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

VIA ELECTRONIC MAIL

May 27, 2021

Ryan Clark
Site Acquisition Consultant
Centerline Communication, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379

RE: **EM-T-MOBILE-032-210430 -** T-Mobile notice of intent to modify an existing telecommunications facility located at 1712 Main Street, Coventry, Connecticut.

Dear Mr. Clark:

The Connecticut Siting Council (Council) is in receipt of your correspondence of May 25, 2021 submitted in response to the Council's May 25, 2021 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,

s/ Melanie A. Bachman

Melanie A. Bachman
Executive Director

MAB/IN/emr

From: Ryan Clark <rclark@clinellc.com>
Sent: Tuesday, May 25, 2021 11:22 AM
To: Fontaine, Lisa <Lisa.Fontaine@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: EM-T-MOBILE-032-210430 Council Incomplete Letter Sprint/T-Mobile Site# CTHA616A-1712 Main Street Coventry, CT

Good Morning,

Please find the stamped Structural and Mount Analysis as requested. Let me know if you need anything else.

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

CENTERLINE COMMUNICATIONS
750 West Center Street, Suite 301
West Bridgewater, MA 02379
781.713.4725

Revised Structural Analysis Report

Site ID: CTHA616A
Site Name: CT03XC206
Project Name: Sprint Retain
Address: 1712 Main Street
Coventry, CT 06238

Client:

T - Mobile

NORTHEAST, LLC
15 Commerce Way, Suite B
Norton, MA 02766

Date: 4/29/2021 (Rev. 1)
4/28/2021

STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED
PROFESSIONAL ENGINEER

DN: CN = Derek J. Creaser, P.E. email = dcreaser@clinellc.com C = US O = Centerline Communications OU = Director - A&E Services
Date: 2021.04.29 18:39:38 -04'00'

Scope of Work:

Centerline Communications was authorized by T-Mobile Northeast LLC to perform an analysis of the existing structure to determine its capacity to support the proposed and existing T-Mobile equipment/appurtenances listed in this report.

Existing & Proposed Equipment:

Carrier	Mounting Level (ft)	Center Line Elevation (ft)	Number of Appurtenances	Antenna Manufacturer	Appurtenance Model	Feed Lines (in)
-	192.0	202.0	2	-	ASP-705	(2) 1-1/4 (2) 1/2 (5) 7/8
	192.0	202.0	1	-	DB420	
	192.0	196.0	1	-	PD1142-3	
	192.0	192.0	1	-	Halo	
	192.0	192.0	2	-	Obstruction Lights	
	190.0	190.0	1	-	3' Yagi	
		192.0	1	-	4'x3" Dia. Omni	
		190.0	1	-	3' Yagi	
	188.0	188.0	3	Pirod	4' Side Mount Standoff	
	187.0	187.0	3	-	Paraflector	
-	187.0	195.0	1	-	PD1142-3	(1) 1/2
T-Mobile	180.0	180.0	**3**	**RFS**	**APX16DWV-16DWV-S-E-A20**	**(3) 6x24 Hybrid**
			3	**RFS**	**APXVAALL24_43-U-NA20**	
			3	**Ericsson**	**AIR 6449 B41**	
			3	**Ericsson**	**4415 B66A RRH**	
			3	**Ericsson**	**Radio 4449 B71+B85 RRH**	
			3	**Ericsson**	**4424 B25 RRH**	
			3	-	Sector Frame	
-	156.0	166.0	2	-	ASP-705	(6) 1-5/8 (3) 7/8
		156.0	1	-	3' Grid Dish	
		156.0	2	Pirod	4' Side Mount Standoff	
Verizon	150.0	150.0	6	-	LNX-6514DS-T4M	(20) 1-5/8
			6	-	HBXX-6517DS-A2M	
			3	-	RRH2x60-AWS	
			3	-	RRH2x60-PCS	
			2	-	DB-T1-6Z-8AB-0Z	
			3	Pirod	12' Sector Mount	

-	144.0	144.0	2	-	Paraflector	(2) 7/8 (2) 1/2
	142.0	142.0	1	-	DB230-2A	
			1	-	DB264-A	
			1	-	DB436-C	
			2	Pirod	4’ Side Mount Standoff	
-	136.0	139.0	1	-	Single Dipole	(1) 1/2
-	113.0	116.0	1	-	Dipole	(1) 7/8 (1) 1/2
		113.0	1	Pirod	4’ Side Mount Standoff	
-	110.0	110.0	1	-	PD320	-
-	109.0	116.0	1	-	14’x3” Dia. Omni	(1) 7/8
		109.0	1	Pirod	4’ Side Mount Standoff	
-	103.0	110.0	1	-	14’x3” Dia. Omni	(1) 7/8
		103.0	1	Pirod	4’ Side Mount Standoff	
-	102.0	102.0	1	-	GPS	(1) 1/2
			1	-	1’ Standoff Mount	
-	94.0	94.0	1	-	DB212 Single Dipole	(1) 1/2
-	92.0	92.0	1	-	15’ Single Dipole	(1) 7/8
-	74.0	74.0	1	-	PD320	(1) 7/8
-	70.0	70.0	1	-	15’ Single Dipole	(1) 1/2
-	50.0	50.0	1	-	15’ Single Dipole	(1) 1/2
-	50.0	50.0	1	-	DB212 Single Dipole	(1) 1/2
-	32.0	32.0	1	-	DB212 Single Dipole	(1) 1/2
-	31.0	31.0	1	-	15’ Single Dipole	(1) 1/2
-	17.0	23.0	1	-	PD400	(1) 1/2
	17.0	21.0	1	-	3’ Yagi	
		17.0	1	Pirod	4’ Side Mount Standoff	

*Note: Proposed equipment shown in **bold**.*

Design Criteria:

Design Codes:

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

Ultimate Design Wind Speed (V_{ult})	130 mph
Wind Speed with Ice	50 mph
Ice Thickness	1.00 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	0.176 g
Spectral Response Acceleration Parameter at a Period of 1 Second, S_1	0.063 g
Short Period Site Coefficient, F_a	1.60
Long Period Site Coefficient, F_v	2.40

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

Conclusion:

Section Capacity (Summary)

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	190 - 180	Leg	ROHN 2 STD	2	-5001.40	31617.20	15.8	Pass
T2	180 - 160	Leg	ROHN 2.5 STD	20	-41175.80	63560.30	64.8	Pass
T3	160 - 140	Leg	ROHN 3 EH	53	-102224.00	119117.00	85.8	Pass
T4	140 - 136	Leg	ROHN 3.5 EH	86	-114843.00	149924.00	76.6	Pass
T5	136 - 132	Leg	ROHN 3.5 EH	98	-123691.00	149924.00	82.5	Pass
T6	132 - 128	Leg	ROHN 3.5 EH	107	-130879.00	149926.00	87.3	Pass
T7	128 - 124	Leg	ROHN 3.5 EH	116	-138161.00	149924.00	92.2	Pass
T8	124 - 120	Leg	ROHN 3.5 EH	125	-144551.00	161228.00	89.7	Pass
T9	120 - 100	Leg	ROHN 4 EH	137	-177379.00	192061.00	92.4	Pass
T10	100 - 80	Leg	ROHN 5 EH	176	-210036.00	239388.00	87.7 89.7 (b)	Pass
T11	80 - 60	Leg	ROHN 5 EH	197	-241316.00	265136.00	91.0	Pass
T12	60 - 40	Leg	6.0 EHS + HALF HSS7.625x0.375	227	-276335.00	400079.00	69.1 77.6 (b)	Pass
T13	40 - 20	Leg	ROHN 6 EH	248	-304630.00	356741.00	85.4	Pass
T14	20 - 0	Leg	ROHN 8 EHS	269	-335912.00	386395.00	86.9	Pass
T1	190 - 180	Diagonal	L1 3/4x1 3/4x3/16	10	-1962.67	10333.60	19.0 33.5 (b)	Pass
T2	180 - 160	Diagonal	L1 3/4x1 3/4x3/16	24	-4018.07	11446.10	35.1 67.6 (b)	Pass
T3	160 - 140	Diagonal	L2x2x1/4	58	-7835.10	19074.20	41.1 80.5 (b)	Pass
T4	140 - 136	Diagonal	L1 3/4x1 3/4x3/16	94	-4603.01	10909.60	42.2 73.3 (b)	Pass
T5	136 - 132	Diagonal	L1 3/4x1 3/4x3/16	102	-4142.98	10379.70	39.9 69.3 (b)	Pass
T6	132 - 128	Diagonal	L1 3/4x1 3/4x3/16	111	-4112.45	9859.69	41.7 67.1 (b)	Pass
T7	128 - 124	Diagonal	L1 3/4x1 3/4x3/16	120	-4107.76	9280.71	44.3 67.5 (b)	Pass
T8	124 - 120	Diagonal	L1 3/4x1 3/4x3/16	129	-4541.07	8567.74	53.0 73.3 (b)	Pass
T9	120 - 100	Diagonal	L2x2x3/16	150	-5804.58	8389.57	69.2 78.4 (b)	Pass
T10	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	180	-6159.41	9563.61	64.4 72.5 (b)	Pass
T11	80 - 60	Diagonal	L2 1/2x2 1/2x1/4	201	-7310.48	9369.88	78.0	Pass
T12	60 - 40	Diagonal	L3x3x1/4	231	-7846.91	13252.80	59.2 66.8 (b)	Pass
T13	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	252	-9243.54	14151.80	65.3 77.6 (b)	Pass
T14	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	273	-10310.00	12139.10	84.9	Pass
T8	124 - 120	Secondary Horizontal	L2x2x1/4	135	-1419.66	13968.10	10.2	Pass
T9	120 - 100	Secondary Horizontal	L2x2x1/4	165	-1870.27	12814.60	14.6	Pass
T11	80 - 60	Secondary Horizontal	L2 1/2x2 1/2x1/4	216	-1937.64	11663.90	16.6	Pass

T13	40 - 20	Secondary Horizontal	L3x3x5/16	258	-1837.27	13884.10	13.2	Pass
T1	190 - 180	Top Girt	L1 3/4x1 3/4x3/16	5	-447.98	6477.07	6.9 7.1 (b)	Pass
T4	140 - 136	Top Girt	L1 3/4x1 3/4x3/16	90	-560.33	6683.02	8.4	Pass
							Summary	
						Leg (T9)	92.4	Pass
						Diagonal (T14)	84.9	Pass
						Secondary Horizontal (T11)	16.6	Pass
						Top Girt (T4)	8.4	Pass
						Bolt Checks	89.7	Pass
						RATING =	**92.4**	**Pass**

Structure Rating (max from all components) =	**92.4%**

Foundation Capacity (Summary)

Component	*% Capacity*	*Pass/Fail*
Soil Rating	63.5%	Pass

Foundation Rating (max from all components) =	**63.5%**

Recommendations:

The existing tower has sufficient capacity to support the existing and proposed loading for the final loading configuration. Modifications to the tower structure are not required.

Reference Documents:

- T-Mobile RFDS CTHA616A_Sprint Retain_1, dated January 15, 2021
- Construction Drawings by Maser Consulting, dated July 27, 2018
- Structural and Mount Analysis and Modifications by Maser Consulting, dated July 23, 2018

Assumptions and Limitations:

- The tower and structures were built and maintained with the manufacturer's specifications.
- The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in this report and the referenced drawings.

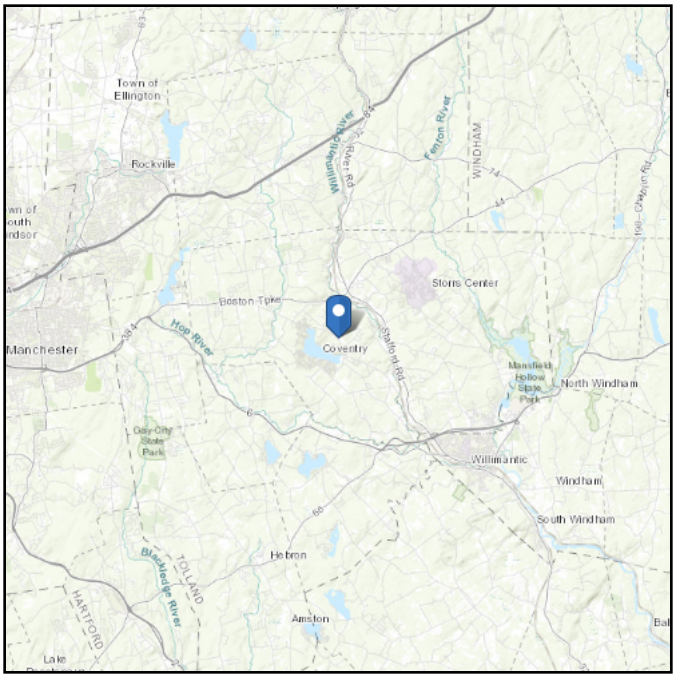
Design Calculations

ASCE 7 Hazards Report

Address:
1660 Main St
Coventry, Connecticut
06238

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 692.83 ft (NAVD 88)
Latitude: 41.778476
Longitude: -72.309981



Wind

Results:

Wind Speed:	126 Vmph
10-year MRI	78 Vmph
25-year MRI	87 Vmph
50-year MRI	95 Vmph
100-year MRI	103 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, Accessed: Tue Apr 27 2021, incorporating errata of March 12, 2014

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

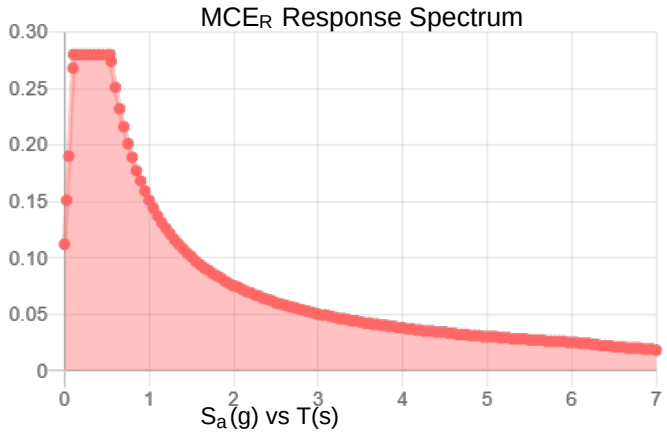
Seismic

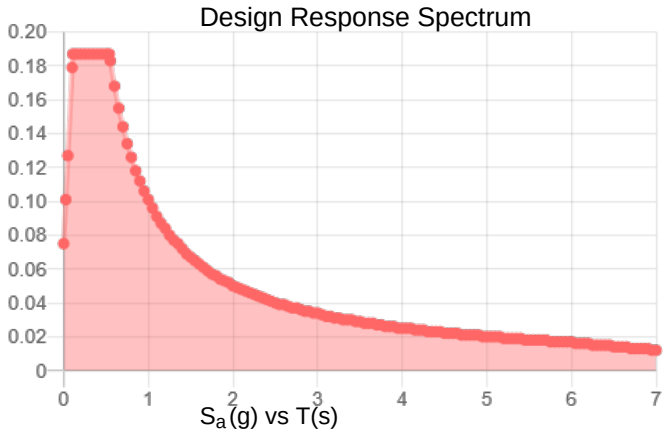
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.175	S_{DS} :	0.187
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.088
S_{MS} :	0.28	PGA_M :	0.14
S_{M1} :	0.151	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Apr 27 2021

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Apr 27 2021

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Snow

Results:

Ground Snow Load, p_g:	30 lb/ft^2
Elevation:	692.8 ft
Data Source:	ASCE/SEI 7-10, Fig. 7-1.
Date Accessed:	Tue Apr 27 2021

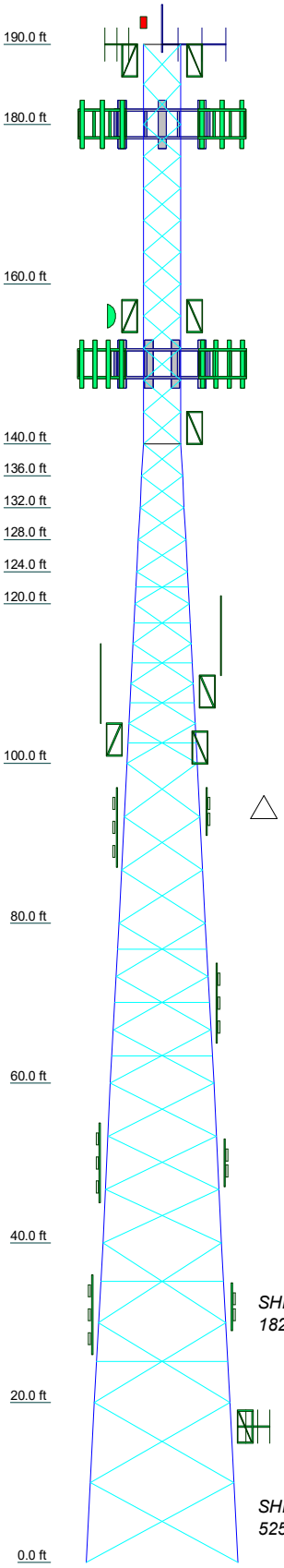
Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Section	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EHS	ROHN 6 EH	B	ROHN 5 EH		ROHN 4 EH		ROHN 3.5 EH				ROHN 3 EH	ROHN 2.5 STD	A
Leg Grade	A572-50													
Diagonals	L3 1/2x3 1/2x1/4		L3x3x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x3/16	L2x2x3/16	L1 3/4x1 3/4x3/16					L2x2x1/4	L1 3/4x1 3/4x3/16	
Diagonal Grade	A572-50						A36							
Top Girts				N.A.							C			C
Sec. Horizontals	N.A.	L3x5x5/16	N.A.	L2 1/2x2 1/2x1/4	N.A.	L2x2x1/4	N.A.					N.A.		
Face Width (ft)	19	16.99	14.85	12.92	10.83	8.83	6.76	6.35	5.94	5.54	5.13	4.72	4.69	4.65
# Panels @ (ft)	4 @ 10			9 @ 6.66667		4 @ 5						15 @ 4		2 @ 5
Weight (lb) 21258.1	3579.0	3774.6	3542.0	2809.2	2001.8	1827.9	326.1	255.6	251.1	246.8	273.9	1267.4	774.7	328.0



ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 344137 lb
SHEAR: 33053 lb

UPLIFT: -302758 lb
SHEAR: 29484 lb

AXIAL 186974 lb
SHEAR 18264 lb *MOMENT 1994199 lb-ft*
TORQUE 12488 lb-ft
50 mph WIND - 1.0000 in ICE

AXIAL 50457 lb
SHEAR 52544 lb *MOMENT 5473057 lb-ft*
TORQUE 53612 lb-ft
REACTIONS - 101 mph WIND

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 2 STD	C	L1 3/4x1 3/4x3/16
B	6.0 EHS + HALF HSS7.625x0.375		

MATERIAL STRENGTH

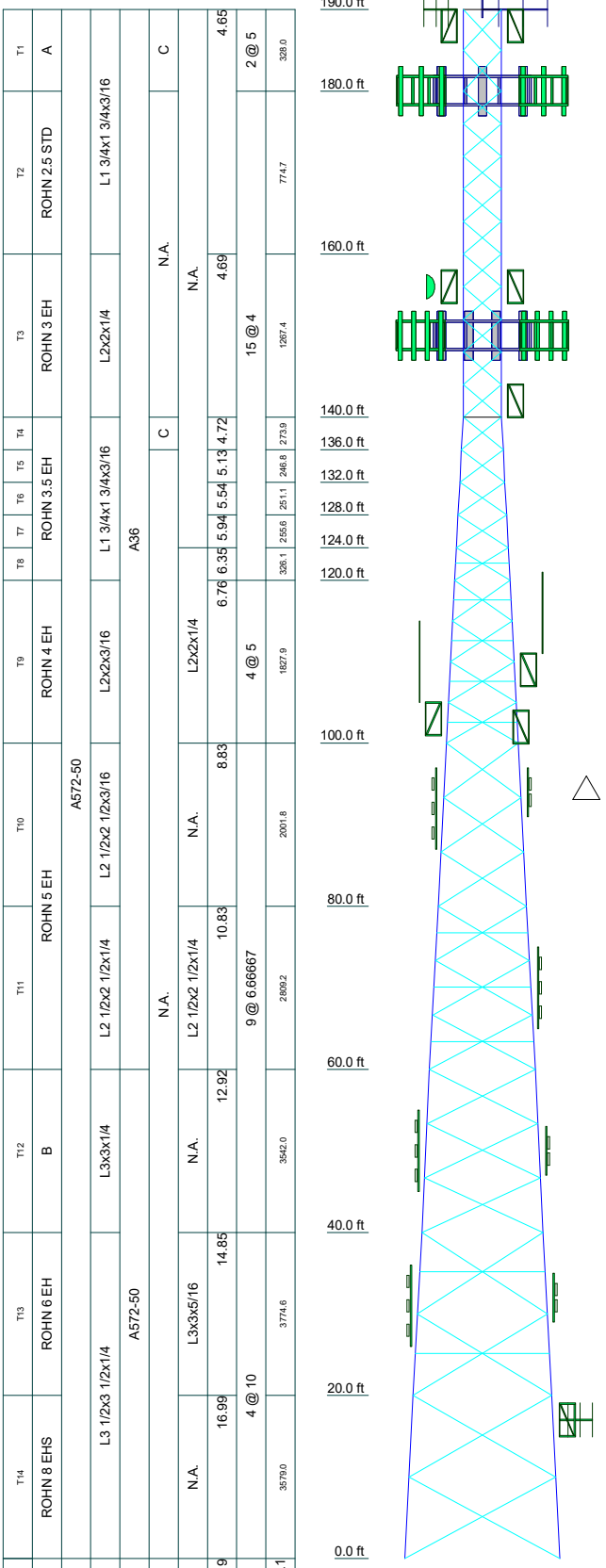
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 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: 92.4%

Centerline Communications
750 West Center Street, Suite 301
West Bridgewater, MA 02379
Phone: (781) 713-4725
FAX:

Job: **CTHA616A**			
Project: **ANCHOR**			
Client: T-MOBILE	Drawn by: Joshua Gildert		App'd:
Code: TIA-222-G	Date: 04/28/21		Scale: NTS
Path:			Dwg No. E-1



Section	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EHS	ROHN 6 EH	B	ROHN 5 EH		ROHN 4 EH		ROHN 3.5 EH				ROHN 3 EH	ROHN 2.5 STD	A
Leg Grade	A572-50													
Diagonals	L3 1/2x3 1/2x1/4		L3x3x1/4	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x3/16	L2x2x3/16	L1 3/4x1 3/4x3/16				C	L2x2x1/4	L1 3/4x1 3/4x3/16	
Diagonal Grade	A572-50						A36							
Top Girts				N.A.							C	N.A.		C
Sec. Horizontals	N.A.	L3x3x5/16	N.A.	L2 1/2x2 1/2x1/4	N.A.	L2x2x1/4						N.A.		
Face Width (ft)	19	16.99	14.85	12.92	10.83	8.83	6.76	6.35	5.94	5.54	5.13	4.72	4.69	4.65
# Panels @ (ft)		4 @ 10		9 @ 6.66667		4 @ 5				15 @ 4			2 @ 5	
Weight (lb)	21258.1	3579.0	3774.6	3542.0	2809.2	2001.8	1827.9	326.1	255.6	251.1	246.8	273.9	1267.4	774.7	328.0

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) Obstruction Lights	192	LNX-6514DS-T4M (VZW)	150
PD1142-3	192	HBXX-6517DS-A2M (VZW)	150
ASP-705	192	LNX-6514DS-T4M (VZW)	150
ASP-705	192	HBXX-6517DS-A2M (VZW)	150
DB420	192	LNX-6514DS-T4M (VZW)	150
Halo	192	HBXX-6517DS-A2M (VZW)	150
4'x3" Dia. Omni	190	LNX-6514DS-T4M (VZW)	150
3' Yagi	190	HBXX-6517DS-A2M (VZW)	150
3' Yagi	190	LNX-6514DS-T4M (VZW)	150
Pirod 4' Side Mount Standoff	188	HBXX-6517DS-A2M (VZW)	150
Pirod 4' Side Mount Standoff	188	RRH2x60-AWS (VZW)	150
Pirod 4' Side Mount Standoff	188	RRH2x60-AWS (VZW)	150
Paraflector	187	RRH2x60-AWS (VZW)	150
PD1142-3	187	RRH 2x60-PCS (VZW)	150
APX16DWV-16DWV-S-E-A20 (T-Mobile)	180	RRH 2x60-PCS (VZW)	150
		RRH 2x60-PCS (VZW)	150
APX16DWV-16DWV-S-E-A20 (T-Mobile)	180	DB-T1-6Z-8AB-0Z (VZW)	150
		DB-T1-6Z-8AB-0Z (VZW)	150
APX16DWV-16DWV-S-E-A20 (T-Mobile)	180	Paraflector	144
APXVAALL24_43-U-NA20 (T-Mobile)	180	Pirod 4' Side Mount Standoff	142
APXVAALL24_43-U-NA20 (T-Mobile)	180	DB264-A	142
APXVAALL24_43-U-NA20 (T-Mobile)	180	DB436-C	142
AIR 6449 B41 (T-Mobile)	180	DB230-2A	142
AIR 6449 B41 (T-Mobile)	180	Pirod 4' Side Mount Standoff	142
AIR 6449 B41 (T-Mobile)	180	Paraflector	140
4415 B66A (T-Mobile)	180	Single Dipole	136
4415 B66A (T-Mobile)	180	Dipole	113
4415 B66A (T-Mobile)	180	Pirod 4' Side Mount Standoff	113
RADIO 4449 B71+B85 (T-Mobile)	180	PD320	110
RADIO 4449 B71+B85 (T-Mobile)	180	Pirod 4' Side Mount Standoff	109
RADIO 4449 B71+B85 (T-Mobile)	180	14'x3" Dia. Omni	109
4424 B25 (T-Mobile)	180	Pirod 4' Side Mount Standoff	103
4424 B25 (T-Mobile)	180	14'x3" Dia. Omni	103
4424 B25 (T-Mobile)	180	GPS	102
(3) Sector Frames (Sprint)	179.92	1' Standoff Mount	102
Pirod 4' Side Mount Standoff	156	DB212 Single Dipole	94
ASP-705	156	15' Single Dipole	92
Pirod 4' Side Mount Standoff	156	PD320	74
ASP-705	156	15' Single Dipole	70
3' Dish	156	15' Single Dipole	50
Pirod 12' T-Frame Sector Mount (VZW)	150	DB212 Single Dipole	50
Pirod 12' T-Frame Sector Mount (VZW)	150	DB212 Single Dipole	32
Pirod 12' T-Frame Sector Mount (VZW)	150	15' Single Dipole	31
LNX-6514DS-T4M (VZW)	150	Pirod 4' Side Mount Standoff	17
HBXX-6517DS-A2M (VZW)	150	PD400	17
		3' Yagi	17

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 2 STD	C	L1 3/4x1 3/4x3/16
B	6.0 EHS + HALF HSS7.625x0.375		

MATERIAL STRENGTH

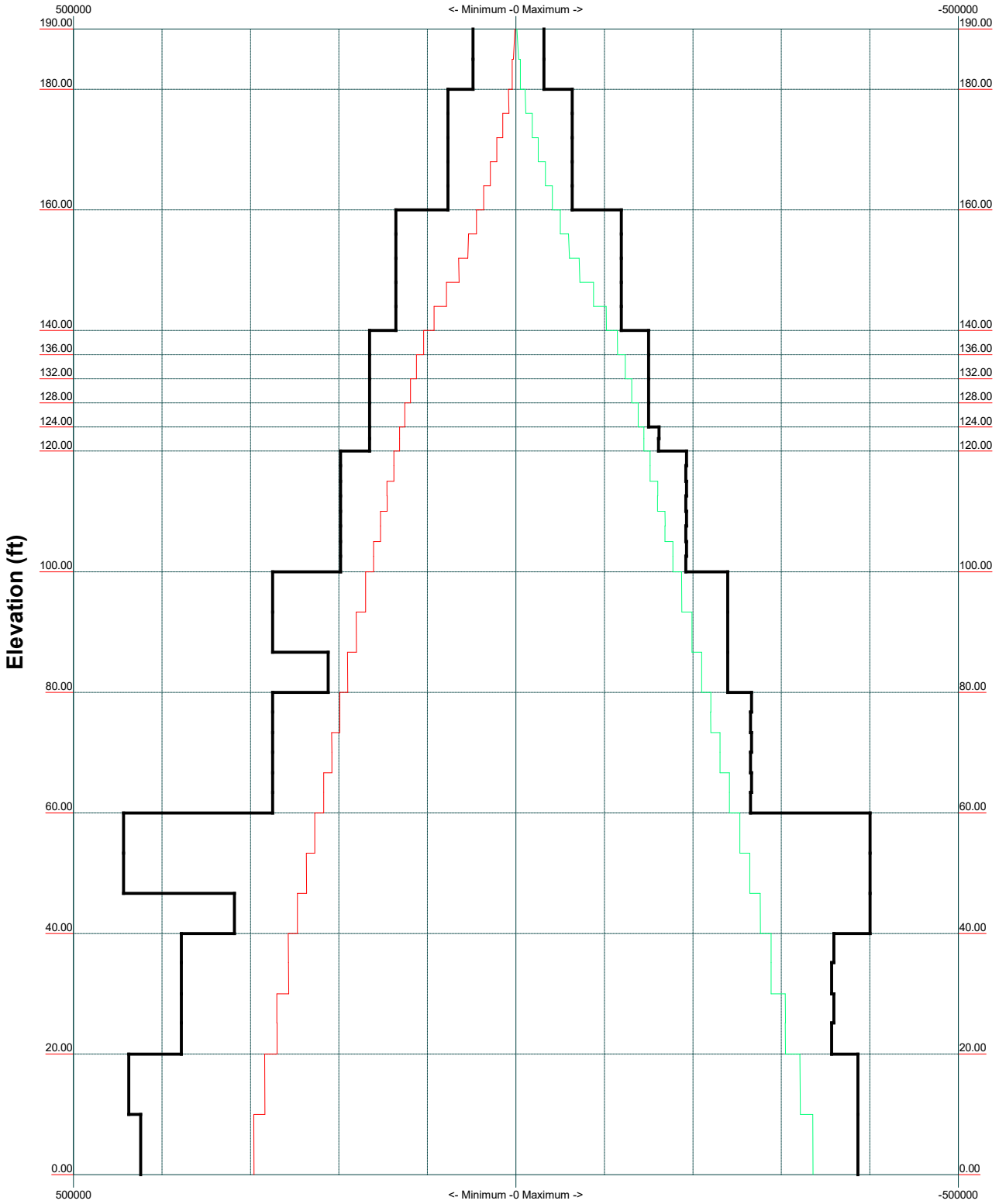
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

Centerline Communications
750 West Center Street, Suite 301
West Bridgewater, MA 02379
Phone: (781) 713-4725
FAX:

Job: ***CTHA616A***			
Project: ***ANCHOR***			
Client: T-MOBILE	Drawn by: Joshua Gildert		App'd:
Code: TIA-222-G	Date: 04/28/21		Scale: NTS
Path:			Dwg No. E-1

TIA-222-G - 101 mph/50 mph 1.0000 in Ice Exposure B

Leg Capacity ——— **Leg Compression (lb)**



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Phone: (781) 713-4725
FAX:

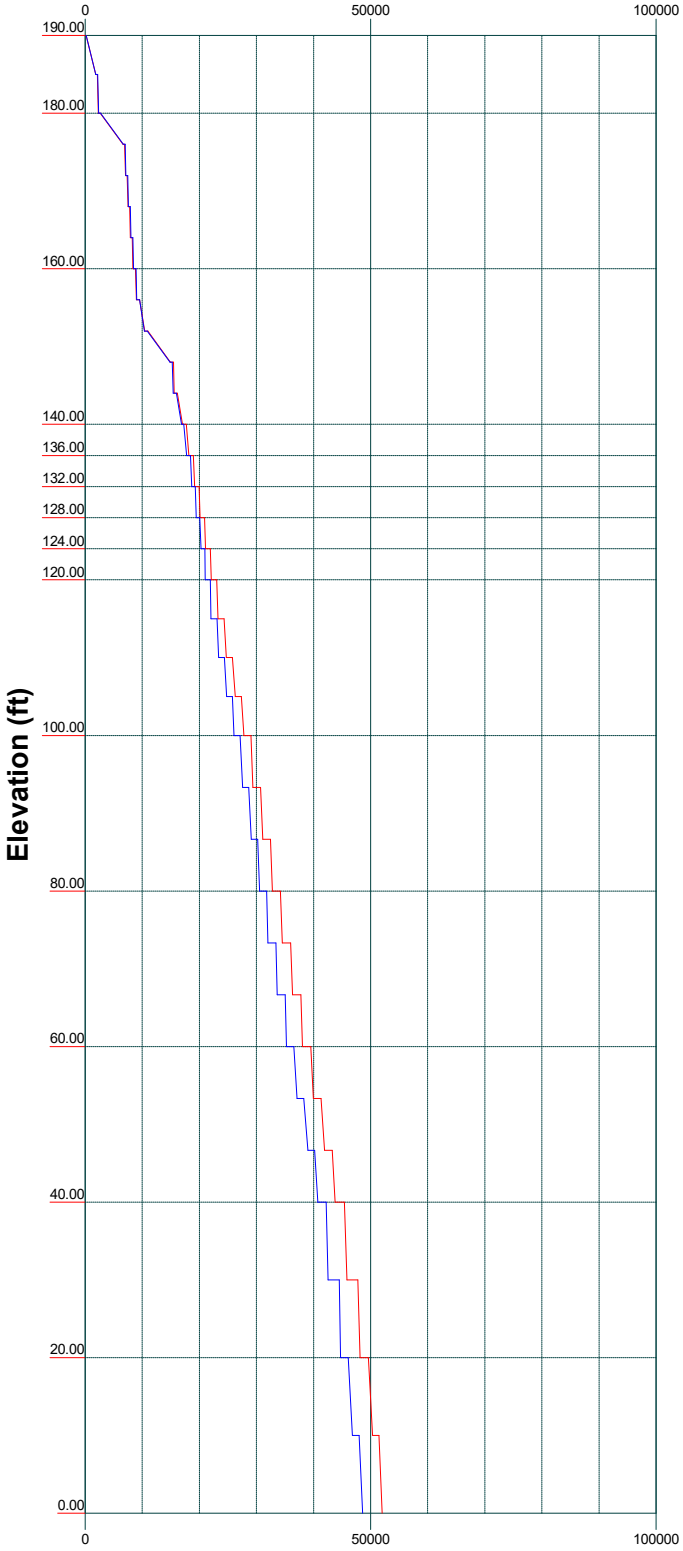
Job: ***CTHA616A***			
Project: ***ANCHOR***			
Client: T-MOBILE	Drawn by: Joshua Gildert		App'd:
Code: TIA-222-G	Date: 04/28/21		Scale: NTS
Path:			Dwg No. E-3

TIA-222-G - 101 mph/50 mph 1.0000 in Ice Exposure B

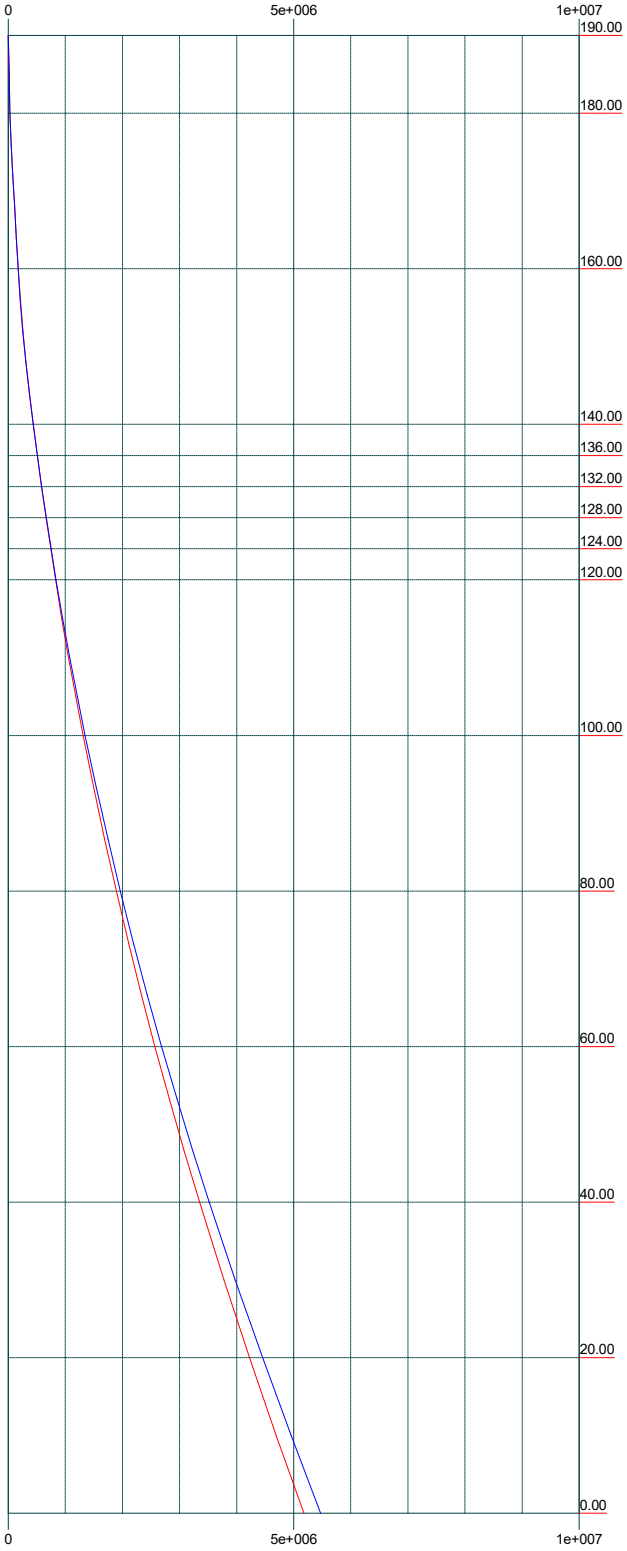
Maximum Values

Vx Vz Mx Mz

Global Mast Shear (lb)



Global Mast Moment (lb-ft)



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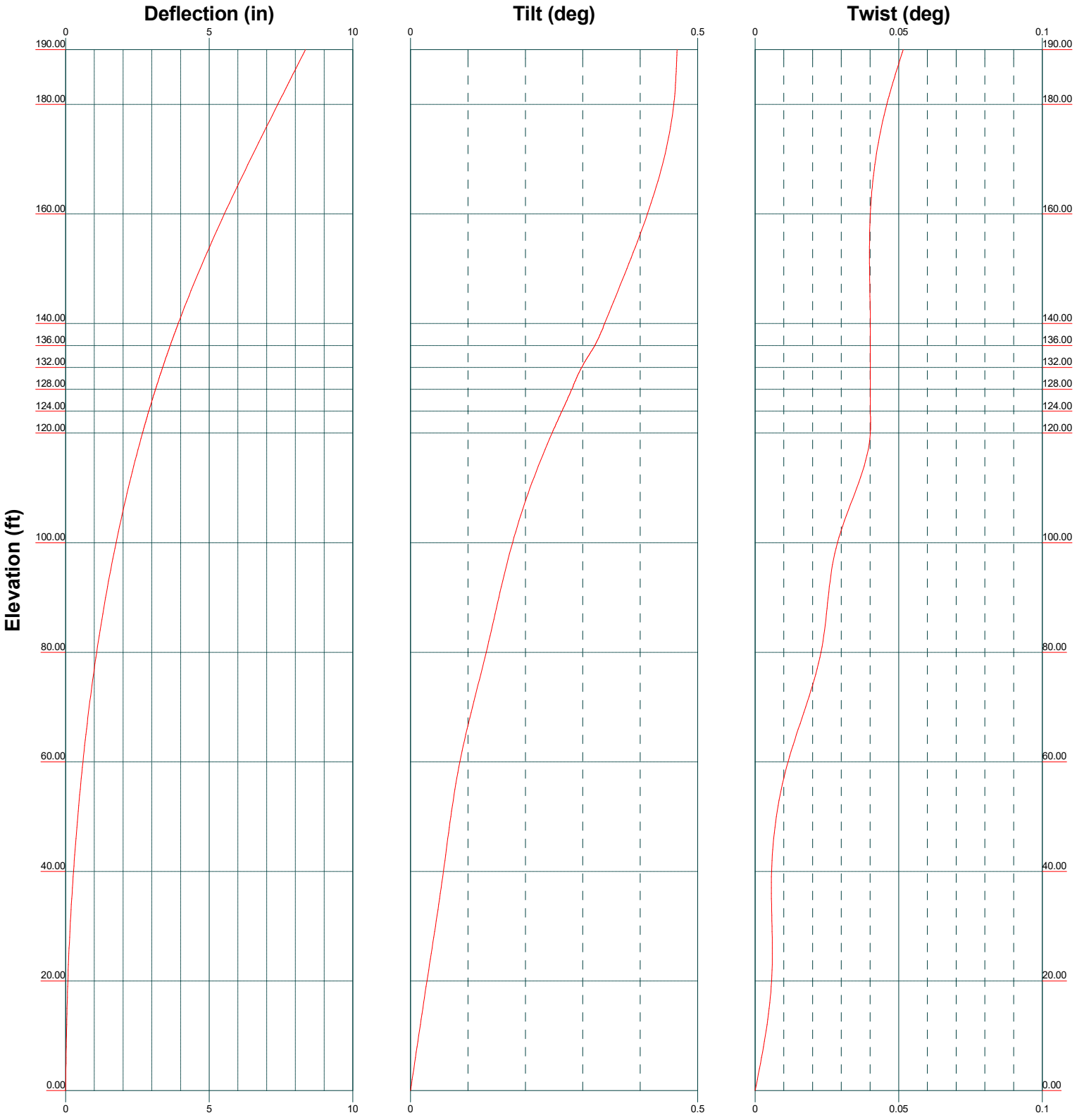
FAX:

Job: ***CTHA616A***			
Project: ***ANCHOR***			
Client: T-MOBILE	Drawn by: Joshua Gildert		App'd:
Code: TIA-222-G	Date: 04/28/21		Scale: NTS
Path:			Dwg No. E-4

TIA-222-G - Service - 60 mph

Maximum Values



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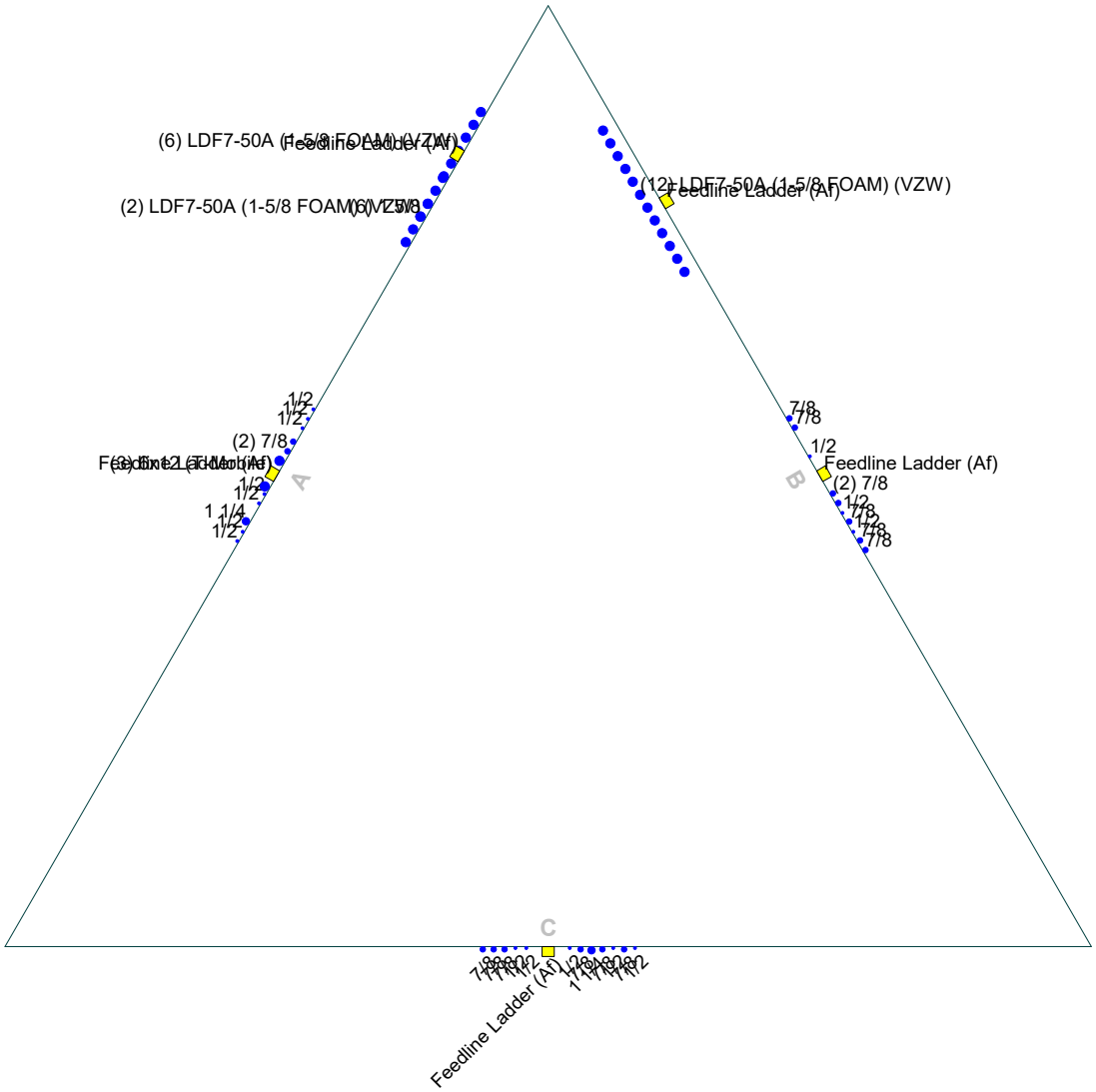
Phone: (781) 713-4725
FAX:

Job: ***CTHA616A***			
Project: ***ANCHOR***			
Client: T-MOBILE	Drawn by: Joshua Gildert		App'd:
Code: TIA-222-G	Date: 04/28/21		Scale: NTS
Path:			Dwg No. E-5

Feed Line Plan

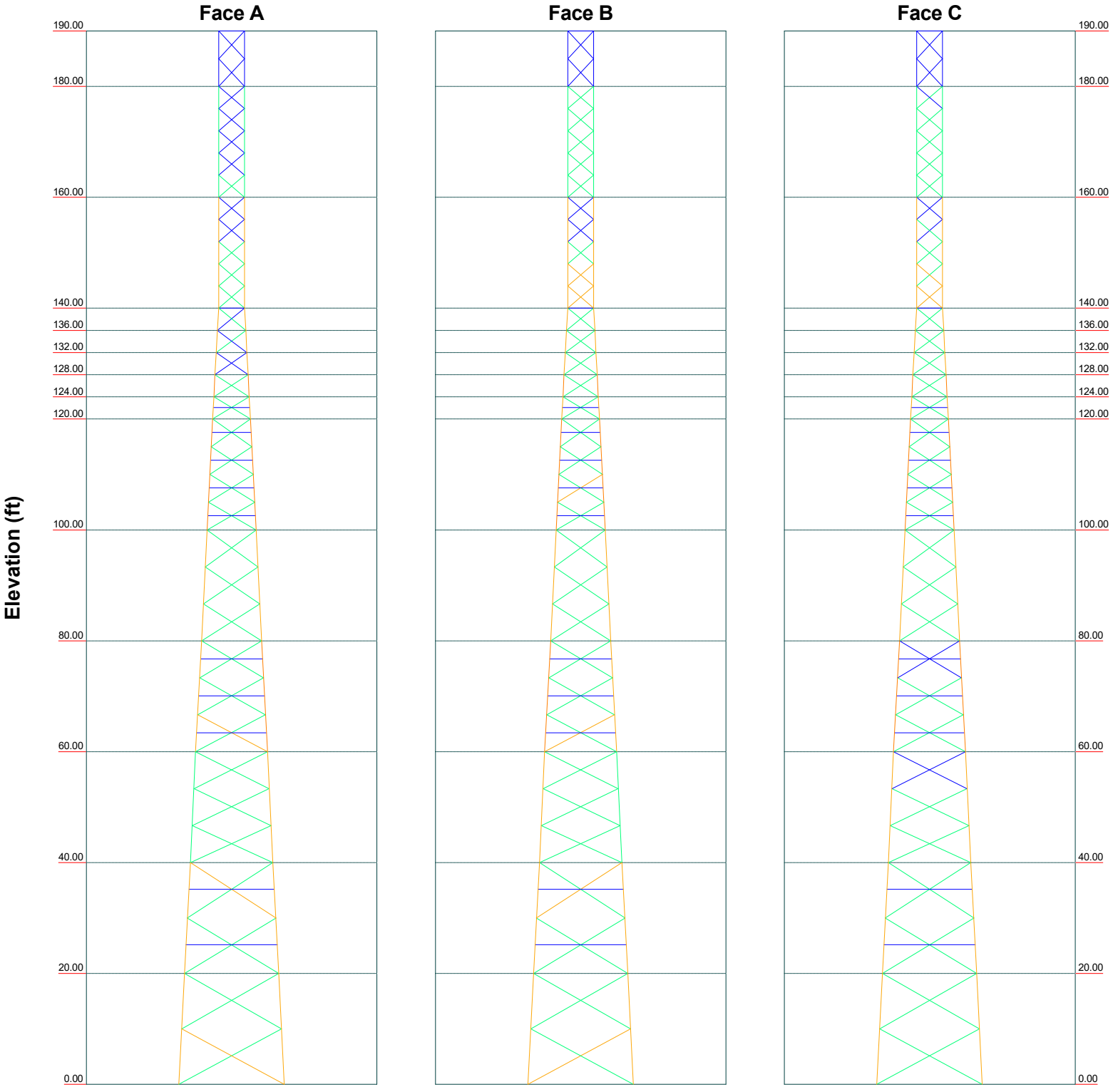
Round Flat App In Face App Out Face



Centerline Communications 750 West Center Street, Suite 301 West Bridgewater, MA 02379 Phone: (781) 713-4725 FAX:	Job: ***CTHA616A***		
	Project: ***ANCHOR***		
	Client: T-MOBILE	Drawn by: Joshua Gildert	App'd:
	Code: TIA-222-G	Date: 04/28/21	Scale: NTS
	Path:		Dwg No. E-7

Stress Distribution Chart
0' - 190'

> 100% | 90%-100% | 75%-90% | 50%-75% | < 50% Overstress



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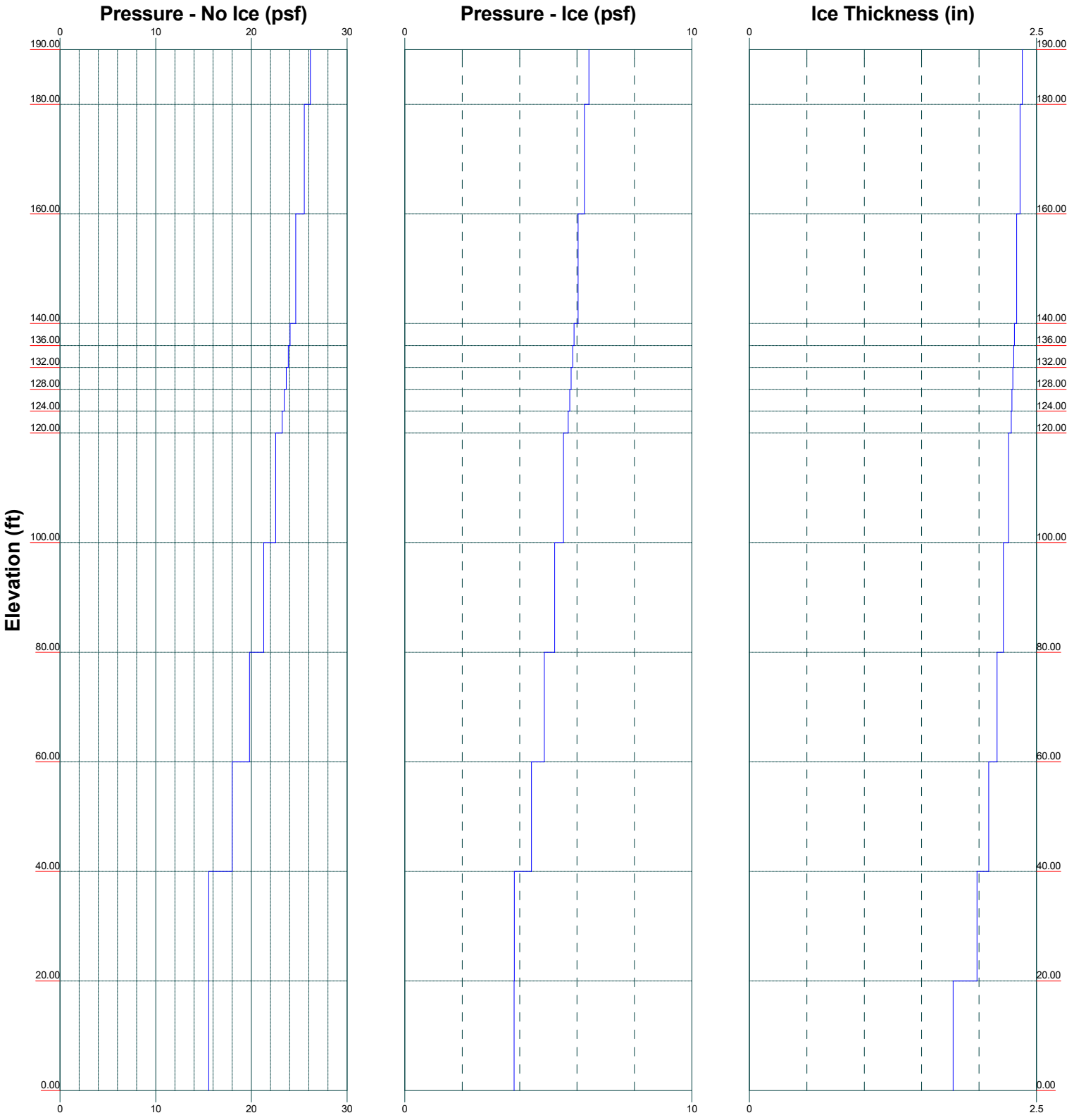
FAX:

Job: ***CTHA616A***			
Project: ***ANCHOR***			
Client: T-MOBILE	Drawn by: Joshua Gildert		App'd:
Code: TIA-222-G	Date: 04/28/21		Scale: NTS
Path:			Dwg No. E-8

Wind Pressures and Ice Thickness

TIA-222-G - 101 mph/50 mph 1.0000 in Ice Exposure B



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West Bridgewater, MA 02379
Phone: (781) 713-4725
FAX:

Job: ***CTHA616A***			
Project: ***ANCHOR***			
Client: T-MOBILE	Drawn by: Joshua Gildert		App'd:
Code: TIA-222-G	Date: 04/28/21		Scale: NTS
Path:			Dwg No. E-9

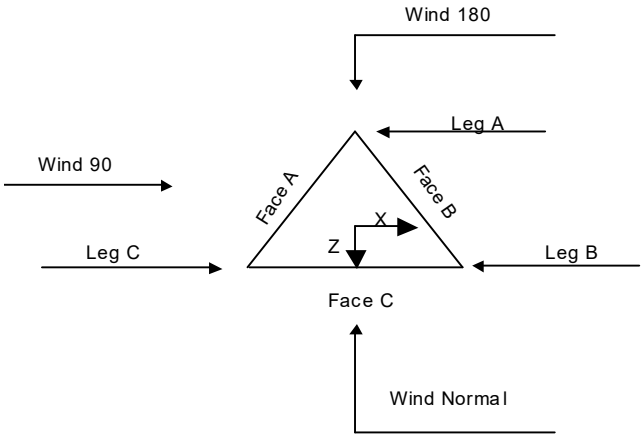
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 190.00 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 4.65 ft at the top and 19.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Tolland County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 101 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	190.00-180.00			4.65	1	10.00
T2	180.00-160.00			4.65	1	20.00
T3	160.00-140.00			4.69	1	20.00
T4	140.00-136.00			4.72	1	4.00
T5	136.00-132.00			5.13	1	4.00
T6	132.00-128.00			5.54	1	4.00
T7	128.00-124.00			5.94	1	4.00
T8	124.00-120.00			6.35	1	4.00
T9	120.00-100.00			6.76	1	20.00
T10	100.00-80.00			8.83	1	20.00
T11	80.00-60.00			10.83	1	20.00
T12	60.00-40.00			12.92	1	20.00
T13	40.00-20.00			14.85	1	20.00
T14	20.00-0.00			16.99	1	20.00

Tower Section Geometry *(cont'd)*

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
T1	190.00-180.00	5.00	X Brace	No	Yes	0.0000	0.0000

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*
T2	180.00-160.00	4.00	X Brace	No	No	0.0000	0.0000
T3	160.00-140.00	4.00	X Brace	No	Yes	0.0000	0.0000
T4	140.00-136.00	4.00	X Brace	No	Yes	0.0000	0.0000
T5	136.00-132.00	4.00	X Brace	No	Yes	0.0000	0.0000
T6	132.00-128.00	4.00	X Brace	No	Yes	0.0000	0.0000
T7	128.00-124.00	4.00	X Brace	No	Yes	0.0000	0.0000
T8	124.00-120.00	4.00	X Brace	No	Yes	0.0000	0.0000
T9	120.00-100.00	5.00	X Brace	No	Yes	0.0000	0.0000
T10	100.00-80.00	6.67	X Brace	No	Yes	0.0000	0.0000
T11	80.00-60.00	6.67	X Brace	No	Yes	0.0000	0.0000
T12	60.00-40.00	6.67	X Brace	No	Yes	0.0000	0.0000
T13	40.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T14	20.00-0.00	10.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation *ft*	*Leg Type*	*Leg Size*	*Leg Grade*	*Diagonal Type*	*Diagonal Size*	*Diagonal Grade*
T1 190.00-180.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 180.00-160.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 160.00-140.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T4 140.00-136.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T5 136.00-132.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T6 132.00-128.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T7 128.00-124.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T8 124.00-120.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T9 120.00-100.00	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T10 100.00-80.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T11 80.00-60.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T12 60.00-40.00	Arbitrary Shape	6.0 EHS + HALF HSS7.625x0.375	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A572-50 (50 ksi)
T13 40.00-20.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T14 20.00-0.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 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 190.00-180.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T4 140.00-136.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T8 124.00-120.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T9 120.00-100.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T11 80.00-60.00	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T13 40.00-20.00	Equal Angle	L3x3x5/16	A36 (36 ksi)	Solid Round		A572-50 (50 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 190.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	30.0000	30.0000	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 140.00-136.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 136.00-132.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 132.00-128.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 128.00-124.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 124.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T10 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T12 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T13	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft²	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
40.00-20.00 T14 20.00-0.00	0.00	0.0000	(36 ksi) 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	Yes	Yes	1	1	1	1	1	1	1	1
190.00-180.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
140.00-136.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
136.00-132.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
132.00-128.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
128.00-124.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
124.00-120.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1
20.00-0.00				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 190.00-180.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 140.00-136.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 136.00-132.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 132.00-128.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 128.00-124.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 124.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower 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 190.00-180.00	Flange	0.6250 A325N	4	0.6250 A325N	1	0.6250 A325N	1	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	1	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	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-136.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 136.00-132.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 132.00-128.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 128.00-124.00	Flange	1.0000 A325N	0	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 124.00-120.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

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.
T9 120.00-100.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T10 100.00-80.00	Flange	1.0000 A325N	4	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 80.00-60.00	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T12 60.00-40.00	Flange	1.0000 A325N	6	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T13 40.00-20.00	Flange	1.0000 A325N	8	0.6250 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2
T14 20.00-0.00	Flange	1.0000 A325N	8	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1-5/8 FOAM) (VZW)	B	No	No	Ar (CaAa)	150.00 - 8.00	-2.0000	-0.3	12	12	1.0000	1.9800		1.04
LDF7-50A (1-5/8 FOAM) (VZW)	A	No	No	Ar (CaAa)	150.00 - 8.00	0.0000	0.28	2	2	1.0000	1.9800		1.04
LDF7-50A (1-5/8 FOAM) (VZW) ***	A	No	No	Ar (CaAa)	150.00 - 8.00	0.0000	0.35	6	6	1.0000	1.9800		1.04
1/2	A	No	No	Ar (CaAa)	50.00 - 8.00	0.0000	0.07	1	1	0.5800	0.5800		0.25
1/2	A	No	No	Ar (CaAa)	70.00 - 8.00	0.0000	0.06	1	1	0.5800	0.5800		0.25
1/2	A	No	No	Ar (CaAa)	94.00 - 8.00	0.0000	0.05	1	1	0.5800	0.5800		0.25
7/8	A	No	No	Ar (CaAa)	156.00 - 8.00	0.0000	0.03	2	2	1.1100	1.1100		0.54
1/2	A	No	No	Ar (CaAa)	185.00 - 8.00	0.0000	-0.02	1	1	0.5800	0.5800		0.25
1/2	A	No	No	Ar (CaAa)	32.00 - 8.00	0.0000	-0.03	1	1	0.5800	0.5800		0.25
1 1/4	A	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	-0.05	1	1	1.5500	1.5500		0.66
1/2	A	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	-0.06	1	1	0.5800	0.5800		0.25
1/2	A	No	No	Ar (CaAa)	17.00 - 8.00	0.0000	-0.07	1	1	0.5800	0.5800		0.25
7/8	B	No	No	Ar (CaAa)	92.00 - 8.00	0.0000	0.08	1	1	1.1100	1.1100		0.54
7/8	B	No	No	Ar (CaAa)	142.00 - 8.00	0.0000	0.07	1	1	1.1100	1.1100		0.54
1/2	B	No	No	Ar (CaAa)	142.00 - 8.00	0.0000	0.06	1	1	0.5800	0.5800		0.25
7/8	B	No	No	Ar (CaAa)	156.00 - 8.00	0.0000	0.05	1	1	1.1100	1.1100		0.54
1/2	B	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	0.04	1	1	0.5800	0.5800		0.25
7/8	B	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	0.025	2	2	1.1100	1.1100		0.54
1/2	B	No	No	Ar (CaAa)	102.00 -	0.0000	-0.02	1	1	0.5800	0.5800		0.25

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
					8.00								
7/8	B	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	-0.05	1	1	1.1100	1.1100		0.54
7/8	B	No	No	Ar (CaAa)	109.00 - 8.00	0.0000	-0.06	1	1	1.1100	1.1100		0.54
7/8	C	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	0.06	1	1	1.1100	1.1100		0.54
7/8	C	No	No	Ar (CaAa)	119.00 - 8.00	0.0000	0.05	1	1	1.1100	1.1100		0.54
7/8	C	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	0.04	1	1	1.1100	1.1100		0.54
1/2	C	No	No	Ar (CaAa)	136.00 - 8.00	0.0000	0.03	1	1	0.5800	0.5800		0.25
1/2	C	No	No	Ar (CaAa)	113.00 - 8.00	0.0000	0.02	1	1	0.5800	0.5800		0.25
1/2	C	No	No	Ar (CaAa)	142.00 - 8.00	0.0000	-0.02	1	1	0.5800	0.5800		0.25
7/8	C	No	No	Ar (CaAa)	142.00 - 8.00	0.0000	-0.03	1	1	1.1100	1.1100		0.54
7/8	C	No	No	Ar (CaAa)	103.00 - 8.00	0.0000	-0.05	1	1	1.1100	1.1100		0.54
1/2	C	No	No	Ar (CaAa)	31.00 - 8.00	0.0000	-0.06	1	1	0.5800	0.5800		0.25
1 1/4	C	No	No	Ar (CaAa)	190.00 - 8.00	0.0000	-0.04	1	1	1.5500	1.5500		0.66
7/8	C	No	No	Ar (CaAa)	74.00 - 8.00	0.0000	-0.07	1	1	1.1100	1.1100		0.54
1/2	C	No	No	Ar (CaAa)	50.00 - 8.00	0.0000	-0.08	1	1	0.5800	0.5800		0.25
1 5/8	A	No	No	Ar (CaAa)	150.00 - 8.00	0.0000	0.28	6	6	1.0000	1.9800		1.90
***													
6x12 (T-Mobile)	A	No	No	Ar (CaAa)	180.00 - 8.00	0.0000	0	3	3	1.0000	1.9800		1.04
***													
Feedline Ladder (Af)	B	No	No	Af (CaAa)	150.00 - 8.00	0.0000	-0.29	1	1	3.0000	2.5000		8.40
Feedline Ladder (Af)	A	No	No	Af (CaAa)	150.00 - 8.00	0.0000	0.34	1	1	3.0000	2.5000		8.40
Feedline Ladder (Af)	A	No	No	Af (CaAa)	180.00 - 8.00	0.0000	0	1	1	3.0000	2.5000		8.40
Feedline Ladder (Af)	C	No	No	Af (CaAa)	190.00 - 8.00	0.0000	0	1	1	3.0000	2.5000		8.40
Feedline Ladder (Af)	B	No	No	Af (CaAa)	190.00 - 8.00	0.0000	0	1	1	3.0000	2.5000		8.40

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	190.00-180.00	A	0.000	0.000	2.420	0.000	10.35
		B	0.000	0.000	8.077	0.000	102.70
		C	0.000	0.000	7.937	0.000	101.40
T2	180.00-160.00	A	0.000	0.000	25.633	0.000	253.60
		B	0.000	0.000	16.153	0.000	205.40
		C	0.000	0.000	15.873	0.000	202.80
T3	160.00-140.00	A	0.000	0.000	61.072	0.000	552.08
		B	0.000	0.000	46.194	0.000	424.42

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C	0.000	0.000	16.211	0.000	204.38
T4	140.00-136.00	A	0.000	0.000	18.769	0.000	167.52
		B	0.000	0.000	15.521	0.000	129.92
		C	0.000	0.000	3.851	0.000	43.72
T5	136.00-132.00	A	0.000	0.000	18.769	0.000	167.52
		B	0.000	0.000	15.521	0.000	129.92
		C	0.000	0.000	4.083	0.000	44.72
T6	132.00-128.00	A	0.000	0.000	18.769	0.000	167.52
		B	0.000	0.000	15.521	0.000	129.92
		C	0.000	0.000	4.083	0.000	44.72
T7	128.00-124.00	A	0.000	0.000	18.769	0.000	167.52
		B	0.000	0.000	15.521	0.000	129.92
		C	0.000	0.000	4.083	0.000	44.72
T8	124.00-120.00	A	0.000	0.000	18.769	0.000	167.52
		B	0.000	0.000	15.521	0.000	129.92
		C	0.000	0.000	4.083	0.000	44.72
T9	120.00-100.00	A	0.000	0.000	93.847	0.000	837.60
		B	0.000	0.000	78.722	0.000	654.96
		C	0.000	0.000	23.609	0.000	238.73
T10	100.00-80.00	A	0.000	0.000	94.659	0.000	841.10
		B	0.000	0.000	82.319	0.000	671.88
		C	0.000	0.000	26.013	0.000	250.20
T11	80.00-60.00	A	0.000	0.000	95.587	0.000	845.10
		B	0.000	0.000	83.207	0.000	676.20
		C	0.000	0.000	27.567	0.000	257.76
T12	60.00-40.00	A	0.000	0.000	96.747	0.000	850.10
		B	0.000	0.000	83.207	0.000	676.20
		C	0.000	0.000	28.813	0.000	263.50
T13	40.00-20.00	A	0.000	0.000	98.023	0.000	855.60
		B	0.000	0.000	83.207	0.000	676.20
		C	0.000	0.000	30.031	0.000	268.75
T14	20.00-0.00	A	0.000	0.000	59.614	0.000	516.81
		B	0.000	0.000	49.924	0.000	405.72
		C	0.000	0.000	18.332	0.000	162.60

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	190.00-180.00	A	2.376	0.000	0.000	14.301	0.000	253.07
		B		0.000	0.000	32.595	0.000	604.09
		C		0.000	0.000	26.947	0.000	584.10
T2	180.00-160.00	A	2.356	0.000	0.000	87.237	0.000	1657.00
		B		0.000	0.000	64.811	0.000	1195.00
		C		0.000	0.000	53.574	0.000	1155.24
T3	160.00-140.00	A	2.327	0.000	0.000	186.017	0.000	3402.27
		B		0.000	0.000	134.457	0.000	2584.81
		C		0.000	0.000	55.304	0.000	1174.03
T4	140.00-136.00	A	2.308	0.000	0.000	53.933	0.000	988.88
		B		0.000	0.000	42.911	0.000	826.77
		C		0.000	0.000	14.927	0.000	299.08
T5	136.00-132.00	A	2.301	0.000	0.000	53.861	0.000	985.85
		B		0.000	0.000	42.855	0.000	824.16
		C		0.000	0.000	16.967	0.000	331.25
T6	132.00-128.00	A	2.294	0.000	0.000	53.787	0.000	982.74
		B		0.000	0.000	42.799	0.000	821.48
		C		0.000	0.000	16.928	0.000	329.82

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T7	128.00-124.00	A	2.287	0.000	0.000	53.711	0.000	979.54
		B		0.000	0.000	42.740	0.000	818.72
		C		0.000	0.000	16.888	0.000	328.35
T8	124.00-120.00	A	2.279	0.000	0.000	53.633	0.000	976.27
		B		0.000	0.000	42.680	0.000	815.90
		C		0.000	0.000	16.847	0.000	326.85
T9	120.00-100.00	A	2.256	0.000	0.000	266.915	0.000	4829.27
		B		0.000	0.000	218.523	0.000	4139.06
		C		0.000	0.000	102.565	0.000	1931.20
T10	100.00-80.00	A	2.211	0.000	0.000	271.537	0.000	4839.71
		B		0.000	0.000	238.327	0.000	4409.72
		C		0.000	0.000	114.456	0.000	2101.62
T11	80.00-60.00	A	2.156	0.000	0.000	276.297	0.000	4835.05
		B		0.000	0.000	239.861	0.000	4361.67
		C		0.000	0.000	119.853	0.000	2154.18
T12	60.00-40.00	A	2.085	0.000	0.000	281.584	0.000	4810.32
		B		0.000	0.000	236.101	0.000	4202.99
		C		0.000	0.000	124.717	0.000	2174.25
T13	40.00-20.00	A	1.981	0.000	0.000	285.036	0.000	4704.87
		B		0.000	0.000	230.633	0.000	3977.59
		C		0.000	0.000	129.479	0.000	2155.68
T14	20.00-0.00	A	1.775	0.000	0.000	168.400	0.000	2599.95
		B		0.000	0.000	131.871	0.000	2129.70
		C		0.000	0.000	73.709	0.000	1136.14

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	190.00-180.00	1.1597	0.8122	1.0465	0.7832
T2	180.00-160.00	-1.0190	-0.8290	-0.8891	-0.5316
T3	160.00-140.00	-1.2093	-8.1671	-0.9817	-5.7879
T4	140.00-136.00	-1.0115	-11.3865	-0.3939	-7.3277
T5	136.00-132.00	-1.1015	-12.5308	-0.5105	-8.7765
T6	132.00-128.00	-1.1306	-13.3526	-0.5292	-9.4742
T7	128.00-124.00	-1.1588	-14.1574	-0.5470	-10.1583
T8	124.00-120.00	-1.0909	-14.0824	-0.4747	-9.3744
T9	120.00-100.00	-1.0827	-15.7773	-0.4045	-10.8800
T10	100.00-80.00	-0.8496	-19.4487	0.3178	-14.0910
T11	80.00-60.00	-0.7281	-20.6493	0.3691	-15.3815
T12	60.00-40.00	-0.7159	-20.7320	0.0904	-17.0795
T13	40.00-20.00	-0.9802	-24.8563	-0.3442	-19.0583
T14	20.00-0.00	-0.9850	-22.0857	-0.9003	-17.9714

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	9	1/2	180.00 - 185.00	0.6000	0.4572

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	11	1 1/4	180.00 - 190.00	0.6000	0.4572
T1	12	1/2	180.00 - 190.00	0.6000	0.4572
T1	18	1/2	180.00 - 190.00	0.6000	0.4572
T1	19	7/8	180.00 - 190.00	0.6000	0.4572
T1	21	7/8	180.00 - 190.00	0.6000	0.4572
T1	23	7/8	180.00 - 190.00	0.6000	0.4572
T1	25	7/8	180.00 - 190.00	0.6000	0.4572
T1	32	1 1/4	180.00 - 190.00	0.6000	0.4572
T1	46	Feedline Ladder (Af)	180.00 - 190.00	0.6000	0.4572
T1	47	Feedline Ladder (Af)	180.00 - 190.00	0.6000	0.4572
T2	9	1/2	160.00 - 180.00	0.6000	0.4653
T2	11	1 1/4	160.00 - 180.00	0.6000	0.4653
T2	12	1/2	160.00 - 180.00	0.6000	0.4653
T2	18	1/2	160.00 - 180.00	0.6000	0.4653
T2	19	7/8	160.00 - 180.00	0.6000	0.4653
T2	21	7/8	160.00 - 180.00	0.6000	0.4653
T2	23	7/8	160.00 - 180.00	0.6000	0.4653
T2	25	7/8	160.00 - 180.00	0.6000	0.4653
T2	32	1 1/4	160.00 - 180.00	0.6000	0.4653
T2	41	6x12	160.00 - 180.00	0.6000	0.4653
T2	45	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.4653
T2	46	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.4653
T2	47	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.4653
T3	1	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.4493
T3	2	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.4493
T3	3	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.4493
T3	8	7/8	140.00 - 156.00	0.6000	0.4493
T3	9	1/2	140.00 - 160.00	0.6000	0.4493
T3	11	1 1/4	140.00 - 160.00	0.6000	0.4493
T3	12	1/2	140.00 - 160.00	0.6000	0.4493
T3	15	7/8	140.00 - 142.00	0.6000	0.4493

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T3	16	1/2	140.00 - 142.00	0.6000	0.4493
T3	17	7/8	140.00 - 156.00	0.6000	0.4493
T3	18	1/2	140.00 - 160.00	0.6000	0.4493
T3	19	7/8	140.00 - 160.00	0.6000	0.4493
T3	21	7/8	140.00 - 160.00	0.6000	0.4493
T3	23	7/8	140.00 - 160.00	0.6000	0.4493
T3	25	7/8	140.00 - 160.00	0.6000	0.4493
T3	28	1/2	140.00 - 142.00	0.6000	0.4493
T3	29	7/8	140.00 - 142.00	0.6000	0.4493
T3	32	1 1/4	140.00 - 160.00	0.6000	0.4493
T3	35	1 5/8	140.00 - 150.00	0.6000	0.4493
T3	41	6x12	140.00 - 160.00	0.6000	0.4493
T3	43	Feedline Ladder (Af)	140.00 - 150.00	0.6000	0.4493
T3	44	Feedline Ladder (Af)	140.00 - 150.00	0.6000	0.4493
T3	45	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4493
T3	46	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4493
T3	47	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.4493
T4	1	LDF7-50A (1-5/8 FOAM)	136.00 - 140.00	0.6000	0.3640
T4	2	LDF7-50A (1-5/8 FOAM)	136.00 - 140.00	0.6000	0.3640
T4	3	LDF7-50A (1-5/8 FOAM)	136.00 - 140.00	0.6000	0.3640
T4	8	7/8	136.00 - 140.00	0.6000	0.3640
T4	9	1/2	136.00 - 140.00	0.6000	0.3640
T4	11	1 1/4	136.00 - 140.00	0.6000	0.3640
T4	12	1/2	136.00 - 140.00	0.6000	0.3640
T4	15	7/8	136.00 - 140.00	0.6000	0.3640
T4	16	1/2	136.00 - 140.00	0.6000	0.3640
T4	17	7/8	136.00 - 140.00	0.6000	0.3640
T4	18	1/2	136.00 - 140.00	0.6000	0.3640
T4	19	7/8	136.00 - 140.00	0.6000	0.3640
T4	21	7/8	136.00 - 140.00	0.6000	0.3640
T4	23	7/8	136.00 - 140.00	0.6000	0.3640

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T4	25	7/8	136.00 - 140.00	0.6000	0.3640
T4	28	1/2	136.00 - 140.00	0.6000	0.3640
T4	29	7/8	136.00 - 140.00	0.6000	0.3640
T4	32	1 1/4	136.00 - 140.00	0.6000	0.3640
T4	35	1 5/8	136.00 - 140.00	0.6000	0.3640
T4	41	6x12	136.00 - 140.00	0.6000	0.3640
T4	43	Feedline Ladder (Af)	136.00 - 140.00	0.6000	0.3640
T4	44	Feedline Ladder (Af)	136.00 - 140.00	0.6000	0.3640
T4	45	Feedline Ladder (Af)	136.00 - 140.00	0.6000	0.3640
T4	46	Feedline Ladder (Af)	136.00 - 140.00	0.6000	0.3640
T4	47	Feedline Ladder (Af)	136.00 - 140.00	0.6000	0.3640
T5	1	LDF7-50A (1-5/8 FOAM)	132.00 - 136.00	0.6000	0.4893
T5	2	LDF7-50A (1-5/8 FOAM)	132.00 - 136.00	0.6000	0.4893
T5	3	LDF7-50A (1-5/8 FOAM)	132.00 - 136.00	0.6000	0.4893
T5	8	7/8	132.00 - 136.00	0.6000	0.4893
T5	9	1/2	132.00 - 136.00	0.6000	0.4893
T5	11	1 1/4	132.00 - 136.00	0.6000	0.4893
T5	12	1/2	132.00 - 136.00	0.6000	0.4893
T5	15	7/8	132.00 - 136.00	0.6000	0.4893
T5	16	1/2	132.00 - 136.00	0.6000	0.4893
T5	17	7/8	132.00 - 136.00	0.6000	0.4893
T5	18	1/2	132.00 - 136.00	0.6000	0.4893
T5	19	7/8	132.00 - 136.00	0.6000	0.4893
T5	21	7/8	132.00 - 136.00	0.6000	0.4893
T5	23	7/8	132.00 - 136.00	0.6000	0.4893
T5	25	7/8	132.00 - 136.00	0.6000	0.4893
T5	26	1/2	132.00 - 136.00	0.6000	0.4893
T5	28	1/2	132.00 - 136.00	0.6000	0.4893
T5	29	7/8	132.00 - 136.00	0.6000	0.4893
T5	32	1 1/4	132.00 - 136.00	0.6000	0.4893
T5	35	1 5/8	132.00 - 136.00	0.6000	0.4893

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	41	6x12	132.00 - 136.00	0.6000	0.4893
T5	43	Feedline Ladder (Af)	132.00 - 136.00	0.6000	0.4893
T5	44	Feedline Ladder (Af)	132.00 - 136.00	0.6000	0.4893
T5	45	Feedline Ladder (Af)	132.00 - 136.00	0.6000	0.4893
T5	46	Feedline Ladder (Af)	132.00 - 136.00	0.6000	0.4893
T5	47	Feedline Ladder (Af)	132.00 - 136.00	0.6000	0.4893
T6	1	LDF7-50A (1-5/8 FOAM)	128.00 - 132.00	0.6000	0.5084
T6	2	LDF7-50A (1-5/8 FOAM)	128.00 - 132.00	0.6000	0.5084
T6	3	LDF7-50A (1-5/8 FOAM)	128.00 - 132.00	0.6000	0.5084
T6	8	7/8	128.00 - 132.00	0.6000	0.5084
T6	9	1/2	128.00 - 132.00	0.6000	0.5084
T6	11	1 1/4	128.00 - 132.00	0.6000	0.5084
T6	12	1/2	128.00 - 132.00	0.6000	0.5084
T6	15	7/8	128.00 - 132.00	0.6000	0.5084
T6	16	1/2	128.00 - 132.00	0.6000	0.5084
T6	17	7/8	128.00 - 132.00	0.6000	0.5084
T6	18	1/2	128.00 - 132.00	0.6000	0.5084
T6	19	7/8	128.00 - 132.00	0.6000	0.5084
T6	21	7/8	128.00 - 132.00	0.6000	0.5084
T6	23	7/8	128.00 - 132.00	0.6000	0.5084
T6	25	7/8	128.00 - 132.00	0.6000	0.5084
T6	26	1/2	128.00 - 132.00	0.6000	0.5084
T6	28	1/2	128.00 - 132.00	0.6000	0.5084
T6	29	7/8	128.00 - 132.00	0.6000	0.5084
T6	32	1 1/4	128.00 - 132.00	0.6000	0.5084
T6	35	1 5/8	128.00 - 132.00	0.6000	0.5084
T6	41	6x12	128.00 - 132.00	0.6000	0.5084
T6	43	Feedline Ladder (Af)	128.00 - 132.00	0.6000	0.5084
T6	44	Feedline Ladder (Af)	128.00 - 132.00	0.6000	0.5084
T6	45	Feedline Ladder (Af)	128.00 - 132.00	0.6000	0.5084
T6	46	Feedline Ladder (Af)	128.00 - 132.00	0.6000	0.5084

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	47	Feedline Ladder (Af)	128.00 - 132.00	0.6000	0.5084
T7	1	LDF7-50A (1-5/8 FOAM)	124.00 - 128.00	0.6000	0.5250
T7	2	LDF7-50A (1-5/8 FOAM)	124.00 - 128.00	0.6000	0.5250
T7	3	LDF7-50A (1-5/8 FOAM)	124.00 - 128.00	0.6000	0.5250
T7	8	7/8	124.00 - 128.00	0.6000	0.5250
T7	9	1/2	124.00 - 128.00	0.6000	0.5250
T7	11	1 1/4	124.00 - 128.00	0.6000	0.5250
T7	12	1/2	124.00 - 128.00	0.6000	0.5250
T7	15	7/8	124.00 - 128.00	0.6000	0.5250
T7	16	1/2	124.00 - 128.00	0.6000	0.5250
T7	17	7/8	124.00 - 128.00	0.6000	0.5250
T7	18	1/2	124.00 - 128.00	0.6000	0.5250
T7	19	7/8	124.00 - 128.00	0.6000	0.5250
T7	21	7/8	124.00 - 128.00	0.6000	0.5250
T7	23	7/8	124.00 - 128.00	0.6000	0.5250
T7	25	7/8	124.00 - 128.00	0.6000	0.5250
T7	26	1/2	124.00 - 128.00	0.6000	0.5250
T7	28	1/2	124.00 - 128.00	0.6000	0.5250
T7	29	7/8	124.00 - 128.00	0.6000	0.5250
T7	32	1 1/4	124.00 - 128.00	0.6000	0.5250
T7	35	1 5/8	124.00 - 128.00	0.6000	0.5250
T7	41	6x12	124.00 - 128.00	0.6000	0.5250
T7	43	Feedline Ladder (Af)	124.00 - 128.00	0.6000	0.5250
T7	44	Feedline Ladder (Af)	124.00 - 128.00	0.6000	0.5250
T7	45	Feedline Ladder (Af)	124.00 - 128.00	0.6000	0.5250
T7	46	Feedline Ladder (Af)	124.00 - 128.00	0.6000	0.5250
T7	47	Feedline Ladder (Af)	124.00 - 128.00	0.6000	0.5250
T8	1	LDF7-50A (1-5/8 FOAM)	120.00 - 124.00	0.6000	0.4230
T8	2	LDF7-50A (1-5/8 FOAM)	120.00 - 124.00	0.6000	0.4230
T8	3	LDF7-50A (1-5/8 FOAM)	120.00 - 124.00	0.6000	0.4230
T8	8	7/8	120.00 - 124.00	0.6000	0.4230

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	9	1/2	120.00 - 124.00	0.6000	0.4230
T8	11	1 1/4	120.00 - 124.00	0.6000	0.4230
T8	12	1/2	120.00 - 124.00	0.6000	0.4230
T8	15	7/8	120.00 - 124.00	0.6000	0.4230
T8	16	1/2	120.00 - 124.00	0.6000	0.4230
T8	17	7/8	120.00 - 124.00	0.6000	0.4230
T8	18	1/2	120.00 - 124.00	0.6000	0.4230
T8	19	7/8	120.00 - 124.00	0.6000	0.4230
T8	21	7/8	120.00 - 124.00	0.6000	0.4230
T8	23	7/8	120.00 - 124.00	0.6000	0.4230
T8	25	7/8	120.00 - 124.00	0.6000	0.4230
T8	26	1/2	120.00 - 124.00	0.6000	0.4230
T8	28	1/2	120.00 - 124.00	0.6000	0.4230
T8	29	7/8	120.00 - 124.00	0.6000	0.4230
T8	32	1 1/4	120.00 - 124.00	0.6000	0.4230
T8	35	1 5/8	120.00 - 124.00	0.6000	0.4230
T8	41	6x12	120.00 - 124.00	0.6000	0.4230
T8	43	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.4230
T8	44	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.4230
T8	45	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.4230
T8	46	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.4230
T8	47	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.4230
T9	1	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.5058
T9	2	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.5058
T9	3	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.5058
T9	8	7/8	100.00 - 120.00	0.6000	0.5058
T9	9	1/2	100.00 - 120.00	0.6000	0.5058
T9	11	1 1/4	100.00 - 120.00	0.6000	0.5058
T9	12	1/2	100.00 - 120.00	0.6000	0.5058
T9	15	7/8	100.00 - 120.00	0.6000	0.5058
T9	16	1/2	100.00 - 120.00	0.6000	0.5058

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	17	7/8	100.00 - 120.00	0.6000	0.5058
T9	18	1/2	100.00 - 120.00	0.6000	0.5058
T9	19	7/8	100.00 - 120.00	0.6000	0.5058
T9	20	1/2	100.00 - 102.00	0.6000	0.5058
T9	21	7/8	100.00 - 120.00	0.6000	0.5058
T9	22	7/8	100.00 - 109.00	0.6000	0.5058
T9	23	7/8	100.00 - 120.00	0.6000	0.5058
T9	24	7/8	100.00 - 119.00	0.6000	0.5058
T9	25	7/8	100.00 - 120.00	0.6000	0.5058
T9	26	1/2	100.00 - 120.00	0.6000	0.5058
T9	27	1/2	100.00 - 113.00	0.6000	0.5058
T9	28	1/2	100.00 - 120.00	0.6000	0.5058
T9	29	7/8	100.00 - 120.00	0.6000	0.5058
T9	30	7/8	100.00 - 103.00	0.6000	0.5058
T9	32	1 1/4	100.00 - 120.00	0.6000	0.5058
T9	35	1 5/8	100.00 - 120.00	0.6000	0.5058
T9	41	6x12	100.00 - 120.00	0.6000	0.5058
T9	43	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5058
T9	44	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5058
T9	45	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5058
T9	46	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5058
T9	47	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.5058
T10	1	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T10	2	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T10	3	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T10	7	1/2	80.00 - 94.00	0.6000	0.6000
T10	8	7/8	80.00 - 100.00	0.6000	0.6000
T10	9	1/2	80.00 - 100.00	0.6000	0.6000
T10	11	1 1/4	80.00 - 100.00	0.6000	0.6000
T10	12	1/2	80.00 - 100.00	0.6000	0.6000
T10	14	7/8	80.00 - 92.00	0.6000	0.6000
T10	15	7/8	80.00 - 100.00	0.6000	0.6000
T10	16	1/2	80.00 - 100.00	0.6000	0.6000
T10	17	7/8	80.00 - 100.00	0.6000	0.6000
T10	18	1/2	80.00 - 100.00	0.6000	0.6000
T10	19	7/8	80.00 - 100.00	0.6000	0.6000
T10	20	1/2	80.00 - 100.00	0.6000	0.6000
T10	21	7/8	80.00 - 100.00	0.6000	0.6000
T10	22	7/8	80.00 - 100.00	0.6000	0.6000
T10	23	7/8	80.00 - 100.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	24	7/8	80.00 - 100.00	0.6000	0.6000
T10	25	7/8	80.00 - 100.00	0.6000	0.6000
T10	26	1/2	80.00 - 100.00	0.6000	0.6000
T10	27	1/2	80.00 - 100.00	0.6000	0.6000
T10	28	1/2	80.00 - 100.00	0.6000	0.6000
T10	29	7/8	80.00 - 100.00	0.6000	0.6000
T10	30	7/8	80.00 - 100.00	0.6000	0.6000
T10	32	1 1/4	80.00 - 100.00	0.6000	0.6000
T10	35	1 5/8	80.00 - 100.00	0.6000	0.6000
T10	41	6x12	80.00 - 100.00	0.6000	0.6000
T10	43	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T10	44	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T10	45	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T10	46	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T10	47	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T11	1	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T11	2	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T11	3	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T11	6	1/2	60.00 - 70.00	0.6000	0.6000
T11	7	1/2	60.00 - 80.00	0.6000	0.6000
T11	8	7/8	60.00 - 80.00	0.6000	0.6000
T11	9	1/2	60.00 - 80.00	0.6000	0.6000
T11	11	1 1/4	60.00 - 80.00	0.6000	0.6000
T11	12	1/2	60.00 - 80.00	0.6000	0.6000
T11	14	7/8	60.00 - 80.00	0.6000	0.6000
T11	15	7/8	60.00 - 80.00	0.6000	0.6000
T11	16	1/2	60.00 - 80.00	0.6000	0.6000
T11	17	7/8	60.00 - 80.00	0.6000	0.6000
T11	18	1/2	60.00 - 80.00	0.6000	0.6000
T11	19	7/8	60.00 - 80.00	0.6000	0.6000
T11	20	1/2	60.00 - 80.00	0.6000	0.6000
T11	21	7/8	60.00 - 80.00	0.6000	0.6000
T11	22	7/8	60.00 - 80.00	0.6000	0.6000
T11	23	7/8	60.00 - 80.00	0.6000	0.6000
T11	24	7/8	60.00 - 80.00	0.6000	0.6000
T11	25	7/8	60.00 - 80.00	0.6000	0.6000
T11	26	1/2	60.00 - 80.00	0.6000	0.6000
T11	27	1/2	60.00 - 80.00	0.6000	0.6000
T11	28	1/2	60.00 - 80.00	0.6000	0.6000
T11	29	7/8	60.00 - 80.00	0.6000	0.6000
T11	30	7/8	60.00 - 80.00	0.6000	0.6000
T11	32	1 1/4	60.00 - 80.00	0.6000	0.6000
T11	33	7/8	60.00 - 74.00	0.6000	0.6000
T11	35	1 5/8	60.00 - 80.00	0.6000	0.6000
T11	41	6x12	60.00 - 80.00	0.6000	0.6000
T11	43	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T11	44	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T11	45	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T11	46	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T11	47	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T12	1	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T12	2	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T12	3	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T12	5	1/2	40.00 - 50.00	0.6000	0.6000
T12	6	1/2	40.00 - 60.00	0.6000	0.6000
T12	7	1/2	40.00 - 60.00	0.6000	0.6000
T12	8	7/8	40.00 - 60.00	0.6000	0.6000
T12	9	1/2	40.00 - 60.00	0.6000	0.6000
T12	11	1 1/4	40.00 - 60.00	0.6000	0.6000
T12	12	1/2	40.00 - 60.00	0.6000	0.6000
T12	14	7/8	40.00 - 60.00	0.6000	0.6000
T12	15	7/8	40.00 - 60.00	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T12	16	1/2	40.00 - 60.00	0.6000	0.6000
T12	17	7/8	40.00 - 60.00	0.6000	0.6000
T12	18	1/2	40.00 - 60.00	0.6000	0.6000
T12	19	7/8	40.00 - 60.00	0.6000	0.6000
T12	20	1/2	40.00 - 60.00	0.6000	0.6000
T12	21	7/8	40.00 - 60.00	0.6000	0.6000
T12	22	7/8	40.00 - 60.00	0.6000	0.6000
T12	23	7/8	40.00 - 60.00	0.6000	0.6000
T12	24	7/8	40.00 - 60.00	0.6000	0.6000
T12	25	7/8	40.00 - 60.00	0.6000	0.6000
T12	26	1/2	40.00 - 60.00	0.6000	0.6000
T12	27	1/2	40.00 - 60.00	0.6000	0.6000
T12	28	1/2	40.00 - 60.00	0.6000	0.6000
T12	29	7/8	40.00 - 60.00	0.6000	0.6000
T12	30	7/8	40.00 - 60.00	0.6000	0.6000
T12	32	1 1/4	40.00 - 60.00	0.6000	0.6000
T12	33	7/8	40.00 - 60.00	0.6000	0.6000
T12	34	1/2	40.00 - 50.00	0.6000	0.6000
T12	35	1 5/8	40.00 - 60.00	0.6000	0.6000
T12	41	6x12	40.00 - 60.00	0.6000	0.6000
T12	43	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T12	44	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T12	45	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T12	46	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T12	47	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T13	1	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T13	2	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T13	3	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T13	5	1/2	20.00 - 40.00	0.6000	0.6000
T13	6	1/2	20.00 - 40.00	0.6000	0.6000
T13	7	1/2	20.00 - 40.00	0.6000	0.6000
T13	8	7/8	20.00 - 40.00	0.6000	0.6000
T13	9	1/2	20.00 - 40.00	0.6000	0.6000
T13	10	1/2	20.00 - 32.00	0.6000	0.6000
T13	11	1 1/4	20.00 - 40.00	0.6000	0.6000
T13	12	1/2	20.00 - 40.00	0.6000	0.6000
T13	14	7/8	20.00 - 40.00	0.6000	0.6000
T13	15	7/8	20.00 - 40.00	0.6000	0.6000
T13	16	1/2	20.00 - 40.00	0.6000	0.6000
T13	17	7/8	20.00 - 40.00	0.6000	0.6000
T13	18	1/2	20.00 - 40.00	0.6000	0.6000
T13	19	7/8	20.00 - 40.00	0.6000	0.6000
T13	20	1/2	20.00 - 40.00	0.6000	0.6000
T13	21	7/8	20.00 - 40.00	0.6000	0.6000
T13	22	7/8	20.00 - 40.00	0.6000	0.6000
T13	23	7/8	20.00 - 40.00	0.6000	0.6000
T13	24	7/8	20.00 - 40.00	0.6000	0.6000
T13	25	7/8	20.00 - 40.00	0.6000	0.6000
T13	26	1/2	20.00 - 40.00	0.6000	0.6000
T13	27	1/2	20.00 - 40.00	0.6000	0.6000
T13	28	1/2	20.00 - 40.00	0.6000	0.6000
T13	29	7/8	20.00 - 40.00	0.6000	0.6000
T13	30	7/8	20.00 - 40.00	0.6000	0.6000
T13	31	1/2	20.00 - 31.00	0.6000	0.6000
T13	32	1 1/4	20.00 - 40.00	0.6000	0.6000
T13	33	7/8	20.00 - 40.00	0.6000	0.6000
T13	34	1/2	20.00 - 40.00	0.6000	0.6000
T13	35	1 5/8	20.00 - 40.00	0.6000	0.6000
T13	41	6x12	20.00 - 40.00	0.6000	0.6000
T13	43	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T13	44	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T13	45	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	46	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T13	47	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T14	1	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T14	2	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T14	3	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T14	5	1/2	8.00 - 20.00	0.6000	0.6000
T14	6	1/2	8.00 - 20.00	0.6000	0.6000
T14	7	1/2	8.00 - 20.00	0.6000	0.6000
T14	8	7/8	8.00 - 20.00	0.6000	0.6000
T14	9	1/2	8.00 - 20.00	0.6000	0.6000
T14	10	1/2	8.00 - 20.00	0.6000	0.6000
T14	11	1 1/4	8.00 - 20.00	0.6000	0.6000
T14	12	1/2	8.00 - 20.00	0.6000	0.6000
T14	13	1/2	8.00 - 17.00	0.6000	0.6000
T14	14	7/8	8.00 - 20.00	0.6000	0.6000
T14	15	7/8	8.00 - 20.00	0.6000	0.6000
T14	16	1/2	8.00 - 20.00	0.6000	0.6000
T14	17	7/8	8.00 - 20.00	0.6000	0.6000
T14	18	1/2	8.00 - 20.00	0.6000	0.6000
T14	19	7/8	8.00 - 20.00	0.6000	0.6000
T14	20	1/2	8.00 - 20.00	0.6000	0.6000
T14	21	7/8	8.00 - 20.00	0.6000	0.6000
T14	22	7/8	8.00 - 20.00	0.6000	0.6000
T14	23	7/8	8.00 - 20.00	0.6000	0.6000
T14	24	7/8	8.00 - 20.00	0.6000	0.6000
T14	25	7/8	8.00 - 20.00	0.6000	0.6000
T14	26	1/2	8.00 - 20.00	0.6000	0.6000
T14	27	1/2	8.00 - 20.00	0.6000	0.6000
T14	28	1/2	8.00 - 20.00	0.6000	0.6000
T14	29	7/8	8.00 - 20.00	0.6000	0.6000
T14	30	7/8	8.00 - 20.00	0.6000	0.6000
T14	31	1/2	8.00 - 20.00	0.6000	0.6000
T14	32	1 1/4	8.00 - 20.00	0.6000	0.6000
T14	33	7/8	8.00 - 20.00	0.6000	0.6000
T14	34	1/2	8.00 - 20.00	0.6000	0.6000
T14	35	1 5/8	8.00 - 20.00	0.6000	0.6000
T14	41	6x12	8.00 - 20.00	0.6000	0.6000
T14	43	Feedline Ladder (Af)	8.00 - 20.00	0.6000	0.6000
T14	44	Feedline Ladder (Af)	8.00 - 20.00	0.6000	0.6000
T14	45	Feedline Ladder (Af)	8.00 - 20.00	0.6000	0.6000
T14	46	Feedline Ladder (Af)	8.00 - 20.00	0.6000	0.6000
T14	47	Feedline Ladder (Af)	8.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pirod 4' Side Mount Standoff	A	From Leg	2.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pirod 4' Side Mount Standoff	B	From Leg	2.00	0.0000	188.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff	C	From Leg	2.00	0.0000	188.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
(2) Obstruction Lights	C	From Leg	0.00	0.0000	192.00	No Ice	0.18	0.18	10.00
			0.00			1/2" Ice	0.25	0.25	10.00
			0.00			1" Ice	0.32	0.32	10.00
PD1142-3	C	From Leg	0.00	0.0000	192.00	No Ice	0.48	0.48	10.00
			0.00			1/2" Ice	0.55	0.55	10.00
			4.00			1" Ice	0.62	0.62	10.00
3' Yagi	C	From Leg	1.00	0.0000	190.00	No Ice	2.08	2.08	30.00
			0.00			1/2" Ice	3.79	3.79	50.00
			0.00			1" Ice	5.50	5.50	70.00
PD1142-3	C	From Leg	4.00	0.0000	187.00	No Ice	0.48	0.48	10.00
			0.00			1/2" Ice	0.55	0.55	10.00
			8.00			1" Ice	0.62	0.62	10.00
Pirod 4' Side Mount Standoff	C	From Leg	2.00	0.0000	156.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
ASP-705	C	From Leg	4.00	0.0000	156.00	No Ice	5.88	5.88	30.00
			0.00			1/2" Ice	8.01	8.01	70.00
			10.00			1" Ice	10.14	10.14	110.00
DB230-2A	C	From Leg	1.00	0.0000	142.00	No Ice	3.00	3.00	11.00
			0.00			1/2" Ice	5.40	5.40	15.00
			0.00			1" Ice	7.80	7.80	19.00
PD320	C	From Leg	1.00	0.0000	110.00	No Ice	2.03	2.03	10.00
			0.00			1/2" Ice	4.58	4.58	30.00
			0.00			1" Ice	7.13	7.13	50.00
Pirod 4' Side Mount Standoff	C	From Leg	2.00	0.0000	103.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
14'x3" Dia. Omni	C	From Leg	4.00	0.0000	103.00	No Ice	4.20	4.20	40.00
			0.00			1/2" Ice	5.63	5.63	70.00
			7.00			1" Ice	7.06	7.06	100.00
15' Single Dipole	C	From Leg	1.00	0.0000	92.00	No Ice	3.00	3.00	40.00
			0.00			1/2" Ice	6.00	6.00	60.00
			0.00			1" Ice	9.00	9.00	80.00
PD320	C	From Leg	1.00	0.0000	74.00	No Ice	2.03	2.03	10.00
			0.00			1/2" Ice	4.58	4.58	30.00
			0.00			1" Ice	7.13	7.13	50.00
15' Single Dipole	C	From Leg	1.00	0.0000	50.00	No Ice	3.00	3.00	40.00
			0.00			1/2" Ice	6.00	6.00	60.00
			0.00			1" Ice	9.00	9.00	80.00
15' Single Dipole	C	From Leg	1.00	0.0000	31.00	No Ice	3.00	3.00	40.00
			0.00			1/2" Ice	6.00	6.00	60.00
			0.00			1" Ice	9.00	9.00	80.00
ASP-705	B	From Leg	1.00	0.0000	192.00	No Ice	5.88	5.88	30.00
			0.00			1/2" Ice	8.01	8.01	70.00
			10.00			1" Ice	10.14	10.14	110.00
ASP-705	B	From Leg	4.00	0.0000	192.00	No Ice	5.88	5.88	30.00
			0.00			1/2" Ice	8.01	8.01	70.00
			10.00			1" Ice	10.14	10.14	110.00
Paraflector	B	From Leg	4.00	0.0000	144.00	No Ice	8.90	8.90	40.00
			0.00			1/2" Ice	10.70	10.70	60.00
			0.00			1" Ice	12.50	12.50	80.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Paraflector	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	8.90 10.70 12.50	8.90 10.70 12.50	40.00 60.00 80.00
Pirod 4' Side Mount Standoff	B	From Leg	2.00 0.00 0.00	0.0000	142.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00
Pirod 4' Side Mount Standoff	B	From Leg	2.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00
14'x3" Dia. Omni	B	From Leg	4.00 0.00 7.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice	4.20 5.63 7.06	4.20 5.63 7.06	40.00 70.00 100.00
GPS	B	From Leg	1.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	1.00 1.50 2.00	1.00 1.50 2.00	10.00 10.00 10.00
1' Standoff Mount	B	From Leg	0.50 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	0.16 0.23 0.30	0.16 0.23 0.30	10.00 15.00 20.00
DB212 Single Dipole	B	From Leg	1.00 0.00 0.00	0.0000	94.00	No Ice 1/2" Ice 1" Ice	1.60 3.20 4.80	1.60 3.20 4.80	30.00 40.00 50.00
15' Single Dipole	B	From Leg	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice	3.00 6.00 9.00	3.00 6.00 9.00	40.00 60.00 80.00
DB212 Single Dipole	B	From Leg	1.00 0.00 0.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice	1.60 3.20 4.80	1.60 3.20 4.80	30.00 40.00 50.00
DB212 Single Dipole	B	From Leg	1.00 0.00 0.00	0.0000	32.00	No Ice 1/2" Ice 1" Ice	1.60 3.20 4.80	1.60 3.20 4.80	30.00 40.00 50.00
Pirod 4' Side Mount Standoff	B	From Leg	2.00 0.00 0.00	0.0000	17.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00
PD400	B	From Leg	4.00 0.00 6.00	0.0000	17.00	No Ice 1/2" Ice 1" Ice	3.14 4.48 5.82	3.14 4.48 5.82	20.00 40.00 60.00
3' Yagi	B	From Leg	1.00 0.00 0.00	0.0000	17.00	No Ice 1/2" Ice 1" Ice	2.08 3.79 5.50	2.08 3.79 5.50	30.00 50.00 70.00
Paraflector	B	From Leg	4.00 0.00 0.00	0.0000	187.00	No Ice 1/2" Ice 1" Ice	8.90 10.70 12.50	8.90 10.70 12.50	40.00 60.00 80.00
Pirod 4' Side Mount Standoff	B	From Leg	2.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	2.72 4.91 7.10	2.72 4.91 7.10	50.00 89.00 128.00
ASP-705	B	From Leg	4.00 0.00 10.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice	5.88 8.01 10.14	5.88 8.01 10.14	30.00 70.00 110.00
DB420	A	From Leg	1.00 0.00 10.00	0.0000	192.00	No Ice 1/2" Ice 1" Ice	3.33 5.99 8.65	3.33 5.99 8.65	30.00 40.00 50.00
4'x3" Dia. Omni	A	From Leg	4.00 0.00 2.00	0.0000	190.00	No Ice 1/2" Ice 1" Ice	1.00 1.25 1.50	1.00 1.25 1.50	20.00 20.00 20.00
Halo	A	From Leg	4.00 0.00 0.00	0.0000	192.00	No Ice 1/2" Ice 1" Ice	4.00 5.60 7.20	4.00 5.60 7.20	10.00 30.00 50.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
3' Yagi	A	From Leg	1.00	0.0000	190.00	No Ice	2.08	2.08	30.00
			0.00			1/2" Ice	3.79	3.79	50.00
			0.00			1" Ice	5.50	5.50	70.00
Pirod 4' Side Mount Standoff	A	From Leg	2.00	0.0000	142.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
DB264-A	A	From Leg	4.00	0.0000	142.00	No Ice	3.16	3.16	40.00
			0.00			1/2" Ice	5.69	5.69	50.00
			0.00			1" Ice	8.22	8.22	60.00
DB436-C	A	From Leg	4.00	0.0000	142.00	No Ice	0.45	0.45	10.00
			0.00			1/2" Ice	0.81	0.81	10.00
			0.00			1" Ice	1.17	1.17	10.00
Single Dipole	A	From Leg	4.00	0.0000	136.00	No Ice	1.60	1.60	30.00
			0.00			1/2" Ice	3.20	3.20	40.00
			3.00			1" Ice	4.80	4.80	50.00
Pirod 4' Side Mount Standoff	A	From Leg	2.00	0.0000	113.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
Dipole	A	From Leg	4.00	0.0000	113.00	No Ice	3.16	3.16	40.00
			0.00			1/2" Ice	5.69	5.69	50.00
			3.00			1" Ice	8.22	8.22	60.00
***									
(3) Sector Frames (Sprint)	C	None		0.0000	179.92	No Ice	52.00	52.00	1750.00
						1/2" Ice	61.90	61.90	2190.00
						1" Ice	71.80	71.80	2630.00
***									
Pirod 12' T-Frame Sector Mount (VZW)	A	From Leg	0.00	0.0000	150.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
Pirod 12' T-Frame Sector Mount (VZW)	B	From Leg	0.00	0.0000	150.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
Pirod 12' T-Frame Sector Mount (VZW)	C	From Leg	0.00	0.0000	150.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
LNX-6514DS-T4M (VZW)	A	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
			-6.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M (VZW)	A	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
			-4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M (VZW)	A	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
			0.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M (VZW)	A	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
			4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M (VZW)	B	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
			-6.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M (VZW)	B	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
			-4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M (VZW)	B	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
			0.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M	B	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(VZW)			4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M	C	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
(VZW)			-6.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M	C	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
(VZW)			-4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
LNX-6514DS-T4M	C	From Leg	4.00	0.0000	150.00	No Ice	8.20	5.42	31.30
(VZW)			0.00			1/2" Ice	8.66	5.88	81.94
			0.00			1" Ice	9.13	6.35	138.72
HBXX-6517DS-A2M	C	From Leg	4.00	0.0000	150.00	No Ice	8.53	5.24	43.00
(VZW)			4.00			1/2" Ice	9.00	5.71	93.49
			0.00			1" Ice	9.48	6.18	150.23
RRH2x60-AWS	A	From Leg	4.00	0.0000	150.00	No Ice	1.73	1.33	50.00
(VZW)			4.00			1/2" Ice	1.90	1.48	66.28
			0.00			1" Ice	2.07	1.64	85.25
RRH2x60-AWS	B	From Leg	4.00	0.0000	150.00	No Ice	1.73	1.33	50.00
(VZW)			4.00			1/2" Ice	1.90	1.48	66.28
			0.00			1" Ice	2.07	1.64	85.25
RRH2x60-AWS	C	From Leg	4.00	0.0000	150.00	No Ice	1.73	1.33	50.00
(VZW)			4.00			1/2" Ice	1.90	1.48	66.28
			0.00			1" Ice	2.07	1.64	85.25
RRH 2x60-PCS	A	From Leg	4.00	0.0000	150.00	No Ice	1.87	1.18	40.00
(VZW)			-4.00			1/2" Ice	2.05	1.33	55.63
			0.00			1" Ice	2.23	1.48	73.92
RRH 2x60-PCS	B	From Leg	4.00	0.0000	150.00	No Ice	1.87	1.18	40.00
(VZW)			-4.00			1/2" Ice	2.05	1.33	55.63
			0.00			1" Ice	2.23	1.48	73.92
RRH 2x60-PCS	C	From Leg	4.00	0.0000	150.00	No Ice	1.87	1.18	40.00
(VZW)			-4.00			1/2" Ice	2.05	1.33	55.63
			0.00			1" Ice	2.23	1.48	73.92
DB-T1-6Z-8AB-0Z	A	From Leg	2.00	0.0000	150.00	No Ice	5.60	2.33	60.00
(VZW)			0.00			1/2" Ice	5.92	2.56	80.00
			0.00			1" Ice	6.24	2.79	100.00
DB-T1-6Z-8AB-0Z	B	From Leg	2.00	0.0000	150.00	No Ice	5.60	2.33	60.00
(VZW)			0.00			1/2" Ice	5.92	2.56	80.00
			0.00			1" Ice	6.24	2.79	100.00
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APX16DWV-16DWV-S-E-A20	A	From Leg	3.00	0.0000	180.00	No Ice	6.46	2.15	40.70
			0.00			1/2" Ice	6.83	2.49	73.65
(T-Mobile)			0.00			1" Ice	7.21	2.84	111.47
APX16DWV-16DWV-S-E-A20	B	From Leg	3.00	0.0000	180.00	No Ice	6.46	2.15	40.70
			0.00			1/2" Ice	6.83	2.49	73.65
(T-Mobile)			0.00			1" Ice	7.21	2.84	111.47
APX16DWV-16DWV-S-E-A20	C	From Leg	3.00	0.0000	180.00	No Ice	6.46	2.15	40.70
			0.00			1/2" Ice	6.83	2.49	73.65
(T-Mobile)			0.00			1" Ice	7.21	2.84	111.47
APXVAALL24_43-U-NA20	A	From Leg	3.00	0.0000	180.00	No Ice	20.24	8.89	153.30
(T-Mobile)			0.00			1/2" Ice	20.89	9.49	265.89
			0.00			1" Ice	21.54	10.09	387.02
APXVAALL24_43-U-NA20	B	From Leg	3.00	0.0000	180.00	No Ice	20.24	8.89	153.30
(T-Mobile)			0.00			1/2" Ice	20.89	9.49	265.89
			0.00			1" Ice	21.54	10.09	387.02
APXVAALL24_43-U-NA20	C	From Leg	3.00	0.0000	180.00	No Ice	20.24	8.89	153.30
(T-Mobile)			0.00			1/2" Ice	20.89	9.49	265.89
			0.00			1" Ice	21.54	10.09	387.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
AIR 6449 B41 (T-Mobile)	A	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	5.68 5.98 6.29	2.49 2.72 2.95	104.00 143.12 186.46
AIR 6449 B41 (T-Mobile)	B	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	5.68 5.98 6.29	2.49 2.72 2.95	104.00 143.12 186.46
AIR 6449 B41 (T-Mobile)	C	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	5.68 5.98 6.29	2.49 2.72 2.95	104.00 143.12 186.46
4415 B66A (T-Mobile)	A	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	46.00 60.07 76.66
4415 B66A (T-Mobile)	B	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	46.00 60.07 76.66
4415 B66A (T-Mobile)	C	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	0.82 0.94 1.07	46.00 60.07 76.66
RADIO 4449 B71+B85 (T-Mobile)	A	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	1.63 1.79 1.95	1.00 1.13 1.27	74.00 89.91 108.43
RADIO 4449 B71+B85 (T-Mobile)	B	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	1.63 1.79 1.95	1.00 1.13 1.27	74.00 89.91 108.43
RADIO 4449 B71+B85 (T-Mobile)	C	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	1.63 1.79 1.95	1.00 1.13 1.27	74.00 89.91 108.43
4424 B25 (T-Mobile)	A	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	2.05 2.23 2.42	1.61 1.77 1.94	86.00 106.93 130.84
4424 B25 (T-Mobile)	B	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	2.05 2.23 2.42	1.61 1.77 1.94	86.00 106.93 130.84
4424 B25 (T-Mobile)	C	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	2.05 2.23 2.42	1.61 1.77 1.94	86.00 106.93 130.84
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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
3' Dish	C	Paraboloid w/o Radome	From Leg	4.00 0.00 0.00	0.0000		156.00	3.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68	80.00 100.00 120.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	1.2D+1.6W (pattern 1) 0 deg - No Ice
4	1.2D+1.6W (pattern 2) 0 deg - No Ice
5	0.9 Dead+1.6 Wind 0 deg - No Ice
6	1.2 Dead+1.6 Wind 30 deg - No Ice
7	1.2D+1.6W (pattern 1) 30 deg - No Ice
8	1.2D+1.6W (pattern 2) 30 deg - No Ice
9	0.9 Dead+1.6 Wind 30 deg - No Ice
10	1.2 Dead+1.6 Wind 60 deg - No Ice
11	1.2D+1.6W (pattern 1) 60 deg - No Ice
12	1.2D+1.6W (pattern 2) 60 deg - No Ice
13	0.9 Dead+1.6 Wind 60 deg - No Ice
14	1.2 Dead+1.6 Wind 90 deg - No Ice
15	1.2D+1.6W (pattern 1) 90 deg - No Ice
16	1.2D+1.6W (pattern 2) 90 deg - No Ice
17	0.9 Dead+1.6 Wind 90 deg - No Ice
18	1.2 Dead+1.6 Wind 120 deg - No Ice
19	1.2D+1.6W (pattern 1) 120 deg - No Ice
20	1.2D+1.6W (pattern 2) 120 deg - No Ice
21	0.9 Dead+1.6 Wind 120 deg - No Ice
22	1.2 Dead+1.6 Wind 150 deg - No Ice
23	1.2D+1.6W (pattern 1) 150 deg - No Ice
24	1.2D+1.6W (pattern 2) 150 deg - No Ice
25	0.9 Dead+1.6 Wind 150 deg - No Ice
26	1.2 Dead+1.6 Wind 180 deg - No Ice
27	1.2D+1.6W (pattern 1) 180 deg - No Ice
28	1.2D+1.6W (pattern 2) 180 deg - No Ice
29	0.9 Dead+1.6 Wind 180 deg - No Ice
30	1.2 Dead+1.6 Wind 210 deg - No Ice
31	1.2D+1.6W (pattern 1) 210 deg - No Ice
32	1.2D+1.6W (pattern 2) 210 deg - No Ice
33	0.9 Dead+1.6 Wind 210 deg - No Ice
34	1.2 Dead+1.6 Wind 240 deg - No Ice
35	1.2D+1.6W (pattern 1) 240 deg - No Ice
36	1.2D+1.6W (pattern 2) 240 deg - No Ice
37	0.9 Dead+1.6 Wind 240 deg - No Ice
38	1.2 Dead+1.6 Wind 270 deg - No Ice
39	1.2D+1.6W (pattern 1) 270 deg - No Ice
40	1.2D+1.6W (pattern 2) 270 deg - No Ice
41	0.9 Dead+1.6 Wind 270 deg - No Ice
42	1.2 Dead+1.6 Wind 300 deg - No Ice
43	1.2D+1.6W (pattern 1) 300 deg - No Ice
44	1.2D+1.6W (pattern 2) 300 deg - No Ice
45	0.9 Dead+1.6 Wind 300 deg - No Ice
46	1.2 Dead+1.6 Wind 330 deg - No Ice
47	1.2D+1.6W (pattern 1) 330 deg - No Ice
48	1.2D+1.6W (pattern 2) 330 deg - No Ice
49	0.9 Dead+1.6 Wind 330 deg - No Ice
50	1.2 Dead+1.0 Ice+1.0 Temp
51	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
52	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
53	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
54	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
55	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
56	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
57	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
58	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
59	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
60	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
61	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
62	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
63	Dead+Wind 0 deg - Service
64	Dead+Wind 30 deg - Service
65	Dead+Wind 60 deg - Service
66	Dead+Wind 90 deg - Service
67	Dead+Wind 120 deg - Service
68	Dead+Wind 150 deg - Service
69	Dead+Wind 180 deg - Service
70	Dead+Wind 210 deg - Service
71	Dead+Wind 240 deg - Service
72	Dead+Wind 270 deg - Service
73	Dead+Wind 300 deg - Service
74	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	34	342056.96	27988.51	-17234.85
	Max. H_x	34	342056.96	27988.51	-17234.85
	Max. H_z	13	-301564.11	-24956.92	15468.19
	Min. Vert	13	-301564.11	-24956.92	15468.19
	Min. H_x	13	-301564.11	-24956.92	15468.19
	Min. H_z	34	342056.96	27988.51	-17234.85
Leg B	Max. Vert	18	344137.45	-28069.85	-17451.72
	Max. H_x	45	-302758.26	24984.22	15654.71
	Max. H_z	45	-302758.26	24984.22	15654.71
	Min. Vert	45	-302758.26	24984.22	15654.71
	Min. H_x	18	344137.45	-28069.85	-17451.72
	Min. H_z	18	344137.45	-28069.85	-17451.72
Leg A	Max. Vert	2	331618.90	156.71	31354.15
	Max. H_x	39	19292.35	4303.60	1173.79
	Max. H_z	2	331618.90	156.71	31354.15
	Min. Vert	29	-284573.25	-157.40	-27651.50
	Min. H_x	15	19462.80	-4314.40	1183.53
	Min. H_z	29	-284573.25	-157.40	-27651.50

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	42047.89	-0.04	0.56	-29432.58	174.88	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	50457.43	101.02	-48968.36	-5179867.20	-15990.96	5277.71
1.2D+1.6W (pattern 1) 0 deg - No Ice	50457.43	101.02	-48707.43	-5130366.72	-15973.49	4450.76
1.2D+1.6W (pattern 2) 0 deg - No Ice	50457.45	55.56	-27610.48	-2998200.17	-8682.67	3186.98
0.9 Dead+1.6 Wind 0 deg - No Ice	37843.08	101.02	-48968.91	-5160532.16	-16003.74	5276.46
1.2 Dead+1.6 Wind 30 deg - No	50457.43	23292.91	-40249.38	-4307888.36	-2475386.67	-3159.13

Load Combination	*Vertical*	*Shear$_x$*	*Shear$_z$*	*Overturning Moment, M$_x$*	*Overturning Moment, M$_z$*	*Torque*
	lb	*lb*	*lb*	*lb-ft*	*lb-ft*	*lb-ft*
Ice						
1.2D+1.6W (pattern 1) 30 deg - No Ice	50457.44	23162.45	-40023.41	-4265027.57	-2450619.42	-4112.56
1.2D+1.6W (pattern 2) 30 deg - No Ice	50457.46	13150.06	-22724.23	-2500749.31	-1427967.96	-6358.16
0.9 Dead+1.6 Wind 30 deg - No Ice	37843.08	23293.18	-40249.84	-4290243.14	-2470388.64	-3121.43
1.2 Dead+1.6 Wind 60 deg - No Ice	50457.43	42440.06	-24502.77	-2619069.48	-4474416.09	-30377.40
1.2D+1.6W (pattern 1) 60 deg - No Ice	50457.43	42214.10	-24372.31	-2594332.31	-4431538.37	-31200.32
1.2D+1.6W (pattern 2) 60 deg - No Ice	50457.45	23929.13	-13815.48	-1523137.34	-2576226.07	-33714.05
0.9 Dead+1.6 Wind 60 deg - No Ice	37843.07	42440.53	-24503.05	-2604919.02	-4465440.12	-30311.92
1.2 Dead+1.6 Wind 90 deg - No Ice	50457.43	52544.02	-47.54	-43491.90	-5472883.93	-51048.31
1.2D+1.6W (pattern 1) 90 deg - No Ice	50457.43	52283.10	-47.54	-43500.01	-5423384.48	-51520.49
1.2D+1.6W (pattern 2) 90 deg - No Ice	50457.45	29577.11	-26.15	-39941.86	-3143278.00	-53611.86
0.9 Dead+1.6 Wind 90 deg - No Ice	37842.48	52544.26	-47.79	-34531.32	-5462036.45	-50973.99
1.2 Dead+1.6 Wind 120 deg - No Ice	50457.43	45005.59	25867.36	2652221.64	-4687787.00	-35343.80
1.2D+1.6W (pattern 1) 120 deg - No Ice	50457.43	44779.62	25736.89	2627473.72	-4644918.52	-35340.19
1.2D+1.6W (pattern 2) 120 deg - No Ice	50457.45	25340.14	14566.00	1509342.53	-2693624.46	-36590.38
0.9 Dead+1.6 Wind 120 deg - No Ice	37843.07	45006.07	25867.63	2655803.50	-4678463.44	-35279.91
1.2 Dead+1.6 Wind 150 deg - No Ice	50457.43	23591.20	40863.54	4297844.58	-2501556.44	-13515.22
1.2D+1.6W (pattern 1) 150 deg - No Ice	50457.44	23460.74	40637.57	4254979.00	-2476794.46	-13036.61
1.2D+1.6W (pattern 2) 150 deg - No Ice	50457.46	13314.10	23062.04	2463185.04	-1442381.53	-13093.21
0.9 Dead+1.6 Wind 150 deg - No Ice	37843.08	23591.46	40863.99	4297964.92	-2496516.41	-13479.19
1.2 Dead+1.6 Wind 180 deg - No Ice	50457.43	20.15	46252.98	4891182.83	-2806.32	-5052.31
1.2D+1.6W (pattern 1) 180 deg - No Ice	50457.44	20.15	45992.06	4841677.94	-2786.59	-4225.89
1.2D+1.6W (pattern 2) 180 deg - No Ice	50457.46	11.08	26117.06	2807356.73	-1435.62	-3063.59
0.9 Dead+1.6 Wind 180 deg - No Ice	37843.08	20.15	46253.50	4890068.34	-2847.19	-5050.93
1.2 Dead+1.6 Wind 210 deg - No Ice	50457.44	-23198.62	40246.66	4236351.09	2460851.45	3506.87
1.2D+1.6W (pattern 1) 210 deg - No Ice	50457.44	-23068.15	40020.69	4193469.29	2436119.41	4460.39
1.2D+1.6W (pattern 2) 210 deg - No Ice	50457.46	-13098.18	22722.76	2429347.57	1420198.87	6549.52
0.9 Dead+1.6 Wind 210 deg - No Ice	37843.08	-23198.88	40247.11	4236587.61	2455793.34	3469.46
1.2 Dead+1.6 Wind 240 deg - No Ice	50457.43	-44708.25	25812.33	2648971.77	4650134.02	30379.15
1.2D+1.6W (pattern 1) 240 deg - No Ice	50457.43	-44482.28	25681.87	2624206.09	4607276.87	31202.86
1.2D+1.6W (pattern 2) 240 deg - No Ice	50457.45	-25176.61	14535.73	1507536.16	2673103.63	33722.31

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
0.9 Dead+1.6 Wind 240 deg - No Ice	37843.08	-44708.73	25812.60	2652553.38	4640795.01	30316.68
1.2 Dead+1.6 Wind 270 deg - No Ice	50457.43	-52494.50	-32.71	-40686.95	5465493.98	50699.26
1.2D+1.6W (pattern 1) 270 deg - No Ice	50457.43	-52233.57	-32.72	-40695.37	5415994.41	51171.43
1.2D+1.6W (pattern 2) 270 deg - No Ice	50457.45	-29549.88	-18.00	-38400.13	3139396.20	53419.75
0.9 Dead+1.6 Wind 270 deg - No Ice	37842.48	-52494.73	-32.97	-31734.80	5454564.57	50625.04
1.2 Dead+1.6 Wind 300 deg - No Ice	50457.43	-42593.39	-24614.57	-2631374.15	4490145.29	35113.59
1.2D+1.6W (pattern 1) 300 deg - No Ice	50457.43	-42367.43	-24484.11	-2606620.82	4447275.39	35109.90
1.2D+1.6W (pattern 2) 300 deg - No Ice	50457.45	-24013.46	-13876.97	-1529889.65	2585073.07	36456.29
0.9 Dead+1.6 Wind 300 deg - No Ice	37843.07	-42593.86	-24614.84	-2617200.31	4481038.53	35046.60
1.2 Dead+1.6 Wind 330 deg - No Ice	50457.43	-23593.25	-40862.33	-4368864.79	2502192.67	13519.08
1.2D+1.6W (pattern 1) 330 deg - No Ice	50457.43	-23462.79	-40636.36	-4325988.61	2477449.93	13040.53
1.2D+1.6W (pattern 2) 330 deg - No Ice	50457.45	-13315.25	-23061.35	-2534274.43	1442928.83	13092.86
0.9 Dead+1.6 Wind 330 deg - No Ice	37843.08	-23593.52	-40862.79	-4351112.20	2497048.89	13478.83
1.2 Dead+1.0 Ice+1.0 Temp	186973.80	-0.02	0.55	-154757.26	635.01	0.05
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	186973.79	23.28	-17175.57	-1994196.24	-3164.87	2183.72
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	186973.79	8609.27	-14888.03	-1749286.79	-922126.28	-704.49
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	186973.79	15437.01	-8912.52	-1100947.93	-1637918.54	-7640.33
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	186973.79	18254.80	-11.77	-156908.46	-1921454.18	-12487.50
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	186973.79	15828.34	9111.66	803278.32	-1666714.16	-9921.36
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	186973.80	8684.83	15043.15	1452531.99	-927401.81	-4589.81
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	186973.80	2.73	16839.31	1659135.74	211.62	-2135.34
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	186973.80	-8589.01	14887.53	1439343.32	920095.99	778.95
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	186973.80	-15680.22	9053.02	800005.29	1654658.36	7594.86
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	186973.79	-18244.17	-5.40	-155791.80	1920999.00	12412.13
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	186973.79	-15559.78	-8986.56	-1106686.86	1648336.29	9917.53
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	186973.79	-8685.30	-15042.80	-1762344.48	928749.08	4589.85
Dead+Wind 0 deg - Service	42047.89	22.28	-10800.85	-1162850.92	-3384.52	1165.11
Dead+Wind 30 deg - Service	42047.89	5137.68	-8877.72	-970751.16	-545156.17	-696.45
Dead+Wind 60 deg - Service	42047.89	9360.94	-5404.53	-598723.61	-985537.42	-6691.71
Dead+Wind 90 deg - Service	42047.89	11589.54	-10.49	-31334.18	-1205513.44	-11242.52
Dead+Wind 120 deg - Service	42047.89	9926.79	5705.51	562504.45	-1032548.83	-7788.45
Dead+Wind 150 deg - Service	42047.89	5203.46	9013.21	924974.78	-550921.68	-2982.77
Dead+Wind 180 deg - Service	42047.89	4.44	10201.95	1055663.20	-481.28	-1115.10
Dead+Wind 210 deg - Service	42047.89	-5116.87	8877.14	911416.37	542222.26	773.39
Dead+Wind 240 deg - Service	42047.89	-9861.21	5693.38	561775.98	1024511.31	6693.59
Dead+Wind 270 deg - Service	42047.89	-11578.61	-7.22	-30717.37	1204136.72	11165.40

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Wind 300 deg - Service	42047.89	-9394.76	-5429.19	-601424.80	989260.09	7736.03
Dead+Wind 330 deg - Service	42047.89	-5203.93	-9012.92	-984177.04	551332.04	2982.59

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-42047.89	-0.00	0.04	42047.89	-0.56	0.001%
2	101.02	-50457.47	-48970.32	-101.02	50457.43	48968.36	0.003%
3	101.02	-50457.47	-48709.36	-101.02	50457.43	48707.43	0.003%
4	55.56	-50457.47	-27611.68	-55.56	50457.45	27610.48	0.002%
5	101.02	-37843.10	-48970.32	-101.02	37843.08	48968.91	0.002%
6	23293.94	-50457.47	-40251.05	-23292.91	50457.43	40249.38	0.003%
7	23163.46	-50457.47	-40025.05	-23162.45	50457.44	40023.41	0.003%
8	13150.67	-50457.47	-22725.25	-13150.06	50457.46	22724.23	0.002%
9	23293.94	-37843.10	-40251.05	-23293.18	37843.08	40249.84	0.002%
10	42441.86	-50457.47	-24503.82	-42440.06	50457.43	24502.77	0.003%
11	42215.86	-50457.47	-24373.34	-42214.10	50457.43	24372.31	0.003%
12	23930.20	-50457.47	-13816.10	-23929.13	50457.45	13815.48	0.002%
13	42441.86	-37843.10	-24503.82	-42440.53	37843.07	24503.05	0.002%
14	52546.11	-50457.47	-47.62	-52544.02	50457.43	47.54	0.003%
15	52285.15	-50457.47	-47.62	-52283.10	50457.43	47.54	0.003%
16	29578.37	-50457.47	-26.19	-29577.11	50457.45	26.15	0.002%
17	52546.11	-37843.10	-47.62	-52544.26	37842.48	47.79	0.003%
18	45007.33	-50457.47	25868.34	-45005.59	50457.43	-25867.36	0.003%
19	44781.34	-50457.47	25737.86	-44779.62	50457.43	-25736.89	0.003%
20	25341.21	-50457.47	14566.59	-25340.14	50457.45	-14566.00	0.002%
21	45007.33	-37843.10	25868.34	-45006.07	37843.07	-25867.63	0.002%
22	23592.13	-50457.47	40865.26	-23591.20	50457.43	-40863.54	0.003%
23	23461.65	-50457.47	40639.26	-23460.74	50457.44	-40637.57	0.003%
24	13314.68	-50457.47	23063.07	-13314.10	50457.46	-23062.04	0.002%
25	23592.13	-37843.10	40865.26	-23591.46	37843.08	-40863.99	0.002%
26	20.15	-50457.47	46254.98	-20.15	50457.43	-46252.98	0.003%
27	20.15	-50457.47	45994.02	-20.15	50457.44	-45992.06	0.003%
28	11.08	-50457.47	26118.25	-11.08	50457.46	-26117.06	0.002%
29	20.15	-37843.10	46254.98	-20.15	37843.08	-46253.50	0.002%
30	-23199.54	-50457.47	40248.36	23198.62	50457.44	-40246.66	0.003%
31	-23069.06	-50457.47	40022.37	23068.15	50457.44	-40020.69	0.003%
32	-13098.75	-50457.47	22723.77	13098.18	50457.46	-22722.76	0.002%
33	-23199.54	-37843.10	40248.36	23198.88	37843.08	-40247.11	0.002%
34	-44709.98	-50457.47	25813.32	44708.25	50457.43	-25812.33	0.003%
35	-44483.98	-50457.47	25682.84	44482.28	50457.43	-25681.87	0.003%
36	-25177.66	-50457.47	14536.33	25176.61	50457.45	-14535.73	0.002%
37	-44709.98	-37843.10	25813.32	44708.73	37843.08	-25812.60	0.002%
38	-52496.58	-50457.47	-32.79	52494.50	50457.43	32.71	0.003%
39	-52235.62	-50457.47	-32.79	52233.57	50457.43	32.72	0.003%
40	-29551.13	-50457.47	-18.04	29549.88	50457.45	18.00	0.002%
41	-52496.58	-37843.10	-32.79	52494.73	37842.48	32.97	0.003%
42	-42595.19	-50457.47	-24615.61	42593.39	50457.43	24614.57	0.003%
43	-42369.19	-50457.47	-24485.13	42367.43	50457.43	24484.11	0.003%
44	-24014.53	-50457.47	-13877.59	24013.46	50457.45	13876.97	0.002%
45	-42595.19	-37843.10	-24615.61	42593.86	37843.07	24614.84	0.002%
46	-23594.29	-50457.47	-40864.01	23593.25	50457.43	40862.33	0.003%
47	-23463.81	-50457.47	-40638.02	23462.79	50457.43	40636.36	0.003%
48	-13315.86	-50457.47	-23062.38	13315.25	50457.45	23061.35	0.002%
49	-23594.29	-37843.10	-40864.01	23593.52	37843.08	40862.79	0.002%
50	0.00	-186973.80	-0.00	0.02	186973.80	-0.55	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
51	23.28	-186973.80	-17176.22	-23.28	186973.79	17175.57	0.000%
52	8609.57	-186973.80	-14888.59	-8609.27	186973.79	14888.03	0.000%
53	15437.54	-186973.80	-8912.87	-15437.01	186973.79	8912.52	0.000%
54	18255.42	-186973.80	-11.81	-18254.80	186973.79	11.77	0.000%
55	15828.88	-186973.80	9111.93	-15828.34	186973.79	-9111.66	0.000%
56	8685.14	-186973.80	15043.63	-8684.83	186973.80	-15043.15	0.000%
57	2.74	-186973.80	16839.87	-2.73	186973.80	-16839.31	0.000%
58	-8589.30	-186973.80	14888.01	8589.01	186973.80	-14887.53	0.000%
59	-15680.75	-186973.80	9053.28	15680.22	186973.80	-9053.02	0.000%
60	-18244.79	-186973.80	-5.45	18244.17	186973.79	5.40	0.000%
61	-15560.31	-186973.80	-8986.91	15559.78	186973.79	8986.56	0.000%
62	-8685.60	-186973.80	-15043.36	8685.30	186973.79	15042.80	0.000%
63	22.28	-42047.89	-10801.22	-22.28	42047.89	10800.85	0.001%
64	5137.87	-42047.89	-8878.04	-5137.68	42047.89	8877.72	0.001%
65	9361.26	-42047.89	-5404.72	-9360.94	42047.89	5404.53	0.001%
66	11589.92	-42047.89	-10.50	-11589.54	42047.89	10.49	0.001%
67	9927.11	-42047.89	5705.69	-9926.79	42047.89	-5705.51	0.001%
68	5203.64	-42047.89	9013.51	-5203.46	42047.89	-9013.21	0.001%
69	4.44	-42047.89	10202.30	-4.44	42047.89	-10201.95	0.001%
70	-5117.04	-42047.89	8877.44	5116.87	42047.89	-8877.14	0.001%
71	-9861.53	-42047.89	5693.56	9861.21	42047.89	-5693.38	0.001%
72	-11578.99	-42047.89	-7.23	11578.61	42047.89	7.22	0.001%
73	-9395.08	-42047.89	-5429.38	9394.76	42047.89	5429.19	0.001%
74	-5204.11	-42047.89	-9013.24	5203.93	42047.89	9012.92	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00012694
2	Yes	13	0.00004271	0.00009807
3	Yes	13	0.00004269	0.00009791
4	Yes	13	0.00000001	0.00010104
5	Yes	13	0.00000001	0.00007124
6	Yes	13	0.00004446	0.00010200
7	Yes	13	0.00004440	0.00010175
8	Yes	13	0.00000001	0.00010346
9	Yes	13	0.00000001	0.00007496
10	Yes	13	0.00004591	0.00010507
11	Yes	13	0.00004583	0.00010475
12	Yes	13	0.00000001	0.00010526
13	Yes	13	0.00000001	0.00007795
14	Yes	13	0.00004421	0.00010112
15	Yes	13	0.00004415	0.00010087
16	Yes	13	0.00000001	0.00010278
17	Yes	13	0.00000001	0.00007429
18	Yes	13	0.00004254	0.00009759
19	Yes	13	0.00004252	0.00009742
20	Yes	13	0.00000001	0.00010077
21	Yes	13	0.00000001	0.00007083
22	Yes	13	0.00004445	0.00010201
23	Yes	13	0.00004439	0.00010176
24	Yes	13	0.00000001	0.00010358
25	Yes	13	0.00000001	0.00007494
26	Yes	13	0.00004604	0.00010559
27	Yes	13	0.00004595	0.00010526

28	Yes	13	0.00000001	0.00010579
29	Yes	13	0.00000001	0.00007831
30	Yes	13	0.00004447	0.00010210
31	Yes	13	0.00004442	0.00010185
32	Yes	13	0.00000001	0.00010363
33	Yes	13	0.00000001	0.00007501
34	Yes	13	0.00004254	0.00009759
35	Yes	13	0.00004252	0.00009742
36	Yes	13	0.00000001	0.00010073
37	Yes	13	0.00000001	0.00007085
38	Yes	13	0.00004419	0.00010107
39	Yes	13	0.00004414	0.00010082
40	Yes	13	0.00000001	0.00010272
41	Yes	13	0.00000001	0.00007427
42	Yes	13	0.00004591	0.00010504
43	Yes	13	0.00004582	0.00010472
44	Yes	13	0.00000001	0.00010522
45	Yes	13	0.00000001	0.00007794
46	Yes	13	0.00004442	0.00010187
47	Yes	13	0.00004437	0.00010162
48	Yes	13	0.00000001	0.00010336
49	Yes	13	0.00000001	0.00007486
50	Yes	12	0.00000001	0.00010003
51	Yes	15	0.00000001	0.00007789
52	Yes	15	0.00000001	0.00007812
53	Yes	15	0.00000001	0.00007836
54	Yes	15	0.00000001	0.00007759
55	Yes	15	0.00000001	0.00007646
56	Yes	15	0.00000001	0.00007561
57	Yes	15	0.00000001	0.00007531
58	Yes	15	0.00000001	0.00007525
59	Yes	15	0.00000001	0.00007596
60	Yes	15	0.00000001	0.00007717
61	Yes	15	0.00000001	0.00007812
62	Yes	15	0.00000001	0.00007802
63	Yes	13	0.00000001	0.00008122
64	Yes	13	0.00000001	0.00008200
65	Yes	13	0.00000001	0.00008255
66	Yes	13	0.00000001	0.00008168
67	Yes	13	0.00000001	0.00008114
68	Yes	13	0.00000001	0.00008213
69	Yes	13	0.00000001	0.00008286
70	Yes	13	0.00000001	0.00008207
71	Yes	13	0.00000001	0.00008102
72	Yes	13	0.00000001	0.00008156
73	Yes	13	0.00000001	0.00008247
74	Yes	13	0.00000001	0.00008197

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
T1	190 - 180	8.351	66	0.4621	0.0520
T2	180 - 160	7.387	66	0.4561	0.0464
T3	160 - 140	5.528	66	0.4108	0.0399
T4	140 - 136	3.920	66	0.3362	0.0414
T5	136 - 132	3.641	66	0.3180	0.0415
T6	132 - 128	3.378	66	0.3002	0.0409
T7	128 - 124	3.129	66	0.2826	0.0400

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T8	124 - 120	2.895	66	0.2652	0.0388
T9	120 - 100	2.676	66	0.2481	0.0373
T10	100 - 80	1.757	66	0.1796	0.0284
T11	80 - 60	1.080	66	0.1322	0.0207
T12	60 - 40	0.602	66	0.0864	0.0142
T13	40 - 20	0.274	66	0.0588	0.0085
T14	20 - 0	0.076	66	0.0269	0.0041

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.00	(2) Obstruction Lights	66	8.351	0.4621	0.0520	192417
190.00	3' Yagi	66	8.351	0.4621	0.0520	192417
188.00	Pirod 4' Side Mount Standoff	66	8.158	0.4614	0.0509	192417
187.00	PD1142-3	66	8.061	0.4610	0.0504	192417
180.00	APX16DWV-16DWV-S-E-A20	66	7.387	0.4561	0.0464	87397
179.92	(3) Sector Frames	66	7.379	0.4560	0.0464	86384
156.00	3' Dish	66	5.181	0.3980	0.0403	16250
150.00	Pirod 12' T-Frame Sector Mount	66	4.684	0.3769	0.0408	14689
144.00	Paraflector	66	4.215	0.3533	0.0413	13400
142.00	DB230-2A	66	4.066	0.3449	0.0414	12923
140.00	Paraflector	66	3.920	0.3362	0.0414	12249
136.00	Single Dipole	66	3.641	0.3180	0.0415	11559
113.00	Pirod 4' Side Mount Standoff	66	2.322	0.2208	0.0343	16431
110.00	PD320	66	2.182	0.2102	0.0329	17285
109.00	Pirod 4' Side Mount Standoff	66	2.136	0.2068	0.0325	17583
103.00	Pirod 4' Side Mount Standoff	66	1.878	0.1880	0.0297	19594
102.00	GPS	66	1.837	0.1851	0.0293	19941
94.00	DB212 Single Dipole	66	1.531	0.1644	0.0259	21549
92.00	15' Single Dipole	66	1.460	0.1596	0.0251	21808
74.00	PD320	66	0.918	0.1177	0.0187	25783
70.00	15' Single Dipole	66	0.819	0.1080	0.0174	27563
50.00	15' Single Dipole	66	0.421	0.0715	0.0113	36196
32.00	DB212 Single Dipole	66	0.179	0.0465	0.0067	35961
31.00	15' Single Dipole	66	0.168	0.0449	0.0064	35550
17.00	Pirod 4' Side Mount Standoff	66	0.059	0.0224	0.0035	37293

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	37.912	14	2.0947	0.2356
T2	180 - 160	33.539	14	2.0691	0.2104
T3	160 - 140	25.103	14	1.8657	0.2126
T4	140 - 136	17.803	14	1.5262	0.2129
T5	136 - 132	16.534	14	1.4440	0.2096
T6	132 - 128	15.341	14	1.3632	0.2048
T7	128 - 124	14.212	14	1.2832	0.1984
T8	124 - 120	13.150	14	1.2043	0.1909

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T9	120 - 100	12.152	14	1.1268	0.1824
T10	100 - 80	7.979	14	0.8157	0.1378
T11	80 - 60	4.905	14	0.6006	0.0994
T12	60 - 40	2.733	14	0.3924	0.0681
T13	40 - 20	1.244	14	0.2670	0.0408
T14	20 - 0	0.346	14	0.1220	0.0198

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.00	(2) Obstruction Lights	14	37.912	2.0947	0.2356	39974
190.00	3' Yagi	14	37.912	2.0947	0.2356	39974
188.00	Pirod 4' Side Mount Standoff	14	37.036	2.0917	0.2308	39974
187.00	PD1142-3	14	36.598	2.0901	0.2284	39974
180.00	APX16DWV-16DWV-S-E-A20	14	33.539	2.0691	0.2104	19569
179.92	(3) Sector Frames	14	33.504	2.0687	0.2102	19398
156.00	3' Dish	14	23.530	1.8072	0.2140	3589
150.00	Pirod 12' T-Frame Sector Mount	14	21.270	1.7112	0.2153	3235
144.00	Paraflector	14	19.142	1.6042	0.2147	2944
142.00	DB230-2A	14	18.464	1.5659	0.2140	2840
140.00	Paraflector	14	17.803	1.5262	0.2129	2697
136.00	Single Dipole	14	16.534	1.4440	0.2096	2561
113.00	Pirod 4' Side Mount Standoff	14	10.546	1.0028	0.1668	3625
110.00	PD320	14	9.908	0.9548	0.1600	3809
109.00	Pirod 4' Side Mount Standoff	14	9.702	0.9394	0.1578	3874
103.00	Pirod 4' Side Mount Standoff	14	8.528	0.8541	0.1443	4316
102.00	GPS	14	8.342	0.8410	0.1421	4393
94.00	DB212 Single Dipole	14	6.952	0.7466	0.1254	4745
92.00	15' Single Dipole	14	6.630	0.7252	0.1214	4802
74.00	PD320	14	4.168	0.5345	0.0895	5674
70.00	15' Single Dipole	14	3.720	0.4903	0.0832	6067
50.00	15' Single Dipole	14	1.913	0.3249	0.0538	7968
32.00	DB212 Single Dipole	14	0.811	0.2112	0.0318	7917
31.00	15' Single Dipole	14	0.764	0.2038	0.0308	7827
17.00	Pirod 4' Side Mount Standoff	14	0.267	0.1015	0.0168	8213

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	190	Leg	A325N	0.6250	4	1084.95	20708.70	0.052	1	Bolt Tension
		Diagonal	A325N	0.6250	1	1946.68	5811.33	0.335	1	Member Block Shear
		Top Girt	A325N	0.6250	1	414.77	5811.33	0.071	1	Member Block Shear
T2	180	Leg	A325N	0.7500	4	9114.85	29820.60	0.306	1	Bolt Tension
		Diagonal	A325N	0.6250	1	3925.89	5811.33	0.676	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T3	160	Leg	A325N	0.8750	4	23126.00	40589.10	0.570	1	Bolt Tension
		Diagonal	A325N	0.6250	1	7334.04	9107.81	0.805	1	Member Block Shear
T4	140	Diagonal	A325N	0.6250	1	4261.46	5811.33	0.733	1	Member Block Shear
		Top Girt	A325N	0.6250	1	436.11	5811.33	0.075	1	Member Block Shear
T5	136	Diagonal	A325N	0.6250	1	4026.23	5811.33	0.693	1	Member Block Shear
T6	132	Diagonal	A325N	0.6250	1	3901.45	5811.33	0.671	1	Member Block Shear
T7	128	Diagonal	A325N	0.6250	1	3921.89	5811.33	0.675	1	Member Block Shear
T8	124	Leg	A325N	1.0000	4	32877.60	53014.40	0.620	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4257.32	5811.33	0.733	1	Member Block Shear
T9	120	Leg	A325N	1.0000	4	40224.00	53014.40	0.759	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5353.39	6830.86	0.784	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	2	995.18	8224.22	0.121	1	Member Block Shear
T10	100	Leg	A325N	1.0000	4	47544.70	53014.40	0.897	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5675.77	7830.00	0.725	1	Member Bearing
T11	80	Leg	A325N	1.0000	6	36183.40	53014.40	0.683	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6679.63	10440.00	0.640	1	Member Bearing
		Secondary Horizontal	A325N	0.6250	2	1017.73	9583.59	0.106	1	Member Block Shear
T12	60	Leg	A325N	1.0000	6	41158.20	53014.40	0.776	1	Bolt Tension
		Diagonal	A325N	0.6250	1	7817.10	11700.00	0.668	1	Member Bearing
T13	40	Leg	A325N	1.0000	8	33753.40	53014.40	0.637	1	Bolt Tension
		Diagonal	A325N	0.6250	1	9643.24	12425.20	0.776	1	Bolt Shear
		Secondary Horizontal	A325N	0.6250	2	918.63	12425.20	0.074	1	Bolt Shear
T14	20	Leg	A325N	1.0000	8	37024.30	53014.40	0.698	1	Bolt Tension
		Diagonal	A325N	0.7500	1	9145.29	14137.50	0.647	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	ROHN 2 STD	10.00	5.00	76.2 K=1.00	1.0745	-5001.40	31617.20	0.158 [1]
T2	180 - 160	ROHN 2.5 STD	20.00	4.00	50.7 K=1.00	1.7040	-41175.80	63560.30	0.648 [1]
T3	160 - 140	ROHN 3 EH	20.00	4.00	42.2 K=1.00	3.0159	-102224.00	119117.00	0.858 [1]
T4	140 - 136	ROHN 3.5 EH	4.01	4.01	36.8 K=1.00	3.6784	-114843.00	149924.00	0.766 [1]
T5	136 - 132	ROHN 3.5 EH	4.01	4.01	36.8	3.6784	-123691.00	149924.00	0.825 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T6	132 - 128	ROHN 3.5 EH	4.01	4.01	K=1.00 36.8	3.6784	-130879.00	149926.00	0.873 [1]
T7	128 - 124	ROHN 3.5 EH	4.01	4.01	K=1.00 36.8	3.6784	-138161.00	149924.00	0.922 [1]
T8	124 - 120	ROHN 3.5 EH	4.01	2.07	K=1.00 19.0	3.6784	-144551.00	161228.00	0.897 [1]
T9	120 - 100	ROHN 4 EH	20.04	2.58	K=1.00 21.0	4.4074	-177379.00	192061.00	0.924 [1]
T10	100 - 80	ROHN 5 EH	20.03	6.68	K=1.00 43.6	6.1120	-210036.00	239388.00	0.877 [1]
T11	80 - 60	ROHN 5 EH	20.04	3.43	K=1.00 22.4	6.1120	-241316.00	265136.00	0.910 [1]
T12	60 - 40	6.0 EHS + HALF HSS7.625x0.375	20.03	6.68	K=1.00 37.5	9.8520	-276335.00	400079.00	0.691 [1]
T13	40 - 20	ROHN 6 EH	20.04	5.17	K=1.00 28.3	8.4049	-304630.00	356741.00	0.854 [1]
T14	20 - 0	ROHN 8 EHS	20.03	10.02	K=1.00 41.2	9.7193	-335912.00	386395.00	0.869 [1]
					K=1.00				

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 3/4x1 3/4x3/16	6.83	3.15	112.5 K=1.02	0.6211	-1962.67	10333.60	0.190 [1]
T2	180 - 160	L1 3/4x1 3/4x3/16	6.16	2.81	103.5 K=1.06	0.6211	-4018.07	11446.10	0.351 [1]
T3	160 - 140	L2x2x1/4	6.18	2.78	94.1 K=1.10	0.9380	-7835.10	19074.20	0.411 [1]
T4	140 - 136	L1 3/4x1 3/4x3/16	6.35	2.97	107.8 K=1.04	0.6211	-4603.01	10909.60	0.422 [1]
T5	136 - 132	L1 3/4x1 3/4x3/16	6.67	3.13	112.1 K=1.02	0.6211	-4142.98	10379.70	0.399 [1]
T6	132 - 128	L1 3/4x1 3/4x3/16	7.00	3.30	116.4 K=1.01	0.6211	-4112.45	9859.69	0.417 [1]
T7	128 - 124	L1 3/4x1 3/4x3/16	7.33	3.47	121.2 K=1.00	0.6211	-4107.76	9280.71	0.443 [1]
T8	124 - 120	L1 3/4x1 3/4x3/16	7.68	3.65	127.4 K=1.00	0.6211	-4541.07	8567.74	0.530 [1]
T9	120 - 100	L2x2x3/16	9.48	4.56	138.8 K=1.00	0.7150	-5804.58	8389.57	0.692 [1]
T10	100 - 80	L2 1/2x2 1/2x3/16	12.44	6.02	146.0 K=1.00	0.9020	-6159.41	9563.61	0.644 [1]
T11	80 - 60	L2 1/2x2 1/2x1/4	14.23	6.93	169.4 K=1.00	1.1900	-7310.48	9369.88	0.780 [1]
T12	60 - 40	L3x3x1/4	15.99	7.73	156.7 K=1.00	1.4400	-7846.91	13252.80	0.592 [1]
T13	40 - 20	L3 1/2x3 1/2x1/4	19.26	9.50	164.3 K=1.00	1.6900	-9243.54	14151.80	0.653 [1]
T14	20 - 0	L3 1/2x3 1/2x1/4	21.03	10.26	177.3 K=1.00	1.6900	-10310.00	12139.10	0.849 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	124 - 120	L2x2x1/4	6.55	6.22	121.5 K=0.99	0.9380	-1419.66	13968.10	0.102 [1]
T9	120 - 100	L2x2x1/4	7.53	6.76	128.1 K=0.96	0.9380	-1870.27	12814.60	0.146 [1]
T11	80 - 60	L2 1/2x2 1/2x1/4	11.86	11.01	151.8 K=0.88	1.1900	-1937.64	11663.90	0.166 [1]
T13	40 - 20	L3x3x5/16	16.44	15.49	170.2 K=0.84	1.7800	-1837.27	13884.10	0.132 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 3/4x1 3/4x3/16	4.65	4.21	147.2 K=1.00	0.6211	-447.98	6477.07	0.069 [1]
T4	140 - 136	L1 3/4x1 3/4x3/16	4.72	4.15	144.9 K=1.00	0.6211	-560.33	6683.02	0.084 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	ROHN 2 STD	10.00	5.00	76.2	1.0745	4339.79	48353.90	0.090 [1]
T2	180 - 160	ROHN 2.5 STD	20.00	4.00	50.7	1.7040	36459.40	76682.30	0.475 [1]
T3	160 - 140	ROHN 3 EH	20.00	4.00	42.2	3.0159	92504.10	135717.00	0.682 [1]
T4	140 - 136	ROHN 3.5 EH	4.01	4.01	36.8	3.6784	104239.00	165529.00	0.630 [1]
T5	136 - 132	ROHN 3.5 EH	4.01	4.01	36.8	3.6784	112335.00	165529.00	0.679 [1]
T6	132 - 128	ROHN 3.5 EH	4.01	4.01	36.8	3.6784	119056.00	165529.00	0.719 [1]
T7	128 - 124	ROHN 3.5 EH	4.01	4.01	36.8	3.6784	125735.00	165529.00	0.760 [1]
T8	124 - 120	ROHN 3.5 EH	4.01	1.94	17.8	3.6784	131639.00	165529.00	0.795 [1]
T9	120 - 100	ROHN 4 EH	20.04	2.43	19.7	4.4074	161030.00	198335.00	0.812 [1]
T10	100 - 80	ROHN 5 EH	20.03	6.68	43.6	6.1120	190179.00	275039.00	0.691 [1]
T11	80 - 60	ROHN 5 EH	20.04	3.25	21.2	6.1120	217289.00	275039.00	0.790 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T12	60 - 40	6.0 EHS + HALF HSS7.625x0.375	20.03	6.68	37.5	9.8520	246949.00	443340.00	0.557 [1]
T13	40 - 20	ROHN 6 EH	20.04	4.85	26.5	8.4049	270294.00	378222.00	0.715 [1]
T14	20 - 0	ROHN 8 EHS	20.03	10.02	41.2	9.7193	296194.00	437369.00	0.677 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 3/4x1 3/4x3/16	6.83	3.15	73.1	0.3604	1946.68	15675.30	0.124 [1]
T2	180 - 160	L1 3/4x1 3/4x3/16	6.16	2.81	65.4	0.3604	3925.89	15675.30	0.250 [1]
T3	160 - 140	L2x2x1/4	6.18	2.78	57.2	0.5629	7334.04	24485.10	0.300 [1]
T4	140 - 136	L1 3/4x1 3/4x3/16	6.35	2.97	69.1	0.3604	4261.46	15675.30	0.272 [1]
T5	136 - 132	L1 3/4x1 3/4x3/16	6.67	3.13	72.7	0.3604	4026.23	15675.30	0.257 [1]
T6	132 - 128	L1 3/4x1 3/4x3/16	7.00	3.30	76.4	0.3604	3901.45	15675.30	0.249 [1]
T7	128 - 124	L1 3/4x1 3/4x3/16	7.33	3.47	80.2	0.3604	3921.89	15675.30	0.250 [1]
T8	124 - 120	L1 3/4x1 3/4x3/16	7.68	3.65	84.1	0.3604	4257.32	15675.30	0.272 [1]
T9	120 - 100	L2x2x3/16	9.48	4.56	90.9	0.4308	5353.39	18739.00	0.286 [1]
T10	100 - 80	L2 1/2x2 1/2x3/16	11.88	5.75	90.5	0.5710	5675.77	24839.90	0.228 [1]
T11	80 - 60	L2 1/2x2 1/2x1/4	13.62	6.63	105.3	0.7519	6679.63	32706.60	0.204 [1]
T12	60 - 40	L3x3x1/4	15.99	7.73	101.3	0.9394	7817.10	45794.50	0.171 [1]
T13	40 - 20	L3 1/2x3 1/2x1/4	18.35	9.05	101.0	1.1269	8537.11	54935.20	0.155 [1]
T14	20 - 0	L3 1/2x3 1/2x1/4	21.03	10.26	114.4	1.1034	9145.29	53792.60	0.170 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	124 - 120	L2x2x1/4	6.55	6.22	122.5	0.9380	1467.09	30391.20	0.048 [1]
T9	120 - 100	L2x2x1/4	7.53	6.76	140.9	0.5629	1990.36	24485.10	0.081 [1]
T11	80 - 60	L2 1/2x2 1/2x1/4	11.86	11.01	177.9	0.7519	2035.46	32706.60	0.062 [1]
T13	40 - 20	L3x3x5/16	15.37	14.42	192.8	1.1592	1811.18	50426.00	0.036 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 3/4x1 3/4x3/16	4.65	4.21	99.5	0.3604	414.77	15675.30	0.026 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	140 - 136	L1 3/4x1 3/4x3/16	4.72	4.15	98.0	0.3604	436.11	15675.30	0.028 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	190 - 180	Leg	ROHN 2 STD	2	-5001.40	31617.20	15.8	Pass
T2	180 - 160	Leg	ROHN 2.5 STD	20	-41175.80	63560.30	64.8	Pass
T3	160 - 140	Leg	ROHN 3 EH	53	-102224.00	119117.00	85.8	Pass
T4	140 - 136	Leg	ROHN 3.5 EH	86	-114843.00	149924.00	76.6	Pass
T5	136 - 132	Leg	ROHN 3.5 EH	98	-123691.00	149924.00	82.5	Pass
T6	132 - 128	Leg	ROHN 3.5 EH	107	-130879.00	149926.00	87.3	Pass
T7	128 - 124	Leg	ROHN 3.5 EH	116	-138161.00	149924.00	92.2	Pass
T8	124 - 120	Leg	ROHN 3.5 EH	125	-144551.00	161228.00	89.7	Pass
T9	120 - 100	Leg	ROHN 4 EH	137	-177379.00	192061.00	92.4	Pass
T10	100 - 80	Leg	ROHN 5 EH	176	-210036.00	239388.00	87.7	Pass
							89.7 (b)	
T11	80 - 60	Leg	ROHN 5 EH	197	-241316.00	265136.00	91.0	Pass
T12	60 - 40	Leg	6.0 EHS + HALF HSS7.625x0.375	227	-276335.00	400079.00	69.1	Pass
							77.6 (b)	
T13	40 - 20	Leg	ROHN 6 EH	248	-304630.00	356741.00	85.4	Pass
T14	20 - 0	Leg	ROHN 8 EHS	269	-335912.00	386395.00	86.9	Pass
T1	190 - 180	Diagonal	L1 3/4x1 3/4x3/16	10	-1962.67	10333.60	19.0	Pass
							33.5 (b)	
T2	180 - 160	Diagonal	L1 3/4x1 3/4x3/16	24	-4018.07	11446.10	35.1	Pass
							67.6 (b)	
T3	160 - 140	Diagonal	L2x2x1/4	58	-7835.10	19074.20	41.1	Pass
							80.5 (b)	
T4	140 - 136	Diagonal	L1 3/4x1 3/4x3/16	94	-4603.01	10909.60	42.2	Pass
							73.3 (b)	
T5	136 - 132	Diagonal	L1 3/4x1 3/4x3/16	102	-4142.98	10379.70	39.9	Pass
							69.3 (b)	
T6	132 - 128	Diagonal	L1 3/4x1 3/4x3/16	111	-4112.45	9859.69	41.7	Pass
							67.1 (b)	
T7	128 - 124	Diagonal	L1 3/4x1 3/4x3/16	120	-4107.76	9280.71	44.3	Pass
							67.5 (b)	
T8	124 - 120	Diagonal	L1 3/4x1 3/4x3/16	129	-4541.07	8567.74	53.0	Pass
							73.3 (b)	
T9	120 - 100	Diagonal	L2x2x3/16	150	-5804.58	8389.57	69.2	Pass
							78.4 (b)	
T10	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	180	-6159.41	9563.61	64.4	Pass
							72.5 (b)	
T11	80 - 60	Diagonal	L2 1/2x2 1/2x1/4	201	-7310.48	9369.88	78.0	Pass
T12	60 - 40	Diagonal	L3x3x1/4	231	-7846.91	13252.80	59.2	Pass
							66.8 (b)	
T13	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	252	-9243.54	14151.80	65.3	Pass
							77.6 (b)	
T14	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	273	-10310.00	12139.10	84.9	Pass
T8	124 - 120	Secondary Horizontal	L2x2x1/4	135	-1419.66	13968.10	10.2	Pass
T9	120 - 100	Secondary Horizontal	L2x2x1/4	165	-1870.27	12814.60	14.6	Pass
T11	80 - 60	Secondary Horizontal	L2 1/2x2 1/2x1/4	216	-1937.64	11663.90	16.6	Pass
T13	40 - 20	Secondary Horizontal	L3x3x5/16	258	-1837.27	13884.10	13.2	Pass
T1	190 - 180	Top Girt	L1 3/4x1 3/4x3/16	5	-447.98	6477.07	6.9	Pass
							7.1 (b)	

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T4	140 - 136	Top Girt	L1 3/4x1 3/4x3/16	90	-560.33	6683.02	8.4	Pass
							Summary	
						Leg (T9)	92.4	Pass
						Diagonal (T14)	84.9	Pass
						Secondary Horizontal (T11)	16.6	Pass
						Top Girt (T4)	8.4	Pass
						Bolt Checks	89.7	Pass
						RATING =	**92.4**	**Pass**

SST Unit Base Foundation

BU # :	
Site Name:	CTHA616A
App. Number:	

TIA-222 Revision: G

Top & Bot. Pad Rein. Different?:	☐
Tower Centroid Offset?:	☐
Block Foundation?:	☑

Superstructure Analysis Reactions		
Global Moment, **M**:	5473.057	ft-kips
Global Axial, **P**:	50.457	kips
Global Shear, **V**:	52.544	kips
Leg Compression, $\mathbf{P_{comp}}$:	344.137	kips
Leg Comp. Shear, $\mathbf{V_{u\_comp}}$:	33.053	kips
Leg Uplift, $\mathbf{P_{uplift}}$:	302.758	kips
Leg Uplift. Shear, $\mathbf{V_{u\_uplift}}$:	29.484	kips
Tower Height, **H**:	190	ft
Base Face Width, **BW**:	19	ft
BP Dist. Above Fdn, $\mathbf{bp_{dist}}$:	0	in
Anchor Bolt Circle, **BC**:		in

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating**	**Check**
Lateral (Sliding) (kips)	235.96	52.54	**22.3%**	**Pass**
Bearing Pressure (ksf)	6.00	2.47	**41.2%**	**Pass**
*Overturning (kip*ft)*	8997.76	5709.51	**63.5%**	**Pass**

Soil Rating:	**63.5%**

Pad Properties		
Depth, **D**:	4.50	ft
Pad Width, **W**:	32.00	ft
Pad Thickness, **T**:	4.50	ft
Pad Rebar Size (Bottom), **Sp**:		
Pad Rebar Quantity (Bottom), **mp**:		
Pad Clear Cover, $\mathbf{cc_{pad}}$:		in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	120	pcf
Ultimate Gross Bearing, Qult:	8.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, $\mathbf{N_{blows}}$:		
Base Friction, μ:	0.3	
Neglected Depth, **N**:	0.0	ft
Foundation Bearing on Rock?		
Groundwater Depth, **gw**:	N/A	ft

<-- Toggle between Gross and Net

Version 3.2.0

CENTERLINE COMMUNICATIONS
750 West Center Street, Suite 301
West Bridgewater, MA 02379
781.713.4725

Revised Mount Analysis Report

Site Address	1712 Main Street Coventry, CT 06238
Site Name	CT03XC206
Site ID	CTHA616A
Project Name	Sprint Retain
Design Codes	2015 International Building Code ASCE 7-10 TIA-222-G Standards 2018 CT State Building Code

	Stress Ratio	Overall Result
Existing Mount	**98%**	**PASS**

Client:

T - Mobile

NORTHEAST, LLC
15 Commerce Way, Suite B
Norton, MA 02766

STATE OF CONNECTICUT
DEREK J. CREASER
No. 28554
LICENSED
PROFESSIONAL ENGINEER

Date: 4/29/2021 (Rev. 1)
4/28/2021

DN: CN = Derek J. Creaser, P.E.
email = dcreaser@clinellc.com C
= US O = Centerline
Communications OU = Director -
A&E Services
Date: 2021.04.29 18:39:14 -04'00'

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 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
180	**MP1**	**30**	**1**	**APX16DWV-16DWV-S-E-A20 Antenna**	Sector 1
180	**MP2**	**30**	**1**	**APXVAALL24_43-U-NA20 Antenna**	
180	**MP3**	**30**	**1**	**AIR6449 B41 RRH**	
180	**MP1**	**30**	**1**	**4415 B66A RRH**	
180	**MP4**	**30**	**1**	**4449 B71+B85 RRH**	
180	**MP4**	**30**	**1**	**4424 B25 RRH**	
180	**-**	**135**	**1**	**APX16DWV-16DWV-S-E-A20 Antenna**	Sector 2
180	**-**	**135**	**1**	**APXVAALL24_43-U-NA20 Antenna**	
180	**-**	**135**	**1**	**AIR6449 B41 RRH**	
180	**-**	**135**	**1**	**4415 B66A RRH**	
180	**-**	**135**	**1**	**4449 B71+B85 RRH**	
180	**-**	**135**	**1**	**4424 B25 RRH**	
180	**-**	**270**	**1**	**APX16DWV-16DWV-S-E-A20 Antenna**	Sector 3
180	**-**	**270**	**1**	**APXVAALL24_43-U-NA20 Antenna**	
180	**-**	**270**	**1**	**AIR6449 B41 RRH**	
180	**-**	**270**	**1**	**4415 B66A RRH**	
180	**-**	**270**	**1**	**4449 B71+B85 RRH**	
180	**-**	**270**	**1**	**4424 B25 RRH**	

Notes:

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

Design Criteria:

Design Codes:

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

Ultimate Wind Speed	130 mph
Nominal Wind Speed	101 mph
Wind Speed with Ice	50 mph
Ice Thickness	1.0 in.
Exposure Category	B
Topographic Category	1
Structure Class	II
Site Soil Class (Assumed)	D-Stiff Soil
Seismic Design Category	B
Spectral Response Acceleration Parameter at a Short Periods, S_S	0.176 g
Spectral Response Acceleration Parameter at a Period of 1 Second, S_1	0.063 g
Short Period Site Coefficient, F_a	1.6
Long Period Site Coefficient, F_v	2.4

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

Conclusion:

The results of the analysis concluded that the existing T-Mobile mounts *are adequate* to support the proposed T-Mobile equipment loading upon completion of the following modifications. Centerline recommends the following:

Alpha, Beta & Gamma:

- Install (1) 2" STD. x 8.0 ft long mount pipes using (2) Site Pro 1 UB1212 U-bolts at Position 2.

	Stress Ratio	Overall Result
Existing Mount	**98%**	**PASS**

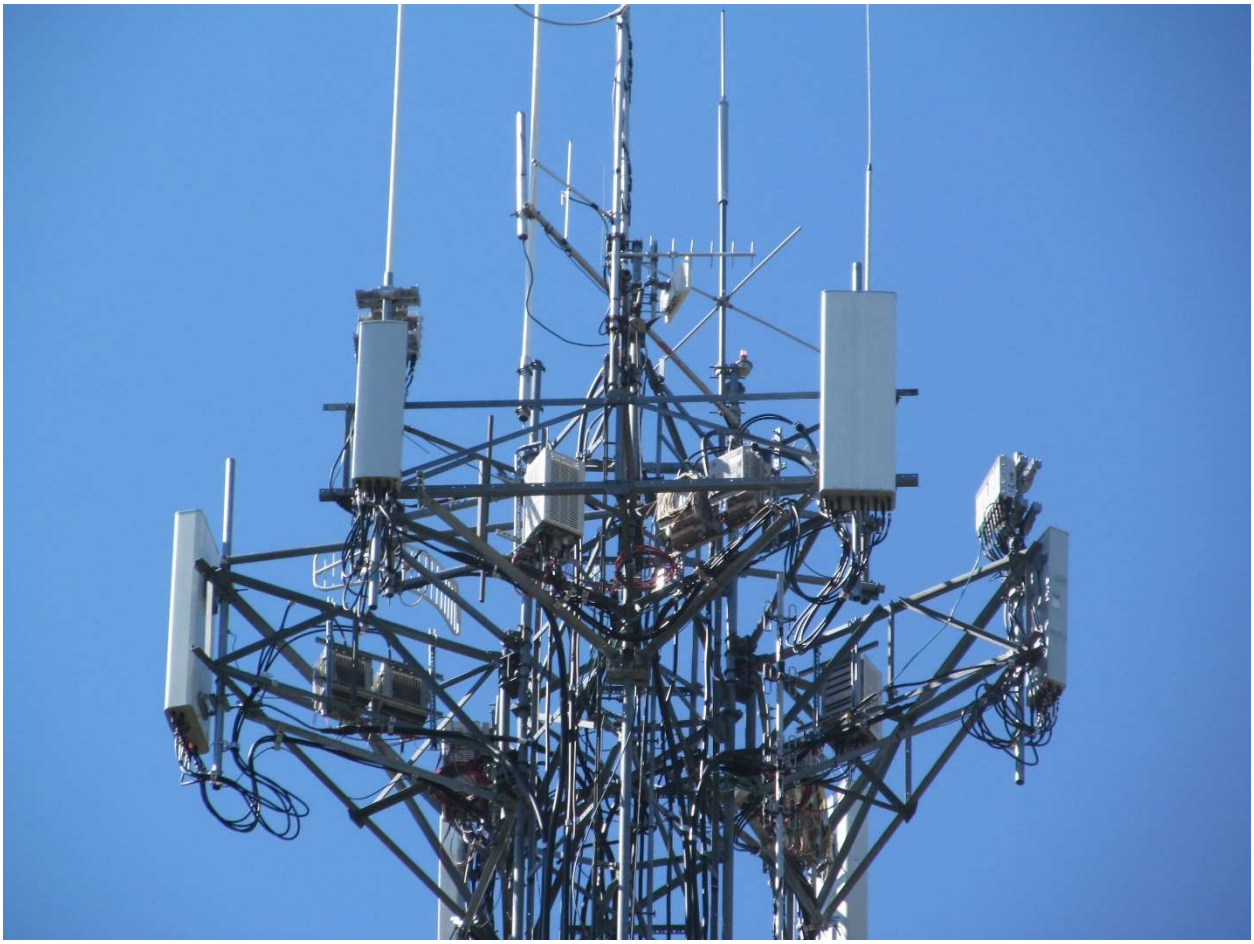
Reference Documents:

- T-Mobile RFDS CTHA616A_Sprint Retain_1_draft, dated 01/15/2021
- Structural Analysis by Maser, dated 07/23/2018
- Construction Drawings by Maser, dated 07/27/2018
- Mount Analysis by Maser, dated 07/23/2018
- Site Photos and Notes by Centerline Communications, dated 04/22/2021

Assumptions and Limitations:

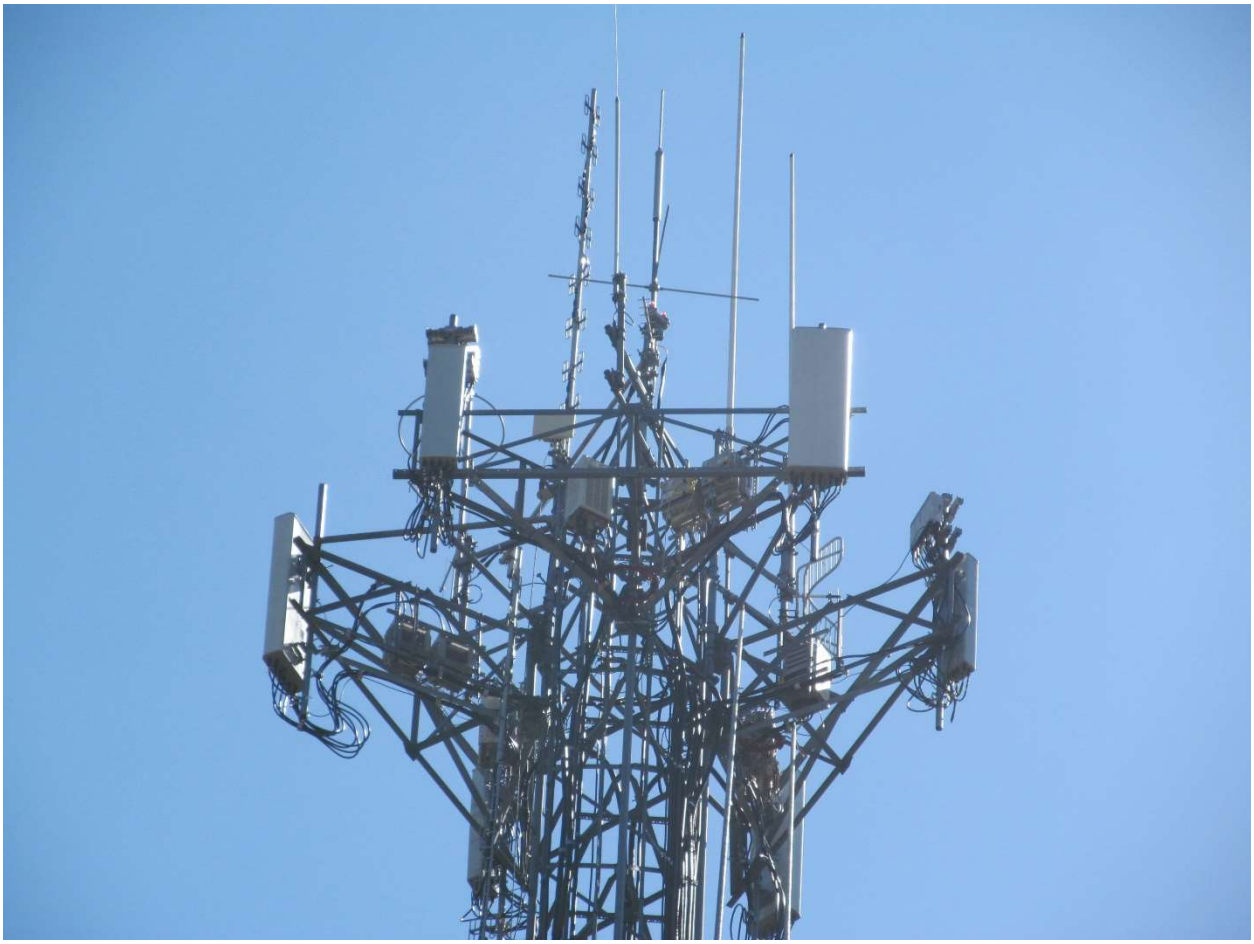
- The calculations performed by Centerline Communications are limited to the structural members in these calculations only.
- Structural calculations in this report do not check the adequacy of the supporting structure, other mounts, or coax mounting attachments.
- The calculation assumes all structural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

Photos:



Existing Alpha Sector

Existing Beta Sector



Existing Gamma Sector

Overall

Design Calculations

CENTERLINE COMMUNICATIONS

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West Bridgewater, MA 02379
781.713.4725

Site Details	
Site Name	CT03XC206
Carrier	T-Mobile
City, State	Coventry, CT
Project	Sprint Retain

Mount Details		
Mount Type	Sector Frame	
Mount Height, z	180	ft
Number of Sectors	3	
Tower Type	SST	
Tower Height, h	190	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	0.176	g
1 Second Period Spectral Acceleration, S_1	0.063	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}	130	mph
Nominal Wind Speed, V	101	mph
Wind Speed with Ice, V_i	50	mph
Design Ice Thickness, t_i	1	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	1.17	
Gust Effect Factor, G_h	1.00	
Design Ice Thickness, t_{iz}	2.37	in
Velocity Pressure, q_z	29.00	psf
Velocity Pressure with Ice, q_{zi}	7.11	psf
Shielding Factor, K_a	1.00	
Flat Velocity Pressure (Ca =2.0)	58.00	psf
Round Velocity Pressure (Ca = 1.2)	34.80	psf
Round Velocity Pressure with Ice (Ca = 1.2)	8.53	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**
Horizontal	L2.5x2.5x3	Beam	3.07	58.00	17.10	8.53	0.38
Standoff	L2x2x3	Beam	2.46	58.00	15.05	8.53	0.31
Horizontal Diagonal Brace	L2x2x2	Beam	1.67	58.00	15.05	8.53	0.21
Horizontal Vertical Brace	L1.75x1.75x2	Beam	1.44	58.00	14.03	8.53	0.18
Standoff Brace	L1.75x1.75x2	Beam	1.44	58.00	14.03	8.53	0.18
Mount Pipe	PIPE_2.0	Beam	3.47	34.80	13.74	8.53	0.43
Tieback	PIPE_2.0	Beam	3.47	34.80	13.74	8.53	0.43

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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.
APX16DWV-16DWV-S-E-A20 Antenna	180	6.59	2.15	191.01	62.35	55.9\13.3\3.15	40.7\203.79
APXVAALL24_43-U-NA20 Antenna	180	20.27	8.90	587.74	258.10	96\24\8.7	153.3\611.38
AIR6449 B41 RRH	180	5.68	2.49	164.78	72.23	33.1\20.6\8.6	104\224.47
4415 B66A RRH	180	1.86	0.82	53.84	23.85	16.54\13.47\5.9	49.6\91.01
4449 B71+B85 RRH	180	1.97	1.59	57.05	46.01	17.91\13.18\10.63	91.09\120.84
4424 B25 RRH	180	1.64	0.67	47.53	19.44	14.9\13.2\5.4	46.3\81.35

*Dish force coefficient is calculated per Annex C.2 of TIA-222-G, if available.

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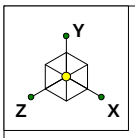
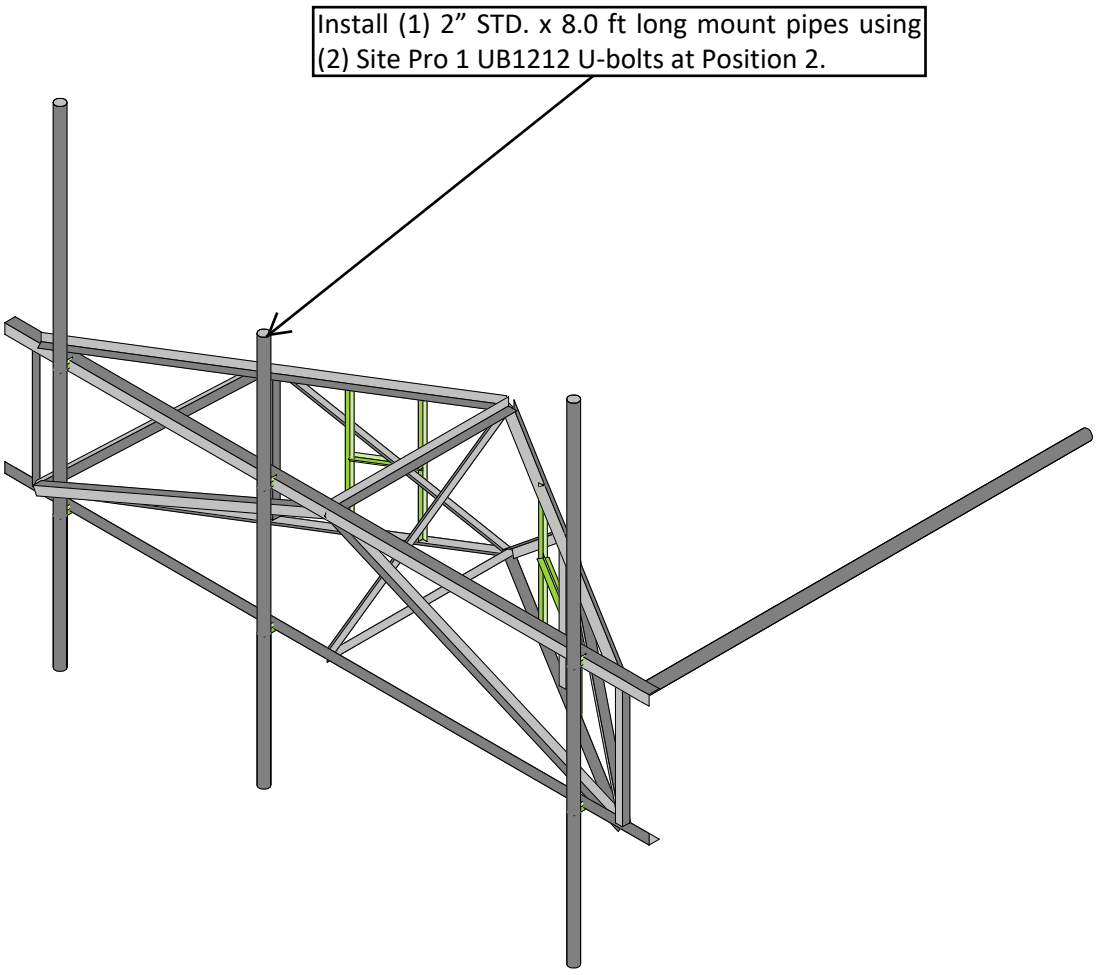
Sector 1 Continue…								
		Wind Force with Ice				Wind Force V = 30 mph		Seismic Force
Appurtenances	Rad. Ht., ft	Front EPA ft^2	Side EPA ft^2	0° Force lbs.	90° Force lbs.	0° Force lbs.	90° Force lbs.	Vs, lbs
APX16DWV-16DWV-S-E-A20 Antenna	180	5.46	2.71	85.64	34.53	16.85	5.50	5.09
APXVAALL24_43-U-NA20 Antenna	180	14.52	7.63	247.26	117.45	51.85	22.77	19.19
AIR6449 B41 RRH	180	4.66	2.48	73.51	35.33	14.54	6.37	13.02
4415 B66A RRH	180	1.88	1.10	26.58	13.67	4.75	2.10	6.21
4449 B71+B85 RRH	180	1.97	1.69	28.00	23.30	5.03	4.06	11.40
4424 B25 RRH	180	1.71	0.97	23.82	11.65	4.19	1.72	5.79

Existing Mount Results





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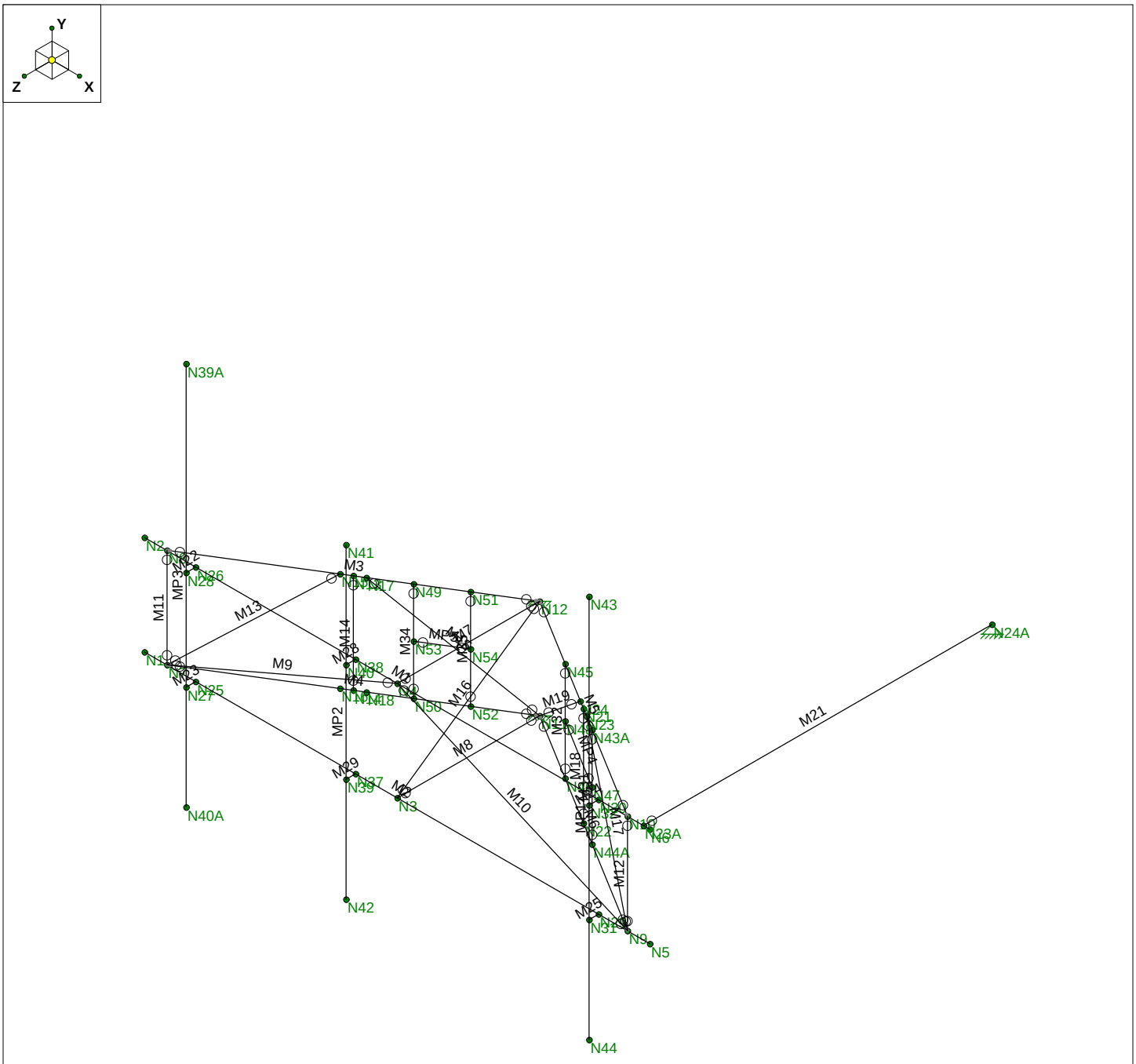

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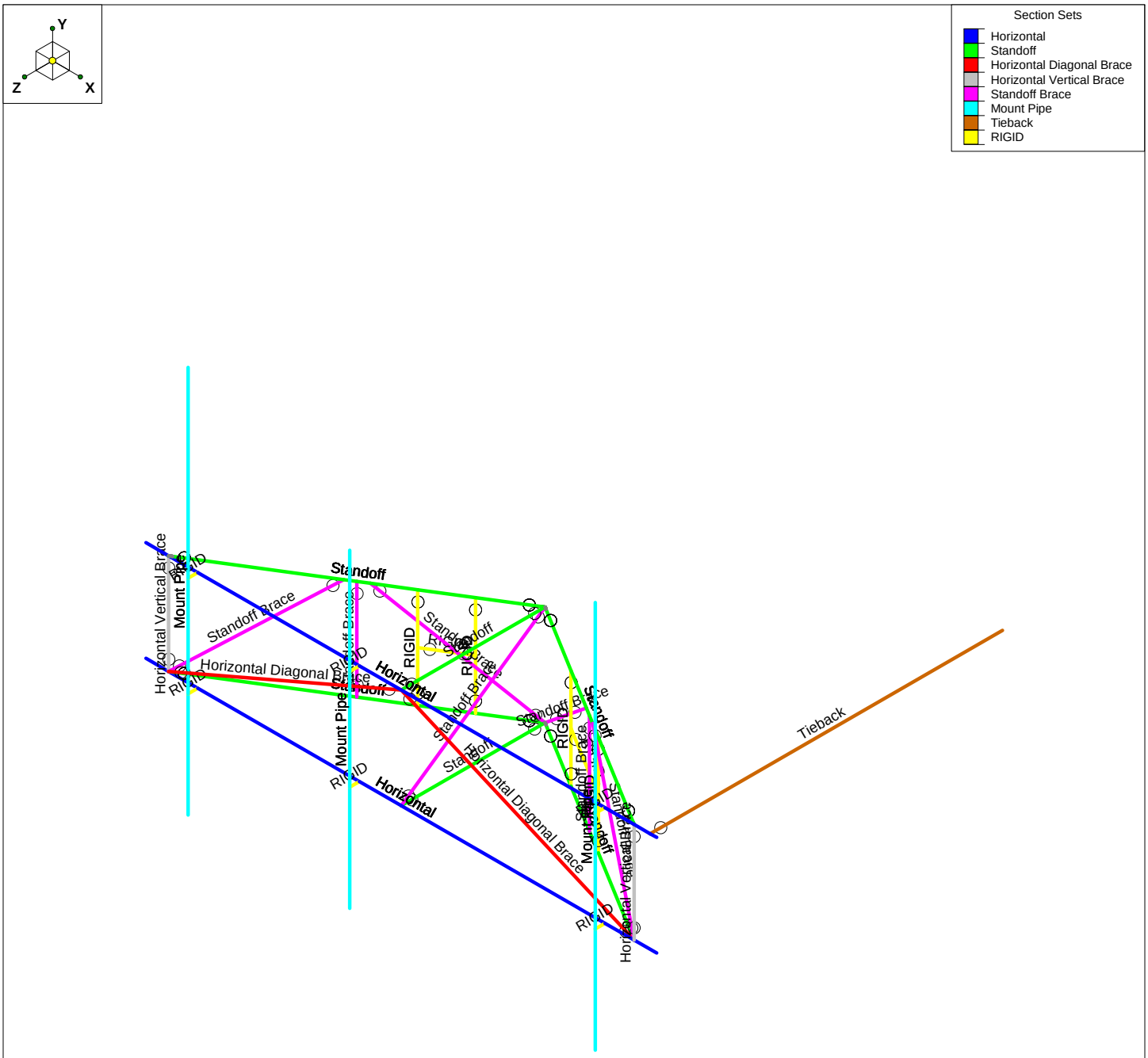

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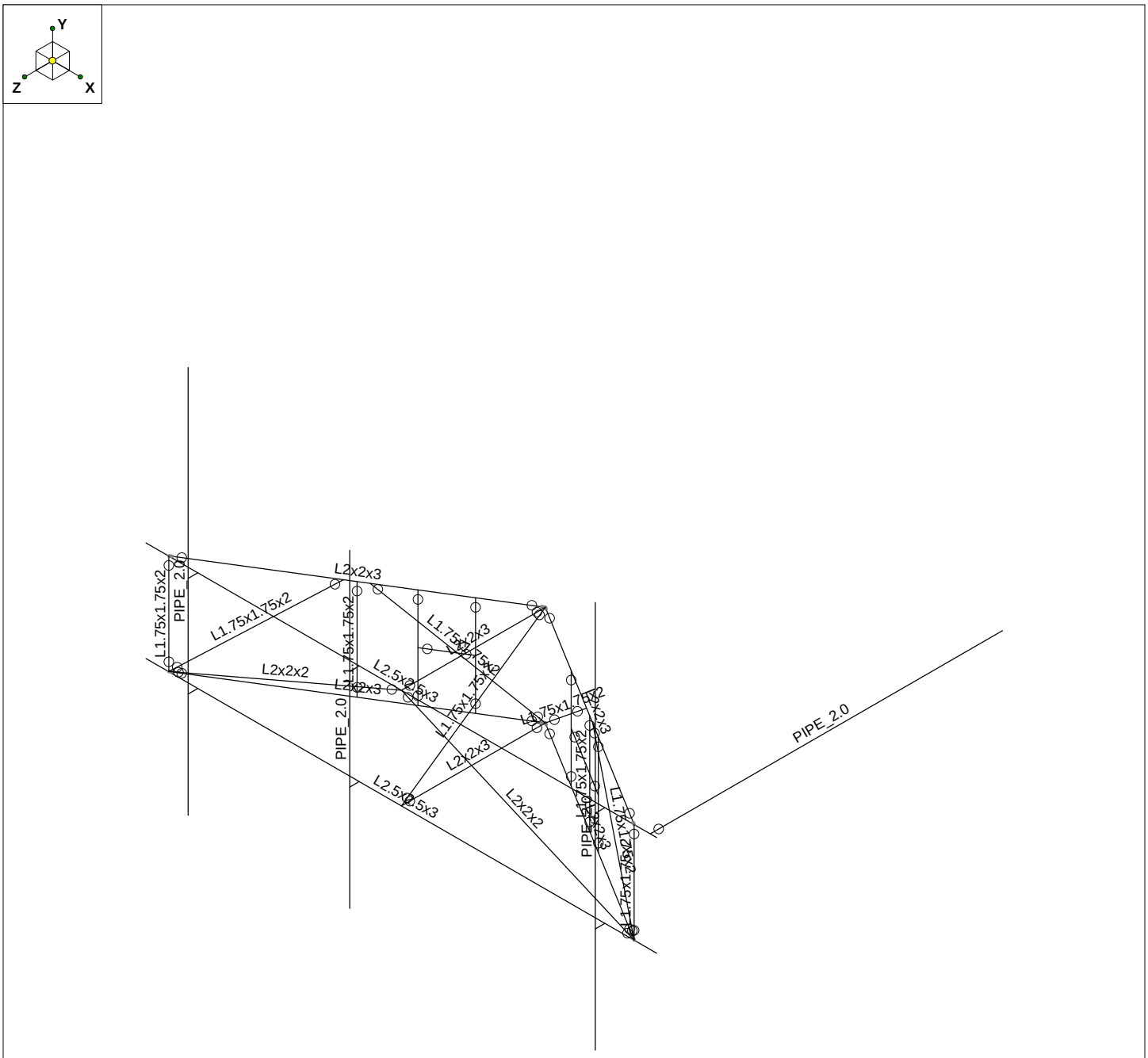

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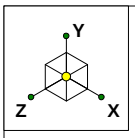

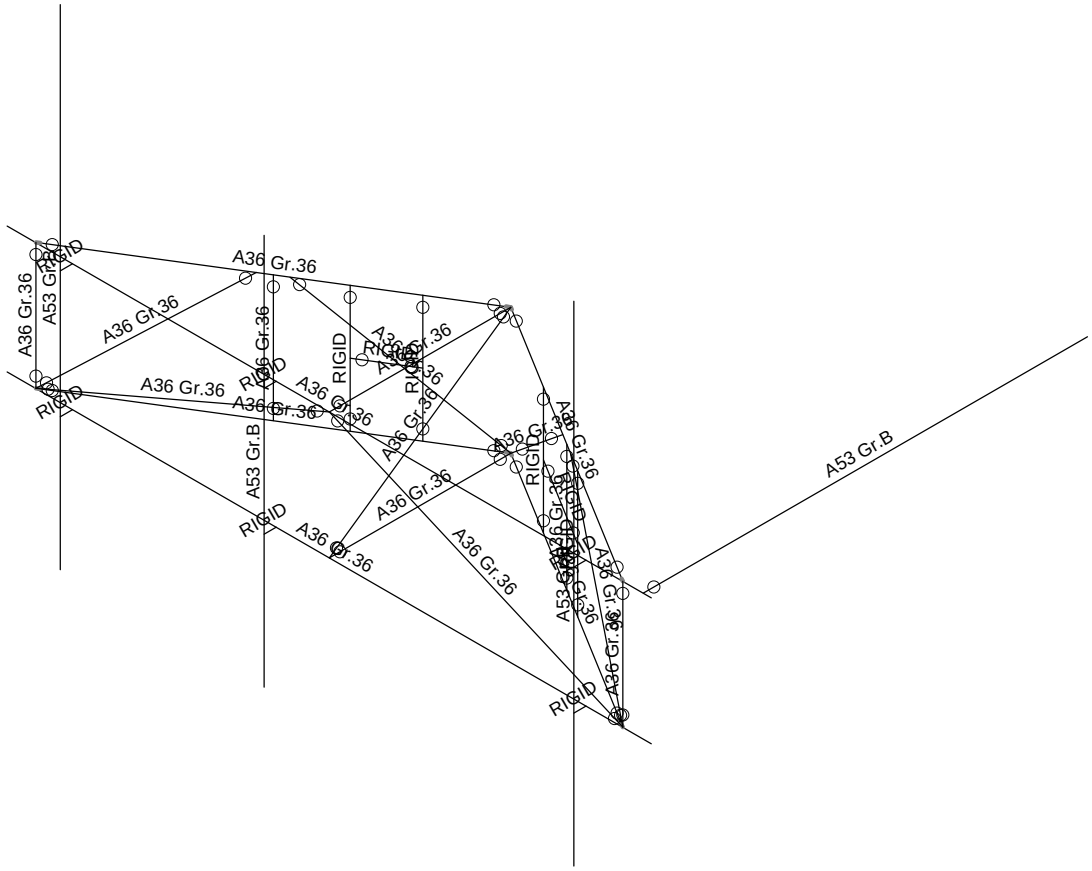

Centerline Communcation...	CTHA616A_MA	Material Sets
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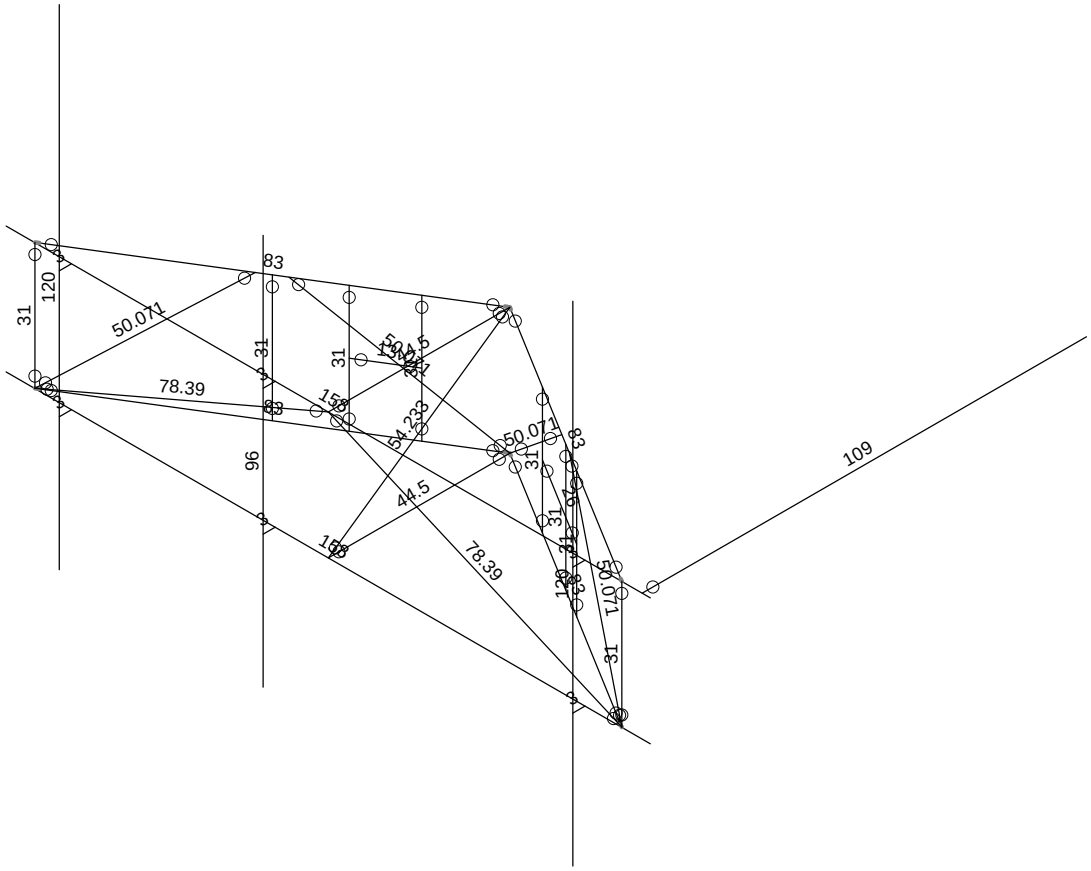

Member Length (in) Displayed

Centerline Communcation...	CTHA616A_MA	Member Length
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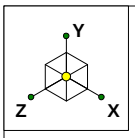

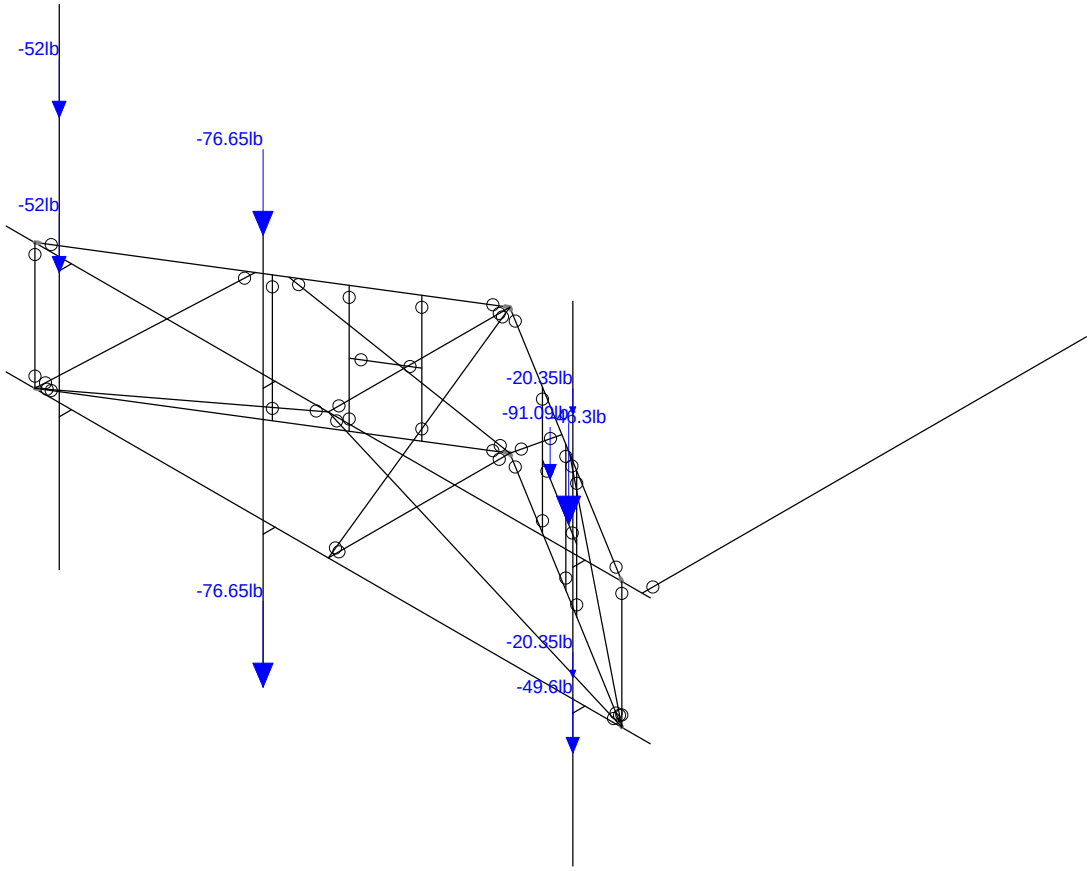

Loads: BLC 1, Dead Load

Centerline Communcation...	CTHA616A_MA	Dead Load
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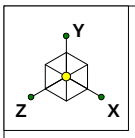

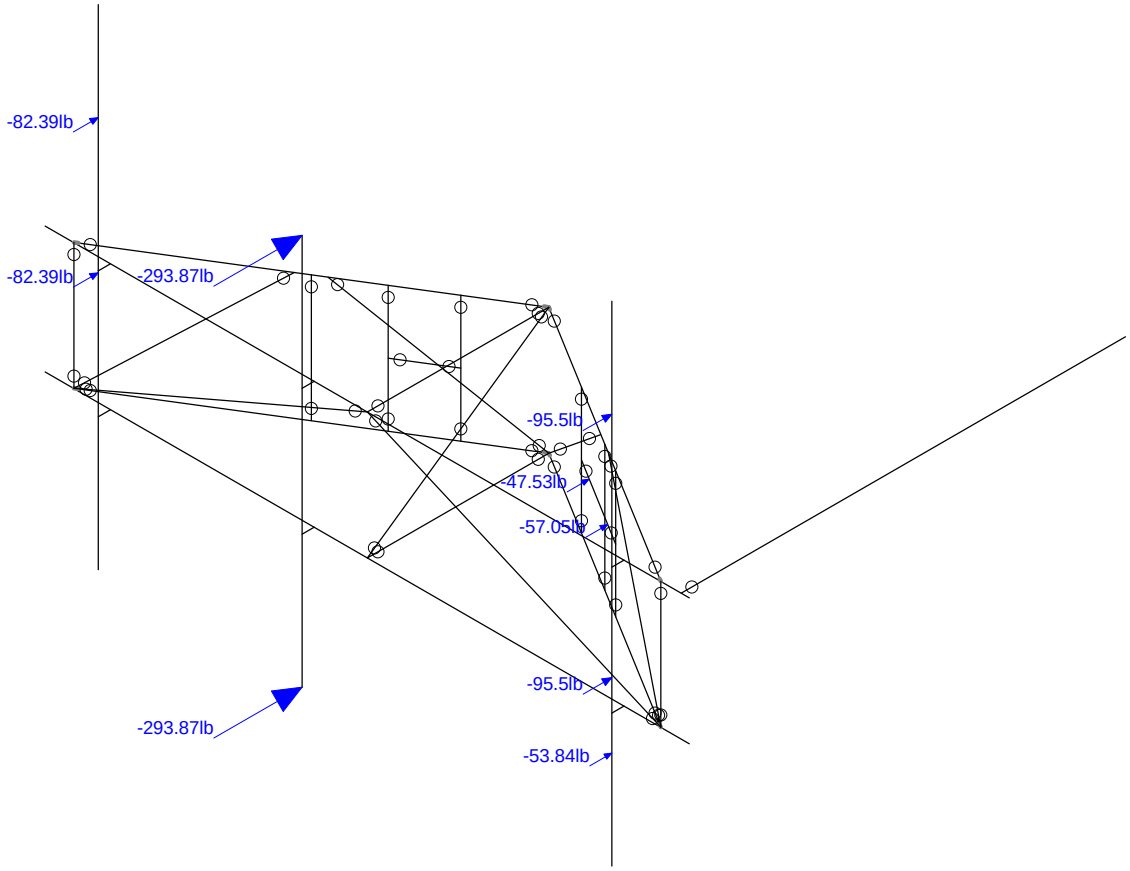

Loads: BLC 2, Wind 0

Centerline Communcation...	CTHA616A_MA	Wind 0
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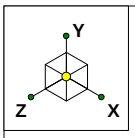
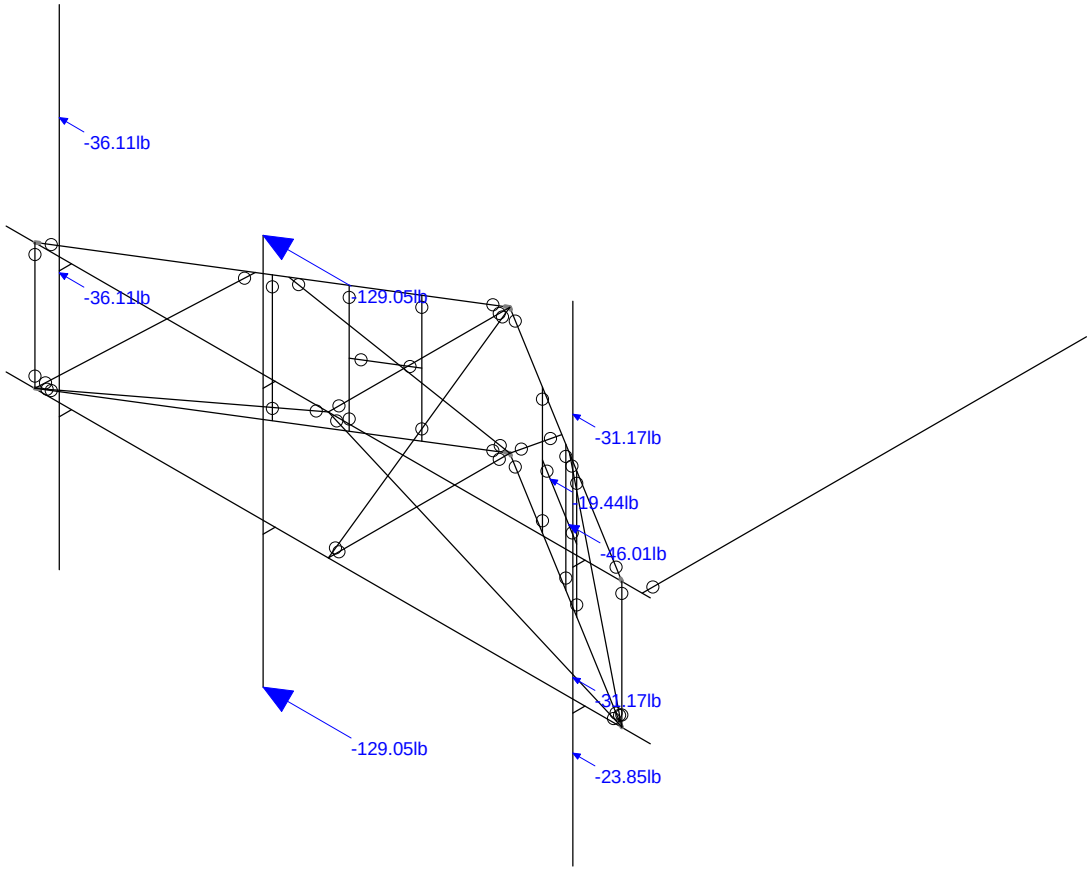
		CTHA616A_MA.r3d





Loads: BLC 5, Wind 90

Centerline Communcation...	CTHA616A_MA	Wind 90
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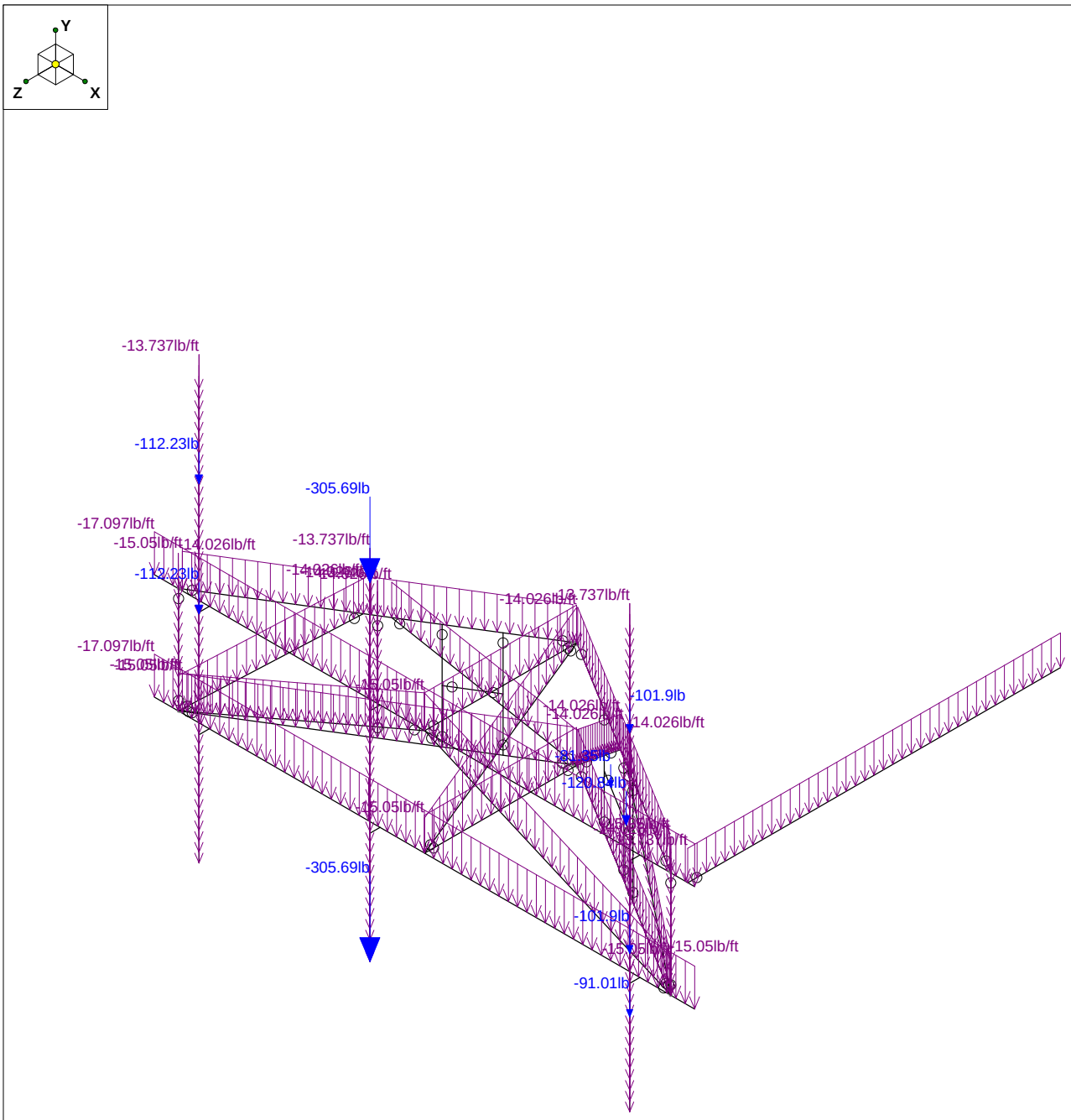

Loads: BLC 9, Ice Weight

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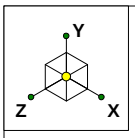

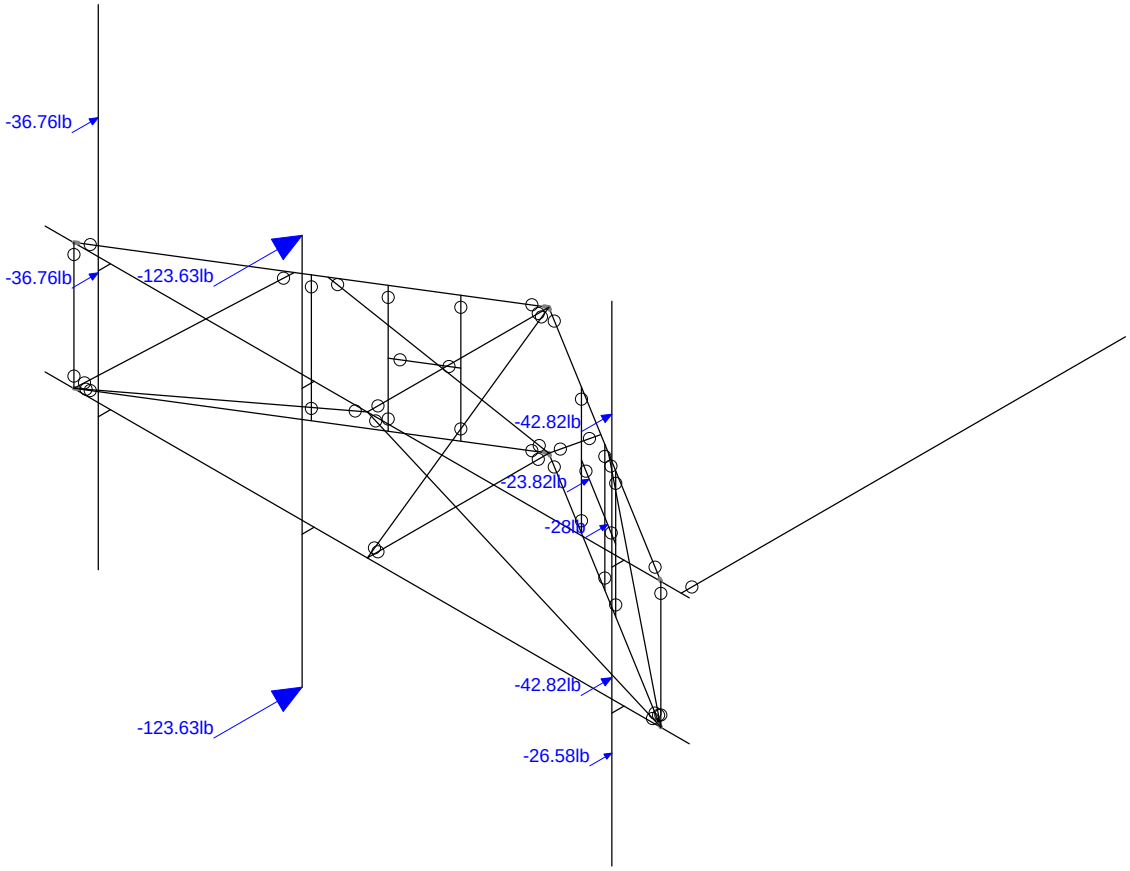

Loads: BLC 10, Ice + Wind 0

Centerline Communcation...	CTHA616A_MA	Ice + Wind 0
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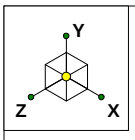

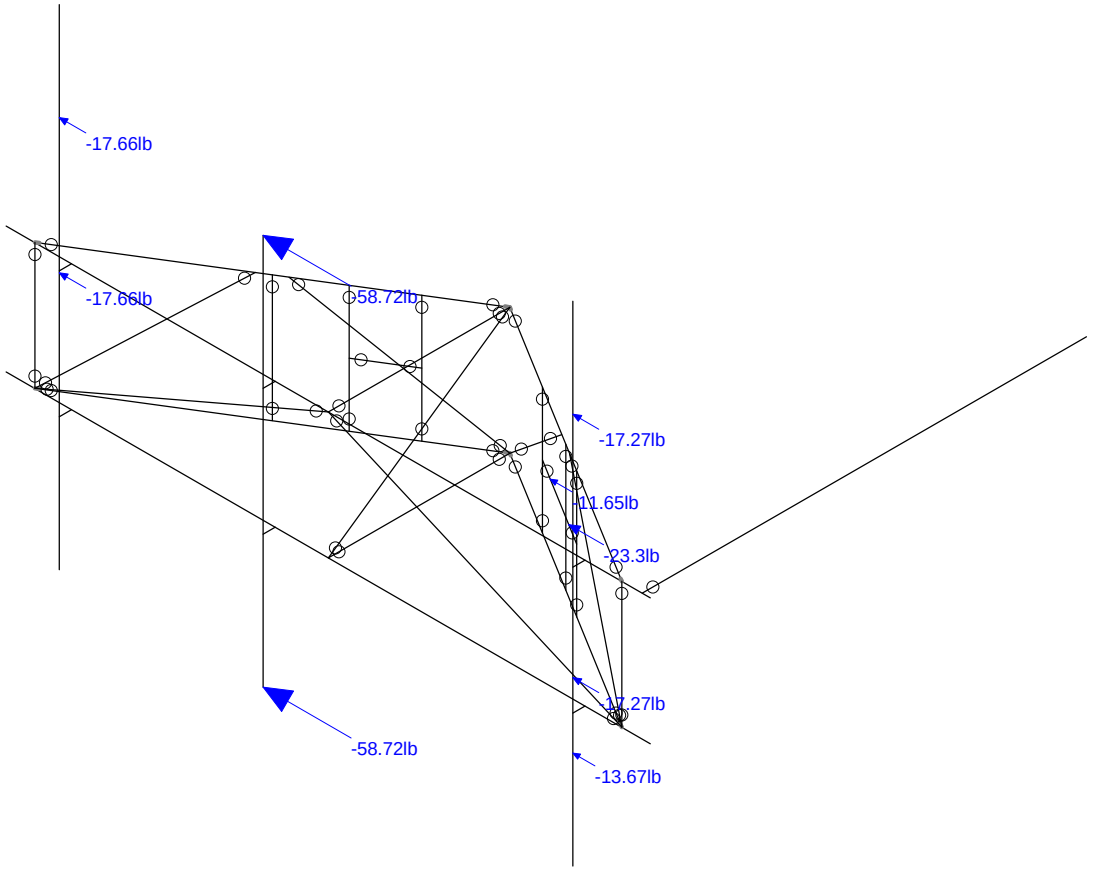

Loads: BLC 13, Ice + Wind 90

Centerline Communcation...	CTHA616A_MA	Ice + Wind 90
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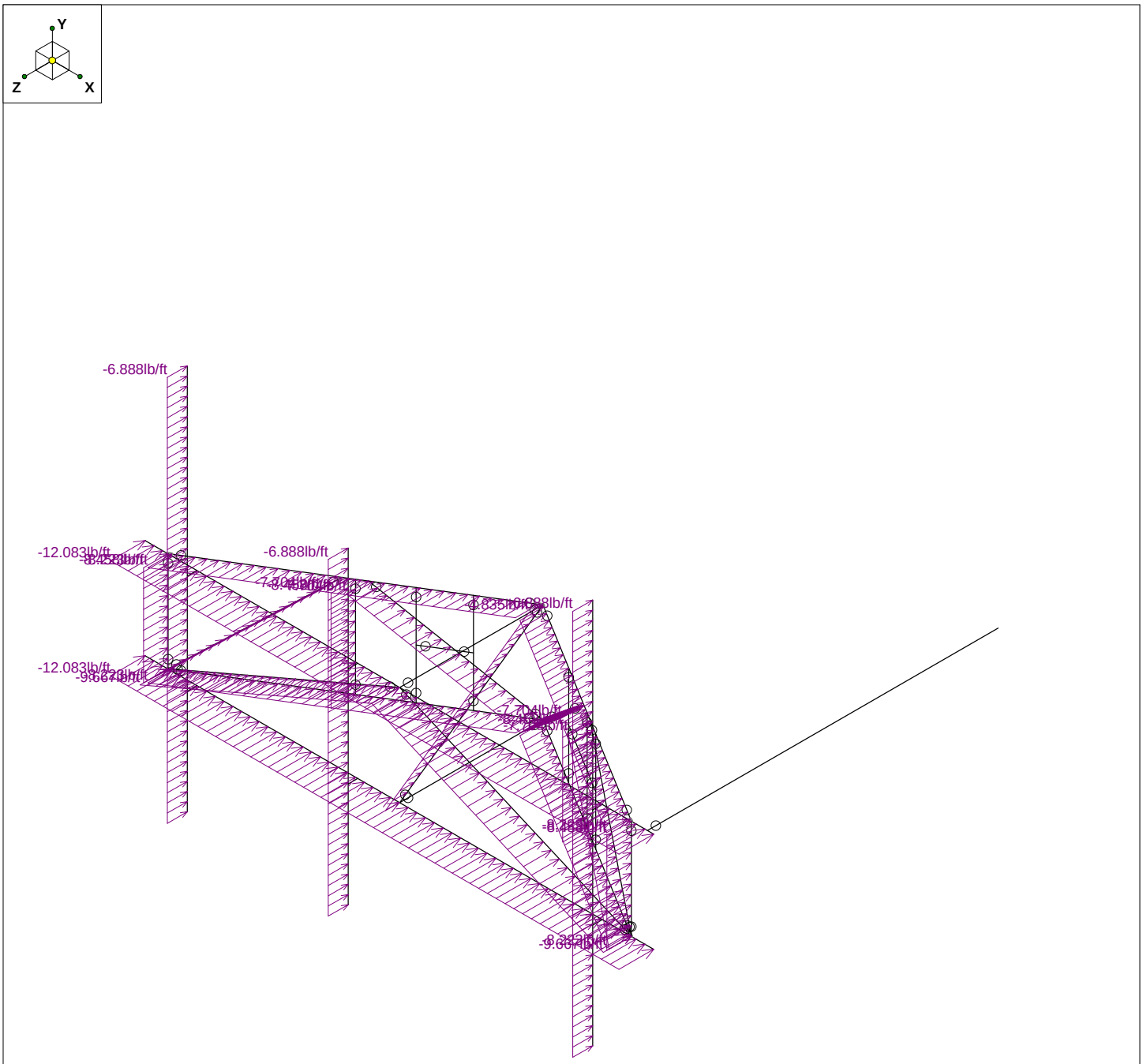

Loads: BLC 17, Distri. Wind Z

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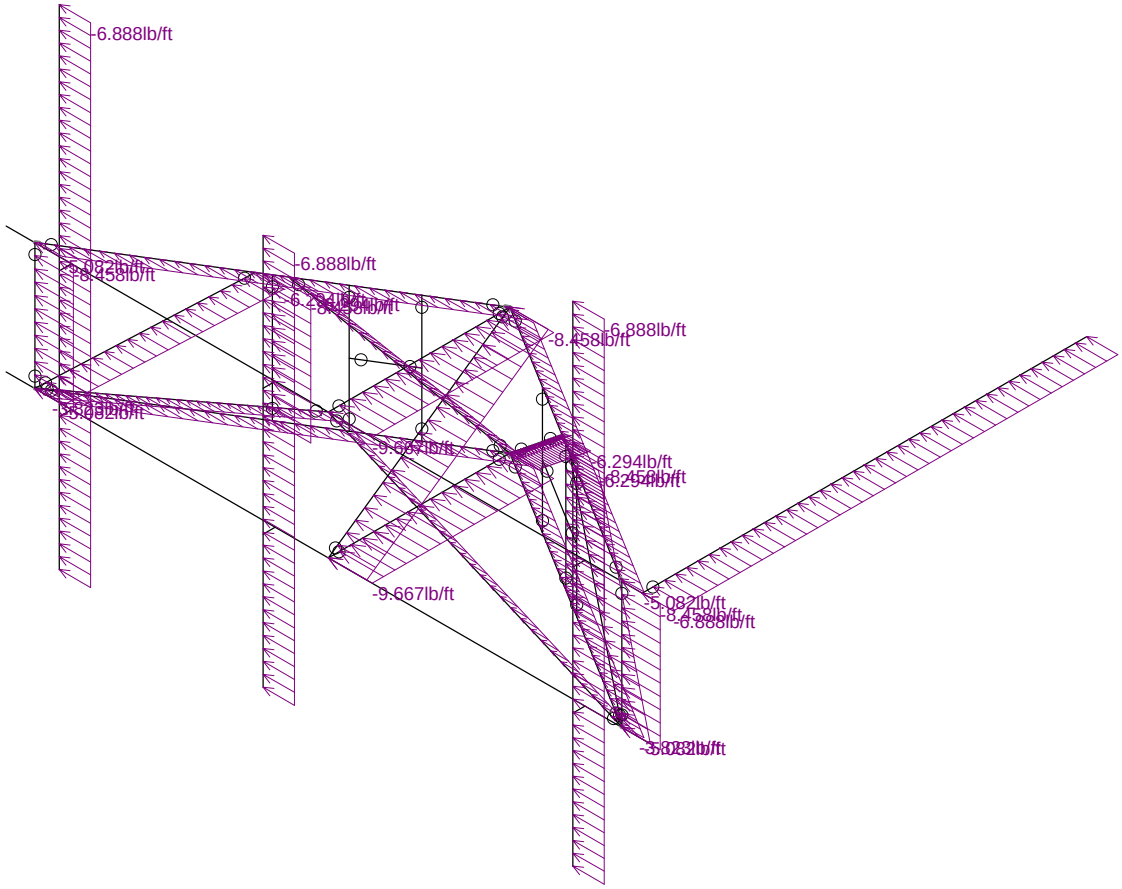

Loads: BLC 18, Distri. Wind X

Centerline Communcation...	CTHA616A_MA	Distr. Wind 90
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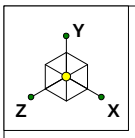

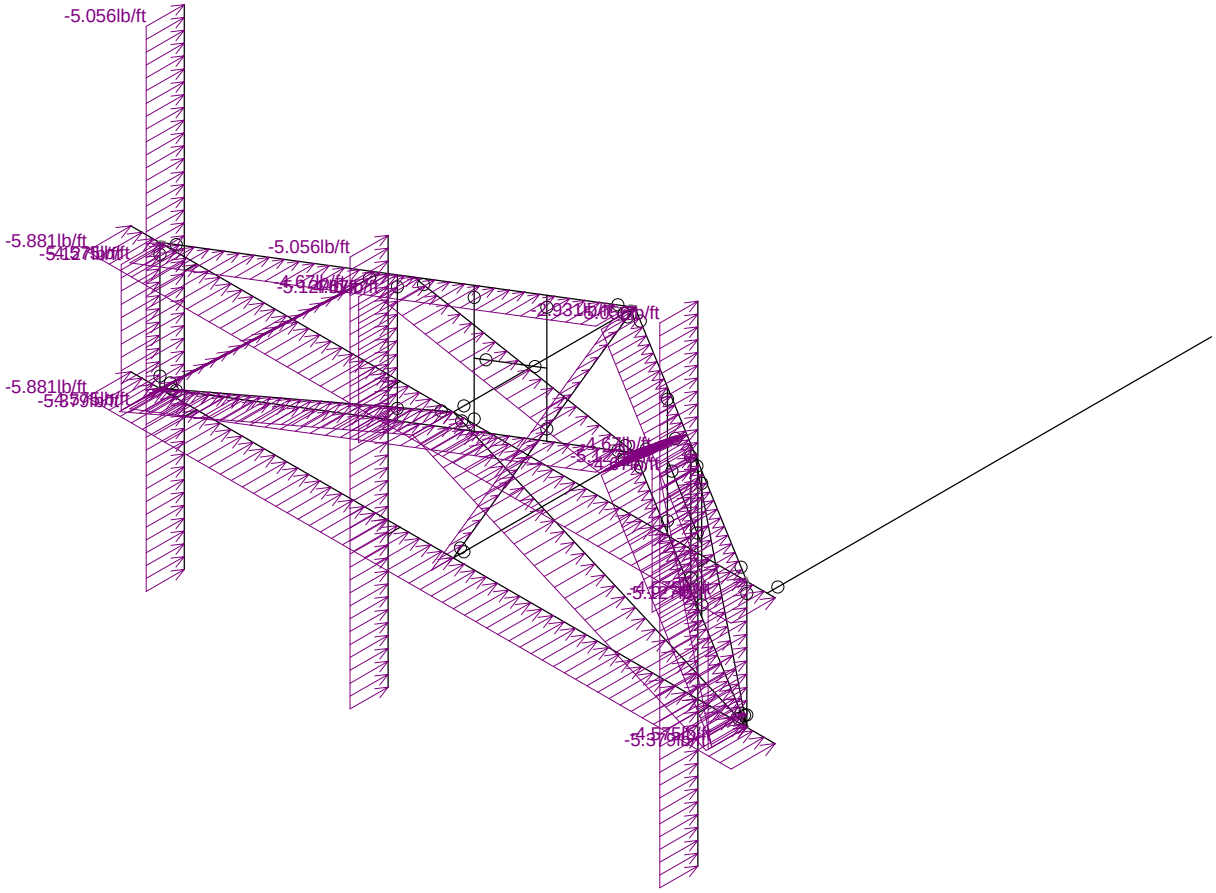

Loads: BLC 19, Distri. Ice + Wind Z

Centerline Communcation...	CTHA616A_MA	Distr. Ice + Wind 0
AP		Apr 27, 2021 at 2:32 PM
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Loads: BLC 20, Distrr. Ice + Wind X

Centerline Communcation...	CTHA616A_MA	Distr. Ice + Wind 90
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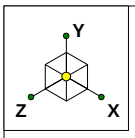

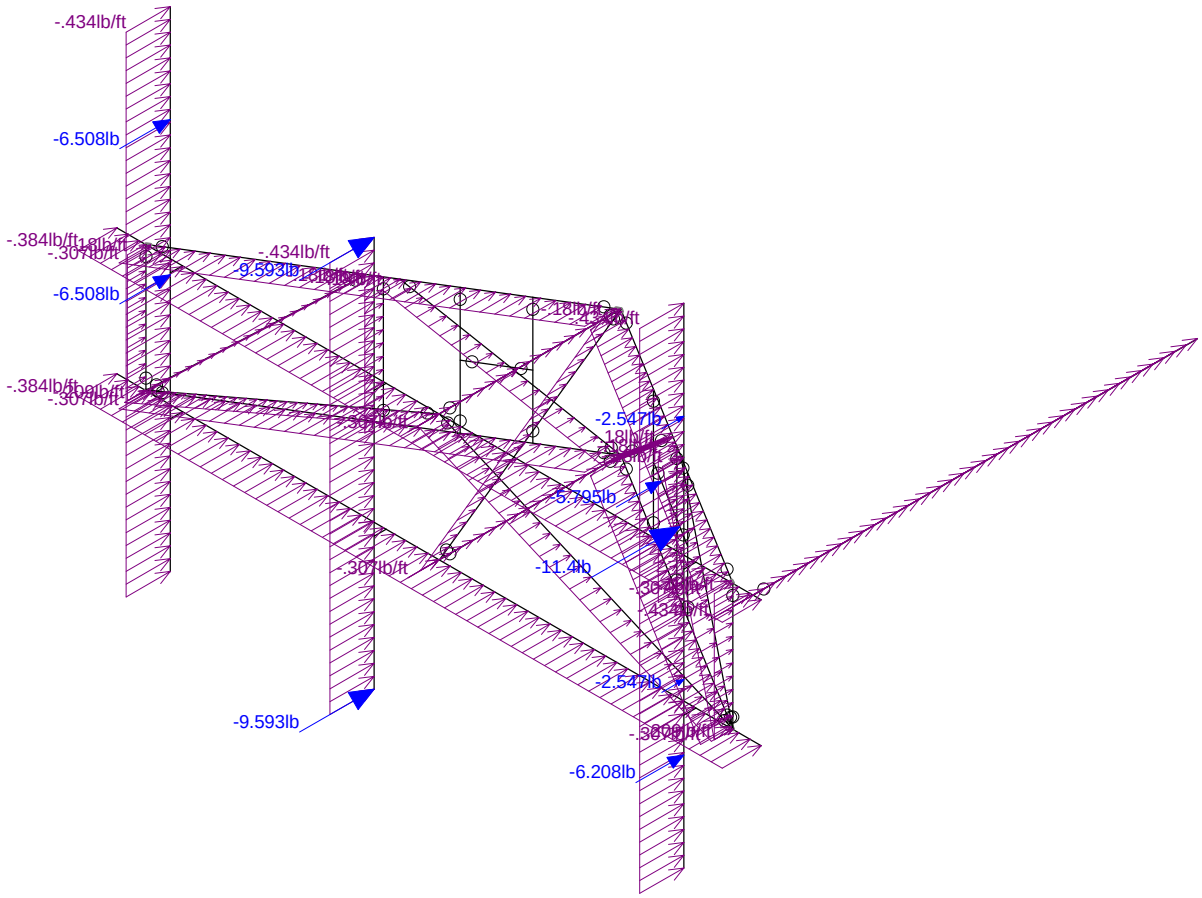

Loads: BLC 21, Seismic Load Z

Centerline Communcation...	CTHA616A_MA	Seismic Z
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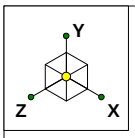

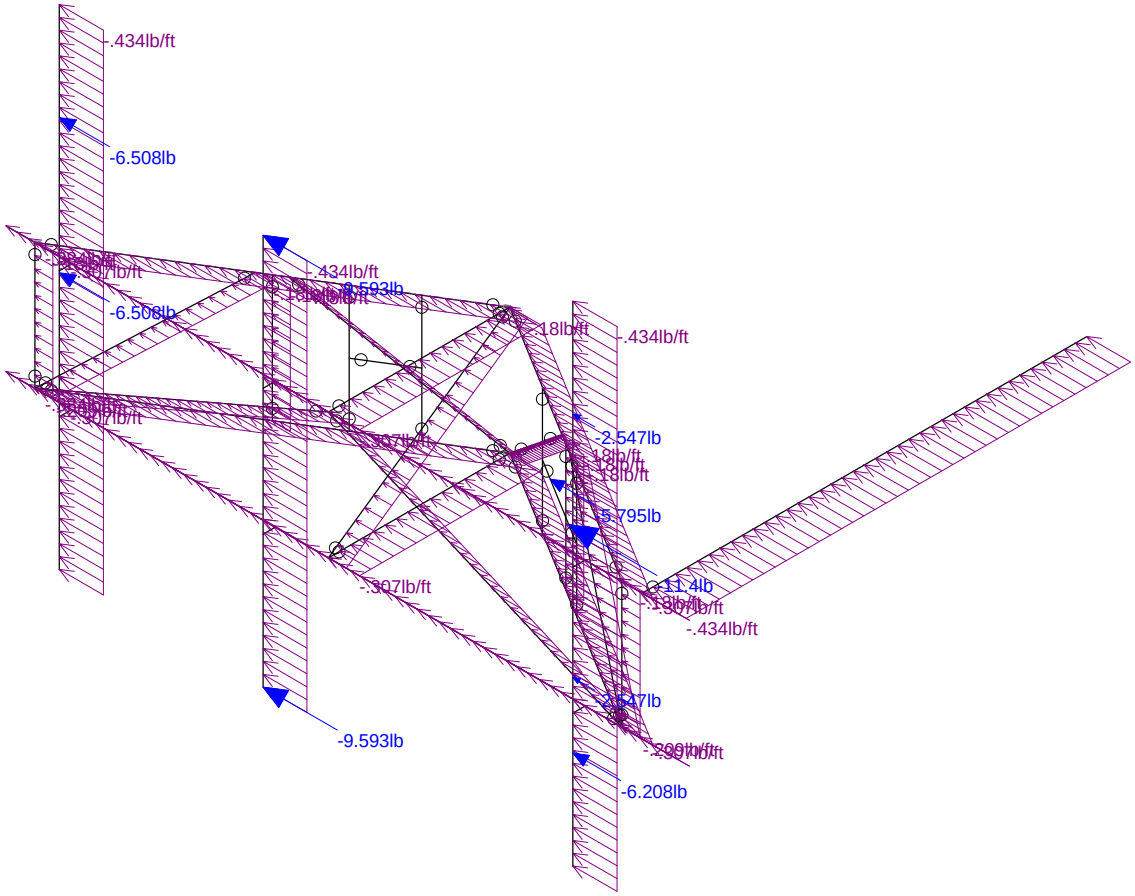

Loads: BLC 22, Seismic Load X

Centerline Communcation...	CTHA616A_MA	Seismic X
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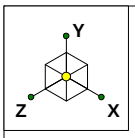
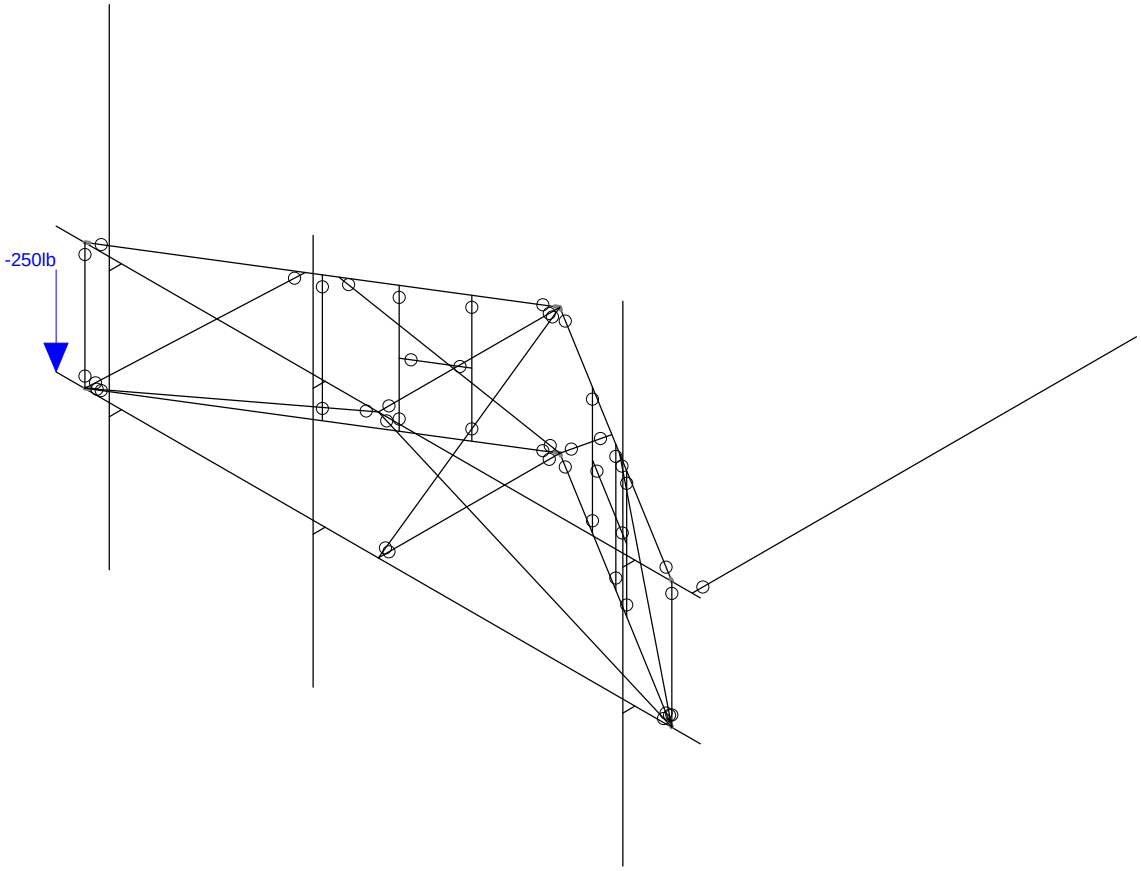
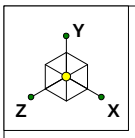
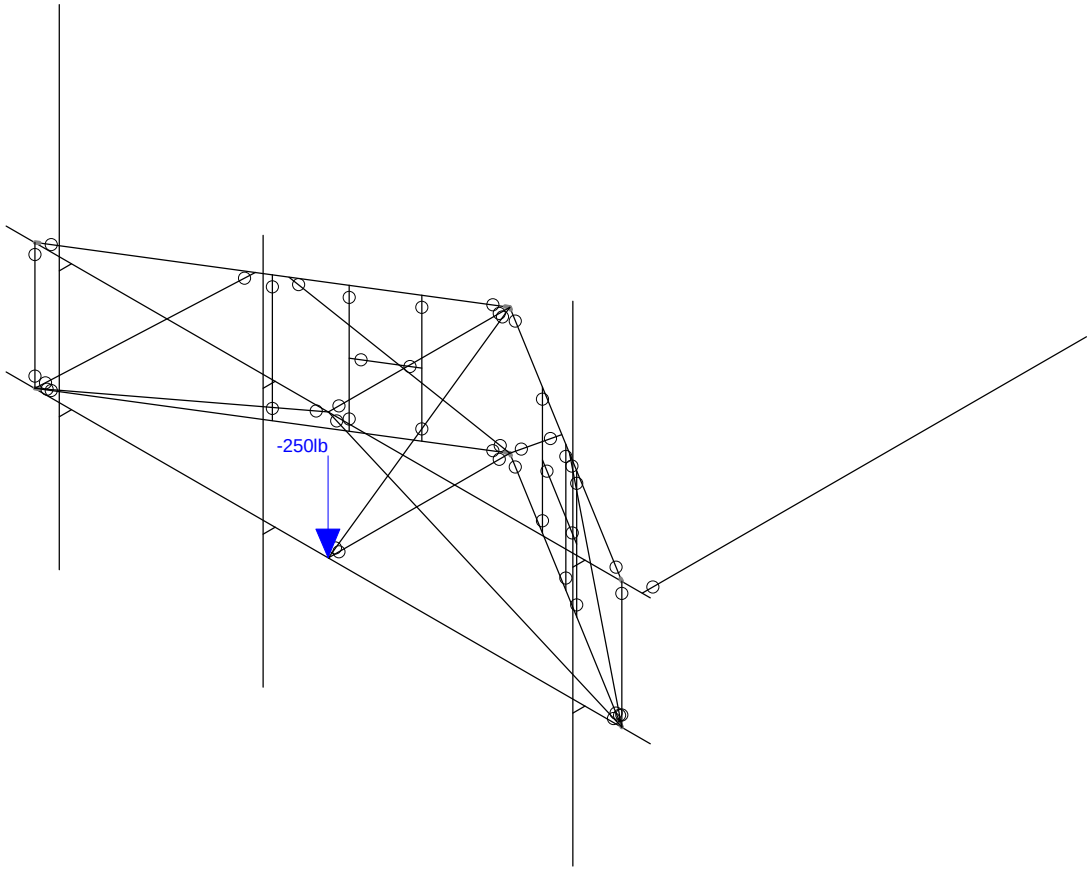




Loads: BLC 23, Live Load 1

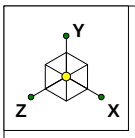
Centerline Communcation...	CTHA616A_MA	Live Load 1
AP		Apr 27, 2021 at 2:32 PM
		CTHA616A_MA.r3d

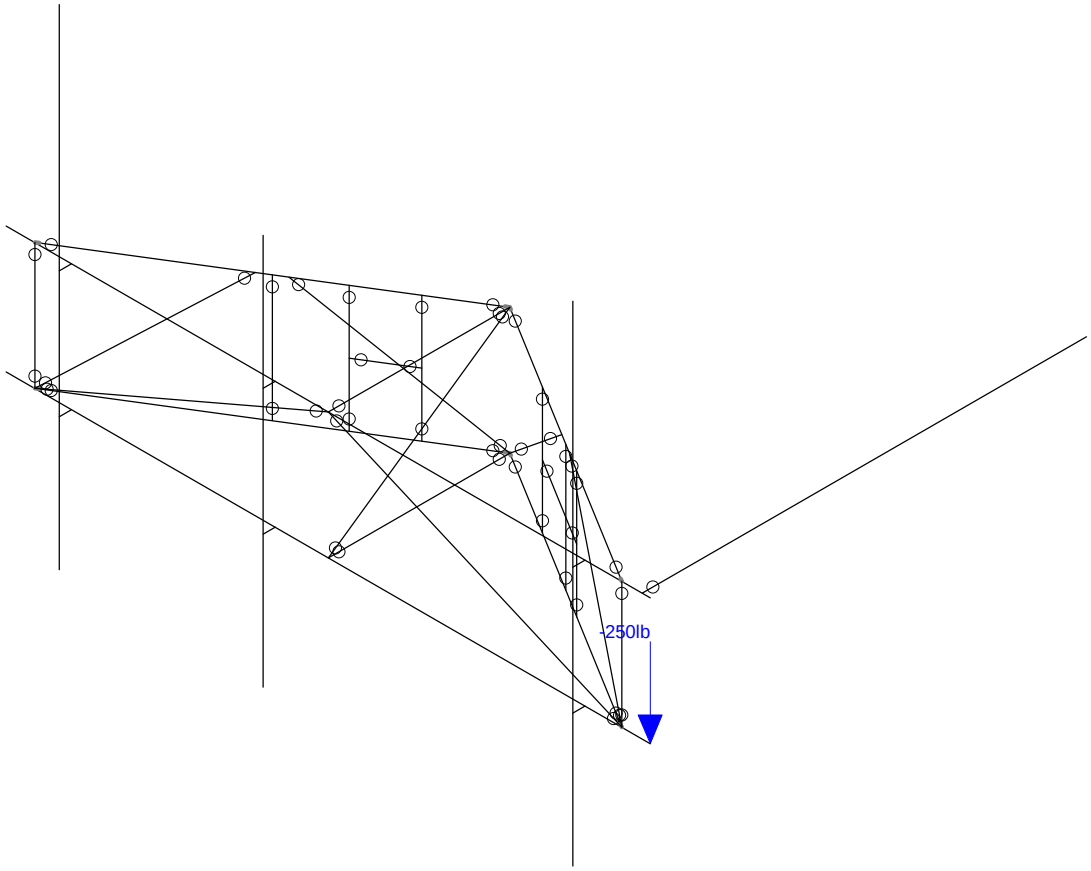




Loads: BLC 24, Live Load 2

Centerline Communcation...	CTHA616A_MA	Live Load 2
AP		Apr 27, 2021 at 2:32 PM
		CTHA616A_MA.r3d





Loads: BLC 25, Live Load 3

Centerline Communcation...	CTHA616A_MA	Live Load 3
AP		Apr 27, 2021 at 2:32 PM
		CTHA616A_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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Horizontal	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical	.901	.535	.535	.011
2	Standoff	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	Horizontal Diagon...	L2x2x2	Beam	Single Angle	A36 Gr.36	Typical	.491	.189	.189	.003
4	Horizontal Vertical...	L1.75x1.75x2	Beam	Single Angle	A36 Gr.36	Typical	.422	.126	.126	.002
5	Standoff Brace	L1.75x1.75x2	Beam	Single Angle	A36 Gr.36	Typical	.422	.126	.126	.002
6	Mount Pipe	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	Tieback	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	0	31	0	0	
3	N3	79	0	0	0	
4	N4	79	31	0	0	
5	N5	158	0	0	0	
6	N6	158	31	0	0	
7	N7	7	0	0	0	
8	N8	7	31	0	0	
9	N9	151	0	0	0	
10	N10	151	31	0	0	
11	N11	79	0	-44.5	0	
12	N12	79	31	-44.5	0	
13	N13	43	31	-22.25	0	
14	N14	43	0	-22.25	0	
15	N15	40.448033	31	-20.672742	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
16	N16	40.448033	0	-20.672742	0	
17	N17	45.551888	31	-23.827209	0	
18	N18	45.551888	0	-23.827209	0	
19	N21	115	31	-22.25	0	
20	N22	115	0	-22.25	0	
21	N23	117.551967	31	-20.672742	0	
22	N24	112.448112	31	-23.827209	0	
23	N23A	156	31	0	0	
24	N24A	156	31	-109	0	
25	N25	16	0	0	0	
26	N26	16	31	0	0	
27	N27	16	0	3	0	
28	N28	16	31	3	0	
29	N29	142	0	0	0	
30	N30	142	31	0	0	
31	N31	142	0	3	0	
32	N32	142	31	3	0	
33	N37	66	0	0	0	
34	N38	66	31	0	0	
35	N39	66	0	3	0	
36	N40	66	31	3	0	
37	N41	66	63.5	3	0	
38	N42	66	-32.5	3	0	
39	N39A	16	87.5	3	0	
40	N40A	16	-32.5	3	0	
41	N43	142	87.5	3	0	
42	N44	142	-32.5	3	0	
43	N43A	122.078151	31	-17.875309	0	
44	N44A	122.078151	0	-17.875309	0	
45	N45	99.961444	31	-31.544663	0	
46	N46	99.961444	0	-31.544663	0	
47	N47	122.078151	15.5	-17.875309	0	
48	N48	99.961444	15.5	-31.544663	0	
49	N49	54.635986	31	-29.441686	0	
50	N50	54.635986	0	-29.441686	0	
51	N51	65.69434	31	-36.276363	0	
52	N52	65.69434	0	-36.276363	0	
53	N53	54.635986	15.5	-29.441686	0	
54	N54	65.69434	15.5	-36.276363	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	N12	max	1146.938	12	1357.249	20	1474.614	10	4.257	2	6.037	13	3.165	6
2		min	-1042.134	51	-5.812	9	-6187.101	22	-3.247	15	-2.977	2	-1.307	9
3	N11	max	1178.89	54	3214.827	16	5880.093	16	2.812	8	4.996	6	1.797	9
4		min	-870.271	43	291.875	13	-336.335	15	-2.615	9	-2.78	9	-3.303	6
5	N24A	max	50.35	12	81.717	20	6.233	23	0	78	0	78	0	78
6		min	0	22	14.186	30	-929.435	5	0	1	0	1	0	1
7	Totals:	max	1968.487	5	4476.831	22	3527.368	2						
8		min	0	9	762.963	9	-3527.365	15						

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	N12	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N11	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N24A	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	Horizontal	158	79		Lbyy						Lateral
2	M2	Horizontal	158	79		Lbyy						Lateral
3	M3	Standoff	84.642			Lbyy						Lateral
4	M4	Standoff	84.642			Lbyy						Lateral
5	M5	Standoff	84.642			Lbyy						Lateral
6	M6	Standoff	84.642			Lbyy						Lateral
7	M7	Standoff	44.5			Lbyy						Lateral
8	M8	Standoff	44.5			Lbyy						Lateral
9	M9	Horizontal ...	78.39			Lbyy						Lateral
10	M10	Horizontal ...	78.39			Lbyy						Lateral
11	M11	Horizontal V...	31			Lbyy						Lateral
12	M12	Horizontal V...	31			Lbyy						Lateral
13	M13	Standoff Br...	50.071			Lbyy						Lateral
14	M14	Standoff Br...	31			Lbyy						Lateral
15	M15	Standoff Br...	50.071			Lbyy						Lateral
16	M16	Standoff Br...	54.233			Lbyy						Lateral
17	M17	Standoff Br...	50.071			Lbyy						Lateral
18	M18	Standoff Br...	31			Lbyy						Lateral
19	M19	Standoff Br...	50.071			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
20	M21	Tieback	109			Lbyy						Lateral
21	MP2	Mount Pipe	96			Lbyy						Lateral
22	MP3	Mount Pipe	120			Lbyy						Lateral
23	MP1	Mount Pipe	120			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N2	N6		180	Horizontal	Beam	Single Angle	A36 Gr.36	Typical
2	M2	N1	N5		270	Horizontal	Beam	Single Angle	A36 Gr.36	Typical
3	M3	N8	N12			Standoff	Beam	Single Angle	A36 Gr.36	Typical
4	M4	N7	N11		90	Standoff	Beam	Single Angle	A36 Gr.36	Typical
5	M5	N10	N12		270	Standoff	Beam	Single Angle	A36 Gr.36	Typical
6	M6	N9	N11		180	Standoff	Beam	Single Angle	A36 Gr.36	Typical
7	M7	N4	N12			Standoff	Beam	Single Angle	A36 Gr.36	Typical
8	M8	N3	N11		90	Standoff	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N7	N4		180	Horizontal Dia...	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N9	N4		90	Horizontal Dia...	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N8	N7		90	Horizontal Vert...	Beam	Single Angle	A36 Gr.36	Typical
12	M12	N10	N9			Horizontal Vert...	Beam	Single Angle	A36 Gr.36	Typical
13	M13	N15	N7		90	Standoff Brace	Beam	Single Angle	A36 Gr.36	Typical
14	M14	N13	N14			Standoff Brace	Beam	Single Angle	A36 Gr.36	Typical
15	M15	N17	N11		90	Standoff Brace	Beam	Single Angle	A36 Gr.36	Typical
16	M16	N12	N3			Standoff Brace	Beam	Single Angle	A36 Gr.36	Typical
17	M17	N23	N9		180	Standoff Brace	Beam	Single Angle	A36 Gr.36	Typical
18	M18	N21	N22			Standoff Brace	Beam	Single Angle	A36 Gr.36	Typical
19	M19	N24	N11		180	Standoff Brace	Beam	Single Angle	A36 Gr.36	Typical
20	M21	N23A	N24A			Tieback	Beam	Pipe	A53 Gr.B	Typical
21	M22	N28	N26			RIGID	None	None	RIGID	Typical
22	M23	N27	N25			RIGID	None	None	RIGID	Typical
23	M24	N32	N30			RIGID	None	None	RIGID	Typical
24	M25	N31	N29			RIGID	None	None	RIGID	Typical
25	M28	N40	N38			RIGID	None	None	RIGID	Typical
26	M29	N39	N37			RIGID	None	None	RIGID	Typical
27	MP2	N41	N42			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
28	MP3	N39A	N40A			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
29	MP1	N43	N44			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
30	M31	N43A	N44A			RIGID	None	None	RIGID	Typical
31	M32	N45	N46			RIGID	None	None	RIGID	Typical
32	MP4	N47	N48			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
33	M34	N49	N50			RIGID	None	None	RIGID	Typical
34	M35	N51	N52			RIGID	None	None	RIGID	Typical
35	MP5	N53	N54			RIGID	None	None	RIGID	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						Yes				None
2	M2						Yes				None
3	M3	BenPIN	BenPIN	.821	.821		Yes				None
4	M4	BenPIN	BenPIN	.821	.821		Yes				None
5	M5	BenPIN	BenPIN	.821	.821		Yes				None
6	M6	BenPIN	BenPIN	.821	.821		Yes				None
7	M7	BenPIN	BenPIN				Yes				None
8	M8	BenPIN	BenPIN				Yes				None
9	M9	BenPIN	BenPIN				Yes				None
10	M10	BenPIN	BenPIN				Yes				None
11	M11	BenPIN	BenPIN				Yes				None
12	M12	BenPIN	BenPIN				Yes				None
13	M13	BenPIN	BenPIN				Yes				None
14	M14	BenPIN	BenPIN				Yes				None
15	M15	BenPIN	BenPIN				Yes				None
16	M16	BenPIN	BenPIN				Yes				None
17	M17	BenPIN	BenPIN				Yes				None
18	M18	BenPIN	BenPIN				Yes				None
19	M19	BenPIN	BenPIN				Yes				None
20	M21	BenPIN					Yes	Default			None
21	M22						Yes	** NA **			None
22	M23						Yes	** NA **			None
23	M24						Yes	** NA **			None
24	M25						Yes	** NA **			None
25	M28						Yes	** NA **			None
26	M29						Yes	** NA **			None
27	MP2						Yes				None
28	MP3						Yes				None
29	MP1						Yes	Default			None
30	M31	BenPIN	BenPIN				Yes	** NA **			None
31	M32	BenPIN	BenPIN				Yes	** NA **			None
32	MP4	BenPIN	BenPIN				Yes	** NA **			None
33	M34	BenPIN	BenPIN				Yes	** NA **			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
34	M35	BenPIN	BenPIN				Yes	** NA **			None
35	MP5	BenPIN	BenPIN				Yes	** NA **			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			9			
2	Wind 0	WLZ					18			
3	Wind 30	None					18			
4	Wind 60	None					18			
5	Wind 90	WLX					18			
6	Wind 120	None					18			
7	Wind 150	None					18			
8	Wind 180	WLZ					18			
9	Ice Weight	DL					9	35		
10	Ice + Wind 0	WLZ					18			
11	Ice + Wind 30	None					18			
12	Ice + Wind 60	None					18			
13	Ice + Wind 90	WLX					18			
14	Ice + Wind 120	None					18			
15	Ice + Wind 150	None					18			
16	Ice + Wind 180	WLZ					18			
17	Distri. Wind Z	WLZ						35		
18	Distri. Wind X	WLX						35		
19	Distri. Ice + Wind Z	WLZ						35		
20	Distrr. Ice + Wind X	WLX						35		
21	Seismic Load Z	ELZ					9	35		
22	Seismic Load X	ELX					9	35		
23	Live Load 1	LL					1			
24	Live Load 2	LL					1			
25	Live Load 3	LL					1			

Load Combinations

	Description	Solve	P...	S...	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	1.3...	18	.8												
4	1.2D + 1.6W 60°	Yes	Y		1	1.2	4	1.6	17	.8	18	1.3...												

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
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	1.3...												
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	1.3...	18	.8												
11	0.9D + 1.6W 60°	Yes	Y		1	.9	4	1.6	17	.8	18	1.3...												
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	1.3...												
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 + 1.0Wi 0°	Yes	Y		1	1.2	9	1	10	1	19	1	20											
17	1.2D + 1.0Di + 1.0Wi 3...	Yes	Y		1	1.2	9	1	11	1	19	.866	20	.5										
18	1.2D + 1.0Di + 1.0Wi 6...	Yes	Y		1	1.2	9	1	12	1	19	.5	20	.866										
19	1.2D + 1.0Di + 1.0Wi 9...	Yes	Y		1	1.2	9	1	13	1	19		20	1										
20	1.2D + 1.0Di + 1.0Wi 1...	Yes	Y		1	1.2	9	1	14	1	19	-.5	20	.866										
21	1.2D + 1.0Di + 1.0Wi 1...	Yes	Y		1	1.2	9	1	15	1	19	-.866	20	.5										
22	1.2D + 1.0Di + 1.0Wi 1...	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	-.866	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															
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	-.866	22	.5														
36	0.9D + 1.0Eh 180°	Yes	Y		1	.9	21	-1	22															
37	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	23	1.5	2	.316	17	.316	18											
38	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	23	1.5	3	.316	17	.273	18	.158										
39	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	23	1.5	4	.316	17	.158	18	.273										
40	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	23	1.5	5	.316	17		18	.316										
41	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	23	1.5	6	.316	17	-.158	18	.273										
42	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	23	1.5	7	.316	17	-.273	18	.158										
43	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	23	1.5	8	.316	17	-.316	18											
44	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	24	1.5	2	.316	17	.316	18											

Load Combinations (Continued)

	Description	Solve	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
45	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	24	1.5	3	.316	17	.273	18	.158										
46	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	24	1.5	4	.316	17	.158	18	.273										
47	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	24	1.5	5	.316	17		18	.316										
48	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	24	1.5	6	.316	17	-.158	18	.273										
49	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	24	1.5	7	.316	17	-.273	18	.158										
50	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	24	1.5	8	.316	17	-.316	18											
51	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	25	1.5	2	.316	17	.316	18											
52	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	25	1.5	3	.316	17	.273	18	.158										
53	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	25	1.5	4	.316	17	.158	18	.273										
54	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	25	1.5	5	.316	17		18	.316										
55	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	25	1.5	6	.316	17	-.158	18	.273										
56	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	25	1.5	7	.316	17	-.273	18	.158										
57	1.0D +1.5Lv + 1.0W (6...	Yes	Y		1	1	25	1.5	8	.316	17	-.316	18											
58	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	23	1	2	.088	17	.088	18											
59	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	23	1	3	.088	17	.076	18	.044										
60	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	23	1	4	.088	17	.044	18	.076										
61	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	23	1	5	.088	17		18	.088										
62	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	23	1	6	.088	17	-.044	18	.076										
63	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	23	1	7	.088	17	-.076	18	.044										
64	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	23	1	8	.088	17	-.088	18											
65	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	24	1	2	.088	17	.088	18											
66	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	24	1	3	.088	17	.076	18	.044										
67	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	24	1	4	.088	17	.044	18	.076										
68	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	24	1	5	.088	17		18	.088										
69	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	24	1	6	.088	17	-.044	18	.076										
70	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	24	1	7	.088	17	-.076	18	.044										
71	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	24	1	8	.088	17	-.088	18											
72	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	25	1	2	.088	17	.088	18											
73	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	25	1	3	.088	17	.076	18	.044										
74	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	25	1	4	.088	17	.044	18	.076										
75	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	25	1	5	.088	17		18	.088										
76	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	25	1	6	.088	17	-.044	18	.076										
77	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	25	1	7	.088	17	-.076	18	.044										
78	1.2D + 1.0Lv + 1.0W (...	Yes	Y		1	1.2	25	1	8	.088	17	-.088	18											

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*P...	phi*P...	phi*M...	phi*M...	...	Eqn
1	M4	L2x2x3	.979	55.333	22	.029	54.4...	z	16	3582....	23392..	557.7...	1156....	...	H2-1
2	M6	L2x2x3	.856	41.5	22	.058	41.5	y	19	3582....	23392..	557.7...	1021....	...	H2-1
3	M3	L2x2x3	.815	44.958	16	.160	41.5	y	16	3582....	23392..	557.7...	1128....	...	H2-1
4	M1	L2.5x2.5...	.787	79	8	.102	151....	z	5	7577....	29192..	872.5...	1032....	1	H2-1
5	M5	L2x2x3	.758	44.958	16	.195	44.0...	z	19	3582....	23392..	557.7...	1167....	...	H2-1
6	M2	L2.5x2.5...	.741	67.479	20	.119	79	z	20	7577....	29192..	872.5...	1803....	...	H2-1
7	M19	L1.75x1....	.721	25.557	22	.007	0	y	22	4572....	13668..	300.3...	515.17	...	H2-1
8	MP2	PIPE_2.0	.706	63	2	.052	32		2	14916..	32130	1871....	1871....	...	H1-1b
9	M15	L1.75x1....	.610	25.557	22	.010	50.0...	z	20	4572....	13668..	300.3...	515.17	...	H2-1
10	M9	L2x2x2	.486	38.378	16	.023	0	z	8	2759....	15908..	402.5...	569.9...	...	H2-1
11	M10	L2x2x2	.404	38.378	19	.018	0	y	8	2759....	15908..	402.5...	569.9...	...	H2-1
12	M16	L1.75x1....	.291	27.117	16	.011	54.2...	y	17	3897....	13668..	300.3...	501.9...	...	H2-1
13	MP1	PIPE_2.0	.287	56.25	8	.078	57.5		13	9836....	32130	1871....	1871....	...	H1-1b
14	MP3	PIPE_2.0	.286	57.5	8	.086	57.5		2	9836....	32130	1871....	1871....	...	H1-1b
15	M13	L1.75x1....	.258	25.036	16	.010	0	z	16	4572....	13668..	300.3...	515.17	...	H2-1
16	M17	L1.75x1....	.255	25.036	17	.007	50.0...	y	18	4572....	13668..	300.3...	515.17	...	H2-1
17	M8	L2x2x3	.230	22.25	16	.018	0	z	22	11745..	23392..	557.7...	1123....	...	H2-1
18	M21	PIPE_2.0	.108	54.5	20	.009	109		19	11922..	32130	1871....	1871....	...	H1-1b
19	M7	L2x2x3	.088	22.25	3	.008	0	z	7	11745..	23392..	557.7...	1123....	...	H2-1
20	M11	L1.75x1....	.072	16.792	21	.016	31	y	2	8790....	13668..	300.3...	584.4...	...	H2-1
21	M12	L1.75x1....	.064	16.792	18	.019	31	y	13	8790....	13668..	300.3...	584.4...	...	H2-1
22	M14	L1.75x1....	.052	15.5	2	.013	31	z	16	8790....	13668..	300.3...	584.4...	...	H2-1
23	M18	L1.75x1....	.052	15.5	4	.005	31	y	19	8790....	13668..	300.3...	584.4...	...	H2-1