



1699 Cherry St. Unit B
Louisville, CO 90027
720-664-9354

DATE: 5/16/2025

AUTHOR: AMR

REVISIONS
NUMBER DATE

EB1416

GRAND JUNCTION REC
CENTER - SHOT ROCK

2836 RECREATION
WAY, GRAND
JUNCTION, CO 81506

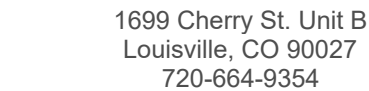
SHEET INDEX

0.0	COVER PAGE
0.1	STEEL BOM - PROFILES
0.2	STEEL BOM -GUSSETS
1.0	PROJECT OVERVIEW
2.0	BASE LAYOUT
2.1	BASE LAYOUT W/ PIPES
3.0	STEEL OVERVIEW - LEDGERS & TIEBACKS
3.1	STEEL OVERVIEW - PIPES
4.0	OSB OVERVIEW
5.0	OSB SHAPES FOR CNC
6.0	STEEL PLATES
SR2.0	SHOT ROCK 2.0 TYPICALS

COVER PAGE



0.0



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**PEAK
THRILLS**
ENGINEERING



0.1

Sticks (20ft)	Profile	Member	Length
One (1)	L4x3x0.25in-A36	L100	23 1/2"
		L101	62 1/2"
		L102	28 1/8"
		L103	23 9/16"
		L104	77 1/2"
Seven (7)	L2x2x3/13	L300	36 1/2"
		L301	46 13/16"
		L302	17 13/16"
		L303	26 5/16"
		L304	10"
		L305	21 3/4"
		L306	46 9/16"
		L307	12 11/16"
		L308	8"
		L309	62 1/8"
		L310	9"
		L311	51 11/16"
		L312	51 15/16"
		L313	56"
		L314	28 7/8"
		L315	8 1/16"
		L316	34 7/16"
		L317	37 9/16"
		L318	27 1/4"
		L319	23 7/16"
		L320	28 7/8"
		L321	11 15/16"
		L322	11 1/2"
		L323	33 3/16"
		L324	28 13/16"
		L325	22 13/16"
		L326	9"
		L327	28 1/8"
L328	41 9/16"		
PIPE-2in-SCH40		P134	36 5/8"
		P135	20 5/16"
		P136	76 7/16"
		P137	48 1/4"
		P138	47 7/8"
		P139	30 5/8"
		P140	21 15/16"
		P141	52 13/16"
		P142	36 1/4"
		P143	52 1/4"
P144	42 15/16"		

PIPE-2in-SCH40

P145	71 7/16"
P146	37 5/16"
P147	9 5/16"
P148	42 5/16"
P149	6"
P150	59 3/16"
P151	12 13/16"
P152	40 7/8"
P153	18 3/8"
P154	17 1/2"
P155	30 3/8"
P156	13 1/16"
P157	10 9/16"
P158	8 11/16"
P159	42"
P160	23 1/16"
P161	47 1/2"
P162	47 13/16"
P163	41 13/16"
P164	56 3/8"
P165	19 1/4"
P166	52 1/4"
P167	18 1/2"
P168	56 1/16"
P169	17 5/16"
P170	12 1/8"
P171	94"
P172	44 9/16"
P173	5 7/8"
P174	48 1/4"
P175	21 3/4"
P176	67 1/16"
P177	69"
P178	13 7/8"
P179	6"
P180	83 1/2"
P181	92 5/16"
P182	78 5/8"
P183	11 15/16"
P184	59 9/16"
P185	26 11/16"
P186	33 13/16"
P187	67 13/16"
P188	51 3/16"
P189	37 7/16"
P190	23 3/4"
P191	67 5/16"
P192	67 1/8"

PIPE-2in-SCH40

P193	84 15/16"
P194	6"
P195	82 3/16"
P196	103 3/16"
P197	73 9/16"
P198	47 1/4"
P199	99 1/4"
P200	14 3/16"
P201	76 1/4"
P202	106 3/16"
P203	57 9/16"
P204	31 9/16"
P205	16"
P206	40 5/8"
P207	11 1/16"
P208	41 15/16"
P209	60"
P210	38 1/16"
P211	31 3/4"
P212	87 3/8"
P213	56 1/16"
P214	36 7/16"
P215	12 13/16"
P216	91 7/8"
P217	52 15/16"

SINGLE GUSSETS

GussetNo	Pipe1	Pipe2	Angle
001	P134	P135	111.07°
002	P134	P169	82.77°
003	P134	P192	102.75°
005	P134	P212	96.93°
007	P135	P172	67.84°
008	P135	P208	99.83°
009	P135	P209	73.08°
011	P136	P139	118.80°
013	P136	P146	53.49°
014	P136	P150	33.82°
016	P136	P196	18.91°
020	P137	P149	96.66°
021	P137	P157	85.88°
023	P137	P179	83.34°
024	P137	P183	67.67°
027	P138	P184	108.61°
028	P138	P202	77.21°
029	P138	P208	82.29°
030	P138	P216	91.86°
033	P139	P160	120.28°
034	P139	P189	48.02°
035	P139	P196	42.28°
037	P140	P171	48.55°
038	P140	P180	40.53°
040	P140	P201	136.18°
041	P140	P214	141.42°
042	P141	P156	129.32°
043	P141	P200	90.00°
045	P142	P144	87.01°
046	P142	P150	50.40°
047	P142	P152	92.86°
048	P142	P189	88.33°
051	P144	P150	42.59°
055	P146	P150	92.69°
056	P146	P171	43.35°
060	P146	P214	126.69°
062	P148	P172	100.55°
063	P148	P208	96.06°
065	P149	P174	83.34°
070	P152	P210	83.20°
071	P156	P177	55.51°
072	P156	P180	137.27°
073	P156	P201	46.01°
075	P158	P162	141.42°
076	P158	P185	71.38°
078	P160	P175	75.95°
080	P160	P203	108.95°
081	P160	P205	73.08°
082	P161	P175	137.79°
084	P161	P188	44.91°

084	P161	P188	44.91°
085	P161	P203	37.30°
087	P161	P211	111.79°
088	P162	P167	107.08°
091	P164	P182	37.78°
093	P164	P197	40.46°
095	P165	P188	127.79°
098	P165	P211	75.52°
100	P167	P186	106.16°
102	P167	P204	90.66°
103	P167	P206	78.03°
104	P168	P179	88.01°
105	P168	P183	58.68°
107	P168	P194	91.99°
108	P168	P207	97.86°
109	P169	P172	98.32°
112	P170	P187	82.87°
114	P170	P191	92.75°
117	P172	P217	76.23°
118	P173	P181	87.72°
119	P173	P193	98.64°
120	P173	P202	89.60°
121	P173	P216	96.12°
122	P174	P179	96.66°
125	P175	P205	215.62°
126	P175	P207	63.71°
128	P177	P192	92.62°
129	P177	P200	85.18°
130	P177	P212	67.69°
131	P178	P184	52.00°
133	P178	P198	107.86°
134	P178	P208	117.59°
135	P178	P209	69.50°
137	P179	P213	91.99°
138	P180	P195	66.83°
139	P180	P212	97.27°
142	P181	P215	90.03°
143	P182	P184	146.89°
147	P182	P199	48.85°
148	P182	P206	54.52°
150	P183	P205	104.12°
151	P183	P210	112.72°
153	P184	P198	20.15°
155	P185	P193	116.61°
156	P185	P202	55.16°
157	P185	P206	142.10°
158	P186	P199	104.05°
159	P186	P203	117.96°
161	P186	P211	73.32°

162	P187	P190	80.43°
163	P187	P194	97.13°
164	P187	P207	56.39°
165	P188	P190	84.84°
166	P188	P207	138.34°
167	P189	P205	118.62°
168	P189	P210	95.61°
169	P191	P194	87.25°
173	P194	P213	88.01°
174	P195	P198	56.41°
175	P195	P209	122.79°
176	P195	P214	119.51°
178	P196	P199	52.16°
179	P196	P203	85.83°
181	P197	P198	118.75°
182	P197	P199	52.91°
183	P197	P214	65.32°
187	P202	P206	152.77°
190	P204	P211	89.85°
192	P209	P212	73.11°
193	P215	P216	86.13°
195	P216	P217	93.02°

DOUBLE GUSSETS

GussetNo	Pipe1	Pipe2	Include?	Angle1	Angle2
001	P143	P192	Yes	86.87°	93.13°
002	P143	P212	Yes	106.55°	73.45°
003	P145	P195	Yes	62.70°	117.30°
004	P145	P212	Yes	101.41°	78.59°
005	P147	P181	Yes	90.97°	89.03°
006	P147	P216	Yes	85.19°	94.81°
007	P148	P216	Yes	90.21°	89.79°
008	P151	P193	Yes	96.35°	83.65°
009	P151	P202	Yes	91.88°	88.12°
010	P153	P171	Yes	77.29°	102.71°
011	P153	P214	Yes	87.26°	92.74°
012	P154	P180	Yes	138.54°	41.46°
013	P154	P201	Yes	135.25°	44.75°
014	P155	P176	Yes	74.81°	105.19°
015	P155	P196	Yes	111.89°	68.11°
016	P157	P210	Yes	93.73°	* 86.27°
017	P159	P182	Yes	73.09°	106.91°
018	P159	P202	Yes	100.38°	79.62°
019	P163	P195	Yes	58.25°	121.75°
020	P163	P197	Yes	116.92°	63.08°
021	P164	P199	Yes	86.63°	93.37°
022	P166	P184	Yes	106.20°	73.80°
023	P166	P202	Yes	100.38°	79.62°
024	P176	P199	Yes	58.87°	121.13°
025	P176	P203	Yes	79.12°	100.88°



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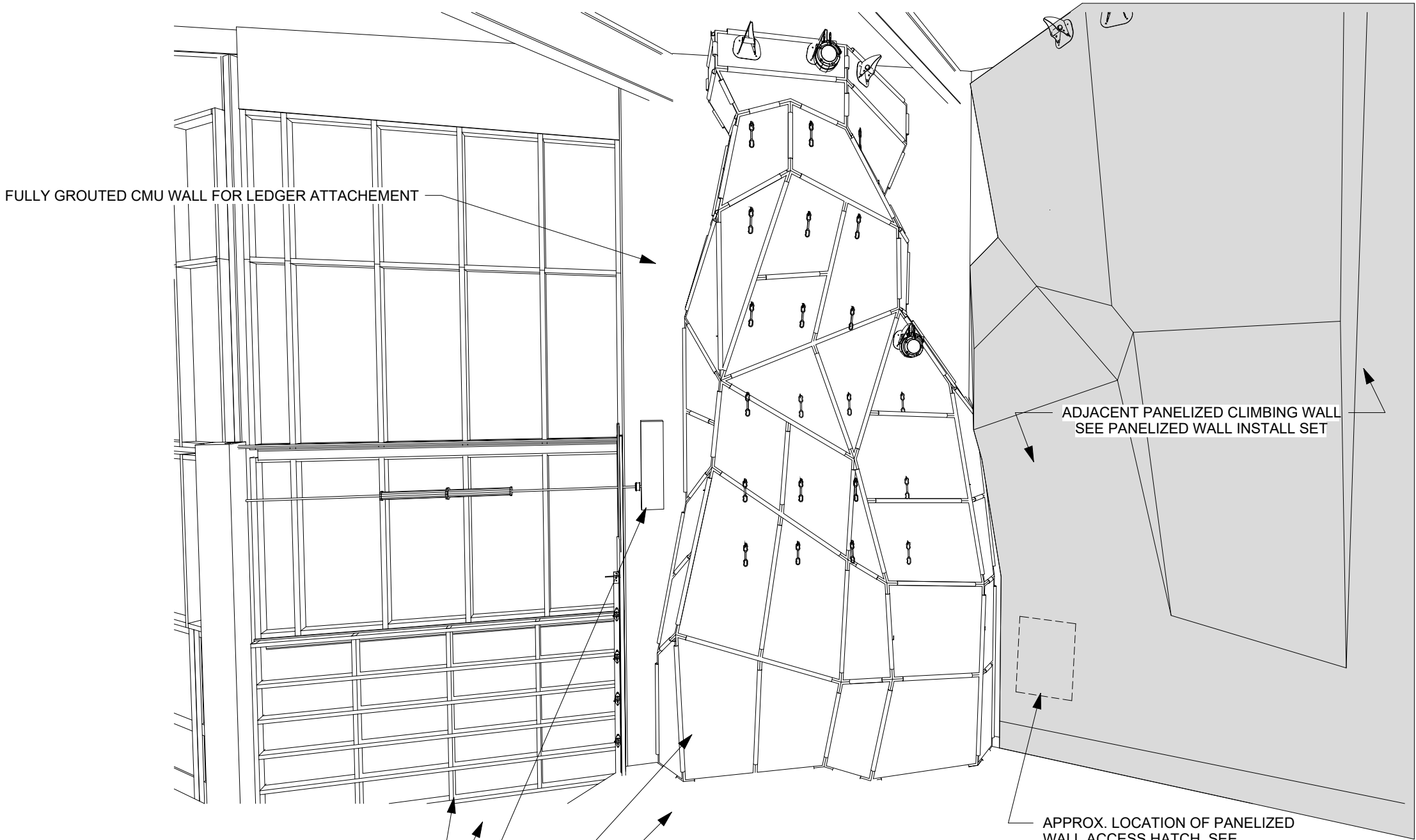
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STEEL BOM -GUSSETS



0.2



ADJACENT STOREFRONT GLAZING SYSTEM & OVERHEAD DOOR

CONC. SLAB ON GRADE FOR BASE ANCHOR ATTACHMENT

CLIMBING WALL TO BE CLEAR OF MOTOR FOR OVERHEAD DOOR

OMIT OSB ON SHAPES FOR BACK OF WALL ACCESS AS NEEDED

5.5" PROTEC FLOORING, SEE FLOORING SHEET 7.0

ITEM	QTY
BELAY BAR	4
LEAD BOLT	21

1
1.0

PROJECT OVERVIEW

- SHOT ROCK 2.0 ROPE WALL**
- 17' WIDE X 33' TALL X 6' MAX PROJECTION OFF BULDING WALL
 - 4 BELAY BARS
 - 4 LEAD LANES
 - 1 KNURLLED NUT HAND HOLD PLACEMENT PER 1 SF OF WALL
 - NO ACCESS HATCH, ACCESS VIA ADJACENT PANELIEZD WALL AND CAVITY BEYOND
 - VARIETY OF TERRAIN FOR ALL SKILL LEVELS
 - WINGATE SANDSTONE AESTHETIC TO MATCH INDEPENDENCE MONUMENT / COLORADO NATIONAL MONUMENT
 - VARIETY OF SCULPTED CRACKS & FEATURES FOR NATURAL CLIMBING ABILITY
 - 5.5" PROTEC FLOORING, CONTINUOUS W/ PANELIZED WALL



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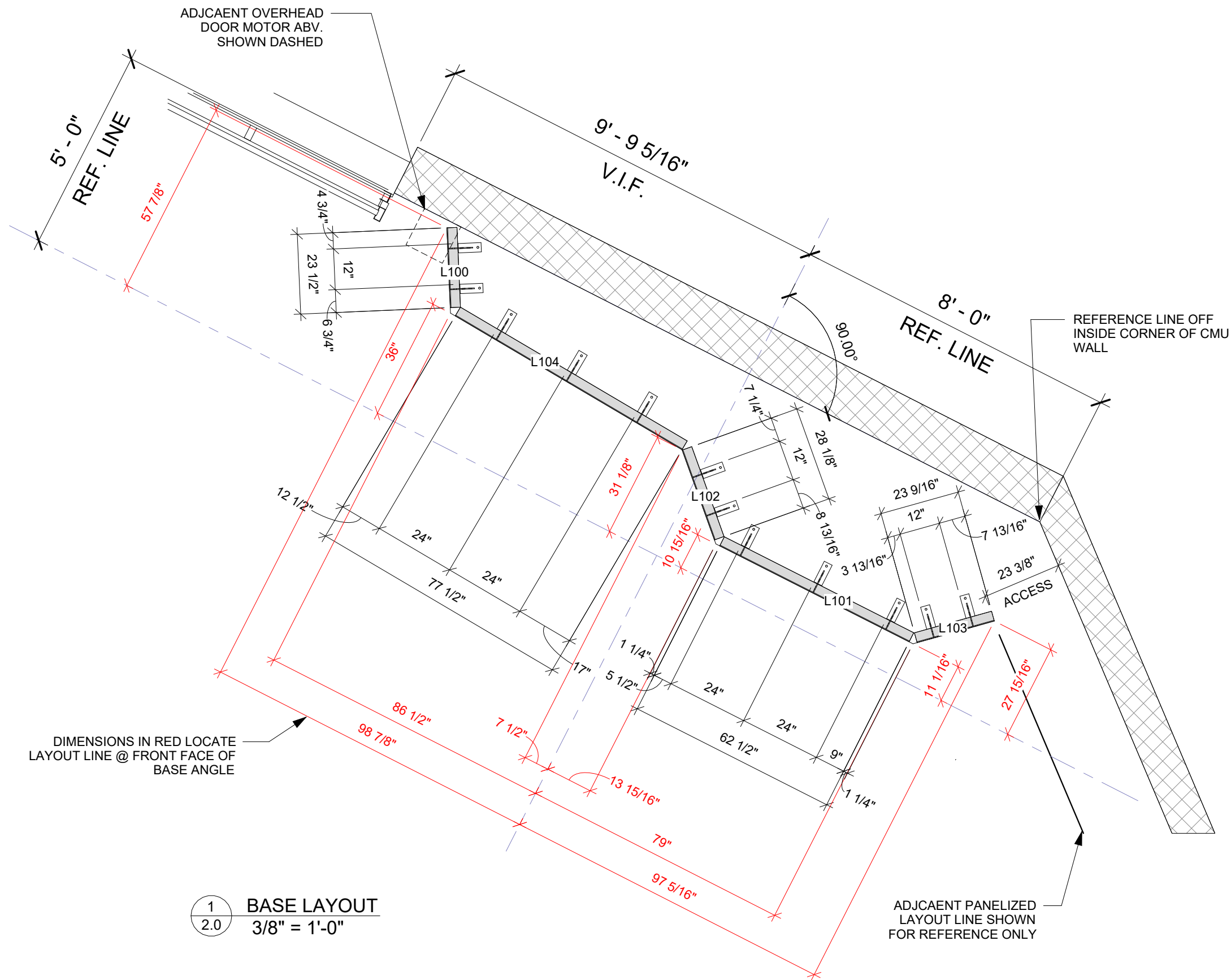
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PROJECT OVERVIEW



1.0



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BASE LAYOUT



2.0

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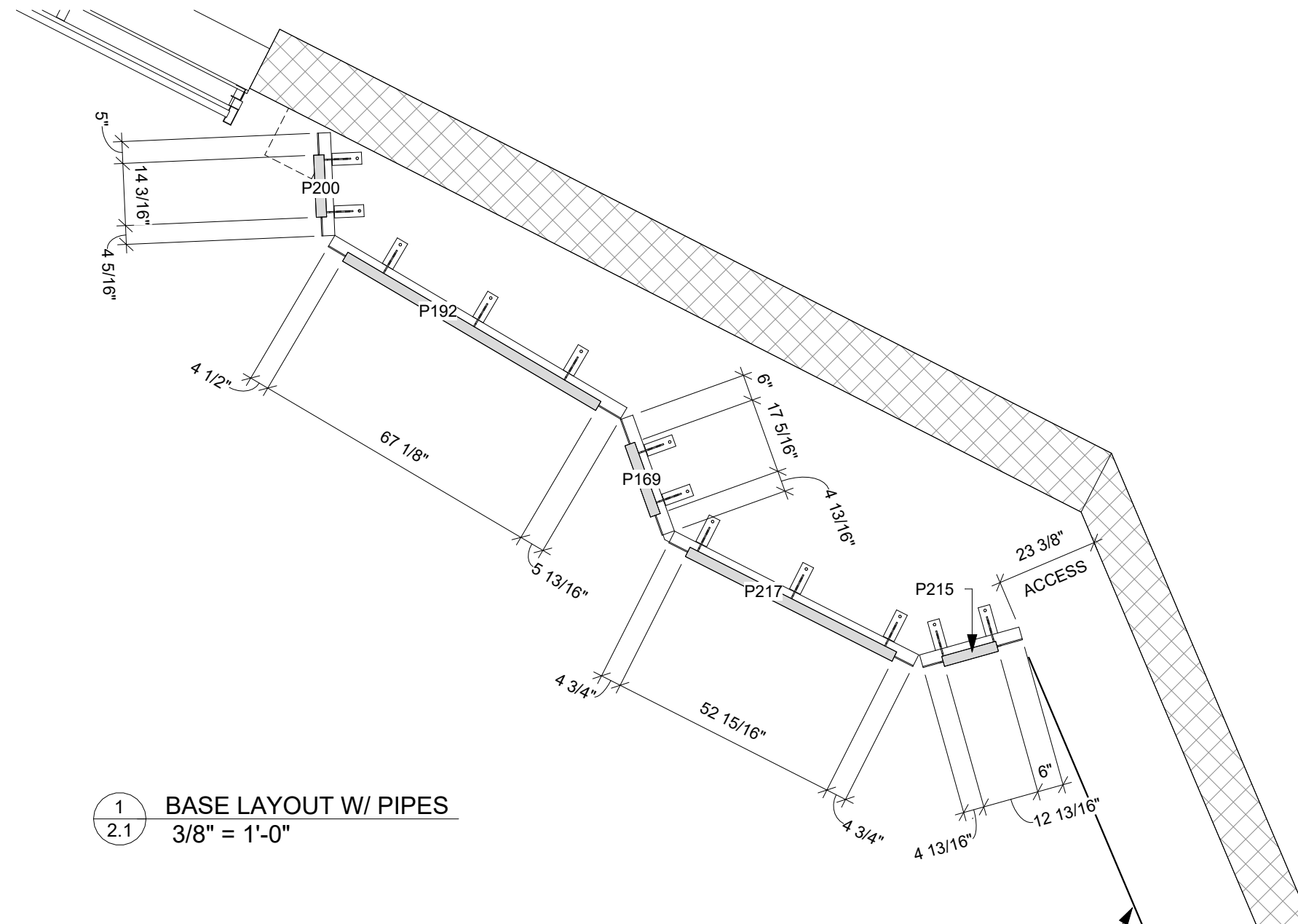
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BASE LAYOUT W/
PIPES

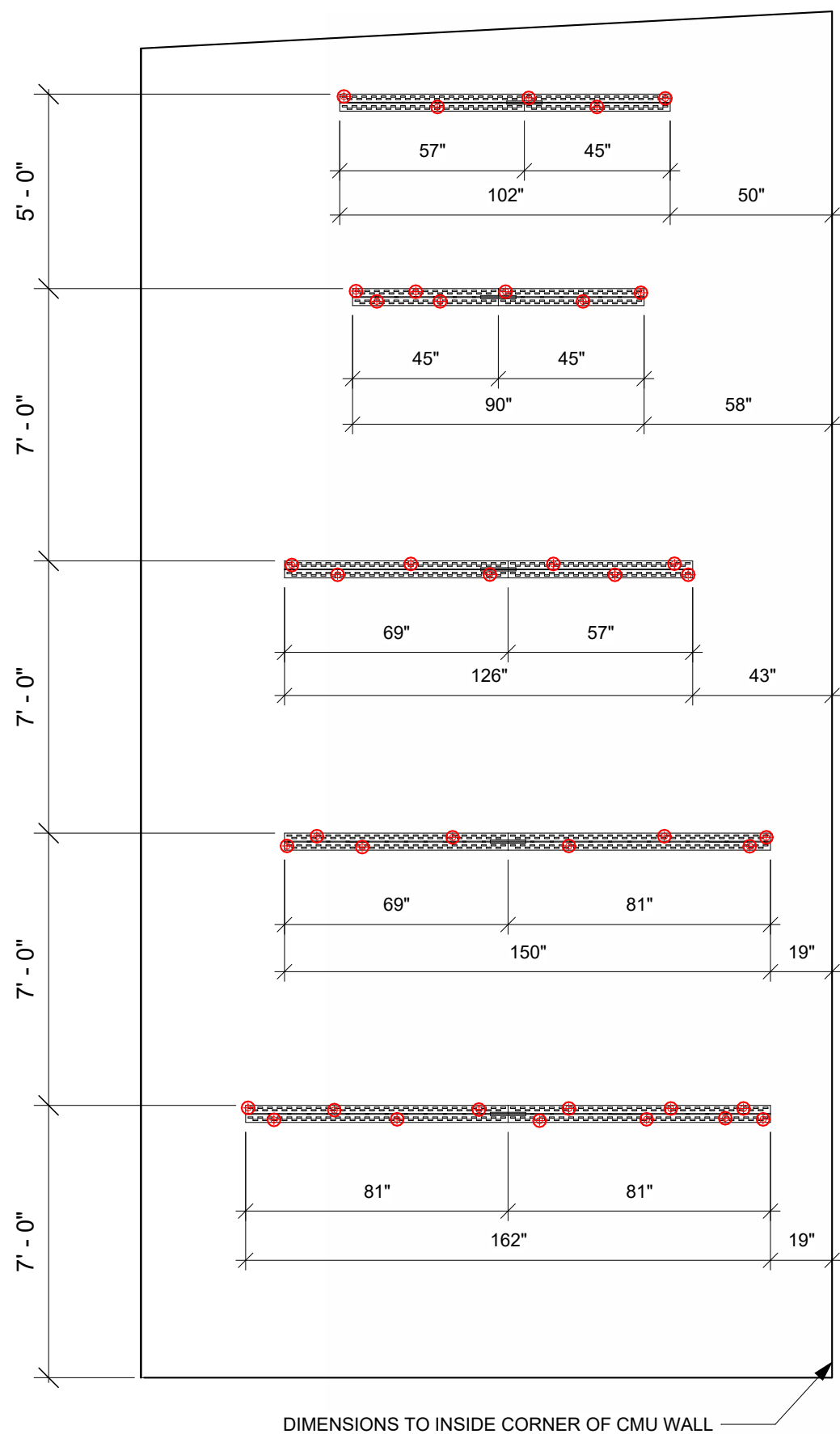


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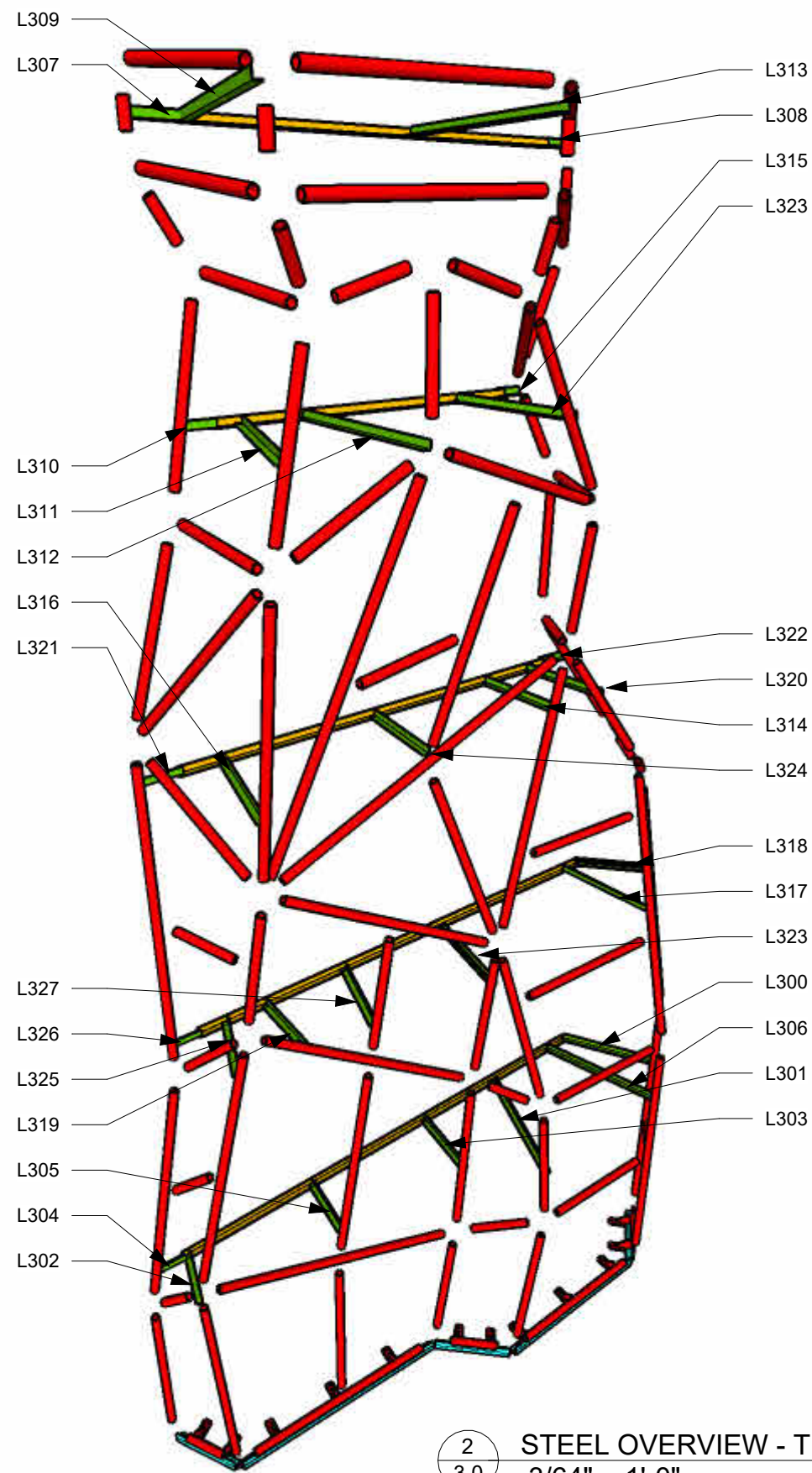
1 BASE LAYOUT W/ PIPES
2.1 3/8" = 1'-0"

Item No	PartNo	Description	QTY	Packable
1	PWS-2.0-L01	Straight Splice Plate	10	Yes
2	PWS-2.0-W04-45	Ledger - 45in	3	Yes
3	PWS-2.0-W04-57	Ledger - 57in	2	Yes
4	PWS-2.0-W04-69	Ledger - 69in	2	Yes
5	PWS-2.0-W04-81	Ledger - 81in	3	Yes
6	SR-2.0-W03	Anchor Foot	12	Yes



1
3.0 LEDGER LAYOUT
1/4" = 1'-0"

- NOTES:
- REQUIRED WALL ANCHOR LOCATIONS SHOWN IN RED
 - ANCHORS TO BE MIN. 8" APART
 - ALTERNATE ANCHORS PLACEMENTS ON TOP AND BOTTOM OF LEDGER
 - ADDITIONAL ANCHORS MAY BE PLACED FOR HANGING LEDGERS BUT NOT REQUIRED
 - TIEBACKS TO BE WELDED WITHIN 8" OF ANCHOR LOCATIONS



2
3.0 STEEL OVERVIEW - TIEBACKS
3/64" = 1'-0"

- NOTES:
- WALL LEDGERS SHOWN YELLOW
 - L2X2X3/16 TIEBACKS SHOWN GREEN
 - 2" SCH.40 PIPE SHOWN RED



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STEEL OVERVIEW -
LEDGERS & TIEBACKS



3.0



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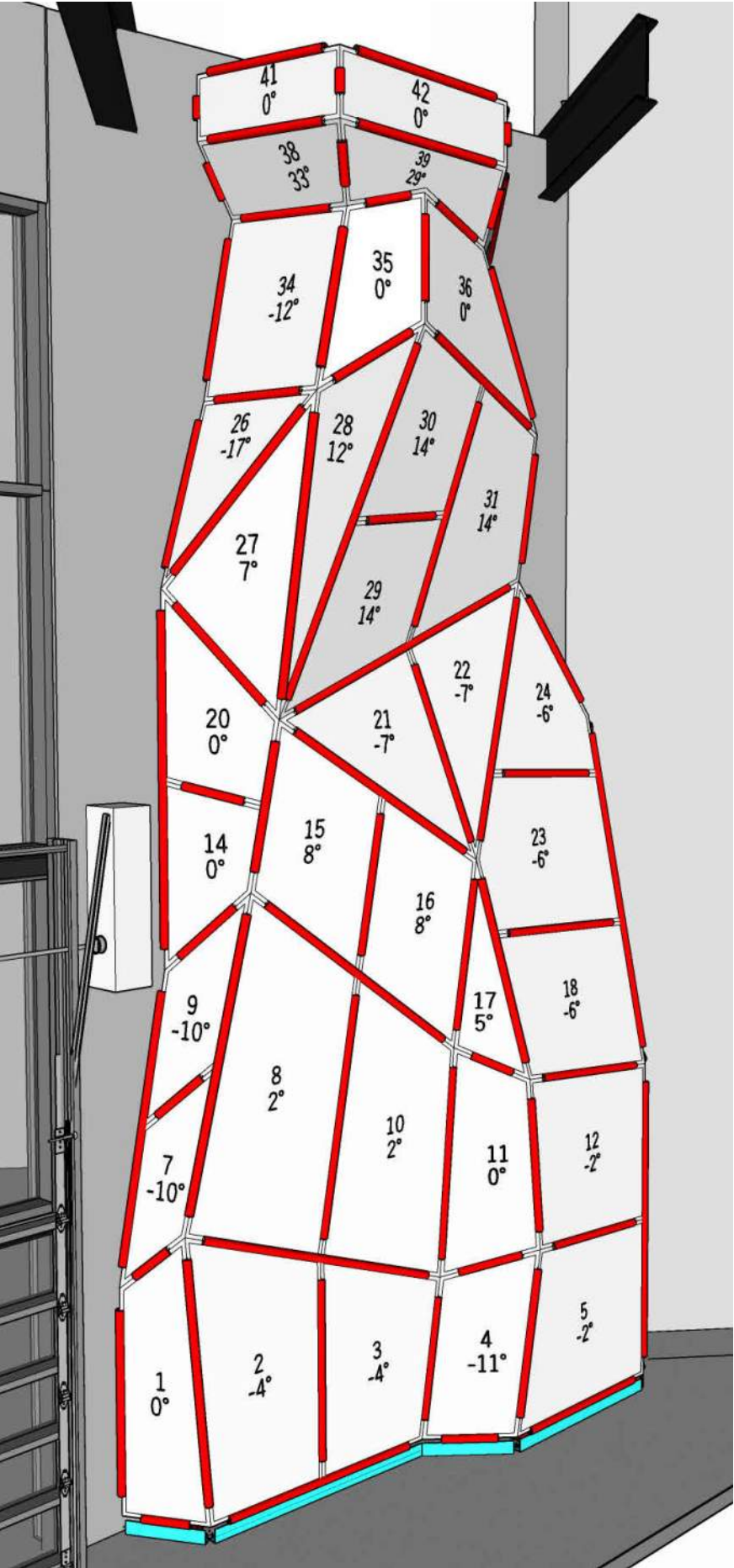
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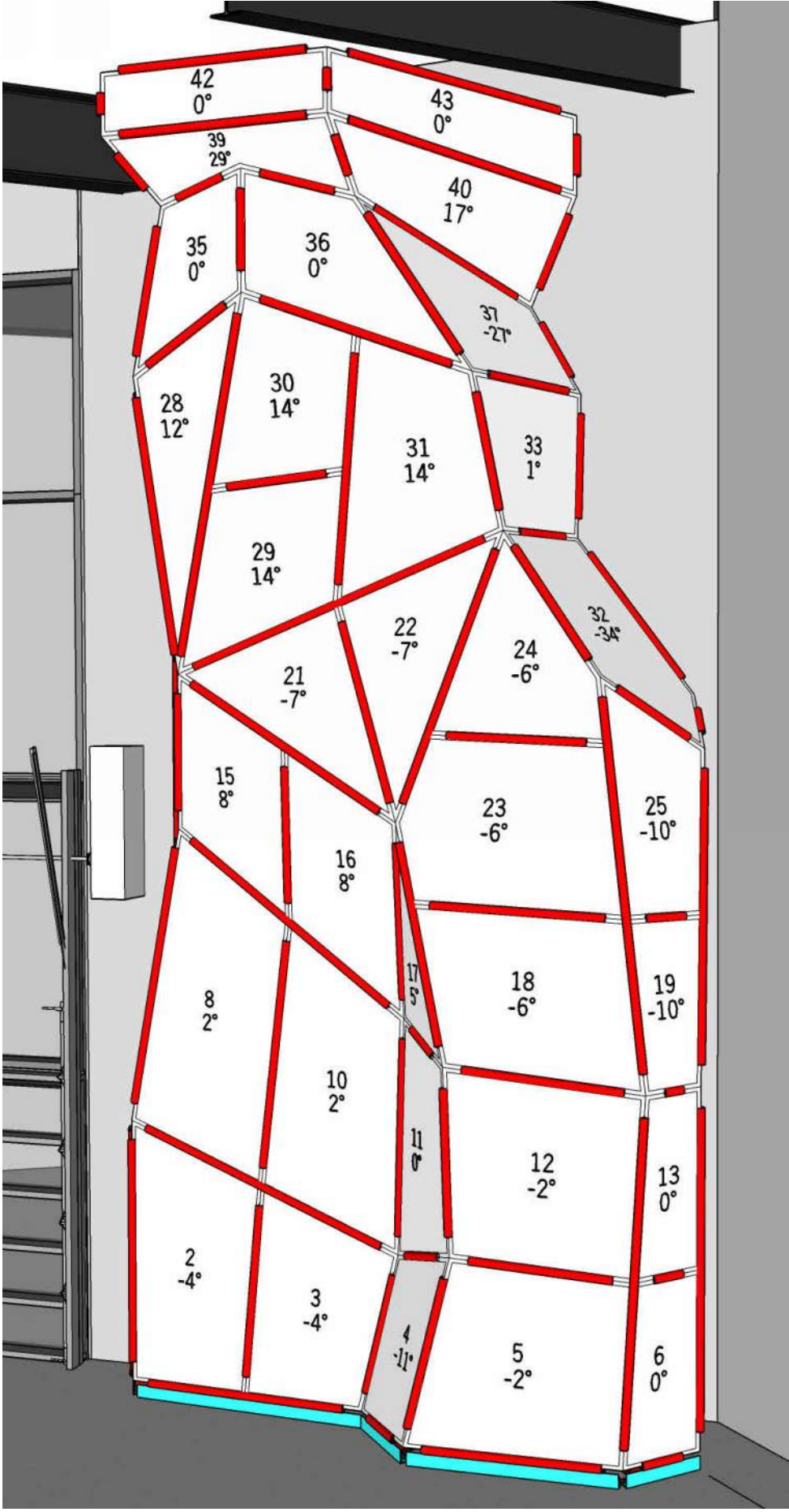
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STEEL OVERVIEW - PIPES





1 OSB OVERVIEW 1 OF 2
4.0



2 OSB OVERVIEW 2 OF 2
4.0

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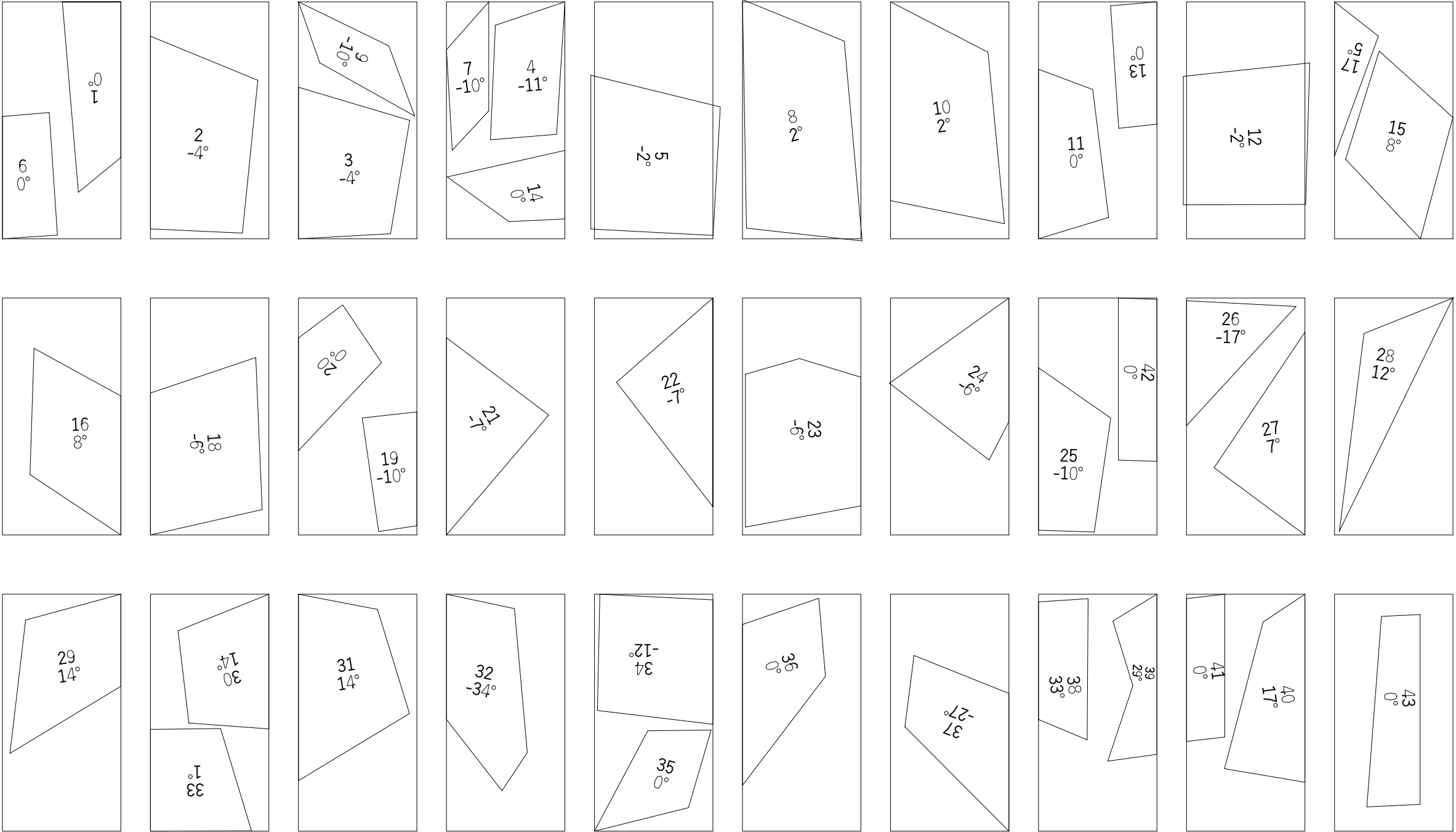
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OSB OVERVIEW





1
5.0

OSB CNC OVERVIEW

- NOTES:
- QTY: 30 SHEETS OF OSB
 - SHAPES 5 & 12 OVERSIZED, OK TO CUT
 - NO BASE SHAPES ON CUSTOM WALLS



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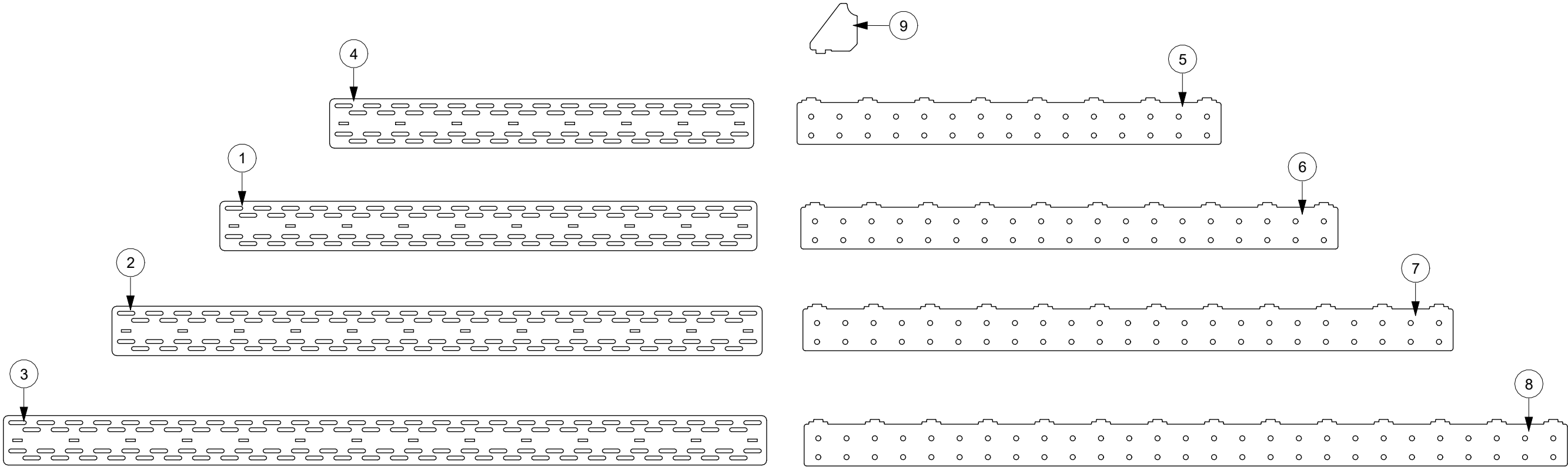
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OSB SHAPES FOR CNC

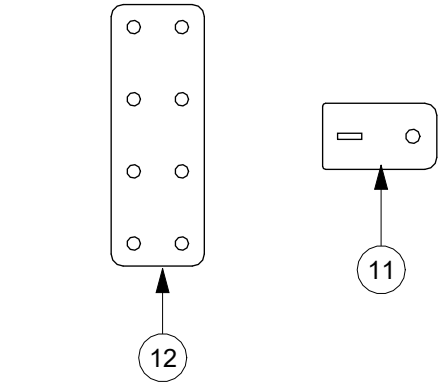


5.0



1
6.0 Plates 1/4"

ItemNo	PartNo	Description	Qty	Material	Thickness
1/4" PLATES					
1	PWS-2.0-L12-57	Ledger Plate One - 57in	2	ASTM A36 Steel	0.25
2	PWS-2.0-L12-69	Ledger Plate One - 69in	2	ASTM A36 Steel	0.25
3	PWS-2.0-L12-81	Ledger Plate One - 81in	3	ASTM A36 Steel	0.25
4	PWS-2.0-L12-45	Ledger Plate One - 45in	3	ASTM A36 Steel	0.25
5	PWS-2.0-L13-45	Ledger Plate Two - 45in	3	ASTM A36 Steel	0.25
6	PWS-2.0-L13-57	Ledger Plate Two - 57in	2	ASTM A36 Steel	0.25
7	PWS-2.0-L13-69	Ledger Plate Two - 69in	2	ASTM A36 Steel	0.25
8	PWS-2.0-L13-81	Ledger Plate Two - 81in	3	ASTM A36 Steel	0.25
9	SR-2.0-L02	Anchor Gusset	12	ASTM A36 Steel	0.25
3/8" PLATES					
11	SR-2.0-L04	Baseplate	12	ASTM A572 Grade 50 Steel	0.375
12	PWS-2.0-L01	Straight Splice Plate	10	ASTM A572 Grade 50 Steel	0.375



2
6.0 Plates 3/8"



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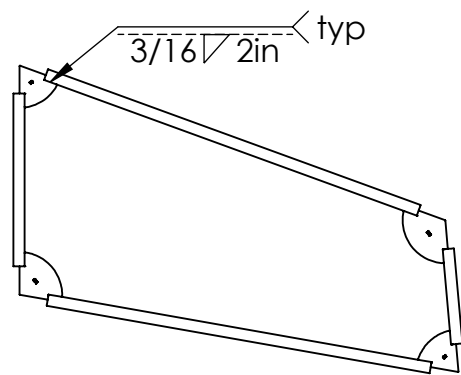
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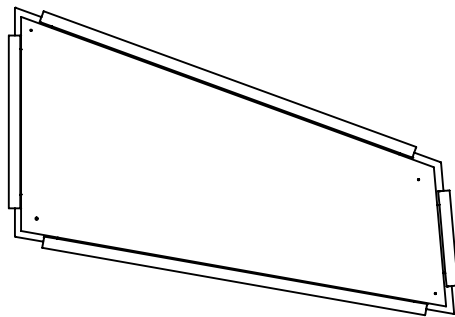
STEEL PLATES



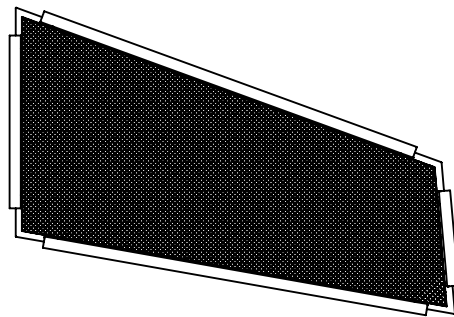
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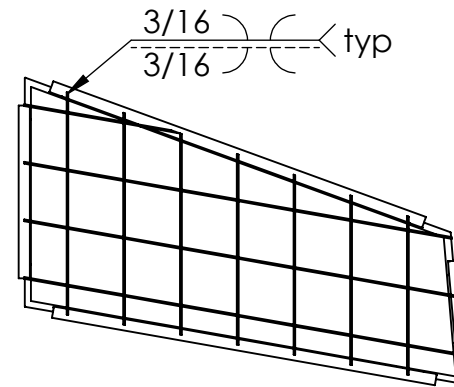
Step 1
Welding
Pipes and Gussets



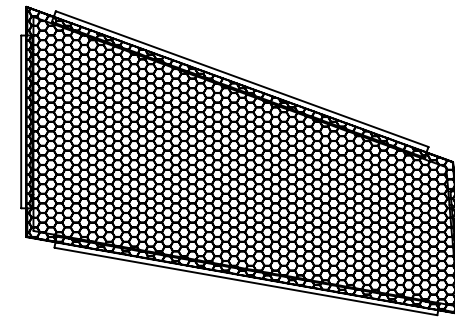
Step 2
Nailing (or Screwing)
Shape to Gussets



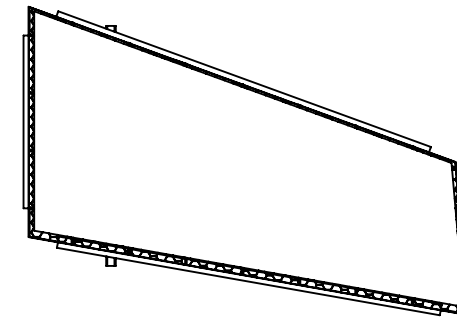
Step 3
Stapling
Lath to Shape
(if not already done)



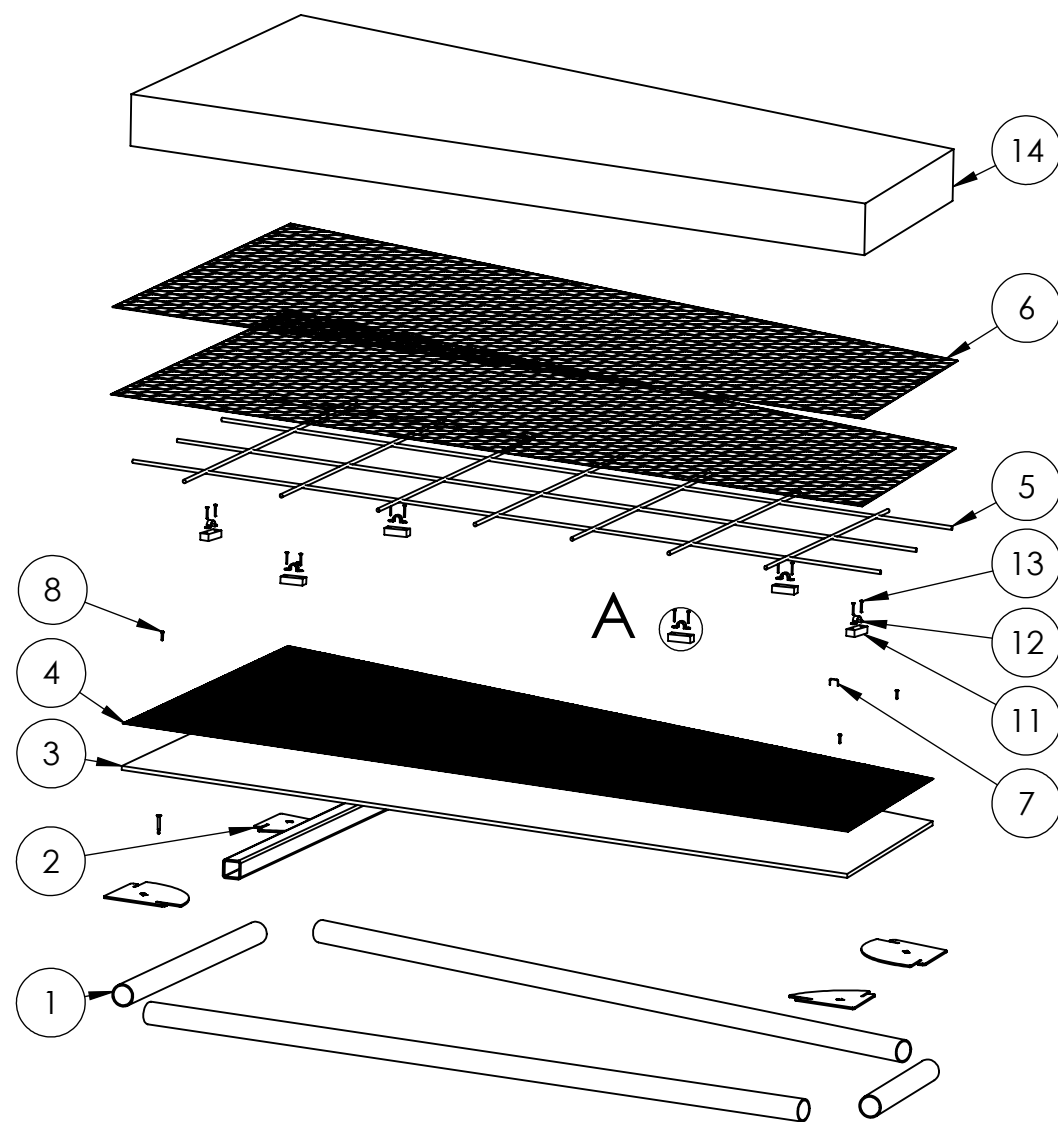
Step 4
Welding
Rebar to Pipes and Rebar



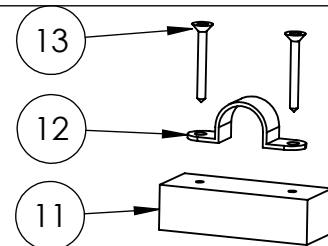
Step 5
Stapling
Poultry Netting (x2) to Shapes



Step 6
Concreting
Scratch Coat + Texture Coat



ItemNo	PartNo	DESCRIPTION	QTY
1	MAT-STL-005-2.375-0.154-A53GrB	Steel Pipe - 2in - Schedule 40 - A53 Grade B	4
2	SR-2.0-L01	Single Gusset	4
3	SR-2.0-C01	Typical Shape	1
4	4113145	Metal Lath - Galvanized	1
5	MAT-STL-RB-3-A706Gr60	Rebar - #3 - Carbon Steel - A706 Grade 60 (or better)	11
6	NB20-4X150M1	Poultry Netting - 20 Gauge - 1in Mesh	2
7		Spot Nail - 16 Gauge - Galvanized - Wide Crown - 1in Wide - 0.625in Leg	AR
8	237346	Hilti Nail - X-U MX Steel and Concrete Nails - Collated	4
9	50353	Hilti Powder Cartridge - 6.8/11 M10 - 27 Caliber - Red	4
10	14N200UFTZ	Self Drilling Screw - #14 x 2in Long - Flat Head - Tamper Resistant T25 Torx Drive - Zinc Plated	4
11	SR-2.0-C02	Rebar Block	6
12	751300010038	Pipe Hanger Strap - 0.5in - Galvanized	6
13	GRK00091	GRK Screw - R4 - #9 x 1.25in Long - Zinc Yellow	8
14	n/a	Concrete (Scratch Coat + Texture Coat)	1
22	MAT-STL-007-2-2-0.1875-A500GrB-50	Steel Square Tube - 2in x 2in x 0.1875in - A500 Grade B Steel - 50in Long	1



DETAIL A
SCALE 1 : 3

Use to affix shapes to
rebar mid-shape or
along any long
unspported edges



Unless otherwise specified:
Dimensions are in inches
Surface finish:
Intermittent

FINISH:

Scratch Coat: 2-3in
Texture Coat: 1-3in

Deburr and
break sharp
edges (if
applicable)

DO NOT SCALE DRAWING

REVISION B

DATE
4/22/2024

MATERIAL:
As Noted

WEIGHT: 286.293184

TITLE:

Typical Shape

DWG NO.

SR-2.0-A02

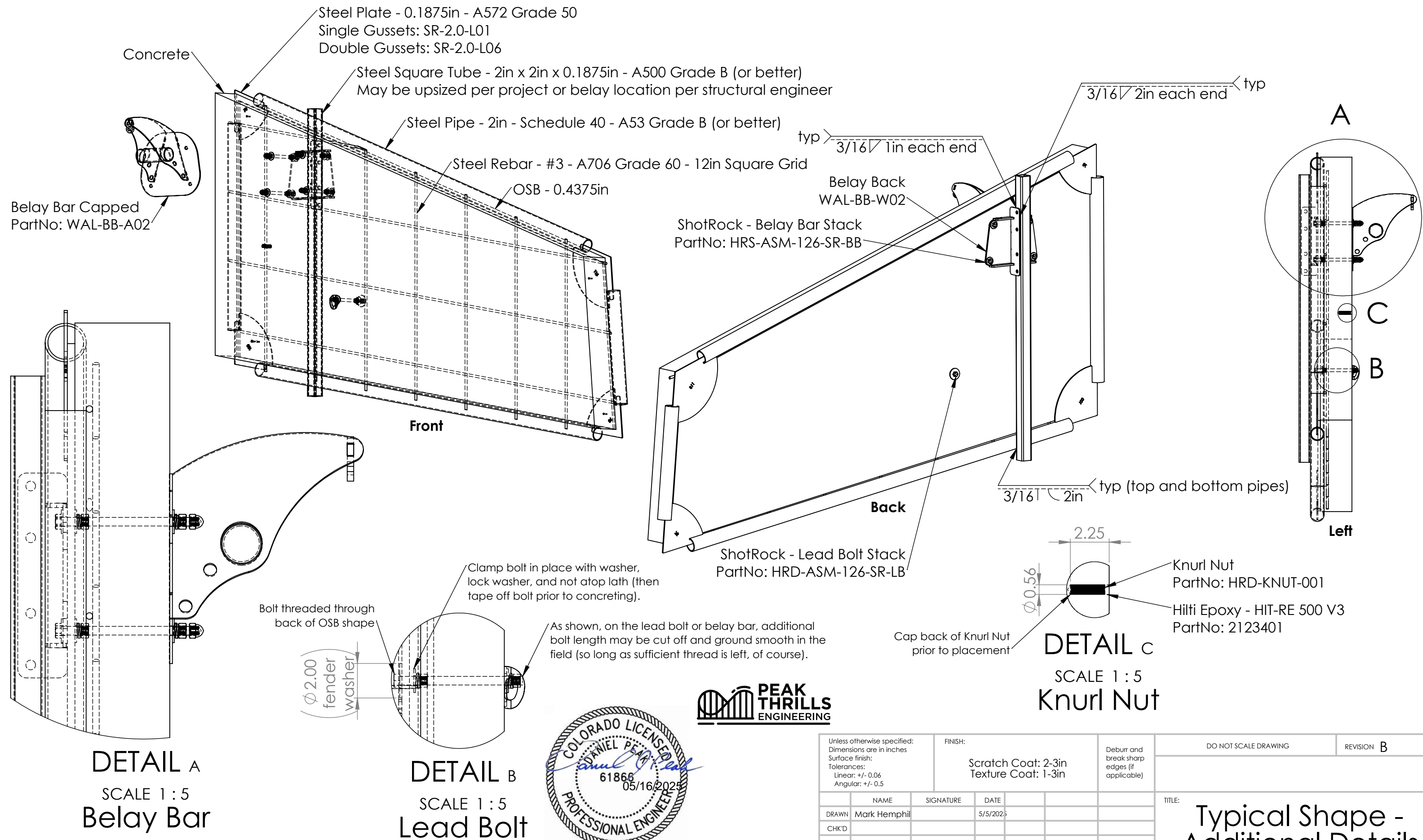
B

SCALE: 1:40

SHEET 1 OF 2

Notes:

- Any and all hardware specified above is nonstructural and may be substituted as desired with another item (e.g. to address availability, lead time, efficiency, etc.)
- Item 3 (OSB shape) is intended to be affixed to item 2 (Gusset) with either items 8 and 9, or item 10, or any other substitute fastener(s) if/as needed.

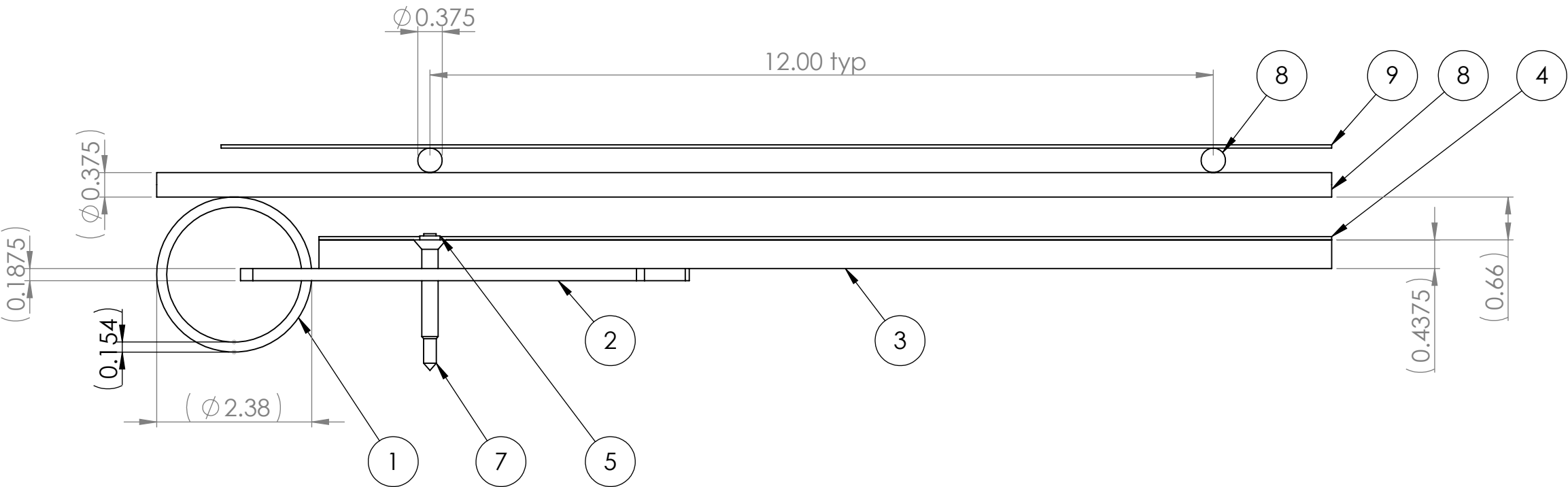


Notes:

1. Not pictured here are the lath (stapled atop the OSB) or the double layer of poultry netting (placed atop the rebar, also stapled to the OSB). See sheet 1 for the full details associated with the shapes themselves. This drawing speaks specifically to the two belay conditions (Belay Bars and Lead Bolts) and the Knurl Nuts (which receive holds).

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: Scratch Coat: 2-3in Texture Coat: 1-3in		Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION B
DRAWN	Mark Hemphil		DATE	5/5/2025		TITLE: Typical Shape - Additional Details	
CHK'D							
APPV'D							
MFG							
Q.A							
			MATERIAL: As Noted			DWG NO. SR-2.0-A02	B
			WEIGHT: 286.293184			SCALE: 1:15	SHEET 2 OF 2

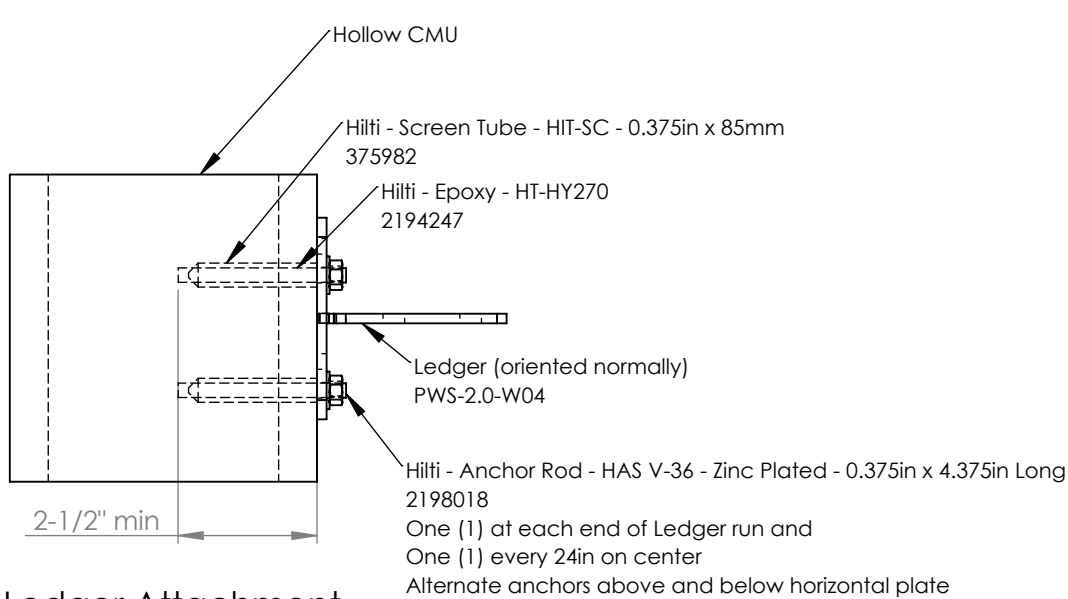
ITEM NO.	PartNo	DESCRIPTION	QTY Shown
1	MAT-STL-005-2.375-0.154-A53GrB	Steel Pipe - 2in - Schedule 40 - A53 Grade B	1
2	SR-2.0-L01	Single Gusset	1
3	SR-2.0-C01	Typical Shape	1
4	4113145	Metal Lath - Galvanized	1
5	237346	Hilti Nail - X-U MX Steel and Concrete Nails - Collated	1
6	50353	Hilti Powder Cartridge - 6.8/11 M10 - 27 Caliber - Red	1
7	14N200UFTZ	Self Drilling Screw - #14 x 2in Long - Flat Head - Tamper Resistant T25 Torx Drive - Zinc Plated	1
8	MAT-STL-RB-3-A706Gr60	Rebar - #3 - Carbon Steel - A706 Grade 60 (or better)	3
9	NB20-4X150M1	Poultry Netting - 20 Gauge - 1in Mesh	2



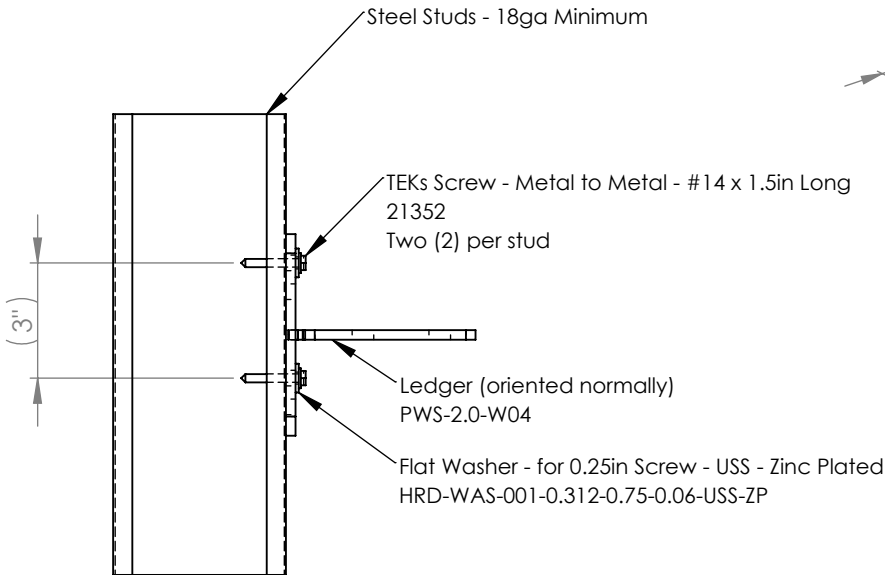
Notes:
1. Items 5 and 6, or 7 alone, or any other fastener may suffice to initially affix item 3 (any given OSB shape) to item 2 (any given gusset).

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											
DRAWN			Mark Hemphil			SIGNATURE			DATE			2/18/2025			TITLE: Typical Section								
CHK'D																							
APPV'D																							
MFG																							
Q.A																							
									MATERIAL:			As Noted			DWG NO.			SR-2.0-A03			B		
															WEIGHT:			SCALE: 1:2			SHEET 1 OF 1		

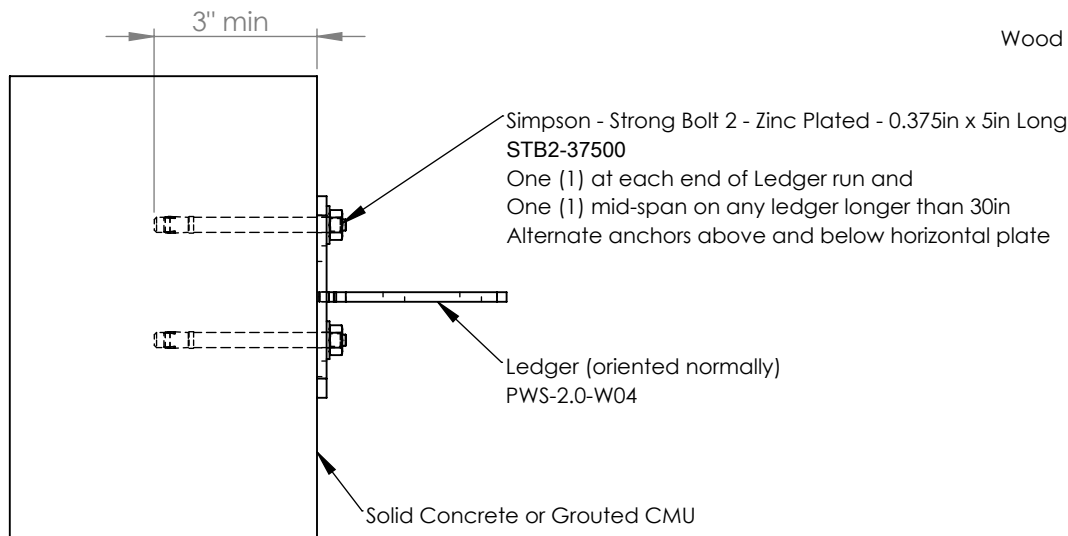
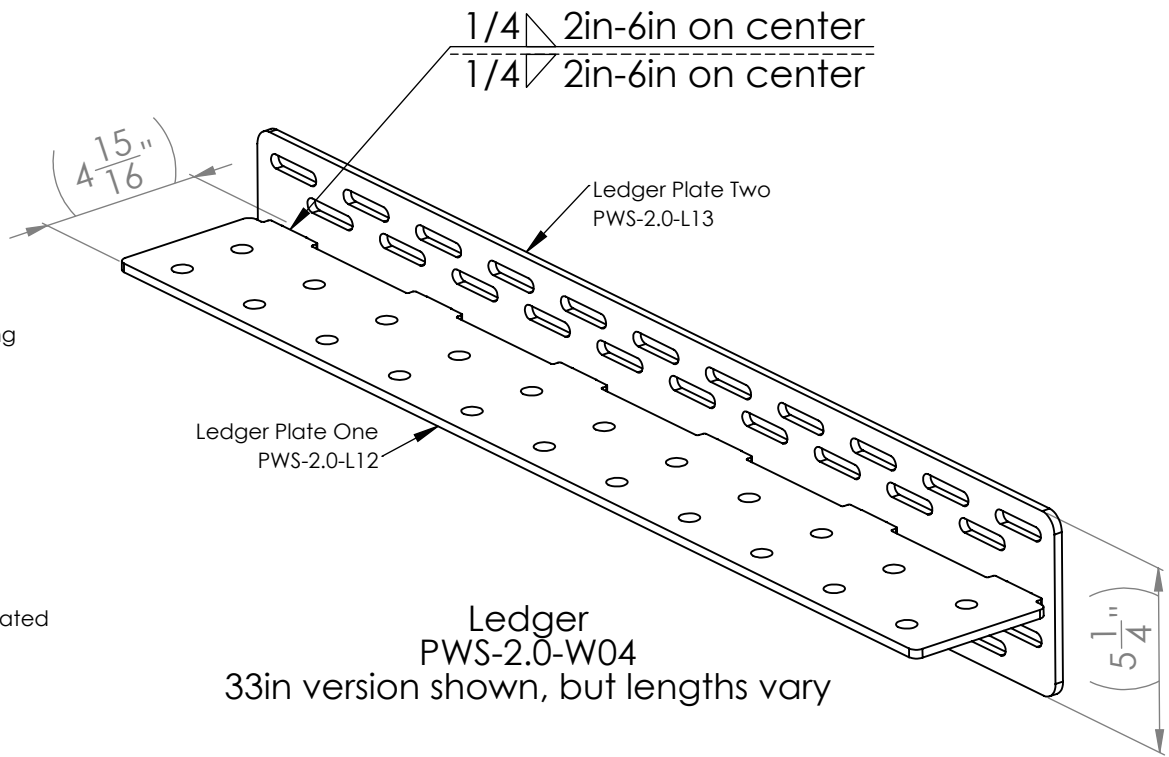
Ledger Spacing: 96in max



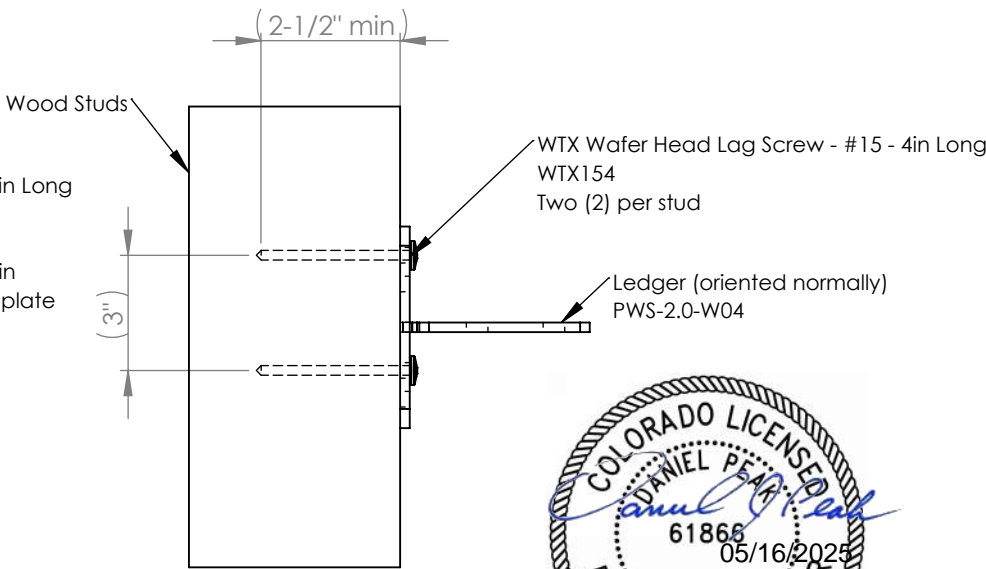
Ledger Attachment to Hollow CMU



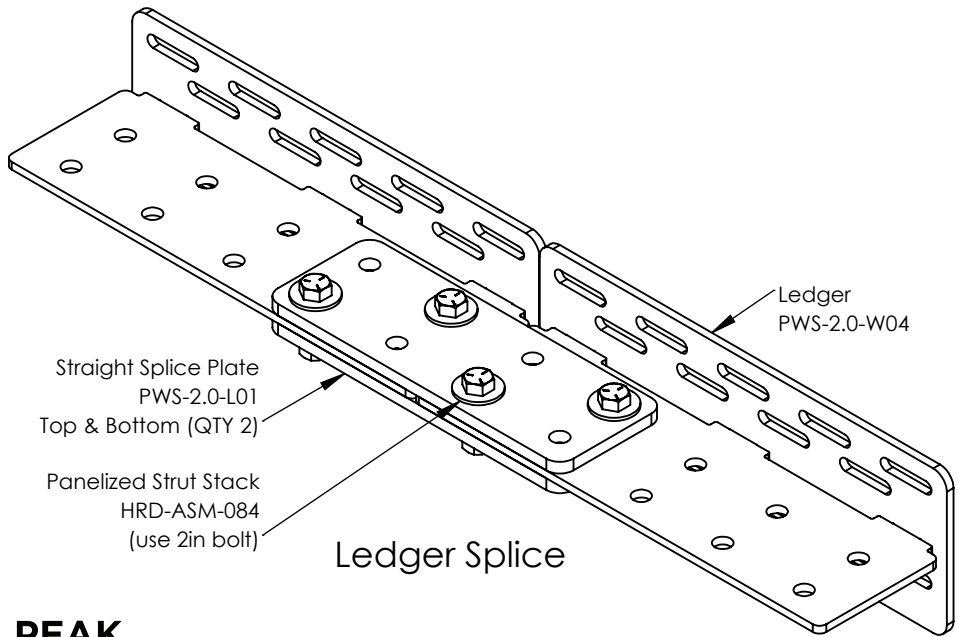
Ledger Attachment to Front of Steel Studs



Ledger Attachment to Solid Concrete or Grouted CMU



Ledger Attachment to Front of Wood Studs



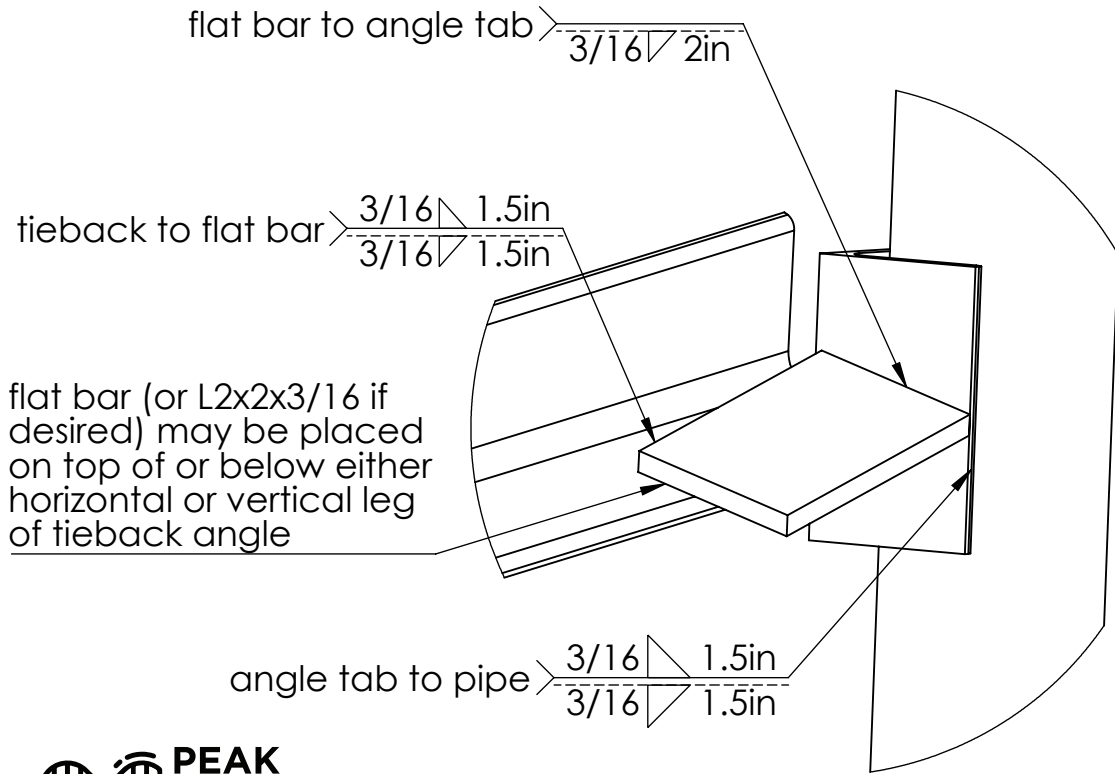
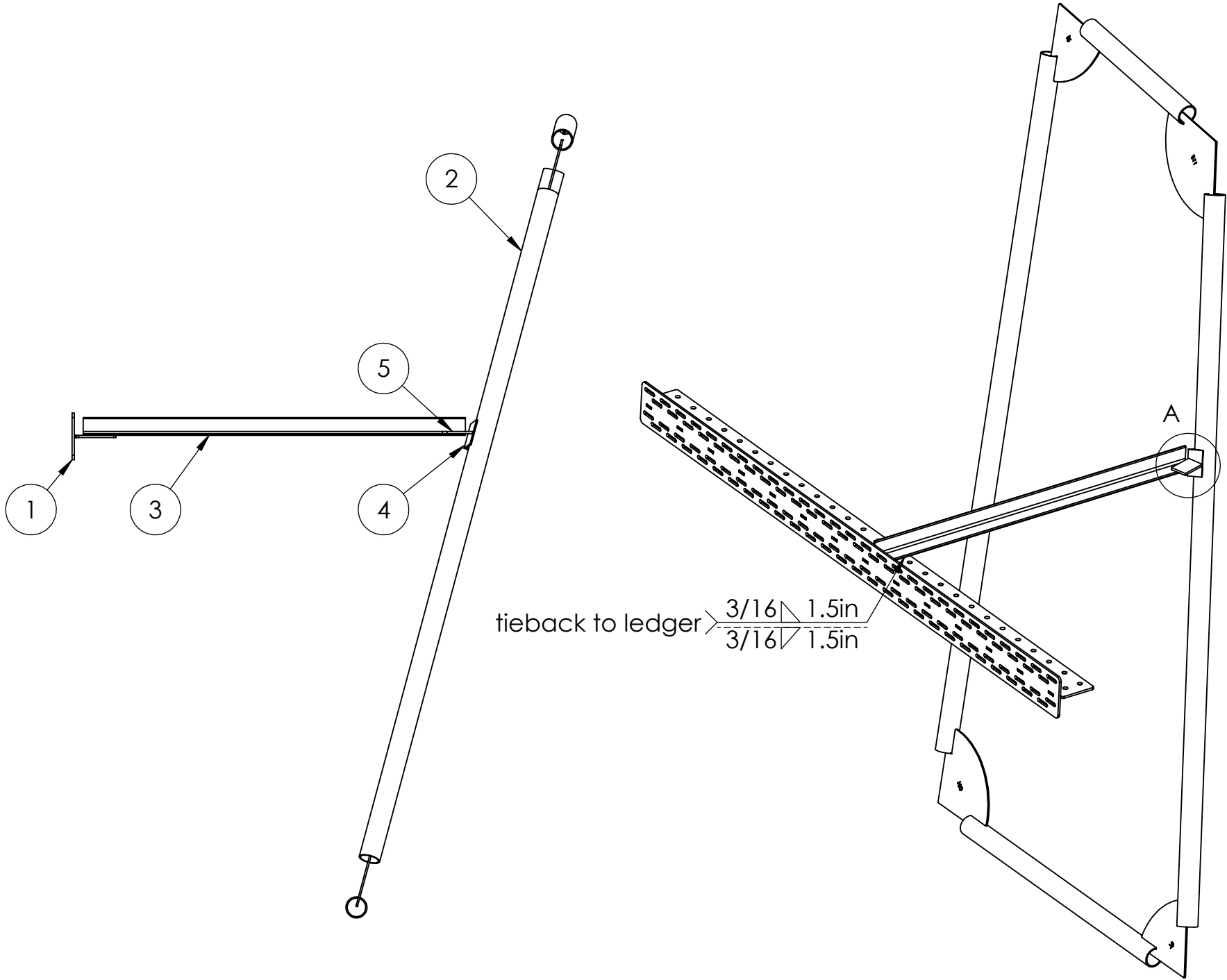
Notes:

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 A		
									<div>TITLE:</div> <div>ShotRock 2.0 - Typical Ledgers - Indoor</div>					
NAME		SIGNATURE		DATE										
DRAWN	Mark Hemphill			4/12/2023										
CHK'D														
APPV'D														
MFG														
Q.A						MATERIAL:			DWG NO.			SR-2.0-A04-I		B
						WEIGHT: 221.632622			SCALE: 1:5			SHEET 1 OF 1		

- Notes:
1. Connection from tieback to pipe can be direct (if a clean weld is possible), or facilitated via one or more clips or tabs (either 0.25in A36 flat bar / plate as shown, or with 2in x 2in x 0.1875in angle iron).
 2. Tiebacks spacing and placement determined per project by structural engineer.

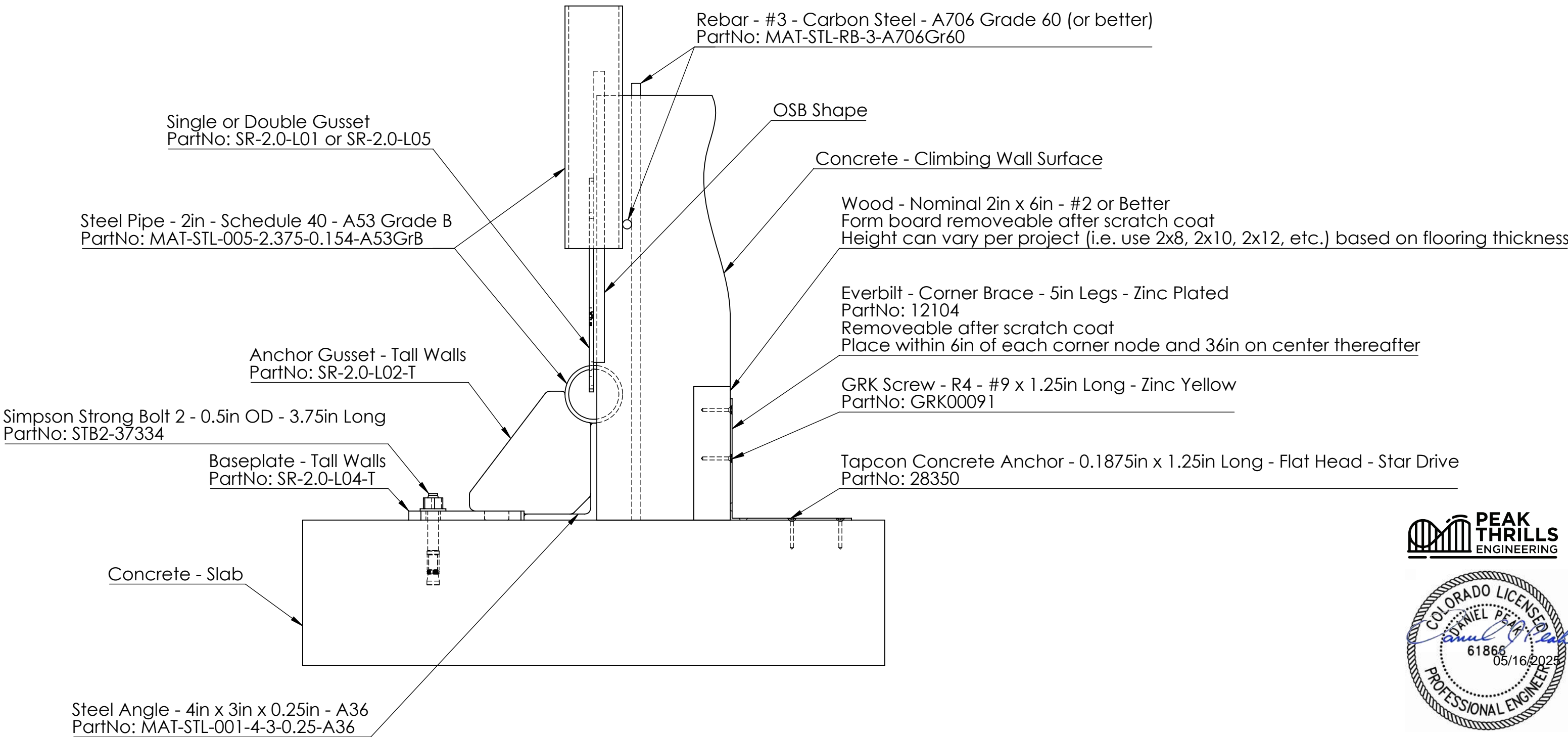


DETAIL A
SCALE 1 : 2



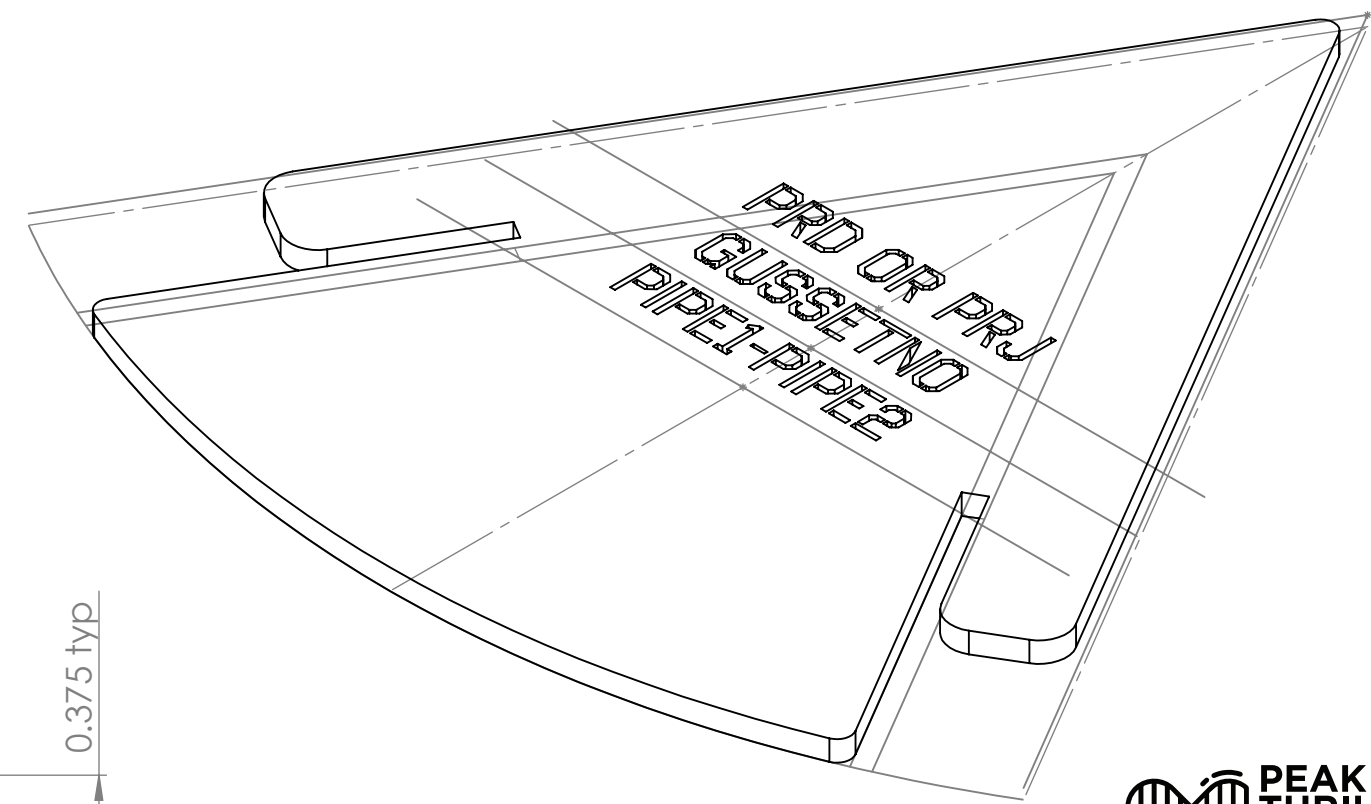
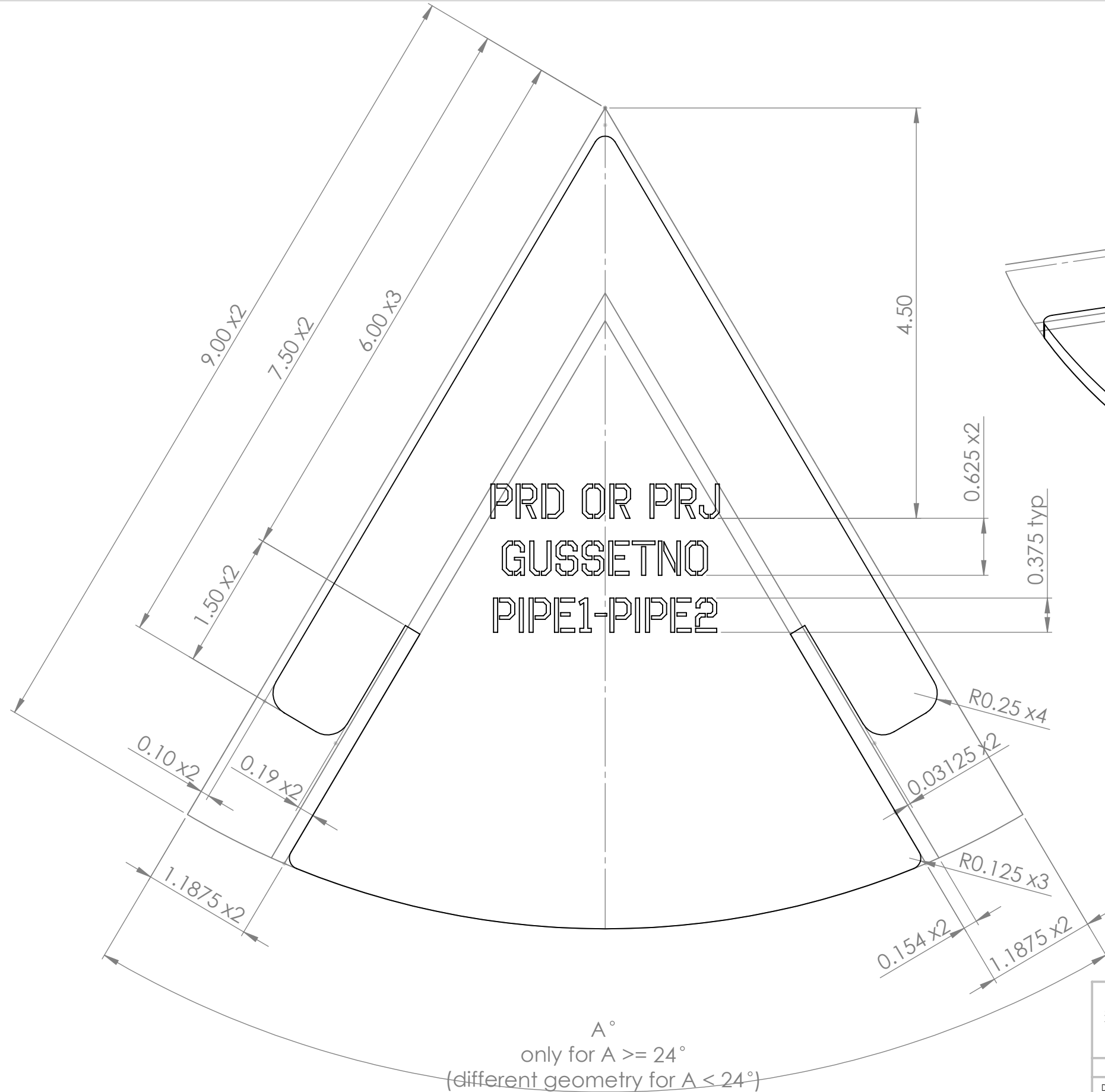
ITEM NO.	PartNo	DESCRIPTION	QTY.
1	PWS-2.0-W04	Ledger	1
2	SR-2.0-A02	Typical Shape	1
3	MAT-STL-001-2-2-0.1875-A36	Steel Angle - 2in x 2in x 0.1875in - A36 - Tieback	1
4	MAT-STL-001-2-2-0.1875-A36-3	Steel Angle - 2in x 2in x 0.1875in - A36 - 3in Long	1
5	MAT-STL-003-2-0.25-A36-3	Steel Flat Bar - 2in x 0.25in - A36 - 3in Long	1

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				
									<div>TITLE:</div> <div>Typical Tieback</div>							
	NAME	SIGNATURE	DATE													
DRAWN	Mark Hemphill		5/5/2025													
CHK'D																
APPV'D																
MFG																
Q.A				MATERIAL: As Noted					DWG NO. SR-2.0-A06					B		
				WEIGHT:					SCALE: 1:15				SHEET 1 OF 1			



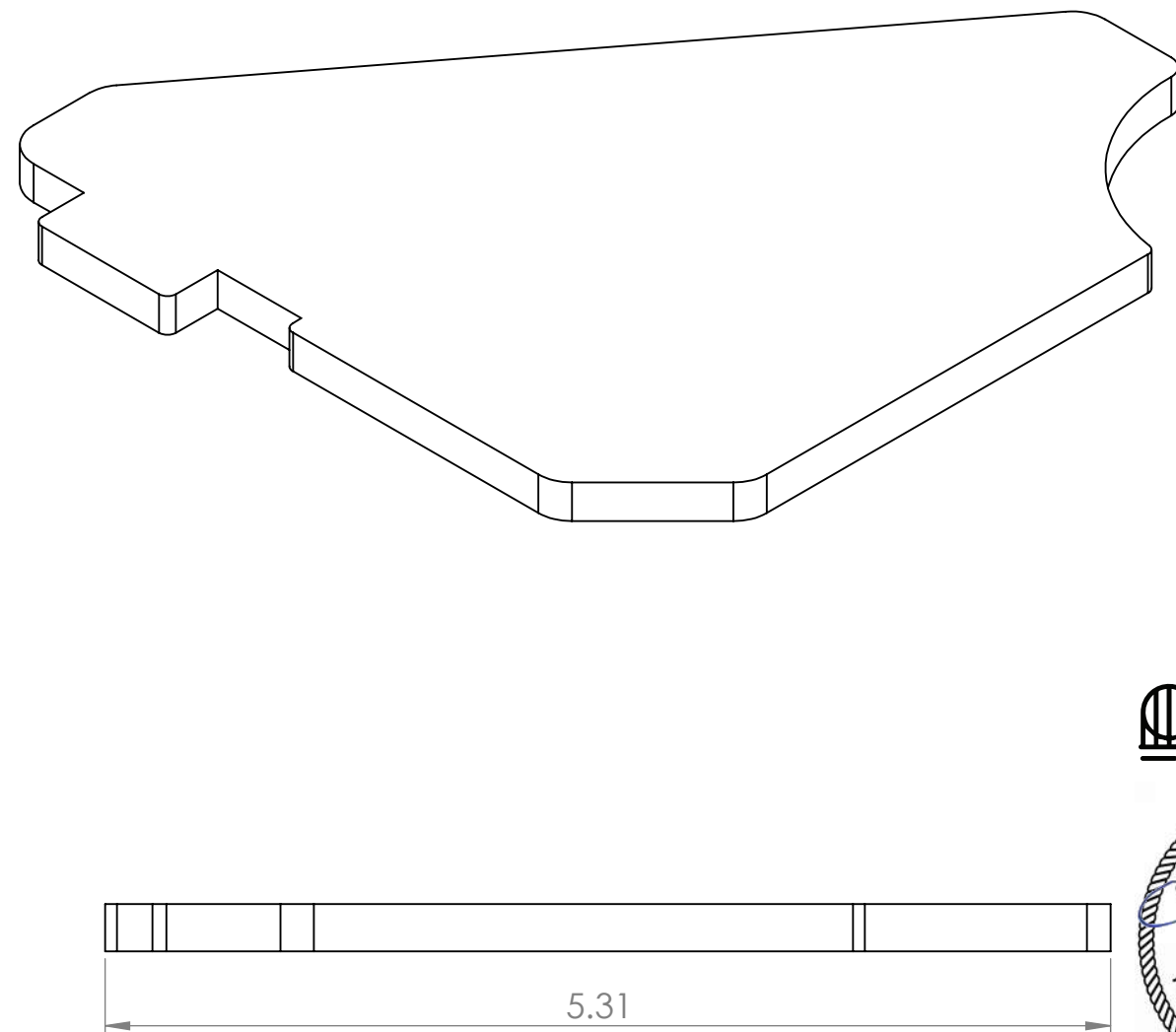
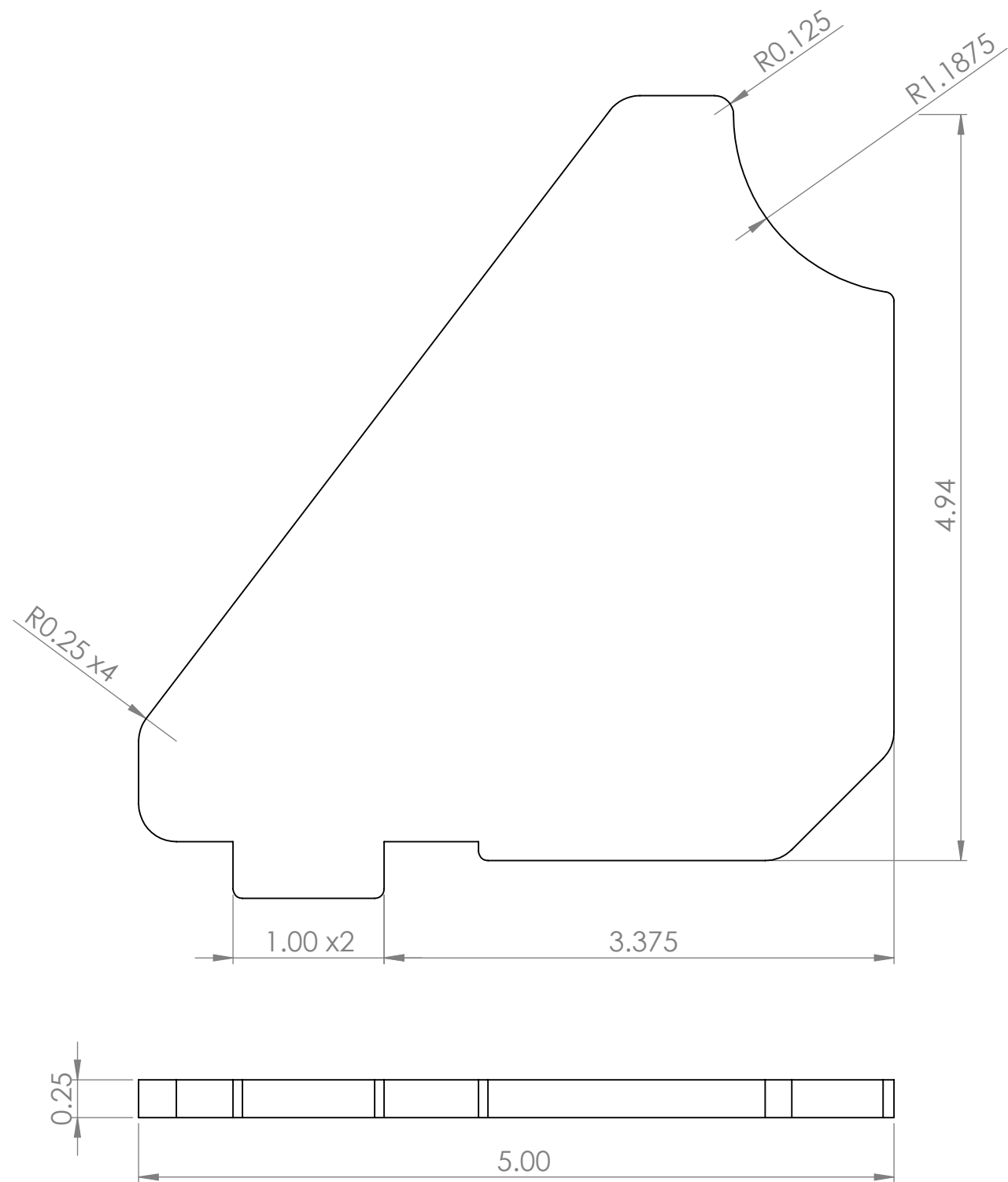
Note:
1. Anchor Feet for Tall Walls (SR-2.0-W03-T) may be fabricated ahead of time. The plates which comprise this weldment (SR-2.0-L02-T and SR-2.0-L04-T) are called out above in case this pre-fabrication doesn't occur for any reason.

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: ShotRock Curb Detail		
DRAWN	Mark Hemphil		5/6/2025						
CHK'D									
APPV'D									
MFG									
Q.A						MATERIAL: As Noted	DWG NO.	SR-2.0-A08	B
						WEIGHT:	SCALE: 1:4	SHEET 1 OF 1	



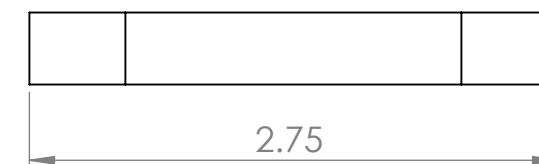
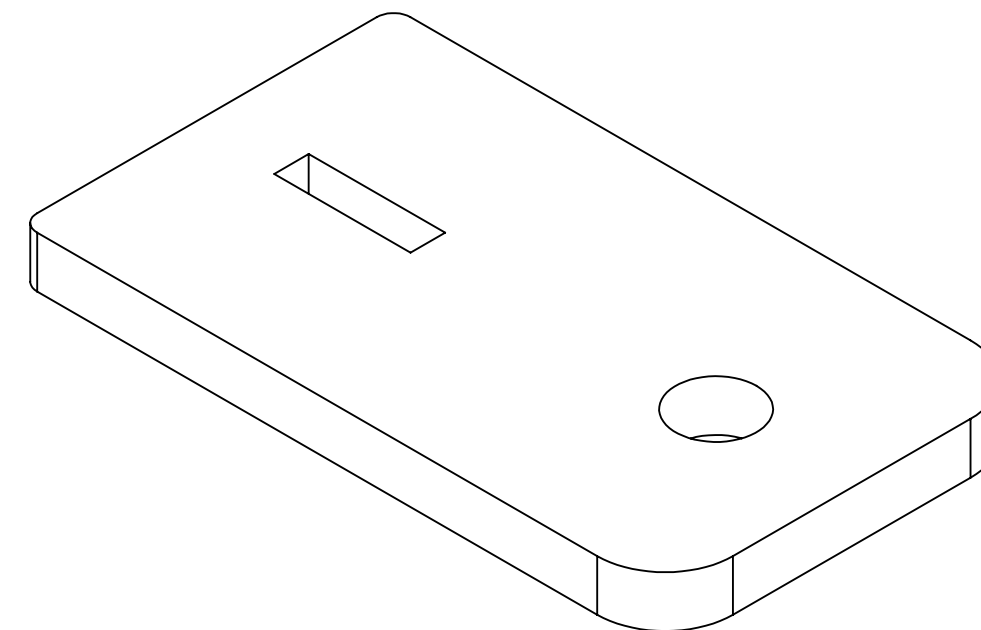
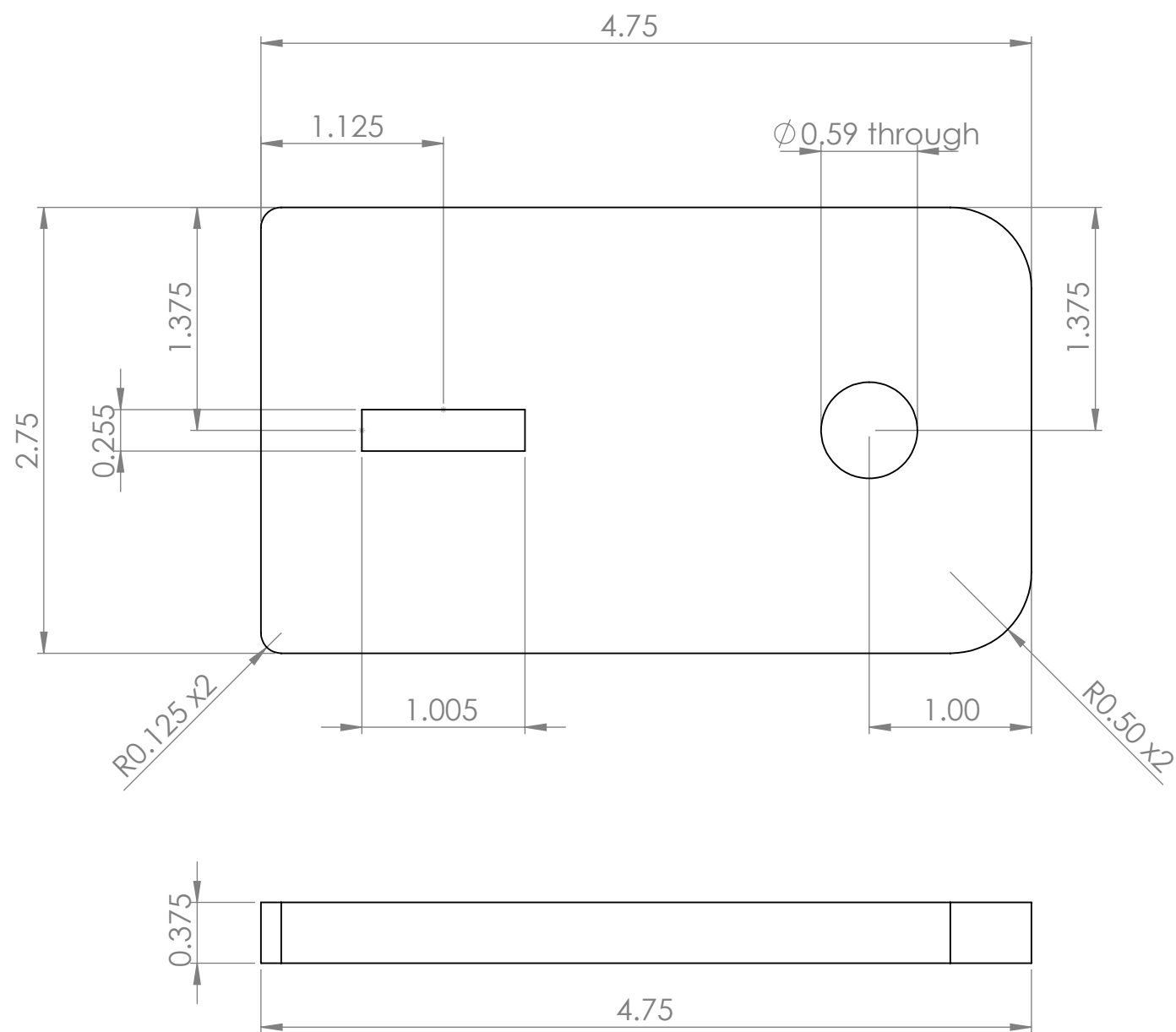
- Notes:
- 1. Manufacture from customer-supplied data (e.g. laser-cut from DXF file).
 - 2. Deburr and break all sharp edges.

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: Single Gusset				
DRAWN	Mark Hemphil				7/14/2023										
CHK'D															
APPV'D															
MFG															
Q.A															
						MATERIAL:			DWG NO.			B			
						ASTM A572 Grade 50 Steel			SR-2.0-L01						
									WEIGHT: 0.592121			SCALE: 1:1.25		SHEET 2 OF 2	



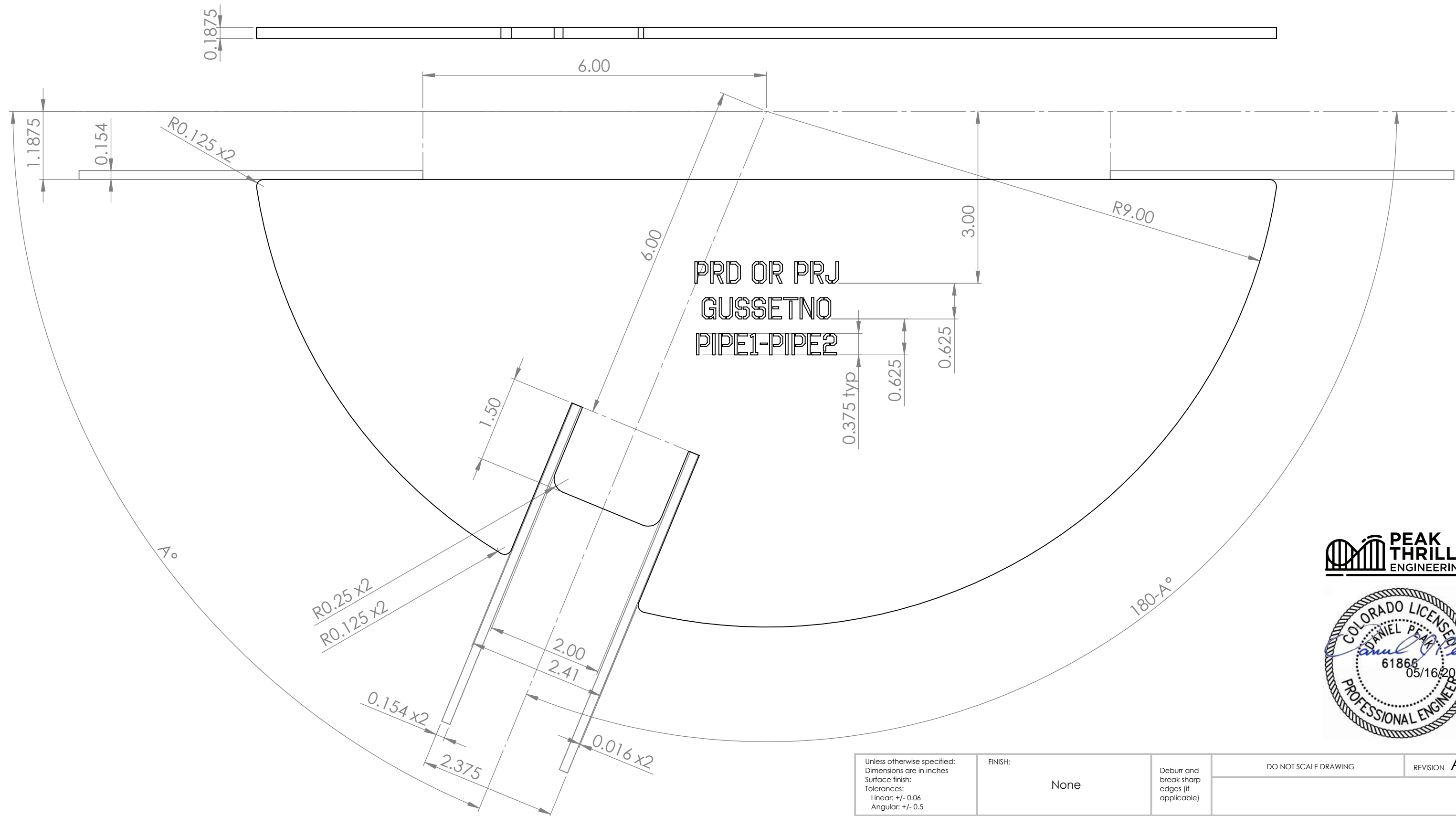
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from DXF file).
 2. Deburr and break all sharp edges.

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 C											
			NAME			SIGNATURE			DATE						TITLE: Anchor Gusset - Tall Walls								
DRAWN			Mark Hemphil						7/16/2023														
CHK'D																							
APPV'D																							
MFG																							
Q.A																							
												MATERIAL: ASTM A36 Steel			DWG NO. SR-2.0-L02-T			B					
															WEIGHT: 1.23			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 C		
							TITLE: Baseplate - Tall Walls				
	NAME	SIGNATURE	DATE								
DRAWN	Mark Hemphil		7/16/2023								
CHK'D											
APPV'D											
MFG											
Q.A				MATERIAL:			DWG NO.		B		
				ASTM A572 Grade 50 Steel			SR-2.0-L04-T				
				WEIGHT: 1.32			SCALE: 1:1		SHEET 2 OF 2		

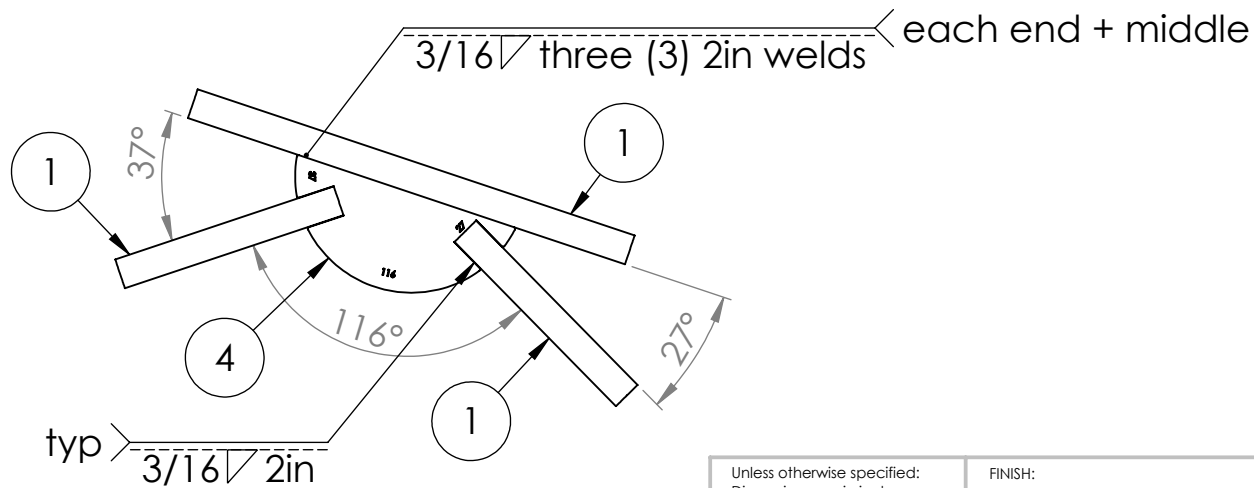
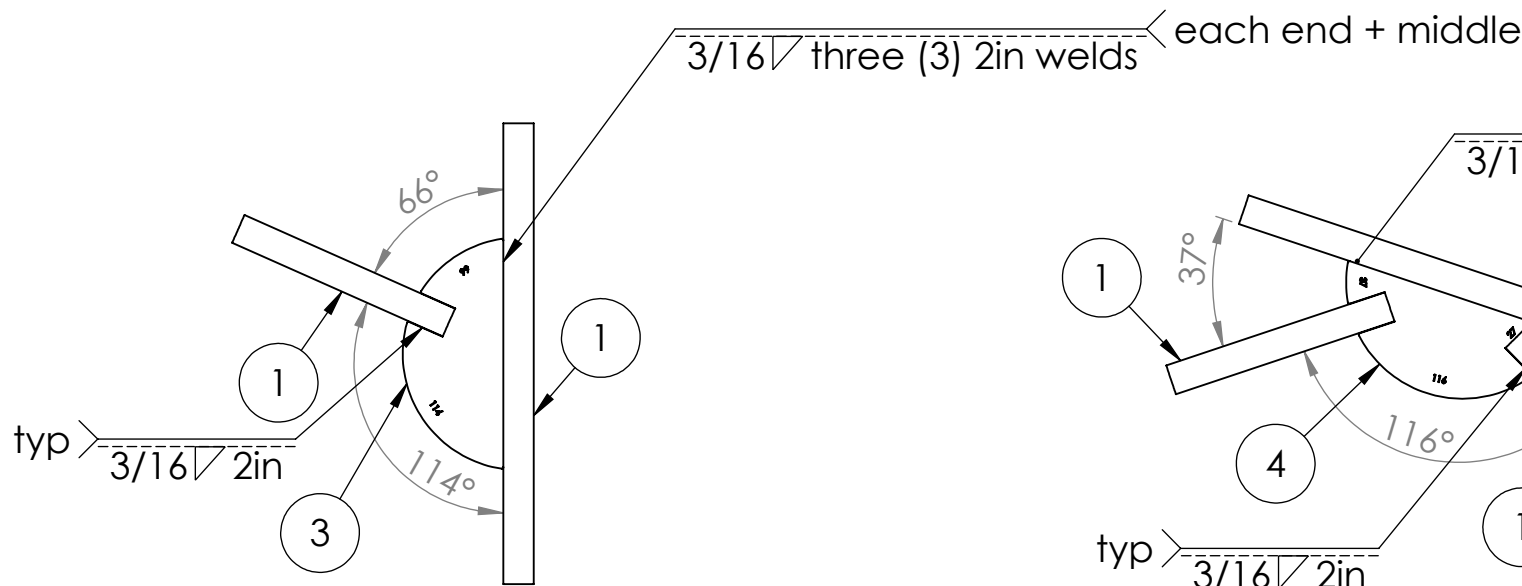
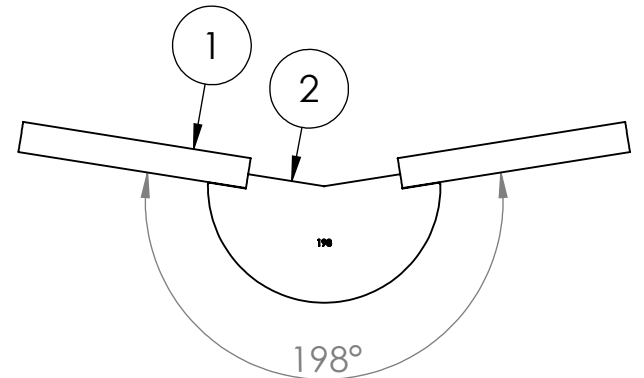
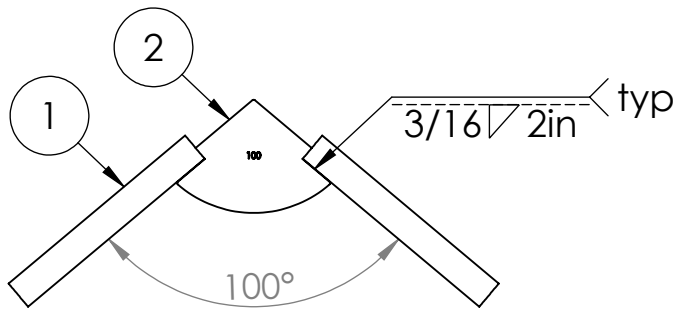
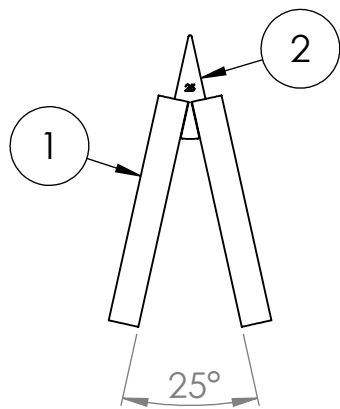


Notes:

1. Manufacture from customer-supplied data (e.g. laser-cut from DXF file).
2. Deburr and break all sharp edges.
3. One example is shown here, but others are of a similar construction.

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: Double Gusset (180°)			
DRAWN		Mark Hemphil				7/14/2023							
CHK'D													
APPV'D													
MFG													
Q.A													
								MATERIAL: ASTM A572 Grade 50 Steel		DWG NO. SR-2.0-L05		B	
								WEIGHT: 5.361994		SCALE: 1:1.6		SHEET 2 OF 2	

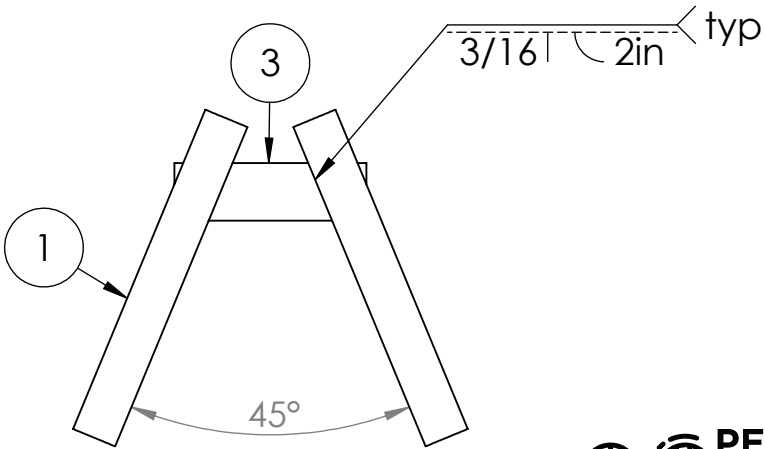
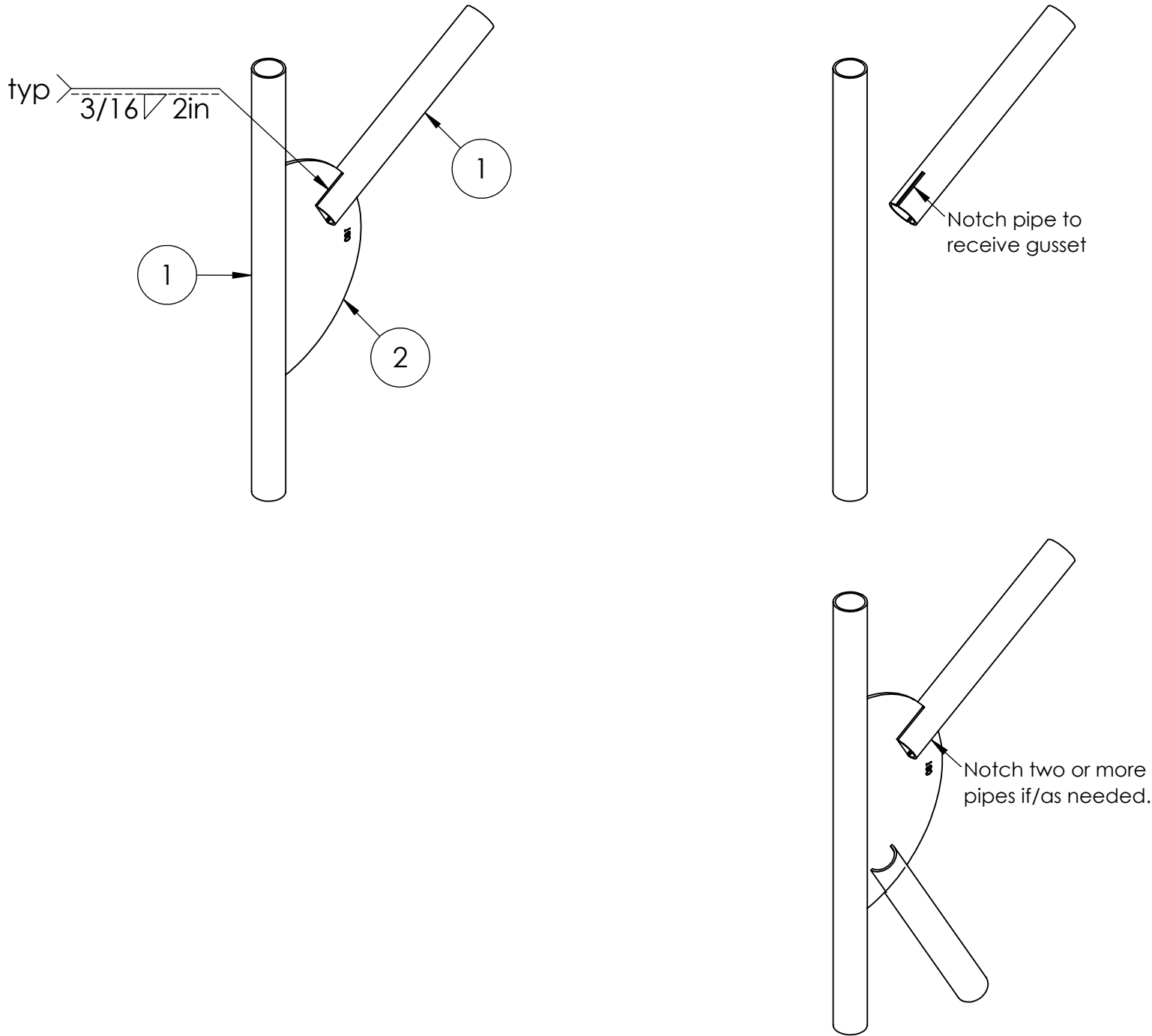
ItemNo	PartNo	DESCRIPTION	2D - under 180°	2D - over 180°	2D - Double	2D - Triple
1	MAT-STL-005-2.375-0.154-A53GrB	Steel Pipe - 2in - Schedule 40 - A53 Grade B	2	2	2	3
2	SR-2.0-L01	Single Gusset	1	-	-	-
3	SR-2.0-L05	Double Gusset	-	-	1	-
4	SR-2.0-L06	Triple Gusset	-	-	-	1



- Notes:
- 1. Singular angles for each condition are shown, but all other vertices are constructed similarly.
 - 2. Gussets may be trimmed in field if/as necessary to reduce the relative angle between pipes.
 - 3. Pipes could be any length (within the bounds dictated by engineering for a given boulder or custom wall).
 - 4. These details addresses the typical 2D connections. Gusset to gusset welds are covered on subsequent pages.

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: ShotRock 2.0 - Vertex - 2D - Planned Angle					
DRAWN Mark Hemphil			SIGNATURE			DATE 9/26/2023								
CHK'D														
APPV'D														
MFG														
Q.A						MATERIAL: As Noted								
									SCALE: 1:15			SHEET 1 OF 3		

ItemNo	PartNo	DESCRIPTION	2D - via 180°	2D - via Angle Iron
1	MAT-STL-005-2.375-0.154-A53GrB	Steel Pipe - 2in - Schedule 40 - A53 Grade B	1	-
2	SR-2.0-L05-180	Double Gusset - 180 Degrees	1	-
3	MAT-STL-001-3-3-0.1875-A36	Steel Angle - 3in x 3in x 0.1875in - A36	-	1

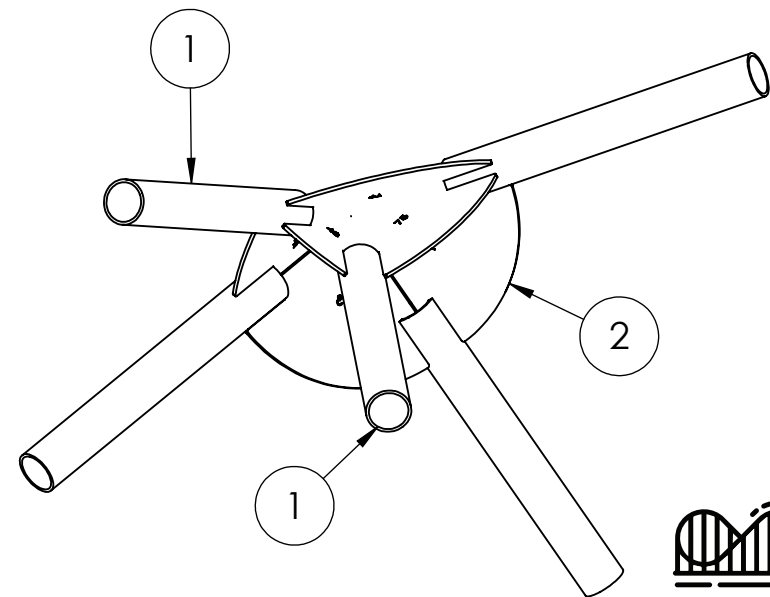
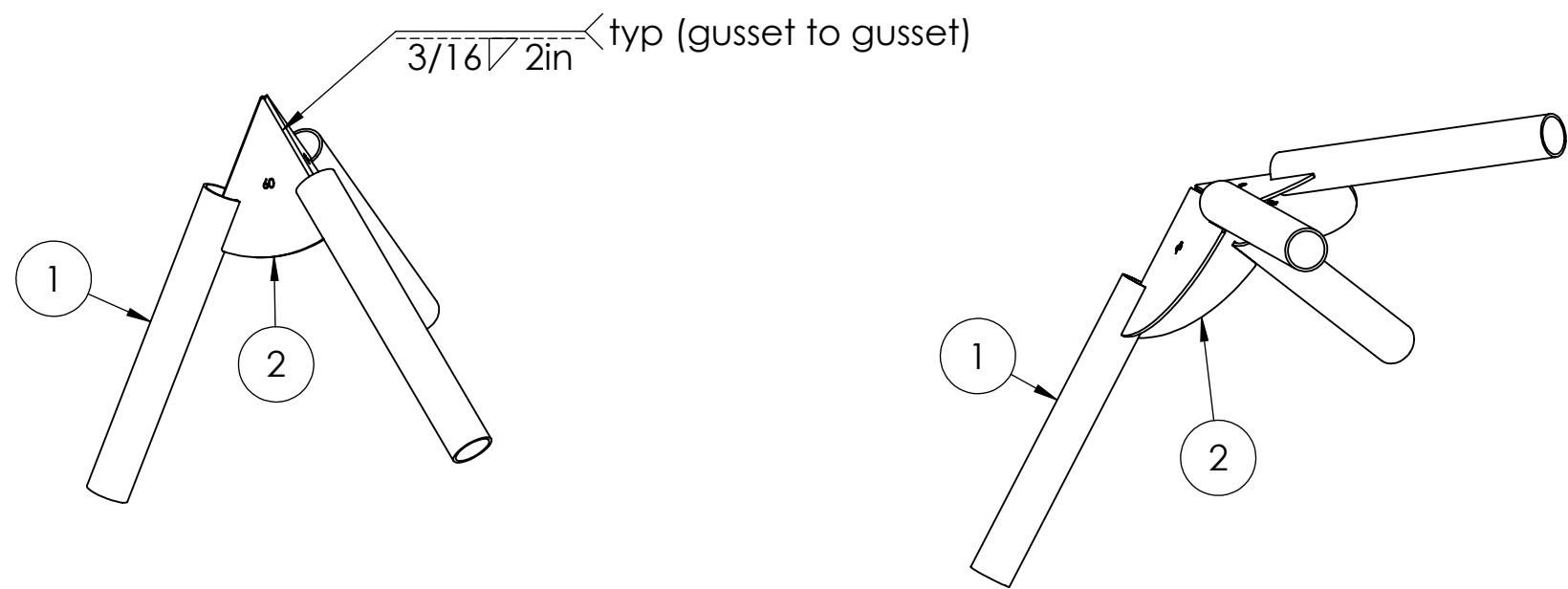


Notes:

- 1. Singular angles for each condition are shown, but all other vertices are constructed similarly.
- 2. Gussets may be trimmed in field if/as necessary to reduce the relative angle between pipes.
- 3. Pipes could be any length (within the bounds dictated by engineering for a given boulder or custom wall).
- 4. These details addresses the typical 2D connections. Gusset to gusset welds are covered on subsequent pages.

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: ShotRock 2.0 - Vertex - 2D - Unplanned Angle								
NAME			SIGNATURE			DATE											
DRAWN			Mark Hemphil			9/26/2023											
CHK'D																	
APPV'D																	
MFG																	
Q.A									MATERIAL: As Noted			DWG NO. SR-2.0-W01-2D-U			B		
									WEIGHT:			SCALE: 1:10			SHEET 2 OF 3		

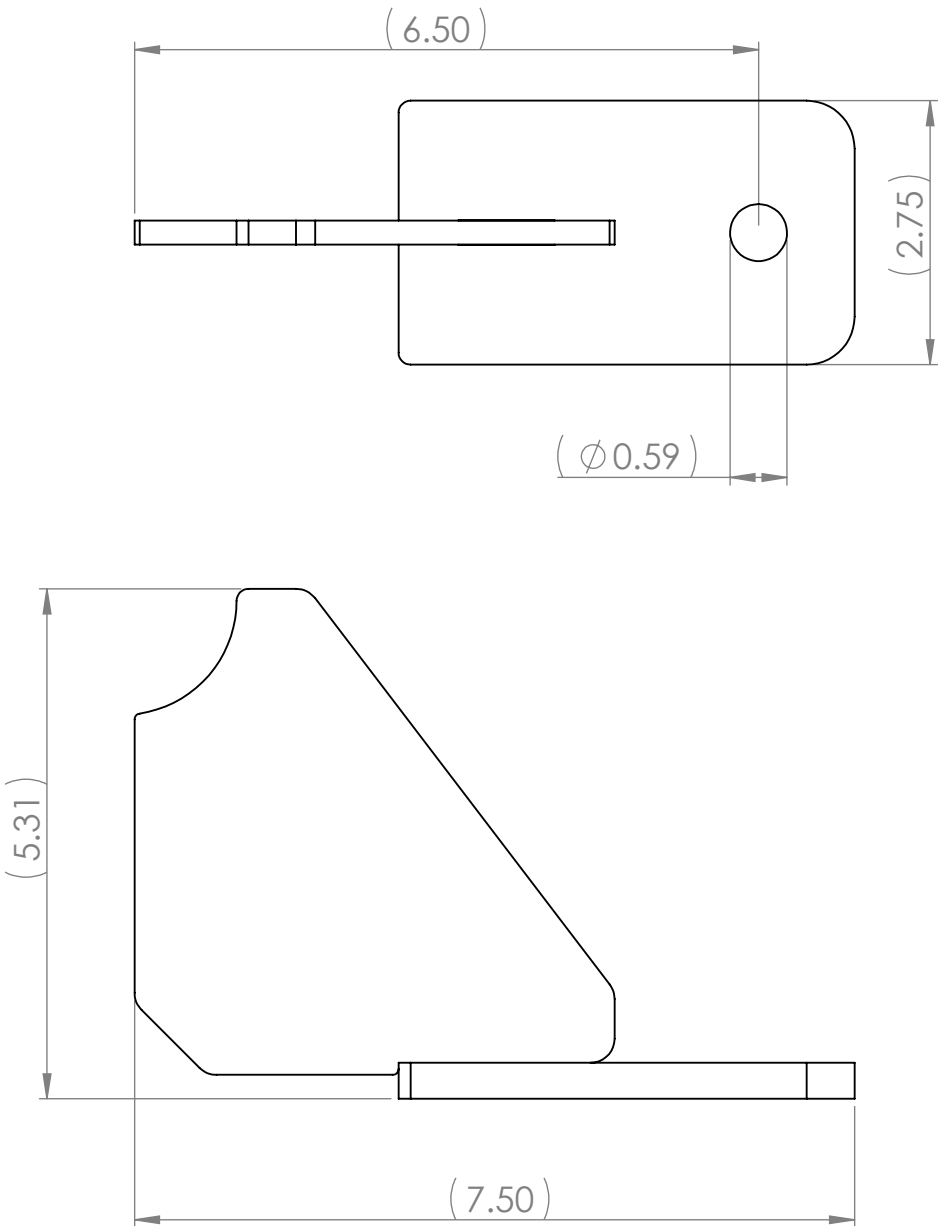
ITEM NO.	PartNo	DESCRIPTION	3D - 3 Pipes	3D - 4 Pipes	3D - 4 Pipes - with Internal Diagonal
1	MAT-STL-005-2.375-0.154-A53GrB	Steel Pipe - 2in - Schedule 40 - A53 Grade B	3	4	5
2	SR-2.0-L01	Single Gusset	3	4	2



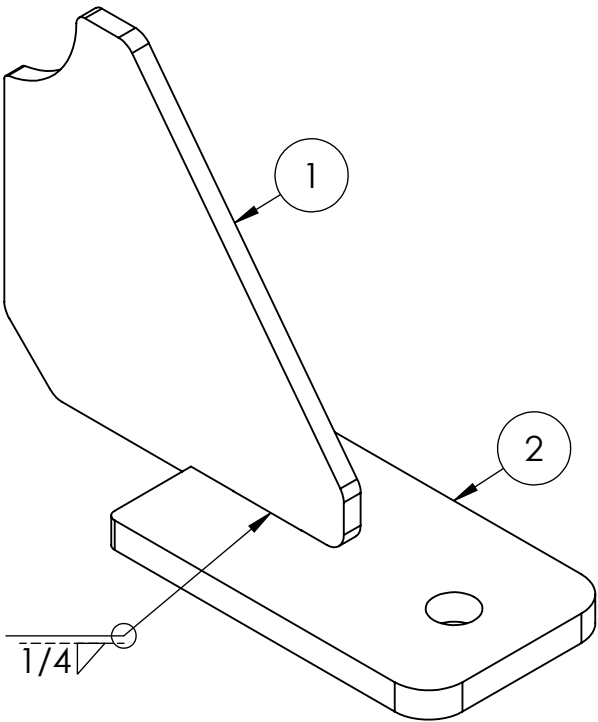
- Notes:
1. Rebar (#3 unless otherwise specified) may be used as a weld backer material for any gusset to gusset weld with an undesirably large gap between adjacent plates.
 2. Conversely, if the gusset plates overlap, one or both may be ground down to fit in 3D space.

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: ShotRock 2.0 - Vertex - 3D				DWG NO. SR-2.0-W01-3D	
DRAWN	Mark Hemphil	9/26/2023						
CHK'D								
APPV'D								
MFG								
Q.A			MATERIAL: As Noted				SCALE: 1:10	
			WEIGHT:				SHEET 3 OF 3	

ITEM NO.	PartNo	DESCRIPTION	Tall Walls
1	SR-2.0-L02-T	Anchor Gusset - Tall Walls	1
2	SR-2.0-L04-T	Baseplate - Tall Walls	1



Fabrication Time	Minutes
Time - Assembling	
Time - CNCing	
Time - Cutting	
Time - Drilling	
Time - Grinding	5
Time - Ironworking	
Time - Painting	
Time - Routing	
Time - Transporting	
Time - Welding	15
Time - Total	20

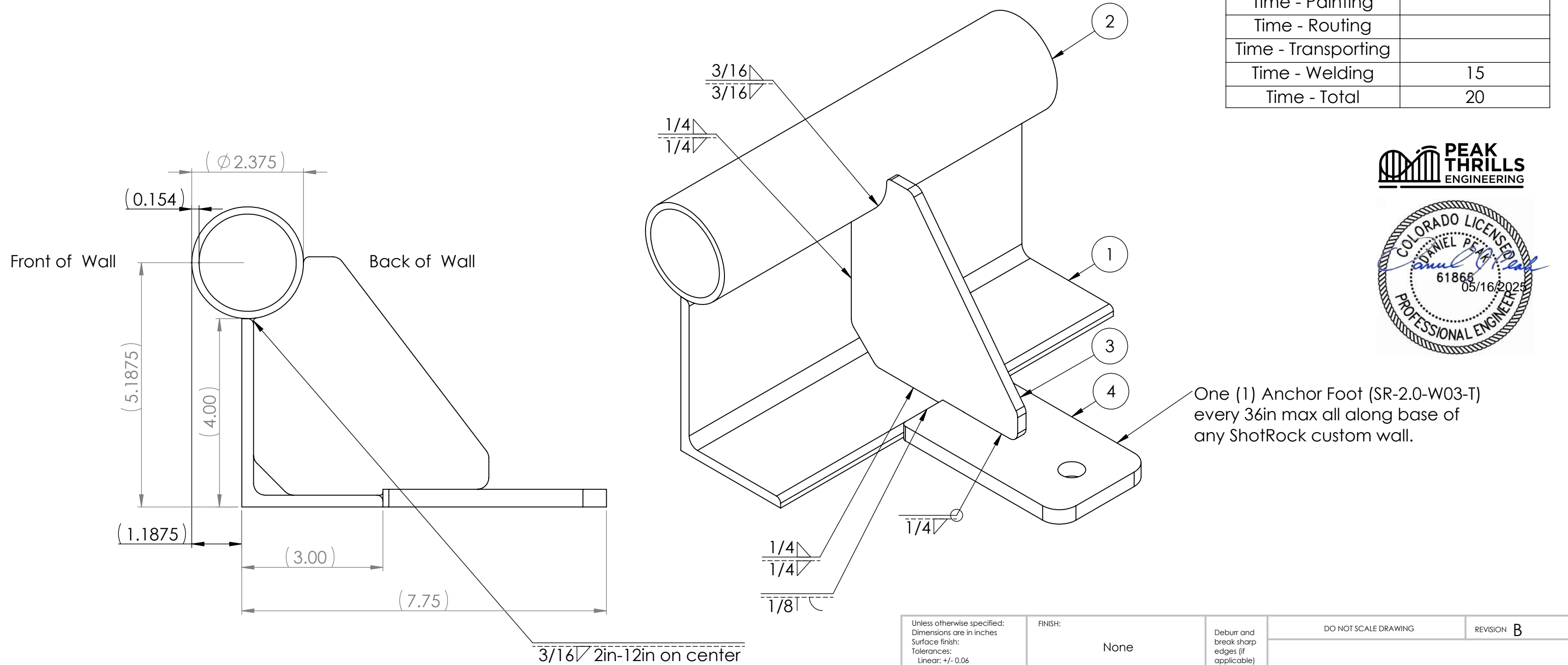


Notes:
1. These sub-assemblies may be fabricated prior to incorporating them into either a boulder or custom wall. They are not project-specific.
2. All plates should be self-fixturing.

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: Anchor Foot - Tall Walls	
DRAWN	Mark Hemphil		7/16/2023					
CHK'D								
APPV'D								
MFG								
Q.A						MATERIAL: As Noted	DWG NO. SR-2.0-W03-T	B
						WEIGHT: 3.54	SCALE: 1:2	SHEET 2 OF 4

ITEM NO.	PartNo	DESCRIPTION	Tall Walls - in Context
1	MAT-STL-001-4-3-0.25-A36	Steel Angle - 4in x 3in x 0.25in - A36	1
2	MAT-STL-005-2.375-0.154-A53GrB	Steel Pipe - 2in - Schedule 40 - A53 Grade B (or Better)	1
3	SR-2.0-L02-T	Anchor Gusset - Tall Walls	1
4	SR-2.0-L04-T	Baseplate - Tall Walls	1

Fabrication Time	Minutes
Time - Assembling	
Time - CNCing	
Time - Cutting	
Time - Drilling	
Time - Grinding	5
Time - Ironworking	
Time - Painting	
Time - Routing	
Time - Transporting	
Time - Welding	15
Time - Total	20



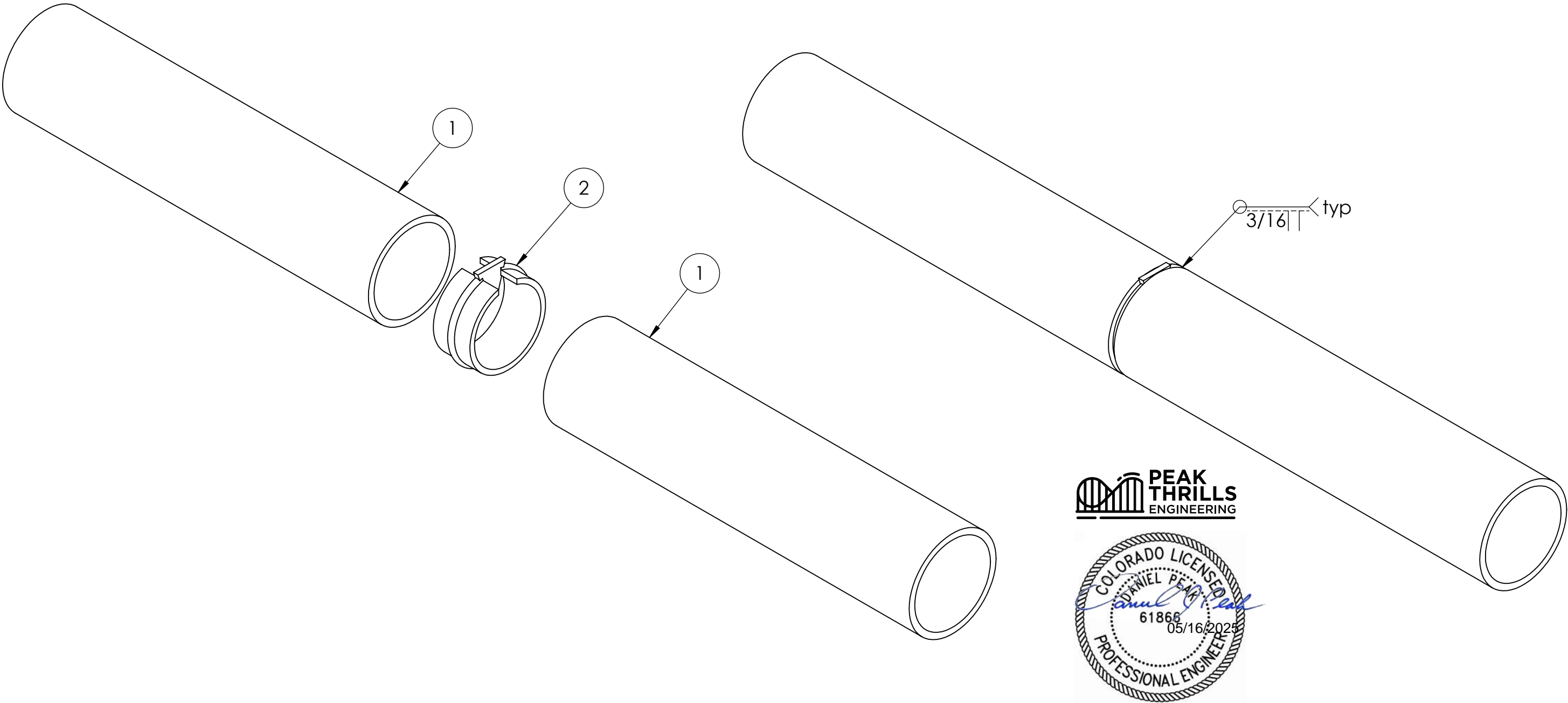
Notes:

1. This "in context" drawing corresponds with how the actual Anchor Foot will attach to other primary steel members of custom ShotRock projects.

2. All plates should be self-fixturing.

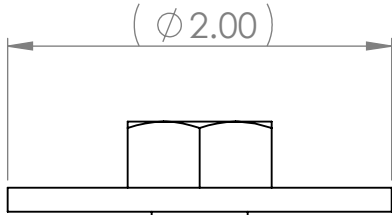
Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5		FINISH: None		Deburr and break sharp edges (if applicable)		DO NOT SCALE DRAWING		REVISION B	
	NAME	SIGNATURE	DATE			TITLE: Anchor Foot - Tall Walls - in Context			
DRAWN	Mark Hemphil		7/16/2023						
CHK'D									
APPV'D									
MFG									
Q.A									
				MATERIAL: As Noted		DWG NO. SR-2.0-W03-T		B	
				WEIGHT: 3.54		SCALE: 1:2		SHEET 4 OF 4	

ITEM NO.	PartNo	DESCRIPTION	QTY.
1	MAT-STL-005-2.375-0.154-A53GrB	Steel Pipe - 2in - Schedule 40 - A53 Grade B	2
2	1043	Steel Wedge Lock Welding Connector for 2in Schedule 40 Steel Pipe	1

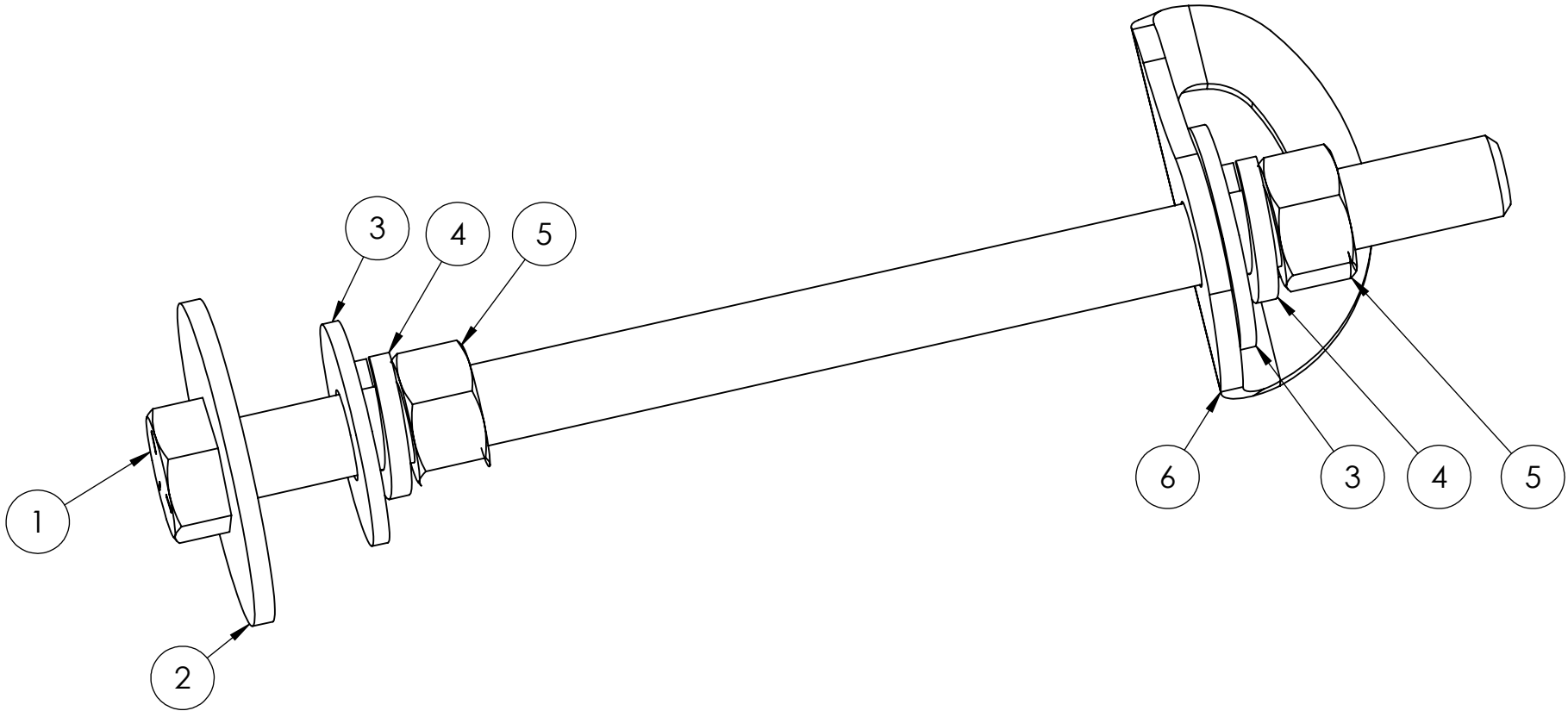
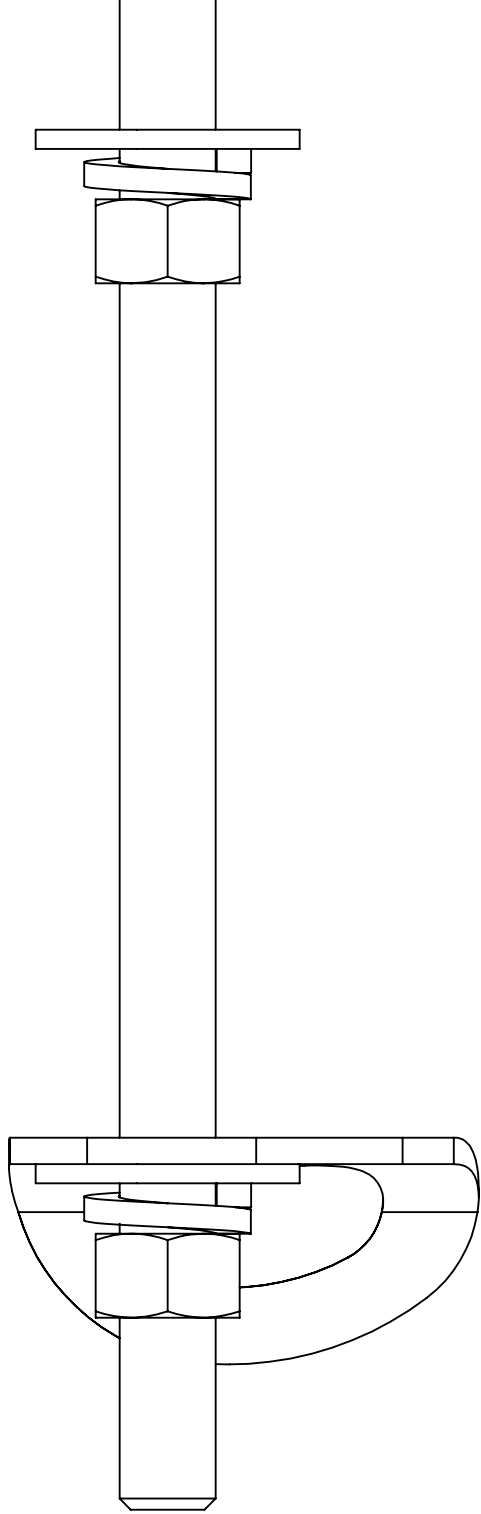


Notes:
1. Use this detail to splice any continuous run of pipe (e.g. in order to ship smaller, palletizable pipe lengths without sacrificing strength in the final installed "continuous" run of pipe).

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:		Pipe Splice	
DRAWN	Mark Hemphil			2/25/2025					
CHK'D									
APPV'D									
MFG									
Q.A						MATERIAL:		DWG NO.	
						As Noted		SR-2.0-W06	
						WEIGHT:		SCALE: 1:2	
								SHEET 1 OF 1	



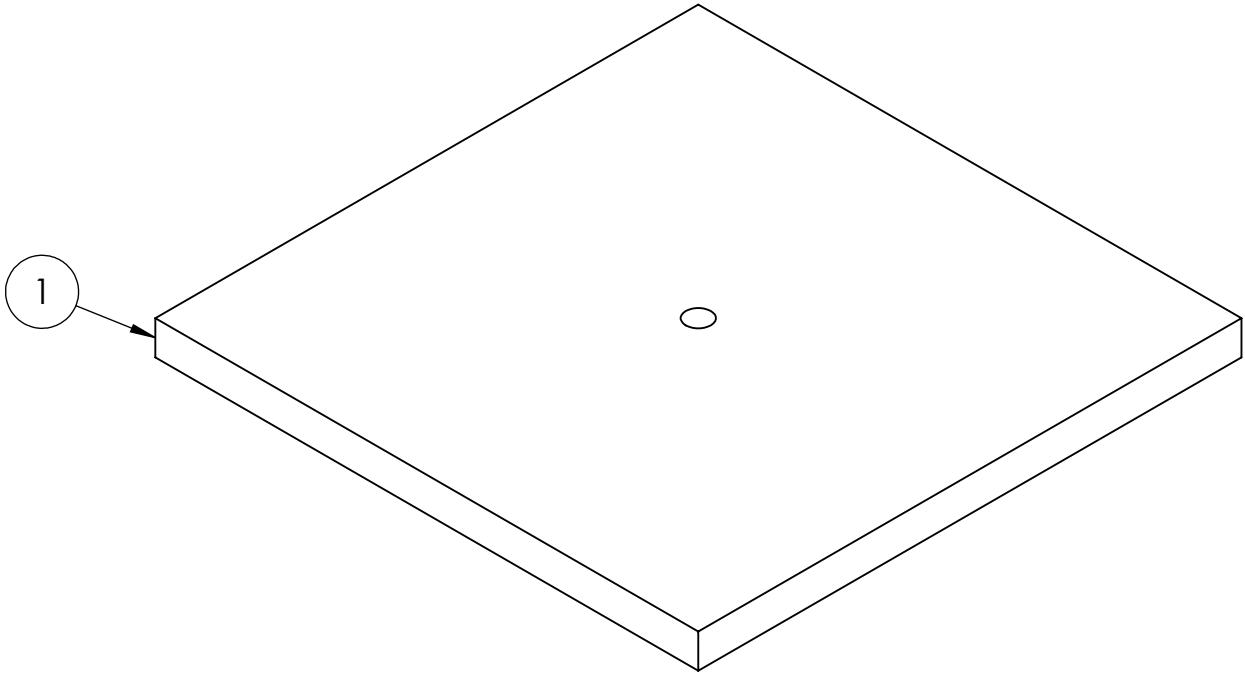
ItemNo	PartNo	DESCRIPTION	QTY
1	HRD-SCR-001-0.5-13-8-HH-EH-5-ZP-FT	Screw - 0.5in - 13 Thread - 8in Long - Hex Head - External Hex - Grade 5 - Zinc Plated - Full Thread	1
2	HRD-WAS-001-0.531-2-0.125	Fender Washer - for 0.5in Screw - 2in OD - 0.125in Thick - Zinc Plated	1
3	HRD-WAS-001-0.562-1.375-0.132-2-ZP	Flat Washer - 0.5in - USS - Zinc Plated	2
4	HRD-WAS-002-0.512-0.869-5-ZP	Split Lock Washer - 0.5in - Grade 5 - Zinc Plated	2
5	HRD-NUT-001-0.5-13-EH-5-ZP	Nut - 0.5in - 13 Thread - External Hex - Grade 5 - Zinc Plated	2
6	013-1/2	Fixe Hardware - Zinc Plated Steel - 0.5in Bolt Hanger	1



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: ShotRock - Lead Bolt Stack - Indoor			
DRAWN											
CHK'D											
APPV'D											
MFG											
Q.A											
					MATERIAL: As Noted			DWG NO.		B	
								HRD-ASM-126-SR-LB-I			
					WEIGHT: 0.878322			SCALE: 1:1		SHEET 2 OF 2	

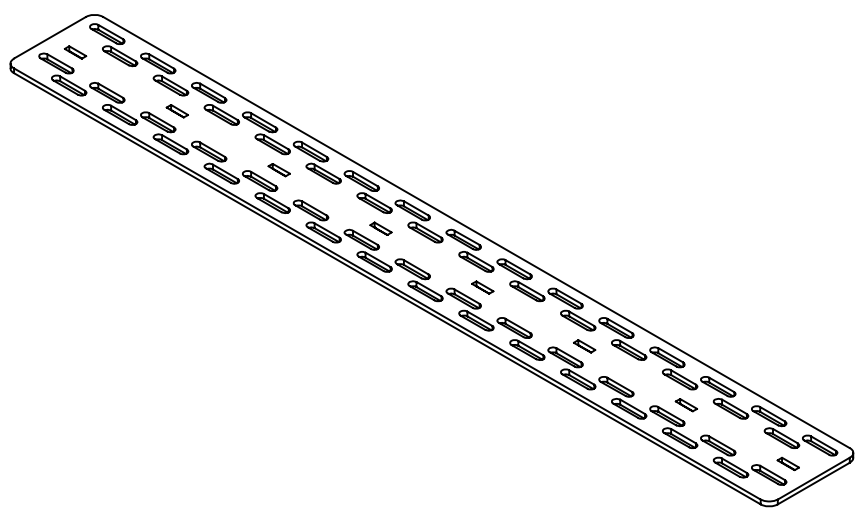
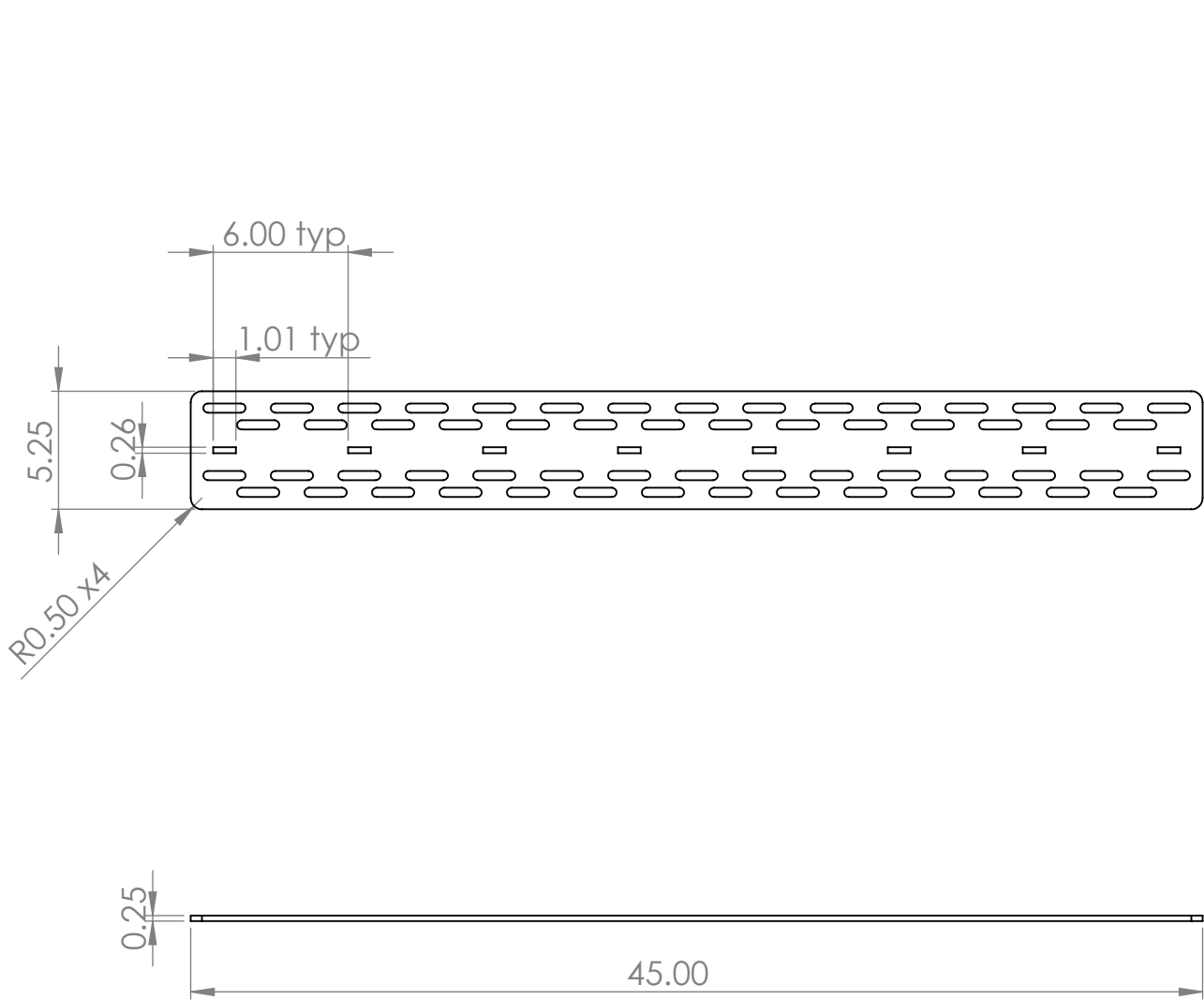
ITEM NO.	PartNo	DESCRIPTION	QTY	Vendor	VendorNo
1	varies	Concrete Substrate	1	varies	varies
2	CTG-S-DP36-C	Coating - Sealant - Proseal DP-36 - Clear - 5 Gal (Covers 3500sf with One Coat)	1	Proseal	PS DP-36
3	CTG-P-BFCC-CR	Coating - Paint - Brickform Cem Coat - Colored - 5 Gal (Covers 300sf With One Coat)	2	Rio Grande	CC4-####
4	CTG-P-BCS-CR	Coating - Paint - Behr - Concrete Stain - Solid Colored - 5 Gal (Covers 2000sf With One Coat)	1	Home Depot	TBD
5	CTG-P-BCS-STC	Coating - Paint - Behr Concrete Stain - Semi Transparent - 1 Gal (Covers 300sf With One Coat)	1	Home Depot	TBD
6	CTG-S-SGWB-C	Coating - Sealant - Salt Guard WB - Clear - 5 Gal (Covers 1250sf with One Coat)	1	Amazon	SH-4606705
7	varies	Metal Lath (paper backed or not, per foreman)	1	Rio Grande	varies
8	varies	Fiberglass Tape	1	varies	varies

Contexts of Use
ShotRock



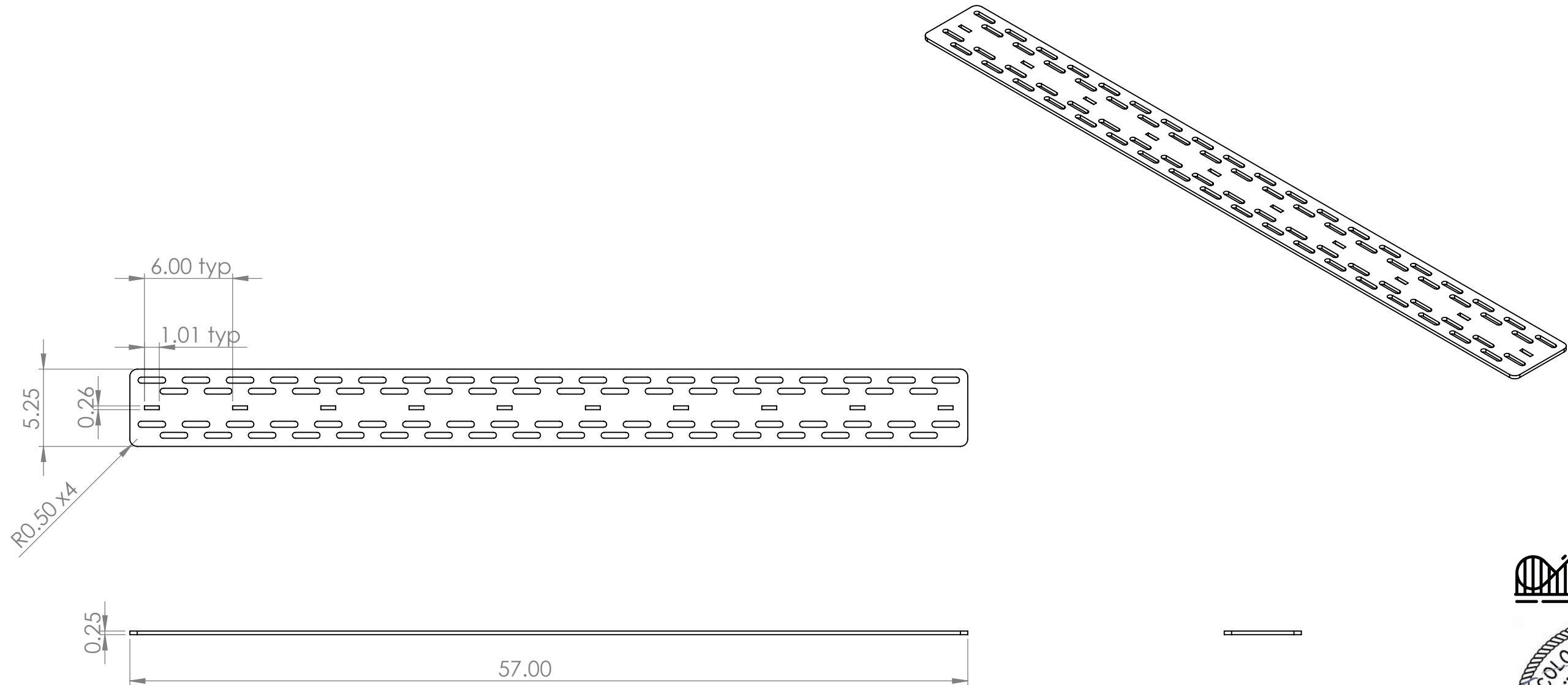
- Notes:
- 1. Coatings may be applied by roller, sprayer, bottle brush, etc. as appropriate.
 - 2. Tint/coloration is to be requested at time of paint ordering (i.e. mixed in by vendor).

Unless otherwise specified: Dimensions are in inches Surface finish: Tolerances: Linear: +/- 0.06 Angular: +/- 0.5			FINISH: (this is a finish)			Deburr and break sharp edges (if applicable)	DO NOT SCALE DRAWING	REVISION	B
	NAME	SIGNATURE	DATE				TITLE: Coating - ShotRock		
DRAWN	Mark Hemphil		3/11/2021						
CHK'D									
APPV'D									
MFG									
Q.A						MATERIAL: As Noted	DWG NO.	CTG-SR	B
						WEIGHT:	SCALE: 1:3	SHEET 9 OF 9	



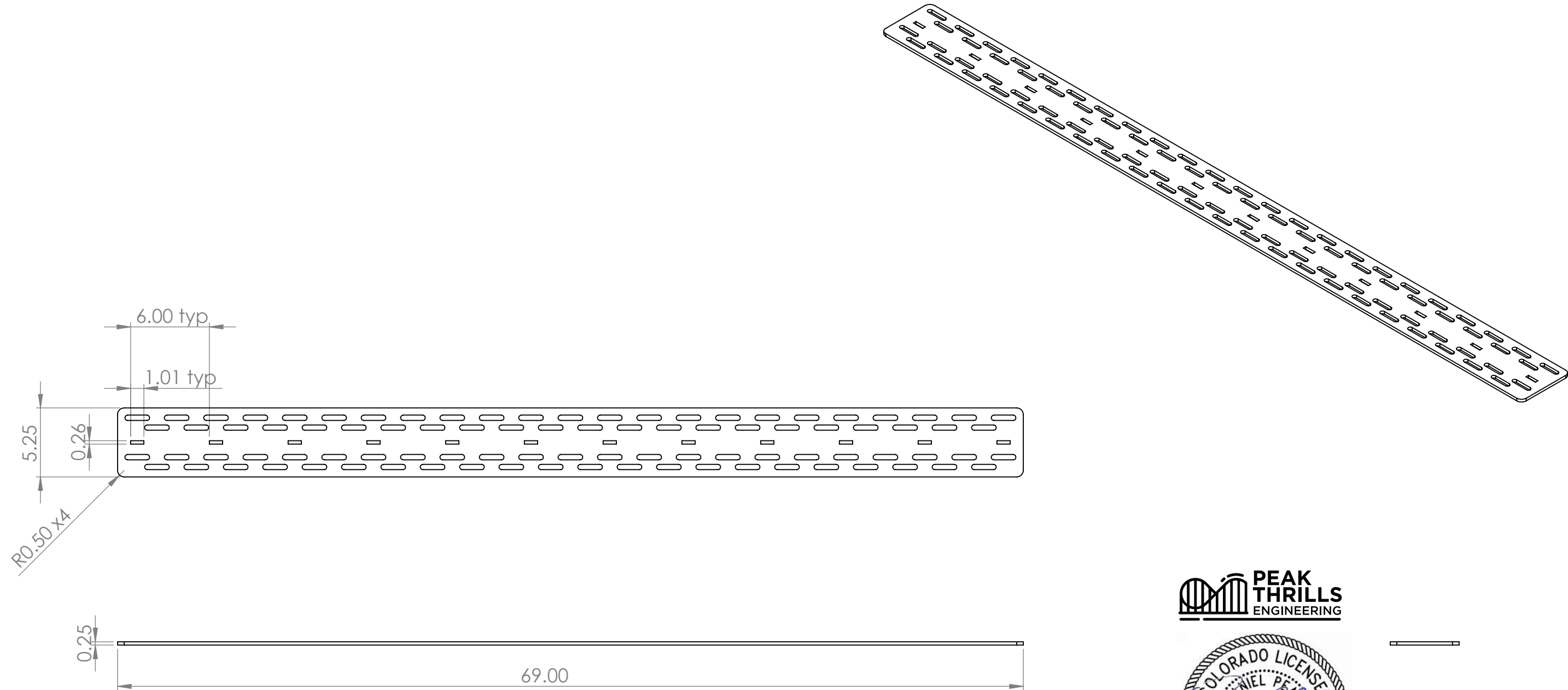
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

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: Ledger Plate One - 45in Long				
DRAWN	Mark Hemphil		4/10/2023								
CHK'D											
APPV'D											
MFG											
Q.A											
						MATERIAL: ASTM A36 Steel		DWG NO. PWS-2.0-L12-45		B	
							WEIGHT: 13.599228		SCALE: 1:8		
									SHEET 7 OF 12		



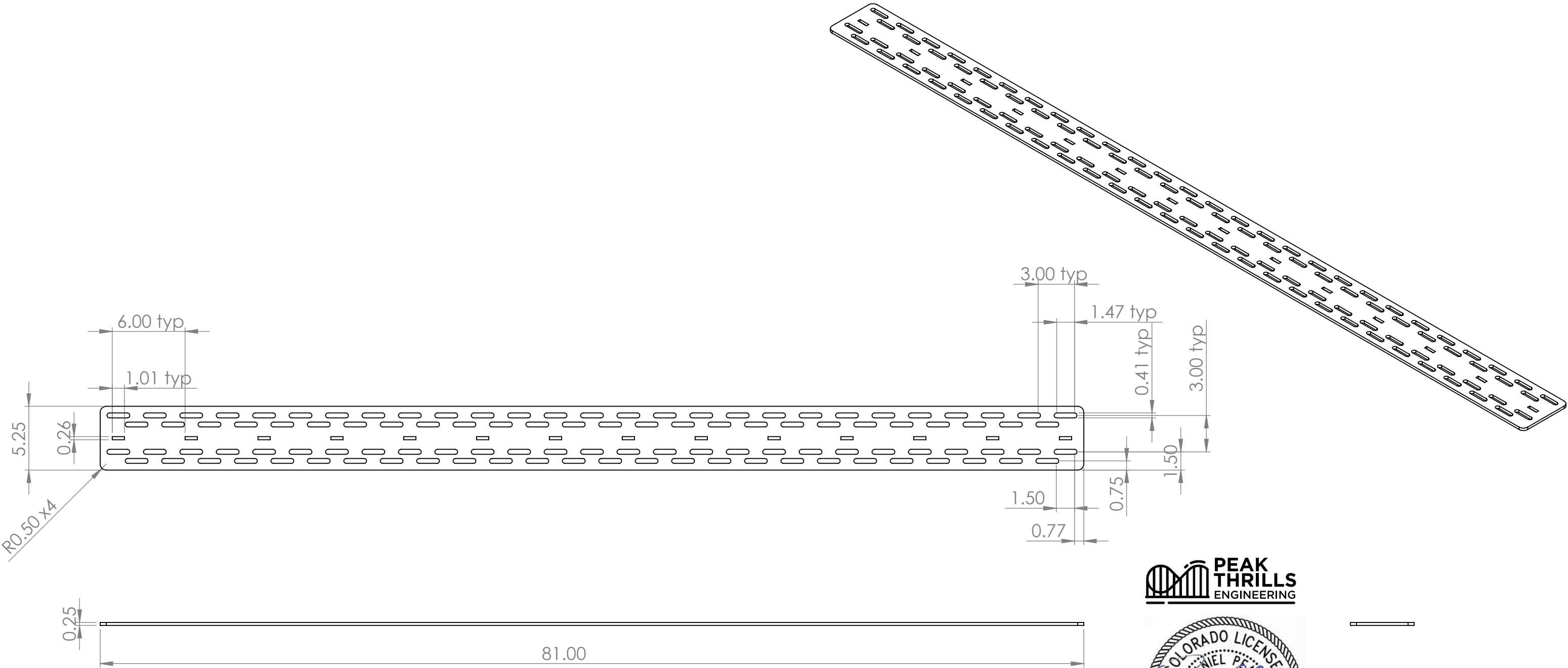
- Notes:
- 1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 - 2. Deburr and break all sharp edges.

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 A							
												TITLE: Ledger Plate One - 57in Long							
NAME		SIGNATURE		DATE															
DRAWN		Mark Hemphil				4/10/2023													
CHK'D																			
APPV'D																			
MFG																			
Q.A								MATERIAL: ASTM A36 Steel				DWG NO. PWS-2.0-L12-57				B			
								WEIGHT: 17.204764				SCALE: 1:8				SHEET 8 OF 12			



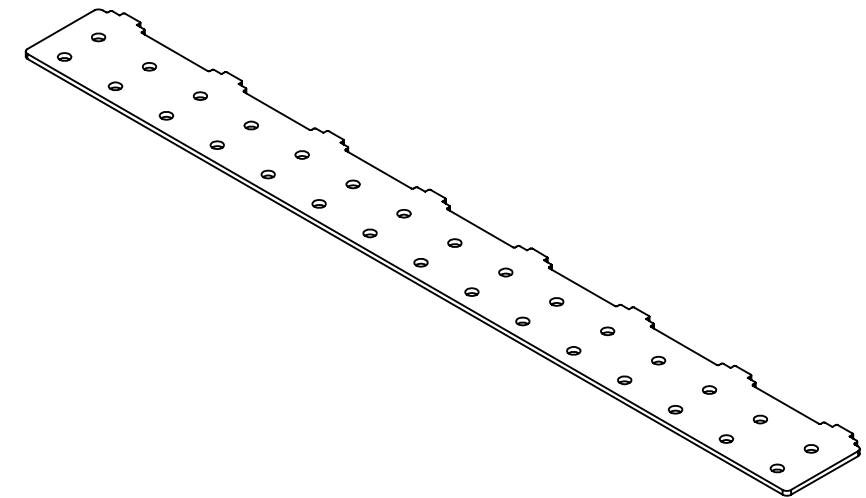
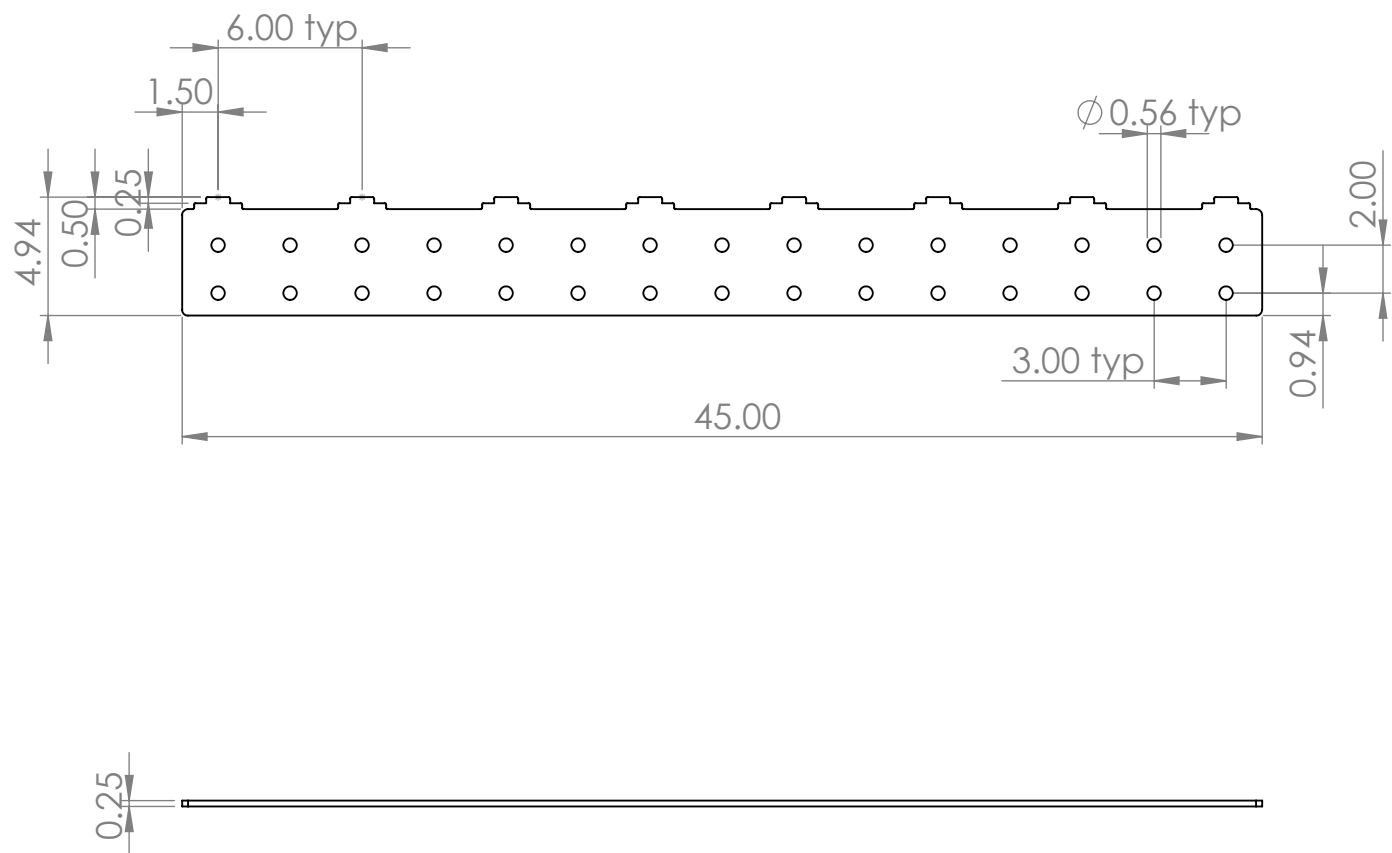
- Notes:
- 1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 - 2. Deburr and break all sharp edges.

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 A											
			NAME			SIGNATURE			DATE						TITLE: Ledger Plate One - 69in Long								
DRAWN			Mark Hemphil						4/10/2023														
CHK'D																							
APPV'D																							
MFG																							
Q.A																							
												MATERIAL: ASTM A36 Steel			DWG NO. PWS-2.0-L12-69			B					
															WEIGHT: 20.810301			SCALE: 1:8			SHEET 10 OF 12		



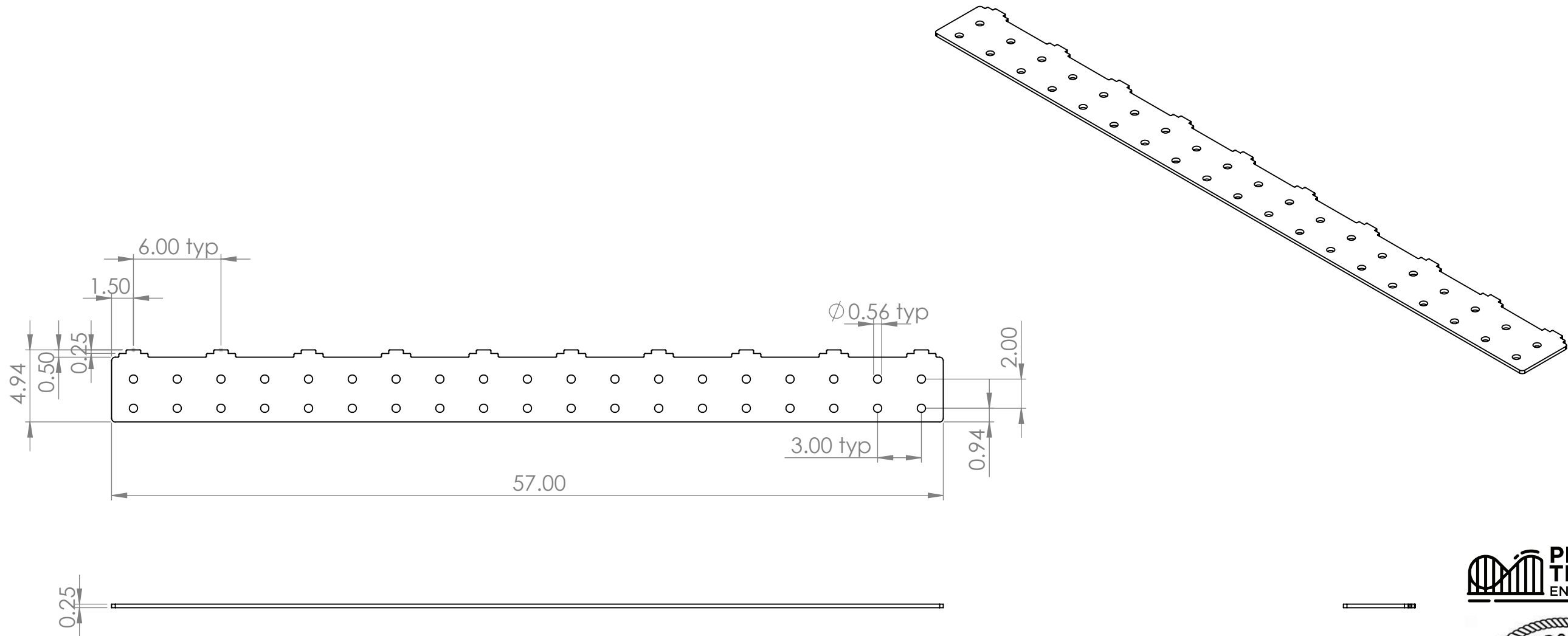
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

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 A
	NAME	SIGNATURE	DATE				TITLE: Ledger Plate One - 81in Long	
DRAWN	Mark Hemphil		4/10/2023					
CHK'D								
APPV'D								
MFG								
Q.A						MATERIAL: ASTM A36 Steel	DWG NO. PWS-2.0-L12-81	B
						WEIGHT: 24.415838	SCALE: 1:8	SHEET 11 OF 12



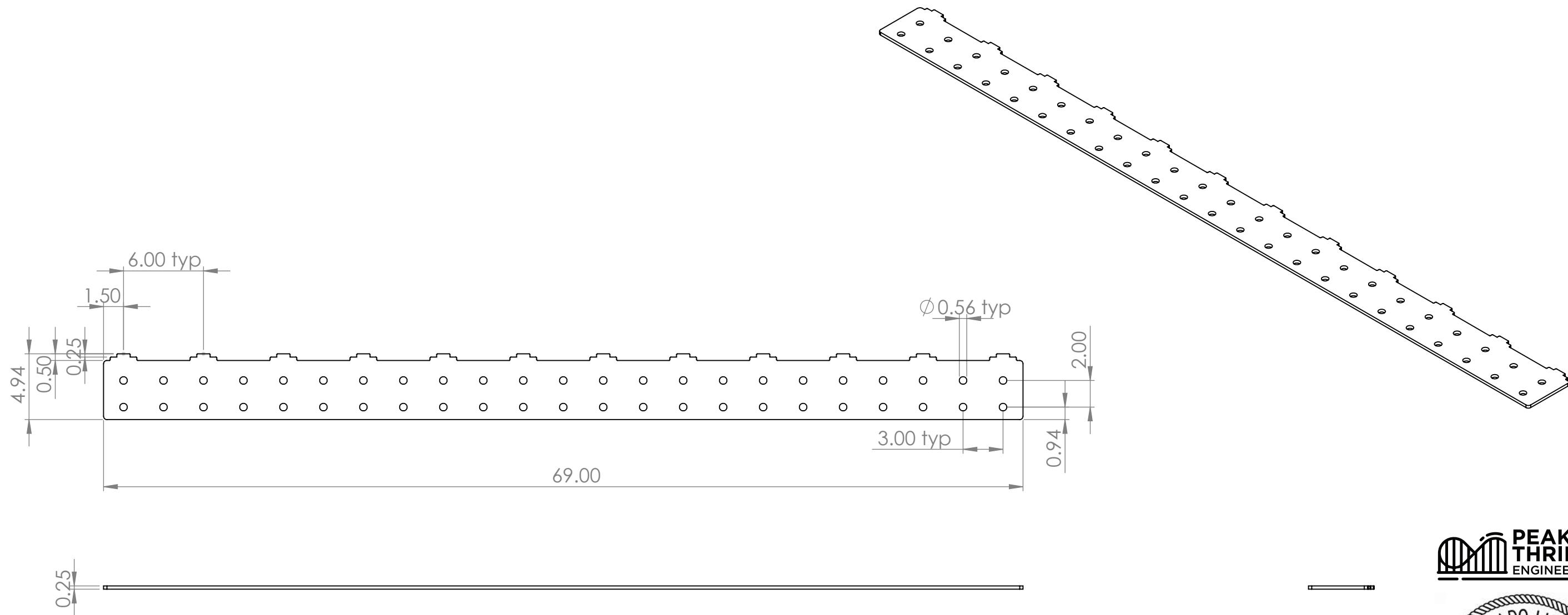
- Notes:
1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 2. Deburr and break all sharp edges.

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 C
	NAME	SIGNATURE	DATE				TITLE: Ledger Plate Two - 45in Long	
DRAWN	Mark Hemphil		4/10/2023					
CHK'D								
APPV'D								
MFG								
Q.A						MATERIAL: ASTM A36 Steel	DWG NO. PWS-2.0-L13-45	B
						WEIGHT: 14.049878	SCALE: 1:8	SHEET 7 OF 12



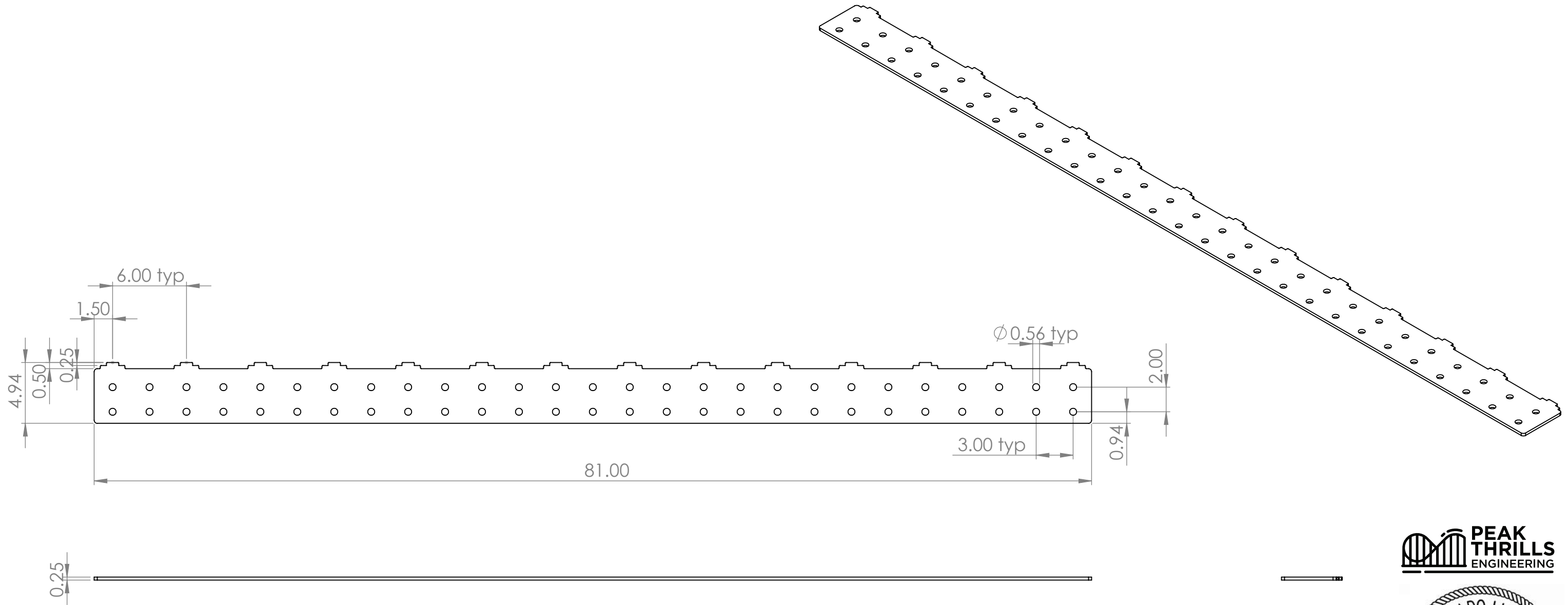
- Notes:
- 1. Manufacture from customer-supplied data (e.g. laser-cut from dxf file).
 - 2. Deburr and break all sharp edges.

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 C		
									TITLE: Ledger Plate Two - 57in Long					
NAME			SIGNATURE			DATE								
DRAWN			Mark Hemphil			4/10/2023								
CHK'D														
APPV'D														
MFG														
Q.A						MATERIAL: ASTM A36 Steel			DWG NO. PWS-2.0-L13-57			B		
						WEIGHT: 17.790452			SCALE: 1:8			SHEET 8 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 C				
										TITLE: Ledger Plate Two - 69in Long						
DRAWN		Mark Hemphil		4/10/2023												
CHK'D																
APPV'D																
MFG																
Q.A						MATERIAL: ASTM A36 Steel				DWG NO.			PWS-2.0-L13-69		B	
WEIGHT: 21.531026						SCALE: 1:8				SHEET 10 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 C		
									TITLE: Ledger Plate Two - 81in Long					
NAME			SIGNATURE			DATE								
DRAWN			Mark Hemphil			4/10/2023								
CHK'D														
APPV'D														
MFG														
Q.A						MATERIAL: ASTM A36 Steel			DWG NO. PWS-2.0-L13-81			B		
						WEIGHT: 25.271600			SCALE: 1:8			SHEET 11 OF 12		