



SUBMITTAL PACKAGE

Project: Grand Junction Rec Center Climbing Walls

Project #: 003-0353

Location: Grand Junction, CO

Client: Eldorado Climbing

Submittal Date: 5/19/2025

Reviewed by:

Prepared by:



Daniel J. Peak, P.E.

A handwritten signature in blue ink, appearing to read 'Dylan Corbin', written over a horizontal line.

Dylan Corbin, E.I.T.



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Project Information

Project Summary

The project covered by this submittal consists of permanent indoor climbing walls to be installed at Grand Junction Rec Center in Grand Junction, CO. The wall framing is comprised of the standardized Panelized 2.0 system developed by Eldorado Climbing. The climbing wall structure is braced against existing fully grouted CMU walls.

Eldorado Climbing has produced a drawing set specific to this project that details the arrangement of the climbing wall components. That drawing set is attached to this submittal.

Scope of Review

Peak Thrills Engineering has performed a structural review of the climbing wall framing in accordance with the codes and reference documents listed in the general notes.

Conclusions

Our review has concluded that the climbing structure referenced above has sufficient structural stability and integrity to support the loads indicated in the general structural notes in accordance with the codes and reference documents listed in the general notes.

Limitations and Exceptions

The scope of review for this submittal is limited to the items listed above. All other temporary or permanent structures on site not specifically referenced under "Scope of Review" are the responsibility of others.

Where the items covered by this submittal are attached to existing structures, it is the responsibility of the engineer of record for those existing structures to review the impact of the elements referenced in this submittal.

General Structural Notes

CODES

1. 2021 INTERNATIONAL BUILDING CODE
2. ASCE 7-16: MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES
3. AISC 360-16: SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
4. ACI 318-19: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
5. GENERAL SPECIFICATION FOR THE DESIGN AND ENGINEERING OF ARTIFICIAL CLIMBING STRUCTURES, FIRST EDITION

CONSTRUCTION AND SAFETY

1. CONTRACTOR SHALL BRACE ENTIRE STRUCTURE AS REQUIRED DURING CONSTRUCTION TO MAINTAIN STABILITY UNTIL THE STRUCTURE IS COMPLETE AND FUNCTIONING AS THE DESIGNED UNIT.
2. ENGINEER SHALL NOT BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION SELECTED BY CONTRACTOR.
3. THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. WHEN ON SITE, THE ENGINEER IS RESPONSIBLE FOR HIS OWN SAFETY BUT HAS NO RESPONSIBILITY FOR THE SAFETY OF OTHER PERSONNEL OR SAFETY CONDITIONS AT THE SITE.
4. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. SHOULD ANY DISCREPANCY BE FOUND, CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER IMMEDIATELY OF THE CONDITION.

DESIGN LOADS

1. DEAD LOAD:
 - A. SELF-WEIGHT OF STRUCTURE
 - B. CLIMBING SURFACE: 5 PSF
2. LIVE LOADS:
 - A. CLIMBER WEIGHT: 270 LB EACH
 - B. BELAY LOAD: 1350 LB
3. SNOW LOADS: NOT APPLICABLE
4. WIND LOADS: NOT APPLICABLE
5. SEISMIC LOADS:
 - A. SEISMIC RISK CATEGORY: II
 - B. SEISMIC IMPORTANCE FACTOR, I_e : 1.0
 - C. SITE CLASS: D (ASSUMED)
 - D. $S_{DS} = 0.25$
 - E. $S_{D1} = 0.10$
 - F. RESPONSE MODIFICATION FACTOR, $R = 2.0$
 - G. SEISMIC COEFFICIENT, $C_s = 0.126$



STRUCTURAL STEEL

1. ALL STEEL DETAILING, FABRICATION, AND ERECTION SHALL CONFORM TO THE LATEST VERSION OF THE FOLLOWING SPECIFICATIONS UNLESS NOTED OTHERWISE ON THE DRAWINGS:
 - A. AISC 360: SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
 - B. AISC 303: CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES
 - C. RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS
 - D. AWS D1.1: STRUCTURAL WELDING CODE-STEEL
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING CRITERIA UNLESS NOTED OTHERWISE ON THE DRAWINGS:
 - A. MISC PLATE, BAR, ANGLES AND CHANNELS: ASTM A36, FY = 36 KSI
 - B. HSS TUBES: ASTM A500 GR B, FY = 46 KSI
 - C. BOLTS: ASTM A325-N
 - D. HARDENED WASHERS: ASTM F436
 - E. NUTS: ASTM A563
 - F. FIELD WELDS: AWS E70XX, LOW HYDROGEN ELECTRODES

POST-INSTALLED ANCHORS

1. EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES.
2. ANCHORAGE TO CONCRETE:
 - A. MEDIUM DUTY MECHANICAL ANCHORS FOR CRACKED AND UNCRACKED CONCRETE
USE: SIMPSON STRONG BOLT 2 ANCHOR PER ICC-ES ESR-3037.
3. ANCHORAGE TO MASONRY:
 - A. MEDIUM DUTY MECHANICAL ANCHORS FOR NORMAL WEIGHT GROUT FILLED CMU
USE: SIMPSON STRONG BOLT 2 ANCHOR PER ICC-ES ESR-3037
4. ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED BY THE MANUFACTURER OR OTHER SUCH METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS THAT HAVE BEEN SEALED BY ANOTHER LICENSED ENGINEER DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF MEETING THE PERFORMANCE OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS.
5. USE OF DIAMOND CORE BIT WITH ROUGHENING TOOL FOR ANCHOR HOLES REQUIRES APPROVAL FROM ENGINEER OF RECORD PRIOR TO DRILLING. UNLESS OTHERWISE SHOWN IN THE DRAWINGS, ALL HOLES SHALL BE DRILLED PERPENDICULAR TO THE CONCRETE SURFACE.
6. INSTALL ANCHORS PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING.
7. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE/MASONRY. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.

Facility Loads

The indoor climbing wall and its framing system place the following maximum service-level loads on the surrounding structure. It is the responsibility of the facility engineer of record to ensure that these loads are adequately supported by the facility structure. Reference the calculation package for more detailed reactions at each facility attachment point.

Base of Lead Walls

- 150 PLF vertical load acting on floor

Base of Boulder Wall

- 75 PLF vertical load acting on floor

Base of Each Profile, Lead Walls

- Vertical load acting down: 3480 LB
- Uplift load: 0 LB
- Lateral load (any direction): 350 LB

Base of Each Profile, Boulder Wall

- Vertical load acting down: 1320 LB
- Uplift load: 0 LB
- Lateral load (any direction): 280 LB

Masonry Wall @ Each Anchor Plate, Lead Walls

- Parallel to wall: 630 LB
- Away from wall: 1110 LB
- Toward wall: 1030 LB
- Vertical: 530 LB

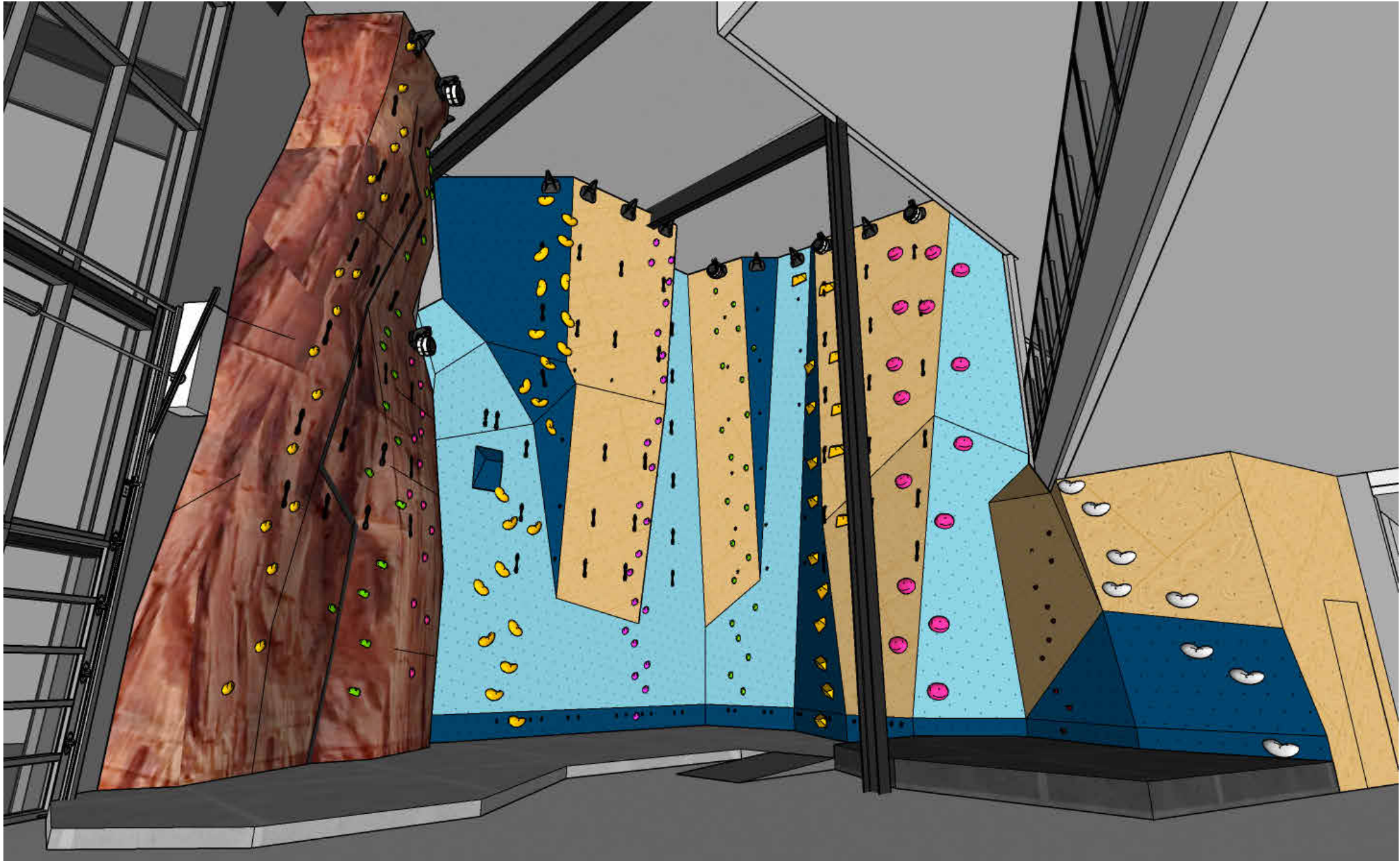
Masonry Wall @ Each Anchor Plate, Boulder Wall

- Parallel to wall: 150 LB
- Away from wall: 310 LB
- Toward wall: 90 LB
- Vertical: 20 LB



APPENDIX A

REFERENCE DRAWINGS



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GRAND JUNCTION REC CENTER - PANELIZED

2836 RECREATION WAY, GRAND JUNCTION, CO 81506

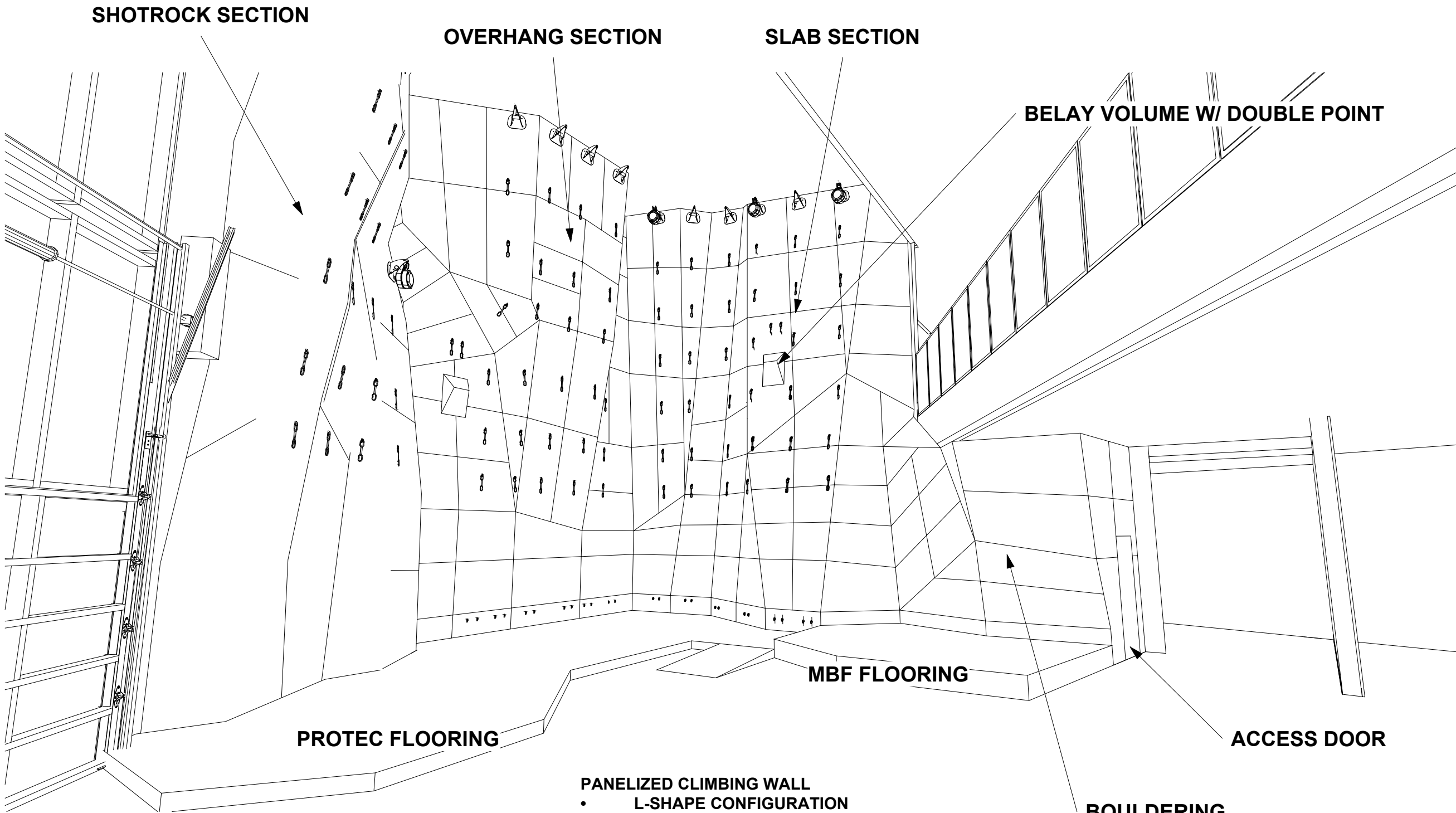
COVER PAGE



PEAK THRILLS ENGINEERING



0.0



- PANELIZED CLIMBING WALL**
- L-SHAPE CONFIGURATION
 - 33' HIGH
 - 12 BELAY BARS
 - 12 LEAD LANES
 - 14 DOUBLE POINT ANCHORS
 1. 12 AT BASE SHAPES FOR ADAPTIVE CLIMBING
 - BOULDERING SECTION ON RIGHT SIDE
 1. MODULAR BOULDER FLOORING
 - TALL WALL BETWEEN BOULDERING AND SHOTROCK
 1. SLAB SECTION AND OVERHANG SECTION
 2. PROTEC FLOORING
 - 2 BELAY VOLUMES
 - 1 ACCESS DOOR

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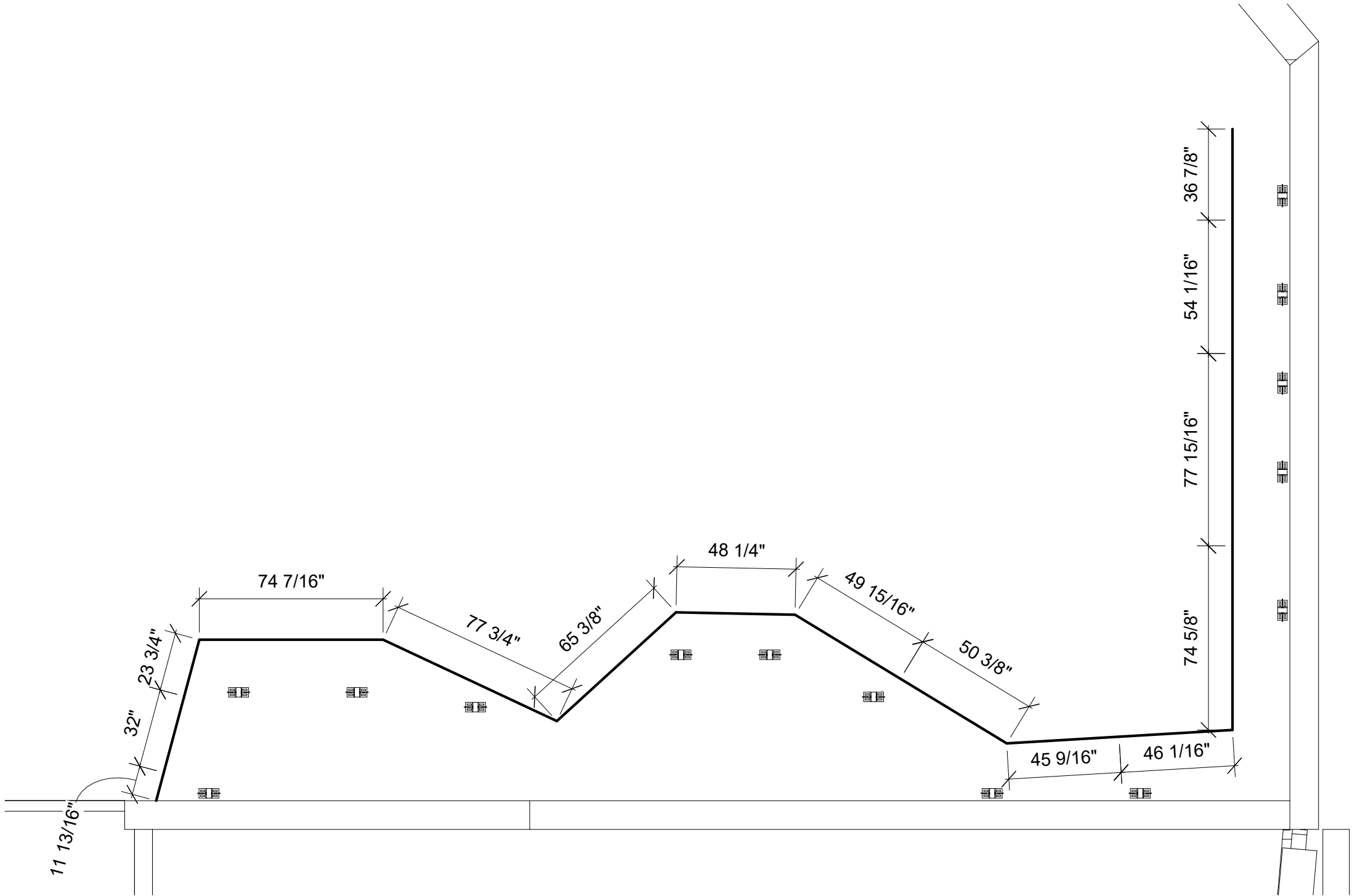
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PROJECT OVERVIEW





1 Baseboard Layout - Lengths
2.0 1/4" = 1'-0"

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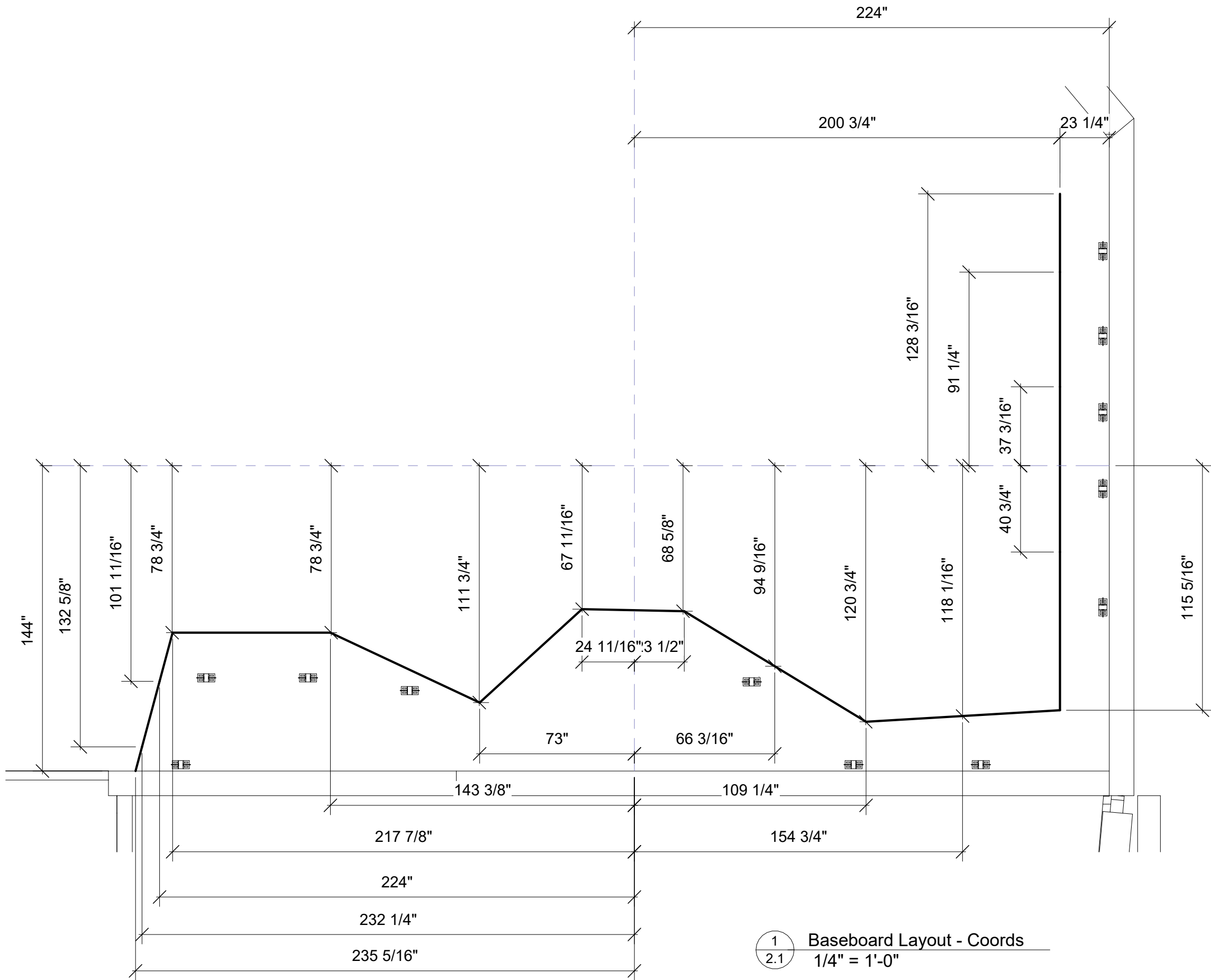
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BASEBOARD LAYOUT





1 Baseboard Layout - Coords
2.1 1/4" = 1'-0"



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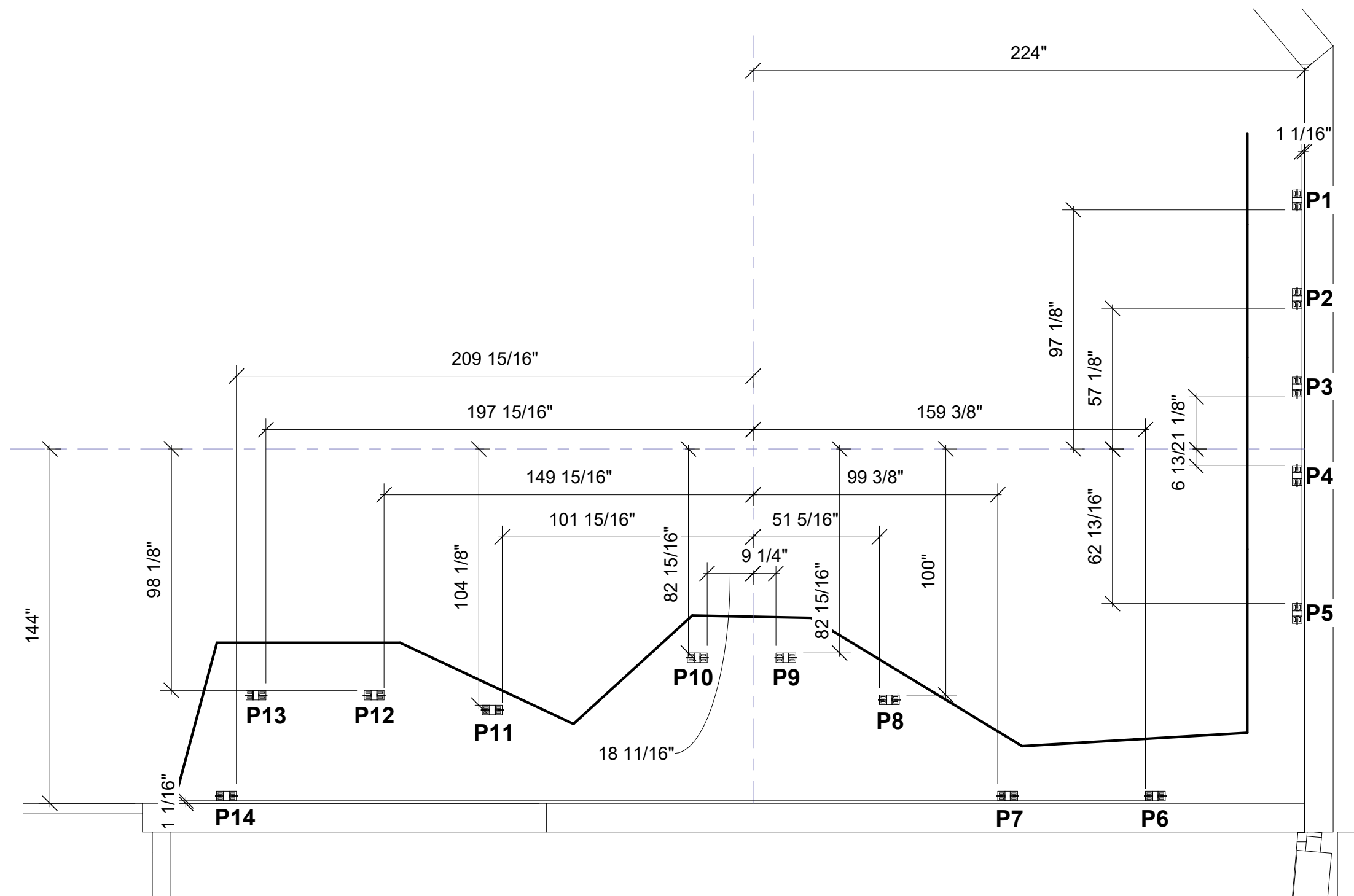
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BASEBOARD LAYOUT





1 Profile Baseplate Layout
2.2 1/4" = 1'-0"

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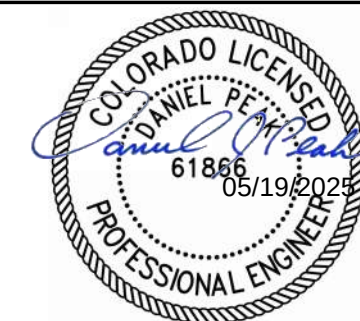
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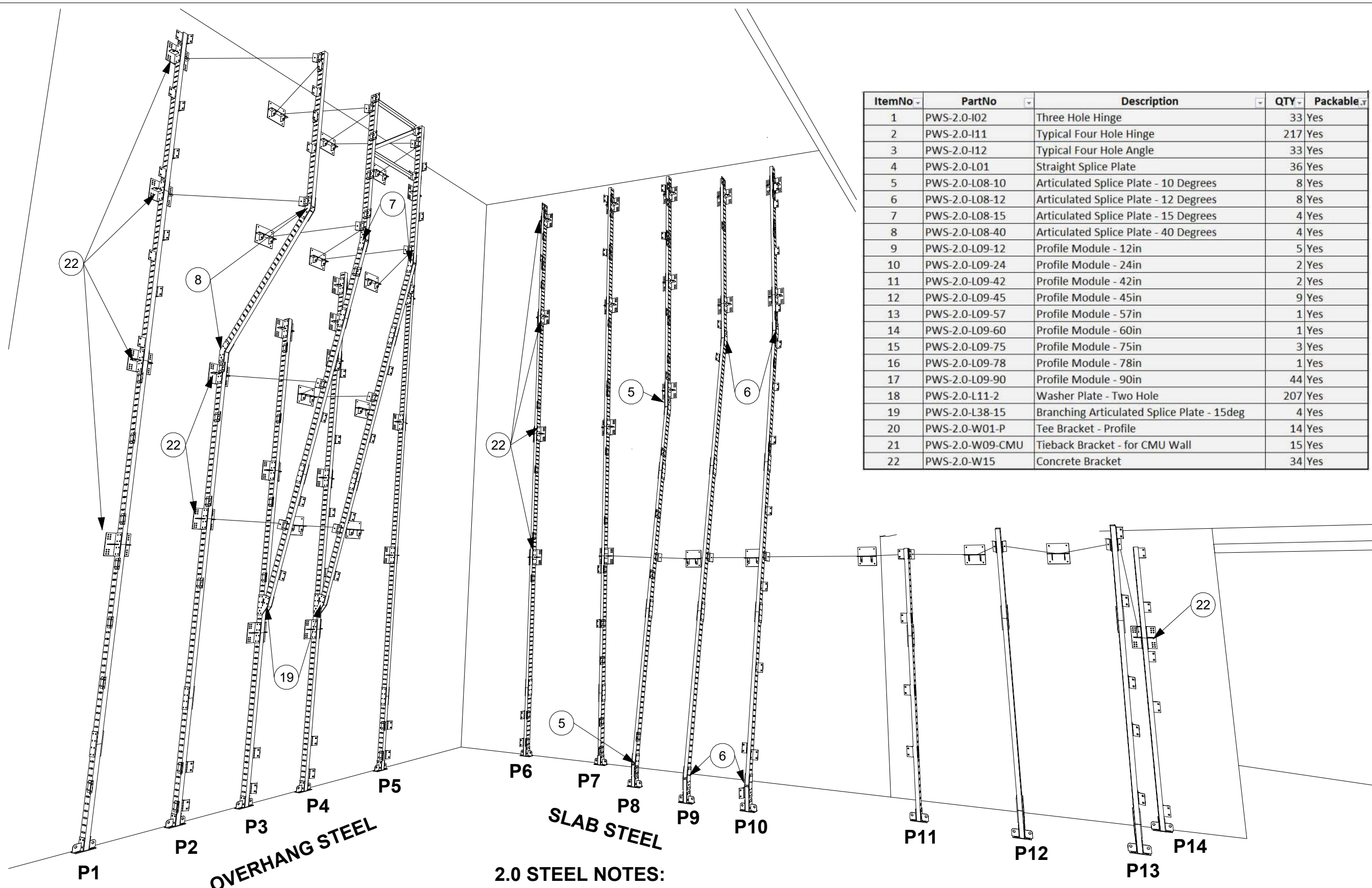
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PROFILE LAYOUT
**PEAK
THRILLS**
ENGINEERING





ItemNo	PartNo	Description	QTY	Packable
1	PWS-2.0-I02	Three Hole Hinge	33	Yes
2	PWS-2.0-I11	Typical Four Hole Hinge	217	Yes
3	PWS-2.0-I12	Typical Four Hole Angle	33	Yes
4	PWS-2.0-L01	Straight Splice Plate	36	Yes
5	PWS-2.0-L08-10	Articulated Splice Plate - 10 Degrees	8	Yes
6	PWS-2.0-L08-12	Articulated Splice Plate - 12 Degrees	8	Yes
7	PWS-2.0-L08-15	Articulated Splice Plate - 15 Degrees	4	Yes
8	PWS-2.0-L08-40	Articulated Splice Plate - 40 Degrees	4	Yes
9	PWS-2.0-L09-12	Profile Module - 12in	5	Yes
10	PWS-2.0-L09-24	Profile Module - 24in	2	Yes
11	PWS-2.0-L09-42	Profile Module - 42in	2	Yes
12	PWS-2.0-L09-45	Profile Module - 45in	9	Yes
13	PWS-2.0-L09-57	Profile Module - 57in	1	Yes
14	PWS-2.0-L09-60	Profile Module - 60in	1	Yes
15	PWS-2.0-L09-75	Profile Module - 75in	3	Yes
16	PWS-2.0-L09-78	Profile Module - 78in	1	Yes
17	PWS-2.0-L09-90	Profile Module - 90in	44	Yes
18	PWS-2.0-L11-2	Washer Plate - Two Hole	207	Yes
19	PWS-2.0-L38-15	Branching Articulated Splice Plate - 15deg	4	Yes
20	PWS-2.0-W01-P	Tee Bracket - Profile	14	Yes
21	PWS-2.0-W09-CMU	Tieback Bracket - for CMU Wall	15	Yes
22	PWS-2.0-W15	Concrete Bracket	34	Yes

- 2.0 STEEL NOTES:
- ALL STEEL TO CONNECT TO CMU WALL - FULLY GROUTED
 - P1, P5, P6, P7, P11, AND P14 ARE VERTICAL PROFILES
 - P2, P3, P4, P8, P9, P10, P12, AND P13 ARE ARTICULATED OR PARTIALLY ARTICULATED PROFILES
 - VERTICAL PROFILES CONNECT TO CMU WITH PWS-2.0-W15 WELDMENTS
 - ARTICULATED PROFILES HAVE TIEBACKS TO PWS-2.0-W09-CMU WELDMENT



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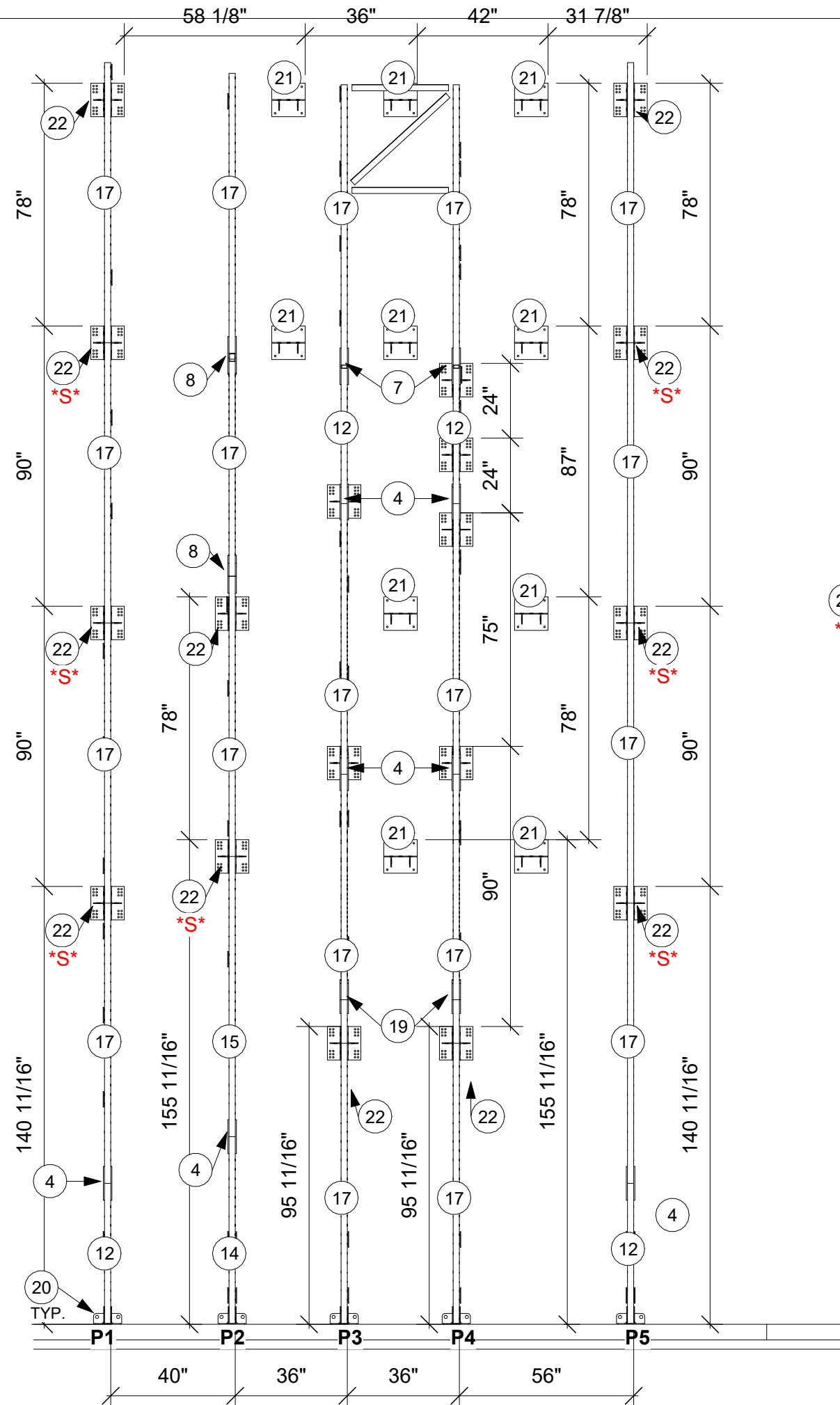
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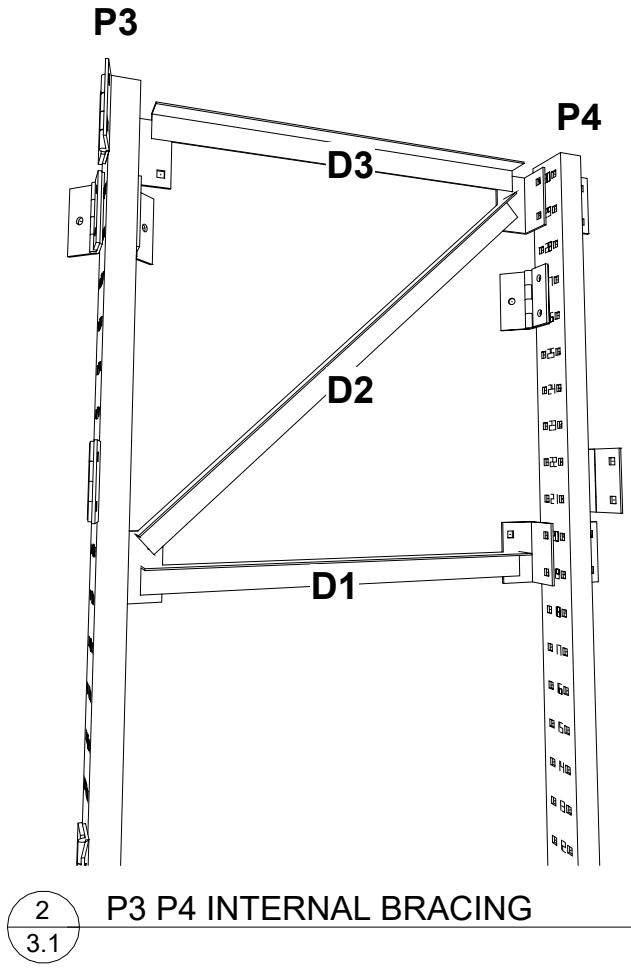




ItemNo	PartNo	Description	QTY	Packable
1	PWS-2.0-I02	Three Hole Hinge	33	Yes
2	PWS-2.0-I11	Typical Four Hole Hinge	217	Yes
3	PWS-2.0-I12	Typical Four Hole Angle	33	Yes
4	PWS-2.0-L01	Straight Splice Plate	36	Yes
5	PWS-2.0-L08-10	Articulated Splice Plate - 10 Degrees	8	Yes
6	PWS-2.0-L08-12	Articulated Splice Plate - 12 Degrees	8	Yes
7	PWS-2.0-L08-15	Articulated Splice Plate - 15 Degrees	4	Yes
8	PWS-2.0-L08-40	Articulated Splice Plate - 40 Degrees	4	Yes
9	PWS-2.0-L09-12	Profile Module - 12in	5	Yes
10	PWS-2.0-L09-24	Profile Module - 24in	2	Yes
11	PWS-2.0-L09-42	Profile Module - 42in	2	Yes
12	PWS-2.0-L09-45	Profile Module - 45in	9	Yes
13	PWS-2.0-L09-57	Profile Module - 57in	1	Yes
14	PWS-2.0-L09-60	Profile Module - 60in	1	Yes
15	PWS-2.0-L09-75	Profile Module - 75in	3	Yes
16	PWS-2.0-L09-78	Profile Module - 78in	1	Yes
17	PWS-2.0-L09-90	Profile Module - 90in	44	Yes
18	PWS-2.0-L11-2	Washer Plate - Two Hole	207	Yes
19	PWS-2.0-L38-15	Branching Articulated Splice Plate - 15deg	4	Yes
20	PWS-2.0-W01-P	Tee Bracket - Profile	14	Yes
21	PWS-2.0-W09-CMU	Tieback Bracket - for CMU Wall	15	Yes
22	PWS-2.0-W15	Concrete Bracket	34	Yes

22
S INDICATES THAT CONCRETE BRACKET ACTS AS SPLICE BETWEEN PROFILE MODULES

*SEE BRACING TABLES FOR INTERNAL BRACING LENGTHS



1 Overhang Steel
3.1 1 : 43

2 P3 P4 INTERNAL BRACING
3.1



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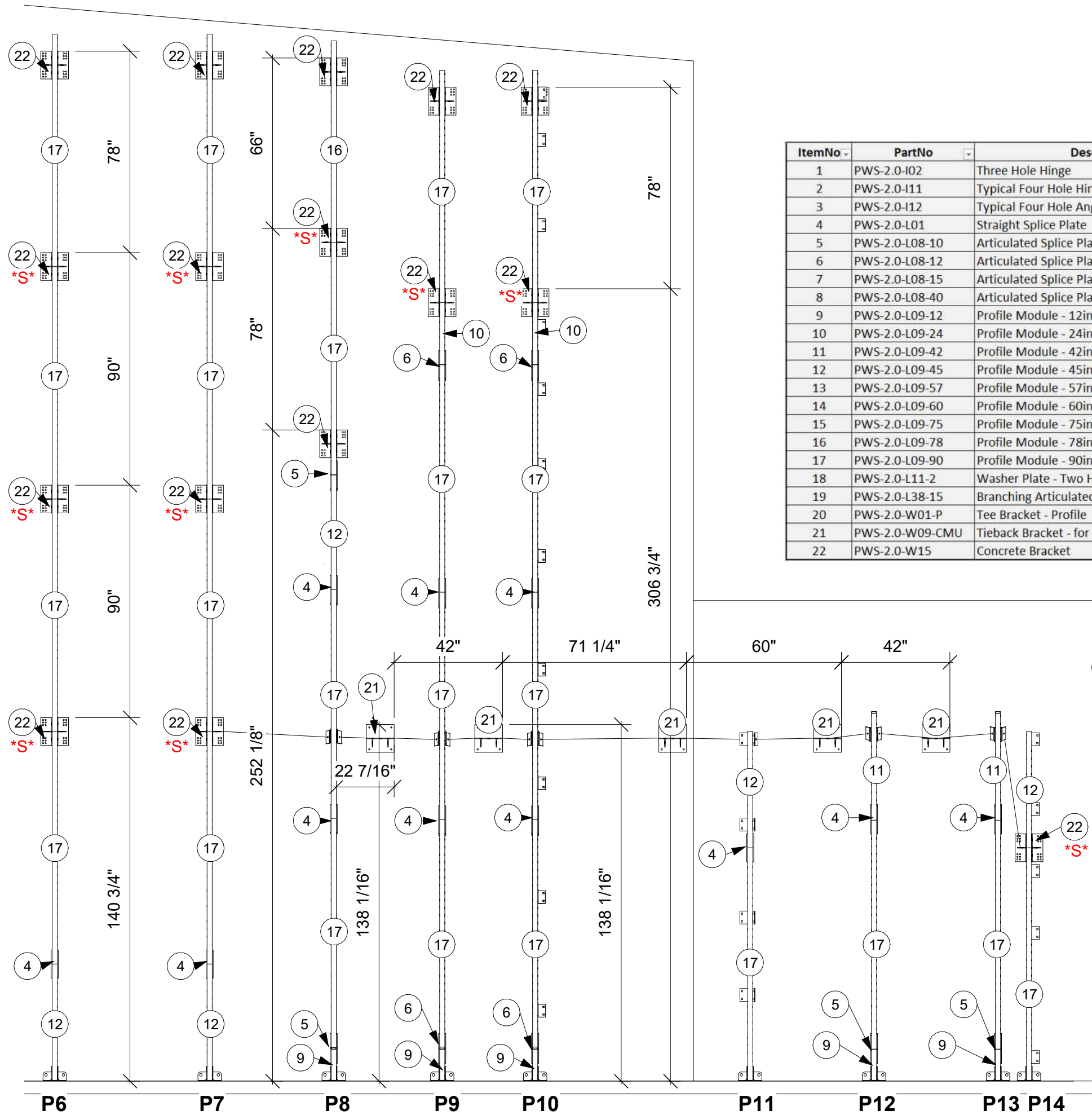
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STEEL PAGES





ItemNo	PartNo	Description	QTY	Packable
1	PWS-2.0-I02	Three Hole Hinge	33	Yes
2	PWS-2.0-I11	Typical Four Hole Hinge	217	Yes
3	PWS-2.0-I12	Typical Four Hole Angle	33	Yes
4	PWS-2.0-L01	Straight Splice Plate	36	Yes
5	PWS-2.0-L08-10	Articulated Splice Plate - 10 Degrees	8	Yes
6	PWS-2.0-L08-12	Articulated Splice Plate - 12 Degrees	8	Yes
7	PWS-2.0-L08-15	Articulated Splice Plate - 15 Degrees	4	Yes
8	PWS-2.0-L08-40	Articulated Splice Plate - 40 Degrees	4	Yes
9	PWS-2.0-L09-12	Profile Module - 12in	5	Yes
10	PWS-2.0-L09-24	Profile Module - 24in	2	Yes
11	PWS-2.0-L09-42	Profile Module - 42in	2	Yes
12	PWS-2.0-L09-45	Profile Module - 45in	9	Yes
13	PWS-2.0-L09-57	Profile Module - 57in	1	Yes
14	PWS-2.0-L09-60	Profile Module - 60in	1	Yes
15	PWS-2.0-L09-75	Profile Module - 75in	3	Yes
16	PWS-2.0-L09-78	Profile Module - 78in	1	Yes
17	PWS-2.0-L09-90	Profile Module - 90in	44	Yes
18	PWS-2.0-L11-2	Washer Plate - Two Hole	207	Yes
19	PWS-2.0-L38-15	Branching Articulated Splice Plate - 15deg	4	Yes
20	PWS-2.0-W01-P	Tee Bracket - Profile	14	Yes
21	PWS-2.0-W09-CMU	Tieback Bracket - for CMU Wall	15	Yes
22	PWS-2.0-W15	Concrete Bracket	34	Yes

22
S
**INDICATES THAT CONCRETE
BRACKET ACTS AS SPLICE
BETWEEN PROFILE MODULES**

1
3.2
Slab Steel
1 : 42



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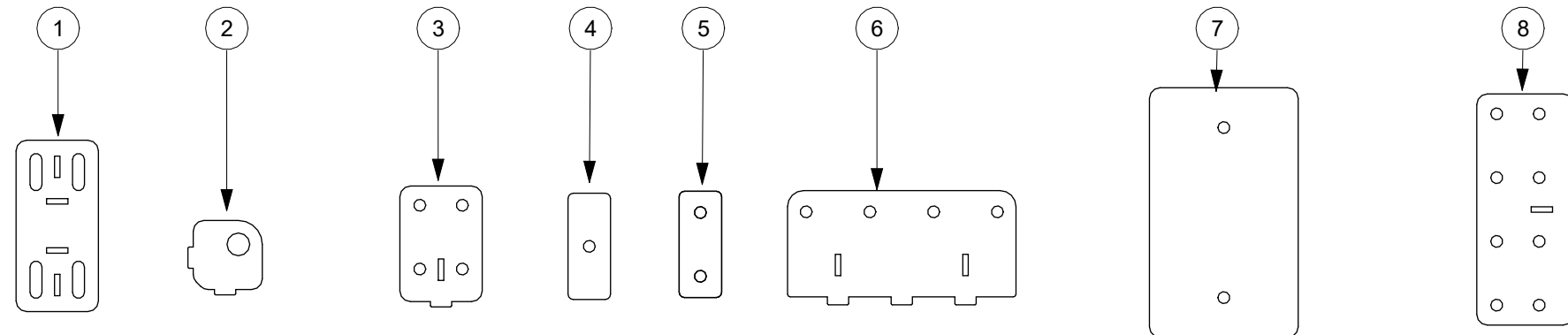
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LASERED PLATES
PEAK
THRILLS
ENGINEERING

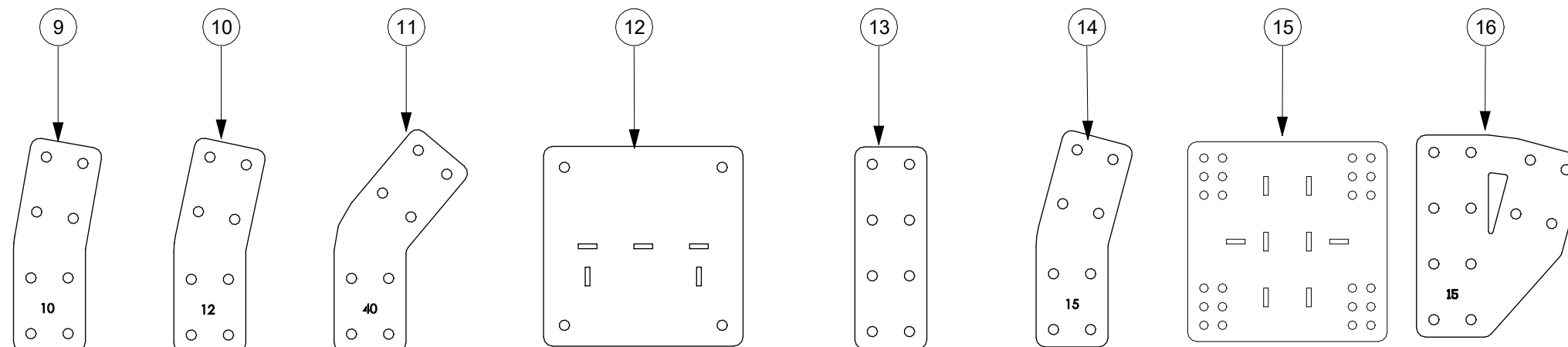


3.3



1
3.3 Plates 1/4"
1 1/2" = 1'-0"

ItemNo	PartNo	Description	Qty	Material	Thickness	Packable
1	PWS-2.0-L03-P	Base Plate - Profile	14	ASTM A36 Steel	0.25	No
2	PWS-2.0-L04	Bracket Gusset	126	ASTM A36 Steel	0.25	No
3	PWS-2.0-L05	Profile Receiver	28	ASTM A36 Steel	0.25	No
4	PWS-2.0-L11-1	Washer Plate - Single Hole	97	ASTM A36 Steel	0.25	Yes
5	PWS-2.0-L11-2	Washer Plate - Double Hole	207	ASTM A36 Steel	0.25	Yes
6	PWS-2.0-L19-CMU	Tieback Fin Plate - for CMU Wall	15	ASTM A36 Steel	0.25	No
7	PWS-2.0-L10	Double Point Anchor Plate	14	ASTM A36 Steel	0.25	No
8	PWS-2.0-L30	Concrete Bracket Splice Plate	68	ASTM A36 Steel	0.25	No
9	PWS-2.0-L08-10	Articulated Splice Plate - 10 Degrees	8	ASTM A572 Grade 50 Steel	0.375	Yes
10	PWS-2.0-L08-12	Articulated Splice Plate - 12 Degrees	8	ASTM A572 Grade 50 Steel	0.375	Yes
11	PWS-2.0-L08-40	Articulated Splice Plate - 40 Degrees	4	ASTM A572 Grade 50 Steel	0.375	Yes
12	PWS-2.0-L18	Tieback Anchor Plate	15	ASTM A572 Grade 50 Steel	0.375	No
13	PWS-2.0-L01	Straight Splice Plate	34	ASTM A572 Grade 50 Steel	0.375	Yes
14	PWS-2.0-L08-15	Articulated Splice Plate - 15 Degrees	4	ASTM A572 Grade 50 Steel	0.375	Yes
15	PWS-2.0-L31	Concrete Bracket Anchor Plate	36	ASTM A572 Grade 50 Steel	0.375	No
16	PWS-2.0-L38-15	Branching Articulated Splice Plate - 15 Degrees	4	ASTM A572 Grade 50 Steel	0.375	Yes



2
3.3 Plates 3/8"
1 1/2" = 1'-0"

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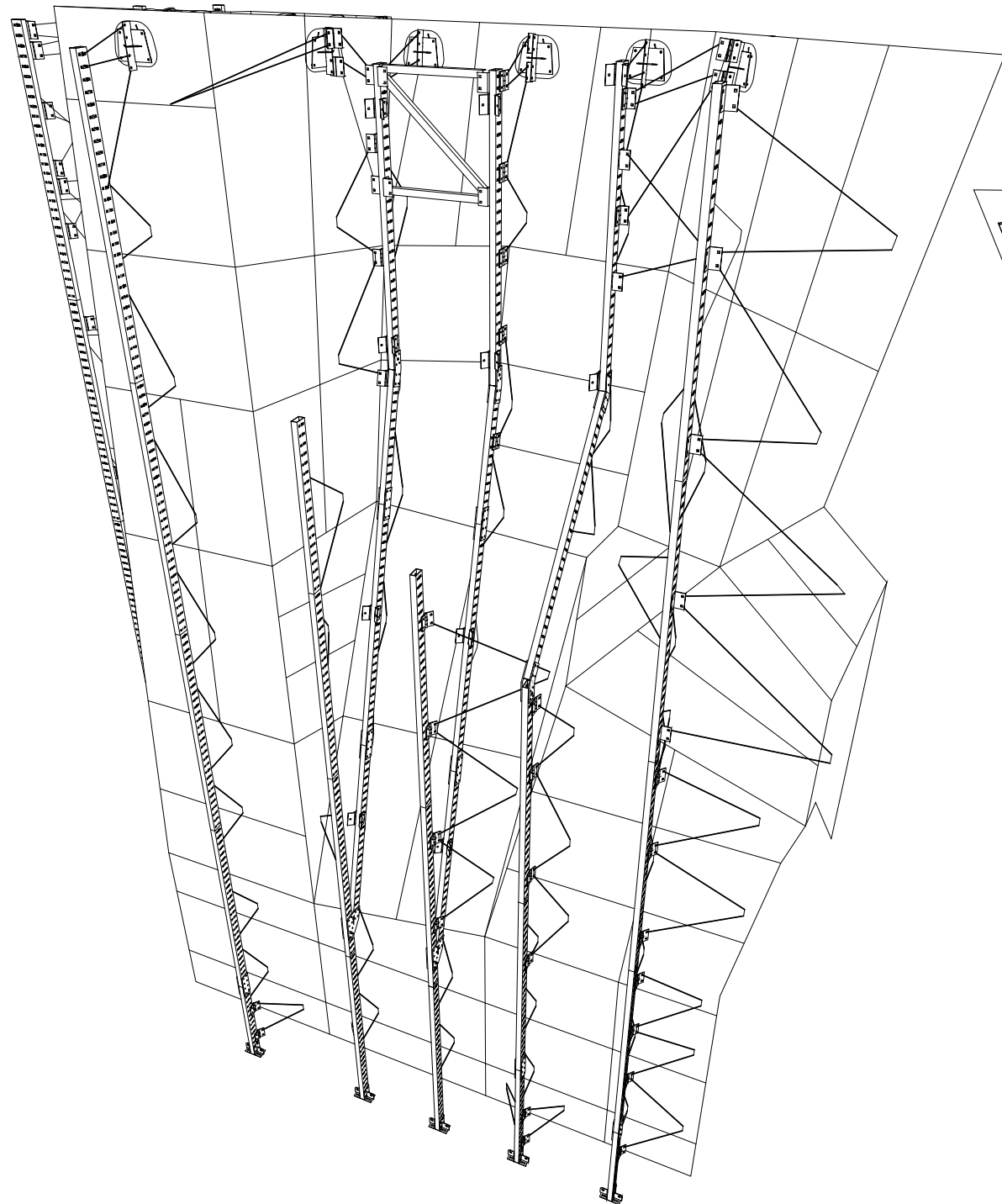
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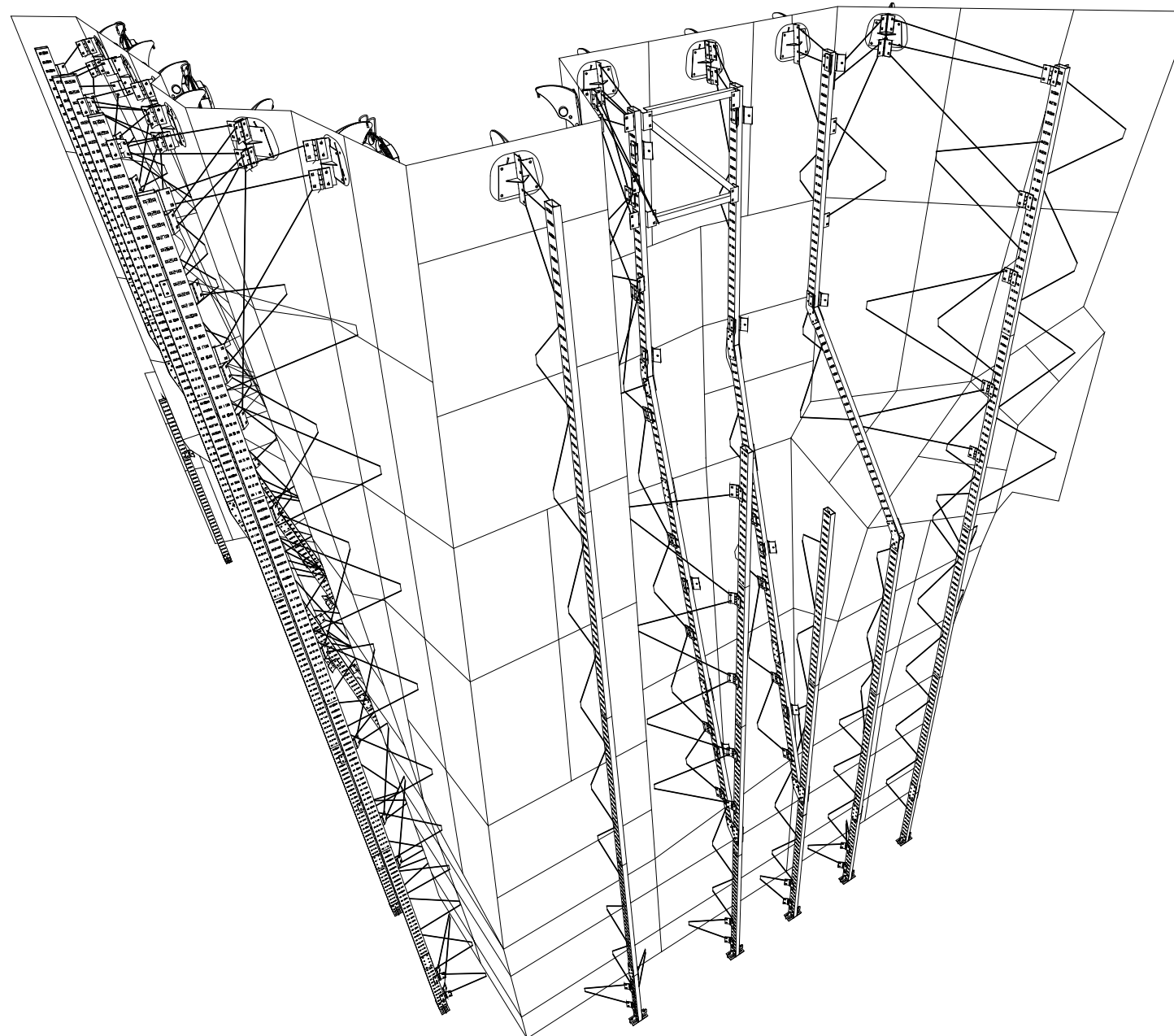
BRACING VIEWS



4.0



1
4.0
BRACING VIEW 1



2
4.0
BRACING VIEW 2

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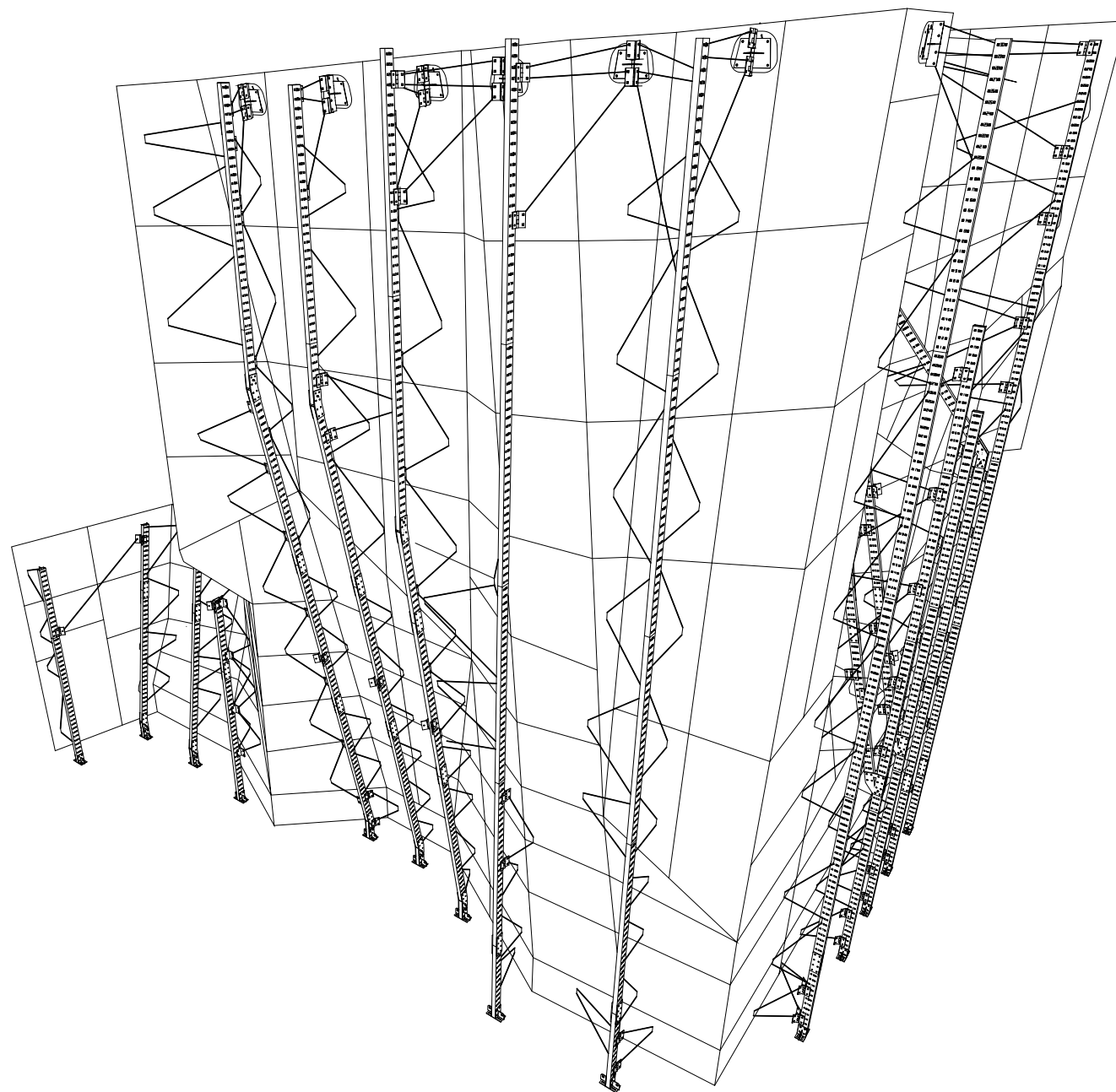
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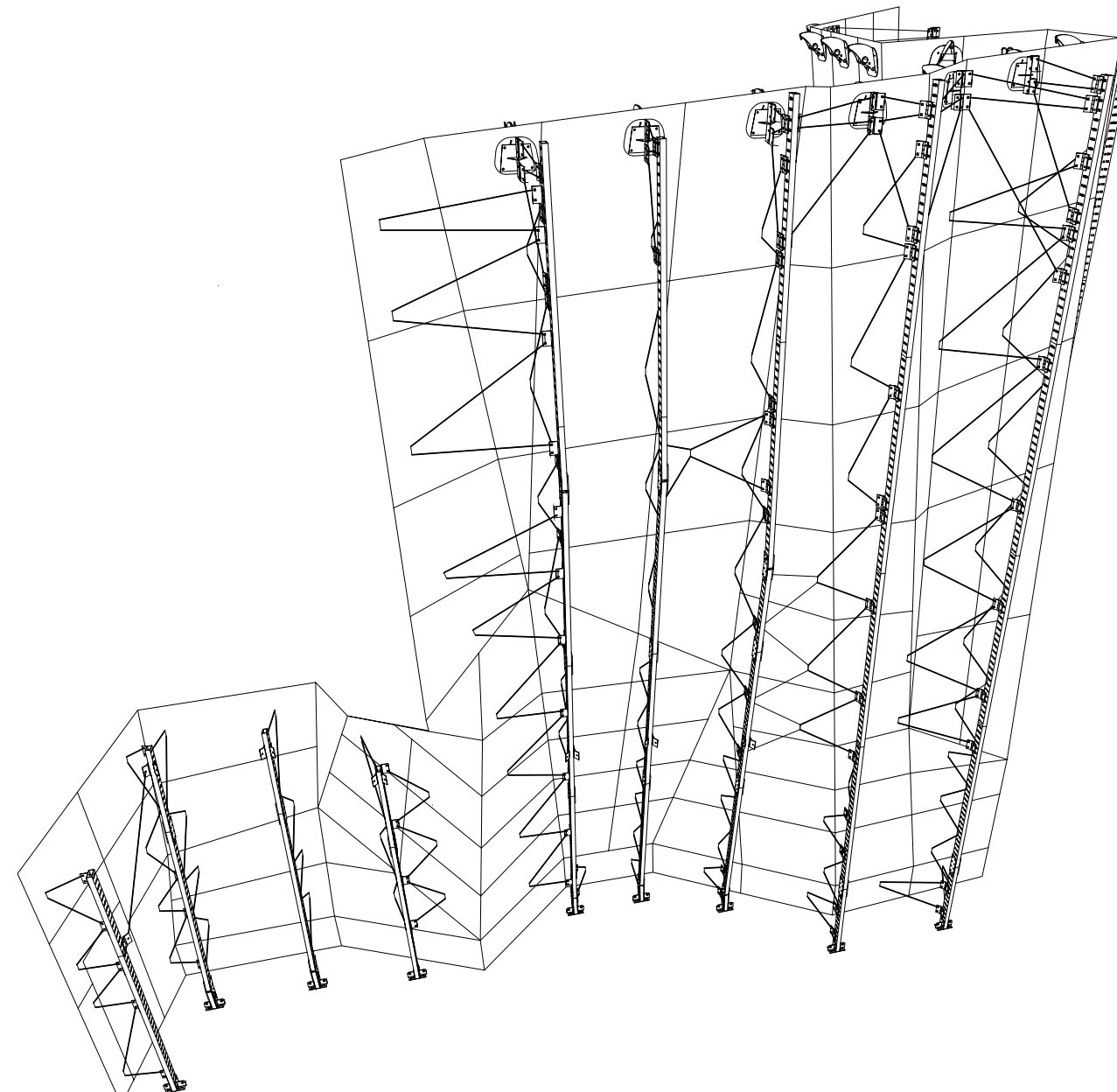
BRACING VIEWS



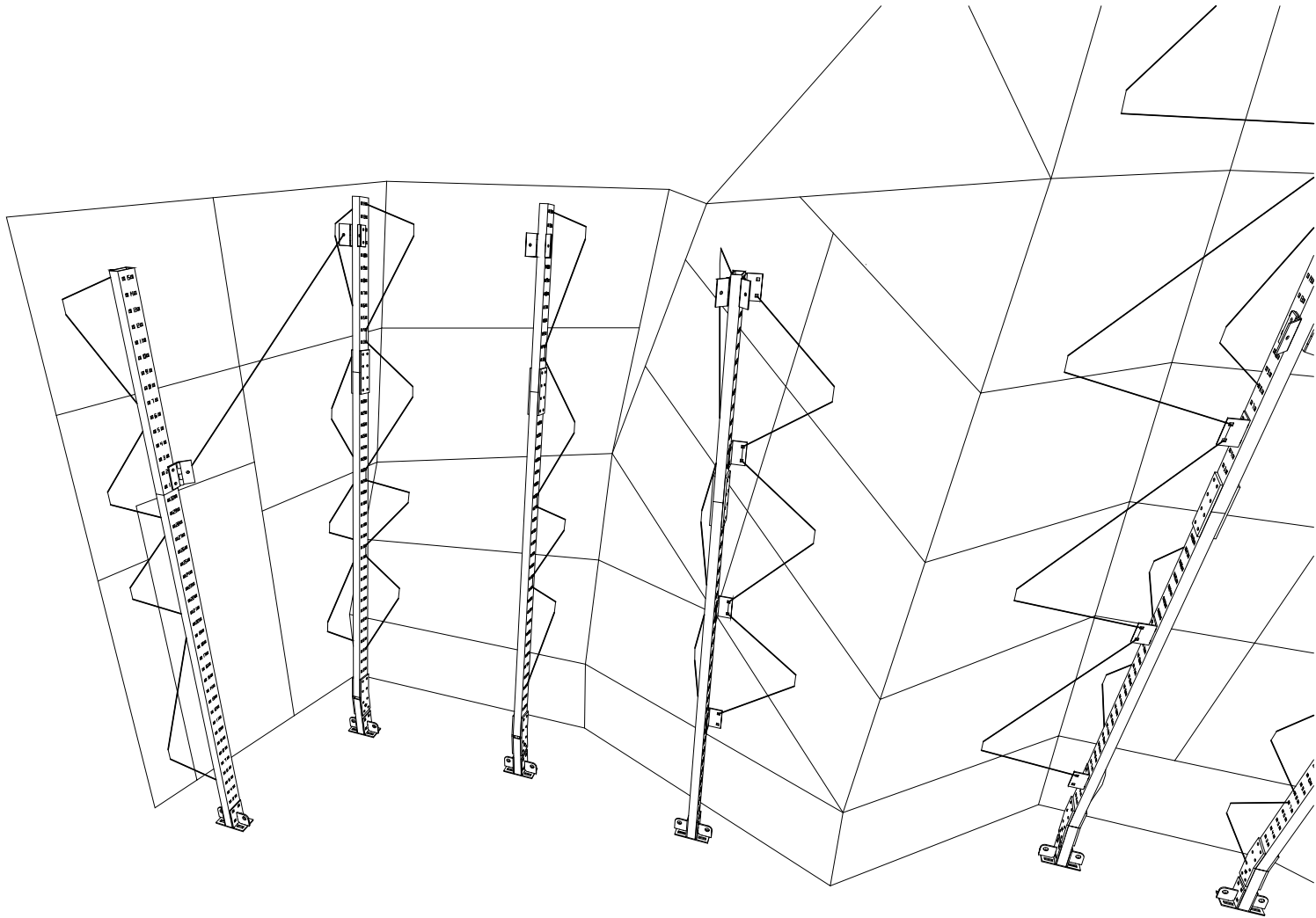
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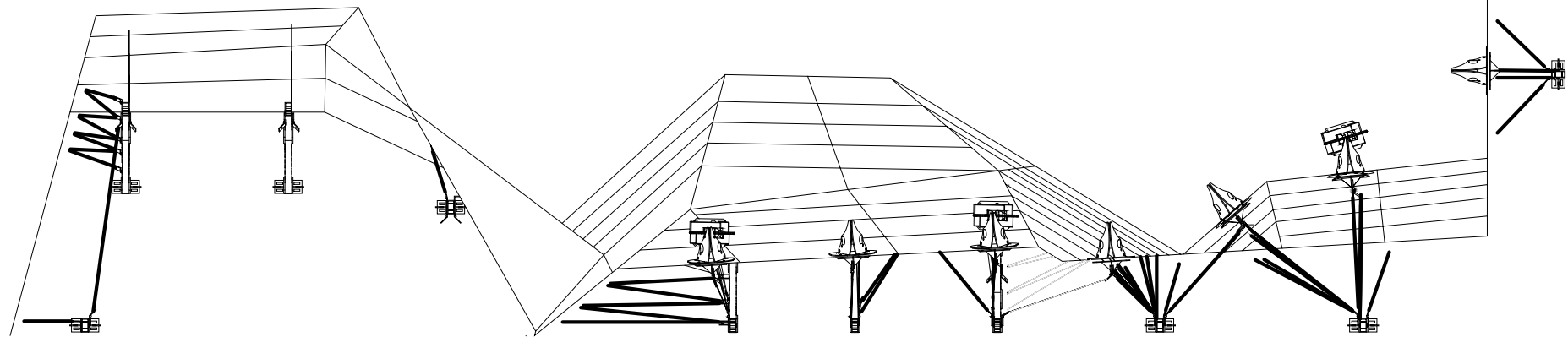
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4.1 BRACING VIEW 3



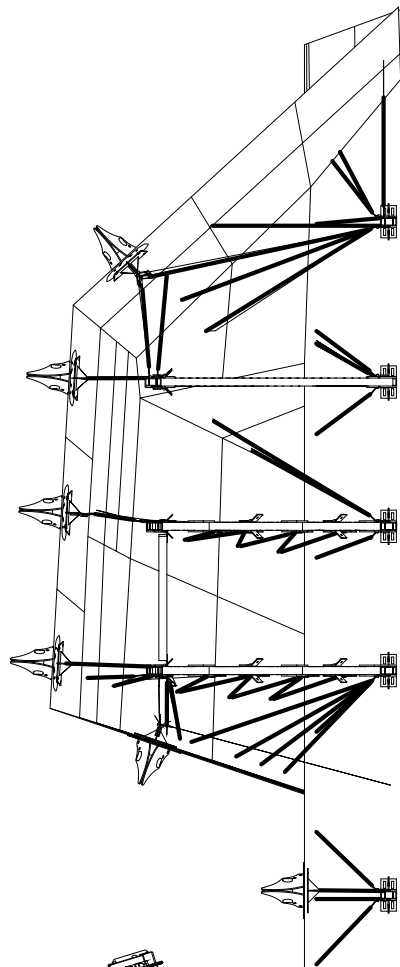
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4.1 BRACING VIEW 4



1
4.2 BRACING VIEW 5



2
4.2 BRACING TOP



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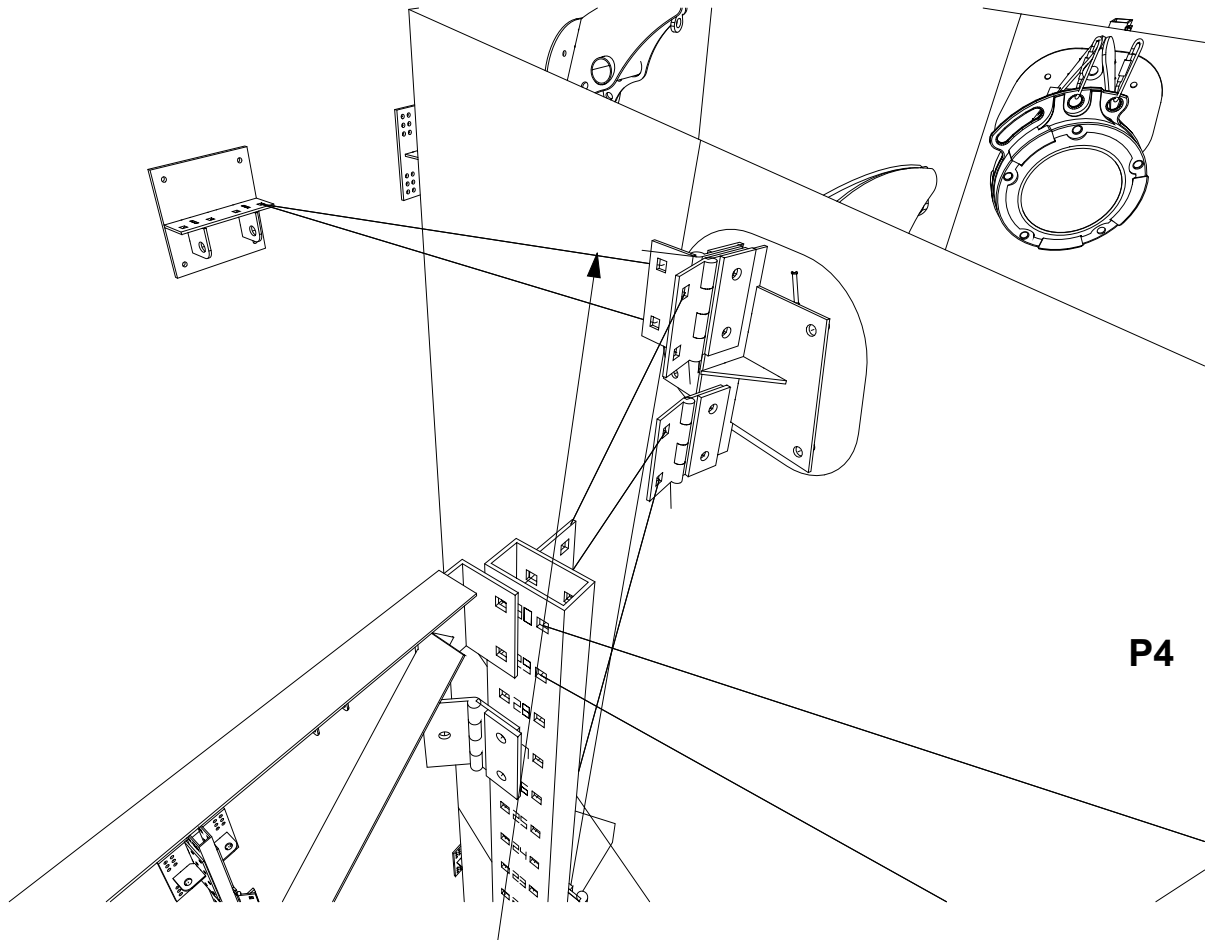
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GRAND JUNCTION REC
CENTER - PANELIZED

2836 RECREATION
WAY, GRAND
JUNCTION, CO 81506

BRACING VIEWS

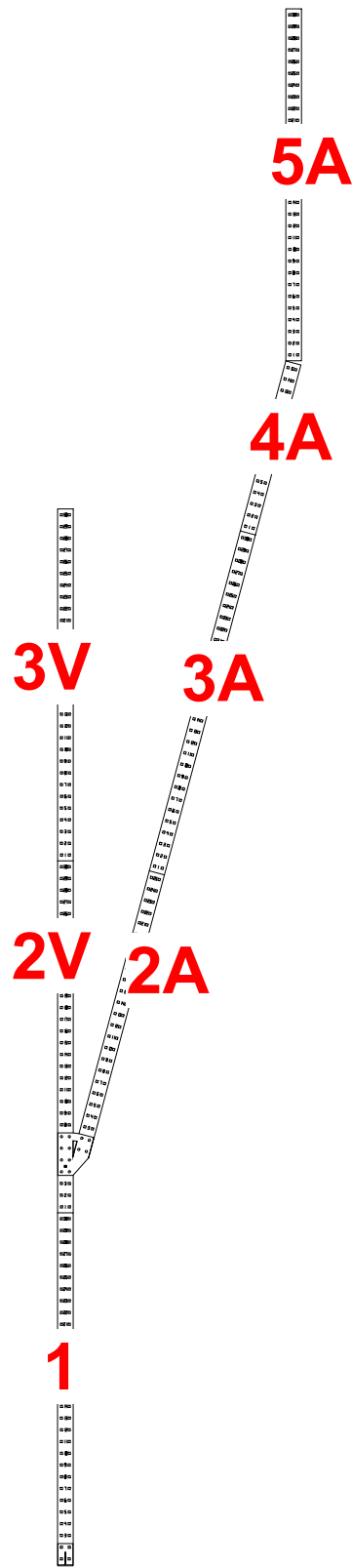




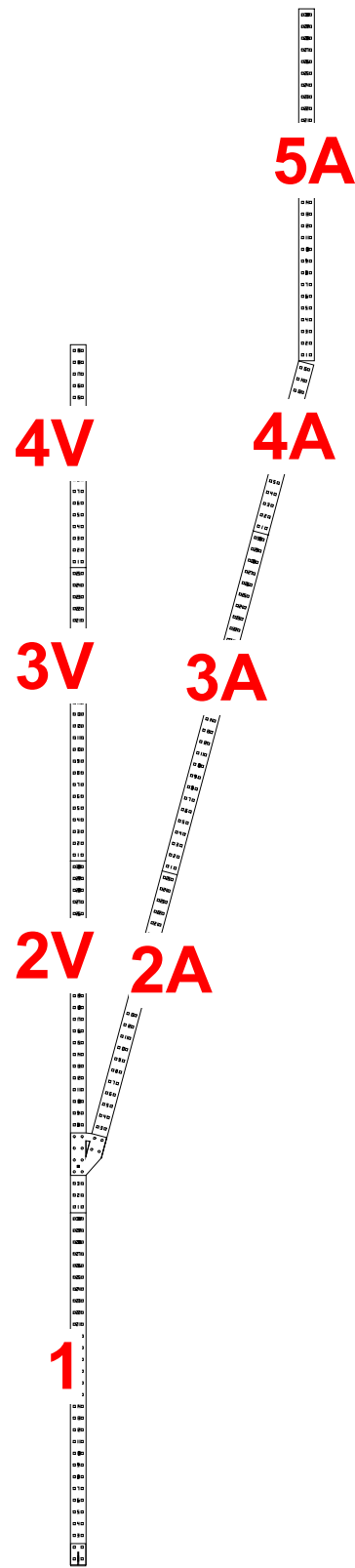
ATTACH TWO EXTRA TENSION MEMBERS TO
TIEBACK BRACKET FOR BELAY BAR ADJACENT
TO P4
- BOTH "SG" PINCHPIPES

ETXRA BELAY BAR BRACING

1
4.3



2
4.3 P3 SIDE VIEW
1/4" = 1'-0"



3
4.3 P4 SIDE VIEW
1/4" = 1'-0"

DATE: 5/16/2025

AUTHOR: CTB

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CENTER - PANELIZED

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DETAILS
PEAK
THRILLS
ENGINEERING



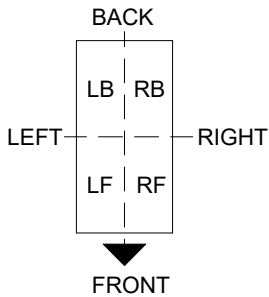
P1		VERTICAL PROFILE - 5 SECTIONS				
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [45in]	W	10-LF	HINGE	C	25.5	
	W	10-RF	DIRECT	C	18.75	
0° SPLICE - PLATES						
2 [90in]	W	9-LF	HINGE	T	46.125	
	W	9-RF	DIRECT	T	42.125	
	W	10-LF	HINGE	C	25.625	
	W	10-RF	DIRECT	C	18.75	
	W	18-LF	HINGE	T	31.5	
	W	19-LF	HINGE	C	25.75	
	W	24-RF	DIRECT	T	41.5	
	W	25-RF	DIRECT	C	18.75	
	W	28-LF	HINGE	T	33	
0° SPLICE - CMU BRACKET						
3 [90in]	W	5-LF	HINGE	C	33.875	
	W	9-RF	DIRECT	T	41.625	
	W	10-RF	DIRECT	C	18.875	
	W	17-LF	HINGE	T	44	
	W	18-LF	HINGE	C	34	
	W	24-RF	DIRECT	T	41.375	
	W	25-RF	DIRECT	C	20	
	DP	26-LF	DIRECT	C	24.25	
	W	28-LF	HINGE	T	39.75	
0° SPLICE - CMU BRACKET						
4 [90in]	W	4-LB	ANGLE	C	46.75	
	DP	6-LF	DIRECT	T	22.25	
	W	9-RF	DIRECT	T	37.375	
	W	10-RF	DIRECT	C	17.75	
	LB	13-RF	HINGE	C	47.875	
	W	18-LB	ANGLE	T	59.375	
	W	19-LB	ANGLE	C	43.25	
	W	21-RF	DIRECT	T	35.5	
	LB	22-RF	HINGE	T	56.75	
	LB	23-RF	HINGE	C	53.75	
	W	25-RF	DIRECT	C	32.125	
0° SPLICE - CMU BRACKET						
5 [90in]	W	3-LB	ANGLE	T	49.75	
	W	4-LB	ANGLE	C	29.5	
	LB	8-RF	HINGE	T	59.125	
	W	10-RF	DIRECT	T	50.25	
	W	11-RF	DIRECT	C	47.25	
	BB	17-RF	HINGE	C	66.25	
	W	18-LB	ANGLE	T	46.875	
	W	19-LB	ANGLE	C	38.25	
	W	23-RF	DIRECT	T	48.25	
	W	29-LB	ANGLE	T	45	
	BB	29-RF	HINGE	T		SG
	BB	30-RF	HINGE	T		SG

X - CONNECT TO WHAT	
DP	DOUBLE POINT
LB	LEAD BOLT
BB	BELAY BAR
TB	TIEBACK
W	WALL CONNECTION

** A YELLOW SHADED CELL INDICATES THE NEED FOR A WASHER PLATE INSTALLED ON A HINGE - NECESSARY FOR ALL TIEBACKS, LEADBOLTS, AND BELAY BRACES THAT USE HINGES

P2		ARTICULATED PROFILE - 5 SECTIONS				
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [60in]	DP	4-LF	HINGE	C	19.375	
	DP	4-RF	HINGE	C	19.625	
	DP	10-LF	HINGE	T	21.625	
	DP	10-RF	HINGE	T	21.875	
	W	11-RF	DIRECT	C	18.625	
0° SPLICE - PLATES						
2 [90in]	W	4-RF	DIRECT	T	40.125	
	W	5-RF	DIRECT	C	18.5	
	W	16-RF	DIRECT	T	36	
	W	17-RF	DIRECT	C	18.5	
	LB	20-LF	HINGE	C	19.125	
	W	27-RF	DIRECT	T	33.5	
0° SPLICE - CMU BRACKET						
3 [90in]	LB	3-LF	HINGE	T	34.625	
	LB	4-LF	HINGE	C	17.25	
	LB	18-LF	HINGE	T	41.875	
	LB	19-LF	HINGE	C	17.75	
	LB	27-LF	HINGE	T	23.75	
40° SPLICE (OVERHANG) - PLATES						
	LB	16-RF	DIRECT	C	34.5	
	LB	24-LF	DIRECT	C	19	
	LB	26-RF	DIRECT	T	38.625	
-40° SPLICE (BACK TO VERT) - PLATES						
5 [90in]	TB	1/2-LB	3H-HINGE	TB		SH
	TB	1/2-RB	3H-HINGE	TB		SG
	LB	2-LF	DIRECT	T	19.125	
	LB	12-LF	ANGLE	C	26.25	
	LB	13-LF	DIRECT	C	14	
	BB	17-LB	HINGE	C	42.375	
	LB	20-LF	DIRECT	T	18.125	
	BB	21-LF	DIRECT	C	27.5	
	LB	23-LF	ANGLE	T	33.5	
	BB	27-LB	HINGE	T		SC
	BB	28-LB	HINGE	T		SC
	BB	29-LF	DIRECT	T		SA
	BB	30-LF	DIRECT	T		SB
	TB	29/30-LB	3H-HINGE	TB		SH
	TB	29/30-RB	3H-HINGE	TB		SG

HINGE	USE WASHER PLATE
3H-HINGE	
	NO WASHER PLATE NEEDED
HINGE	



P3		BRANCHING ARTICULATED PROFILE - 7 SECTIONS				
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [90in]	DP	4-RF	HINGE	C	17.25	
	DP	10-RF	HINGE	T	19.75	
	W	11-RF	DIRECT	C	18.625	
	W	23-RF	DIRECT	T	38.125	
	W	24-RF	DIRECT	C	18.75	
0° SPLICE - CMU BRACKET						
2V [90in]	BRANCHING SPLICE PLATE HOLES 4-7					
	LB	11-LF	HINGE	C	24.75	
	LB	24-LF	HINGE	T	40.625	
	LB	25-LF	HINGE	C	35.5	
0° SPLICE - CMU BRACKET						
3V [90in]	LB	10-LF	HINGE	T	56.125	
	LB	11-LF	HINGE	C	47.625	
	LB	24-LF	HINGE	T	61	
15° BRANCHING SPLICE (OVERHANG) - PLATES						
2A [75in]	W	4-RF	DIRECT	T	41.625	
	LB	7-RF	HINGE	C	16.375	
	TB	15/16-LB	3H-HINGE	TB		SD
	TB	15/16-RB	3H-HINGE	TB		SB
	LB	20-RF	HINGE	T	32.25	
	LB	21-RF	HINGE	C	14.5	
0° SPLICE - PLATES						
3A [90in]	LB	11-RF	HINGE	T	41.5	
	LB	12-RF	HINGE	C	15.25	
	TB	17/18-LB	3H-HINGE	TB		SF
	TB	17/18-RB	3H-HINGE	TB		SD
	LB	21-RF	HINGE	T	23.75	
	LB	28-LF	DIRECT	C	17.75	
0° SPLICE - PLATES						
4A [45in]	LB	8-LF	DIRECT	T	26.375	
	LB	10-LF	HINGE	C	11.75	
-15° SPLICE (BACK TO VERT) - PLATES						
5A [90in]	TB	3/4-LB	3H-HINGE	TB		SG
	TB	3/4-LB	3H-HINGE	TB		SG
	LB	5-LF	HINGE	T	23.375	
	LB	14-LF	HINGE	C	13.25	
	P4	19-RB	ANGLE	PS	D1 - 31[29.5 H-H]	
	P4	20-RB	ANGLE	PS	D2 - 40[38.5 H-H]	
	LB	21-LF	HINGE	T	17.25	
	BB	22-LF	HINGE	C	26	
	TB	27/28-LB	3H-HINGE	TB		SG
	TB	27/28-RB	3H-HINGE	TB		SG
	BB	29-LF	HINGE	T		SA
	BB	30-LF	HINGE	T		SA
	P4	30-RB	ANGLE	PS	D3 - 31[29.5 H-H]	

**REFER TO DETAIL 2/4.3 FOR P3 SIDE VIEW



1699 Cherry St. Unit B
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720-664-9354

DATE: 5/16/2025

AUTHOR: CTB

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2836 RECREATION WAY, GRAND JUNCTION, CO 81506

BRACING TABLES




4.4

P4	BRANCHING ARTICULATED PROFILE - 8 SECTIONS					
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [90in]	DP	4-RF	HINGE	C	21	
	DP	10-RF	HINGE	T	23	
	W	11-RF	DIRECT	C	18.625	
	W	23-RF	DIRECT	T	37.75	
	W	24-RF	DIRECT	C	18.625	
0° SPLICE - CMU BRACKET						
2V [90in]	BRANCHING SPLICE PLATE HOLES 4-7					
	LB	12-RF	HINGE	C	33.125	
	LB	23-RF	HINGE	T	43.375	
	LB	24-RF	HINGE	C	36.25	
0° SPLICE - CMU BRACKET						
3V [90in]	LB	8-RF	HINGE	T	52	
	LB	9-RF	HINGE	C	40.75	
	LB	22-RF	HINGE	T	51	
	LB	23-RF	HINGE	C	50.75	
0° SPLICE - CMU BRACKET						
4V [57in]	LB	13-RF	HINGE	T	57.625	
15° BRANCHING SPLICE (OVERHANG) - PLATES						
2A [75in]	W	4-RF	DIRECT	T	42	
	LB	7-RF	HINGE	C	18.375	
	TB	15/16-LB	3H-HINGE	TB		SB
	TB	15/16-RB	3H-HINGE	TB		SC
	LB	18-RF	HINGE	T	27.5	
	LB	19-RF	HINGE	C	20	
0° SPLICE - PLATES						
3A [90in]	LB	9-RF	HINGE	T	35.75	
	LB	10-RF	HINGE	C	20.5	
	TB	17/18-LB	3H-HINGE	TB		SD
	TB	17/18-RB	3H-HINGE	TB		SE
	LB	23-RF	HINGE	T	29.875	
	LB	24-RF	HINGE	C	24.875	
	LB	25-RF	HINGE	T	40.75	
	LB	26-RF	HINGE	C	19.375	
0° SPLICE - PLATES						
4A [45in]	LB	10-RF	HINGE	T	30.75	
	LB	11-RF	HINGE	C	11.75	
	LB	15-RB	HINGE	C	15.625	
-15° SPLICE (BACK TO VERT) - PLATES						
5A [90in]	TB	3/4-LB	3H-HINGE	TB		SG
	TB	3/4-RB	3H-HINGE	TB		SH
	LB	10-RF	HINGE	T	38.875	
	LB	11-RF	HINGE	C	21.25	
	LB	12-RB	HINGE	T	35.25	
	LB	13-RB	HINGE	C	16	
	BB	17-LF	DIRECT	C	42.875	
	P3	19-LB	ANGLE	PS	D1 - 31 [29.5 H-H]	
	BB	20-RB	ANGLE	C	31.375	
	LB	21-RF	HINGE	T	18.5	
	LB	23-RB	HINGE	T	25.875	
	TB	26/27-LB	3H-HINGE	TB		SG
	TB	26/27-RB	3H-HINGE	TB		SH
	BB	29-LF	DIRECT	T		SC
	BB	29-RB	ANGLE	T		SA
	P3	29-LB	ANGLE	PS	D2 - 40 [38.5 H-H]	
	BB	30-LF	DIRECT	T		SC
	BB	30-RB	ANGLE	T		SA
	P3	30-LB	ANGLE	PS	D3 - 31 [29.5 H-H]	

P5	VERTICAL PROFILE - 5 SECTIONS					
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [45in]	DP	4-LF	HINGE	C	21.25	
	DP	4-RF	HINGE	C	22.375	
	DP	10-LF	HINGE	T	23.375	
	DP	10-RF	HINGE	T	24.375	
	W	11-RF	DIRECT	C	18.625	
0° SPLICE - PLATES						
2 [90in]	W	8-RF	DIRECT	T	38	
	W	9-RF	DIRECT	C	18.625	
	W	19-RF	DIRECT	T	32	
	LB	27-RF	DIRECT	C	18.75	
0° SPLICE - CMU BRACKET						
3 [90in]	LB	8-RF	DIRECT	T	34	
	LB	9-RF	DIRECT	C	18.625	
	LB	24-RF	DIRECT	T	45.75	
	LB	25-RF	DIRECT	C	18.625	
0° SPLICE - CMU BRACKET						
4 [90in]	LB	10-RF	DIRECT	T	44.875	
	LB	11-RF	DIRECT	C	18.625	
	LB	26-RF	DIRECT	T	45.25	
	LB	27-RF	DIRECT	C	18.75	
0° SPLICE - CMU BRACKET						
5 [90in]	LB	11-RF	DIRECT	T	41.875	
	LB	12-RF	DIRECT	C	19	
	BB	19-LF	DIRECT	C	34.25	
	LB	20-RF	DIRECT	T	25.75	
	BB	29-LF	DIRECT	T		SB
	BB	30-LF	DIRECT	T		SB

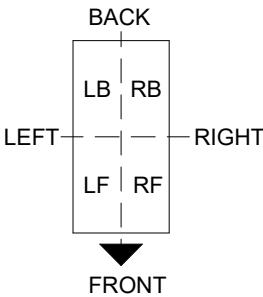
**REFER TO DETAIL 3/4.3 FOR P4
SIDE VIEW

X - CONNECT TO WHAT	
DP	DOUBLE POINT
LB	LEAD BOLT
BB	BELAY BAR
TB	TIEBACK
W	WALL CONNECTION

** A YELLOW SHADED CELL INDICATES
THE NEED FOR A WASHER PLATE
INSTALLED ON A HINGE - NECESSARY FOR
ALL TIEBACKS, LEADBOLTS, AND BELAY
BRACES THAT USE HINGES

HINGE	USE WASHER
3H-HINGE	PLATE
HINGE	NO WASHER PLATE NEEDED

P6	VERTICAL PROFILE - 5 SECTIONS					
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [45in]	DP	4-LF	HINGE	C	20.75	
	DP	4-RF	HINGE	C	33	
	DP	10-LF	HINGE	T	21.75	
	DP	10-RF	HINGE	T	33.625	
	W	11-RF	DIRECT	C	21.75	
0° SPLICE - PLATES						
2 [90in]	W	7-RF	DIRECT	T	36.75	
	W	8-RF	DIRECT	C	21.75	
	W	17-RF	DIRECT	T	31.75	
	W	18-RF	DIRECT	C	21.75	
	W	24-RF	DIRECT	T	26.375	
	LB	26-RF	HINGE	C	35.125	
	LB	27-RF	DIRECT	C	23.25	
0° SPLICE - CMU BRACKET						
3 [90in]	LB	5-RF	HINGE	T	39.75	
	LB	6-RF	HINGE	C	36.375	
	LB	8-RF	DIRECT	T	37	
	LB	9-RF	DIRECT	C	25.75	
	LB	21-RF	HINGE	T	46.875	
	LB	22-RF	HINGE	C	35.125	
	LB	24-RF	DIRECT	T	48.125	
	LB	25-RF	DIRECT	C	29.125	
0° SPLICE - CMU BRACKET						
4 [90in]	LB	7-RF	HINGE	T	46.125	
	LB	8-RF	HINGE	C	38	
	LB	10-RF	DIRECT	T	50	
	LB	11-RF	DIRECT	C	32.5	
	LB	25-RF	DIRECT	T	49.625	
	LB	26-RF	DIRECT	C	36.125	
	LB	27-RF	HINGE	T	56.625	
	LB	28-RF	HINGE	C	39.375	
0° SPLICE - CMU BRACKET						
5 [90in]	BB	9-RF	HINGE	C	67.375	
	LB	11-RF	DIRECT	T	52	
	LB	12-RF	DIRECT	C	39.375	
	LB	13-RF	HINGE	T	58.875	
	LB	14-RF	HINGE	C	42	
	BB	16-RF	HINGE	C	49.75	
	LB	21-RF	HINGE	T	46.375	
	LB	23-RF	DIRECT	T	47	
	BB	27-RF	HINGE	T		SE
	BB	28-RF	HINGE	T		SE
	BB	29-RF	HINGE	T		SD
	BB	30-RF	HINGE	T		SD



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2836 RECREATION
WAY, GRAND
JUNCTION, CO 81506

BRACING TABLES



P7		VERTICAL PROFILE - 5 SECTIONS				
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [45in]	DP	4-RF	HINGE	C	23.375	
	DP	10-RF	HINGE	T	26.875	
	W	11-RF	DIRECT	C	22.125	
0° SPLICE - PLATES						
2 [90in]	W	6-RF	DIRECT	T	34.375	
	W	8-RF	HINGE	C	18.625	
	W	15-RF	HINGE	T	25	
	W	16-LF	HINGE	C	15.75	
	W	27-LF	HINGE	T	33.75	
	W	27-LF	HINGE	T	33.75	
	LB	28-RF	HINGE	C	28.75	
0° SPLICE - CMU BRACKET						
3 [90in]	LB	8-RF	HINGE	T	40.625	
	LB	9-RF	HINGE	C	26.5	
	LB	24-RF	HINGE	T	48.875	
	LB	25-RF	HINGE	C	24.625	
0° SPLICE - CMU BRACKET						
4 [90in]	LB	8-RF	HINGE	T	43	
	LB	10-RF	HINGE	C	17.5	
	LB	25-RF	HINGE	T	41.375	
	LB	26-RF	HINGE	C	19.125	
0° SPLICE - CMU BRACKET						
5 [90in]	LB	12-RF	HINGE	T	45.125	
	LB	13-RF	HINGE	C	18.5	
	BB	14-LF	HINGE	C	50.75	
	BB	15-RF	HINGE	C	34.625	
	LB	23-RF	HINGE	T	31.625	
	BB	27-LF	HINGE	T		SD
	BB	27-RF	HINGE	T		SA
	BB	28-LF	HINGE	T		SD
	BB	28-RF	HINGE	T		SA

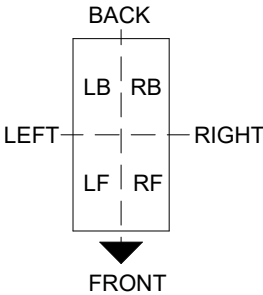
X - CONNECT TO WHAT	
DP	DOUBLE POINT
LB	LEAD BOLT
BB	BELAY BAR
TB	TIEBACK
W	WALL CONNECTION

**** A YELLOW SHADED CELL INDICATES THE NEED FOR A WASHER PLATE INSTALLED ON A HINGE - NECESSARY FOR ALL TIEBACKS, LEADBOLTS, AND BELAY BRACES THAT USE HINGES**

P8		ARTICULATED PROFILE - 6 SECTIONS				
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [12in]	DP	4-RF	HINGE	C	14	
-10° SPLICE (SLAB) - PLATES						
2 [90in]	DP	6-RF	HINGE	T	22.25	
	W	7-RF	DIRECT	C	15.625	
	W	18-RF	DIRECT	T	35.875	
	W	19-RF	DIRECT	C	19.75	
	W	27-RF	DIRECT	T	30.625	
	W	28-RF	DIRECT	C	22.875	
0° SPLICE - PLATES						
3 [90in]	W	6-RF	DIRECT	T	32.375	
	LB	8-RF	HINGE	C	24.375	
	TB	11/12-LB	3H-HINGE	TB		SF
	TB	11/12-RB	3H-HINGE	TB		SB
	LB	20-RF	HINGE	T	43.25	
	LB	21-RF	HINGE	C	26	
0° SPLICE - PLATES						
4 [45in]	LB	4-RF	HINGE	T	46.875	
	LB	5-RF	HINGE	C	29.375	
10° SPLICE (BACK TO VERT) - PLATES						
5 [90in]	LB	7-RF	HINGE	T	54.375	
	LB	8-RF	HINGE	C	29.75	
	DP	11-RF	HINGE	C	35.625	
	DP	21-RF	HINGE	T	42.25	
	LB	22-RF	HINGE	T	48.375	
	LB	23-RF	HINGE	C	25.75	
0° SPLICE - CMU BRACKET						
6 [78in]	LB	9-RF	HINGE	T	47.875	
	LB	10-RF	HINGE	C	21	
	BB	12-LF	HINGE	C	44.625	
	BB	12-RF	HINGE	C	31.25	
	LB	19-RF	HINGE	T	31.625	
	BB	23-LF	HINGE	T		SD
	BB	23-RF	HINGE	T		SA
	BB	24-LF	HINGE	T		
	BB	24-RF	HINGE	T		SA

HINGE	USE WASHER PLATE
3H-HINGE	
HINGE	NO WASHER PLATE NEEDED

P9		ARTICULATED PROFILE - 5 SECTIONS				
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [12in]	DP	4-RF	DIRECT	C	14.875	
-12° SPLICE (SLAB) - PLATES						
2 [90in]	DP	7-RF	DIRECT	T	25.25	
	W	8-RF	DIRECT	C	16.5	
	W	18-RF	DIRECT	T	33.625	
	W	19-RF	DIRECT	C	16.75	
	W	27-RF	DIRECT	T	28.25	
	W	28-RF	DIRECT	C	17	
0° SPLICE - PLATES						
3 [90in]	W	6-RF	DIRECT	T	28.875	
	LB	7-RF	DIRECT	C	17.125	
	TB	11/12-LB	3H-HINGE	TB		SD
	TB	11/12-RB	3H-HINGE	TB		SD
	LB	19-RF	DIRECT	T	36.25	
	LB	20-RF	DIRECT	C	17.25	
4 [90in]	LB	28-RF	DIRECT	T	27.875	
	0° SPLICE - PLATES					
	LB	5-LF	DIRECT	C	20.75	
	LB	22-LF	DIRECT	T	51.375	
5 [24in]	LB	23-LF	DIRECT	C	26.375	
	DP	26-LF	HINGE	C	30.375	
12° SPLICE (BACK TO VERT) - PLATES						
5 [24in]	DP	4-LF	HINGE	T	35.25	
	LB	6-LF	HINGE	T	45.625	
	LB	6-RF	HINGE	C	29.5	
0° SPLICE - CMU BRACKET						
6 [90in]	LB	13-RF	HINGE	T	39.75	
	LB	16-LF	HINGE	C	23	
	BB	19-RF	HINGE	C	29.125	
	LB	24-LF	DIRECT	T	26.75	
	BB	29-RF	HINGE	T		SA
	BB	30-RF	HINGE	T		SA



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2836 RECREATION
WAY, GRAND
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P10	ARTICULATED PROFILE - 6 SECTIONS					
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [12in]	DP	4-LF	HINGE	C	13.75	
- 12° SPLICE (SLAB) - PLATES						
2 [90in]	W	6-RB	ANGLE	C	21.125	
	DP	7-LF	HINGE	T	24.875	
	W	8-LF	DIRECT	C	18.125	
	W	18-LF	DIRECT	T	28.25	
	W	19-LF	DIRECT	C	18.375	
	W	20-RB	ANGLE	T	43.75	
	W	21-RB	ANGLE	C	23.75	
	W	28-LF	DIRECT	T	26.875	
0° SPLICE - PLATES						
3 [90in]	W	5-RB	ANGLE	T	45.125	
	W	6-RB	ANGLE	C	27.625	
	LB	8-RF	DIRECT	C	17.875	
	TB	11/12-LB	3H-HINGE	TB		SD
	TB	11/12-RB	3H-HINGE	TB		SG
	LB	18-RF	DIRECT	T	33.625	
	LB	19-RF	DIRECT	C	18.125	
	W	20-RB	ANGLE	T	42.75	
	W	21-RB	ANGLE	C	29.25	
	LB	28-RF	DIRECT	T	29.125	
0° SPLICE - PLATES						
4 [90in]	LB	4-RF	HINGE	C	15.75	
	W	5-RB	ANGLE	T	48.25	
	W	6-RB	ANGLE	C	35.375	
	W	17-RB	ANGLE	T	41.75	
	W	18-RB	ANGLE	C	42.5	
	LB	22-RF	HINGE	T	53	
	LB	23-RF	HINGE	C	21	
	W	27-RB	ANGLE	T	48.125	
12° SPLICE (BACK TO VERT) - PLATES						
5 [24in]	LB	3-RF	HINGE	T	34.75	
	LB	4-RF	HINGE	C	28.625	
	W	6-RF	ANGLE	C	48.5	
0° SPLICE - CMU BRACKET						
6 [90in]	W	10-RF	ANGLE	T	58.25	
	W	11-RF	ANGLE	C	49.25	
	LB	14-RF	HINGE	T	39	
	LB	15-RF	HINGE	C	19.125	
	BB	17-RF	HINGE	C	31	
	W	21-RF	ANGLE	T	52.25	
	W	22-RF	ANGLE	C	48.625	
	LB	24-RF	HINGE	T	22.375	
	W	26-RF	ANGLE	T	48.75	
	BB	27-RF	HINGE	T		SA
	BB	28-RF	HINGE	T		SA

X - CONNECT TO WHAT	
DP	DOUBLE POINT
LB	LEAD BOLT
BB	BELAY BAR
TB	TIEBACK
W	WALL CONNECTION

P11	VERTICAL PROFILE - 2 SECTIONS					
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [90in]	W	12-LF	ANGLE	C	21.25	
	W	12-RF	HINGE	C	14.625	
	W	21-LF	ANGLE	T	21.5	
	W	21-RF	HINGE	T	26.125	
	W	22-LF	ANGLE	C	24.75	
	W	22-RF	HINGE	C	22.75	
0° SPLICE - PLATES						
2 [45in]	W	3-LF	ANGLE	T	22	
	W	3-RF	HINGE	T	30.875	
	W	4-LF	ANGLE	C	14.875	
	W	4-RF	HINGE	C	39.125	
	W	14-LF	ANGLE	T	23.875	
	W	15-RF	HINGE	T	21.25	
	TB	14/15-LB	3H-HINGE	TB		SE
	TB	14/15-RB	3H-HINGE	TB		SE

P13	ARTICULATED PROFILE - 3 SECTIONS					
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [12in]						
10° SPLICE (OVERHANG) - PLATES						
2 [90in]	W	5-LF	DIRECT	C	21.125	
	W	5-RF	HINGE	C	16.125	
	W	14-LF	DIRECT	T	25.5	
	W	14-RF	HINGE	T	30.875	
	W	15-LF	DIRECT	C	25	
	W	15-RF	HINGE	C	14.75	
	W	21-LF	DIRECT	T	27.125	
	W	21-RF	HINGE	T	22.125	
	W	22-LF	DIRECT	C	30.625	
	W	22-RF	HINGE	C	17.25	
0° SPLICE - PLATES						
3 [42in]	W	3-LF	DIRECT	T	29.5	
	W	3-RF	HINGE	T	24.125	
	W	4-LF	DIRECT	C	34.875	
	W	4-RF	HINGE	C	25.75	
	TB	11/12-LB	3H-HINGE	TB		SH
	TB	11/12-RB	3H-HINGE	TB		SI
	W	14-LF	DIRECT	T	25.25	
	W	14-RF	HINGE	T	12	

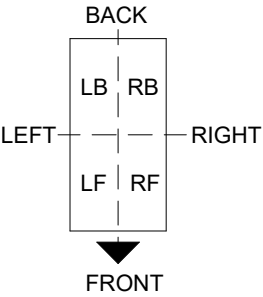
P12	ARTICULATED PROFILE - 3 SECTIONS					
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [12in]						
10° SPLICE (OVERHANG) - PLATES						
2 [90in]	W	5-LF	DIRECT	C	24.25	
	W	14-LF	DIRECT	T	23.375	
	W	15-LF	DIRECT	C	24.625	
	W	21-LF	DIRECT	T	26.375	
	W	22-LF	DIRECT	C	29.75	
0° SPLICE - PLATES						
3 [42in]	W	3-LF	DIRECT	T	33.5	
	W	4-LF	DIRECT	C	37	
	TB	11/12-LB	3H-HINGE	TB		SH
	TB	11/12-RB	3H-HINGE	TB		SH
	W	14-LF	DIRECT	T	26.5	

P14	VERTICAL PROFILE - 2 SECTIONS					
SECTION	X	HOLE #	CONNECTION	TYPE	ANGLE (IN)	PINCH PIPE
1 [90in]	W	4-RF	ANGLE	C	16.5	
	W	19-RF	ANGLE	T	43.5	
	W	20-RF	ANGLE	C	16.25	
	W	27-RF	ANGLE	T	23.875	
	W	28-RF	ANGLE	C	16.25	
0° SPLICE - CMU BRACKET						
2 [45in]	W	5-RF	ANGLE	T	24.125	
	W	6-RF	ANGLE	C	25.125	
	W	15-RF	ANGLE	T	17.25	

ITEM	QTY
BELAY BAR	12
LEAD BOLT	97
ANGLE - 3 HOLE	160
ANGLE - 4 HOLE	38
HINGE - 3 HOLE	237
HINGE - 4 HOLE	177
L 2x2x1/8	880 ft
L 3x3x3/16	100 ft

Backups	
PIPE	QTY
SA	2
SB	9
SC	40
SD	34
SE	38
SF	25
SG	10
SH	0
SI	0
SJ	0
SK	0
SL	0

For Belays and Tiebacks	
PIPE	QTY
SA	13
SB	6
SC	5
SD	11
SE	5
SF	2
SG	11
SH	7
SI	1
SJ	0
SK	0
SL	0



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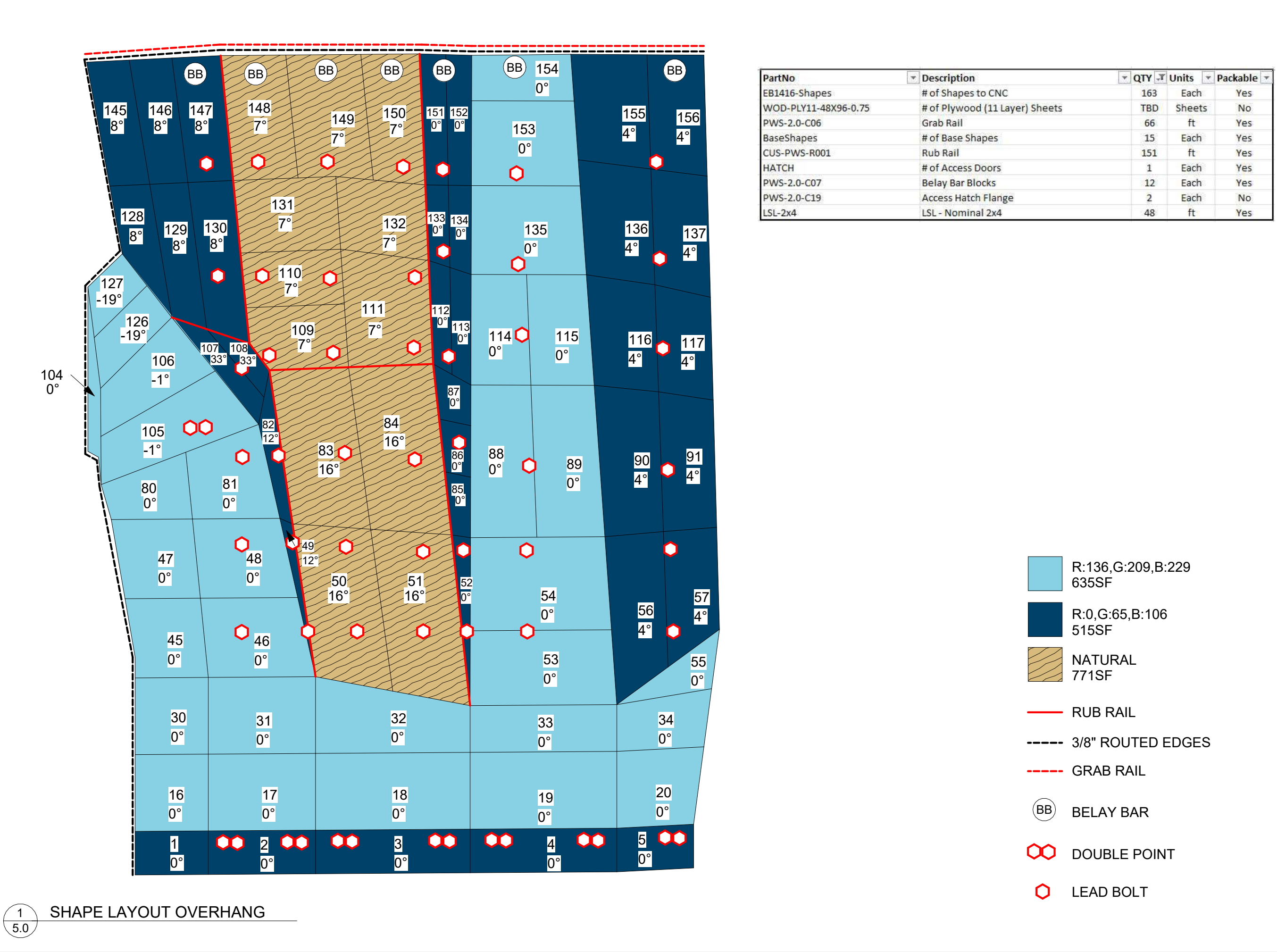
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WAY, GRAND
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ELDORADO
CLIMBING

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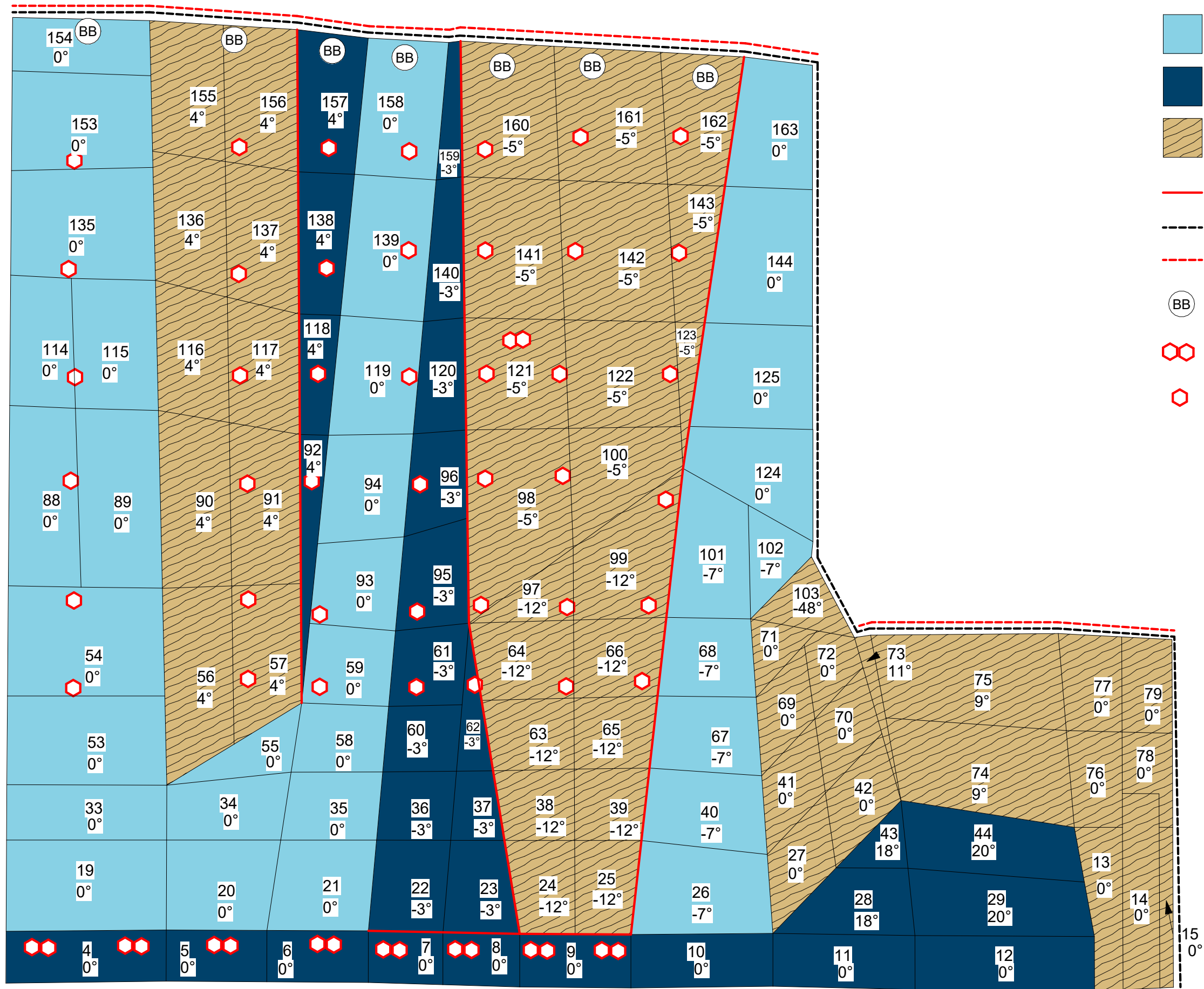
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SHAPE LAYOUT

PEAK
THRILLS
ENGINEERING

5.0



-  R:136,G:209,B:229 635SF
-  R:0,G:65,B:106 515SF
-  NATURAL 771SF
-  RUB RAIL
-  3/8\"/>
-  GRAB RAIL
-  BELAY BAR
-  DOUBLE POINT
-  LEAD BOLT



ELBORADO
CLIMBING

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NUMBER	DATE

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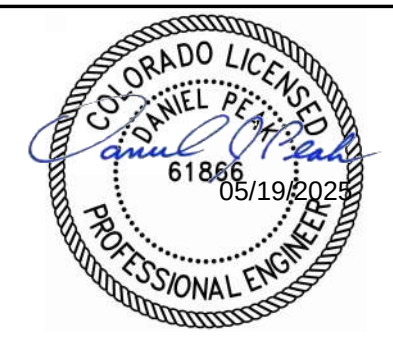
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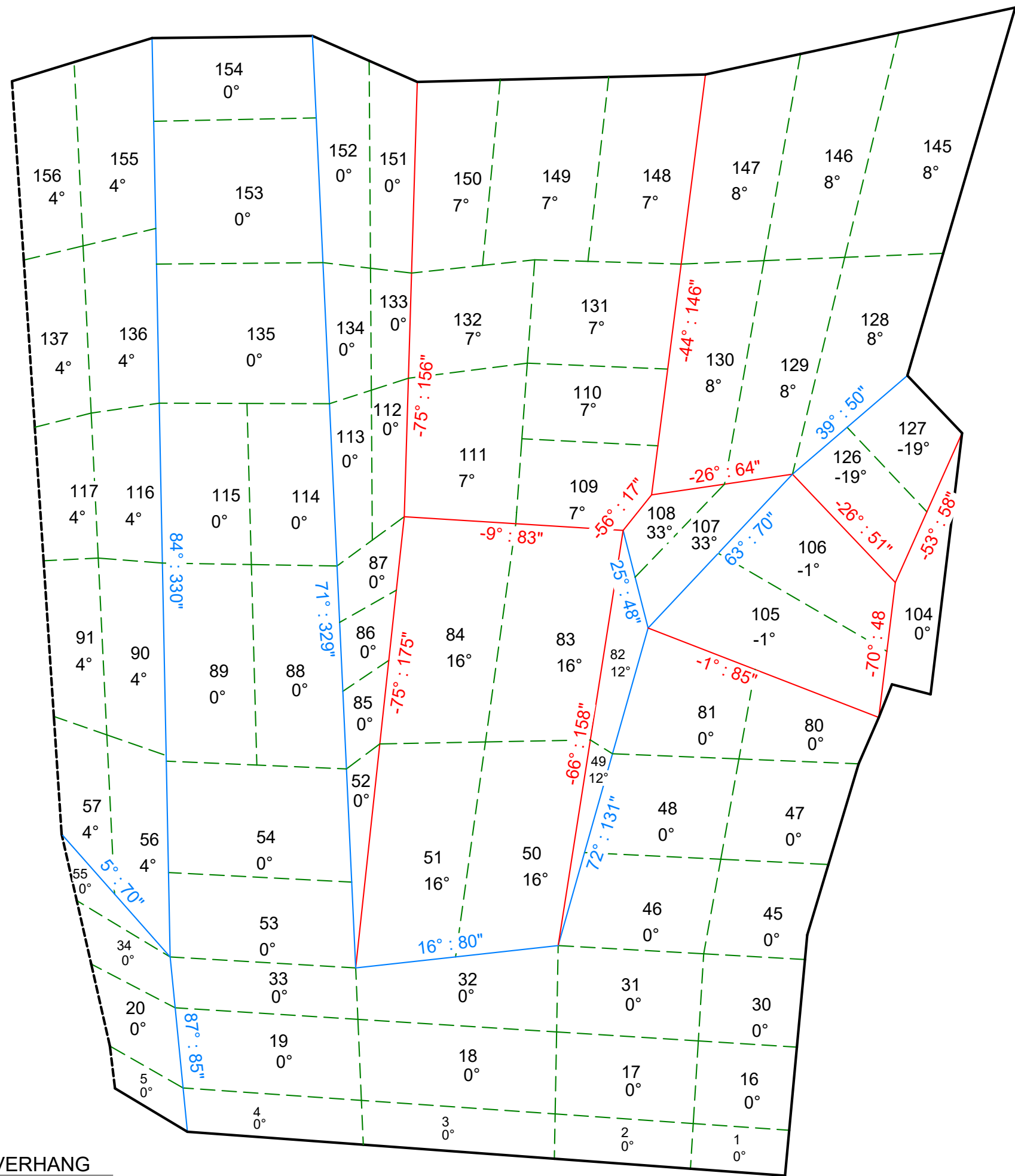
SHAPE LAYOUT

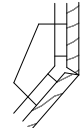
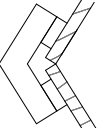


PEAK
THRILLS
ENGINEERING



5.1



-  ARETE FLANGE
(OUTSIDE CORNER)
< 0°
-  BUTT JOINT FLANGE
(NO ANGLE CHANGE)
= 0°
-  DIHEDRAL FLANGE
(INSIDE CORNER)
> 0°



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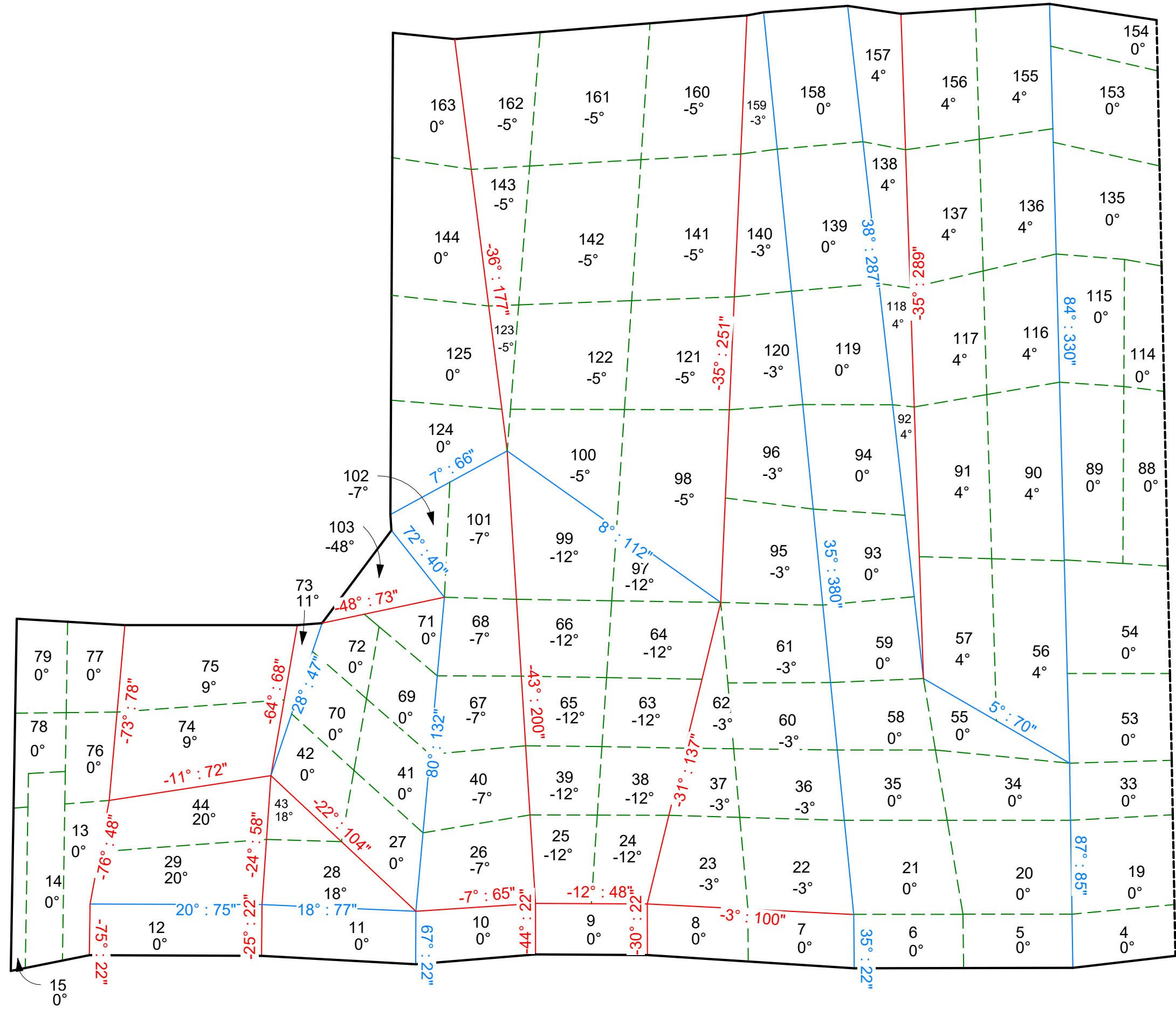
2836 RECREATION
WAY, GRAND
JUNCTION, CO 81506

FLANGE LAYOUT





6.0



1
6.1 FLANGE VIEW SLAB

- ARETE FLANGE
(OUTSIDE CORNER)
< 0°
- BUTT JOINT FLANGE
(NO ANGLE CHANGE)
= 0°
- DIHEDRAL FLANGE
(INSIDE CORNER)
> 0°



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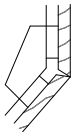
FLANGE LAYOUT



6.1

PartNo	Description	Sheets to Cut	Material ID	Material Name	Thickness	CNC Time (per Sheet)	CNC Time (Total)
PWS-2.0-CNC-ADV-01-3.5x7	Butt Joints for CNC - 3.5in Wide x 7in Long	8	WOD-ADV-48X96-0.75	AdvanTech	0.72	17	136
PWS-2.0-CNC-ADV-02	Belay Bar Blocking for CNC - Indoor	1	WOD-ADV-48X96-0.75	AdvanTech	0.72	14	14
PWS-2.0-CNC-ADV-03	Grab Rail and Trim for CNC - Indoor	7	WOD-ADV-48X96-0.75	AdvanTech	0.72	24	168
PWS-2.0-CNC-ADV-05	Access Hatch Flanges for CNC - Indoor	1	WOD-ADV-48X96-0.75	AdvanTech	0.72	28	28
PWS-2.0-CNC-PLY-02	Flange Wings for CNC - Indoor	7	WOD-PLY13-48X96-0.75	Plywood (13 Layer) - BB/CP	0.72	51	357
PWS-2.0-CNC-PLY-04	Flange Gussets for CNC - Indoor	8	WOD-PLY13-48X96-0.75	Plywood (13 Layer) - BB/CP	0.72	115	920
Totals		32 sheets					28 hours

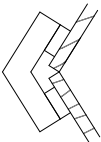
Angle Type	Angle Change	Length	Full Brackets (93in)	Partial Bracket Length	Gussets	Wings
Arete	-76	48	0	48	10	
Arete	-75	353	3	74	70	
Arete	-73	78	0	78	16	
Arete	-70	48	0	48	10	
Arete	-66	158	1	65	32	
Arete	-64	68	0	68	14	
Arete	-56	17	0	17	4	
Arete	-53	58	0	58	12	
Arete	-48	73	0	73	16	
Arete	-44	168	1	75	34	
Arete	-43	200	2	14	40	
Arete	-36	177	1	84	36	
Arete	-35	540	5	75	106	
Arete	-31	137	1	44	28	
Arete	-30	22	0	22	6	
Arete	-26	115	1	22	24	
Arete	-25	22	0	22	6	
Arete	-24	58	0	58	12	
Arete	-22	104	1	11	22	
Arete	-12	48	0	48	10	
Arete	-11	72	0	72	14	
Arete	-9	83	0	83	18	
Arete	-7	65	0	65	14	
Arete	-3	100	1	7	20	
Arete	-1	85	0	85	18	
Butt Joint	0	7651	1093 island blocks			
Dihedral	5	70	0	70	14	
Dihedral	7	66	0	66	14	
Dihedral	8	112	1	19	22	
Dihedral	16	80	0	80	16	
Dihedral	18	77	0	77	16	
Dihedral	20	75	0	75	16	
Dihedral	25	48	0	48	10	
Dihedral	28	74	0	74	16	
Dihedral	35	402	4	30	78	
Dihedral	38	287	3	8	56	
Dihedral	39	50	0	50	10	
Dihedral	63	70	0	70	14	
Dihedral	67	22	0	22	6	
Dihedral	71	329	3	50	64	
Dihedral	72	171	1	78	34	
Dihedral	80	132	1	39	26	
Dihedral	84	330	3	51	64	
Dihedral	87	85	0	85	18	
Totals		1086 ft	33 full brackets	43 partial brackets	1086 gusset: 118 wings	



ARETE FLANGE
(OUTSIDE CORNER)
< 0°



BUTT JOINT FLANGE
(NO ANGLE CHANGE)
= 0°



DIHEDRAL FLANGE
(INSIDE CORNER)
> 0°



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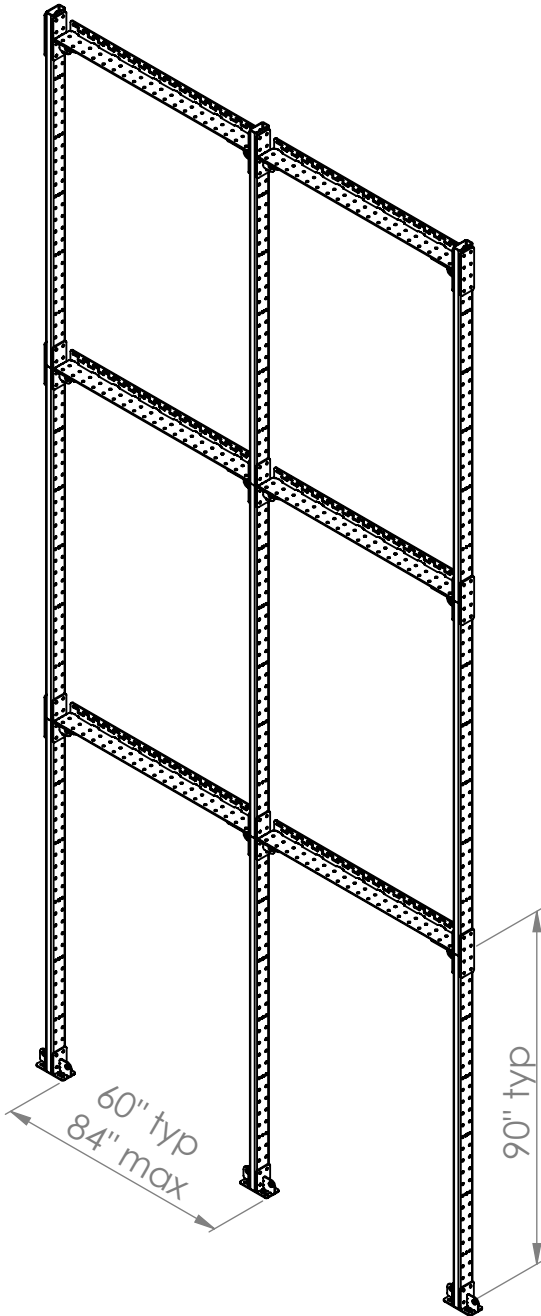
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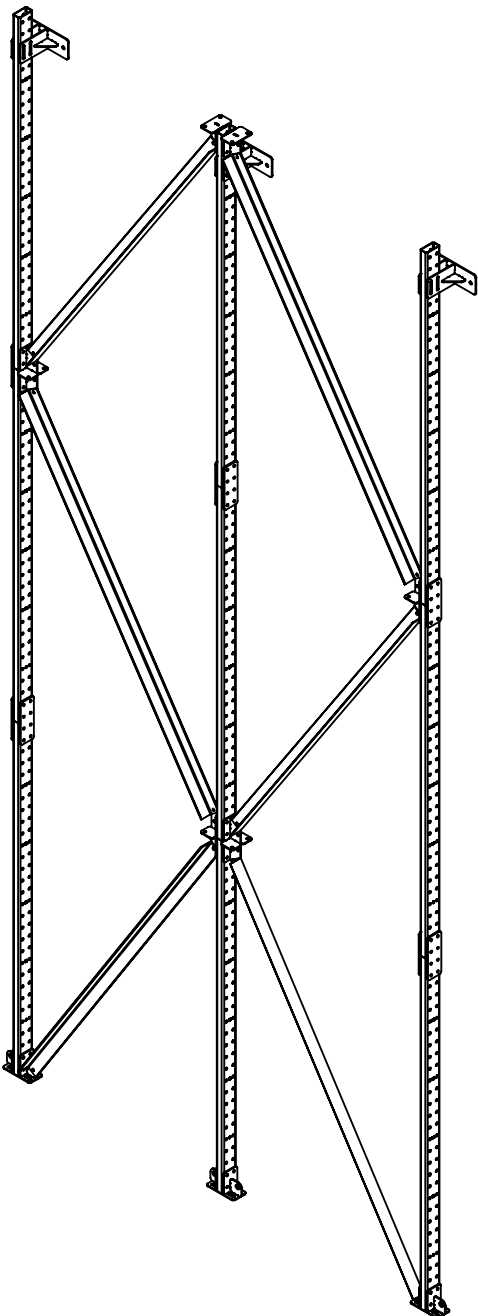
FLANGE SUMMARY



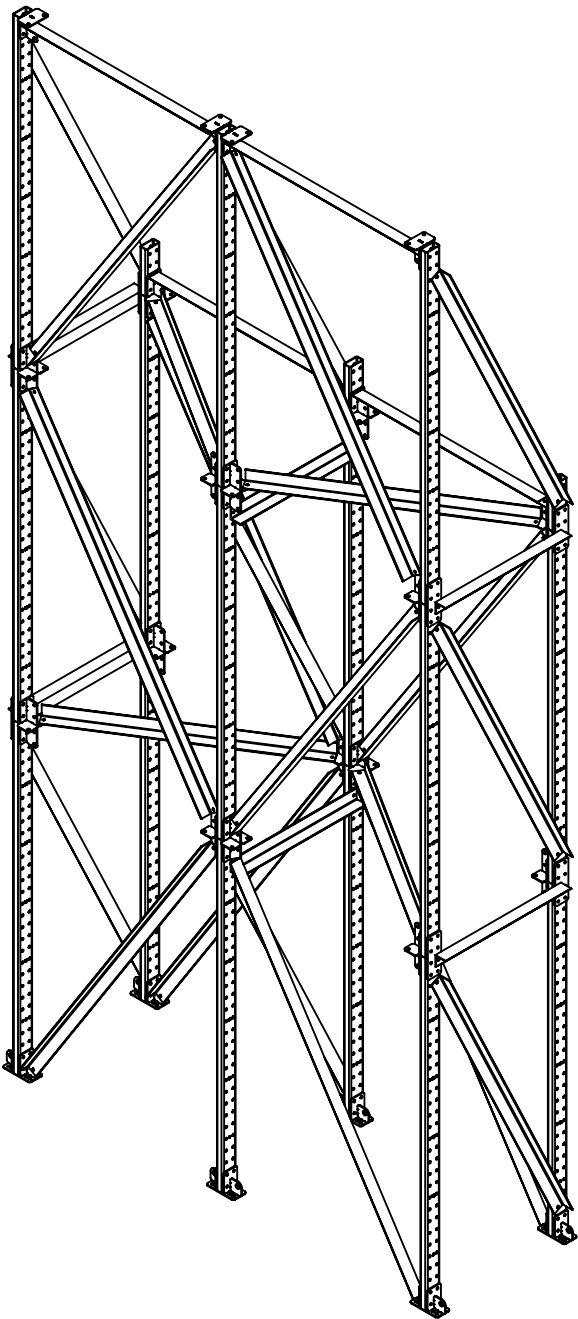
6.2



Case 1
Slab and Wall Attachments



Case 2
Slab and Ceiling (or Beam) Attachments

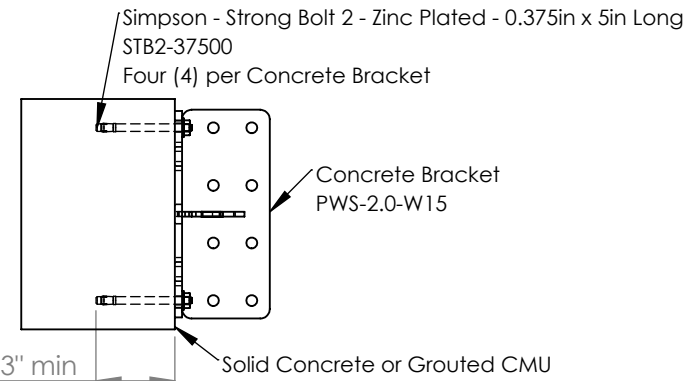
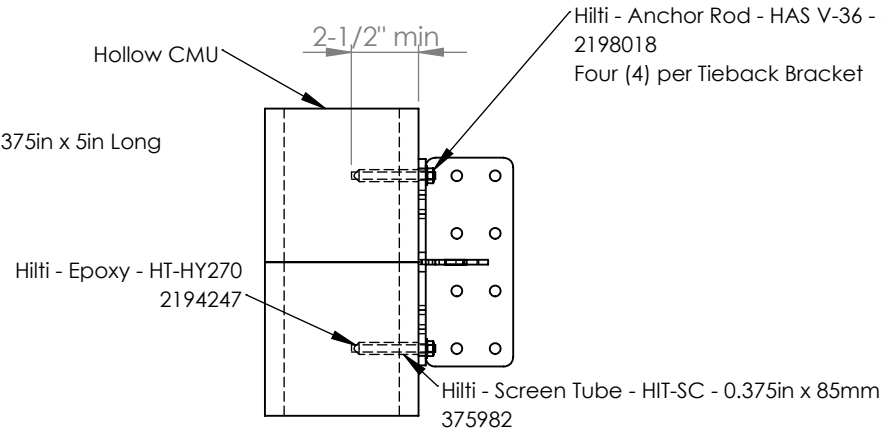
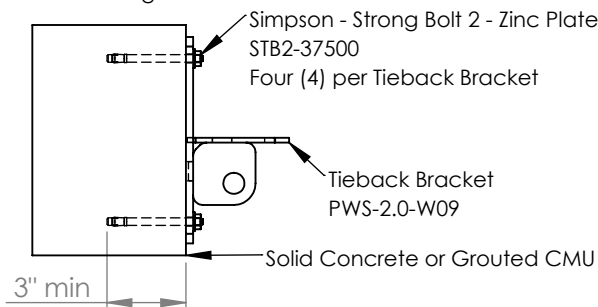
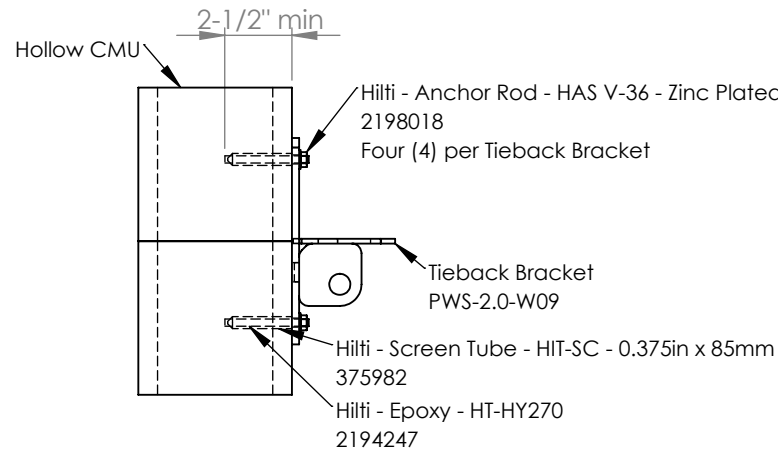
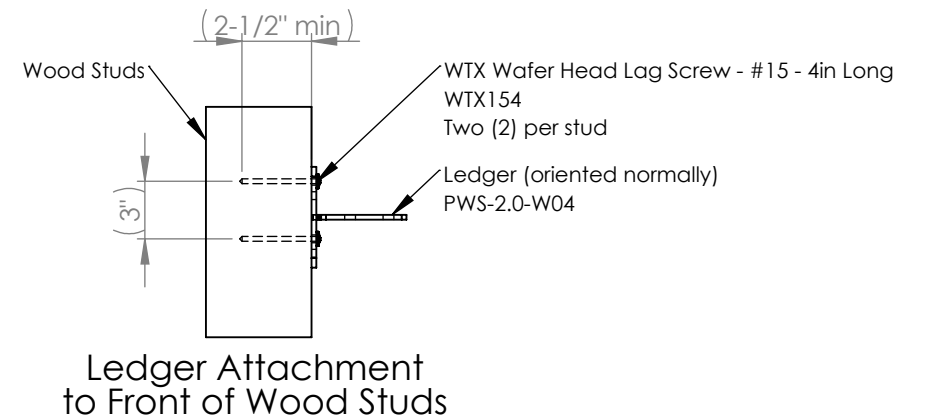
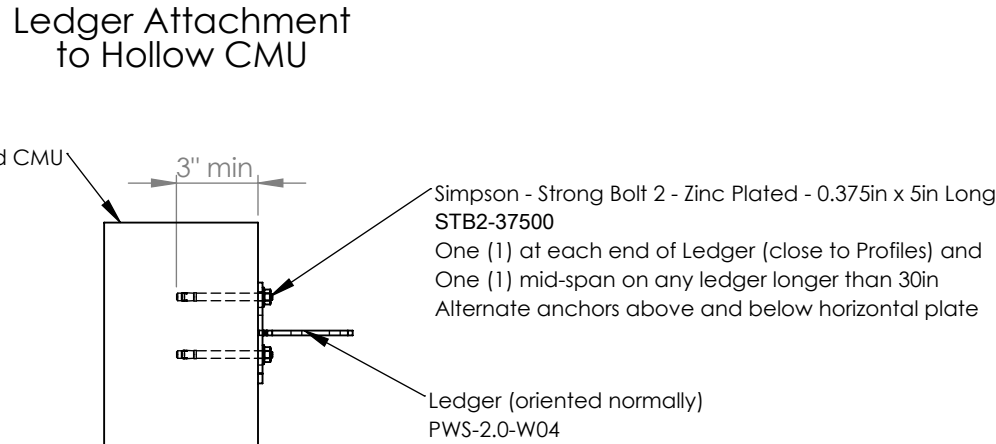
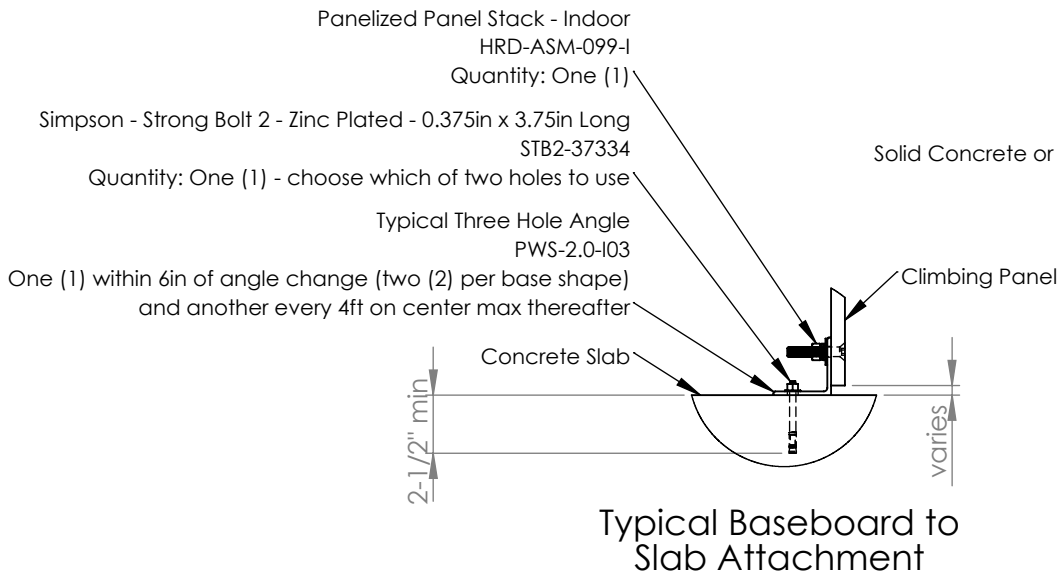
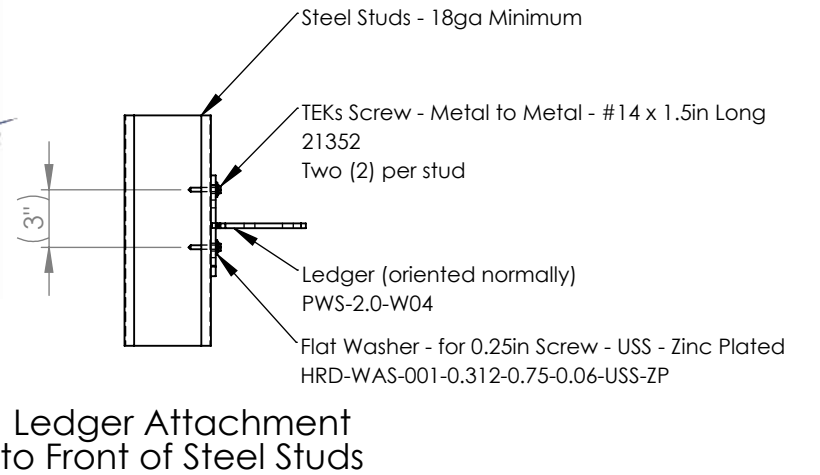
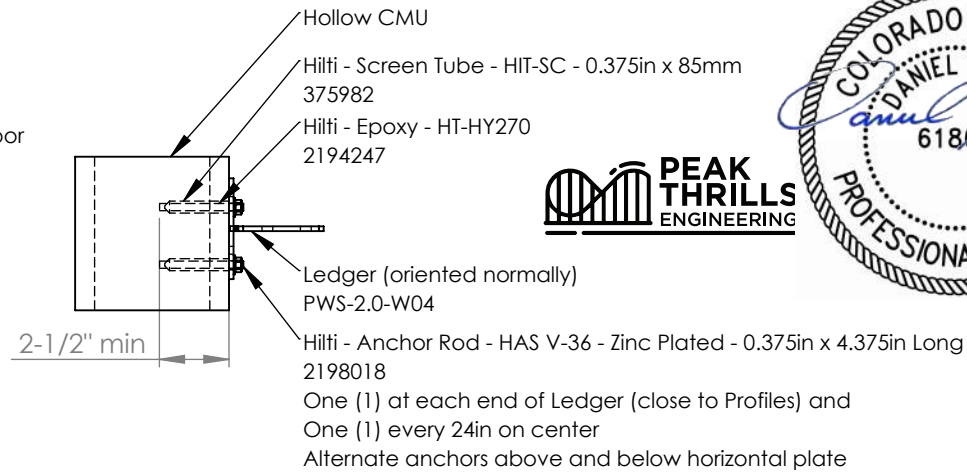
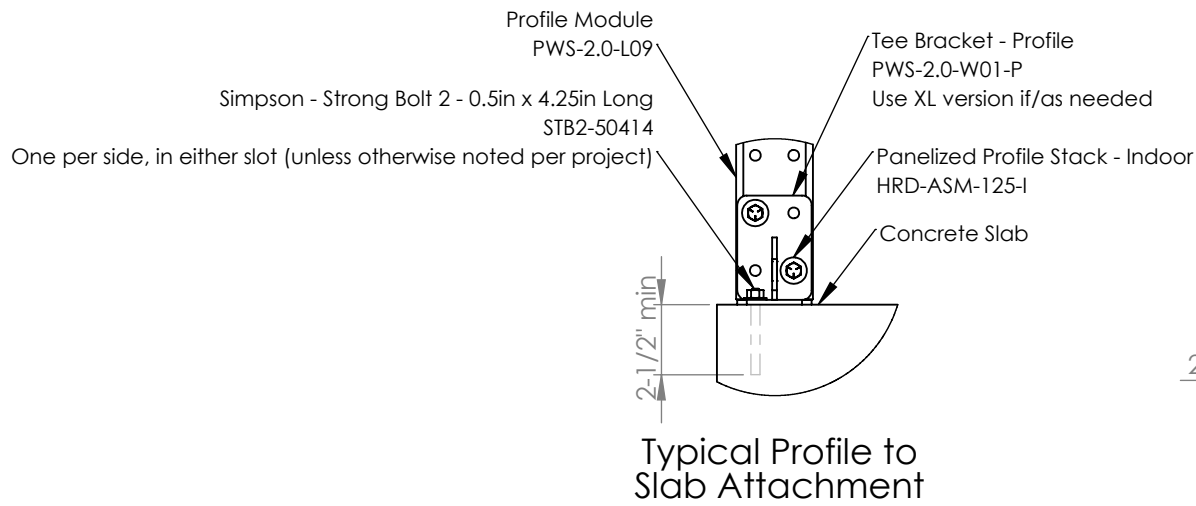


Case 3
Slab Attachments Only

Typical Details - Table of Contents	
Sheet	Description
0.01	Visual Overview
0.02	Building Connections
0.03	Steel Joints
0.04	Articulated Profiles
0.05	Climbing Wall Details
0.06	Sub Assemblies
0.07	Ironworked Parts
0.08	Weldments 1
0.09	Weldments 2
0.10	Hardware Stacks
0.11	Parts to CNC
0.12	Tie Off Points
0.13	Bracing Members 1
0.14	Bracing Members 2

Notes:
1. The three basic structure types are shown above for clarity. Actual steel configurations vary per project, and are detailed in those project-specific install sets.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5		FINISH:		Deburr and break sharp edges (if applicable)		DO NOT SCALE DRAWING		REVISION 1	
NAME		SIGNATURE		DATE		TITLE:		Panelized 2.0 Typicals - Visual Overview	
DRAWN						DWG NO.		P2-0.01	
CHK'D								B	
APPV'D									
MFG									
Q.A						MATERIAL:			
						WEIGHT:		SCALE: 1:40	
								SHEET 1 OF 19	

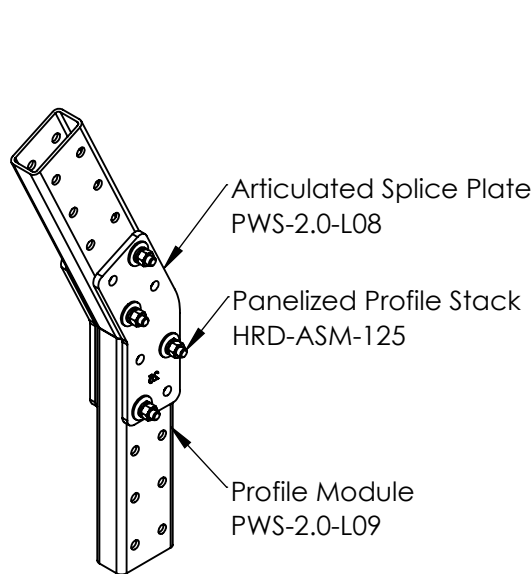


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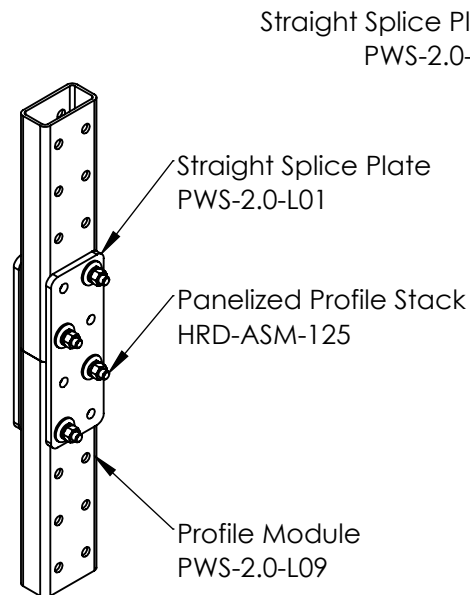
1. It is permissible to install ledgers or brackets atop wall cladding (e.g. drywall, plywood, etc.), so long as the appropriate embedment (into whichever wall type) is maintained (as defined by the manufacturer of each fastener and the structural engineer stamping these plans).

2. Wedge anchors (or any other fastener) may change per project if/when required by engineering. For example each Strong Bolt 2 may be replaced with a KB TZ2 of equivalent diameter and length for high seismic areas. Additionally, any Zinc Plated Simpson Strong Bolt 2 may be replaced with a Zinc Plated Hilti KB1 of equivalent diameter and length.

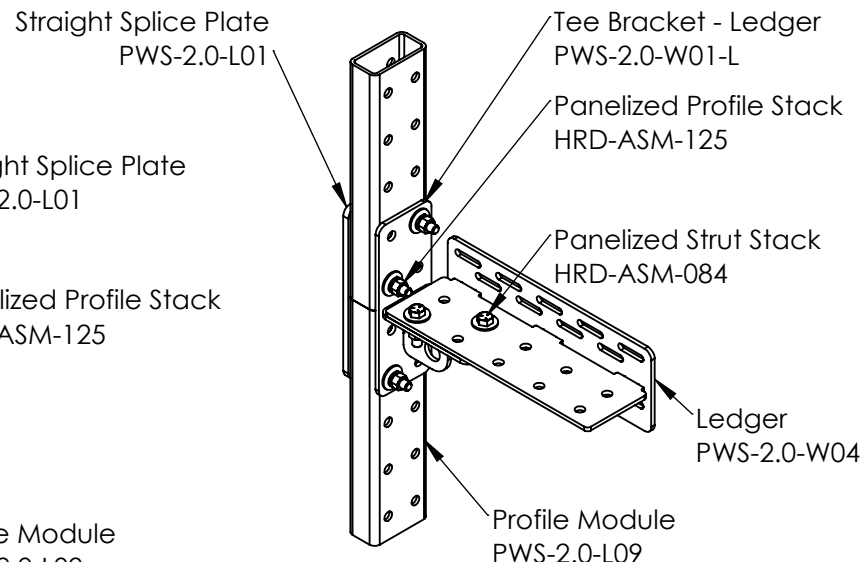
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING		REVISION			
							TITLE: Panelized 2.0 Typicals - Building Connections - Indoor					
	NAME	SIGNATURE	DATE									
DRAWN	Mark Hemphill		4/12/2023									
CHK'D												
APPV'D												
MFG												
Q.A				MATERIAL:			DWG NO. P2-0.02-I		B			
							WEIGHT: 221.632622			SCALE: 1:5		SHEET 2 OF 19



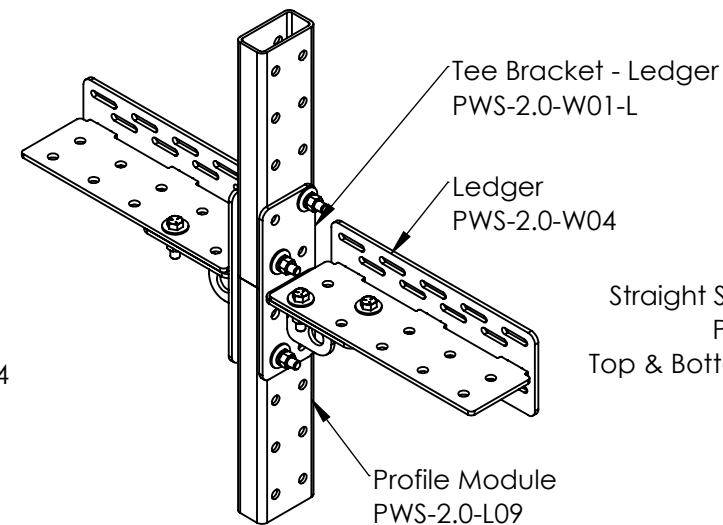
Articulated Profile Splice



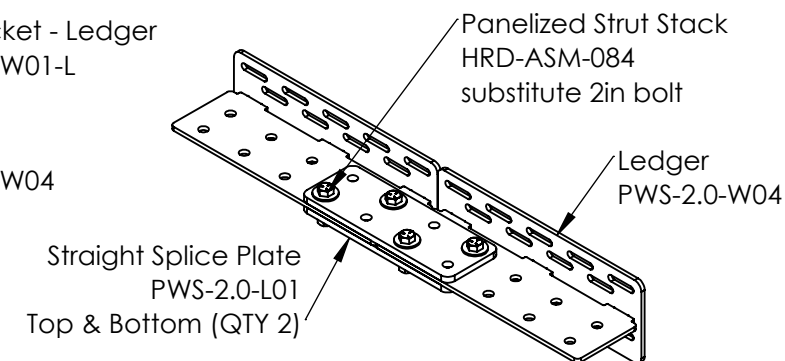
Straight Profile Splice



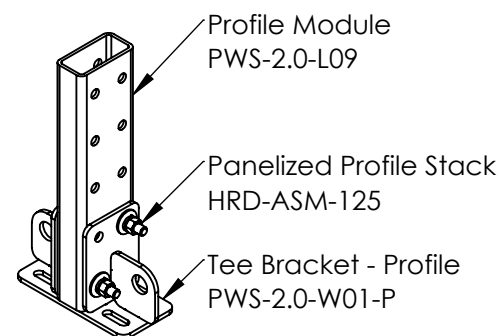
Tee Connection
(Profiles & Ledgers)



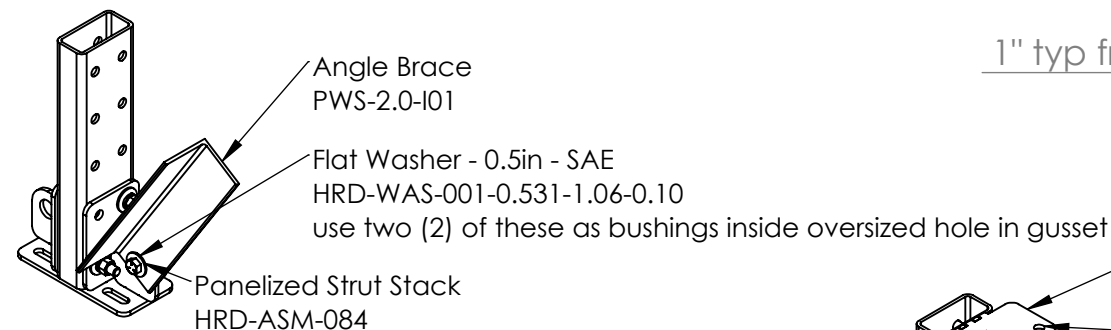
Cross Connection
(Profiles & Ledgers)



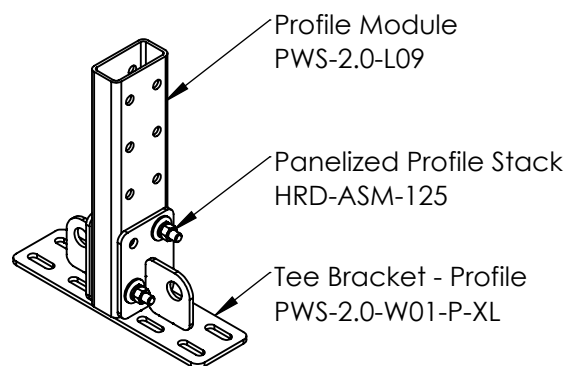
Straight Ledger Splice



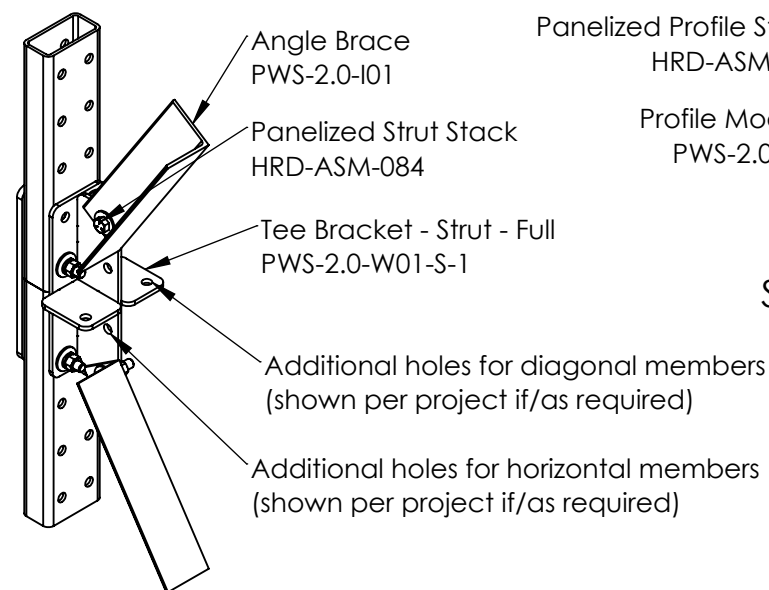
Profile to Tee Bracket



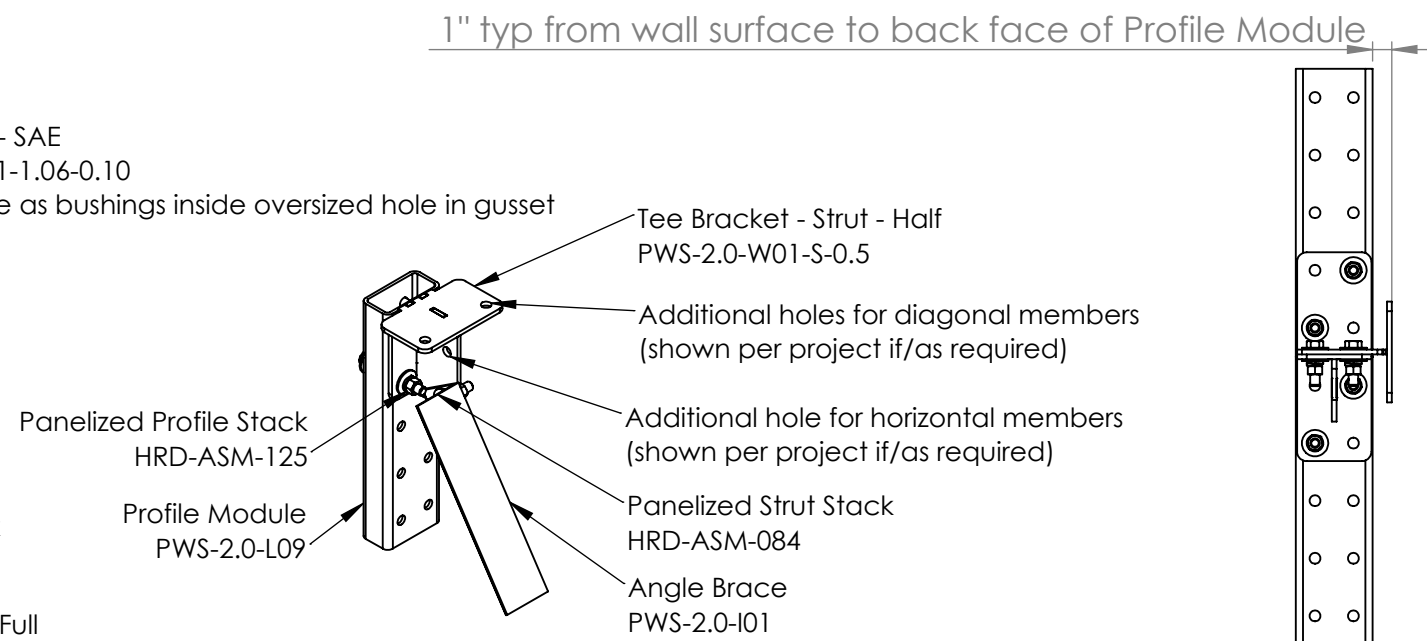
Strut Connection - Base



Profile to Tee Bracket - XL
(use if/when necessary to
avoid rebar or cable(s) in slab)



Strut Connection - Mid Height



Strut Connection - Top



Tee or Cross Connection
(Profiles & Ledgers)
Side View

Notes:
1. All joints above are shown with two (2) bolts per inbound member. This is typical. However, certain joints or joint types (e.g. articulated profile splices) may need four (4) bolts per member, if/as specified in the project-specific engineering. Also, bolts are shown intentionally staggered - install as shown above.

Unless oth Dimension Surface fir Tolerance Linear: + Angular:		Deburr and break sharp edges (if applicable)		DO NOT SCALE DRAWING		REVISION	
DRAWN		MATERIAL:		DWG NO.		B	
CHK'D		WEIGHT:		SCALE: 1:10		SHEET 4 OF 19	
APPV'D							
MFG							
Q.A							



TITLE:
**Panelized 2.0 Typical
- Steel Joints**

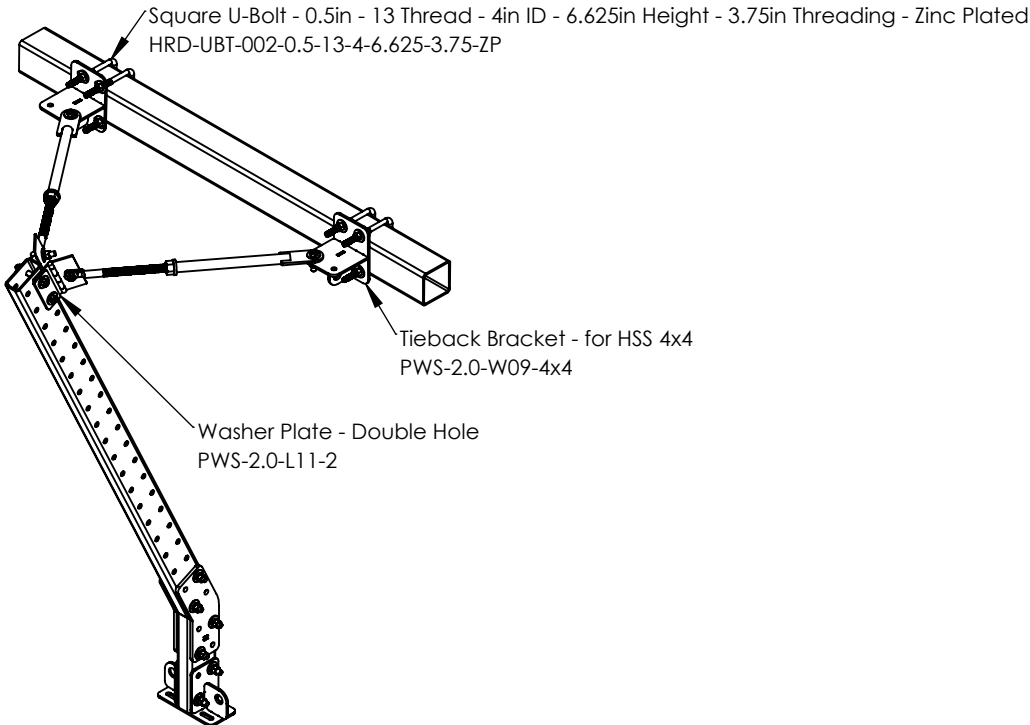
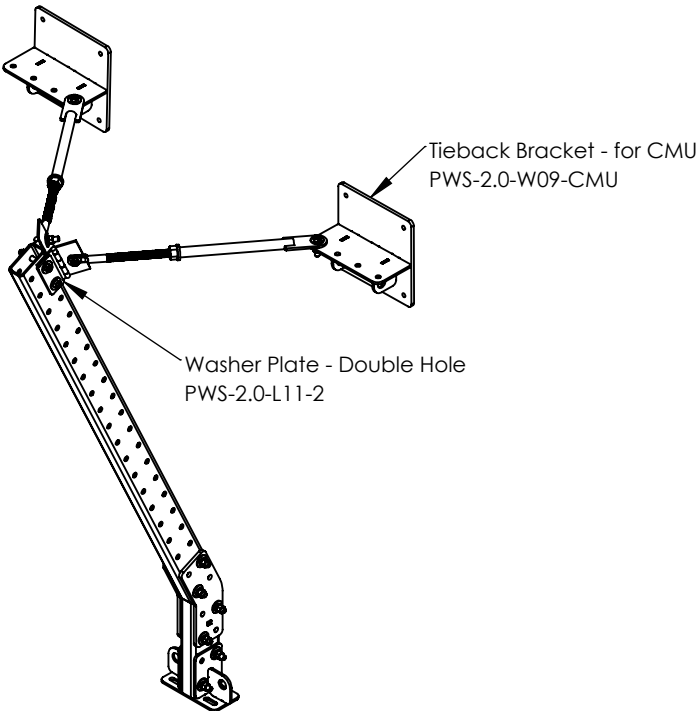
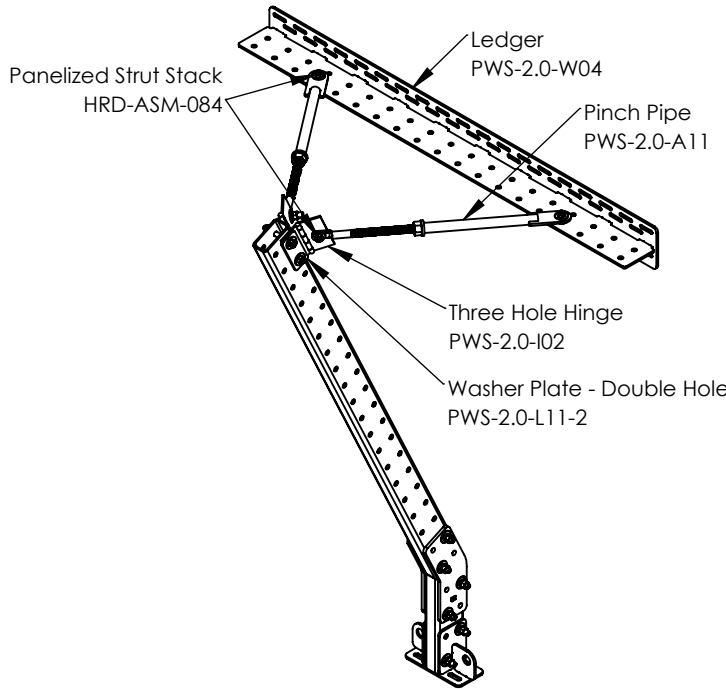
P2-0.03

to Ledger (PWS-2.0-W04)

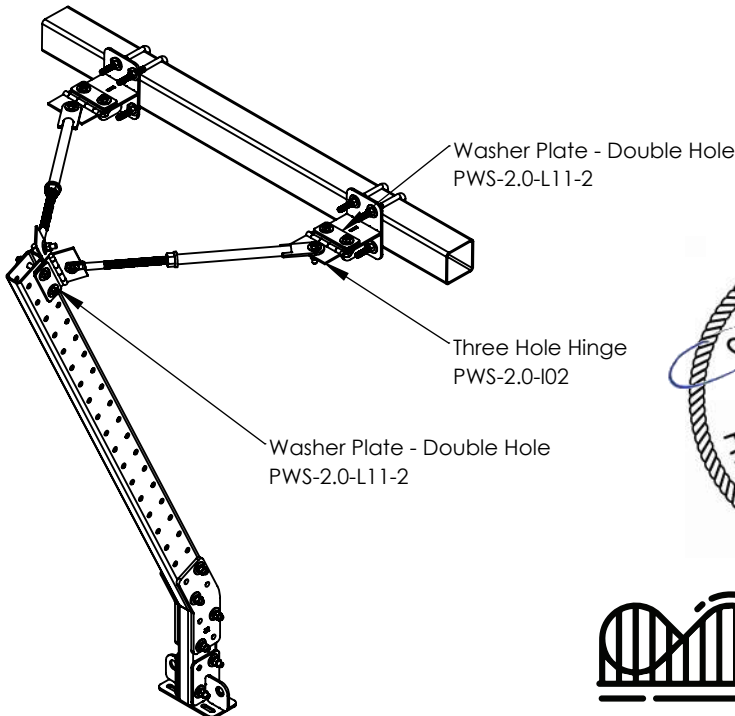
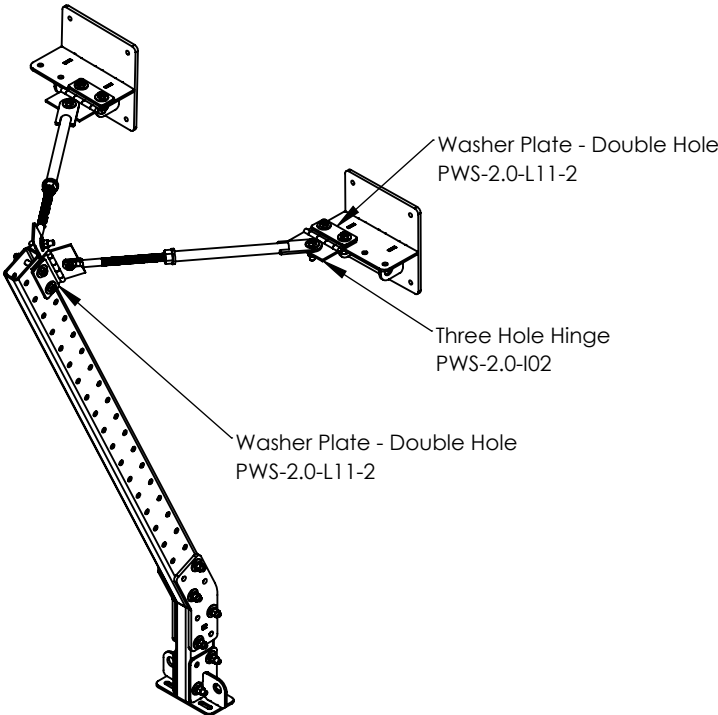
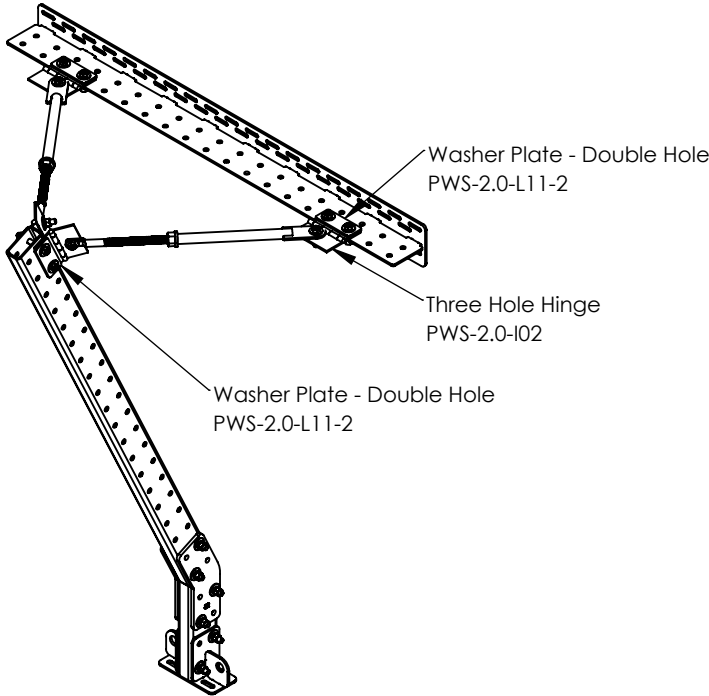
to Tie Back Bracket - for CMU (PWS-2.0-W09-CMU)

to Tie Back Bracket - for HSS 4x4 (PWS-2.0-W09-4x4)

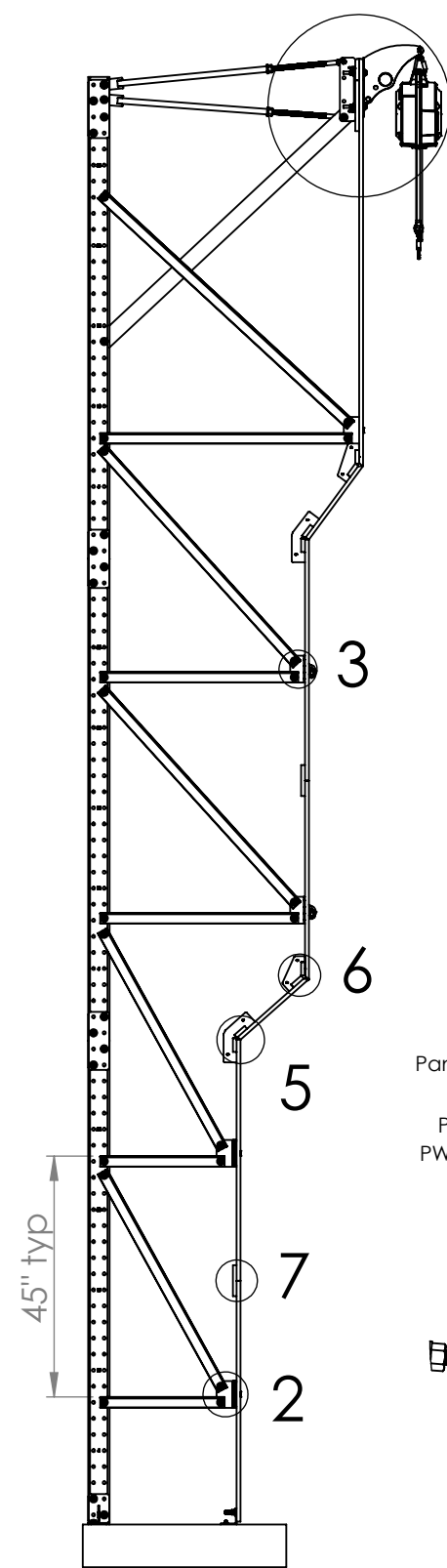
Direct



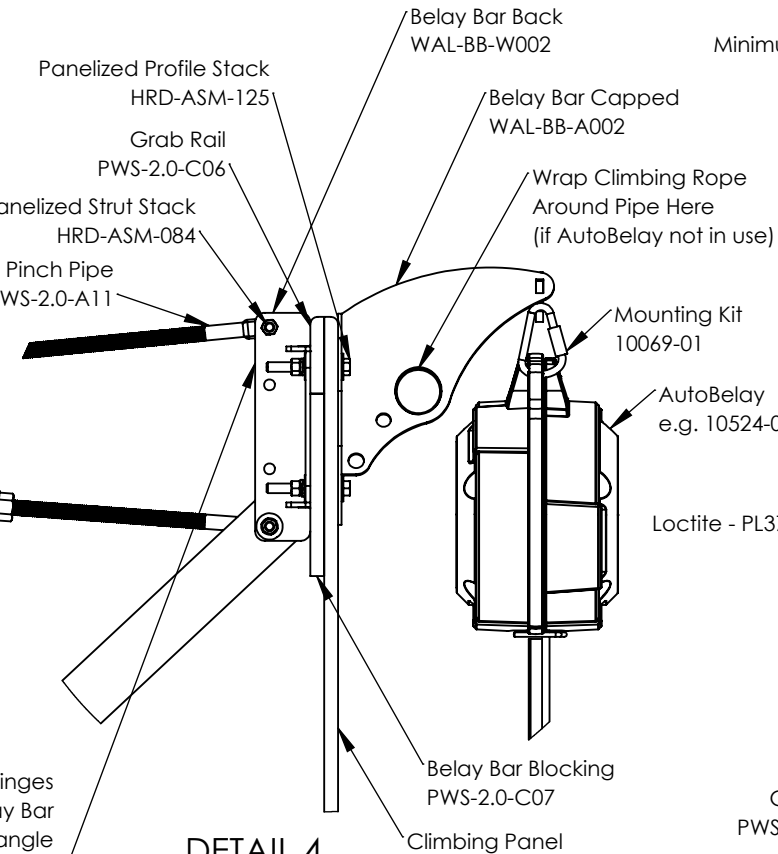
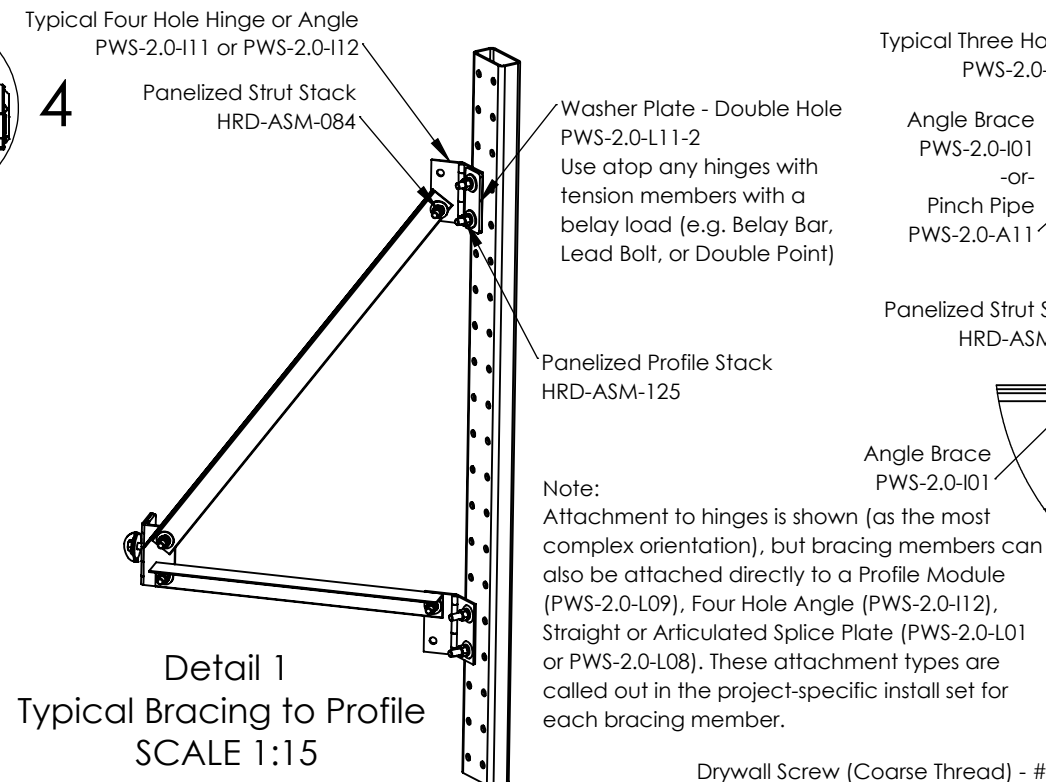
Hinged



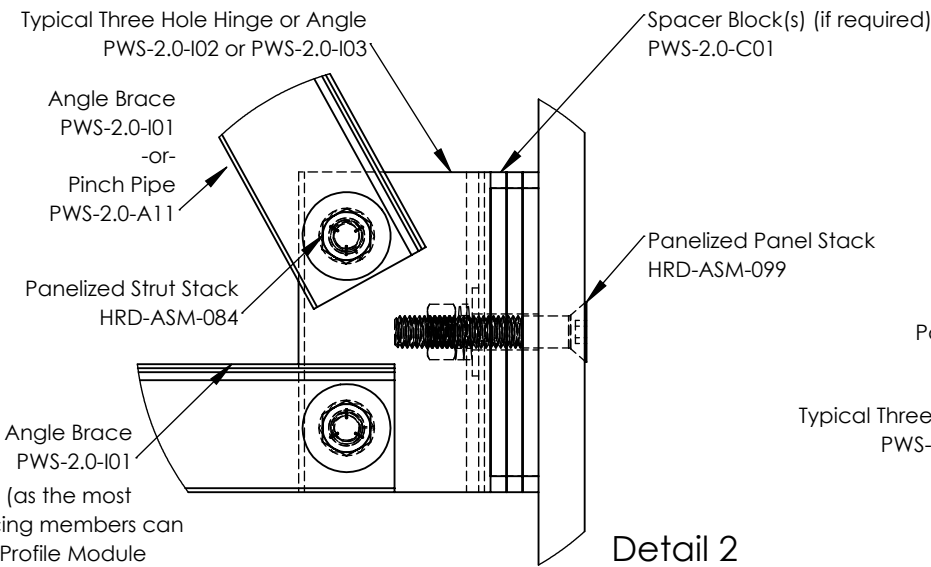
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5				FINISH:		Deburr and break sharp edges (if applicable)		DO NOT SCALE DRAWING		REVISION	
		NAME		SIGNATURE		DATE				TITLE: Panelized 2.0 Typicals - Articulated Profiles	
DRAWN											
CHK'D											
APPV'D											
MFG											
Q.A											
								MATERIAL:		DWG NO.	
										P2-0.04	
										B	
								WEIGHT:		SCALE: 1:20	
										SHEET 5 OF 19	



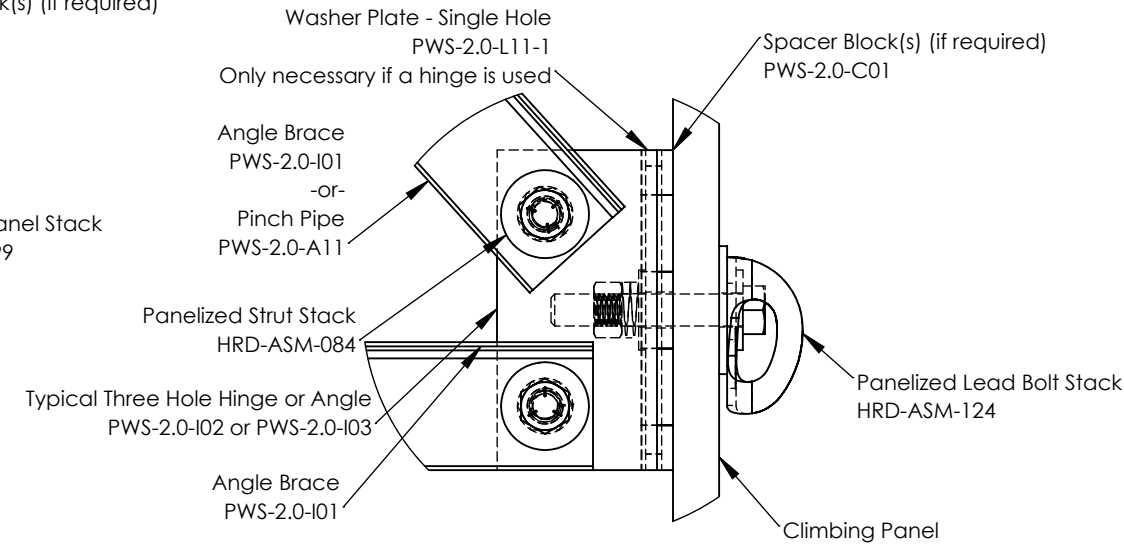
Two (2) or Four (4) Typical Four Hole Hinges (PWS-2.0-I11) may be bolted onto the Belay Bar Back (PWS-.20-W04) if/as needed to angle bracing in one or two directions to the nearest Profile(s).



DETAIL 4
Typical Belay Bar
Attachment Detail
SCALE 1 : 10



DETAIL 2
Typical Hinge to Panel
Connection (non-Lead Climbing)
SCALE 1 : 3

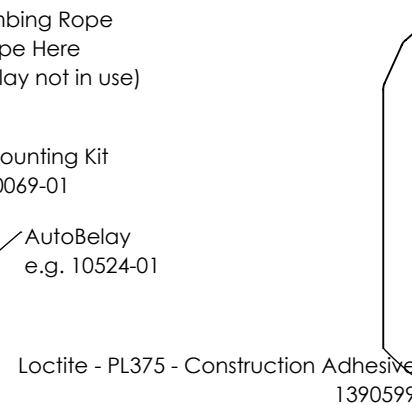


DETAIL 3
Typical Hinge to Panel
Connection (Lead Climbing)
SCALE 1 : 3

Drywall Screw (Coarse Thread) - #8 - 0.75in Long - Bugle Head - Phillips Drive - Heat Treated Steel - Black Phosphate
HRD-SCR-002-8-0.75-BU-P-HTS-BP

GRK Screw - R4 - #9 x 1.25in Long
GRK00091
Minimum spacing: 9in on center

Flange Bracket - Dihedral
PWS-2.0-A21-D

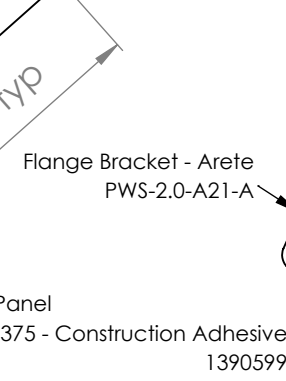


DETAIL 5
Typical Panel to Panel Connection -
Less Than 180 Degrees (aka Dihedral)
SCALE 1 : 3

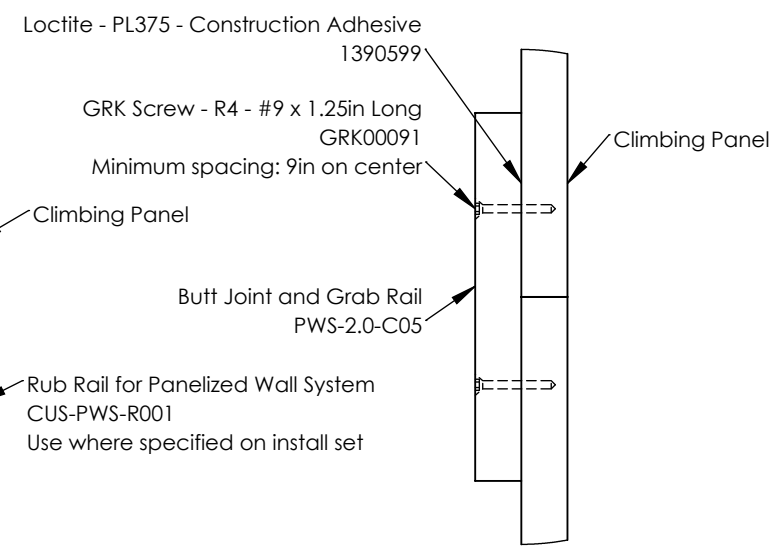
Each end of each Rub Rail piece, or omitted if PL375 is sufficient

GRK Screw - R4 - #9 x 1.25in Long
GRK00091
Minimum spacing: 9in on center

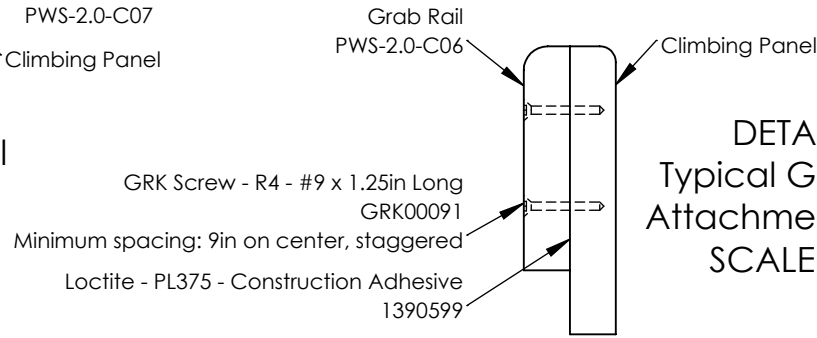
Flange Bracket - Arete
PWS-2.0-A21-A



DETAIL 6
Typical Panel to Panel Connection -
Greater than 180 Degrees (aka Arete)
SCALE 1 : 3

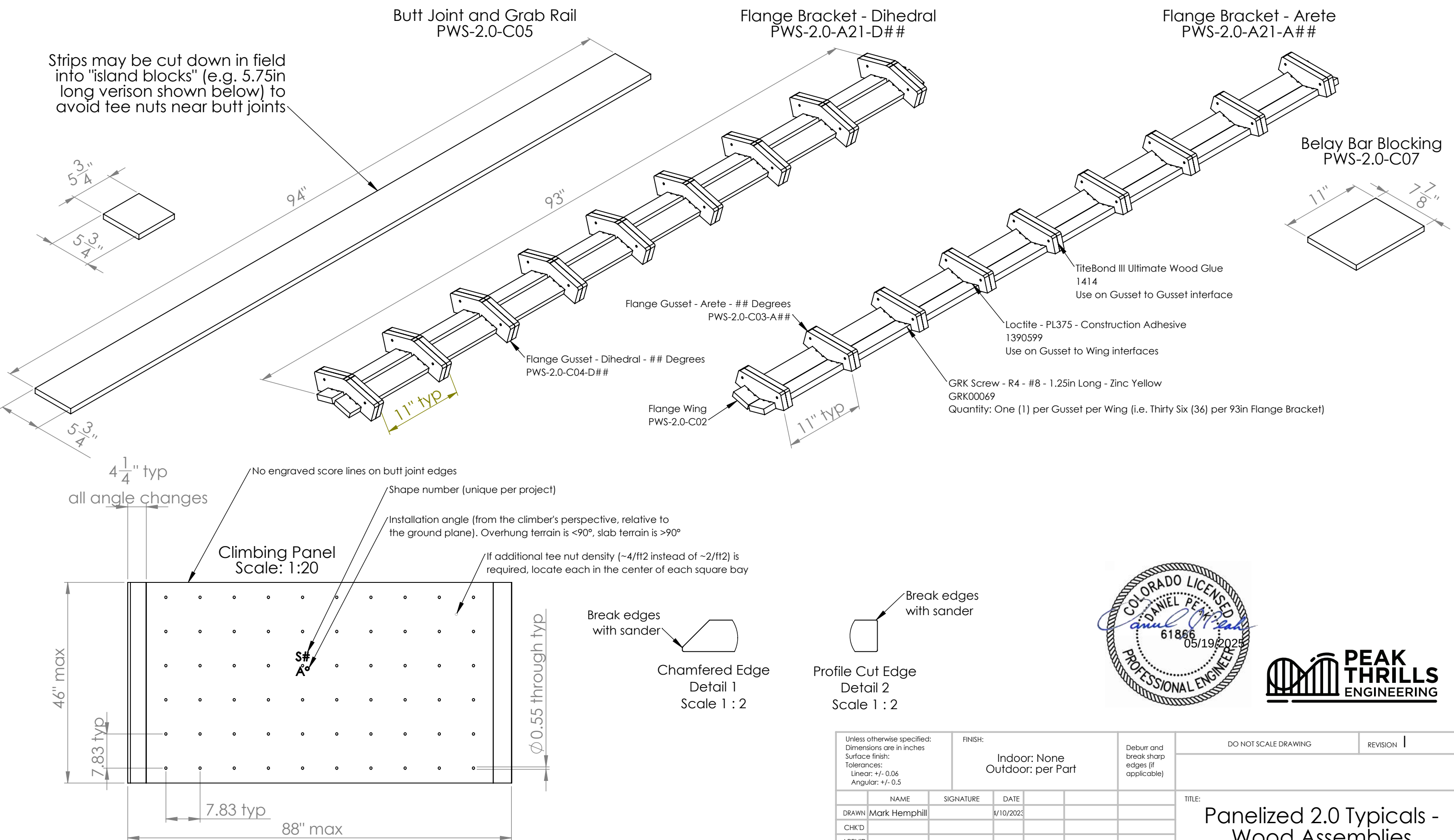


DETAIL 7
Typical Panel to Panel Connection -
180 Degrees (aka Butt Joint)
SCALE 1 : 3



DETAIL 8
Typical Grab Rail
Attachment Detail
SCALE 1 : 3

Unless otherwise specified: Dimensions are in inches		FINISH:		None		Deburr and break sharp edges (if applicable)		DO NOT SCALE DRAWING		REVISION	
DRAWN: 		DATE: 05/19/2023		/2023		PEAK THRILLS ENGINEERING		TITLE: Panelized 2.0 Typicals - Climbing Wall Details - Indoor			
CHK'D:		MATERIAL:		As Noted		DWG NO.		P2-0.05-I		B	
APPV'T:		WEIGHT: 710.358460		SCALE: 1:35		SHEET 6 OF 19					
MFG:											
Q.A.											



Notes:

1. The longest possible flanges (93in and 94in long for angle changes and butt joints, respectively) are shown above. Actual flange bracket lengths and angles (and thus gussets used) will vary from joint to joint. Similarly, the Climbing Panel is shown for reference only. Actual shapes will have unique polygonal outlines.

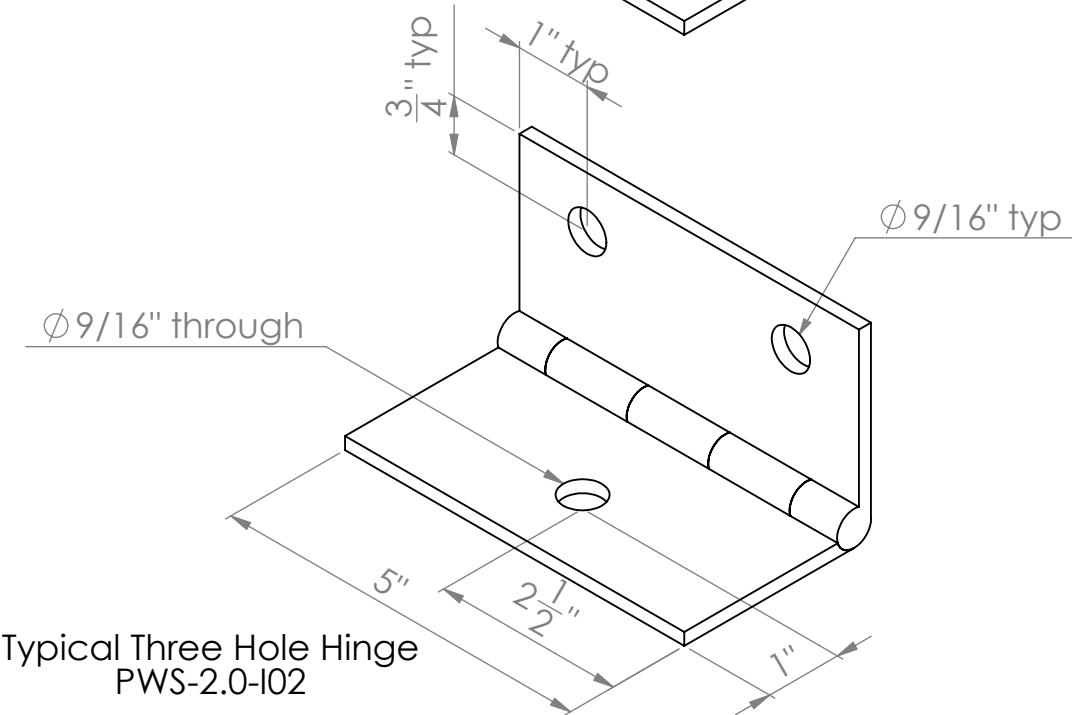
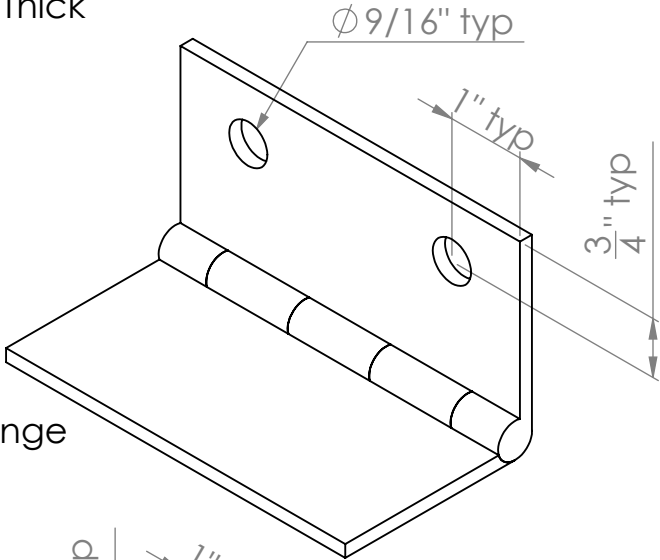


Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: Indoor: None Outdoor: per Part			Deburr and break sharp edges (if applicable)			DO NOT SCALE DRAWING			REVISION		
	NAME		SIGNATURE		DATE						TITLE: Panelized 2.0 Typicals - Wood Assemblies			
DRAWN	Mark Hemphill				4/10/2023									
CHK'D														
APPV'D														
MFG														
Q.A														
											DWG NO. P2-0.06		B	

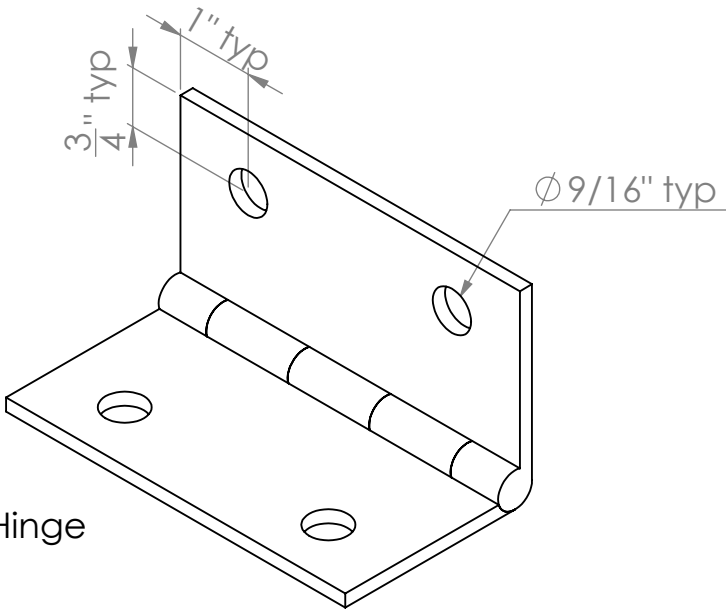
Butt Hinge - 0.375in OD Pin - 5in Long - 5in Wide - 0.18in Thick
BTS18505037

Finish (for hinge parts):
- Indoor: None
- Outdoor: Zinc Yellow

Typical Two Hole Hinge
PWS-2.0-I08



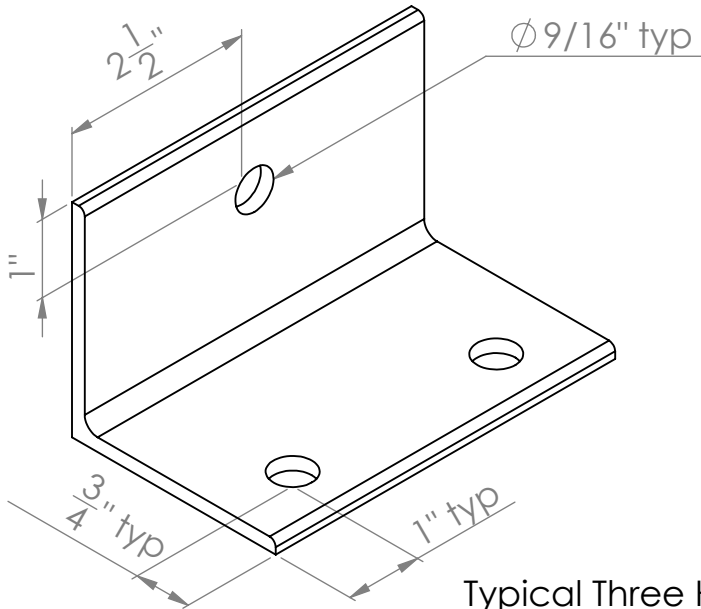
Typical Three Hole Hinge
PWS-2.0-I02



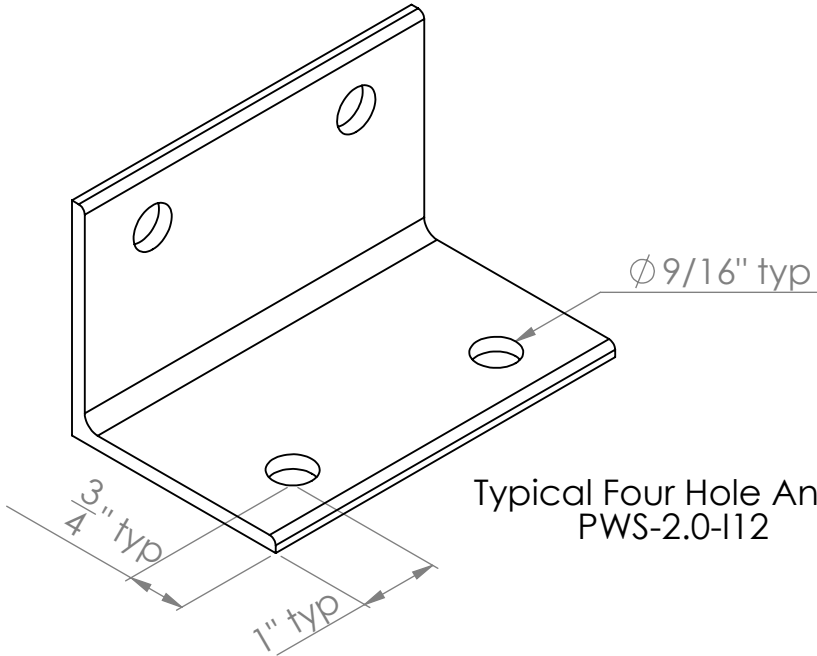
Typical Four Hole Hinge
PWS-2.0-I11

Steel Angle - 3in x 3in x 0.1875in - A36 - 5in Long
MAT-STL-001-3-3-0.1875-A36-5

Finish (for angle iron parts):
- Indoor: None
- Outdoor: Hot Dip Galvnize



Typical Three Hole Angle
PWS-2.0-I03

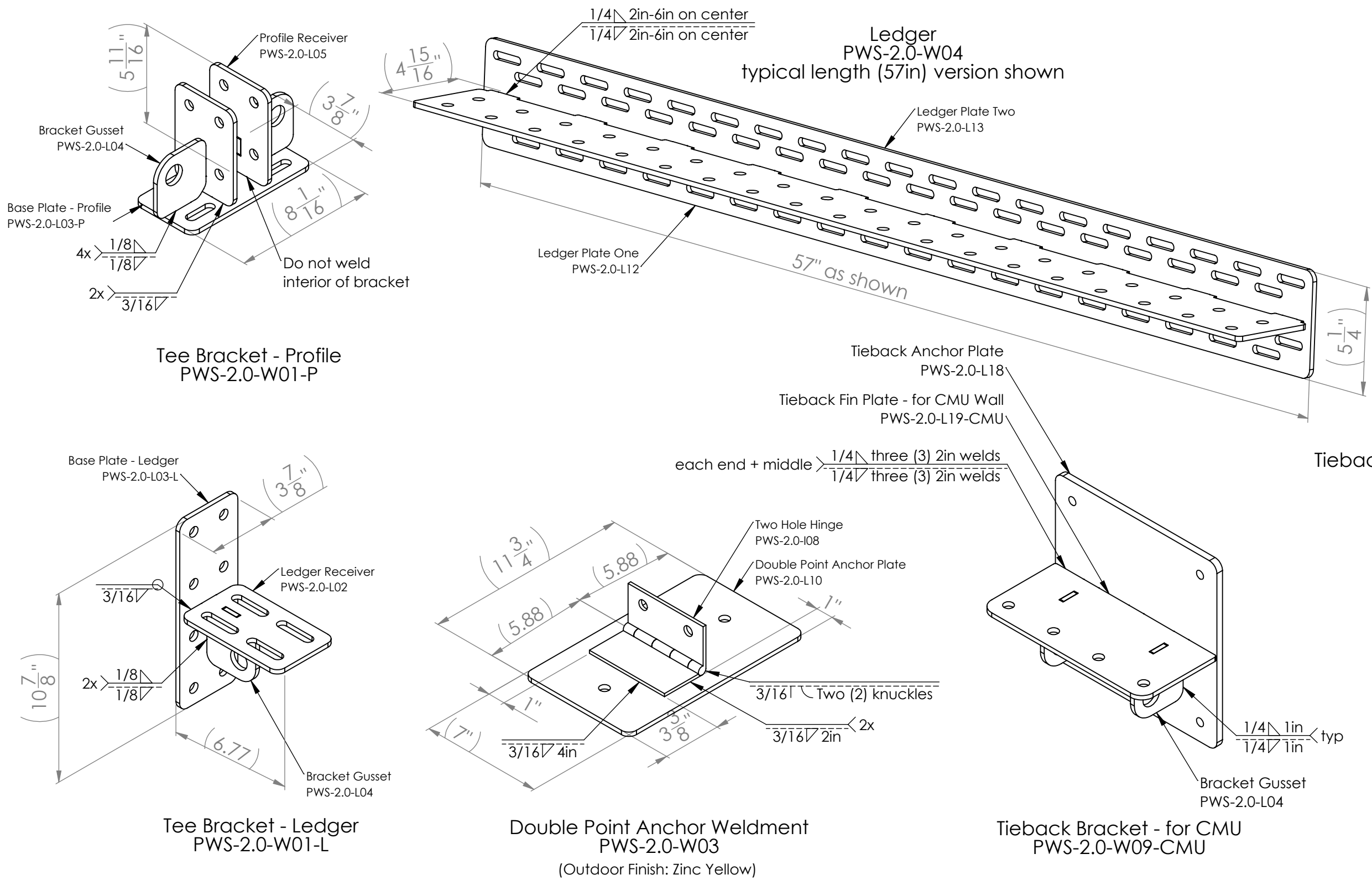


Typical Four Hole Angle
PWS-2.0-I12



Notes:
1. Angle Braces (PWS-2.0-I01) can be found on the Bracing Members sheet (P2-0.8).

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5				FINISH: None		Deburr and break sharp edges (if applicable)		DO NOT SCALE DRAWING		REVISION			
		NAME		SIGNATURE		DATE				TITLE: Panelized 2.0 Typicals - Ironworked Parts			
DRAWN		Mark Hemphill				4/8/2020							
CHK'D													
APPV'D													
MFG													
Q.A													
								MATERIAL: As Noted		DWG NO. P2-0.07		B	
								WEIGHT: 1.426324		SCALE: 1:2		SHEET 10 OF 19	



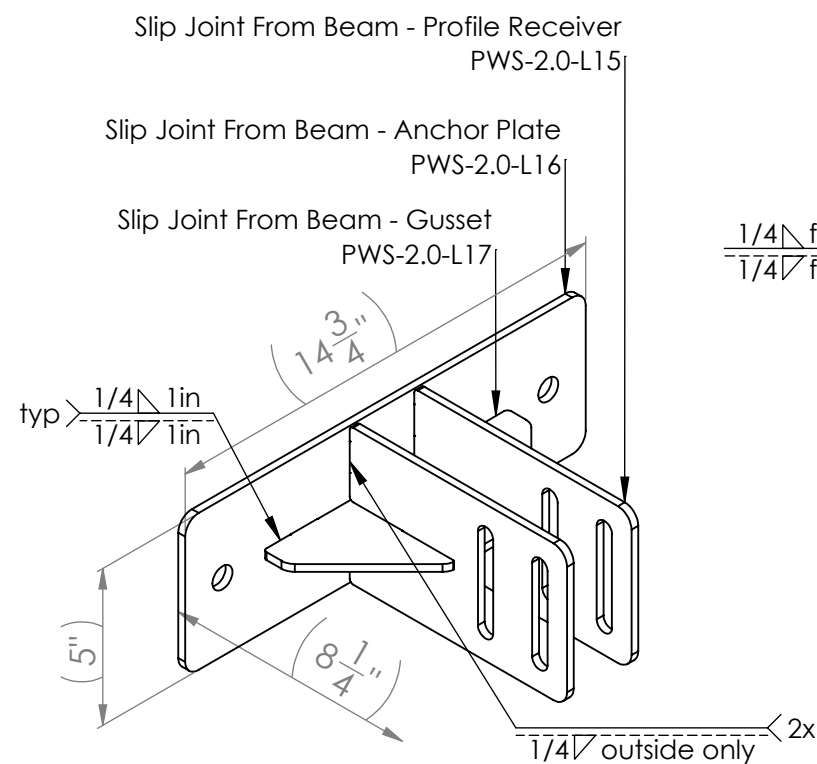
Profile Spacing	Ledger Length
4ft	45in
5ft	57in
6ft	69in
7ft	81in

Note: Ledger Weldments (PWS-2.0-W04) may be cut in the shop or field if/as needed, ideally only every 3in (in order to maintain anticipated hole spacing from each end).

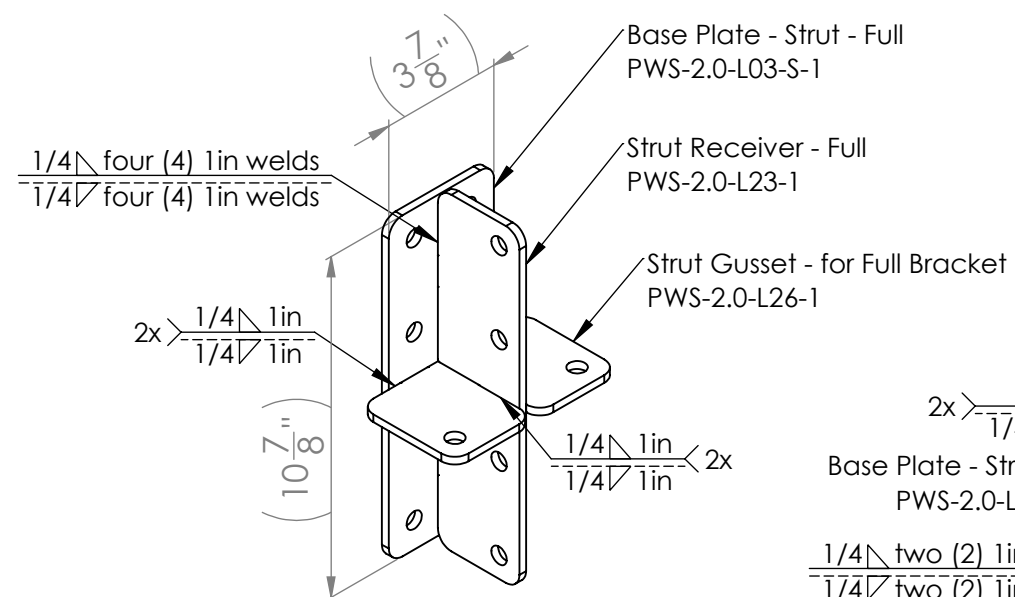


- Notes:
- The following weldments can be found on their own drawings (and also require a different finish if used outdoors).
 - Pinch Pipe Fixed End (PWS-2.0-W02)
 - Frankenbrace Fixed End (PWS-2.0-W14)
 - Mounting Bracket (WAL-BB-W004)
 - Mega Bump Off (WAL-BB-W005)
 - Plates without relational dimensions shown are all self-fixturing (with tabs controlling locations and orientations).
 - As shown, all plates should be welded perpendicular to each other.

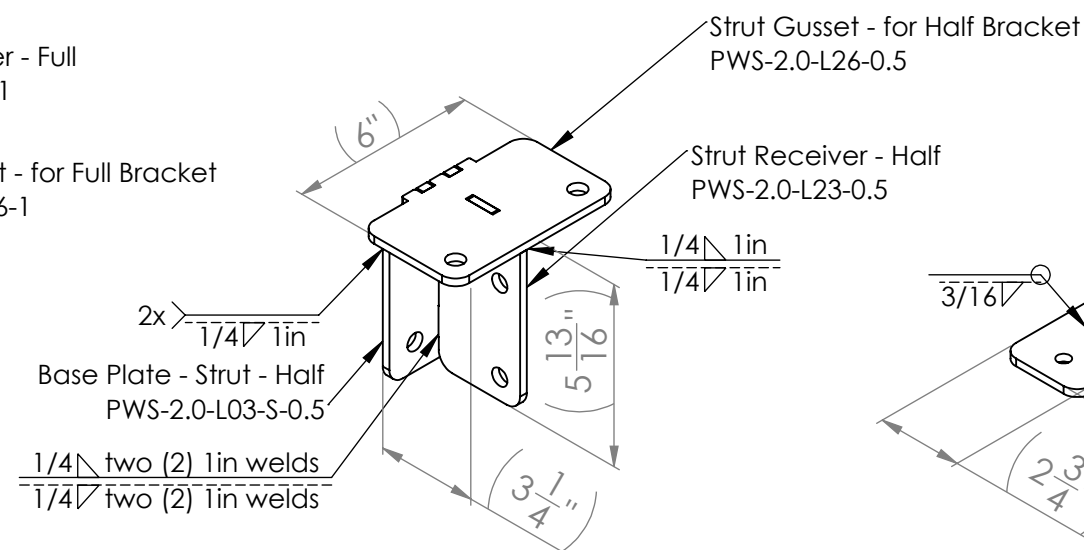
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: Indoor: None Outdoor: Hot Dip Galvanized			Deburr and break sharp edges (if applicable)			DO NOT SCALE DRAWING			REVISION											
									TITLE: Panelized 2.0 Typicals - Weldments 1														
NAME			SIGNATURE			DATE																	
DRAWN			Mark Hemphill			5/15/2023																	
CHK'D																							
APPV'D																							
MFG																							
Q.A									MATERIAL: As Noted			DWG NO.			P2-0.08			B					
									WEIGHT: 6.04			SCALE: 1:5			SHEET 11 OF 19								



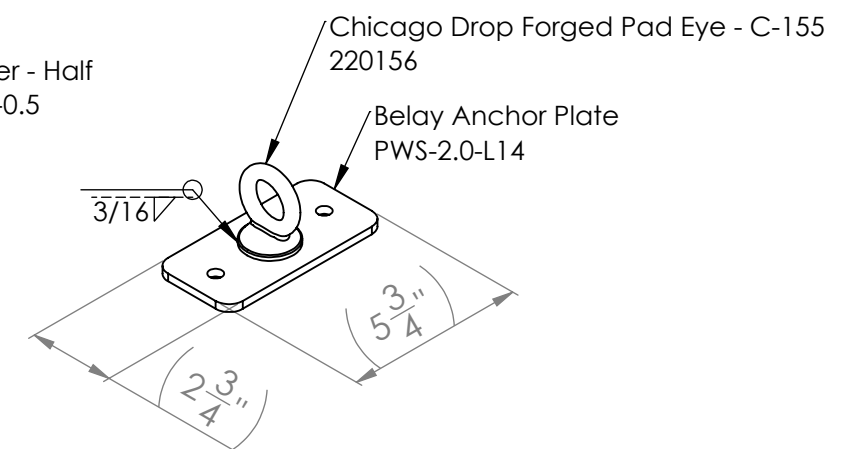
Slip Joint Bracket For Beam
(from Behind)
PWS-2.0-W08



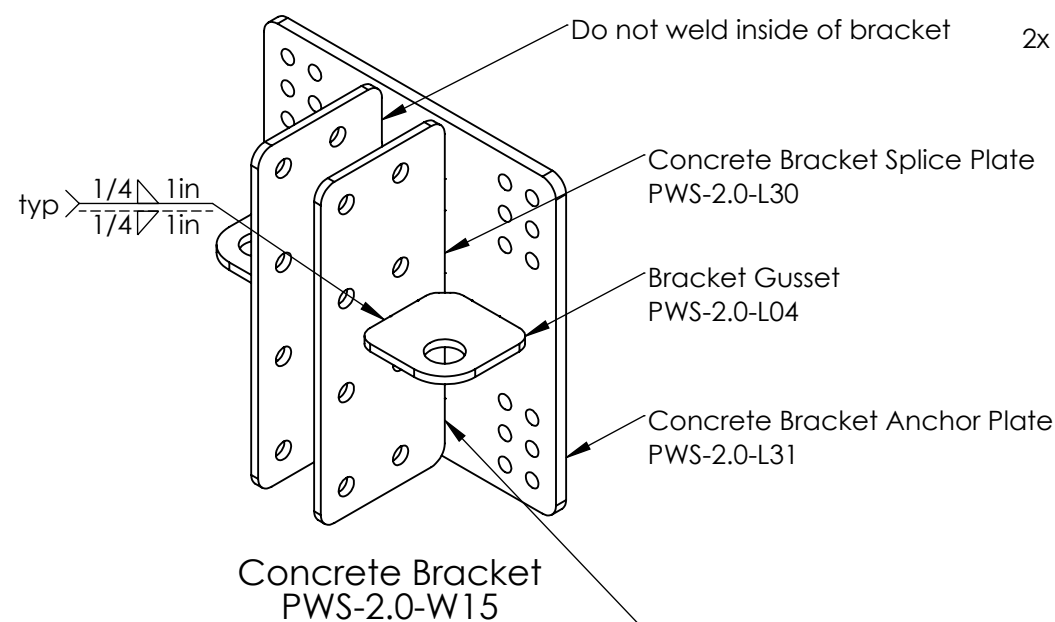
Tee Bracket - Strut - Full
PWS-2.0-W01-S-1



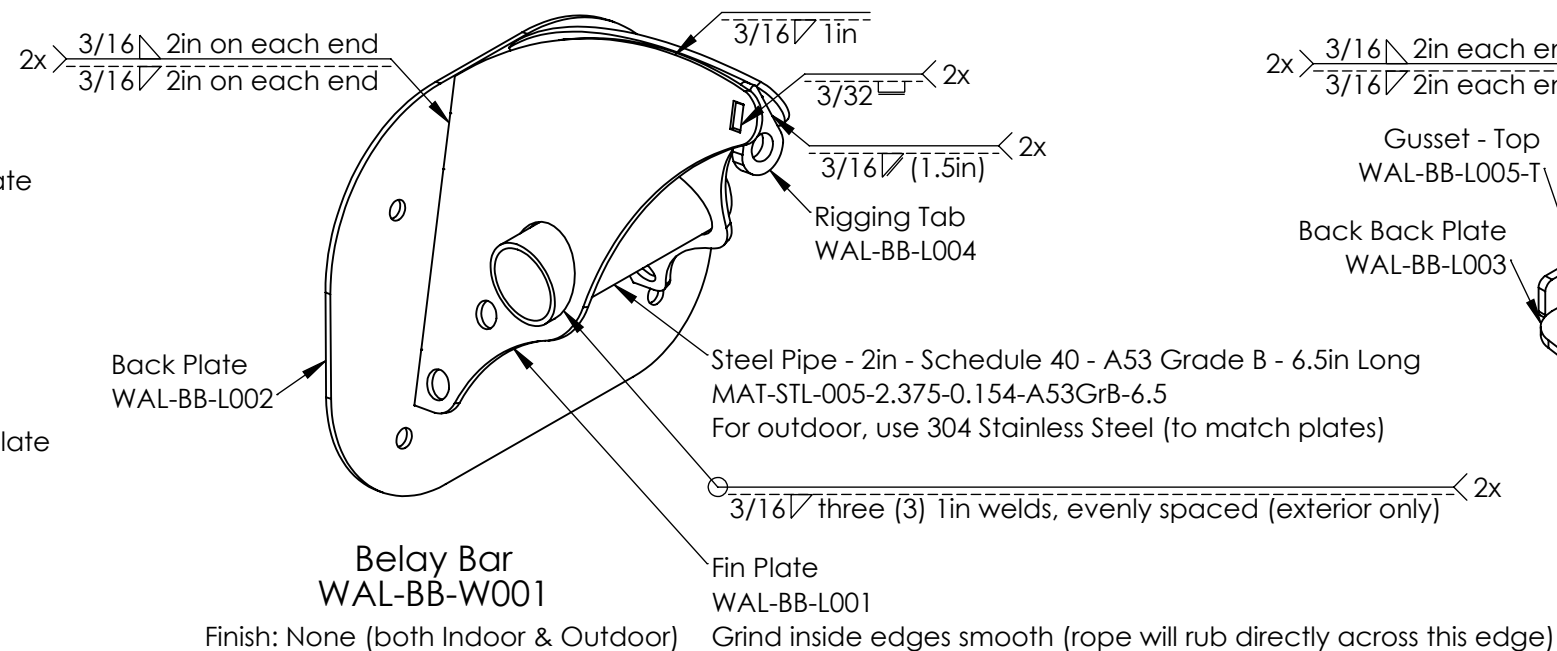
Tee Bracket - Strut - Half
PWS-2.0-W01-S-0.5



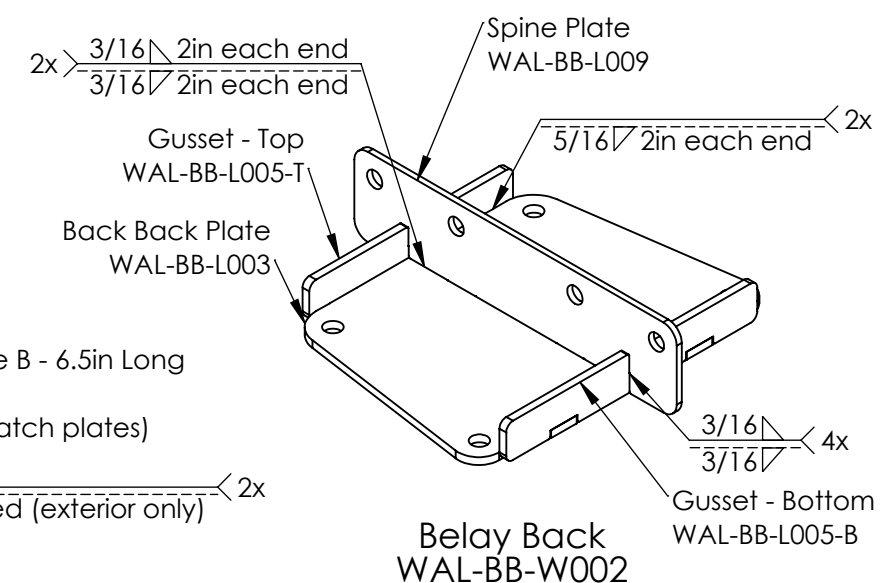
Belay Anchor
PWS-2.0-W07



Concrete Bracket
PWS-2.0-W15



Belay Bar
WAL-BB-W001



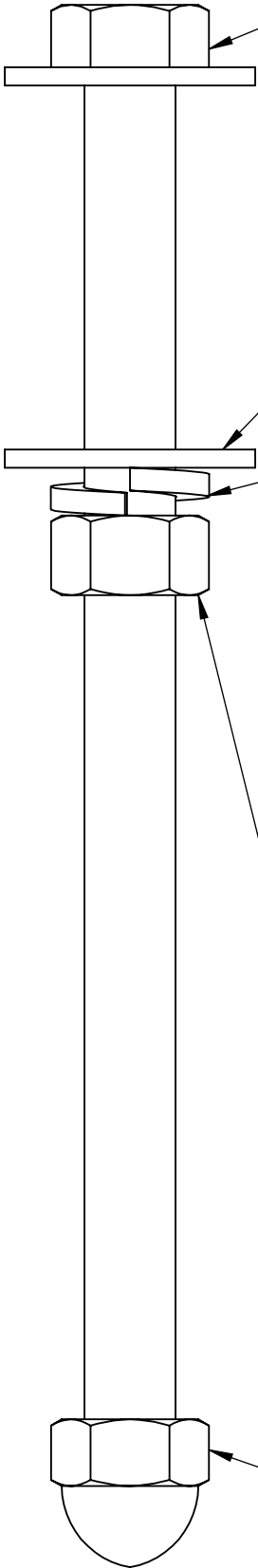
Belay Back
WAL-BB-W002

- Notes:
- The following weldments can be found on their own drawings (and also require a different finish if used outdoors).
 - Pinch Pipe Fixed End (PWS-2.0-W02)
 - Frankenbrace Fixed End (PWS-2.0-W14)
 - Mounting Bracket (WAL-BB-W004)
 - Mega Bump Off (WAL-BB-W005)
 - Plates without relational dimensions shown are all self-fixturing (with tabs controlling locations and orientations).
 - As shown, all plates should be welded perpendicular to each other.



Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: 1/16" (0.0625")	FINISH: Indoor: None Outdoor: Hot Dip Galvanize		Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING		REVISION 1	
	DATE 5/15/2023		TITLE: Panelized 2.0 Typicals - Weldments 2				
	MATERIAL: As Noted		DWG NO. P2-0.09		B		
WEIGHT: 11.95		SCALE: 1:5		SHEET 12 OF 19			

Panelized Safety Stack - Rung - Indoor
HRD-ASM-126-R-I



Screw - 0.5in - 13 Thread - 8in Long - Hex Head - External Hex - Grade 5 - Zinc Plated - Full Thread
PartNo: HRD-SCR-001-0.5-13-8-HH-EH-5-ZP-FT
VendorNo: HTB5Z-50C-800

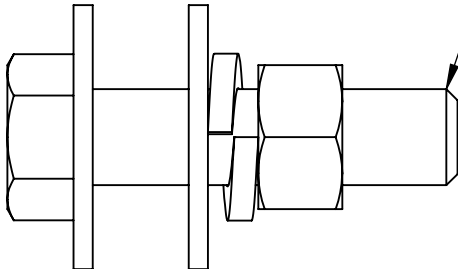
Flat Washer - 0.5in - USS - Zinc Plated
PartNo: HRD-WAS-001-0.562-1.375-0.132-2-ZP
VendorNo: FWUZ-50

Split Lock Washer - 0.5in - Grade 5 - Zinc Plated
PartNo: HRD-WAS-002-0.512-0.869-5-ZP
VendorNo: SLW5Z-50

Nut - 0.5in - 13 Thread - External Hex - Grade 5 - Zinc Plated
PartNo: HRD-NUT-001-0.5-13-EH-5-ZP
VendorNo: FHN5Z-50C

Acorn Nut - 0.5in - 13 Thread - Nickel Plated
PartNo: HRD-NUT-006-0.5-13-NI
VendorNo: ACNNI-50C

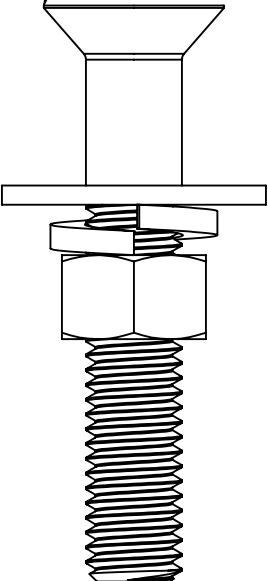
Panelized Strut Stack - Indoor
HRD-ASM-084-I



Panelized Panel Stack - Indoor
HRD-ASM-099-I

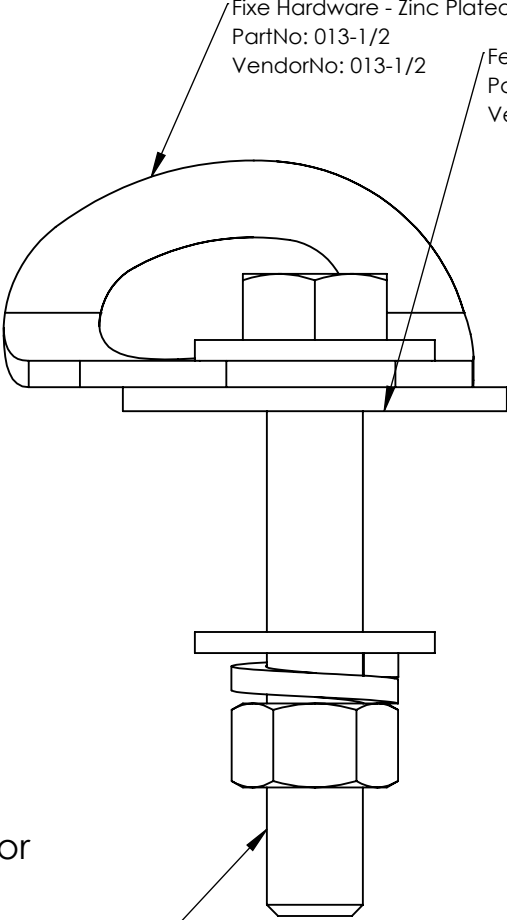
Screw - 0.5in - 13 Thread - 2in Long - Hex Head - External Hex - Grade 5 - Zinc Plated - Full Thread
PartNo: HRD-SCR-001-0.5-13-2-HH-EH-5-ZP-FT
VendorNo: HTB5Z-50C-200

Screw - 0.5in - 13 Thread - 3in Long - Flat Head - Internal Hex Drive - F825 - Zinc Plated - Partial Thread
PartNo: HRD-SCR-001-0.5-13-3-FH-IH-F835-ZP-PT
VendorNo: 2.07



Screw - 0.5in - 13 Thread - 3in Long - Hex Head - External Hex - Grade 5 - Zinc Plated - Full Thread
PartNo: HRD-SCR-001-0.5-13-3-HH-EH-5-ZP-FT
VendorNo: HC5Z-50C-300

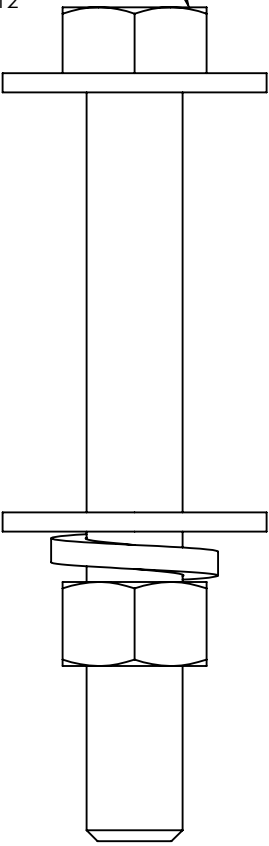
Panelized Lead Bolt Stack - Indoor
HRD-ASM-124-I



Fixe Hardware - Zinc Plated Steel - 0.5in Bolt Hanger
PartNo: 013-1/2
VendorNo: 013-1/2

Fender Washer - for 0.5in Screw - 2in OD - 0.125in Thick - Zinc Plated
PartNo: HRD-WAS-001-0.531-2-0.125
VendorNo: FEWZ-50-200-12

Panelized Profile Stack - Indoor
HRD-ASM-125-I

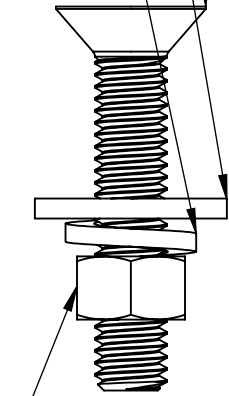


Nut - 0.375in - 16 Thread - External Hex - Grade 5 - Zinc Plated
PartNo: HRD-NUT-001-0.375-16-EH-5-ZP
VendorNo: FHN5Z-37C

Screw - 0.375in - 16 Thread - 2in Long - Flat Head - Internal Hex Drive - F835 - Zinc Plated - Full Thread
PartNo: HRD-SCR-001-0.375-16-2-FH-IH-F835-ZP-FT
VendorNo: FSCZ-37C-200

Flat Washer - 0.375in - USS - Zinc Plated
PartNo: HRD-WAS-001-0.438-1-0.104-USS-ZP
VendorNo: FWUZ-37

Split Lock Washer - 0.375in - Zinc Plated
PartNo: HRD-WAS-002-0.385-0.68-5-ZP
VendorNo: SLW5Z-37



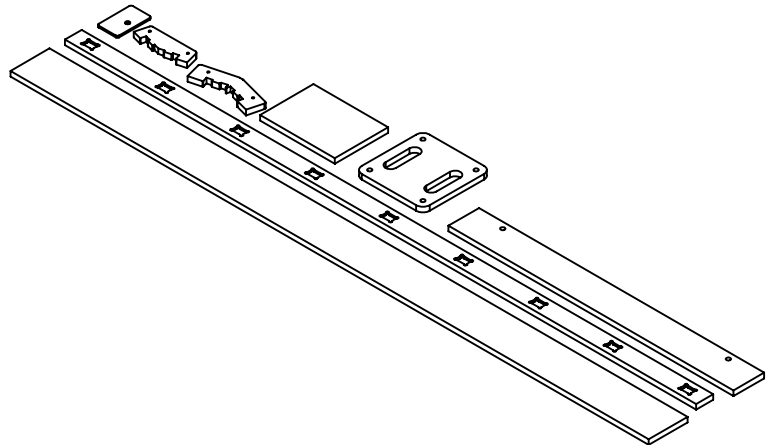
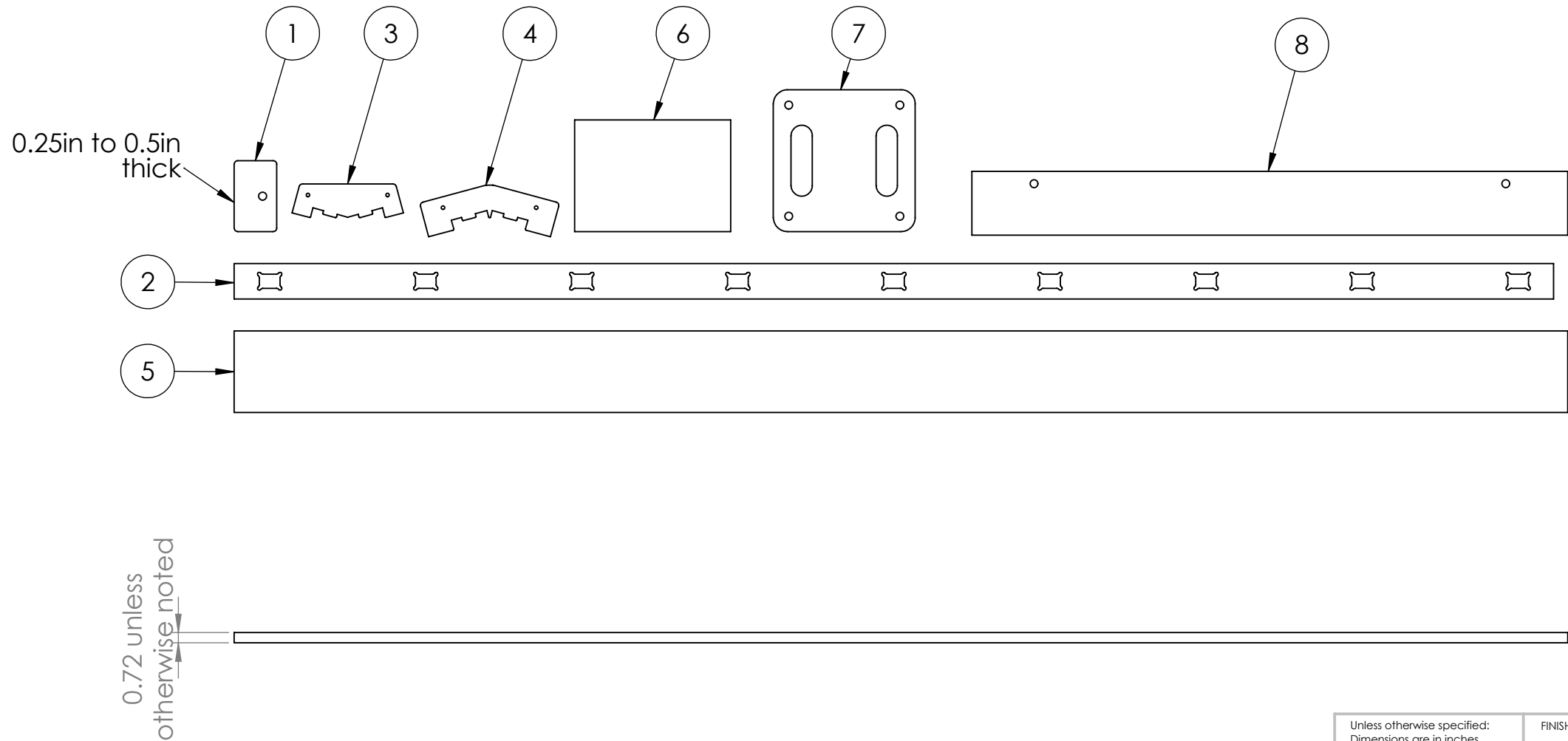
Eldo Plaque Stack
HRD-ASM-139

Notes:
1. Any part not explicitly labeled is assumed to be the same as another instance of the part within another hardware assembly. For example, flar washers, lock washer, hex nuts, and bolt hangers.
2. Longer or shorter bolts of the same diameter, threading, and equivalent or better grade may be substituted in any hardware stack (e.g. using 4in or 5in bolts instead of 3.5in ones for HRD-ASM-125 where necessary).



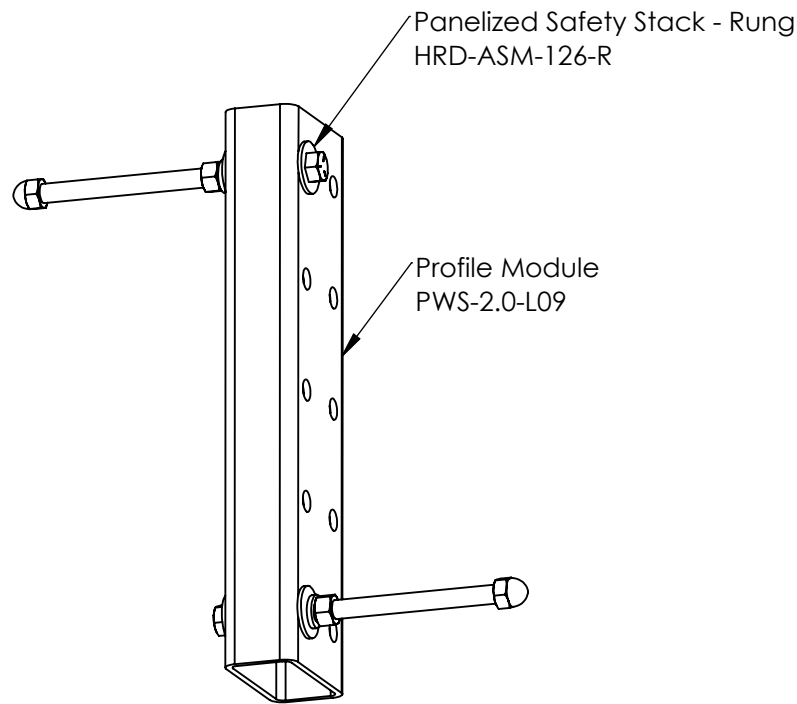
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)			DO NOT SCALE DRAWING			REVISION					
									TITLE: Panelized 2.0 Typicals - Hardware Stacks - Indoor								
NAME			SIGNATURE			DATE											
DRAWN Mark Hemphill						5/15/2023											
CHK'D																	
APPV'D																	
MFG									DWG NO. P2-0.10-I								
Q.A						MATERIAL: As Noted									B		
									WEIGHT: 0.276302			SCALE: 1:1			SHEET 13 OF 19		

ITEM NO.	PartNo	DESCRIPTION	Material	Thickness	QTY Shown	Cut File(s)
1	PWS-2.0-C01	Spacer Block	Plywood	0.25	1	PWS-2.0-CNC-PLY-03
2	PWS-2.0-C02	Flange Wing	Plywood (7 Layer)	0.72	1	PWS-2.0-CNC-PLY-02
3	PWS-2.0-C03-A##	Flange Gusset - Arete - ## Degrees	Plywood (7 Layer)	0.72	1	PWS-2.0-CNC-PLY-04
4	PWS-2.0-C04-D##	Flange Gusset - Dihedral - ## Degrees	Plywood (7 Layer)	0.72	1	PWS-2.0-CNC-BIR-04
5	PWS-2.0-C05-5.75x94	Butt Joint - 5.75in Wide x 94in Long	AdvanTech	0.72	1	PWS-2.0-CNC-ADV-01
6	PWS-2.0-C07	Belay Bar Blocking	AdvanTech	0.72	1	PWS-2.0-CNC-ADV-02
7	PWS-2.0-C18-2x2	Butt Joint Alignment Block - 2x2	AdvanTech	0.72	1	PWS-2.0-CNC-ADV-04
8	PWS-2.0-C19	Access Hatch Flange	AdvanTech	0.72	1	PWS-2.0-CNC-PLY-06



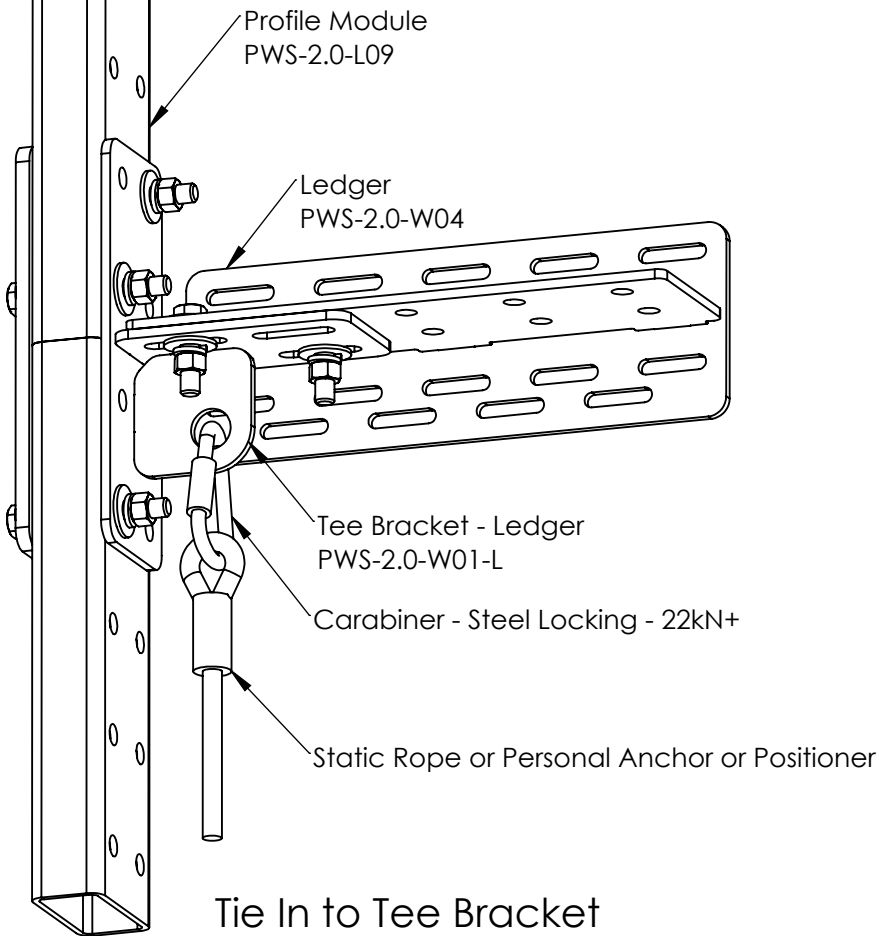
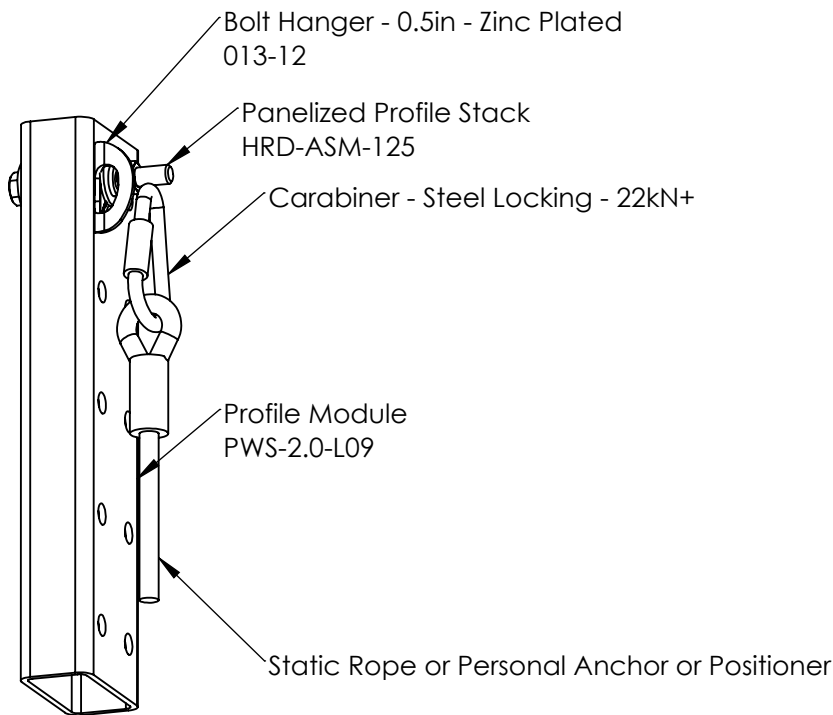
Notes:
1. Example instances of the Flange Gusset - Arete and Dihedral (items 3 and 4, respectively) are shown above. In reality, many different angles of each will be present on any given project.
2. Other configurations of item 8 are available (e.g. 2x4, 2x6) if/as desired by installers.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5				FINISH: Indoor: None Outdoor: CTG-OUT-SM		Deburr and break sharp edges (if applicable)		DO NOT SCALE DRAWING		REVISION	
		NAME		SIGNATURE		DATE				TITLE:	
DRAWN		Mark Hemphill				4/25/2023				Panelized 2.0 Typicals - Wood to CNC	
CHK'D											
APPV'D											
MFG											
Q.A											
						MATERIAL: As Noted		DWG NO.		B	
								P2-0.11-I			
						WEIGHT:		SCALE: 1:10		SHEET 15 OF 19	

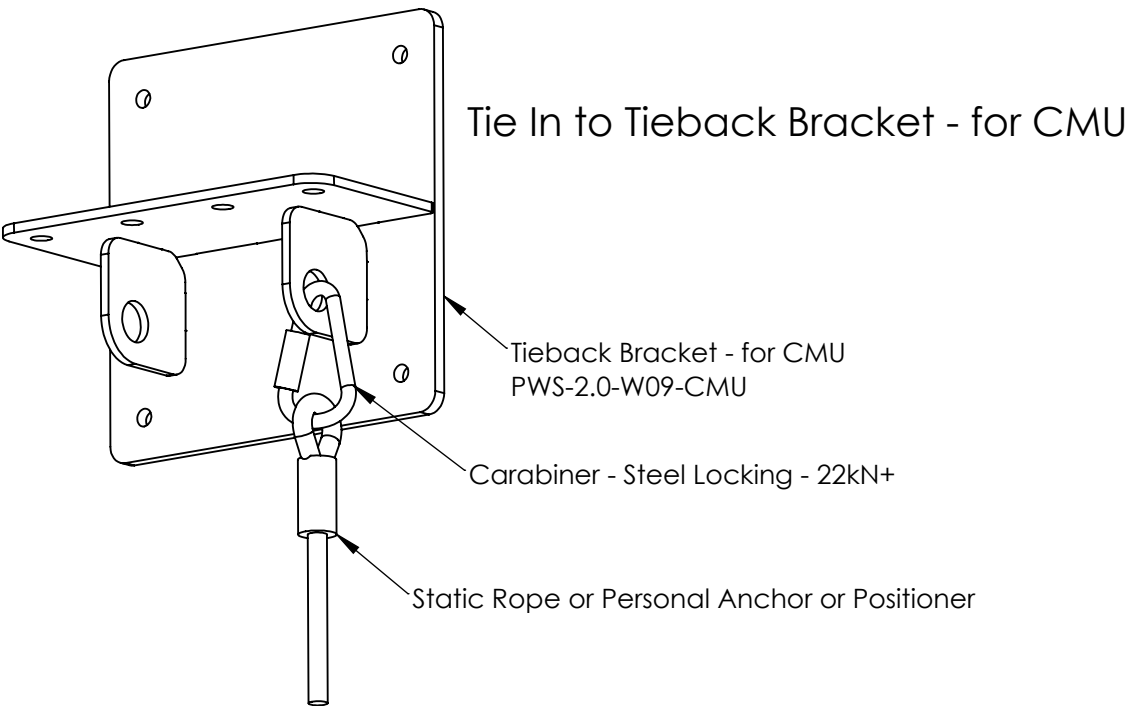


Rungs on Profile

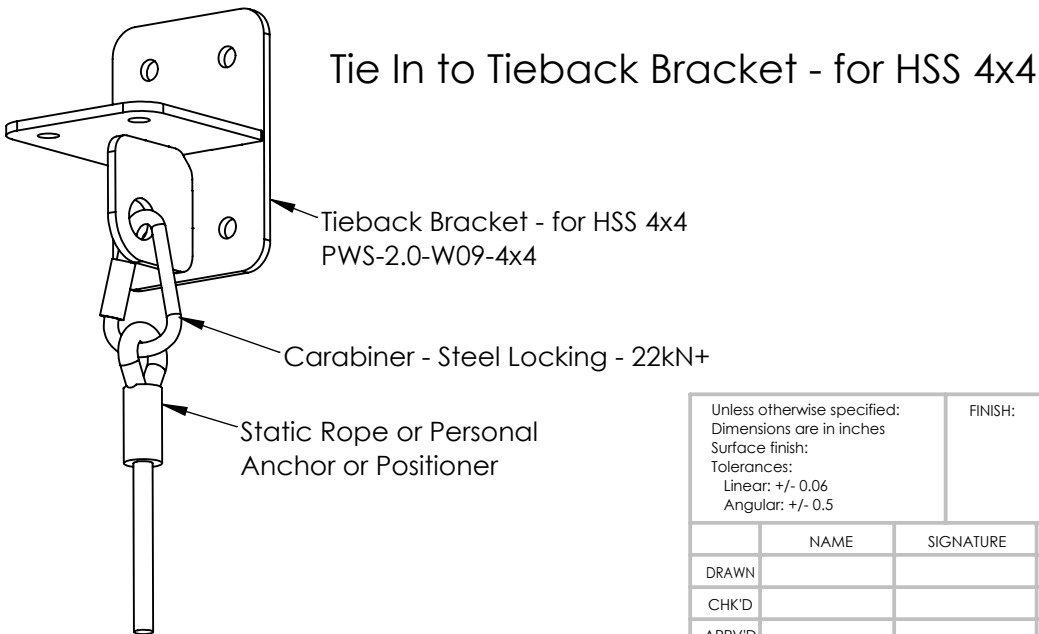
Tie In to Profile



Tie In to Tee Bracket



Tie In to Tieback Bracket - for CMU



Tie In to Tieback Bracket - for HSS 4x4

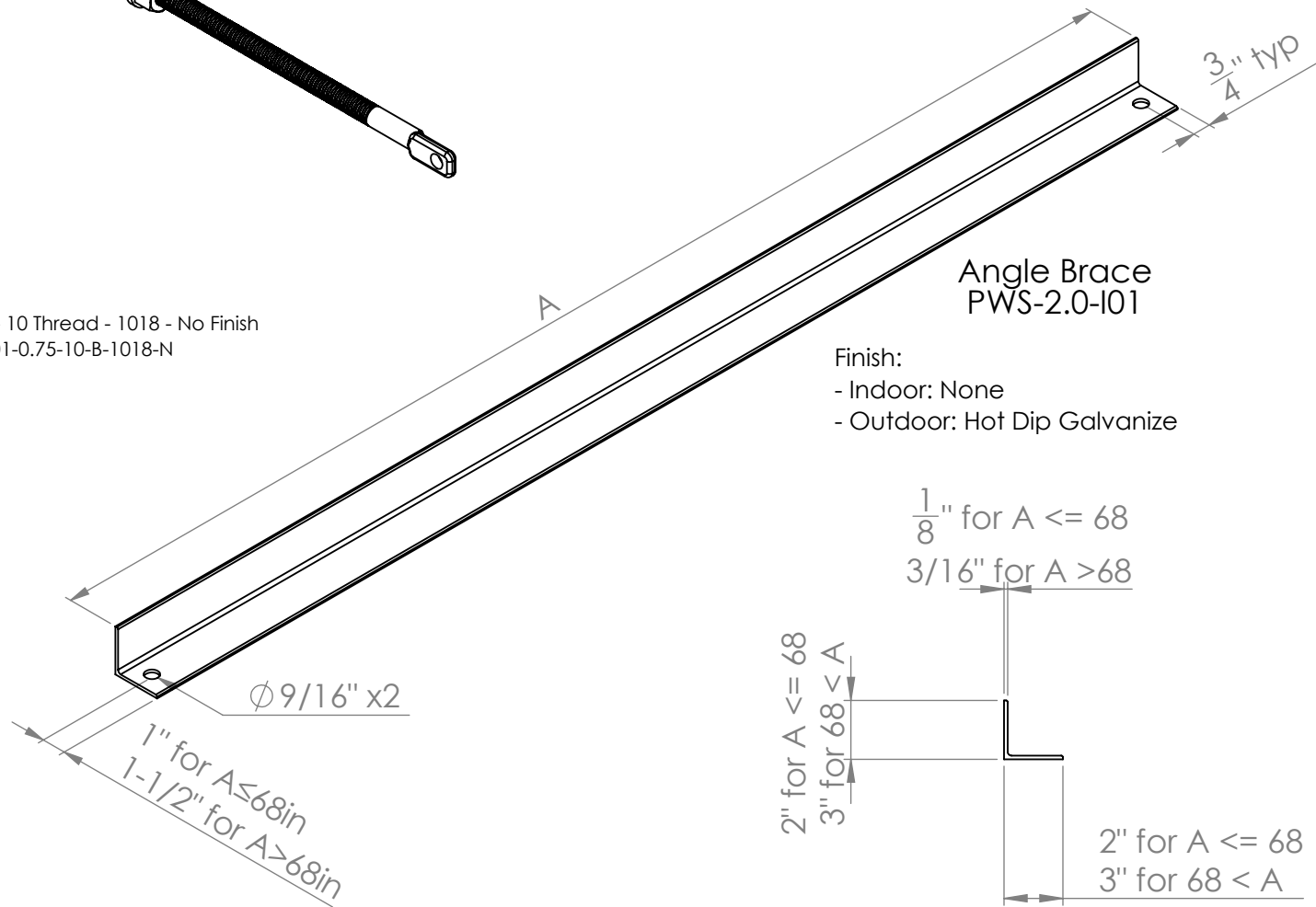
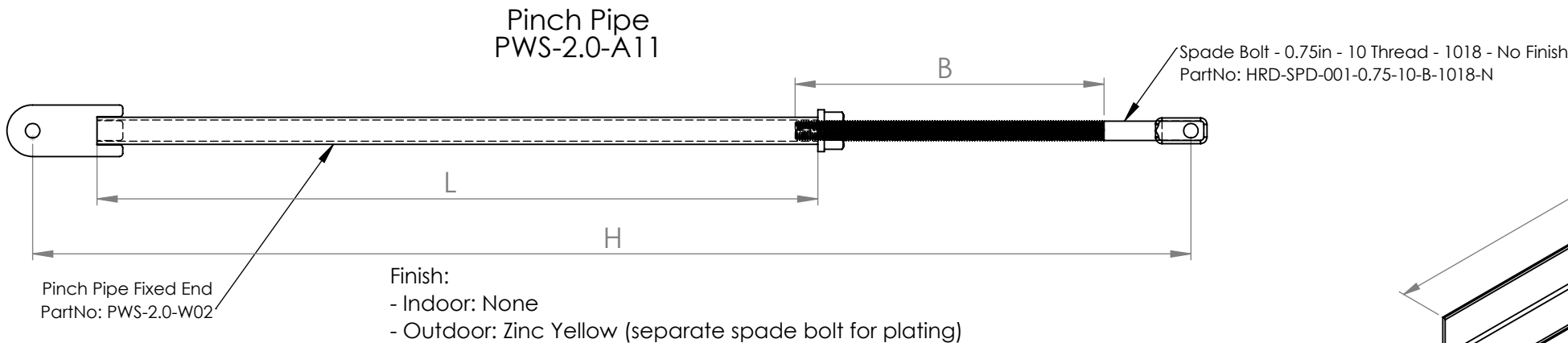
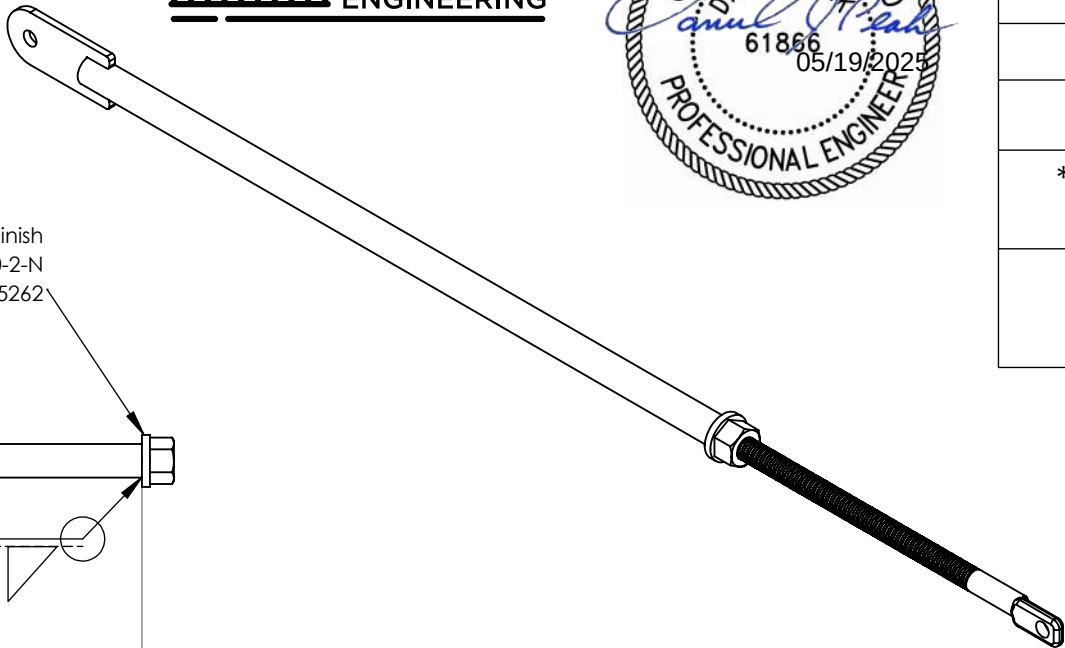
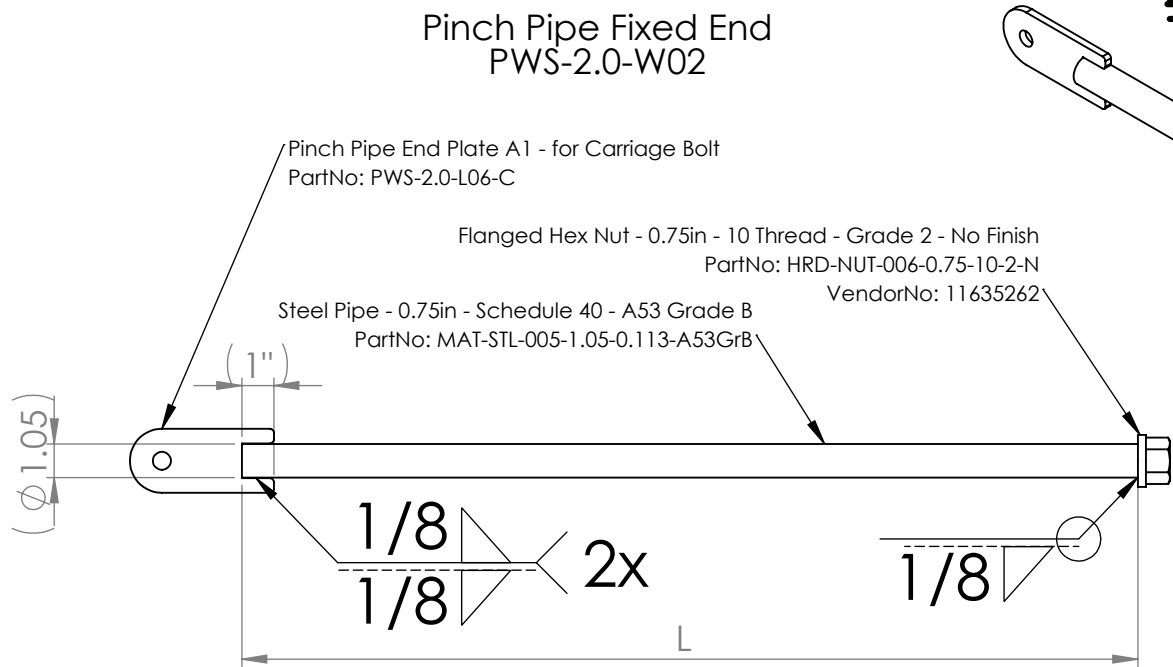


Notes:
1. For rungs and tie in to profiles, use any hole on any Profile Module.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5				FINISH:		Debur and break sharp edges (if applicable)	DO NOT SCALE DRAWING		REVISION		
	NAME	SIGNATURE	DATE				TITLE: Panelized 2.0 Typicals - Tie Off Points				
DRAWN											
CHK'D											
APPV'D											
MFG											
Q.A				MATERIAL:			DWG NO.				B
							P2-0.12				
				WEIGHT:			SCALE: 1:5			SHEET 17 OF 19	



Max Length	Angle Size
67.5in (66in hole to hole)	L2x2x1/8
109.5in (108in hole to hole)	L3x3x3/16
* Pinch pipes up to 36in hole to hole may be used as compression members	
* Angles may be substituted for pinch pipes in any locations with max lengths noted above	

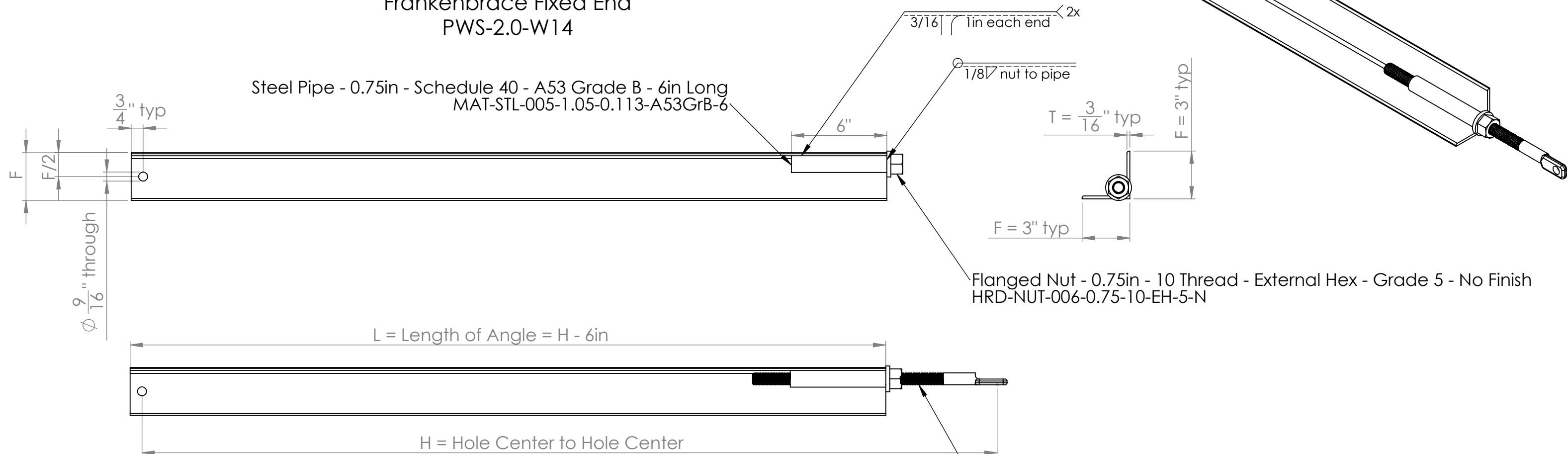


S = Pinch Pipe Size	H = Hole to Hole (in)		L = Length of Pipe (in)	B = Bolt Thread Length (in)
	Min	Max		
SA	13	17	6	6
SB	15	22	8	
SC	19	29	12	
SD	27	37	20	12
SE	35	45	28	
SF	43	53	36	
SG	51	61	44	
SH	59	69	52	
SI	67	77	60	
SJ	75	85	68	
SK	83	93	76	
SL	91	101	84	

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5				FINISH:		Deburr and break sharp edges (if applicable)		DO NOT SCALE DRAWING		REVISION			
								TITLE: Panelized 2.0 Typicals - Bracing Members 1					
NAME		SIGNATURE		DATE									
DRAWN													
CHK'D													
APPV'D													
MFG													
Q.A						MATERIAL:		DWG NO.		P2-0.13		B	
						WEIGHT: 5.209772		SCALE: 1:6		SHEET 18 OF 19			

Frankenbrace Fixed End PWS-2.0-W14

Steel Pipe - 0.75in - Schedule 40 - A53 Grade B - 6in Long
MAT-STL-005-1.05-0.113-A53GrB-6



Frankenbrace PWS-2.0-A50

Spade Bolt - 0.75in - 10 Thread - 12in Threading - 1018 - No Finish
HRD-SPD-001-0.75-10-12-1018-N
Substitute for longer or shorter threading if/as desired (e.g. 6in or 18in)

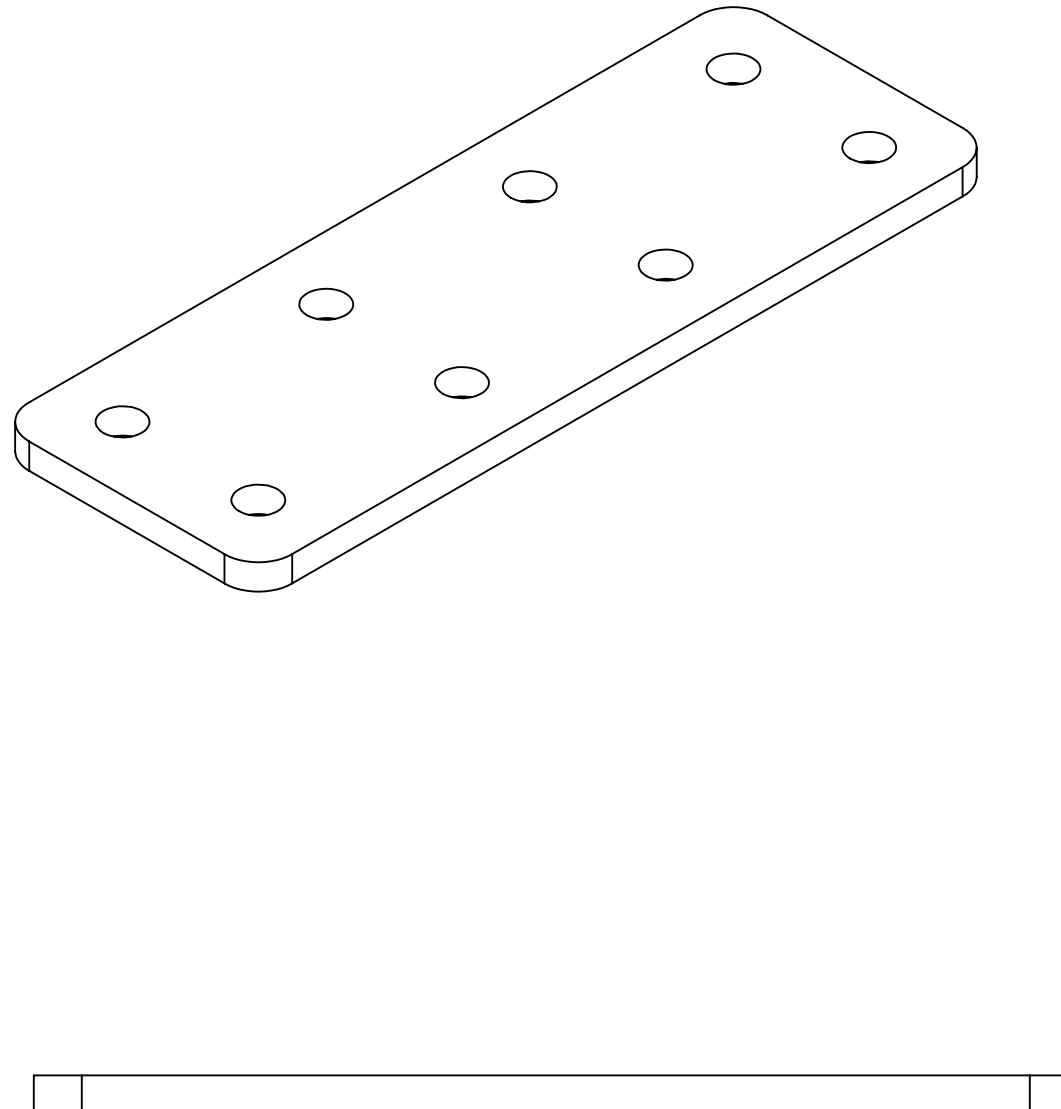
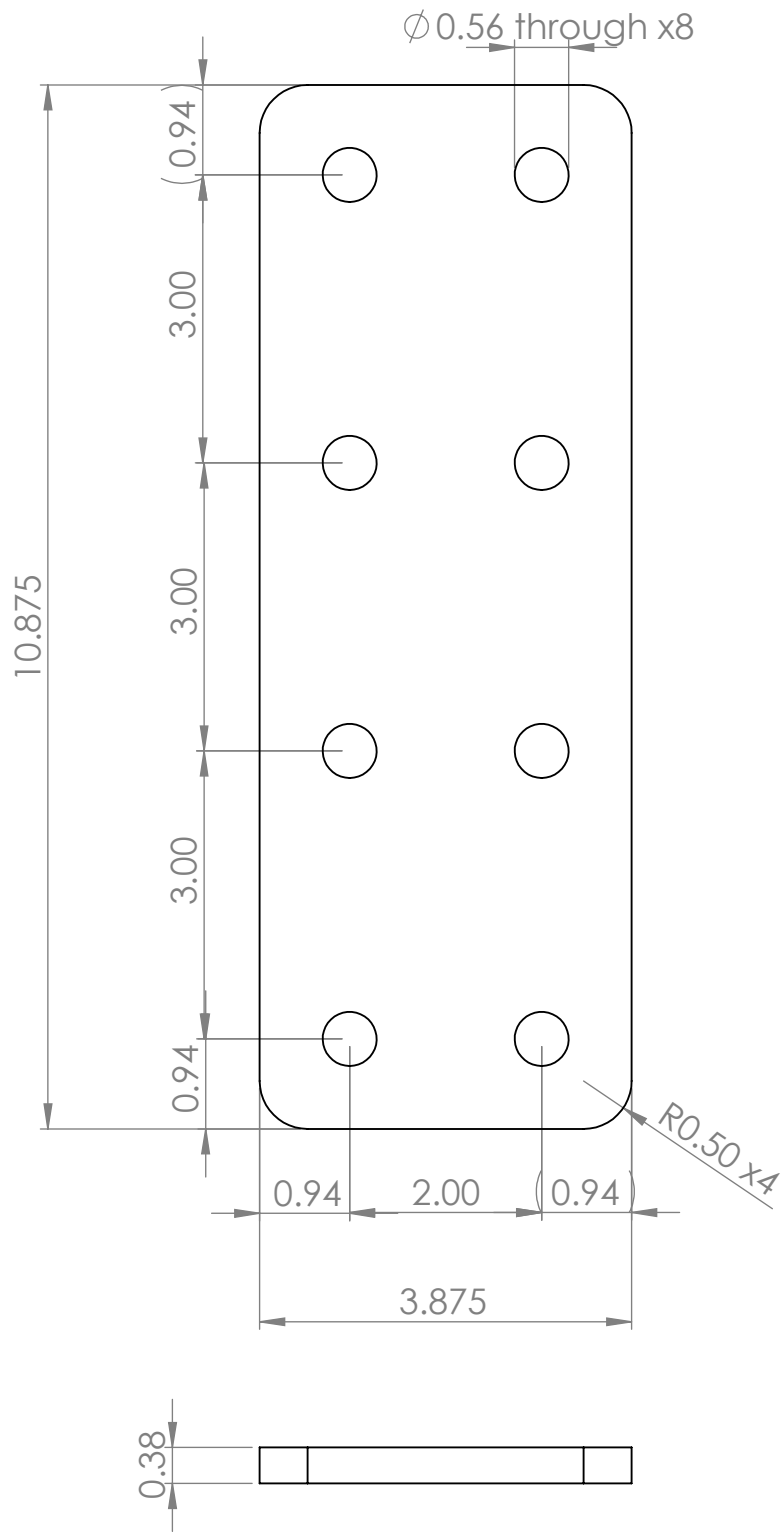
Notes:

- Use this member type if/when Bar Belays require double bracing, articulated profiles require out-of-plane connections, and anywhere else where a larger (yet still adjustable) member is needed.
- The steel angle forming the main body of this member is shown as L3x3x0.1875in by default. If/when required by engineering for specific members on a given project, that may be upsized (for exmample, to L4x4x0.25in).

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: Indoor: None Outdoor: Zinc Yellow			Deburr and break sharp edges (if applicable)			DO NOT SCALE DRAWING			REVISION	
	NAME		SIGNATURE		DATE				TITLE: Panelized 2.0 Typicals - Bracing Members 2				
DRAWN													
CHK'D													
APPV'D													
MFG													
Q.A						MATERIAL: As Noted			DWG NO. P2-0.14			B	
						WEIGHT:			SCALE: 1:6			SHEET 19 OF 19	

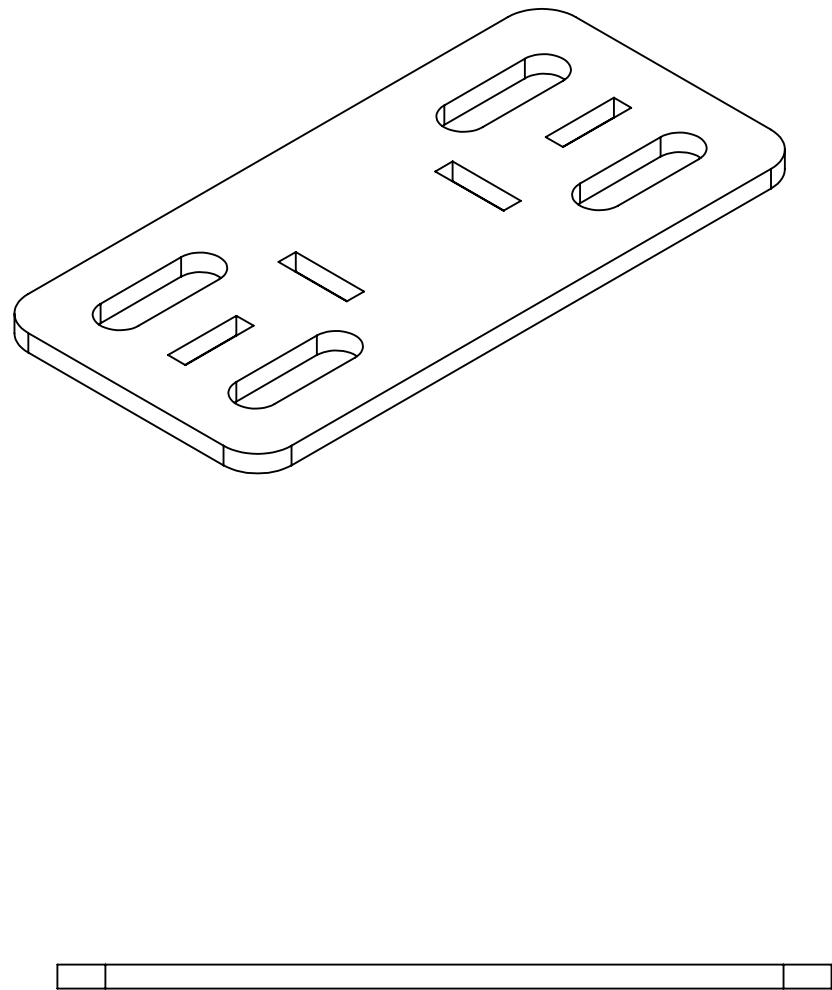
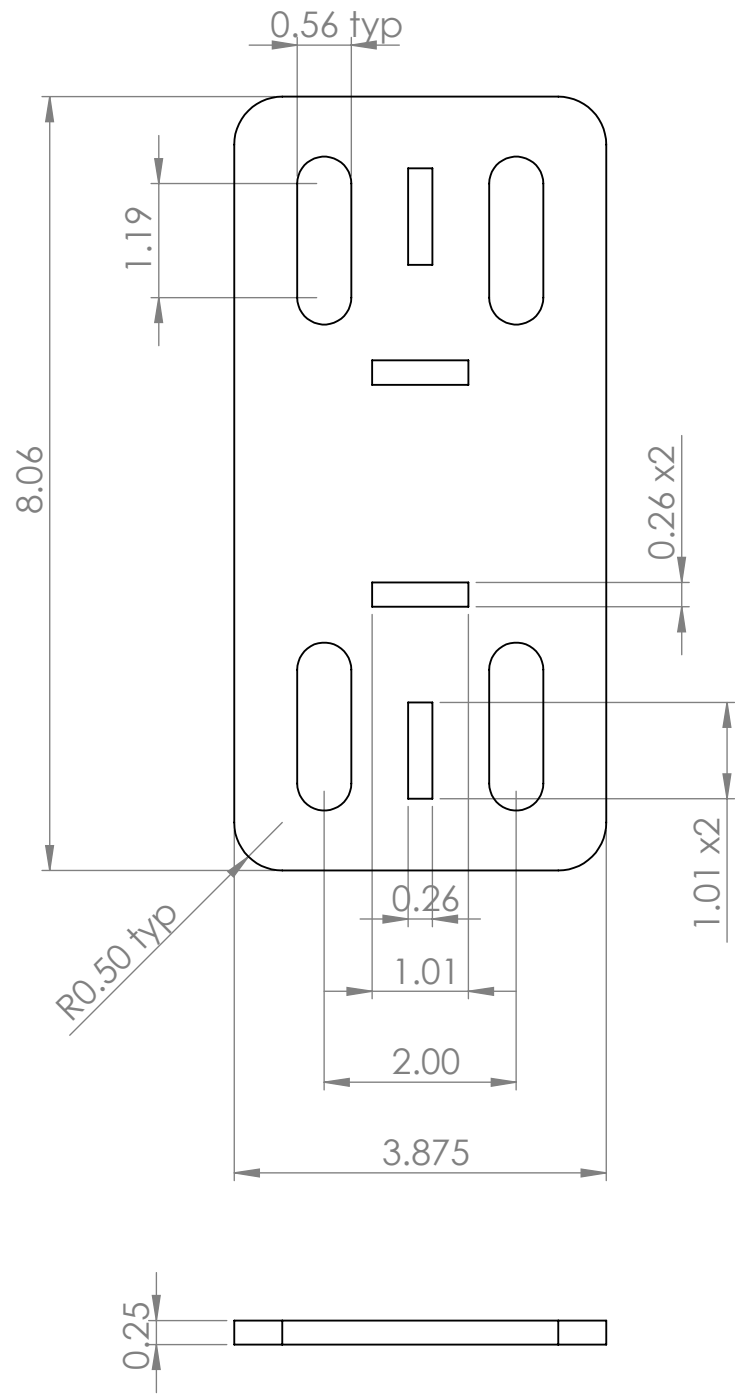
Panelized 2.0

Lasered Parts



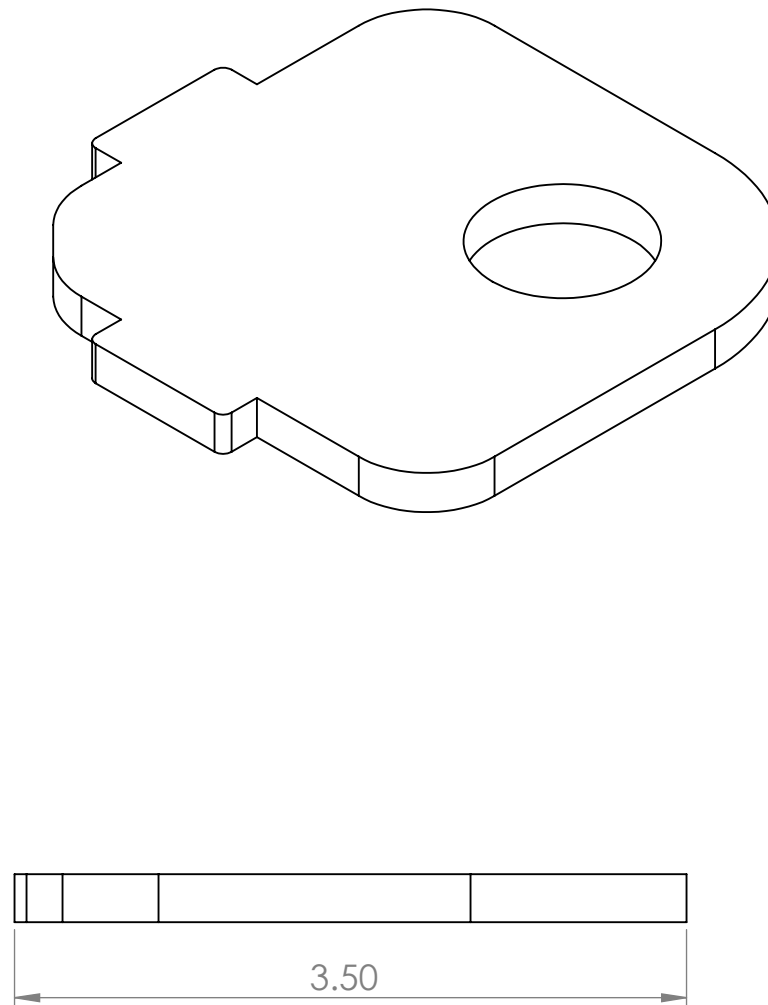
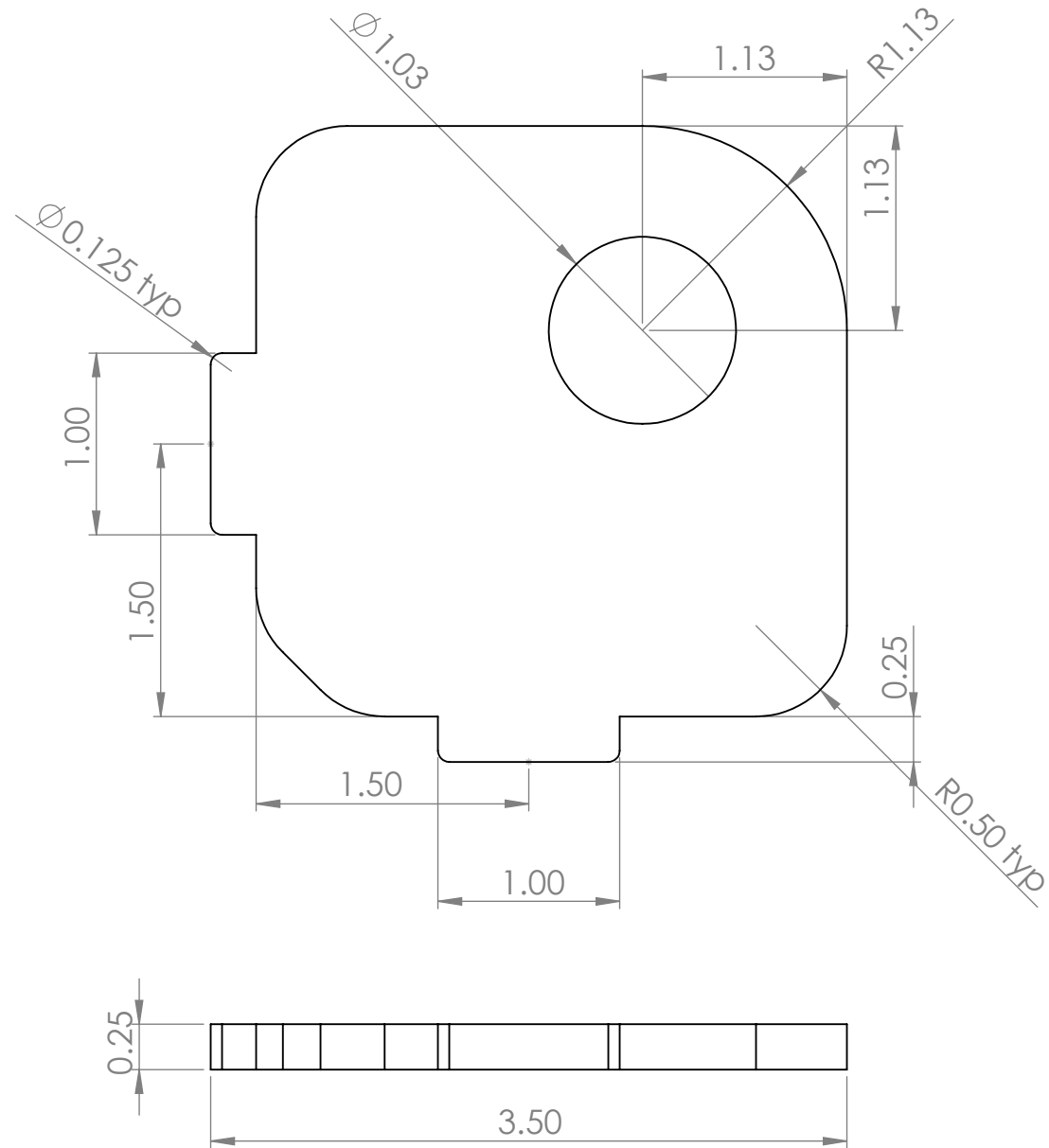
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION E
	NAME	SIGNATURE	DATE				TITLE: Straight Splice Plate	
DRAWN	Mark Hemphil		11/9/2022					
CHK'D								
APPV'D								
MFG								
Q.A						MATERIAL: ASTM A572 Grade 50 Steel	DWG NO. PWS-2.0-L01	B
						WEIGHT: 4.247392	SCALE: 1:2	SHEET 1 OF 1



- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

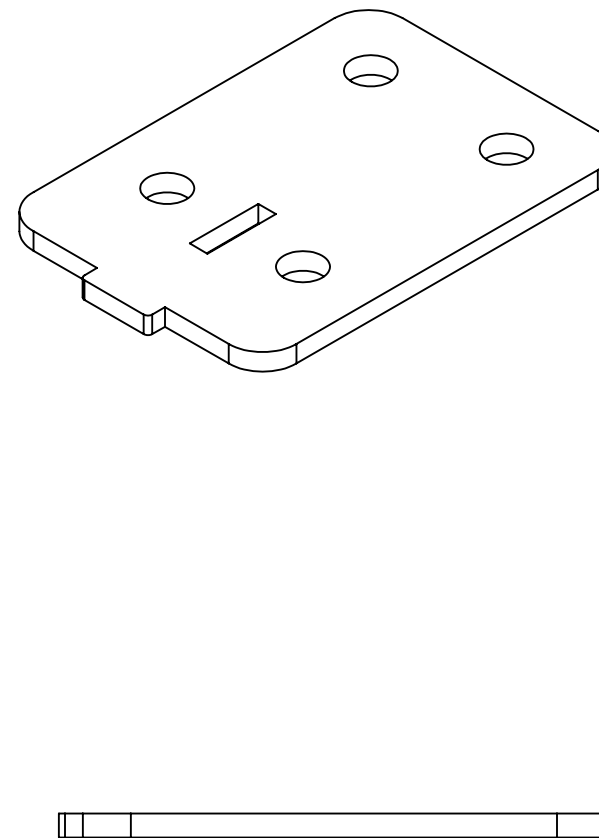
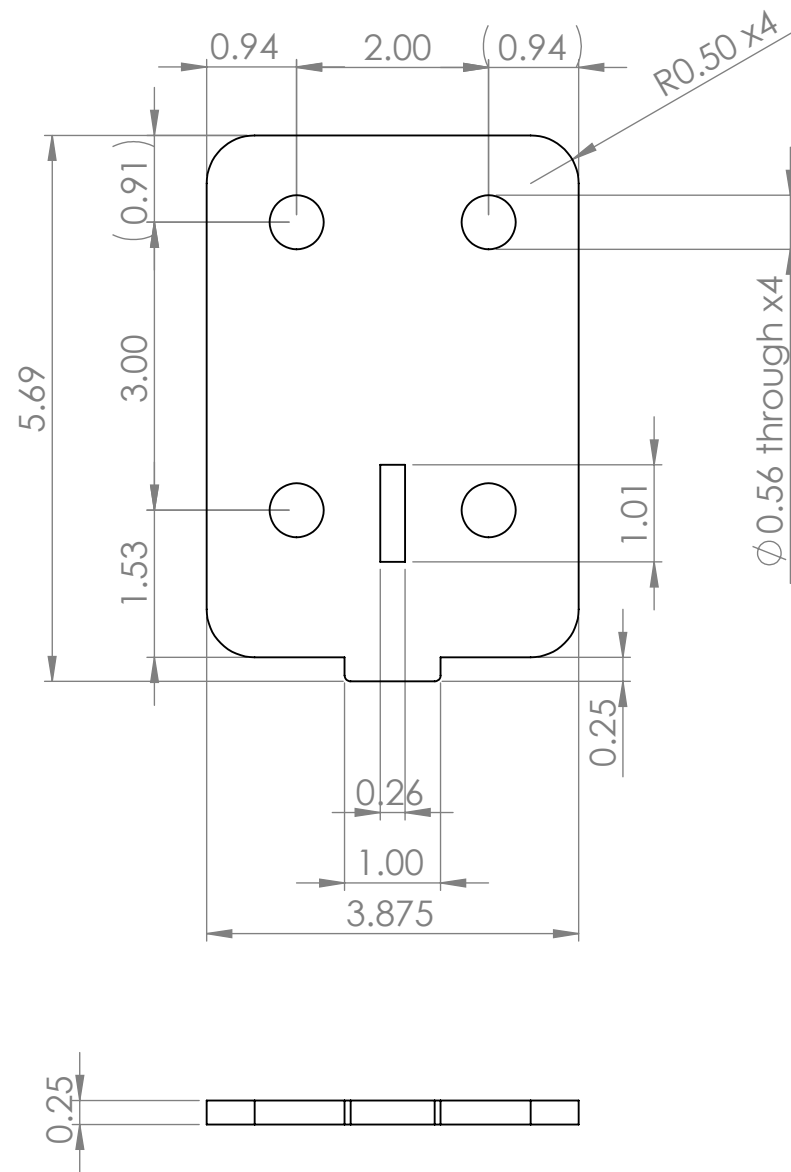
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION C
	NAME	SIGNATURE	DATE				TITLE: Base Plate - Profile	
DRAWN	Mark Hemphil		11/9/2022					
CHK'D								
APPV'D								
MFG								
Q.A						MATERIAL: ASTM A36 Steel	DWG NO. PWS-2.0-L03-P	B
						WEIGHT: 1.867259	SCALE: 1:2	SHEET 1 OF 6



Notes:

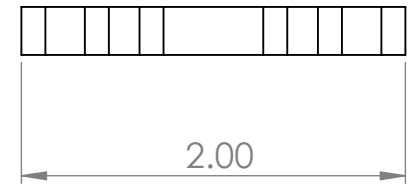
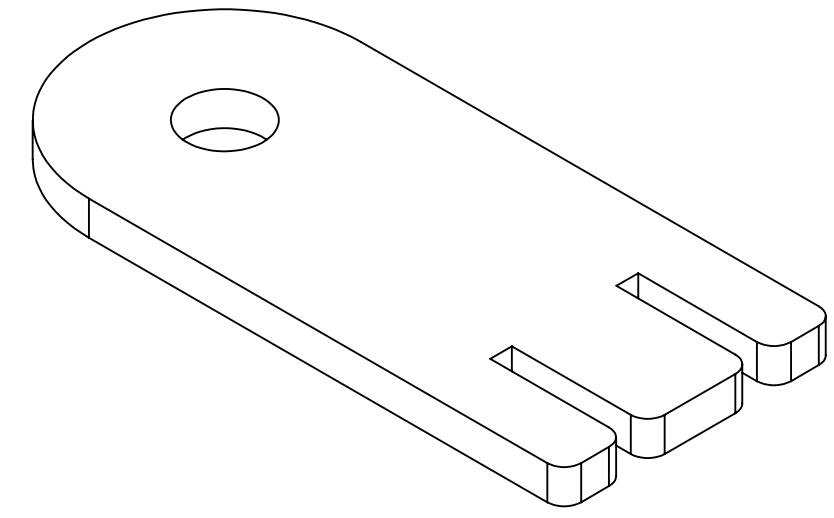
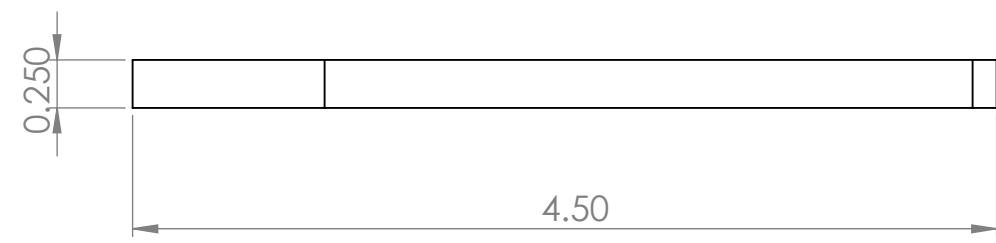
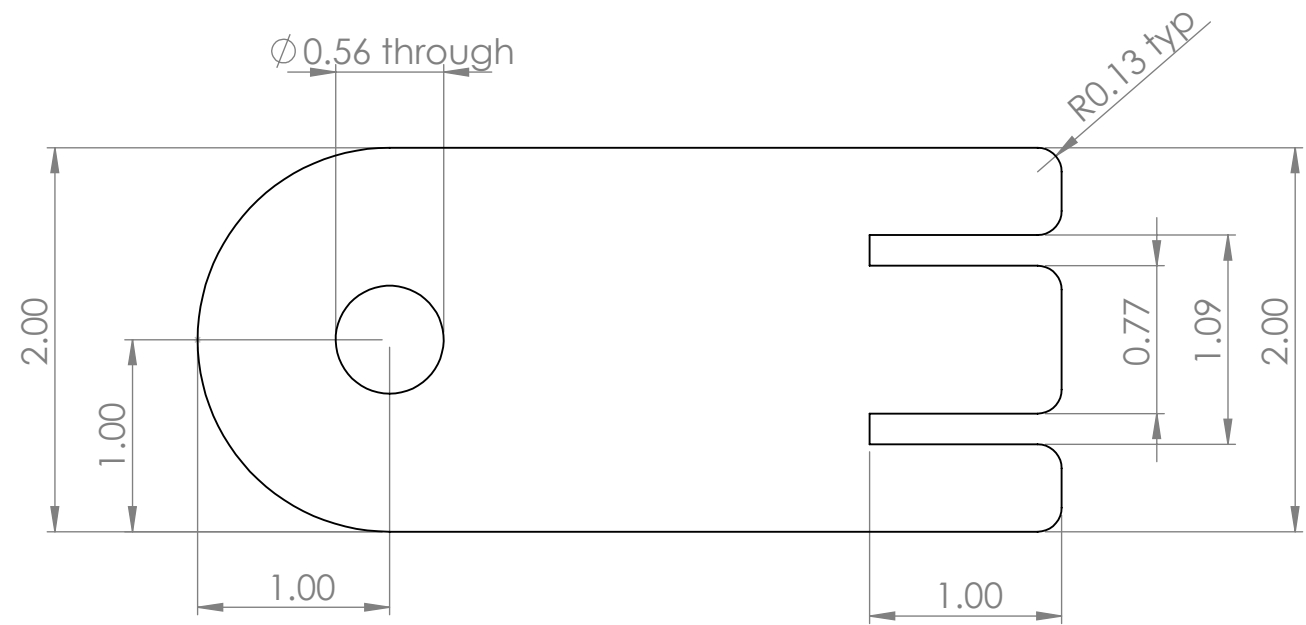
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING		REVISION D		
	NAME	SIGNATURE	DATE				TITLE: Bracket Gusset				
DRAWN	Mark Hemphil		2/9/2023								
CHK'D											
APPV'D											
MFG											
Q.A				MATERIAL: ASTM A36 Steel			DWG NO.		PWS-2.0-L04		B
				WEIGHT: 0.688526			SCALE: 1:1		SHEET 1 OF 1		



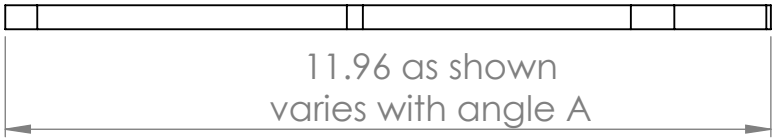
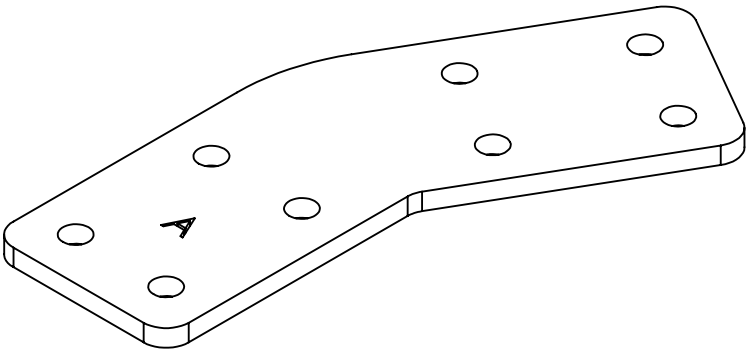
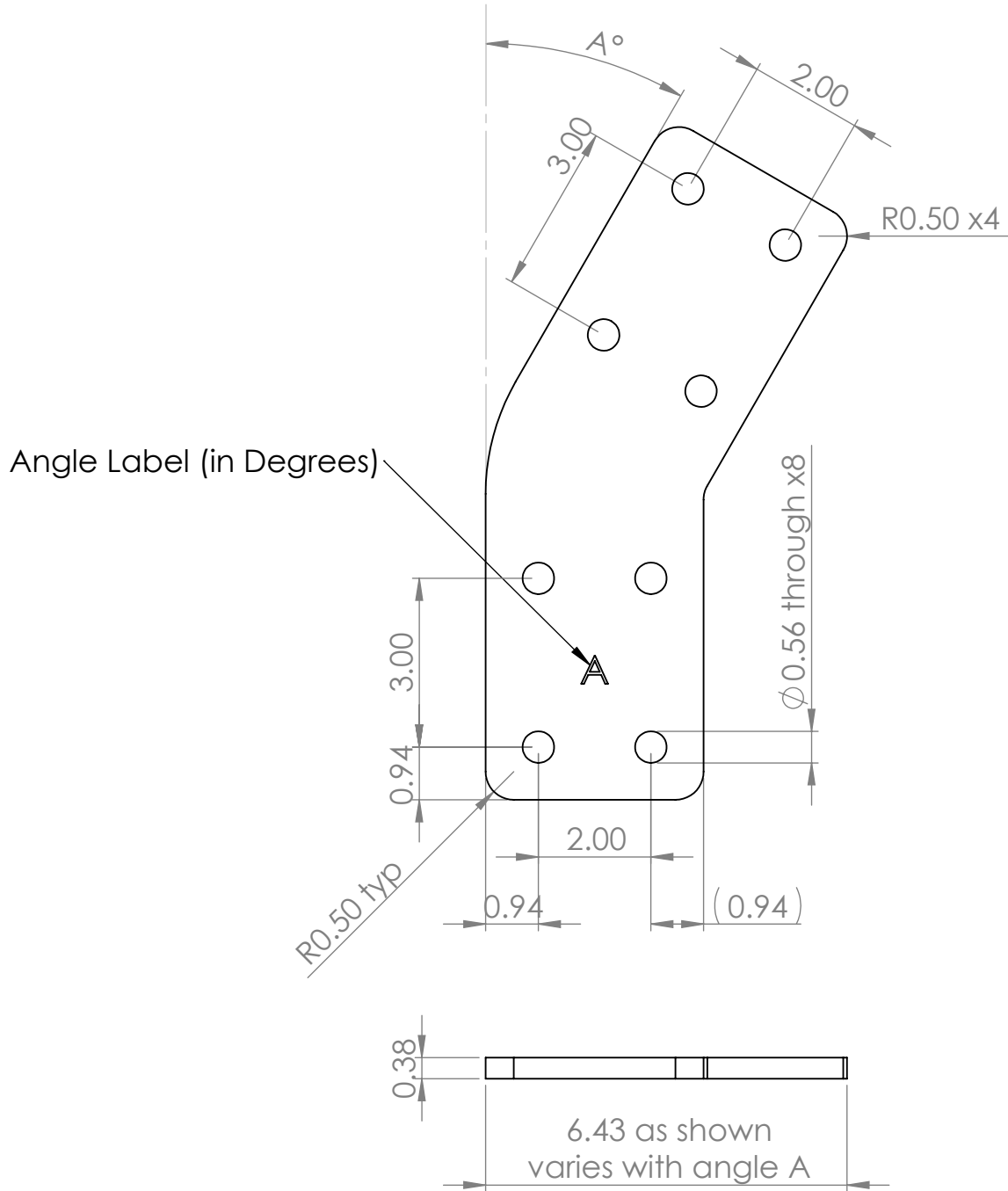
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION C
	NAME	SIGNATURE	DATE				TITLE: Profile Receiver	
DRAWN	Mark Hemphil		1/24/2023					
CHK'D								
APPV'D								
MFG								
Q.A				MATERIAL: ASTM A36 Steel			DWG NO.	B
				WEIGHT: 1.407178			SCALE: 1:2	SHEET 1 OF 1



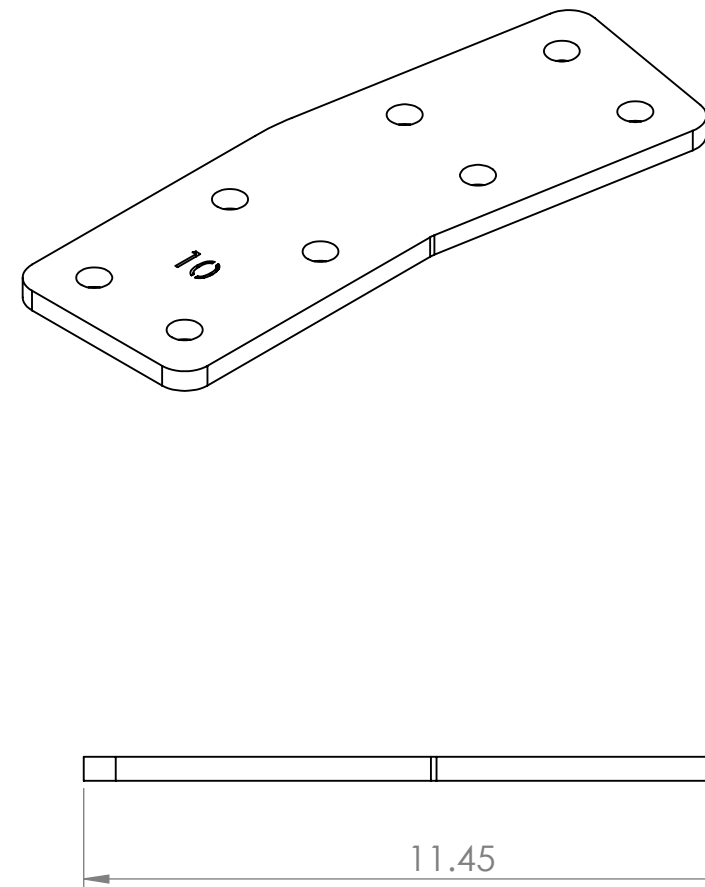
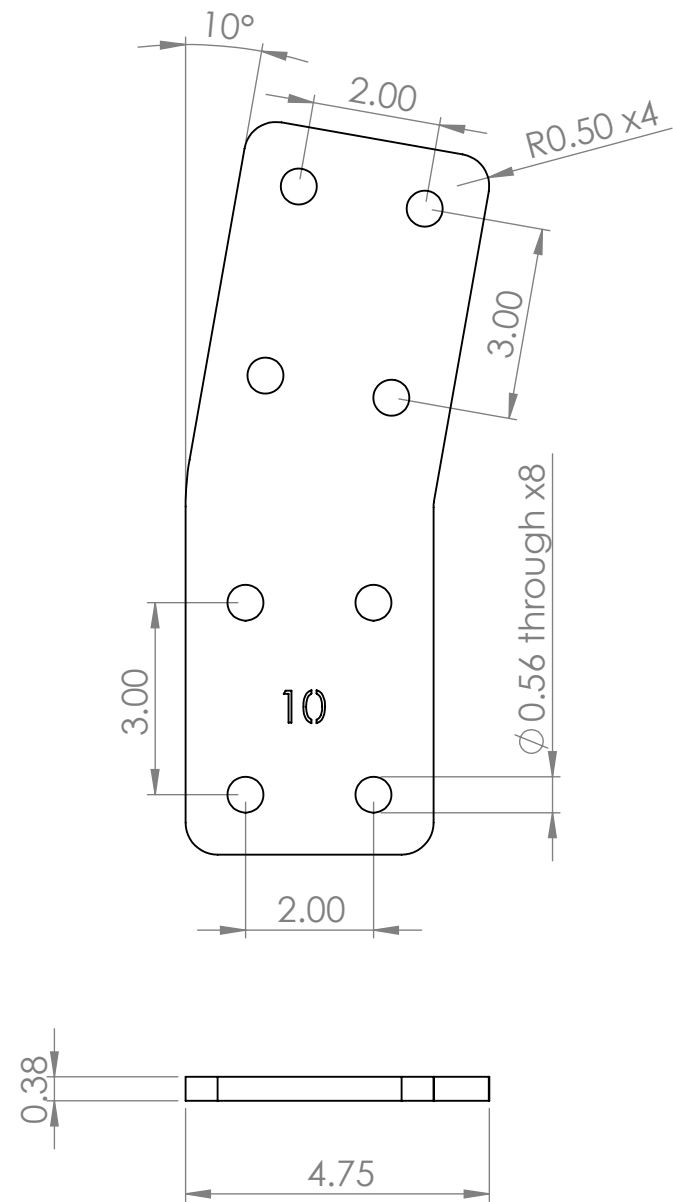
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING		REVISION G		
	NAME	SIGNATURE	DATE				TITLE:				
DRAWN	Mark Hemphil						Pinch Pipe End Plate A1				
CHK'D											
APPV'D											
MFG											
Q.A											
							DWG NO.				B
							PWS-2.0-L06				
							SCALE: 1:1				SHEET 1 OF 1



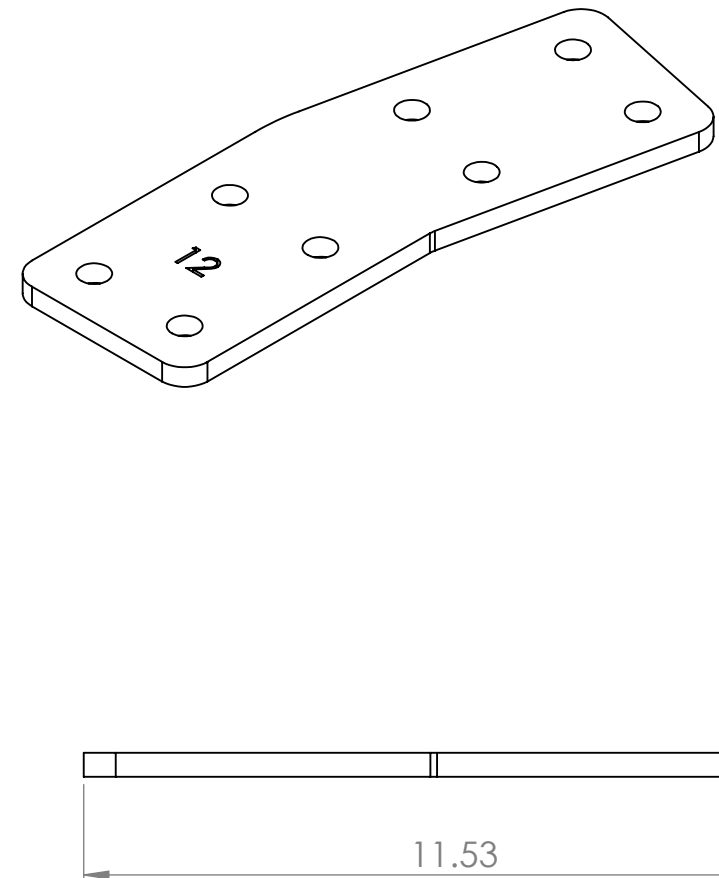
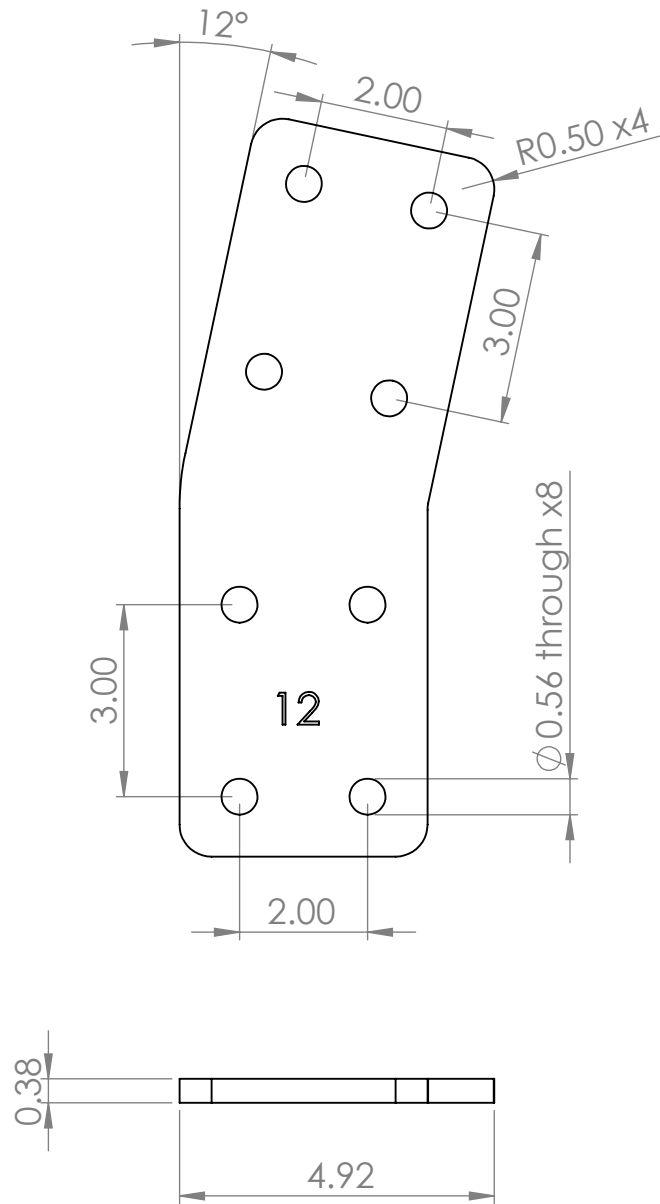
- Notes:
1. A complete part number is of the form PWS-2.0-L08-A, where A is the angle (relative to straight).
 2. Manufacture from customer-supplied data (e.g. laser- or plasma-cut from dwg or dxf file).
 3. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5				FINISH: None		Deburr and break sharp edges (if applicable)		DO NOT SCALE DRAWING		REVISION D	
NAME		SIGNATURE		DATE						TITLE: Articulated Splice Plate	
DRAWN		Mark Hemphil		11/9/2022							
CHK'D											
APPV'D											
MFG											
Q.A											
						MATERIAL: ASTM A572 Grade 50 Steel		DWG NO. PWS-2.0-L08-A		B	
						WEIGHT: 4.684955		SCALE: 1:3		SHEET 1 OF 12	



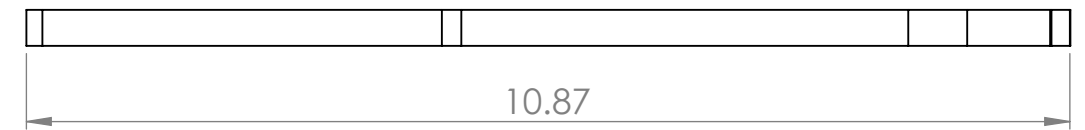
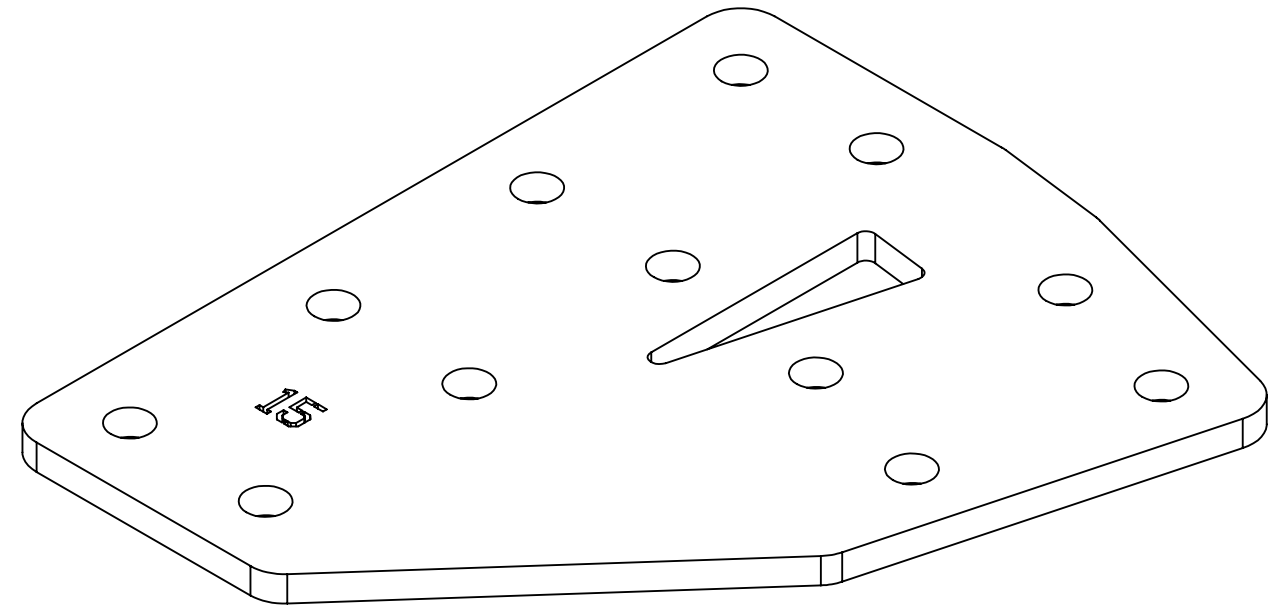
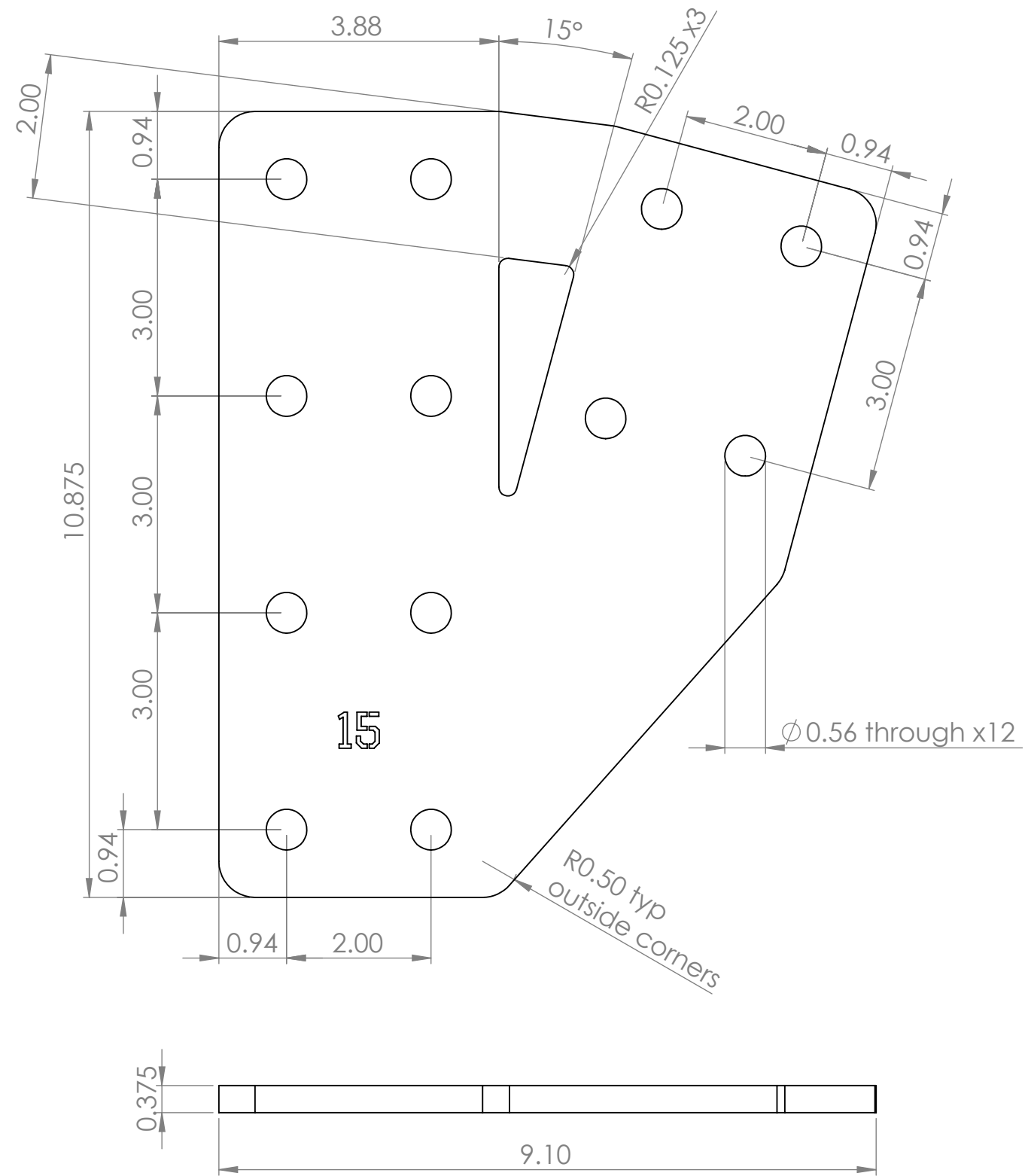
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION	D
	NAME	SIGNATURE	DATE				TITLE: Articulated Splice Plate - 10 Degrees		
DRAWN	Mark Hemphil		11/9/2022						
CHK'D									
APPV'D									
MFG									
Q.A							DWG NO.		
						MATERIAL: ASTM A572 Grade 50 Steel	PWS-2.0-L08-10		
						WEIGHT: 4.404211	SCALE: 1:3	SHEET 4 OF 12	



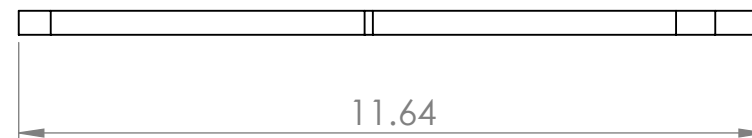
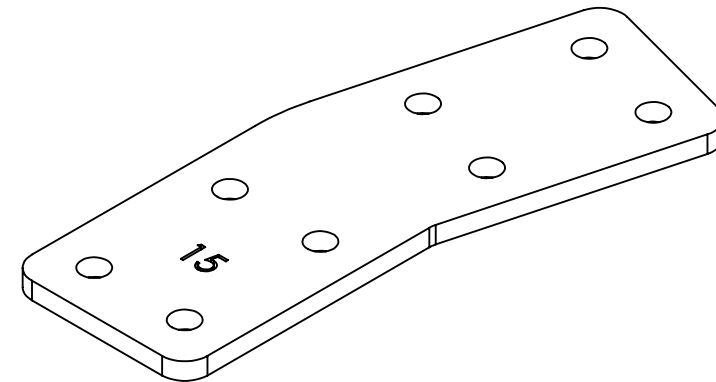
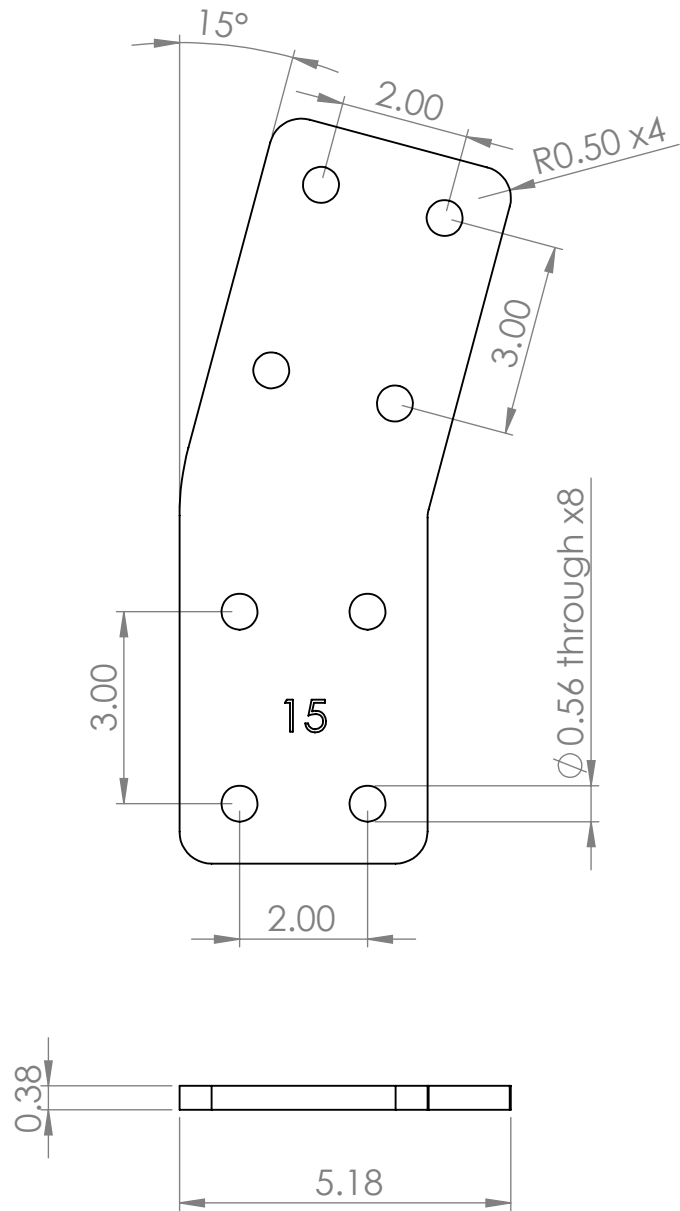
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION	D
	NAME	SIGNATURE	DATE				TITLE: Articulated Splice Plate - 12 Degrees		
DRAWN	Mark Hemphil		11/9/2022						
CHK'D									
APPV'D									
MFG									
Q.A							DWG NO.		
						MATERIAL: ASTM A572 Grade 50 Steel	PWS-2.0-L08-12		
						WEIGHT: 4.431842	SCALE: 1:3	SHEET 5 OF 12	



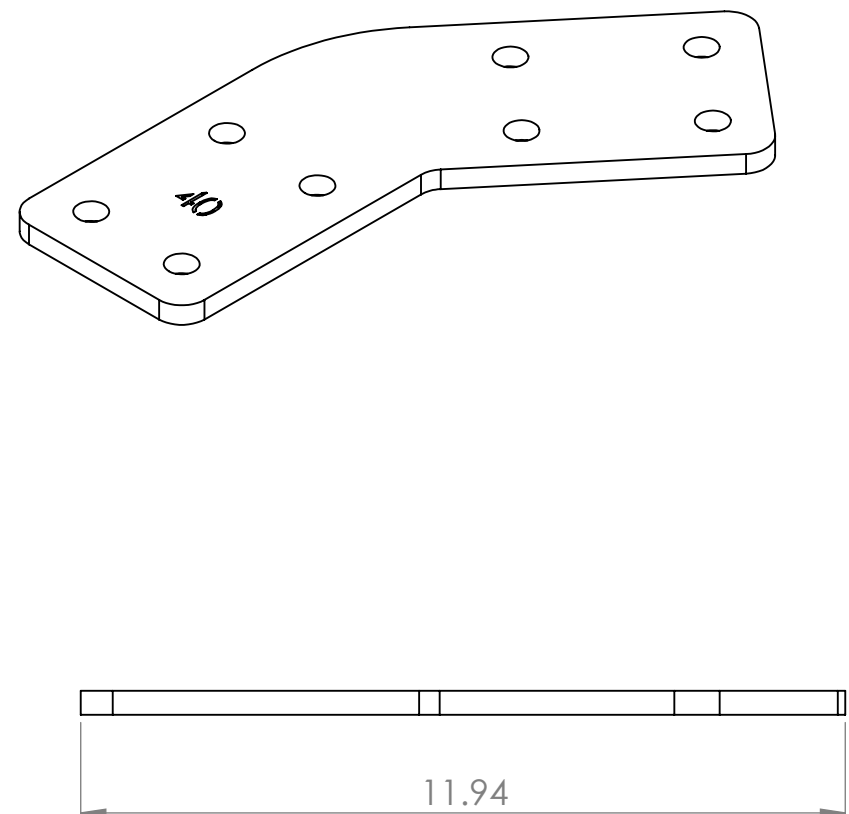
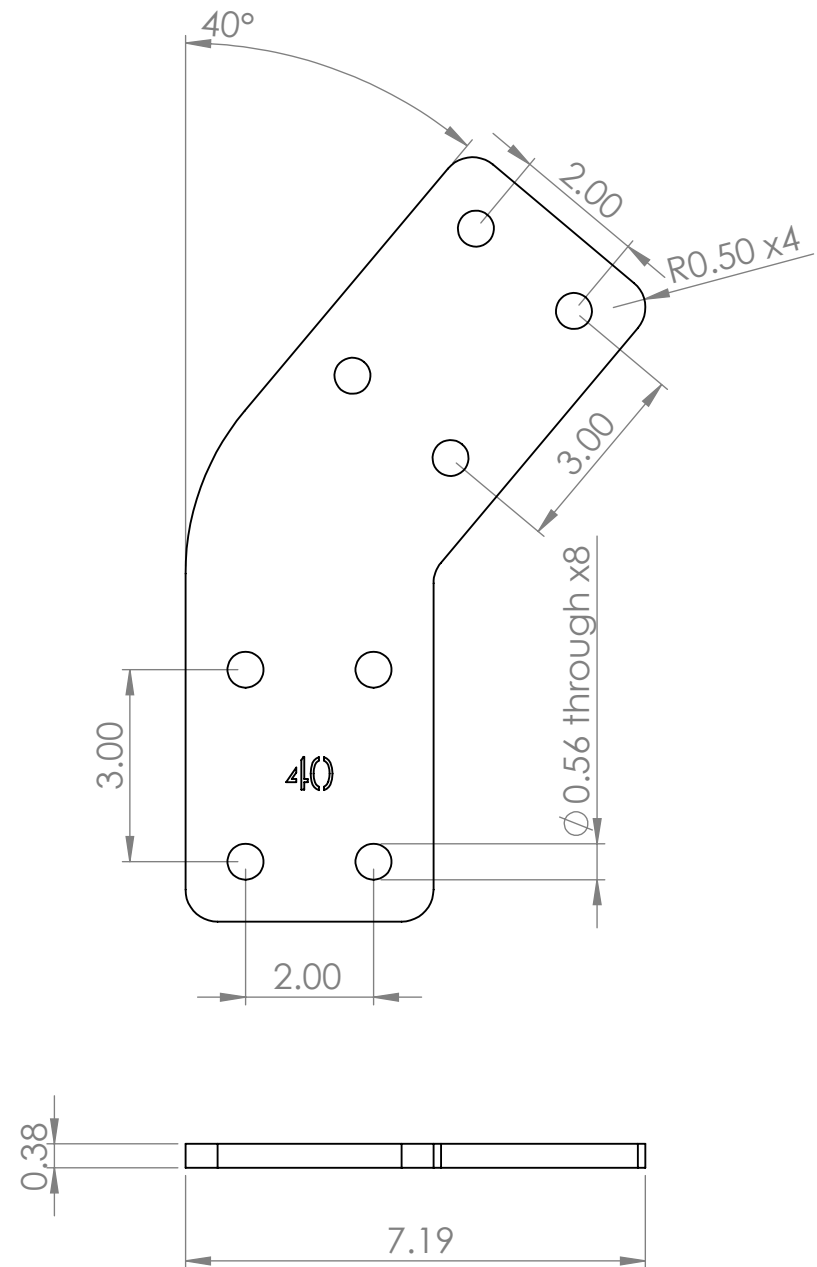
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from DXF file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION	B
							TITLE: Branching Articulated Splice Plate - 15 Degrees		
DRAWN	Mark Hemphill	SIGNATURE	DATE				DWG NO.	PWS-2.0-L38-15	B
CHK'D									
APPV'D									
MFG									
Q.A						MATERIAL: ASTM A572 Grade 50 Steel			
						WEIGHT: 7.808103	SCALE: 1:2	SHEET 1 OF 1	



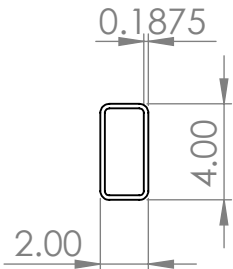
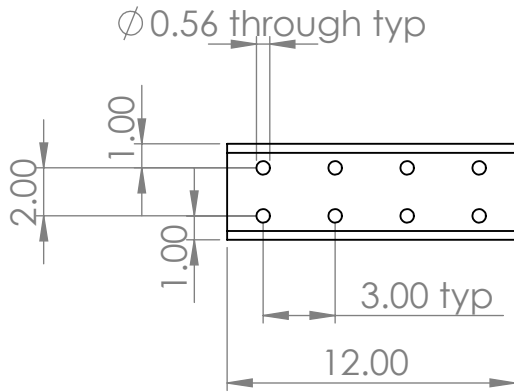
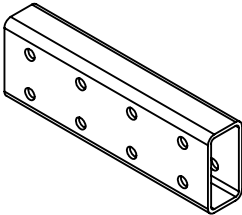
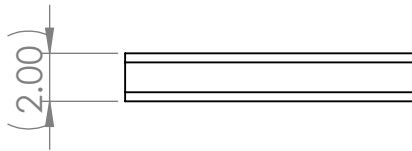
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING		REVISION D		
	NAME	SIGNATURE	DATE				TITLE: Articulated Splice Plate - 15 Degrees				
DRAWN	Mark Hemphil		11/9/2022								
CHK'D											
APPV'D											
MFG											
Q.A							MATERIAL:		DWG NO.		B
							ASTM A572 Grade 50 Steel		PWS-2.0-L08-15		
							WEIGHT: 4.473550		SCALE: 1:3		SHEET 6 OF 12



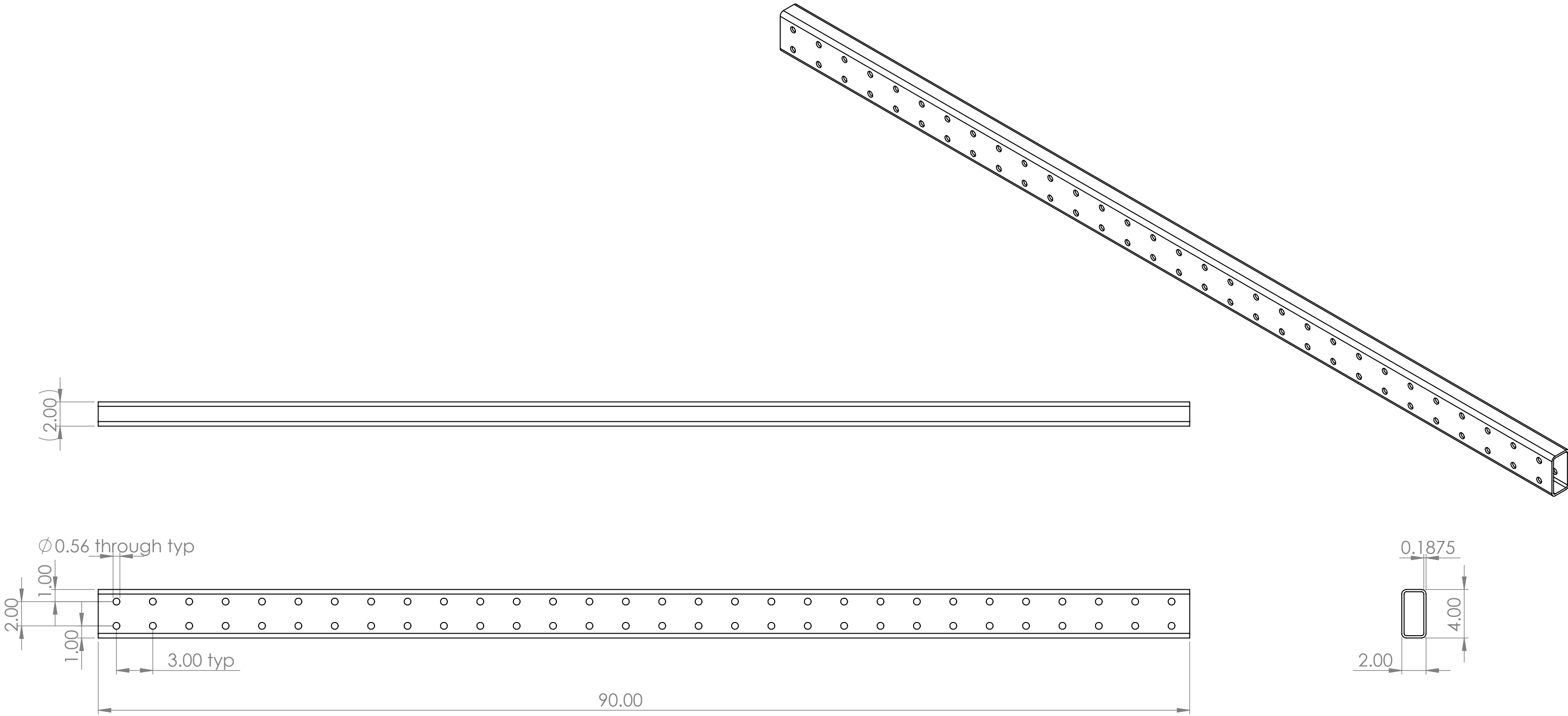
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION	D
	NAME	SIGNATURE	DATE				TITLE: Articulated Splice Plate - 40 Degrees		
DRAWN	Mark Hemphil		11/9/2022						
CHK'D									
APPV'D									
MFG									
Q.A							DWG NO.		
						MATERIAL: ASTM A572 Grade 50 Steel	PWS-2.0-L08-40		
						WEIGHT: 4.820195	SCALE: 1:3	SHEET 11 OF 12	



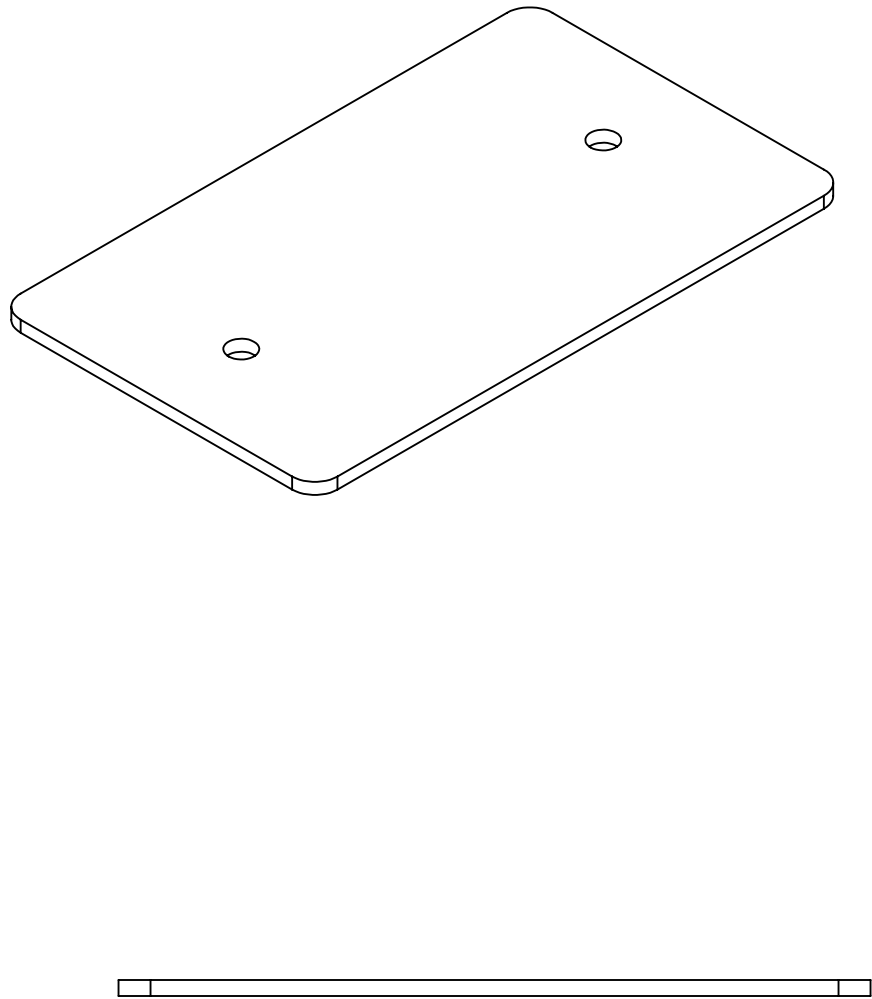
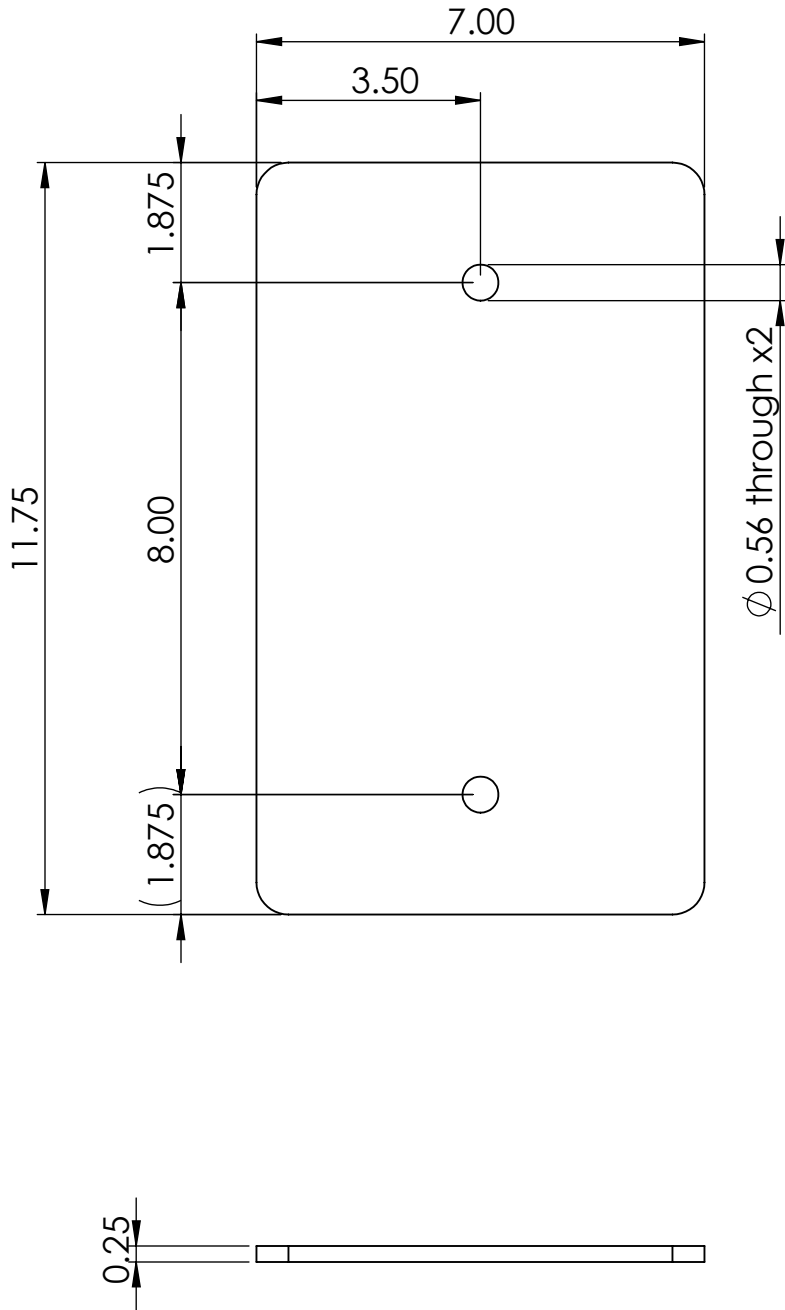
Notes:
1. Manufacture from customer supplied data (e.g. tube laser from Solidworks part file).

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: Indoor: None Outdoor: Hot Dip Galvanize			DO NOT SCALE DRAWING			REVISION		
						TITLE: Profile Module - 12in Long					
DRAWN	Mark Hemphil		SIGNATURE		DATE		1/27/2023				
CHK'D											
APPV'D											
MFG											
Q.A											
						MATERIAL:			DWG NO.		
						ASTM A500 Grade B Steel			PWS-2.0-L09-12		
									B		
						WEIGHT: 6.659068			SCALE: 1:8		
									SHEET 2 OF 2		



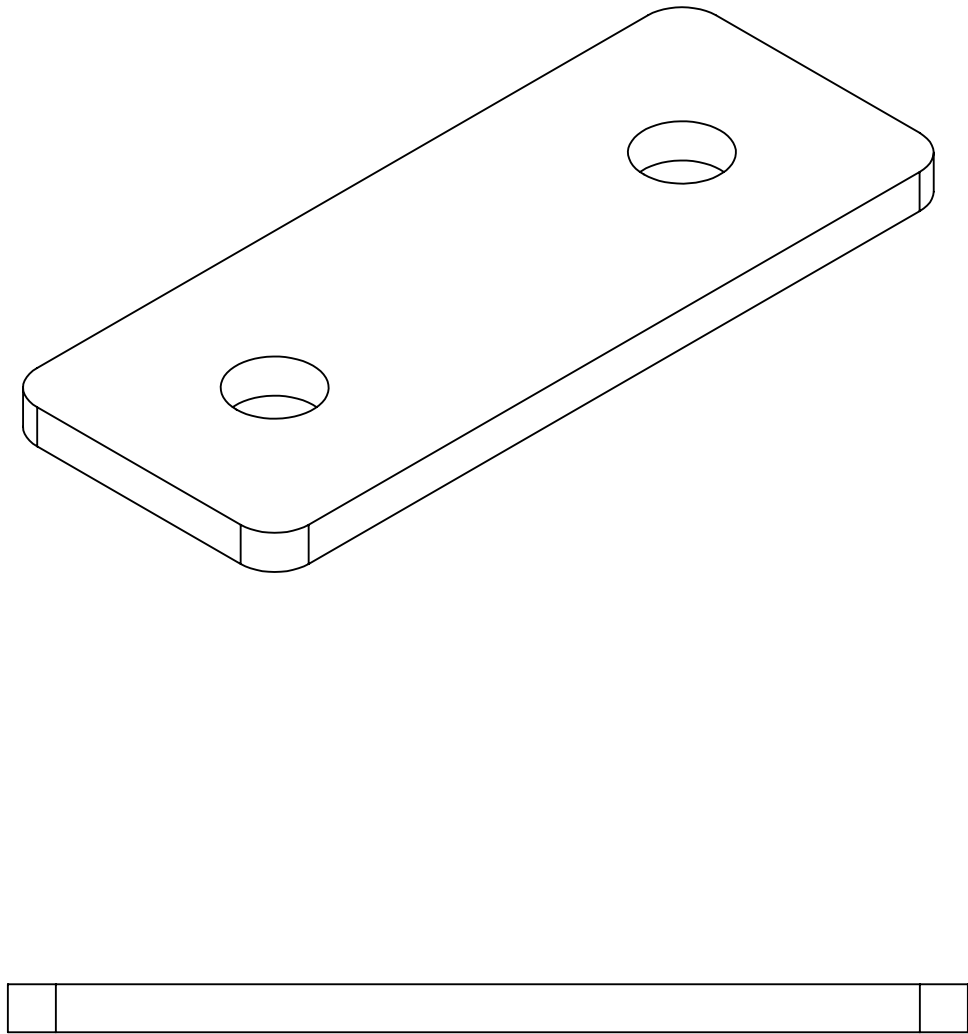
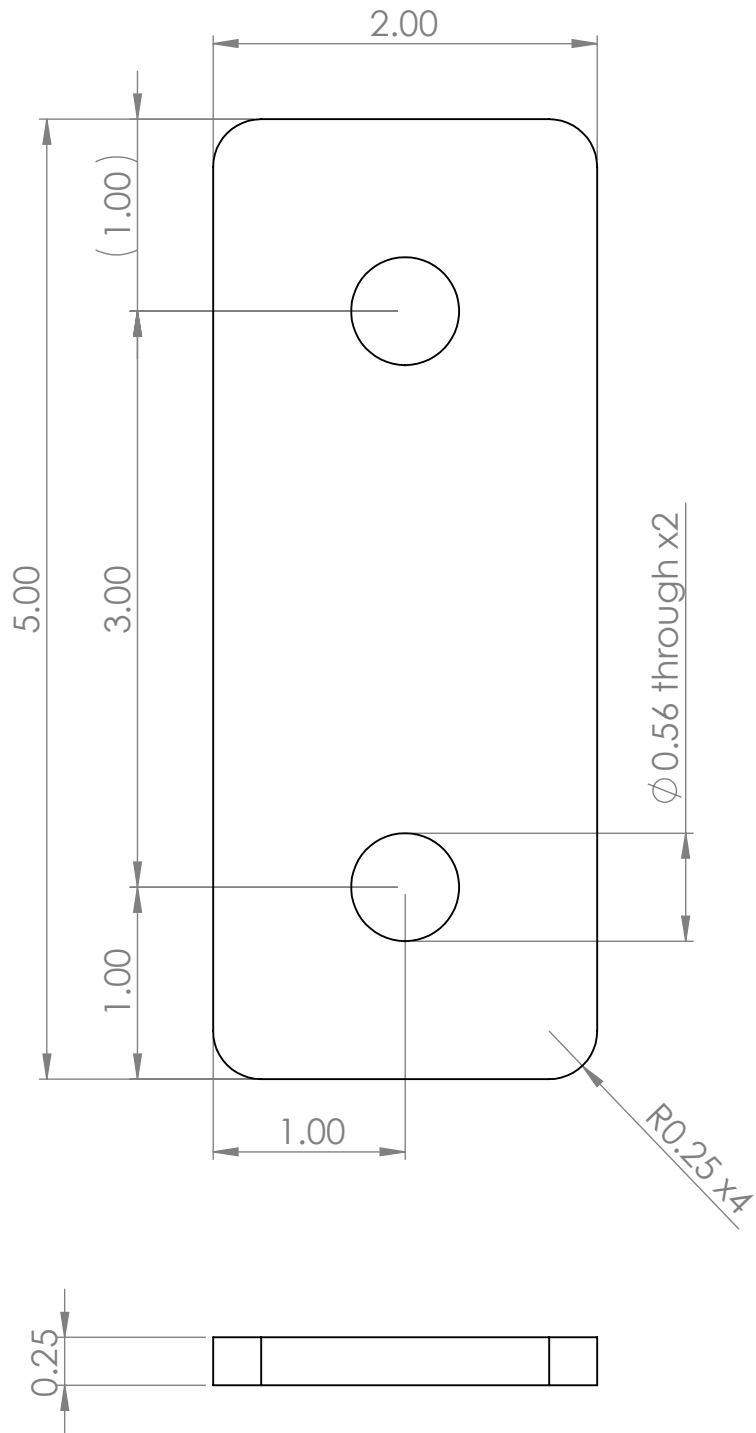
Notes:
1. Manufacture from customer supplied data (e.g. tube laser from Solidworks part file).

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: Indoor: None Outdoor: Hot Dip Galvanize			Debur and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION	I
							TITLE: Profile Module - 90in Long		
DRAWN	Mark Hemphil		1/27/2023				DWG NO.		B
CHK'D							PWS-2.0-L09-90		
APPV'D									
MFG							SCALE: 1:8		
Q.A									
						MATERIAL: ASTM A500 Grade B Steel	SHEET 1 OF 2		
						WEIGHT: 49.943011			



- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

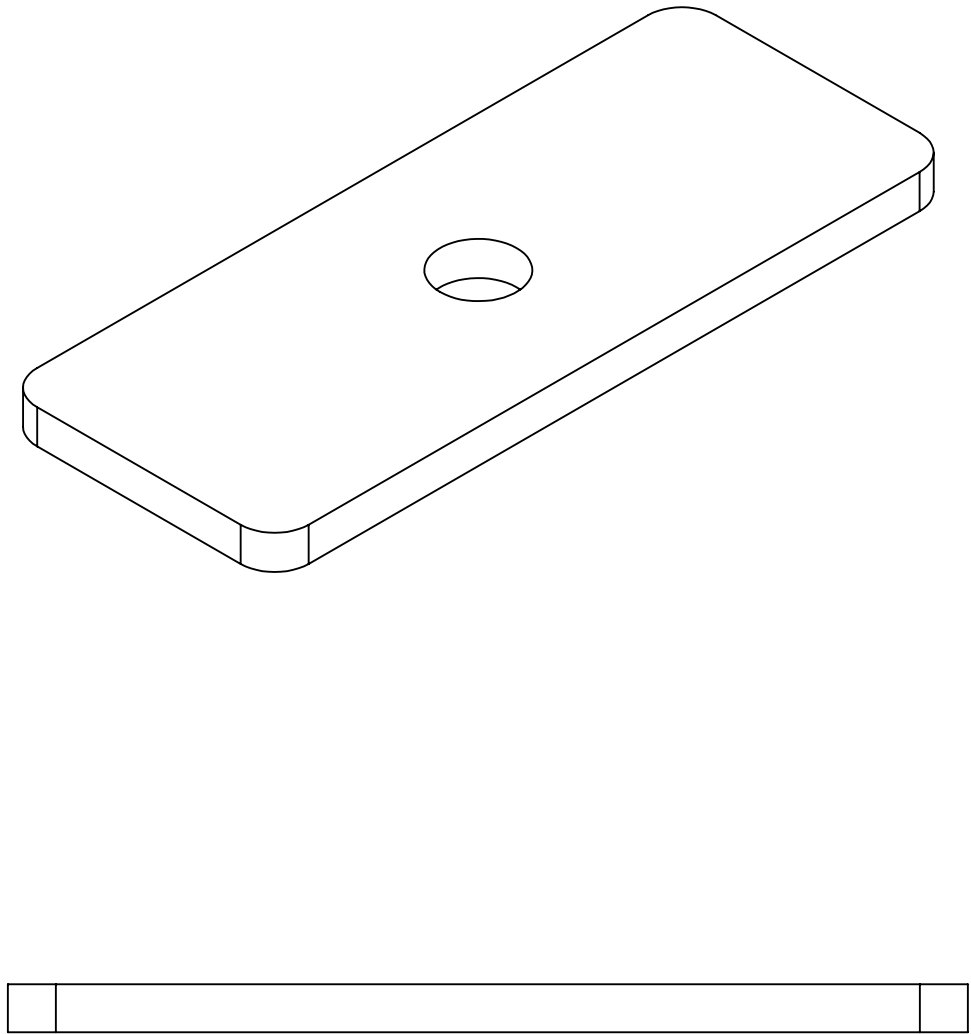
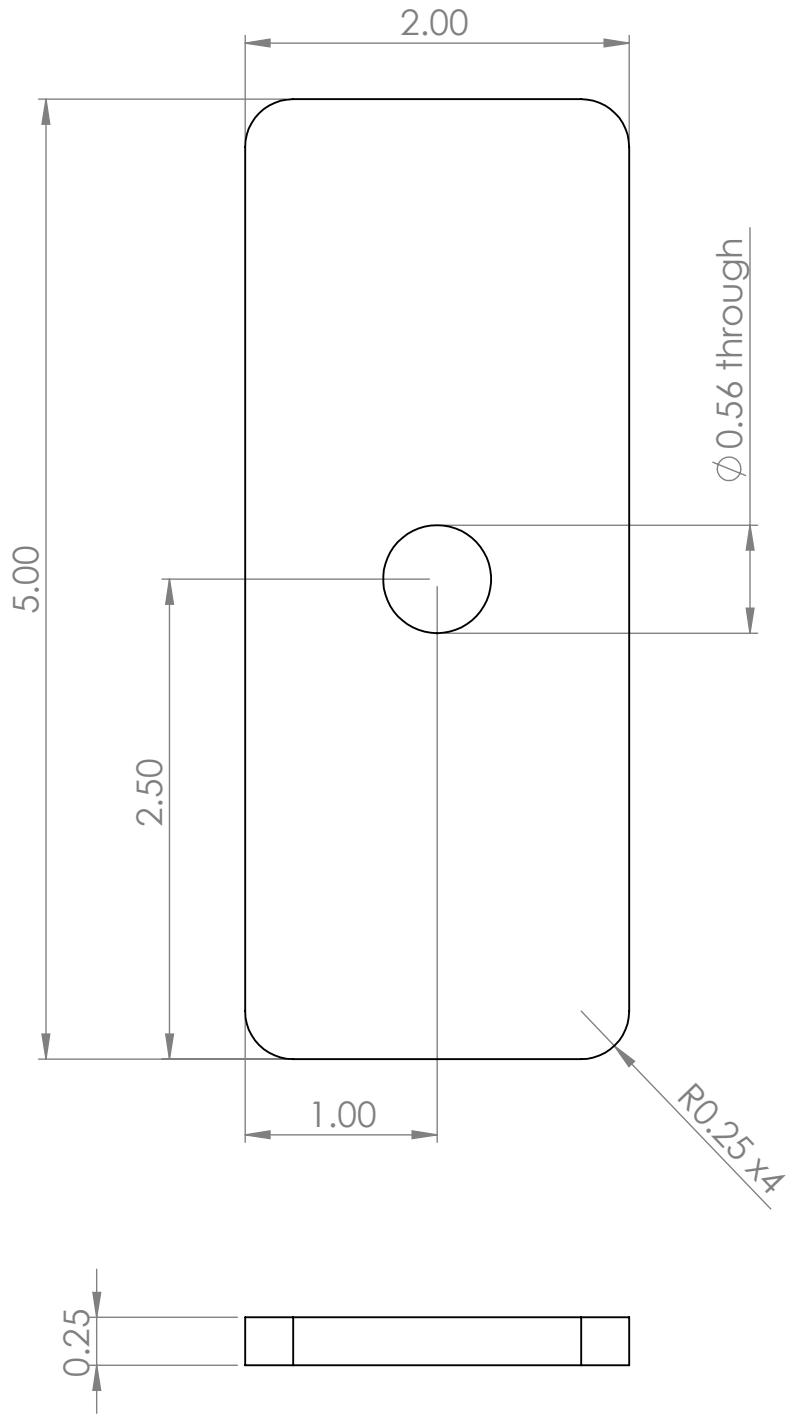
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)			DO NOT SCALE DRAWING			REVISION A							
												TITLE: Double Point Anchor Plate							
NAME		SIGNATURE		DATE															
DRAWN		Mark Hemphil		12/28/2022															
CHK'D																			
APPV'D																			
MFG																			
Q.A								MATERIAL:				DWG NO.				B			
								ASTM A36 Steel				PWS-2.0-L10							
								WEIGHT: 5.781055				SCALE: 1:3				SHEET 1 OF 1			



Notes:

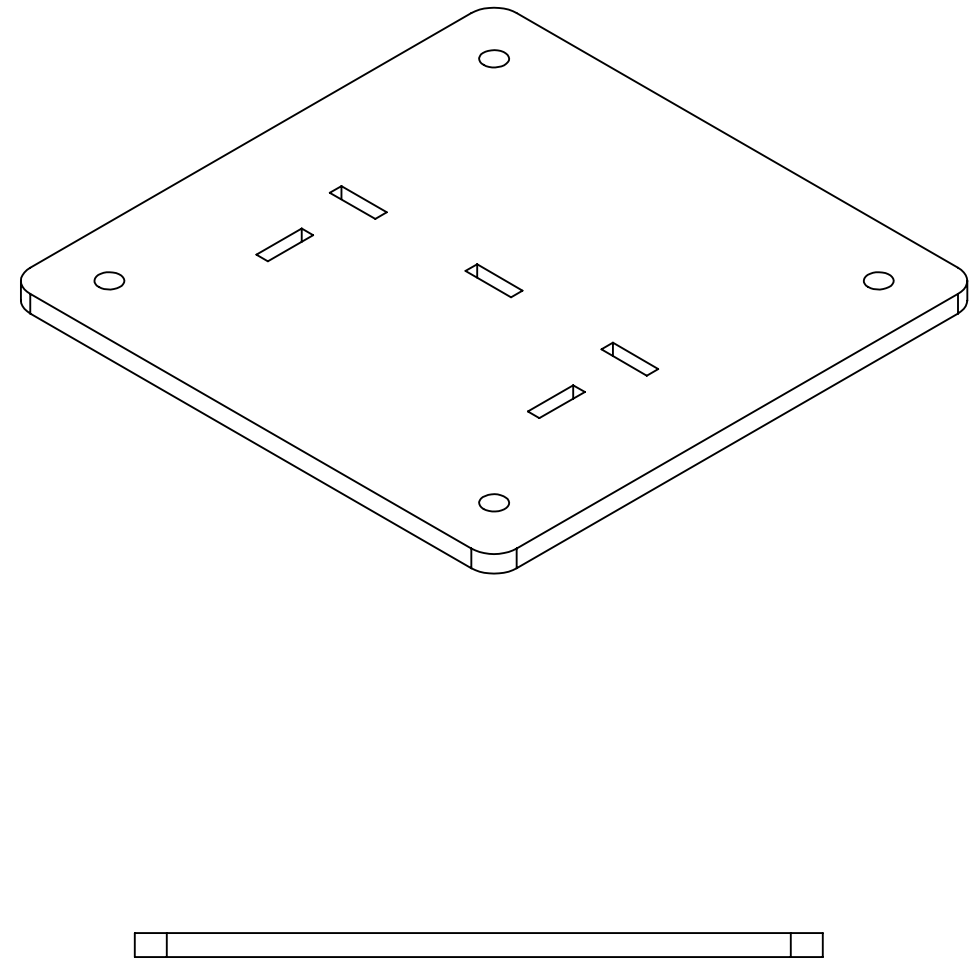
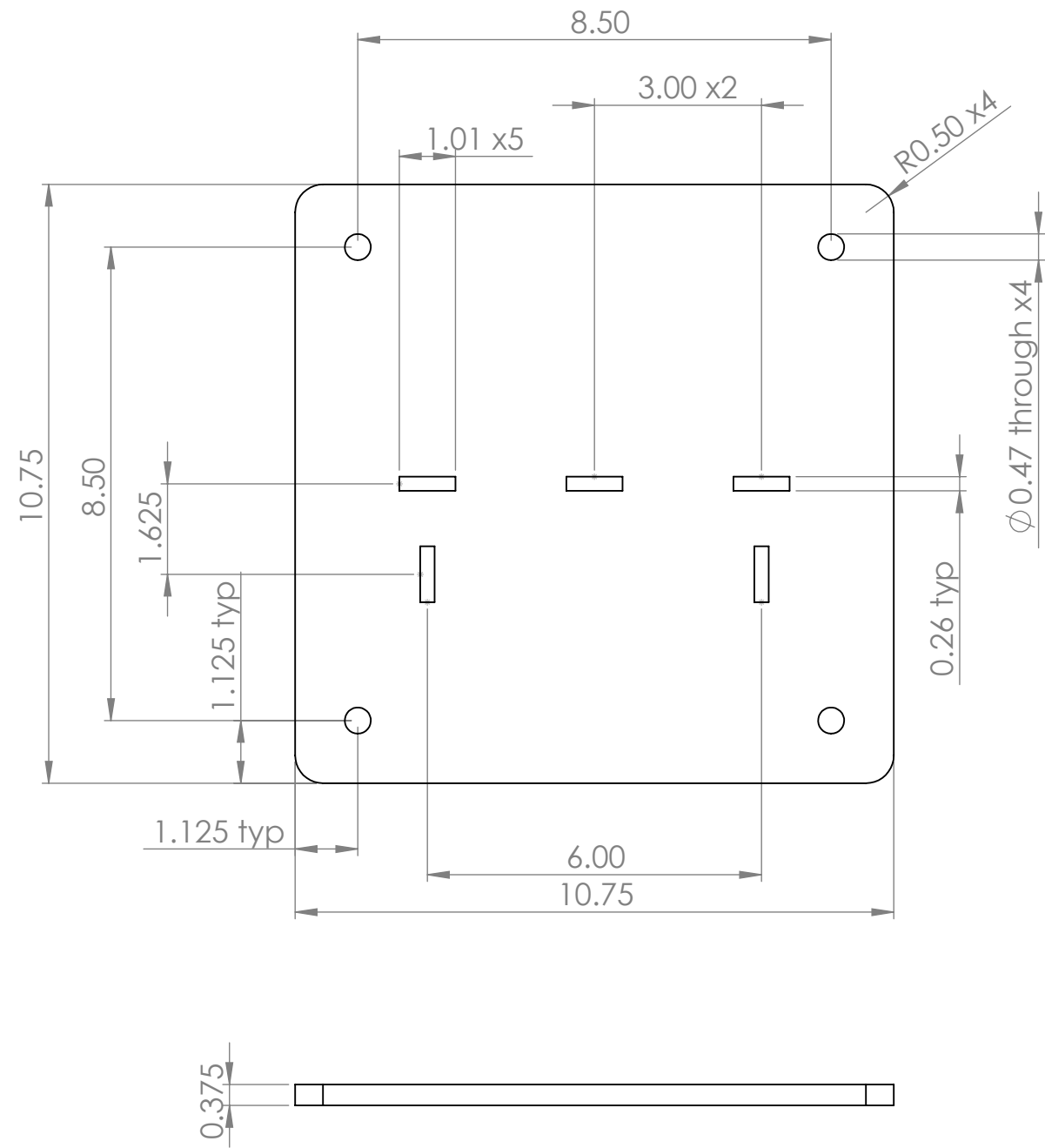
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: Indoor: None Outdoor: Hot Dip Galvanize			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION C
	NAME	SIGNATURE	DATE				TITLE: Washer Plate - Double Hole	
DRAWN	Mark Hemphill		4/10/2023					
CHK'D								
APPV'D								
MFG								
Q.A				MATERIAL: ASTM A36 Steel			DWG NO. PWS-2.0-L11-2	B
				WEIGHT: 0.669956			SCALE: 1:1	SHEET 1 OF 2



- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

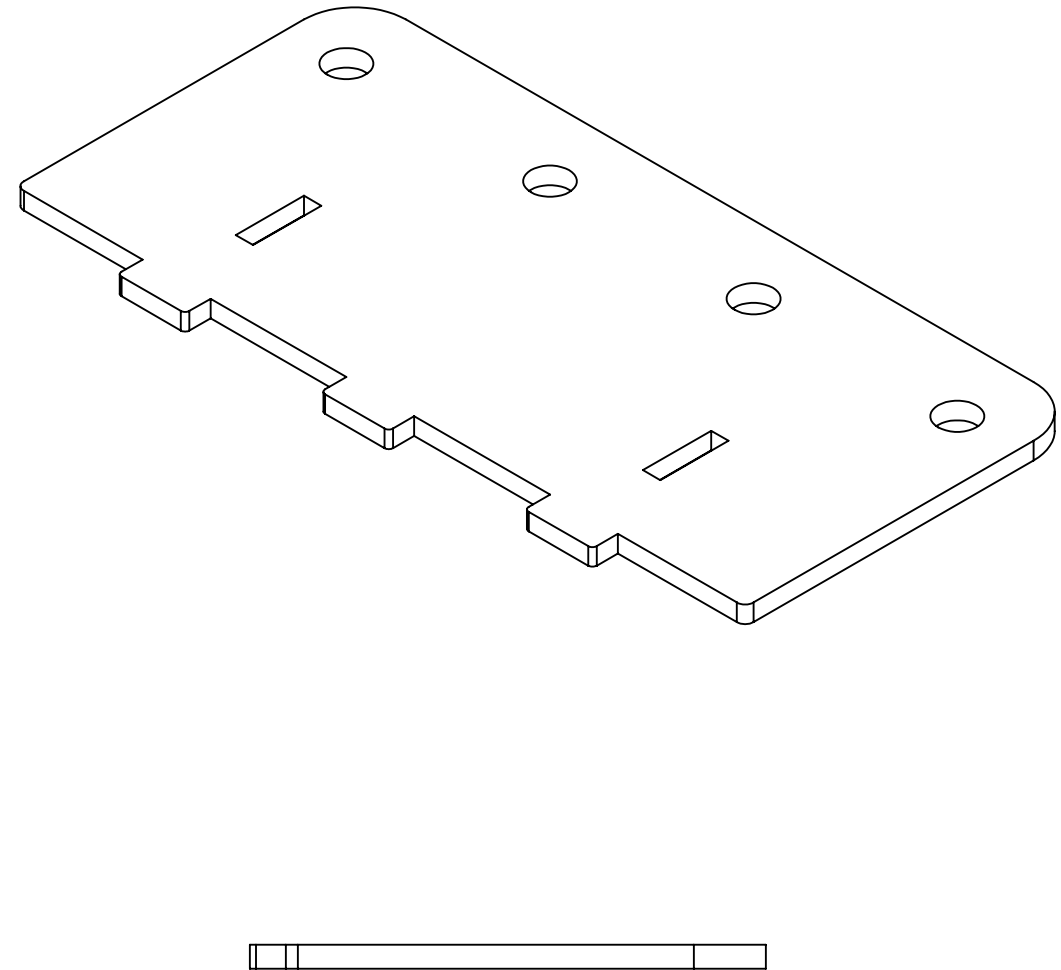
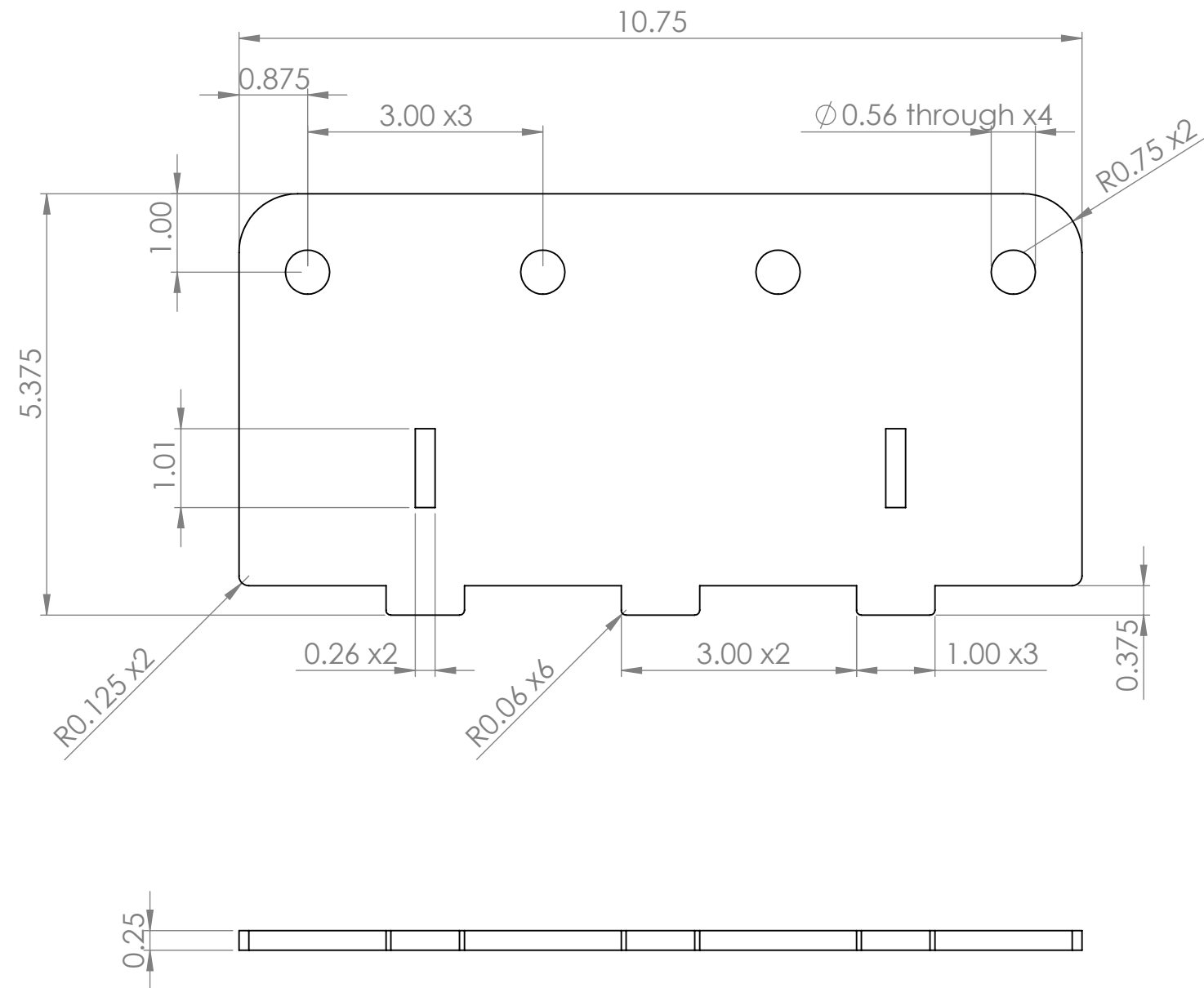
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: Indoor: None Outdoor: Hot Dip Galvanize			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING			REVISION C	
							TITLE: Washer Plate - Single Hole				
	NAME	SIGNATURE	DATE								
DRAWN	Mark Hemphill		4/10/2023								
CHK'D											
APPV'D											
MFG											
Q.A				MATERIAL: ASTM A36 Steel			DWG NO. PWS-2.0-L11-1		B		
				WEIGHT: 0.687575			SCALE: 1:1		SHEET 2 OF 2		



Notes:

1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
2. Deburr and break all sharp edges.

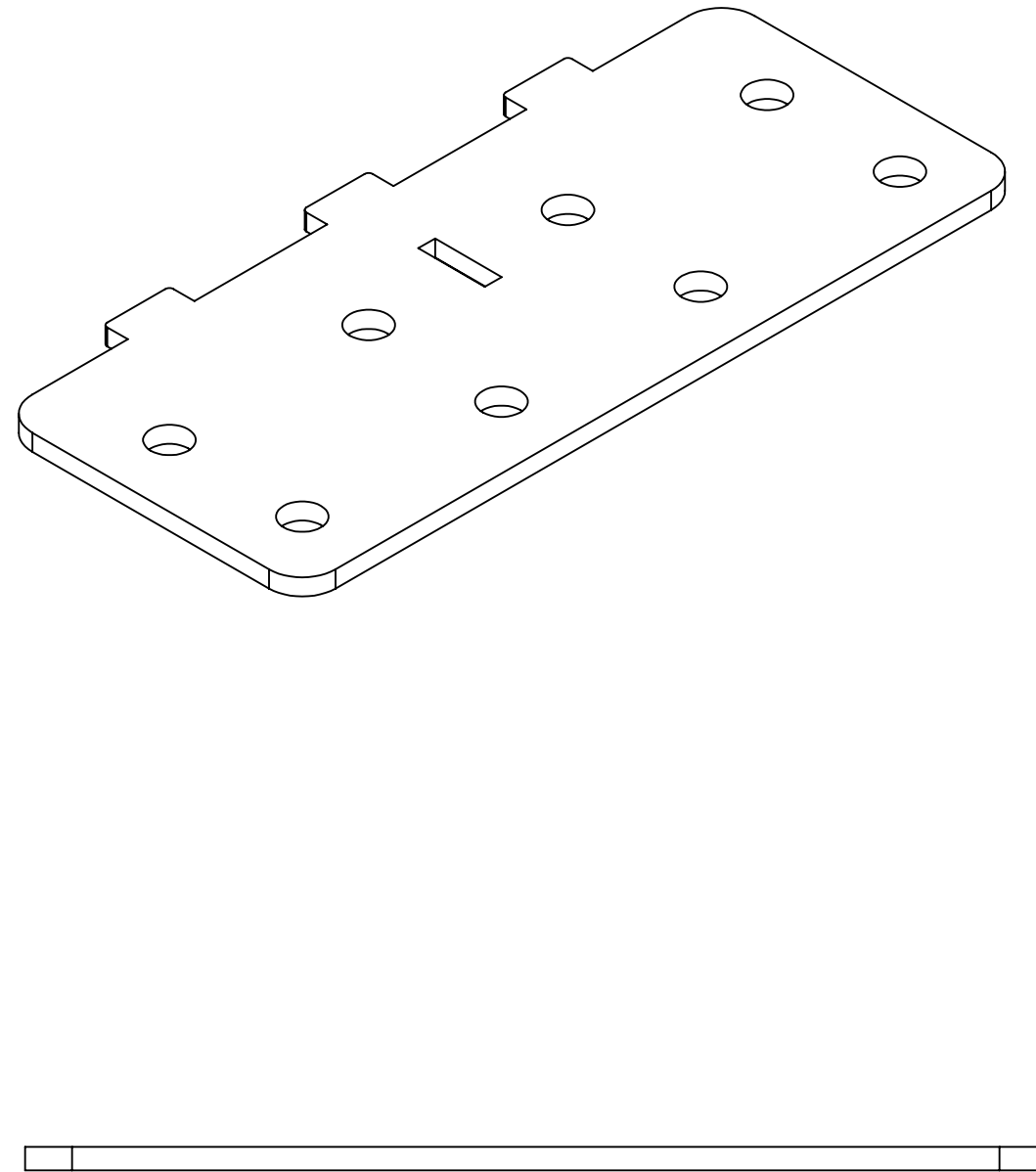
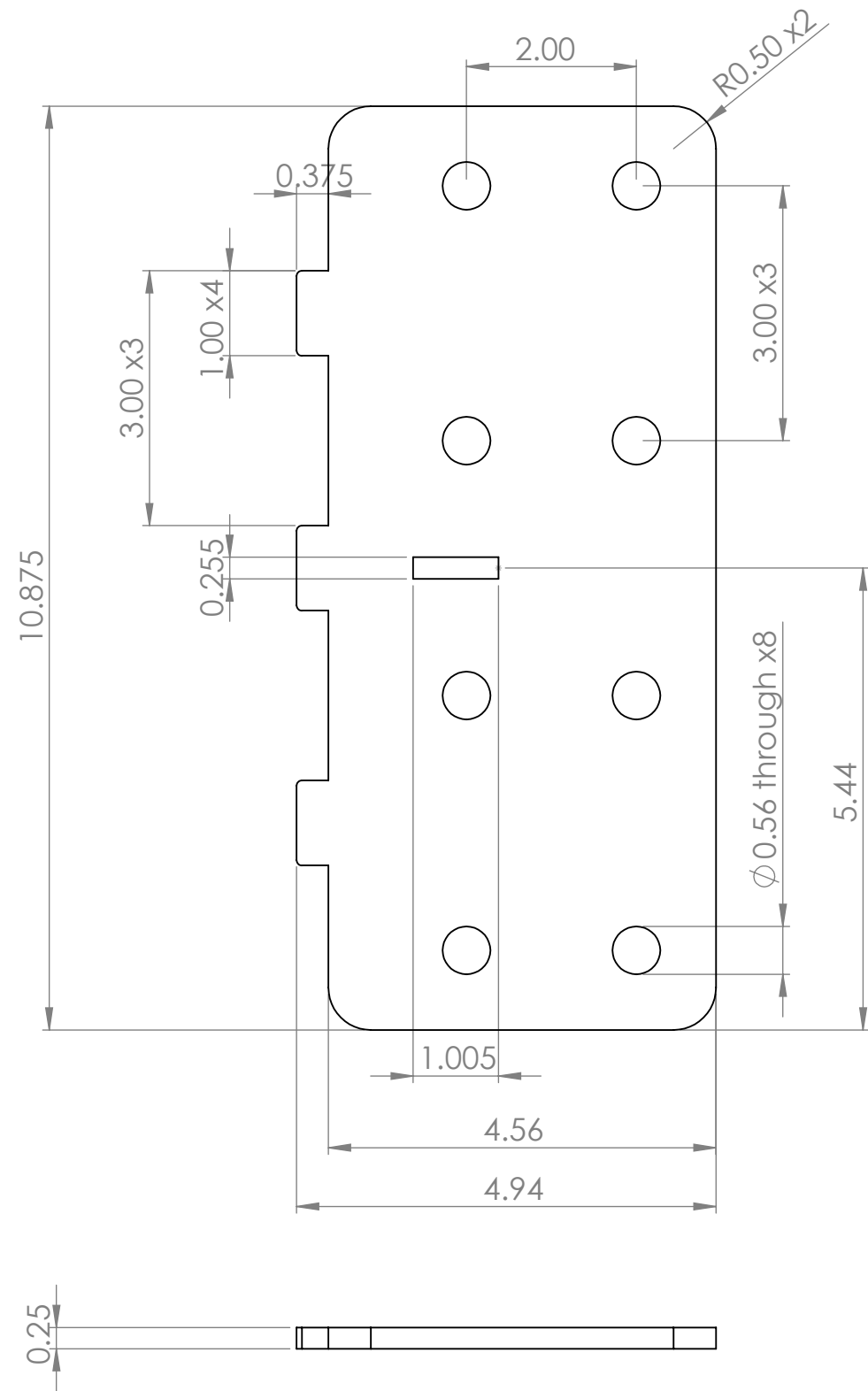
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING		REVISION B		
							TITLE: Tieback Anchor Plate				
	NAME	SIGNATURE	DATE								
DRAWN	Mark Hemphil		7/12/2023								
CHK'D											
APPV'D											
MFG											
Q.A				MATERIAL:			DWG NO.		B		
				ASTM A572 Grade 50 Steel			PWS-2.0-L18				
				WEIGHT: 12.057527			SCALE: 1:3		SHEET 1 OF 1		



Notes:

1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
2. Deburr and break all sharp edges.

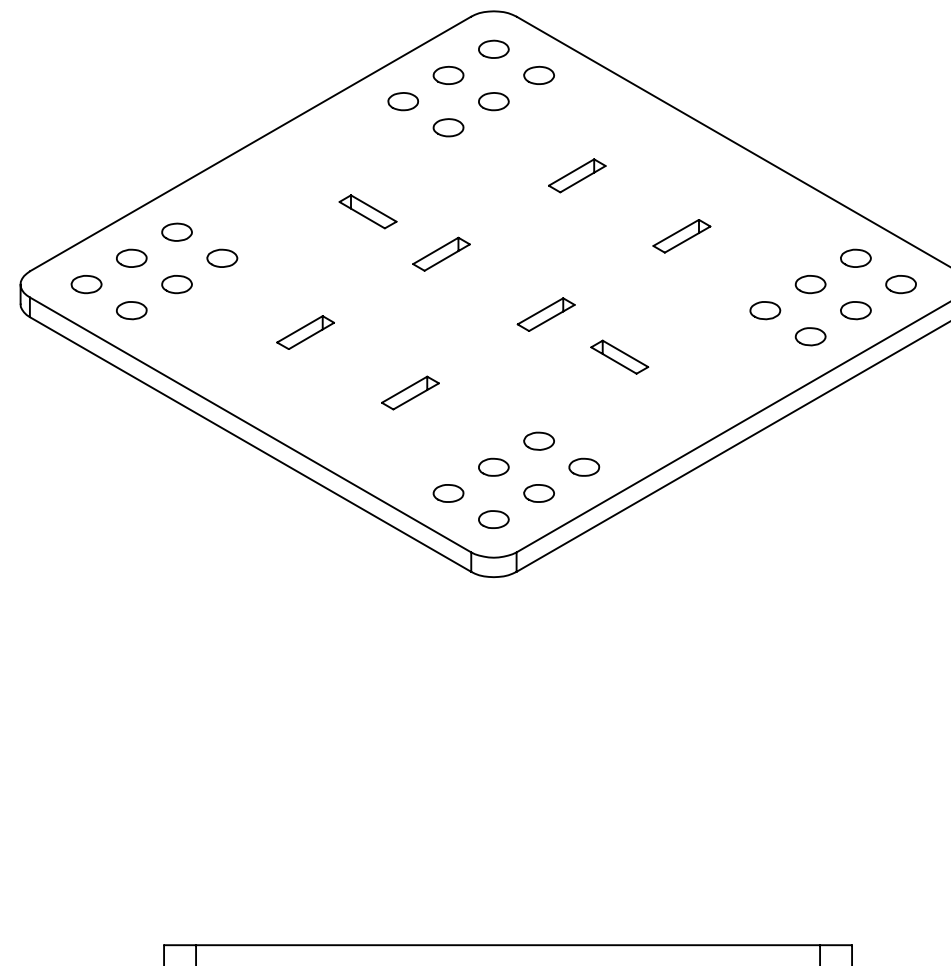
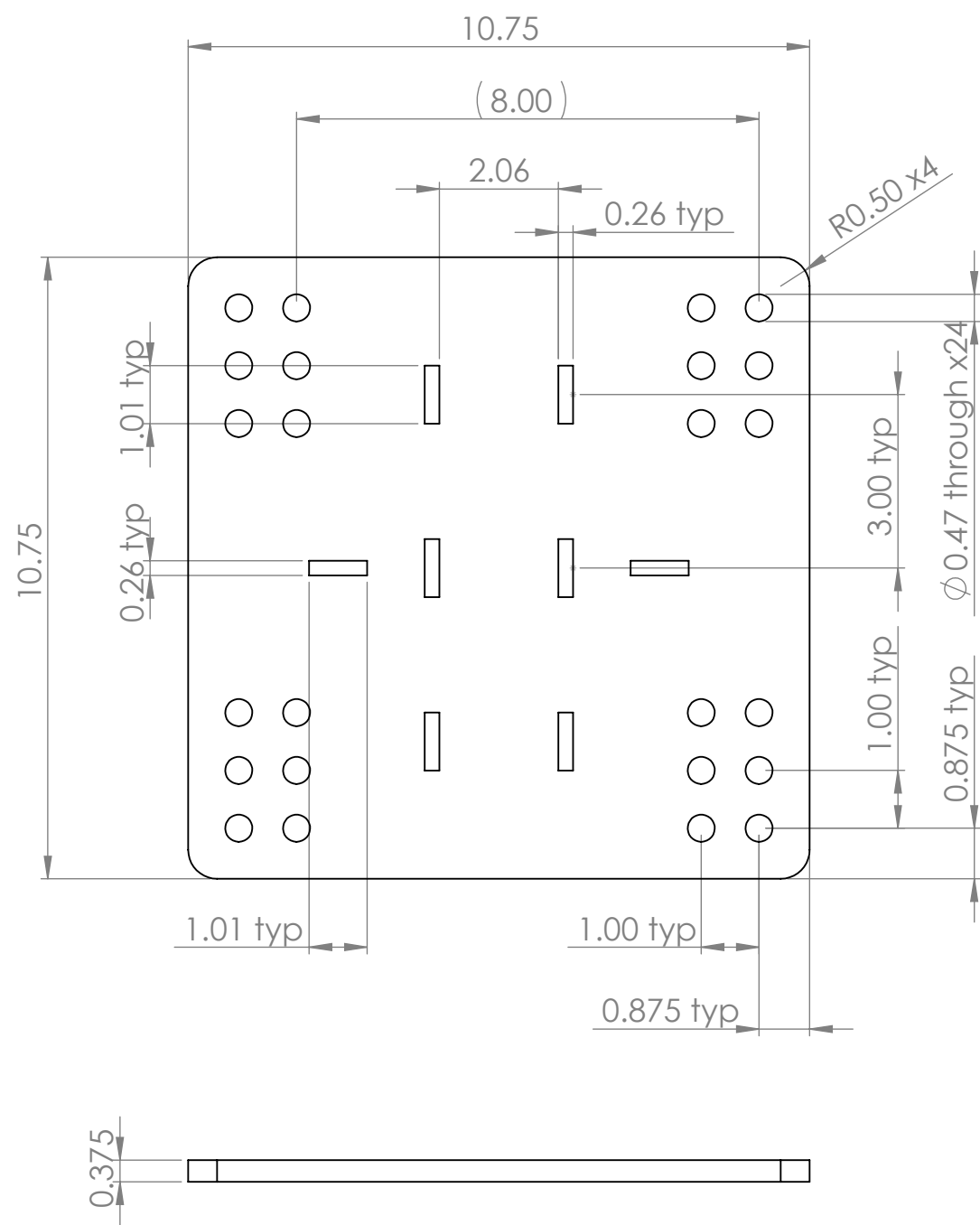
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)			DO NOT SCALE DRAWING		REVISION A		
	NAME		SIGNATURE		DATE				TITLE: Tieback Fin Plate - for CMU Wall				
DRAWN	Mark Hemphil				7/12/2023								
CHK'D													
APPV'D													
MFG													
Q.A													
					MATERIAL: ASTM A36 Steel				DWG NO.			PWS-2.0-L19-CMU	B
					WEIGHT: 3.765861				SCALE: 1:2		SHEET 1 OF 2		



Notes:

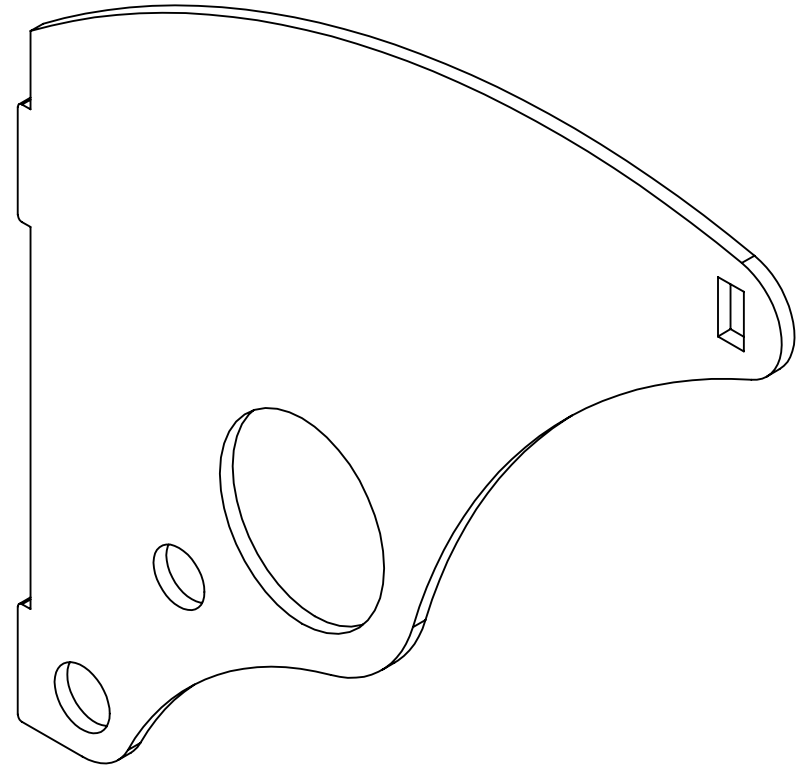
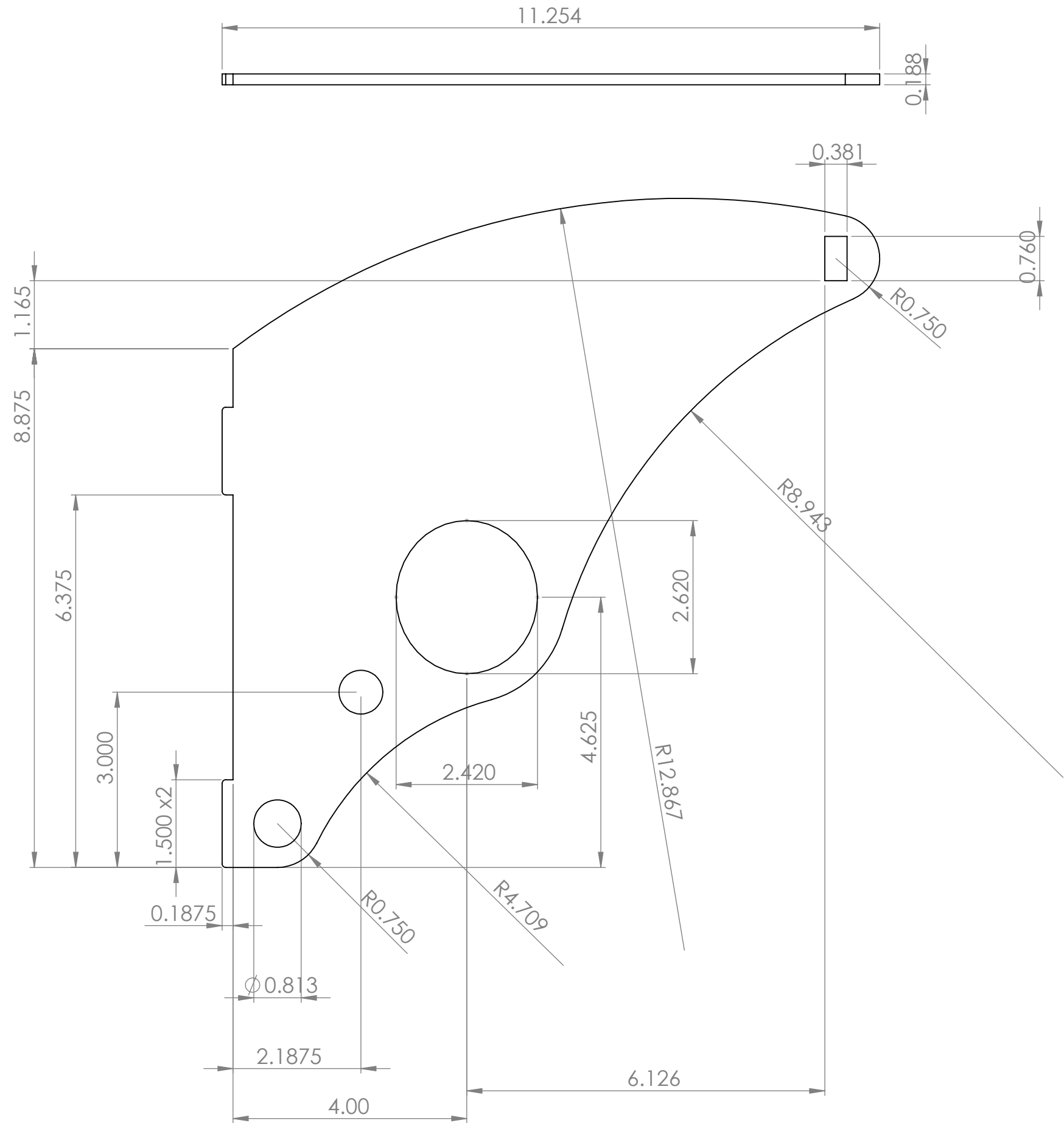
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION	B
	NAME	SIGNATURE	DATE				TITLE: Concrete Bracket Splice Plate		
DRAWN	Mark Hemphil		2/14/2024						
CHK'D									
APPV'D									
MFG									
Q.A						MATERIAL: ASTM A36 Steel	DWG NO.	PWS-2.0-L30	B
						WEIGHT: 3.422917	SCALE: 1:2	SHEET 1 OF 1	



- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

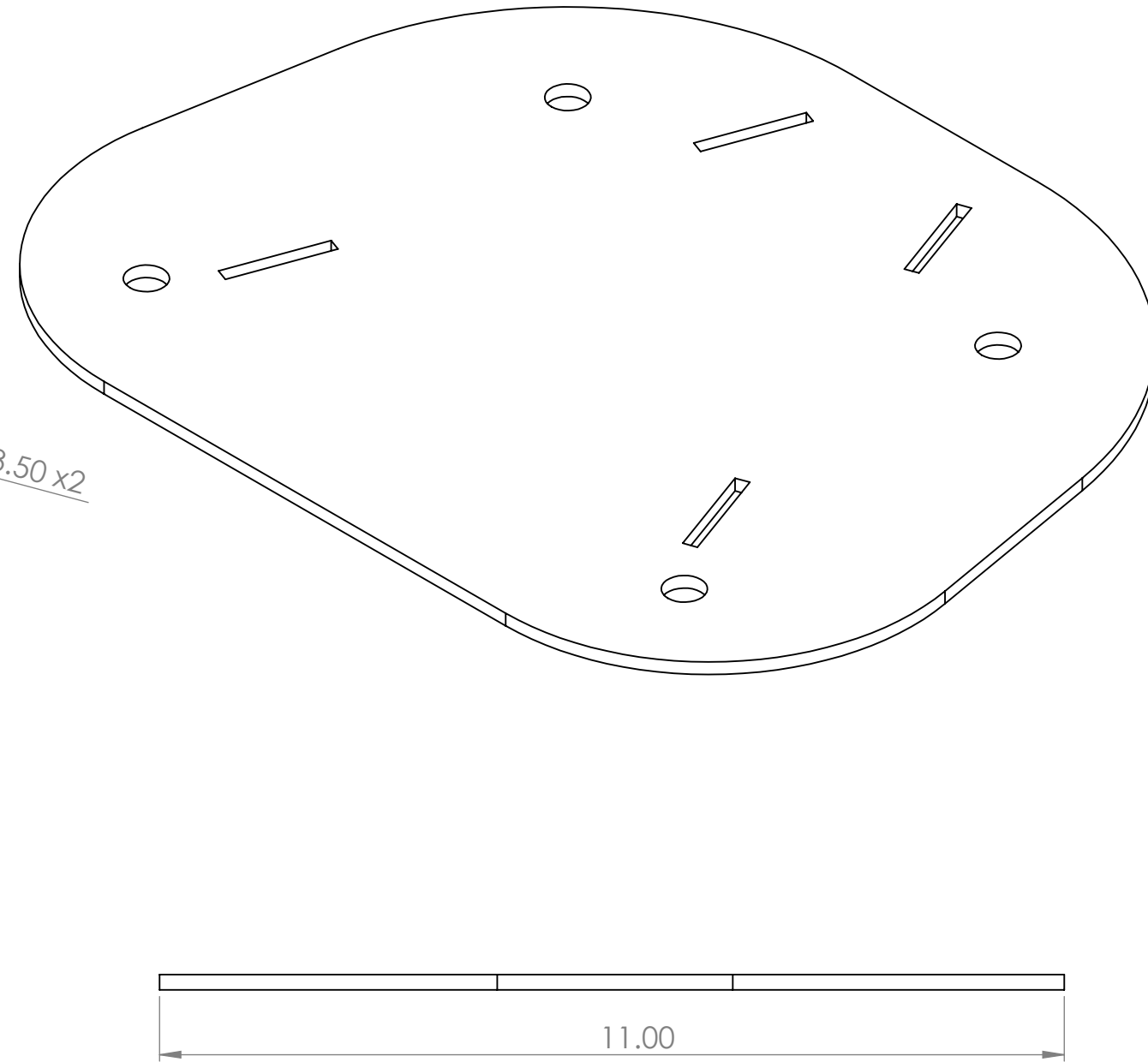
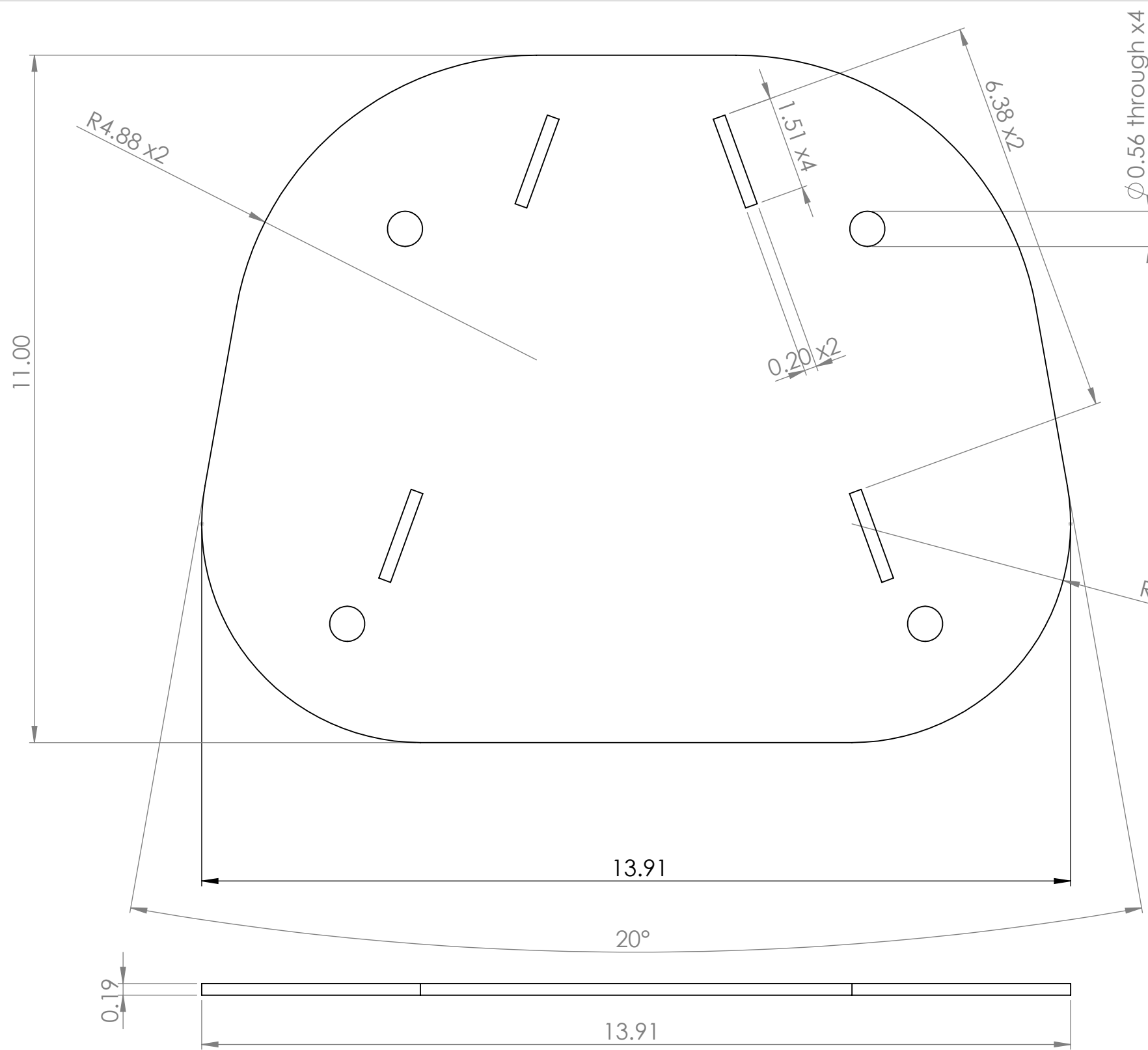
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION	A
	NAME	SIGNATURE	DATE				TITLE: Concrete Bracket Anchor Plate		
DRAWN	Mark Hemphil		2/14/2023						
CHK'D									
APPV'D									
MFG									
Q.A						MATERIAL: ASTM A572 Grade 50 Steel	DWG NO.	PWS-2.0-L31	B
						WEIGHT: 11.608701	SCALE: 1:3	SHEET 1 OF 1	



Notes:

- 1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
- 2. Deburr and break all sharp edges.

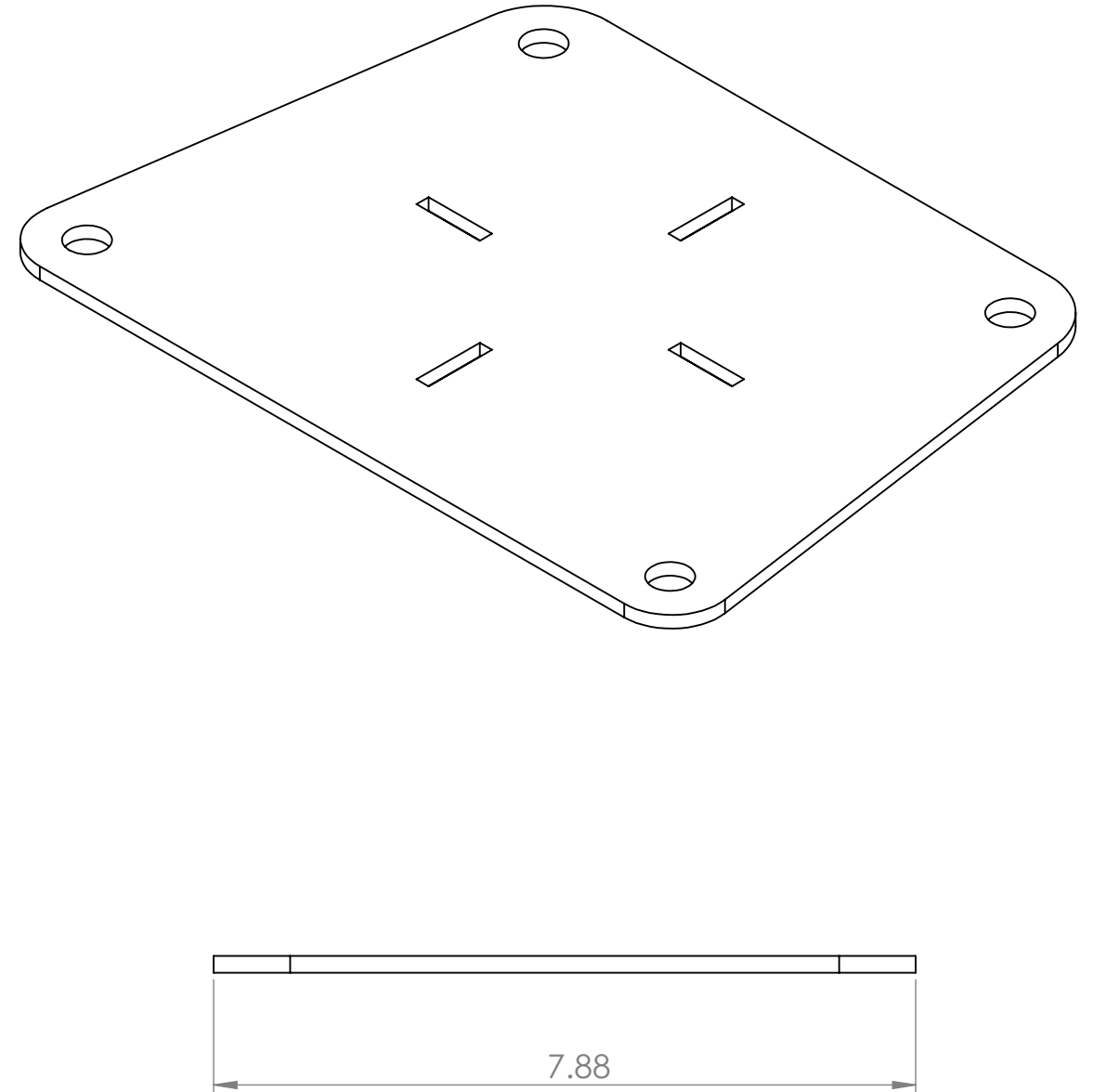
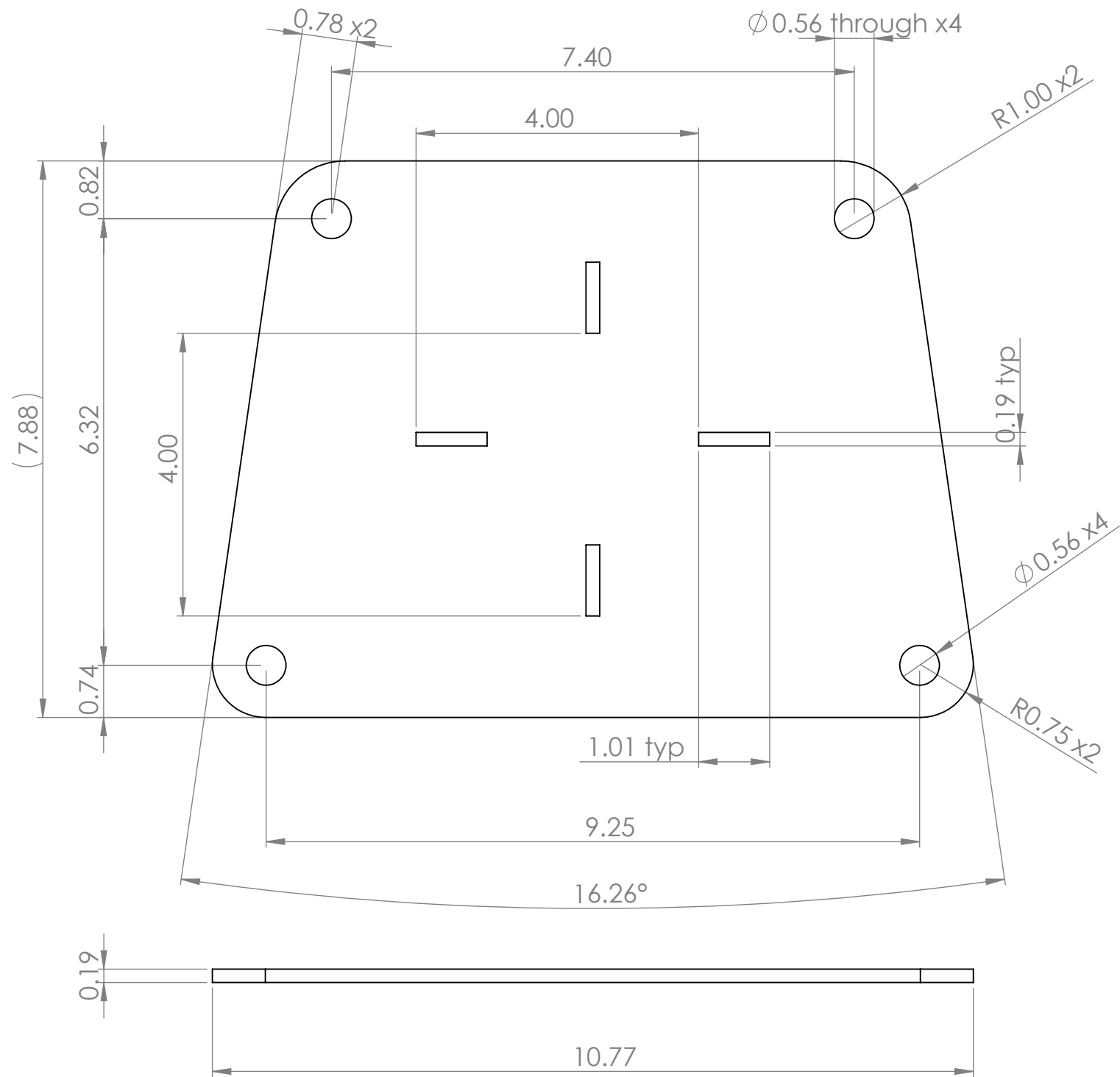
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.02 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION E
	NAME	SIGNATURE	DATE				TITLE: Fin Plate - Indoor	
DRAWN	Mark Hemphil		4/8/2020				DWG NO. WAL-BB-L001-I	
CHK'D								
APPV'D								
MFG								
Q.A						MATERIAL: ASTM A572 Grade 50 Steel	SCALE: 1:2	
						WEIGHT: 3.244003	SHEET 1 OF 2	



Notes:

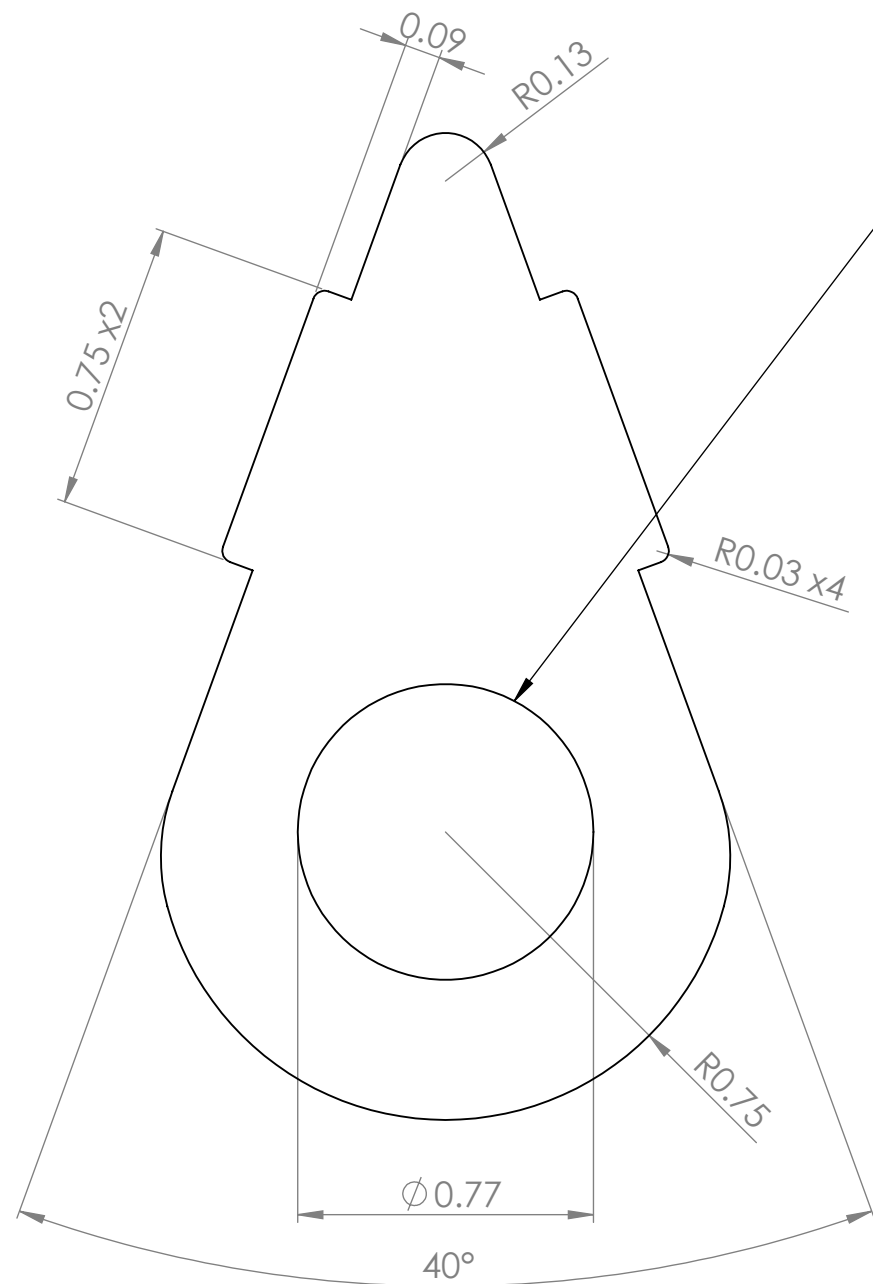
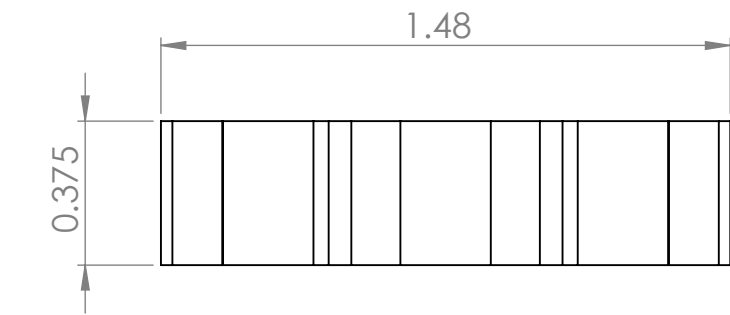
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.02 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION E
	NAME	SIGNATURE	DATE				TITLE: Back Plate - Indoor	
DRAWN	Mark Hemphil		4/8/2020					
CHK'D								
APPV'D								
MFG								
Q.A							DWG NO. WAL-BB-L002-I	
							SCALE: 1:2	
							SHEET 1 OF 4	

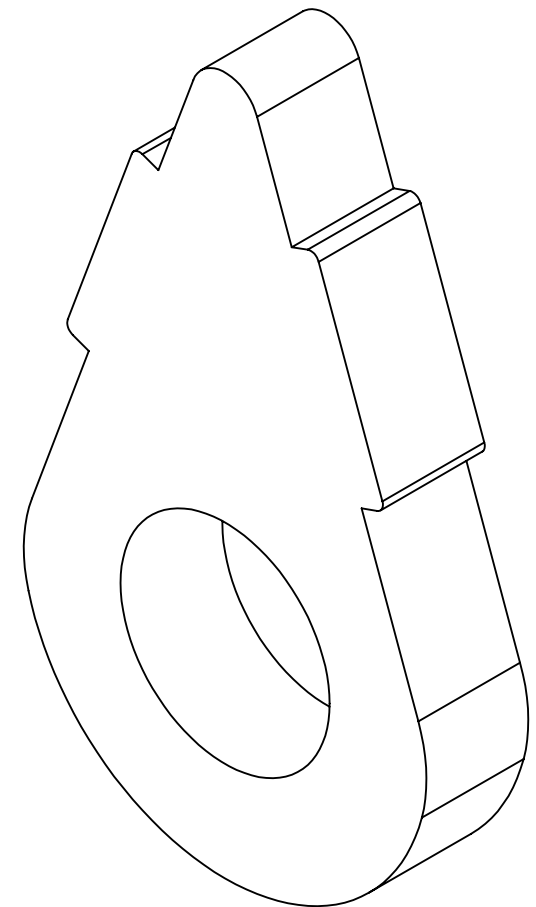
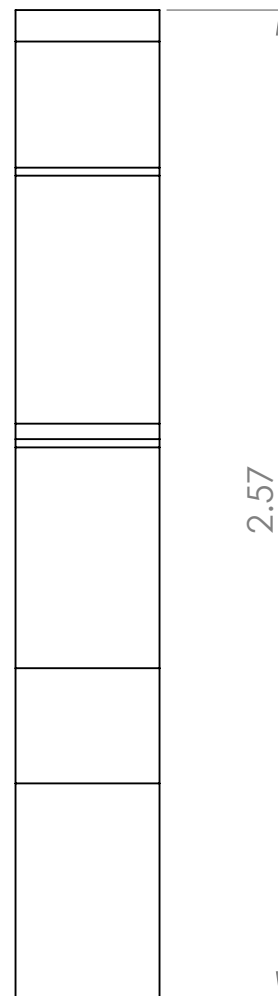


- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)			DO NOT SCALE DRAWING			REVISION		G	
	NAME		SIGNATURE		DATE					TITLE: Back Back Plate					
DRAWN	Mark Hemphil				4/8/2020										
CHK'D															
APPV'D															
MFG															
Q.A															
															DWG NO. WAL-BB-L003
										SCALE: 1:2			SHEET 1 OF 1		

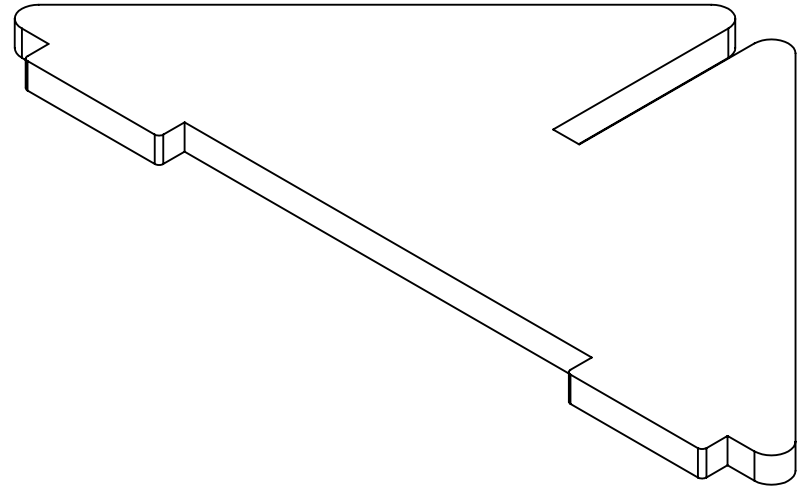
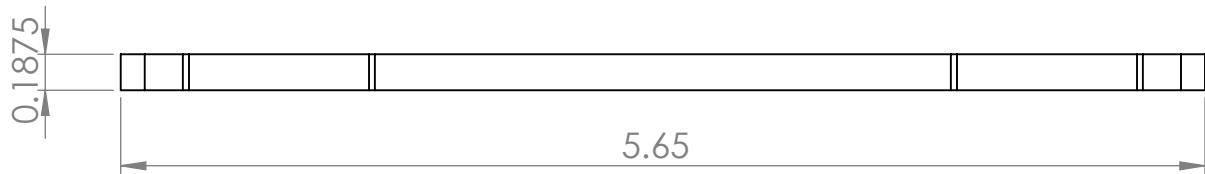
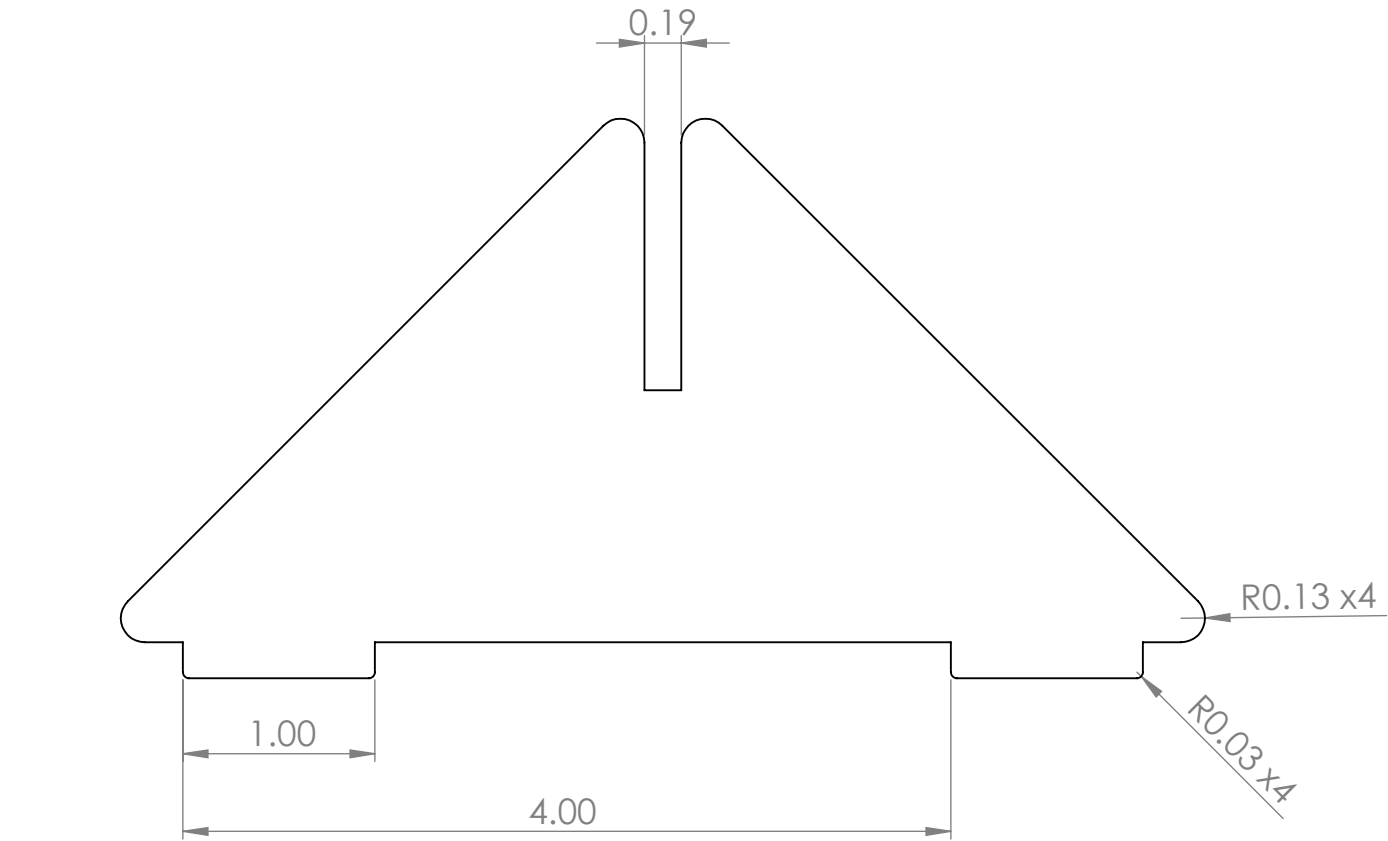


break edge of through hole both front and back
(carabiner will be rubbing against these edges)



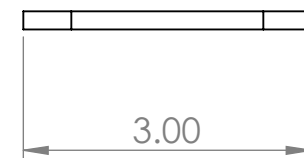
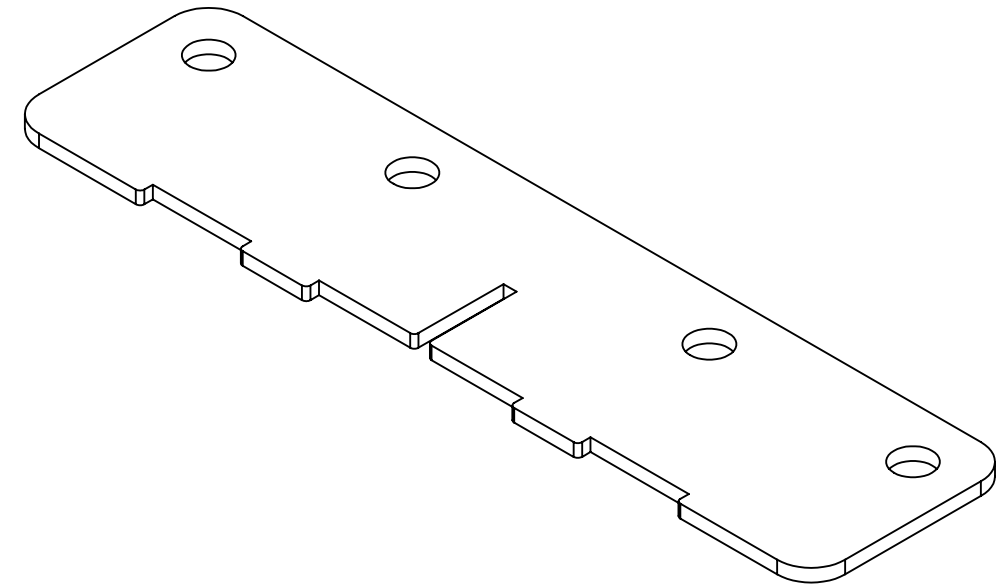
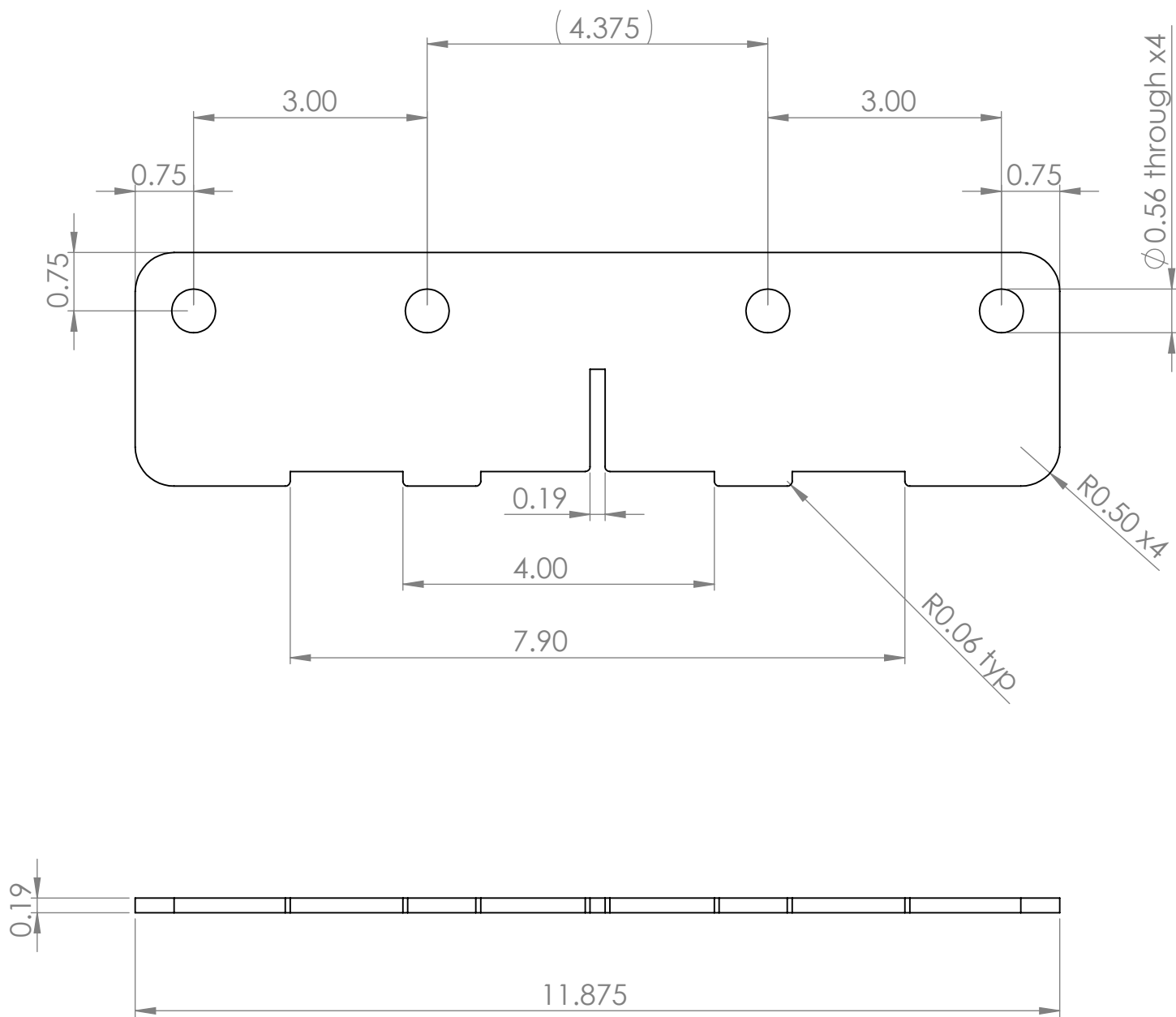
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING		REVISION F		
							TITLE: Rigging Tab - Indoor				
DRAWN	Mark Hemphil	SIGNATURE	DATE	11/5/2020							
CHK'D											
APPV'D											
MFG											
Q.A				MATERIAL:			DWG NO.		B		
				ASTM A572 Grade 50 Steel			WAL-BB-L004-I				
				WEIGHT: 0.220860			SCALE: 2:1		SHEET 1 OF 2		



- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING		REVISION D		
							TITLE: Gusset				
DRAWN	Mark Hemphil		6/3/202								
CHK'D											
APPV'D											
MFG											
Q.A											
			MATERIAL: ASTM A572 Grade 50 Steel				DWG NO. WAL-BB-L005			B	
			WEIGHT: 0.477581				SCALE: 1:1			SHEET 1 OF 1	



Notes:

1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
2. Deburr and break all sharp edges.

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: None			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION	A
	NAME	SIGNATURE	DATE				TITLE: Spine Plate		
DRAWN	Mark Hemphil		4/23/2024						
CHK'D									
APPV'D									
MFG									
Q.A						MATERIAL: ASTM A572 Grade 50 Steel	DWG NO.	WAL-BB-L009	
									B
						WEIGHT:	SCALE: 1:2	SHEET 1 OF 1	



APPENDIX B

CALCULATIONS

Grand Junction Recreation Center- Applied Loads

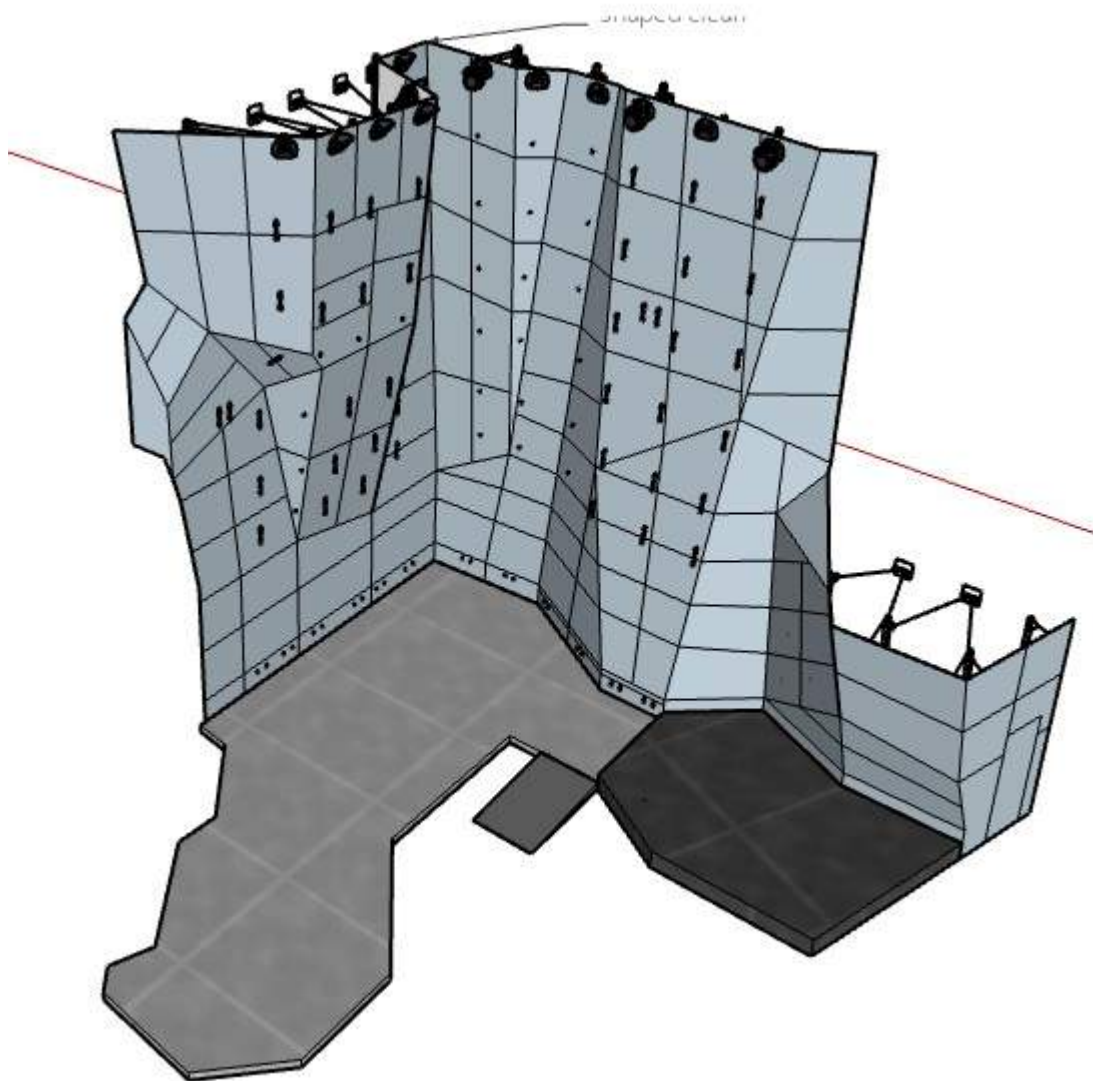
Location: Grand Junction, CO

Codes and Reference Standards

- 2021 International Building Code
- American Institute of Steel Construction, Steel Construction Manual 15th Edition
- American Society of Civil Engineers 7-16 (ASCE 7-16) "*Minimum Design Loads for Buildings and Other Structures*"
- ACI 318-19: Building Code Requirements for Structural Concrete
- General Specification for the Design and Engineering of Artificial Climbing Structures

Project Description

- Permanent climbing walls to be installed indoors.



Standard Variables:

Safety Factors:

Yield: $\Omega_{y.AISC} := 1.67$

TEK Screws: $\Omega_{TEK} := 3.0$

Rupture: $\Omega_{r.AISC} := 2.0$

A36 Steel:

Yield: $F_{y.A36} := 36 \text{ ksi}$

Tensile: $F_{u.A36} := 58 \text{ ksi}$

A500 Grade B Steel - Rectangular Shapes:

Yield: $F_{y.A500.rect} := 46 \text{ ksi}$

Tensile: $F_{u.A500.rect} := 58 \text{ ksi}$

A325 (Grade 5) Bolts:

Tensile: $F_{u.A325} := 120 \text{ ksi}$

A490 (Grade 8) Bolts:

Tensile: $F_{u.A490} := 150 \text{ ksi}$

Weld Filler:

Shear: $F_{u.weld} := 70 \text{ ksi} \cdot 0.6 = 42.00 \text{ ksi}$

Dead Loads

Climbing wall self-weight: $w_{wall} := 5 \text{ psf}$

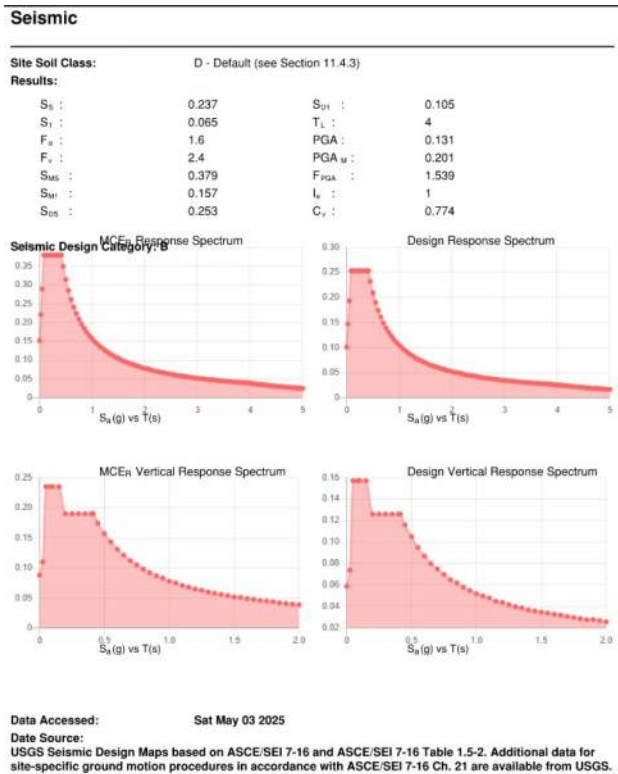
Live Loads

Climber load: $W_{patron} := 270 \text{ lbf}$

Dynamic factor: $Dyn := 1.2$

Belay Loads: $P_{belay} := \frac{2250 \text{ lbf}}{\Omega_{y.AISC}} = 1347 \text{ lbf}$

Seismic Criteria per ASCE 7-16



Seismic site class:

Class := D (Default) ▾

Mapped MCE, 5% damped, spectral response, acceleration parameter at short periods:

$S_S := 0.237$

Mapped MCE, 5% damped, spectral response, acceleration parameter at 1s:

$S_1 := .065$

Table 11.4-1 Short-Period Site Coefficient, F_a :

$$F_a := \text{Spline}(\text{Table}.F_a, \text{Class}, S_S) = 1.60$$

Table 11.4-2 Long-Period Site Coefficient, F_v :

$$F_v := \text{Spline}(\text{Table}.F_v, \text{Class}, S_1) = 2.40$$

Design 5% damped, spectral response, acceleration parameter at short periods:

$$S_{DS} := S_S \cdot F_a \cdot \frac{2}{3}$$

$S_{DS} = 0.25$

Design 5% damped, spectral response, acceleration parameter at 1s:

$$S_{D1} := S_1 \cdot F_v \cdot \frac{2}{3}$$

$S_{D1} = 0.10$

Seismic Review per ASCE 7-16 (Chapter 12/15)

Response modification factor:

$$R_{eq} := 2.0$$

Structural height (FT):

$$h_n := 12$$

Approximate period parameters
(Table 12.8-2, Page 90):

$$C_t := 0.02$$

Long period transition period
(Figure 22-12, Page 224):

$$T_L := 12$$

Importance factor:

$$I_e := 1.0$$

Which seismic chapter
of ASCE 7-16 applies?

Section := Chapter 15 ▾

Approximate Fundamental Period:

$$T_a := C_t \cdot h_n^{.75} = 0.13$$

Seismic response
coefficient (EQ 12.8-2):

$$C_{s,calc} := \frac{S_{DS}}{\left(\frac{R_{eq}}{I_e} \right)} = 0.13$$

Maximum seismic response
coefficient (EQ 12.8-3 & 12.8-4):

$$C_{s,max} := \left\| \begin{array}{l} \text{if } T_a \leq T_L \\ \left\| \frac{S_{D1}}{T_a \cdot \left(\frac{R_{eq}}{I_e} \right)} \right\| \\ \text{if } T_a > T_L \\ \left\| \frac{S_{D1} \cdot T_L}{T_a^2 \cdot \left(\frac{R_{eq}}{I_e} \right)} \right\| \end{array} \right\| = 0.40$$

Minimum seismic response
coefficient (EQ 12.8-5 & 12.8-6):

$$C_{s,min} := \begin{cases} \text{if Section} = 12 \\ \quad \text{if } S_1 < 0.6 \\ \quad \quad \max(0.044 \cdot S_{DS} \cdot I_e, 0.01) \\ \quad \text{if } S_1 \geq 0.6 \\ \quad \quad \max\left(0.044 \cdot S_{DS} \cdot I_e, 0.01, \frac{0.5 \cdot S_1 \cdot I_e}{R_{eq}}\right) \\ \text{if Section} = 15 \\ \quad \text{if } S_1 < 0.6 \\ \quad \quad \max(0.044 \cdot S_{DS} \cdot I_e, 0.03) \\ \quad \text{if } S_1 \geq 0.6 \\ \quad \quad \max\left(0.044 \cdot S_{DS} \cdot I_e, \frac{0.8 \cdot S_1 \cdot I_e}{R_{eq}}, 0.03\right) \end{cases} = 0.03$$

Seismic response coefficient:

$$C_s := \min(\max(C_{s,calc}, C_{s,min}), C_{s,max})$$

$$C_s = 0.126$$

Vertical seismic load effect:

$$EQ_v := 0.2 \cdot S_{DS}$$

$$EQ_v = 0.051$$

Profile Base Connection

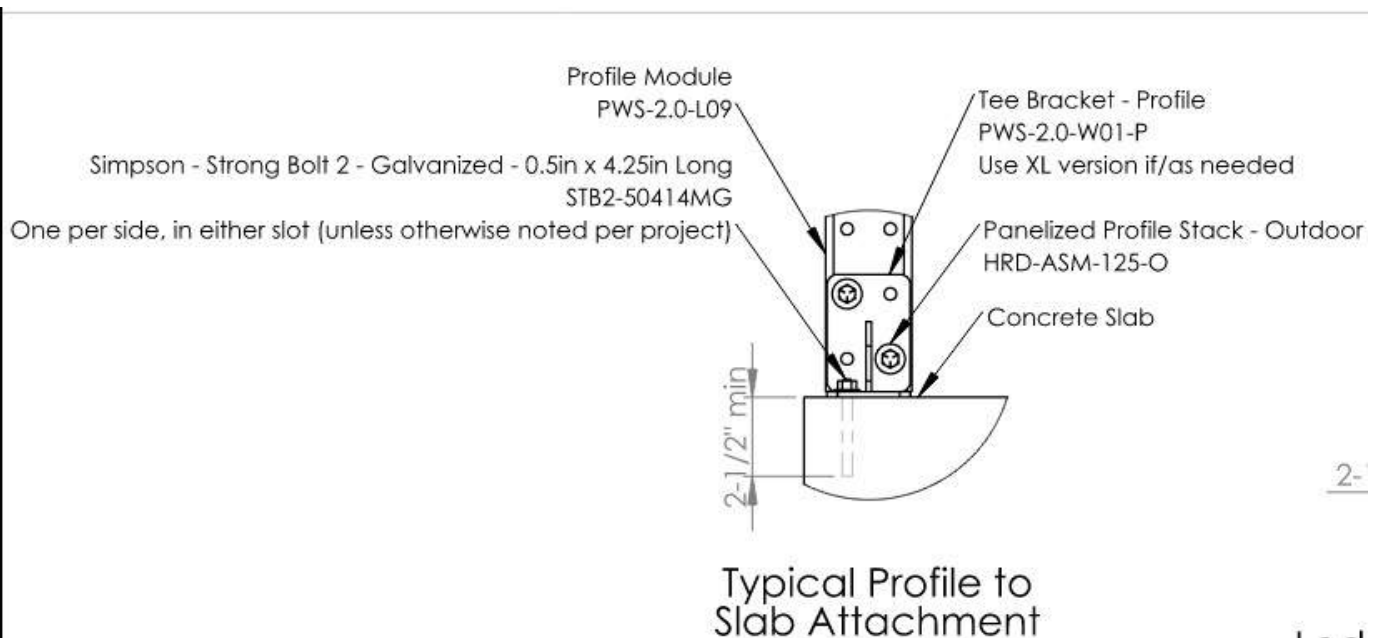
Note: The profile base steel is checked in separate standard sheets included with this submittal. The profile base is attached to the floor slab using (2) ½"Ø Simpson Strong Bolt 2 Anchors. Separate Simpson analysis sheets are provided to review the anchor capacity. The forces indicated below are the maximum factored forces taken from the RISA-3D model. Because these forces are within the loads used for the analysis, the anchor design is acceptable.

Maximum forces at base (factored):

Vertical load down: $P_{base} := 4605 \text{ lbf}$

Uplift: $T_{base} := 50 \text{ lbf}$

Shear (any direction): $V_{base} := 465 \text{ lbf}$



Fully-Grouted CMU Wall Attachment Review

3/8"Ø Simpson Strong Bolt 2 anchors are used to attach the ledger to the grouted CMU wall.

Values shown on this page are taken from Simpson documentation.

Anchor allowable strength: $T_{n,anchor} := 435 \text{ lbf}$

$V_{n,anchor} := 775 \text{ lbf}$

Maximum wall connection loads:

$$T_{anchor} := \frac{1290}{4} \text{ lbf} = 323 \text{ lbf}$$

$$V_{anchor} := \frac{630}{4} \text{ lbf} = 158 \text{ lbf}$$

Note: Wall connection forces are taken from the RISA-3D model.

Wall connection strength ratios:

$$\text{Ratio}_{\text{conn.1}} := \max \left(\frac{T_{anchor}}{T_{n,anchor}}, \frac{V_{anchor}}{V_{n,anchor}} \right) = 0.74 < 1.00 \text{ OK}$$

$$\text{Ratio}_{\text{conn.2}} := \left(\frac{T_{anchor}}{T_{n,anchor}} \right)^{1.67} + \left(\frac{V_{anchor}}{V_{n,anchor}} \right)^{1.67} = 0.68 < 1.00 \text{ OK}$$

Zinc-Plated Carbon-Steel Strong-Bolt 2 Tension and Shear Loads in 8" Lightweight, Medium-Weight and Normal-Weight Grout-Filled CMU



Size in. (mm)	Drill Bit Diameter (in.)	Min. Embed. Depth in. (mm)	Install. Torque ft.-lb. (N-m)	Critical Edge Dist. in. (mm)	Critical End Dist. in. (mm)	Critical Spacing in. (mm)	Tension Load		Shear Load	
							Ultimate lb. (kN)	Allowable lb. (kN)	Ultimate lb. (kN)	Allowable lb. (kN)
Anchor Installed in the Face of the CMU Wall (See Figure 1)										
¼ (6.4)	¼	1¾ (45)	4 (5.4)	12 (305)	12 (305)	8 (203)	1,150 (5.1)	230 (1.0)	1,500 (6.7)	300 (1.3)
⅜ (9.5)	⅜	2⅝ (67)	20 (27.1)	12 (305)	12 (305)	8 (203)	2,185 (9.7)	435 (1.9)	3,875 (17.2)	775 (3.4)
½ (12.7)	½	3 ½ (89)	35 (47.5)	12 (305)	12 (305)	8 (203)	2,645 (11.8)	530 (2.4)	5,055 (22.5)	1,010 (4.5)
⅝ (15.9)	⅝	4⅜ (111)	55 (74.6)	20 (508)	20 (508)	8 (203)	4,460 (19.8)	890 (4.0)	8,815 (39.2)	1,765 (7.9)
¾ (19.1)	¾	5 ¼ (133)	100 (135.6)	20 (508)	20 (508)	8 (203)	5,240 (23.3)	1,050 (4.7)	12,450 (55.4)	2,490 (11.1)

- The tabulated allowable loads are based on a safety factor of 5.0 for installation under the IBC and IRC.
- Listed loads may be applied to installations on the face of the CMU wall at least 1 1/4" away from head joints.
- Values for 8"-wide concrete masonry units (CMU) with a minimum specified compressive strength of masonry, f'_m , at 28 days is 1,500 psi.
- Embedment depth is measured from the outside face of the concrete masonry unit.
- Tension and shear loads may be combined using the parabolic interaction equation ($n = 5/8$).
- Refer to allowable load adjustment factors for edge distance and spacing on p. 106.

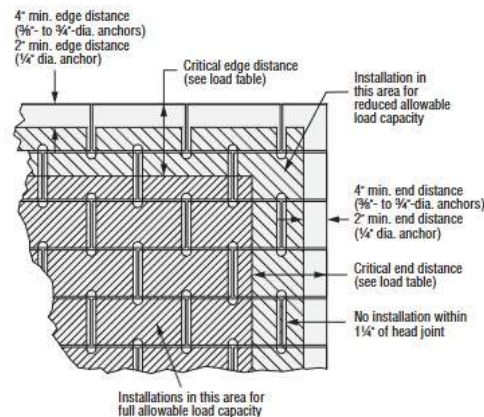
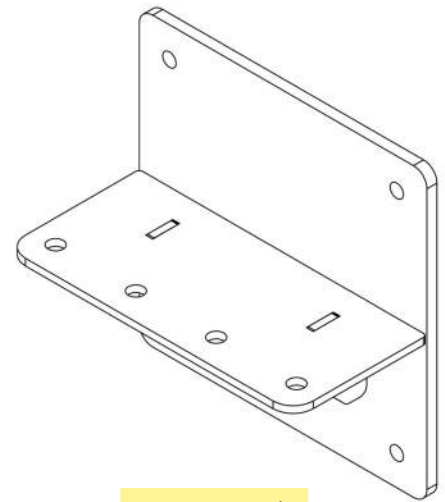
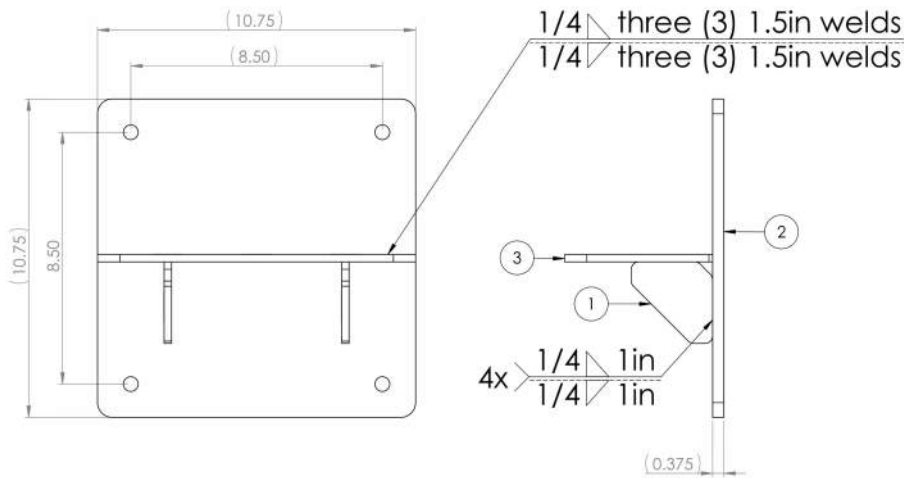


Figure 1



Wall Mount Plate

Maximum tension
away from wall:

$$T_{\text{bracket}} := 680 \text{ lbf}$$

Maximum shear
parallel to wall:

$$V_{\text{bracket}} := 305 \text{ lbf}$$

Wall plate thickness:

$$t_{\text{wp}} := 0.25 \text{ in}$$

Flat plate thickness:

$$t_{\text{fp}} := 0.25 \text{ in}$$

Plate width:

$$B_{\text{pl}} := 10.75 \text{ in}$$

Prying variables:

$$b := \frac{s_{\text{anchor}} - t_{\text{fp}}}{2} = 4.13 \text{ in}$$

$$b' := b - \frac{D_{\text{anchor.hole}}}{2} = 3.88 \text{ in}$$

$$p := \min(B_{\text{pl}}, 2 \cdot 3.5 \cdot b) = 10.75 \text{ in}$$

Prying capacity:

$$T_{\text{a.pry}} := \frac{t_{\text{wp}}^2 \cdot p \cdot F_{\text{u.A36}}}{1.67 \cdot 4 \cdot b'} = 1505 \text{ lbf}$$

Weld capacity:

$$V_{\text{a.weld}} := \frac{F_{\text{u.weld}}}{\Omega_{\text{r.AISC}}} \cdot 2 \cdot t_{\text{weld}} \cdot 0.707 \cdot B_{\text{pl}} = 79.80 \text{ kip}$$

Anchor bearing
capacity:

$$P_{\text{a.brg}} := 2.4 \cdot \frac{F_{\text{u.A36}}}{\Omega_{\text{r.AISC}}} \cdot D_{\text{anchor}} \cdot t_{\text{wp}} \cdot n_{\text{anchor}} = 26.10 \text{ kip}$$

Anchor spacing:

$$s_{\text{anchor}} := 8.5 \text{ in}$$

Number of anchors:

$$n_{\text{anchor}} := 4$$

Anchor diameter:

$$D_{\text{anchor}} := 0.375 \text{ in}$$

Anchor hole diameter:

$$D_{\text{anchor.hole}} := 0.5 \text{ in}$$

Anchor hole edge
distance:

$$L_{\text{c.anchor}} := 0.875 \text{ in}$$

Weld thickness:

$$t_{\text{weld}} := 0.25 \text{ in}$$

Weld length:

$$L_{\text{weld}} := 3 \cdot 1.5 \text{ in} = 4.50 \text{ in}$$

Anchor tearout capacity: $P_{a, \text{tear}} := 1.2 \cdot \frac{F_{u, A36}}{\Omega_{r, AISC}} \cdot L_{c, \text{anchor}} \cdot t_{wp} \cdot n_{\text{anchor}} = 30.45 \text{ kip}$

Prying strength ratio: $\text{Ratio}_{\text{pry}} := \frac{T_{\text{bracket}}}{T_{a, \text{pry}}} = 0.45 < 1.0 \text{ OK}$

Weld strength ratio: $\text{Ratio}_{\text{weld}} := \frac{\sqrt{T_{\text{bracket}}^2 + V_{\text{bracket}}^2}}{V_{a, \text{weld}}} = 0.01 < 1.0 \text{ OK}$

Bearing / tearout strength ratio: $\text{Ratio}_{\text{brg}} := \frac{V_{\text{bracket}}}{\min(P_{a, \text{brg}}, P_{a, \text{tear}})} = 0.01 < 1.0 \text{ OK}$



Reactions (Service Level)

Location	Max / Min	X	Y	Z
		LB	LB	LB
F01_BASE	max	-26	46	671
F01_BASE	min	-117	-31	263
F01R01	max	116	70	0
F01R01	min	-18	-116	0
F02_BASE	max	34	278	1311
F02_BASE	min	-63	67	569
F02R01	max	74	-35	8
F02R01	min	-30	-301	5
F03_BASE	max	21	179	677
F03_BASE	min	-25	48	354
F03R01	max	29	-4	15
F03R01	min	-46	-157	4
F04_BASE	max	51	83	1101
F04_BASE	min	0	0	455
F04R01	max	134	87	11
F04R01	min	-142	-47	-6
F05_BASE	max	30	-77	2132
F05_BASE	min	-123	-347	1007
F05R01	max	81	424	5
F05R01	min	-167	-6	-51
F05R02	max	-20	906	527
F05R02	min	-371	-128	215
F05R03	max	397	6	525
F05R03	min	74	-655	215
F06_BASE	max	-3	11	1791
F06_BASE	min	-27	-246	626
F06R01	max	369	384	7
F06R01	min	-87	-28	-78
F06R02	max	17	938	356
F06R02	min	-44	-126	123
F06R03	max	35	-2	358
F06R03	min	-28	-690	123
F07_BASE	max	45	30	1818
F07_BASE	min	-45	-198	649
F07R01	max	74	715	368
F07R01	min	-443	-362	124
F07R02	max	507	803	364
F07R02	min	-163	-705	124
F07R03	max	175	43	362
F07R03	min	-295	-746	124
F08_BASE	max	12	127	2139
F08_BASE	min	-37	-2	820



Reactions (Service Level)

Location	Max / Min	X	Y	Z
		LB	LB	LB
F08R01	max	47	380	0
F08R01	min	-456	-125	0
F08R02	max	320	289	0
F08R02	min	-178	-429	0
F08R03	max	336	520	0
F08R03	min	-315	-345	0
F08R04	max	324	64	0
F08R04	min	-232	-528	0
F09_BASE	max	14	182	2935
F09_BASE	min	-101	18	1395
F09R01	max	68	416	0
F09R01	min	-544	-172	0
F09R02	max	579	565	0
F09R02	min	-518	-380	0
F09R03	max	528	1103	0
F09R03	min	-625	-492	0
F09R04	max	597	18	0
F09R04	min	-142	-1026	0
F10_BASE	max	-4	20	2247
F10_BASE	min	-149	-16	894
F10R01	max	177	45	0
F10R01	min	-271	-49	0
F10R02	max	282	32	0
F10R02	min	-315	-40	0
F10R03	max	261	35	0
F10R03	min	-757	-31	0
F10R04	max	688	22	0
F10R04	min	-12	-30	0
F11_BASE	max	11	23	3476
F11_BASE	min	-105	-89	1366
F11R01	max	-113	85	0
F11R01	min	-767	-384	0
F11R02	max	189	44	43
F11R02	min	-35	-236	-7
F11R03	max	319	454	0
F11R03	min	-716	-433	0
F11R04	max	102	11	7
F11R04	min	-14	-79	1
F11R05	max	571	550	0
F11R05	min	-1131	-457	0
F11R06	max	351	233	0
F11R06	min	-2	-149	0



Reactions (Service Level)

Location	Max / Min	X	Y	Z
		LB	LB	LB
F11R07	max	1298	478	0
F11R07	min	-48	-12	0
F11R08	max	568	47	10
F11R08	min	-96	-276	2
F11R09	max	277	177	29
F11R09	min	-359	-129	-91
F12_BASE	max	24	36	2387
F12_BASE	min	-94	-41	480
F12R01	max	-9	239	0
F12R01	min	-643	-39	0
F12R02	max	338	302	77
F12R02	min	-87	-277	-17
F12R03	max	344	572	0
F12R03	min	-866	-257	0
F12R04	max	461	203	26
F12R04	min	17	-96	4
F12R05	max	846	-19	0
F12R05	min	45	-527	0
F12R06	max	372	141	9
F12R06	min	-192	-184	1
F12R07	max	328	198	51
F12R07	min	-22	-155	7
F13_BASE	max	-5	40	2397
F13_BASE	min	-144	-33	829
F13R01	max	174	337	0
F13R01	min	-302	-169	0
F13R02	max	168	231	0
F13R02	min	-1128	-154	0
F13R03	max	680	40	7
F13R03	min	-105	-287	5
F13R04	max	677	94	41
F13R04	min	-22	-233	-31
F14_BASE	max	-9	76	3233
F14_BASE	min	-139	3	1629
F14R01	max	108	142	0
F14R01	min	-165	-37	0
F14R02	max	125	82	0
F14R02	min	-822	-507	0
F14R03	max	819	553	0
F14R03	min	-360	-78	0
F14R04	max	884	216	0
F14R04	min	22	-300	0

Profile Summary

Typical Profile Splice Connection: **Typ Short - 2 Bolts**
Typical Profile Base Connection: **Base - 2 Bolts**
of Base Anchors: **2**

Max: **0.571 0.353 0.072 0.037 0.187**

Post ID	Type	Length (FT)	End	Connection ID	Connection Type	Strength Ratios				
						Bolt Shear	Splice Plate	Weld	Base Plate	Anchors
F01P01	Profile	7.50	I	F01P01-I	Base - 2 Bolts	0.043	0.033	0.039	0.012	0.063
F01P01	Profile	7.50	J	F01P01-J	Typ Short - 2 Bolts	0.424	0.226			
F01P02	Profile	3.75	I	F01P02-I	Typ Short - 2 Bolts	0.430	0.229			
F01P02	Profile	3.75	J	F01P02-J	Typ Short - 2 Bolts	0.000	0.000			
F02P01	Profile	1.03	I	F02P01-I	Base - 2 Bolts	0.090	0.050	0.052	0.029	0.150
F02P01	Profile	1.03	J	F02P01-J	Typ Short - 2 Bolts	0.184	0.107			
F02P02	Profile	7.50	I	F02P02-I	Typ Short - 2 Bolts	0.162	0.098			
F02P02	Profile	7.50	J	F02P02-J	Typ Short - 2 Bolts	0.319	0.196			
F02P03	Profile	3.50	I	F02P03-I	Typ Short - 2 Bolts	0.319	0.196			
F02P03	Profile	3.50	J	F02P03-J	Typ Short - 2 Bolts	0.000	0.000			
F03P01	Profile	1.03	I	F03P01-I	Base - 2 Bolts	0.056	0.041	0.048	0.019	0.096
F03P01	Profile	1.03	J	F03P01-J	Typ Short - 2 Bolts	0.113	0.069			
F03P02	Profile	7.50	I	F03P02-I	Typ Short - 2 Bolts	0.101	0.063			
F03P02	Profile	7.50	J	F03P02-J	Typ Short - 2 Bolts	0.197	0.122			
F03P03	Profile	3.50	I	F03P03-I	Typ Short - 2 Bolts	0.197	0.121			
F03P03	Profile	3.50	J	F03P03-J	Typ Short - 2 Bolts	0.000	0.000			
F04P01	Profile	7.50	I	F04P01-I	Base - 2 Bolts	0.077	0.062	0.072	0.009	0.047
F04P01	Profile	7.50	J	F04P01-J	Typ Short - 2 Bolts	0.229	0.131			
F04P02	Profile	3.75	I	F04P02-I	Typ Short - 2 Bolts	0.229	0.131			
F04P02	Profile	3.75	J	F04P02-J	Typ Short - 2 Bolts	0.000	0.000			
F05P01	Profile	1.04	I	F05P01-I	Base - 2 Bolts	0.121	0.056	0.033	0.037	0.187
F05P01	Profile	1.04	J	F05P01-J	Typ Short - 2 Bolts	0.256	0.150			
F05P02	Profile	7.50	I	F05P02-I	Typ Short - 2 Bolts	0.217	0.133			
F05P02	Profile	7.50	J	F05P02-J	Typ Short - 2 Bolts	0.291	0.174			
F05P03	Profile	7.50	I	F05P03-I	Typ Short - 2 Bolts	0.291	0.174			
F05P03	Profile	7.50	J	F05P03-J	Typ Short - 2 Bolts	0.479	0.289			
F05P04	Profile	7.54	I	F05P04-I	Typ Short - 2 Bolts	0.479	0.289			
F05P04	Profile	7.54	J	F05P04-J	Typ Short - 2 Bolts	0.445	0.298			
F05P05	Profile	2.00	I	F05P05-I	Typ Short - 2 Bolts	0.421	0.253			
F05P05	Profile	2.00	J	F05P05-J	Typ Short - 2 Bolts	0.469	0.291			
F05P06	Profile	7.50	I	F05P06-I	Typ Short - 2 Bolts	0.465	0.289			
F05P06	Profile	7.50	J	F05P06-J	Typ Short - 2 Bolts	0.000	0.000			
F06P01	Profile	1.04	I	F06P01-I	Base - 2 Bolts	0.097	0.043	0.021	0.026	0.131
F06P01	Profile	1.04	J	F06P01-J	Typ Short - 2 Bolts	0.184	0.105			
F06P02	Profile	7.50	I	F06P02-I	Typ Short - 2 Bolts	0.161	0.094			
F06P02	Profile	7.50	J	F06P02-J	Typ Short - 2 Bolts	0.305	0.185			
F06P03	Profile	7.50	I	F06P03-I	Typ Short - 2 Bolts	0.305	0.185			
F06P03	Profile	7.50	J	F06P03-J	Typ Short - 2 Bolts	0.436	0.274			
F06P04	Profile	7.54	I	F06P04-I	Typ Short - 2 Bolts	0.436	0.274			
F06P04	Profile	7.54	J	F06P04-J	Typ Short - 2 Bolts	0.245	0.153			
F06P05	Profile	2.00	I	F06P05-I	Typ Short - 2 Bolts	0.236	0.145			
F06P05	Profile	2.00	J	F06P05-J	Typ Short - 2 Bolts	0.414	0.246			
F06P06	Profile	7.50	I	F06P06-I	Typ Short - 2 Bolts	0.412	0.245			
F06P06	Profile	7.50	J	F06P06-J	Typ Short - 2 Bolts	0.000	0.000			
F07P01	Profile	1.03	I	F07P01-I	Base - 2 Bolts	0.094	0.041	0.019	0.020	0.104
F07P01	Profile	1.03	J	F07P01-J	Typ Short - 2 Bolts	0.159	0.089			
F07P02	Profile	7.50	I	F07P02-I	Typ Short - 2 Bolts	0.139	0.078			
F07P02	Profile	7.50	J	F07P02-J	Typ Short - 2 Bolts	0.405	0.252			
F07P03	Profile	7.50	I	F07P03-I	Typ Short - 2 Bolts	0.405	0.252			
F07P03	Profile	7.50	J	F07P03-J	Typ Short - 2 Bolts	0.448	0.275			
F07P04	Profile	3.78	I	F07P04-I	Typ Short - 2 Bolts	0.448	0.274			
F07P04	Profile	3.78	J	F07P04-J	Typ Short - 2 Bolts	0.251	0.165			
F07P05	Profile	7.50	I	F07P05-I	Typ Short - 2 Bolts	0.254	0.162			
F07P05	Profile	7.50	J	F07P05-J	Typ Short - 2 Bolts	0.256	0.140			
F07P06	Profile	6.50	I	F07P06-I	Typ Short - 2 Bolts	0.319	0.178			
F07P06	Profile	6.50	J	F07P06-J	Typ Short - 2 Bolts	0.000	0.000			
F08P01	Profile	3.75	I	F08P01-I	Base - 2 Bolts	0.107	0.044	0.017	0.013	0.066
F08P01	Profile	3.75	J	F08P01-J	Typ Short - 2 Bolts	0.234	0.132			

Profile Summary

Typical Profile Splice Connection:

Typ Short - 2 Bolts

Typical Profile Base Connection:

Base - 2 Bolts

of Base Anchors:

2

Max:

0.571 0.353 0.072 0.037 0.187

Post ID	Type	Length (FT)	End	Connection ID	Connection Type	Strength Ratios				
						Bolt Shear	Splice Plate	Weld	Base Plate	Anchors
F08P02	Profile	7.50	I	F08P02-I	Typ Short - 2 Bolts	0.234	0.133			
F08P02	Profile	7.50	J	F08P02-J	Typ Short - 2 Bolts	0.463	0.258			
F08P03	Profile	7.50	I	F08P03-I	Typ Short - 2 Bolts	0.438	0.245			
F08P03	Profile	7.50	J	F08P03-J	Typ Short - 2 Bolts	0.380	0.218			
F08P04	Profile	7.50	I	F08P04-I	Typ Short - 2 Bolts	0.355	0.204			
F08P04	Profile	7.50	J	F08P04-J	Typ Short - 2 Bolts	0.306	0.168			
F08P05	Profile	7.50	I	F08P05-I	Typ Short - 2 Bolts	0.341	0.179			
F08P05	Profile	7.50	J	F08P05-J	Typ Short - 2 Bolts	0.000	0.000			
F09P01	Profile	3.75	I	F09P01-I	Base - 2 Bolts	0.142	0.062	0.024	0.020	0.102
F09P01	Profile	3.75	J	F09P01-J	Typ Short - 2 Bolts	0.448	0.247			
F09P02	Profile	7.50	I	F09P02-I	Typ Short - 2 Bolts	0.448	0.247			
F09P02	Profile	7.50	J	F09P02-J	Typ Short - 2 Bolts	0.571	0.353			
F09P03	Profile	7.50	I	F09P03-I	Typ Short - 2 Bolts	0.557	0.345			
F09P03	Profile	7.50	J	F09P03-J	Typ Short - 2 Bolts	0.490	0.295			
F09P04	Profile	7.50	I	F09P04-I	Typ Short - 2 Bolts	0.478	0.288			
F09P04	Profile	7.50	J	F09P04-J	Typ Short - 2 Bolts	0.400	0.252			
F09P05	Profile	7.50	I	F09P05-I	Typ Short - 2 Bolts	0.491	0.292			
F09P05	Profile	7.50	J	F09P05-J	Typ Short - 2 Bolts	0.000	0.000			
F10P01	Profile	3.75	I	F10P01-I	Base - 2 Bolts	0.110	0.042	0.014	0.015	0.075
F10P01	Profile	3.75	J	F10P01-J	Typ Short - 2 Bolts	0.245	0.149			
F10P02	Profile	7.50	I	F10P02-I	Typ Short - 2 Bolts	0.245	0.150			
F10P02	Profile	7.50	J	F10P02-J	Typ Short - 2 Bolts	0.145	0.084			
F10P03	Profile	7.50	I	F10P03-I	Typ Short - 2 Bolts	0.132	0.081			
F10P03	Profile	7.50	J	F10P03-J	Typ Short - 2 Bolts	0.140	0.082			
F10P04	Profile	7.50	I	F10P04-I	Typ Short - 2 Bolts	0.161	0.086			
F10P04	Profile	7.50	J	F10P04-J	Typ Short - 2 Bolts	0.294	0.183			
F10P05	Profile	7.50	I	F10P05-I	Typ Short - 2 Bolts	0.356	0.211			
F10P05	Profile	7.50	J	F10P05-J	Typ Short - 2 Bolts	0.000	0.000			
F11P01	Profile	7.55	I	F11P01-I	Base - 2 Bolts	0.165	0.059	0.011	0.014	0.070
F11P01	Profile	7.55	J	F11P01-J	Typ Short - 2 Bolts	0.329	0.178			
F11P02	Profile	6.21	I	F11P02-I	Typ Short - 2 Bolts	0.335	0.179			
F11P02	Profile	6.21	J	F11P02-J	Typ Short - 2 Bolts	0.212	0.125			
F11P03	Profile	7.50	I	F11P03-I	Typ Short - 2 Bolts	0.212	0.125			
F11P03	Profile	7.50	J	F11P03-J	Typ Short - 2 Bolts	0.248	0.149			
F11P04	Profile	3.80	I	F11P04-I	Typ Short - 2 Bolts	0.248	0.149			
F11P04	Profile	3.80	J	F11P04-J	Typ Short - 2 Bolts	0.307	0.188			
F11P05	Profile	7.50	I	F11P05-I	Typ Short - 2 Bolts	0.323	0.193			
F11P05	Profile	7.50	J	F11P05-J	Typ Short - 2 Bolts	0.000	0.000			
F11P06	Profile	7.50	I	F11P06-I	Typ Short - 2 Bolts	0.372	0.203			
F11P06	Profile	7.50	J	F11P06-J	Typ Short - 2 Bolts	0.357	0.186			
F11P07	Profile	6.25	I	F11P07-I	Typ Short - 2 Bolts	0.405	0.214			
F11P07	Profile	6.25	J	F11P07-J	Typ Short - 2 Bolts	0.479	0.267			
F11P08	Profile	4.50	I	F11P08-I	Typ Short - 2 Bolts	0.455	0.255			
F11P08	Profile	4.50	J	F11P08-J	Typ Short - 2 Bolts	0.000	0.000			
F12P01	Profile	7.55	I	F12P01-I	Base - 2 Bolts	0.114	0.042	0.010	0.010	0.053
F12P01	Profile	7.55	J	F12P01-J	Typ Short - 2 Bolts	0.267	0.144			
F12P02	Profile	6.21	I	F12P02-I	Typ Short - 2 Bolts	0.190	0.098			
F12P02	Profile	6.21	J	F12P02-J	Typ Short - 2 Bolts	0.239	0.144			
F12P03	Profile	7.50	I	F12P03-I	Typ Short - 2 Bolts	0.239	0.144			
F12P03	Profile	7.50	J	F12P03-J	Typ Short - 2 Bolts	0.179	0.107			
F12P04	Profile	3.80	I	F12P04-I	Typ Short - 2 Bolts	0.179	0.107			
F12P04	Profile	3.80	J	F12P04-J	Typ Short - 2 Bolts	0.326	0.198			
F12P05	Profile	7.50	I	F12P05-I	Typ Short - 2 Bolts	0.341	0.206			
F12P05	Profile	7.50	J	F12P05-J	Typ Short - 2 Bolts	0.000	0.000			
F12P06	Profile	7.50	I	F12P06-I	Typ Short - 2 Bolts	0.296	0.160			
F12P06	Profile	7.50	J	F12P06-J	Typ Short - 2 Bolts	0.437	0.222			
F12P07	Profile	7.50	I	F12P07-I	Typ Short - 2 Bolts	0.493	0.254			
F12P07	Profile	7.50	J	F12P07-J	Typ Short - 2 Bolts	0.000	0.000			



Profile Summary

Typical Profile Splice Connection:	Typ Short - 2 Bolts
Typical Profile Base Connection:	Base - 2 Bolts
# of Base Anchors:	2

Max:	0.571	0.353	0.072	0.037	0.187
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Post ID	Type	Length	End	Connection ID	Connection Type	Strength Ratios				
		(FT)				Bolt Shear	Splice Plate	Weld	Base Plate	Anchors
F13P01	Profile	5.00	I	F13P01-I	Base - 2 Bolts	0.121	0.049	0.013	0.015	0.076
F13P01	Profile	5.00	J	F13P01-J	Typ Short - 2 Bolts	0.278	0.152			
F13P02	Profile	7.50	I	F13P02-I	Typ Short - 2 Bolts	0.278	0.152			
F13P02	Profile	7.50	J	F13P02-J	Typ Short - 2 Bolts	0.455	0.265			
F13P03	Profile	7.61	I	F13P03-I	Typ Short - 2 Bolts	0.445	0.259			
F13P03	Profile	7.61	J	F13P03-J	Typ Short - 2 Bolts	0.458	0.263			
F13P04	Profile	7.61	I	F13P04-I	Typ Short - 2 Bolts	0.376	0.249			
F13P04	Profile	7.61	J	F13P04-J	Typ Short - 2 Bolts	0.446	0.276			
F13P05	Profile	7.50	I	F13P05-I	Typ Short - 2 Bolts	0.526	0.313			
F13P05	Profile	7.50	J	F13P05-J	Typ Short - 2 Bolts	0.000	0.000			
F14P01	Profile	3.75	I	F14P01-I	Base - 2 Bolts	0.155	0.057	0.013	0.017	0.086
F14P01	Profile	3.75	J	F14P01-J	Typ Short - 2 Bolts	0.299	0.154			
F14P02	Profile	7.50	I	F14P02-I	Typ Short - 2 Bolts	0.298	0.153			
F14P02	Profile	7.50	J	F14P02-J	Typ Short - 2 Bolts	0.312	0.170			
F14P03	Profile	7.50	I	F14P03-I	Typ Short - 2 Bolts	0.306	0.166			
F14P03	Profile	7.50	J	F14P03-J	Typ Short - 2 Bolts	0.417	0.232			
F14P04	Profile	7.50	I	F14P04-I	Typ Short - 2 Bolts	0.454	0.250			
F14P04	Profile	7.50	J	F14P04-J	Typ Short - 2 Bolts	0.357	0.220			
F14P05	Profile	7.50	I	F14P05-I	Typ Short - 2 Bolts	0.412	0.246			
F14P05	Profile	7.50	J	F14P05-J	Typ Short - 2 Bolts	0.000	0.000			



Brace Summary

Max: 3040 2765

Max: 0.90 0.82

Brace ID	Type	Length	Maximum Forces		Capacities		Strength Ratios	
			Tension	Comp.	Tension	Comp.	Tension	Compression
		(FT)	(LB)	(LB)	(LB)	(LB)	(LB)	(LB)
F01B01	Slotted Brace L2x2x1/8	1.57	0	155	1901	1901	0.00	0.08
F01B02	Slotted Brace L2x2x1/8	3.81	376	0	1901	1901	0.20	0.00
F01B03	Slotted Brace L2x2x1/8	1.55	0	313	1901	1901	0.00	0.16
F01B04	Slotted Brace L2x2x1/8	2.19	436	0	1901	1901	0.23	0.00
F01B05	Slotted Brace L2x2x1/8	1.55	0	283	1901	1901	0.00	0.15
F01B06	Slotted Brace L2x2x1/8	2.26	412	0	1901	1901	0.22	0.00
F01B07	Slotted Brace L2x2x1/8	2.32	0	453	1901	1901	0.00	0.24
F01B08	Slotted Brace L2x2x1/8	1.58	295	0	1901	1901	0.16	0.00
F02B01	Slotted Brace L2x2x1/8	1.95	0	224	1901	1901	0.00	0.12
F02B02	Slotted Brace L2x2x1/8	2.11	367	0	1901	1901	0.19	0.00
F02B03	Slotted Brace L2x2x1/8	1.54	4	217	1901	1901	0.00	0.11
F02B04	Slotted Brace L2x2x1/8	2.82	507	0	1901	1901	0.27	0.00
F02B05	Slotted Brace L2x2x1/8	2.22	0	420	1901	1901	0.00	0.22
F02B06	Slotted Brace L2x2x1/8	2.16	515	0	1901	1901	0.27	0.00
F02B07	Slotted Brace L2x2x1/8	1.44	0	280	1901	1901	0.00	0.15
F02B08	Slotted Brace L2x2x1/8	2.36	534	0	1901	1901	0.28	0.00
F02B09	Slotted Brace L2x2x1/8	2.75	0	259	1901	1901	0.00	0.14
F02B10	Slotted Brace L2x2x1/8	2.51	371	0	1901	1901	0.20	0.00
F02B11	Slotted Brace L2x2x1/8	1.70	0	180	1901	1901	0.00	0.09
F02B12	Slotted Brace L2x2x1/8	2.35	338	0	1901	1901	0.18	0.00
F02B13	Slotted Brace L2x2x1/8	3.07	0	460	1901	1901	0.00	0.24
F02B14	Slotted Brace L2x2x1/8	2.06	364	0	1901	1901	0.19	0.00
F02B15	Slotted Brace L2x2x1/8	2.31	0	395	1901	1901	0.00	0.21
F02B16	Slotted Brace L2x2x1/8	1.21	214	0	1901	1901	0.11	0.00
F02T01	Pinch Pipe 0.75	6.39	154	123	4610	893	0.03	0.14
F02T02	Pinch Pipe 0.75	5.64	227	0	4610	1112	0.05	0.00
F03B01	Slotted Brace L2x2x1/8	2.08	0	277	1901	1901	0.00	0.15
F03B02	Slotted Brace L2x2x1/8	1.96	352	0	1901	1901	0.18	0.00
F03B03	Slotted Brace L2x2x1/8	2.05	0	412	1901	1901	0.00	0.22
F03B04	Slotted Brace L2x2x1/8	2.18	514	0	1901	1901	0.27	0.00
F03B05	Slotted Brace L2x2x1/8	2.46	0	253	1901	1901	0.00	0.13
F03B06	Slotted Brace L2x2x1/8	2.82	398	0	1901	1901	0.21	0.00
F03B07	Slotted Brace L2x2x1/8	3.14	0	481	1901	1901	0.00	0.25
F03B08	Slotted Brace L2x2x1/8	2.09	369	0	1901	1901	0.19	0.00
F03T01	Pinch Pipe 0.75	5.62	101	9	4610	1112	0.02	0.01
F03T02	Pinch Pipe 0.75	5.46	97	0	4610	1112	0.02	0.00
F04B01	Slotted Brace L2x2x1/8	1.80	0	272	1901	1901	0.00	0.14
F04B02	Slotted Brace L2x2x1/8	1.83	282	0	1901	1901	0.15	0.00
F04B03	Slotted Brace L2x2x1/8	1.27	0	199	1901	1901	0.00	0.10
F04B04	Slotted Brace L2x2x1/8	2.26	353	0	1901	1901	0.19	0.00
F04B05	Slotted Brace L2x2x1/8	2.13	0	266	1901	1901	0.00	0.14
F04B06	Slotted Brace L2x2x1/8	1.87	246	0	1901	1901	0.13	0.00
F04B07	Slotted Brace L2x2x1/8	1.88	0	260	1901	1901	0.00	0.14
F04B08	Slotted Brace L2x2x1/8	2.64	354	0	1901	1901	0.19	0.00
F04B09	Slotted Brace L2x2x1/8	1.77	0	266	1901	1901	0.00	0.14
F04B10	Slotted Brace L2x2x1/8	1.87	255	2	1901	1901	0.13	0.00
F04B11	Slotted Brace L2x2x1/8	3.14	0	450	1901	1901	0.00	0.24
F04B12	Slotted Brace L2x2x1/8	1.64	241	0	1901	1901	0.13	0.00
F04T01	Pinch Pipe 0.75	3.92	84	16	4610	1885	0.02	0.01
F04T02	Pinch Pipe 0.75	4.00	84	89	4610	1885	0.02	0.05
F05B01	Slotted Brace L2x2x1/8	1.03	0	300	1901	1901	0.00	0.16
F05B02	Slotted Brace L2x2x1/8	2.09	463	7	1901	1901	0.24	0.00
F05B03	Slotted Brace L2x2x1/8	1.69	14	244	1901	1901	0.01	0.13
F05B04	Slotted Brace L2x2x1/8	3.74	385	0	1901	1901	0.20	0.00

Brace Summary

Max: 3040 2765

Max: 0.90 0.82

Brace ID	Type	Length	Maximum Forces		Capacities		Strength Ratios	
			Tension	Comp.	Tension	Comp.	Tension	Compression
		(FT)	(LB)	(LB)	(LB)	(LB)	(LB)	(LB)
F05B05	Slotted Brace L2x2x1/8	1.48	0	270	1901	1901	0.00	0.14
F05B06	Slotted Brace L2x2x1/8	2.43	298	0	1901	1901	0.16	0.00
F05B07	Slotted Brace L2x2x1/8	1.50	0	341	1901	1901	0.00	0.18
F05B08	Slotted Brace L2x2x1/8	2.03	251	0	1901	1901	0.13	0.00
F05B09	Slotted Brace L2x2x1/8	1.91	0	249	1901	1901	0.00	0.13
F05B10	Slotted Brace L2x2x1/8	3.85	358	0	1901	1901	0.19	0.00
F05B11	Slotted Brace L2x2x1/8	2.26	0	256	1901	1901	0.00	0.13
F05B12	Slotted Brace L2x2x1/8	3.63	324	0	1901	1901	0.17	0.00
F05B13	Brace L2x2x1/8	1.38	0	940	3393	4350	0.00	0.22
F05B14	Brace L2x2x1/8	2.89	1380	0	3393	4230	0.41	0.00
F05B15	Brace L2x2x1/8	1.43	0	1134	3393	4350	0.00	0.26
F05B16	Brace L2x2x1/8	2.30	1315	0	3393	4350	0.39	0.00
F05B17	Slotted Brace L2x2x1/8	2.35	0	327	1901	1901	0.00	0.17
F05B18	Slotted Brace L2x2x1/8	4.10	399	0	1901	1901	0.21	0.00
F05B19	Brace L2x2x1/8	1.27	0	634	3393	4350	0.00	0.15
F05B20	Brace L2x2x1/8	4.50	1166	9	3393	2890	0.34	0.00
F05B21	Slotted Brace L2x2x1/8	2.95	0	432	1901	1901	0.00	0.23
F05B22	Slotted Brace L2x2x1/8	3.50	425	0	1901	1901	0.22	0.00
F05B23	Slotted Brace L2x2x1/8	3.51	0	563	1901	1901	0.00	0.30
F05B24	Slotted Brace L2x2x1/8	3.88	559	0	1901	1901	0.29	0.00
F05B25	Brace L2x2x1/8	1.67	0	1022	3393	4350	0.00	0.23
F05B26	Brace L2x2x1/8	2.93	1434	0	3393	4230	0.42	0.00
F05B27	Brace L2x2x1/8	2.51	0	668	3393	4230	0.00	0.16
F05B28	Brace L2x2x1/8	3.75	1026	0	3393	3370	0.30	0.00
F05B29	Slotted Brace L2x2x1/8	3.94	0	476	1901	1901	0.00	0.25
F05B30	Slotted Brace L2x2x1/8	4.87	585	0	1901	1901	0.31	0.00
F05B31	Slotted Brace L2x2x1/8	4.03	0	566	1901	1901	0.00	0.30
F05B32	Slotted Brace L2x2x1/8	4.33	608	0	1901	1901	0.32	0.00
F05B33	Brace L2x2x1/8	1.39	0	1065	3393	4350	0.00	0.24
F05B34	Brace L2x2x1/8	1.79	1374	0	3393	4350	0.40	0.00
F05B35	Slotted Brace L2x2x1/8	4.10	0	942	1901	1901	0.00	0.50
F05B36	Slotted Brace L2x2x1/8	3.93	946	0	1901	1901	0.50	0.00
F05B50	Brace L3x3x3/16	2.95	0	2075	5090	5301	0.00	0.39
F05B51	Pinch Pipe 0.75	1.54	25	8	4610	4610	0.01	0.00
F05B52	Pinch Pipe 0.75	1.47	1205	0	4610	4610	0.26	0.00
F05T01	Pinch Pipe 0.75	5.10	98	161	4610	1112	0.02	0.14
F05T02	Pinch Pipe 0.75	3.08	0	408	4610	3551	0.00	0.12
F06B01	Slotted Brace L2x2x1/8	1.34	0	306	1901	1901	0.00	0.16
F06B02	Slotted Brace L2x2x1/8	2.05	376	0	1901	1901	0.20	0.00
F06B03	Slotted Brace L2x2x1/8	1.35	0	258	1901	1901	0.00	0.14
F06B04	Slotted Brace L2x2x1/8	2.90	374	0	1901	1901	0.20	0.00
F06B05	Slotted Brace L2x2x1/8	1.37	0	290	1901	1901	0.00	0.15
F06B06	Slotted Brace L2x2x1/8	2.48	367	0	1901	1901	0.19	0.00
F06B07	Slotted Brace L2x2x1/8	1.37	0	324	1901	1901	0.00	0.17
F06B08	Slotted Brace L2x2x1/8	2.35	420	0	1901	1901	0.22	0.00
F06B09	Brace L2x2x1/8	1.48	0	857	3393	4350	0.00	0.20
F06B10	Brace L2x2x1/8	3.17	1181	0	3393	3800	0.35	0.00
F06B11	Brace L2x2x1/8	1.42	3	1165	3393	4350	0.00	0.27
F06B12	Brace L2x2x1/8	2.35	1444	13	3393	4350	0.43	0.00
F06B13	Brace L2x2x1/8	1.74	0	815	3393	4350	0.00	0.19
F06B14	Brace L2x2x1/8	4.49	1382	0	3393	2890	0.41	0.00
F06B15	Brace L2x2x1/8	2.18	0	1160	3393	4350	0.00	0.27
F06B16	Brace L2x2x1/8	3.61	1645	0	3393	3370	0.48	0.00
F06B17	Brace L2x2x1/8	2.84	709	451	3393	4230	0.21	0.11

Brace Summary

Max: 3040 2765

Max: 0.90 0.82

Brace ID	Type	Length (FT)	Maximum Forces		Capacities		Strength Ratios	
			Tension (LB)	Comp. (LB)	Tension (LB)	Comp. (LB)	Tension (LB)	Compression (LB)
F06B18	Brace L2x2x1/8	3.26	491	775	3393	3800	0.14	0.20
F06B19	Brace L2x2x1/8	2.48	0	934	3393	4350	0.00	0.21
F06B20	Brace L2x2x1/8	3.28	1250	0	3393	3800	0.37	0.00
F06B21	Brace L2x2x1/8	2.02	0	1307	3393	4350	0.00	0.30
F06B22	Brace L2x2x1/8	2.18	1411	0	3393	4350	0.42	0.00
F06B50	Brace L3x3x3/16	2.59	0	2183	5090	5301	0.00	0.41
F06B51	Pinch Pipe 0.75	1.68	13	327	4610	4610	0.00	0.07
F06B52	Pinch Pipe 0.75	1.50	1629	0	4610	4610	0.35	0.00
F06T01	Pinch Pipe 0.75	3.10	39	289	4610	2615	0.01	0.11
F06T02	Pinch Pipe 0.75	3.37	110	218	4610	2615	0.02	0.08
F07B01	Slotted Brace L2x2x1/8	1.56	0	366	1901	1901	0.00	0.19
F07B02	Slotted Brace L2x2x1/8	2.08	408	0	1901	1901	0.21	0.00
F07B03	Slotted Brace L2x2x1/8	1.31	0	225	1901	1901	0.00	0.12
F07B04	Slotted Brace L2x2x1/8	3.02	369	0	1901	1901	0.19	0.00
F07B05	Slotted Brace L2x2x1/8	1.65	0	328	1901	1901	0.00	0.17
F07B06	Slotted Brace L2x2x1/8	2.64	409	0	1901	1901	0.21	0.00
F07B07	Slotted Brace L2x2x1/8	1.90	0	410	1901	1901	0.00	0.22
F07B08	Slotted Brace L2x2x1/8	2.66	477	0	1901	1901	0.25	0.00
F07B11	Brace L2x2x1/8	2.33	0	1189	3393	4350	0.00	0.27
F07B12	Brace L2x2x1/8	3.98	1633	0	3393	3370	0.48	0.00
F07B15	Brace L2x2x1/8	2.44	0	1141	3393	4350	0.00	0.26
F07B16	Brace L2x2x1/8	4.36	1634	0	3393	2890	0.48	0.00
F07B19	Brace L2x2x1/8	2.74	0	960	3393	4230	0.00	0.23
F07B20	Brace L2x2x1/8	4.98	1525	0	3393	2400	0.45	0.00
F07B21	Brace L2x2x1/8	2.73	0	1032	3393	4230	0.00	0.24
F07B22	Brace L2x2x1/8	4.43	1693	0	3393	2890	0.50	0.00
F07B23	Brace L2x2x1/8	3.26	135	1243	3393	3800	0.04	0.33
F07B24	Brace L2x2x1/8	3.90	1484	160	3393	3370	0.44	0.05
F07B25	Brace L2x2x1/8	2.40	0	799	3393	4350	0.00	0.18
F07B26	Brace L2x2x1/8	4.39	1455	0	3393	2890	0.43	0.00
F07B27	Brace L2x2x1/8	1.99	0	1071	3393	4350	0.00	0.25
F07B28	Brace L2x2x1/8	3.13	1684	0	3393	3800	0.50	0.00
F07B50	Brace L3x3x3/16	3.97	251	762	5090	5301	0.05	0.14
F07B51	Pinch Pipe 0.75	3.21	368	386	4610	2615	0.08	0.15
F07B52	Pinch Pipe 0.75	3.15	881	79	4610	2615	0.19	0.03
F07B53	Brace L3x3x3/16	2.81	0	1938	5090	5301	0.00	0.37
F07B54	Pinch Pipe 0.75	1.96	14	411	4610	4542	0.00	0.09
F07B55	Pinch Pipe 0.75	1.66	1566	0	4610	4610	0.34	0.00
F07T01	Pinch Pipe 0.75	2.22	6	539	4610	4542	0.00	0.12
F07T02	Pinch Pipe 0.75	4.33	26	489	4610	1885	0.01	0.26
F08B01	Slotted Brace L2x2x1/8	2.22	0	465	1901	1901	0.00	0.24
F08B02	Slotted Brace L2x2x1/8	2.69	574	0	1901	1901	0.30	0.00
F08B03	Slotted Brace L2x2x1/8	1.84	0	262	1901	1901	0.00	0.14
F08B04	Slotted Brace L2x2x1/8	2.87	410	0	1901	1901	0.22	0.00
F08B05	Slotted Brace L2x2x1/8	1.85	3	318	1901	1901	0.00	0.17
F08B06	Slotted Brace L2x2x1/8	2.45	444	0	1901	1901	0.23	0.00
F08B07	Slotted Brace L2x2x1/8	1.60	0	193	1901	1901	0.00	0.10
F08B08	Slotted Brace L2x2x1/8	3.36	415	0	1901	1901	0.22	0.00
F08B09	Brace L2x2x1/8	1.82	0	582	3393	4350	0.00	0.13
F08B10	Brace L2x2x1/8	3.99	1283	0	3393	3370	0.38	0.00
F08B11	Brace L2x2x1/8	1.84	75	567	3393	4350	0.02	0.13
F08B12	Brace L2x2x1/8	4.28	1419	0	3393	2890	0.42	0.00
F08B13	Brace L2x2x1/8	1.81	58	861	3393	4350	0.02	0.20
F08B14	Brace L2x2x1/8	3.18	1596	0	3393	3800	0.47	0.00

Brace Summary

Max: 3040 2765

Max: 0.90 0.82

Brace ID	Type	Length	Maximum Forces		Capacities		Strength Ratios	
			Tension	Comp.	Tension	Comp.	Tension	Compression
		(FT)	(LB)	(LB)	(LB)	(LB)	(LB)	(LB)
F08B20	Brace L2x2x1/8	2.67	0	1338	3393	4230	0.00	0.32
F08B21	Brace L2x2x1/8	3.97	2005	0	3393	3370	0.59	0.00
F08B22	Brace L2x2x1/8	2.47	0	887	3393	4350	0.00	0.20
F08B23	Brace L2x2x1/8	4.58	1656	0	3393	2400	0.49	0.00
F08B24	Brace L2x2x1/8	2.31	1	910	3393	4350	0.00	0.21
F08B25	Brace L2x2x1/8	4.03	1636	0	3393	2890	0.48	0.00
F08B50	Brace L3x3x3/16	4.50	174	918	5090	5301	0.03	0.17
F08B51	Pinch Pipe 0.75	3.28	661	269	4610	2615	0.14	0.10
F08B52	Pinch Pipe 0.75	3.27	182	138	4610	2615	0.04	0.05
F08B53	Brace L3x3x3/16	3.32	370	1496	5090	5301	0.07	0.28
F08B54	Pinch Pipe 0.75	2.03	46	480	4610	4542	0.01	0.11
F08B55	Pinch Pipe 0.75	1.84	1281	156	4610	4542	0.28	0.03
F09B01	Slotted Brace L2x2x1/8	2.12	0	443	1901	1901	0.00	0.23
F09B02	Slotted Brace L2x2x1/8	2.12	447	0	1901	1901	0.24	0.00
F09B03	Slotted Brace L2x2x1/8	2.99	0	712	1901	1901	0.00	0.37
F09B04	Slotted Brace L2x2x1/8	3.09	743	0	1901	1901	0.39	0.00
F09B05	Slotted Brace L2x2x1/8	1.79	0	232	1901	1901	0.00	0.12
F09B06	Slotted Brace L2x2x1/8	3.25	425	0	1901	1901	0.22	0.00
F09B07	Slotted Brace L2x2x1/8	1.79	8	269	1901	1901	0.00	0.14
F09B08	Slotted Brace L2x2x1/8	2.83	427	1	1901	1901	0.22	0.00
F09B09	Slotted Brace L2x2x1/8	1.78	0	429	1901	1901	0.00	0.23
F09B10	Slotted Brace L2x2x1/8	2.23	539	0	1901	1901	0.28	0.00
F09B11	Brace L2x2x1/8	3.26	0	1694	3393	3800	0.00	0.45
F09B12	Brace L2x2x1/8	3.56	1896	0	3393	3370	0.56	0.00
F09B13	Brace L2x2x1/8	1.94	0	902	3393	4350	0.00	0.21
F09B14	Brace L2x2x1/8	3.25	1528	0	3393	3800	0.45	0.00
F09B15	Brace L2x2x1/8	3.36	0	1179	3393	3800	0.00	0.31
F09B16	Brace L2x2x1/8	4.12	1463	0	3393	2890	0.43	0.00
F09B17	Brace L2x2x1/8	2.15	0	754	3393	4350	0.00	0.17
F09B18	Brace L2x2x1/8	4.20	1478	0	3393	2890	0.44	0.00
F09B19	Brace L2x2x1/8	3.30	0	1147	3393	3800	0.00	0.30
F09B20	Brace L2x2x1/8	4.04	1442	0	3393	2890	0.43	0.00
F09B21	Brace L2x2x1/8	2.43	0	848	3393	4350	0.00	0.19
F09B22	Brace L2x2x1/8	4.35	1534	0	3393	2890	0.45	0.00
F09B23	Brace L2x2x1/8	3.56	0	974	3393	3370	0.00	0.29
F09B24	Brace L2x2x1/8	4.98	1376	0	3393	2400	0.41	0.00
F09B25	Brace L2x2x1/8	2.71	0	1019	3393	4230	0.00	0.24
F09B26	Brace L2x2x1/8	4.29	1622	0	3393	2890	0.48	0.00
F09B27	Brace L2x2x1/8	3.55	0	1232	3393	3370	0.00	0.37
F09B28	Brace L2x2x1/8	5.16	1827	0	3393	2080	0.54	0.00
F09B29	Brace L2x2x1/8	3.03	0	1072	3393	3800	0.00	0.28
F09B30	Brace L2x2x1/8	4.44	1585	0	3393	2890	0.47	0.00
F09B31	Brace L2x2x1/8	3.78	0	2765	3393	3370	0.00	0.82
F09B32	Brace L2x2x1/8	4.12	3040	0	3393	2890	0.90	0.00
F09B33	Brace L2x2x1/8	3.30	0	1601	3393	3800	0.00	0.42
F09B34	Brace L2x2x1/8	3.93	1914	0	3393	3370	0.56	0.00
F09B50	Brace L3x3x3/16	4.74	0	2323	5090	5301	0.00	0.44
F09B51	Pinch Pipe 0.75	3.48	51	268	4610	2615	0.01	0.10
F09B52	Pinch Pipe 0.75	3.53	1957	23	4610	2615	0.42	0.01
F09B53	Brace L3x3x3/16	6.33	676	1310	5090	5301	0.13	0.25
F09B54	Pinch Pipe 0.75	3.98	241	1076	4610	1885	0.05	0.57
F09B55	Pinch Pipe 0.75	4.04	1874	95	4610	1885	0.41	0.05
F10B01	Slotted Brace L2x2x1/8	2.16	0	503	1901	1901	0.00	0.26
F10B02	Slotted Brace L2x2x1/8	2.06	0	489	1901	1901	0.00	0.26

Brace Summary

Max: 3040 2765

Max: 0.90 0.82

Brace ID	Type	Length	Maximum Forces		Capacities		Strength Ratios	
			Tension	Comp.	Tension	Comp.	Tension	Compression
		(FT)	(LB)	(LB)	(LB)	(LB)	(LB)	(LB)
F10B03	Slotted Brace L2x2x1/8	2.33	551	0	1901	1901	0.29	0.00
F10B04	Slotted Brace L2x2x1/8	2.26	540	0	1901	1901	0.28	0.00
F10B05	Slotted Brace L2x2x1/8	1.53	0	185	1901	1901	0.00	0.10
F10B06	Slotted Brace L2x2x1/8	3.31	405	0	1901	1901	0.21	0.00
F10B07	Slotted Brace L2x2x1/8	1.56	0	227	1901	1901	0.00	0.12
F10B08	Slotted Brace L2x2x1/8	2.69	394	0	1901	1901	0.21	0.00
F10B09	Brace L2x2x1/8	1.57	0	726	3393	4350	0.00	0.17
F10B10	Brace L2x2x1/8	2.99	1401	0	3393	4230	0.41	0.00
F10B11	Brace L2x2x1/8	1.54	0	544	3393	4350	0.00	0.13
F10B12	Brace L2x2x1/8	3.96	1399	0	3393	3370	0.41	0.00
F10B13	Brace L2x2x1/8	1.56	0	548	3393	4350	0.00	0.13
F10B14	Brace L2x2x1/8	3.87	1376	0	3393	3370	0.41	0.00
F10B15	Brace L2x2x1/8	1.56	0	555	3393	4350	0.00	0.13
F10B16	Brace L2x2x1/8	3.85	1378	0	3393	3370	0.41	0.00
F10B17	Brace L2x2x1/8	1.59	0	597	3393	4350	0.00	0.14
F10B18	Brace L2x2x1/8	3.55	1349	0	3393	3370	0.40	0.00
F10B19	Brace L2x2x1/8	1.64	0	1060	3393	4350	0.00	0.24
F10B20	Brace L2x2x1/8	2.15	1385	0	3393	4350	0.41	0.00
F10B50	Brace L3x3x3/16	2.95	0	2483	5090	5301	0.00	0.47
F10B51	Pinch Pipe 0.75	1.54	11	614	4610	4610	0.00	0.13
F10B52	Pinch Pipe 0.75	1.60	1946	0	4610	4610	0.42	0.00
F11B01	Slotted Brace L2x2x1/8	2.08	0	462	1901	1901	0.00	0.24
F11B02	Slotted Brace L2x2x1/8	2.23	495	0	1901	1901	0.26	0.00
F11B03	Slotted Brace L2x2x1/8	1.57	0	181	1901	1901	0.00	0.10
F11B04	Slotted Brace L2x2x1/8	3.29	383	0	1901	1901	0.20	0.00
F11B05	Slotted Brace L2x2x1/8	1.55	0	146	1901	1901	0.00	0.08
F11B06	Slotted Brace L2x2x1/8	2.94	380	0	1901	1901	0.20	0.00
F11B07	Brace L2x2x1/8	1.93	0	522	3393	4350	0.00	0.12
F11B08	Brace L2x2x1/8	2.73	1375	0	3393	4230	0.41	0.00
F11B11	Brace L2x2x1/8	1.93	4	330	3393	4350	0.00	0.08
F11B12	Brace L2x2x1/8	3.41	1380	0	3393	3800	0.41	0.00
F11B15	Brace L2x2x1/8	1.96	3	459	3393	4350	0.00	0.11
F11B16	Brace L2x2x1/8	2.93	1352	0	3393	4230	0.40	0.00
F11B19	Brace L2x2x1/8	2.25	0	419	3393	4350	0.00	0.10
F11B20	Brace L2x2x1/8	2.92	1239	0	3393	4230	0.37	0.00
F11B23	Brace L2x2x1/8	1.26	0	358	3393	4350	0.00	0.08
F11B24	Brace L2x2x1/8	3.54	1360	0	3393	3370	0.40	0.00
F11B25	Brace L2x2x1/8	1.63	20	681	3393	4350	0.01	0.16
F11B26	Brace L2x2x1/8	3.00	1334	0	3393	3800	0.39	0.00
F11B27	Brace L2x2x1/8	1.68	0	818	3393	4350	0.00	0.19
F11B28	Brace L2x2x1/8	2.29	1147	0	3393	4350	0.34	0.00
F11B29	Brace L2x2x1/8	2.04	14	976	3393	4350	0.00	0.22
F11B30	Brace L2x2x1/8	2.05	987	0	3393	4350	0.29	0.00
F11B40	Brace L2x2x1/8	3.01	0	1423	3393	3800	0.00	0.37
F11B41	Brace L2x2x1/8	4.31	2060	0	3393	2890	0.61	0.00
F11B42	Brace L2x2x1/8	3.28	0	1186	3393	3800	0.00	0.31
F11B43	Brace L2x2x1/8	5.13	1879	0	3393	2080	0.55	0.00
F11B44	Brace L2x2x1/8	3.63	0	1522	3393	3370	0.00	0.45
F11B45	Brace L2x2x1/8	4.89	2066	0	3393	2400	0.61	0.00
F11B46	Brace L2x2x1/8	4.43	0	1542	3393	2890	0.00	0.53
F11B47	Brace L2x2x1/8	5.43	1900	0	3393	2080	0.56	0.00
F11B50	Brace L3x3x3/16	3.61	0	2426	5090	5301	0.00	0.46
F11B51	Pinch Pipe 0.75	1.78	7	890	4610	4610	0.00	0.19
F11B52	Pinch Pipe 0.75	1.92	2128	0	4610	4542	0.46	0.00

Brace Summary

Max: 3040 2765

Max: 0.90 0.82

Brace ID	Type	Length	Maximum Forces		Capacities		Strength Ratios	
			Tension	Comp.	Tension	Comp.	Tension	Compression
		(FT)	(LB)	(LB)	(LB)	(LB)	(LB)	(LB)
F11B53	Brace L3x3x3/16	2.91	85	2713	5090	5301	0.02	0.51
F11B54	Pinch Pipe 0.75	1.29	134	343	4610	4610	0.03	0.07
F11B55	Pinch Pipe 0.75	1.49	1828	157	4610	4610	0.40	0.03
F11B56	Pinch Pipe 0.75	4.95	128	513	4610	1423	0.03	0.36
F11B57	Pinch Pipe 0.75	5.06	465	145	4610	1423	0.10	0.10
F11T01	Pinch Pipe 0.75	5.13	524	79	4610	1112	0.11	0.07
F11T02	Pinch Pipe 0.75	5.49	289	417	4610	1112	0.06	0.37
F11T03	Pinch Pipe 0.75	5.17	249	410	4610	1112	0.05	0.37
F11T04	Pinch Pipe 0.75	5.46	632	107	4610	1112	0.14	0.10
F11T05	Pinch Pipe 0.75	3.43	490	11	4610	2615	0.11	0.00
F11T06	Pinch Pipe 0.75	3.90	129	18	4610	1885	0.03	0.01
F11T07	Pinch Pipe 0.75	2.00	463	170	4610	4542	0.10	0.04
F11T08	Pinch Pipe 0.75	2.11	306	57	4610	4542	0.07	0.01
F12B01	Slotted Brace L2x2x1/8	1.88	15	331	1901	1901	0.01	0.17
F12B02	Slotted Brace L2x2x1/8	1.91	338	4	1901	1901	0.18	0.00
F12B03	Slotted Brace L2x2x1/8	1.56	0	182	1901	1901	0.00	0.10
F12B04	Slotted Brace L2x2x1/8	3.26	383	0	1901	1901	0.20	0.00
F12B05	Slotted Brace L2x2x1/8	1.58	0	134	1901	1901	0.00	0.07
F12B06	Slotted Brace L2x2x1/8	3.05	368	0	1901	1901	0.19	0.00
F12B07	Brace L2x2x1/8	1.77	0	290	3393	4350	0.00	0.07
F12B08	Brace L2x2x1/8	3.14	1378	0	3393	3800	0.41	0.00
F12B11	Brace L2x2x1/8	1.50	8	149	3393	4350	0.00	0.03
F12B12	Brace L2x2x1/8	3.91	1447	0	3393	3370	0.43	0.00
F12B15	Brace L2x2x1/8	1.53	2	566	3393	4350	0.00	0.13
F12B16	Brace L2x2x1/8	2.34	1495	0	3393	4350	0.44	0.00
F12B19	Brace L2x2x1/8	1.63	0	466	3393	4350	0.00	0.11
F12B20	Brace L2x2x1/8	2.31	1305	0	3393	4350	0.38	0.00
F12B21	Brace L2x2x1/8	1.55	0	472	3393	4350	0.00	0.11
F12B22	Brace L2x2x1/8	2.26	1149	0	3393	4350	0.34	0.00
F12B23	Brace L2x2x1/8	1.78	0	939	3393	4350	0.00	0.22
F12B24	Brace L2x2x1/8	1.90	1003	0	3393	4350	0.30	0.00
F12B30	Brace L2x2x1/8	2.36	0	934	3393	4350	0.00	0.21
F12B31	Brace L2x2x1/8	3.92	1559	0	3393	3370	0.46	0.00
F12B32	Brace L2x2x1/8	3.27	0	1146	3393	3800	0.00	0.30
F12B33	Brace L2x2x1/8	5.15	1857	0	3393	2080	0.55	0.00
F12B34	Brace L2x2x1/8	4.27	0	1759	3393	2890	0.00	0.61
F12B35	Brace L2x2x1/8	5.44	2312	0	3393	2080	0.68	0.00
F12B50	Brace L3x3x3/16	2.84	0	2759	5090	5301	0.00	0.52
F12B51	Pinch Pipe 0.75	1.59	11	290	4610	4610	0.00	0.06
F12B52	Pinch Pipe 0.75	1.86	2078	0	4610	4542	0.45	0.00
F12B53	Brace L2x2x1/8	3.00	444	928	3393	3800	0.13	0.24
F12B54	Brace L2x2x1/8	3.94	892	586	3393	3370	0.26	0.17
F12B55	Brace L2x2x1/8	3.00	291	77	3393	3800	0.09	0.02
F12T01	Pinch Pipe 0.75	5.12	378	56	4610	1112	0.08	0.05
F12T02	Pinch Pipe 0.75	5.20	427	351	4610	1112	0.09	0.32
F12T03	Pinch Pipe 0.75	5.10	251	264	4610	1112	0.05	0.24
F12T04	Pinch Pipe 0.75	5.10	252	328	4610	1112	0.05	0.29
F12T05	Pinch Pipe 0.75	4.24	342	0	4610	1885	0.07	0.00
F12T06	Pinch Pipe 0.75	3.42	251	36	4610	2615	0.05	0.01
F12T07	Pinch Pipe 0.75	3.27	373	151	4610	2615	0.08	0.06
F12T08	Pinch Pipe 0.75	2.01	357	124	4610	4542	0.08	0.03
F13B01	Slotted Brace L2x2x1/8	1.95	0	423	1901	1901	0.00	0.22
F13B02	Slotted Brace L2x2x1/8	2.16	476	0	1901	1901	0.25	0.00
F13B03	Slotted Brace L2x2x1/8	1.94	0	437	1901	1901	0.00	0.23

Brace Summary

Max: 3040 2765

Max: 0.90 0.82

Brace ID	Type	Length	Maximum Forces		Capacities		Strength Ratios	
			Tension	Comp.	Tension	Comp.	Tension	Compression
		(FT)	(LB)	(LB)	(LB)	(LB)	(LB)	(LB)
F13B04	Slotted Brace L2x2x1/8	2.12	482	0	1901	1901	0.25	0.00
F13B05	Slotted Brace L2x2x1/8	1.52	0	171	1901	1901	0.00	0.09
F13B06	Slotted Brace L2x2x1/8	3.59	407	0	1901	1901	0.21	0.00
F13B07	Slotted Brace L2x2x1/8	1.51	0	193	1901	1901	0.00	0.10
F13B08	Slotted Brace L2x2x1/8	3.22	415	0	1901	1901	0.22	0.00
F13B09	Slotted Brace L2x2x1/8	1.51	0	224	1901	1901	0.00	0.12
F13B11	Slotted Brace L2x2x1/8	2.83	420	0	1901	1901	0.22	0.00
F13B12	Brace L2x2x1/8	2.01	0	764	3393	4350	0.00	0.18
F13B13	Brace L2x2x1/8	3.17	1239	0	3393	3800	0.37	0.00
F13B14	Brace L2x2x1/8	1.75	0	660	3393	4350	0.00	0.15
F13B15	Brace L2x2x1/8	3.68	1415	0	3393	3370	0.42	0.00
F13B16	Brace L2x2x1/8	1.82	8	1097	3393	4350	0.00	0.25
F13B17	Brace L2x2x1/8	2.26	1419	0	3393	4350	0.42	0.00
F13B20	Brace L2x2x1/8	2.75	10	497	3393	4230	0.00	0.12
F13B21	Brace L2x2x1/8	3.24	1691	0	3393	3800	0.50	0.00
F13B22	Brace L2x2x1/8	1.72	27	399	3393	4350	0.01	0.09
F13B23	Brace L2x2x1/8	1.60	1361	0	3393	4350	0.40	0.00
F13B26	Brace L2x2x1/8	2.52	0	1131	3393	4230	0.00	0.27
F13B27	Brace L2x2x1/8	3.00	1342	0	3393	4230	0.40	0.00
F13B28	Brace L2x2x1/8	1.39	0	975	3393	4350	0.00	0.22
F13B29	Brace L2x2x1/8	1.48	1043	0	3393	4350	0.31	0.00
F13B50	Brace L3x3x3/16	3.81	400	1981	5090	5301	0.08	0.37
F13B51	Pinch Pipe 0.75	2.30	47	779	4610	4542	0.01	0.17
F13B52	Pinch Pipe 0.75	2.62	2078	80	4610	3551	0.45	0.02
F13B53	Brace L3x3x3/16	2.40	0	2562	5090	5301	0.00	0.48
F13B54	Pinch Pipe 0.75	1.44	14	551	4610	4610	0.00	0.12
F13B55	Pinch Pipe 0.75	1.53	2069	0	4610	4610	0.45	0.00
F13T01	Pinch Pipe 0.75	5.93	272	608	4610	893	0.06	0.68
F13T02	Pinch Pipe 0.75	5.21	729	72	4610	1112	0.16	0.06
F13T03	Pinch Pipe 0.75	5.92	968	119	4610	893	0.21	0.13
F13T04	Pinch Pipe 0.75	5.21	815	121	4610	1112	0.18	0.11
F14B01	Slotted Brace L2x2x1/8	1.68	0	161	1901	1901	0.00	0.08
F14B02	Slotted Brace L2x2x1/8	3.51	343	0	1901	1901	0.18	0.00
F14B03	Slotted Brace L2x2x1/8	2.38	0	237	1901	1901	0.00	0.12
F14B04	Slotted Brace L2x2x1/8	4.29	435	0	1901	1901	0.23	0.00
F14B05	Slotted Brace L2x2x1/8	1.64	0	166	1901	1901	0.00	0.09
F14B06	Slotted Brace L2x2x1/8	3.49	365	0	1901	1901	0.19	0.00
F14B07	Slotted Brace L2x2x1/8	2.39	0	415	1901	1901	0.00	0.22
F14B08	Slotted Brace L2x2x1/8	3.03	538	0	1901	1901	0.28	0.00
F14B09	Slotted Brace L2x2x1/8	2.41	0	345	1901	1901	0.00	0.18
F14B10	Slotted Brace L2x2x1/8	3.23	457	0	1901	1901	0.24	0.00
F14B11	Slotted Brace L2x2x1/8	1.62	0	166	1901	1901	0.00	0.09
F14B12	Slotted Brace L2x2x1/8	3.48	366	0	1901	1901	0.19	0.00
F14B13	Slotted Brace L2x2x1/8	3.04	0	401	1901	1901	0.00	0.21
F14B14	Slotted Brace L2x2x1/8	3.92	523	0	1901	1901	0.28	0.00
F14B15	Slotted Brace L2x2x1/8	1.64	0	166	1901	1901	0.00	0.09
F14B16	Slotted Brace L2x2x1/8	3.47	362	0	1901	1901	0.19	0.00
F14B17	Slotted Brace L2x2x1/8	3.12	0	440	1901	1901	0.00	0.23
F14B18	Slotted Brace L2x2x1/8	3.56	501	0	1901	1901	0.26	0.00
F14B19	Slotted Brace L2x2x1/8	1.80	0	182	1901	1901	0.00	0.10
F14B20	Slotted Brace L2x2x1/8	3.16	329	0	1901	1901	0.17	0.00
F14B21	Slotted Brace L2x2x1/8	2.30	0	292	1901	1901	0.00	0.15
F14B22	Slotted Brace L2x2x1/8	1.94	254	0	1901	1901	0.13	0.00
F14B23	Slotted Brace L2x2x1/8	4.10	0	412	1901	1901	0.00	0.22

Brace Summary

Max: 3040 2765

Max: 0.90 0.82

Brace ID	Type	Length	Maximum Forces		Capacities		Strength Ratios	
			Tension	Comp.	Tension	Comp.	Tension	Compression
		(FT)	(LB)	(LB)	(LB)	(LB)	(LB)	(LB)
F14B24	Slotted Brace L2x2x1/8	5.17	526	0	1901	1901	0.28	0.00
F14B25	Slotted Brace L2x2x1/8	1.47	16	134	1901	1901	0.01	0.07
F14B26	Slotted Brace L2x2x1/8	3.70	357	15	1901	1901	0.19	0.01
F14B27	Slotted Brace L2x2x1/8	3.75	0	385	1901	1901	0.00	0.20
F14B28	Slotted Brace L2x2x1/8	4.62	477	0	1901	1901	0.25	0.00
F14B29	Slotted Brace L2x2x1/8	2.76	0	279	1901	1901	0.00	0.15
F14B30	Slotted Brace L2x2x1/8	4.07	421	0	1901	1901	0.22	0.00
F14B31	Slotted Brace L2x2x1/8	2.70	0	272	1901	1901	0.00	0.14
F14B32	Slotted Brace L2x2x1/8	4.16	420	0	1901	1901	0.22	0.00
F14B33	Slotted Brace L2x2x1/8	4.16	0	499	1901	1901	0.00	0.26
F14B34	Slotted Brace L2x2x1/8	3.98	478	0	1901	1901	0.25	0.00
F14B35	Slotted Brace L2x2x1/8	3.41	0	511	1901	1901	0.00	0.27
F14B36	Slotted Brace L2x2x1/8	3.90	590	0	1901	1901	0.31	0.00
F14B40	Brace L2x2x1/8	4.44	0	2205	3393	2890	0.00	0.76
F14B41	Brace L2x2x1/8	5.04	2515	0	3393	2080	0.74	0.00
F14B42	Brace L2x2x1/8	4.84	0	1706	3393	2400	0.00	0.71
F14B43	Brace L2x2x1/8	5.22	1863	0	3393	2080	0.55	0.00
F14B50	Brace L3x3x3/16	6.20	2	1199	5090	5301	0.00	0.23
F14B51	Pinch Pipe 0.75	5.38	443	0	4610	1112	0.10	0.00
F14B52	Pinch Pipe 0.75	5.42	943	8	4610	1112	0.20	0.01

Panelized Wall 2.0 - Brace Capacity Calculations

Standard Variables:

Safety Factors:

Yield: $\Omega_{y.AISC} := 1.67$

Rupture: $\Omega_{r.AISC} := 2.0$

A36 Steel:

Yield: $F_{y.A36} := 36 \text{ ksi}$

Tensile: $F_{u.A36} := 58 \text{ ksi}$

A500 Grade B Steel - Rectangular Shapes:

Yield: $F_{y.A500.rect} := 46 \text{ ksi}$

Tensile: $F_{u.A500.rect} := 58 \text{ ksi}$

AISI 1018:

Yield: $F_{y.1018} := 53.7 \text{ ksi}$

Tensile: $F_{u.1018} := 63.8 \text{ ksi}$

A53 Steel:

Yield: $F_{y.A53} := 35 \text{ ksi}$

Tensile: $F_{u.A53} := 60 \text{ ksi}$

A325 (Grade 5) Bolts:

Tensile: $F_{u.A325} := 120 \text{ ksi}$

Weld Filler:

Shear: $F_{u.weld} := 70 \text{ ksi} \cdot 0.6 = 42.000 \text{ ksi}$

Bolt Properties

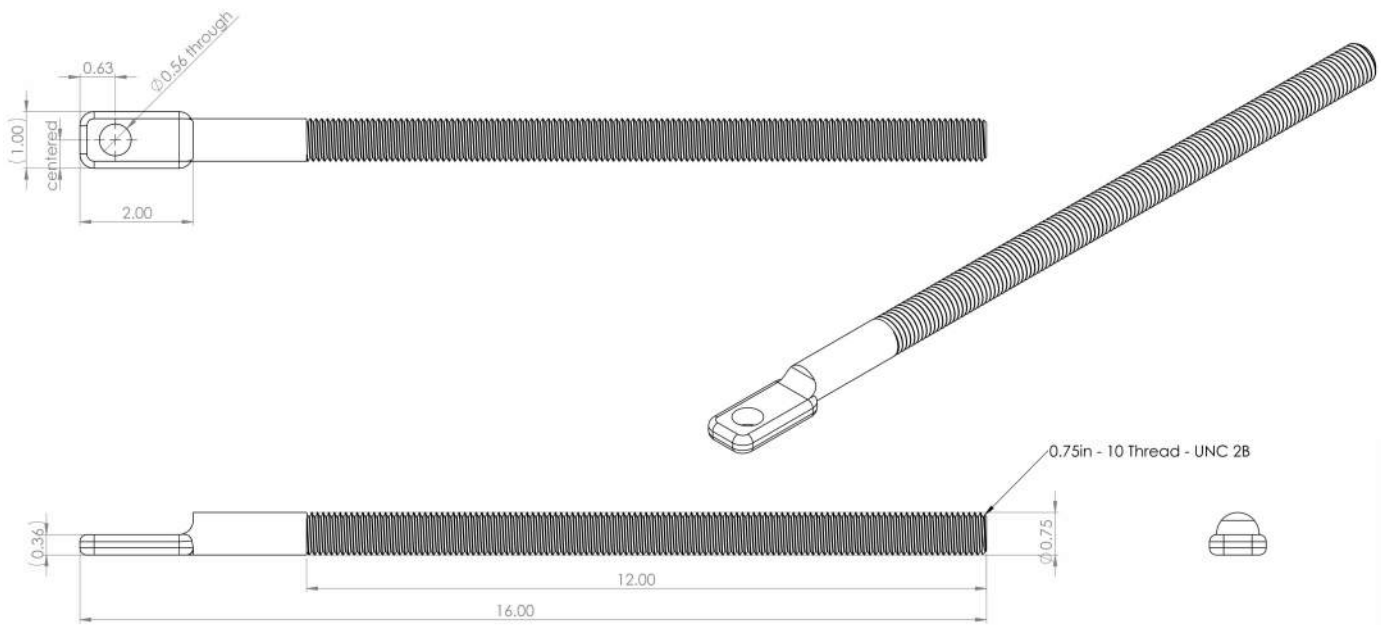
Bolt diameter: $D_{bolt} := 0.5 \text{ in}$

Bolt shear capacity: $V_{a.bolt} := D_{bolt}^2 \cdot \frac{\pi}{4} \cdot F_{u.A325} \cdot \frac{0.75 \cdot 0.6}{\Omega_{r.AISC}} = 5.301 \text{ kip}$

Bolt tension capacity: $T_{a.bolt} := D_{bolt}^2 \cdot \frac{\pi}{4} \cdot F_{u.A325} \cdot \frac{0.75}{\Omega_{r.AISC}} = 8.836 \text{ kip}$

Note: The values calculated below are used in a separate Excel spreadsheet to review the capacity of each pinch pipe and angle brace based on output from a RISA-3D model of the climbing wall.

Spade bolt properties:



Spade Rod diameter:

$$D_{sb,rod} := 0.75 \text{ in}$$

Spade width:

$$B_{sb} := 1.0 \text{ in}$$

Hole diameter:

$$D_{sb,hole} := D_{bolt} + \frac{1}{16} \text{ in} = 0.563 \text{ in}$$

Spade thickness:

$$t_{sb} := 0.36 \text{ in}$$

Spade plate distance from bolt hole to plate end:

$$e_{sb,hole} := 0.63 \text{ in}$$

Spade gross area:

$$A_{g, sb} := 0.347 \text{ in}^2$$

Spade hole end distance:

$$L_{c, sb} := e_{sb, hole} - \frac{D_{sb, hole}}{2} = 0.349 \text{ in}$$

Spade net area:

$$A_{n, sb} := A_{g, sb} - t_{sb} \cdot D_{sb, hole} = 0.145 \text{ in}^2$$

Rod axial capacity:

$$T_{a, rod} := F_{u, 1018} \cdot D_{sb, rod}^2 \cdot \frac{\pi}{4} \cdot \frac{0.75}{\Omega_{r, AISC}} = 10.570 \text{ kip}$$

Spade yield capacity:

$$T_{a, y, spade} := \frac{F_{y, 1018} \cdot A_{g, sb}}{\Omega_{y, AISC}} = 11.158 \text{ kip}$$

Spade tensile capacity:

$$T_{a, u, spade} := \frac{F_{u, 1018} \cdot A_{n, sb}}{\Omega_{r, AISC}} = 4.610 \text{ kip}$$

Spade bearing capacity: $T_{a.brg.spade} := \frac{2.4 \cdot F_{u.1018} \cdot t_{sb} \cdot D_{bolt}}{\Omega_{r.AISC}} = 13.781 \text{ kip}$

Spade tearout capacity: $T_{a.tear.spade} := \frac{1.2 \cdot F_{u.1018} \cdot t_{sb} \cdot L_{c.sb}}{\Omega_{r.AISC}} = 4.806 \text{ kip}$

Spade block shear: $T_{a.block.spade} := \left(F_{u.1018} \cdot \frac{A_{n.sb}}{2} \downarrow + 0.6 \min(F_{y.1018} \cdot e_{sb.hole} \cdot t_{sb}, F_{u.1018} \cdot L_{c.sb} \cdot t_{sb}) \right) \cdot \frac{1}{\Omega_{r.AISC}} = 4.708 \text{ kip}$

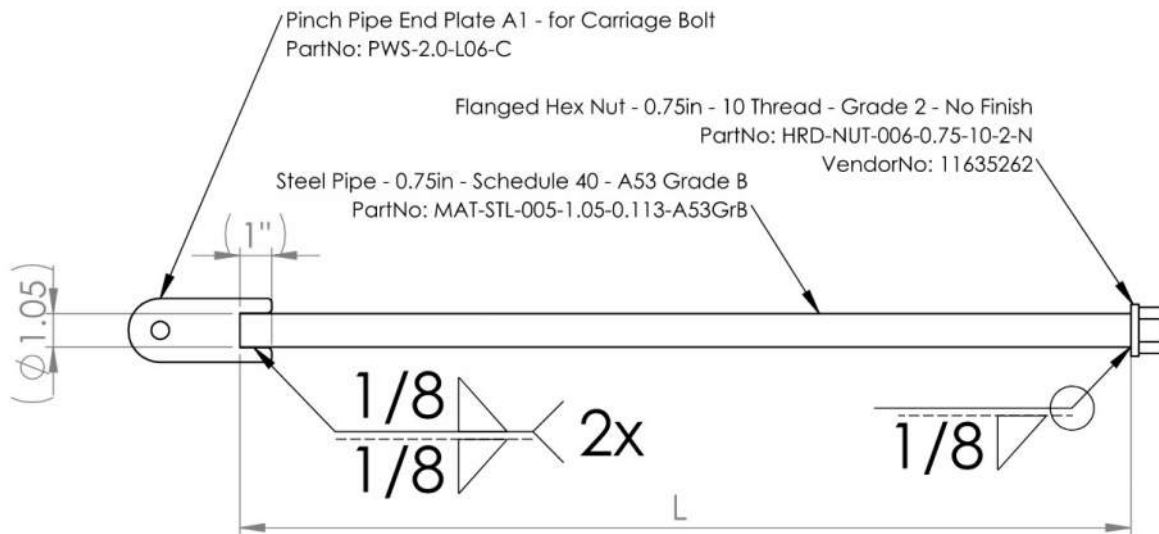
Spade bolt tension capacity: $T_{a.sb} := \min(T_{a.rod}, T_{a.y.spade}, T_{a.u.spade}, T_{a.brg.spade}, T_{a.tear.spade}, T_{a.block.spade}, V_{a.bolt})$

$T_{a.sb} = 4.610 \text{ kip}$

Spade bolt compression capacity: $P_{a.sb} := \min(T_{a.rod}, T_{a.y.spade}, T_{a.u.spade}, T_{a.brg.spade}, V_{a.bolt})$

$P_{a.sb} = 4.610 \text{ kip}$

Pinch Pipe Capacity:



Pipe outside diameter:

$$D_{\text{pipe}} := \begin{bmatrix} 1.050 \\ 1.300 \end{bmatrix} \text{ in}$$

$$\begin{bmatrix} \text{"0.75 Schedue 40 Pipe"} \\ \text{"1.00 Schedule 10 Pipe"} \end{bmatrix}$$

Pipe thickness:

$$t_{\text{pipe}} := \begin{bmatrix} 0.105 \\ 0.109 \end{bmatrix} \text{ in}$$

0.75" Sch 40
Pipe Lengths:

1.00" Sch 10
Pipe Lengths:

Bolt hole width:

$$D_{\text{ep.hole}} := 0.56 \text{ in}$$

Weld thickness:

$$t_{\text{weld}} := 0.125 \text{ in}$$

Weld length:

$$L_{\text{weld}} := 1 \text{ in}$$

End plate thickness:

$$t_{\text{ep}} := 0.25 \text{ in}$$

End plate width:

$$B_{\text{ep}} := 2.00 \text{ in}$$

$$L_{\text{pp.1}} := \begin{bmatrix} 17 \\ 22 \\ 29 \\ 37 \\ 45 \\ 53 \\ 61 \\ 69 \\ 77 \\ 85 \\ 93 \\ 101 \end{bmatrix} \text{ in}$$

$$L_{\text{pp.2}} := \begin{bmatrix} 17 \\ 22 \\ 29 \\ 37 \\ 45 \\ 53 \\ 61 \\ 69 \\ 77 \\ 85 \\ 93 \\ 101 \end{bmatrix} \text{ in}$$

End plate tab width on
either side of pipe:

$$B_{\text{tab}} := \left[\frac{B_{\text{ep}} - 1.09 \text{ in}}{2.38 \text{ in} - 1.38 \text{ in}} \right] \cdot \frac{1}{2} = \begin{bmatrix} 0.455 \\ 0.500 \end{bmatrix} \text{ in}$$

End plate distance from
hole to plate end:

$$e_{\text{ep.hole}} := 1.00 \text{ in}$$

End plate unbraced length:

$$L_{\text{b.ep}} := 2.5 \text{ in}$$

Pinch pipe radius
of gyration:

$$r_{y,pp_i} := \frac{\sqrt{D_{pipe_i}^2 + (D_{pipe_i} - 2 \cdot t_{pipe_i})^2}}{4} = \begin{bmatrix} 0.336 \\ 0.423 \end{bmatrix} \text{ in}$$

Pinch pipe area:

$$A_{pp_i} := \frac{\pi}{4} \cdot (D_{pipe_i}^2 - (D_{pipe_i} - 2 \cdot t_{pipe_i})^2) = \begin{bmatrix} 0.312 \\ 0.408 \end{bmatrix} \text{ in}^2$$

End plate end distance:

$$L_{c,ep} := e_{ep,hole} - \frac{D_{ep,hole}}{2} = 0.720 \text{ in}$$

Weld capacity at end plate:

$$V_{a,weld.1} := \frac{F_{u,weld} \cdot L_{weld} \cdot 4 \cdot t_{weld} \cdot 0.707}{\Omega_{r,AISC}} = 7.424 \text{ kip}$$

Weld capacity at nut:

$$V_{a,weld.2} := \frac{F_{u,weld} \cdot D_{pipe} \cdot \pi \cdot t_{weld} \cdot 0.707}{\Omega_{r,AISC}} = \begin{bmatrix} 6.122 \\ 7.580 \end{bmatrix} \text{ kip}$$

End plate yield
capacity:

$$T_{a,y,ep.1} := \frac{F_{y,A36} \cdot t_{ep} \cdot B_{ep}}{\Omega_{y,AISC}} = 10.778 \text{ kip}$$

End plate yield
capacity 2:

$$T_{a,y,ep.2} := \frac{F_{y,A36} \cdot t_{ep} \cdot 2 \cdot B_{tab}}{\Omega_{y,AISC}} = \begin{bmatrix} 4.904 \\ 5.389 \end{bmatrix} \text{ kip}$$

End plate rupture
capacity 1:

$$T_{a,u,ep.1} := \frac{F_{u,A36} \cdot t_{ep} \cdot (B_{ep} - D_{ep,hole})}{\Omega_{r,AISC}} = 10.440 \text{ kip}$$

End plate rupture
capacity 2:

$$T_{a,u,ep.2} := \frac{F_{u,A36} \cdot t_{ep} \cdot 2 \cdot B_{tab}}{\Omega_{r,AISC}} = \begin{bmatrix} 6.598 \\ 7.250 \end{bmatrix} \text{ kip}$$

End plate compression
capacity:

$$r_{y,ep} := \frac{t_{ep}}{\sqrt{12}} = 0.072 \text{ in} \quad F_{e,ep} := \frac{\pi^2 \cdot E_s}{\left(\frac{L_{b,ep}}{r_{y,ep}}\right)^2} = 238.515 \text{ ksi} \quad \frac{F_{y,A36}}{F_{e,ep}} = 0.151$$

$$F_{cr} := 0.658^{\frac{F_{y,A36}}{F_{e,ep}}} \cdot F_{y,A36} = 33.796 \text{ ksi}$$

$$P_{a,ep} := \frac{t_{ep} \cdot B_{ep} \cdot F_{cr}}{\Omega_{y,AISC}} = 10.119 \text{ kip}$$

End plate bearing
capacity:

$$T_{a,brg,ep} := \frac{2.4 \cdot F_{u,A36} \cdot t_{ep} \cdot D_{bolt}}{\Omega_{r,AISC}} = 8.700 \text{ kip}$$

End plate tearout
capacity:

$$T_{a,tear,ep} := \frac{1.2 \cdot F_{u,A36} \cdot t_{ep} \cdot L_{c,ep}}{\Omega_{r,AISC}} = 6.264 \text{ kip}$$

Block shear capacity:

$$T_{a,block,ep} := \left(F_{u,A36} \cdot (B_{ep} - D_{ep,hole}) \cdot 0.5 \downarrow + 0.6 \min(F_{y,A36} \cdot e_{ep,hole}, F_{u,A36} \cdot L_{c,ep}) \right) \cdot \frac{t_{ep}}{\Omega_{r,AISC}} = 7.920 \text{ kip}$$

3/4" Sch 40 Pipe
compression capacity:

$$F_{e,pp,1j} := \frac{\pi^2 \cdot E_s}{\left(\frac{L_{pp,1j}}{r_{y,pp1}} \right)^2} = \begin{bmatrix} 111.919 \\ 66.827 \\ 38.460 \\ 23.626 \\ 15.973 \\ 11.515 \\ 8.692 \\ 6.794 \\ 5.455 \\ 4.477 \\ 3.740 \\ 3.171 \end{bmatrix} \text{ ksi}$$

$$F_{cr,pp,1j} := \begin{cases} \text{if } \frac{F_{y,A36}}{F_{e,pp,1j}} \leq 2.25 \\ \left| \frac{F_{y,A36}}{F_{e,pp,1j}} \right| \cdot F_{y,A36} \\ \text{else} \\ 0.877 \cdot F_{e,pp,1j} \end{cases} = \begin{bmatrix} 31.465 \\ 28.733 \\ 24.331 \\ 19.025 \\ 14.008 \\ 10.098 \\ 7.623 \\ 5.958 \\ 4.784 \\ 3.926 \\ 3.280 \\ 2.781 \end{bmatrix} \text{ ksi}$$

$$P_{n,pp,1,buckle_j} := \frac{F_{cr,pp,1j} \cdot A_{pp1}}{\Omega_{y,AISC}} = \begin{bmatrix} 5.873 \\ 5.363 \\ 4.542 \\ 3.551 \\ 2.615 \\ 1.885 \\ 1.423 \\ 1.112 \\ 0.893 \\ 0.733 \\ 0.612 \\ 0.519 \end{bmatrix} \text{ kip}$$

1.0" Sch 10 Pipe
compression capacity:

$$F_{e,pp,2_j} := \frac{\pi^2 \cdot E_s}{\left(\frac{L_{pp,2_j}}{r_{y,pp_2}} \right)^2} = \begin{bmatrix} 177.074 \\ 105.732 \\ 60.850 \\ 37.381 \\ 25.271 \\ 18.218 \\ 13.753 \\ 10.749 \\ 8.631 \\ 7.083 \\ 5.917 \\ 5.017 \end{bmatrix} \text{ ksi}$$

$$F_{cr,pp,2_j} := \begin{cases} \text{if } \frac{F_{y,A36}}{F_{e,pp,2_j}} \leq 2.25 \\ \left\| \frac{F_{y,A36}}{F_{e,pp,2_j}} \right\| 0.658 \cdot F_{y,A36} \\ \text{else} \\ \left\| 0.877 \cdot F_{e,pp,2_j} \right\| \end{cases} = \begin{bmatrix} 33.063 \\ 31.218 \\ 28.104 \\ 24.057 \\ 19.832 \\ 15.744 \\ 12.061 \\ 9.427 \\ 7.570 \\ 6.212 \\ 5.189 \\ 4.400 \end{bmatrix} \text{ ksi}$$

$$P_{n,pp,2,buckle_j} := \frac{F_{cr,pp,2_j} \cdot A_{pp_2}}{\Omega_{y,AISC}} = \begin{bmatrix} 8.075 \\ 7.624 \\ 6.863 \\ 5.875 \\ 4.843 \\ 3.845 \\ 2.946 \\ 2.302 \\ 1.849 \\ 1.517 \\ 1.267 \\ 1.074 \end{bmatrix} \text{ kip}$$

3/4" Sch 40 Pinch Pipe Capacities:

Tension:

$$T_{a.pp.1} := \min \left(\begin{array}{c} V_{a.bolt} \\ T_{a.sb} \\ V_{a.weld.1} \\ V_{a.weld.2_1} \\ T_{a.y.ep.1} \\ T_{a.y.ep.2_1} \\ T_{a.u.ep.1} \\ T_{a.u.ep.2_1} \\ T_{a.brg.ep} \\ T_{a.tear.ep} \\ T_{a.block.ep} \end{array} \right)$$

$$T_{a.pp.1} = 4.610 \text{ kip}$$

Compression:

$$P_{a.pp.1_j} := \min \left(\begin{array}{c} P_{a.sb} \\ V_{a.weld.1} \\ T_{a.y.ep.1} \\ T_{a.y.ep.2_1} \\ T_{a.u.ep.1} \\ T_{a.u.ep.2_1} \\ T_{a.brg.ep} \\ P_{a.ep} \\ P_{n.pp.1.buckle_j} \end{array} \right)$$

$$P_{a.pp.1} = \begin{bmatrix} 4.610 \\ 4.610 \\ 4.542 \\ 3.551 \\ 2.615 \\ 1.885 \\ 1.423 \\ 1.112 \\ 0.893 \\ 0.733 \\ 0.612 \\ 0.519 \end{bmatrix} \text{ kip}$$

1.0" Sch 40 Pinch Pipe Capacities:

Tension:

$$T_{a.pp.2} := \min \left(\begin{array}{c} V_{a.bolt} \\ T_{a.sb} \\ V_{a.weld.1} \\ V_{a.weld.2_2} \\ T_{a.y.ep.1} \\ T_{a.y.ep.2_2} \\ T_{a.u.ep.1} \\ T_{a.u.ep.2_2} \\ T_{a.brg.ep} \\ T_{a.tear.ep} \\ T_{a.block.ep} \end{array} \right)$$

$$T_{a.pp.2} = 4.610 \text{ kip}$$

Compression:

$$P_{a.pp.2_j} := \min \left(\begin{array}{c} P_{a.sb} \\ V_{a.weld.1} \\ T_{a.y.ep.1} \\ T_{a.y.ep.2_2} \\ T_{a.u.ep.1} \\ T_{a.u.ep.2_2} \\ T_{a.brg.ep} \\ P_{a.ep} \\ P_{n.pp.2.buckle_j} \end{array} \right)$$

$$P_{a.pp.2} = \begin{bmatrix} 4.610 \\ 4.610 \\ 4.610 \\ 4.610 \\ 3.845 \\ 2.946 \\ 2.302 \\ 1.849 \\ 1.517 \\ 1.267 \\ 1.074 \end{bmatrix} \text{ kip}$$

Angle Braces

L2x2x1/8:

L3x3x3/16:

Angle length:

Compression capacity:

Angle length:

Compression capacity:

$$L_{\text{angle.1}} := \begin{bmatrix} 0.0 \\ 0.5 \\ 1.0 \\ 1.5 \\ 2.0 \\ 2.5 \\ 3.0 \\ 3.5 \\ 4.0 \\ 4.5 \\ 5.0 \\ 5.5 \\ 6.0 \end{bmatrix} \text{ ft}$$

$$P_{\text{a.angle.1.buckle}} := \begin{bmatrix} 5.46 \\ 5.42 \\ 5.37 \\ 5.12 \\ 4.86 \\ 4.55 \\ 4.23 \\ 3.80 \\ 3.37 \\ 2.89 \\ 2.40 \\ 2.08 \\ 1.76 \end{bmatrix} \text{ kip}$$

$$L_{\text{angle.2}} := \begin{bmatrix} 3.0 \\ 3.5 \\ 4.0 \\ 4.5 \\ 5.0 \\ 5.5 \\ 6.0 \\ 6.5 \\ 7.0 \\ 7.5 \\ 8.0 \\ 8.5 \\ 9.0 \end{bmatrix} \text{ ft}$$

$$P_{\text{a.angle.2.buckle}} := \begin{bmatrix} 11.1 \\ 10.6 \\ 10.2 \\ 9.70 \\ 9.19 \\ 8.29 \\ 7.38 \\ 6.61 \\ 5.84 \\ 5.26 \\ 4.68 \\ 4.26 \\ 3.84 \end{bmatrix} \text{ kip}$$

Angle width:

$$B_{\text{angle}} := \begin{bmatrix} 2 \\ 3 \end{bmatrix} \text{ in}$$

Bolt diameter:

$$D_{\text{angle.bolt}} := 0.375 \text{ in}$$

Angle thickness:

$$t_{\text{angle}} := \begin{bmatrix} 0.125 \\ 0.1875 \end{bmatrix} \text{ in}$$

Bolt hole width:

$$D_{\text{angle.hole}} := 0.5625 \text{ in}$$

Bolt end distance:

$$e_{\text{angle.hole}} := 1 \text{ in}$$

Bolt end edge distance:

$$L_{\text{c.angle.hole}} := e_{\text{angle.hole}} - \frac{D_{\text{angle.hole}}}{2} = 0.719 \text{ in}$$

Angle leg gross area:

$$A_{\text{g.leg}_i} := B_{\text{angle}_i} \cdot t_{\text{angle}_i} = \begin{bmatrix} 0.250 \\ 0.563 \end{bmatrix} \text{ in}^2$$

Angle leg net area:

$$A_{\text{n.leg}_i} := (B_{\text{angle}_i} - D_{\text{angle.hole}}) \cdot t_{\text{angle}_i} = \begin{bmatrix} 0.180 \\ 0.457 \end{bmatrix} \text{ in}^2$$

Angle connection
yield capacity:

$$T_{\text{a.y.leg}} := \frac{F_{\text{y.A36}} \cdot A_{\text{g.leg}}}{\Omega_{\text{y.AISC}}} = \begin{bmatrix} 5.389 \\ 12.126 \end{bmatrix} \text{ kip}$$

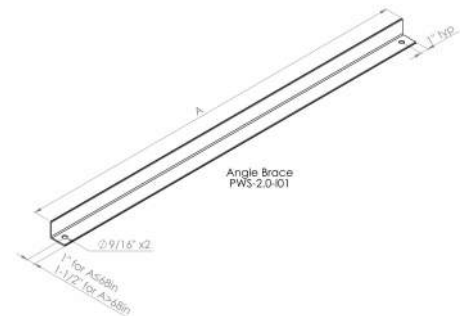
Angle connection
rupture capacity:

$$T_{\text{a.u.leg}} := \frac{F_{\text{u.A36}} \cdot A_{\text{n.leg}}}{\Omega_{\text{r.AISC}}} = \begin{bmatrix} 5.211 \\ 13.254 \end{bmatrix} \text{ kip}$$

Bolt bearing capacity:

$$T_{\text{a.brg.leg}} := \frac{2.4 \cdot F_{\text{u.A36}} \cdot D_{\text{bolt}} \cdot t_{\text{angle}}}{\Omega_{\text{r.AISC}}} = \begin{bmatrix} 4.350 \\ 6.525 \end{bmatrix} \text{ kip}$$

Note: Angle compression values provided above are taken from Table 4-12 in AISC Design Manual, 15th Ed.



Bolt tearout capacity:
$$T_{a.tear.leg} := \frac{1.2 \cdot F_{u.A36} \cdot L_{c.angle.hole} \cdot t_{angle}}{\Omega_{r.AISC}} = \left[\frac{3.127}{4.690} \right] \text{ kip}$$

Block shear capacity:
$$T_{a.block.leg_i} := \left(F_{u.A36} \cdot (B_{angle_i} - D_{angle.hole}) \cdot 0.5 \downarrow + 0.6 \min(F_{y.A36} \cdot e_{angle.hole}, F_{u.A36} \cdot L_{c.angle.hole}) \right) \cdot \frac{t_{angle_i}}{\Omega_{r.AISC}} = \left[\frac{3.955}{8.652} \right] \text{ kip}$$

L2x2x1/8 Capacity:

Tension capacity:
$$T_{a.angle.1} := \min(V_{a.bolt}, T_{a.y.leg_1}, T_{a.u.leg_1}, T_{a.brg.leg_1}, T_{a.tear.leg_1}, T_{a.block.leg_1})$$
 $T_{a.angle.1} = 3.127 \text{ kip}$

Compression capacity:
$$P_{a.angle.1_m} := \min(V_{a.bolt}, T_{a.y.leg_1}, T_{a.u.leg_1}, T_{a.brg.leg_1}, P_{a.angle.1.buckle_m})$$

L3x3x3/16 Capacity:

Tension capacity:
$$T_{a.angle.2} := \min(V_{a.bolt}, T_{a.y.leg_2}, T_{a.u.leg_2}, T_{a.brg.leg_2}, T_{a.tear.leg_2}, T_{a.block.leg_2})$$
 $T_{a.angle.2} = 4.690 \text{ kip}$

Compression capacity:
$$P_{a.angle.2_m} := \min(V_{a.bolt}, T_{a.y.leg_2}, T_{a.u.leg_2}, T_{a.brg.leg_2}, P_{a.angle.2.buckle_m})$$

L2x2x1/8 Compression Capacity:

$L_{angle.1} =$	0.000	$P_{a.angle.1} =$	4.350	kip
	0.500		4.350	
	1.000		4.350	
	1.500		4.350	
	2.000		4.350	
	2.500		4.350	
	3.000		4.230	
	3.500		3.800	
	4.000		3.370	
	4.500		2.890	
	5.000		2.400	
	5.500		2.080	
	6.000		1.760	

L3x3x3/16 Compression Capacity:

$L_{angle.2} =$	3.000	$P_{a.angle.2} =$	5.301	kip
	3.500		5.301	
	4.000		5.301	
	4.500		5.301	
	5.000		5.301	
	5.500		5.301	
	6.000		5.301	
	6.500		5.301	
	7.000		5.301	
	7.500		5.260	
	8.000		4.680	
	8.500		4.260	
	9.000		3.840	

Slotted Angle Braces

Slip critical connection:

Mean slip coefficient, class A surface

$$\mu := 0.30$$

Multiplier that represents the ratio of the mean installed bolt pretension to the specified minimum bolt pretension

$$D_u := 1.13$$

Factor for fillers between connected parts, ≥ 1

$$h_f := 1.0$$

Number of slip planes required to permit the connection to slip

$$n_s := 1.0$$

Safety factor, long slotted holes in slip critical connections

$$\Omega_{\text{slip}} := 2.14$$

Minimum fastener tension given in table J3.1

$$T_b := 12 \text{ kip}$$

Single bolt available slip resistance:
(EQN J3-4)

$$V_{n,\text{slip}} := \frac{\mu \cdot D_u \cdot h_f \cdot T_b \cdot n_s}{\Omega_{\text{slip}}} = 1.901 \text{ kip}$$

L2x2x1/8 Capacity:

Tension capacity:

$$T_{a,\text{angle}.1} := \min(V_{a,\text{bolt}}, T_{a,y,\text{leg}_1}, T_{a,u,\text{leg}_1}, T_{a,\text{block},\text{leg}_1}, V_{n,\text{slip}})$$

$$T_{a,\text{angle}.1} = 1.901 \text{ kip}$$

Compression capacity:

$$P_{a,\text{angle}.1_m} := \min(V_{a,\text{bolt}}, T_{a,y,\text{leg}_1}, T_{a,u,\text{leg}_1}, P_{a,\text{angle}.1,\text{buckle}_m}, V_{n,\text{slip}})$$

L3x3x3/16 Capacity:

Tension capacity:

$$T_{a,\text{angle}.2} := \min(V_{a,\text{bolt}}, T_{a,y,\text{leg}_2}, T_{a,u,\text{leg}_2}, T_{a,\text{block},\text{leg}_2}, V_{n,\text{slip}})$$

$$T_{a,\text{angle}.2} = 1.901 \text{ kip}$$

Compression capacity:

$$P_{a,\text{angle}.2_m} := \min(V_{a,\text{bolt}}, T_{a,y,\text{leg}_2}, T_{a,u,\text{leg}_2}, P_{a,\text{angle}.2,\text{buckle}_m}, V_{n,\text{slip}})$$

L2x2x1/8 Slotted Compression Capacity:

$L_{\text{angle.1}} =$	0.000	$P_{\text{a.angle.1}} =$	1.901	kip
	0.500		1.901	
	1.000		1.901	
	1.500		1.901	
	2.000		1.901	
	2.500		1.901	
	3.000		1.901	
	3.500		1.901	
	4.000		1.901	
	4.500		1.901	
	5.000		1.901	
	5.500		1.901	

L3x3x3/16 Slotted Compression Capacity:

$L_{\text{angle.2}} =$	3.000	$P_{\text{a.angle.2}} =$	1.901	kip
	3.500		1.901	
	4.000		1.901	
	4.500		1.901	
	5.000		1.901	
	5.500		1.901	
	6.000		1.901	
	6.500		1.901	
	7.000		1.901	
	7.500		1.901	
	8.000		1.901	
	8.500		1.901	

Panelized Wall 2.0 - Hinge Calculations

Standard Variables

Safety Factors:

Yield: $\Omega_{y.AISC} := 1.67$

Rupture: $\Omega_{r.AISC} := 2.0$

A36 Steel:

Yield: $F_{y.A36} := 36 \text{ ksi}$

Tensile: $F_{u.A36} := 58 \text{ ksi}$

A500 Grade B Steel - Rectangular Shapes:

Yield: $F_{y.A500.rect} := 46 \text{ ksi}$

Tensile: $F_{u.A500.rect} := 58 \text{ ksi}$

AISI 1018:

Yield: $F_{y.1018} := 53.7 \text{ ksi}$

Tensile: $F_{u.1018} := 63.8 \text{ ksi}$

A53 Steel:

Yield: $F_{y.A53} := 35 \text{ ksi}$

Tensile: $F_{u.A53} := 60 \text{ ksi}$

A325 (Grade 5) Bolts:

Tensile: $F_{u.A325} := 120 \text{ ksi}$

Weld Filler:

Shear: $F_{u.weld} := 70 \text{ ksi} \cdot 0.6 = 42.000 \text{ ksi}$

Bolt Properties

Bolt diameter: $D_{bolt} := 0.5 \text{ in}$

Bolt shear capacity: $V_{a.bolt} := D_{bolt}^2 \cdot \frac{\pi}{4} \cdot F_{u.A325} \cdot \frac{0.75 \cdot 0.6}{\Omega_{r.AISC}} = 5.301 \text{ kip}$

Bolt tension capacity: $T_{a.bolt} := D_{bolt}^2 \cdot \frac{\pi}{4} \cdot F_{u.A325} \cdot \frac{0.75}{\Omega_{r.AISC}} = 8.836 \text{ kip}$

Note: The calculations performed below are representative of the calculations used to develop charts in Excel for the capacity of the hinge under various loading conditions. Reference the separate hinge capacity charts.

Hinge Capacity Review

Stainless steel
material strength:

$$F_{y,hinge} := 30 \text{ ksi}$$

$$F_{u,hinge} := 70 \text{ ksi}$$

Pin diameter:

$$D_{pin} := 0.375 \text{ in}$$

Hinge thickness:

$$t_{hinge} := 0.180 \text{ in}$$

Washer plate
thickness:

$$t_{wash} := 0.25 \text{ in}$$

Pin shear planes:

$$n_{plane} := 4$$

Bolt diameter:

$$D_{bolt} = 0.500 \text{ in}$$

Bolt edge distance:

$$e_{bolt,hinge} := 1 \text{ in}$$

Bolt hole edge distance:

$$L_{c,hinge} := e_{bolt,hinge} - \frac{D_{bolt}}{2} - \frac{1}{32} \text{ in} = 0.719 \text{ in}$$

Distance from pin
to edge of hinge:

$$B_{hinge} := 2.50 \text{ in}$$

Hinge length:

$$L_{hinge} := 5.00 \text{ in}$$

Knuckle length:

$$L_{knuckle} := 1.2 \text{ in}$$

Knuckle spacing:

$$S_{knuckle} := 2 \cdot L_{knuckle} = 2.400 \text{ in}$$

Bolt spacing:

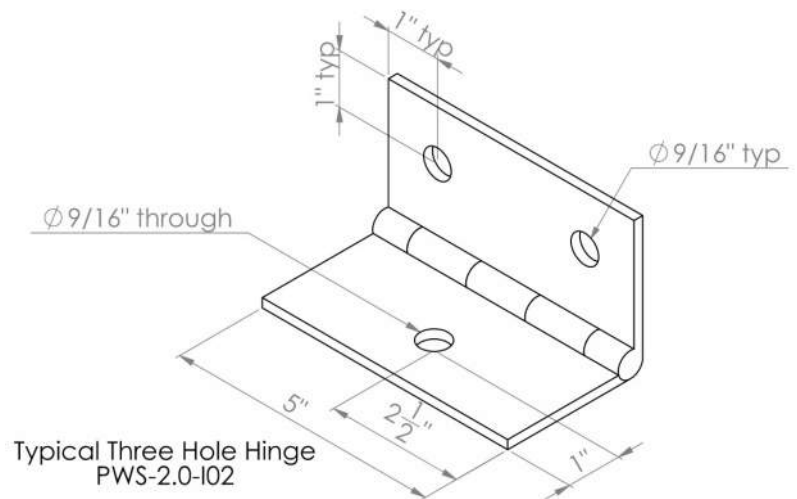
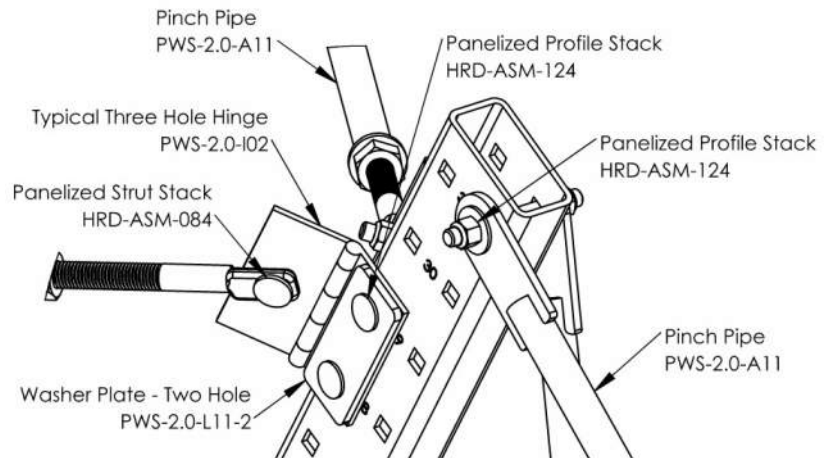
$$S_{bolt} := L_{hinge} - 2 \cdot e_{bolt,hinge} = 3.000 \text{ in}$$

Distance from
bolt to pin:

$$e_{pin} := B_{hinge} - e_{bolt,hinge} = 1.500 \text{ in}$$

Prying length:

$$b'_{pry,hinge} := e_{pin} - \frac{D_{bolt}}{2} - \frac{1}{32} \text{ in} = 1.219 \text{ in}$$



Bolt bearing
capacity:

$$V_{a.brg.hinge} := \frac{2.4 \cdot F_{u.hinge} \cdot D_{bolt} \cdot t_{hinge}}{\Omega_{r.AISC}} = 7.560 \text{ kip}$$

Bolt tearout
capacity:

$$V_{a.tear.hinge} := \frac{1.2 \cdot F_{u.hinge} \cdot t_{hinge} \cdot L_{c.hinge}}{\Omega_{r.AISC}} = 5.434 \text{ kip}$$

Block shear
capacity:

$$V_{a.block.hinge} := \frac{t_{hinge}}{\Omega_{r.AISC}} \cdot \left(L_{c.hinge} \cdot F_{u.hinge} + 0.6 \cdot \min(e_{bolt.hinge} \cdot F_{y.hinge}, L_{c.hinge} \cdot F_{u.hinge}) \right) = 6.148 \text{ kip}$$

Pin shear capacity:

$$V_{a.pin} := D_{pin}^2 \cdot \frac{\pi}{4} \cdot 0.6 \cdot \frac{F_{u.hinge}}{\Omega_{r.AISC}} = 2.319 \text{ kip}$$

Hinge tension yield
capacity (straight pull):

$$T_{a.y1.hinge} := \frac{t_{hinge} \cdot 2 \cdot L_{knuckle} \cdot F_{y.hinge}}{\Omega_{y.AISC}} = 7.760 \text{ kip}$$

Hinge tension rupture
capacity (straight pull):

$$T_{a.u1.hinge} := \frac{t_{hinge} \cdot 2 \cdot L_{knuckle} \cdot F_{u.hinge}}{\Omega_{r.AISC}} = 15.120 \text{ kip}$$

Hinge tension yield
capacity (side pull):

$$T_{a.y2.hinge} := \frac{t_{hinge} \cdot B_{hinge} \cdot F_{y.hinge}}{\Omega_{y.AISC}} = 8.084 \text{ kip}$$

Hinge tension rupture
capacity (side pull):

$$T_{a.u2.hinge} := \frac{t_{hinge} \cdot (B_{hinge} - (D_{bolt} + 0.125 \text{ in})) \cdot F_{u.hinge}}{\Omega_{r.AISC}} = 11.813 \text{ kip}$$

Hinge prying
capacity:

$$T_{a.pry.hinge} := \frac{t_{hinge}^2 \cdot L_{hinge} \cdot F_{u.hinge}}{\Omega_{y.AISC} \cdot 4 \cdot b_{pry.hinge}} = 1.393 \text{ kip}$$

Washer plate
prying capacity:

$$T_{a.pry.wash} := \frac{t_{wash}^2 \cdot L_{hinge} \cdot F_{u.A36}}{\Omega_{y.AISC} \cdot 4 \cdot b_{pry.hinge}} = 2.226 \text{ kip}$$

Side pull capacity
based on pin shear:

$$T_{a.side.pin} := \frac{2 \cdot V_{a.pin} \cdot s_{knuckle}}{e_{pin}} = 7.422 \text{ kip}$$

Side pull capacity
based on knuckle
tension:

$$T_{a.side.knuckle} := \frac{\min(T_{a.y1.hinge}, T_{a.u1.hinge}) \cdot s_{knuckle}}{e_{pin}} = 12.417 \text{ kip}$$

Bolt shear limiting
capacity:

$$V_{a.bolt.limit} := \min(V_{a.bolt}, V_{a.brg.hinge}, V_{a.tear.hinge}, V_{a.block.hinge}) = 5.301 \text{ kip}$$

Side pull capacity
based on bolt
shear (flat hinge):

Constraints Values	$T_{a.side.bolt.180.temp} := 1 \text{ kip}$
	$V_{a.bolt.limit} = \sqrt{\left(\frac{T_{a.side.bolt.180.temp}}{2}\right)^2 + \left(\frac{T_{a.side.bolt.180.temp} \cdot 2 \cdot e_{pin}}{s_{bolt}}\right)^2}$
Solver	$T_{a.side.bolt.180} := \text{find}(T_{a.side.bolt.180.temp}) = 4.742 \text{ kip}$

Side pull capacity
based on bolt
shear (90° hinge):

Constraints Values	$T_{a.side.bolt.90.temp} := 1 \text{ kip}$
	$V_{a.bolt.limit} = \sqrt{\left(\frac{T_{a.side.bolt.90.temp}}{2}\right)^2 + \left(\frac{T_{a.side.bolt.90.temp} \cdot e_{pin}}{s_{bolt}}\right)^2}$
Solver	$T_{a.side.bolt.90} := \text{find}(T_{a.side.bolt.90.temp}) = 7.497 \text{ kip}$

Side pull capacity
based on prying
(90° hinge):

$$T_{a.side.pry} := (T_{a.pry.hinge} + T_{a.pry.wash}) \cdot \frac{2}{3} \cdot \frac{(L_{hinge} - 1.30 \text{ in})}{e_{pin}} = 5.952 \text{ kip}$$

Straight tension on flat hinge:

$$T_{a.hinge.180.str} := \min \left(\begin{matrix} V_{a.bolt} \\ V_{a.brg.hinge} \\ V_{a.tear.hinge} \\ 2 \cdot V_{a.block.hinge} \\ n_{plane} \cdot V_{a.pin} \\ T_{a.y1.hinge} \\ T_{a.u1.hinge} \end{matrix} \right) = 5.301 \text{ kip}$$

Straight compression on flat hinge:

$$P_{a.hinge.180.str} := \min \left(\begin{matrix} V_{a.bolt} \\ V_{a.brg.hinge} \\ n_{plane} \cdot V_{a.pin} \\ T_{a.y1.hinge} \\ T_{a.u1.hinge} \end{matrix} \right) = 5.301 \text{ kip}$$

Straight tension on bent hinge (90°):

$$T_{a.hinge.90.str} := \min \left(\begin{matrix} V_{a.bolt} \\ V_{a.brg.hinge} \\ V_{a.tear.hinge} \\ T_{a.pry.hinge} + T_{a.pry.wash} \\ 2 \cdot T_{a.bolt} \\ n_{plane} \cdot V_{a.pin} \\ T_{a.y1.hinge} \\ T_{a.u1.hinge} \end{matrix} \right) = 3.619 \text{ kip}$$

Straight compression on bent hinge (90°):

$$P_{a.hinge.90.str} := \min \left(\begin{matrix} V_{a.bolt} \\ V_{a.brg.hinge} \\ n_{plane} \cdot V_{a.pin} \\ T_{a.y1.hinge} \\ T_{a.u1.hinge} \end{matrix} \right) = 5.301 \text{ kip}$$

Side load on flat hinge:

$$P_{a.hinge.180.side} := \min \begin{pmatrix} V_{a.bolt} \\ V_{a.brg.hinge} \\ T_{a.y2.hinge} \\ T_{a.u2.hinge} \\ T_{a.side.pin} \\ T_{a.side.knuckle} \\ T_{a.side.bolt.180} \end{pmatrix} = 4.742 \text{ kip}$$

Side load on bent hinge (90°):

$$P_{a.hinge.90.side} := \min \begin{pmatrix} V_{a.bolt} \\ V_{a.brg.hinge} \\ T_{a.y2.hinge} \\ T_{a.u2.hinge} \\ T_{a.side.pin} \\ T_{a.side.knuckle} \\ T_{a.side.bolt.90} \\ T_{a.side.pry} \end{pmatrix} = 5.301 \text{ kip}$$

Hinge Capacity Review - Brace Side

5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
7.56 KIP	$V_{a,brg,hinge}$: Bolt Bearing Capacity on Hinge
2.32 KIP	$V_{a,pin}$: Pin shear capacity

Brace Angle DEG	Tension Capacity Review									
	Trial Capacity KIP	Bolt Tearout Length IN	Bolt Tearout Cap. KIP	Block Shear Cap. KIP	Knuckle Shear KIP	Knuckle Axial KIP	Bolt Strength Ratio	Knuckle Strength Ratio	Pin Strength Ratio	Controlling Strength Ratio
0°	5.29	0.719	5.43	15.40	0.00	2.65	0.998	0.682	0.570	0.998
5°	5.29	0.723	5.46	14.81	0.23	2.92	0.998	0.763	0.630	0.998
10°	5.29	0.734	5.55	14.22	0.46	3.18	0.998	0.858	0.685	0.998
15°	5.29	0.754	5.70	13.64	0.68	3.41	0.998	0.965	0.735	0.998
20°	4.92	0.783	5.92	13.07	0.84	3.36	0.928	0.997	0.725	0.997
25°	4.50	0.822	6.22	12.52	0.95	3.23	0.849	0.999	0.696	0.999
30°	4.15	0.873	6.60	11.99	1.04	3.09	0.783	0.996	0.667	0.996
35°	3.88	0.940	7.10	11.49	1.11	2.98	0.732	0.996	0.642	0.996
40°	3.67	1.024	7.74	11.02	1.18	2.88	0.692	0.999	0.621	0.999
45°	3.49	1.133	8.57	10.58	1.23	2.78	0.658	0.996	0.598	0.996
50°	3.36	1.274	9.64	10.17	1.29	2.69	0.634	0.998	0.580	0.998
55°	3.25	1.462	11.05	9.81	1.33	2.60	0.613	0.996	0.560	0.996
60°	3.18	1.719	12.99	9.49	1.38	2.52	0.600	0.998	0.542	0.998
65°	3.13	2.085	15.76	9.22	1.42	2.43	0.590	0.999	0.525	0.999
70°	3.10	2.219	16.77	8.99	1.46	2.35	0.585	0.997	0.507	0.997
75°	3.10	2.219	16.77	8.81	1.50	2.27	0.585	0.999	0.490	0.999
80°	3.11	2.219	16.77	8.68	1.53	2.18	0.587	0.996	0.471	0.996
85°	3.15	2.219	16.77	8.60	1.57	2.10	0.594	0.995	0.452	0.995
90°	3.22	2.219	16.77	8.58	1.61	2.01	0.607	0.997	0.434	0.997

Compression Capacity Review						
Trial Capacity KIP	Knuckle Shear KIP	Knuckle Axial KIP	Bolt Strength Ratio	Knuckle Strength Ratio	Pin Strength Ratio	Controlling Strength Ratio
5.29	0.00	2.65	0.998	0.682	0.570	0.998
5.29	0.23	2.92	0.998	0.763	0.630	0.998
5.29	0.46	3.18	0.998	0.858	0.685	0.998
5.29	0.68	3.41	0.998	0.965	0.735	0.998
4.92	0.84	3.36	0.928	0.997	0.725	0.997
4.50	0.95	3.23	0.849	0.999	0.696	0.999
4.15	1.04	3.09	0.783	0.996	0.667	0.996
3.88	1.11	2.98	0.732	0.996	0.642	0.996
3.67	1.18	2.88	0.692	0.999	0.621	0.999
3.49	1.23	2.78	0.658	0.996	0.598	0.996
3.35	1.28	2.68	0.632	0.995	0.578	0.995
3.25	1.33	2.60	0.613	0.996	0.560	0.996
3.18	1.38	2.52	0.600	0.998	0.542	0.998
3.13	1.42	2.43	0.590	0.999	0.525	0.999
3.10	1.46	2.35	0.585	0.997	0.507	0.997
3.09	1.49	2.27	0.583	0.995	0.488	0.995
3.11	1.53	2.18	0.587	0.996	0.471	0.996
3.15	1.57	2.10	0.594	0.995	0.452	0.995
3.22	1.61	2.01	0.607	0.997	0.434	0.997



Hinge Capacity Review - Profile/Ledger Side

180°	Hinge Angle	0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity	5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
0.25 IN	Washer Thickness	1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity	8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
				2.32 KIP	$V_{a,pin}$: Pin shear capacity

Tension Capacity Review													
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	2.65	0.00	0.00	2.65	7.08	0.499	0.000	0.499	10.603
5°	5.29	5.29	0.23	2.92	2.92	0.00	0.00	3.16	6.22	0.596	0.000	0.596	8.869
10°	5.29	5.29	0.46	3.18	3.18	0.00	0.00	3.67	5.37	0.692	0.000	0.692	7.648
15°	5.29	5.29	0.68	3.41	3.41	0.00	0.00	4.15	4.57	0.783	0.000	0.783	6.754
20°	4.92	4.92	0.84	3.36	3.36	0.00	0.00	4.29	4.34	0.809	0.000	0.809	6.083
25°	4.50	4.50	0.95	3.23	3.23	0.00	0.00	4.29	4.34	0.808	0.000	0.808	5.567
30°	4.15	4.15	1.04	3.09	3.09	0.00	0.00	4.26	4.39	0.803	0.000	0.803	5.165
35°	3.88	3.88	1.11	2.98	2.98	0.00	0.00	4.24	4.42	0.800	0.000	0.800	4.850
40°	3.67	3.67	1.18	2.88	2.88	0.00	0.00	4.23	4.44	0.797	0.000	0.797	4.602
45°	3.49	3.49	1.23	2.78	2.78	0.00	0.00	4.20	4.49	0.791	0.000	0.791	4.410
50°	3.36	3.36	1.29	2.69	2.69	0.00	0.00	4.18	4.52	0.788	0.000	0.788	4.263
55°	3.25	3.25	1.33	2.60	2.60	0.00	0.00	4.15	4.58	0.782	0.000	0.782	4.155
60°	3.18	3.18	1.38	2.52	2.52	0.00	0.00	4.13	4.60	0.779	0.000	0.779	4.082
65°	3.13	3.13	1.42	2.43	2.43	0.00	0.00	4.11	4.64	0.774	0.000	0.774	4.042
70°	3.10	3.10	1.46	2.35	2.35	0.00	0.00	4.08	4.69	0.769	0.000	0.769	4.032
75°	3.10	3.10	1.50	2.27	2.27	0.00	0.00	4.06	4.73	0.765	0.000	0.765	4.052
80°	3.11	3.11	1.53	2.18	2.18	0.00	0.00	4.02	4.79	0.758	0.000	0.758	4.103
85°	3.15	3.15	1.57	2.10	2.10	0.00	0.00	3.99	4.84	0.752	0.000	0.752	4.186
90°	3.22	3.22	1.61	2.01	2.01	0.00	0.00	3.96	4.88	0.748	0.000	0.748	4.306

Compression Capacity Review								
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity	
KIP	KIP	KIP	KIP	KIP	KIP		KIP	KIP
5.29	5.29	0.00	2.645	2.65	2.65	0.499	10.60	
5.29	5.29	0.23	2.92	2.92	3.16	0.596	8.87	
5.29	5.29	0.46	3.18	3.18	3.67	0.692	7.65	
5.29	5.29	0.68	3.41	3.41	4.15	0.783	6.75	
4.92	4.92	0.84	3.36	3.36	4.29	0.809	6.08	
4.50	4.50	0.95	3.23	3.23	4.29	0.808	5.57	
4.15	4.15	1.04	3.09	3.09	4.26	0.803	5.16	
3.88	3.88	1.11	2.98	2.98	4.24	0.800	4.85	
3.67	3.67	1.18	2.88	2.88	4.23	0.797	4.60	
3.49	3.49	1.23	2.78	2.78	4.20	0.791	4.41	
3.35	3.35	1.28	2.68	2.68	4.17	0.786	4.26	
3.25	3.25	1.33	2.60	2.60	4.15	0.782	4.16	
3.18	3.18	1.38	2.52	2.52	4.13	0.779	4.08	
3.13	3.13	1.42	2.43	2.43	4.11	0.774	4.04	
3.10	3.10	1.46	2.35	2.35	4.08	0.769	4.03	
3.09	3.09	1.49	2.27	2.27	4.04	0.763	4.05	
3.11	3.11	1.53	2.18	2.18	4.02	0.758	4.10	
3.15	3.15	1.57	2.10	2.10	3.99	0.752	4.19	
3.22	3.22	1.61	2.01	2.01	3.96	0.748	4.31	



Hinge Capacity Review - Profile/Ledger Side

170°	Hinge Angle
0.25 IN	Washer Thickness

0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity
1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity

5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
2.32 KIP	$V_{a,pin}$: Pin shear capacity

	Tension Capacity Review												
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	2.60	0.46	1.15	2.60	7.15	0.491	0.254	0.491	10.766
5°	5.29	5.29	0.23	2.92	2.88	0.51	1.27	3.12	6.29	0.588	0.280	0.588	8.995
10°	5.29	5.29	0.46	3.18	3.13	0.55	1.38	3.62	5.45	0.683	0.305	0.683	7.749
15°	5.29	5.29	0.68	3.41	3.36	0.59	1.48	4.10	4.65	0.774	0.327	0.774	6.839
20°	4.92	4.92	0.84	3.36	3.31	0.58	1.46	4.24	4.42	0.799	0.323	0.799	6.155
25°	4.50	4.50	0.95	3.23	3.18	0.56	1.40	4.24	4.42	0.799	0.310	0.799	5.630
30°	4.15	4.15	1.04	3.09	3.05	0.54	1.34	4.21	4.46	0.795	0.297	0.795	5.221
35°	3.88	3.88	1.11	2.98	2.93	0.52	1.29	4.20	4.49	0.792	0.286	0.792	4.900
40°	3.67	3.67	1.18	2.88	2.84	0.50	1.25	4.19	4.51	0.789	0.276	0.789	4.649
45°	3.49	3.49	1.23	2.78	2.73	0.48	1.21	4.16	4.56	0.784	0.266	0.784	4.452
50°	3.36	3.36	1.29	2.69	2.65	0.47	1.17	4.14	4.59	0.781	0.258	0.781	4.303
55°	3.25	3.25	1.33	2.60	2.56	0.45	1.13	4.11	4.64	0.775	0.249	0.775	4.193
60°	3.18	3.18	1.38	2.52	2.48	0.44	1.09	4.09	4.66	0.772	0.241	0.772	4.118
65°	3.13	3.13	1.42	2.43	2.40	0.42	1.06	4.07	4.70	0.768	0.234	0.768	4.076
70°	3.10	3.10	1.46	2.35	2.32	0.41	1.02	4.04	4.75	0.763	0.226	0.763	4.065
75°	3.10	3.10	1.50	2.27	2.24	0.39	0.99	4.02	4.78	0.759	0.218	0.759	4.084
80°	3.11	3.11	1.53	2.18	2.15	0.38	0.95	3.99	4.84	0.752	0.210	0.752	4.134
85°	3.15	3.15	1.57	2.10	2.07	0.36	0.91	3.96	4.89	0.747	0.201	0.747	4.217
90°	3.22	3.22	1.61	2.01	1.98	0.35	0.87	3.94	4.93	0.742	0.193	0.742	4.337

Compression Capacity Review							
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity
KIP	KIP	KIP	KIP	KIP	KIP		KIP
5.29	5.29	0.00	2.645	2.60	2.60	0.491	10.77
5.29	5.29	0.23	2.92	2.88	3.12	0.588	9.00
5.29	5.29	0.46	3.18	3.13	3.62	0.683	7.75
5.29	5.29	0.68	3.41	3.36	4.10	0.774	6.84
4.92	4.92	0.84	3.36	3.31	4.24	0.799	6.15
4.50	4.50	0.95	3.23	3.18	4.24	0.799	5.63
4.15	4.15	1.04	3.09	3.05	4.21	0.795	5.22
3.88	3.88	1.11	2.98	2.93	4.20	0.792	4.90
3.67	3.67	1.18	2.88	2.84	4.19	0.789	4.65
3.49	3.49	1.23	2.78	2.73	4.16	0.784	4.45
3.35	3.35	1.28	2.68	2.64	4.13	0.779	4.30
3.25	3.25	1.33	2.60	2.56	4.11	0.775	4.19
3.18	3.18	1.38	2.52	2.48	4.09	0.772	4.12
3.13	3.13	1.42	2.43	2.40	4.07	0.768	4.08
3.10	3.10	1.46	2.35	2.32	4.04	0.763	4.06
3.09	3.09	1.49	2.27	2.23	4.01	0.757	4.08
3.11	3.11	1.53	2.18	2.15	3.99	0.752	4.13
3.15	3.15	1.57	2.10	2.07	3.96	0.747	4.22
3.22	3.22	1.61	2.01	1.98	3.94	0.742	4.34



Hinge Capacity Review - Profile/Ledger Side

160°	Hinge Angle	0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity	5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
0.25 IN	Washer Thickness	1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity	8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
				2.32 KIP	$V_{a,pin}$: Pin shear capacity

	Tension Capacity Review												
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	2.49	0.90	2.26	2.49	7.34	0.469	0.500	0.500	10.582
5°	5.29	5.29	0.23	2.92	2.75	1.00	2.50	2.99	6.51	0.563	0.552	0.563	9.391
10°	5.29	5.29	0.46	3.18	2.99	1.09	2.72	3.48	5.69	0.656	0.601	0.656	8.066
15°	5.29	5.29	0.68	3.41	3.20	1.17	2.92	3.95	4.90	0.745	0.645	0.745	7.101
20°	4.92	4.92	0.84	3.36	3.16	1.15	2.88	4.09	4.67	0.771	0.636	0.771	6.378
25°	4.50	4.50	0.95	3.23	3.03	1.10	2.76	4.10	4.66	0.773	0.610	0.773	5.824
30°	4.15	4.15	1.04	3.09	2.91	1.06	2.65	4.08	4.69	0.769	0.585	0.769	5.394
35°	3.88	3.88	1.11	2.98	2.80	1.02	2.55	4.07	4.71	0.767	0.563	0.767	5.056
40°	3.67	3.67	1.18	2.88	2.71	0.99	2.46	4.06	4.72	0.766	0.544	0.766	4.791
45°	3.49	3.49	1.23	2.78	2.61	0.95	2.37	4.04	4.76	0.761	0.525	0.761	4.584
50°	3.36	3.36	1.29	2.69	2.53	0.92	2.30	4.02	4.78	0.759	0.508	0.759	4.426
55°	3.25	3.25	1.33	2.60	2.44	0.89	2.22	4.00	4.82	0.754	0.491	0.754	4.309
60°	3.18	3.18	1.38	2.52	2.36	0.86	2.15	3.99	4.84	0.752	0.476	0.752	4.229
65°	3.13	3.13	1.42	2.43	2.29	0.83	2.08	3.97	4.87	0.748	0.460	0.748	4.182
70°	3.10	3.10	1.46	2.35	2.21	0.80	2.01	3.94	4.91	0.744	0.444	0.744	4.167
75°	3.10	3.10	1.50	2.27	2.14	0.78	1.94	3.93	4.94	0.741	0.430	0.741	4.183
80°	3.11	3.11	1.53	2.18	2.05	0.75	1.87	3.90	4.99	0.735	0.413	0.735	4.230
85°	3.15	3.15	1.57	2.10	1.97	0.72	1.79	3.87	5.03	0.731	0.397	0.731	4.312
90°	3.22	3.22	1.61	2.01	1.89	0.69	1.72	3.85	5.06	0.727	0.380	0.727	4.430

Compression Capacity Review							
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity
KIP	KIP	KIP	KIP	KIP	KIP		KIP
5.29	5.29	0.00	2.645	2.49	2.49	0.469	11.28
5.29	5.29	0.23	2.92	2.75	2.99	0.563	9.39
5.29	5.29	0.46	3.18	2.99	3.48	0.656	8.07
5.29	5.29	0.68	3.41	3.20	3.95	0.745	7.10
4.92	4.92	0.84	3.36	3.16	4.09	0.771	6.38
4.50	4.50	0.95	3.23	3.03	4.10	0.773	5.82
4.15	4.15	1.04	3.09	2.91	4.08	0.769	5.39
3.88	3.88	1.11	2.98	2.80	4.07	0.767	5.06
3.67	3.67	1.18	2.88	2.71	4.06	0.766	4.79
3.49	3.49	1.23	2.78	2.61	4.04	0.761	4.58
3.35	3.35	1.28	2.68	2.52	4.01	0.757	4.43
3.25	3.25	1.33	2.60	2.44	4.00	0.754	4.31
3.18	3.18	1.38	2.52	2.36	3.99	0.752	4.23
3.13	3.13	1.42	2.43	2.29	3.97	0.748	4.18
3.10	3.10	1.46	2.35	2.21	3.94	0.744	4.17
3.09	3.09	1.49	2.27	2.13	3.92	0.739	4.18
3.11	3.11	1.53	2.18	2.05	3.90	0.735	4.23
3.15	3.15	1.57	2.10	1.97	3.87	0.731	4.31
3.22	3.22	1.61	2.01	1.89	3.85	0.727	4.43



Hinge Capacity Review - Profile/Ledger Side

150°	Hinge Angle	0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity	5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
0.25 IN	Washer Thickness	1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity	8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
				2.32 KIP	$V_{a,pin}$: Pin shear capacity

	Tension Capacity Review												
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	2.29	1.32	3.31	2.29	7.67	0.432	0.731	0.731	7.238
5°	5.29	5.29	0.23	2.92	2.53	1.46	3.65	2.77	6.87	0.532	0.808	0.808	6.550
10°	5.29	5.29	0.46	3.18	2.75	1.59	3.97	3.25	6.08	0.654	0.878	0.878	6.023
15°	5.29	5.29	0.68	3.41	2.95	1.71	4.26	3.70	5.32	0.802	0.942	0.942	5.614
20°	4.92	4.92	0.84	3.36	2.91	1.68	4.20	3.85	5.07	0.829	0.929	0.929	5.294
25°	4.50	4.50	0.95	3.23	2.80	1.61	4.03	3.87	5.04	0.800	0.892	0.892	5.046
30°	4.15	4.15	1.04	3.09	2.68	1.55	3.87	3.86	5.05	0.765	0.855	0.855	4.855
35°	3.88	3.88	1.11	2.98	2.58	1.49	3.73	3.86	5.06	0.737	0.823	0.823	4.712
40°	3.67	3.67	1.18	2.88	2.49	1.44	3.60	3.86	5.06	0.728	0.796	0.796	4.612
45°	3.49	3.49	1.23	2.78	2.40	1.39	3.47	3.84	5.08	0.725	0.767	0.767	4.550
50°	3.36	3.36	1.29	2.69	2.33	1.34	3.36	3.84	5.09	0.724	0.743	0.743	4.523
55°	3.25	3.25	1.33	2.60	2.25	1.30	3.24	3.82	5.12	0.720	0.717	0.720	4.512
60°	3.18	3.18	1.38	2.52	2.18	1.26	3.15	3.81	5.13	0.719	0.695	0.719	4.421
65°	3.13	3.13	1.42	2.43	2.11	1.22	3.04	3.80	5.15	0.717	0.673	0.717	4.365
70°	3.10	3.10	1.46	2.35	2.04	1.18	2.94	3.78	5.18	0.714	0.650	0.714	4.343
75°	3.10	3.10	1.50	2.27	1.97	1.14	2.84	3.77	5.19	0.712	0.628	0.712	4.354
80°	3.11	3.11	1.53	2.18	1.89	1.09	2.73	3.75	5.24	0.707	0.604	0.707	4.397
85°	3.15	3.15	1.57	2.10	1.82	1.05	2.62	3.73	5.27	0.704	0.580	0.704	4.474
90°	3.22	3.22	1.61	2.01	1.74	1.01	2.52	3.72	5.29	0.702	0.556	0.702	4.590

Compression Capacity Review							
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity
KIP	KIP	KIP	KIP	KIP	KIP		KIP
5.29	5.29	0.00	2.645	2.29	2.29	0.432	12.24
5.29	5.29	0.23	2.92	2.53	2.77	0.523	10.12
5.29	5.29	0.46	3.18	2.75	3.25	0.612	8.64
5.29	5.29	0.68	3.41	2.95	3.70	0.698	7.58
4.92	4.92	0.84	3.36	2.91	3.85	0.726	6.78
4.50	4.50	0.95	3.23	2.80	3.87	0.729	6.17
4.15	4.15	1.04	3.09	2.68	3.86	0.728	5.70
3.88	3.88	1.11	2.98	2.58	3.86	0.728	5.33
3.67	3.67	1.18	2.88	2.49	3.86	0.728	5.04
3.49	3.49	1.23	2.78	2.40	3.84	0.725	4.82
3.35	3.35	1.28	2.68	2.32	3.83	0.722	4.64
3.25	3.25	1.33	2.60	2.25	3.82	0.720	4.51
3.18	3.18	1.38	2.52	2.18	3.81	0.719	4.42
3.13	3.13	1.42	2.43	2.11	3.80	0.717	4.37
3.10	3.10	1.46	2.35	2.04	3.78	0.714	4.34
3.09	3.09	1.49	2.27	1.96	3.76	0.710	4.35
3.11	3.11	1.53	2.18	1.89	3.75	0.707	4.40
3.15	3.15	1.57	2.10	1.82	3.73	0.704	4.47
3.22	3.22	1.61	2.01	1.74	3.72	0.702	4.59



Hinge Capacity Review - Profile/Ledger Side

140°	Hinge Angle	0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity	5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
0.25 IN	Washer Thickness	1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity	8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
				2.32 KIP	$V_{a,pin}$: Pin shear capacity

	Tension Capacity Review												
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	2.03	1.70	4.25	2.03	8.11	0.524	0.940	0.940	5.631
5°	5.29	5.29	0.23	2.92	2.24	1.88	4.70	2.48	7.35	0.639	1.038	1.038	5.095
10°	5.29	5.29	0.46	3.18	2.44	2.04	5.11	2.93	6.60	0.774	1.129	1.129	4.685
15°	5.29	5.29	0.68	3.41	2.61	2.19	5.48	3.37	5.87	0.933	1.211	1.211	4.367
20°	4.92	4.92	0.84	3.36	2.58	2.16	5.40	3.52	5.62	0.962	1.195	1.195	4.118
25°	4.50	4.50	0.95	3.23	2.47	2.07	5.19	3.55	5.56	0.932	1.147	1.147	3.925
30°	4.15	4.15	1.04	3.09	2.37	1.99	4.97	3.56	5.55	0.896	1.099	1.099	3.776
35°	3.88	3.88	1.11	2.98	2.28	1.92	4.79	3.57	5.53	0.866	1.059	1.059	3.665
40°	3.67	3.67	1.18	2.88	2.21	1.85	4.63	3.59	5.51	0.840	1.023	1.023	3.587
45°	3.49	3.49	1.23	2.78	2.13	1.78	4.46	3.58	5.52	0.808	0.986	0.986	3.539
50°	3.36	3.36	1.29	2.69	2.06	1.73	4.32	3.59	5.51	0.784	0.955	0.955	3.518
55°	3.25	3.25	1.33	2.60	1.99	1.67	4.17	3.58	5.53	0.755	0.922	0.922	3.525
60°	3.18	3.18	1.38	2.52	1.93	1.62	4.04	3.58	5.52	0.733	0.894	0.894	3.558
65°	3.13	3.13	1.42	2.43	1.86	1.56	3.91	3.58	5.53	0.708	0.865	0.865	3.620
70°	3.10	3.10	1.46	2.35	1.80	1.51	3.78	3.57	5.54	0.682	0.835	0.835	3.713
75°	3.10	3.10	1.50	2.27	1.74	1.46	3.65	3.57	5.54	0.673	0.807	0.807	3.840
80°	3.11	3.11	1.53	2.18	1.67	1.40	3.51	3.55	5.57	0.670	0.776	0.776	4.008
85°	3.15	3.15	1.57	2.10	1.61	1.35	3.37	3.54	5.58	0.668	0.745	0.745	4.226
90°	3.22	3.22	1.61	2.01	1.54	1.29	3.23	3.54	5.59	0.668	0.715	0.715	4.504

Compression Capacity Review							
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity
KIP	KIP	KIP	KIP	KIP	KIP		KIP
5.29	5.29	0.00	2.645	2.03	2.03	0.382	13.84
5.29	5.29	0.23	2.92	2.24	2.48	0.468	11.31
5.29	5.29	0.46	3.18	2.44	2.93	0.553	9.57
5.29	5.29	0.68	3.41	2.61	3.37	0.635	8.33
4.92	4.92	0.84	3.36	2.58	3.52	0.664	7.41
4.50	4.50	0.95	3.23	2.47	3.55	0.670	6.71
4.15	4.15	1.04	3.09	2.37	3.56	0.672	6.18
3.88	3.88	1.11	2.98	2.28	3.57	0.674	5.76
3.67	3.67	1.18	2.88	2.21	3.59	0.676	5.43
3.49	3.49	1.23	2.78	2.13	3.58	0.675	5.17
3.35	3.35	1.28	2.68	2.05	3.57	0.674	4.97
3.25	3.25	1.33	2.60	1.99	3.58	0.675	4.82
3.18	3.18	1.38	2.52	1.93	3.58	0.675	4.71
3.13	3.13	1.42	2.43	1.86	3.58	0.675	4.64
3.10	3.10	1.46	2.35	1.80	3.57	0.673	4.61
3.09	3.09	1.49	2.27	1.74	3.56	0.671	4.61
3.11	3.11	1.53	2.18	1.67	3.55	0.670	4.64
3.15	3.15	1.57	2.10	1.61	3.54	0.668	4.71
3.22	3.22	1.61	2.01	1.54	3.54	0.668	4.82



Hinge Capacity Review - Profile/Ledger Side

130°	Hinge Angle	0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity	5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
0.25 IN	Washer Thickness	1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity	8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
				2.32 KIP	$V_{a,pin}$: Pin shear capacity

	Tension Capacity Review												
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	1.70	2.03	5.07	1.70	8.65	0.585	1.120	1.120	4.725
5°	5.29	5.29	0.23	2.92	1.88	2.24	5.60	2.12	7.95	0.704	1.237	1.237	4.275
10°	5.29	5.29	0.46	3.18	2.04	2.44	6.09	2.54	7.25	0.840	1.346	1.346	3.931
15°	5.29	5.29	0.68	3.41	2.19	2.61	6.53	2.96	6.56	0.996	1.444	1.444	3.664
20°	4.92	4.92	0.84	3.36	2.16	2.58	6.44	3.12	6.29	1.024	1.424	1.424	3.456
25°	4.50	4.50	0.95	3.23	2.07	2.47	6.18	3.17	6.20	0.997	1.366	1.366	3.293
30°	4.15	4.15	1.04	3.09	1.99	2.37	5.93	3.20	6.15	0.963	1.310	1.310	3.169
35°	3.88	3.88	1.11	2.98	1.92	2.28	5.71	3.23	6.11	0.934	1.262	1.262	3.076
40°	3.67	3.67	1.18	2.88	1.85	2.21	5.52	3.25	6.07	0.909	1.219	1.219	3.010
45°	3.49	3.49	1.23	2.78	1.78	2.13	5.32	3.26	6.05	0.879	1.175	1.175	2.970
50°	3.36	3.36	1.29	2.69	1.73	2.06	5.15	3.28	6.02	0.855	1.138	1.138	2.952
55°	3.25	3.25	1.33	2.60	1.67	1.99	4.97	3.28	6.02	0.826	1.099	1.099	2.957
60°	3.18	3.18	1.38	2.52	1.62	1.93	4.82	3.30	5.99	0.804	1.065	1.065	2.985
65°	3.13	3.13	1.42	2.43	1.56	1.86	4.66	3.30	5.98	0.779	1.031	1.031	3.037
70°	3.10	3.10	1.46	2.35	1.51	1.80	4.50	3.31	5.98	0.753	0.995	0.995	3.115
75°	3.10	3.10	1.50	2.27	1.46	1.74	4.35	3.32	5.96	0.730	0.962	0.962	3.222
80°	3.11	3.11	1.53	2.18	1.40	1.67	4.18	3.31	5.97	0.701	0.925	0.925	3.363
85°	3.15	3.15	1.57	2.10	1.35	1.61	4.02	3.31	5.96	0.674	0.888	0.888	3.546
90°	3.22	3.22	1.61	2.01	1.29	1.54	3.85	3.32	5.95	0.647	0.852	0.852	3.780

Compression Capacity Review							
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity
KIP	KIP	KIP	KIP	KIP	KIP		KIP
5.29	5.29	0.00	2.645	1.70	1.70	0.321	16.50
5.29	5.29	0.23	2.92	1.88	2.12	0.400	13.22
5.29	5.29	0.46	3.18	2.04	2.54	0.480	11.02
5.29	5.29	0.68	3.41	2.19	2.96	0.558	9.48
4.92	4.92	0.84	3.36	2.16	3.12	0.588	8.36
4.50	4.50	0.95	3.23	2.07	3.17	0.598	7.52
4.15	4.15	1.04	3.09	1.99	3.20	0.603	6.88
3.88	3.88	1.11	2.98	1.92	3.23	0.609	6.38
3.67	3.67	1.18	2.88	1.85	3.25	0.613	5.98
3.49	3.49	1.23	2.78	1.78	3.26	0.615	5.67
3.35	3.35	1.28	2.68	1.72	3.27	0.617	5.43
3.25	3.25	1.33	2.60	1.67	3.28	0.619	5.25
3.18	3.18	1.38	2.52	1.62	3.30	0.622	5.12
3.13	3.13	1.42	2.43	1.56	3.30	0.623	5.02
3.10	3.10	1.46	2.35	1.51	3.31	0.624	4.97
3.09	3.09	1.49	2.27	1.46	3.30	0.623	4.96
3.11	3.11	1.53	2.18	1.40	3.31	0.625	4.98
3.15	3.15	1.57	2.10	1.35	3.31	0.625	5.04
3.22	3.22	1.61	2.01	1.29	3.32	0.626	5.14



Hinge Capacity Review - Profile/Ledger Side

120°	Hinge Angle	0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity	5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
0.25 IN	Washer Thickness	1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity	8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
				2.32 KIP	$V_{a,pin}$: Pin shear capacity

	Tension Capacity Review												
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	1.32	2.29	5.73	1.32	8.84	0.648	1.266	1.266	4.179
5°	5.29	5.29	0.23	2.92	1.46	2.53	6.33	1.71	8.64	0.732	1.399	1.399	3.782
10°	5.29	5.29	0.46	3.18	1.59	2.75	6.88	2.10	7.99	0.862	1.521	1.521	3.477
15°	5.29	5.29	0.68	3.41	1.71	2.95	7.38	2.49	7.34	1.006	1.632	1.632	3.241
20°	4.92	4.92	0.84	3.36	1.68	2.91	7.28	2.66	7.05	1.032	1.610	1.610	3.057
25°	4.50	4.50	0.95	3.23	1.61	2.80	6.99	2.74	6.93	1.009	1.545	1.545	2.913
30°	4.15	4.15	1.04	3.09	1.55	2.68	6.70	2.78	6.84	0.979	1.481	1.481	2.803
35°	3.88	3.88	1.11	2.98	1.49	2.58	6.45	2.83	6.77	0.953	1.426	1.426	2.721
40°	3.67	3.67	1.18	2.88	1.44	2.49	6.24	2.87	6.70	0.931	1.378	1.378	2.663
45°	3.49	3.49	1.23	2.78	1.39	2.40	6.01	2.90	6.66	0.903	1.329	1.329	2.627
50°	3.36	3.36	1.29	2.69	1.34	2.33	5.82	2.93	6.60	0.881	1.287	1.287	2.611
55°	3.25	3.25	1.33	2.60	1.30	2.25	5.62	2.95	6.57	0.855	1.242	1.242	2.616
60°	3.18	3.18	1.38	2.52	1.26	2.18	5.45	2.97	6.53	0.834	1.204	1.204	2.641
65°	3.13	3.13	1.42	2.43	1.22	2.11	5.27	2.99	6.50	0.811	1.165	1.165	2.687
70°	3.10	3.10	1.46	2.35	1.18	2.04	5.09	3.01	6.47	0.786	1.125	1.125	2.756
75°	3.10	3.10	1.50	2.27	1.14	1.97	4.92	3.03	6.44	0.764	1.088	1.088	2.850
80°	3.11	3.11	1.53	2.18	1.09	1.89	4.73	3.04	6.42	0.736	1.045	1.045	2.975
85°	3.15	3.15	1.57	2.10	1.05	1.82	4.54	3.05	6.40	0.710	1.004	1.004	3.137
90°	3.22	3.22	1.61	2.01	1.01	1.74	4.36	3.07	6.37	0.684	0.963	0.963	3.343

Compression Capacity Review							
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity
KIP	KIP	KIP	KIP	KIP	KIP		KIP
5.29	5.29	0.00	2.645	1.32	1.32	0.249	21.21
5.29	5.29	0.23	2.92	1.46	1.71	0.322	16.42
5.29	5.29	0.46	3.18	1.59	2.10	0.396	13.36
5.29	5.29	0.68	3.41	1.71	2.49	0.469	11.28
4.92	4.92	0.84	3.36	1.68	2.66	0.502	9.81
4.50	4.50	0.95	3.23	1.61	2.74	0.516	8.72
4.15	4.15	1.04	3.09	1.55	2.78	0.525	7.90
3.88	3.88	1.11	2.98	1.49	2.83	0.534	7.27
3.67	3.67	1.18	2.88	1.44	2.87	0.542	6.77
3.49	3.49	1.23	2.78	1.39	2.90	0.547	6.38
3.35	3.35	1.28	2.68	1.34	2.92	0.551	6.08
3.25	3.25	1.33	2.60	1.30	2.95	0.556	5.85
3.18	3.18	1.38	2.52	1.26	2.97	0.561	5.67
3.13	3.13	1.42	2.43	1.22	2.99	0.565	5.54
3.10	3.10	1.46	2.35	1.18	3.01	0.567	5.46
3.09	3.09	1.49	2.27	1.13	3.02	0.570	5.43
3.11	3.11	1.53	2.18	1.09	3.04	0.573	5.43
3.15	3.15	1.57	2.10	1.05	3.05	0.576	5.47
3.22	3.22	1.61	2.01	1.01	3.07	0.579	5.56



Hinge Capacity Review - Profile/Ledger Side

110°	Hinge Angle	0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity	5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
0.25 IN	Washer Thickness	1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity	8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
				2.32 KIP	$V_{a,pin}$: Pin shear capacity

	Tension Capacity Review												
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	0.90	2.49	6.21	0.90	8.84	0.703	1.373	1.373	3.851
5°	5.29	5.29	0.23	2.92	1.00	2.75	6.87	1.25	8.84	0.777	1.518	1.518	3.485
10°	5.29	5.29	0.46	3.18	1.09	2.99	7.47	1.61	8.80	0.849	1.651	1.651	3.205
15°	5.29	5.29	0.68	3.41	1.17	3.20	8.01	1.97	8.20	0.977	1.771	1.771	2.987
20°	4.92	4.92	0.84	3.36	1.15	3.16	7.90	2.16	7.88	1.002	1.747	1.747	2.817
25°	4.50	4.50	0.95	3.23	1.10	3.03	7.58	2.26	7.71	0.983	1.676	1.676	2.685
30°	4.15	4.15	1.04	3.09	1.06	2.91	7.27	2.34	7.59	0.958	1.607	1.607	2.583
35°	3.88	3.88	1.11	2.98	1.02	2.80	7.00	2.40	7.48	0.936	1.547	1.547	2.507
40°	3.67	3.67	1.18	2.88	0.99	2.71	6.77	2.47	7.38	0.917	1.496	1.496	2.454
45°	3.49	3.49	1.23	2.78	0.95	2.61	6.52	2.51	7.31	0.893	1.442	1.442	2.421
50°	3.36	3.36	1.29	2.69	0.92	2.53	6.32	2.55	7.23	0.874	1.396	1.396	2.407
55°	3.25	3.25	1.33	2.60	0.89	2.44	6.10	2.59	7.17	0.850	1.348	1.348	2.411
60°	3.18	3.18	1.38	2.52	0.86	2.36	5.91	2.63	7.11	0.832	1.307	1.307	2.434
65°	3.13	3.13	1.42	2.43	0.83	2.29	5.72	2.66	7.05	0.811	1.264	1.264	2.476
70°	3.10	3.10	1.46	2.35	0.80	2.21	5.52	2.69	7.00	0.788	1.221	1.221	2.539
75°	3.10	3.10	1.50	2.27	0.78	2.14	5.34	2.72	6.95	0.768	1.180	1.180	2.627
80°	3.11	3.11	1.53	2.18	0.75	2.05	5.13	2.75	6.91	0.742	1.134	1.134	2.742
85°	3.15	3.15	1.57	2.10	0.72	1.97	4.93	2.77	6.86	0.718	1.090	1.090	2.891
90°	3.22	3.22	1.61	2.01	0.69	1.89	4.73	2.81	6.81	0.694	1.045	1.045	3.081

Compression Capacity Review							
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity
KIP	KIP	KIP	KIP	KIP	KIP		KIP
5.29	5.29	0.00	2.645	0.90	0.90	0.171	31.00
5.29	5.29	0.23	2.92	1.00	1.25	0.236	22.41
5.29	5.29	0.46	3.18	1.09	1.61	0.304	17.38
5.29	5.29	0.68	3.41	1.17	1.97	0.372	14.21
4.92	4.92	0.84	3.36	1.15	2.16	0.408	12.06
4.50	4.50	0.95	3.23	1.10	2.26	0.427	10.54
4.15	4.15	1.04	3.09	1.06	2.34	0.441	9.41
3.88	3.88	1.11	2.98	1.02	2.40	0.454	8.55
3.67	3.67	1.18	2.88	0.99	2.47	0.465	7.89
3.49	3.49	1.23	2.78	0.95	2.51	0.473	7.38
3.35	3.35	1.28	2.68	0.92	2.55	0.480	6.97
3.25	3.25	1.33	2.60	0.89	2.59	0.488	6.66
3.18	3.18	1.38	2.52	0.86	2.63	0.496	6.42
3.13	3.13	1.42	2.43	0.83	2.66	0.502	6.24
3.10	3.10	1.46	2.35	0.80	2.69	0.507	6.11
3.09	3.09	1.49	2.27	0.77	2.71	0.512	6.04
3.11	3.11	1.53	2.18	0.75	2.75	0.518	6.01
3.15	3.15	1.57	2.10	0.72	2.77	0.523	6.02
3.22	3.22	1.61	2.01	0.69	2.81	0.529	6.08



Hinge Capacity Review - Profile/Ledger Side

100°	Hinge Angle	0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity	5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
0.25 IN	Washer Thickness	1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity	8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
				2.32 KIP	$V_{a,pin}$: Pin shear capacity

	Tension Capacity Review												
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	0.46	2.60	6.51	0.46	8.84	0.737	1.439	1.439	3.675
5°	5.29	5.29	0.23	2.92	0.51	2.88	7.20	0.77	8.84	0.815	1.591	1.591	3.325
10°	5.29	5.29	0.46	3.18	0.55	3.13	7.83	1.11	8.84	0.886	1.730	1.730	3.058
15°	5.29	5.29	0.68	3.41	0.59	3.36	8.40	1.45	8.84	0.950	1.856	1.856	2.850
20°	4.92	4.92	0.84	3.36	0.58	3.31	8.28	1.66	8.73	0.949	1.830	1.830	2.688
25°	4.50	4.50	0.95	3.23	0.56	3.18	7.95	1.79	8.51	0.934	1.757	1.757	2.562
30°	4.15	4.15	1.04	3.09	0.54	3.05	7.62	1.89	8.34	0.913	1.684	1.684	2.465
35°	3.88	3.88	1.11	2.98	0.52	2.93	7.34	1.97	8.20	0.895	1.622	1.622	2.392
40°	3.67	3.67	1.18	2.88	0.50	2.84	7.09	2.05	8.07	0.879	1.567	1.567	2.342
45°	3.49	3.49	1.23	2.78	0.48	2.73	6.84	2.11	7.96	0.858	1.511	1.511	2.310
50°	3.36	3.36	1.29	2.69	0.47	2.65	6.62	2.18	7.86	0.842	1.463	1.463	2.296
55°	3.25	3.25	1.33	2.60	0.45	2.56	6.39	2.22	7.78	0.822	1.413	1.413	2.300
60°	3.18	3.18	1.38	2.52	0.44	2.48	6.19	2.28	7.69	0.806	1.369	1.369	2.322
65°	3.13	3.13	1.42	2.43	0.42	2.40	5.99	2.32	7.61	0.787	1.325	1.325	2.363
70°	3.10	3.10	1.46	2.35	0.41	2.32	5.79	2.37	7.54	0.767	1.279	1.279	2.423
75°	3.10	3.10	1.50	2.27	0.39	2.24	5.60	2.41	7.47	0.749	1.237	1.237	2.506
80°	3.11	3.11	1.53	2.18	0.38	2.15	5.38	2.45	7.41	0.726	1.189	1.189	2.616
85°	3.15	3.15	1.57	2.10	0.36	2.07	5.17	2.49	7.34	0.704	1.142	1.142	2.758
90°	3.22	3.22	1.61	2.01	0.35	1.98	4.95	2.54	7.26	0.683	1.095	1.095	2.940

Compression Capacity Review							
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity
KIP	KIP	KIP	KIP	KIP	KIP		KIP
5.29	5.29	0.00	2.645	0.46	0.46	0.087	61.06
5.29	5.29	0.23	2.92	0.51	0.77	0.146	36.27
5.29	5.29	0.46	3.18	0.55	1.11	0.210	25.25
5.29	5.29	0.68	3.41	0.59	1.45	0.273	19.36
4.92	4.92	0.84	3.36	0.58	1.66	0.312	15.76
4.50	4.50	0.95	3.23	0.56	1.79	0.337	13.36
4.15	4.15	1.04	3.09	0.54	1.89	0.356	11.67
3.88	3.88	1.11	2.98	0.52	1.97	0.372	10.42
3.67	3.67	1.18	2.88	0.50	2.05	0.387	9.48
3.49	3.49	1.23	2.78	0.48	2.11	0.399	8.75
3.35	3.35	1.28	2.68	0.47	2.17	0.409	8.19
3.25	3.25	1.33	2.60	0.45	2.22	0.420	7.75
3.18	3.18	1.38	2.52	0.44	2.28	0.430	7.40
3.13	3.13	1.42	2.43	0.42	2.32	0.438	7.14
3.10	3.10	1.46	2.35	0.41	2.37	0.446	6.95
3.09	3.09	1.49	2.27	0.39	2.40	0.454	6.81
3.11	3.11	1.53	2.18	0.38	2.45	0.462	6.73
3.15	3.15	1.57	2.10	0.36	2.49	0.470	6.71
3.22	3.22	1.61	2.01	0.35	2.54	0.478	6.73

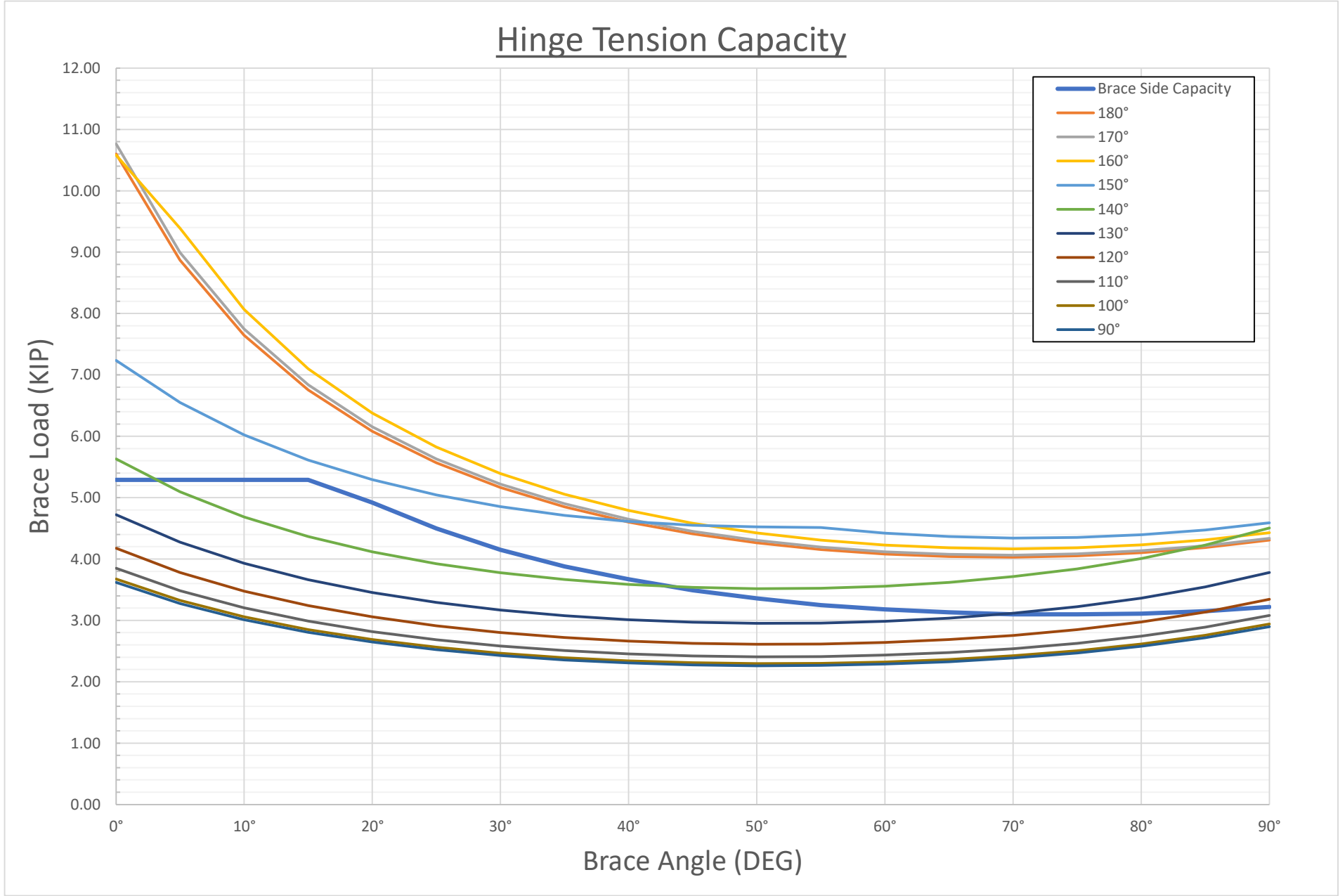


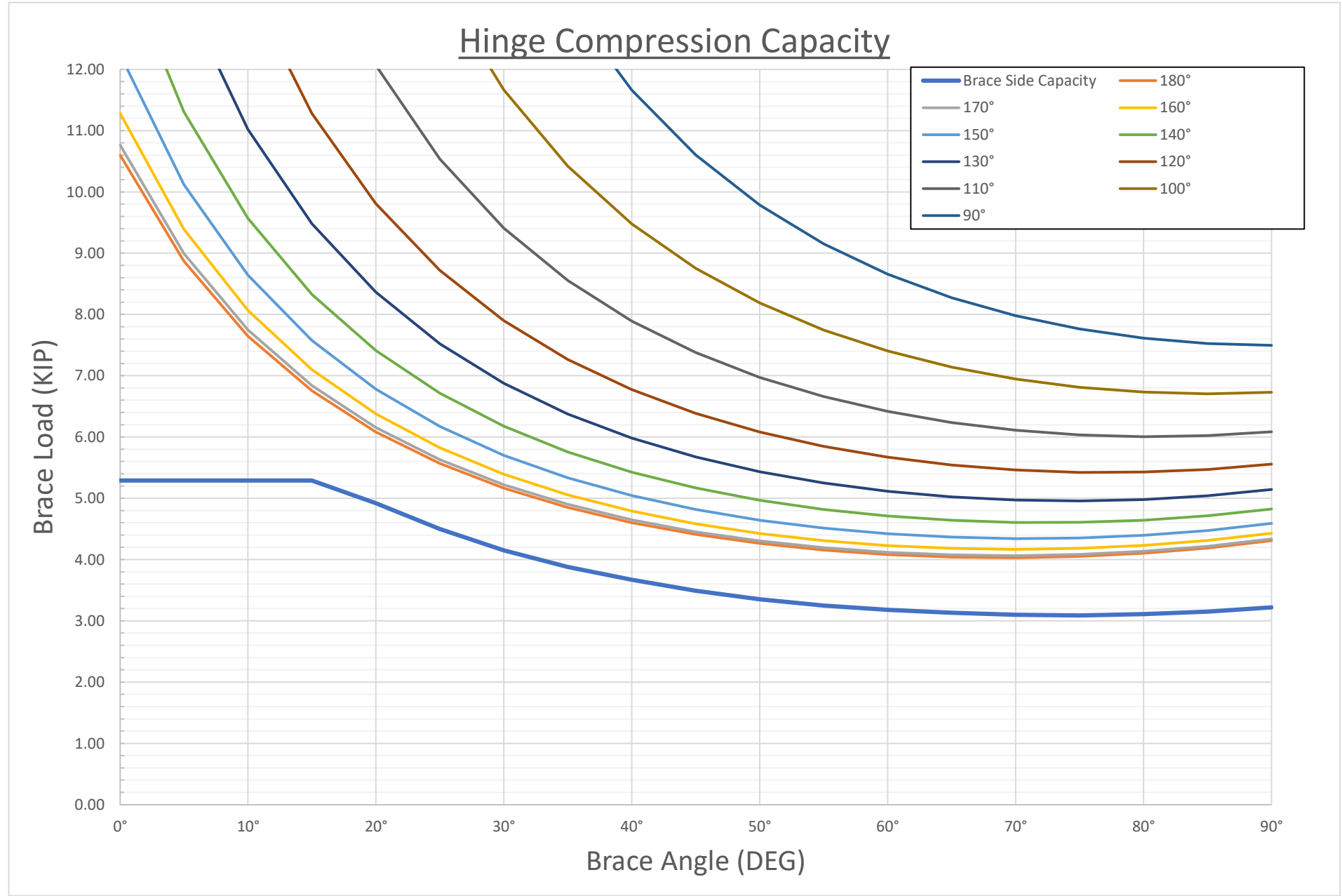
Hinge Capacity Review - Profile/Ledger Side

90°	Hinge Angle	0.696 KIP	$T_{a,pry,hinge}$: Hinge prying capacity	5.30 KIP	$V_{a,bolt}$: Bolt Shear Capacity
0.25 IN	Washer Thickness	1.113 KIP	$T_{a,pry,washer}$: Washer Prying Capacity	8.84 KIP	$T_{a,bolt}$: Bolt Tension Capacity
				2.32 KIP	$V_{a,pin}$: Pin shear capacity

	Tension Capacity Review												
Brace Angle	Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Tension	Knuckle Tension Parallel to Plate	Knuckle Tension Perp. to Plate	Bolt Tension	Bolt Shear	Adjusted Tension Capacity	Bolt Strength Ratio	Prying Strength Ratio	Controlling Strength Ratio	Final Capacity
DEG	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP	KIP				KIP
0°	5.29	5.29	0.00	2.65	0.00	2.65	6.61	0.00	8.84	0.748	1.462	1.462	3.619
5°	5.29	5.29	0.23	2.92	0.00	2.92	7.31	0.33	8.84	0.827	1.615	1.615	3.275
10°	5.29	5.29	0.46	3.18	0.00	3.18	7.95	0.65	8.84	0.899	1.757	1.757	3.011
15°	5.29	5.29	0.68	3.41	0.00	3.41	8.53	0.97	8.84	0.965	1.885	1.885	2.807
20°	4.92	4.92	0.84	3.36	0.00	3.36	8.41	1.19	8.84	0.952	1.859	1.859	2.647
25°	4.50	4.50	0.95	3.23	0.00	3.23	8.07	1.34	8.84	0.913	1.784	1.784	2.523
30°	4.15	4.15	1.04	3.09	0.00	3.09	7.73	1.47	8.84	0.875	1.710	1.710	2.427
35°	3.88	3.88	1.11	2.98	0.00	2.98	7.45	1.57	8.84	0.843	1.647	1.647	2.356
40°	3.67	3.67	1.18	2.88	0.00	2.88	7.20	1.67	8.71	0.827	1.592	1.592	2.306
45°	3.49	3.49	1.23	2.78	0.00	2.78	6.94	1.75	8.58	0.809	1.534	1.534	2.275
50°	3.36	3.36	1.29	2.69	0.00	2.69	6.72	1.82	8.45	0.795	1.486	1.486	2.262
55°	3.25	3.25	1.33	2.60	0.00	2.60	6.49	1.88	8.35	0.777	1.435	1.435	2.266
60°	3.18	3.18	1.38	2.52	0.00	2.52	6.29	1.95	8.24	0.763	1.390	1.390	2.287
65°	3.13	3.13	1.42	2.43	0.00	2.43	6.09	2.01	8.14	0.747	1.345	1.345	2.327
70°	3.10	3.10	1.46	2.35	0.00	2.35	5.88	2.06	8.05	0.730	1.299	1.299	2.386
75°	3.10	3.10	1.50	2.27	0.00	2.27	5.68	2.12	7.96	0.714	1.256	1.256	2.468
80°	3.11	3.11	1.53	2.18	0.00	2.18	5.46	2.17	7.88	0.693	1.207	1.207	2.577
85°	3.15	3.15	1.57	2.10	0.00	2.10	5.25	2.22	7.79	0.674	1.160	1.160	2.716
90°	3.22	3.22	1.61	2.01	0.00	2.01	5.03	2.28	7.69	0.654	1.112	1.112	2.895

Compression Capacity Review							
Brace Side Capacity	Trial Capacity	Knuckle Shear	Knuckle Comp.	Knuckle Comp. Parallel to Plate	Bolt Shear	Bolt Strength Ratio	Final Capacity
KIP	KIP	KIP	KIP	KIP	KIP		KIP
5.29	5.29	0.00	2.645	0.00	0.00	0.000	86.02
5.29	5.29	0.23	2.92	0.00	0.33	0.061	86.02
5.29	5.29	0.46	3.18	0.00	0.65	0.123	43.18
5.29	5.29	0.68	3.41	0.00	0.97	0.183	28.97
4.92	4.92	0.84	3.36	0.00	1.19	0.224	21.92
4.50	4.50	0.95	3.23	0.00	1.34	0.254	17.74
4.15	4.15	1.04	3.09	0.00	1.47	0.277	14.99
3.88	3.88	1.11	2.98	0.00	1.57	0.297	13.07
3.67	3.67	1.18	2.88	0.00	1.67	0.315	11.66
3.49	3.49	1.23	2.78	0.00	1.75	0.329	10.60
3.35	3.35	1.28	2.68	0.00	1.81	0.342	9.79
3.25	3.25	1.33	2.60	0.00	1.88	0.355	9.15
3.18	3.18	1.38	2.52	0.00	1.95	0.367	8.66
3.13	3.13	1.42	2.43	0.00	2.01	0.378	8.27
3.10	3.10	1.46	2.35	0.00	2.06	0.389	7.98
3.09	3.09	1.49	2.27	0.00	2.11	0.398	7.76
3.11	3.11	1.53	2.18	0.00	2.17	0.409	7.61
3.15	3.15	1.57	2.10	0.00	2.22	0.419	7.53
3.22	3.22	1.61	2.01	0.00	2.28	0.429	7.50





Panelized Wall 2.0 - Concrete Bracket Calculations - PWS-2.0-W15

Standard Variables:

Safety Factors:

Yield: $\Omega_{y.AISC} := 1.67$

Rupture: $\Omega_{r.AISC} := 2.0$

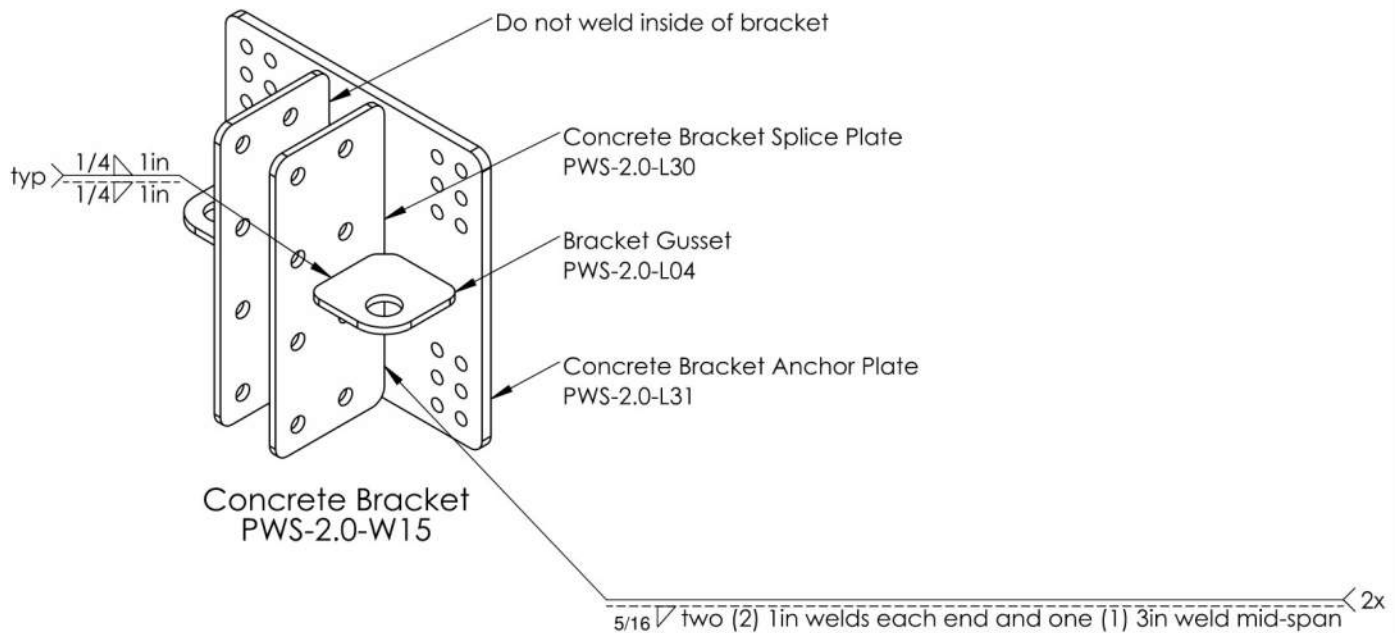
A572 Steel:

Yield: $F_{y.A572} := 50 \text{ ksi}$

Tensile: $F_{u.A572} := 65 \text{ ksi}$

Weld Filler:

Shear: $F_{u.weld} := 70 \text{ ksi} \cdot 0.6 = 42.00 \text{ ksi}$



Design Philosophy

The concrete bracket is reviewed for the loads indicated below by generating a finite element model in RISA-3D. The results below demonstrate adequate capacity for the bracket to resist the design loads.

Design Loads

Load toward or away from wall:

$$P_{\text{perp}} := 2000 \text{ lbf}$$

Vertical load applied to bracket:

$$P_{\text{vert}} := 2000 \text{ lbf}$$

Lateral load parallel to wall from both profiles combined:

$$P_{\text{lat}} := 1000 \text{ lbf}$$

Plate Stress

Maximum plate stress from RISA-3D model:

$$f_{\text{pl}} := 26.7 \text{ ksi}$$

Plate yield strength ratio:

$$\text{Ratio}_{\text{pl}} := \frac{f_{\text{pl}} \cdot \Omega_{\text{y.AISC}}}{F_{\text{y.A572}}} = 0.89 < 1.0 \quad \underline{\text{OK}}$$

Weld Stress

Weld length:

$$L_{\text{weld}} := 1 \text{ in}$$

Weld thickness:

$$t_{\text{weld}} := 0.3125 \text{ in}$$

Weld area:

$$A_{\text{weld}} := L_{\text{weld}} \cdot t_{\text{weld}} \cdot 0.707 = 0.22 \text{ in}^2$$

Number of vertical welds:

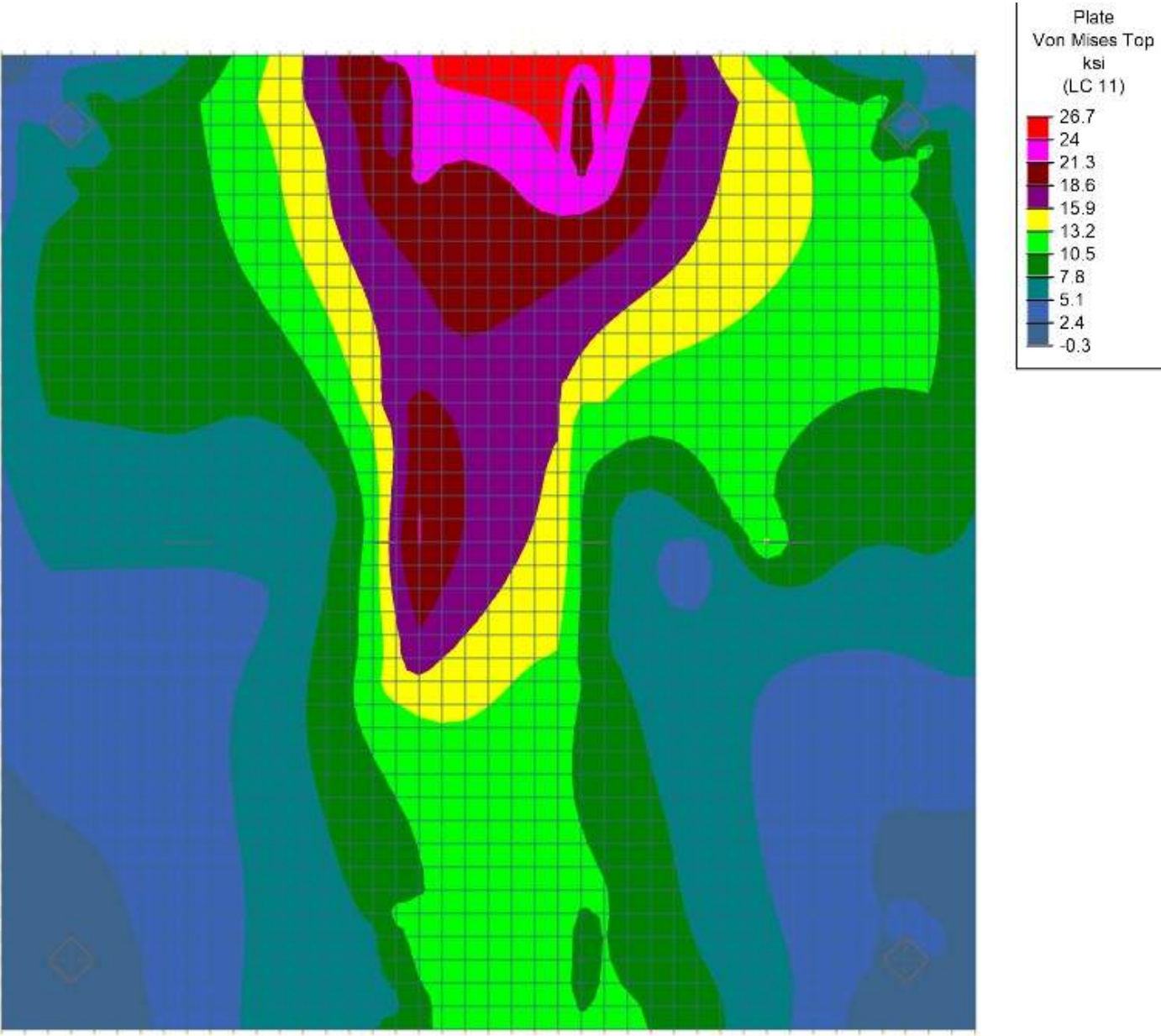
$$n_{\text{weld}} := 8$$

Weld stress:

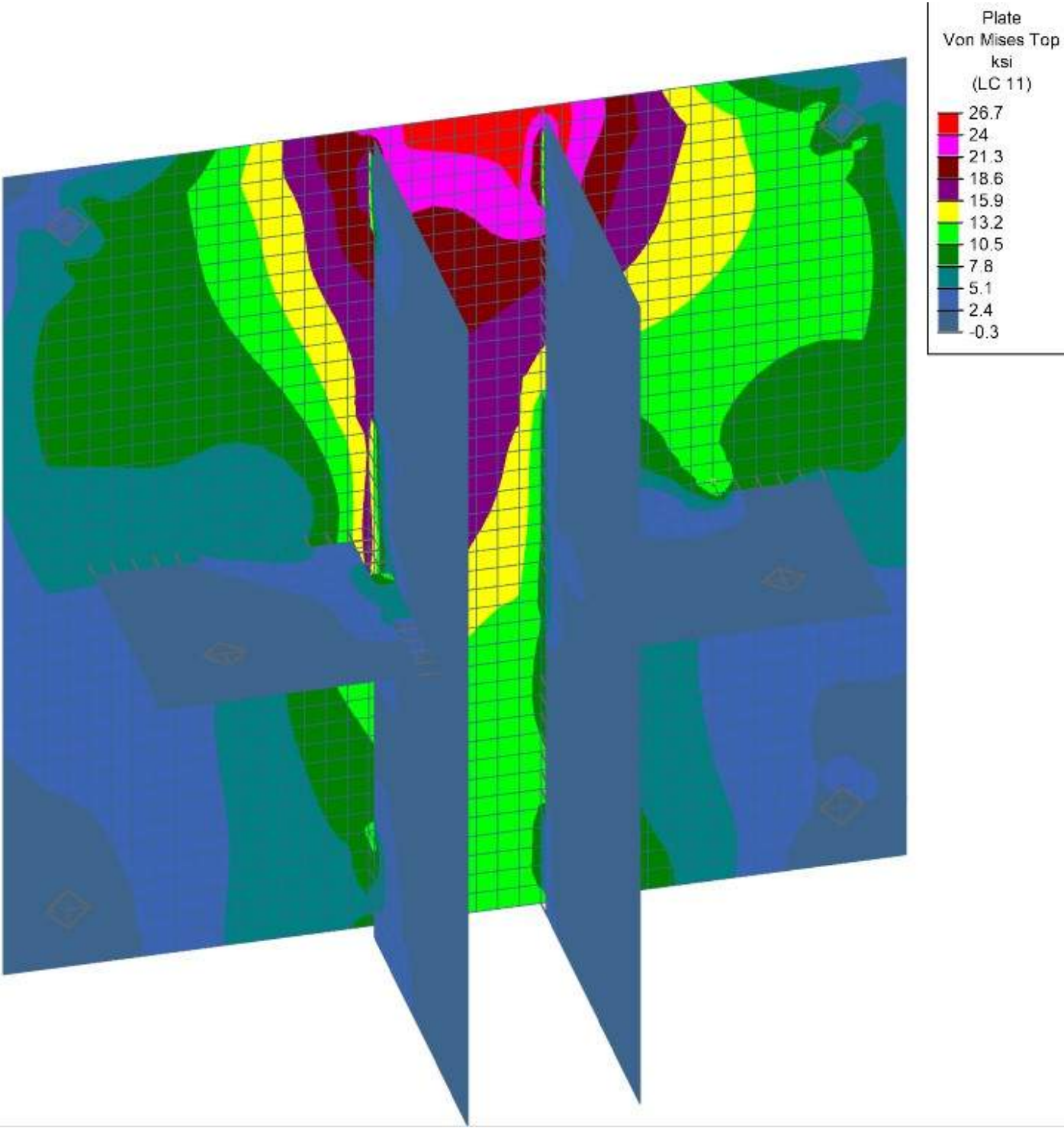
$$f_{\text{weld}} := \sqrt{\left(\frac{P_{\text{vert}} \cdot 2.625 \text{ in}}{2 \cdot 9 \text{ in} \cdot A_{\text{weld}}} + \frac{P_{\text{perp}}}{n_{\text{weld}} \cdot A_{\text{weld}}} \right)^2 + \left(\frac{P_{\text{vert}}}{n_{\text{weld}} \cdot A_{\text{weld}}} \right)^2} = 2.70 \text{ ksi}$$

Weld stress ratio:

$$\text{Ratio}_{\text{weld}} := \frac{f_{\text{weld}} \cdot \Omega_{\text{r.AISC}}}{F_{\text{u.weld}}} = 0.13$$



Concrete Bracket Plate Stress



Concrete Bracket Plate Stress

Panelized Wall 2.0 - Profile Splice and Base Connection Calculations

Standard Variables

Safety Factors:

Yield: $\Omega_{y.AISC} := 1.67$

Rupture: $\Omega_{r.AISC} := 2.0$

A36 Steel:

Yield: $F_{y.A36} := 36 \text{ ksi}$

Tensile: $F_{u.A36} := 58 \text{ ksi}$

A500 Grade B Steel - Rectangular Shapes:

Yield: $F_{y.A500.rect} := 46 \text{ ksi}$

Tensile: $F_{u.A500.rect} := 58 \text{ ksi}$

AISI 1018:

Yield: $F_{y.1018} := 53.7 \text{ ksi}$

Tensile: $F_{u.1018} := 63.8 \text{ ksi}$

A53 Steel:

Yield: $F_{y.A53} := 35 \text{ ksi}$

Tensile: $F_{u.A53} := 60 \text{ ksi}$

A325 (Grade 5) Bolts:

Tensile: $F_{u.A325} := 120 \text{ ksi}$

Weld Filler:

Shear: $F_{u.weld} := 70 \text{ ksi} \cdot 0.6 = 42.000 \text{ ksi}$

Bolt Properties

Bolt diameter: $D_{bolt} := 0.5 \text{ in}$

Bolt shear capacity: $V_{a.bolt} := D_{bolt}^2 \cdot \frac{\pi}{4} \cdot F_{u.A325} \cdot \frac{0.75 \cdot 0.6}{\Omega_{r.AISC}} = 5.301 \text{ kip}$

Note: The values calculated below are used in a separate Excel spreadsheet to review the capacity of each profile splice based on output from a RISA-3D model of the climbing wall.

Profile Splice Analysis

Splice plate thickness: $t_{sp} := 0.375 \text{ in}$

Splice plate width: $B_{sp} := 3.875 \text{ in}$

Bolt edge distance: $e_{sp.bolt} := 0.94 \text{ in}$

Bolt spacing 1: $s_{sp.bolt.1} := 2 \text{ in}$

Bolt spacing 2: $s_{sp.bolt.2} := 3 \text{ in}$

Bolt hole width: $B_{sp.hole} := 0.56 \text{ in}$

Number of bolts: $n_{sp.bolt} := \begin{bmatrix} 2 \\ 4 \end{bmatrix}$

Number of splice plates: $n_{sp} := 2$

Splice gross area: $A_{g.sp} := B_{sp} \cdot t_{sp} = 1.453 \text{ in}^2$

Splice net area: $A_{n.sp} := (B_{sp} - 2 \cdot B_{sp.hole}) \cdot t_{sp} = 1.033 \text{ in}^2$

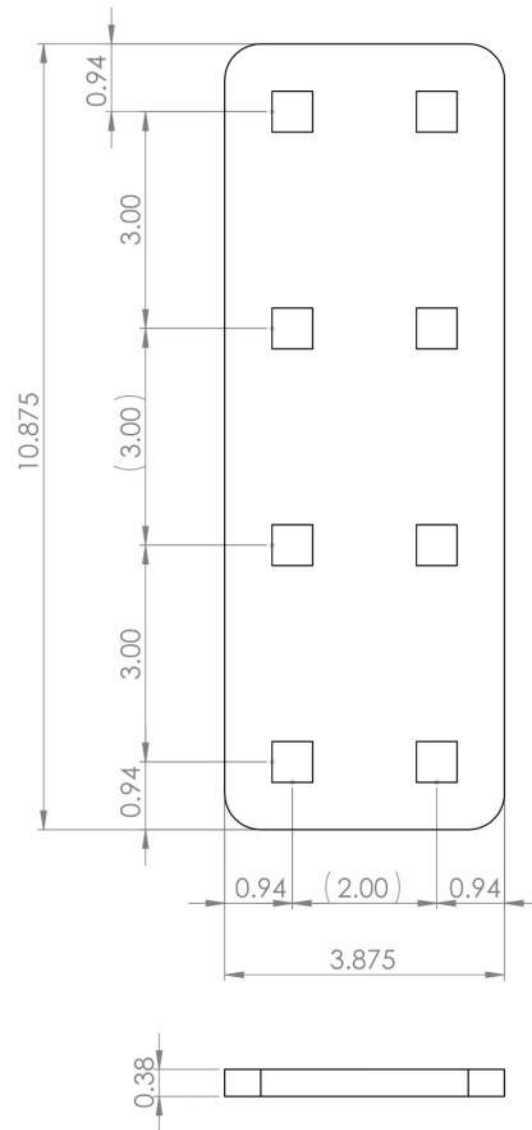
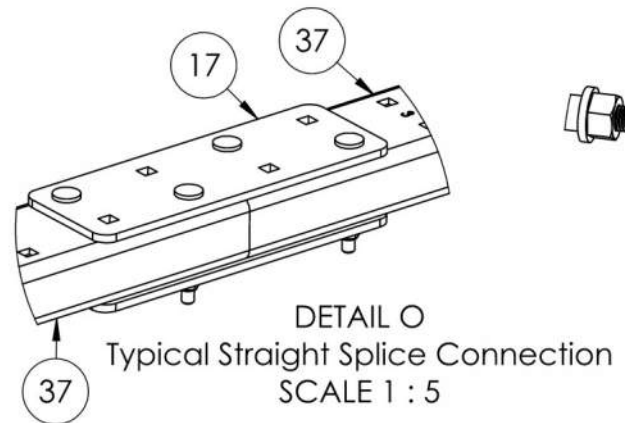
Splice elastic section modulus: $S_{x.sp} := \frac{1}{6} \cdot B_{sp}^2 \cdot t_{sp} = 0.938 \text{ in}^3$

Splice plastic section modulus: $Z_{x.sp} := \frac{1}{4} \cdot B_{sp}^2 \cdot t_{sp} = 1.408 \text{ in}^3$

Bolt hole edge distance: $L_{c.sp} := e_{sp.bolt} - \frac{B_{sp.hole}}{2} = 0.660 \text{ in}$

Splice plate yield capacity: $T_{a.y.sp} := \frac{F_{y.A36} \cdot A_{g.sp}}{\Omega_{y.AISC}} = 31.325 \text{ kip}$

Splice plate rupture capacity: $T_{a.u.sp} := \frac{F_{u.A36} \cdot A_{n.sp}}{\Omega_{r.AISC}} = 29.961 \text{ kip}$



Bolt bearing
capacity:

$$T_{a.brg.sp} := \frac{2.4 \cdot t_{sp} \cdot F_{u.A36} \cdot D_{bolt}}{\Omega_{r.AISC}} = 13.050 \text{ kip}$$

Bolt tearout
capacity:

$$T_{a.tear.sp} := \frac{1.2 \cdot t_{sp} \cdot F_{u.A36} \cdot L_{c.sp}}{\Omega_{r.AISC}} = 8.613 \text{ kip}$$

Block shear capacity (2 bolts):

$$T_{a.block.sp.1} := \frac{t_{sp}}{\Omega_{r.AISC}} \cdot \left(F_{u.A36} \cdot L_{c.sp} \cdot 2 \cdot \left(+ 0.6 \cdot \min \left(F_{y.A36} \cdot \left(2 \cdot e_{sp.bolt} \cdot \left(+ s_{sp.bolt.2} \right) \right), F_{u.A36} \cdot \left(2 \cdot L_{c.sp} \cdot \left(+ (s_{sp.bolt.2} - B_{sp.hole}) \right) \right) \right) \right) \right) = 34.119 \text{ kip}$$

Block shear capacity (4 bolts):

$$T_{a.block.sp.2} := \frac{t_{sp}}{\Omega_{r.AISC}} \cdot \left(F_{u.A36} \cdot L_{c.sp} \cdot 2 \cdot \left(+ 0.6 \cdot \min \left(F_{y.A36} \cdot 2 \cdot \left(e_{sp.bolt} \cdot \left(+ s_{sp.bolt.2} \right) \right), F_{u.A36} \cdot 2 \cdot \left(L_{c.sp} \cdot \left(+ (s_{sp.bolt.2} - B_{sp.hole}) \right) \right) \right) \right) \right) = 46.269 \text{ kip}$$

Two-bolt tension capacity:

$$T_{a.sp.1} := n_{sp} \cdot \min \left(T_{a.y.sp}, T_{a.u.sp}, n_{sp.bolt_1} \cdot V_{a.bolt}, \frac{n_{sp.bolt_1}}{2} \cdot \left(T_{a.brg.sp} \cdot \left(+ \min (T_{a.brg.sp}, T_{a.tear.sp}) \right) \right), T_{a.block.sp.1} \right) = 21.206 \text{ kip}$$

Four-bolt tension capacity:

$$T_{a.sp.2} := n_{sp} \cdot \min \left(T_{a.y.sp}, T_{a.u.sp}, n_{sp.bolt_2} \cdot V_{a.bolt}, \frac{n_{sp.bolt_2}}{2} \cdot \left(T_{a.brg.sp} \cdot \left(+ \min (T_{a.brg.sp}, T_{a.tear.sp}) \right) \right), T_{a.block.sp.2} \right) = 42.412 \text{ kip}$$

Two-bolt compression
capacity:

$$P_{a.sp.1} := n_{sp} \cdot \min \left(T_{a.y.sp}, T_{a.u.sp}, n_{sp.bolt_1} \cdot \min (V_{a.bolt}, T_{a.brg.sp}) \right) = 21.206 \text{ kip}$$

Four-bolt compression
capacity:

$$P_{a.sp.2} := n_{sp} \cdot \min \left(T_{a.y.sp}, T_{a.u.sp}, n_{sp.bolt_2} \cdot \min (V_{a.bolt}, T_{a.brg.sp}) \right) = 42.412 \text{ kip}$$

Plate strong axis
flexural capacity:

$$M_{ax.y.sp} := \frac{F_{y.A36} \cdot Z_{x.sp}}{\Omega_{y.AISC}} = 30.346 \text{ kip} \cdot \text{in}$$

Plate yield shear capacity:

$$V_{a.y.sp} := \frac{F_{y.A36} \cdot 0.6 \cdot A_{g.sp}}{\Omega_{y.AISC}} = 18.795 \text{ kip}$$

Plate rupture shear capacity:

$$V_{a.u.sp} := \frac{F_{u.A36} \cdot 0.6 \cdot A_{n.sp}}{\Omega_{t.AISC}} = 17.976 \text{ kip}$$

Plate shear capacity:

$$V_{a.sp} := \min(V_{a.y.sp}, V_{a.u.sp}) = 17.976 \text{ kip}$$

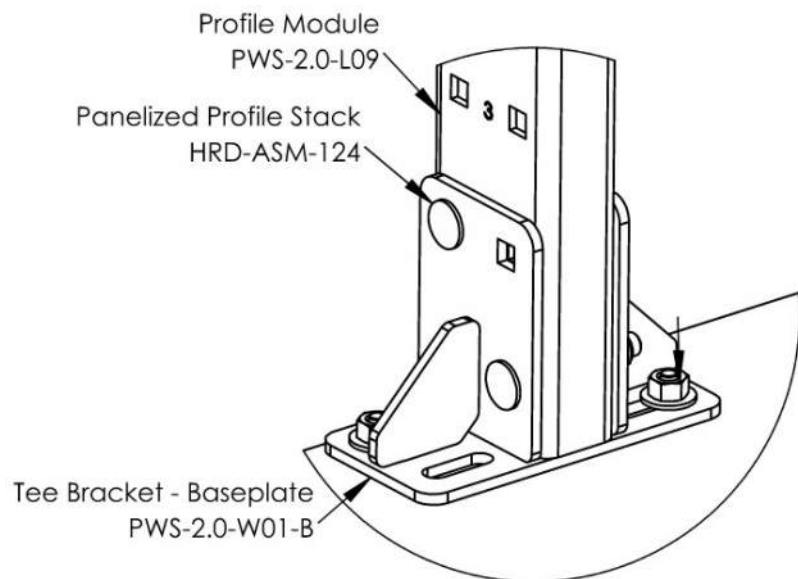
Base Connection:

Anchor tension capacity from Hilti Profis:

$$T_{a.anchor.profis} := \frac{4000 \text{ lbf}}{1.6} = 2500 \text{ lbf}$$

Anchor shear capacity from Hilti Profis:

$$V_{a.anchor.profis} := \frac{3000 \text{ lbf}}{1.6} = 1875 \text{ lbf}$$



DETAIL A

Typical Profile to Slab Connection

Base plate prying:

Base plate thickness:

$$t_{bp} := 0.25 \text{ in}$$

Tributary length:

$$p_{bp} := 2 \text{ in}$$

Prying distance:

$$b'_{bp} := 0.72 \text{ in}$$

Prying capacity:

$$T_{a.bp.pry} := \frac{t_{bp}^2 \cdot p_{bp} \cdot F_{u.A36}}{\Omega_{y.AISC} \cdot 4 \cdot b'_{bp}} = 1507 \text{ lbf}$$

Note: Base anchor analysis is based on 1/2"Ø Hilti Kwik Bolt TZ2, 2 1/2" embed, 4000 PSI concrete

Base plate shear:

Base plate width: $B_{bp} := 3.875 \text{ in}$

Anchor diameter: $D_{anchor} := 0.50 \text{ in}$

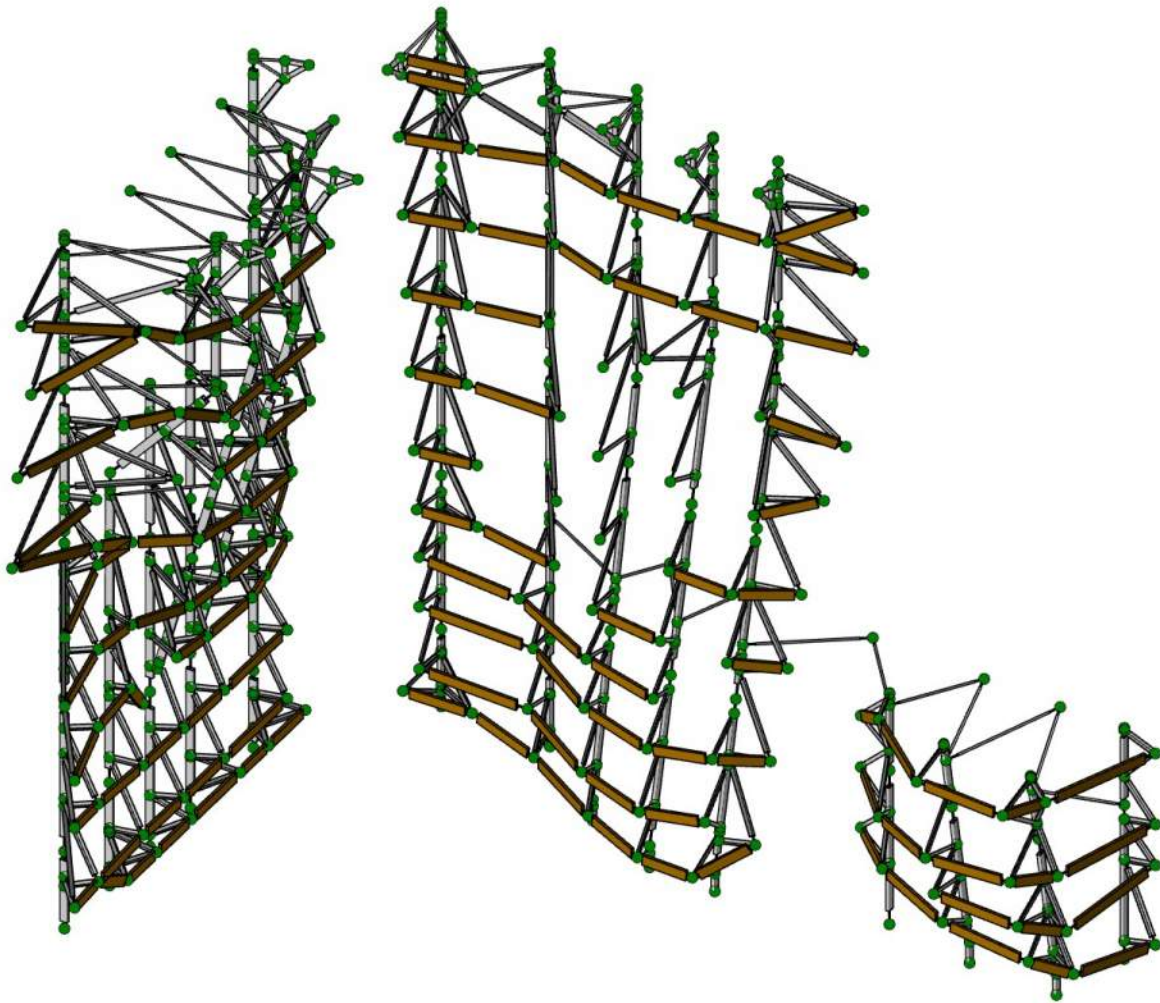
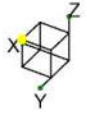
Anchor edge distance: $L_{c, bp} := 0.66 \text{ in}$

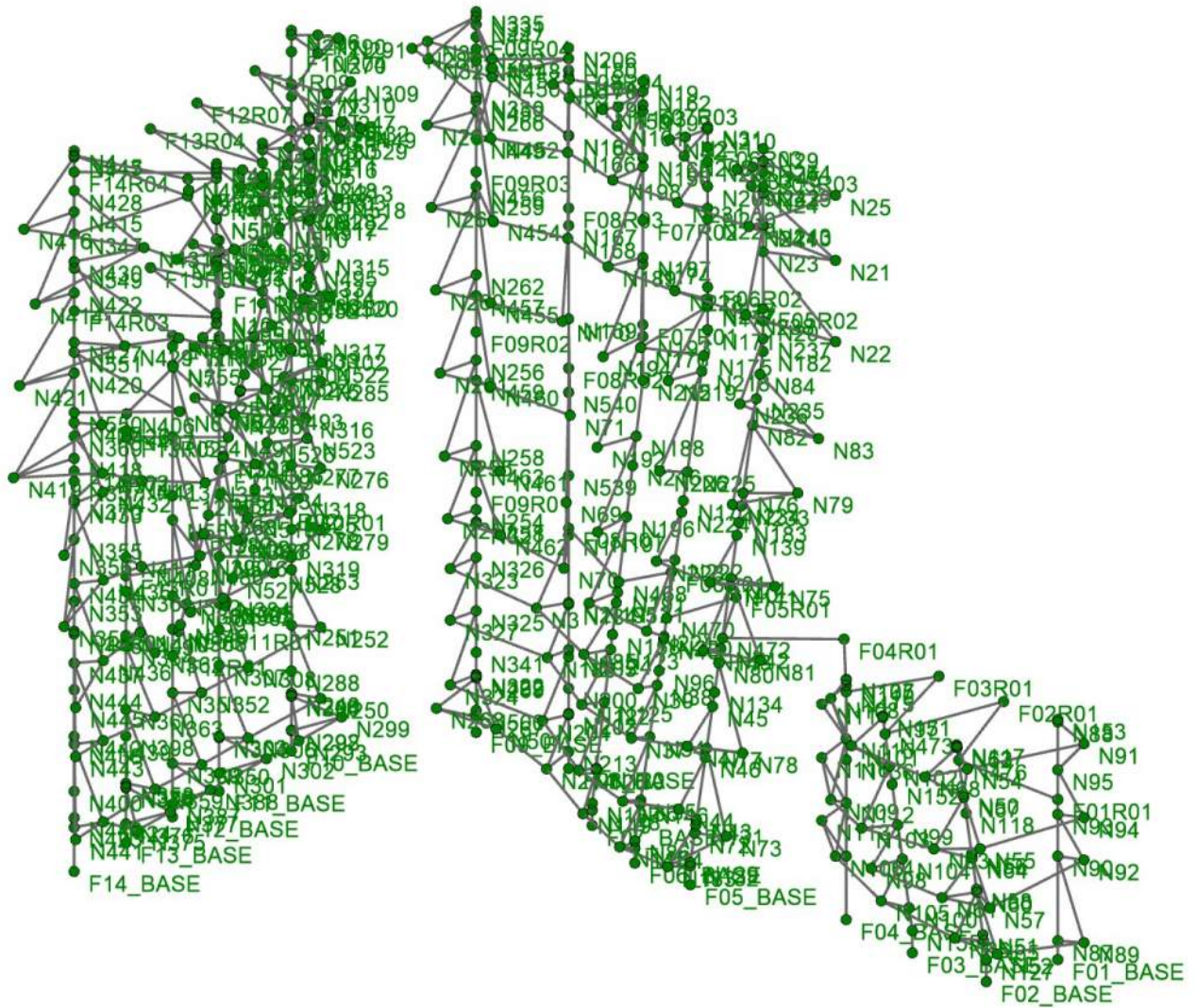
Base plate shear yield capacity: $V_{a, y, bp} := \frac{F_{y, A36} \cdot 0.6 \cdot t_{bp} \cdot B_{bp}}{\Omega_{y, AISC}} = 12530 \text{ lbf}$

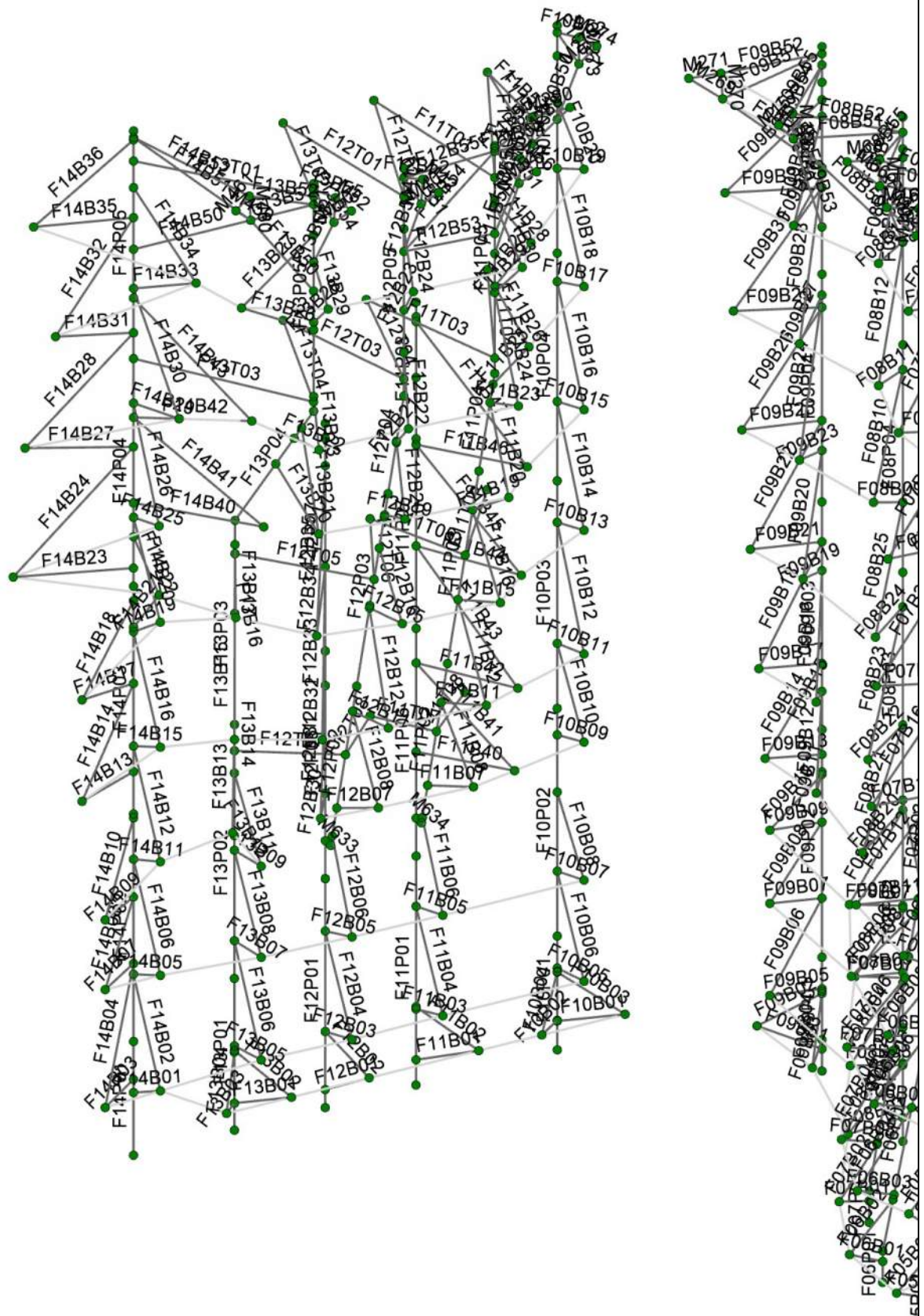
Base plate shear rupture capacity: $V_{a, u, bp} := \frac{F_{u, A36} \cdot 0.6 \cdot t_{bp} \cdot (B_{bp} - 2 \cdot (D_{anchor} + 0.125 \text{ in}))}{\Omega_{r, AISC}} = 11419 \text{ lbf}$

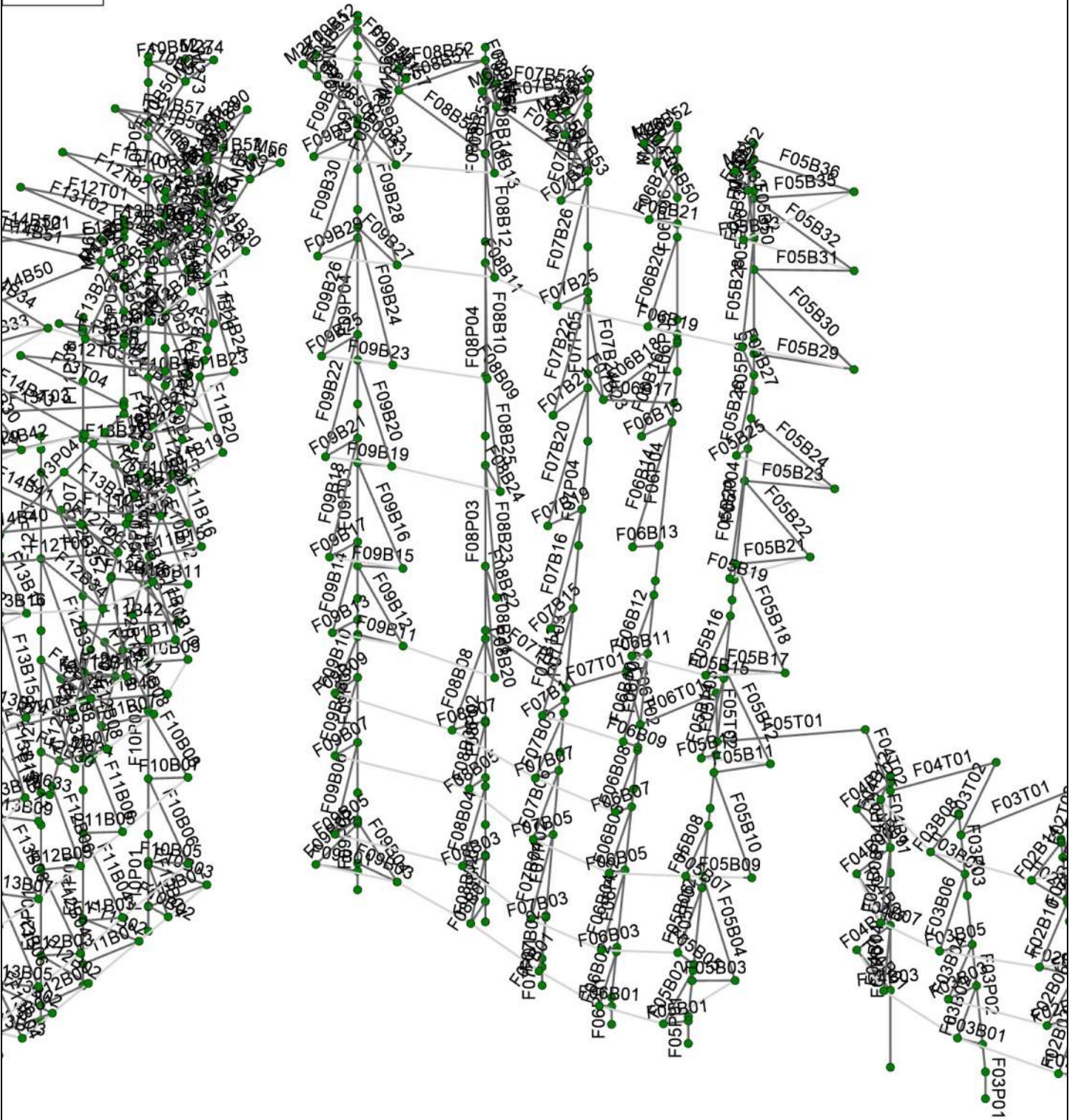
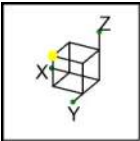
Anchor bearing capacity: $V_{anchor, brg} := \frac{2.0 \cdot t_{bp} \cdot F_{u, A36} \cdot D_{anchor}}{\Omega_{r, AISC}} = 7250 \text{ lbf}$

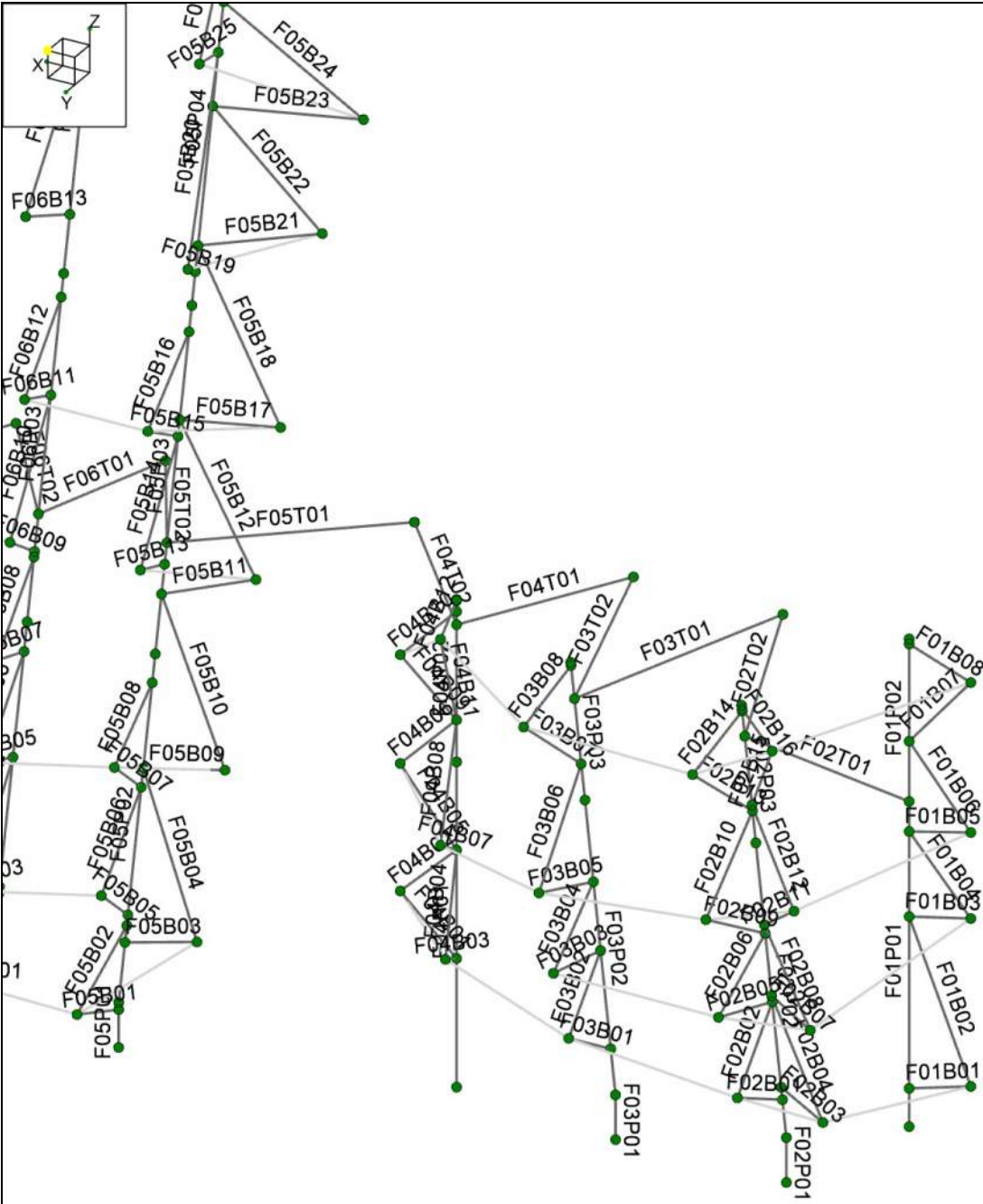
Anchor tearout capacity: $V_{anchor, tear} := \frac{1.0 \cdot t_{bp} \cdot F_{u, A36} \cdot L_{c, bp}}{\Omega_{r, AISC}} = 4785 \text{ lbf}$







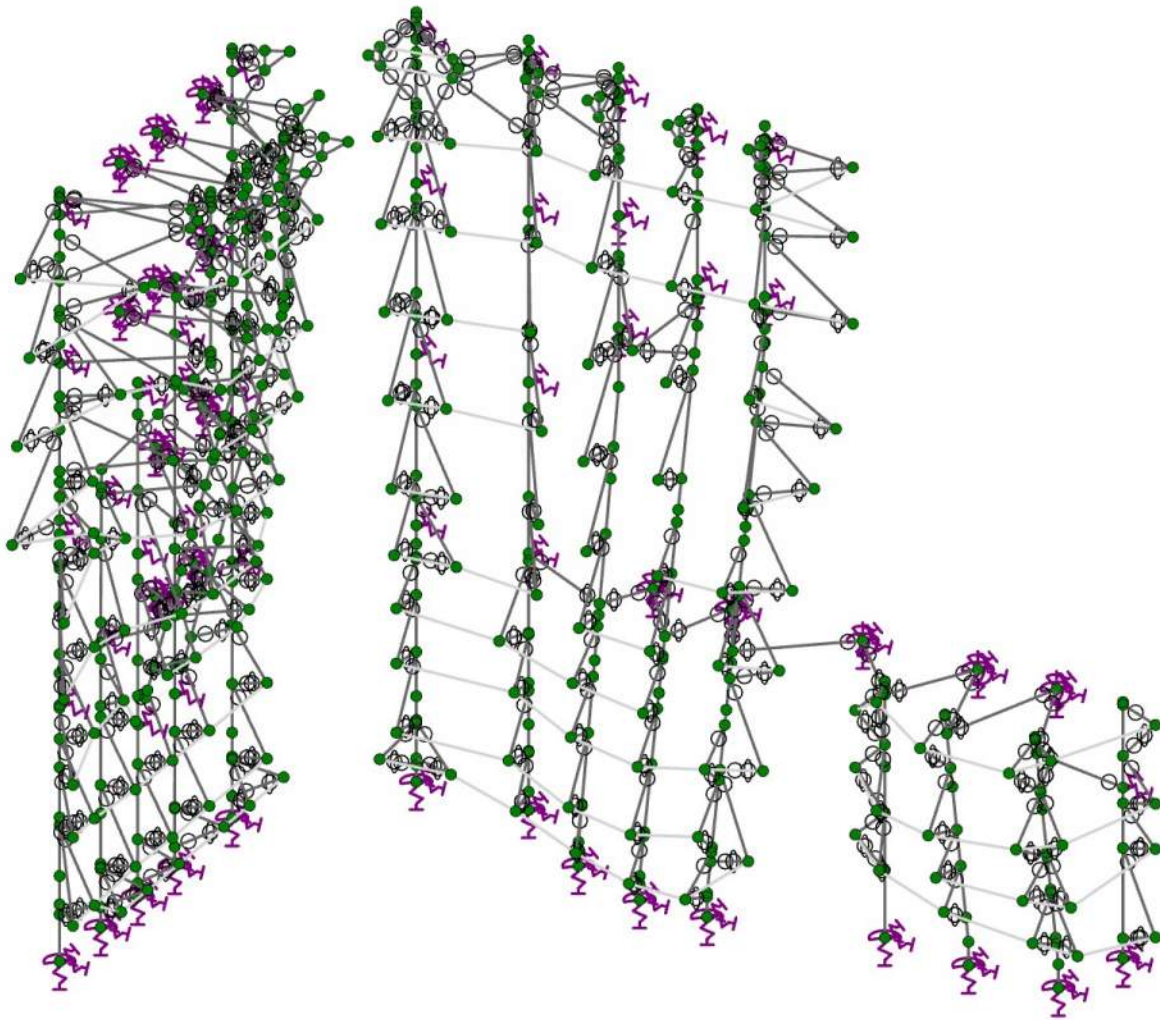




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Grand Junction Rec Center
Member Labels

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003-0353 Grand Junction Re...



Loads: BLC 1, Framing Weight



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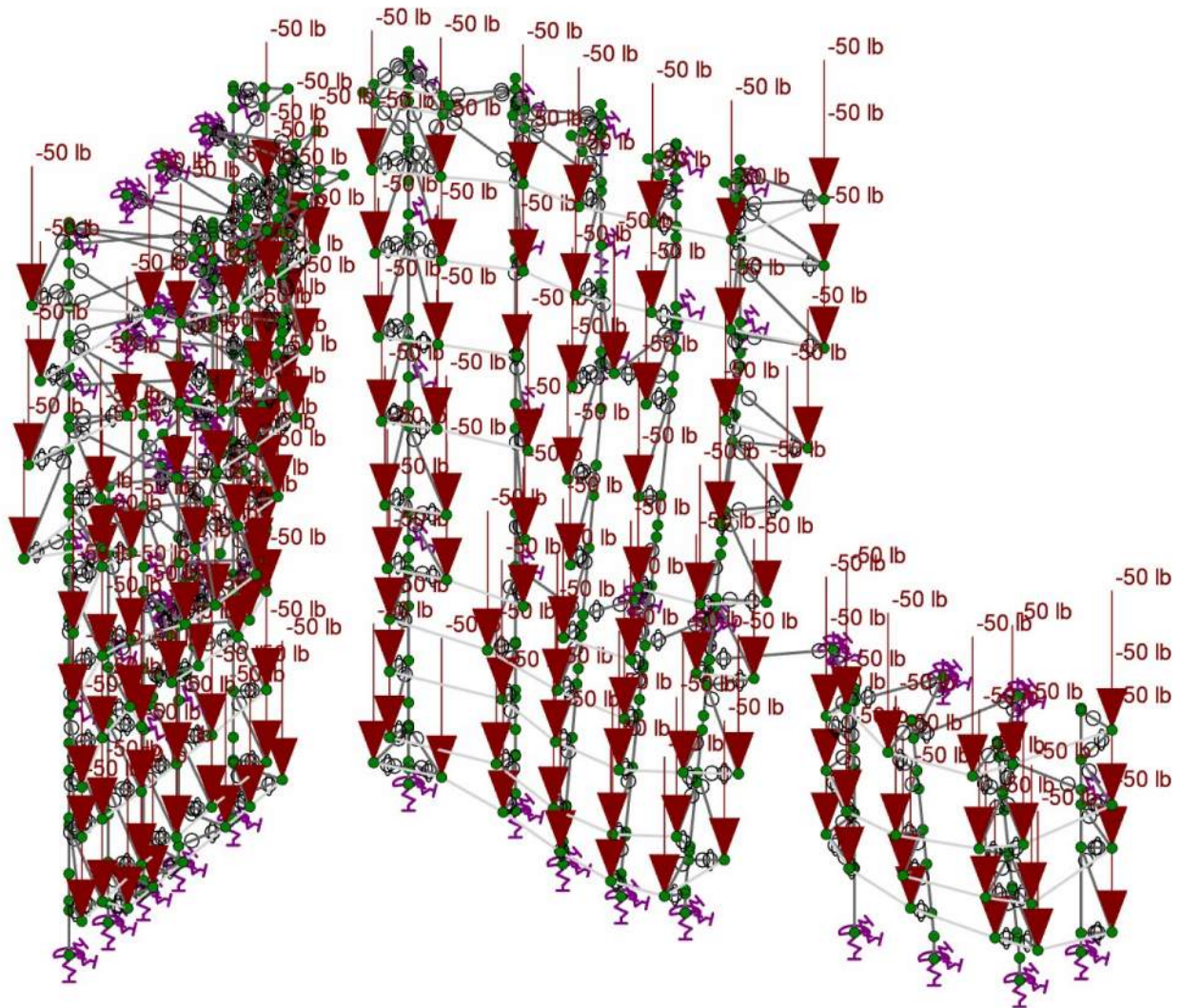
Grand Junction Rec Center

Loads

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Loads: BLC 2, Wall Weight



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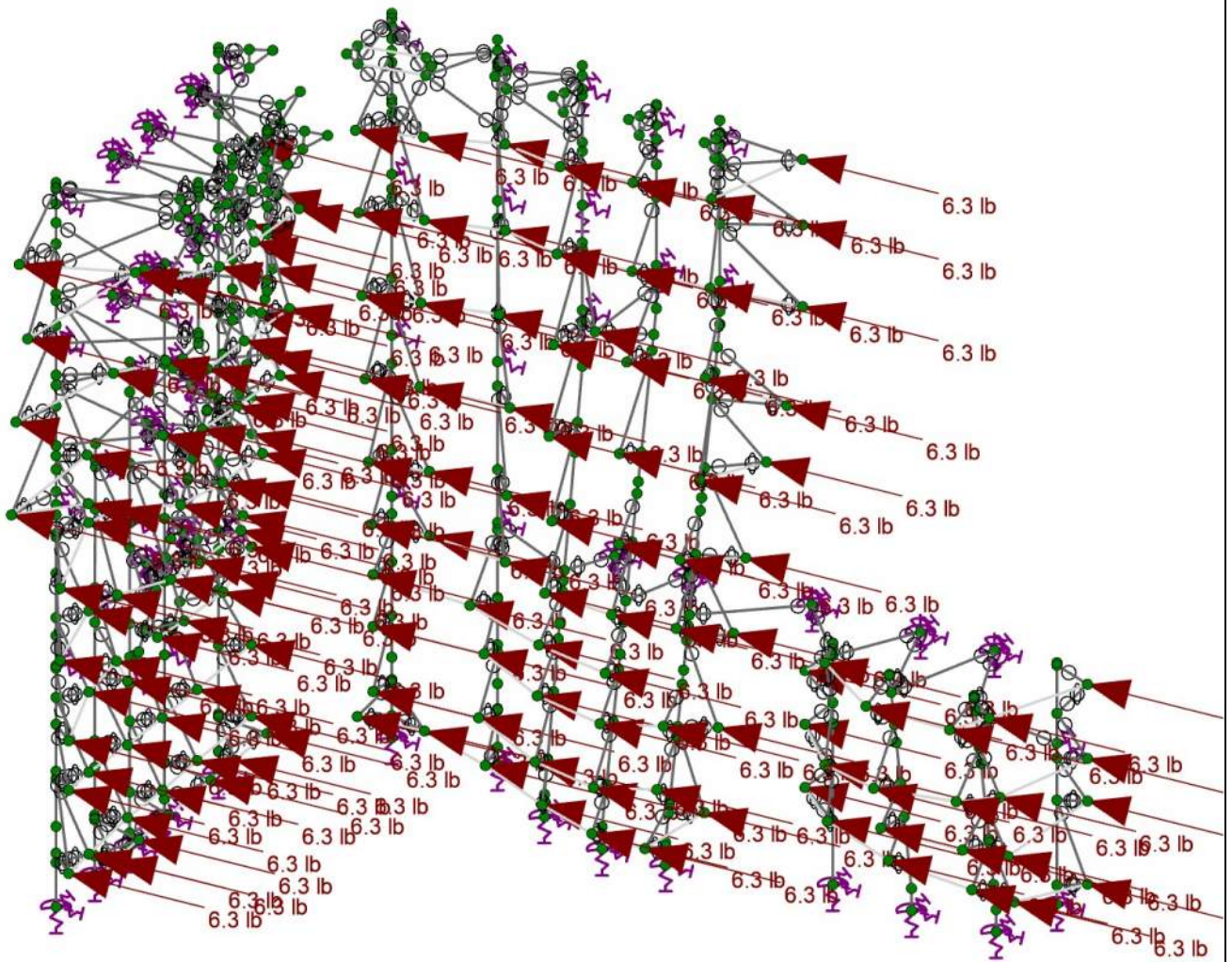
Grand Junction Rec Center

Loads

SK-8

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003-0353 Grand Junction Re...



Loads: BLC 6, Seismic X



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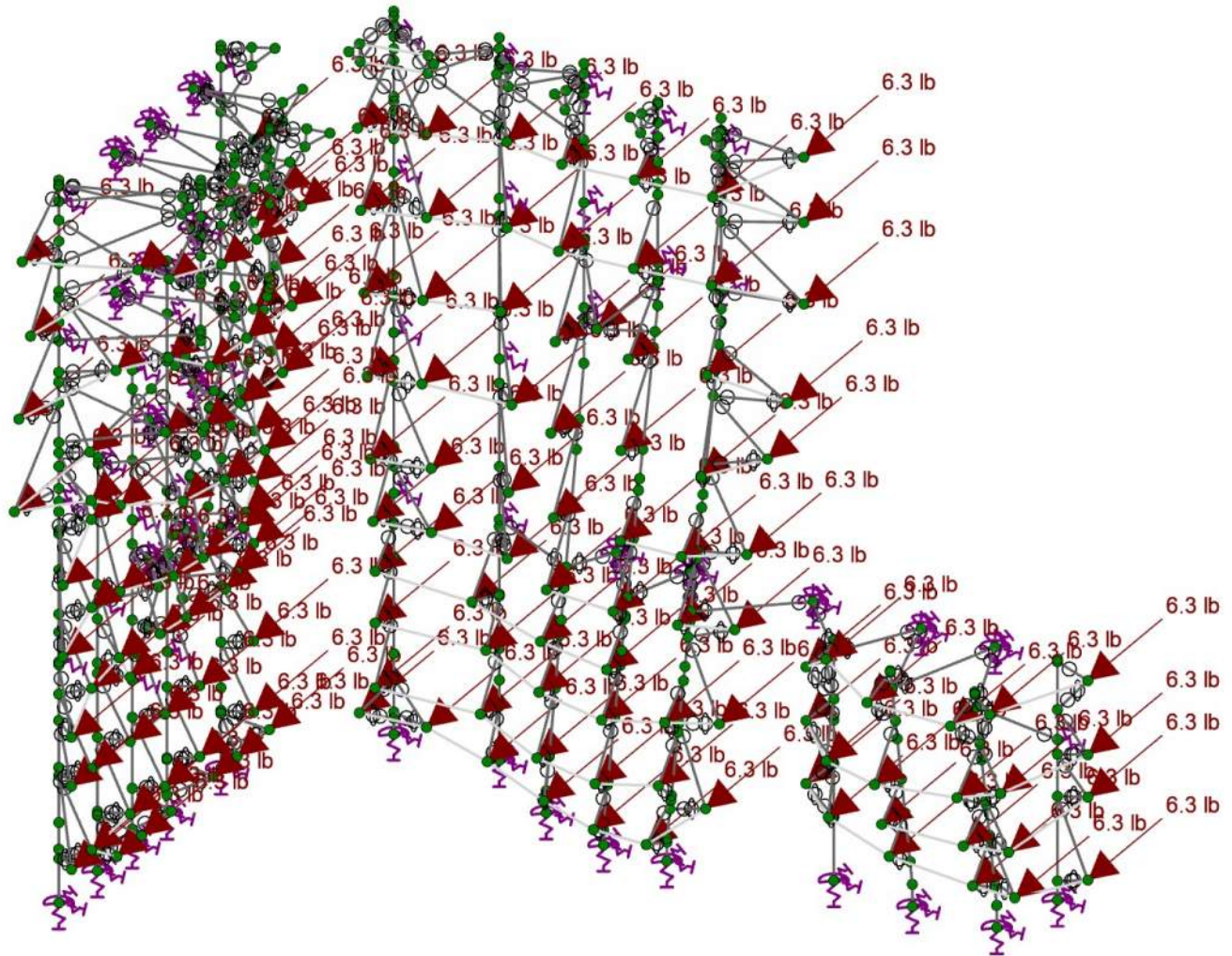
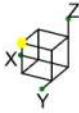
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Loads

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003-0353 Grand Junction Re...



Loads: BLC 7, Seismic Y



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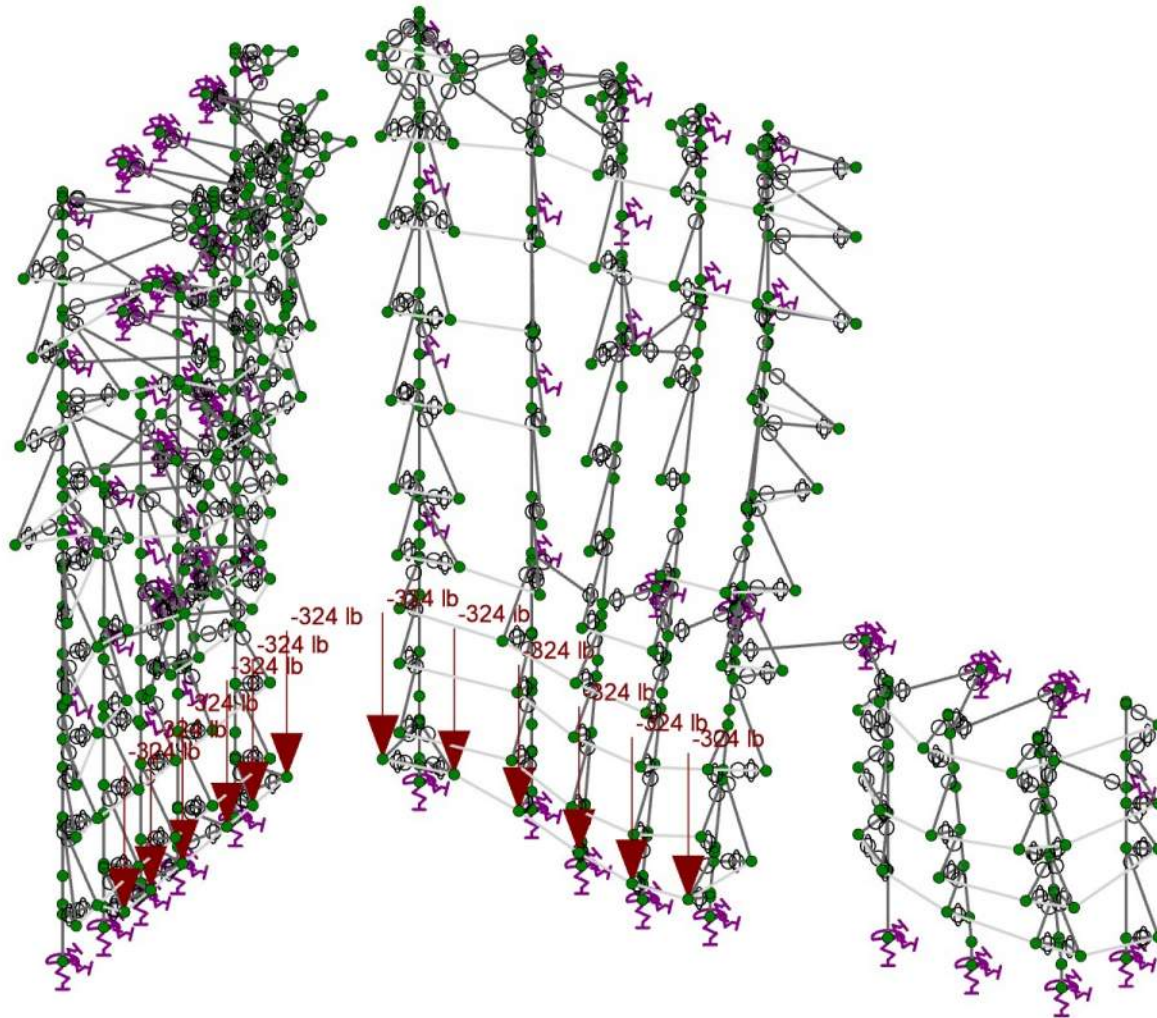
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Loads

SK-10

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003-0353 Grand Junction Re...



Loads: BLC 11, Climber Load 01A



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DMC
003-0353

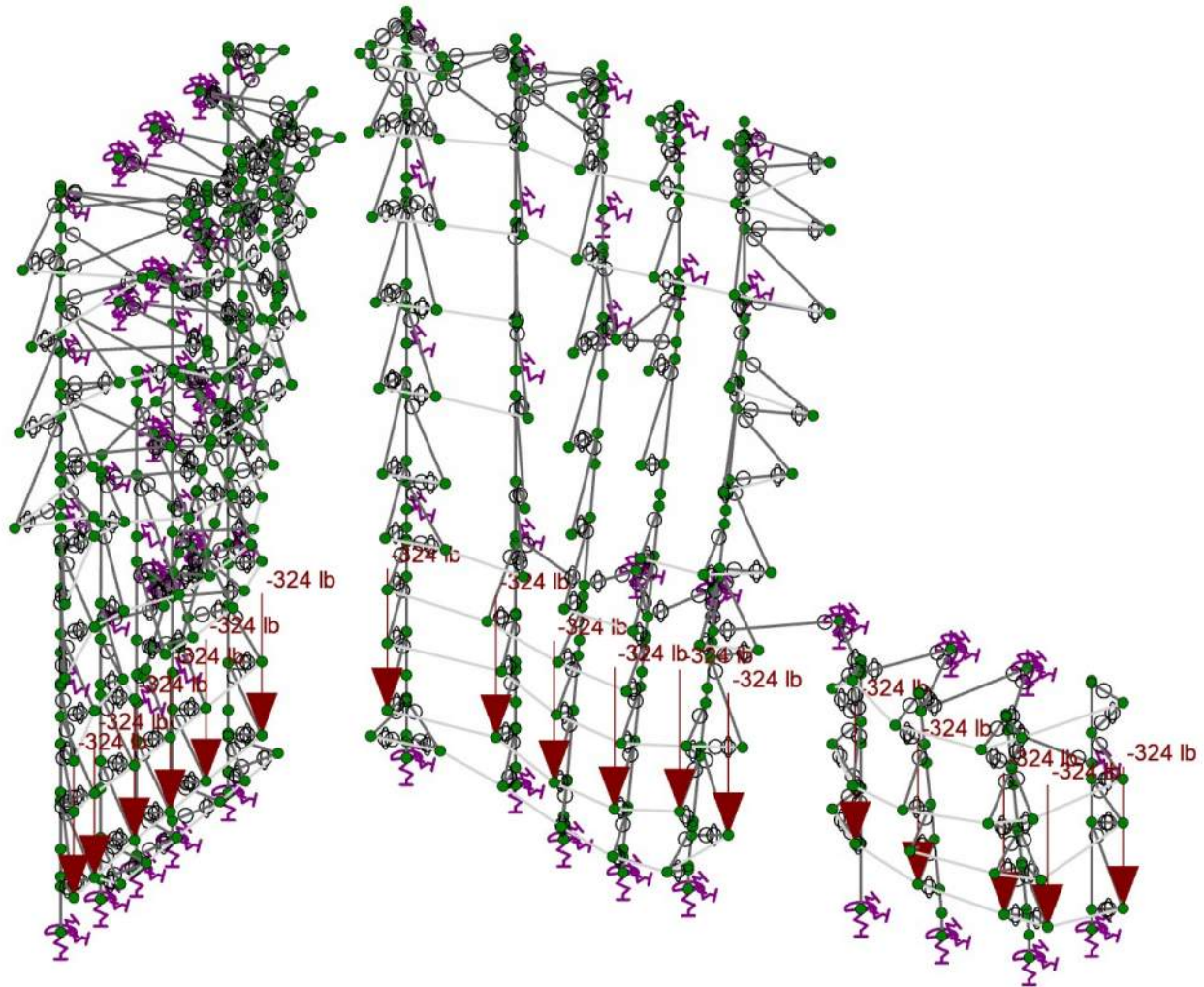
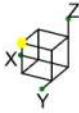
Grand Junction Rec Center

Loads

SK-11

May 19, 2025 at 01:58 PM

003-0353 Grand Junction Re...



Loads: BLC 13, Climber Load 02A



Peak Thrills Engineering
DMC
003-0353

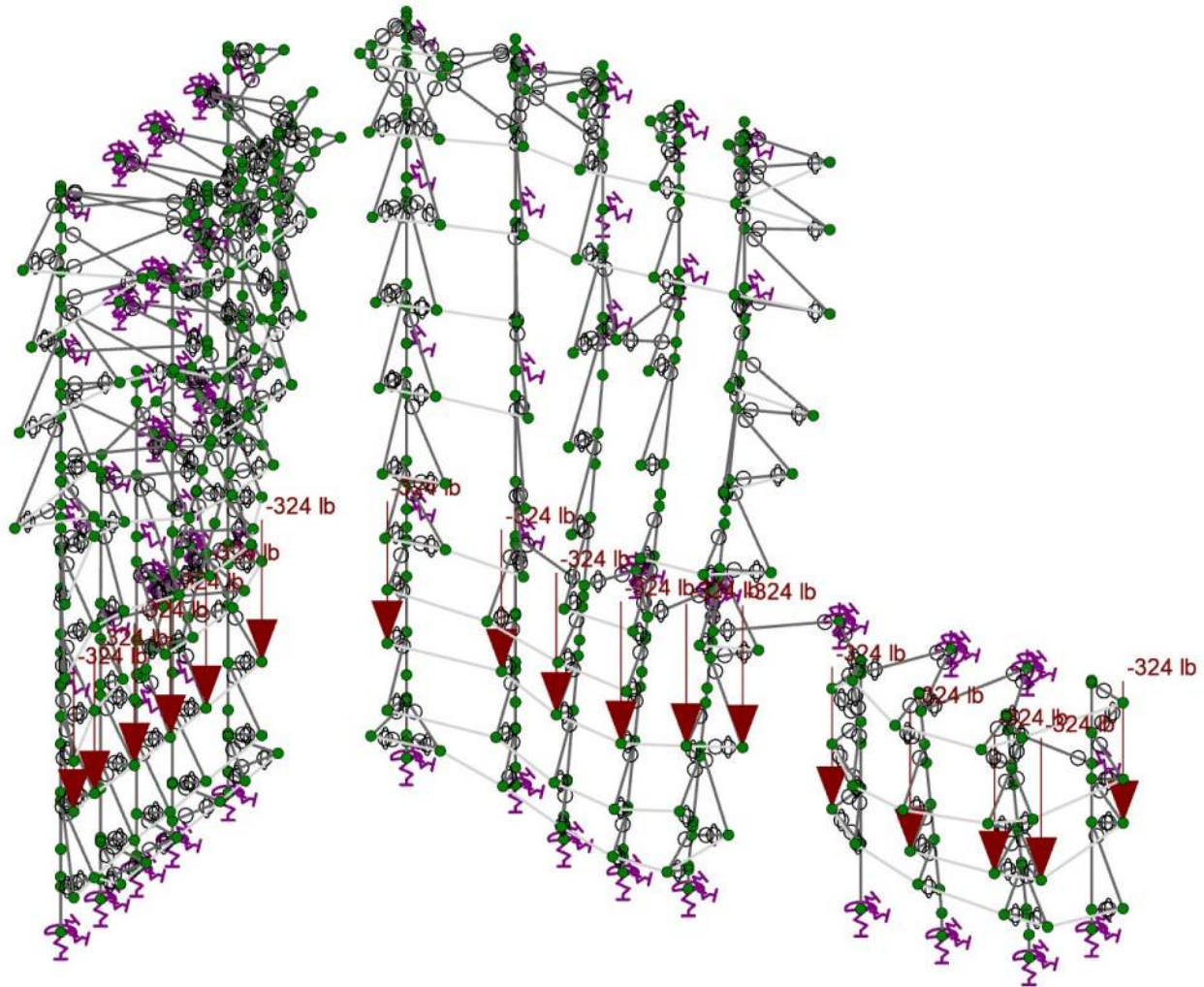
Grand Junction Rec Center

Loads

SK-12

May 19, 2025 at 01:58 PM

003-0353 Grand Junction Re...



Loads: BLC 15, Climber Load 03A



Peak Thrills Engineering
DMC
003-0353

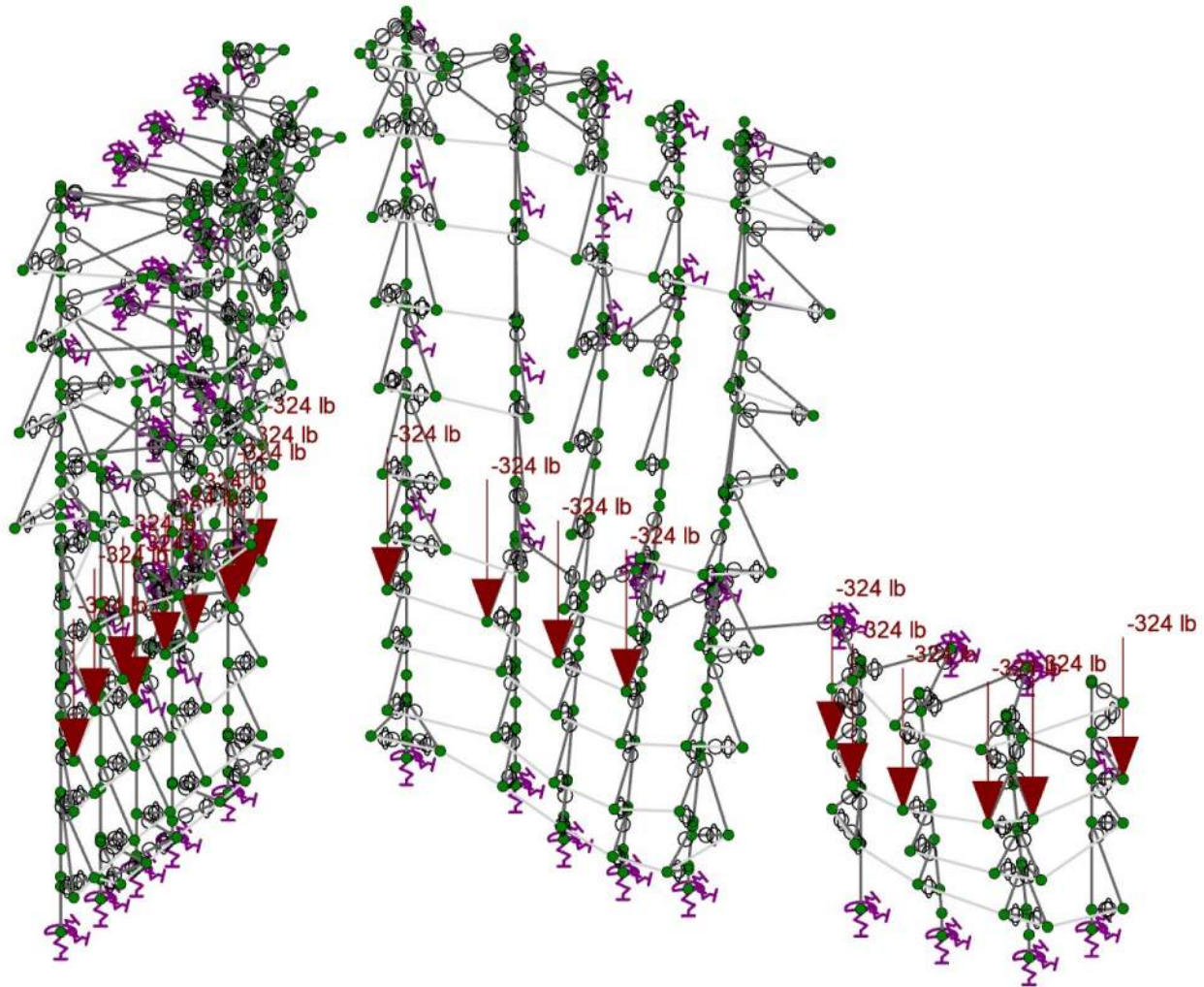
Grand Junction Rec Center

Loads

SK-13

May 19, 2025 at 01:58 PM

003-0353 Grand Junction Re...



Loads: BLC 17, Climber Load 04A



Peak Thrills Engineering
DMC
003-0353

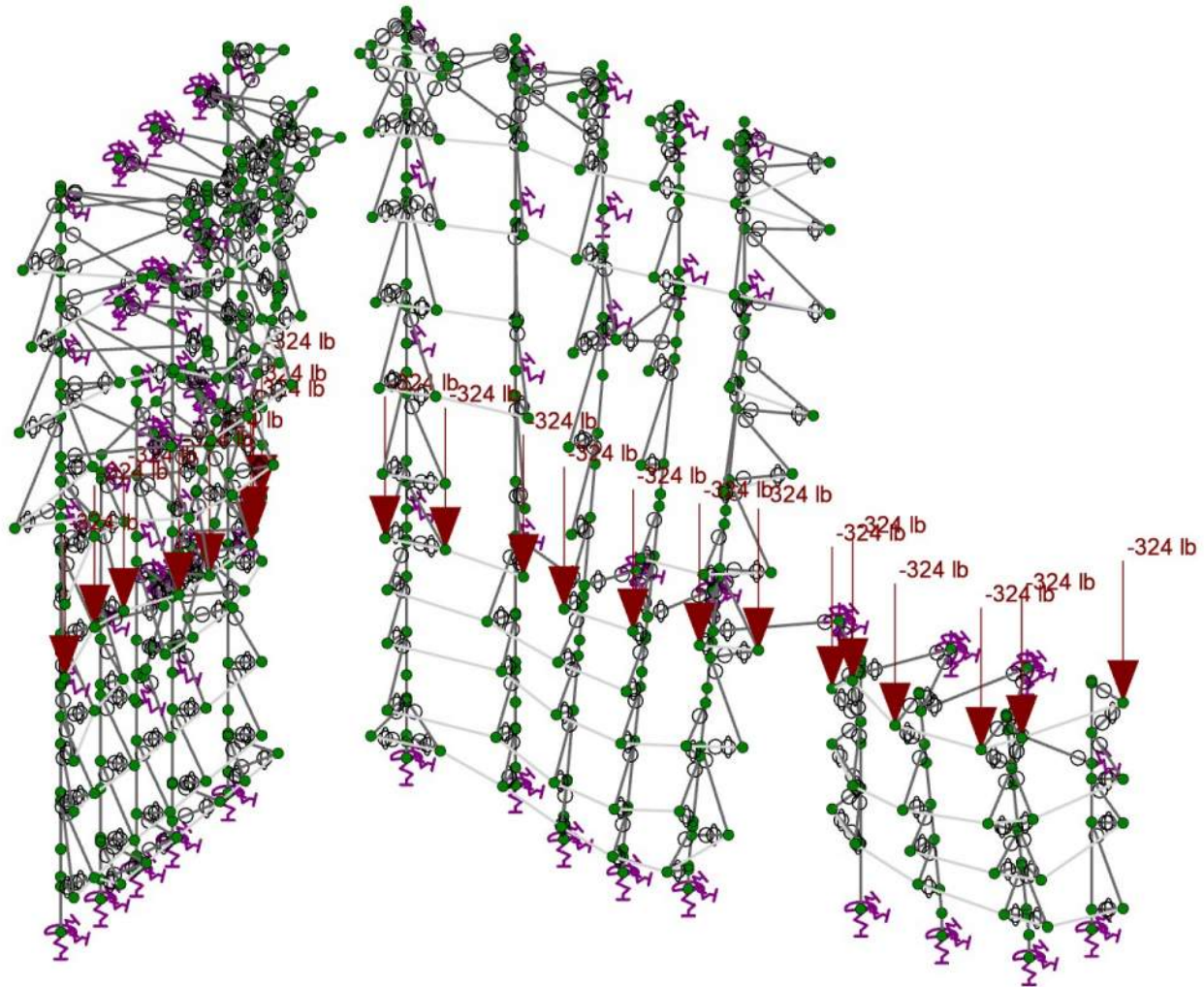
Grand Junction Rec Center

Loads

SK-14

May 19, 2025 at 01:58 PM

003-0353 Grand Junction Re...



Loads: BLC 19, Climber Load 05A



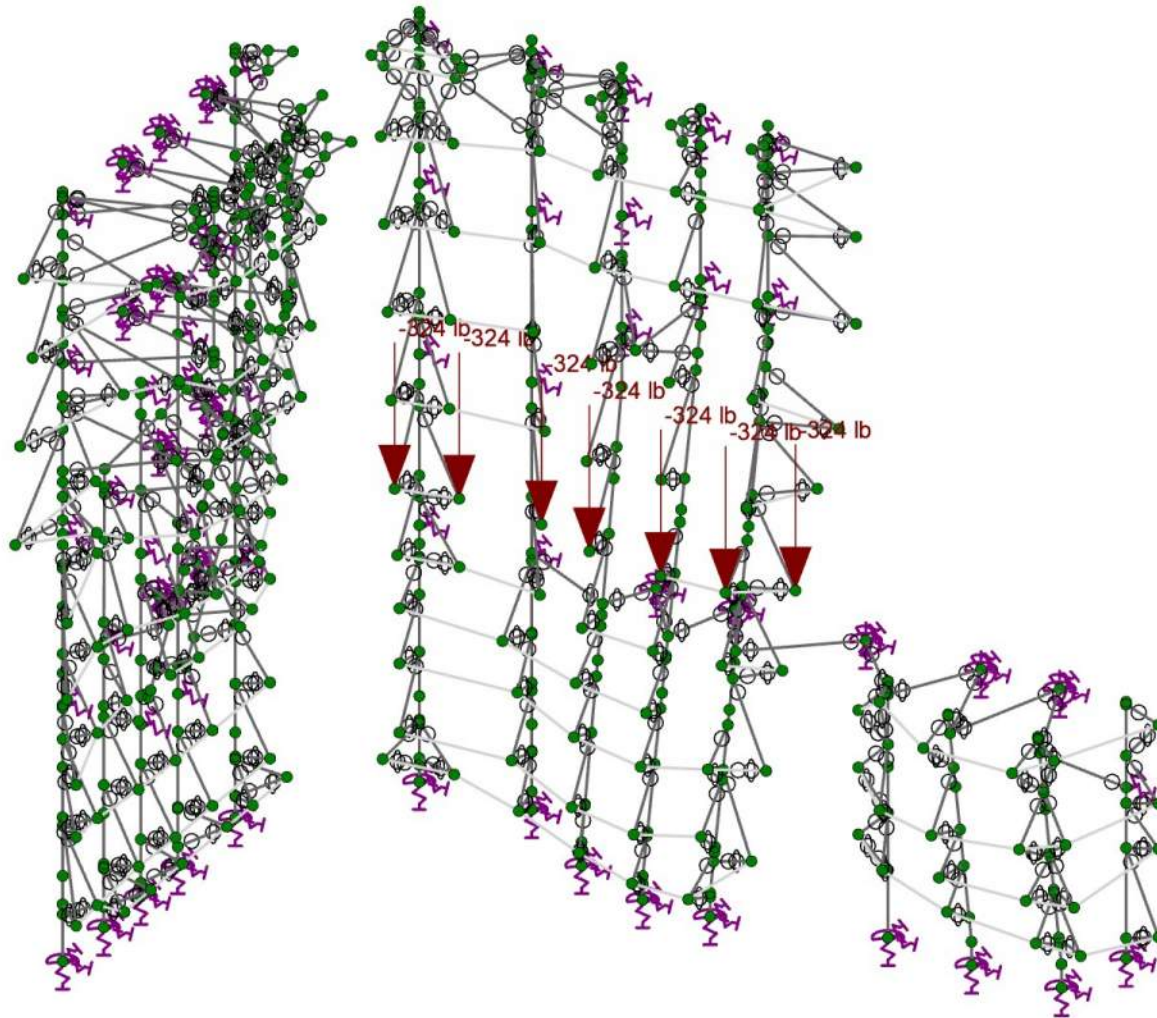
Peak Thrills Engineering
DMC
003-0353

Grand Junction Rec Center

Loads

SK-15

May 19, 2025 at 01:59 PM
003-0353 Grand Junction Re...



Loads: BLC 20, Climber Load 05B



Peak Thrills Engineering
DMC
003-0353

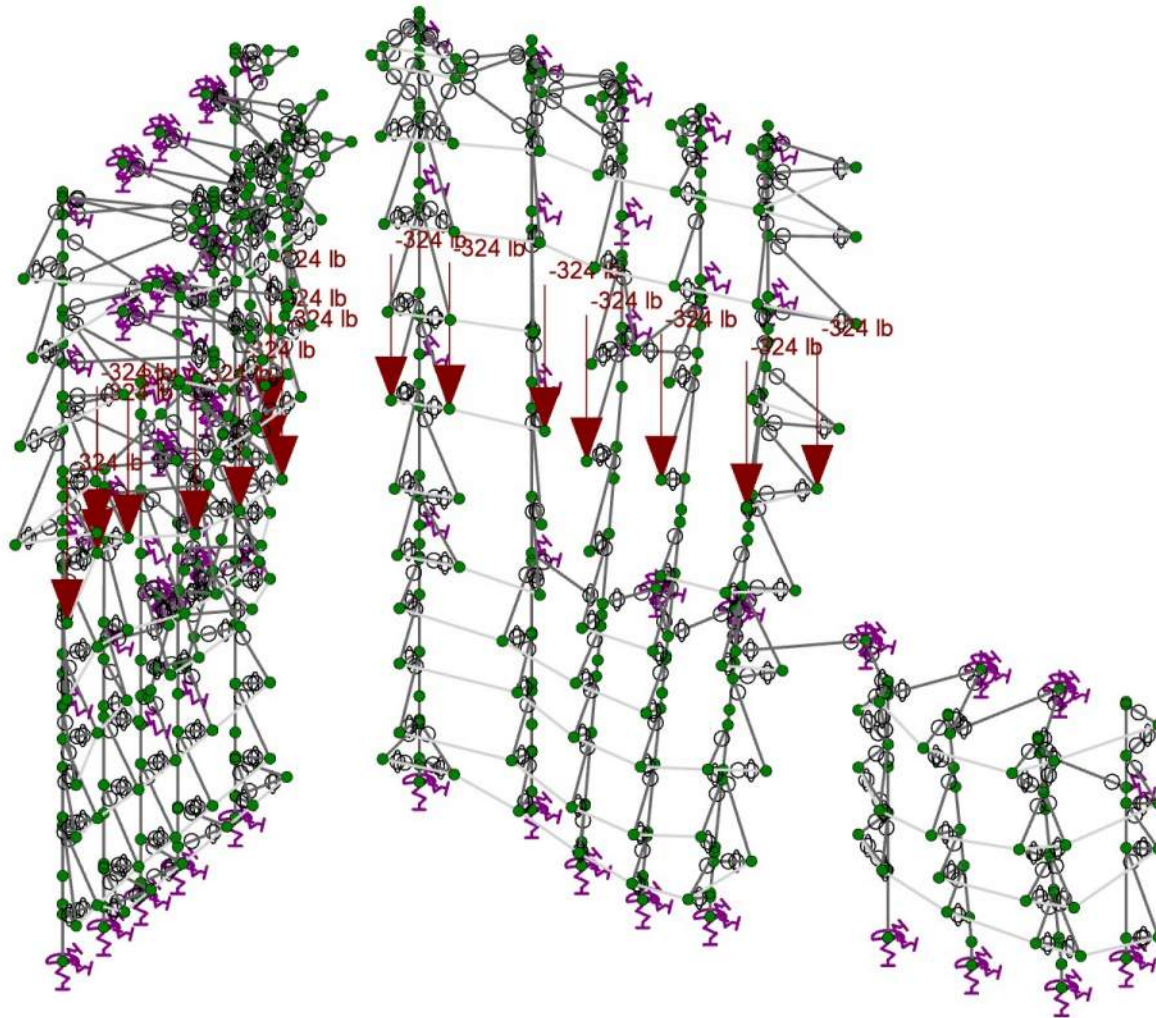
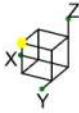
Grand Junction Rec Center

Loads

SK-16

May 19, 2025 at 01:59 PM

003-0353 Grand Junction Re...



Loads: BLC 21, Climber Load 06A



Peak Thrills Engineering
DMC
003-0353

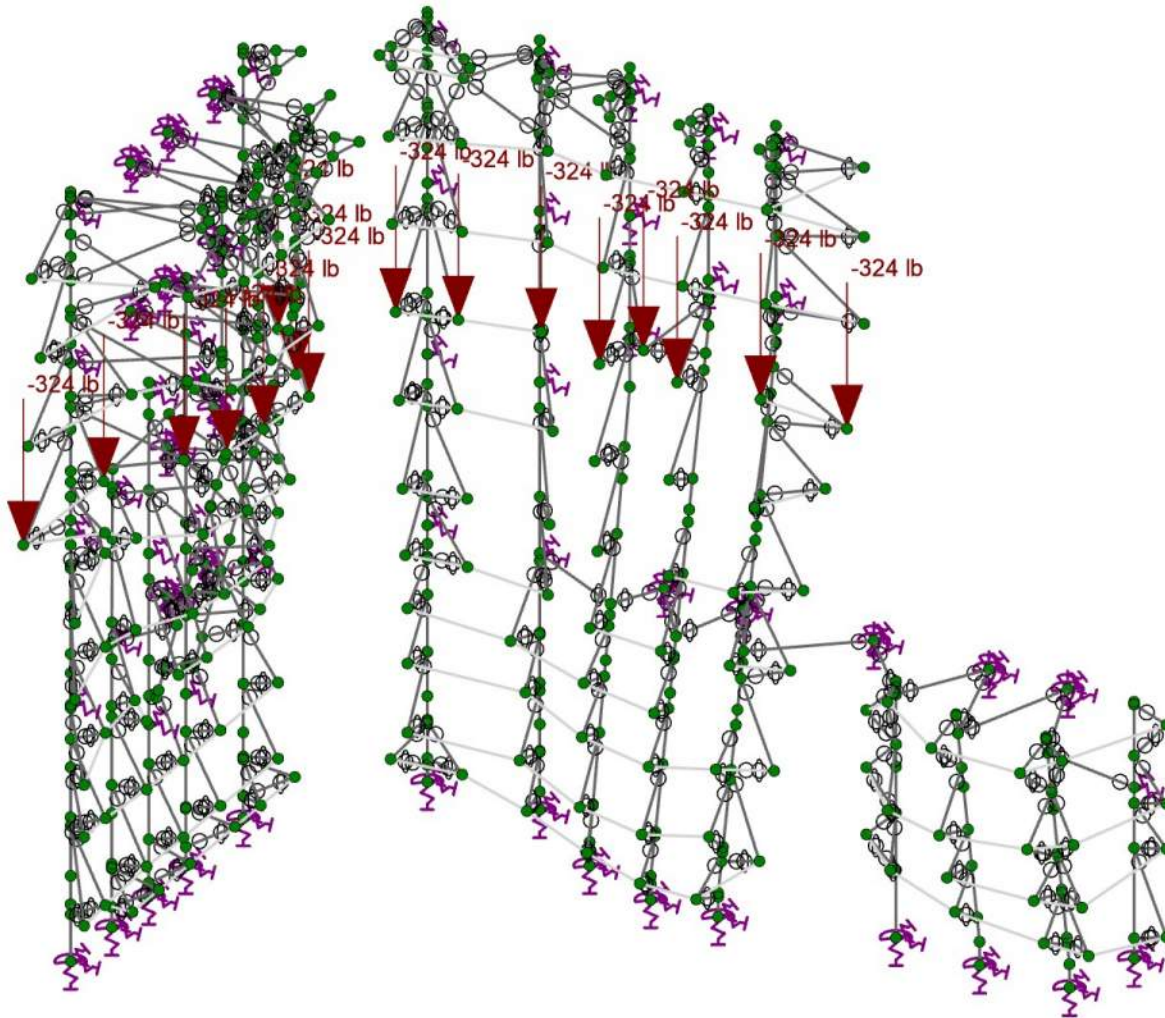
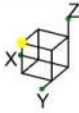
Grand Junction Rec Center

Loads

SK-17

May 19, 2025 at 01:59 PM

003-0353 Grand Junction Re...



Loads: BLC 23, Climber Load 07A



Peak Thrills Engineering
DMC
003-0353

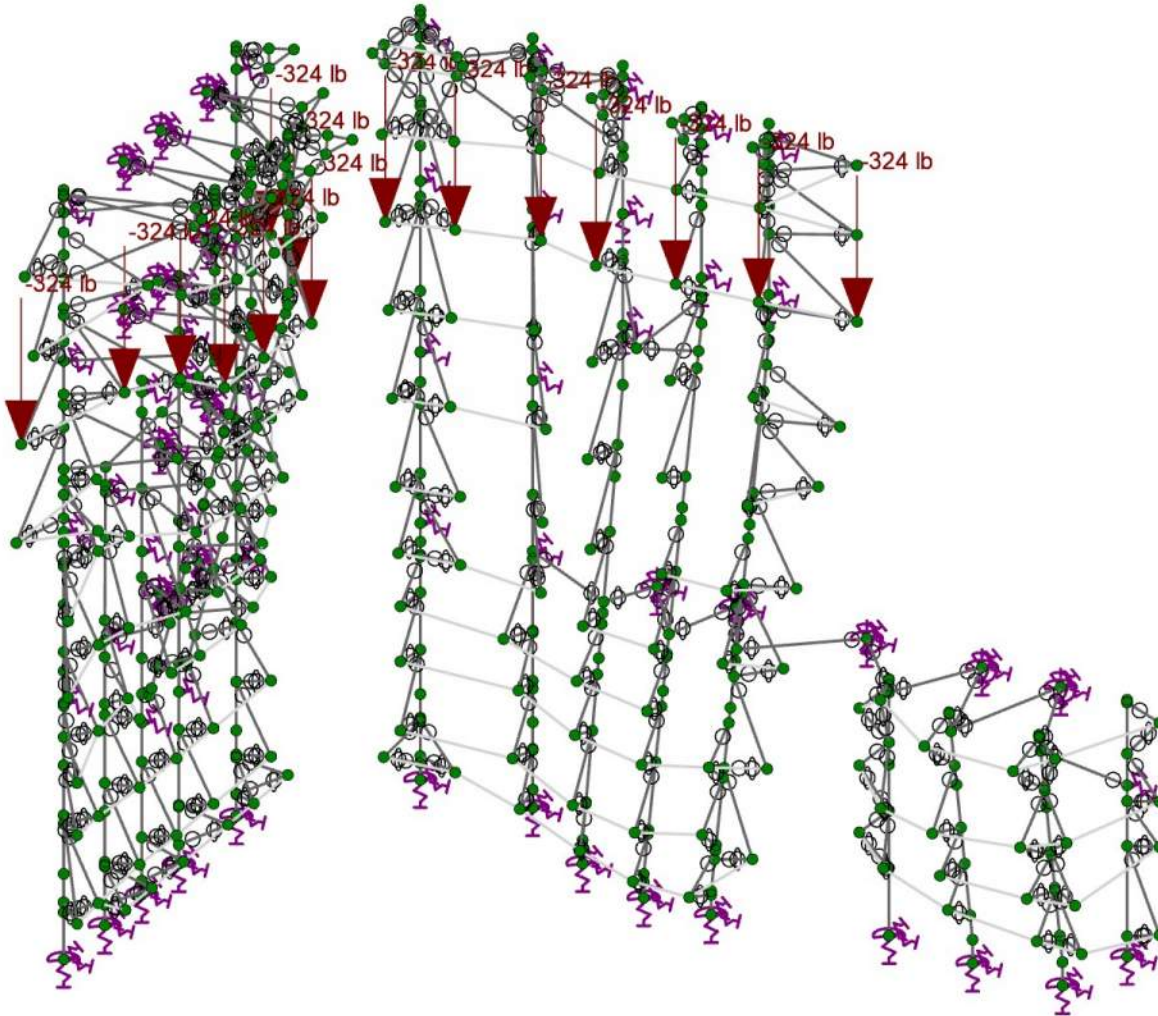
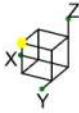
Grand Junction Rec Center

Loads

SK-18

May 19, 2025 at 01:59 PM

003-0353 Grand Junction Re...



Loads: BLC 25, Climber Load 08A



Peak Thrills Engineering
DMC
003-0353

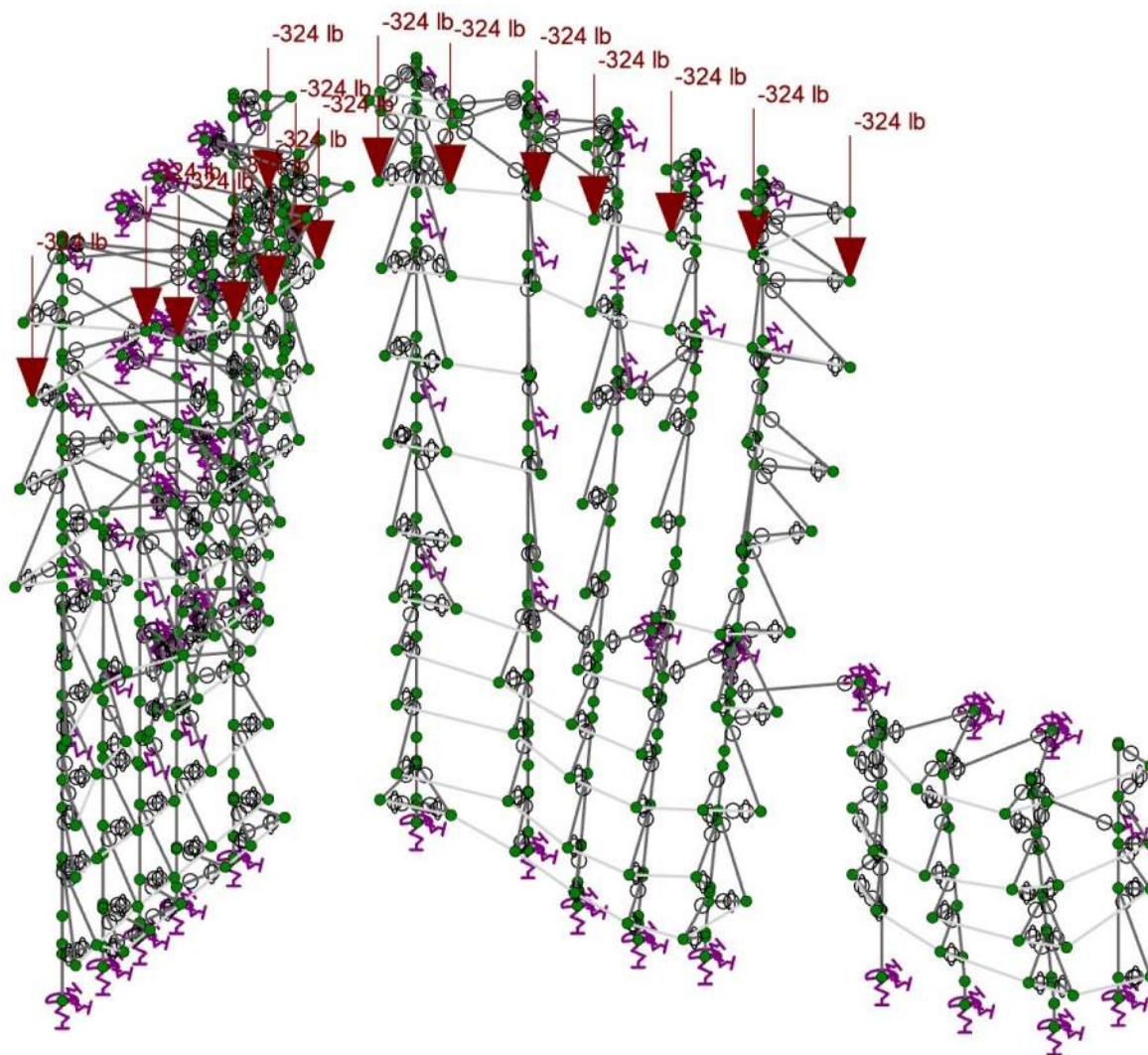
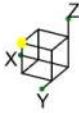
Grand Junction Rec Center

Loads

SK-19

May 19, 2025 at 01:59 PM

003-0353 Grand Junction Re...



Loads: BLC 27, Climber Load 09A



Peak Thrills Engineering
DMC
003-0353

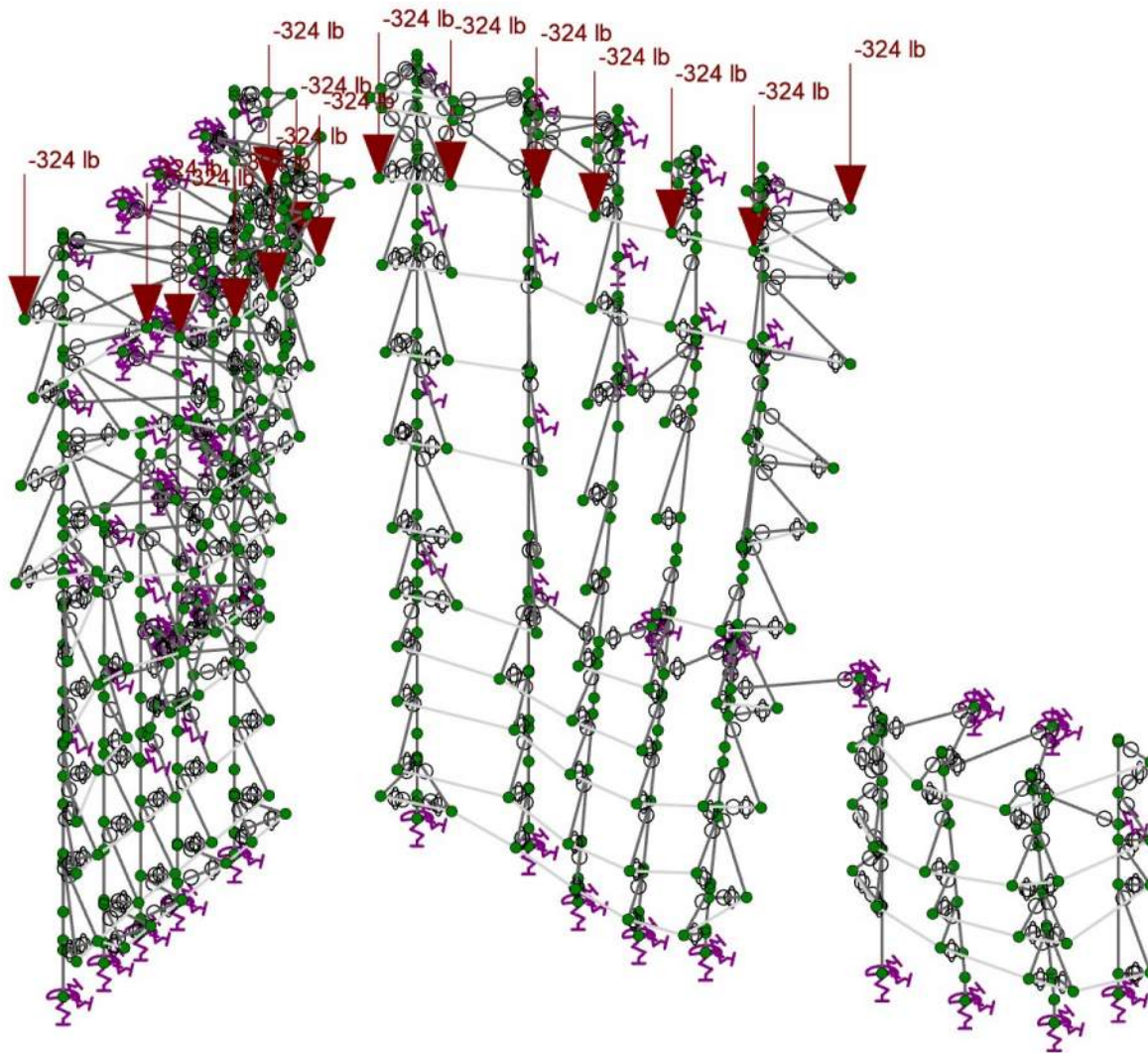
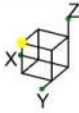
Grand Junction Rec Center

Loads

SK-20

May 19, 2025 at 01:59 PM

003-0353 Grand Junction Re...



Loads: BLC 28, Climber Load 09B



Peak Thrills Engineering
DMC
003-0353

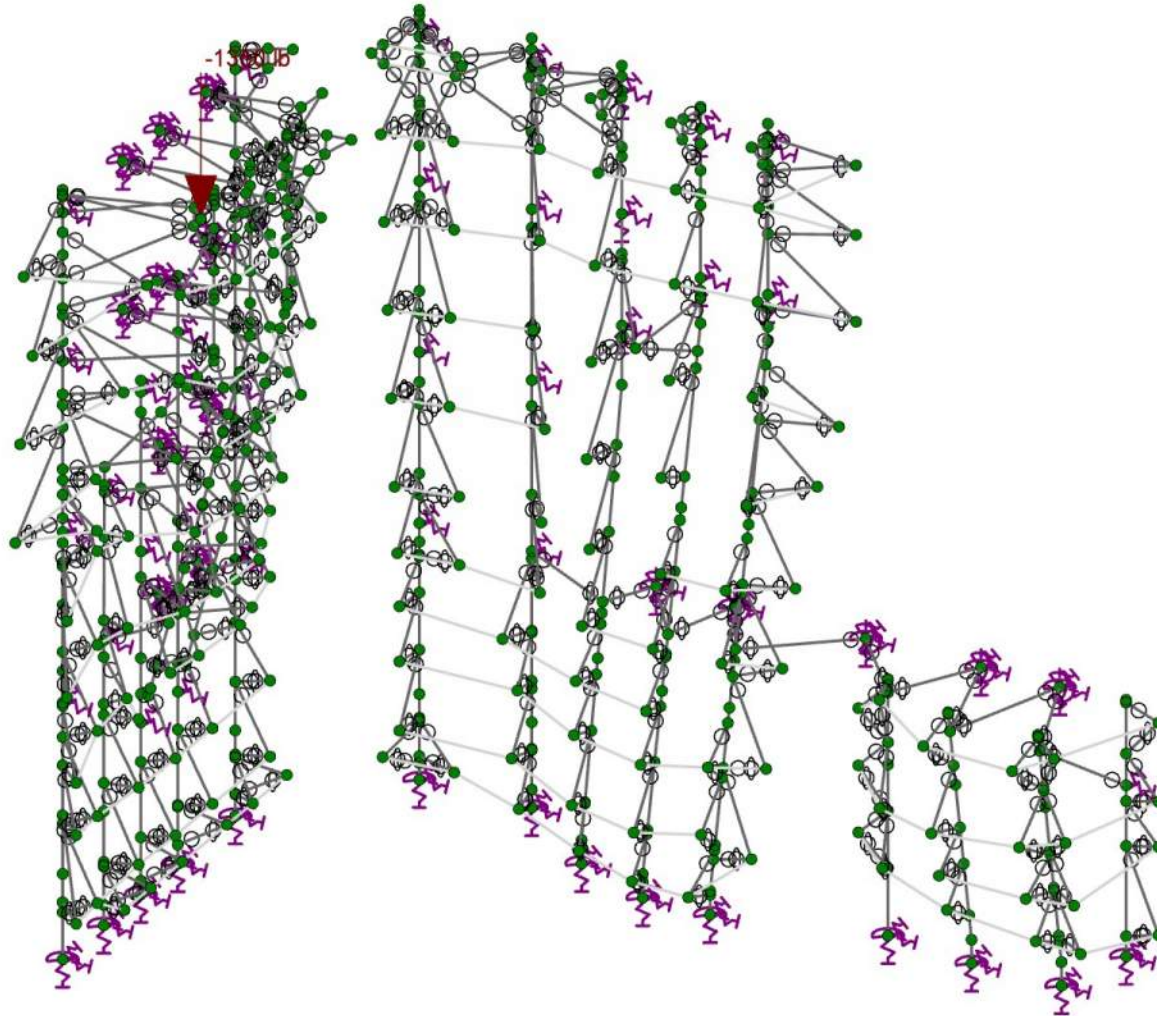
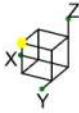
Grand Junction Rec Center

Loads

SK-21

May 19, 2025 at 01:59 PM

003-0353 Grand Junction Re...



Loads: BLC 33, Belay Load 01



Peak Thrills Engineering
DMC
003-0353

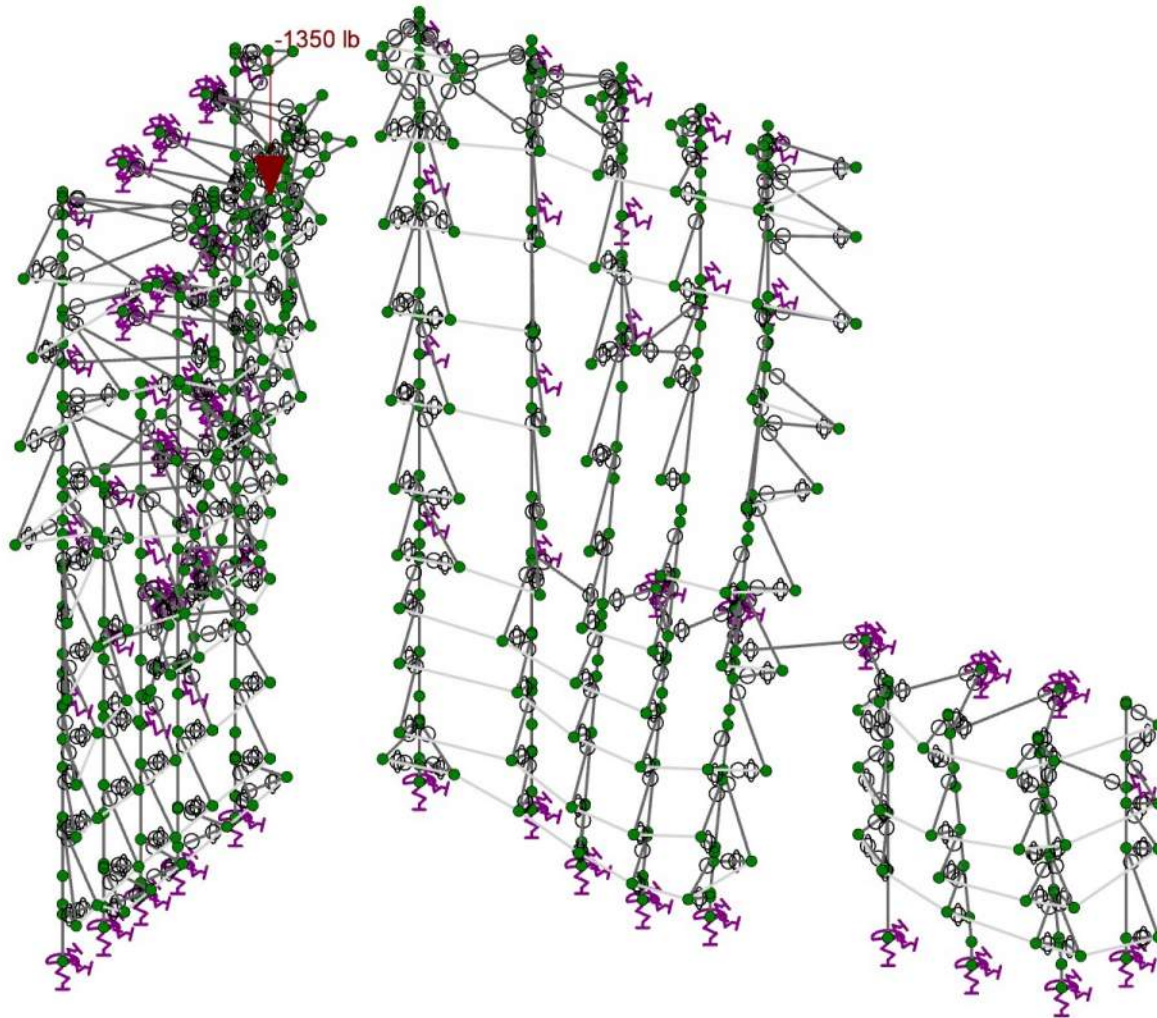
Grand Junction Rec Center

Loads

SK-22

May 19, 2025 at 02:00 PM

003-0353 Grand Junction Re...



Loads: BLC 34, Belay Load 02



Peak Thrills Engineering
DMC
003-0353

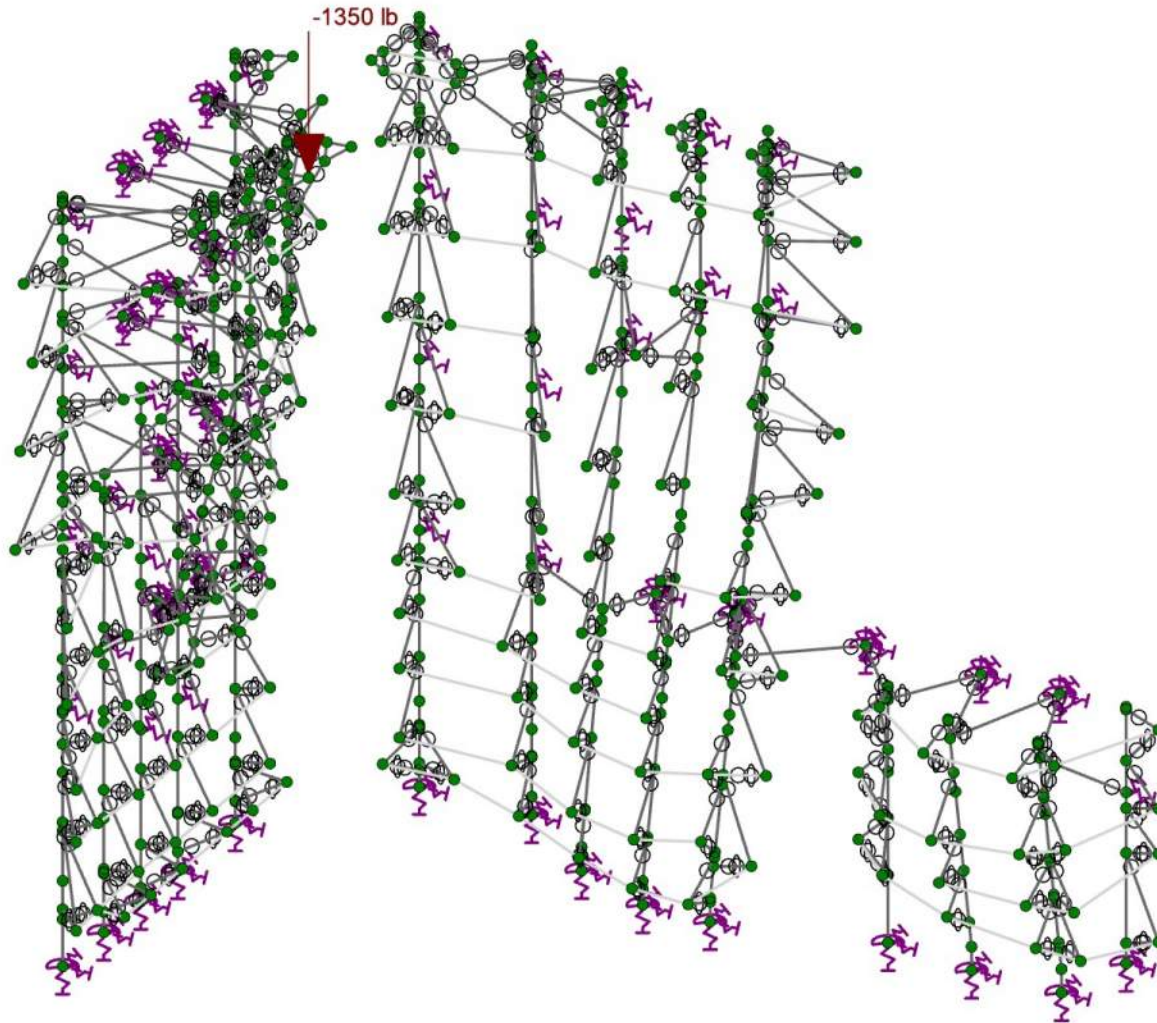
Grand Junction Rec Center

Loads

SK-23

May 19, 2025 at 02:00 PM

003-0353 Grand Junction Re...



Loads: BLC 35, Belay Load 03



Peak Thrills Engineering
DMC
003-0353

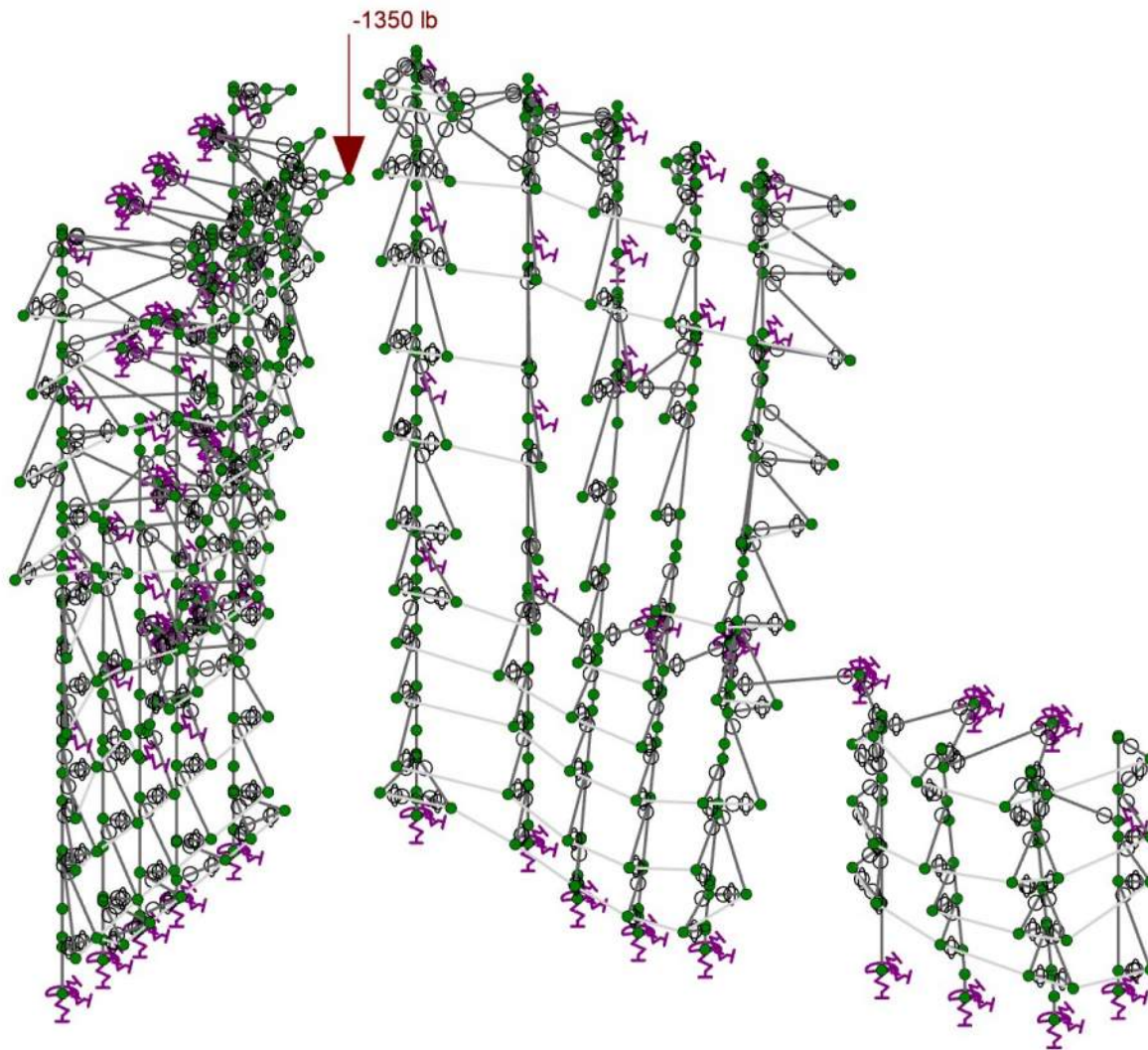
Grand Junction Rec Center

Loads

SK-24

May 19, 2025 at 02:00 PM

003-0353 Grand Junction Re...



Loads: BLC 36, Belay Load 04



Peak Thrills Engineering
DMC
003-0353

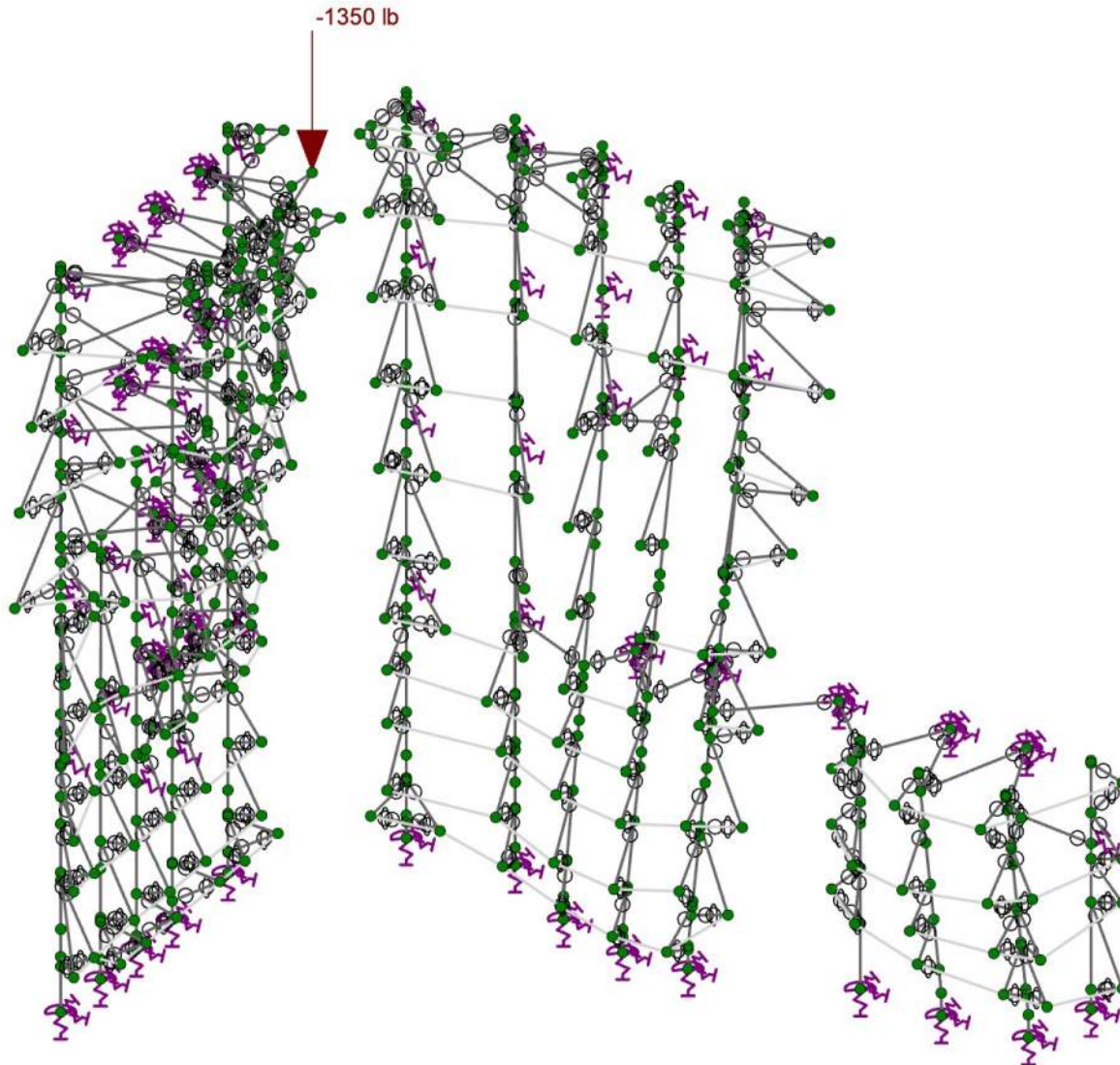
Grand Junction Rec Center

Loads

SK-25

May 19, 2025 at 02:01 PM

003-0353 Grand Junction Re...



Loads: BLC 37, Belay Load 05



Peak Thrills Engineering
DMC
003-0353

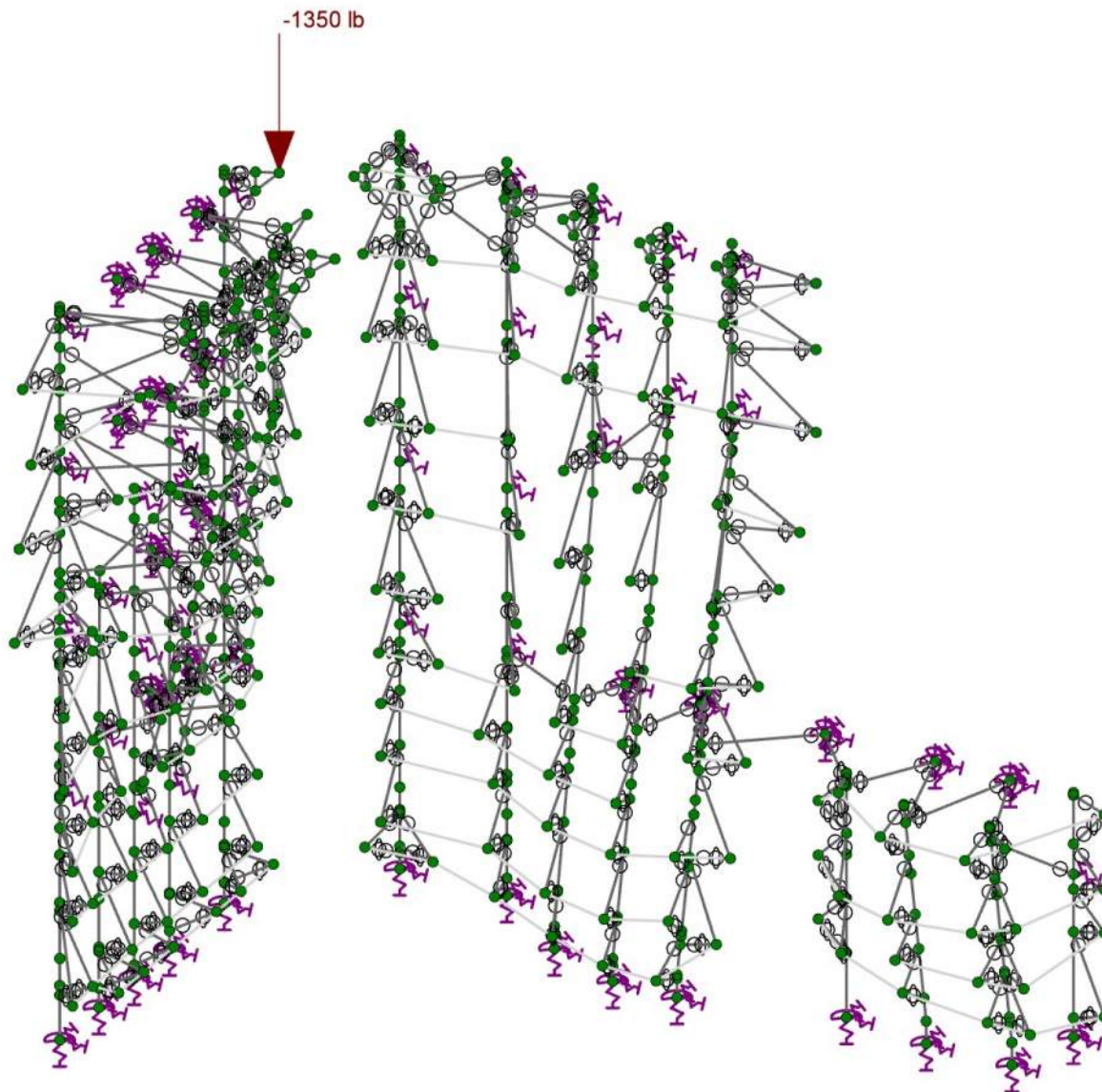
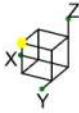
Grand Junction Rec Center

Loads

SK-26

May 19, 2025 at 02:01 PM

003-0353 Grand Junction Re...



Loads: BLC 38, Belay Load 06



Peak Thrills Engineering
DMC
003-0353

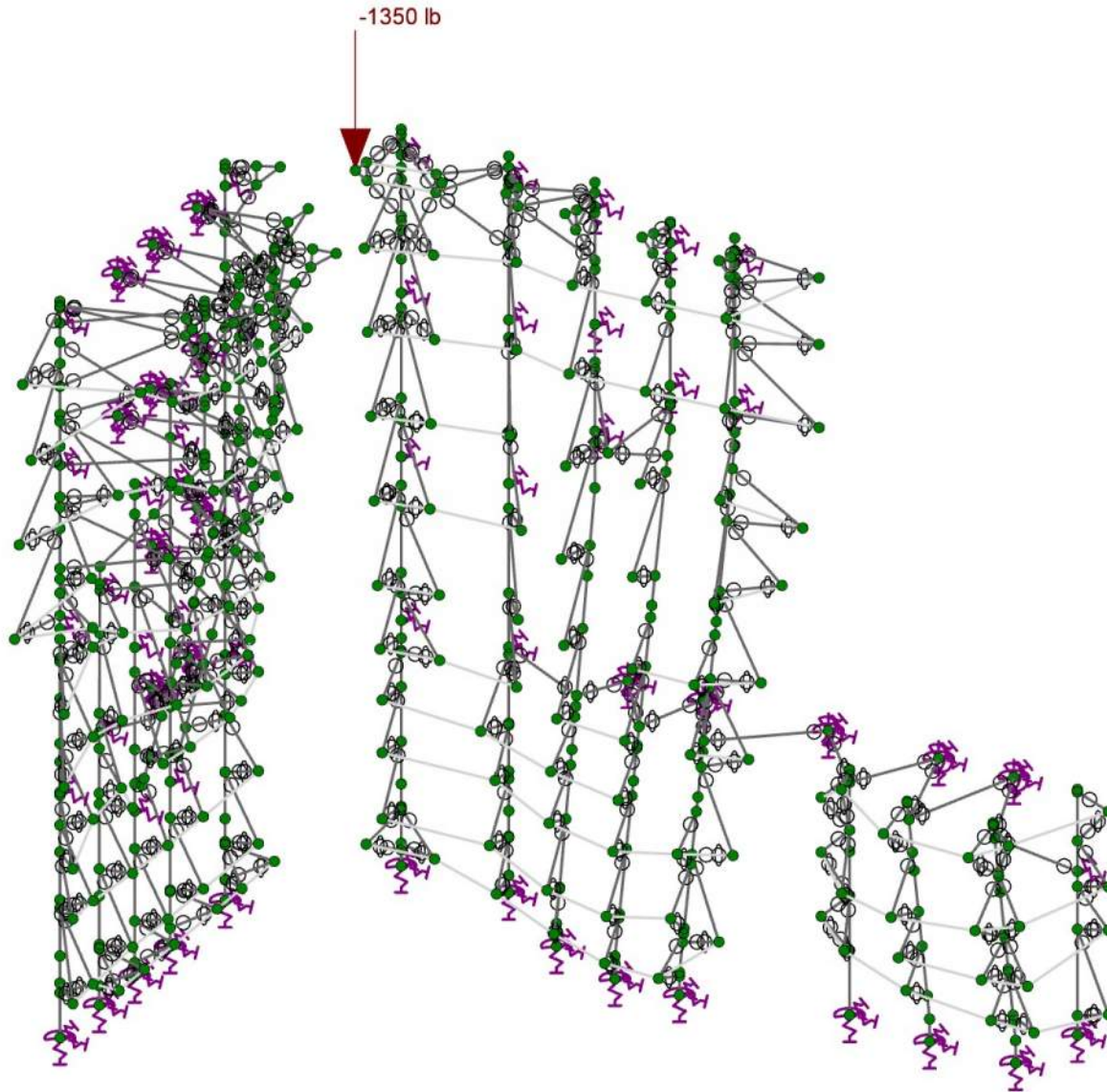
Grand Junction Rec Center

Loads

SK-27

May 19, 2025 at 02:01 PM

003-0353 Grand Junction Re...



Loads: BLC 39, Belay Load 07



Peak Thrills Engineering
DMC
003-0353

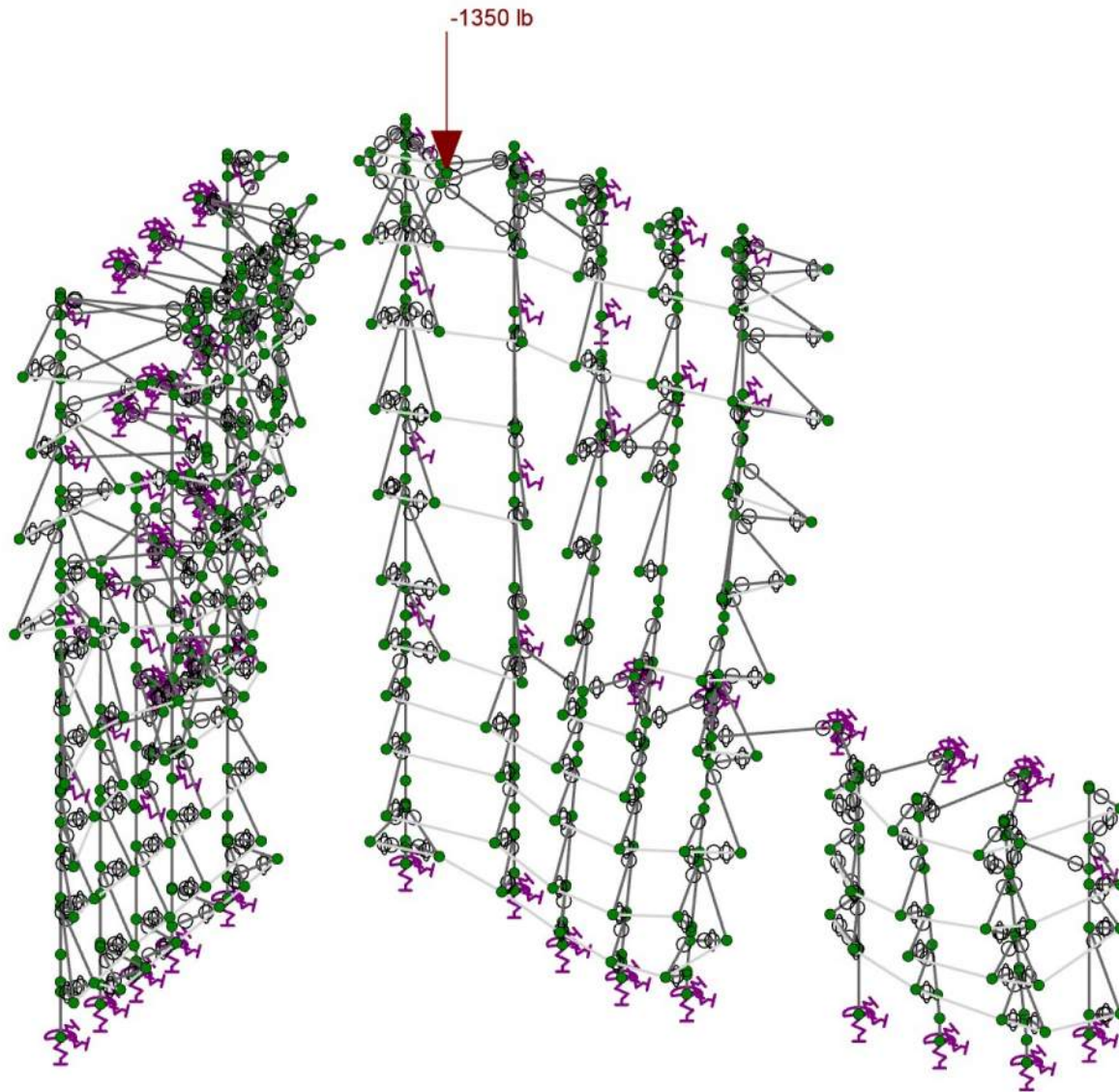
Grand Junction Rec Center

Loads

SK-28

May 19, 2025 at 02:01 PM

003-0353 Grand Junction Re...



Loads: BLC 40, Belay Load 08



Peak Thrills Engineering
DMC
003-0353

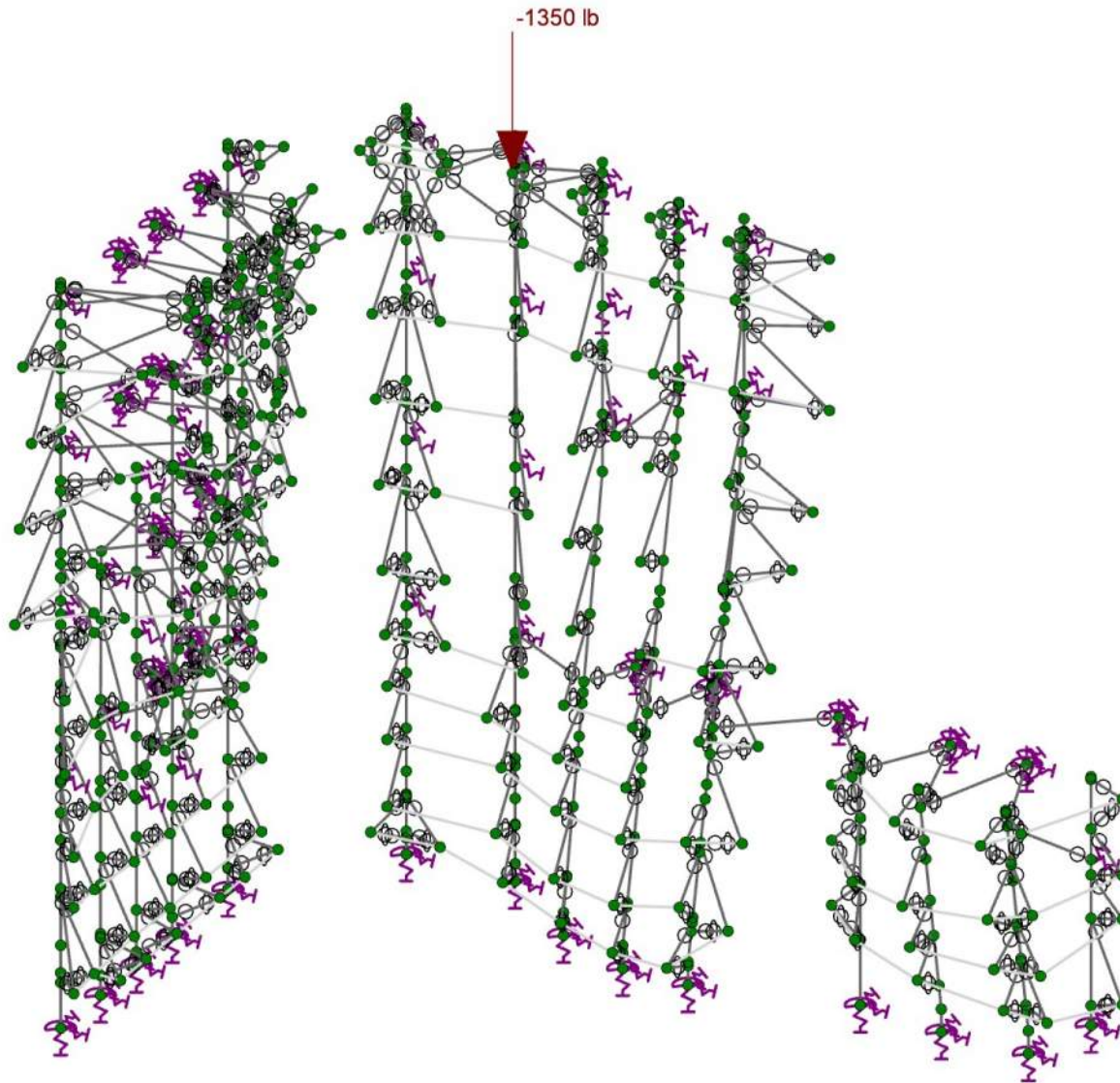
Grand Junction Rec Center

Loads

SK-29

May 19, 2025 at 02:01 PM

003-0353 Grand Junction Re...



Loads: BLC 41, Belay Load 09



Peak Thrills Engineering
DMC
003-0353

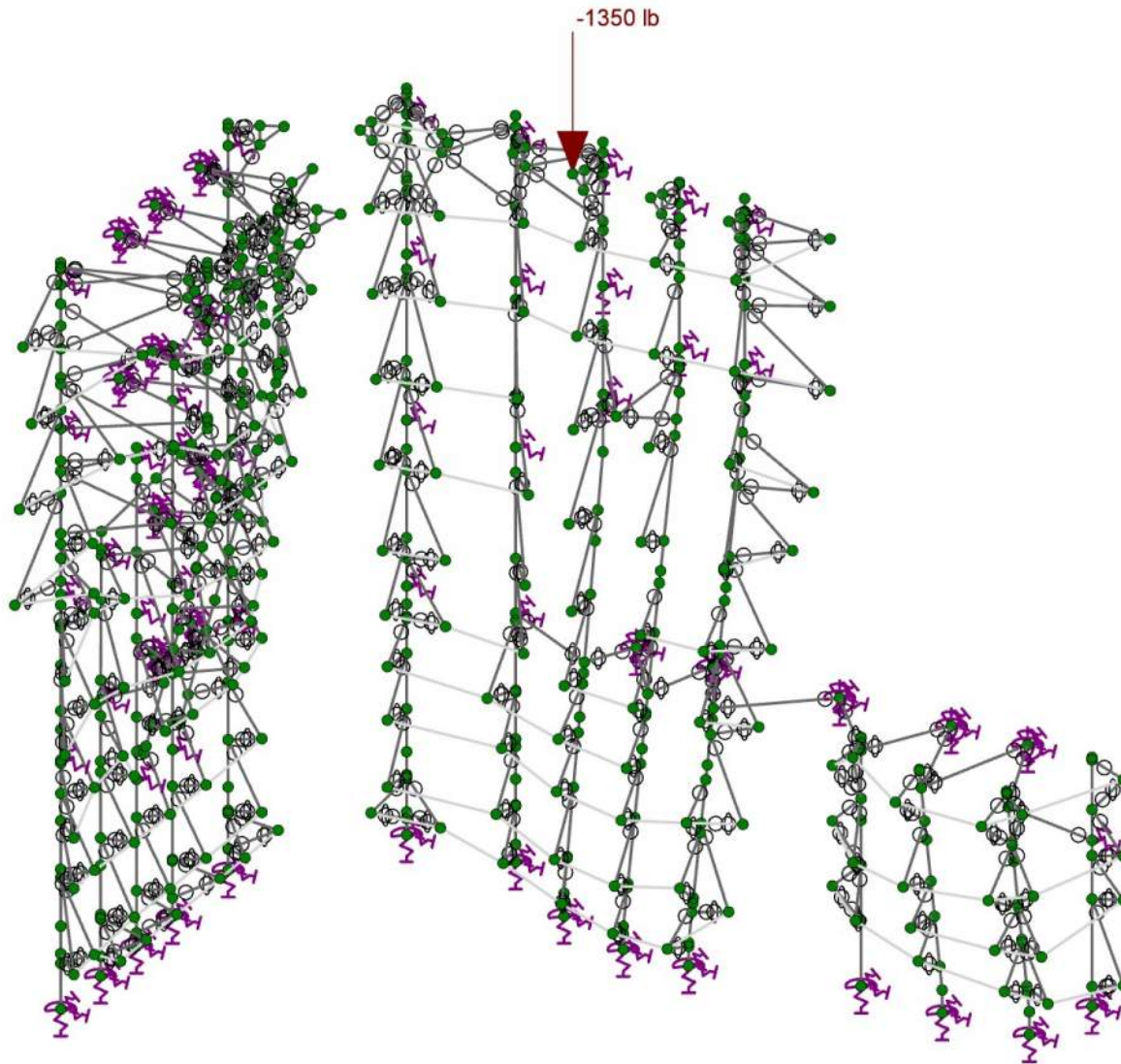
Grand Junction Rec Center

Loads

SK-30

May 19, 2025 at 02:01 PM

003-0353 Grand Junction Re...



Loads: BLC 42, Belay Load 10



Peak Thrills Engineering
DMC
003-0353

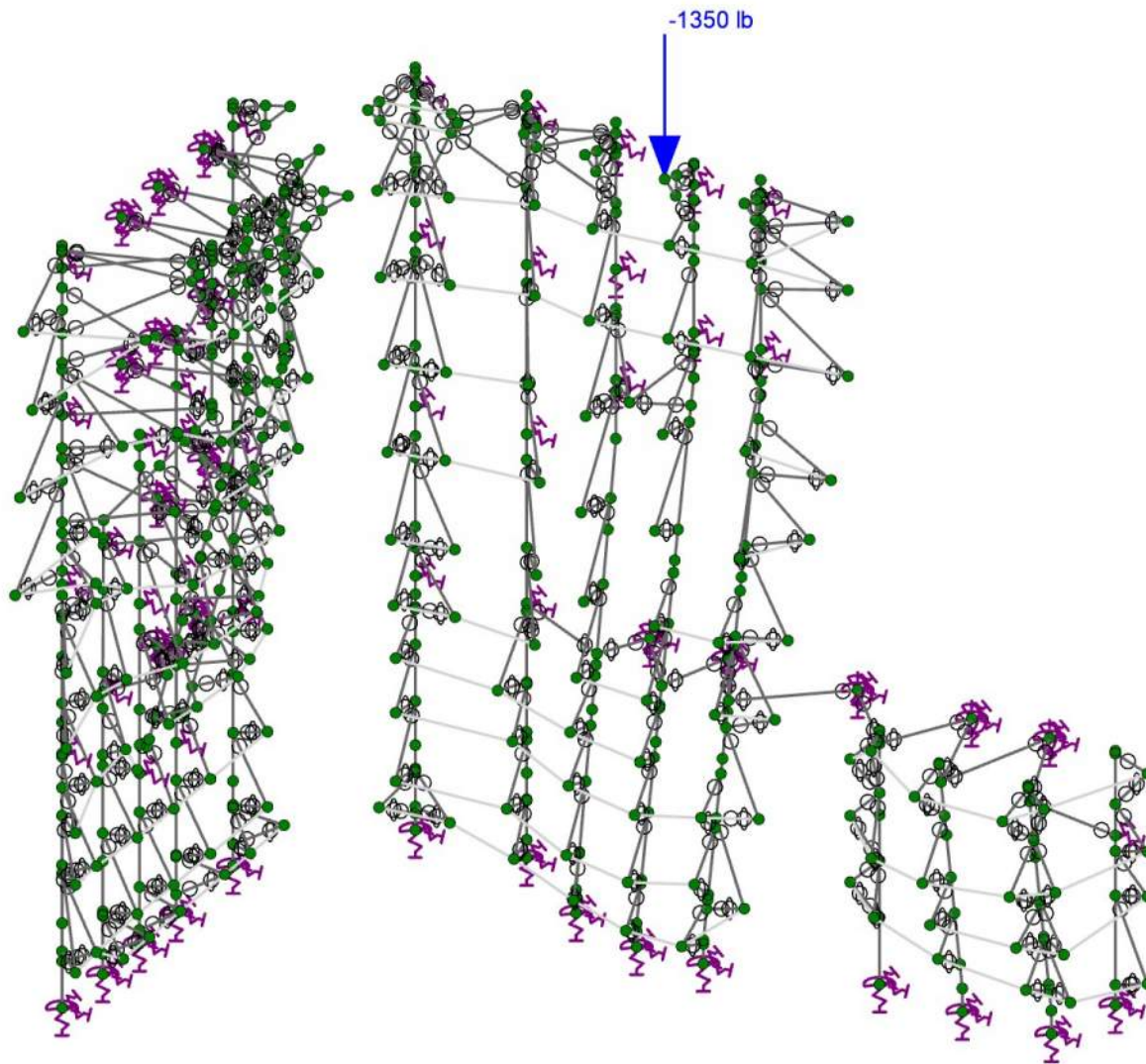
Grand Junction Rec Center

Loads

SK-31

May 19, 2025 at 02:01 PM

003-0353 Grand Junction Re...



Loads: BLC 43, Belay Load 11



Peak Thrills Engineering
DMC
003-0353

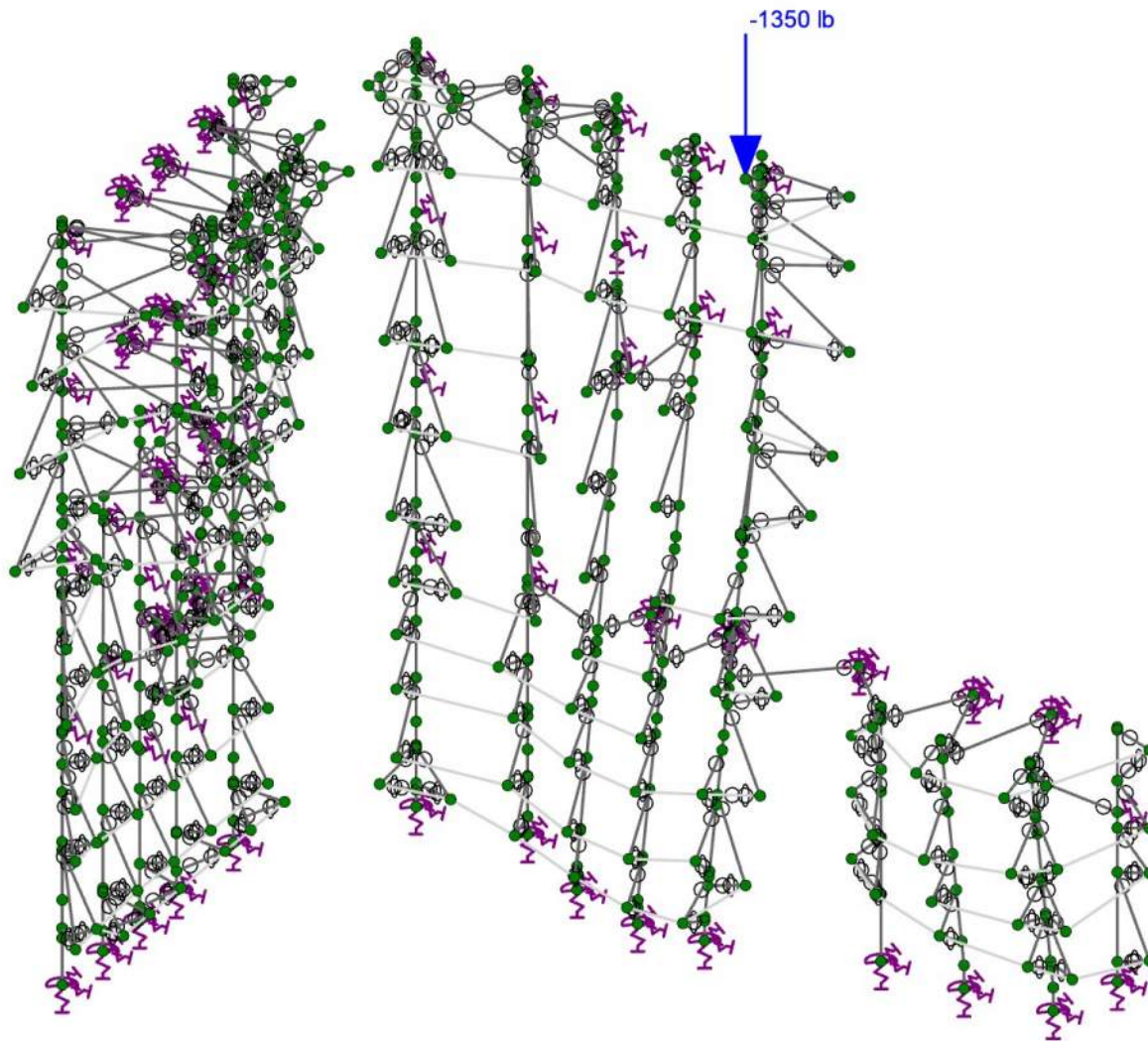
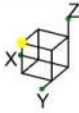
Grand Junction Rec Center

Loads

SK-32

May 19, 2025 at 02:01 PM

003-0353 Grand Junction Re...



Loads: BLC 44, Belay Load 12



Peak Thrills Engineering
DMC
003-0353

Grand Junction Rec Center

Loads

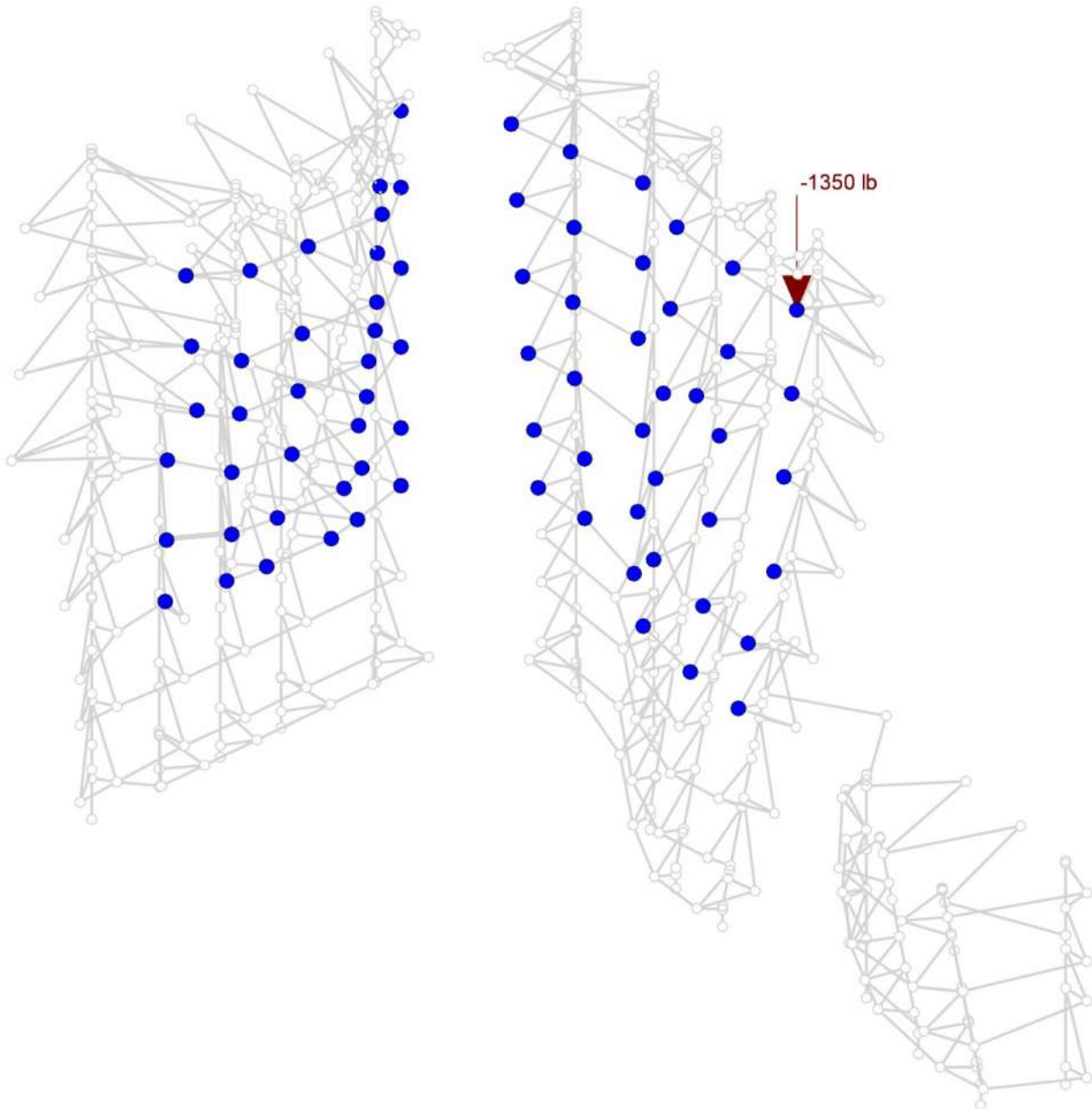
SK-33

May 19, 2025 at 02:02 PM

003-0353 Grand Junction Re...



Each node highlighted was checked
independently in separate load
combinations



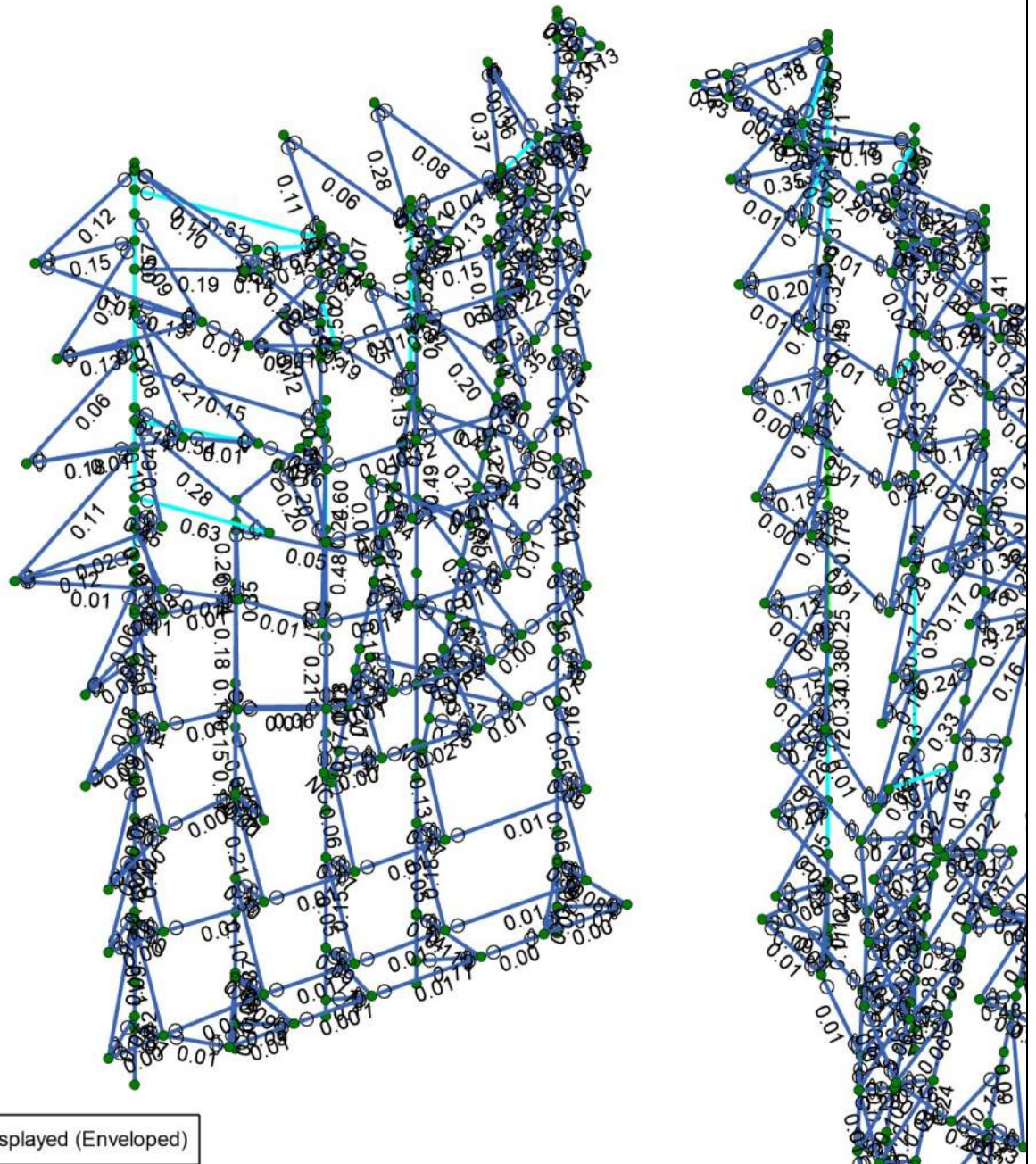
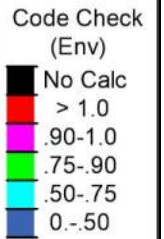
Loads: BLC 118, Lead Anchor 74



Peak Thrills Engineering
DMC
003-0353

Grand Junction Rec Center
Lead Anchor Belay Loading Nodes

SK-34
May 19, 2025 at 02:08 PM
003-0353 Grand Junction Re...



Member Code Checks Displayed (Enveloped)



Peak Thrills Engineering
DMC
003-0353

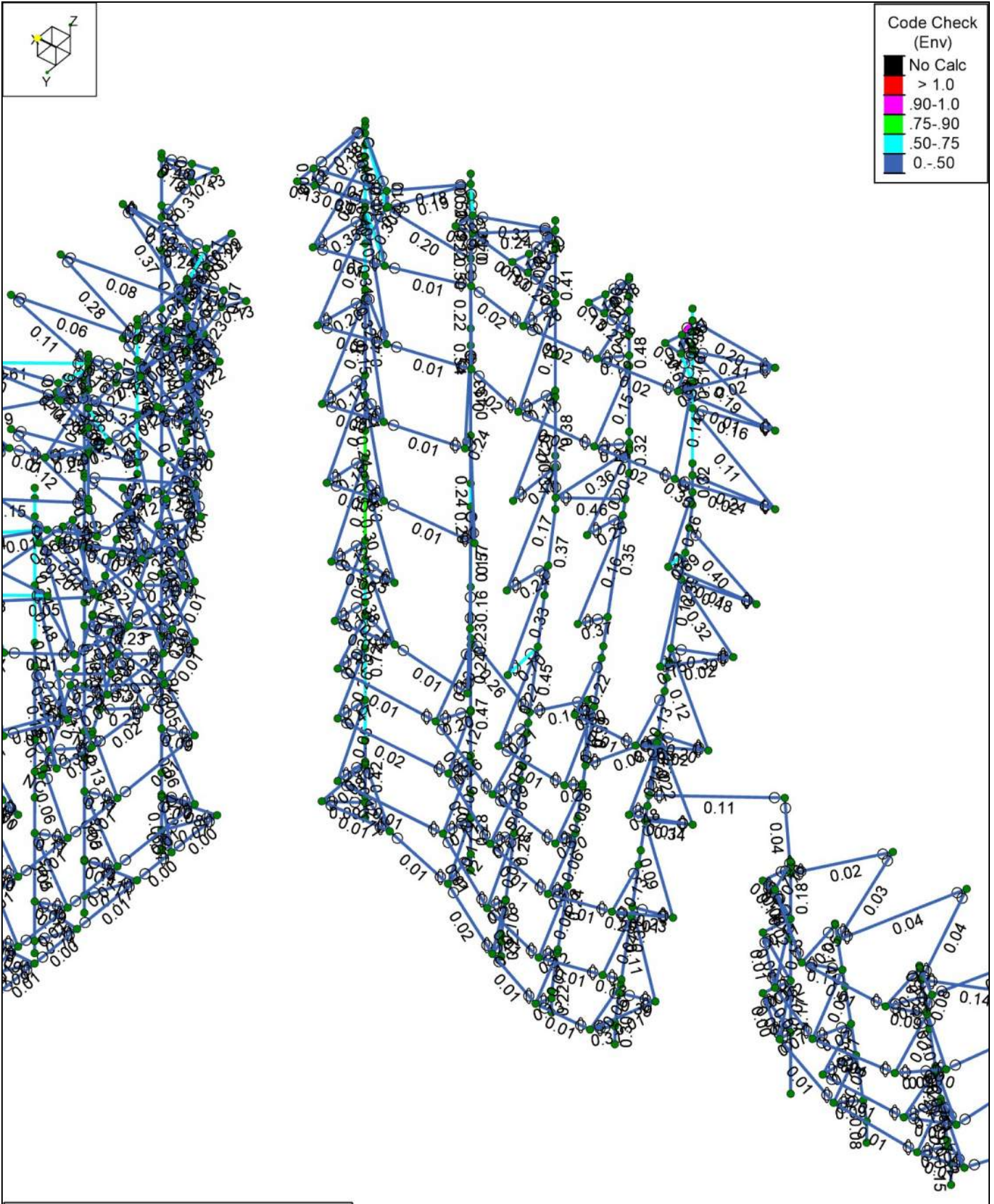
Grand Junction Rec Center

Unity Check

SK-35

May 19, 2025 at 02:14 PM

003-0353 Grand Junction Re...



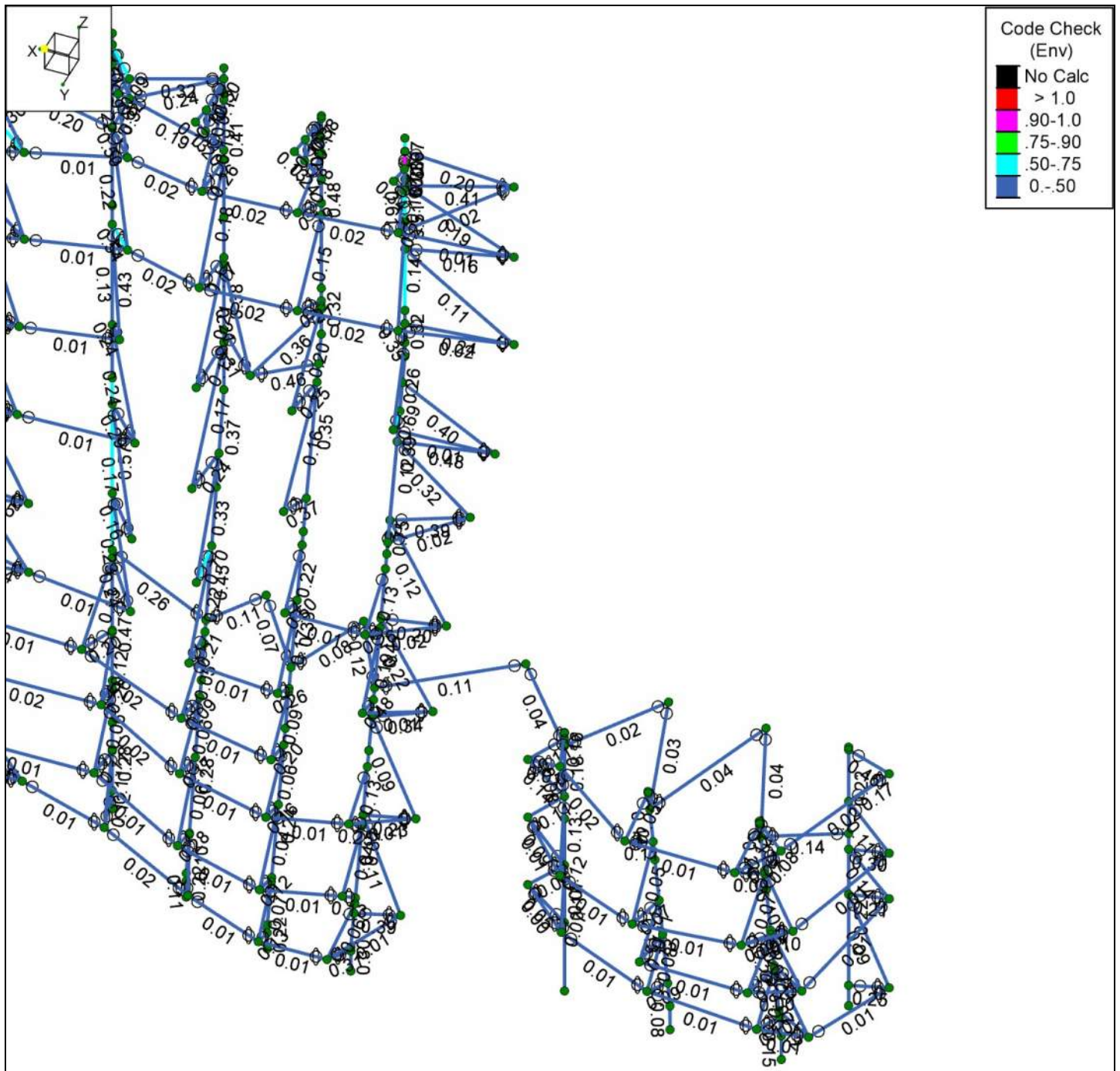
PEAK
THRILLS
ENGINEERING

DMC

Unity Check

May 19, 2025 at 02:14 PM

003-0353 Grand Junction Re...



Member Code Checks Displayed (Enveloped)



Peak Thrills Engineering
DMC
003-0353

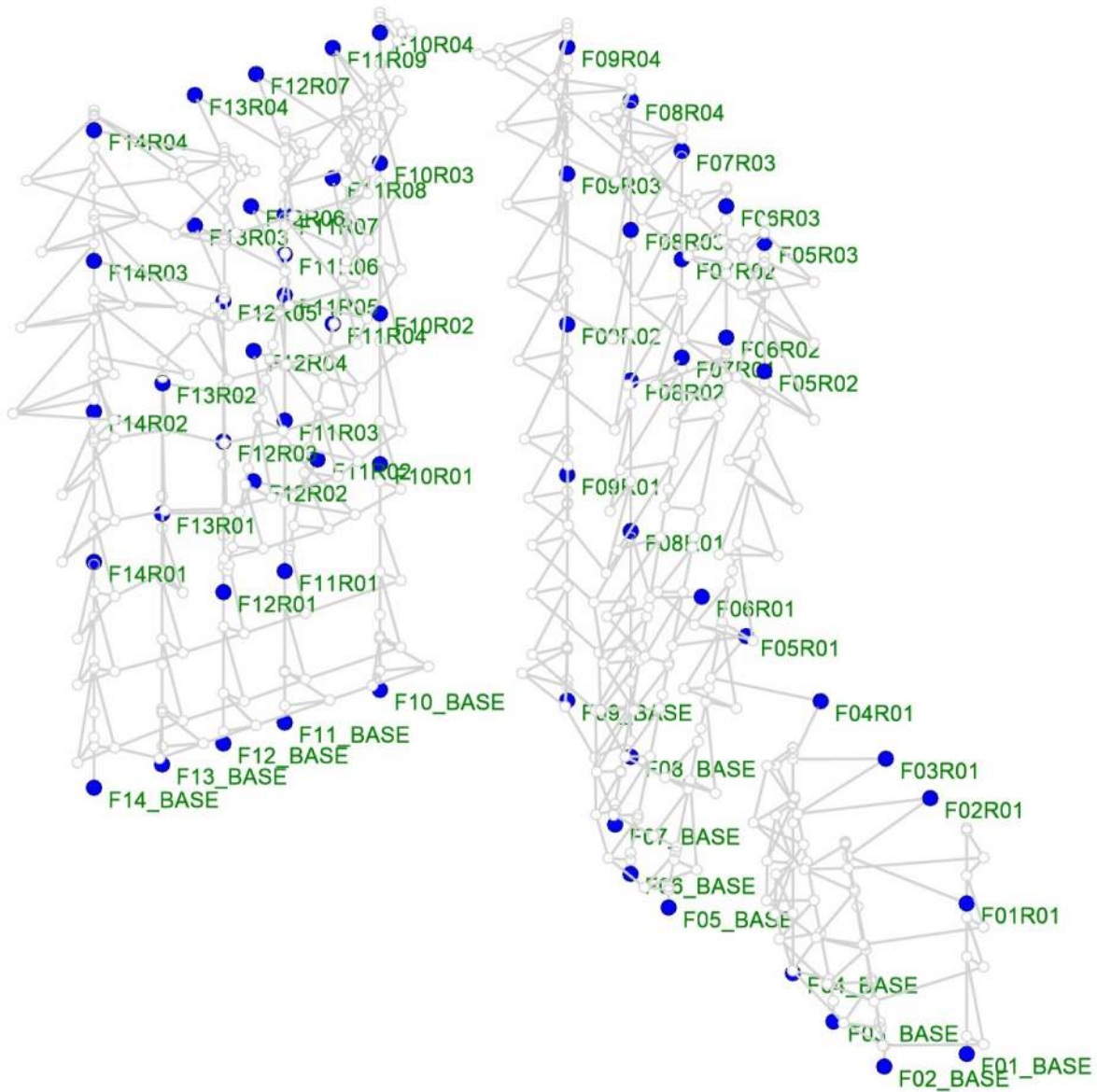
Grand Junction Rec Center

Unity Check

SK-38

May 19, 2025 at 02:15 PM

003-0353 Grand Junction Re...



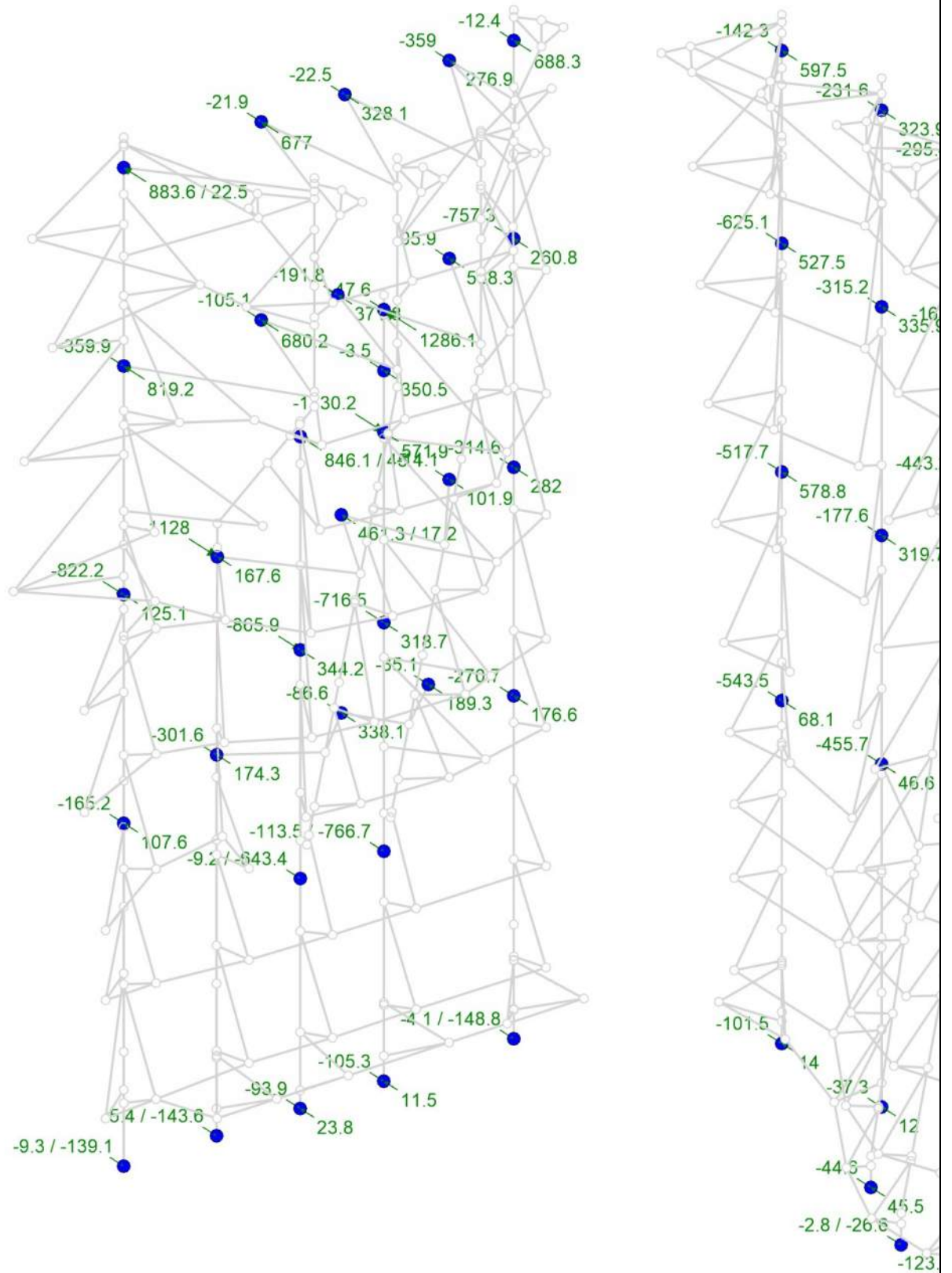
PEAK
THRILLS
ENGINEERING

DMC

Facility Reaction Node Labels

May 19, 2025 at 02:16 PM

003-0353 Grand Junction Re...



X-direction Reaction Units are lbs and lb-ft (Enveloped)



Peak Thrills Engineering
DMC
003-0353

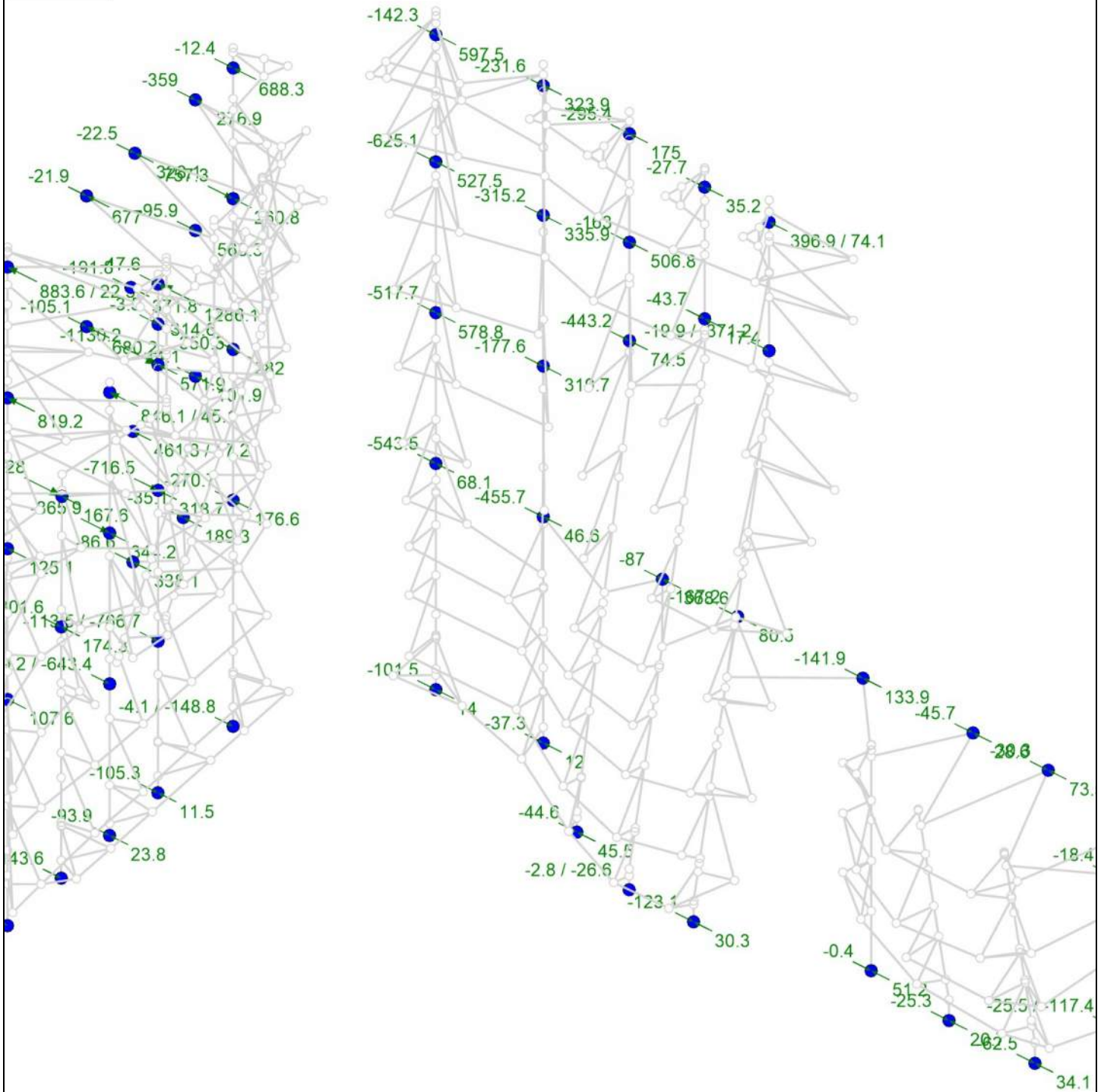
Grand Junction Rec Center

Base Reactions

SK-40

May 19, 2025 at 02:20 PM

003-0353 Grand Junction Re...



X-direction Reaction Units are lbs and lb-ft (Enveloped)



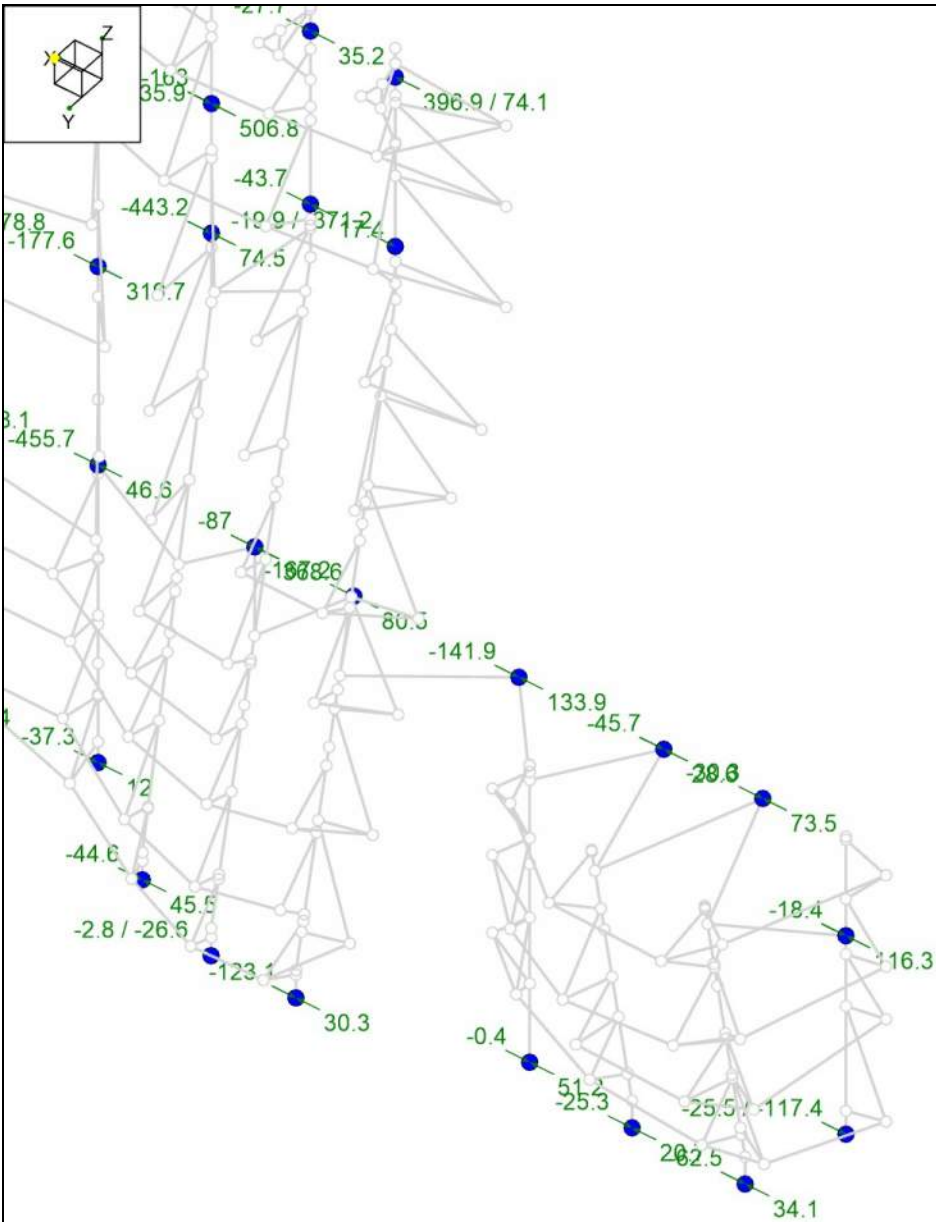
Peak Thrills Engineering
DMC
003-0353

Grand Junction Rec Center

Base Reactions

SK-41

May 19, 2025 at 02:20 PM
003-0353 Grand Junction Re...



X-direction Reaction Units are lbs and lb-ft (Enveloped)



Peak Thrills Engineering
DMC
003-0353

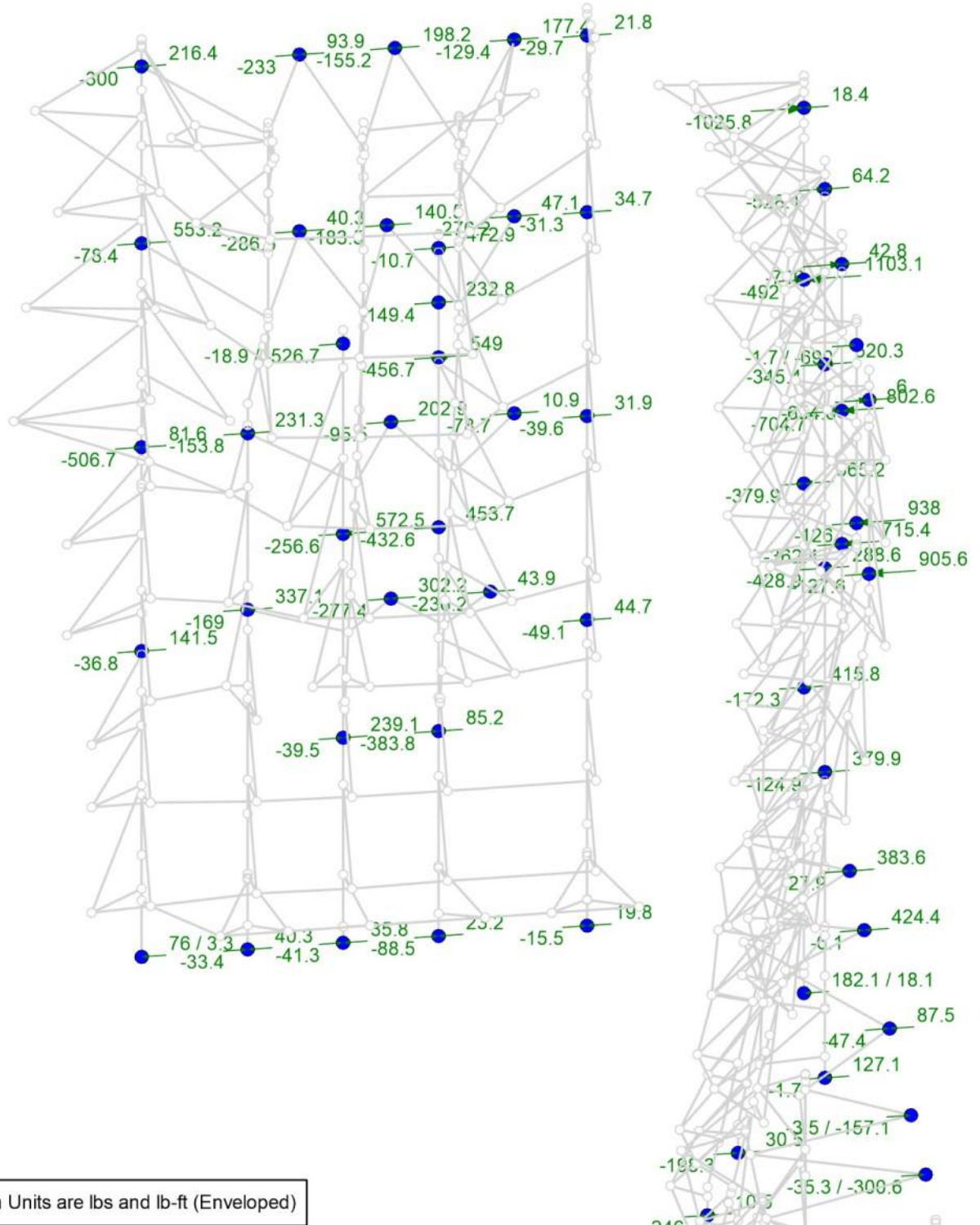
Grand Junction Rec Center

Base Reactions

SK-42

May 19, 2025 at 02:20 PM

003-0353 Grand Junction Re...



Y-direction Reaction Units are lbs and lb-ft (Enveloped)



Peak Thrills Engineering
DMC
003-0353

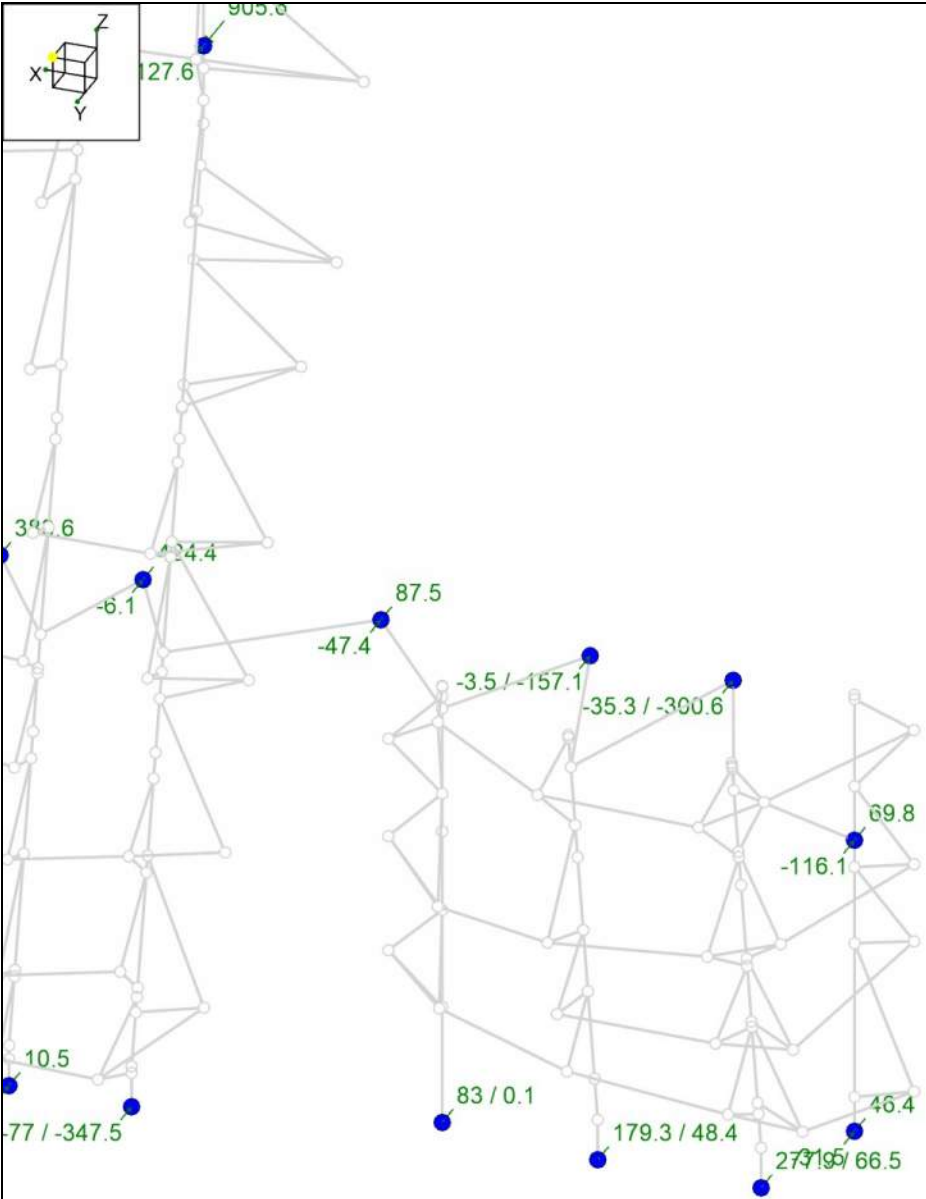
Grand Junction Rec Center

Base Reactions

SK-43

May 19, 2025 at 02:21 PM

003-0353 Grand Junction Re...



Y-direction Reaction Units are lbs and lb-ft (Enveloped)



Peak Thrills Engineering
DMC
003-0353

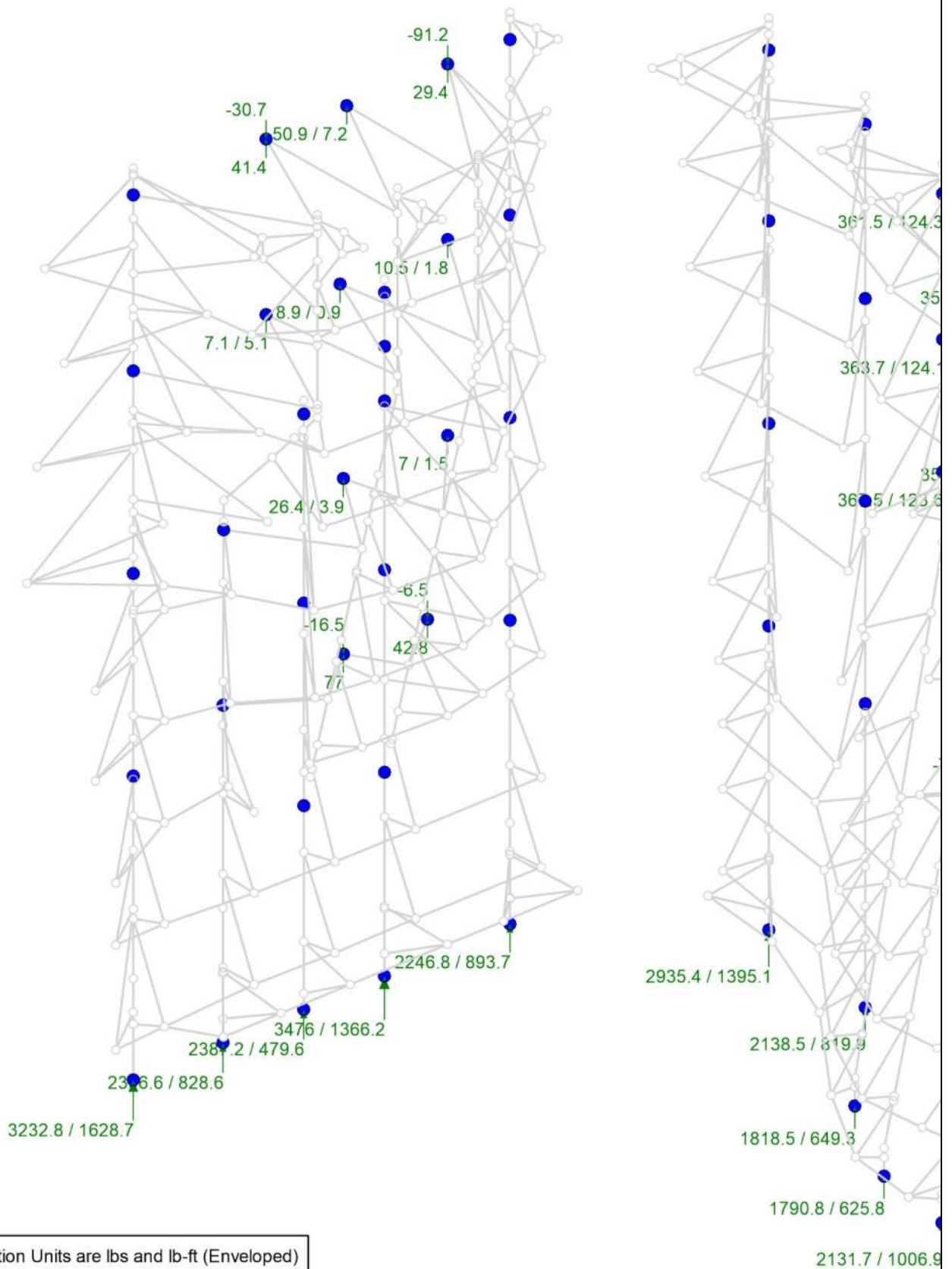
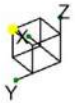
Grand Junction Rec Center

Base Reactions

SK-45

May 19, 2025 at 02:22 PM

003-0353 Grand Junction Re...



Z-direction Reaction Units are lbs and lb-ft (Enveloped)



Peak Thrills Engineering

DMC

003-0353

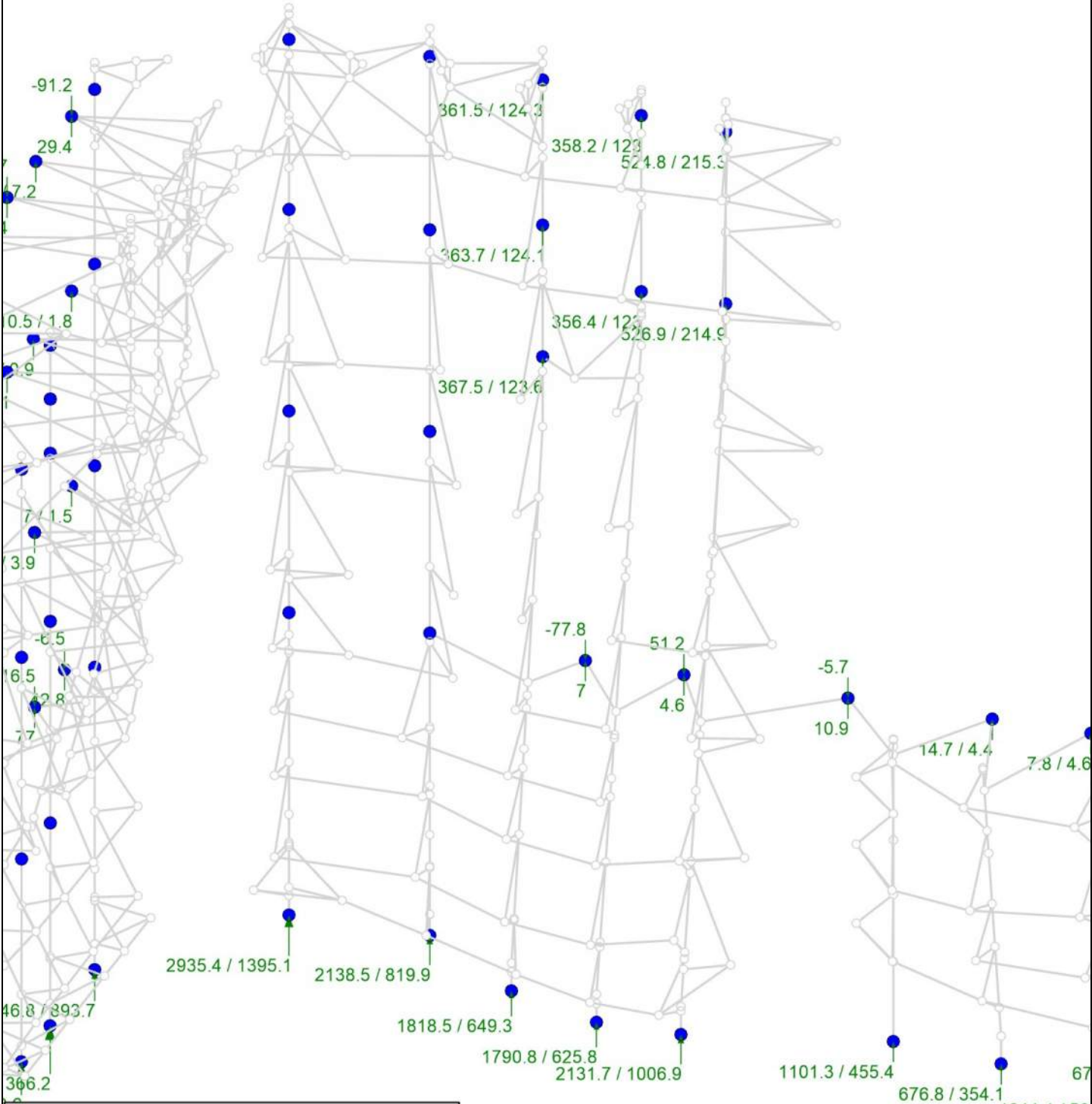
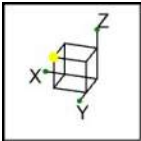
Grand Junction Rec Center

Base Reactions

SK-46

May 19, 2025 at 02:22 PM

003-0353 Grand Junction Re...



Z-direction Reaction Units are lbs and lb-ft (Enveloped)



Peak Thrills Engineering
DMC
003-0353

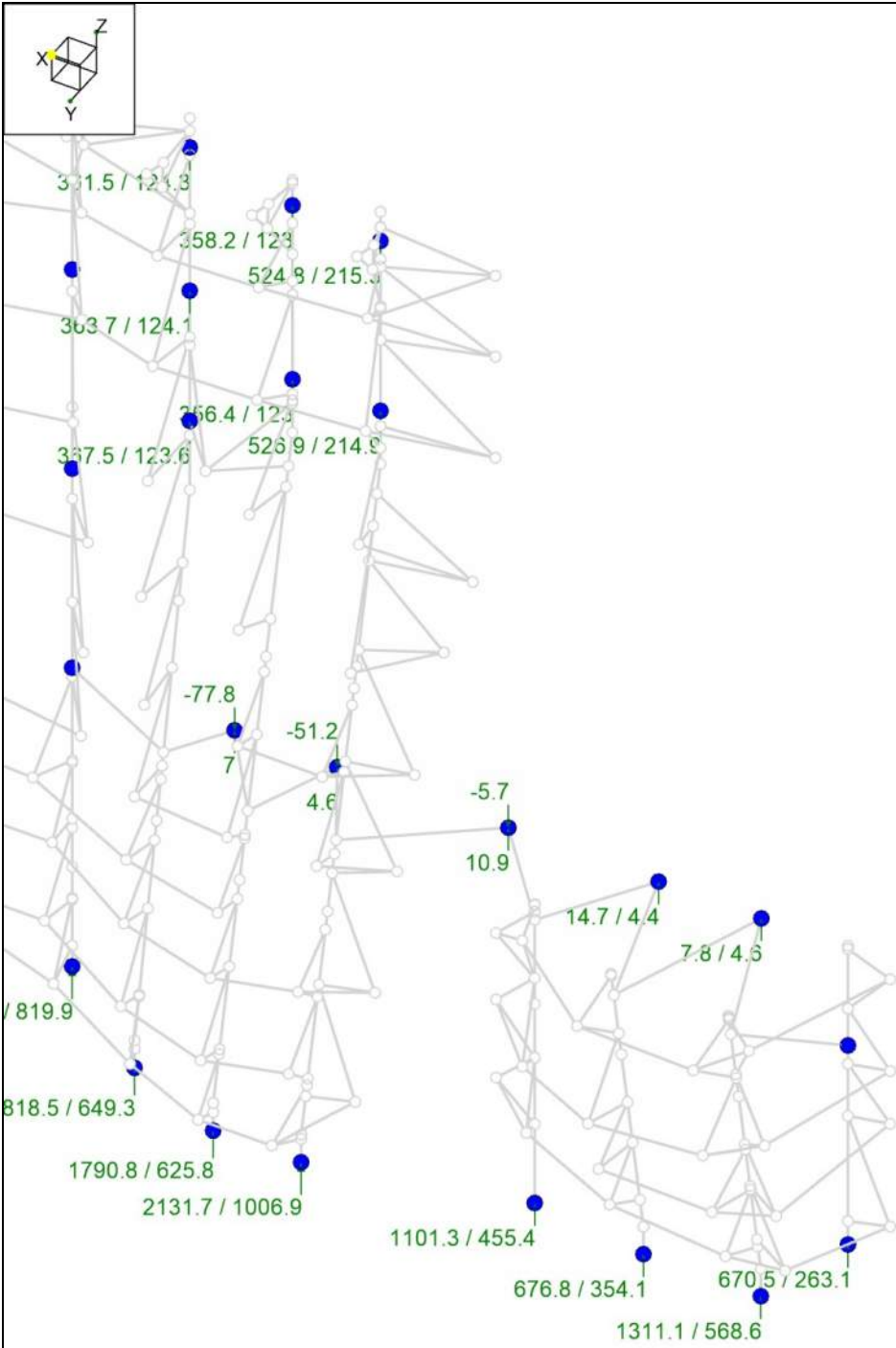
Grand Junction Rec Center

Base Reactions

SK-47

May 19, 2025 at 02:24 PM

003-0353 Grand Junction Re...



Z-direction Reaction Units are lbs and lb-ft (Enveloped)



Peak Thrills Engineering
DMC
003-0353

Grand Junction Rec Center

Base Reactions

SK-48
May 19, 2025 at 02:25 PM
003-0353 Grand Junction Re...

Basic Load Cases

	BLC Description	BLC Factor	Category	X Gravity	Y Gravity	Z Gravity	Nodal
1	Framing Weight		DL			-1.05	
2	Wall Weight		DL				156
3	***		None				
4	***		None				
5	***		None				
6	Seismic X	0.126	EL	1.05			156
7	Seismic Y	0.126	EL		1.05		156
8	***		None				
9	***		None				
10	***		None				
11	Climber Load 01A	1.2	LL				12
12	Climber Load 01B	1.2	LL				
13	Climber Load 02A	1.2	LL				17
14	Climber Load 02B	1.2	LL				
15	Climber Load 03A	1.2	LL				17
16	Climber Load 03B	1.2	LL				
17	Climber Load 04A	1.2	LL				19
18	Climber Load 04B	1.2	LL				
19	Climber Load 05A	1.2	LL				21
20	Climber Load 05B	1.2	LL				7
21	Climber Load 06A	1.2	LL				16
22	Climber Load 06B	1.2	LL				
23	Climber Load 07A	1.2	LL				16
24	Climber Load 07B	1.2	LL				
25	Climber Load 08A	1.2	LL				15
26	Climber Load 08B	1.2	LL				
27	Climber Load 09A	1.2	LL				15
28	Climber Load 09B	1.2	LL				15
29	Climber Load 10A	1.2	LL				
30	Climber Load 10B	1.2	LL				
31	Climber Load 11A	1.2	LL				
32	***		None				
33	Belay Load 01		LL				1
34	Belay Load 02		LL				1
35	Belay Load 03		LL				1
36	Belay Load 04		LL				1
37	Belay Load 05		LL				1
38	Belay Load 06		LL				1
39	Belay Load 07		LL				1
40	Belay Load 08		LL				1
41	Belay Load 09		LL				1
42	Belay Load 10		LL				1
43	Belay Load 11		LL				1
44	Belay Load 12		LL				1
45	Lead Anchor 01		LL				1
46	Lead Anchor 02		LL				1
47	Lead Anchor 03		LL				1
48	Lead Anchor 04		LL				1
49	Lead Anchor 05		LL				1
50	Lead Anchor 06		LL				1
51	Lead Anchor 07		LL				1
52	Lead Anchor 08		LL				1
53	Lead Anchor 09		LL				1
54	Lead Anchor 10		LL				1
55	Lead Anchor 11		LL				1

Basic Load Cases (Continued)

	BLC Description	BLC Factor	Category	X Gravity	Y Gravity	Z Gravity	Nodal
56	Lead Anchor 12		LL				1
57	Lead Anchor 13		LL				1
58	Lead Anchor 14		LL				1
59	Lead Anchor 15		LL				1
60	Lead Anchor 16		LL				1
61	Lead Anchor 17		LL				1
62	Lead Anchor 18		LL				1
63	Lead Anchor 19		LL				1
64	Lead Anchor 20		LL				1
65	Lead Anchor 21		LL				1
66	Lead Anchor 22		LL				1
67	Lead Anchor 23		LL				1
68	Lead Anchor 24		LL				1
69	Lead Anchor 25		LL				1
70	Lead Anchor 26		LL				1
71	Lead Anchor 27		LL				1
72	Lead Anchor 28		LL				1
73	Lead Anchor 29		LL				1
74	Lead Anchor 30		LL				1
75	Lead Anchor 31		LL				1
76	Lead Anchor 32		LL				1
77	Lead Anchor 33		LL				1
78	Lead Anchor 34		LL				1
79	Lead Anchor 35		LL				1
80	Lead Anchor 36		LL				1
81	Lead Anchor 37		LL				1
82	Lead Anchor 38		LL				1
83	Lead Anchor 39		LL				1
84	Lead Anchor 40		LL				1
85	Lead Anchor 41		LL				1
86	Lead Anchor 42		LL				1
87	Lead Anchor 43		LL				1
88	Lead Anchor 44		LL				1
89	Lead Anchor 45		LL				1
90	Lead Anchor 46		LL				1
91	Lead Anchor 47		LL				1
92	Lead Anchor 48		LL				1
93	Lead Anchor 49		LL				1
94	Lead Anchor 50		LL				1
95	Lead Anchor 51		LL				1
96	Lead Anchor 52		LL				1
97	Lead Anchor 53		LL				1
98	Lead Anchor 54		LL				1
99	Lead Anchor 55		LL				1
100	Lead Anchor 56		LL				1
101	Lead Anchor 57		LL				1
102	Lead Anchor 58		LL				1
103	Lead Anchor 59		LL				1
104	Lead Anchor 60		LL				1
105	Lead Anchor 61		LL				1
106	Lead Anchor 62		LL				1
107	Lead Anchor 63		LL				1
108	Lead Anchor 64		LL				1
109	Lead Anchor 65		LL				1
110	Lead Anchor 66		LL				1

Basic Load Cases (Continued)

	BLC Description	BLC Factor	Category	X Gravity	Y Gravity	Z Gravity	Nodal
111	Lead Anchor 67		LL				1
112	Lead Anchor 68		LL				1
113	Lead Anchor 69		LL				1
114	Lead Anchor 70		LL				1
115	Lead Anchor 71		LL				1
116	Lead Anchor 72		LL				1
117	Lead Anchor 73		LL				1
118	Lead Anchor 74		LL				1
119	Lead Anchor 75		LL				

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
1	Dead Load	Yes	Y	1	1	2	1	3	1
2	DL + 0.7(EQX + EQZ)	Yes	Y	L1	1.035	6	1.4		
3	DL + 0.7(-EQX + EQZ)	Yes	Y	L1	1.035	6	-1.4		
4	DL + 0.7(EQY + EQZ)	Yes	Y	L1	1.035	7	1.4		
5	DL + 0.7(-EQY + EQZ)	Yes	Y	L1	1.035	7	-1.4		
6	DL + CL01A	Yes	Y	L1	1	11	1		
7	DL + CL01B	Yes	Y	L1	1	12	1		
8	DL + CL02A	Yes	Y	L1	1	13	1		
9	DL + CL02B	Yes	Y	L1	1	14	1		
10	DL + CL03A	Yes	Y	L1	1	15	1		
11	DL + CL03B	Yes	Y	L1	1	16	1		
12	DL + CL04A	Yes	Y	L1	1	17	1		
13	DL + CL04B	Yes	Y	L1	1	18	1		
14	DL + CL05A	Yes	Y	L1	1	19	1		
15	DL + CL05B	Yes	Y	L1	1	20	1		
16	DL + CL06A	Yes	Y	L1	1	21	1		
17	DL + CL06B	Yes	Y	L1	1	22	1		
18	DL + CL07A	Yes	Y	L1	1	23	1		
19	DL + CL07B	Yes	Y	L1	1	24	1		
20	DL + CL08A	Yes	Y	L1	1	25	1		
21	DL + CL08B	Yes	Y	L1	1	26	1		
22	DL + CL09A	Yes	Y	L1	1	27	1		
23	DL + CL09B	Yes	Y	L1	1	28	1		
24	DL + CL10A	Yes	Y	L1	1	29	1		
25	DL + CL10B	Yes	Y	L1	1	30	1		
26	DL + CL11A	Yes	Y	L1	1	31	1		
27	DL + BL01	Yes	Y	L1	1	33	1		
28	DL + BL02	Yes	Y	L1	1	34	1		
29	DL + BL03	Yes	Y	L1	1	35	1		
30	DL + BL04	Yes	Y	L1	1	36	1		
31	DL + BL05	Yes	Y	L1	1	37	1		
32	DL + BL06	Yes	Y	L1	1	38	1		
33	DL + BL07	Yes	Y	L1	1	39	1		
34	DL + BL08	Yes	Y	L1	1	40	1		
35	DL + BL09	Yes	Y	L1	1	41	1		
36	DL + BL10	Yes	Y	L1	1	42	1		
37	DL + BL11	Yes	Y	L1	1	43	1		
38	DL + BL12	Yes	Y	L1	1	44	1		
39	DL + LAL01	Yes	Y	L1	1	45	1		
40	DL + LAL02	Yes	Y	L1	1	46	1		
41	DL + LAL03	Yes	Y	L1	1	47	1		
42	DL + LAL04	Yes	Y	L1	1	48	1		
43	DL + LAL05	Yes	Y	L1	1	49	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
44	DL + LAL06	Yes	Y	L1	1	50	1		
45	DL + LAL07	Yes	Y	L1	1	51	1		
46	DL + LAL08	Yes	Y	L1	1	52	1		
47	DL + LAL09	Yes	Y	L1	1	53	1		
48	DL + LAL10	Yes	Y	L1	1	54	1		
49	DL + LAL11	Yes	Y	L1	1	55	1		
50	DL + LAL12	Yes	Y	L1	1	56	1		
51	DL + LAL13	Yes	Y	L1	1	57	1		
52	DL + LAL14	Yes	Y	L1	1	58	1		
53	DL + LAL15	Yes	Y	L1	1	59	1		
54	DL + LAL16	Yes	Y	L1	1	60	1		
55	DL + LAL17	Yes	Y	L1	1	61	1		
56	DL + LAL18	Yes	Y	L1	1	62	1		
57	DL + LAL19	Yes	Y	L1	1	63	1		
58	DL + LAL20	Yes	Y	L1	1	64	1		
59	DL + LAL21	Yes	Y	L1	1	65	1		
60	DL + LAL22	Yes	Y	L1	1	66	1		
61	DL + LAL23	Yes	Y	L1	1	67	1		
62	DL + LAL24	Yes	Y	L1	1	68	1		
63	DL + LAL25	Yes	Y	L1	1	69	1		
64	DL + LAL26	Yes	Y	L1	1	70	1		
65	DL + LAL27	Yes	Y	L1	1	71	1		
66	DL + LAL28	Yes	Y	L1	1	72	1		
67	DL + LAL29	Yes	Y	L1	1	73	1		
68	DL + LAL30	Yes	Y	L1	1	74	1		
69	DL + LAL31	Yes	Y	L1	1	75	1		
70	DL + LAL32	Yes	Y	L1	1	76	1		
71	DL + LAL33	Yes	Y	L1	1	77	1		
72	DL + LAL34	Yes	Y	L1	1	78	1		
73	DL + LAL35	Yes	Y	L1	1	79	1		
74	DL + LAL36	Yes	Y	L1	1	80	1		
75	DL + LAL37	Yes	Y	L1	1	81	1		
76	DL + LAL38	Yes	Y	L1	1	82	1		
77	DL + LAL39	Yes	Y	L1	1	83	1		
78	DL + LAL40	Yes	Y	L1	1	84	1		
79	DL + LAL41	Yes	Y	L1	1	85	1		
80	DL + LAL42	Yes	Y	L1	1	86	1		
81	DL + LAL43	Yes	Y	L1	1	87	1		
82	DL + LAL44	Yes	Y	L1	1	88	1		
83	DL + LAL45	Yes	Y	L1	1	89	1		
84	DL + LAL46	Yes	Y	L1	1	90	1		
85	DL + LAL47	Yes	Y	L1	1	91	1		
86	DL + LAL48	Yes	Y	L1	1	92	1		
87	DL + LAL49	Yes	Y	L1	1	93	1		
88	DL + LAL50	Yes	Y	L1	1	94	1		
89	DL + LAL51	Yes	Y	L1	1	95	1		
90	DL + LAL52	Yes	Y	L1	1	96	1		
91	DL + LAL53	Yes	Y	L1	1	97	1		
92	DL + LAL54	Yes	Y	L1	1	98	1		
93	DL + LAL55	Yes	Y	L1	1	99	1		
94	DL + LAL56	Yes	Y	L1	1	100	1		
95	DL + LAL57	Yes	Y	L1	1	101	1		
96	DL + LAL58	Yes	Y	L1	1	102	1		
97	DL + LAL59	Yes	Y	L1	1	103	1		
98	DL + LAL60	Yes	Y	L1	1	104	1		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
99	DL + LAL61	Yes	Y	L1	1	105	1		
100	DL + LAL62	Yes	Y	L1	1	106	1		
101	DL + LAL63	Yes	Y	L1	1	107	1		
102	DL + LAL64	Yes	Y	L1	1	108	1		
103	DL + LAL65	Yes	Y	L1	1	109	1		
104	DL + LAL66	Yes	Y	L1	1	110	1		
105	DL + LAL67	Yes	Y	L1	1	111	1		
106	DL + LAL68	Yes	Y	L1	1	112	1		
107	DL + LAL69	Yes	Y	L1	1	113	1		
108	DL + LAL70	Yes	Y	L1	1	114	1		
109	DL + LAL71	Yes	Y	L1	1	115	1		
110	DL + LAL72	Yes	Y	L1	1	116	1		
111	DL + LAL73	Yes	Y	L1	1	117	1		
112	DL + LAL74	Yes	Y	L1	1	118	1		
113	DL + LAL75	Yes	Y	L1	1	119	1		
114	***		Y						
115	1.4DL		Y	L1	1.4				
116	0.9DL + (EQX + EQZ)		Y	L1	0.865	6	2		
117	0.9DL + (-EQX + EQZ)		Y	L1	0.865	6	-2		
118	0.9DL + (EQY + EQZ)		Y	L1	0.865	7	2		
119	0.9DL + (-EQY + EQZ)		Y	L1	0.865	7	-2		
120	0.9DL + 1.6CL01A		Y	L1	0.9	11	1.6		
121	0.9DL + 1.6CL01B		Y	L1	0.9	12	1.6		
122	0.9DL + 1.6CL02A		Y	L1	0.9	13	1.6		
123	0.9DL + 1.6CL02B		Y	L1	0.9	14	1.6		
124	0.9DL + 1.6CL03A		Y	L1	0.9	15	1.6		
125	0.9DL + 1.6CL03B		Y	L1	0.9	16	1.6		
126	0.9DL + 1.6CL04A		Y	L1	0.9	17	1.6		
127	0.9DL + 1.6CL04B		Y	L1	0.9	18	1.6		
128	0.9DL + 1.6CL05A		Y	L1	0.9	19	1.6		
129	0.9DL + 1.6CL05B		Y	L1	0.9	20	1.6		
130	0.9DL + 1.6CL06A		Y	L1	0.9	21	1.6		
131	0.9DL + 1.6CL06B		Y	L1	0.9	22	1.6		
132	0.9DL + 1.6CL07A		Y	L1	0.9	23	1.6		
133	0.9DL + 1.6CL07B		Y	L1	0.9	24	1.6		
134	0.9DL + 1.6CL08A		Y	L1	0.9	25	1.6		
135	0.9DL + 1.6CL08B		Y	L1	0.9	26	1.6		
136	0.9DL + 1.6CL09A		Y	L1	0.9	27	1.6		
137	0.9DL + 1.6CL09B		Y	L1	0.9	28	1.6		
138	0.9DL + 1.6CL10A		Y	L1	0.9	29	1.6		
139	0.9DL + 1.6CL10B		Y	L1	0.9	30	1.6		
140	0.9DL + 1.6CL11A		Y	L1	0.9	31	1.6		
141	0.9DL + 1.6BL01		Y	L1	0.9	33	1.6		
142	0.9DL + 1.6BL02		Y	L1	0.9	34	1.6		
143	0.9DL + 1.6BL03		Y	L1	0.9	35	1.6		
144	0.9DL + 1.6BL04		Y	L1	0.9	36	1.6		
145	0.9DL + 1.6BL05		Y	L1	0.9	37	1.6		
146	0.9DL + 1.6BL06		Y	L1	0.9	38	1.6		
147	0.9DL + 1.6BL07		Y	L1	0.9	39	1.6		
148	0.9DL + 1.6BL08		Y	L1	0.9	40	1.6		
149	0.9DL + 1.6BL09		Y	L1	0.9	41	1.6		
150	0.9DL + 1.6BL10		Y	L1	0.9	42	1.6		
151	0.9DL + 1.6BL11		Y	L1	0.9	43	1.6		
152	0.9DL + 1.6BL12		Y	L1	0.9	44	1.6		
153	0.9DL + 1.6LAL01		Y	L1	0.9	45	1.6		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
154	0.9DL + 1.6LAL02		Y	L1	0.9	46	1.6		
155	0.9DL + 1.6LAL03		Y	L1	0.9	47	1.6		
156	0.9DL + 1.6LAL04		Y	L1	0.9	48	1.6		
157	0.9DL + 1.6LAL05		Y	L1	0.9	49	1.6		
158	0.9DL + 1.6LAL06		Y	L1	0.9	50	1.6		
159	0.9DL + 1.6LAL07		Y	L1	0.9	51	1.6		
160	0.9DL + 1.6LAL08		Y	L1	0.9	52	1.6		
161	0.9DL + 1.6LAL09		Y	L1	0.9	53	1.6		
162	0.9DL + 1.6LAL10		Y	L1	0.9	54	1.6		
163	0.9DL + 1.6LAL11		Y	L1	0.9	55	1.6		
164	0.9DL + 1.6LAL12		Y	L1	0.9	56	1.6		
165	0.9DL + 1.6LAL13		Y	L1	0.9	57	1.6		
166	0.9DL + 1.6LAL14		Y	L1	0.9	58	1.6		
167	0.9DL + 1.6LAL15		Y	L1	0.9	59	1.6		
168	0.9DL + 1.6LAL16		Y	L1	0.9	60	1.6		
169	0.9DL + 1.6LAL17		Y	L1	0.9	61	1.6		
170	0.9DL + 1.6LAL18		Y	L1	0.9	62	1.6		
171	0.9DL + 1.6LAL19		Y	L1	0.9	63	1.6		
172	0.9DL + 1.6LAL20		Y	L1	0.9	64	1.6		
173	0.9DL + 1.6LAL21		Y	L1	0.9	65	1.6		
174	0.9DL + 1.6LAL22		Y	L1	0.9	66	1.6		
175	0.9DL + 1.6LAL23		Y	L1	0.9	67	1.6		
176	0.9DL + 1.6LAL24		Y	L1	0.9	68	1.6		
177	0.9DL + 1.6LAL25		Y	L1	0.9	69	1.6		
178	0.9DL + 1.6LAL26		Y	L1	0.9	70	1.6		
179	0.9DL + 1.6LAL27		Y	L1	0.9	71	1.6		
180	0.9DL + 1.6LAL28		Y	L1	0.9	72	1.6		
181	0.9DL + 1.6LAL29		Y	L1	0.9	73	1.6		
182	0.9DL + 1.6LAL30		Y	L1	0.9	74	1.6		
183	0.9DL + 1.6LAL31		Y	L1	0.9	75	1.6		
184	0.9DL + 1.6LAL32		Y	L1	0.9	76	1.6		
185	0.9DL + 1.6LAL33		Y	L1	0.9	77	1.6		
186	0.9DL + 1.6LAL34		Y	L1	0.9	78	1.6		
187	0.9DL + 1.6LAL35		Y	L1	0.9	79	1.6		
188	0.9DL + 1.6LAL36		Y	L1	0.9	80	1.6		
189	0.9DL + 1.6LAL37		Y	L1	0.9	81	1.6		
190	0.9DL + 1.6LAL38		Y	L1	0.9	82	1.6		
191	0.9DL + 1.6LAL39		Y	L1	0.9	83	1.6		
192	0.9DL + 1.6LAL40		Y	L1	0.9	84	1.6		
193	0.9DL + 1.6LAL41		Y	L1	0.9	85	1.6		
194	0.9DL + 1.6LAL42		Y	L1	0.9	86	1.6		
195	0.9DL + 1.6LAL43		Y	L1	0.9	87	1.6		
196	0.9DL + 1.6LAL44		Y	L1	0.9	88	1.6		
197	0.9DL + 1.6LAL45		Y	L1	0.9	89	1.6		
198	0.9DL + 1.6LAL46		Y	L1	0.9	90	1.6		
199	0.9DL + 1.6LAL47		Y	L1	0.9	91	1.6		
200	0.9DL + 1.6LAL48		Y	L1	0.9	92	1.6		
201	0.9DL + 1.6LAL49		Y	L1	0.9	93	1.6		
202	0.9DL + 1.6LAL50		Y	L1	0.9	94	1.6		
203	0.9DL + 1.6LAL51		Y	L1	0.9	95	1.6		
204	0.9DL + 1.6LAL52		Y	L1	0.9	96	1.6		
205	0.9DL + 1.6LAL53		Y	L1	0.9	97	1.6		
206	0.9DL + 1.6LAL54		Y	L1	0.9	98	1.6		
207	0.9DL + 1.6LAL55		Y	L1	0.9	99	1.6		
208	0.9DL + 1.6LAL56		Y	L1	0.9	100	1.6		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
209	0.9DL + 1.6LAL57		Y	L1	0.9	101	1.6		
210	0.9DL + 1.6LAL58		Y	L1	0.9	102	1.6		
211	0.9DL + 1.6LAL59		Y	L1	0.9	103	1.6		
212	0.9DL + 1.6LAL60		Y	L1	0.9	104	1.6		
213	0.9DL + 1.6LAL61		Y	L1	0.9	105	1.6		
214	0.9DL + 1.6LAL62		Y	L1	0.9	106	1.6		
215	0.9DL + 1.6LAL63		Y	L1	0.9	107	1.6		
216	0.9DL + 1.6LAL64		Y	L1	0.9	108	1.6		
217	0.9DL + 1.6LAL65		Y	L1	0.9	109	1.6		
218	0.9DL + 1.6LAL66		Y	L1	0.9	110	1.6		
219	0.9DL + 1.6LAL67		Y	L1	0.9	111	1.6		
220	0.9DL + 1.6LAL68		Y	L1	0.9	112	1.6		
221	0.9DL + 1.6LAL69		Y	L1	0.9	113	1.6		
222	0.9DL + 1.6LAL70		Y	L1	0.9	114	1.6		
223	0.9DL + 1.6LAL71		Y	L1	0.9	115	1.6		
224	0.9DL + 1.6LAL72		Y	L1	0.9	116	1.6		
225	0.9DL + 1.6LAL73		Y	L1	0.9	117	1.6		
226	0.9DL + 1.6LAL74		Y	L1	0.9	118	1.6		
227	0.9DL + 1.6LAL75		Y	L1	0.9	119	1.6		

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	67.876625	37.728575	10.923182	
2	N2	67.876625	37.728575	7.766174	
3	N3	68.347229	39.241777	7.962029	
4	N4	77.677036	57.909699	33.75	
5	N5	73.357418	56.310487	25.800616	
6	N6	73.880662	55.636435	21.906359	
7	N7	75.122377	54.576357	23.140195	
8	N8	72.644118	54.479739	21.956258	
9	N9	73.514968	54.576357	25.07668	
10	N10	72.778875	54.576357	26.453134	
11	N11	73.979847	54.576357	24.516629	
12	N12	72.313221	54.646406	24.924035	
13	N13	73.277337	51.576366	23.956252	
14	N14	72.13931	51.783998	24.989859	
15	N15	72.811828	51.576366	27.139525	
16	N16	74.003392	51.576366	21.234091	
17	N17	72.497618	51.711583	21.830962	
18	N18	73.264624	51.576366	24.004008	
19	N19	63.871591	37.721545	33.531361	
20	N20	57.36933	37.721543	24.50928	
21	N21	53.449565	37.721543	28.675505	
22	N22	53.449565	37.721543	24.866867	
23	N23	57.36933	37.721543	27.75928	
24	N24	57.36933	37.721543	30.50928	
25	N25	53.449565	37.721543	31.725472	
26	N26	57.36933	37.721543	32.010763	
27	F07R02	63.871591	37.721545	27.031361	
28	F08 BASE	67.876625	37.728575	0	
29	N29	57.36933	37.721543	32.585763	
30	F05R02	57.36933	37.721543	25.085763	
31	N31	60.36933	37.721543	32.585763	
32	F06R02	60.36933	37.721543	25.085763	
33	N33	56.789807	40.109491	32.765966	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
34	N34	60.36933	41.450185	5.524305	
35	N35	60.36933	42.029004	2.801176	
36	N36	60.285996	43.288248	3.278821	
37	N37	60.285996	42.728703	6.000089	
38	N38	60.36933	40.977018	7.750383	
39	N39	60.285996	42.285881	8.15369	
40	N40	60.36933	40.554496	9.738194	
41	N41	70.01951	51.917667	33.790807	
42	N42	60.272404	40.289328	33.064587	
43	N43	57.36933	42.01258	2.878445	
44	N44	57.36933	43.14554	3.834432	
45	N45	57.36933	40.973022	7.769183	
46	N46	57.36933	41.440823	5.568351	
47	N47	57.36933	42.589222	6.540006	
48	N48	70.180658	54.716975	33.804236	
49	N49	69.839013	48.782269	33.775766	
50	N50	42.430021	42.612245	9.366054	
51	N51	42.430021	41.36557	2.295811	
52	N52	41.067051	42.067439	2.134978	
53	N53	42.430021	43.037431	11.777407	
54	N54	41.457497	43.524604	11.258004	
55	N55	41.289276	42.896793	7.327403	
56	N56	42.430021	42.083171	6.365531	
57	N57	41.164045	42.429427	4.401315	
58	N58	42.430021	41.769431	4.586219	
59	N59	66.623973	40.239255	33.48416	
60	N60	42.430021	41.74305	4.436605	
61	N61	42.513355	43.886472	5.020046	
62	N62	42.430021	43.027175	11.71924	
63	N63	42.513355	44.425189	7.516803	
64	N64	42.430021	42.045205	6.150213	
65	N65	42.430021	41.310772	1.985034	
66	N66	42.513355	43.078739	2.800817	
67	N67	42.430021	42.586606	9.22065	
68	N68	42.513355	44.994569	11.118368	
69	N69	66.36726	39.683668	13.763383	
70	N70	66.323553	39.893313	10.778158	
71	N71	66.347694	39.450906	17.752609	
72	N72	57.36933	42.135509	2.300112	
73	N73	55.727583	42.054925	2.679229	
74	N74	57.36933	39.796502	13.304272	
75	N75	55.049652	39.720037	13.664016	
76	N76	57.36933	39.016834	16.972326	
77	N77	57.36933	41.35584	5.968165	
78	N78	55.501249	41.275401	6.3466	
79	N79	54.564156	38.82931	17.854556	
80	N80	57.36933	40.576171	9.636219	
81	N81	55.250065	40.410289	10.416635	
82	N82	57.36933	38.393098	19.906769	
83	N83	53.895906	38.287108	20.405413	
84	N84	57.36933	37.925297	22.107601	
85	F06 BASE	60.36933	42.407695	0	
86	N86	60.36933	42.403626	1.038721	
87	N87	41.427417	37.728575	0.884308	
88	N88	41.427417	37.728575	11.133172	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
89	N89	39.927013	37.832742	1.345594	
90	N90	41.427417	37.728575	4.846594	
91	N91	39.927013	37.832742	10.659023	
92	N92	39.927013	37.832742	5.217375	
93	N93	41.427417	37.728575	6.809183	
94	N94	39.927013	37.832742	7.201863	
95	N95	41.427417	37.728575	8.890729	
96	N96	60.36933	40.844288	8.374828	
97	N97	46.430021	43.039635	11.789903	
98	N98	46.430021	43.792914	5.027131	
99	N99	46.430021	42.08457	6.37346	
100	N100	46.430021	41.346565	2.188027	
101	N101	46.430021	45.062491	11.281415	
102	N102	46.430021	42.605514	9.327884	
103	N103	46.430021	44.411148	7.161409	
104	N104	46.430021	41.780685	4.650047	
105	N105	46.430021	43.141086	3.236248	
106	N106	50.089478	41.73146	3.523425	
107	N107	50.427417	40.640034	11.222619	
108	N108	49.945646	42.201913	11.150739	
109	N109	49.945646	42.201913	6.399918	
110	N110	50.427417	40.640034	10.973652	
111	N111	51.744365	40.642121	9.651044	
112	N112	50.427417	40.640034	5.472619	
113	N113	51.744365	40.642121	4.202915	
114	N114	50.427417	40.640034	2.972619	
115	N115	50.427417	40.640034	8.473652	
116	N116	51.744365	40.642121	7.142261	
117	N117	42.430021	43.053069	11.866091	
118	N118	42.430021	42.4453	8.419264	
119	F05 BASE	57.36933	42.407695	0	
120	N120	63.871591	40.709775	2.567536	
121	N121	63.871591	39.432112	9.813526	
122	N122	63.788258	41.758165	6.001892	
123	N123	63.871591	39.79395	7.761438	
124	N124	63.788258	41.617013	8.303457	
125	N125	63.871591	40.198064	5.469594	
126	N126	63.788258	41.941743	3.008556	
127	N127	42.430021	41.142939	1.033206	
128	F02 BASE	42.430021	41.140034	0	
129	N129	57.36933	42.403626	1.038721	
130	F04 BASE	50.427417	40.640034	0	
131	N131	57.36933	42.059702	2.656754	
132	N132	57.36933	42.404281	0.871518	
133	N133	57.857082	43.291132	1.03558	
134	N134	57.36933	40.844288	8.374828	
135	N135	50.427417	40.640034	11.25	
136	N136	50.427417	40.640034	7.5	
137	N137	63.871591	40.980353	1.03301	
138	F07 BASE	63.871591	40.983313	0	
139	N139	57.36933	39.403122	15.154979	
140	N140	57.386714	41.132023	13.632507	
141	N141	57.36933	39.870924	12.954147	
142	N142	57.36933	40.442681	10.264241	
143	N143	57.232678	41.731084	10.741081	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
144	N144	60.36933	42.404989	0.690706	
145	N145	60.20187	43.591844	1.289063	
146	N146	60.36933	42.061886	2.646479	
147	F01 BASE	41.427417	37.728575	0	
148	N148	63.871591	40.981283	0.708572	
149	N149	63.266438	42.295734	1.289063	
150	N150	63.871591	40.719942	2.509878	
151	N151	46.430021	43.053069	11.866091	
152	N152	46.430021	42.4453	8.419264	
153	N153	41.427417	37.728575	11.25	
154	F01R01	41.427417	37.728575	7.5	
155	N155	46.430021	41.142939	1.033206	
156	F03 BASE	46.430021	41.140034	0	
157	N157	69.092924	41.184142	33.779026	
158	N158	63.871591	39.677992	8.419069	
159	N159	63.755001	40.469166	33.363207	
160	N160	63.871591	37.721545	29.95432	
161	N161	63.807135	39.463583	32.163712	
162	N162	63.871591	37.721545	33.058454	
163	N163	63.8119	39.383668	33.024581	
164	N164	67.876625	37.728575	32.417342	
165	N165	67.876625	37.728575	29.657838	
166	N166	66.746831	39.136163	29.802745	
167	N167	67.876625	37.728575	25.428437	
168	N168	66.741528	39.135848	25.779124	
169	N169	67.876625	37.728575	21.06114	
170	N170	67.024932	39.152684	21.803724	
171	N171	60.36933	37.721543	23.085763	
172	N172	60.36933	39.28495	15.710935	
173	F07R01	63.871591	37.721545	22.132936	
174	N174	63.871591	37.721545	24.977274	
175	N175	60.36933	37.956727	21.976365	
176	N176	61.885683	40.231198	22.750719	
177	N177	60.36933	37.721543	24.182971	
178	N178	66.682218	39.127107	33.247636	
179	N179	66.682218	39.127107	32.383053	
180	N180	67.876625	37.728575	33.247801	
181	N181	67.876625	37.728575	29.624532	
182	N182	57.36933	37.721543	23.085763	
183	N183	57.36933	39.28495	15.710935	
184	N184	67.876625	37.728575	7.680122	
185	N185	67.876625	37.728575	5.565054	
186	N186	67.541764	39.494782	6.016489	
187	N187	63.871591	37.721545	25.286855	
188	N188	63.871591	38.149442	17.093694	
189	N189	63.785462	40.062877	25.829643	
190	N190	63.871591	37.721545	29.543692	
191	N191	63.871591	39.35284	10.263098	
192	N192	63.738737	40.818509	17.688626	
193	N193	63.871591	37.721545	21.59238	
194	N194	63.738211	40.437015	21.783327	
195	N195	63.52067	41.596879	10.778538	
196	N196	63.871591	38.771694	13.558941	
197	N197	63.439622	41.143245	13.954884	
198	N198	63.832478	39.702921	29.72358	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
199	N199	63.871591	37.721545	32.142402	
200	N200	67.876625	37.728575	3.75	
201	F08R01	67.876625	37.728575	11.25	
202	F08R02	67.876625	37.728575	18.75	
203	N203	67.876625	37.728575	2.518998	
204	N204	67.793291	39.509267	2.979553	
205	N205	67.876625	37.728575	5.231055	
206	N206	67.876625	37.728575	33.75	
207	F08R03	67.876625	37.728575	26.25	
208	N208	60.324538	39.283745	31.865092	
209	N209	60.36933	37.721543	29.798055	
210	N210	60.36933	37.721543	32.473626	
211	N211	60.329303	39.203831	32.725961	
212	N212	67.876625	37.728575	2.581047	
213	N213	67.876625	37.728575	0.785427	
214	N214	67.282348	39.854869	1.039063	
215	N215	63.871591	37.721545	19.531361	
216	N216	63.871591	38.375631	15.805127	
217	N217	60.36933	37.721543	24.289072	
218	N218	60.36933	38.100885	21.296352	
219	N219	60.384051	40.243589	21.712781	
220	N220	60.36933	40.529362	9.856439	
221	N221	60.26137	41.772958	10.650441	
222	N222	60.36933	39.828995	13.151408	
223	N223	60.259552	41.152888	13.666239	
224	N224	60.36933	39.391011	15.211961	
225	N225	60.36933	39.020957	16.956233	
226	N226	60.521188	40.63096	17.585918	
227	N227	60.36933	37.721543	24.527037	
228	N228	60.343072	39.860767	25.781597	
229	N229	60.36933	37.721543	28.268643	
230	N230	60.36933	37.721543	28.780174	
231	N231	60.490433	39.50395	29.720303	
232	N232	60.36933	37.721543	30.963941	
233	N233	57.36933	39.134337	16.421403	
234	N234	56.97285	40.172421	17.039057	
235	N235	57.36933	38.155041	21.04089	
236	N236	56.972117	39.689031	21.559848	
237	N237	57.36933	37.721543	23.688179	
238	N238	56.954763	39.313993	25.580203	
239	N239	57.36933	37.721543	30.796724	
240	N240	57.36933	37.721543	28.945993	
241	N241	57.09371	38.956218	29.523811	
242	N242	56.84194	39.103908	31.566472	
243	N243	57.36933	37.721543	29.018922	
244	N244	57.36933	37.721543	31.989683	
245	N245	56.846705	39.023994	32.427341	
246	N246	72.810835	48.576366	33.026171	
247	N247	72.894116	47.295728	32.921098	
248	N248	72.810835	48.576366	30.314027	
249	N249	77.677036	43.909699	2.696432	
250	N250	76.172001	43.826366	2.937688	
251	N251	77.677036	43.909699	5.887393	
252	N252	76.172001	43.826366	6.269621	
253	N253	77.677036	43.909699	8.494756	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
254	N254	72.876625	37.728575	10.429144	
255	N255	72.816741	39.846061	13.808894	
256	N256	72.876625	37.728575	17.435556	
257	N257	72.816741	39.635076	10.797928	
258	N258	72.876625	37.728575	13.429325	
259	N259	72.876625	37.728575	25.16115	
260	N260	72.816741	40.407076	21.815162	
261	N261	72.816741	40.126376	17.809282	
262	N262	72.876625	37.728575	21.433326	
263	N263	72.876625	37.728575	32.000649	
264	N264	72.816741	40.964141	29.765057	
265	N265	72.816741	40.686392	25.80129	
266	N266	72.876625	37.728575	29.108254	
267	N267	72.876625	37.728575	0.72559	
268	N268	73.516175	39.533098	1.638469	
269	N269	72.876625	37.728575	2.553518	
270	N270	76.17721	43.993032	33.203702	
271	N271	77.677036	43.909699	33.521333	
272	N272	77.677036	43.909699	30.659692	
273	F10R01	77.677036	43.909699	11.25	
274	N274	77.677036	43.909699	31.222055	
275	N275	77.677036	43.909699	17.381381	
276	N276	76.172001	43.826366	13.720135	
277	N277	77.677036	43.909699	13.394875	
278	N278	77.677036	43.909699	10.379089	
279	N279	76.172001	43.826366	10.817612	
280	N280	76.172001	43.826366	21.771086	
281	N281	77.677036	43.909699	25.315587	
282	N282	76.172001	43.826366	25.829251	
283	N283	77.677036	43.909699	29.044232	
284	N284	76.172001	43.826366	29.692169	
285	N285	76.172001	43.826366	17.797039	
286	N286	77.677036	43.909699	21.364226	
287	N287	72.474989	42.345837	34.035225	
288	N288	77.677036	43.909699	3.75	
289	F10 BASE	77.677036	43.909699	0	
290	N290	76.17721	43.993032	34.068286	
291	N291	75.063565	44.000845	34.304809	
292	N292	77.677036	43.909699	0.974374	
293	N293	76.17721	45.220446	1.513516	
294	N294	77.677036	43.909699	2.585941	
295	F10R02	77.677036	43.909699	18.75	
296	N296	77.677036	43.909699	33.75	
297	F10R03	77.677036	43.909699	26.25	
298	N298	77.677036	43.909699	0.948953	
299	N299	76.17721	42.467469	1.513516	
300	N300	77.677036	43.909699	2.561889	
301	N301	77.675363	48.576366	0.831865	
302	N302	76.17721	47.303779	1.513516	
303	N303	77.673933	48.576366	2.57896	
304	N304	77.673994	48.576366	2.504654	
305	N305	77.281508	48.576366	8.996289	
306	N306	76.172001	48.493032	2.962864	
307	N307	77.671223	48.576366	5.890448	
308	N308	76.172001	48.493032	6.271566	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
309	N309	72.529742	46.24011	34.019098	
310	N310	72.893347	47.293446	33.785678	
311	N311	72.810835	48.576366	31.412077	
312	N312	72.810835	48.576366	28.579582	
313	N313	73.064871	47.242497	29.562753	
314	N314	72.919529	48.576366	25.296621	
315	N315	73.340307	47.160098	25.983475	
316	N316	74.507545	46.790291	17.826837	
317	N317	73.576185	47.092513	21.904451	
318	N318	75.028847	46.626204	13.819481	
319	N319	75.520617	46.469076	10.833589	
320	F11 BASE	77.676044	48.576366	0	
321	N321	72.876625	37.728575	9.771249	
322	N322	72.876625	37.728575	2.707318	
323	N323	72.793291	39.495692	8.411658	
324	N324	72.793291	39.495692	2.962934	
325	N325	72.876625	37.728575	5.693652	
326	N326	72.876625	37.728575	8.199061	
327	N327	72.793291	39.495692	5.995624	
328	F11R01	77.669868	48.576366	7.546909	
329	N329	72.585463	41.163426	33.014245	
330	N330	72.876625	37.728575	29.76749	
331	N331	72.876625	37.728575	33.514954	
332	N332	72.579475	41.223263	33.876734	
333	N333	73.787582	48.576366	22.035796	
334	N334	75.728725	48.576366	14.791352	
335	N335	72.876625	37.728575	33.75	
336	N336	72.810835	48.576366	33.204926	
337	N337	72.810835	48.576366	25.704926	
338	F09R03	72.876625	37.728575	26.25	
339	F09R02	72.876625	37.728575	18.75	
340	F09R01	72.876625	37.728575	11.25	
341	N341	72.876625	37.728575	3.75	
342	F09 BASE	72.876625	37.728575	0	
343	N343	72.778875	54.576357	32.772141	
344	N344	72.778875	54.576357	29.92592	
345	N345	77.677036	57.909699	33.536737	
346	N346	72.434806	56.838945	32.977015	
347	N347	77.677036	57.909699	29.852452	
348	F13 BASE	77.677036	54.576357	0	
349	N349	77.240593	51.576366	9.15269	
350	N350	76.172001	51.493032	2.922063	
351	N351	77.672274	51.576366	5.820143	
352	N352	76.172001	51.493032	6.299636	
353	N353	77.677036	57.909699	12.643913	
354	N354	76.081018	60.462765	13.038638	
355	N355	77.677036	57.909699	15.549118	
356	N356	76.081005	60.462788	16.37985	
357	N357	77.677036	57.909699	18.270807	
358	N358	77.677036	54.576357	2.778974	
359	N359	76.172001	54.493024	2.991128	
360	N360	77.677036	54.576357	6.24461	
361	N361	77.677036	54.576357	11.769003	
362	N362	76.172001	54.493024	9.375001	
363	N363	76.172001	54.493024	6.375001	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
364	N364	77.677036	54.576357	9.224273	
365	N365	72.811828	51.576366	33.204926	
366	N366	72.811828	51.576366	25.704926	
367	N367	73.788575	51.576366	22.035796	
368	N368	75.729718	51.576366	14.791352	
369	N369	77.677036	57.909699	20.38259	
370	N370	77.677036	57.909699	17.398891	
371	N371	76.17721	57.863273	19.145325	
372	F12R01	77.670861	51.576366	7.546909	
373	F12 BASE	77.677036	51.576366	0	
374	N374	77.677036	54.576357	2.570881	
375	N375	76.17721	55.637113	1.513516	
376	N376	77.677036	54.576357	0.890221	
377	N377	76.17721	53.492006	1.513516	
378	N378	77.677036	54.576357	2.63249	
379	F14R03	77.677036	57.909699	26.25	
380	N380	74.539692	51.167549	13.863005	
381	N381	74.941788	51.576366	17.731948	
382	N382	75.982693	51.576366	13.847238	
383	N383	76.958583	51.576366	10.205165	
384	N384	75.38306	51.047008	10.811558	
385	N385	73.437613	51.294912	17.84466	
386	N386	74.336206	51.576366	19.992009	
387	N387	77.676551	51.576366	0.593851	
388	N388	76.17721	50.924115	1.513516	
389	N389	77.674985	51.576366	2.507585	
390	N390	74.830419	53.195745	13.845832	
391	N391	75.684748	52.792153	10.755462	
392	N392	74.916916	51.576366	17.824769	
393	N393	74.027523	53.808575	17.789057	
394	N394	74.024548	51.576366	21.155135	
395	F14R02	77.677036	57.909699	18.75	
396	F14 BASE	77.677036	57.909699	0	
397	F13R01	77.677036	54.576357	12.5	
398	N398	77.677036	54.576357	5	
399	F14R01	77.677036	57.909699	11.25	
400	N400	77.677036	57.909699	3.75	
401	N401	72.778875	54.576357	33.46347	
402	N402	72.778875	54.576357	31.768231	
403	N403	72.778875	54.576357	28.645424	
404	N404	73.064455	56.806564	29.787393	
405	N405	72.778875	54.576357	25.96347	
406	N406	77.638409	54.576357	20.109069	
407	N407	77.642464	54.576357	19.310266	
408	N408	76.172001	55.376754	13.771722	
409	N409	77.677036	54.576357	9.706059	
410	N410	76.172001	55.442368	10.712382	
411	N411	77.672618	54.576357	13.370436	
412	N412	77.653984	54.576357	17.041127	
413	N413	76.172001	55.336334	17.775771	
414	N414	77.57287	60.542718	27.675176	
415	N415	77.677036	57.909699	30.896275	
416	N416	77.57287	61.267017	31.46975	
417	N417	77.677036	57.909699	33.457767	
418	N418	77.677036	57.909699	19.350425	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
419	N419	77.57287	61.940696	20.101375	
420	N420	77.677036	57.909699	23.343188	
421	N421	77.57287	61.550001	24.253595	
422	N422	77.677036	57.909699	27.103054	
423	N423	77.677036	57.909699	2.068519	
424	N424	76.172	57.826366	2.8003	
425	N425	77.677036	57.909699	21.022705	
426	N426	76.250188	57.826366	21.37494	
427	N427	77.677036	57.909699	24.784529	
428	N428	77.677036	57.909699	31.883656	
429	N429	75.012479	57.826366	25.483948	
430	N430	77.677036	57.909699	28.561	
431	N431	73.966093	57.826366	30.440974	
432	N432	76.18144	57.826366	18.240298	
433	N433	77.677036	57.909699	17.249452	
434	N434	77.677036	57.909699	13.485186	
435	N435	76.171989	57.826366	14.125402	
436	N436	76.171993	57.826366	10.350937	
437	N437	77.677036	57.909699	9.757001	
438	N438	77.677036	57.909699	5.965764	
439	N439	76.171996	57.826366	6.606682	
440	N440	77.677036	57.909699	2.505395	
441	N441	76.106103	59.685682	2.744328	
442	N442	77.677036	57.909699	6.322442	
443	N443	76.106103	59.685682	6.628032	
444	N444	77.677036	57.909699	8.513603	
445	N445	76.106103	59.685682	8.923366	
446	N446	77.677036	57.909699	11.120264	
447	N447	72.876625	37.728575	33.150907	
448	N448	69.824414	40.327847	33.612026	
449	N449	72.876625	37.728575	27.807961	
450	N450	69.859525	40.287319	32.749107	
451	N451	72.876625	37.728575	31.455727	
452	N452	70.02052	40.190672	29.793156	
453	N453	72.876625	37.728575	29.553186	
454	N454	70.114635	39.943284	25.792434	
455	N455	70.350868	39.821195	21.818228	
456	N456	72.876625	37.728575	25.568972	
457	N457	72.876625	37.728575	20.445025	
458	N458	72.876625	37.728575	9.859057	
459	N459	72.876625	37.728575	16.487661	
460	N460	70.503309	39.621601	17.784229	
461	N461	70.217476	39.342347	13.784089	
462	N462	70.2085	39.341814	10.794782	
463	N463	72.876625	37.728575	12.509859	
464	F12R06	77.72127	50.193658	26.260417	
465	F13R03	77.72127	52.943655	26.260417	
466	N466	72.811828	51.576366	26.262714	
467	F06R01	62.368817	37.676492	11.039063	
468	N468	63.871591	39.273327	10.714037	
469	F05R01	58.868817	37.676492	11.039063	
470	N470	60.36933	40.361637	10.645521	
471	F04R01	53.055021	37.645242	11.039063	
472	N472	57.36933	40.346366	10.717367	
473	N473	46.430021	42.893263	10.95979	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
474	F03R01	47.930021	37.645242	11.039063	
475	N475	50.427417	40.640034	10.668107	
476	N476	42.430021	42.916697	11.092689	
477	F02R01	44.430021	37.645242	11.039063	
478	F11R09	77.72127	46.193658	32.760417	
479	F12R07	77.72127	49.943658	32.760417	
480	N480	72.810835	48.576366	32.159235	
481	F13R04	77.72127	52.943655	32.760417	
482	N482	72.811828	51.576366	32.275413	
483	F14R04	77.677036	57.909699	32.760417	
484	N484	72.778875	54.576357	33.02621	
485	F12R02	77.72127	50.068658	12.510417	
486	N486	76.420659	51.576366	12.212727	
487	F11R02	77.72127	46.943658	12.510417	
488	N488	76.413368	48.576366	12.236231	
489	F13R02	77.642464	54.576357	19.010417	
490	F12R04	77.72127	50.068658	19.010417	
491	N491	74.653618	51.576366	18.807411	
492	F11R04	77.72127	46.193658	19.010417	
493	N493	74.634207	48.576366	18.876149	
494	F11R08	77.72127	46.193658	26.260417	
495	N495	72.810835	48.576366	26.211776	
496	N496	72.778875	54.576357	26.273098	
497	N497	71.597528	57.776539	33.911138	
498	N498	72.353518	56.928841	33.833062	
499	N499	72.876625	37.728575	2.630368	
500	N500	72.876625	37.728575	1.028476	
501	N501	70.438268	39.350246	1.638469	
502	N502	72.778875	54.576357	28.894918	
503	N503	71.750963	54.646406	29.823449	
504	N504	72.778875	54.576357	30.885896	
505	N505	71.248719	51.838402	32.823614	
506	N506	72.811828	51.576366	32.897892	
507	N507	72.811828	51.576366	30.469146	
508	N508	71.150476	51.844112	33.682579	
509	N509	72.811828	51.576366	28.540113	
510	N510	71.595878	51.911652	29.789873	
511	N511	72.811828	51.576366	31.210312	
512	N512	71.409868	54.637711	32.837043	
513	N513	72.778875	54.576357	33.273147	
514	N514	71.311625	54.643421	33.696008	
515	N515	72.778875	54.576357	30.863192	
516	N516	72.810835	48.576366	31.293399	
517	N517	72.810835	48.576366	28.372341	
518	N518	71.389484	48.425203	29.822724	
519	N519	76.120295	48.576366	13.329995	
520	N520	71.937988	48.25946	24.95922	
521	N521	73.102331	48.576366	24.60993	
522	N522	72.307078	48.378132	21.803135	
523	N523	73.277408	48.137757	17.824979	
524	N524	74.178544	48.576366	20.576706	
525	N525	74.361268	48.022582	13.911102	
526	N526	75.083797	48.576366	17.198257	
527	N527	76.956869	48.576366	10.207859	
528	N528	75.221405	47.989007	10.816319	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
529	N529	71.068223	48.703005	32.808573	
530	N530	72.810835	48.576366	33.130536	
531	N531	72.810835	48.576366	29.655201	
532	N532	70.96998	48.708714	33.667537	
533	F05R03	57.36933	37.721543	31.485763	
534	F06R03	60.36933	37.721543	31.635763	
535	F07R03	63.871591	37.721545	32.431361	
536	F08R04	67.876625	37.728575	32.7	
537	F09R04	72.876625	37.728575	32.575	
538	F10R04	77.677036	43.909699	32.75	
539	N539	67.876625	37.728575	13.726302	
540	N540	67.876625	37.728575	17.61625	
541	F11R03	77.669868	48.576366	15.046909	
542	N542	77.669868	48.576366	25.156712	
543	N543	77.669868	48.576366	21.103315	
544	N544	77.669868	48.576366	17.767341	
545	N545	77.669868	48.576366	13.911529	
546	N546	77.669868	48.576366	10.98399	
547	F11R05	77.669868	48.576366	21.296909	
548	N548	77.669868	48.576366	25.796909	
549	N549	77.677036	57.909699	28.249827	
550	N550	77.677036	57.909699	21.495466	
551	N551	77.677036	57.909699	24.314139	
552	N552	77.670861	51.576366	10.362974	
553	N553	77.670861	51.576366	13.91129	
554	N554	77.670861	51.576366	17.824769	
555	N555	77.670861	51.576366	21.155135	
556	N556	77.670861	51.576366	22.546909	
557	F12R03	77.670861	51.576366	15.046909	
558	F11R07	77.669868	48.576366	25.316909	
559	F12R05	77.670861	51.576366	22.046909	
560	N562	77.334931	48.576366	8.796909	
561	N563	77.335924	51.576366	8.796909	
562	F11R06	77.669868	48.576366	23.316909	
563	N565	77.670861	51.576366	8.796909	
564	N566	77.669868	48.576366	8.796909	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	F11R07	S30	S30				
2	F11R05	S30	S30				
3	F12R03	S30	S30				
4	F11R03	S30	S30				
5	F14R02	S30	S30				
6	F12R01	S30	S30				
7	F11R01	S30	S30				
8	F10R01	S30	S30				
9	F10R02	S30	S30				
10	F10R03	S30	S30				
11	F14R01	S30	S30				
12	F09R04	S30	S30				
13	F08R04	S30	S30				
14	F05R03	S30	S30	S5			
15	F06R03	S30	S30	S5			
16	F07R03	S30	S30	S5			

Node Boundary Conditions (Continued)

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
17	F08R02	S30	S30				
18	F09R02	S30	S30				
19	F09R01	S30	S30				
20	F10R04	S30	S30				
21	F06R02	S30	S30	S5			
22	F07R02	S30	S30	S5			
23	F05R02	S30	S30	S5			
24	F08R03	S30	S30				
25	F09R03	S30	S30				
26	F07R01	S30	S30	S5			
27	F08 BASE	S30	S30	S30			S1
28	F01 BASE	S30	S30	S30			S1
29	F06 BASE	S30	S30	S30			S1
30	F05 BASE	S30	S30	S30			S1
31	F02 BASE	S30	S30	S30			S1
32	F04 BASE	S30	S30	S30			S1
33	F13 BASE	S30	S30	S30			S1
34	F07 BASE	S30	S30	S30			S1
35	F03 BASE	S30	S30	S30			S1
36	F12 BASE	S30	S30	S30			S1
37	F10 BASE	S30	S30	S30			S1
38	F11 BASE	S30	S30	S30			S1
39	F09 BASE	S30	S30	S30			S1
40	F14 BASE	S30	S30	S30			S1
41	F11R02	S30	S30	S30	S1	S1	S1
42	F14R03	S30	S30				
43	F12R06	S30	S30	S30	S1	S1	S1
44	F12R07	S30	S30	S30	S1	S1	S1
45	F13R02	S30	S30				
46	F13R01	S30	S30				
47	F12R02	S30	S30	S30	S1	S1	S1
48	F13R03	S30	S30	S30	S1	S1	S1
49	F11R09	S30	S30	S30	S1	S1	S1
50	F13R04	S30	S30	S30	S1	S1	S1
51	F14R04	S30	S30				
52	F12R04	S30	S30	S30	S1	S1	S1
53	F11R04	S30	S30	S30	S1	S1	S1
54	F11R08	S30	S30	S30	S1	S1	S1
55	F02R01	S30	S30	S30	S1	S1	S1
56	F03R01	S30	S30	S30	S1	S1	S1
57	F05R01	S30	S30	S30	S1	S1	S1
58	F08R01	S30	S30				
59	F06R01	S30	S30	S30	S1	S1	S1
60	F04R01	S30	S30	S30	S1	S1	S1
61	F01R01	S30	S30				
62	F12R05	S30	S30				
63	F11R06	S30	S30				

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	F01B01	N87	N89		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
2	F01B02	N90	N89		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
3	F01B03	N90	N92		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
4	F01B04	N93	N92		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
5	F01B05	N93	N94		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
6	F01B06	N95	N94		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
7	F01B07	N95	N91		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
8	F01B08	N88	N91		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
9	F01P01	F01 BASE	F01R01		Profile	Column	Tube	A500 Gr.B RECT	Typical
10	F01P02	F01R01	N153		Profile	Column	Tube	A500 Gr.B RECT	Typical
11	F02B01	N65	N66		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
12	F02B02	N60	N66		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
13	F02B03	N51	N52		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
14	F02B04	N58	N52		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
15	F02B05	N60	N61		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
16	F02B06	N64	N61		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
17	F02B07	N58	N57		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
18	F02B08	N56	N57		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
19	F02B09	N64	N63		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
20	F02B10	N67	N63		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
21	F02B11	N56	N55		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
22	F02B12	N50	N55		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
23	F02B13	N67	N68		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
24	F02B14	N62	N68		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
25	F02B15	N50	N54		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
26	F02B16	N53	N54		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
27	F02P01	F02 BASE	N127		Profile	Column	Tube	A500 Gr.B RECT	Typical
28	F02P02	N127	N118		Profile	Column	Tube	A500 Gr.B RECT	Typical
29	F02P03	N118	N117		Profile	Column	Tube	A500 Gr.B RECT	Typical
30	F02T01	F01R01	N476		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
31	F02T02	F02R01	N476		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
32	F03B01	N100	N105		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
33	F03B02	N104	N105		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
34	F03B03	N104	N98		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
35	F03B04	N99	N98		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
36	F03B05	N99	N103		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
37	F03B06	N102	N103		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
38	F03B07	N102	N101		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
39	F03B08	N97	N101		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
40	F03P01	F03 BASE	N155		Profile	Column	Tube	A500 Gr.B RECT	Typical
41	F03P02	N155	N152		Profile	Column	Tube	A500 Gr.B RECT	Typical
42	F03P03	N152	N151		Profile	Column	Tube	A500 Gr.B RECT	Typical
43	F03T01	F02R01	N473		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
44	F03T02	F03R01	N473		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
45	F04B01	N114	N113		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
46	F04B02	N112	N113		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
47	F04B03	N114	N106		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
48	F04B04	N112	N106		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
49	F04B05	N112	N116		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
50	F04B06	N115	N116		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
51	F04B07	N112	N109		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
52	F04B08	N115	N109		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
53	F04B09	N115	N111		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
54	F04B10	N110	N111		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
55	F04B11	N115	N108		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
56	F04B12	N107	N108		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
57	F04P01	F04 BASE	N136		Profile	Column	Tube	A500 Gr.B RECT	Typical
58	F04P02	N136	N135		Profile	Column	Tube	A500 Gr.B RECT	Typical
59	F04T01	F03R01	N475		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
60	F04T02	F04R01	N475		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
61	F05B01	N132	N133		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
62	F05B02	N131	N133		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
63	F05B03	N72	N73		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
64	F05B04	N77	N73		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
65	F05B05	N43	N44		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
66	F05B06	N46	N44		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
67	F05B07	N46	N47		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
68	F05B08	N45	N47		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
69	F05B09	N77	N78		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
70	F05B10	N80	N78		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
71	F05B11	N80	N81		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
72	F05B12	N74	N81		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
73	F05B13	N142	N143		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
74	F05B14	N141	N143		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
75	F05B15	N141	N140		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
76	F05B16	N139	N140		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
77	F05B17	N74	N75		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
78	F05B18	N76	N75		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
79	F05B19	N233	N234		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
80	F05B20	N235	N234		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
81	F05B21	N76	N79		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
82	F05B22	N82	N79		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
83	F05B23	N82	N83		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
84	F05B24	N84	N83		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
85	F05B25	N235	N236		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
86	F05B26	N237	N236		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
87	F05B27	N237	N238		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
88	F05B28	N240	N238		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
89	F05B29	N20	N22		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
90	F05B30	N23	N22		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
91	F05B31	N23	N21		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
92	F05B32	N24	N21		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
93	F05B33	N240	N241		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
94	F05B34	N239	N241		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
95	F05B35	N24	N25		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
96	F05B36	N26	N25		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
97	F05B50	N242	N243		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
98	F05B51	N242	N244		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
99	F05B52	N244	N245		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
100	F05P01	F05 BASE	N129		Profile	Column	Tube	A500 Gr.B RECT	Typical
101	F05P02	N129	N134		Profile	Column	Tube	A500 Gr.B RECT	Typical
102	F05P03	N134	N183		Profile	Column	Tube	A500 Gr.B RECT	Typical
103	F05P04	N183	N182		Profile	Column	Tube	A500 Gr.B RECT	Typical
104	F05P05	N182	F05R02		Profile	Column	Tube	A500 Gr.B RECT	Typical
105	F05P06	F05R02	N29		Profile	Column	Tube	A500 Gr.B RECT	Typical
106	F05T01	F04R01	N472		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
107	F05T02	F05R01	N472		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
108	F06B01	N144	N145		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
109	F06B02	N146	N145		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
110	F06B03	N35	N36		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
111	F06B04	N34	N36		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
112	F06B05	N34	N37		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
113	F06B06	N38	N37		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
114	F06B07	N38	N39		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
115	F06B08	N40	N39		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
116	F06B09	N220	N221		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
117	F06B10	N222	N221		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
118	F06B11	N222	N223		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
119	F06B12	N224	N223		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
120	F06B13	N225	N226		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
121	F06B14	N218	N226		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
122	F06B15	N218	N219		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
123	F06B16	N217	N219		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
124	F06B17	N175	N176		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
125	F06B18	N177	N176		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
126	F06B19	N227	N228		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
127	F06B20	N229	N228		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
128	F06B21	N230	N231		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
129	F06B22	N232	N231		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
130	F06B50	N208	N209		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
131	F06B51	N208	N210		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
132	F06B52	N210	N211		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
133	F06P01	F06_BASE	N86		Profile	Column	Tube	A500 Gr.B RECT	Typical
134	F06P02	N86	N96		Profile	Column	Tube	A500 Gr.B RECT	Typical
135	F06P03	N96	N172		Profile	Column	Tube	A500 Gr.B RECT	Typical
136	F06P04	N172	N171		Profile	Column	Tube	A500 Gr.B RECT	Typical
137	F06P05	N171	F06R02		Profile	Column	Tube	A500 Gr.B RECT	Typical
138	F06P06	F06R02	N31		Profile	Column	Tube	A500 Gr.B RECT	Typical
139	F06T01	F05R01	N470		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
140	F06T02	F06R01	N470		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
141	F07B01	N148	N149		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
142	F07B02	N150	N149		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
143	F07B03	N120	N126		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
144	F07B04	N125	N126		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
145	F07B05	N125	N122		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
146	F07B06	N123	N122		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
147	F07B07	N123	N124		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
148	F07B08	N121	N124		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
149	F07B11	N191	N195		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
150	F07B12	N196	N195		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
151	F07B15	N196	N197		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
152	F07B16	N188	N197		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
153	F07B19	N188	N192		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
154	F07B20	N193	N192		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
155	F07B21	N193	N194		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
156	F07B22	N187	N194		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
157	F07B23	F07R01	N176		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
158	F07B24	N174	N176		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
159	F07B25	N187	N189		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
160	F07B26	N190	N189		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
161	F07B27	N190	N198		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
162	F07B28	N199	N198		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
163	F07B50	N179	N160		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
164	F07B51	N179	N162		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
165	F07B52	N162	N178		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
166	F07B53	N160	N161		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
167	F07B54	N161	N162		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
168	F07B55	N162	N163		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
169	F07P01	F07_BASE	N137		Profile	Column	Tube	A500 Gr.B RECT	Typical
170	F07P02	N137	N158		Profile	Column	Tube	A500 Gr.B RECT	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
171	F07P03	N158	N216		Profile	Column	Tube	A500 Gr.B RECT	Typical
172	F07P04	N216	N215		Profile	Column	Tube	A500 Gr.B RECT	Typical
173	F07P05	N215	F07R02		Profile	Column	Tube	A500 Gr.B RECT	Typical
174	F07P06	F07R02	N19		Profile	Column	Tube	A500 Gr.B RECT	Typical
175	F07T01	F06R01	N468		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
176	F07T02	F08R01	N468		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
177	F08B01	N213	N214		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
178	F08B02	N212	N214		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
179	F08B03	N203	N204		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
180	F08B04	N205	N204		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
181	F08B05	N185	N186		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
182	F08B06	N184	N186		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
183	F08B07	N2	N3		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
184	F08B08	N1	N3		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
185	F08B09	N169	N170		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
186	F08B10	N167	N170		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
187	F08B11	N167	N168		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
188	F08B12	N165	N168		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
189	F08B13	N165	N166		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
190	F08B14	N164	N166		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
191	F08B20	N1	N70		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
192	F08B21	N539	N70		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
193	F08B22	N539	N69		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
194	F08B23	N540	N69		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
195	F08B24	N540	N71		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
196	F08B25	N169	N71		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
197	F08B50	N181	N450		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
198	F08B51	N450	N180		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
199	F08B52	N180	N448		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
200	F08B53	N179	N181		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
201	F08B54	N179	N180		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
202	F08B55	N180	N178		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
203	F08P01	F08_BASE	N200		Profile	Column	Tube	A500 Gr.B RECT	Typical
204	F08P02	N200	F08R01		Profile	Column	Tube	A500 Gr.B RECT	Typical
205	F08P03	F08R01	F08R02		Profile	Column	Tube	A500 Gr.B RECT	Typical
206	F08P04	F08R02	F08R03		Profile	Column	Tube	A500 Gr.B RECT	Typical
207	F08P05	F08R03	N206		Profile	Column	Tube	A500 Gr.B RECT	Typical
208	F09B01	N267	N268		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
209	F09B02	N269	N268		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
210	F09B03	N500	N501		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
211	F09B04	N499	N501		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
212	F09B05	N322	N324		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
213	F09B06	N325	N324		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
214	F09B07	N325	N327		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
215	F09B08	N326	N327		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
216	F09B09	N326	N323		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
217	F09B10	N321	N323		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
218	F09B11	N458	N462		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
219	F09B12	N463	N462		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
220	F09B13	N254	N257		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
221	F09B14	N258	N257		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
222	F09B15	N463	N461		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
223	F09B16	N459	N461		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
224	F09B17	N258	N255		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
225	F09B18	N256	N255		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
226	F09B19	N459	N460		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
227	F09B20	N457	N460		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
228	F09B21	N256	N261		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
229	F09B22	N262	N261		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
230	F09B23	N457	N455		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
231	F09B24	N456	N455		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
232	F09B25	N262	N260		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
233	F09B26	N259	N260		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
234	F09B27	N456	N454		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
235	F09B28	N453	N454		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
236	F09B29	N259	N265		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
237	F09B30	N266	N265		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
238	F09B31	N453	N452		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
239	F09B32	N451	N452		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
240	F09B33	N266	N264		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
241	F09B34	N263	N264		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
242	F09B50	N329	N330		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
243	F09B51	N329	N331		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
244	F09B52	N331	N332		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
245	F09B53	N449	N450		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
246	F09B54	N450	N447		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
247	F09B55	N447	N448		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
248	F09P01	F09 BASE	N341		Profile	Column	Tube	A500 Gr.B RECT	Typical
249	F09P02	N341	F09R01		Profile	Column	Tube	A500 Gr.B RECT	Typical
250	F09P03	F09R01	F09R02		Profile	Column	Tube	A500 Gr.B RECT	Typical
251	F09P04	F09R02	F09R03		Profile	Column	Tube	A500 Gr.B RECT	Typical
252	F09P05	F09R03	N335		Profile	Column	Tube	A500 Gr.B RECT	Typical
253	F10B01	N298	N299		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
254	F10B02	N292	N293		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
255	F10B03	N300	N299		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
256	F10B04	N294	N293		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
257	F10B05	N249	N250		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
258	F10B06	N251	N250		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
259	F10B07	N251	N252		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
260	F10B08	N253	N252		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
261	F10B09	N278	N279		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
262	F10B10	N277	N279		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
263	F10B11	N277	N276		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
264	F10B12	N275	N276		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
265	F10B13	N275	N285		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
266	F10B14	N286	N285		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
267	F10B15	N286	N280		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
268	F10B16	N281	N280		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
269	F10B17	N281	N282		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
270	F10B18	N283	N282		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
271	F10B19	N283	N284		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
272	F10B20	N274	N284		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
273	F10B50	N270	N272		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
274	F10B51	N270	N271		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
275	F10B52	N271	N290		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
276	F10P01	F10 BASE	N288	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
277	F10P02	N288	F10R01	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
278	F10P03	F10R01	F10R02	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
279	F10P04	F10R02	F10R03	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
280	F10P05	F10R03	N296	90	Profile	Column	Tube	A500 Gr.B RECT	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
281	F11B01	N301	N302		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
282	F11B02	N303	N302		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
283	F11B03	N304	N306		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
284	F11B04	N307	N306		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
285	F11B05	N307	N308		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
286	F11B06	N305	N308		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
287	F11B07	N527	N528		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
288	F11B08	N519	N528		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
289	F11B11	N519	N525		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
290	F11B12	N526	N525		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
291	F11B15	N526	N523		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
292	F11B16	N524	N523		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
293	F11B19	N524	N522		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
294	F11B20	N521	N522		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
295	F11B23	N521	N520		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
296	F11B24	N517	N520		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
297	F11B25	N314	N315		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
298	F11B26	N312	N315		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
299	F11B27	N312	N313		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
300	F11B28	N311	N313		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
301	F11B29	N517	N518		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
302	F11B30	N516	N518		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
303	F11B40	N546	N319		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
304	F11B41	N545	N319		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
305	F11B42	N545	N318		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
306	F11B43	N544	N318		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
307	F11B44	N544	N316		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
308	F11B45	N543	N316		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
309	F11B46	N543	N317		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
310	F11B47	N542	N317		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
311	F11B50	N529	N531		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
312	F11B51	N529	N530		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
313	F11B52	N530	N532		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
314	F11B53	N247	N248		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
315	F11B54	N247	N246		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
316	F11B55	N246	N310		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
317	F11B56	N247	F11R09		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
318	F11B57	N310	F11R09		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
319	F11P01	F11 BASE	F11R01		Profile	Column	Tube	A500 Gr.B RECT	Typical
320	F11P02	N562	N334		Profile	Column	Tube	A500 Gr.B RECT	Typical
321	F11P03	N334	N333		Profile	Column	Tube	A500 Gr.B RECT	Typical
322	F11P04	N333	N337		Profile	Column	Tube	A500 Gr.B RECT	Typical
323	F11P05	N337	N336	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
324	F11P06	F11R01	F11R03	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
325	F11P07	F11R03	F11R05	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
326	F11P08	F11R05	N548	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
327	F11T01	F12R07	N480		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
328	F11T02	F11R09	N480		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
329	F11T03	F12R06	N495		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
330	F11T04	F11R08	N495		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
331	F11T05	F12R04	N493		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
332	F11T06	F11R04	N493		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
333	F11T07	F12R02	N488		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
334	F11T08	F11R02	N488		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
335	F12B01	N387	N388		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
336	F12B02	N389	N388		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
337	F12B03	N389	N350		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
338	F12B04	N351	N350		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
339	F12B05	N351	N352		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
340	F12B06	N349	N352		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
341	F12B07	N383	N384		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
342	F12B08	N382	N384		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
343	F12B11	N382	N380		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
344	F12B12	N381	N380		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
345	F12B15	N381	N385		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
346	F12B16	N386	N385		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
347	F12B19	N16	N17		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
348	F12B20	N18	N17		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
349	F12B21	N13	N14		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
350	F12B22	N15	N14		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
351	F12B23	N509	N510		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
352	F12B24	N511	N510		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
353	F12B30	N552	N391		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
354	F12B31	N553	N391		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
355	F12B32	N553	N390		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
356	F12B33	N554	N390		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
357	F12B34	N554	N393		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
358	F12B35	N555	N393		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
359	F12B50	N507	N505		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
360	F12B51	N505	N506		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
361	F12B52	N506	N508		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
362	F12B53	N248	N507		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
363	F12B54	N246	N507		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
364	F12B55	N246	N506		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
365	F12P01	F12 BASE	F12R01		Profile	Column	Tube	A500 Gr.B RECT	Typical
366	F12P02	N563	N368		Profile	Column	Tube	A500 Gr.B RECT	Typical
367	F12P03	N368	N367		Profile	Column	Tube	A500 Gr.B RECT	Typical
368	F12P04	N367	N366		Profile	Column	Tube	A500 Gr.B RECT	Typical
369	F12P05	N366	N365	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
370	F12P06	F12R01	F12R03	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
371	F12P07	F12R03	N556	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
372	F12T01	F13R04	N482		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
373	F12T02	F12R07	N482		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
374	F12T03	F13R03	N466		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
375	F12T04	F12R06	N466		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
376	F12T05	F13R02	N491		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
377	F12T06	F12R04	N491		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
378	F12T07	F13R01	N486		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
379	F12T08	F12R02	N486		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
380	F13B01	N376	N377		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
381	F13B02	N378	N377		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
382	F13B03	N376	N375		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
383	F13B04	N374	N375		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
384	F13B05	N358	N359		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
385	F13B06	N360	N359		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
386	F13B07	N360	N363		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
387	F13B08	N364	N363		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
388	F13B09	N364	N362		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
389	F13B11	N361	N362		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
390	F13B12	N409	N410		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
391	F13B13	N411	N410		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
392	F13B14	N411	N408		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
393	F13B15	N412	N408		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
394	F13B16	N412	N413		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
395	F13B17	N407	N413		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
396	F13B20	N7	N8		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
397	F13B21	N9	N8		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
398	F13B22	N11	N12		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
399	F13B23	N10	N12		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
400	F13B26	N403	N404		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
401	F13B27	N402	N404		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
402	F13B28	N502	N503		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
403	F13B29	N504	N503		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
404	F13B50	N346	N344		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
405	F13B51	N346	N343		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
406	F13B52	N343	N498		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
407	F13B53	N512	N515		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
408	F13B54	N512	N513		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
409	F13B55	N513	N514		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
410	F13P01	F13 BASE	N398	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
411	F13P02	N398	F13R01	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
412	F13P03	F13R01	N406		Profile	Column	Tube	A500 Gr.B RECT	Typical
413	F13P04	N406	N405		Profile	Column	Tube	A500 Gr.B RECT	Typical
414	F13P05	N405	N401	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
415	F13T01	F14R04	N484		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
416	F13T02	F13R04	N484		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
417	F13T03	F14R03	N496		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
418	F13T04	F13R03	N496		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
419	F14B01	N423	N424		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
420	F14B02	N438	N424		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
421	F14B03	N440	N441		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
422	F14B04	N442	N441		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
423	F14B05	N438	N439		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
424	F14B06	N437	N439		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
425	F14B07	N442	N443		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
426	F14B08	N444	N443		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
427	F14B09	N444	N445		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
428	F14B10	N446	N445		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
429	F14B11	N437	N436		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
430	F14B12	N434	N436		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
431	F14B13	N353	N354		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
432	F14B14	N355	N354		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
433	F14B15	N434	N435		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
434	F14B16	N433	N435		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
435	F14B17	N355	N356		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
436	F14B18	N357	N356		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
437	F14B19	N433	N432		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
438	F14B20	N425	N432		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
439	F14B21	N370	N371		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
440	F14B22	N369	N371		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
441	F14B23	N418	N419		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
442	F14B24	N420	N419		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
443	F14B25	N425	N426		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
444	F14B26	N427	N426		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
445	F14B27	N420	N421		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
446	F14B28	N422	N421		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
447	F14B29	N427	N429		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
448	F14B30	N430	N429		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
449	F14B31	N422	N414		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
450	F14B32	N415	N414		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
451	F14B33	N430	N431		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
452	F14B34	N428	N431		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
453	F14B35	N415	N416		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
454	F14B36	N417	N416		Slotted Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
455	F14B40	N550	N6		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
456	F14B41	N551	N6		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
457	F14B42	N551	N5		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
458	F14B43	N549	N5		Brace L2x2x1/8	VBrace	Single Angle	A36 Gr.36	Typical
459	F14B50	N346	N347		Brace L3x3x3/16	VBrace	Single Angle	A36 Gr.36	Typical
460	F14B51	N346	N345		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
461	F14B52	N345	N498		Pinch Pipe 0.75	Beam	Pipe	A53 Gr.B	Typical
462	F14P01	F14 BASE	N400	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
463	F14P02	N400	F14R01	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
464	F14P03	F14R01	F14R02	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
465	F14P04	F14R02	F14R03	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
466	F14P05	F14R03	N4	90	Profile	Column	Tube	A500 Gr.B RECT	Typical
467	M31	N245	N242		Belay Tube	None	None	A36 Gr.36	Typical
468	M32	N33	N245		Belay Tube	None	None	A36 Gr.36	Typical
469	M33	N242	N33		Belay Tube	None	None	A36 Gr.36	Typical
470	M40	N505	N41		Belay Tube	None	None	A36 Gr.36	Typical
471	M41	N508	N505		Belay Tube	None	None	A36 Gr.36	Typical
472	M42	N41	N508		Belay Tube	None	None	A36 Gr.36	Typical
473	M43	N208	N42		Belay Tube	None	None	A36 Gr.36	Typical
474	M44	N211	N208		Belay Tube	None	None	A36 Gr.36	Typical
475	M45	N42	N211		Belay Tube	None	None	A36 Gr.36	Typical
476	M50	N512	N48		Belay Tube	None	None	A36 Gr.36	Typical
477	M51	N514	N512		Belay Tube	None	None	A36 Gr.36	Typical
478	M52	N48	N514		Belay Tube	None	None	A36 Gr.36	Typical
479	M54	N529	N49		Belay Tube	None	None	A36 Gr.36	Typical
480	M55	N532	N529		Belay Tube	None	None	A36 Gr.36	Typical
481	M56	N49	N532		Belay Tube	None	None	A36 Gr.36	Typical
482	M66	N179	N59		Belay Tube	None	None	A36 Gr.36	Typical
483	M67	N178	N179		Belay Tube	None	None	A36 Gr.36	Typical
484	M68	N59	N178		Belay Tube	None	None	A36 Gr.36	Typical
485	M155	N450	N157		Belay Tube	None	None	A36 Gr.36	Typical
486	M156	N448	N450		Belay Tube	None	None	A36 Gr.36	Typical
487	M157	N157	N448		Belay Tube	None	None	A36 Gr.36	Typical
488	M159	N161	N159		Belay Tube	None	None	A36 Gr.36	Typical
489	M160	N163	N161		Belay Tube	None	None	A36 Gr.36	Typical
490	M161	N159	N163		Belay Tube	None	None	A36 Gr.36	Typical
491	M269	N329	N287		Belay Tube	None	None	A36 Gr.36	Typical
492	M270	N332	N329		Belay Tube	None	None	A36 Gr.36	Typical
493	M271	N287	N332		Belay Tube	None	None	A36 Gr.36	Typical
494	M273	N290	N270		Belay Tube	None	None	A36 Gr.36	Typical
495	M274	N291	N290		Belay Tube	None	None	A36 Gr.36	Typical
496	M275	N270	N291		Belay Tube	None	None	A36 Gr.36	Typical
497	M288	N247	N309		Belay Tube	None	None	A36 Gr.36	Typical
498	M289	N310	N247		Belay Tube	None	None	A36 Gr.36	Typical
499	M290	N309	N310		Belay Tube	None	None	A36 Gr.36	Typical
500	M459	N346	N497		Belay Tube	None	None	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
501	M460	N498	N346		Belay Tube	None	None	A36 Gr.36	Typical
502	M461	N497	N498		Belay Tube	None	None	A36 Gr.36	Typical
503	M490	N441	N424		Wall Panel	Beam	Rectangular	DF	Typical
504	M491	N424	N375		Wall Panel	Beam	Rectangular	DF	Typical
505	M492	N375	N377		Wall Panel	Beam	Rectangular	DF	Typical
506	M493	N377	N388		Wall Panel	Beam	Rectangular	DF	Typical
507	M494	N388	N302		Wall Panel	Beam	Rectangular	DF	Typical
508	M495	N302	N293		Wall Panel	Beam	Rectangular	DF	Typical
509	M496	N293	N299		Wall Panel	Beam	Rectangular	DF	Typical
510	M497	N424	N359		Wall Panel	Beam	Rectangular	DF	Typical
511	M498	N359	N350		Wall Panel	Beam	Rectangular	DF	Typical
512	M499	N350	N306		Wall Panel	Beam	Rectangular	DF	Typical
513	M500	N306	N250		Wall Panel	Beam	Rectangular	DF	Typical
514	M501	N443	N439		Wall Panel	Beam	Rectangular	DF	Typical
515	M502	N439	N363		Wall Panel	Beam	Rectangular	DF	Typical
516	M503	N363	N352		Wall Panel	Beam	Rectangular	DF	Typical
517	M504	N352	N308		Wall Panel	Beam	Rectangular	DF	Typical
518	M505	N308	N252		Wall Panel	Beam	Rectangular	DF	Typical
519	M506	N445	N436		Wall Panel	Beam	Rectangular	DF	Typical
520	M507	N436	N410		Wall Panel	Beam	Rectangular	DF	Typical
521	M508	N410	N362		Wall Panel	Beam	Rectangular	DF	Typical
522	M510	N391	N384		Wall Panel	Beam	Rectangular	DF	Typical
523	M511	N384	N528		Wall Panel	Beam	Rectangular	DF	Typical
524	M512	N528	N319		Wall Panel	Beam	Rectangular	DF	Typical
525	M513	N319	N279		Wall Panel	Beam	Rectangular	DF	Typical
526	M514	N354	N435		Wall Panel	Beam	Rectangular	DF	Typical
527	M515	N435	N408		Wall Panel	Beam	Rectangular	DF	Typical
528	M516	N408	N390		Wall Panel	Beam	Rectangular	DF	Typical
529	M517	N390	N380		Wall Panel	Beam	Rectangular	DF	Typical
530	M518	N380	N525		Wall Panel	Beam	Rectangular	DF	Typical
531	M519	N525	N318		Wall Panel	Beam	Rectangular	DF	Typical
532	M520	N318	N276		Wall Panel	Beam	Rectangular	DF	Typical
533	M521	N356	N432		Wall Panel	Beam	Rectangular	DF	Typical
534	M522	N432	N413		Wall Panel	Beam	Rectangular	DF	Typical
535	M523	N413	N393		Wall Panel	Beam	Rectangular	DF	Typical
536	M524	N393	N385		Wall Panel	Beam	Rectangular	DF	Typical
537	M525	N385	N523		Wall Panel	Beam	Rectangular	DF	Typical
538	M526	N523	N316		Wall Panel	Beam	Rectangular	DF	Typical
539	M527	N316	N285		Wall Panel	Beam	Rectangular	DF	Typical
540	M528	N419	N426		Wall Panel	Beam	Rectangular	DF	Typical
541	M531	N8	N17		Wall Panel	Beam	Rectangular	DF	Typical
542	M532	N17	N522		Wall Panel	Beam	Rectangular	DF	Typical
543	M533	N522	N317		Wall Panel	Beam	Rectangular	DF	Typical
544	M534	N317	N280		Wall Panel	Beam	Rectangular	DF	Typical
545	M535	N421	N429		Wall Panel	Beam	Rectangular	DF	Typical
546	M536	N429	N5		Wall Panel	Beam	Rectangular	DF	Typical
547	M537	N5	N12		Wall Panel	Beam	Rectangular	DF	Typical
548	M538	N12	N14		Wall Panel	Beam	Rectangular	DF	Typical
549	M540	N315	N282		Wall Panel	Beam	Rectangular	DF	Typical
550	M541	N416	N431		Wall Panel	Beam	Rectangular	DF	Typical
551	M542	N431	N404		Wall Panel	Beam	Rectangular	DF	Typical
552	M543	N404	N503		Wall Panel	Beam	Rectangular	DF	Typical
553	M544	N503	N510		Wall Panel	Beam	Rectangular	DF	Typical
554	M545	N510	N518		Wall Panel	Beam	Rectangular	DF	Typical
555	M546	N518	N313		Wall Panel	Beam	Rectangular	DF	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
556	M547	N313	N284		Wall Panel	Beam	Rectangular	DF	Typical
557	M548	N264	N452		Wall Panel	Beam	Rectangular	DF	Typical
558	M549	N452	N166		Wall Panel	Beam	Rectangular	DF	Typical
559	M550	N166	N198		Wall Panel	Beam	Rectangular	DF	Typical
560	M551	N198	N231		Wall Panel	Beam	Rectangular	DF	Typical
561	M552	N231	N241		Wall Panel	Beam	Rectangular	DF	Typical
562	M553	N241	N25		Wall Panel	Beam	Rectangular	DF	Typical
563	M554	N265	N454		Wall Panel	Beam	Rectangular	DF	Typical
564	M555	N454	N168		Wall Panel	Beam	Rectangular	DF	Typical
565	M556	N168	N189		Wall Panel	Beam	Rectangular	DF	Typical
566	M557	N189	N228		Wall Panel	Beam	Rectangular	DF	Typical
567	M558	N228	N238		Wall Panel	Beam	Rectangular	DF	Typical
568	M559	N238	N22		Wall Panel	Beam	Rectangular	DF	Typical
569	M560	N260	N455		Wall Panel	Beam	Rectangular	DF	Typical
570	M561	N455	N170		Wall Panel	Beam	Rectangular	DF	Typical
571	M567	N261	N460		Wall Panel	Beam	Rectangular	DF	Typical
572	M568	N460	N71		Wall Panel	Beam	Rectangular	DF	Typical
573	M573	N255	N461		Wall Panel	Beam	Rectangular	DF	Typical
574	M577	N223	N140		Wall Panel	Beam	Rectangular	DF	Typical
575	M579	N257	N462		Wall Panel	Beam	Rectangular	DF	Typical
576	M580	N462	N70		Wall Panel	Beam	Rectangular	DF	Typical
577	M582	N195	N221		Wall Panel	Beam	Rectangular	DF	Typical
578	M585	N323	N3		Wall Panel	Beam	Rectangular	DF	Typical
579	M586	N3	N124		Wall Panel	Beam	Rectangular	DF	Typical
580	M587	N124	N39		Wall Panel	Beam	Rectangular	DF	Typical
581	M588	N327	N186		Wall Panel	Beam	Rectangular	DF	Typical
582	M589	N186	N122		Wall Panel	Beam	Rectangular	DF	Typical
583	M590	N122	N37		Wall Panel	Beam	Rectangular	DF	Typical
584	M591	N37	N47		Wall Panel	Beam	Rectangular	DF	Typical
585	M592	N47	N78		Wall Panel	Beam	Rectangular	DF	Typical
586	M593	N324	N204		Wall Panel	Beam	Rectangular	DF	Typical
587	M594	N204	N126		Wall Panel	Beam	Rectangular	DF	Typical
588	M595	N126	N36		Wall Panel	Beam	Rectangular	DF	Typical
589	M596	N36	N44		Wall Panel	Beam	Rectangular	DF	Typical
590	M597	N268	N501		Wall Panel	Beam	Rectangular	DF	Typical
591	M598	N501	N214		Wall Panel	Beam	Rectangular	DF	Typical
592	M599	N214	N149		Wall Panel	Beam	Rectangular	DF	Typical
593	M600	N149	N145		Wall Panel	Beam	Rectangular	DF	Typical
594	M601	N145	N133		Wall Panel	Beam	Rectangular	DF	Typical
595	M602	N133	N73		Wall Panel	Beam	Rectangular	DF	Typical
596	M603	N111	N108		Wall Panel	Beam	Rectangular	DF	Typical
597	M604	N108	N101		Wall Panel	Beam	Rectangular	DF	Typical
598	M605	N101	N68		Wall Panel	Beam	Rectangular	DF	Typical
599	M606	N68	N54		Wall Panel	Beam	Rectangular	DF	Typical
600	M607	N54	N91		Wall Panel	Beam	Rectangular	DF	Typical
601	M608	N116	N109		Wall Panel	Beam	Rectangular	DF	Typical
602	M609	N109	N103		Wall Panel	Beam	Rectangular	DF	Typical
603	M610	N103	N63		Wall Panel	Beam	Rectangular	DF	Typical
604	M611	N63	N55		Wall Panel	Beam	Rectangular	DF	Typical
605	M612	N55	N94		Wall Panel	Beam	Rectangular	DF	Typical
606	M613	N113	N106		Wall Panel	Beam	Rectangular	DF	Typical
607	M614	N106	N105		Wall Panel	Beam	Rectangular	DF	Typical
608	M615	N105	N66		Wall Panel	Beam	Rectangular	DF	Typical
609	M616	N66	N52		Wall Panel	Beam	Rectangular	DF	Typical
610	M617	N52	N89		Wall Panel	Beam	Rectangular	DF	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
611	M619	N98	N61		Wall Panel	Beam	Rectangular	DF	Typical
612	M620	N61	N57		Wall Panel	Beam	Rectangular	DF	Typical
613	M621	N57	N92		Wall Panel	Beam	Rectangular	DF	Typical
614	M622	N14	N520		Wall Panel	Beam	Rectangular	DF	Typical
615	M624	N419	N371		Wall Panel	Beam	Rectangular	DF	Typical
616	M625	N371	N413		Wall Panel	Beam	Rectangular	DF	Typical
617	M626	N414	N431		Wall Panel	Beam	Rectangular	DF	Typical
618	M627	N241	N21		Wall Panel	Beam	Rectangular	DF	Typical
619	M638	N332	N448		Wall Panel	Beam	Rectangular	DF	Typical
620	M643	N329	N450		Wall Panel	Beam	Rectangular	DF	Typical
621	M629	N236	N83		Wall Panel	Beam	Rectangular	DF	Typical
622	M630	N234	N79		Wall Panel	Beam	Rectangular	DF	Typical
623	M631	N140	N75		Wall Panel	Beam	Rectangular	DF	Typical
624	M632	N143	N81		Wall Panel	Beam	Rectangular	DF	Typical
625	M633	N565	N563		splice plate dummy	None	None	RIGID	Typical
626	M634	N566	N562		splice plate dummy	None	None	RIGID	Typical

Node Loads and Enforced Displacements (BLC 2 : Wall Weight)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N25	L	Z	-50
2	N3	L	Z	-50
3	N8	L	Z	-50
4	N126	L	Z	-50
5	N22	L	Z	-50
6	N5	L	Z	-50
7	N149	L	Z	-50
8	N36	L	Z	-50
9	N6	L	Z	-50
10	N362	L	Z	-50
11	N14	L	Z	-50
12	N439	L	Z	-50
13	N12	L	Z	-50
14	N525	L	Z	-50
15	N54	L	Z	-50
16	N219	L	Z	-50
17	N66	L	Z	-50
18	N518	L	Z	-50
19	N17	L	Z	-50
20	N116	L	Z	-50
21	N21	L	Z	-50
22	N276	L	Z	-50
23	N57	L	Z	-50
24	N55	L	Z	-50
25	N384	L	Z	-50
26	N39	L	Z	-50
27	N37	L	Z	-50
28	N44	L	Z	-50
29	N221	L	Z	-50
30	N47	L	Z	-50
31	N52	L	Z	-50
32	N61	L	Z	-50
33	N63	L	Z	-50
34	N350	L	Z	-50
35	N68	L	Z	-50
36	N69	L	Z	-50

Node Loads and Enforced Displacements (BLC 2 : Wall Weight) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
37	N70	L	Z	-50
38	N71	L	Z	-50
39	N371	L	Z	-50
40	N73	L	Z	-50
41	N143	L	Z	-50
42	N75	L	Z	-50
43	N78	L	Z	-50
44	N79	L	Z	-50
45	N460	L	Z	-50
46	N503	L	Z	-50
47	N81	L	Z	-50
48	N83	L	Z	-50
49	N522	L	Z	-50
50	N431	L	Z	-50
51	N265	L	Z	-50
52	N89	L	Z	-50
53	N91	L	Z	-50
54	N92	L	Z	-50
55	N94	L	Z	-50
56	N416	L	Z	-50
57	N238	L	Z	-50
58	N354	L	Z	-50
59	N98	L	Z	-50
60	N101	L	Z	-50
61	N103	L	Z	-50
62	N105	L	Z	-50
63	N106	L	Z	-50
64	N108	L	Z	-50
65	N352	L	Z	-50
66	N109	L	Z	-50
67	N111	L	Z	-50
68	N528	L	Z	-50
69	N113	L	Z	-50
70	N404	L	Z	-50
71	N375	L	Z	-50
72	N319	L	Z	-50
73	N122	L	Z	-50
74	N408	L	Z	-50
75	N124	L	Z	-50
76	N198	L	Z	-50
77	N268	L	Z	-50
78	N264	L	Z	-50
79	N145	L	Z	-50
80	N133	L	Z	-50
81	N234	L	Z	-50
82	N454	L	Z	-50
83	N140	L	Z	-50
84	N280	L	Z	-50
85	N410	L	Z	-50
86	N306	L	Z	-50
87	N166	L	Z	-50
88	N168	L	Z	-50
89	N170	L	Z	-50
90	N279	L	Z	-50
91	N176	L	Z	-50

Node Loads and Enforced Displacements (BLC 2 : Wall Weight) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
92	N445	L	Z	-50
93	N318	L	Z	-50
94	N186	L	Z	-50
95	N189	L	Z	-50
96	N523	L	Z	-50
97	N192	L	Z	-50
98	N194	L	Z	-50
99	N195	L	Z	-50
100	N385	L	Z	-50
101	N197	L	Z	-50
102	N391	L	Z	-50
103	N204	L	Z	-50
104	N461	L	Z	-50
105	N214	L	Z	-50
106	N324	L	Z	-50
107	N223	L	Z	-50
108	N226	L	Z	-50
109	N228	L	Z	-50
110	N231	L	Z	-50
111	N236	L	Z	-50
112	N390	L	Z	-50
113	N241	L	Z	-50
114	N250	L	Z	-50
115	N252	L	Z	-50
116	N443	L	Z	-50
117	N255	L	Z	-50
118	N520	L	Z	-50
119	N257	L	Z	-50
120	N260	L	Z	-50
121	N435	L	Z	-50
122	N261	L	Z	-50
123	N282	L	Z	-50
124	N284	L	Z	-50
125	N285	L	Z	-50
126	N293	L	Z	-50
127	N299	L	Z	-50
128	N302	L	Z	-50
129	N414	L	Z	-50
130	N308	L	Z	-50
131	N313	L	Z	-50
132	N315	L	Z	-50
133	N316	L	Z	-50
134	N317	L	Z	-50
135	N413	L	Z	-50
136	N323	L	Z	-50
137	N327	L	Z	-50
138	N356	L	Z	-50
139	N359	L	Z	-50
140	N363	L	Z	-50
141	N377	L	Z	-50
142	N380	L	Z	-50
143	N393	L	Z	-50
144	N419	L	Z	-50
145	N501	L	Z	-50
146	N421	L	Z	-50

Node Loads and Enforced Displacements (BLC 2 : Wall Weight) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
147	N424	L	Z	-50
148	N426	L	Z	-50
149	N429	L	Z	-50
150	N462	L	Z	-50
151	N432	L	Z	-50
152	N436	L	Z	-50
153	N441	L	Z	-50
154	N452	L	Z	-50
155	N455	L	Z	-50
156	N510	L	Z	-50

Node Loads and Enforced Displacements (BLC 6 : Seismic X)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N25	L	X	50
2	N3	L	X	50
3	N8	L	X	50
4	N126	L	X	50
5	N22	L	X	50
6	N5	L	X	50
7	N149	L	X	50
8	N36	L	X	50
9	N6	L	X	50
10	N362	L	X	50
11	N14	L	X	50
12	N439	L	X	50
13	N12	L	X	50
14	N525	L	X	50
15	N54	L	X	50
16	N219	L	X	50
17	N66	L	X	50
18	N518	L	X	50
19	N17	L	X	50
20	N116	L	X	50
21	N21	L	X	50
22	N276	L	X	50
23	N57	L	X	50
24	N55	L	X	50
25	N384	L	X	50
26	N39	L	X	50
27	N37	L	X	50
28	N44	L	X	50
29	N221	L	X	50
30	N47	L	X	50
31	N52	L	X	50
32	N61	L	X	50
33	N63	L	X	50
34	N350	L	X	50
35	N68	L	X	50
36	N69	L	X	50
37	N70	L	X	50
38	N71	L	X	50
39	N371	L	X	50
40	N73	L	X	50
41	N143	L	X	50
42	N75	L	X	50

Node Loads and Enforced Displacements (BLC 6 : Seismic X) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
43	N78	L	X	50
44	N79	L	X	50
45	N460	L	X	50
46	N503	L	X	50
47	N81	L	X	50
48	N83	L	X	50
49	N522	L	X	50
50	N431	L	X	50
51	N265	L	X	50
52	N89	L	X	50
53	N91	L	X	50
54	N92	L	X	50
55	N94	L	X	50
56	N416	L	X	50
57	N238	L	X	50
58	N354	L	X	50
59	N98	L	X	50
60	N101	L	X	50
61	N103	L	X	50
62	N105	L	X	50
63	N106	L	X	50
64	N108	L	X	50
65	N352	L	X	50
66	N109	L	X	50
67	N111	L	X	50
68	N528	L	X	50
69	N113	L	X	50
70	N404	L	X	50
71	N375	L	X	50
72	N319	L	X	50
73	N122	L	X	50
74	N408	L	X	50
75	N124	L	X	50
76	N198	L	X	50
77	N268	L	X	50
78	N264	L	X	50
79	N145	L	X	50
80	N133	L	X	50
81	N234	L	X	50
82	N454	L	X	50
83	N140	L	X	50
84	N280	L	X	50
85	N410	L	X	50
86	N306	L	X	50
87	N166	L	X	50
88	N168	L	X	50
89	N170	L	X	50
90	N279	L	X	50
91	N176	L	X	50
92	N445	L	X	50
93	N318	L	X	50
94	N186	L	X	50
95	N189	L	X	50
96	N523	L	X	50
97	N192	L	X	50

Node Loads and Enforced Displacements (BLC 6 : Seismic X) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
98	N194	L	X	50
99	N195	L	X	50
100	N385	L	X	50
101	N197	L	X	50
102	N391	L	X	50
103	N204	L	X	50
104	N461	L	X	50
105	N214	L	X	50
106	N324	L	X	50
107	N223	L	X	50
108	N226	L	X	50
109	N228	L	X	50
110	N231	L	X	50
111	N236	L	X	50
112	N390	L	X	50
113	N241	L	X	50
114	N250	L	X	50
115	N252	L	X	50
116	N443	L	X	50
117	N255	L	X	50
118	N520	L	X	50
119	N257	L	X	50
120	N260	L	X	50
121	N435	L	X	50
122	N261	L	X	50
123	N282	L	X	50
124	N284	L	X	50
125	N285	L	X	50
126	N293	L	X	50
127	N299	L	X	50
128	N302	L	X	50
129	N414	L	X	50
130	N308	L	X	50
131	N313	L	X	50
132	N315	L	X	50
133	N316	L	X	50
134	N317	L	X	50
135	N413	L	X	50
136	N323	L	X	50
137	N327	L	X	50
138	N356	L	X	50
139	N359	L	X	50
140	N363	L	X	50
141	N377	L	X	50
142	N380	L	X	50
143	N393	L	X	50
144	N419	L	X	50
145	N501	L	X	50
146	N421	L	X	50
147	N424	L	X	50
148	N426	L	X	50
149	N429	L	X	50
150	N462	L	X	50
151	N432	L	X	50
152	N436	L	X	50

Node Loads and Enforced Displacements (BLC 6 : Seismic X) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
153	N441	L	X	50
154	N452	L	X	50
155	N455	L	X	50
156	N510	L	X	50

Node Loads and Enforced Displacements (BLC 7 : Seismic Y)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N25	L	Y	50
2	N3	L	Y	50
3	N8	L	Y	50
4	N126	L	Y	50
5	N22	L	Y	50
6	N5	L	Y	50
7	N149	L	Y	50
8	N36	L	Y	50
9	N6	L	Y	50
10	N362	L	Y	50
11	N14	L	Y	50
12	N439	L	Y	50
13	N12	L	Y	50
14	N525	L	Y	50
15	N54	L	Y	50
16	N219	L	Y	50
17	N66	L	Y	50
18	N518	L	Y	50
19	N17	L	Y	50
20	N116	L	Y	50
21	N21	L	Y	50
22	N276	L	Y	50
23	N57	L	Y	50
24	N55	L	Y	50
25	N384	L	Y	50
26	N39	L	Y	50
27	N37	L	Y	50
28	N44	L	Y	50
29	N221	L	Y	50
30	N47	L	Y	50
31	N52	L	Y	50
32	N61	L	Y	50
33	N63	L	Y	50
34	N350	L	Y	50
35	N68	L	Y	50
36	N69	L	Y	50
37	N70	L	Y	50
38	N71	L	Y	50
39	N371	L	Y	50
40	N73	L	Y	50
41	N143	L	Y	50
42	N75	L	Y	50
43	N78	L	Y	50
44	N79	L	Y	50
45	N460	L	Y	50
46	N503	L	Y	50
47	N81	L	Y	50
48	N83	L	Y	50

Node Loads and Enforced Displacements (BLC 7 : Seismic Y) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
49	N522	L	Y	50
50	N431	L	Y	50
51	N265	L	Y	50
52	N89	L	Y	50
53	N91	L	Y	50
54	N92	L	Y	50
55	N94	L	Y	50
56	N416	L	Y	50
57	N238	L	Y	50
58	N354	L	Y	50
59	N98	L	Y	50
60	N101	L	Y	50
61	N103	L	Y	50
62	N105	L	Y	50
63	N106	L	Y	50
64	N108	L	Y	50
65	N352	L	Y	50
66	N109	L	Y	50
67	N111	L	Y	50
68	N528	L	Y	50
69	N113	L	Y	50
70	N404	L	Y	50
71	N375	L	Y	50
72	N319	L	Y	50
73	N122	L	Y	50
74	N408	L	Y	50
75	N124	L	Y	50
76	N198	L	Y	50
77	N268	L	Y	50
78	N264	L	Y	50
79	N145	L	Y	50
80	N133	L	Y	50
81	N234	L	Y	50
82	N454	L	Y	50
83	N140	L	Y	50
84	N280	L	Y	50
85	N410	L	Y	50
86	N306	L	Y	50
87	N166	L	Y	50
88	N168	L	Y	50
89	N170	L	Y	50
90	N279	L	Y	50
91	N176	L	Y	50
92	N445	L	Y	50
93	N318	L	Y	50
94	N186	L	Y	50
95	N189	L	Y	50
96	N523	L	Y	50
97	N192	L	Y	50
98	N194	L	Y	50
99	N195	L	Y	50
100	N385	L	Y	50
101	N197	L	Y	50
102	N391	L	Y	50
103	N204	L	Y	50

Node Loads and Enforced Displacements (BLC 7 : Seismic Y) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
104	N461	L	Y	50
105	N214	L	Y	50
106	N324	L	Y	50
107	N223	L	Y	50
108	N226	L	Y	50
109	N228	L	Y	50
110	N231	L	Y	50
111	N236	L	Y	50
112	N390	L	Y	50
113	N241	L	Y	50
114	N250	L	Y	50
115	N252	L	Y	50
116	N443	L	Y	50
117	N255	L	Y	50
118	N520	L	Y	50
119	N257	L	Y	50
120	N260	L	Y	50
121	N435	L	Y	50
122	N261	L	Y	50
123	N282	L	Y	50
124	N284	L	Y	50
125	N285	L	Y	50
126	N293	L	Y	50
127	N299	L	Y	50
128	N302	L	Y	50
129	N414	L	Y	50
130	N308	L	Y	50
131	N313	L	Y	50
132	N315	L	Y	50
133	N316	L	Y	50
134	N317	L	Y	50
135	N413	L	Y	50
136	N323	L	Y	50
137	N327	L	Y	50
138	N356	L	Y	50
139	N359	L	Y	50
140	N363	L	Y	50
141	N377	L	Y	50
142	N380	L	Y	50
143	N393	L	Y	50
144	N419	L	Y	50
145	N501	L	Y	50
146	N421	L	Y	50
147	N424	L	Y	50
148	N426	L	Y	50
149	N429	L	Y	50
150	N462	L	Y	50
151	N432	L	Y	50
152	N436	L	Y	50
153	N441	L	Y	50
154	N452	L	Y	50
155	N455	L	Y	50
156	N510	L	Y	50

Node Loads and Enforced Displacements (BLC 11 : Climber Load 01A)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N268	L	Z	-270
2	N377	L	Z	-270
3	N133	L	Z	-270
4	N302	L	Z	-270
5	N145	L	Z	-270
6	N149	L	Z	-270
7	N214	L	Z	-270
8	N293	L	Z	-270
9	N299	L	Z	-270
10	N375	L	Z	-270
11	N388	L	Z	-270
12	N501	L	Z	-270

Node Loads and Enforced Displacements (BLC 13 : Climber Load 02A)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N36	L	Z	-270
2	N126	L	Z	-270
3	N250	L	Z	-270
4	N44	L	Z	-270
5	N52	L	Z	-270
6	N66	L	Z	-270
7	N73	L	Z	-270
8	N306	L	Z	-270
9	N89	L	Z	-270
10	N105	L	Z	-270
11	N106	L	Z	-270
12	N359	L	Z	-270
13	N350	L	Z	-270
14	N204	L	Z	-270
15	N324	L	Z	-270
16	N441	L	Z	-270
17	N424	L	Z	-270

Node Loads and Enforced Displacements (BLC 15 : Climber Load 03A)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N186	L	Z	-270
2	N57	L	Z	-270
3	N47	L	Z	-270
4	N37	L	Z	-270
5	N61	L	Z	-270
6	N78	L	Z	-270
7	N352	L	Z	-270
8	N92	L	Z	-270
9	N98	L	Z	-270
10	N363	L	Z	-270
11	N113	L	Z	-270
12	N122	L	Z	-270
13	N252	L	Z	-270
14	N308	L	Z	-270
15	N327	L	Z	-270
16	N439	L	Z	-270
17	N443	L	Z	-270

Node Loads and Enforced Displacements (BLC 17 : Climber Load 04A)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N3	L	Z	-270
2	N445	L	Z	-270
3	N103	L	Z	-270
4	N279	L	Z	-270
5	N55	L	Z	-270
6	N323	L	Z	-270
7	N39	L	Z	-270
8	N63	L	Z	-270
9	N436	L	Z	-270
10	N94	L	Z	-270
11	N109	L	Z	-270
12	N116	L	Z	-270
13	N124	L	Z	-270
14	N391	L	Z	-270
15	N319	L	Z	-270
16	N362	L	Z	-270
17	N384	L	Z	-270
18	N410	L	Z	-270
19	N528	L	Z	-270

Node Loads and Enforced Displacements (BLC 19 : Climber Load 05A)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N101	L	Z	-270
2	N462	L	Z	-270
3	N91	L	Z	-270
4	N54	L	Z	-270
5	N221	L	Z	-270
6	N68	L	Z	-270
7	N70	L	Z	-270
8	N81	L	Z	-270
9	N111	L	Z	-270
10	N108	L	Z	-270
11	N143	L	Z	-270
12	N354	L	Z	-270
13	N525	L	Z	-270
14	N195	L	Z	-270
15	N257	L	Z	-270
16	N276	L	Z	-270
17	N318	L	Z	-270
18	N435	L	Z	-270
19	N380	L	Z	-270
20	N390	L	Z	-270
21	N408	L	Z	-270

Node Loads and Enforced Displacements (BLC 20 : Climber Load 05B)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N69	L	Z	-270
2	N75	L	Z	-270
3	N461	L	Z	-270
4	N140	L	Z	-270
5	N197	L	Z	-270
6	N223	L	Z	-270

Node Loads and Enforced Displacements (BLC 20 : Climber Load 05B) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
7	N255	L	Z	-270

Node Loads and Enforced Displacements (BLC 21 : Climber Load 06A)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N192	L	Z	-270
2	N393	L	Z	-270
3	N226	L	Z	-270
4	N71	L	Z	-270
5	N79	L	Z	-270
6	N371	L	Z	-270
7	N432	L	Z	-270
8	N316	L	Z	-270
9	N460	L	Z	-270
10	N385	L	Z	-270
11	N234	L	Z	-270
12	N261	L	Z	-270
13	N285	L	Z	-270
14	N356	L	Z	-270
15	N413	L	Z	-270
16	N523	L	Z	-270

Node Loads and Enforced Displacements (BLC 23 : Climber Load 07A)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N6	L	Z	-270
2	N8	L	Z	-270
3	N17	L	Z	-270
4	N170	L	Z	-270
5	N194	L	Z	-270
6	N83	L	Z	-270
7	N280	L	Z	-270
8	N176	L	Z	-270
9	N219	L	Z	-270
10	N236	L	Z	-270
11	N260	L	Z	-270
12	N426	L	Z	-270
13	N317	L	Z	-270
14	N419	L	Z	-270
15	N455	L	Z	-270
16	N522	L	Z	-270

Node Loads and Enforced Displacements (BLC 25 : Climber Load 08A)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N5	L	Z	-270
2	N454	L	Z	-270
3	N12	L	Z	-270
4	N14	L	Z	-270
5	N22	L	Z	-270
6	N168	L	Z	-270
7	N228	L	Z	-270
8	N189	L	Z	-270
9	N421	L	Z	-270
10	N238	L	Z	-270

Node Loads and Enforced Displacements (BLC 25 : Climber Load 08A) (Continued)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
11	N265	L	Z	-270
12	N520	L	Z	-270
13	N282	L	Z	-270
14	N315	L	Z	-270
15	N429	L	Z	-270

Node Loads and Enforced Displacements (BLC 27 : Climber Load 09A)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N452	L	Z	-270
2	N21	L	Z	-270
3	N166	L	Z	-270
4	N313	L	Z	-270
5	N414	L	Z	-270
6	N264	L	Z	-270
7	N198	L	Z	-270
8	N231	L	Z	-270
9	N241	L	Z	-270
10	N284	L	Z	-270
11	N404	L	Z	-270
12	N431	L	Z	-270
13	N503	L	Z	-270
14	N510	L	Z	-270
15	N518	L	Z	-270

Node Loads and Enforced Displacements (BLC 28 : Climber Load 09B)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N452	L	Z	-270
2	N25	L	Z	-270
3	N166	L	Z	-270
4	N313	L	Z	-270
5	N264	L	Z	-270
6	N198	L	Z	-270
7	N231	L	Z	-270
8	N241	L	Z	-270
9	N284	L	Z	-270
10	N404	L	Z	-270
11	N416	L	Z	-270
12	N431	L	Z	-270
13	N503	L	Z	-270
14	N510	L	Z	-270
15	N518	L	Z	-270

Node Loads and Enforced Displacements (BLC 33 : Belay Load 01)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N497	L	Z	-1350

Node Loads and Enforced Displacements (BLC 34 : Belay Load 02)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N48	L	Z	-1350

Node Loads and Enforced Displacements (BLC 35 : Belay Load 03)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N41	L	Z	-1350

Node Loads and Enforced Displacements (BLC 36 : Belay Load 04)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N49	L	Z	-1350

Node Loads and Enforced Displacements (BLC 37 : Belay Load 05)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N309	L	Z	-1350

Node Loads and Enforced Displacements (BLC 38 : Belay Load 06)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N291	L	Z	-1350

Node Loads and Enforced Displacements (BLC 39 : Belay Load 07)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N287	L	Z	-1350

Node Loads and Enforced Displacements (BLC 40 : Belay Load 08)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N157	L	Z	-1350

Node Loads and Enforced Displacements (BLC 41 : Belay Load 09)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N59	L	Z	-1350

Node Loads and Enforced Displacements (BLC 42 : Belay Load 10)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N159	L	Z	-1350

Node Loads and Enforced Displacements (BLC 43 : Belay Load 11)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N42	L	Z	-1350

Node Loads and Enforced Displacements (BLC 44 : Belay Load 12)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N33	L	Z	-1350

Node Loads and Enforced Displacements (BLC 45 : Lead Anchor 01)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N410	L	Z	-1350

Node Loads and Enforced Displacements (BLC 46 : Lead Anchor 02)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N391	L	Z	-1350

Node Loads and Enforced Displacements (BLC 47 : Lead Anchor 03)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N384	L	Z	-1350

Node Loads and Enforced Displacements (BLC 48 : Lead Anchor 04)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N528	L	Z	-1350

Node Loads and Enforced Displacements (BLC 49 : Lead Anchor 05)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N319	L	Z	-1350

Node Loads and Enforced Displacements (BLC 50 : Lead Anchor 06)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N279	L	Z	-1350

Node Loads and Enforced Displacements (BLC 51 : Lead Anchor 07)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N257	L	Z	-1350

Node Loads and Enforced Displacements (BLC 52 : Lead Anchor 08)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N462	L	Z	-1350

Node Loads and Enforced Displacements (BLC 53 : Lead Anchor 09)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N70	L	Z	-1350

Node Loads and Enforced Displacements (BLC 54 : Lead Anchor 10)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N195	L	Z	-1350

Node Loads and Enforced Displacements (BLC 55 : Lead Anchor 11)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N221	L	Z	-1350

Node Loads and Enforced Displacements (BLC 56 : Lead Anchor 12)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N143	L	Z	-1350

Node Loads and Enforced Displacements (BLC 57 : Lead Anchor 13)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N408	L	Z	-1350

Node Loads and Enforced Displacements (BLC 58 : Lead Anchor 14)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N390	L	Z	-1350

Node Loads and Enforced Displacements (BLC 59 : Lead Anchor 15)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N380	L	Z	-1350

Node Loads and Enforced Displacements (BLC 60 : Lead Anchor 16)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N525	L	Z	-1350

Node Loads and Enforced Displacements (BLC 61 : Lead Anchor 17)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N318	L	Z	-1350

Node Loads and Enforced Displacements (BLC 62 : Lead Anchor 18)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N276	L	Z	-1350

Node Loads and Enforced Displacements (BLC 63 : Lead Anchor 19)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N255	L	Z	-1350

Node Loads and Enforced Displacements (BLC 64 : Lead Anchor 20)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N461	L	Z	-1350

Node Loads and Enforced Displacements (BLC 65 : Lead Anchor 21)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N69	L	Z	-1350

Node Loads and Enforced Displacements (BLC 66 : Lead Anchor 22)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N197	L	Z	-1350

Node Loads and Enforced Displacements (BLC 67 : Lead Anchor 23)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N223	L	Z	-1350

Node Loads and Enforced Displacements (BLC 68 : Lead Anchor 24)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N140	L	Z	-1350

Node Loads and Enforced Displacements (BLC 69 : Lead Anchor 25)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N413	L	Z	-1350

Node Loads and Enforced Displacements (BLC 70 : Lead Anchor 26)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N393	L	Z	-1350

Node Loads and Enforced Displacements (BLC 71 : Lead Anchor 27)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N385	L	Z	-1350

Node Loads and Enforced Displacements (BLC 72 : Lead Anchor 28)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N523	L	Z	-1350

Node Loads and Enforced Displacements (BLC 73 : Lead Anchor 29)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N316	L	Z	-1350

Node Loads and Enforced Displacements (BLC 74 : Lead Anchor 30)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N285	L	Z	-1350

Node Loads and Enforced Displacements (BLC 75 : Lead Anchor 31)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N261	L	Z	-1350

Node Loads and Enforced Displacements (BLC 76 : Lead Anchor 32)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N460	L	Z	-1350

Node Loads and Enforced Displacements (BLC 77 : Lead Anchor 33)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N71	L	Z	-1350

Node Loads and Enforced Displacements (BLC 78 : Lead Anchor 34)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N192	L	Z	-1350

Node Loads and Enforced Displacements (BLC 79 : Lead Anchor 35)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N226	L	Z	-1350

Node Loads and Enforced Displacements (BLC 80 : Lead Anchor 36)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N234	L	Z	-1350

Node Loads and Enforced Displacements (BLC 81 : Lead Anchor 37)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N6	L	Z	-1350

Node Loads and Enforced Displacements (BLC 82 : Lead Anchor 38)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N8	L	Z	-1350

Node Loads and Enforced Displacements (BLC 83 : Lead Anchor 39)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N17	L	Z	-1350

Node Loads and Enforced Displacements (BLC 84 : Lead Anchor 40)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N522	L	Z	-1350

Node Loads and Enforced Displacements (BLC 85 : Lead Anchor 41)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N317	L	Z	-1350

Node Loads and Enforced Displacements (BLC 86 : Lead Anchor 42)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N280	L	Z	-1350

Node Loads and Enforced Displacements (BLC 87 : Lead Anchor 43)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N260	L	Z	-1350

Node Loads and Enforced Displacements (BLC 88 : Lead Anchor 44)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N455	L	Z	-1350

Node Loads and Enforced Displacements (BLC 89 : Lead Anchor 45)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N170	L	Z	-1350

Node Loads and Enforced Displacements (BLC 90 : Lead Anchor 46)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N194	L	Z	-1350

Node Loads and Enforced Displacements (BLC 91 : Lead Anchor 47)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N176	L	Z	-1350

Node Loads and Enforced Displacements (BLC 92 : Lead Anchor 48)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N219	L	Z	-1350

Node Loads and Enforced Displacements (BLC 93 : Lead Anchor 49)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N236	L	Z	-1350

Node Loads and Enforced Displacements (BLC 94 : Lead Anchor 50)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N5	L	Z	-1350

Node Loads and Enforced Displacements (BLC 95 : Lead Anchor 51)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N12	L	Z	-1350

Node Loads and Enforced Displacements (BLC 96 : Lead Anchor 52)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N14	L	Z	-1350

Node Loads and Enforced Displacements (BLC 97 : Lead Anchor 53)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N520	L	Z	-1350

Node Loads and Enforced Displacements (BLC 98 : Lead Anchor 54)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N315	L	Z	-1350

Node Loads and Enforced Displacements (BLC 99 : Lead Anchor 55)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N282	L	Z	-1350

Node Loads and Enforced Displacements (BLC 100 : Lead Anchor 56)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N265	L	Z	-1350

Node Loads and Enforced Displacements (BLC 101 : Lead Anchor 57)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N454	L	Z	-1350

Node Loads and Enforced Displacements (BLC 102 : Lead Anchor 58)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N168	L	Z	-1350

Node Loads and Enforced Displacements (BLC 103 : Lead Anchor 59)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N168	L	Z	-1350

Node Loads and Enforced Displacements (BLC 104 : Lead Anchor 60)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N189	L	Z	-1350

Node Loads and Enforced Displacements (BLC 105 : Lead Anchor 61)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N228	L	Z	-1350

Node Loads and Enforced Displacements (BLC 106 : Lead Anchor 62)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N238	L	Z	-1350

Node Loads and Enforced Displacements (BLC 107 : Lead Anchor 63)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N404	L	Z	-1350

Node Loads and Enforced Displacements (BLC 108 : Lead Anchor 64)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N503	L	Z	-1350

Node Loads and Enforced Displacements (BLC 109 : Lead Anchor 65)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N510	L	Z	-1350

Node Loads and Enforced Displacements (BLC 110 : Lead Anchor 66)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N518	L	Z	-1350

Node Loads and Enforced Displacements (BLC 111 : Lead Anchor 67)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N313	L	Z	-1350

Node Loads and Enforced Displacements (BLC 112 : Lead Anchor 68)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N284	L	Z	-1350

Node Loads and Enforced Displacements (BLC 113 : Lead Anchor 69)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N264	L	Z	-1350

Node Loads and Enforced Displacements (BLC 114 : Lead Anchor 70)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N452	L	Z	-1350

Node Loads and Enforced Displacements (BLC 115 : Lead Anchor 71)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N166	L	Z	-1350

Node Loads and Enforced Displacements (BLC 116 : Lead Anchor 72)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N198	L	Z	-1350

Node Loads and Enforced Displacements (BLC 117 : Lead Anchor 73)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N231	L	Z	-1350

Node Loads and Enforced Displacements (BLC 118 : Lead Anchor 74)

	Node Label	L, D, M	Direction	Magnitude [(lb, lb-ft), (in, rad), (lb*s ² /ft, lb*s ² *ft)]
1	N241	L	Z	-1350

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	F11R07	max	1286.094	79	472.863	79	0	113	0	113	0	113	0	113
2		min	-47.646	55	-10.678	55	0	1	0	1	0	1	0	1
3	F11R05	max	571.905	55	548.975	55	0	113	0	113	0	113	0	113
4		min	-1130.231	79	-456.724	79	0	1	0	1	0	1	0	1
5	F12R03	max	344.175	40	572.498	64	0	113	0	113	0	113	0	113
6		min	-865.925	64	-256.612	40	0	1	0	1	0	1	0	1
7	F11R03	max	318.662	43	453.687	43	0	113	0	113	0	113	0	113
8		min	-716.461	67	-432.604	67	0	1	0	1	0	1	0	1
9	F14R02	max	125.132	14	81.613	20	0	113	0	113	0	113	0	113
10		min	-822.226	75	-506.699	75	0	1	0	1	0	1	0	1
11	F12R01	max	-9.225	31	239.15	40	0	113	0	113	0	113	0	113
12		min	-643.417	41	-39.482	64	0	1	0	1	0	1	0	1
13	F11R01	max	-113.488	6	85.24	6	0	113	0	113	0	113	0	113
14		min	-766.67	31	-383.839	43	0	1	0	1	0	1	0	1
15	F10R01	max	176.624	6	44.666	5	0	113	0	113	0	113	0	113
16		min	-270.729	56	-49.078	4	0	1	0	1	0	1	0	1
17	F10R02	max	282.009	44	31.905	5	0	113	0	113	0	113	0	113
18		min	-314.594	80	-39.57	4	0	1	0	1	0	1	0	1
19	F10R03	max	260.752	80	34.695	4	0	113	0	113	0	113	0	113
20		min	-757.316	32	-31.251	5	0	1	0	1	0	1	0	1
21	F14R01	max	107.647	8	141.528	16	0	113	0	113	0	113	0	113
22		min	-165.246	14	-36.775	8	0	1	0	1	0	1	0	1
23	F09R04	max	597.476	34	18.442	70	0	113	0	113	0	113	0	113
24		min	-142.329	33	-1025.792	33	0	1	0	1	0	1	0	1
25	F08R04	max	323.905	35	64.188	71	0	113	0	113	0	113	0	113
26		min	-231.634	34	-528.129	35	0	1	0	1	0	1	0	1
27	F05R03	max	396.9	23	6.01	50	524.77	87	0	113	0	113	0	113
28		min	74.083	5	-654.643	38	215.314	35	0	1	0	1	0	1
29	F06R03	max	35.245	86	-1.677	49	358.212	99	0	113	0	113	0	113
30		min	-27.735	85	-689.975	37	122.996	48	0	1	0	1	0	1
31	F07R03	max	175.031	36	42.77	3	361.502	72	0	113	0	113	0	113
32		min	-295.364	35	-746.036	36	124.274	49	0	1	0	1	0	1
33	F08R02	max	319.698	47	288.551	83	0	113	0	113	0	113	0	113

Envelope Node Reactions (Continued)

Node Label		X [lb]		LC	Y [lb]		LC	Z [lb]		LC	MX [lb-ft]		LC	MY [lb-ft]		LC	MZ [lb-ft]		LC
34		min	-177.624	83	-428.939	47	0	1	0	1	0	1	0	1	0	1	0	1	
35	F09R02	max	578.819	58	565.244	81	0	113	0	113	0	113	0	113	0	113	0	113	
36		min	-517.696	82	-379.894	57	0	1	0	1	0	1	0	1	0	1	0	1	
37	F09R01	max	68.132	6	415.765	57	0	113	0	113	0	113	0	113	0	113	0	113	
38		min	-543.501	58	-172.319	6	0	1	0	1	0	1	0	1	0	1	0	1	
39	F10R04	max	688.266	32	21.798	106	0	113	0	113	0	113	0	113	0	113	0	113	
40		min	-12.406	68	-29.741	32	0	1	0	1	0	1	0	1	0	1	0	1	
41	F06R02	max	17.416	111	938.012	37	356.363	99	0	113	0	113	0	113	0	113	0	113	
42		min	-43.672	37	-125.989	61	123.006	48	0	1	0	1	0	1	0	1	0	1	
43	F07R02	max	506.778	85	802.644	36	363.66	72	0	113	0	113	0	113	0	113	0	113	
44		min	-162.961	36	-704.682	84	124.068	49	0	1	0	1	0	1	0	1	0	1	
45	F05R02	max	-19.94	4	905.633	38	526.943	87	0	113	0	113	0	113	0	113	0	113	
46		min	-371.239	23	-127.558	50	214.884	35	0	1	0	1	0	1	0	1	0	1	
47	F08R03	max	335.94	71	520.306	35	0	113	0	113	0	113	0	113	0	113	0	113	
48		min	-315.195	35	-345.441	71	0	1	0	1	0	1	0	1	0	1	0	1	
49	F09R03	max	527.537	82	1103.11	33	0	113	0	113	0	113	0	113	0	113	0	113	
50		min	-625.134	34	-491.991	81	0	1	0	1	0	1	0	1	0	1	0	1	
51	F07R01	max	74.497	60	715.425	84	367.507	72	0	113	0	113	0	113	0	113	0	113	
52		min	-443.194	85	-362.364	60	123.583	49	0	1	0	1	0	1	0	1	0	1	
53	F08_BASE	max	12.034	59	127.07	6	2138.544	97	0	113	0	113	0	113	11.363		2		
54		min	-37.325	47	-1.7	4	819.941	95	0	1	0	1	0	1	-16.101		3		
55	F01_BASE	max	-25.513	3	46.446	3	670.546	8	0	113	0	113	0	113	45.068		2		
56		min	-117.408	8	-31.498	2	263.114	2	0	1	0	1	0	1	-29.076		3		
57	F06_BASE	max	-2.766	18	10.549	8	1790.828	49	0	113	0	113	0	113	12.951		2		
58		min	-26.593	14	-245.976	73	625.772	48	0	1	0	1	0	1	-21.487		3		
59	F05_BASE	max	30.337	3	-76.995	6	2131.728	50	0	113	0	113	0	113	12.767		2		
60		min	-123.126	8	-347.482	74	1006.938	35	0	1	0	1	0	1	-28.471		3		
61	F02_BASE	max	34.113	3	277.937	14	1311.124	14	0	113	0	113	0	113	50.713		2		
62		min	-62.533	2	66.518	3	568.648	3	0	1	0	1	0	1	-31.878		3		
63	F04_BASE	max	51.174	10	82.99	14	1101.293	14	0	113	0	113	0	113	87.743		2		
64		min	-0.394	2	0.06	4	455.37	18	0	1	0	1	0	1	-56.012		3		
65	F13_BASE	max	-5.385	3	40.29	5	2396.629	39	0	113	0	113	0	113	12.194		4		
66		min	-143.612	6	-33.408	4	828.566	88	0	1	0	1	0	1	-11.558		5		
67	F07_BASE	max	45.499	3	30.456	6	1818.476	48	0	113	0	113	0	113	12.088		2		
68		min	-44.57	2	-198.296	60	649.31	49	0	1	0	1	0	1	-18.496		3		
69	F03_BASE	max	20.692	3	179.266	14	676.765	10	0	113	0	113	0	113	52.413		2		
70		min	-25.259	2	48.422	4	354.111	62	0	1	0	1	0	1	-33.793		3		
71	F12_BASE	max	23.792	52	35.772	5	2387.202	52	0	113	0	113	0	113	11.43		4		
72		min	-93.873	6	-41.294	6	479.588	31	0	1	0	1	0	1	-11.024		5		
73	F10_BASE	max	-4.073	3	19.794	5	2246.809	32	0	113	0	113	0	113	13.614		4		
74		min	-148.8	6	-15.522	4	893.678	92	0	1	0	1	0	1	-12.897		5		
75	F11_BASE	max	11.466	43	23.163	5	3475.988	31	0	113	0	113	0	113	11.577		4		
76		min	-105.284	6	-88.541	6	1366.241	76	0	1	0	1	0	1	-10.77		5		
77	F09_BASE	max	14.009	3	182.067	6	2935.38	95	0	113	0	113	0	113	14.104		2		
78		min	-101.488	6	18.11	4	1395.071	72	0	1	0	1	0	1	-19.482		3		
79	F14_BASE	max	-9.348	3	75.998	8	3232.76	88	0	113	0	113	0	113	13.134		4		
80		min	-139.087	8	3.316	4	1628.738	65	0	1	0	1	0	1	-10.937		5		
81	F11R02	max	189.296	42	43.906	66	42.761	42	0	113	0	113	0	113	0		113		
82		min	-35.069	66	-236.213	42	-6.532	66	0	1	0	1	0	1	0		1		
83	F14R03	max	819.229	75	553.193	75	0	113	0	113	0	113	0	113	0		113		
84		min	-359.902	88	-78.404	88	0	1	0	1	0	1	0	1	0		1		
85	F12R06	max	371.841	78	140.542	29	8.921	78	0	113	0	113	0	113	0		113		
86		min	-191.752	30	-183.539	30	0.947	30	0	1	0	1	0	1	0		1		
87	F12R07	max	328.076	29	198.201	30	50.909	30	0	113	0	113	0	113	0		113		
88		min	-22.493	92	-155.166	29	7.152	88	0	1	0	1	0	1	0		1		

Envelope Node Reactions (Continued)

Node Label			X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
89	F13R02	max	167.553	51	231.278	53	0	113	0	113	0	113	0	113
90		min	-1128.01	89	-153.786	51	0	1	0	1	0	1	0	1
91	F13R01	max	174.264	6	337.074	41	0	113	0	113	0	113	0	113
92		min	-301.556	51	-168.97	4	0	1	0	1	0	1	0	1
93	F12R02	max	338.124	42	302.166	42	77.036	42	0	113	0	113	0	113
94		min	-86.644	66	-277.395	41	-16.536	43	0	1	0	1	0	1
95	F13R03	max	680.215	89	40.334	27	7.085	76	0	113	0	113	0	113
96		min	-105.078	27	-286.545	76	5.135	29	0	1	0	1	0	1
97	F11R09	max	276.907	30	177.425	92	29.448	104	0	113	0	113	0	113
98		min	-359.034	92	-129.378	30	-91.24	31	0	1	0	1	0	1
99	F13R04	max	676.97	27	93.862	29	41.43	29	0	113	0	113	0	113
100		min	-21.891	77	-233.04	27	-30.669	27	0	1	0	1	0	1
101	F14R04	max	883.571	88	216.366	88	0	113	0	113	0	113	0	113
102		min	22.475	16	-299.979	27	0	1	0	1	0	1	0	1
103	F12R04	max	461.269	54	202.867	54	26.395	54	0	113	0	113	0	113
104		min	17.233	90	-95.529	53	3.851	90	0	1	0	1	0	1
105	F11R04	max	101.901	92	10.922	78	7.028	92	0	113	0	113	0	113
106		min	-14.149	78	-78.667	92	1.497	78	0	1	0	1	0	1
107	F11R08	max	568.303	105	47.056	5	10.468	105	0	113	0	113	0	113
108		min	-95.922	5	-276.241	105	1.825	30	0	1	0	1	0	1
109	F02R01	max	73.528	3	-35.294	5	7.779	2	0	113	0	113	0	113
110		min	-30.314	2	-300.647	14	4.603	3	0	1	0	1	0	1
111	F03R01	max	28.646	3	-3.505	5	14.744	14	0	113	0	113	0	113
112		min	-45.733	2	-157.145	14	4.429	5	0	1	0	1	0	1
113	F05R01	max	80.549	61	424.425	74	4.649	4	0	113	0	113	0	113
114		min	-167.184	62	-6.13	4	-51.17	74	0	1	0	1	0	1
115	F08R01	max	46.587	3	379.88	59	0	113	0	113	0	113	0	113
116		min	-455.726	60	-124.856	6	0	1	0	1	0	1	0	1
117	F06R01	max	368.571	60	383.591	60	6.987	6	0	61	0	61	0	4
118		min	-87.007	61	-27.924	3	-77.779	60	0	48	0	3	0	73
119	F04R01	max	133.894	62	87.494	62	10.851	18	0	113	0	113	0	113
120		min	-141.858	2	-47.39	18	-5.735	62	0	1	0	1	0	1
121	F01R01	max	116.325	8	69.761	3	0	113	0	113	0	113	0	113
122		min	-18.364	2	-116.063	14	0	1	0	1	0	1	0	1
123	F12R05	max	846.122	64	-18.928	5	0	113	0	113	0	113	0	113
124		min	45.067	2	-526.701	64	0	1	0	1	0	1	0	1
125	F11R06	max	350.529	67	232.802	67	0	113	0	113	0	113	0	113
126		min	-3.523	55	-149.437	55	0	1	0	1	0	1	0	1
127	Totals:	max	2428.297	3	2428.297	5	20569.846	14						
128		min	-2428.293	2	-2428.294	4	13765.846	1						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn
1	F01B01	L2X2X2	0.251	0	3	0.01	0	y	3	8090.426	10584.431	267.84	556.705	1.136	H2-1
2	F01B02	L2X2X2	0.094	0.04	14	0.002	3.81	y	2	5152.274	10584.431	263.478	455.39	1.136	H2-1
3	F01B03	L2X2X2	0.209	0	14	0.008	0	y	14	8105.645	10584.431	267.84	558.107	1.136	H2-1
4	F01B04	L2X2X2	0.136	0.023	10	0.003	2.19	y	2	7619.05	10584.431	263.478	523.949	1.136	H2-1
5	F01B05	L2X2X2	0.304	0	14	0.012	0	y	14	8102.267	10584.431	267.84	557.793	1.136	H2-1
6	F01B06	L2X2X2	0.108	0.024	12	0.002	2.261	y	12	7554.152	10584.431	263.478	520.468	1.136	H2-1
7	F01B07	L2X2X2	0.172	0.024	14	0.003	2.321	y	14	7498.164	10584.431	263.478	517.594	1.136	H2-1
8	F01B08	L2X2X2	0.457	0.016	14	0.016	1.577	y	14	8087.993	10584.431	263.478	556.484	1.136	H2-1
9	F01P01	HSS4X2X3	0.225	7.5	14	0.04	7.5	z	14	22382.802	52059.88	3282.435	5371.257	1.521	H1-1b
10	F01P02	HSS4X2X3	0.221	0	14	0.057	3.633	z	14	42155.669	52059.88	3282.435	5371.257	1.785	H1-1b
11	F02B01	L2X2X2	0.098	0.02	8	0.003	1.949	y	8	7822.131	10584.431	263.478	536.121	1.136	H2-1
12	F02B02	L2X2X2	0.099	0.022	8	0.002	2.113	y	8	7686.088	10584.431	263.478	527.734	1.136	H2-1

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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnny/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn	
13	F02B03	L2X2X2	0.119	0.016	8	0.004	1.541	y	8	8110.366	10584.431	263.478	558.548	1.136	H2-1
14	F02B04	L2X2X2	0.069	0	8	0.002	2.82	y	2	6974.916	10584.431	267.84	494.971	1.136	H2-1
15	F02B05	L2X2X2	0.114	0.023	10	0.002	2.223	y	10	7589.361	10584.431	263.478	522.336	1.136	H2-1
16	F02B06	L2X2X2	0.098	0.023	10	0.002	2.162	y	10	7643.791	10584.431	263.478	525.322	1.136	H2-1
17	F02B07	L2X2X2	0.109	0.015	10	0.003	1.44	y	10	8171.67	10584.431	263.478	561.962	1.136	H2-1
18	F02B08	L2X2X2	0.074	0	8	0.002	0	y	8	7459.046	10584.431	267.84	515.652	1.136	H2-1
19	F02B09	L2X2X2	0.088	0.029	10	0.002	0	y	14	7059.704	10584.431	263.478	498.225	1.136	H2-1
20	F02B10	L2X2X2	0.066	0.026	12	0.002	2.508	y	2	7314.275	10584.431	263.478	508.872	1.136	H2-1
21	F02B11	L2X2X2	0.097	0.018	10	0.004	1.7	y	10	8006.729	10584.431	263.478	549.531	1.136	H2-1
22	F02B12	L2X2X2	0.096	0.025	14	0.003	2.353	y	14	7467.687	10584.431	263.478	516.076	1.136	H2-1
23	F02B13	L2X2X2	0.091	0	14	0.001	0	y	8	6638.91	10584.431	267.84	484.536	1.136	H2-1
24	F02B14	L2X2X2	0.124	0.021	14	0.003	2.059	y	14	7732.54	10584.431	263.478	530.483	1.136	H2-1
25	F02B15	L2X2X2	0.08	0	14	0.001	0	y	14	7504.537	10584.431	267.84	517.916	1.136	H2-1
26	F02B16	L2X2X2	0.171	0.013	14	0.008	1.205	y	14	8296.383	10584.431	263.478	561.962	1.136	H2-1
27	F02P01	HSS4X2X3	0.148	0	14	0.023	1.033	y	2	8843.328	52059.88	3282.435	5270.717	1	H1-1b*
28	F02P02	HSS4X2X3	0.213	7.5	14	0.031	5.391	z	10	8843.328	52059.88	3282.435	5371.257	1.428	H1-1b
29	F02P03	HSS4X2X3	0.238	0.802	14	0.036	2.734	y	14	8843.328	52059.88	3282.435	5371.257	1.297	H1-1b
30	F02T01	PIPE .75	0.138	0	3	0.002	6.39		4	894.778	6538.922	164.521	164.521	1	H1-1b*
31	F02T02	PIPE .75	0.044	2.819	10	0.002	5.638		3	1149.16	6538.922	164.521	164.521	1	H1-1b
32	F03B01	L2X2X2	0.091	0.022	8	0.002	2.078	y	2	7716.168	10584.431	263.478	529.502	1.136	H2-1
33	F03B02	L2X2X2	0.077	0.02	2	0.002	1.962	y	2	7811.69	10584.431	263.478	535.931	1.142	H2-1
34	F03B03	L2X2X2	0.13	0.021	10	0.004	2.047	y	2	7742.182	10584.431	263.478	531.068	1.136	H2-1
35	F03B04	L2X2X2	0.111	0.023	14	0.003	2.175	y	14	7632.269	10584.431	263.478	524.68	1.136	H2-1
36	F03B05	L2X2X2	0.069	0	14	0.002	0	y	14	7366.621	10584.431	267.84	511.254	1.136	H2-1
37	F03B06	L2X2X2	0.051	0.47	12	0.001	2.82	y	14	6975.15	10584.431	263.478	494.98	1.136	H2-1
38	F03B07	L2X2X2	0.113	0	14	0.001	0	y	14	6493.553	10584.431	267.84	481.571	1.136	H2-1
39	F03B08	L2X2X2	0.051	0.022	8	0.002	0	y	10	7709.769	10584.431	263.478	529.122	1.136	H2-1
40	F03P01	HSS4X2X3	0.077	0	10	0.02	1.033	y	2	8843.328	52059.88	3282.435	5270.717	1	H1-1b*
41	F03P02	HSS4X2X3	0.13	7.5	14	0.019	0	z	2	8843.328	52059.88	3282.435	5371.257	1.405	H1-1b
42	F03P03	HSS4X2X3	0.145	0.911	14	0.019	2.589	y	14	8843.328	52059.88	3282.435	5371.257	1.262	H1-1b
43	F03T01	PIPE .75	0.036	2.808	2	0.002	5.617		3	1158.016	6538.922	164.521	164.521	1	H1-1b
44	F03T02	PIPE .75	0.033	2.729	14	0.002	5.459		2	1226.024	6538.922	164.521	164.521	1	H1-1b
45	F04B01	L2X2X2	0.048	0.019	10	0.001	0	y	12	7933.854	10584.431	263.478	543.897	1.136	H2-1
46	F04B02	L2X2X2	0.065	0	2	0.002	1.829	y	3	7913.864	10584.431	267.84	542.437	1.136	H2-1
47	F04B03	L2X2X2	0.072	0.013	10	0.003	1.268	y	10	8265.053	10584.431	263.478	561.962	1.136	H2-1
48	F04B04	L2X2X2	0.067	0.024	14	0.002	2.259	y	14	7556.102	10584.431	263.478	520.57	1.136	H2-1
49	F04B05	L2X2X2	0.094	0.022	2	0.003	2.127	y	2	7674.838	10584.431	263.478	527.085	1.136	H2-1
50	F04B06	L2X2X2	0.111	0.02	14	0.004	1.873	y	14	7881.292	10584.431	263.478	540.123	1.136	H2-1
51	F04B07	L2X2X2	0.119	0.02	12	0.004	1.879	y	2	7876.318	10584.431	263.478	539.777	1.136	H2-1
52	F04B08	L2X2X2	0.132	0.028	14	0.003	2.64	y	14	7175.266	10584.431	263.478	502.882	1.136	H2-1
53	F04B09	L2X2X2	0.143	0	14	0.004	1.767	y	2	7959.687	10584.431	267.84	545.837	1.136	H2-1
54	F04B10	L2X2X2	0.106	0.019	2	0.003	1.866	y	2	7886.025	10584.431	263.478	540.455	1.136	H2-1
55	F04B11	L2X2X2	0.079	0	14	0.001	3.137	y	2	6498.272	10584.431	267.84	481.667	1.136	H2-1
56	F04B12	L2X2X2	0.157	0.017	2	0.006	1.636	y	2	8049.596	10584.431	263.478	553.406	1.14	H2-1
57	F04P01	HSS4X2X3	0.173	7.5	14	0.03	3.047	z	2	8843.328	52059.88	3282.435	5371.257	1.38	H1-1b
58	F04P02	HSS4X2X3	0.185	0.938	14	0.024	0.938	y	2	8843.328	52059.88	3282.435	5371.257	1.314	H1-1b
59	F04T01	PIPE .75	0.019	1.959	14	0.001	3.917		3	2381.034	6538.922	164.521	164.521	1	H1-1b
60	F04T02	PIPE .75	0.039	0	2	0.001	4.001		2	2281.794	6538.922	164.521	164.521	1	H1-1b*
61	F05B01	L2X2X2	0.312	0.011	2	0.018	1.025	y	2	8376.939	10584.431	263.478	561.962	1.136	H2-1
62	F05B02	L2X2X2	0.064	0	8	0.002	0	y	8	7703.25	10584.431	267.84	528.737	1.136	H2-1
63	F05B03	L2X2X2	0.395	0	8	0.013	0	y	8	8015.422	10584.431	267.84	550.238	1.136	H2-1
64	F05B04	L2X2X2	0.109	0	8	0.002	0	y	8	5286.303	10584.431	267.84	457.952	1.136	H2-1
65	F05B05	L2X2X2	0.128	0.015	18	0.005	1.482	y	18	8146.445	10584.431	263.478	561.962	1.136	H2-1
66	F05B06	L2X2X2	0.044	0	6	0.001	0	y	6	7391.366	10584.431	267.84	512.406	1.136	H2-1
67	F05B07	L2X2X2	0.247	0	10	0.008	0	y	10	8133.238	10584.431	267.84	560.736	1.136	H2-1

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

	Member	Shape	Code	Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn
68	F05B08	L2X2X2	0.131	0	10	0.004	0	y	10		7756.074	10584.431	267.84	531.919	1.136	H2-1	
69	F05B09	L2X2X2	0.234	0	10	0.007	0	y	10		7854.39	10584.431	267.84	538.273	1.136	H2-1	
70	F05B10	L2X2X2	0.094	0	10	0.001	0	y	10		5080.937	10584.431	267.84	454.028	1.136	H2-1	
71	F05B11	L2X2X2	0.343	0	14	0.009	0	y	14		7551.398	10584.431	267.84	520.324	1.136	H2-1	
72	F05B12	L2X2X2	0.218	0	14	0.004	0	y	14		5498.773	10584.431	267.84	462.025	1.136	H2-1	
73	F05B13	L2X2X2	0.479	0	14	0.019	0	y	14		8205.223	10584.431	267.84	568.216	1.136	H2-1	
74	F05B14	L2X2X2	0.189	0	50	0.003	0	y	14		6889.141	10584.431	267.84	491.803	1.136	H2-1	
75	F05B15	L2X2X2	0.256	0	15	0.009	0	y	15		8176.033	10584.431	267.84	565.064	1.136	H2-1	
76	F05B16	L2X2X2	0.129	1.056	62	0.003	0	y	15		7514.805	10584.431	263.478	518.437	1.136	H2-1	
77	F05B17	L2X2X2	0.204	0	15	0.005	0	y	15		7472.215	10584.431	267.84	516.3	1.136	H2-1	
78	F05B18	L2X2X2	0.116	0	15	0.002	4.101	y	74		4596.648	10584.431	267.84	444.771	1.136	H2-1	
79	F05B19	L2X2X2	0.746	0	16	0.034	0	y	16		8263.543	10584.431	267.84	575.105	1.136	H2-1	
80	F05B20	L2X2X2	0.119	0	74	0.001	4.499	y	87		3870.854	10584.431	267.84	430.84	1.136	H2-1	
81	F05B21	L2X2X2	0.386	0	16	0.007	0	y	16		6826.928	10584.431	267.84	489.578	1.136	H2-1	
82	F05B22	L2X2X2	0.315	0	16	0.005	0	y	16		5759.888	10584.431	267.84	467.064	1.136	H2-1	
83	F05B23	L2X2X2	0.477	0	18	0.007	0	y	18		5744.573	10584.431	267.84	466.767	1.136	H2-1	
84	F05B24	L2X2X2	0.397	0	18	0.006	0	y	18		5007.704	10584.431	267.84	452.629	1.136	H2-1	
85	F05B25	L2X2X2	0.69	0	18	0.023	0	y	18		8028.65	10584.431	267.84	551.33	1.136	H2-1	
86	F05B26	L2X2X2	0.255	0	87	0.005	0	y	18		6852.119	10584.431	267.84	490.472	1.136	H2-1	
87	F05B27	L2X2X2	0.346	0.026	18	0.008	2.507	y	18		7314.868	10584.431	263.478	508.898	1.136	H2-1	
88	F05B28	L2X2X2	0.136	0	100	0.002	3.747	y	38		5277.098	10584.431	267.84	457.776	1.136	H2-1	
89	F05B29	L2X2X2	0.235	0.041	18	0.004	3.936	y	18		4909.502	10584.431	263.478	450.755	1.136	H2-1	
90	F05B30	L2X2X2	0.113	0.051	16	0.002	4.871	y	16		3301.752	10584.431	263.478	418.349	1.136	H2-1	
91	F05B31	L2X2X2	0.159	0	22	0.002	4.025	y	20		4739.288	10584.431	267.84	447.502	1.136	H2-1	
92	F05B32	L2X2X2	0.192	0.045	23	0.003	4.328	y	23		4181.909	10584.431	263.478	436.769	1.136	H2-1	
93	F05B33	L2X2X2	0.208	0.014	18	0.009	1.391	y	18		8199.535	10584.431	263.478	561.962	1.136	H2-1	
94	F05B34	L2X2X2	0.159	0.019	112	0.004	1.795	y	38		7939.389	10584.431	263.478	544.308	1.136	H2-1	
95	F05B35	L2X2X2	0.406	0	23	0.004	0	y	23		4591.326	10584.431	267.84	444.669	1.136	H2-1	
96	F05B36	L2X2X2	0.197	0	23	0.003	0	y	23		4920.83	10584.431	267.84	450.971	1.136	H2-1	
97	F05B50	L3X3X3	0.61	0	38	0.06	0	y	38		17346.138	23497.006	878.308	1791.415	1.136	H2-1	
98	F05B51	PIPE .75	0.361	0	38	0.239	1.539		38		5596.729	6538.922	164.521	164.521	1	H3-6	
99	F05B52	PIPE .75	0.971	1.47	38	0.427	1.47		38		5673.41	6538.922	164.521	164.521	1	H3-6	
100	F05P01	HSS4X2X3	0.297	1.039	62	0.032	1.039	y	14		8843.328	52059.88	3282.435	5371.257	1.628	H1-1a	
101	F05P02	HSS4X2X3	0.322	7.5	50	0.039	7.5	z	18		8843.328	52059.88	3282.435	5270.717	1	H1-1a	
102	F05P03	HSS4X2X3	0.41	1.25	50	0.052	2.344	y	50		6497.139	52059.88	3282.435	5239.012	1	H1-1a	
103	F05P04	HSS4X2X3	0.393	5.418	87	0.108	6.518	z	18		6497.139	52059.88	3282.435	5239.012	1	H1-1b	
104	F05P05	HSS4X2X3	0.324	0.583	87	0.079	0.583	y	87		6497.139	52059.88	3282.435	5239.012	1	H1-1b	
105	F05P06	HSS4X2X3	0.505	3.906	38	0.112	6.875	z	23		22382.802	52059.88	3282.435	5371.257	1.511	H1-1b	
106	F05T01	PIPE .75	0.115	5.1	62	0.002	5.1		5		1404.427	6538.922	164.521	164.521	1	H1-1b*	
107	F05T02	PIPE .75	0.116	3.079	74	0.001	3.079		2		3507.566	6538.922	164.521	164.521	1	H1-1b*	
108	F06B01	L2X2X2	0.134	0.014	3	0.006	1.34	y	3		8227.647	10584.431	263.478	561.962	1.136	H2-1	
109	F06B02	L2X2X2	0.07	0.021	3	0.002	2.052	y	3		7738.084	10584.431	263.478	530.195	1.13	H2-1	
110	F06B03	L2X2X2	0.121	0	3	0.005	0	y	3		8222.395	10584.431	267.84	570.156	1.136	H2-1	
111	F06B04	L2X2X2	0.04	1.542	8	0.001	2.903	y	10		6878.751	10584.431	263.478	491.427	1.136	H2-1	
112	F06B05	L2X2X2	0.162	0	10	0.006	0	y	49		8212.901	10584.431	267.84	569.075	1.136	H2-1	
113	F06B06	L2X2X2	0.061	0	10	0.002	0	y	16		7345.192	10584.431	267.84	510.27	1.136	H2-1	
114	F06B07	L2X2X2	0.2	0.014	2	0.008	1.372	y	2		8209.919	10584.431	263.478	561.962	1.136	H2-1	
115	F06B08	L2X2X2	0.087	0	3	0.003	0	y	3		7472.394	10584.431	267.84	515.632	1.129	H2-1	
116	F06B09	L2X2X2	0.258	0	48	0.01	0	y	48		8148.238	10584.431	267.84	562.216	1.136	H2-1	
117	F06B10	L2X2X2	0.171	0	49	0.002	0	y	3		6431.876	10584.431	267.84	480.324	1.136	H2-1	
118	F06B11	L2X2X2	0.502	0	15	0.02	0	y	15		8180.278	10584.431	267.84	565.511	1.136	H2-1	
119	F06B12	L2X2X2	0.217	0	61	0.005	0	y	14		7474.387	10584.431	267.84	516.408	1.136	H2-1	
120	F06B13	L2X2X2	0.371	0.018	73	0.009	1.735	y	73		7981.768	10584.431	263.478	547.544	1.136	H2-1	
121	F06B14	L2X2X2	0.157	1.077	73	0.001	4.494	y	85		3880.443	10584.431	263.478	431.03	1.136	H2-1	
122	F06B15	L2X2X2	0.253	0	86	0.003	0	y	86		7625.389	10584.431	267.84	524.299	1.136	H2-1	

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

Member	Shape	Code	Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn
123	F06B16	L2X2X2	0.202	0	86	0.002	0	y	73	5555.851	10584.431	267.84	463.123	1.136	H2-1	
124	F06B17	L2X2X2	0.46	0.03	3	0.01	2.841	y	3	6951.078	10584.431	263.478	494.078	1.136	H2-1	
125	F06B18	L2X2X2	0.362	0.034	3	0.03	3.263	z	3	6242.234	10584.431	263.478	498.08	1.349	H2-1	
126	F06B19	L2X2X2	0.206	0.026	99	0.005	2.48	y	86	7342.741	10584.431	263.478	510.158	1.136	H2-1	
127	F06B20	L2X2X2	0.145	0	99	0.002	3.281	y	111	6207.252	10584.431	267.84	475.831	1.136	H2-1	
128	F06B21	L2X2X2	0.19	0	111	0.005	0	y	37	7765.737	10584.431	267.84	532.518	1.136	H2-1	
129	F06B22	L2X2X2	0.177	0.023	111	0.004	2.177	y	37	7630.795	10584.431	263.478	524.598	1.136	H2-1	
130	F06B50	L3X3X3	0.241	2.591	37	0.013	2.591	y	37	17734.892	23497.006	878.308	1833.831	1.136	H2-1	
131	F06B51	PIPE .75	0.174	1.677	37	0.022	1.677		37	5435.605	6538.922	164.521	164.521	1	H1-1b	
132	F06B52	PIPE .75	0.384	0	37	0.028	1.504		37	5635.741	6538.922	164.521	164.521	1	H1-1a	
133	F06P01	HSS4X2X3	0.224	0.682	49	0.019	1.039	y	61	8843.328	52059.88	3282.435	5371.257	1.747	H1-1a	
134	F06P02	HSS4X2X3	0.235	0	49	0.018	1.719	y	3	8843.328	52059.88	3282.435	5371.257	1.846	H1-1a	
135	F06P03	HSS4X2X3	0.392	1.328	49	0.051	6.953	y	61	6497.139	52059.88	3282.435	5239.012	1	H1-1a	
136	F06P04	HSS4X2X3	0.347	1.256	73	0.064	6.361	y	86	6497.139	52059.88	3282.435	5239.012	1	H1-1b	
137	F06P05	HSS4X2X3	0.32	1.188	86	0.071	1.188	y	86	6497.139	52059.88	3282.435	5239.012	1	H1-1b	
138	F06P06	HSS4X2X3	0.482	4.688	37	0.079	7.344	y	37	22382.802	52059.88	3282.435	5371.257	1.524	H1-1b	
139	F06T01	PIPE .75	0.083	3.101	73	0.001	3.101		5	3476.309	6538.922	164.521	164.521	1	H1-1b*	
140	F06T02	PIPE .75	0.07	3.371	61	0.001	3.371		2	3099.471	6538.922	164.521	164.521	1	H1-1b*	
141	F07B01	L2X2X2	0.111	0	6	0.004	0	y	5	8099.296	10584.431	267.84	557.518	1.136	H2-1	
142	F07B02	L2X2X2	0.097	0	6	0.002	0	y	5	7711.964	10584.431	267.84	529.252	1.136	H2-1	
143	F07B03	L2X2X2	0.285	0	3	0.013	0	y	3	8242.847	10584.431	267.84	572.56	1.136	H2-1	
144	F07B04	L2X2X2	0.055	0	3	0.002	0	y	3	6739.241	10584.431	267.84	485.584	1.127	H2-1	
145	F07B05	L2X2X2	0.17	0	48	0.006	0	y	48	8039.99	10584.431	267.84	552.282	1.136	H2-1	
146	F07B06	L2X2X2	0.059	0	10	0.001	0	y	16	7177.48	10584.431	267.84	502.974	1.136	H2-1	
147	F07B07	L2X2X2	0.095	0	48	0.003	0	y	48	7857.462	10584.431	267.84	538.481	1.136	H2-1	
148	F07B08	L2X2X2	0.049	0	12	0.002	0	y	3	7157.097	10584.431	267.84	502.131	1.136	H2-1	
149	F07B11	L2X2X2	0.215	0	48	0.002	0	y	49	7490.903	10584.431	267.84	517.23	1.136	H2-1	
150	F07B12	L2X2X2	0.217	0	48	0.002	0	y	48	4826.699	10584.431	267.84	449.173	1.136	H2-1	
151	F07B15	L2X2X2	0.705	0	60	0.014	0	y	60	7380.127	10584.431	267.84	511.88	1.136	H2-1	
152	F07B16	L2X2X2	0.335	0	60	0.003	0	y	60	4123.477	10584.431	267.84	435.669	1.136	H2-1	
153	F07B19	L2X2X2	0.239	0	72	0.003	0	y	3	7068.531	10584.431	267.84	498.572	1.136	H2-1	
154	F07B20	L2X2X2	0.172	0	72	0.002	0	y	3	3153.259	10584.431	267.84	414.641	1.136	H2-1	
155	F07B21	L2X2X2	0.172	0.028	84	0.003	2.725	y	2	7082.285	10584.431	263.478	499.114	1.136	H2-1	
156	F07B22	L2X2X2	0.21	0	84	0.002	0	y	3	3984.108	10584.431	267.84	433.052	1.136	H2-1	
157	F07B23	L2X2X2	0.306	0.034	3	0.006	3.259	y	3	6250.036	10584.431	263.478	476.681	1.136	H2-1	
158	F07B24	L2X2X2	0.211	0	85	0.014	3.899	y	3	4981.275	10584.431	267.84	449.7	1.117	H2-1	
159	F07B25	L2X2X2	0.172	0	98	0.003	2.405	y	85	7417.611	10584.431	267.84	513.648	1.136	H2-1	
160	F07B26	L2X2X2	0.18	0	98	0.001	0	y	5	4063.212	10584.431	267.84	434.551	1.136	H2-1	
161	F07B27	L2X2X2	0.261	0	110	0.007	0	y	5	7789.279	10584.431	267.84	533.998	1.136	H2-1	
162	F07B28	L2X2X2	0.195	0	110	0.003	3.127	y	35	6517.725	10584.431	267.84	482.062	1.136	H2-1	
163	F07B50	L3X3X3	0.195	3.972	35	0.021	3.972	y	3	15931.441	23497.006	878.308	1681.43	1.136	H2-1	
164	F07B51	PIPE .75	0.236	0	35	0.093	3.214		35	3316.79	6538.922	164.521	164.521	1	H1-1b	
165	F07B52	PIPE .75	0.315	3.148	35	0.113	3.148		35	3409.673	6538.922	164.521	164.521	1	H1-1b	
166	F07B53	L3X3X3	0.2	0	36	0.022	0	y	36	17496.56	23497.006	878.308	1806.854	1.136	H2-1	
167	F07B54	PIPE .75	0.122	1.959	36	0.033	1.959		35	5081.07	6538.922	164.521	164.521	1	H1-1b	
168	F07B55	PIPE .75	0.297	0	36	0.031	1.664		35	5451.854	6538.922	164.521	164.521	1	H1-1a	
169	F07P01	HSS4X2X3	0.225	1.033	48	0.016	1.033	y	6	8843.328	52059.88	3282.435	5371.257	1.833	H1-1a	
170	F07P02	HSS4X2X3	0.285	7.5	48	0.032	7.5	z	3	8843.328	52059.88	3282.435	5270.717	1	H1-1b	
171	F07P03	HSS4X2X3	0.452	1.797	48	0.069	2.266	y	48	6497.139	52059.88	3282.435	5239.012	1	H1-1a	
172	F07P04	HSS4X2X3	0.368	1.3	72	0.051	1.3	y	60	6497.139	52059.88	3282.435	5239.012	1	H1-1b	
173	F07P05	HSS4X2X3	0.382	5.391	85	0.065	5.703	z	85	22382.802	52059.88	3282.435	5371.257	1.762	H1-1b	
174	F07P06	HSS4X2X3	0.408	2.911	36	0.075	6.026	y	36	27615.589	52059.88	3282.435	5371.257	1.395	H1-1b	
175	F07T01	PIPE .75	0.114	2.217	60	0.001	2.217		5	4734.759	6538.922	164.521	164.521	1	H1-1b*	
176	F07T02	PIPE .75	0.265	2.163	60	0.001	4.326		2	1952.2	6538.922	164.521	164.521	1	H1-1a	
177	F08B01	L2X2X2	0.123	0.023	47	0.004	0	y	2	7589.969	10584.431	263.478	522.368	1.136	H2-1	

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

Member	Shape	Code	Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn
178	F08B02	L2X2X2	0.106	0	6	0.003	0	y	2	7118.164	10584.431	267.84	500.547	1.136	H2-1	
179	F08B03	L2X2X2	0.112	0	3	0.004	0	y	3	7905.053	10584.431	267.84	541.802	1.136	H2-1	
180	F08B04	L2X2X2	0.058	0	8	0.001	0	y	3	6915.481	10584.431	267.84	492.763	1.136	H2-1	
181	F08B05	L2X2X2	0.257	0	47	0.009	0	y	47	7895.819	10584.431	267.84	541.144	1.136	H2-1	
182	F08B06	L2X2X2	0.123	0	47	0.003	0	y	47	7373.667	10584.431	267.84	511.58	1.136	H2-1	
183	F08B07	L2X2X2	0.197	0	47	0.008	0	y	47	8075.311	10584.431	267.84	555.345	1.136	H2-1	
184	F08B08	L2X2X2	0.13	0	47	0.003	0	y	47	6050.053	10584.431	267.84	472.726	1.136	H2-1	
185	F08B09	L2X2X2	0.245	0	3	0.008	0	y	3	7922.307	10584.431	267.84	543.049	1.136	H2-1	
186	F08B10	L2X2X2	0.127	0	83	0.002	0	y	3	4813.184	10584.431	267.84	448.915	1.136	H2-1	
187	F08B11	L2X2X2	0.538	0	3	0.017	0	y	3	7904.663	10584.431	267.84	541.774	1.136	H2-1	
188	F08B12	L2X2X2	0.219	0	97	0.002	0	y	3	4268.647	10584.431	267.84	438.452	1.136	H2-1	
189	F08B13	L2X2X2	0.497	0	35	0.016	0	y	35	7927.615	10584.431	267.84	543.438	1.136	H2-1	
190	F08B14	L2X2X2	0.225	0	109	0.004	0	y	3	6416.467	10584.431	267.84	480.014	1.136	H2-1	
191	F08B20	L2X2X2	0.243	0.028	47	0.003	0	y	46	7145.249	10584.431	263.478	501.646	1.136	H2-1	
192	F08B21	L2X2X2	0.229	0	47	0.001	0	y	46	4837.668	10584.431	267.84	449.383	1.136	H2-1	
193	F08B22	L2X2X2	0.156	0	59	0.003	2.47	y	2	7352.727	10584.431	267.84	510.614	1.136	H2-1	
194	F08B23	L2X2X2	0.17	2.145	59	0.002	0	y	47	3740.847	10584.431	263.478	428.198	1.136	H2-1	
195	F08B24	L2X2X2	0.292	0	71	0.008	0	y	46	7511.681	10584.431	267.84	518.278	1.136	H2-1	
196	F08B25	L2X2X2	0.241	0	71	0.002	0	y	46	4728.396	10584.431	267.84	447.294	1.136	H2-1	
197	F08B50	L3X3X3	0.205	0	3	0.026	4.499	y	3	15029.434	23497.006	878.308	1630.43	1.136	H2-1	
198	F08B51	PIPE .75	0.186	3.275	3	0.088	3.275	35	3231.531	6538.922	164.521	164.521	1	H1-1b		
199	F08B52	PIPE .75	0.176	0	3	0.096	3.268	35	3241.099	6538.922	164.521	164.521	1	H1-1b		
200	F08B53	L3X3X3	0.341	0	35	0.041	3.315	y	3	16886.273	23497.006	878.308	1749.877	1.136	H2-1	
201	F08B54	PIPE .75	0.291	2.032	3	0.162	2.032	35	4984.89	6538.922	164.521	164.521	1	H1-1b		
202	F08B55	PIPE .75	0.509	0	35	0.213	1.839	35	5235.913	6538.922	164.521	164.521	1	H1-1b		
203	F08P01	HSS4X2X3	0.275	3.75	47	0.019	2.578	y	6	8843.328	52059.88	3282.435	5371.257	1.43	H1-1a	
204	F08P02	HSS4X2X3	0.466	7.188	47	0.104	7.5	z	47	8843.328	52059.88	3282.435	5371.257	1.541	H1-1a	
205	F08P03	HSS4X2X3	0.566	2.422	47	0.08	2.422	z	47	22382.802	52059.88	3282.435	5371.257	1.631	H1-1b	
206	F08P04	HSS4X2X3	0.427	2.266	71	0.082	7.5	z	3	22382.802	52059.88	3282.435	5371.257	1.639	H1-1b	
207	F08P05	HSS4X2X3	0.445	3.359	35	0.088	6.953	z	35	22382.802	52059.88	3282.435	5371.257	1.495	H1-1b	
208	F09B01	L2X2X2	0.094	0	3	0.003	0	y	3	7679.6	10584.431	267.84	527.359	1.136	H2-1	
209	F09B02	L2X2X2	0.079	0	3	0.003	0	y	3	7678.792	10584.431	267.84	526.849	1.131	H2-1	
210	F09B03	L2X2X2	0.115	1.309	6	0.002	0	y	3	6773.089	10584.431	263.478	487.697	1.136	H2-1	
211	F09B04	L2X2X2	0.119	0	6	0.002	0	y	3	6588.832	10584.431	267.84	483.511	1.136	H2-1	
212	F09B05	L2X2X2	0.12	0.019	6	0.004	1.787	y	6	7944.604	10584.431	263.478	544.697	1.136	H2-1	
213	F09B06	L2X2X2	0.047	1.457	8	0.001	0	y	46	6261.631	10584.431	263.478	476.912	1.136	H2-1	
214	F09B07	L2X2X2	0.47	0	46	0.016	0	y	46	7939.362	10584.431	267.84	544.306	1.136	H2-1	
215	F09B08	L2X2X2	0.262	0	46	0.006	0	y	46	6968.868	10584.431	267.84	494.743	1.136	H2-1	
216	F09B09	L2X2X2	0.295	0	46	0.01	0	y	46	7948.689	10584.431	267.84	545.004	1.136	H2-1	
217	F09B10	L2X2X2	0.249	0	46	0.007	0	y	46	7581.916	10584.431	267.84	521.937	1.136	H2-1	
218	F09B11	L2X2X2	0.339	0	46	0.003	0	y	3	6258.359	10584.431	267.84	476.847	1.136	H2-1	
219	F09B12	L2X2X2	0.377	0	46	0.004	0	y	46	5648.995	10584.431	267.84	464.919	1.136	H2-1	
220	F09B13	L2X2X2	0.15	0.02	2	0.005	1.943	y	2	7826.973	10584.431	263.478	536.439	1.136	H2-1	
221	F09B14	L2X2X2	0.193	0	45	0.002	3.25	y	46	6269.052	10584.431	267.84	477.06	1.136	H2-1	
222	F09B15	L2X2X2	0.25	0.035	46	0.005	3.361	y	46	6044.261	10584.431	263.478	472.612	1.136	H2-1	
223	F09B16	L2X2X2	0.301	0	46	0.005	0	y	46	4559.349	10584.431	267.84	444.055	1.136	H2-1	
224	F09B17	L2X2X2	0.123	0	57	0.003	2.152	y	2	7652.567	10584.431	267.84	525.816	1.136	H2-1	
225	F09B18	L2X2X2	0.149	0	57	0.002	0	y	70	4413.562	10584.431	267.84	441.252	1.136	H2-1	
226	F09B19	L2X2X2	0.383	0	70	0.004	0	y	70	6165.873	10584.431	267.84	475.011	1.136	H2-1	
227	F09B20	L2X2X2	0.243	0	70	0.003	4.037	y	46	4717.722	10584.431	267.84	447.09	1.136	H2-1	
228	F09B21	L2X2X2	0.18	0.025	46	0.005	2.427	y	46	7395.41	10584.431	263.478	512.596	1.136	H2-1	
229	F09B22	L2X2X2	0.185	0	69	0.001	0	y	3	4148.976	10584.431	267.84	436.128	1.136	H2-1	
230	F09B23	L2X2X2	0.271	0	82	0.005	3.556	y	70	5654.24	10584.431	267.84	465.02	1.136	H2-1	
231	F09B24	L2X2X2	0.151	0	82	0.002	4.983	y	94	3155.996	10584.431	267.84	414.711	1.136	H2-1	
232	F09B25	L2X2X2	0.173	0	81	0.003	2.706	y	70	7103.539	10584.431	267.84	499.96	1.136	H2-1	

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

Member	Shape	Code	Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn
233	F09B26	L2X2X2	0.164	0	81	0.002	0	y	95	4255.901	10584.431	267.84	438.206	1.136	H2-1	
234	F09B27	L2X2X2	0.322	0	95	0.003	0	y	95	5671.296	10584.431	267.84	465.349	1.136	H2-1	
235	F09B28	L2X2X2	0.307	0	95	0.003	0	y	95	2937.109	10584.431	267.84	408.834	1.136	H2-1	
236	F09B29	L2X2X2	0.199	0	94	0.003	0	y	95	6719.895	10584.431	267.84	486.205	1.136	H2-1	
237	F09B30	L2X2X2	0.214	0	94	0.002	0	y	3	3979.657	10584.431	267.84	432.967	1.136	H2-1	
238	F09B31	L2X2X2	0.695	0	108	0.004	0	y	108	5214.531	10584.431	267.84	456.58	1.136	H2-1	
239	F09B32	L2X2X2	0.397	0	108	0.003	0	y	108	4559.628	10584.431	267.84	444.061	1.136	H2-1	
240	F09B33	L2X2X2	0.349	0	107	0.005	0	y	33	6163.855	10584.431	267.84	474.971	1.136	H2-1	
241	F09B34	L2X2X2	0.191	2.335	107	0.002	3.933	y	33	4914.882	10584.431	263.478	450.857	1.136	H2-1	
242	F09B50	L3X3X3	0.392	4.735	33	0.022	4.735	y	3	14322.516	23497.006	878.308	1608.554	1.136	H2-1	
243	F09B51	PIPE .75	0.182	3.483	3	0.068	3.483	34	2946.406	6538.922	164.521	164.521	1	H1-1b		
244	F09B52	PIPE .75	0.375	3.526	33	0.063	3.526	34	2889.215	6538.922	164.521	164.521	1	H1-1a		
245	F09B53	L3X3X3	0.303	0	95	0.02	6.33	y	3	9702.657	23497.006	878.308	1473.397	1.136	H2-1	
246	F09B54	PIPE .75	0.551	3.976	34	0.063	3.976	33	2310.539	6538.922	164.521	164.521	1	H1-1a		
247	F09B55	PIPE .75	0.404	0	34	0.06	4.035	33	2243.382	6538.922	164.521	164.521	1	H1-1a		
248	F09P01	HSS4X2X3	0.425	3.75	46	0.06	2.617	z	6	8843.328	52059.88	3282.435	5371.257	1.643	H1-1a	
249	F09P02	HSS4X2X3	0.724	6.094	46	0.215	6.641	z	46	8843.328	52059.88	3282.435	5371.257	1.225	H1-1a	
250	F09P03	HSS4X2X3	0.766	1.25	46	0.188	1.25	z	46	22382.802	52059.88	3282.435	5371.257	1.711	H1-1b	
251	F09P04	HSS4X2X3	0.488	1.641	70	0.125	7.5	z	95	22382.802	52059.88	3282.435	5371.257	1.66	H1-1b	
252	F09P05	HSS4X2X3	0.714	3.281	108	0.181	3.516	z	108	22382.802	52059.88	3282.435	5371.257	1.708	H1-1b	
253	F10B01	L2X2X2	0.072	0.831	6	0.002	0	y	5	7649.138	10584.431	263.478	525.623	1.136	H2-1	
254	F10B02	L2X2X2	0.069	0.709	6	0.002	0	y	5	7728.555	10584.431	263.478	530.243	1.136	H2-1	
255	F10B03	L2X2X2	0.085	0	6	0.002	0	y	5	7490.075	10584.431	267.84	517.189	1.136	H2-1	
256	F10B04	L2X2X2	0.06	0	6	0.002	0	y	5	7553.48	10584.431	267.84	520.433	1.136	H2-1	
257	F10B05	L2X2X2	0.099	0.016	88	0.004	1.527	y	88	8119.637	10584.431	263.478	559.425	1.136	H2-1	
258	F10B06	L2X2X2	0.064	0	6	0.001	0	y	6	6142.809	10584.431	267.84	474.555	1.136	H2-1	
259	F10B07	L2X2X2	0.089	0	12	0.004	0	y	12	8101.88	10584.431	267.84	557.757	1.136	H2-1	
260	F10B08	L2X2X2	0.048	0	10	0.001	0	y	12	7124.016	10584.431	267.84	500.783	1.136	H2-1	
261	F10B09	L2X2X2	0.39	0.016	41	0.015	1.57	y	41	8092.542	10584.431	263.478	556.898	1.136	H2-1	
262	F10B10	L2X2X2	0.159	0	44	0.003	2.986	y	41	6779.818	10584.431	267.84	487.93	1.136	H2-1	
263	F10B11	L2X2X2	0.188	0.016	54	0.007	1.542	y	54	8110.024	10584.431	263.478	558.516	1.136	H2-1	
264	F10B12	L2X2X2	0.137	0	56	0.001	3.959	y	68	4864.822	10584.431	267.84	449.901	1.136	H2-1	
265	F10B13	L2X2X2	0.218	0.016	52	0.008	1.564	y	52	8096.49	10584.431	263.478	557.26	1.136	H2-1	
266	F10B14	L2X2X2	0.147	0	68	0.001	3.873	y	52	5031.63	10584.431	267.84	453.086	1.136	H2-1	
267	F10B15	L2X2X2	0.138	0.016	78	0.005	1.561	y	78	8097.952	10584.431	263.478	557.394	1.136	H2-1	
268	F10B16	L2X2X2	0.138	1.605	80	0.001	0	y	32	5072.044	10584.431	263.478	453.858	1.136	H2-1	
269	F10B17	L2X2X2	0.238	0.017	5	0.009	1.592	y	5	8078.078	10584.431	263.478	555.592	1.136	H2-1	
270	F10B18	L2X2X2	0.145	0	93	0.001	3.551	y	92	5664.347	10584.431	267.84	465.215	1.136	H2-1	
271	F10B19	L2X2X2	0.236	0	4	0.009	0	y	4	8046.528	10584.431	267.84	552.837	1.136	H2-1	
272	F10B20	L2X2X2	0.242	0.022	32	0.007	2.148	y	32	7656.392	10584.431	263.478	526.032	1.136	H2-1	
273	F10B50	L3X3X3	0.306	2.954	32	0.012	2.954	y	32	17336.351	23497.006	878.308	1790.447	1.136	H2-1	
274	F10B51	PIPE .75	0.192	1.535	32	0.049	1.535	32	5600.726	6538.922	164.521	164.521	1	H1-1b		
275	F10B52	PIPE .75	0.462	0	32	0.031	1.599	32	5528.243	6538.922	164.521	164.521	1	H1-1a		
276	F10P01	HSS4X2X3	0.168	2.578	6	0.038	2.578	z	6	42155.669	52059.88	3282.435	5371.257	1.594	H1-1b	
277	F10P02	HSS4X2X3	0.158	6.563	44	0.033	7.5	y	44	22382.802	52059.88	3282.435	5371.257	1.399	H1-1b	
278	F10P03	HSS4X2X3	0.222	2.109	44	0.024	2.109	y	44	22382.802	52059.88	3282.435	5371.257	1.572	H1-1b	
279	F10P04	HSS4X2X3	0.181	2.578	68	0.028	6.563	z	4	22382.802	52059.88	3282.435	5371.257	1.599	H1-1b	
280	F10P05	HSS4X2X3	0.445	4.375	32	0.077	7.266	y	32	22382.802	52059.88	3282.435	5371.257	1.463	H1-1b	
281	F11B01	L2X2X2	0.109	0	5	0.003	0	y	5	7714.231	10584.431	267.84	529.387	1.136	H2-1	
282	F11B02	L2X2X2	0.112	0	5	0.003	0	y	5	7578.514	10584.431	267.84	521.327	1.132	H2-1	
283	F11B03	L2X2X2	0.139	0.016	43	0.005	1.573	y	43	8090.823	10584.431	263.478	556.741	1.136	H2-1	
284	F11B04	L2X2X2	0.047	0.857	8	0.001	3.29	y	43	6187.896	10584.431	263.478	475.447	1.136	H2-1	
285	F11B05	L2X2X2	0.173	0.016	4	0.007	0	y	5	8105.58	10584.431	263.478	558.101	1.136	H2-1	
286	F11B06	L2X2X2	0.126	0.031	43	0.003	2.943	y	43	6831.081	10584.431	263.478	489.725	1.136	H2-1	
287	F11B07	L2X2X2	0.25	0.02	41	0.008	1.931	y	41	7836.583	10584.431	263.478	537.076	1.136	H2-1	

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

	Member	Shape	Code	Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn
288	F11B08	L2X2X2	0.227	0.028	42	0.003	2.733	y	41		7073.413	10584.431	263.478	498.764	1.136	H2-1	
289	F11B11	L2X2X2	0.218	0.02	54	0.007	1.934	y	4		7834.249	10584.431	263.478	536.921	1.136	H2-1	
290	F11B12	L2X2X2	0.138	0.711	54	0.001	3.411	y	4		5944.651	10584.431	263.478	470.66	1.136	H2-1	
291	F11B15	L2X2X2	0.155	0.02	4	0.005	1.962	y	4		7811.959	10584.431	263.478	535.456	1.136	H2-1	
292	F11B16	L2X2X2	0.149	0.031	66	0.002	2.929	y	4		6848.49	10584.431	263.478	490.343	1.136	H2-1	
293	F11B19	L2X2X2	0.138	0.023	66	0.004	2.246	y	66		7568.122	10584.431	263.478	521.203	1.136	H2-1	
294	F11B20	L2X2X2	0.123	0.457	78	0.002	0	y	92		6853.9	10584.431	263.478	490.536	1.136	H2-1	
295	F11B23	L2X2X2	0.296	0	92	0.014	0	y	92		8271.221	10584.431	267.84	576.081	1.136	H2-1	
296	F11B24	L2X2X2	0.137	0	91	0.001	3.537	y	4		5691.514	10584.431	267.84	465.74	1.136	H2-1	
297	F11B25	L2X2X2	0.351	0.017	92	0.01	1.629	y	92		8054.067	10584.431	263.478	553.484	1.136	H2-1	
298	F11B26	L2X2X2	0.131	0	92	0.002	3.004	y	105		6757.161	10584.431	267.84	487.149	1.136	H2-1	
299	F11B27	L2X2X2	0.193	0	105	0.006	0	y	27		8022.548	10584.431	267.84	550.824	1.136	H2-1	
300	F11B28	L2X2X2	0.136	0.024	30	0.004	2.294	y	30		7523.692	10584.431	263.478	518.891	1.136	H2-1	
301	F11B29	L2X2X2	0.216	0	104	0.006	0	y	30		7751.248	10584.431	267.84	531.622	1.136	H2-1	
302	F11B30	L2X2X2	0.16	0.021	30	0.005	2.051	y	30		7739.186	10584.431	263.478	530.886	1.136	H2-1	
303	F11B40	L2X2X2	0.369	0	43	0.004	0	y	43		6745.66	10584.431	267.84	486.755	1.136	H2-1	
304	F11B41	L2X2X2	0.253	0	43	0.002	0	y	43		4222.252	10584.431	267.84	437.553	1.136	H2-1	
305	F11B42	L2X2X2	0.234	0	55	0.003	3.284	y	43		6199.799	10584.431	267.84	475.683	1.136	H2-1	
306	F11B43	L2X2X2	0.243	0	55	0.002	0	y	55		2971.985	10584.431	267.84	409.807	1.136	H2-1	
307	F11B44	L2X2X2	0.389	0	67	0.003	3.632	y	55		5502.203	10584.431	267.84	462.091	1.136	H2-1	
308	F11B45	L2X2X2	0.235	0	67	0.002	0	y	4		3274.836	10584.431	267.84	417.692	1.136	H2-1	
309	F11B46	L2X2X2	0.414	0	79	0.002	0	y	4		3997.198	10584.431	267.84	433.303	1.136	H2-1	
310	F11B47	L2X2X2	0.198	0	79	0.002	0	y	4		2652.67	10584.431	267.84	400.323	1.136	H2-1	
311	F11B50	L3X3X3	0.225	3.605	30	0.015	0	y	31		16486.459	23497.006	878.308	1718.9	1.136	H2-1	
312	F11B51	PIPE .75	0.184	1.777	30	0.018	1.777		31		5314.274	6538.922	164.521	164.521	1	H1-1b	
313	F11B52	PIPE .75	0.41	0	30	0.018	1.922		30		5129.632	6538.922	164.521	164.521	1	H1-1a	
314	F11B53	L3X3X3	0.413	0	31	0.029	0	y	4		17392.809	23497.006	878.308	1796.091	1.136	H2-1	
315	F11B54	PIPE .75	0.303	1.288	5	0.176	1.288		31		5864.051	6538.922	164.521	164.521	1	H1-1b	
316	F11B55	PIPE .75	0.6	0	31	0.165	1.493		31		5647.94	6538.922	164.521	164.521	1	H1-1a	
317	F11B56	PIPE .75	0.363	2.477	31	0.001	4.954		4		1488.608	6538.922	164.521	164.521	1	H1-1a	
318	F11B57	PIPE .75	0.101	5.057	105	0.002	5.057		3		1428.774	6538.922	164.521	164.521	1	H1-1b*	
319	F11P01	HSS4X2X3	0.18	7.547	43	0.029	2.516	z	6		22146.967	52059.88	3282.435	5371.257	1.61	H1-1b	
320	F11P02	HSS4X2X3	0.199	4.654	42	0.054	0.194	z	43		29208.36	52059.88	3282.435	5371.257	1.393	H1-1b	
321	F11P03	HSS4X2X3	0.232	5.938	66	0.03	4.297	y	66		22382.802	52059.88	3282.435	5371.257	1.512	H1-1b	
322	F11P04	HSS4X2X3	0.197	3.401	92	0.07	3.797	z	92		41932.292	52059.88	3282.435	5371.257	1.381	H1-1b	
323	F11P05	HSS4X2X3	0.422	3.906	30	0.084	7.266	y	30		22382.802	52059.88	3282.435	5371.257	1.412	H1-1b	
324	F11P06	HSS4X2X3	0.496	3.437	43	0.074	1.25	z	43		22382.802	52059.88	3282.435	5371.257	1.632	H1-1b	
325	F11P07	HSS4X2X3	0.486	2.669	55	0.063	6.25	y	79		28968.61	52059.88	3282.435	5371.257	1.513	H1-1b	
326	F11P08	HSS4X2X3	0.267	0	67	0.064	3.984	y	79		38417.688	52059.88	3282.435	5371.257	2.996	H1-1b	
327	F11T01	PIPE .75	0.08	0	30	0.002	5.133		2		1386.809	6538.922	164.521	164.521	1	H1-1b*	
328	F11T02	PIPE .75	0.366	2.745	92	0.002	5.491		5		1211.668	6538.922	164.521	164.521	1	H1-1a	
329	F11T03	PIPE .75	0.32	2.585	30	0.002	5.17		4		1366.726	6538.922	164.521	164.521	1	H1-1a	
330	F11T04	PIPE .75	0.097	0	105	0.002	5.458		5		1226.271	6538.922	164.521	164.521	1	H1-1b*	
331	F11T05	PIPE .75	0.075	0	54	0.001	3.431		4		3016.681	6538.922	164.521	164.521	1	H1-1b*	
332	F11T06	PIPE .75	0.023	1.951	92	0.001	3.902		5		2399.502	6538.922	164.521	164.521	1	H1-1b	
333	F11T07	PIPE .75	0.071	0	42	0.001	2.003		4		5023.543	6538.922	164.521	164.521	1	H1-1b*	
334	F11T08	PIPE .75	0.047	0	42	0.001	2.11		5		4880.787	6538.922	164.521	164.521	1	H1-1b*	
335	F12B01	L2X2X2	0.108	0	5	0.004	0	y	5		7878.798	10584.431	267.84	539.949	1.136	H2-1	
336	F12B02	L2X2X2	0.109	0	5	0.004	0	y	5		7850.83	10584.431	267.84	537.544	1.131	H2-1	
337	F12B03	L2X2X2	0.09	0.016	4	0.004	1.561	y	4		8097.935	10584.431	263.478	557.393	1.136	H2-1	
338	F12B04	L2X2X2	0.048	0	52	0.001	0	y	52		6239.885	10584.431	267.84	476.479	1.136	H2-1	
339	F12B05	L2X2X2	0.167	0	5	0.007	0	y	5		8087.833	10584.431	267.84	556.47	1.136	H2-1	
340	F12B06	L2X2X2	0.06	0	10	0.001	0	y	5		6677.807	10584.431	267.84	485.336	1.136	H2-1	
341	F12B07	L2X2X2	0.311	0.018	42	0.011	1.769	y	42		7957.741	10584.431	263.478	545.689	1.136	H2-1	
342	F12B08	L2X2X2	0.169	0.033	41	0.001	3.139	y	42		6492.872	10584.431	263.478	481.558	1.136	H2-1	

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

	Member	Shape	Code	Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnny/om [lb-ft]	Mnzcz/om [lb-ft]	Cb	Eqn
343	F12B11	L2X2X2	0.222	0.016	54	0.009	1.5	y	54		8135.923	10584.431	263.478	560.998	1.136	H2-1	
344	F12B12	L2X2X2	0.147	0	53	0.001	3.911	y	65		4957.177	10584.431	267.84	451.665	1.136	H2-1	
345	F12B15	L2X2X2	0.143	0.016	66	0.006	1.534	y	66		8114.753	10584.431	263.478	558.961	1.136	H2-1	
346	F12B16	L2X2X2	0.145	0.757	65	0.002	2.345	y	66		7475.962	10584.431	263.478	516.486	1.136	H2-1	
347	F12B19	L2X2X2	0.143	0	77	0.005	1.625	y	4		8056.645	10584.431	267.84	553.707	1.136	H2-1	
348	F12B20	L2X2X2	0.218	0	77	0.003	0	y	77		7510.443	10584.431	267.84	518.215	1.136	H2-1	
349	F12B21	L2X2X2	0.12	0	90	0.005	1.551	y	27		8104.227	10584.431	267.84	557.975	1.136	H2-1	
350	F12B22	L2X2X2	0.154	0	90	0.002	2.262	y	27		7553.72	10584.431	267.84	520.446	1.136	H2-1	
351	F12B23	L2X2X2	0.224	0	29	0.007	0	y	29		7953.149	10584.431	267.84	545.341	1.136	H2-1	
352	F12B24	L2X2X2	0.206	0.02	29	0.007	1.9	y	29		7860.649	10584.431	263.478	538.699	1.136	H2-1	
353	F12B30	L2X2X2	0.167	0.025	42	0.005	2.362	y	42		7459.842	10584.431	263.478	515.691	1.136	H2-1	
354	F12B31	L2X2X2	0.183	0.041	52	0.003	3.922	y	52		4936.45	10584.431	263.478	451.269	1.136	H2-1	
355	F12B32	L2X2X2	0.215	0	52	0.002	0	y	4		6228.09	10584.431	267.84	476.245	1.136	H2-1	
356	F12B33	L2X2X2	0.266	0	52	0.002	0	y	52		2954.201	10584.431	267.84	409.313	1.136	H2-1	
357	F12B34	L2X2X2	0.484	0	64	0.003	0	y	4		4280.376	10584.431	267.84	438.68	1.136	H2-1	
358	F12B35	L2X2X2	0.244	2.776	64	0.003	0	y	52		2648.196	10584.431	263.478	400.18	1.136	H2-1	
359	F12B50	L3X3X3	0.396	2.838	29	0.036	2.838	y	29		17469.773	23497.006	878.308	1804.024	1.136	H2-1	
360	F12B51	PIPE .75	0.134	0	29	0.144	1.587		29		5542.095	6538.922	164.521	164.521	1	H1-1b	
361	F12B52	PIPE .75	0.461	1.857	29	0.173	1.857		29		5213.597	6538.922	164.521	164.521	1	H1-1a	
362	F12B53	L2X2X2	0.145	1.502	31	0.001	3.004	y	4		6757.539	10584.431	263.478	487.162	1.136	H2-1	
363	F12B54	L2X2X2	0.13	2.012	92	0.001	3.942	y	5		4898.329	10584.431	263.478	450.541	1.136	H2-1	
364	F12B55	L2X2X2	0.036	1.501	31	0.001	3.003	y	5		6759.084	10584.431	263.478	487.215	1.136	H2-1	
365	F12P01	HSS4X2X3	0.153	7.547	52	0.023	7.547	z	5		22146.967	52059.88	3282.435	5371.257	1.79	H1-1b	
366	F12P02	HSS4X2X3	0.198	5.172	41	0.028	0.323	z	4		29208.36	52059.88	3282.435	5371.257	1.844	H1-1b	
367	F12P03	HSS4X2X3	0.192	5.313	65	0.043	4.219	y	65		22382.802	52059.88	3282.435	5371.257	1.364	H1-1b	
368	F12P04	HSS4X2X3	0.177	3.797	29	0.025	3.797	y	77		41932.292	52059.88	3282.435	5371.257	1.317	H1-1b	
369	F12P05	HSS4X2X3	0.516	4.688	29	0.08	7.188	y	29		22382.802	52059.88	3282.435	5371.257	1.598	H1-1b	
370	F12P06	HSS4X2X3	0.426	6.406	52	0.053	7.5	z	52		22382.802	52059.88	3282.435	5371.257	1.71	H1-1b	
371	F12P07	HSS4X2X3	0.603	2.812	64	0.062	6.953	z	64		22382.802	52059.88	3282.435	5371.257	1.704	H1-1b	
372	F12T01	PIPE .75	0.058	0	29	0.002	5.119		4		1394.003	6538.922	164.521	164.521	1	H1-1b*	
373	F12T02	PIPE .75	0.28	2.598	92	0.002	5.196		5		1352.898	6538.922	164.521	164.521	1	H1-1a	
374	F12T03	PIPE .75	0.188	0	31	0.002	5.096		5		1406.628	6538.922	164.521	164.521	1	H1-1b*	
375	F12T04	PIPE .75	0.253	2.55	29	0.002	5.1		4		1404.336	6538.922	164.521	164.521	1	H1-1a	
376	F12T05	PIPE .75	0.052	0	53	0.001	4.24		2		2032.512	6538.922	164.521	164.521	1	H1-1b*	
377	F12T06	PIPE .75	0.038	0	53	0.001	3.424		5		3026.615	6538.922	164.521	164.521	1	H1-1b*	
378	F12T07	PIPE .75	0.057	0	41	0.001	3.265		2		3245.744	6538.922	164.521	164.521	1	H1-1b*	
379	F12T08	PIPE .75	0.055	0	41	0.001	2.013		5		5010.139	6538.922	164.521	164.521	1	H1-1b*	
380	F13B01	L2X2X2	0.088	0	39	0.003	0	y	39		7818.952	10584.431	267.84	535.912	1.136	H2-1	
381	F13B02	L2X2X2	0.086	0	5	0.003	0	y	5		7643.197	10584.431	267.84	524.826	1.131	H2-1	
382	F13B03	L2X2X2	0.115	0	39	0.004	0	y	39		7829.24	10584.431	267.84	536.589	1.136	H2-1	
383	F13B04	L2X2X2	0.078	0	39	0.002	0	y	5		7680.816	10584.431	267.84	527.429	1.136	H2-1	
384	F13B05	L2X2X2	0.179	0.016	39	0.007	1.522	y	39		8122.302	10584.431	263.478	559.68	1.136	H2-1	
385	F13B06	L2X2X2	0.098	0.037	39	0.002	3.586	y	39		5594.827	10584.431	263.478	463.874	1.136	H2-1	
386	F13B07	L2X2X2	0.303	0.016	39	0.012	1.513	y	39		8127.959	10584.431	263.478	560.223	1.136	H2-1	
387	F13B08	L2X2X2	0.207	0.034	39	0.004	3.223	y	39		6322.795	10584.431	263.478	478.133	1.136	H2-1	
388	F13B09	L2X2X2	0.114	0.016	4	0.005	1.515	y	4		8126.804	10584.431	263.478	560.112	1.136	H2-1	
389	F13B11	L2X2X2	0.069	0.029	12	0.002	2.829	y	39		6965.094	10584.431	263.478	494.602	1.136	H2-1	
390	F13B12	L2X2X2	0.139	0.021	39	0.003	2.007	y	4		7775.439	10584.431	263.478	533.124	1.136	H2-1	
391	F13B13	L2X2X2	0.154	0	39	0.002	0	y	5		6424.992	10584.431	267.84	480.186	1.136	H2-1	
392	F13B14	L2X2X2	0.194	0.018	54	0.007	1.747	y	54		7973.288	10584.431	263.478	546.883	1.136	H2-1	
393	F13B15	L2X2X2	0.185	0	51	0.003	3.678	y	63		5412.356	10584.431	267.84	460.367	1.136	H2-1	
394	F13B16	L2X2X2	0.236	0.019	63	0.006	1.82	y	4		7920.554	10584.431	263.478	542.921	1.136	H2-1	
395	F13B17	L2X2X2	0.257	0.024	63	0.004	0	y	27		7558.196	10584.431	263.478	520.68	1.136	H2-1	
396	F13B20	L2X2X2	0.196	0	27	0.005	0	y	27		7056.855	10584.431	267.84	498.114	1.136	H2-1	
397	F13B21	L2X2X2	0.199	0	27	0.004	0	y	27		6287.054	10584.431	267.84	477.419	1.136	H2-1	

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

	Member	Shape	Code	Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn
398	F13B22	L2X2X2	0.161	0.018	4	0.006	1.717	y	4		4	7994.564	10584.431	263.478	548.555	1.136	H2-1
399	F13B23	L2X2X2	0.313	0	27	0.011	0	y	27		27	8073.233	10584.431	267.84	555.161	1.136	H2-1
400	F13B26	L2X2X2	0.249	0	27	0.006	0	y	27		27	7300.19	10584.431	267.84	508.243	1.136	H2-1
401	F13B27	L2X2X2	0.242	0.031	27	0.005	2.997	y	27		27	6766.67	10584.431	263.478	487.476	1.136	H2-1
402	F13B28	L2X2X2	0.505	0.014	27	0.021	1.387	y	27		27	8201.668	10584.431	263.478	561.962	1.136	H2-1
403	F13B29	L2X2X2	0.555	0.015	27	0.022	1.48	y	27		27	8147.899	10584.431	263.478	561.962	1.136	H2-1
404	F13B50	L3X3X3	0.291	0	27	0.02	3.814	y	27		27	16176.738	23497.006	878.308	1697.319	1.136	H2-1
405	F13B51	PIPE .75	0.454	2.298	27	0.093	2.298		27		27	4622.323	6538.922	164.521	164.521	1	H1-1b
406	F13B52	PIPE .75	0.668	0	27	0.072	2.615		28		28	4171.764	6538.922	164.521	164.521	1	H1-1a
407	F13B53	L3X3X3	0.223	2.403	28	0.02	0	y	101		101	17920.458	23497.006	878.308	1857.551	1.136	H2-1
408	F13B54	PIPE .75	0.165	1.438	28	0.025	1.438		101		101	5708.154	6538.922	164.521	164.521	1	H1-1b
409	F13B55	PIPE .75	0.367	0	28	0.05	1.528		28		28	5608.526	6538.922	164.521	164.521	1	H1-1a
410	F13P01	HSS4X2X3	0.365	5	39	0.028	2.604	z	6		6	8150.011	52059.88	3282.435	5371.257	1.831	H1-1a
411	F13P02	HSS4X2X3	0.496	4.688	39	0.052	7.5	z	39		39	8150.011	52059.88	3282.435	5371.257	1.334	H1-1a
412	F13P03	HSS4X2X3	0.352	4.518	63	0.066	6.737	z	63		63	21835.594	52059.88	3282.435	5371.257	1.762	H1-1b
413	F13P04	HSS4X2X3	0.263	6.42	76	0.069	7.608	z	27		27	21838.976	52059.88	3282.435	5371.257	1.731	H1-1b
414	F13P05	HSS4X2X3	0.498	3.906	27	0.1	6.797	z	27		27	22382.802	52059.88	3282.435	5371.257	1.877	H1-1b
415	F13T01	PIPE .75	0.611	2.965	27	0.002	5.931		5		5	1038.645	6538.922	164.521	164.521	1	H1-1a
416	F13T02	PIPE .75	0.112	5.212	27	0.002	5.212		4		4	1344.927	6538.922	164.521	164.521	1	H1-1b*
417	F13T03	PIPE .75	0.148	5.925	27	0.002	5.925		5		5	1040.719	6538.922	164.521	164.521	1	H1-1b*
418	F13T04	PIPE .75	0.125	5.205	76	0.002	5.205		4		4	1348.426	6538.922	164.521	164.521	1	H1-1b*
419	F14B01	L2X2X2	0.073	0.017	8	0.002	1.676	y	10		10	8023.111	10584.431	263.478	550.87	1.136	H2-1
420	F14B02	L2X2X2	0.111	0.037	10	0.002	3.506	y	10		10	5753.785	10584.431	263.478	466.945	1.136	H2-1
421	F14B03	L2X2X2	0.051	0	5	0.002	0	y	5		5	7438.995	10584.431	267.84	514.675	1.136	H2-1
422	F14B04	L2X2X2	0.09	0.045	10	0.002	4.292	y	10		10	4245.098	10584.431	263.478	437.996	1.136	H2-1
423	F14B05	L2X2X2	0.102	0.017	10	0.003	1.638	y	10		10	8048.355	10584.431	263.478	552.993	1.136	H2-1
424	F14B06	L2X2X2	0.089	0.036	12	0.002	3.492	y	12		12	5781.135	10584.431	263.478	467.476	1.136	H2-1
425	F14B07	L2X2X2	0.099	0.025	10	0.002	0	y	39		39	7431.592	10584.431	263.478	514.318	1.136	H2-1
426	F14B08	L2X2X2	0.116	0.032	12	0.003	3.029	y	12		12	6714.806	10584.431	263.478	486.1	1.136	H2-1
427	F14B09	L2X2X2	0.104	0	12	0.002	0	y	12		12	7416.391	10584.431	267.84	513.59	1.136	H2-1
428	F14B10	L2X2X2	0.079	0	12	0.002	0	y	10		10	6304.676	10584.431	267.84	477.771	1.136	H2-1
429	F14B11	L2X2X2	0.072	0	5	0.003	0	y	5		5	8060.091	10584.431	267.84	554.006	1.136	H2-1
430	F14B12	L2X2X2	0.087	0	12	0.001	0	y	12		12	5810.158	10584.431	267.84	468.039	1.136	H2-1
431	F14B13	L2X2X2	0.091	0.032	54	0.002	3.037	y	54		54	6700.202	10584.431	263.478	485.798	1.136	H2-1
432	F14B14	L2X2X2	0.083	0.041	16	0.002	3.92	y	16		16	4939.904	10584.431	263.478	451.335	1.136	H2-1
433	F14B15	L2X2X2	0.143	0.017	54	0.005	1.638	y	54		54	8048.532	10584.431	263.478	553.009	1.136	H2-1
434	F14B16	L2X2X2	0.091	0.036	16	0.002	3.469	y	16		16	5828.572	10584.431	263.478	468.397	1.136	H2-1
435	F14B17	L2X2X2	0.09	0	16	0.002	0	y	52		52	6524.964	10584.431	267.84	482.209	1.136	H2-1
436	F14B18	L2X2X2	0.065	0.037	75	0.002	3.555	y	75		75	5655.052	10584.431	263.478	465.036	1.136	H2-1
437	F14B19	L2X2X2	0.111	0.019	88	0.004	1.796	y	88		88	7938.409	10584.431	263.478	544.235	1.136	H2-1
438	F14B20	L2X2X2	0.056	0	16	0.001	0	y	5		5	6451.021	10584.431	267.84	480.711	1.136	H2-1
439	F14B21	L2X2X2	0.082	0.024	88	0.002	2.303	y	88		88	7515.958	10584.431	263.478	518.496	1.136	H2-1
440	F14B22	L2X2X2	0.091	0.02	4	0.003	1.945	y	4		4	7825.321	10584.431	263.478	536.774	1.141	H2-1
441	F14B23	L2X2X2	0.12	1.239	18	0.002	4.102	y	75		75	4595.873	10584.431	263.478	444.756	1.136	H2-1
442	F14B24	L2X2X2	0.114	0	75	0.002	0	y	75		75	2926.974	10584.431	267.84	408.549	1.136	H2-1
443	F14B25	L2X2X2	0.446	0	75	0.018	0	y	75		75	8152.62	10584.431	267.84	562.656	1.136	H2-1
444	F14B26	L2X2X2	0.097	0.039	20	0.002	3.697	y	20		20	5374.321	10584.431	263.478	459.637	1.136	H2-1
445	F14B27	L2X2X2	0.18	0.039	88	0.004	3.754	y	88		88	5262.677	10584.431	263.478	457.5	1.136	H2-1
446	F14B28	L2X2X2	0.059	0	4	0.002	0	y	23		23	3664.407	10584.431	267.84	426.616	1.137	H2-1
447	F14B29	L2X2X2	0.135	0	4	0.004	0	y	4		4	7048.055	10584.431	267.84	497.77	1.136	H2-1
448	F14B30	L2X2X2	0.081	0	20	0.001	0	y	20		20	4652.891	10584.431	267.84	445.849	1.136	H2-1
449	F14B31	L2X2X2	0.134	0	88	0.003	0	y	88		88	7114.299	10584.431	267.84	500.392	1.136	H2-1
450	F14B32	L2X2X2	0.135	0.043	88	0.002	4.162	y	88		88	4484.351	10584.431	263.478	442.615	1.136	H2-1
451	F14B33	L2X2X2	0.192	0	27	0.003	0	y	27		27	4485.857	10584.431	267.84	442.644	1.136	H2-1
452	F14B34	L2X2X2	0.09	0.456	23	0.002	3.982	y	23		23	4820.978	10584.431	263.478	449.064	1.136	H2-1

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

Member	Shape	Code	Check	Loc[ft]	LC	Shear	Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn
453	F14B35	L2X2X2	0.149	0	23	0.003	0	y	27	5951.377	10584.431	267.84	470.791	1.136	H2-1	
454	F14B36	L2X2X2	0.124	0.041	23	0.003	0	y	27	4972.659	10584.431	263.478	451.96	1.136	H2-1	
455	F14B40	L2X2X2	0.634	0	75	0.003	0	y	5	3967.416	10584.431	267.84	432.731	1.136	H2-1	
456	F14B41	L2X2X2	0.281	0	75	0.003	0	y	5	3087.471	10584.431	267.84	412.927	1.136	H2-1	
457	F14B42	L2X2X2	0.541	0	88	0.002	0	y	4	3344.657	10584.431	267.84	419.382	1.136	H2-1	
458	F14B43	L2X2X2	0.214	0	88	0.002	0	y	4	2878.999	10584.431	267.84	407.182	1.136	H2-1	
459	F14B50	L3X3X3	0.189	6.196	27	0.019	6.196	y	27	10068.06	23497.006	878.308	1484.022	1.136	H2-1	
460	F14B51	PIPE .75	0.097	5.38	88	0.075	5.38		27	1262.339	6538.922	164.521	164.521	1	H1-1b	
461	F14B52	PIPE .75	0.167	5.421	27	0.076	5.421		27	1243.056	6538.922	164.521	164.521	1	H1-1b	
462	F14P01	HSS4X2X3	0.424	2.5	88	0.014	3.75	z	8	8150.011	52059.88	3282.435	5371.257	1.347	H1-1a	
463	F14P02	HSS4X2X3	0.422	2.188	10	0.041	4.688	z	10	8150.011	52059.88	3282.435	5371.257	1.63	H1-1a	
464	F14P03	HSS4X2X3	0.242	7.5	88	0.034	7.5	z	4	22382.802	52059.88	3282.435	5371.257	1.834	H1-1b	
465	F14P04	HSS4X2X3	0.638	2.734	75	0.087	5.547	z	75	22382.802	52059.88	3282.435	5371.257	1.534	H1-1b	
466	F14P05	HSS4X2X3	0.572	1.953	88	0.058	7.187	z	23	22382.802	52059.88	3282.435	5371.257	1.917	H1-1b	
467	M31	HSS2X2X2	0.305	0.865	38	0.108	0	y	38	17931.298	18107.784	1049.102	1049.102	1.679	H1-1b	
468	M32	HSS2X2X2	0.1	0	38	0.029	1.139	z	38	17802.844	18107.784	1049.102	1049.102	1.592	H1-1b	
469	M33	HSS2X2X2	0.337	0	38	0.033	0	y	38	17535.109	18107.784	1049.102	1049.102	1.934	H1-1b	
470	M40	HSS2X2X2	0.213	0	29	0.023	0	y	29	17535.109	18107.784	1049.102	1049.102	1.809	H1-1b	
471	M41	HSS2X2X2	0.169	0.865	29	0.039	0.865	z	29	17931.298	18107.784	1049.102	1049.102	1.258	H1-1b	
472	M42	HSS2X2X2	0.101	0	29	0.007	1.139	z	29	17802.844	18107.784	1049.102	1049.102	1.406	H1-1b*	
473	M43	HSS2X2X2	0.13	0	37	0.003	1.566	z	37	17535.109	18107.784	1049.102	1049.102	1.162	H1-1b*	
474	M44	HSS2X2X2	0.061	0	37	0.027	0.865	y	37	17931.298	18107.784	1049.102	1049.102	2.219	H1-1b	
475	M45	HSS2X2X2	0.103	1.139	37	0.014	1.139	y	37	17802.844	18107.784	1049.102	1049.102	2.067	H1-1b	
476	M50	HSS2X2X2	0.135	0	28	0.007	0	y	28	17535.109	18107.784	1049.102	1049.102	1.519	H1-1b*	
477	M51	HSS2X2X2	0.068	0	28	0.019	0	y	28	17931.298	18107.784	1049.102	1049.102	2.065	H1-1b	
478	M52	HSS2X2X2	0.108	1.139	28	0.012	1.139	y	28	17802.844	18107.784	1049.102	1049.102	1.873	H1-1b	
479	M54	HSS2X2X2	0.135	0	30	0.003	0	y	30	17535.109	18107.784	1049.102	1049.102	1.294	H1-1b*	
480	M55	HSS2X2X2	0.072	0	30	0.025	0	y	30	17931.298	18107.784	1049.102	1049.102	2.219	H1-1b	
481	M56	HSS2X2X2	0.109	1.139	30	0.014	1.139	y	30	17802.844	18107.784	1049.102	1049.102	1.992	H1-1b	
482	M66	HSS2X2X2	0.191	0	35	0.032	0	y	35	17535.109	18107.784	1049.102	1049.102	1.825	H1-1b	
483	M67	HSS2X2X2	0.192	0.865	35	0.048	0.865	y	35	17931.298	18107.784	1049.102	1049.102	1.596	H1-1b	
484	M68	HSS2X2X2	0.089	0	35	0.014	1.139	y	35	17802.844	18107.784	1049.102	1049.102	1.298	H1-1b*	
485	M155	HSS2X2X2	0.133	0	34	0.016	1.566	z	95	17535.109	18107.784	1049.102	1049.102	1.353	H1-1b*	
486	M156	HSS2X2X2	0.097	0.865	95	0.034	0.865	z	35	17931.298	18107.784	1049.102	1049.102	1.824	H1-1b	
487	M157	HSS2X2X2	0.111	1.139	34	0.019	1.139	y	34	17802.844	18107.784	1049.102	1049.102	1.972	H1-1b	
488	M159	HSS2X2X2	0.129	0	36	0.005	0	y	36	17535.109	18107.784	1049.102	1049.102	1.441	H1-1b*	
489	M160	HSS2X2X2	0.066	0	36	0.022	0.865	y	36	17931.298	18107.784	1049.102	1049.102	1.963	H1-1b	
490	M161	HSS2X2X2	0.095	1.139	36	0.013	1.139	y	36	17802.844	18107.784	1049.102	1049.102	1.955	H1-1b	
491	M269	HSS2X2X2	0.134	0	33	0.006	1.566	y	95	17535.109	18107.784	1049.102	1049.102	1.083	H1-1b*	
492	M270	HSS2X2X2	0.083	0.865	33	0.037	0	y	33	17931.298	18107.784	1049.102	1049.102	2.259	H1-1b	
493	M271	HSS2X2X2	0.121	1.139	33	0.016	1.139	y	33	17802.844	18107.784	1049.102	1049.102	2.099	H1-1b	
494	M273	HSS2X2X2	0.111	0.865	32	0.036	0.865	z	32	17931.298	18107.784	1049.102	1049.102	1.672	H1-1b	
495	M274	HSS2X2X2	0.117	1.139	32	0.016	1.139	y	32	17802.844	18107.784	1049.102	1049.102	2.105	H1-1b	
496	M275	HSS2X2X2	0.133	0	32	0.009	1.566	z	32	17535.109	18107.784	1049.102	1049.102	1.192	H1-1b*	
497	M288	HSS2X2X2	0.221	0	31	0.022	0	y	31	17535.109	18107.784	1049.102	1049.102	1.865	H1-1b	
498	M289	HSS2X2X2	0.166	0.865	31	0.04	0	y	30	17931.298	18107.784	1049.102	1049.102	1.434	H1-1b	
499	M290	HSS2X2X2	0.091	0	31	0.009	1.139	z	31	17802.844	18107.784	1049.102	1049.102	1.131	H1-1b*	
500	M459	HSS2X2X2	0.136	0	27	0.024	1.566	z	27	17535.109	18107.784	1049.102	1049.102	1.426	H1-1b	
501	M460	HSS2X2X2	0.163	0.865	27	0.038	0.865	z	27	17931.298	18107.784	1049.102	1049.102	2.191	H1-1b	
502	M461	HSS2X2X2	0.124	1.139	27	0.022	1.139	y	27	17802.844	18107.784	1049.102	1049.102	1.916	H1-1b	



Anchor Designer™ for
Concrete Software
Version 3.3.2404.1

Company:	Peak Thrills Engineering	Date:	7/9/2024
Engineer:	Dan Peak	Page:	1/5
Project:	Panelized 2.0		
Address:	PO Box 43224, Cincinnati, OH 45243		
Phone:	513-205-0031		
E-mail:	dpeak@peakthrills.com		

1. Project information

Project description:

Location:

Fastening description:

Comment:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-19

Units: Imperial units

Anchor Information:

Anchor type: Torque controlled expansion anchor

Material: Carbon Steel

Diameter (inch): 0.500

Nominal Embedment depth (inch): 2.750

Effective Embedment depth, h_{ef} (inch): 2.250

Code report: ICC-ES ESR-3037

Anchor category: 1

Anchor ductility: Yes

h_{min} (inch): 4.00

c_{ac} (inch): 6.00

c_{min} (inch): 12.00

s_{min} (inch): 2.75

Base Material

Concrete: Normal-weight

Concrete thickness, h (inch): 4.00

State: Uncracked

Compressive strength, f'_c (psi): 4000

$\Psi_{c,v}$: 1.4

Reinforcement condition: Supplementary reinforcement not present

Supplemental edge reinforcement: No

Reinforcement provided at corners: No

Ignore concrete breakout in tension: No

Ignore concrete breakout in shear: No

Ignore 6d requirement: Not applicable

Build-up grout pad: No

Base Plate

Length x Width x Thickness (inch): 4.00 x 7.00 x 0.25

Recommended Anchor

Anchor Name: Strong-Bolt® 2 - 1/2"Ø STB2, h_{nom} : 2.75" (70mm)

Code Report: ICC-ES ESR-3037





Anchor Designer™ for Concrete Software

Version 3.3.2404.1

Company:	Peak Thrills Engineering	Date:	7/9/2024
Engineer:	Dan Peak	Page:	2/5
Project:	Panelized 2.0		
Address:	PO Box 43224, Cincinnati, OH 45243		
Phone:	513-205-0031		
E-mail:	dpeak@peakthrills.com		

Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: Yes

Anchors subjected to sustained tension: Not applicable

Ductility section for tension: 17.10.5.3 (d) is satisfied

Ductility section for shear: 17.10.6.3 (c) is satisfied

Ω_0 factor: not set

Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: 3000

V_{uax} [lb]: 4000

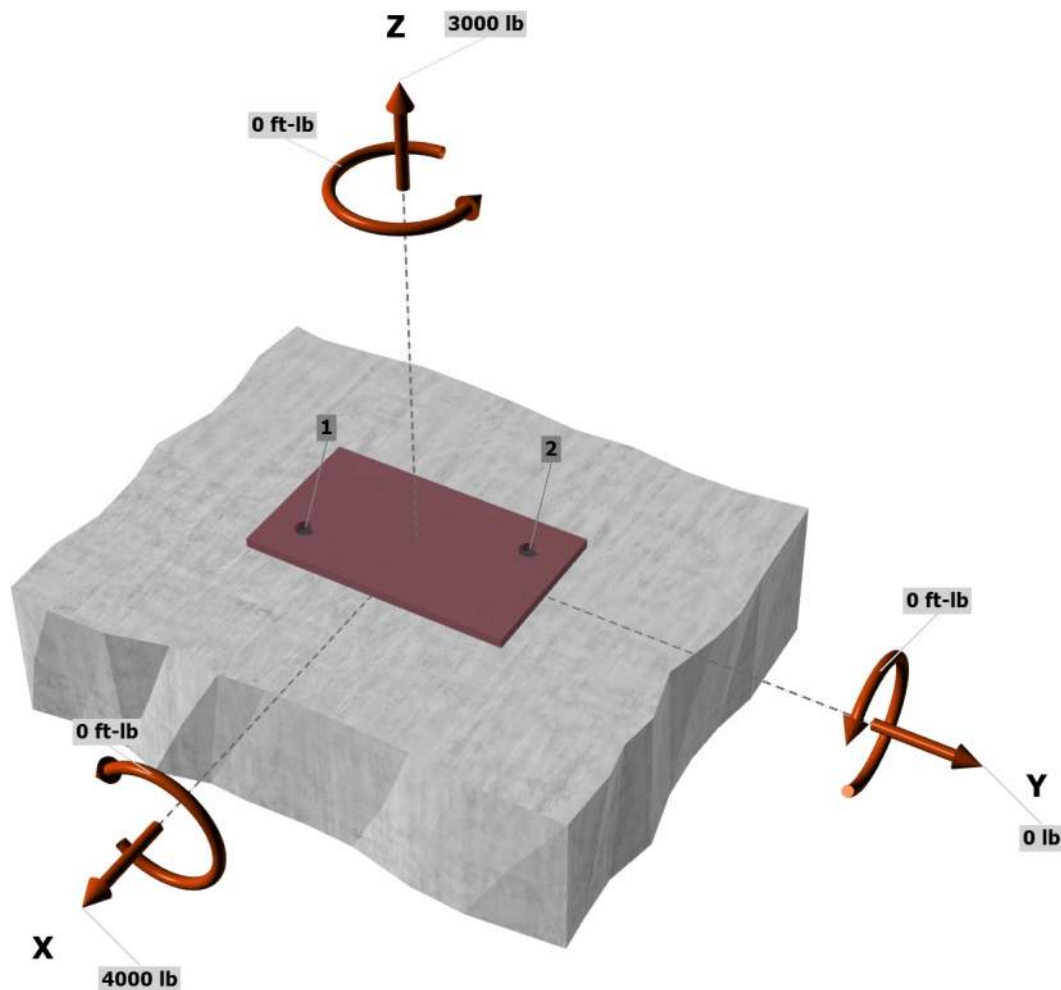
V_{uay} [lb]: 0

M_{ux} [ft-lb]: 0

M_{uy} [ft-lb]: 0

M_{uz} [ft-lb]: 0

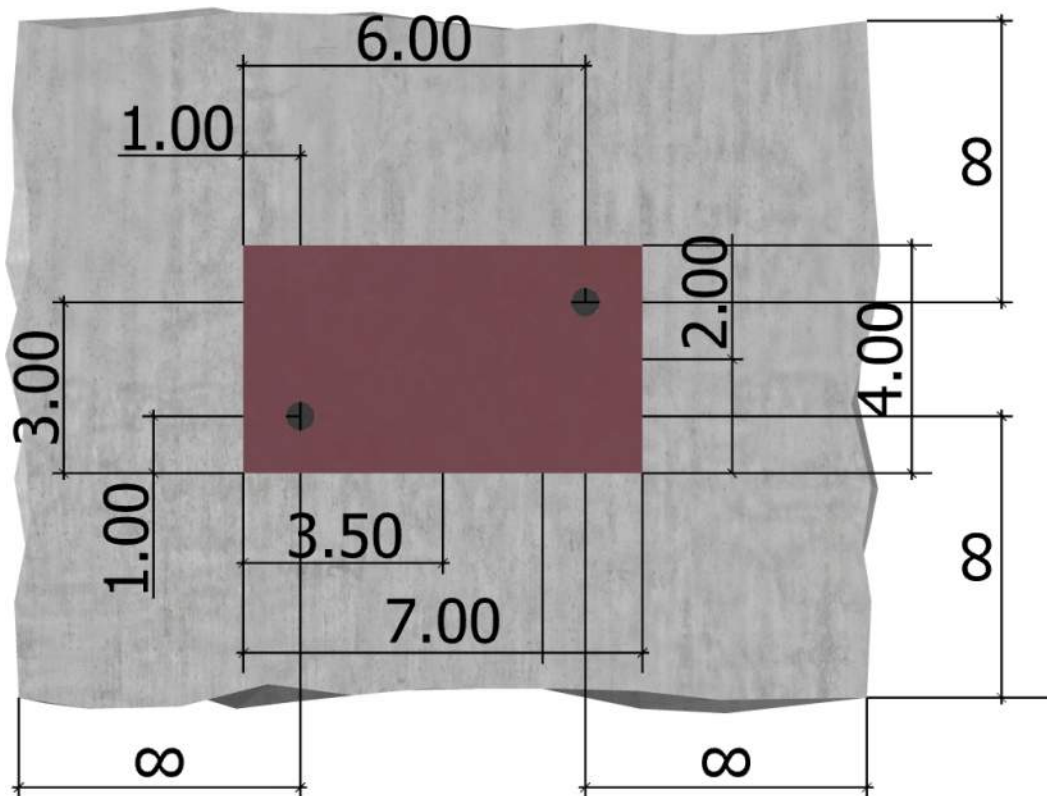
<Figure 1>



Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

Simpson Strong-Tie Company Inc. 5956 W. Las Positas Boulevard Pleasanton, CA 94588 Phone: 925.560.9000 Fax: 925.847.3871 www.strongtie.com

<Figure 2>

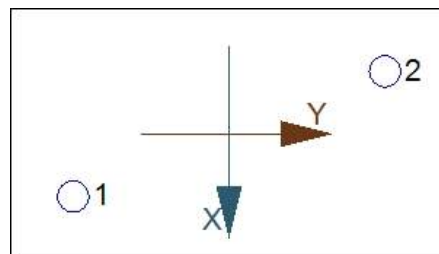


3. Resulting Anchor Forces

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	1500.0	2000.0	0.0	2000.0
2	1500.0	2000.0	0.0	2000.0
Sum	3000.0	4000.0	0.0	4000.0

Maximum concrete compression strain (‰): 0.00
Maximum concrete compression stress (psi): 0
Resultant tension force (lb): 3000
Resultant compression force (lb): 0
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00
Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00
Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>





**Anchor Designer™ for
Concrete Software**
Version 3.3.2404.1

Company:	Peak Thrills Engineering	Date:	7/9/2024
Engineer:	Dan Peak	Page:	4/5
Project:	Panelized 2.0		
Address:	PO Box 43224, Cincinnati, OH 45243		
Phone:	513-205-0031		
E-mail:	dpeak@peakthrills.com		

4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
12100	0.75	9075

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5} \text{ (Eq. 17.6.2.2.1)}$$

k_c	λ_a	f'_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	4000	2.250	5123

$$0.75 \phi N_{cbg} = 0.75 \phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$C_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	$0.75 \phi N_{cbg}$ (lb)
82.81	45.56	-	1.000	1.000	1.00	1.000	5123	0.65	4539

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$$0.75 \phi N_{pn} = 0.75 \phi \Psi_{c,P} \lambda_a N_p (f'_c / 2,500)^n \text{ (Sec. 17.5.1.2, Eq. 17.6.3.1 & Code Report)}$$

$\Psi_{c,P}$	λ_a	N_p (lb)	f'_c (psi)	n	ϕ	$0.75 \phi N_{pn}$ (lb)
1.0	1.00	3615	4000	0.50	0.65	2229



**Anchor Designer™ for
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Version 3.3.2404.1

Company:	Peak Thrills Engineering	Date:	7/9/2024
Engineer:	Dan Peak	Page:	5/5
Project:	Panelized 2.0		
Address:	PO Box 43224, Cincinnati, OH 45243		
Phone:	513-205-0031		
E-mail:	dpeak@peakthrills.com		

8. Steel Strength of Anchor in Shear (Sec. 17.7.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
6510	1.0	0.65	4232

10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.7.3)

$\phi V_{cp} = \phi K_{cp} N_{cb} = \phi K_{cp} (A_{Nc} / A_{Nco}) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b$ (Sec. 17.5.1.2 & Eq. 17.7.3.1b)

K_{cp}	A_{Nc} (in ²)	A_{Nco} (in ²)	$\psi_{ec,N}$	$\psi_{ed,N}$	$\psi_{c,N}$	$\psi_{cp,N}$	N_b (lb)	ϕ	ϕV_{cp} (lb)
1.0	82.81	45.56	1.000	1.000	1.000	1.000	5123	0.70	6518

11. Results

Interaction of Tensile and Shear Forces (Sec. R17.8)

Tension	Factored Load, N _{ua} (lb)	Design Strength, ϕN _n (lb)	Ratio	Status	
Steel	1500	9075	0.17	Pass	
Concrete breakout	3000	4539	0.66	Pass	
Pullout	1500	2229	0.67	Pass (Governs)	
Shear	Factored Load, V _{ua} (lb)	Design Strength, ϕV _n (lb)	Ratio	Status	
Steel	2000	4232	0.47	Pass	
Pryout	4000	6518	0.61	Pass (Governs)	
Interaction check	(N _{ua} /ϕN _{ua}) ^{5/3}	(V _{ua} /ϕV _{ua}) ^{5/3}	Combined Ratio	Permissible	Status
Sec. R17.8	0.52	0.44	96.0%	1.0	Pass

1/2"Ø STB2, hnom:2.75" (70mm) meets the selected design criteria.

12. Warnings

- For irregular anchor patterns, the designer must consider sizing of base plate holes to ensure shear loads are distributed to anchors as designed.
- Per designer input, ductility requirements for tension have been determined to be satisfied – designer to verify.
- Per designer input, ductility requirements for shear have been determined to be satisfied – designer to verify.
- Designer must exercise own judgement to determine if this design is suitable.
- Refer to manufacturer's product literature for hole cleaning and installation instructions.