Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Date: **January 25, 2022**

Mount Analysis Report

Tower Owner: Vertical Bridge Towers LLC
Carrier: Dish Wireless

Site Name: NJJER01133A
Site Data: 39 Carmen Hill Road, Brookfield, Fairfield County, CT 06804
Latitude *41° 29' 36.2"*, Longitude *-73° 25' 43.7"*
Proposed 8 ft CommScope Sector Frame Mount

Tectonic Project Number: 10710.NJJER01133A

Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of the above mentioned mount.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Sector Mount: **Sufficient Capacity – 61%**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Structure Class 2 were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with drawing for the determined available structural capacity to be effective.

We at Tectonic appreciate the opportunity of providing our continuing professional services to you and Dish. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: John-Fritz Julien / Ian Marinaccio

Respectfully submitted by:
Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C.

Edward N. Iamiceli, P.E.
Managing Director - Structural

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1) INTRODUCTION

The proposed mount is an 8' sector v-frame mount manufactured by Commscope P/N: MTC3975083. To accommodate for existing feedlines, Dish Wireless is proposing to install the proposed mounts on the face of the tower using a tubular-arm by SitePro1 P/N: TAP-472.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-G
Structure Class:	2
Wind Speed:	93 mph
Exposure Category:	C
Topographic Factor:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Loading Information

Mounting Level (ft)	Carrier Designation	Number of Antennas	Antenna Manufacturer	Antenna Model	Proposed Mount Type	Note
225.0	Dish Wireless	3	JMA Wireless	MX08FR0665-21	CommScope P/N: MTC3975083 With SitePro1 P/N: TAP-427	1
		3	Fujitsu	TA08025-B604 RRH		
		3	Fujitsu	TA08025-B605 RRH		
		1	Raycap	RDIDC-9181-PF-48		

Note:
1) Proposed equipment to be installed on the proposed mounts.

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Dated
Mount Assembly Drawings	CommScope	07/14/17
RFDS	Dish Wireless	06/09/21
Construction Drawings	Tectonic Engineering	10/07/21

3.1) Analysis Method

A tool internally developed, using Microsoft Excel, was used to calculate wind loading on all appurtenances and mount members. This information was then used in conjunction with another program, RISA-3D, which is a commercially available analysis software package, used to check the antenna mounting system and calculate member stresses for various loading cases. The selected output from the analysis is included in Appendices B and C.

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed, and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Member length and sizes are based solely on the assembly drawing by CommScope, referenced above.

5) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Tectonic should be notified to determine the effect on the structural integrity of the mount.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Sector Mount)

Notes	Component	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Face Horizontal	225.0	51	Pass
	Standoff Horizontal		61	Pass
	Pipe Mount		51	Pass
	Standoff Brace		51	Pass
	Stiff-arm		7	Pass
	Connection Horizontal		44	Pass
	Connection Vertical		16	Pass
	Connection		13	Pass
Structure Rating (max from all components) =			**61%**	

Note:

1) See additional documentation in "Appendix C - Analysis Output" for calculations supporting the % capacity consumed.

4.1) Result / Conclusions

The proposed sector v-frame mount have adequate capacity to support the proposed antenna and equipment installation as detailed in the following report.

This structural analysis only includes evaluation of the antenna mounts and not the guyed tower. The tower is to be analyzed under a separate structural analysis by others.

Contractor shall install the mount at the correct degree to correct to the existing tapper and field verify existing conditions and recommendations as noted on the construction drawings and notify the design engineer of any discrepancies prior to construction. Any further changes to the antenna and/or appurtenance configuration should be reviewed with respect to their effect on structural loads prior to implementation.

APPENDIX A

SOFTWARE INPUT CALCULATIONS

Tectonic	Job No. 10710.NJJER01133A			
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.	Sheet No.	1	of	3
	Calculated By	JJ	Date :	1/20/2022
	Checked By	IM	Date :	1/20/2022

WIND AND ICE LOADS PER TIA-222-G

W.O.	10710.NJJER01133A
Project Name	NJJER01133A
Location	39 Carmen Hill Road, Brookfield, CT 06804
County	Fairfield

Tower Type	GT	Guyed Tower
Structure Class	2	Substantial hazard
Exposure Category	C	Open terrain
Topo Category	1	Flat or rolling terrain
Height of crest	0	ft

Basic Wind Speed (3-sec gust):		
Without ice	93	mph*
With ice	50	mph
Service	60	mph
Ice thickness	1.00	in

Importance Factor	
Wind only	1.00
Wind with ice	1.00
Ice thickness	1.00
Supporting Data:	
K_e	1.00
K_t	N/A
f	N/A
z_g	900
α	9.5
$K_{z,min}$	0.85
K_d	0.95
G_h	1.00

Height	z (ft)	225
	Kh	N/A
	Kzt	1.00
	Kz	1.50
	Kiz	1.21
Wind Pressure, qz (psf)	No Ice	31.58
	With Ice	9.13
	Service	13.14
(tiz)	Ice Thk	2.42
Appurtenances (qzGh)	No Ice	31.58
	With Ice	9.13
	Service	13.14

*Ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second wind gust speed of 93 mph per Section 1609.3 and Appendix N, as required for use in the TIA-222-G Standard.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01133A
Sheet No. 2 of 3
Calculated By JJ Date : 01/20/22
Checked By IM Date : 01/20/22

Appurtenance Information

Effective Projected Area for Appurtenance $(EPA)_A=Max((EPA)_N,(EPA)_T)$

$(EPA)_T=\sum(C_aA_A)_T$ | | $(EPA)_N=\sum(C_aA_A)_N$

Reduction Factor = 0.9

Wind Only Load Combinations

Antenna Configuration	(E) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_T$	Antenna $(Ca)_N$	Side Face $(Aa)_T$ (ft^2)	Wind ward Side Face (CaAa)T (ft^2)	Face Normal $(A_a)_N$ (ft^2)	Windward face Normal $(C_aA_a)_N$ (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight (lb)	Total Weight (lb)
MX08FR0665-21	P	3	225	6.00	20.00	8.00	Flat	1.47	1.25	4.00	15.84	10.00	33.72	355	167	64.5	193.5
TA08025-B604 RRH	P	3	225	1.24	15.70	7.80	Flat	1.20	1.20	0.81	2.61	1.62	5.26	55	28	63.9	191.7
TA08025-B605 RRH	P	3	225	1.24	15.70	9.00	Flat	1.20	1.20	0.93	3.02	1.62	5.26	55	32	74.9	224.7
RDIDC-9181-PF-48	P	3	225	1.58	14.39	8.15	Flat	1.20	1.20	1.07	3.48	1.90	6.15	65	37	21.8	65.5
										$\sum(CaA_A)_T$	24.95	$\sum(CaA_A)_N$	50.39				675

Wind with Ice Load Combinations

Ice Thk= 2.42 in

Antenna Configuration	(E), (R) or (P)	Qty	z (ft)	Length or Diameter (ft)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna $(Ca)_T$	Antenna $(Ca)_N$	Side Face $(A_a)_T$ (ft^2)	Windward Side Face (CaAa)T (ft^2)	Face Normal $(A_a)_N$ (ft^2)	Windward Face Normal $(C_aA_a)_N$ (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Ice Area for Weight (ft^2)	Ice Weight Alone (lbs)
MX08FR0665-21	P	3	225	6.40	24.85	12.85	Cylindrical	1.35	1.23	6.86	25.08	13.26	43.90	134	76	28.0	316.6
TA08025-B604 RRH	P	3	225	1.65	20.55	12.65	Cylindrical	1.20	1.20	1.73	5.62	2.82	9.13	28	17	4.9	55.0
TA08025-B605 RRH	P	3	225	1.65	20.55	13.85	Cylindrical	1.20	1.20	1.90	6.15	2.82	9.13	28	19	5.1	57.8
RDIDC-9181-PF-48	P	3	225	1.99	19.24	13.00	Cylindrical	1.20	1.20	2.15	6.97	3.18	10.31	31	21	5.9	67.2
										$\sum(CaA_A)_T$	43.81	$\sum(CaA_A)_N$	72.47				497

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Sheet No. 3 of 3
Calculated By JJ Date : 01/20/22
Checked By IM Date : 01/20/22

Existing Platform Mount

Mount Center Line=	225 ft

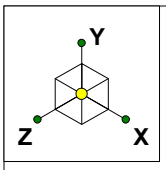
Member sizes are based on the assembly drawings by CommScope, dated 07/14/17

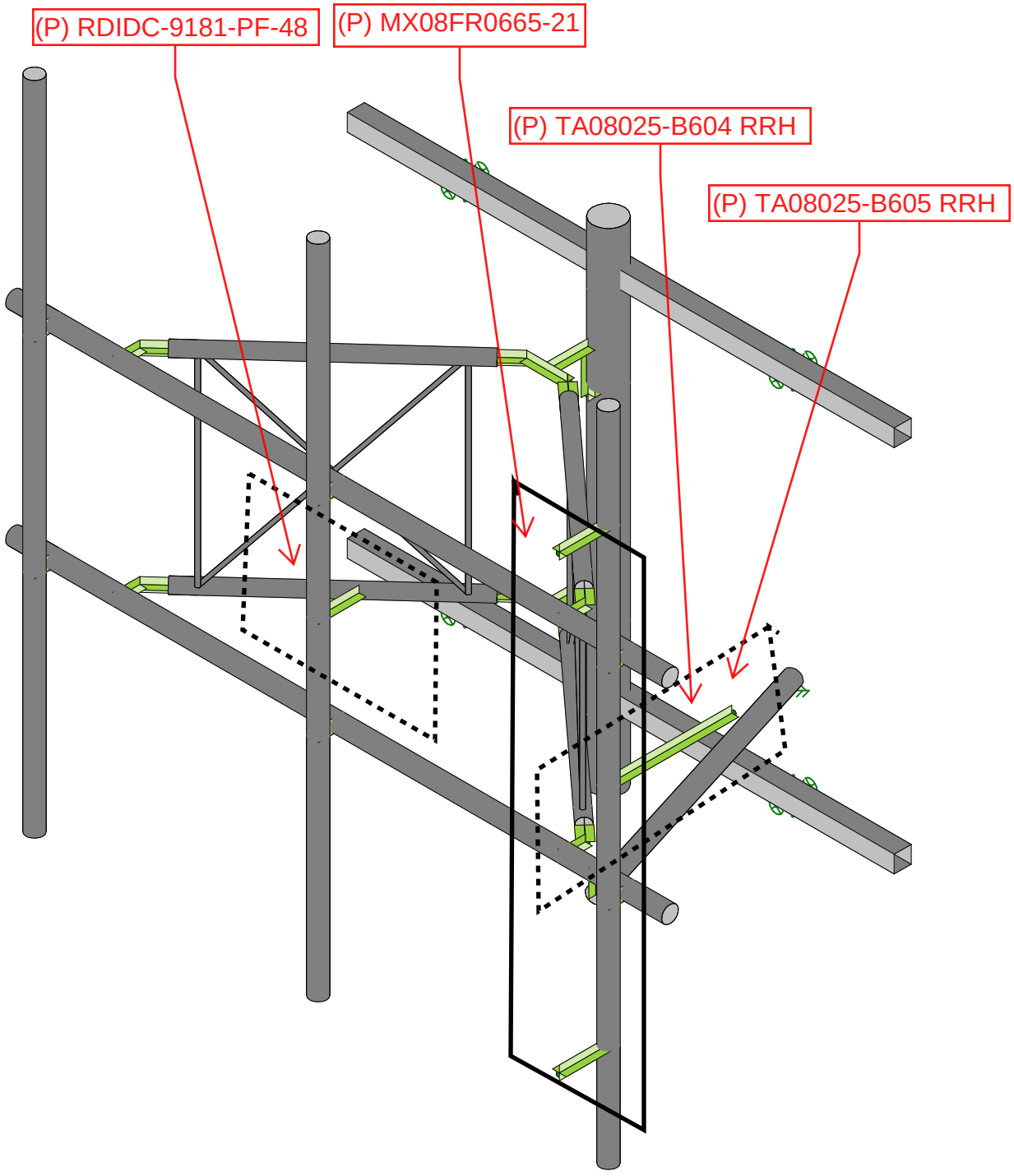
Reduction Factor = 0.9

Mount Part	Quantity	Length (ft)	Projected Width (in)	Depth (in)	Flat or Cylindrical?	Drag Factor	Projected Area (ft^2)	Wind Force (lbs/ft)	Ice Weight Area (ft^2)	Ice Weight (lbs/ft)	Projected Area with Ice (ft^2)	Wind Force Ice (lbs/ft)	Service Wind Force (lbs/ft)
Face Horizontal_2.0" STD Pipe	2	8.00	2.38	2.38	Cylindrical	1.2	3.80	6.7	9.94	7.0	11.55	5.9	2.8
Standoff_1.5" STD Pipe	4	3.25	1.90	1.90	Cylindrical	1.2	2.47	5.4	6.46	5.6	8.77	5.5	2.2
Standoff Diagonals_SR_0.5	4	3.78	0.50	0.50	Cylindrical	1.2	0.76	1.4	1.98	1.5	8.08	4.4	0.6
Standoff Vertical_SR_5/8	4	2.50	0.63	0.63	Cylindrical	1.2	0.63	1.8	1.64	1.8	5.47	4.5	0.7
Mount Pipe_2.0" STD	3	8.00	2.38	2.38	Cylindrical	1.2	5.70	6.7	14.92	7.0	17.33	5.9	2.8
Tie-back_2.0" STD Pipe	1	8.00	2.38	2.38	Cylindrical	1.2	1.90	6.7	4.97	7.0	5.78	5.9	2.8
Connection Vertical Post_4.0" STD	1	6.00	4.50	4.50	Cylindrical	1.2	2.70	12.8	7.07	13.3	5.61	7.7	5.3
Connection Horizontal_2.5" SQ Tube	2	6.67	2.50	2.50	Flat	2	5.56	11.8	11.12	9.4	16.33	10.1	4.9

APPENDIX B

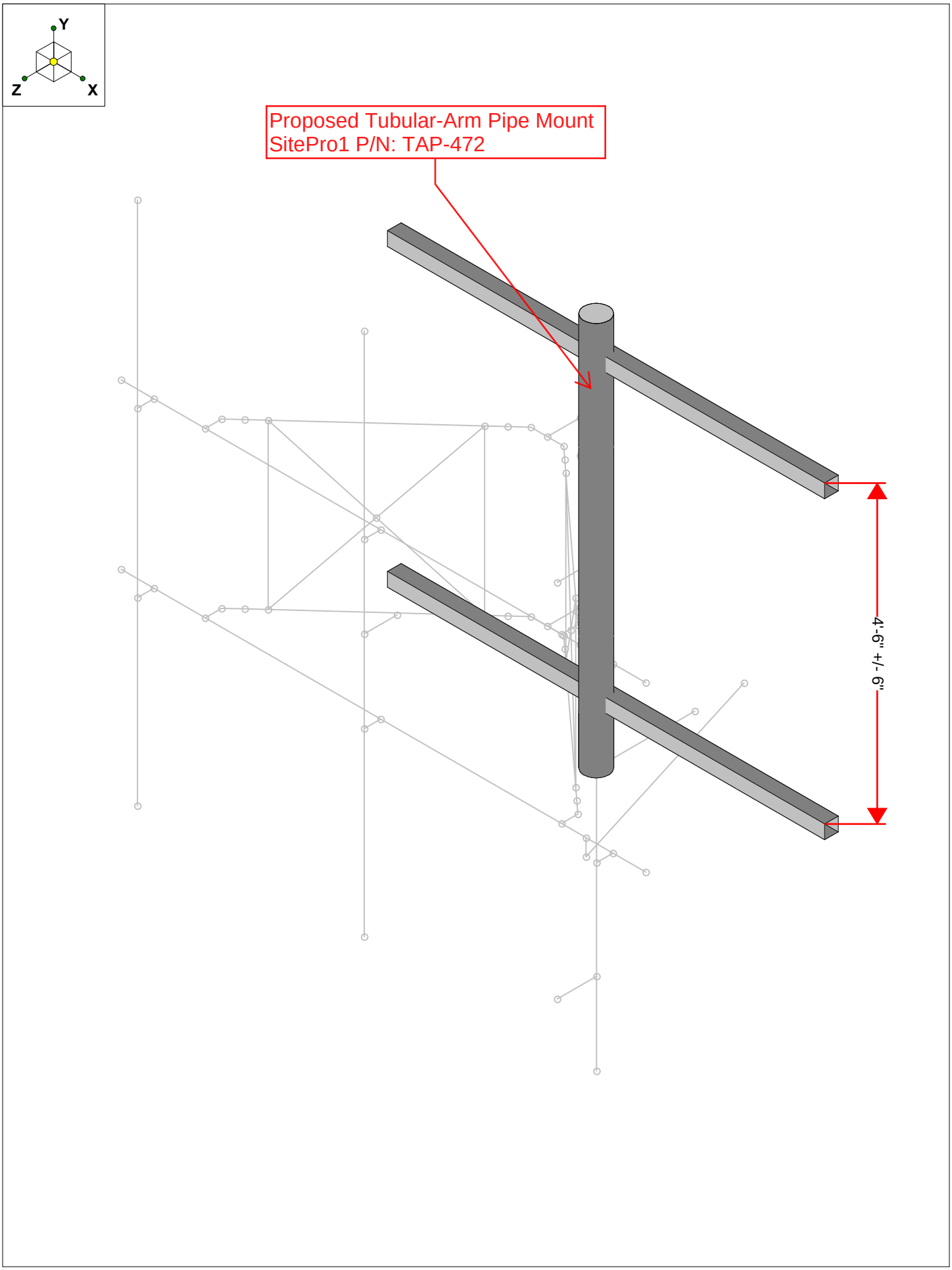
WIRE FRAME AND RENDERED MODELS

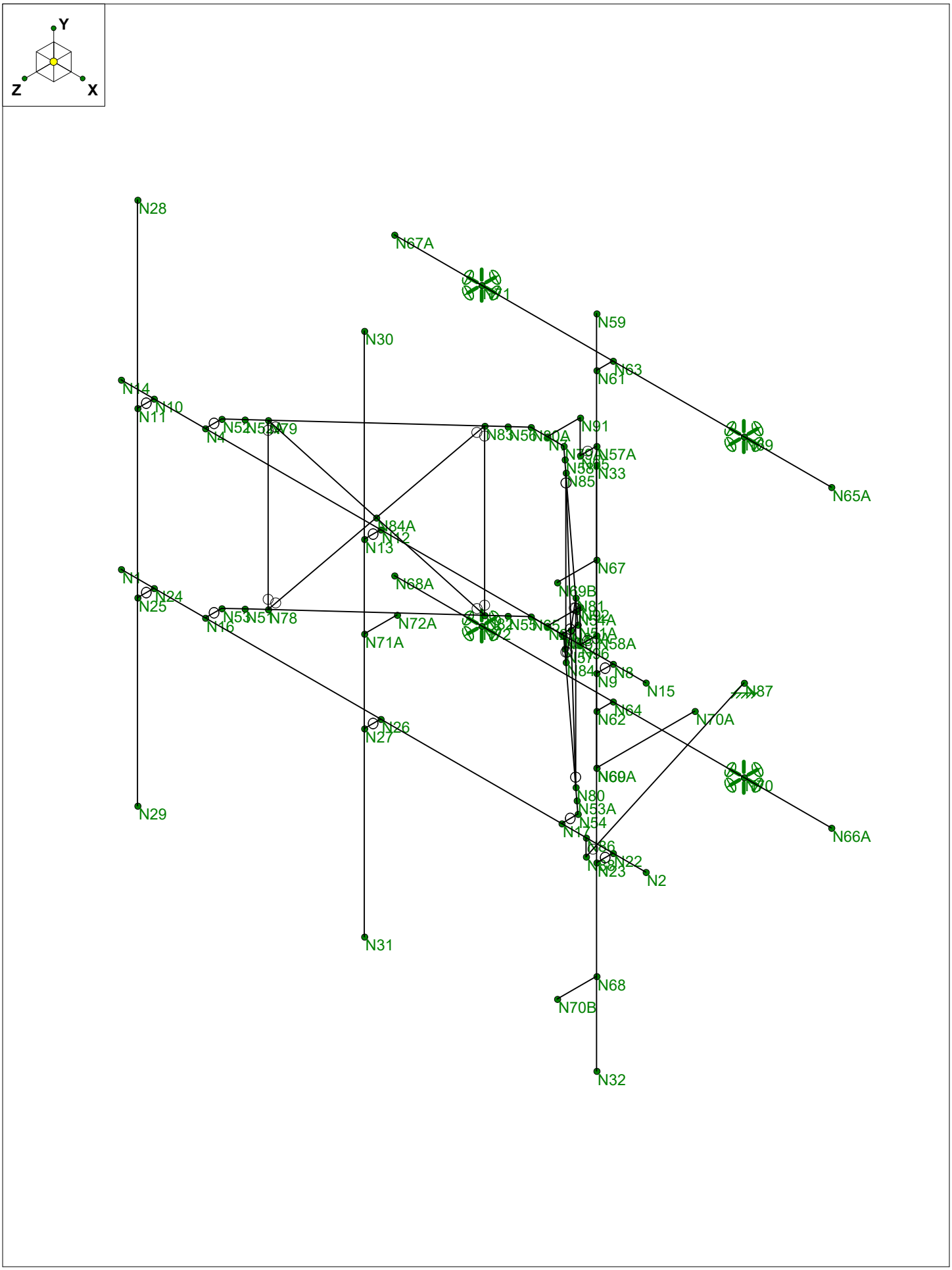




(P) PROPOSED

NOTES:
1) PROPOSED ANTENNAS AND MOUNTING PIPES HAVE BEEN VERTICALLY CENTERED ALONG THE EXISTING MOUNT (NO OFFSET).
2) LISTED PROPOSED APPURTENANCES ABOVE ARE TYPICAL FOR ALL SECTORS.


Y
Z
X
Proposed Tubular-Arm Pipe Mount
SitePro1 P/N: TAP-472
4'-6" +/- 6"


Y
Z
X
N28
N67A
N71
N59
N30
N63
N61
N14
N10
N11
N4
N52
N79
N83
N91
N57A
N33
N85
N65A
N84A
N12
N13
N67
N1
N68A
N69B
N24
N25
N53
N51
N78
N16
N72A
N71A
N58A
N8
N9
N15
N87
N64
N62
N70A
N26
N27
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N54
N29
N66A
N23
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N31
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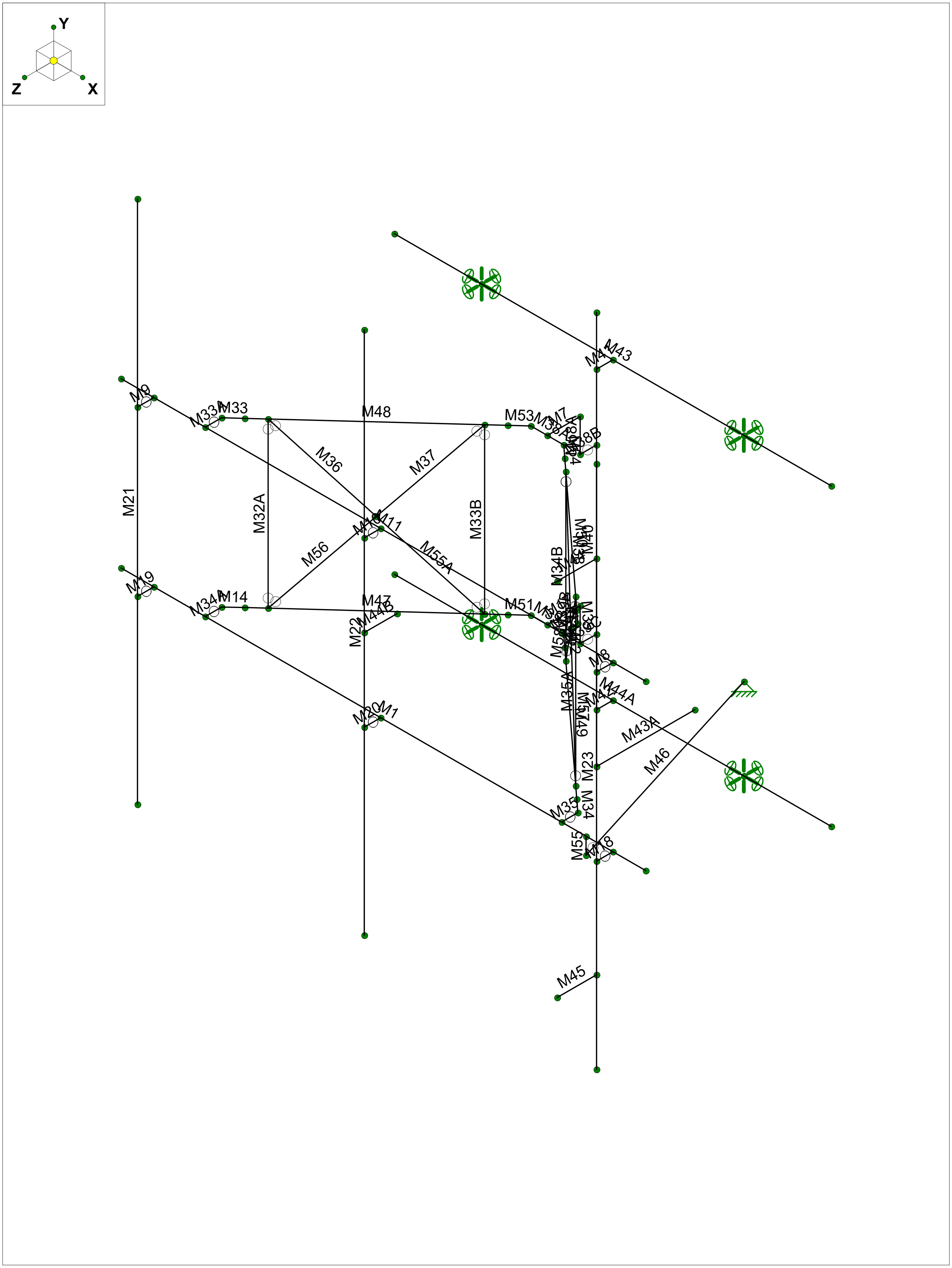
N70B
N32



Y
Z
X
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M9
M33A
M33
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M43
M36
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M32A
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M10
M11
M56
M55A
M34B
M19
M34A
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M44B
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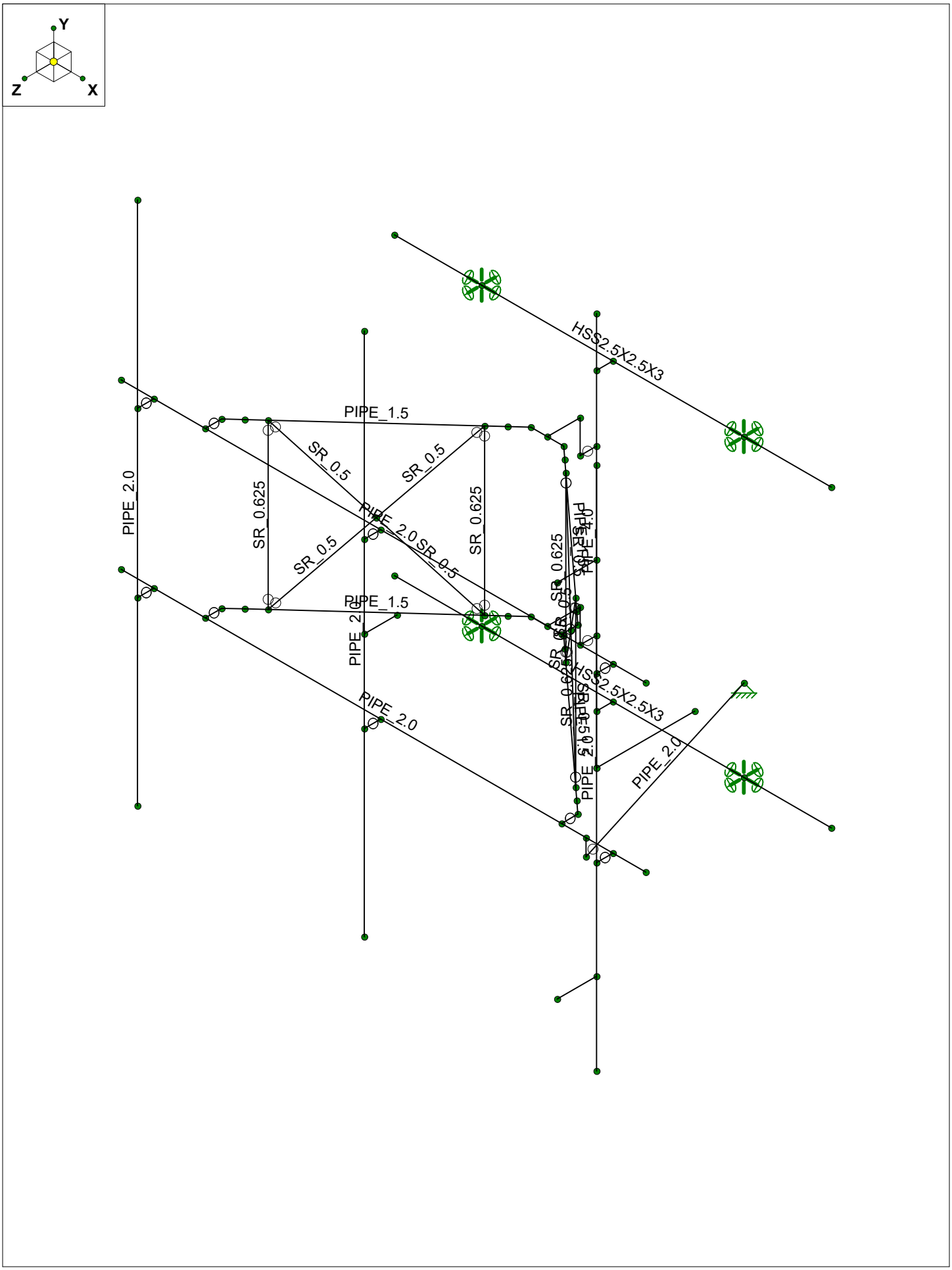
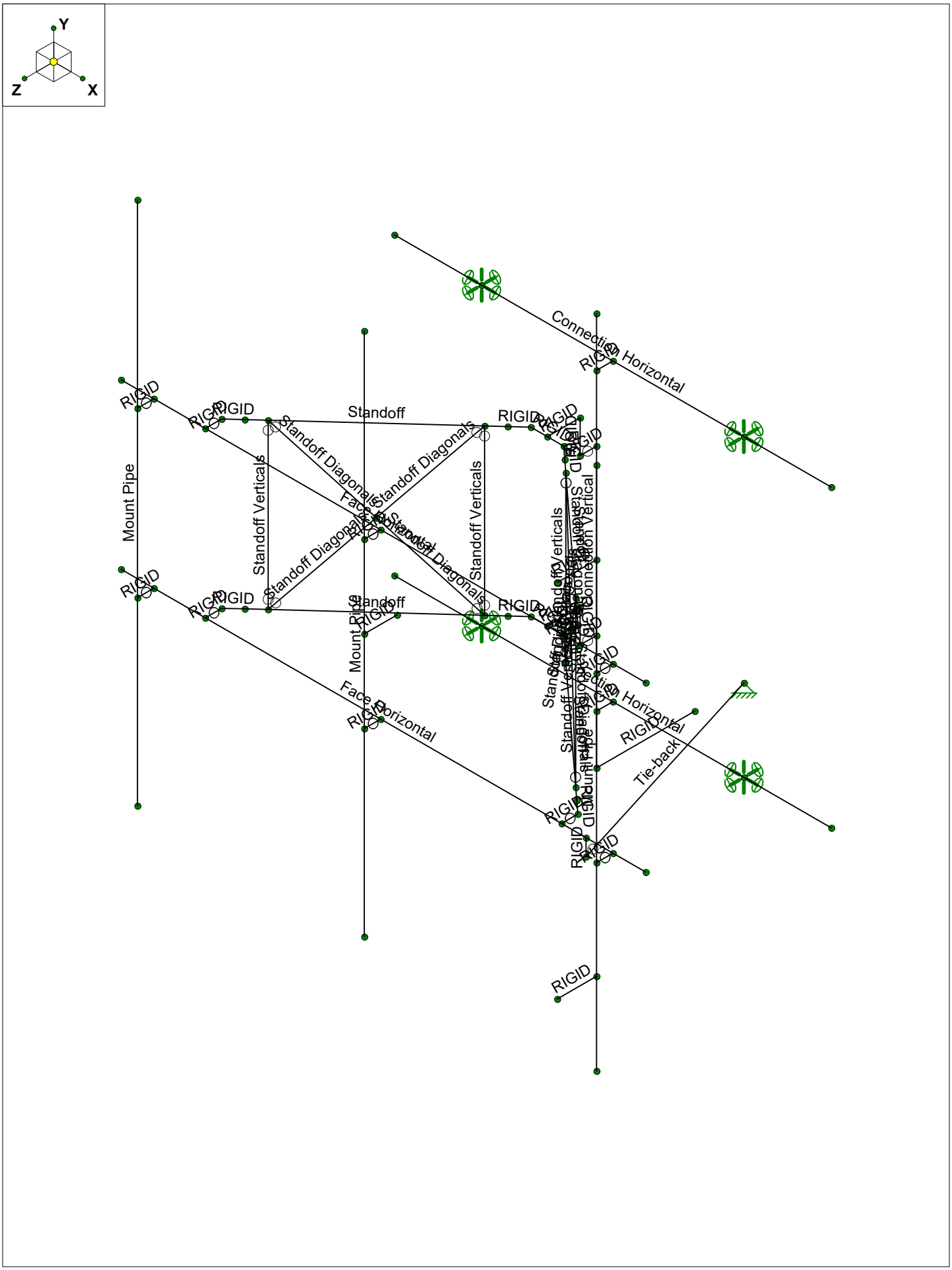
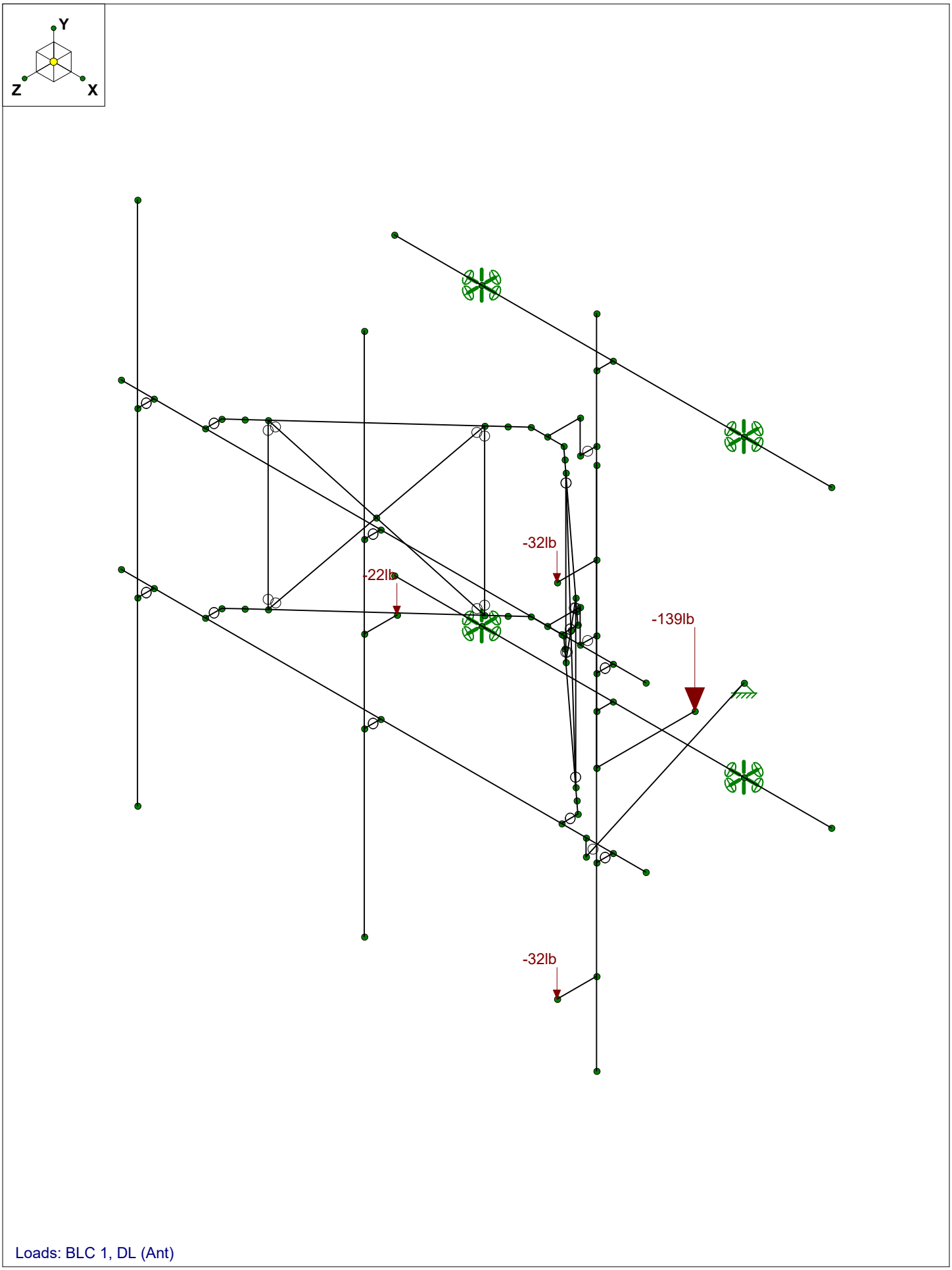
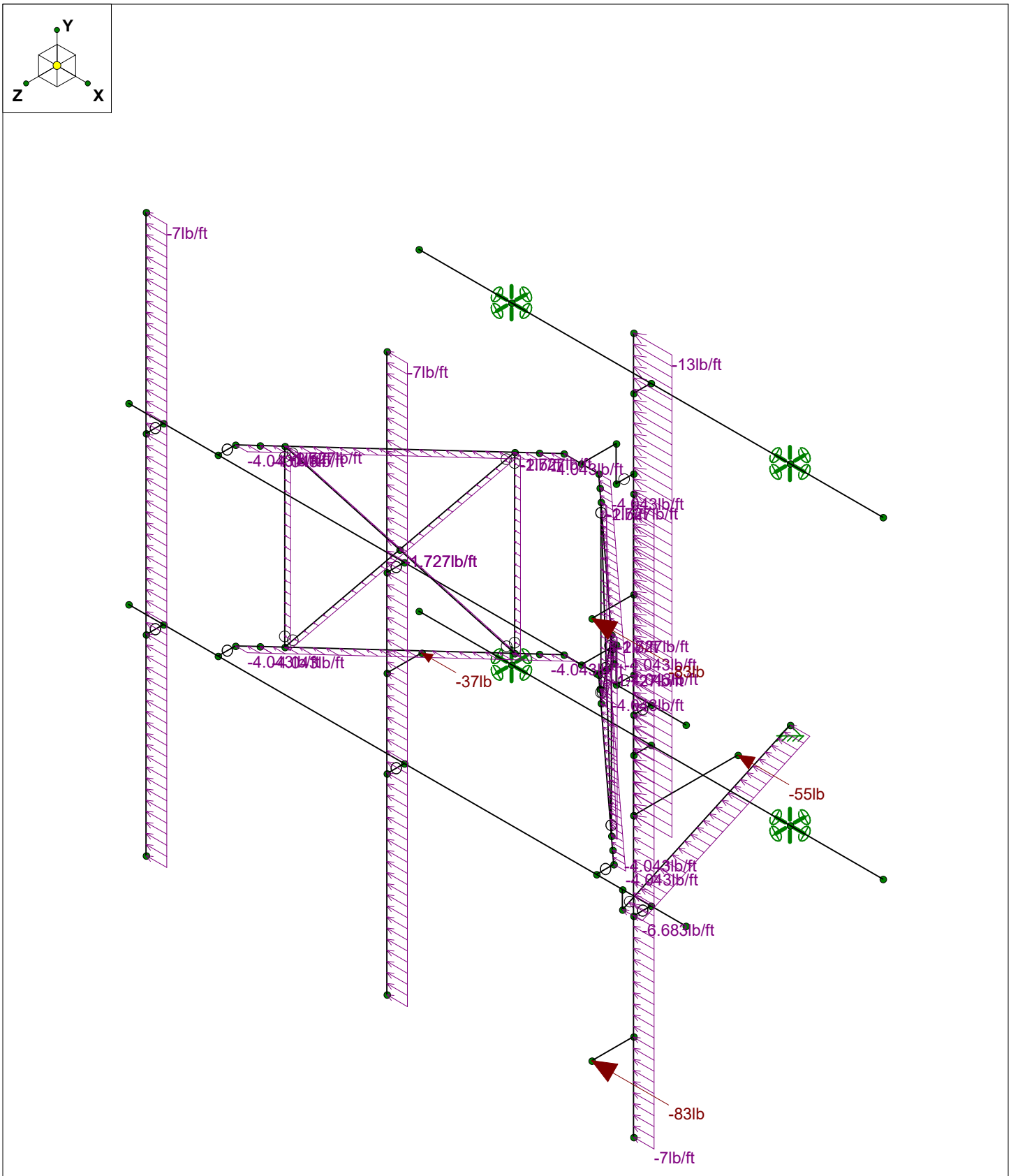
M55
M18
M45


Y
Z
X
HSS2.5X2.5X3
PIPE_1.5
SR_0.5
SR_0.625
PIPE_2.0
PIPE_1.5
PIPE_2.0
HSS2.5X2.5X3
PIPE_2.0

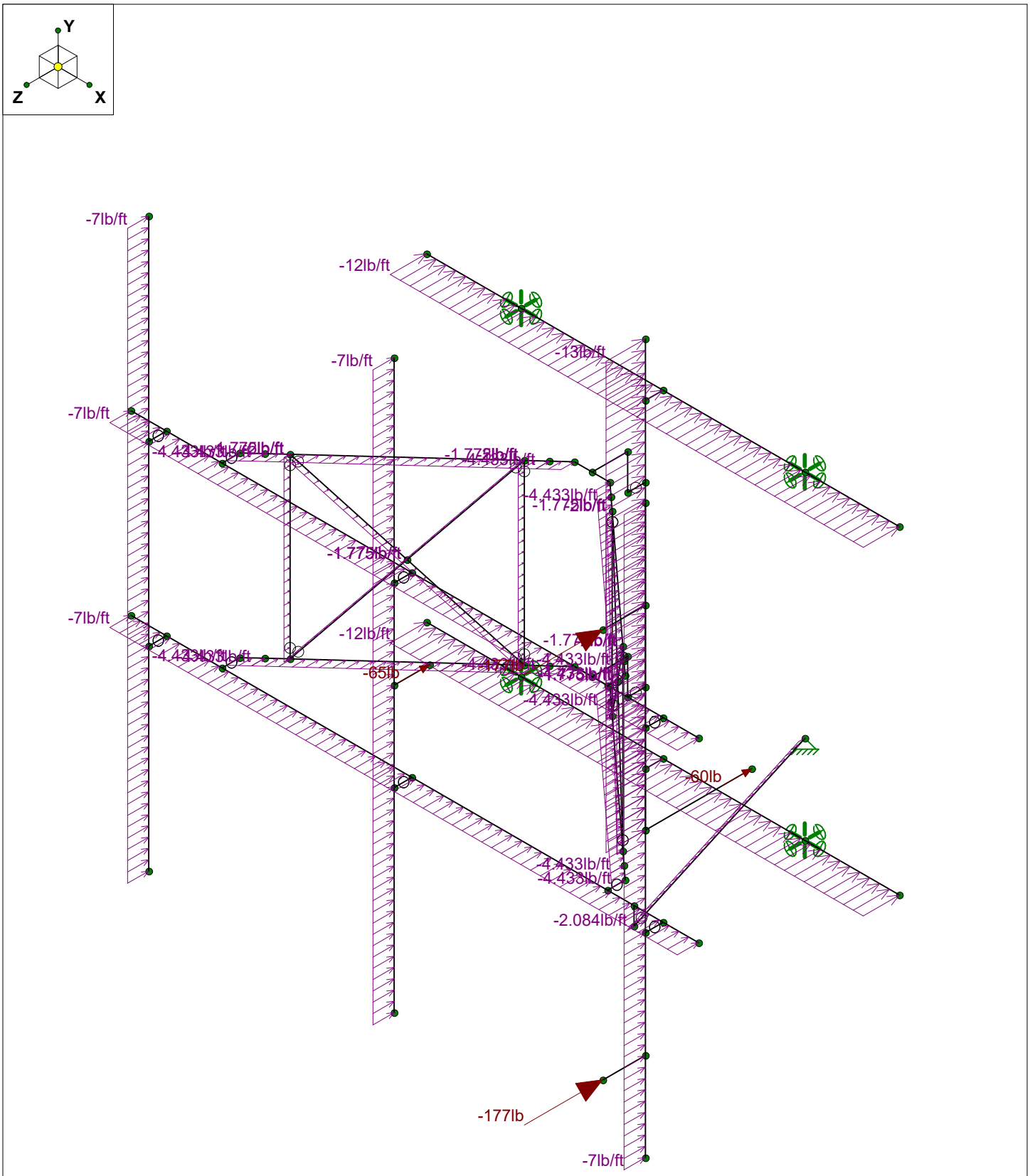

Y
Z
X
Connection Horizontal
RIGID
Standoff
Standoff Diagonals
Standoff Verticals
Face Horizontal
Mount Pipe
Tie-back



Loads: BLC 1, DL (Ant)



Loads: BLC 2, WLX



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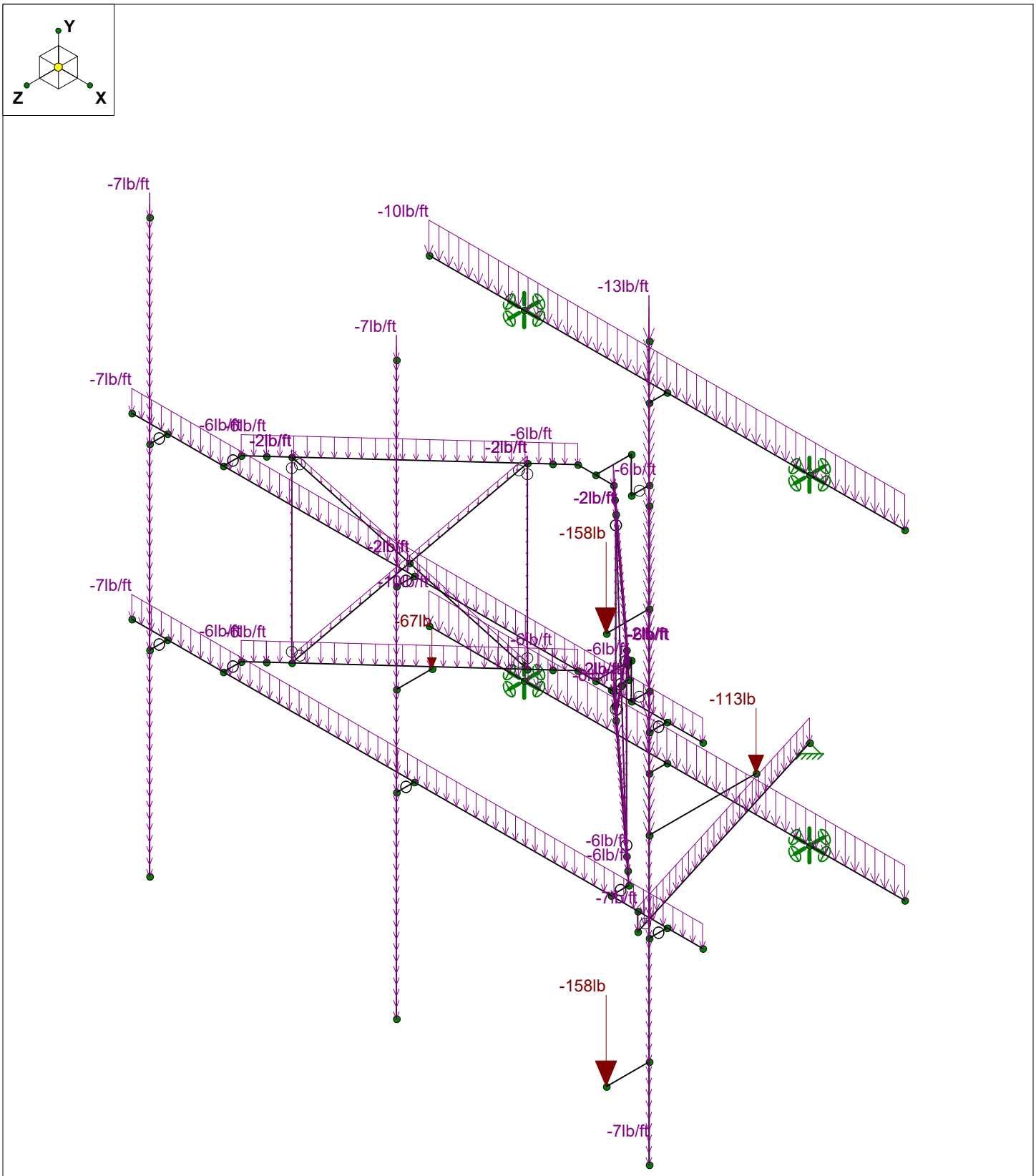
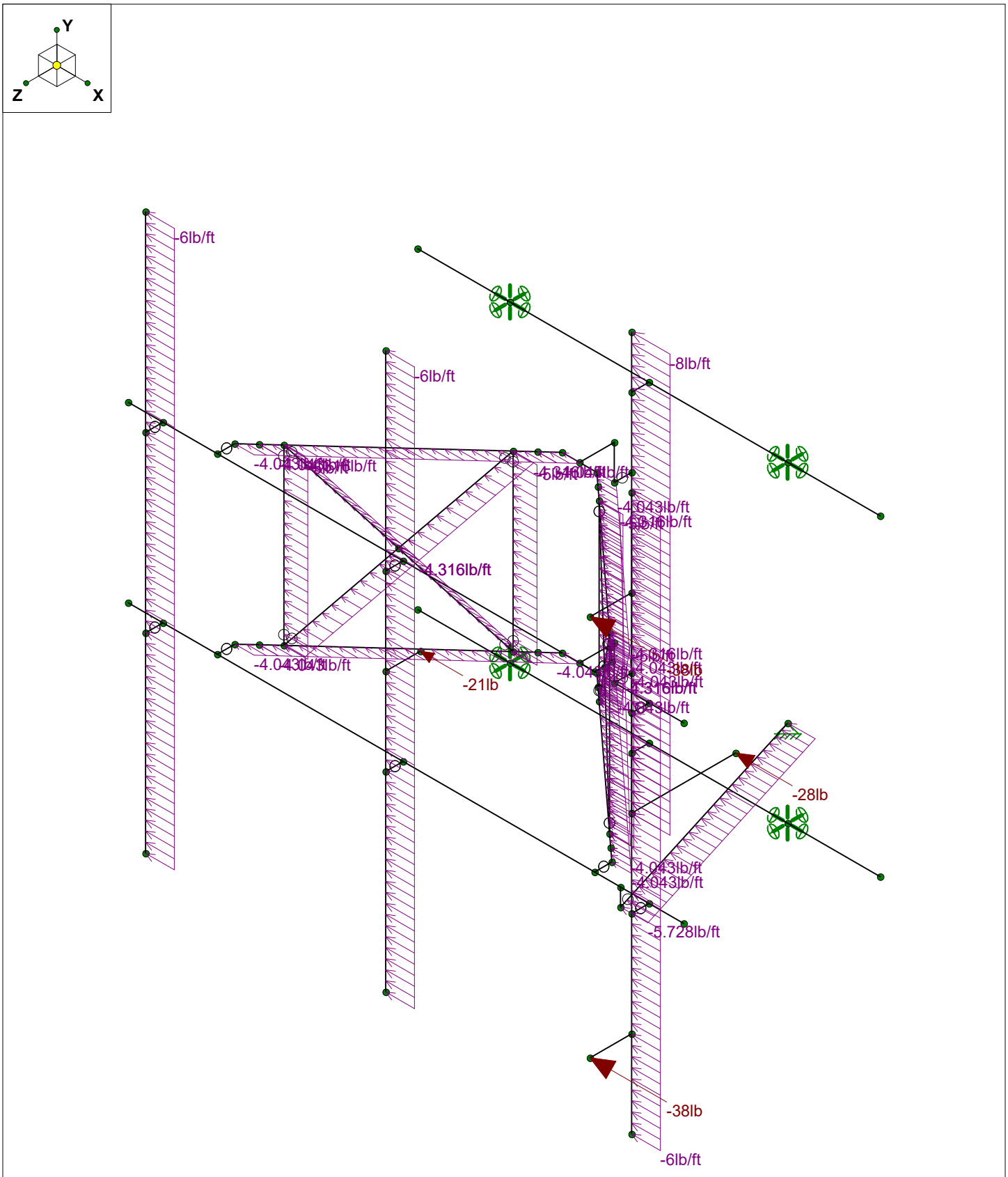


Loads: BLC 4, DLi



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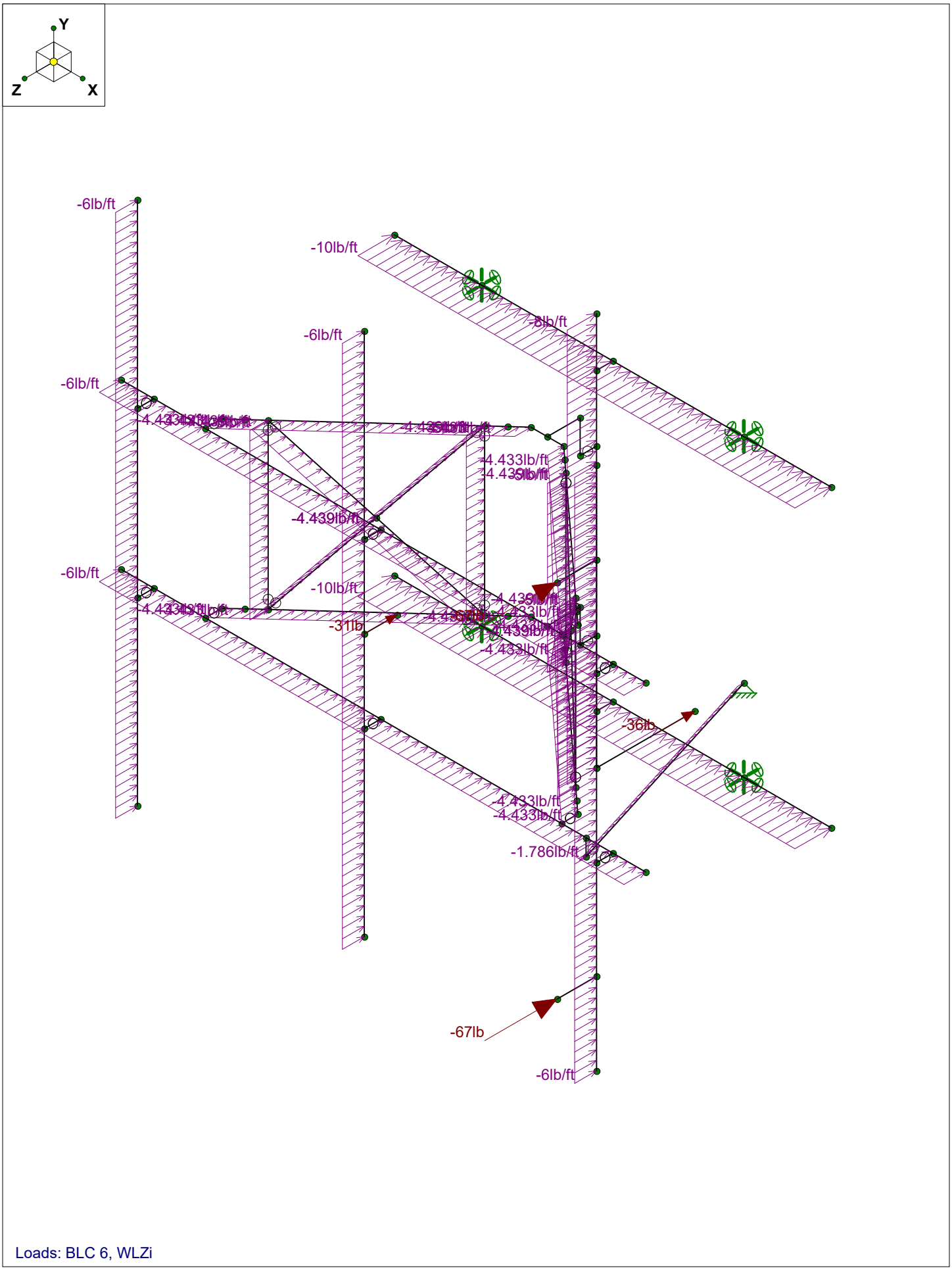
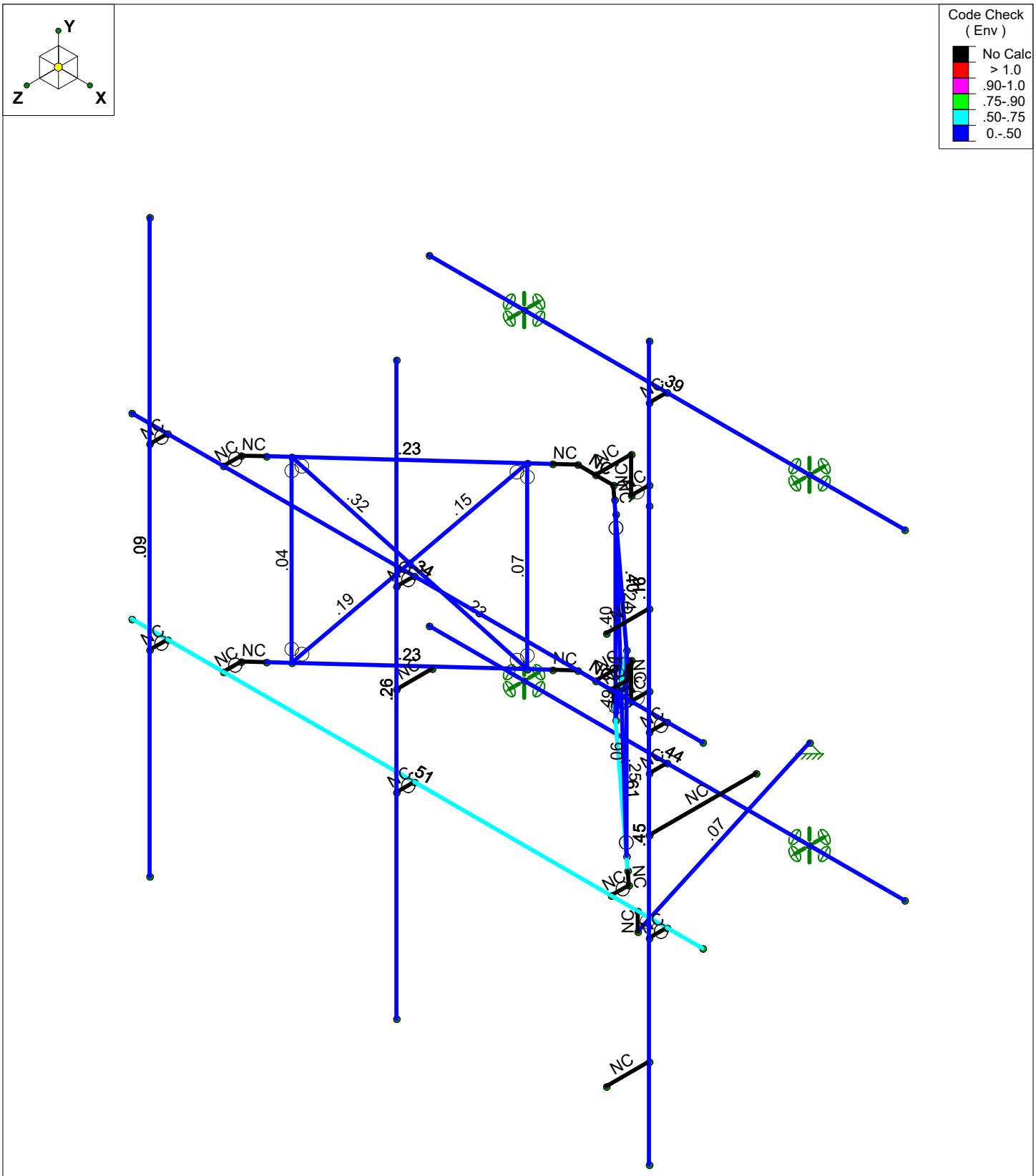


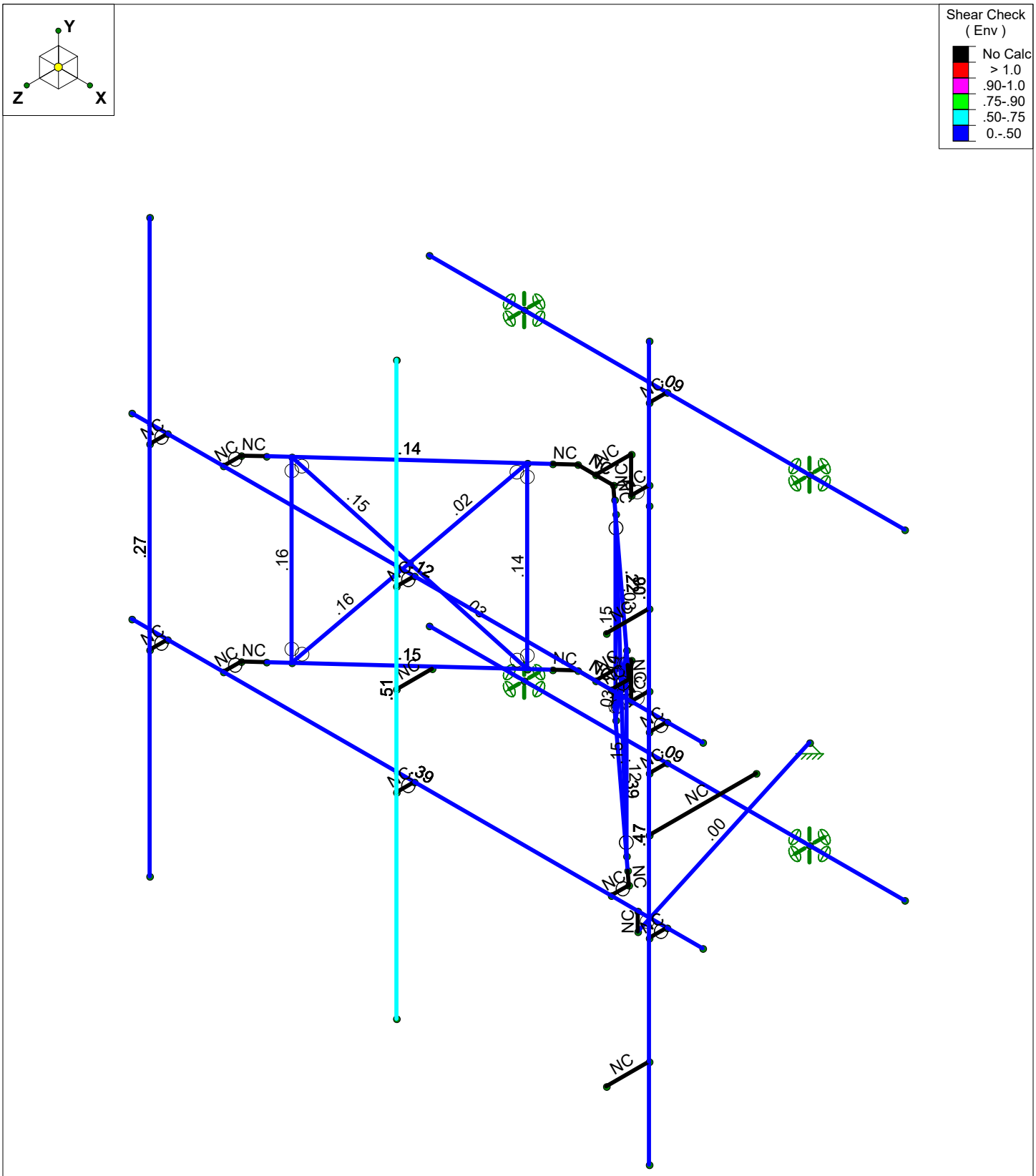
Loads: BLC 6, WLZi

APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Code Checks Displayed (Enveloped)
Envelope Only Solution



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E..	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	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	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horizontal	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	Standoff	PIPE_1.5	None	None	A53 Gr.B	Typical	.749	.293	.293	.586
3	Standoff Diagonals	SR_0.5	None	None	A36 Gr.36	Typical	.196	.003	.003	.006
4	Standoff Verticals	SR_0.625	None	None	A36 Gr.36	Typical	.307	.007	.007	.015
5	Mount Pipe	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Tie-back	PIPE_2.0	None	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	Connection Vertical	PIPE_4.0	None	None	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
8	Connection Horizontal	HSS2.5X2.5X3	None	None	A500 Gr.B R...	Typical	1.54	1.35	1.35	2.25

Load Combinations

	Description	S...	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	7	1.4																
2	1.2D+1.6(WLX+WLZ) - 0 Deg	Yes	Y		1	1.2	2	1.6	7	1.2														
3	1.2D+1.6(WLX+WLZ) - 30 Deg	Yes	Y		1	1.2	2	1.3...	3	.8	7	1.2												
4	1.2D+1.6(WLX+WLZ) - 60 Deg	Yes	Y		1	1.2	2	.8	3	1.3...	7	1.2												
5	1.2D+1.6(WLX+WLZ) - 90 Deg	Yes	Y		1	1.2	2		3	1.6	7	1.2												
6	1.2D+1.6(WLX+WLZ) - 120 Deg	Yes	Y		1	1.2	2	-.8	3	1.3...	7	1.2												
7	1.2D+1.6(WLX+WLZ) - 150 Deg	Yes	Y		1	1.2	2	-1....	3	.8	7	1.2												
8	1.2D+1.6(WLX+WLZ) - 180 Deg	Yes	Y		1	1.2	2	-1.6	3		7	1.2												
9	1.2D+1.6(WLX+WLZ) - 210 Deg	Yes	Y		1	1.2	2	-1....	3	-.8	7	1.2												
10	1.2D+1.6(WLX+WLZ) - 240 Deg	Yes	Y		1	1.2	2	-.8	3	-1....	7	1.2												
11	1.2D+1.6(WLX+WLZ) - 270 Deg	Yes	Y		1	1.2	2		3	-1.6	7	1.2												
12	1.2D+1.6(WLX+WLZ) - 300 Deg	Yes	Y		1	1.2	2	.8	3	-1....	7	1.2												
13	1.2D+1.6(WLX+WLZ) - 330 Deg	Yes	Y		1	1.2	2	1.3...	3	-.8	7	1.2												
14	**Wind Load with Ice**																							
15	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	1	6		7	1.2										
16	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	.87	6	.5	7	1.2										
17	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	.5	6	.87	7	1.2										
18	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5		6	1	7	1.2										
19	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-.5	6	.87	7	1.2										
20	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-.87	6	.5	7	1.2										
21	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-1	6		7	1.2										
22	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-.87	6	-.5	7	1.2										
23	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	-.5	6	-.87	7	1.2										
24	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5		6	-1	7	1.2										
25	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	.5	6	-.87	7	1.2										
26	1.2D+1.0Di+1.0(WLXi+WLZi) - ...	Yes	Y		1	1.2	4	1	5	.87	6	-.5	7	1.2										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N71	max	231.488	2	511.647	21	244.746	4	.025	7	0	26	.444	21
2		min	-456.873	21	80.521	2	-689.968	23	-.222	26	0	1	.081	2
3	N72	max	478.499	13	573.451	15	713.077	16	.005	5	0	26	.488	15
4		min	-282.392	7	47.563	7	-341.526	8	-.203	24	0	1	.064	7
5	N69	max	231.488	2	446.915	26	230.226	4	.025	7	0	26	-.132	7
6		min	-456.873	21	128.614	7	-627.744	23	-.222	26	0	1	-.394	25
7	N70	max	478.499	13	454.307	20	641.228	16	.005	5	0	26	-.091	13
8		min	-282.392	7	64.598	13	-266.128	8	-.203	24	0	1	-.404	20
9	N87	max	524.123	7	26.103	26	1716.677	7	0	26	0	26	0	26
10		min	-501.184	13	2.169	7	-1702.367	13	0	1	0	1	0	1
11	Totals:	max	1001.878	2	1833.413	26	1773.035	5						
12		min	-1001.89	8	692.916	6	-1773.015	11						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code ...	Loc[ft]	LC	Shear ..	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M49	PIPE_1.5	.610	2.838	13	.386	2.838		13	20271.6...	23593.5	1.105	1.105	2...	H3-6
2	M39B	SR_0.5	.514	1.711	25	.145	1.711		7	3171.075	6361.74	.053	.053	2...	H1-1a
3	M1	PIPE_2.0	.505	7.083	13	.395	7.083		13	14916.0...	32130	1.872	1.872	1...	H3-6
4	M58	SR_0.5	.485	0	25	.032	0		7	3171.075	6361.74	.053	.053	2...	H1-1a
5	M23	PIPE_2.0	.446	4	6	.471	5.25		7	14916.0...	32130	1.872	1.872	1...	H3-6
6	M44A	HSS2.5X2.5X3	.442	3.333	15	.088	3.333	z	26	39019.2...	63756	4.554	4.554	1...	H1-1b
7	M50	PIPE_1.5	.402	.266	26	.221	.236		26	20271.6...	23593.5	1.105	1.105	1...	H1-1b
8	M34B	SR_0.625	.400	1.276	2	.151	0		7	1880.591	9940.19	.104	.104	1...	H1-1a
9	M43	HSS2.5X2.5X3	.395	3.333	23	.089	1.389	z	24	39019.2...	63756	4.554	4.554	1...	H1-1b
10	M11	PIPE_2.0	.342	7.5	6	.118	6.75		26	14916.0...	32130	1.872	1.872	2...	H1-1b
11	M36	SR_0.5	.315	1.711	6	.145	0		6	3171.075	6361.74	.053	.053	2...	H1-1b
12	M22	PIPE_2.0	.258	2.75	7	.511	2.75		7	14916.0...	32130	1.872	1.872	2...	H3-6
13	M57	SR_0.5	.251	0	7	.120	1.711		7	3171.075	6361.74	.053	.053	1...	H1-1b
14	M38	SR_0.5	.244	1.711	25	.026	0		6	3171.075	6361.74	.053	.053	2...	H1-1b
15	M55A	SR_0.5	.232	0	18	.032	0		7	3171.075	6361.74	.053	.053	2...	H1-1b
16	M47	PIPE_1.5	.231	2.838	26	.155	2.838		16	20271.6...	23593.5	1.105	1.105	2...	H1-1b
17	M48	PIPE_1.5	.229	2.838	20	.142	2.838		25	20271.6...	23593.5	1.105	1.105	1...	H1-1b
18	M56	SR_0.5	.187	0	8	.157	1.711		7	3171.075	6361.74	.053	.053	2...	H1-1b
19	M40	PIPE_4.0	.157	4.25	15	.064	5.25		15	83097.9...	93240	10.631	10.631	1...	H1-1b
20	M37	SR_0.5	.147	1.711	23	.019	1.711		6	3171.075	6361.74	.053	.053	2...	H1-1b
21	M21	PIPE_2.0	.089	2.75	7	.271	2.75		7	14916.0...	32130	1.872	1.872	1...	H3-6
22	M33B	SR_0.625	.067	1.276	18	.144	0		7	1880.591	9940.19	.104	.104	1	H1-1b
23	M46	PIPE_2.0	.066	0	7	.002	0		21	27348.5...	32130	1.872	1.872	1...	H1-1b*
24	M35A	SR_0.625	.063	2.5	12	.151	0		7	1880.591	9940.19	.104	.104	1...	H1-1b*
25	M32A	SR_0.625	.041	1.276	25	.164	0		7	1880.591	9940.19	.104	.104	1...	H1-1b

CONNECTICUT DESIGN CRITERIA - STATE

Revison:

CT is NOT a Home Rule State; Tab added only for Design Criteria

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS

				Wind Design Parameters					
Municipality	**Ground Snow Load**	**MCE Spectral Accelerations** (%g)		**Ultimate Design Wind Speeds,** V_{ult} (mph)			**Nominal Design Wind Speeds,** V_{asd} (mph)		
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV
Andover	30	0.176	0.063	120	130	140	93	101	108
Ansonia	30	0.195	0.064	115	125	135	89	97	105
Ashford	35	0.173	0.063	120	130	140	93	101	108
Avon	35	0.181	0.064	110	120	130	85	93	101
Barkhamsted	40	0.177	0.065	110	120	125	85	93	97
Beacon Falls	30	0.192	0.064	115	125	135	89	97	105
Berlin	30	0.183	0.063	115	125	135	89	97	105
Bethany	30	0.189	0.063	115	125	135	89	97	105
Bethel	30	0.215	0.066	110	120	125	85	93	97
Bethlehem	35	0.190	0.065	110	120	125	85	93	97
Bloomfield	35	0.180	0.064	115	125	130	89	97	101
Bolton	30	0.177	0.063	115	125	135	89	97	105
Bozrah	30	0.170	0.061	120	135	145	93	105	112
Branford	30	0.180	0.061	120	130	140	93	101	108
Bridgeport	30	0.209	0.064	115	125	135	89	97	105
Bridgewater	35	0.201	0.066	110	120	125	85	93	97
Bristol	35	0.185	0.064	110	120	130	85	93	101
Brookfield	35	0.208	0.066	110	120	125	85	93	97
Brooklyn	35	0.171	0.062	120	130	140	93	101	108
Burlington	35	0.182	0.064	110	120	130	85	93	101
Canaan	40	0.173	0.065	105	115	120	81	89	93
Canterbury	35	0.171	0.061	120	130	140	93	101	108
Canton	35	0.180	0.064	110	120	130	85	93	101
Chaplin	35	0.173	0.062	120	130	140	93	101	108
Cheshire	30	0.186	0.063	115	125	135	89	97	105
Chester	30	0.172	0.060	120	130	140	93	101	108
Clinton	30	0.169	0.059	120	135	140	93	105	108
Colchester	30	0.174	0.061	120	130	140	93	101	108
Colebrook	40	0.174	0.065	105	115	125	81	89	97
Columbia	30	0.175	0.062	120	130	140	93	101	108
Cornwall	40	0.180	0.065	105	115	120	81	89	93
Coventry	30	0.176	0.063	120	130	140	93	101	108
Cromwell	30	0.181	0.063	115	125	135	89	97	105
Danbury	30	0.217	0.067	110	120	125	85	93	97
Darien	30	0.242	0.068	110	120	130	85	93	101
Deep River	30	0.170	0.060	120	130	140	93	101	108
Derby	30	0.195	0.064	115	125	135	89	97	105
Durham	30	0.179	0.062	115	130	140	89	101	108
Eastford	40	0.172	0.063	120	130	140	93	101	108
East Granby	35	0.177	0.065	110	120	130	85	93	101
East Haddam	30	0.172	0.061	120	130	140	93	101	108
East Hampton	30	0.177	0.062	120	130	140	93	101	108

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 10710.NJJER01133A
Calculated By: JJ Date : 1/20/22
Checked By: IM Date : 1/20/22

Design connection per AISC Steel Manual, 15th edition [LRFD].

Connection Details

Quantity =	4	Threaded rods in plane
Diameter =	0.5	in
Vertical Spacing =	4	in
Horizontal Spacing =	7	in
Grade =	A307	
F_{nt} =	45	ksi
F_{nv} =	27	ksi

Loading Details
Node N72, LC 15

Shear, X =	0.46	k
Shear, Y =	0.573	k
Tension, Z =	0.71	k
Mx =	0.18	k-ft
My =	0	k-ft
Mz =	0.438	k-ft

[Table J3.2]
[Table J3.2]

1 - Tensile Capacity

$$\phi R_{nt} = F_{nt} A_b$$ [Eqn. J3-1]

φ =	0.75	
F_{nt} =	45	ksi
A_b =	0.19635	in^2
φR_{nt} =	6.63	k
T_{max} =	0.45	k

Rnt > Tmax
7%
OK

2 - Shear Capacity

$$\phi R_{nv} = F_{nv} A_b$$ [Eqn. J3-1]

φ =	0.75	
F_{nv} =	27	ksi
A_b =	0.19635	in^2
φR_{nv} =	3.98	k
V_{max} =	0.52	k

Rnv > Vmax
13%
OK

3 - Combined Tension and Shear Capacity

$$\phi R'_{nt} = F'_{nt} A_b$$ [Eqn. J3-2]

$$F'_{nt} = 1.3F_{nt} - \frac{F_{nt}}{\phi F_{nv}} f_{rv} \leq F_{nt}$$ [Eqn. J3-3a]

φ =	0.75	
F'_{nt} =	45	ksi
A_b =	0.19635	in^2
$\varphi R'_{nt}$ =	6.63	k
T_{max} =	0.45	k

R'nt > Tmax
7%
OK

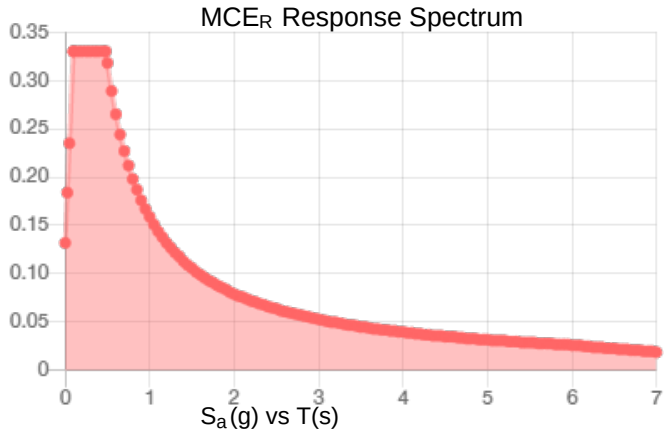
Seismic

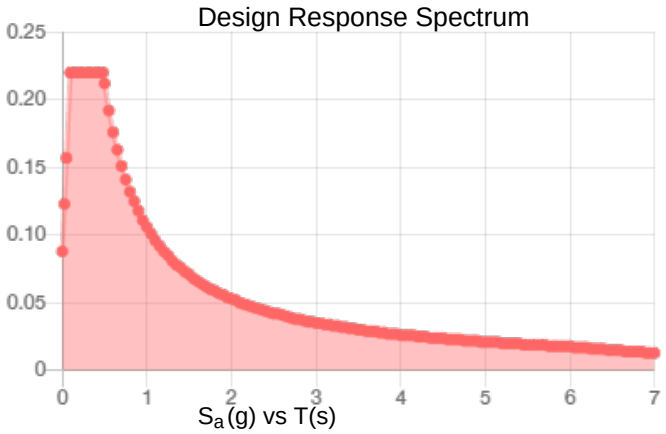
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.207	S_{DS} :	0.22
S_1 :	0.066	S_{D1} :	0.106
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.111
S_{MS} :	0.33	PGA_M :	0.175
S_{M1} :	0.159	F_{PGA} :	1.579
		I_e :	1

Seismic Design Category B





Data Accessed: **Thu Jan 20 2022**

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:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Thu Jan 20 2022

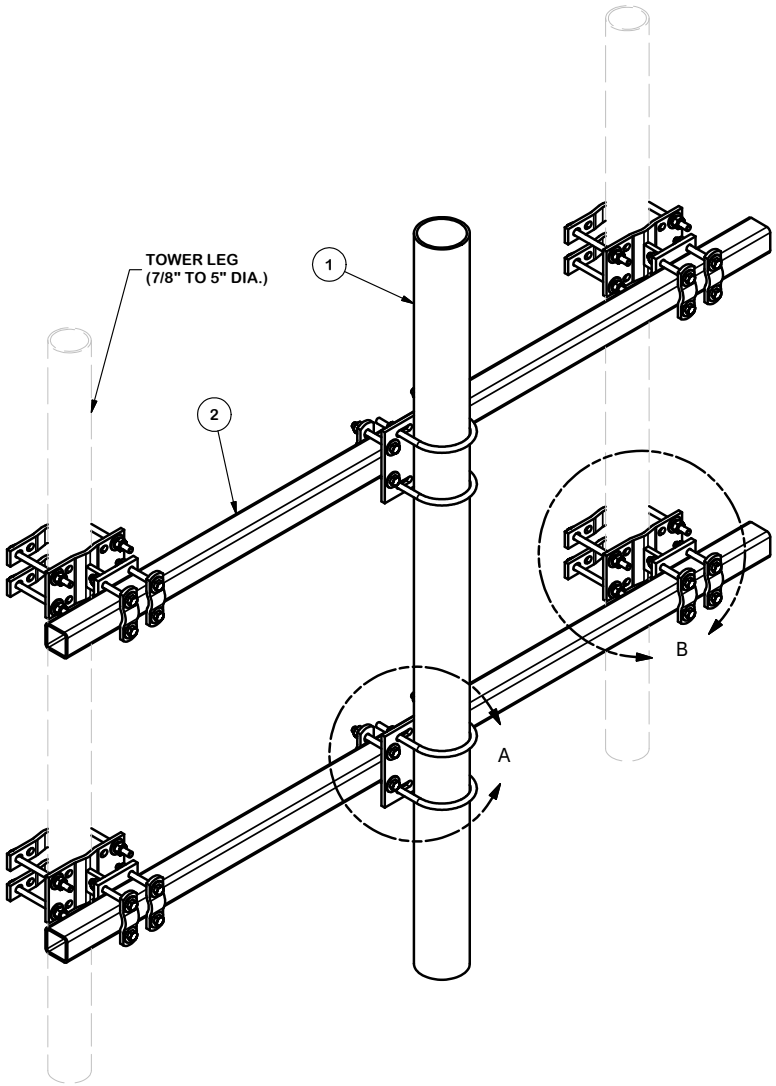
Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

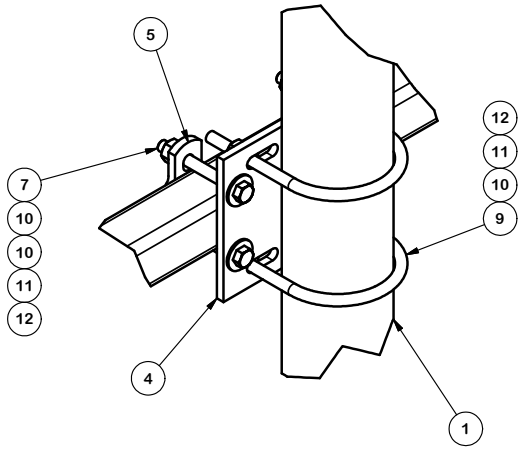
Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from 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.

APPENDIX D

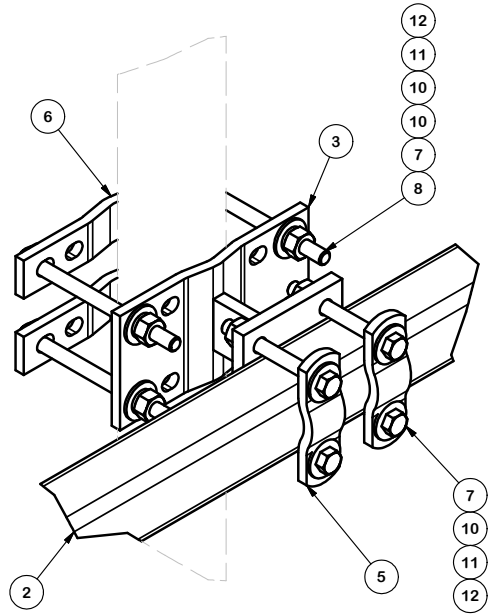
REFERENCES

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	P472	4-1/2" X 72" SCH. 40 GALVANIZED PIPE		64.89	64.89
2	2	X-116146	3/16" x 2.5" x 2.5" SQ TUBE	80 in	37.34	74.69
3	4	X-135543	MOUNTING BRACKET STANDOFF		7.38	29.53
4	2	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	12.04
5	12	X-116165	3" V-CLAMP		0.74	8.91
6	8	X-116344	V-CLAMP (4" & 6 5/8" HOLE CENTERS)	8 5/8 in	1.29	10.31
7	40	G12045	1/2" x 4.5" HDG HEX BOLT GR5 FULL THREAD	4 1/2 in	0.30	11.92
8	16	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	6.55
9	4	X-UB1458	1/2" X 4-5/8" X 7" X 3" GALV U-BOLT		0.97	3.89
10	72	G12FW	1/2" HDG USS FLATWASHER		0.03	2.45
11	48	G12LW	1/2" HDG LOCKWASHER		0.01	0.67
12	48	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	3.43
					TOTAL WT. #	240.00





DETAIL A



DETAIL B

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION
TUBULAR-ARM
PIPE MOUNT
80" FACE 4-1/2" PIPE

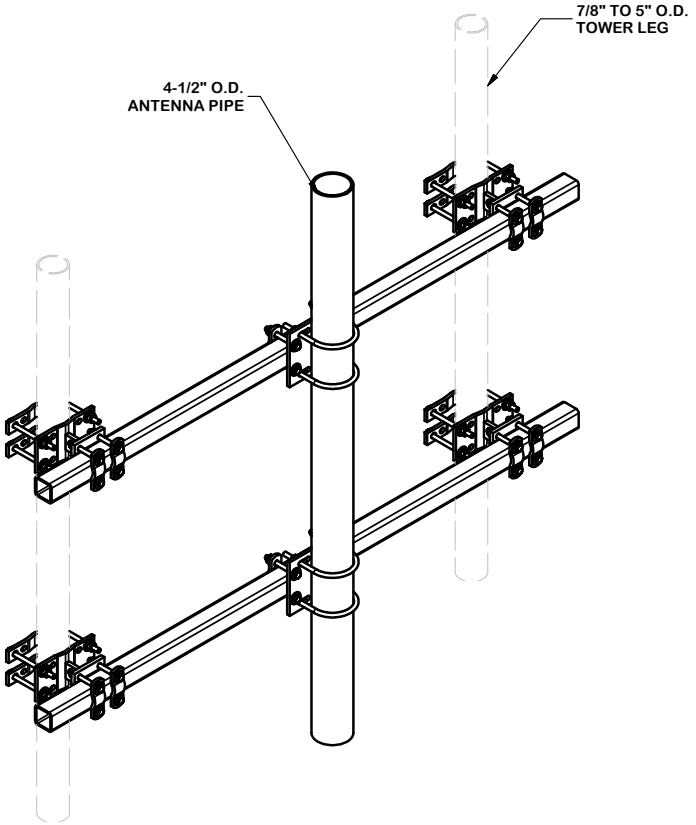
SITE PRO 1 — A valmont COMPANY

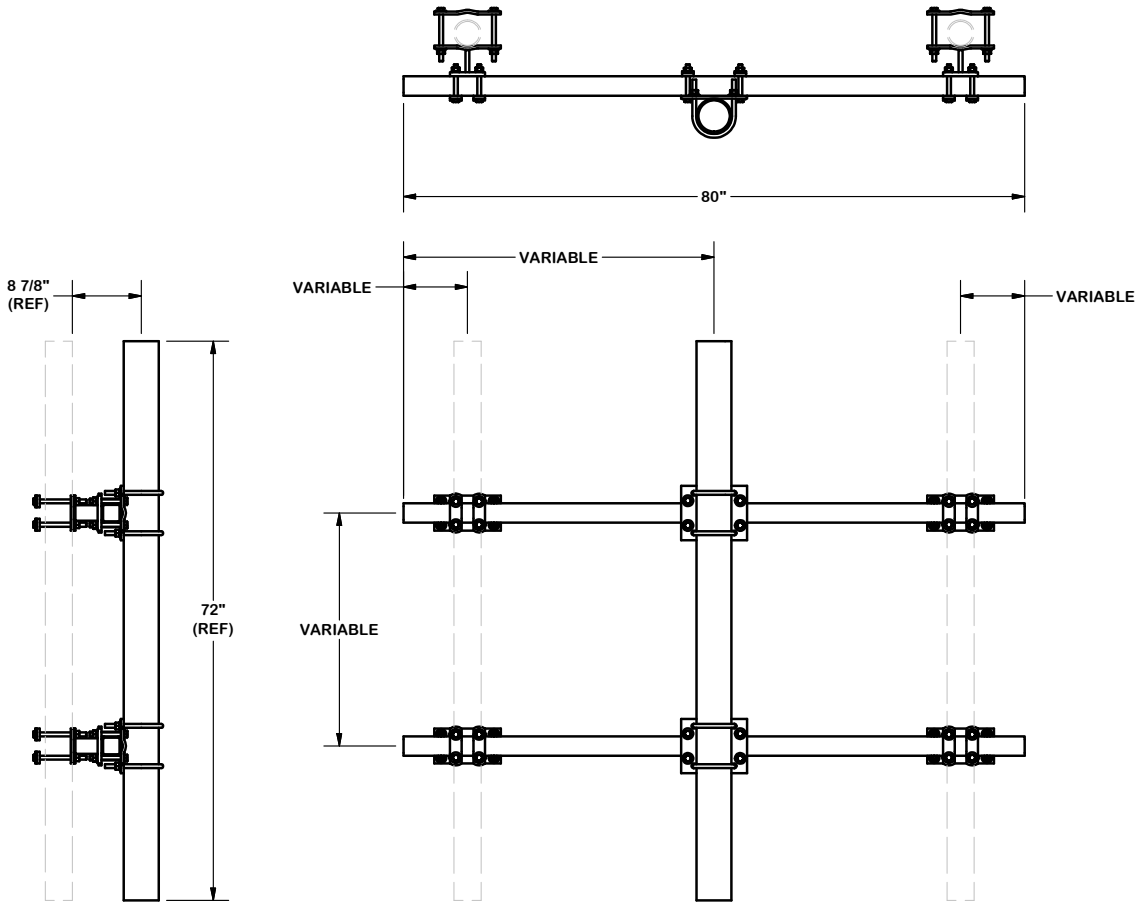
Engineering Support Team: 1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
5073	BMC 3/29/2011		TAP-472	1 OF 2

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	RCH 3/29/2011	TAP-472





TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

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5073	BMC 3/29/2011		TAP-472

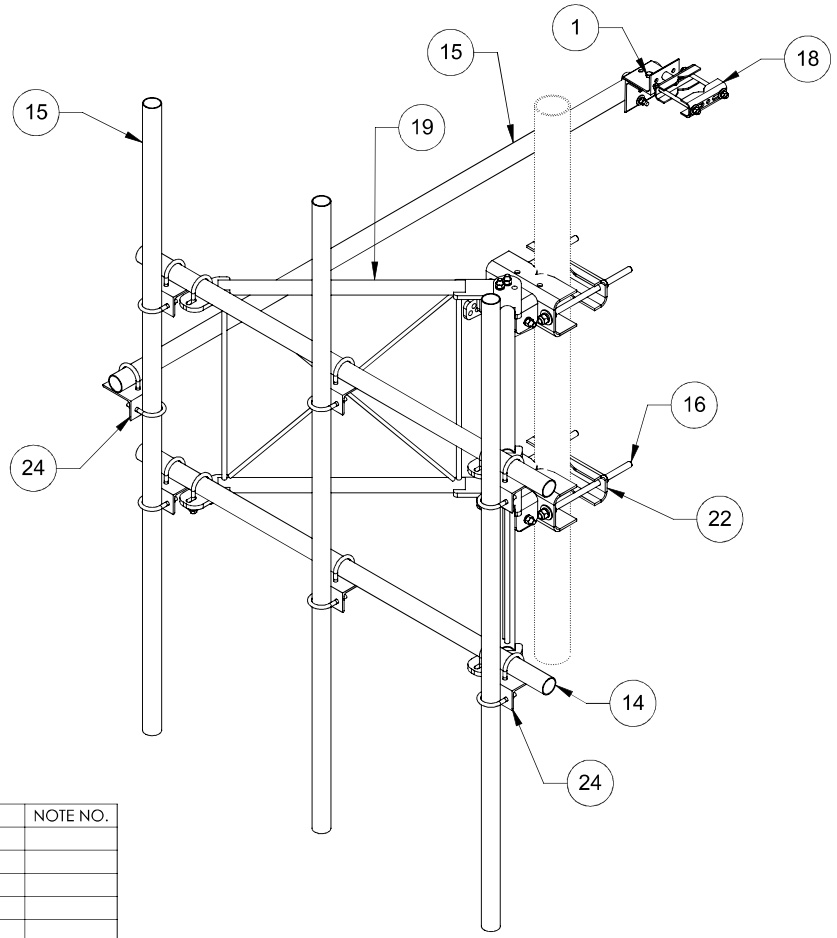
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	RCH 3/29/2011	TAP-472

NOTES:
1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.

REVISIONS				
REV.	ECN	DESCRIPTION	BY	DATE
PRE		REVIEW	DRH	01/28/21

www.Talleycom.com | Sales@Talleycom.com | 800.949.7079

TALLEY®



ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT	NOTE NO.
1	GB-04125	1/2" X 1-1/4" GALV BOLT KIT	1	0.12 LBS	
2	GB-04265	1/2" X 2-3/4" GALV BOLT KIT	1	0.20 LBS	
3	GB-05225	5/8" X 2-1/4" GALV BOLT KIT	8	0.28 LBS	
4	GB-05305	5/8" X 3" GALV BOLT KIT	4	0.35 LBS	
5	GN-04	1/2" GALV HEX NUT	4	0.04 LBS	
6	GN-06	3/4" GALV HEX NUT	12	0.15 LBS	
7	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT	19	0.56 LBS	
8	GWF-04	1/2" GALV FLAT WASHER	4	0.03 LBS	
9	GWF-05	5/8" GALV FLAT WASHER	4	0.06 LBS	
10	GWF-06	3/4" GALV FLAT WASHER	8	0.10 LBS	
11	GWL-04	1/2" GALV LOCK WASHER	4	0.01 LBS	
12	GWL-06	3/4" GALV LOCK WASHER	8	0.04 LBS	
13	MT-379-8	1/2" X 8" GALV THREADED ROD	2	0.44 LBS	
14	MT-651-96	2.375" OD x 96" PIPE	2	17.29 LBS	
15	MT-651-96	∅2.375" OD X 96" PIPE	4	23.05 LBS	
16	MT38416	Threaded Rod Galv 3/4" x 16"	4	1.99 LBS	
17	OS15034	3/4" X 1-1/2" OFFSET COLLAR	1	0.14 LBS	
18	SAB01	FORMED CLAMP	2	1.35 LBS	
19	SFV01	WELDMENT, SF-V STANDOFF ARM	2	36.81 LBS	
20	SFV02	SFV AZIMUTH BRACKET	3	6.70 LBS	
21	SFV03	SFV TAPER BRACKET	1	7.49 LBS	
22	SMU2080.06	CLAMP PLATE	2	6.96 LBS	
23	SMU208004	MOUNT	2	12.15 LBS	
24	XA2020.01	ANTENNA MOUNT ANGLE	9	2.65 LBS	

DENSITY	0.28	lbs/in³
MASS	400.61	lbs
VOLUME	1421.66	in³
SURFACE AREA		in²
HEIGHT		
LENGTH		
WIDTH		

COMMSCOPE, INC. OF NORTH CAROLINA

TOLERANCES
0 PLACE X ± .25 | 2 PLACE .XX ± .06
1 PLACE .X ± .12 | ANGLES ±2°

SAP MATERIAL MASTER: MTC3975083

FINISH: GALV A123

MATERIAL: A1011/A1018, A500, A529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS INTERPRET PER ISO 14405-1:2010 HANDBOOK TECHNICAL DRAWINGS, VOLUMES 1 & 2, THIRD EDITION (2002)

	NAME	DATE
CE	RDLS	7/14/17
RW		
RV		
AD		
RE	TP	7/14/17
ECN		

TITLE: SECTOR FRAME, 8' FACE, (3) 96" PIPES

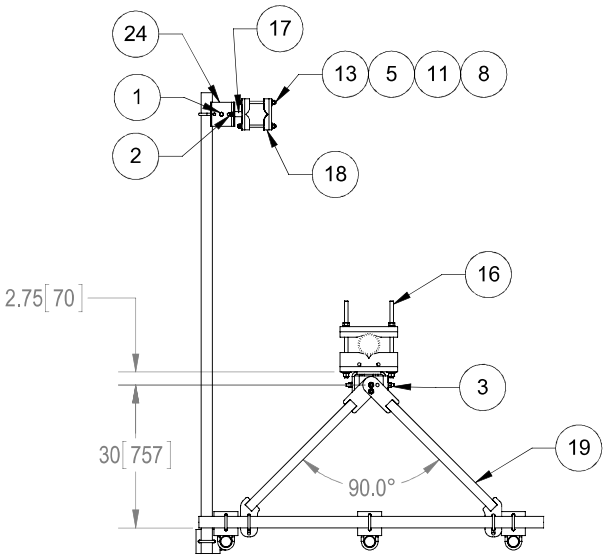
SCALE: 1:12

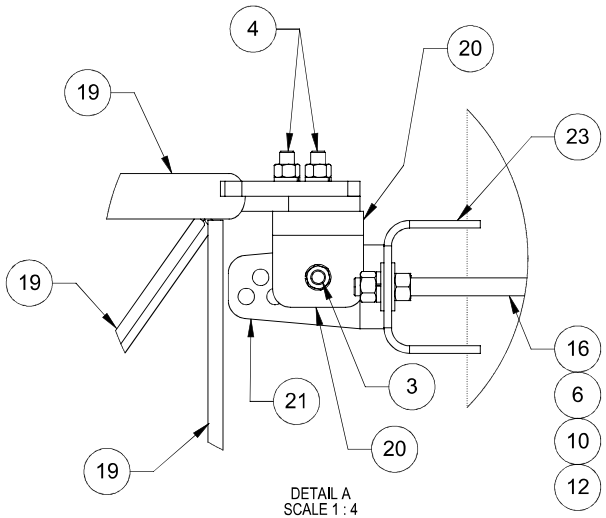
DOCUMENT NO.: MTC3975083

SIZE	WORK AREA	MODEL			DRAWING			SHEET
		VERSION	STATUS	REVISION	VERSION	STATUS	REVISION	
C							PRE	1 OF 2

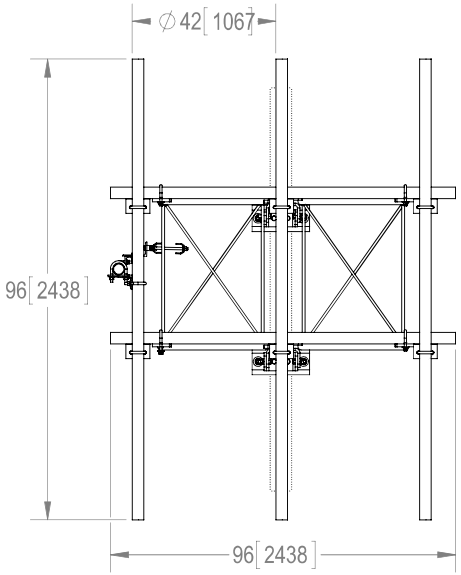
NOTES:

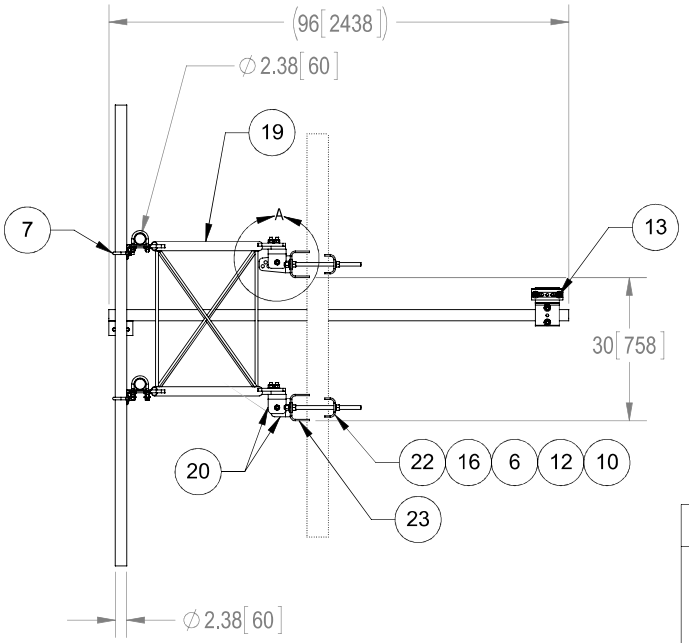
1.0 ALL METRIC DIMENSIONS ARE IN BRACKETS.





DETAIL A
SCALE 1 : 4





COMMSCOPE, INC. OF NORTH CAROLINA			
TITLE: **SECTOR FRAME, 8' FACE, (3) 96" PIPES**			
SIZE: C	SCALE: 1:20	DOCUMENT NO.: **MTC3975083**	
		DRAWING VERSION / STATUS / REVISION: PRE	SHEET: 2 OF 2