AMERICAN TOWER®
CORPORATION

This report was prepared for American Tower Corporation by

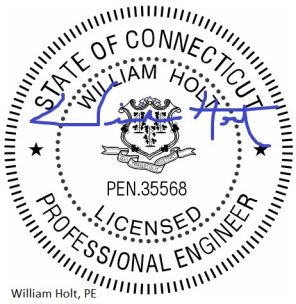
telamon
Tower Engineering PLLC

Antenna Mount Analysis Report

ATC Site Name	:	**West Haven & RT 162 CT**
ATC Asset Number	:	**243036**
Engineering Number	:	**13682841_C8_04**
Mount Elevation	:	**125 ft**
Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**MRCTB051490**
Site Location	:	**668 Jones Hill Road** **West Haven, CT 06516-6311** **41.25640278, -72.97236111**
County	:	**New Haven**
Date	:	**March 11, 2022**
Max Usage	:	**73%**
Result	:	**Contingent Pass*** ***See conclusion for requirements**

Prepared By:
Anudeep Meruva
Telamon Tower Engineering, PLLC

Reviewed By:
William Holt, P.E.
Telamon Tower Engineering, PLLC
Digitally signed by William Holt
Date: 2022.03.11 16:52:57 -05'00'



William Holt, PE
Director of Engineering
License No. 35568 Expires: 01/31/2023

Table of Contents

Introduction

The proposed equipment is to be mounted to the proposed Site Pro 1 RMQLP-4120-H10 Platform w/ Reinforced Support Rail Kit & Cable. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

Supporting Documents

Structural Data	Site Photos dated May 11, 2020 Assembly drawings by Site Pro 1, Part Number #RMQLP-4120-H10, dated October 18, 2019 Site Pro 1 Part #SQCX4-K, dated November 12, 2018 Site Pro 1 Part #DCPxxK, dated January 22, 2013
Previous Analyses	Structural Analysis by American Tower Corporation, Eng. #13693702_C3_03, dated August 12, 2021
Loading Data	ATC Application, Project #13682841, Rev. 1 AT&T RFDS, RFDS ID #4397241, Version 3.00, dated October 25, 2021

Analysis

Codes	TIA-222-H
Basic Wind Speed	120 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
Exposure Category	B
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Risk Category	II
Maintenance Live Load	L_M: 500 lb
Spectral Response	S_s: 0.20; S_1: 0.05; Site Class: D

Conclusion

Based on the analysis, the antenna mount meets the requirements per the applicable codes listed above. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

AT&T CONMAT does not have parts which connect HSS tube to pipe and pipe to pipe threaded rod clamp kits. Hence proposing modifications parts which are not listed in the CONMAT approved list.

- **Replace existing platform mount with new (1) Site Pro 1 RMQLP-4120-H10 (ANT.44987) Platform w/ Reinforced Support Rail and Cable at 125 ft elevation.**
- **Connect AC516-10 Air Craft cables as shown in the following assembly drawings.**
- **Install (4) Site Pro 1 P30120 mount pipes included in the proposed platform mount. Connect to platform base and support rail with Site Pro 1 SCX4 and Site Pro 1 SCX2 crossover plates included in the proposed mount respectively.**
- **Install (1) Site Pro 1 P30120 mount pipe at position 2 on each sector (3 total). Connect to proposed primary mount pipe at position 2 using proposed Site Pro 1 DCP18K threaded rod kit (3 total).**
- **Install (1) 6ft. long, Pipe 2 STD, A53 Gr. B, mount pipes at each sector of the platform mount (3 total) as shown. Connect to stand-off horizontal HSS tubes with (1) Site Pro 1 SQCX4-K crossover plate kits at each sector (3 total).**
- **Install all proposed antennas such that they are vertically centered between the support rails and face horizontal member.**
- **All mount pipes are to be installed as shown below in sketches.**

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

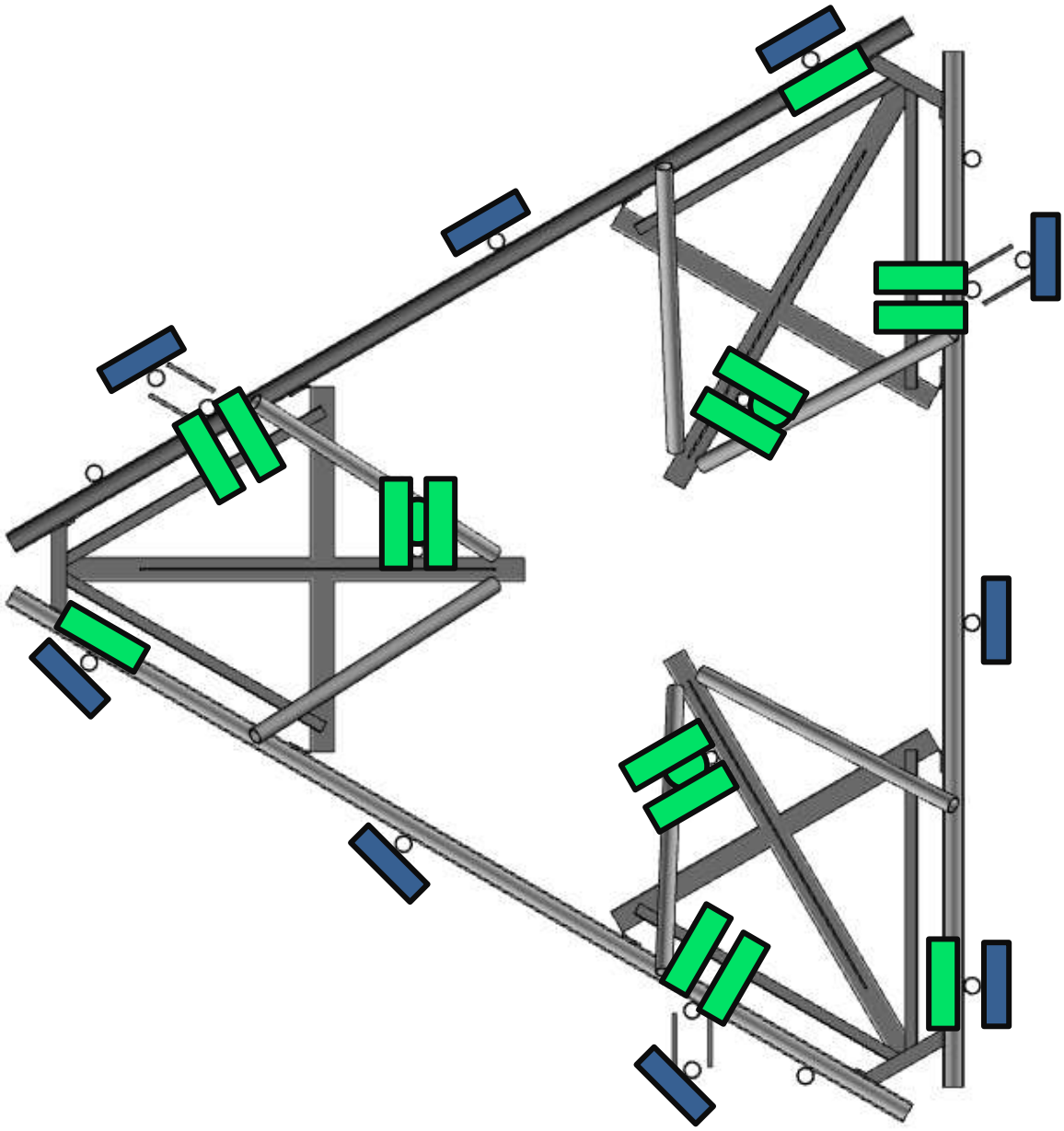
Antenna Loading

Elevation (ft)		Antennas	
Mount	**Rad.**	**#**	**Name**
125.0	127.0	3	Ericsson AIR 6449 n77D
	125.0	3	Quintel Technology QD8616-7
		3	Kathrein Scala 80010966
		3	Ericsson RRUS E2 B29
		3	Ericsson RRUS 4449 B5, B12
		3	Ericsson RRUS 4478 B14
		3	Ericsson Radio 4415 B30
		3	Ericsson RRUS 8843 B2, B66A
		1	Commscope WCS-IMFQ-AMT
		2	Raycap DC6-48-60-18-8F
		1	Raycap DC9-48-60-24-8C-EV
	123.0	3	Ericsson AIR 6419 N77G

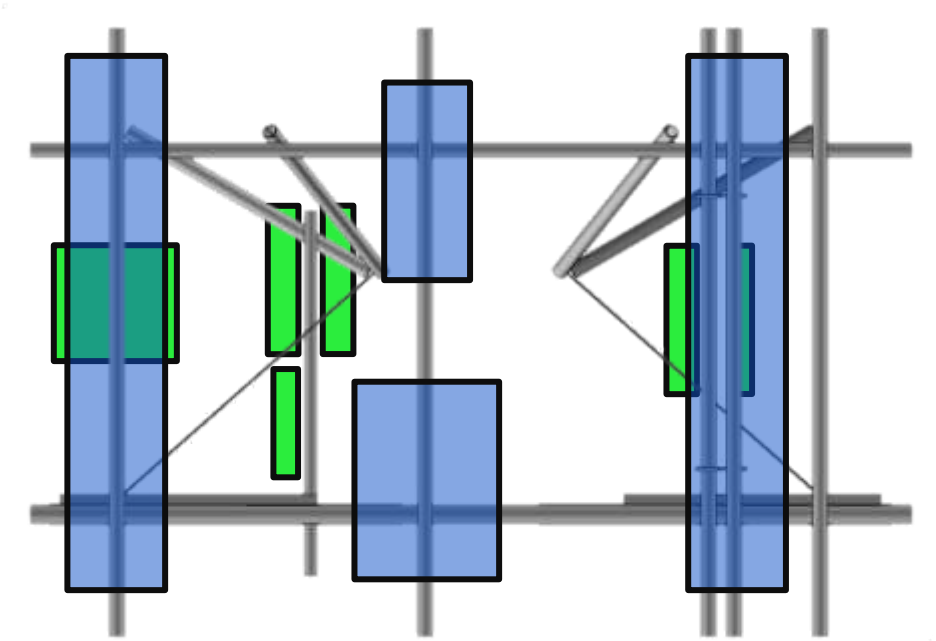
Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Threaded Rods	73%	Pass
Support Rail Connecting Plate	52%	Pass
Mount To Tower Connection Plates	36%	Pass
Stand-Off Horizontals	36%	Pass
Mount Pipes	31%	Pass
Support Rail	27%	Pass
Platform Base	14%	Pass

Equipment Layout Plan View

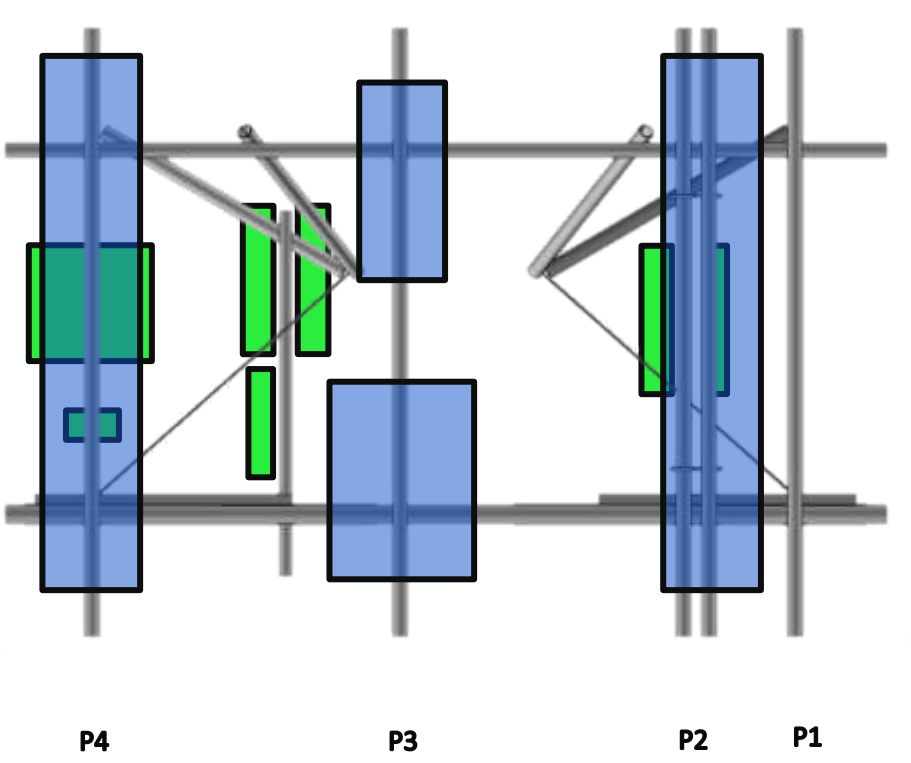


Equipment Layout Front Elevation View at Alpha & Beta Sector



Total #	Equipment	Mount Pipe Position
3	Ericsson AIR 6449 n77D	P3
3	Ericsson AIR 6419 N77G	P3
3	Quintel Technology QD8616-7	P2
3	Kathrein Scala 80010966	P4
3	Ericsson RRUS E2 B29	P2
3	Ericsson RRUS 4449 B5, B12	Stand-off
3	Ericsson RRUS 4478 B14	Stand-off
3	Ericsson Radio 4415 B30	P4
3	Ericsson RRUS 8843 B2, B66A	P2
1	Commscope WCS-IMFQ-AMT	P4 (Gamma)
2	Raycap DC6-48-60-18-8F	Stand-off
1	Raycap DC9-48-60-24-8C-EV	Stand-off

Equipment Layout Front Elevation View at Gamma Sector



Standard Conditions

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, Telamon Tower Engineering, PLLC should be notified immediately to revise results.

This analysis assumes the following:

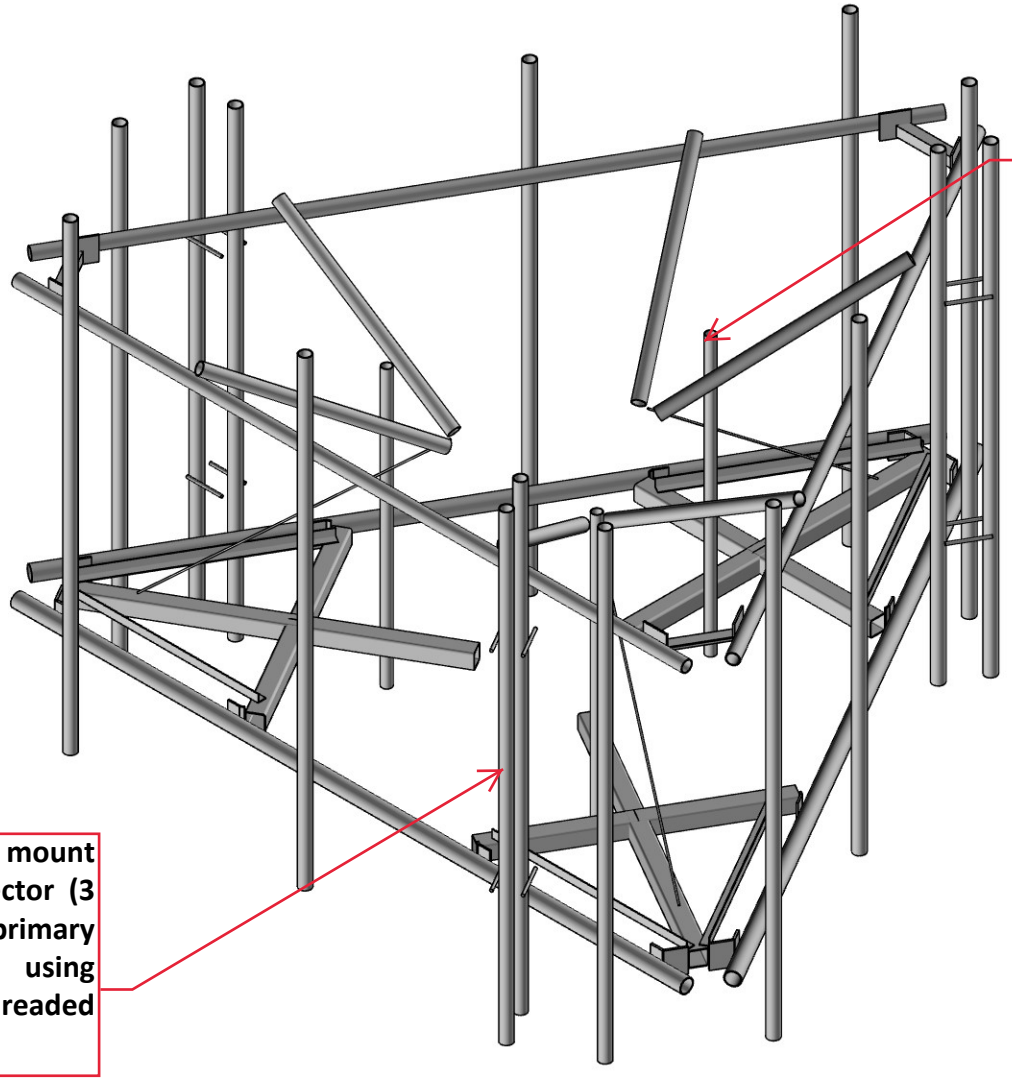
1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.
7. Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from Telamon Tower Engineering, PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. Telamon Tower Engineering, PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by Telamon Tower Engineering, PLLC verifies the adequacy of the primary members of the structure. Telamon Tower Engineering, PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.

Replace existing platform mount with new (1) Site Pro 1 RMQLP-4120-H10 (ANT.44987) Platform w/ Reinforced Support Rail and Cable at 125 ft elevation.



Install (1) 6ft. long, Pipe 2 STD, A53 Gr. B, mount pipes at each sector of the platform mount (3 total) as shown. Connect to stand-off horizontal HSS tubes with (1) Site Pro 1 SQCX4-K crossover plate kits at each sector (3 total).

Install (1) Site Pro 1 P30120 mount pipe at position 2 on each sector (3 total). Connect to proposed primary mount pipe at position 2 using proposed Site Pro 1 DCP18K threaded rod kit (3 total).

Telamon CLS	41124-13682841_C8_04-West Haven & RT 162 CT	IN-1
AM		Mar 11, 2022
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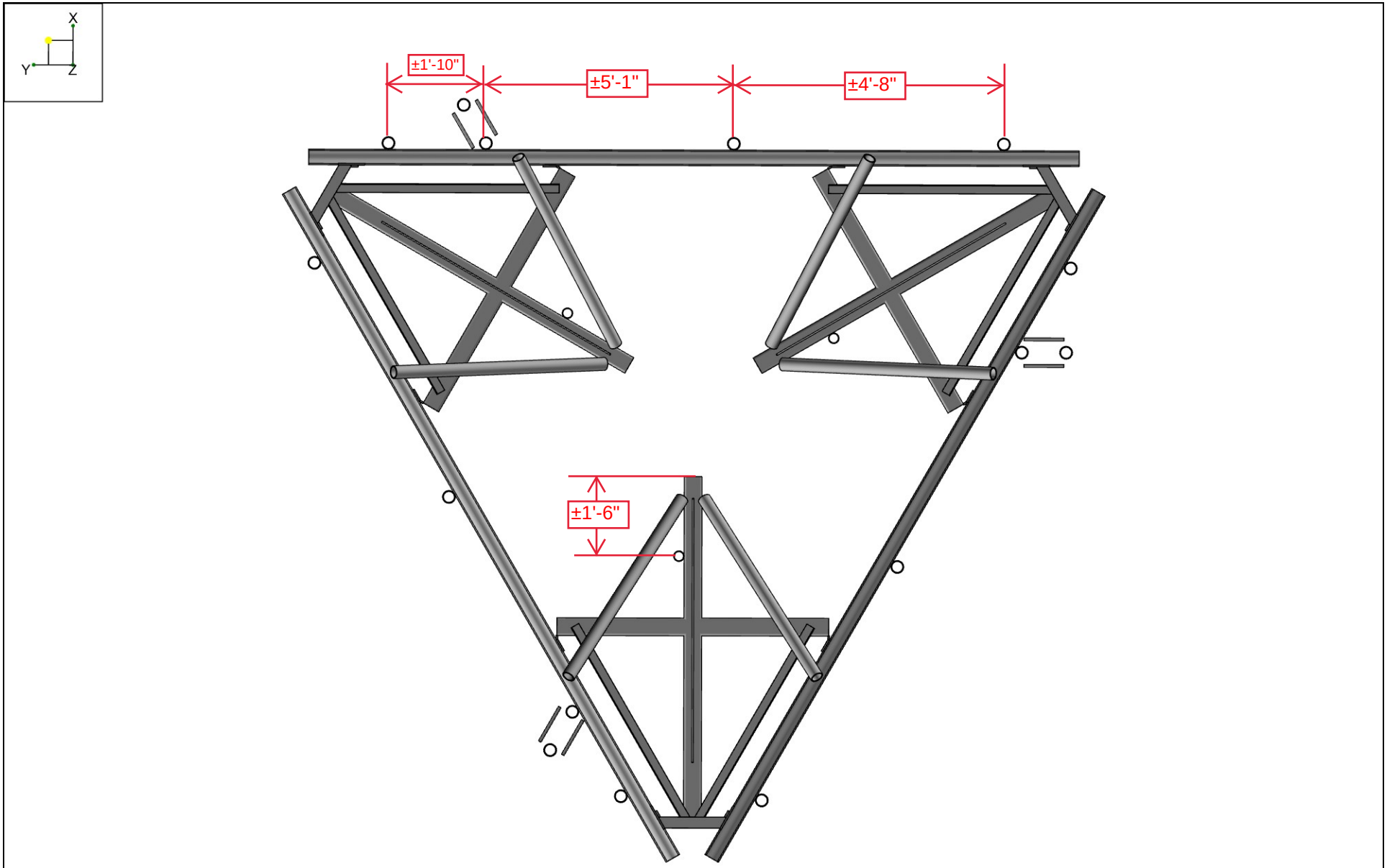

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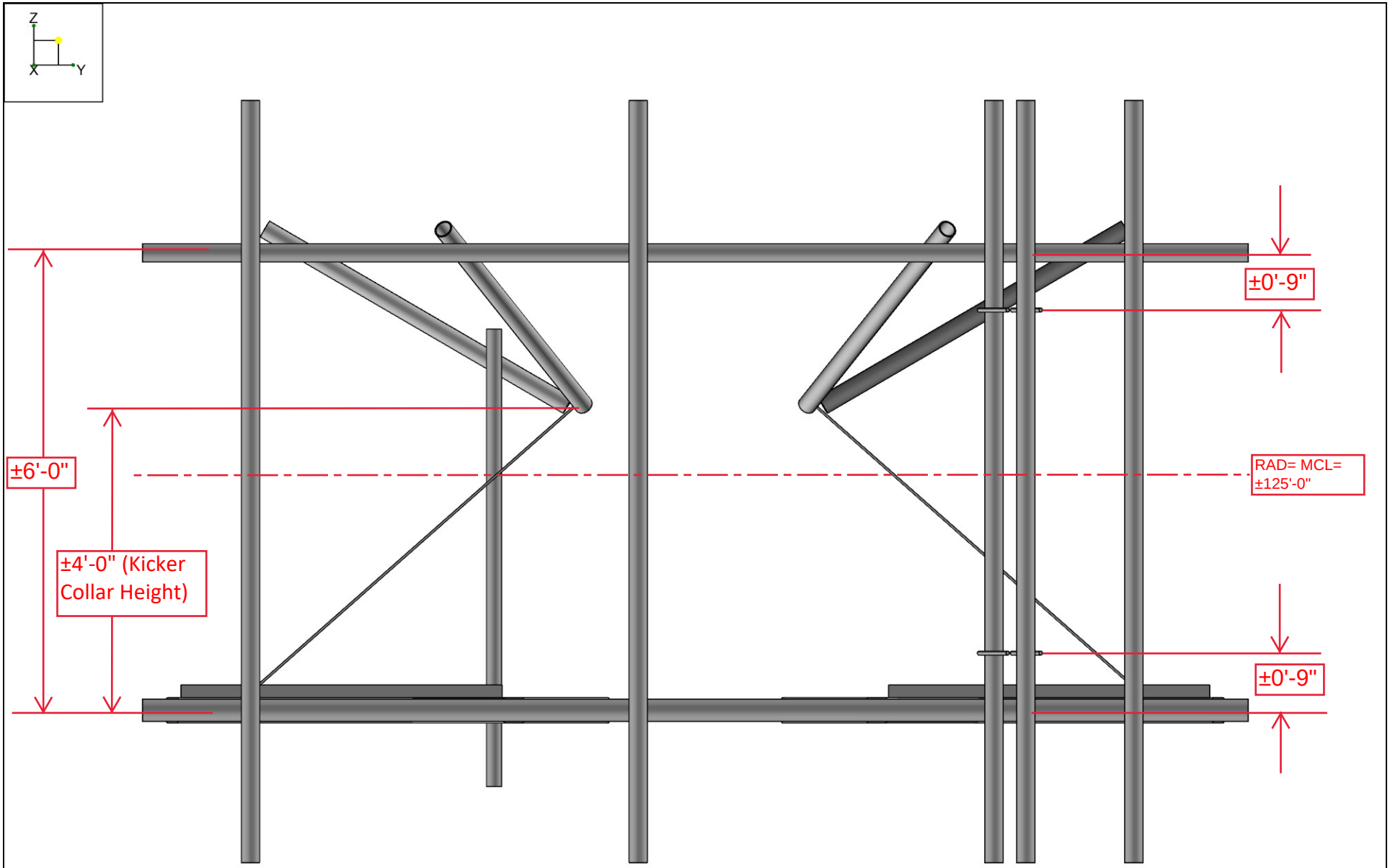

Telamon CLS	41124-13682841_C8_04-West Haven & RT 162 CT	IN-3
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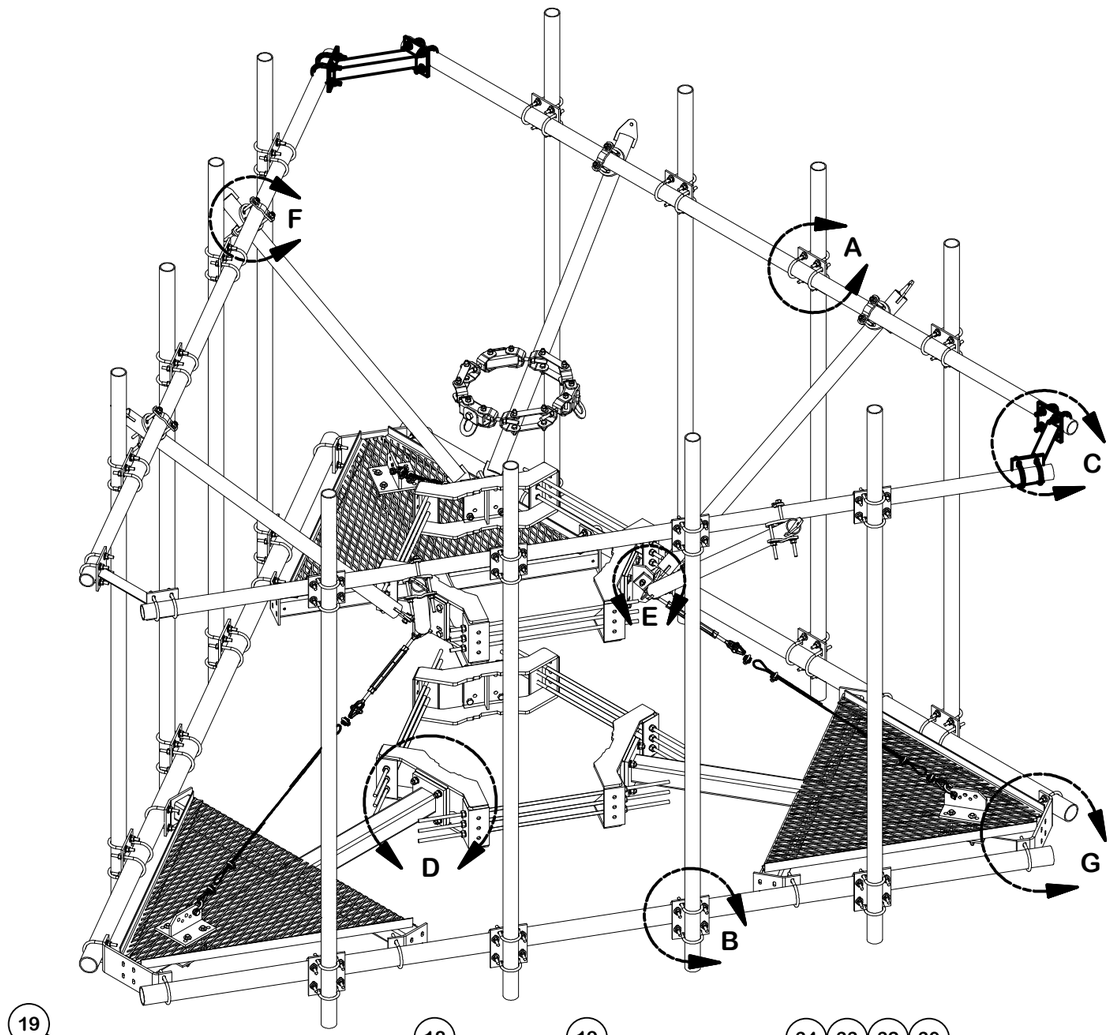
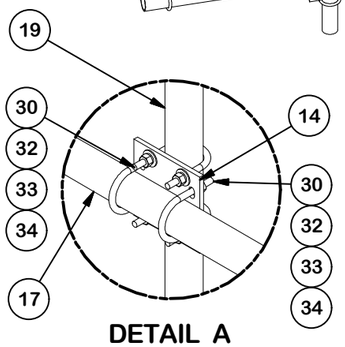
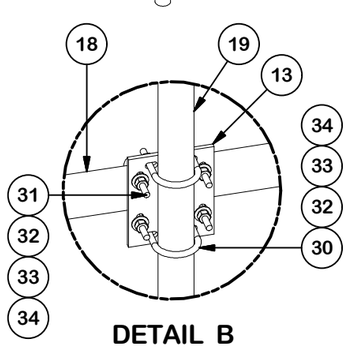


PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	6	X-LWRM	RING MOUNT WELDMENT		68.81	412.85
2	3	X-SV196L	LONG PLATFORM WELDMENT		230.94	692.81
3	6	X-TBW	T-BRACKET WELDMENT		13.60	81.60
4	6	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3 in	1.86	11.15
5	6	X-VSKL	LONG SUPPORT WELDMENT FOR VSK REINFORCEMENTS		37.05	222.33
6	6	X-127594	FLAT DISK CLAMP PLATE 4" CENTERS (GALV.)		2.51	15.04
7	12	X-100064	CLAMP (4" V-CLAMP) GALVANIZED		0.92	11.06
8	3	320751-I	1/2" CHAIN SHACKLE		0.76	2.29
9	3	320601-I	5/8" TURNBUCKLE		2.63	7.89
10	6	320777-I	5/16" THIMBLE		0.06	0.36
11	12	320152-I	5/16" WIRE ROPE CLIP		1.32	15.78
12	3	AC516-10	5/16" AIRECRAFT CABLE		1.25	3.76
13	15	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	90.32
14	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
15	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
17	3	P30174	2-7/8" O.D. x 174" SCH. 40 PIPE	174 in	84.20	252.59
18	3	P3174	3-1/2" X 174" SCH 40 GALVANIZED PIPE	174 in	109.97	329.90
19	12	P30120	2-7/8" x 120" (2-1/2" SCH. 40) GALVANIZED PIPE	120 in	58.07	696.79
20	18	G58R-48	5/8" x 48" THREADED ROD (HDG.)		4.18	75.27
20	18	G58R-24	5/8" x 24" THREADED ROD (HDG.)		2.09	37.63
21	12	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	3.75
22	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	4.27
23	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
24	60	G58LW	5/8" HDG LOCKWASHER		0.03	1.57
25	60	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	7.79
26	6	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1/2 in	0.15	0.89
27	3	G12212	1/2" x 2-1/2" HDG HEX BOLT GR5	2 1/2 in	0.20	0.61
28	12	G1204	1/2" x 4" HDG HEX BOLT GR5 FULL THREAD	4 in	0.27	3.24
29	24	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	5 1/2 in	0.41	9.83
30	84	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.70	58.53
31	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.83	29.82
32	288	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	9.82
33	285	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	3.96
34	285	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	20.41
35	1	HALO40	5,000 LB. MAINTENANCE TIE-OFF POINT		41.12	41.12
					TOTAL WT. #	3249.41



DETAIL A



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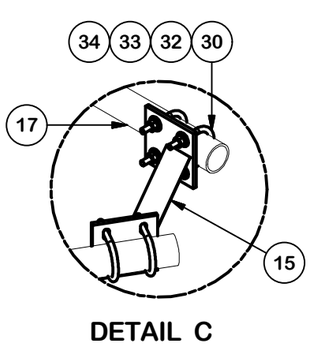

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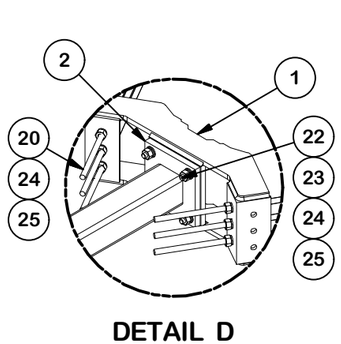

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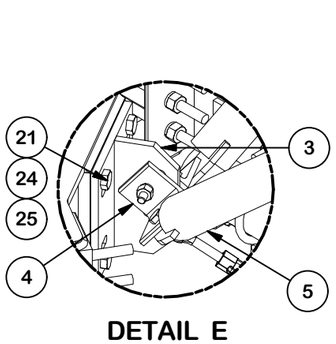

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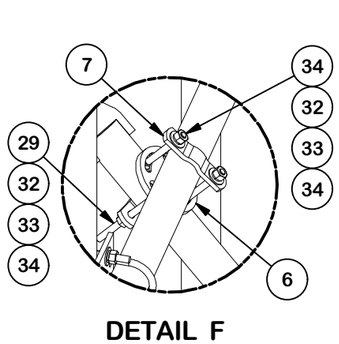

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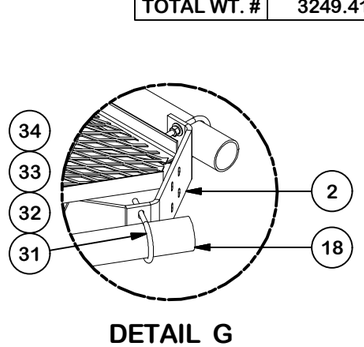

DETAIL G

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 AND ANGLES ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

DESCRIPTION
14' 6" LOW PROFILE PLATFORM
WITH TWELVE 2-7/8" ANTENNA MOUTING
PIPES, REINFORCED HANDRAIL, AND CABLE

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
Tampa, FL

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CSL 10/17/2019	10/18/2019	RMQLP-4120-H10

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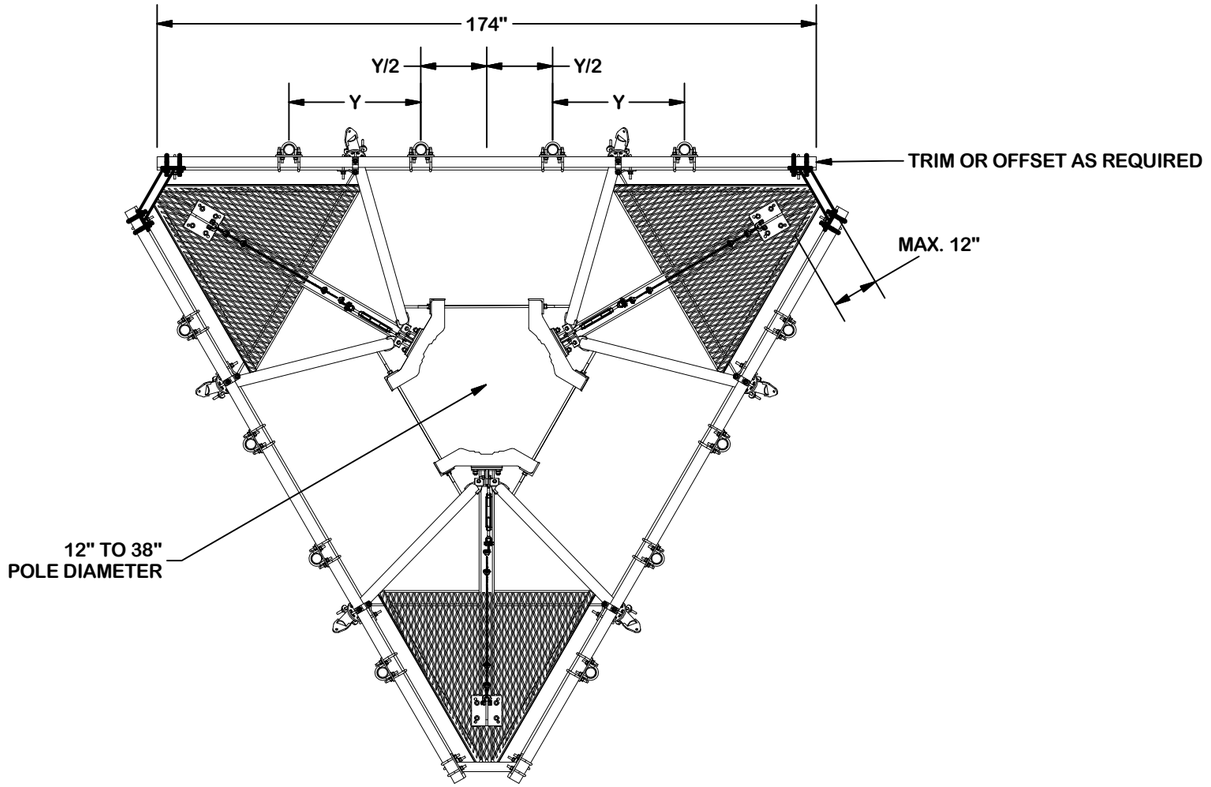

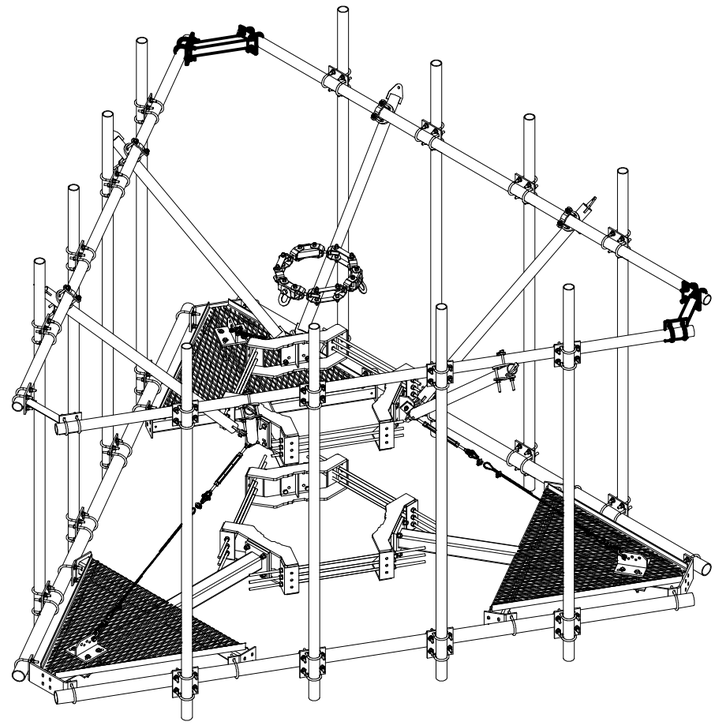

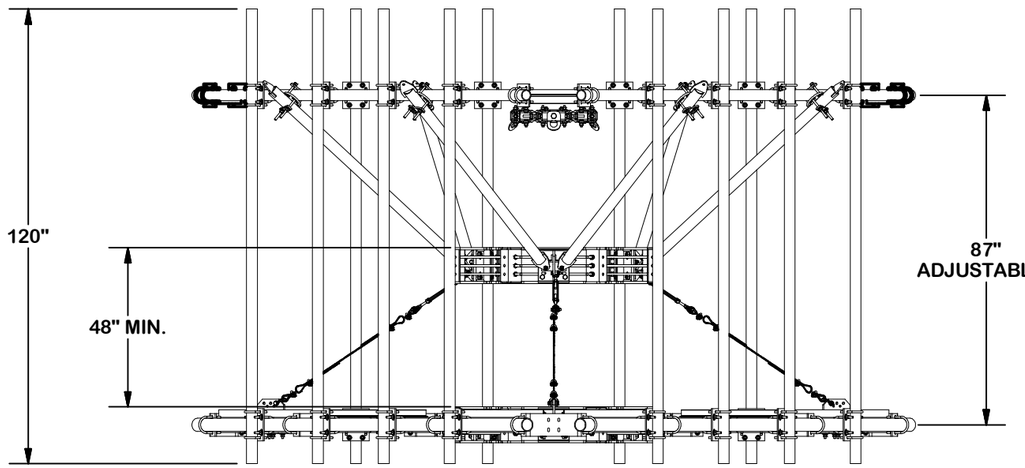

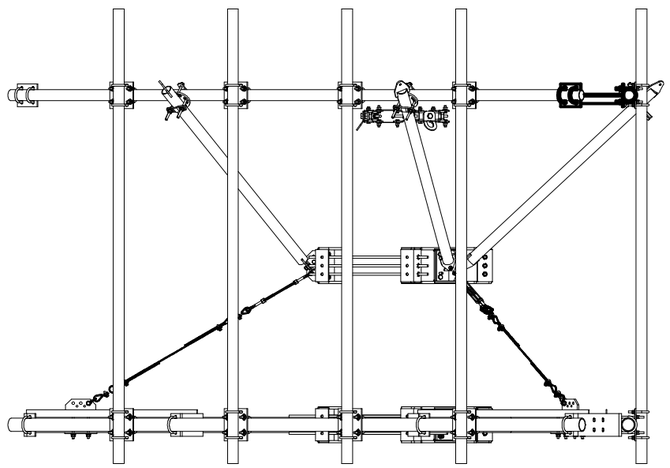

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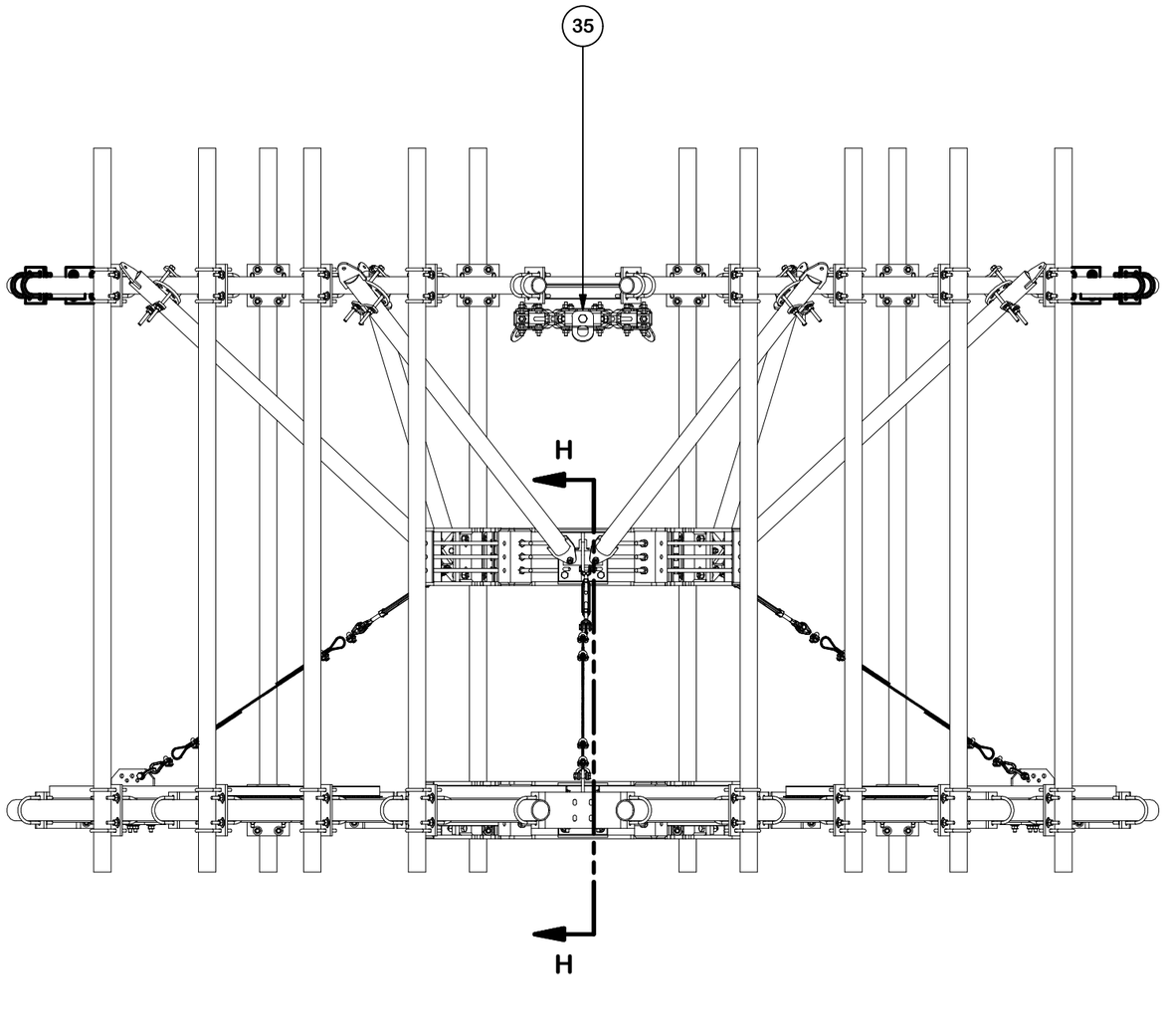
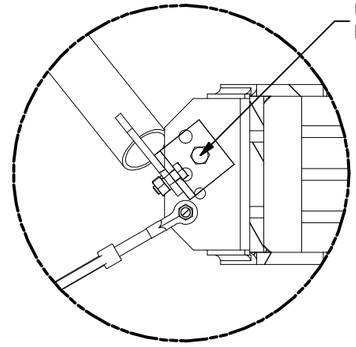
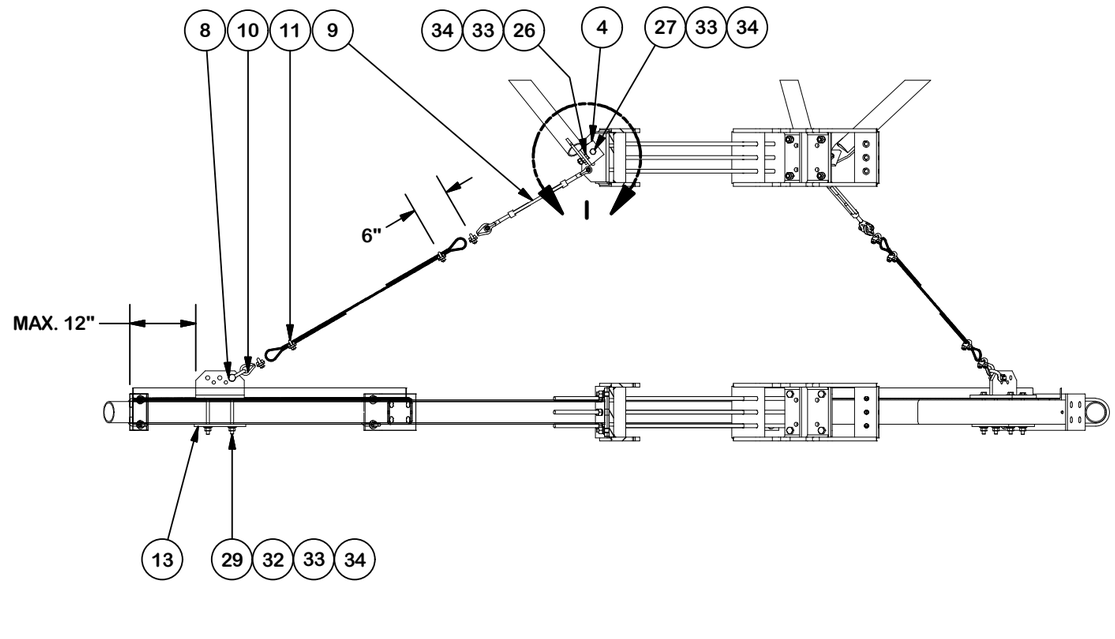




DETAIL I



SECTION H-H

NOTE:
SOME OBJECTS ARE TRANSPARENT FOR CLARITY

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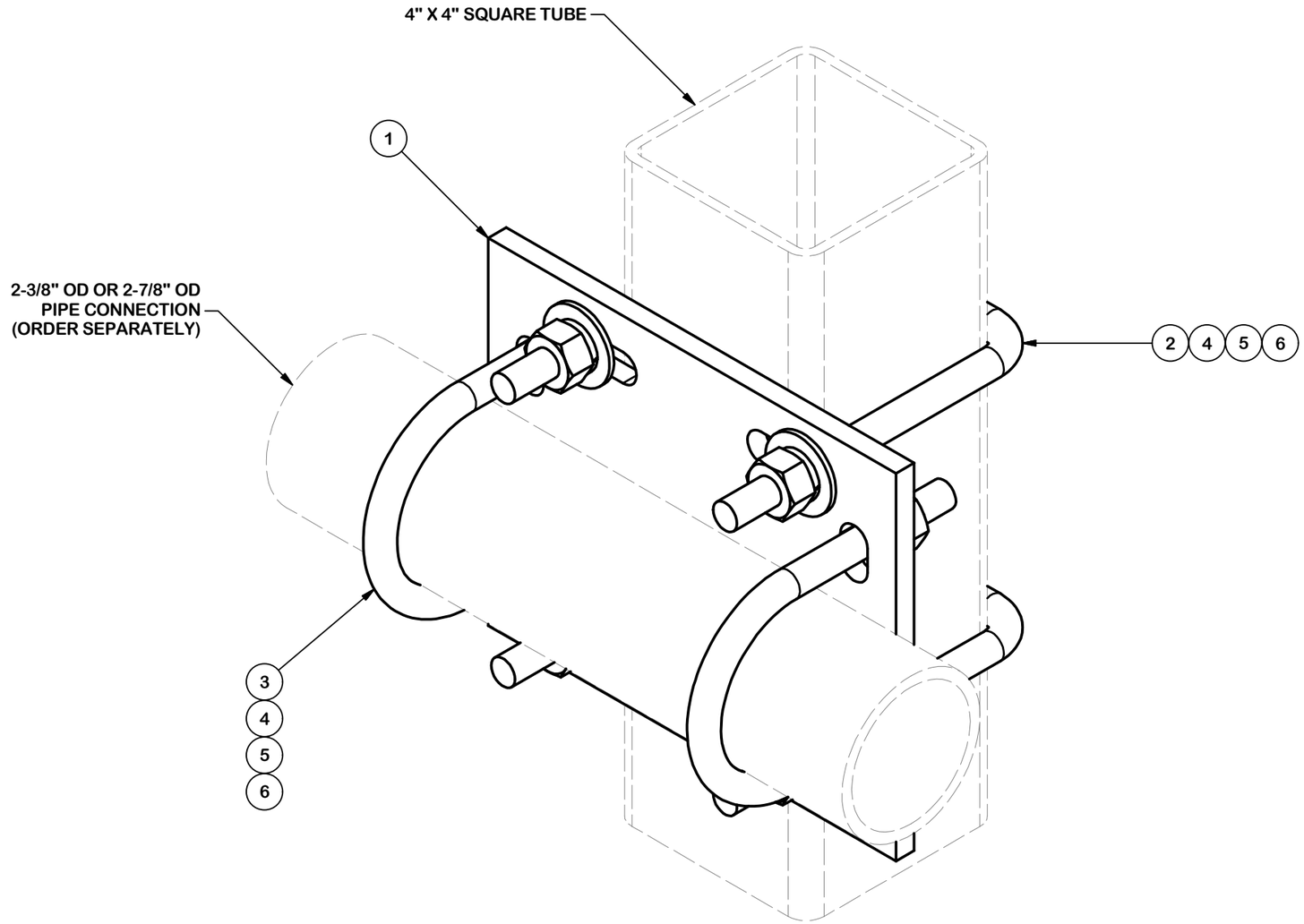
87	02	CUSTOMER	BMC 10/18/2019	RMQLP-4120-H10

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	6.02
2	2	X-SUB1418	SQUARE U-BOLT 0.5" DIA. X 4.125" IW X 6" IL X 3" TR		0.98	1.95
3	2	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.60	1.19
3	2	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.67	1.34
4	8	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	0.27
5	8	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.11
6	8	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.57
					TOTAL WT. #	11.35



TOLERANCE NOTES

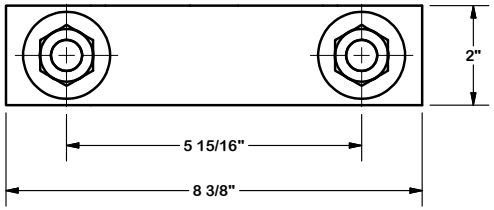
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

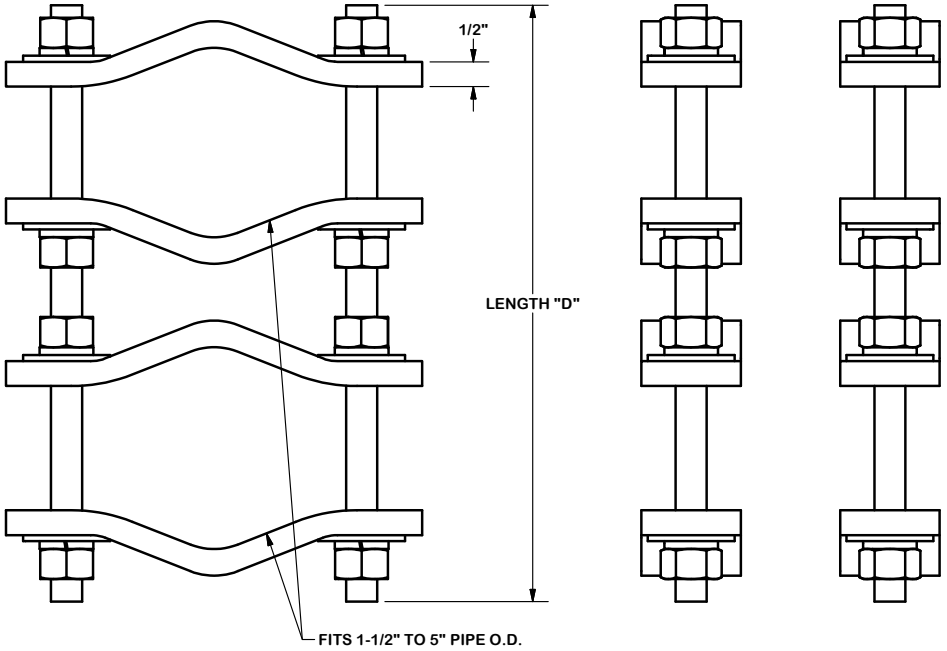
DESCRIPTION
CROSSOVER PLATE KIT
W/ SQUARE U-BOLTS AND STD. U-BOLTS

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.
	CSL 9/18/2018	3RD PARTY	SQCX4-K

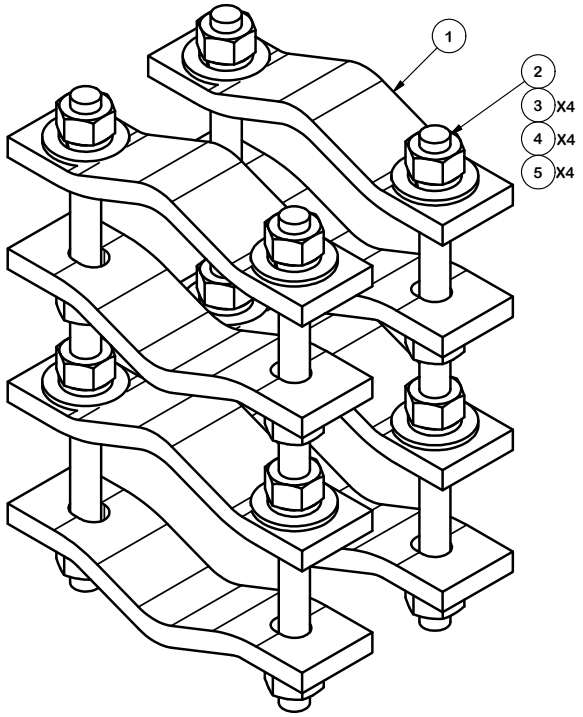
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
87	02	CUSTOMER	BMC 11/12/2018	SQCX4-K





PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	8	DCP	CLAMP HALF, 1/2" THICK, 8-3/8"		2.40	19.20
2	B	C	5/8" THREADED ROD	D	E	F
3	16	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	2.08
4	16	G58LW	5/8" HDG LOCKWASHER		0.03	0.42
5	16	G58FW	5/8" HDG USS FLATWASHER		0.07	1.13

VARIABLE PARTS TABLE						
ASSEMBLY "A"	QTY "B"	PART "C"	LENGTH "D"	UNIT WT. "E"	NET WT. "F"	TOTAL WEIGHT
DCP12K	4	G58R-12	12"	1.05	4.18	27.01
DCP18K	4	G58R-18	18"	1.57	6.27	29.10



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
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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
PIPE TO PIPE CLAMP SET
1-1/2" TO 5" PIPE
1/2" THICK CLAMP

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
	KC8 8/21/2012		SEE ASSEMBLY "A"	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	CEK 1/22/2013	DCPxxK

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	125 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	125 ft	K_d	0.95
Elevation AMSL (ft)	139 ft	K_e	0.99
TIA Standard	H	K_z	1.05
Basic Wind Speed, V_{ult} (bare)	120 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 in	t_{iz}	1.14 in
Exposure Category	B	G_h	1.00
Risk Category	II	q_z (bare)	36.7 psf
Seismic Response Coeff., C_s	0.11	q_z (ice)	6.4 psf

Live Loading

At Mount Pipes, L_M	500 lb
Joint Labels Considered	M1
	M2
	M3
	M4

Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Offset Tube	HSS4X4X4	22.02	1.60	8.70
Offset End Plate	0.5 x 6 Plate	33.03	4.76	7.37
Offset Side Plate	0.38 X 6 Plate	33.03	4.76	7.26
Grating Angle	L2x2x3	11.01	1.45	5.04
Platform Horzontal Pipe	PIPE_3.0	11.56	3.32	6.48
Mount Pipe 1	PIPE_2.0	7.85	2.67	4.91
SR Bracing Pipe	PIPE_2.5	9.50	2.96	5.61
Cable	5/16"	1.03	1.49	2.03
Support Rail	PIPE_2.5	9.50	2.96	5.61
SR Conn Plate	PL6x0.375	33.03	4.76	7.26
SR Conn Angle	L2.5x2.5x4	13.76	1.49	5.93
MOUNT_PIPE_2.5	PIPE_2.5	9.50	2.96	5.61
Mod Threaded Rods	SR 5/8	2.06	1.67	2.47
Mod Mount Pipe	PIPE_2.5	9.50	2.96	5.61

Appurtenances

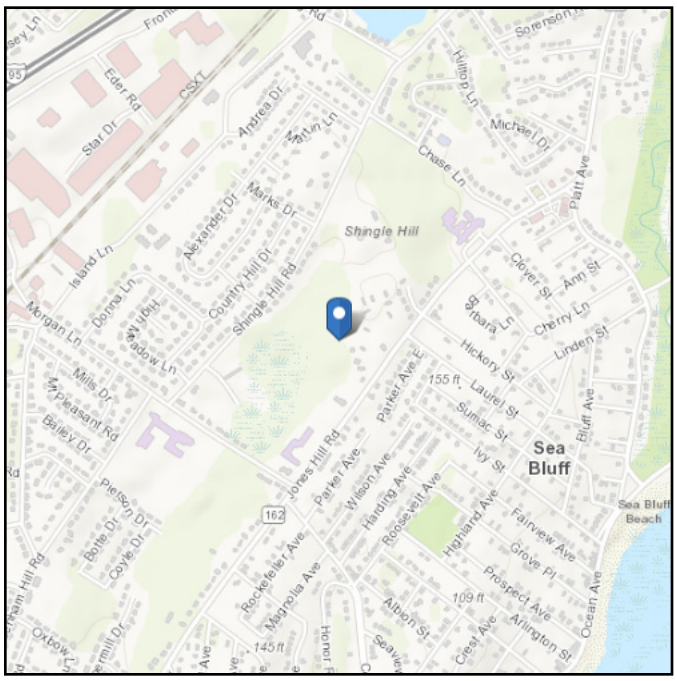
Appurtenance Model	Status	Azimuth Offset (°, ↻)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty. per Azimuth			Total Qty. Override	0° Joints		130° Joints		240° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_A (Bare) (ft²)		EPA_A (Ice) (ft²)		F_A (Bare) (lb)		F_A (Ice) (lb)	
					Front	Side	0°	130°	240°		1	2	1	2	1	2							N	T	N	T	N	T	N	T
QD8616-7				☐			1	1	1	3	A1	A2	B1	B2	G1	G2	96	22	9.6	150	Flat	262.25	18.81	9.60	21.03	11.70	621.49	317.11	120.60	67.10
AIR 6449 n77D			127	☐			1	1	1	3	A3	A4	B3	B4	G3	G4	30.4	15.9	8.1	81.6	Flat	73.28	4.03	2.15	4.95	2.90	133.66	71.25	28.54	16.69
AIR 6419 N77G			123	☐			1	1	1	3	A5	A6	B5	B6	G5	G6	15.7	30	6.7	70	Flat	66.68	3.93	0.88	4.84	1.35	129.05	28.82	27.61	7.68
80010966				☐			1	1	1	3	A7	A8	B7	B8	G7	G8	96	20	6.9	125.7	Generic	210.62	14.59	5.04	16.58	6.80	481.94	166.48	95.07	38.99
RRUS E2 B29				☑	0.5	0.5	1	1	1	3	R1		R2		R3		20.4	18.5	7.5	60	Flat	53.06	0.64	1.57	0.92	1.96	21.23	51.94	5.30	11.27
RRUS 8843 B2/B66A				☑	0.5	0.5	1	1	1	3	R1		R2		R3		14.9	13.2	10.9	72	Flat	40.21	0.68	0.82	0.94	1.11	22.35	27.07	5.41	6.36
RRUS 4478 B14				☑	0.5		1	1	1	3	R4		R5		R6		16.5	13.4	7.7	59.9	Flat	36.28	0.53	1.84	0.78	2.46	17.49	60.86	4.48	14.08
RRUS 4449 B5/B12				☑	0.5		1	1	1	3	R4		R5		R6		17.9	13.19	9.44	71	Flat	42.29	0.70	1.97	0.99	2.60	23.26	64.99	5.66	14.93
RADIO 4415 B30				☐	0.5		1	1	1	3	R7		R8		R9		14.96	13.18	5.04	42.9	Flat	27.63	0.82	0.64	1.11	1.05	27.14	21.11	6.37	6.04
WCS-IMFQ-AMT				☐	0.5				1	1					R10		11.2	10.6	6.9	29.5	Flat	22.13	0.49	0.64	0.72	1.03	16.34	21.27	4.15	5.92
DC6-48-60-18-8F				☐			1			1	RAYCAP_1						24	11	11	18.9	Round	40.48	1.28	1.28	1.70	1.70	42.39	42.39	9.73	9.73
DC6-48-60-18-8F				☐				1		1			RAYCAP_2				24	11	11	18.9	Round	40.48	1.28	1.28	1.70	1.70	42.39	42.39	9.73	9.73
DC9-48-60-24-8C-EV				☐					1	1			RAYCAP_3				31.41	10.24	18.28	26.2	Flat	84.71	2.74	4.78	3.54	5.77	90.40	158.05	20.31	33.11

ASCE 7 Hazards Report

Address:
West Haven, Connecticut 06516

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 138.77 ft (NAVD 88)
Latitude: 41.256403
Longitude: -72.972361



Wind

Results:

Wind Speed	120 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	91 Vmph
100-year MRI	99 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Mar 11 2022

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 7-16 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 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

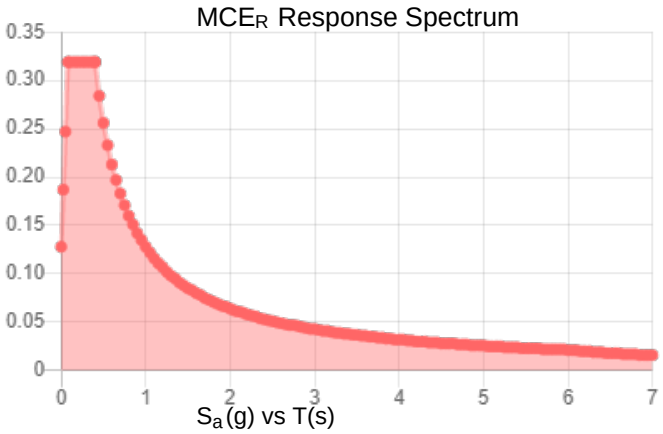
Seismic

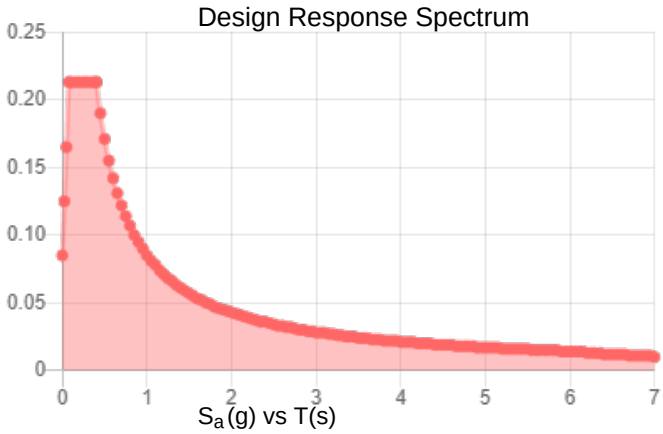
Site Soil Class: D - Default (see Section 11.4.3)

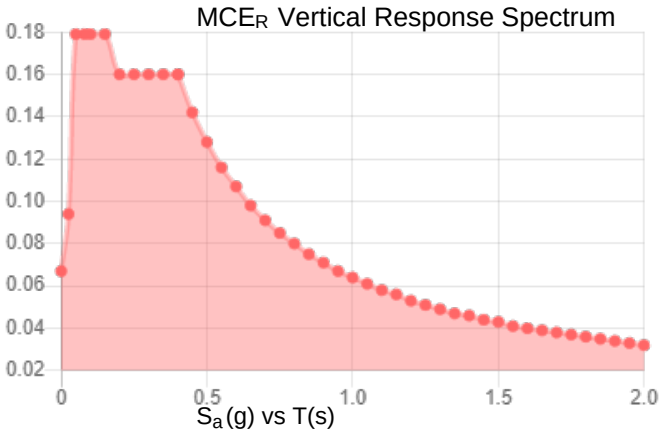
Results:

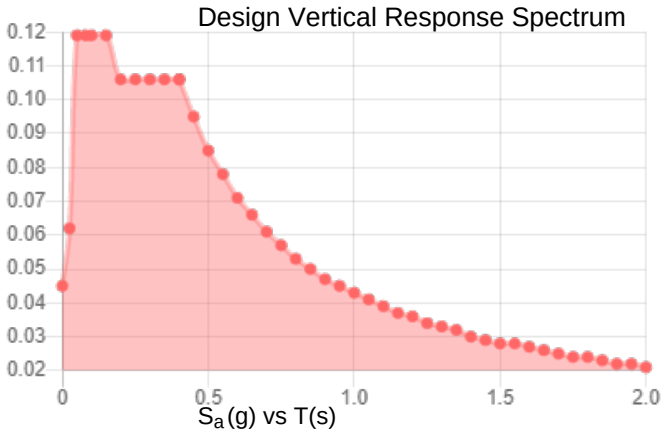
S_S :	0.2	S_{D1} :	0.085
S_1 :	0.053	T_L :	6
F_a :	1.6	PGA :	0.112
F_v :	2.4	PGA_M :	0.176
S_{MS} :	0.319	F_{PGA} :	1.577
S_{M1} :	0.128	I_e :	1
S_{DS} :	0.213	C_v :	0.7

Seismic Design Category B









Data Accessed: **Fri Mar 11 2022**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

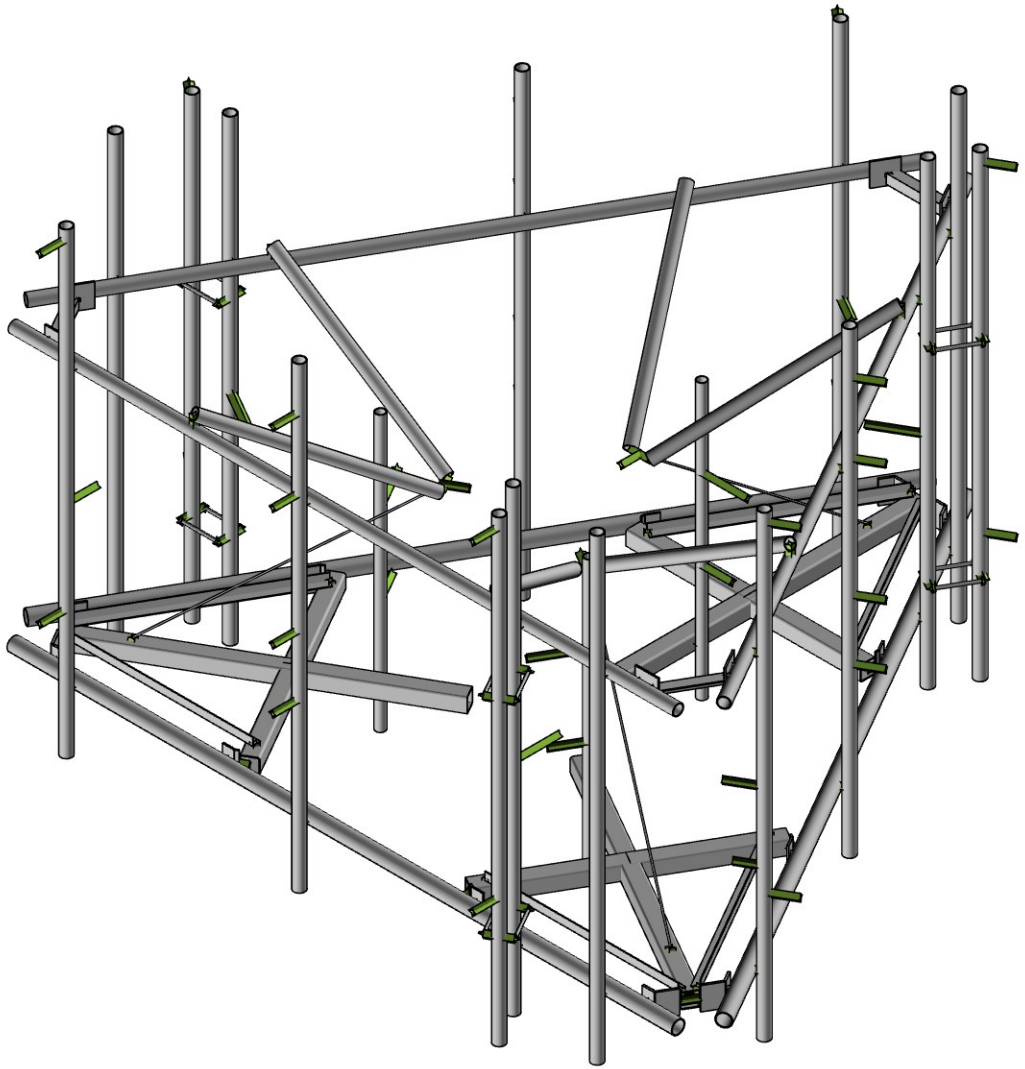
Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Mar 11 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 500-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.



Envelope Only Solution

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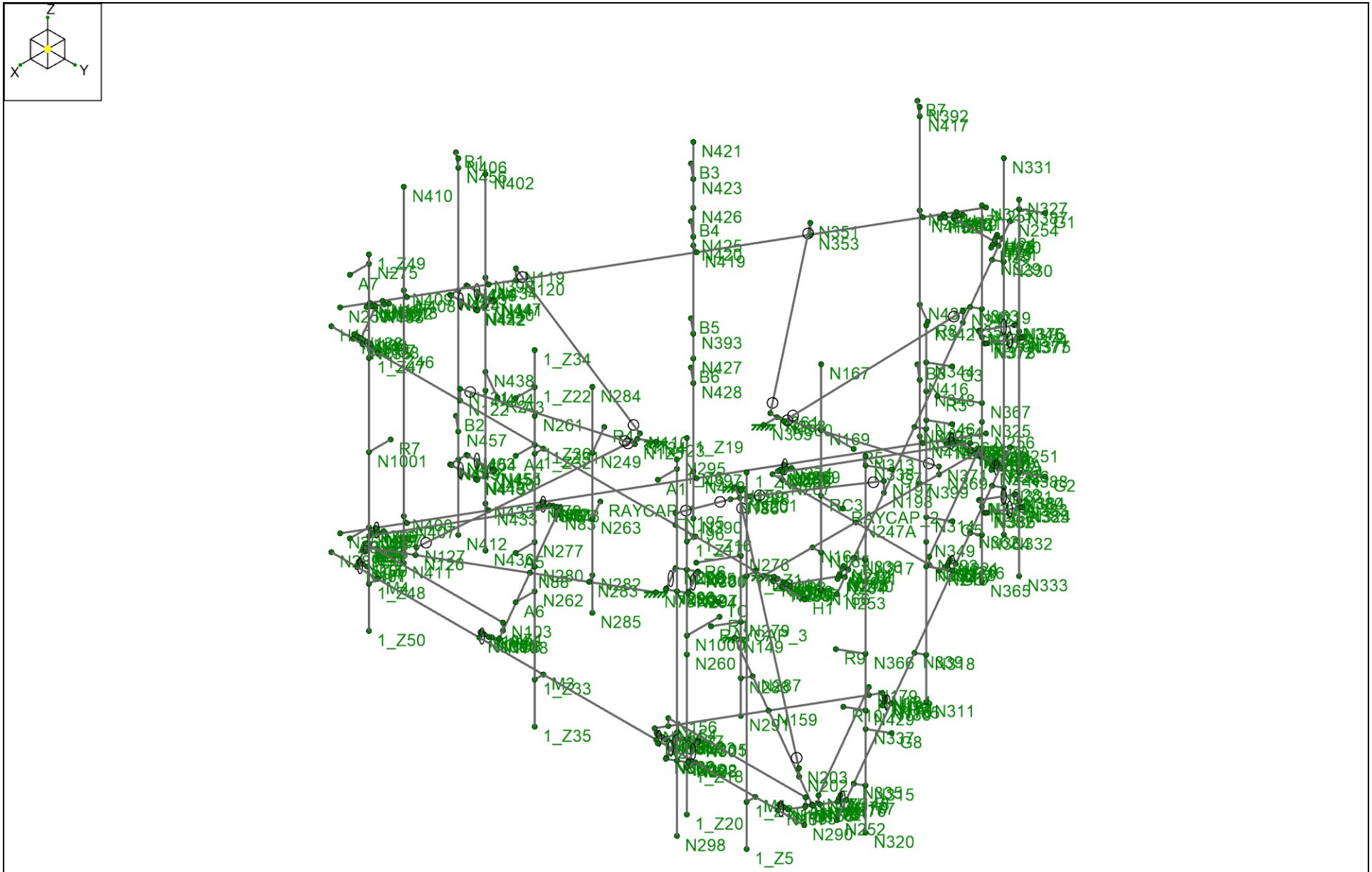

Envelope Only Solution

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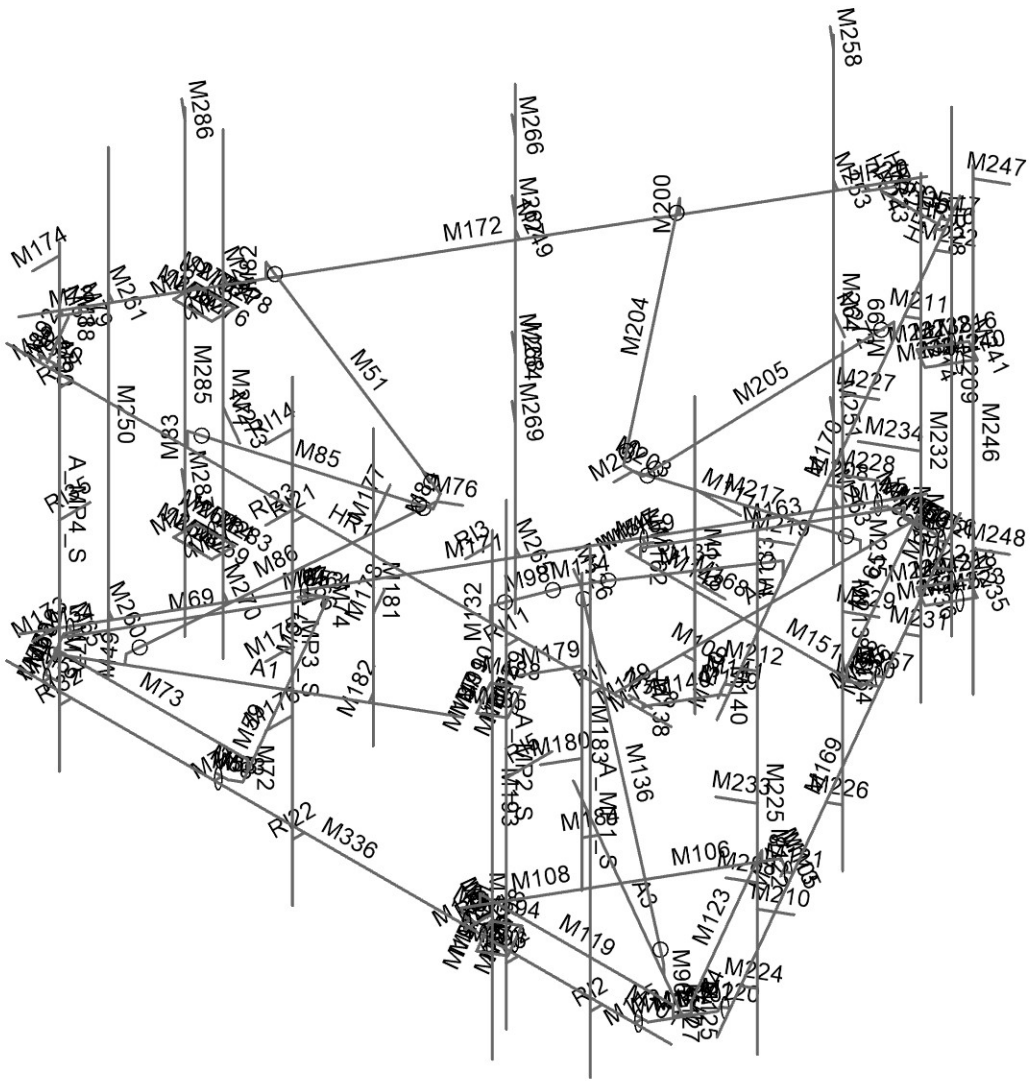

Envelope Only Solution

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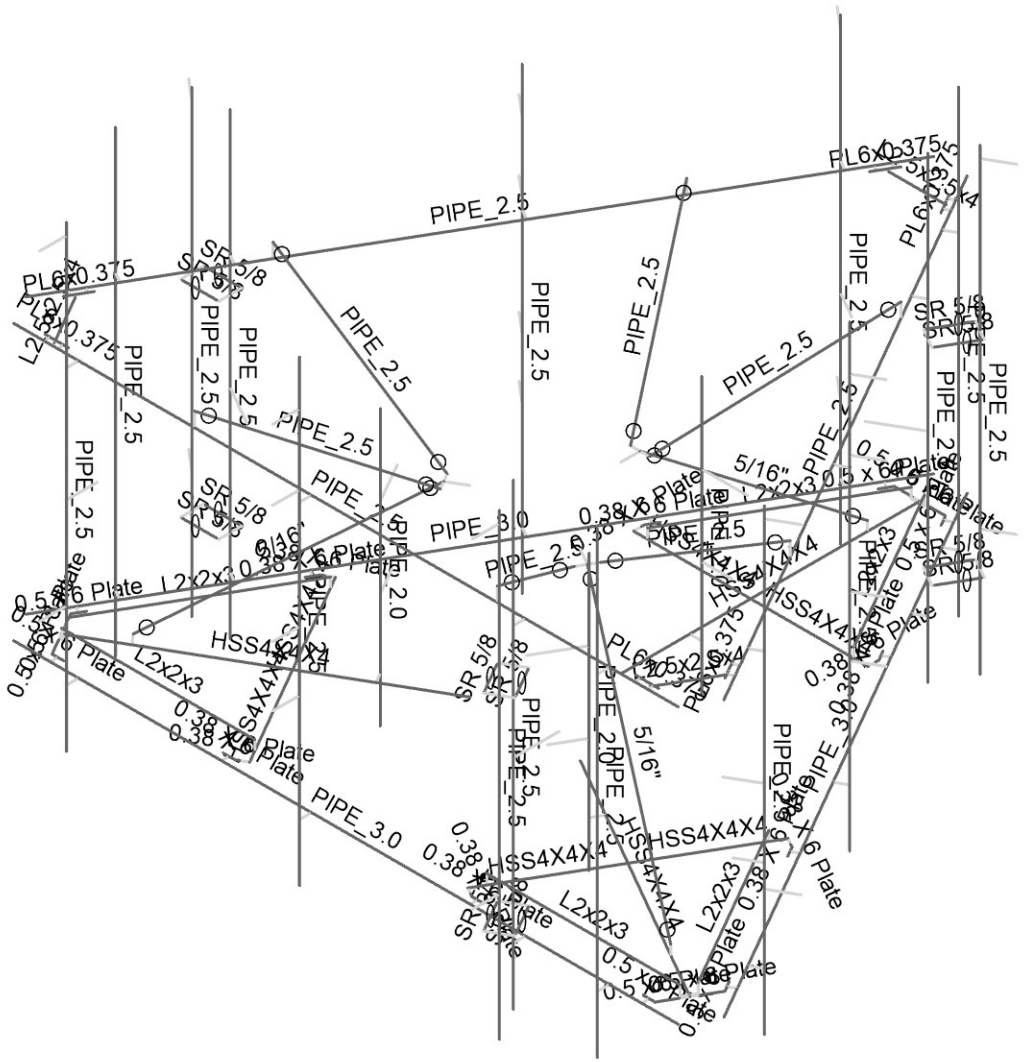

Envelope Only Solution

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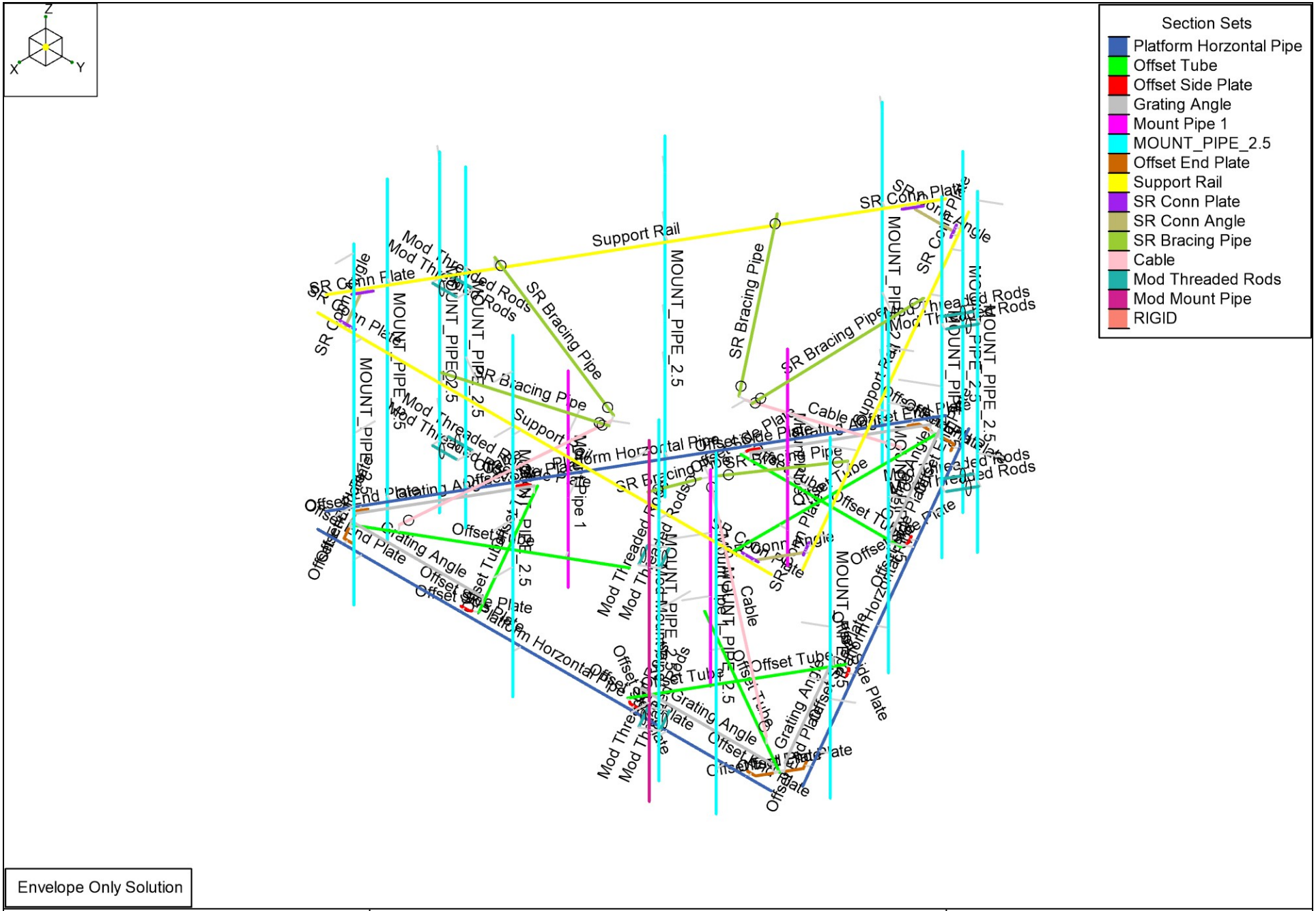

Envelope Only Solution

Telamon CLS	41124-13682841_C8_04-West Haven & RT 162 CT	SK-4
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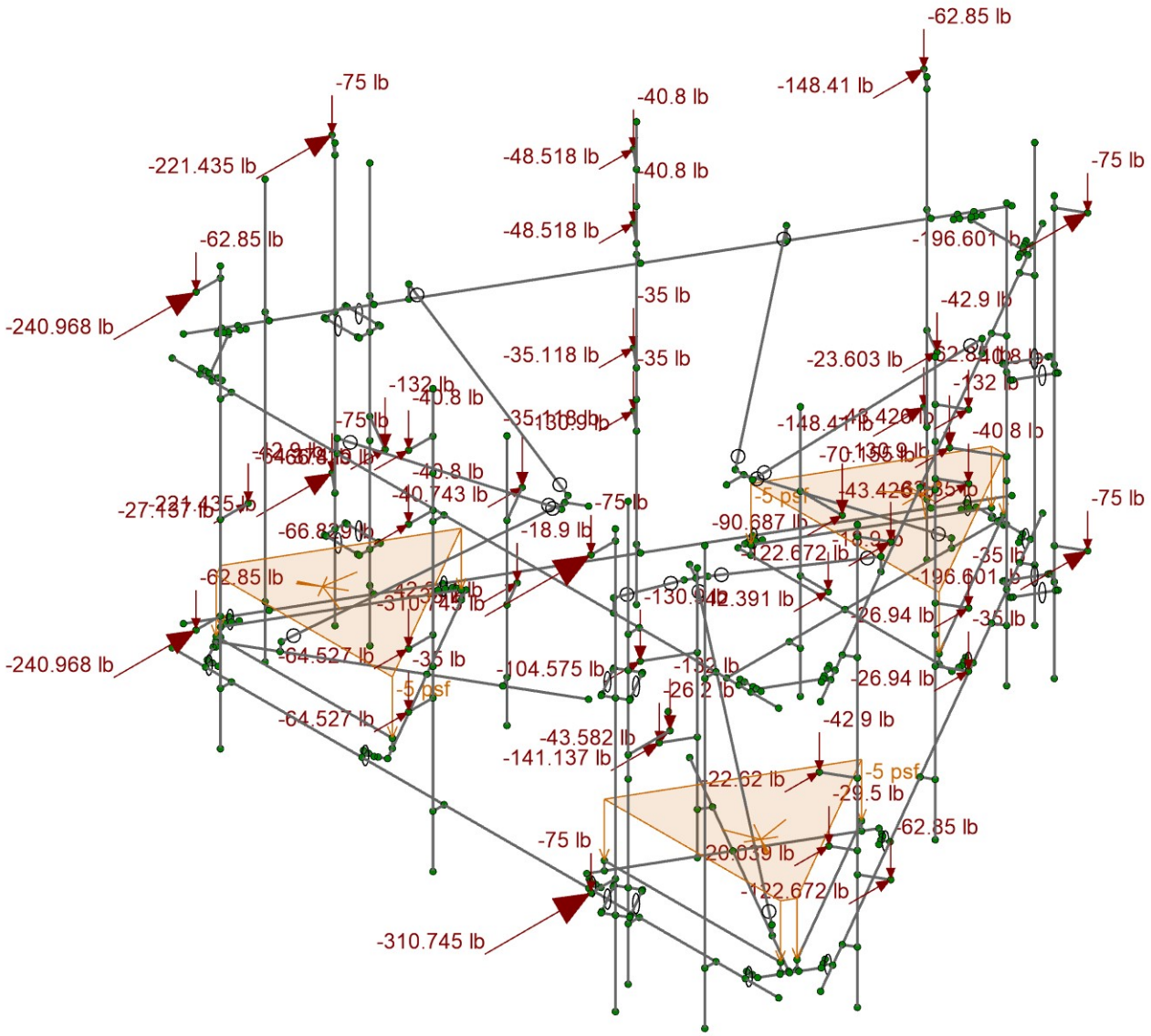

Loads: LC 1, DISPLAY (1.0D + 1.0W_0)
Envelope Only Solution

Telamon CLS	41124-13682841_C8_04-West Haven & RT 162 CT	SK-5
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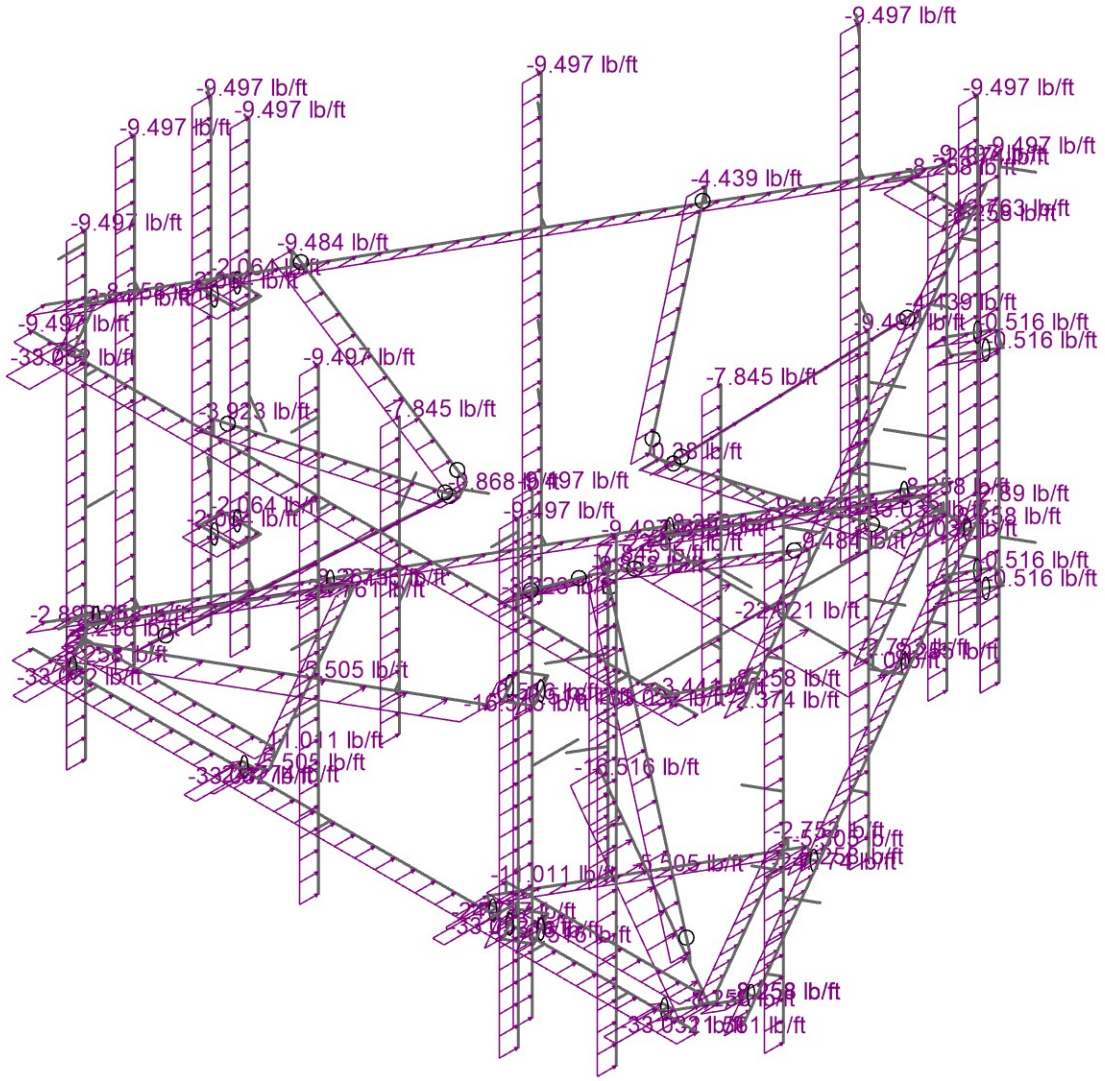

Loads: BLC 5, Structure Wind 0
Envelope Only Solution

Telamon CLS	41124-13682841_C8_04-West Haven & RT 162 CT	SK-6
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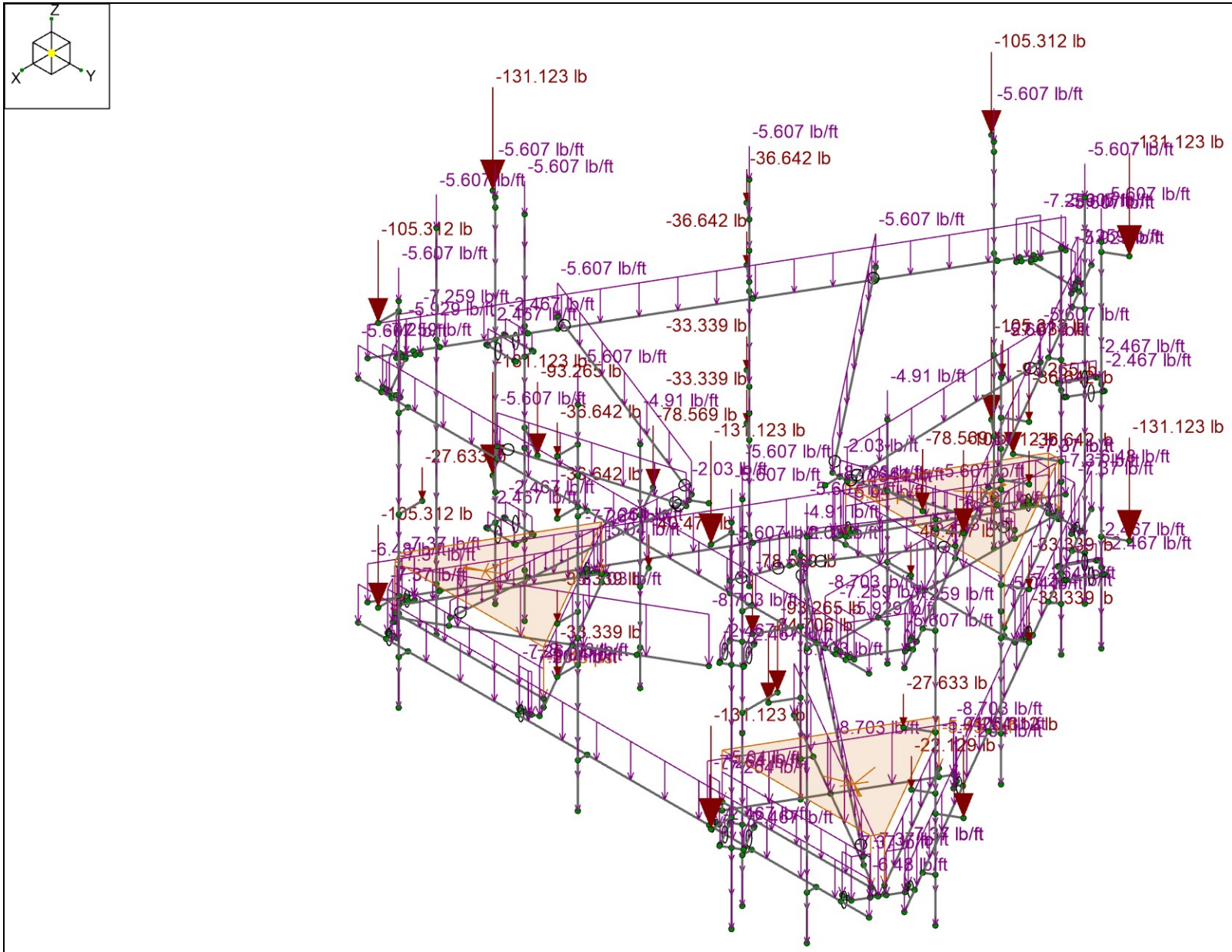

Loads: BLC 2, Ice Dead
Envelope Only Solution

Telamon CLS	41124-13682841_C8_04-West Haven & RT 162 CT	SK-7
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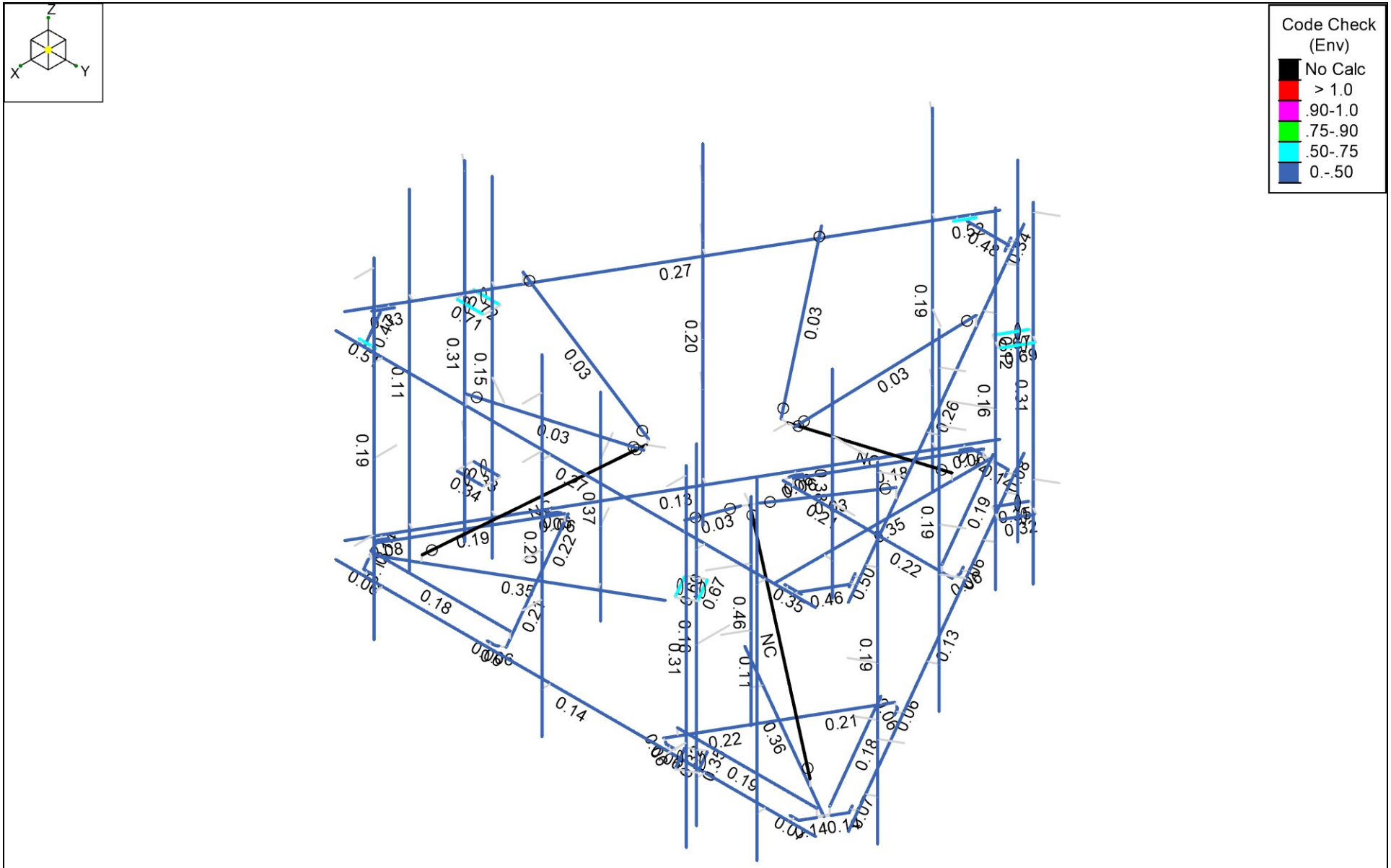

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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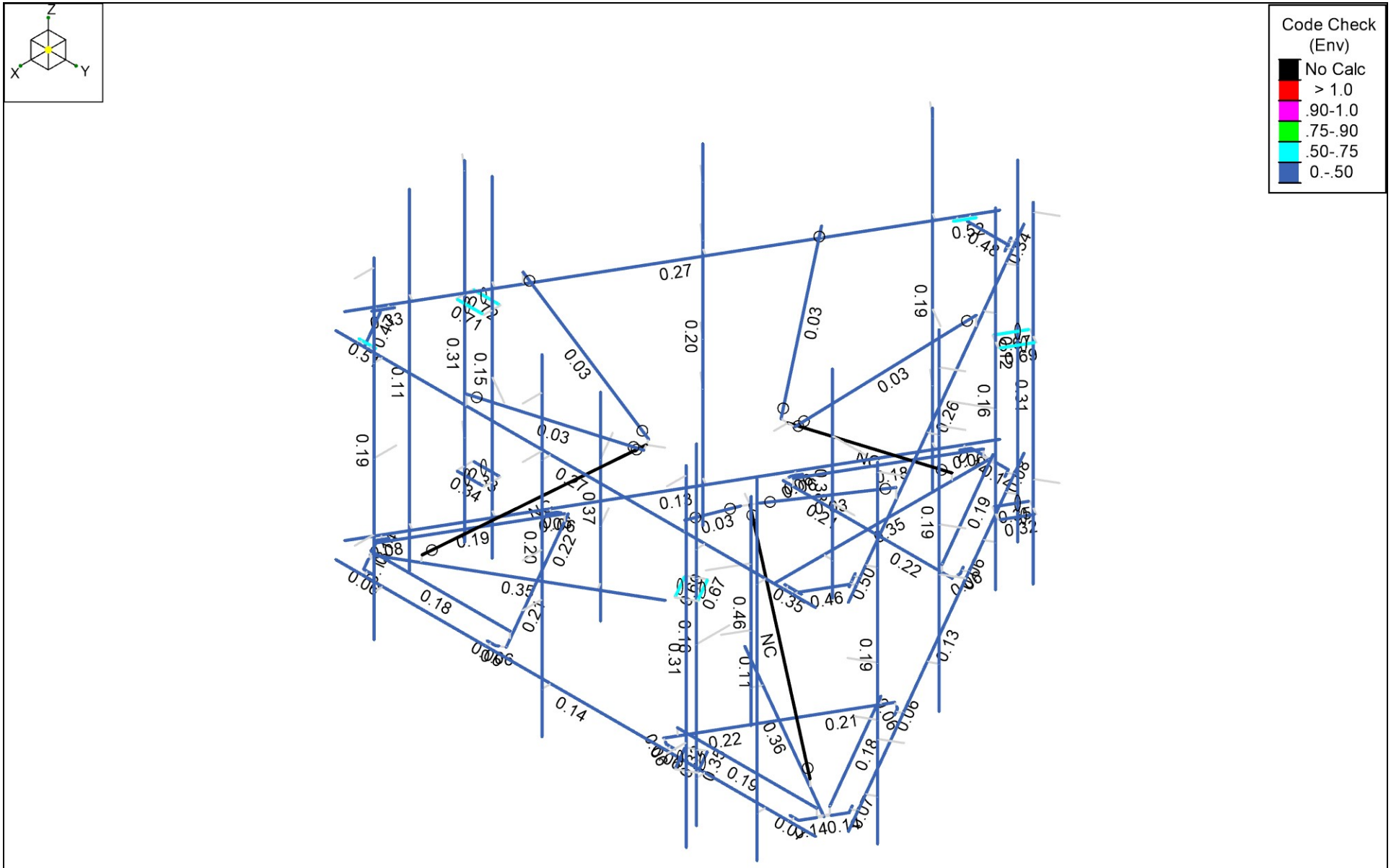

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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AM		Mar 11, 2022
41124-13682841_C8_04-02-MA	Envelope Member Check Results - Shear	41124-13682841_C8_04-02-MA.r3d

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	Dead	DL	-1	43		3
2	Ice Dead	RL		43	93	3
3	BLC 1 Transient Area Loads	None			30	
4	BLC 2 Transient Area Loads	None			30	
5	Structure Wind 0°	None			91	
6	Structure Wind 30°	None			148	
7	Structure Wind 45°	None			186	
8	Structure Wind 60°	None			182	
9	Structure Wind 90°	None			74	
10	Structure Wind 120°	None			182	
11	Structure Wind 135°	None			186	
12	Structure Wind 150°	None			148	
13	Structure Wind 180°	None			91	
14	Structure Wind 210°	None			148	
15	Structure Wind 225°	None			186	
16	Structure Wind 240°	None			182	
17	Structure Wind 270°	None			74	
18	Structure Wind 300°	None			182	
19	Structure Wind 315°	None			186	
20	Structure Wind 330°	None			148	
21	Structure Wind w/ Ice 0°	None			91	
22	Structure Wind w/ Ice 30°	None			152	
23	Structure Wind w/ Ice 45°	None			186	
24	Structure Wind w/ Ice 60°	None			182	
25	Structure Wind w/ Ice 90°	None			76	
26	Structure Wind w/ Ice 120°	None			182	
27	Structure Wind w/ Ice 135°	None			186	
28	Structure Wind w/ Ice 150°	None			152	
29	Structure Wind w/ Ice 180°	None			91	
30	Structure Wind w/ Ice 210°	None			152	
31	Structure Wind w/ Ice 225°	None			186	
32	Structure Wind w/ Ice 240°	None			182	
33	Structure Wind w/ Ice 270°	None			76	
34	Structure Wind w/ Ice 300°	None			182	
35	Structure Wind w/ Ice 315°	None			186	
36	Structure Wind w/ Ice 330°	None			152	
37	Antenna Wind 0°	None		43		
38	Antenna Wind 30°	None		86		
39	Antenna Wind 45°	None		86		
40	Antenna Wind 60°	None		86		
41	Antenna Wind 90°	None		43		
42	Antenna Wind 120°	None		86		
43	Antenna Wind 135°	None		86		
44	Antenna Wind 150°	None		86		
45	Antenna Wind 180°	None		43		
46	Antenna Wind 210°	None		86		
47	Antenna Wind 225°	None		86		
48	Antenna Wind 240°	None		86		
49	Antenna Wind 270°	None		43		
50	Antenna Wind 300°	None		86		
51	Antenna Wind 315°	None		86		
52	Antenna Wind 330°	None		86		
53	Antenna Wind w/ Ice 0°	None		43		
54	Antenna Wind w/ Ice 30°	None		86		
55	Antenna Wind w/ Ice 45°	None		86		
56	Antenna Wind w/ Ice 60°	None		86		
57	Antenna Wind w/ Ice 90°	None		43		
58	Antenna Wind w/ Ice 120°	None		86		
59	Antenna Wind w/ Ice 135°	None		86		
60	Antenna Wind w/ Ice 150°	None		86		
61	Antenna Wind w/ Ice 180°	None		43		
62	Antenna Wind w/ Ice 210°	None		86		
63	Antenna Wind w/ Ice 225°	None		86		
64	Antenna Wind w/ Ice 240°	None		86		
65	Antenna Wind w/ Ice 270°	None		43		

Basic Load Cases (Continued)

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
66	Antenna Wind w/ Ice 300°	None		86		
67	Antenna Wind w/ Ice 315°	None		86		
68	Antenna Wind w/ Ice 330°	None		86		
69	Seismic X	ELX		43	93	
70	Seismic Y	ELY		43	93	
71	Seismic Z	ELZ		43	93	
72	Maintenance Live 500 (1)	OL1		1		
73	Maintenance Live 500 (2)	OL2		1		
74	Maintenance Live 500 (3)	OL3		1		
75	Maintenance Live 500 (4)	OL4		1		

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DISPLAY (1.0D + 1.0W_0°)	Yes	Y	DL	1	37	1				
2	1.4D	Yes	Y	DL	1.4						
3	1.2D + 1.0W_0°	Yes	Y	DL	1.2	5	1	37	1		
4	1.2D + 1.0W_30°	Yes	Y	DL	1.2	6	1	38	1		
5	1.2D + 1.0W_45°	Yes	Y	DL	1.2	7	1	39	1		
6	1.2D + 1.0W_60°	Yes	Y	DL	1.2	8	1	40	1		
7	1.2D + 1.0W_90°	Yes	Y	DL	1.2	9	1	41	1		
8	1.2D + 1.0W_120°	Yes	Y	DL	1.2	10	1	42	1		
9	1.2D + 1.0W_135°	Yes	Y	DL	1.2	11	1	43	1		
10	1.2D + 1.0W_150°	Yes	Y	DL	1.2	12	1	44	1		
11	1.2D + 1.0W_180°	Yes	Y	DL	1.2	13	-1	45	-1		
12	1.2D + 1.0W_210°	Yes	Y	DL	1.2	14	-1	46	-1		
13	1.2D + 1.0W_225°	Yes	Y	DL	1.2	15	-1	47	-1		
14	1.2D + 1.0W_240°	Yes	Y	DL	1.2	16	-1	48	-1		
15	1.2D + 1.0W_270°	Yes	Y	DL	1.2	17	-1	49	-1		
16	1.2D + 1.0W_300°	Yes	Y	DL	1.2	18	-1	50	-1		
17	1.2D + 1.0W_315°	Yes	Y	DL	1.2	19	-1	51	-1		
18	1.2D + 1.0W_330°	Yes	Y	DL	1.2	20	-1	52	-1		
19	1.2D + 1.0Di + 1.0Wi_0°	Yes	Y	DL	1.2	21	1	53	1	RL	1
20	1.2D + 1.0Di + 1.0Wi_30°	Yes	Y	DL	1.2	22	1	54	1	RL	1
21	1.2D + 1.0Di + 1.0Wi_45°	Yes	Y	DL	1.2	23	1	55	1	RL	1
22	1.2D + 1.0Di + 1.0Wi_60°	Yes	Y	DL	1.2	24	1	56	1	RL	1
23	1.2D + 1.0Di + 1.0Wi_90°	Yes	Y	DL	1.2	25	1	57	1	RL	1
24	1.2D + 1.0Di + 1.0Wi_120°	Yes	Y	DL	1.2	26	1	58	1	RL	1
25	1.2D + 1.0Di + 1.0Wi_135°	Yes	Y	DL	1.2	27	1	59	1	RL	1
26	1.2D + 1.0Di + 1.0Wi_150°	Yes	Y	DL	1.2	28	1	60	1	RL	1
27	1.2D + 1.0Di + 1.0Wi_180°	Yes	Y	DL	1.2	29	-1	61	-1	RL	1
28	1.2D + 1.0Di + 1.0Wi_210°	Yes	Y	DL	1.2	30	-1	62	-1	RL	1
29	1.2D + 1.0Di + 1.0Wi_225°	Yes	Y	DL	1.2	31	-1	63	-1	RL	1
30	1.2D + 1.0Di + 1.0Wi_240°	Yes	Y	DL	1.2	32	-1	64	-1	RL	1
31	1.2D + 1.0Di + 1.0Wi_270°	Yes	Y	DL	1.2	33	-1	65	-1	RL	1
32	1.2D + 1.0Di + 1.0Wi_300°	Yes	Y	DL	1.2	34	-1	66	-1	RL	1
33	1.2D + 1.0Di + 1.0Wi_315°	Yes	Y	DL	1.2	35	-1	67	-1	RL	1
34	1.2D + 1.0Di + 1.0Wi_330°	Yes	Y	DL	1.2	36	-1	68	-1	RL	1
35	1.2D + 1.0Ev + 1.0Eh_0°	Yes	Y	DL	1.243	ELX	-1	ELY			
36	1.2D + 1.0Ev + 1.0Eh_30°	Yes	Y	DL	1.243	ELX	-0.866	ELY	0.5		
37	1.2D + 1.0Ev + 1.0Eh_45°	Yes	Y	DL	1.243	ELX	-0.707	ELY	0.707		
38	1.2D + 1.0Ev + 1.0Eh_60°	Yes	Y	DL	1.243	ELX	-0.5	ELY	0.866		
39	1.2D + 1.0Ev + 1.0Eh_90°	Yes	Y	DL	1.243	ELX		ELY	1		
40	1.2D + 1.0Ev + 1.0Eh_120°	Yes	Y	DL	1.243	ELX	0.5	ELY	0.866		
41	1.2D + 1.0Ev + 1.0Eh_135°	Yes	Y	DL	1.243	ELX	0.707	ELY	0.707		
42	1.2D + 1.0Ev + 1.0Eh_150°	Yes	Y	DL	1.243	ELX	0.866	ELY	0.5		
43	1.2D + 1.0Ev + 1.0Eh_180°	Yes	Y	DL	1.243	ELX	1	ELY			
44	1.2D + 1.0Ev + 1.0Eh_210°	Yes	Y	DL	1.243	ELX	0.866	ELY	-0.5		
45	1.2D + 1.0Ev + 1.0Eh_225°	Yes	Y	DL	1.243	ELX	0.707	ELY	-0.707		
46	1.2D + 1.0Ev + 1.0Eh_240°	Yes	Y	DL	1.243	ELX	0.5	ELY	-0.866		
47	1.2D + 1.0Ev + 1.0Eh_270°	Yes	Y	DL	1.243	ELX		ELY	-1		
48	1.2D + 1.0Ev + 1.0Eh_300°	Yes	Y	DL	1.243	ELX	-0.5	ELY	-0.866		
49	1.2D + 1.0Ev + 1.0Eh_315°	Yes	Y	DL	1.243	ELX	-0.707	ELY	-0.707		
50	1.2D + 1.0Ev + 1.0Eh_330°	Yes	Y	DL	1.243	ELX	-0.866	ELY	-0.5		
51	0.9D - 1.0Ev + 1.0Eh_0°	Yes	Y	DL	0.857	ELX	-1	ELY			

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
52	0.9D - 1.0Ev + 1.0Eh_30°	Yes	Y	DL	0.857	ELX	-0.866	ELY	0.5		
53	0.9D - 1.0Ev + 1.0Eh_45°	Yes	Y	DL	0.857	ELX	-0.707	ELY	0.707		
54	0.9D - 1.0Ev + 1.0Eh_60°	Yes	Y	DL	0.857	ELX	-0.5	ELY	0.866		
55	0.9D - 1.0Ev + 1.0Eh_90°	Yes	Y	DL	0.857	ELX		ELY	1		
56	0.9D - 1.0Ev + 1.0Eh_120°	Yes	Y	DL	0.857	ELX	0.5	ELY	0.866		
57	0.9D - 1.0Ev + 1.0Eh_135°	Yes	Y	DL	0.857	ELX	0.707	ELY	0.707		
58	0.9D - 1.0Ev + 1.0Eh_150°	Yes	Y	DL	0.857	ELX	0.866	ELY	0.5		
59	0.9D - 1.0Ev + 1.0Eh_180°	Yes	Y	DL	0.857	ELX	1	ELY			
60	0.9D - 1.0Ev + 1.0Eh_210°	Yes	Y	DL	0.857	ELX	0.866	ELY	-0.5		
61	0.9D - 1.0Ev + 1.0Eh_225°	Yes	Y	DL	0.857	ELX	0.707	ELY	-0.707		
62	0.9D - 1.0Ev + 1.0Eh_240°	Yes	Y	DL	0.857	ELX	0.5	ELY	-0.866		
63	0.9D - 1.0Ev + 1.0Eh_270°	Yes	Y	DL	0.857	ELX		ELY	-1		
64	0.9D - 1.0Ev + 1.0Eh_300°	Yes	Y	DL	0.857	ELX	-0.5	ELY	-0.866		
65	0.9D - 1.0Ev + 1.0Eh_315°	Yes	Y	DL	0.857	ELX	-0.707	ELY	-0.707		
66	0.9D - 1.0Ev + 1.0Eh_330°	Yes	Y	DL	0.857	ELX	-0.866	ELY	-0.5		
67	1.2D + 1.5Lm_1 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.066	37	0.066	OL1	1.5
68	1.2D + 1.5Lm_1 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.066	38	0.066	OL1	1.5
69	1.2D + 1.5Lm_1 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.066	39	0.066	OL1	1.5
70	1.2D + 1.5Lm_1 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.066	40	0.066	OL1	1.5
71	1.2D + 1.5Lm_1 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.066	41	0.066	OL1	1.5
72	1.2D + 1.5Lm_1 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.066	42	0.066	OL1	1.5
73	1.2D + 1.5Lm_1 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.066	43	0.066	OL1	1.5
74	1.2D + 1.5Lm_1 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.066	44	0.066	OL1	1.5
75	1.2D + 1.5Lm_1 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.066	45	-0.066	OL1	1.5
76	1.2D + 1.5Lm_1 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.066	46	-0.066	OL1	1.5
77	1.2D + 1.5Lm_1 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.066	47	-0.066	OL1	1.5
78	1.2D + 1.5Lm_1 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.066	48	-0.066	OL1	1.5
79	1.2D + 1.5Lm_1 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.066	49	-0.066	OL1	1.5
80	1.2D + 1.5Lm_1 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.066	50	-0.066	OL1	1.5
81	1.2D + 1.5Lm_1 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.066	51	-0.066	OL1	1.5
82	1.2D + 1.5Lm_1 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.066	52	-0.066	OL1	1.5
83	1.2D + 1.5Lm_2 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.066	37	0.066	OL2	1.5
84	1.2D + 1.5Lm_2 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.066	38	0.066	OL2	1.5
85	1.2D + 1.5Lm_2 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.066	39	0.066	OL2	1.5
86	1.2D + 1.5Lm_2 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.066	40	0.066	OL2	1.5
87	1.2D + 1.5Lm_2 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.066	41	0.066	OL2	1.5
88	1.2D + 1.5Lm_2 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.066	42	0.066	OL2	1.5
89	1.2D + 1.5Lm_2 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.066	43	0.066	OL2	1.5
90	1.2D + 1.5Lm_2 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.066	44	0.066	OL2	1.5
91	1.2D + 1.5Lm_2 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.066	45	-0.066	OL2	1.5
92	1.2D + 1.5Lm_2 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.066	46	-0.066	OL2	1.5
93	1.2D + 1.5Lm_2 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.066	47	-0.066	OL2	1.5
94	1.2D + 1.5Lm_2 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.066	48	-0.066	OL2	1.5
95	1.2D + 1.5Lm_2 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.066	49	-0.066	OL2	1.5
96	1.2D + 1.5Lm_2 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.066	50	-0.066	OL2	1.5
97	1.2D + 1.5Lm_2 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.066	51	-0.066	OL2	1.5
98	1.2D + 1.5Lm_2 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.066	52	-0.066	OL2	1.5
99	1.2D + 1.5Lm_3 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.066	37	0.066	OL3	1.5
100	1.2D + 1.5Lm_3 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.066	38	0.066	OL3	1.5
101	1.2D + 1.5Lm_3 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.066	39	0.066	OL3	1.5
102	1.2D + 1.5Lm_3 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.066	40	0.066	OL3	1.5
103	1.2D + 1.5Lm_3 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.066	41	0.066	OL3	1.5
104	1.2D + 1.5Lm_3 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.066	42	0.066	OL3	1.5
105	1.2D + 1.5Lm_3 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.066	43	0.066	OL3	1.5
106	1.2D + 1.5Lm_3 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.066	44	0.066	OL3	1.5
107	1.2D + 1.5Lm_3 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.066	45	-0.066	OL3	1.5
108	1.2D + 1.5Lm_3 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.066	46	-0.066	OL3	1.5
109	1.2D + 1.5Lm_3 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.066	47	-0.066	OL3	1.5
110	1.2D + 1.5Lm_3 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.066	48	-0.066	OL3	1.5
111	1.2D + 1.5Lm_3 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.066	49	-0.066	OL3	1.5
112	1.2D + 1.5Lm_3 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.066	50	-0.066	OL3	1.5
113	1.2D + 1.5Lm_3 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.066	51	-0.066	OL3	1.5
114	1.2D + 1.5Lm_3 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.066	52	-0.066	OL3	1.5
115	1.2D + 1.5Lm_4 + 1.0Wm_0°	Yes	Y	DL	1.2	5	0.066	37	0.066	OL4	1.5
116	1.2D + 1.5Lm_4 + 1.0Wm_30°	Yes	Y	DL	1.2	6	0.066	38	0.066	OL4	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
117	1.2D + 1.5Lm_4 + 1.0Wm_45°	Yes	Y	DL	1.2	7	0.066	39	0.066	OL4	1.5
118	1.2D + 1.5Lm_4 + 1.0Wm_60°	Yes	Y	DL	1.2	8	0.066	40	0.066	OL4	1.5
119	1.2D + 1.5Lm_4 + 1.0Wm_90°	Yes	Y	DL	1.2	9	0.066	41	0.066	OL4	1.5
120	1.2D + 1.5Lm_4 + 1.0Wm_120°	Yes	Y	DL	1.2	10	0.066	42	0.066	OL4	1.5
121	1.2D + 1.5Lm_4 + 1.0Wm_135°	Yes	Y	DL	1.2	11	0.066	43	0.066	OL4	1.5
122	1.2D + 1.5Lm_4 + 1.0Wm_150°	Yes	Y	DL	1.2	12	0.066	44	0.066	OL4	1.5
123	1.2D + 1.5Lm_4 + 1.0Wm_180°	Yes	Y	DL	1.2	13	-0.066	45	-0.066	OL4	1.5
124	1.2D + 1.5Lm_4 + 1.0Wm_210°	Yes	Y	DL	1.2	14	-0.066	46	-0.066	OL4	1.5
125	1.2D + 1.5Lm_4 + 1.0Wm_225°	Yes	Y	DL	1.2	15	-0.066	47	-0.066	OL4	1.5
126	1.2D + 1.5Lm_4 + 1.0Wm_240°	Yes	Y	DL	1.2	16	-0.066	48	-0.066	OL4	1.5
127	1.2D + 1.5Lm_4 + 1.0Wm_270°	Yes	Y	DL	1.2	17	-0.066	49	-0.066	OL4	1.5
128	1.2D + 1.5Lm_4 + 1.0Wm_300°	Yes	Y	DL	1.2	18	-0.066	50	-0.066	OL4	1.5
129	1.2D + 1.5Lm_4 + 1.0Wm_315°	Yes	Y	DL	1.2	19	-0.066	51	-0.066	OL4	1.5
130	1.2D + 1.5Lm_4 + 1.0Wm_330°	Yes	Y	DL	1.2	20	-0.066	52	-0.066	OL4	1.5

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3
8	SAE J429 Gr.2	29000	11154	0.3	0.65	0.49	57	1.5	74	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	Platform Horzontal Pipe	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Offset Tube	HSS4X4X4	Beam	None	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
3	Offset Side Plate	0.38 X 6 Plate	Beam	None	A36 Gr.36	Typical	2.28	0.027	6.84	0.105
4	Grating Angle	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	0.722	0.271	0.271	0.009
5	Mount Pipe 1	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
6	MOUNT_PIPE_2.5	PIPE_2.5	None	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
7	Offset End Plate	0.5 x 6 Plate	Beam	None	A36 Gr.36	Typical	3	0.063	9	0.237
8	Support Rail	PIPE_2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
9	SR Conn Plate	PL6x0.375	Beam	None	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
10	SR Conn Angle	L2.5x2.5x4	Beam	None	A36 Gr.36	Typical	1.19	0.692	0.692	0.026
11	SR Bracing Pipe	PIPE_2.5	None	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
12	Cable	5/16"	HBrace	None	A36 Gr.36	Typical	0.076	0.000465	0.000465	0.00093
13	Mod Threaded Rods	SR 5/8	Beam	None	SAE J429 Gr.2	Typical	0.307	0.007	0.007	0.015
14	Mod Mount Pipe	PIPE_2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Function
1	A2	Offset Tube	78.3				Lateral
2	M143	Offset End Plate	3.122				Lateral
3	M144	Offset End Plate	4.688				Lateral
4	M145	Offset End Plate	3.122				Lateral
5	M146	Offset Side Plate	0.875				Lateral
6	M147	Offset Side Plate	0.875				Lateral
7	M148	Offset Tube	30.688				Lateral
8	M151	Offset Tube	30.687				Lateral
9	M152	Offset End Plate	4.688				Lateral
10	M158	Offset Side Plate	3				Lateral
11	M159	Offset Side Plate	3				Lateral
12	M163	Grating Angle	50.542				Lateral
13	M165	Grating Angle	50.542				Lateral
14	M336	Platform Horzontal Pipe	174	45	61		Lateral
15	M110	Mount Pipe 1	72				Lateral
16	M204	SR Bracing Pipe	55.186				Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Function
17	M205	SR Bracing Pipe	55.186				Lateral
18	M217	Cable	74.93				Lateral
19	HR1	Support Rail	174	79	61		Lateral
20	HR12	SR Conn Plate	6				Lateral
21	HR20	SR Conn Plate	6				Lateral
22	HR30	SR Conn Angle	14.975				Lateral
23	M51	SR Bracing Pipe	55.186				Lateral
24	A1	Offset Tube	78.3				Lateral
25	M53	Offset Side Plate	0.875				Lateral
26	M54	Offset End Plate	3.122				Lateral
27	M55	Offset End Plate	4.688				Lateral
28	M56	Offset End Plate	4.688				Lateral
29	M57	Offset End Plate	3.122				Lateral
30	M58	Offset Side Plate	0.875				Lateral
31	M59	Offset Tube	30.688				Lateral
32	M61	Offset Tube	30.687				Lateral
33	M67	Offset Side Plate	3				Lateral
34	M68	Offset Side Plate	3				Lateral
35	M69	Grating Angle	50.542				Lateral
36	M73	Grating Angle	50.542				Lateral
37	M78	SR Conn Plate	6				Lateral
38	M80	SR Conn Plate	6				Lateral
39	M85	SR Bracing Pipe	55.186				Lateral
40	M86	Cable	74.93				Lateral
41	M92	SR Conn Angle	14.975				Lateral
42	M98	SR Bracing Pipe	55.186				Lateral
43	A3	Offset Tube	78.3				Lateral
44	M100	Offset Side Plate	0.875				Lateral
45	M101	Offset End Plate	3.122				Lateral
46	M102	Offset End Plate	4.688				Lateral
47	M103	Offset End Plate	4.688				Lateral
48	M104	Offset End Plate	3.122				Lateral
49	M105	Offset Side Plate	0.875				Lateral
50	M106	Offset Tube	30.688				Lateral
51	M108	Offset Tube	30.687				Lateral
52	M117	Offset Side Plate	3				Lateral
53	M118	Offset Side Plate	3				Lateral
54	M119	Grating Angle	50.542				Lateral
55	M123	Grating Angle	50.542				Lateral
56	M128	SR Conn Plate	6				Lateral
57	M130	SR Conn Plate	6				Lateral
58	M135	SR Bracing Pipe	55.186				Lateral
59	M136	Cable	74.93				Lateral
60	M149	SR Conn Angle	14.975				Lateral
61	A_MP1_S	MOUNT_PIPE_2.5	120				Lateral
62	A_MP2_S	MOUNT_PIPE_2.5	120				Lateral
63	A_MP3_S	MOUNT_PIPE_2.5	120				Lateral
64	A_MP4_S	MOUNT_PIPE_2.5	120				Lateral
65	M169	Platform Horzontal Pipe	174	45	61		Lateral
66	M170	Support Rail	174	79	61		Lateral
67	M171	Platform Horzontal Pipe	174	45	61		Lateral
68	M172	Support Rail	174	79	61		Lateral
69	M181	Mount Pipe 1	72				Lateral
70	M183	Mount Pipe 1	72				Lateral
71	M191	Mod Threaded Rods	9			Lbyy	Lateral
72	M192	Mod Threaded Rods	9			Lbyy	Lateral
73	M193	Mod Mount Pipe	120				Lateral
74	M206	Mod Threaded Rods	9			Lbyy	Lateral
75	M207	Mod Threaded Rods	9			Lbyy	Lateral
76	M209	MOUNT_PIPE_2.5	120				Lateral
77	M213	MOUNT_PIPE_2.5	120				Lateral
78	M225	MOUNT_PIPE_2.5	120				Lateral
79	M232	MOUNT_PIPE_2.5	120				Lateral
80	M238	Mod Threaded Rods	9			Lbyy	Lateral
81	M242	Mod Threaded Rods	9			Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Function
82	M243	Mod Threaded Rods	9			Lbyy	Lateral
83	M245	Mod Threaded Rods	9			Lbyy	Lateral
84	M246	MOUNT_PIPE_2.5	120				Lateral
85	M250	MOUNT_PIPE_2.5	120				Lateral
86	M254	MOUNT_PIPE_2.5	120				Lateral
87	M264	MOUNT_PIPE_2.5	120				Lateral
88	M271	MOUNT_PIPE_2.5	120				Lateral
89	M277	Mod Threaded Rods	9			Lbyy	Lateral
90	M281	Mod Threaded Rods	9			Lbyy	Lateral
91	M282	Mod Threaded Rods	9			Lbyy	Lateral
92	M284	Mod Threaded Rods	9			Lbyy	Lateral
93	M285	MOUNT_PIPE_2.5	120				Lateral

Member Advanced Data

	Label	I Release	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
1	A2				Yes	Default		None
2	M143				Yes			None
3	M144				Yes			None
4	M145				Yes			None
5	M146				Yes			None
6	M147				Yes			None
7	M148				Yes			None
8	M150				Yes	** NA **		None
9	M151				Yes			None
10	M152				Yes			None
11	M153				Yes	** NA **		None
12	M154				Yes	** NA **		None
13	M155				Yes	** NA **		None
14	M156		OOOXOO		Yes	** NA **		None
15	M157		OOOXOO		Yes	** NA **		None
16	M158				Yes			None
17	M159				Yes			None
18	M160		OOOXOO		Yes	** NA **		None
19	M161		OOOXOO		Yes	** NA **		None
20	M162				Yes	** NA **		None
21	M163				Yes			None
22	M164				Yes	** NA **		None
23	M165				Yes			None
24	M166				Yes	** NA **		None
25	M167				Yes	** NA **		None
26	M336				Yes	Default		None
27	M109				Yes	** NA **		None
28	M110				Yes	Default		None
29	M111				Yes	** NA **		None
30	M199				Yes	** NA **		None
31	M200				Yes	** NA **		None
32	M202				Yes	** NA **		None
33	M203				Yes	** NA **		None
34	M204	BenPIN	BenPIN		Yes	** NA **		None
35	M205	BenPIN	BenPIN		Yes	** NA **		None
36	M215				Yes	** NA **		None
37	M217	BenPIN	BenPIN	Tension Only	Yes	** NA **	Exclude	None
38	HR1				Yes	Default		None
39	HR12				Yes			None
40	HR16				Yes	** NA **		None
41	HR17				Yes	** NA **		None
42	HR18				Yes	** NA **		None
43	HR20				Yes			None
44	HR22				Yes	** NA **		None
45	HR23				Yes	** NA **		None
46	HR24				Yes	** NA **		None
47	HR30				Yes			None
48	M49				Yes	** NA **		None
49	M51	BenPIN	BenPIN		Yes	** NA **		None

Member Advanced Data (Continued)

	Label	I Release	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
50	A1				Yes	Default		None
51	M53				Yes			None
52	M54				Yes			None
53	M55				Yes			None
54	M56				Yes			None
55	M57				Yes			None
56	M58				Yes			None
57	M59				Yes			None
58	M60				Yes	** NA **		None
59	M61				Yes			None
60	M62				Yes	** NA **		None
61	M63				Yes	** NA **		None
62	M64				Yes	** NA **		None
63	M65		OOOXOO		Yes	** NA **		None
64	M66		OOOXOO		Yes	** NA **		None
65	M67				Yes			None
66	M68				Yes			None
67	M69				Yes			None
68	M70		OOOXOO		Yes	** NA **		None
69	M71		OOOXOO		Yes	** NA **		None
70	M72				Yes	** NA **		None
71	M73				Yes			None
72	M74				Yes	** NA **		None
73	M75				Yes	** NA **		None
74	M76				Yes	** NA **		None
75	M77				Yes	** NA **		None
76	M78				Yes			None
77	M79				Yes	** NA **		None
78	M80				Yes			None
79	M82				Yes	** NA **		None
80	M83				Yes	** NA **		None
81	M84				Yes	** NA **		None
82	M85	BenPIN	BenPIN		Yes	** NA **		None
83	M86	BenPIN	BenPIN	Tension Only	Yes	** NA **	Exclude	None
84	M87				Yes	** NA **		None
85	M88				Yes	** NA **		None
86	M89				Yes	** NA **		None
87	M90				Yes	** NA **		None
88	M91				Yes	** NA **		None
89	M92				Yes			None
90	M96				Yes	** NA **		None
91	M98	BenPIN	BenPIN		Yes	** NA **		None
92	A3				Yes	Default		None
93	M100				Yes			None
94	M101				Yes			None
95	M102				Yes			None
96	M103				Yes			None
97	M104				Yes			None
98	M105				Yes			None
99	M106				Yes			None
100	M107				Yes	** NA **		None
101	M108				Yes			None
102	M112				Yes	** NA **		None
103	M113				Yes	** NA **		None
104	M114				Yes	** NA **		None
105	M115		OOOXOO		Yes	** NA **		None
106	M116		OOOXOO		Yes	** NA **		None
107	M117				Yes			None
108	M118				Yes			None
109	M119				Yes			None
110	M120		OOOXOO		Yes	** NA **		None
111	M121		OOOXOO		Yes	** NA **		None
112	M122				Yes	** NA **		None
113	M123				Yes			None
114	M124				Yes	** NA **		None

Member Advanced Data (Continued)

	Label	I Release	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
115	M125				Yes	** NA **		None
116	M126				Yes	** NA **		None
117	M127				Yes	** NA **		None
118	M128				Yes			None
119	M129				Yes	** NA **		None
120	M130				Yes			None
121	M132				Yes	** NA **		None
122	M133				Yes	** NA **		None
123	M134				Yes	** NA **		None
124	M135	BenPIN	BenPIN		Yes	** NA **		None
125	M136	BenPIN	BenPIN	Tension Only	Yes	** NA **	Exclude	None
126	M137				Yes	** NA **		None
127	M138				Yes	** NA **		None
128	M139				Yes	** NA **		None
129	M140				Yes	** NA **		None
130	M141				Yes	** NA **		None
131	M149				Yes			None
132	RI2				Yes	** NA **		None
133	RI1				Yes	** NA **		None
134	A_MP1_S				Yes	** NA **		None
135	RI3				Yes	** NA **		None
136	RI4				Yes	** NA **		None
137	RI5				Yes	** NA **		None
138	RI12				Yes	** NA **		None
139	RI11				Yes	** NA **		None
140	A_MP2_S				Yes	** NA **		None
141	RI14				Yes	** NA **		None
142	RI22				Yes	** NA **		None
143	RI21				Yes	** NA **		None
144	A_MP3_S				Yes	** NA **		None
145	RI23				Yes	** NA **		None
146	RI32				Yes	** NA **		None
147	RI31				Yes	** NA **		None
148	A_MP4_S				Yes	** NA **		None
149	RI35				Yes	** NA **		None
150	M169				Yes	Default		None
151	M170				Yes	Default		None
152	M171				Yes	Default		None
153	M172				Yes	Default		None
154	M173				Yes	** NA **		None
155	M174				Yes	** NA **		None
156	M175				Yes	** NA **		None
157	M176				Yes	** NA **		None
158	M168				Yes	** NA **		None
159	M177				Yes	** NA **		None
160	M178				Yes	** NA **		None
161	M179				Yes	** NA **		None
162	M180				Yes	** NA **		None
163	M181				Yes	Default		None
164	M182				Yes	** NA **		None
165	M183				Yes	Default		None
166	M184				Yes	** NA **		None
167	M185				Yes	** NA **		None
168	M186				Yes	** NA **		None
169	M187				Yes	** NA **		None
170	M188				Yes	** NA **		None
171	M189				Yes	** NA **		None
172	M190				Yes	** NA **		None
173	M191	OOOXOO			Yes	Default		None
174	M192	OOOXOO			Yes	Default		None
175	M193				Yes	Default		None
176	M194				Yes	** NA **		None
177	M195				Yes	** NA **		None
178	M196				Yes	** NA **		None
179	M197				Yes	** NA **		None

Member Advanced Data (Continued)

	Label	I Release	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
180	M198				Yes	** NA **		None
181	M201				Yes	** NA **		None
182	M206	OOOXOO			Yes	Default		None
183	M207	OOOXOO			Yes	Default		None
184	M208				Yes	** NA **		None
185	M209				Yes	** NA **		None
186	M210				Yes	** NA **		None
187	M211				Yes	** NA **		None
188	M212				Yes	** NA **		None
189	M213				Yes	** NA **		None
190	M214				Yes	** NA **		None
191	M216				Yes	** NA **		None
192	M218				Yes	** NA **		None
193	M219				Yes	** NA **		None
194	M220				Yes	** NA **		None
195	M221				Yes	** NA **		None
196	M222				Yes	** NA **		None
197	M223				Yes	** NA **		None
198	M224				Yes	** NA **		None
199	M225				Yes	** NA **		None
200	M226				Yes	** NA **		None
201	M227				Yes	** NA **		None
202	M228				Yes	** NA **		None
203	M229				Yes	** NA **		None
204	M230				Yes	** NA **		None
205	M231				Yes	** NA **		None
206	M232				Yes	** NA **		None
207	M233				Yes	** NA **		None
208	M234				Yes	** NA **		None
209	M235				Yes	** NA **		None
210	M236				Yes	** NA **		None
211	M237				Yes	** NA **		None
212	M238	OOOXOO			Yes	Default		None
213	M239				Yes	** NA **		None
214	M240				Yes	** NA **		None
215	M241				Yes	** NA **		None
216	M242	OOOXOO			Yes	Default		None
217	M243	OOOXOO			Yes	Default		None
218	M244				Yes	** NA **		None
219	M245	OOOXOO			Yes	Default		None
220	M246				Yes	** NA **		None
221	M247				Yes	** NA **		None
222	M248				Yes	** NA **		None
223	M249				Yes	** NA **		None
224	M250				Yes	** NA **		None
225	M251				Yes	** NA **		None
226	M252				Yes	** NA **		None
227	M253				Yes	** NA **		None
228	M254				Yes	** NA **		None
229	M255				Yes	** NA **		None
230	M256				Yes	** NA **		None
231	M257				Yes	** NA **		None
232	M258				Yes	** NA **		None
233	M259				Yes	** NA **		None
234	M260				Yes	** NA **		None
235	M261				Yes	** NA **		None
236	M262				Yes	** NA **		None
237	M263				Yes	** NA **		None
238	M264				Yes	** NA **		None
239	M265				Yes	** NA **		None
240	M266				Yes	** NA **		None
241	M267				Yes	** NA **		None
242	M268				Yes	** NA **		None
243	M269				Yes	** NA **		None
244	M270				Yes	** NA **		None

Member Advanced Data (Continued)

	Label	I Release	J Release	T/C Only	Physical	Deflection Ratio Options	Activation	Seismic DR
245	M271				Yes	** NA **		None
246	M272				Yes	** NA **		None
247	M273				Yes	** NA **		None
248	M274				Yes	** NA **		None
249	M275				Yes	** NA **		None
250	M276				Yes	** NA **		None
251	M277	OOOXOO			Yes	Default		None
252	M278				Yes	** NA **		None
253	M279				Yes	** NA **		None
254	M280				Yes	** NA **		None
255	M281	OOOXOO			Yes	Default		None
256	M282	OOOXOO			Yes	Default		None
257	M283				Yes	** NA **		None
258	M284	OOOXOO			Yes	Default		None
259	M285				Yes	** NA **		None
260	M286				Yes	** NA **		None
261	M287				Yes	** NA **		None
262	M288				Yes	** NA **		None

Node Boundary Conditions

	Y [k/in]	X Rot [k-ft/rad]	X [k/in]	Z Rot [k-ft/rad]	Z [k/in]	Node Label	Y Rot [k-ft/rad]
1	Reaction	Reaction	Reaction	Reaction	Reaction	N241	Reaction
2	Reaction	Reaction	Reaction	Reaction	Reaction	N355	Reaction
3	Reaction	Reaction	Reaction	Reaction	Reaction	N78	Reaction
4	Reaction	Reaction	Reaction	Reaction	Reaction	N123	Reaction
5	Reaction	Reaction	Reaction	Reaction	Reaction	N149	Reaction
6	Reaction	Reaction	Reaction	Reaction	Reaction	N199	Reaction

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N241	max	-362.331	3	850.732	15	1877.038	19	1390.313	7	4223.851	19	1690.243	7
2		min	-1725.866	27	-847.449	7	472.577	11	-919.345	15	282.169	11	-1703.847	15
3	N355	max	3623.101	3	528.444	15	1713.964	30	177.597	15	669.803	19	112.364	7
4		min	-1871.284	11	-532.211	7	619.417	55	-186.565	7	236.39	59	-105.227	15
5	N78	max	1145.653	18	-183.753	17	1863.868	30	-231.875	7	486.862	3	1813.927	18
6		min	-346.231	10	-1494.594	25	498.999	5	-3871.327	31	-2065.925	11	-1822.942	10
7	N123	max	894.009	4	3027.921	14	1714.393	24	-177.335	18	-13.074	10	119.602	18
8		min	-1747.141	12	-1537.042	6	618.92	65	-587.496	26	-375.856	34	-111.513	10
9	N149	max	1263.237	4	1545.028	33	1929.026	24	3541.799	23	275.959	3	1871.379	12
10		min	-418.498	12	260.83	9	536.043	16	113.889	15	-2692.385	11	-1880.472	4
11	N199	max	1109.811	18	1480.47	16	1757.307	19	611.544	28	1.854	12	117.577	12
12		min	-2008.09	10	-3049.53	8	637.432	60	203.34	1	-367.692	20	-109.854	4
13	Totals:	max	6691.294	3	6437.506	15	10444.455	19						
14		min	-6691.341	11	-6437.344	7	3921.26	59						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	M281	SR 5/8	0.725	9	18	0.043	9		18	11936.082	15738.635	163.941	163.941	2.222	H1-1b
2	M277	SR 5/8	0.71	0	10	0.042	9		10	11936.082	15738.635	163.941	163.941	2.226	H1-1b
3	M191	SR 5/8	0.686	9	12	0.04	9		12	11936.082	15738.635	163.941	163.941	2.223	H1-1b
4	M242	SR 5/8	0.686	9	7	0.04	9		7	11936.082	15738.635	163.941	163.941	2.223	H1-1b
5	M238	SR 5/8	0.674	0	15	0.04	9		15	11936.082	15738.635	163.941	163.941	2.228	H1-1b
6	M192	SR 5/8	0.674	0	4	0.04	9		4	11936.082	15738.635	163.941	163.941	2.228	H1-1b
7	HR20	PL6x0.375	0.524	2.305	10	0.163	1.295	y	8	62014.225	72900	569.533	9112.5	1.275	H1-1b
8	M80	PL6x0.375	0.512	2.305	4	0.171	1.295	y	3	62014.225	72900	569.533	9112.5	1.274	H1-1b
9	M130	PL6x0.375	0.501	2.305	15	0.174	1.295	y	13	62014.225	72900	569.533	9112.5	1.275	H1-1b
10	HR30	L2.5x2.5x4	0.481	14.975	10	0.03	0	y	8	36645.617	38556	1113.554	2537.388	1.255	H2-1
11	M92	L2.5x2.5x4	0.47	14.975	4	0.031	14.975	y	18	36645.617	38556	1113.554	2537.388	1.246	H2-1
12	M149	L2.5x2.5x4	0.461	14.975	15	0.031	0	y	13	36645.617	38556	1113.554	2537.388	1.25	H2-1
13	M183	PIPE_2.0	0.459	59.874	10	0.162	59.874		17	20866.733	32130	1871.625	1871.625	1.804	H1-1b
14	M110	PIPE_2.0	0.381	59.874	5	0.1	59.874		12	20866.733	32130	1871.625	1871.625	1.739	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
15	M181	PIPE_2.0	0.367	59.874	15	0.102	59.874		7	20866.733	32130	1871.625	1871.625	1.688	H1-1b
16	A3	HSS4X4X4	0.358	0	26	0.168	0	y	12	94976.036	109188	12663	12663	2.897	H1-1b
17	A2	HSS4X4X4	0.35	0	20	0.163	0	y	7	94976.036	109188	12663	12663	2.873	H1-1b
18	M128	PL6x0.375	0.348	3.695	17	0.179	4.705	y	11	62014.225	72900	569.533	9112.5	1.711	H1-1b
19	A1	HSS4X4X4	0.347	0	29	0.166	0	y	17	94976.036	109188	12663	12663	2.871	H1-1b
20	M243	SR 5/8	0.346	0	20	0.02	9		20	11936.082	15738.635	163.941	163.941	2.243	H1-1b
21	M207	SR 5/8	0.346	0	26	0.02	9		26	11936.082	15738.635	163.941	163.941	2.243	H1-1b
22	M282	SR 5/8	0.344	0	31	0.02	9		31	11936.082	15738.635	163.941	163.941	2.243	H1-1b
23	HR12	PL6x0.375	0.34	3.695	12	0.188	4.705	y	5	62014.225	72900	569.533	9112.5	1.734	H1-1b
24	M78	PL6x0.375	0.332	3.695	7	0.178	4.705	y	16	62014.225	72900	569.533	9112.5	1.822	H1-1b
25	M284	SR 5/8	0.327	0	28	0.019	9		27	11936.082	15738.635	163.941	163.941	2.248	H1-1b
26	M206	SR 5/8	0.325	0	26	0.019	9		21	11936.082	15738.635	163.941	163.941	2.241	H1-1b
27	M245	SR 5/8	0.324	0	21	0.019	9		32	11936.082	15738.635	163.941	163.941	2.241	H1-1b
28	M193	PIPE_2.5	0.312	41.684	11	0.078	96		4	22373.407	50715	3596.25	3596.25	2.104	H1-1b
29	M246	PIPE_2.5	0.312	41.684	6	0.077	96		15	22373.407	50715	3596.25	3596.25	2.111	H1-1b
30	M285	PIPE_2.5	0.311	41.684	17	0.074	96		10	22373.407	50715	3596.25	3596.25	1.814	H1-1b
31	M172	PIPE_2.5	0.274	47.621	10	0.142	46.705		9	35571.585	50715	3596.25	3596.25	2.7	H1-1b
32	HR1	PIPE_2.5	0.267	47.621	4	0.143	46.705		3	35571.585	50715	3596.25	3596.25	2.683	H1-1b
33	M170	PIPE_2.5	0.264	47.621	15	0.139	46.705		14	35571.585	50715	3596.25	3596.25	2.716	H1-1b
34	M108	HSS4X4X4	0.22	0	26	0.067	27.134	y	25	106874.166	109188	12663	12663	1.701	H1-1b
35	M151	HSS4X4X4	0.22	0	20	0.067	27.134	y	20	106874.166	109188	12663	12663	1.7	H1-1b
36	M61	HSS4X4X4	0.217	0	31	0.066	27.134	y	31	106874.166	109188	12663	12663	1.701	H1-1b
37	M106	HSS4X4X4	0.214	30.688	23	0.065	3.553	y	24	106874.106	109188	12663	12663	1.687	H1-1b
38	M148	HSS4X4X4	0.212	30.688	34	0.065	3.553	y	34	106874.106	109188	12663	12663	1.687	H1-1b
39	M59	HSS4X4X4	0.211	30.688	28	0.065	3.553	y	29	106874.106	109188	12663	12663	1.686	H1-1b
40	A_MP3_S	PIPE_2.5	0.205	104.842	13	0.056	104.842		13	22373.407	50715	3596.25	3596.25	2.449	H1-1b
41	M254	PIPE_2.5	0.2	104.842	3	0.055	104.842		3	22373.407	50715	3596.25	3596.25	2.426	H1-1b
42	M119	L2x2x3	0.192	50.542	10	0.015	50.542	z	25	9618.956	23392.8	557.717	1137.588	1.5	H2-1
43	A_MP4_S	PIPE_2.5	0.191	32.842	11	0.083	104.842		3	22373.407	50715	3596.25	3596.25	2.651	H1-1b
44	M225	PIPE_2.5	0.191	32.842	6	0.083	86.526		16	22373.407	50715	3596.25	3596.25	2.649	H1-1b
45	M165	L2x2x3	0.19	50.542	4	0.014	50.542	z	19	9618.956	23392.8	557.717	1137.588	1.5	H2-1
46	M264	PIPE_2.5	0.19	32.842	17	0.086	104.842		8	22373.407	50715	3596.25	3596.25	1.738	H1-1b
47	M213	PIPE_2.5	0.189	104.842	8	0.051	104.842		8	22373.407	50715	3596.25	3596.25	2.463	H1-1b
48	M69	L2x2x3	0.185	50.542	15	0.014	50.542	z	31	9618.956	23392.8	557.717	1137.588	1.5	H2-1
49	M73	L2x2x3	0.178	50.542	12	0.013	50.542	y	29	9618.888	23392.8	557.717	1137.587	1.5	H2-1
50	M163	L2x2x3	0.178	50.542	18	0.013	50.542	y	19	9618.888	23392.8	557.717	1137.587	1.5	H2-1
51	M123	L2x2x3	0.175	50.542	7	0.013	50.542	y	24	9618.888	23392.8	557.717	1137.587	1.5	H2-1
52	A_MP2_S	PIPE_2.5	0.162	104.842	17	0.164	33.474		16	22373.407	50715	3596.25	3596.25	2.208	H1-1b
53	M232	PIPE_2.5	0.159	42.316	12	0.167	33.474		11	22373.407	50715	3596.25	3596.25	2.214	H1-1b
54	M271	PIPE_2.5	0.154	104.842	3	0.159	33.474		6	22373.407	50715	3596.25	3596.25	2.26	H1-1b
55	M152	0.5 x 6 Plate	0.145	0	3	0.056	0	y	15	91950.093	97200	1012.5	12150	1.294	H1-1b
56	M103	0.5 x 6 Plate	0.141	0	8	0.109	0	y	68	91950.093	97200	1012.5	12150	1.295	H1-1b
57	M336	PIPE_3.0	0.139	96.158	108	0.072	54.032		21	56781.488	65205	5748.75	5748.75	2.081	H1-1b
58	M56	0.5 x 6 Plate	0.139	0	14	0.058	0	y	10	91950.093	97200	1012.5	12150	1.293	H1-1b
59	M144	0.5 x 6 Plate	0.138	4.688	3	0.072	4.688	y	16	91950.093	97200	1012.5	12150	1.27	H1-1b
60	M102	0.5 x 6 Plate	0.136	4.688	8	0.073	4.688	y	5	91950.093	97200	1012.5	12150	1.271	H1-1b
61	M169	PIPE_3.0	0.135	119.969	25	0.072	54.032		20	56781.488	65205	5748.75	5748.75	2.027	H1-1b
62	M171	PIPE_3.0	0.133	119.969	20	0.071	54.032		27	56781.488	65205	5748.75	5748.75	2.044	H1-1b
63	M55	0.5 x 6 Plate	0.132	4.688	14	0.095	4.688	y	130	91950.093	97200	1012.5	12150	1.269	H1-1b
64	M209	PIPE_2.5	0.115	104.842	4	0.086	104.842		11	22373.407	50715	3596.25	3596.25	2.415	H1-1b
65	A_MP1_S	PIPE_2.5	0.115	104.842	10	0.084	104.842		16	22373.407	50715	3596.25	3596.25	2.415	H1-1b
66	M250	PIPE_2.5	0.109	104.842	15	0.084	104.842		6	22373.407	50715	3596.25	3596.25	2.416	H1-1b
67	M54	0.5 x 6 Plate	0.078	0	13	0.183	0	y	16	94834.571	97200	1012.5	12150	3	H1-1b
68	M143	0.5 x 6 Plate	0.075	0	3	0.18	0	y	6	94834.571	97200	1012.5	12150	3	H1-1b
69	M101	0.5 x 6 Plate	0.072	0	7	0.184	0	y	11	94834.571	97200	1012.5	12150	3	H1-1b
70	M104	0.5 x 6 Plate	0.067	0	9	0.252	0	y	6	94834.571	97200	1012.5	12150	3	H1-1b
71	M57	0.5 x 6 Plate	0.064	1.495	3	0.253	0	y	11	94834.571	97200	1012.5	12150	3	H1-1b
72	M158	0.38 X 6 Plate	0.064	3	5	0.135	3	y	15	71020.258	73872	584.82	9234	3	H1-1b
73	M117	0.38 X 6 Plate	0.064	3	10	0.159	3	y	84	71020.258	73872	584.82	9234	3	H1-1b
74	M146	0.38 X 6 Plate	0.063	0	5	0.225	0.875	y	32	73624.978	73872	584.82	9234	1.177	H1-1b
75	M145	0.5 x 6 Plate	0.063	1.495	8	0.252	0	y	17	94834.571	97200	1012.5	12150	3	H1-1b
76	M100	0.38 X 6 Plate	0.062	0	10	0.249	0.875	y	85	73624.978	73872	584.82	9234	1.185	H1-1b
77	M118	0.38 X 6 Plate	0.062	1.5	12	0.132	3	y	6	71019.885	73872	584.82	9234	3	H1-1b
78	M68	0.38 X 6 Plate	0.062	1.5	18	0.132	3	y	11	71019.885	73872	584.82	9234	3	H1-1b
79	M159	0.38 X 6 Plate	0.061	1.5	18	0.13	3	y	16	71019.885	73872	584.82	9234	3	H1-1b

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
80	M67	0.38 X 6 Plate	0.061	3	15	0.141	3	y	10	71020.258	73872	584.82	9234	3	H1-1b
81	M53	0.38 X 6 Plate	0.059	0	15	0.224	0.875	y	27	73624.978	73872	584.82	9234	1.185	H1-1b
82	M147	0.38 X 6 Plate	0.058	0	18	0.136	0.875	y	23	73624.978	73872	584.82	9234	1.169	H1-1b
83	M58	0.38 X 6 Plate	0.058	0	12	0.198	0.875	y	114	73624.978	73872	584.82	9234	1.17	H1-1b
84	M105	0.38 X 6 Plate	0.056	0	7	0.14	0.875	y	28	73624.978	73872	584.82	9234	1.169	H1-1b
85	M98	PIPE_2.5	0.032	55.186	18	0.033	55.186		16	42655.041	50715	3596.25	3596.25	1.136	H1-1b*
86	M205	PIPE_2.5	0.032	55.186	12	0.035	55.186		11	42655.041	50715	3596.25	3596.25	1.136	H1-1b*
87	M51	PIPE_2.5	0.031	55.186	7	0.037	55.186		5	42655.041	50715	3596.25	3596.25	1.136	H1-1b*
88	M204	PIPE_2.5	0.027	55.186	10	0.042	55.186		12	42655.041	50715	3596.25	3596.25	1.136	H1-1b*
89	M85	PIPE_2.5	0.026	55.186	4	0.041	55.186		7	42655.041	50715	3596.25	3596.25	1.136	H1-1b*
90	M135	PIPE_2.5	0.026	55.186	15	0.042	55.186		18	42655.041	50715	3596.25	3596.25	1.136	H1-1b*

TOWER-MOUNT CONNECTION ANALYSIS

v.1.0.0

319 Chapanoke Road, Suite 118
Raleigh, NC 27603
Office: (405) 348-5460
Fax: (405) 341-6334

SITE INFORMATION	
Site ID	243036
Site Name	West Haven & RT 162 CT
Project ID	41124-13682841_C8_04-02-MA

ANALYSIS PARAMETERS	
TIA Revision	H

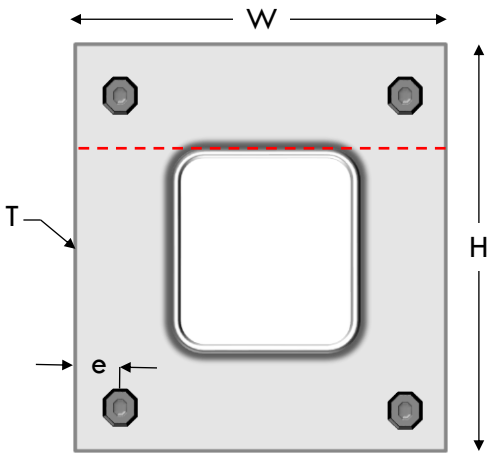
APPLIED FORCES FROM R3D		
Member Label		A3
Member End Label		I
Force-X	Fx, lbs	278.2
Force-Y	Fy, lbs	1936.8
Force-Z	Fz, lbs	945.0
Moment X-X	Mx, lbs-ft	-1447.7
Moment Y-Y	My, lbs-ft	-1879.0
Moment Z-Z	Mz, lbs-ft	4343.1

STANDOFF MEMBER PROPERTIES	
Standoff Member Type	Square/Rect. HSS
Standoff Member Shape	HSS4X4X1/4
Standoff Member Grade	A36
Member to Plate Weld Size, in	3/16

BOLT & PLATE PROPERTIES	
Bolt Quantity	4
Bolt Edge Distance (e), in	1.00
Nominal Bolt Diameter (ØDb), in	0.625
Bolt Grade	A325
Plate Height (H), in	8.00
Plate Width (W), in	8.00
Plate Thickness (T), in	0.75
Plate Grade	A36

BOLT ANALYSIS		
Shear Demand (Vu), k	0.79	
Shear Capacity (ΦRnv), k	13.81	
Tension Demand (Tu), k	6.62	
Tension Capacity (ΦRnt), k	20.34	
Shear Utilization	5.8%	
Tension Utilization	32.6%	PASS
Interaction Utilization	10.9%	

PLATE ANALYSIS		
Moment Demand (Mu), k-in	9.37	
Flexural Capacity (ΦMn), k-in	25.77	
Plate Utilization	36.3%	PASS



MATERIAL PROPERTIES	
Standoff Member - Yield Strength (Fy), ksi	36
Standoff Member - Ultimate Strength (Fu), ksi	58
Bolt - Yield Strength (Fy), ksi	92
Bolt - Tensile Strength (Fu), ksi	120
Plate - Yield Strength (Fy), ksi	36
Plate - Ultimate Strength (Fu), ksi	58