STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

October 11, 2022

Mark Appleby
Centerline Communications
750 West Center Street, Floor 3
West Bridgewater, MA 02379
mappleby@clinellc.com

RE: **EM-T-MOBILE-013-220922 –** T-Mobile notice of intent to modify an existing telecommunications facility located at Polly Lane (a/k/a 10 Polly Lane), Bozrah, Connecticut.

Dear Mark Appleby:

The Connecticut Siting Council (Council) is in receipt of correspondence dated October 6, 2022 submitted in response to the Council's October 5, 2022 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 Bachman
Executive Director

MAB/IN/laf

c: Ryan Clark, Site Acquisition Consultant, Centerline Communications (rclark@clinellc.com)

From: Ryan Clark <rclark@clinellc.com>
Sent: Thursday, October 6, 2022 4:14 PM
To: Robidoux, Evan <Evan.Robidoux@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>; Peter Fales <pfales@clinellc.com>; Ryan Clark <rclark@clinellc.com>; Sean Dempsey <sdempsey@pmass.com>
Subject: RE: Council Incomplete Letter for EM-T-MOBILE-013-220922 (Polly Lane, Bozrah)

Good Afternoon,

Please find attached a copy of the Structural Analysis and the Mount Analysis both stamped and signed by the engineer. Please let us know if you need anything else.

Thank you,

Ryan Clark | Site Acquisition Consultant
750 W Center St, Suite 301 | West Bridgewater, MA 02379
Mobile: 203.300.7310
rclark@clinellc.com | www.centerlinecommunications.com

PAUL J. FORD & COMPANY

Report Date: August 10, 2022

Client: Everest Infrastructure Partners
Two Allegheny Center
Pittsburgh, PA 15212
Attn: Thomas Rigg
(603) 498-7462
tom.rigg@everestinfrastructure.com

Structure: Existing 187-ft Guyed Tower
Site Name: Bozrah Polly Lane
Site Reference #: 701695
Site Address: 3 Polly Lane
City, County, State: Bozrah, New London County, CT
Latitude, Longitude: 41.573333°, -72.203333°

PJF Project: A13321-0017.002.8700

Paul J. Ford and Company is pleased to submit this "**Structural Analysis Report**" to determine the tower stress level.

Analysis Criteria:
This analysis utilizes an ultimate 3-second gust wind speed of 135 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

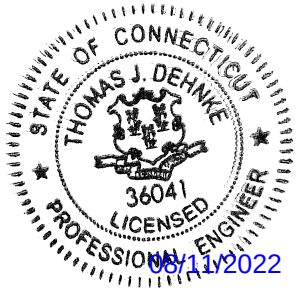
Proposed Appurtenance Loads:
The structure was analyzed with the proposed loading configuration shown in Table 1 combined with the other considered equipment shown in Table 2 of this report.

Summary of Analysis Results:
Existing Structure: Pass – 88.9%
Existing Foundation: Pass – 97.7%

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and Everest Infrastructure Partners. If you have any questions or need further assistance on this or any other projects, please give us a call.

Respectfully Submitted by:
Paul J. Ford and Company

Anna Trudo, EI
Structural Designer JMF
atrudo@pauljford.com



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1) INTRODUCTION

This tower is a 187 ft Guyed tower designed by Fred A. Nudd Corporation.

The tower has been modified per reinforcement drawings prepared by Paul J. Ford in March of 2020. Reinforcement consists of expanding the Base Foundation by adding concrete.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Risk Category:	II
Nominal Wind Speed:	105 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	0.75 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
177.0	177.0	3	commscope	VV-65B-R1_TMO w/ Mount Pipe	3	1-5/8
		3	ericsson	4460 B25/B66		
		3	ericsson	AIR 6419 B41_TMO w/ Mount Pipe		
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APXVAALL24_43-U-NA20 w/ Mount Pipe		
		1	tower mounts	Sector Mount [SM 1305-3] with mount modifications		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
187.0	187.0	6	cci antennas	DMP65R-BU8D w/ Mount Pipe	12 1 2	1-5/8 1-3/8 0.66
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14		
		3	ericsson	RRUS 8843 B2/B66A		
		3	powerwave technologies	7770 w/ Mount Pipe		
		6	powerwave technologies	LGP 17201		
		2	raycap	DC6-48-60-18-8F		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		1	tower mounts	Sector Mount [SM 801-3]		
150.0	150.0	3	alcatel lucent	1900 MHz 4x45W RRH	4	1-1/4
		3	alcatel lucent	RRH 8x20W + Solar Shield		
		6	alcatel lucent	RRH2x50-WCS		
		3	commscope	DT465B-2XR w/ Mount Pipe		
		3	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe		
		1	tower mounts	Sector Mount [SM 502-3]		
136.0	136.0	3	antel	BXA-70063/6CF w/ Mount Pipe	10 2	1-5/8 6x12
		3	commscope	BSAMNT-SBS-2-2 (Mount Bracket)		
		3	commscope	CBC78T-DS-43-2X		
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
		1	raycap	RVZDC-6627-PF-48		
		3	samsung telecommunications	B2/B66A RRH-BR049 (RFV01U-D1A)		
		3	samsung telecommunications	B5/B13 RRH-BR04C (RFV01U-D2A)		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		1	tower mounts	Sector Mount [SM 502-3]		
127.0	127.0	3	fujitsu	TA08025-B604	1	1.6
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-20 w/ Mount Pipe		
		1	mounts	Sabre_C10837002C-32788_Sector_(3)		
		1	raycap	RDIDC-9181-PF-48		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
Foundation Mapping Report	TEP, 11/20/2019	133845.318836	Everest
Geotechnical Report	TEP, 8/24/2009	080004.46E	Everest
Previous Structural Analysis	Fred A. Nudd Corporation, 12/28/2017	117-23243.4	Everest
Tower Modification Drawings	Paul J. Ford, 3/12/020	A00019-0431.002.8800_R1	Everest
PMI	Armor Tower Engineering, 8/18/2020	701695	Everest
Collocation Application	Everest, 7/15/2022	701695	Everest
Mount Analysis	Centerline	CT11258B	Everest

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) The original guy anchor foundation drawings were not available at the time of analysis. Therefore, we have assumed the material grades, guy rod information, and reinforcing steel information provided in the previous structural analysis report, referenced in Table 3, are correct.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	187 - 180	Leg	P2.875"x0.203" (2.5 STD)	3	-17.01	74.72	22.8	Pass
T2	180 - 160	Leg	P2.875"x0.203" (2.5 STD)	26	-64.41	79.61	80.9	Pass
T3	160 - 140	Leg	P2.875"x0.203" (2.5 STD)	86	-70.78	79.61	88.9	Pass
T4	140 - 120	Leg	P2.875"x0.203" (2.5 STD)	146	-70.01	79.61	88.0	Pass
T5	120 - 100	Leg	P2.875"x0.203" (2.5 STD)	207	-68.02	79.61	85.4	Pass
T6	100 - 80	Leg	P2.875"x0.203" (2.5 STD)	267	-58.07	79.61	72.9	Pass
T7	80 - 60	Leg	P2.875"x0.203" (2.5 STD)	327	-60.41	79.61	75.9	Pass
T8	60 - 40	Leg	P2.875"x0.203" (2.5 STD)	387	-65.92	79.61	82.8	Pass
T9	40 - 20	Leg	P2.875"x0.203" (2.5 STD)	447	-68.30	79.61	85.8	Pass
T10	20 - 0	Leg	P2.875"x0.203" (2.5 STD)	507	-68.37	79.61	85.9	Pass
T1	187 - 180	Diagonal	5/8	13	7.79	9.94	78.4	Pass
T2	180 - 160	Diagonal	C3x4.1	39	-6.20	31.24	19.9	Pass
T3	160 - 140	Diagonal	5/8	142	7.67	9.94	77.2	Pass
T4	140 - 120	Diagonal	5/8	163	5.58	9.94	56.2	Pass
T5	120 - 100	Diagonal	5/8	261	5.83	9.94	58.7	Pass
T6	100 - 80	Diagonal	5/8	322	3.46	9.94	34.8	Pass
T7	80 - 60	Diagonal	5/8	336	4.11	9.94	41.4	Pass
T8	60 - 40	Diagonal	5/8	439	4.12	9.94	41.5	Pass
T9	40 - 20	Diagonal	5/8	458	3.30	9.94	33.2	Pass
T10	20 - 0	Diagonal	5/8	517	4.27	9.94	42.9	Pass
T1	187 - 180	Horizontal	L 1.5 x 1.5 x 3/16	16	-6.33	7.19	88.0	Pass
T2	180 - 160	Horizontal	L 1.5 x 1.5 x 3/16	67	-3.27	7.19	45.5	Pass
T3	160 - 140	Horizontal	L 1.5 x 1.5 x 3/16	137	-5.24	7.19	72.8	Pass
T4	140 - 120	Horizontal	L 1.5 x 1.5 x 3/16	198	-4.34	7.19	60.4	Pass
T5	120 - 100	Horizontal	L 1.5 x 1.5 x 3/16	257	-3.98	7.19	55.3	Pass
T6	100 - 80	Horizontal	L 1.5 x 1.5 x 3/16	282	-3.55	7.19	49.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T7	80 - 60	Horizontal	L 1.5 x 1.5 x 3/16	378	-3.38	7.19	47.1	Pass
T8	60 - 40	Horizontal	L 1.5 x 1.5 x 3/16	437	-3.34	7.19	46.5	Pass
T9	40 - 20	Horizontal	L 1.5 x 1.5 x 3/16	462	-3.56	7.19	49.5	Pass
T10	20 - 0	Horizontal	L 1.5 x 1.5 x 3/16	558	-3.43	7.19	47.7	Pass
T1	187 - 180	Top Girt	L 1.5 x 1.5 x 3/16	4	-4.24	7.19	59.0	Pass
T2	180 - 160	Top Girt	L 1.5 x 1.5 x 3/16	30	-1.23	7.19	17.0	Pass
T3	160 - 140	Top Girt	L 1.5 x 1.5 x 3/16	89	-4.23	7.19	58.9	Pass
T4	140 - 120	Top Girt	L 1.5 x 1.5 x 3/16	149	-2.60	7.19	36.2	Pass
T5	120 - 100	Top Girt	L 1.5 x 1.5 x 3/16	209	-3.13	7.19	43.5	Pass
T6	100 - 80	Top Girt	L 1.5 x 1.5 x 3/16	269	-1.96	7.19	27.2	Pass
T7	80 - 60	Top Girt	L 1.5 x 1.5 x 3/16	330	-1.96	7.19	27.2	Pass
T9	40 - 20	Top Girt	L 1.5 x 1.5 x 3/16	448	-1.63	7.19	22.6	Pass
T10	20 - 0	Top Girt	L 1.5 x 1.5 x 3/16	510	-1.95	7.19	27.1	Pass
T1	187 - 180	Bottom Girt	L 1.5 x 1.5 x 3/16	7	-4.64	7.19	64.6	Pass
T2	180 - 160	Bottom Girt	L 1.5 x 1.5 x 3/16	33	6.28	17.09	36.8	Pass
T3	160 - 140	Bottom Girt	L 1.5 x 1.5 x 3/16	93	-2.24	7.19	31.2	Pass
T4	140 - 120	Bottom Girt	L 1.5 x 1.5 x 3/16	152	-4.24	7.19	58.9	Pass
T5	120 - 100	Bottom Girt	L 1.5 x 1.5 x 3/16	213	-2.05	7.19	28.5	Pass
T6	100 - 80	Bottom Girt	L 1.5 x 1.5 x 3/16	271	-1.72	7.19	23.9	Pass
T7	80 - 60	Bottom Girt	L 1.5 x 1.5 x 3/16	332	-1.72	7.19	23.9	Pass
T8	60 - 40	Bottom Girt	L 1.5 x 1.5 x 3/16	393	-2.02	7.19	28.2	Pass
T9	40 - 20	Bottom Girt	L 1.5 x 1.5 x 3/16	453	-1.75	7.19	24.3	Pass
T10	20 - 0	Bottom Girt	L 1.5 x 1.5 x 3/16	512	0.87	17.09	5.1	Pass
T2	180 - 160	Guy A@160.375	5/8	577	15.39	25.44	60.5	Pass
		Guy A@170	5/8	606	16.11	25.44	63.3	Pass
T4	140 - 120	Guy A@120.375	9/16	595	9.98	21.00	47.5	Pass
T8	60 - 40	Guy A@59.625	9/16	603	9.37	21.00	44.6	Pass
T2	180 - 160	Guy B@160.375	5/8	572	15.01	25.44	59.0	Pass
		Guy B@170	5/8	605	15.85	25.44	62.3	Pass
T4	140 - 120	Guy B@120.375	9/16	590	10.29	21.00	49.0	Pass
T8	60 - 40	Guy B@59.625	9/16	602	9.79	21.00	46.6	Pass
T2	180 - 160	Guy C@160.375	5/8	566	16.83	25.44	66.2	Pass
		Guy C@170	5/8	604	17.40	25.44	68.4	Pass
T4	140 - 120	Guy C@120.375	9/16	583	11.73	21.00	55.9	Pass
T8	60 - 40	Guy C@59.625	9/16	601	10.61	21.00	50.5	Pass
T2	180 - 160	Top Guy Pull-Off@160.375	L 2 x 2 x 5/16	41	11.28	28.60	39.4 49.5 (b)	Pass
		Top Guy Pull-Off@170	L 1.5 x 1.5 x 3/16	60	5.02	17.09	29.4	Pass
T4	140 - 120	Top Guy Pull-Off@120.375	L 2 x 2 x 5/16	162	-7.53	21.94	34.3	Pass
T8	60 - 40	Top Guy Pull-Off@59.625	L 1.5 x 1.5 x 3/16	388	-1.17	6.70	17.5	Pass
T2	180 - 160	Torque Arm Top@160.375	L 3 x 3 x 1/4	567	16.39	39.76	41.2 73.5 (b)	Pass
T4	140 - 120	Torque Arm Top@120.375	L 3 x 3 x 1/4	585	10.06	39.76	25.3 45.1 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T2	180 - 160	Torque Arm Bottom@160.375	L 3 x 3 x 1/4	575	-13.93	36.39	38.3 38.9 (b)	Pass
T4	140 - 120	Torque Arm Bottom@120.375	L 3 x 3 x 1/4	593	-8.80	36.39	24.2 24.6 (b)	Pass
							Summary	
						Leg (T3)	88.9	Pass
						Diagonal (T1)	78.4	Pass
						Horizontal (T1)	88.0	Pass
						Top Girt (T1)	59.0	Pass
						Bottom Girt (T1)	64.6	Pass
						Guy A (T2)	63.3	Pass
						Guy B (T2)	62.3	Pass
						Guy C (T2)	68.4	Pass
						Top Guy Pull-Off (T2)	49.5	Pass
						Torque Arm Top (T2)	73.5	Pass
						Torque Arm Bottom (T2)	38.9	Pass
						Bolt Checks	73.5	Pass
						Rating =	88.9	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Foundation (Structure)	-	12.7	Pass
1	Base Foundation (Soil Interaction)	-	77.0	Pass
1	Guy Anchor Shaft	-	88.2	Pass
1	Guy Anchor Foundation Structural	-	48.1	Pass
1	Guy Anchor Foundation Soil Interaction	-	97.7	Pass

Structure Rating (max from all components) =	**97.7%**

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

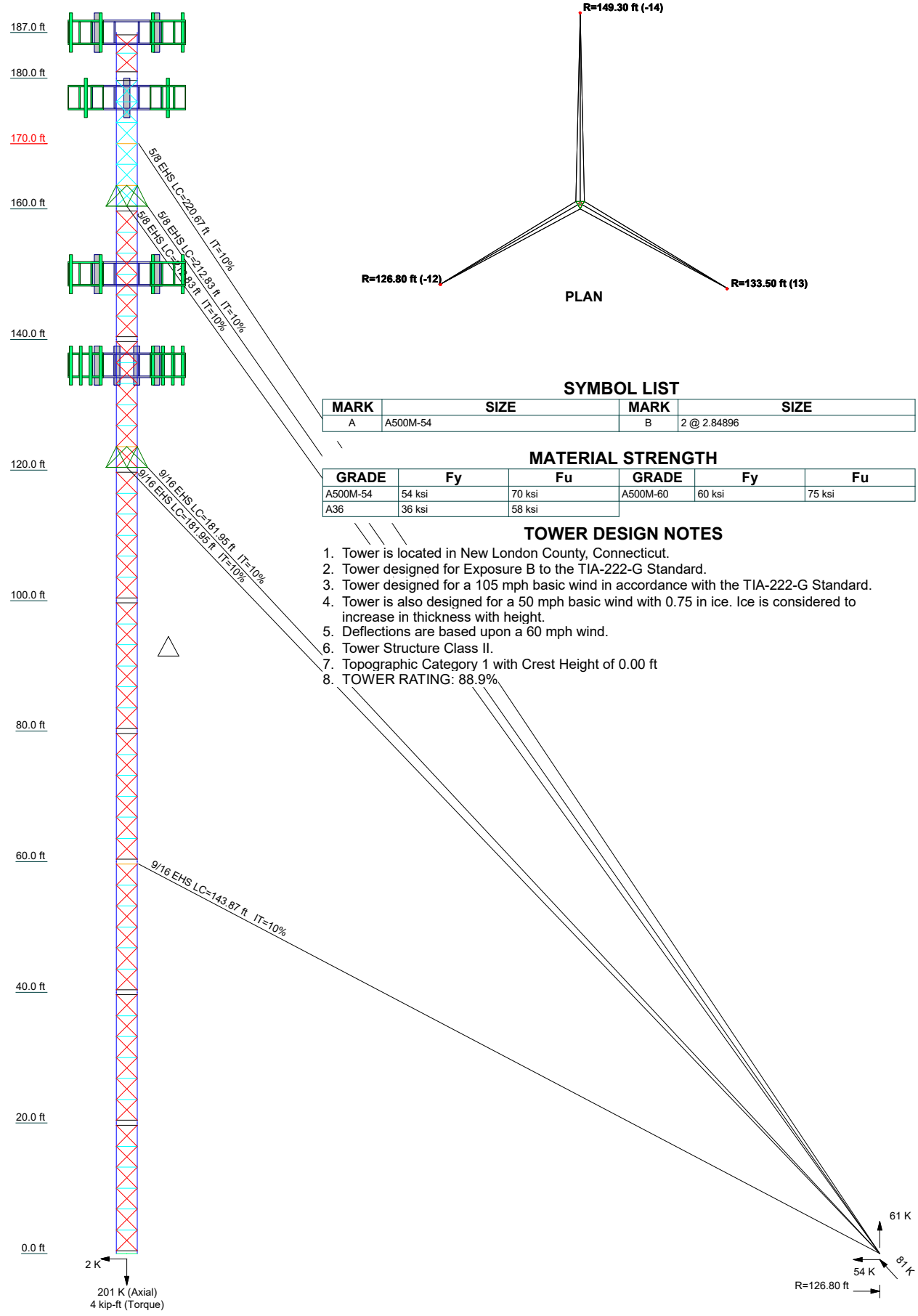
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Legs						P2.875"x0.203" (2.5 STD)				
Leg Grade		A				A500M-60				
Diagonals		SR 5/8	C3x4.1			SR 5/8				
Diagonal Grade						A36				
Top Girts				L 1.5 x 1.5 x 3/16				N.A.		L 1.5 x 1.5 x 3/16
Bottom Girts						L 1.5 x 1.5 x 3/16				
Horizontals						L 1.5 x 1.5 x 3/16				
Top Guy Pull-Offs		N.A.		L 2 x 2 x 5/16		N.A.		L 1.5 x 1.5 x 3/16		N.A.
Face Width (ft)						3.5				
# Panels @ (ft)		B				55 @ 3.20833				
Weight (K)	0.2	1.5	0.7	1.0	0.7	0.7	0.7	0.7	0.7	0.7



PLAN

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	A500M-54	B	2 @ 2.84896

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500M-54	54 ksi	70 ksi	A500M-60	60 ksi	75 ksi
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 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: 88.9%

ALL REACTIONS ARE FACTORED

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
Phone: 614-221-6679
FAX:

Job: 187-ft GT; Bozrah Polly Lane, CT			
Project: 13321-0017.002.8700			
Client: Everest Infrastructure Partners	Drawn by: Anna Trudo	App'd:	
Code: TIA-222-G	Date: 08/10/22	Scale: NTS	
Path: G:\TOWER\133_Everest Infrastructure Partners\2021\13321-0017_Bozrah_CT\13321-0017.002.8700_SA\tnx\13321-0017.002.8700.eri		Dwg No. E-1	

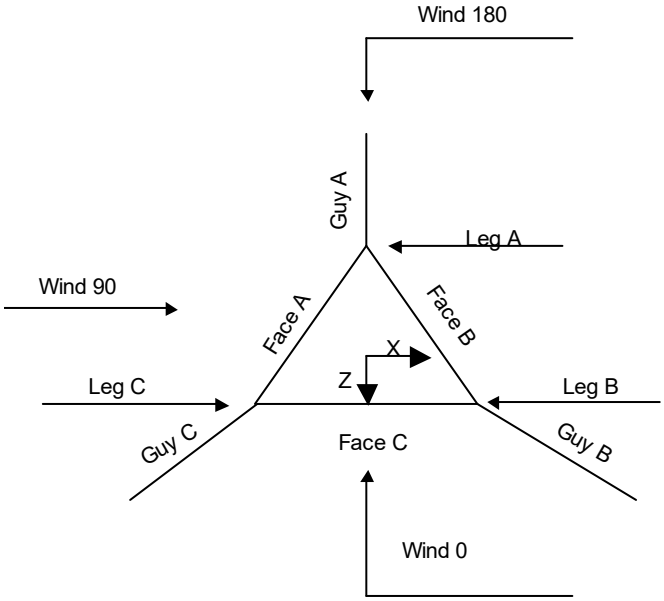
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 187.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.50 ft at the top and 3.50 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

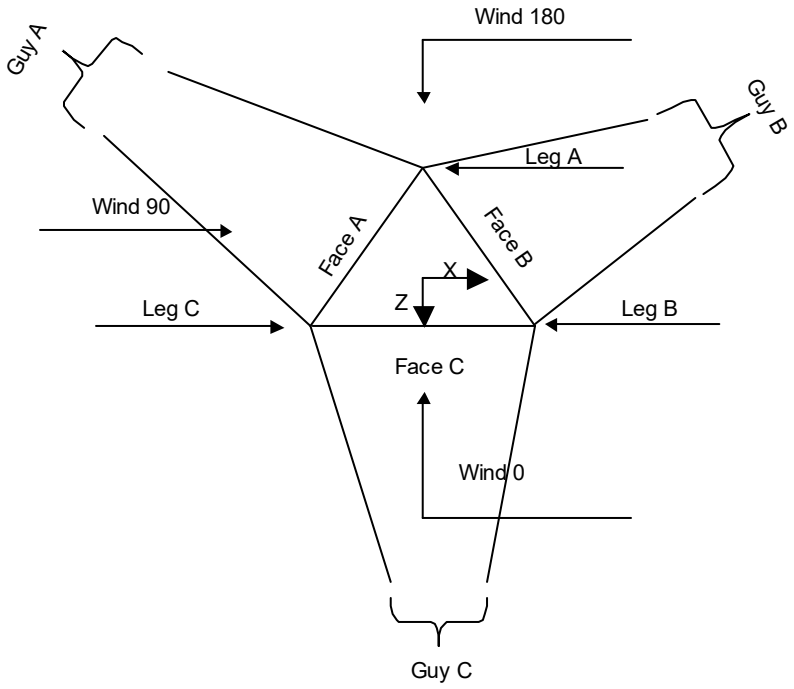
- Tower is located in New London County, Connecticut.
- ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- Basic wind speed of 105 mph.
- Structure Class II.
- Exposure Category B.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Nominal ice thickness of 0.7500 in.
- Ice thickness 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.
- Tension only take-up is 0.0313 in.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Safety factor used in guy design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	187.00-180.00			3.50	1	7.00
T2	180.00-160.00			3.50	1	20.00
T3	160.00-140.00			3.50	1	20.00
T4	140.00-120.00			3.50	1	20.00
T5-T6	120.00-80.00			3.50	2	20.00
T7	80.00-60.00			3.50	1	20.00
T8-T10	60.00-0.00			3.50	3	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	187.00-180.00	2.85	TX Brace	No	Yes	3.7500	11.8750
T2	180.00-160.00	3.21	X Brace	No	Yes	4.5000	4.5000
T3	160.00-140.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T4	140.00-120.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T5-T6	120.00-80.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T7	80.00-60.00	3.21	TX Brace	No	Yes	4.5000	4.5000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T8-T10	60.00-0.00	3.21	TX Brace	No	Yes	4.5000	4.5000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 187.00-180.00	Pipe	P2.875"x0.203" (2.5 STD)	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 180.00-160.00	Pipe	P2.875"x0.203" (2.5 STD)	A500M-60 (60 ksi)	Channel	C3x4.1	A36 (36 ksi)
T3 160.00-140.00	Pipe	P2.875"x0.203" (2.5 STD)	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 140.00-120.00	Pipe	P2.875"x0.203" (2.5 STD)	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T5-T6 120.00-80.00	Pipe	P2.875"x0.203" (2.5 STD)	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T7 80.00-60.00	Pipe	P2.875"x0.203" (2.5 STD)	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T8-T10 60.00-0.00	Pipe	P2.875"x0.203" (2.5 STD)	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 187.00-180.00	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T2 180.00-160.00	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T3 160.00-140.00	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T4 140.00-120.00	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T5-T6 120.00-80.00	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T7 80.00-60.00	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T8-T10 60.00-0.00	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 187.00-180.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T2 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T3 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T4 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T5-T6 120.00-80.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T7 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)
T8-T10 60.00-0.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 187.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5-T6 120.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8-T10 60.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 187.00-180.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 180.00-160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 160.00-140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 140.00-120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5-T6 120.00-80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 80.00-60.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8-T10 60.00-0.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 187.00-180.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 140.00-120.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5-T6 120.00-80.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 80.00-60.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8-T10 60.00-0.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 187.00-180.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 160.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 140.00-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5-T6 120.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8-T10 60.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 187.00-180.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-120.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5-T6 120.00-80.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8-T10 60.00-0.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
160.375	EHS	A	5/8	4.24	10%	23000	0.813	228.10	149.30	0.0000	-14.00	100%
		B	5/8	4.24	10%	23000	0.813	197.38	133.50	0.0000	13.00	100%
		C	5/8	4.24	10%	23000	0.813	212.66	126.80	0.0000	-12.00	100%
120.375	EHS	A	9/16	3.50	10%	23000	0.671	199.25	149.30	0.0000	-14.00	100%
		B	9/16	3.50	10%	23000	0.671	169.66	133.50	0.0000	13.00	100%
		C	9/16	3.50	10%	23000	0.671	181.81	126.80	0.0000	-12.00	100%
59.625	EHS	A	9/16	3.50	10%	23000	0.671	164.53	149.30	0.0000	-14.00	100%
		B	9/16	3.50	10%	23000	0.671	139.40	133.50	0.0000	13.00	100%
		C	9/16	3.50	10%	23000	0.671	143.76	126.80	0.0000	-12.00	100%
170	EHS	A	5/8	4.24	10%	23000	0.813	235.50	149.30	0.0000	-14.00	100%
		B	5/8	4.24	10%	23000	0.813	204.63	133.50	0.0000	13.00	100%
		C	5/8	4.24	10%	23000	0.813	220.50	126.80	0.0000	-12.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
160.375	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L 3 x 3 x 1/4
120.375	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L 3 x 3 x 1/4
59.625	Corner						
170	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
160.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L 2 x 2 x 5/16

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
120.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L 2 x 2 x 5/16
59.63	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16
170.00	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L 1.5 x 1.5 x 3/16

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
160.375	0.19	0.16	0.17		4.91 3.8 sec/pulse	3.69 3.3 sec/pulse	4.27 3.6 sec/pulse	
120.375	0.13	0.11	0.12		3.76 3.3 sec/pulse	2.73 2.9 sec/pulse	3.13 3.1 sec/pulse	
59.625	0.11	0.09	0.10		2.58 2.8 sec/pulse	1.86 2.4 sec/pulse	1.97 2.4 sec/pulse	
170	0.19	0.17	0.18		5.23 3.9 sec/pulse	3.96 3.4 sec/pulse	4.59 3.7 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
160.375	No	No	1	1	1	1	1	1
120.375	No	No	1	1	1	1	1	1
59.625	No	No			1	1	1	1
170	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
160.375	0.7500 A325N	2	0.0000	0.75	0.7500 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
120.375	0.7500 A325N	2	0.0000	0.75	0.7500 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
59.625	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
170	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
160.375	A	73.19	22	5	1.6244
	B	86.69	23	5	1.6521
	C	74.19	22	5	1.6266
120.375	A	53.19	20	4	1.5733
	B	66.69	21	5	1.6093
	C	54.19	20	5	1.5763
59.625	A	22.81	17	4	1.4456
	B	36.31	18	4	1.5144
	C	23.81	17	4	1.4518
170	A	78.00	22	5	1.6347
	B	91.50	23	5	1.6610
	C	79.00	22	5	1.6368

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
FDH1206-24S50-xxM(1 5/8) (T-Mobile) *****	A	No	No	Ar (CaAa)	177.00 - 0.00	0.0000	0.1	3	3	1.4300	1.4300		1.63
FXL-1480(1-1/4) (Sprint)	B	No	No	Ar (CaAa)	150.00 - 0.00	0.0000	0.25	4	4	1.0000 1.5700	1.5700		0.45
AVA7-50(1-5/8) (AT&T)	B	No	No	Ar (CaAa)	187.00 - 0.00	0.0000	0.25	12	4	1.0000 2.0100	2.0100		0.70
AVA7-50(1-5/8) (Verizon/+2P)	A	No	No	Ar (CaAa)	136.00 - 0.00	0.0000	0.3	12	8	1.0000 2.0100	2.0100		0.70
.66" Fiber (AT&T)	B	No	No	Ar (CaAa)	187.00 - 0.00	0.0000	0.25	2	2	0.6600	0.6600		0.40
FDH1206-24S50-xxM(1-3/8) (AT&T)	B	No	No	Ar (CaAa)	187.00 - 0.00	0.0000	0.25	1	1	1.4300	1.4300		1.63
3" Conduit (2 1/2" EMT) (AT&T) *****	B	No	No	Ar (CaAa)	187.00 - 0.00	0.0000	0.25	1	1	2.8750	2.8750		2.16
Safety Line 3/8 *****	C	No	No	Ar (CaAa)	187.00 - 0.00	0.5000	0	1	1	0.3750	0.3750		0.22
AVA7-50(1-5/8) (DISH) *****	C	No	No	Ar (CaAa)	127.00 - 0.00	0.0000	0.4	1	1	1.0000 2.0100	2.0100		0.70

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
*****								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	187.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	20.822	0.000	0.09
		C	0.000	0.000	0.263	0.000	0.00
T2	180.00-160.00	A	0.000	0.000	7.293	0.000	0.08
		B	0.000	0.000	59.490	0.000	0.26
		C	0.000	0.000	0.750	0.000	0.00
T3	160.00-140.00	A	0.000	0.000	8.580	0.000	0.10
		B	0.000	0.000	65.770	0.000	0.28
		C	0.000	0.000	0.750	0.000	0.00
T4	140.00-120.00	A	0.000	0.000	47.172	0.000	0.23
		B	0.000	0.000	72.050	0.000	0.30
		C	0.000	0.000	2.157	0.000	0.01
T5	120.00-100.00	A	0.000	0.000	56.820	0.000	0.27
		B	0.000	0.000	72.050	0.000	0.30
		C	0.000	0.000	4.770	0.000	0.02
T6	100.00-80.00	A	0.000	0.000	56.820	0.000	0.27
		B	0.000	0.000	72.050	0.000	0.30
		C	0.000	0.000	4.770	0.000	0.02
T7	80.00-60.00	A	0.000	0.000	56.820	0.000	0.27
		B	0.000	0.000	72.050	0.000	0.30
		C	0.000	0.000	4.770	0.000	0.02
T8	60.00-40.00	A	0.000	0.000	56.820	0.000	0.27
		B	0.000	0.000	72.050	0.000	0.30
		C	0.000	0.000	4.770	0.000	0.02
T9	40.00-20.00	A	0.000	0.000	56.820	0.000	0.27
		B	0.000	0.000	72.050	0.000	0.30
		C	0.000	0.000	4.770	0.000	0.02
T10	20.00-0.00	A	0.000	0.000	56.820	0.000	0.27
		B	0.000	0.000	72.050	0.000	0.30
		C	0.000	0.000	4.770	0.000	0.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	187.00-180.00	A	1.781	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	31.562	0.000	0.68
		C		0.000	0.000	2.756	0.000	0.03
T2	180.00-160.00	A	1.767	0.000	0.000	25.035	0.000	0.37
		B		0.000	0.000	89.877	0.000	1.94
		C		0.000	0.000	7.819	0.000	0.10
T3	160.00-140.00	A	1.745	0.000	0.000	29.308	0.000	0.43
		B		0.000	0.000	106.563	0.000	2.14
		C		0.000	0.000	7.731	0.000	0.09
T4	140.00-120.00	A	1.720	0.000	0.000	85.465	0.000	1.61
		B		0.000	0.000	123.025	0.000	2.33
		C		0.000	0.000	11.447	0.000	0.15
T5	120.00-100.00	A	1.692	0.000	0.000	99.175	0.000	1.88
		B		0.000	0.000	122.211	0.000	2.30
		C		0.000	0.000	18.305	0.000	0.26
T6	100.00-80.00	A	1.658	0.000	0.000	98.738	0.000	1.86
		B		0.000	0.000	121.252	0.000	2.26
		C		0.000	0.000	18.036	0.000	0.25
T7	80.00-60.00	A	1.617	0.000	0.000	98.203	0.000	1.83
		B		0.000	0.000	120.078	0.000	2.22
		C		0.000	0.000	17.707	0.000	0.24
T8	60.00-40.00	A	1.564	0.000	0.000	97.509	0.000	1.79
		B		0.000	0.000	118.552	0.000	2.17

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	17.279	0.000	0.23
T9	40.00-20.00	A	1.486	0.000	0.000	96.500	0.000	1.74
		B		0.000	0.000	116.333	0.000	2.09
		C		0.000	0.000	16.656	0.000	0.21
T10	20.00-0.00	A	1.331	0.000	0.000	94.505	0.000	1.63
		B		0.000	0.000	111.935	0.000	1.94
		C		0.000	0.000	15.420	0.000	0.18

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	187.00-180.00	8.5230	0.6394	4.8703	0.8223
T2	180.00-160.00	5.2089	-0.1801	2.4694	0.0317
T3	160.00-140.00	7.7083	-0.1856	4.6075	0.0504
T4	140.00-120.00	5.1917	-4.8222	3.6848	-2.1138
T5	120.00-100.00	4.2669	-5.3716	3.0577	-2.3681
T6	100.00-80.00	4.2669	-5.3716	3.0980	-2.4154
T7	80.00-60.00	4.2669	-5.3716	3.1465	-2.4737
T8	60.00-40.00	4.2669	-5.3716	3.2084	-2.5500
T9	40.00-20.00	4.2669	-5.3716	3.2960	-2.6624
T10	20.00-0.00	4.2669	-5.3716	3.4617	-2.8905

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	5	AVA7-50(1-5/8)	180.00 - 187.00	0.6000	0.3806
T1	7	.66" Fiber	180.00 - 187.00	0.6000	0.3806
T1	8	FDH1206-24S50-xxM(1-3/8)	180.00 - 187.00	0.6000	0.3806
T1	9	3" Conduit (2 1/2" EMT)	180.00 - 187.00	0.6000	0.3806
T1	11	Safety Line 3/8	180.00 - 187.00	0.6000	0.3806
T2	2	FDH1206-24S50-xxM(1 5/8)	160.00 - 177.00	0.6000	0.2566
T2	5	AVA7-50(1-5/8)	160.00 - 180.00	0.6000	0.2566
T2	7	.66" Fiber	160.00 - 180.00	0.6000	0.2566
T2	8	FDH1206-24S50-xxM(1-3/8)	160.00 - 180.00	0.6000	0.2566
T2	9	3" Conduit (2 1/2" EMT)	160.00 - 180.00	0.6000	0.2566
T2	11	Safety Line 3/8	160.00 - 180.00	0.6000	0.2566
T3	2	FDH1206-24S50-xxM(1 5/8)	140.00 - 160.00	0.6000	0.3932
T3	4	FXL-1480(1-1/4)	140.00 - 150.00	0.6000	0.3932
T3	5	AVA7-50(1-5/8)	140.00 - 160.00	0.6000	0.3932
T3	7	.66" Fiber	140.00 - 160.00	0.6000	0.3932

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	8	FDH1206-24S50-xxM(1-3/8)	140.00 - 160.00	0.6000	0.3932
T3	9	3" Conduit (2 1/2" EMT)	140.00 - 160.00	0.6000	0.3932
T3	11	Safety Line 3/8	140.00 - 160.00	0.6000	0.3932
T4	2	FDH1206-24S50-xxM(1 5/8)	120.00 - 140.00	0.6000	0.3969
T4	4	FXL-1480(1-1/4)	120.00 - 140.00	0.6000	0.3969
T4	5	AVA7-50(1-5/8)	120.00 - 140.00	0.6000	0.3969
T4	6	AVA7-50(1-5/8)	120.00 - 136.00	0.6000	0.3969
T4	7	.66" Fiber	120.00 - 140.00	0.6000	0.3969
T4	8	FDH1206-24S50-xxM(1-3/8)	120.00 - 140.00	0.6000	0.3969
T4	9	3" Conduit (2 1/2" EMT)	120.00 - 140.00	0.6000	0.3969
T4	11	Safety Line 3/8	120.00 - 140.00	0.6000	0.3969
T4	13	AVA7-50(1-5/8)	120.00 - 127.00	0.6000	0.3969
T5	2	FDH1206-24S50-xxM(1 5/8)	100.00 - 120.00	0.6000	0.4047
T5	4	FXL-1480(1-1/4)	100.00 - 120.00	0.6000	0.4047
T5	5	AVA7-50(1-5/8)	100.00 - 120.00	0.6000	0.4047
T5	6	AVA7-50(1-5/8)	100.00 - 120.00	0.6000	0.4047
T5	7	.66" Fiber	100.00 - 120.00	0.6000	0.4047
T5	8	FDH1206-24S50-xxM(1-3/8)	100.00 - 120.00	0.6000	0.4047
T5	9	3" Conduit (2 1/2" EMT)	100.00 - 120.00	0.6000	0.4047
T5	11	Safety Line 3/8	100.00 - 120.00	0.6000	0.4047
T5	13	AVA7-50(1-5/8)	100.00 - 120.00	0.6000	0.4047
T6	2	FDH1206-24S50-xxM(1 5/8)	80.00 - 100.00	0.6000	0.4119
T6	4	FXL-1480(1-1/4)	80.00 - 100.00	0.6000	0.4119
T6	5	AVA7-50(1-5/8)	80.00 - 100.00	0.6000	0.4119
T6	6	AVA7-50(1-5/8)	80.00 - 100.00	0.6000	0.4119
T6	7	.66" Fiber	80.00 - 100.00	0.6000	0.4119
T6	8	FDH1206-24S50-xxM(1-3/8)	80.00 - 100.00	0.6000	0.4119
T6	9	3" Conduit (2 1/2" EMT)	80.00 - 100.00	0.6000	0.4119
T6	11	Safety Line 3/8	80.00 - 100.00	0.6000	0.4119
T6	13	AVA7-50(1-5/8)	80.00 - 100.00	0.6000	0.4119
T7	2	FDH1206-24S50-xxM(1 5/8)	60.00 - 80.00	0.6000	0.4208
T7	4	FXL-1480(1-1/4)	60.00 - 80.00	0.6000	0.4208
T7	5	AVA7-50(1-5/8)	60.00 - 80.00	0.6000	0.4208
T7	6	AVA7-50(1-5/8)	60.00 - 80.00	0.6000	0.4208

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	7	.66" Fiber	60.00 - 80.00	0.6000	0.4208
T7	8	FDH1206-24S50-xxM(1-3/8)	60.00 - 80.00	0.6000	0.4208
T7	9	3" Conduit (2 1/2" EMT)	60.00 - 80.00	0.6000	0.4208
T7	11	Safety Line 3/8	60.00 - 80.00	0.6000	0.4208
T7	13	AVA7-50(1-5/8)	60.00 - 80.00	0.6000	0.4208
T8	2	FDH1206-24S50-xxM(1 5/8)	40.00 - 60.00	0.6000	0.4325
T8	4	FXL-1480(1-1/4)	40.00 - 60.00	0.6000	0.4325
T8	5	AVA7-50(1-5/8)	40.00 - 60.00	0.6000	0.4325
T8	6	AVA7-50(1-5/8)	40.00 - 60.00	0.6000	0.4325
T8	7	.66" Fiber	40.00 - 60.00	0.6000	0.4325
T8	8	FDH1206-24S50-xxM(1-3/8)	40.00 - 60.00	0.6000	0.4325
T8	9	3" Conduit (2 1/2" EMT)	40.00 - 60.00	0.6000	0.4325
T8	11	Safety Line 3/8	40.00 - 60.00	0.6000	0.4325
T8	13	AVA7-50(1-5/8)	40.00 - 60.00	0.6000	0.4325
T9	2	FDH1206-24S50-xxM(1 5/8)	20.00 - 40.00	0.6000	0.4495
T9	4	FXL-1480(1-1/4)	20.00 - 40.00	0.6000	0.4495
T9	5	AVA7-50(1-5/8)	20.00 - 40.00	0.6000	0.4495
T9	6	AVA7-50(1-5/8)	20.00 - 40.00	0.6000	0.4495
T9	7	.66" Fiber	20.00 - 40.00	0.6000	0.4495
T9	8	FDH1206-24S50-xxM(1-3/8)	20.00 - 40.00	0.6000	0.4495
T9	9	3" Conduit (2 1/2" EMT)	20.00 - 40.00	0.6000	0.4495
T9	11	Safety Line 3/8	20.00 - 40.00	0.6000	0.4495
T9	13	AVA7-50(1-5/8)	20.00 - 40.00	0.6000	0.4495
T10	2	FDH1206-24S50-xxM(1 5/8)	0.00 - 20.00	0.6000	0.4836
T10	4	FXL-1480(1-1/4)	0.00 - 20.00	0.6000	0.4836
T10	5	AVA7-50(1-5/8)	0.00 - 20.00	0.6000	0.4836
T10	6	AVA7-50(1-5/8)	0.00 - 20.00	0.6000	0.4836
T10	7	.66" Fiber	0.00 - 20.00	0.6000	0.4836
T10	8	FDH1206-24S50-xxM(1-3/8)	0.00 - 20.00	0.6000	0.4836
T10	9	3" Conduit (2 1/2" EMT)	0.00 - 20.00	0.6000	0.4836
T10	11	Safety Line 3/8	0.00 - 20.00	0.6000	0.4836
T10	13	AVA7-50(1-5/8)	0.00 - 20.00	0.6000	0.4836

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
187									
(2) DMP65R-BU8D_TIA w/ Mount Pipe (P - AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	18.11 18.84 19.59	10.26 11.78 13.33	0.14 0.26 0.39
(2) DMP65R-BU8D_TIA w/ Mount Pipe (P - AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	18.11 18.84 19.59	10.26 11.78 13.33	0.14 0.26 0.39
(2) DMP65R-BU8D_TIA w/ Mount Pipe (P - AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	18.11 18.84 19.59	10.26 11.78 13.33	0.14 0.26 0.39
RRUS 4449 B5/B12 (P - AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4449 B5/B12 (P - AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4449 B5/B12 (P - AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 8843 B2/B66A (P - AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 8843 B2/B66A (P - AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 8843 B2/B66A (P - AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 4478 B14 (P - AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
RRUS 4478 B14 (P - AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
RRUS 4478 B14 (P - AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
7770_TIA w/ Mount Pipe (E - AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770_TIA w/ Mount Pipe (E - AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770_TIA w/ Mount Pipe (E - AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
(2) LGP 17201 (E - AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	0.03 0.04 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LGP 17201 (E - AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	0.03 0.04 0.06
(2) LGP 17201 (E - AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.67 1.83 2.00	0.47 0.57 0.68	0.03 0.04 0.06
(2) DC6-48-60-18-8F (E - AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
Sector Mount [SM 801-3] (E - AT&T)	C	None		0.0000	187.00	No Ice 1/2" Ice 1" Ice	20.61 29.42 38.23	20.61 29.42 38.23	0.88 1.28 1.82
mount mods	A	From Leg	2.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	4.16 5.29 6.42	8.47 10.84 13.22	0.24 0.27 0.29
mount mods	B	From Leg	2.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	4.16 5.29 6.42	8.47 10.84 13.22	0.24 0.27 0.29
mount mods	C	From Leg	2.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	4.16 5.29 6.42	8.47 10.84 13.22	0.24 0.27 0.29
177									
APXVAALL24_43-U-NA20_TIA w/ Mount Pipe (TMO)	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	10.87 12.39 13.94	0.18 0.32 0.46
APXVAALL24_43-U-NA20_TIA w/ Mount Pipe (TMO)	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	10.87 12.39 13.94	0.18 0.32 0.46
APXVAALL24_43-U-NA20_TIA w/ Mount Pipe (TMO)	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	10.87 12.39 13.94	0.18 0.32 0.46
RADIO 4449 B71 B85A_T-MOBILE (TMO)	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RADIO 4449 B71 B85A_T-MOBILE (TMO)	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RADIO 4449 B71 B85A_T-MOBILE (TMO)	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
AIR 6419 B41_TMO_TIA w/ Mount Pipe (TMO - p)	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	6.53 6.92 7.31	3.75 4.24 4.75	0.11 0.17 0.23
AIR 6419 B41_TMO_TIA w/ Mount Pipe (TMO - p)	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	6.53 6.92 7.31	3.75 4.24 4.75	0.11 0.17 0.23
AIR 6419 B41_TMO_TIA w/ Mount Pipe (TMO - p)	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	6.53 6.92 7.31	3.75 4.24 4.75	0.11 0.17 0.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
VV-65B-R1_TMO_TIA w/ Mount Pipe (TMO - p)	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	8.15 8.70 9.22	5.43 6.56 7.41	0.07 0.13 0.20
VV-65B-R1_TMO_TIA w/ Mount Pipe (TMO - p)	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	8.15 8.70 9.22	5.43 6.56 7.41	0.07 0.13 0.20
VV-65B-R1_TMO_TIA w/ Mount Pipe (TMO - p)	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	8.15 8.70 9.22	5.43 6.56 7.41	0.07 0.13 0.20
4460 B25/B66 (TMO - p)	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	2.57 2.77 2.98	1.97 2.15 2.34	0.11 0.13 0.16
4460 B25/B66 (TMO - p)	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	2.57 2.77 2.98	1.97 2.15 2.34	0.11 0.13 0.16
4460 B25/B66 (TMO - p)	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	2.57 2.77 2.98	1.97 2.15 2.34	0.11 0.13 0.16
8' x 2" Sch 40 Pipe Mount	A	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Sch 40 Pipe Mount	B	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Sch 40 Pipe Mount	C	From Leg	4.00 0.00 0.00	0.0000	177.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
Sector Mount [SM 1305-3] (TMO) ***173*** ***150***	C	None		0.0000	177.00	No Ice 1/2" Ice 1" Ice	31.68 41.02 50.37	31.68 41.02 50.37	1.25 1.94 2.79
APXV9ERR18-C-A20_TIA w/ Mount Pipe (Sprint)	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	7.47 8.66 9.56	0.10 0.17 0.24
APXV9ERR18-C-A20_TIA w/ Mount Pipe (Sprint)	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	7.47 8.66 9.56	0.10 0.17 0.24
APXV9ERR18-C-A20_TIA w/ Mount Pipe (Sprint)	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	7.47 8.66 9.56	0.10 0.17 0.24
DT465B-2XR w/ Mount Pipe (Sprint)	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.50 5.97 6.45	4.38 4.84 5.30	0.09 0.16 0.25
DT465B-2XR w/ Mount Pipe (Sprint)	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	5.50 5.97 6.45	4.38 4.84 5.30	0.09 0.16 0.25
DT465B-2XR w/ Mount Pipe (Sprint)	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice	5.50 5.97 6.45	4.38 4.84 5.30	0.09 0.16 0.25

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* *K*
						1" Ice			
1900 MHz 4x45W RRH (Sprint)	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
1900 MHz 4x45W RRH (Sprint)	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
1900 MHz 4x45W RRH (Sprint)	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
RRH 8x20W + Solar Shield (Sprint)	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
RRH 8x20W + Solar Shield (Sprint)	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
RRH 8x20W + Solar Shield (Sprint)	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
(2) RRH2x50-WCS (Sprint)	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.91 5.23 5.55	2.70 3.00 3.30	0.08 0.11 0.14
(2) RRH2x50-WCS (Sprint)	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.91 5.23 5.55	2.70 3.00 3.30	0.08 0.11 0.14
(2) RRH2x50-WCS (Sprint)	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.91 5.23 5.55	2.70 3.00 3.30	0.08 0.11 0.14
Sector Mount [SM 502-3]	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice	29.82 42.21 54.43	29.82 42.21 54.43	1.67 2.27 3.05
136									
BXA-70063/6CF_TIA w/ Mount Pipe (E-VZW)	A	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	7.87 8.42 8.94	6.27 7.43 8.30	0.06 0.12 0.19
BXA-70063/6CF_TIA w/ Mount Pipe (E-VZW)	B	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	7.87 8.42 8.94	6.27 7.43 8.30	0.06 0.12 0.19
BXA-70063/6CF_TIA w/ Mount Pipe (E-VZW)	C	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	7.87 8.42 8.94	6.27 7.43 8.30	0.06 0.12 0.19
Sector Mount [SM 502-3] (E-VZW)	C	None		0.0000	136.00	No Ice 1/2" Ice 1" Ice	29.82 42.21 54.43	29.82 42.21 54.43	1.67 2.27 3.05
(2) JAHH-65B-R3B_TIA w/ Mount Pipe (P-VZW)	A	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.17 0.25
(2) JAHH-65B-R3B_TIA w/ Mount Pipe (P-VZW)	B	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.17 0.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							1" Ice			
(2) JAHH-65B-R3B_TIA w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	136.00	No Ice	9.35	7.65	0.09
							1/2" Ice	9.92	8.83	0.17
(P-VZW)			0.00	0.00			1" Ice	10.46	9.73	0.25
MT6407-77A w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	136.00	No Ice	4.91	2.68	0.10
							1/2" Ice	5.26	3.14	0.14
(P-VZW)			0.00	0.00			1" Ice	5.61	3.62	0.18
MT6407-77A w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	136.00	No Ice	4.91	2.68	0.10
							1/2" Ice	5.26	3.14	0.14
(P-VZW)			0.00	0.00			1" Ice	5.61	3.62	0.18
MT6407-77A w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	136.00	No Ice	4.91	2.68	0.10
							1/2" Ice	5.26	3.14	0.14
(P-VZW)			0.00	0.00			1" Ice	5.61	3.62	0.18
B2/B66A RRH-BR049	A	From Leg	4.00	0.00	0.0000	136.00	No Ice	1.88	1.25	0.08
(RFV01U-D1A)				0.00			1/2" Ice	2.05	1.39	0.10
(P-VZW)			0.00	0.00			1" Ice	2.22	1.54	0.12
B2/B66A RRH-BR049	B	From Leg	4.00	0.00	0.0000	136.00	No Ice	1.88	1.25	0.08
(RFV01U-D1A)				0.00			1/2" Ice	2.05	1.39	0.10
(P-VZW)			0.00	0.00			1" Ice	2.22	1.54	0.12
B2/B66A RRH-BR049	C	From Leg	4.00	0.00	0.0000	136.00	No Ice	1.88	1.25	0.08
(RFV01U-D1A)				0.00			1/2" Ice	2.05	1.39	0.10
(P-VZW)			0.00	0.00			1" Ice	2.22	1.54	0.12
B5/B13 RRH-BR04C	A	From Leg	4.00	0.00	0.0000	136.00	No Ice	1.88	1.01	0.07
(RFV01U-D2A)				0.00			1/2" Ice	2.05	1.14	0.09
(P-VZW)			0.00	0.00			1" Ice	2.22	1.28	0.11
B5/B13 RRH-BR04C	B	From Leg	4.00	0.00	0.0000	136.00	No Ice	1.88	1.01	0.07
(RFV01U-D2A)				0.00			1/2" Ice	2.05	1.14	0.09
(P-VZW)			0.00	0.00			1" Ice	2.22	1.28	0.11
B5/B13 RRH-BR04C	C	From Leg	4.00	0.00	0.0000	136.00	No Ice	1.88	1.01	0.07
(RFV01U-D2A)				0.00			1/2" Ice	2.05	1.14	0.09
(P-VZW)			0.00	0.00			1" Ice	2.22	1.28	0.11
RVZDC-6627-PF-48	C	From Leg	4.00	0.00	0.0000	136.00	No Ice	3.79	2.51	0.03
(P-VZW)				0.00			1/2" Ice	4.04	2.73	0.06
				0.00			1" Ice	4.30	2.95	0.10
CBC78T-DS-43-2X	A	From Leg	4.00	0.00	0.0000	136.00	No Ice	0.37	0.51	0.02
(P-VZW)				0.00			1/2" Ice	0.45	0.60	0.03
				0.00			1" Ice	0.53	0.70	0.04
CBC78T-DS-43-2X	B	From Leg	4.00	0.00	0.0000	136.00	No Ice	0.37	0.51	0.02
(P-VZW)				0.00			1/2" Ice	0.45	0.60	0.03
				0.00			1" Ice	0.53	0.70	0.04
CBC78T-DS-43-2X	C	From Leg	4.00	0.00	0.0000	136.00	No Ice	0.37	0.51	0.02
(P-VZW)				0.00			1/2" Ice	0.45	0.60	0.03
				0.00			1" Ice	0.53	0.70	0.04
BSAMNT-SBS-2-2 (Mount Bracket)	A	From Leg	4.00	0.00	0.0000	136.00	No Ice	0.00	0.00	0.07
				0.00			1/2" Ice	0.00	0.00	0.09
(P-VZW)			0.00	0.00			1" Ice	0.00	0.00	0.11
BSAMNT-SBS-2-2 (Mount Bracket)	B	From Leg	4.00	0.00	0.0000	136.00	No Ice	0.00	0.00	0.07
				0.00			1/2" Ice	0.00	0.00	0.09
(P-VZW)			0.00	0.00			1" Ice	0.00	0.00	0.11

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
BSAMNT-SBS-2-2 (Mount Bracket) (P-VZW)	C	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.07 0.09 0.11
*****									
MX08FRO665-20_TIA w/ Mount Pipe (dish network)	A	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	12.73 13.33 13.89	7.53 8.72 9.62	0.10 0.19 0.29
MX08FRO665-20_TIA w/ Mount Pipe (dish network)	B	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	12.73 13.33 13.89	7.53 8.72 9.62	0.10 0.19 0.29
MX08FRO665-20_TIA w/ Mount Pipe (dish network)	C	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	12.73 13.33 13.89	7.53 8.72 9.62	0.10 0.19 0.29
TA08025-B605 (dish network)	A	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605 (dish network)	B	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605 (dish network)	C	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B604 (dish network)	A	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604 (dish network)	B	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604 (dish network)	C	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
RDIDC-9181-PF-48 (dish network)	C	From Leg	4.00 0.00 0.00	0.0000	127.00	No Ice 1/2" Ice 1" Ice	2.01 2.19 2.37	1.17 1.31 1.46	0.02 0.04 0.06
Sabre_C10837002C-32788_Sector_(3)	C	None		0.0000	127.00	No Ice 1/2" Ice 1" Ice	18.52 28.00 37.48	18.52 28.00 37.48	2.03 3.07 4.11

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy

Comb. No.	Description
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Guy C @ 126.8 ft Elev -12 ft Azimuth 240 deg	Max. Vert	10	-2.12	-1.18	0.68
	Max. H_x	10	-2.12	-1.18	0.68
	Max. H_z	5	-60.67	-46.70	26.27
	Min. Vert	5	-60.67	-46.70	26.27
	Min. H_x	5	-60.67	-46.70	26.27
	Min. H_z	10	-2.12	-1.18	0.68
Guy B @ 133.5 ft Elev 13 ft Azimuth 120 deg	Max. Vert	6	-0.96	0.72	0.42
	Max. H_x	11	-48.34	47.02	26.55
	Max. H_z	13	-47.22	45.11	26.71
	Min. Vert	11	-48.34	47.02	26.55
	Min. H_x	6	-0.96	0.72	0.42
	Min. H_z	6	-0.96	0.72	0.42
Guy A @ 149.3 ft Elev -14 ft Azimuth 0 deg	Max. Vert	2	-1.52	-0.00	-1.25
	Max. H_x	11	-27.99	1.16	-28.39
	Max. H_z	2	-1.52	-0.00	-1.25
	Min. Vert	7	-50.69	-0.61	-51.71
	Min. H_x	5	-27.16	-1.20	-27.63
	Min. H_z	7	-50.69	-0.61	-51.71
Mast	Max. Vert	18	201.24	-0.20	-0.20

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	11	116.33	2.22	0.07
	Max. H_z	13	118.69	1.13	1.64
	Max. M_x	1	0.00	0.02	-0.02
	Max. M_z	1	0.00	0.02	-0.02
	Max. Torsion	6	4.38	-1.57	-0.98
	Min. Vert	33	78.37	0.02	-0.43
	Min. H_x	5	126.39	-1.96	0.08
	Min. H_z	8	102.78	0.00	-1.89
	Min. M_x	1	0.00	0.02	-0.02
	Min. M_z	1	0.00	0.02	-0.02
	Min. Torsion	12	-4.29	1.99	1.11

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	78.55	-0.02	0.02	0.00	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	127.42	-0.08	-1.58	0.00	0.00	2.62
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	121.65	0.78	-1.20	0.00	0.00	2.73
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	109.87	1.61	-0.88	0.00	0.00	-0.07
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	126.39	1.96	-0.08	0.00	0.00	-3.86
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	133.19	1.57	0.98	0.00	0.00	-4.38
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	120.47	0.83	1.75	0.00	0.00	-3.14
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	102.78	-0.00	1.89	0.00	0.00	-2.70
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	114.14	-0.73	1.42	0.00	0.00	-2.72
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	122.73	-1.55	0.87	0.00	0.00	0.10
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	116.33	-2.22	-0.07	0.00	0.00	3.79
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	104.56	-1.99	-1.11	0.00	0.00	4.29
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	118.69	-1.13	-1.64	0.00	0.00	3.05
1.2 Dead+1.0 Ice+1.0 Temp+Guy	197.96	-0.19	0.18	0.00	0.00	-0.01
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	201.03	-0.20	-0.16	0.00	0.00	0.45
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	201.05	-0.04	-0.11	0.00	0.00	0.54
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	200.99	0.11	0.02	0.00	0.00	0.13
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	201.24	0.20	0.20	0.00	0.00	-0.50
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	201.06	0.15	0.38	0.00	0.00	-0.63
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	199.63	0.01	0.48	0.00	0.00	-0.43
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.46	-0.18	0.49	0.00	0.00	-0.46

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.23	-0.37	0.45	0.00	0.00	-0.55
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.49	-0.51	0.36	0.00	0.00	-0.14
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.65	-0.59	0.19	0.00	0.00	0.47
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	198.98	-0.53	-0.01	0.00	0.00	0.62
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	199.93	-0.37	-0.14	0.00	0.00	0.42
Dead+Wind 0 deg - Service+Guy	79.28	-0.02	-0.40	0.00	0.00	0.50
Dead+Wind 30 deg - Service+Guy	79.16	0.16	-0.30	0.00	0.00	0.52
Dead+Wind 60 deg - Service+Guy	79.04	0.35	-0.19	0.00	0.00	-0.02
Dead+Wind 90 deg - Service+Guy	78.84	0.49	0.03	0.00	0.00	-0.75
Dead+Wind 120 deg - Service+Guy	78.60	0.42	0.28	0.00	0.00	-0.84
Dead+Wind 150 deg - Service+Guy	78.40	0.22	0.43	0.00	0.00	-0.60
Dead+Wind 180 deg - Service+Guy	78.37	-0.02	0.43	0.00	0.00	-0.50
Dead+Wind 210 deg - Service+Guy	78.48	-0.21	0.35	0.00	0.00	-0.52
Dead+Wind 240 deg - Service+Guy	78.68	-0.40	0.24	0.00	0.00	0.02
Dead+Wind 270 deg - Service+Guy	78.95	-0.52	0.02	0.00	0.00	0.74
Dead+Wind 300 deg - Service+Guy	79.17	-0.44	-0.22	0.00	0.00	0.84
Dead+Wind 330 deg - Service+Guy	79.27	-0.25	-0.39	0.00	0.00	0.59

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-30.76	0.00	0.00	30.76	0.00	0.005%
2	0.10	-36.52	-45.11	-0.10	36.52	45.11	0.007%
3	21.93	-36.35	-37.80	-21.93	36.35	37.81	0.009%
4	39.44	-36.19	-22.76	-39.44	36.19	22.76	0.002%
5	48.25	-36.44	-0.07	-48.26	36.44	0.07	0.006%
6	41.62	-36.67	23.90	-41.63	36.67	-23.90	0.008%
7	23.20	-36.47	40.16	-23.21	36.47	-40.16	0.005%
8	-0.10	-36.25	44.47	0.10	36.25	-44.47	0.001%
9	-21.93	-36.42	37.80	21.93	36.42	-37.80	0.006%
10	-40.00	-36.58	23.08	40.01	36.58	-23.08	0.008%
11	-48.25	-36.34	0.07	48.25	36.34	-0.07	0.003%
12	-41.07	-36.10	-23.58	41.07	36.10	23.58	0.002%
13	-23.20	-36.30	-40.16	23.20	36.30	40.16	0.007%
14	-0.00	-133.48	0.00	0.00	133.48	-0.00	0.001%
15	0.08	-133.61	-13.18	-0.08	133.61	13.19	0.001%
16	6.67	-133.45	-11.44	-6.67	133.45	11.44	0.001%
17	11.73	-133.30	-6.77	-11.73	133.30	6.77	0.001%
18	13.79	-133.52	-0.05	-13.79	133.52	0.05	0.002%
19	11.94	-133.73	6.80	-11.94	133.73	-6.80	0.002%
20	6.68	-133.55	11.55	-6.68	133.55	-11.55	0.001%
21	-0.08	-133.35	13.12	0.08	133.35	-13.11	0.002%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
22	-6.67	-133.51	11.44	6.67	133.51	-11.43	0.001%
23	-11.79	-133.66	6.80	11.79	133.66	-6.80	0.001%
24	-13.79	-133.44	0.05	13.79	133.44	-0.05	0.001%
25	-11.88	-133.23	-6.77	11.88	133.23	6.77	0.001%
26	-6.68	-133.41	-11.55	6.68	133.41	11.55	0.000%
27	0.02	-30.78	-9.21	-0.02	30.78	9.21	0.003%
28	4.48	-30.75	-7.72	-4.48	30.75	7.71	0.003%
29	8.05	-30.72	-4.65	-8.05	30.72	4.64	0.002%
30	9.85	-30.77	-0.01	-9.85	30.77	0.01	0.003%
31	8.49	-30.82	4.88	-8.49	30.82	-4.88	0.004%
32	4.74	-30.78	8.20	-4.73	30.78	-8.19	0.011%
33	-0.02	-30.73	9.08	0.02	30.73	-9.07	0.006%
34	-4.48	-30.77	7.72	4.47	30.77	-7.71	0.005%
35	-8.16	-30.80	4.71	8.16	30.80	-4.71	0.007%
36	-9.85	-30.75	0.01	9.85	30.75	-0.01	0.006%
37	-8.38	-30.70	-4.81	8.38	30.70	4.81	0.005%
38	-4.74	-30.74	-8.20	4.74	30.74	8.19	0.012%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	9	0.00000001	0.00009004
2	Yes	16	0.00000001	0.00006467
3	Yes	15	0.00009015	0.00013087
4	Yes	13	0.00012338	0.00008391
5	Yes	16	0.00000001	0.00007250
6	Yes	16	0.00005818	0.00008516
7	Yes	16	0.00000001	0.00006378
8	Yes	13	0.00000001	0.00006372
9	Yes	15	0.00000001	0.00007632
10	Yes	15	0.00000001	0.00008966
11	Yes	14	0.00011509	0.00013947
12	Yes	13	0.00000001	0.00005467
13	Yes	15	0.00000001	0.00009132
14	Yes	11	0.00000001	0.00005867
15	Yes	13	0.00000001	0.00005248
16	Yes	13	0.00000001	0.00004351
17	Yes	12	0.00000001	0.00006614
18	Yes	12	0.00000001	0.00005653
19	Yes	12	0.00000001	0.00007536
20	Yes	12	0.00000001	0.00006537
21	Yes	11	0.00015000	0.00010685
22	Yes	11	0.00000001	0.00006352
23	Yes	11	0.00000001	0.00004317
24	Yes	11	0.00000001	0.00006928
25	Yes	11	0.00015000	0.00013322
26	Yes	13	0.00000001	0.00003894
27	Yes	9	0.00000001	0.00005023
28	Yes	9	0.00000001	0.00005829
29	Yes	9	0.00000001	0.00005963
30	Yes	9	0.00000001	0.00004833
31	Yes	9	0.00000001	0.00004723
32	Yes	8	0.00000001	0.00013750
33	Yes	8	0.00000001	0.00012863
34	Yes	8	0.00000001	0.00010654
35	Yes	8	0.00000001	0.00009540
36	Yes	8	0.00000001	0.00008521
37	Yes	8	0.00000001	0.00010574
38	Yes	8	0.00000001	0.00013597

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	187 - 180	2.522	29	0.2102	0.0454
T2	180 - 160	2.197	29	0.2037	0.0407
T3	160 - 140	1.508	29	0.1192	0.0383
T4	140 - 120	1.176	29	0.0712	0.0483
T5	120 - 100	0.929	29	0.0432	0.0520
T6	100 - 80	0.868	30	0.0268	0.0864
T7	80 - 60	0.769	30	0.0344	0.1015
T8	60 - 40	0.613	30	0.0286	0.0979
T9	40 - 20	0.511	30	0.0334	0.0788
T10	20 - 0	0.316	30	0.0622	0.0445

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	(2) DMP65R-BU8D_TIA w/ Mount Pipe	29	2.522	0.2102	0.0454	18737
177.00	APXVAALL24_43-U-NA20_TIA w/ Mount Pipe	29	2.068	0.1958	0.0398	12514
170.00	Guy	29	1.801	0.1666	0.0384	11031
160.38	Guy	29	1.517	0.1207	0.0382	9435
150.00	APXV9ERR18-C-A20_TIA w/ Mount Pipe	29	1.317	0.0888	0.0438	19619
136.00	BXA-70063/6CF_TIA w/ Mount Pipe	29	1.121	0.0652	0.0485	300784
127.00	MX08FRO665-20_TIA w/ Mount Pipe	29	1.003	0.0524	0.0483	32256
120.38	Guy	29	0.932	0.0436	0.0517	20990
59.63	Guy	30	0.611	0.0285	0.0977	41661

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	187 - 180	22.443	6	1.5689	0.3218
T2	180 - 160	20.141	6	1.5384	0.3114
T3	160 - 140	14.747	6	1.1088	0.3000
T4	140 - 120	11.364	6	0.7908	0.3261
T5	120 - 100	8.770	6	0.5313	0.3429
T6	100 - 80	7.422	6	0.3219	0.5645
T7	80 - 60	6.241	6	0.2997	0.6136
T8	60 - 40	4.943	6	0.2754	0.5701
T9	40 - 20	3.856	6	0.3106	0.4513
T10	20 - 0	2.253	6	0.4654	0.2647

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	(2) DMP65R-BU8D_TIA w/ Mount Pipe	6	22.443	1.5689	0.3218	4038

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.00	APXVAALL24_43-U-NA20_TIA w/ Mount Pipe	6	19.203	1.5000	0.3076	2650
170.00	Guy	6	17.178	1.3555	0.3012	2236
160.38	Guy	6	14.827	1.1172	0.2999	1916
150.00	APXV9ERR18-C-A20_TIA w/ Mount Pipe	6	12.890	0.9258	0.3070	3539
136.00	BXA-70063/6CF_TIA w/ Mount Pipe	6	10.781	0.7393	0.3266	9978
127.00	MX08FRO665-20_TIA w/ Mount Pipe	6	9.556	0.6221	0.3209	3822
120.38	Guy	6	8.807	0.5362	0.3405	2777
59.63	Guy	6	4.921	0.2746	0.5686	8062

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	187	Leg	A325N	0.7500	4	3.23	29.82	0.108	1	Bolt Tension
T2	180	Leg	A325N	0.7500	4	6.89	29.82	0.231	1	Bolt Tension
		Top Guy Pull-Off@160.375	A325N	0.7500	2	5.64	11.38	0.495	1	Member Block Shear
		Torque Arm Top@160.375	A325N	0.7500	2	8.19	11.15	0.735	1	Member Block Shear
		Torque Arm Bottom@160.375	A325N	0.7500	2	6.96	17.89	0.389	1	Bolt Shear
T3	160	Leg	A325N	0.7500	4	3.70	29.82	0.124	1	Bolt Tension
T4	140	Leg	A325N	0.7500	4	5.65	29.82	0.190	1	Bolt Tension
		Top Guy Pull-Off@120.375	A325N	0.7500	2	3.77	17.89	0.211	1	Bolt Shear
		Torque Arm Top@120.375	A325N	0.7500	2	5.03	11.15	0.451	1	Member Block Shear
		Torque Arm Bottom@120.375	A325N	0.7500	2	4.40	17.89	0.246	1	Bolt Shear
T5	120	Leg	A325N	0.7500	4	4.47	29.82	0.150	1	Bolt Tension
T6	100	Leg	A325N	0.7500	4	4.75	29.82	0.159	1	Bolt Tension
T7	80	Leg	A325N	0.7500	4	4.99	29.82	0.167	1	Bolt Tension
T8	60	Leg	A325N	0.7500	4	5.47	29.82	0.183	1	Bolt Tension
T9	40	Leg	A325N	0.7500	4	5.65	29.82	0.190	1	Bolt Tension
T10	20	Leg	A325N	0.7500	4	5.60	29.82	0.188	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T2	160.38 (A) (577)	5/8 EHS	4.24	42.40	15.39	25.44	1.000	1.653
	160.38 (A) (578)	5/8 EHS	4.24	42.40	14.70	25.44	1.000	1.730
	160.38 (B) (571)	5/8 EHS	4.24	42.40	14.46	25.44	1.000	1.759
	160.38 (B) (572)	5/8 EHS	4.24	42.40	15.01	25.44	1.000	1.694
	160.38 (C) (565)	5/8 EHS	4.24	42.40	16.69	25.44	1.000	1.524

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
	160.38 (C) (566)	5/8 EHS	4.24	42.40	16.83	25.44	1.000	1.511
	170.00 (A) (606)	5/8 EHS	4.24	42.40	16.11	25.44	1.000	1.580
	170.00 (B) (605)	5/8 EHS	4.24	42.40	15.85	25.44	1.000	1.605
	170.00 (C) (604)	5/8 EHS	4.24	42.40	17.40	25.44	1.000	1.462
T4	120.38 (A) (595)	9/16 EHS	3.50	35.00	9.98	21.00	1.000	2.104
	120.38 (A) (596)	9/16 EHS	3.50	35.00	9.79	21.00	1.000	2.146
	120.38 (B) (589)	9/16 EHS	3.50	35.00	9.48	21.00	1.000	2.216
	120.38 (B) (590)	9/16 EHS	3.50	35.00	10.29	21.00	1.000	2.041
	120.38 (C) (583)	9/16 EHS	3.50	35.00	11.73	21.00	1.000	1.790
	120.38 (C) (584)	9/16 EHS	3.50	35.00	10.85	21.00	1.000	1.936
T8	59.63 (A) (603)	9/16 EHS	3.50	35.00	9.37	21.00	1.000	2.242
	59.63 (B) (602)	9/16 EHS	3.50	35.00	9.79	21.00	1.000	2.146
	59.63 (C) (601)	9/16 EHS	3.50	35.00	10.61	21.00	1.000	1.979

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	187 - 180	P2.875"x0.203" (2.5 STD)	7.00	2.85	36.1 K=1.00	1.7040	-17.01	74.72	0.228 [1]
T2	180 - 160	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6 K=1.00	1.7040	-64.41	79.61	0.809 [1]
T3	160 - 140	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6 K=1.00	1.7040	-70.78	79.61	0.889 [1]
T4	140 - 120	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6 K=1.00	1.7040	-70.01	79.61	0.880 [1]
T5	120 - 100	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6 K=1.00	1.7040	-68.02	79.61	0.854 [1]
T6	100 - 80	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6 K=1.00	1.7040	-58.07	79.61	0.729 [1]
T7	80 - 60	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6 K=1.00	1.7040	-60.41	79.61	0.759 [1]
T8	60 - 40	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6 K=1.00	1.7040	-65.92	79.61	0.828 [1]
T9	40 - 20	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6 K=1.00	1.7040	-68.30	79.61	0.858 [1]
T10	20 - 0	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6 K=1.00	1.7040	-68.37	79.61	0.859 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160	C3x4.1	4.75	2.21	65.7 K=1.00	1.2100	-6.20	31.24	0.199 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	187 - 180	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-6.33	7.19	0.880 [1]
T2	180 - 160	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-3.27	7.19	0.455 [1]
T3	160 - 140	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-5.24	7.19	0.728 [1]
T4	140 - 120	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-4.34	7.19	0.604 [1]
T5	120 - 100	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-3.98	7.19	0.553 [1]
T6	100 - 80	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-3.55	7.19	0.494 [1]
T7	80 - 60	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-3.38	7.19	0.471 [1]
T8	60 - 40	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-3.34	7.19	0.465 [1]
T9	40 - 20	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-3.56	7.19	0.495 [1]
T10	20 - 0	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-3.43	7.19	0.477 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	187 - 180	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-4.24	7.19	0.590 [1]
T2	180 - 160	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-1.23	7.19	0.170 [1]
T3	160 - 140	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-4.23	7.19	0.589 [1]
T4	140 - 120	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-2.60	7.19	0.362 [1]
T5	120 - 100	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-3.13	7.19	0.435 [1]
T6	100 - 80	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-1.96	7.19	0.272 [1]
T7	80 - 60	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-1.96	7.19	0.272 [1]
T9	40 - 20	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-1.63	7.19	0.226 [1]
T10	20 - 0	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-1.95	7.19	0.271 [1]

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

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	187 - 180	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-4.64	7.19	0.646 [1]
T2	180 - 160	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-1.71	7.19	0.238 [1]
T3	160 - 140	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-2.24	7.19	0.312 [1]
T4	140 - 120	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-4.24	7.19	0.589 [1]
T5	120 - 100	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-2.05	7.19	0.285 [1]
T6	100 - 80	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-1.72	7.19	0.239 [1]
T7	80 - 60	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-1.72	7.19	0.239 [1]
T8	60 - 40	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-2.02	7.19	0.282 [1]
T9	40 - 20	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-1.75	7.19	0.243 [1]
T10	20 - 0	L 1.5 x 1.5 x 3/16	3.50	3.26	128.2 K=0.96	0.5273	-0.29	7.19	0.041 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160	L 2 x 2 x 5/16	3.50	3.26	100.3 K=1.00	1.1500	-4.89	21.94	0.223 [1]
T4	140 - 120	L 2 x 2 x 5/16	3.50	3.26	100.3 K=1.00	1.1500	-7.53	21.94	0.343 [1]
T8	60 - 40	L 1.5 x 1.5 x 3/16	3.50	3.26	133.4 K=1.00	0.5273	-1.17	6.70	0.175 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160 (569)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-13.75	36.39	0.378 [1]
T2	180 - 160 (570)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-12.64	36.39	0.347 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	180 - 160 (575)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-13.93	36.39	0.383 [1]
T2	180 - 160 (576)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-12.52	36.39	0.344 [1]
T2	180 - 160 (581)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-12.63	36.39	0.347 [1]
T2	180 - 160 (582)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-12.90	36.39	0.355 [1]
T4	140 - 120 (587)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-7.89	36.39	0.217 [1]
T4	140 - 120 (588)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-6.89	36.39	0.189 [1]
T4	140 - 120 (593)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-8.80	36.39	0.242 [1]
T4	140 - 120 (594)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-7.13	36.39	0.196 [1]
T4	140 - 120 (599)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-7.44	36.39	0.204 [1]
T4	140 - 120 (600)	L 3 x 3 x 1/4	3.50	3.38	68.5 K=1.00	1.4375	-8.03	36.39	0.221 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	187 - 180	P2.875"x0.203" (2.5 STD)	7.00	0.99	12.5	1.7040	12.92	82.82	0.156 [1]
T2	180 - 160	P2.875"x0.203" (2.5 STD)	20.00	3.21	40.6	1.7040	40.83	92.02	0.444 [1]
T3	160 - 140	P2.875"x0.203" (2.5 STD)	20.00	0.38	4.7	1.7040	27.55	92.02	0.299 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	187 - 180	5/8	4.51	4.20	322.9	0.3068	7.79	9.94	0.784 [1]
T2	180 - 160	C3x4.1	4.75	2.21	65.7	1.2100	7.04	39.20	0.180 [1]
T3	160 - 140	5/8	4.75	4.42	339.7	0.3068	7.67	9.94	0.772 [1]
T4	140 - 120	5/8	4.75	4.42	339.7	0.3068	5.58	9.94	0.562 [1]
T5	120 - 100	5/8	4.75	4.42	339.7	0.3068	5.83	9.94	0.587 [1]
T6	100 - 80	5/8	4.75	4.42	339.7	0.3068	3.46	9.94	0.348 [1]
T7	80 - 60	5/8	4.75	4.42	339.7	0.3068	4.11	9.94	0.414 [1]
T8	60 - 40	5/8	4.75	4.42	339.7	0.3068	4.12	9.94	0.415 [1]
T9	40 - 20	5/8	4.75	4.42	339.7	0.3068	3.30	9.94	0.332 [1]
T10	20 - 0	5/8	4.75	4.42	339.7	0.3068	4.27	9.94	0.429 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	187 - 180	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	0.29	17.09	0.017 [1]
T2	180 - 160	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	5.10	17.09	0.299 [1]
T3	160 - 140	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.23	17.09	0.072 [1]
T4	140 - 120	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.21	17.09	0.071 [1]
T5	120 - 100	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.18	17.09	0.069 [1]
T6	100 - 80	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.01	17.09	0.059 [1]
T7	80 - 60	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.05	17.09	0.061 [1]
T8	60 - 40	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.14	17.09	0.067 [1]
T9	40 - 20	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.18	17.09	0.069 [1]
T10	20 - 0	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.18	17.09	0.069 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.23	17.09	0.072 [1]
T3	160 - 140	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.23	17.09	0.072 [1]
T4	140 - 120	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.21	17.09	0.071 [1]
T5	120 - 100	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.18	17.09	0.069 [1]
T6	100 - 80	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.01	17.09	0.059 [1]
T7	80 - 60	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.05	17.09	0.061 [1]
T9	40 - 20	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.18	17.09	0.069 [1]
T10	20 - 0	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.18	17.09	0.069 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	187 - 180	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	0.29	17.09	0.017 [1]
T2	180 - 160	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	6.28	17.09	0.368 [1]
T3	160 - 140	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.23	17.09	0.072 [1]
T4	140 - 120	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.21	17.09	0.071 [1]
T5	120 - 100	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.18	17.09	0.069 [1]
T6	100 - 80	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.01	17.09	0.059 [1]
T7	80 - 60	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.05	17.09	0.061 [1]
T8	60 - 40	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.14	17.09	0.067 [1]
T9	40 - 20	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	1.18	17.09	0.069 [1]
T10	20 - 0	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	0.87	17.09	0.051 [1]

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160	L 2 x 2 x 5/16	3.50	3.26	65.1	0.6574	11.28	28.60	0.394 [1]
T2	180 - 160	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	5.02	17.09	0.294 [1]
T4	140 - 120	L 2 x 2 x 5/16	3.50	3.26	65.1	0.6574	0.28	28.60	0.010 [1]
T8	60 - 40	L 1.5 x 1.5 x 3/16	3.50	3.26	85.7	0.5273	2.76	17.09	0.162 [1]

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160 (567)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	16.39	39.76	0.412 [1]
T2	180 - 160 (568)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	16.20	39.76	0.408 [1]
T2	180 - 160 (573)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	15.91	39.76	0.400 [1]
T2	180 - 160 (574)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	16.23	39.76	0.408 [1]
T2	180 - 160 (579)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	14.98	39.76	0.377 [1]
T2	180 - 160 (580)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	15.10	39.76	0.380 [1]
T4	140 - 120 (585)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	10.06	39.76	0.253 [1]
T4	140 - 120 (586)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	9.77	39.76	0.246 [1]
T4	140 - 120 (591)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	8.58	39.76	0.216 [1]
T4	140 - 120 (592)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	9.15	39.76	0.230 [1]
T4	140 - 120 (597)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	8.20	39.76	0.206 [1]
T4	140 - 120 (598)	L 3 x 3 x 1/4	4.75	4.59	59.1	0.9141	8.44	39.76	0.212 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	180 - 160 (569)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	5.28	39.76	0.133 [1]
T2	180 - 160 (570)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	4.65	39.76	0.117 [1]
T2	180 - 160 (575)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	5.57	39.76	0.140 [1]
T2	180 - 160 (576)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	4.81	39.76	0.121 [1]
T2	180 - 160 (581)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	5.57	39.76	0.140 [1]
T2	180 - 160 (582)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	5.70	39.76	0.143 [1]
T4	140 - 120 (587)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	3.82	39.76	0.096 [1]
T4	140 - 120 (588)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	3.52	39.76	0.089 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	140 - 120 (593)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	4.20	39.76	0.106 [1]
T4	140 - 120 (594)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	4.01	39.76	0.101 [1]
T4	140 - 120 (599)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	4.45	39.76	0.112 [1]
T4	140 - 120 (600)	L 3 x 3 x 1/4	3.50	3.38	43.6	0.9141	4.49	39.76	0.113 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	187 - 180	Leg	P2.875"x0.203" (2.5 STD)	3	-17.01	74.72	22.8	Pass
T2	180 - 160	Leg	P2.875"x0.203" (2.5 STD)	26	-64.41	79.61	80.9	Pass
T3	160 - 140	Leg	P2.875"x0.203" (2.5 STD)	86	-70.78	79.61	88.9	Pass
T4	140 - 120	Leg	P2.875"x0.203" (2.5 STD)	146	-70.01	79.61	88.0	Pass
T5	120 - 100	Leg	P2.875"x0.203" (2.5 STD)	207	-68.02	79.61	85.4	Pass
T6	100 - 80	Leg	P2.875"x0.203" (2.5 STD)	267	-58.07	79.61	72.9	Pass
T7	80 - 60	Leg	P2.875"x0.203" (2.5 STD)	327	-60.41	79.61	75.9	Pass
T8	60 - 40	Leg	P2.875"x0.203" (2.5 STD)	387	-65.92	79.61	82.8	Pass
T9	40 - 20	Leg	P2.875"x0.203" (2.5 STD)	447	-68.30	79.61	85.8	Pass
T10	20 - 0	Leg	P2.875"x0.203" (2.5 STD)	507	-68.37	79.61	85.9	Pass
T1	187 - 180	Diagonal	5/8	13	7.79	9.94	78.4	Pass
T2	180 - 160	Diagonal	C3x4.1	39	-6.20	31.24	19.9	Pass
T3	160 - 140	Diagonal	5/8	142	7.67	9.94	77.2	Pass
T4	140 - 120	Diagonal	5/8	163	5.58	9.94	56.2	Pass
T5	120 - 100	Diagonal	5/8	261	5.83	9.94	58.7	Pass
T6	100 - 80	Diagonal	5/8	322	3.46	9.94	34.8	Pass
T7	80 - 60	Diagonal	5/8	336	4.11	9.94	41.4	Pass
T8	60 - 40	Diagonal	5/8	439	4.12	9.94	41.5	Pass
T9	40 - 20	Diagonal	5/8	458	3.30	9.94	33.2	Pass
T10	20 - 0	Diagonal	5/8	517	4.27	9.94	42.9	Pass
T1	187 - 180	Horizontal	L 1.5 x 1.5 x 3/16	16	-6.33	7.19	88.0	Pass
T2	180 - 160	Horizontal	L 1.5 x 1.5 x 3/16	67	-3.27	7.19	45.5	Pass
T3	160 - 140	Horizontal	L 1.5 x 1.5 x 3/16	137	-5.24	7.19	72.8	Pass
T4	140 - 120	Horizontal	L 1.5 x 1.5 x 3/16	198	-4.34	7.19	60.4	Pass
T5	120 - 100	Horizontal	L 1.5 x 1.5 x 3/16	257	-3.98	7.19	55.3	Pass
T6	100 - 80	Horizontal	L 1.5 x 1.5 x 3/16	282	-3.55	7.19	49.4	Pass
T7	80 - 60	Horizontal	L 1.5 x 1.5 x 3/16	378	-3.38	7.19	47.1	Pass
T8	60 - 40	Horizontal	L 1.5 x 1.5 x 3/16	437	-3.34	7.19	46.5	Pass
T9	40 - 20	Horizontal	L 1.5 x 1.5 x 3/16	462	-3.56	7.19	49.5	Pass
T10	20 - 0	Horizontal	L 1.5 x 1.5 x 3/16	558	-3.43	7.19	47.7	Pass
T1	187 - 180	Top Girt	L 1.5 x 1.5 x 3/16	4	-4.24	7.19	59.0	Pass
T2	180 - 160	Top Girt	L 1.5 x 1.5 x 3/16	30	-1.23	7.19	17.0	Pass
T3	160 - 140	Top Girt	L 1.5 x 1.5 x 3/16	89	-4.23	7.19	58.9	Pass
T4	140 - 120	Top Girt	L 1.5 x 1.5 x 3/16	149	-2.60	7.19	36.2	Pass
T5	120 - 100	Top Girt	L 1.5 x 1.5 x 3/16	209	-3.13	7.19	43.5	Pass
T6	100 - 80	Top Girt	L 1.5 x 1.5 x 3/16	269	-1.96	7.19	27.2	Pass
T7	80 - 60	Top Girt	L 1.5 x 1.5 x 3/16	330	-1.96	7.19	27.2	Pass
T9	40 - 20	Top Girt	L 1.5 x 1.5 x 3/16	448	-1.63	7.19	22.6	Pass
T10	20 - 0	Top Girt	L 1.5 x 1.5 x 3/16	510	-1.95	7.19	27.1	Pass
T1	187 - 180	Bottom Girt	L 1.5 x 1.5 x 3/16	7	-4.64	7.19	64.6	Pass
T2	180 - 160	Bottom Girt	L 1.5 x 1.5 x 3/16	33	6.28	17.09	36.8	Pass
T3	160 - 140	Bottom Girt	L 1.5 x 1.5 x 3/16	93	-2.24	7.19	31.2	Pass
T4	140 - 120	Bottom Girt	L 1.5 x 1.5 x 3/16	152	-4.24	7.19	58.9	Pass
T5	120 - 100	Bottom Girt	L 1.5 x 1.5 x 3/16	213	-2.05	7.19	28.5	Pass
T6	100 - 80	Bottom Girt	L 1.5 x 1.5 x 3/16	271	-1.72	7.19	23.9	Pass
T7	80 - 60	Bottom Girt	L 1.5 x 1.5 x 3/16	332	-1.72	7.19	23.9	Pass
T8	60 - 40	Bottom Girt	L 1.5 x 1.5 x 3/16	393	-2.02	7.19	28.2	Pass
T9	40 - 20	Bottom Girt	L 1.5 x 1.5 x 3/16	453	-1.75	7.19	24.3	Pass
T10	20 - 0	Bottom Girt	L 1.5 x 1.5 x 3/16	512	0.87	17.09	5.1	Pass

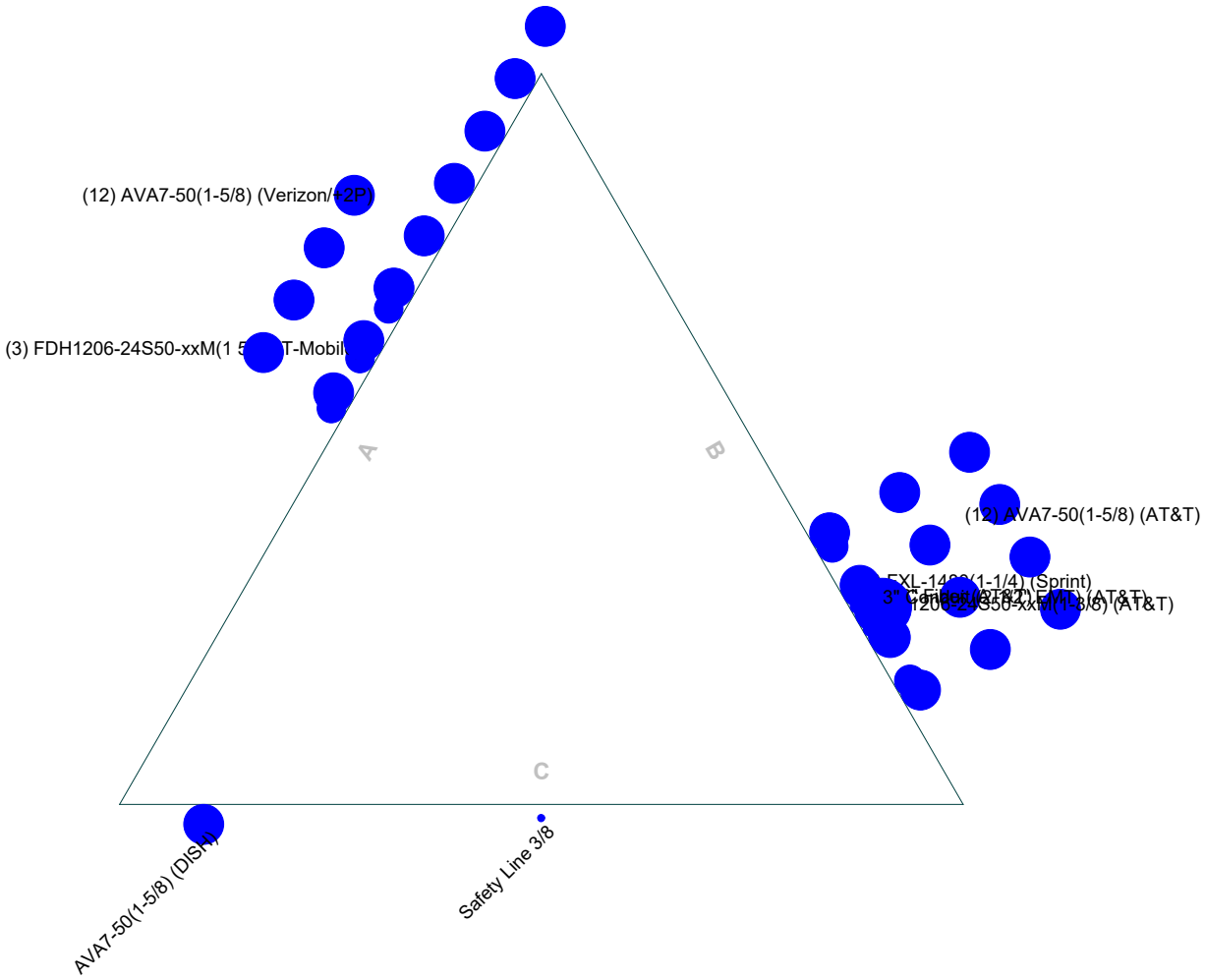
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T2	180 - 160	Guy A@160.375	5/8	577	15.39	25.44	60.5	Pass
		Guy A@170	5/8	606	16.11	25.44	63.3	Pass
T4	140 - 120	Guy A@120.375	9/16	595	9.98	21.00	47.5	Pass
T8	60 - 40	Guy A@59.625	9/16	603	9.37	21.00	44.6	Pass
T2	180 - 160	Guy B@160.375	5/8	572	15.01	25.44	59.0	Pass
		Guy B@170	5/8	605	15.85	25.44	62.3	Pass
T4	140 - 120	Guy B@120.375	9/16	590	10.29	21.00	49.0	Pass
T8	60 - 40	Guy B@59.625	9/16	602	9.79	21.00	46.6	Pass
T2	180 - 160	Guy C@160.375	5/8	566	16.83	25.44	66.2	Pass
		Guy C@170	5/8	604	17.40	25.44	68.4	Pass
T4	140 - 120	Guy C@120.375	9/16	583	11.73	21.00	55.9	Pass
T8	60 - 40	Guy C@59.625	9/16	601	10.61	21.00	50.5	Pass
T2	180 - 160	Top Guy Pull-Off@160.375	L 2 x 2 x 5/16	41	11.28	28.60	39.4 49.5 (b)	Pass
		Top Guy Pull-Off@170	L 1.5 x 1.5 x 3/16	60	5.02	17.09	29.4	Pass
T4	140 - 120	Top Guy Pull-Off@120.375	L 2 x 2 x 5/16	162	-7.53	21.94	34.3	Pass
T8	60 - 40	Top Guy Pull-Off@59.625	L 1.5 x 1.5 x 3/16	388	-1.17	6.70	17.5	Pass
T2	180 - 160	Torque Arm Top@160.375	L 3 x 3 x 1/4	567	16.39	39.76	41.2 73.5 (b)	Pass
T4	140 - 120	Torque Arm Top@120.375	L 3 x 3 x 1/4	585	10.06	39.76	25.3 45.1 (b)	Pass
T2	180 - 160	Torque Arm Bottom@160.375	L 3 x 3 x 1/4	575	-13.93	36.39	38.3 38.9 (b)	Pass
T4	140 - 120	Torque Arm Bottom@120.375	L 3 x 3 x 1/4	593	-8.80	36.39	24.2 24.6 (b)	Pass
						Summary		
						Leg (T3)	88.9	Pass
						Diagonal (T1)	78.4	Pass
						Horizontal (T1)	88.0	Pass
						Top Girt (T1)	59.0	Pass
						Bottom Girt (T1)	64.6	Pass
						Guy A (T2)	63.3	Pass
						Guy B (T2)	62.3	Pass
						Guy C (T2)	68.4	Pass
						Top Guy Pull-Off (T2)	49.5	Pass
						Torque Arm Top (T2)	73.5	Pass
						Torque Arm Bottom (T2)	38.9	Pass
						Bolt Checks	73.5	Pass
						RATING =	**88.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING

Feed Line Plan

Round Flat App In Face App Out Face



Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
Phone: 614-221-6679
FAX:

Job: 187-ft GT; Bozrah Polly Lane, CT			
Project: 13321-0017.002.8700			
Client: Everest Infrastructure Partners	Drawn by: Anna Trudo	App'd:	
Code: TIA-222-G	Date: 08/10/22	Scale: NTS	
Path: G:\TOWER\133_Everest Infrastructure Partners\2021\13321-0017_Bozrah_CT\13321-0017.002.8700_SA\tnx\13321-0017.002.8700.eri		Dwg No. E-7	

APPENDIX C

ADDITIONAL CALCULATIONS

PAUL J. FORD & COMPANY

Project Number:	a13321-0017.002.8700
Engineer:	AKT
Date:	8/10/2022
Site Name:	Bozrah Polly Lane
Site Number:	701695
Client Project:	
Client Project 1:	

BLOCK FOUNDATION

(Version v5.2 - Effective Date 8/1/2022)

STRUCTURE SETTINGS

TIA Standard:	TIA-222-G	
Foundation Type:	Block	
Structure Type:	GT w/ Pivot Base	
Structure Height:	187.00	ft
BP Dist. Above Fnd.:	0.00	in
BC/Bearing Plate Width:	0.00	in

FACTORED FOUNDATION LOADS

Load Combo 1 = LC1 = 1.2D + 1.0Dg + 1.6Wo

Load Combo 2 = =

	Global	LC1 (+C)	LC2 (-T)	
Applied Axial:		201.00		kip
Applied Shear:		2.00		kip
Applied Moment:				kip-ft

Load Offset (Dir.1) (eB):	0.00	ft
Load Offset (Dir.2) (eL):	0.00	ft

PAD PROPERTIES

Pad Width (B):	15.00	ft
Pad Length (L):	4.95	ft (Rectangular)
Pad Thickness (T):	6.75	ft
Height Above Grade:	1.21	ft
Depth to Bottom of Pad (D):	5.54	ft

Top & Btm Pad Steel Different? No

	Dir.1	Dir.2	
Pad Clear Cover (Top) (C2):	3.00		in
Pad Rebar Size (Top):	9	9	# bar
Pad Rebar Quantity (Top):	9	18	
Pad Rebar Length:	14.50	4.45	ft
Pad Clear Cover (Bottom) (C3):			in
Pad Rebar Size (Bottom):			
Pad Rebar Quantity (Bottom):			
Pad Rebar Length:	14.50	4.45	ft

MATERIAL PROPERTIES

Concrete Strength, F'_c:	3.00	ksi
Concrete Density, γ_c:	150	pcf
Long. Rebar Strength, F_y:	60	ksi
Tie Rebar Strength, F_y:	60	ksi

SOIL PROPERTIES

Layer	Thickness (ft)	Soil Density (pcf)	Cohesion (ksf)	Friction Angle (deg)	Ultimate Net Bearing (ksf)	Depth (ft)
1	5.62	115.00	0.00	32.00	8.00	5.62
2						
3						
4						

Base Friction, μ:	0.40	
Groundwater Depth:	8.00	ft
Neglected Depth:	3.33	ft

RESULTS

		Demand	Capacity	Rating	
Pad Shear - 1-Way	(kip)	15.61	372.40	4.2%	Pass
Pad Shear - 2-Way (Comp)	(ksi)	0.00	0.16	0.0%	Pass
Flexural 2-Way (Comp)	(kip-ft)	0.00	6133.30	0.0%	Pass
Pad Flexural	(kip-ft)	382.61	3018.28	12.7%	Pass
Pad Shear - 2-Way (Uplift)	(ksi)	0.00	0.16	0.0%	Pass
Flexural 2-Way (Tension)	(kip-ft)	0.00	6133.30	0.0%	Pass

		Demand	Capacity	Rating	
Lateral	(kip)	2.00	88.17	2.3%	Pass
Overturning		-	-	STABLE	Pass
Bearing Pressure	(ksf)	3.99	5.18	77.0%	Pass
Uplift	(kip)	0.00	0.00	0.0%	Pass

Structural Rating:	12.7%	Pass
Soil Rating:	77.0%	Pass

ANALYSIS ASSUMPTIONS

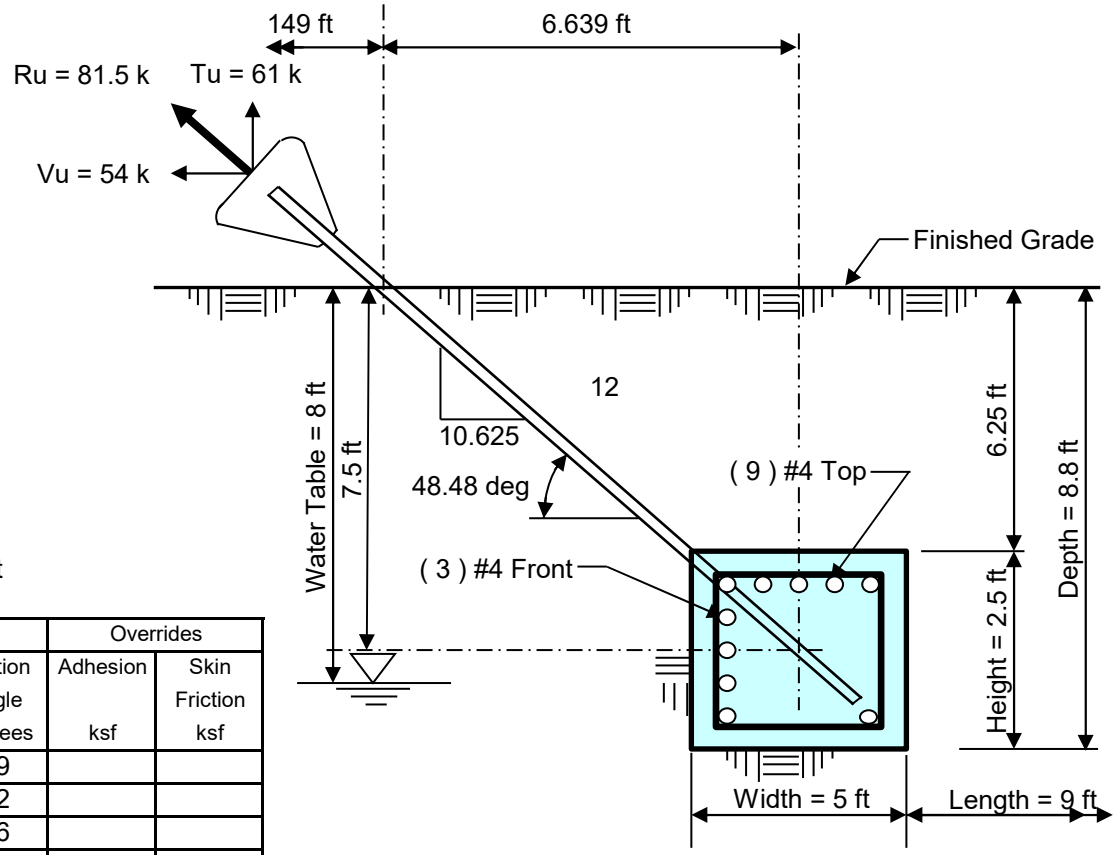
1. PASSIVE PRESSURE: INCLUDED ON PAD AND PIER
2. SOIL WEDGES/COHESION PLANE: NOT INCLUDED

Deadman Guy Anchor Analysis (LRFD)

Guy Anchor: Bozrah, CT

PJF Job No. **13321-0017.002.8700** Project Name: **Bozrah Polly Lane** Engineer: **SFM**

Uplift Force =	**61**	k
Horizontal Force =	**54**	k
Load Factor, Concrete Weight =	**0.9**	
Φ, Soil Weight =	**0.75**	
Depth to Water Table =	**8**	ft
Toe Width (If Any) =	**0**	in
Toe Height (If Any) =	**0**	in
Depth to Bottom of Deadman =	**8.75**	ft
Deadman Block Height =	**2.5**	ft
Deadman Block Width =	**5**	ft
Deadman Block Length =	**9**	ft
Guy Rod Steel Strength, Fy =	**48**	ksi
Guy Rod Cross-Sectional Area =	**2.405**	in^2
Concrete Strength, f'c =	**3**	ksi
Rebar Strength, Fy =	**60**	ksi
Minimum Cover Over Rebar =	**3**	in
Horiz. Ult. Passive Press. Override =		ksf/ft



			Uplift		Horizontal		Overrides	
Layer Thk ft	Dry Soil Density pcf	Sat Soil Density pcf	Cohesion ksf	Friction Angle degrees	Cohesion ksf	Friction Angle degrees	Adhesion ksf	Skin Friction ksf
2.5	110	110		29		29		
3.5	115	115		32		32		
3	120	120		36		36		

Uplift Based on: **Soil Cone**

Inverted pyramid of soil in uplift will be taken from the top of the anchor.

Concrete Volume per Anchor =	**4.17**	yd^3
Concrete Volume for (3) Anchors =	**12.50**	yd^3

Summary Results:

	Required		Available			
Guy Rod Tensile Force =	**81.47**	k	**92.4**	k	Capacity Ratio =	**88.2%** in Tensile Force
Soil, Horizontal Resistance =	**54.0**	k	**55.3**	k	Capacity Ratio =	**97.7%** in Horiz Resistance
Soil, Uplift Resistance =	**61.0**	k	**92.2**	k	Capacity Ratio =	**66.2%** in Uplift Resistance
Steel, Uplift Bending Moment =	**91.3**	k-ft	**199.2**	k-ft	Capacity Ratio =	**45.8%** in Bending Moment
Steel, Horizontal Bending Moment =	**60.8**	k-ft	**126.4**	k-ft	Capacity Ratio =	**48.1%** in Bending Moment
Toe Shear =		k/ft		k/ft	Capacity Ratio =	in Shear

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

1) Paul J. Ford and Company has not made a field inspection to verify the tower member sizes or the antenna/coax loading. If the existing conditions are not as represented on these drawings, we should be contacted immediately to evaluate the significance of the deviation.

2) No allowance was made for any damaged, missing, or rusted members. The analysis of this tower assumes that no physical deterioration has occurred in any of the structural components of the tower and that all the tower members have the same load carrying capacity as the day the tower was erected.

3) It is not possible to have all the detailed information to perform a thorough analysis of every structural sub-component of an existing tower. The structural analysis by Paul J. Ford and Company verifies the adequacy of the main structural members of the tower. Paul J. Ford and Company provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc.

4) This tower has been analyzed according to the minimum design wind loads recommended by the Telecommunications Industry Association Standard ANSI/TIA-222-G. If the owner or local or state agencies require a higher design wind load, Paul J. Ford and Company should be made aware of this requirement.

5) The enclosed sketches are a schematic representation of the tower that we have analyzed. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions and for the proper fit and clearance in the field.

6) Miscellaneous items such as antenna mounts etc. have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

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Mount Analysis Report

Site Address	10 Polly Lane Bozrah, CT 06336
Site Name	Bozrah-1/Rt. 2
Site ID	CT11258B
Project Name	ANCHOR
Design Codes	2015 International Building Code ASCE 7-10 TIA-222-G Standards 2018 CT State Building Code

	Stress Ratio	Overall Result
Existing Mounts with Modifications	**85%**	**PASS**

Client:

T - Mobile

NORTHEAST, LLC
35 GRIFFIN RD S
BLOOMFIELD, CT 06002

Date: 6/22/2022

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Scope of Work:

Centerline Communications was authorized by T-Mobile Northeast LLC to perform an analysis of the existing antenna mounts to determine their capacity to support the existing and proposed T-Mobile equipment listed in this report. These mounts were analyzed using RISA 3D v17.0.4.

Final Appurtenances Configuration:

Elevation (ft)	Position[1]	Azimuth (degrees)	Quantity	Appurtenance	Sector
177	MP1	110	1	APXVAALL24_43-U-NA20 Antenna	Sector 1
177	**MP2**	**110**	**1**	**AIR 6419 B41 Antenna**	
177	**MP3**	**110**	**1**	**VV-65B-R1 Antenna**	
177	MP1	110	1	4449 B71+B85 RRH	
177	**MP3**	**110**	**1**	**4460 B25+B66 RRH**	
177	-	230	1	APXVAALL24_43-U-NA20 Antenna	Sector 2
177	**-**	**230**	**1**	**AIR 6419 B41 Antenna**	
177	**-**	**230**	**1**	**VV-65B-R1 Antenna**	
177	-	230	1	4449 B71+B85 RRH	
177	**-**	**230**	**1**	**4460 B25+B66 RRH**	
177	-	350	1	APXVAALL24_43-U-NA20 Antenna	Sector 3
177	**-**	**350**	**1**	**AIR 6419 B41 Antenna**	
177	**-**	**350**	**1**	**VV-65B-R1 Antenna**	
177	-	350	1	4449 B71+B85 RRH	
177	**-**	**350**	**1**	**4460 B25+B66 RRH**	

Notes:

1. MP represents Mount Pipe.
2. Existing Appurtenance
3. **Proposed Appurtenance**

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Design Criteria:

Design Codes:

2015 International Building Code
ASCE 7-10
TIA-222-G Standards
2018 CT State Building Code

Ultimate Wind Speed	135 mph
Nominal Wind Speed	105 mph
Wind Speed with Ice	50 mph
Ice Thickness	0.75 in.
Exposure Category	B
Topographic Category	1
Risk Category	II
Site Soil Class (Assumed)	D-Stiff Soil
Seismic Design Category	B
Spectral Response Acceleration Parameter at a Short Periods, S_S	0.170 g
Spectral Response Acceleration Parameter at a Period of 1 Second, S_1	0.061 g
Short Period Site Coefficient, F_a	1.6
Long Period Site Coefficient, F_v	2.4

***Refer to calculations for additional design criteria.**

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Conclusion:

Based on the results of the analysis, we have determined that the existing T-Mobile mounts *are adequate* to support the existing and proposed T-Mobile equipment loading *upon completion* of the listed modifications. Centerline Communications recommends the following:

Alpha, Beta & Gamma Sector:

- Relocate existing mount pipe from the Position 2 to Position 4.
- Relocate the existing tieback such that it is connected 9" below the top standoff angle.
- Install (1) 2.0" STD. x 8.0ft long mount pipe at Position 1.

	Stress Ratio	Overall Result
Existing Mounts with Modifications	**85%**	**PASS**

Reference Documents:

- T-Mobile RFDS CT11258B_Anchor_4, dated 05/26/2022
- Mount Analysis by Centek Engineering, Inc., dated 05/03/2019
- Construction Drawings by Centek Engineering, Inc., dated 07/28/2021

Assumptions and Limitations:

- The calculations performed by Centerline Communications are limited to the structural members in these calculations only.
- The existing mounts are assumed to have been correctly designed and installed.
- Structural calculations in this report do not check the adequacy of the supporting structure, other mounts, or coax mounting attachments.
- The calculation assumes all structural members to be in good condition i.e., no damage, rust, or other defects.

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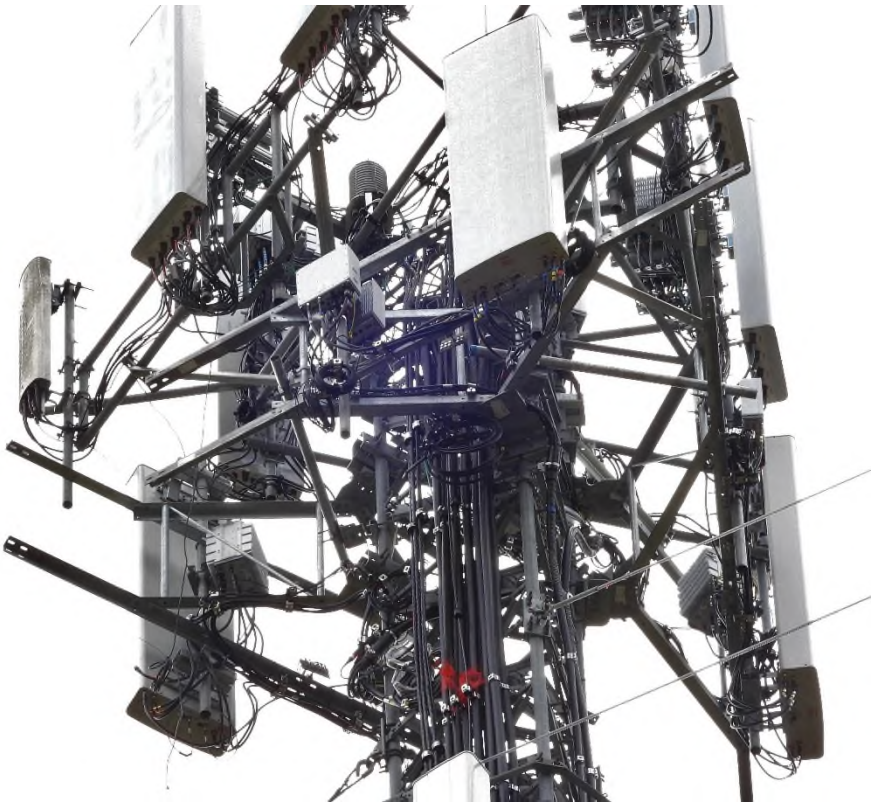
Photos:



Existing Mounts

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Design Calculations

CENTERLINE COMMUNICATIONS

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Site Details	
Site Name	Bozrah-1/Rt. 2
Carrier	T-Mobile
City, State	Bozrah, CT
Project	Anchor

Mount Details		
Mount Type	Sector Frame	
Mount Height, z	177	ft
Number of Sectors	3	
Tower Type	Guyed	
Tower Height, h	187	ft

Topographic Factors		
Topographic Category	1	
Feature	Flat	
Crest Height, H	N/A	ft
Distance from Crest, x	N/A	ft
Slope (H/L)	N/A	
Topographic Factor, K_{zt}	1.00	

Seismic Factors		
Importance Factor, I_E	1	
Short Period Spectral Acceleration, S_s	0.17	g
1 Second Period Spectral Acceleration, S_1	0.061	g
Long-Period Transition Period, T_L	6	
Design Category	B	
Short Period Site Coefficient, F_a	1.60	
Long-Period Site Coefficient, F_v	2.4	

Site Parameters		
Ultimate Wind Speed, V_{ULT}	135	mph
Nominal Wind Speed, V	105	mph
Wind Speed with Ice, V_i	50	mph
Design Ice Thickness, t_i	0.75	in
Structural Class	II	
Exposure Category	B	
Site Soil Class	D-Stiff Soil (Assumed)	

Code	
Building Code	2015 IBC
TIA Code	TIA-222-G
ASCE Code	7-10

Site Constants		
Importance Factor, I (Wind no Ice)	1.00	
Importance Factor, I (Ice Thickness)	1.00	
Importance Factor, I (wind with Ice)	1.00	
Wind Direction Prob. Factor, K_d	0.95	
Velocity Pressure Coefficient, K_z	1.16	
Gust Effect Factor, G_h	1.00	
Design Ice Thickness, t_{iz}	1.77	in
Velocity Pressure, q_z	31.19	psf
Velocity Pressure with Ice, q_{zi}	7.07	psf
Shielding Factor, K_a	1.00	
Flat Velocity Pressure (Ca =2.0)	62.39	psf
Round Velocity Pressure (Ca = 1.2)	37.43	psf
Round Velocity Pressure with Ice (Ca = 1.2)	8.49	psf
Engineer Initials	**AP**	

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Members Forces							
Member Label	**Shape**	**Type**	**w, lbs/ft**	**q_z, psf**	**w_i, lbs/ft**	**q_{zi}, psf**	**V_s, lbs/ft**
L3X3X1/4	L3X3X4	Beam	4.90	62.39	13.04	8.49	0.59
PIPE_1.25	PIPE_1.25	Beam	2.13	37.43	7.53	8.49	0.26
0.75" SR	0.75" SR	Beam	1.50	37.43	5.47	8.49	0.18
PIPE_2.0	PIPE_2.0	Beam	3.47	37.43	8.99	8.49	0.42

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Sector 1							
		Wind Force				Dimensions	Weights
Appurtenances	Rad. Ht., ft	Front EPA ft^2	Side EPA ft^2	0° Force lbs.	90° Force lbs.	H\W\D, in	Wt.\$Wt._{ice}$, lbs.
APXVAALL24_43-U-NA20 Antenna	177	20.24	8.73	631.42	272.41	95.9\24\8.5	153.3\435.75
AIR 6419 B41 Antenna	177	6.32	2.88	197.21	89.74	36.3\20.9\9	83.3\174.92
VV-65B-R1 Antenna	177	7.92	3.77	246.98	117.63	70.4\12\4.6	41.67\177.7
4449 B71+B85 RRH	177	1.65	1.30	51.47	40.55	15\13.2\10.4	75\73.7
4460 B25+B66 RRH	177	2.14	1.50	66.73	46.71	15.1\17\11.9	108\92.86

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Sector 1 Continue…								
		Wind Force with Ice				Wind Force V = 30 mph		Seismic Force
Appurtenances	Rad. Ht., ft	Front EPA ft^2	Side EPA ft^2	0° Force lbs.	90° Force lbs.	0° Force lbs.	90° Force lbs.	Vs, lbs
APXVAALL24_43-U-NA20 Antenna	177	13.79	6.89	240.70	110.49	51.54	22.24	18.53
AIR 6419 B41 Antenna	177	4.74	2.48	78.22	37.91	16.10	7.33	10.07
VV-65B-R1 Antenna	177	5.99	3.54	98.37	51.72	20.16	9.60	5.04
4449 B71+B85 RRH	177	1.51	1.26	22.35	18.09	4.20	3.31	9.07
4460 B25+B66 RRH	177	1.86	1.40	28.31	20.50	5.45	3.81	13.06

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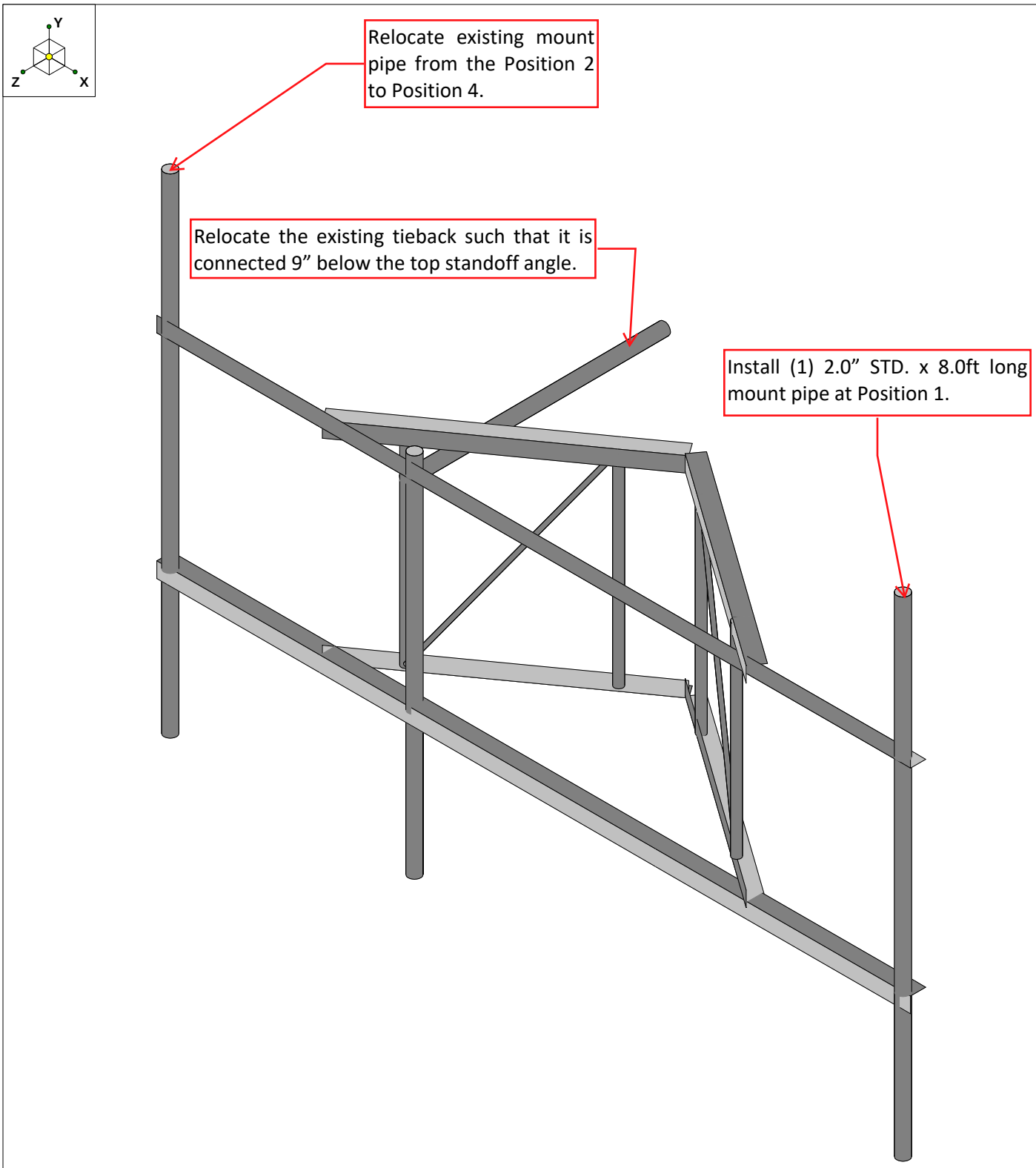
Existing Mounts with Modifications Results



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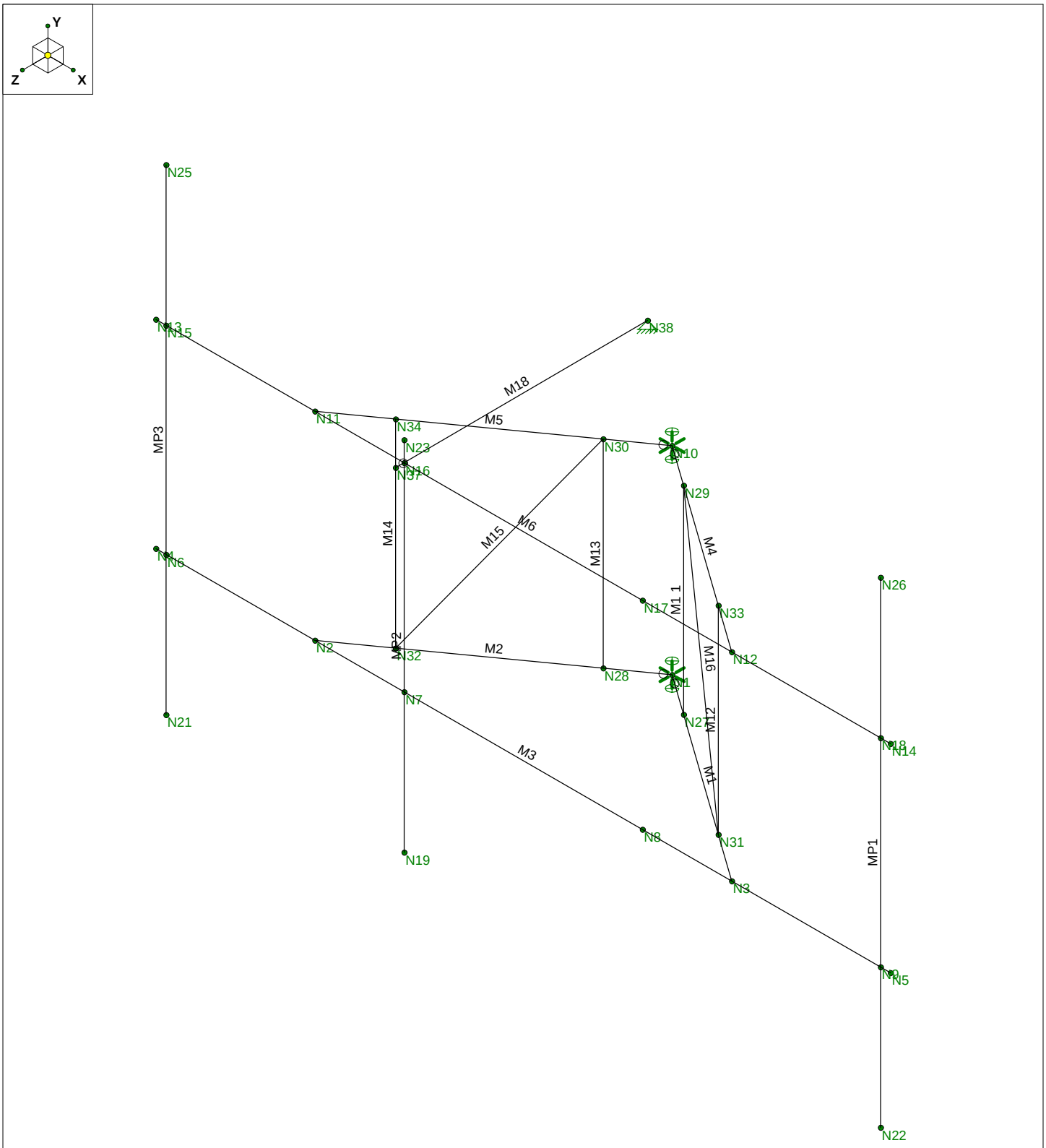

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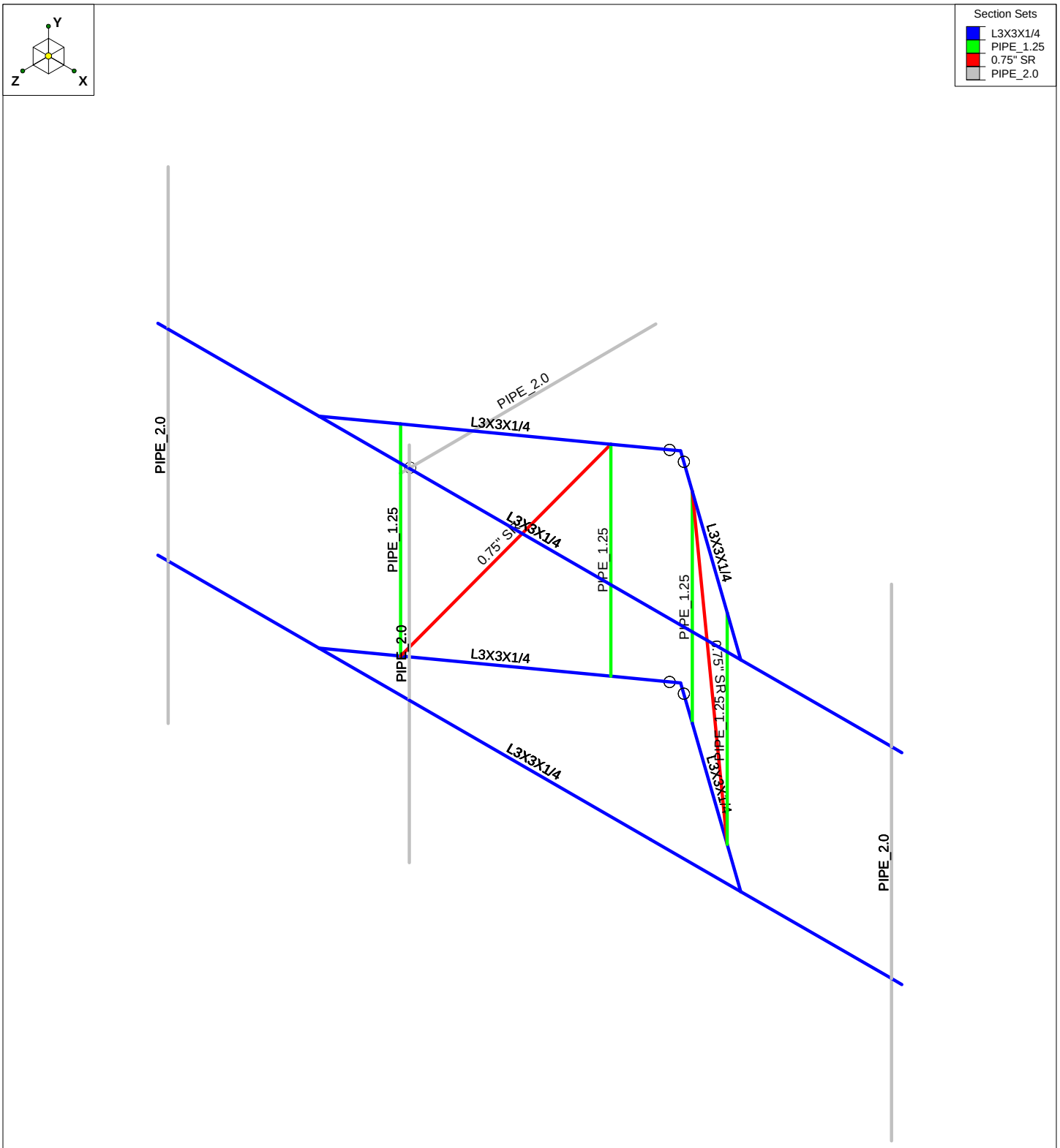

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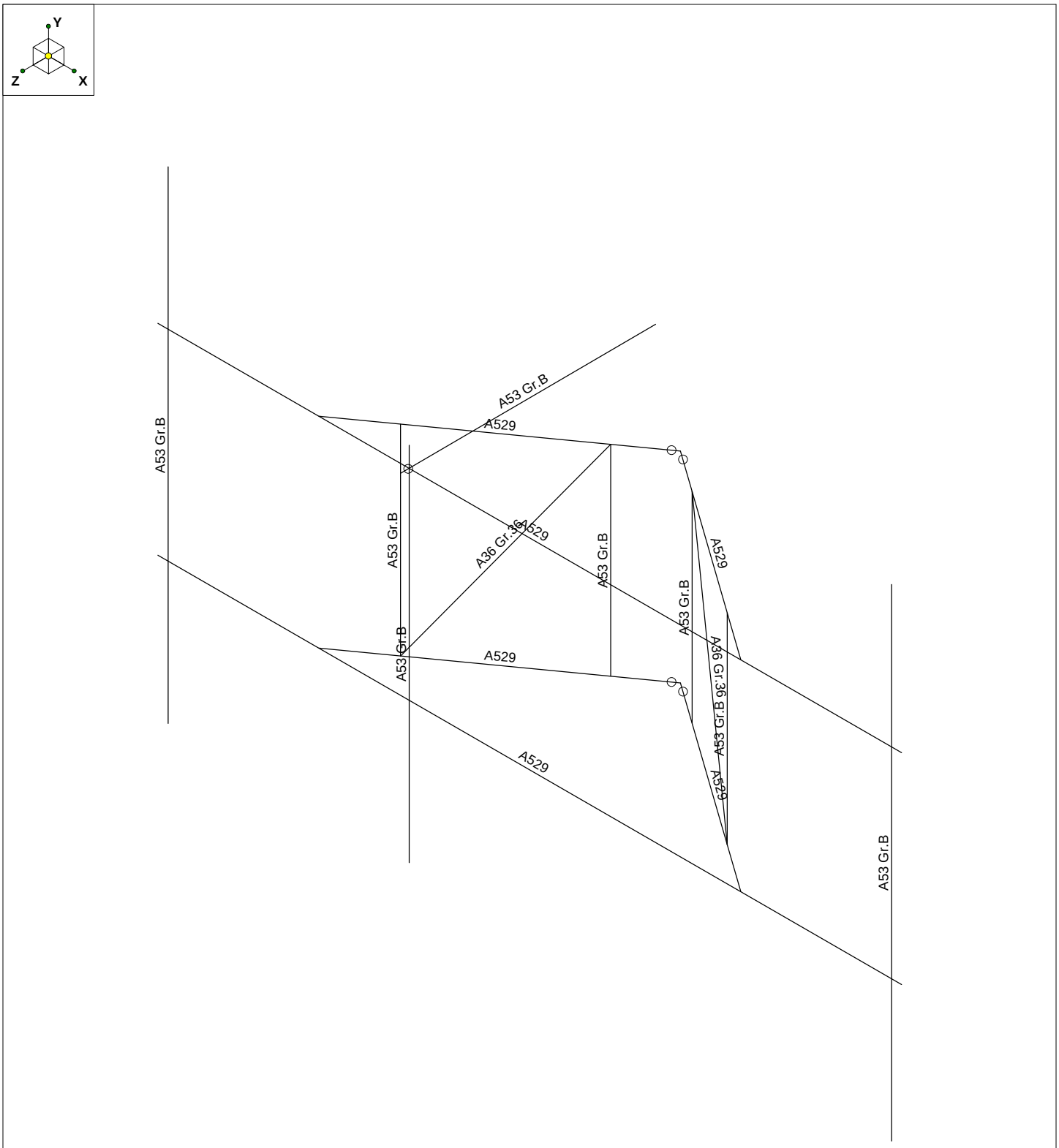

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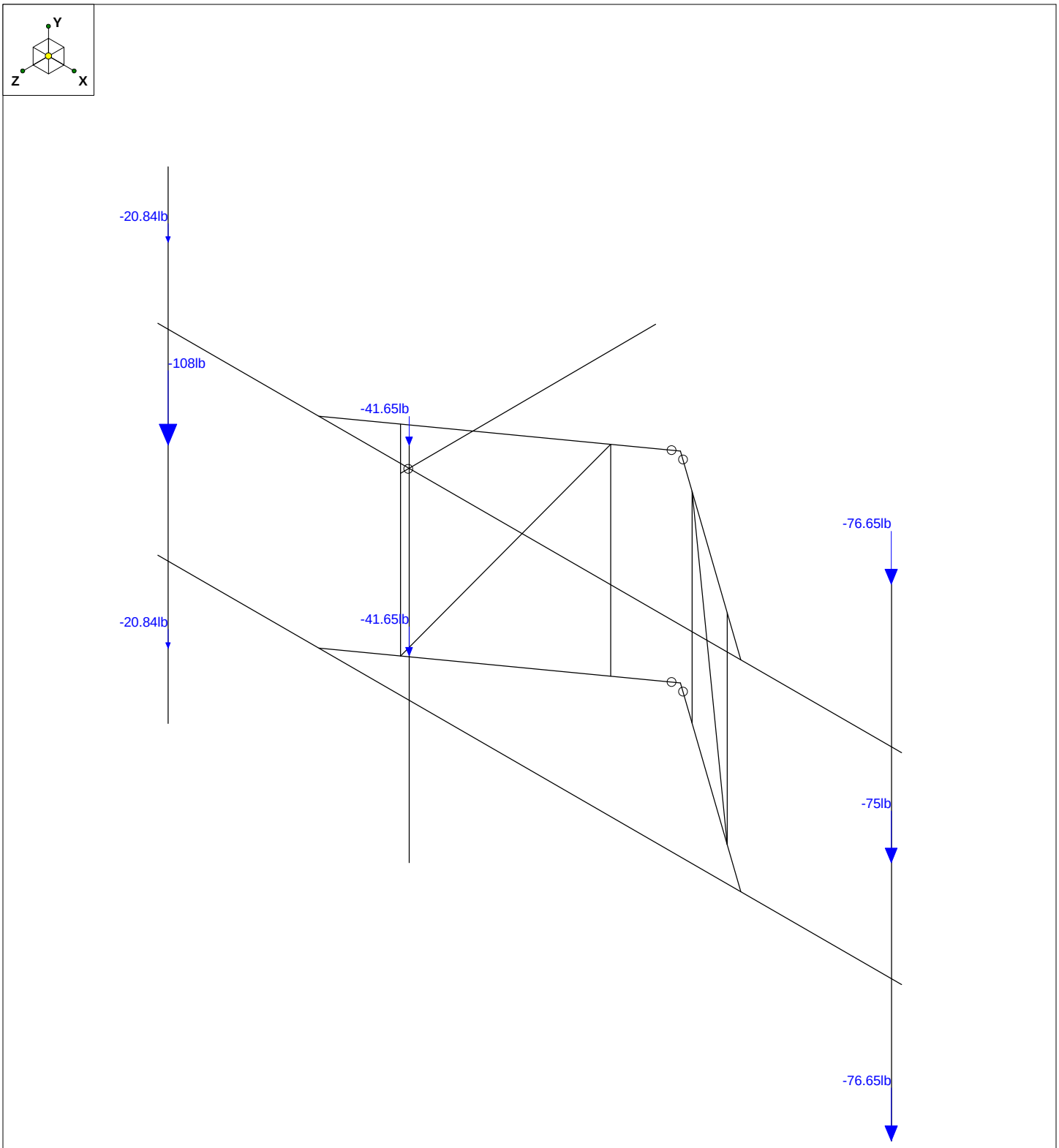

Loads: BLC 1, Dead Load

Centerline Communication...	CT11258B_MA	Dead Load
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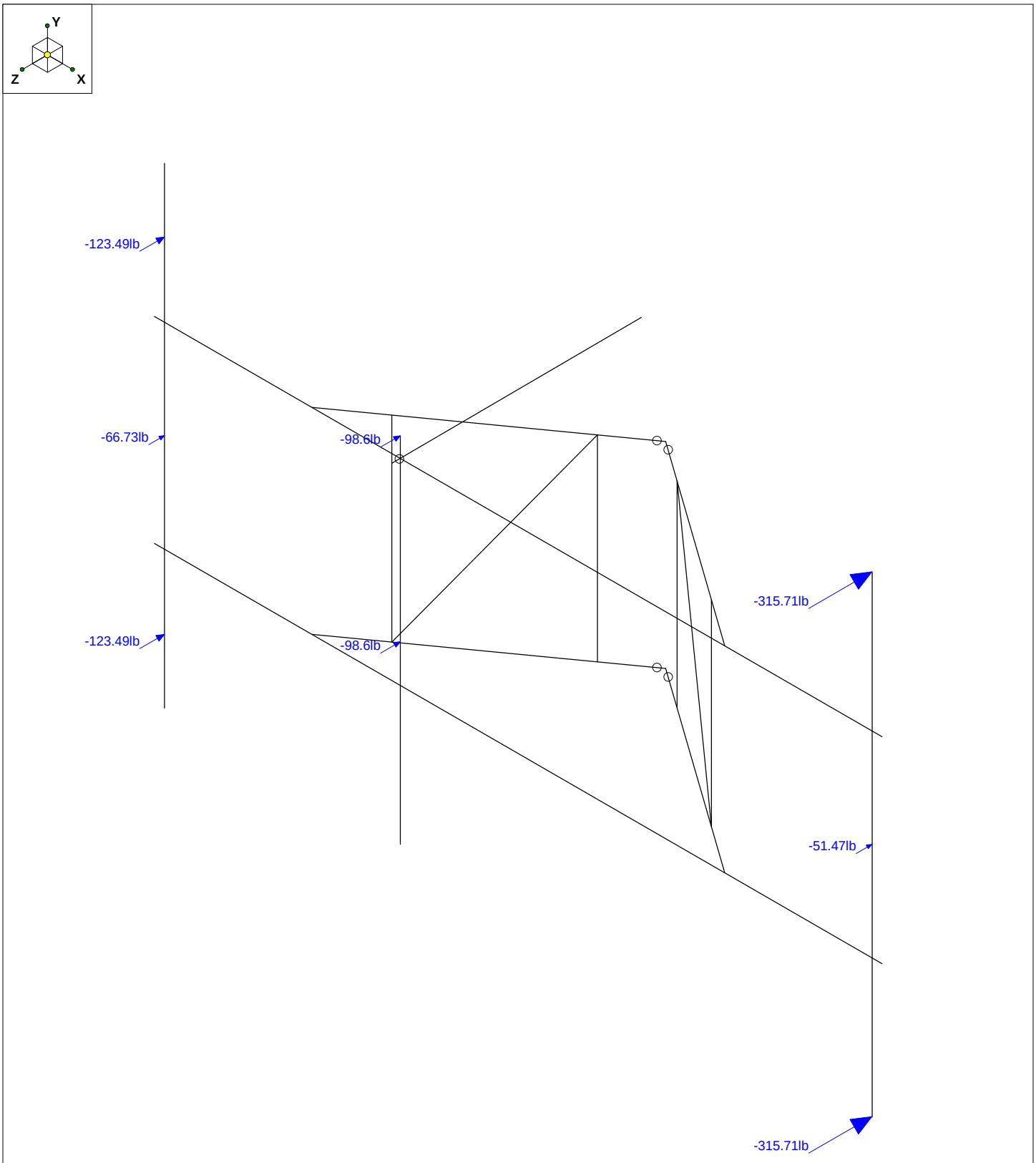
		CT11258B_MA.r3d



Loads: BLC 2, Wind 0

Centerline Communication...	CT11258B_MA	Wind 0
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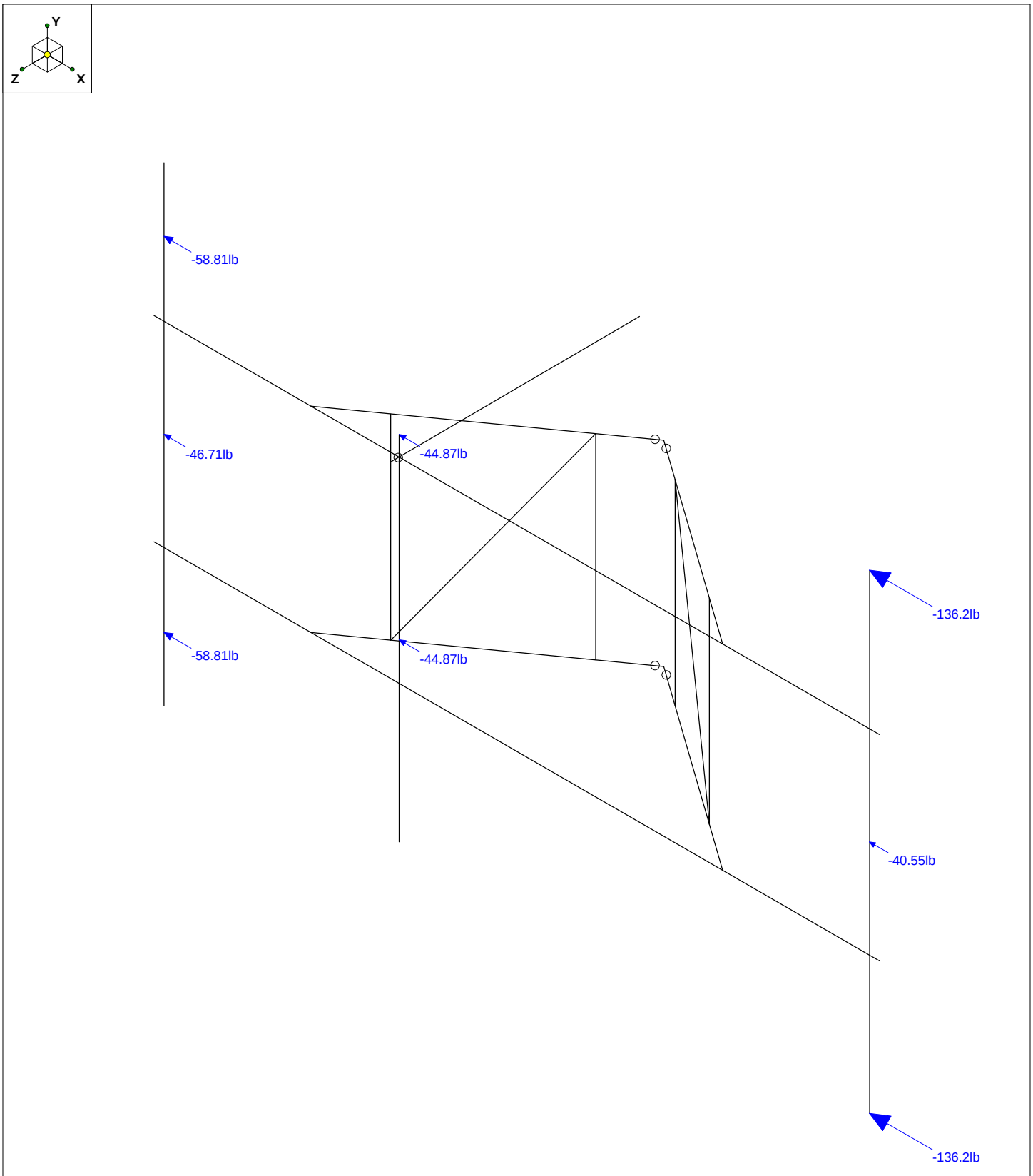

Loads: BLC 5, Wind 90

Centerline Communication...	CT11258B_MA	Wind 90
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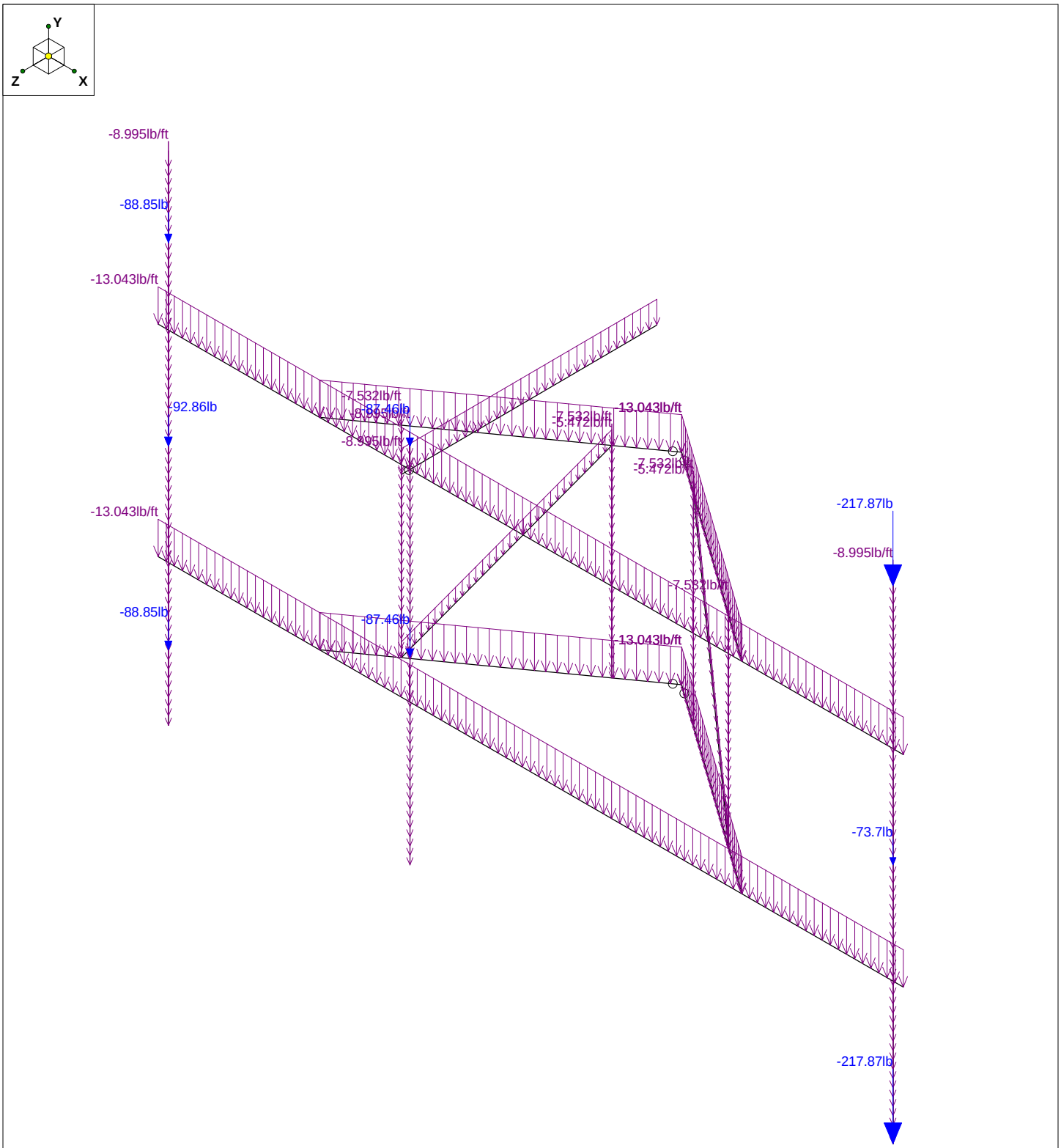
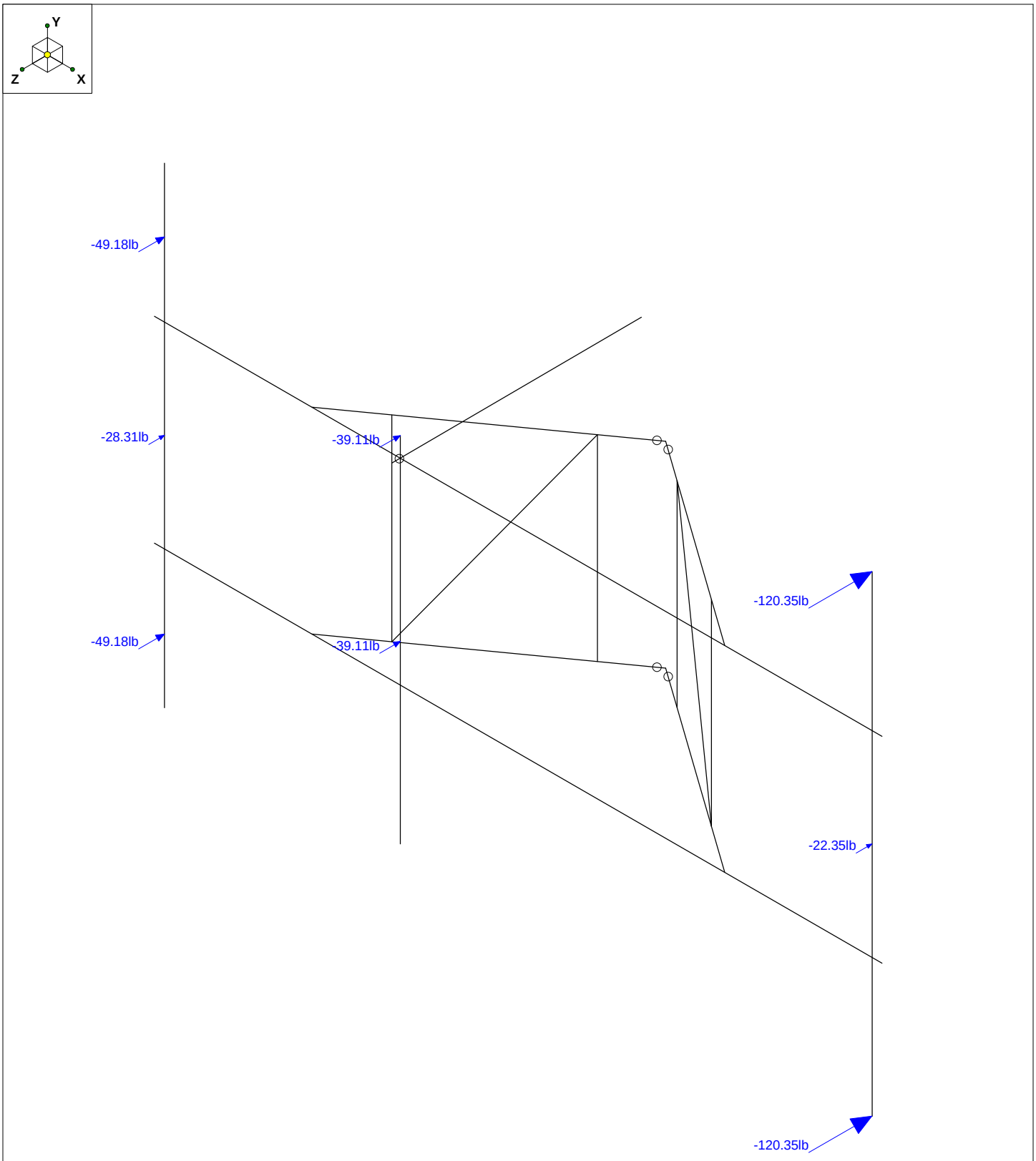


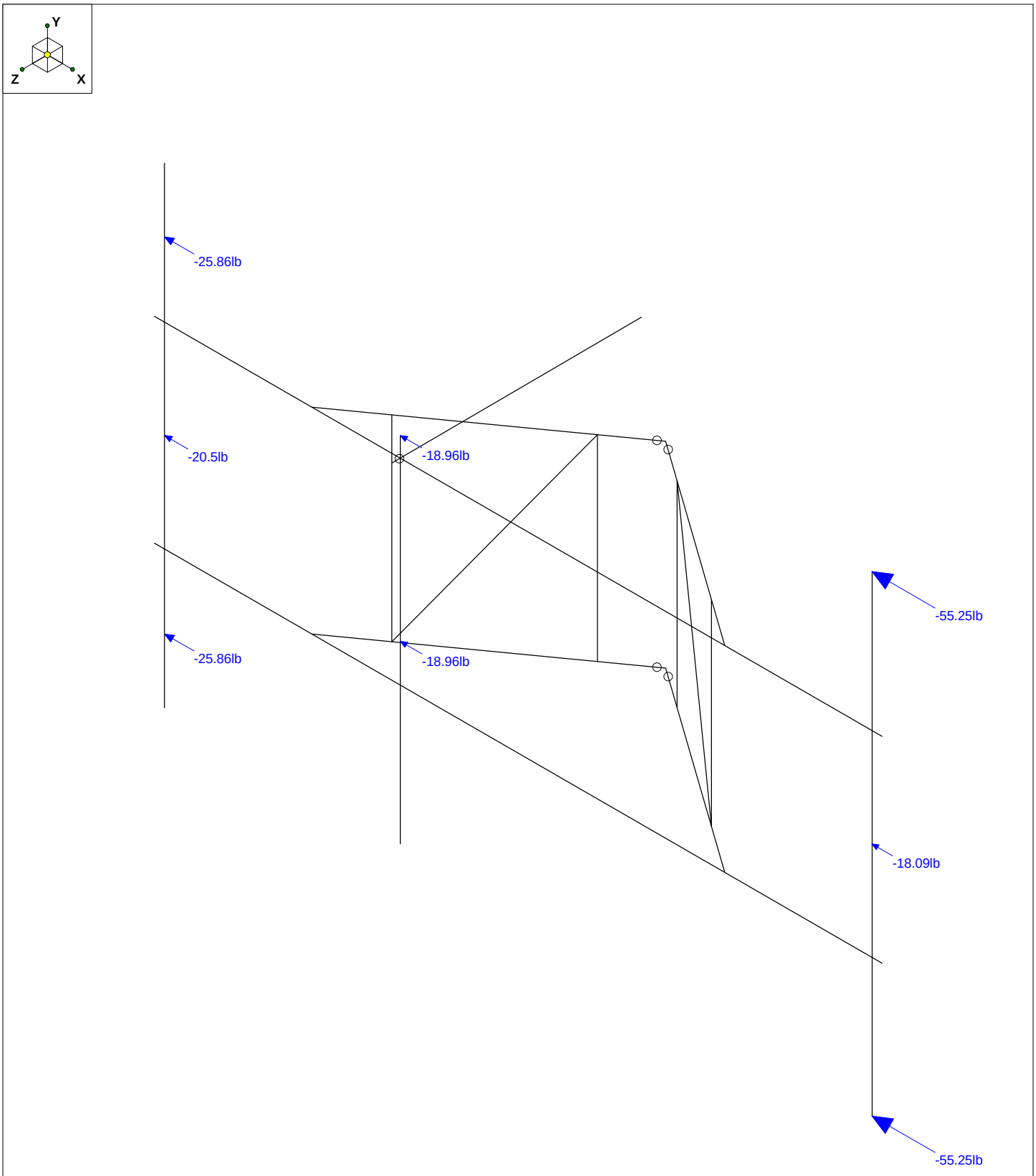
Loads: BLC 9, Ice Weight

Centerline Communication...	CT11258B_MA	Ice Weight
AP		June 22, 2022 at 3:15 PM
		CT11258B_MA.r3d



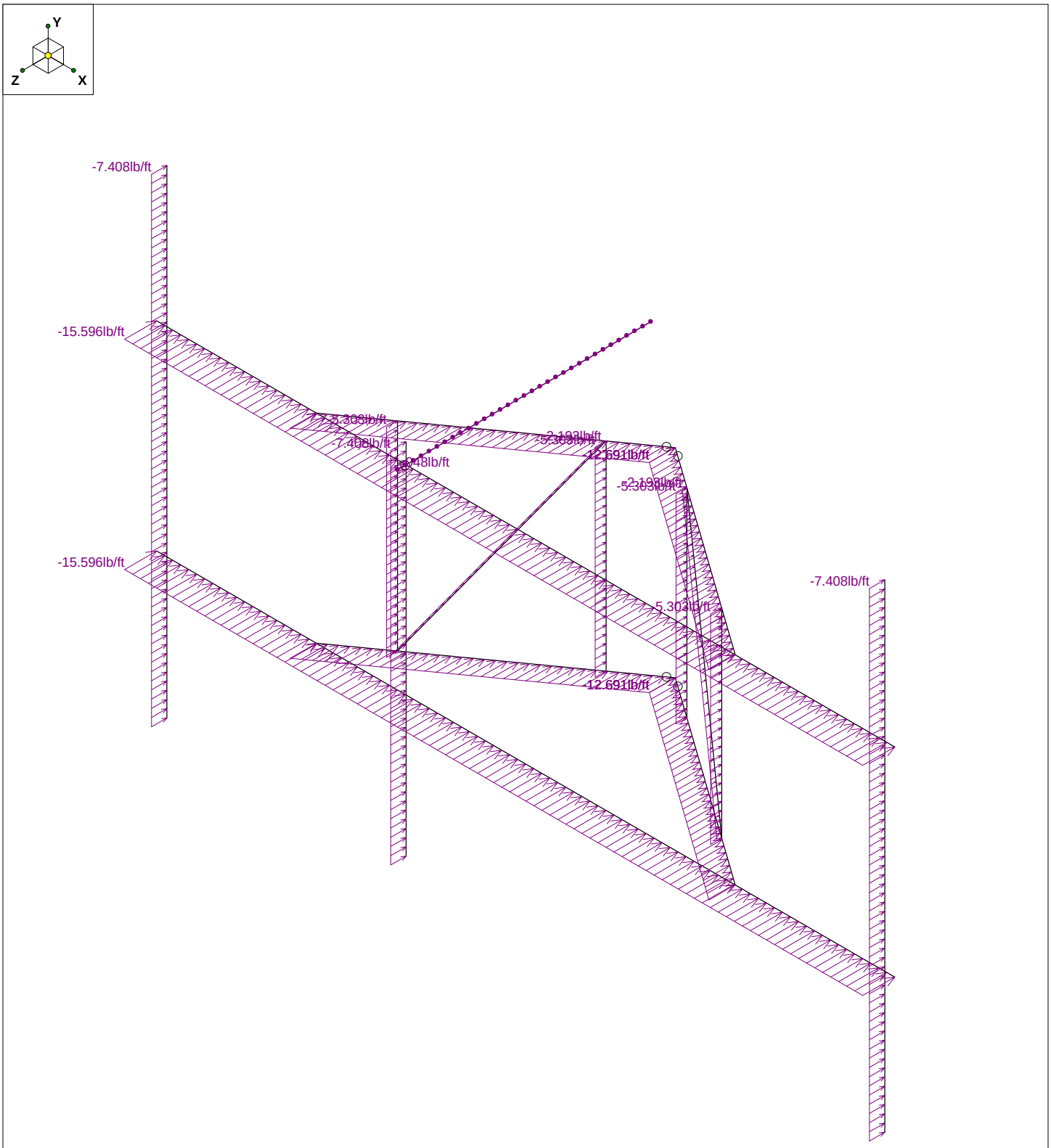
Loads: BLC 10, Ice + Wind 0

Centerline Communication...	CT11258B_MA	Ice + Wind 0
AP		June 22, 2022 at 3:15 PM
		CT11258B_MA.r3d



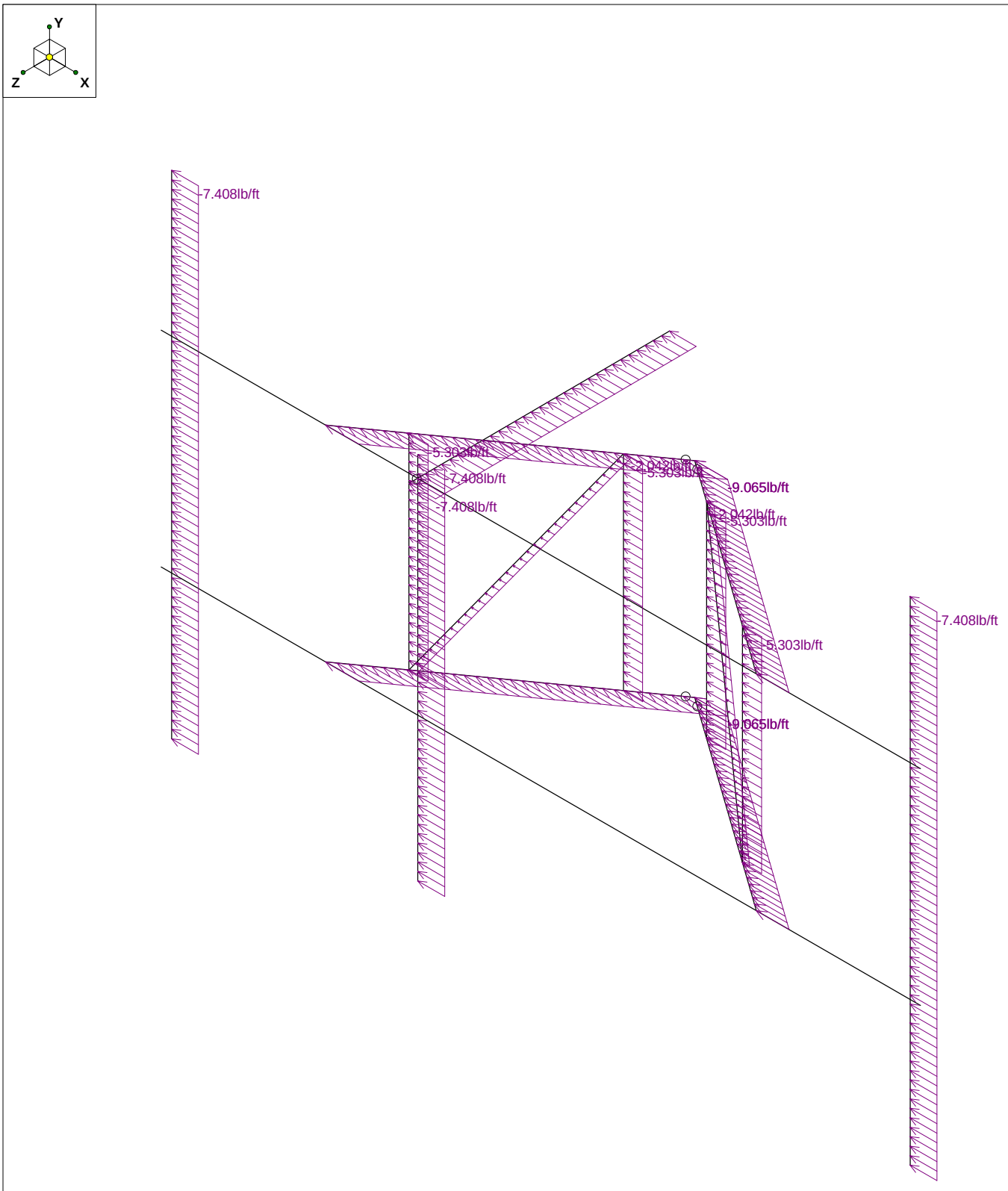
Loads: BLC 13, Ice + Wind 90

Centerline Communication...	CT11258B_MA	Ice + Wind 90
AP		June 22, 2022 at 3:15 PM
		CT11258B_MA.r3d



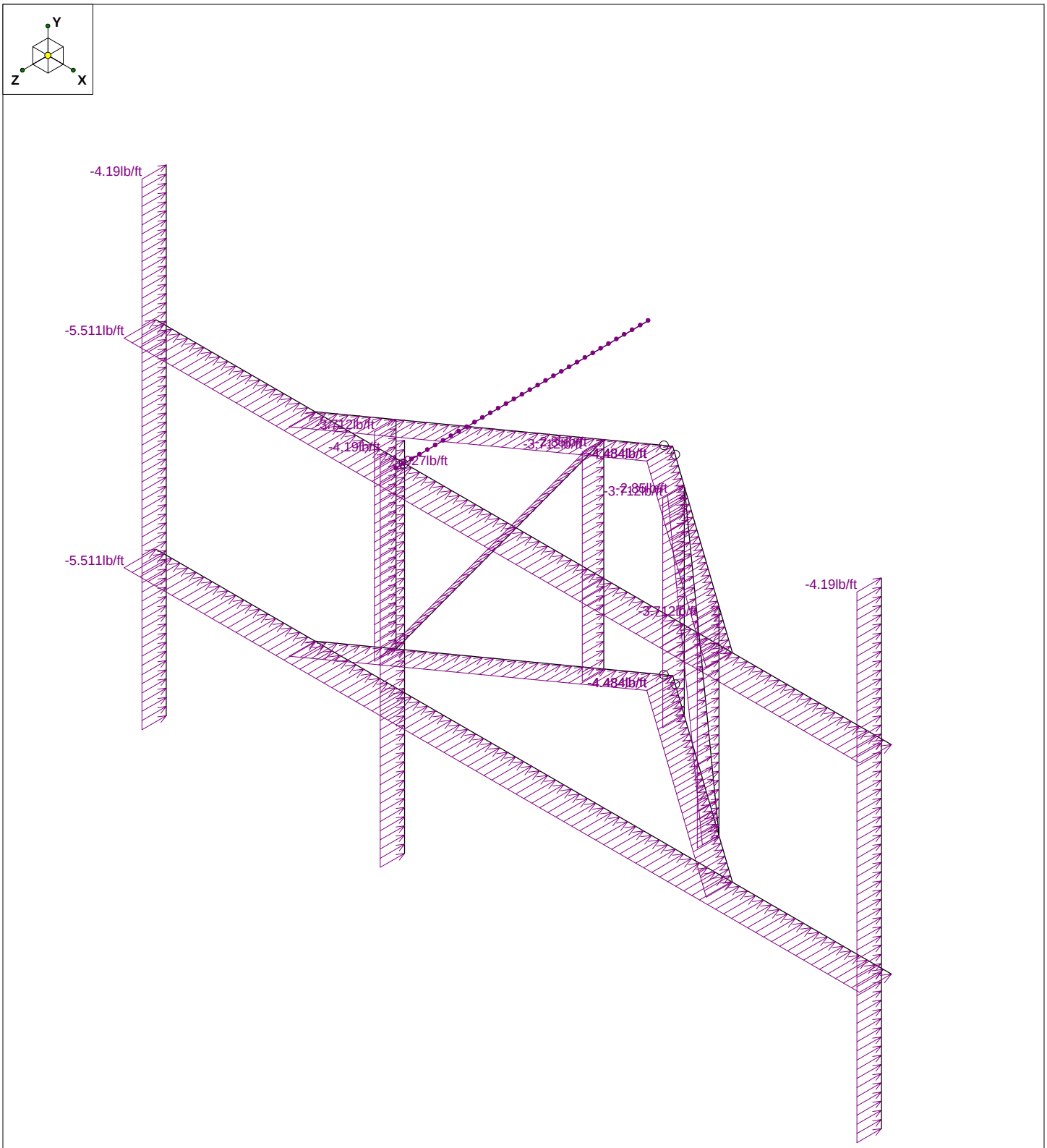
Loads: BLC 17, Distri. Wind Z

Centerline Communication...		Distr. Wind 0
AP	CT11258B_MA	June 22, 2022 at 3:15 PM
		CT11258B_MA.r3d



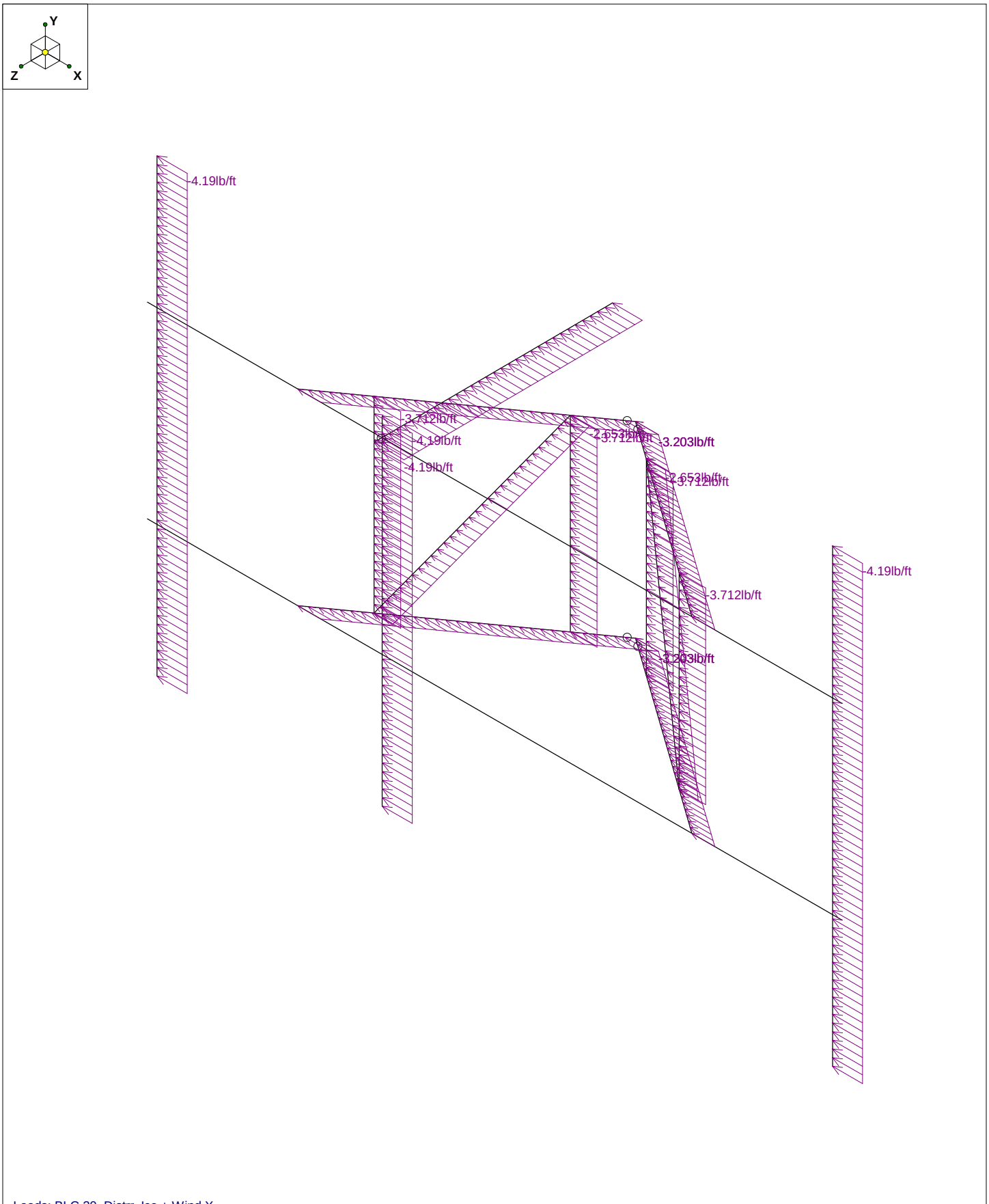
Loads: BLC 18, Distri. Wind X

Centerline Communication...		Distr. Wind 90
AP	CT11258B_MA	June 22, 2022 at 3:15 PM
		CT11258B_MA.r3d



Loads: BLC 19, Distri. Ice + Wind Z

Centerline Communication...		Distr. Ice + Wind 0
AP	CT11258B_MA	June 22, 2022 at 3:16 PM
		CT11258B_MA.r3d



Loads: BLC 20, Distrr. Ice + Wind X

Centerline Communication...	CT11258B_MA	Distr. Ice + Wind 90
AP		June 22, 2022 at 3:16 PM
		CT11258B_MA.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/...	Density[lb/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	490	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	490	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	490	50	1.25	65	1.15
8	A913 Gr.65	29000	11154	.3	.65	490	65	1.1	80	1.1
9	A529	29000	11154	.3	.65	490	42	1.5	60	1.2
10	A572	29000	11154	.3	.65	490	42	1.5	60	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	L3X3X1/4	L3X3X4	Beam	Single Angle	A529	Typical	1.44	1.23	1.23	.031
2	PIPE_1.25	PIPE_1.25	Beam	Pipe	A53 Gr.B	Typical	.625	.184	.184	.368
3	0.75" SR	0.75" SR	Beam	BAR	A36 Gr.36	Typical	.442	.016	.016	.031
4	PIPE_2.0	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	0	0	0	0	
2	N2	-42	0	30	0	
3	N3	42	0	30	0	
4	N4	-74.04	0	30	0	
5	N5	74.04	0	30	0	
6	N6	-72	0	30	0	
7	N7	-24	0	30	0	
8	N8	24	0	30	0	
9	N9	72	0	30	0	
10	N10	0	39.996	0	0	
11	N11	-42	39.996	30	0	
12	N12	42	39.996	30	0	
13	N13	-74.04	39.996	30	0	
14	N14	74.04	39.996	30	0	
15	N15	-72	39.996	30	0	
16	N16	-24	39.996	30	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
17	N17	24	39.996	30	0	
18	N18	72	39.996	30	0	
19	N19	-24	-27.996	30	0	
20	N21	-72	-27.996	30	0	
21	N22	72	-27.996	30	0	
22	N23	-24	44.004	30	0	
23	N25	-72	68.004	30	0	
24	N26	72	68.004	30	0	
25	N27	8.104788	0	5.789136	0	
26	N28	-8.104788	0	5.789136	0	
27	N29	8.104788	39.996	5.789136	0	
28	N30	-8.104788	39.996	5.789136	0	
29	N31	32.516784	0	23.226276	0	
30	N32	-32.516784	0	23.226276	0	
31	N33	32.516784	39.996	23.226276	0	
32	N34	-32.516784	39.996	23.226276	0	
33	N37	-32.516784	31.498	23.226276	0	
34	N38	-32.849017	31.498	-27.89882	0	

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N38	max	32.755	5	28.271	16	1603.491	6	0	78	0	78	0	78
2		min	-7.448	2	6.532	12	-1032.855	2	0	1	0	1	0	1
3	N10	max	765.455	40	1534.028	17	1986.388	9	0	78	0	78	0	78
4		min	-766.851	57	90.492	15	-3284.648	7	0	1	0	1	0	1
5	N1	max	908.958	54	1414.22	22	2488.074	2	0	78	0	78	0	78
6		min	-621.196	43	57.978	9	-1335.629	15	0	1	0	1	0	1
7	Totals:	max	1608.374	12	2841.706	22	3278.744	9						
8		min	0	1	718.687	9	-3278.744	8						

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N38	Reaction	Reaction	Reaction			
2	N10	Reaction	Reaction	Reaction		Reaction	
3	N1	Reaction	Reaction	Reaction		Reaction	

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	L3X3X1/4	51.614			Lbyy						Lateral
2	M2	L3X3X1/4	51.614			Lbyy						Lateral
3	M3	L3X3X1/4	148.08			Lbyy						Lateral
4	M4	L3X3X1/4	51.614			Lbyy						Lateral
5	M5	L3X3X1/4	51.614			Lbyy						Lateral
6	M6	L3X3X1/4	148.08			Lbyy						Lateral
7	MP3	PIPE_2.0	96			Lbyy						Lateral
8	MP2	PIPE_2.0	72			Lbyy						Lateral
9	MP1	PIPE_2.0	96			Lbyy						Lateral
10	M1 1	PIPE_1.25	39.996			Lbyy						Lateral
11	M12	PIPE_1.25	39.996			Lbyy						Lateral
12	M13	PIPE_1.25	39.996			Lbyy						Lateral
13	M14	PIPE_1.25	39.996			Lbyy						Lateral
14	M15	0.75" SR	49.997			Lbyy						Lateral
15	M16	0.75" SR	49.997			Lbyy						Lateral
16	M18	PIPE_2.0	51.126			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	M1	N1	N3		270	L3X3X1/4	Beam	Single Angle	A529	Typical
2	M2	N1	N2			L3X3X1/4	Beam	Single Angle	A529	Typical
3	M3	N4	N5		180	L3X3X1/4	Beam	Single Angle	A529	Typical
4	M4	N10	N12		180	L3X3X1/4	Beam	Single Angle	A529	Typical
5	M5	N10	N11		90	L3X3X1/4	Beam	Single Angle	A529	Typical
6	M6	N13	N14		270	L3X3X1/4	Beam	Single Angle	A529	Typical
7	MP3	N25	N21			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
8	MP2	N23	N19			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
9	MP1	N26	N22			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
10	M1 1	N29	N27			PIPE_1.25	Beam	Pipe	A53 Gr.B	Typical
11	M12	N33	N31			PIPE_1.25	Beam	Pipe	A53 Gr.B	Typical
12	M13	N30	N28			PIPE_1.25	Beam	Pipe	A53 Gr.B	Typical
13	M14	N34	N32			PIPE_1.25	Beam	Pipe	A53 Gr.B	Typical
14	M15	N30	N32			0.75" SR	Beam	BAR	A36 Gr....	Typical
15	M16	N29	N31			0.75" SR	Beam	BAR	A36 Gr....	Typical
16	M18	N37	N38			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1	BenPIN					Yes	Default			None
2	M2	BenPIN					Yes	Default			None
3	M3						Yes	Default			None
4	M4	BenPIN					Yes	Default			None
5	M5	BenPIN					Yes	Default			None
6	M6						Yes	Default			None
7	MP3						Yes	Default			None
8	MP2						Yes	Default			None
9	MP1						Yes	Default			None
10	M1 1						Yes	Default			None
11	M12						Yes	Default			None
12	M13						Yes	Default			None
13	M14						Yes	Default			None
14	M15					Tension ...	Yes	Default			None
15	M16					Tension ...	Yes	Default			None
16	M18	BenPIN					Yes	Default			None

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead Load	DL		-1			8			
2	Wind 0	WLZ					16			
3	Wind 30	None					16			
4	Wind 60	None					16			
5	Wind 90	WLX					16			
6	Wind 120	None					16			
7	Wind 150	None					16			
8	Wind 180	WLZ					16			
9	Ice Weight	DL					8	16		
10	Ice + Wind 0	WLZ					16			
11	Ice + Wind 30	None					16			
12	Ice + Wind 60	None					16			
13	Ice + Wind 90	WLX					16			
14	Ice + Wind 120	None					16			
15	Ice + Wind 150	None					16			
16	Ice + Wind 180	WLZ					16			
17	Distri. Wind Z	WLZ						16		
18	Distri. Wind X	WLX						16		
19	Distri. Ice + Wind Z	WLZ						16		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
20	Distrr. Ice + Wind X	WLX						16		
21	Seismic Load Z	ELZ					8	16		
22	Seismic Load X	ELX					8	16		
23	Live Load 1	LL					1			
24	Live Load 2	LL					1			
25	Live Load 3	LL					1			

Load Combinations

	Description	Solve	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4D	Yes	Y		1	1.4																				
2	1.2D + 1.6W 0°	Yes	Y		1	1.2	2	1.6	17	1.6	18															
3	1.2D + 1.6W 30°	Yes	Y		1	1.2	3	1.6	17	1....	18	.8														
4	1.2D + 1.6W 60°	Yes	Y		1	1.2	4	1.6	17	.8	18	1....														
5	1.2D + 1.6W 90°	Yes	Y		1	1.2	5	1.6	17		18	1.6														
6	1.2D + 1.6W 120°	Yes	Y		1	1.2	6	1.6	17	-.8	18	1....														
7	1.2D + 1.6W 150°	Yes	Y		1	1.2	7	1.6	17	-1....	18	.8														
8	1.2D + 1.6W 180°	Yes	Y		1	1.2	8	1.6	17	-1.6	18															
9	0.9D + 1.6W 0°	Yes	Y		1	.9	2	1.6	17	1.6	18															
10	0.9D + 1.6W 30°	Yes	Y		1	.9	3	1.6	17	1....	18	.8														
11	0.9D + 1.6W 60°	Yes	Y		1	.9	4	1.6	17	.8	18	1....														
12	0.9D + 1.6W 90°	Yes	Y		1	.9	5	1.6	17		18	1.6														
13	0.9D + 1.6W 120°	Yes	Y		1	.9	6	1.6	17	-.8	18	1....														
14	0.9D + 1.6W 150°	Yes	Y		1	.9	7	1.6	17	-1....	18	.8														
15	0.9D + 1.6W 180°	Yes	Y		1	.9	8	1.6	17	-1.6	18															
16	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	9	1	10	1	19	1	20													
17	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	9	1	11	1	19	.866	20	.5												
18	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	9	1	12	1	19	.5	20	.866												
19	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	9	1	13	1	19		20	1												
20	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	9	1	14	1	19	-.5	20	.866												
21	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	9	1	15	1	19	-.8...	20	.5												
22	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	9	1	16	1	19	-1	20													
23	1.2D + 1.0Eh 0°	Yes	Y		1	1.2	21	1	22																	
24	1.2D + 1.0Eh 30°	Yes	Y		1	1.2	21	.866	22	.5																
25	1.2D + 1.0Eh 60°	Yes	Y		1	1.2	21	.5	22	.866																
26	1.2D + 1.0Eh 90°	Yes	Y		1	1.2	21		22	1																
27	1.2D + 1.0Eh 120°	Yes	Y		1	1.2	21	-.5	22	.866																
28	1.2D + 1.0Eh 150°	Yes	Y		1	1.2	21	-.8...	22	.5																
29	1.2D + 1.0Eh 180°	Yes	Y		1	1.2	21	-1	22																	
30	0.9D + 1.0Eh 0°	Yes	Y		1	.9	21	1	22																	

Load Combinations (Continued)

	Description	Solve	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
31	0.9D + 1.0Eh 30°	Yes	Y		1	.9	21	.866	22	.5																
32	0.9D + 1.0Eh 60°	Yes	Y		1	.9	21	.5	22	.866																
33	0.9D + 1.0Eh 90°	Yes	Y		1	.9	21		22	1																
34	0.9D + 1.0Eh 120°	Yes	Y		1	.9	21	-.5	22	.866																
35	0.9D + 1.0Eh 150°	Yes	Y		1	.9	21	-.8...	22	.5																
36	0.9D + 1.0Eh 180°	Yes	Y		1	.9	21	-1	22																	
37	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	23	1.5	2	.292	17	.292	18													
38	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	23	1.5	3	.292	17	.253	18	.146												
39	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	23	1.5	4	.292	17	.146	18	.253												
40	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	23	1.5	5	.292	17		18	.292												
41	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	23	1.5	6	.292	17	-.1...	18	.253												
42	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	23	1.5	7	.292	17	-.2...	18	.146												
43	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	23	1.5	8	.292	17	-.2...	18													
44	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	24	1.5	2	.292	17	.292	18													
45	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	24	1.5	3	.292	17	.253	18	.146												
46	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	24	1.5	4	.292	17	.146	18	.253												
47	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	24	1.5	5	.292	17		18	.292												
48	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	24	1.5	6	.292	17	-.1...	18	.253												
49	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	24	1.5	7	.292	17	-.2...	18	.146												
50	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	24	1.5	8	.292	17	-.2...	18													
51	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	25	1.5	2	.292	17	.292	18													
52	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	25	1.5	3	.292	17	.253	18	.146												
53	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	25	1.5	4	.292	17	.146	18	.253												
54	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	25	1.5	5	.292	17		18	.292												
55	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	25	1.5	6	.292	17	-.1...	18	.253												
56	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	25	1.5	7	.292	17	-.2...	18	.146												
57	1.0D +1.5Lv + 1.0...	Yes	Y		1	1	25	1.5	8	.292	17	-.2...	18													
58	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	23	1	2	.082	17	.082	18													
59	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	23	1	3	.082	17	.071	18	.041												
60	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	23	1	4	.082	17	.041	18	.071												
61	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	23	1	5	.082	17		18	.082												
62	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	23	1	6	.082	17	-.0...	18	.071												
63	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	23	1	7	.082	17	-.0...	18	.041												
64	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	23	1	8	.082	17	-.0...	18													
65	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	24	1	2	.082	17	.082	18													
66	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	24	1	3	.082	17	.071	18	.041												
67	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	24	1	4	.082	17	.041	18	.071												
68	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	24	1	5	.082	17		18	.082												
69	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	24	1	6	.082	17	-.0...	18	.071												
70	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	24	1	7	.082	17	-.0...	18	.041												

Load Combinations (Continued)

	Description	Solve	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
71	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	24	1	8	.082	17	-.0...	18													
72	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	25	1	2	.082	17	.082	18													
73	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	25	1	3	.082	17	.071	18	.041												
74	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	25	1	4	.082	17	.041	18	.071												
75	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	25	1	5	.082	17		18	.082												
76	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	25	1	6	.082	17	-.0...	18	.071												
77	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	25	1	7	.082	17	-.0...	18	.041												
78	1.2D + 1.0Lv + 1.0...	Yes	Y		1	1.2	25	1	8	.082	17	-.0...	18													

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[...	Dir	LC	phi*P...	phi*P...	phi*M...	phi*M.....	Eqn
1	M14	PIPE_1.25	.853	8.749	13	.281	0		6	1490...	1968...	800.6...	800.6.....	H1-1b
2	M6	L3X3X4	.839	117.23	8	.108	117....	y	8	5077....	54432	1969....	3589.....	H2-1
3	M3	L3X3X4	.802	117.23	2	.149	117....	z	2	5077....	54432	1969....	3640.....	H2-1
4	MP1	PIPE_2.0	.689	68	2	.071	68		8	1491...	32130	1871....	1871.....	H1-1b
5	M4	L3X3X4	.447	51.614	8	.065	40.3...	y	5	3362...	54432	1969....	4268.....	H2-1
6	M1	L3X3X4	.444	51.614	2	.086	51.6...	y	2	3362...	54432	1969....	4260.....	H2-1
7	M2	L3X3X4	.356	51.614	2	.143	51.6...	z	6	3362...	54432	1969....	4381.....	H2-1
8	M5	L3X3X4	.336	51.614	8	.199	51.6...	y	13	3362...	54432	1969....	4381.....	H2-1
9	MP3	PIPE_2.0	.239	29	20	.038	29		40	1491...	32130	1871....	1871.....	H1-1b
10	M1 1	PIPE_1.25	.227	0	22	.094	39.9...		6	1490...	1968...	800.6...	800.6.....	H1-1b
11	MP2	PIPE_2.0	.220	43.5	7	.067	4.5		13	2086...	32130	1871....	1871.....	H1-1b
12	M16	0.75" SR	.206	0	20	.031	49.9...		7	1403....	1431...	178.9...	178.9.....	H1-...
13	M13	PIPE_1.25	.179	39.996	16	.107	0		6	1490...	1968...	800.6...	800.6.....	H1-1b
14	M12	PIPE_1.25	.178	0	17	.079	39.9...		6	1490...	1968...	800.6...	800.6.....	H1-1b
15	M15	0.75" SR	.158	0	16	.029	0		7	1403....	1431...	178.9...	178.9.....	H1-...
16	M18	PIPE_2.0	.062	51.126	6	.003	51.1...		19	2584...	32130	1871....	1871.....	H1-...