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

Mount Analysis Report

Site Address	689 Old Colchester Rd Uncasville, CT 06382
Site Name	Montville-Old Colchester Rd.
Site ID	CTNL024A
Project Name	Coverage Strategy
Design Codes	2015 International Building Code ASCE 7-10 TIA-222-G Standards 2018 CT State Building Code

	Stress Ratio	Overall Result
Proposed Mount	**76%**	**PASS**

Client:

T - Mobile

NORTHEAST, LLC
35 Griffin Rd S
Bloomfield, CT 06002

Date: 10/21/2021

STATE OF CONNECTICUT
DEREK J. CREASER
No. 25551
LICENSED PROFESSIONAL ENGINEER

Digitally signed by: Derek J. Creaser, P.E.
DN: CN = Derek J. Creaser, P.E. email = dcreaser@clinellc.com C = US O = Centerline Communications OU = Director - A&E Services
Date: 2021.10.21 16:49:52 -04'00'

Scope of Work:

Centerline Communications was authorized by T-Mobile Northeast LLC to perform an analysis of the proposed 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
230	**MP1**	**30**	**1**	**APX16DWV-16DWV-S-E-A20 Antenna**	Sector 1
230	**MP2**	**30**	**1**	**APXVAALL24_43-U-NA20 Antenna**	
230	**MP3**	**30**	**1**	**AIR6449 B41 Antenna**	
230	**MP1**	**30**	**1**	**4460 B25+B66 RRH**	
230	**MP2**	**30**	**1**	**4480 B71+B85 RRH**	
230	**-**	**150**	**1**	**APX16DWV-16DWV-S-E-A20 Antenna**	Sector 2
230	**-**	**150**	**1**	**APXVAALL24_43-U-NA20 Antenna**	
230	**-**	**150**	**1**	**AIR6449 B41 Antenna**	
230	**-**	**150**	**1**	**4460 B25+B66 RRH**	
230	**-**	**150**	**1**	**4480 B71+B85 RRH**	
230	**-**	**270**	**1**	**APX16DWV-16DWV-S-E-A20 Antenna**	Sector 3
230	**-**	**270**	**1**	**APXVAALL24_43-U-NA20 Antenna**	
230	**-**	**270**	**1**	**AIR6449 B41 Antenna**	
230	**-**	**270**	**1**	**4460 B25+B66 RRH**	
230	**-**	**270**	**1**	**4480 B71+B85 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	135 mph
Nominal Wind Speed	105 mph
Wind Speed with Ice	50 mph
Ice Thickness	0.75 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	0.165 g
Spectral Response Acceleration Parameter at a Period of 1 Second, S_1	0.059 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 proposed T-Mobile mounts *are adequate* to support the proposed T-Mobile equipment loading.

- Install (3) Site Pro 1 VFA12-HD mount.

	Stress Ratio	Overall Result
Proposed Mount	**76%**	**PASS**

Reference Documents:

- T-Mobile RFDS CTNL024A_Coverage Strategy_1_draft, dated 06/16/2021
- Construction Drawings by Centerline Communications, LLC, dated 08/11/2021
- Structural Analysis by Centerline Communications, LLC, dated 08/12/2021

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.

Site Photos:

Overall Tower

Design Calculations

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Site Details	
Site Name	CTNL024A
Carrier	T-Mobile
City, State	Uncasville, CT
Project	Coverage Strategy

Mount Details		
Mount Type	Sector Frame	
Mount Height, z	230	ft
Number of Sectors	3	
Tower Type	Guyed	
Tower Height, h	370	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	0.165	g
1 Second Period Spectral Acceleration, S_1	0.059	g
Long-Period Transition Period, T_L	6	
Design Category	B	
Short Period Site Coefficient, F_a	1.60	
Long-Period Site Coefficient, F_v	2.4	

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

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

Site Constants		
Importance Factor, I (Wind no Ice)	1.00	
Importance Factor, I (Ice Thickness)	1.00	
Importance Factor, I (wind with Ice)	1.00	
Wind Direction Prob. Factor, K_d	0.95	
Velocity Pressure Coefficient, K_z	1.25	
Gust Effect Factor, G_h	1.00	
Design Ice Thickness, t_{iz}	1.82	in
Velocity Pressure, q_z	33.62	psf
Velocity Pressure with Ice, q_{zi}	7.62	psf
Shielding Factor, K_a	1.00	
Flat Velocity Pressure (Ca =2.0)	67.23	psf
Round Velocity Pressure (Ca = 1.2)	40.34	psf
Round Velocity Pressure with Ice (Ca = 1.2)	9.15	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**
Face Horizontal	PIPE_2.5	Beam	5.48	40.34	10.45	9.15	0.64
Standoff	PIPE_2.0	Beam	3.47	40.34	9.34	9.15	0.41
Bracing (Vert)	0.625" S.R.	Beam	1.04	40.34	5.44	9.15	0.12
Mount Pipe	PIPE_2.0	Beam	3.47	40.34	9.34	9.15	0.41
Conn. Plate	PL0.625x3.5	Beam	7.45	67.23	11.96	9.15	0.87
Pivot Plate	PL0.625x9.25	Beam	19.67	67.23	24.68	9.15	2.31
Connection Plate	PL3 1/2x5/8	Beam	7.45	67.23	10.82	9.15	0.87
Tieback	PIPE_2.0	Beam	3.47	40.34	9.34	9.15	0.41
Bracing (Diag)	SR 3/4	Beam	1.50	40.34	5.72	9.15	0.18

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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	230	6.59	2.15	221.41	72.27	55.9\13.3\3.15	40.7\146.19
APXVAALL24_43-U-NA20 Antenna	230	20.24	8.73	680.48	293.58	95.9\24\8.5	153.3\448.82
AIR6449 B41 Antenna	230	5.68	2.49	191.01	83.73	33.1\20.6\8.6	104\163.38
4460 B25+B66 RRH	230	2.14	1.50	71.91	50.34	15.1\17\11.9	108\95.89
4480 B71+B85 RRH	230	2.45	1.27	82.49	42.61	19.5\15.1\7.8	87\86.42

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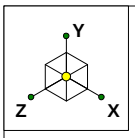
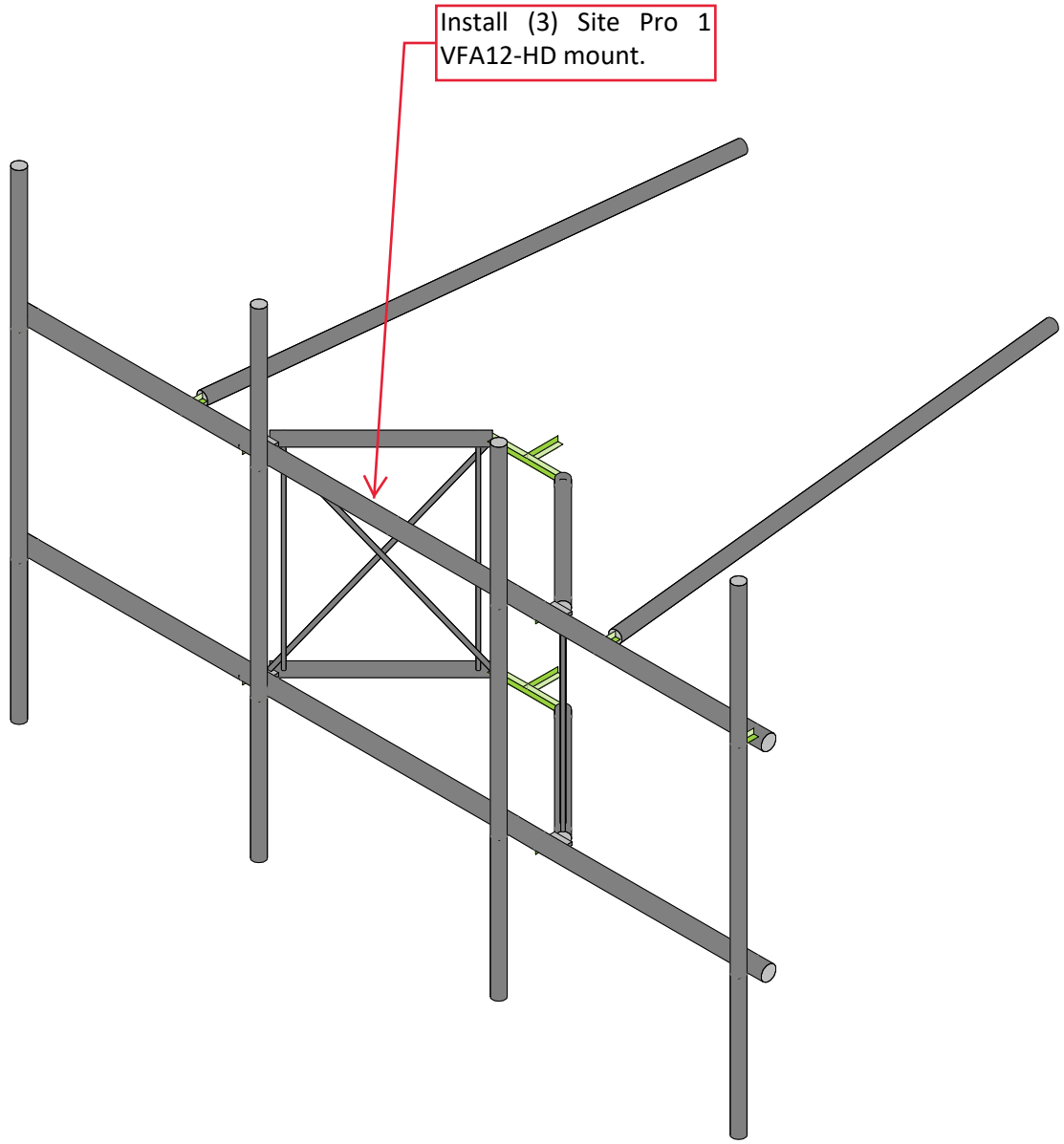
Sector 1 Continue…								
		Wind Force with Ice				Wind Force V = 30 mph		Seismic Force
Appurtenances	Rad. Ht., ft	Front EPA ft^2	Side EPA ft^2	0° Force lbs.	90° Force lbs.	0° Force lbs.	90° Force lbs.	Vs, lbs
APX16DWV-16DWV-S-E-A20 Antenna	230	5.06	2.36	88.79	34.36	18.07	5.90	4.78
APXVAALL24_43-U-NA20 Antenna	230	13.84	6.94	259.83	119.46	55.55	23.97	17.99
AIR6449 B41 Antenna	230	4.33	2.22	76.32	35.92	15.59	6.83	12.20
4460 B25+B66 RRH	230	1.88	1.42	30.64	22.21	5.87	4.11	12.67
4480 B71+B85 RRH	230	2.11	1.29	34.78	19.47	6.73	3.48	10.21

Proposed Mount Results





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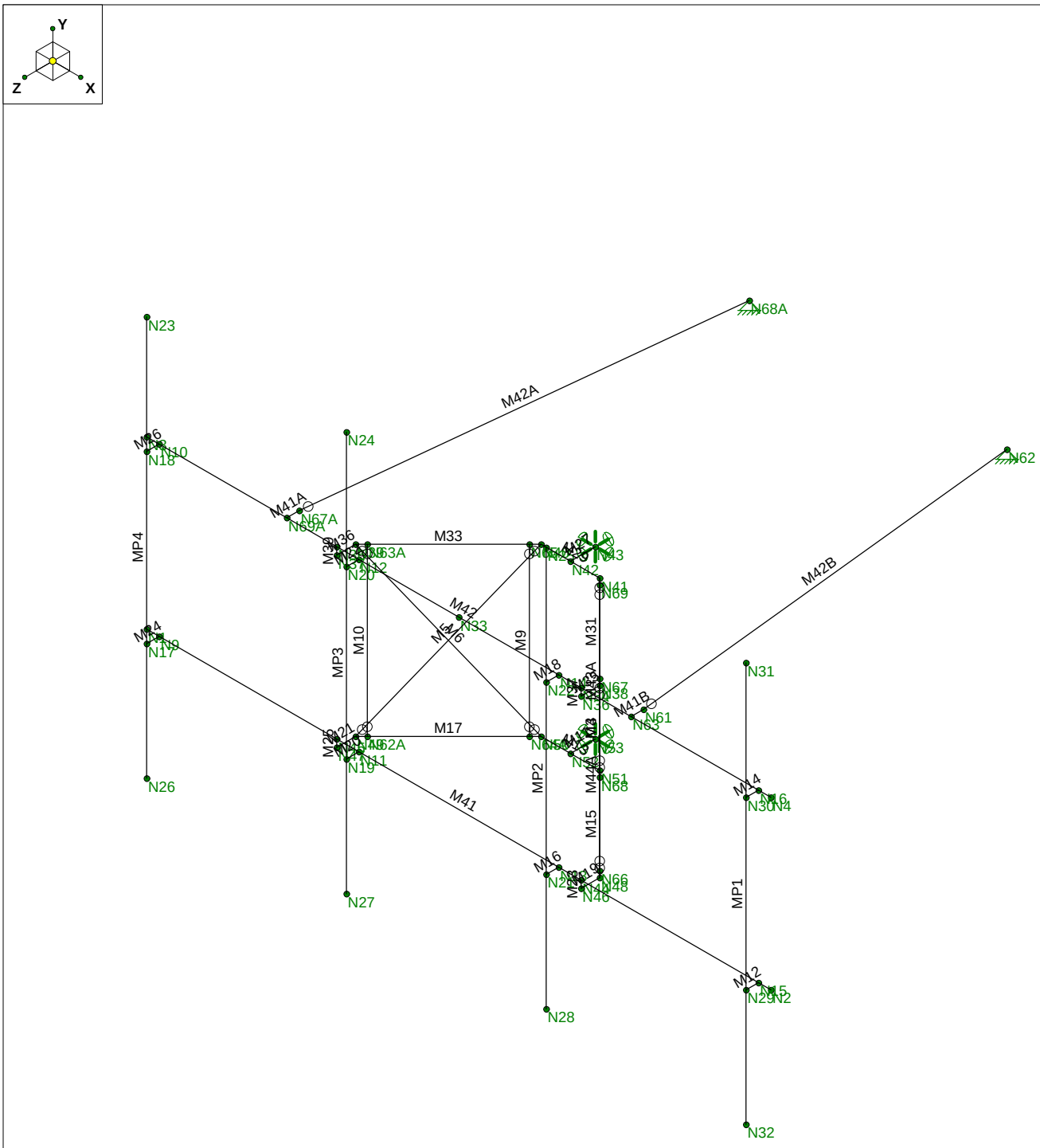

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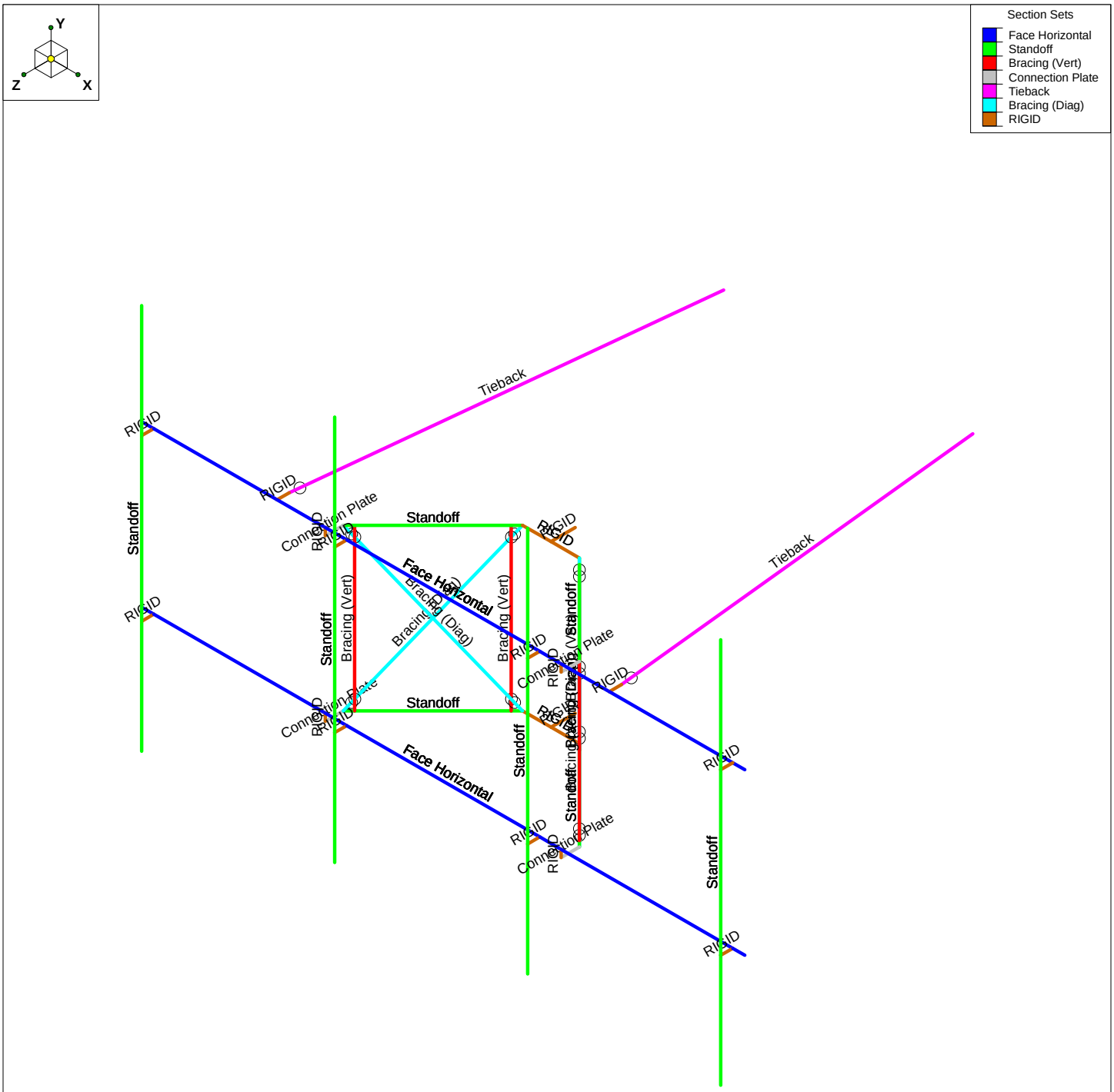

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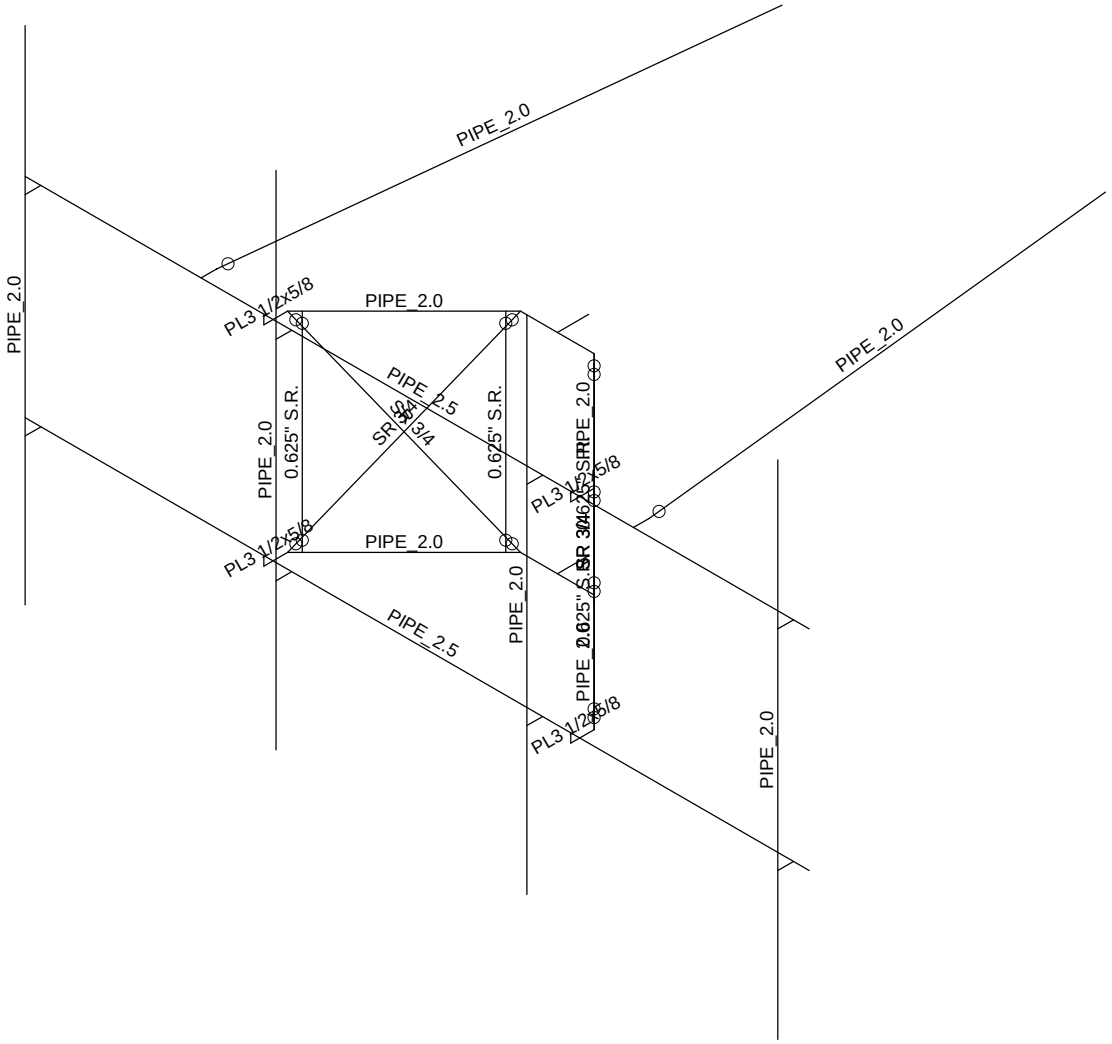

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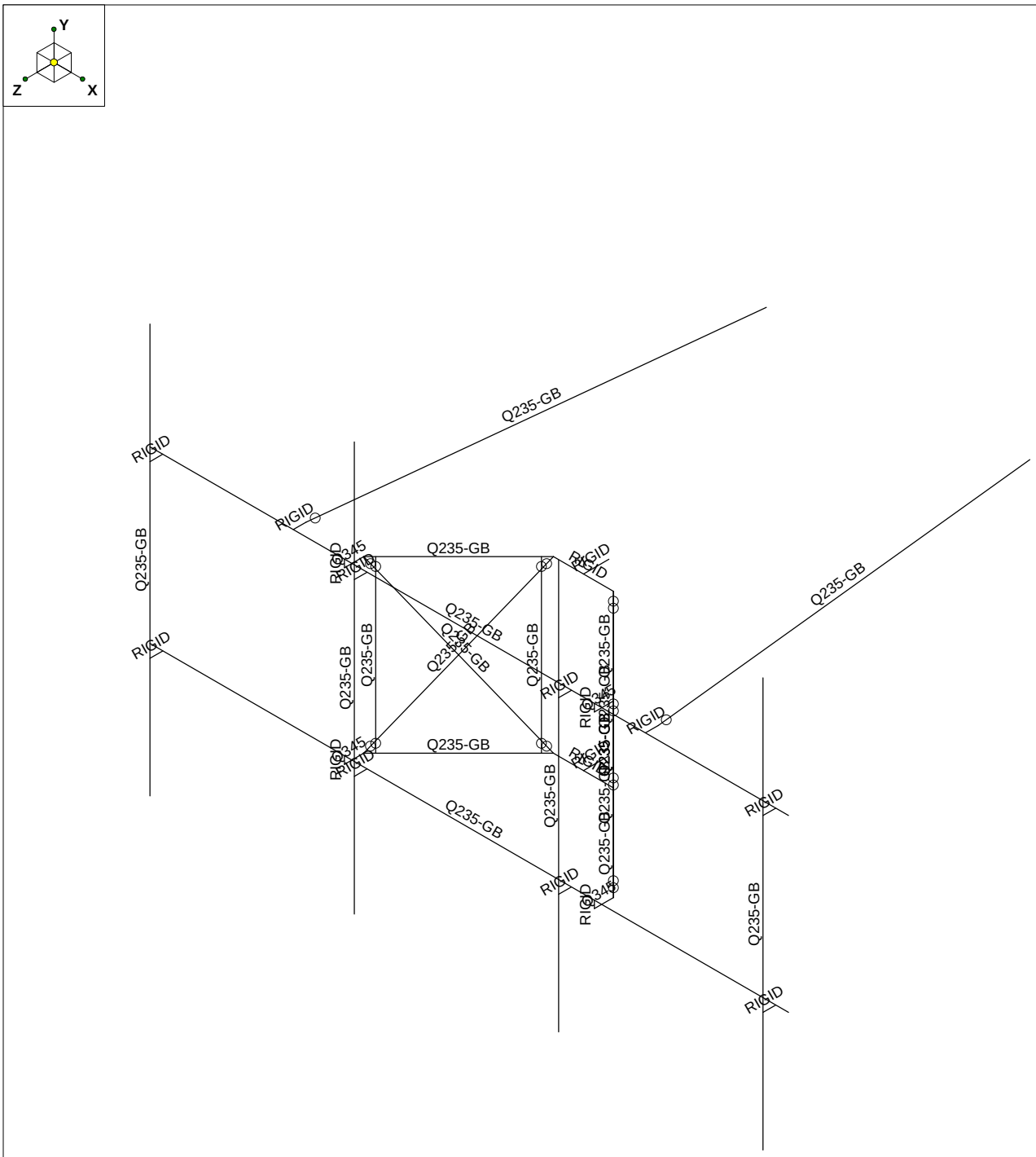

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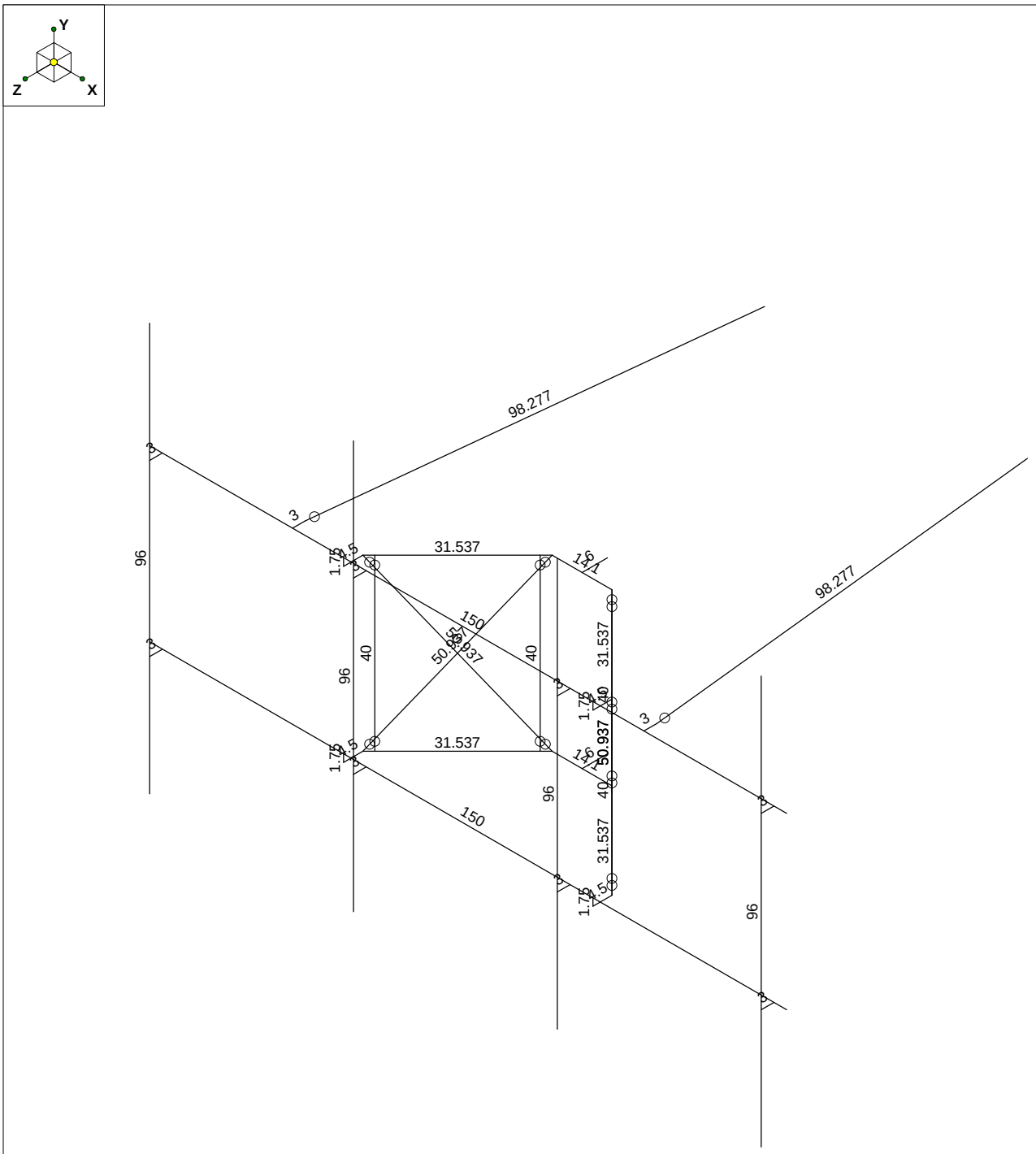

Member Length (in) Displayed

Centerline Communication...	CTNL024A_MA	Member Length
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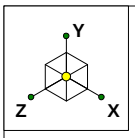

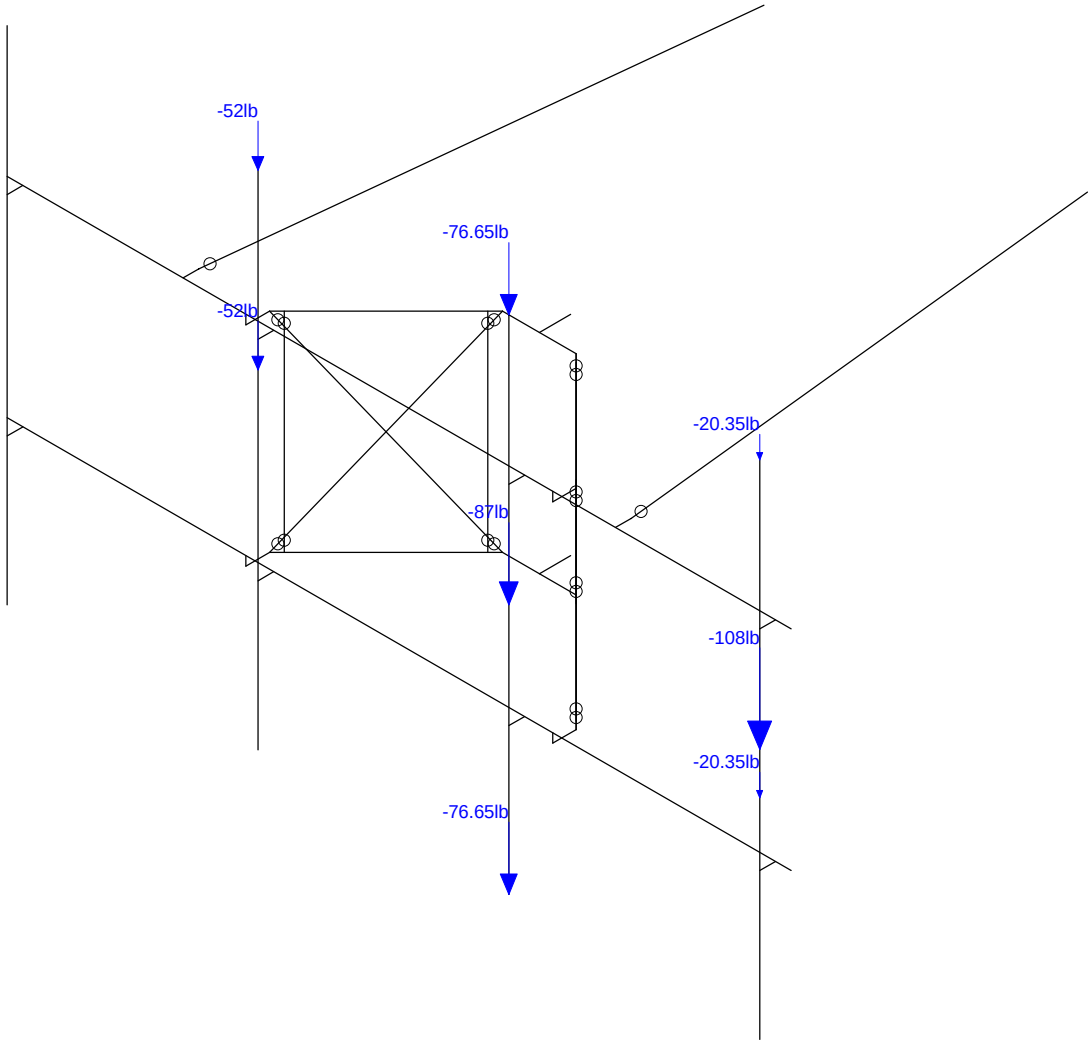

Loads: BLC 1, Dead Load

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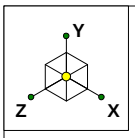
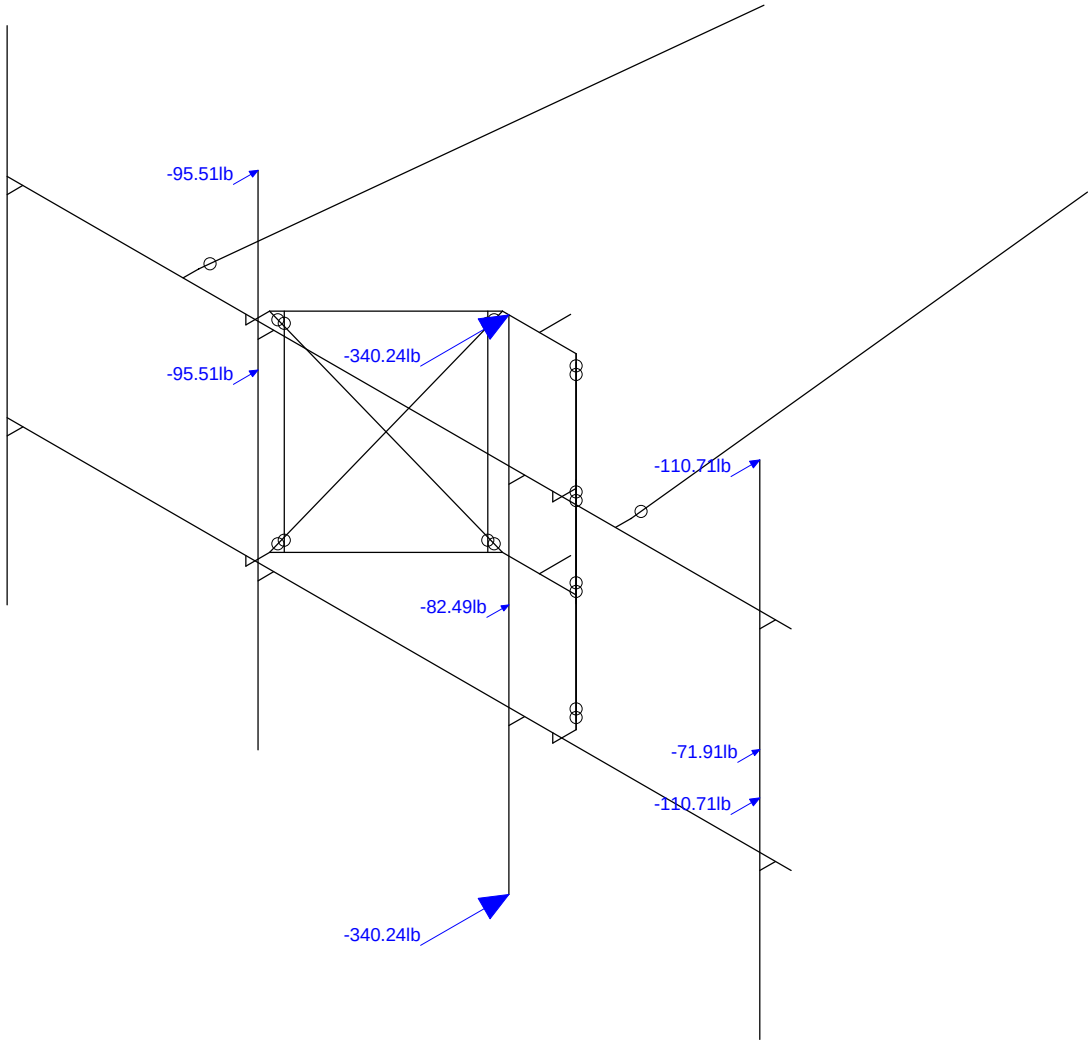
		CTNL024A_MA.r3d





Loads: BLC 2, Wind 0

Centerline Communication...	CTNL024A_MA	Wind 0
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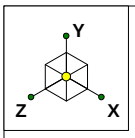

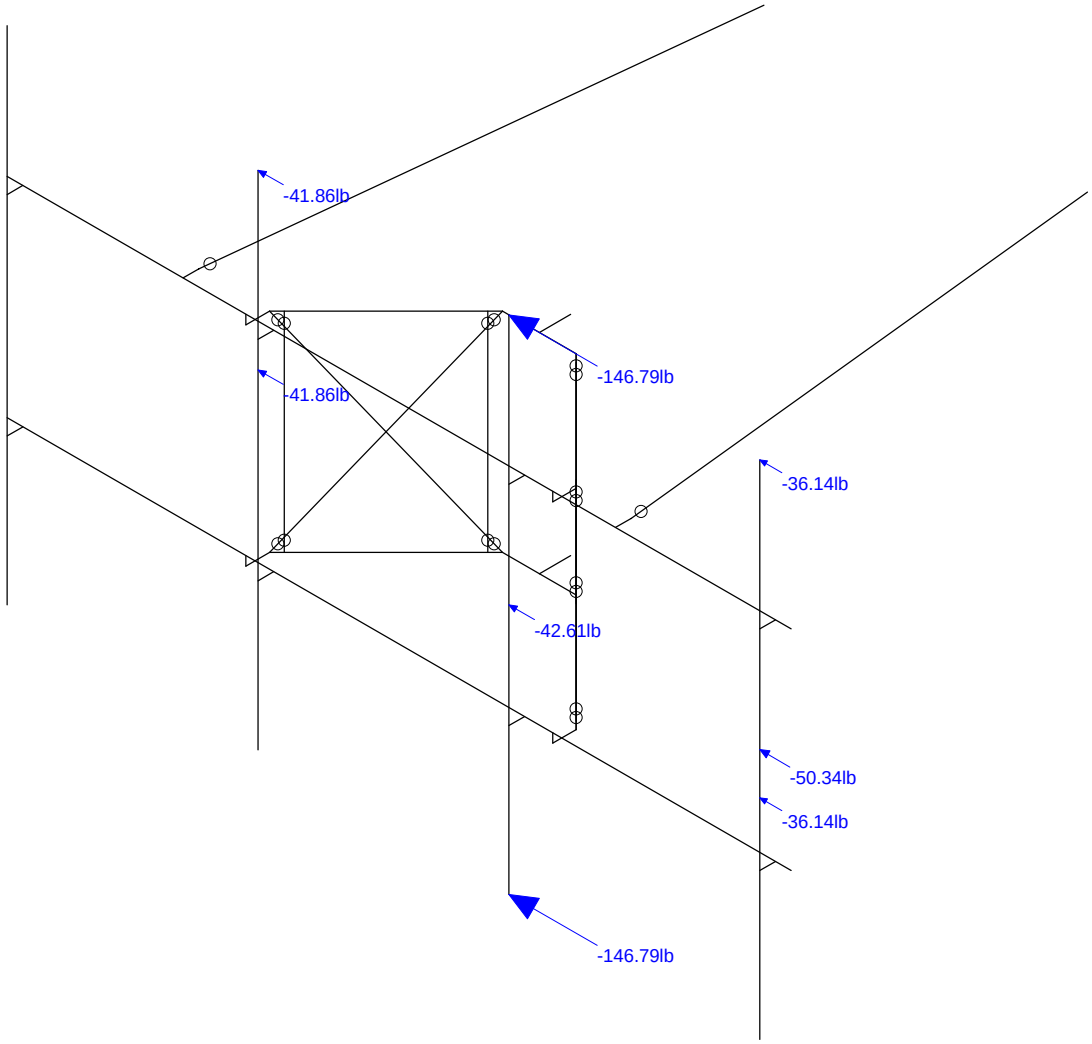

Loads: BLC 5, Wind 90

Centerline Communication...	CTNL024A_MA	Wind 90
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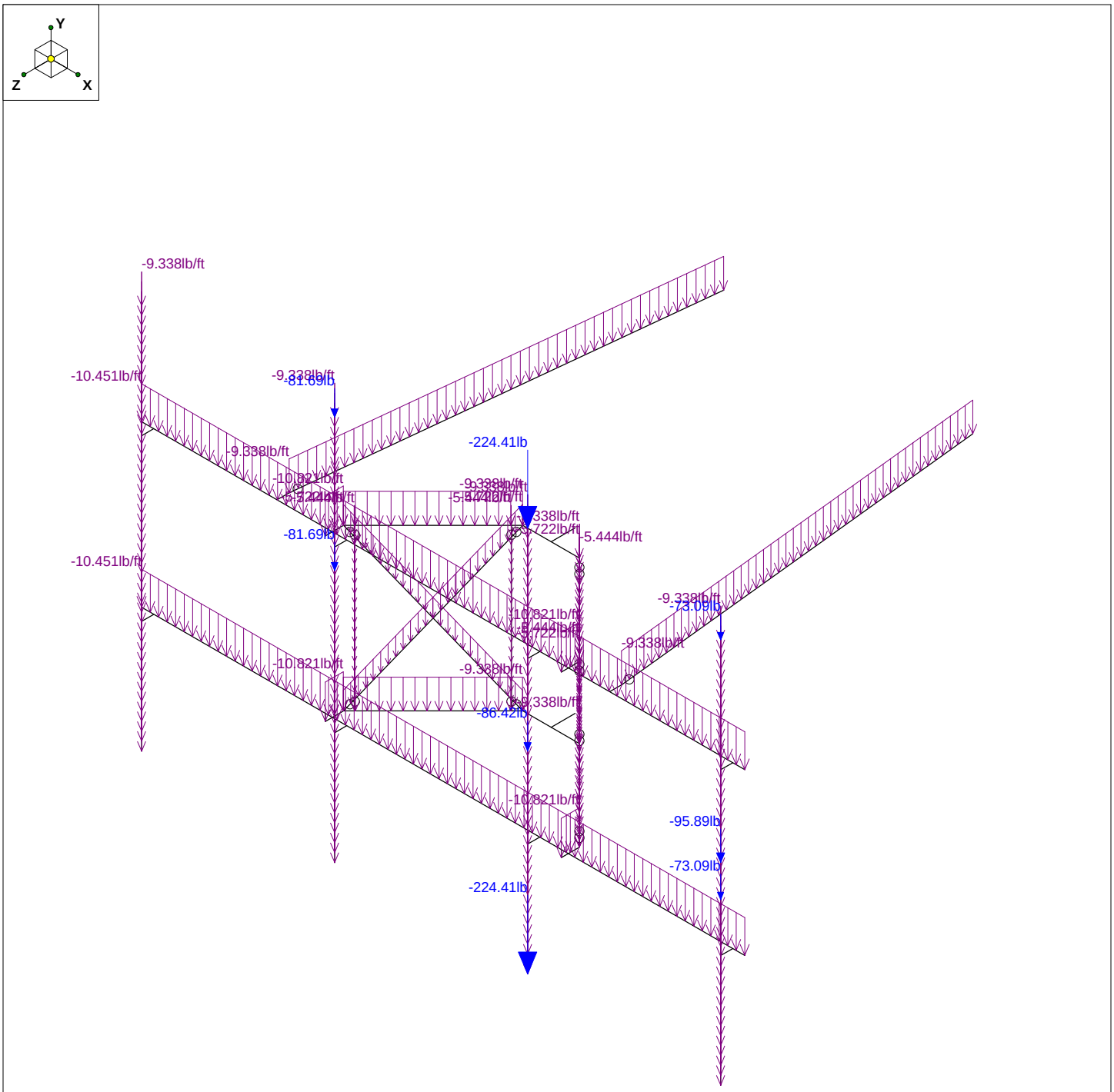

Loads: BLC 9, Ice Weight

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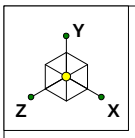

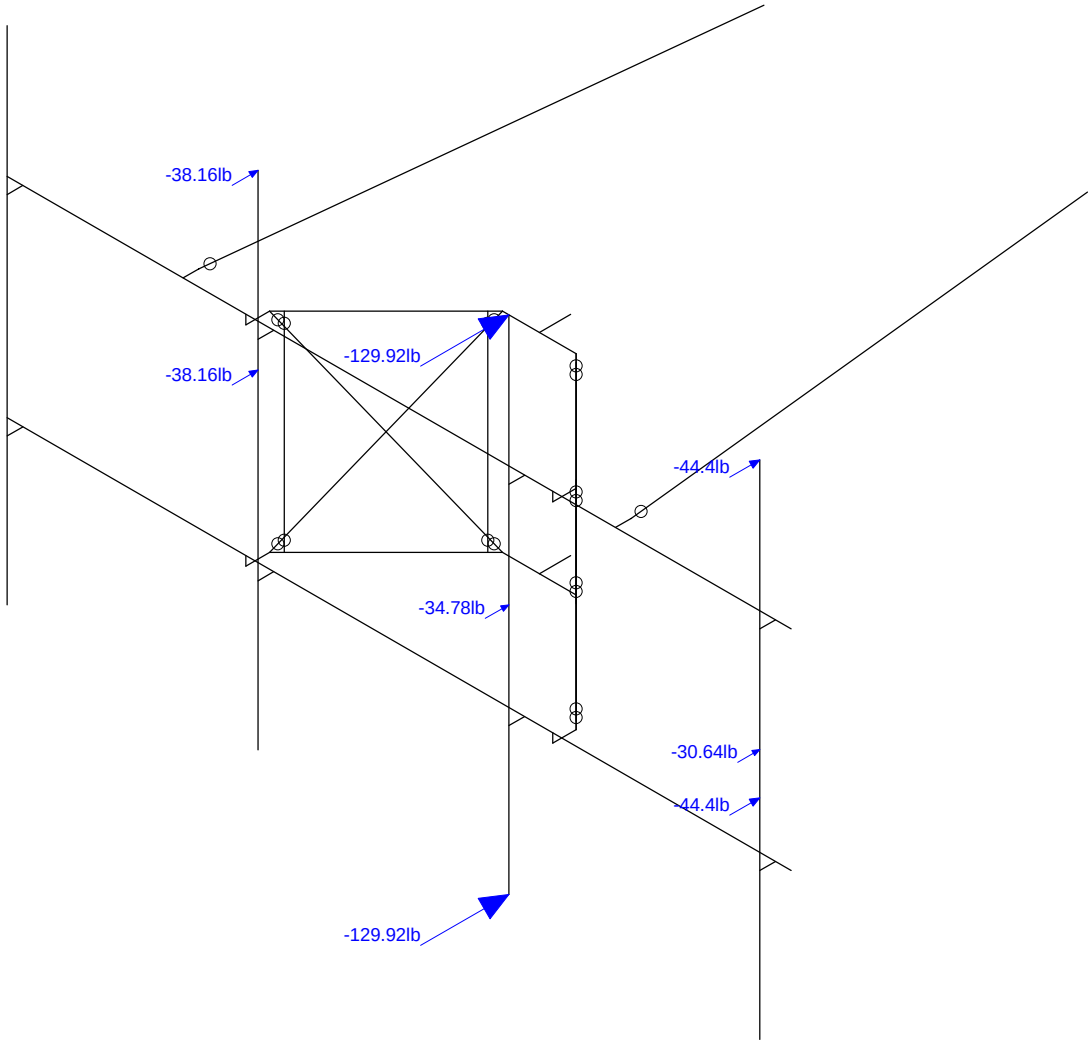

Loads: BLC 10, Ice + Wind 0

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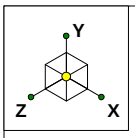

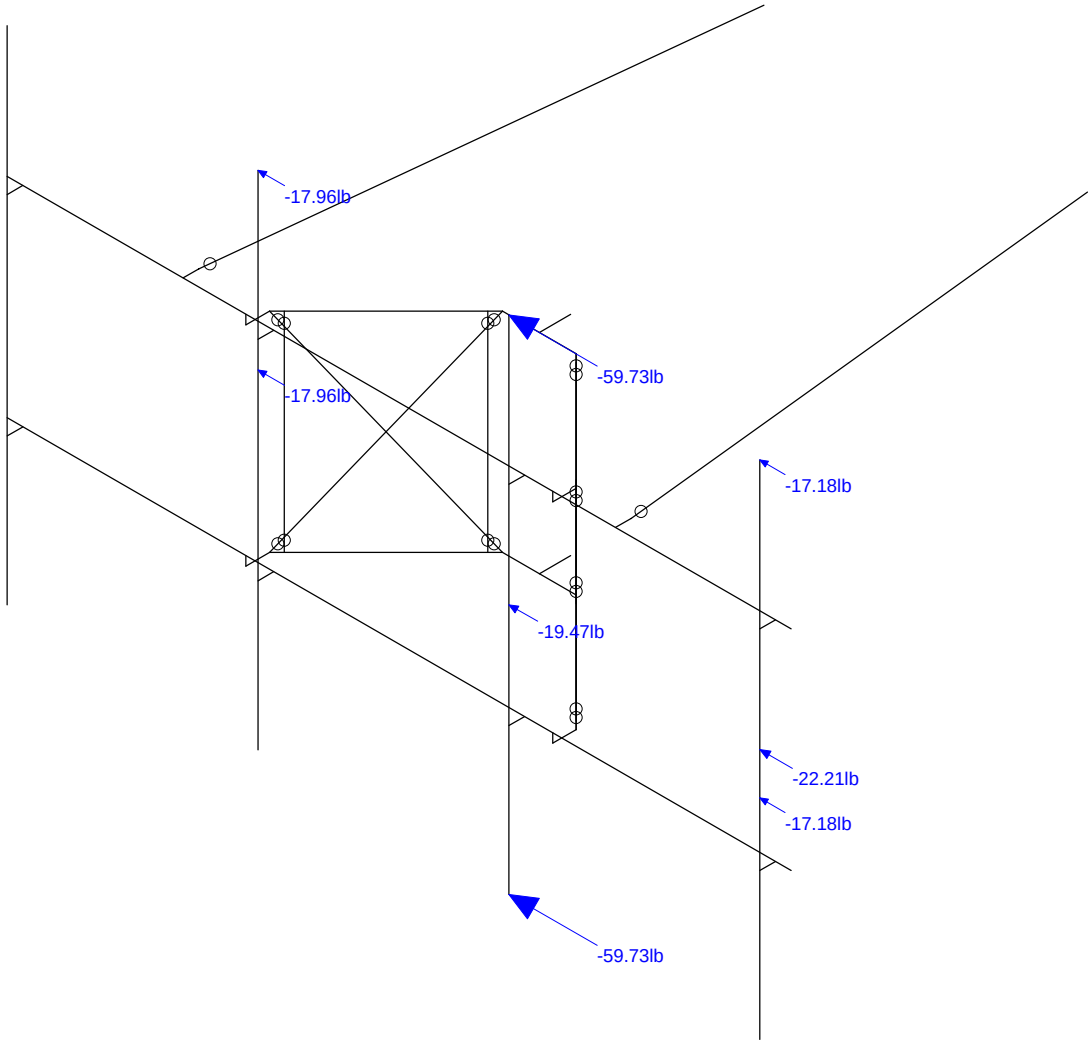

Loads: BLC 13, Ice + Wind 90

Centerline Communication...	CTNL024A_MA	Ice + Wind 90
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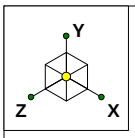

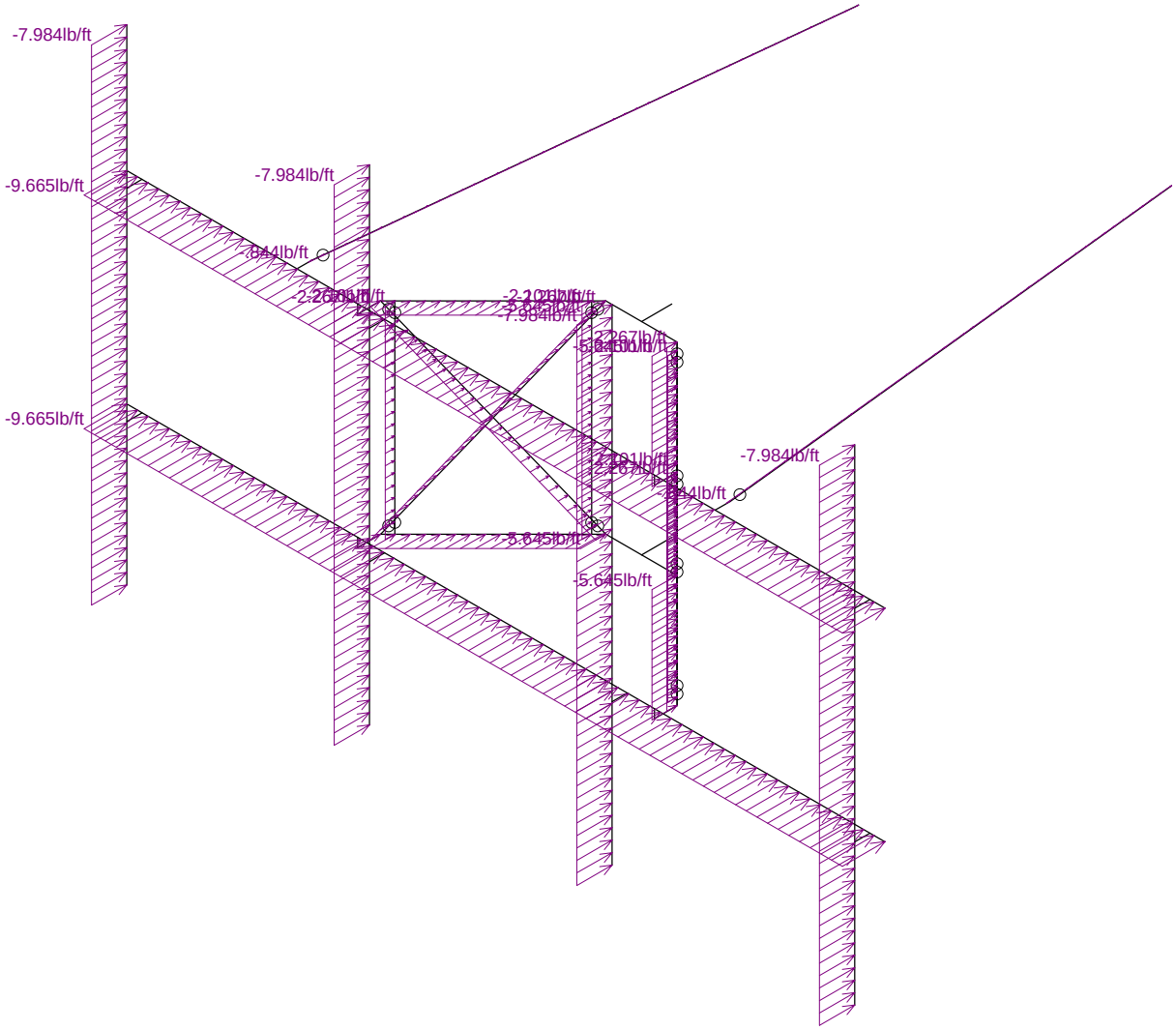

Loads: BLC 17, Distri. Wind Z

Centerline Communication...		Distr. Wind 0
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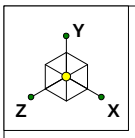

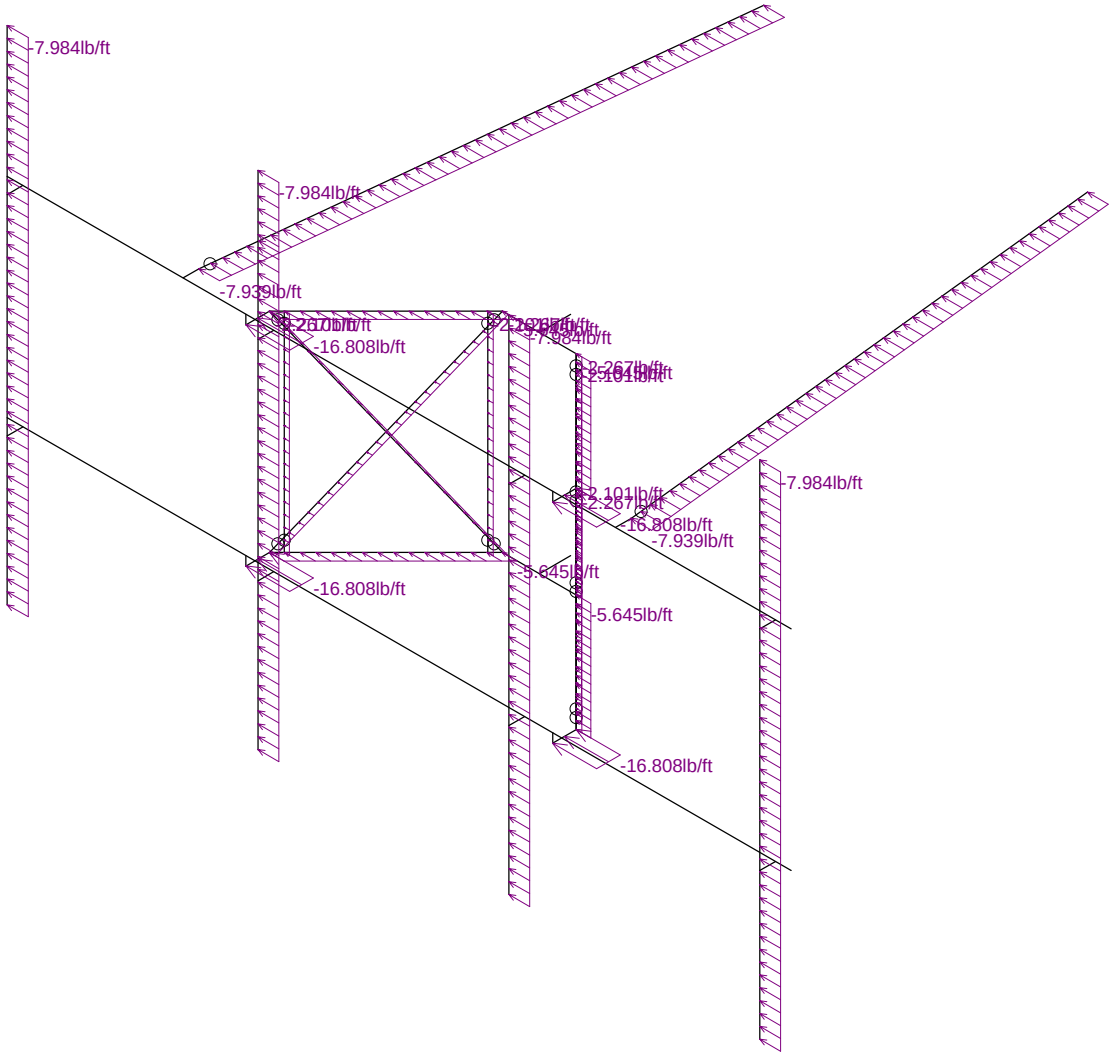

Loads: BLC 18, Distri. Wind X

Centerline Communication...	CTNL024A_MA	Distr. Wind 90
AP		Sept 23, 2021 at 12:38 PM
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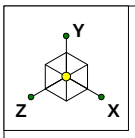

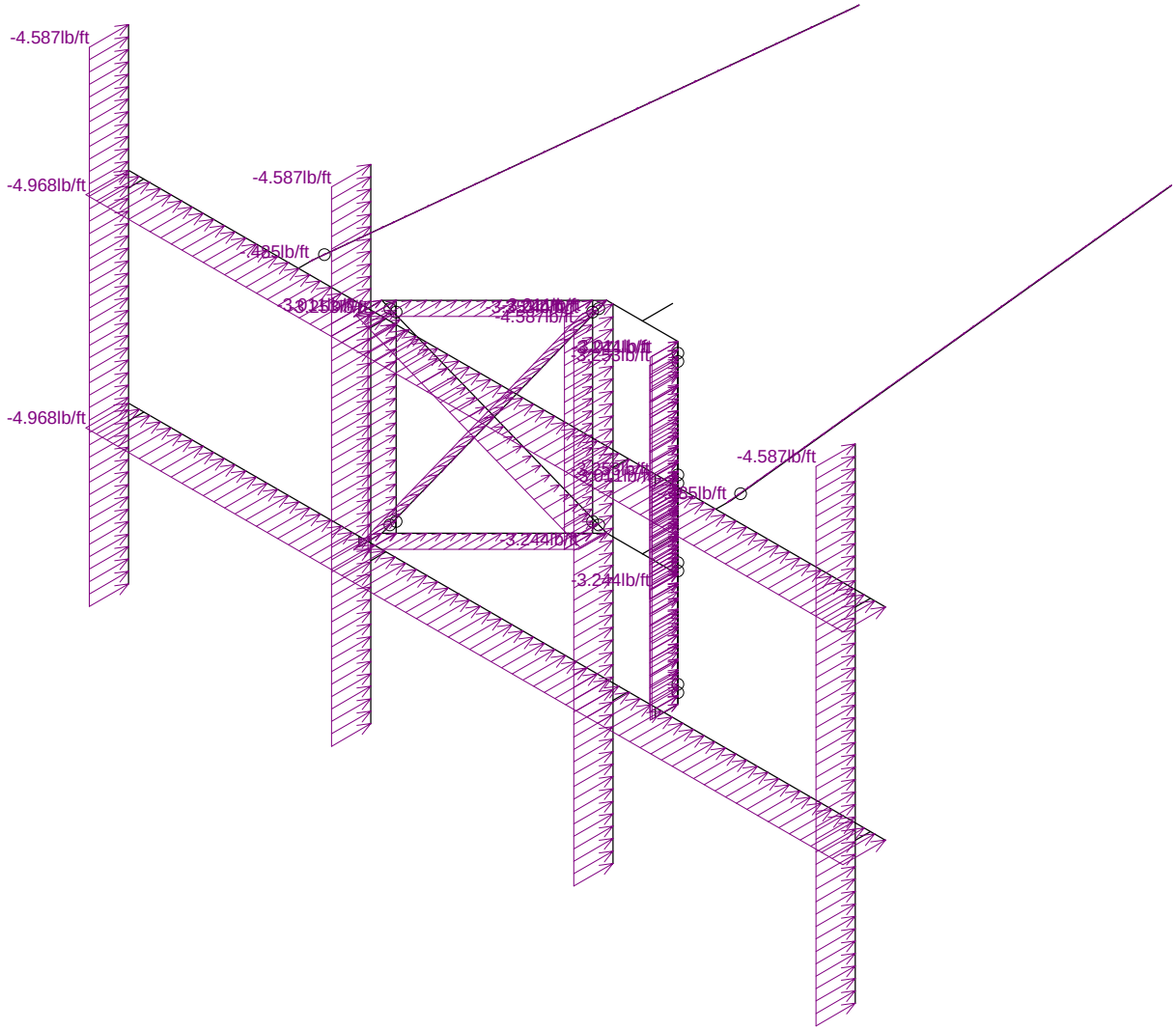

Loads: BLC 19, Distri. Ice + Wind Z

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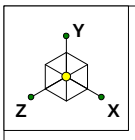

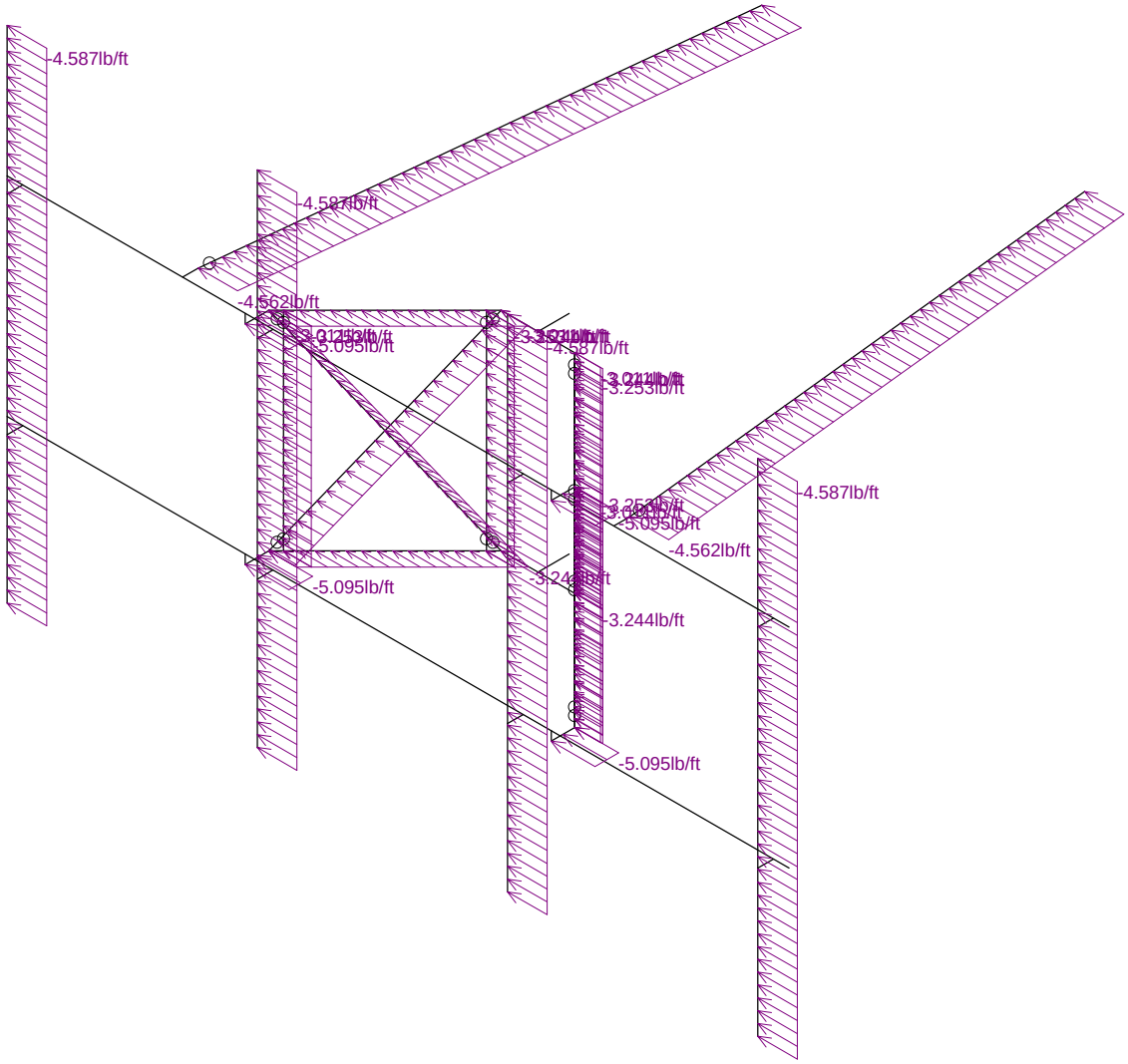

Loads: BLC 20, Distrr. Ice + Wind X

Centerline Communication...	CTNL024A_MA	Distr. Ice + Wind 90
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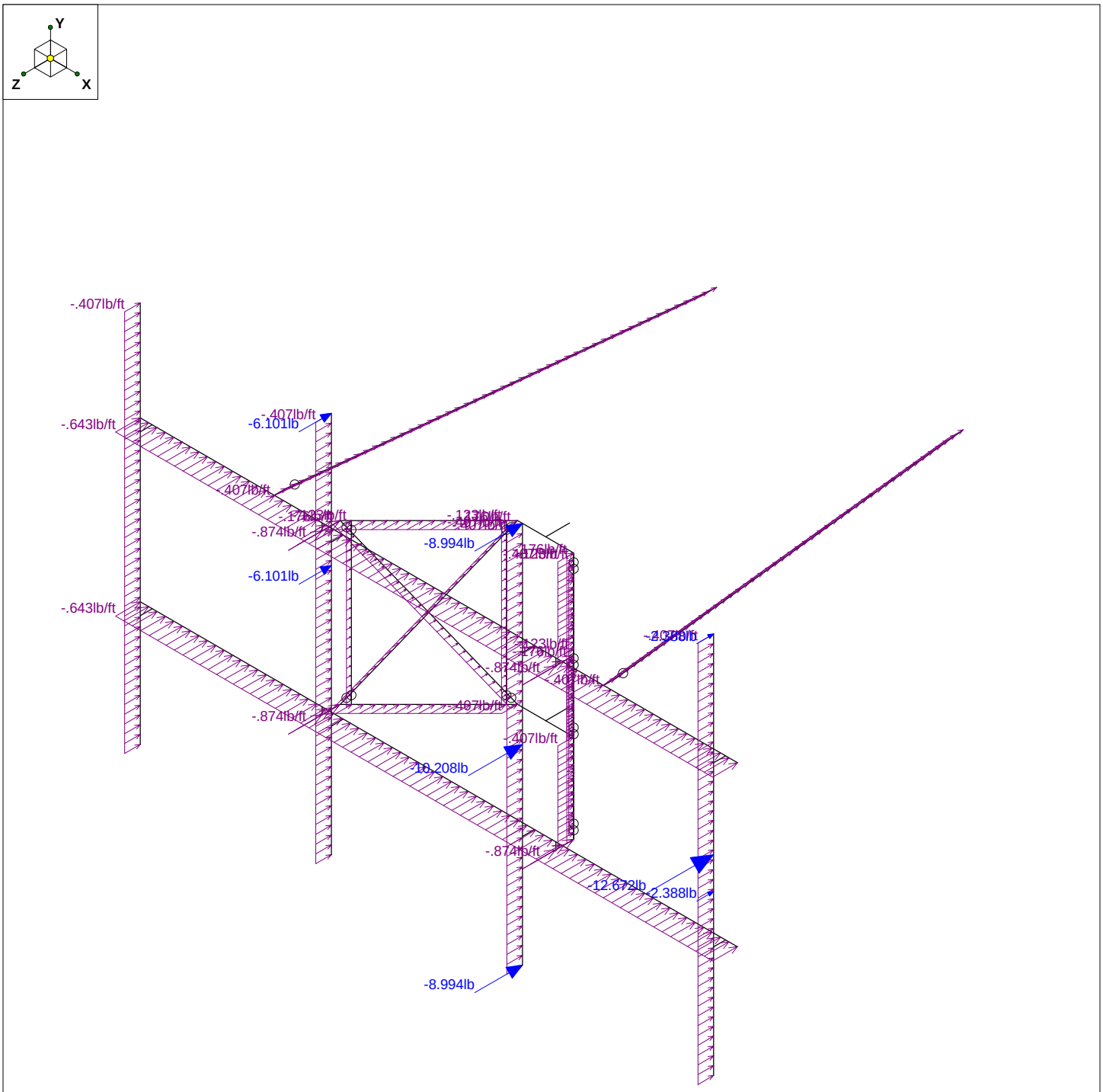

Loads: BLC 21, Seismic Load Z

Centerline Communication...		Seismic Z
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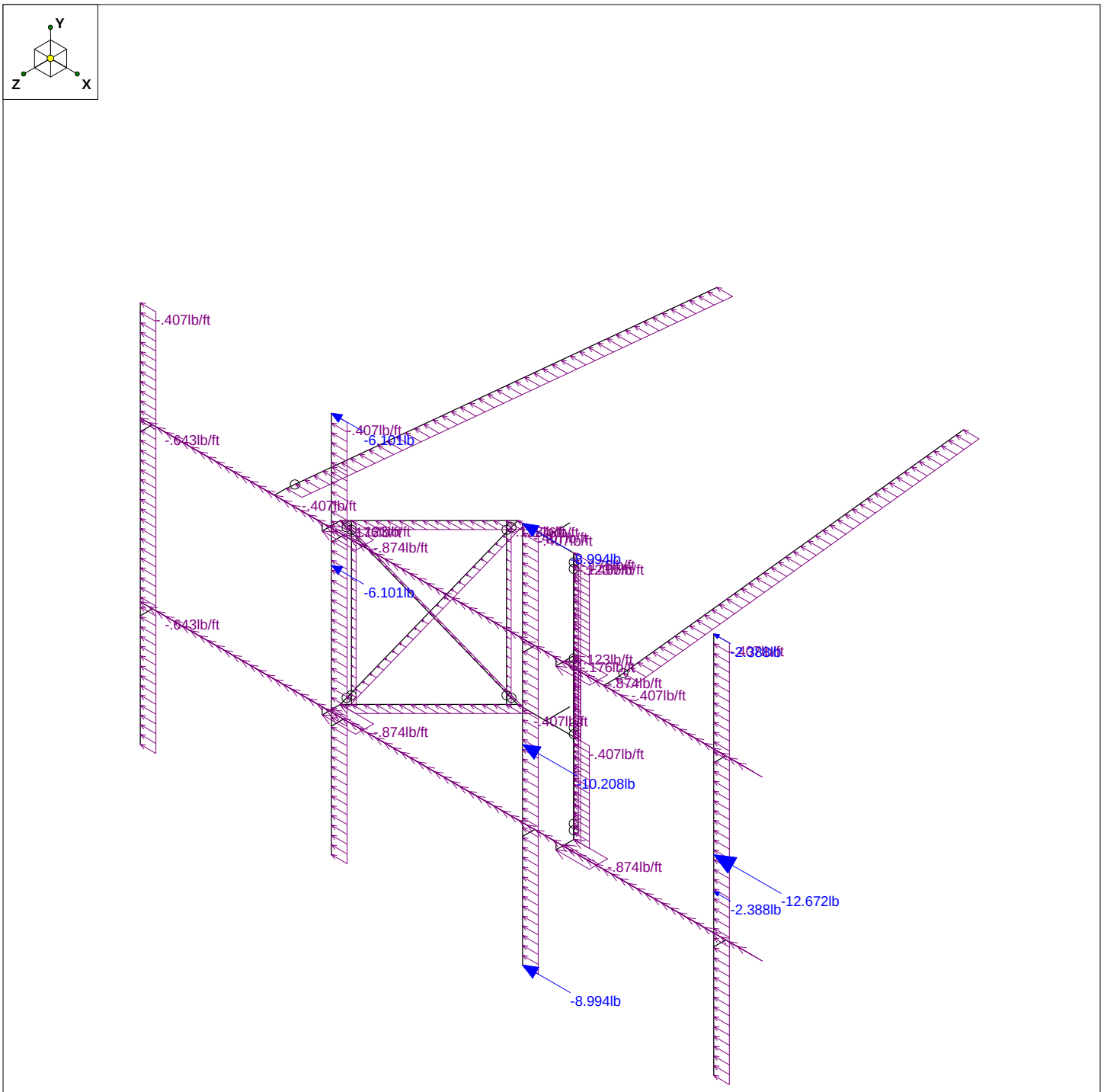

Loads: BLC 22, Seismic Load X

Centerline Communication...	CTNL024A_MA	Seismic X
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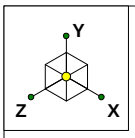

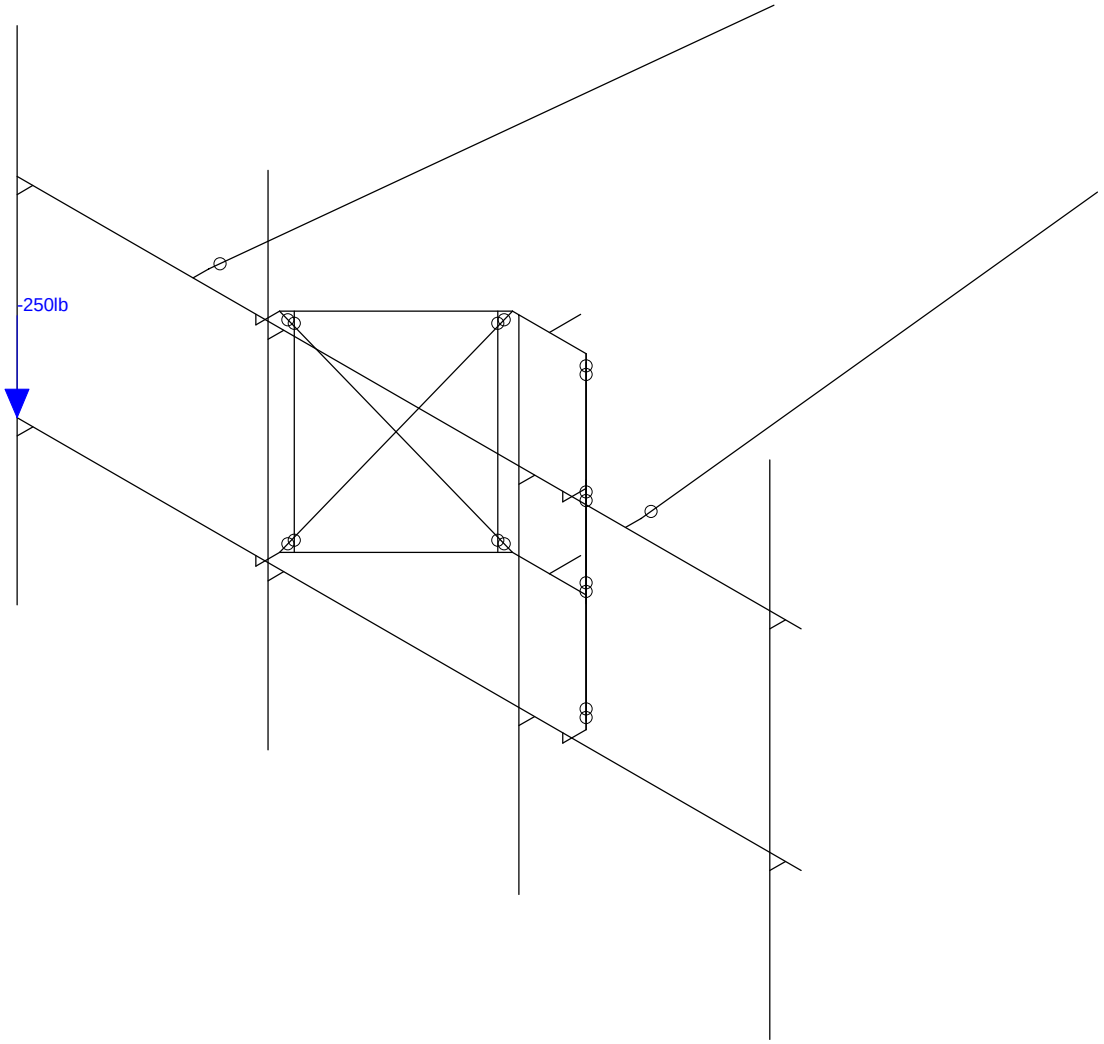

Loads: BLC 23, Live Load 1

Centerline Communication...	CTNL024A_MA	Live Load
AP		Sept 23, 2021 at 12:39 PM
		CTNL024A_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	Q345	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	Q235-GB	29000	11154	.3	.65	490	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	490	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horizontal	PIPE_2.5	Beam	None	Q235-GB	Typical	1.61	1.45	1.45	2.89
2	Standoff	PIPE_2.0	Beam	None	Q235-GB	Typical	1.02	.627	.627	1.25
3	Bracing (Vert)	0.625" S.R.	Beam	None	Q235-GB	Typical	.307	.007	.007	.015
4	Mount Pipe	PIPE_2.0	Beam	None	Q235-GB	Typical	1.02	.627	.627	1.25
5	Conn. Plate	PL0.625x3.5	Beam	None	Q345	Typical	2.188	.071	2.233	.253
6	Pivot Plate	PL0.625x9.25	Beam	None	Q345	Typical	5.781	.188	41.222	.721
7	Connection Plate	PL3 1/2x5/8	Beam	None	Q345	Typical	2.188	.071	2.233	.253
8	Tieback	PIPE_2.0	Beam	None	Q235-GB	Typical	1.02	.627	.627	1.25
9	Bracing (Diag)	SR 3/4	Beam	None	Q235-GB	Typical	.442	.016	.016	.031

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	-75	0	31.3	0	
2	N2	75	0	31.3	0	
3	N3	-75	40	31.3	0	
4	N4	75	40	31.3	0	
5	N9	-72	0	31.3	0	
6	N10	-72	40	31.3	0	
7	N11	-24	0	31.3	0	
8	N12	-24	40	31.3	0	
9	N13	24	0	31.3	0	
10	N14	24	40	31.3	0	
11	N15	72	0	31.3	0	
12	N16	72	40	31.3	0	
13	N17	-72	0	34.3	0	
14	N18	-72	40	34.3	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
15	N19	-24	0	34.3	0	
16	N20	-24	40	34.3	0	
17	N21	24	0	34.3	0	
18	N22	24	40	34.3	0	
19	N23	-72	68	34.3	0	
20	N24	-24	68	34.3	0	
21	N25	24	68	34.3	0	
22	N26	-72	-28	34.3	0	
23	N27	-24	-28	34.3	0	
24	N28	24	-28	34.3	0	
25	N29	72	0	34.3	0	
26	N30	72	40	34.3	0	
27	N31	72	68	34.3	0	
28	N32	72	-28	34.3	0	
29	N33	0	40	31.3	0	
30	N34	29.35	40	31.3	0	
31	N35	-29.35	40	31.3	0	
32	N36	29.35	38.25	31.3	0	
33	N37	-29.35	38.25	31.3	0	
34	N38	29.35	38.25	26.8	0	
35	N39	-29.35	38.25	26.8	0	
36	N40	-7.05	38.25	4.5	0	
37	N41	7.05	38.25	4.5	0	
38	N42	0	38.25	4.5	0	
39	N43	0	38.25	-1.5	0	
40	N44	29.35	0	31.3	0	
41	N45	-29.35	0	31.3	0	
42	N46	29.35	-1.75	31.3	0	
43	N47	-29.35	-1.75	31.3	0	
44	N48	29.35	-1.75	26.8	0	
45	N49	-29.35	-1.75	26.8	0	
46	N50	-7.05	-1.75	4.5	0	
47	N51	7.05	-1.75	4.5	0	
48	N52	0	-1.75	4.5	0	
49	N53	0	-1.75	-1.5	0	
50	N62A	-27.935813	-1.75	25.385813	0	
51	N63A	-27.935813	38.25	25.385813	0	
52	N64A	-8.464214	-1.75	5.914214	0	
53	N65	-8.464214	38.25	5.914214	0	
54	N66	27.935813	-1.75	25.385813	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
55	N67	27.935813	38.25	25.385813	0	
56	N68	8.464214	-1.75	5.914214	0	
57	N69	8.464214	38.25	5.914214	0	
58	N67A	-41.35	40	28.3	0	
59	N68A	-30.965133	40	-69.426852	0	
60	N69A	-41.35	40	31.3	0	
61	N61	41.35	40	28.3	0	
62	N62	30.965133	40	-69.426852	0	
63	N63	41.35	40	31.3	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	N43	max	1045.756	12	2499.898	22	-342.215	15	94.328	10	0	78	1280.46	18
2		min	-889.366	16	-230.656	10	-1585.842	16	-1396.462	20	0	1	-229.34	10
3	N53	max	1036.518	20	1001.808	10	2156.488	16	167.026	15	0	78	323.017	53
4		min	-311.745	43	-353.971	15	-520.601	15	-495.756	10	0	1	-487.898	16
5	N68A	max	38.175	8	55.329	22	695.485	11	0	78	0	78	0	78
6		min	-36.278	3	12.734	10	-364.985	8	0	1	0	1	0	1
7	N62	max	186.675	9	56.087	21	1763.019	9	0	78	0	78	0	78
8		min	-193.286	8	10.997	9	-1942.673	7	0	1	0	1	0	1
9	Totals:	max	1726.573	12	2999.867	22	3014.516	2						
10		min	-.011	8	796.481	14	-3014.522	8						

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N43	Reaction	Reaction	Reaction	Reaction		Reaction
2	N53	Reaction	Reaction	Reaction	Reaction		Reaction
3	N68A	Reaction	Reaction	Reaction			
4	N62	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	M3	Bracing (Di...	50.937			Lbyy						Lateral
2	M4	Bracing (Di...	50.937			Lbyy						Lateral
3	M5	Bracing (Di...	50.937			Lbyy						Lateral
4	M6	Bracing (Di...	50.937			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
5	M9	Bracing (Ve...	40			Lbyy						Lateral
6	M10	Bracing (Ve...	40			Lbyy						Lateral
7	M15	Standoff	31.537			Lbyy						Lateral
8	M17	Standoff	31.537			Lbyy						Lateral
9	M19	Connection ...	4.5			Lbyy						Lateral
10	M21	Connection ...	4.5			Lbyy						Lateral
11	MP1	Standoff	96			Lbyy						Lateral
12	MP2	Standoff	96			Lbyy						Lateral
13	M31	Standoff	31.537			Lbyy						Lateral
14	MP3	Standoff	96			Lbyy						Lateral
15	M33	Standoff	31.537			Lbyy						Lateral
16	MP4	Standoff	96			Lbyy						Lateral
17	M35	Connection ...	4.5			Lbyy						Lateral
18	M36	Connection ...	4.5			Lbyy						Lateral
19	M41	Face Horizo...	150			Lbyy						Lateral
20	M42	Face Horizo...	150			Lbyy						Lateral
21	M43A	Bracing (Ve...	40			Lbyy						Lateral
22	M44A	Bracing (Ve...	40			Lbyy						Lateral
23	M42A	Tieback	98.277			Lbyy						Lateral
24	M42B	Tieback	98.277			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M3	N38	N51			Bracing (Diag)	Beam	None	Q235-GB	Typical
2	M4	N41	N48			Bracing (Diag)	Beam	None	Q235-GB	Typical
3	M5	N40	N49			Bracing (Diag)	Beam	None	Q235-GB	Typical
4	M6	N39	N50			Bracing (Diag)	Beam	None	Q235-GB	Typical
5	M9	N65	N64A			Bracing (Vert)	Beam	None	Q235-GB	Typical
6	M10	N63A	N62A			Bracing (Vert)	Beam	None	Q235-GB	Typical
7	M11	N53	N52		90	RIGID	None	None	RIGID	Typical
8	M12	N15	N29			RIGID	None	None	RIGID	Typical
9	M13	N50	N51			RIGID	None	None	RIGID	Typical
10	M14	N16	N30			RIGID	None	None	RIGID	Typical
11	M15	N51	N48			Standoff	Beam	None	Q235-GB	Typical
12	M16	N13	N21			RIGID	None	None	RIGID	Typical
13	M17	N50	N49			Standoff	Beam	None	Q235-GB	Typical
14	M18	N14	N22			RIGID	None	None	RIGID	Typical
15	M19	N48	N46		90	Connection Pl...	Beam	None	Q345	Typical
16	M20	N11	N19			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
17	M21	N49	N47		90	Connection Pl...	Beam	None	Q345	Typical
18	M22	N12	N20			RIGID	None	None	RIGID	Typical
19	M23	N44	N46			RIGID	None	None	RIGID	Typical
20	M24	N9	N17			RIGID	None	None	RIGID	Typical
21	M25	N45	N47			RIGID	None	None	RIGID	Typical
22	M26	N10	N18			RIGID	None	None	RIGID	Typical
23	M27	N43	N42		90	RIGID	None	None	RIGID	Typical
24	MP1	N31	N32			Standoff	Beam	None	Q235-GB	Typical
25	M29	N40	N41			RIGID	None	None	RIGID	Typical
26	MP2	N25	N28			Standoff	Beam	None	Q235-GB	Typical
27	M31	N41	N38			Standoff	Beam	None	Q235-GB	Typical
28	MP3	N24	N27			Standoff	Beam	None	Q235-GB	Typical
29	M33	N40	N39			Standoff	Beam	None	Q235-GB	Typical
30	MP4	N23	N26			Standoff	Beam	None	Q235-GB	Typical
31	M35	N38	N36		90	Connection Pl...	Beam	None	Q345	Typical
32	M36	N39	N37		90	Connection Pl...	Beam	None	Q345	Typical
33	M37	N34	N36			RIGID	None	None	RIGID	Typical
34	M39	N35	N37			RIGID	None	None	RIGID	Typical
35	M41	N1	N2			Face Horizontal	Beam	None	Q235-GB	Typical
36	M42	N3	N4			Face Horizontal	Beam	None	Q235-GB	Typical
37	M43A	N69	N68			Bracing (Vert)	Beam	None	Q235-GB	Typical
38	M44A	N67	N66			Bracing (Vert)	Beam	None	Q235-GB	Typical
39	M41A	N67A	N69A			RIGID	None	None	RIGID	Typical
40	M42A	N67A	N68A			Tieback	Beam	None	Q235-GB	Typical
41	M41B	N61	N63			RIGID	None	None	RIGID	Typical
42	M42B	N61	N62			Tieback	Beam	None	Q235-GB	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	M3	BenPIN	BenPIN			Euler Buc...	Yes				None
2	M4	BenPIN	BenPIN			Euler Buc...	Yes				None
3	M5	BenPIN	BenPIN			Euler Buc...	Yes				None
4	M6	BenPIN	BenPIN			Euler Buc...	Yes				None
5	M9	BenPIN	BenPIN			Euler Buc...	Yes				None
6	M10	BenPIN	BenPIN			Euler Buc...	Yes				None
7	M11						Yes	** NA **			None
8	M12						Yes	** NA **			None
9	M13						Yes	** NA **			None
10	M14						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...
11	M15						Yes				None
12	M16						Yes	** NA **			None
13	M17						Yes				None
14	M18						Yes	** NA **			None
15	M19						Yes				None
16	M20						Yes	** NA **			None
17	M21						Yes				None
18	M22						Yes	** NA **			None
19	M23						Yes	** NA **			None
20	M24						Yes	** NA **			None
21	M25						Yes	** NA **			None
22	M26						Yes	** NA **			None
23	M27						Yes	** NA **			None
24	MP1						Yes				None
25	M29						Yes	** NA **			None
26	MP2						Yes				None
27	M31						Yes				None
28	MP3						Yes				None
29	M33						Yes	Default			None
30	MP4						Yes	Default			None
31	M35						Yes				None
32	M36						Yes				None
33	M37						Yes	** NA **			None
34	M39						Yes	** NA **			None
35	M41						Yes				None
36	M42						Yes				None
37	M43A	BenPIN	BenPIN			Euler Buc...	Yes				None
38	M44A	BenPIN	BenPIN			Euler Buc...	Yes				None
39	M41A						Yes	** NA **			None
40	M42A	BenPIN					Yes				None
41	M41B						Yes	** NA **			None
42	M42B	BenPIN					Yes				None

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Dead Load	DL		-1			8			
2	Wind 0	WLZ					16			
3	Wind 30	None					16			
4	Wind 60	None					16			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
5	Wind 90	WLX					16			
6	Wind 120	None					16			
7	Wind 150	None					16			
8	Wind 180	WLZ					16			
9	Ice Weight	DL					8	42		
10	Ice + Wind 0	WLZ					16			
11	Ice + Wind 30	None					16			
12	Ice + Wind 60	None					16			
13	Ice + Wind 90	WLX					16			
14	Ice + Wind 120	None					16			
15	Ice + Wind 150	None					16			
16	Ice + Wind 180	WLZ					16			
17	Distri. Wind Z	WLZ						42		
18	Distri. Wind X	WLX						42		
19	Distri. Ice + Wind Z	WLZ						42		
20	Distrr. Ice + Wind X	WLX						42		
21	Seismic Load Z	ELZ					8	42		
22	Seismic Load X	ELX					8	42		
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...												
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													

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...
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											
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										

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...
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	MP2	PIPE_2.0	.755	68	15	.115	28		7	14916...	32130	1871....	1871....	...	H1-1b
2	M19	PL3 1/2x...	.573	4.5	8	.201	0	y	18	68591...	70875	922.8...	5167....	...	H1-1b
3	M35	PL3 1/2x...	.427	4.5	10	.178	0	y	9	68591...	70875	922.8...	5167....	...	H1-1b
4	M42	PIPE_2.5	.340	117.188	8	.220	103....		15	14558...	50715	3596....	3596....	...	H1-1b
5	MP1	PIPE_2.0	.327	28	2	.066	28		8	14916...	32130	1871....	1871....	...	H1-1b
6	M36	PL3 1/2x...	.313	4.5	2	.100	0	y	43	68591...	70875	922.8...	5167....	...	H1-1b
7	MP3	PIPE_2.0	.310	28	7	.069	28		6	14916...	32130	1871....	1871....	...	H1-1b
8	M41	PIPE_2.5	.261	104.688	16	.289	103....		8	14558...	50715	3596....	3596....	...	H1-1b
9	M31	PIPE_2.0	.235	0	2	.105	31.5...		15	29576...	32130	1871....	1871....	...	H1-1b
10	MP4	PIPE_2.0	.213	68	42	.033	28		43	14916...	32130	1871....	1871....	...	H1-1b
11	M15	PIPE_2.0	.201	31.537	17	.117	31.5...		22	29576...	32130	1871....	1871....	...	H1-1b
12	M4	SR 3/4	.195	0	22	.016	50.9...		20	1352....	13916...	173.9...	173.9...	...	H1-1...
13	M21	PL3 1/2x...	.129	4.5	9	.101	0	y	37	68591...	70875	922.8...	5167....	...	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*P...	phi*P...	phi*M...	phi*M...	...	Eqn
14	M42B	PIPE_2.0	.123	98.277	9	.006	98.2...		19	14376...	32130	1871....	1871....	...	H1-1...
15	M33	PIPE_2.0	.093	31.537	8	.050	29.5...		2	29576...	32130	1871....	1871....	...	H1-1b
16	M42A	PIPE_2.0	.081	49.139	5	.006	98.2...		19	14376...	32130	1871....	1871....	...	H1-1b
17	M44A	0.625" S...	.078	0	8	.016	0		7	988.3...	9670.5	94.08	94.08	1	H1-1...
18	M17	PIPE_2.0	.054	31.537	37	.049	29.5...		8	29576...	32130	1871....	1871....	...	H1-1b
19	M5	SR 3/4	.040	0	43	.006	0		14	1352....	13916...	173.9...	173.9...	...	H1-1...
20	M10	0.625" S...	.023	0	8	.012	0		6	988.3...	9670.5	94.08	94.08	1	H1-1...
21	M6	SR 3/4	.019	50.937	14	.011	50.9...		13	1352....	13916...	173.9...	173.9...	...	H1-1...
22	M3	SR 3/4	.007	50.937	15	.012	50.9...		6	1352....	13916...	173.9...	173.9...	...	H1-1...
23	M43A	0.625" S...	.003	0	10	.016	0		7	988.3...	9670.5	94.08	94.08	...	H1-1...
24	M9	0.625" S...	.002	0	16	.018	0		7	988.3...	9670.5	94.08	94.08	1	H1-1...