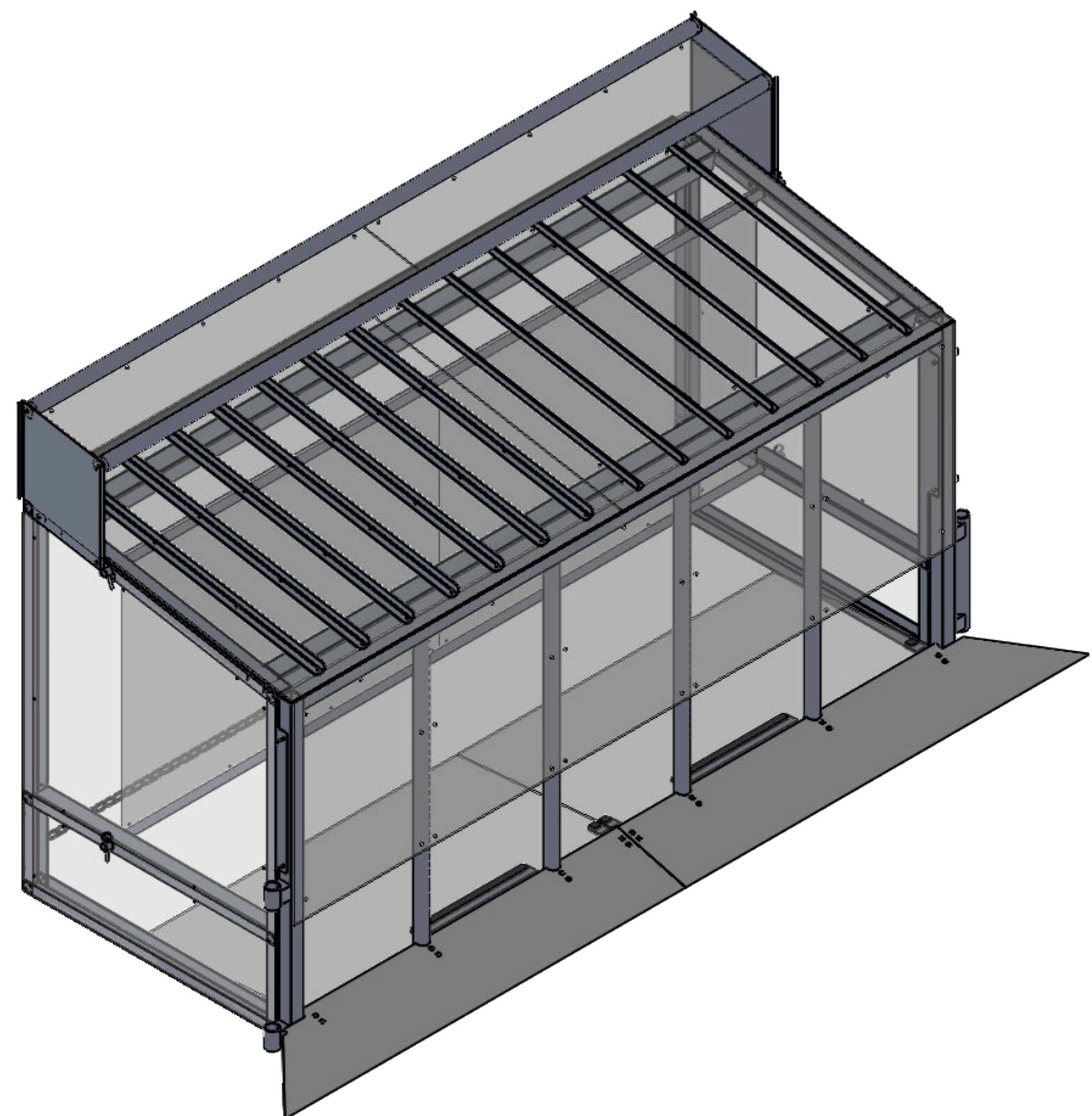


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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22001	Side Frame, Terminal	2
2	GE-22002	Front Frame, Terminal	1
3	GE-22003	Horizontal Support, Terminal	2
4	GE-22004	Chute Assembly, Terminal	2
5	GE-22007	Conduit, Terminal	2
6	GE-22008	Plastic, Purple Plane	2
7	GE-22009	Guard Assembly, Terminal	1
8	GE-22013	Side Plastic, Terminal	2
9	GE-22014	Front Plastic, Terminal	1
10	GE-22016	Outer Ramp Assembly, Left	1
11	GE-22017	Outer Ramp Assembly, Right	1
12	GE-22022	Inner Ramp	2
13	GE-22024	Edge Protector 46"	4
14	GE-22026	Terminal Chain	1
15	GE-22027	Roof	2
16	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	4
17	pin_quick_ring_.25_2.3125	Pin, Ring-Grip Quick-Release with SS Ring, 1/4" Diameter, 2.3125" Usable Length	8

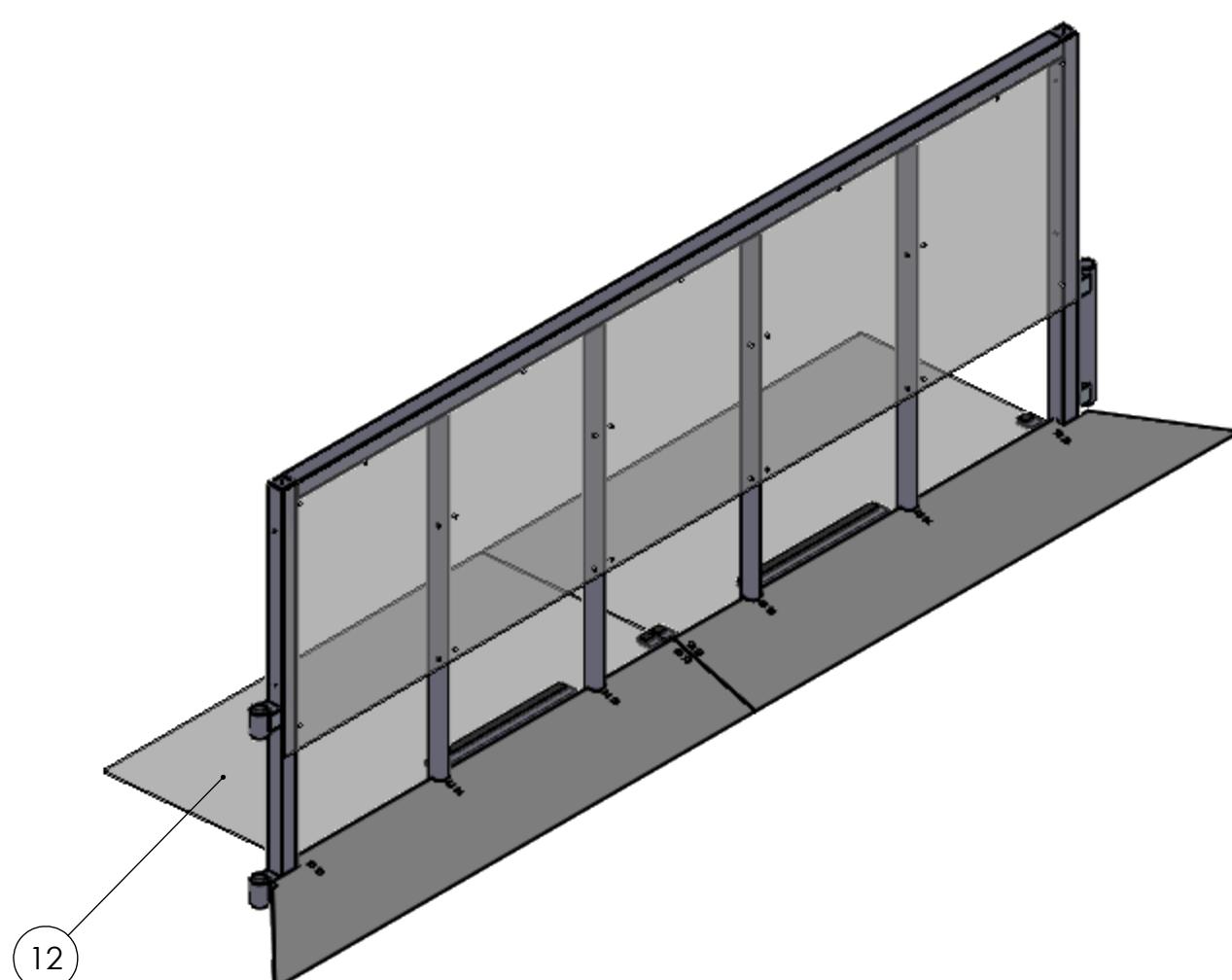
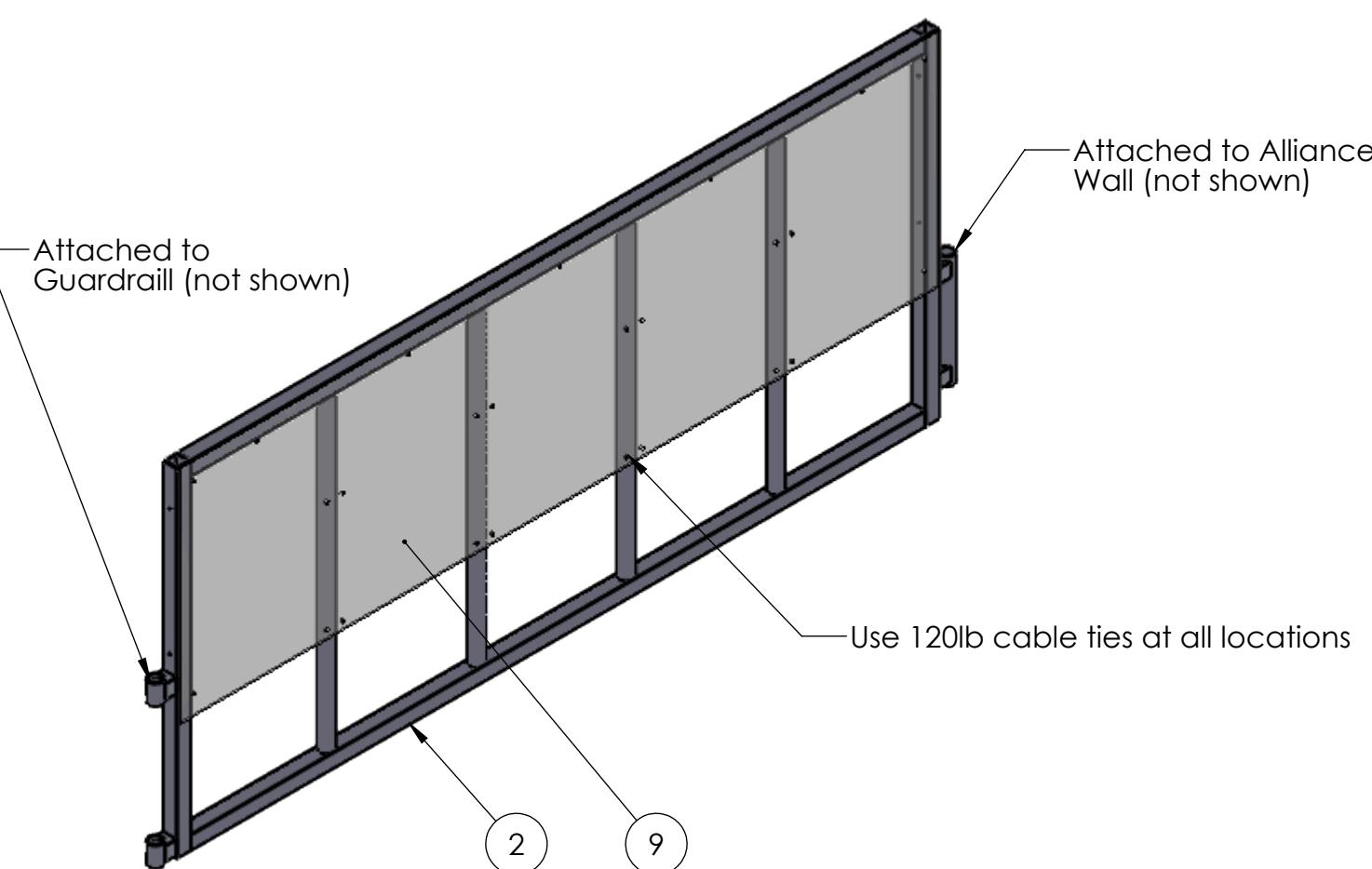
UNLESS OTHERWISE SPECIFIED:			FIELD	NAME	DATE
			DRAWN	DF	1/2/2022
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$			PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:			COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			TITLE: Terminal Assembly		
SIZE	DWG. NO.	REV	C	GE-22000	
SCALE: 1:12			SHEET 1 OF 5		

4

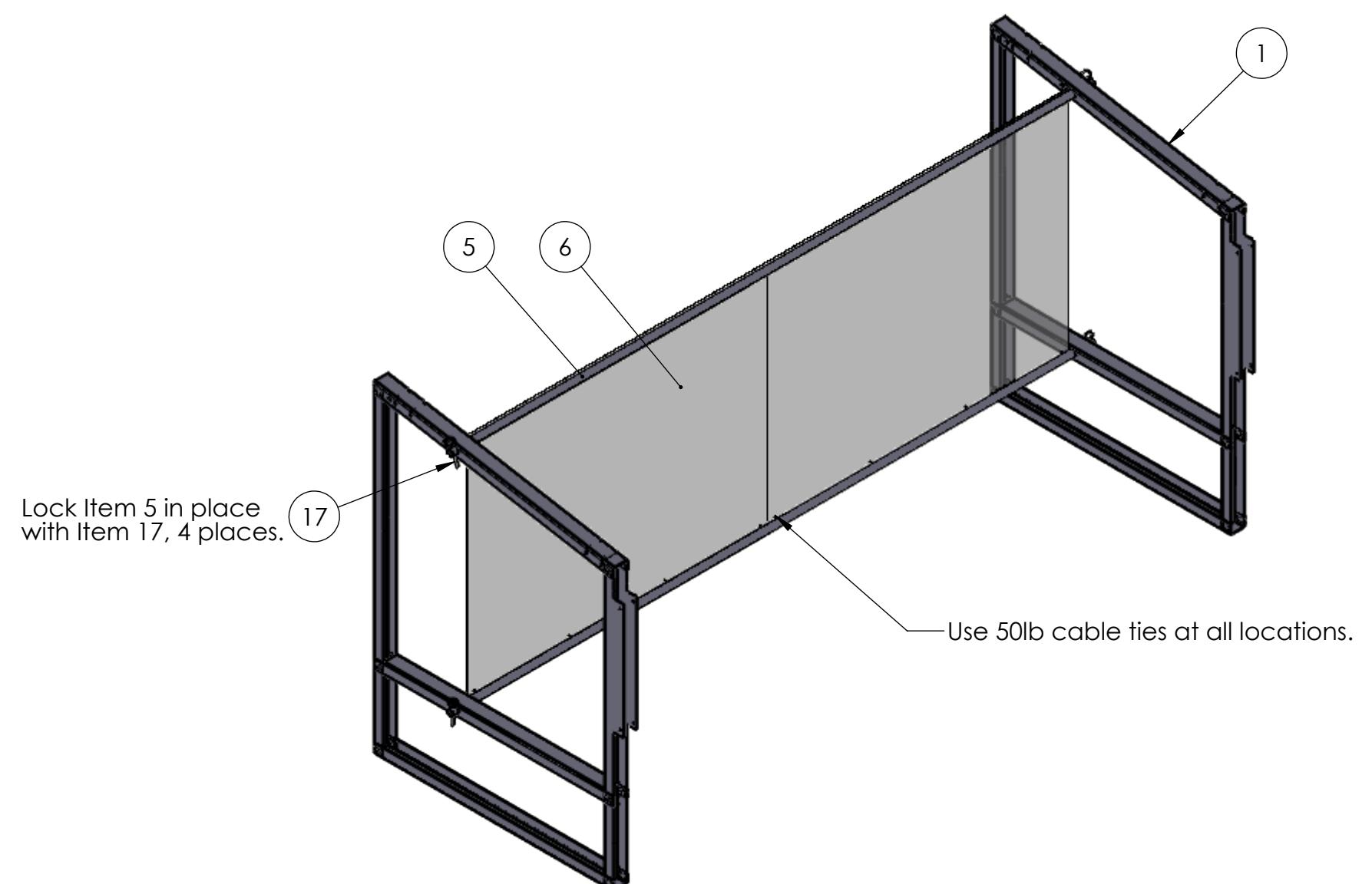
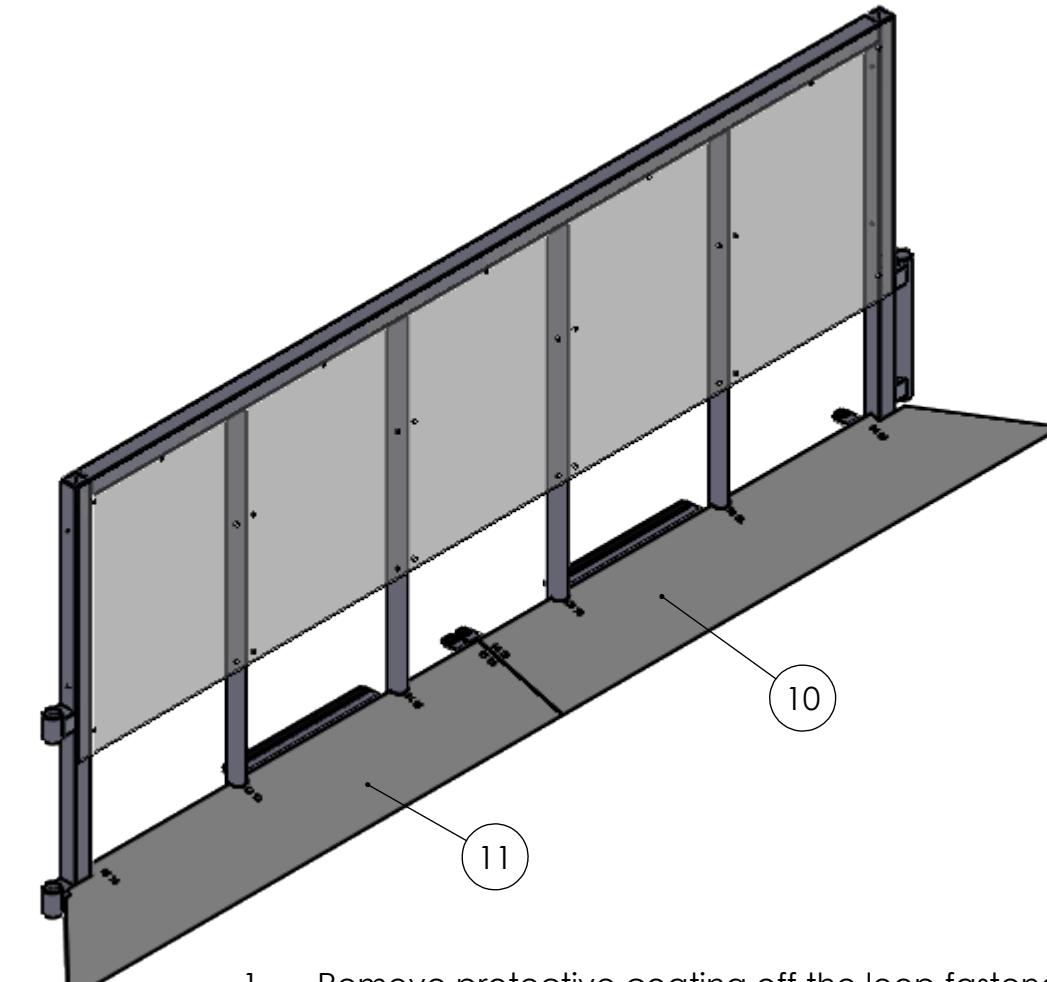
3

2

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Press Item 12 (x2) to Items 10 and 11 as shown to ensure loop fastener adheres to Item 12.



UNLESS OTHERWISE SPECIFIED:			FIELD	NAME	DATE	
DRAWN	DF	1/2/2022				
PROPRIETARY AND CONFIDENTIAL						TITLE:
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.						Terminal Assembly
MATERIAL/FINISH:	SIZE	DWG. NO.	REV	C	GE-22000	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.						SCALE: 1:16 SHEET 2 OF 5
DO NOT SCALE DRAWING						

4 3 2 1

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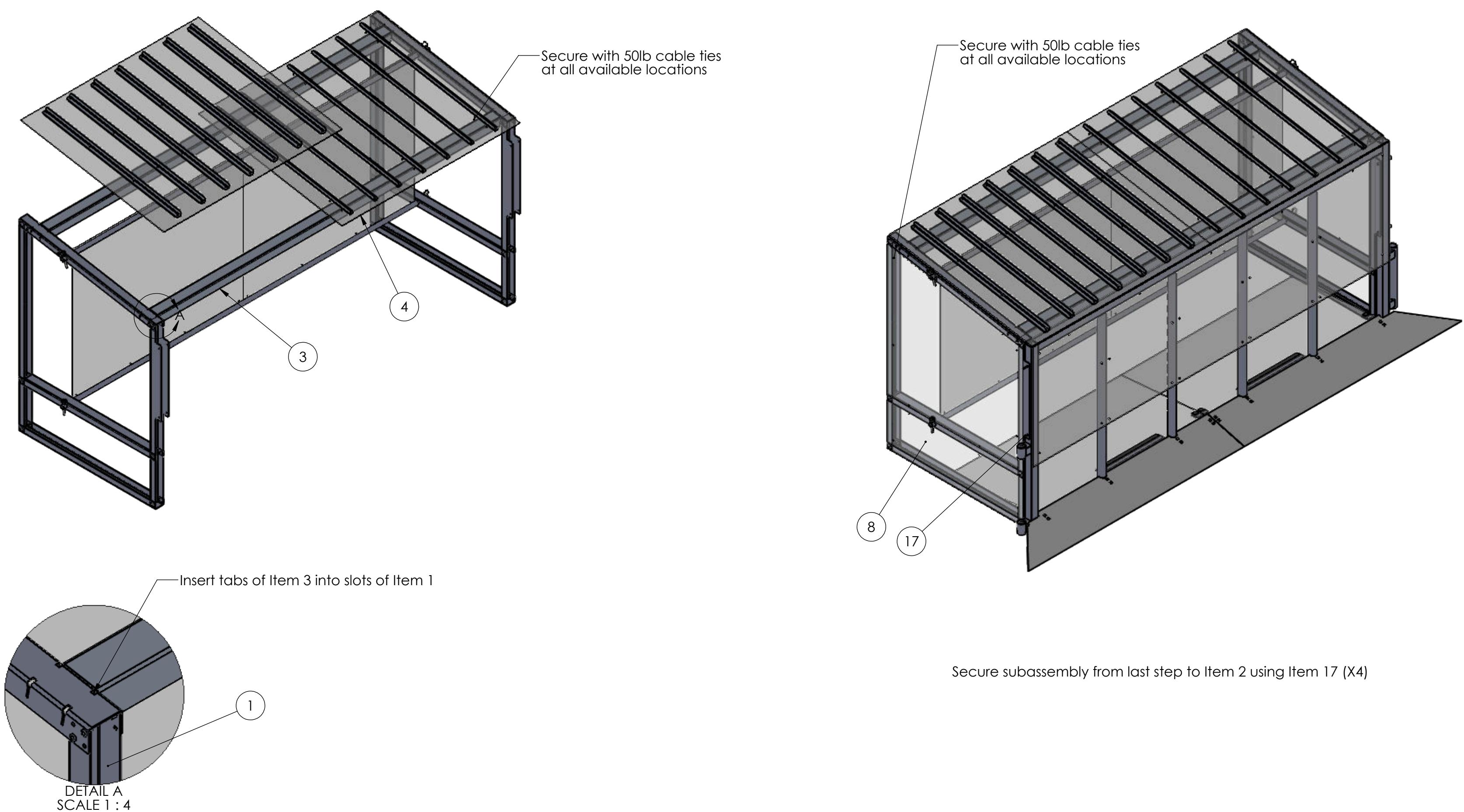
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UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	
DRAWN	DF	1/2/2022		
PROPRIETARY AND CONFIDENTIAL				
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
MATERIAL/FINISH:				TITLE: Terminal Assembly
COMMENTS:				SIZE DWG. NO. REV
REMOVE ALL BURRS AND SHARP EDGES.	C	GE-22000		
DO NOT SCALE DRAWING	SCALE: 1:16	SHEET 3 OF 5		

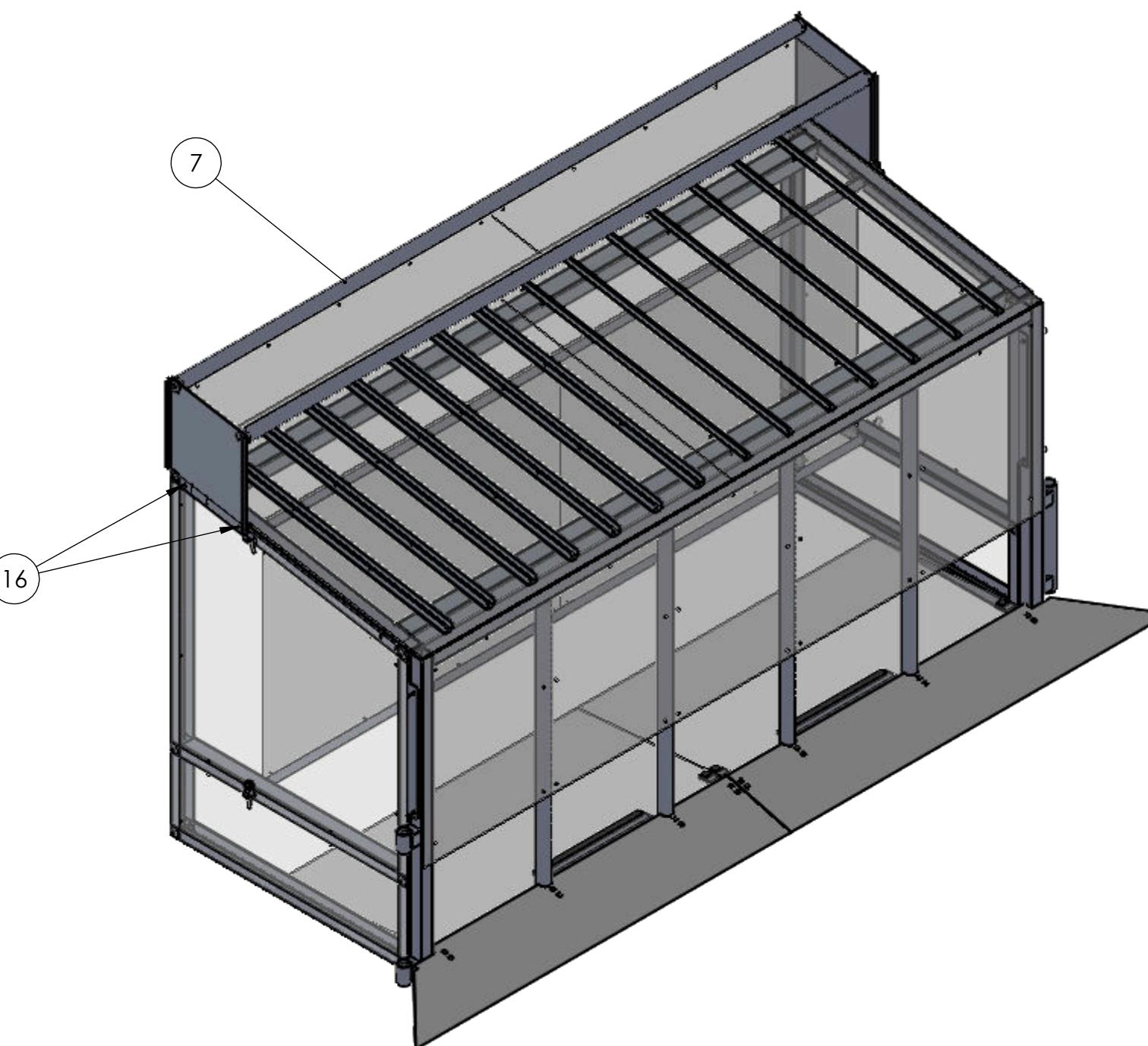
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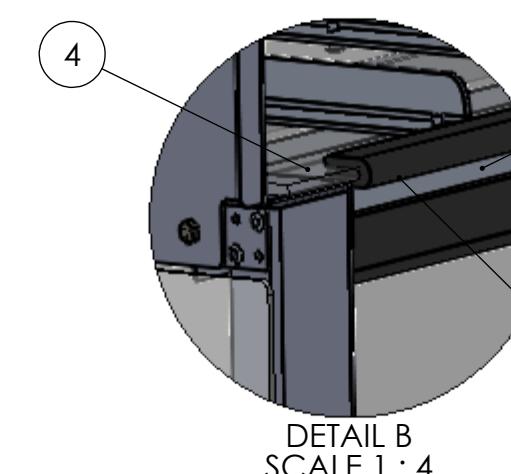
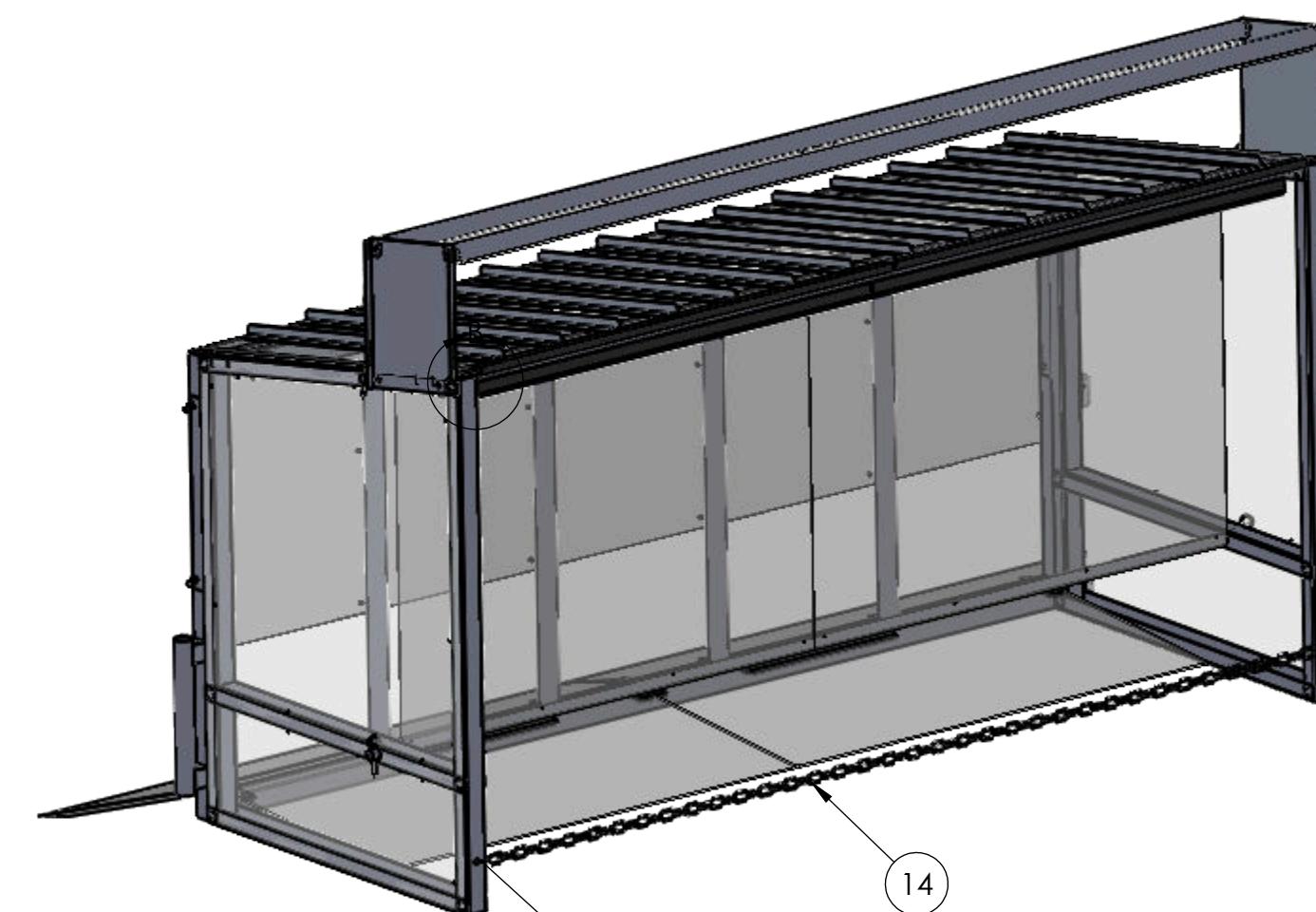
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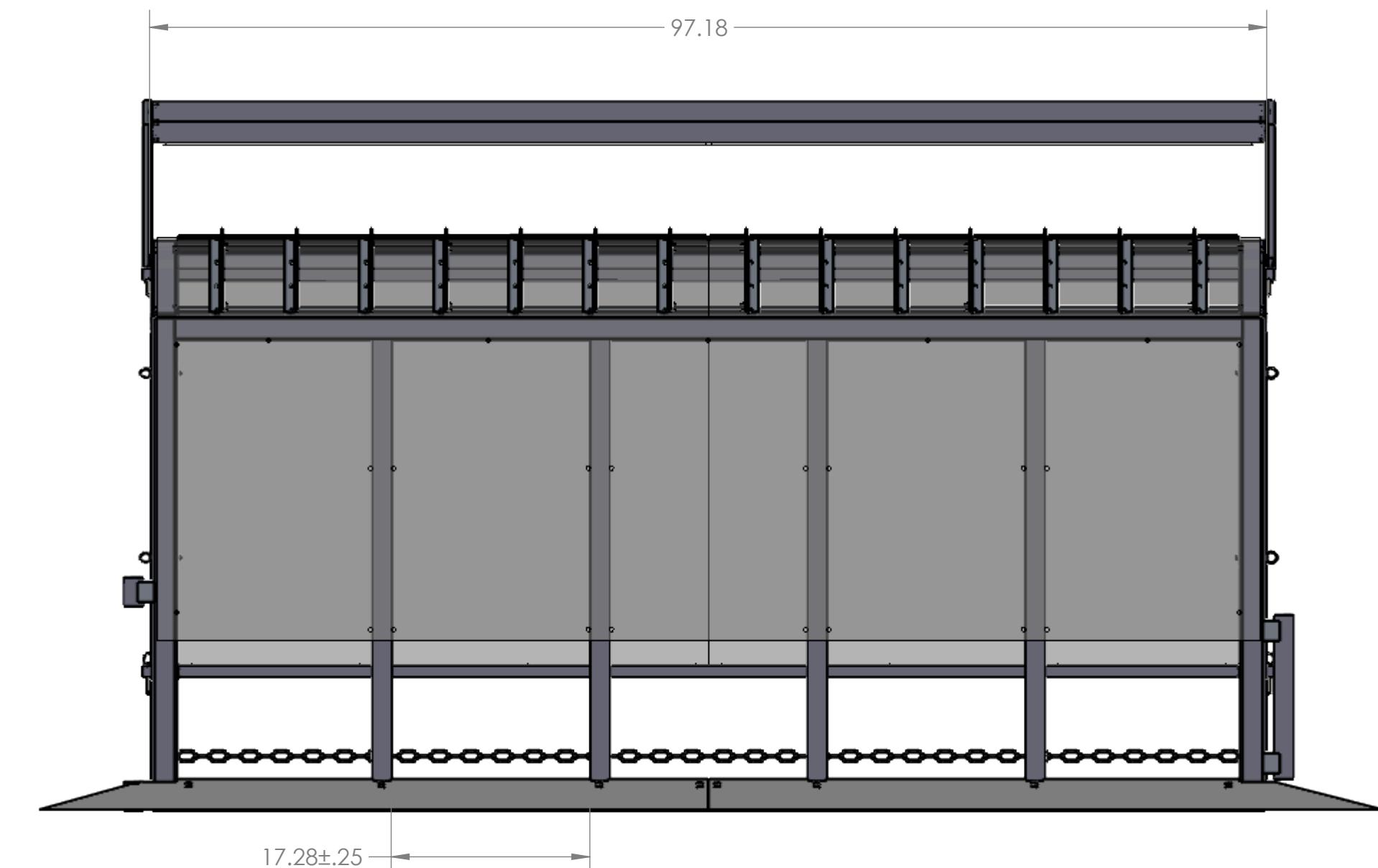
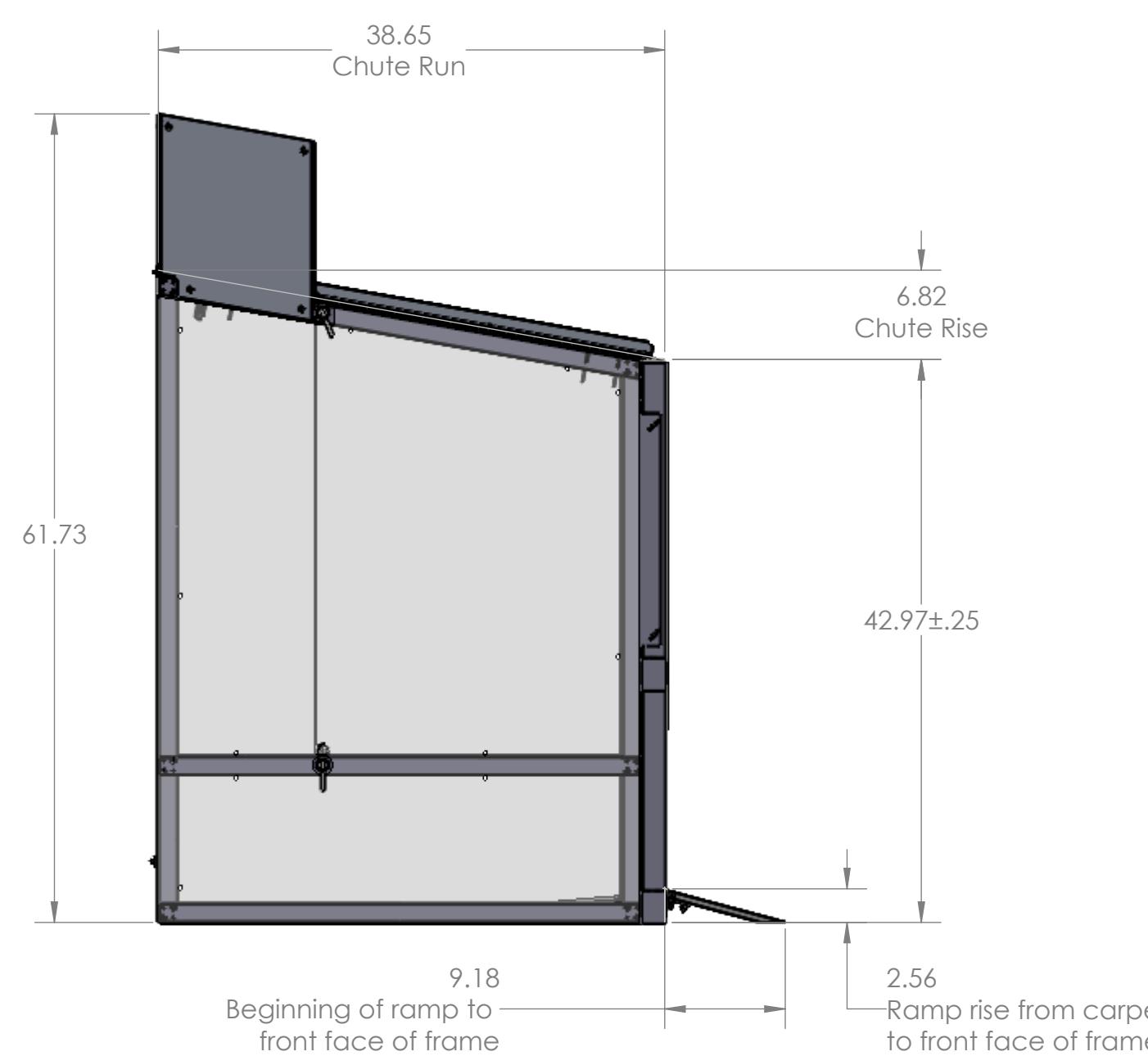
Attach Item 7 using Item 16



Attach Item 13 to the edges of Item 3 and 4 that are closest to the human player.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	
DRAWN	DF	1/2/2022		
PROPRIETARY AND CONFIDENTIAL				
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV	
	C	GE-22000		
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:16	SHEET 4 OF 5		

D



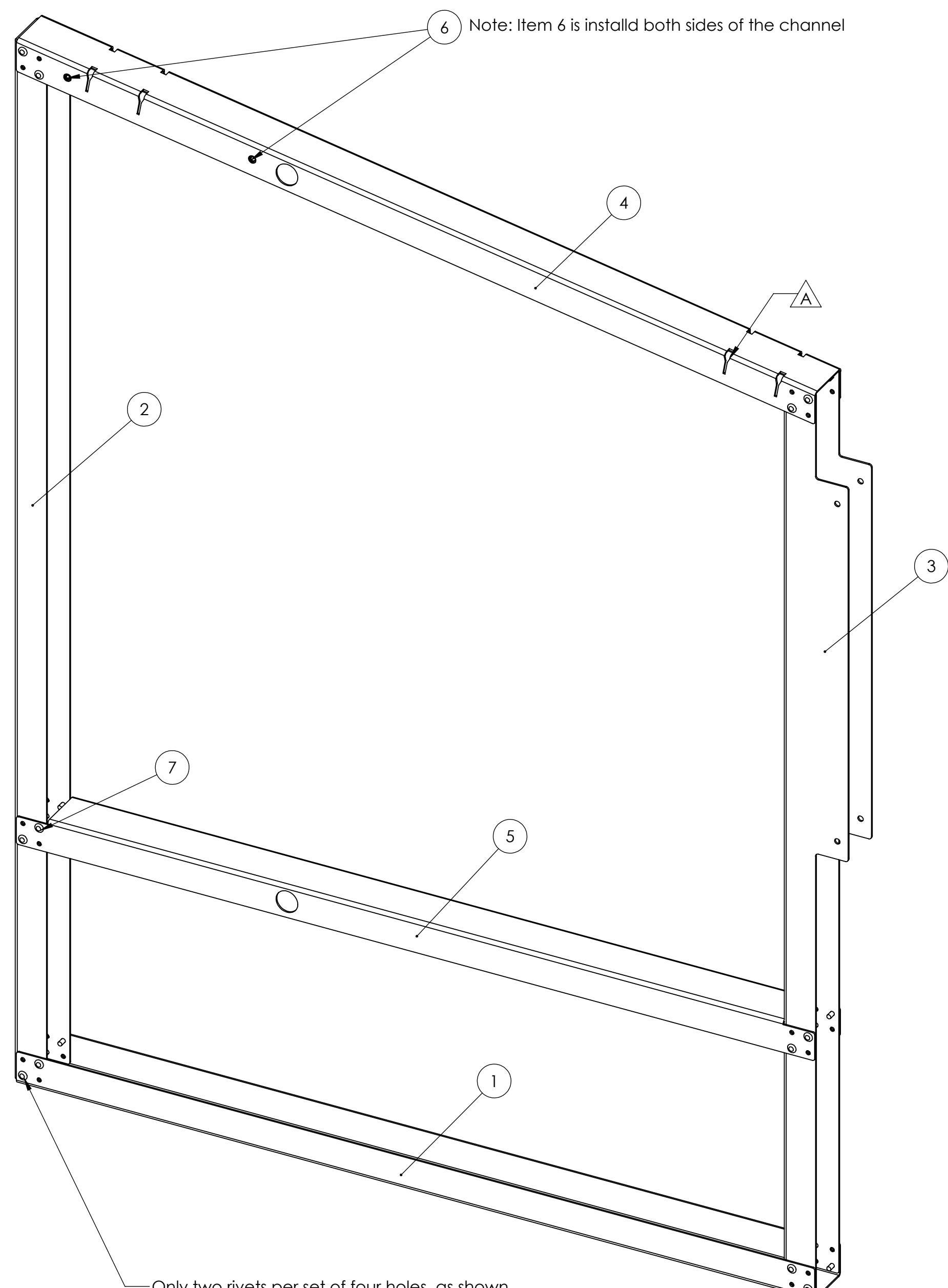
UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	
DRAWN	DF	1/2/2022		
PROPRIETARY AND CONFIDENTIAL				
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
MATERIAL/FINISH:	SIZE	DWG. NO.	REV	
	C	GE-22000		
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:24	SHEET 5 OF 5		

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C3	A	Redesigned slot shape.	8/27/2021	DAF

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22001-01	14 GA Steel, Preplated	1
2	GE-22001-02	14 GA. Steel, Preplated	1
3	GE-22001-03	14 GA. Steel, Preplated	1
4	GE-22001-04	14 GA. Steel, Preplated	1
5	GE-22001-05	14 GA Steel, Preplated	1
6	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	4
7	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	24

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
	DRAWN	DF	3/30/2021
DIMENSIONS ARE IN INCHES			
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$			
TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$			
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 FIRST
ROBOTICS
COMPETITION

 SOLIDWORKS
Modeling Solutions Partner

TITLE: Side Frame, Terminal

SIZE DWG. NO. REV

C GE-22001 **A**

SCALE: 1:8 SHEET 1 OF 3

4

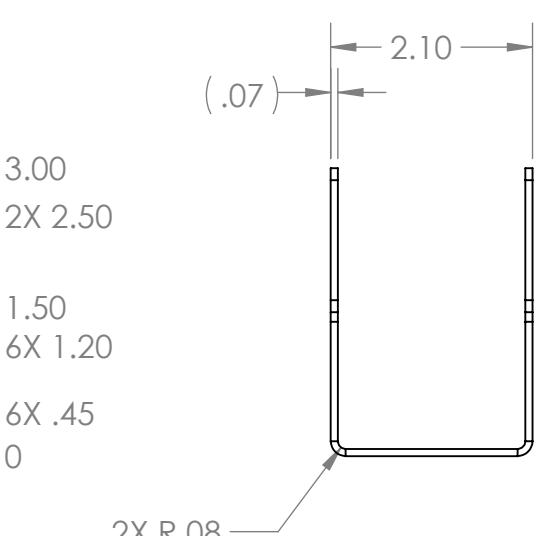
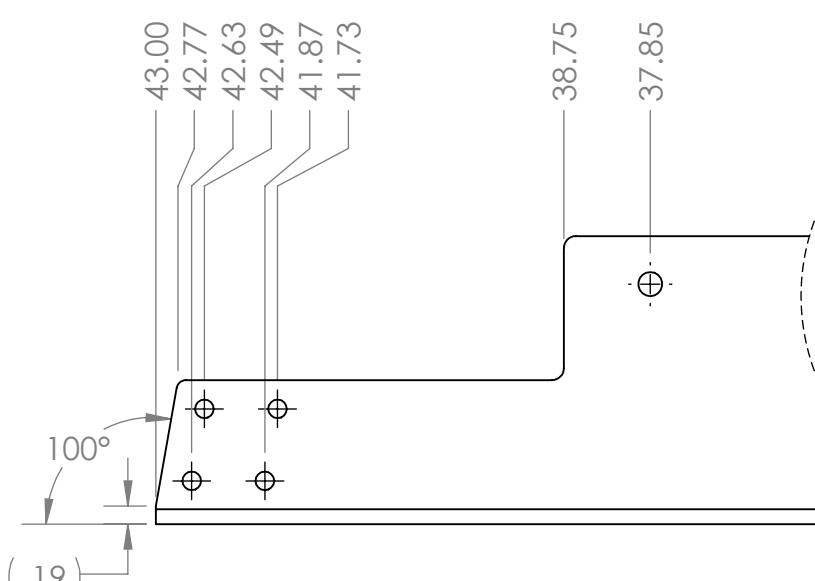
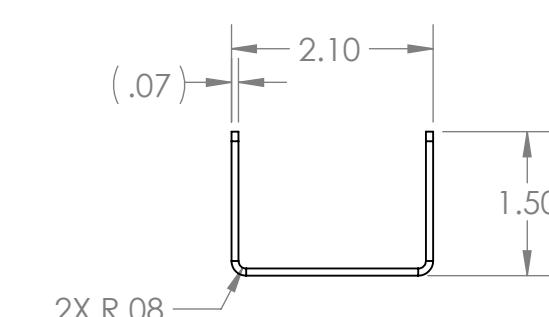
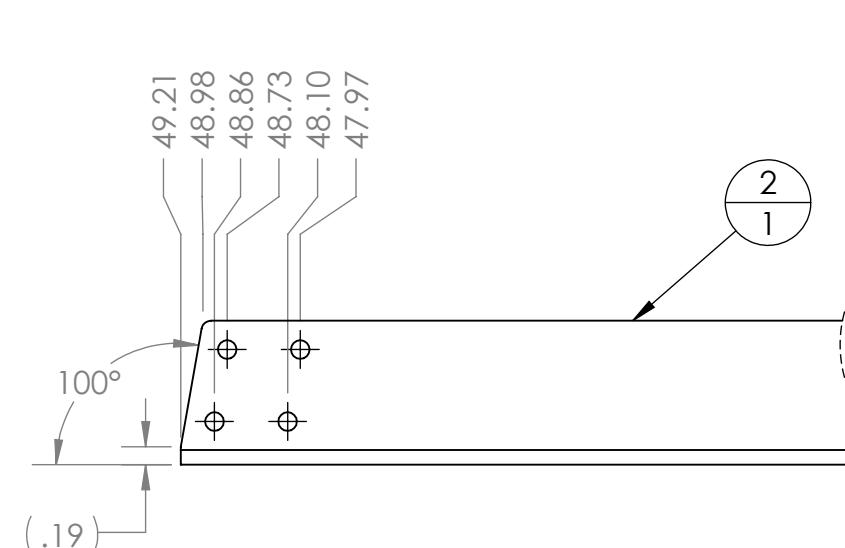
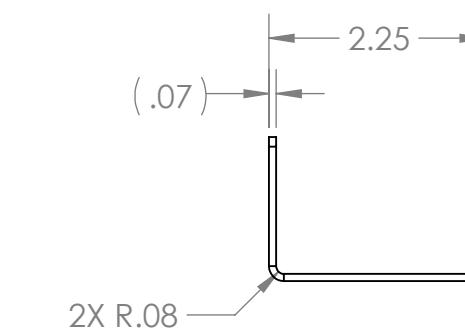
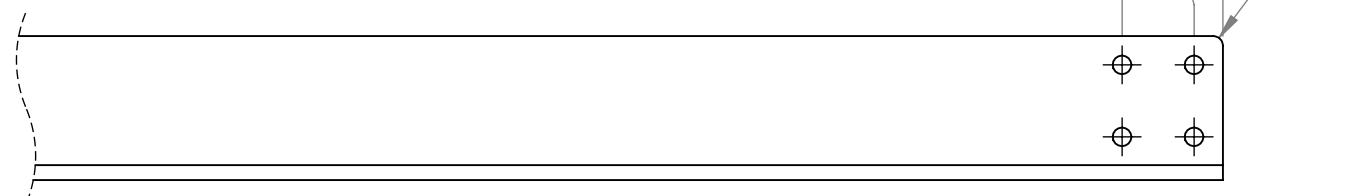
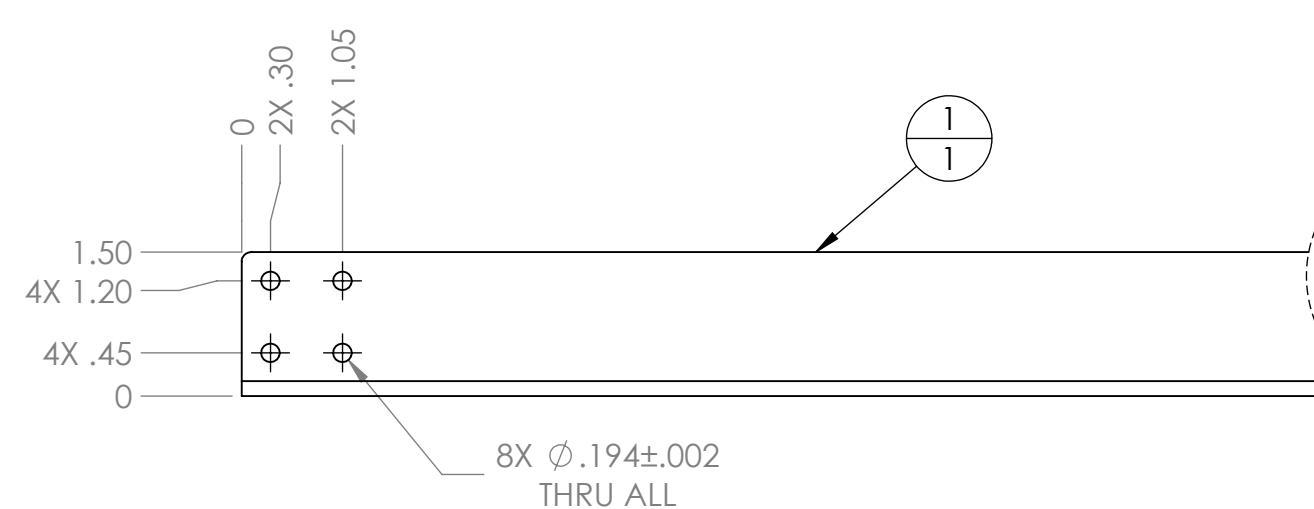
3

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UNLESS OTHERWISE SPECIFIED:			BEND	NAME	DATE			
DRAWN	DF	3/30/2021						
PROPRIETARY AND CONFIDENTIAL								
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.								
MATERIAL/FINISH:								
REMOVE ALL BURRS AND SHARP EDGES.								
DO NOT SCALE DRAWING								

TITLE: Side Frame,
Terminal

SIZE DWG. NO. REV
C GE-22001 **A**

SCALE: 1:8 SHEET 2 OF 3

4

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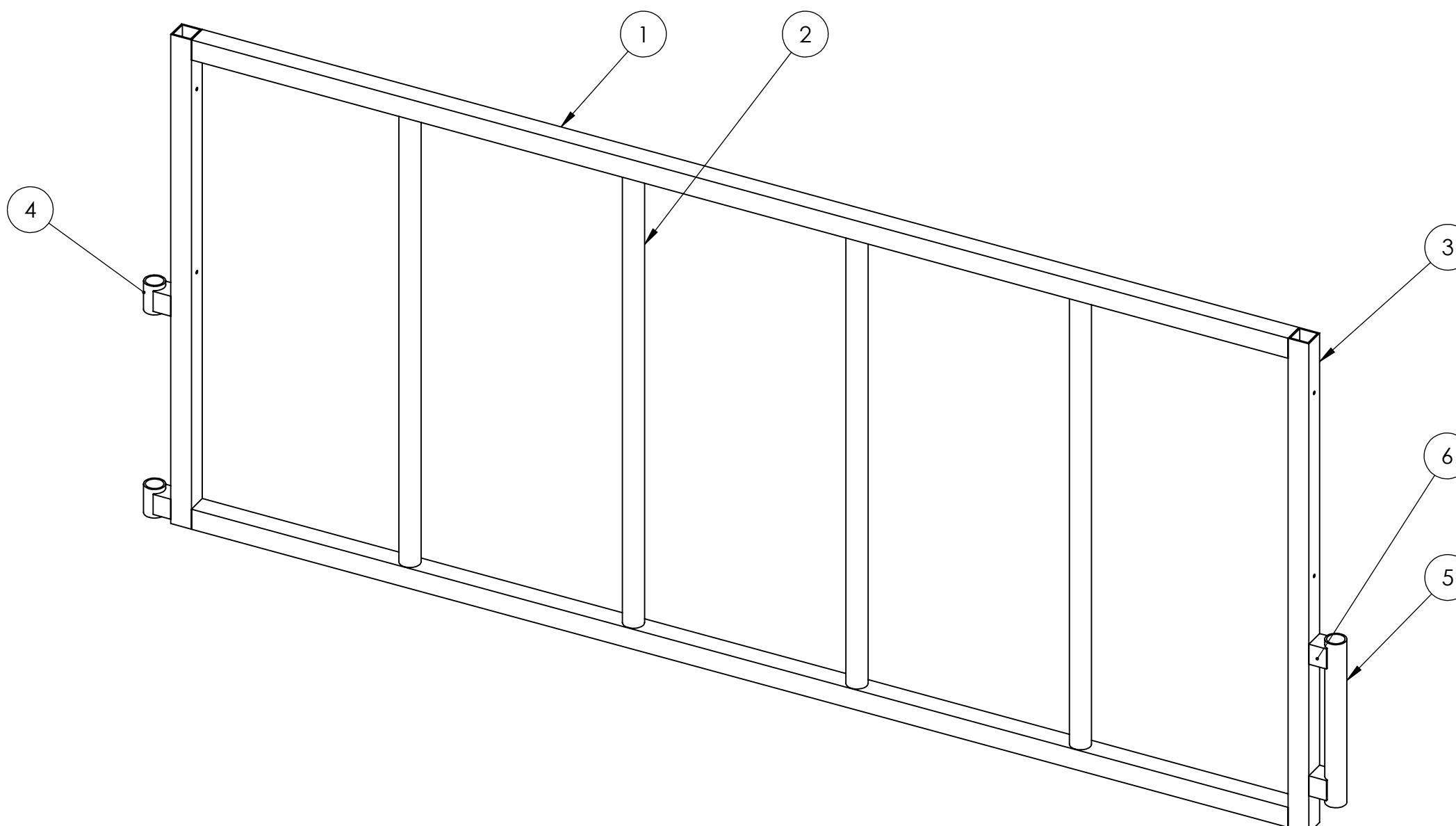
C

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Notes:

1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION			QTY.
1	GE-22002-01	1.75" x .125" thk. Square Tube, 6061 Aluminum			2
2	GE-22002-02	1-1/4" Schedule 40 Pipe, 6061 Aluminum			4
3	GE-22002-03	1.75" x .125" thk. Square Tube, 6061 Aluminum			2
4	GE-22002-04	1-1/4" Schedule 40 Pipe, 6061 Aluminum			2
5	GE-22002-05	1-1/4" Schedule 40 Pipe, 6061 Aluminum			1
6	GE-22002-06	1.75" x .125" thk. Square Tube, 6061 Aluminum			4

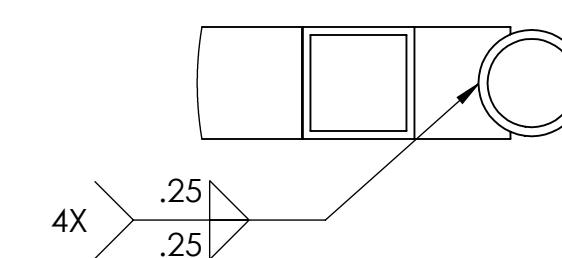
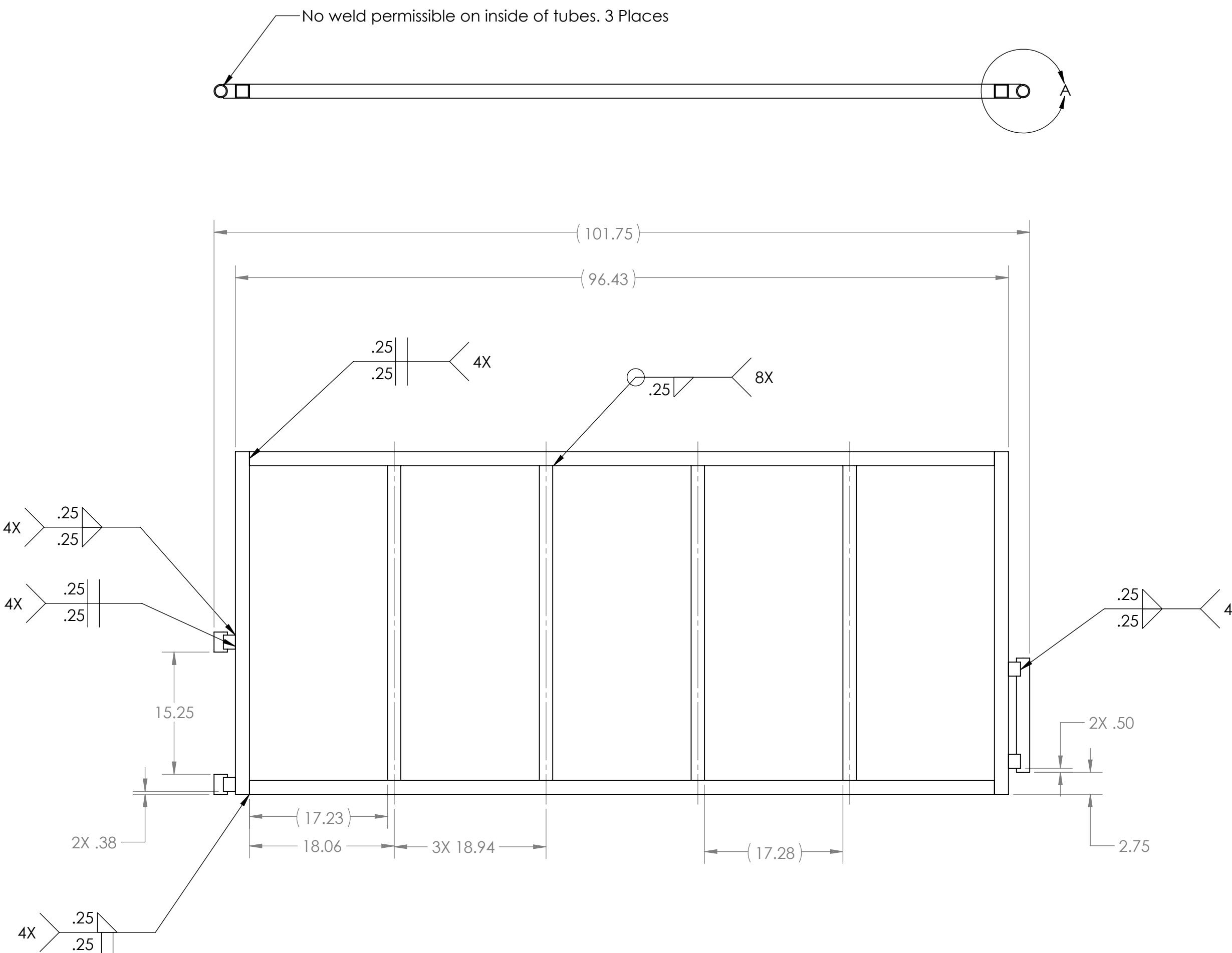
UNLESS OTHERWISE SPECIFIED:			WELD	NAME	DATE
DIMENSIONS ARE IN INCHES			DRAWN	DF	5/21/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$					
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:			COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			SIZE	DWG. NO.	REV
			C	GE-22002	
			SCALE: 1:10	SHEET 1 OF 4	

 FIRST
ROBOTICS
COMPETITION  SOLIDWORKS
Modeling Solutions Partner

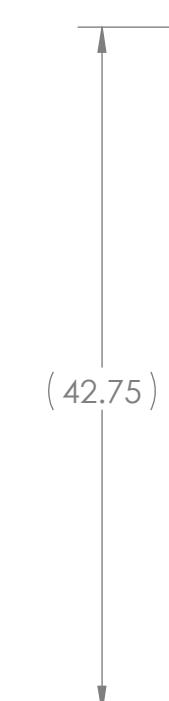
TITLE:
**Front Frame,
Terminal**

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DETAIL A
SCALE 1 : 3



UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	DF	5/21/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Front Frame,
Terminal

SIZE DWG. NO. REV

C GE-22002

SCALE: 1:12 SHEET 2 OF 4

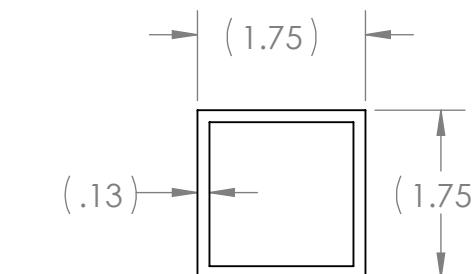
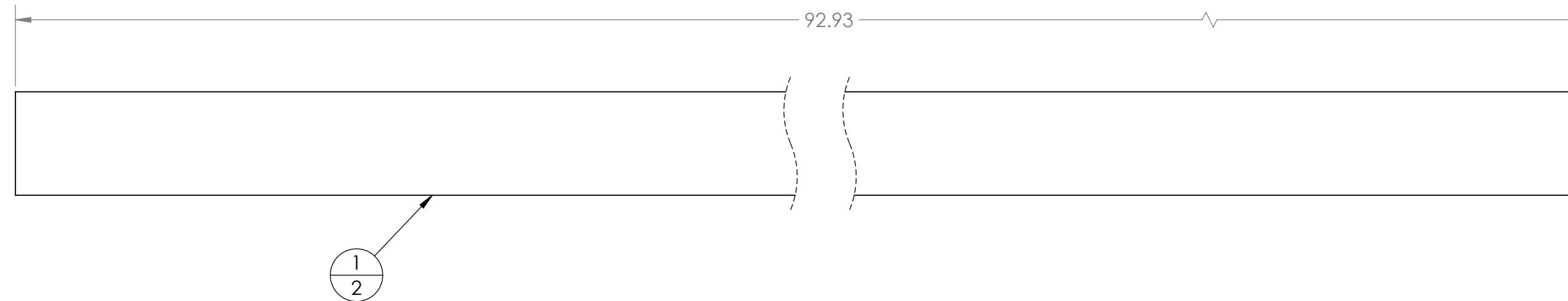
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3

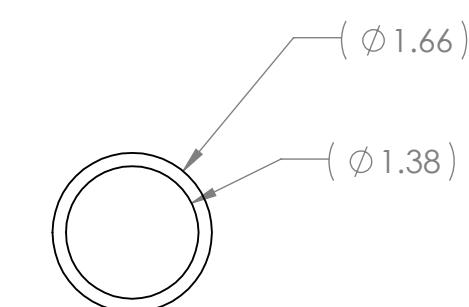
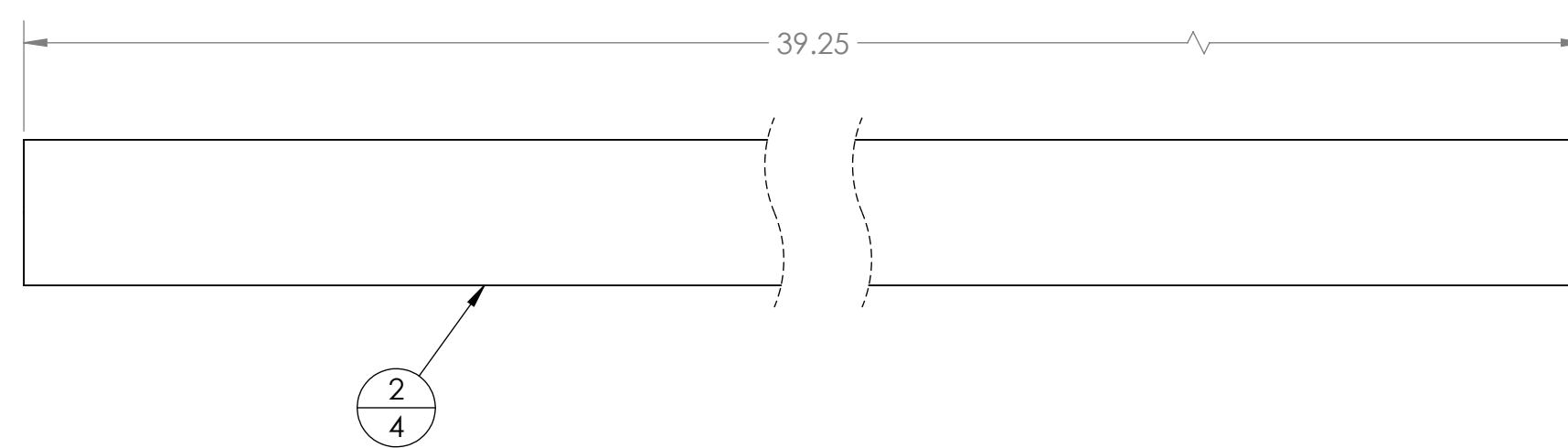
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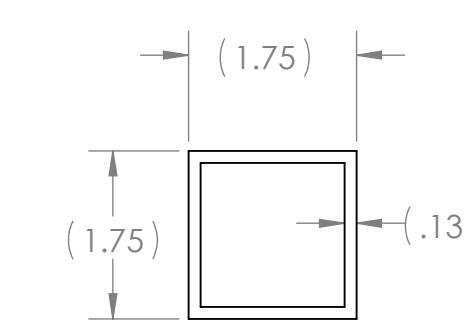
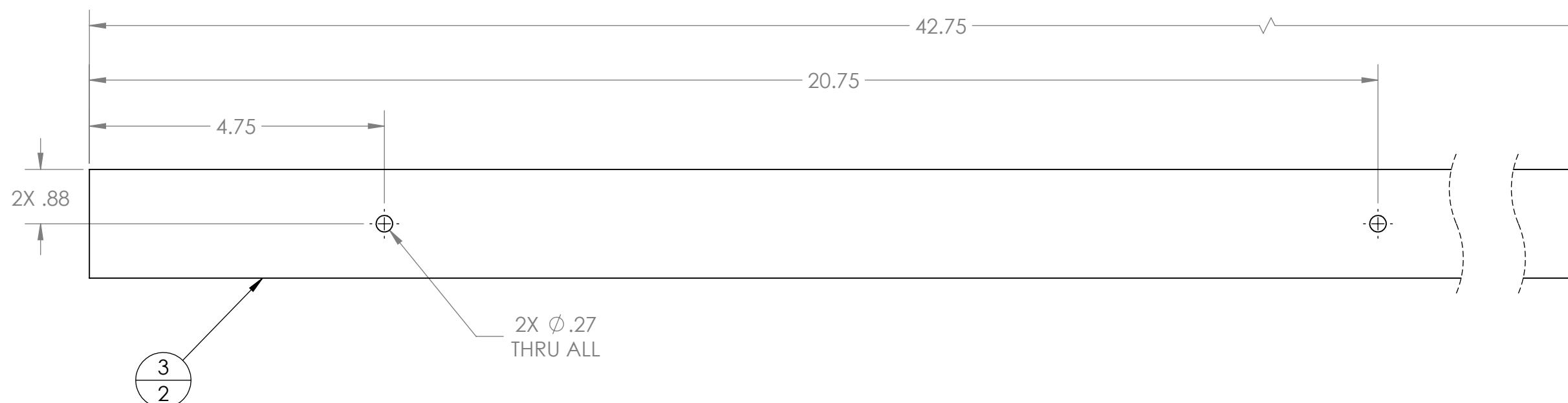
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UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	DF	5/21/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Front Frame,
Terminal

SIZE DWG. NO. REV

C GE-22002

SCALE: 1:12 SHEET 3 OF 4

4

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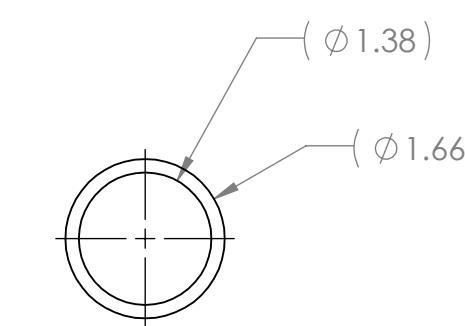
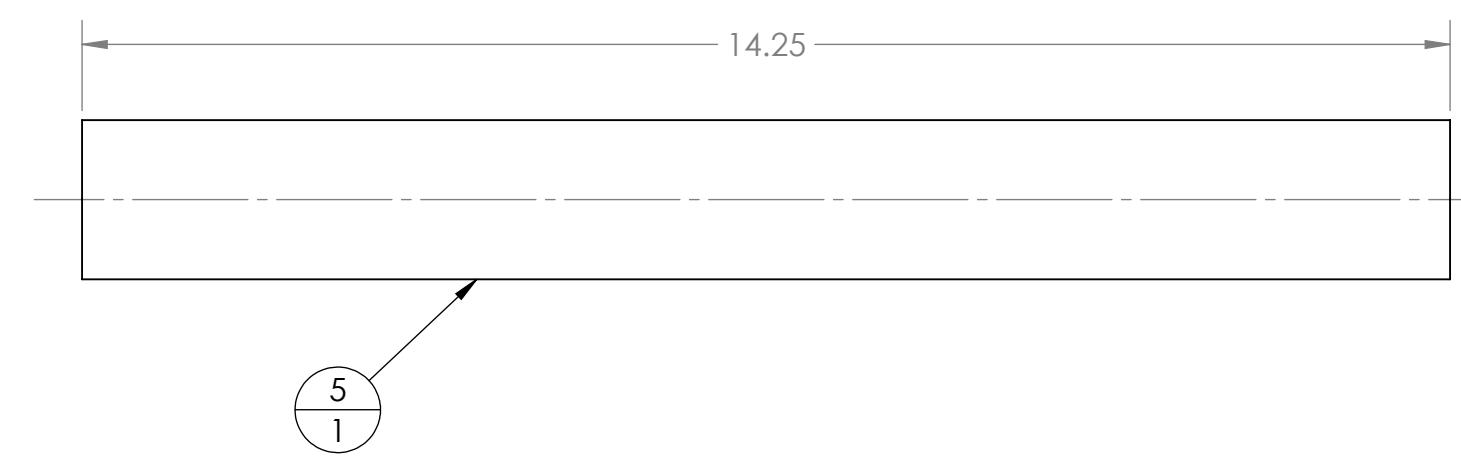
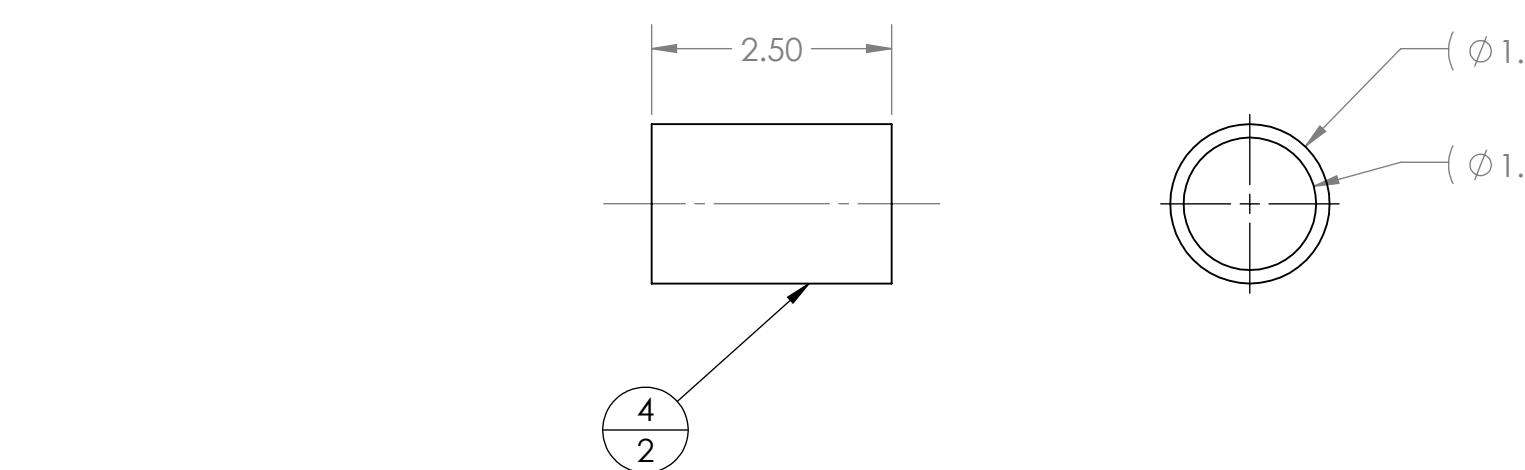
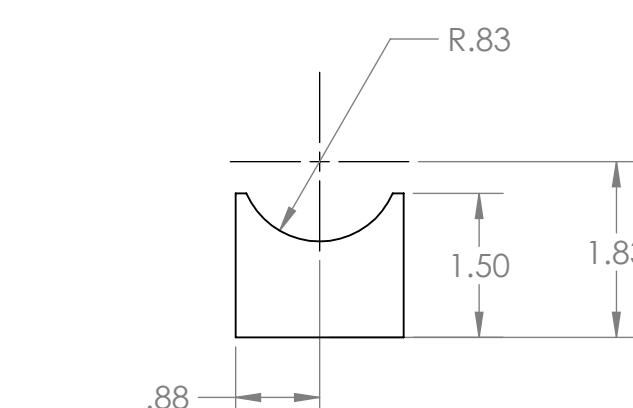
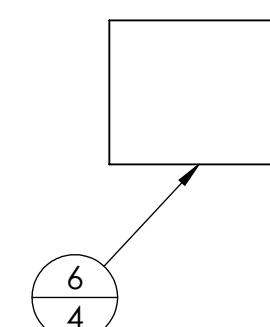
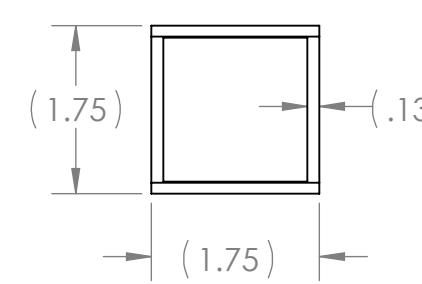
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UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	DF	5/21/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

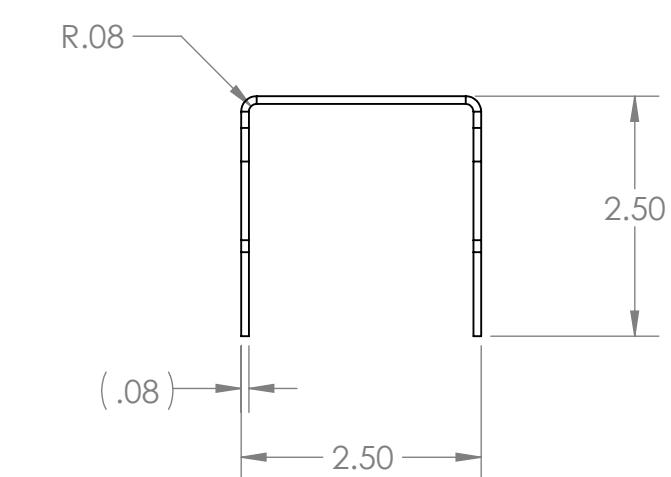
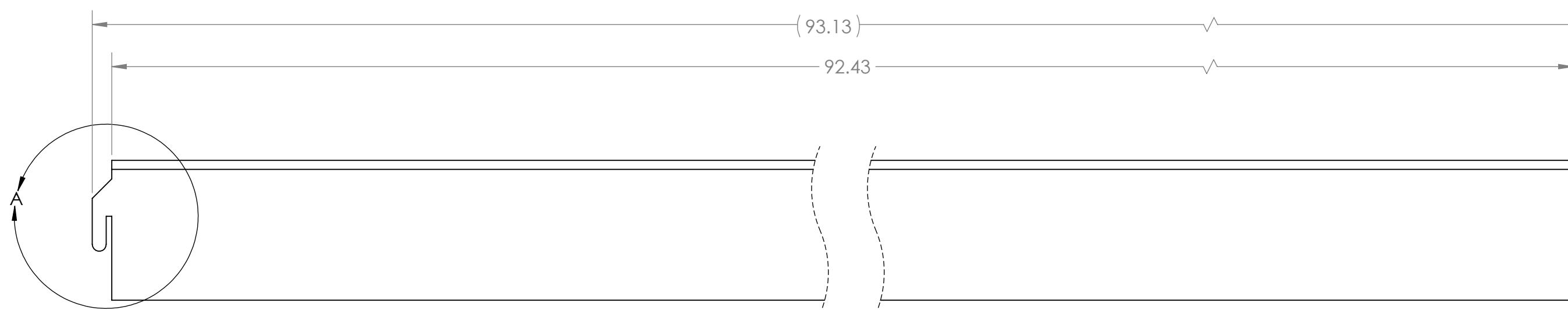
SOLIDWORKS
Modeling Solutions Partner

TITLE:
Front Frame,
Terminal

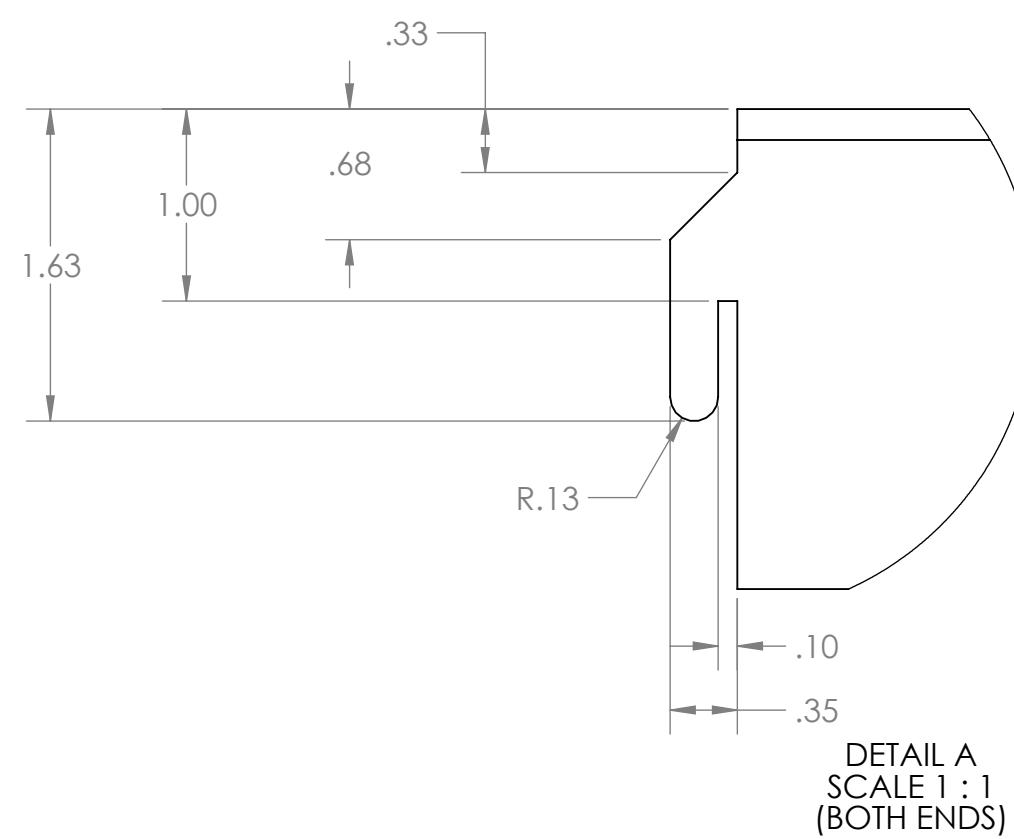
SIZE DWG. NO. REV
C GE-22002

SCALE: 1:12 SHEET 4 OF 4

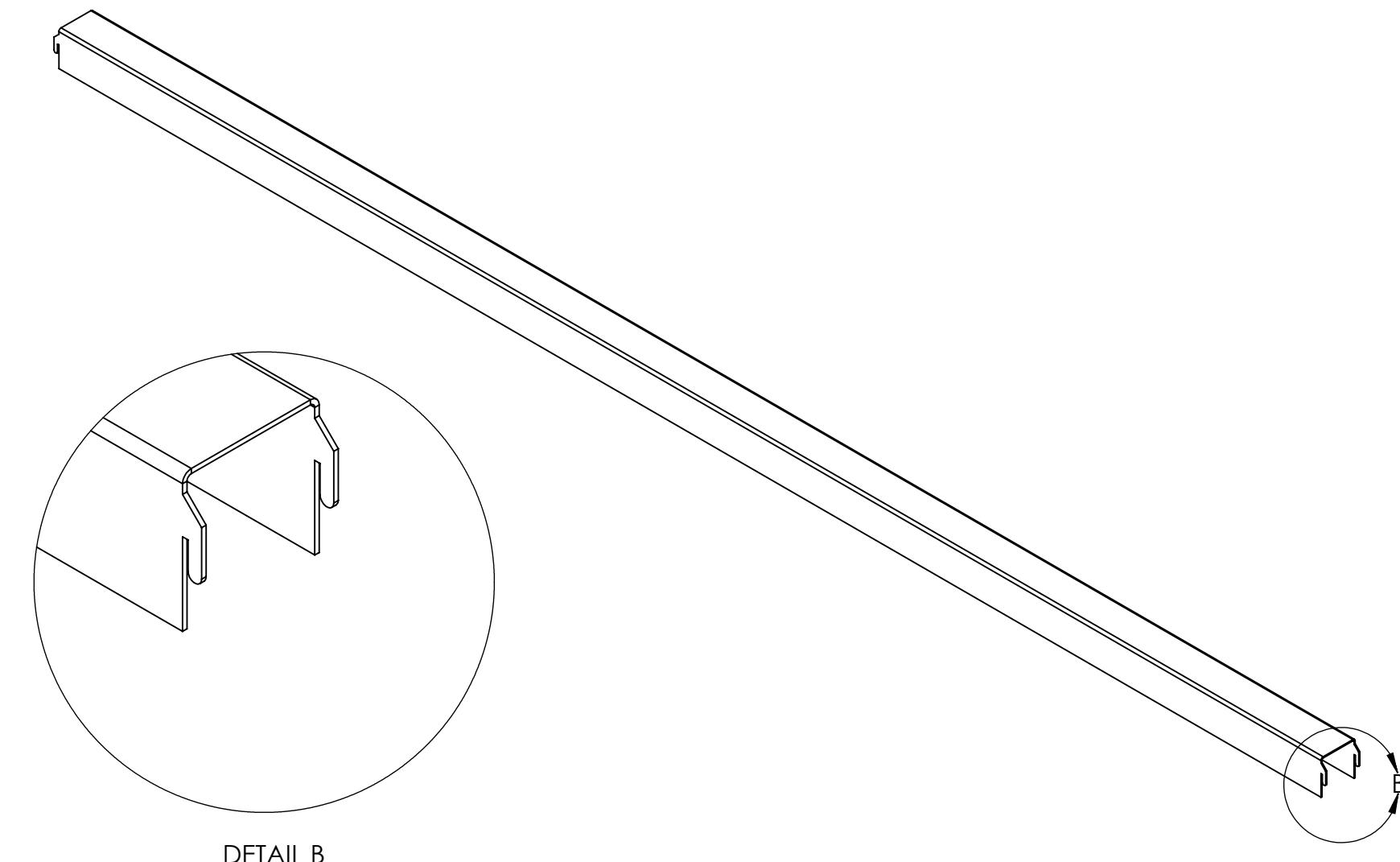
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Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	DF	4/2/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 12 ga. 5052 Aluminum			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

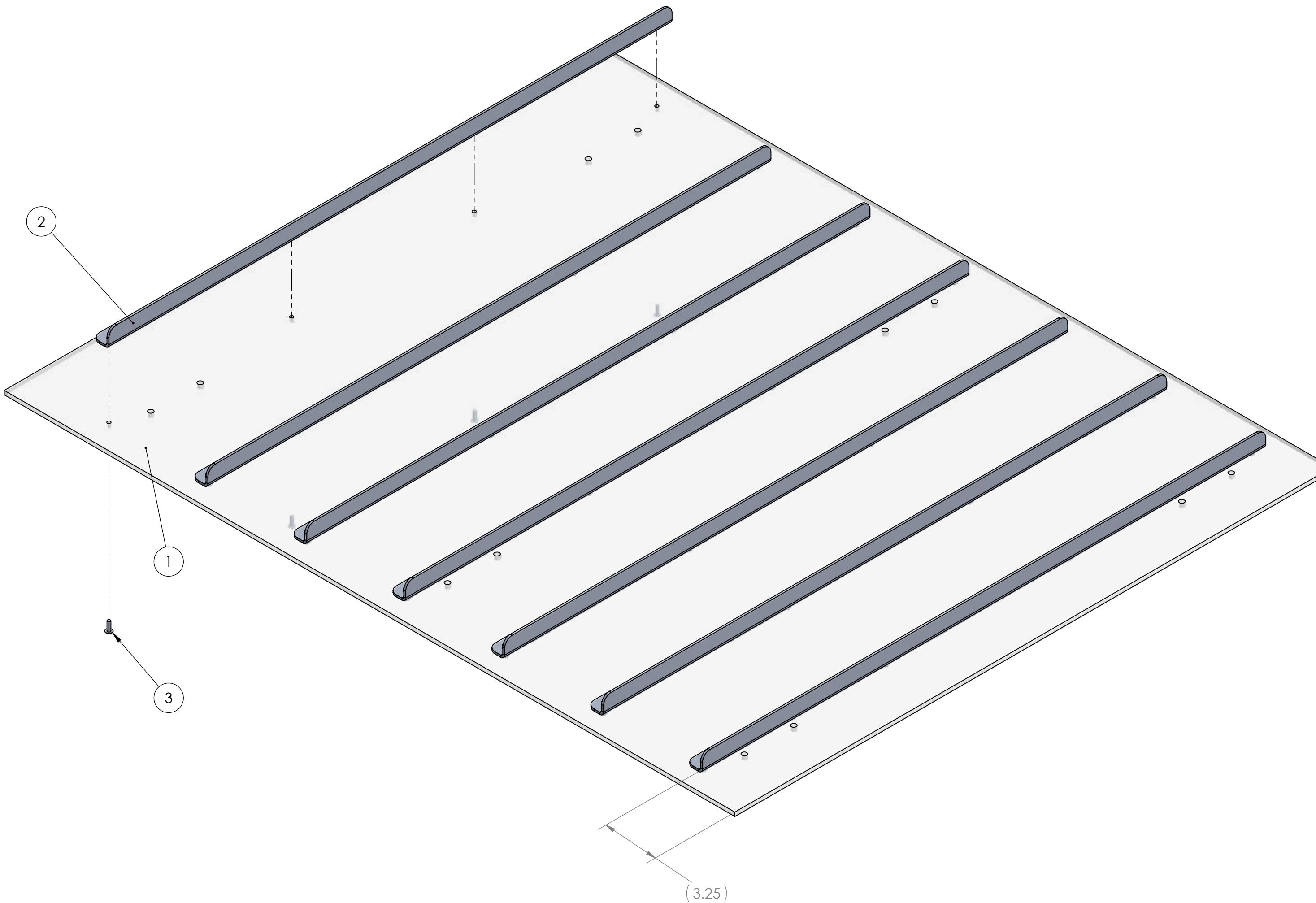
SOLIDWORKS
Modeling Solutions Partner

TITLE: Horizontal Support,
Terminal

SIZE DWG. NO. REV

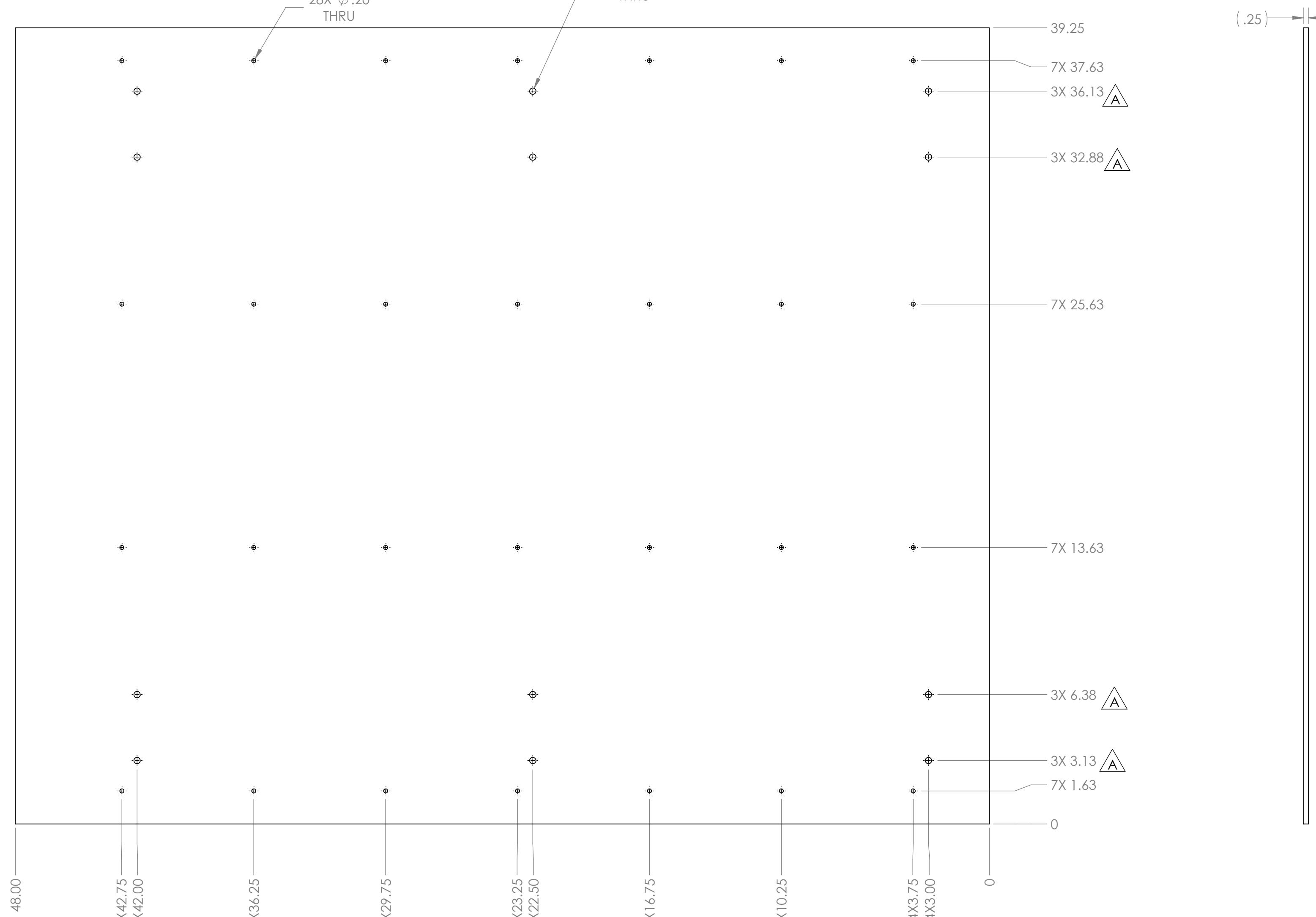
C GE-22003

SCALE: 1:2 SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22005	Bed, Chute Assembly	1
2	GE-22006	Angle, Chute Assembly	7
3	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	28

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
	DRAWN	DF	8/13/2021
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.	TITLE: Chute Assembly, Terminal	FIRST ROBOTICS COMPETITION <small>SOLIDWORKS Modeling Solutions Partner</small>
MATERIAL/FINISH: Tag or Label with Part Number		SIZE DWG. NO. REV	C GE-22004
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		SCALE: 1:4	SHEET 1 OF 1
DO NOT SCALE DRAWING			



Notes:
1. Label or tag with part number.

UNLESS OTHERWISE SPECIFIED:			VEND	NAME	DATE
			DRAWN	DF	5/21/2021
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$					
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	1/4" Polycarbonate, Clear				
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING					

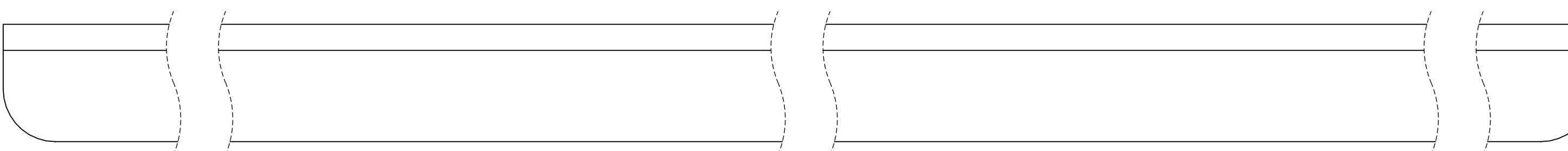


TITLE: Bed, Chute Assembly

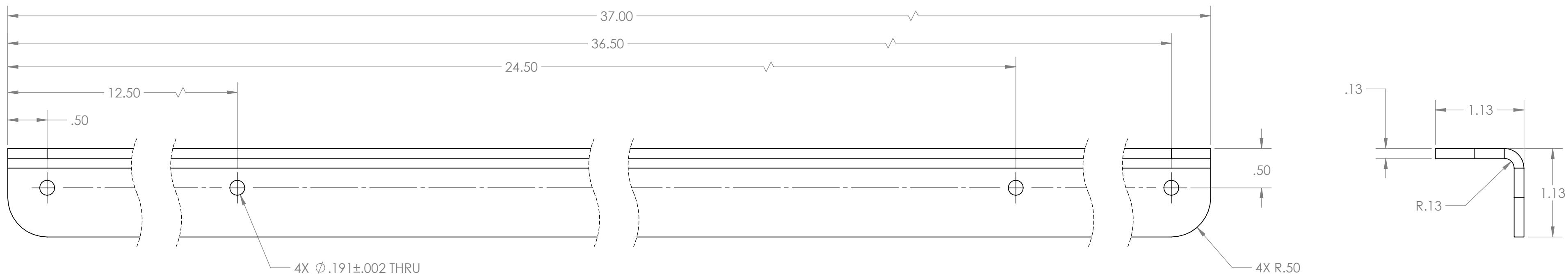
SIZE DWG. NO. REV
C GE-22005 **A**

SCALE: 1:4 SHEET 1 OF 1

D



C



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Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	DF	4/9/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
12 ga. 5052 Aluminum	C	GE-22006	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:1	SHEET 1 OF 1	

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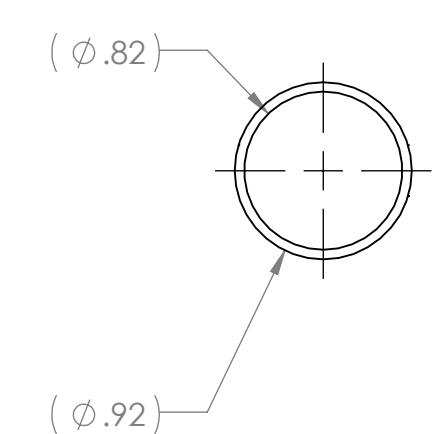
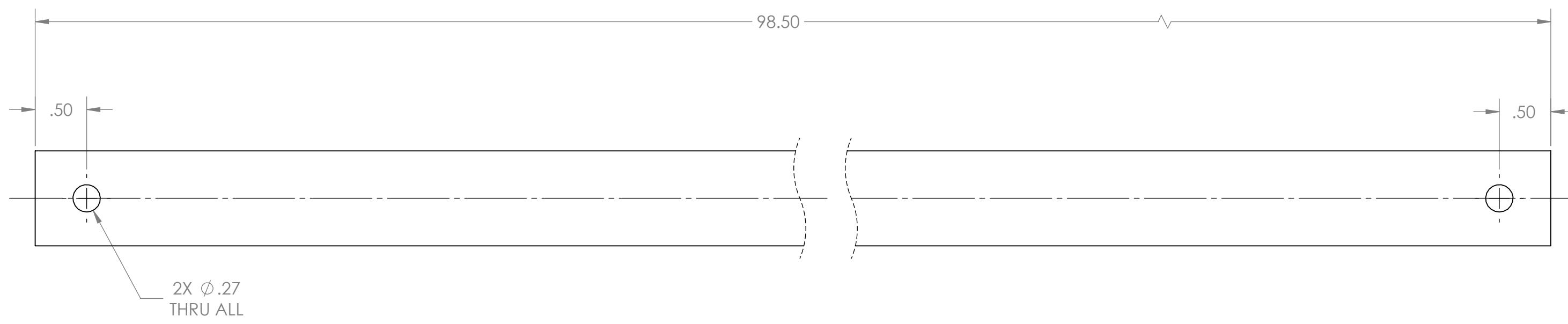
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Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	DF	5/21/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 3/4" Galvanized Steel EMT			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Conduit,
Terminal**

SIZE DWG. NO. REV
C GE-22007

SCALE: 1:12 SHEET 1 OF 1

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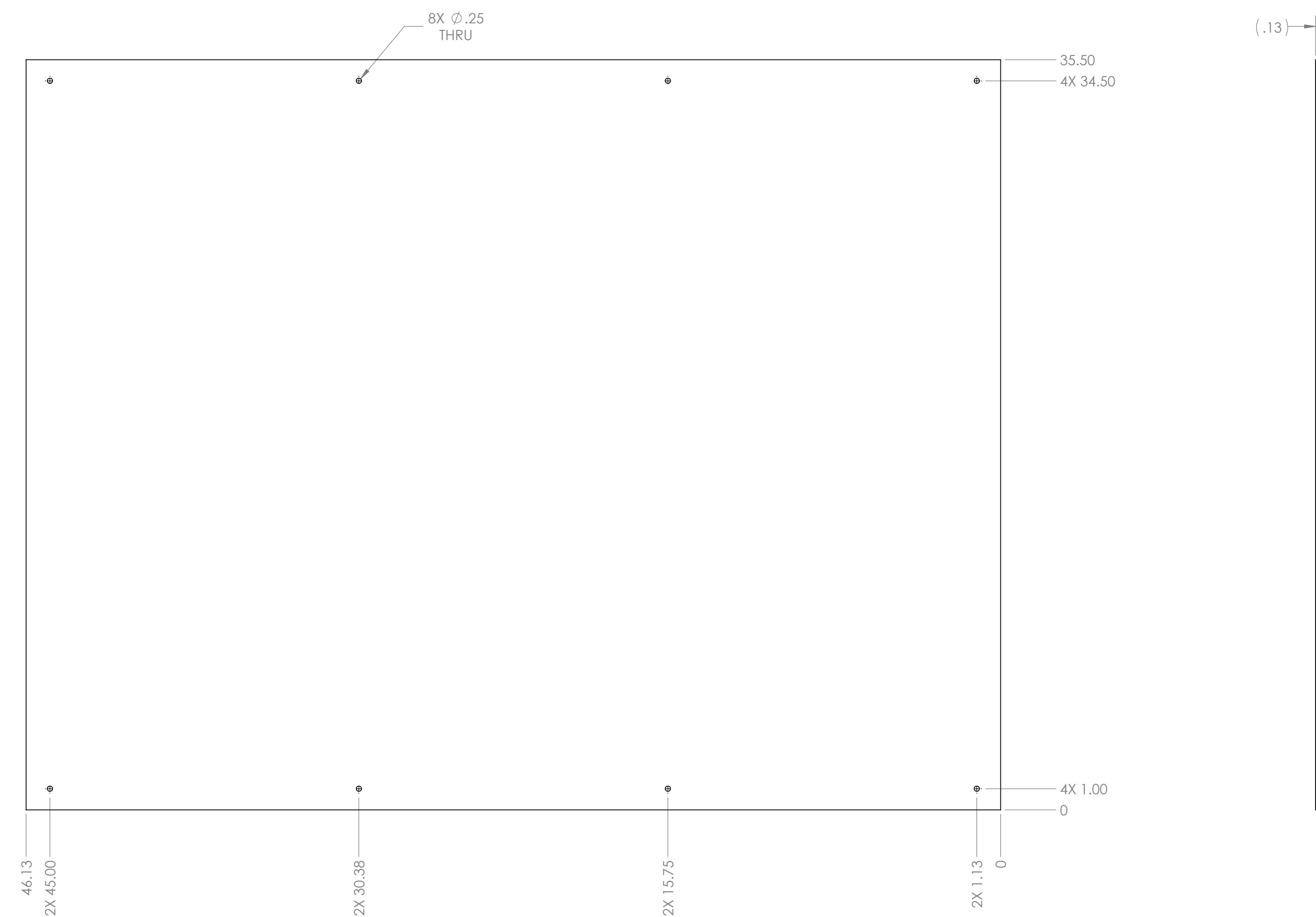
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Label or tag with part number



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	DF	5/21/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 1/8" Polycarbonate, Clear			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			



TITLE:
Plastic, Purple
Plane

SIZE DWG. NO. REV
C GE-22008

SCALE: 1:4 SHEET 1 OF 1

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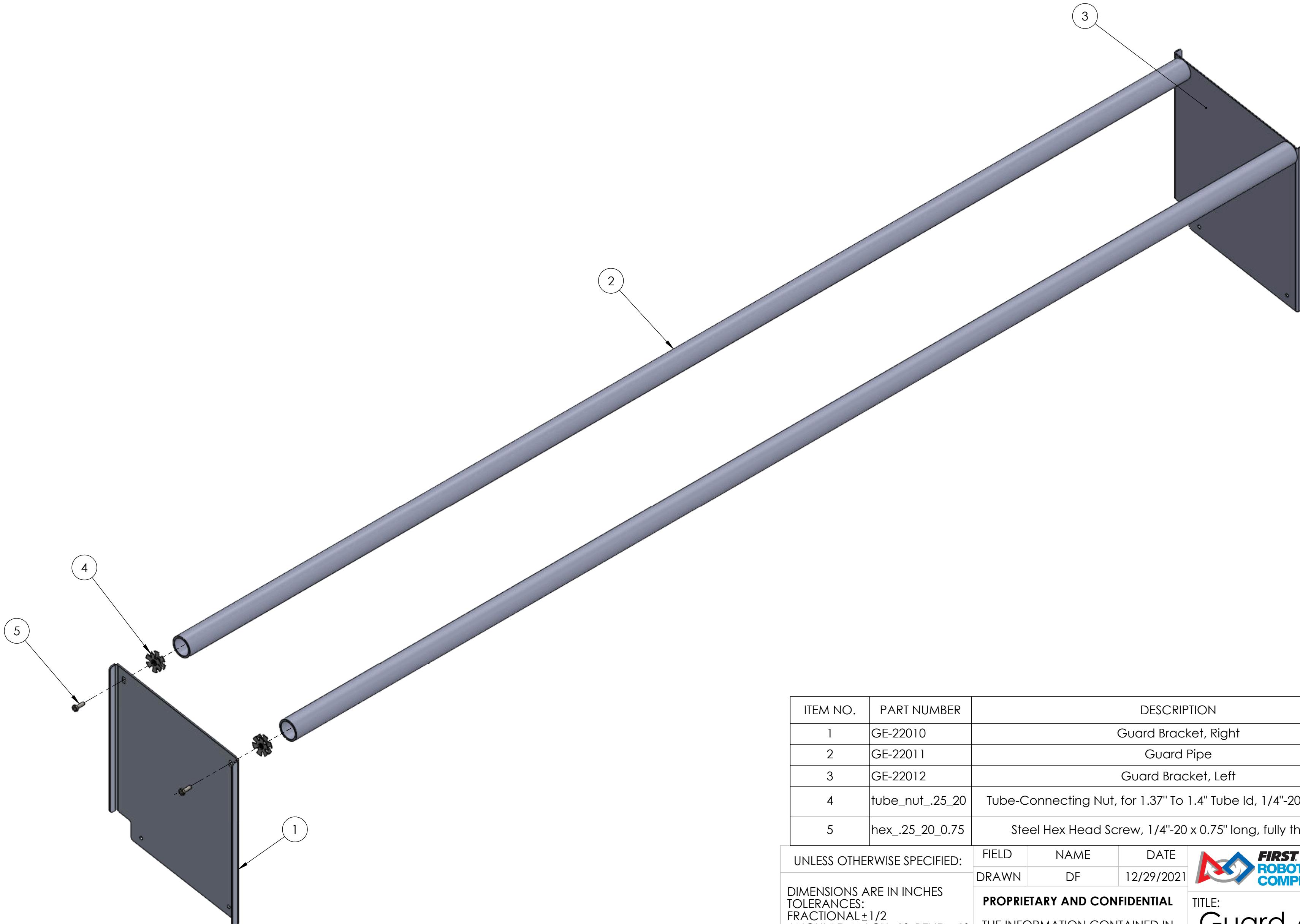
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ITEM NO.	PART NUMBER	DESCRIPTION			QTY.
1	GE-22010	Guard Bracket, Right			1
2	GE-22011	Guard Pipe			2
3	GE-22012	Guard Bracket, Left			1
4	tube_nut_25_20	Tube-Connecting Nut, for 1.37" To 1.4" Tube Id, 1/4"-20 Thread Size			4
5	hex_25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded			4

UNLESS OTHERWISE SPECIFIED:

FIELD NAME DATE

DRAWN DF 12/29/2021

**FIRST
ROBOTICS
COMPETITION****SOLIDWORKS**
Modeling Solutions Partner

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.

MATERIAL/FINISH:

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

TITLE:
**Guard Assembly,
Terminal**

SIZE DWG. NO. REV

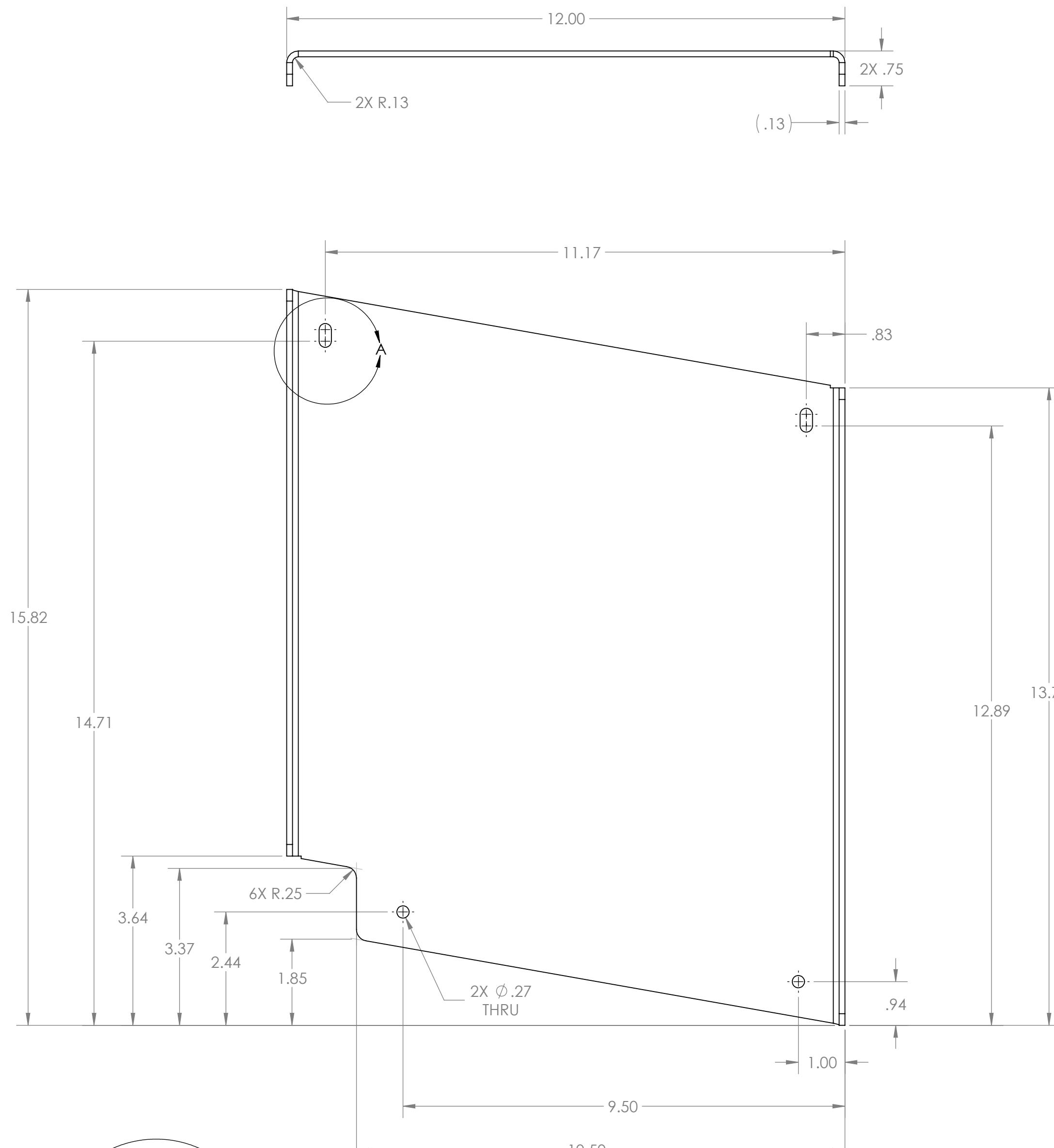
C GE-22009

SCALE: 1:5 SHEET 1 OF 1

DO NOT SCALE DRAWING

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Label or tag with part number.

DETAIL A
SCALE 1:1

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	DF	4/7/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 14 ga. Pre-plated Steel			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Guard Bracket,
Right**

SIZE DWG. NO. REV

C GE-22010

SCALE: 1:2 SHEET 1 OF 1

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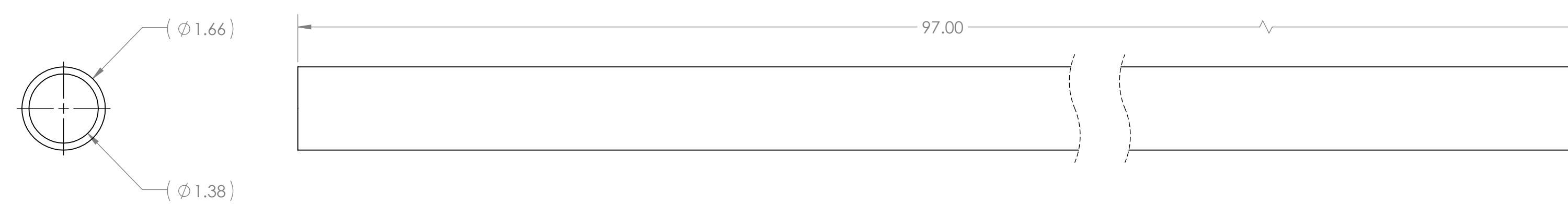
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Tag or label with part number.



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	DF	8/13/2021
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
1-1/4" Schedule 40 Pipe, 6061 Aluminum	C	GE-22011	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:2	SHEET 1 OF 1	

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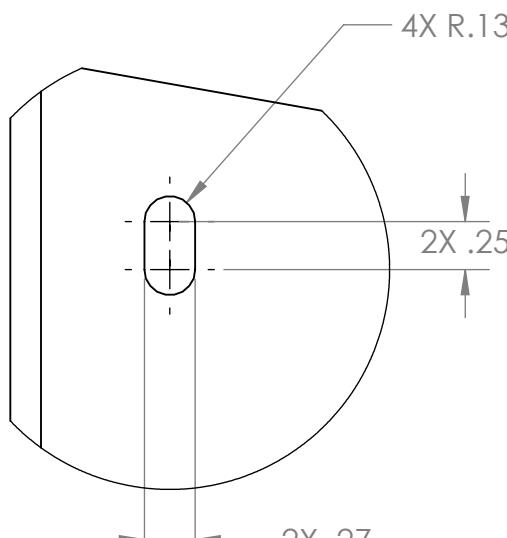
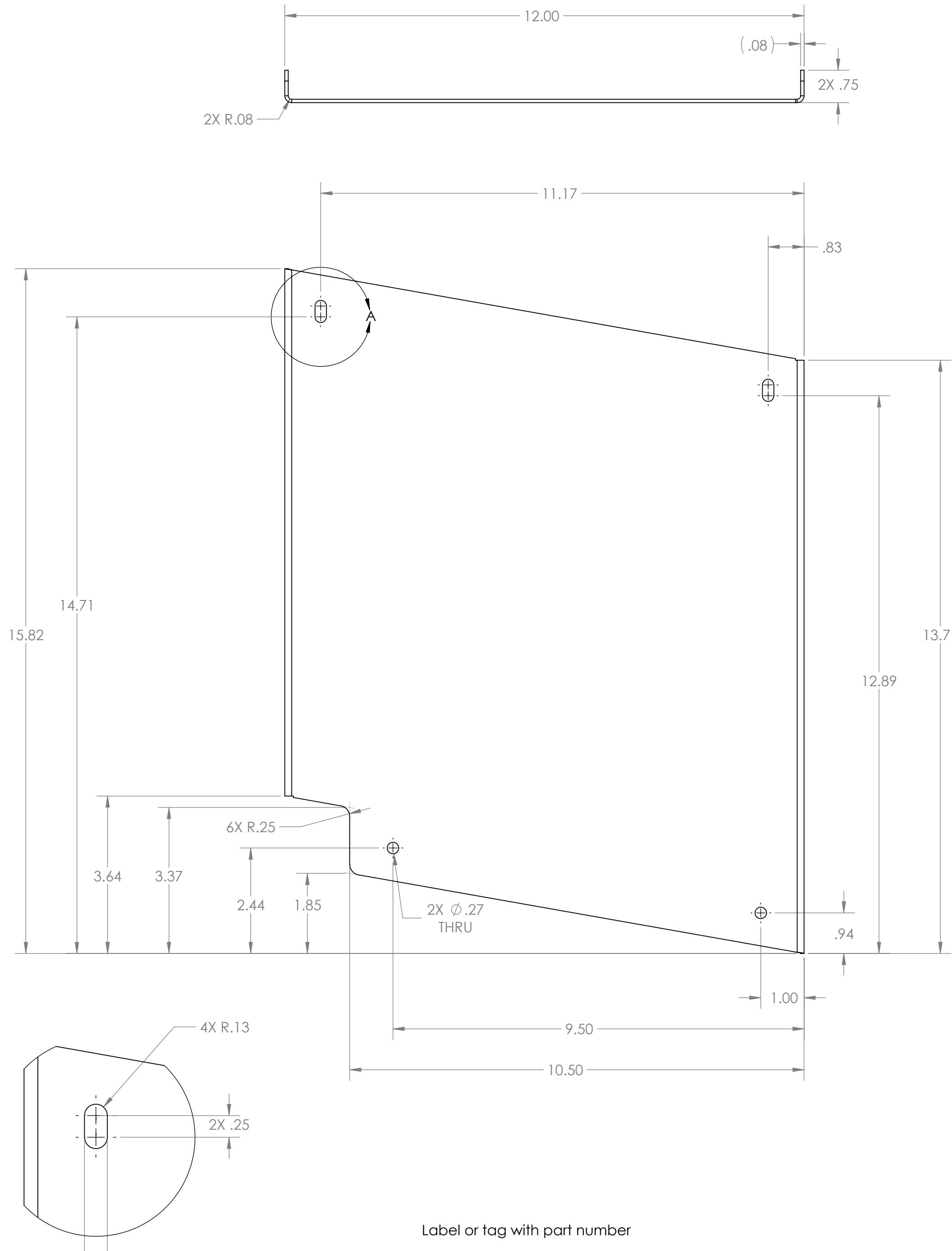
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Label or tag with part number

DETAIL A
SCALE 1 : 1

UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$		DRAWN	DF	5/20/2021			
MATERIAL/FINISH: 14 ga. Pre-Plated Steel		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
					TITLE:		
					Guard Bracket, Left		
				SIZE		DWG. NO.	REV
				C		GE-22012	
				SCALE: 1:2		SHEET 1 OF 1	

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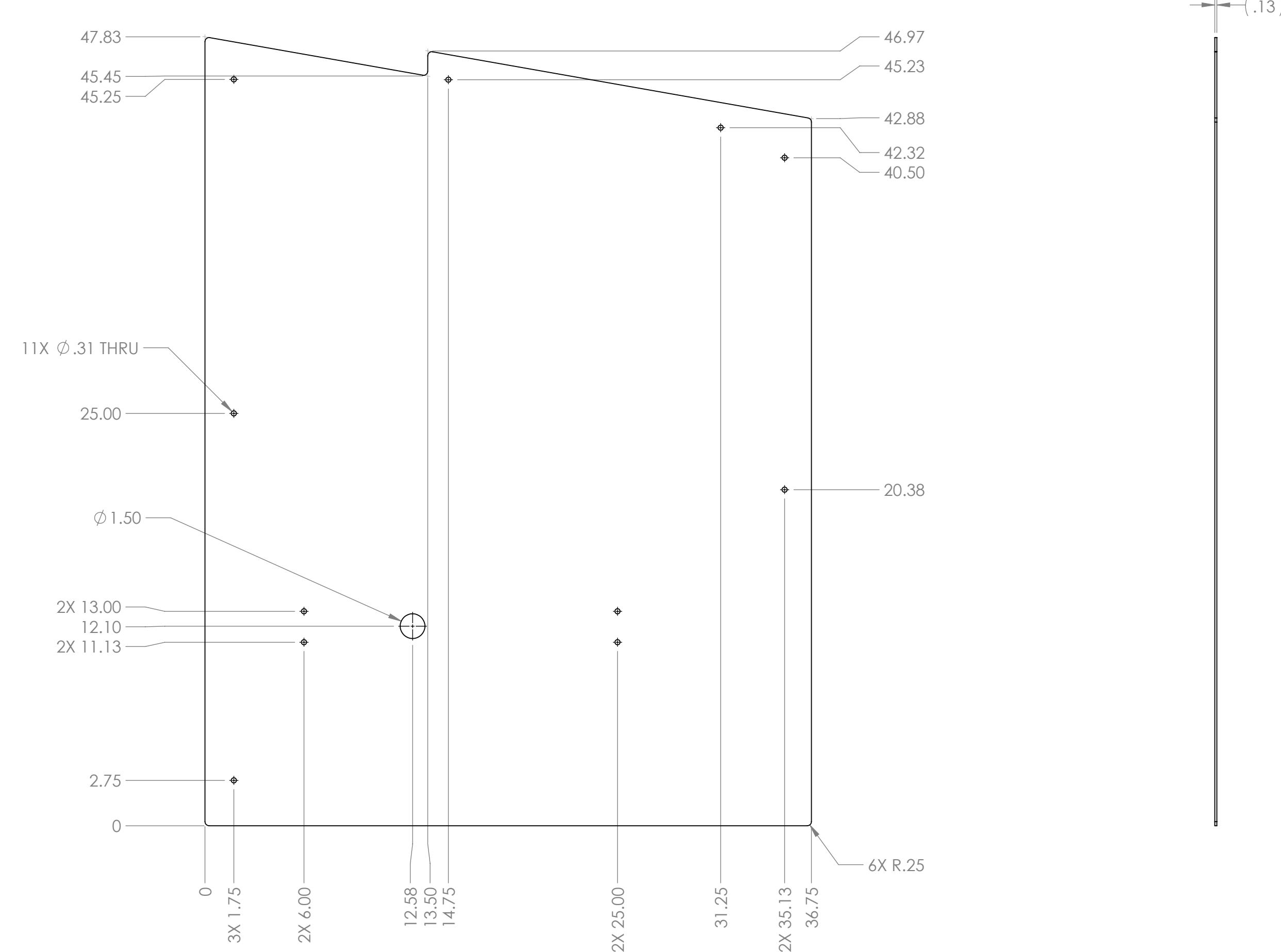
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Tag or label with part number

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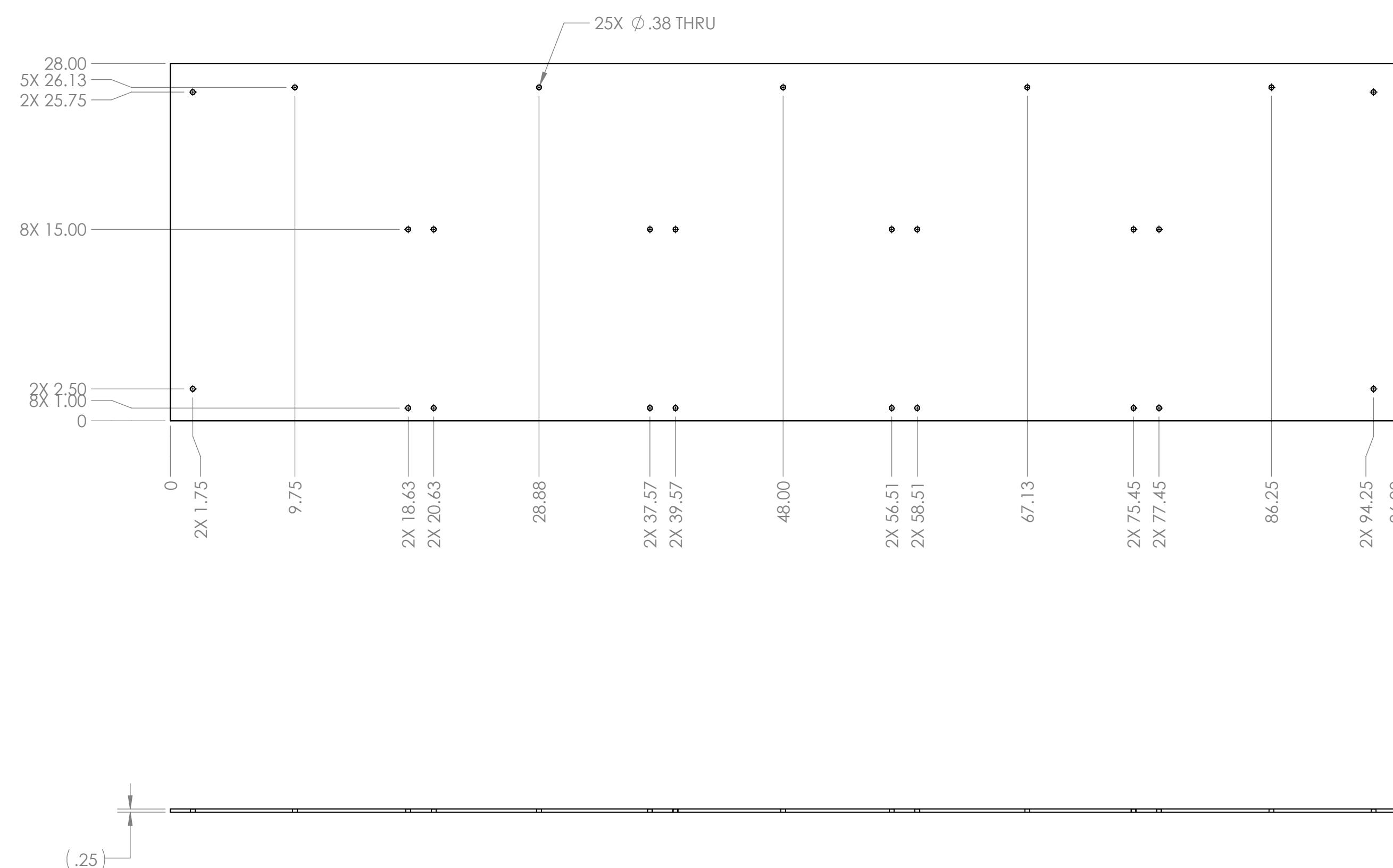
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- Notes:
1. Tag or label with part number.
2. Part will receive vinyl graphics.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	DF	8/13/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 1/4" Polycarbonate, Clear			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Front Plastic,
Terminal

SIZE DWG. NO. REV
C GE-22014

SCALE: 1:8 SHEET 1 OF 1

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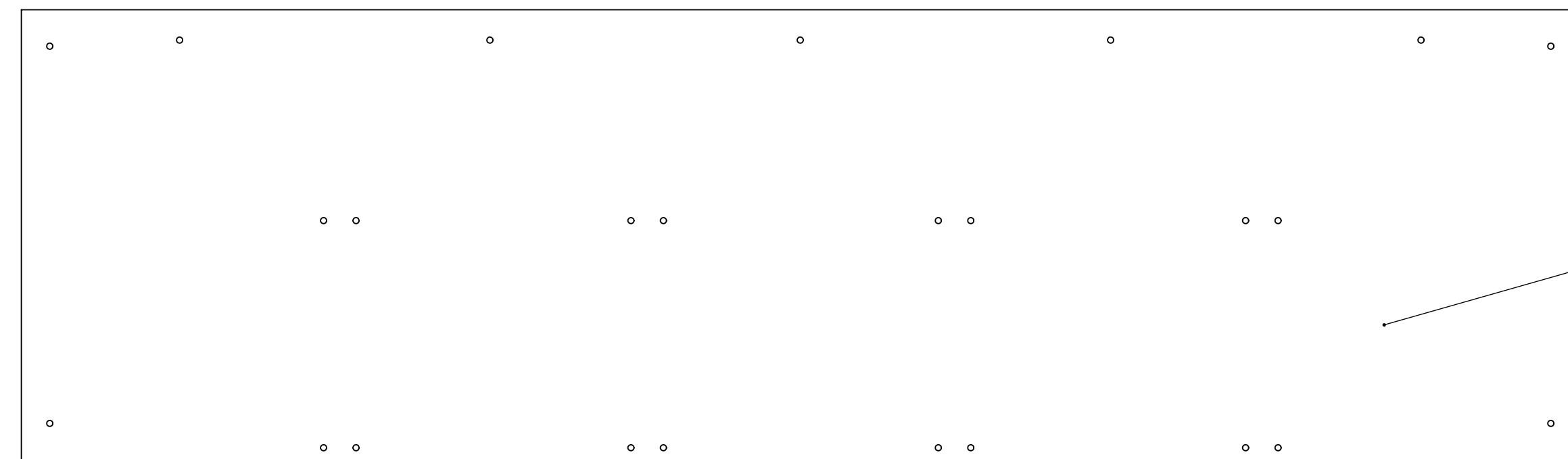
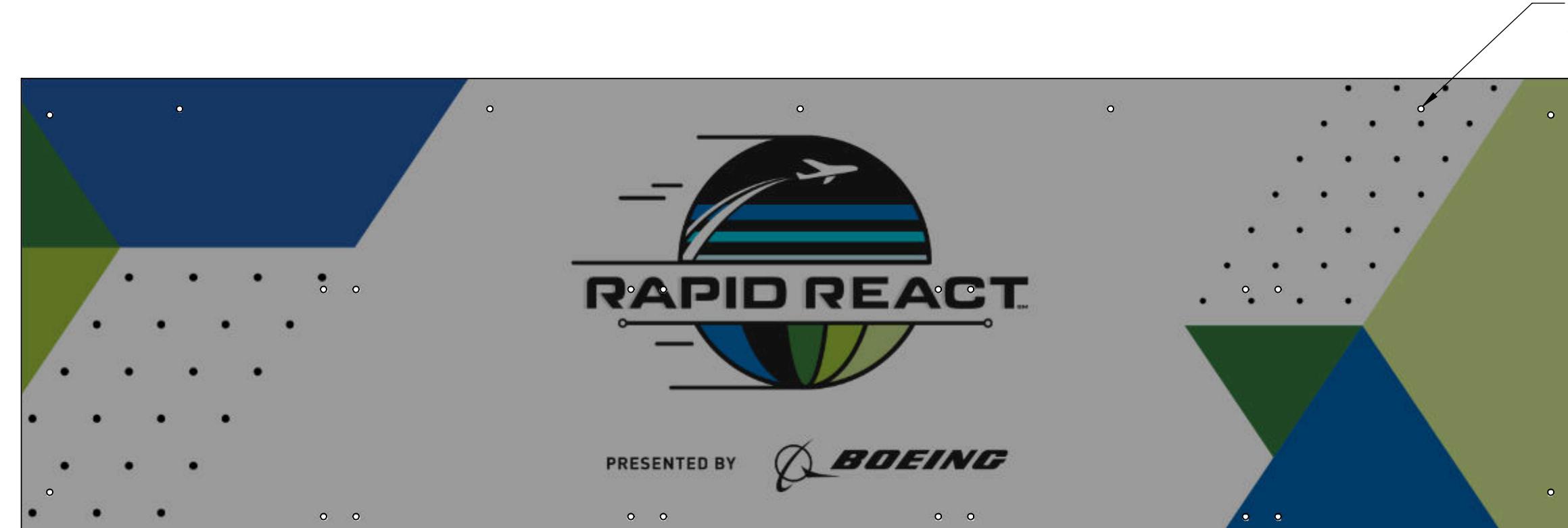
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- Notes:
 1. Tag or label with part number
 2. Vinyl: 50/50 Mesh with clear protective coating.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	DF	9/28/2021
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
See note	C	GE-22015	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:8	SHEET 1 OF 1	

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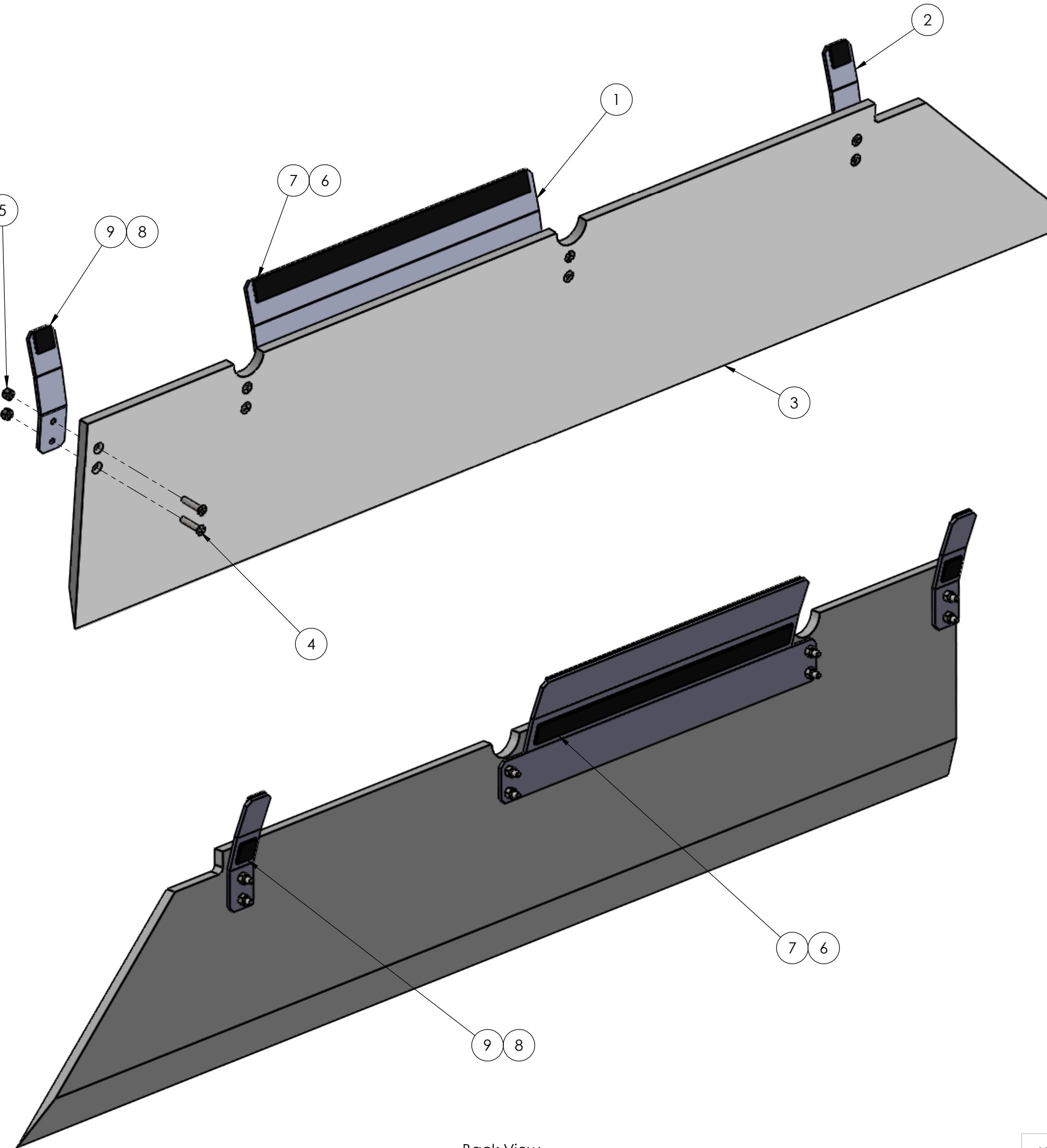
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Back View

- Notes:
1. Attach hook fastener to the ramp brackets.
 2. Attach loop fastener to the hook fastener, but leave the protective plastic backing on until final assembly of the TERMINAL.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm\frac{1}{2}$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22018	Ramp Bracket, Mid	1
2	GE-22019	Ramp Bracket, Edge	2
3	GE-22020	Outer Ramp, Left	1
4	flat_phil_.25_20_1.25	Steel Phillips Flat Head Screw, 1/4"x20 x 1.25" long, fully threaded	8
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	8
6	Hook_1_16	1" x 16" Hook, Adhesive Backed	2
7	Loop_1_16	1" x 16" Loop, Adhesive Backed	2
8	Hook_1_1	1" x 1" Hook, Adhesive Backed	4
9	Loop_1_1	1" x 1" Loop, Adhesive Backed	4

 FIRST
ROBOTICS
COMPETITION

 SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Outer Ramp
Assembly, Left**

SIZE DWG. NO. REV
C GE-22016

SCALE: 1:4 SHEET 1 OF 1

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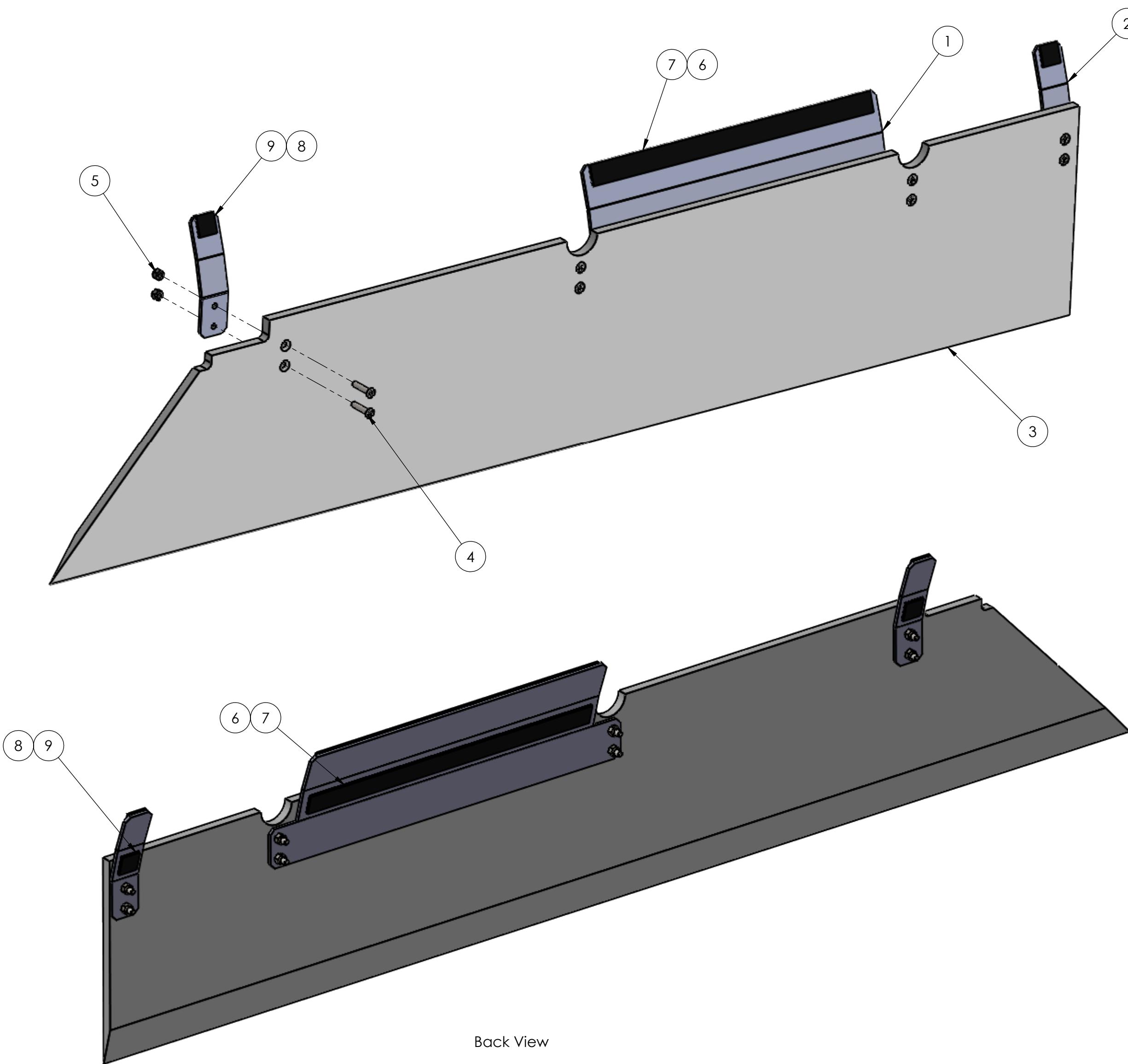
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- Notes:
1. Attach hook fastener to the ramp brackets.
 2. Attach loop fastener to the hook fastener, but leave the protective backing on until final assembly of the TERMINAL.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22018	Ramp Bracket, Mid	1
2	GE-22019	Ramp Bracket, Edge	2
3	GE-22021	Outer Ramp, Right	1
4	flat_phil_.25_20_1.25	Steel Phillips Flat Head Screw, 1/4"x20 x 1.25" long, fully threaded	8
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	8
6	Hook_1_16	1" x 16" Hook, Adhesive Backed	2
7	Loop_1_16	1" x 16" Loop, Adhesive Backed	2
8	Hook_1_1	1" x 1" Hook, Adhesive Backed	4
9	Loop_1_1	1" x 1" Loop, Adhesive Backed	4

UNLESS OTHERWISE SPECIFIED:		
FIELD	NAME	DATE
DRAWN	DF	12/31/2021
PROPRIETARY AND CONFIDENTIAL		
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
COMMENTS:		
REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING		
TITLE: Outer Ramp Assembly, Right		
SIZE	DWG. NO.	REV
C	GE-22017	
SCALE: 1:4		SHEET 1 OF 1

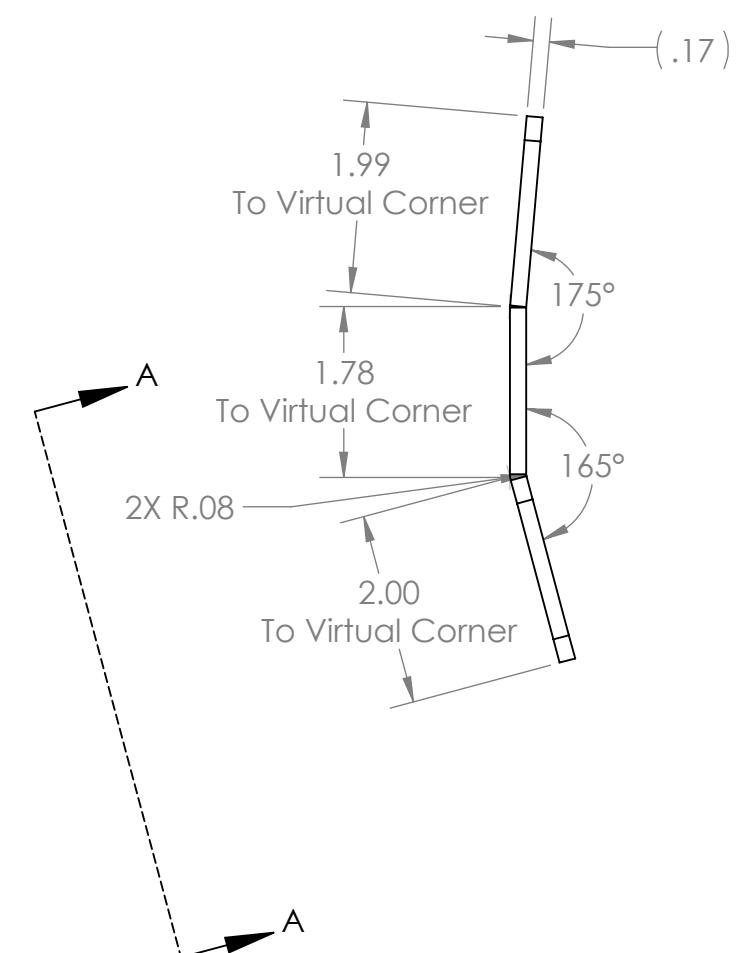


SOLIDWORKS
Modeling Solutions Partner

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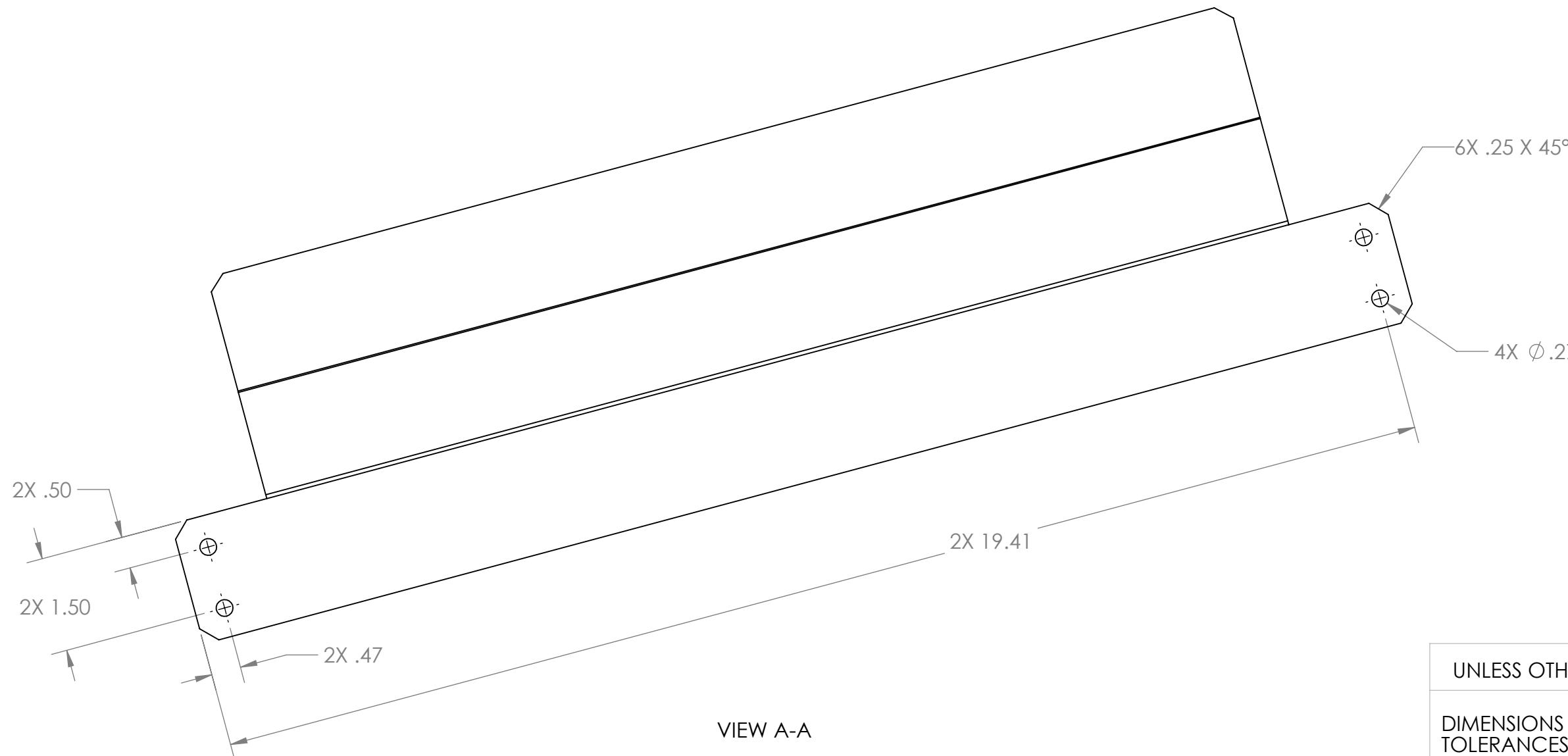


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VIEW A-A

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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$

MATERIAL/FINISH:

8 ga, Pre-plated Steel

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	DF	4/9/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE: Ramp Bracket, Mid

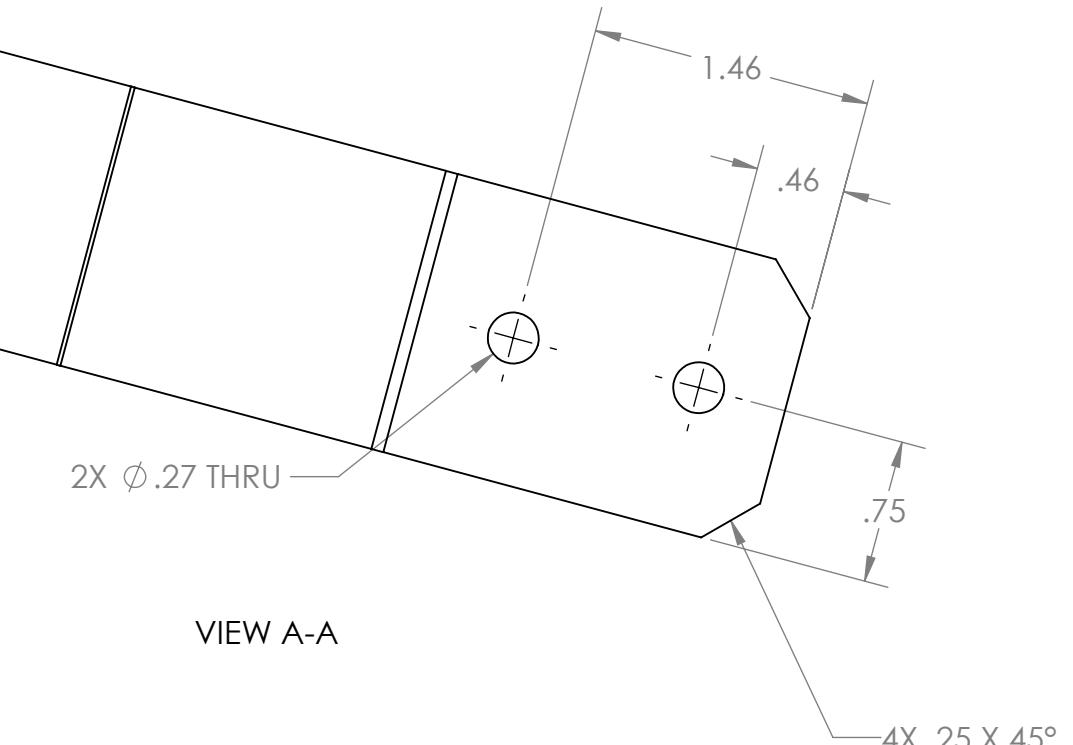
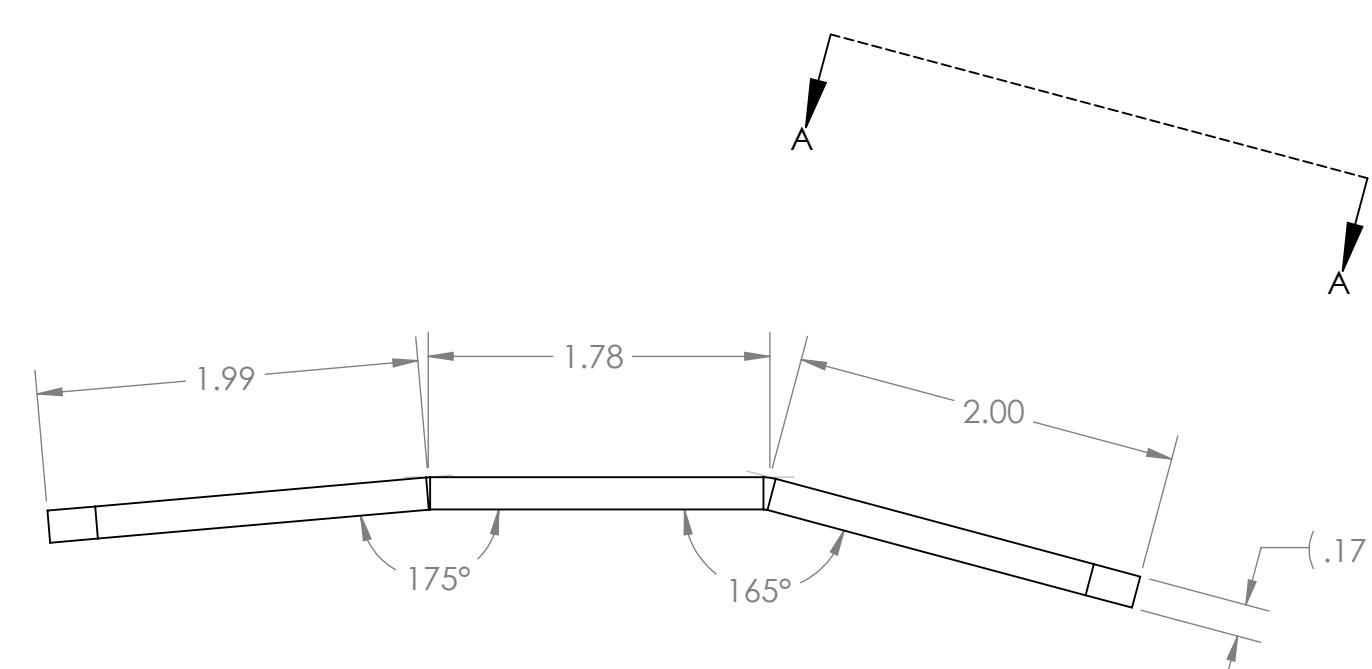
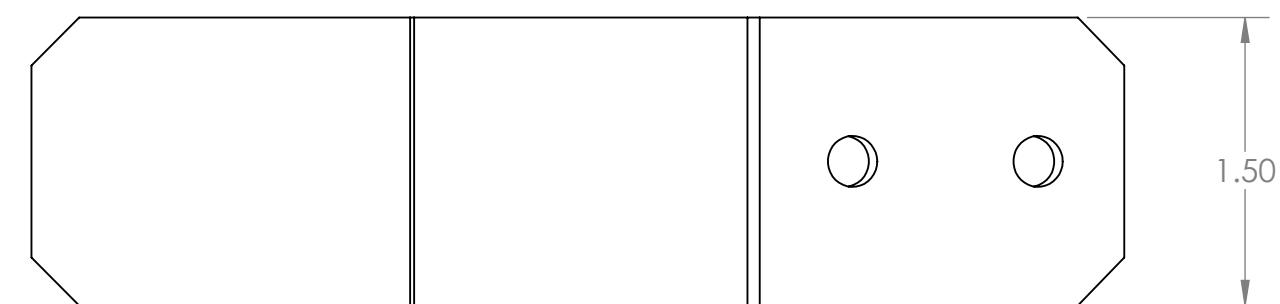
SIZE DWG. NO. REV

C GE-22018

SCALE: 1:2 SHEET 1 OF 1

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VIEW A-A

Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$

MATERIAL/FINISH:

8 ga. Pre-plated Steel

DO NOT SCALE DRAWING

BEND

NAME

DATE

DRAWN

DF

4/9/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
**Ramp Bracket,
Edge**

SIZE DWG. NO. REV
C GE-22019

SCALE: 1:1 SHEET 1 OF 1

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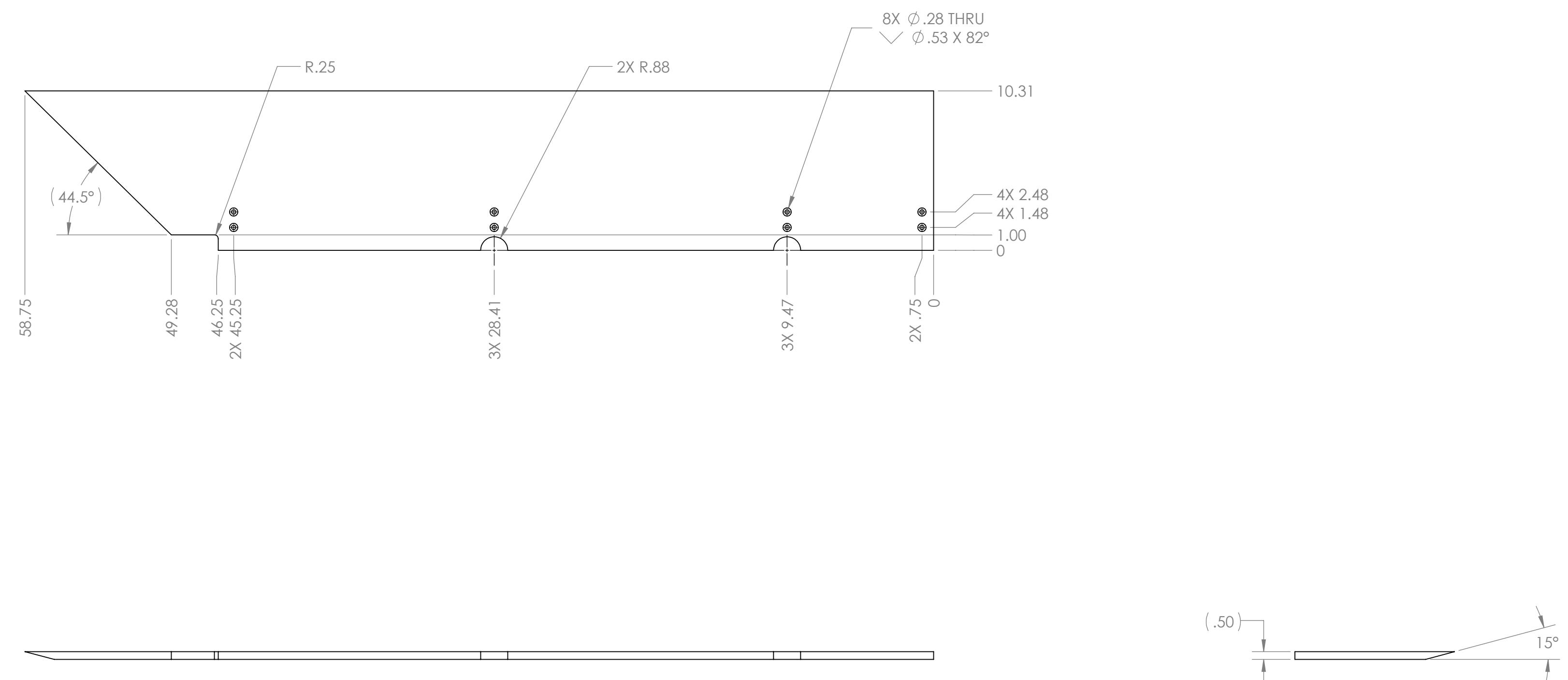
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Notes:
1. Tag or Label with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	DF	8/16/2021
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
1/2" HDPE, Natural	C	GE-22020	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:6	SHEET 1 OF 1	



SOLIDWORKS
Modeling Solutions Partner

TITLE: Outer Ramp, Left

SIZE DWG. NO. REV
C GE-22020

SCALE: 1:6 SHEET 1 OF 1

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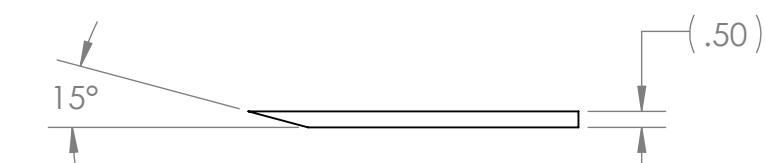
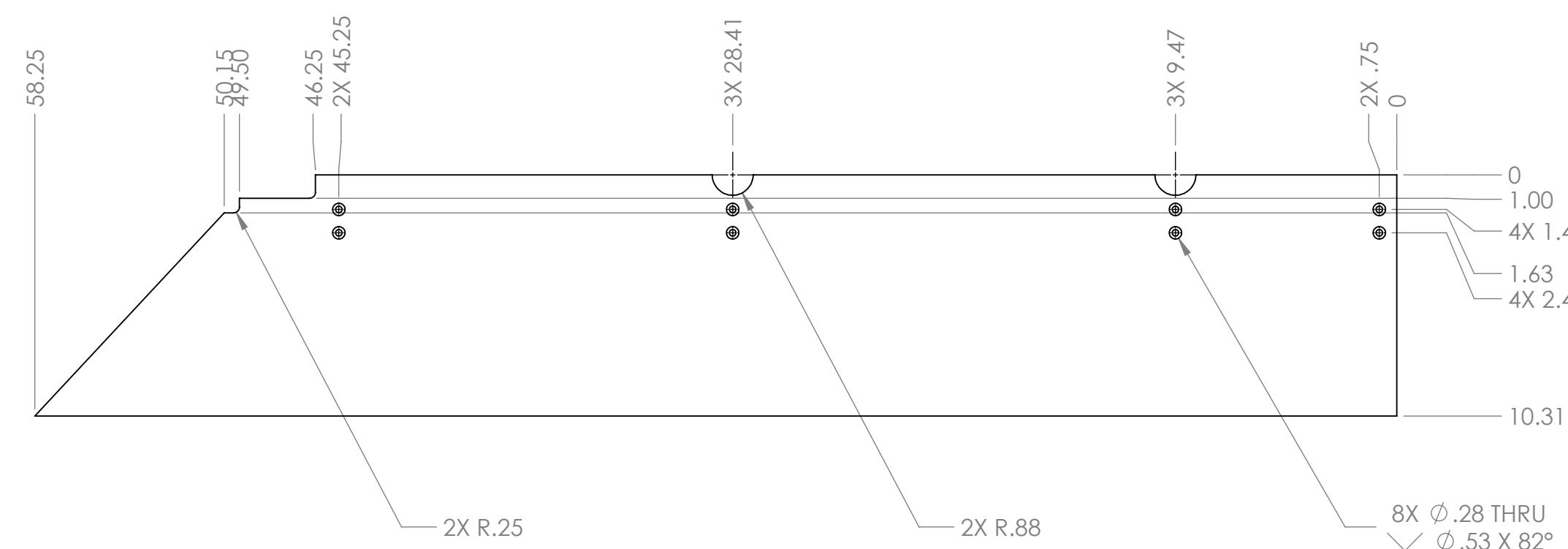
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Notes:
1. Tag or label with part number.

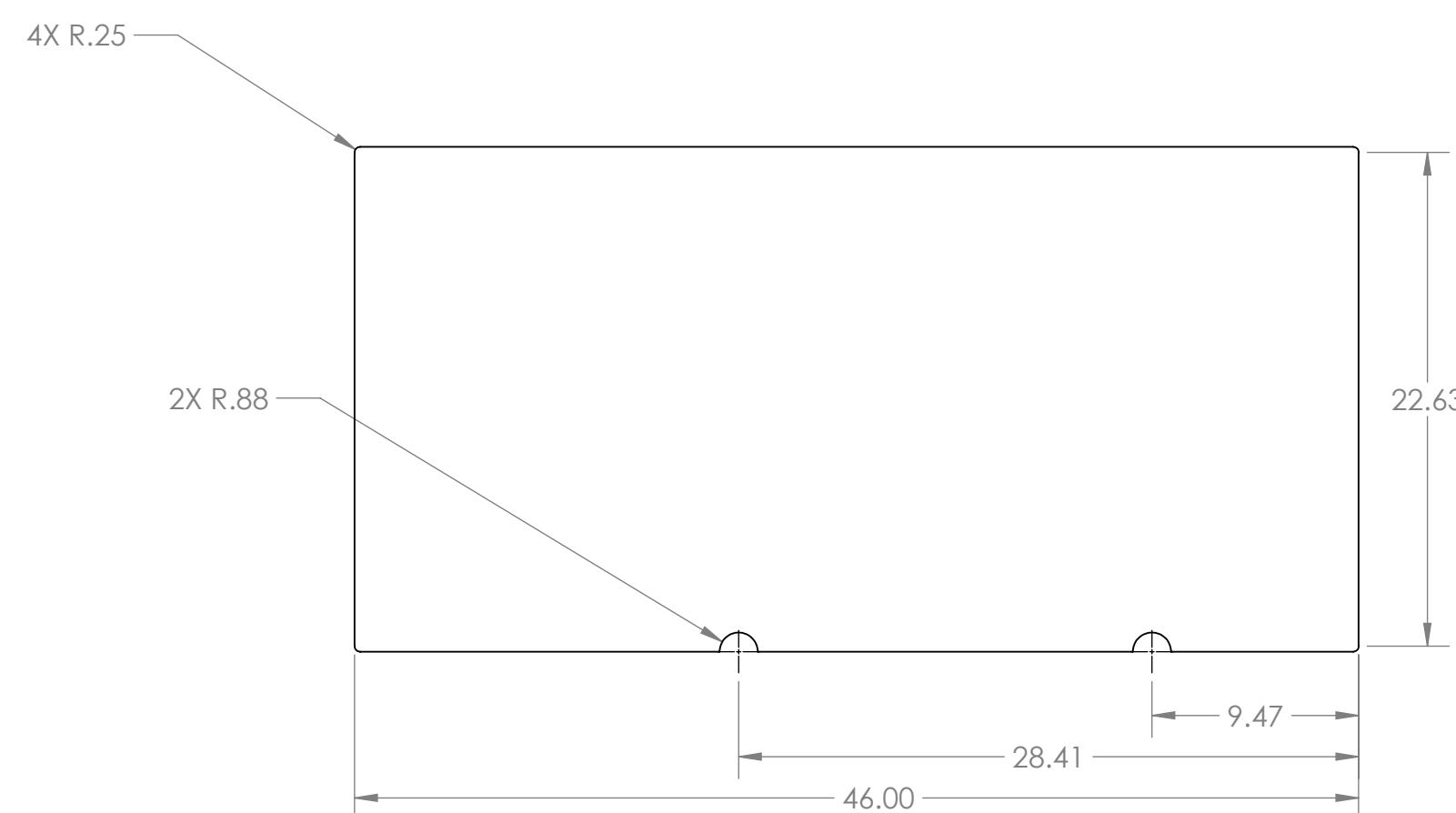


UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	DF	8/16/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL		
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH: 1/2" HDPE, Natural	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION	SOLIDWORKS Modeling Solutions Partner	
TITLE: Outer Ramp, Right		
SIZE	DWG. NO.	REV
C	GE-22021	
SCALE: 1:6		SHEET 1 OF 1

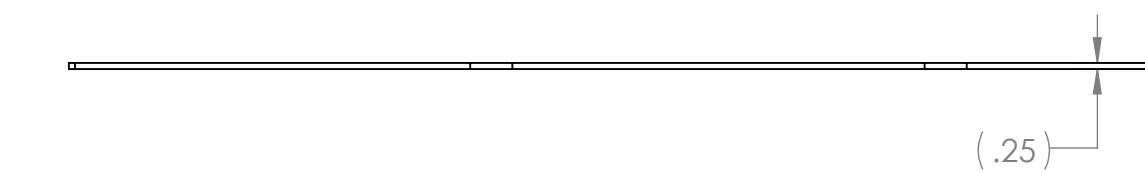
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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	DF	8/16/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
1/4" Polycarbonate, Clear	C	GE-22022	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:8	SHEET 1 OF 1	

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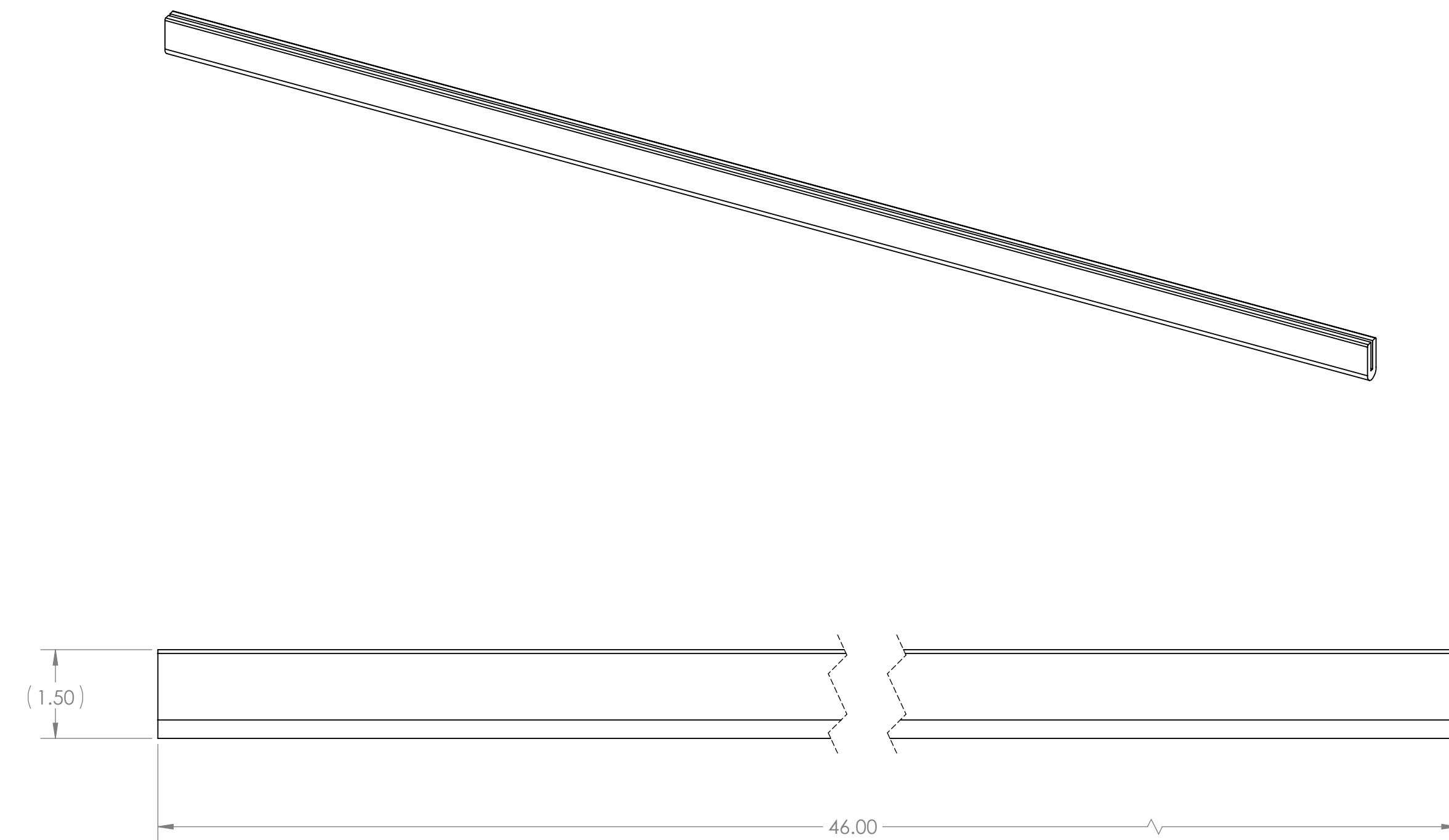
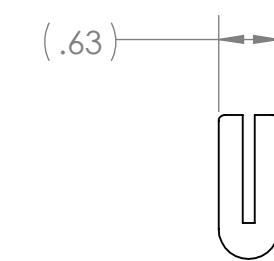
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DESCRIPTION: U SHAPE EDGE PROTECTORS

VENDOR: M2CBRIDGE VIA AMAZON

COLOR: BLACK

PACKAGE QUANTITY: 1 - 6.5 FEET

NOTES:

1. SUBSTITUTIONS ALLOWED
2. CUT TO LENGTH

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND NAME DATE

DRAWN DF 12/29/2021

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
**Edge Protector
46"**

SIZE DWG. NO. REV
C GE-22024

SCALE: 1:2 SHEET 1 OF 1

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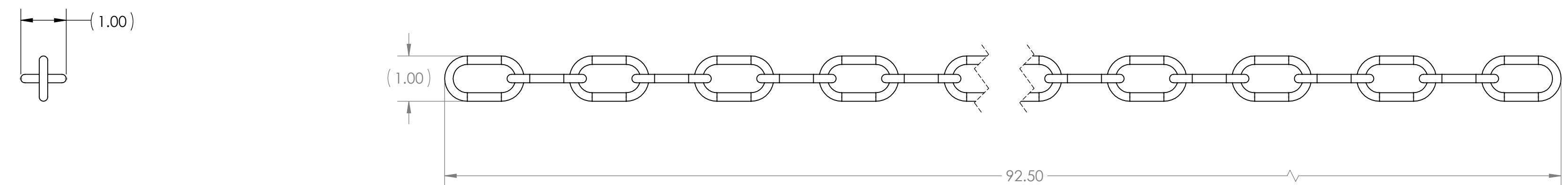
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Description: CHAINBOSS Plastic Chain: US Weight 2 in., Black

Vendor: The Home Depot

Part Number: [internet] 315968945

Substitutions allowed with permission from FIRST HQ.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	DF	12/29/2021
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
Black	C	GE-22026	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:2	SHEET 1 OF 1	

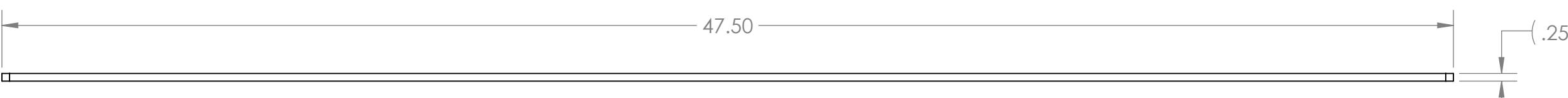
FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

Terminal Chain

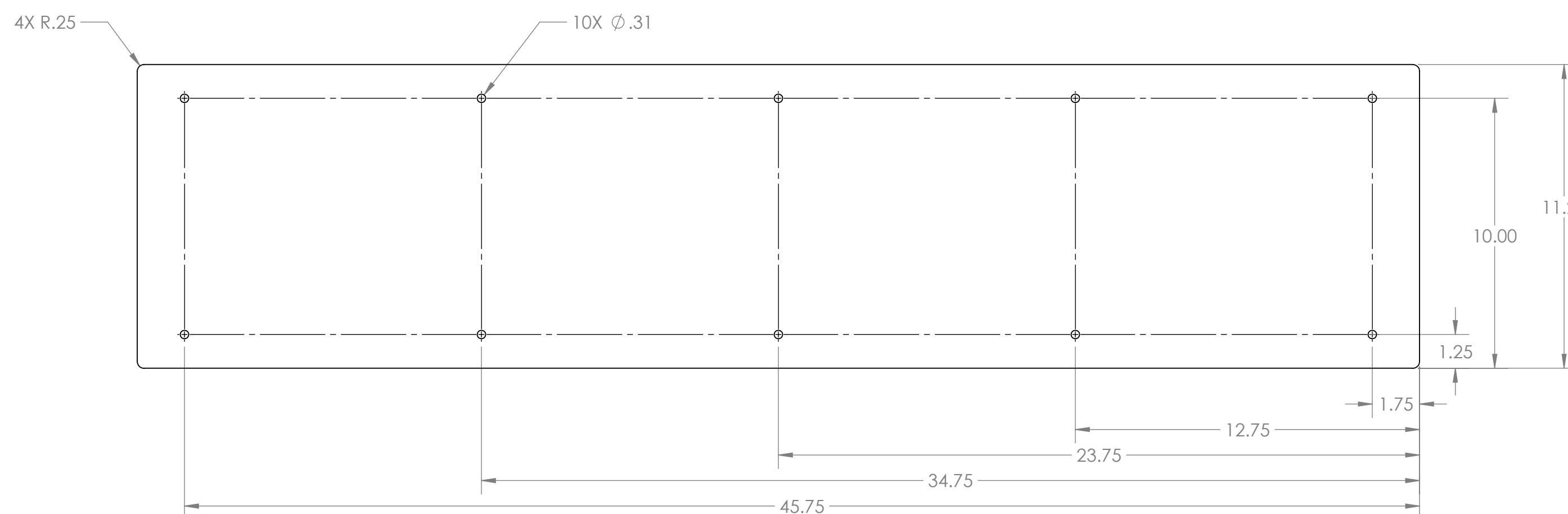
GE-22026

SCALE: 1:2 **SHEET 1 OF 1**

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Notes:
1. Bag or tag with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	DF	8/16/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL		
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
1/4" Polycarbonate, Clear	C	GE-22027	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.	SCALE: 1:4	SHEET 1 OF 1	
DO NOT SCALE DRAWING			

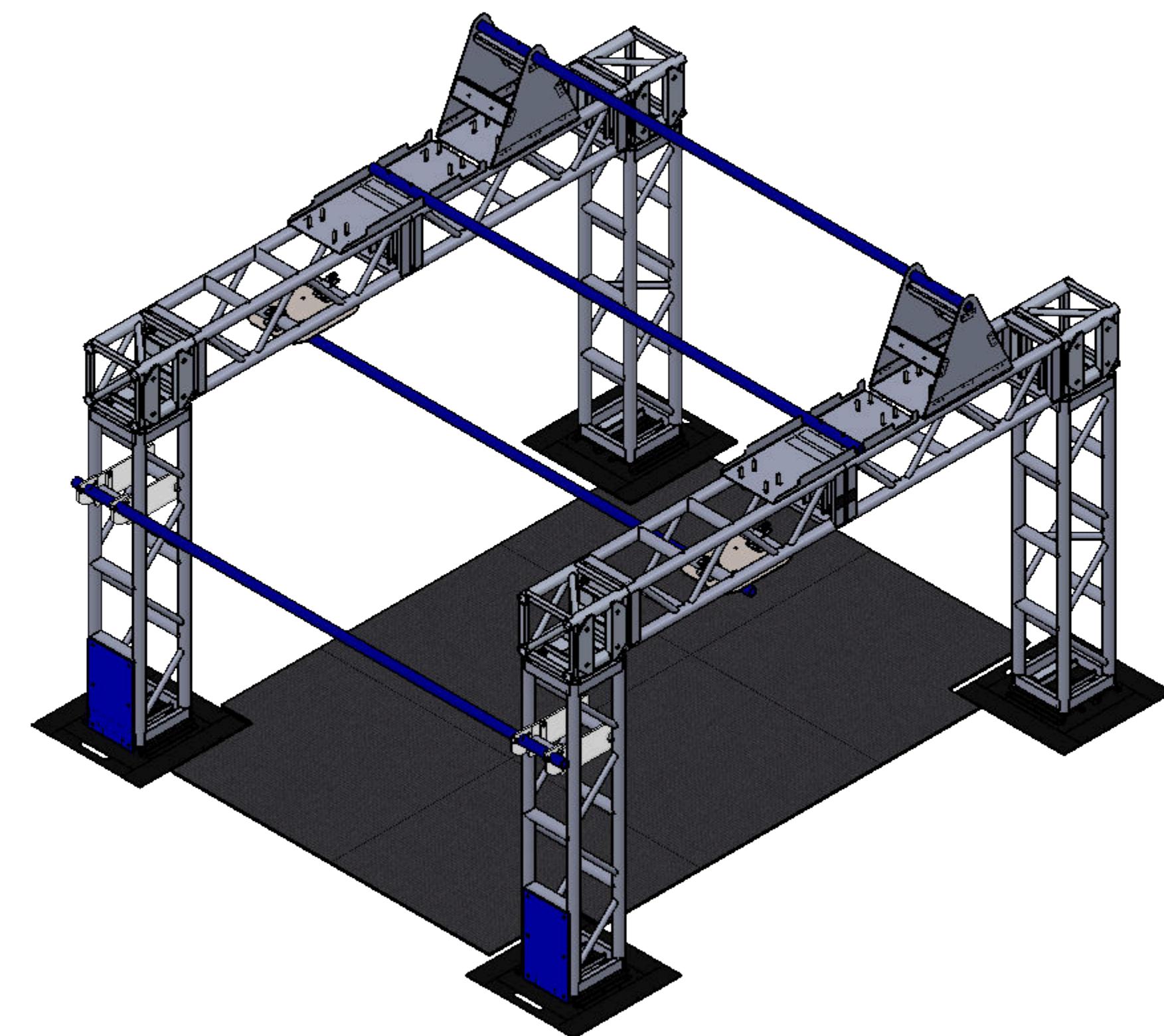
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ITEM NO.	PART NUMBER	DESCRIPTION	
1	FE-01002	4' x 1' x 1' Square Truss	4
2	FE-01003	5' x 1' x 1' Square Truss	4
3	FE-01012	3 Way Corner Block	4
4	GE-22101	Floor Protection Assembly	1
5	GE-22107	Launch pad blue	2
6	GE-22111	Low bar holder	4
7	GE-22112	Low bar clamp	4
8	GE-22120	under hung assembly	2
9	GE-22130	Upper transition bar holder	2
10	GE-22140	mid transition bar holder	2
11	GE-22150	Rung	4
12	GE-22170	Truss Base - Sheet Metal Assembly	4
13	hex_.25_20_1.25	Steel Hex Head Screw, 1/4"-20 x 1.25" long, fully threaded	16
14	hex_.375_16_3_partial	Steel Hex Head Screw, 3/8"-16, 3" long	13
15	hex_.625_11_2.00	Hex Head Bolt, 5/8"-11 Thread, 2" length	56
16	hexnut_.625_11	5/8"-11 hex nut	40
17	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	16
18	nylock_.375_16	Steel Nylon-Insert Locknut, 3/8"-16	12
19	tipeline_HANGARheight	2" Gaffers Tape, Black	2
20	Ubolt_.375_2.4375_4.4375	U-Bolt 3/8-16 x 2-7/16 ID x 4-7/16 height	16
21	washer_flat_.25	Flat Washer for 1/4" Screw	32
22	washer_flat_.625	Flat washer for 5/8" screw	96



Notes:
1. Assembly exists in Red and Blue configurations.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DRAWN	NW	9/29/2020	
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS:			
REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
FIRST ROBOTICS COMPETITION			
SOLIDWORKS Modeling Solutions Partner			
TITLE: Hangar			
SIZE	DWG. NO.	REV	
C	GE-22100		
SCALE: 1:20		SHEET 1 OF 5	

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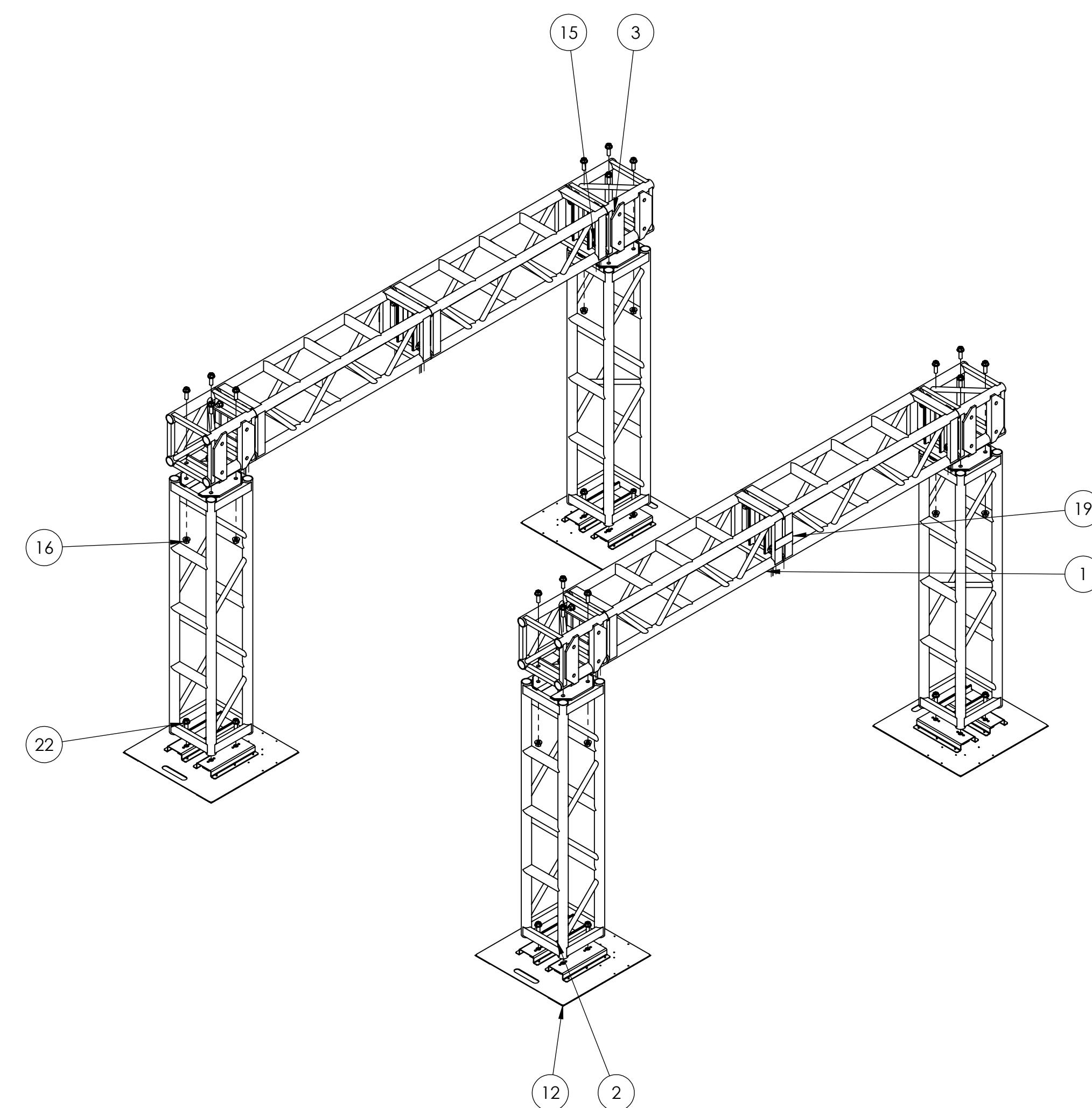
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DRAWN	NW	9/29/2020	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

TITLE: Hangar

SIZE DWG. NO. REV
C GE-22100

SCALE: 1:20 SHEET 2 OF 5

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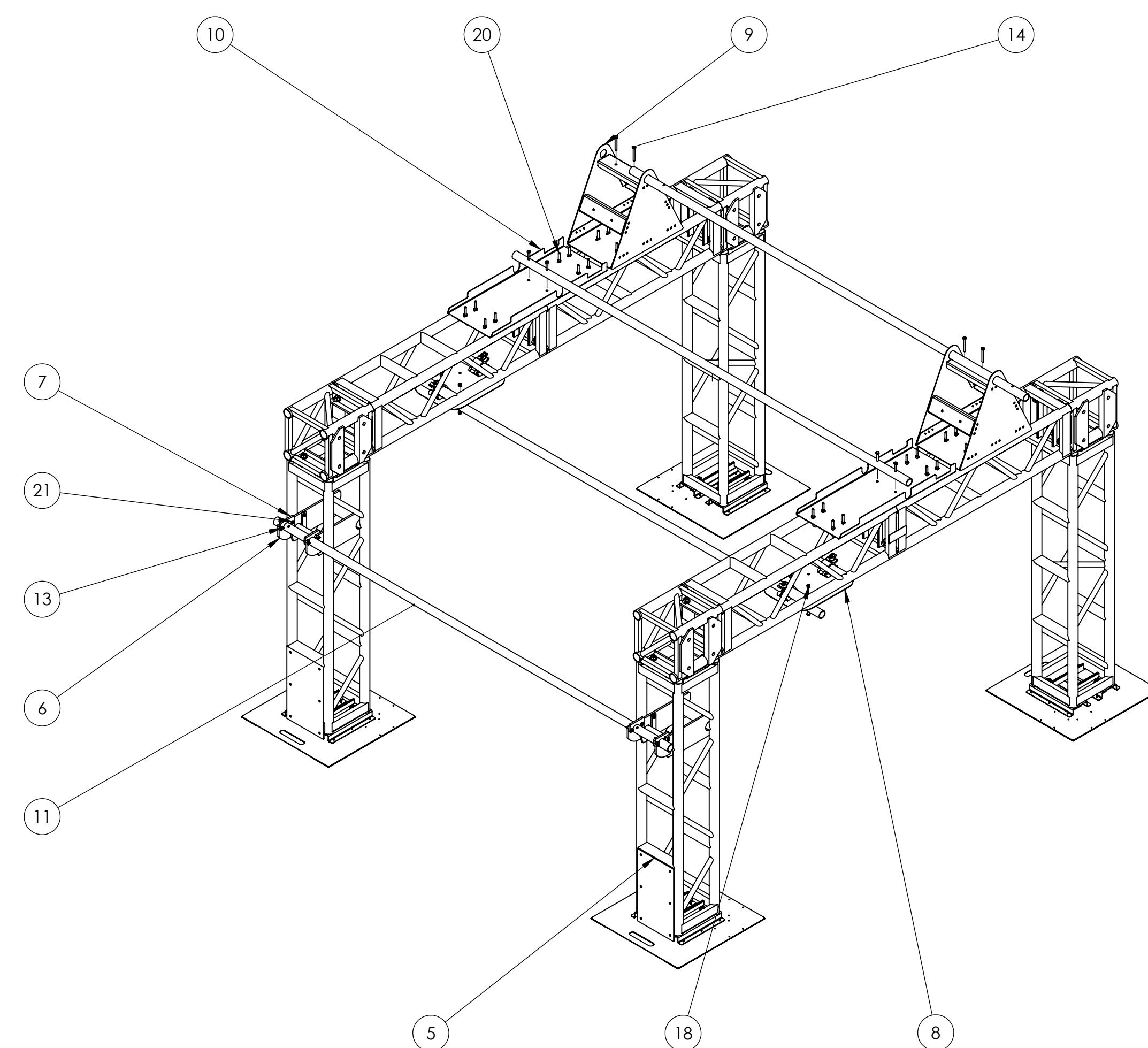
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UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DRAWN	NW	9/29/2020	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

TITLE:
Hangar

SIZE DWG. NO. REV
C GE-22100

SCALE: 1:20 SHEET 3 OF 5

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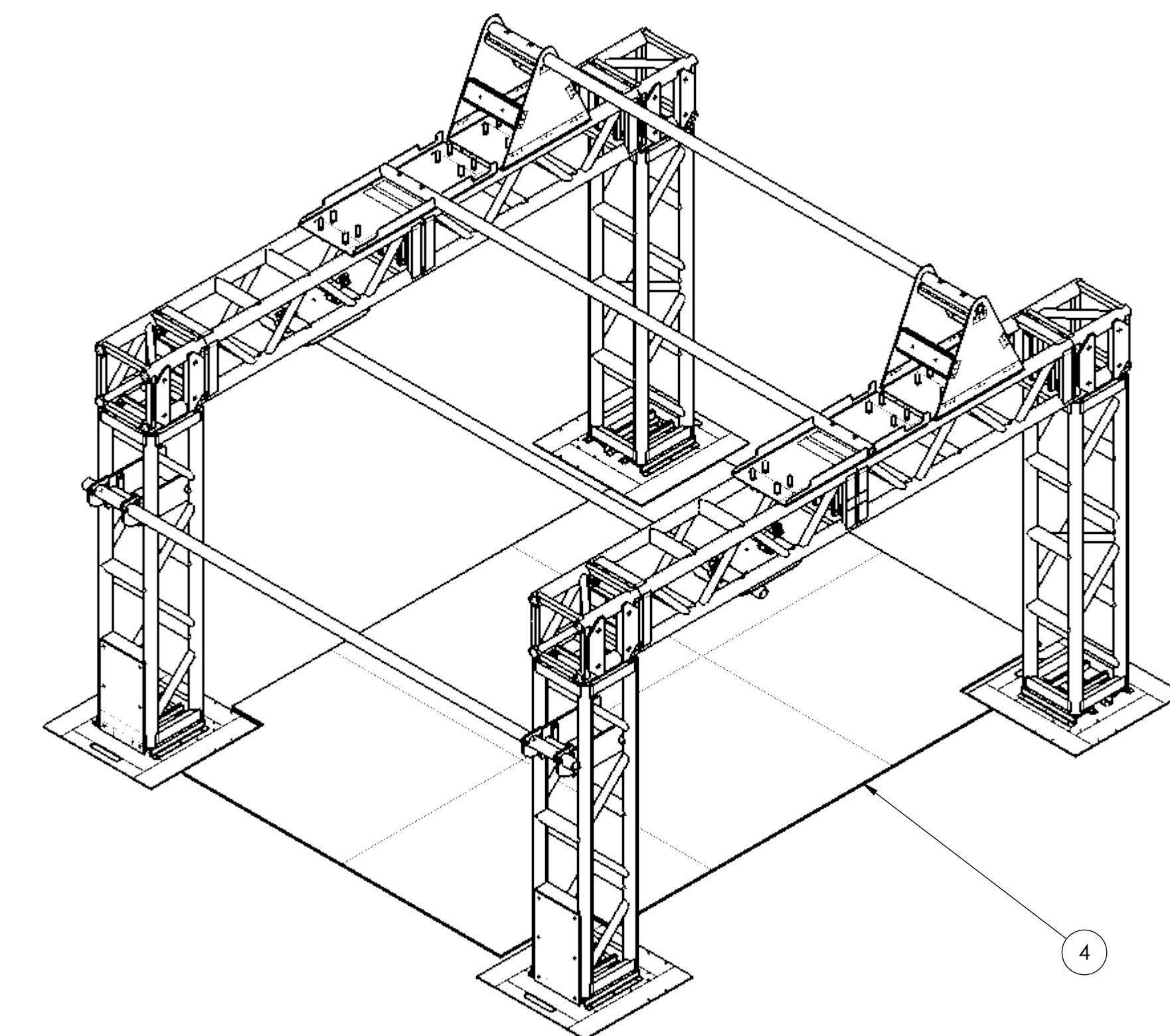
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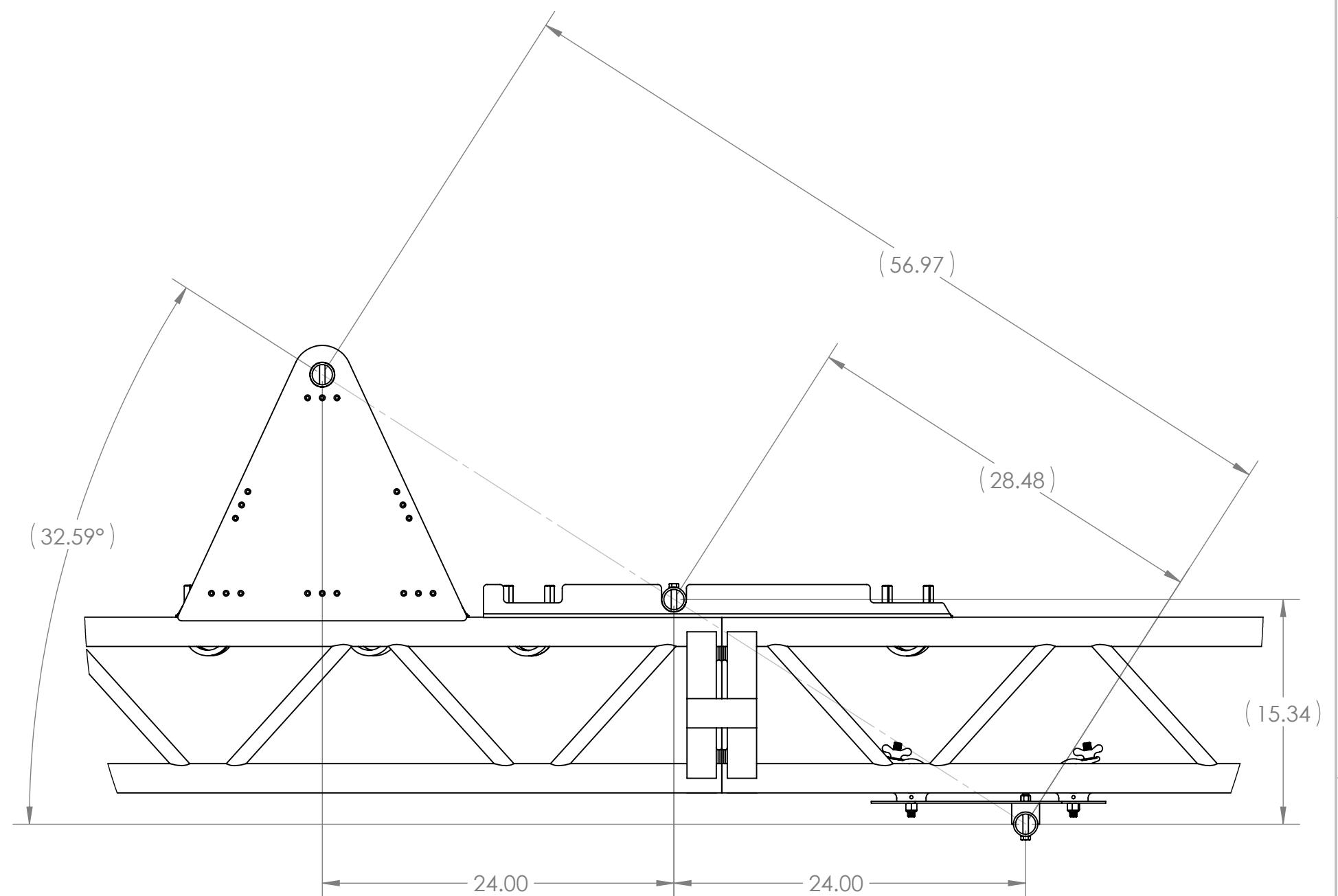
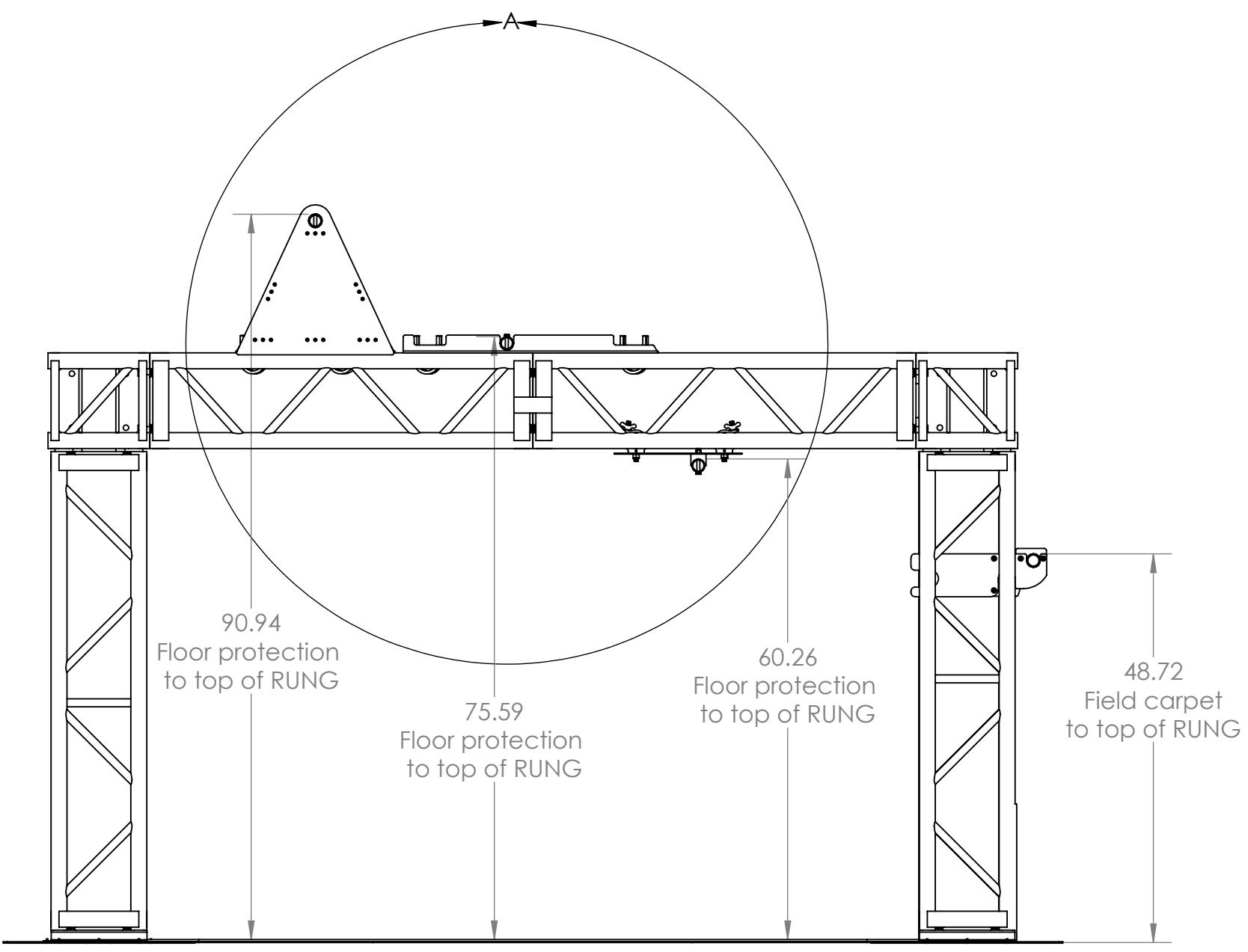
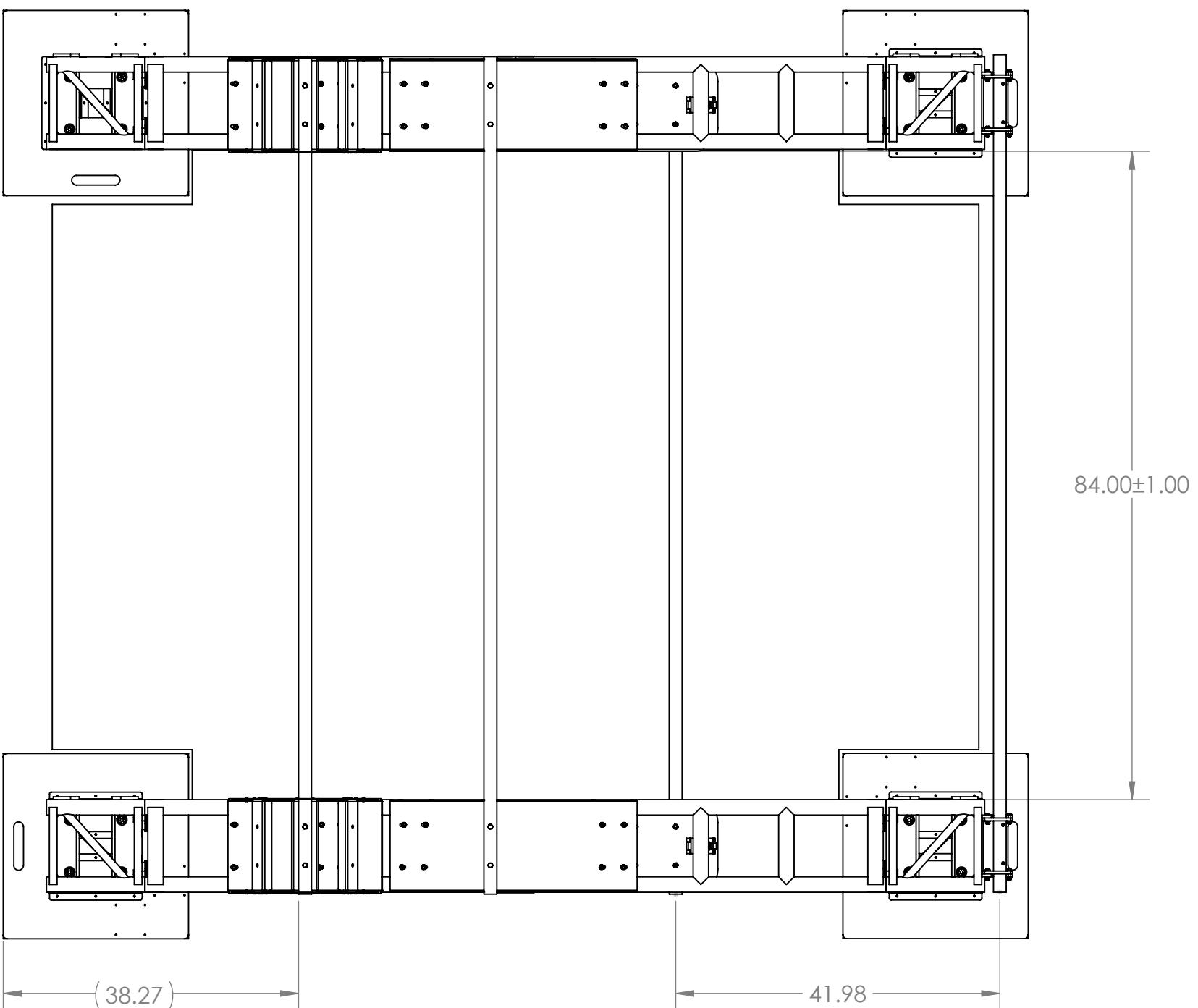
UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm\frac{1}{2}$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	DRAWN	NW	9/29/2020
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
DO NOT SCALE DRAWING	C	GE-22100	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		SCALE: 1:20	SHEET 4 OF 5

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Notes:
1. Dimensions in parentheses are for reference only.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NW	9/29/2020
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

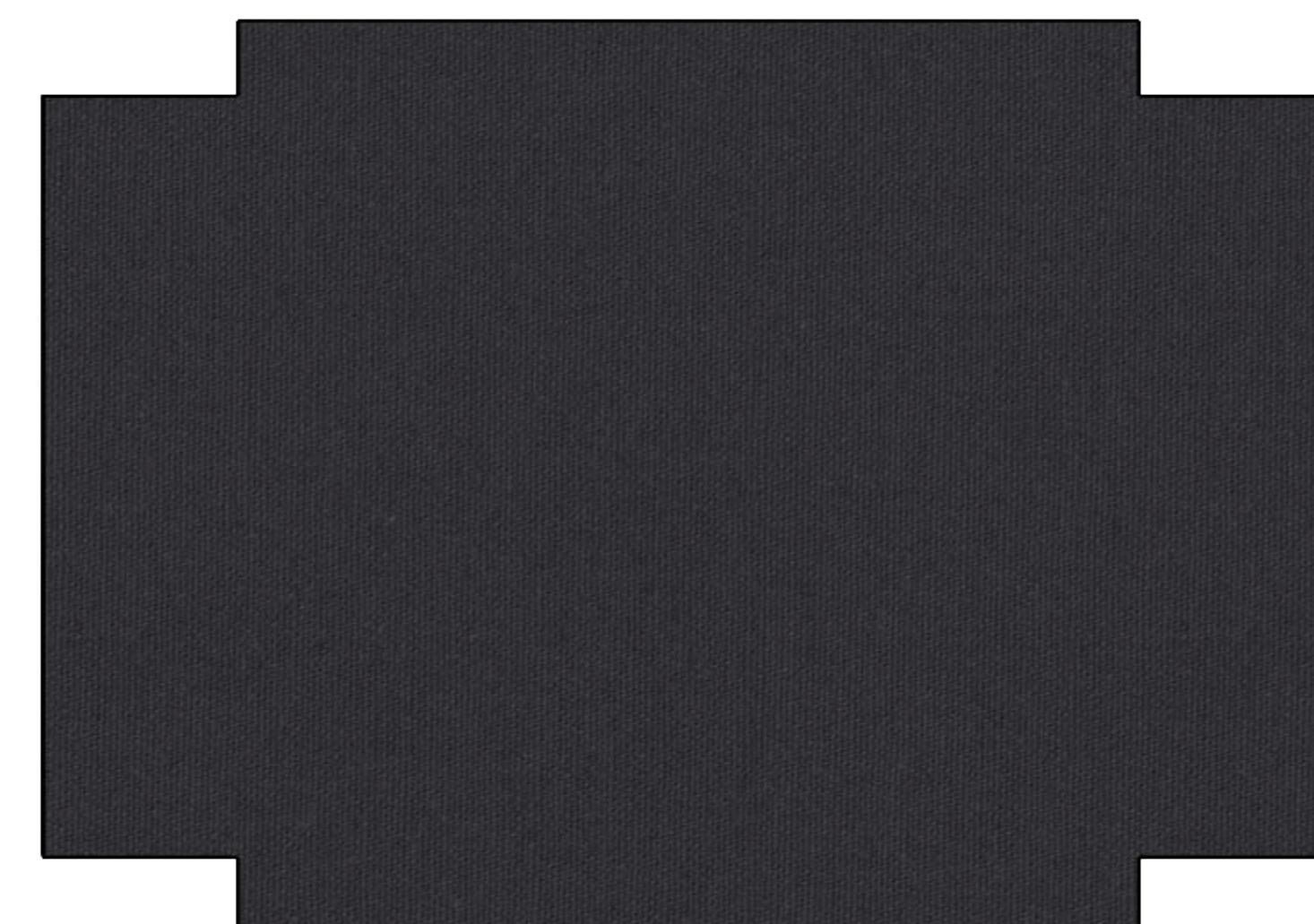
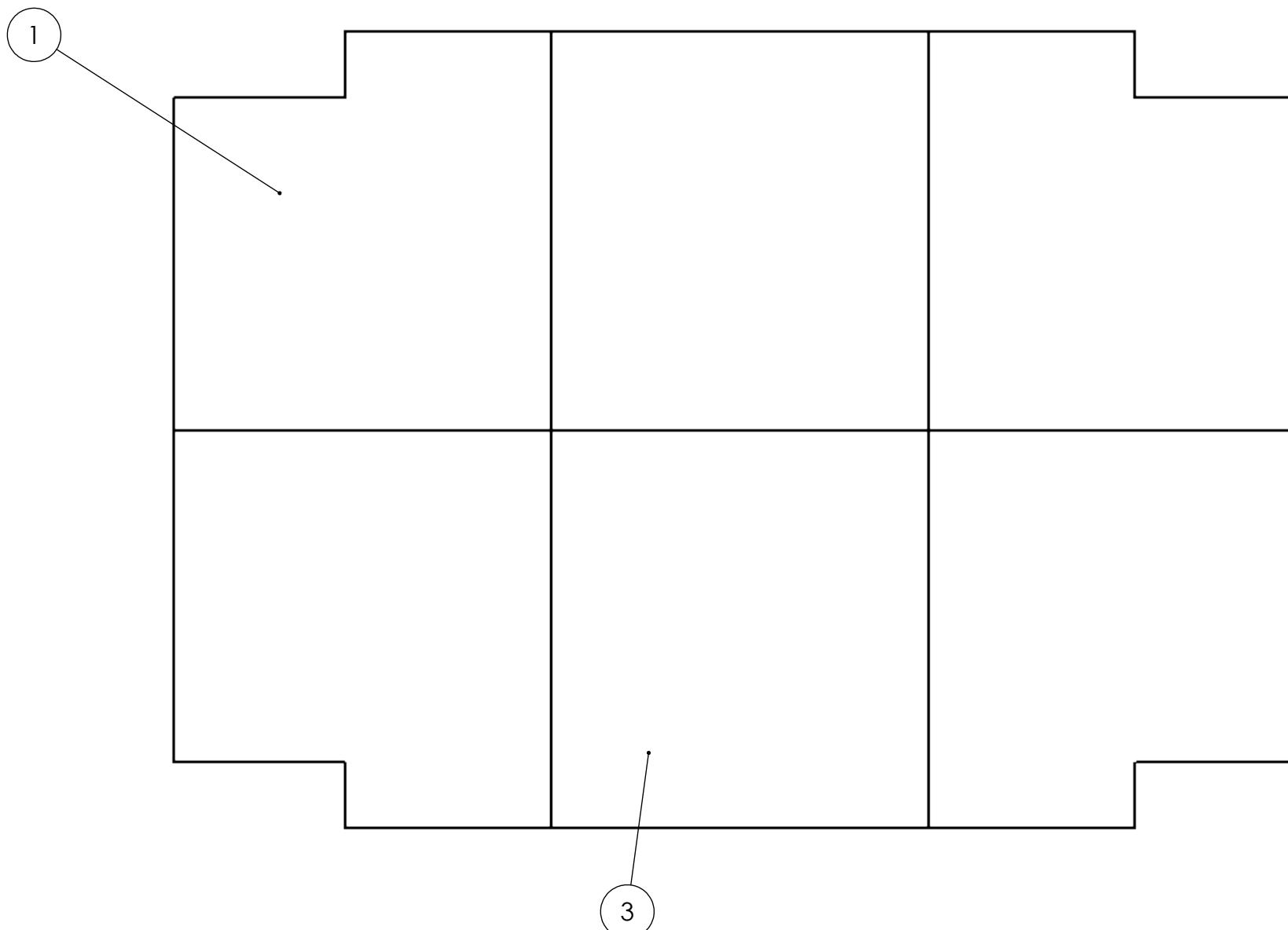
TITLE: Hangar

SIZE DWG. NO. REV

C GE-22100

SCALE: 1:18 SHEET 5 OF 5

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22102	notched floor protection section	4
2	GE-22105	floor protection carpet	1
3	GE-22104	Floor protection full	2



UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NW	6/8/2020
TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

Title: Floor Protection Assembly

Size: DWG. NO. **Rev:**

C GE-22101

Scale: 1:48 **Sheet:** 1 OF 1

4

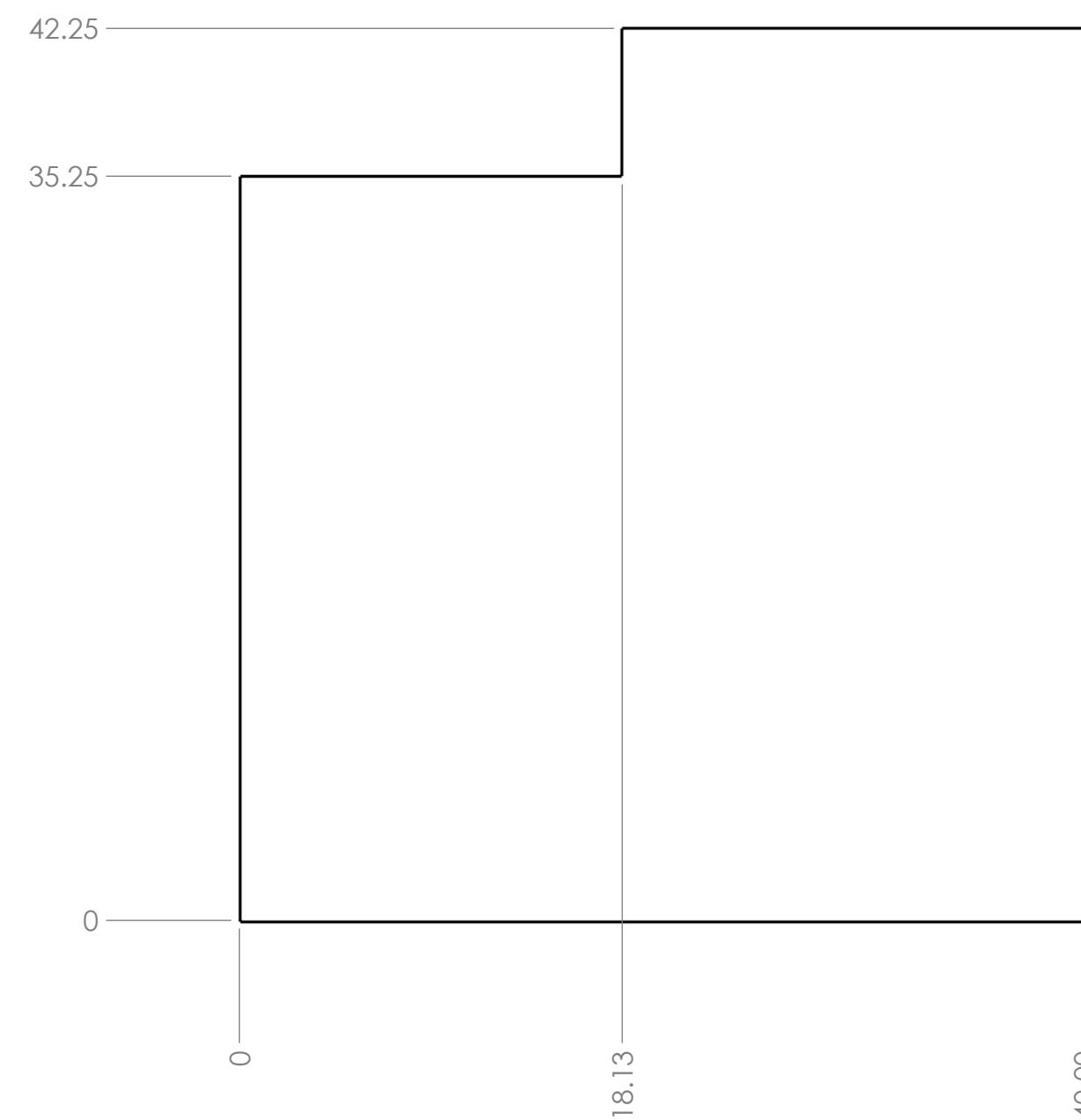
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**Notes:**

1. Label or tag part.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DRAWN	NW	6/3/2020	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 0.125" Hardboard/ Masonite			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
 FIRST ROBOTICS COMPETITION  <small>Modeling Solutions Partner</small>			
TITLE: notched floor protection section			
SIZE	DWG. NO.	REV	
C	GE-22102		
SCALE: 1:16		SHEET 1 OF 1	

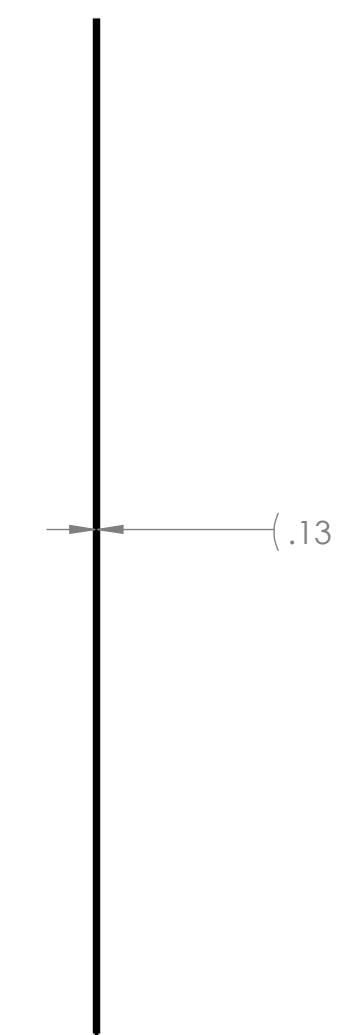
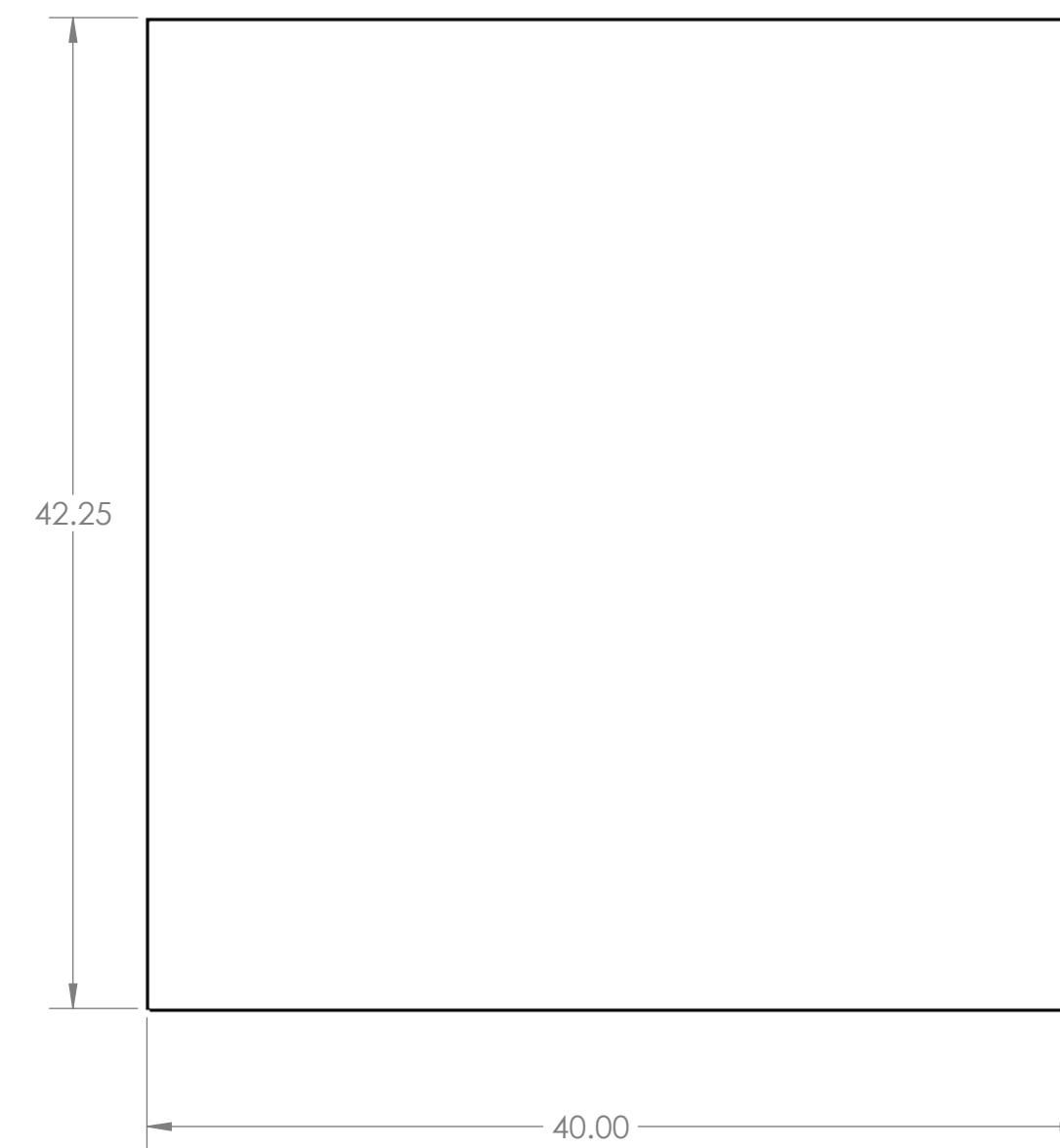
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Notes:

1. Label or tag part.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	NW	6/3/2020	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 0.125" hardboard/ masonite			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
 FIRST ROBOTICS COMPETITION  <small>SOLIDWORKS Modeling Solutions Partner</small>			
TITLE: Floor protection full			
SIZE DWG. NO. REV			
C GE-22104			
SCALE: 1:16 SHEET 1 OF 1			

4

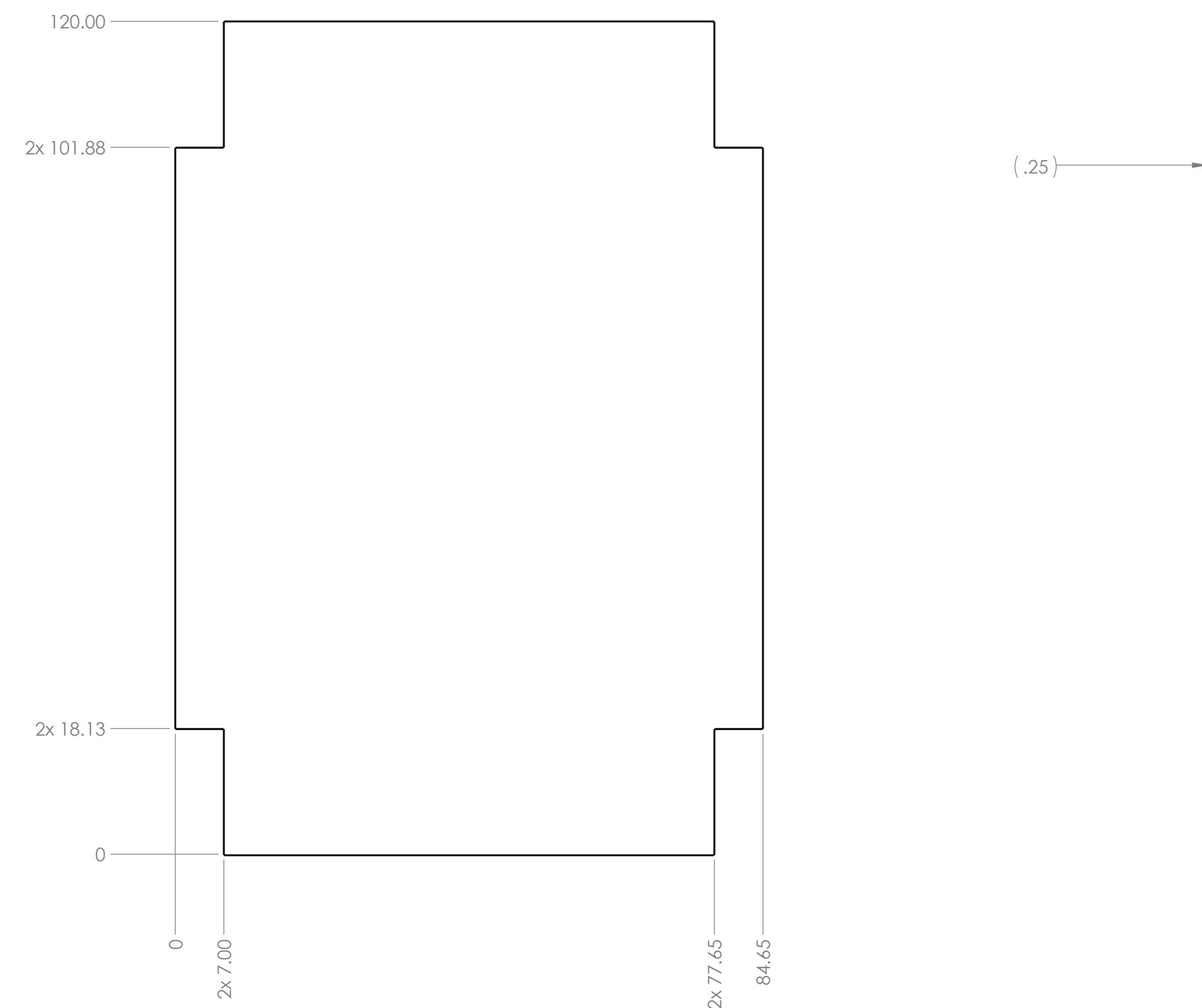
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UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DRAWN	NW	6/8/2020	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
Shaw Neyland II	C	GE-22105	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:32	SHEET 1 OF 1	



TITLE:
floor protection
carpet

SIZE DWG. NO. REV
C GE-22105

SCALE: 1:32 SHEET 1 OF 1

4

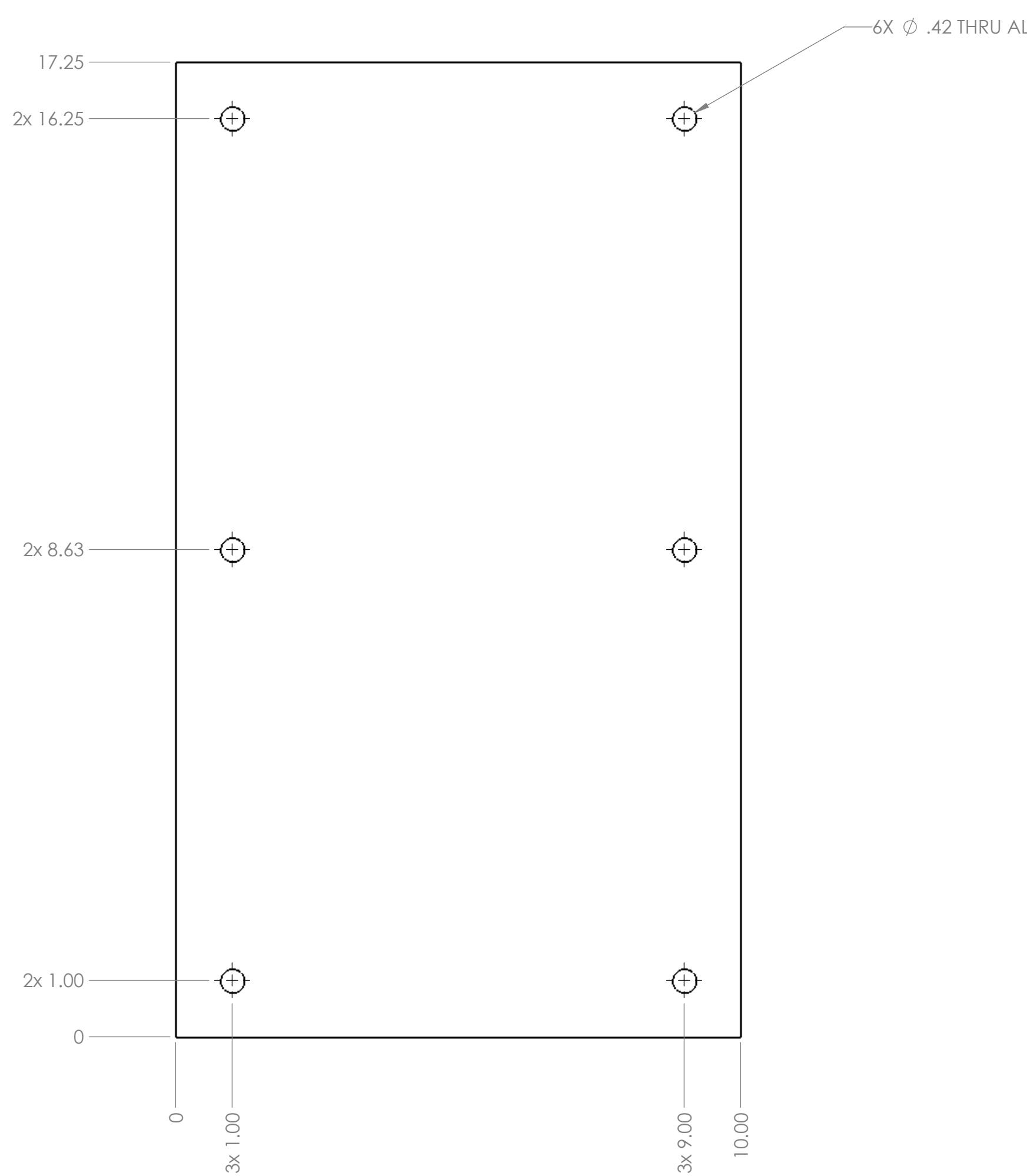
3

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Notes:

1. Label or mark with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	NW	7/1/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: .25" Red HDPE, smooth			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Launch Pad
Red**

SIZE DWG. NO. REV
C GE-22106

SCALE: 1:2 SHEET 1 OF 1

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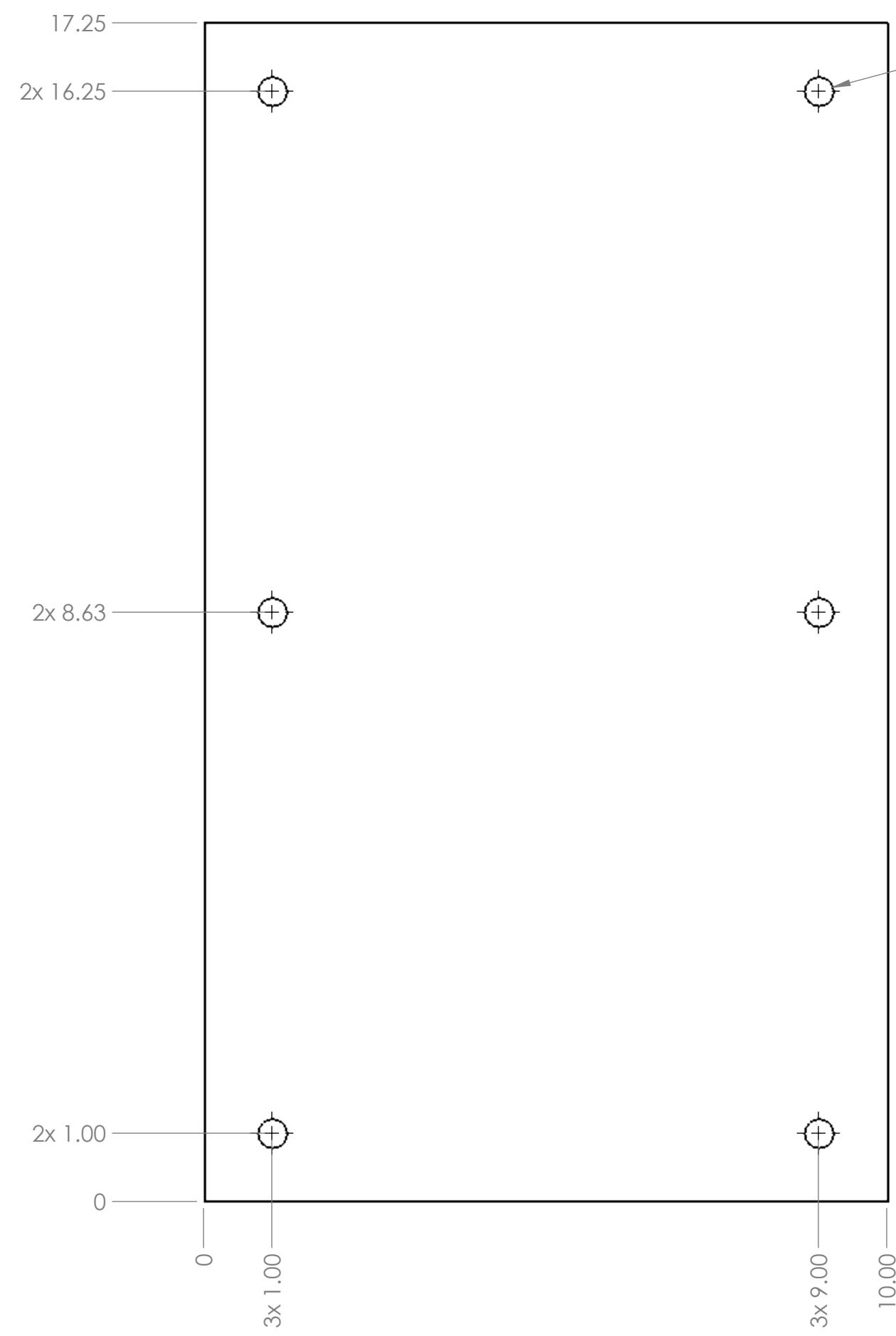
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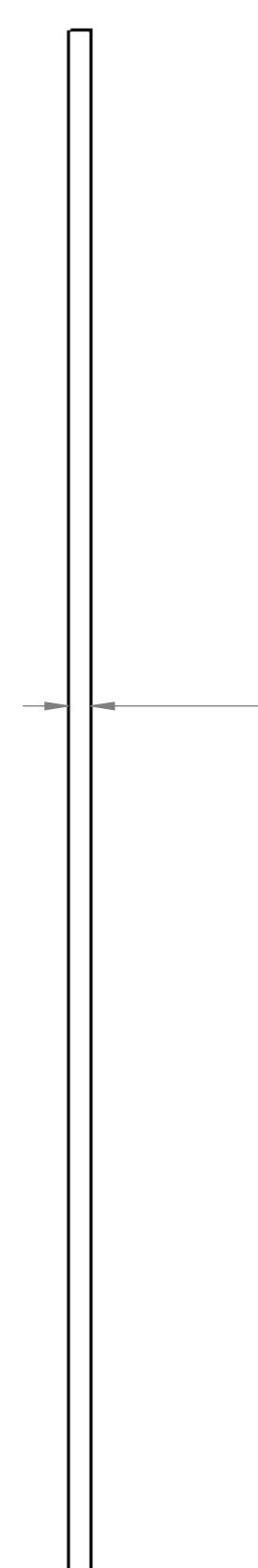
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Notes:

1. Label or mark with part number.



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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	NW	7/1/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
.25" Blue HDPE, smooth	C	GE-22107	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:2	SHEET 1 OF 1	

 **FIRST
ROBOTICS
COMPETITION**  **SOLIDWORKS**
Modeling Solutions Partner

TITLE:
**Launch pad
blue**

SIZE DWG. NO. REV
C GE-22107

SCALE: 1:2 SHEET 1 OF 1

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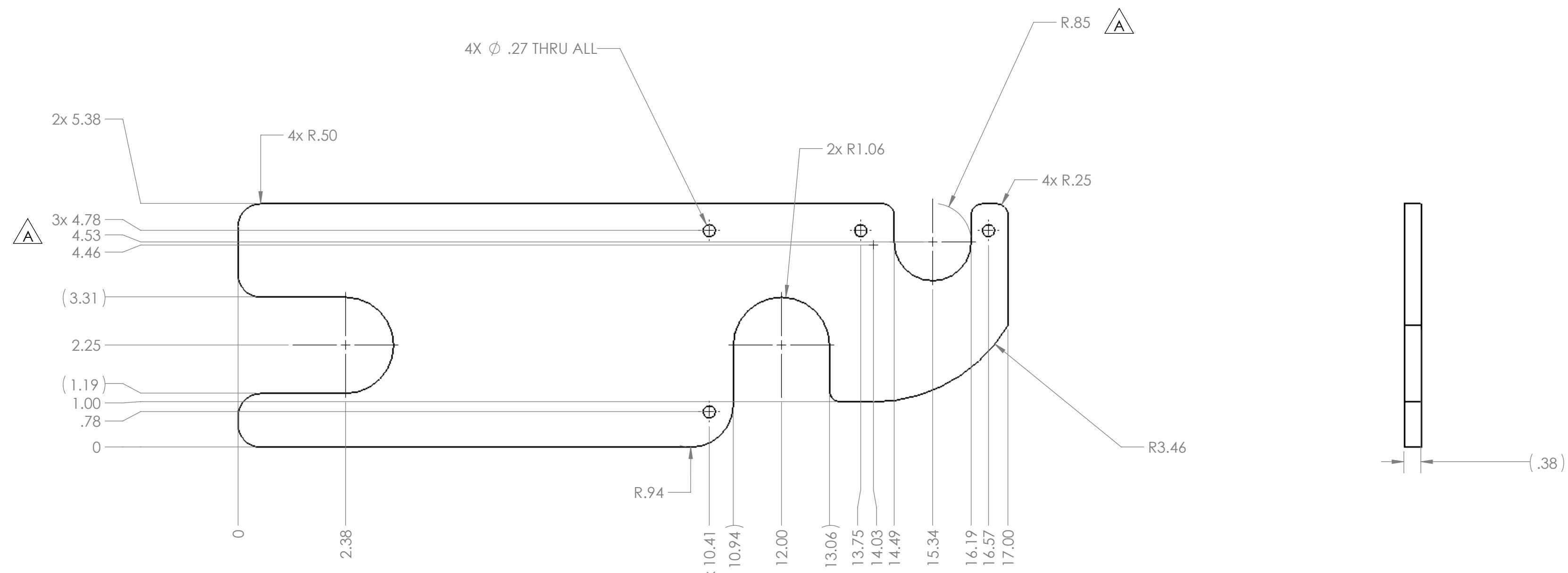
1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
C4, D2	A	R .85 was R.83 4.53 was 4.55	11/18/2021	NTW

D

D



C

C

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Notes:

1. Label or tag with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	NW	6/5/2020	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 3/8" Polycarbonate, Clear			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			



TITLE:
Low bar holder

SIZE DWG. NO. REV
C GE-22111 A

SCALE: 1:4 SHEET 1 OF 1

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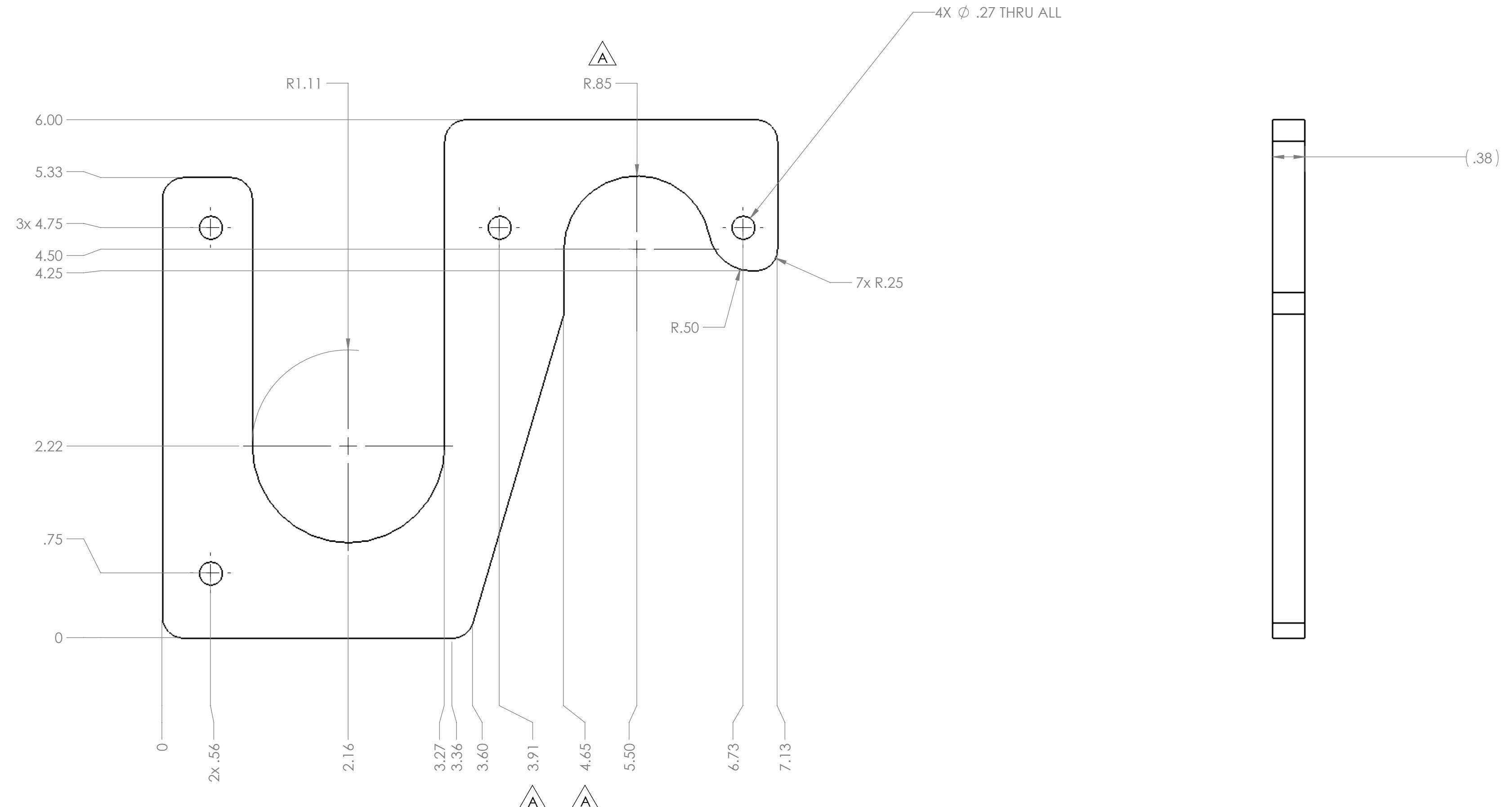
1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3, D3	A	R .85 was R .83, 3.91 was 3.93, 4.65 was 4.67	11/18/2021	NTW

D

D



Notes:

1. Label or tag with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	NW	6/5/2020	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 3/8" Polycarbonate, clear			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			



TITLE:
Low bar clamp

SIZE DWG. NO. REV

C GE-22112 **A**

SCALE: 1:4 SHEET 1 OF 1

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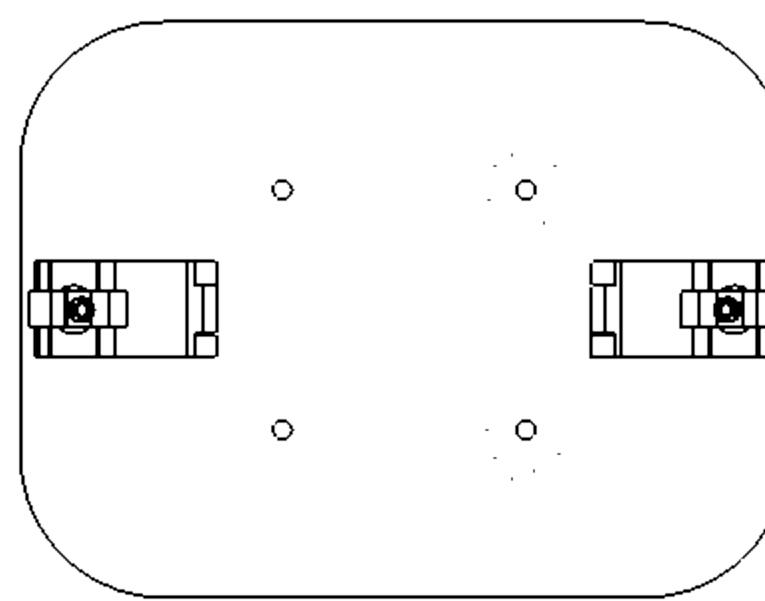
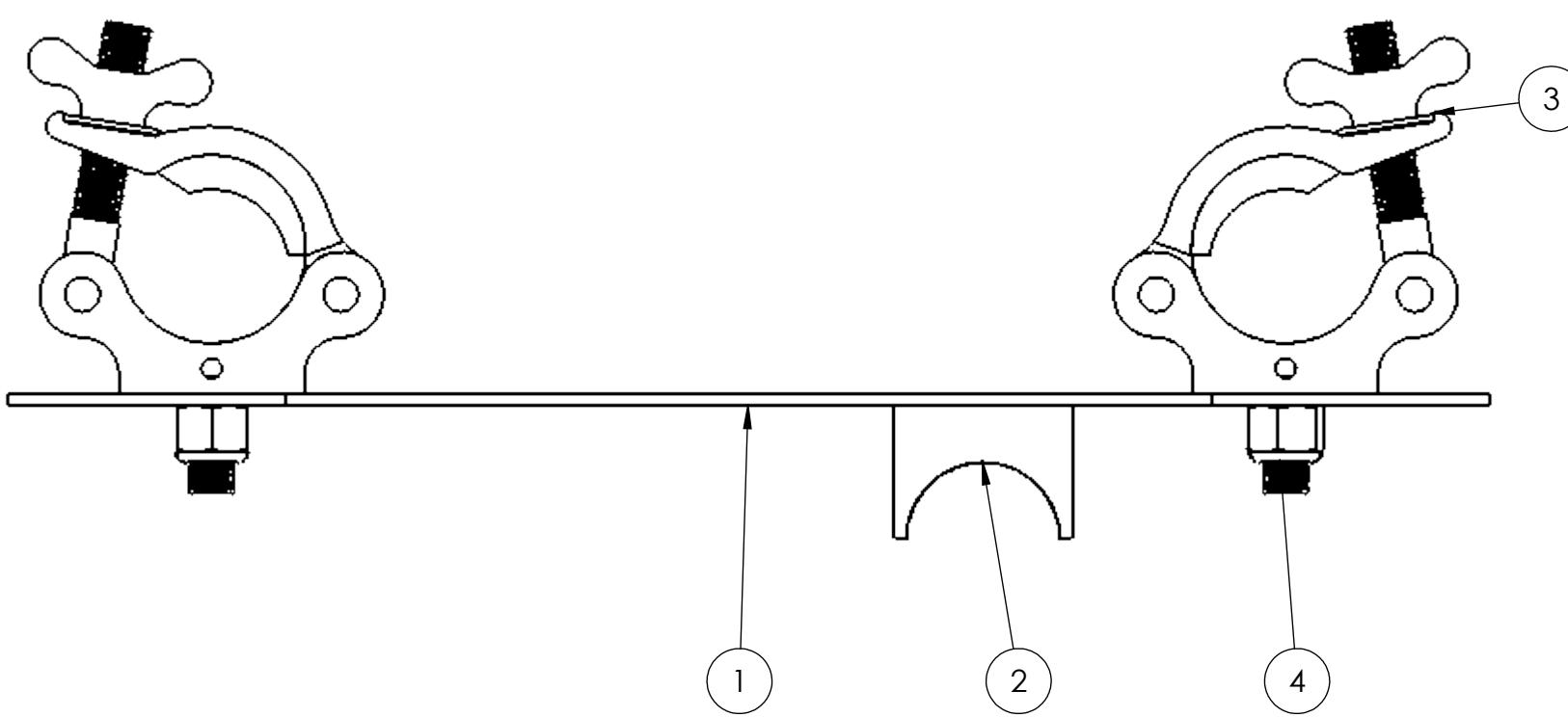
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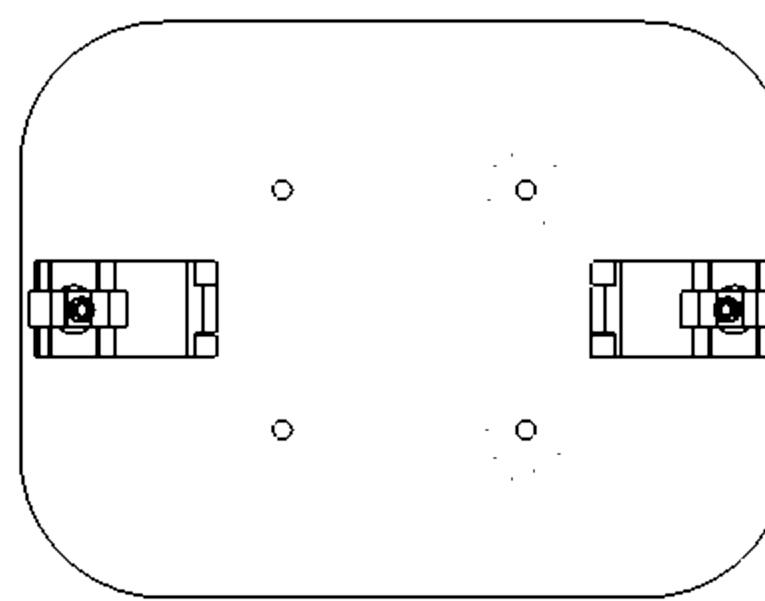
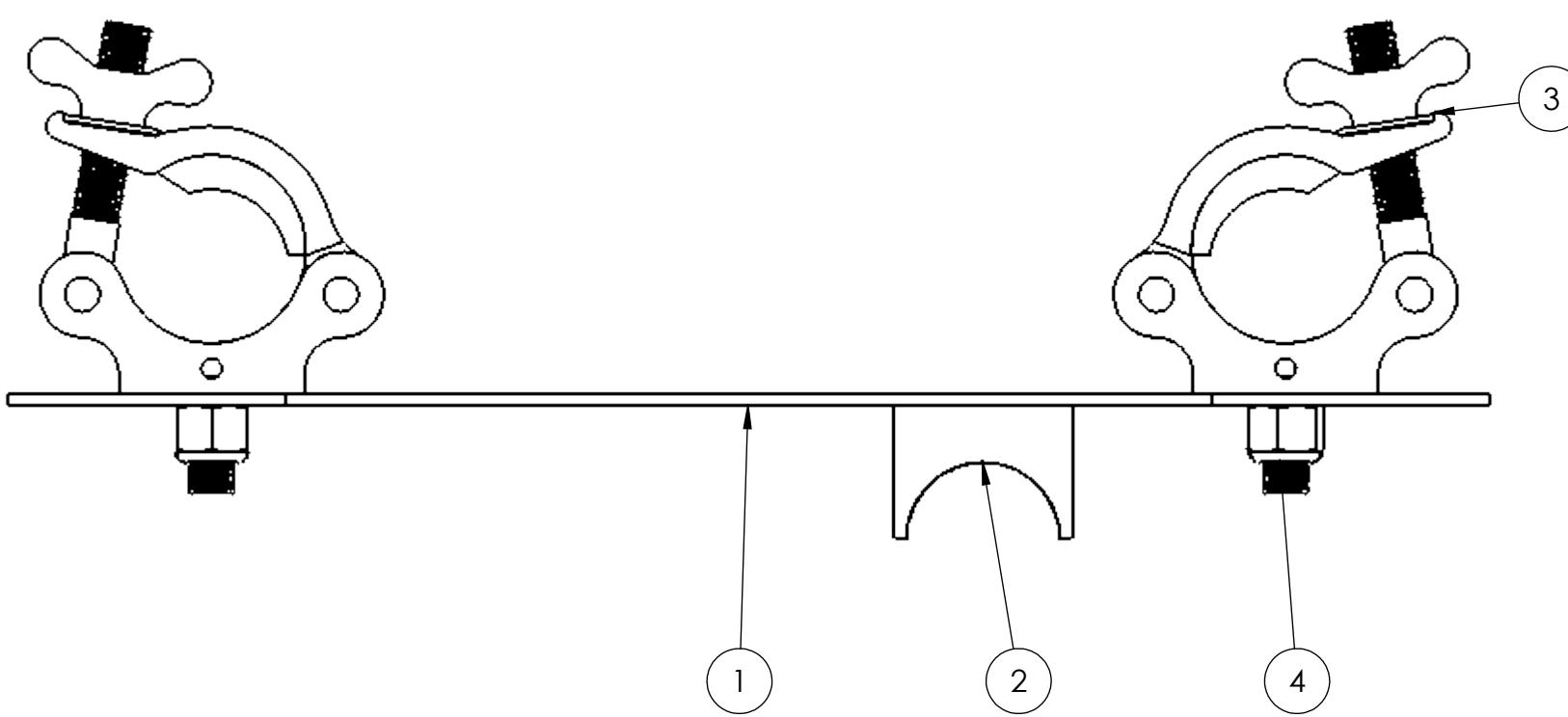
1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22121	Under hung plate	1
2	GE-22123	Pipe Saddle	2
3	FE-01016	Cheeseborough for Truss _ Single	2
4	nylock_.5_13	steel nylon-insert locknut, 1/2" - 13	2

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UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NW	3/4/2021
TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL		
MATERIAL/FINISH:	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

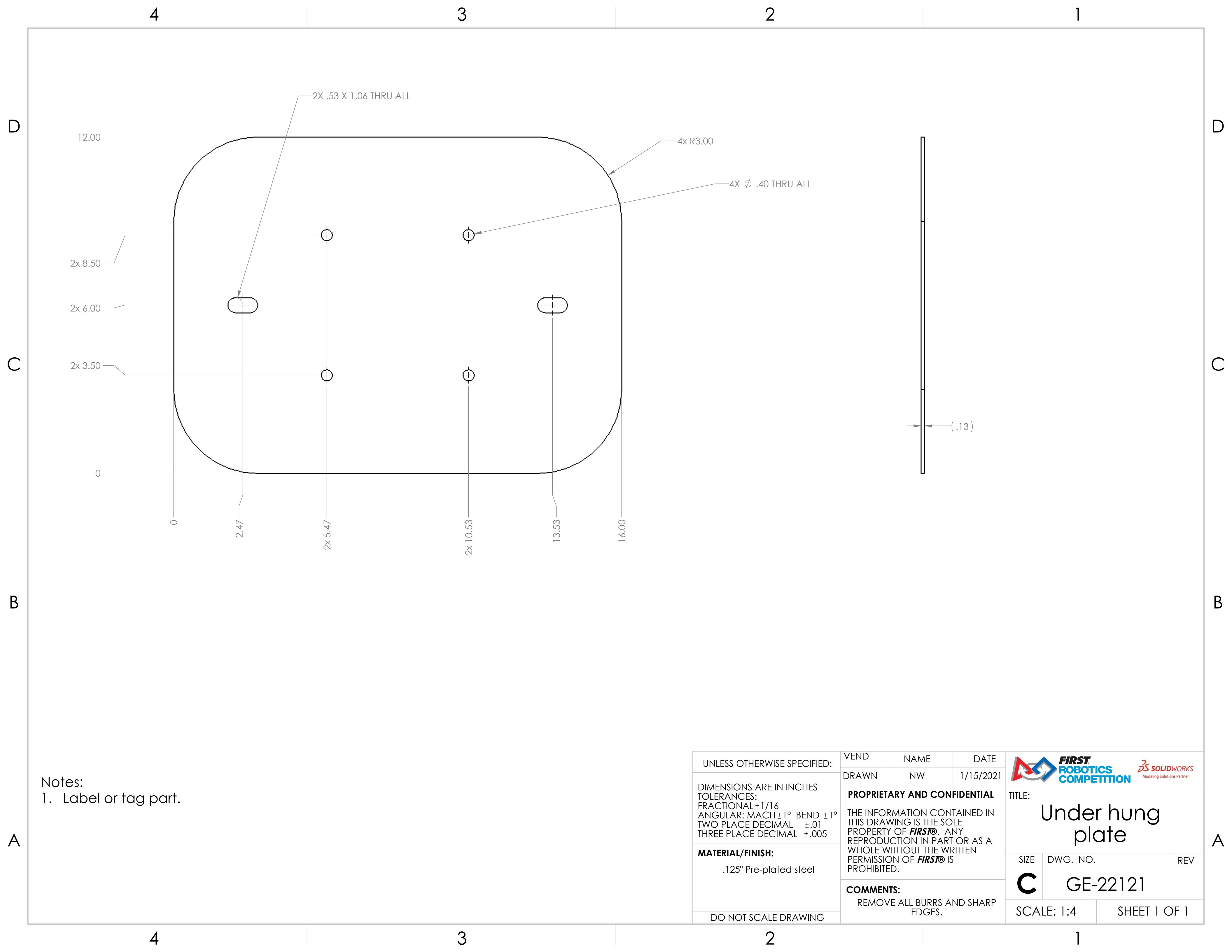
FIRST ROBOTICS COMPETITION Modeling Solutions Partner

TITLE: under hung assembly

SIZE DWG. NO. REV

C GE-22120

SCALE: 1:4 **SHEET** 1 OF 1



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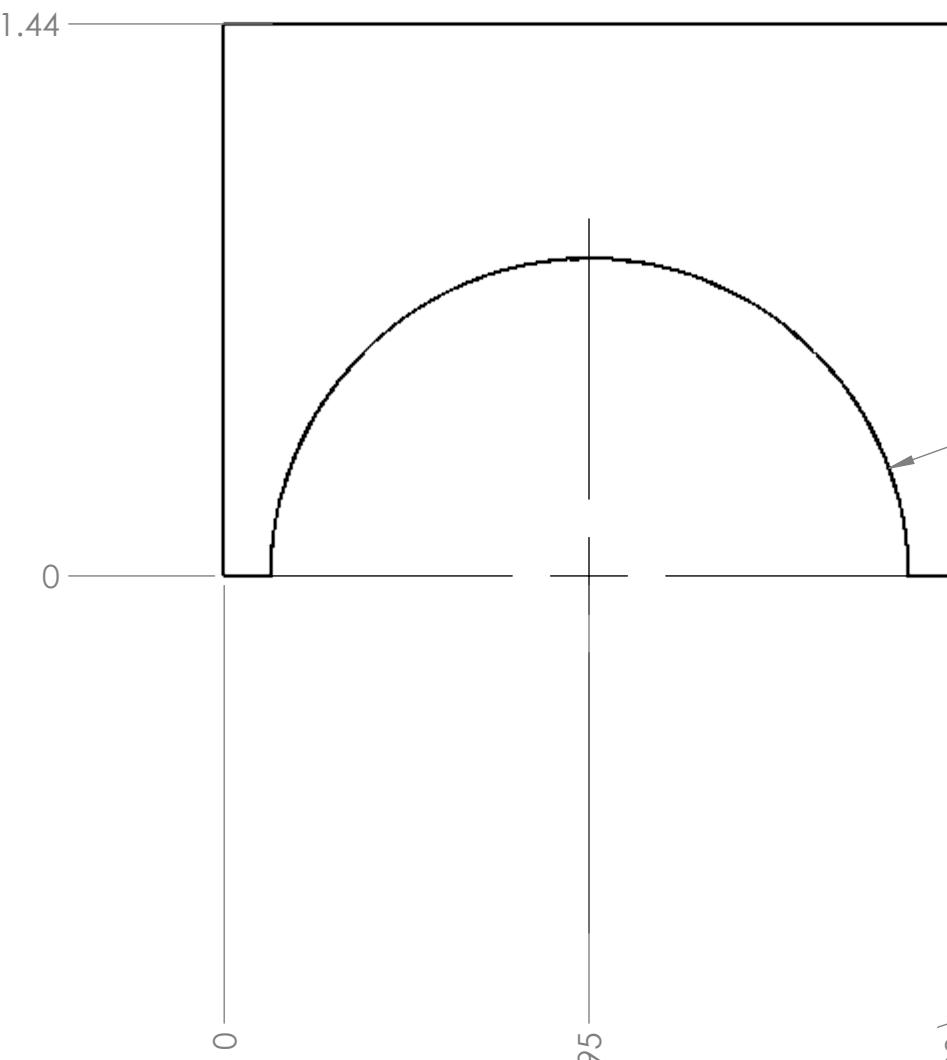
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Notes:

1. Label or tag with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NW	2/18/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$			
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$			
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
1.5" sch 40 aluminum			
COMMENTS:			
REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
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TITLE:
Pipe Saddle

SIZE DWG. NO. REV
C GE-22123

SCALE: 1:1 SHEET 1 OF 1

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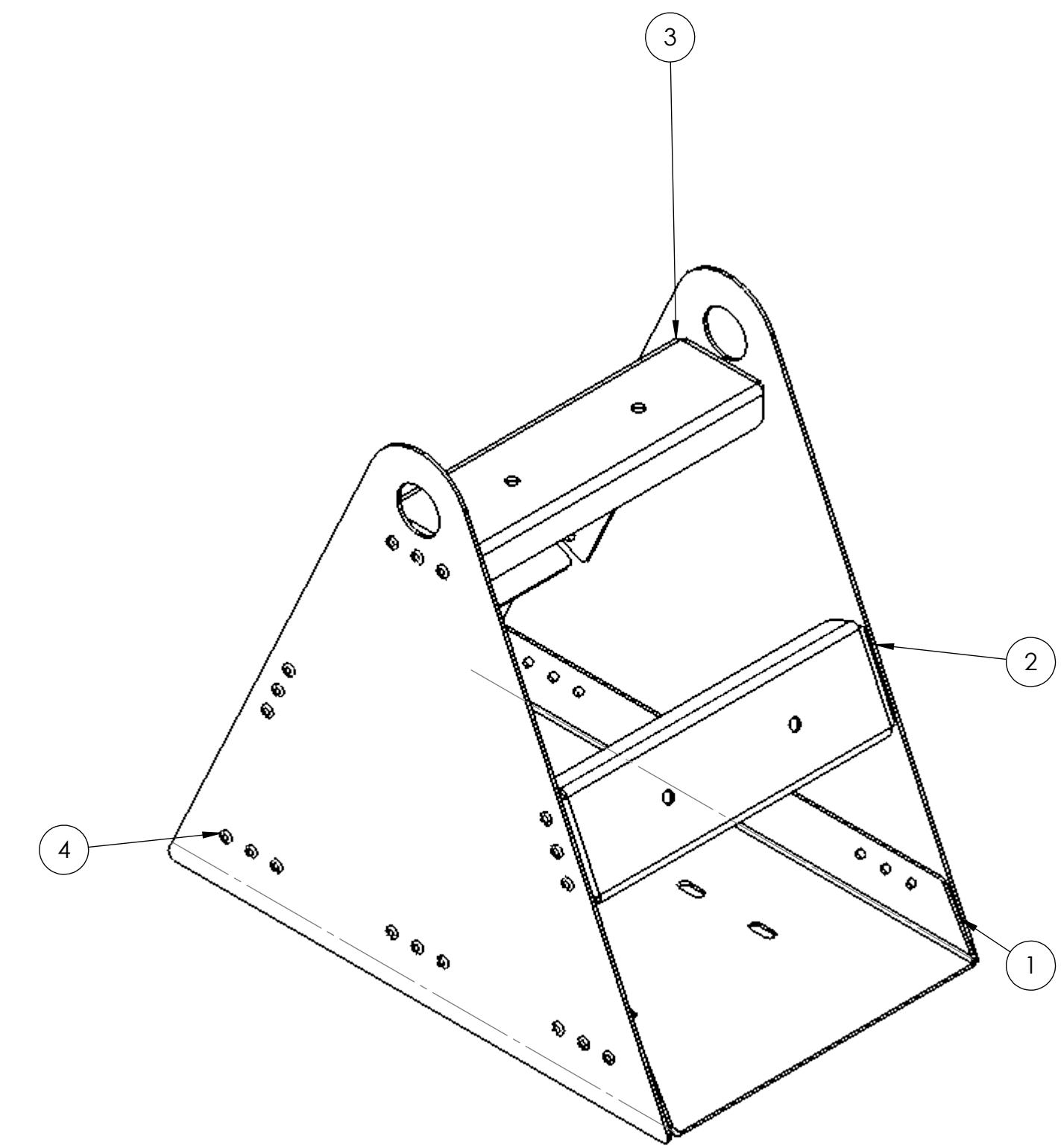
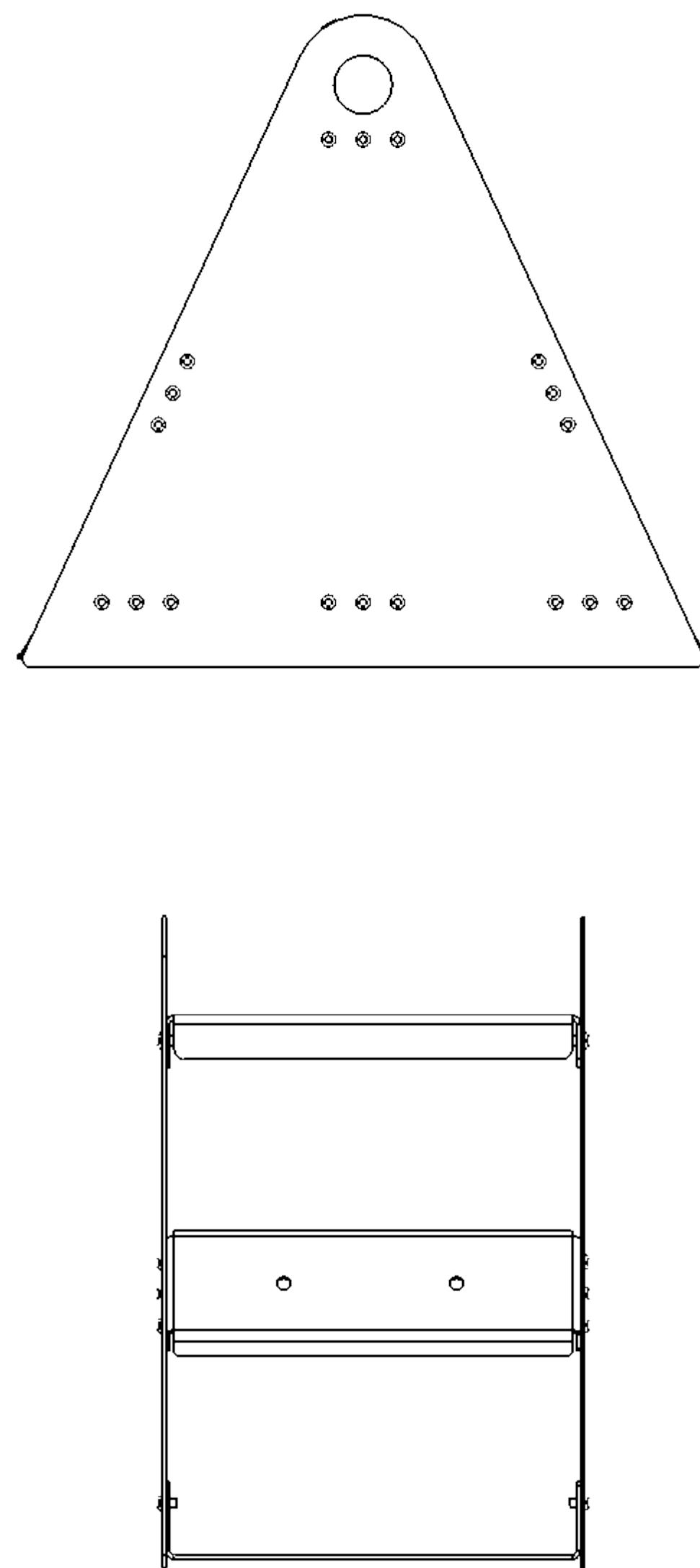
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22131	upper bar base	1
2	GE-22132	High bar side plate	2
3	GE-22133	Upper holder cross	3
4	rivet_1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	36

UNLESS OTHERWISE SPECIFIED:		
VEND	NAME	DATE
DRAWN	NW	1/15/2021
PROPRIETARY AND CONFIDENTIAL		
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COMMENTS:		
REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING		

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Upper transition bar holder

SIZE DWG. NO. REV
C GE-22130

SCALE: 1:8 SHEET 1 OF 3

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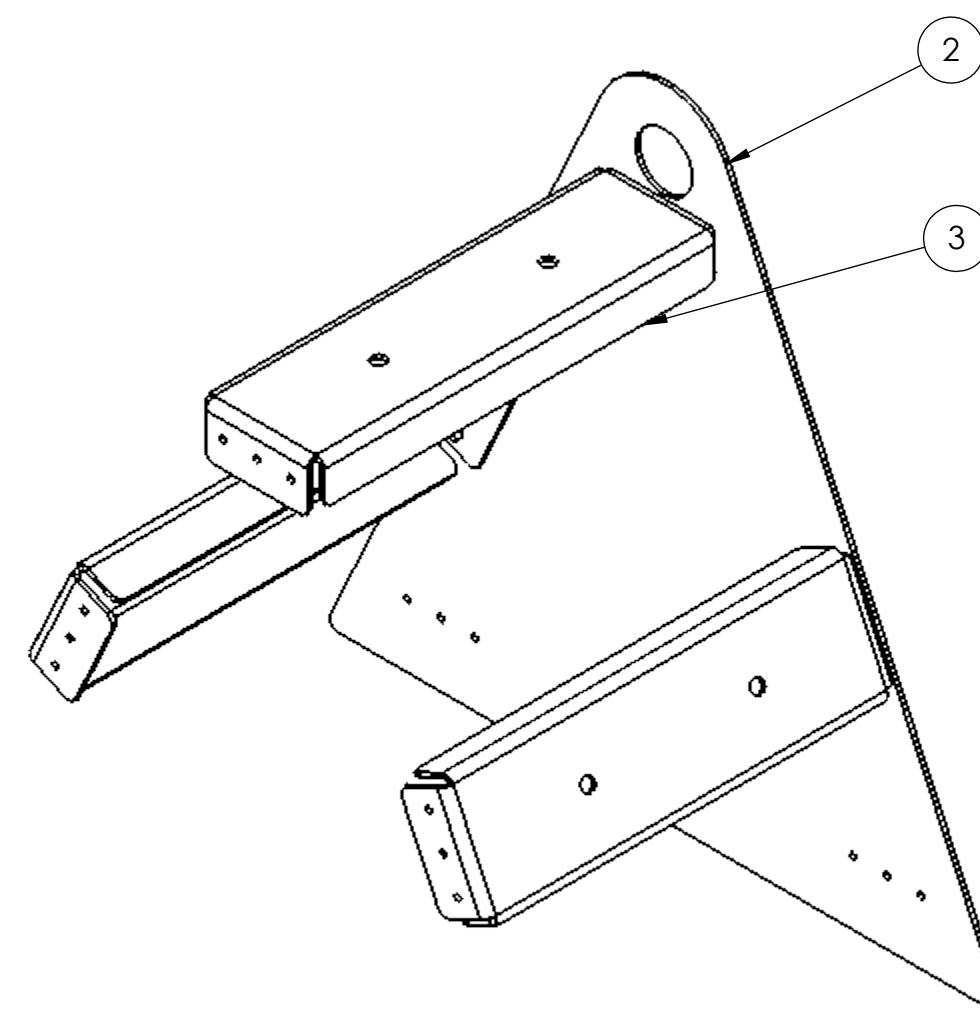
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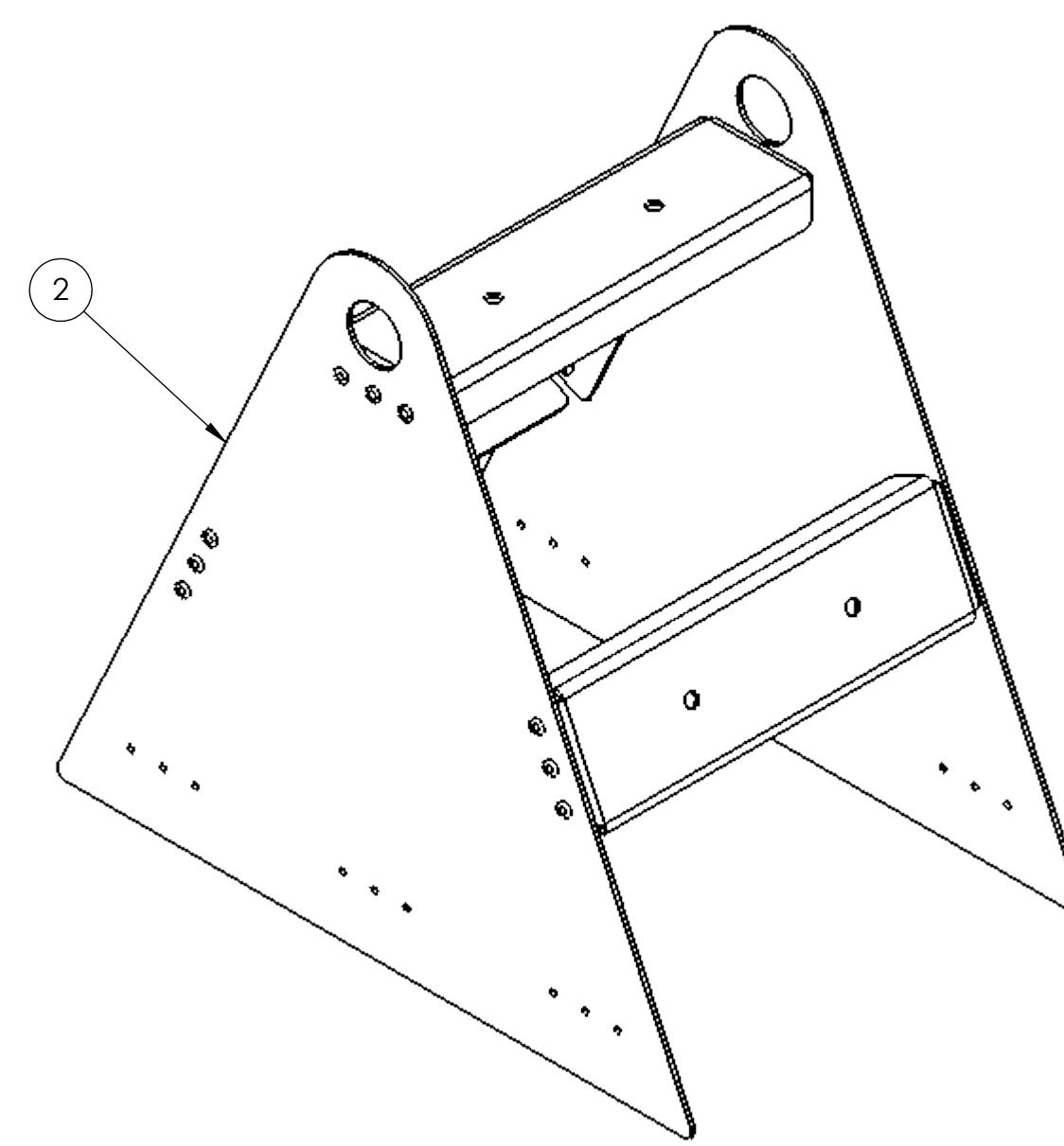
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Step 1



Step 2



Notes:

1. Rivet (3) to (2) with 3/16" steel rivets in three locations.

Notes:

1. Rivet (2) to step 1 with 3/16" steel rivets.

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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	NW	1/15/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
	C	GE-22130	
DO NOT SCALE DRAWING		SCALE: 1:8	SHEET 2 OF 3

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Upper transition
bar holder**

4

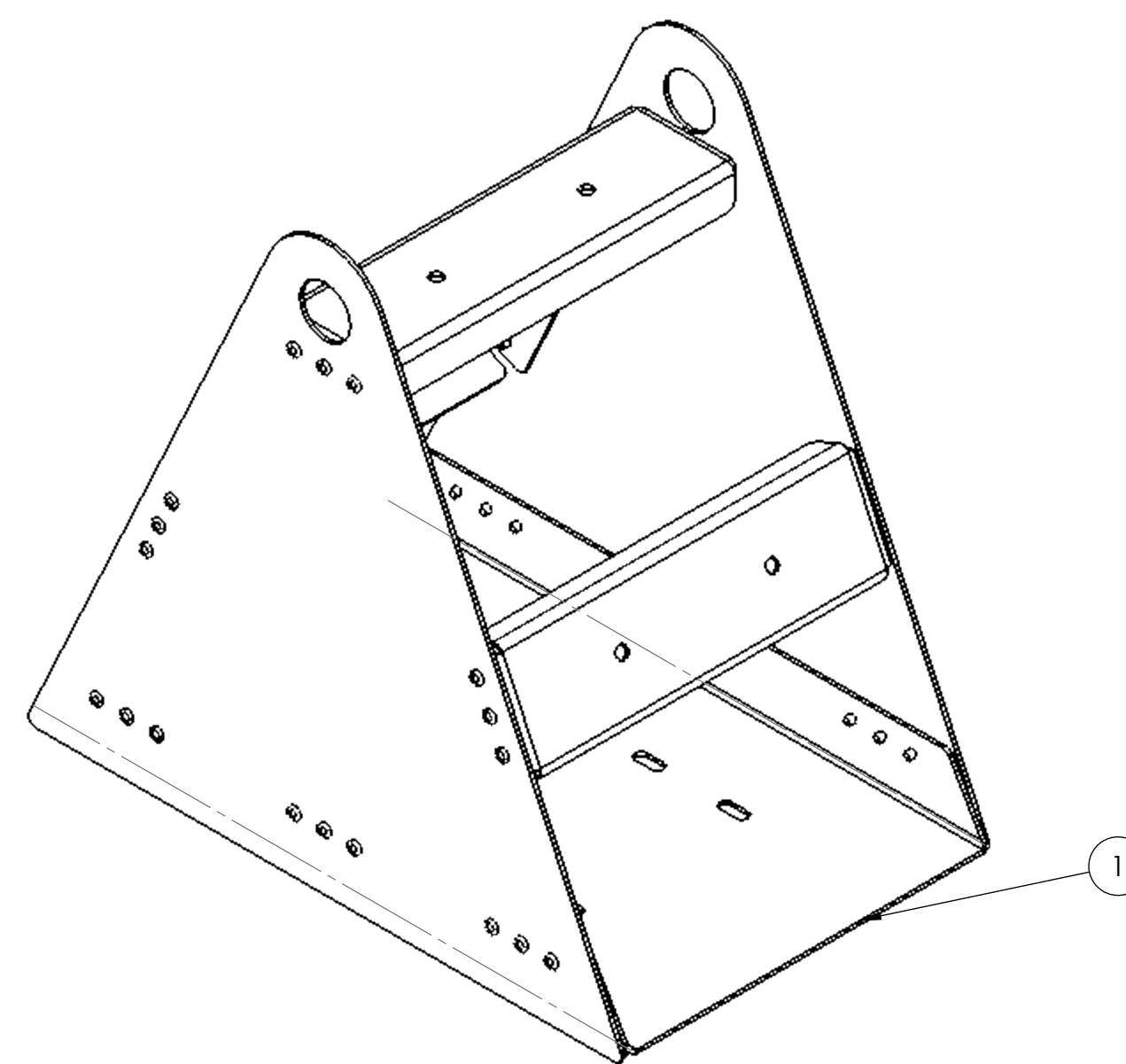
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Step 3:



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Notes:

- Rivet 1 to step 2 with 3/16 steel rivets.

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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	NW	1/15/2021	
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
TITLE: Upper transition bar holder			
SIZE DWG. NO. REV			
C GE-22130			
SCALE: 1:8 SHEET 3 OF 3			



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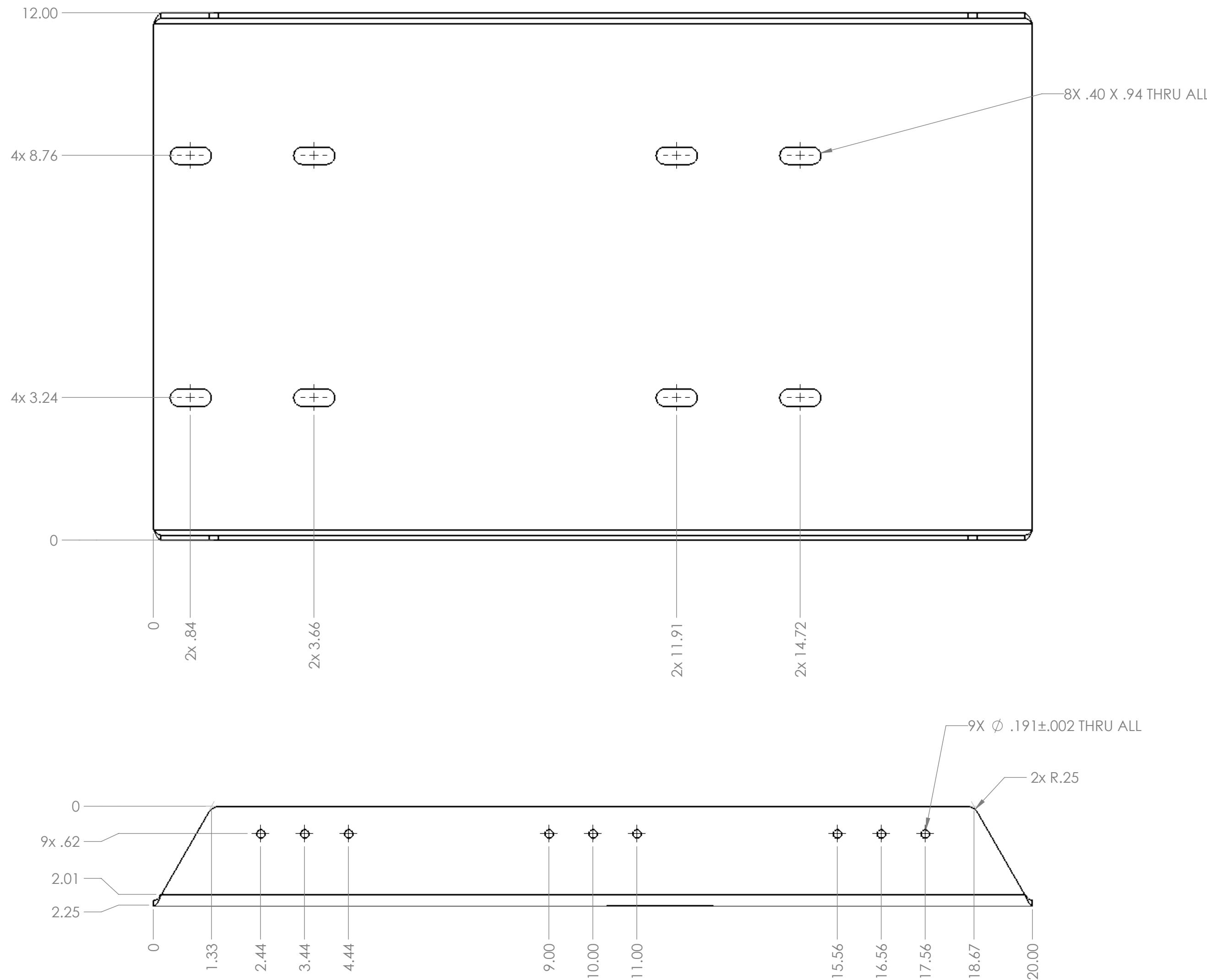
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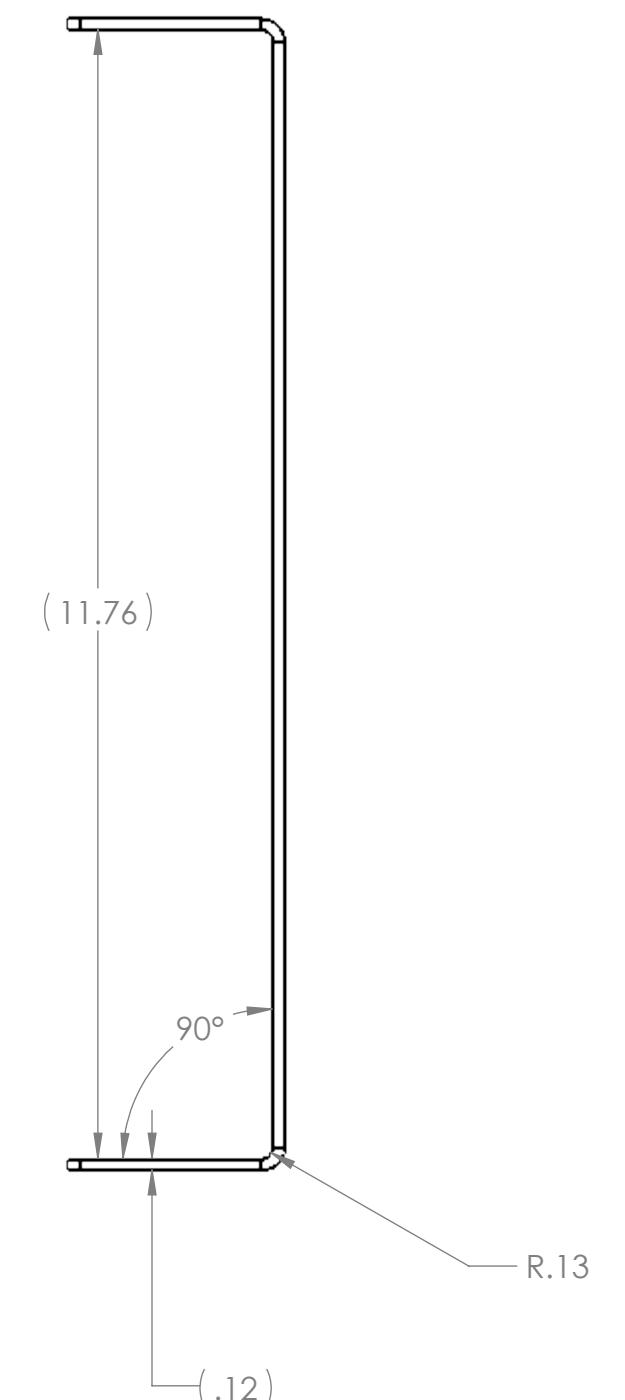
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**Notes:**

1. Tag or label with part number.



UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	NW	10/1/2020	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
11 ga. pre-plated steel	C	GE-22131	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING		SCALE: 1:2	SHEET 1 OF 1

4

3

2

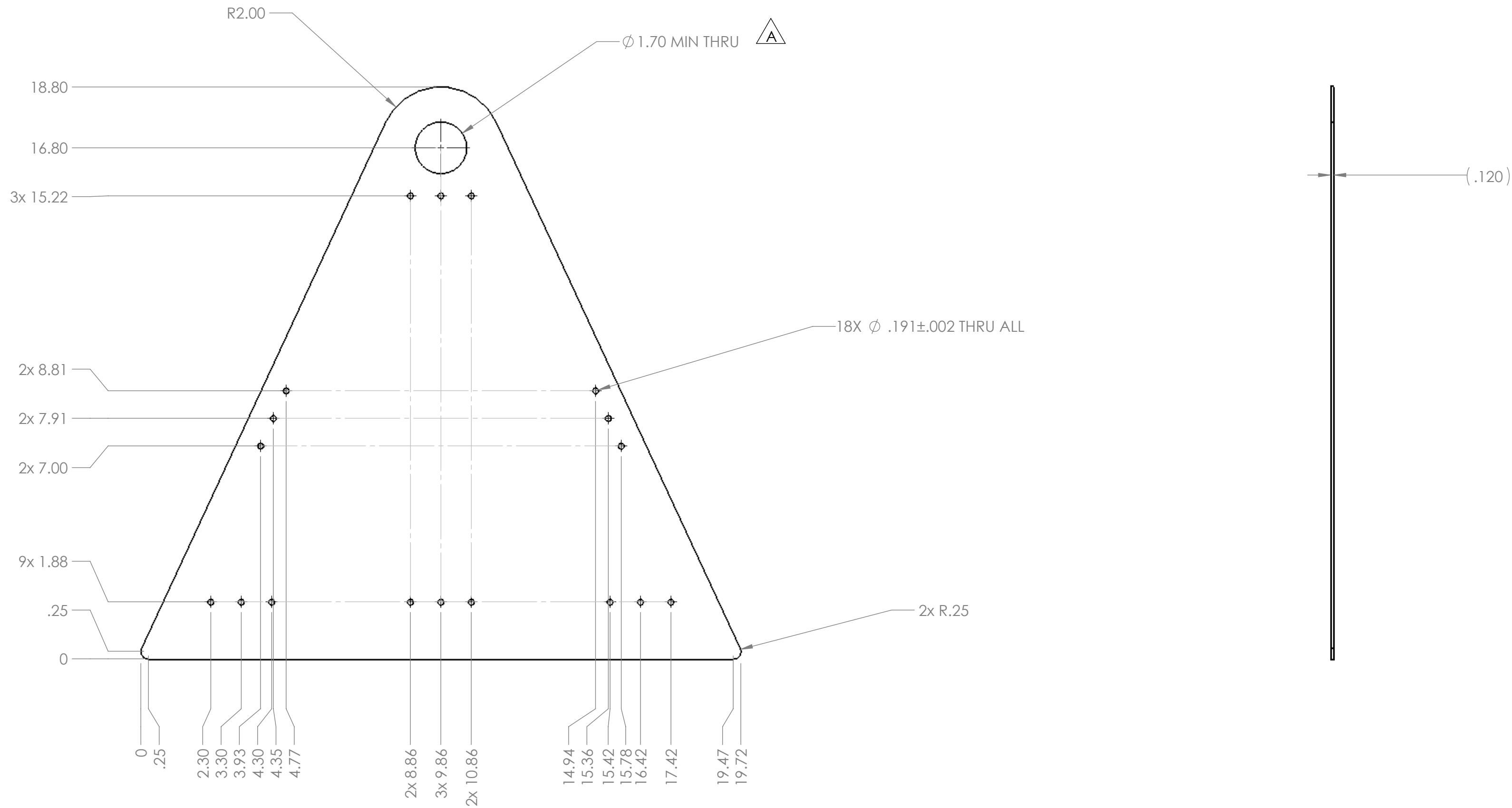
1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
D3	A	1.7" was 1.68"	11/18/2021	NTW

D

D



Notes:
1. Tag or label part with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

11 ga., Pre-plated steel sheet

DO NOT SCALE DRAWING

VEND NAME DATE
DRAWN NW 9/30/2020

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

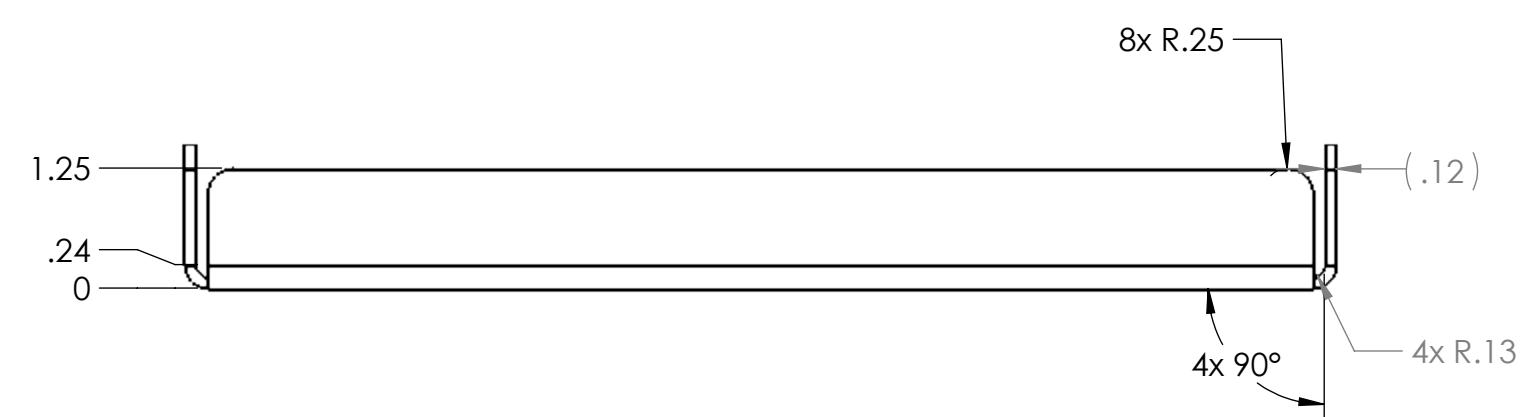
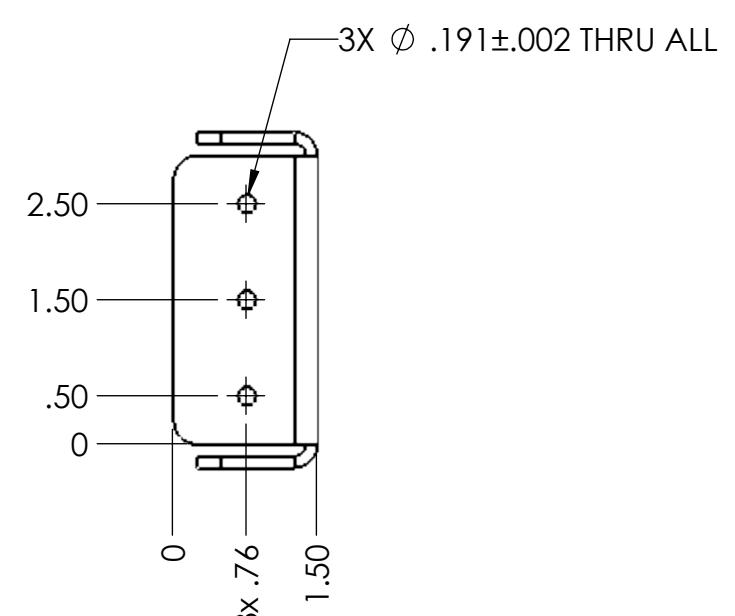
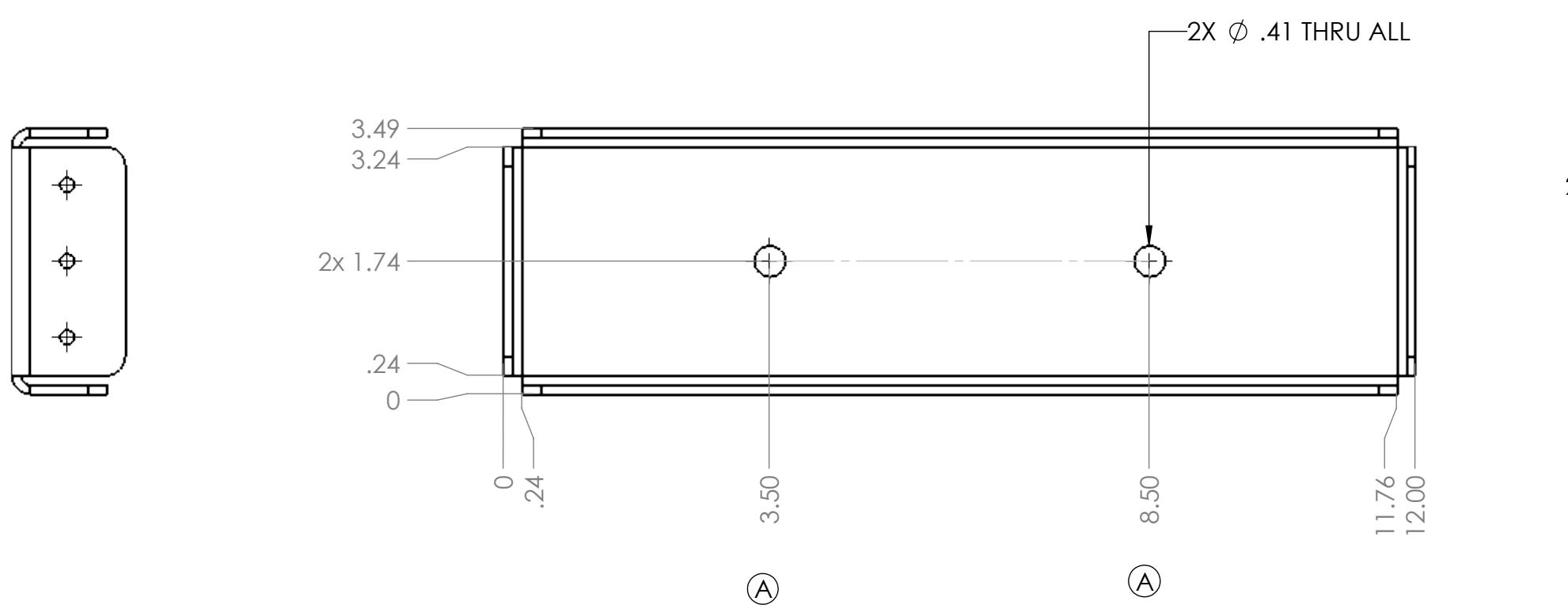
TITLE: High bar side plate

SIZE DWG. NO. REV

C GE-22132 A

SCALE: 1:8 SHEET 1 OF 1

ZONE	REV.	DESCRIPTION	DATE	APPROVED
C3	A	3.50 was 3.41 and 8.50 was 8.41	10/27/2021	NTW



Notes
1. Tag or label part with part number.

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NW	10/1/2020
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL		
TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH: 11 ga. pre-plated steel	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Upper holder cross

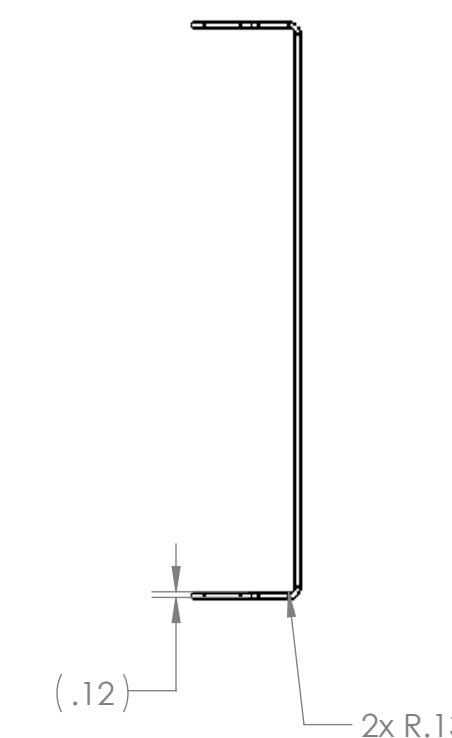
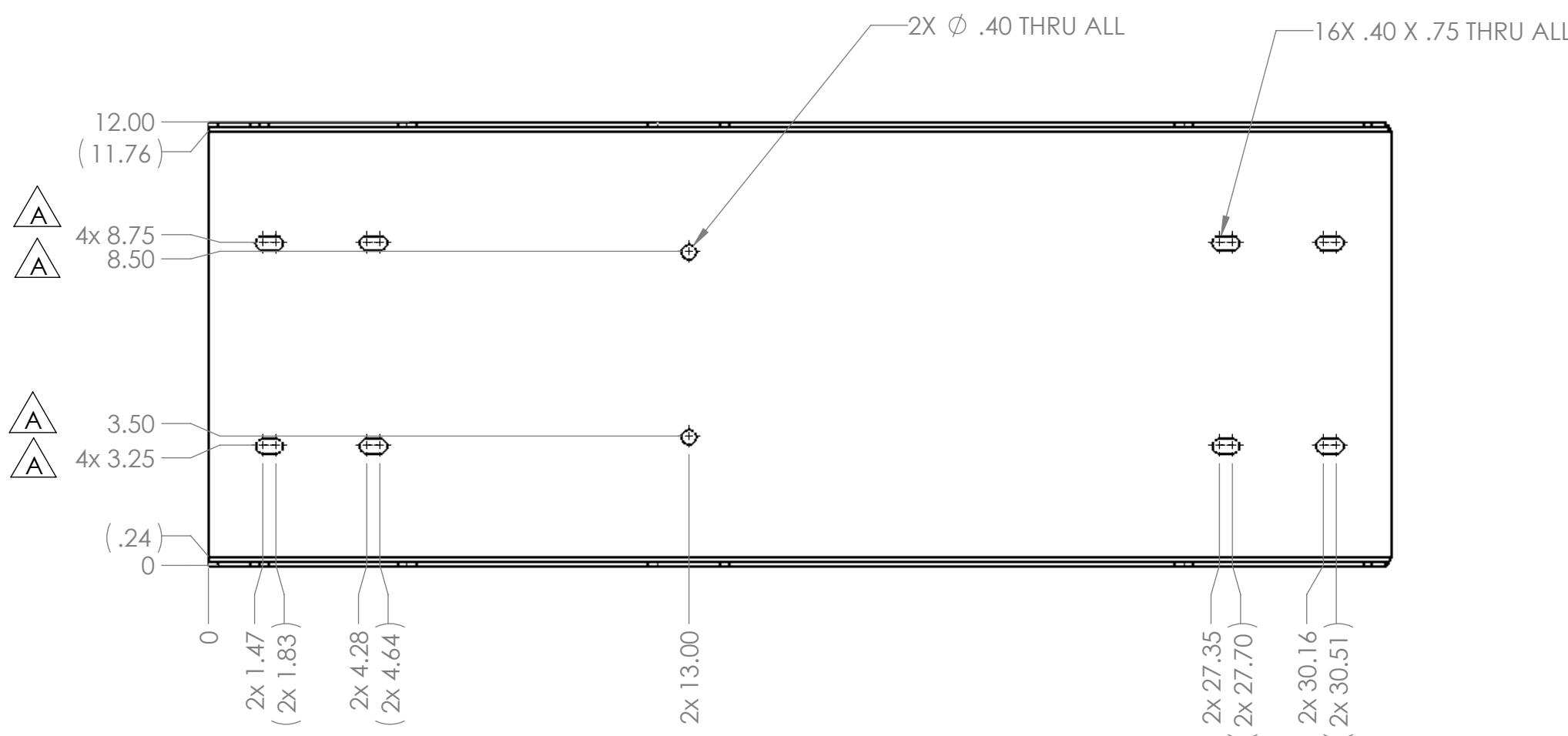
SIZE	DWG. NO.	REV
C	GE-22133	A
SCALE: 1:2		SHEET 1 OF 1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
C4, D4	A	3.25 was 3.24, 3.5 was 3.37, 8.5 was 8.37, 8.75 was 8.74	10/29/2021	NTW

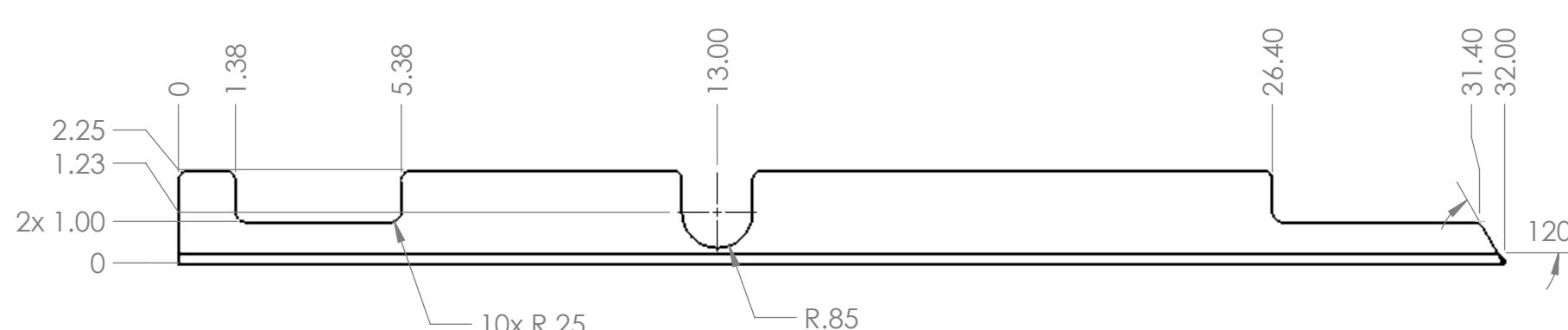
D

D



C

C

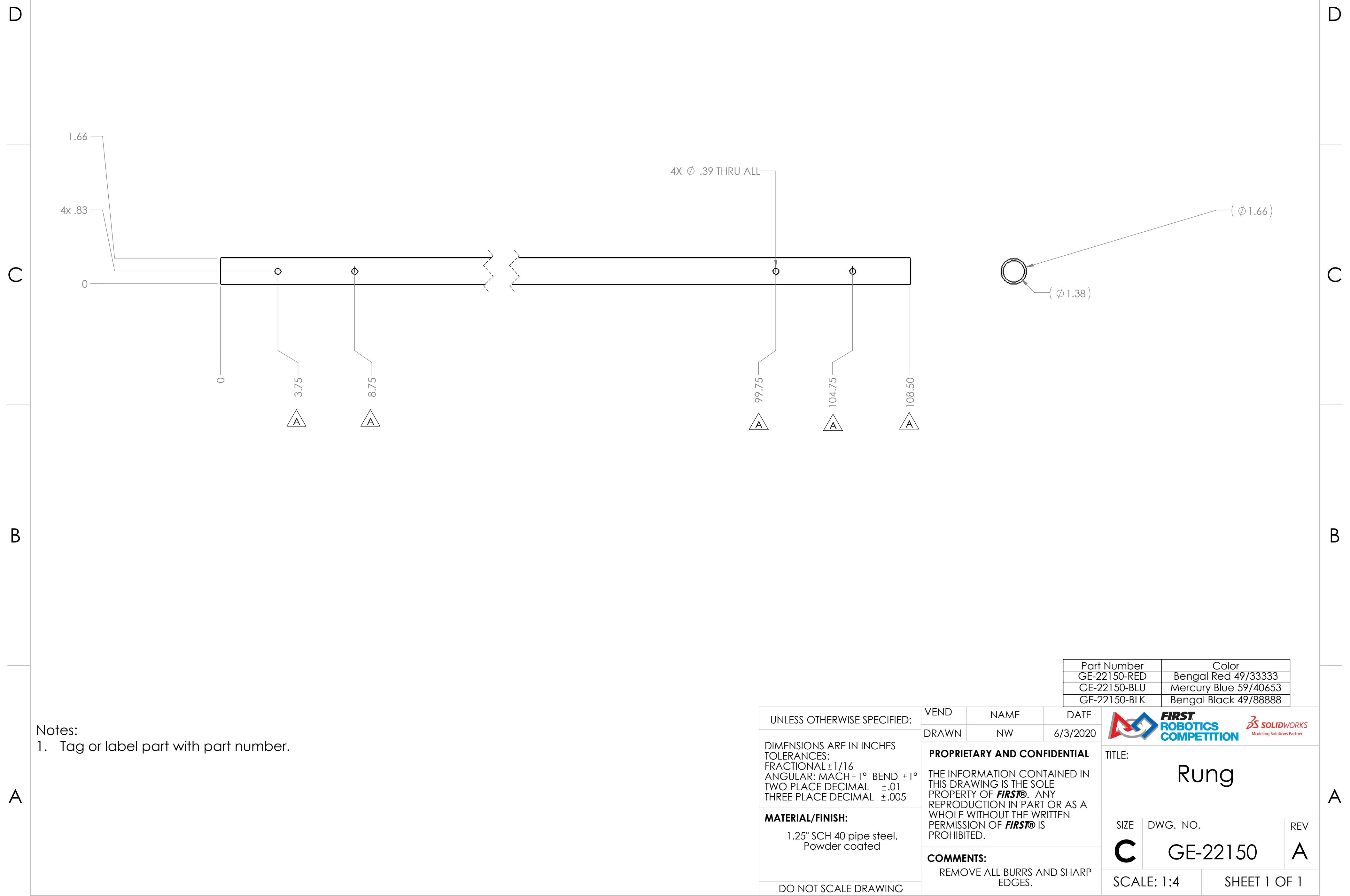


Notes:
1. Tag or label part with part number.

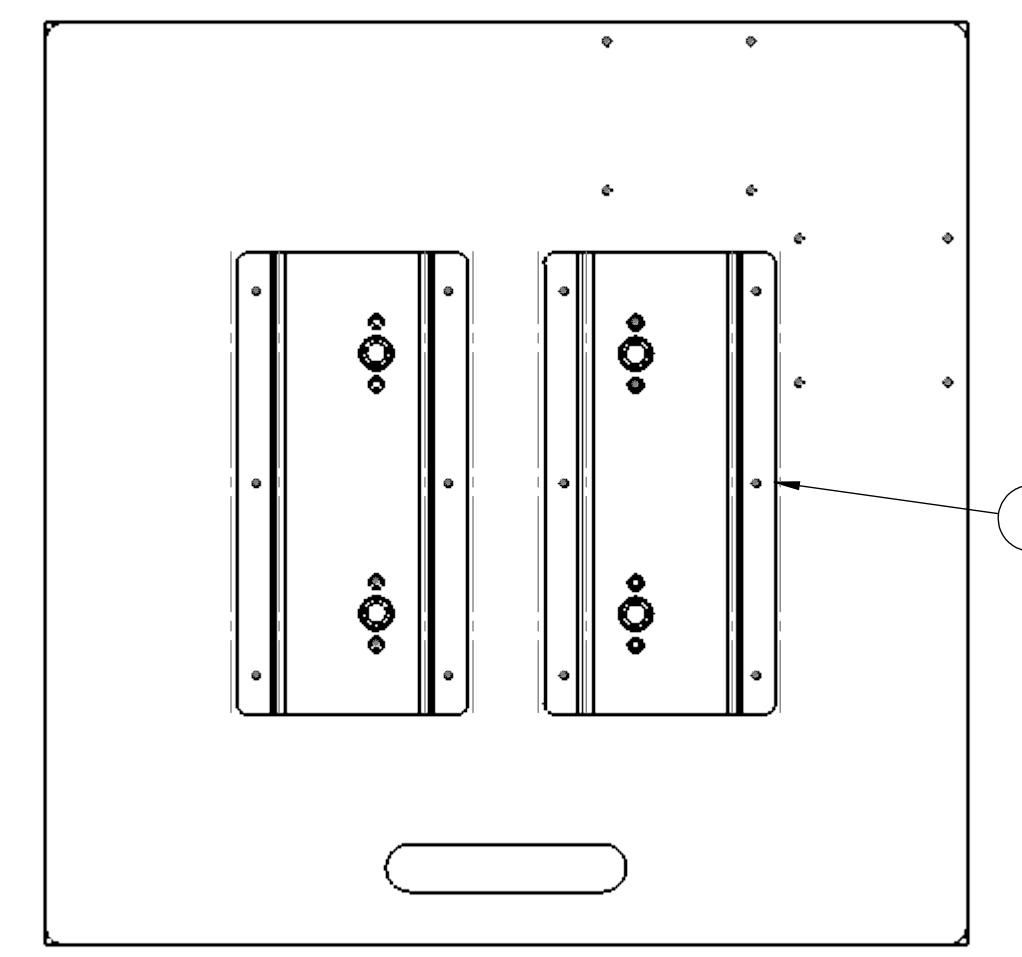
UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
	DRAWN	NW	10/1/2020
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
11 gau, Pre-plated steel			
COMMENTS:			
REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
FIRST ROBOTICS COMPETITION	SOLIDWORKS Modeling Solutions Partner		
TITLE: mid transition bar holder			
SIZE	DWG. NO.	REV	
C	GE-22140	A	
SCALE: 1:4		SHEET 1 OF 1	

REVISIONS

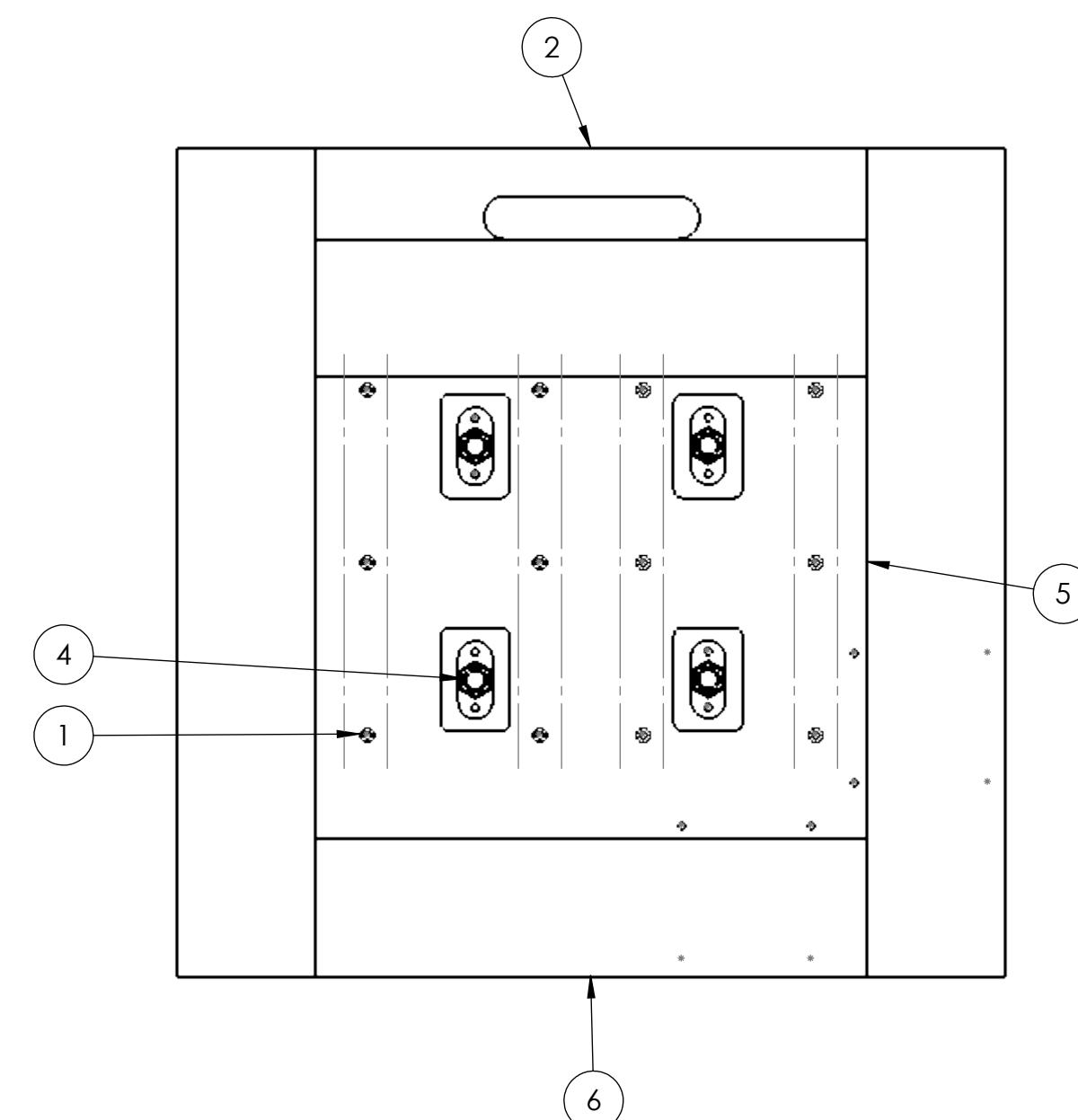
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B3, B4	A	Addition 0.5" added to overall length. Holes moved to center new length.	9/2/2021	NTW



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	12
2	GE-20030 - 01	Truss Base - Sheet Metal Assembly, Base Plate	1
3	GE-20030 - 02	Truss Base - Sheet Metal Assembly, Truss Feet	2
4	nut_chassis_.625_11	Nut, Chassis, 5/8-11	4
5	Hook_4_24	4" x 24" Hook, Adhesive Backed	2
6	Hook_4_16	4" x 16" Hook, Adhesive Backed	2



Top



Bottom

- Notes:
- Made from part GE-20030.
 - Remove parts GE-20030-03 from assembly.
 - Attach (4).
 - Place (6) and (5) or replace missing.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NW	1/4/2022
TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	SIZE DWG. NO. REV		
C GE-22170			
DO NOT SCALE DRAWING		SCALE: 1:5 SHEET 1 OF 1	

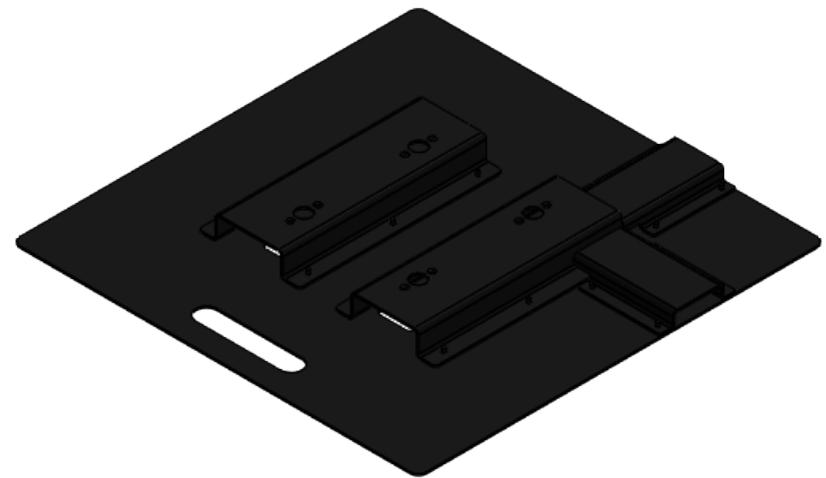
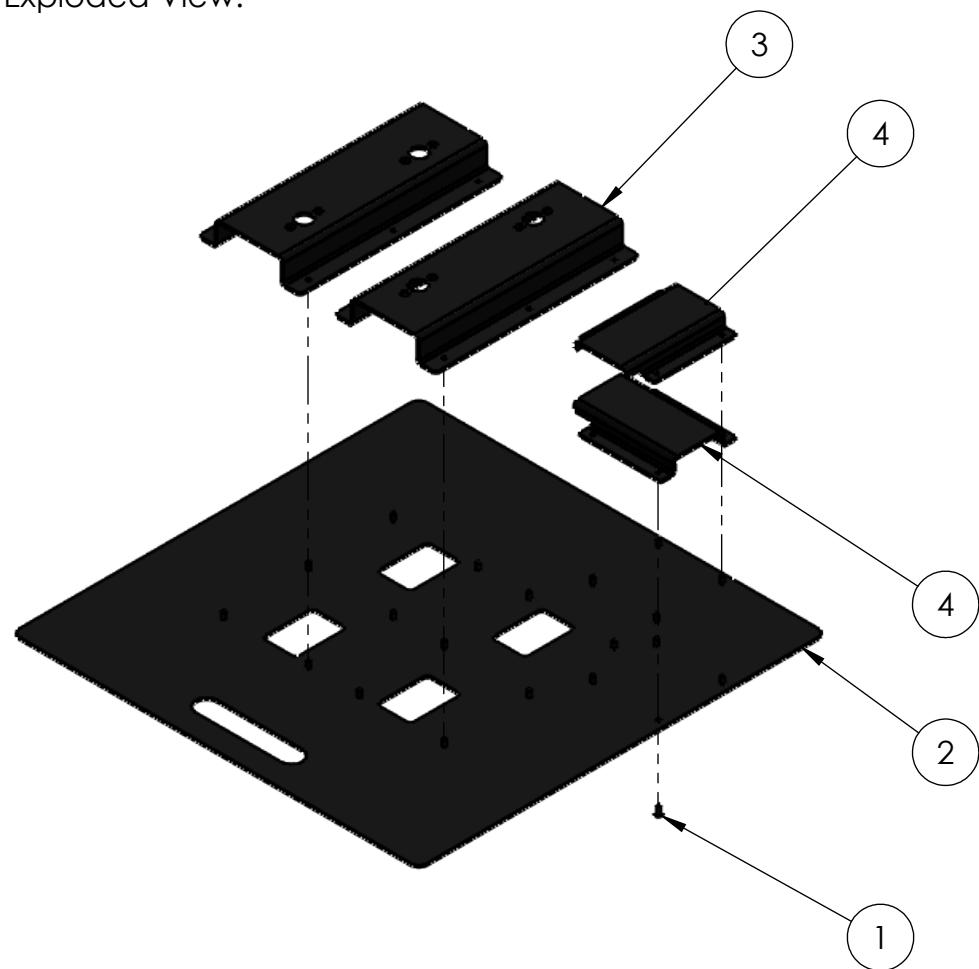
4

3

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1

Exploded View:



- Notes:
1. Rivets should be plated or stainless steel
 2. Tag or label with part number.
 3. Powder Coated Black (Full Assembly).

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OR AS A WHOLE WITHOUT THE WRITTEN
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	20
2	GE-20030 - 01	Truss Base - Sheet Metal Assembly, Base Plate	1
3	GE-20030 - 02	Truss Base - Sheet Metal Assembly, Truss Feet	2
4	GE-20030 - 03	Truss Base - Sheet Metal Assembly, Berm - Red	2

	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	NAME DRAWN KAMC DATE 9/9/19
	CHECKED ENG APPR. MFG APPR.	
	INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL	Q.A. COMMENTS: WEIGHT: 24.93 LBS
NEXT ASSY	USED ON FINISH POWDER COAT BLACK	REV DWG. NO. B GE-20030 0
APPLICATION	DO NOT SCALE DRAWING	SCALE: 1:8 WEIGHT: SHEET 1 OF 2

4

3

2

1

B

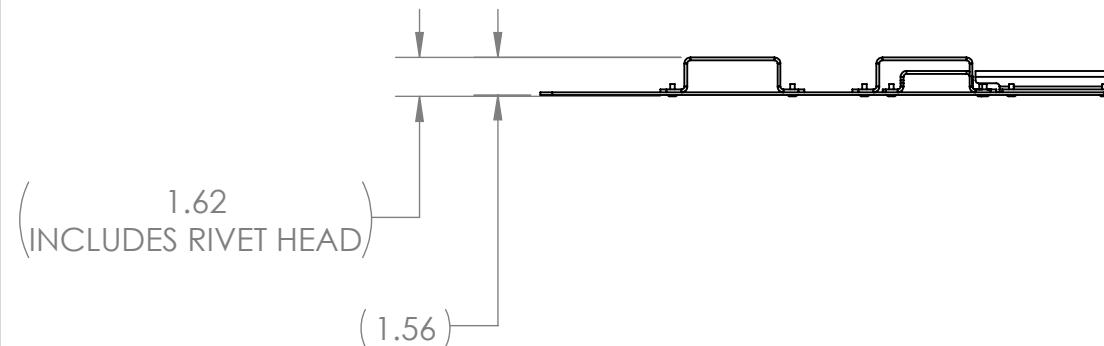
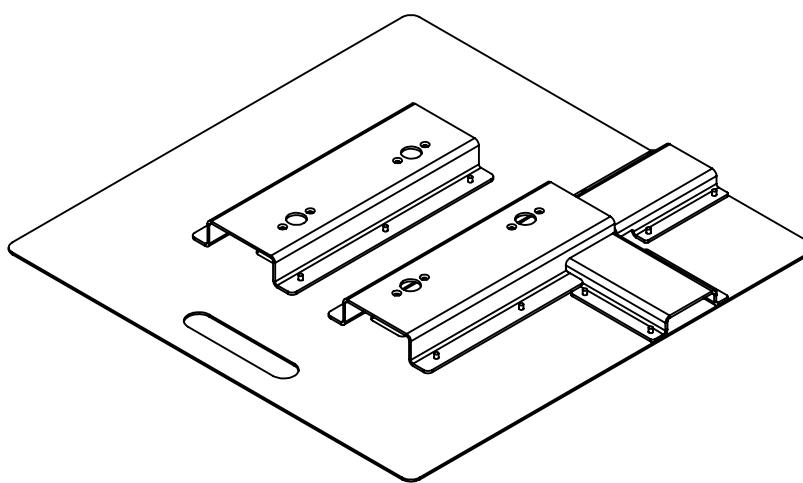
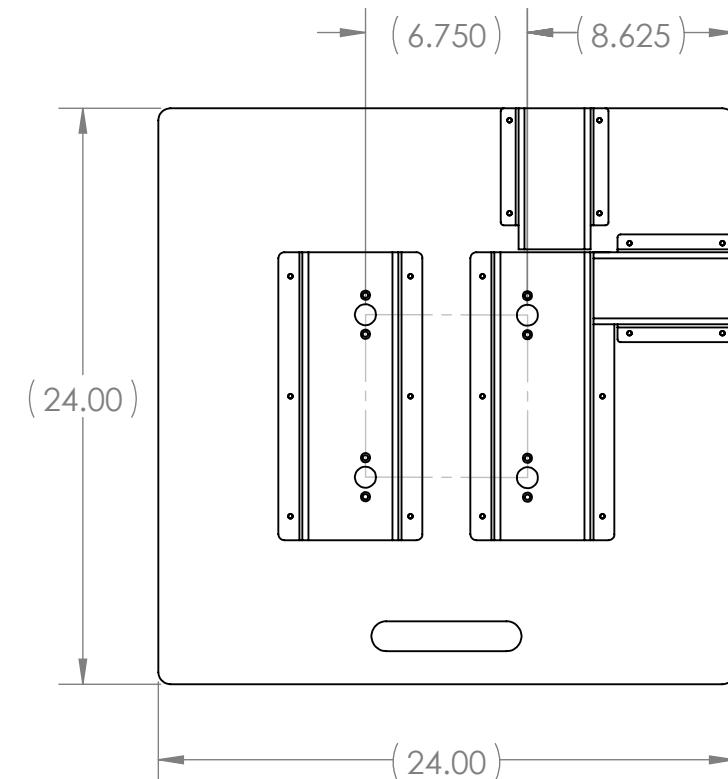
A

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DIMENSIONS SHOWN FOR REFERENCE

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PERMISSION OF **FIRST®** IS PROHIBITED.

		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 FIRST ROBOTICS COMPETITION	SOLIDWORKS <small>Modeling Solutions Partner</small>
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	9/2/19		
			CHECKED				
			ENG APPR.				
			MFG APPR.				
			Q.A.				
		COMMENTS:			Truss Base - Sheet Metal Assembly		
		MATERIAL			SIZE DWG. NO. B GE-20030 REV 0		
NEXT ASSY	USED ON	FINISH POWDER COAT BLACK	WEIGHT: 24.93 LBS			SCALE: 1:8 WEIGHT: SHEET 2 OF 2	
APPLICATION		DO NOT SCALE DRAWING					

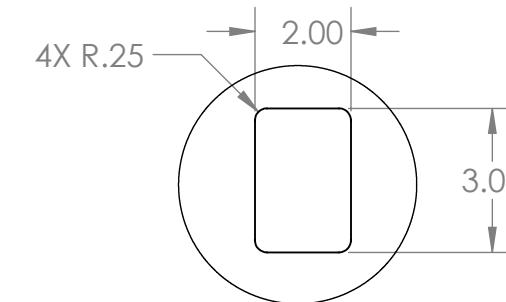
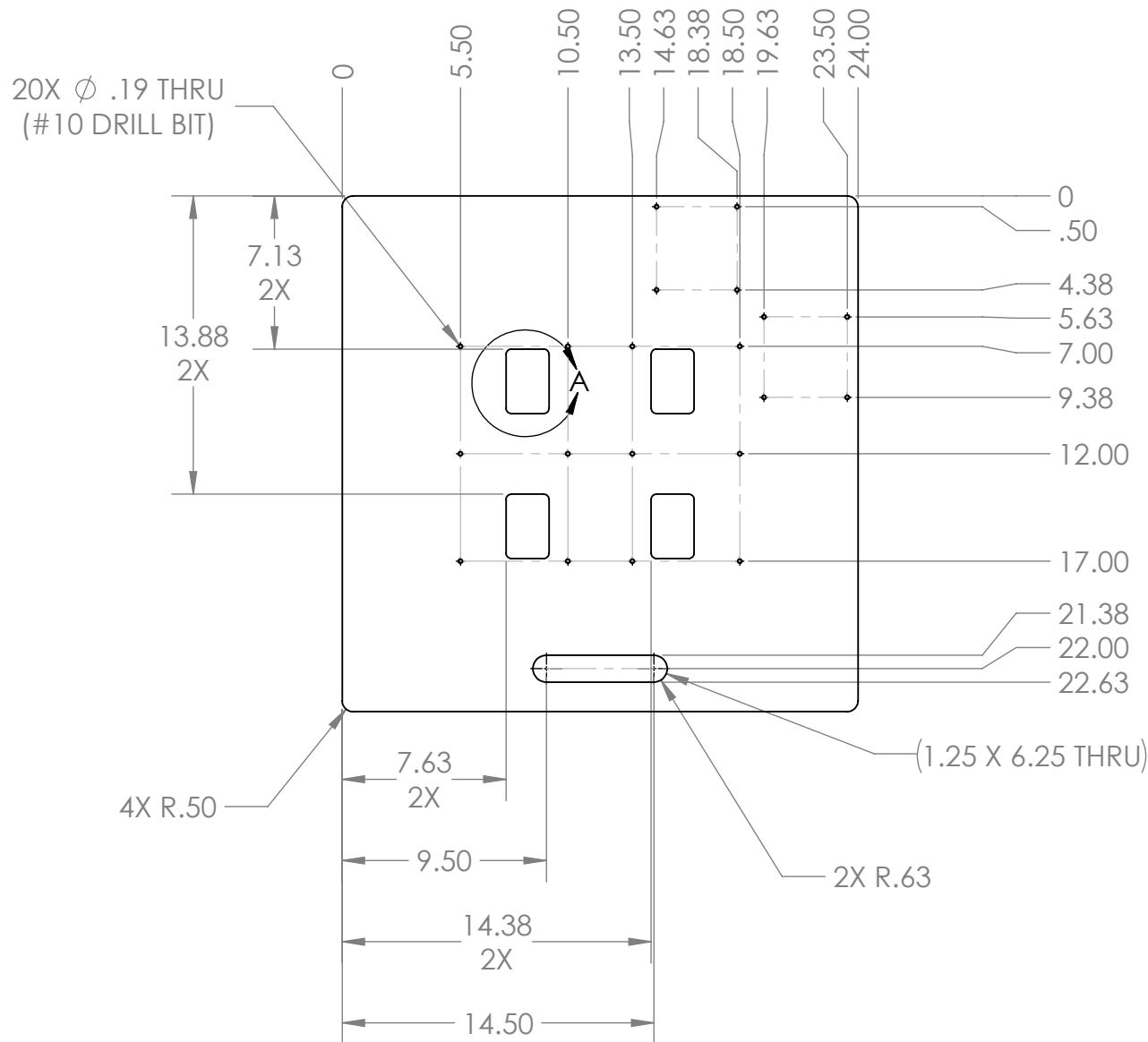
4

3

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1

B



DETAIL A
SCALE 1 : 4
4X

A



Notes:

- Material: 12 Ga. (0.105") Mild Steel Sheet A366/1008 Cold Roll
- Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	NAME DRAWN KAMC 9/2/19	DATE
		INTERPRET GEOMETRIC TOLERANCING PER:	CHECKED	
		MATERIAL	ENG APPR.	
		STEEL SHEET	MFG APPR.	
	GE-20030	Q.A.		
NEXT ASSY	USED ON	COMMENTS:		
APPLICATION	FINISH			
	BARE			
	DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE:
Truss Base - Sheet Metal
Assembly, Base Plate

SIZE DWG. NO. REV
B GE-20030 - 01 0

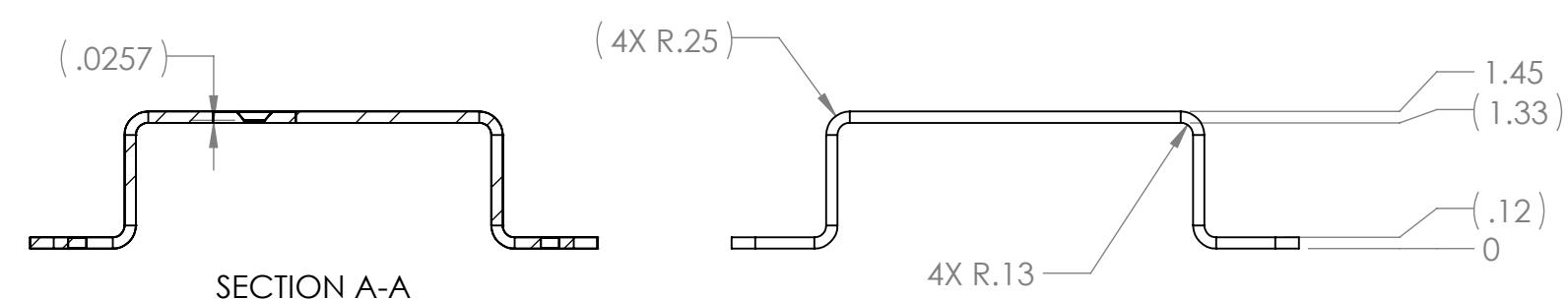
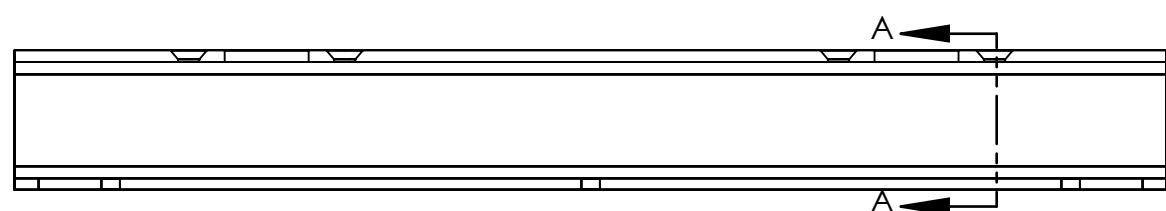
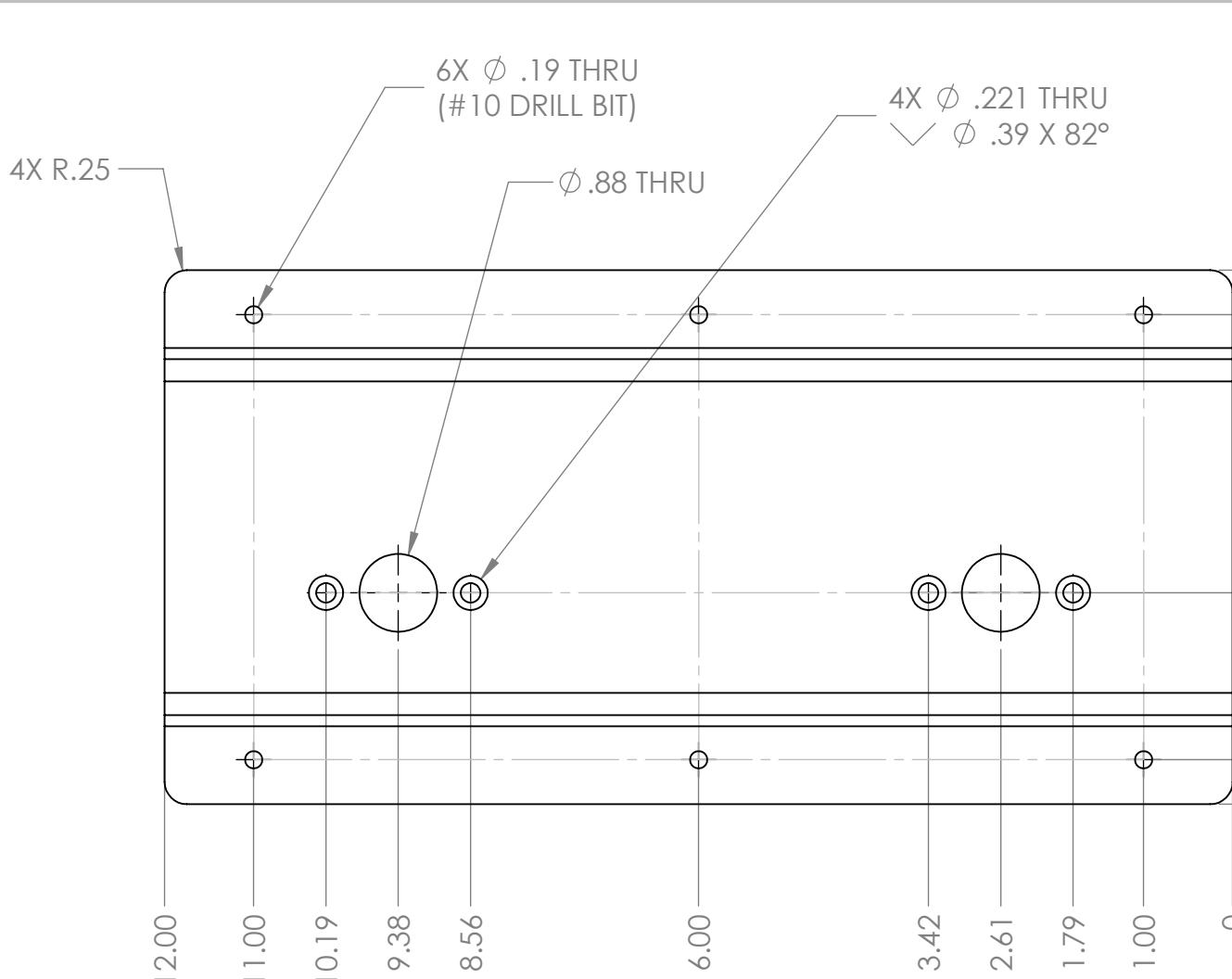
SCALE: 1:8 WEIGHT: SHEET 1 OF 1

4

3

2

1



- Notes:
1. Material: 0.125" Mild Steel Sheet A366/1008 Cold Roll
 2. Remove all burrs and sharp edges.

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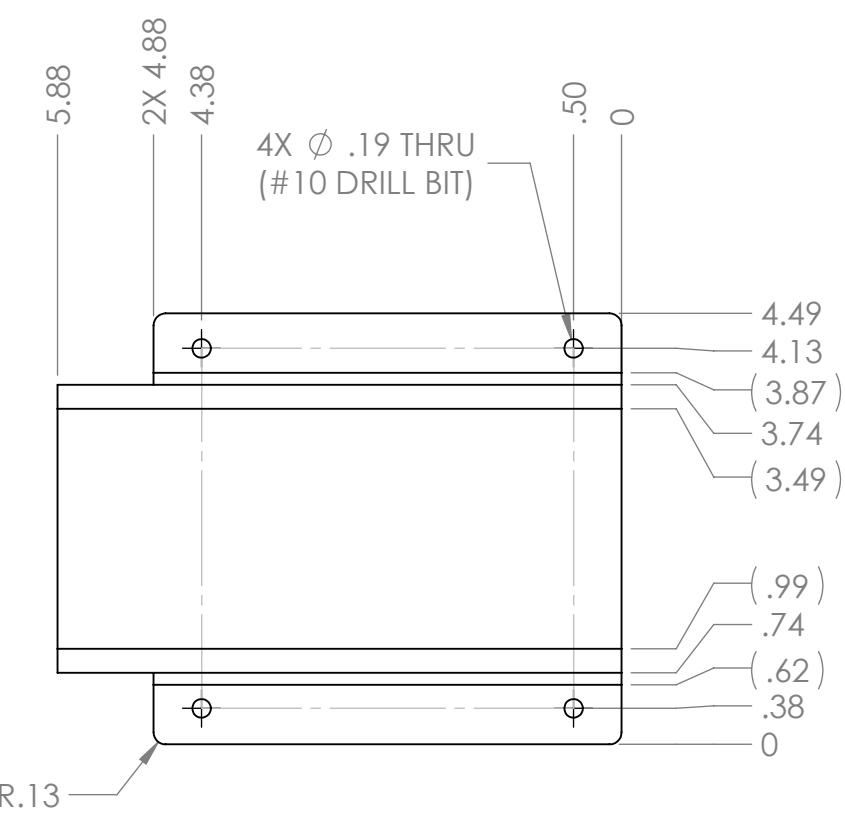
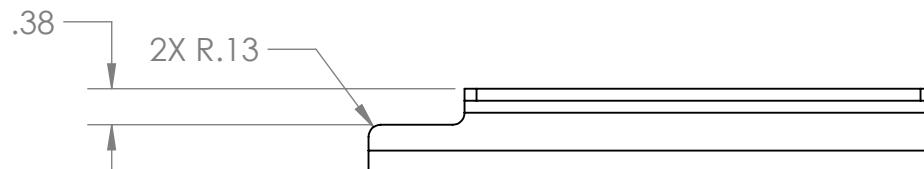
		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	NAME DRAWN KAMC 9/2/19	DATE
		INTERPRET GEOMETRIC TOLERANCING PER:	ENG APPR. MFG APPR.	
		GE-20030	MATERIAL STEEL SHEET	Q.A.
	NEXT ASSY	USED ON	FINISH BARE	COMMENTS:
			APPLICATION	DO NOT SCALE DRAWING
SIZE	DWG. NO.		REV	
B	GE-20030 - 02		0	
SCALE: 1:2	WEIGHT:		SHEET 1 OF 1	

4

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2

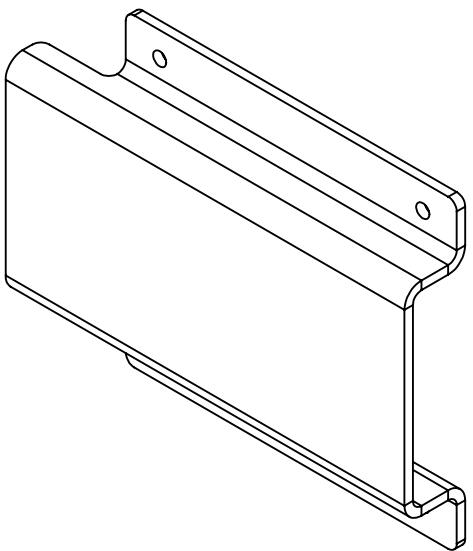
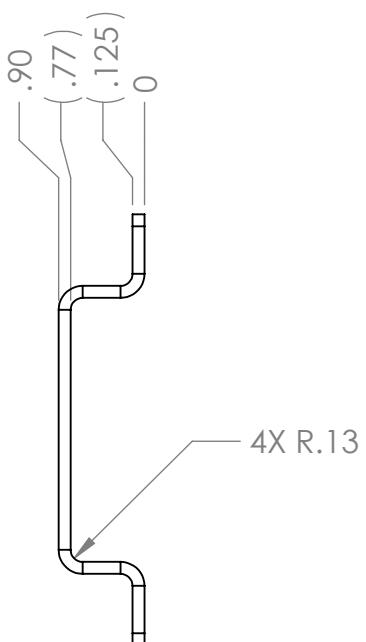
1



- Notes:
1. Material: 0.125" Mild Steel Sheet A366/1008 Cold Roll
 2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	NAME KAMC	DATE 9/2/19
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
GE-20030		MATERIAL SHEET STEEL		
NEXT ASSY	USED ON	FINISH BARE		
APPLICATION		DO NOT SCALE DRAWING		
SIZE B	DWG. NO. GE-20030 - 03	REV 0		
SCALE: 1:2	WEIGHT:	SHEET 1 OF 1		



4

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C

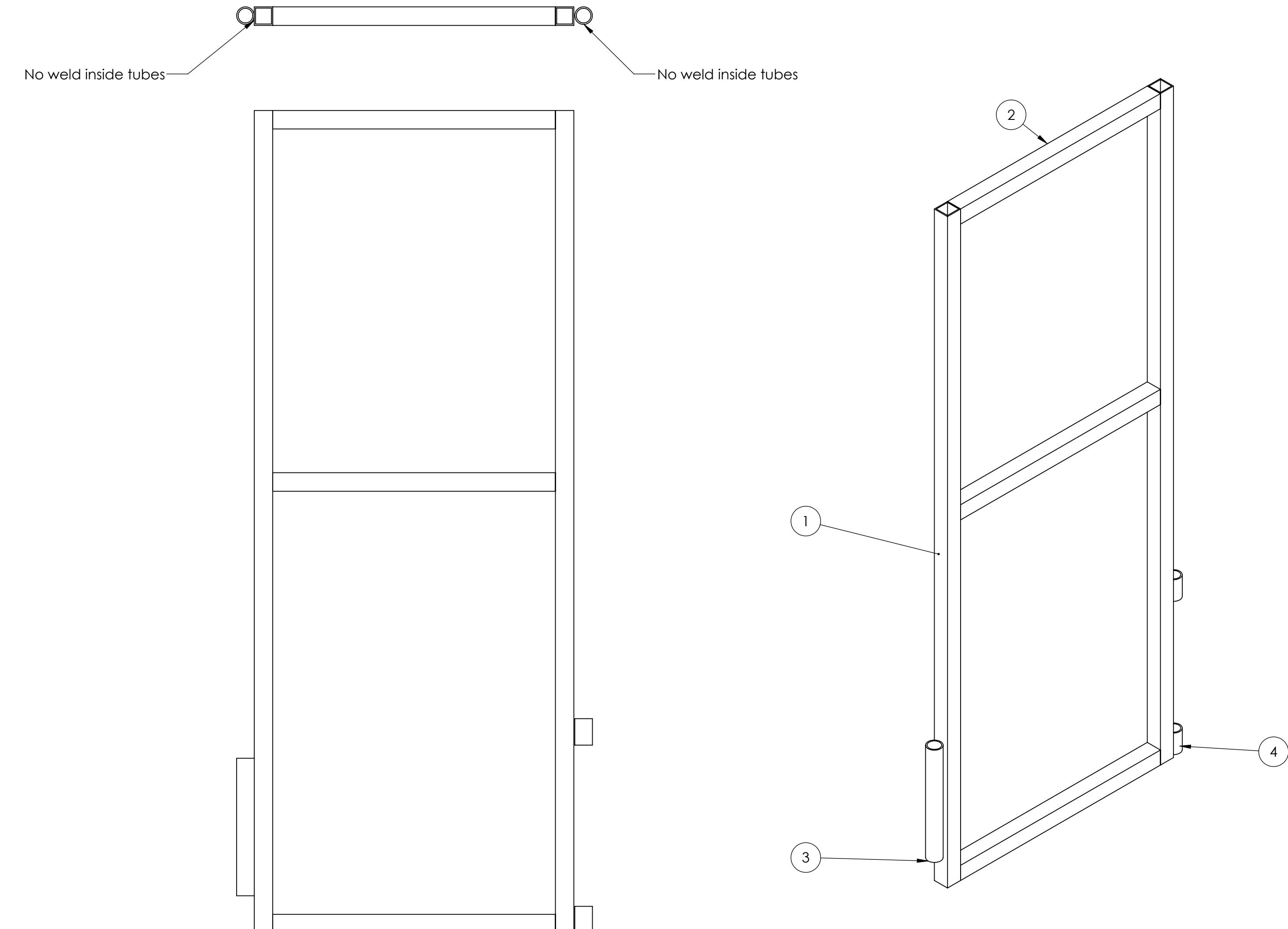
C

B

B

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A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22200-01	1.75 x 1.75 x 77.75 6061 Aluminum Tube	2
2	GE-22200-02	1.75 x 1.75 x 26.75 6061 Aluminum Tube	3
3	GE-22200-03	1.25 6061 Schedule 40 Allumium Pipe	1
4	GE-22200-04	1.25 6061 Schedule 40 Allumimn Pipe	2

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .015$

MATERIAL/FINISH:
Tag or label with part number

DO NOT SCALE DRAWING

WELD NAME DATE
DRAWN MS 5/19/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

FIRST
ROBOTICS
COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Alliance Station
Panel**

SIZE DWG. NO. REV
C GE-22200

SCALE: 1:10 SHEET 1 OF 3

4

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D

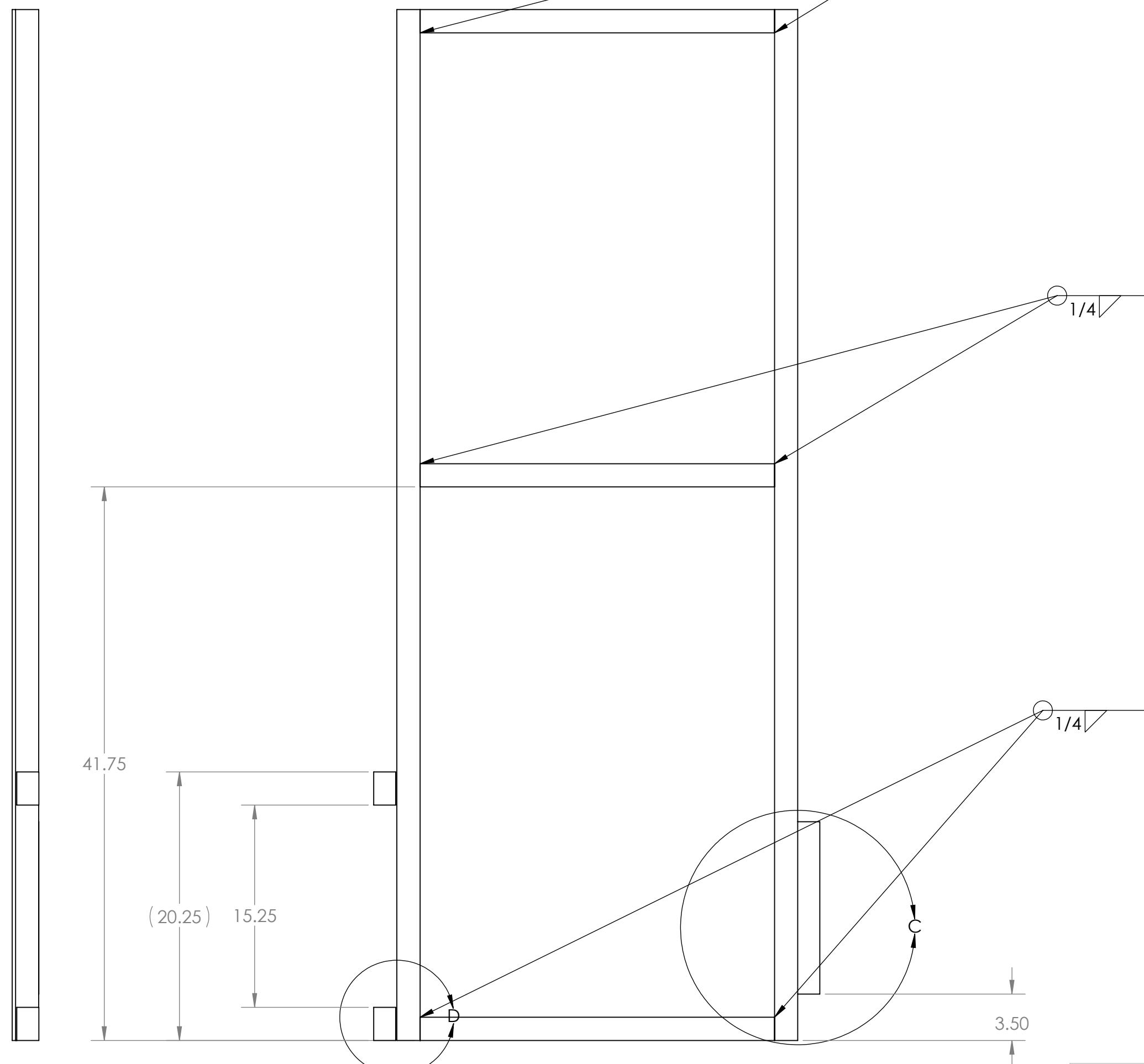
D

4

41.75

(20.25)

15.25



UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	MS	5/19/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: Tag or label with part number			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  **SOLIDWORKS**
Modeling Solutions Partner

TITLE:
**Alliance Station
Panel**

SIZE DWG. NO. REV
C GE-22200

SCALE: 1:24 SHEET 2 OF 3

4

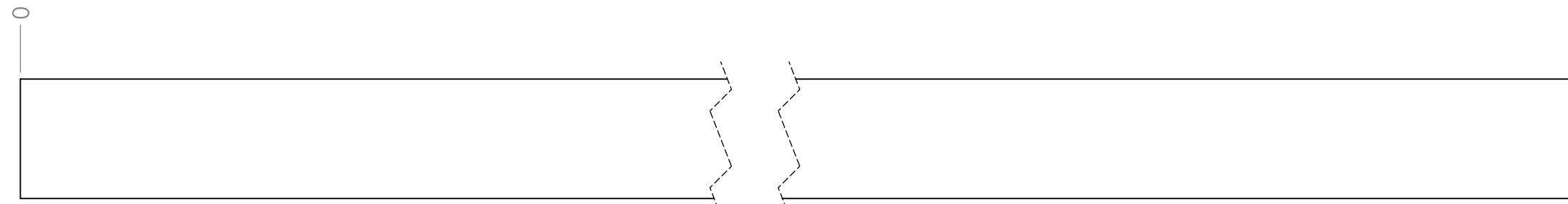
3

2

1

D

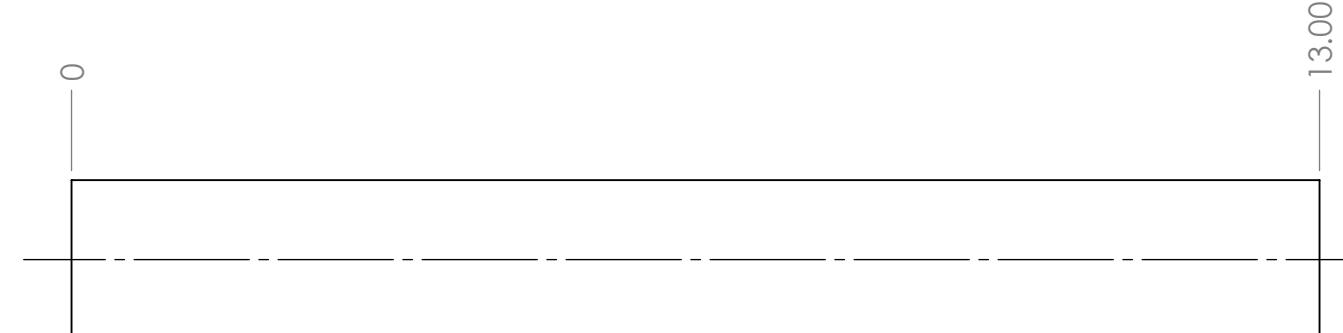
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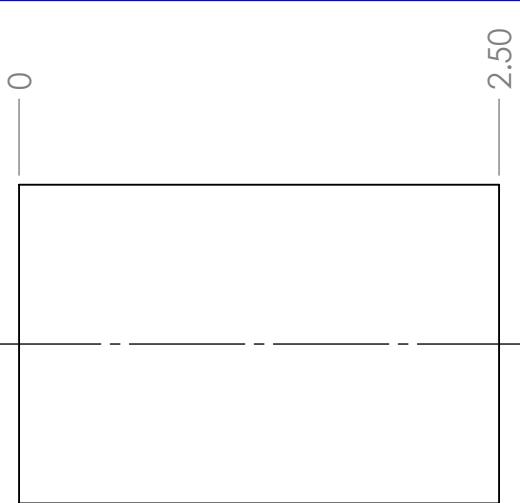
Note:
Item Number: GE-22200-01
QTY:2



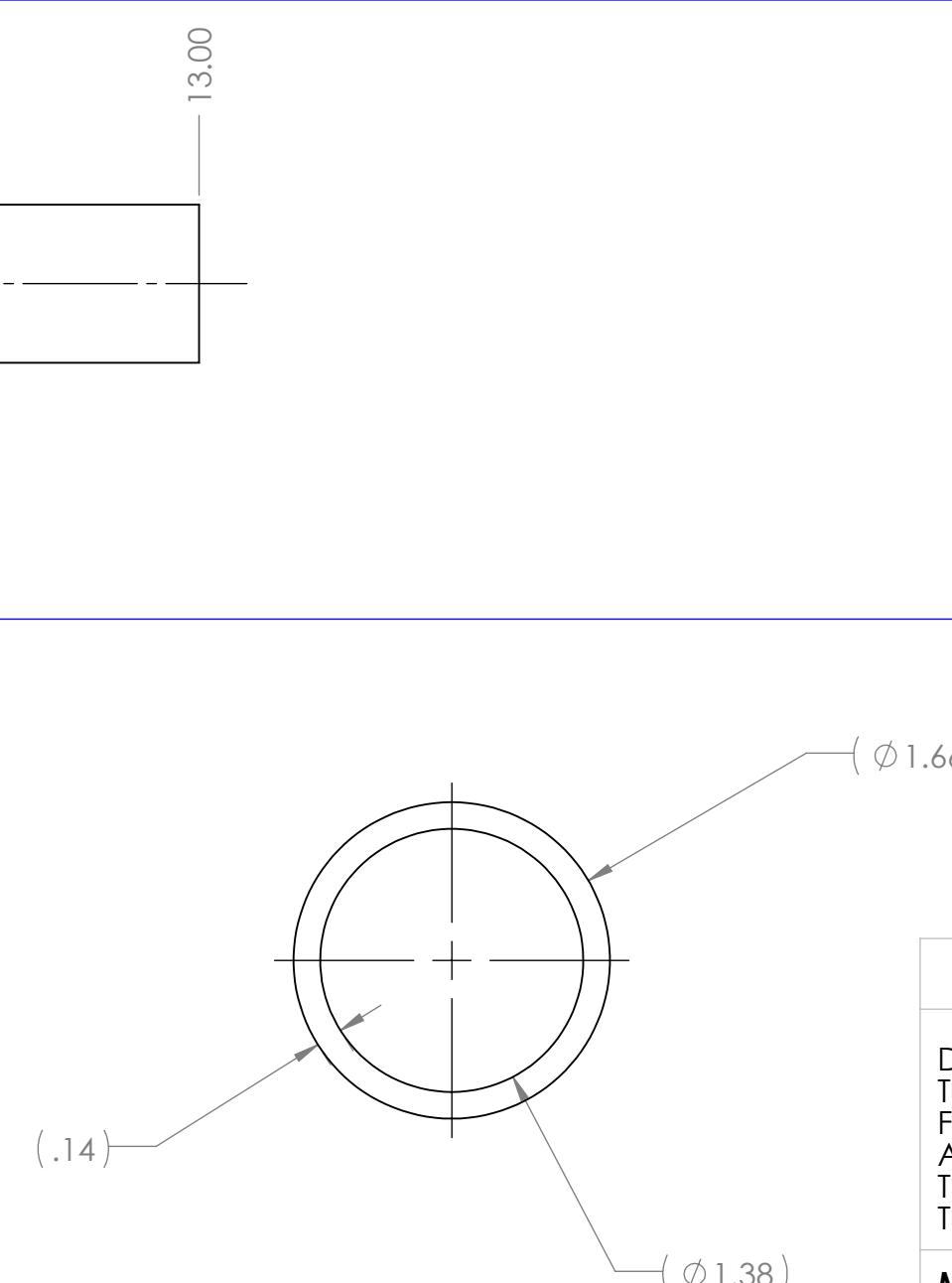
Note:
Item Number: GE-22200-02
QTY:3



Note:
Item Number: GE-22200-03
QTY:1



Note:
Item Number: GE-22200-04
QTY:2



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$

WELD NAME DATE

DRAWN MS 5/19/2021

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MATERIAL/FINISH:

Tag or label with part number

DO NOT SCALE DRAWING

 FIRST ROBOTICS COMPETITION  SOLIDWORKS Modeling Solutions Partner

TITLE: Alliance Station Panel
SIZE DWG. NO. REV
C GE-22200

SCALE: 1:8 SHEET 3 OF 3

4

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D

C

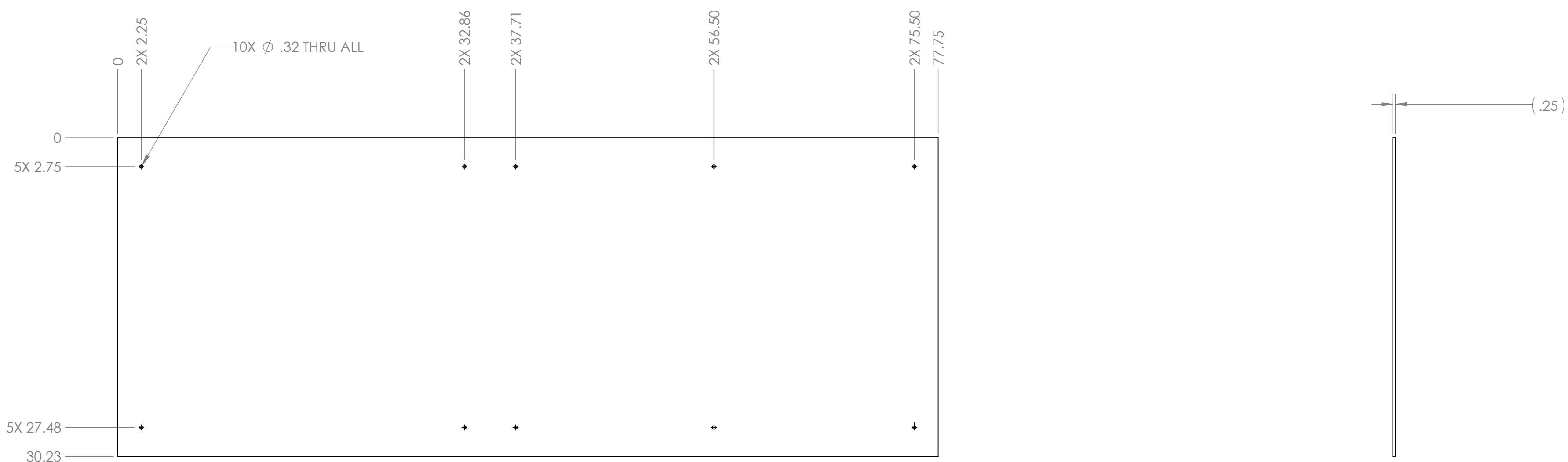
C

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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	MS	8/3/2021
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
.25 Inch Thick Polycarbonate Clear Sheet Tag or label with part number	C	GE-22201	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:12	SHEET 1 OF 1	

4

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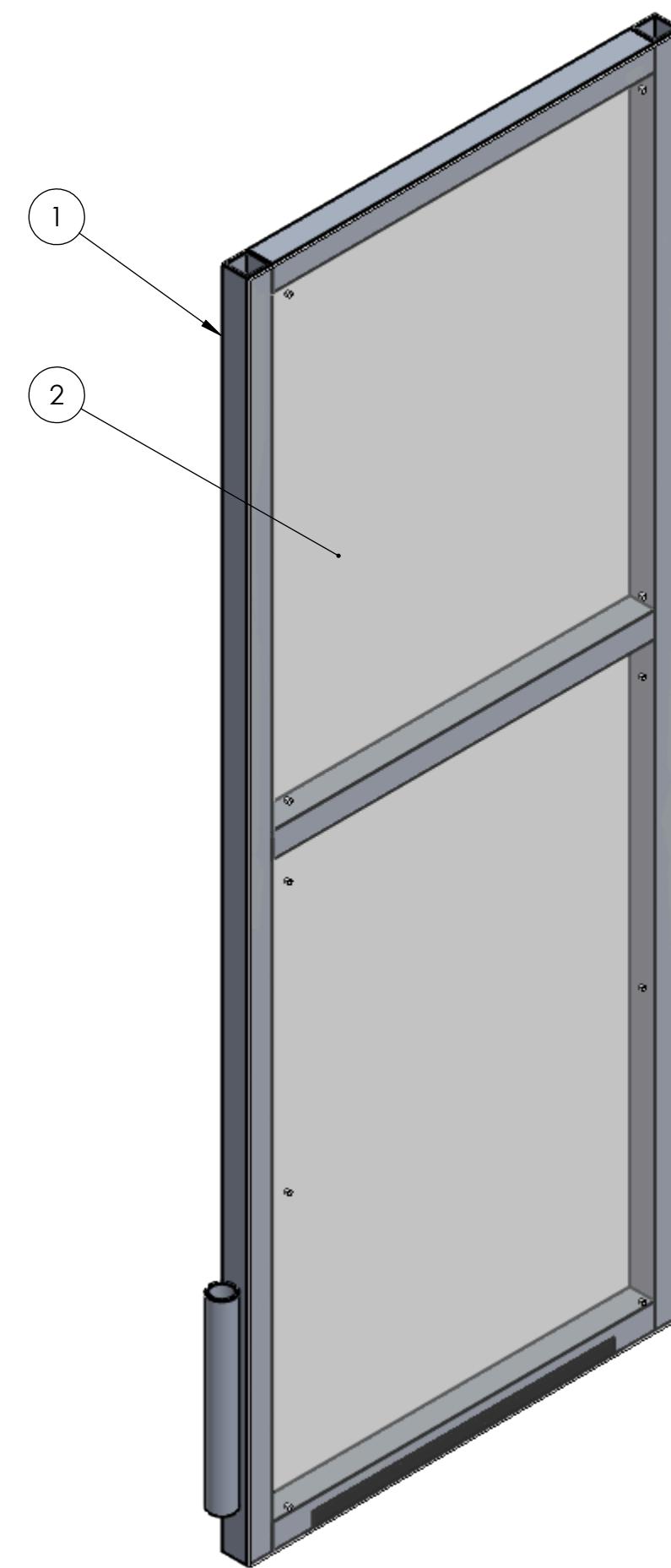
C

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B

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A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22200	GE-22200	1
2	GE-22201	Alliance Polycarbonate Face	1
3	Hook_2_22	2" x 22" Hook, Adhesive Backed	1
4	Hook_1_21	1" x 21" Hook, Adhesive Backed	1
5	Loop_1_21	1" x 21" Loop, Adhesive Backed	1

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
	DRAWN	DF	1/5/2022

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm\frac{1}{2}$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .50$

MATERIAL/FINISH:
Tag or label with part number

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING

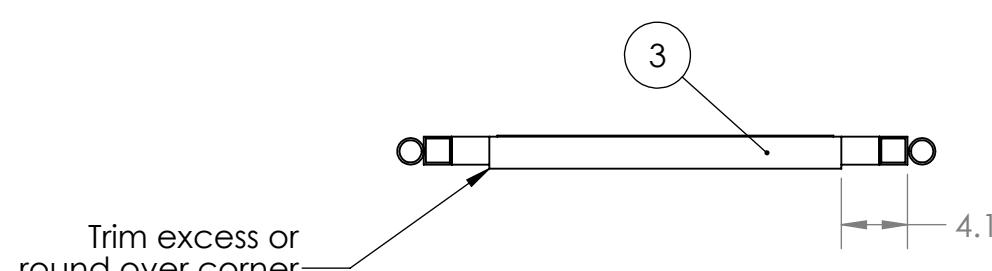
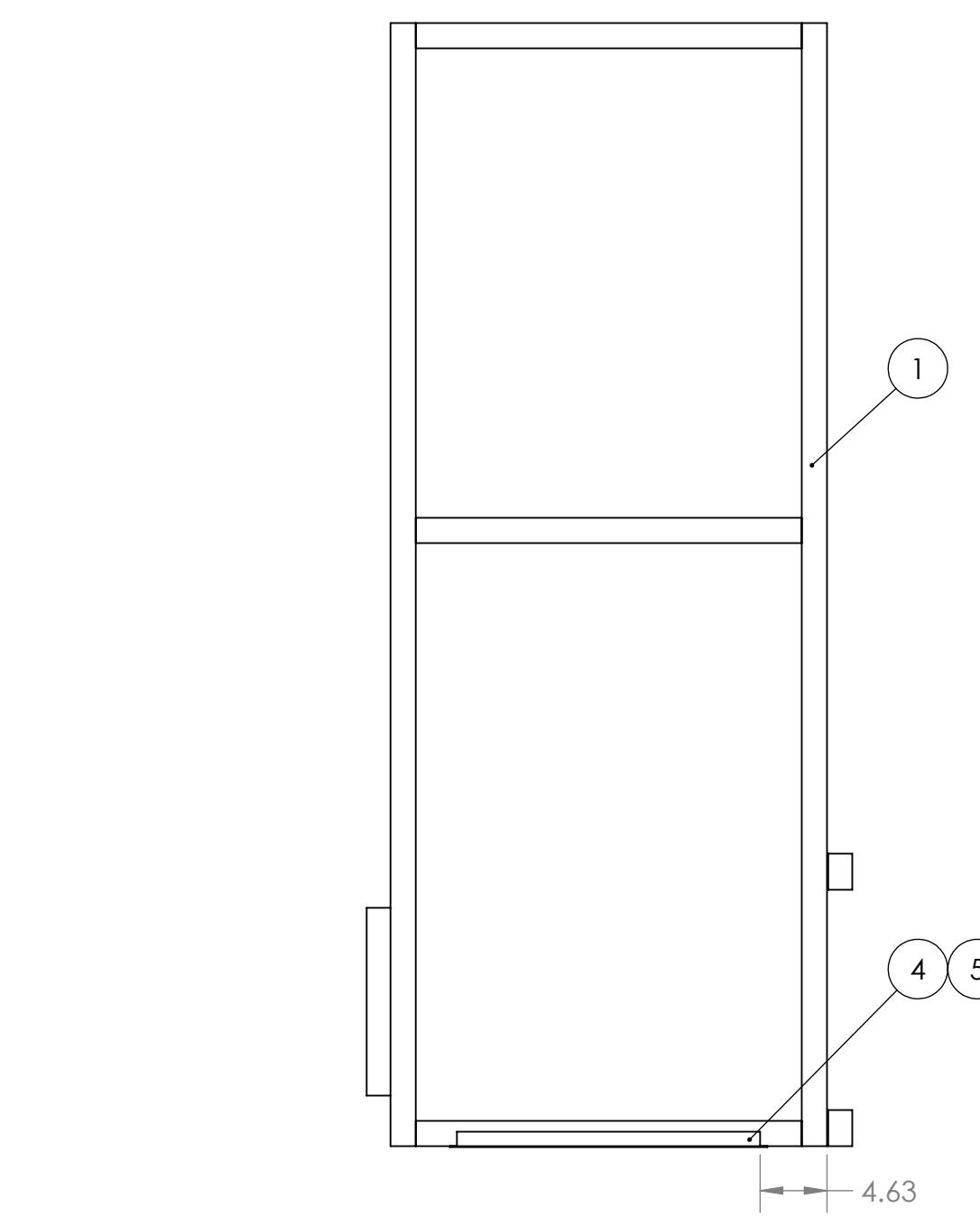
 FIRST
ROBOTICS
COMPETITION  SOLIDWORKS
Modeling Solutions Partner

TITLE:
Alliance Station Panel

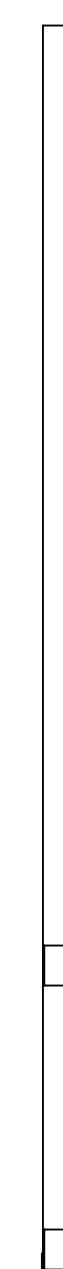
SIZE DWG. NO. REV
C GE-22202

SCALE: 1:8 SHEET 1 OF 2

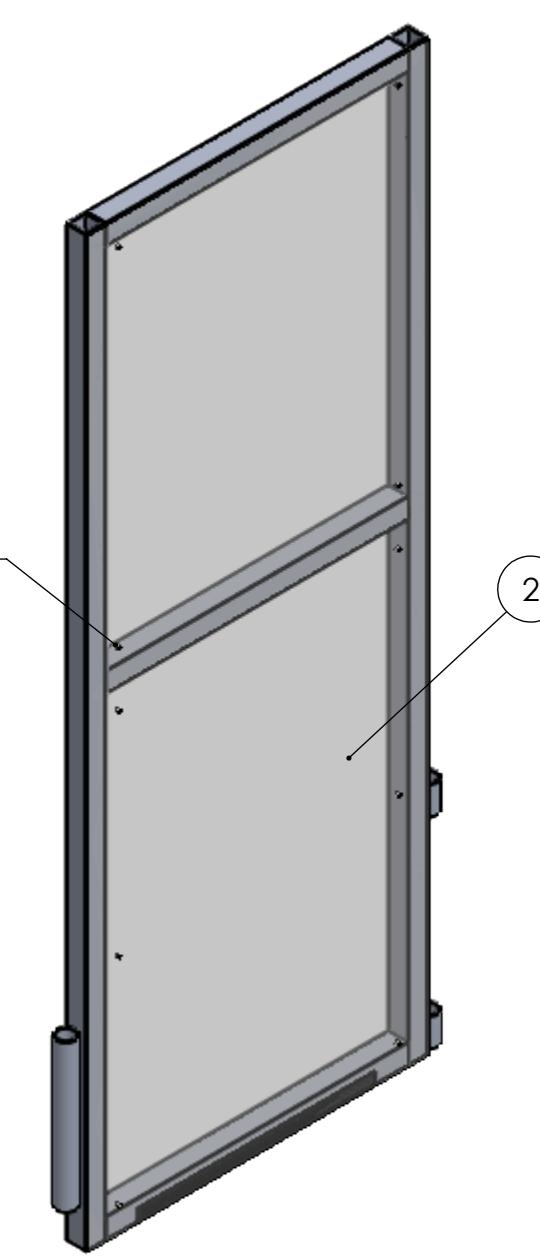
D

**Assembly Steps:**

1. Apply Item 4 to Item 1 as shown.
2. Apply Item 5 to Item 4, but keep the protective backing on the adhesive.
3. Apply Item 3 to Item 1 as shown, trim excess material or round over the edge.



Attach using 50 lb cable ties

**Assembly Steps:**

1. Remove protective backing from the loop adhesive.
2. Place Item 2 in place and press against the loop.
3. Secure Item 2 with 50 lb. cable ties.

UNLESS OTHERWISE SPECIFIED:			FIELD	NAME	DATE
			DRAWN	DF	1/5/2022
PROPRIETARY AND CONFIDENTIAL					
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	Tag or label with part number				
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING					

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

TITLE: Alliance Station Panel

SIZE	DWG. NO.	REV
C	GE-22202	

SCALE: 1:12 SHEET 2 OF 2

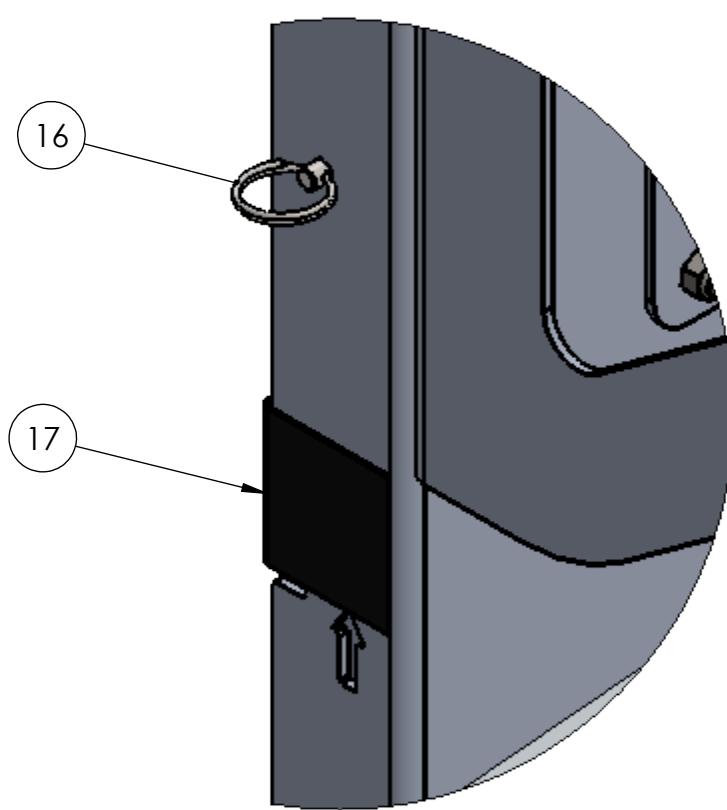
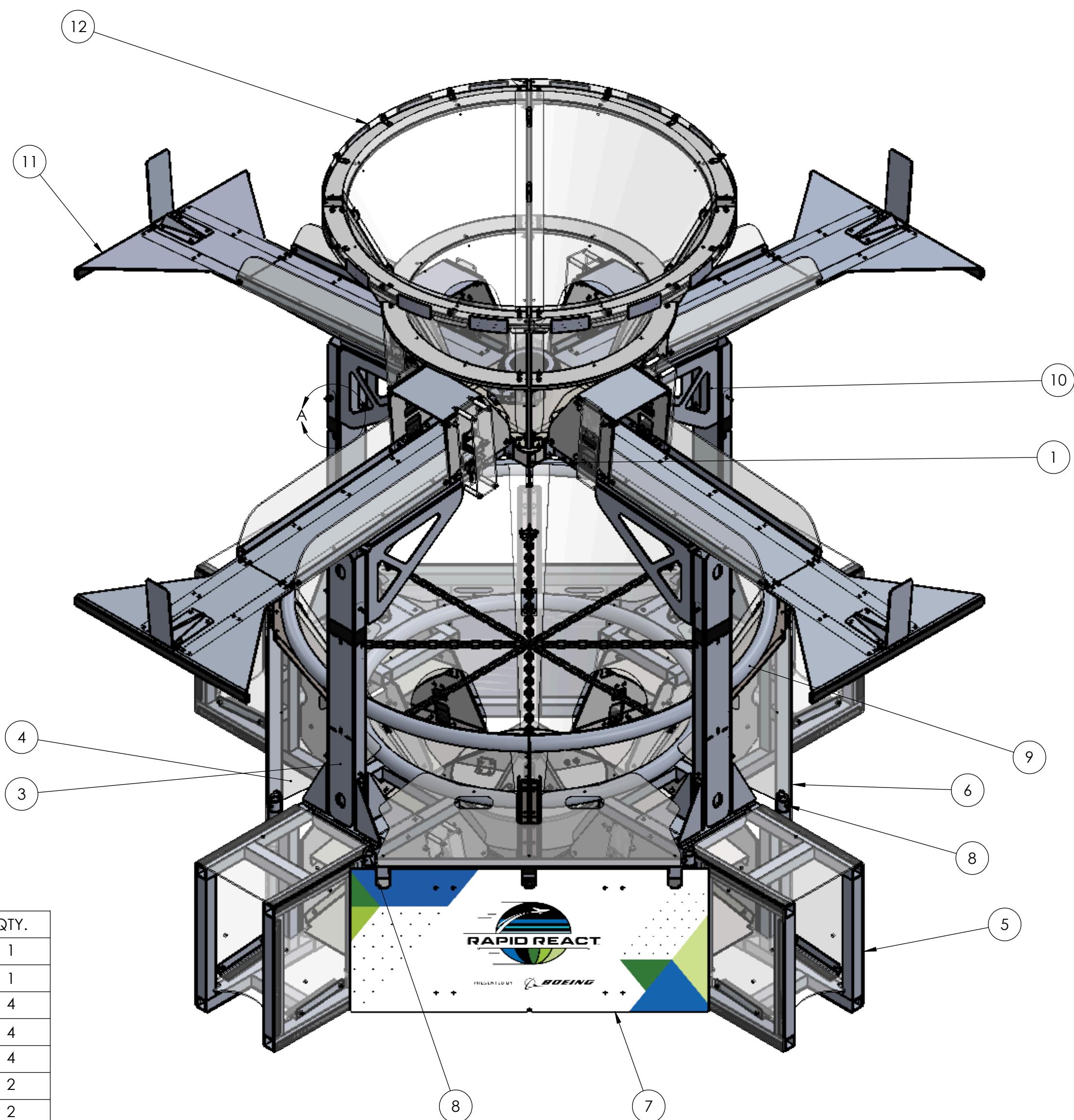
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DETAIL A
SCALE 1 : 2

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22302	Leg to Upper Hub Box	1
2	GE-22303	Hub Base with Hook	1
3	GE-22305	Leg Vertical Channel Cover	4
4	GE-22306	Hub Fender Skirt	4
5	GE-22311	Lower Exit Assembly	4
6	GE-22341-Clear	Fender Assembly - Clear	2
7	GE-22341-Vinyl	Fender Assembly - Vinyl	2
8	GE-22346	Fender Pipe Assembly	8
9	GE-22351	Lower Hub	1
10	GE-22371	Hub Leg Assembly	4
11	GE-22391	Upper Exit Assembly	4
12	GE-22411	Upper Hub	1
13	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	36
14	hex_.25_20_2.5_partial	Steel Hex Head Screw, 1/4"-20 x 2-1/2" long, partially threaded	16
15	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	24
16	pin_quick_ring_.25_0.375	Pin, Ring-Grip Quick-Release with SS Ring, 1/4" Diameter, 0.375" Usable Length	16
17	tapeline_HUBLEGROBOHEIGHT	2" Gaffers Tape, Black	5

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/17/2021
TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL		
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	TITLE: Hub		
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.	SIZE	DWG. NO.	REV
C GE-22300			
SCALE: 1:12		SHEET 1 OF 7	

DO NOT SCALE DRAWING

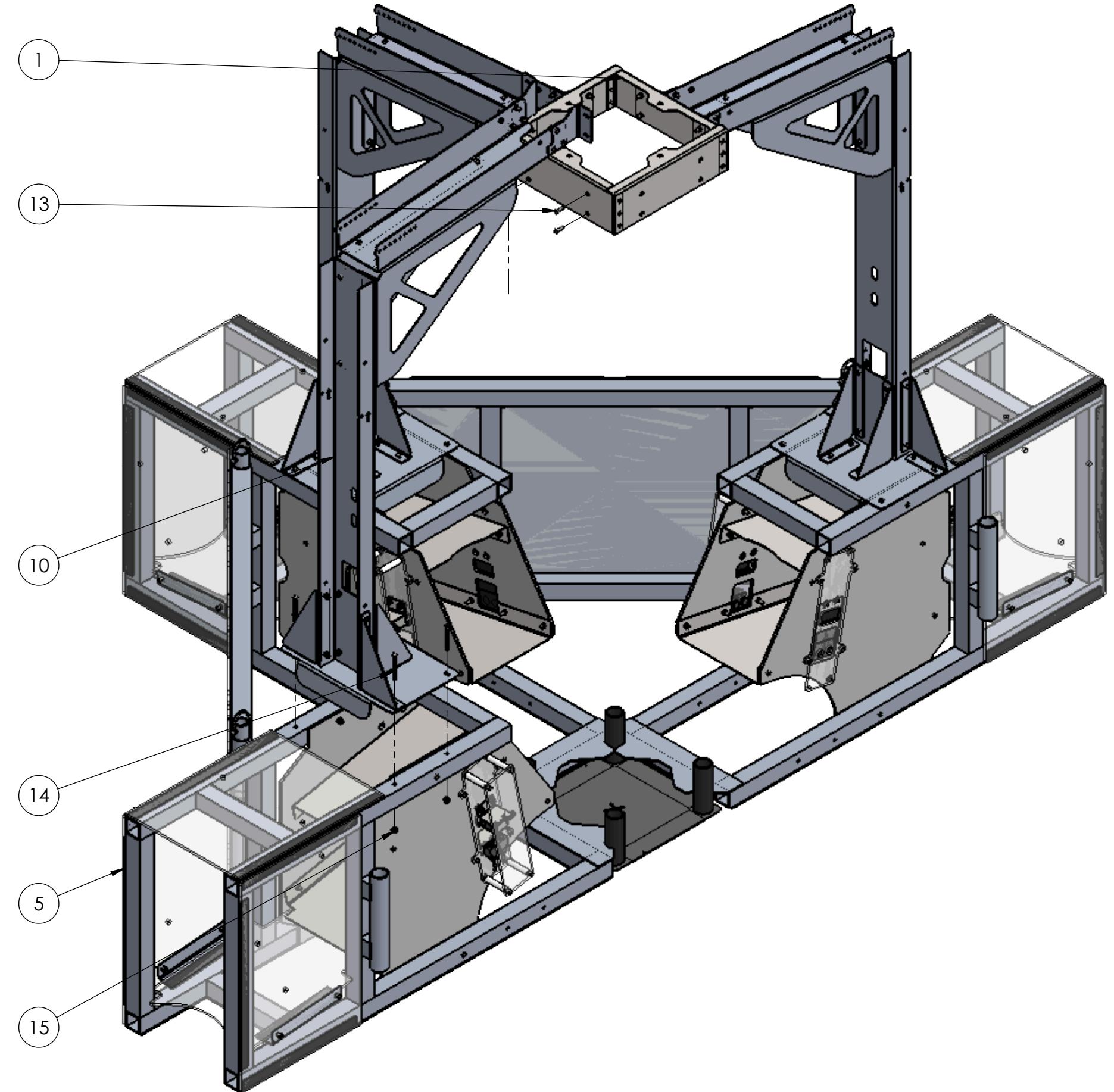
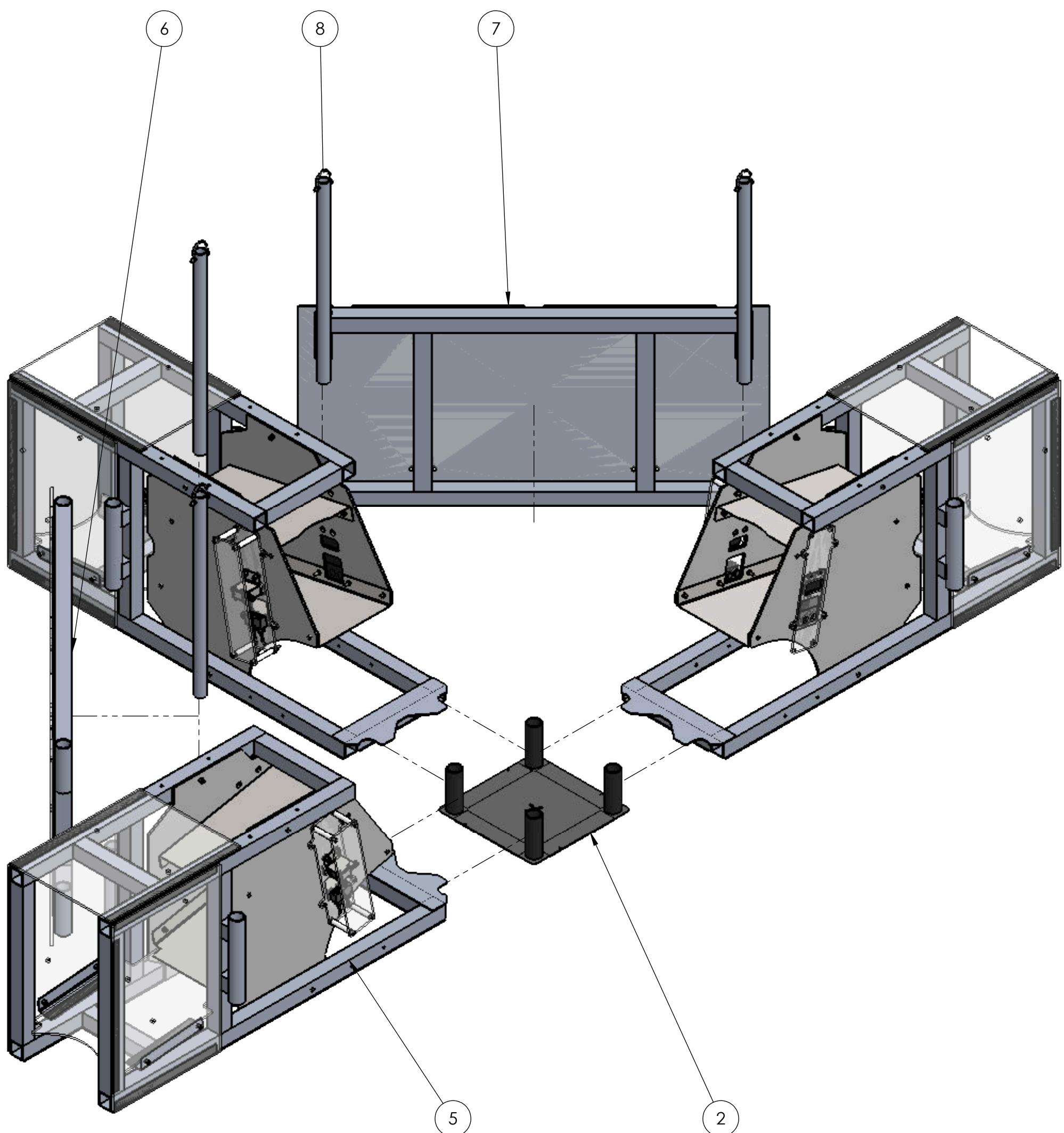
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- Notes:
1. Place (2) down.
 2. Slide (5) in place against (2), aligning cutouts to pipes.
 3. Attach (6) and (7) to (5) using (8).

UNLESS OTHERWISE SPECIFIED:			FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES			DRAWN	CO	12/17/2021
TOLERANCES: FRACTIONAL $\pm\frac{1}{2}$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$					
PROPRIETARY AND CONFIDENTIAL					TITLE:
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MATERIAL/FINISH:					SIZE DWG. NO. REV
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING					

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

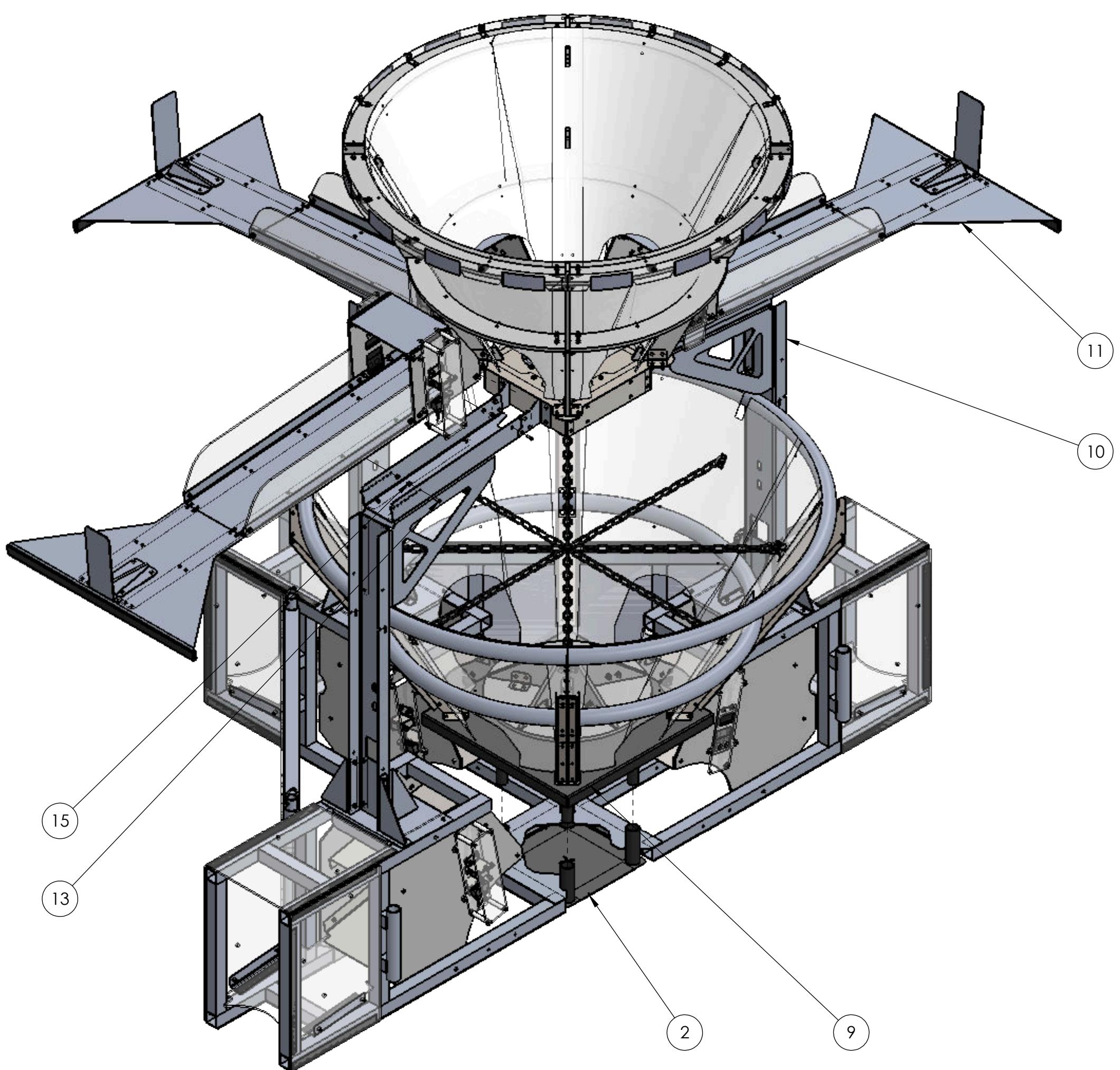
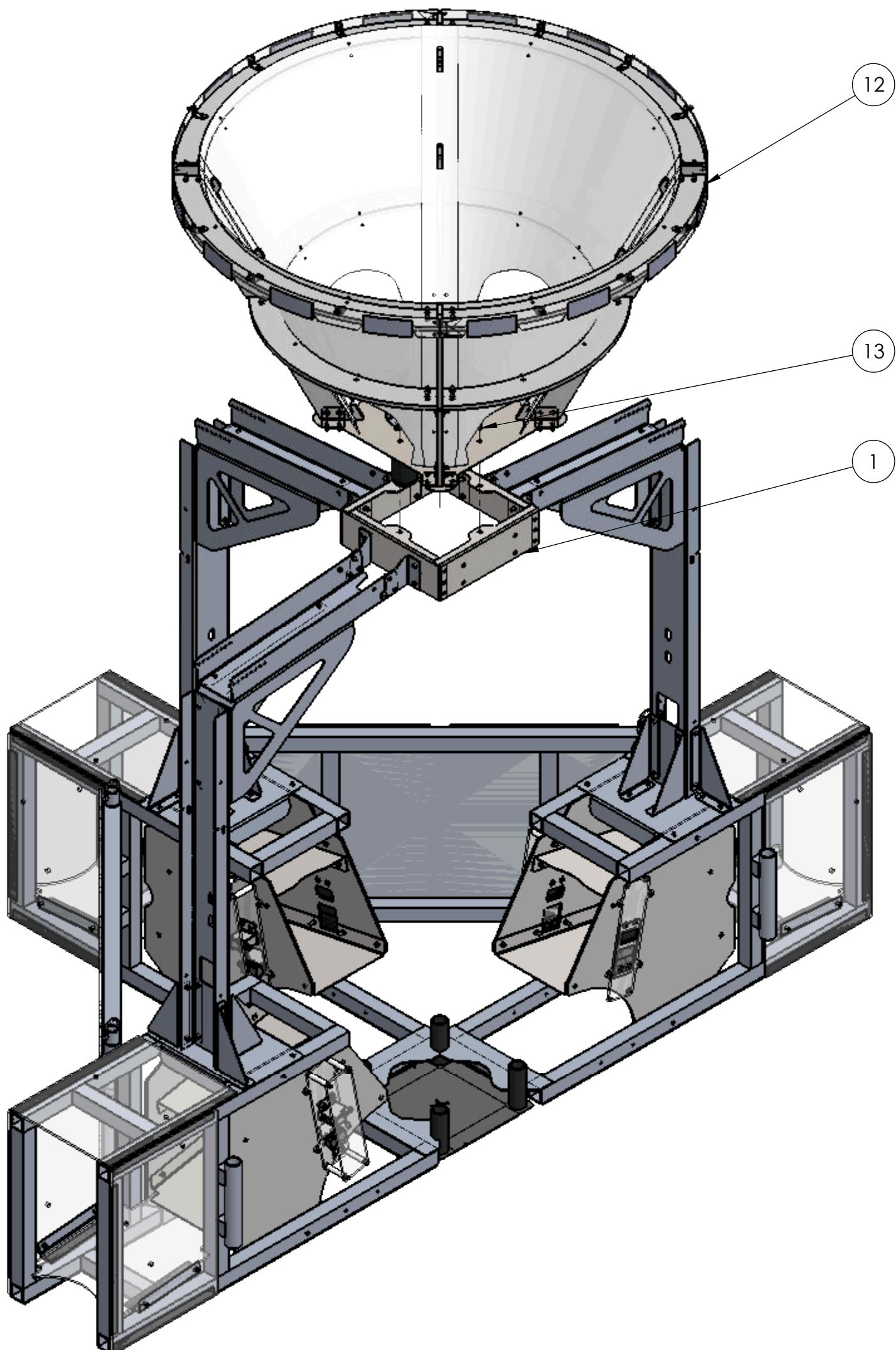
Hub
C GE-22300
SCALE: 1:10 SHEET 2 OF 7

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Notes:

1. Attach 12 to 1 using 13.

Notes:

1. Attach 11 to 10 using 13 and 15.
2. Insert 9 into receiving tubes of 2.

UNLESS OTHERWISE SPECIFIED:			FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES			DRAWN	CO	12/17/2021
TOLERANCES: FRACTIONAL $\pm\frac{1}{2}$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$					
PROPRIETARY AND CONFIDENTIAL					TITLE:
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MATERIAL/FINISH:					SIZE DWG. NO. REV
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					C GE-22300
DO NOT SCALE DRAWING					SCALE: 1:12 SHEET 3 OF 7

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

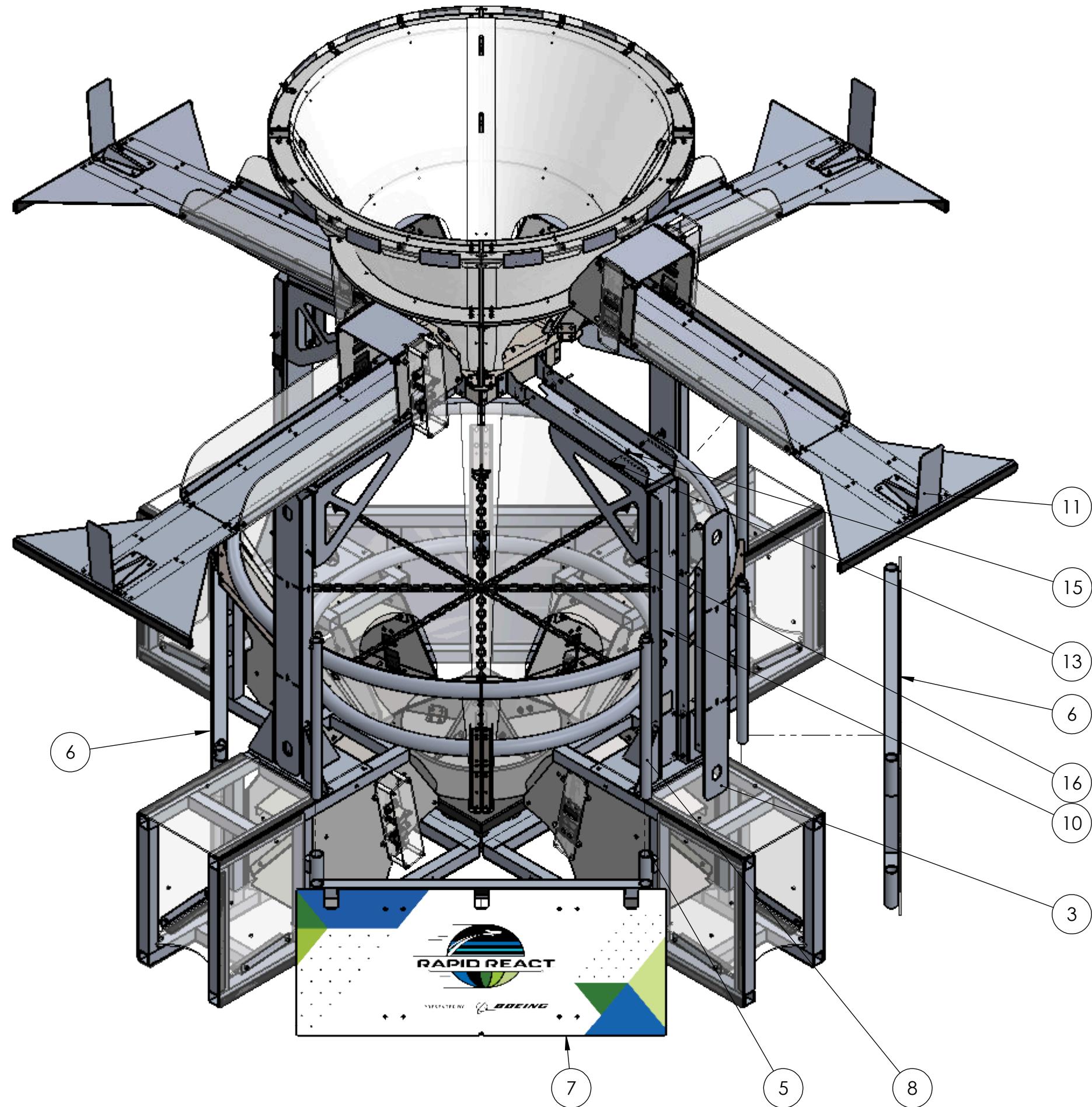
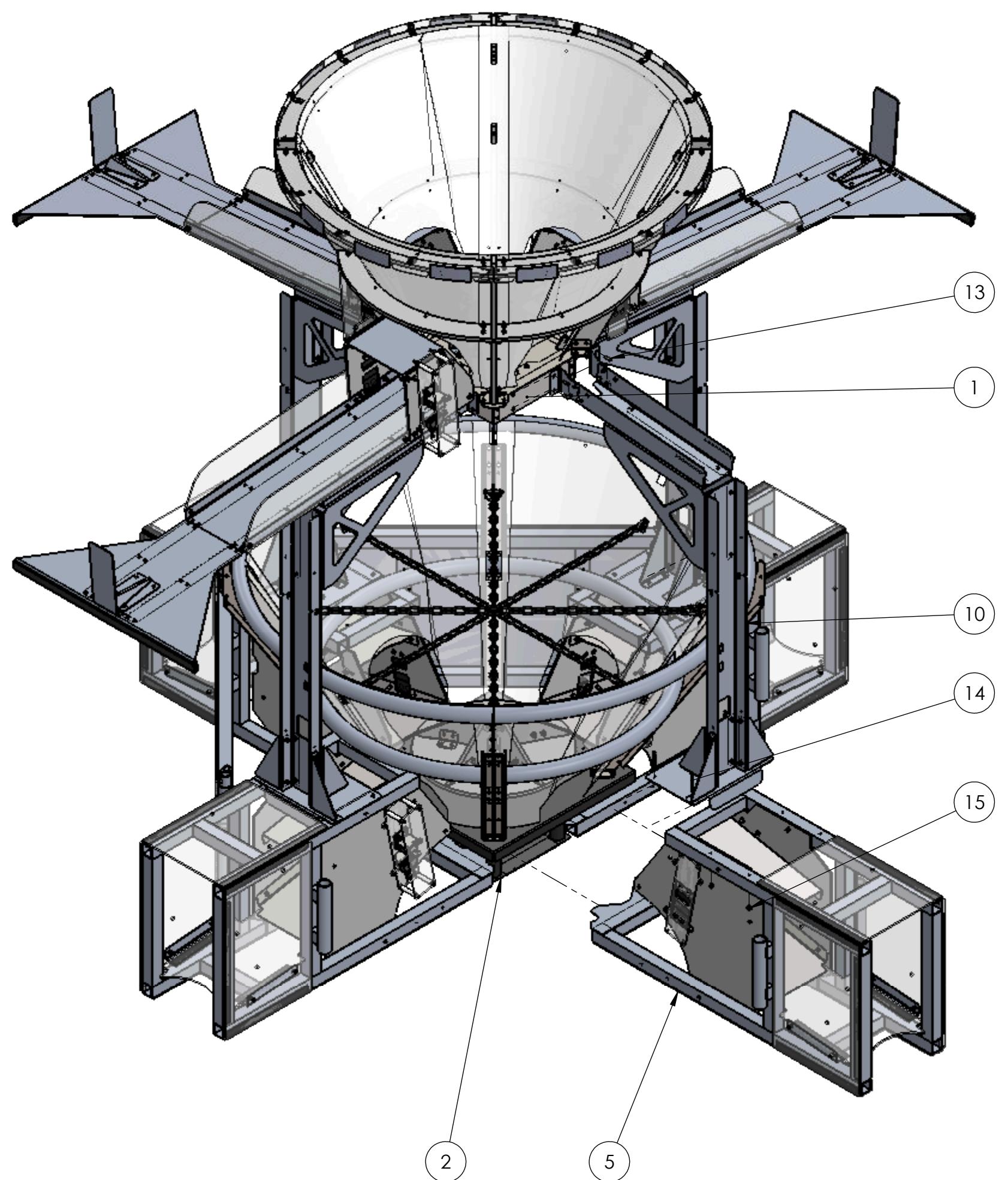
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Notes:

1. Attach (6) and (7) to assembly using (8) to connect to (5). (7) should oppose other (7), and (6) should oppose other (6).
2. Attach (3) to (10) using (16).
3. Attach (11) to (10) using (13) and (15).

Notes:

1. Slide (5) into place flush against (2).
2. Attach (10) to (5) using (14) and (15).
3. Attach (10) to (1) using (13).

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/17/2021
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			TITLE:
			Hub
COMMENTS:			SIZE DWG. NO. REV
REMOVE ALL BURRS AND SHARP EDGES.	C	GE-22300	
DO NOT SCALE DRAWING			SCALE: 1:14 SHEET 4 OF 7

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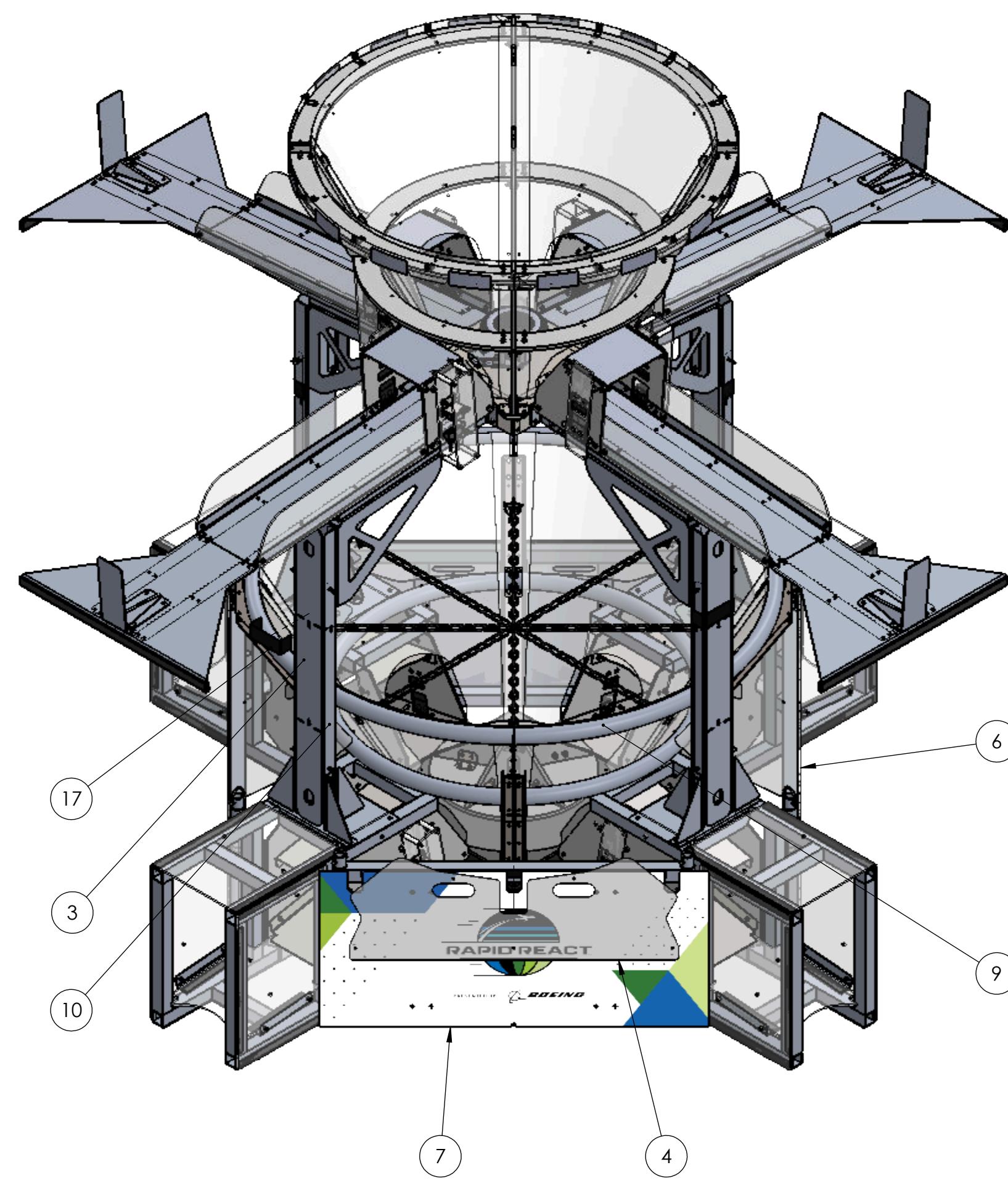
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Notes:

1. Attach (4) to assembly, using cable ties to connect to (9) and either (6) or (7).
2. Attach (17) to (3) and (10), aligning bottom of (17) to notches on (3) and (10).

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DRAWN	CO	12/17/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
	C	GE-22300	
COMMENTS:		SCALE: 1:14	
REMOVE ALL BURRS AND SHARP EDGES.		SHEET 5 OF 7	
DO NOT SCALE DRAWING			

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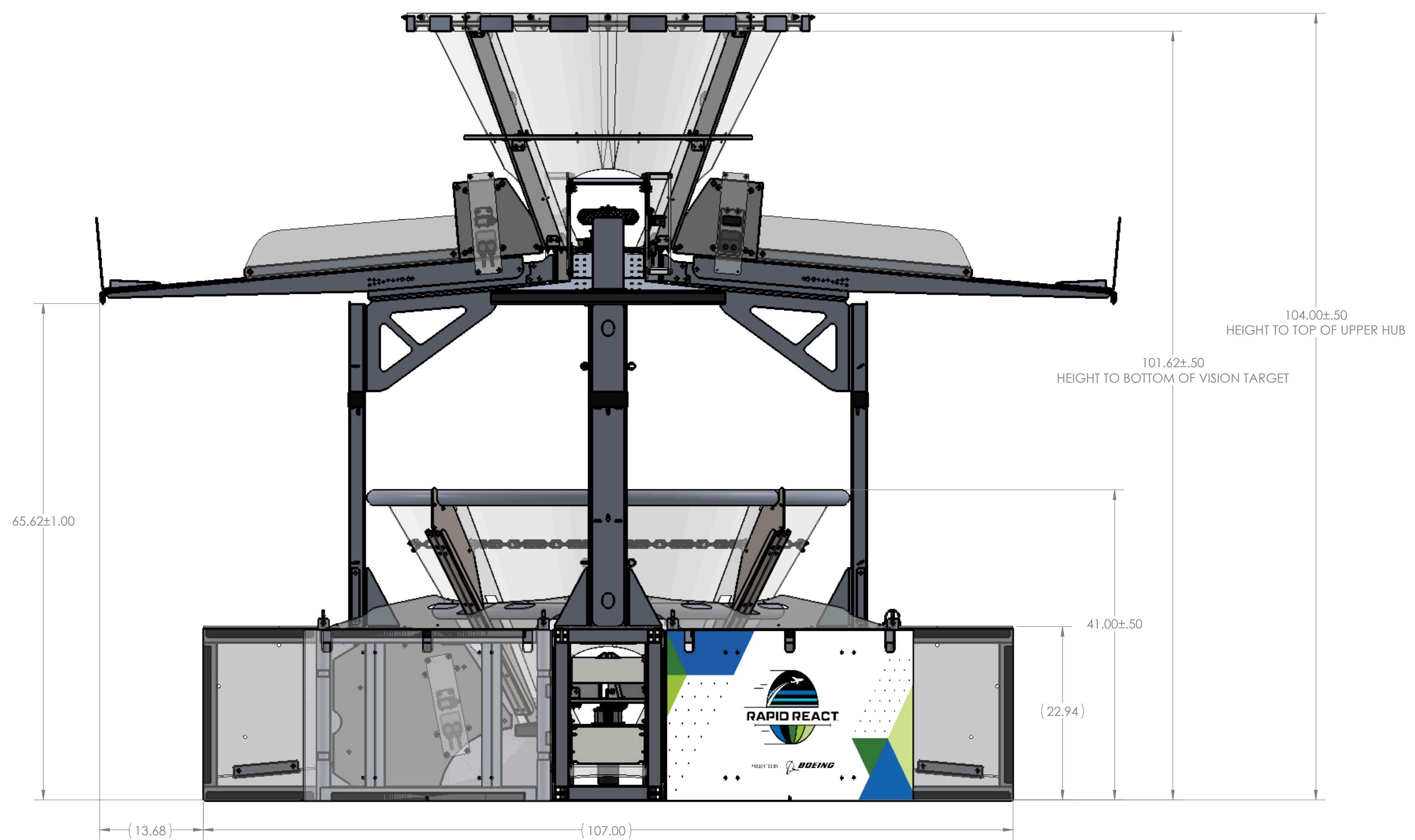
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UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	 FIRST ROBOTICS COMPETITION
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	DRAWN	CO	12/17/2021	 SOLIDWORKS Modeling Solutions Partner
PROPRIETARY AND CONFIDENTIAL				
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV	TITLE: Hub
	C	GE-22300		
DO NOT SCALE DRAWING	SCALE: 1:10	SHEET 6 OF 7		

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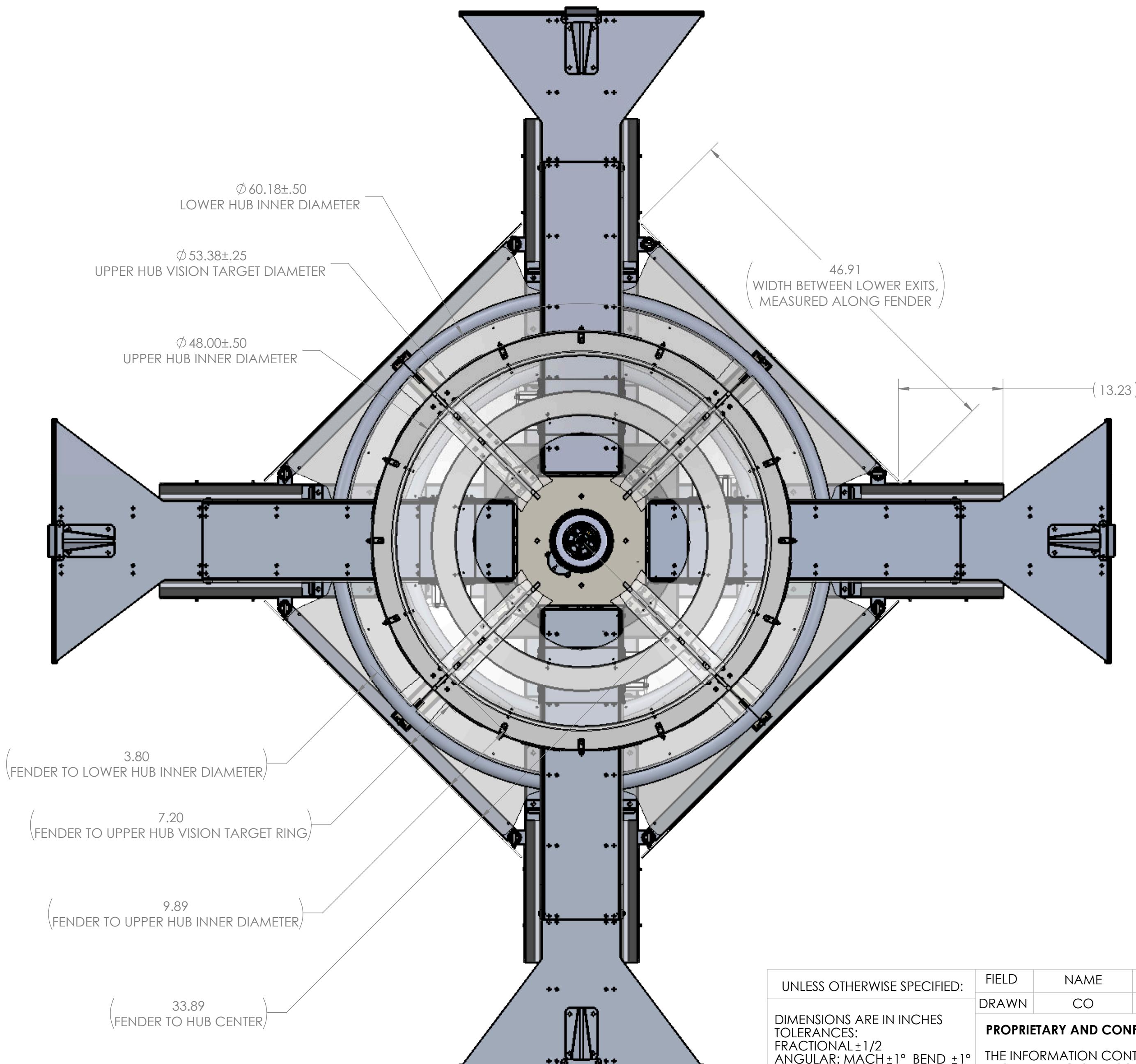
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UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	DRAWN	CO	12/17/2021
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE: Hub

SIZE DWG. NO. REV
C GE-22300

SCALE: 1:10 SHEET 7 OF 7

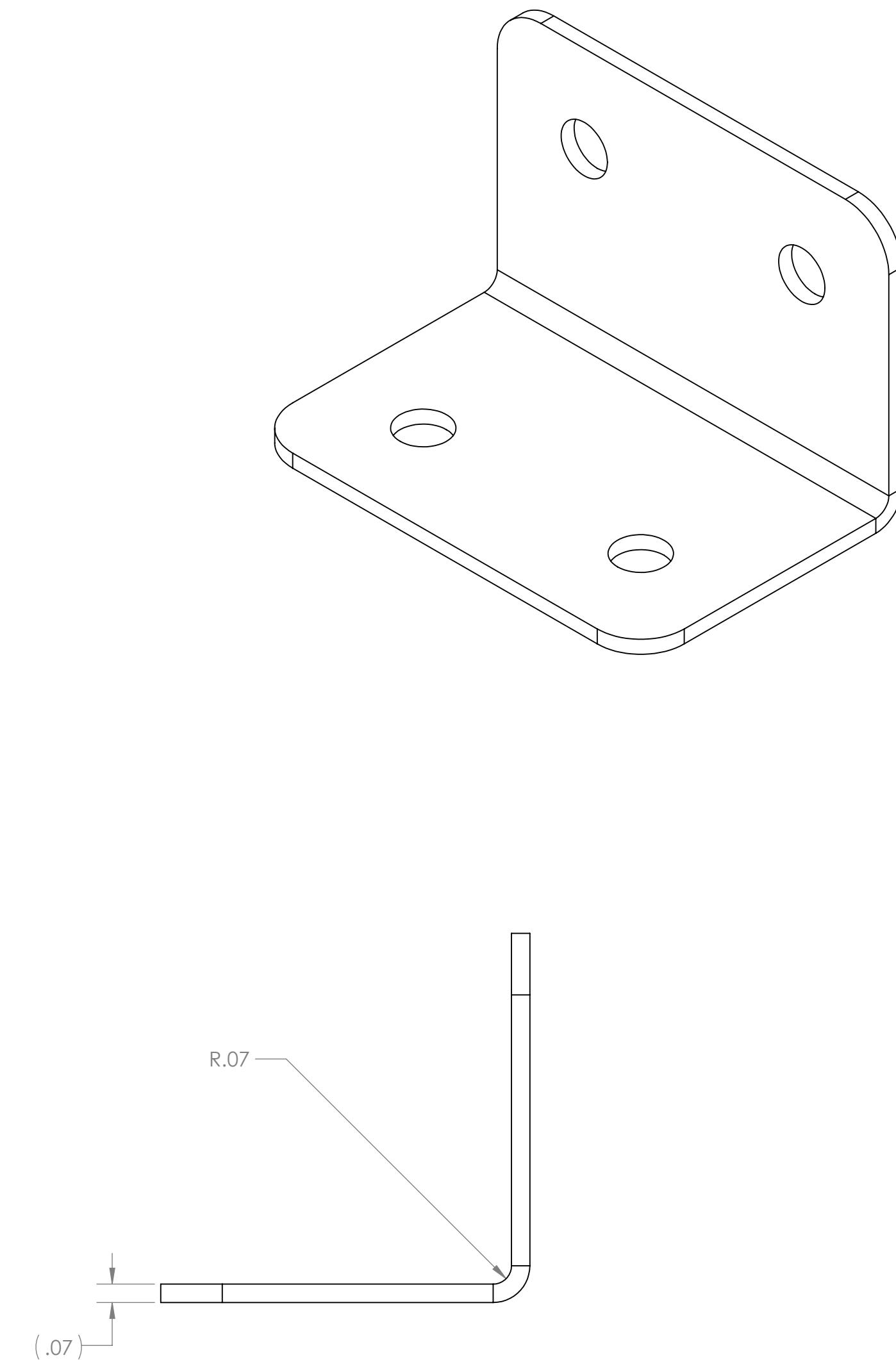
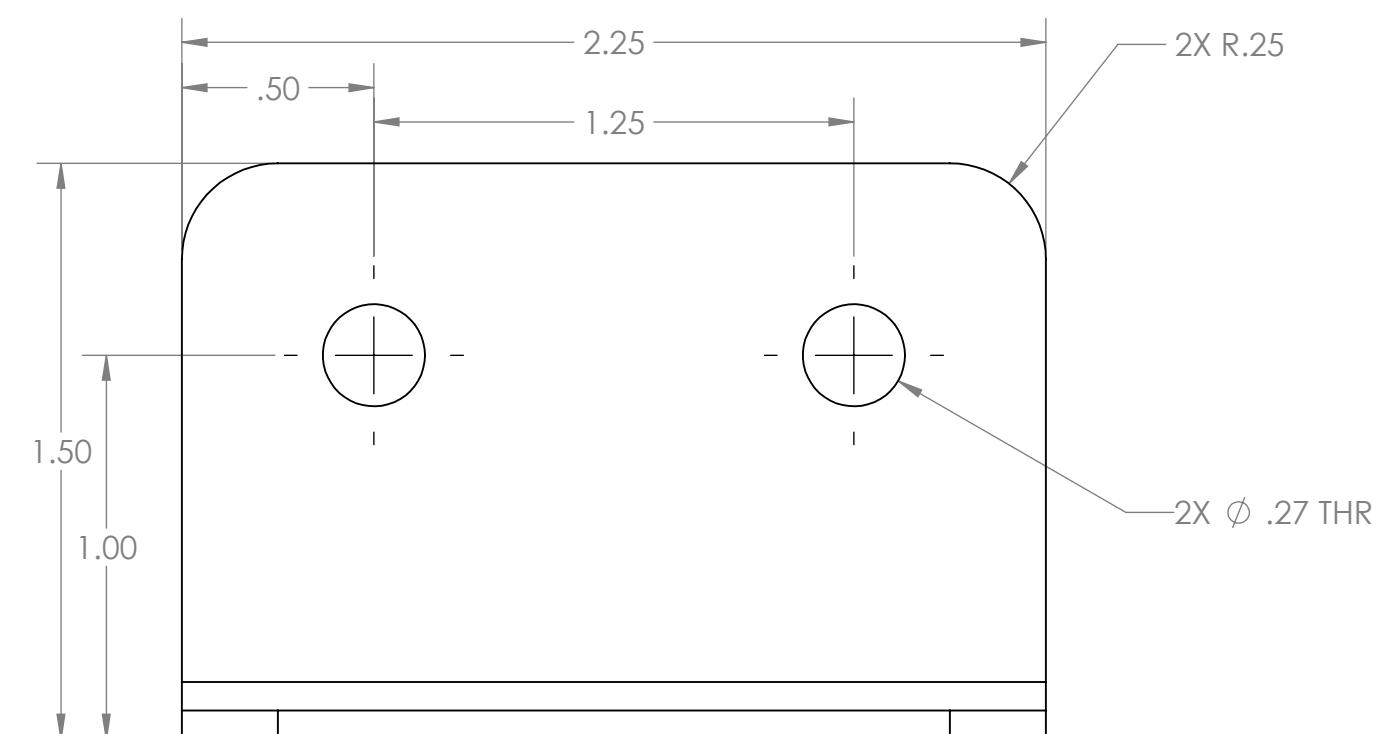
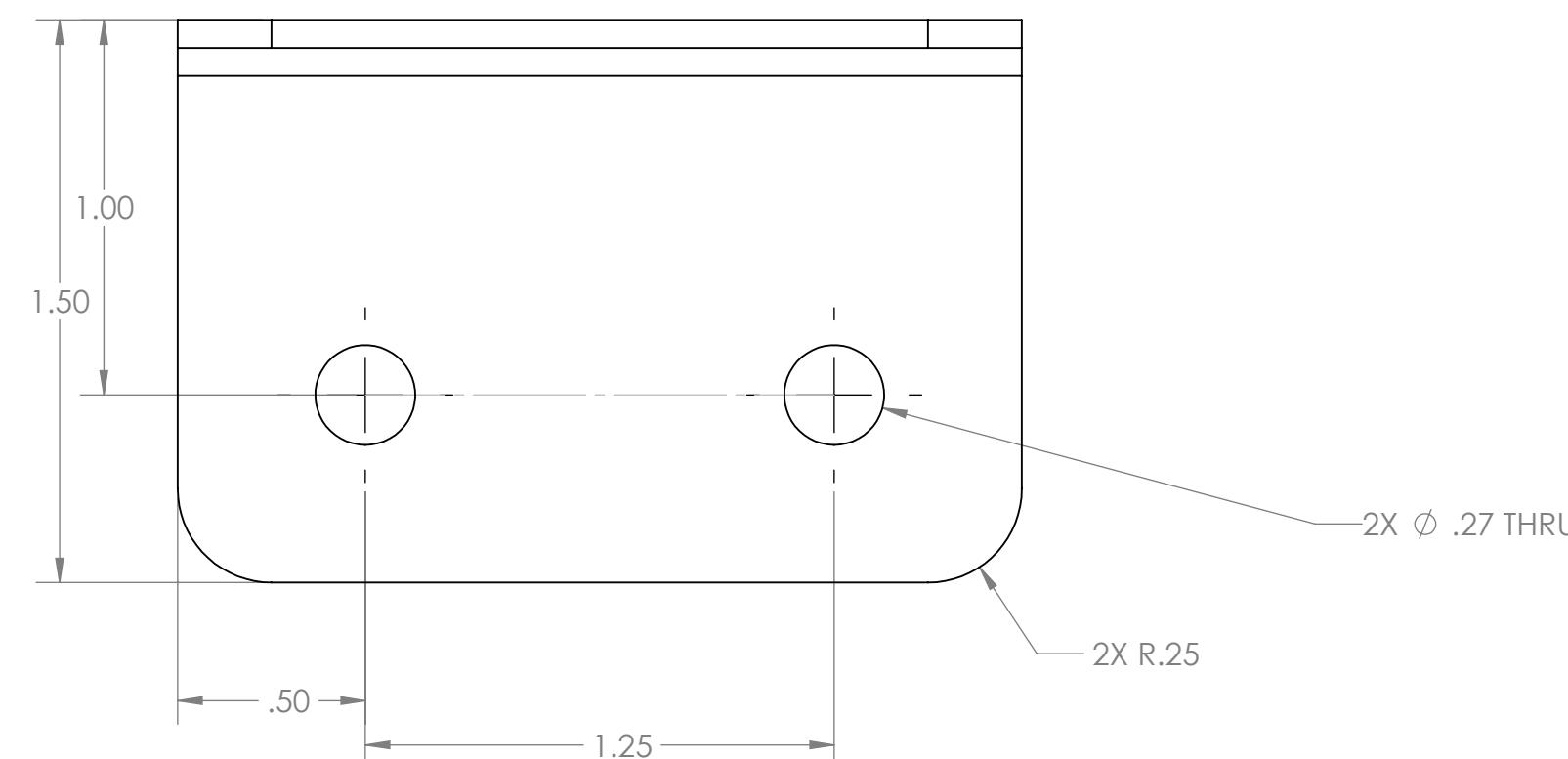
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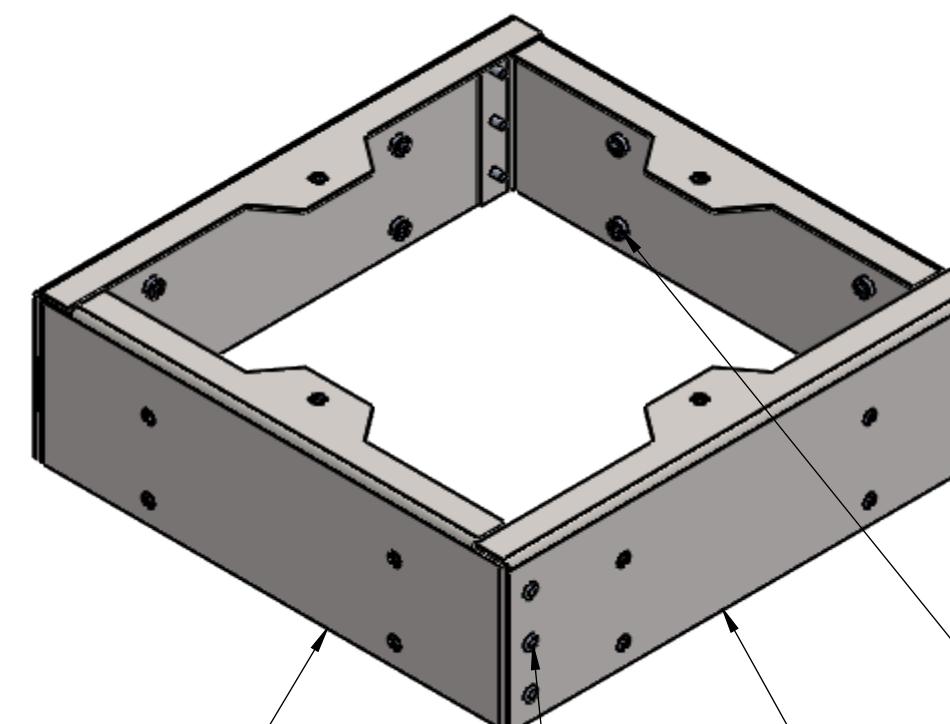
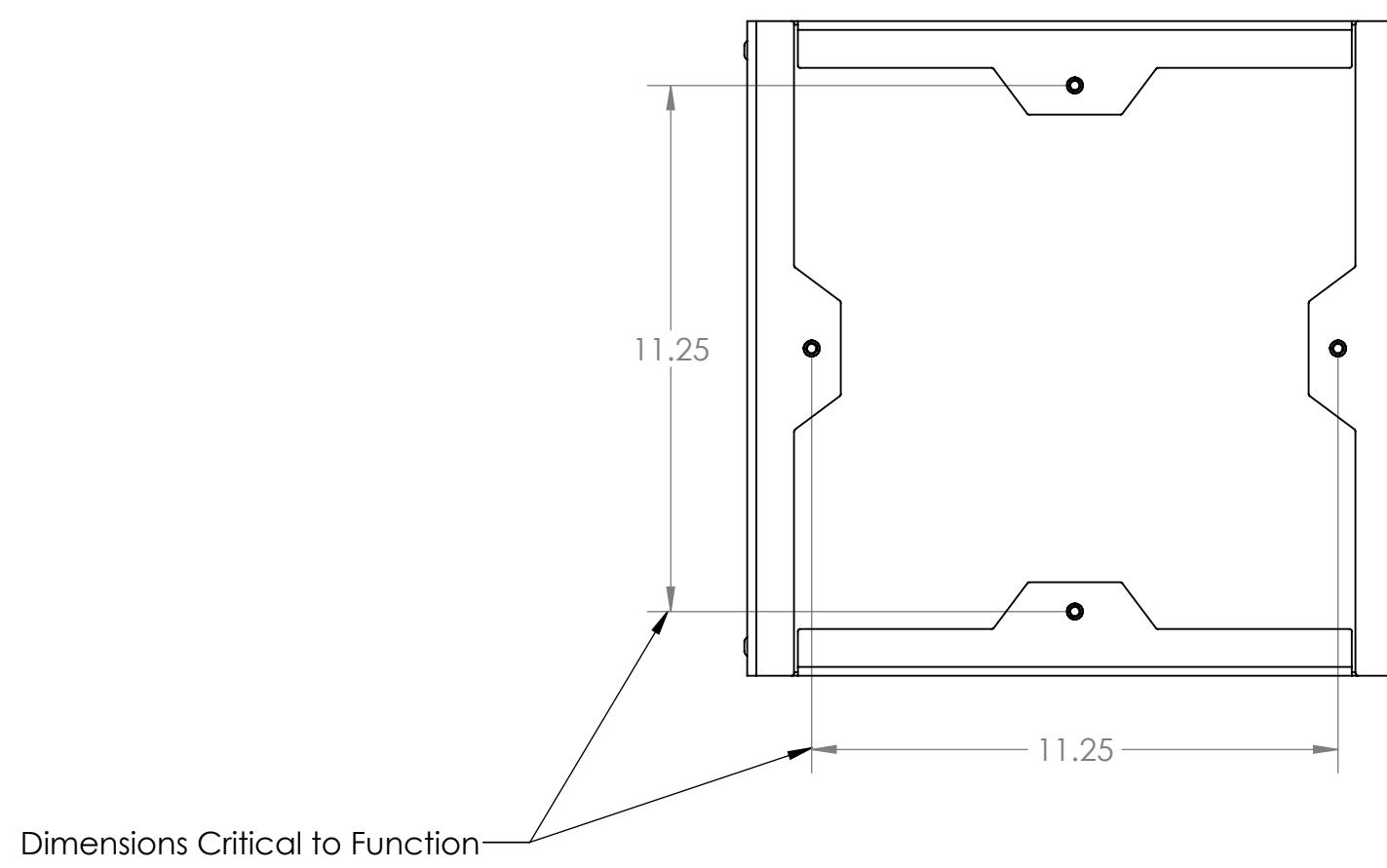
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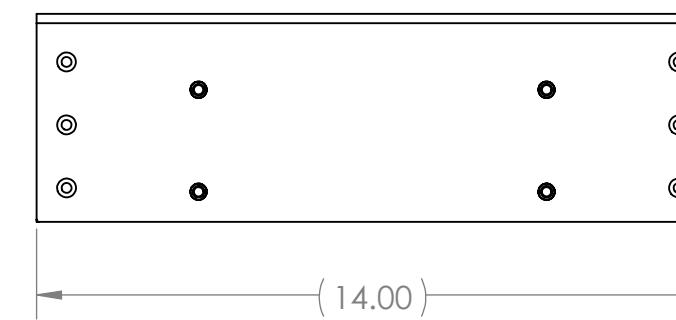
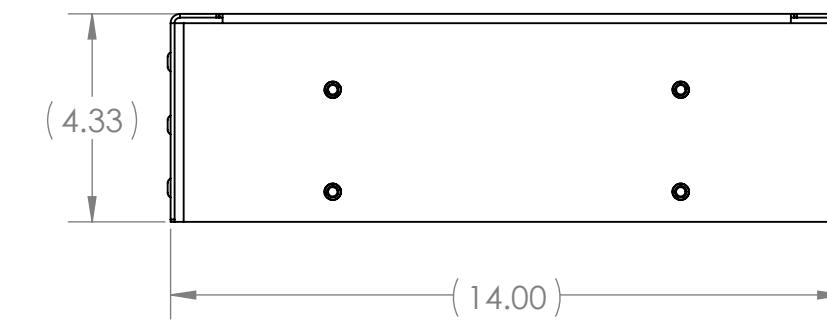
Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	6/17/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 14 ga. Pre-Plated Steel			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
 FIRST ROBOTICS COMPETITION  TITLE: Hub Angle Bucket SIZE DWG. NO. REV C GE-22301 SCALE: 2:1 SHEET 1 OF 1			

D



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Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22302-01	14 Ga. Pre-plated steel	2
2	GE-22302-02	14 Ga. Pre-plated steel	2
3	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	20
4	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	12

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	7/20/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL		
TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Leg to Upper Hub Box

SIZE DWG. NO. REV
C GE-22302

SCALE: 1:4 **SHEET 1 OF 3**

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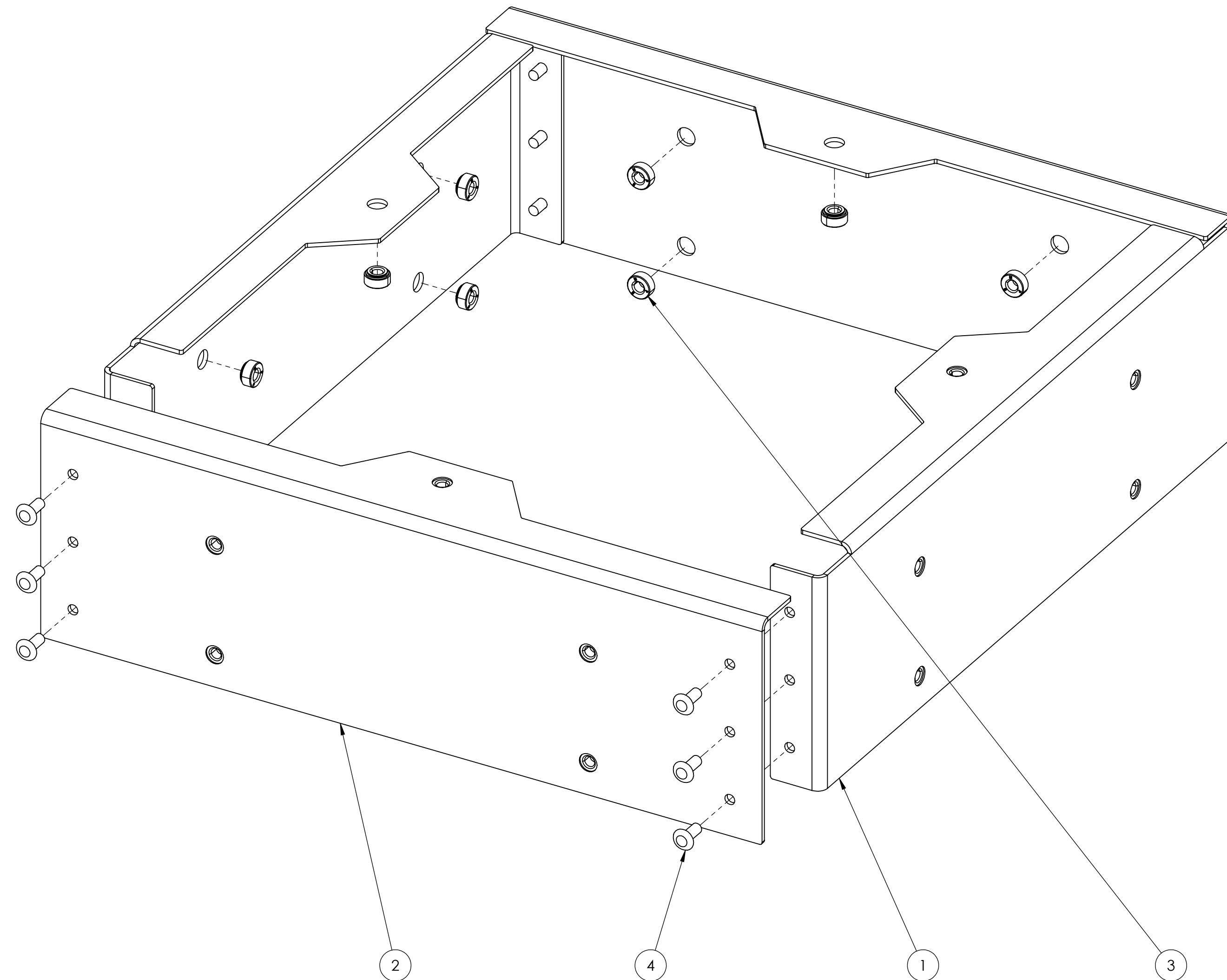
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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$

BEND NAME DATE

DRAWN CO 7/20/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING



TITLE:
Leg to Upper
Hub Box

SIZE DWG. NO. REV

C GE-22302

SCALE: 2:3 SHEET 2 OF 3

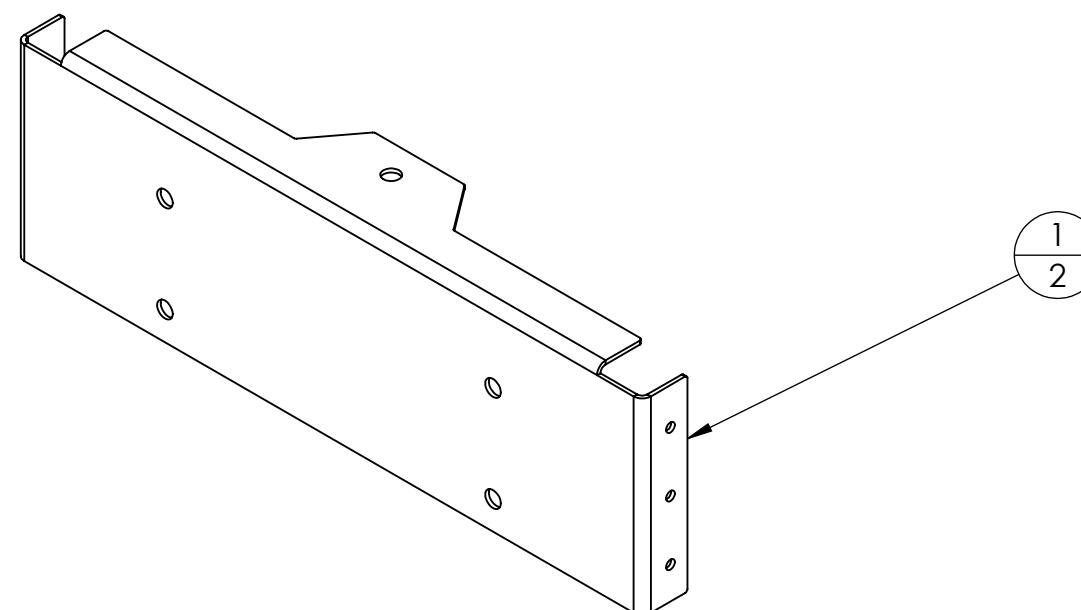
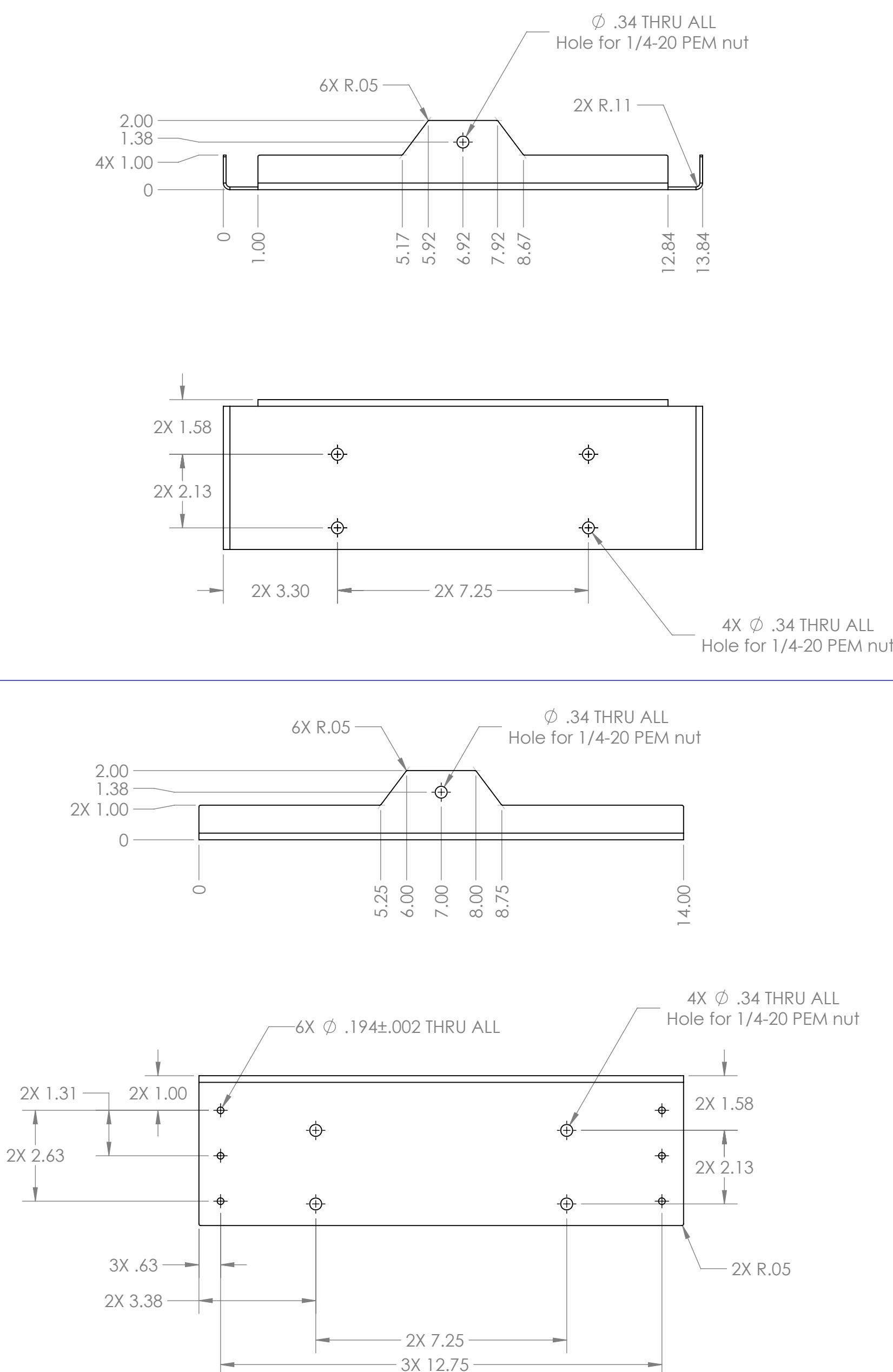
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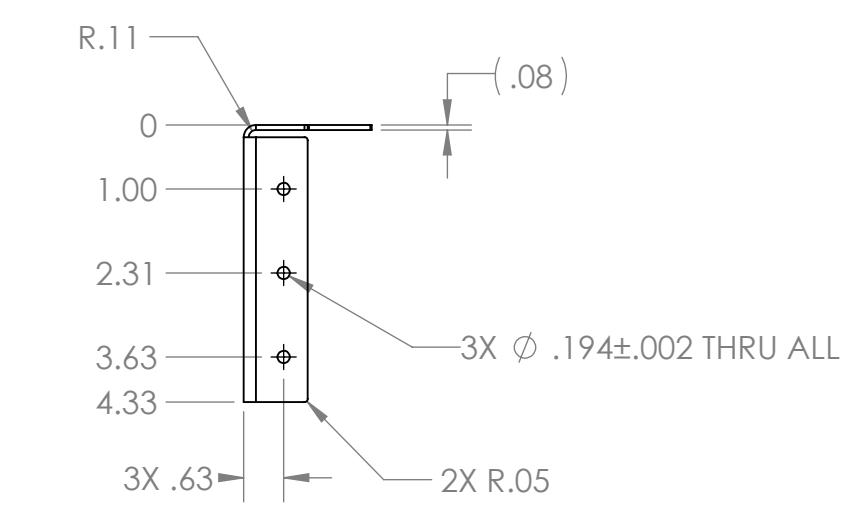
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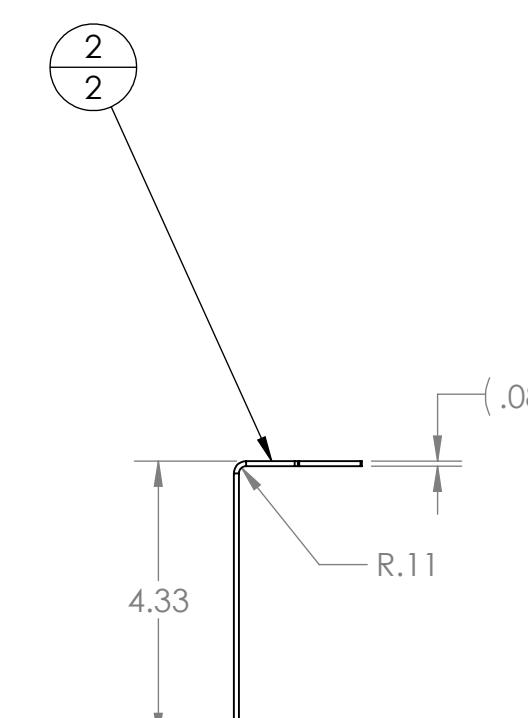
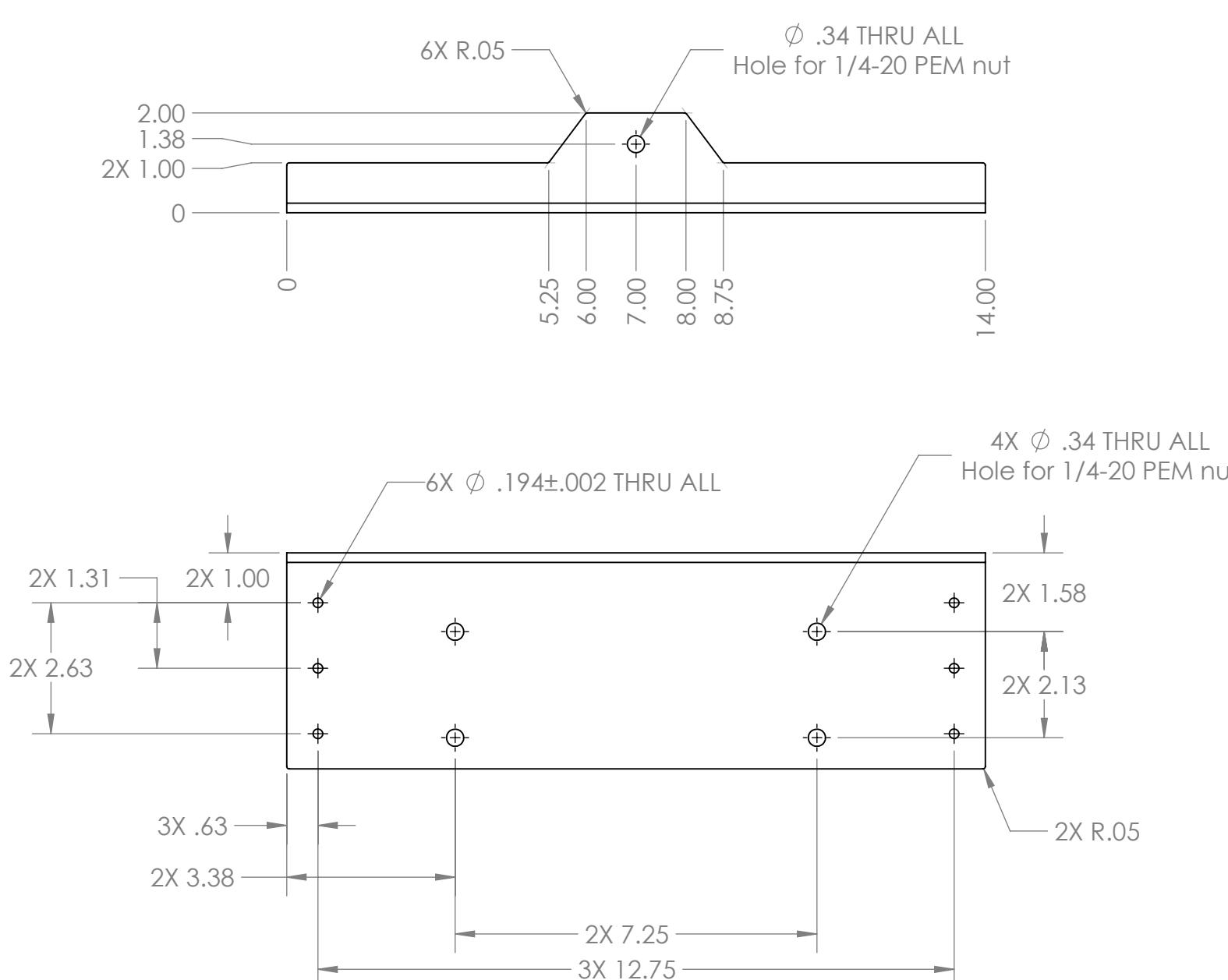
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UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	CO	7/20/2021	
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

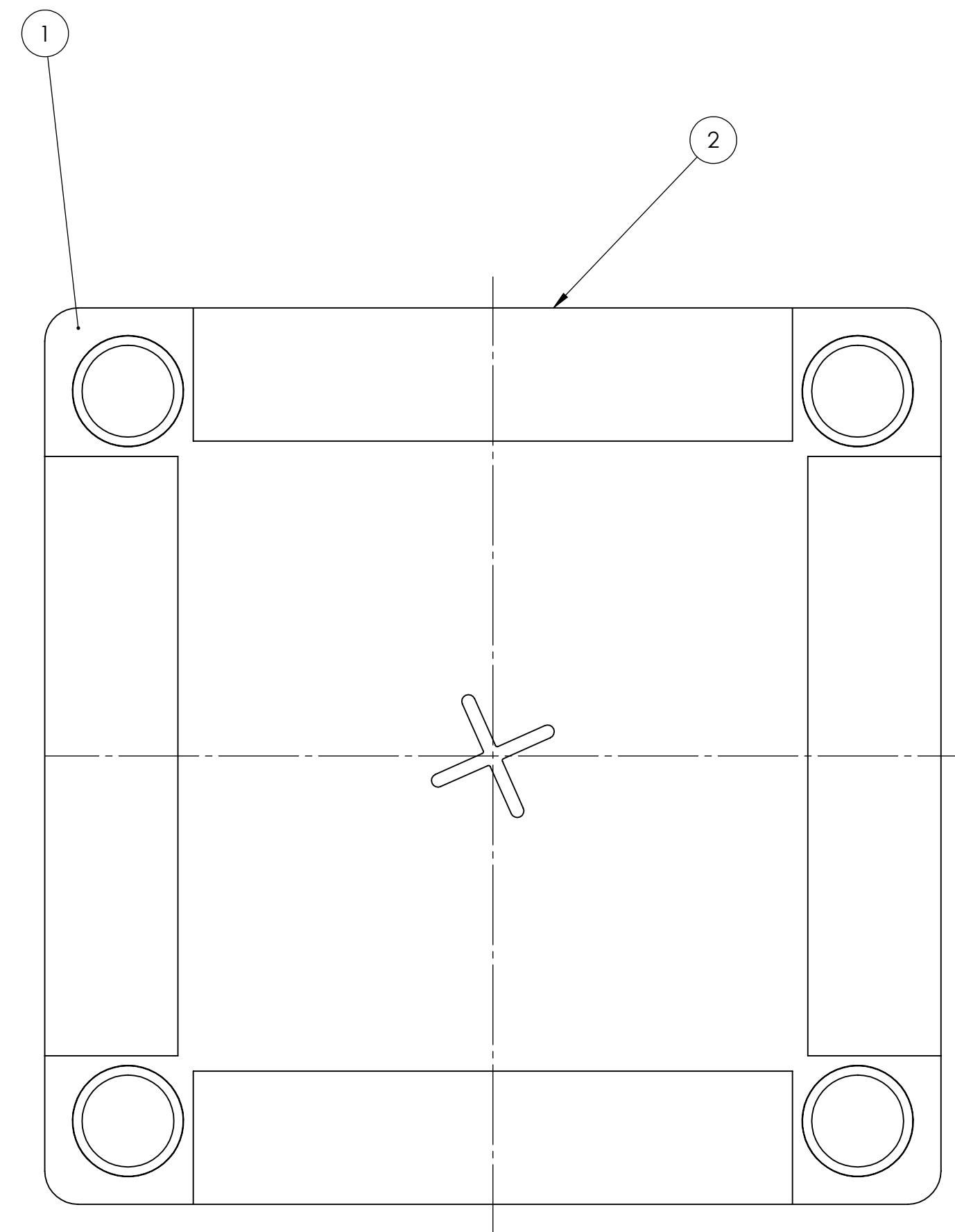
TITLE:
**Leg to Upper
Hub Box**

SIZE DWG. NO. REV

C GE-22302

SCALE: 1:3 SHEET 3 OF 3

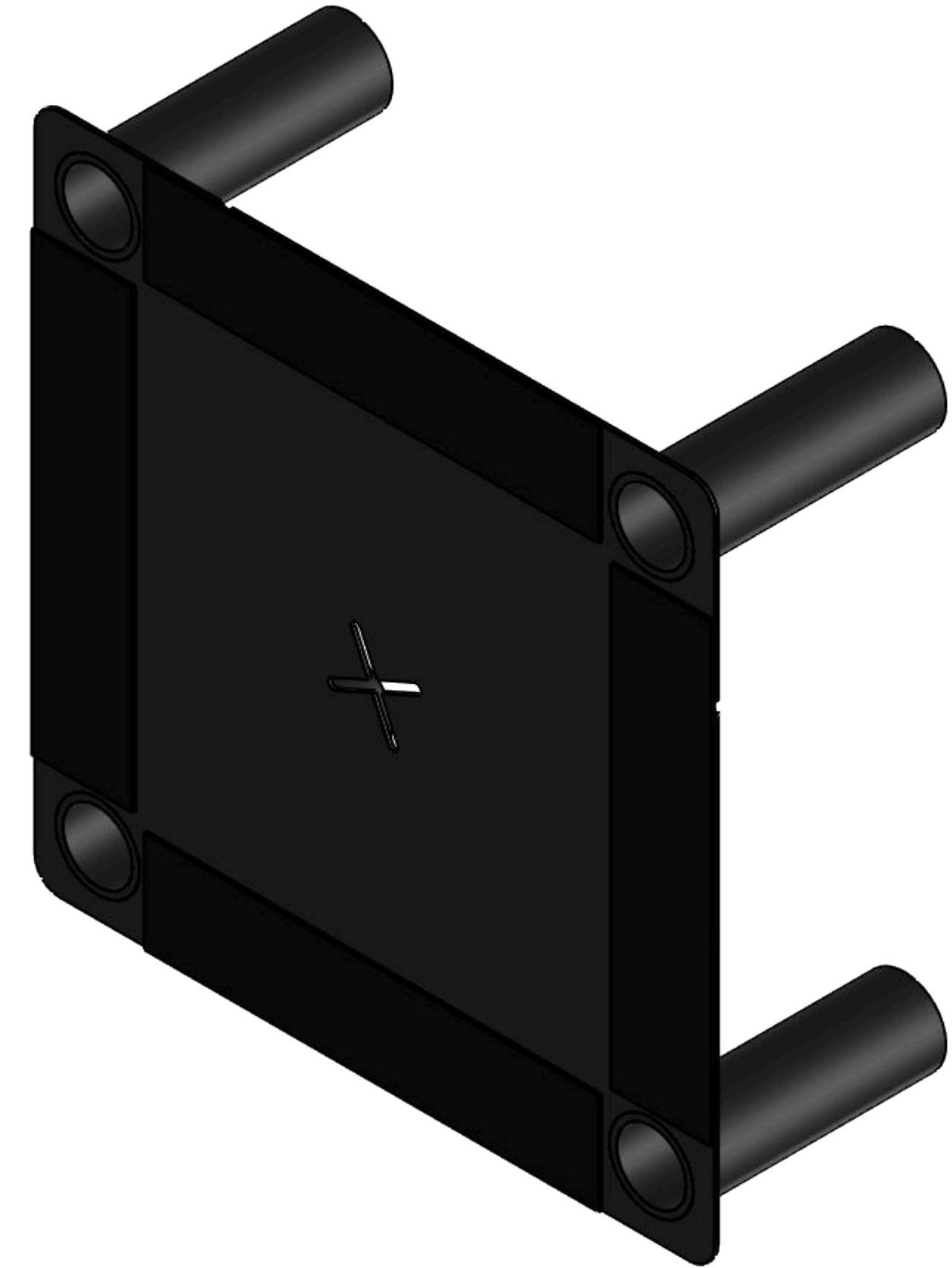
D



Notes:

1. Ensure surface of is clean prior to hook application.
2. Attach to in locations shown.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22304	Hub Base	1
2	Hook_2_9	2" x 9" Hook, Adhesive Backed	4



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	12/14/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
FIRST ROBOTICS COMPETITION			
TITLE: Hub Base with Hook			
SIZE DWG. NO. REV			
C GE-22303			
SCALE: 1:2 SHEET 1 OF 1			

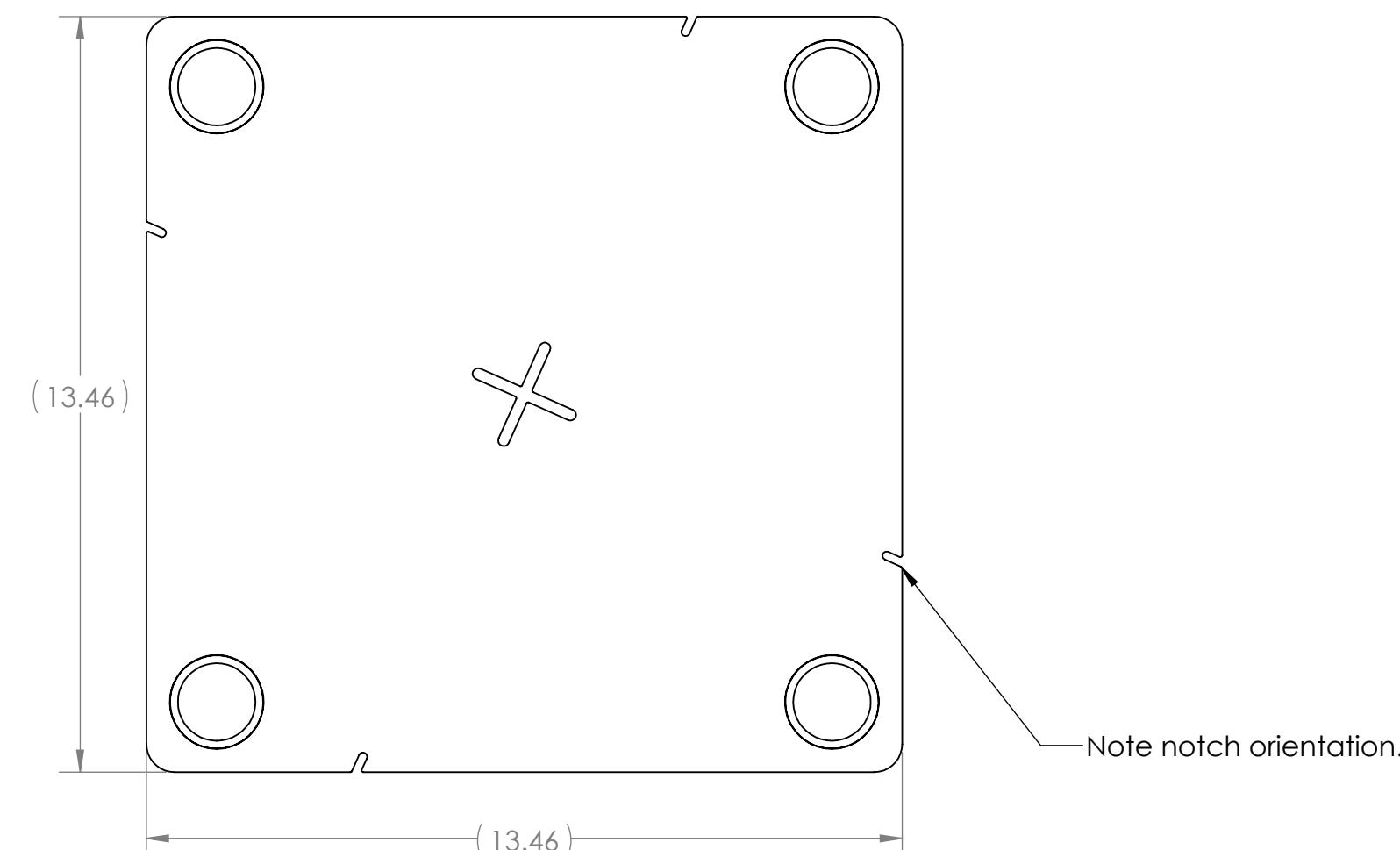
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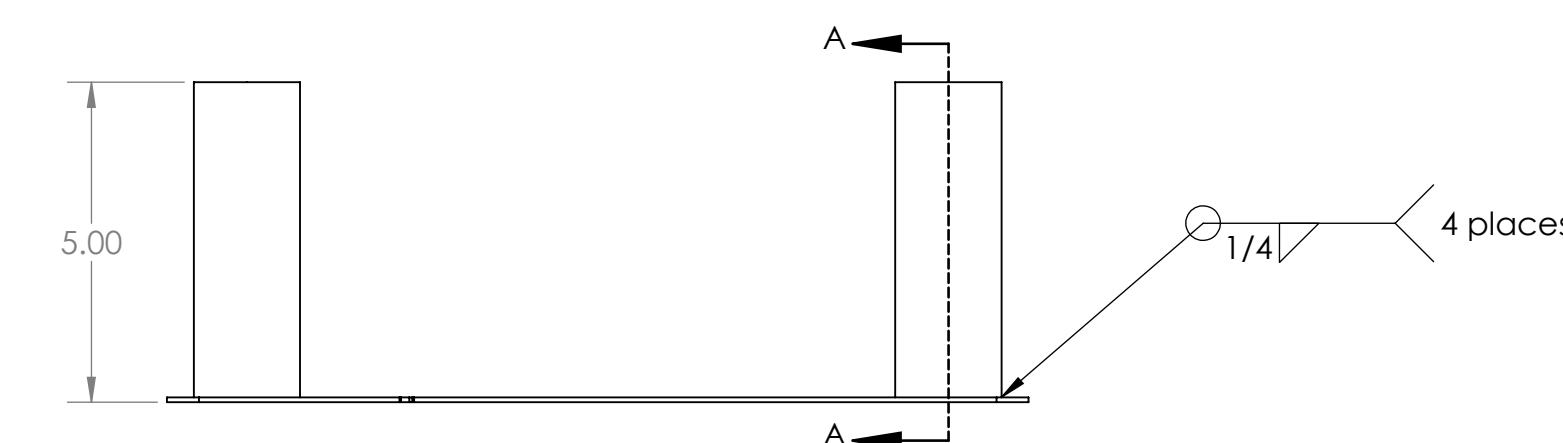
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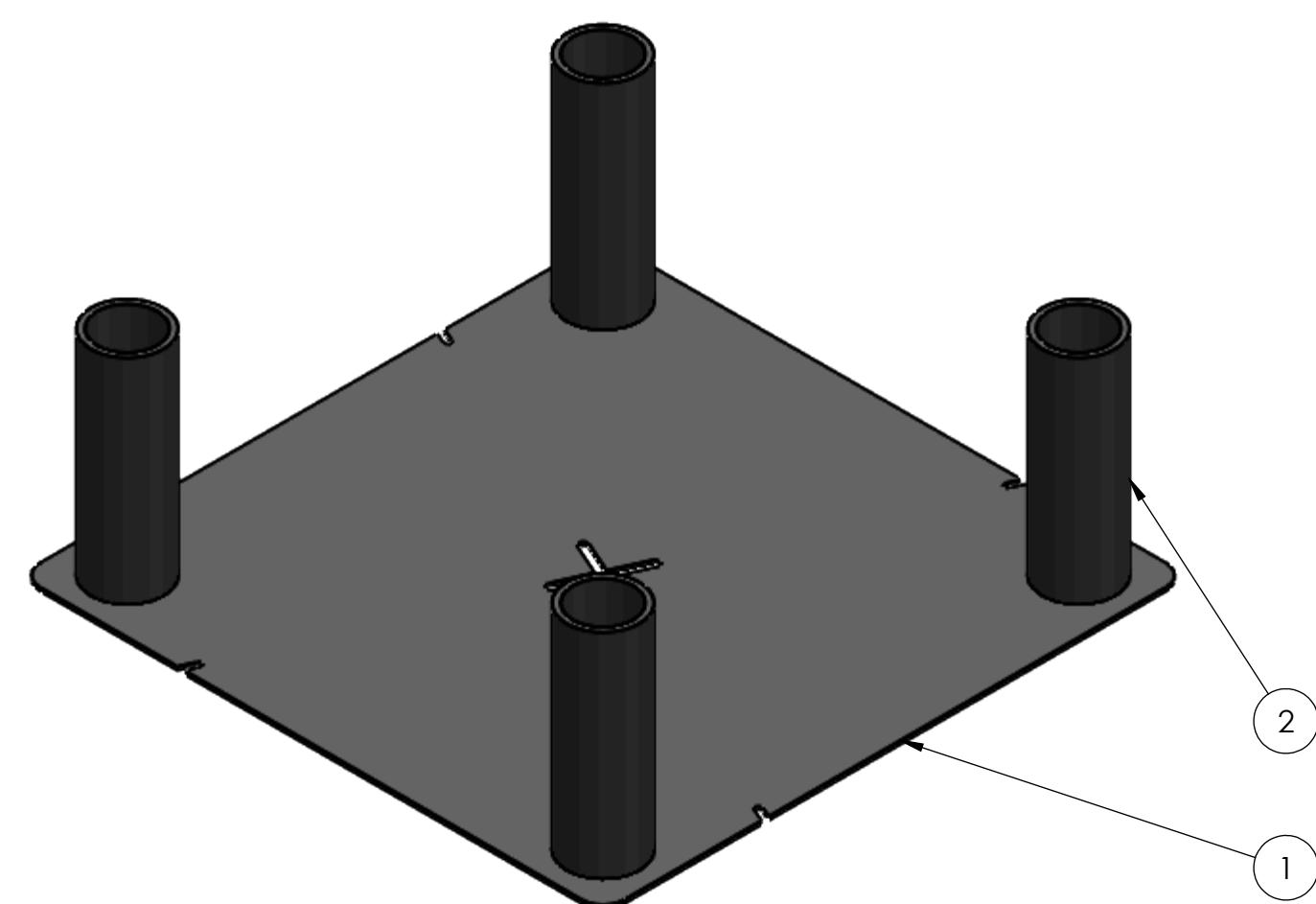
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Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22304-01	14 Ga. A-366/1008 Cold Roll Steel	1
2	GE-22304-02	1.25" Schedule 40 Pipe, A500 Steel	4

UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	CO	7/19/2021	 
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: Powder Coated Black			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SIZE	DWG. NO.	REV
	C	GE-22304	
SCALE: 1:3		SHEET 1 OF 3	

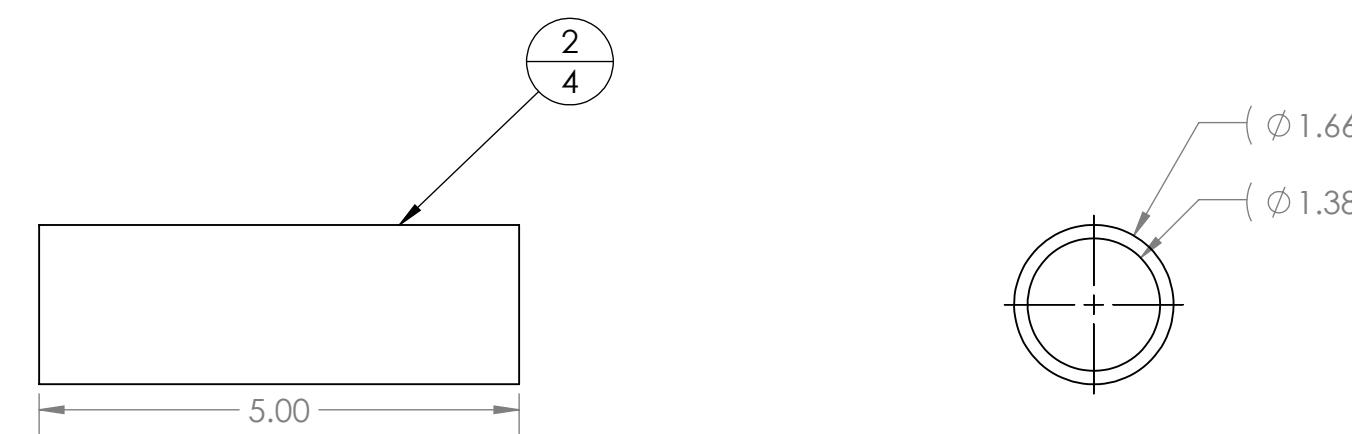
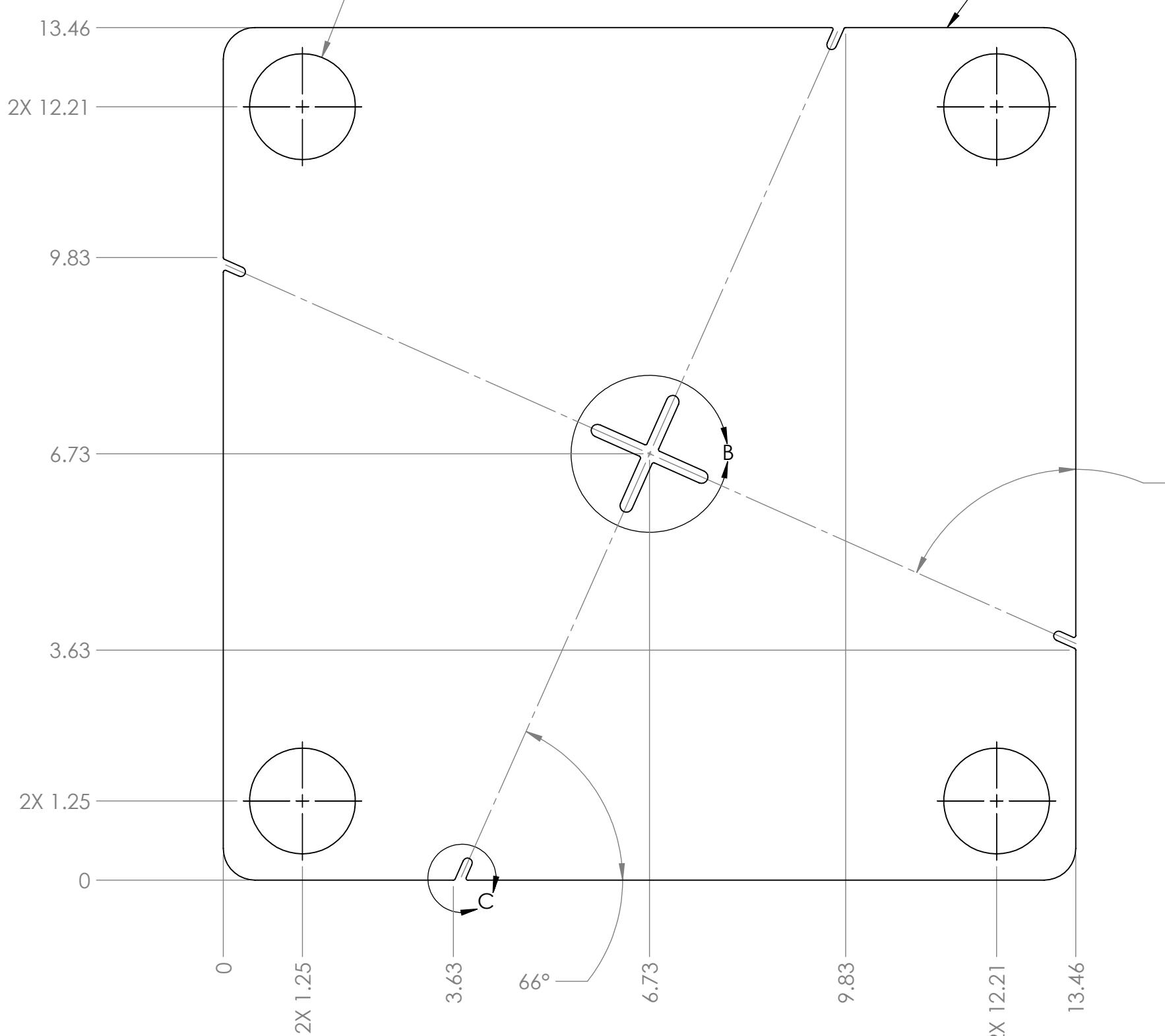
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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .015$

WELD NAME DATE
DRAWN CO 7/19/2021

PROPRIETARY AND CONFIDENTIAL

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MATERIAL/FINISH:
Powder Coated Black

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING

FIRST ROBOTICS COMPETITION

SOLIDWORKS

Modeling Solutions Partner

TITLE: Hub Base

SIZE DWG. NO. REV

C GE-22304

SCALE: 1:2 SHEET 2 OF 3

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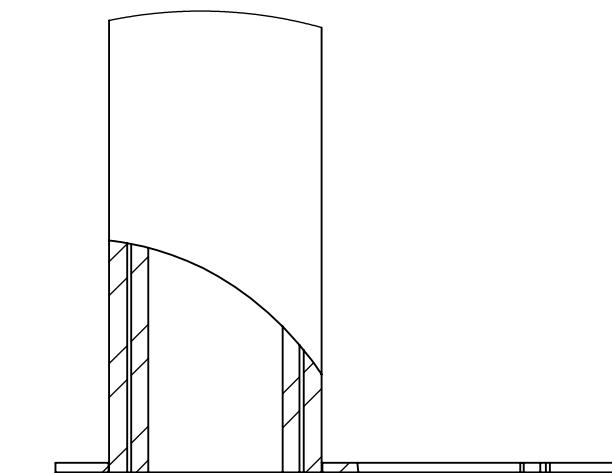
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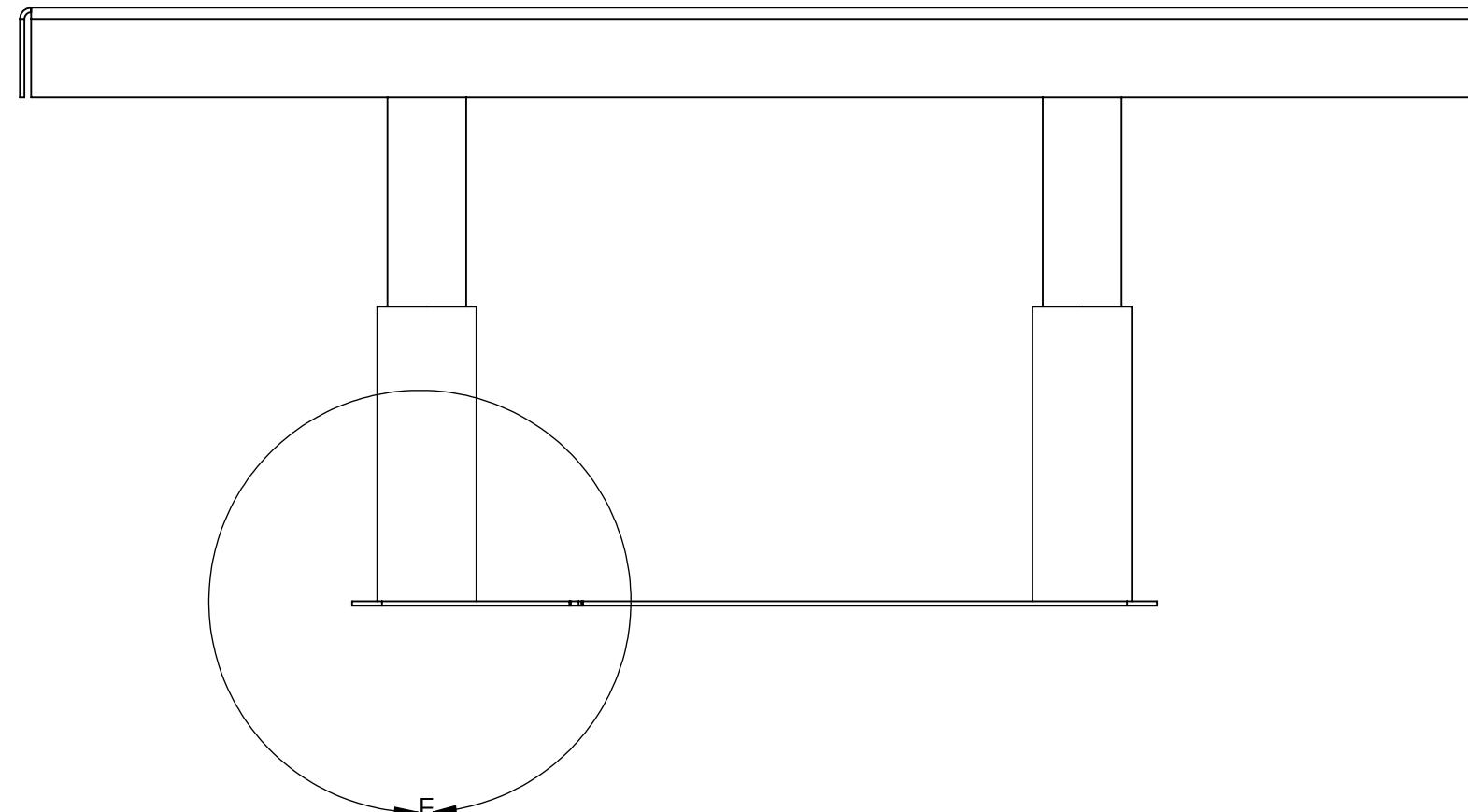
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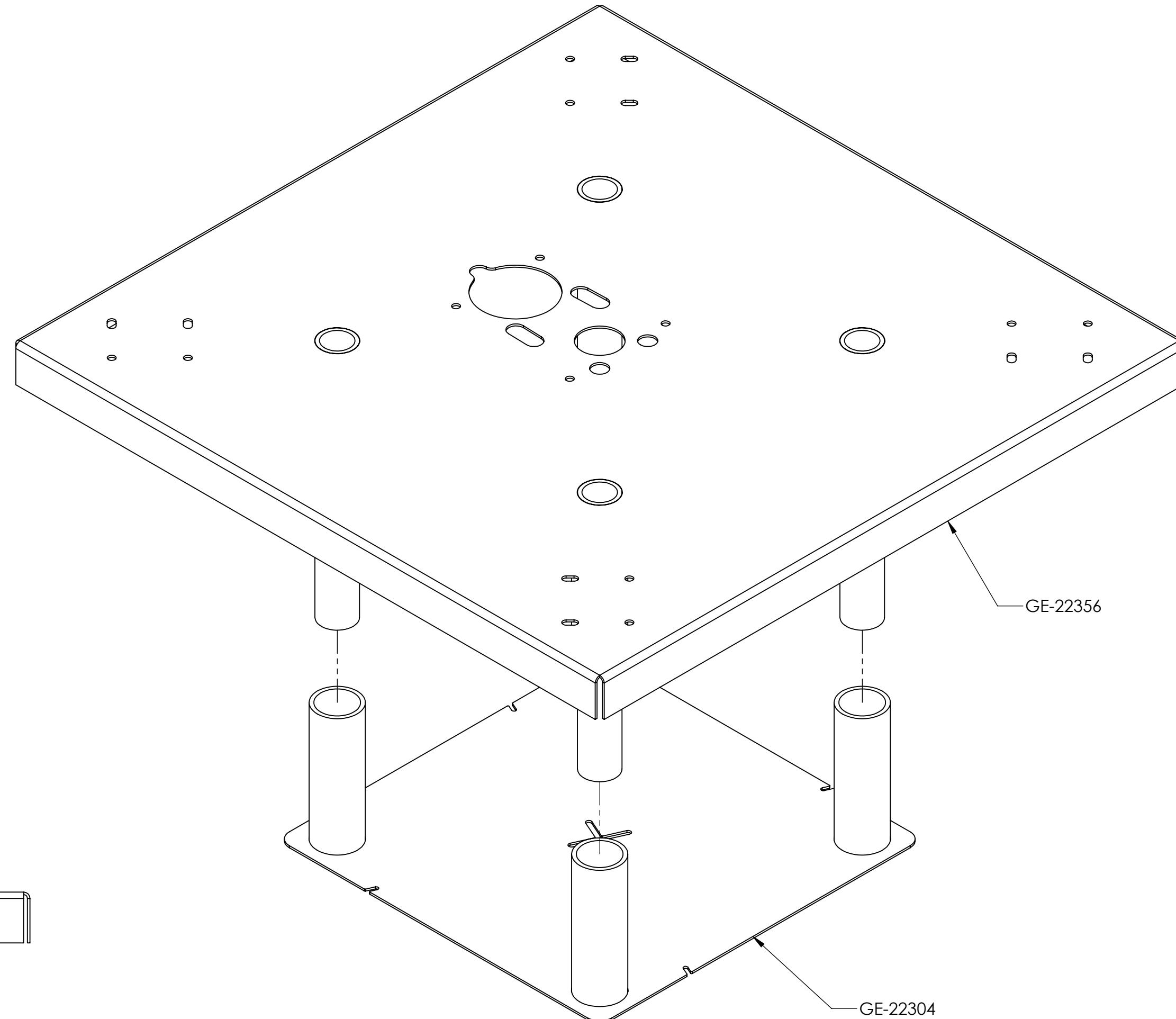
A



DETAIL E
SCALE 2 : 3
Bottom of two assemblies coincident.



Notes:
1. For reference only: designed interface of GE-22304 with mating part.



UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	CO	7/19/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: Powder Coated Black			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Hub Base

SIZE DWG. NO. REV

C GE-22304

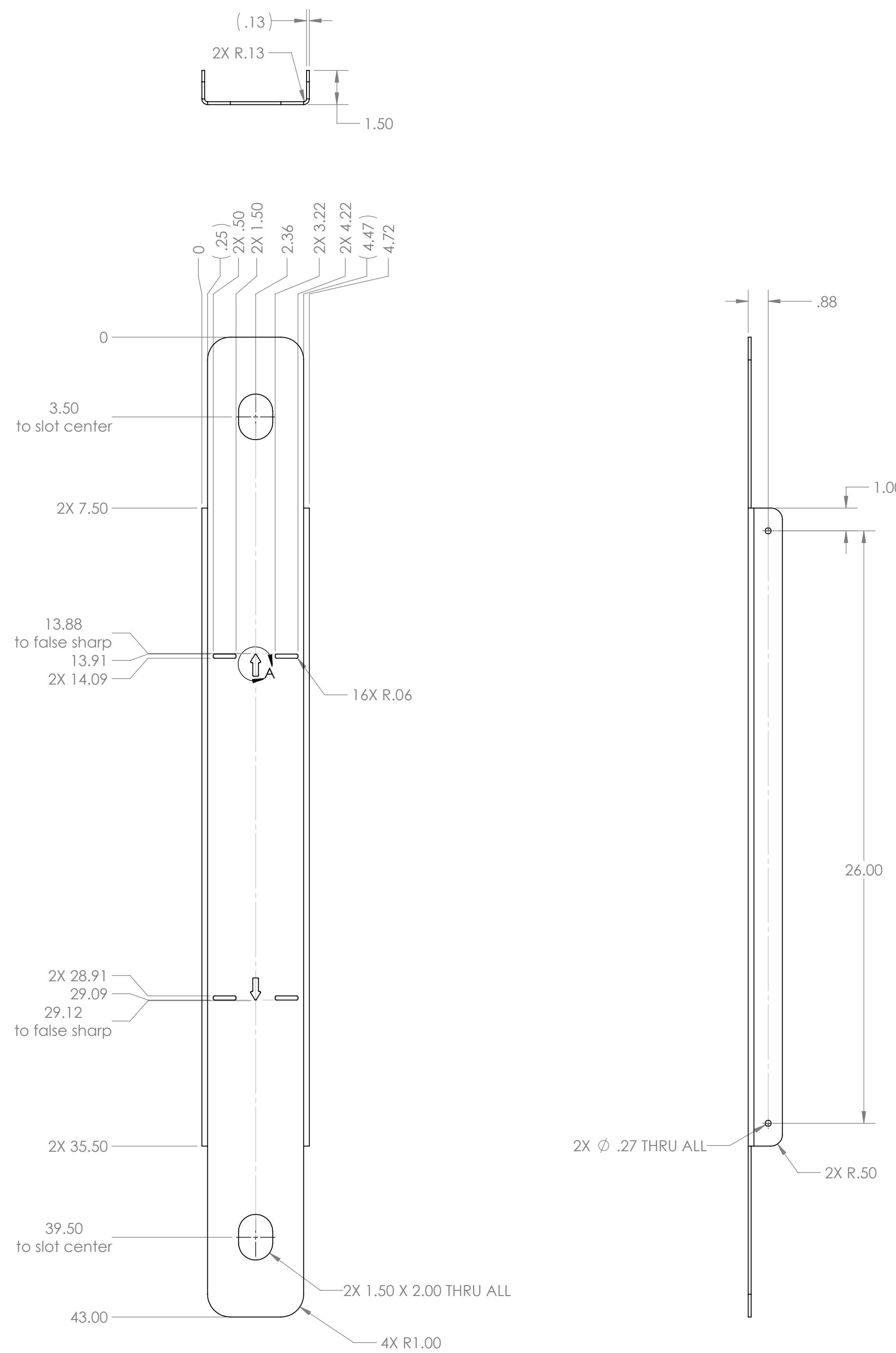
SCALE: 1:3 SHEET 3 OF 3

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UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	KAMC	7/6/2021
PROPRIETARY AND CONFIDENTIAL				
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet				
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING				

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

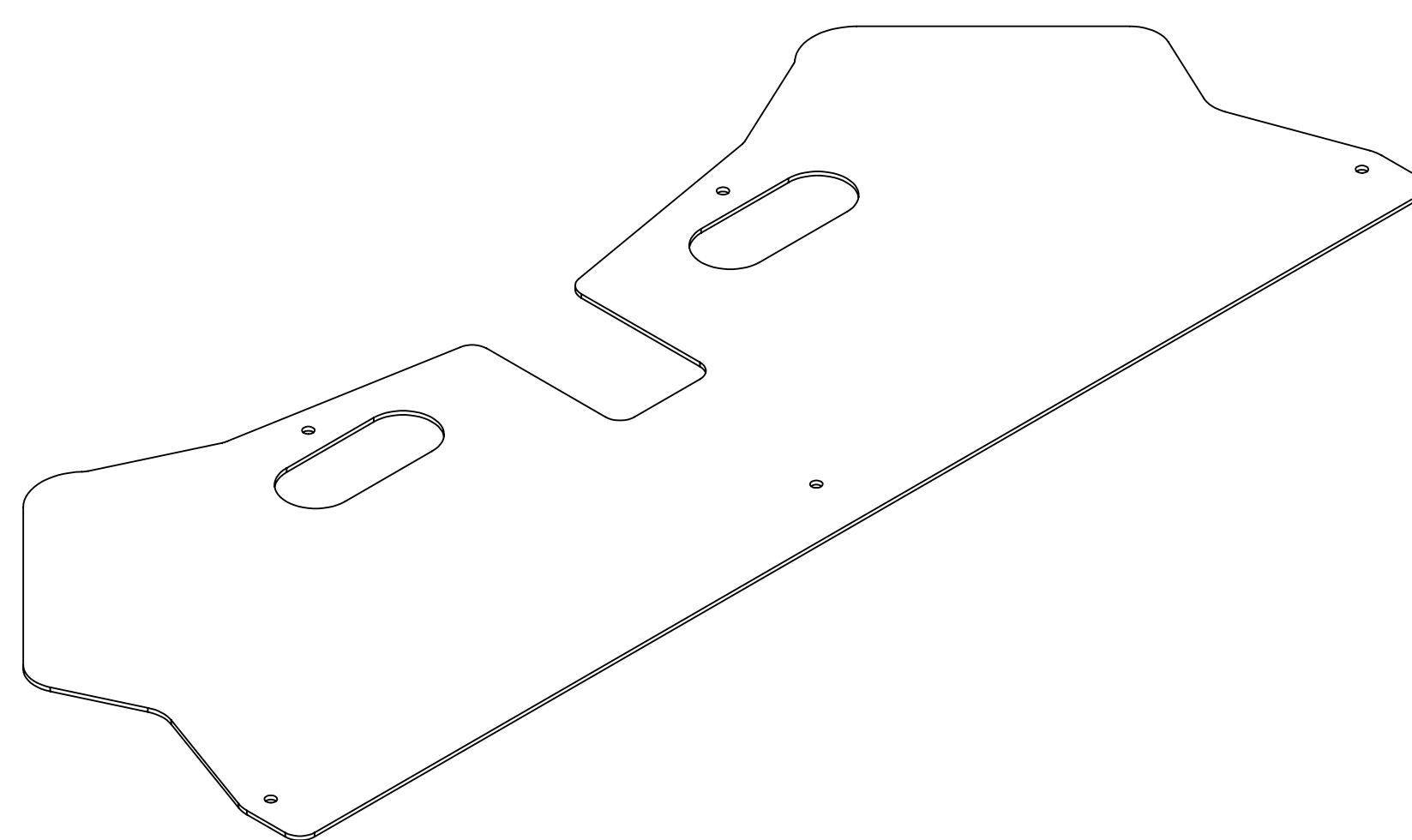
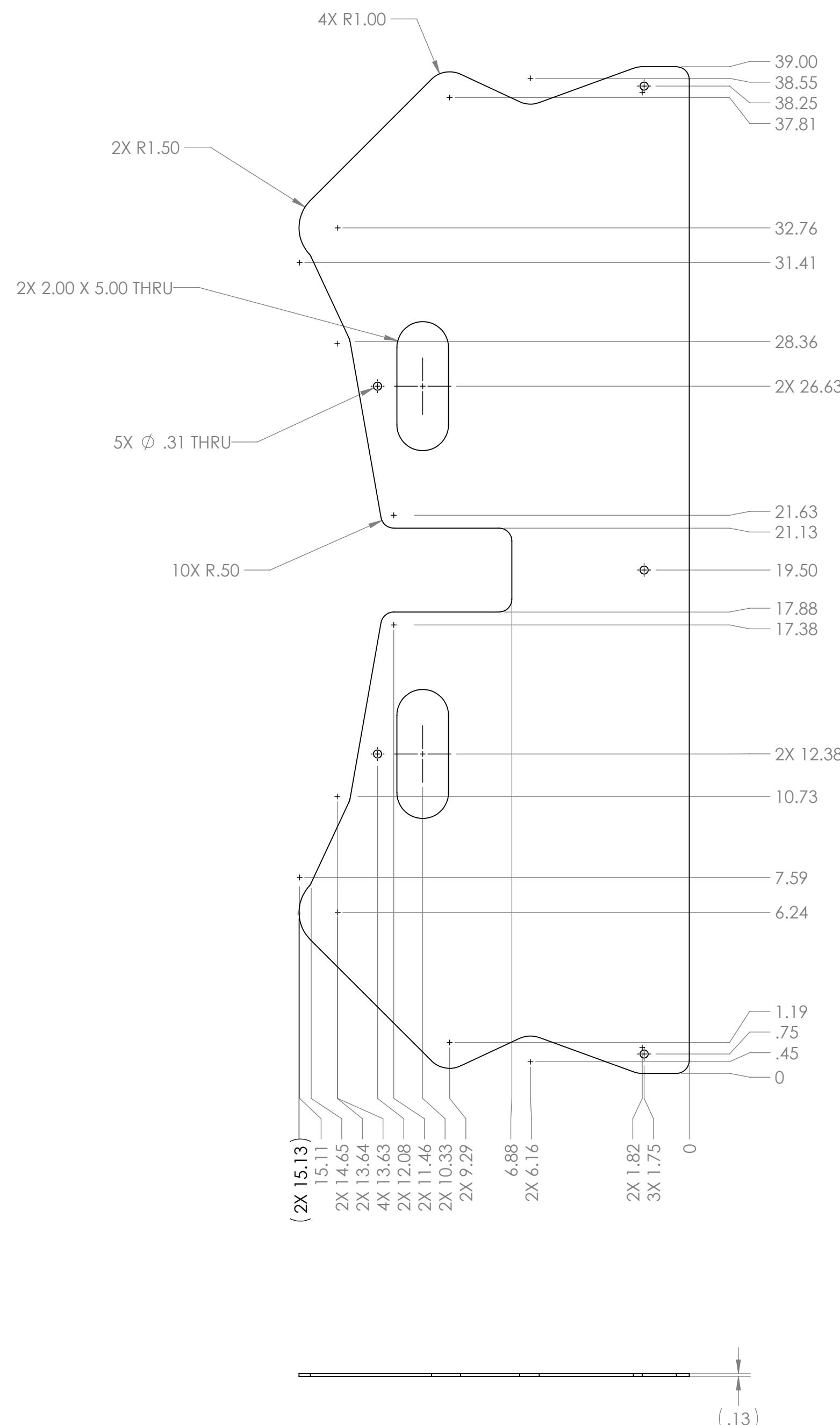
TITLE: Leg Vertical Channel Cover

SIZE DWG. NO. REV
C GE-22305

SCALE: 1:4 SHEET 1 OF 1

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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	KAMC	7/13/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$			
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	1/8" Polycarbonate, Clear		
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

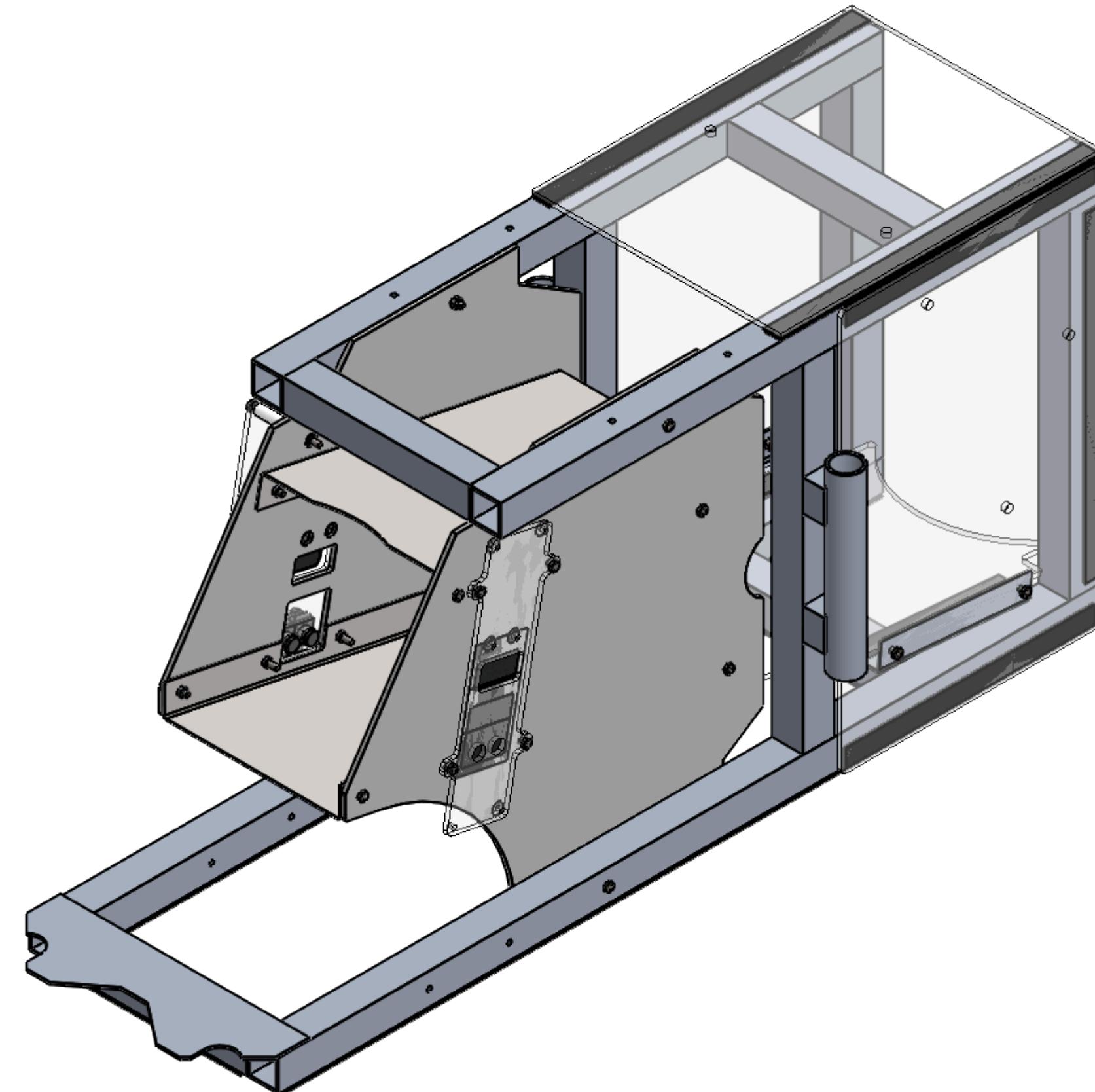
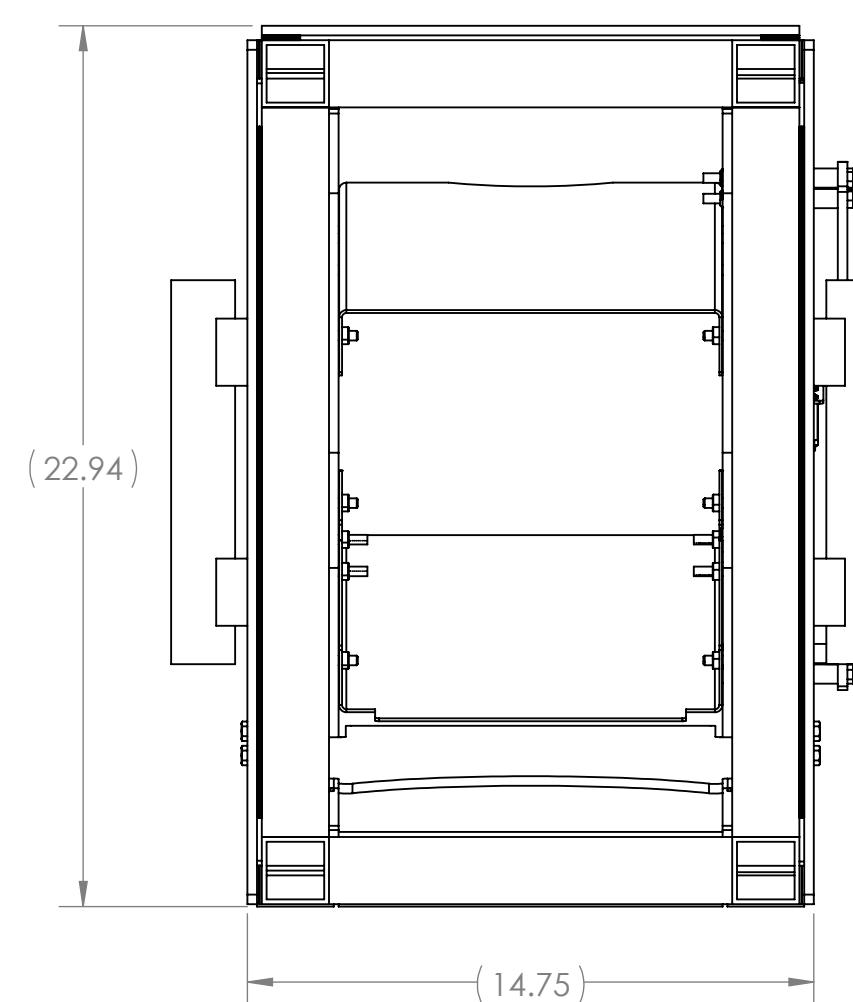
SOLIDWORKS
Modeling Solutions Partner

TITLE:
Hub Fender Skirt

SIZE DWG. NO. REV
C GE-22306

SCALE: 1:4 SHEET 1 OF 1

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22326	Lower Exit Left Polycarbonate Assembly	1
2	GE-22327	Lower Exit Right Polycarbonate Assembly	1
3	GE-22329	Lower Exit Front Roof with Loop	1
4	GE-22331	Lower Exit Front Ramp with Loop	1
5	GE-22332	Lower Exit HDPE Wall	2
6	GE-22333	Lower Exit Back Ramp	1
7	GE-22334	Lower Exit Back Roof	1
8	GE-22336	Lower Exit Frame with Hook	1
9	GE-22461	Sensor Box Assembly	1
10	GE-22466	Sensor Light Shield	1
11	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	8
12	hex_.25_20_1.25_partial	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	8
13	hex_.25_20_2.5_partial	Steel Hex Head Screw, 1/4"-20 x 2-1/2" long, partially threaded	4
14	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/14/2021
TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL		
MATERIAL/FINISH:	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

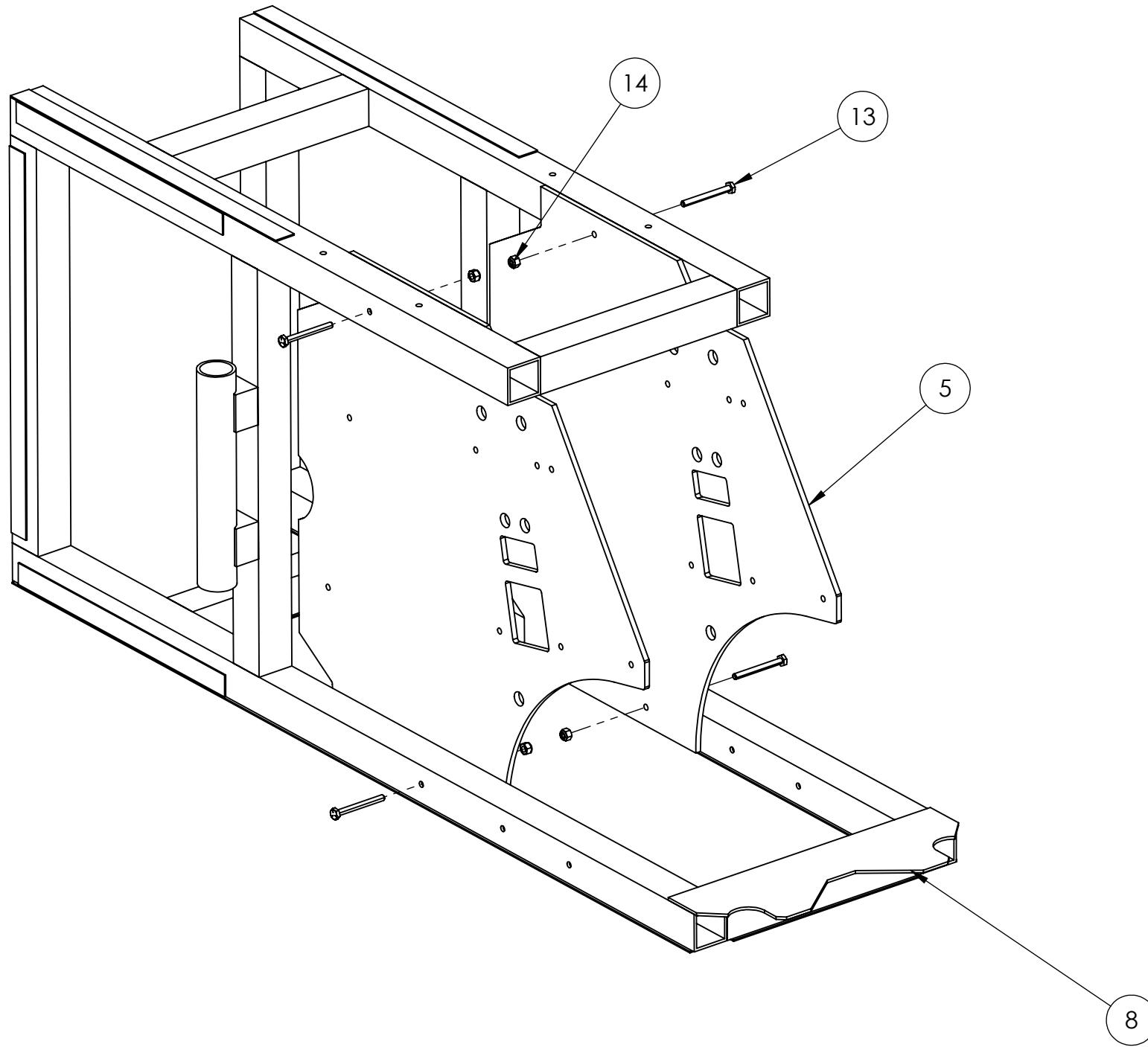
FIRST ROBOTICS COMPETITION Modeling Solutions Partner

Lower Exit Assembly

SIZE DWG. NO. REV
C GE-22311

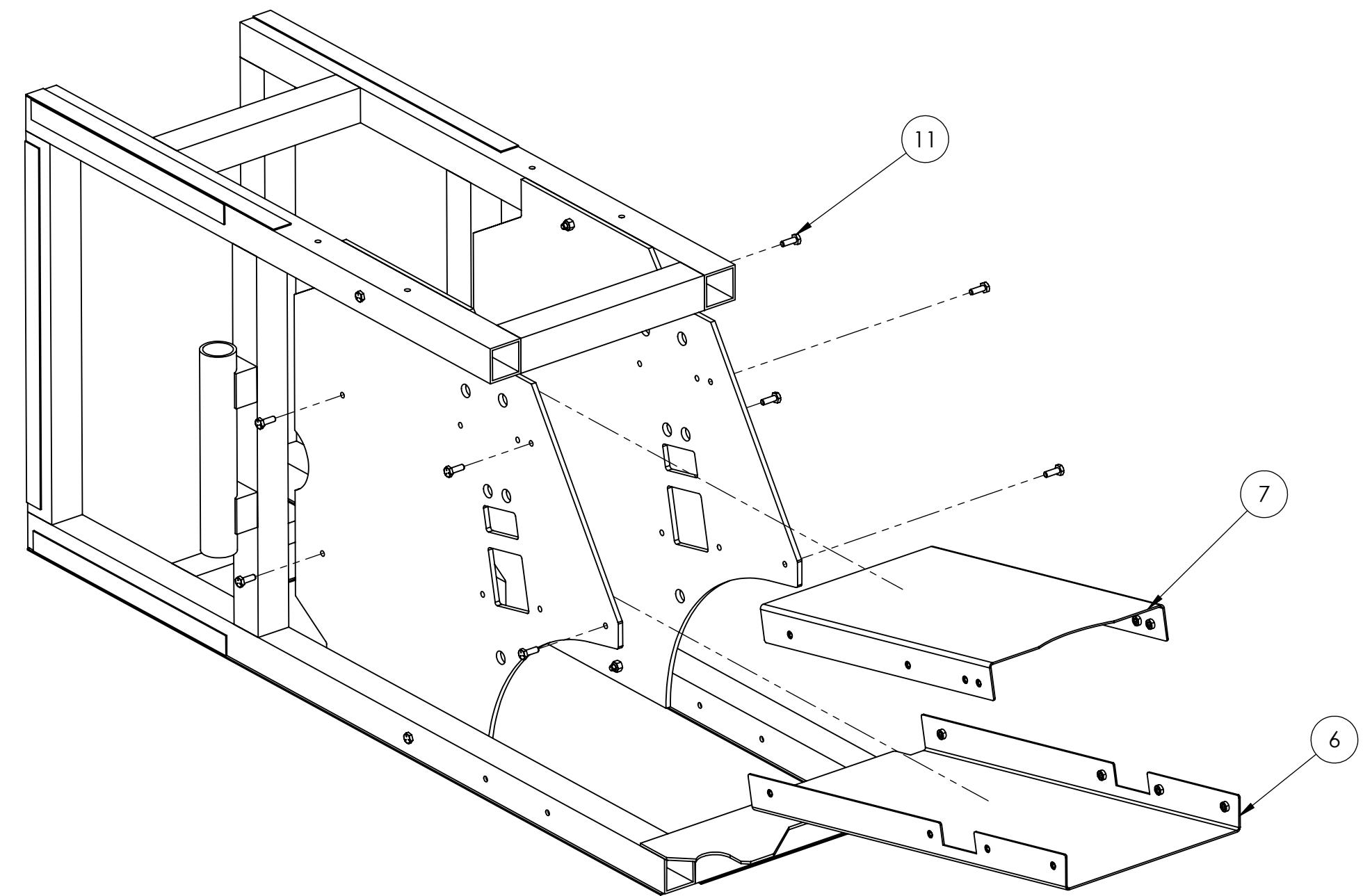
SCALE: 1:5 SHEET 1 OF 4

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Notes:

1. Slide (5) into place inside of (8).
2. Fasten in place using (13) and (14).



Notes:

1. Slide (6) and (7) into assembly as shown.
2. Fasten in place in locations shown using (11).

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/14/2021
TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$			
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	COMMENTS:	SIZE	DWG. NO.
	REMOVE ALL BURRS AND SHARP EDGES.	C	GE-22311
		SCALE: 1:6	SHEET 2 OF 4

D

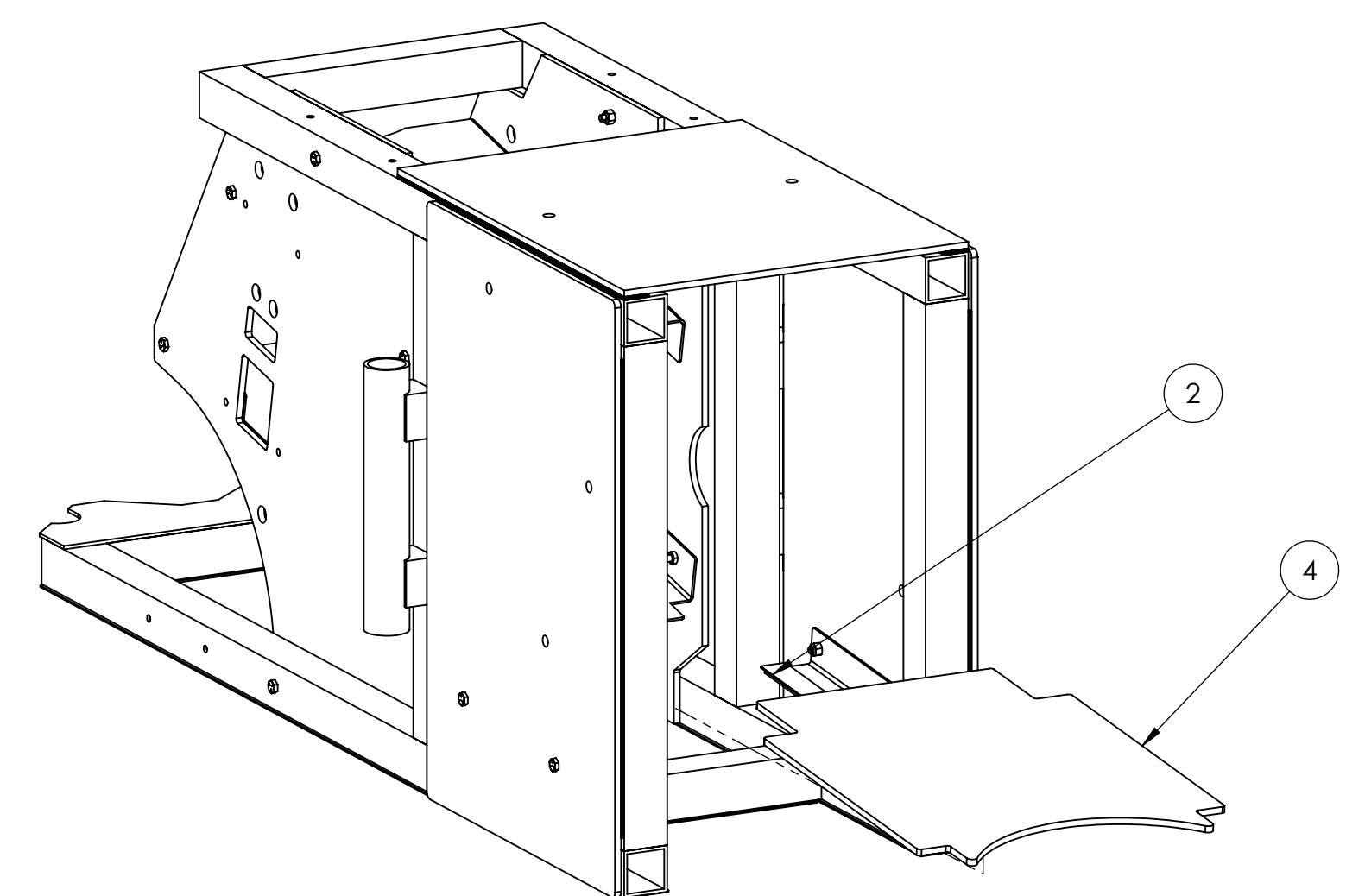
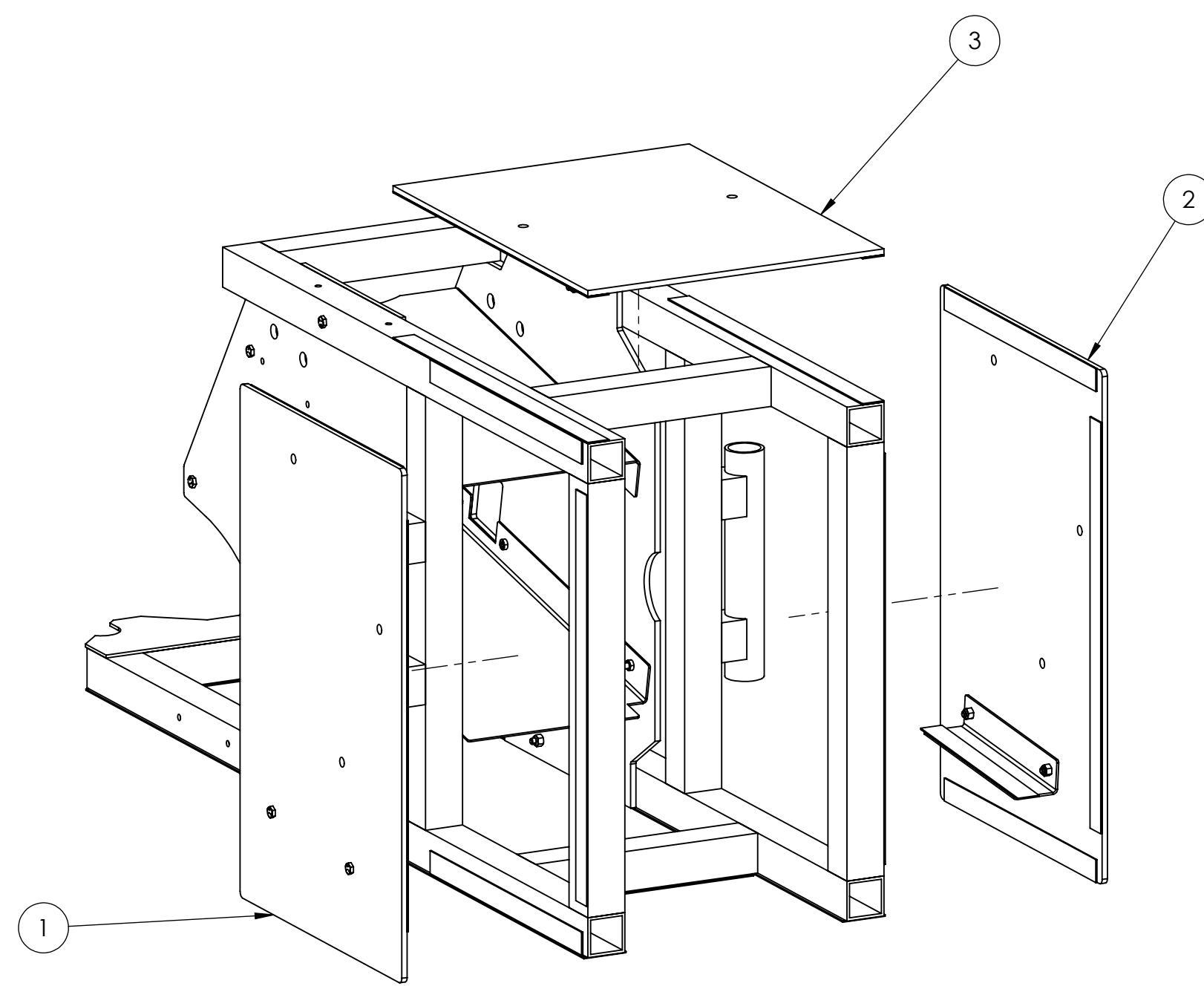
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Notes:

1. Attach (1), (2), and (3) to assembly as shown using hook and loop and cable ties.

Notes:

1. Insert (4) into assembly and attach via fastening hook and loop on (2).

UNLESS OTHERWISE SPECIFIED:			FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES			DRAWN	CO	12/14/2021
TOLERANCES: FRACTIONAL $\pm\frac{1}{2}$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$					
PROPRIETARY AND CONFIDENTIAL					TITLE:
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					Lower Exit Assembly
MATERIAL/FINISH:			SIZE DWG. NO. REV		
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-22311	
DO NOT SCALE DRAWING			SCALE: 1:6 SHEET 3 OF 4		

 FIRST
ROBOTICS
COMPETITION  SOLIDWORKS
Modeling Solutions Partner

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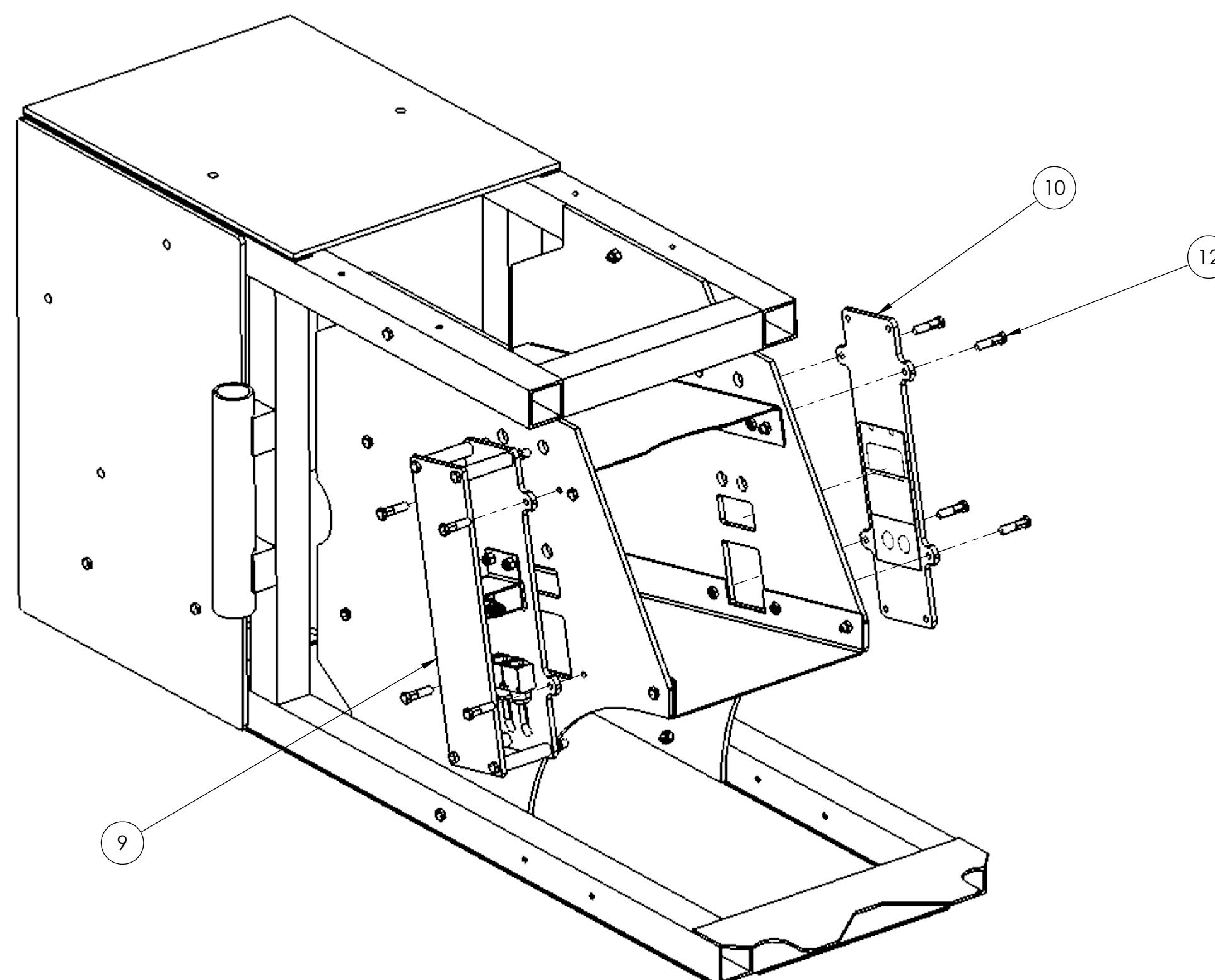
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Notes:

1. Attach (9) and (10) to assembly using (12).



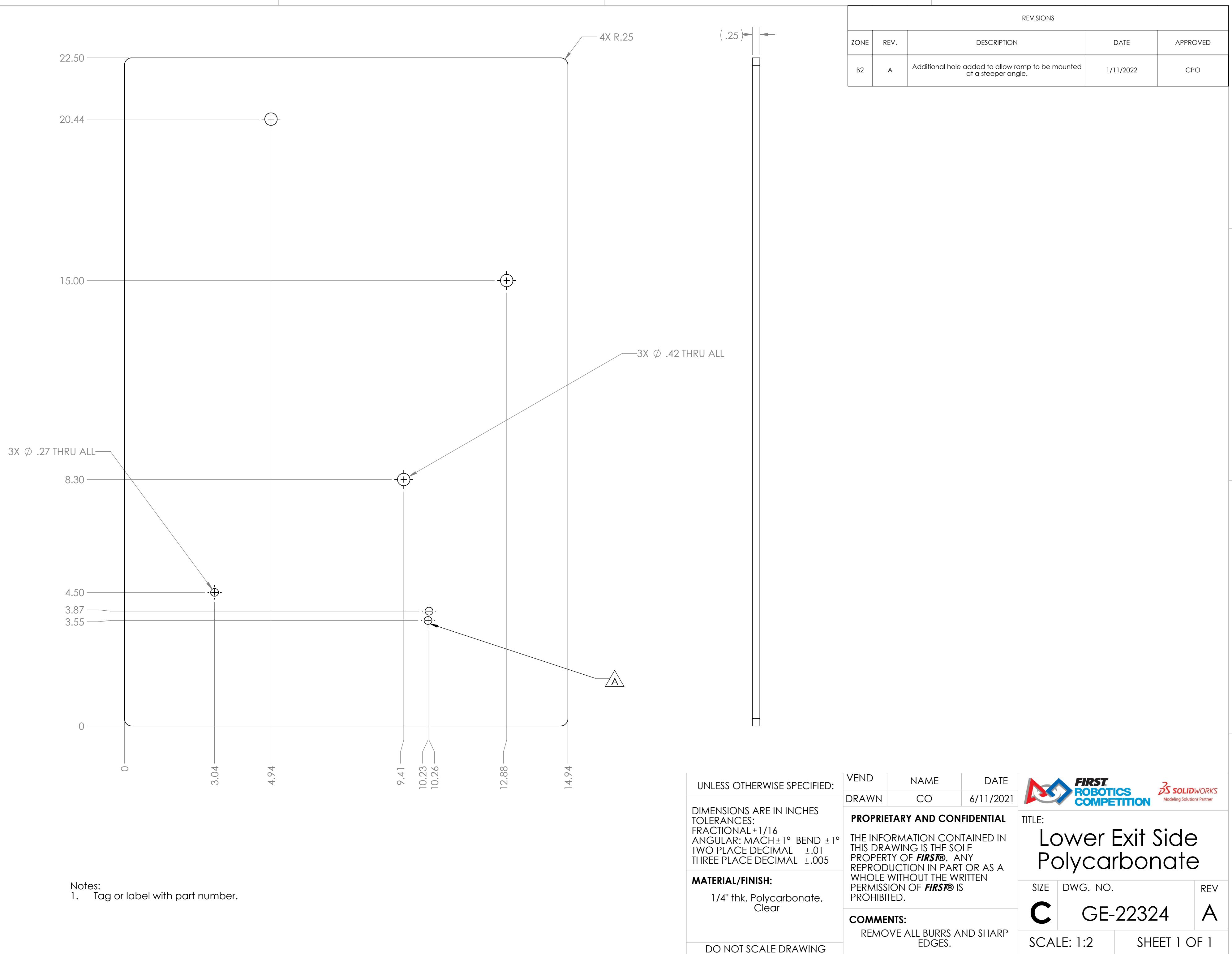
UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DRAWN	CO	12/14/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Lower Exit
Assembly**

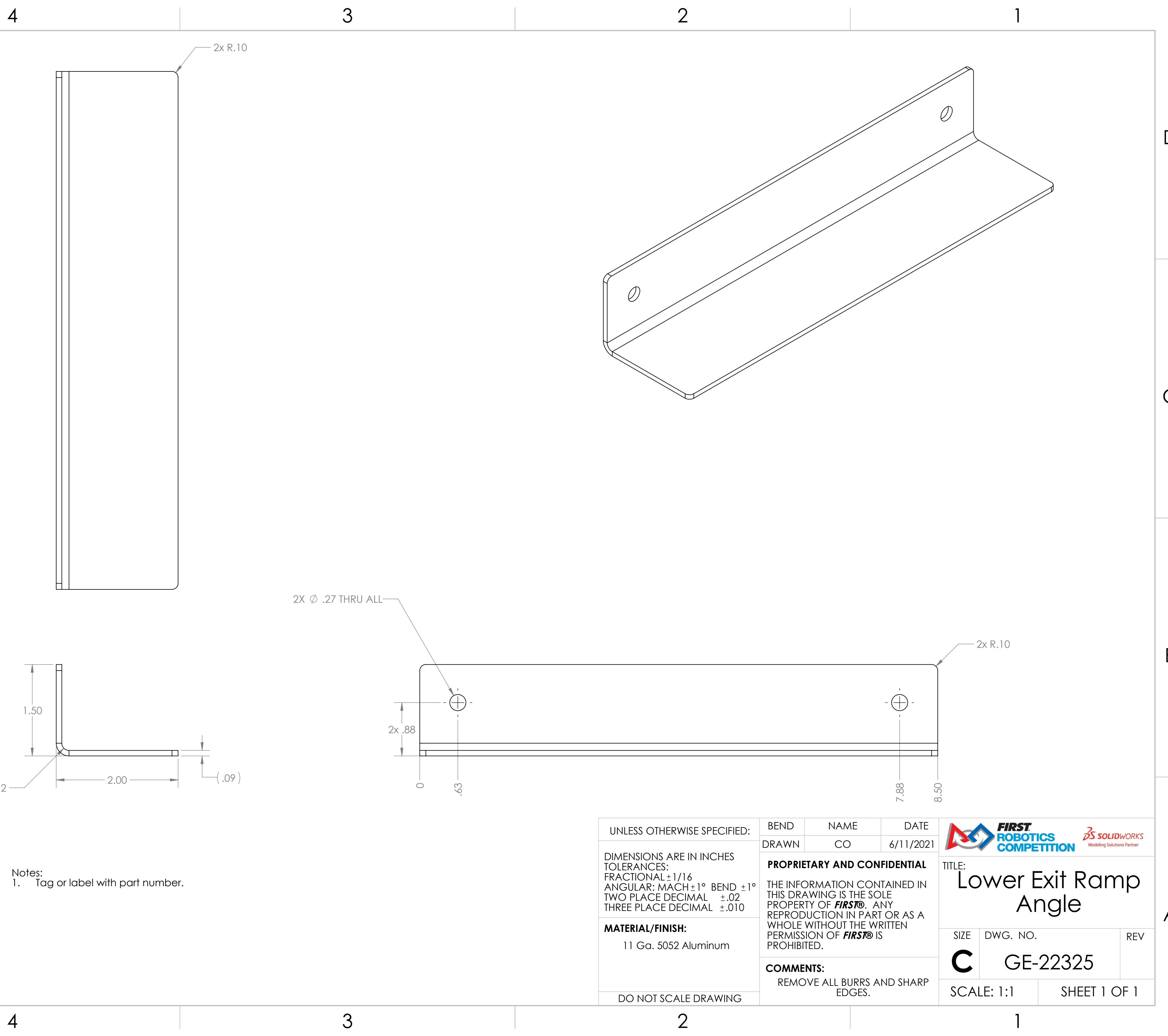
SIZE DWG. NO. REV
C GE-22311

SCALE: 1:5 SHEET 4 OF 4



Notes:

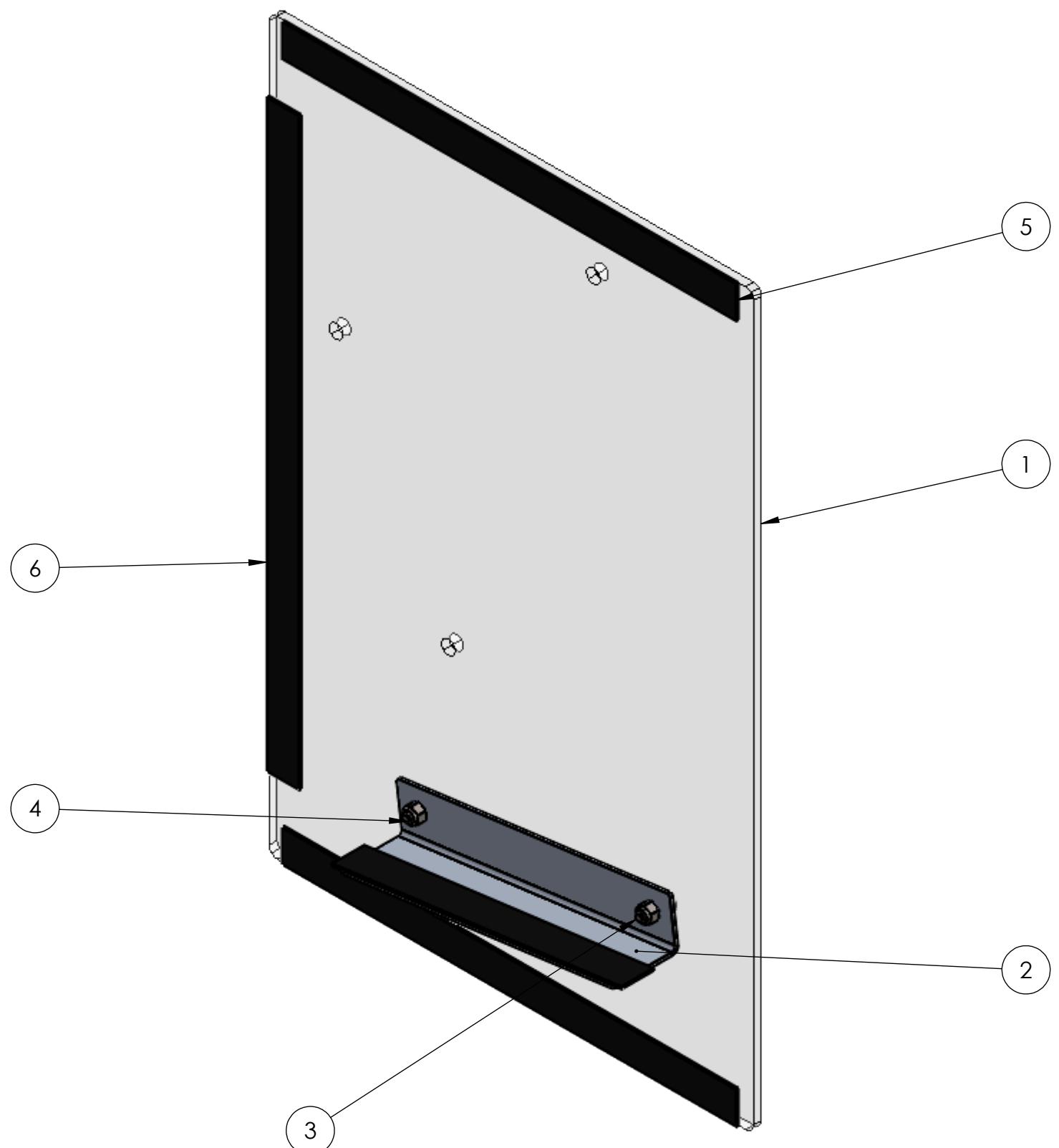
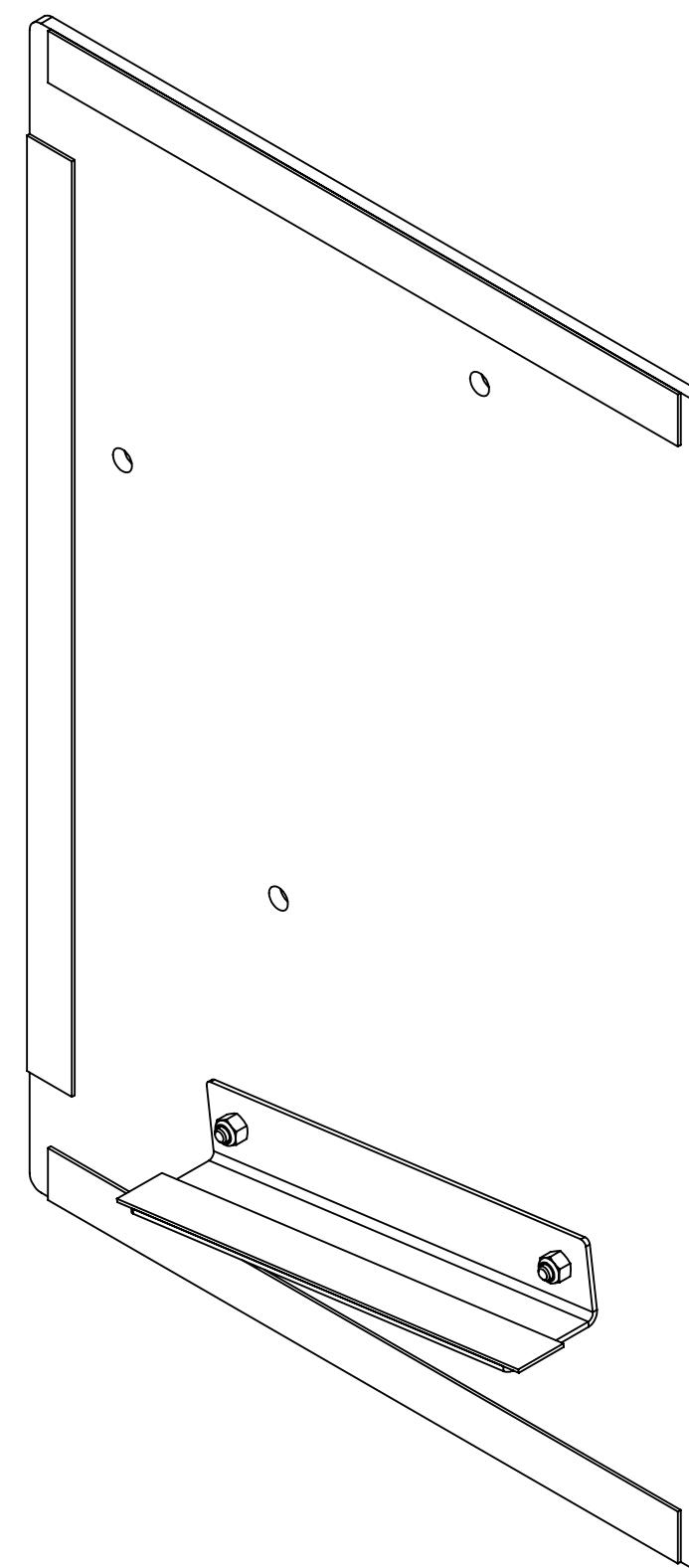
UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	 FIRST ROBOTICS COMPETITION	 DS SOLIDWORKS <small>Modeling Solutions Partner</small>
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$		DRAWN	CO	6/11/2021		
MATERIAL/FINISH: 1/4" thk. Polycarbonate, Clear		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Lower Exit Side Polycarbonate	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE DWG. NO. REV C GE-22324 A		
DO NOT SCALE DRAWING				SCALE: 1:2 SHEET 1 OF 1		



REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-C4	A	Added note to reflect update to GE-22324 done to mount ramp at a steeper angle.	1/11/2022	CPO

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ITEM NO.	PART NUMBER	DESCRIPTION	Qty.
1	GE-22324	Lower Exit Side Polycarbonate	1
2	GE-22337	Lower Exit Ramp Angle with Hook	1
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	2
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	2
5	Loop_1_14	1"x 14" Loop, Adhesive Backed	2
6	Loop_1_18	1"x 18" Loop, Adhesive Backed	1

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

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PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP
EDGES.

DO NOT SCALE DRAWING

VEND DATE
DRAWN CO 10/27/2021
 FIRST ROBOTICS COMPETITION

 SOLIDWORKS

 Modeling Solutions Partner
TITLE: Lower Exit Left
Polycarbonate
AssemblySIZE DWG. NO. REV
C GE-22326 **A**

SCALE: 1:3 SHEET 1 OF 2

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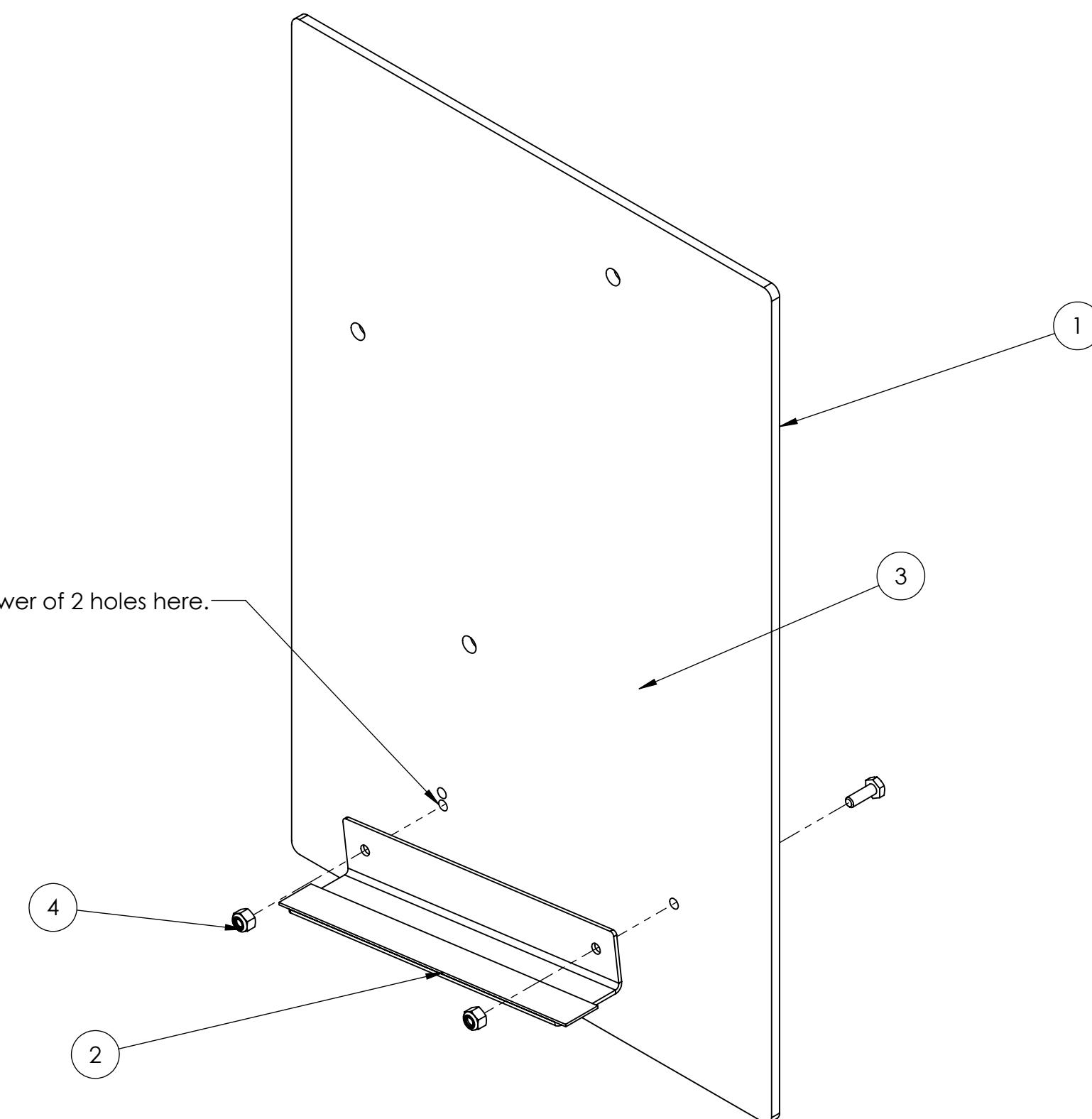
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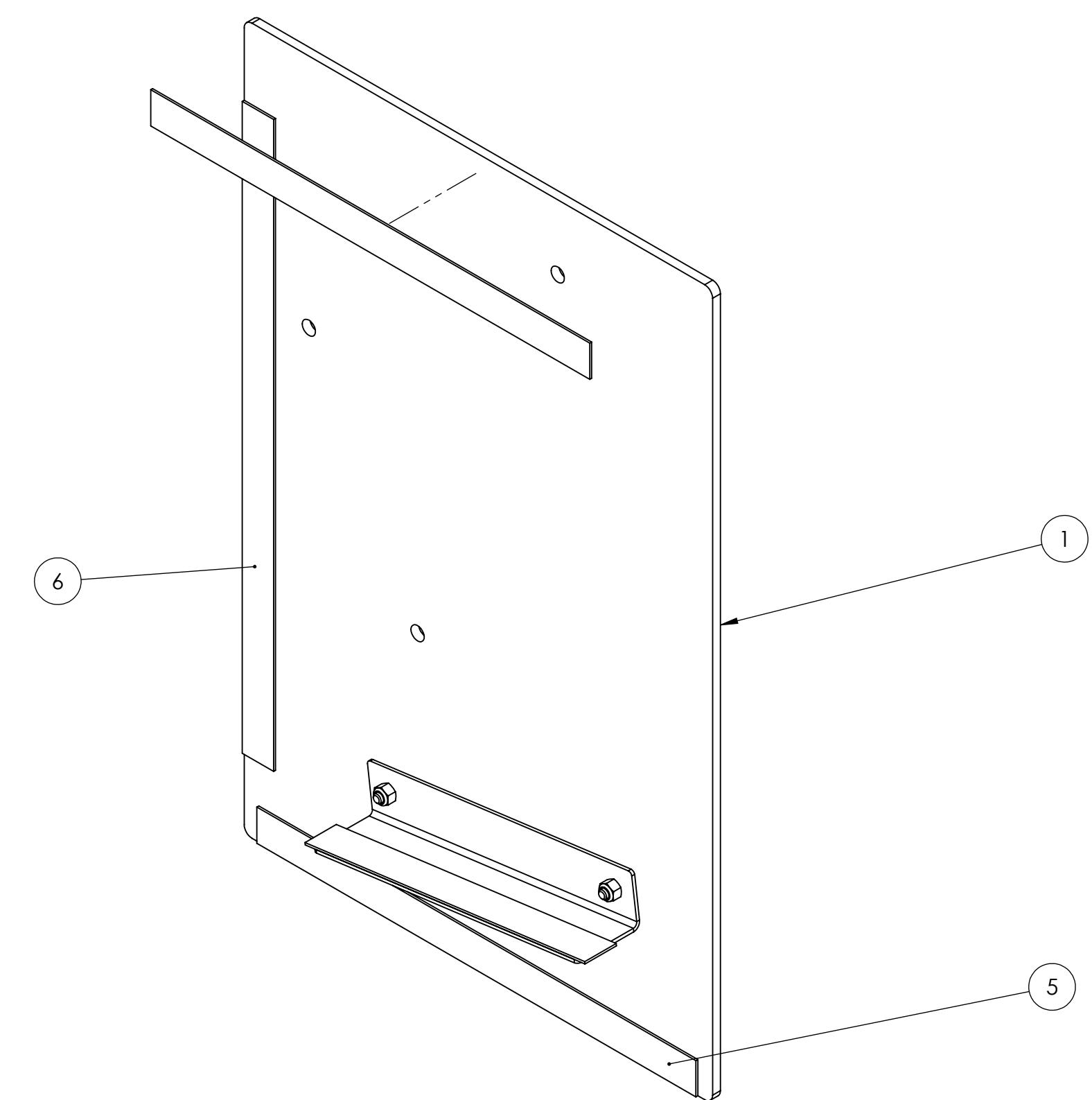
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Notes:

1. Attach (2) to (1) using (3) and (4). Note hole orientation of (1).



Notes:

1. Clean and prep (1).
2. Attach (5) and (6) to (1) in positions shown.

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	CO	10/27/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$				
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$				
MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING				

FIRST
ROBOTICS
COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE: Lower Exit Left
Polycarbonate
Assembly

SIZE DWG. NO. REV
C GE-22326 **A**
SCALE: 1:3 SHEET 2 OF 2

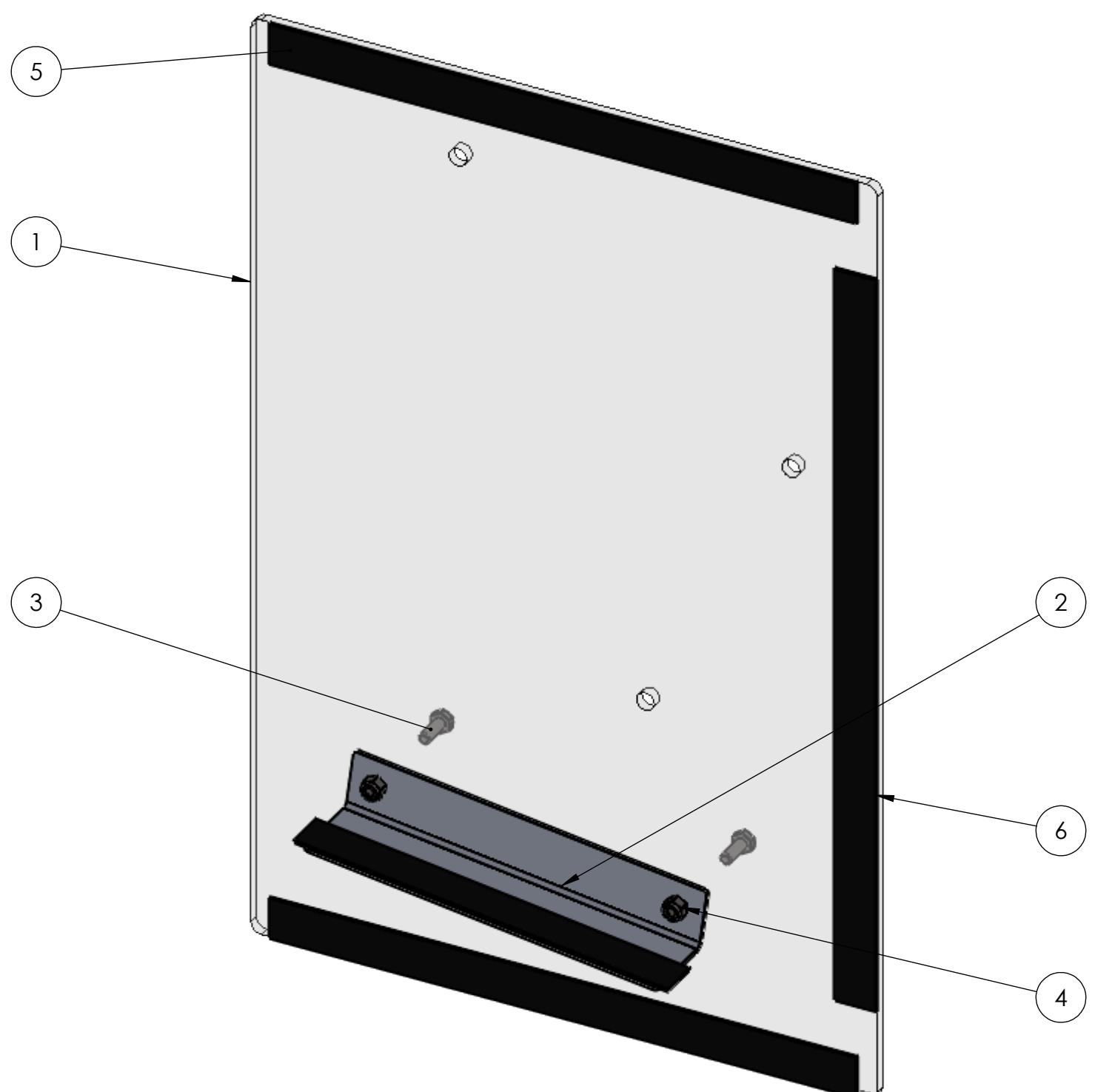
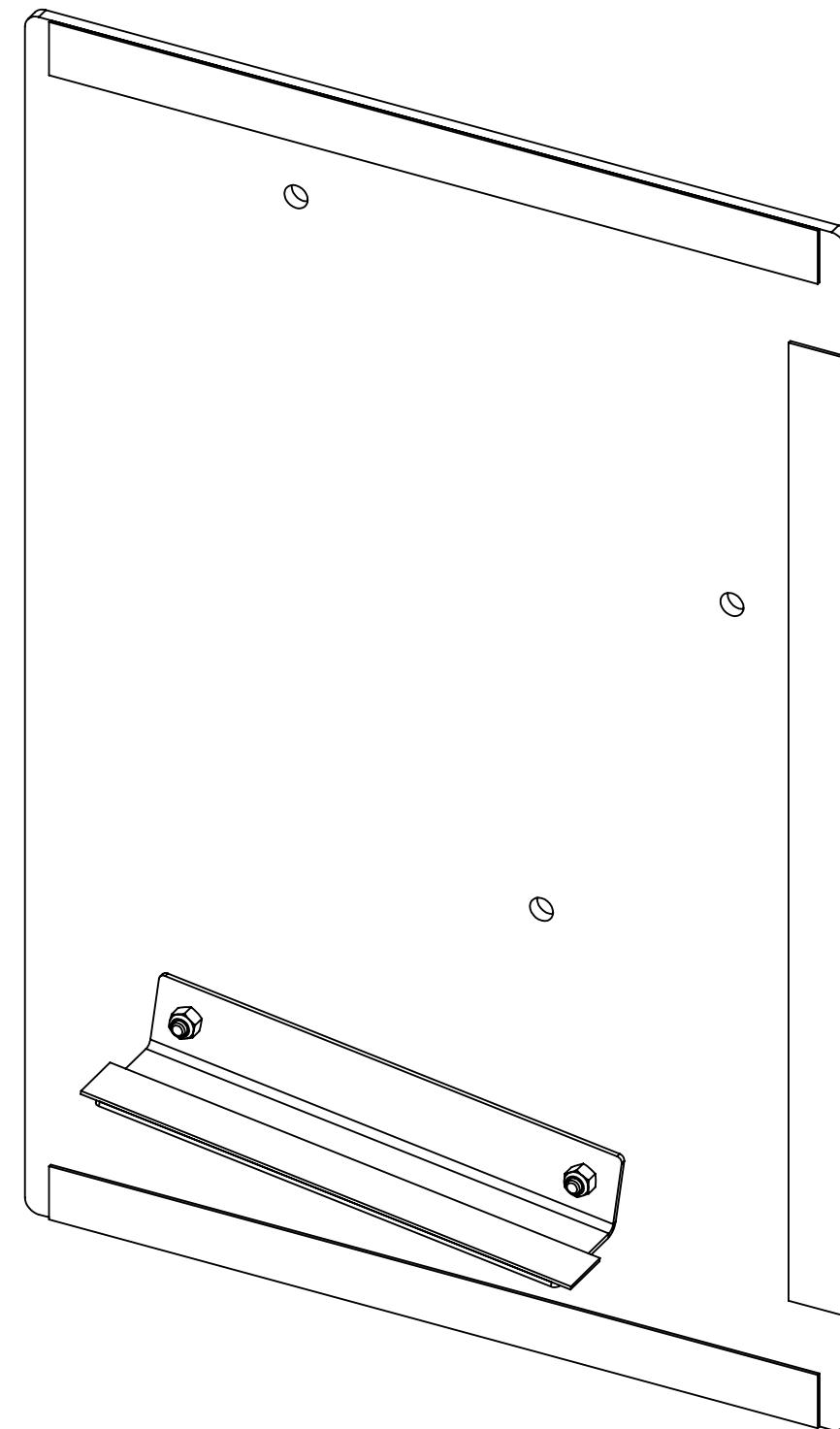
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ITEM NO.	PART NUMBER	DESCRIPTION	Qty.
1	GE-22324	Lower Exit Side Polycarbonate	1
2	GE-22337	Lower Exit Ramp Angle with Hook	1
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	2
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	2
5	Loop_1_14	1"x 14" Loop, Adhesive Backed	2
6	Loop_1_18	1"x 18" Loop, Adhesive Backed	1

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND NAME DATE

DRAWN CO 10/27/2021



TITLE: Lower Exit Right
Polycarbonate
Assembly

SIZE DWG. NO. REV

C GE-22327 A

SCALE: 1:3 SHEET 1 OF 2

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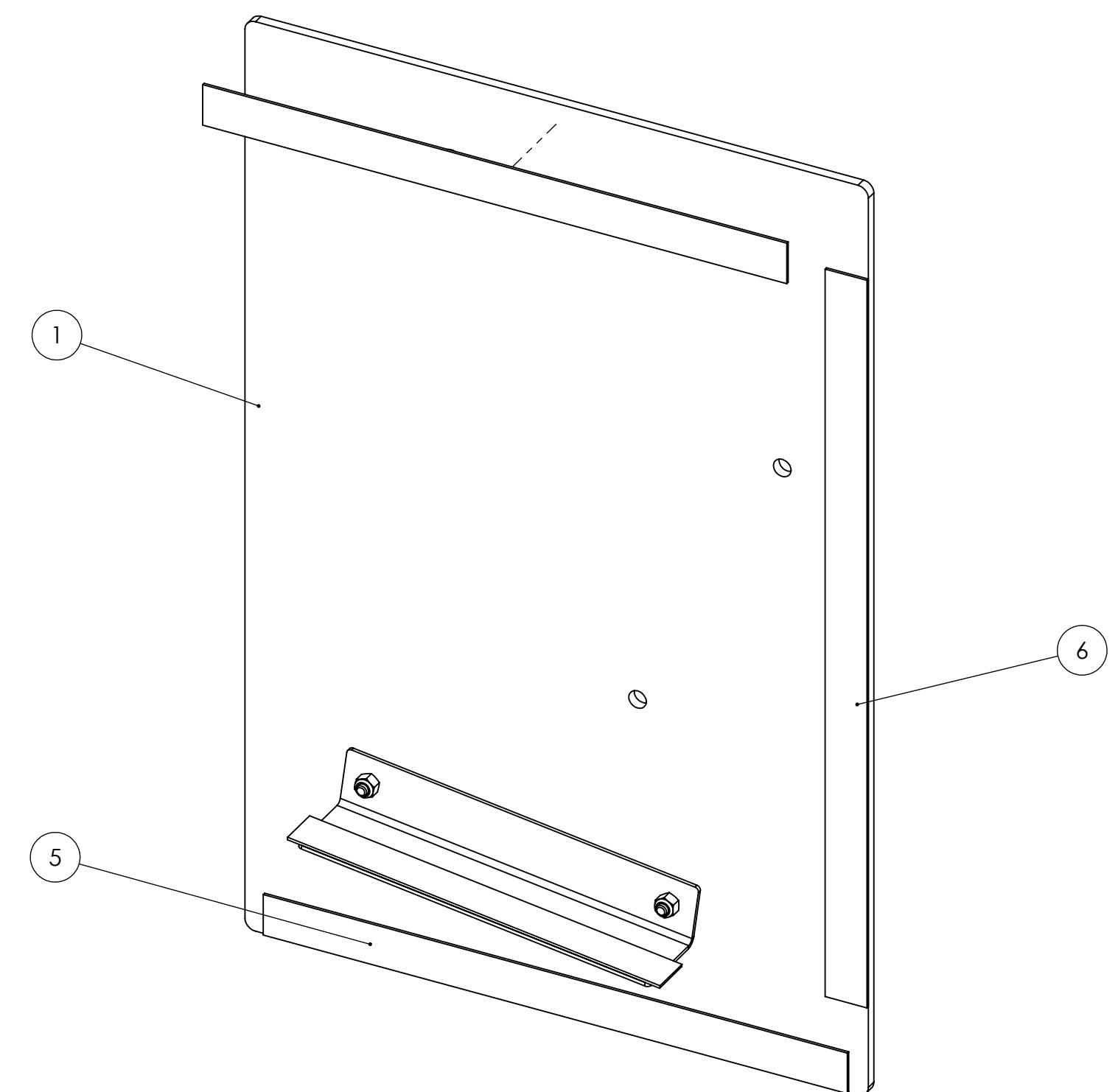
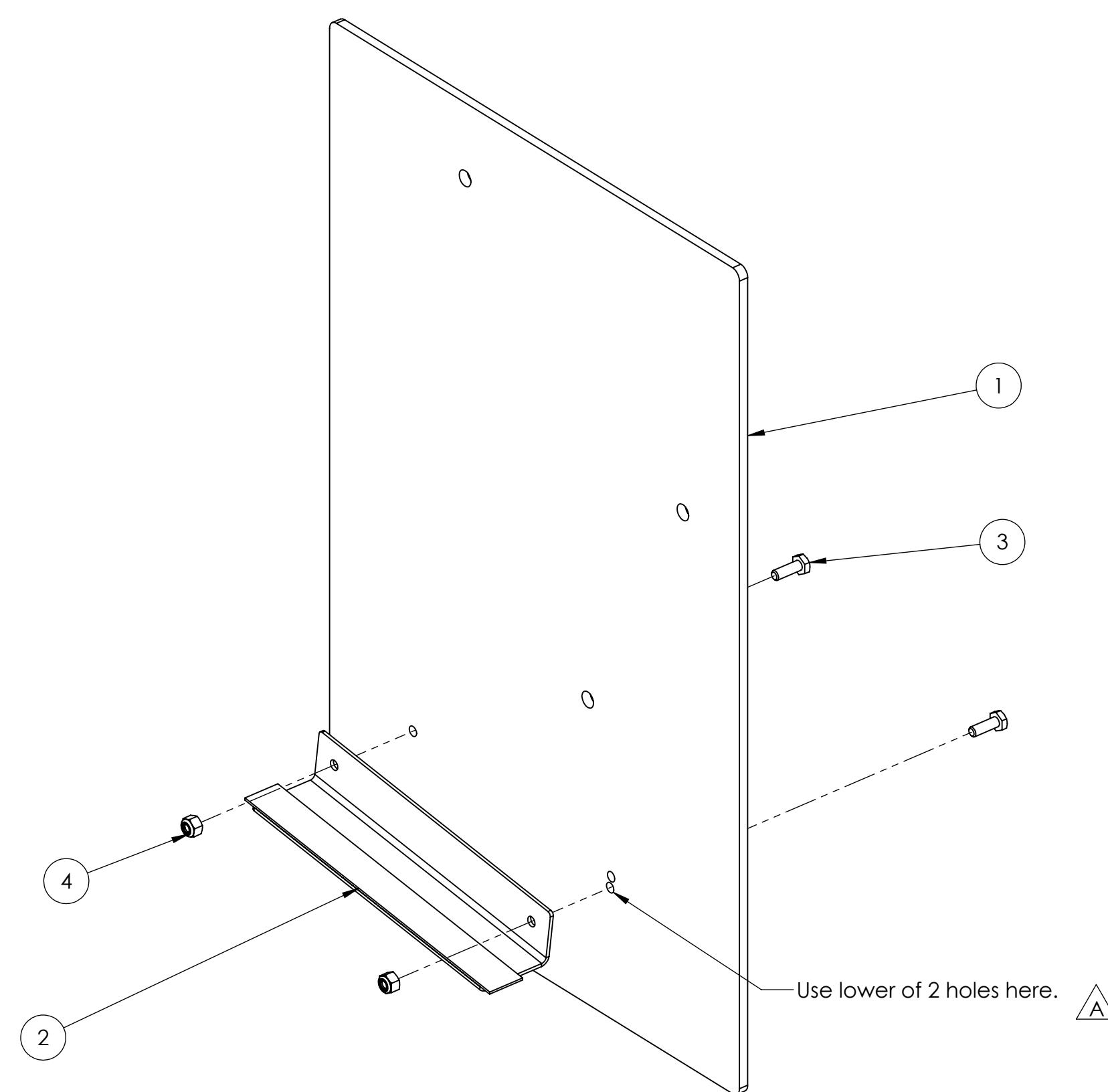
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UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	CO	10/27/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$				
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV	
	C	GE-22327	A	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		SCALE: 1:3	SHEET 2 OF 2	
DO NOT SCALE DRAWING				

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14.00

Notes:
1. Tag or label with part number.

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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$

VEND NAME DATE

DRAWN CO 6/11/2021

PROPRIETARY AND CONFIDENTIALTHE INFORMATION CONTAINED IN
THIS DRAWING IS THE SOLE
PROPERTY OF FIRST[®]. ANY
REPRODUCTION IN PART OR AS A
WHOLE WITHOUT THE WRITTEN
PERMISSION OF FIRST[®] IS
PROHIBITED.**MATERIAL/FINISH:**1/4" thk. Polycarbonate,
Clear

DO NOT SCALE DRAWING

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner
TITLE:
**Lower Exit Front
Roof**
SIZE DWG. NO. REV
C GE-22328
SCALE: 1:2 SHEET 1 OF 1

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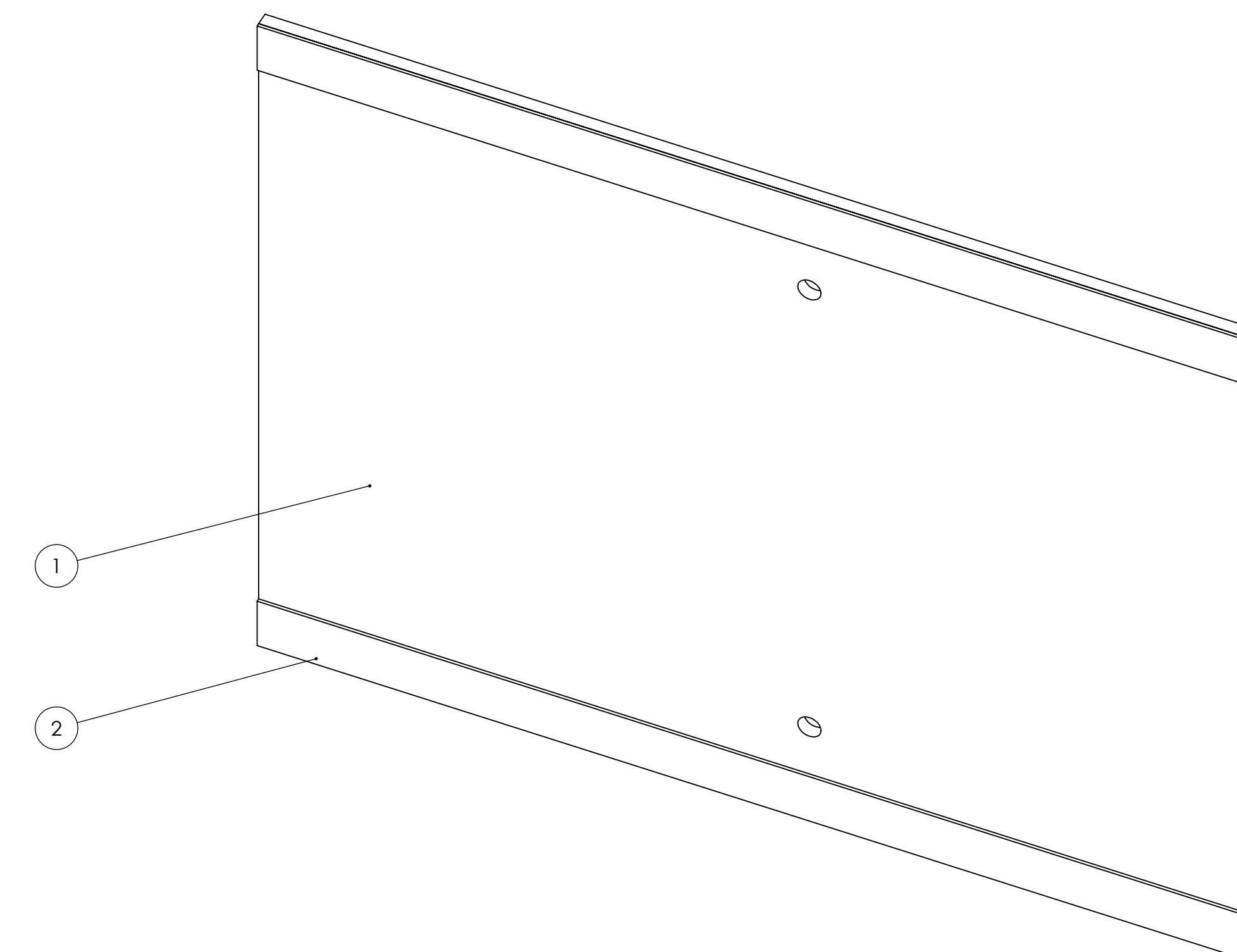
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Notes:

1. Make sure surface of is clean prior to hook application.
2. Attach to in locations shown, flush to edges of part.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22328	Lower Exit Front Roof	1
2	Loop_1_18	1" x 18" Loop, Adhesive Backed	2

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	10/27/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL		
MATERIAL/FINISH:	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

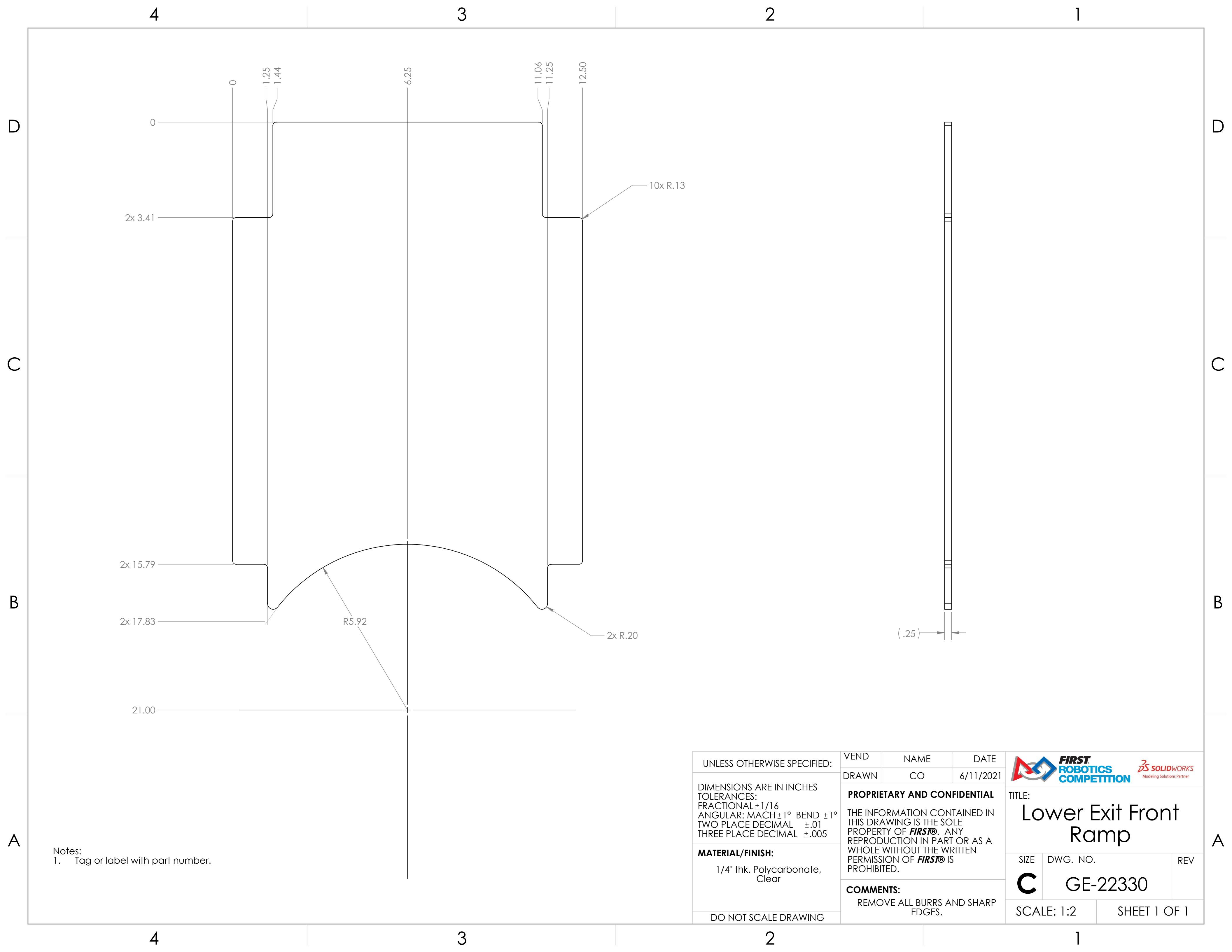
FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

TITLE: Lower Exit Front Roof with Loop

SIZE DWG. NO. REV

C GE-22329

SCALE: 1:2 SHEET 1 OF 1



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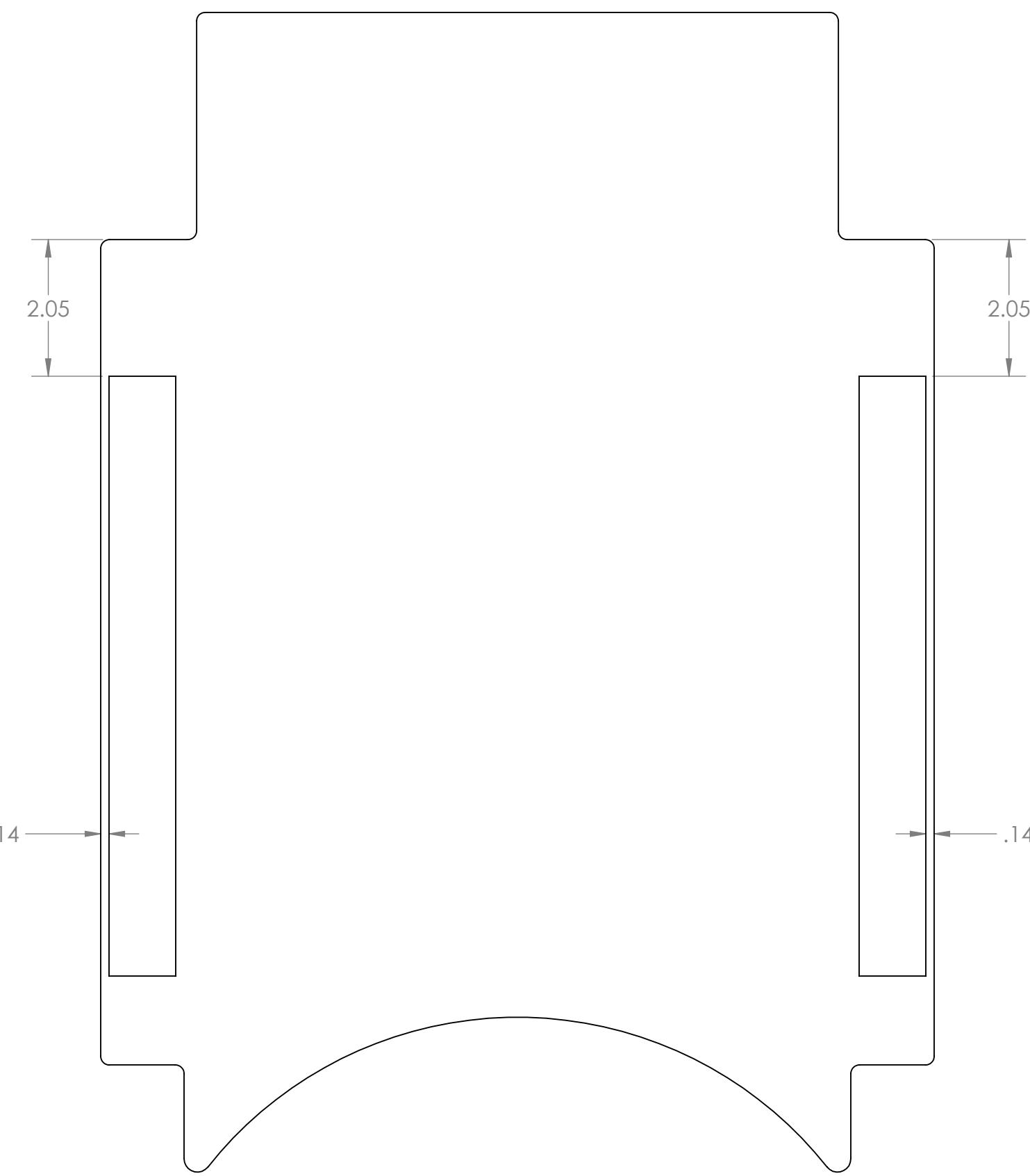
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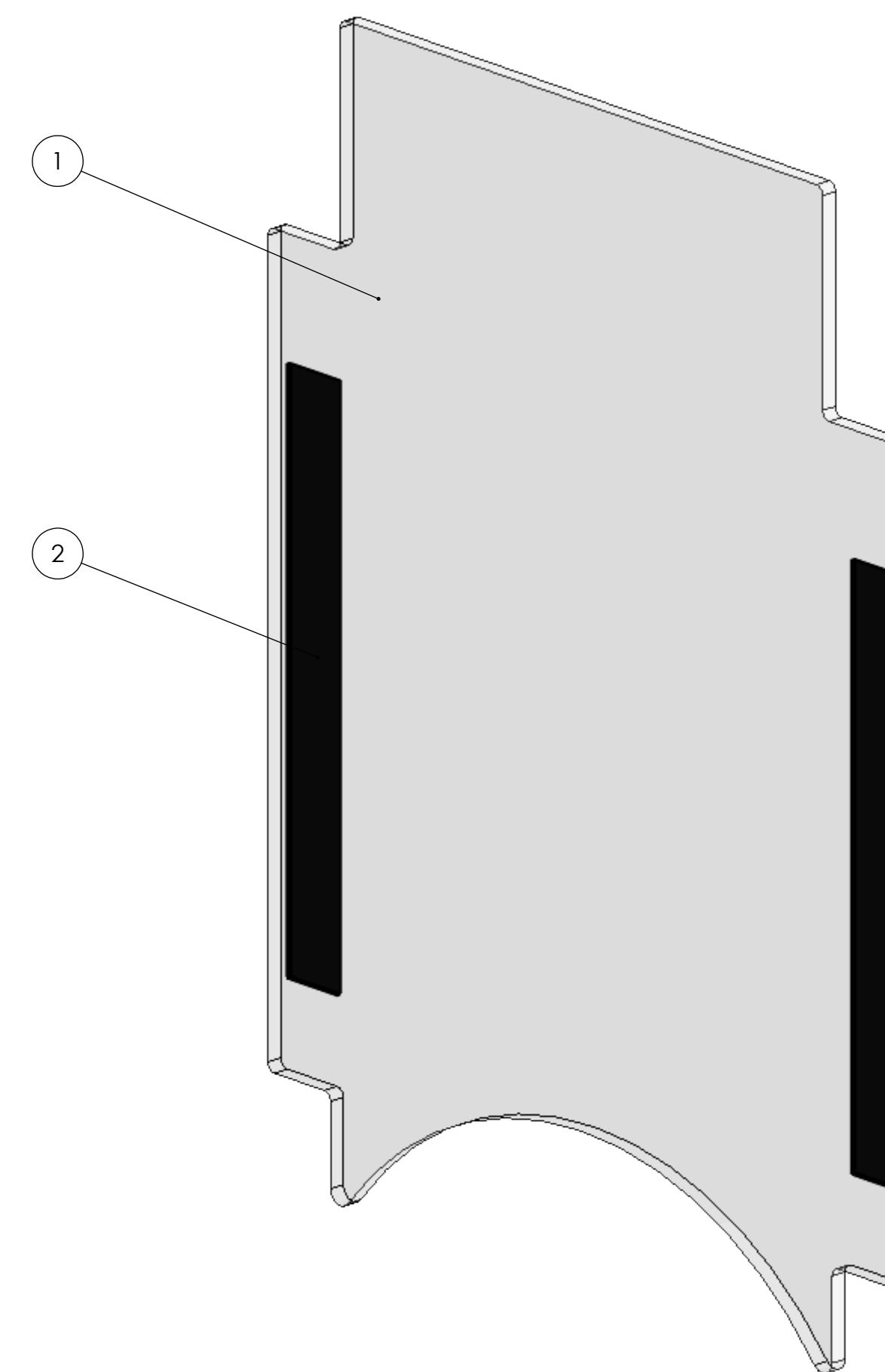
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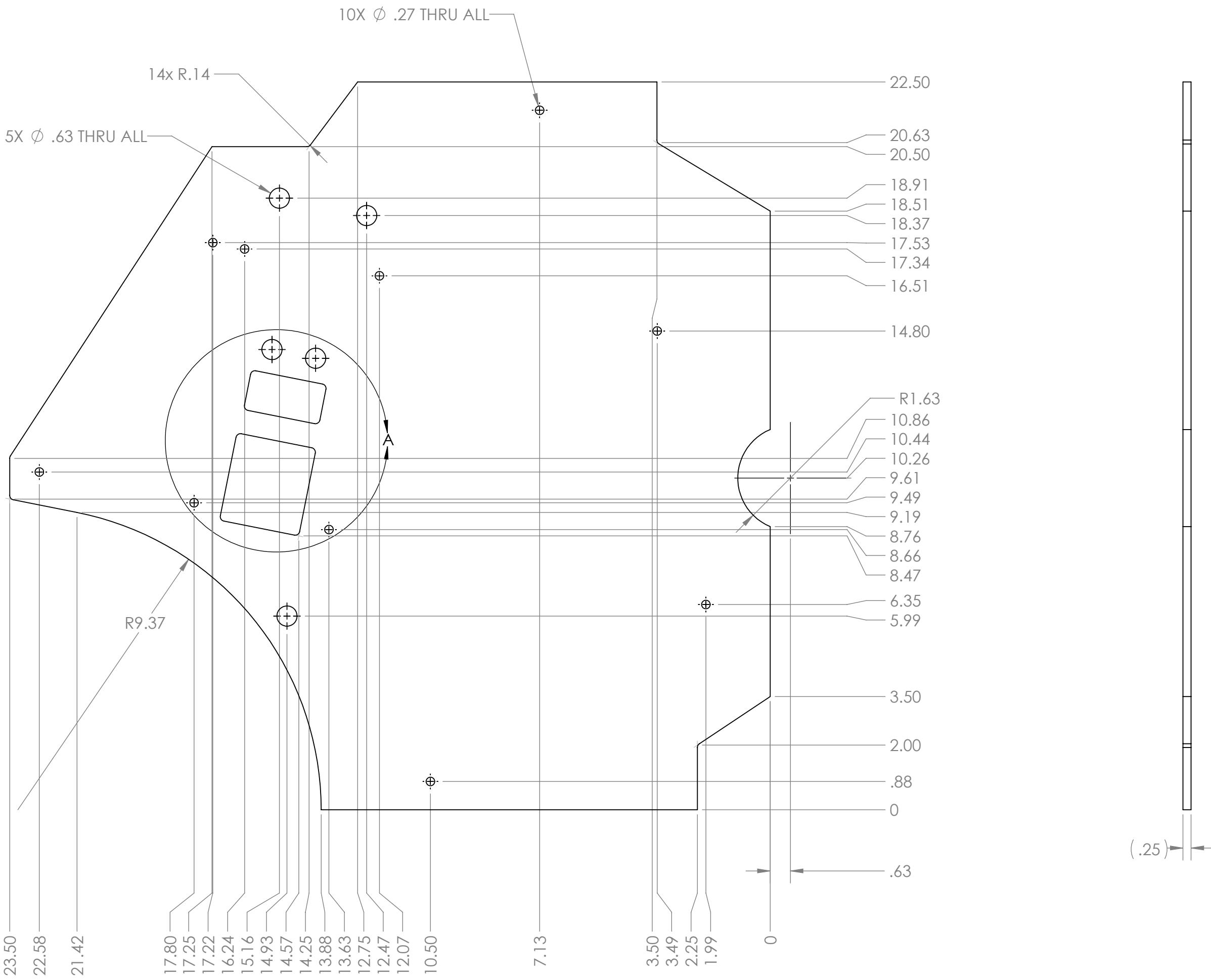
- Notes:
1. Make sure surface of (1) is clean prior to hook applicaton.
 2. Attach (2) to (1) in locations shown.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22330	Lower Exit Front Ramp	1
2	Loop_1_9	1" x 9" Loop, Adhesive Backed	2

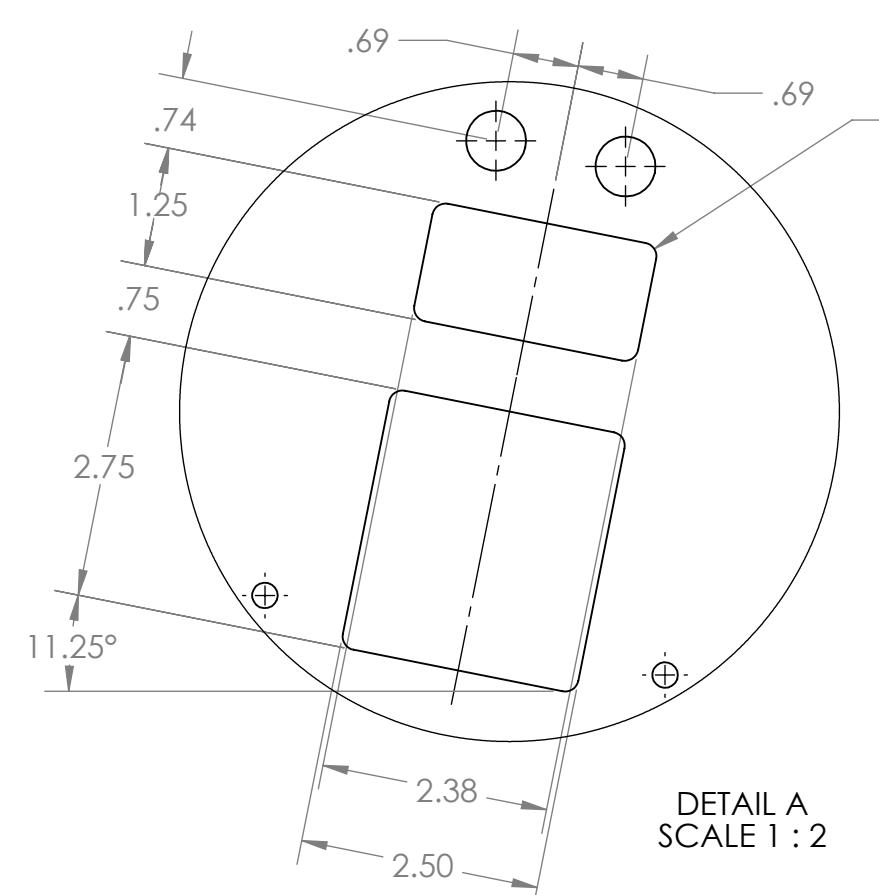


UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	10/27/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
 FIRST ROBOTICS COMPETITION  TITLE: Lower Exit Front Ramp with Loop SIZE DWG. NO. REV C GE-22331			
SCALE: 1:2 SHEET 1 OF 1			

D



Notes:
1. Tag or label with part number.



UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

DO NOT SCALE DRAWING

VEND NAME DATE
DRAWN CO 6/11/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST
ROBOTICS
COMPETITION

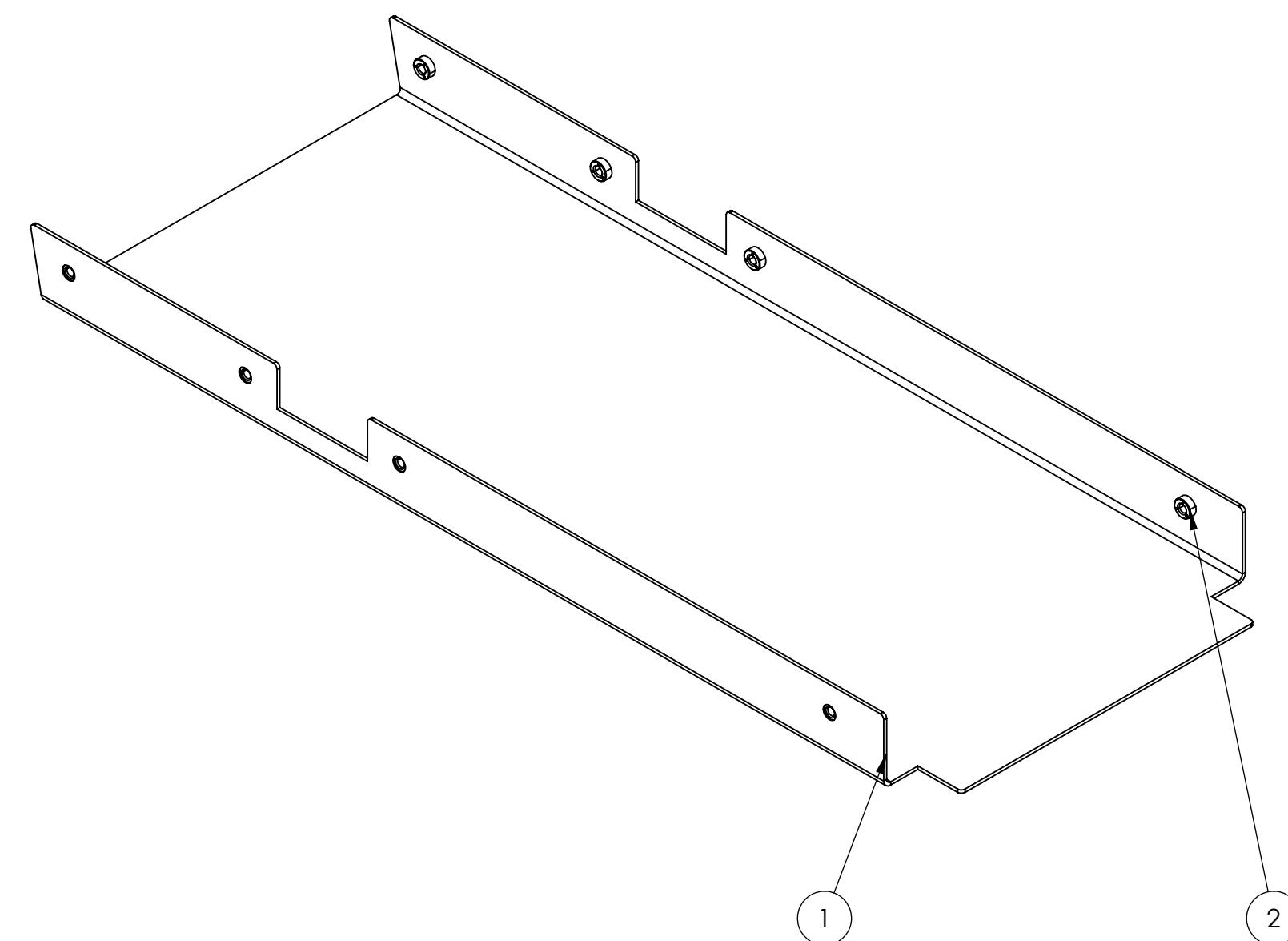
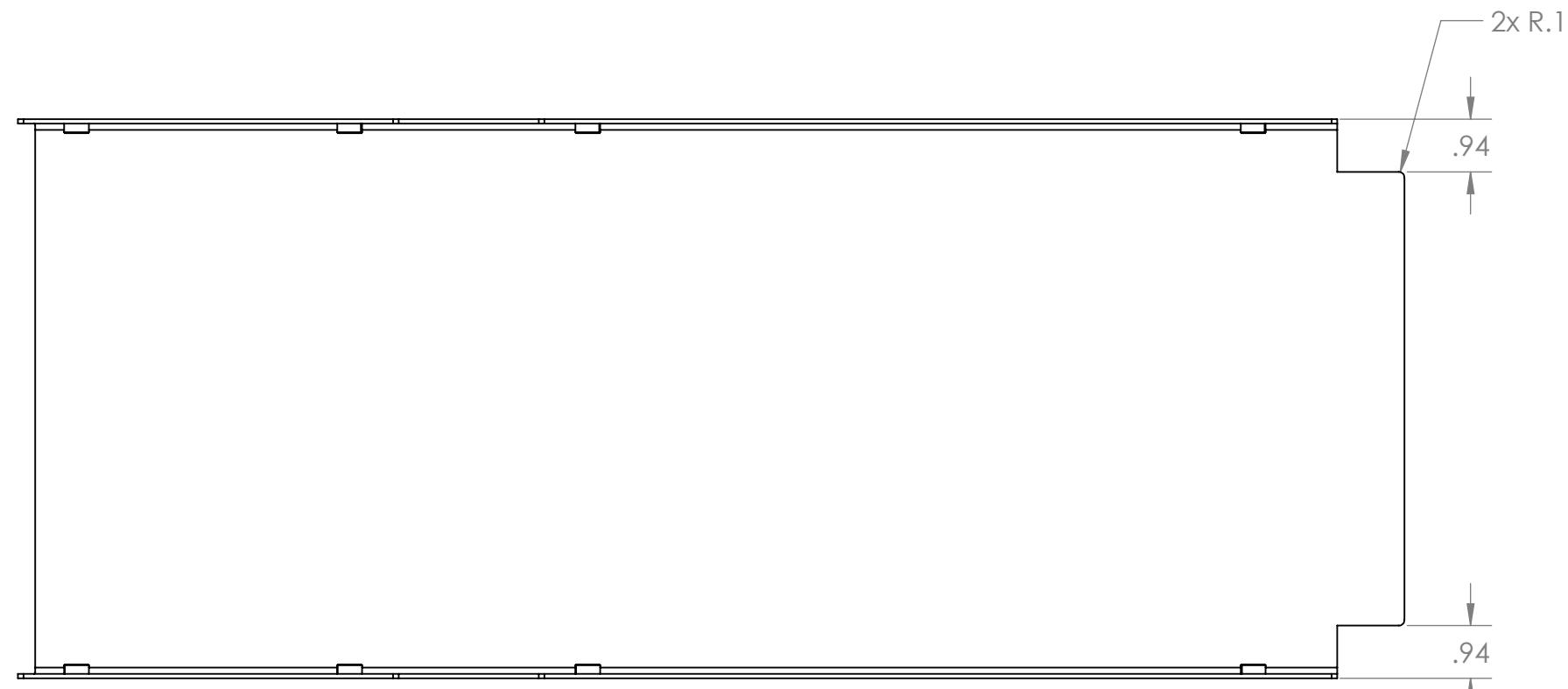
SOLIDWORKS
Modeling Solutions Partner

TITLE:
Lower Exit HDPE Wall

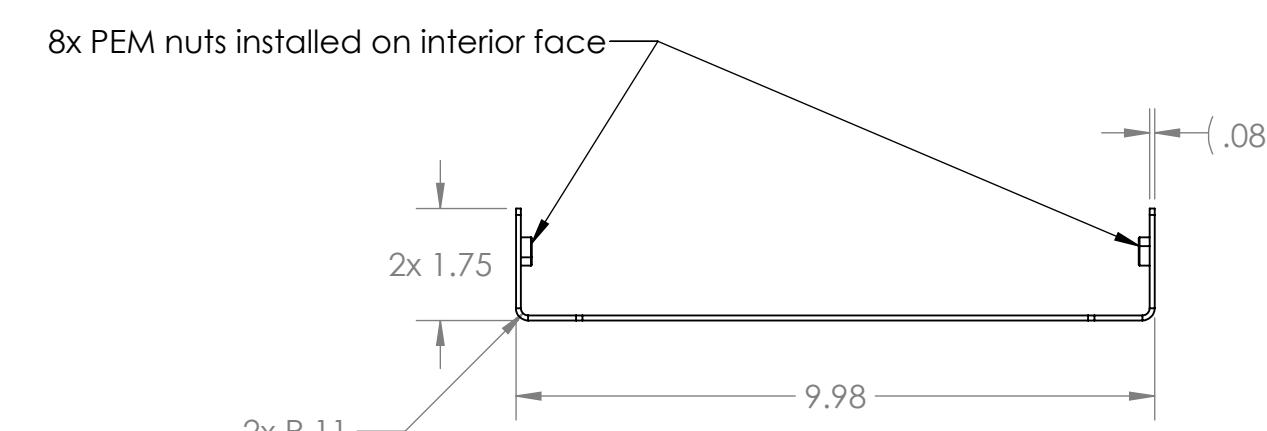
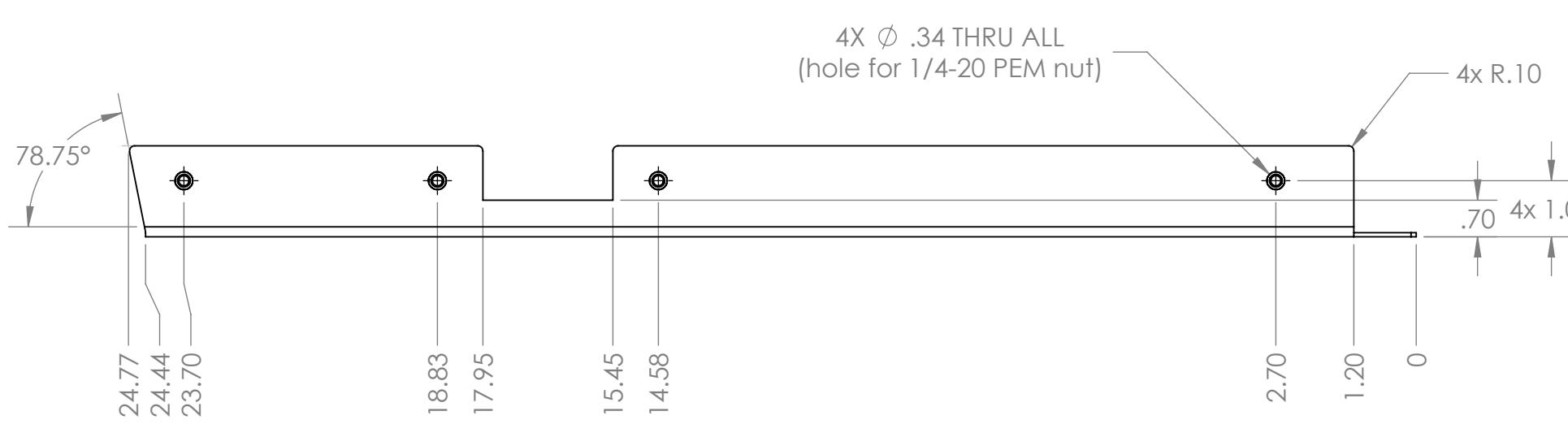
SIZE DWG. NO. REV
C GE-22332

SCALE: 1:3 SHEET 1 OF 1

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Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22333-01	14 Ga. Preplated Steel	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	8

UNLESS OTHERWISE SPECIFIED:			BEND	NAME	DATE
			DRAWN	CO	6/11/2021
DIMENSIONS ARE IN INCHES					
TOLERANCES:					
FRACTIONAL $\pm 1/16$					
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$					
TWO PLACE DECIMAL $\pm .02$					
THREE PLACE DECIMAL $\pm .010$					
PROPRIETARY AND CONFIDENTIAL			THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:			14 Ga. Preplated Steel		
COMMENTS:			REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING					

FIRST
ROBOTICS
COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE: Lower Exit Back Ramp

SIZE DWG. NO. REV

C GE-22333

SCALE: 1:3 SHEET 1 OF 1

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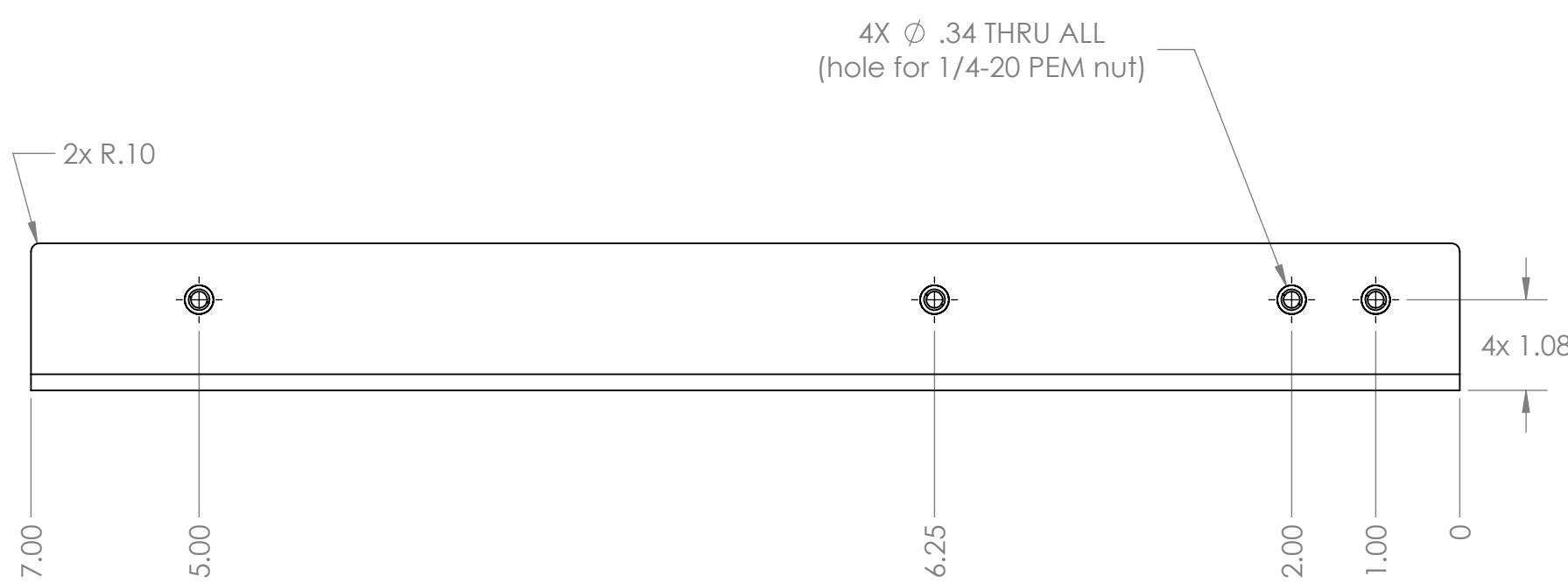
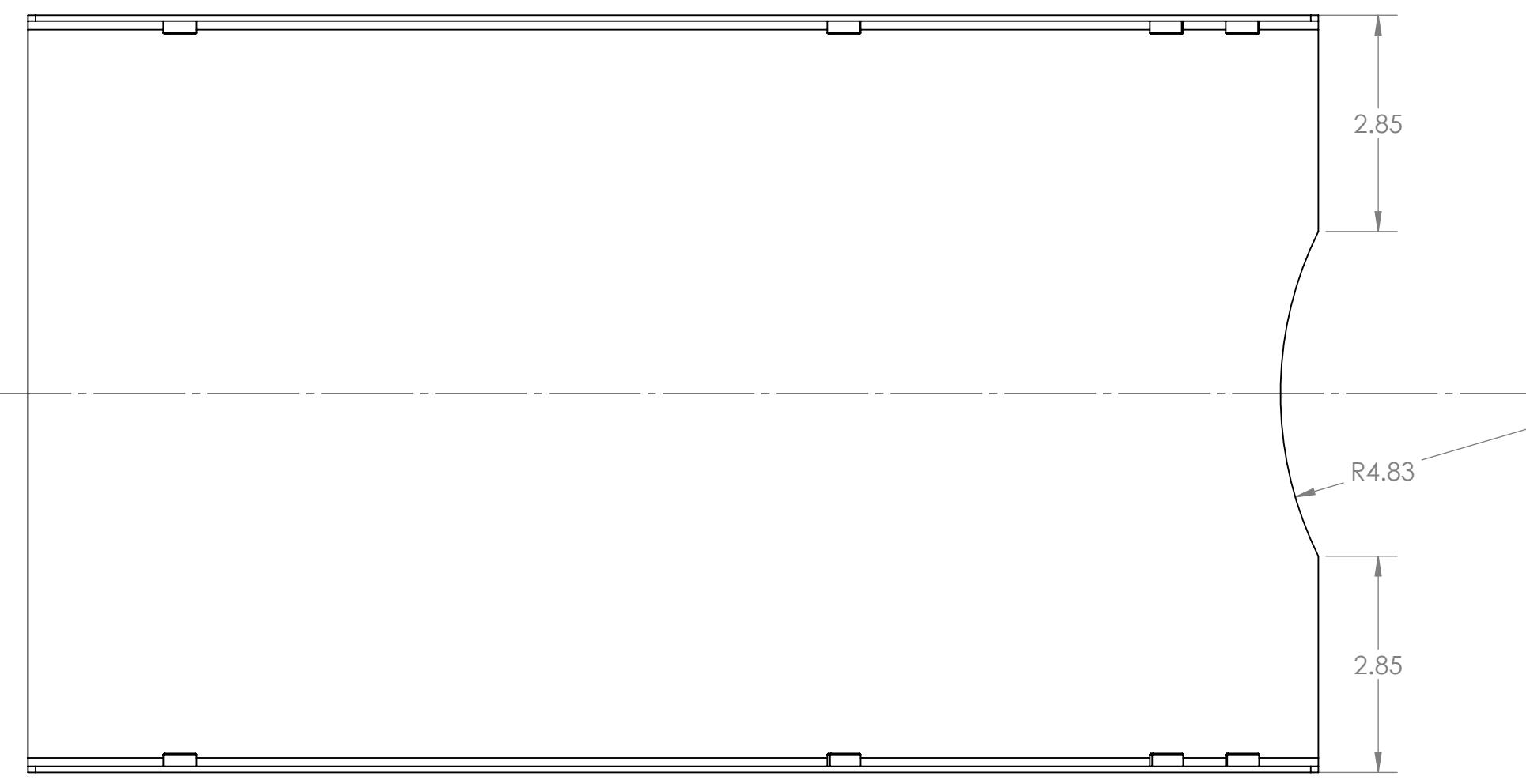
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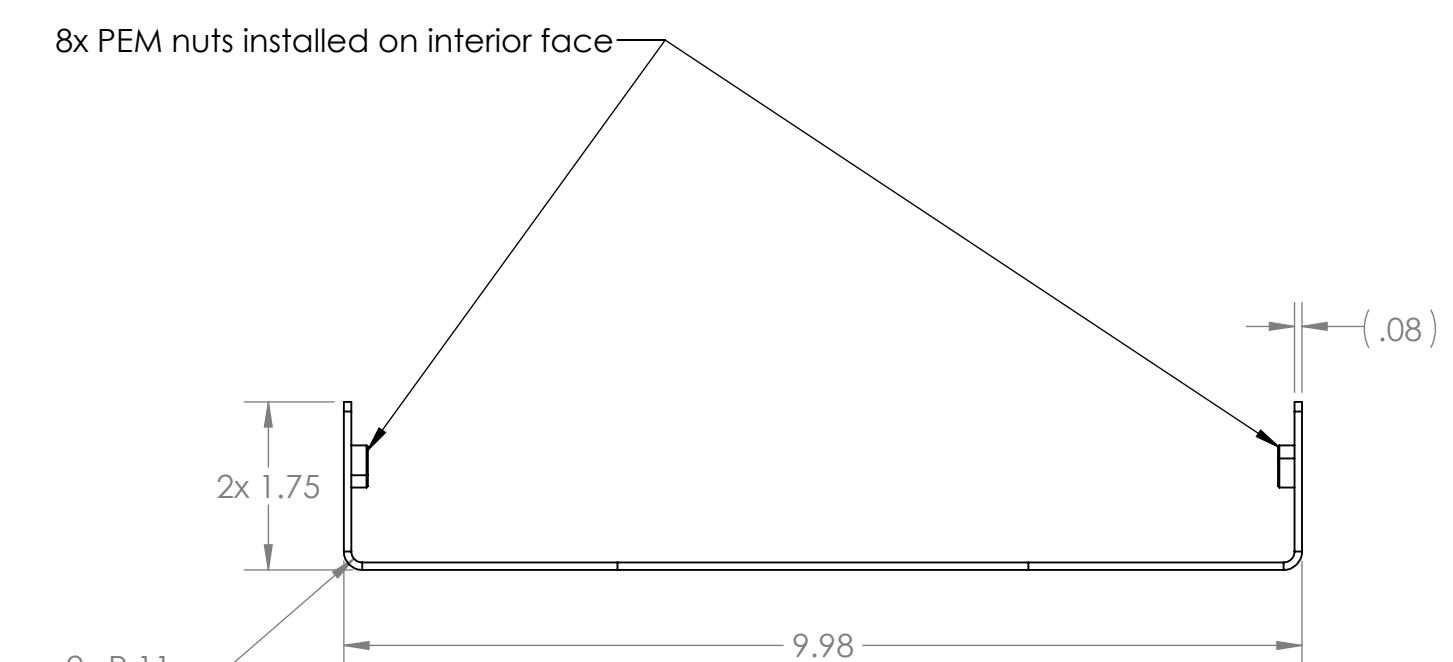
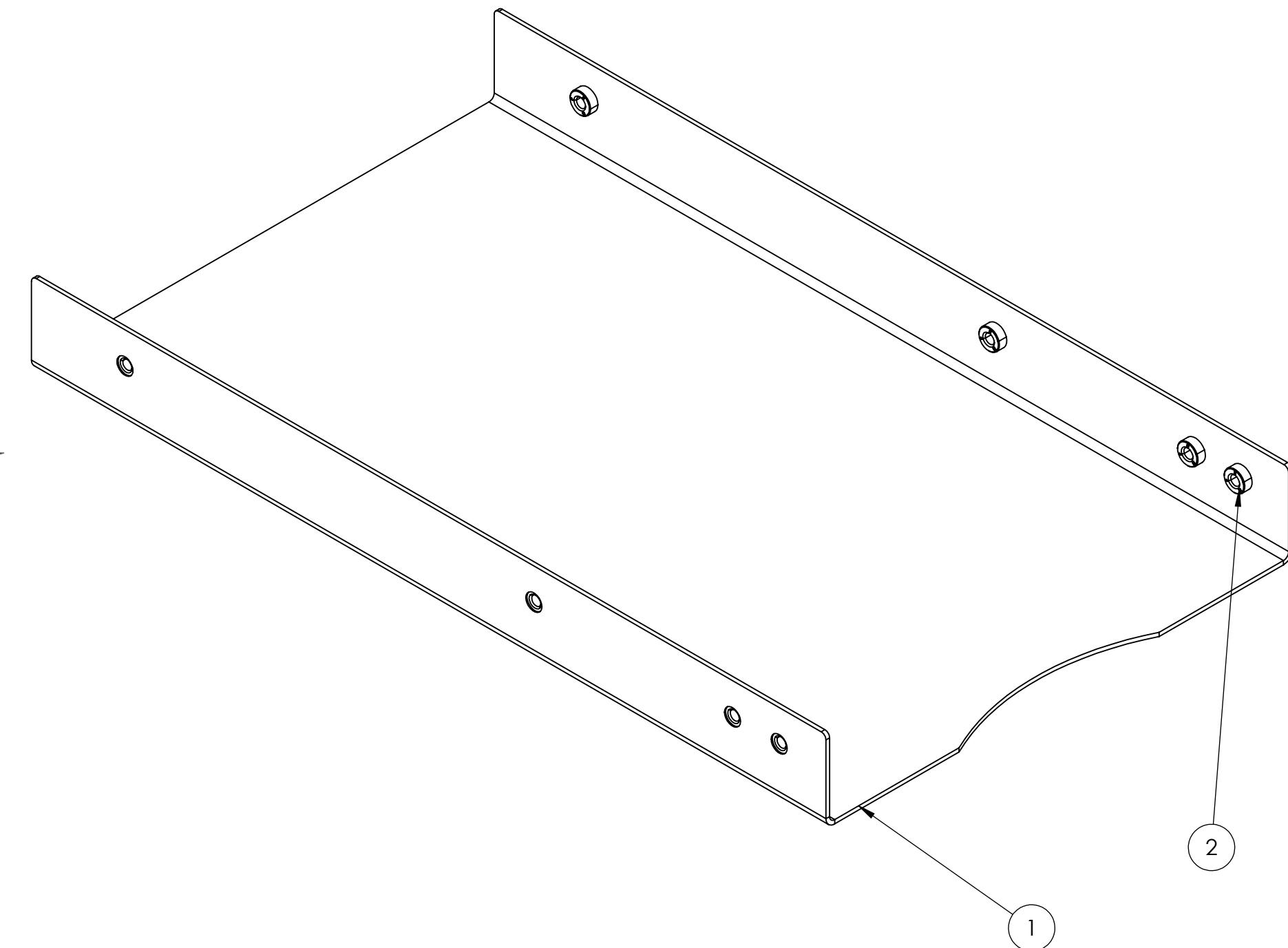
A

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Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22334-01	14 Ga. Preplated Steel	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	8



UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE
		DRAWN	CO	6/11/2021
PROPRIETARY AND CONFIDENTIAL				
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
MATERIAL/FINISH: 14 Ga. Preplated Steel				
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING				

FIRST
ROBOTICS
COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE: Lower Exit Back Roof

SIZE DWG. NO. REV

C GE-22334

SCALE: 1:2 SHEET 1 OF 1

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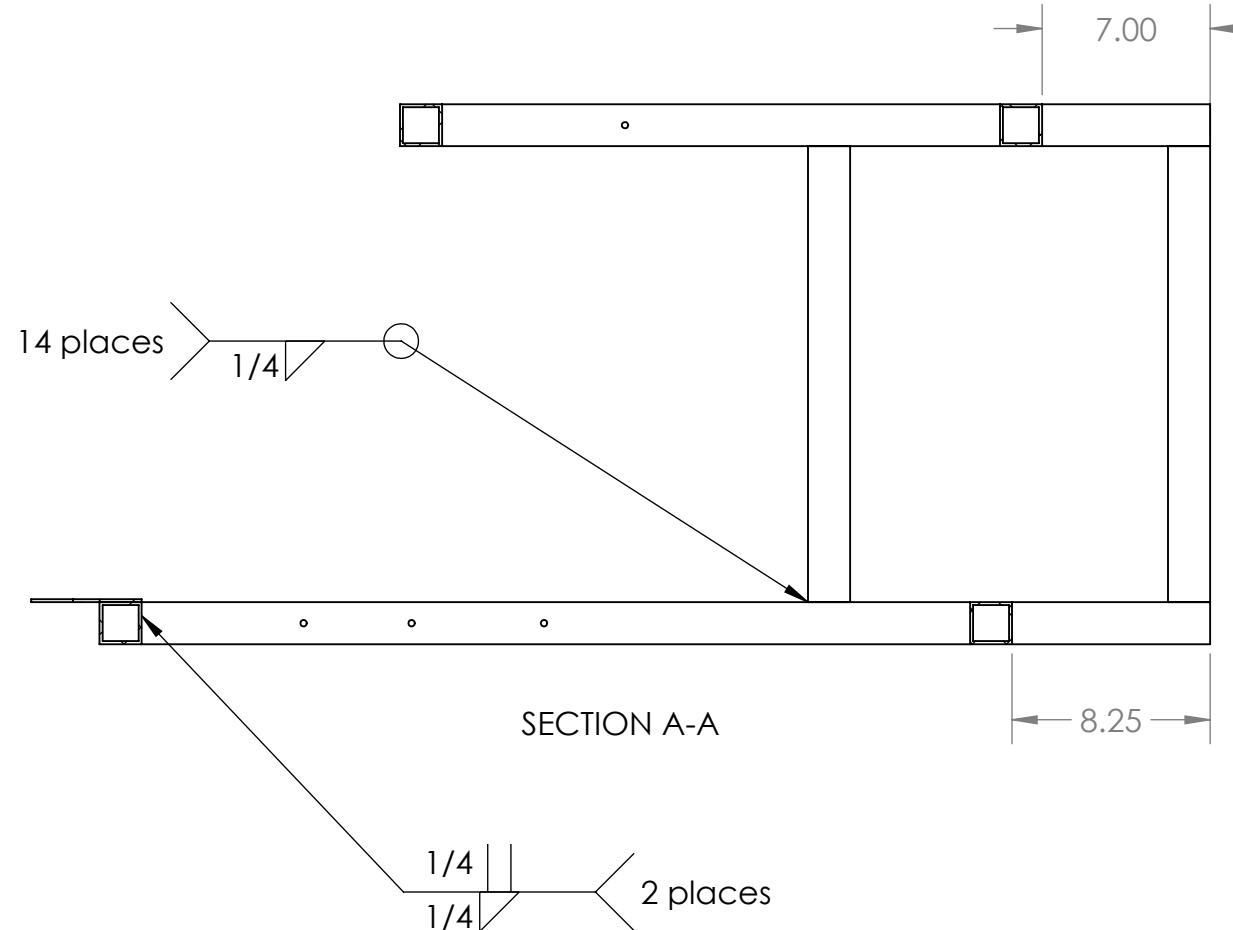
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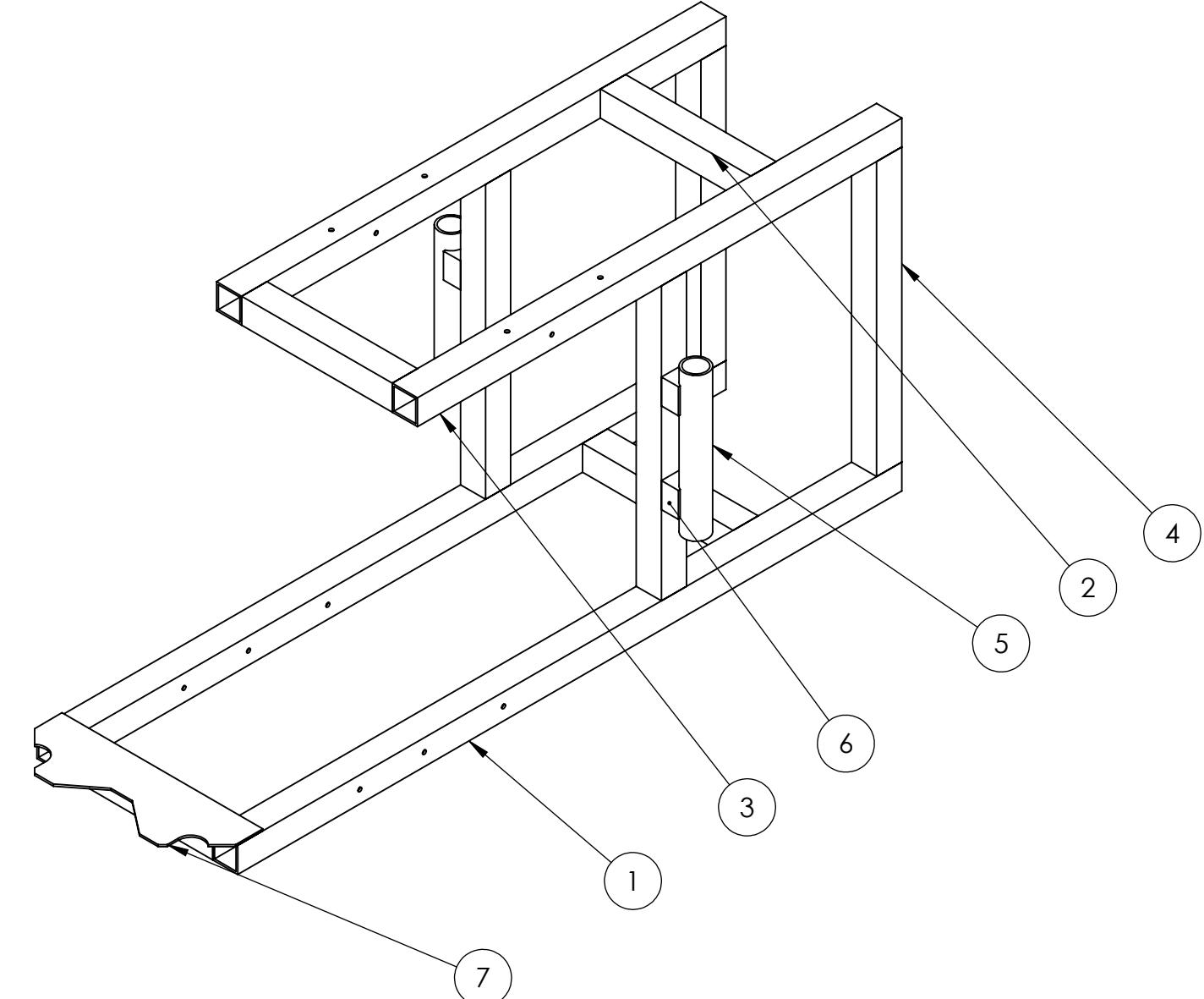
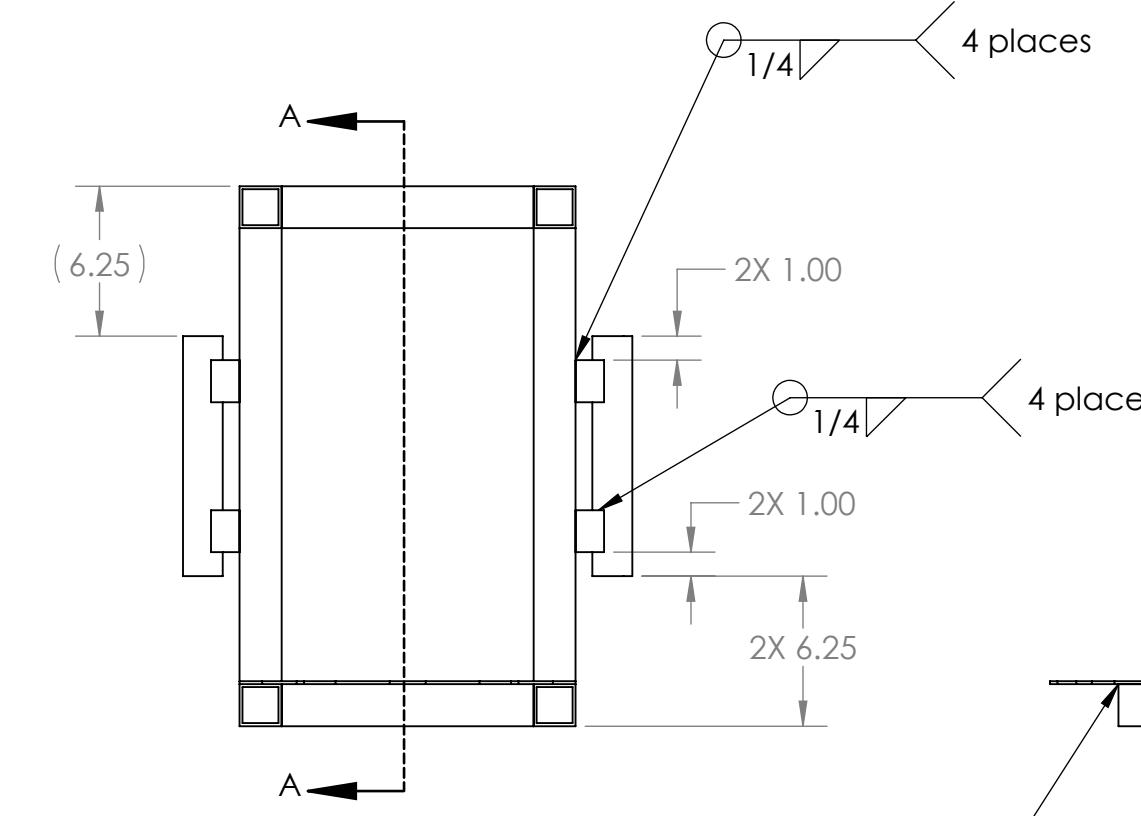
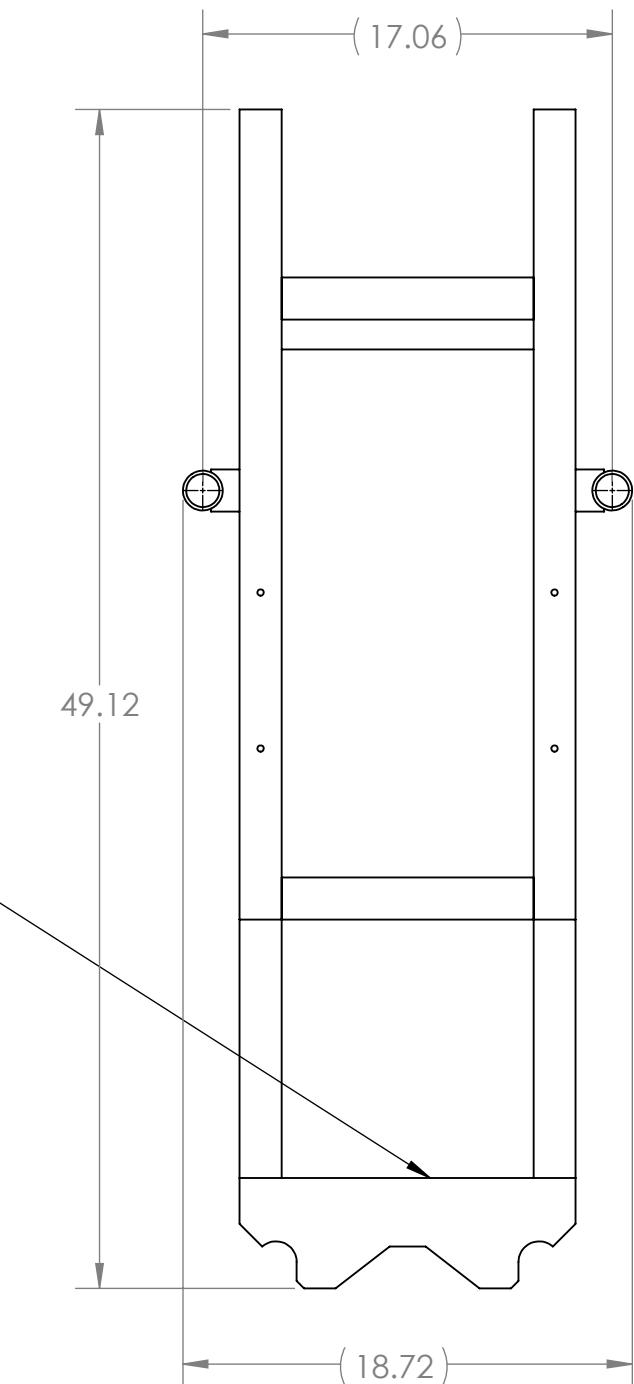
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22335-01	1.75" x .125" thk. Square Tubing, 6061 Aluminum	2
2	GE-22335-02	1.75" x .125" thk. Square Tubing, 6061 Aluminum	4
3	GE-22335-03	1.75" x .125" thk. Square Tubing, 6061 Aluminum	2
4	GE-22335-04	1.75" x .125" thk. Square Tubing, 6061 Aluminum	4
5	GE-22335-05	1.25" Schedule 40 Pipe, 6061 Aluminum	2
6	GE-22335-06	1.75" x .125" thk. Square Tubing, 6061 Aluminum	4
7	GE-22335-07	8 Ga. 5052 Aluminum	1

Notes:
1. Tag or label with part number.



UNLESS OTHERWISE SPECIFIED:		WELD	NAME	DATE
		DRAWN	CO	7/26/2021
PROPRIETARY AND CONFIDENTIAL				
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
MATERIAL/FINISH:				
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING				

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Lower Exit Frame

SIZE DWG. NO. REV

C GE-22335

SCALE: 1:8 SHEET 1 OF 3

4

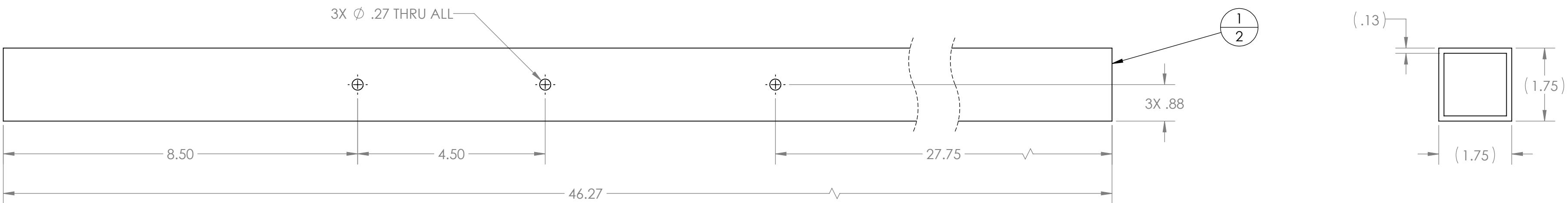
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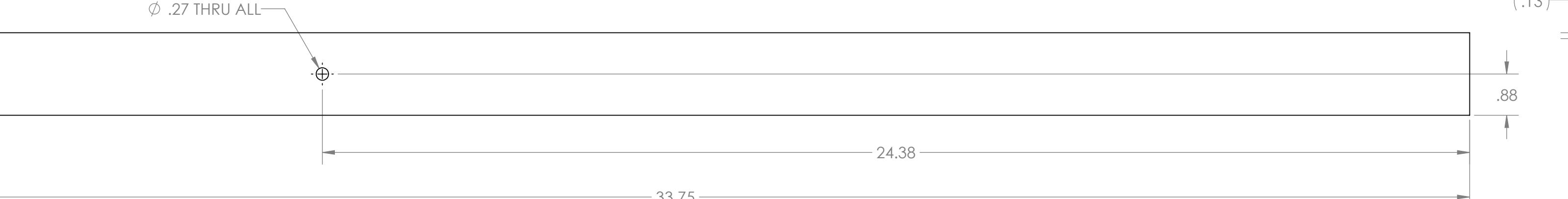
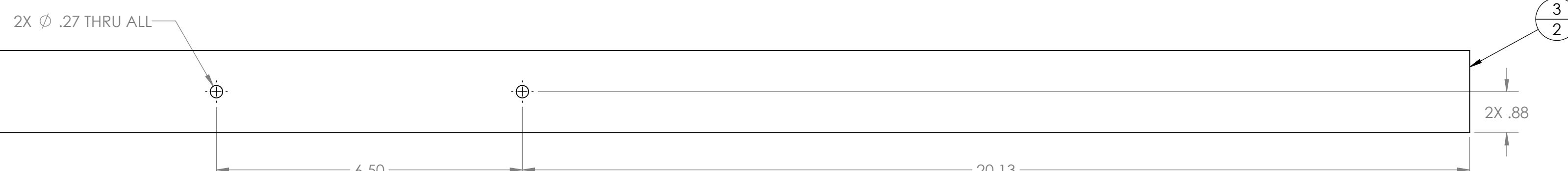
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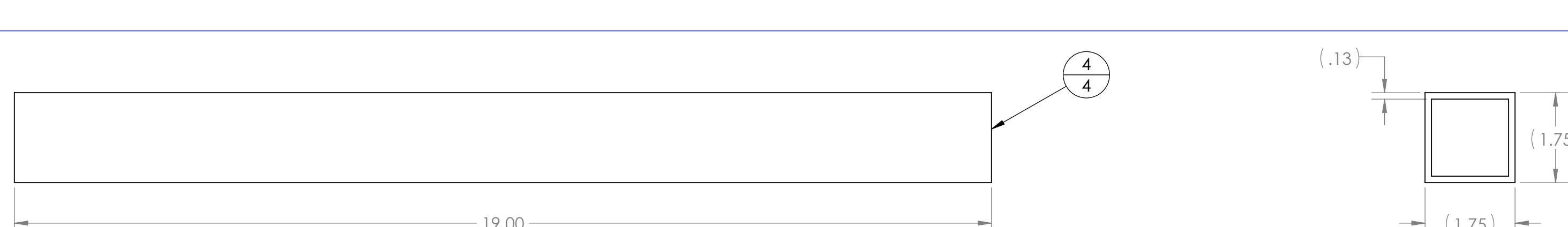
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UNLESS OTHERWISE SPECIFIED:			WELD	NAME	DATE
			DRAWN	CO	7/26/2021
PROPRIETARY AND CONFIDENTIAL					
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:					
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING					

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Lower Exit Frame

SIZE DWG. NO. REV
C GE-22335

SCALE: 1:2 SHEET 2 OF 3

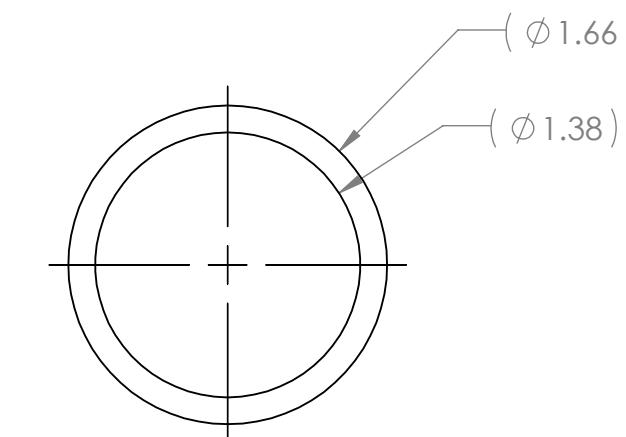
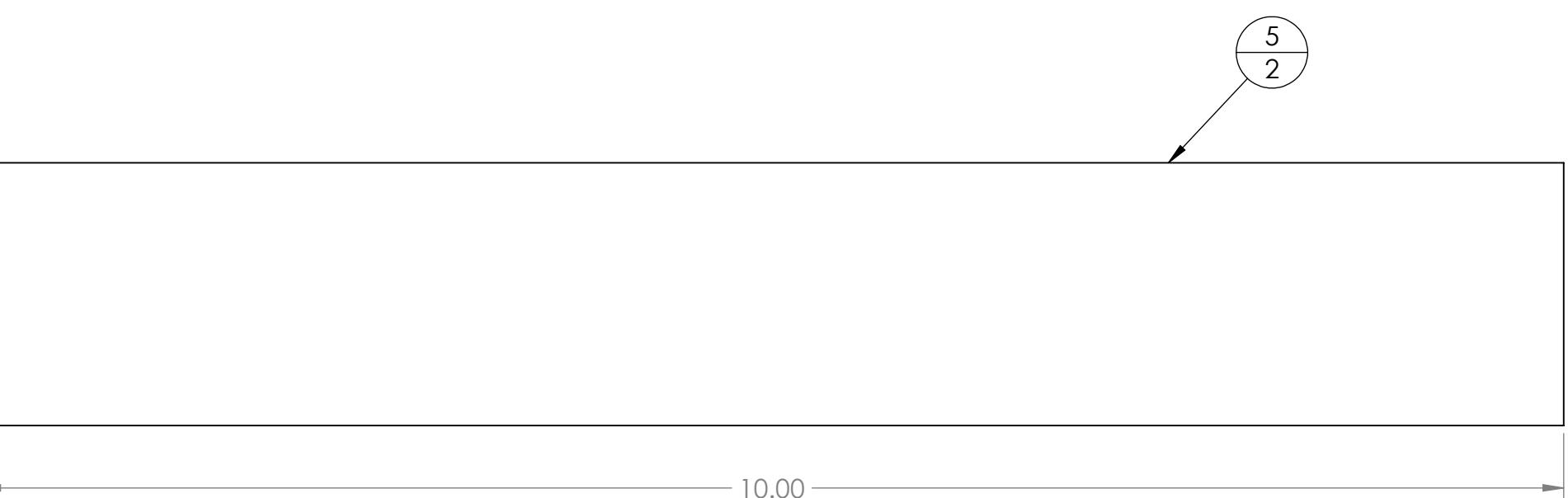
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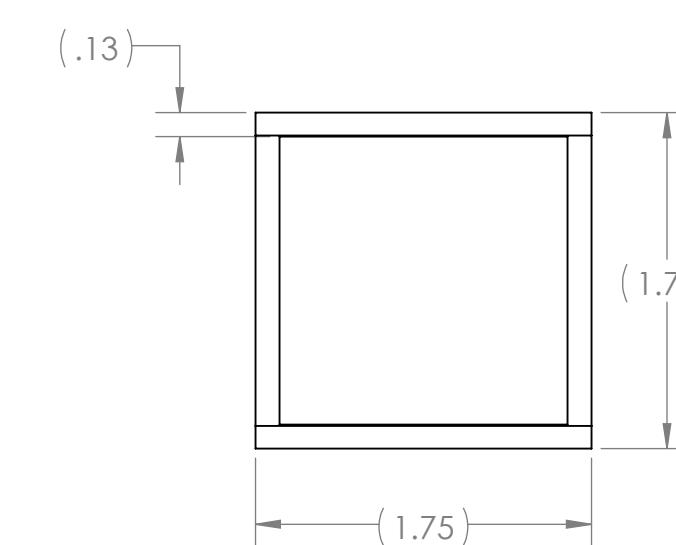
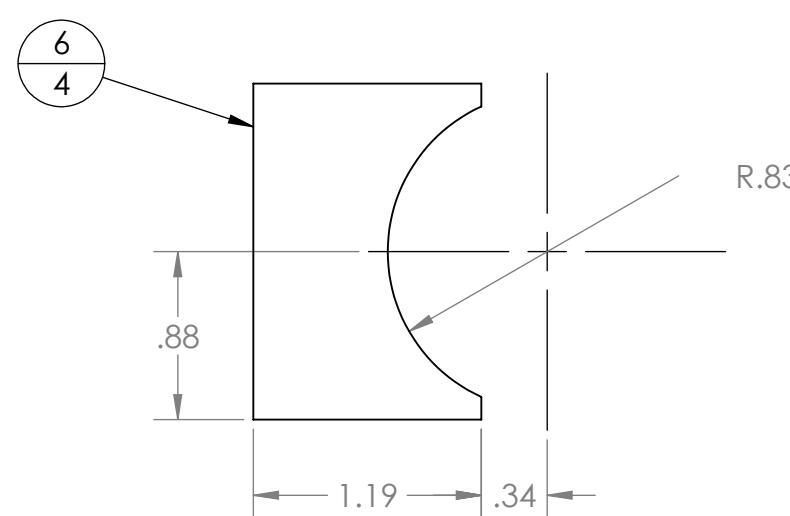
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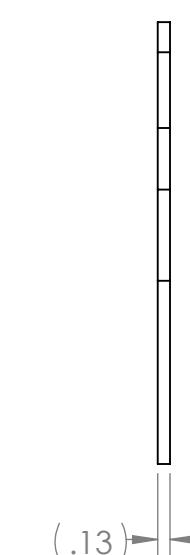
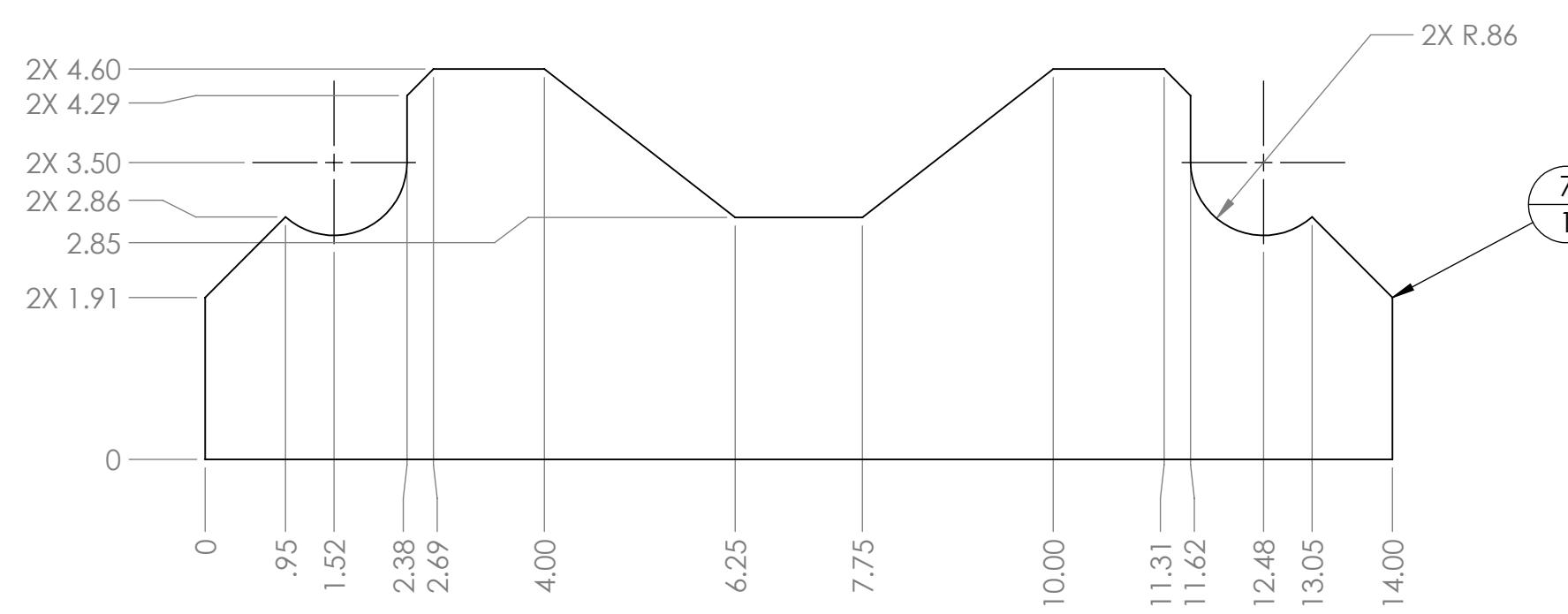
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Notes:
1. Scale: 1:2

UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	CO	7/26/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Lower Exit
Frame**

SIZE DWG. NO. REV

C GE-22335

SCALE: 1:1 SHEET 3 OF 3

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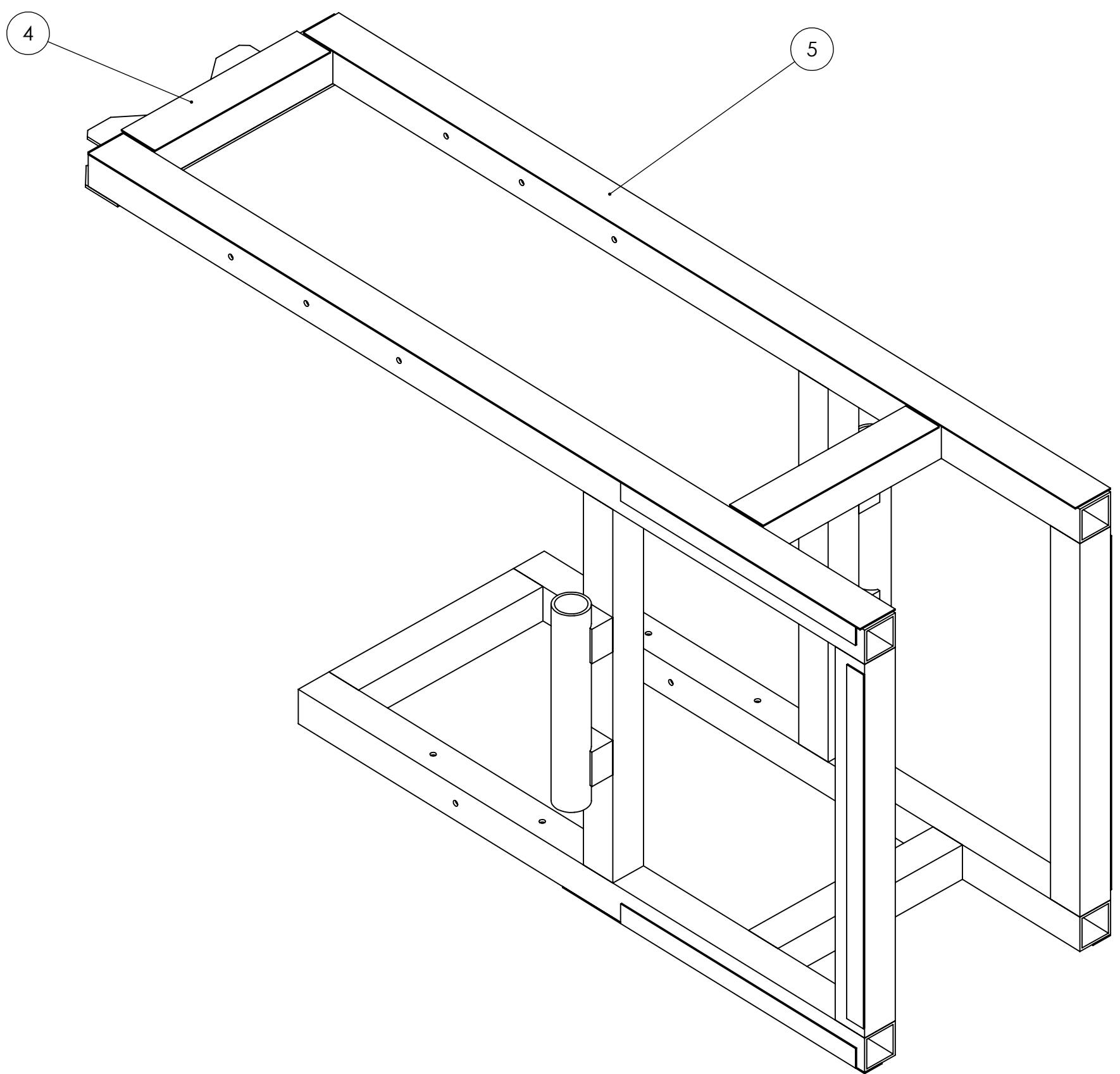
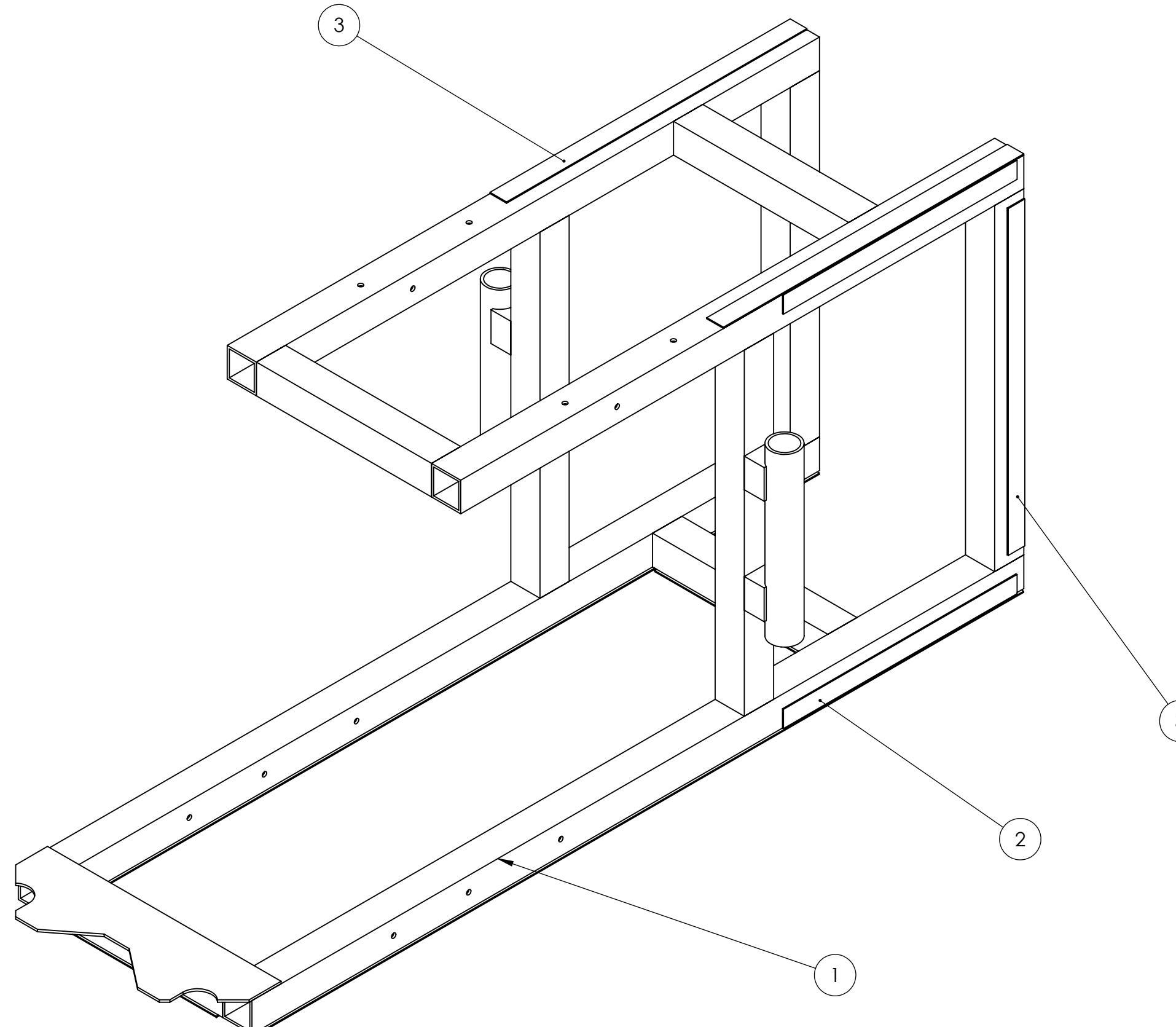
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22335	Lower Exit Frame	1
2	Hook_1_14	1" x 14" Hook, Adhesive Backed	4
3	Hook_1_18	1" x 18" Hook, Adhesive Backed	4
4	Hook_2_10	2" x 10" Hook, Adhesive Backed	2
5	Hook_2_46	2" X 46" Hook, Adhesion Backed	2

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	10/27/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

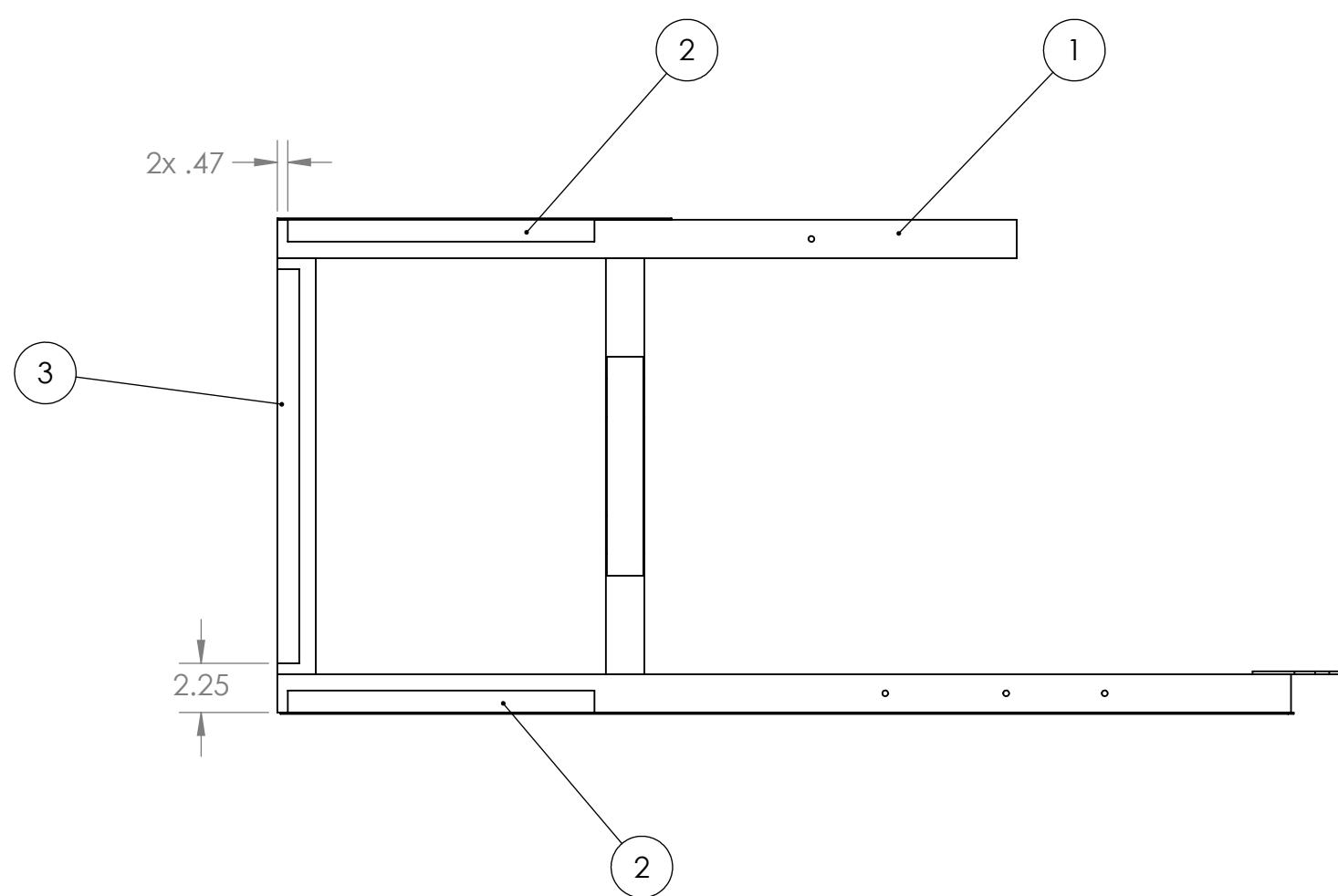
TITLE: Lower Exit Frame with Hook

SIZE DWG. NO. REV

C GE-22336

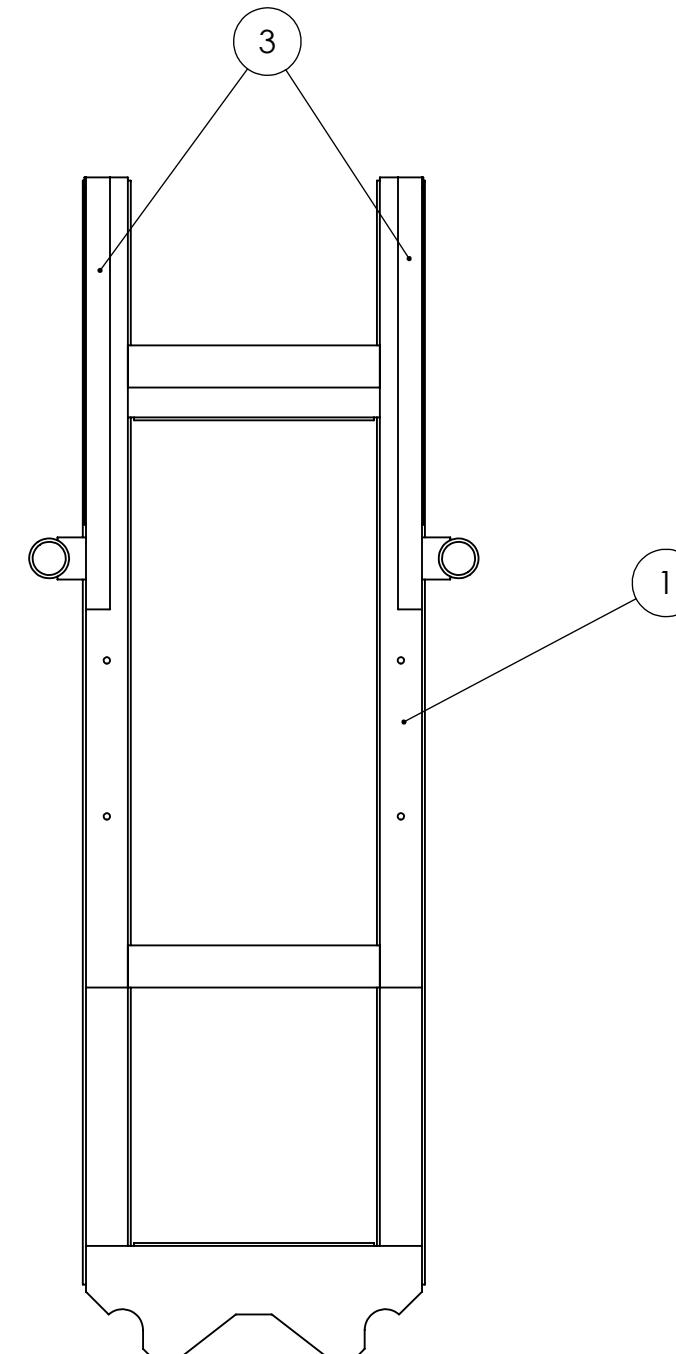
SCALE: 1:5 SHEET 1 OF 2

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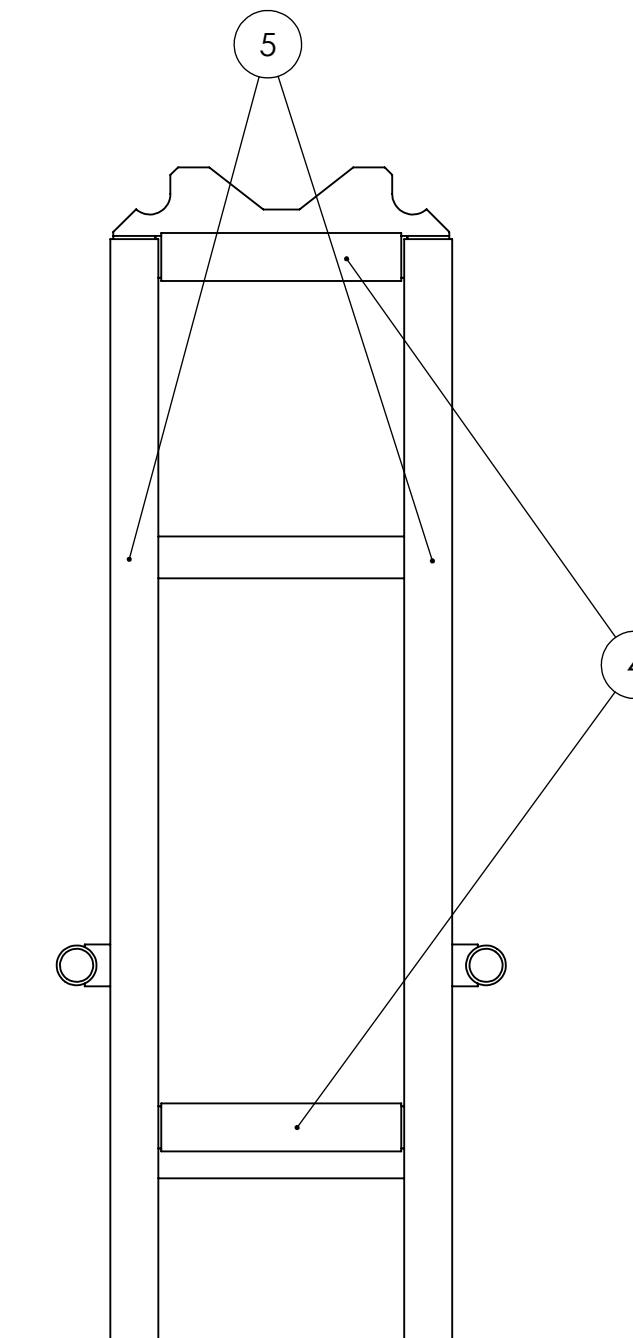
Notes:

1. Make sure surface of **1** is clean prior to hook application.
2. Attach **2** and **3** in locations shown.
3. Repeat process for opposite side of weldment.



Notes:

1. Make sure surface of **1** is clean prior to hook application.
2. Attach **3** in locations shown.



Notes:

1. Make sure surface of **1** is clean prior to hook application.
2. Attach **4** and **5** in locations shown.
3. Repeat process for opposite side of weldment.

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	CO	10/27/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$				
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$				
MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING				

FIRST	ROBOTICS	COMPETITION	SOLIDWORKS
Modeling Solutions Partner			
TITLE: Lower Exit Frame with Hook			REV
SIZE	DWG. NO.	GE-22336	REV
C	SCALE: 1:8		
SHEET 2 OF 2			A

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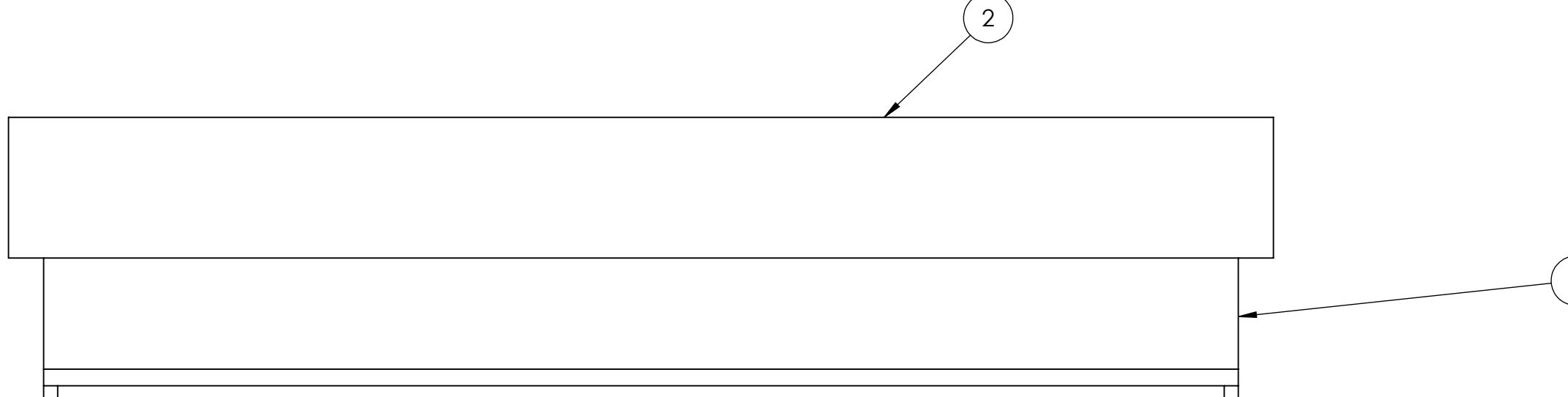
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C

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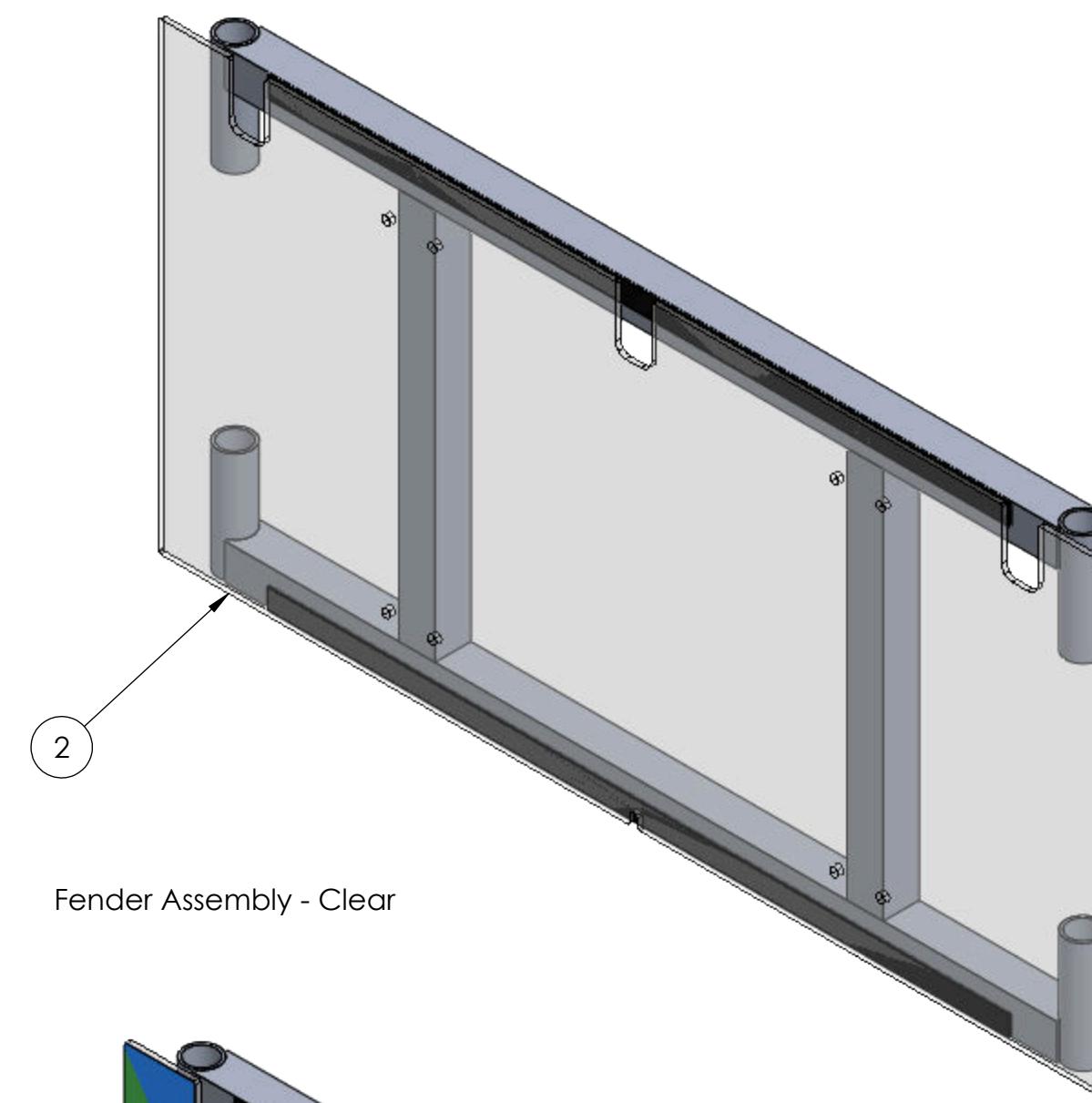
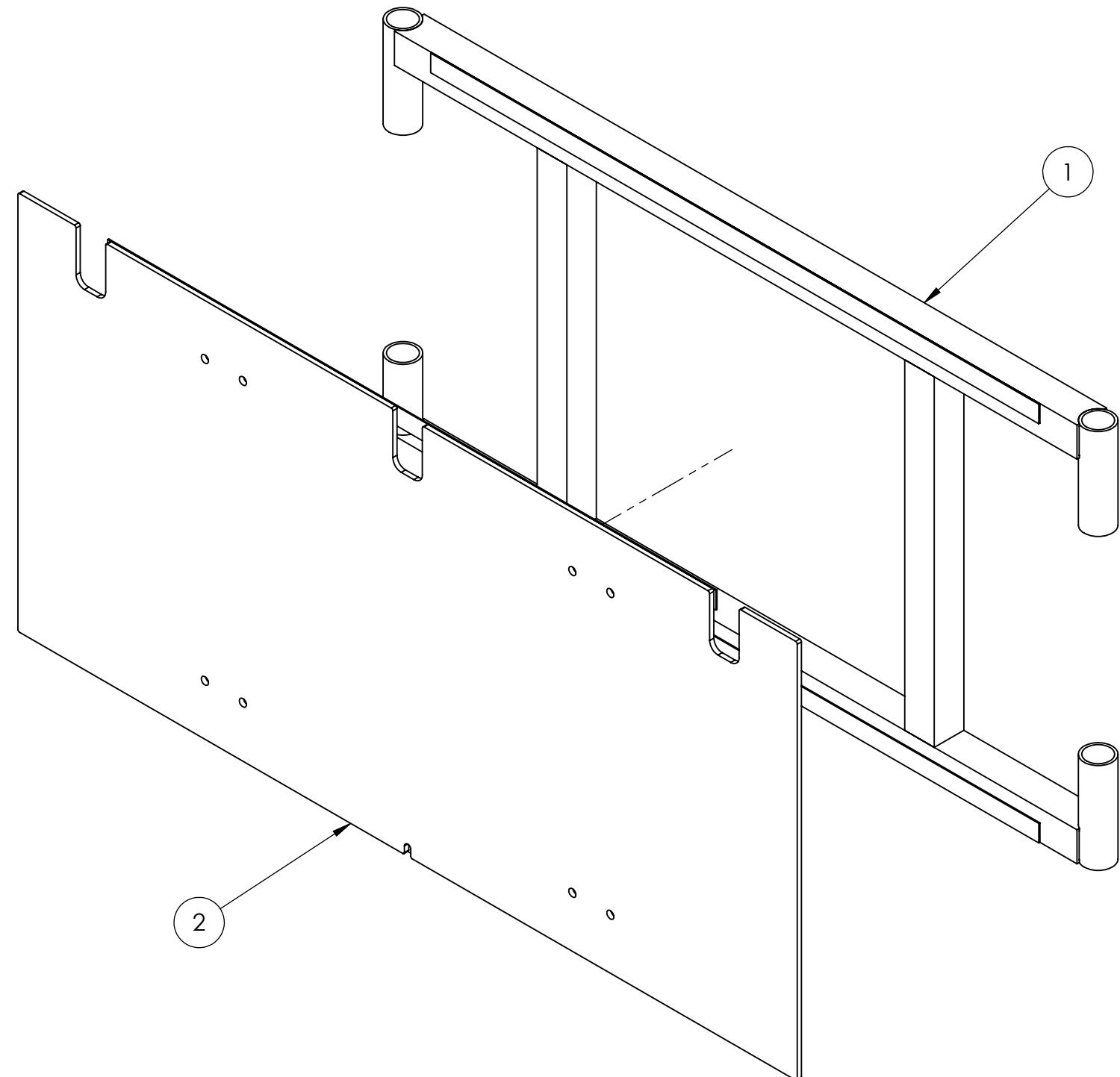
**Notes:**

1. Make sure surface of **(1)** is clean prior to hook application.
2. Attach **(2)** to **(1)** in location shown. **(2)** should be centered along the edge of **(1)**.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22325	Lower Exit Ramp Angle	1
2	Hook_1_9	1" x 9" Hook, Adhesive Backed	1

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/14/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$			
MATERIAL/FINISH:	TITLE: FIRST ROBOTICS COMPETITION <small>SOLIDWORKS Modeling Solutions Partner</small>		
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.	SIZE	DWG. NO.	REV
DO NOT SCALE DRAWING	C	GE-22337	
	SCALE: 1:1	SHEET 1 OF 1	

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Notes:

1. Attach (2) or (3) to (1) using hook and loop.
2. Assembly exists in Vinyl and clear configurations.

ITEM NO.	PART NUMBER	DESCRIPTION	Fender Assembly - Clear QTY.	Fender Assembly - Vinyl QTY.
1	GE-22343	Fender Frame with Hook	1	1
2	GE-22345	Fender Front Polycarbonate with Loop	1	-
3	GE-22349	Fender Vinyl Polycarbonate with Loop	-	1

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/14/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL		
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION Modeling Solutions Partner

Title: Fender Assembly

Size: DWG. NO. **REV:**

C GE-22341

Scale: 1:6 **Sheet:** 1 OF 1

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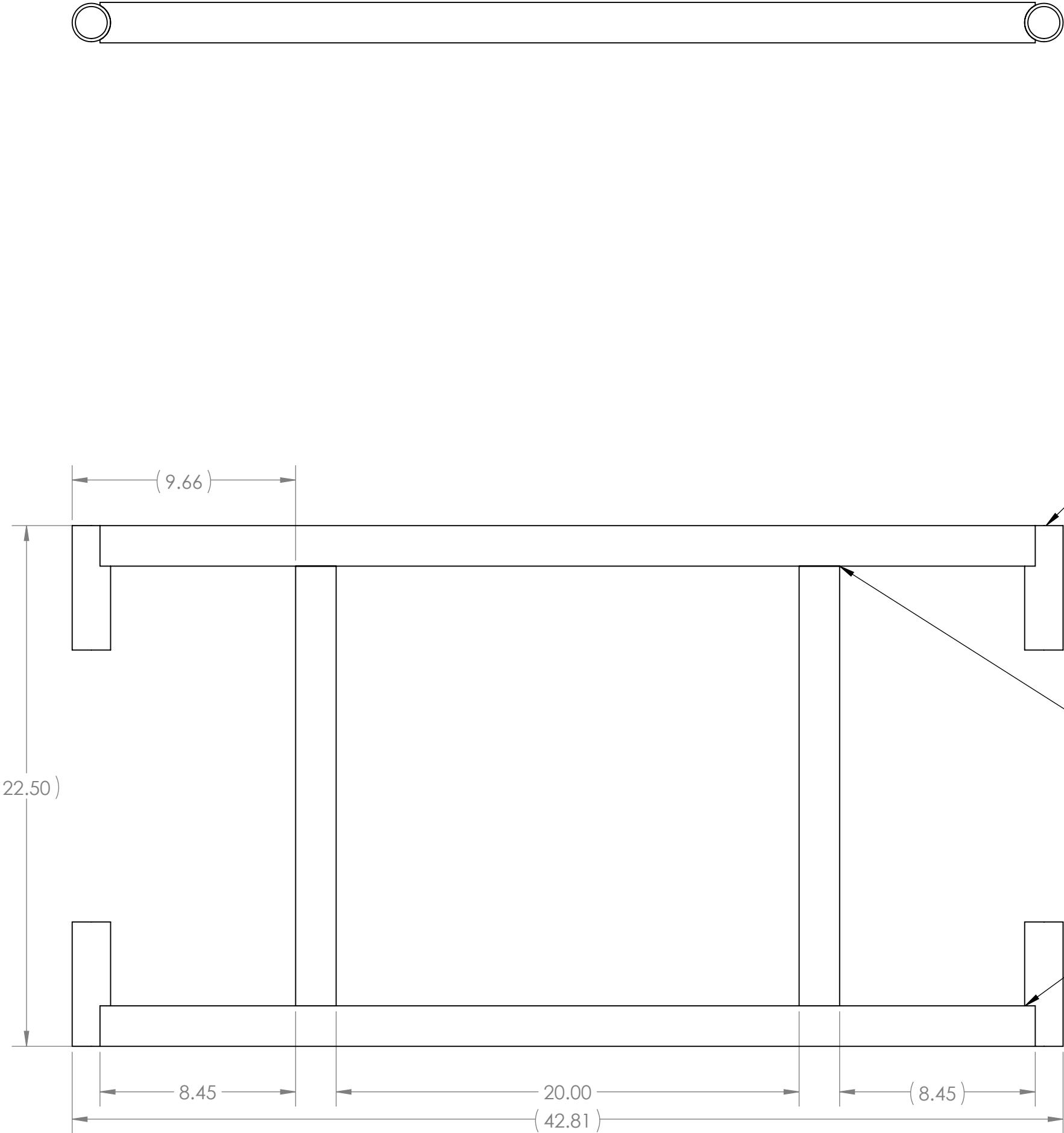
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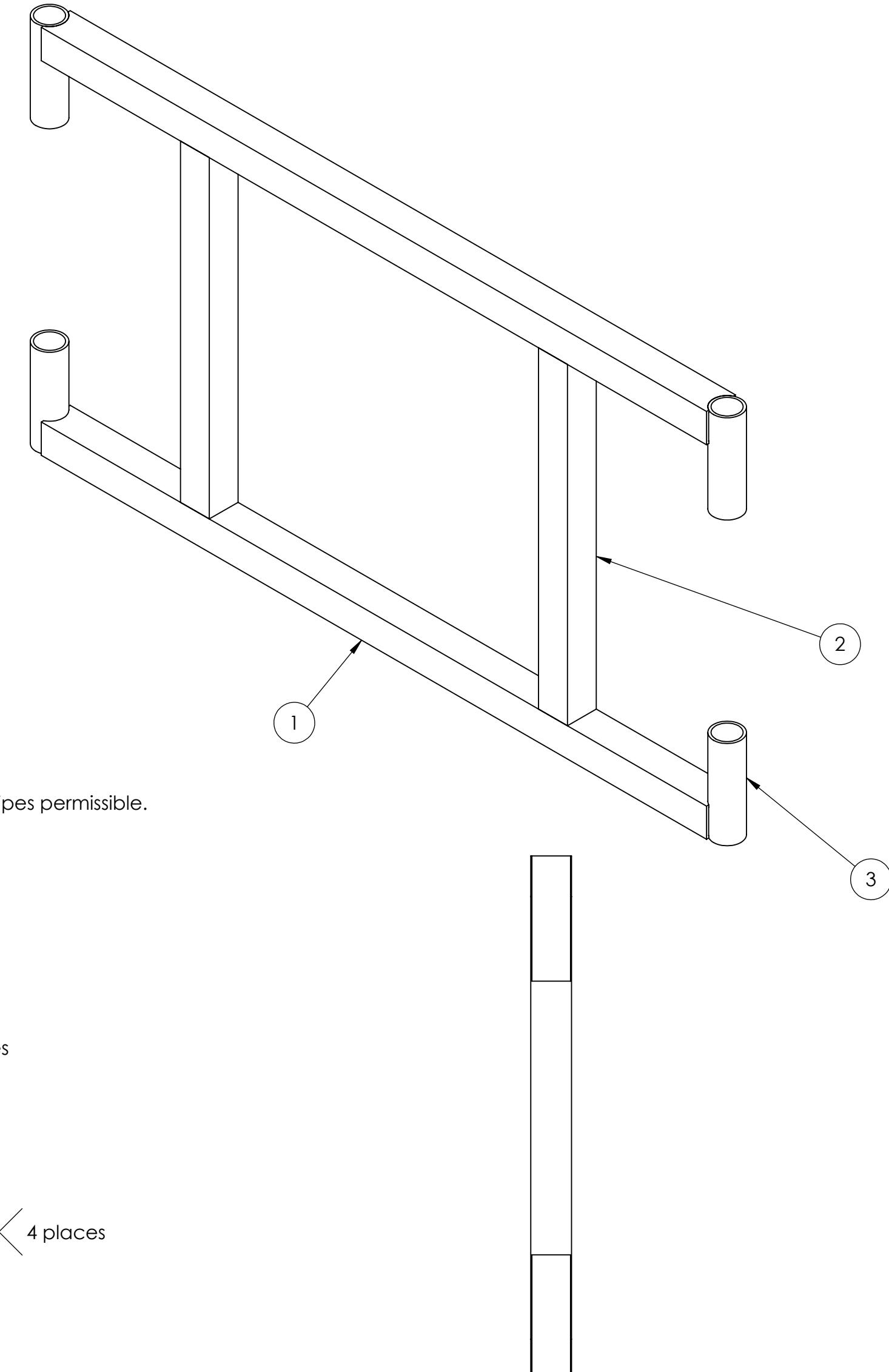
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Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22342-01	1.75" x .125" tk. Square Tube, 6061 Aluminum	2
2	GE-22342-02	1.75" x .125" tk. Square Tube, 6061 Aluminum	2
3	GE-22342-03	1-1/4" Schedule 40 Pipe, 6061 Aluminum	4



UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	CO	6/17/2021	
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS:			
REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

TITLE: Fender Frame

SIZE DWG. NO. REV

C GE-22342

SCALE: 1:5 SHEET 1 OF 2

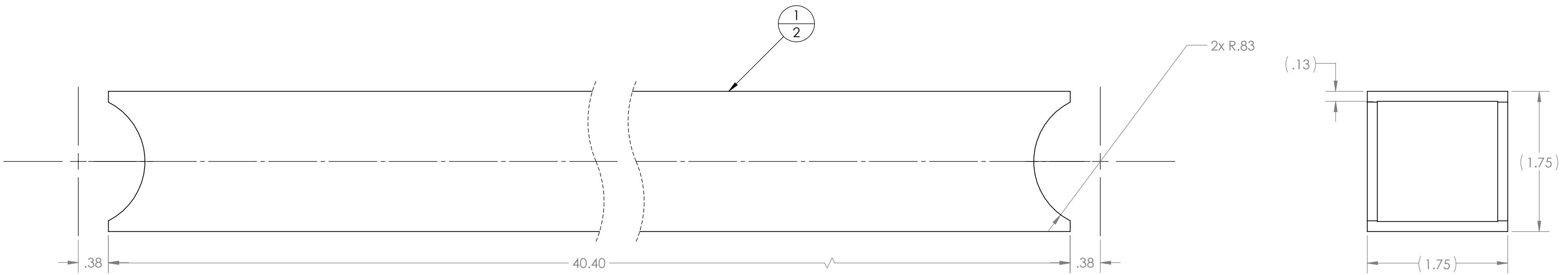
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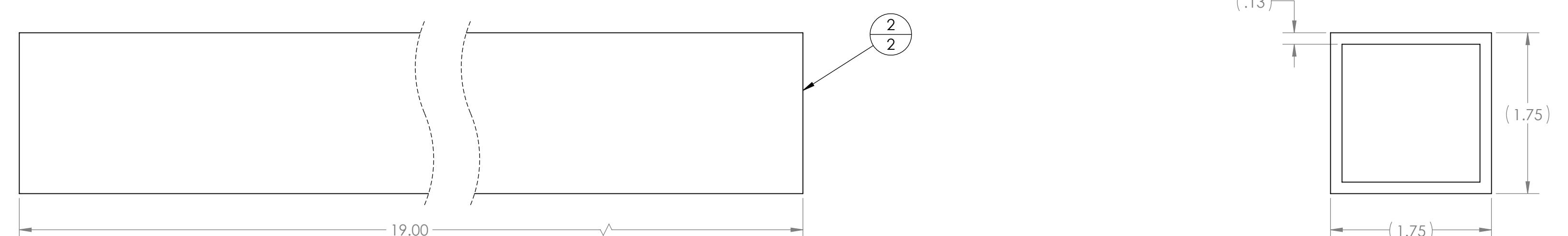
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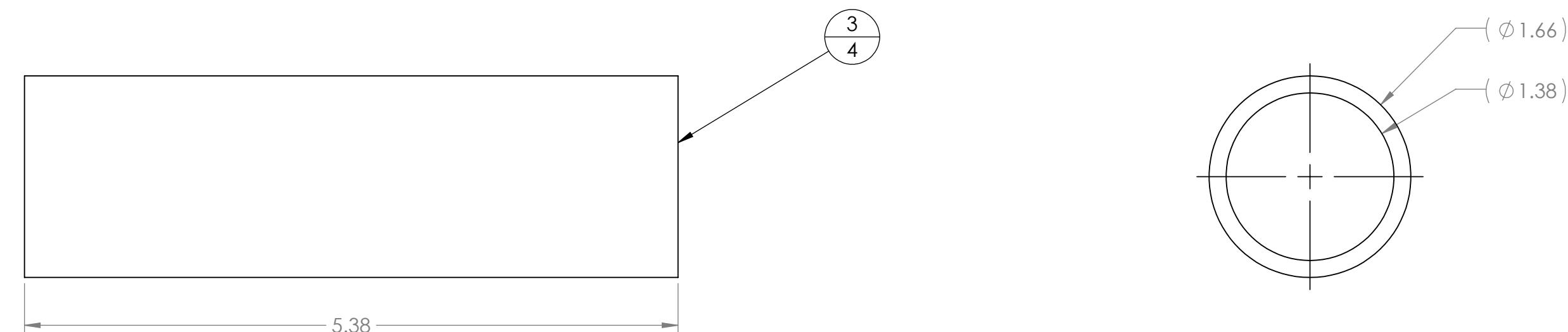
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UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	CO	6/17/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
TITLE: Fender Frame			
SIZE DWG. NO. REV			
C GE-22342			
SCALE: 1:1 SHEET 2 OF 2			



SOLIDWORKS
Modeling Solutions Partner

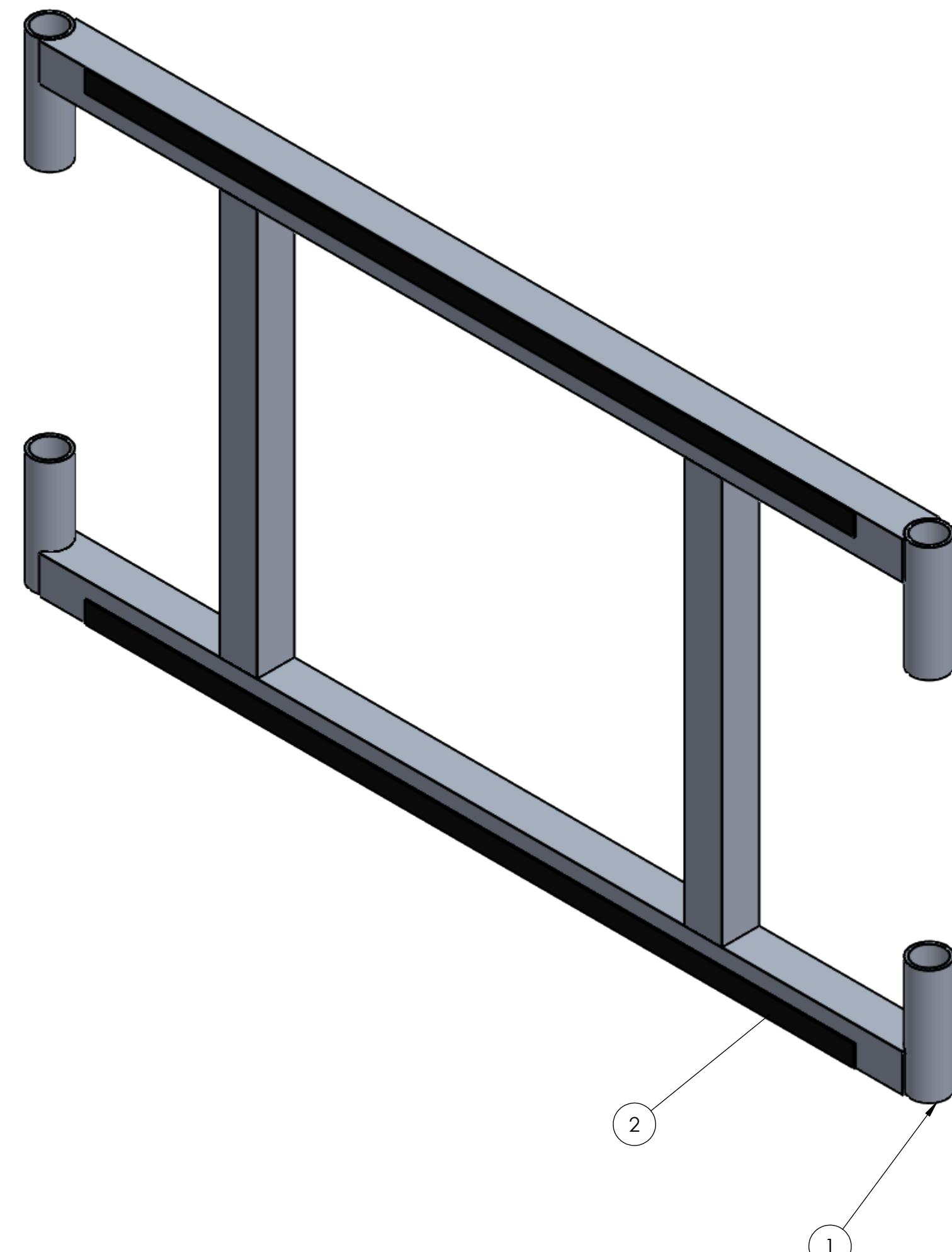
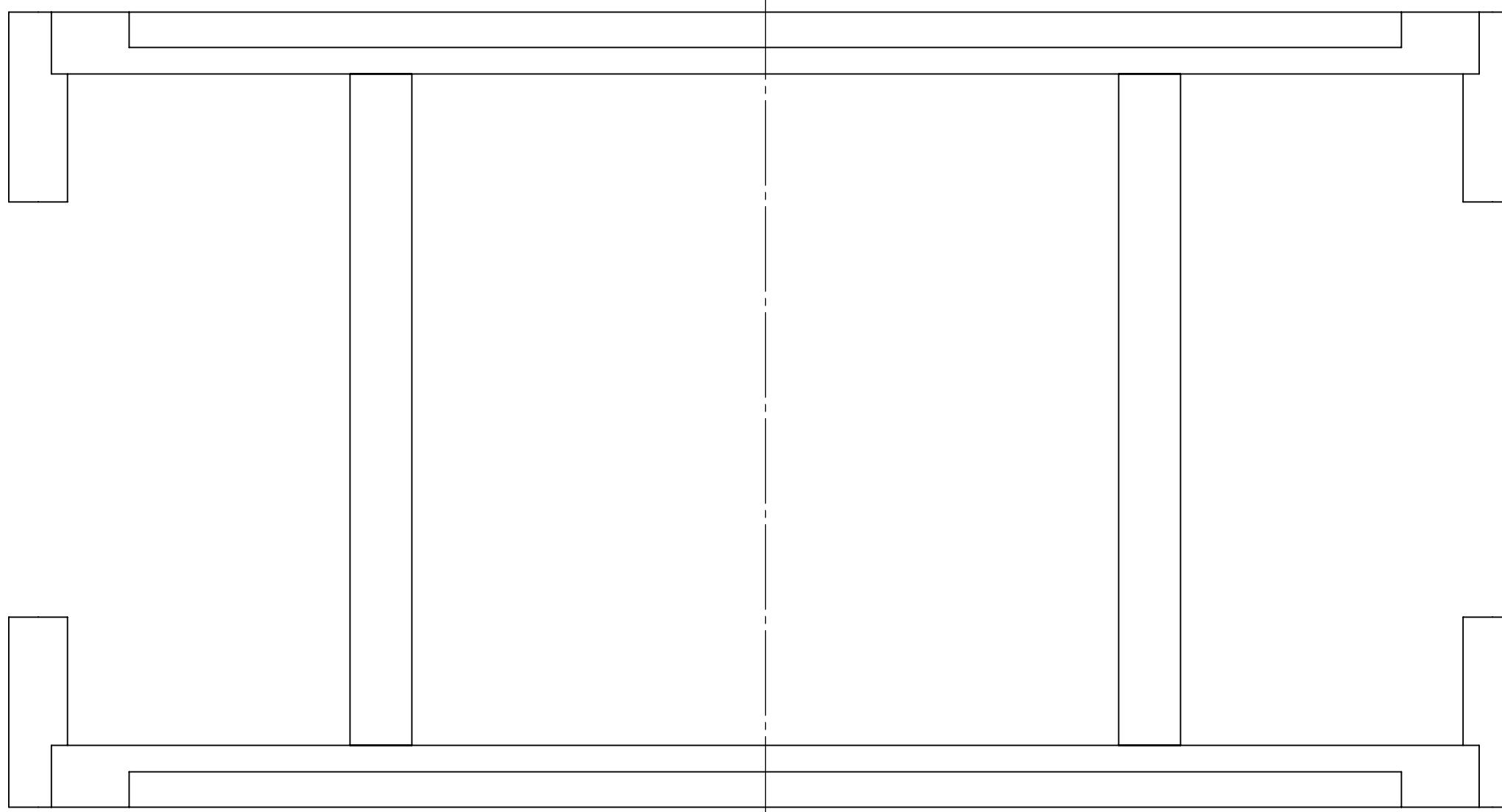
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Notes:

1. Make sure surface of **(1)** is clean prior to hook application.
2. Attach **(2)** to **(1)** in locations shown.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22342	Fender Frame	1
2	Hook_1_36	1" x 36" Hook, Adhesive Backed	2

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	11/2/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL		
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

TITLE: Fender Frame with Hook

SIZE DWG. NO. REV

C GE-22343

SCALE: 1:4 SHEET 1 OF 1

4

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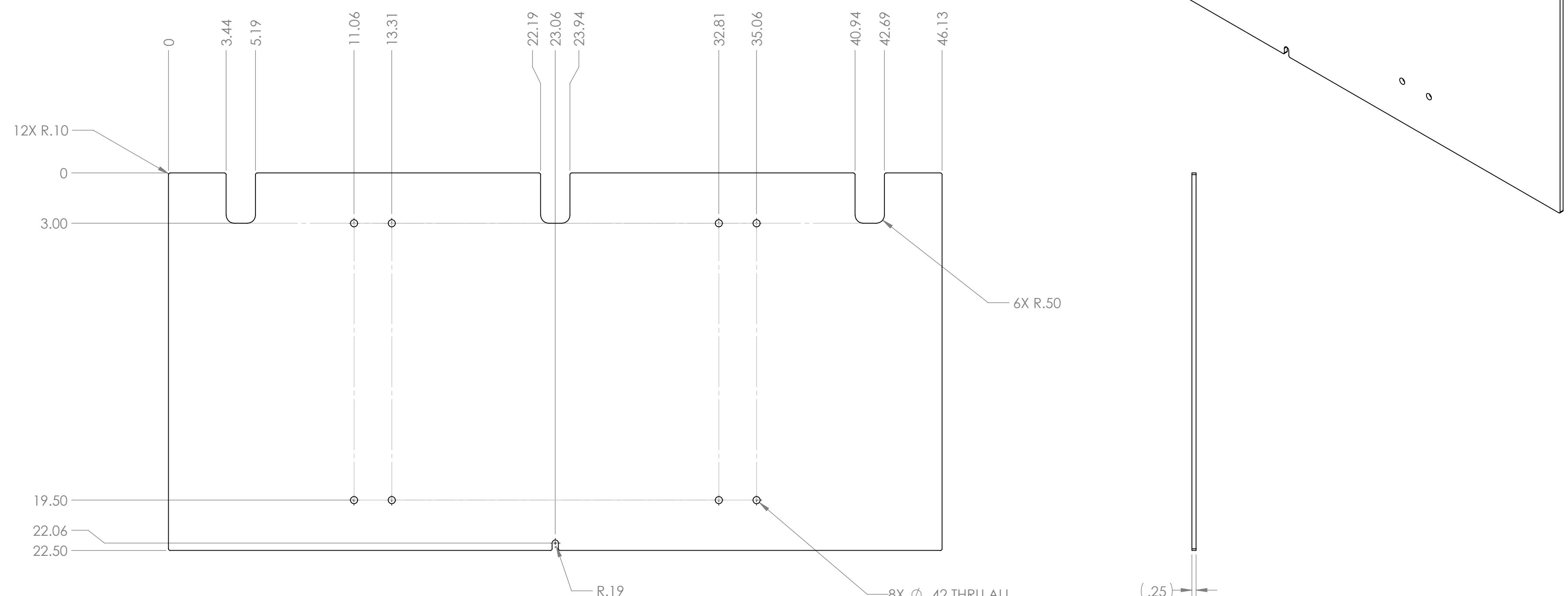
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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	KAMC	6/11/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 1/4" thk. Polycarbonate, Clear			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			



TITLE: Fender Front Polycarbonate
SIZE DWG. NO. REV
C GE-22344

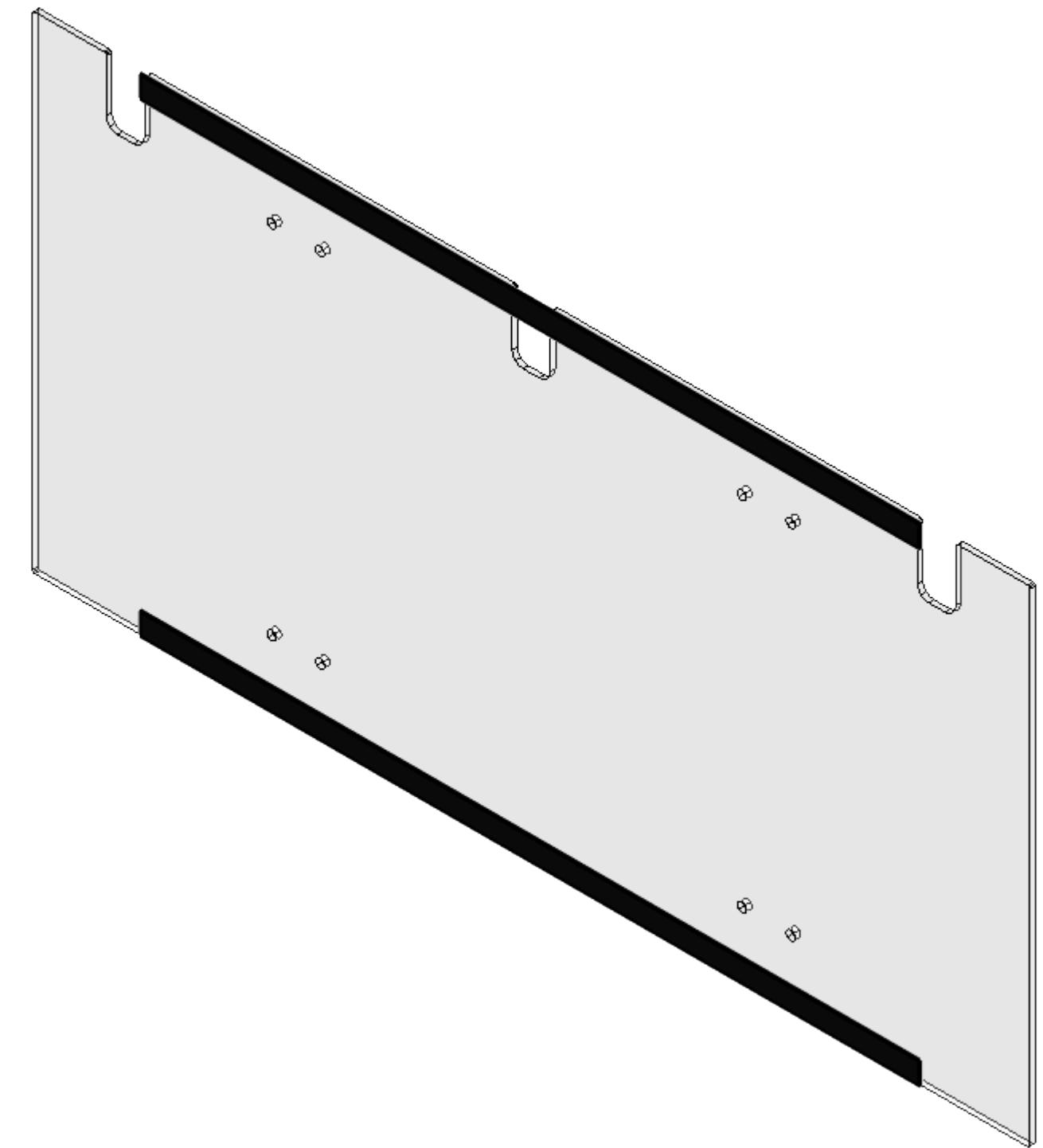
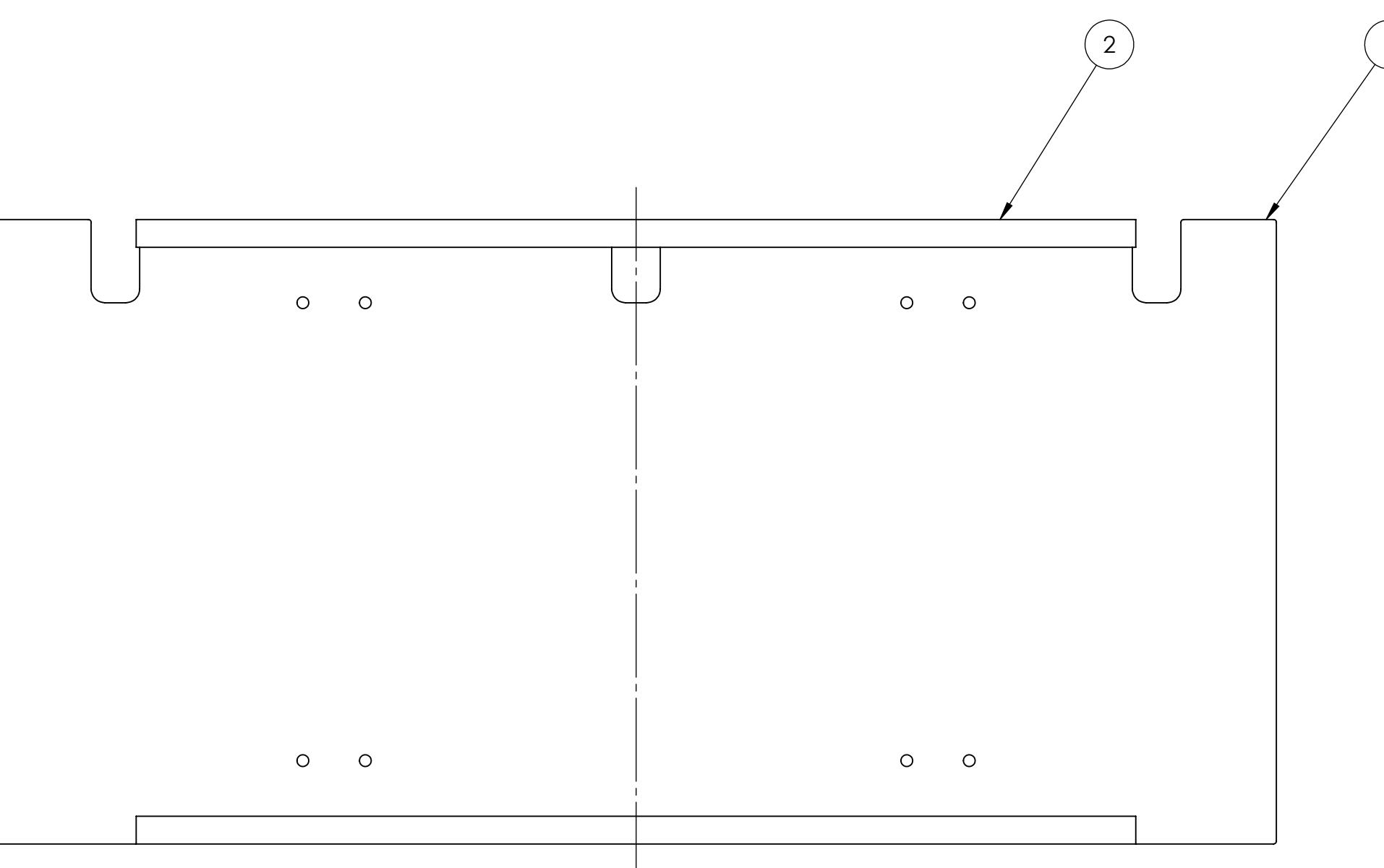
SCALE: 1:5 SHEET 1 OF 1

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Notes:

1. Make sure surface of is clean prior to loop application.
2. Attach to in locations shown.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22344	Fender Front Polycarbonate	1
2	Loop_1_36	1" x 36" Loop, Adhesive Backed	2

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	11/3/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL		
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

TITLE: Fender Front Polycarbonate with Loop

SIZE DWG. NO. REV

C GE-22345

SCALE: 1:5 SHEET 1 OF 1

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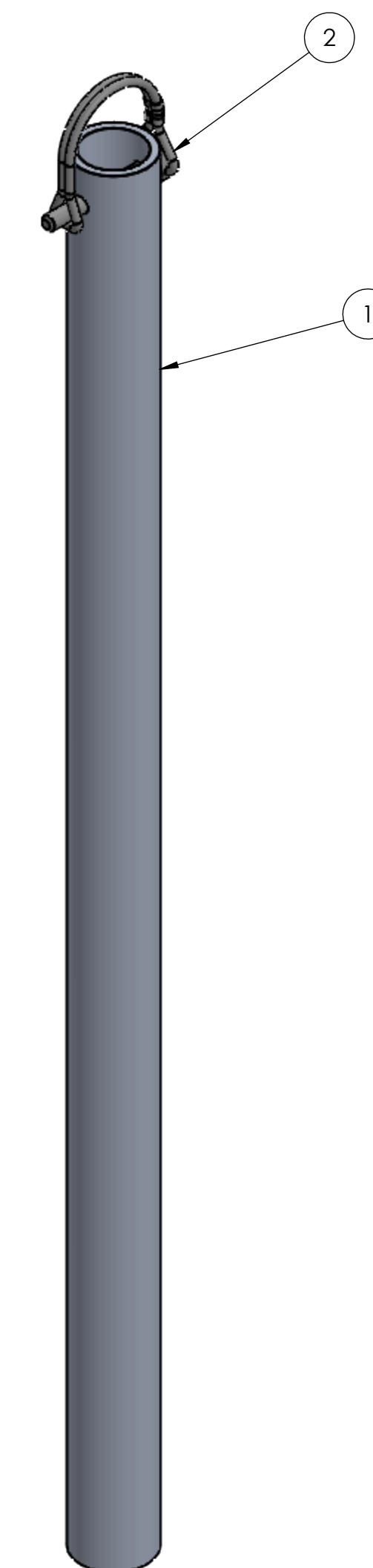
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22347	Fender Pipe	1
2	pin_25_2.375_wireloc_kclevis	Wire-Lock Clevis Pin	1

VEND	NAME	DATE
DRAWN	KAMC	7/7/2021



TITLE:		
Fender Pipe Assembly		

SIZE	DWG. NO.	REV
C	GE-22346	

SCALE: 1:2	SHEET 1 OF 2

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

PROPRIETARY AND CONFIDENTIAL

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DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

4

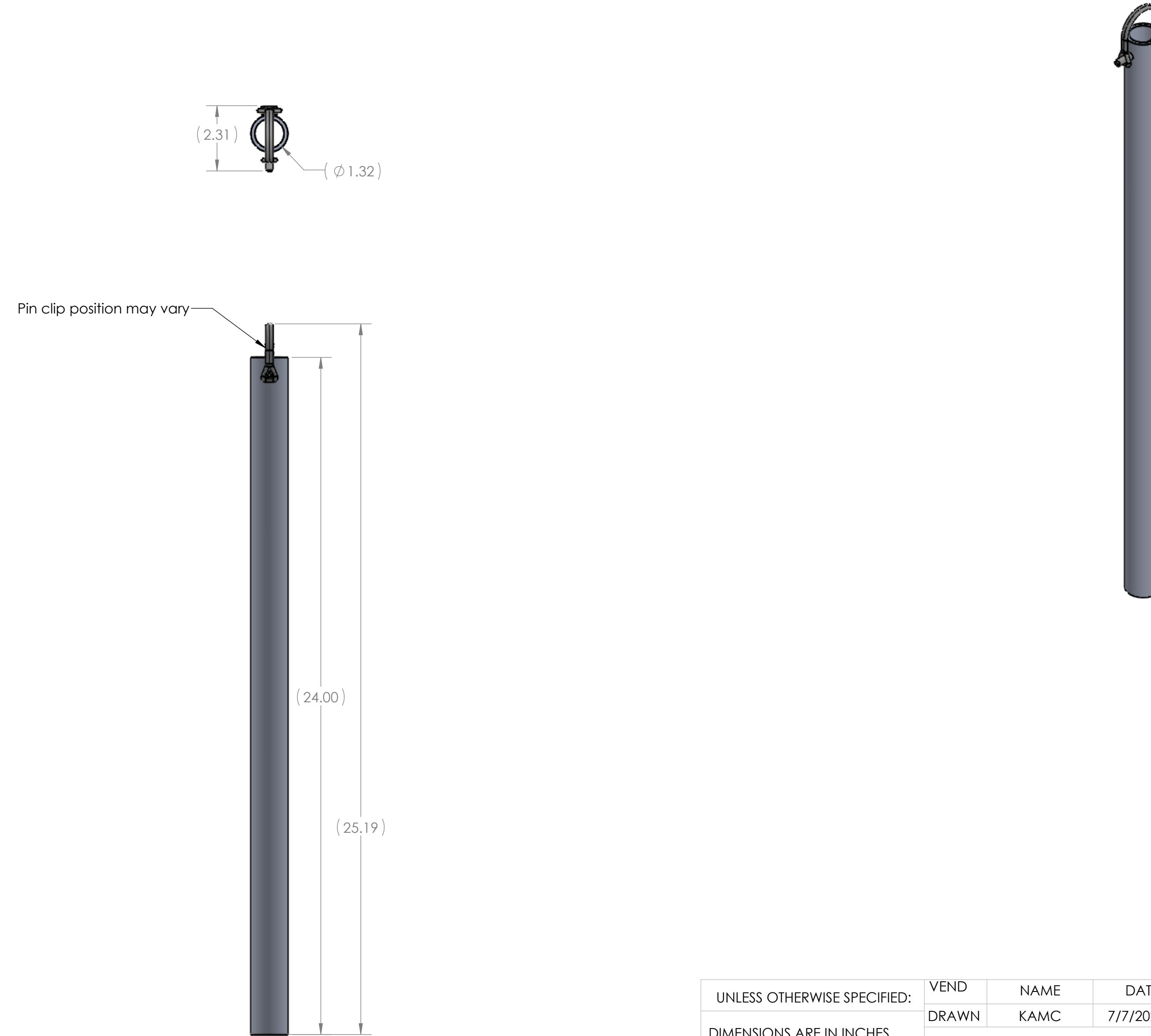
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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	KAMC	7/7/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

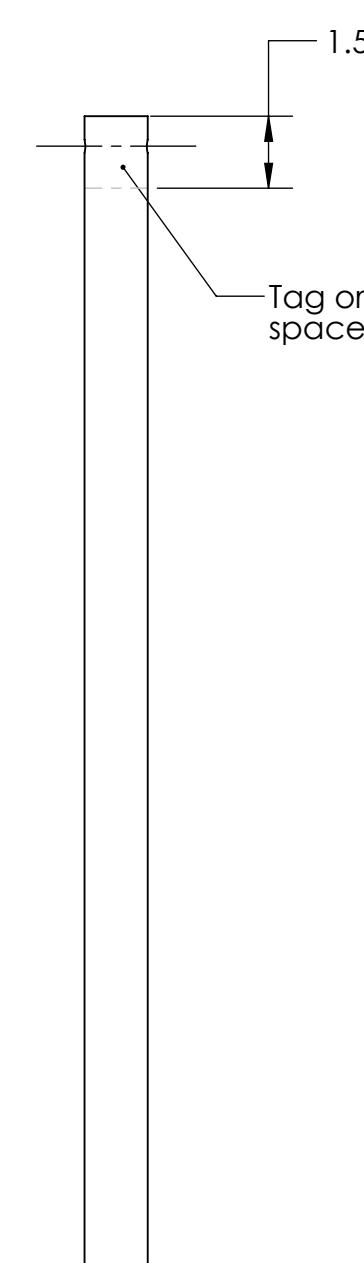
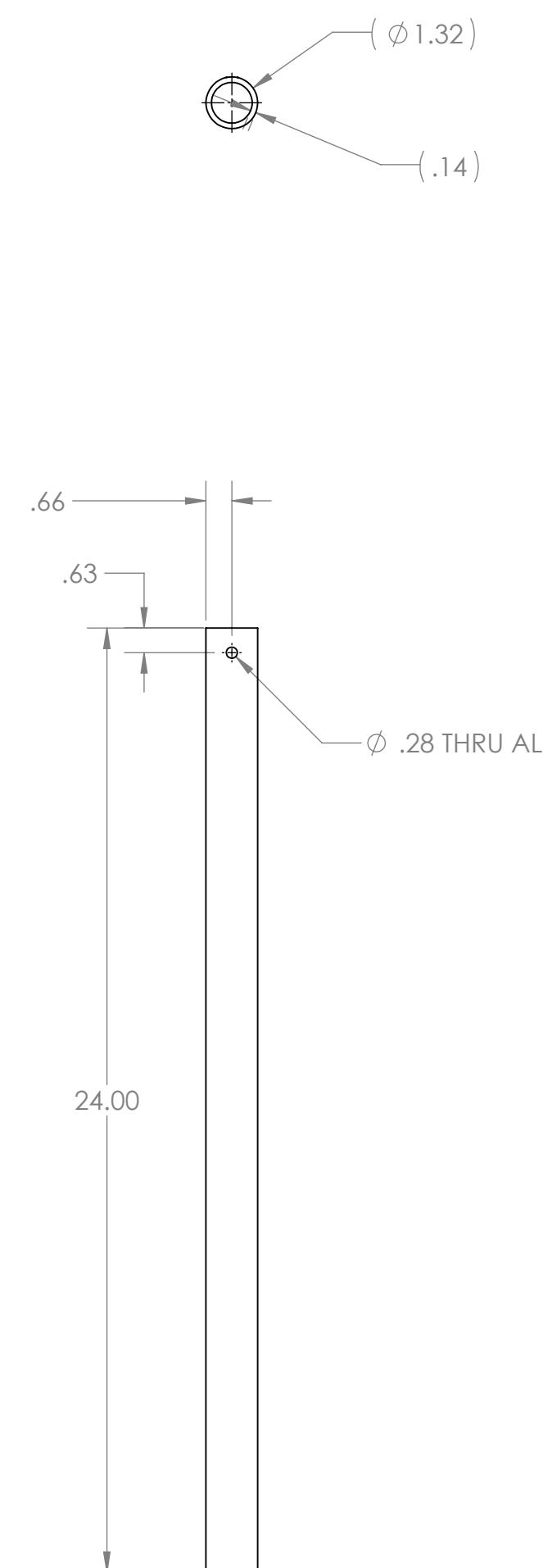
TITLE:
**Fender Pipe
Assembly**

SIZE DWG. NO. REV
C GE-22346

SCALE: 1:3 SHEET 2 OF 2

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Tag or label with part number in this space ONLY (within $1.50^{\prime \prime}$ from the top of the part)

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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^{\circ}$ BEND $\pm 1^{\circ}$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	DRAWN	KAMC	7/7/2021
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST [®] . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST [®] IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
Schedule 40, 1 in. 6061 Aluminum Pipe	C	GE-22347	
DO NOT SCALE DRAWING	SCALE: 1:4		
SHEET 1 OF 1			A

FIRST[®] ROBOTICS COMPETITION DS SOLIDWORKS Modeling Solutions Partner

TITLE:
Fender Pipe

SIZE DWG. NO. REV
C GE-22347

SCALE: 1:4 SHEET 1 OF 1

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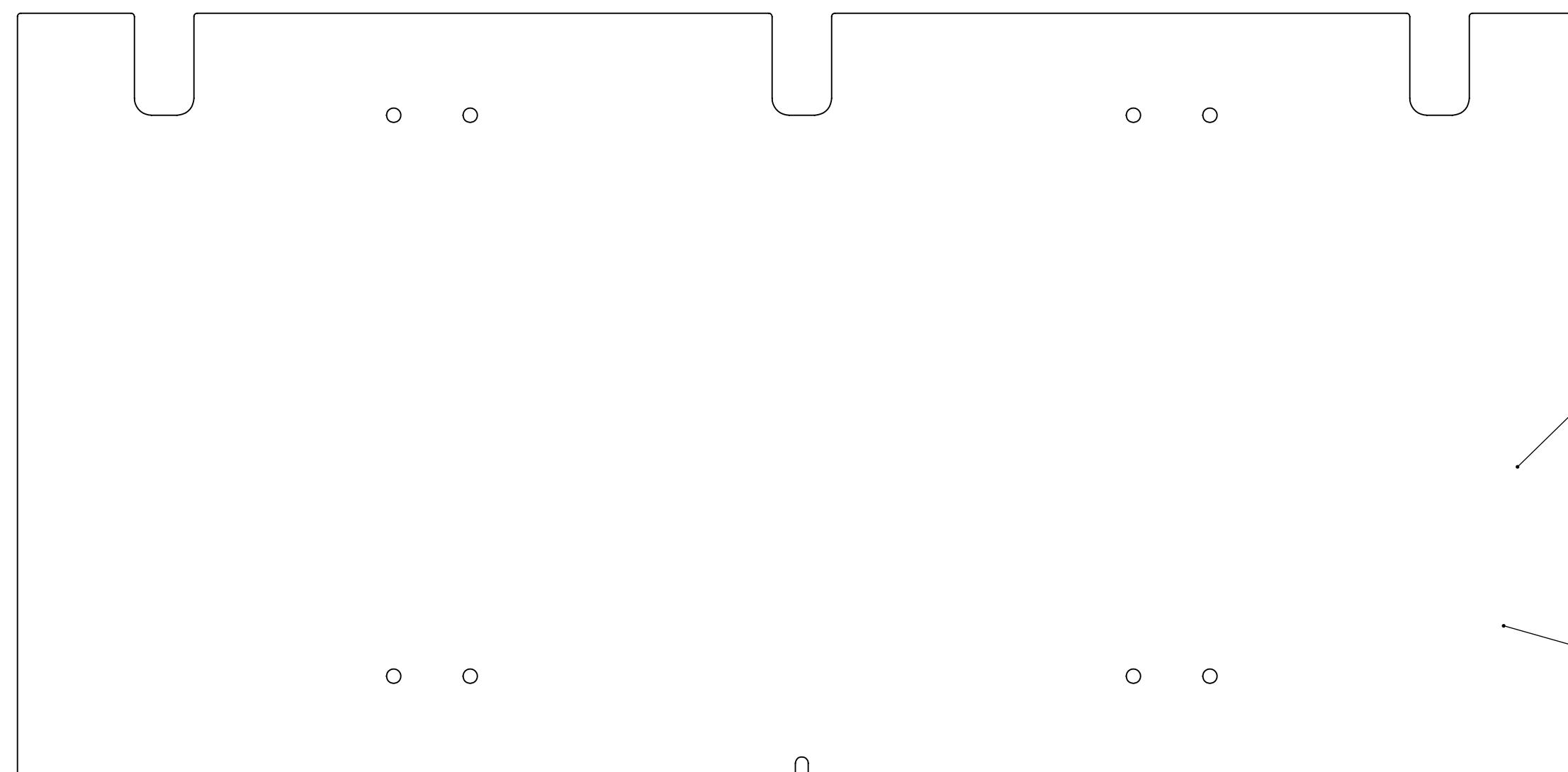
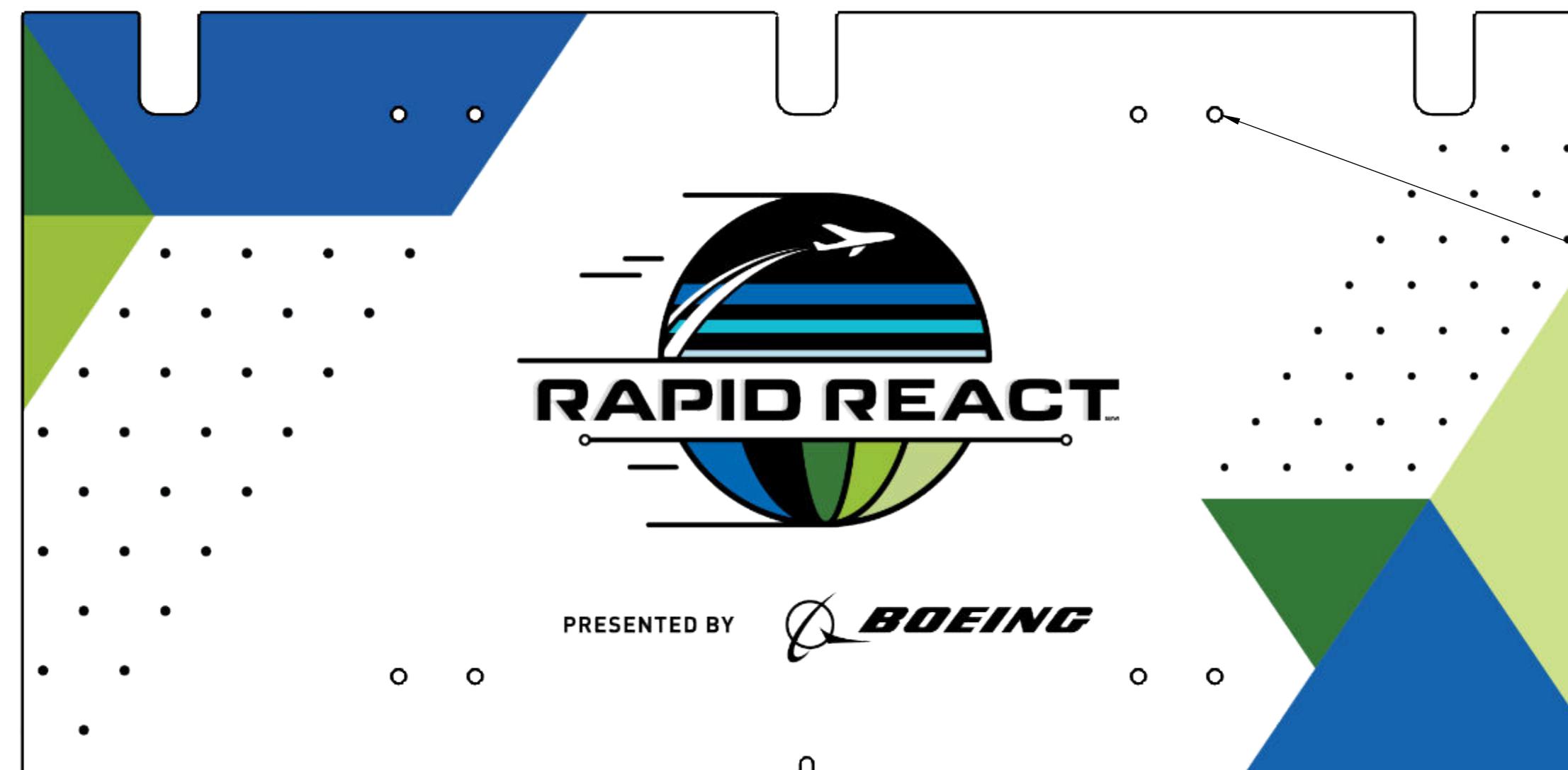
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- Notes:
1. Tag or label with part number
 2. Standard vinyl (not mesh)

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	9/29/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: Polycarbonate/Vinyl			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Fender Front
Polycarbonate with
Vinyl

SIZE DWG. NO. REV

C GE-22348

SCALE: 1:4 SHEET 1 OF 1

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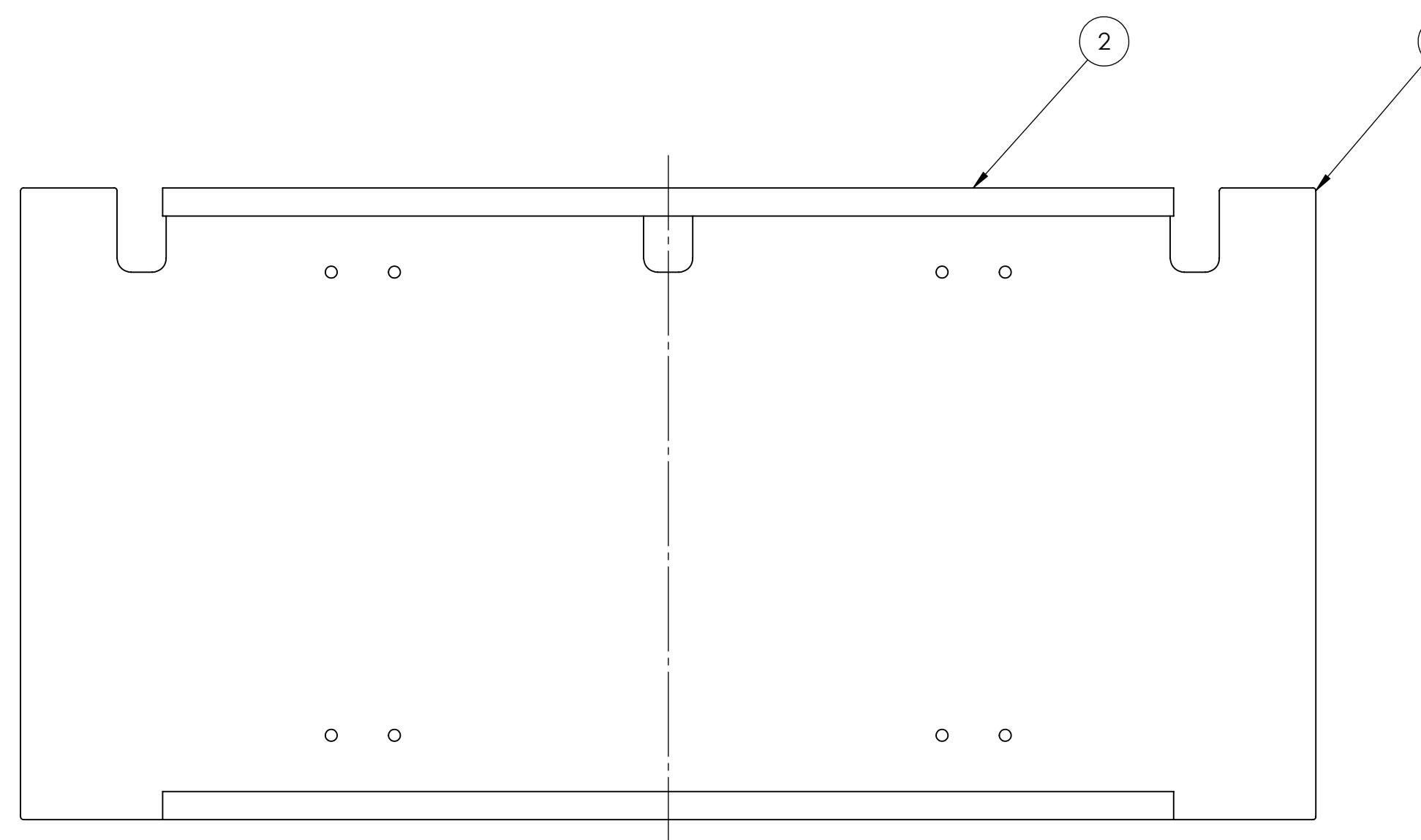
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Notes:

1. Make sure surface of (1) is clean prior to loop application.
2. Attach (2) to (1) in locations shown. (2) should be attached on side of (1) without vinyl.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22348	Fender Front Polycarbonate with Vinyl	1
2	Loop_1_36	1" x 36" Loop, Adhesive Backed	2

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	11/3/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL		
MATERIAL/FINISH:	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

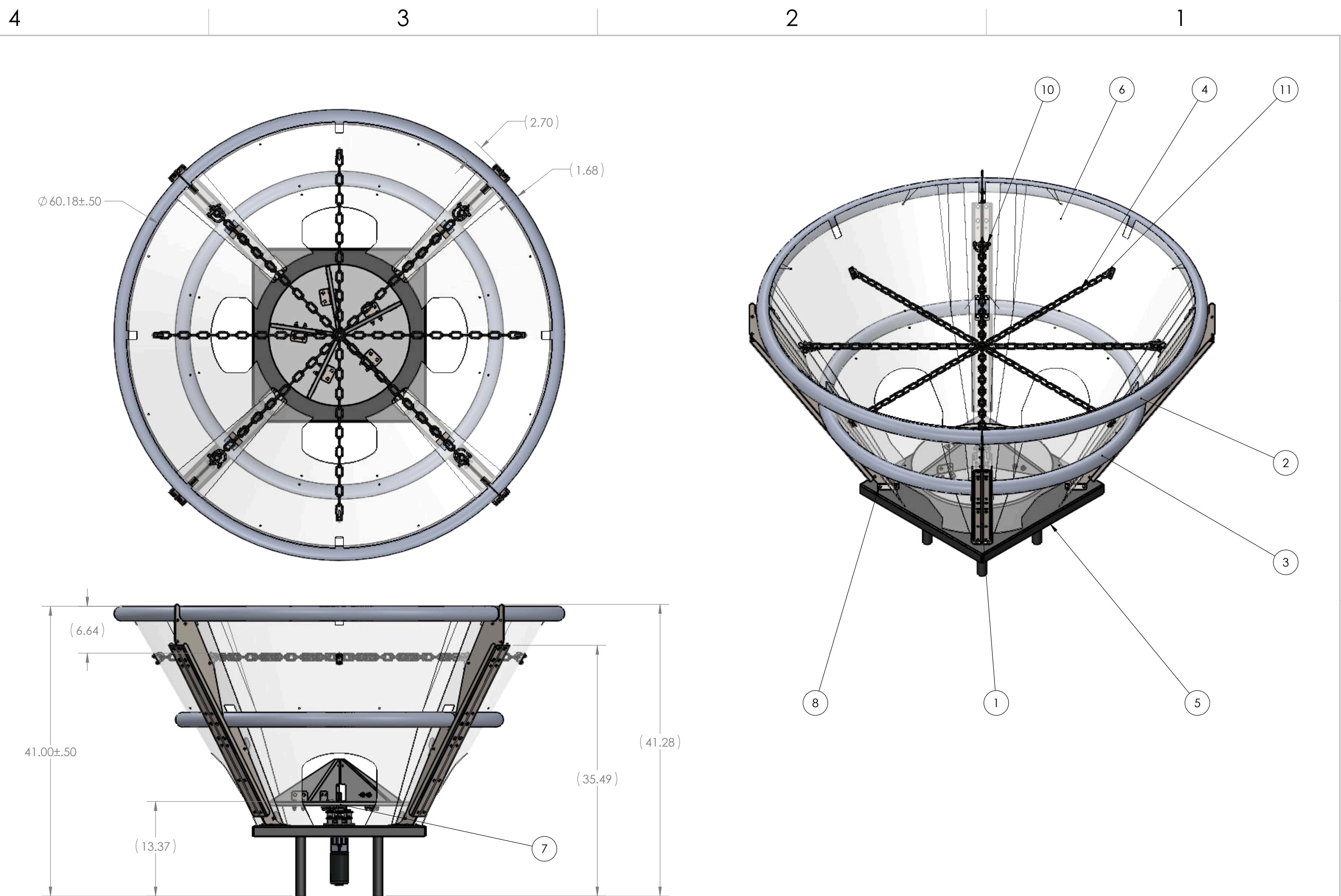
FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

TITLE: Fender Vinyl Polycarbonate with Loop

SIZE DWG. NO. REV

C GE-22349

SCALE: 1:5 SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22352	Lower Hub Ring Support Assembly	4
2	GE-22353	Lower Hub Top Ring	1
3	GE-22354	Lower Hub Bottom Ring	1
4	GE-22355	Lower Hub Chain	4
5	GE-22356	Lower Hub Base	1
6	GE-22357	Lower Hub Panel	4
7	GE-22431	Low Agitator Assembly	1
8	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	20
9	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	20
10	pin_.25_2.375_wirelockclevis	Wire-Lock Clevis Pin	4
11	Ubolt_.25_.75_1.25	U-Bolt 1/4-20 x 3/4 ID x 1-1/4 height	4

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/29/2021
TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	FIRST ROBOTICS COMPETITION		
PROPRIETARY AND CONFIDENTIAL	SOLIDWORKS Modeling Solutions Partner		
MATERIAL/FINISH:	TITLE: Lower Hub		
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.	SIZE	DWG. NO.	REV
	C	GE-22351	
DO NOT SCALE DRAWING	SCALE: 1:10	SHEET 1 OF 4	

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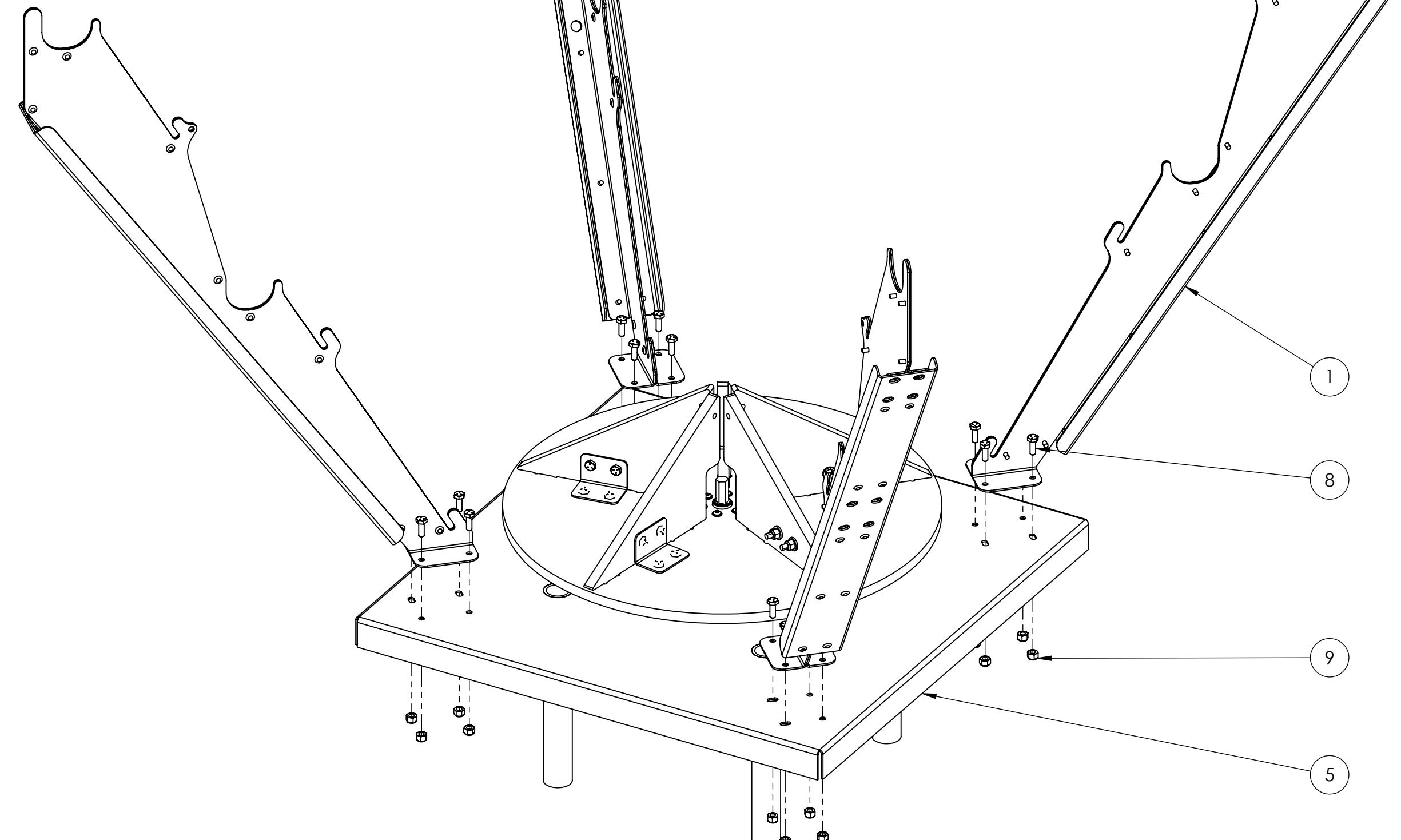
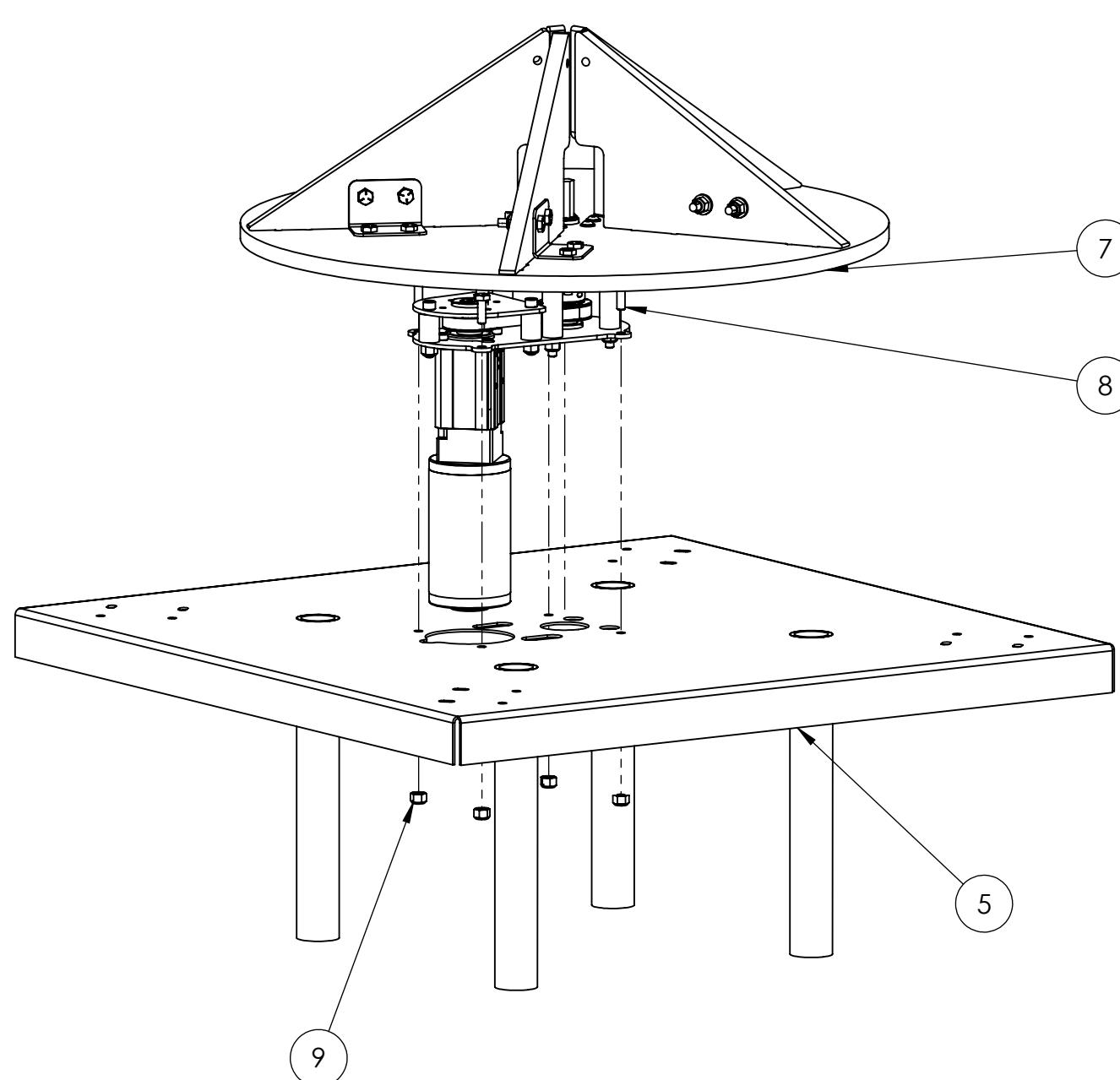
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Notes:

1. Attach (1) to (5) using (8) and (9).

Notes:

1. Attach (7) to (5) as shown using (8) and (9).

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/29/2021
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION	SOLIDWORKS Modeling Solutions Partner	
TITLE: Lower Hub		
SIZE	DWG. NO.	REV
C	GE-22351	
SCALE: 1:5		SHEET 2 OF 4

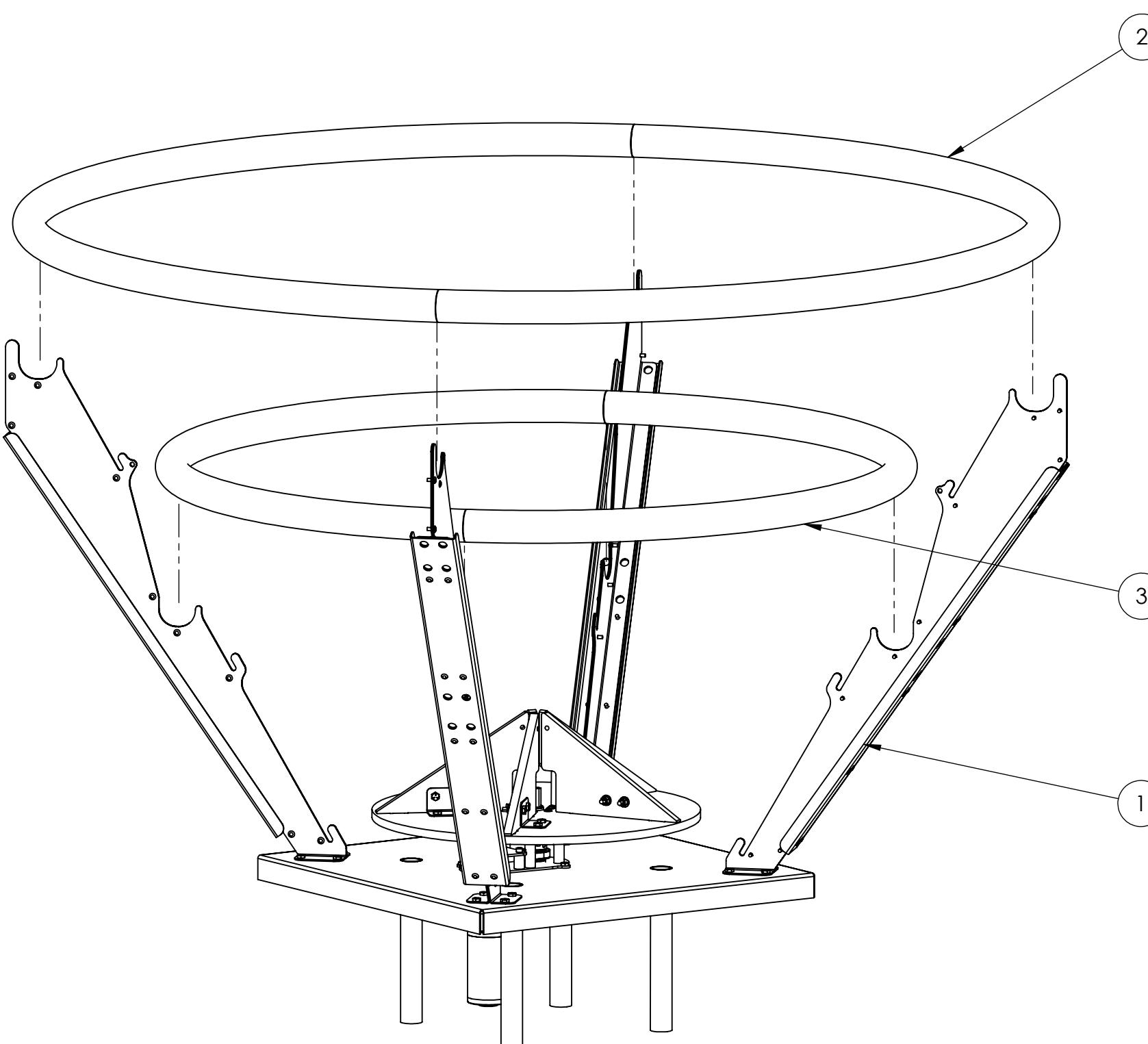
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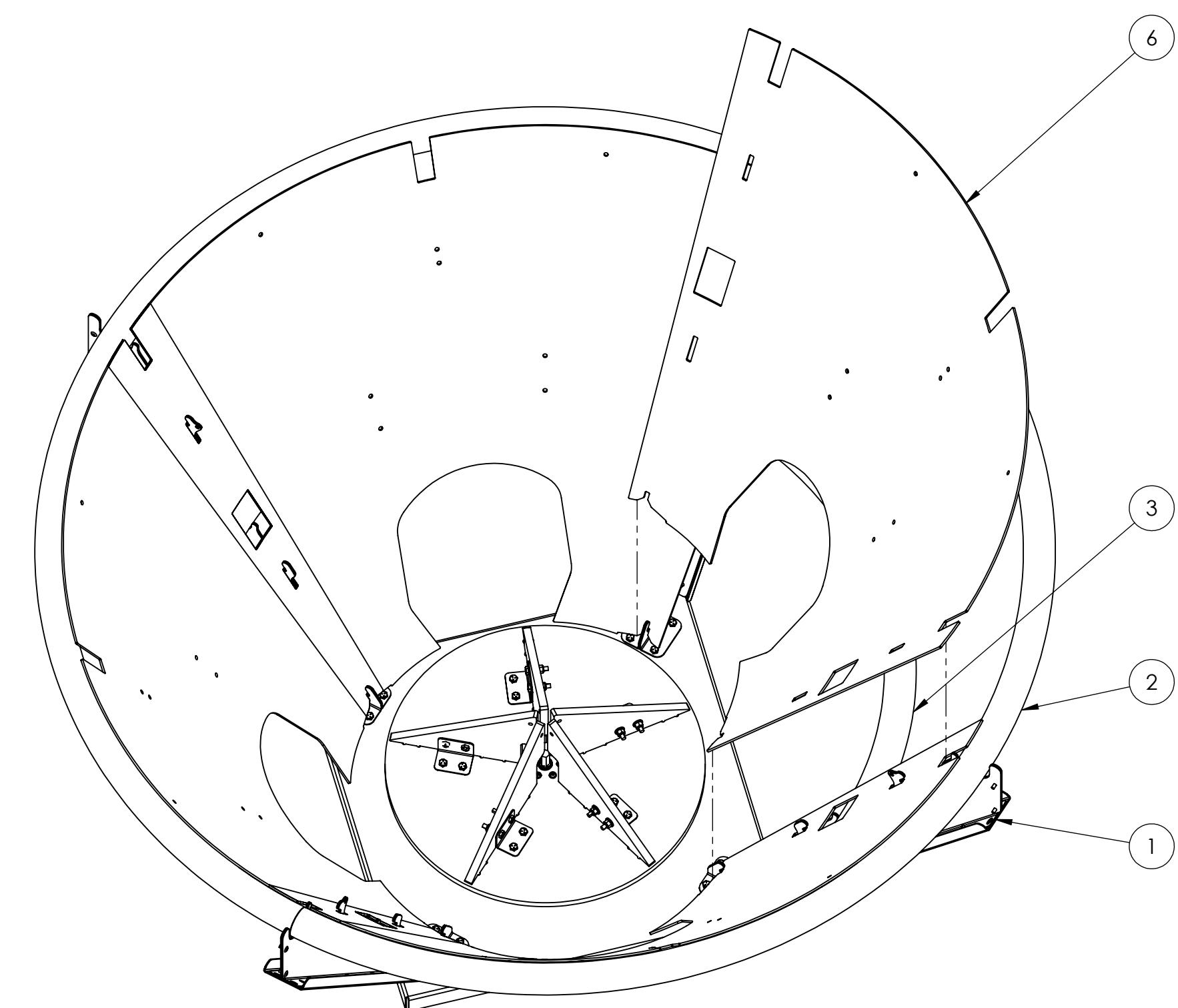
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Notes:

1. Attach (3) and (2) to each (1) using 120 lb. cable ties.

Notes:

1. Insert all (6) into the assembly, bending into place and aligning with the hooks on (1).
2. Cable tie (6) to (2) and (3).

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DRAWN	CO	12/29/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
	C	GE-22351	
COMMENTS:		SCALE: 1:8	
REMOVE ALL BURRS AND SHARP EDGES.		SHEET 3 OF 4	
DO NOT SCALE DRAWING			

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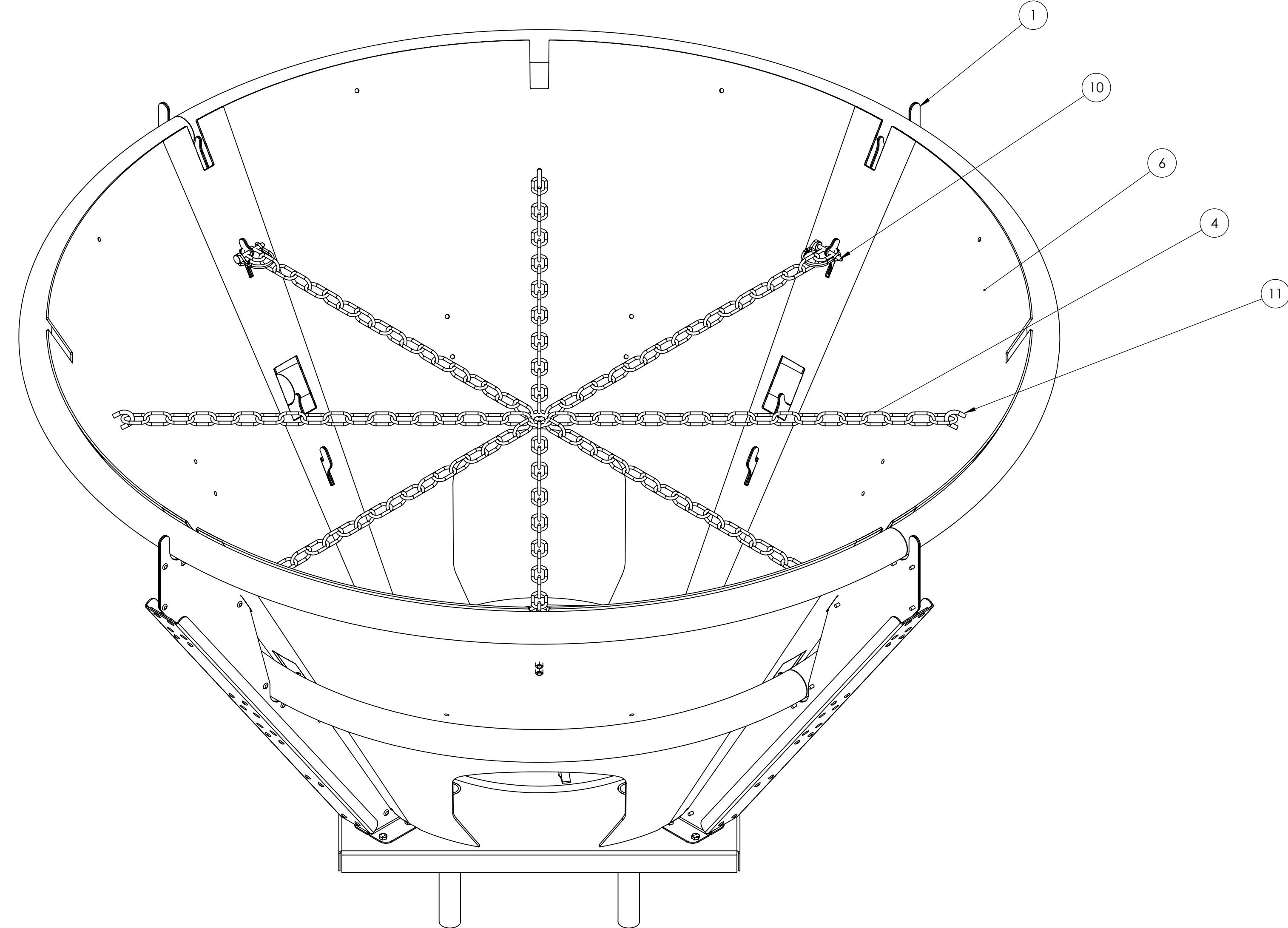
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Notes:

1. Attach (4) to (1) using (10) as shown.
2. Attach (4) to (6) using (11) as shown.

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DRAWN	CO	12/29/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

TITLE:
Lower Hub

SIZE DWG. NO. REV
C GE-22351

SCALE: 1:5 SHEET 4 OF 4

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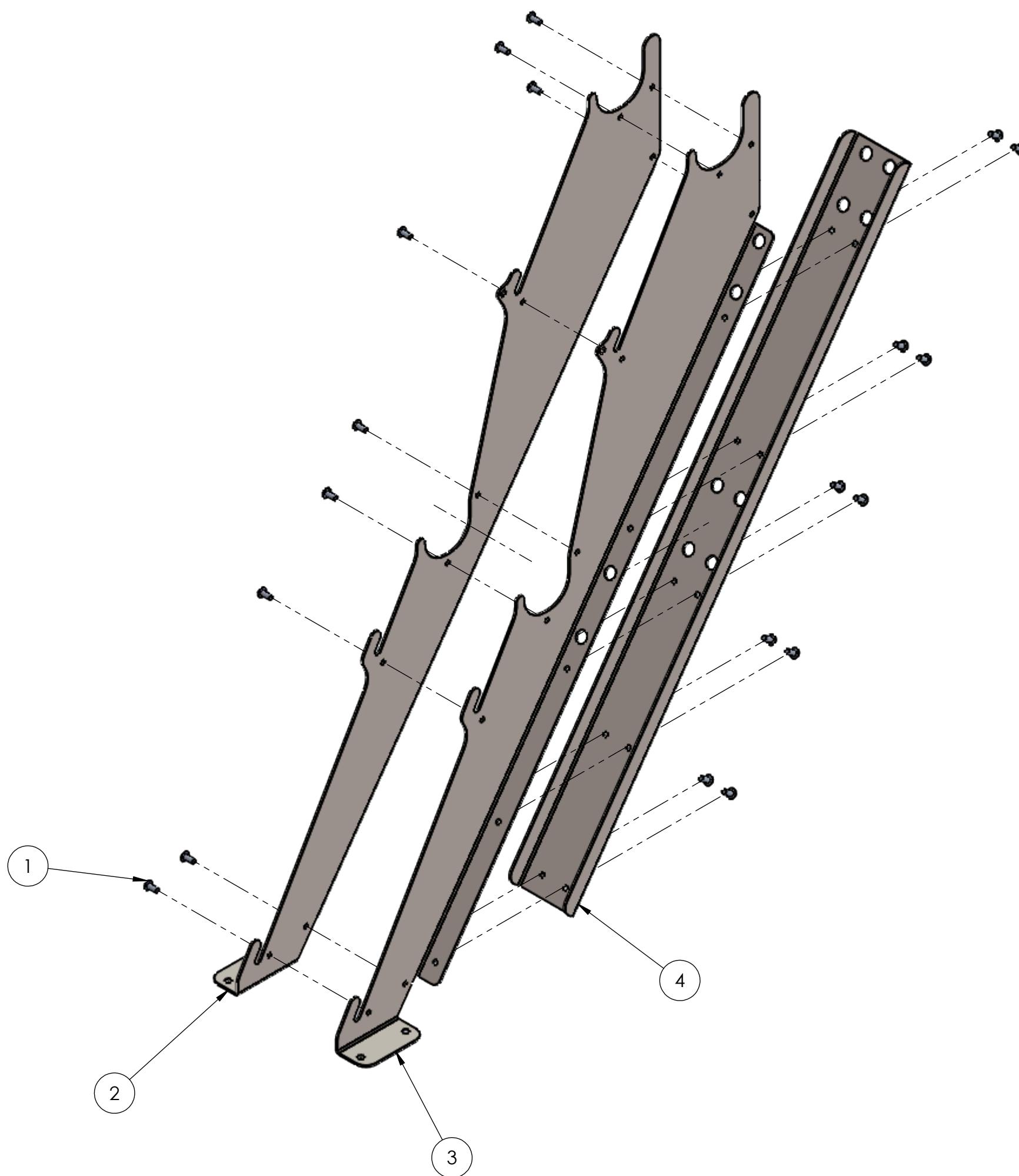
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EXPLODED VIEW



A technical line drawing of a long, thin metal beam or plate, likely made of steel, oriented vertically. The beam has a rectangular cross-section and is supported by two vertical legs at its base. The top edge of the beam features several small, irregular notches or holes. The entire assembly is shown in perspective, highlighting its length and the support structure.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	19
2	GE-22352-01	Ring Support Left Side	1
3	GE-22352-02	Ring Support Right Side	1
4	GE-22352-03	Ring Support Back	1

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .001$

MATERIAL/FINISH:

Rivets should be plated or
stainless steel. Tag or label
with part number.

DO NOT SCALE DRAWING

The image shows the official FIRST Robotics Competition logo on the left, which consists of a red triangle and a blue square forming a stylized 'F' shape. To the right of the logo is the text "FIRST" in a bold, black, sans-serif font, followed by "ROBOTICS" in a large, blue, bold, sans-serif font, and "COMPETITION" in a slightly smaller, blue, bold, sans-serif font. To the right of this is the DS SOLIDWORKS logo, featuring a red stylized 'D' and 'S' icon followed by the word "SOLIDWORKS" in a red, bold, sans-serif font, and "Modeling Solutions Partner" in a smaller, black, sans-serif font.

SIZE	DWG NO	REV
------	--------	-----

C GE-22352

SCALE: 1:4 SHEET 1 OF 2

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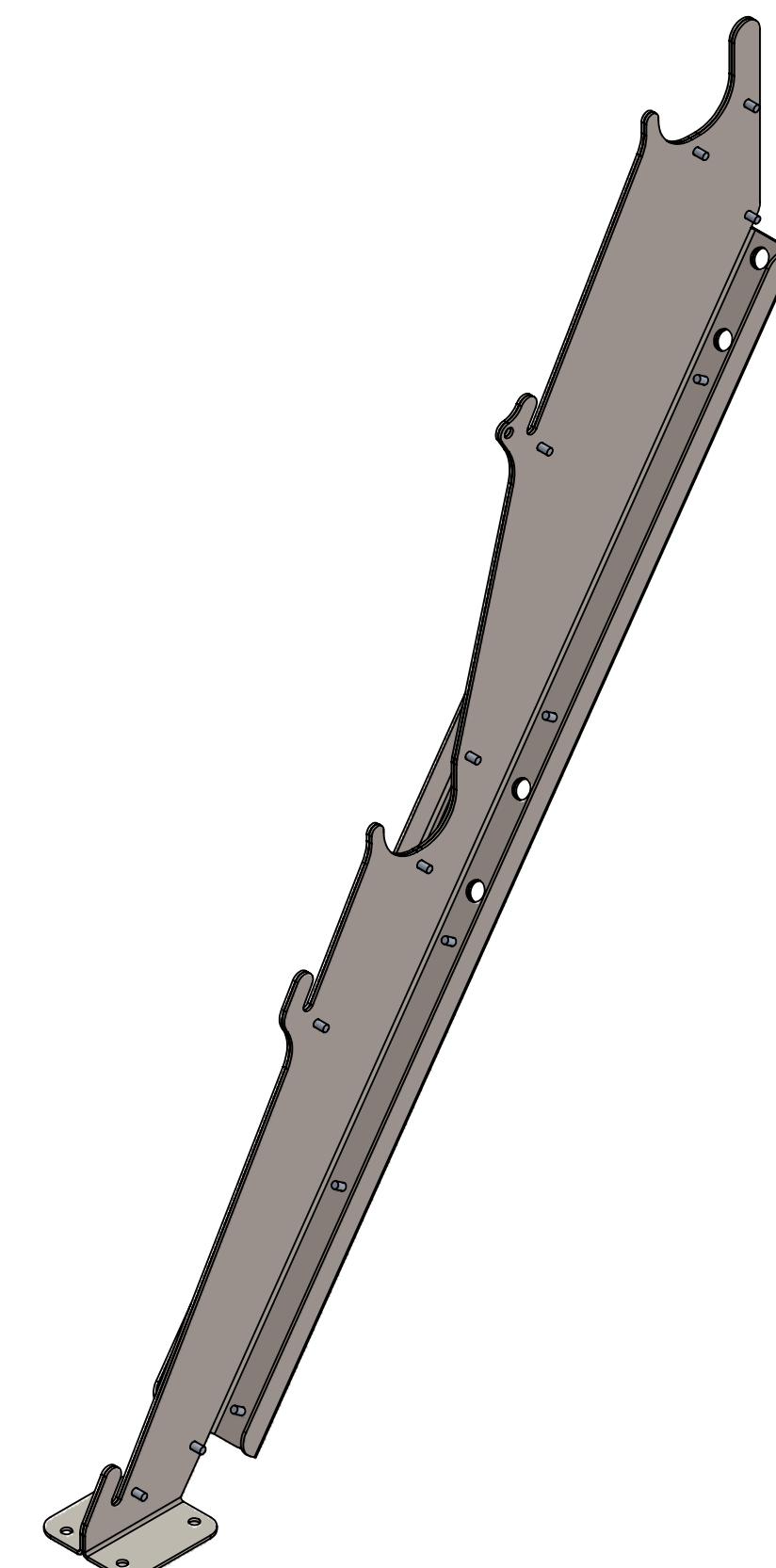
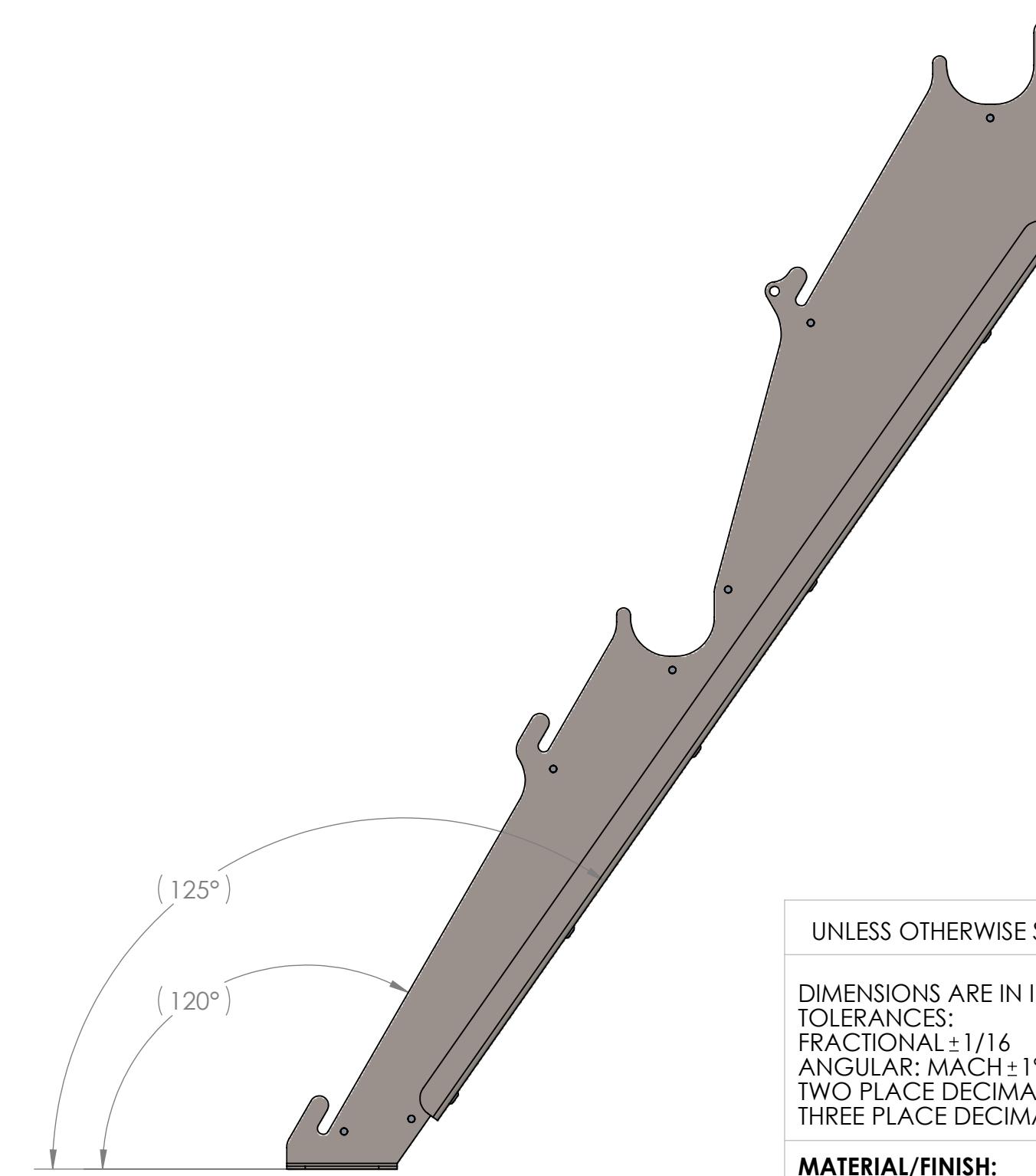
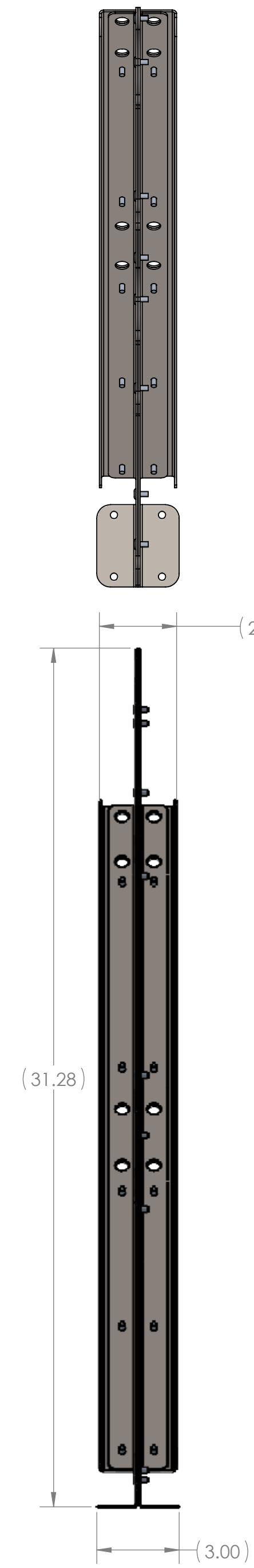
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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$ **MATERIAL/FINISH:**

Rivets should be plated or
stainless steel. Tag or label
with part number.

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

KAMC

6/16/2021

PROPRIETARY AND CONFIDENTIAL

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PROPERTY OF FIRST®. ANY
REPRODUCTION IN PART OR AS A
WHOLE WITHOUT THE WRITTEN
PERMISSION OF FIRST® IS
PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP
EDGES.

TITLE: Lower Hub Ring Support Assembly

SIZE DWG. NO. REV

C GE-22352

SCALE: 1:4 SHEET 2 OF 2

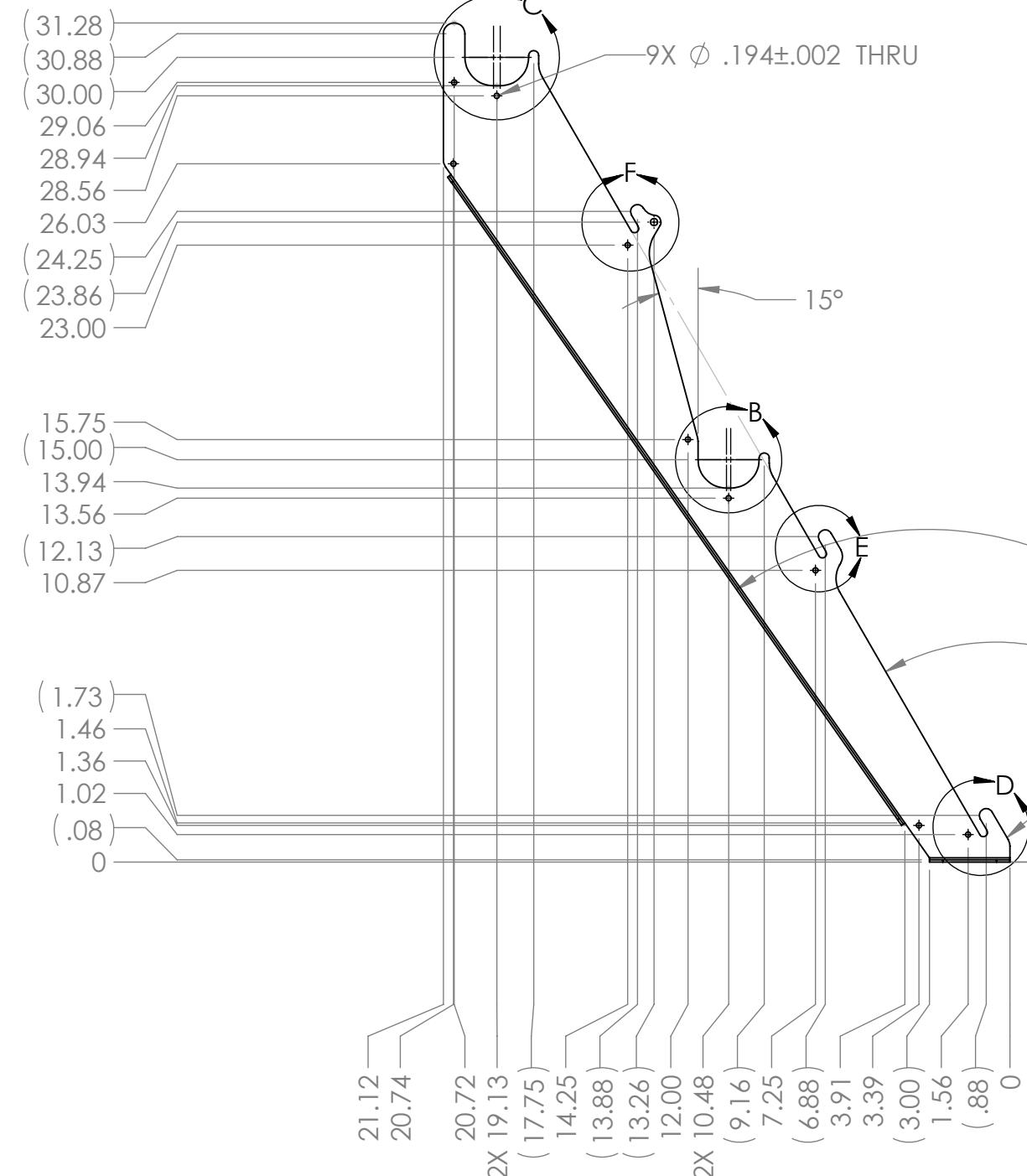
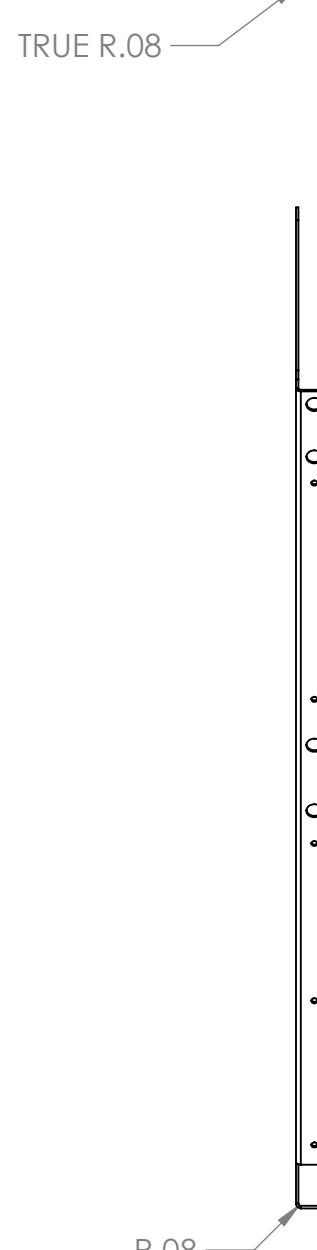
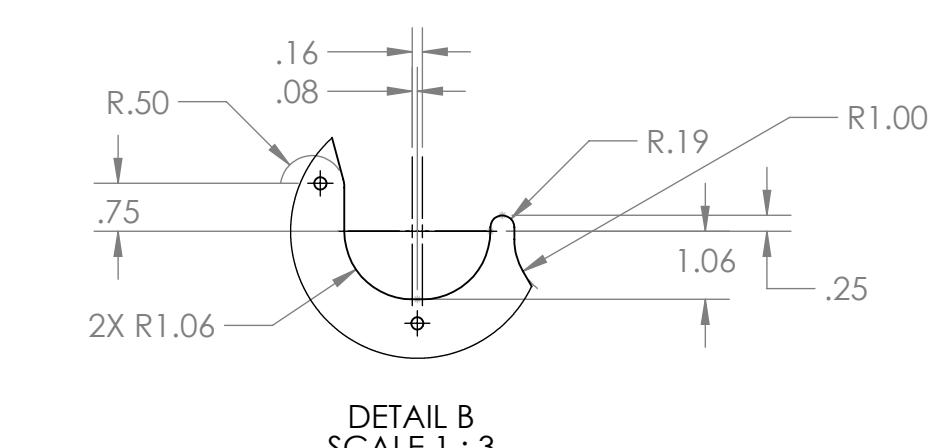
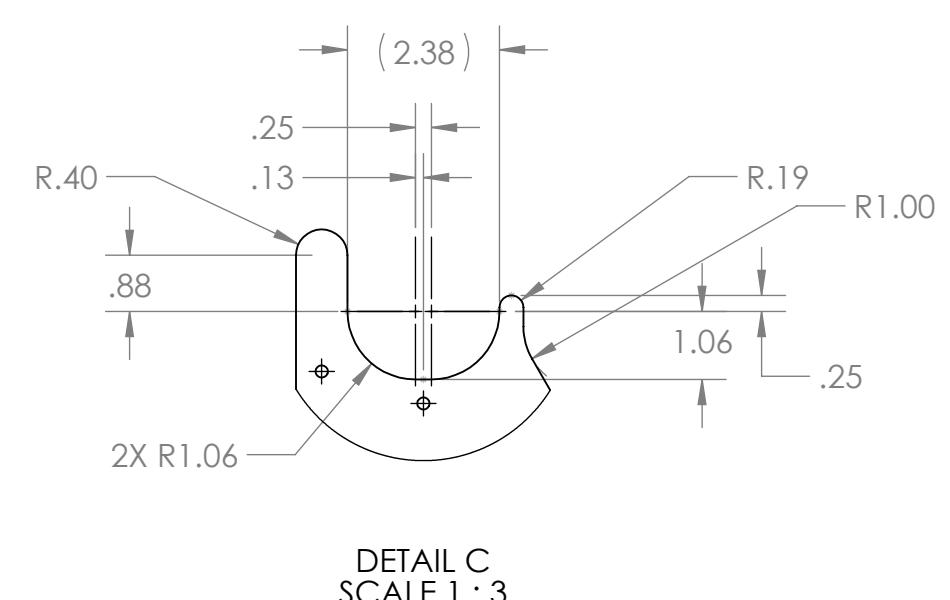
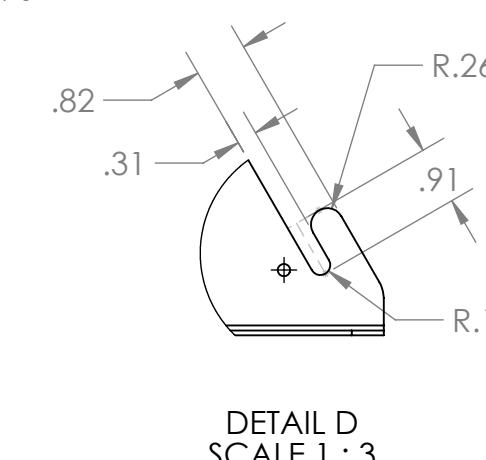
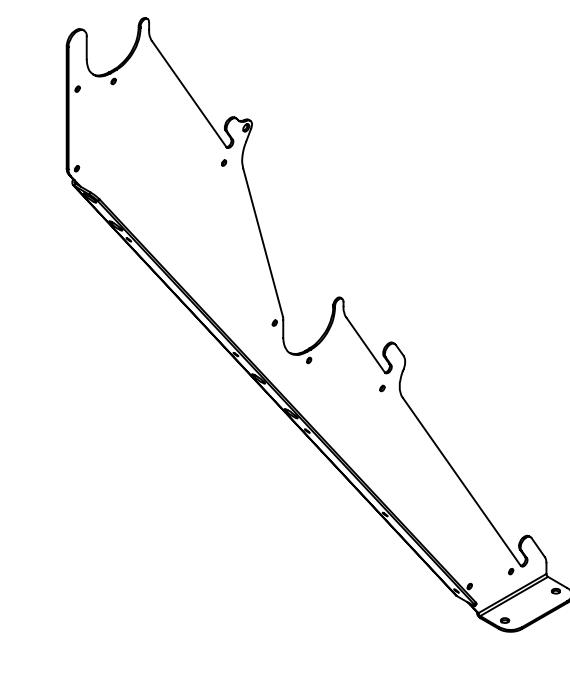
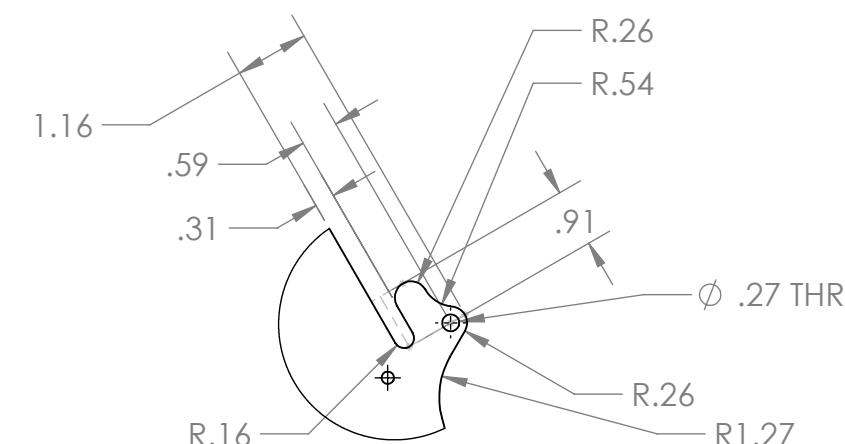
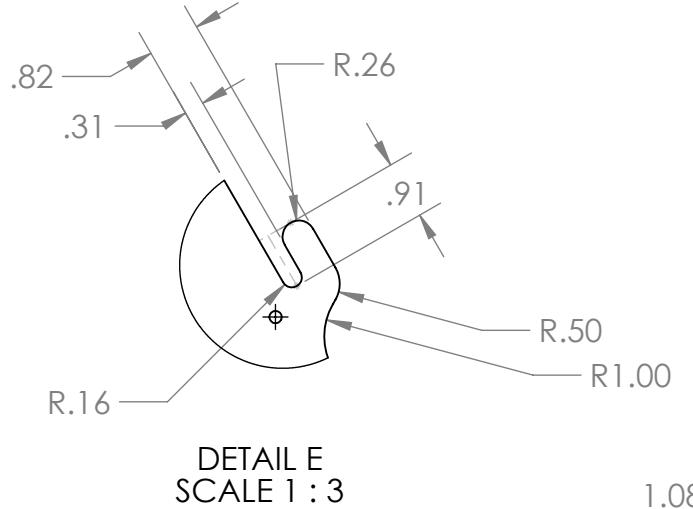
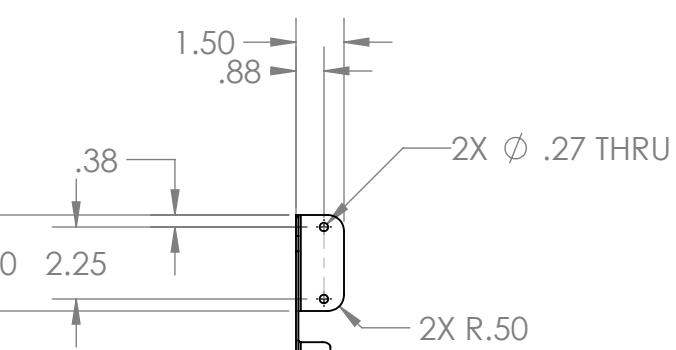
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UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	KAMC	6/16/2021
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 14 Gauge Pre-Plated Steel			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

Note: This part is a mirror of GE-22352-02



TITLE: Ring Support Left Side

SIZE DWG. NO. REV

C GE-22352-01

SCALE: 1:6 SHEET 1 OF 1

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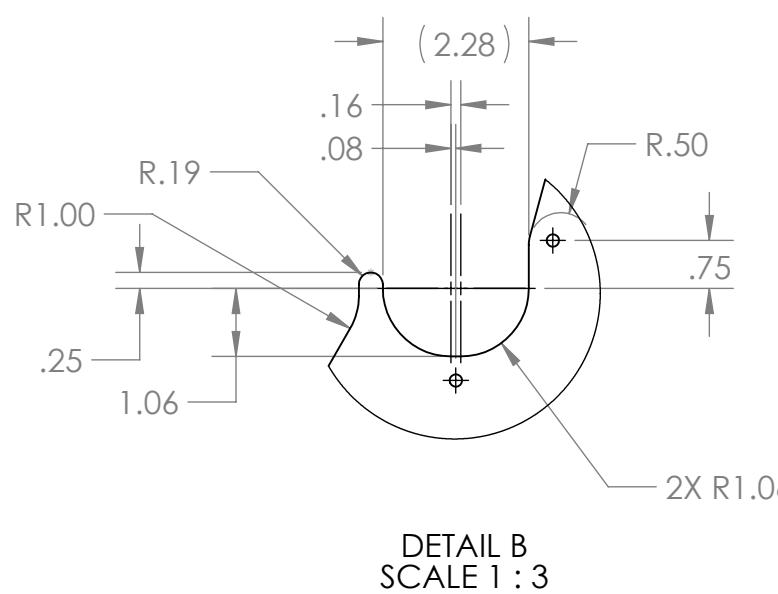
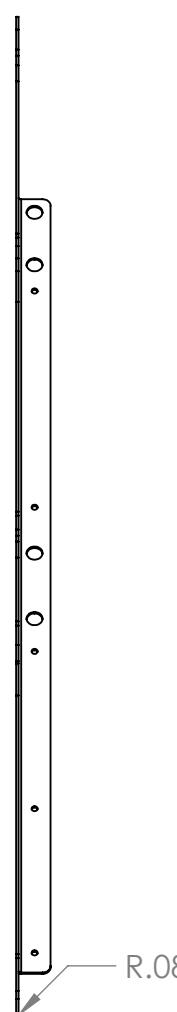
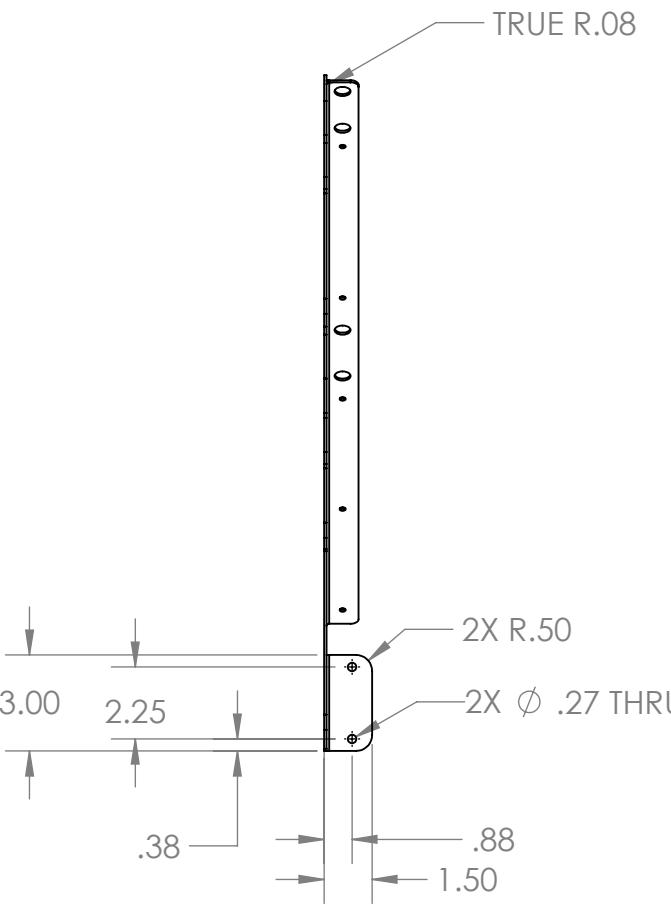
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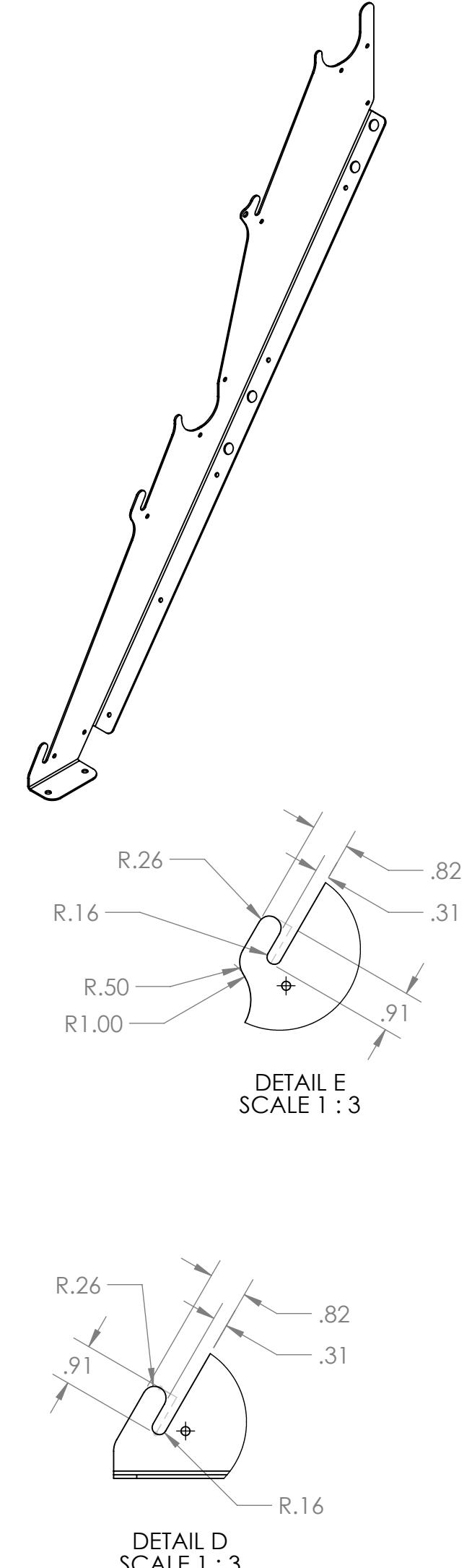
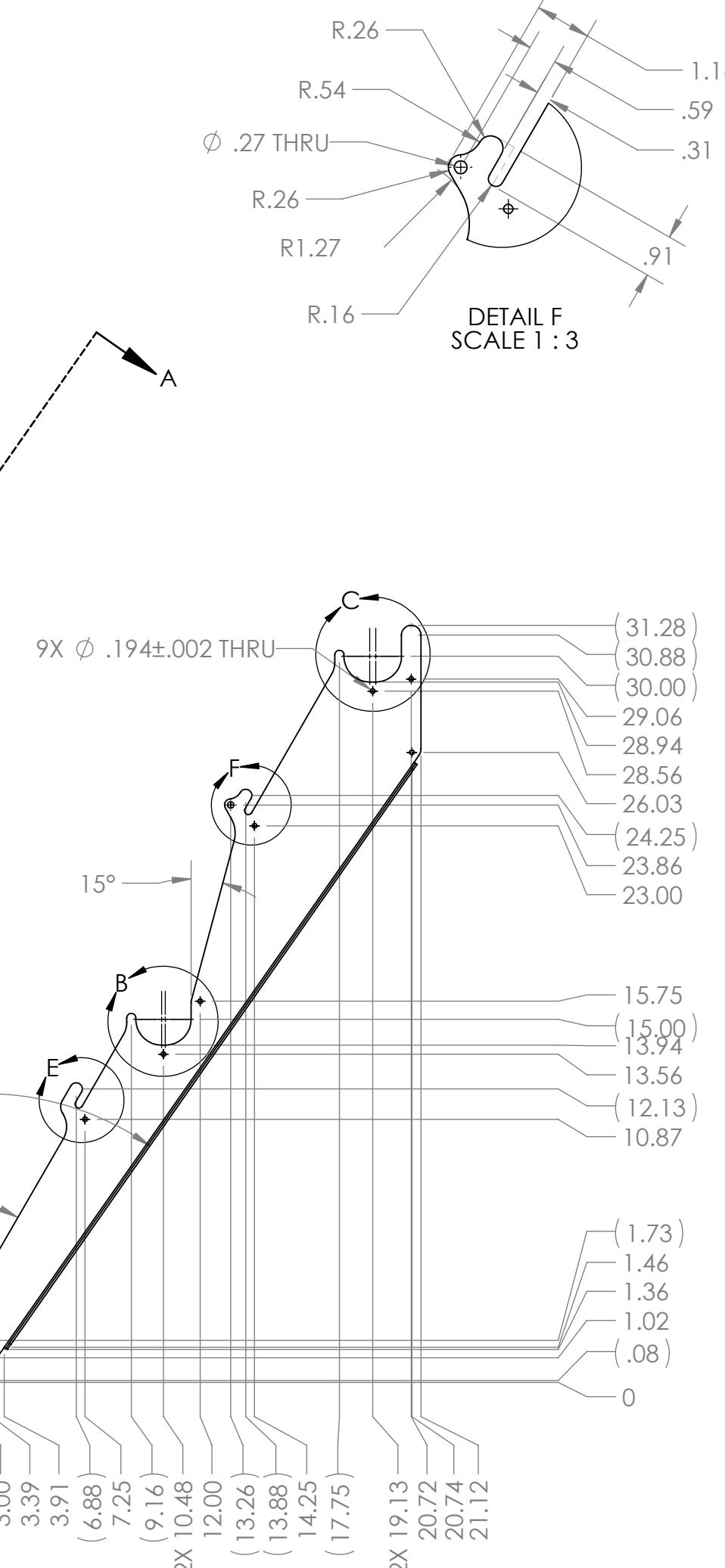
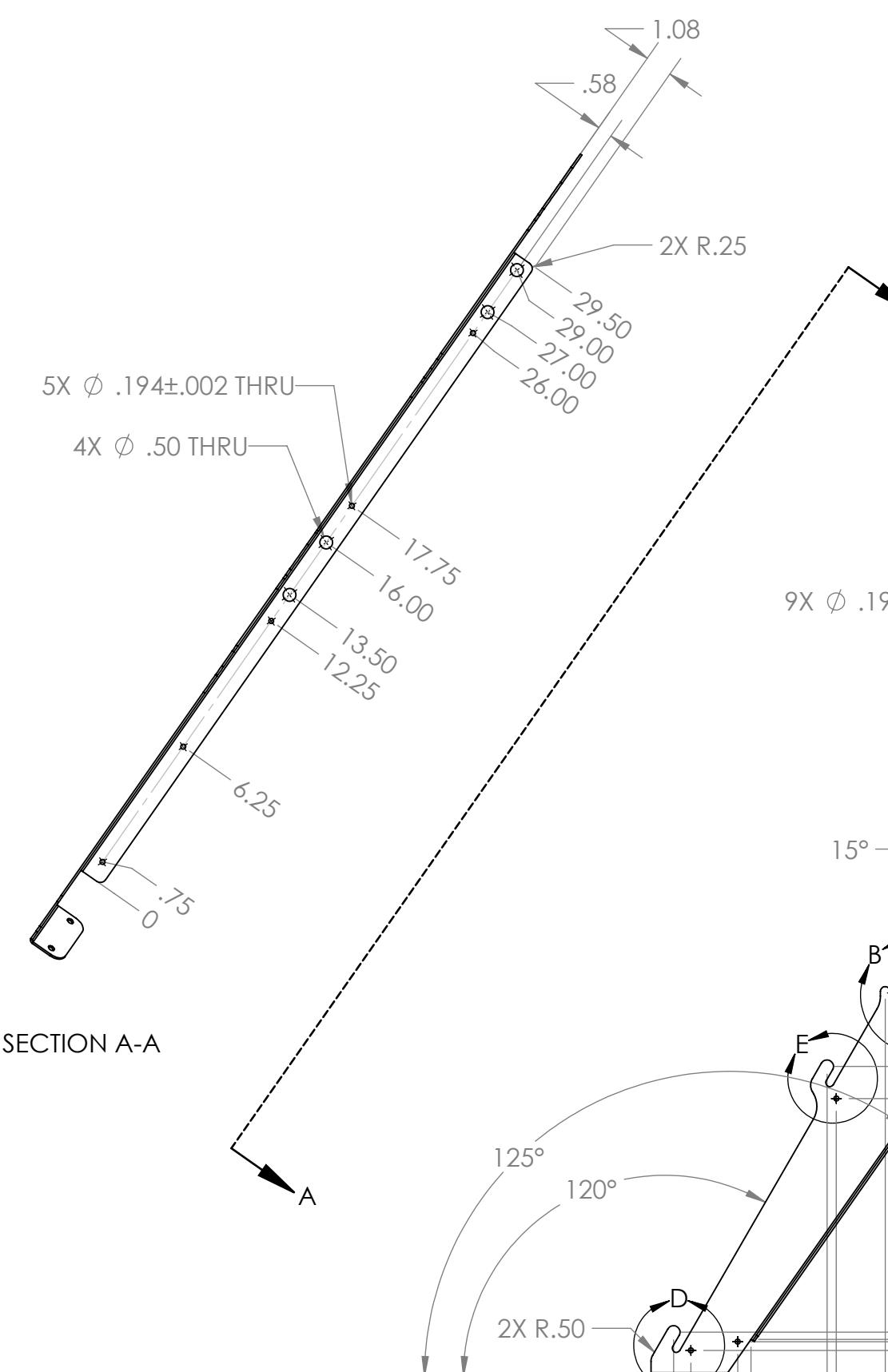
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SECTION A-A



Note: This part is a mirror of GE-22352-01

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/7/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 14 Gauge Pre-Plated Steel			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			



TITLE:
**Ring Support
Right Side**

SIZE DWG. NO. REV
C GE-22352-02

SCALE: 1:6 SHEET 1 OF 1

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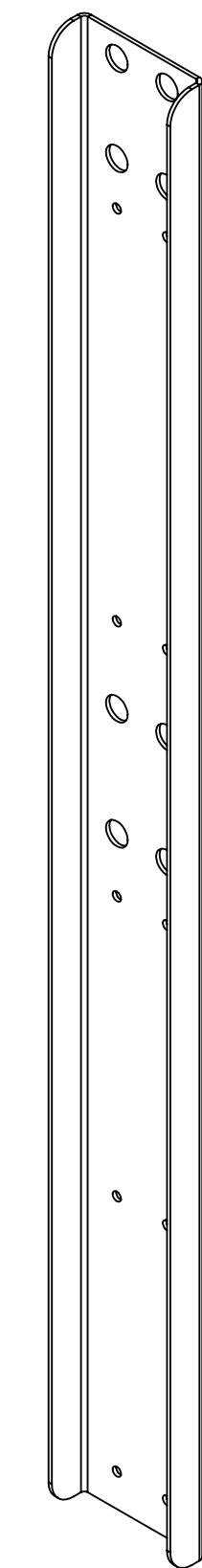
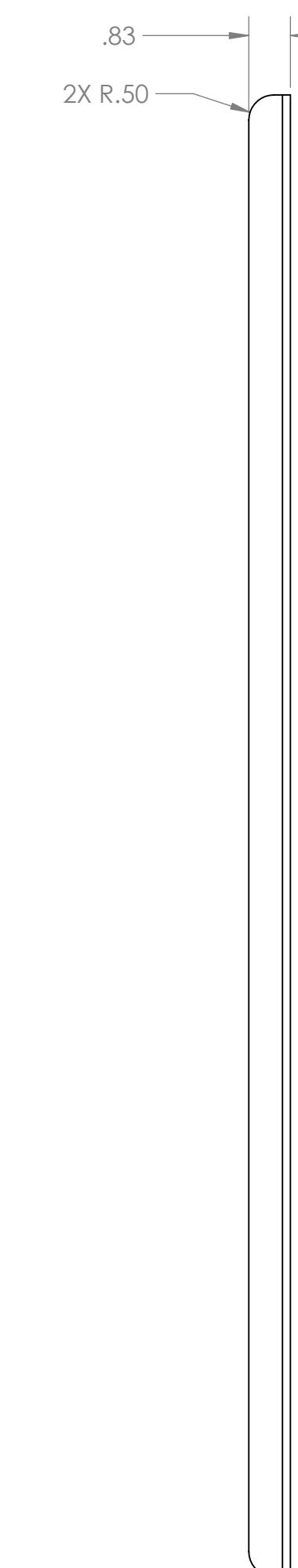
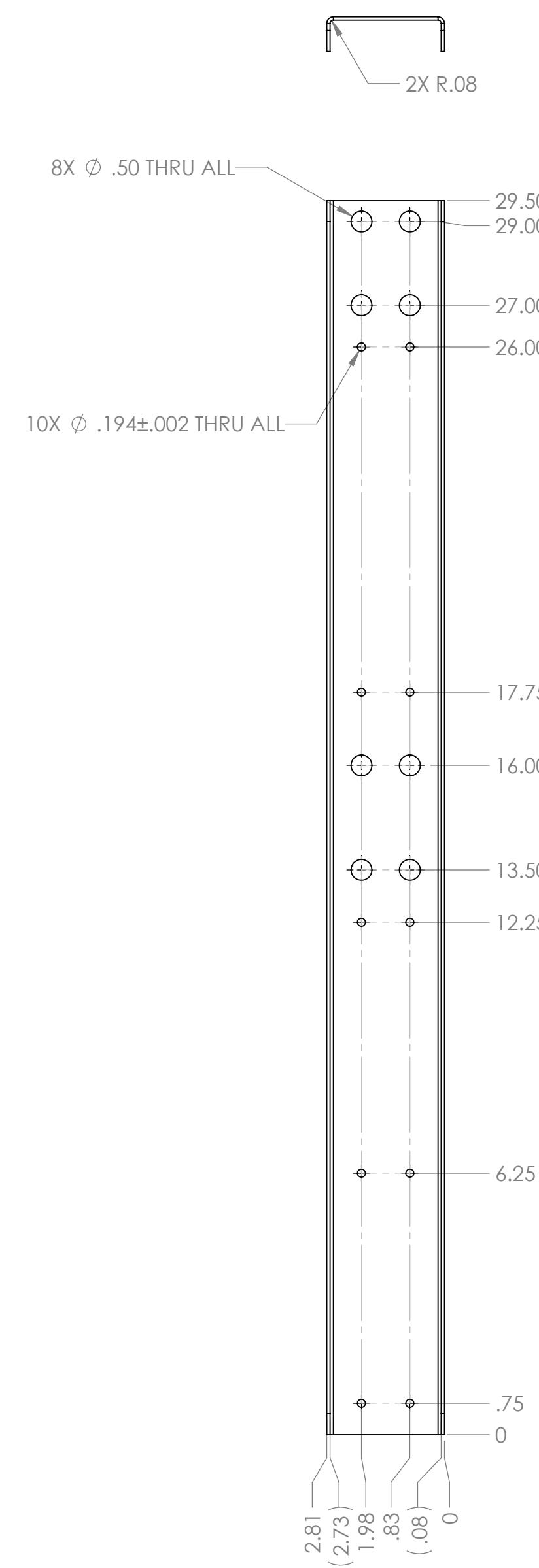
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UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	6/16/2021	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 14 Gauge Pre-Plated Steel			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
FIRST ROBOTICS COMPETITION			
SOLIDWORKS Modeling Solutions Partner			
TITLE: Ring Support Back			
SIZE DWG. NO. REV			
C GE-22352-03			
SCALE: 1:3 SHEET 1 OF 1			

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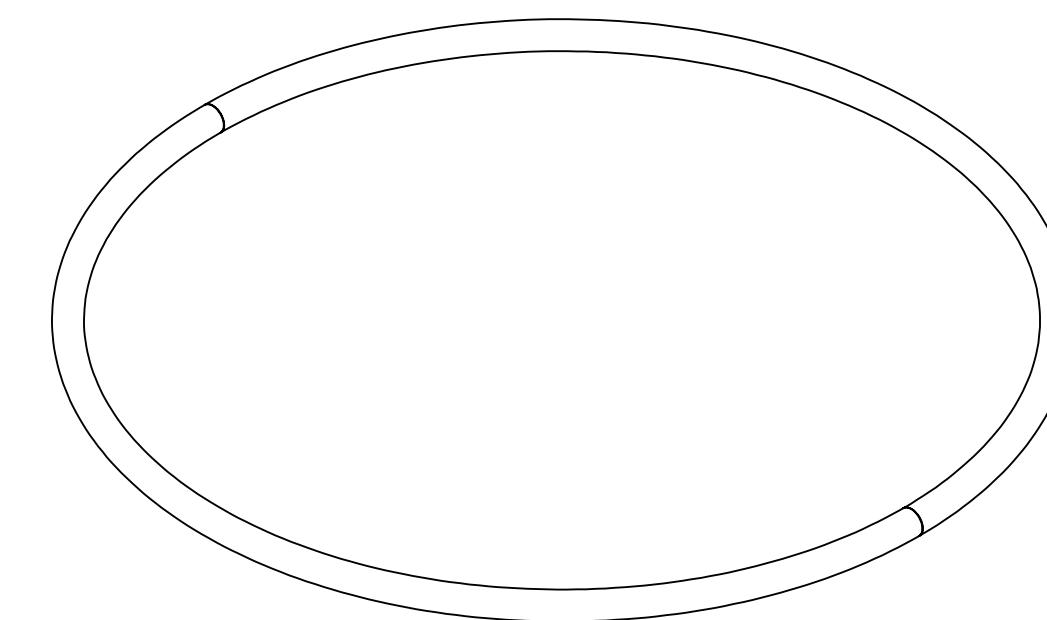
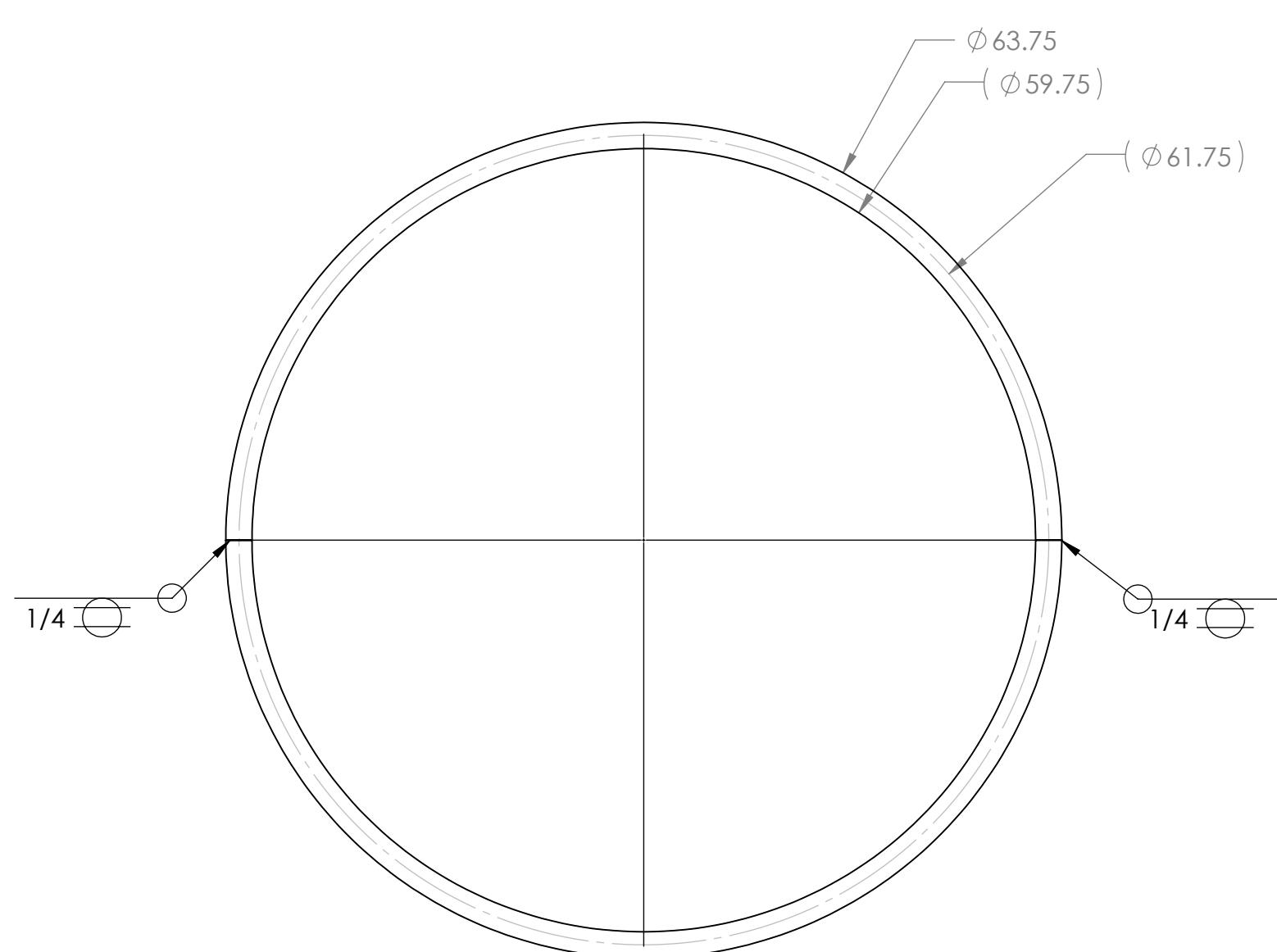
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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	KAMC	12/11/2020	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 2" diameter x .125" wall, 6061 Aluminum, Round Tube			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Lower Hub Top
Ring**

SIZE DWG. NO. REV
C GE-22353

SCALE: 1:12 SHEET 1 OF 1

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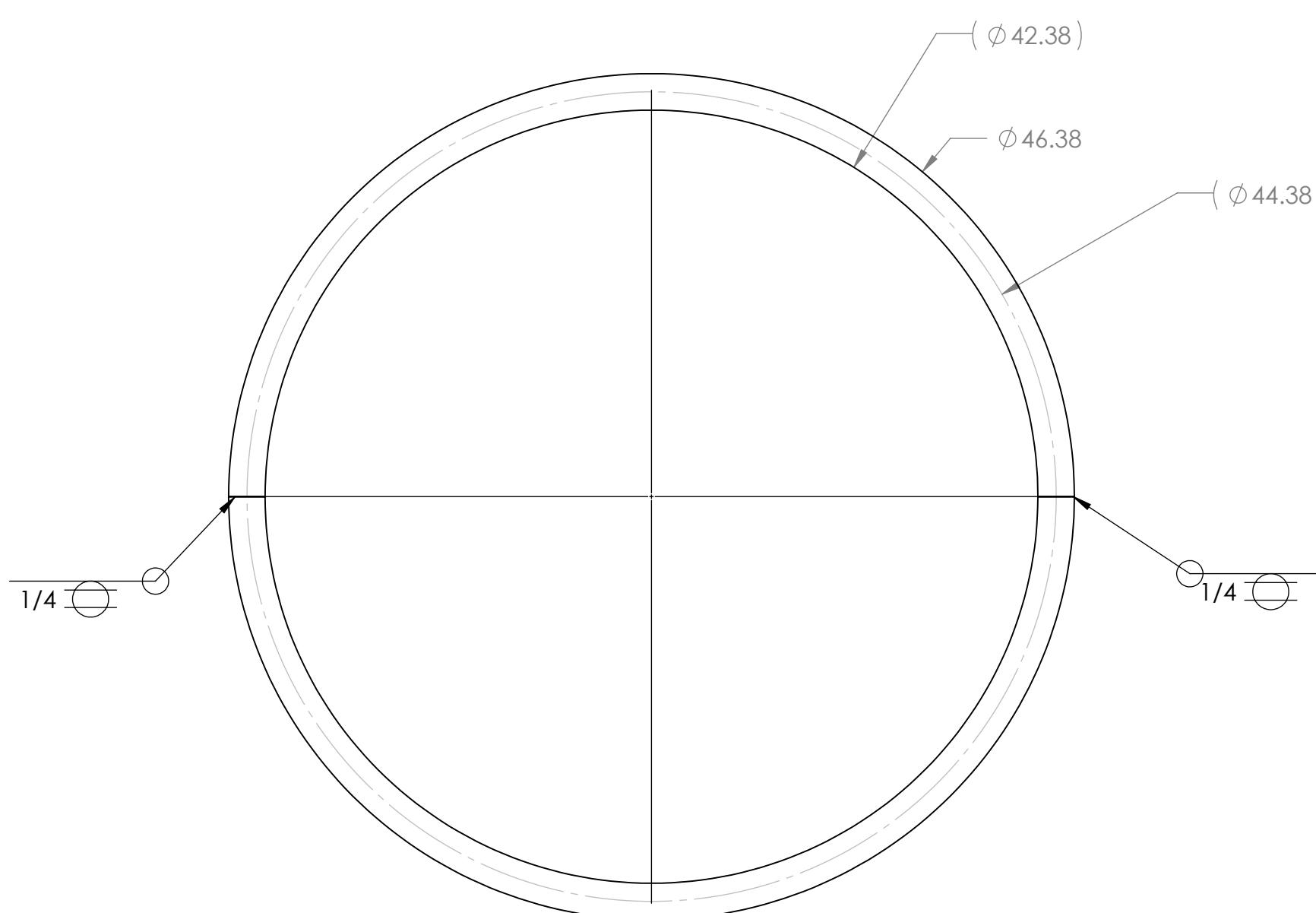
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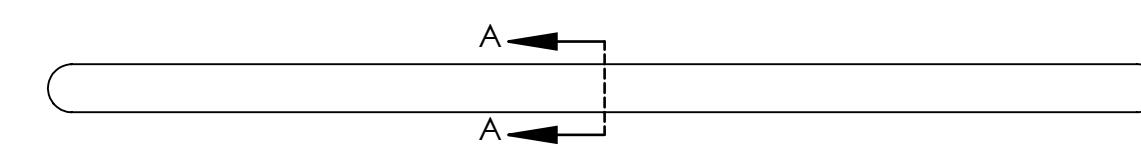
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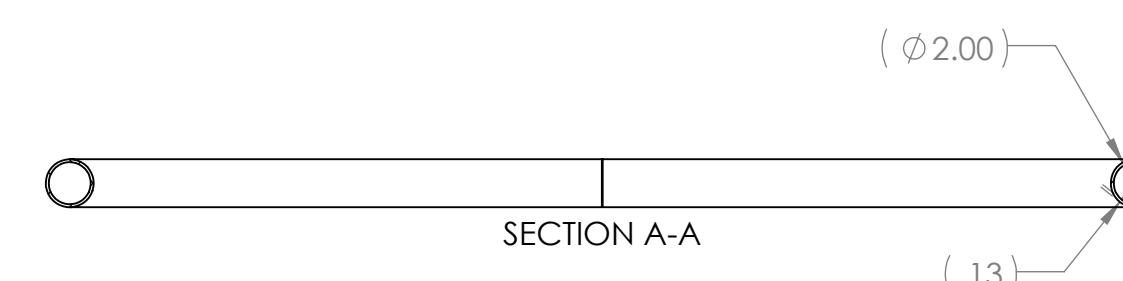
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SECTION A-A

- Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	KAMC	12/11/2020	
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH: 2" diameter x .125" wall, 6061 Aluminum, Round Tube			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Lower Hub
Bottom Ring**

SIZE DWG. NO. REV
C GE-22354

SCALE: 1:8 SHEET 1 OF 1

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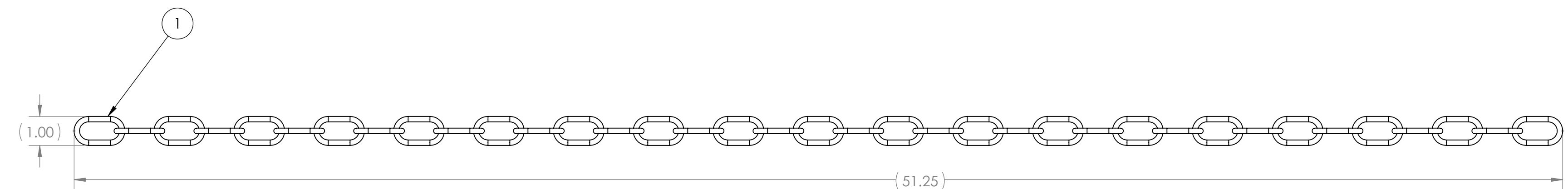
B

Description: CHAINBOSS Plastic Chain: US Weight 2 in., Black

Vendor: The Home Depot

Part Number: [internet] 315968945

Substitutions allowed with permission from FIRST HQ.



ITEM NO.	PART NUMBER		DESCRIPTION		QTY.
1	GE-22355-01		Individual Chain		37
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE		
	DRAWN	KAMC	6/21/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$					
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH: Black					
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING					

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

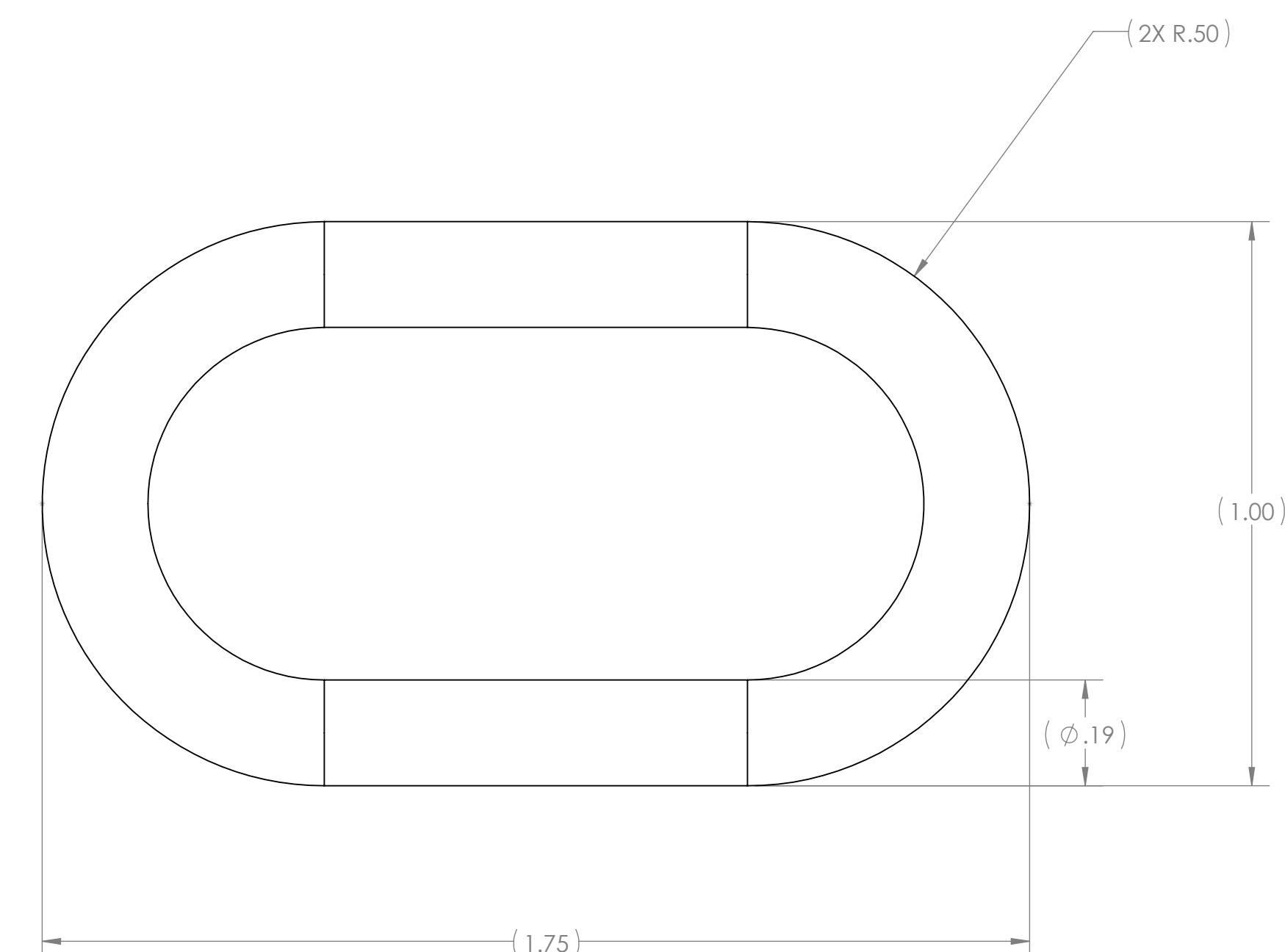
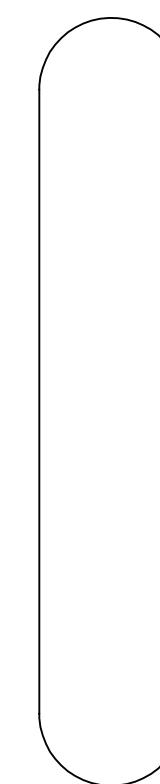
TITLE:
Lower Hub
Chain

SIZE DWG. NO. REV
C GE-22355

SCALE: 1:3 SHEET 1 OF 2

D

GE-22355-01



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Note: Description, Vendor, and Part Number from GE-22355 applicable to GE-22355-01

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	
DRAWN	KAMC	6/21/2021		
PROPRIETARY AND CONFIDENTIAL				
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV	
Black	C	GE-22355		
DO NOT SCALE DRAWING	SCALE: 4:1	SHEET 2 OF 2		

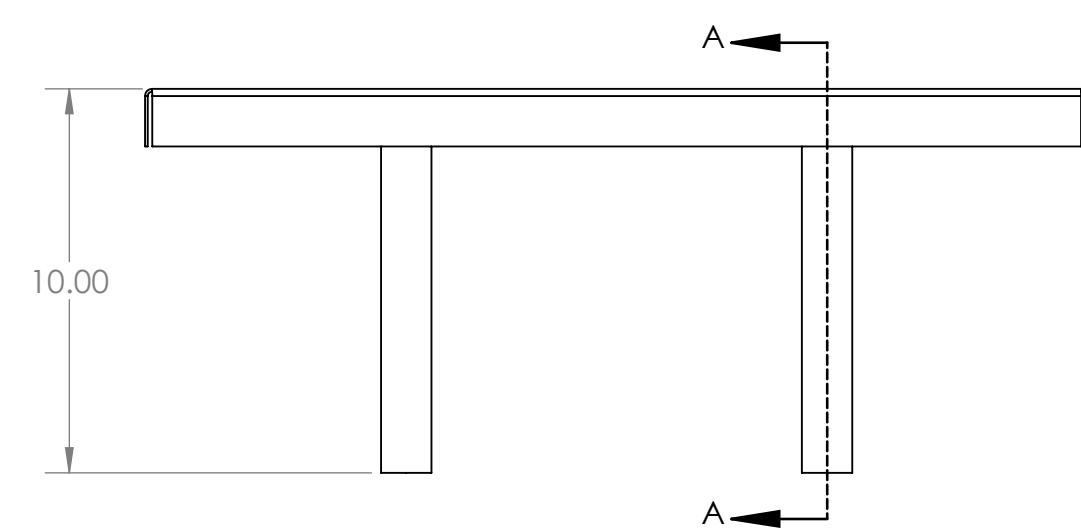
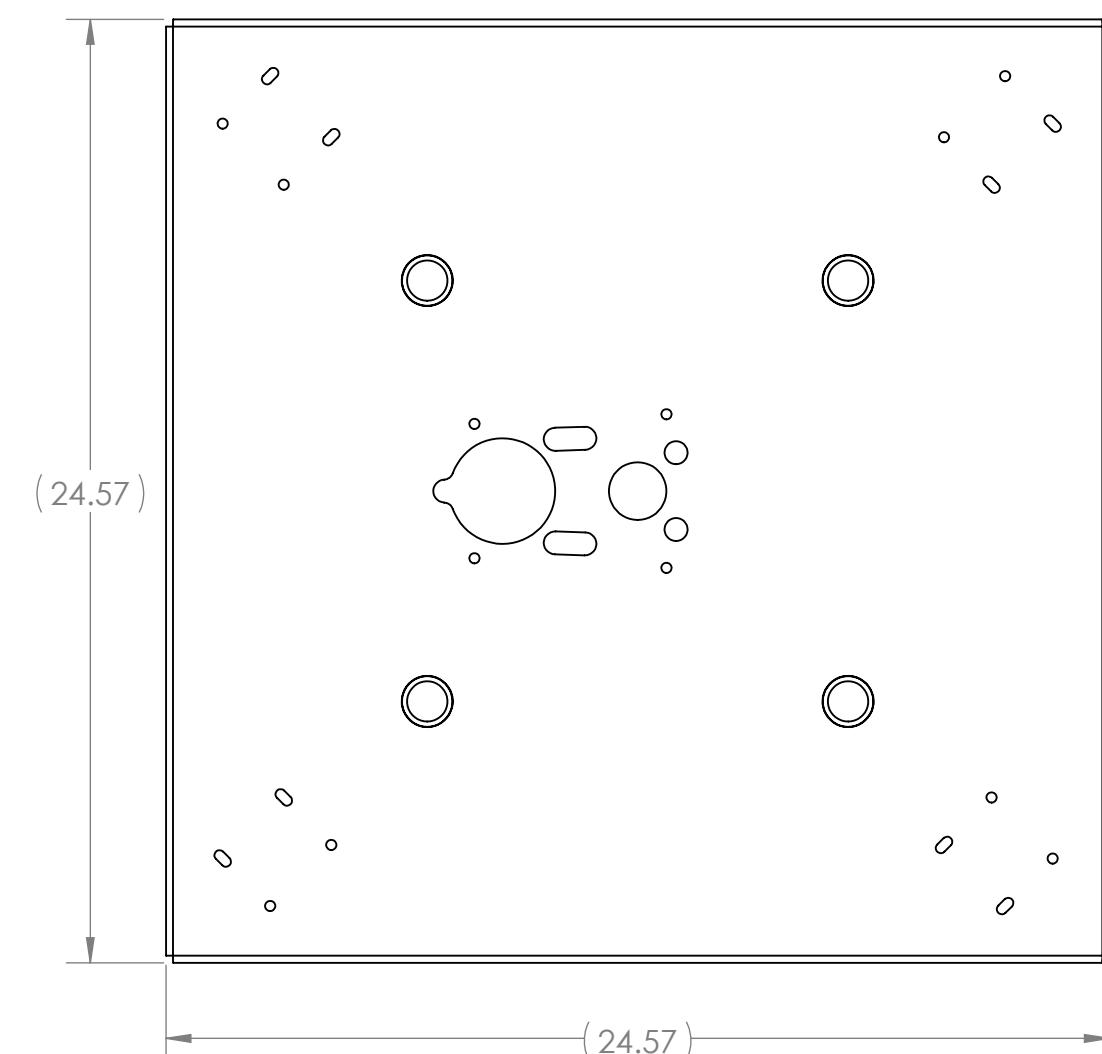
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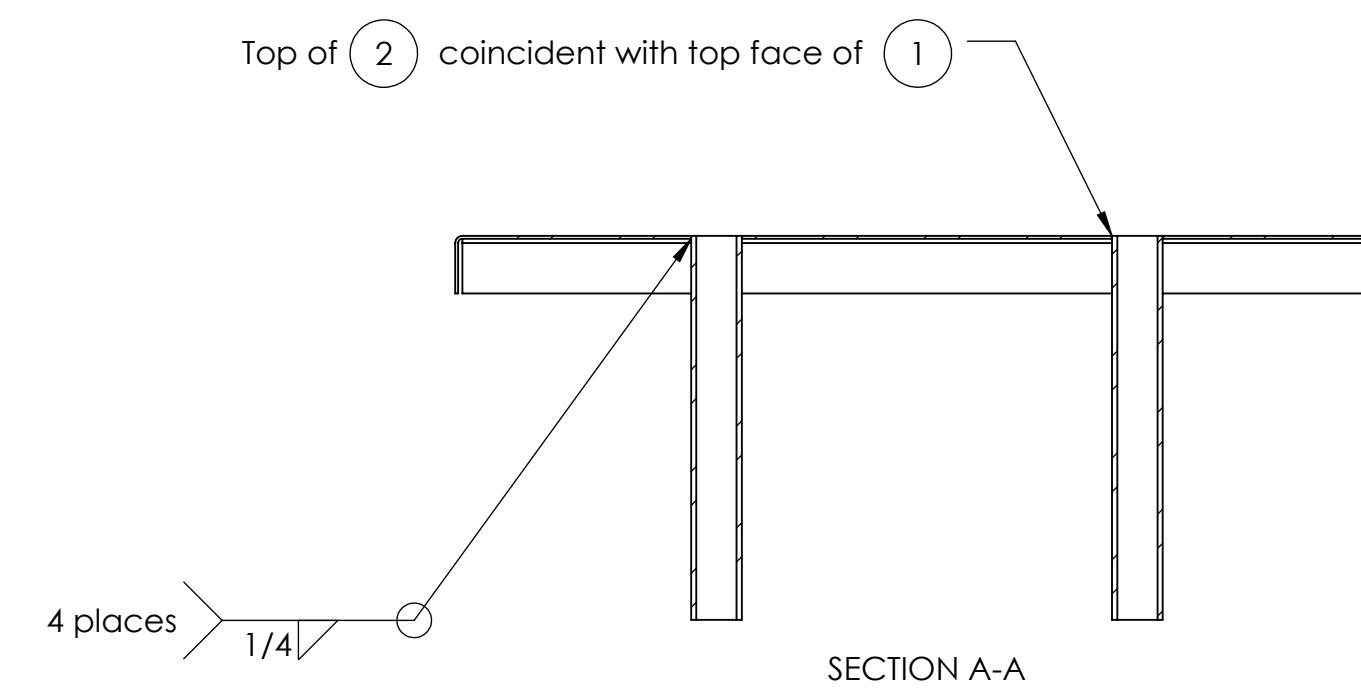
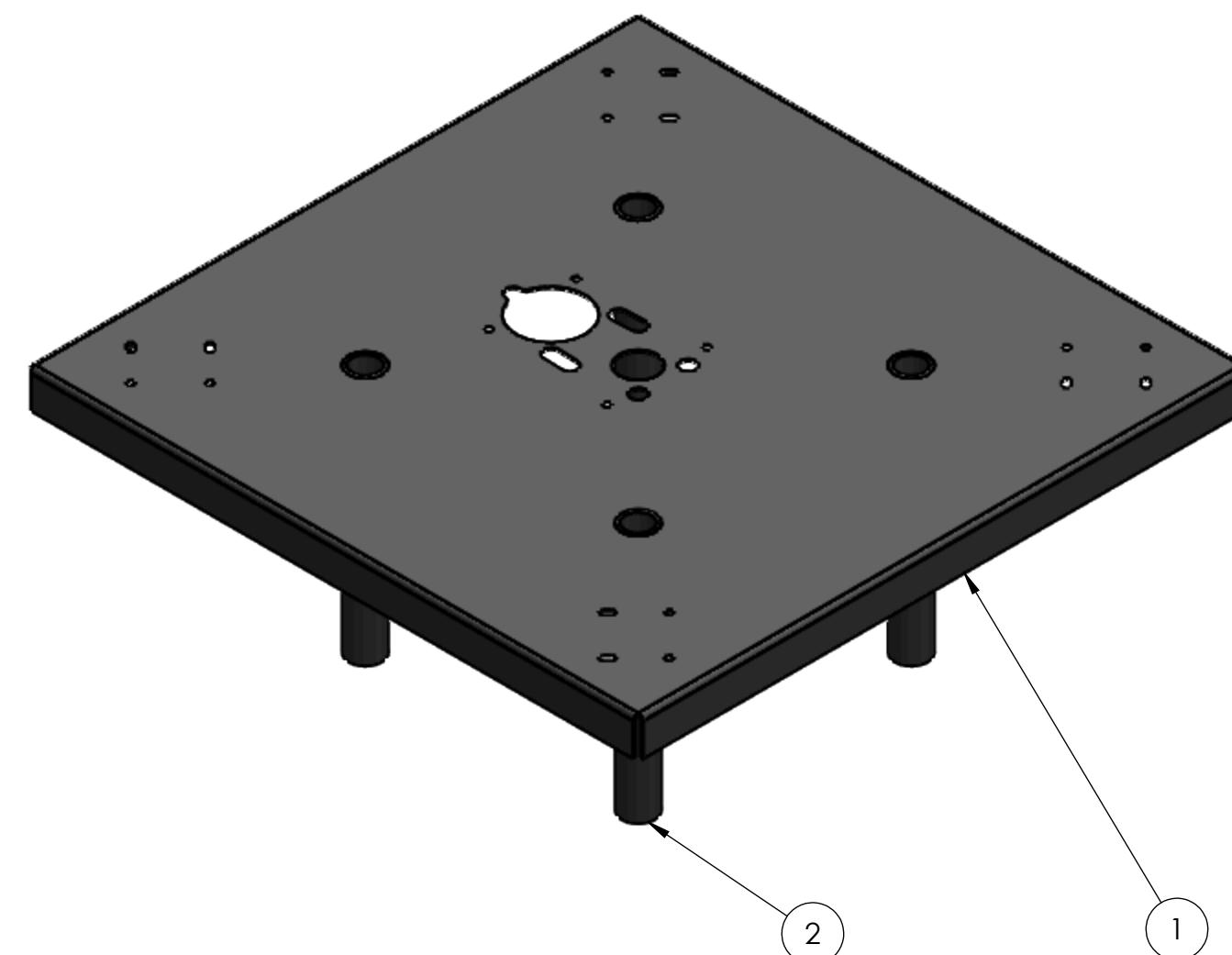
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Notes:
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22356-01	14 Gauge A-366/1008 Cold Roll Steel	1
2	GE-22356-02	1" Schedule 40 A500 Steel	4



UNLESS OTHERWISE SPECIFIED:		WELD	NAME	DATE
DRAWN		CO	7/22/2021	
PROPRIETARY AND CONFIDENTIAL				
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MATERIAL/FINISH: Powder Coat Black				
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING				

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE: Lower Hub Base

SIZE DWG. NO. REV
C GE-22356

SCALE: 1:5 SHEET 1 OF 3

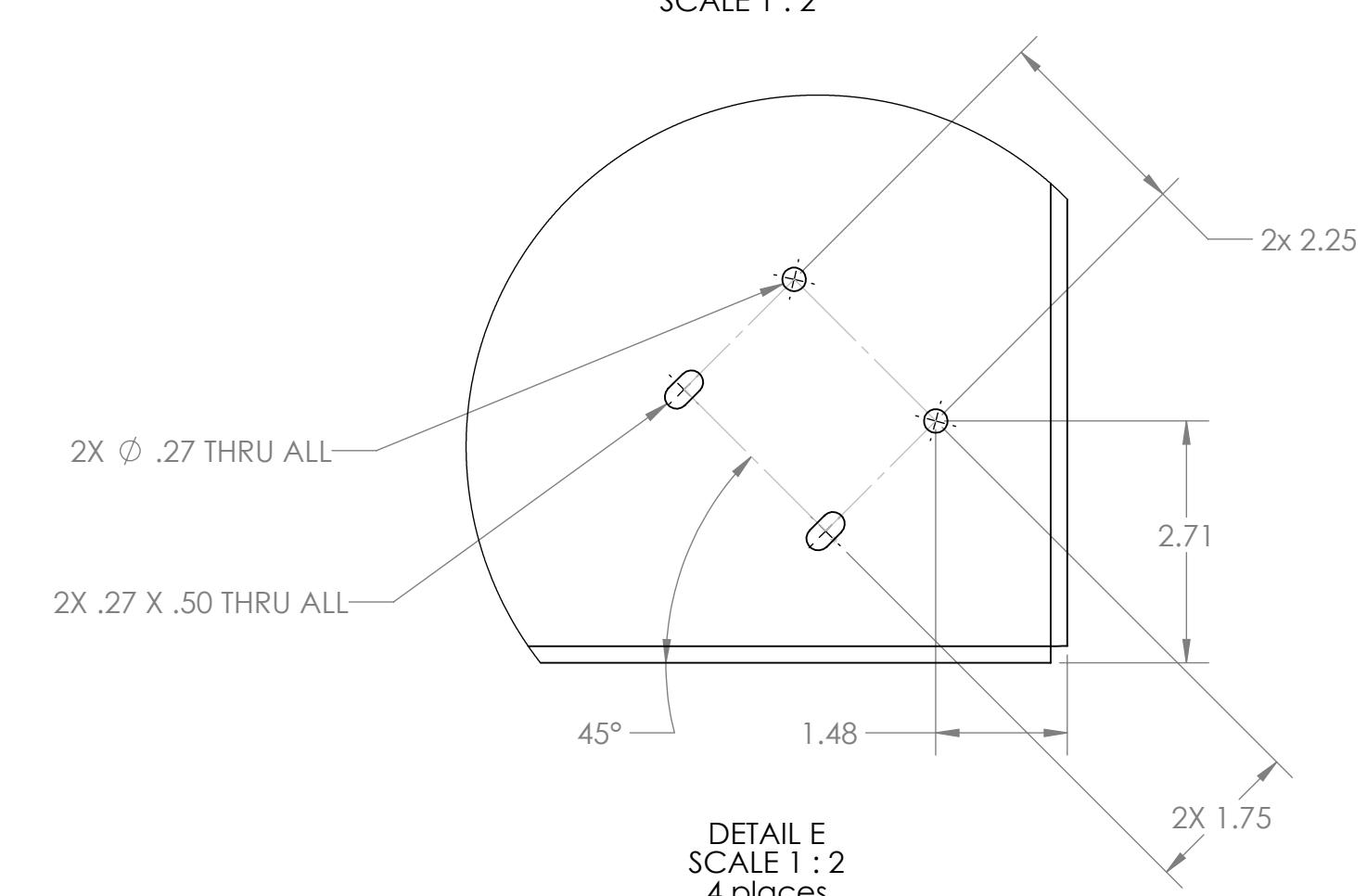
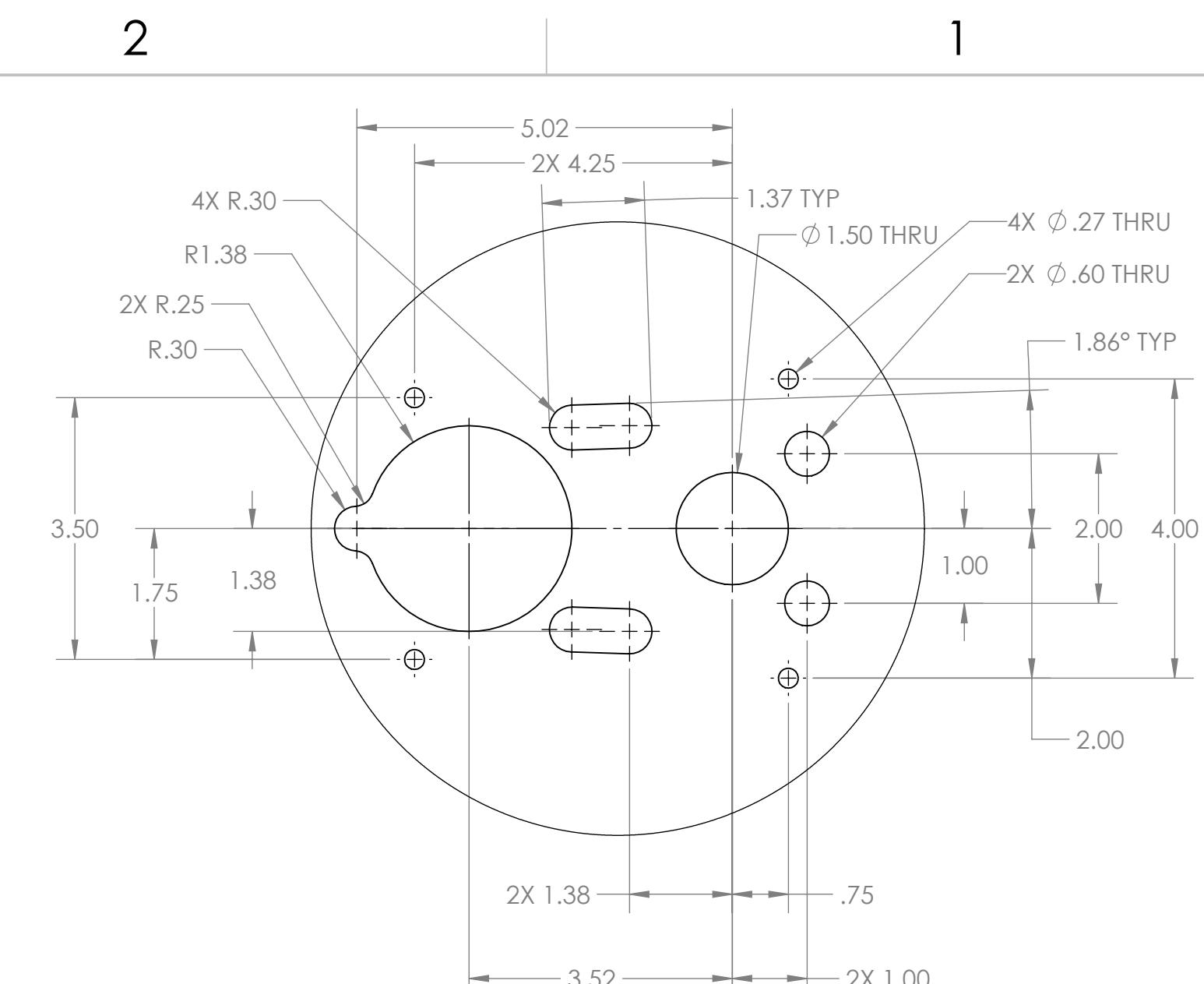
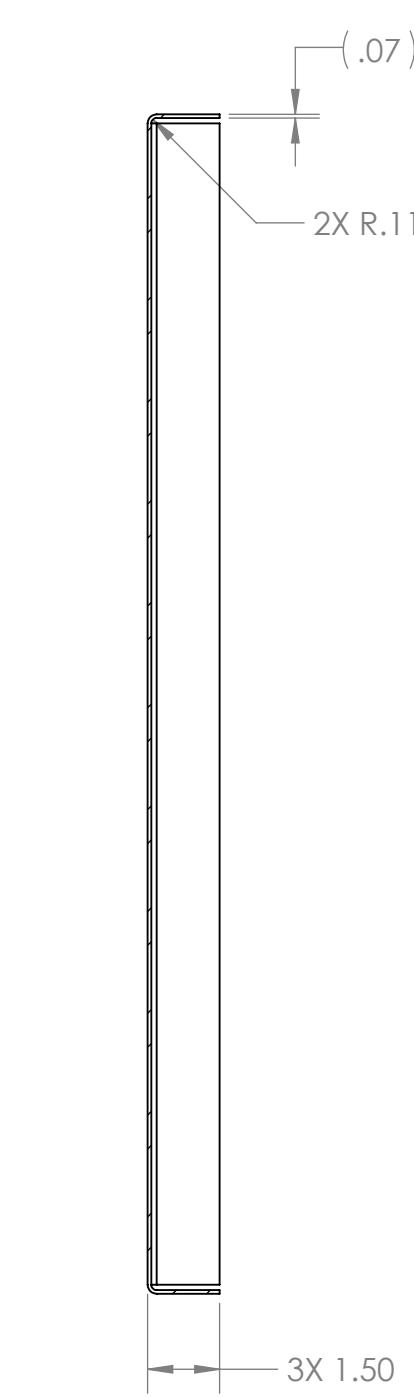
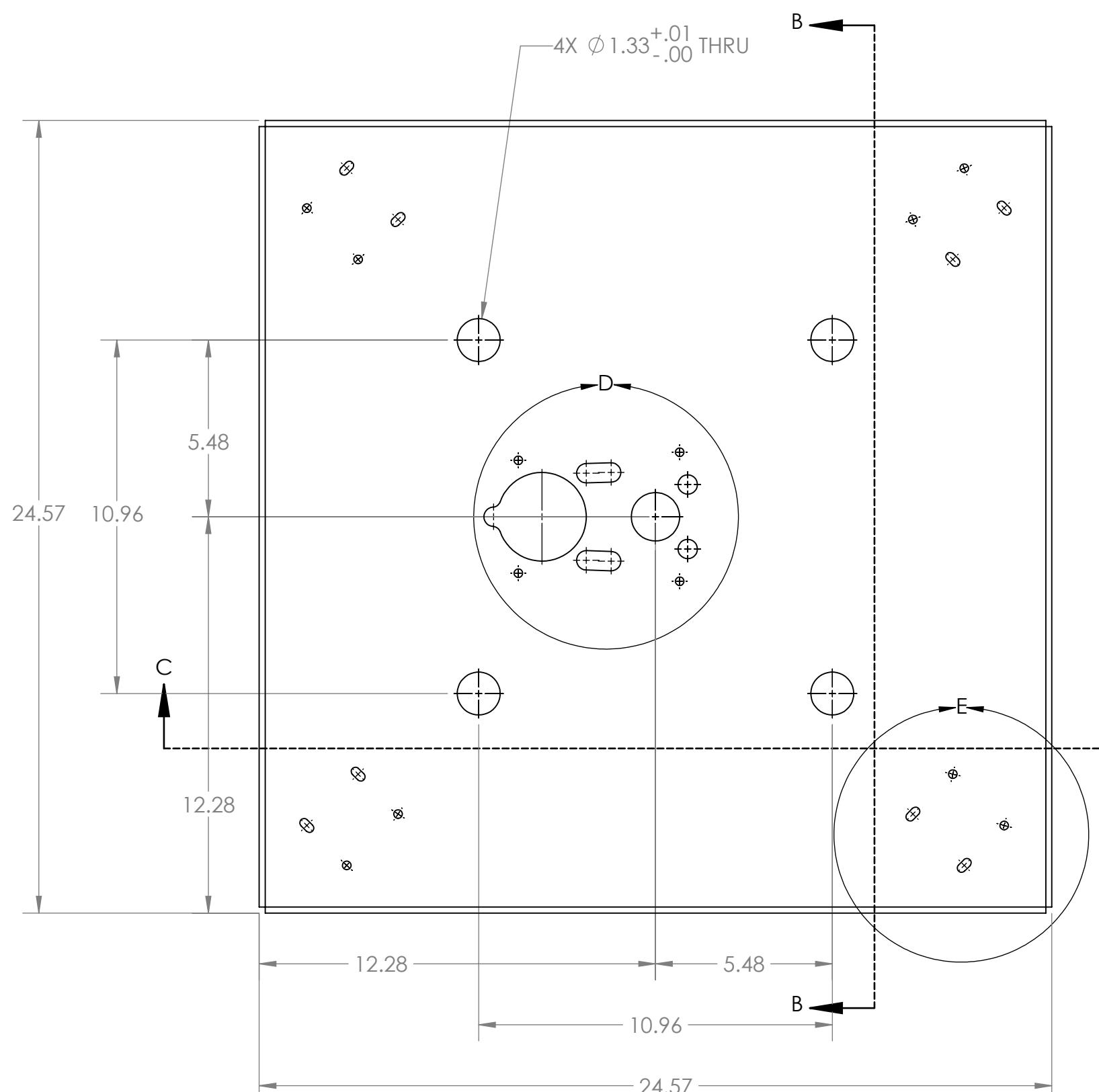
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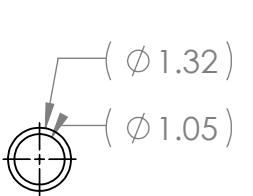
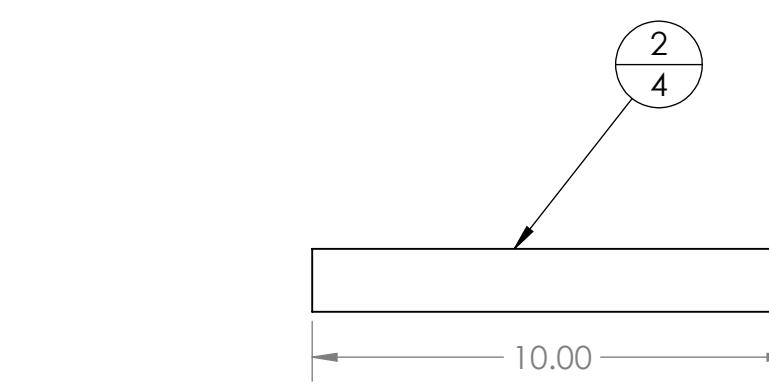
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UNLESS OTHERWISE SPECIFIED:
DRAWN CO 7/22/2021

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .015$

PROPRIETARY AND CONFIDENTIAL
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MATERIAL/FINISH:
Powder Coat Black

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING

WELD NAME DATE
NAME CO 7/22/2021

FIRST ROBOTICS COMPETITION

SOLIDWORKS Modeling Solutions Partner

TITLE: Lower Hub Base

SIZE DWG. NO. REV

C GE-22356

SCALE: 1:4 SHEET 2 OF 3

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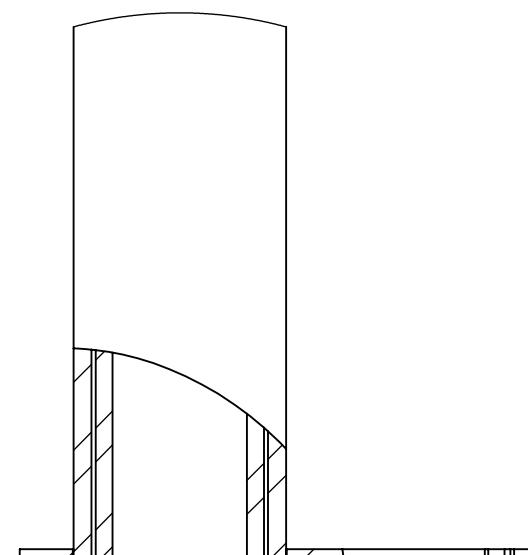
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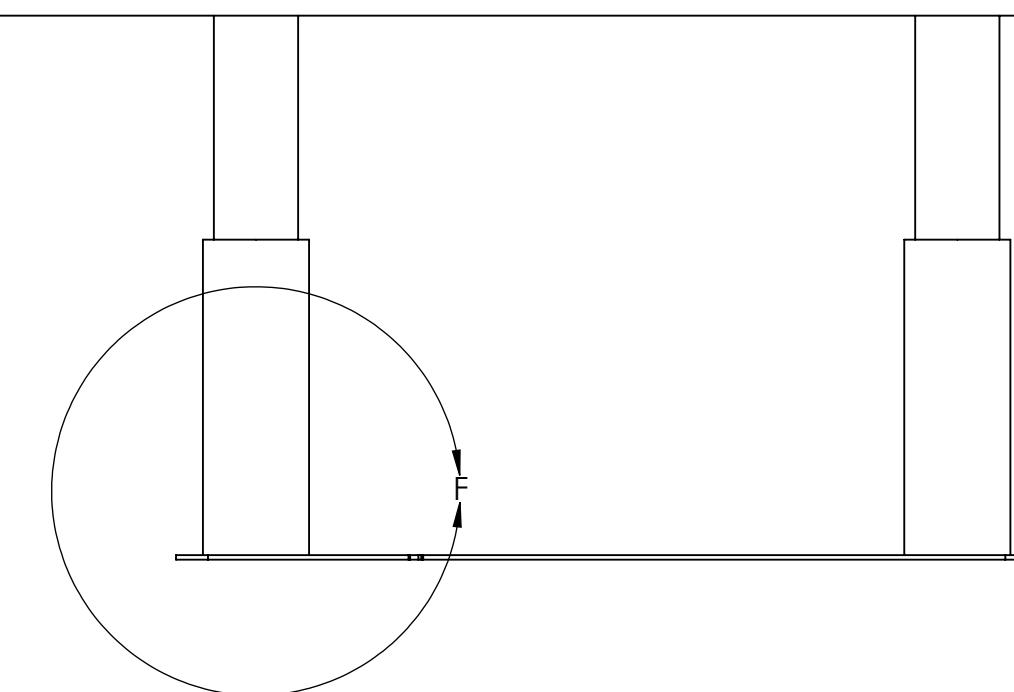
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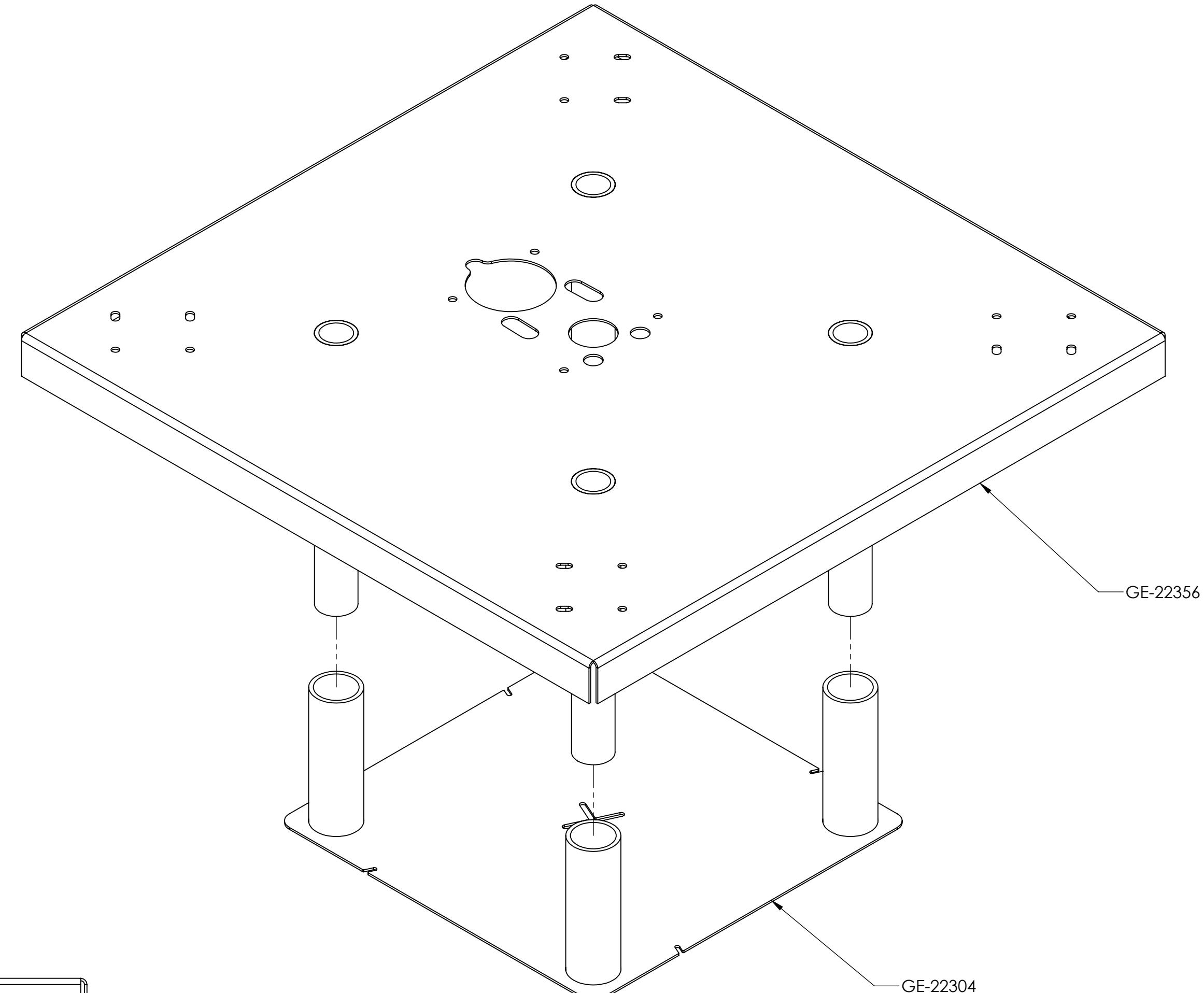


DETAIL F
SCALE 2 : 3
Bottom of two assemblies coincident.



Notes:

- For reference only: designed interface of GE-22356 with mating part.



UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE
DRAWN	CO	7/22/2021	

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .015$

MATERIAL/FINISH:
Powder Coat Black

COMMENTS:
REMOVE ALL BURRS AND SHARP
EDGES.

DO NOT SCALE DRAWING

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Lower Hub Base

SIZE DWG. NO. REV

C GE-22356

SCALE: 1:3 SHEET 3 OF 3

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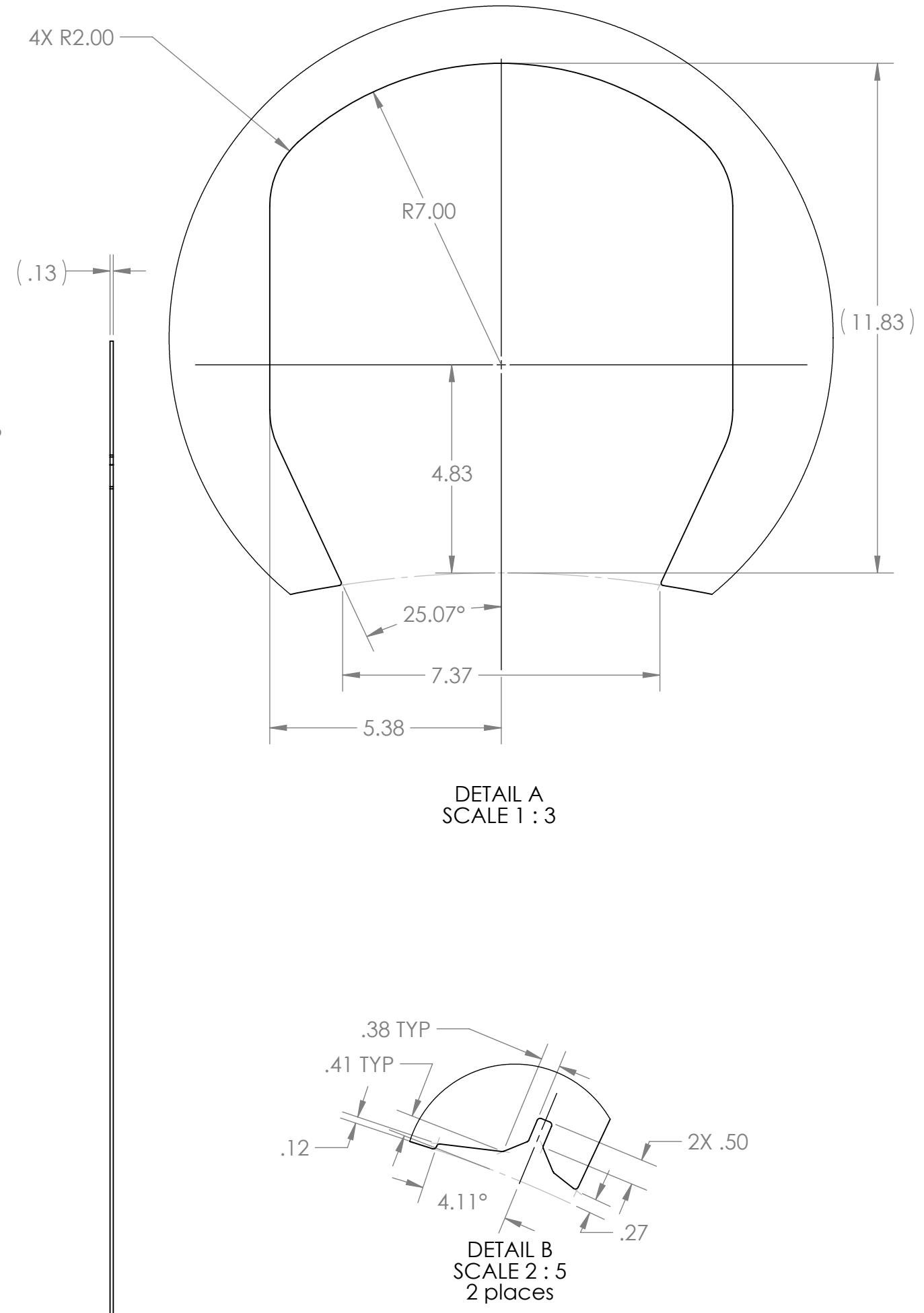
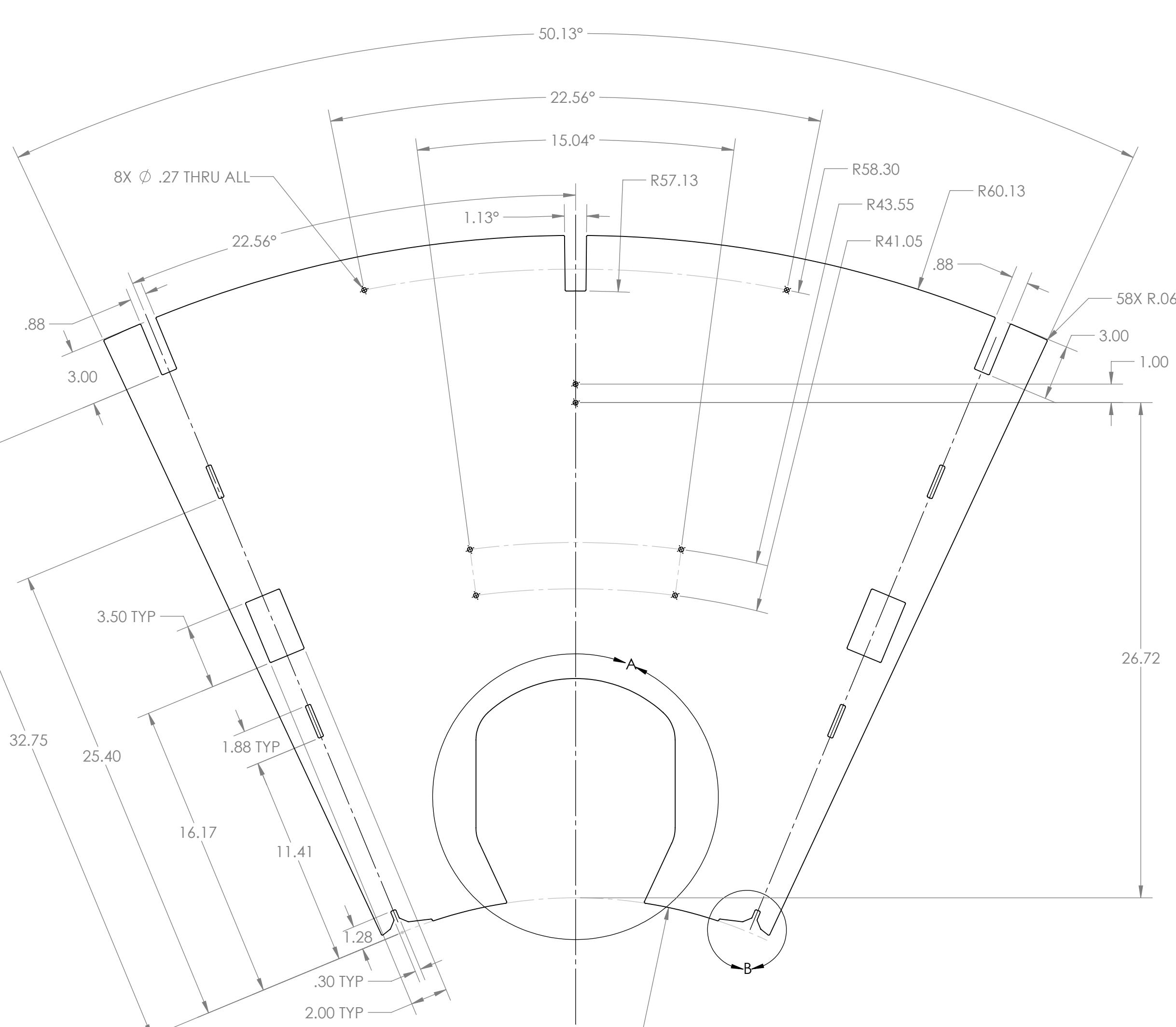
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UNLESS OTHERWISE SPECIFIED:			VEND	NAME	DATE
DIMENSIONS ARE IN INCHES			DRAWN	CO	7/26/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$					
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$					
MATERIAL/FINISH:	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
COMMENTS:	1/8" thk. Polycarbonate, Clear REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING					
SIZE	DWG. NO.	REV	C	GE-22357	
SCALE: 1:5			SHEET 1 OF 1		

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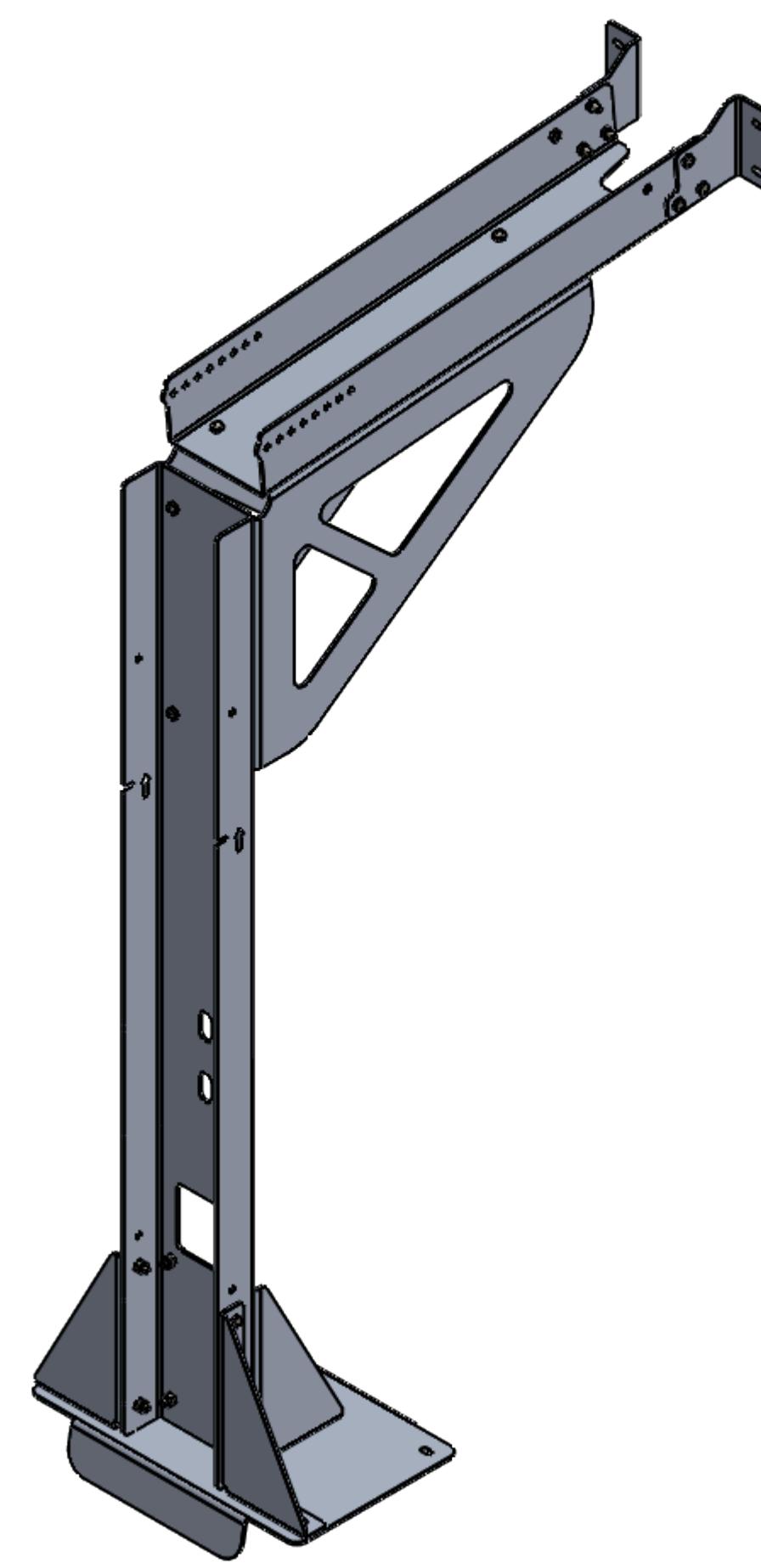
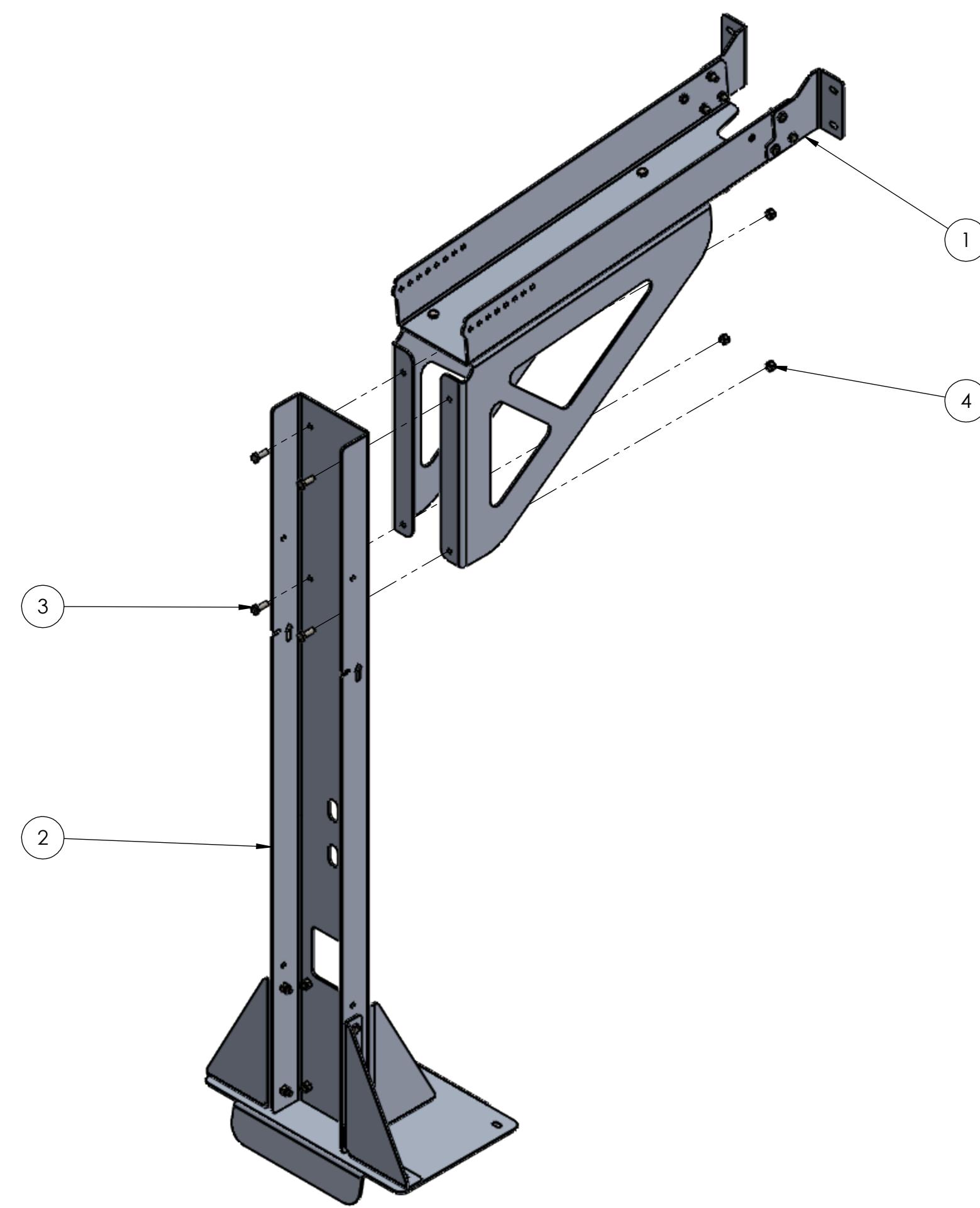
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Notes:

1. Attach (2) to (1) using (4) and (3).

ITEM NO.	PART NUMBER	DESCRIPTION	
1	GE-22382	Upright Top	1
2	GE-22383	Upright Bottom	1
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	4
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	KAMC	7/6/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$				
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$				
PROPRIETARY AND CONFIDENTIAL				
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MATERIAL/FINISH:				
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING		SIZE	DWG. NO.	REV
		C	GE-22371	
SCALE: 1:6		SHEET 1 OF 1		

 **FIRST
ROBOTICS
COMPETITION**  **SOLIDWORKS**
Modeling Solutions Partner

TITLE:
**Hub Leg
Assembly**

SIZE DWG. NO. REV
C GE-22371

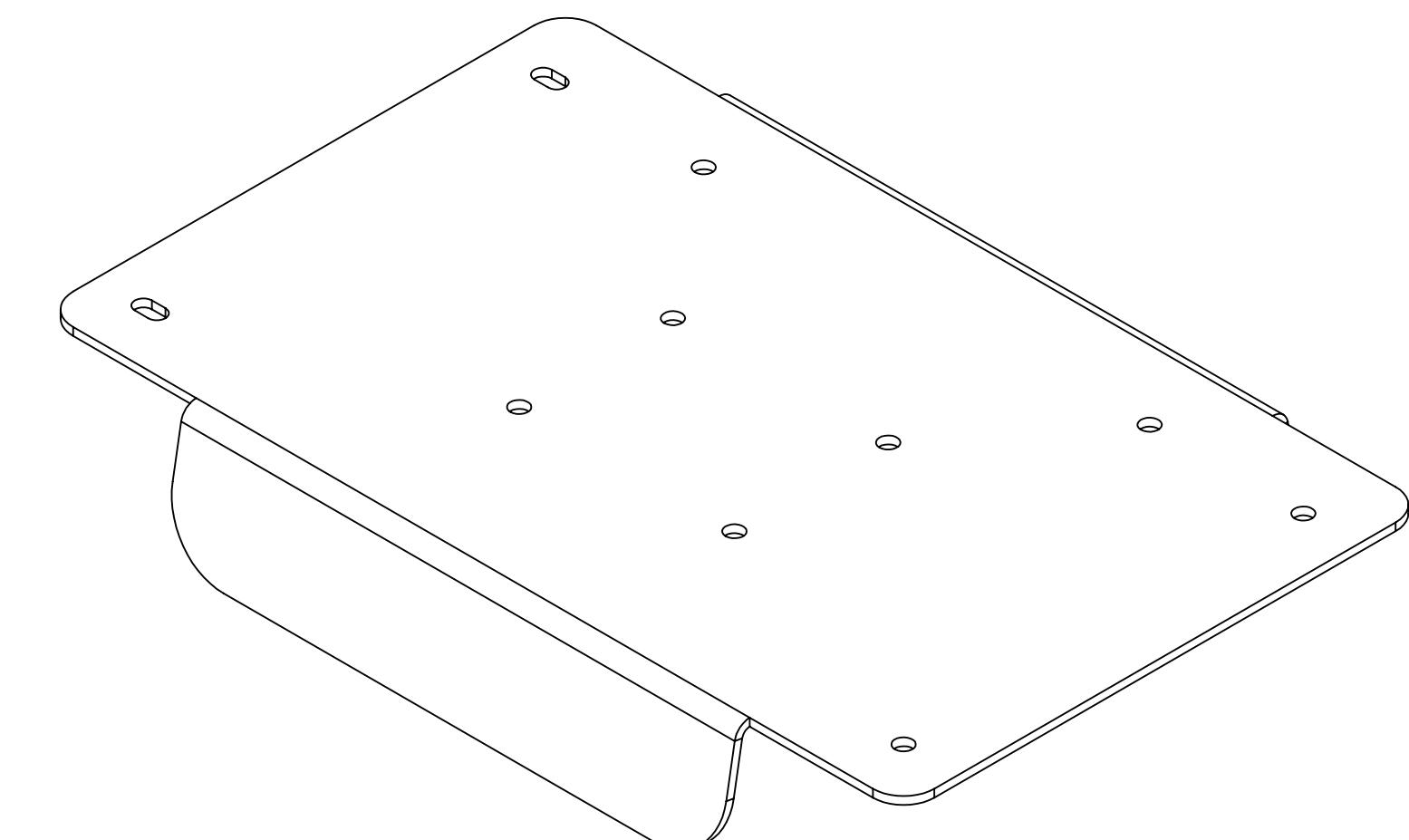
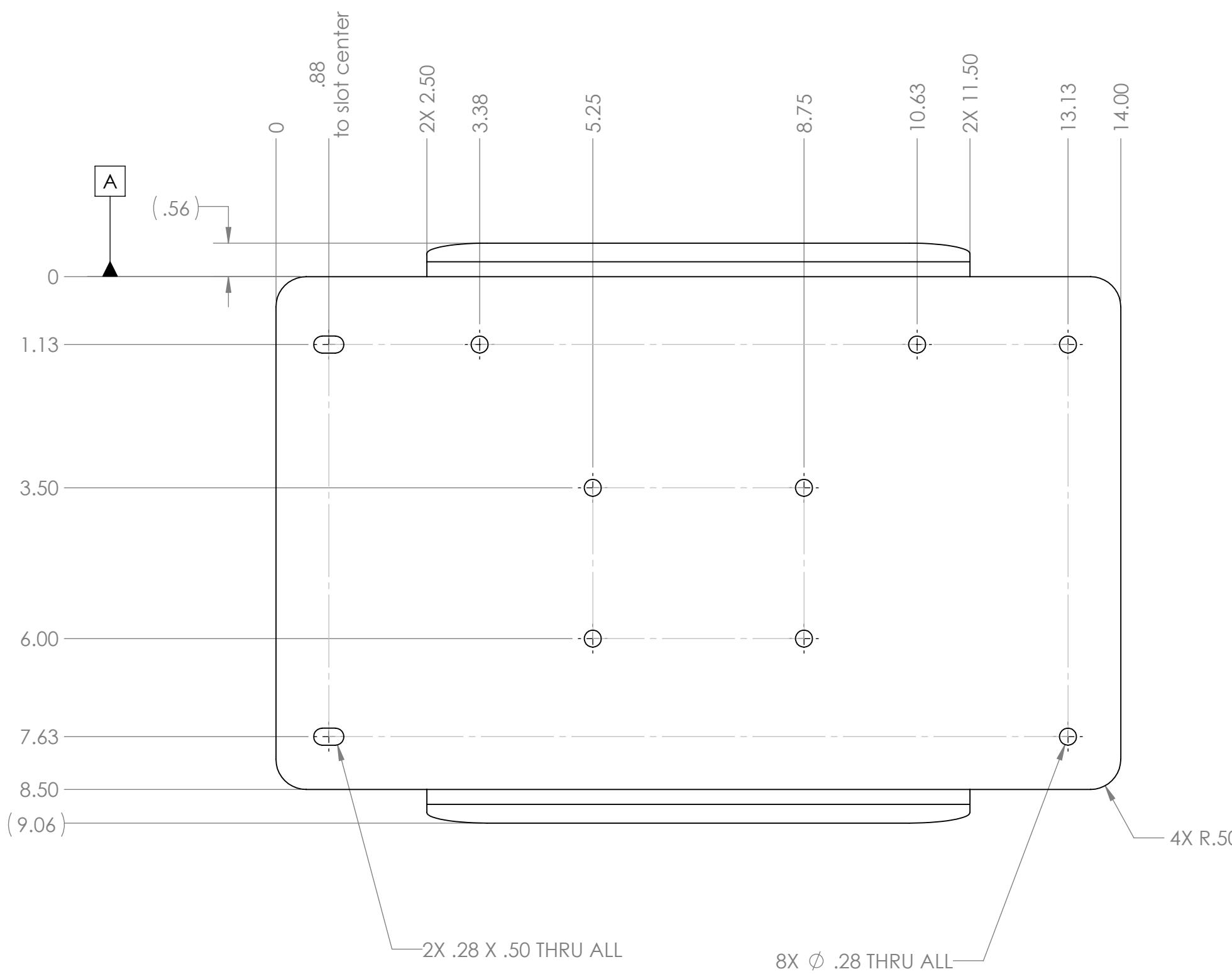
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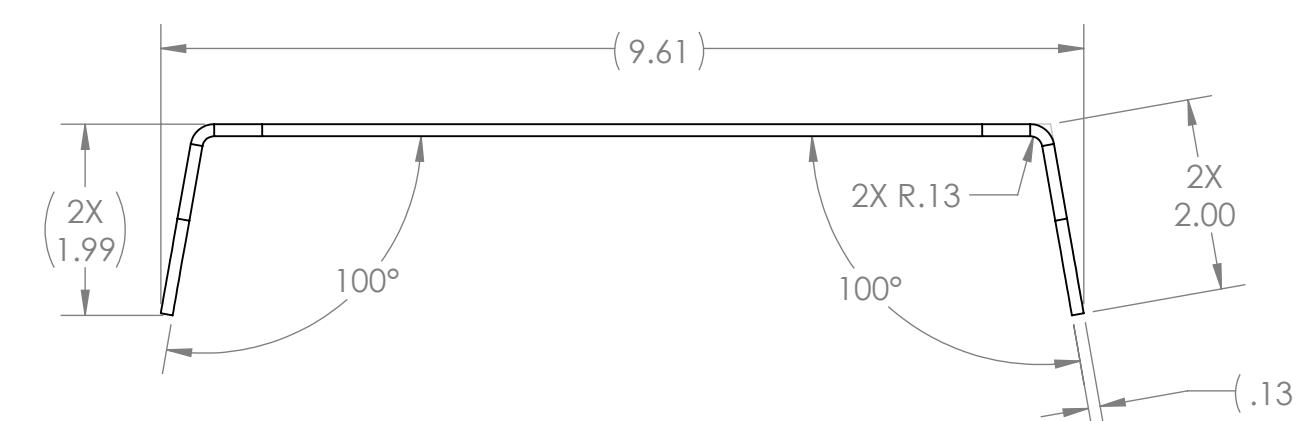
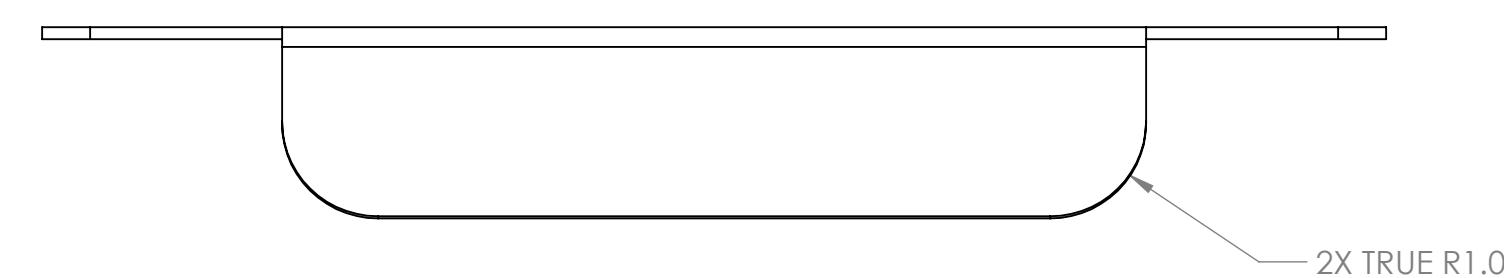
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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
FIRST ROBOTICS COMPETITION			
SOLIDWORKS Modeling Solutions Partner			
TITLE: Leg Base			
SIZE DWG. NO. REV			
C GE-22372			
SCALE: 1:2 SHEET 1 OF 1			

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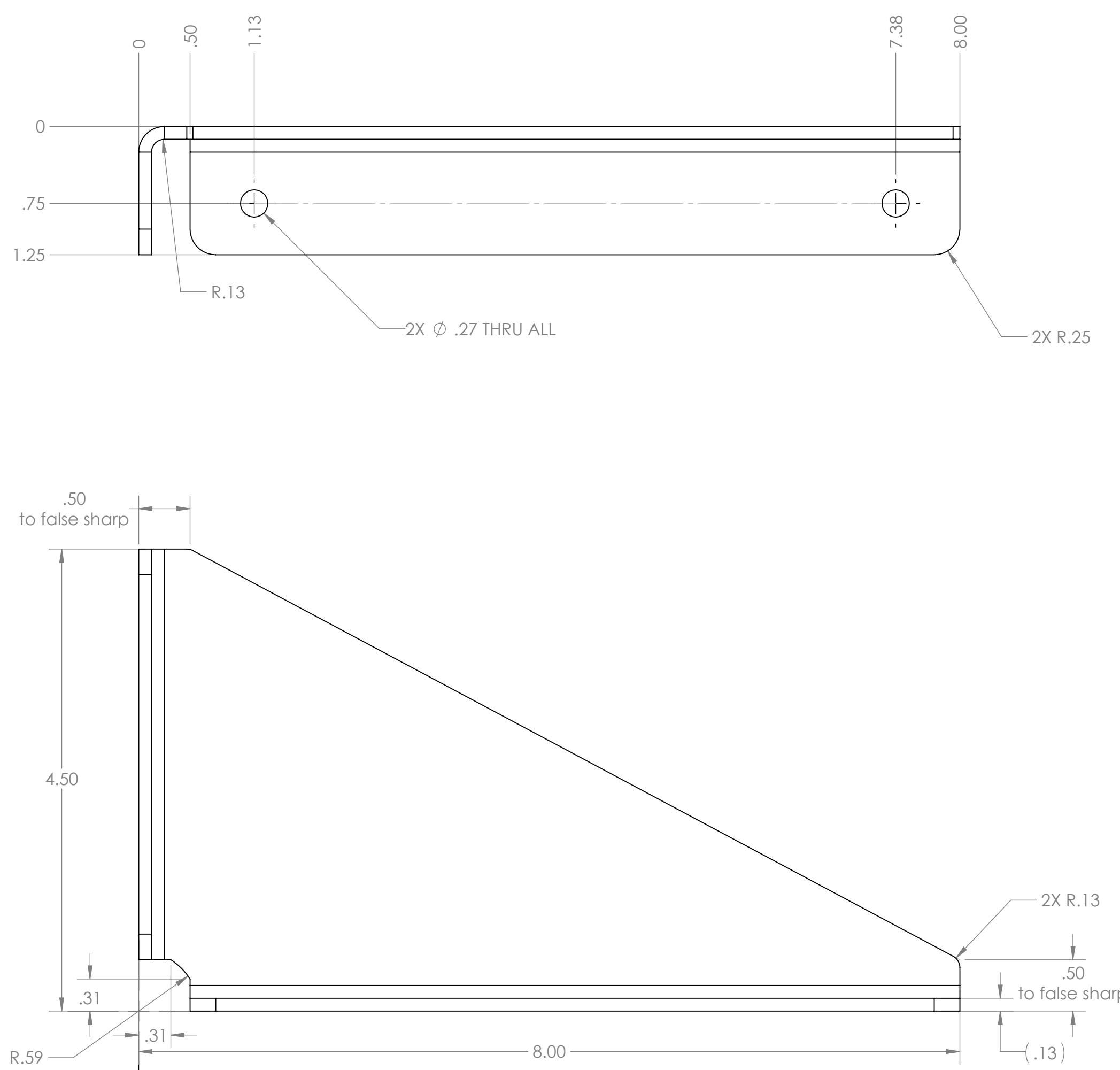
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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Leg Support
Bracket Right**

SIZE DWG. NO. REV
C GE-22373

SCALE: 1:1 SHEET 1 OF 1

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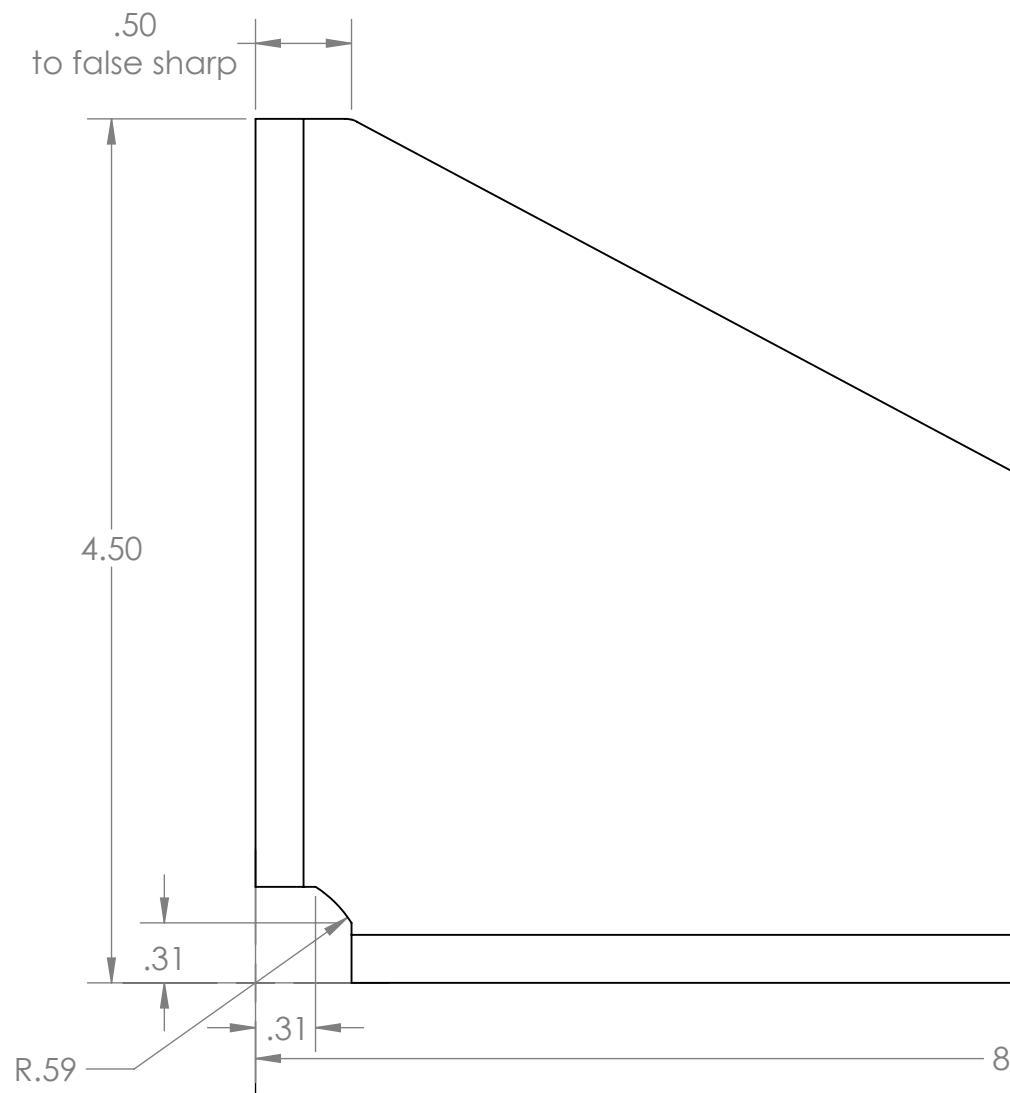
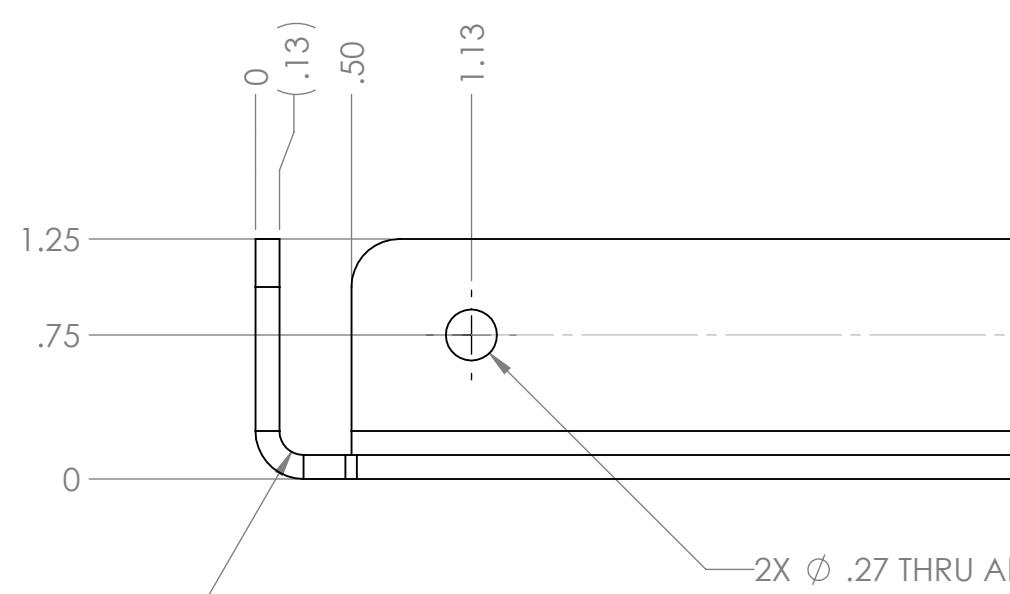
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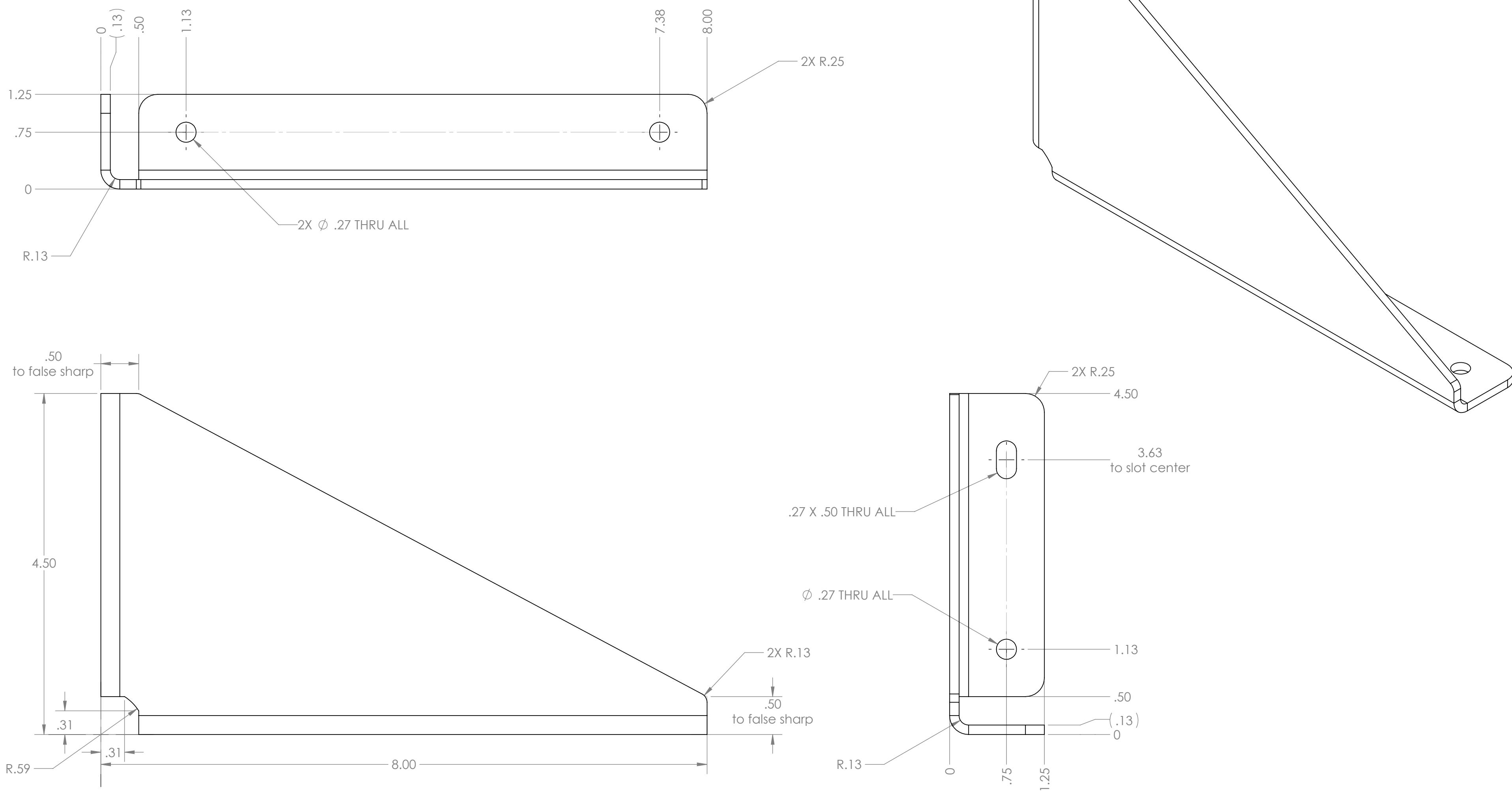
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Notes:
1. Tag or label with part number



UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Leg Support
Bracket Left**

SIZE DWG. NO. REV
C GE-22374

SCALE: 1:1 SHEET 1 OF 1

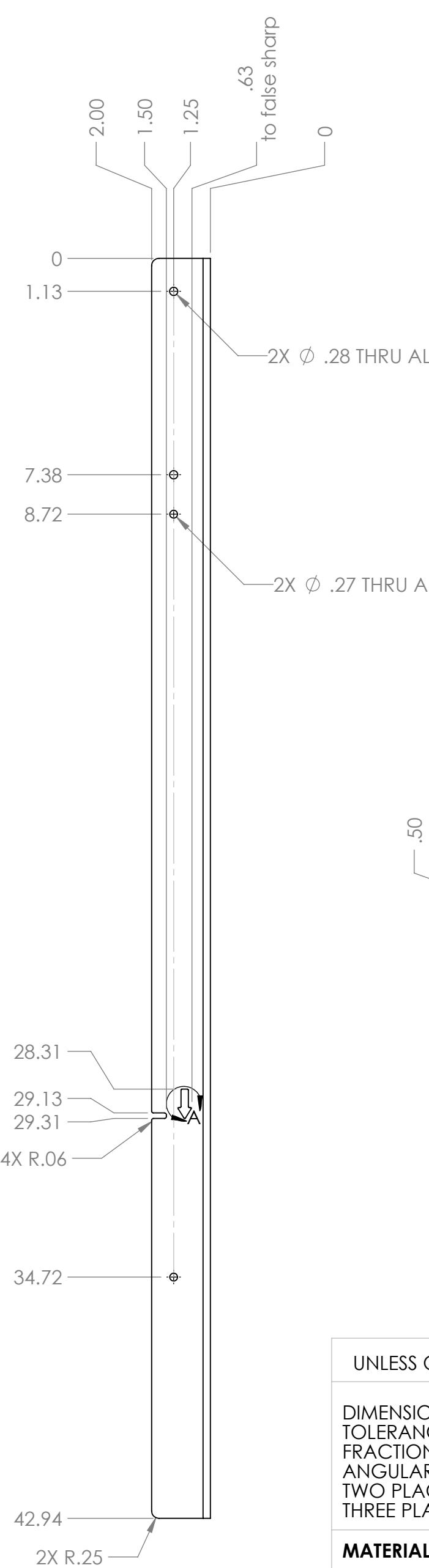
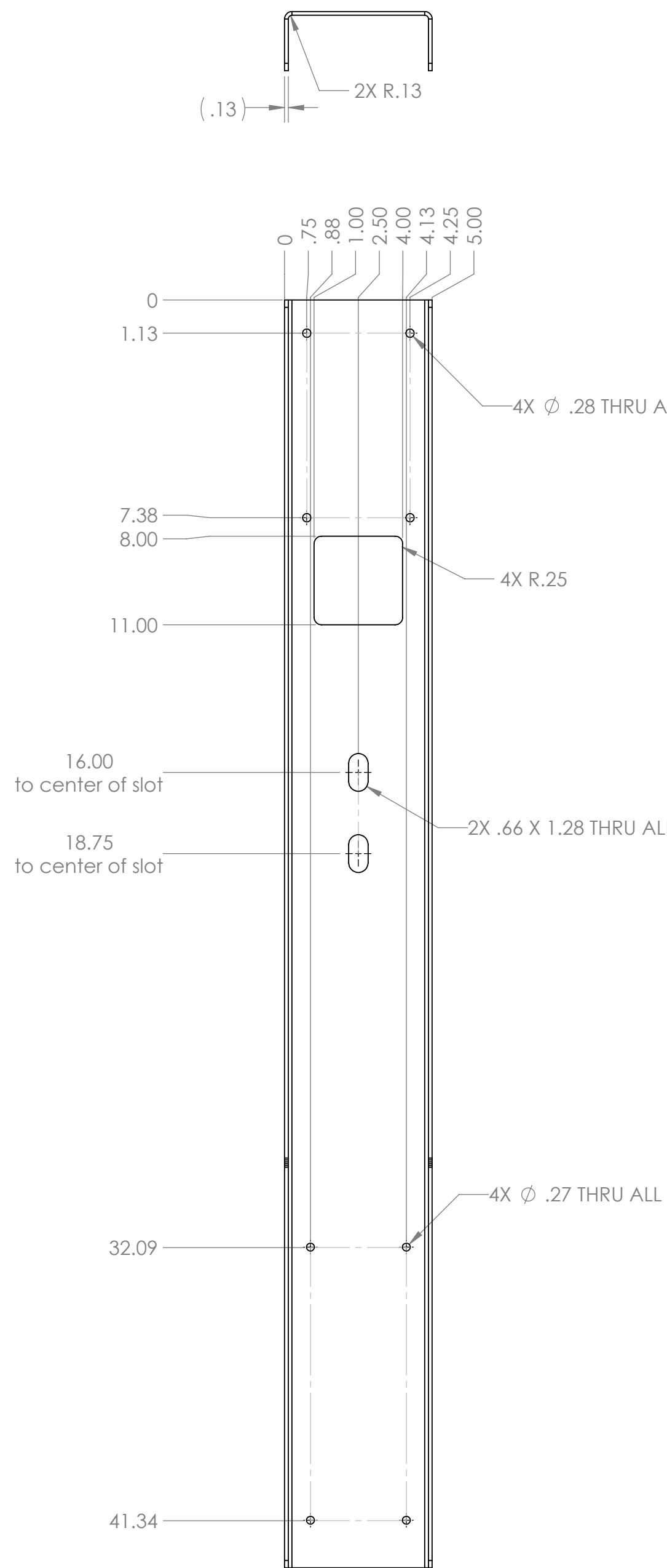
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UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Leg Vertical
Channel**

SIZE DWG. NO. REV

C GE-22375

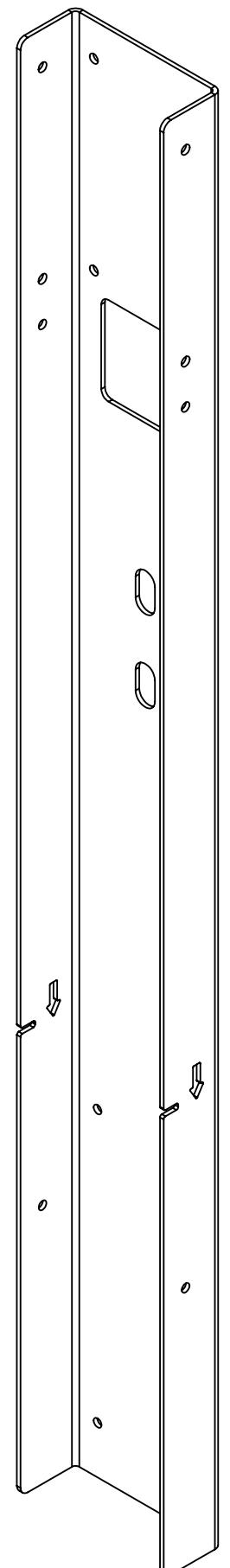
SCALE: 1:4 SHEET 1 OF 1

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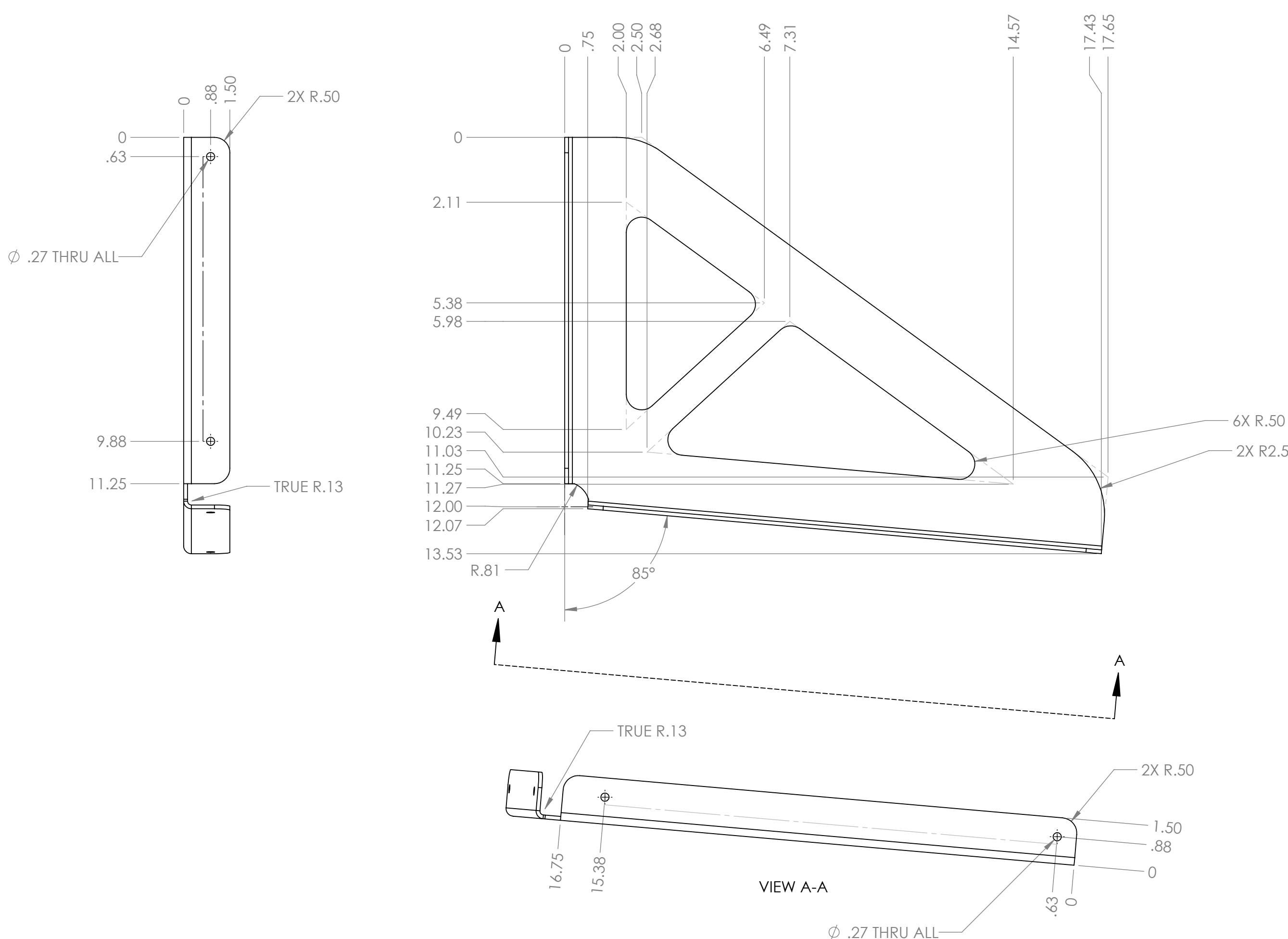
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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Leg to Upper
Exit Gusset Right**

SIZE DWG. NO. REV
C GE-22377

SCALE: 1:3 SHEET 1 OF 1

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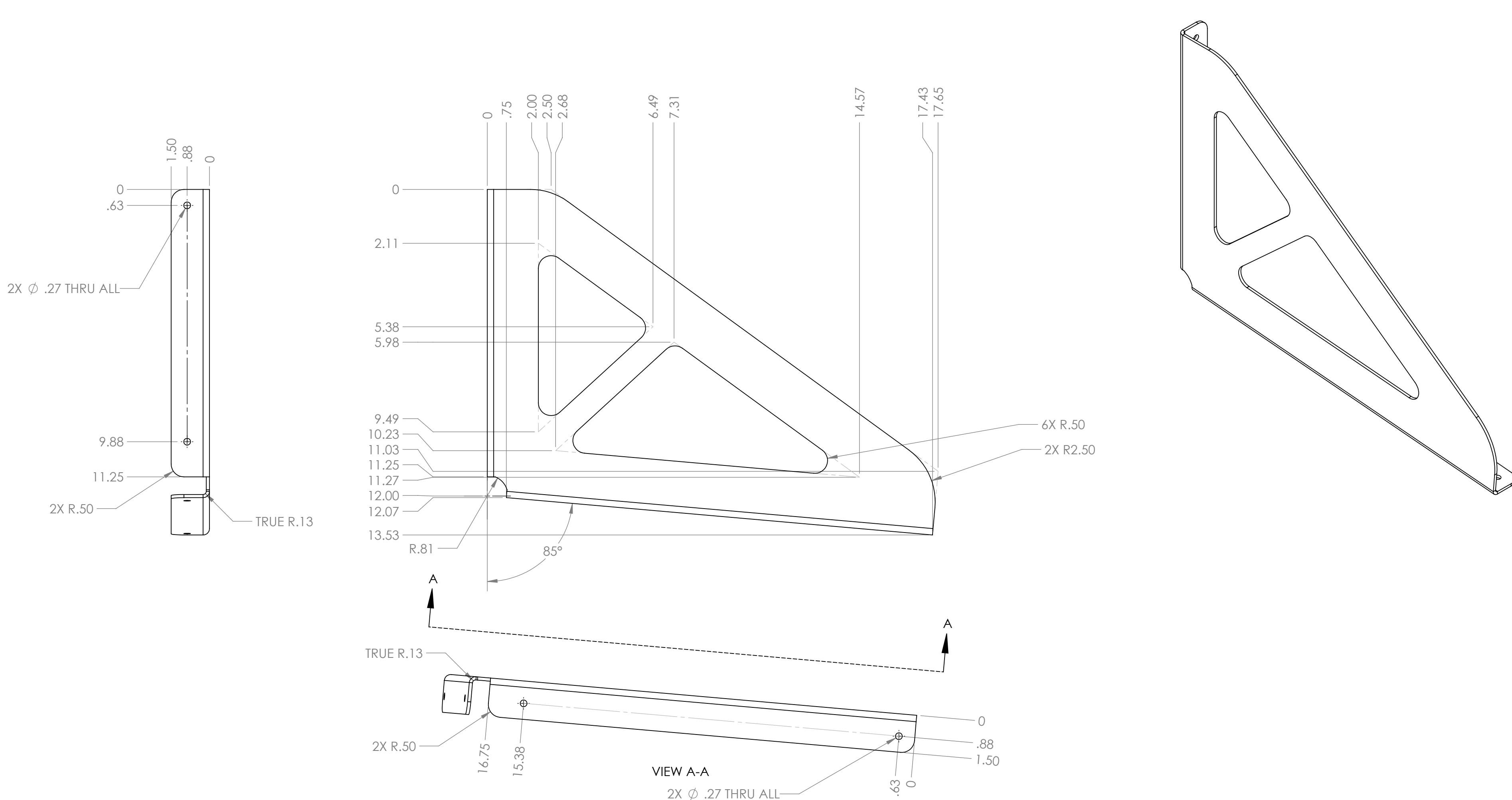
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UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Leg to Upper
Exit Gusset Left**

SIZE DWG. NO. REV

C GE-22378

SCALE: 1:3 SHEET 1 OF 1

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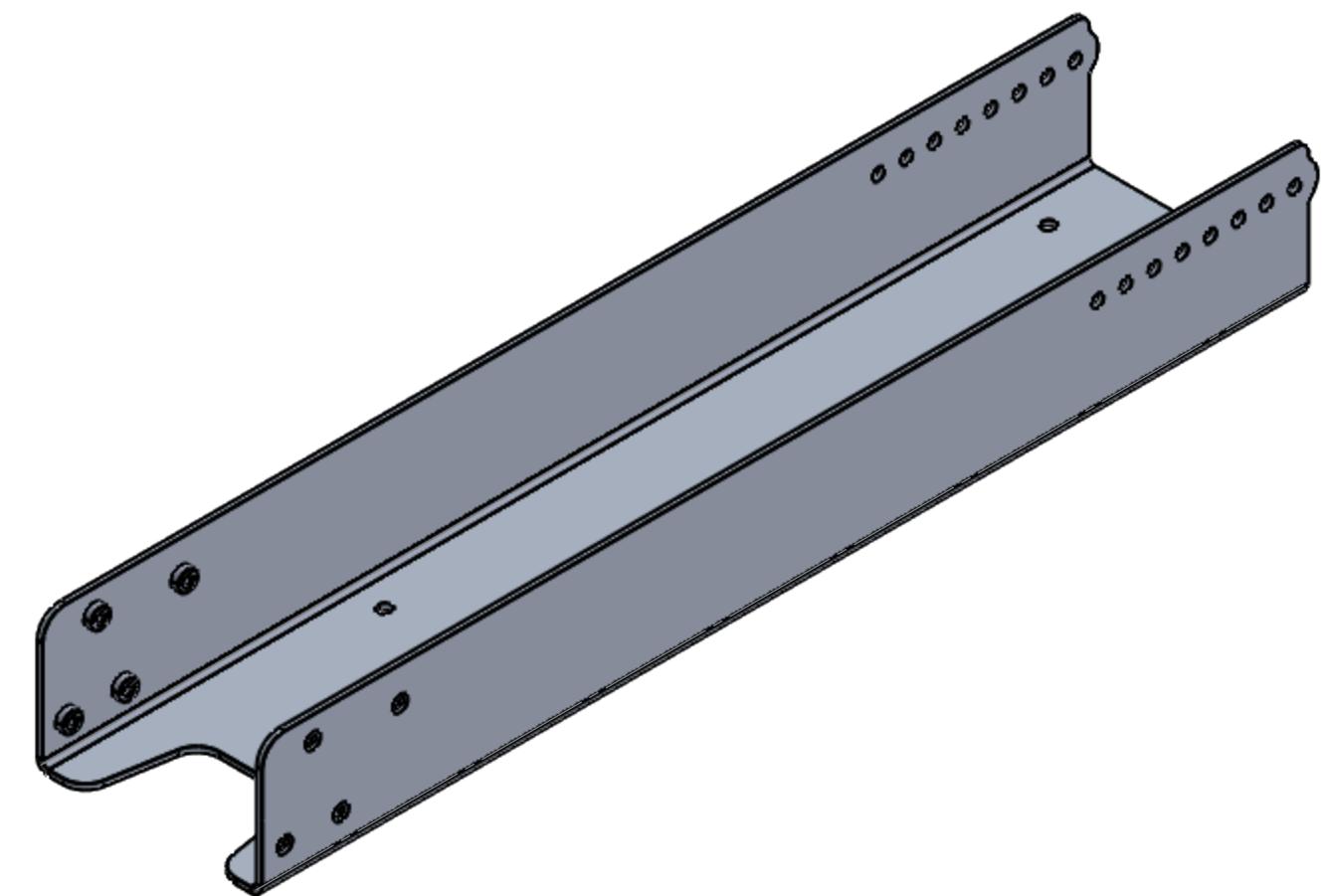
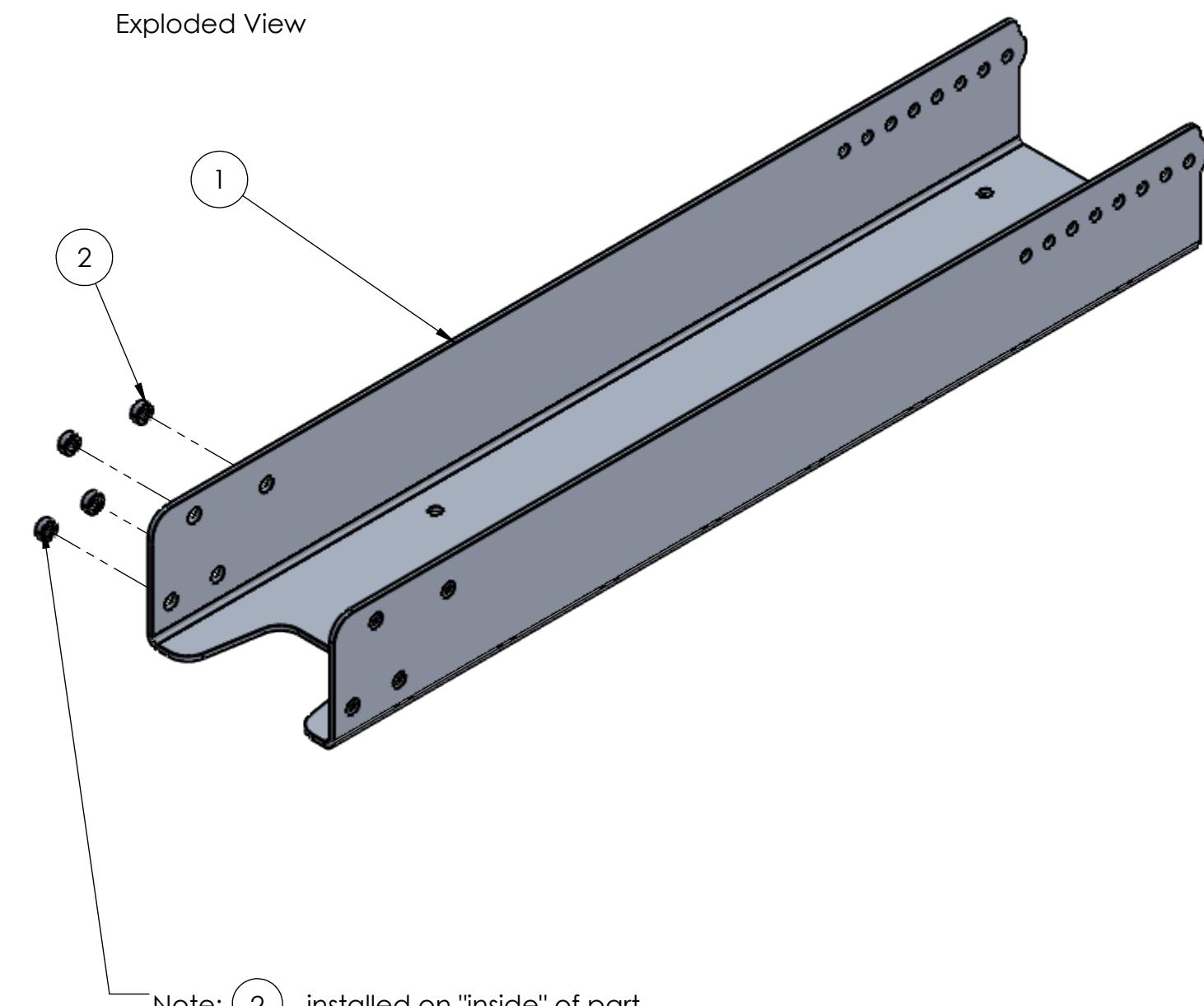
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22379-01	Leg to Upper Exit Channel	1
2	pem_clinchnut_.25_20 .054	1/4-20 self-clinching nut, .054 shank	8

UNLESS OTHERWISE SPECIFIED:			VEND	NAME	DATE
DIMENSIONS ARE IN INCHES			DRAWN	KAMC	7/6/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$					
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$					
MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL				
Tag or label with part number	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING			SIZE	DWG. NO.	REV
			C	GE-22379	
			SCALE: 1:3	SHEET 1 OF 2	

 FIRST
ROBOTICS
COMPETITION  SOLIDWORKS
Modeling Solutions Partner

TITLE:
Leg to Upper Exit
Channel with Pem
Nuts

SIZE DWG. NO. REV
C GE-22379

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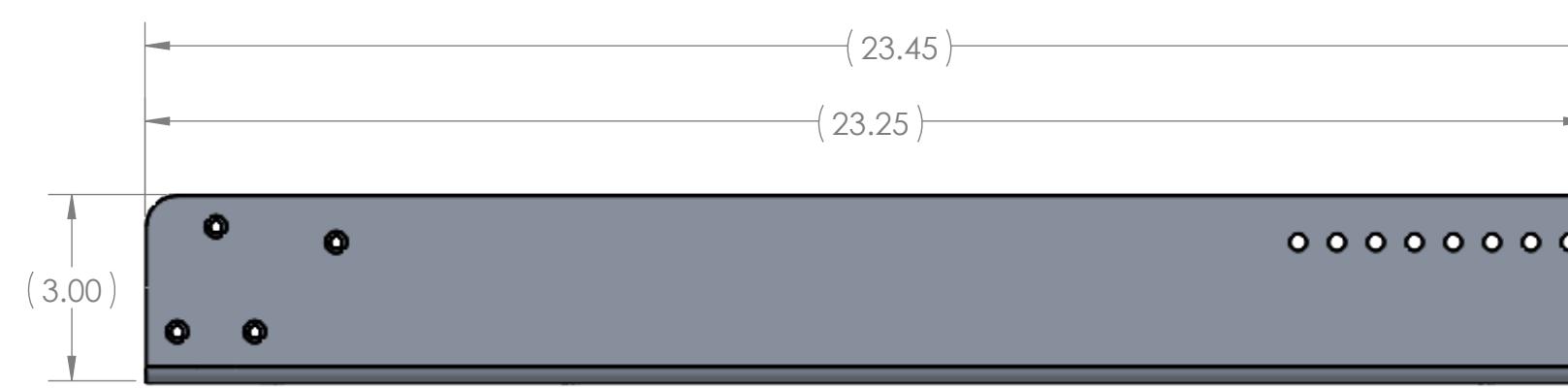
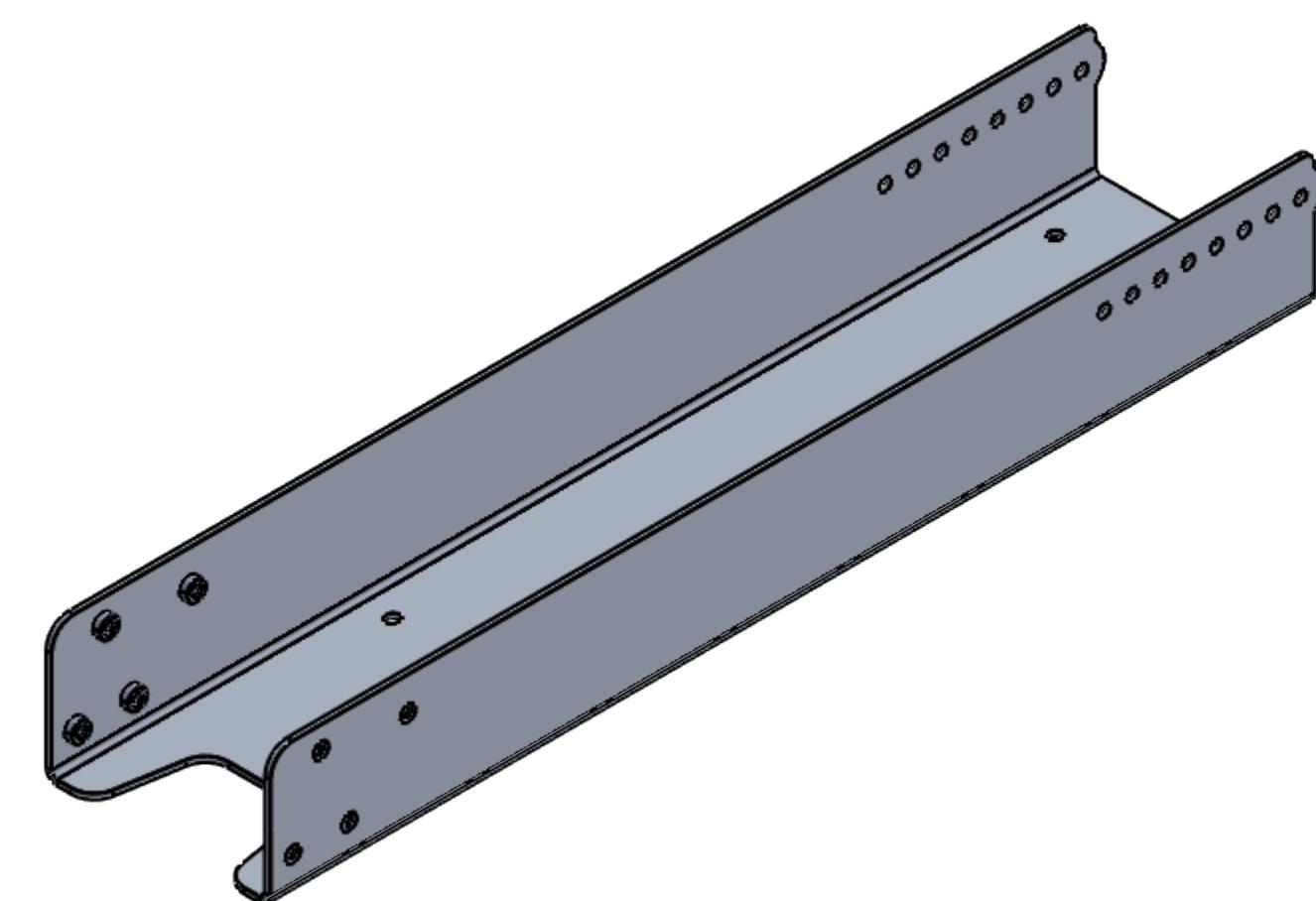
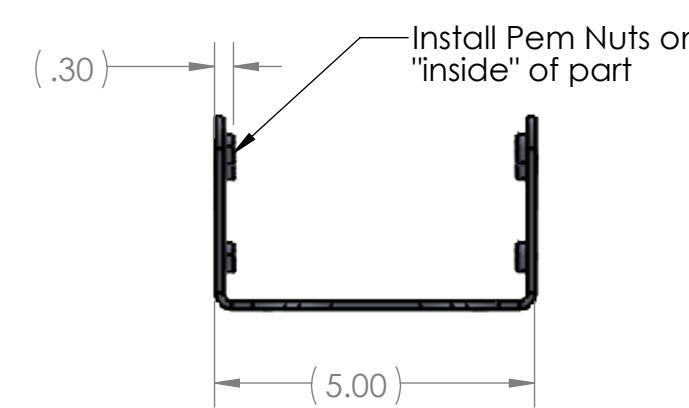
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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

Tag or label with part number

DO NOT SCALE DRAWING

VEND

DRAWN

NAME

KAMC

DATE

7/6/2021



TITLE:
Leg to Upper Exit
Channel with Pem
Nuts

SIZE DWG. NO. REV

C GE-22379

SCALE: 1:3 SHEET 2 OF 2

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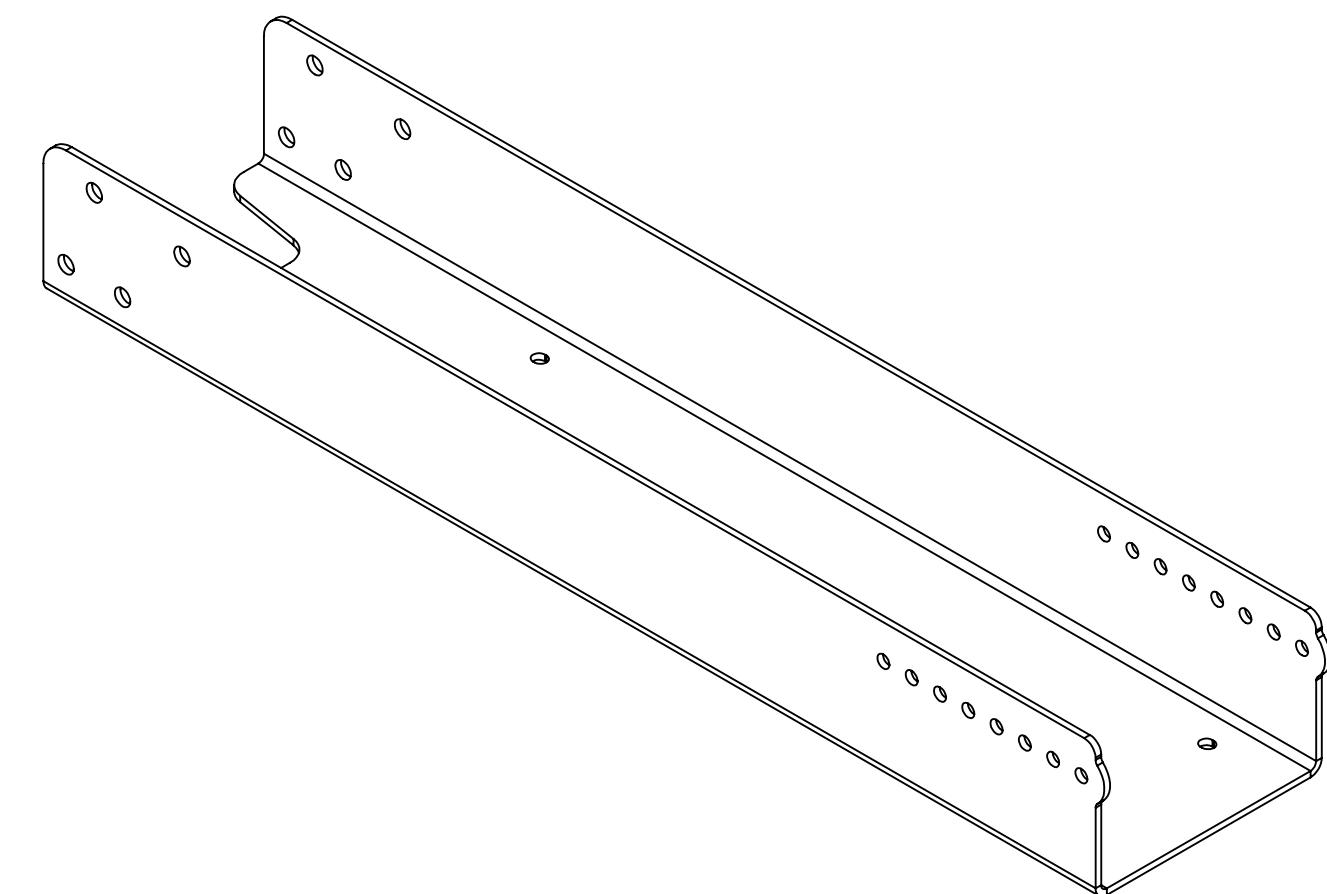
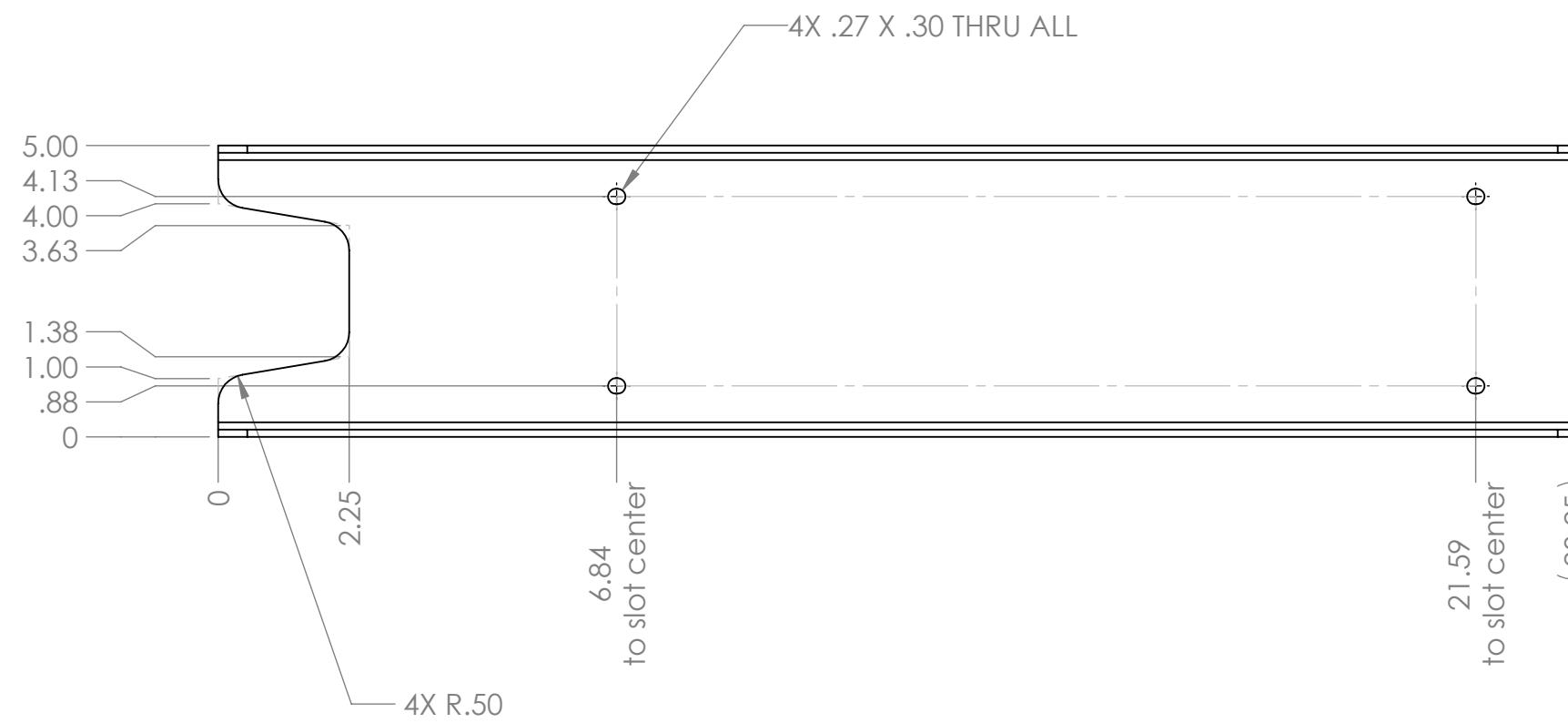
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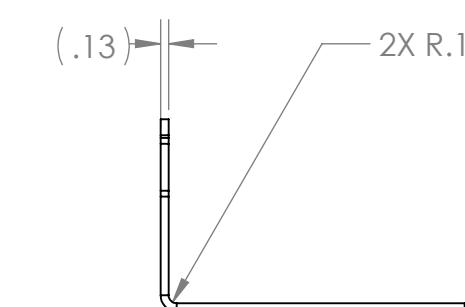
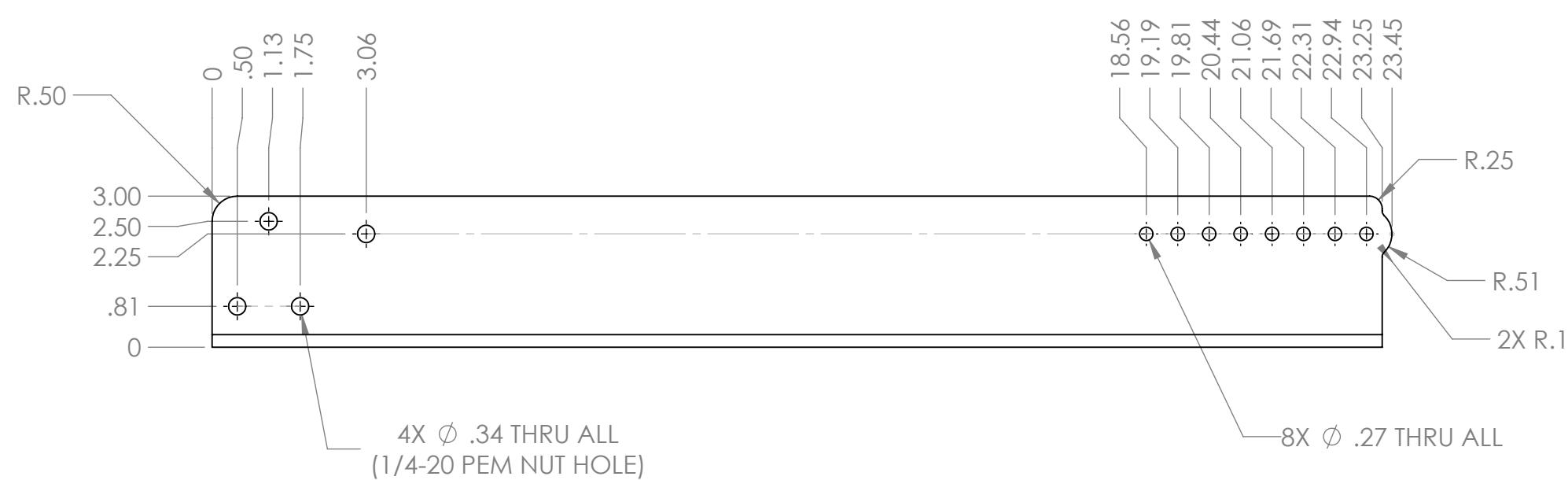
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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Leg to Upper
Exit Channel**

SIZE DWG. NO. REV
C GE-22379-01

SCALE: 1:3 SHEET 1 OF 1

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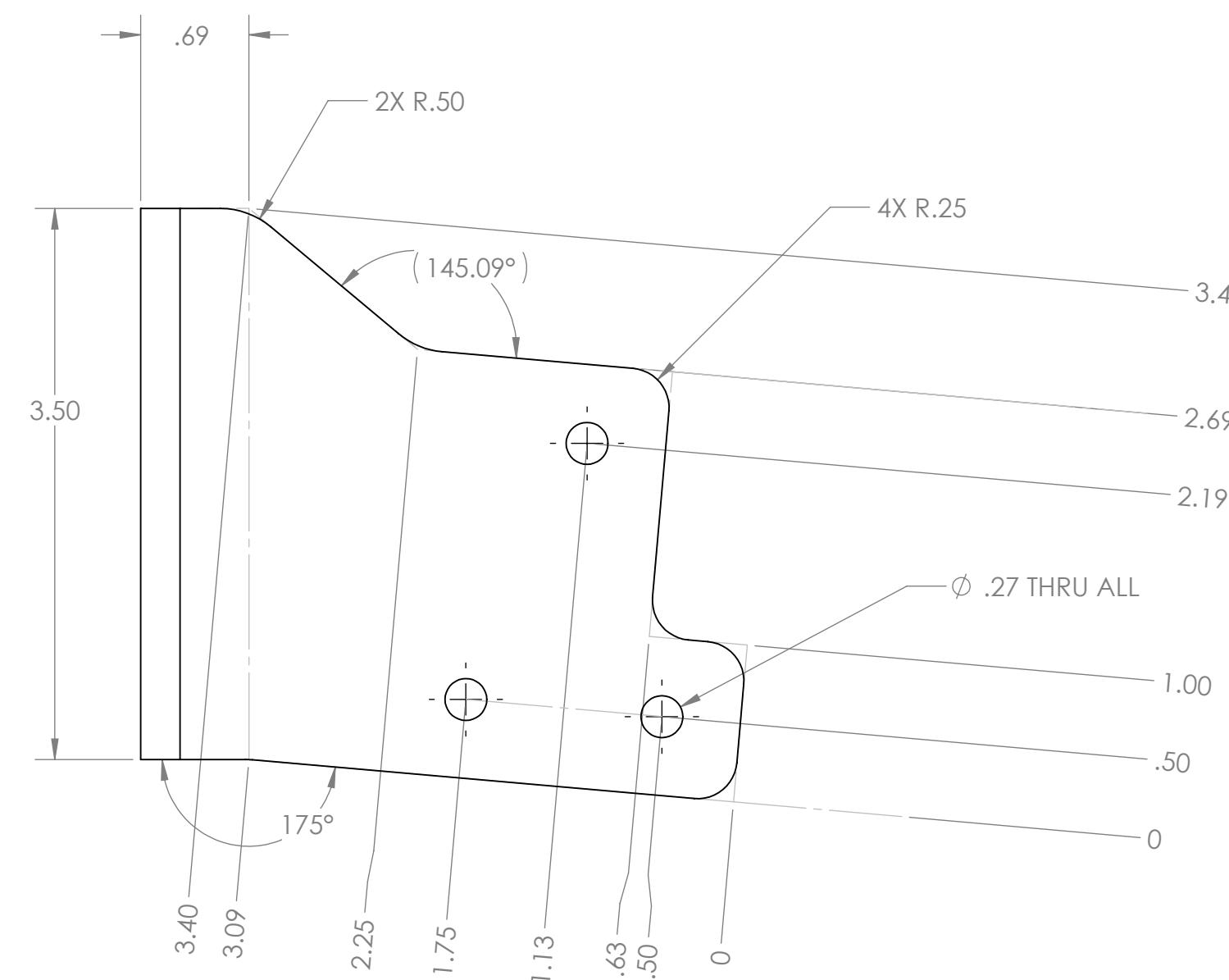
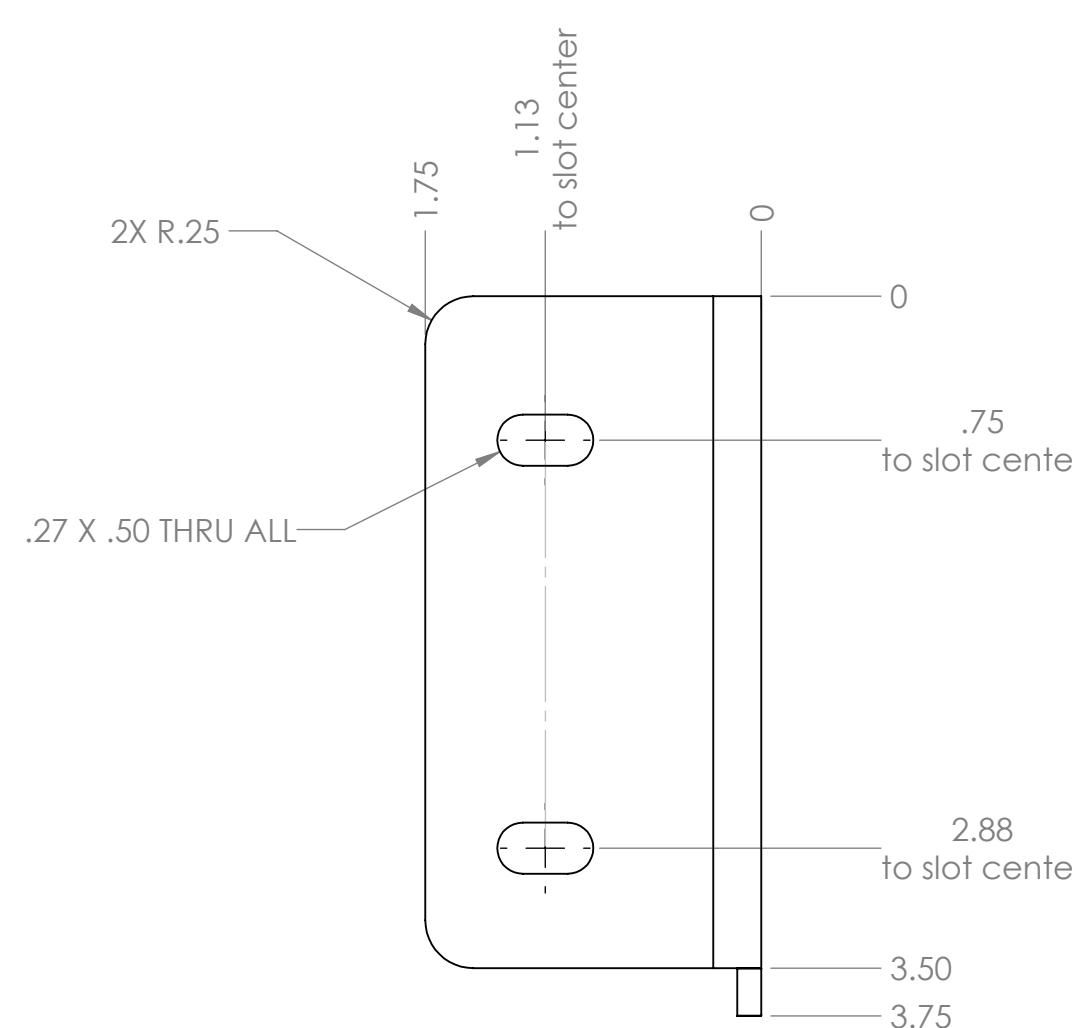
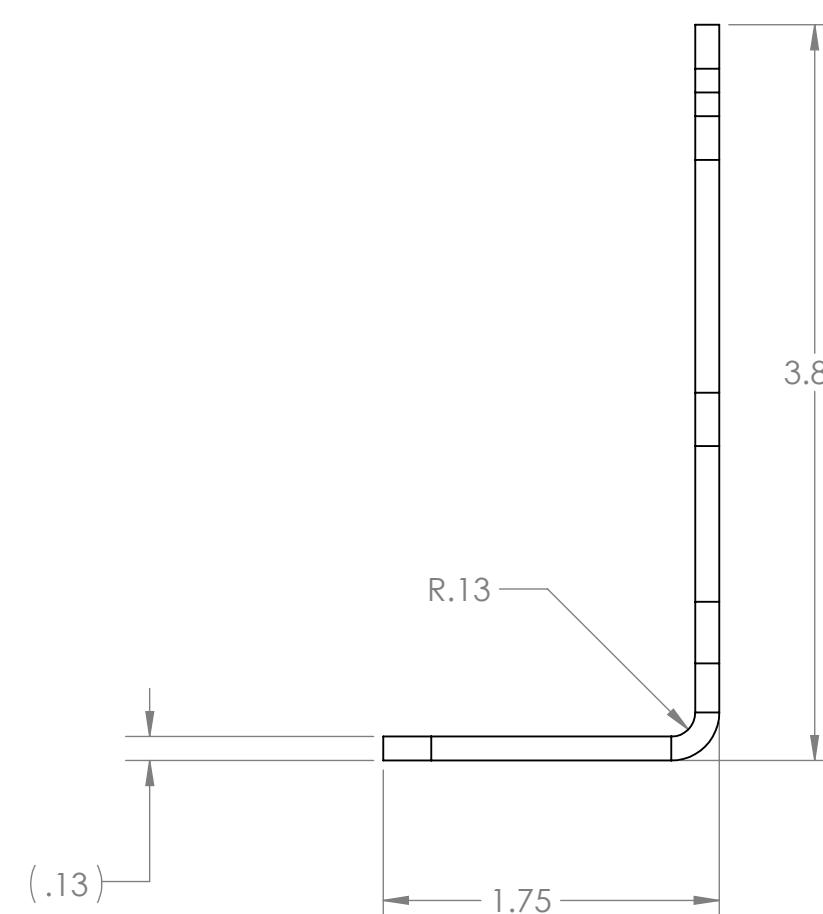
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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 FIRST
ROBOTICS
COMPETITION  SOLIDWORKS
Modeling Solutions Partner

TITLE:
Leg to Upper Hub Connection Right

SIZE DWG. NO. REV
C GE-22380

SCALE: 1:1 SHEET 1 OF 1

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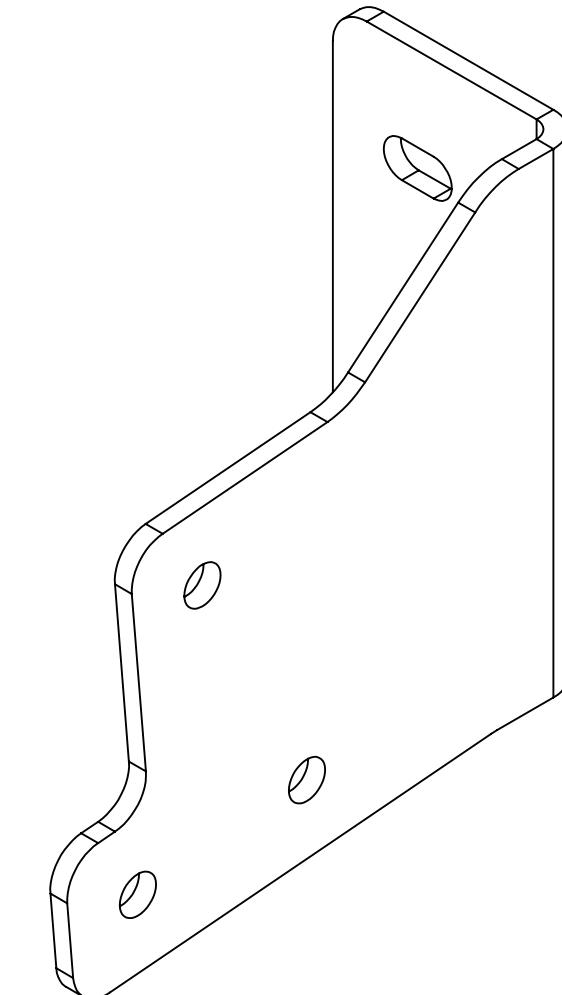
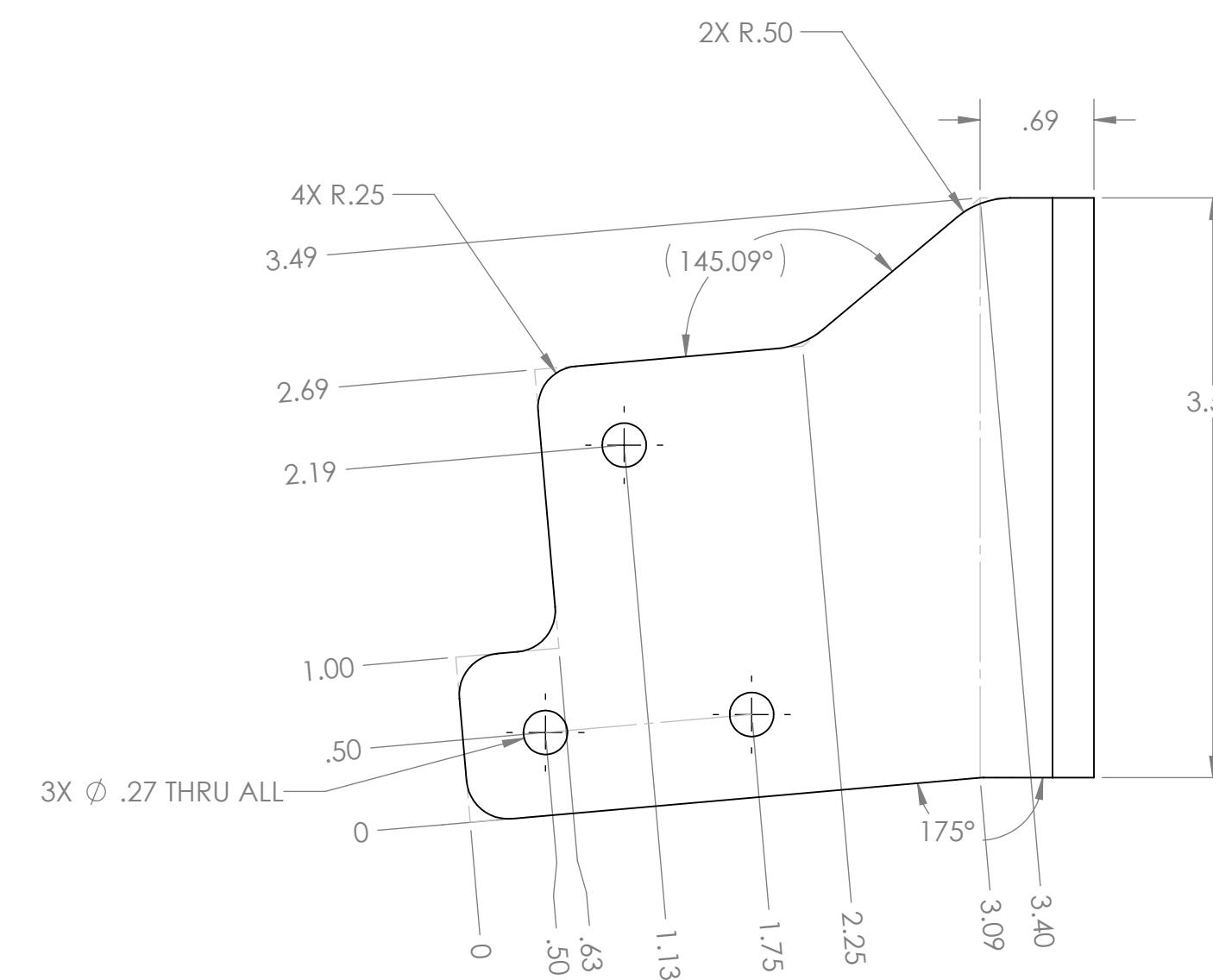
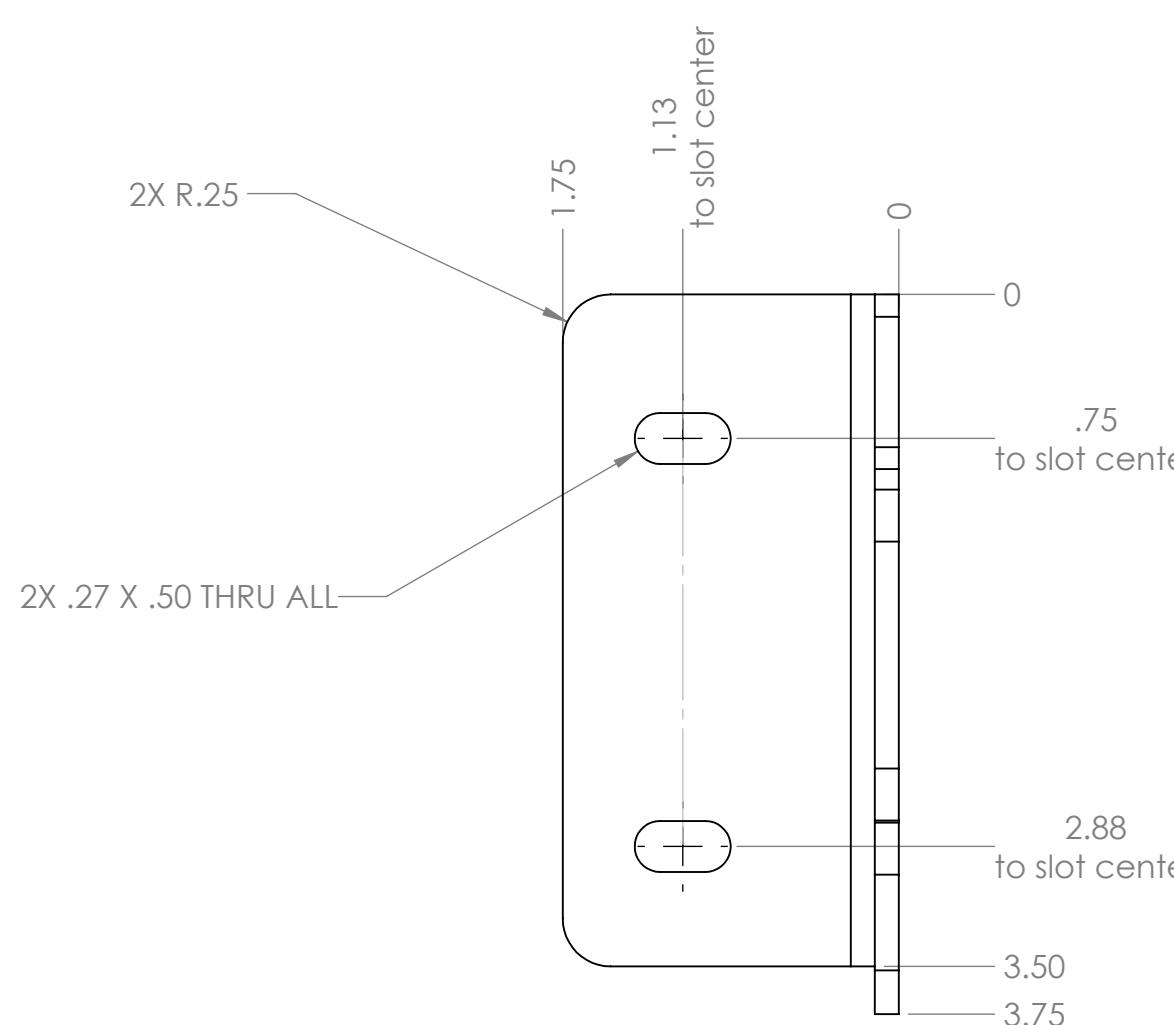
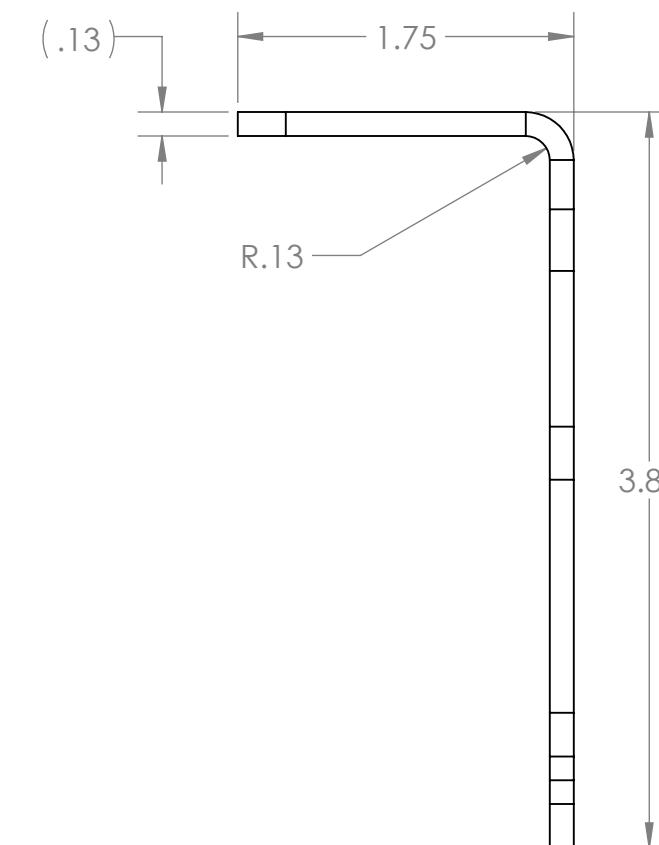
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Notes:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Leg to Upper Hub
Connection Left

SIZE DWG. NO. REV

C GE-22381

SCALE: 1:1 SHEET 1 OF 1

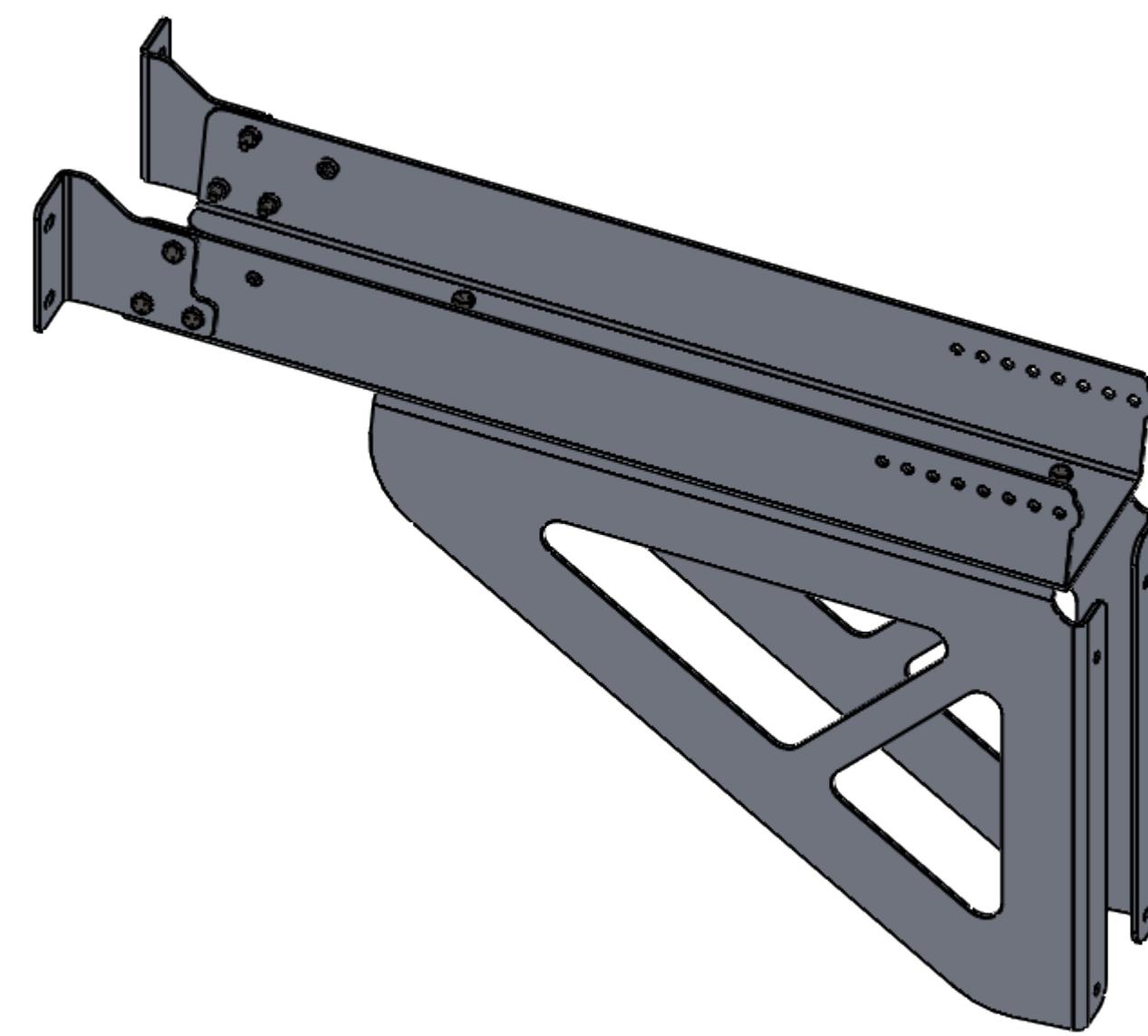
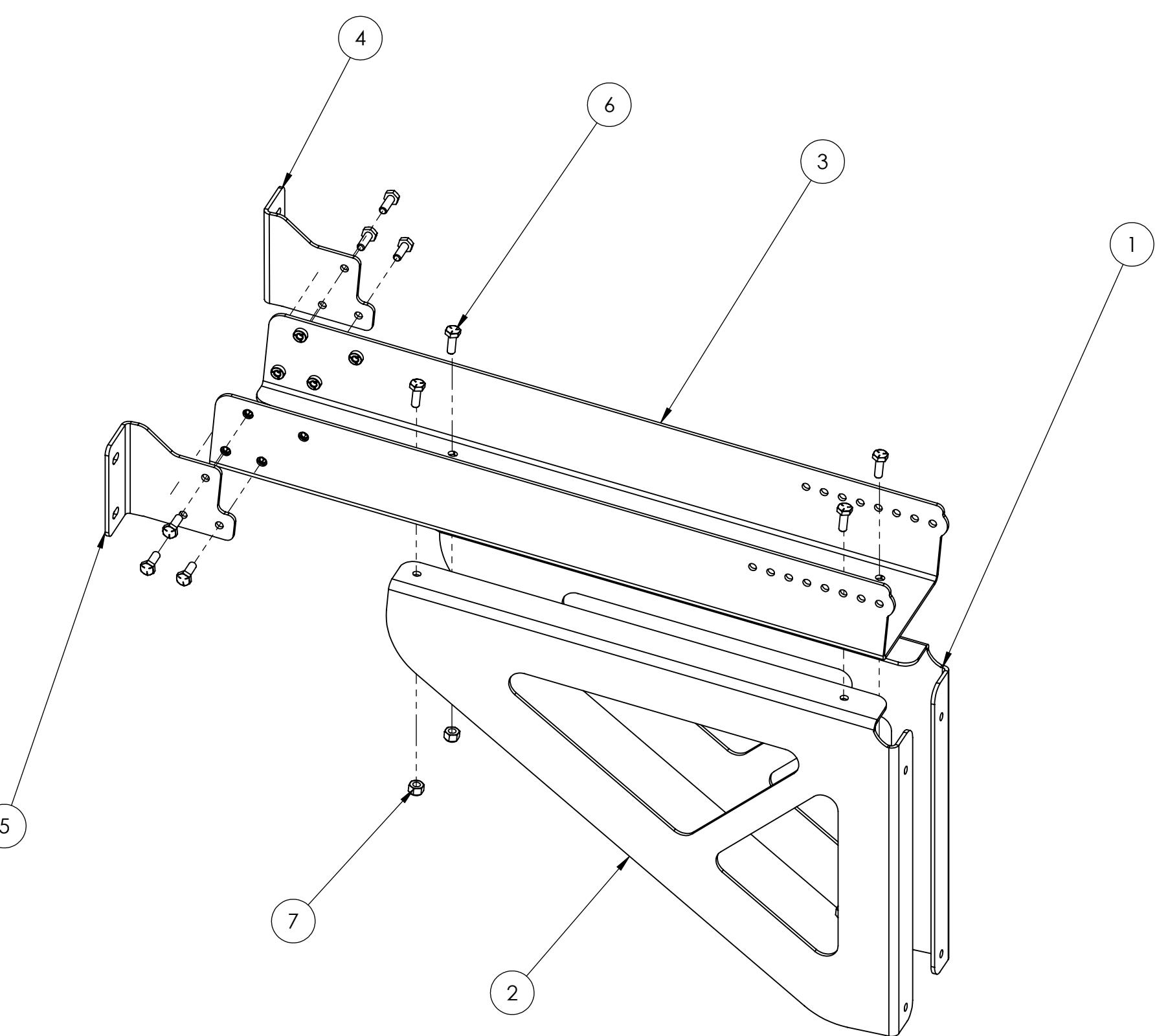
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Notes:

1. Attach (1) and (2) to (3) using (6) and (7).
2. Attach (4) and (5) to (3) using (6).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22377	Leg to Upper Exit Gusset Right	1
2	GE-22378	Leg to Upper Exit Gusset Left	1
3	GE-22379	Leg to Upper Exit Channel with Pem Nuts	1
4	GE-22380	Leg to Upper Hub Connection Right	1
5	GE-22381	Leg to Upper Hub Connection Left	1
6	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	10
7	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

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DRAWN		CO	12/29/2021			
PROPRIETARY AND CONFIDENTIAL						
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV			
	C	GE-22382				
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING		SCALE: 1:4	SHEET 1 OF 1			

FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

Title: Upright Top

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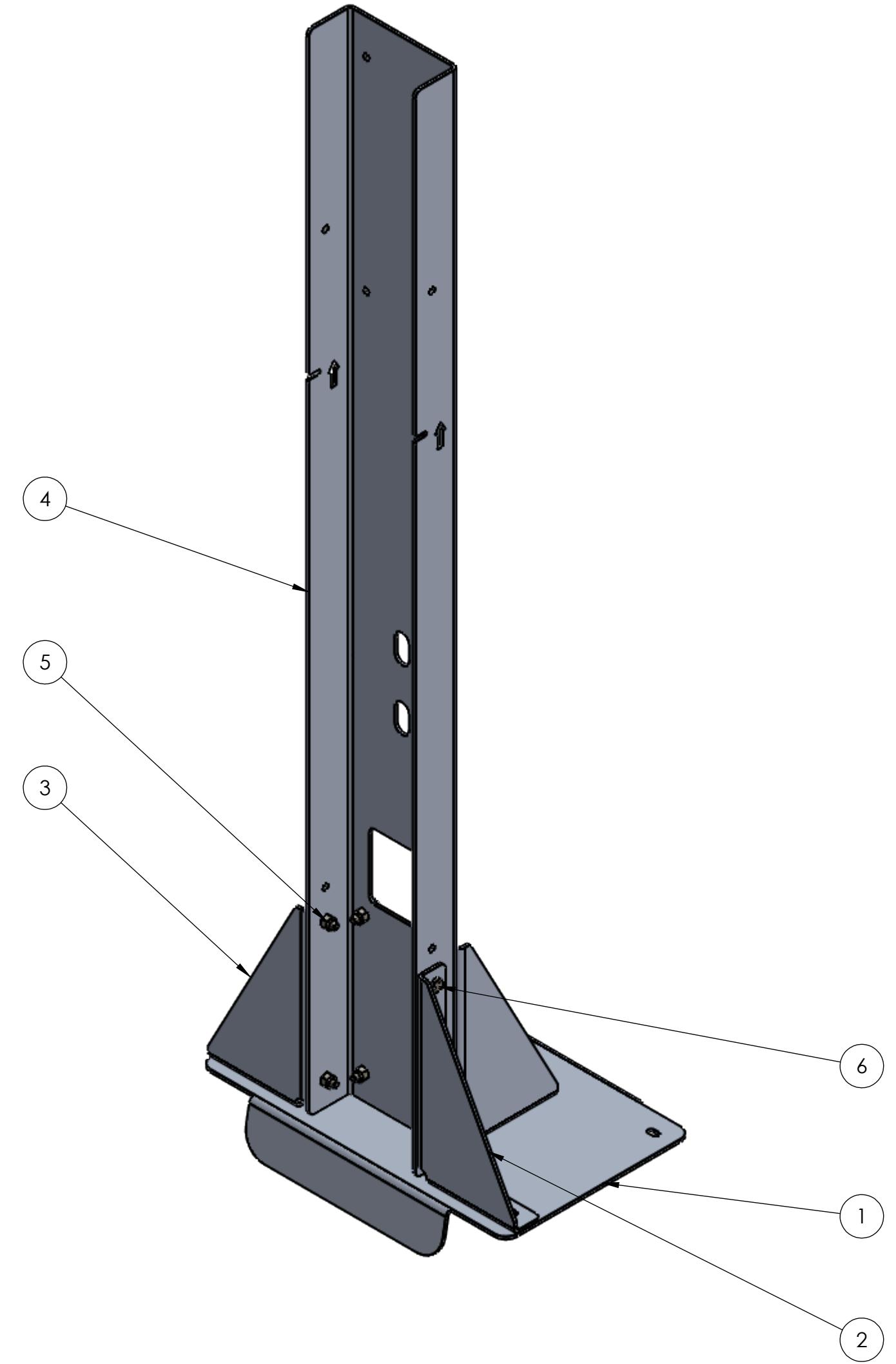
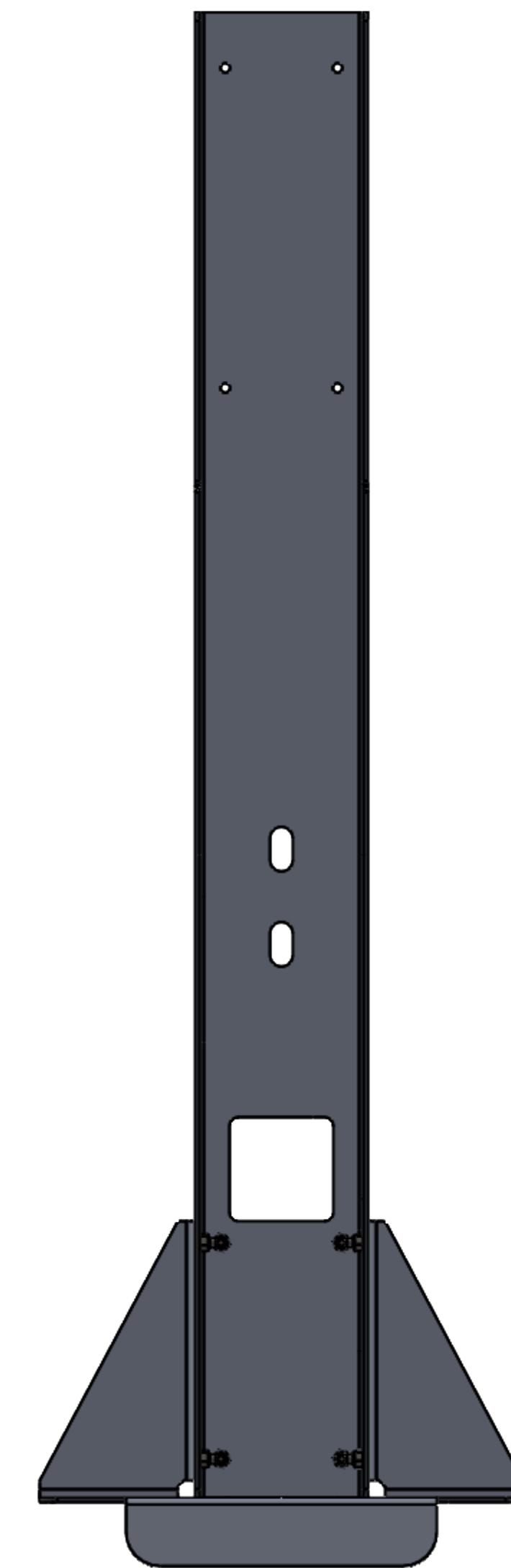
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22372	Leg Base	1
2	GE-22373	Leg Support Bracket Right	2
3	GE-22374	Leg Support Bracket Left	2
4	GE-22375	Leg Vertical Channel	1
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	14
6	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	14

UNLESS OTHERWISE SPECIFIED:

VEND NAME DATE

DRAWN CO 12/29/2021

SOLIDWORKS
Modeling Solutions Partner

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

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COMMENTS:

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EDGES.

DO NOT SCALE DRAWING

TITLE:

Upright Bottom

SIZE DWG. NO. REV

C GE-22383

SCALE: 1:4 SHEET 1 OF 2

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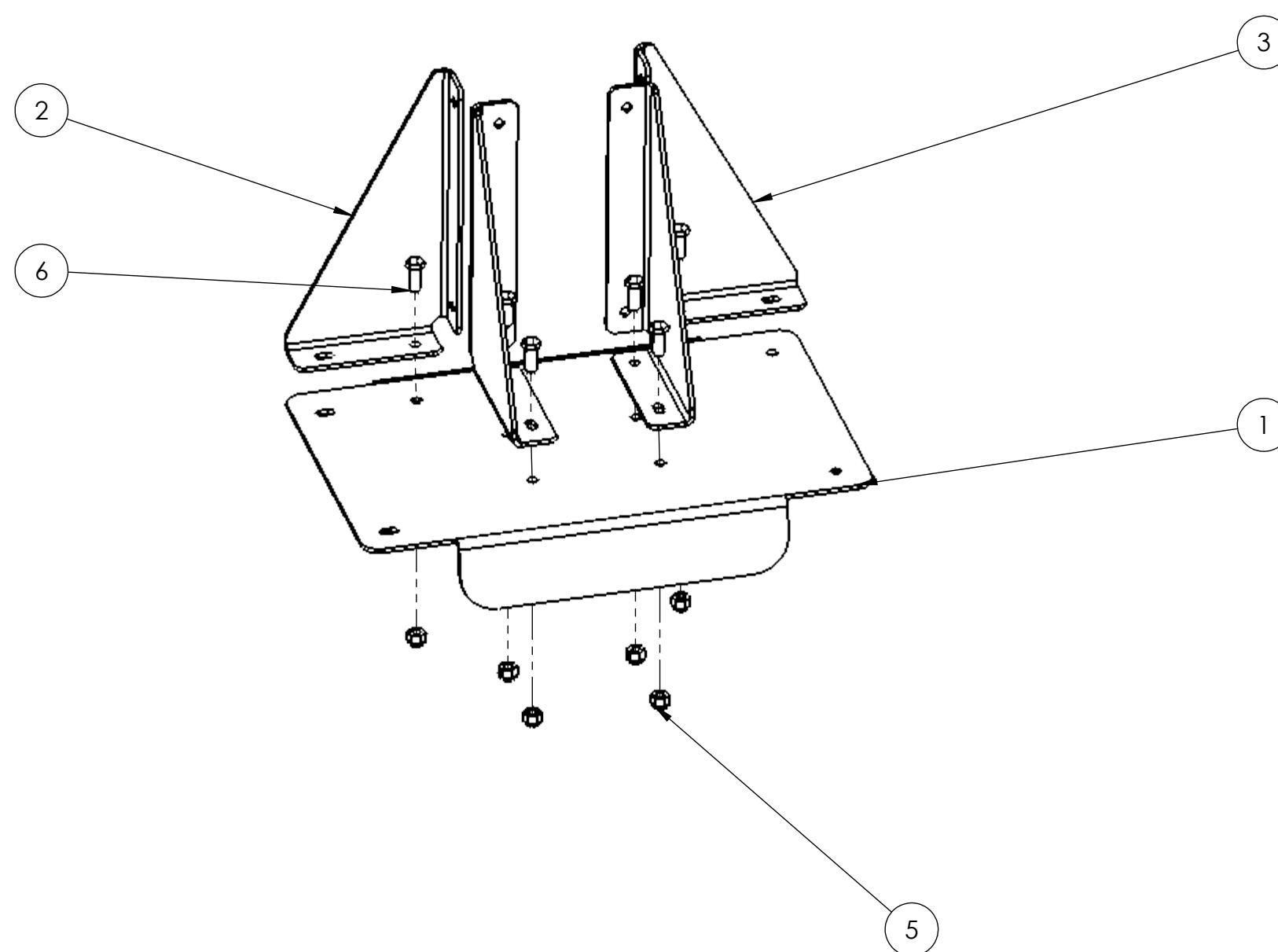
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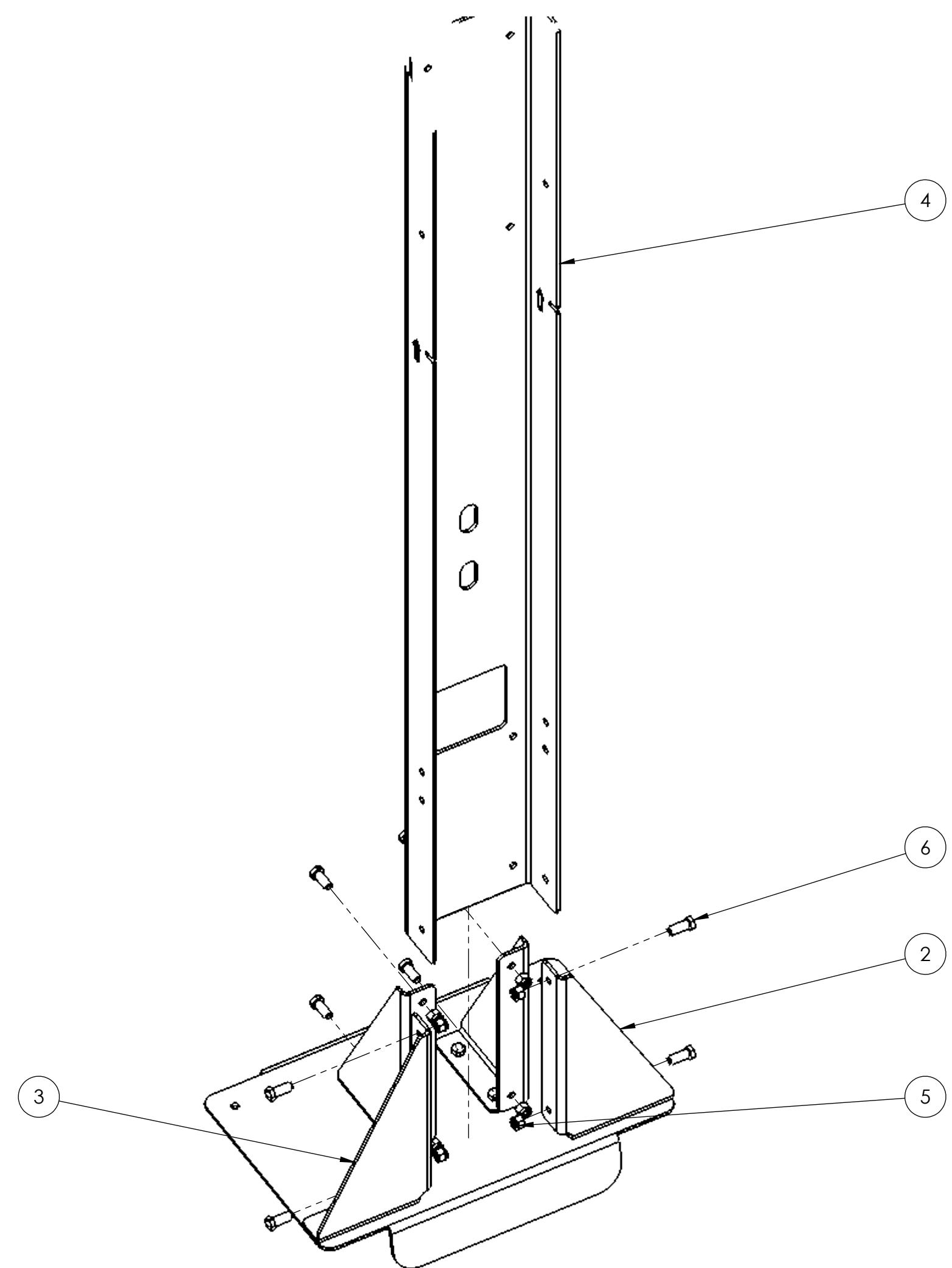
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Notes:

1. Attach (2) and (3) to (1) using (6) and (5).



Notes:

1. Attach (4) to assembly using (5) and (6) to connect to (2) and (3) as shown.

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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
	C	GE-22383	
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING	SCALE: 1:4	SHEET 2 OF 2	

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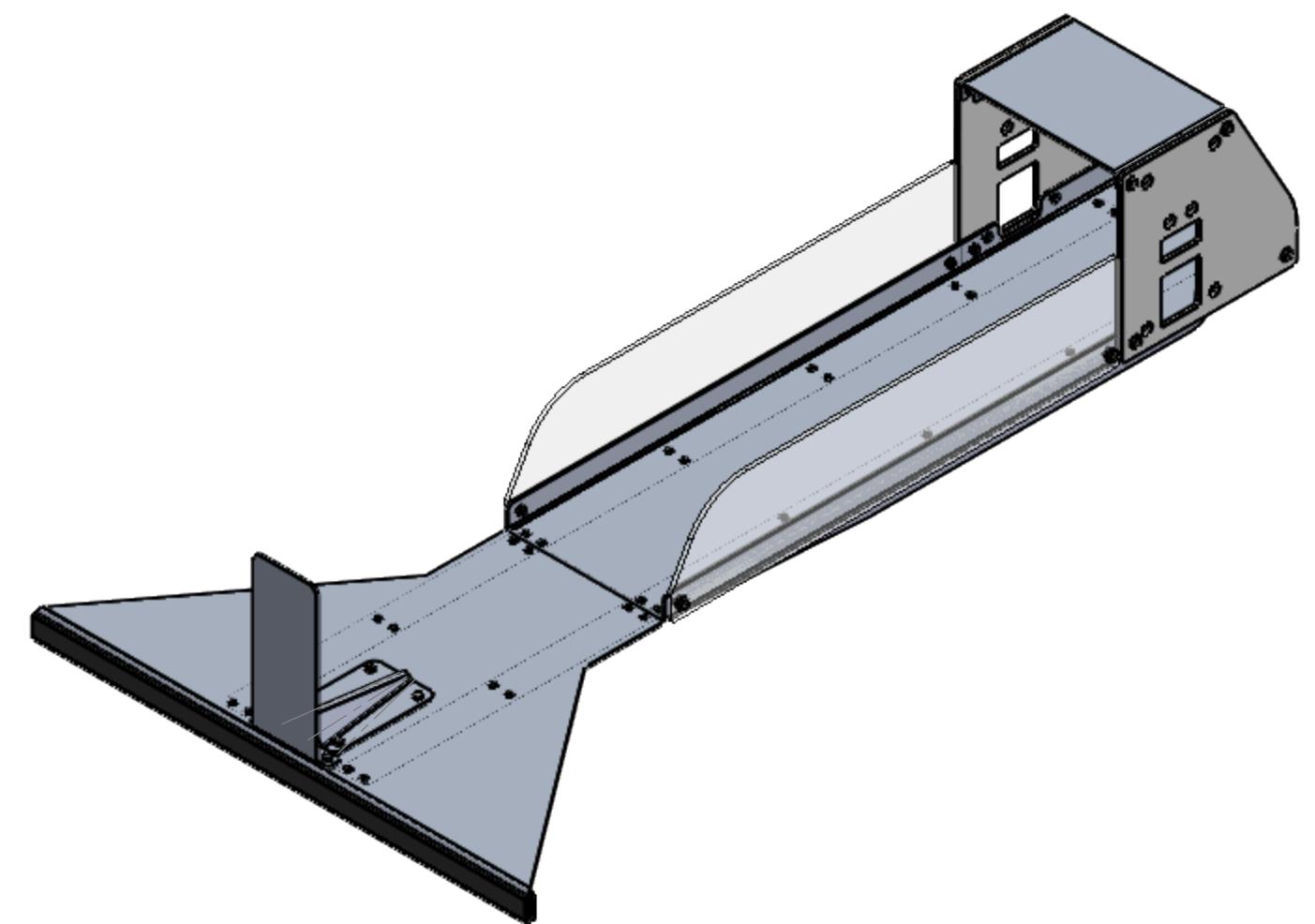
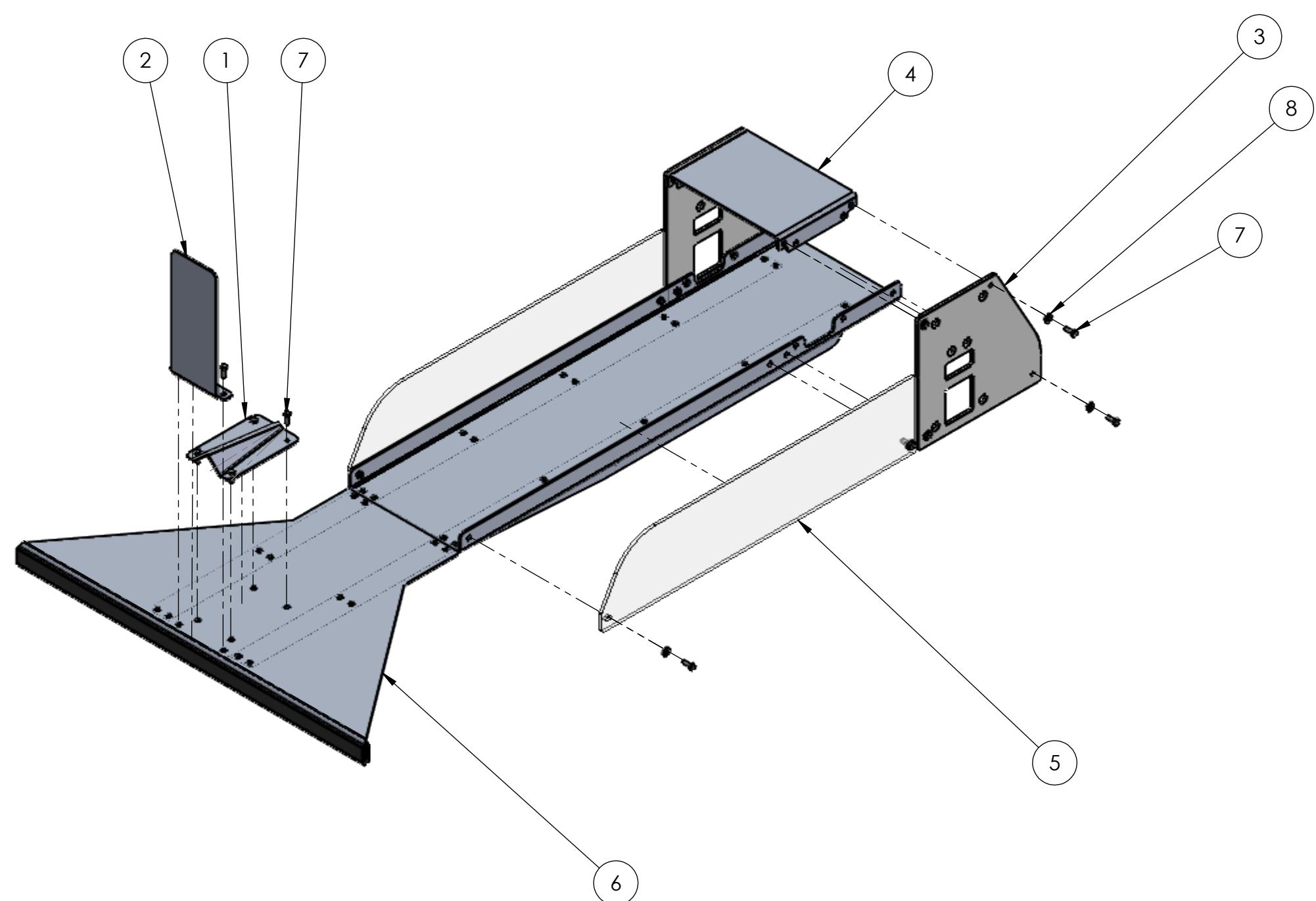
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Exploded View



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ITEM NO.	PART NUMBER	DESCRIPTION	
1	GE-22392	Horn	1
2	GE-22393	Horn Bounce Plate	1
3	GE-22398	Upper Exit Sensor Wall	2
4	GE-22399	Upper Exit Top with Pem Nuts	1
5	GE-22400	Upper Exit Side Wall	2
6	GE-22406	Upper Exit Sheet Metal with Foam	1
7	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	18
8	washer_flat_.25	Flat Washer for 1/4" Screw	12

UNLESS OTHERWISE SPECIFIED:

VEND NAME DATE

DRAWN KAMC 7/6/2021



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Modeling Solutions Partner

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$

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MATERIAL/FINISH:

Tag or label with part number

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING

TITLE:

Upper Exit Assembly

SIZE

DWG. NO.

REV

C

GE-22391

SCALE: 1:8

SHEET 1 OF 2

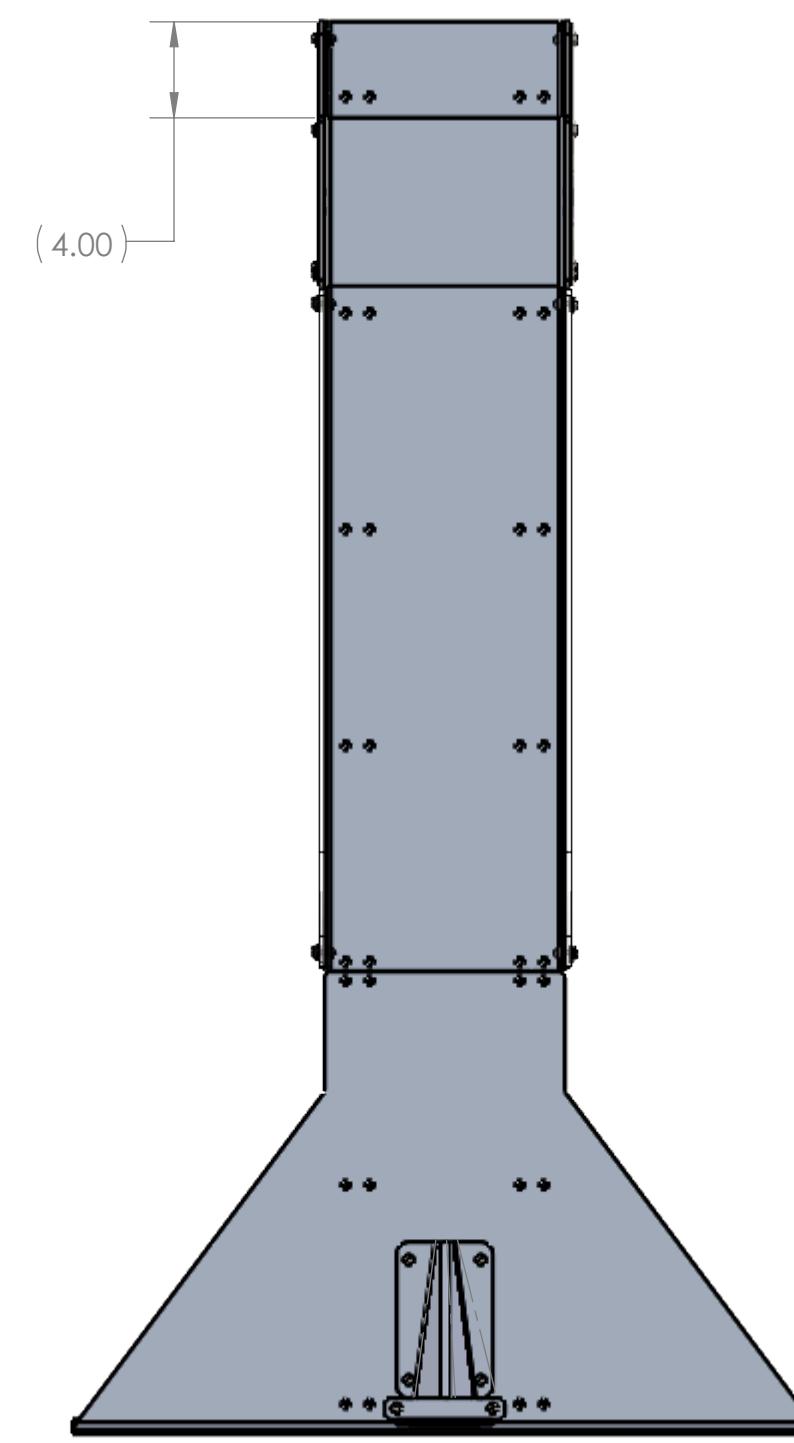
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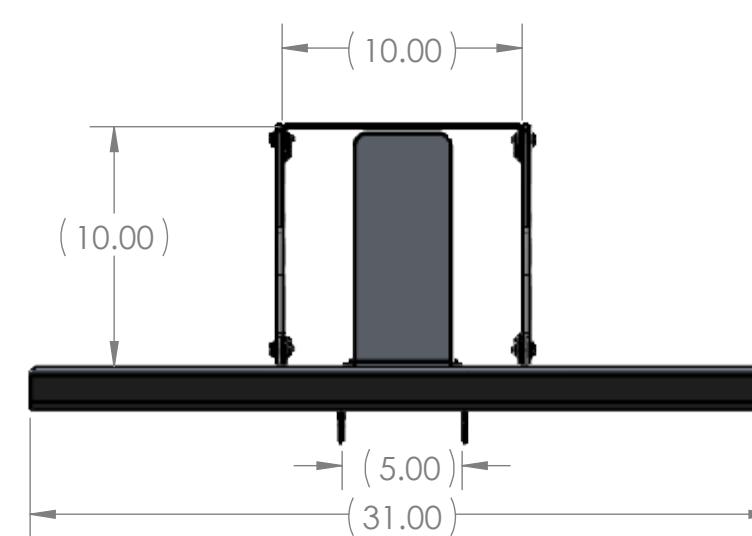
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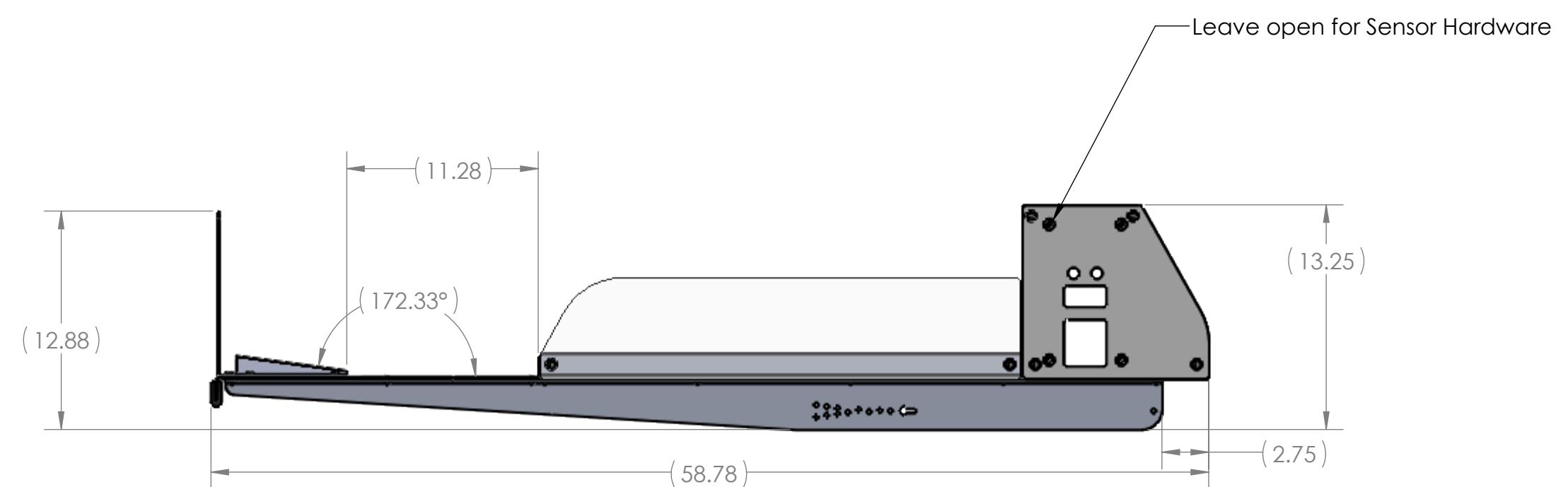
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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
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VEND NAME DATE
DRAWN KAMC 7/6/2021

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COMMENTS:
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EDGES.

FIRST[®]
ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Upper Exit
Assembly**

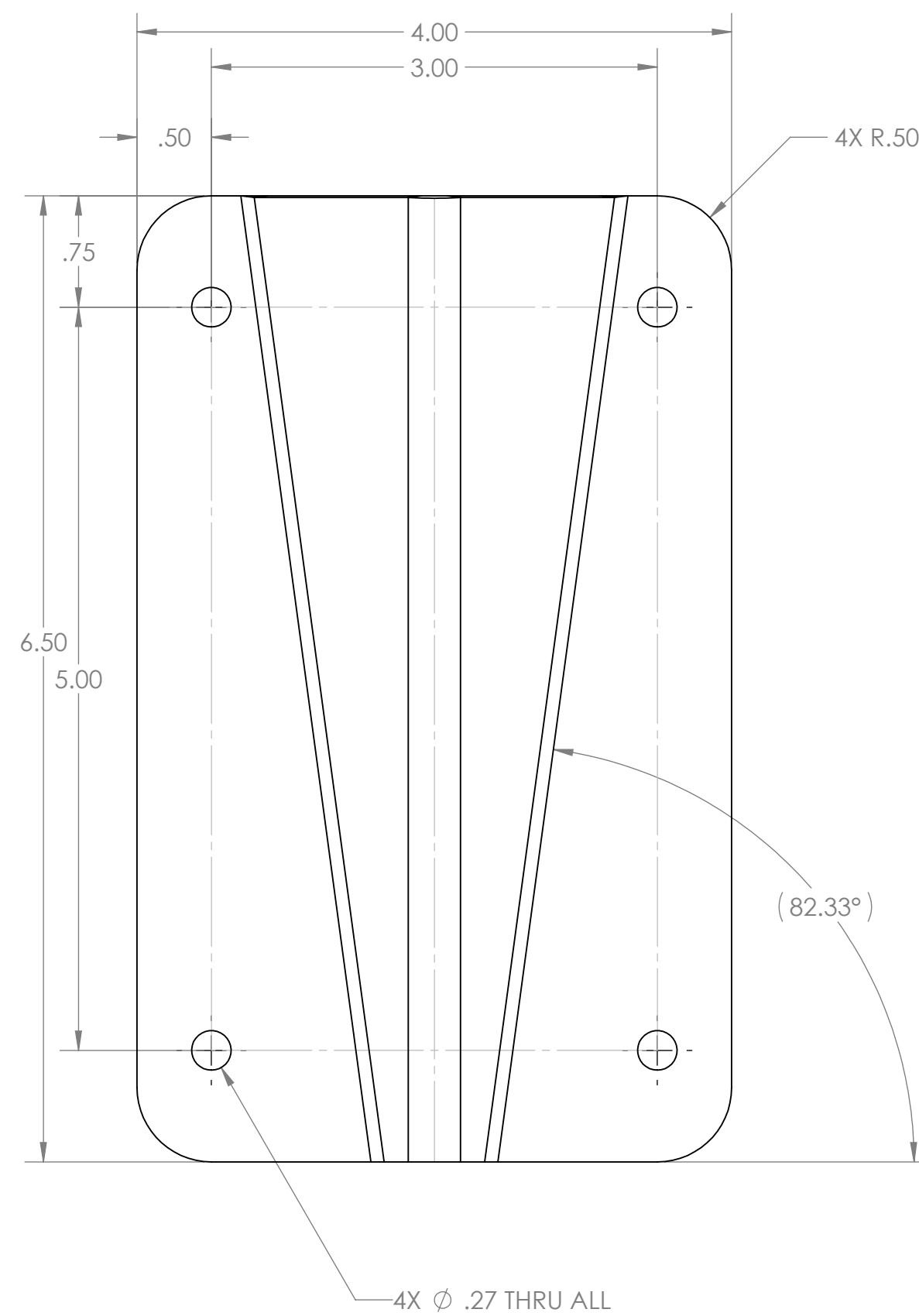
SIZE DWG. NO. REV

C GE-22391

SCALE: 1:8 SHEET 2 OF 2

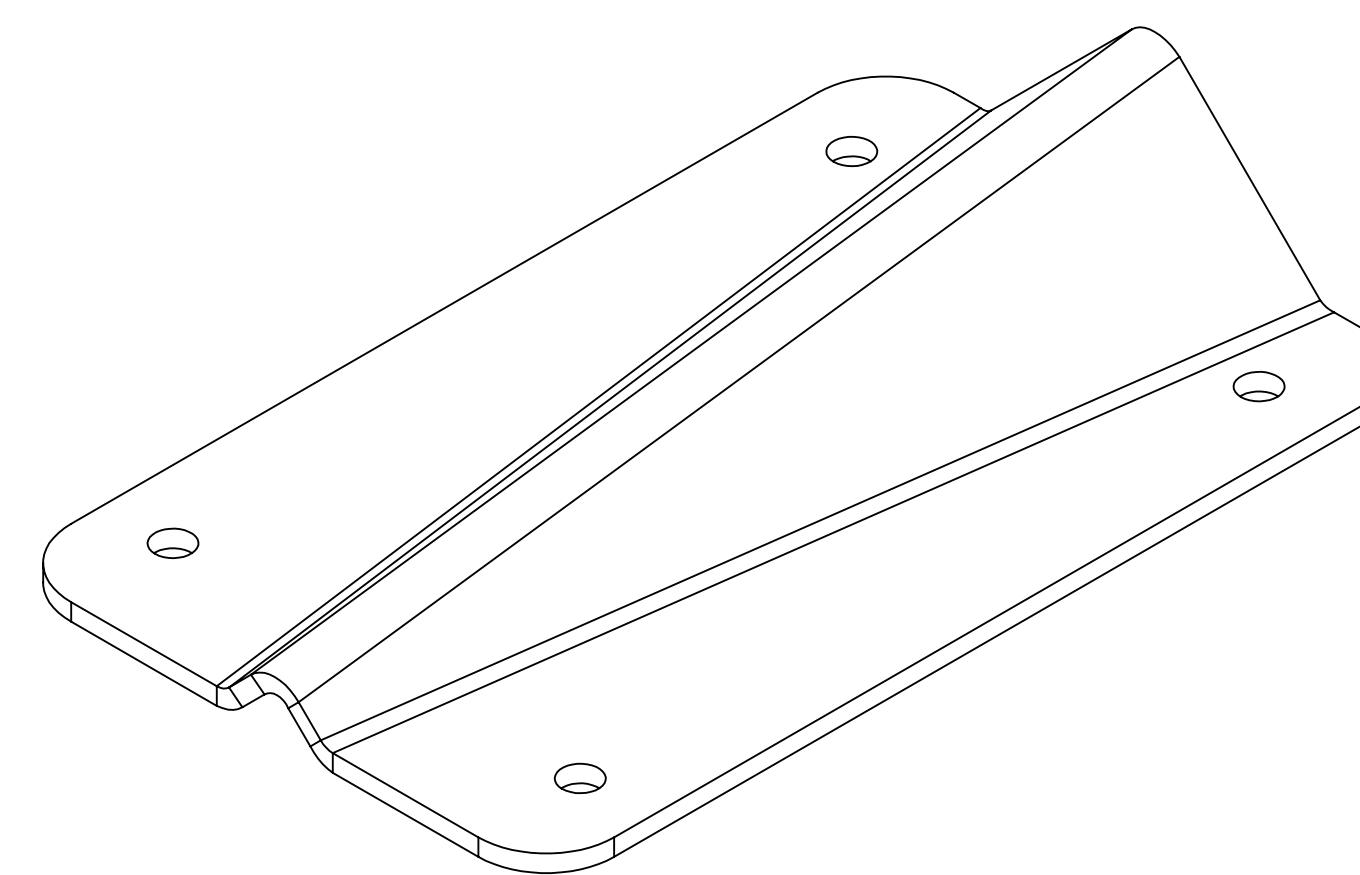
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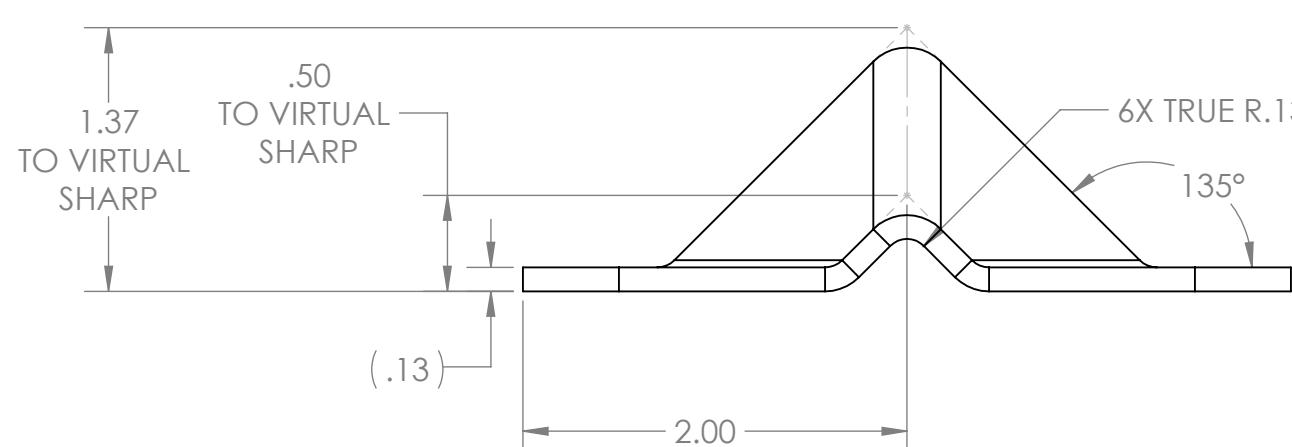
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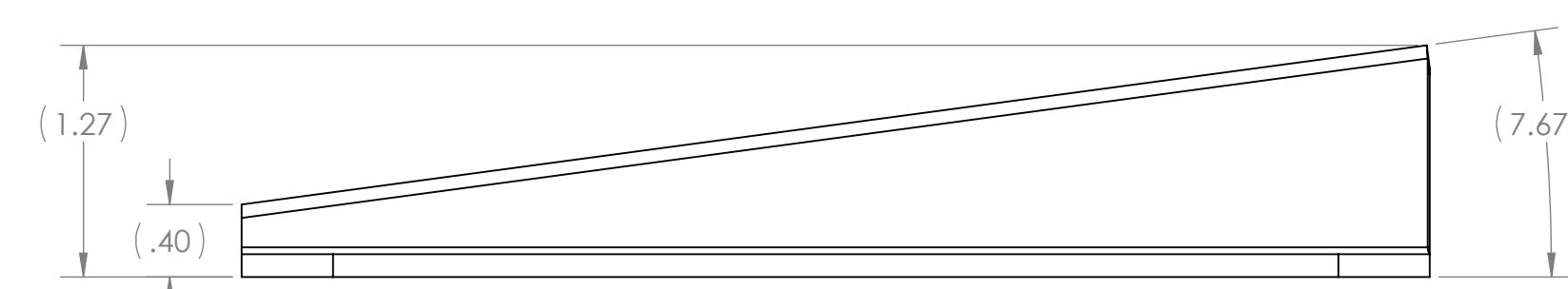
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DRAWN	KAMC	6/9/2021	
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  **SOLIDWORKS**
Modeling Solutions Partner

TITLE: **Horn**

SIZE DWG. NO. REV
C GE-22392

SCALE: 1:1 SHEET 1 OF 1

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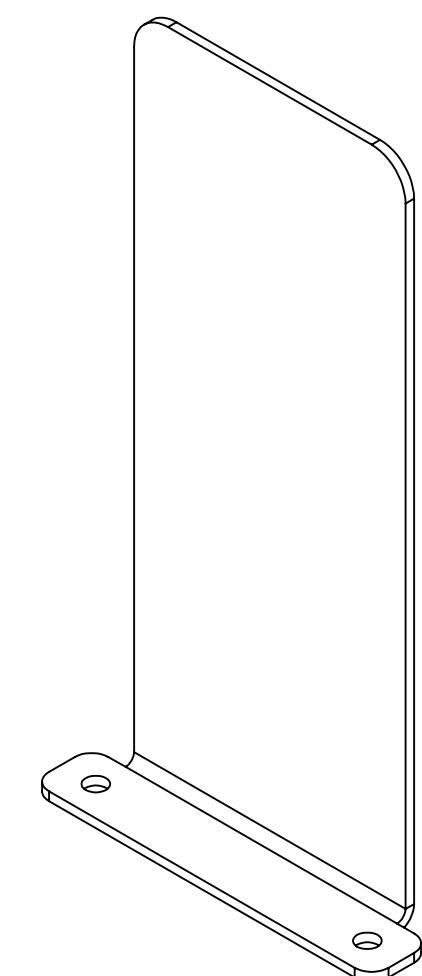
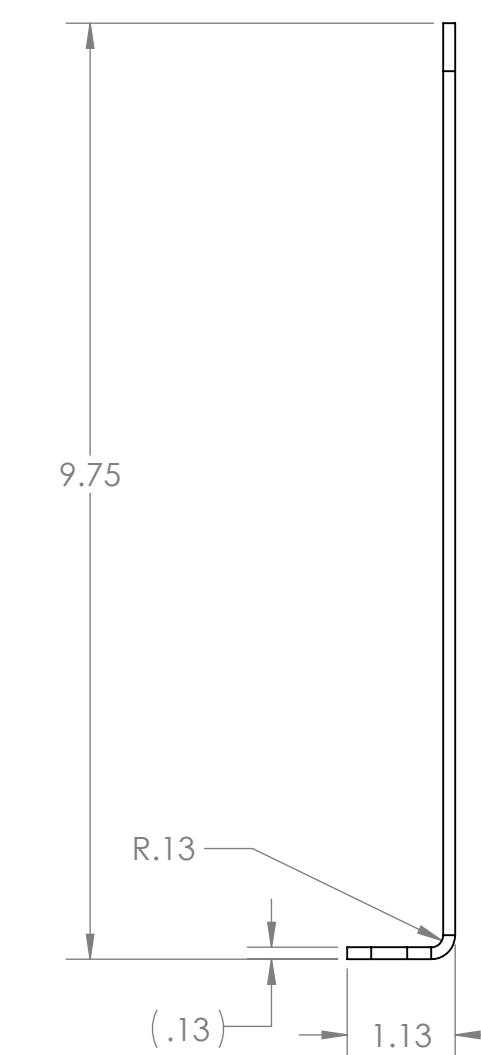
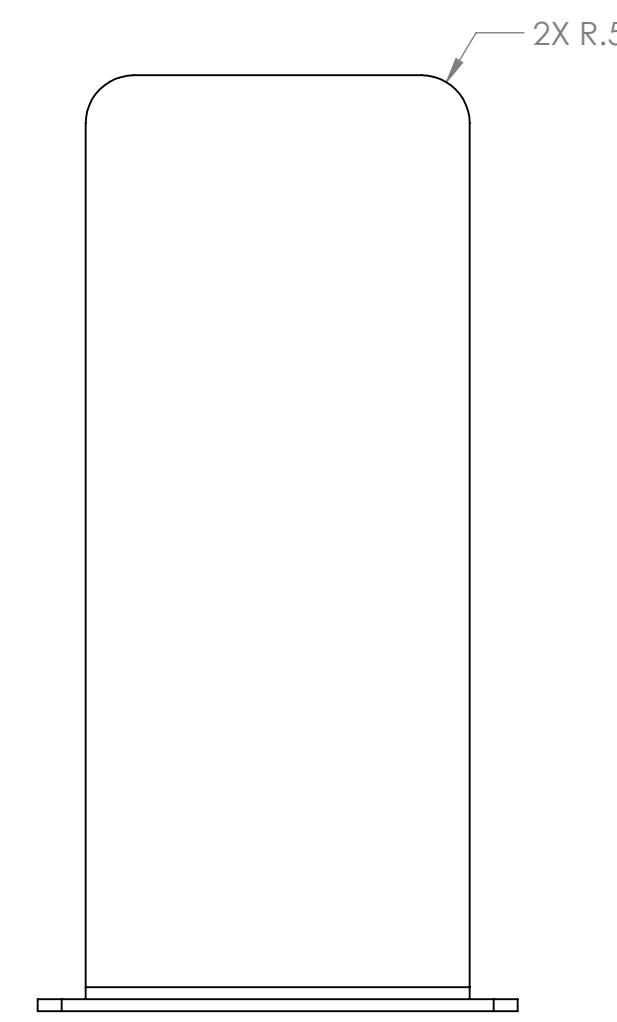
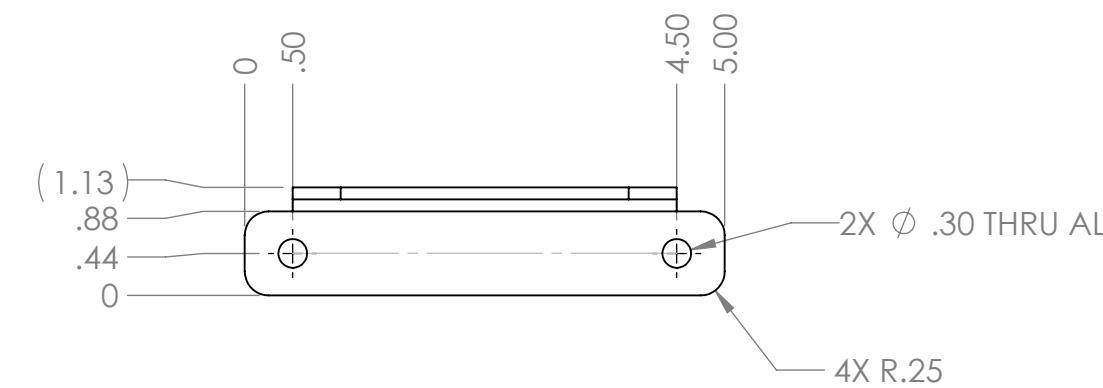
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Notes:
1. Tag or label with part number



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DRAWN	KAMC	7/6/2021	
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
 FIRST ROBOTICS COMPETITION  SOLIDWORKS Modeling Solutions Partner			
TITLE: Horn Bounce Plate			
SIZE	DWG. NO.	REV	
C	GE-22393		
SCALE: 1:2		SHEET 1 OF 1	

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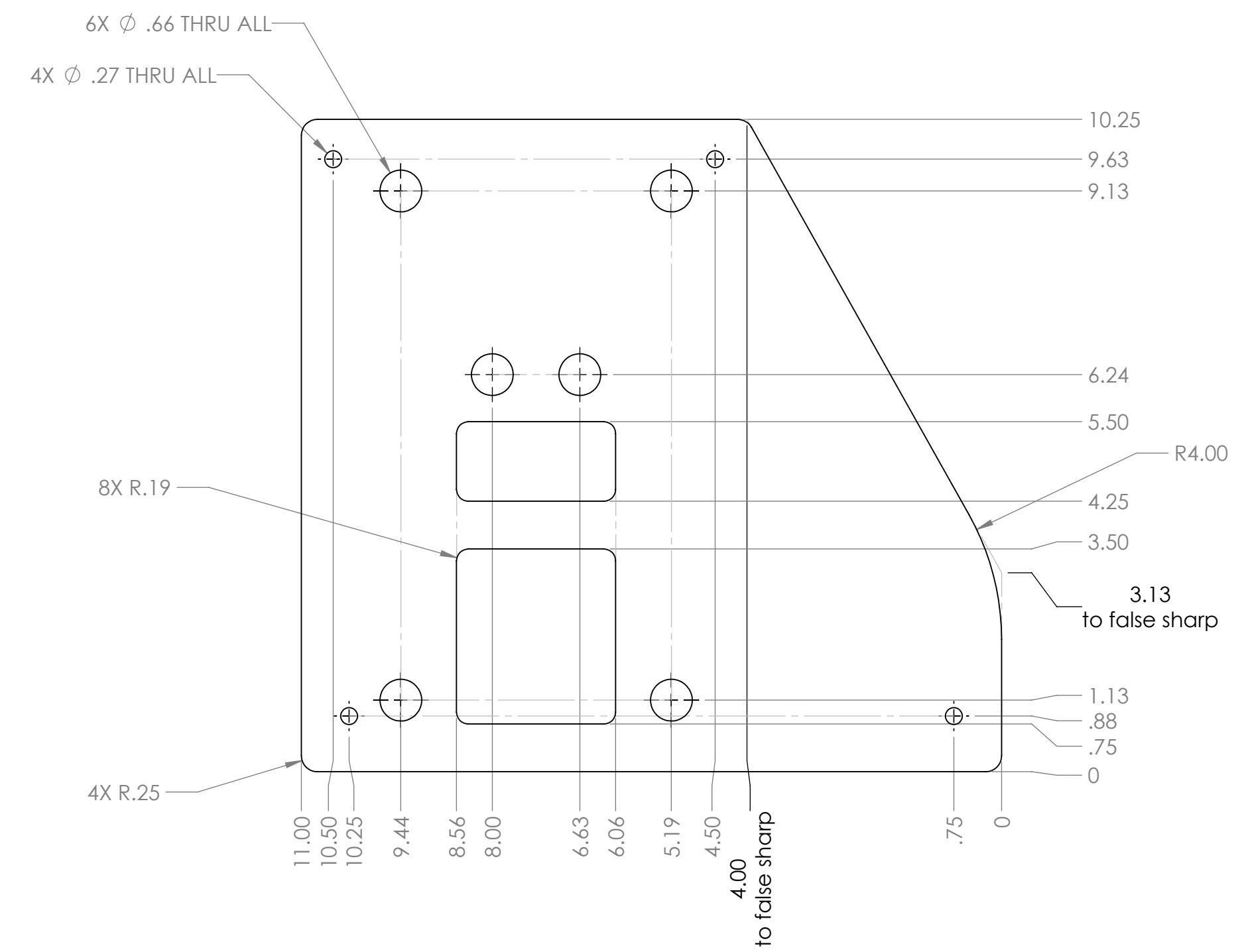
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Notes:
1. Tag or label with part number

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DRAWN	KAMC	7/6/2021	
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
1/4" HDPE, Smooth, White/Natural	C	GE-22398	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:2	SHEET 1 OF 1	



TITLE: Upper Exit Sensor Wall

SIZE DWG. NO. REV
C GE-22398

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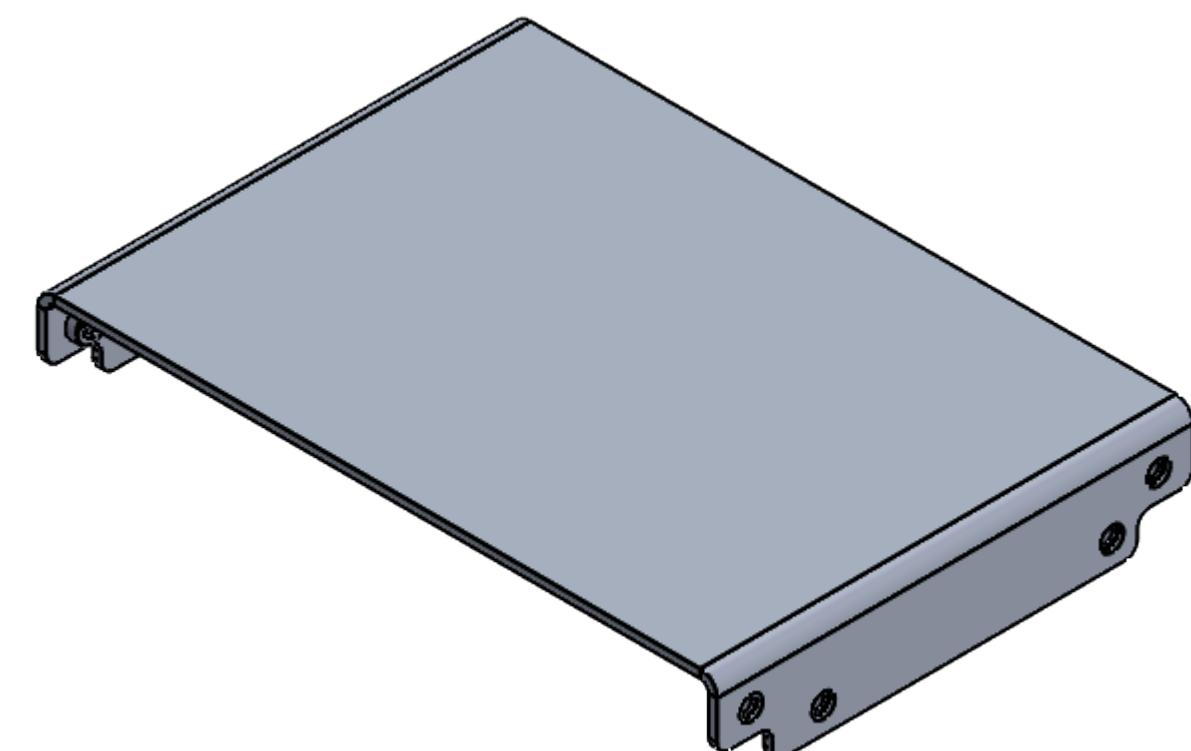
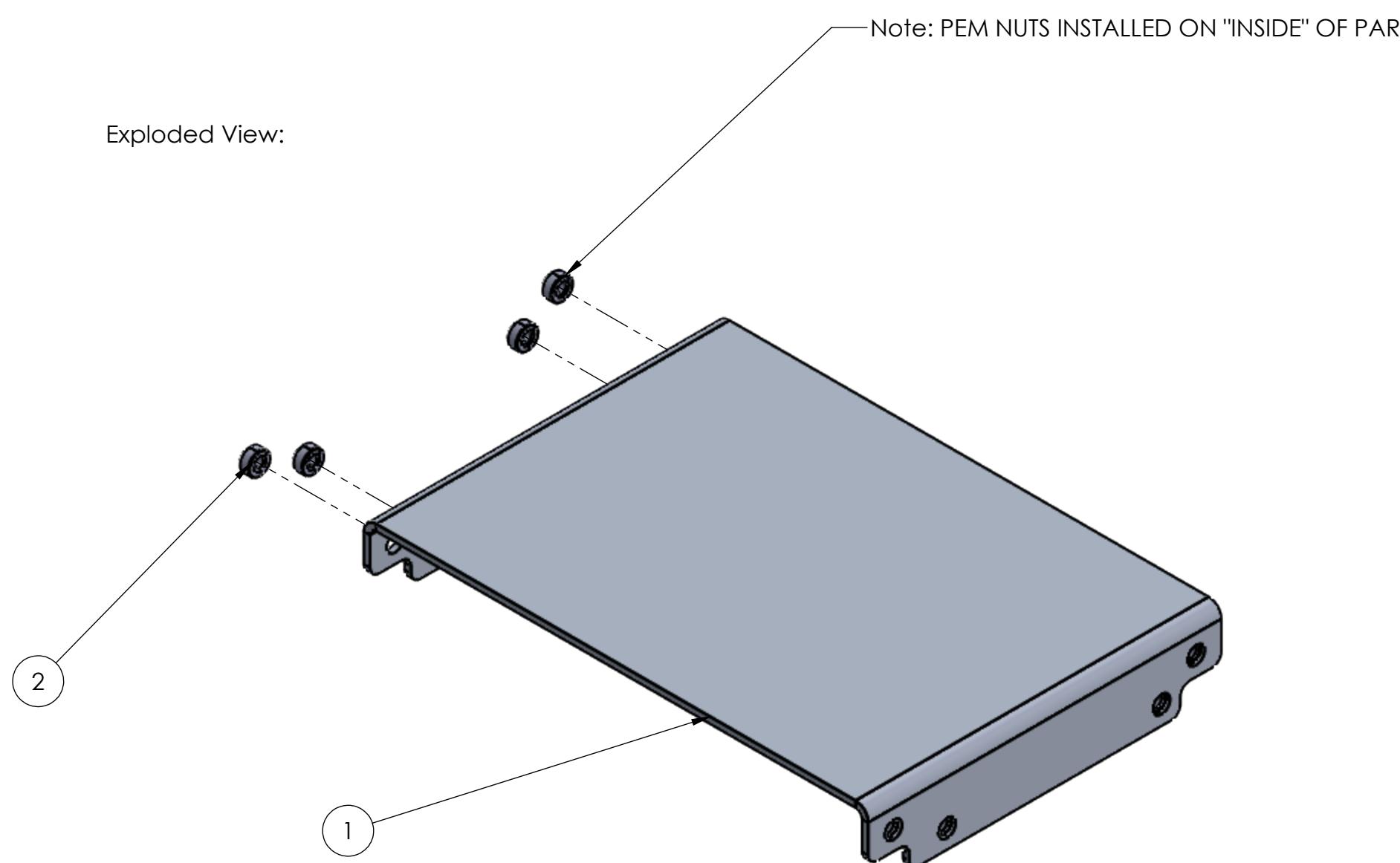
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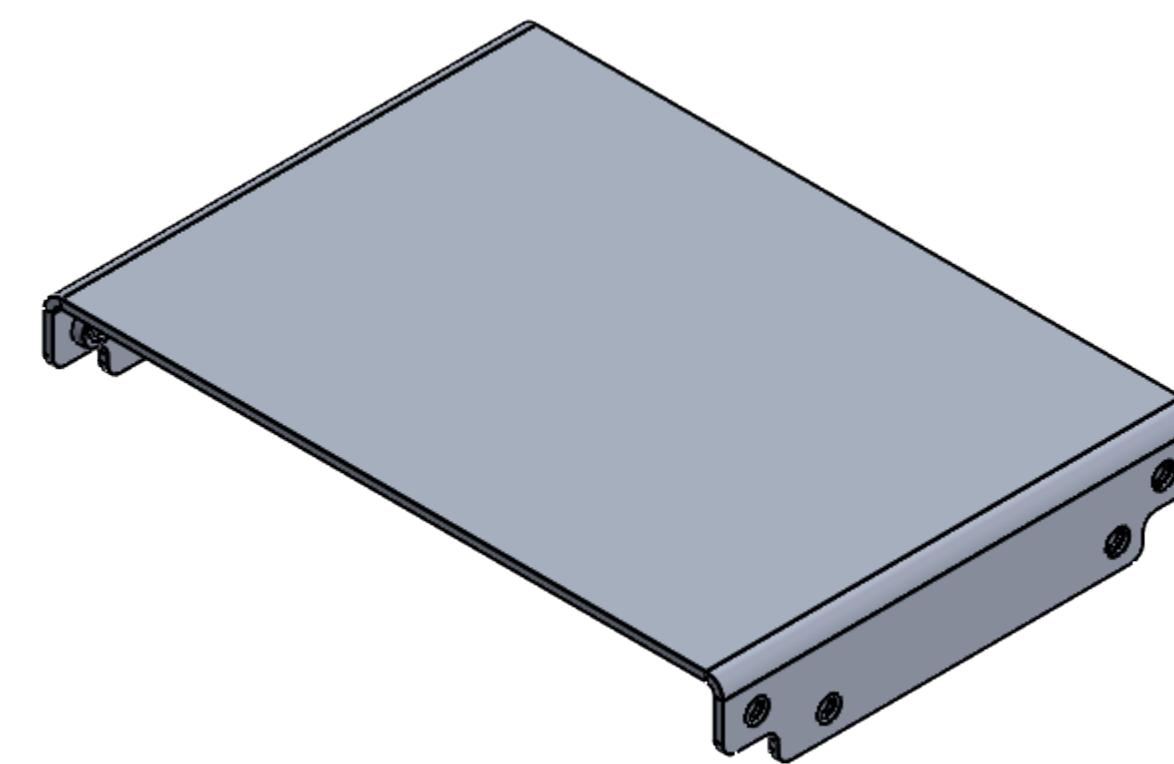
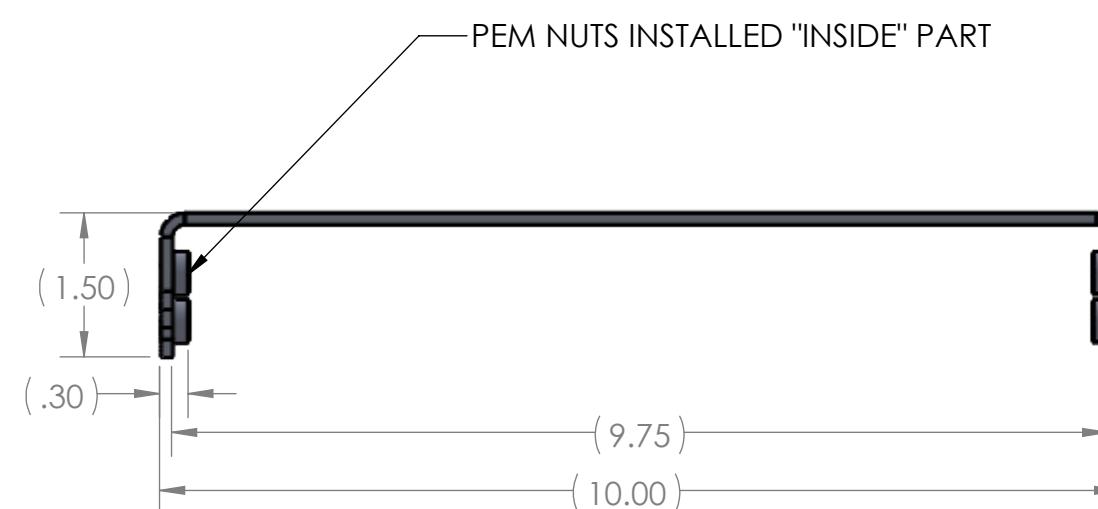
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22399-01	Upper Exit Top	1
2	pem_clinchnut_.25_20 .054	1/4-20 self-clinching nut, .054 shank	8

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DRAWN	KAMC	7/6/2021					
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MATERIAL/FINISH:	Tag or label with part number			SIZE	DWG. NO.	REV	
			C	GE-22399			
COMMENTS:			REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING			SCALE: 1:2		SHEET 1 OF 2		

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DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

Tag or label with part number

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

KAMC

7/6/2021

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COMMENTS:

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COMPETITION**
SOLIDWORKS
Modeling Solutions Partner

TITLE:

**Upper Exit Top
with Pem Nuts**

SIZE DWG. NO. REV

C GE-22399

SCALE: 1:2 SHEET 2 OF 2

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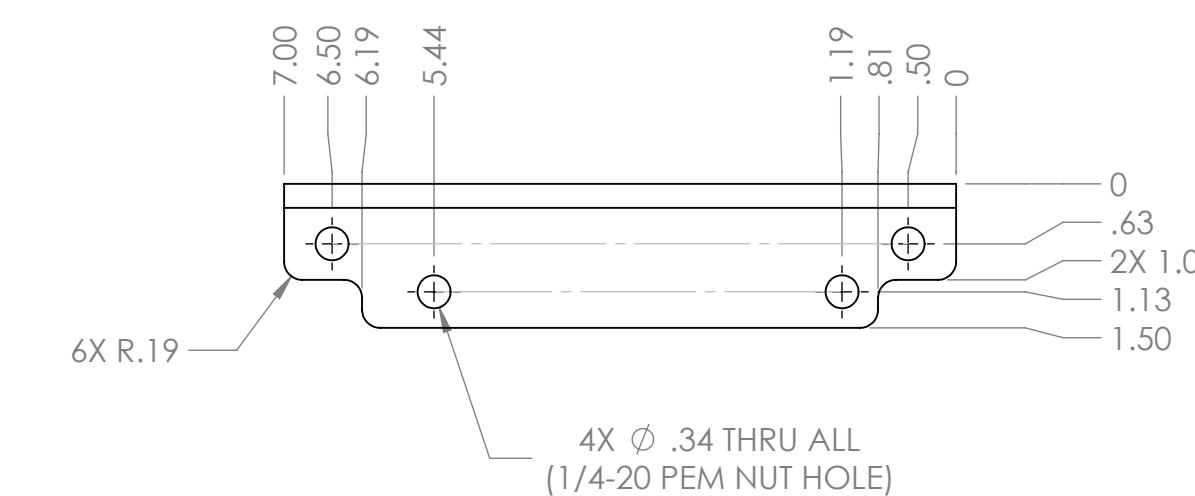
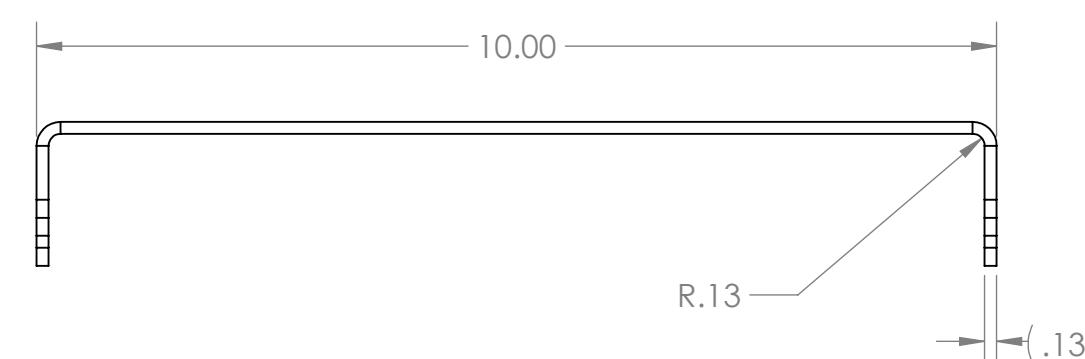
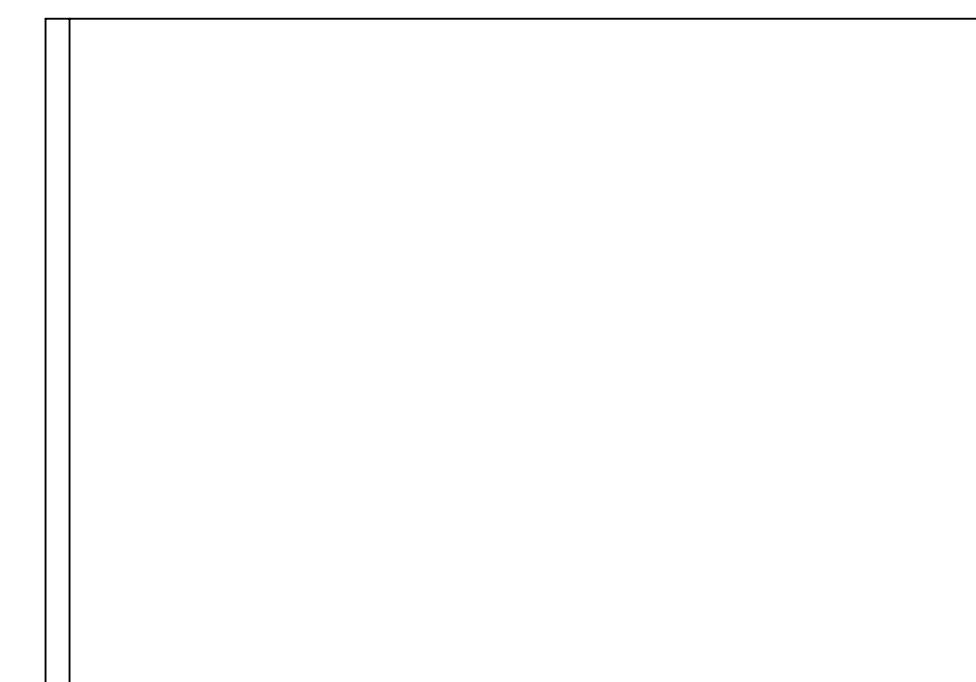
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DRAWN	KAMC	7/6/2021	
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  **SOLIDWORKS**
Modeling Solutions Partner

TITLE: **Upper Exit Top**

SIZE DWG. NO. REV
C GE-22399-01

SCALE: 1:2 SHEET 1 OF 1

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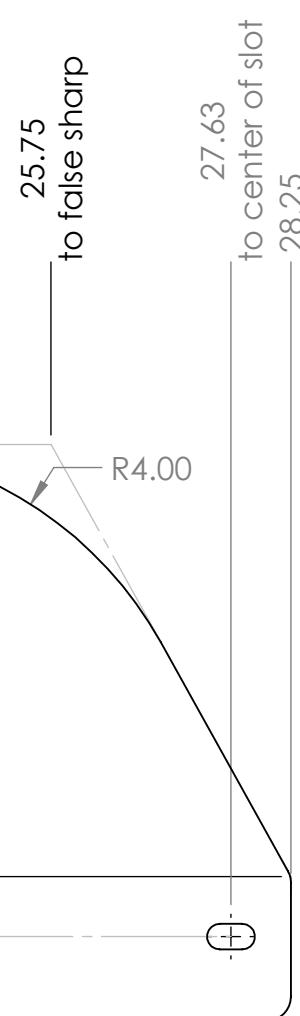
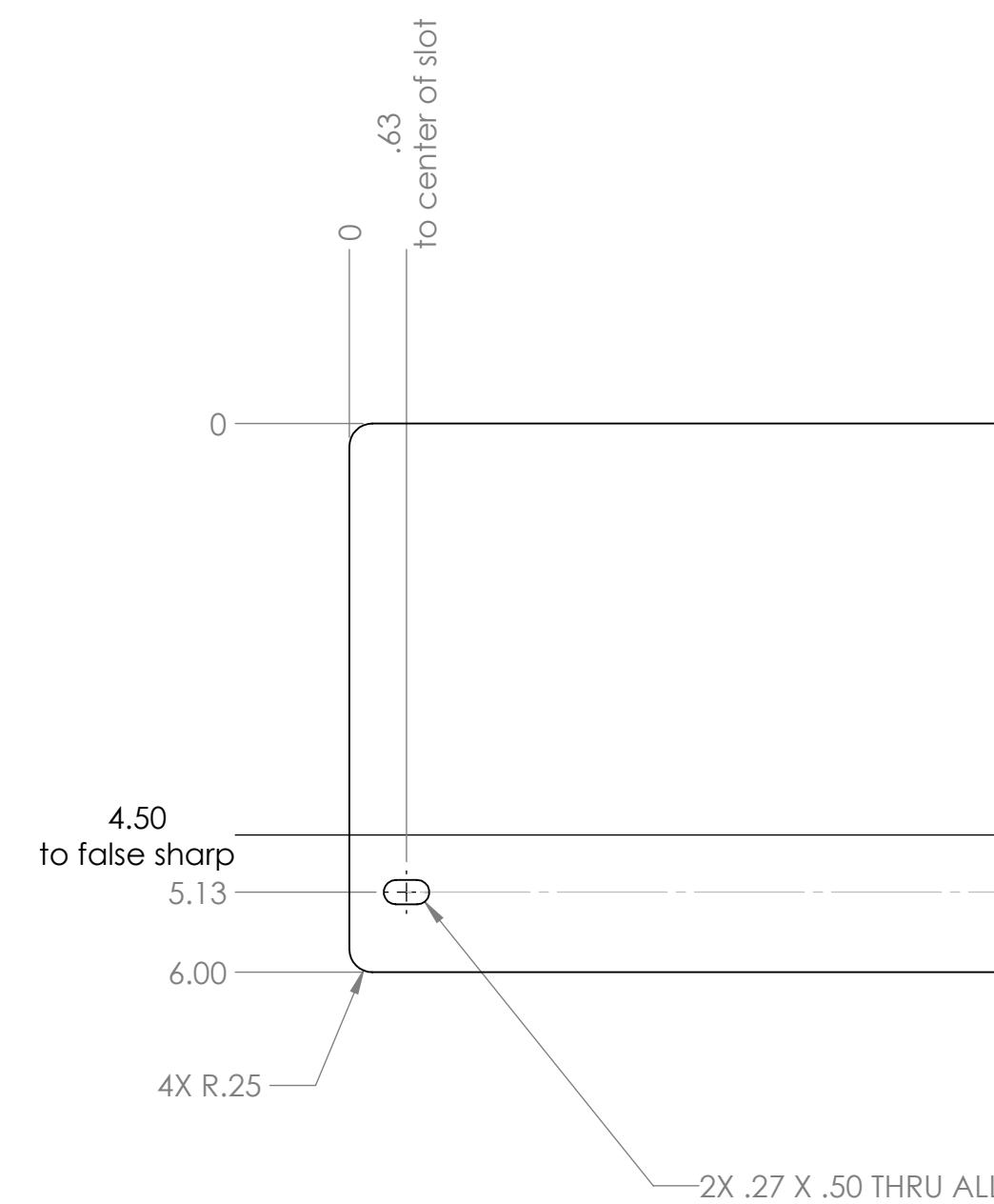
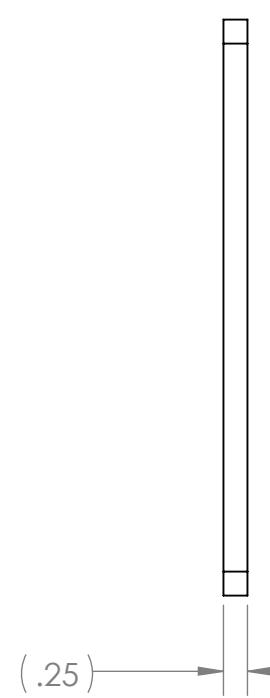
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Notes:
1. Tag or label with part number



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MATERIAL/FINISH: 1/4" Poly, Clear			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Upper Exit Side Wall

SIZE DWG. NO. REV
C GE-22400

SCALE: 1:2 SHEET 1 OF 1

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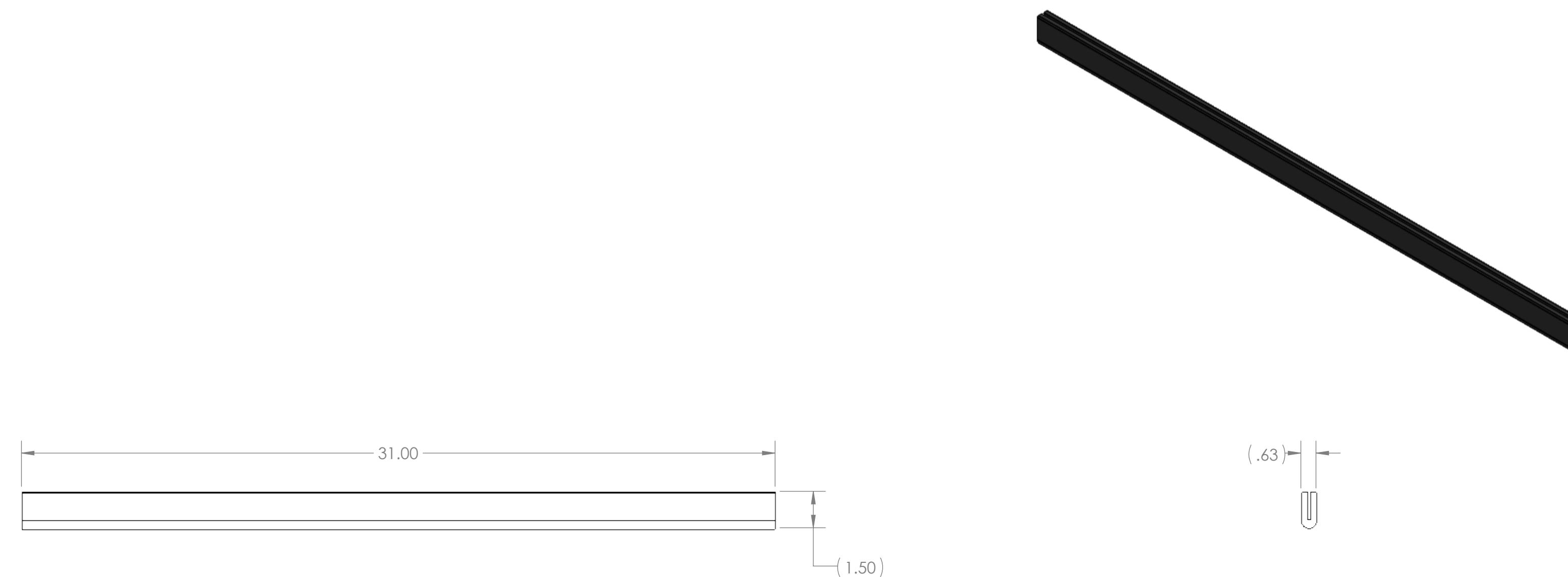
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DESCRIPTION: U SHAPE EDGE PROTECTORS

VENDOR: M2CBRIDGE VIA AMAZON

COLOR: BLACK

PACKAGE QUANTITY: 1 - 6.5 FEET

NOTES:

1. SUBSTITUTIONS ALLOWED
2. CUT TO LENGTH

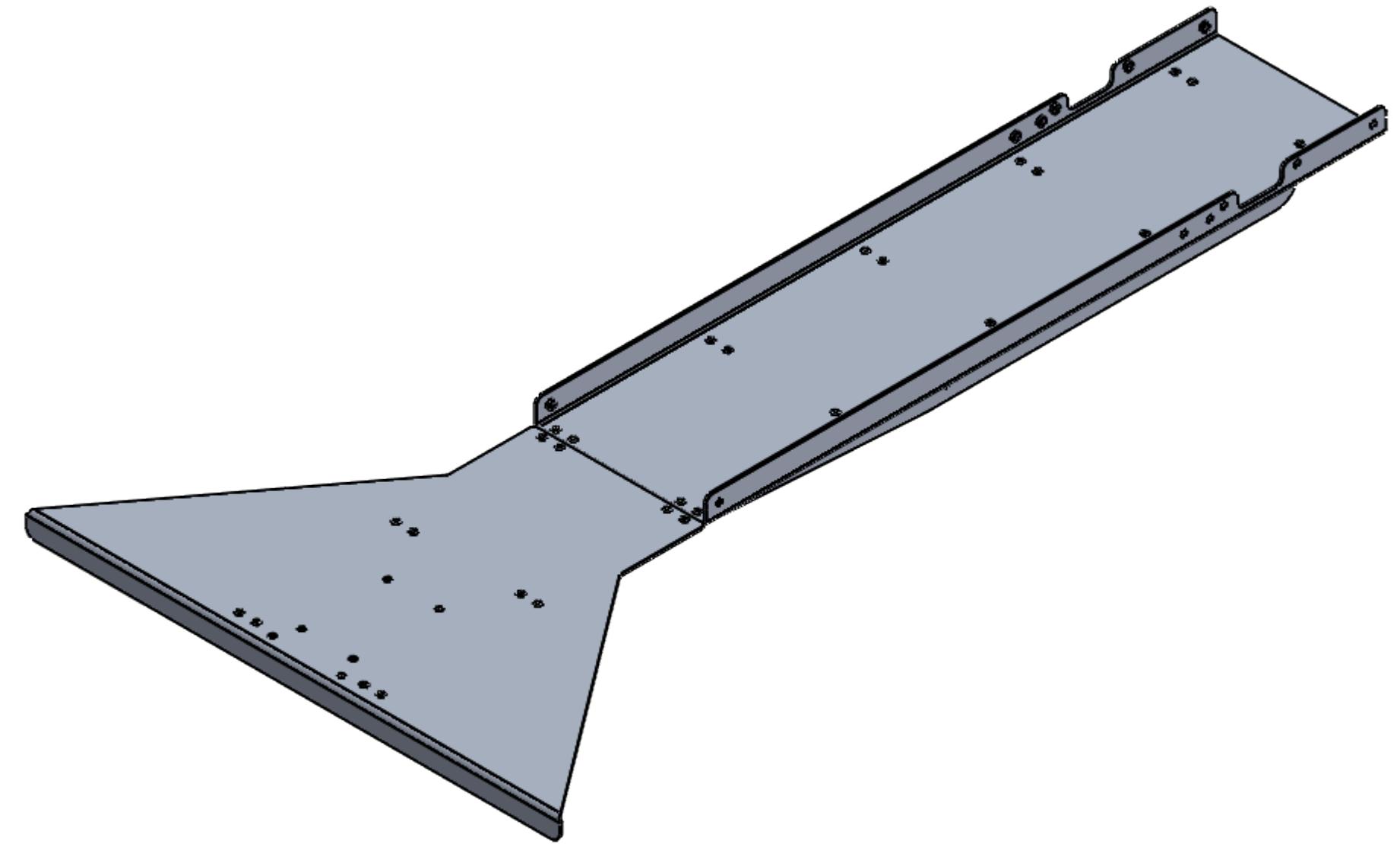
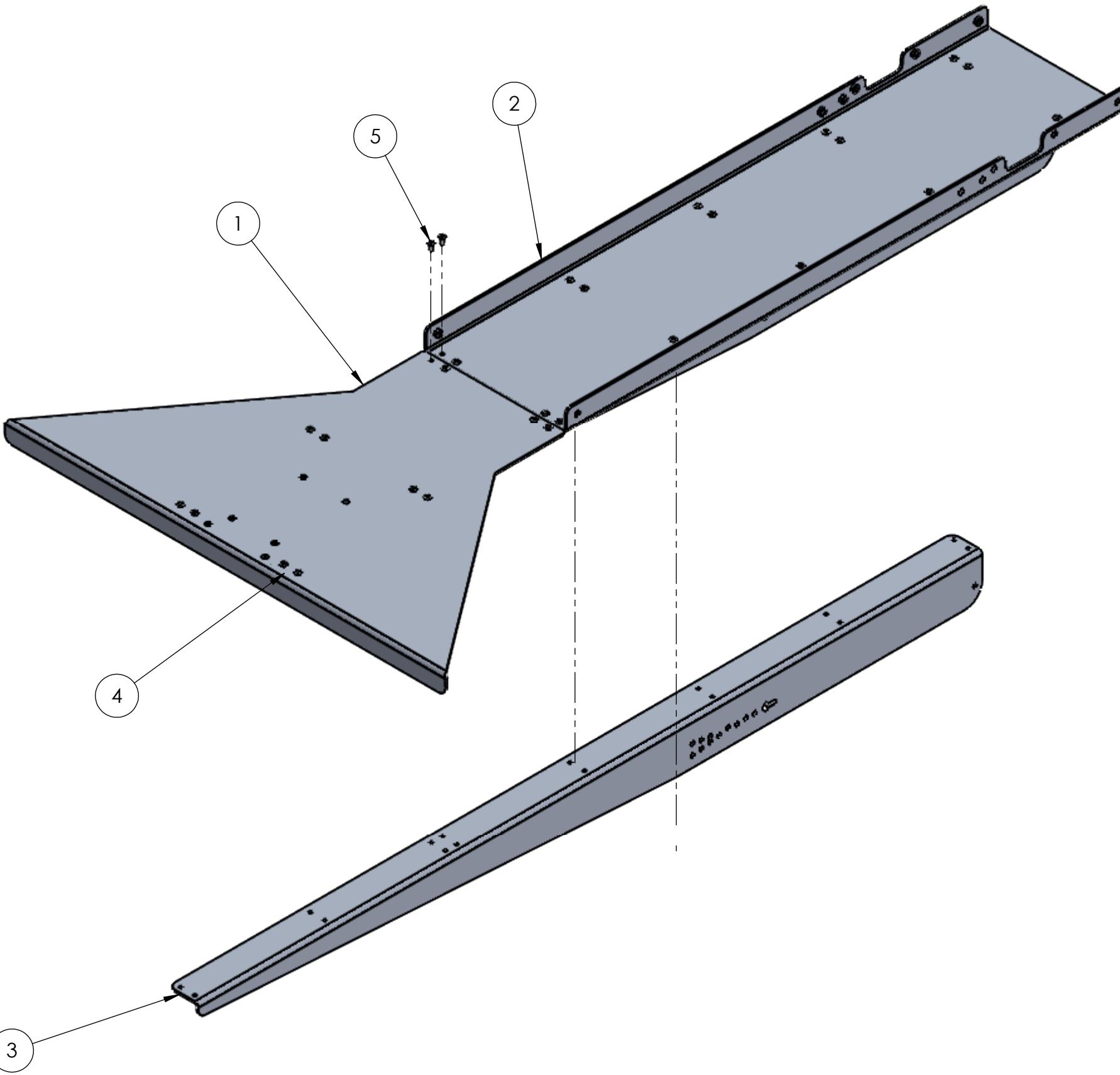
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	KAMC	7/6/2021
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
 FIRST ROBOTICS COMPETITION  SOLIDWORKS <small>Modeling Solutions Partner</small>			
TITLE: Upper Exit Foam Edge SIZE DWG. NO. REV C GE-22401			
SCALE: 1:4 SHEET 1 OF 1			

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22394	Upper Exit Exit with Pem Nuts	1
2	GE-22395	Upper Exit Base Channel with Pem Nuts	1
3	GE-22397	Upper Exit to Leg Connection Left	1
4	GE-22396	Upper Exit to Leg Connection Right	1
5	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	33

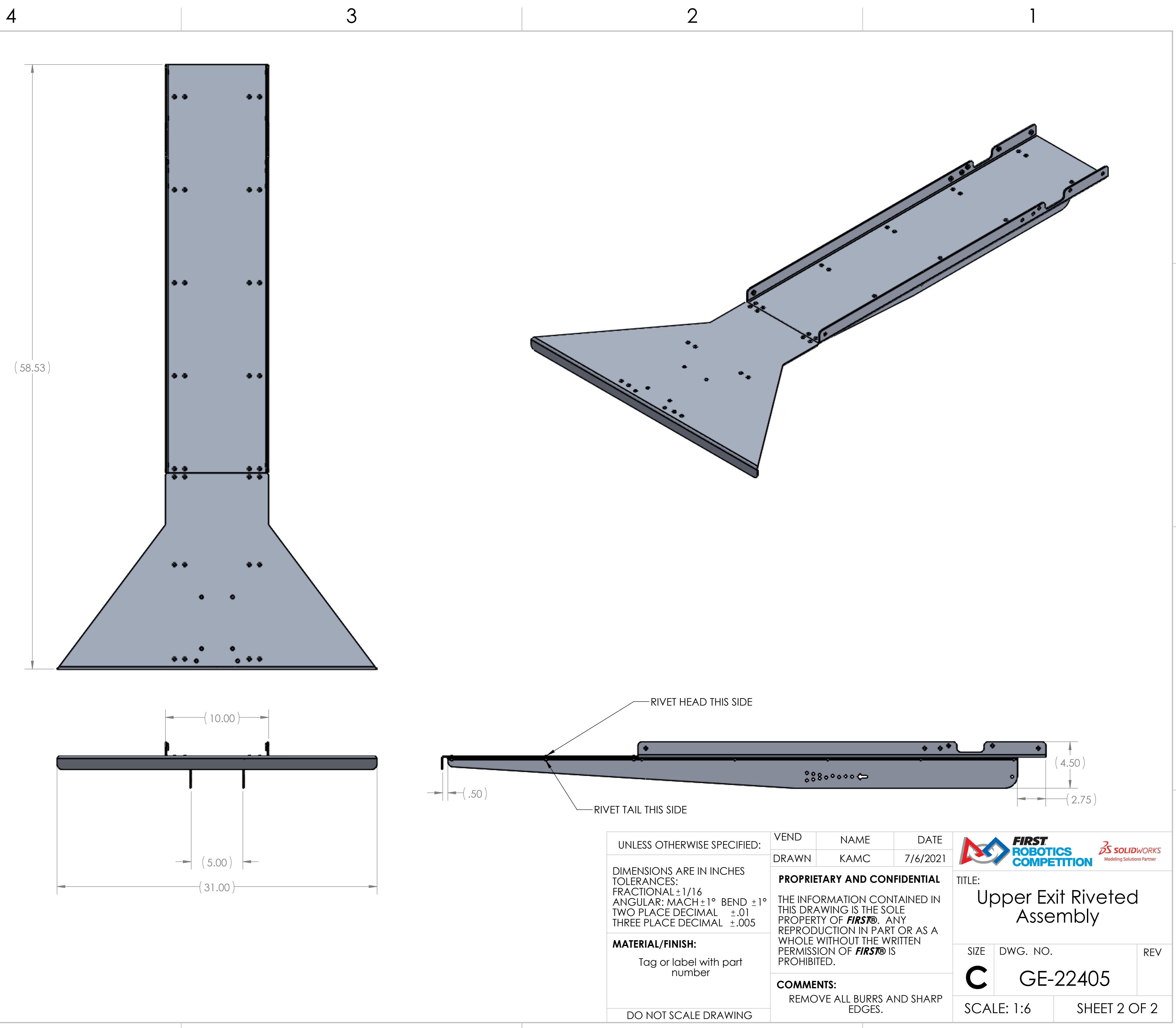
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VEND	NAME	DATE
DRAWN	KAMC	7/6/2021
PROPRIETARY AND CONFIDENTIAL		
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MATERIAL/FINISH: Tag or label with part number		
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING		

FIRST
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COMPETITION

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TITLE: **Upper Exit Riveted Assembly**
 SIZE: **C** DWG. NO. **GE-22405** REV.

SCALE: 1:6 SHEET 1 OF 2



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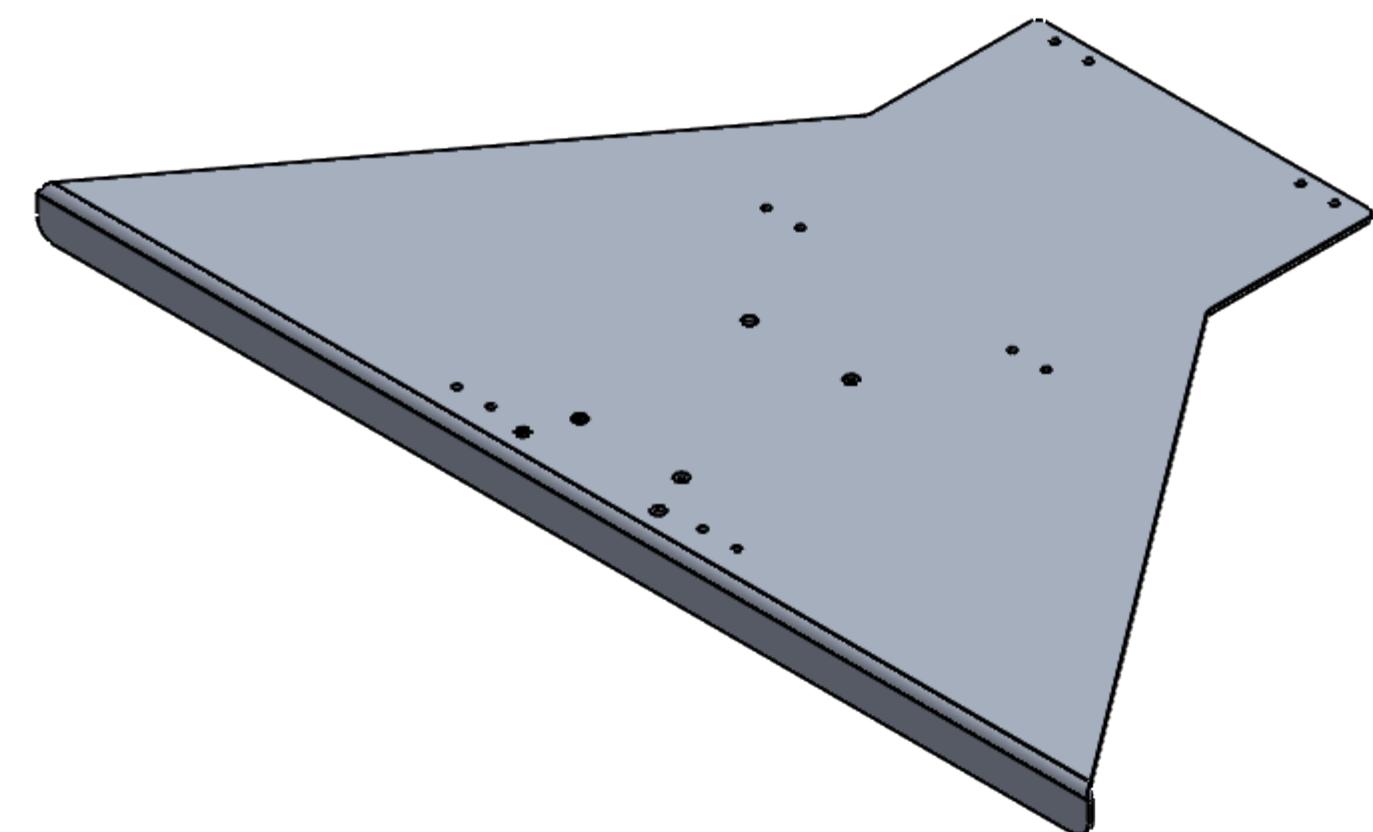
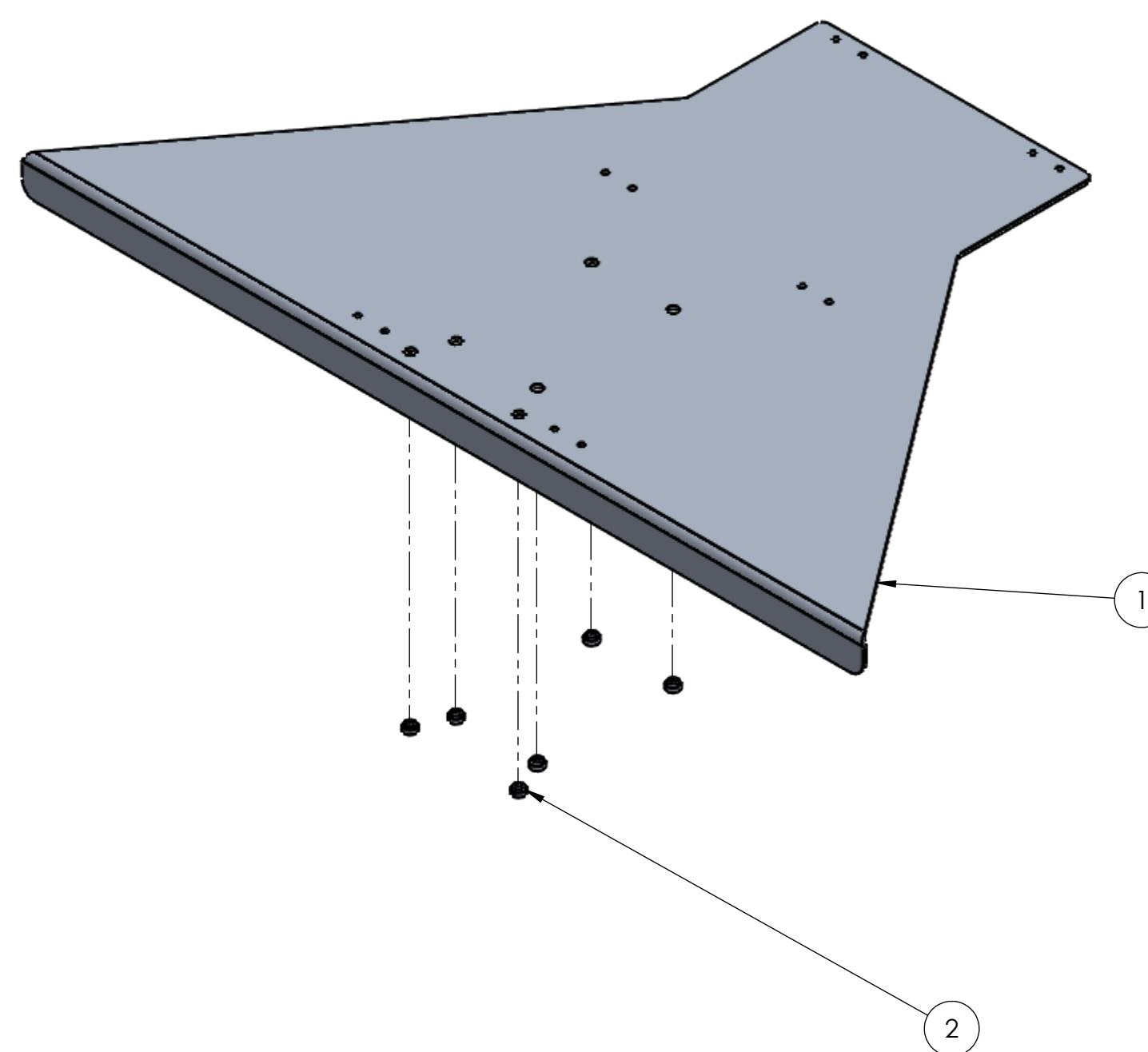
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Exploded View:



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22394-01	Upper Exit Exit	1
2	pem_clinchnut_.25_20 .054	1/4-20 self-clinching nut, .054 shank	6

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm\frac{1}{16}$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

Tag or label with part number

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	KAMC	7/6/2021

**FIRST
ROBOTICS
COMPETITION** DS SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Upper Exit Exit
with Pem Nuts**

SIZE	DWG. NO.	REV
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C GE-22394

SCALE: 1:4	SHEET 1 OF 2
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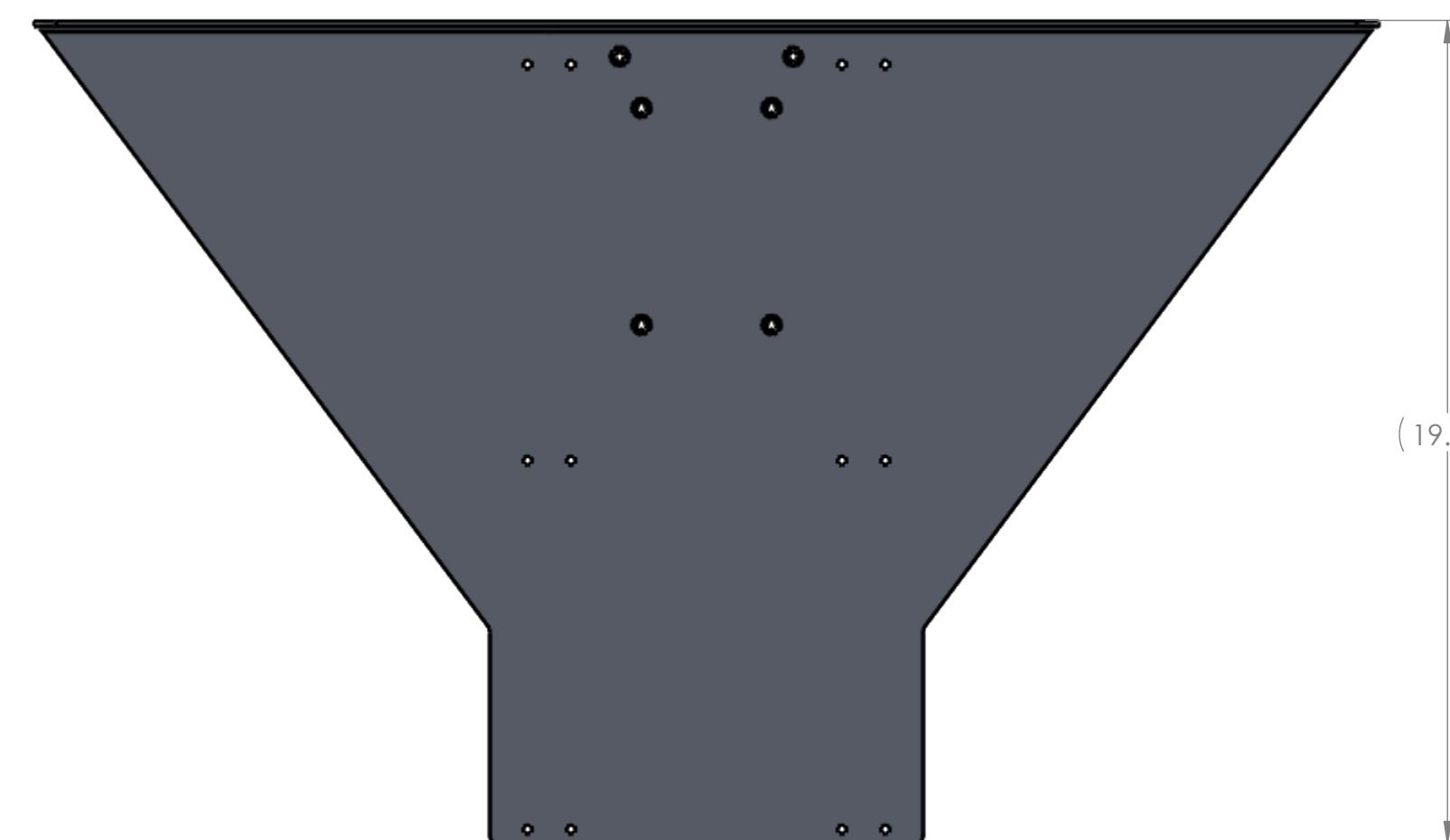
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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	KAMC	7/6/2021
PROPRIETARY AND CONFIDENTIAL			
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			
MATERIAL/FINISH:	SIZE	DWG. NO.	REV
Tag or label with part number	C	GE-22394	
DO NOT SCALE DRAWING	SCALE: 1:4	SHEET 2 OF 2	

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

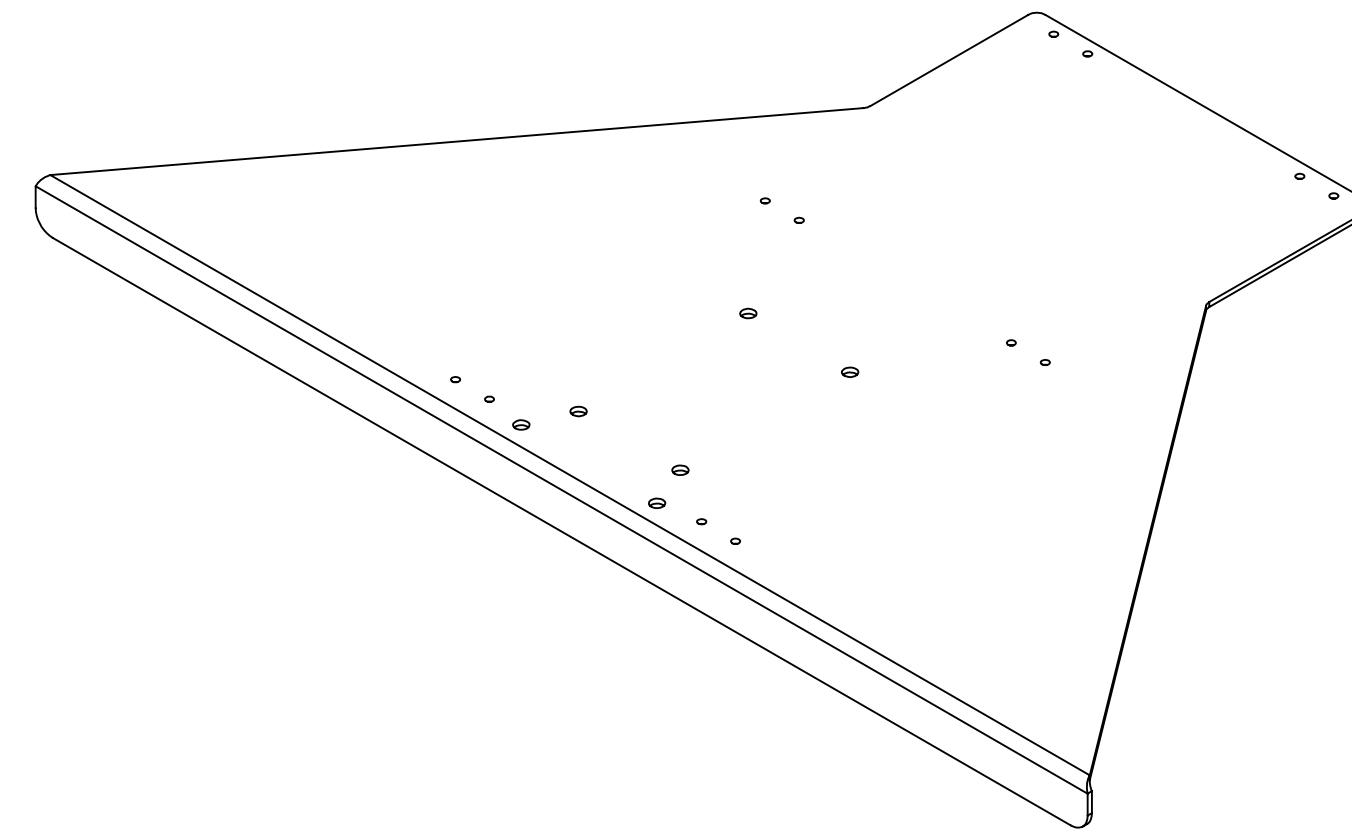
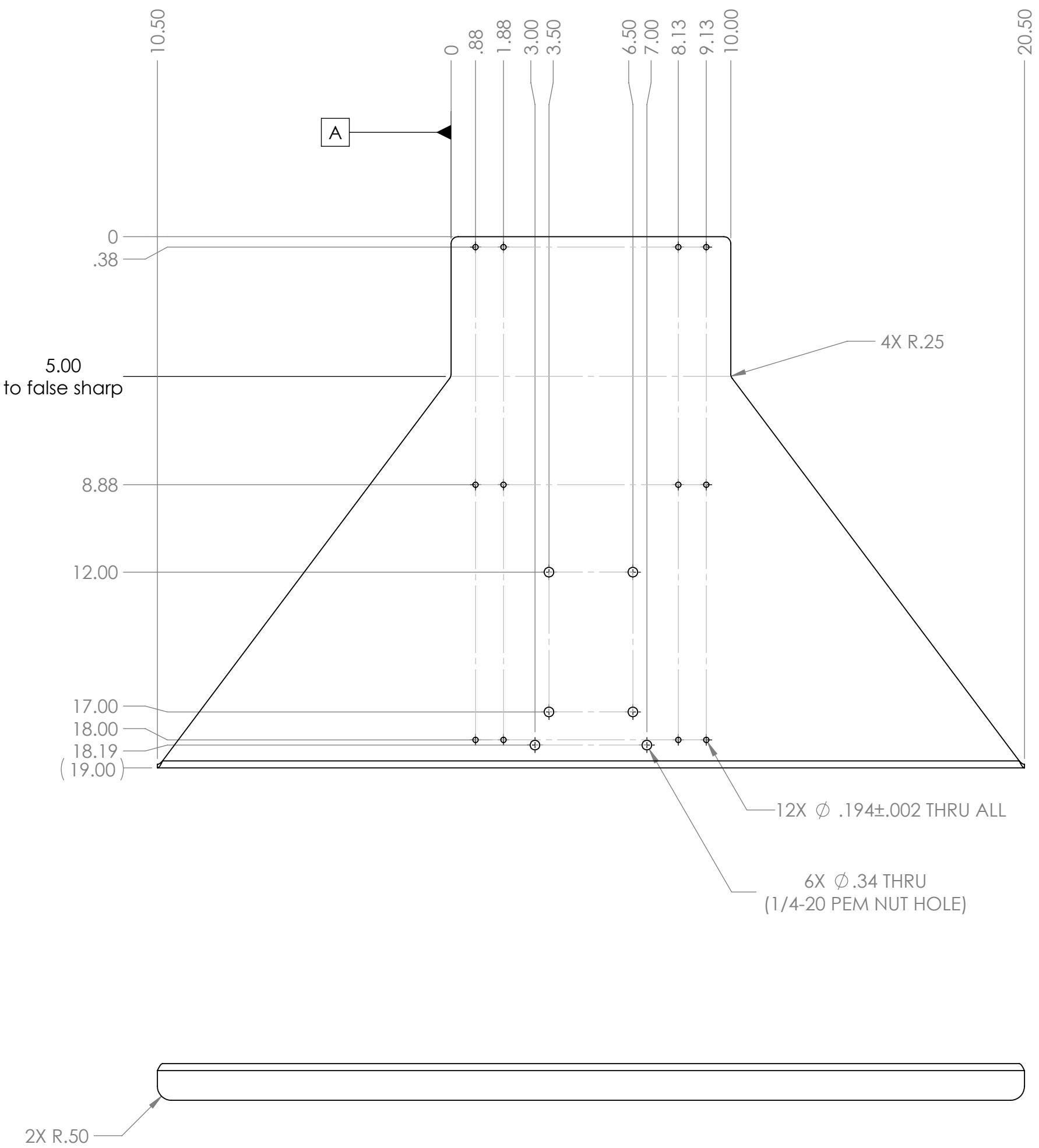
**Upper Exit Exit
with Pem Nuts**

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UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
FIRST ROBOTICS COMPETITION	SOLIDWORKS Modeling Solutions Partner		
TITLE: Upper Exit Exit			
SIZE	DWG. NO.	REV	
C	GE-22394-01		
SCALE: 1:4	SHEET 1 OF 1		

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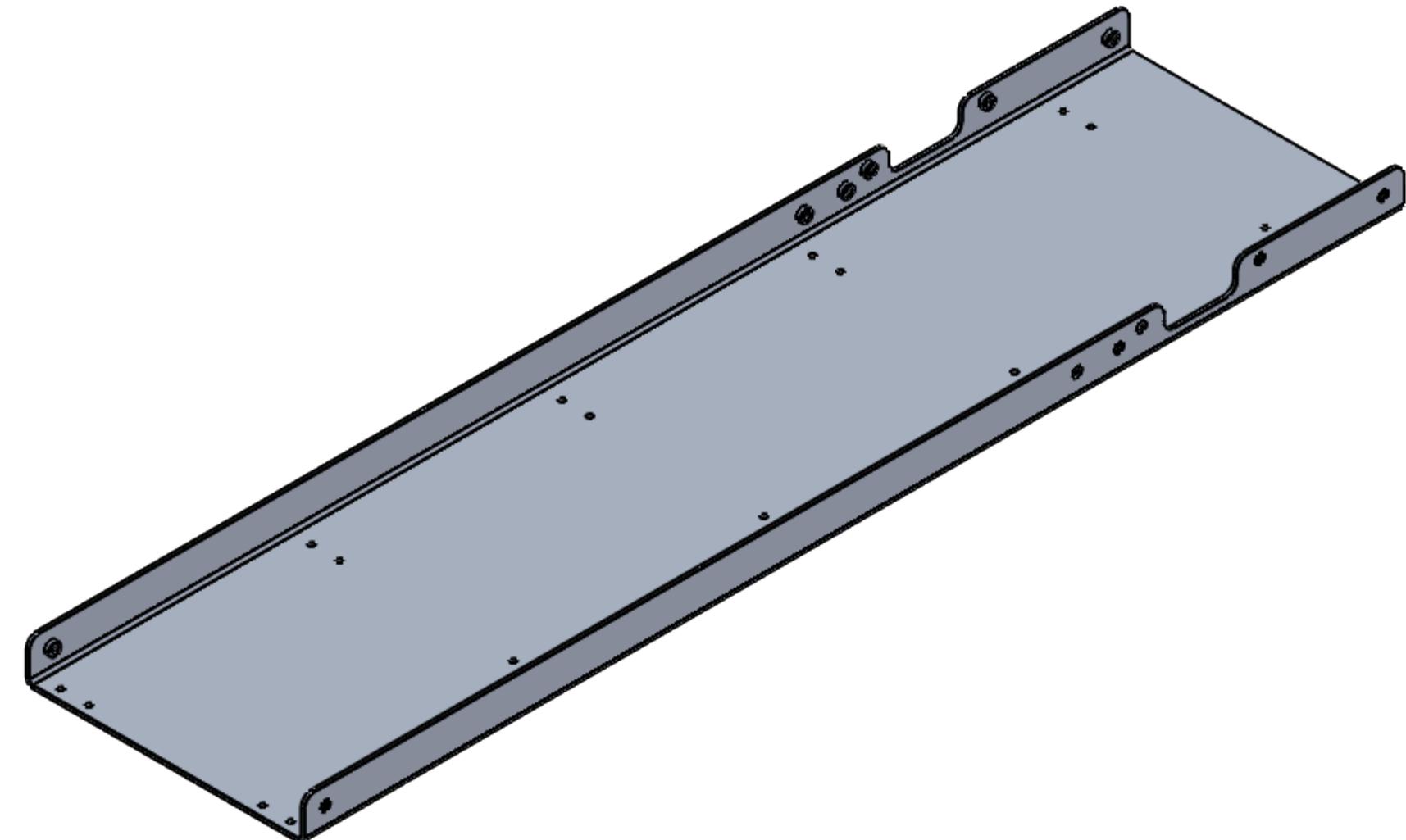
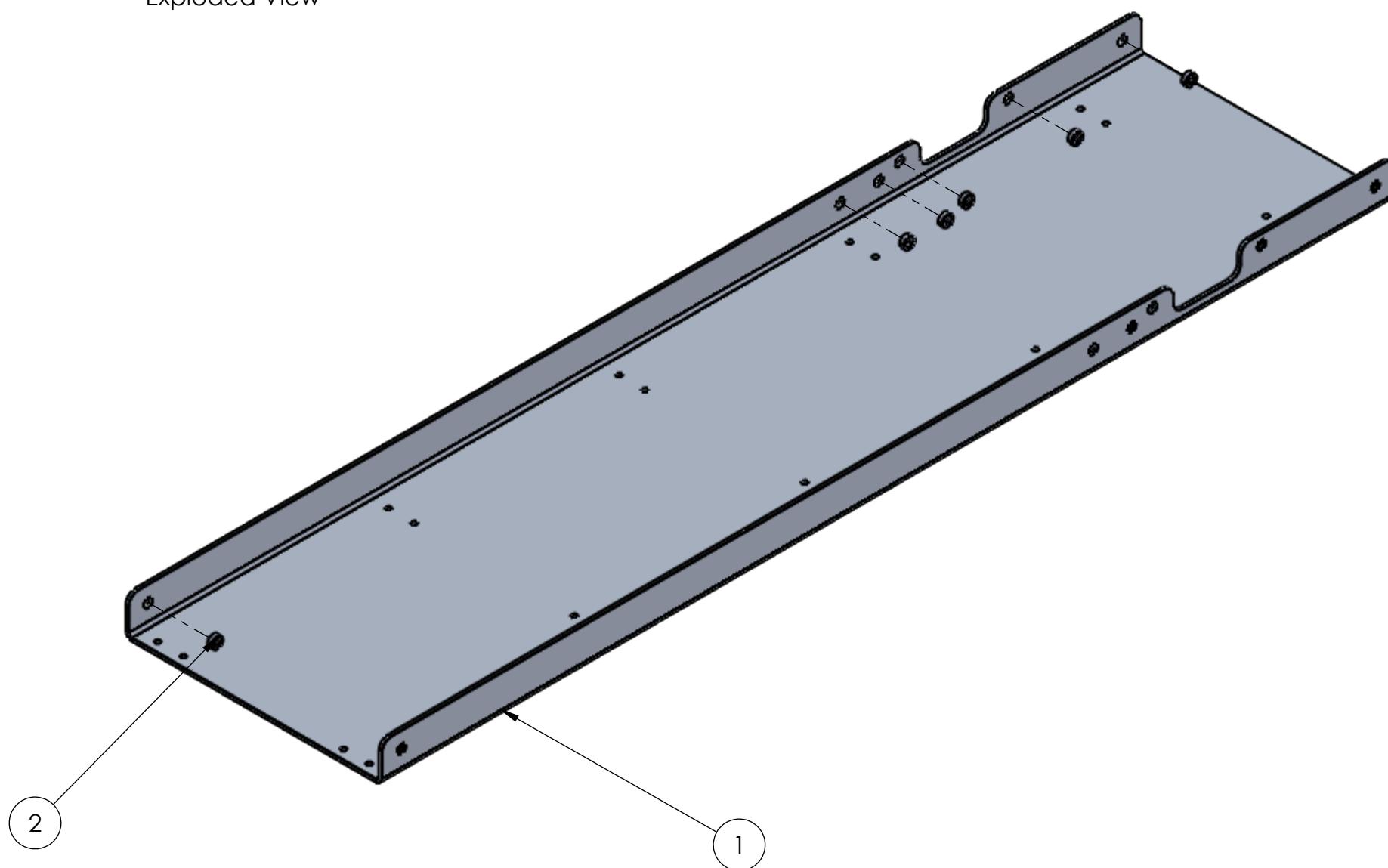
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Exploded View



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DO NOT SCALE DRAWING

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.		
1	GE-22395-01	Upper Exit Base Channel	1		
2	pem_clinchnut_.25_20 .054	1/4-20 self-clinching nut, .054 shank	12		
UNLESS OTHERWISE SPECIFIED:		VEND	NAME		
		DRAWN	KAMC		
		DATE			
		7/6/2021			
PROPRIETARY AND CONFIDENTIAL					
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:		SIZE			
Tag or label with part number		DWG. NO.	REV		
		C	GE-22395		
COMMENTS:		SCALE: 1:4			
REMOVE ALL BURRS AND SHARP EDGES.		SHEET 1 OF 2			

 FIRST
ROBOTICS
COMPETITION

 SOLIDWORKS
Modeling Solutions Partner

TITLE:
Upper Exit Base
Channel with Pem
Nuts

SIZE DWG. NO. REV
C GE-22395

SCALE: 1:4 SHEET 1 OF 2

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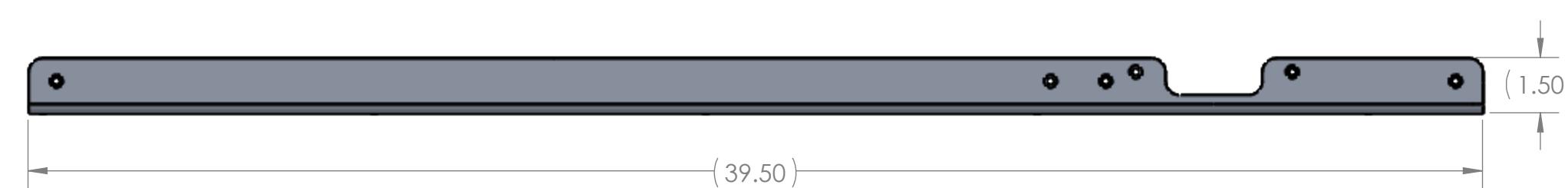
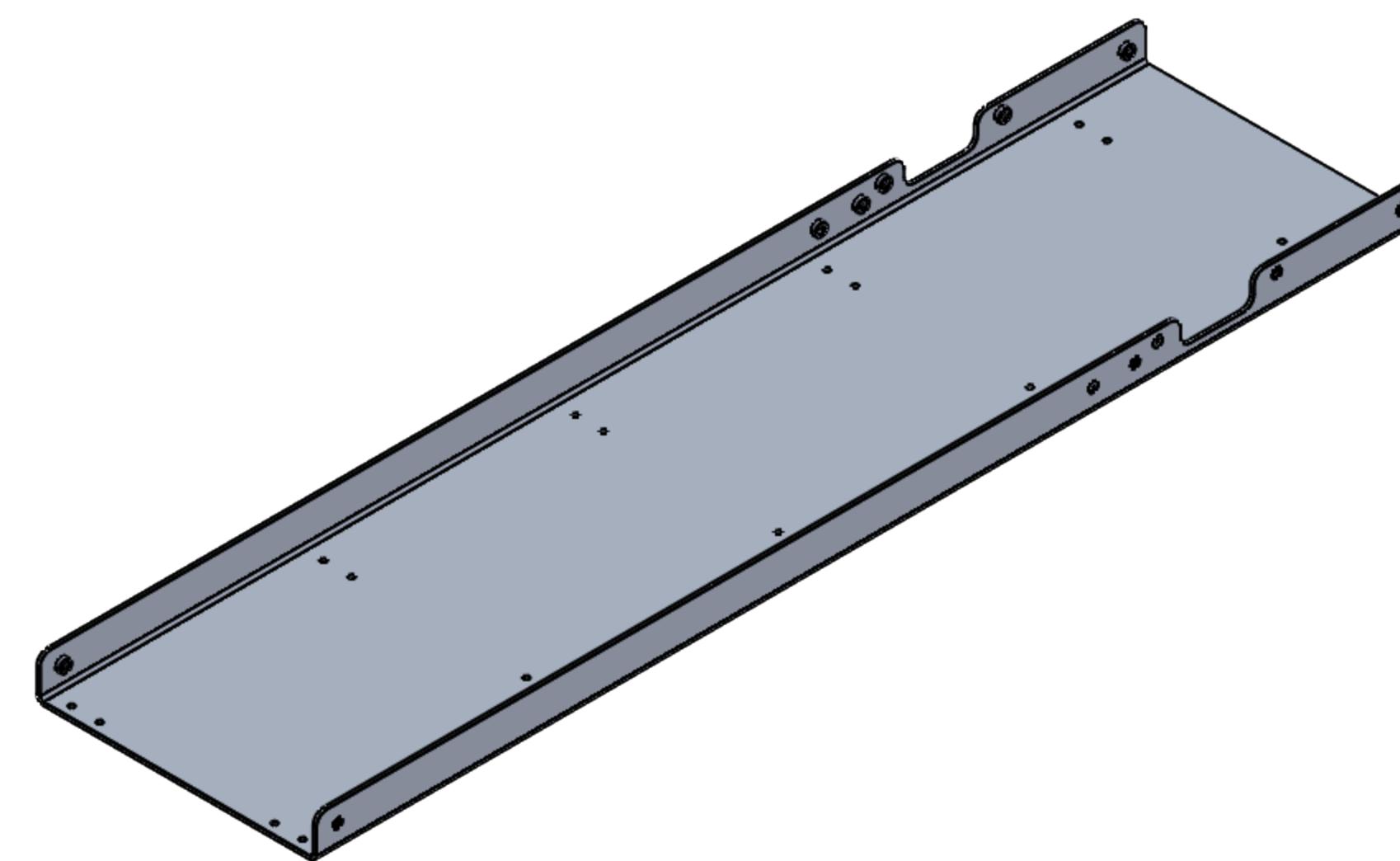
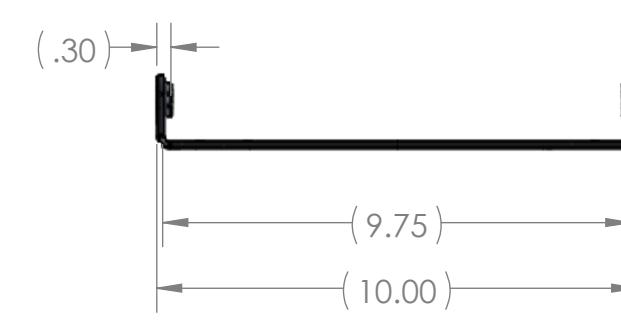
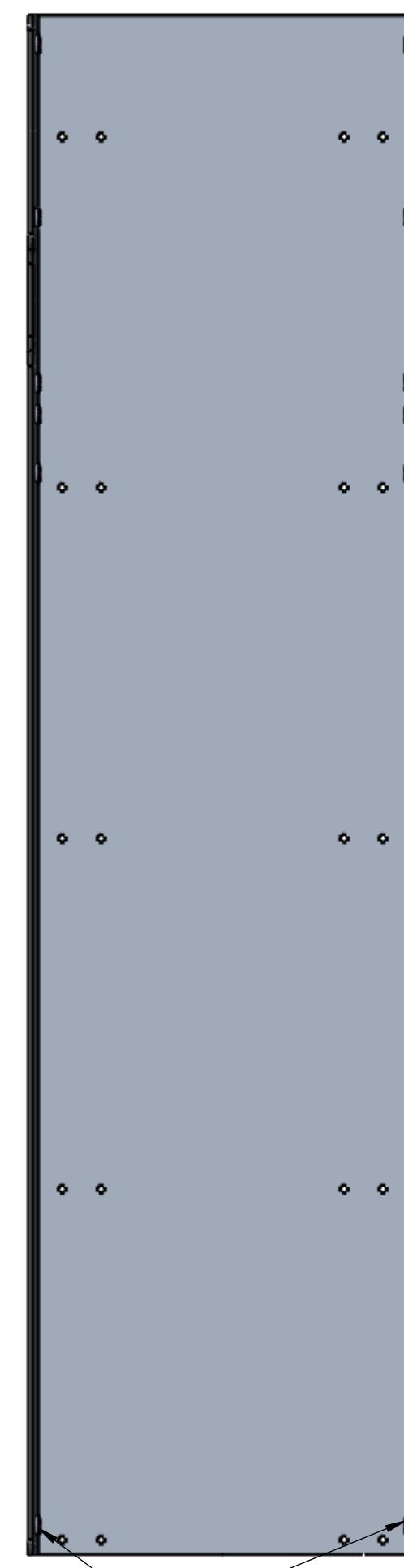
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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: Tag or label with part number			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  **SOLIDWORKS**
Modeling Solutions Partner

TITLE: **Upper Exit Base
Channel with
Pem Nuts**

SIZE DWG. NO. REV
C GE-22395

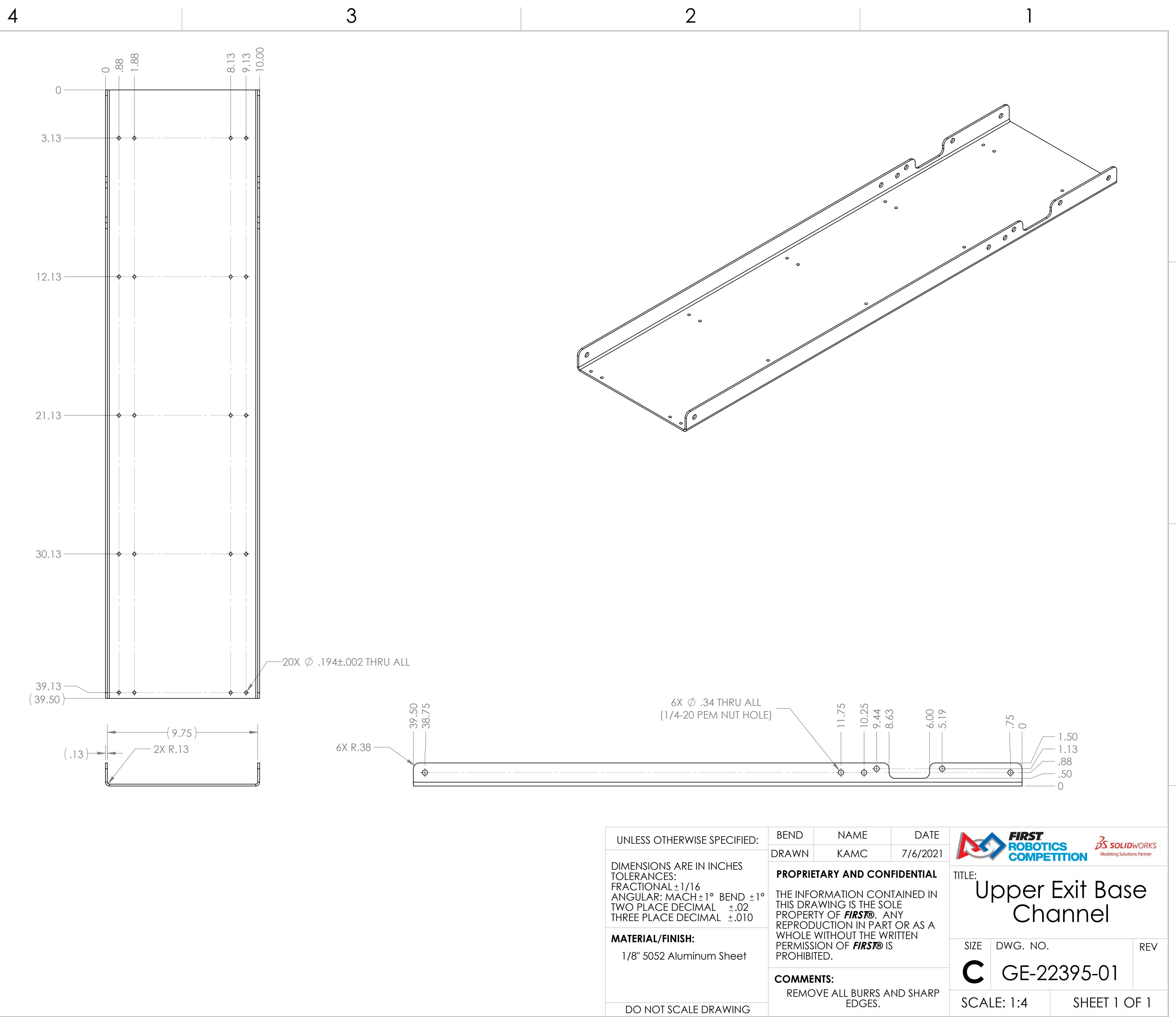
SCALE: 1:4 SHEET 2 OF 2

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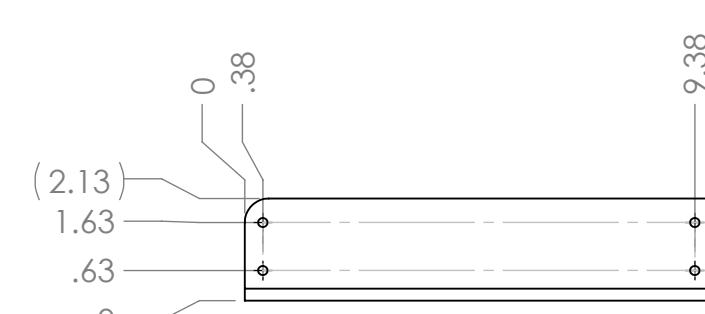
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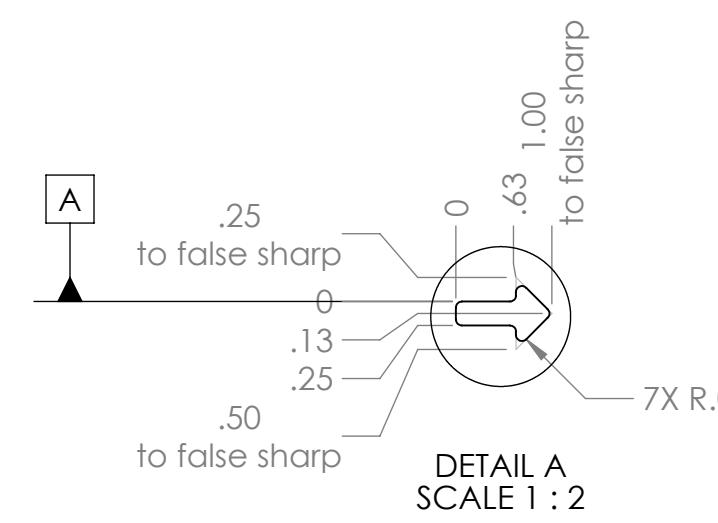
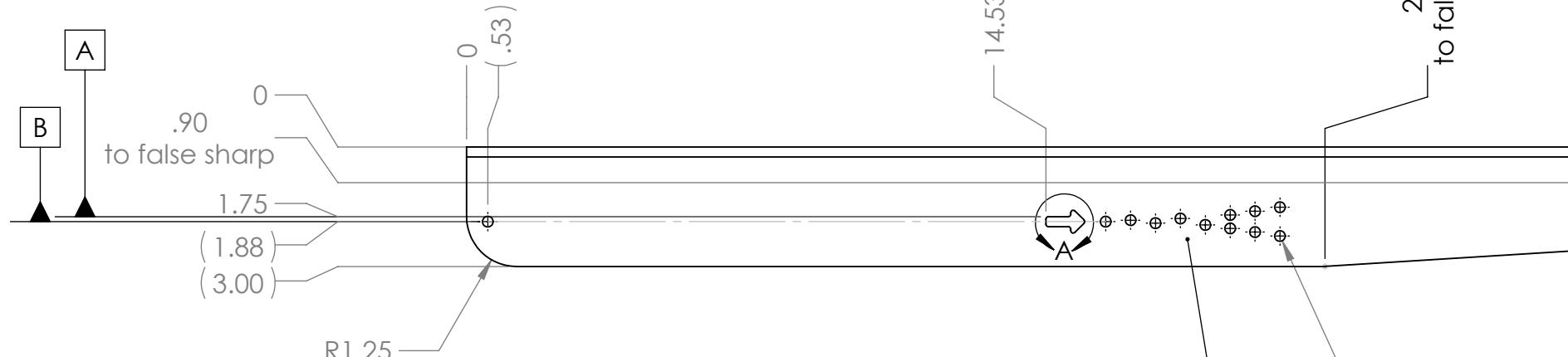
18.38
27.38

36.38
37.16

45.66

54.78
55.16

2X R.50
∅ .19 THRU ALL



Note:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$

ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$

TWO PLACE DECIMAL $\pm .02$

THREE PLACE DECIMAL $\pm .010$

BEND NAME DATE

DRAWN KAMC 7/6/2021

PROPRIETARY AND CONFIDENTIAL

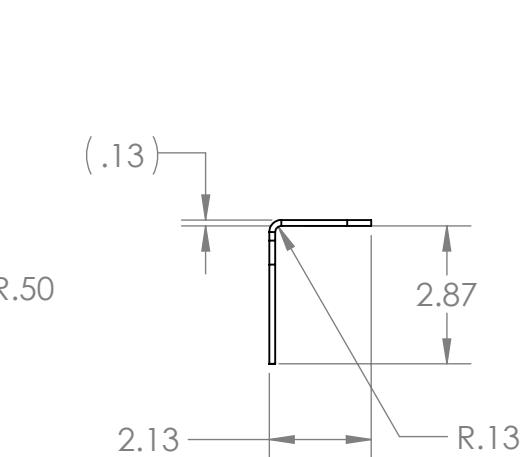
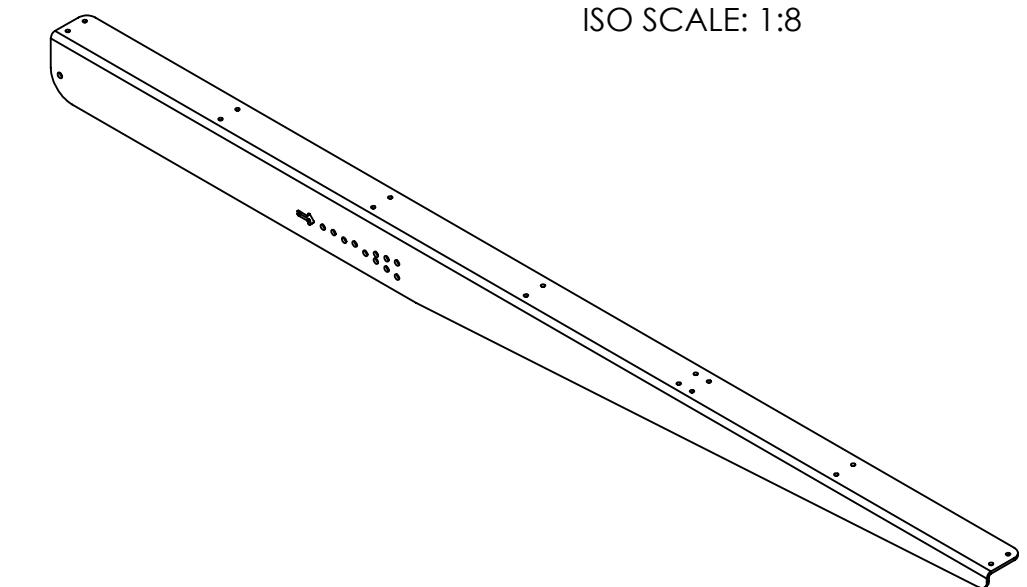
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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING

ISO SCALE: 1:8



FIRST[®] ROBOTICS COMPETITION DS SOLIDWORKS Modeling Solutions Partner

TITLE: Upper Exit to Leg Connection Right

SIZE DWG. NO. REV
C GE-22396

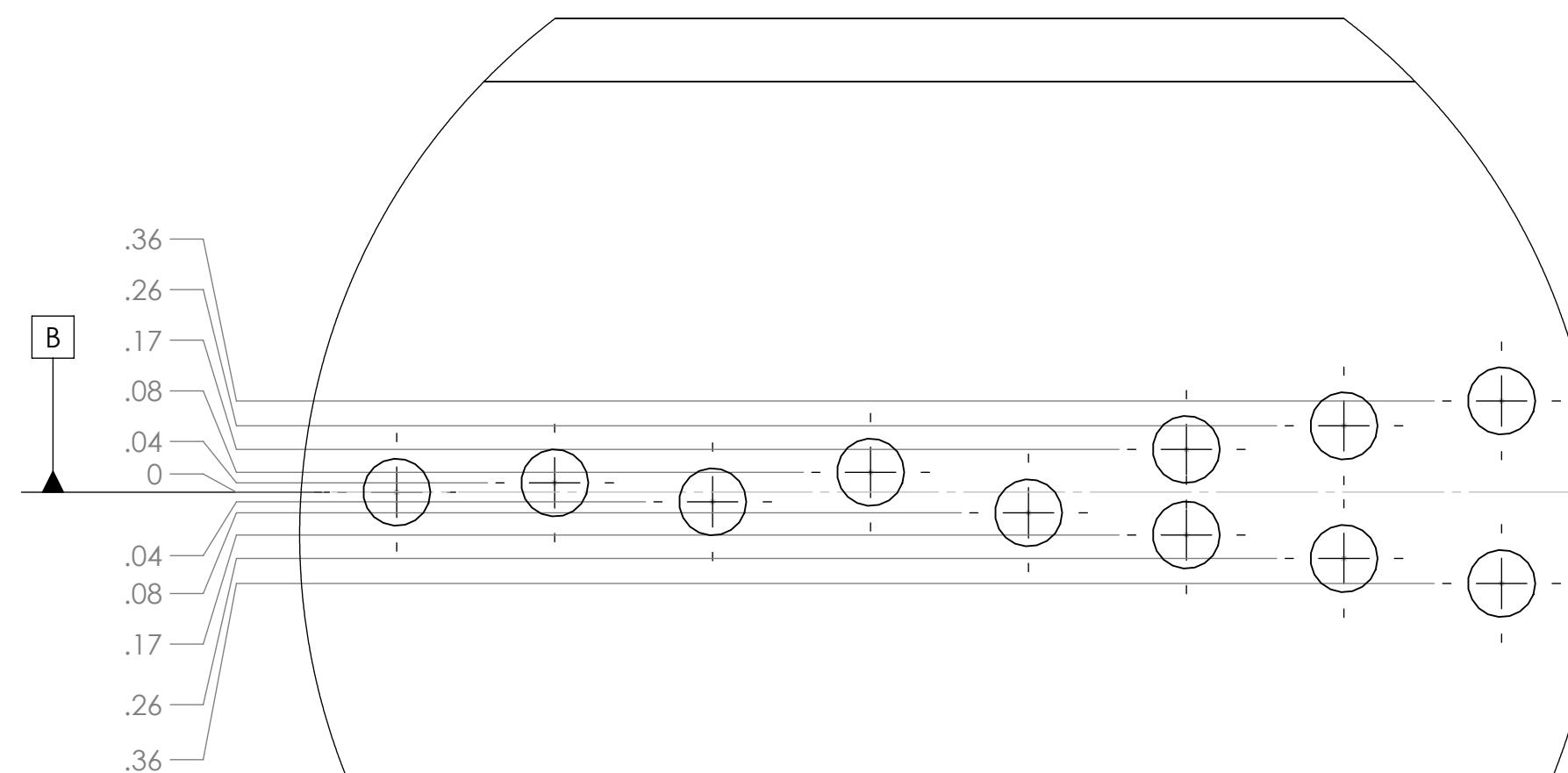
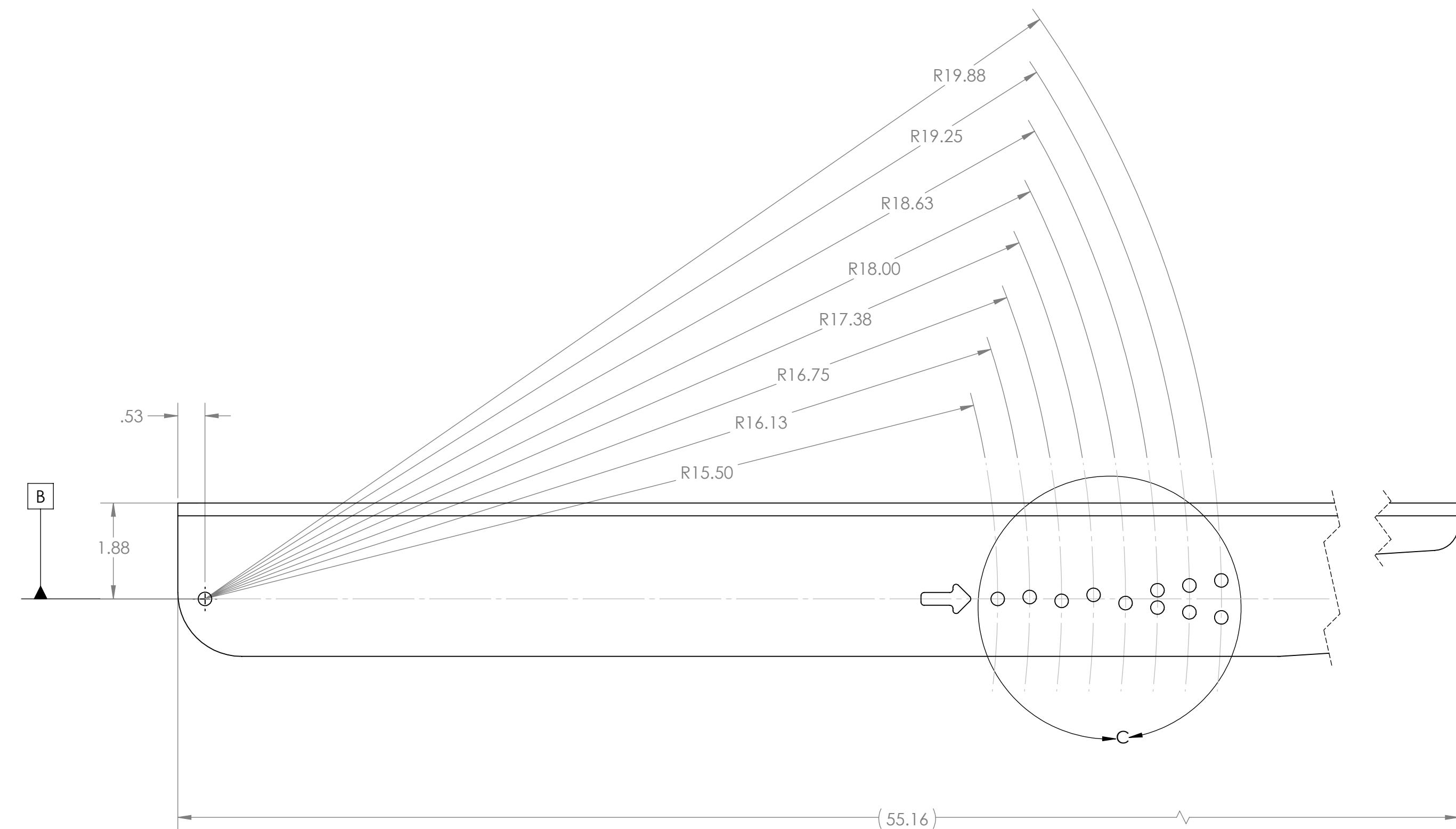
SCALE: 1:4 SHEET 1 OF 2

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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .02$
THREE PLACE DECIMAL $\pm .010$

DO NOT SCALE DRAWING

BEND NAME DATE
DRAWN KAMC 7/6/2021

PROPRIETARY AND CONFIDENTIAL

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PERMISSION OF FIRST[®] IS
PROHIBITED.

MATERIAL/FINISH:
1/8" 5052 Aluminum Sheet

COMMENTS:
REMOVE ALL BURRS AND SHARP
EDGES.

FIRST[®] ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

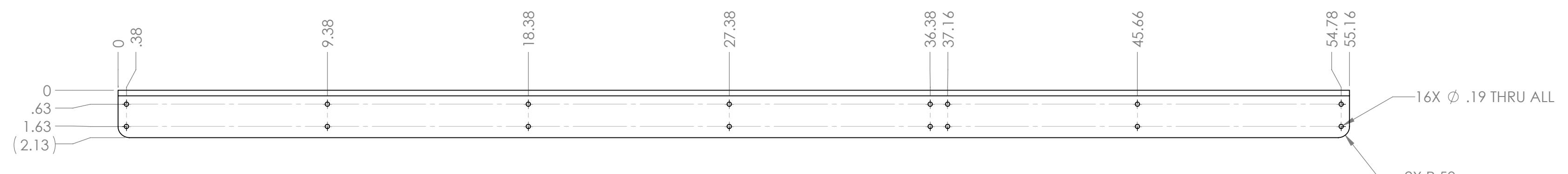
TITLE:
Upper Exit to Leg Connection Right

SIZE DWG. NO. REV

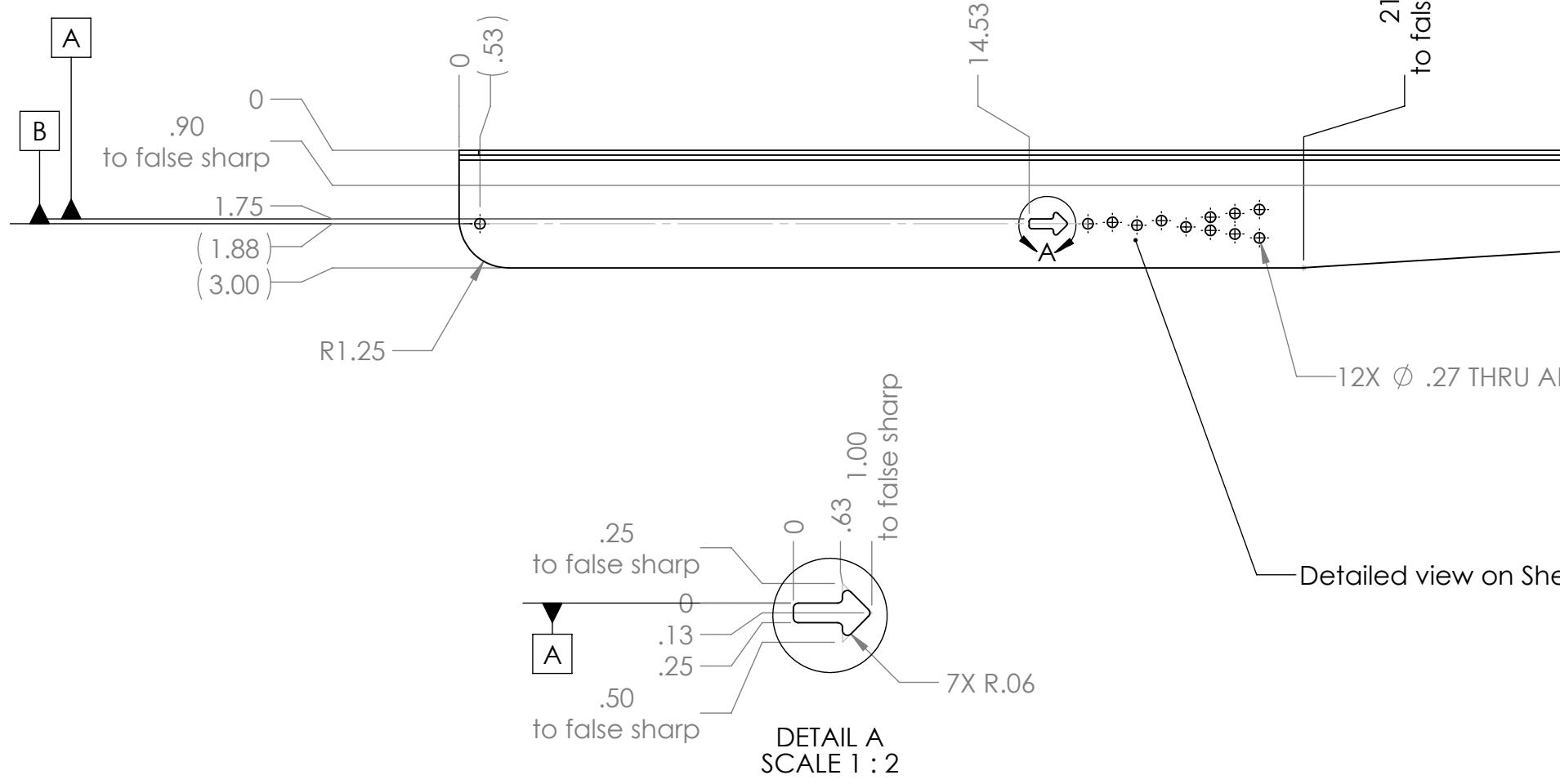
C GE-22396

SCALE: 1:2 SHEET 2 OF 2

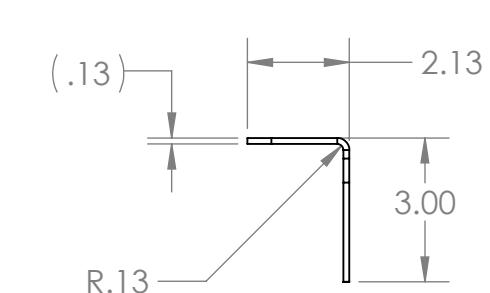
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Note:
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Upper Exit to Leg
Connection Left

SIZE DWG. NO. REV

C GE-22397

SCALE: 1:4 SHEET 1 OF 2

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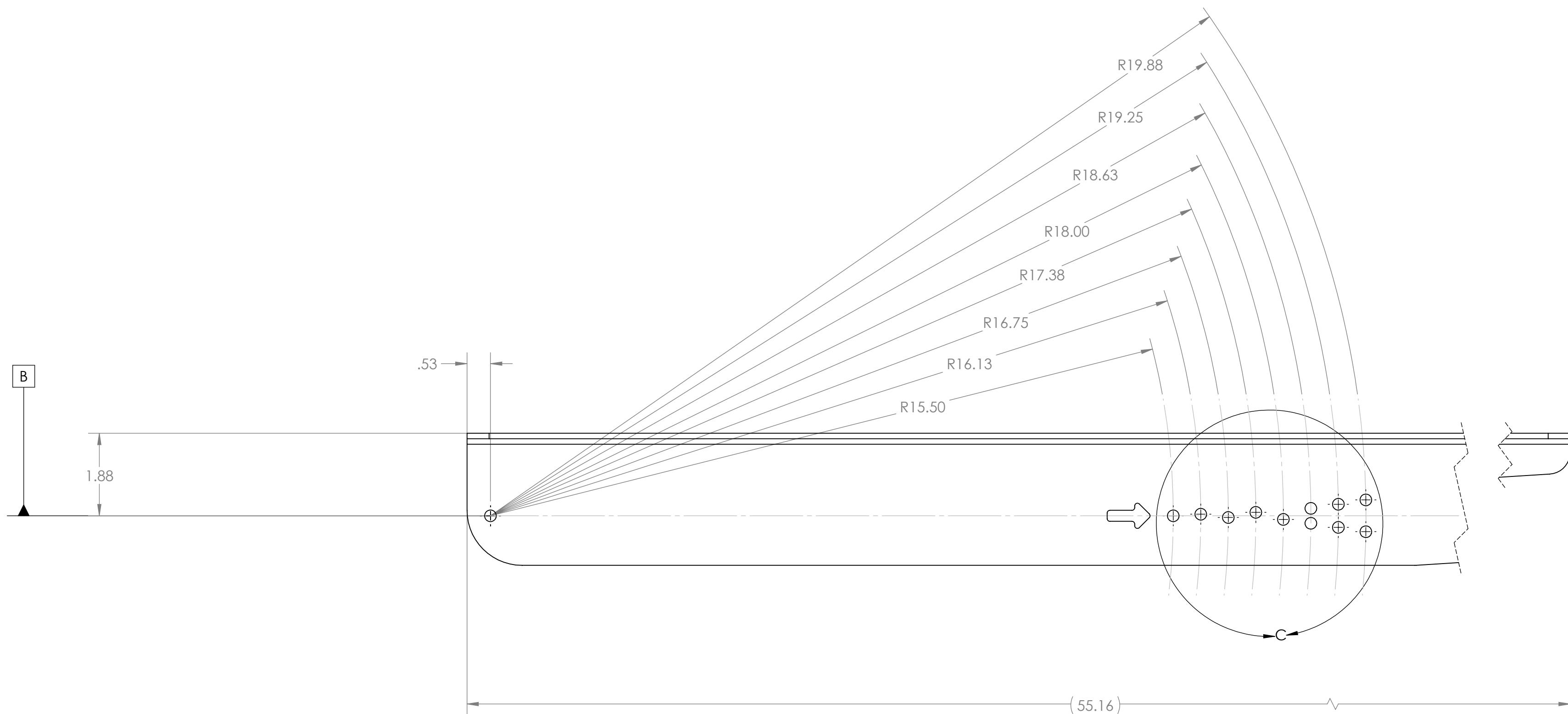
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DETAIL C
SCALE 3 : 2

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	KAMC	7/6/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 1/8" 5052 Aluminum Sheet			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Upper Exit to Leg
Connection Left

SIZE DWG. NO. REV
C GE-22397

SCALE: 1:2 SHEET 2 OF 2

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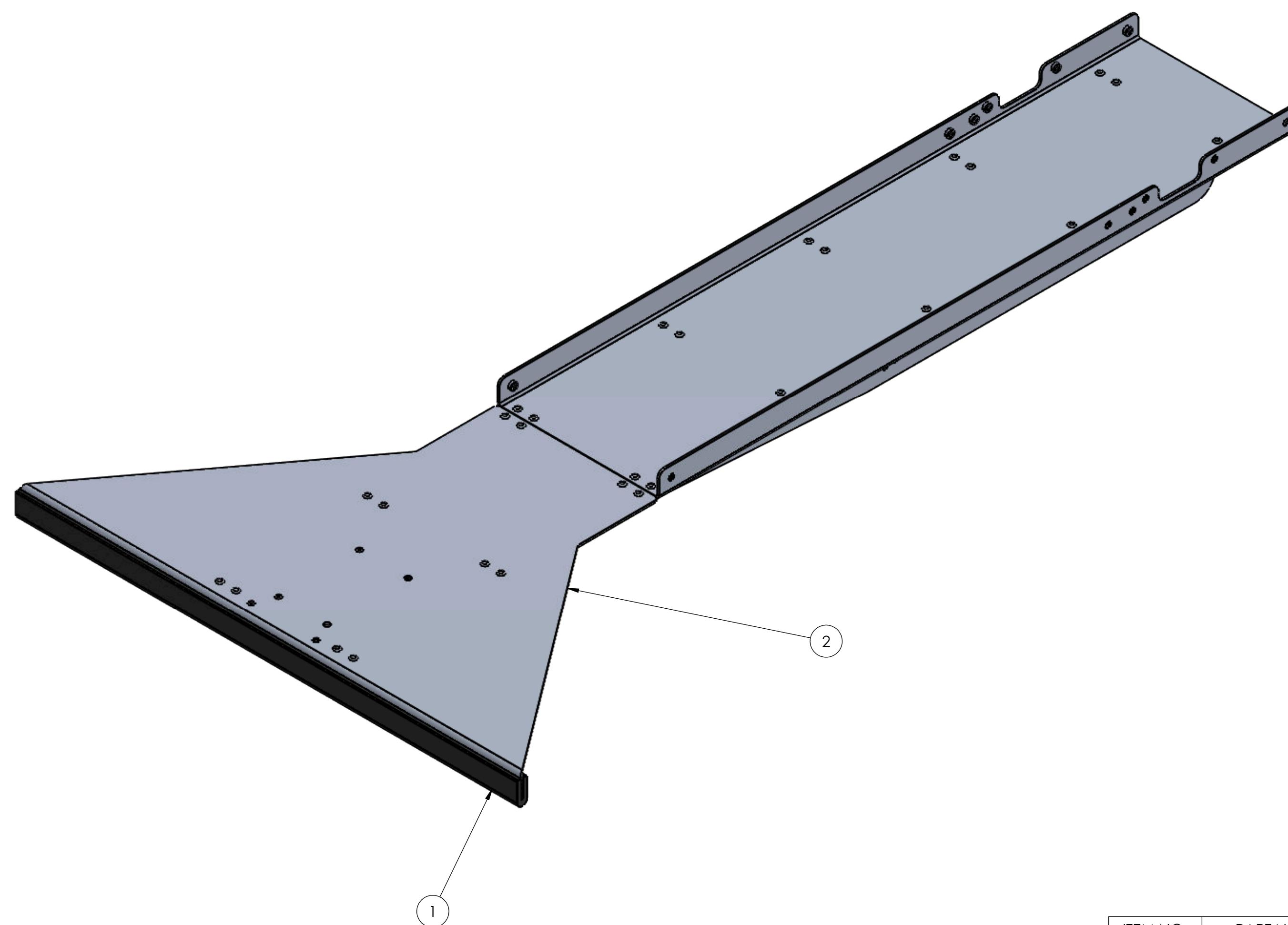
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22401	Upper Exit Foam Edge	1
2	GE-22405	Upper Exit Riveted Assembly	1

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm\frac{1}{16}$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

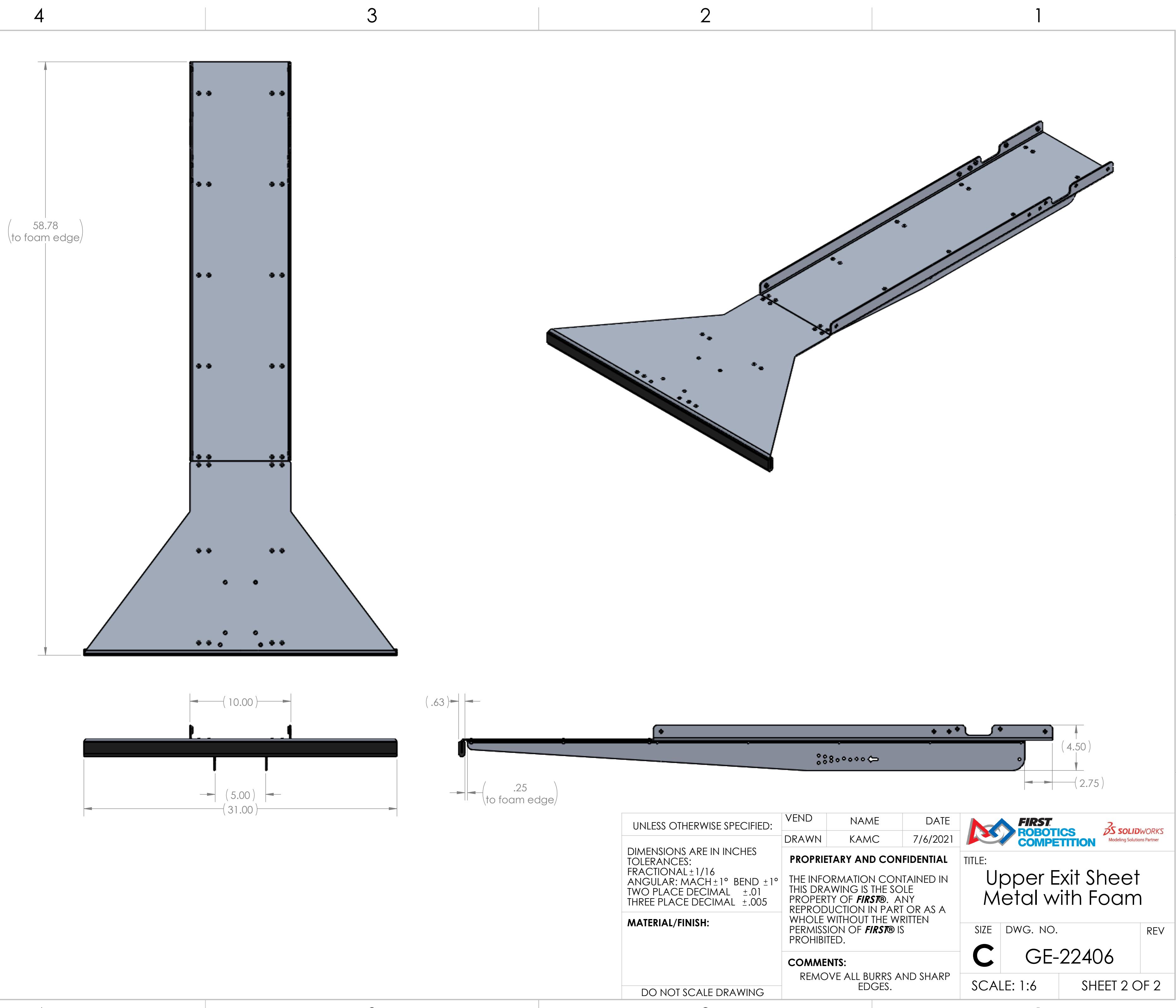
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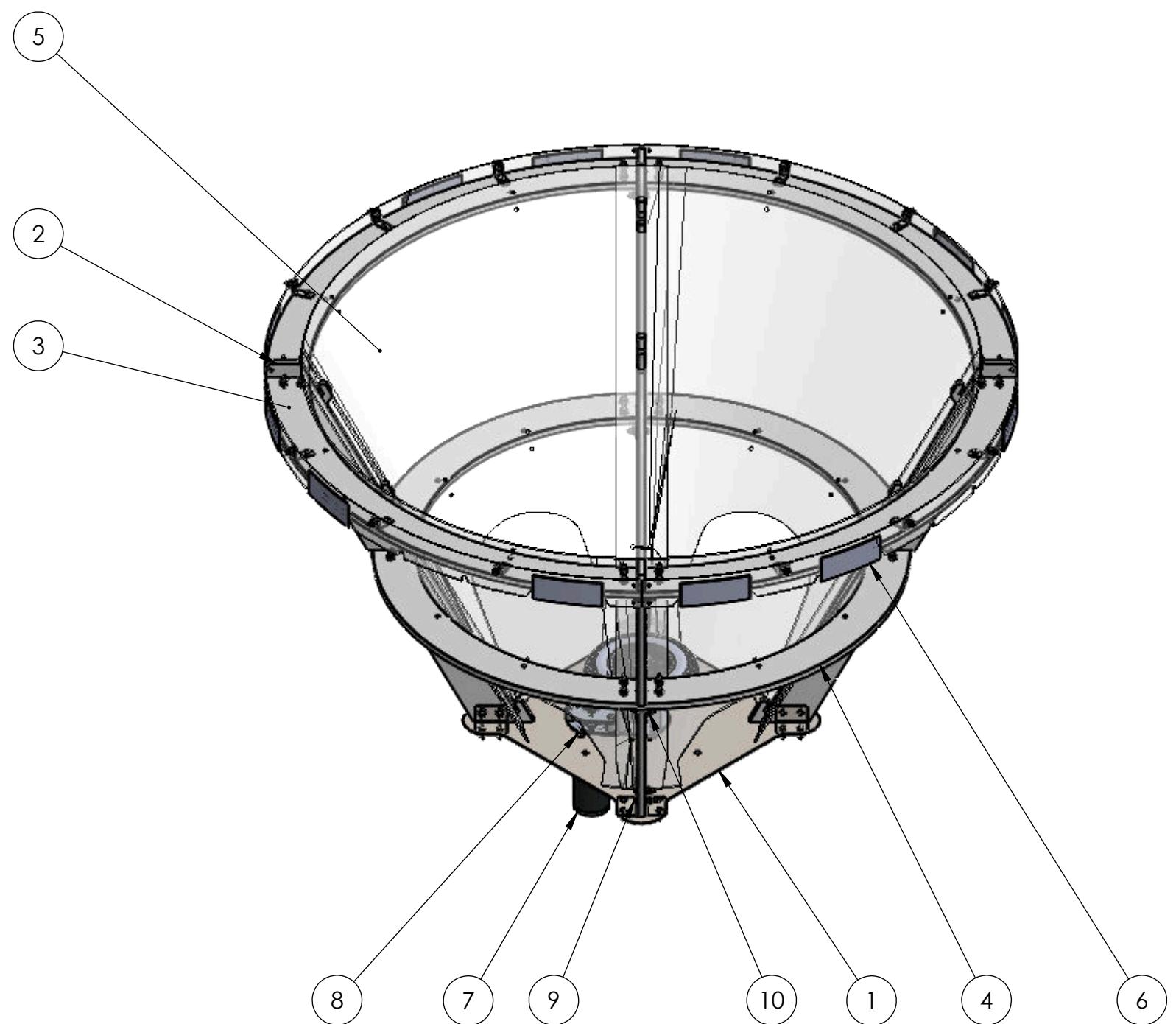
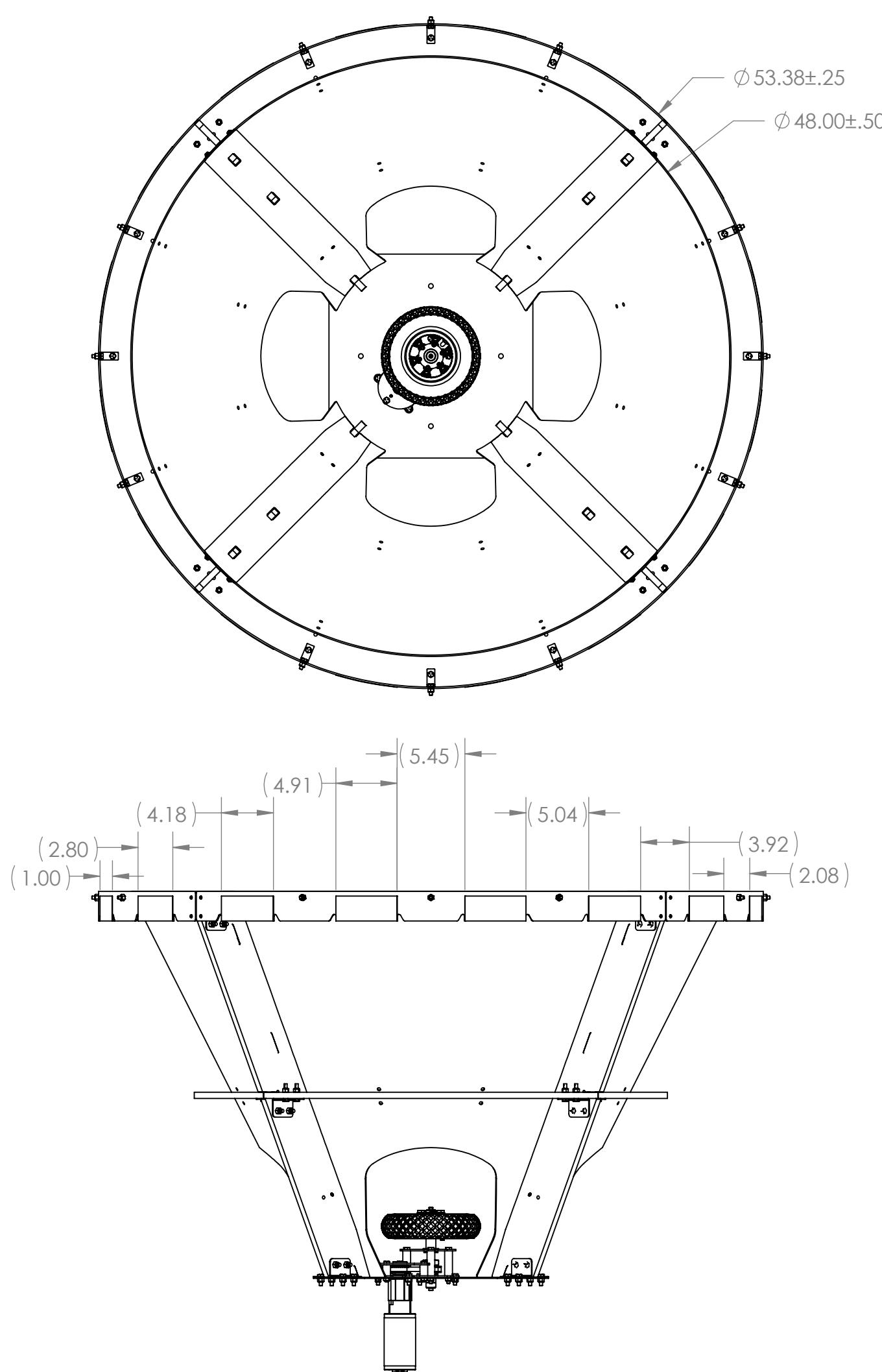
VEND	NAME	DATE
DRAWN	KAMC	7/6/2021
PROPRIETARY AND CONFIDENTIAL		
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COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.	
DO NOT SCALE DRAWING		



SOLIDWORKS Modeling Solutions Partner

Modeling Solutions





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22413	Upper Hub Baseplate Assembly	1
2	GE-22414	Upper Hub Vertical Rib	4
3	GE-22416	Upper Hub Large Rib Assembly	4
4	GE-22418	Upper Hub Small Rib Assembly	4
5	GE-22419	Upper Hub Panel	4
6	GE-22420	Upper Hub Vision Assembly	4
7	GE-22432	High Agitator Assembly	1
8	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	4
9	hex_.25_20_1.25_partial	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	36
10	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	40
11	washer_flat_.25	Flat Washer for 1/4" Screw	12

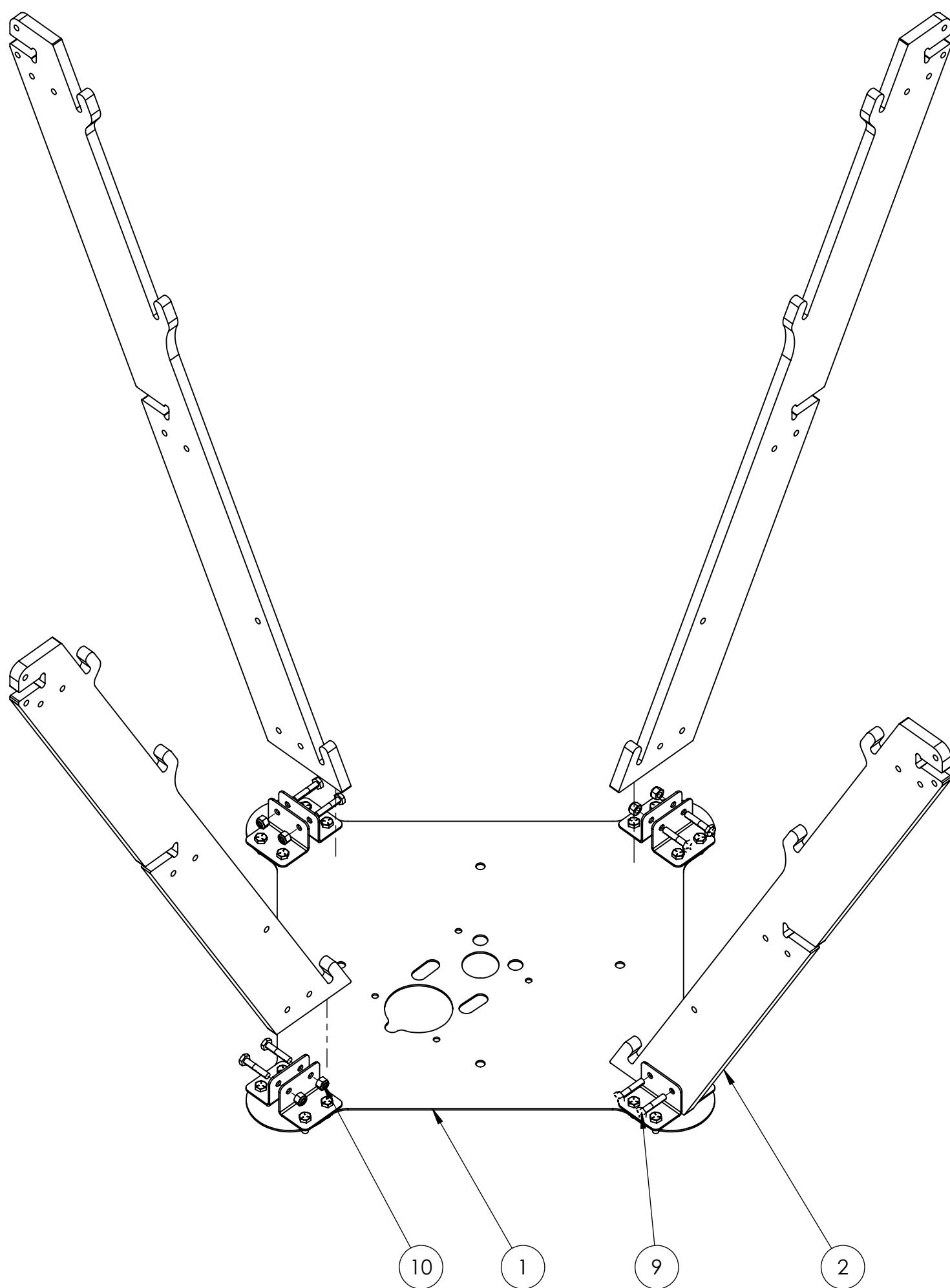
UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/16/2021
TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	PROPRIETARY AND CONFIDENTIAL		
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MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

Upper Hub

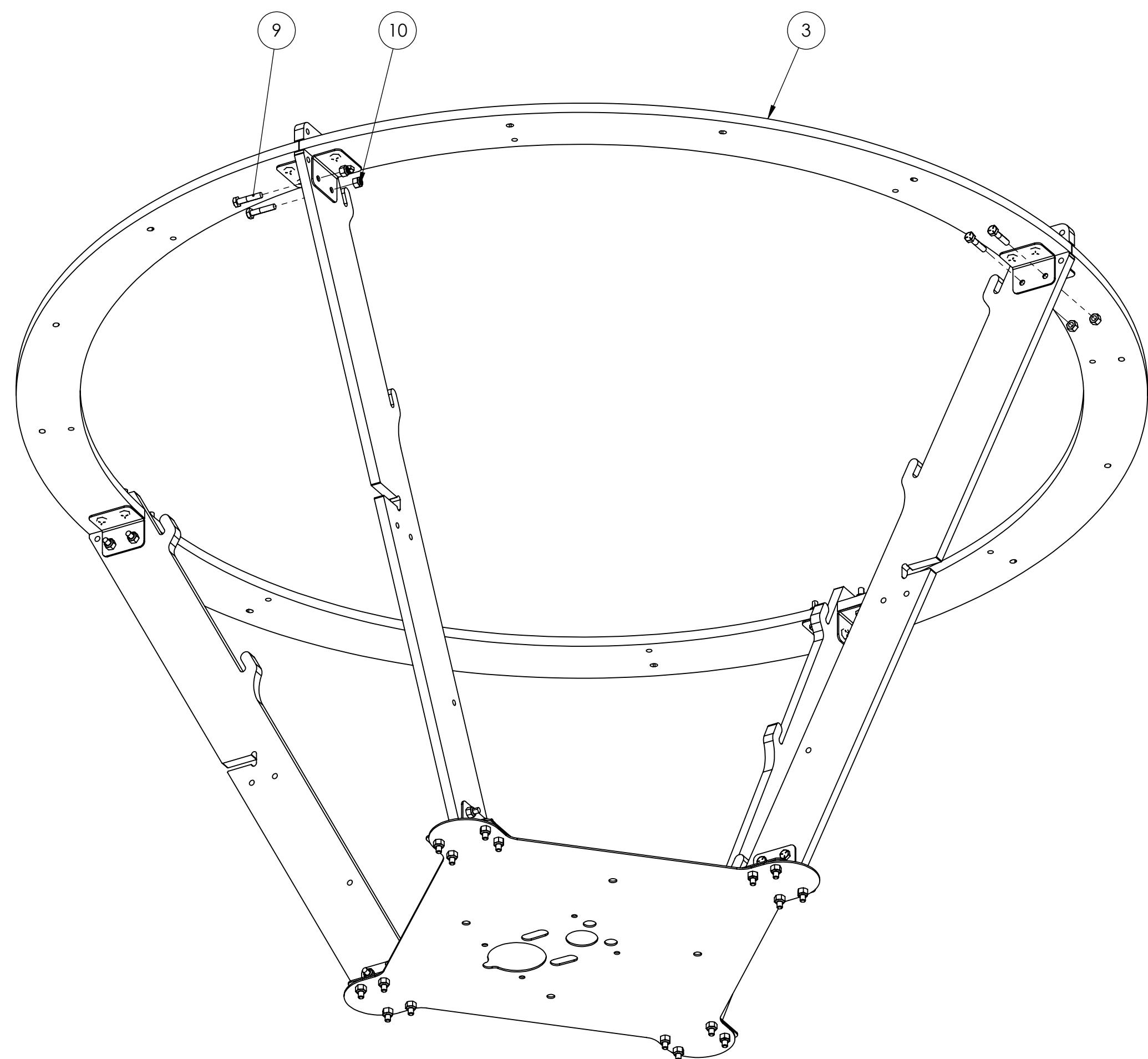
C GE-22411

SCALE: 1:10 SHEET 1 OF 4



Notes:

1. Attach (1) to (2) using (9) and (10).



Notes:

1. Attach (3) to the assembly using (9) and (10).

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/16/2021
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION Modeling Solutions Partner

Upper Hub

SIZE	DWG. NO.	REV
C	GE-22411	
SCALE: 1:5	SHEET 2 OF 4	

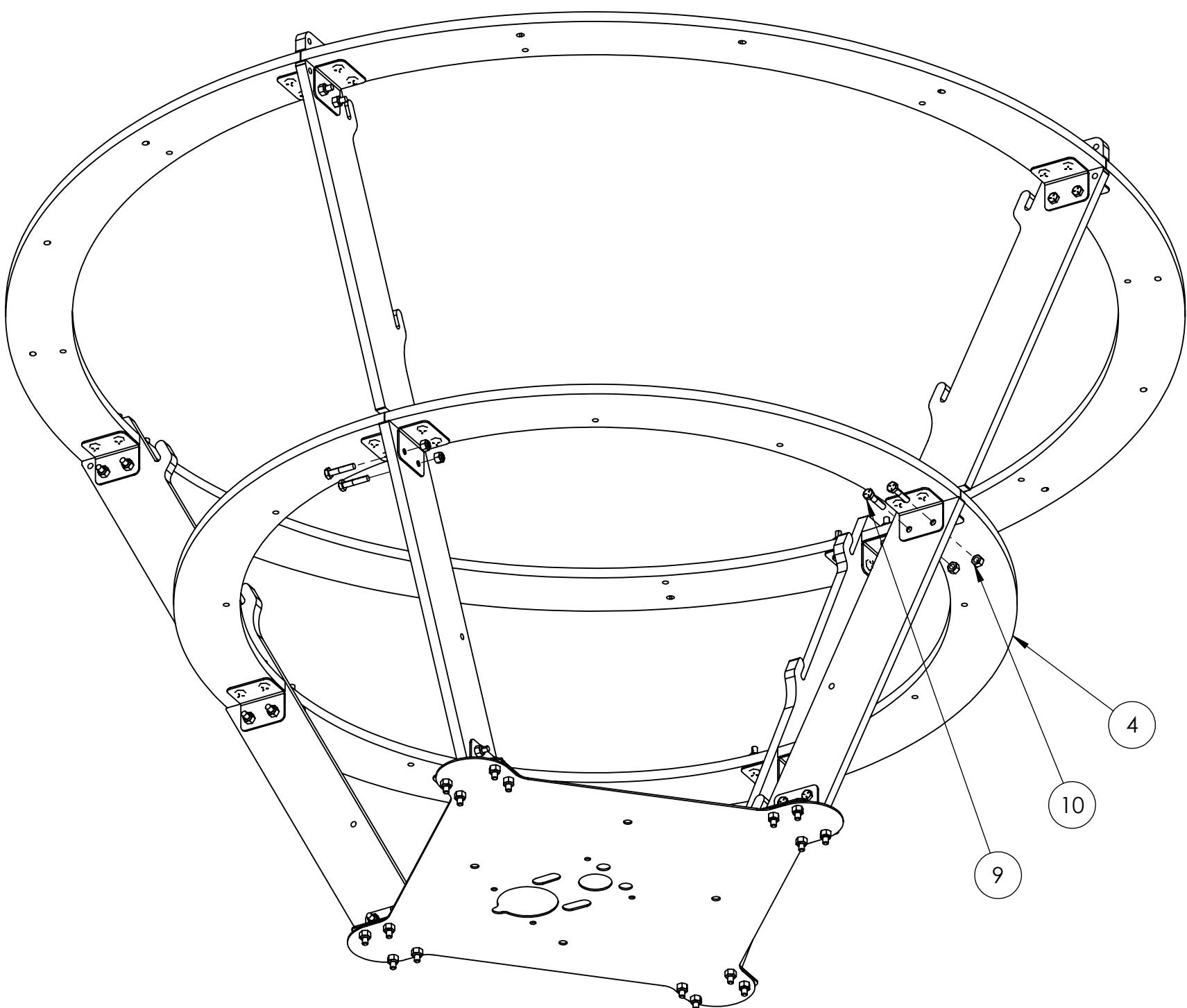
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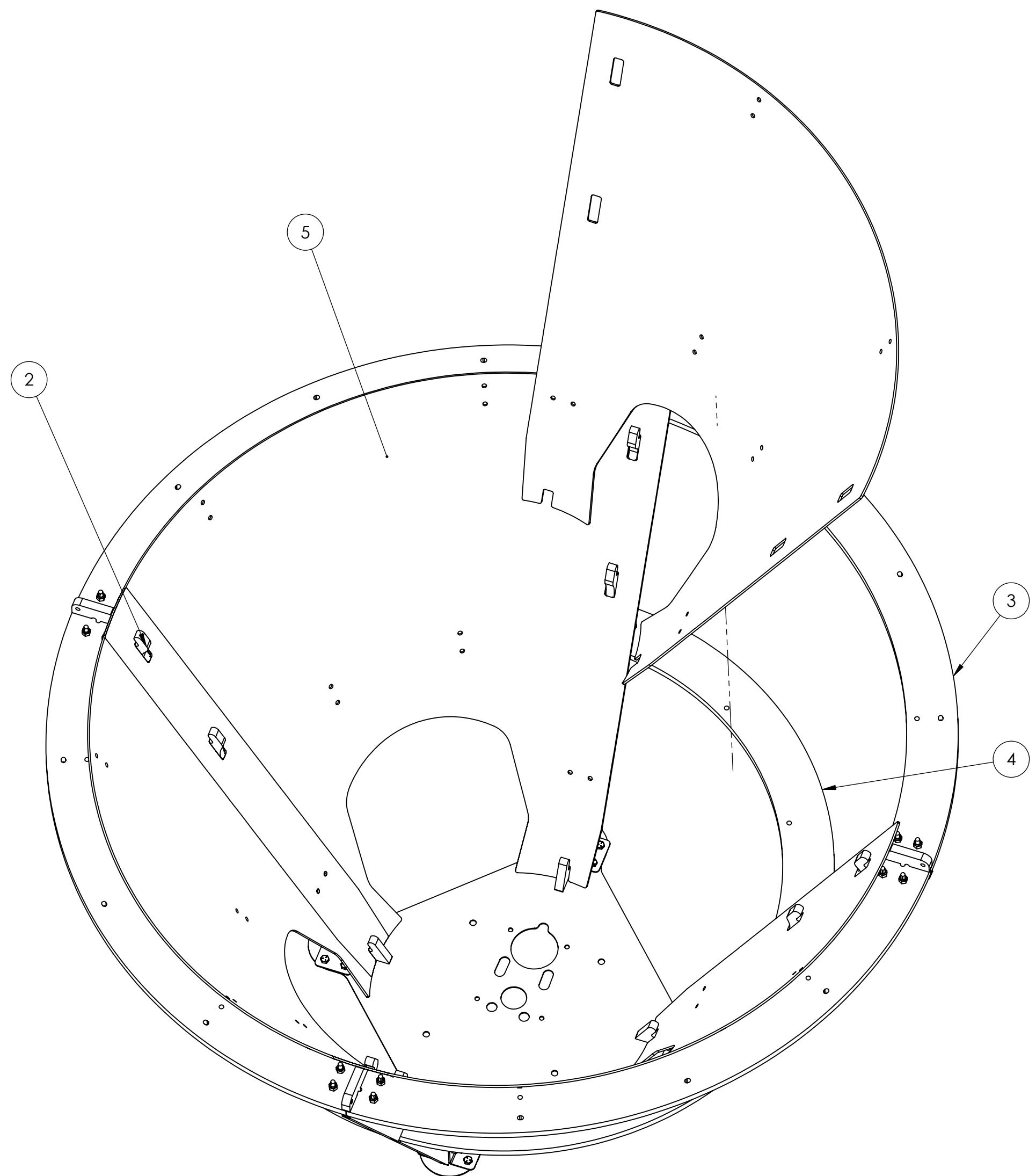
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**Notes:**

1. Attach (4) to assembly using (9) and (10).

**Notes:**

1. Insert all (5) into the assembly, bending and aligning with the hooks on (2).
2. Cable tie (5) to (2), (3), and (4).

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DRAWN	CO	12/16/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  **SOLIDWORKS**
Modeling Solutions Partner

TITLE:
Upper Hub

SIZE DWG. NO. REV

C GE-22411

SCALE: 1:6 SHEET 3 OF 4

4

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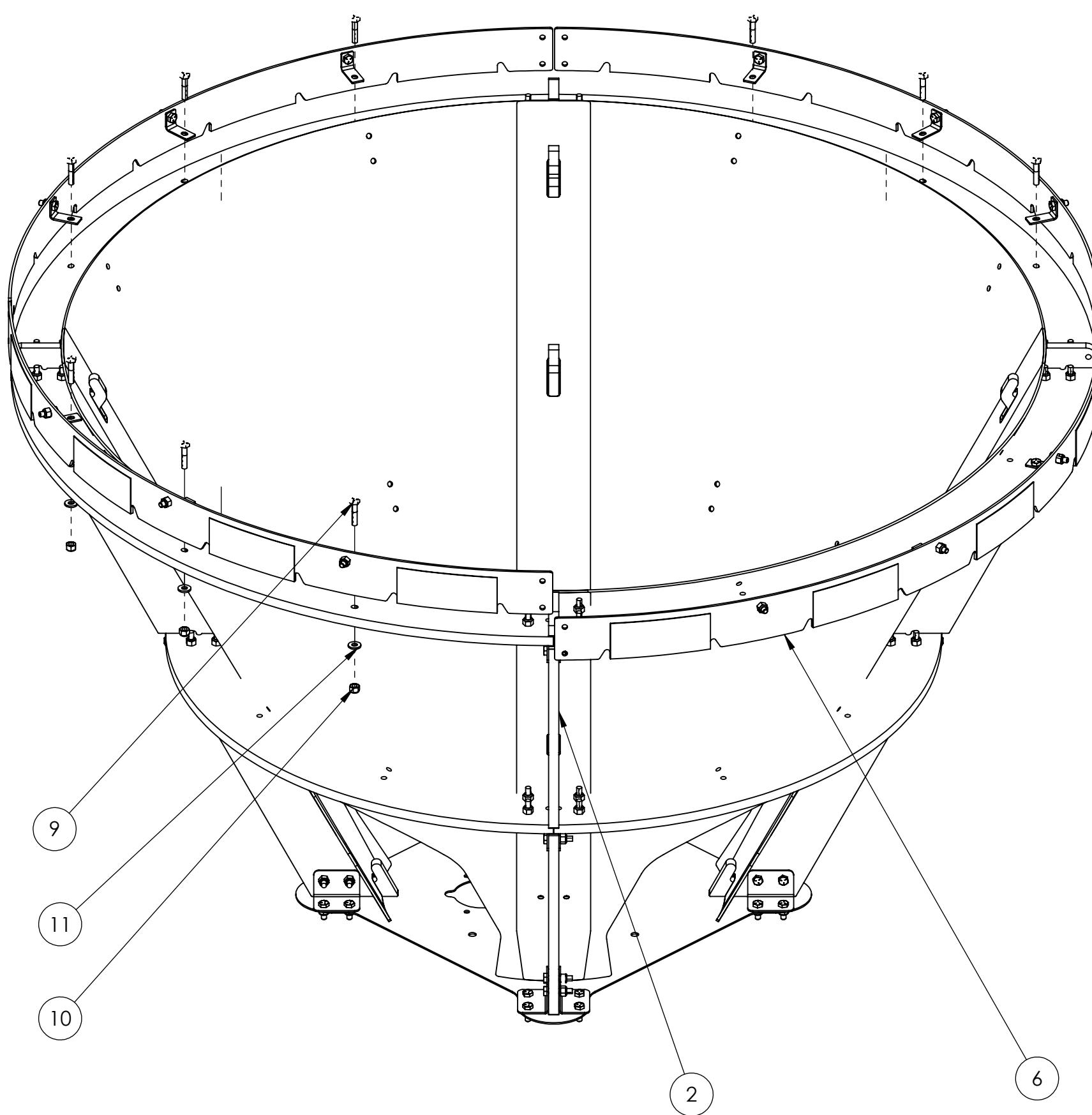
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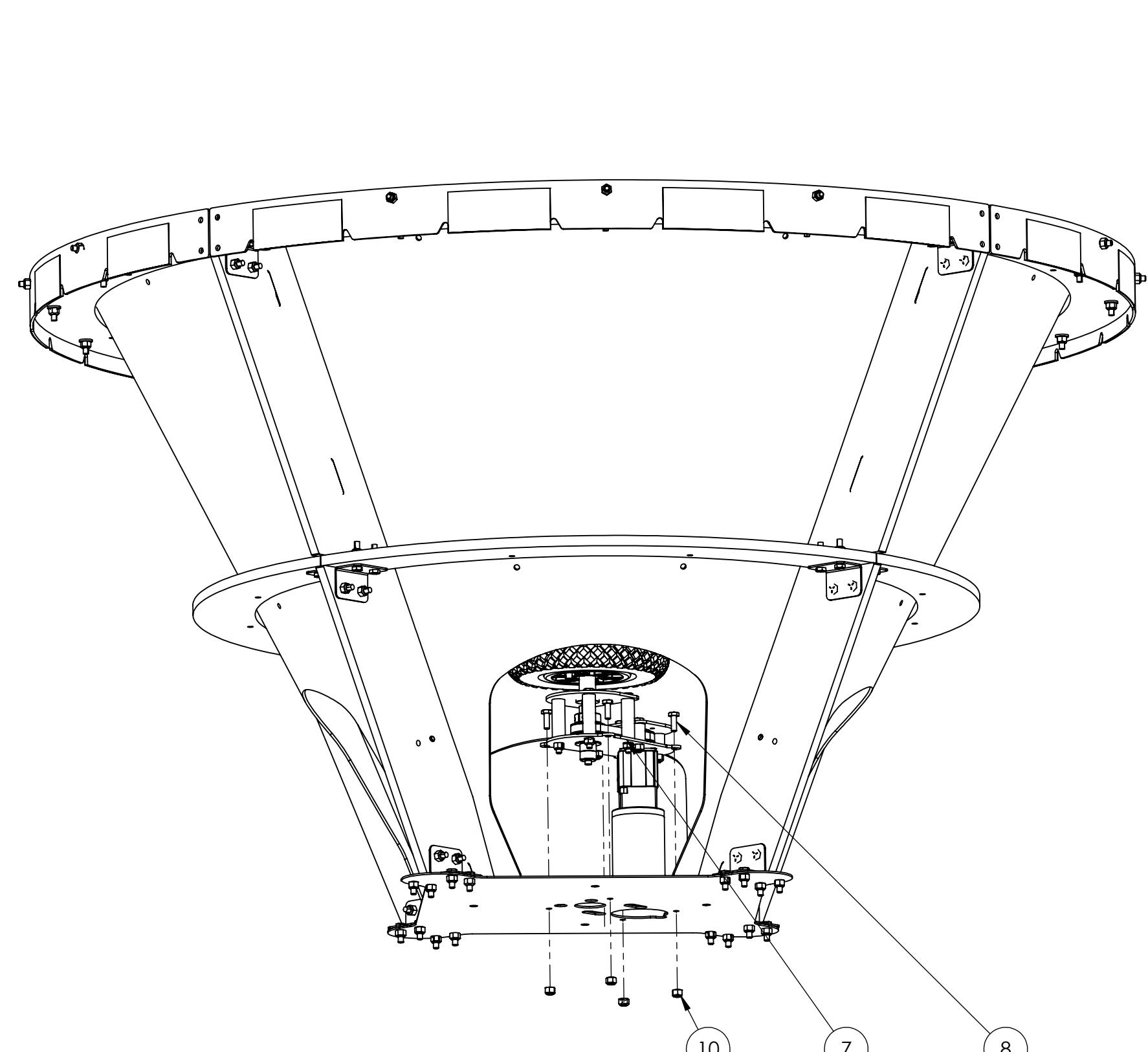
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Notes:

1. Attach (6) to assembly using (9), (11), and (10) as shown.
2. Cable tie adjacent (6)'s to each other and (2).



Notes:

1. Attach (7) to assembly using (8) and (10).

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/16/2021
TOLERANCES: FRACTIONAL $\pm\frac{1}{2}$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL		
TWO PLACE DECIMAL $\pm .50$	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	COMMENTS:		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION Modeling Solutions Partner

Upper Hub

SIZE DWG. NO. REV

C GE-22411

SCALE: 1:6 SHEET 4 OF 4

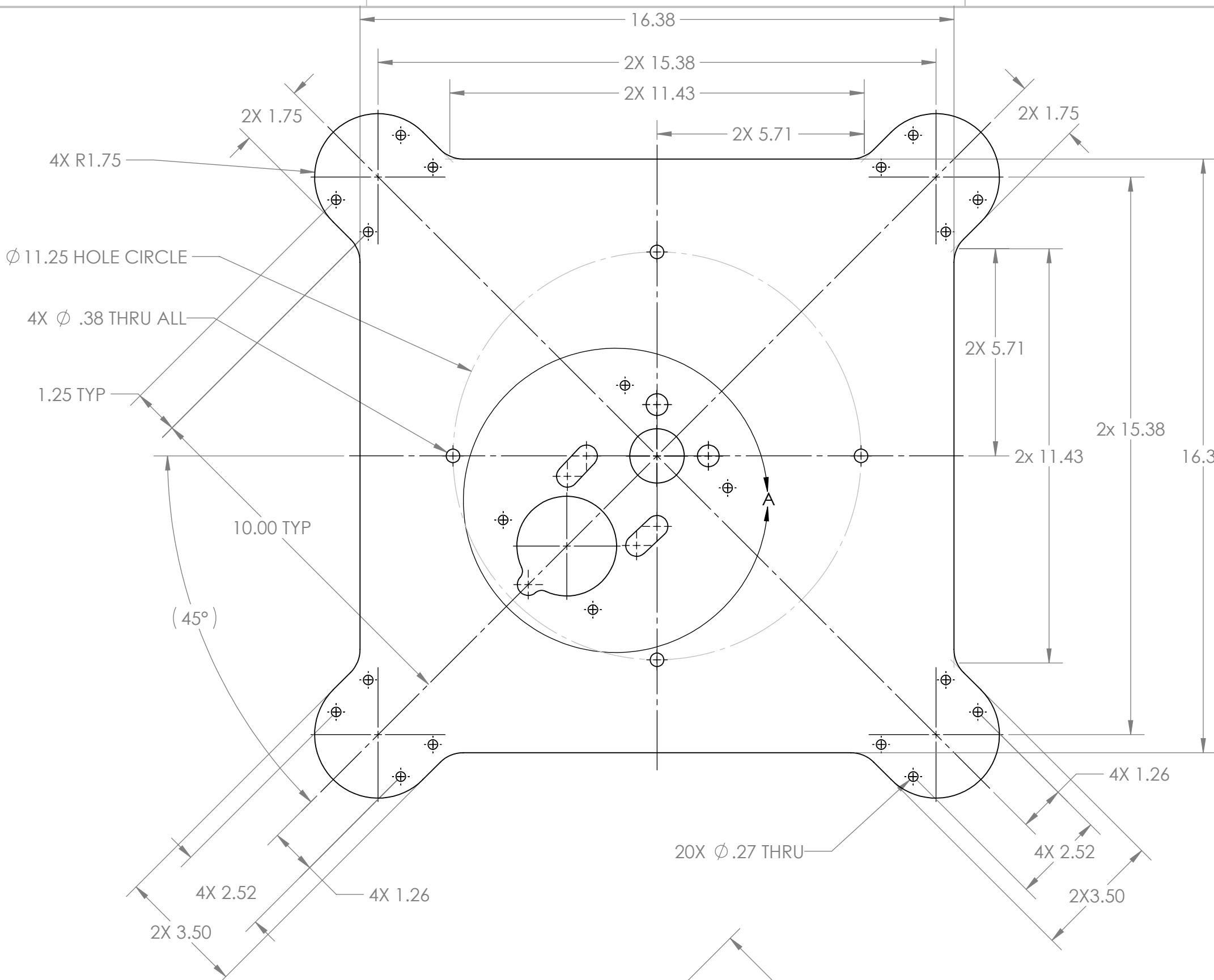
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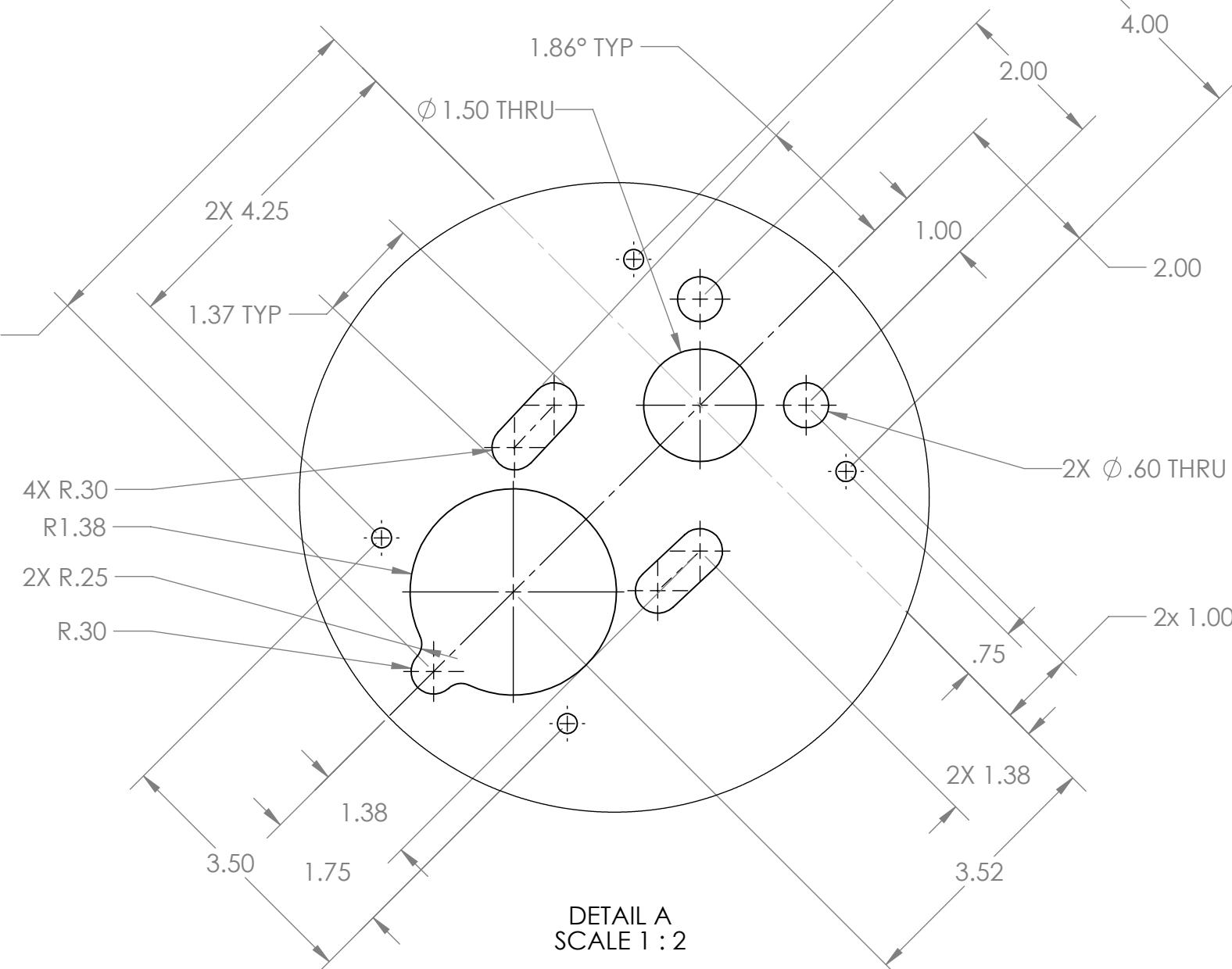
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DETAIL A
SCALE 1 : 2

Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

14 Ga. Preplated Steel

DO NOT SCALE DRAWING

VEND

DRAWN

NAME

CO

DATE

6/28/2021



TITLE:

Upper Hub
Baseplate

SIZE

C

DWG. NO.

GE-22412

REV

SCALE: 1:3

SHEET 1 OF 1

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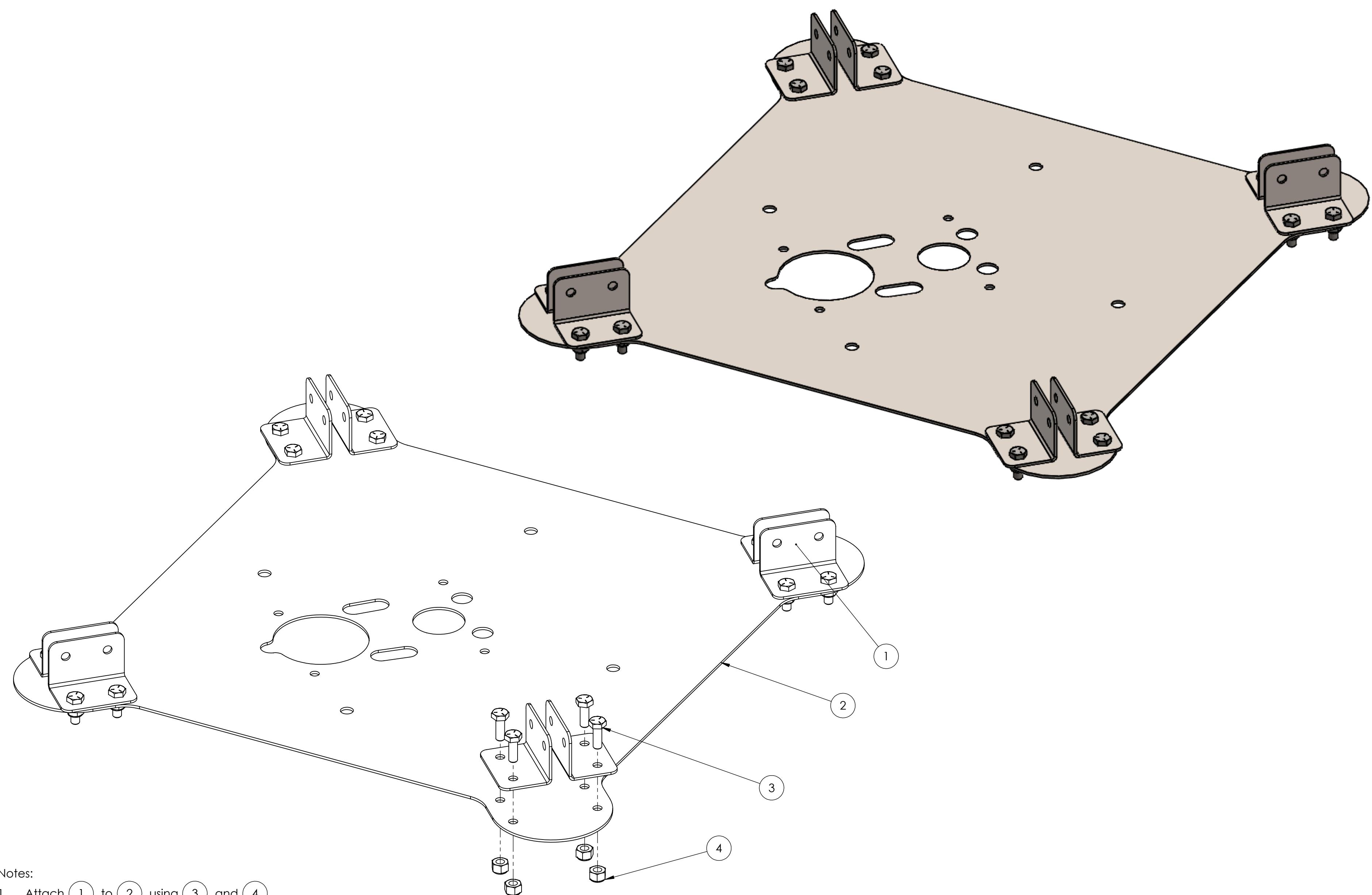
C

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Notes:

1. Attach (1) to (2) using (3) and (4).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22301	Hub Angle Bracket	8
2	GE-22412	Upper Hub Baseplate	1
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	16
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	16

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	11/3/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

TITLE: Upper Hub Baseplate Assembly

C **GE-22413**

SIZE DWG. NO. **REV**

SCALE: 1:2 **SHEET 1 OF 1**

4

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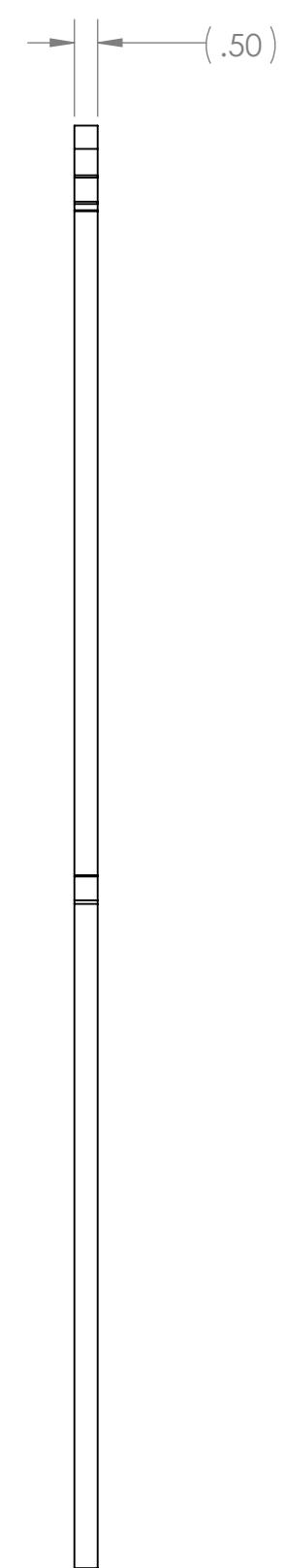
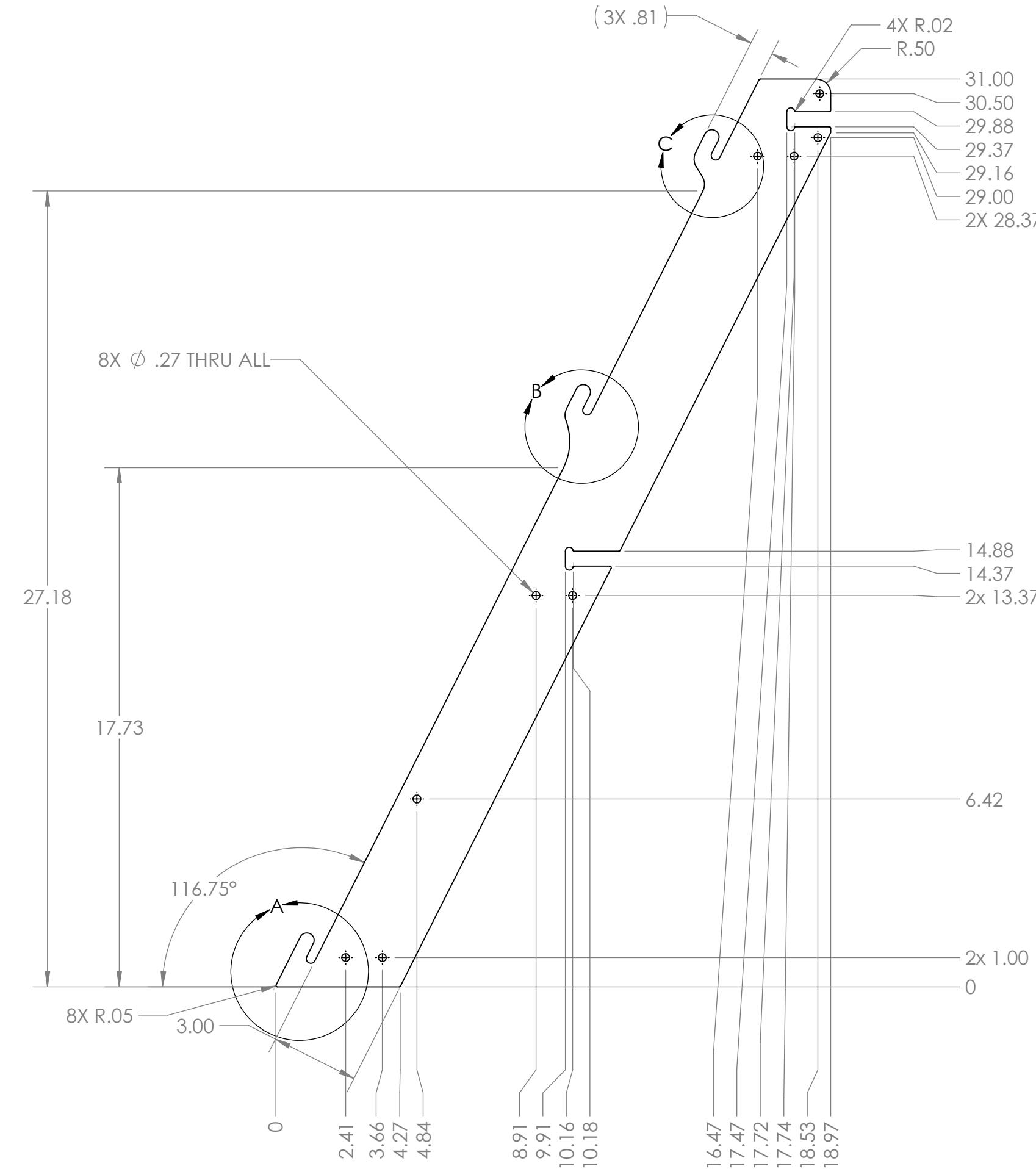
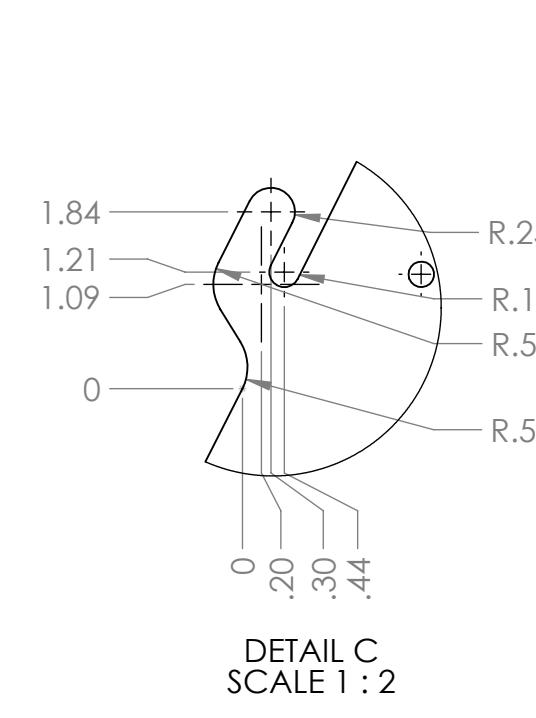
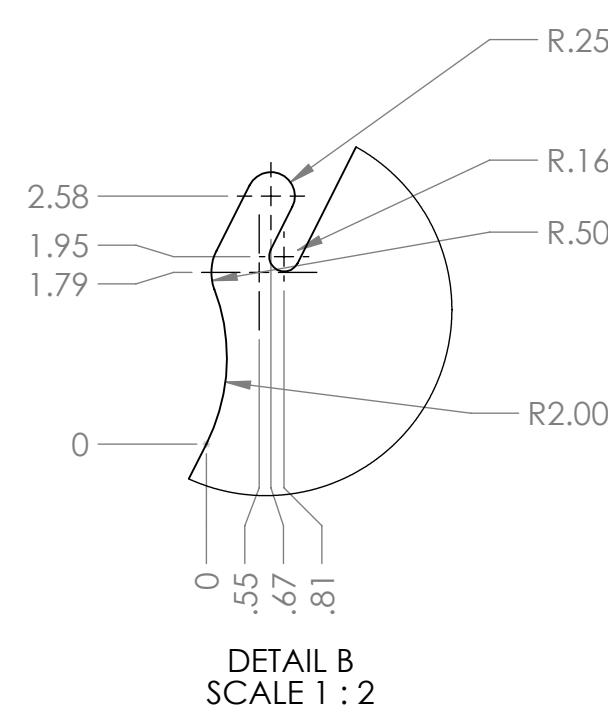
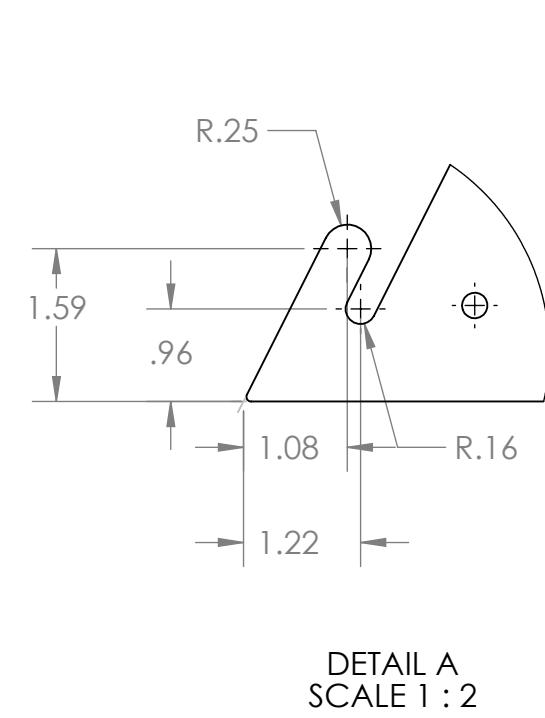
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DIMENSIONS ARE IN INCHES	DRAWN	CO	6/28/2021
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MATERIAL/FINISH: 1/2" HDPE, natural/smooth			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION DS SOLIDWORKS Modeling Solutions Partner

TITLE:
Upper Hub Vertical Rib

SIZE DWG. NO. REV

C GE-22414

SCALE: 1:4 SHEET 1 OF 1

4

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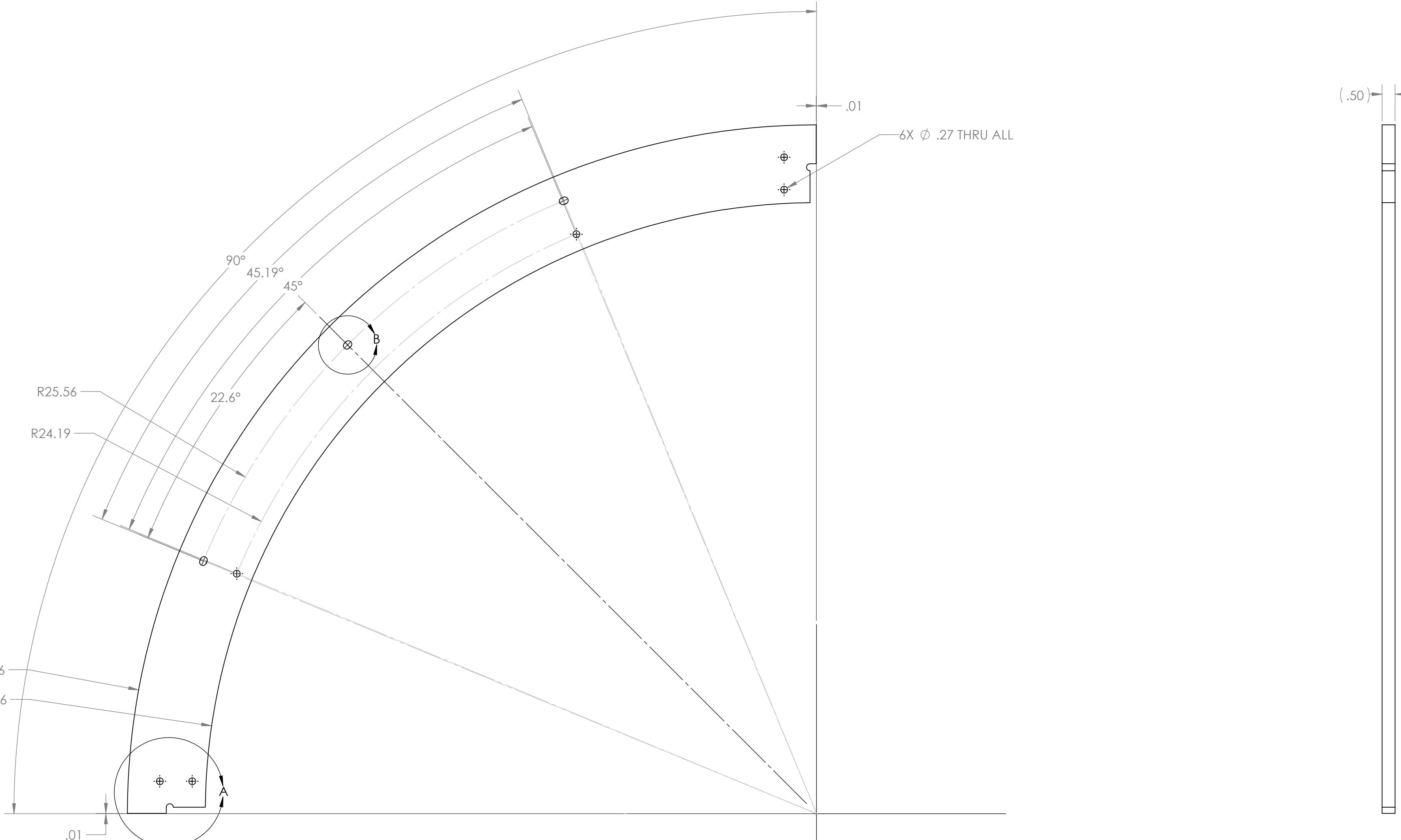
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DETAIL A
SCALE 2 : 3
2 places

DETAIL B
SCALE 2 : 3
3 places

Notes:
1. Tag or label with part number.

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			DRAWN	CO	6/28/2021
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MATERIAL/FINISH: 1/2" natural HDPE, smooth					
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING					

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE: Upper Hub Large Rib

SIZE DWG. NO. REV
C GE-22415

SCALE: 1:3 SHEET 1 OF 1

4

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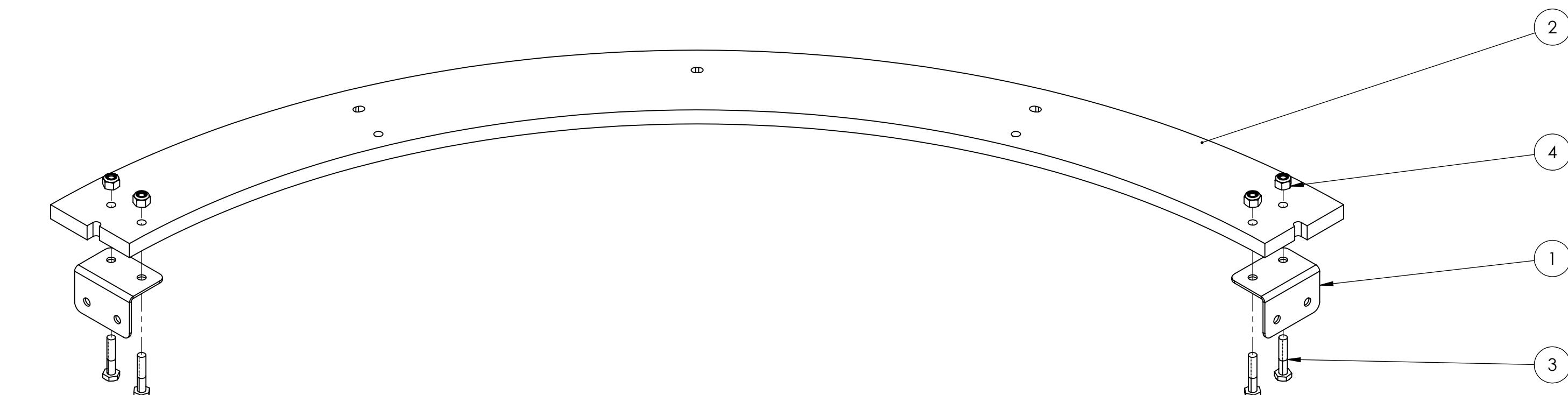
D

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Notes:

1. Attach (1) to (2) using (3) and (4).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22301	Hub Angle Bracket	2
2	GE-22415	Upper Hub Large Rib	1
3	hex_.25_20_1.25_parti al	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	4
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

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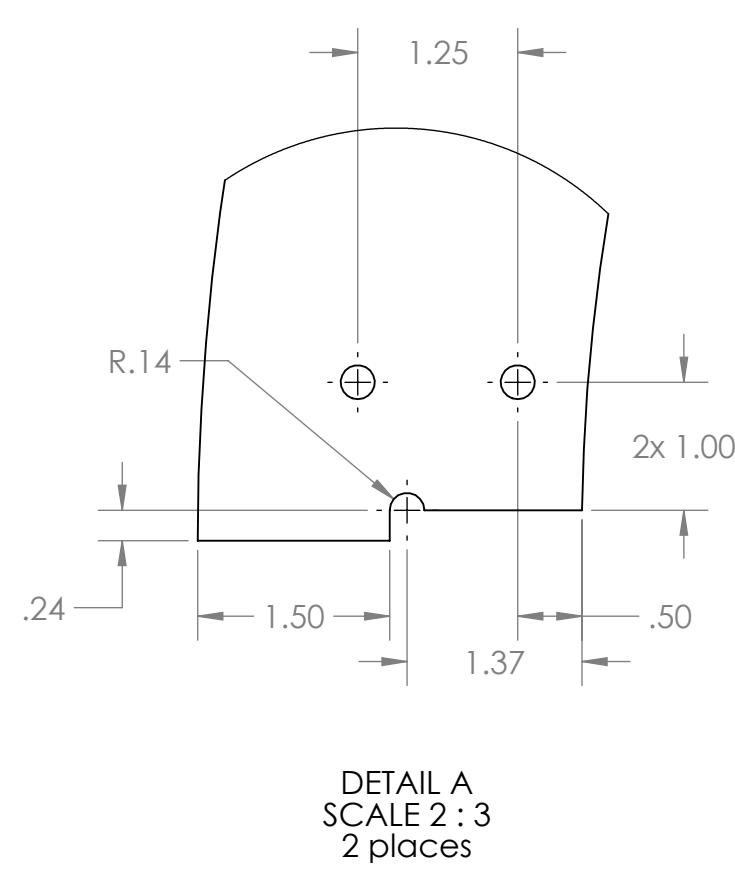
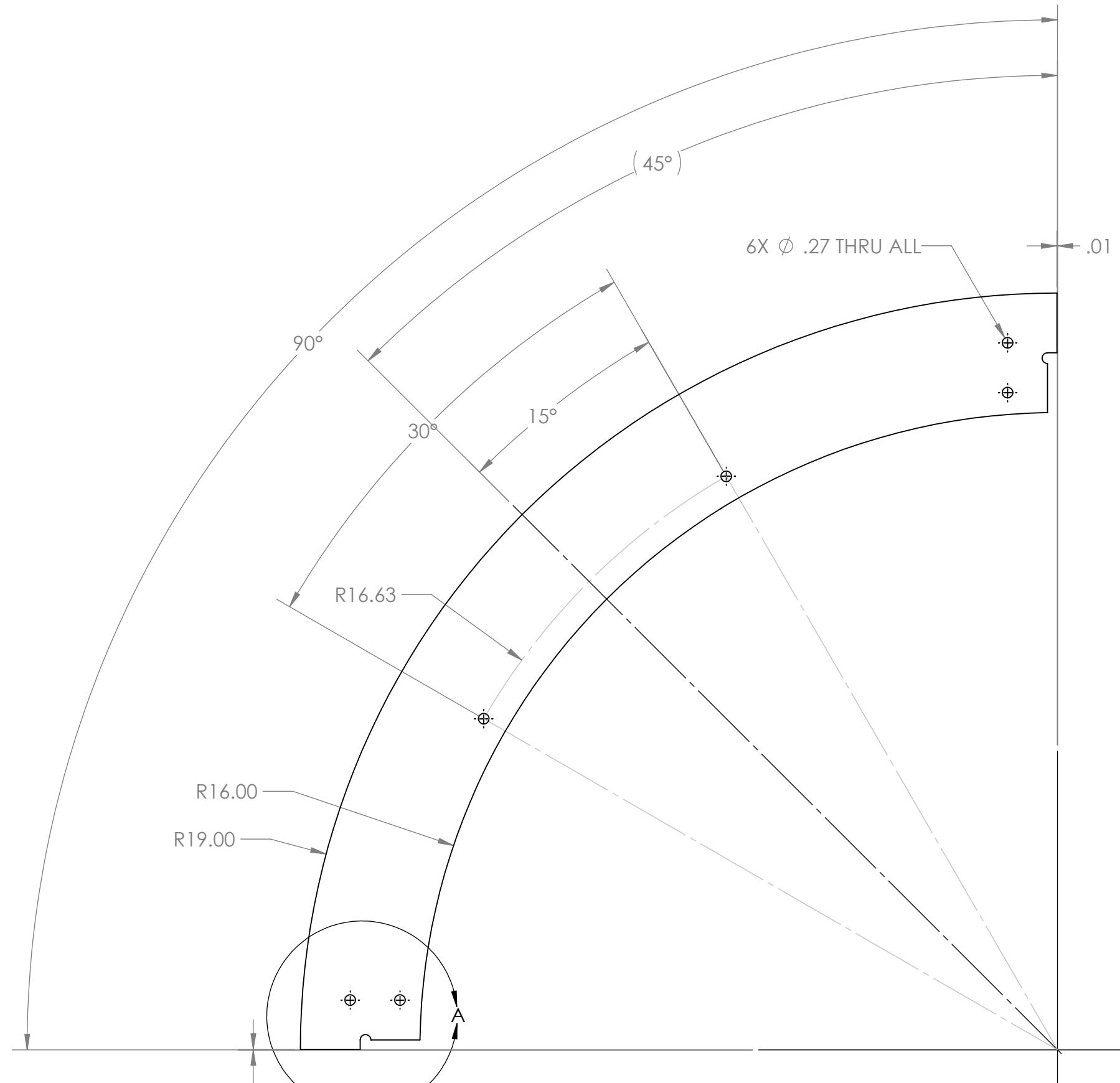
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DIMENSIONS ARE IN INCHES		DRAWN	CO	11/3/2021
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MATERIAL/FINISH:	COMMENTS:	SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.	C	GE-22416	
		SCALE: 1:3	SHEET 1 OF 1	
DO NOT SCALE DRAWING				

 **FIRST
ROBOTICS
COMPETITION**  **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Upper Hub
Large Rib
Assembly

SIZE DWG. NO. REV
C GE-22416
SCALE: 1:3 SHEET 1 OF 1



Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$

ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$

TWO PLACE DECIMAL $\pm .01$

THREE PLACE DECIMAL $\pm .005$

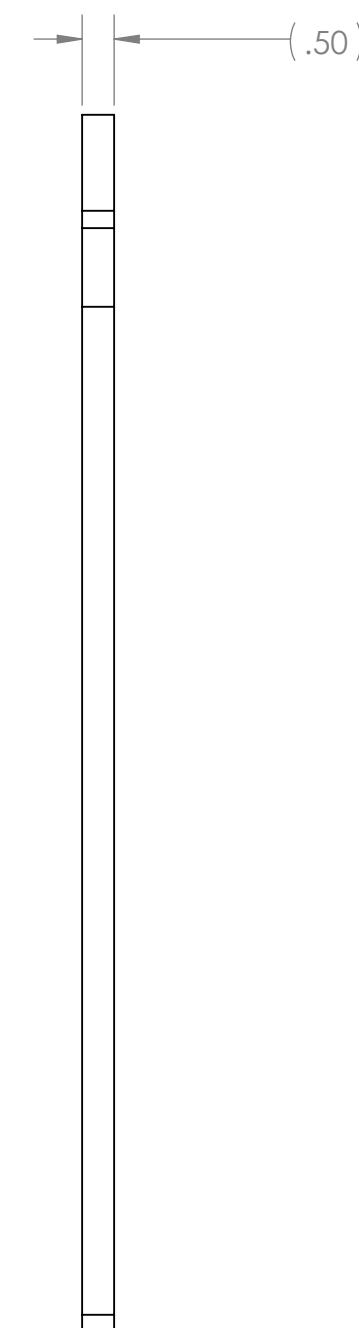
MATERIAL/FINISH:

1/2" HDPE, natural/smooth

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING



VEND	NAME	DATE
DRAWN	CO	6/28/2021
PROPRIETARY AND CONFIDENTIAL		
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SIZE	DWG. NO.	REV
C	GE-22417	
SCALE: 1:3	SHEET 1 OF 1	



TITLE:

**Upper Hub
Small Rib**

SIZE DWG. NO. REV

C GE-22417

SCALE: 1:3 SHEET 1 OF 1

D

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C

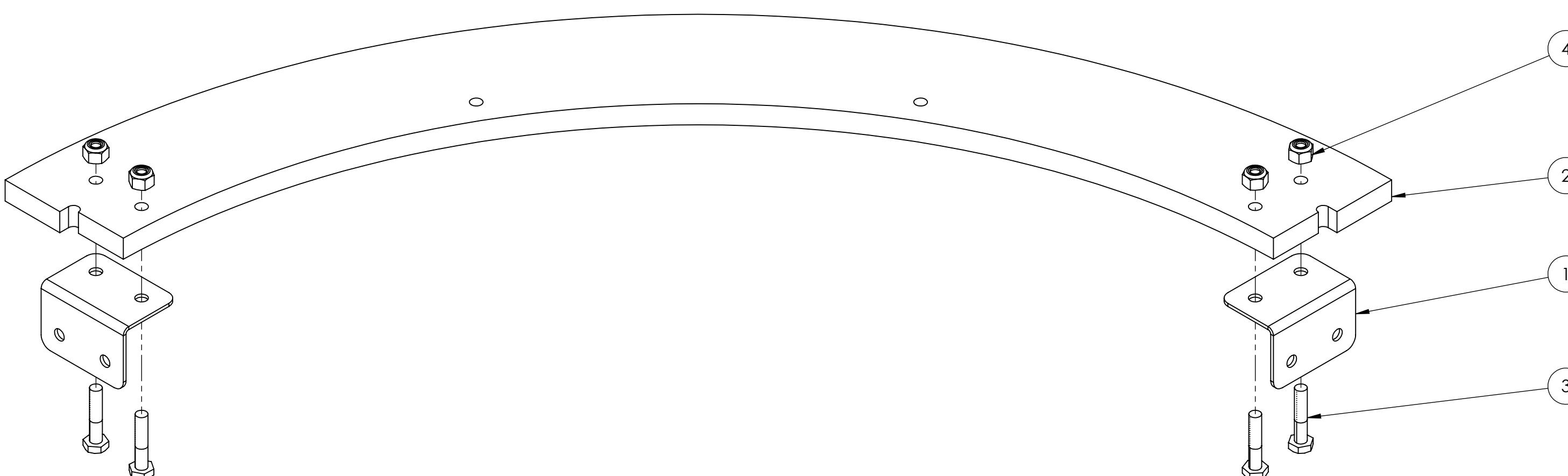
C

B

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Notes:

1. Attach (1) to (2) using (3) and (4).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22301	Hub Angle Bracket	2
2	GE-22417	Upper Hub Small Rib	1
3	hex_.25_20_1.25_parti al	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	4
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

UNLESS OTHERWISE SPECIFIED:

VEND

NAME

DATE

DRAWN

CO

11/3/2021

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING


**FIRST
ROBOTICS
COMPETITION**

SOLIDWORKS
Modeling Solutions Partner
TITLE: **Upper Hub
Small Rib
Assembly**

SIZE DWG. NO. REV

C GE-22418

SCALE: 1:2 SHEET 1 OF 1

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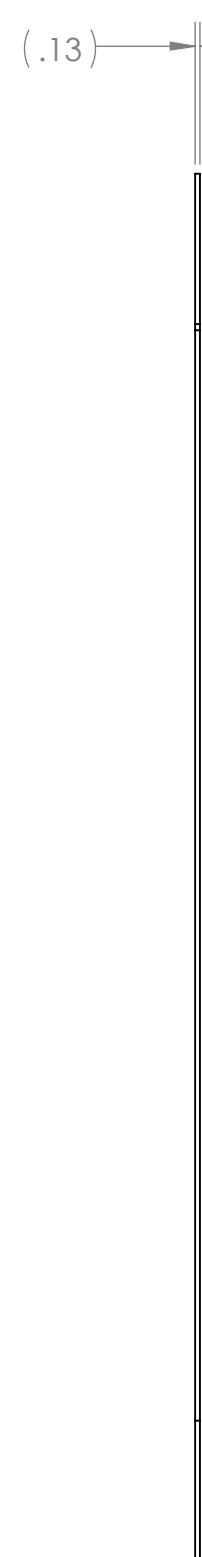
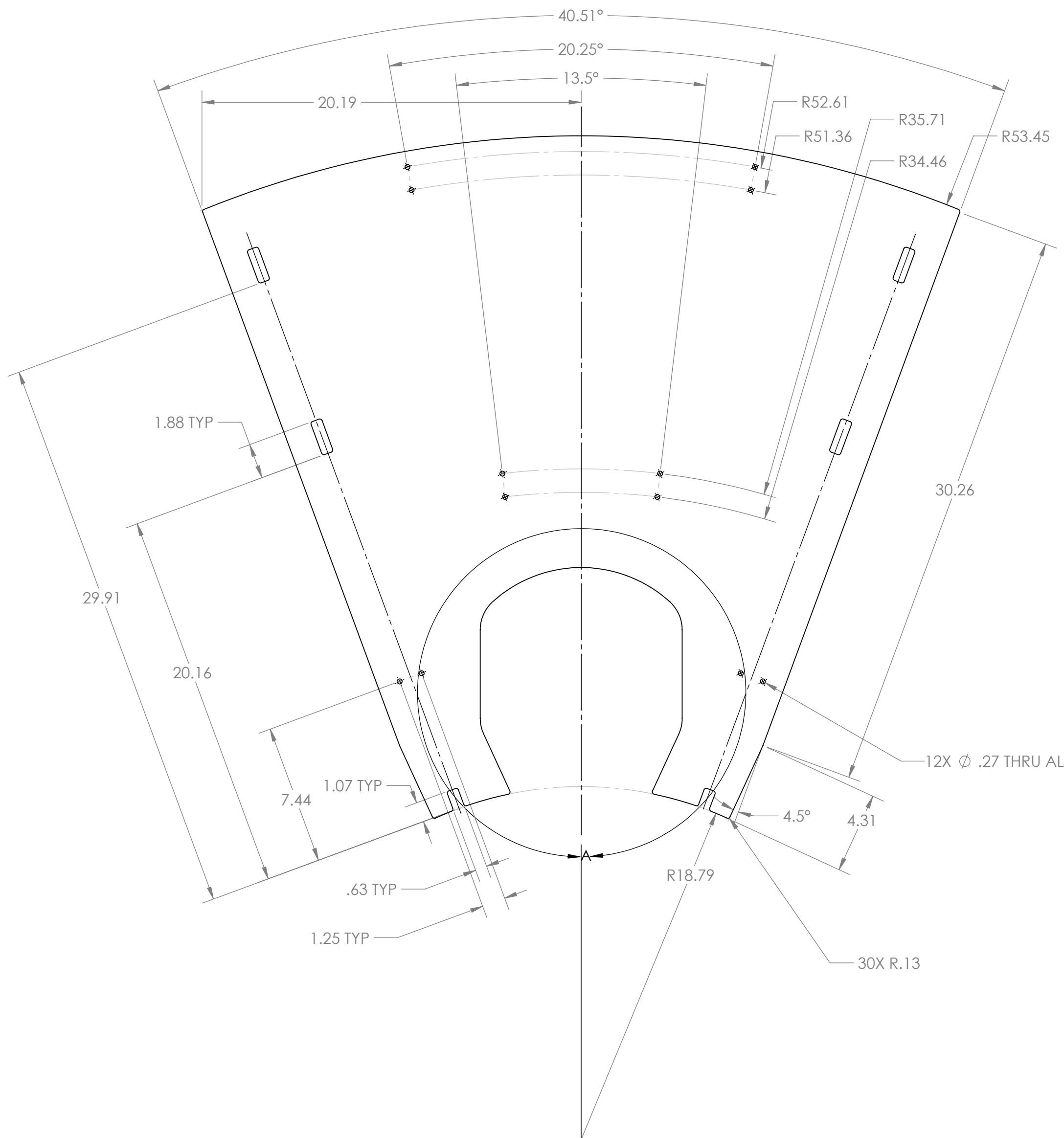
B

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Notes:
1. Tag or label with part number.



DETAIL A
SCALE 1 : 3

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
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MATERIAL/FINISH: 1/8" thk. Polycarbonate, Clear			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Upper Hub
Panel**

SIZE DWG. NO. REV
C GE-22419

SCALE: 1:5 SHEET 1 OF 1

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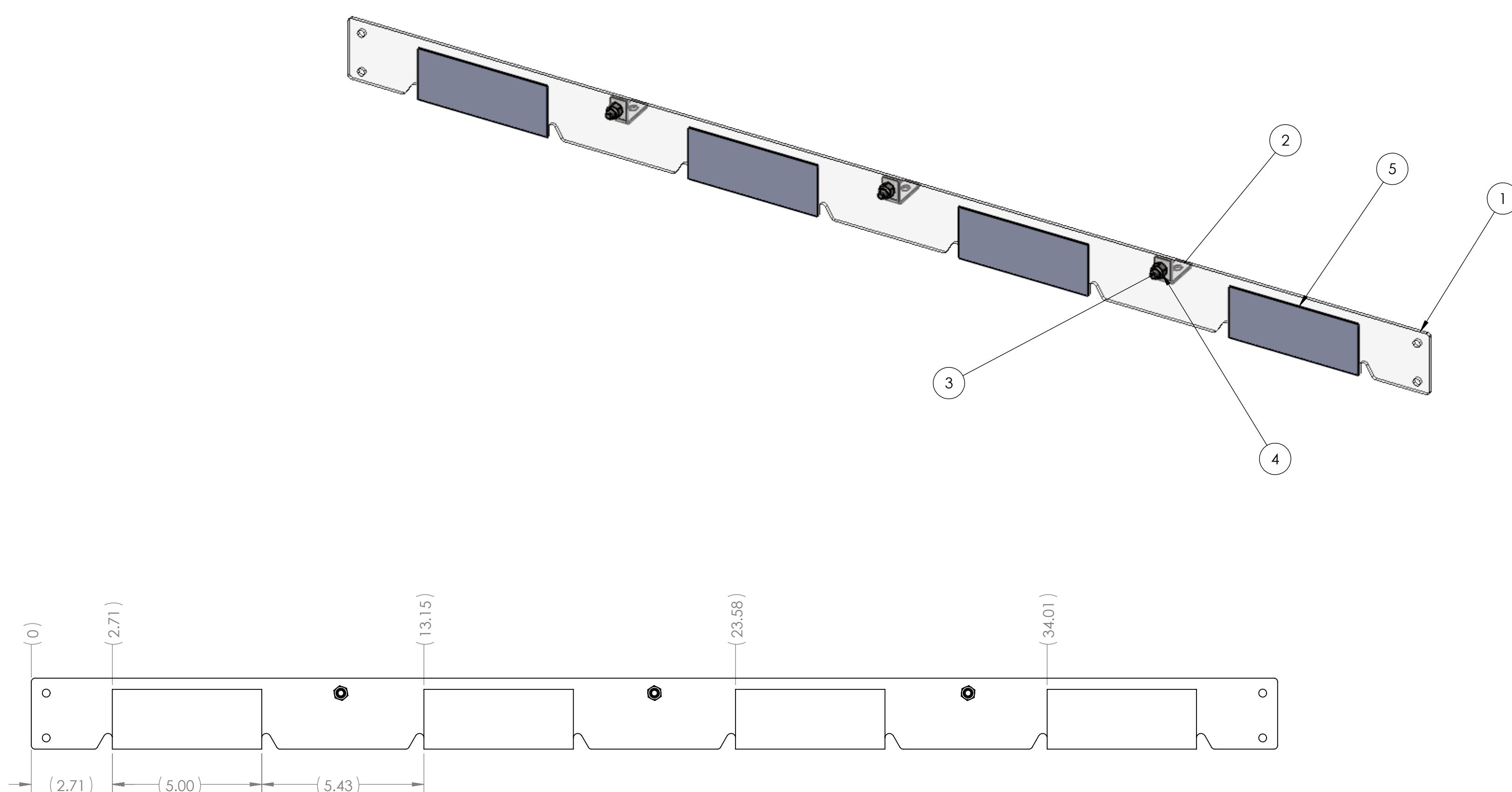
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22421	Upper Hub Vision Plastic	1
2	GE-22422	Upper Hub Vision Angle	3
3	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	3
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	3
5	tape_VISIONTARGET	2" Wide, 5" Long 3M 8830 Scotchlite Reflective Material	4

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DIMENSIONS ARE IN INCHES	DRAWN	CO	11/3/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	REV		
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

Upper Hub Vision Assembly

SIZE DWG. NO. REV
C GE-22420

SCALE: 1:3 SHEET 1 OF 2

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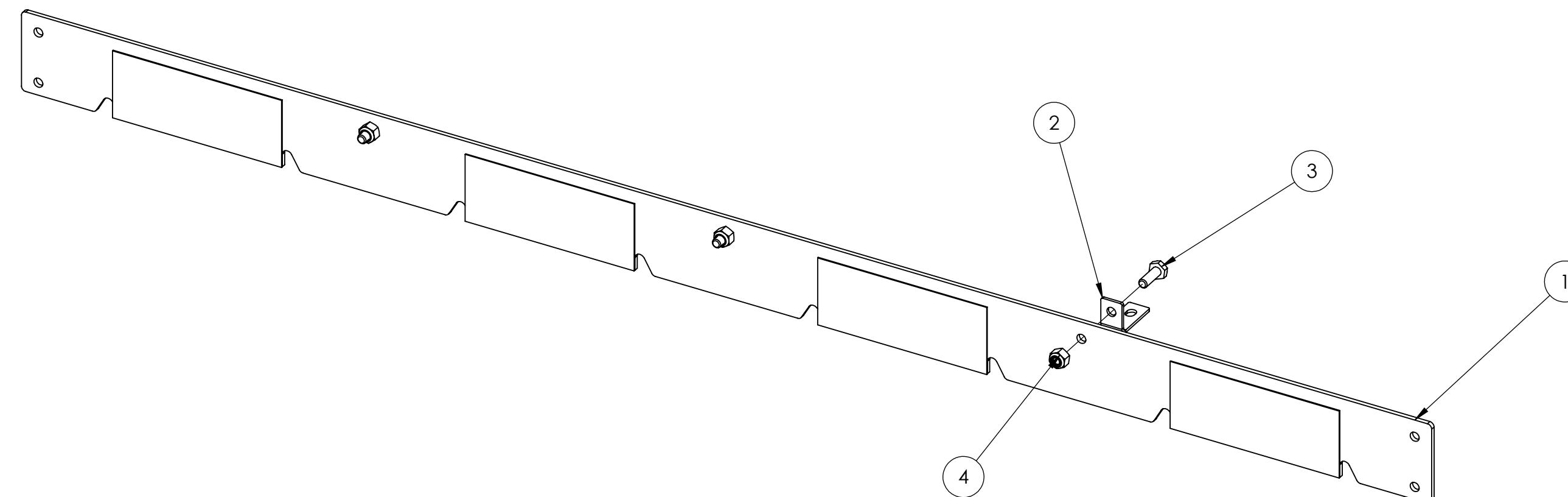
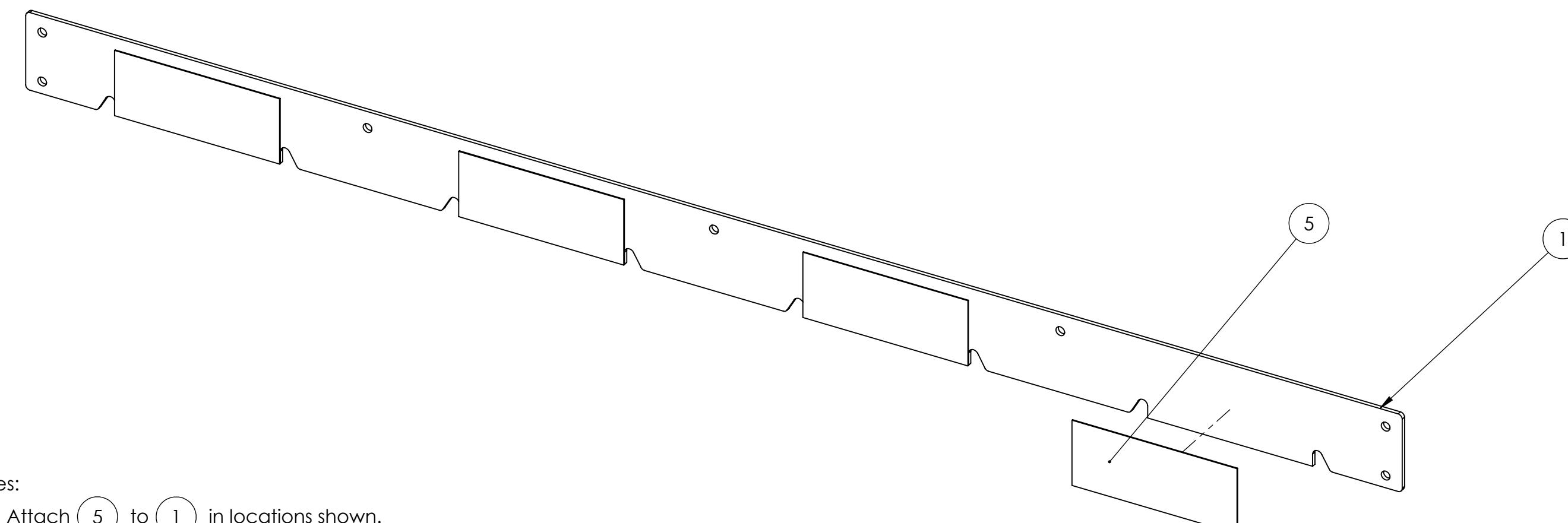
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DIMENSIONS ARE IN INCHES	DRAWN	CO	11/3/2021
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
COMMENTS:	C	GE-22420	
DO NOT SCALE DRAWING	SCALE: 1:3	SHEET 2 OF 2	

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Upper Hub
Vision Assembly

SIZE DWG. NO. REV

C GE-22420

SCALE: 1:3 SHEET 2 OF 2

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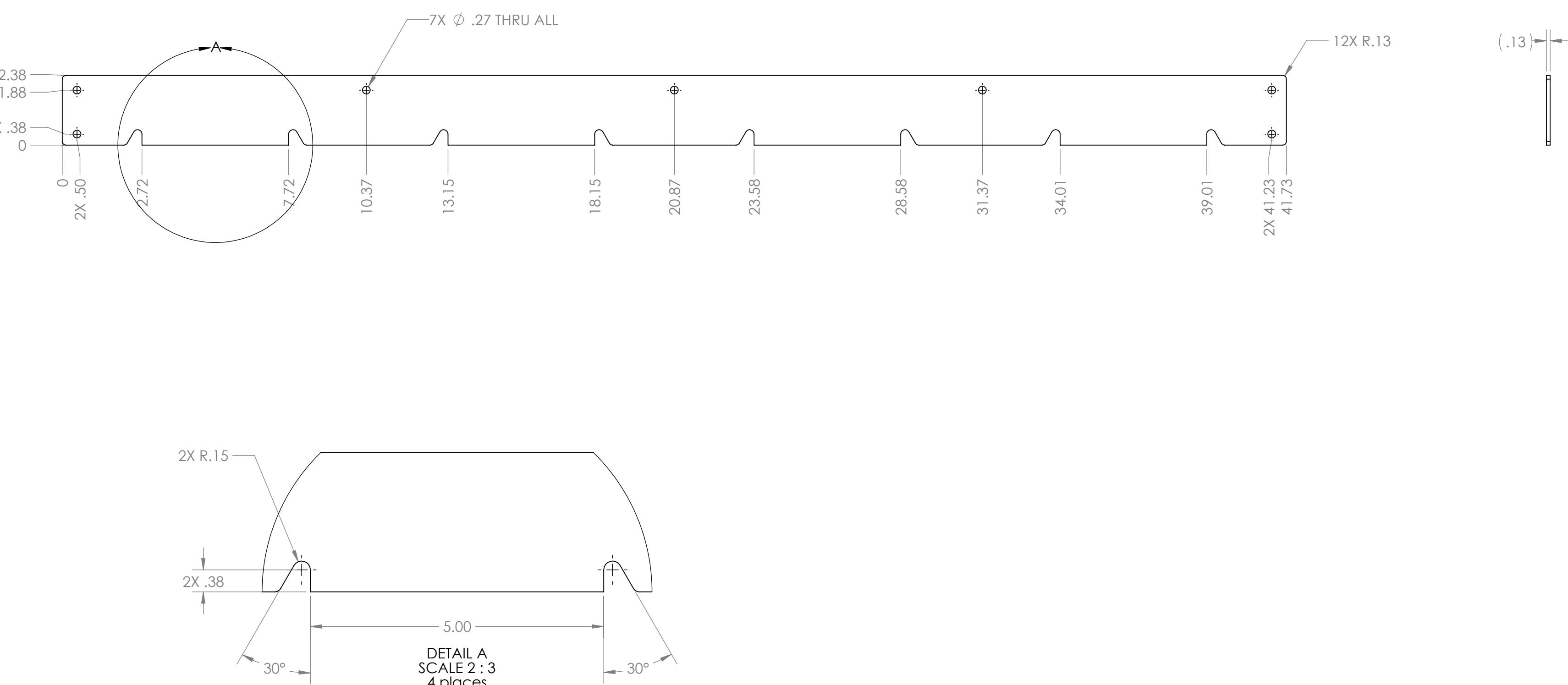
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DRAWN	CO	7/27/2021	
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
1/8" thk. Polycarbonate, Clear	C	GE-22421	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:3	SHEET 1 OF 1	

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Upper Hub
Vision Plastic

D

D

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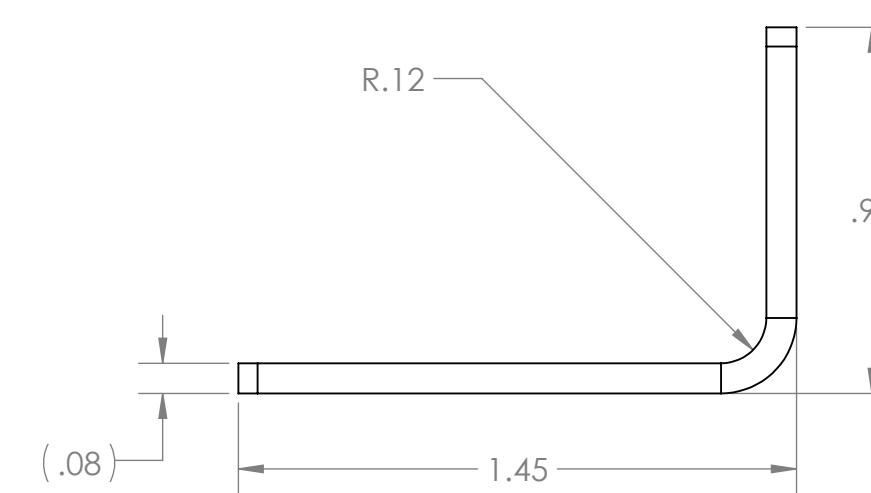
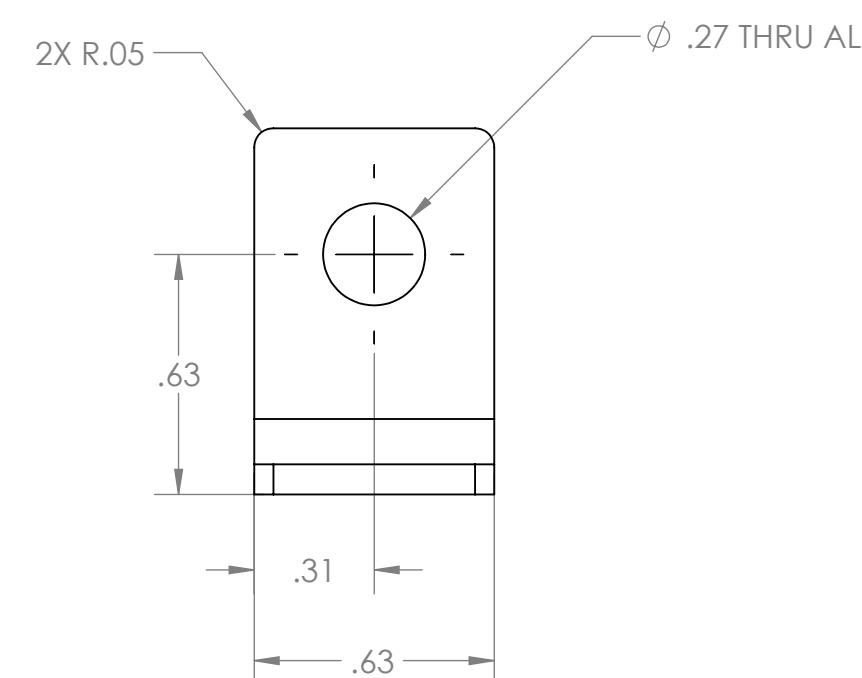
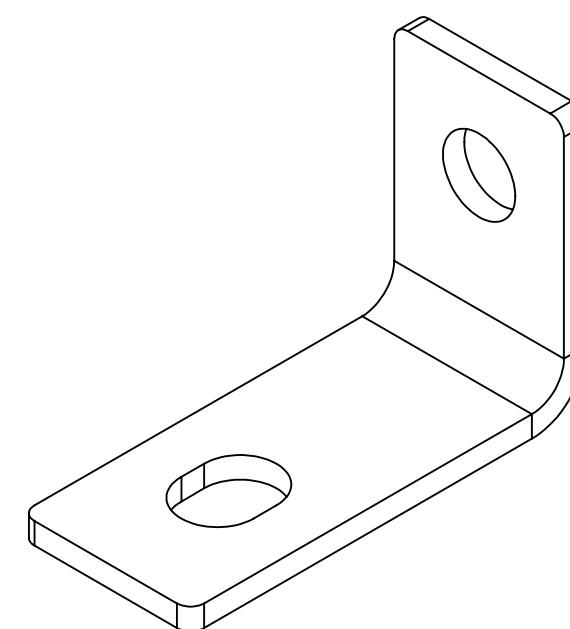
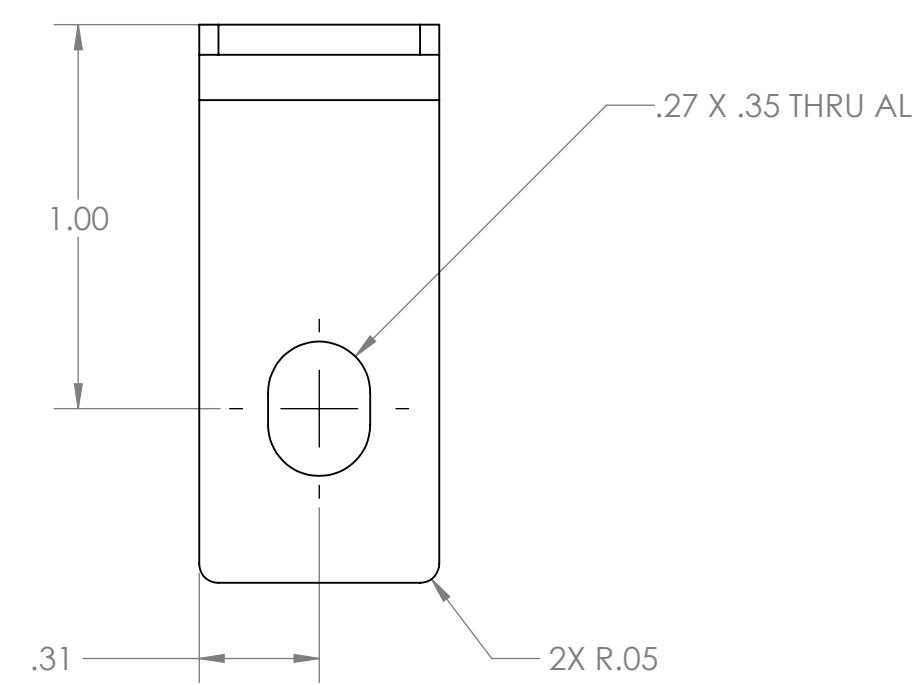
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Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	CO	7/29/2021	
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MATERIAL/FINISH: 14 Ga. preplated steel			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

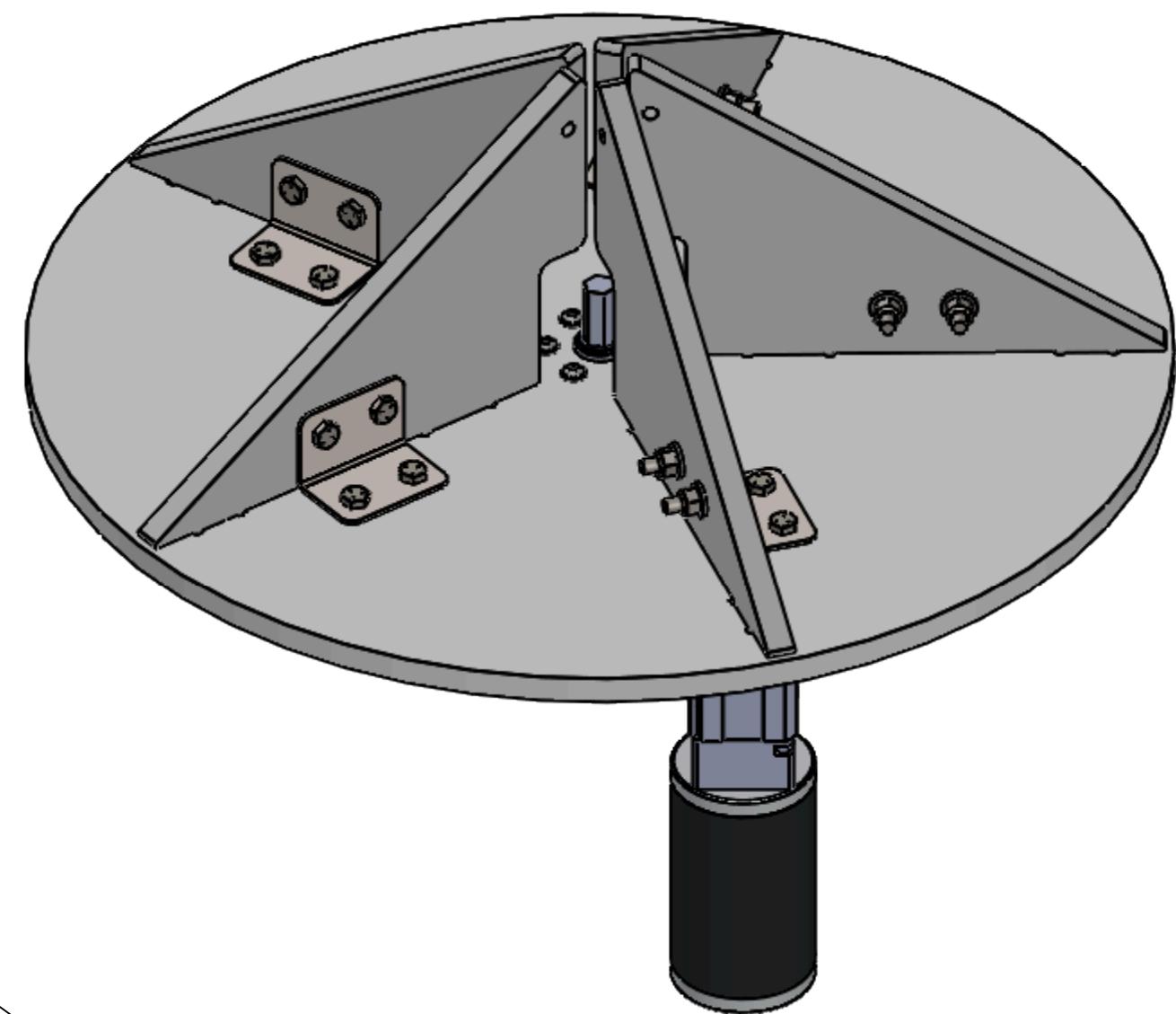
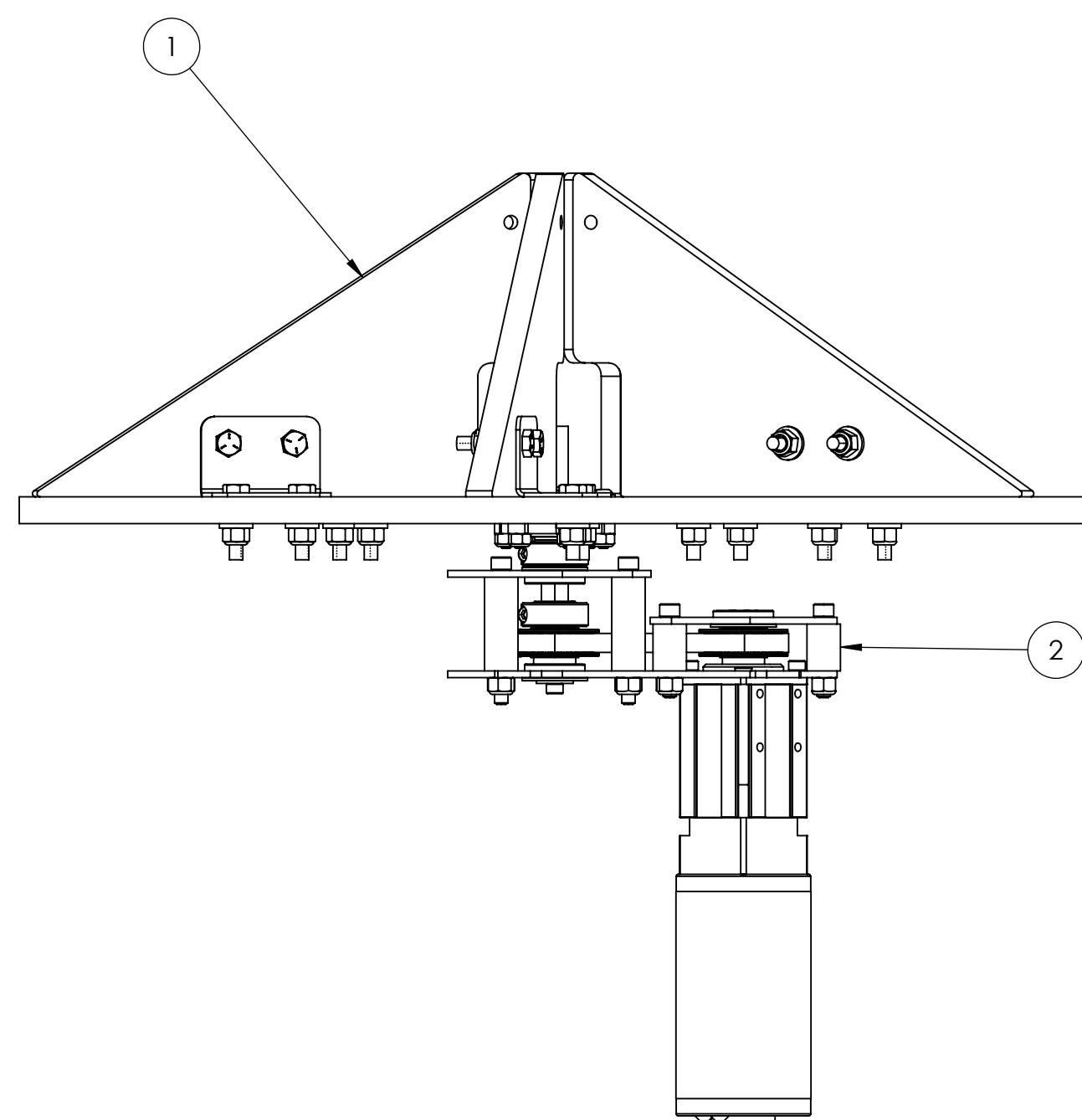
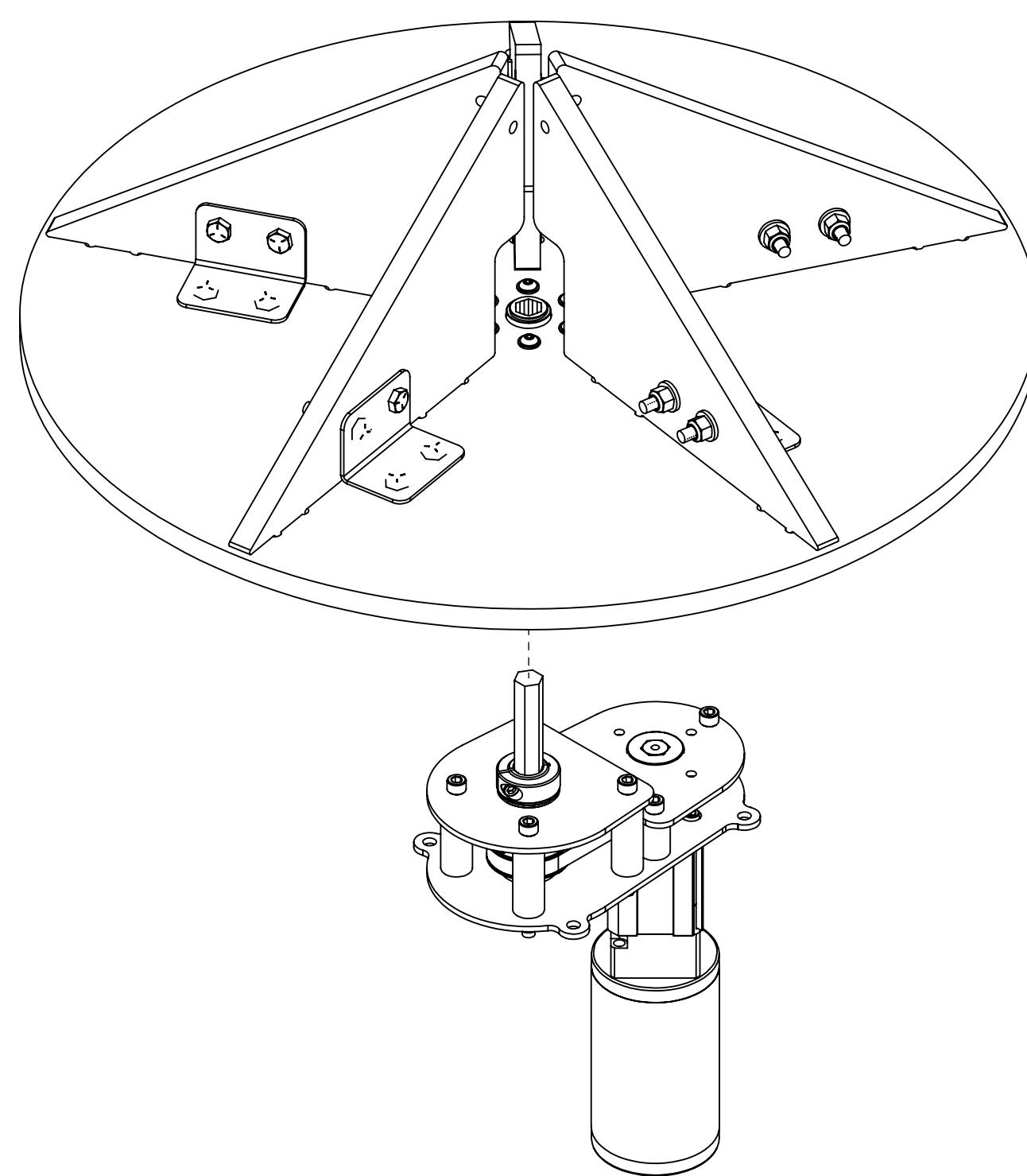
SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Upper Hub
Vision Angle**

SIZE DWG. NO. REV

C GE-22422

SCALE: 2:1 SHEET 1 OF 1



Notes:
1. Mount (1) on the exposed hex shaft of (2).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22433	Low Agitator Wheel Assembly	1
2	GE-22450	Low Agitator Drive Assembly	1

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DIMENSIONS ARE IN INCHES	DRAWN	CO	12/16/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION Modeling Solutions Partner

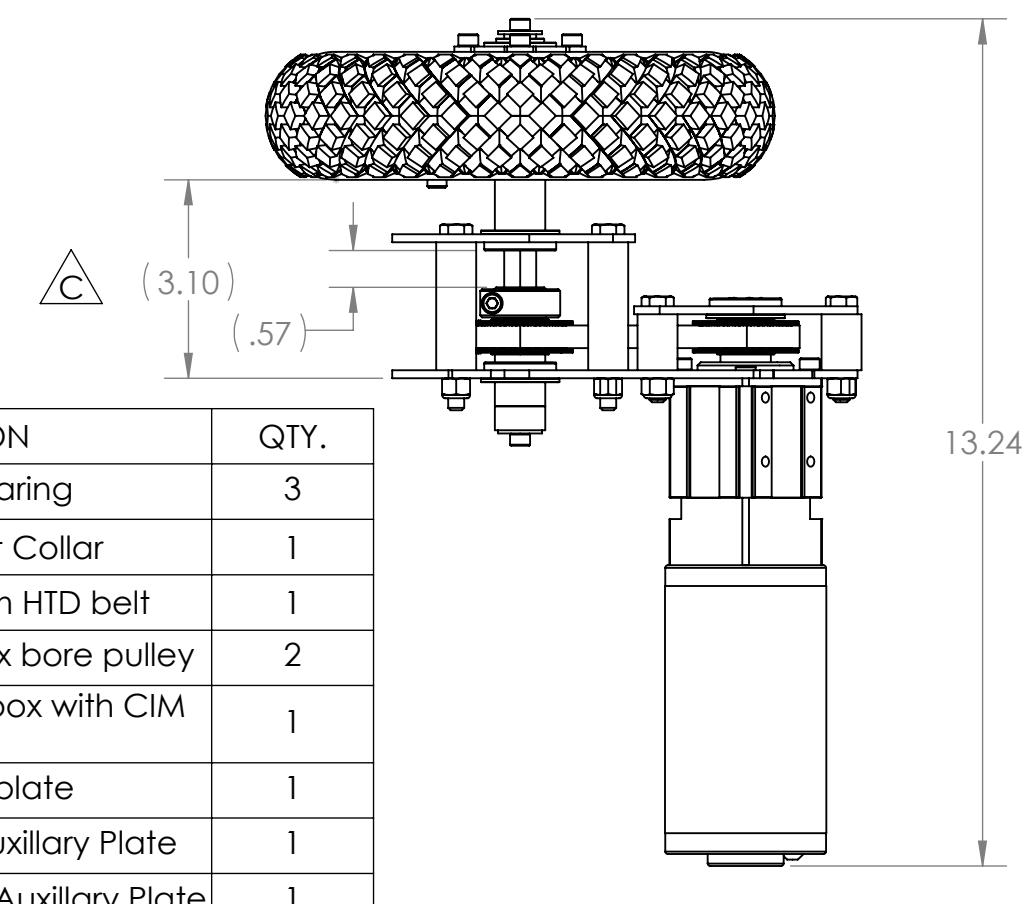
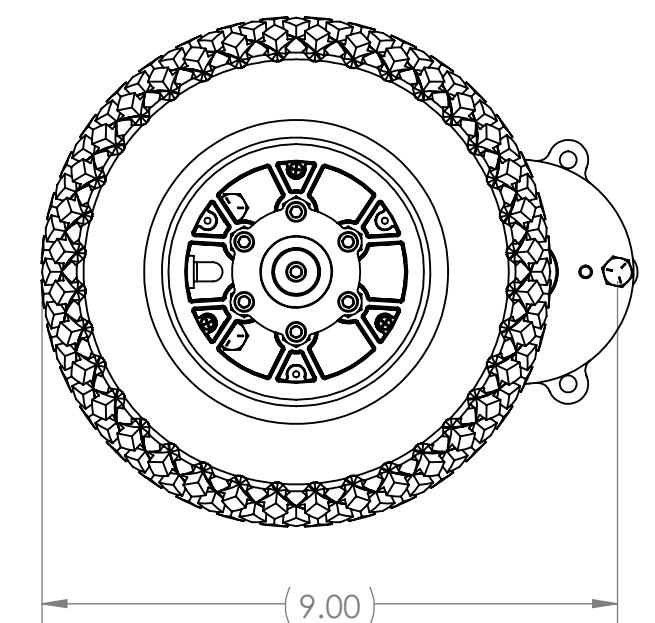
TITLE: Low Agitator Assembly

SIZE DWG. NO. REV

C GE-22431

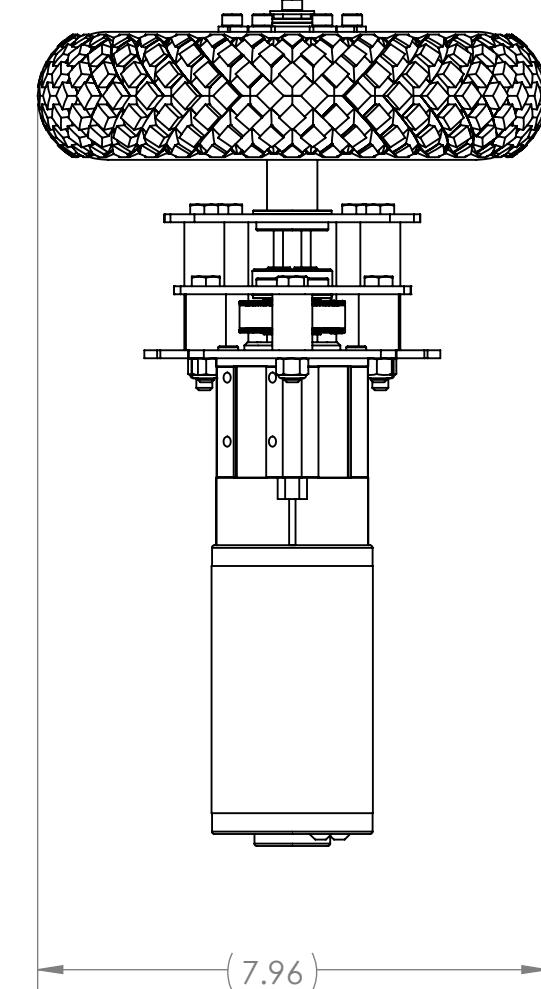
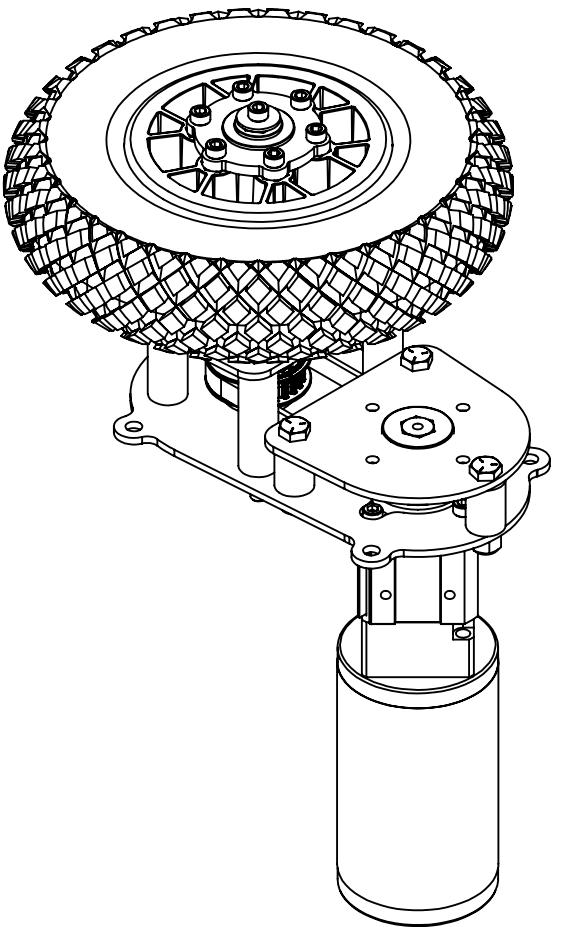
SCALE: 1:3 SHEET 1 OF 1

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22437	1/2 in. Hex Bearing	3
2	GE-22438	1/2 in. Hex Shaft Collar	1
3	GE-22439	60t 9mm wide 5mm HTD belt	1
4	GE-22440	24 tooth 5mm HTD hex bore pulley	2
5	GE-22441-012	12:1 CIM Sport Gearbox with CIM Motor	1
6	GE-22442	Agitator Baseplate	1
7	GE-22443	Agitator Gearbox Auxiliary Plate	1
8	GE-22444	Agitator Output Shaft Auxiliary Plate	1
9	GE-22445-125	1/2 in. hex molded spacer, 1/8 in. long	2
10	GE-22445-1000	1/2 in. hex molded spacer, 1 in. long	2
11	GE-22447	High Agitator Wheel with Hub	1
12	GE-22448	High Agitator Drive Hex Shaft	1
13	hex_.25_20_1.5_partial	Steel Hex Head Screw, 1/4"-20 x 1-1/2" long, partially threaded	3
14	hex_.25_20_2.75_partial	Steel Hex Head Screw, 1/4"-20 x 2-3/4" long, partially threaded	4
15	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	7
16	socket_hex_10_32_.5_nylon	Socket Head Screw, 10-32 x 0.5" long, with nylon patch	4
17	spacer_.252_.625_.875	Spacer, .252 ID, .625 OD, .875 long	3
18	spacer_.255_.625_2	Spacer, .252 ID, .625 OD, 2 long	4
19	washer_flat_10_oversized	Oversized flat Washer for #10 Screw	2
20	GE-22445-375	1/2 in. hex molded spacer, 3/8 in. long	2

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-D4, 3-D4	A	Added notes for use of glue on pulleys. Updates made to geometry of GE-22442, GE-22443, GE-22444	8/17/2021	CPO
A3	B	Two fasteners changed from hex head to socket head bolts.	10/27/2021	CPO
A3, B3, 3-A4	C	Changed fasteners back to hex head. Changed length of bolts and spacers to reduce wheel height. Spacers added to capture extra hex shaft. Assembly instructions modified to include new spacers.	11/23/2021	CPO



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COMMENTS:			
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DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

TITLE: High Agitator Assembly

SIZE DWG. NO. **REV**

C GE-22432 **C**

SCALE: 1:3 **SHEET 1 OF 4**

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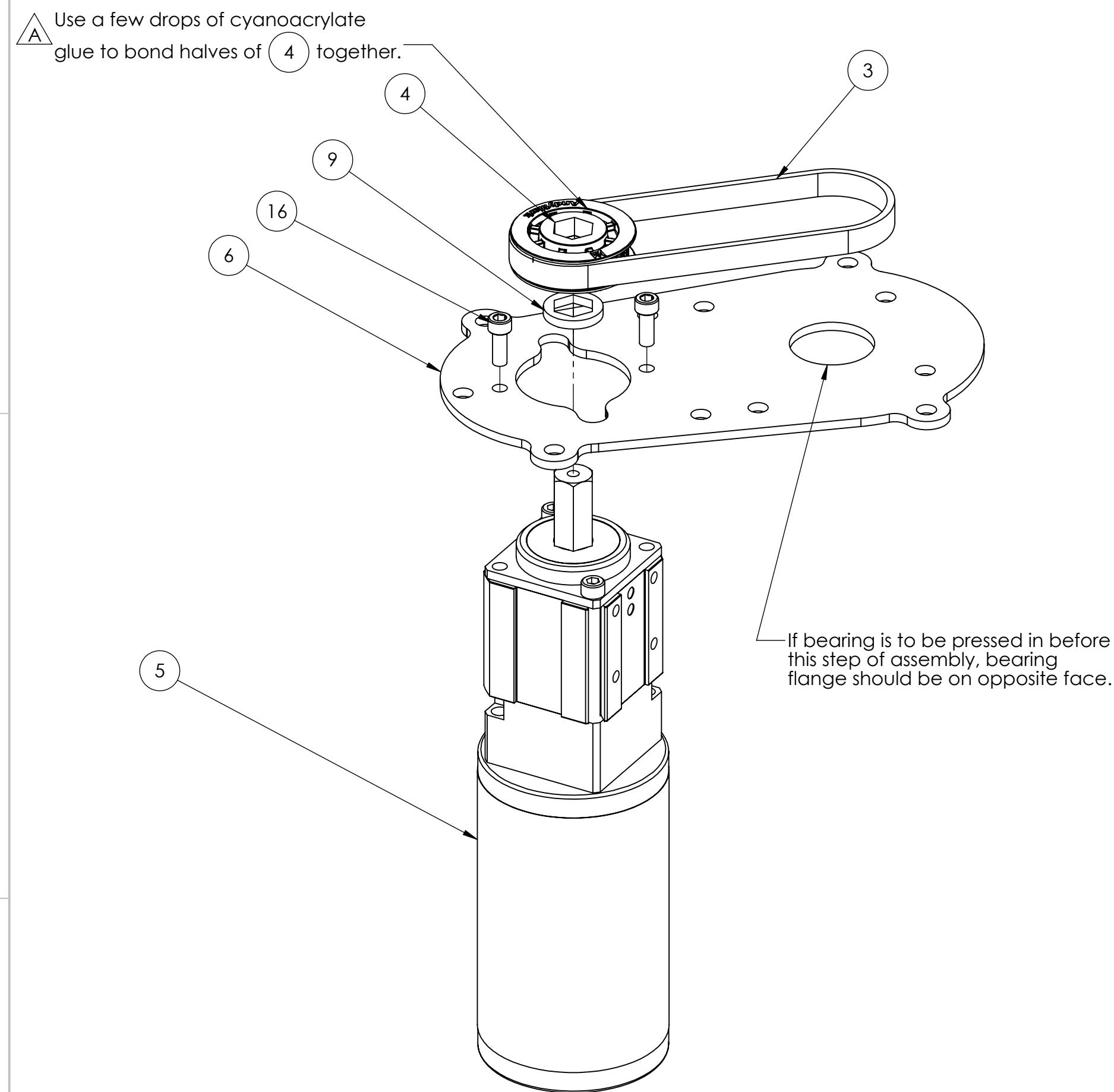
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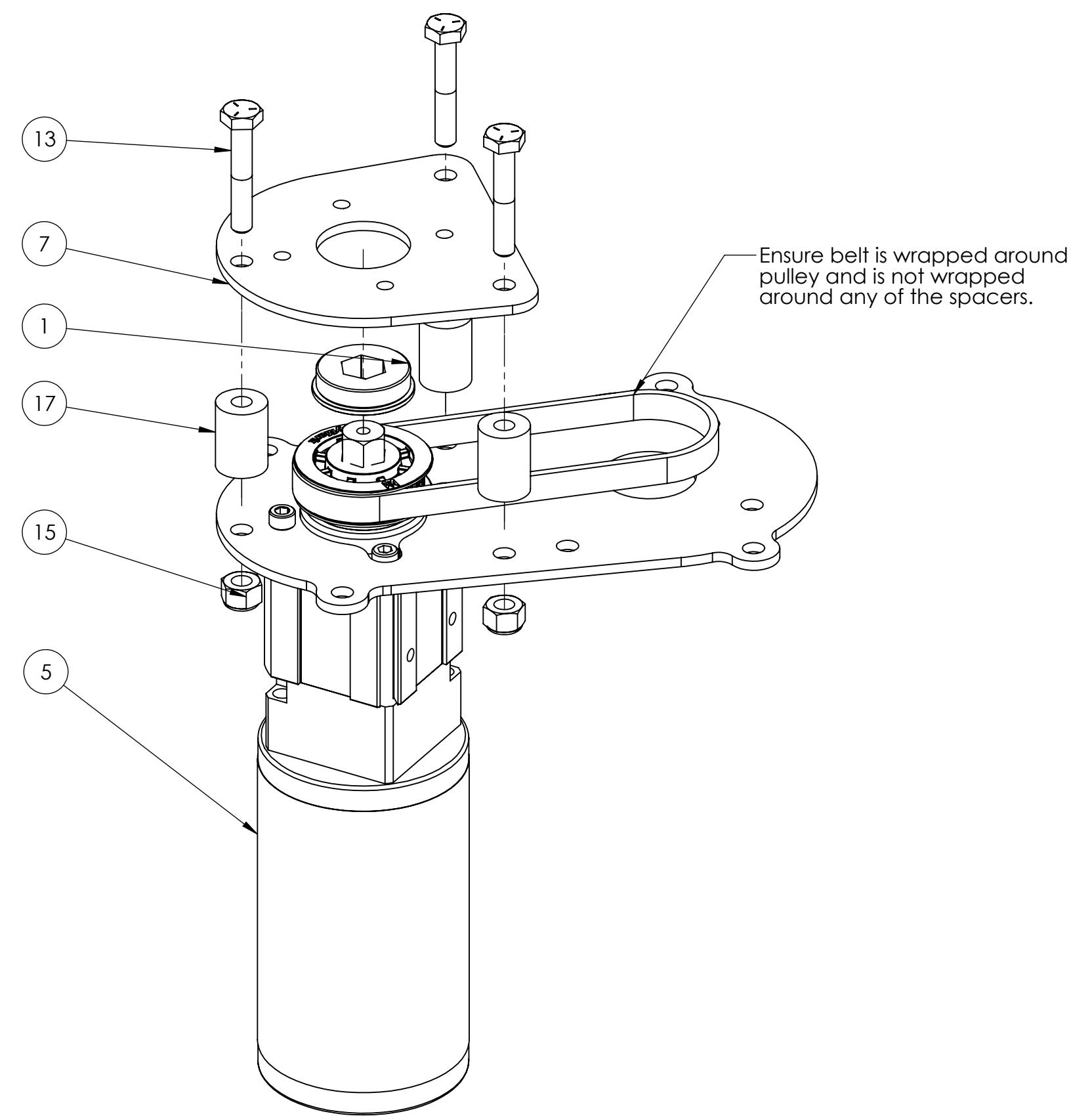
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Notes:

1. Attach (5) to (6) using (16).
2. Slide (9) and (4) in order onto the shaft of (5).
3. Place (3) on (4).



Notes:

1. Insert or press (1) into (7).
2. Slide (1) (7) onto the shaft of (5), noting flange orientation.
3. Attach (1) (7) to the assembly using (17) to space the plates and (13) and (15) to fasten. Be careful of belt routing.

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DRAWN	CO	6/25/2021	
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
	C	GE-22432	C
DO NOT SCALE DRAWING		SCALE: 2:3	SHEET 2 OF 4

FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

High Agitator Assembly

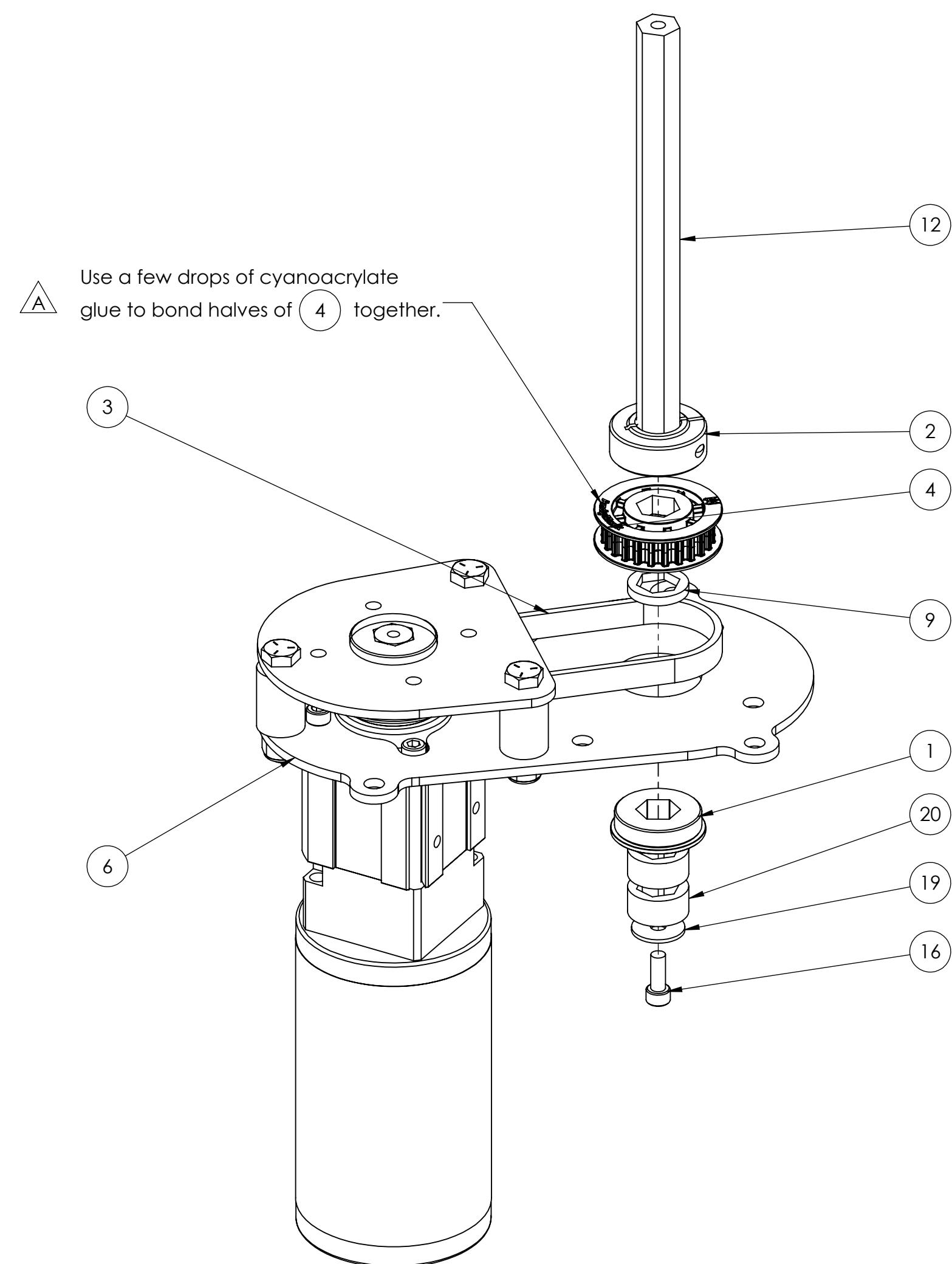
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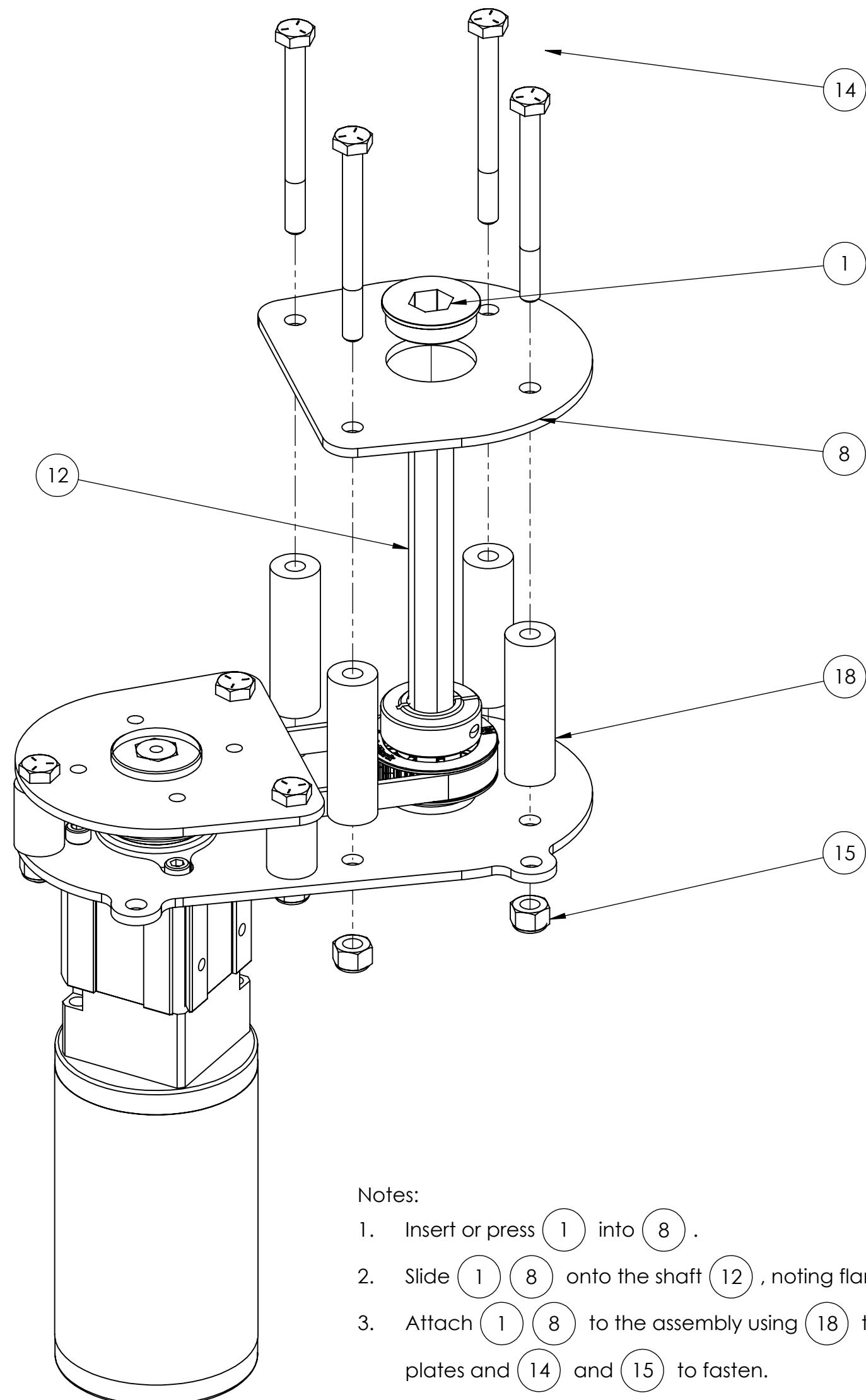
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Notes:

1. If not already done, press or insert 1 into 6, noting flange orientation.
2. Slide items 2, 4, and 9 onto 12, being careful of order.
3. Slide shaft into place, aligning 3 onto 4, then aligning 12 with 1.
4. Slide 20 (qty 2) onto 12.
5. Attach 16 and 19 to 12. 19 must be large enough diameter to prevent shaft being pulled past spacer.
6. With 20 flush to each other and 1, 12 flush to the bottom of 20, and 2 4 9 all flush to each other and 1, tighten set screw on 2.



Notes:

1. Insert or press 1 into 8.
2. Slide 1 8 onto the shaft 12, noting flange orientation.
3. Attach 1 8 to the assembly using 18 to space the plates and 14 and 15 to fasten.

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			DRAWN	CO	6/25/2021
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MATERIAL/FINISH:					
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING					

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

TITLE:
**High Agitator
Assembly**

SIZE DWG. NO. REV
C GE-22432 C

SCALE: 2:3 SHEET 3 OF 4

4

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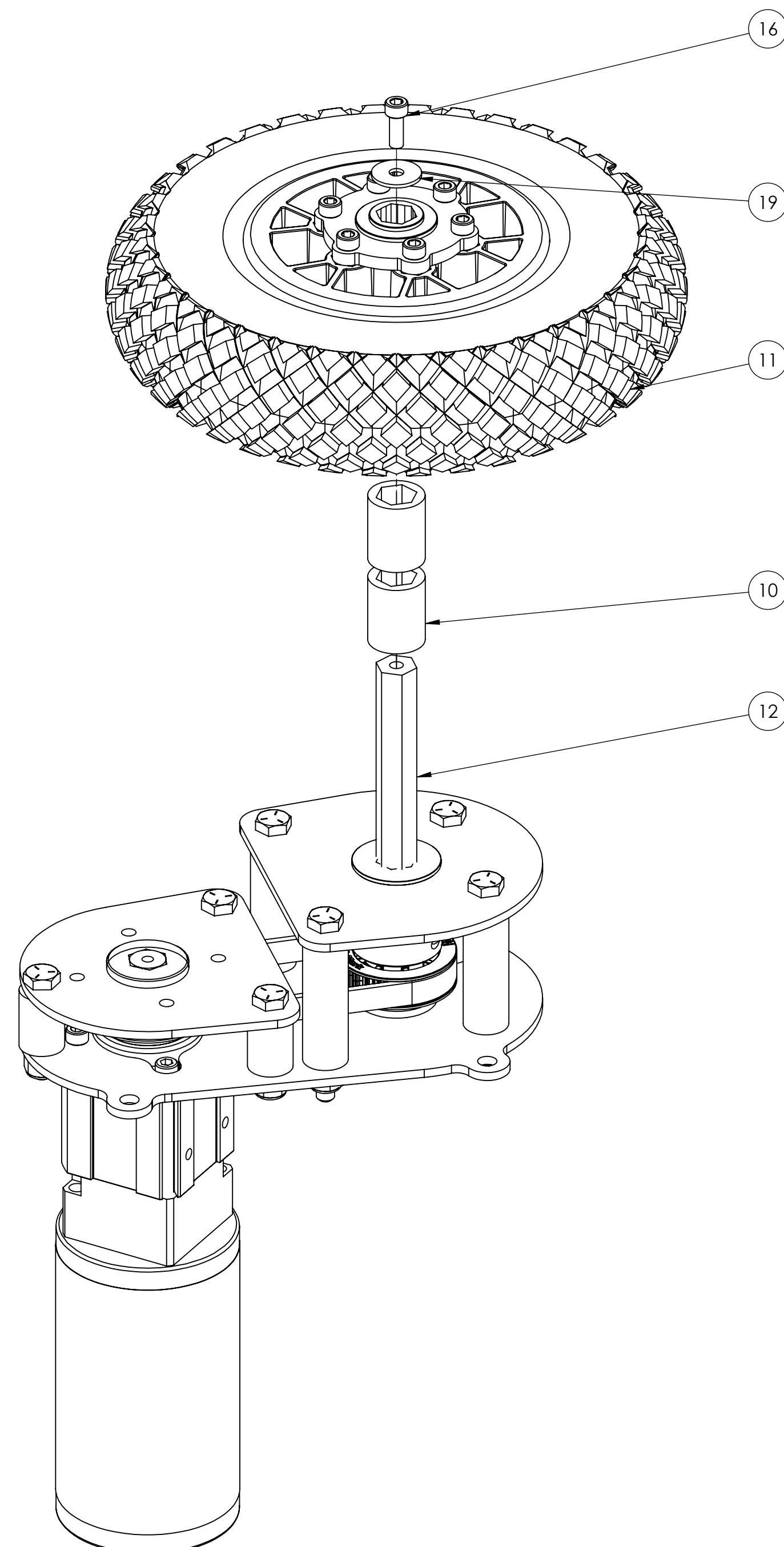
C

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**Notes:**

1. Slide (10) x 2 onto (12).
2. Slide (11) onto (12), noting wheel orientation.
3. Fasten using (19) and (16). (19) must be large enough diameter to prevent shaft being pulled past hub.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/25/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
	C	GE-22432	C
DO NOT SCALE DRAWING		SCALE: 2:3	SHEET 4 OF 4

 **FIRST
ROBOTICS
COMPETITION**  Modeling Solutions Partner

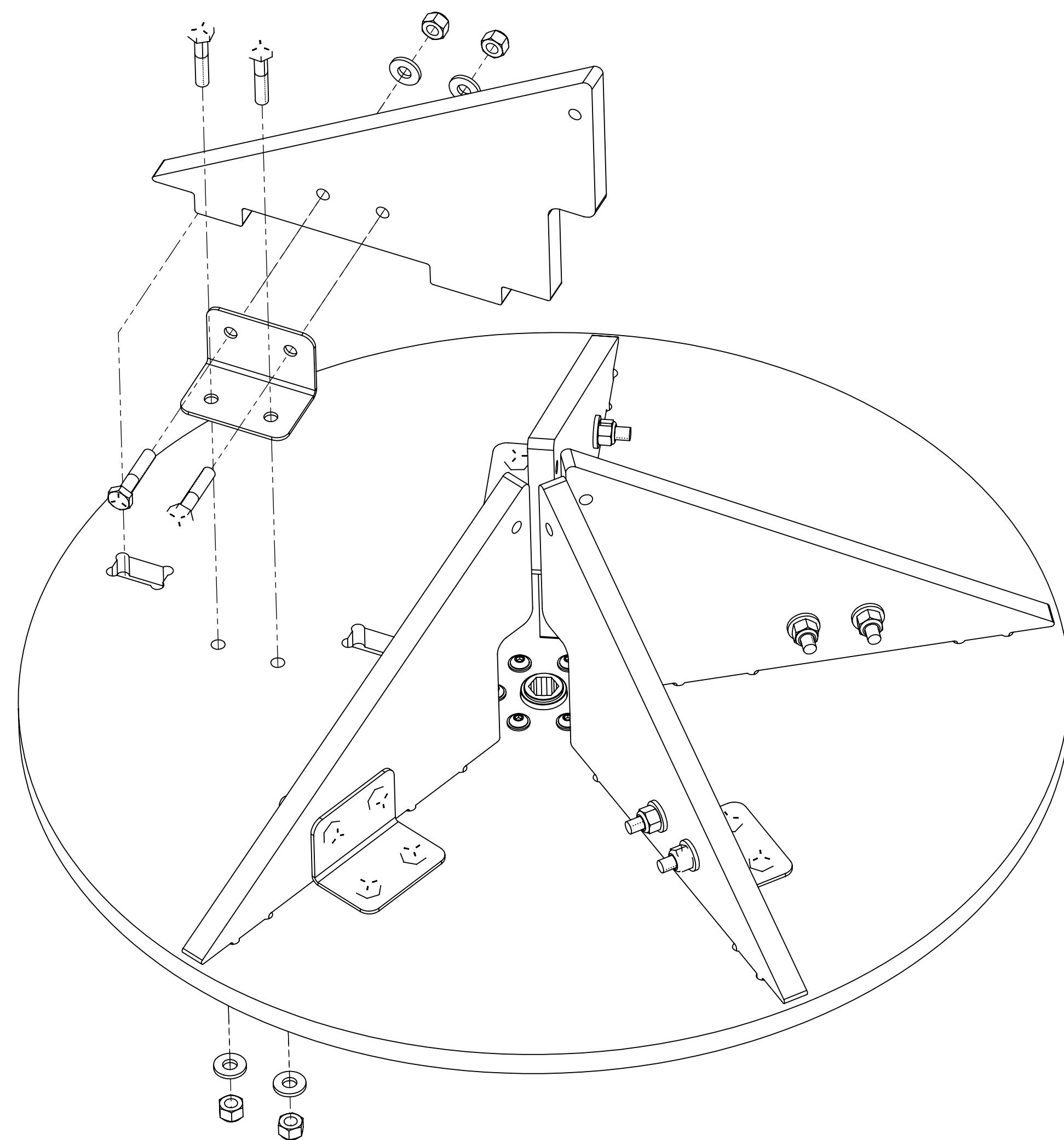
TITLE:
**High Agitator
Assembly**

4

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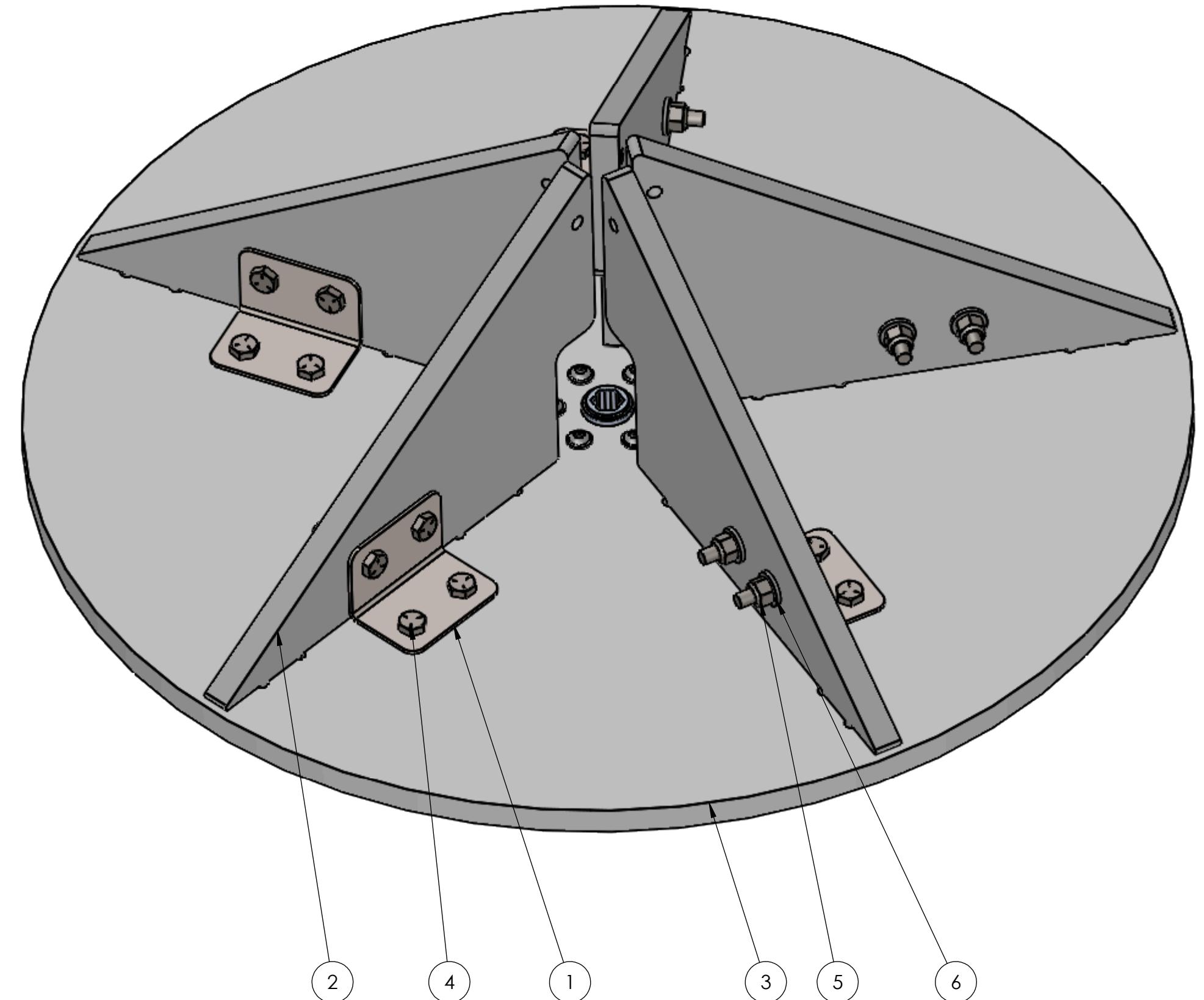
1



Notes:

1. Attach (2) to (1) using (4), (5), and (6).
2. Attach the previous step to (3) using (4), (5), and (6). Tabs on (2) should insert into slots in (3).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22301	Hub Angle Bucket	5
2	GE-22435	Low Agitator Triangle	5
3	GE-22451	Low Agitator Wheel Base Assembly	1
4	hex_.25_20_1.25_partial	Steel Hex Head Bolt, 1/4-20 x 1.25", partially threaded	20
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	20
6	washer_flat_.25	Flat Washer for 1/4" Screw	20



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	12/29/2021	 
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	Tag or label with part number		
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING		SCALE: 1:2	SHEET 1 OF 1

TITLE: Low Agitator Wheel Assembly

SIZE DWG. NO. REV

C GE-22433

4

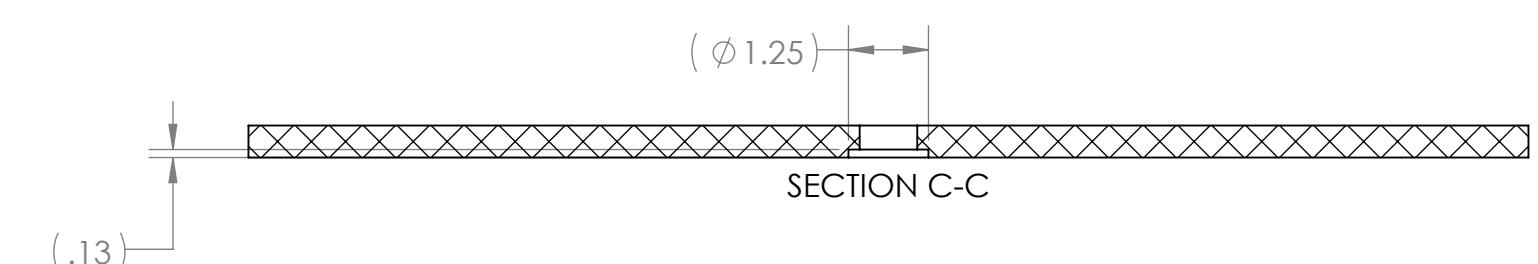
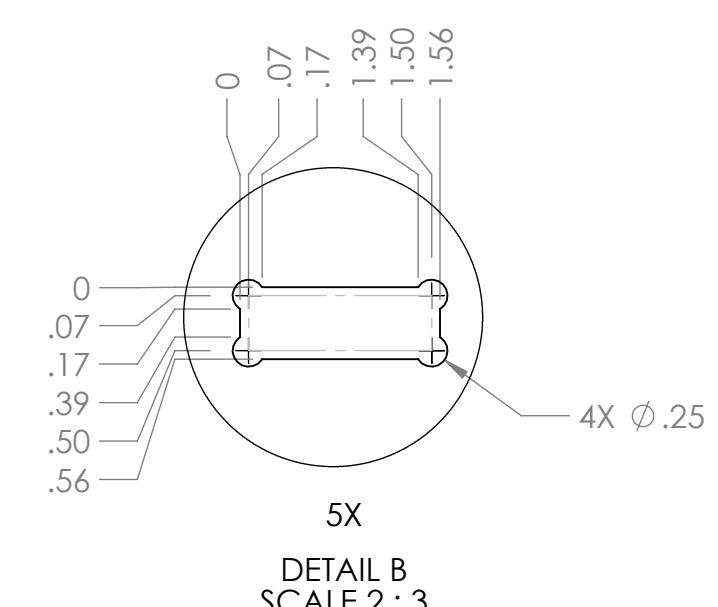
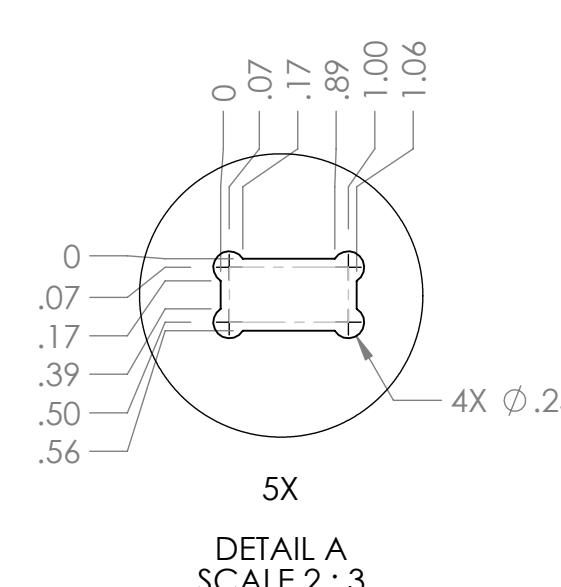
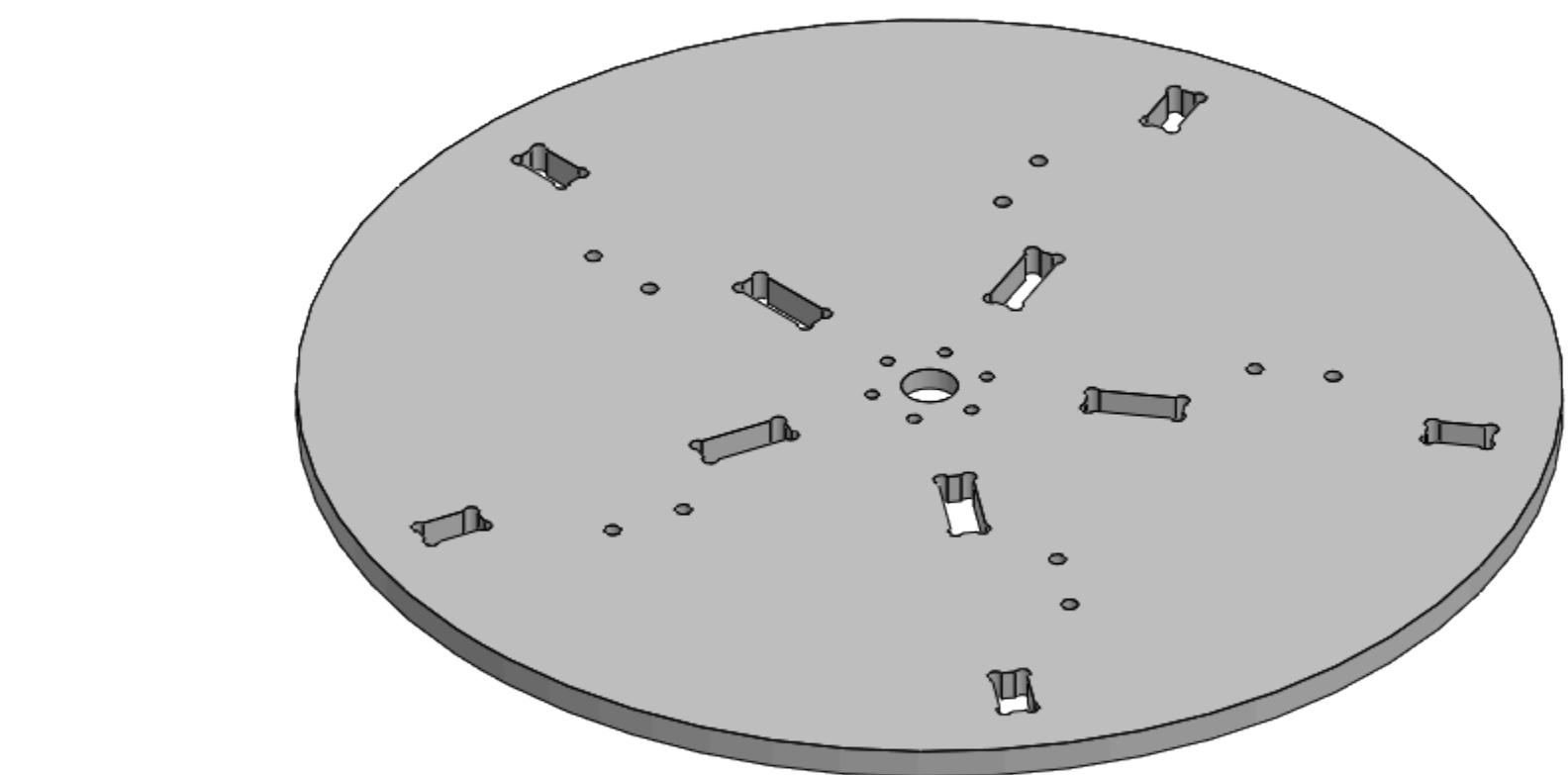
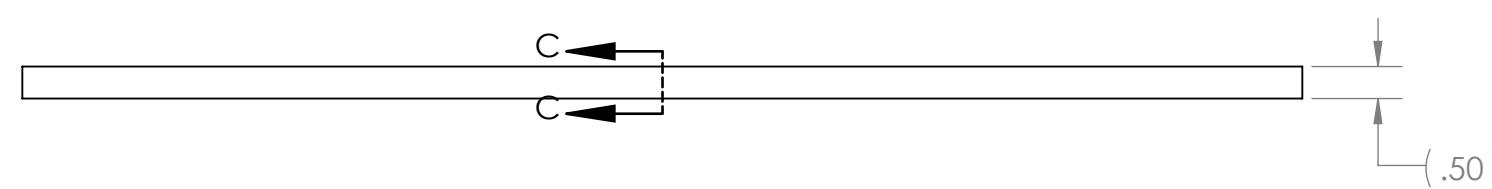
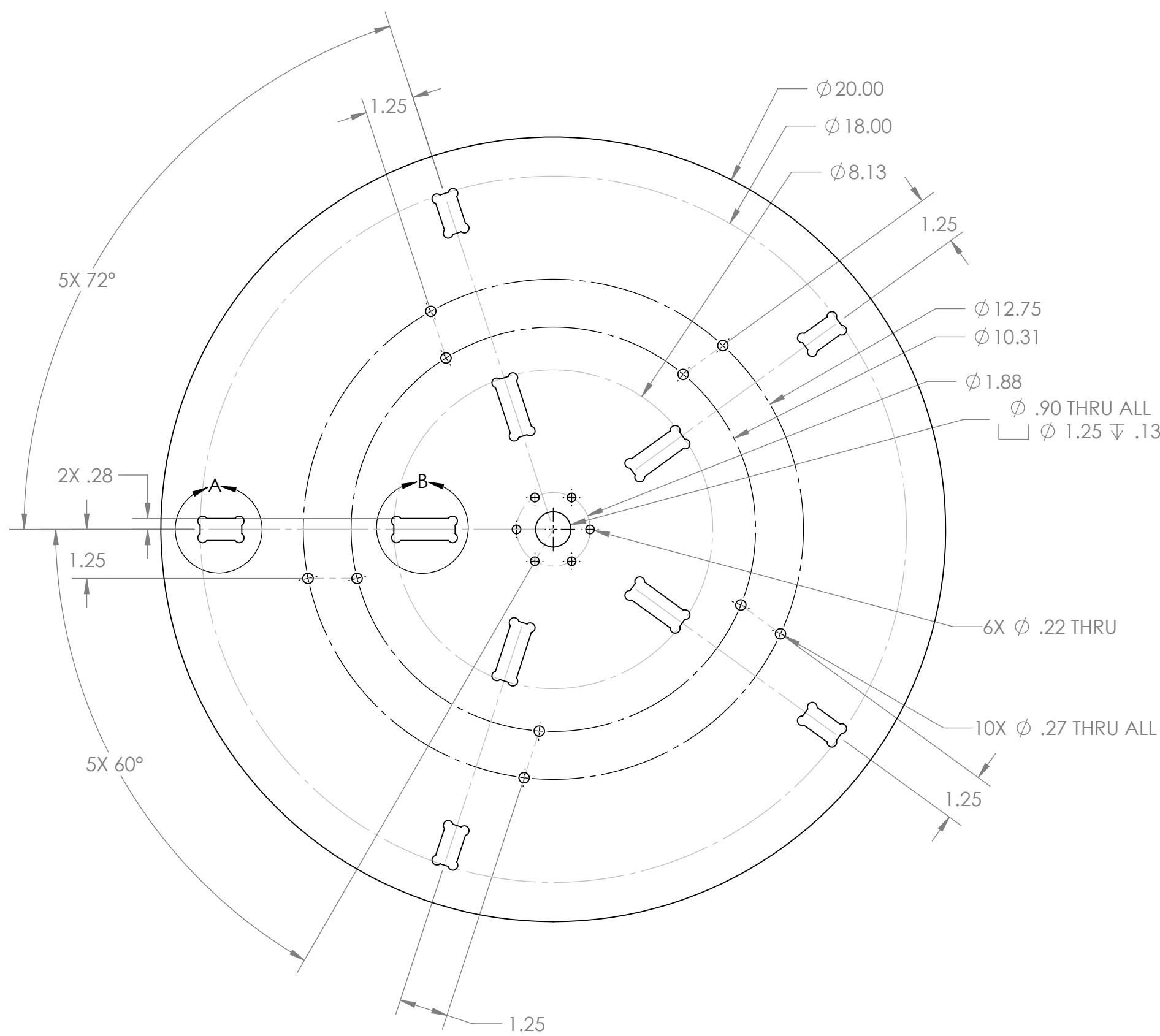
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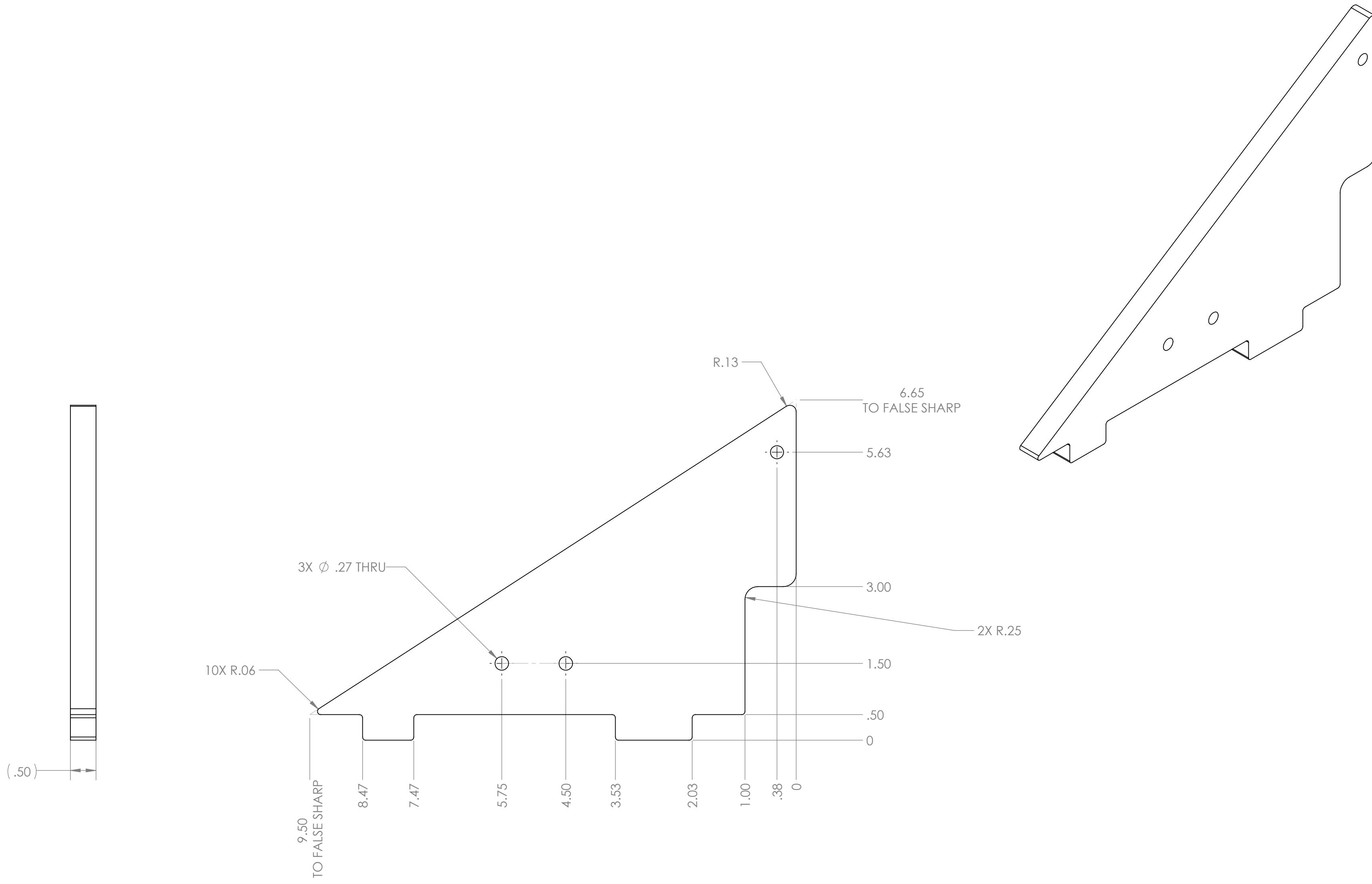
UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE
		DRAWN	KAMC	5/13/2021
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$		TITLE: Low Agitator Wheel Base  FIRST ROBOTICS COMPETITION  SOLIDWORKS <small>Modeling Solutions Partner</small>		
MATERIAL/FINISH: 1/2" HDPE, Natural. Tag or label with part number.		SIZE	DWG. NO.	REV
		C	GE-22434	
DO NOT SCALE DRAWING		SCALE: 1:3	SHEET 1 OF 1	

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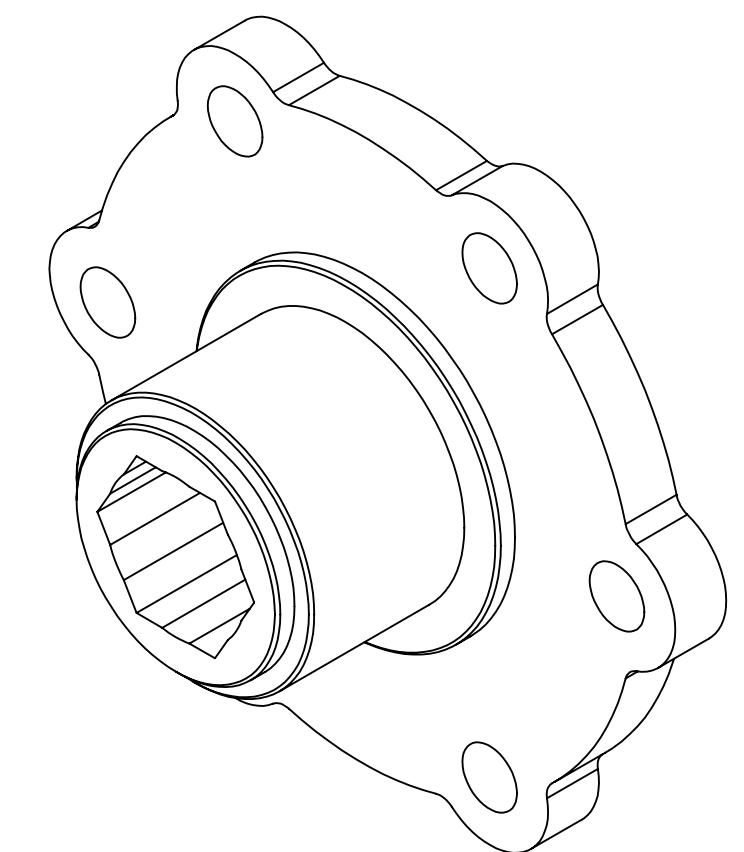
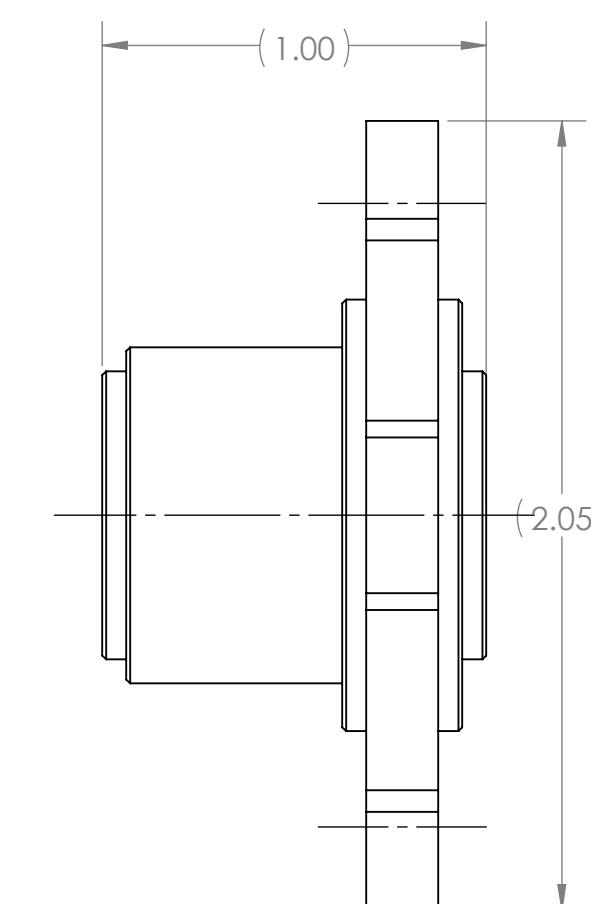
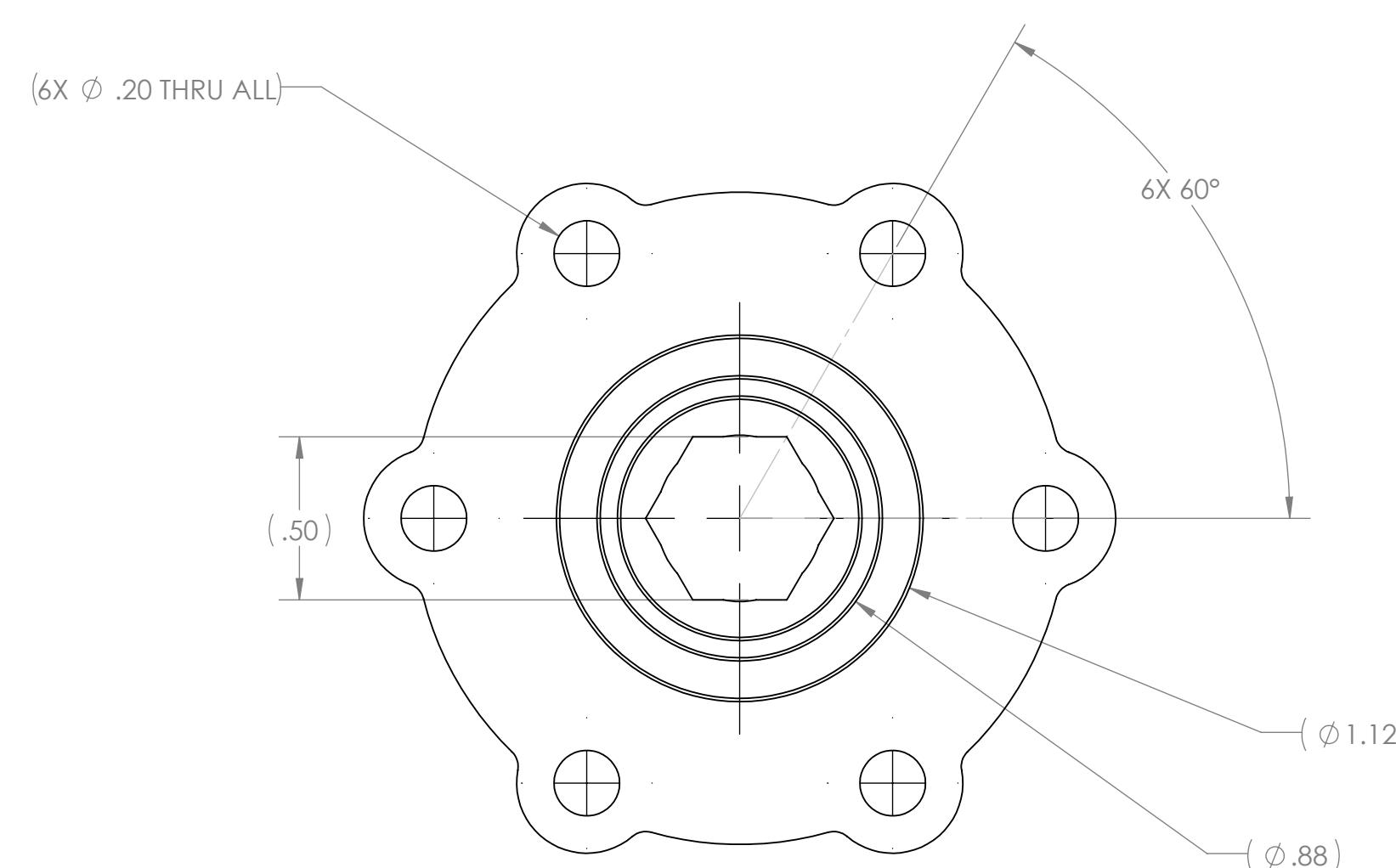
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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	VEND	NAME	DATE	 FIRST ROBOTICS COMPETITION	TITLE: <h1>Low Agitator Triangle</h1>
	DRAWN	KAMC	6/16/2021		
MATERIAL/FINISH: 1/2" HDPE, Natural, tag or label with part number	PROPRIETARY AND CONFIDENTIAL		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
DO NOT SCALE DRAWING	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
				REV	
	C GE-22435				
	SCALE: 2:3			SHEET 1 OF 1	

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Description: Hex Hub
Vendor: AndyMark
Part Number: am-4124

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	KAMC	6/21/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**AndyMark 1/2
in. Hex Hub**

SIZE DWG. NO. REV
C GE-22436

SCALE: 2:1 SHEET 1 OF 1

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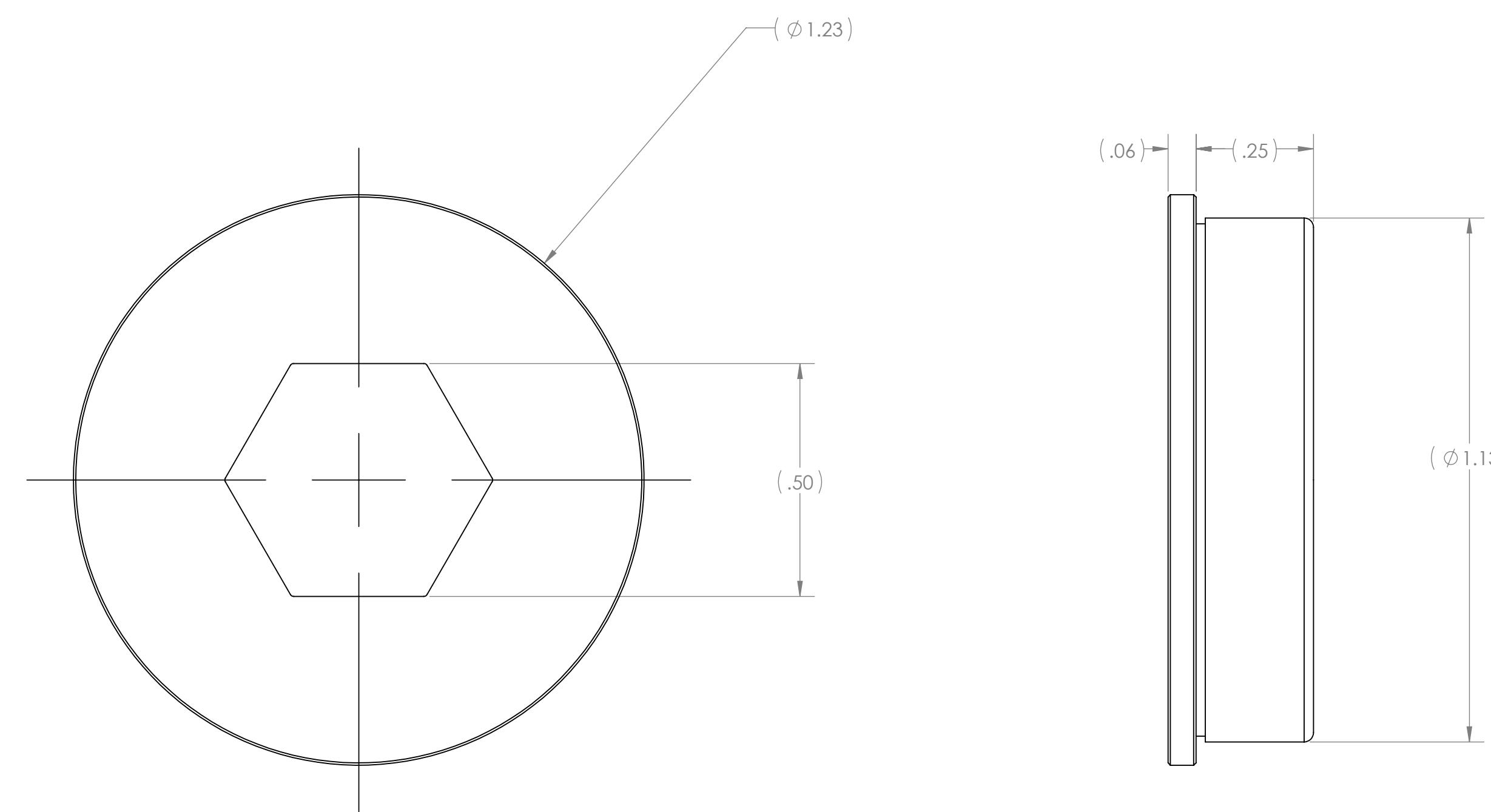
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**Notes:**

1. Description: 1/2 in. flanged hex bearing
2. Source: AndyMark
3. Item #: am-2986
4. Equivalent substitutions allowed

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	VEND	NAME	DATE
	DRAWN	CO	6/22/2021
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SIZE	DWG. NO.	REV
C	GE-22437		
SCALE: 4:1	SHEET 1 OF 1		

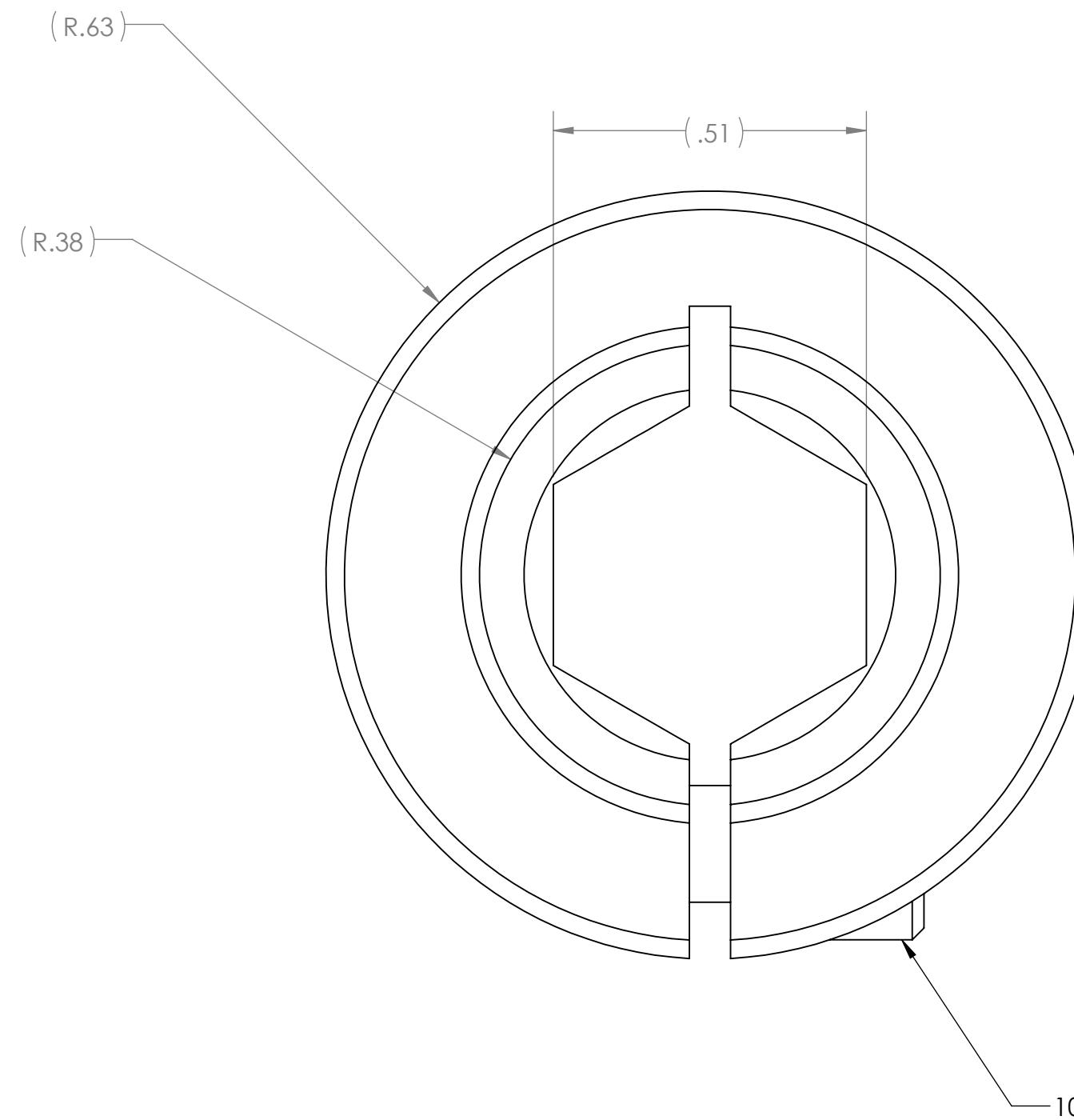
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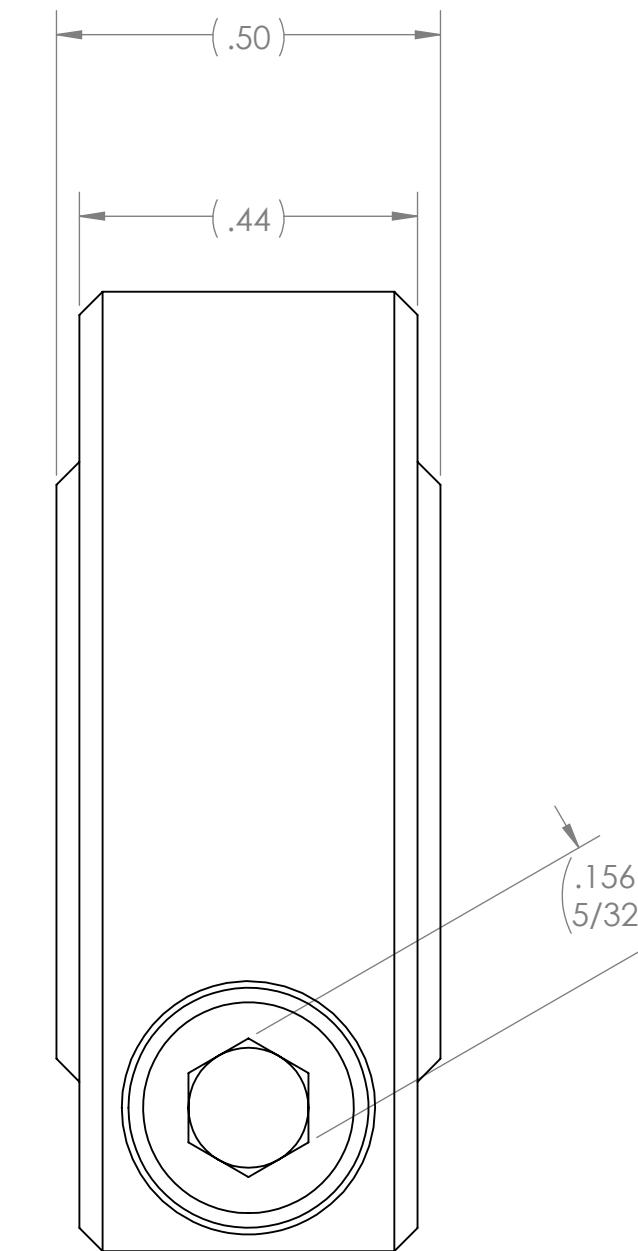
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- Notes:
1. Description: 1/2 in. Hex HD Split Collar Clamp
 2. Source: AndyMark
 3. Item #: am-1526
 4. Equivalent substitutions allowed

UNLESS OTHERWISE SPECIFIED:			VEND	NAME	DATE
DIMENSIONS ARE IN INCHES			DRAWN	CO	6/22/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$					
PROPRIETARY AND CONFIDENTIAL					
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COMMENTS:					
REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING					

FIRST
ROBOTICS
COMPETITION

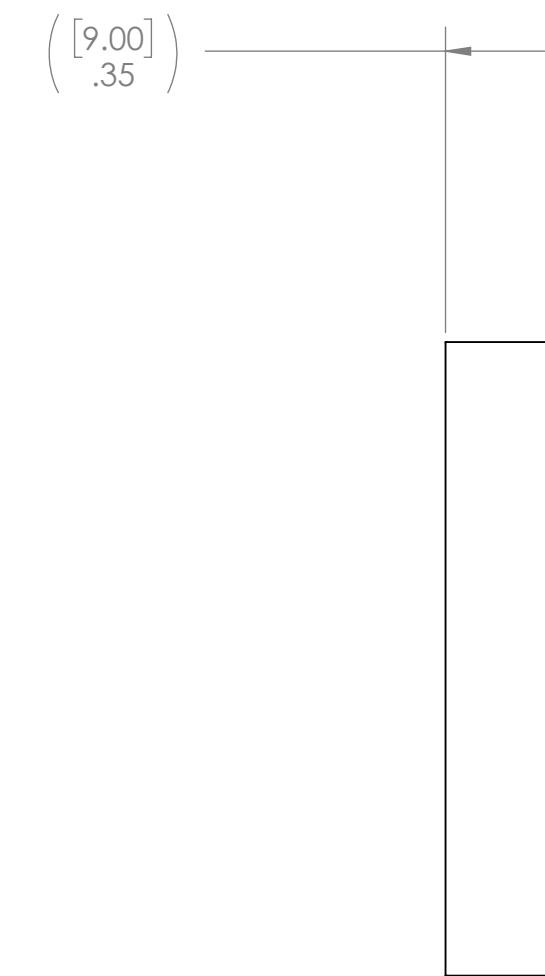
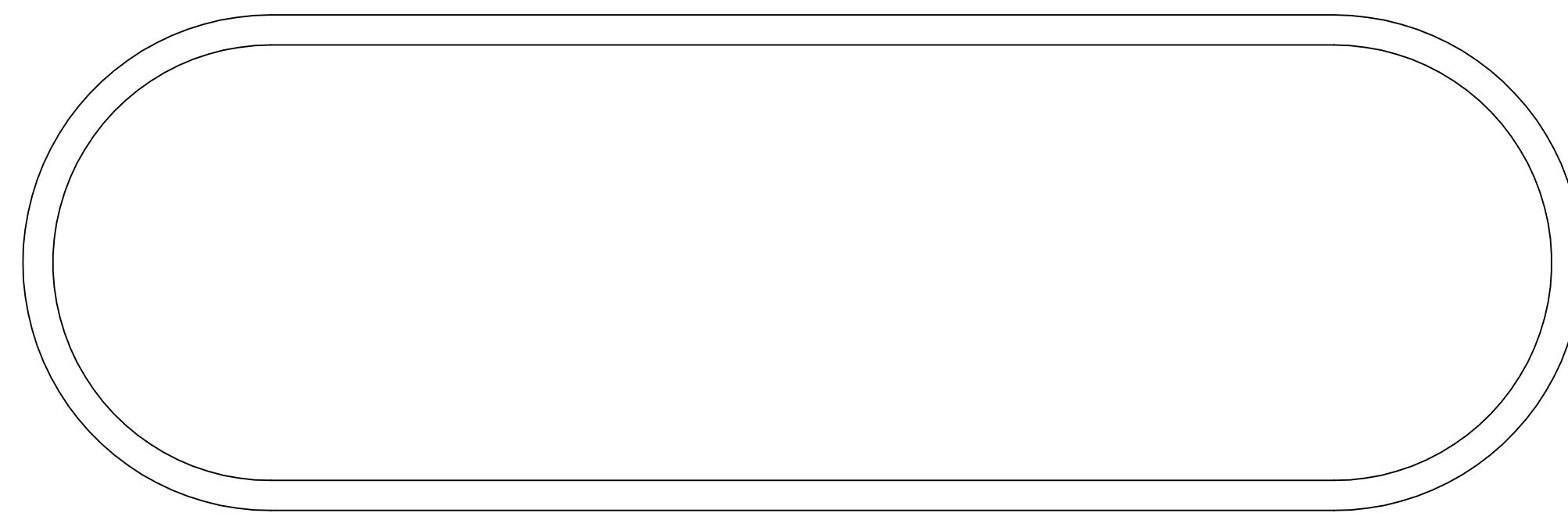
SOLIDWORKS
Modeling Solutions Partner

TITLE:
**1/2 in. Hex Shaft
Collar**

SIZE DWG. NO. REV
C GE-22438

SCALE: 4:1 SHEET 1 OF 1

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Notes:

1. Description: 60 tooth, 9mm wide, 300 mm long, 5mm HTD timing belt
2. Source: Gates
3. Item #: 300-5M-09
4. Equivalent substitutions allowed

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	6/22/2021
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
ROBOTICS
COMPETITION**  Modeling Solutions Partner

TITLE:
**60t 9mm wide
5mm HTD belt**

SIZE DWG. NO. REV

C GE-22439

SCALE: 2:1 SHEET 1 OF 1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	A	Added note about use of glue to fasten halves together.	8/17/2021	CPO

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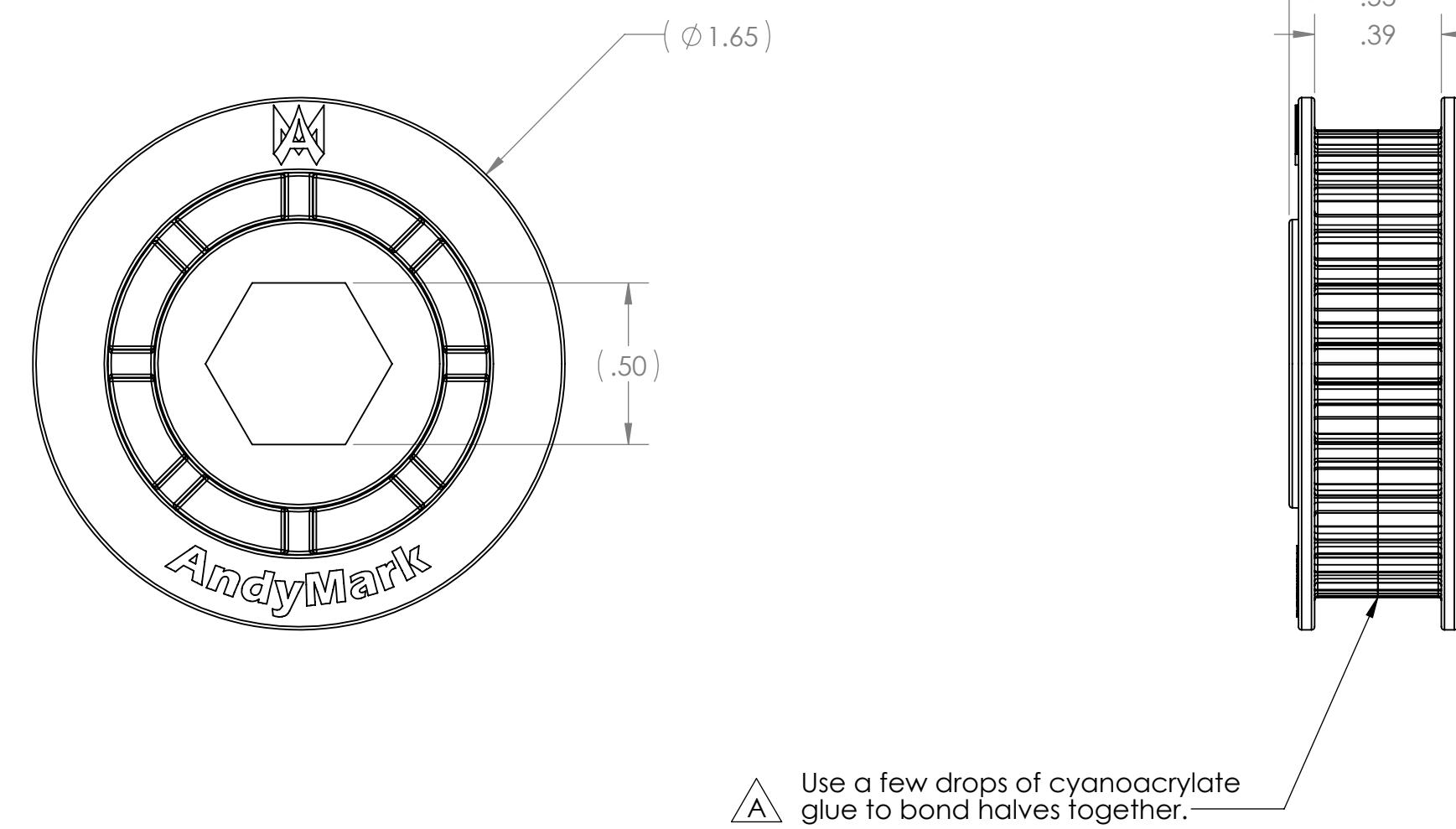
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- Notes:
1. Description: 24 tooth 0.5 in. Hex Bore 5mm HTD Pulley
 2. Source: AndyMark
 3. Item #: am-3403
 4. Equivalent substitutions allowed

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/22/2021	
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

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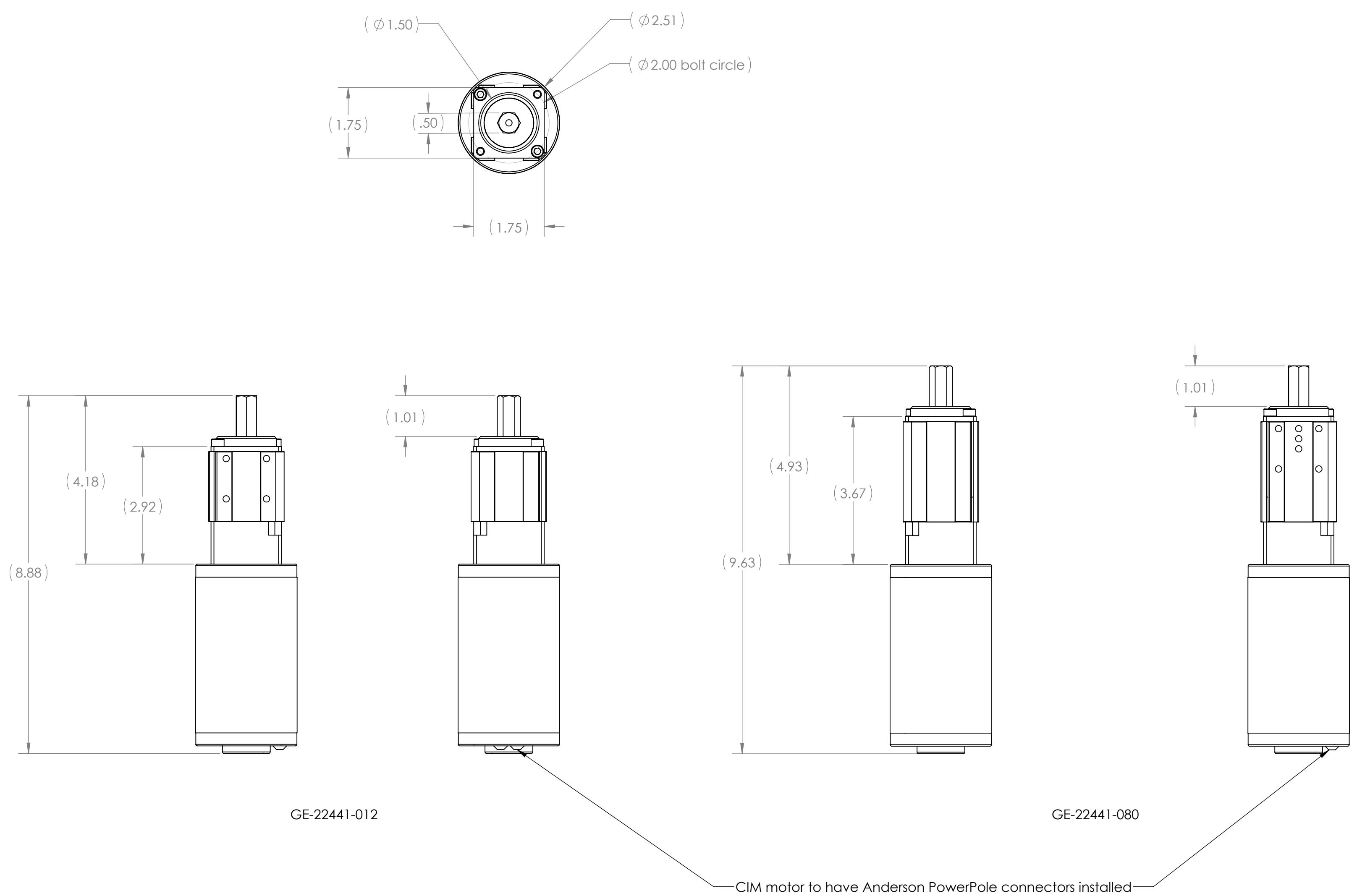
TITLE:
24 tooth 5mm HTD
hex bore pulley

SIZE DWG. NO. REV
C GE-22440 **A**

SCALE: 2:1 SHEET 1 OF 1

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- Notes:
- Fasteners should be installed with loctite or other threadlocker.
 - Source: AndyMark

Part Number	Description	Gearbox Manufacturer PN	Motor Manufacturer PN
GE-22441-012	12:1 CIM Sport Gearbox with CIM Motor	am-4007_012	am-0255_16T
GE-22441-080	80:1 CIM Sport Gearbox with CIM Motor	am-4008_080	am-0255_16T

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/24/2021	
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS:			
REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION Modeling Solutions Partner

TITLE: AndyMark CIM Sport with CIM Motor

SIZE DWG. NO. REV

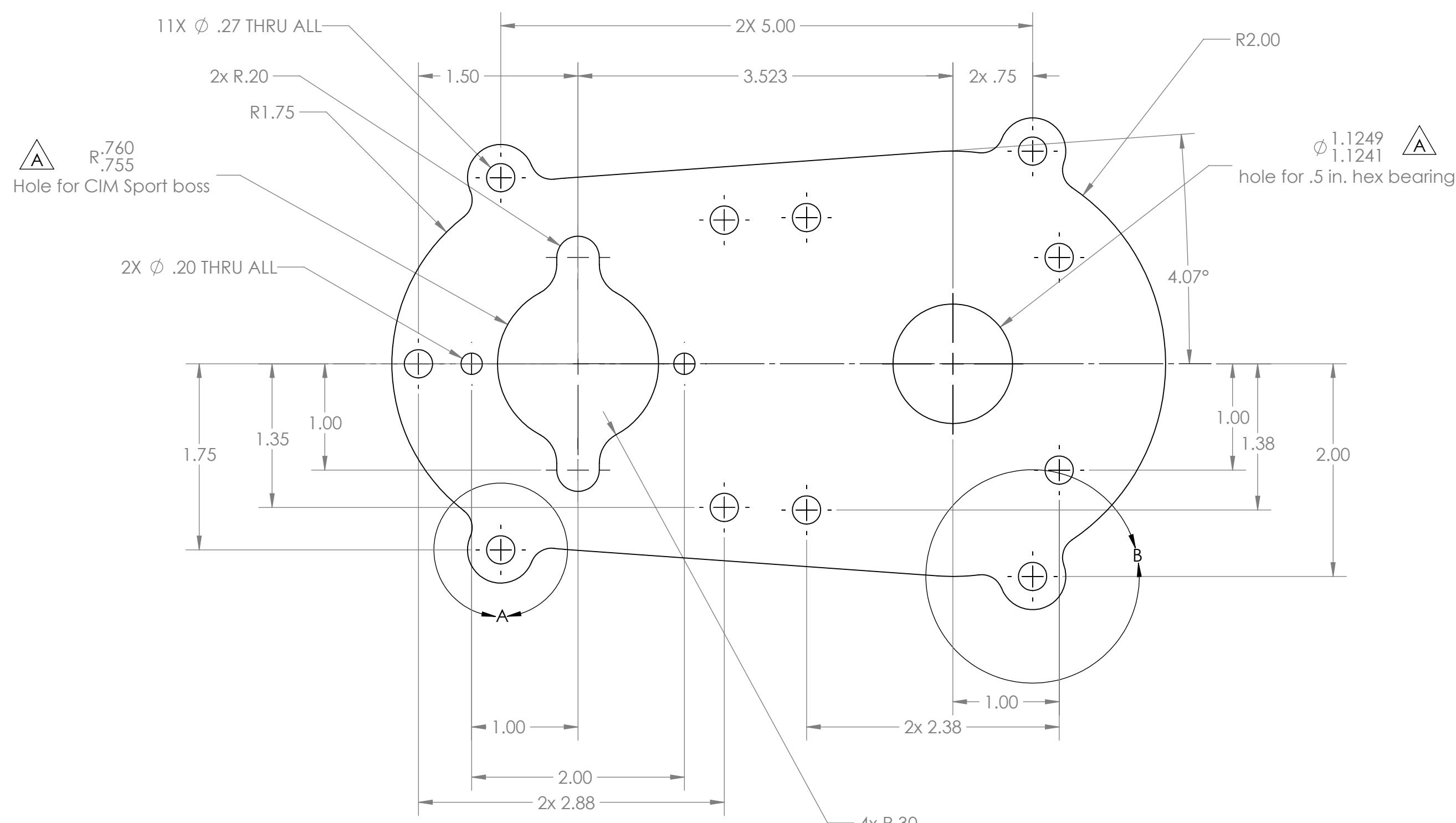
C GE-22441

SCALE: 1:2 SHEET 1 OF 1

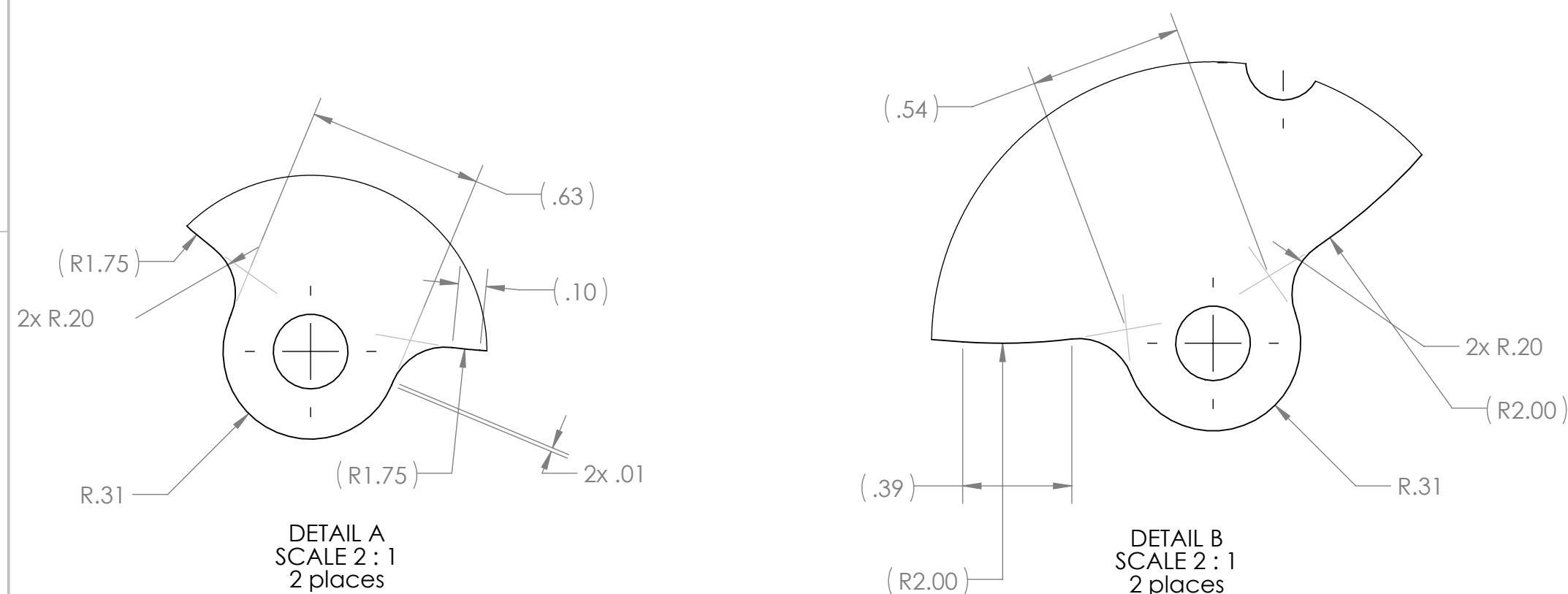
REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
D2, D4	A	Adjusted hole size and tolerance for bearing and gearbox cutouts.	8/17/2021	CPO

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UNLESS OTHERWISE SPECIFIED:

VEND	NAME	DATE
DRAWN	CO	6/22/2021

PROPRIETARY AND CONFIDENTIAL

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
1/8 thk. 5052 Aluminum Sheet

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING



TITLE:

Agitator
Baseplate

SIZE DWG. NO. REV

C GE-22442 A

SCALE: 1:1 SHEET 1 OF 1

4

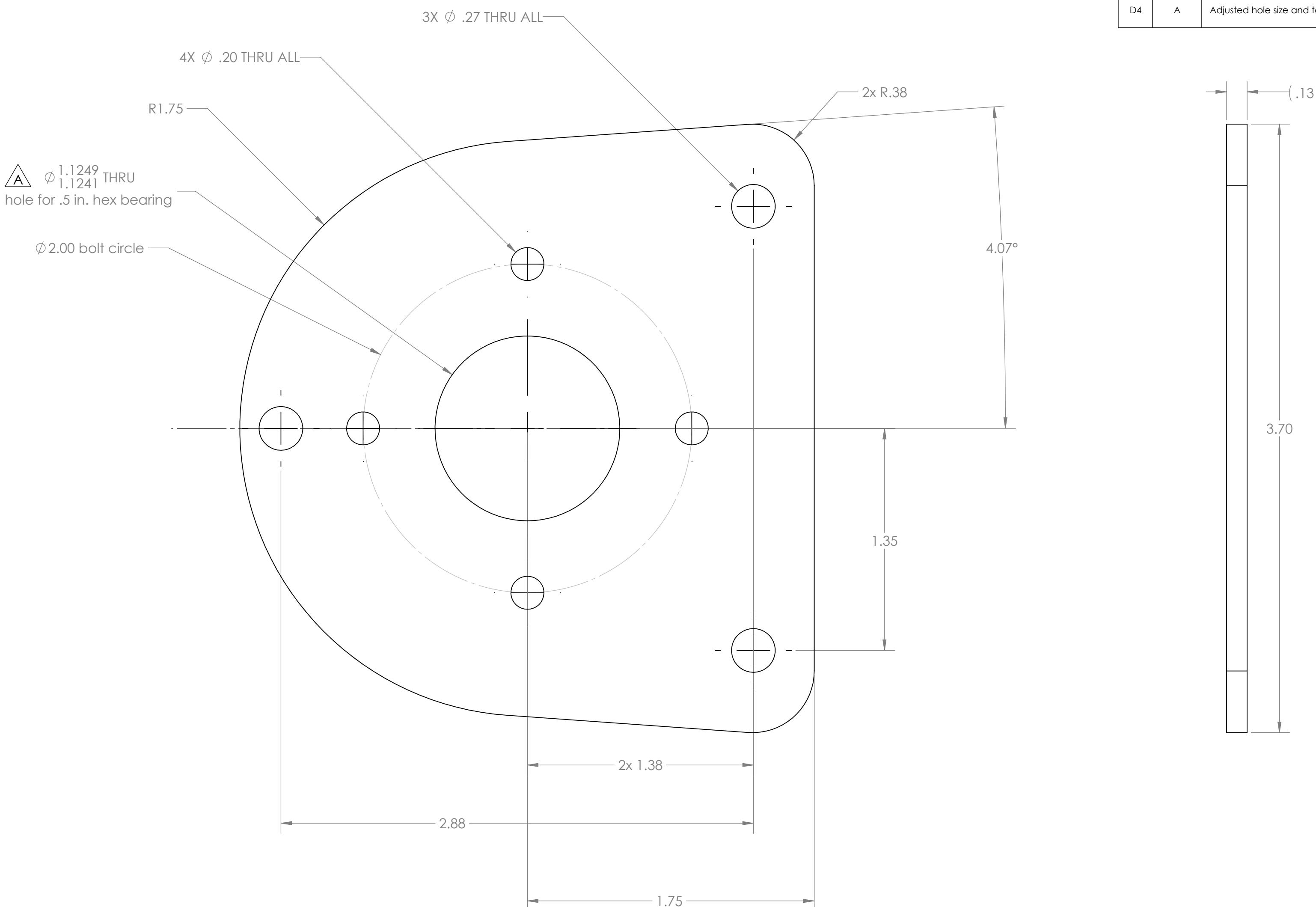
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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
1/8 thk. 5052 Aluminum Sheet

DO NOT SCALE DRAWING

VEND NAME DATE
DRAWN CO 6/23/2021

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COMMENTS:
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FIRST[®] ROBOTICS COMPETITION DS SOLIDWORKS Modeling Solutions Partner

TITLE:
Agitator Gearbox Auxillary Plate

SIZE DWG. NO. REV
C GE-22443 A

SCALE: 2:1 SHEET 1 OF 1

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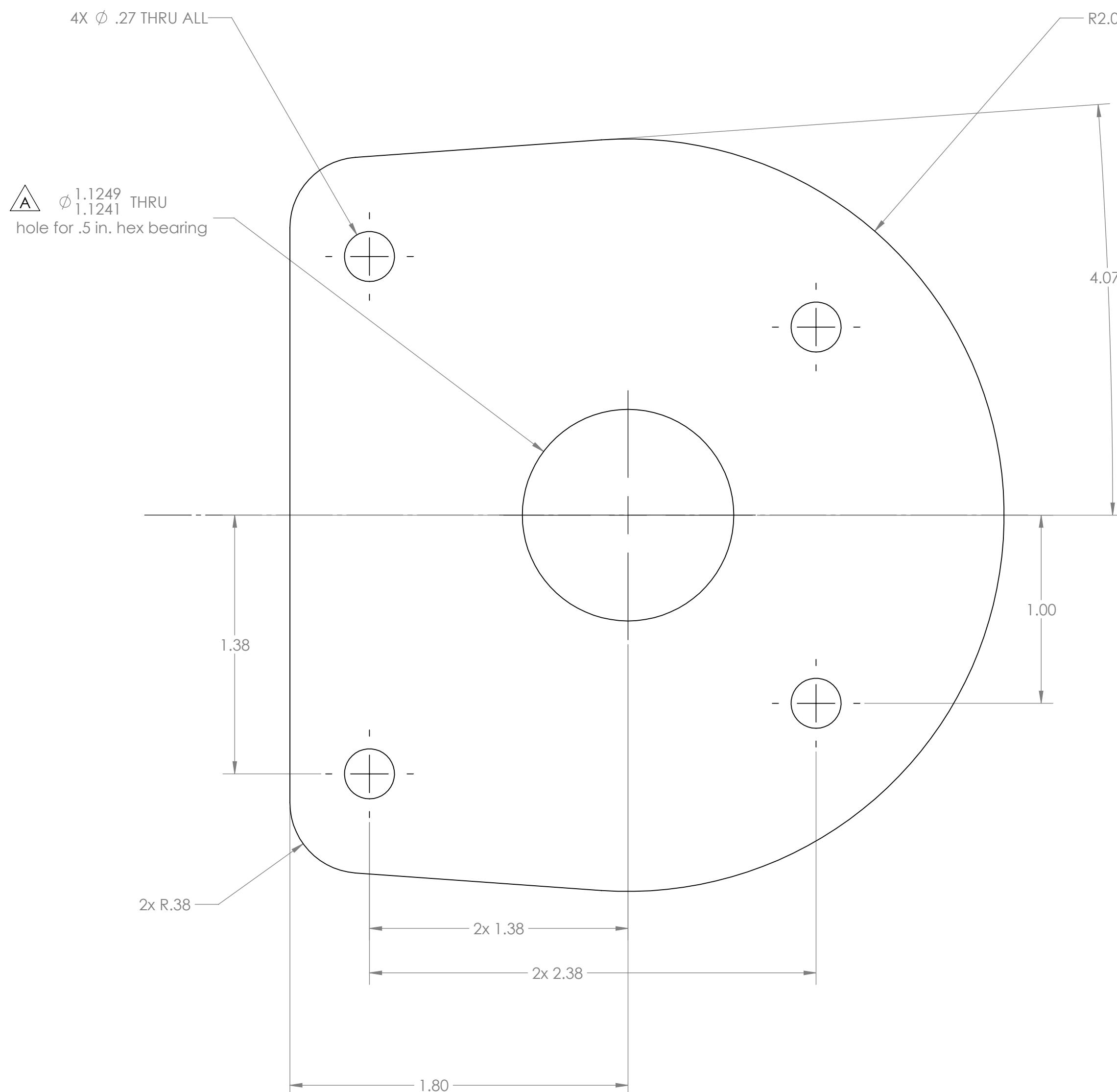
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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:
1/8 thk. 5052 Aluminum Sheet

DO NOT SCALE DRAWING

VEND NAME DATE
DRAWN CO 6/23/2021

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COMMENTS:
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FIRST[®] ROBOTICS COMPETITION DS SOLIDWORKS Modeling Solutions Partner

TITLE:
Agitator Output
Shaft Auxiliary Plate

SIZE DWG. NO. REV
C GE-22444 **A**

SCALE: 2:1 SHEET 1 OF 1

4

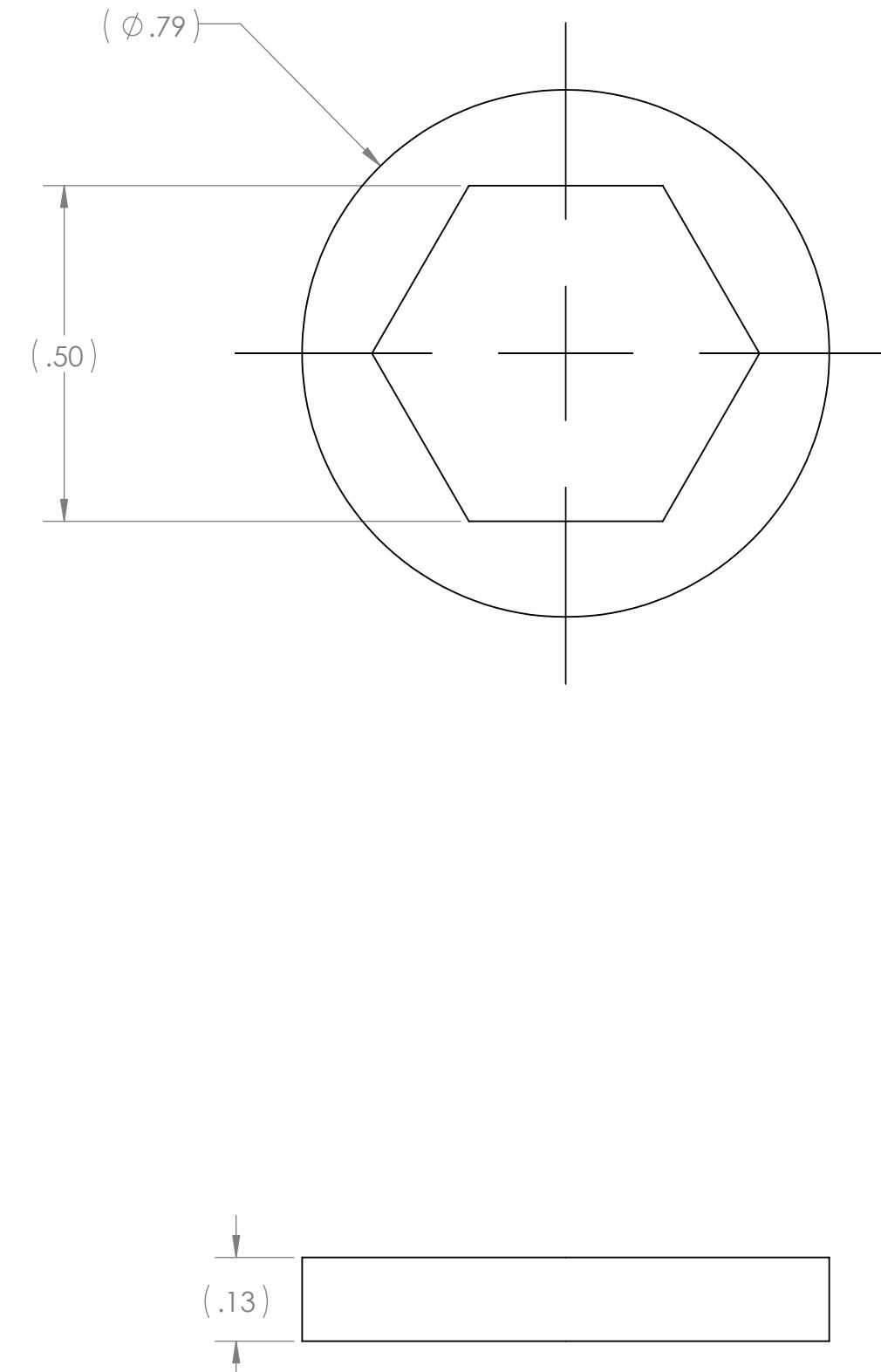
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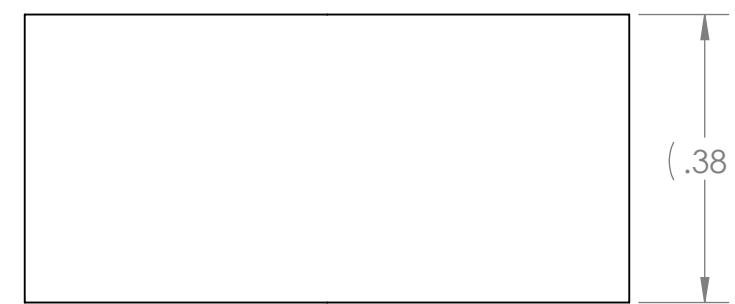
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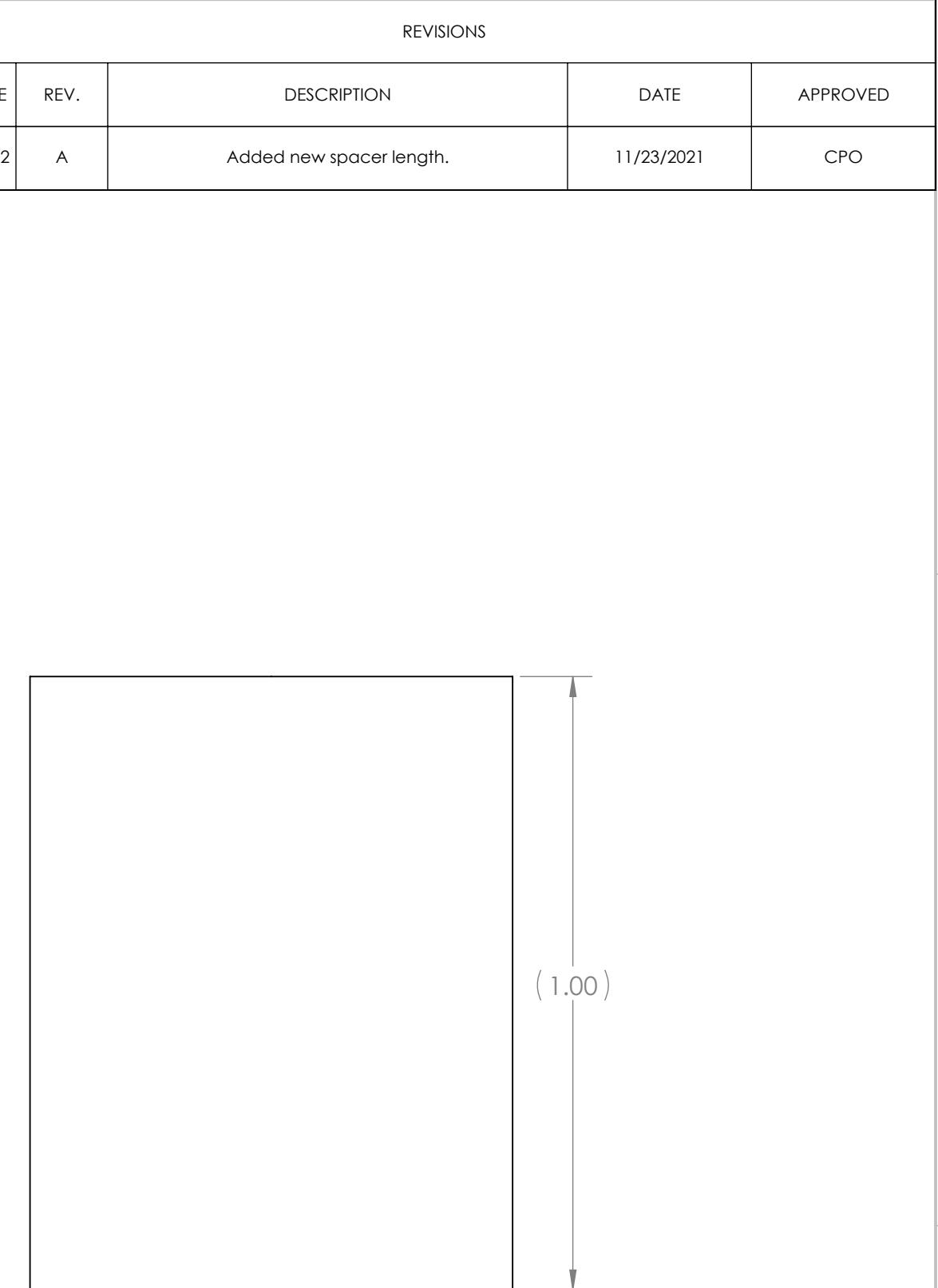
GE-22445-125



GE-22445-375

A

GE-22445-1000



Notes:
 1. Source: AndyMark
 2. Equivalent substitutions allowed

Part Number	Description	Manufacturer PN
GE-22445-125	1/2 in. hex molded spacer, 1/8 in. long	am-3948-125
GE-22445-375	1/2 in. hex molded spacer, 3/8 in. long	am-3948-375
GE-22445-1000	1/2 in. hex molded spacer, 1 in. long	am-3948-1000

A

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DIMENSIONS ARE IN INCHES		DRAWN	CO	6/24/2021
PROPRIETARY AND CONFIDENTIAL				
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MATERIAL/FINISH:	Black PC	SIZE	DWG. NO.	REV
COMMENTS:		C	GE-22445	A
REMOVE ALL BURRS AND SHARP EDGES.		SCALE: 4:1		SHEET 1 OF 1
DO NOT SCALE DRAWING				

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

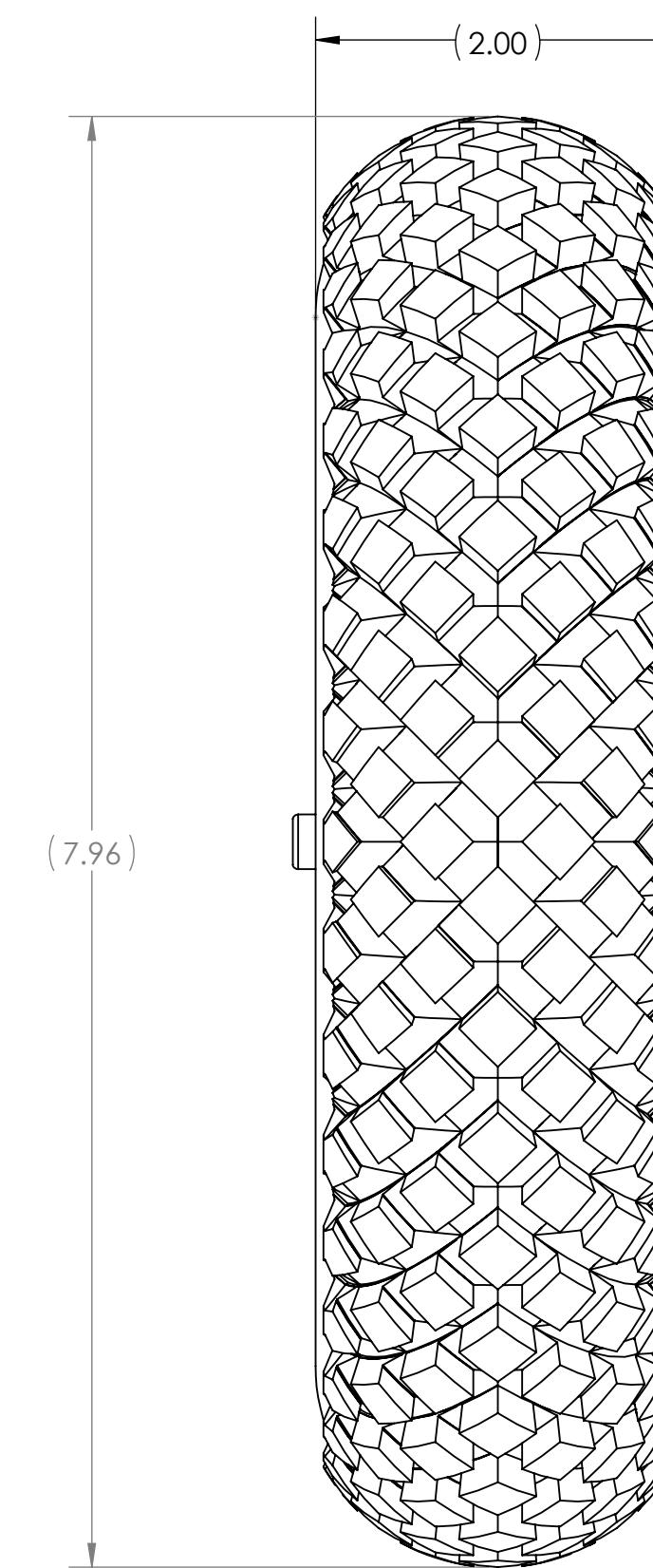
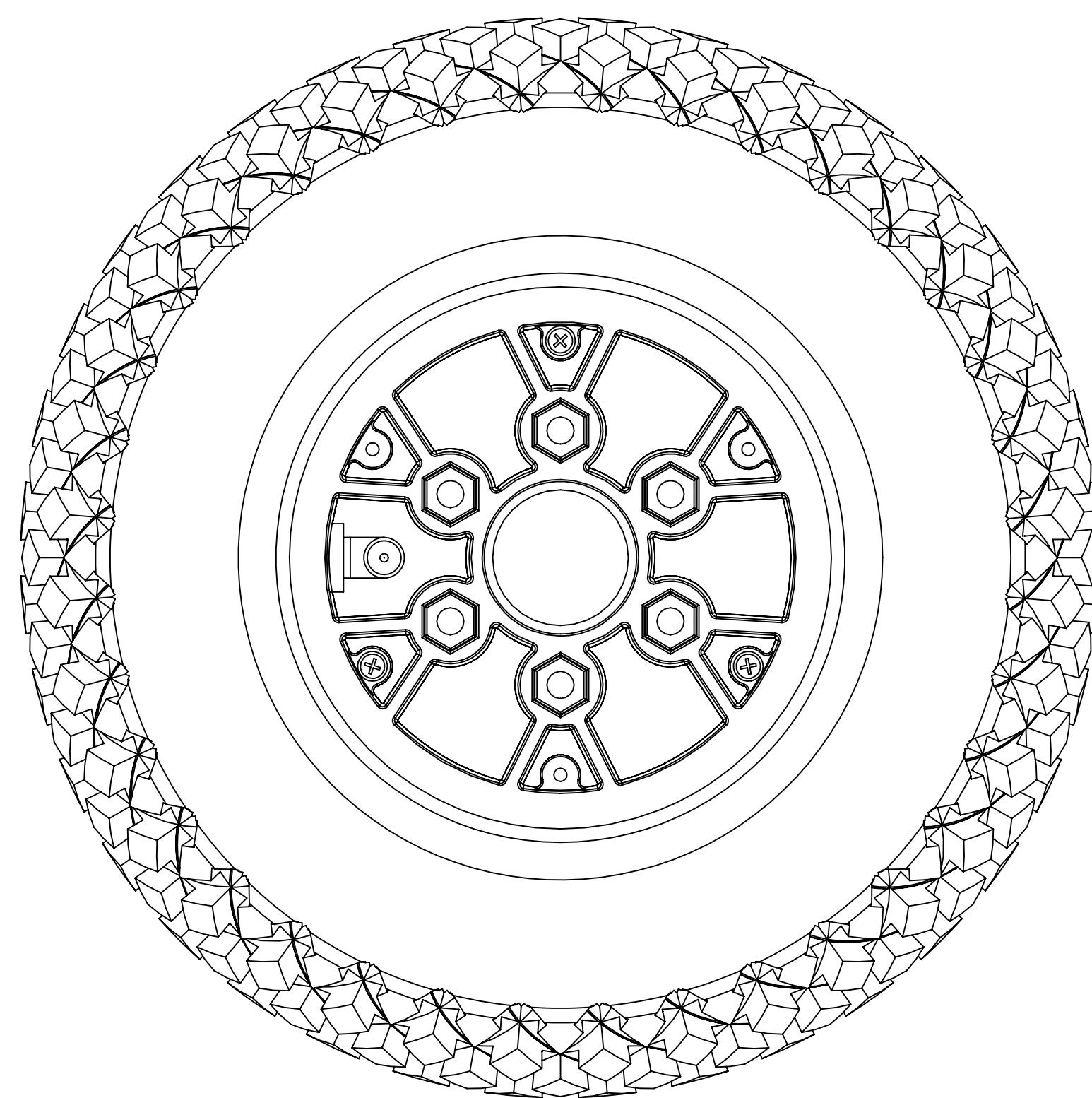
TITLE:
1/2 in. hex
molded spacer

SIZE DWG. NO. REV

C GE-22445 A

SCALE: 4:1 SHEET 1 OF 1

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- Notes:
1. Description: 8 in. Pneumatic Wheel Kit
 2. Source: AndyMark
 3. Item #: am-0970
 4. Equivalent substitutions allowed

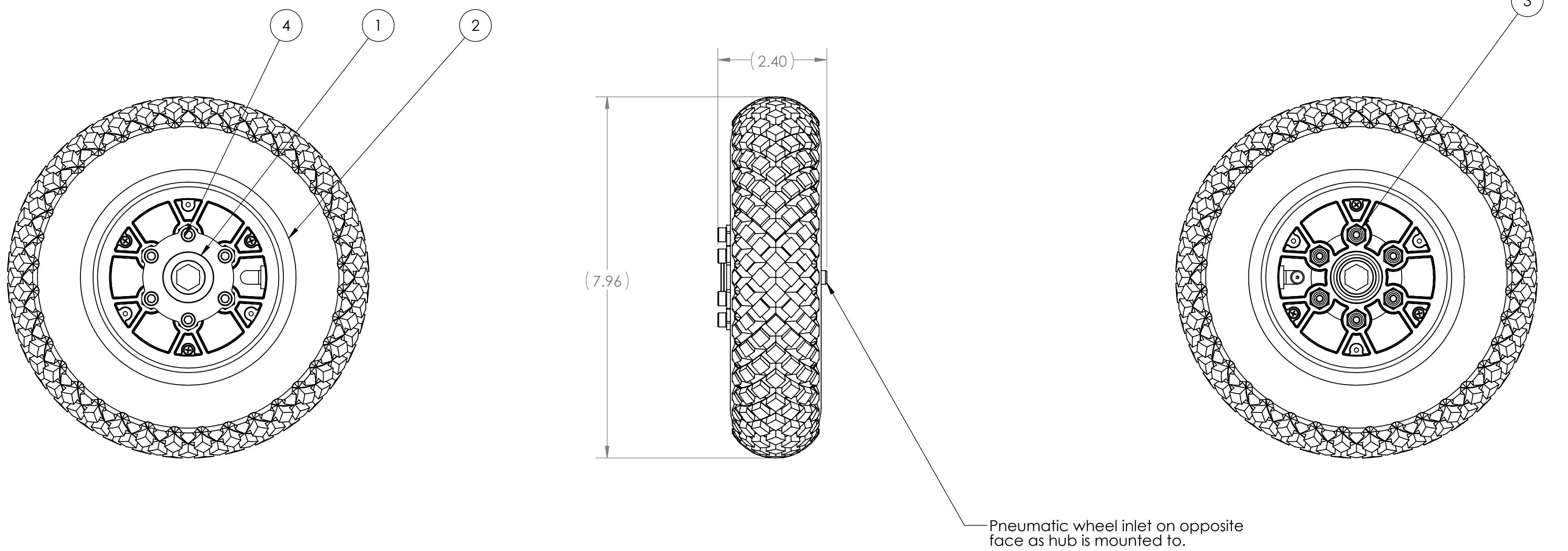
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/24/2021	
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
TITLE: 8 in. Pneumatic Wheel			
SIZE DWG. NO. REV			
C GE-22446			
SCALE: 1:1 SHEET 1 OF 1			

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22436	AndyMark 1/2 in. Hex Hub	1
2	GE-22446	8 in. Pneumatic Wheel	1
3	nylock_10_32	Low-Strength Steel Nylon-Insert Locknut, Zinc-Plated, 10-32 Thread Size	6
4	socket_hex_10_32_2_partial	Socket Head Screw, 10-32 x 2" long, partially threaded	6

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/24/2021	
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
 FIRST ROBOTICS COMPETITION  SOLIDWORKS Modeling Solutions Partner			
TITLE: High Agitator Wheel with Hub			
SIZE DWG. NO.		REV	
C GE-22447			
SCALE: 1:2		SHEET 1 OF 1	

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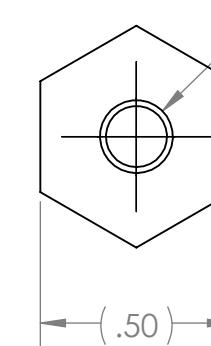
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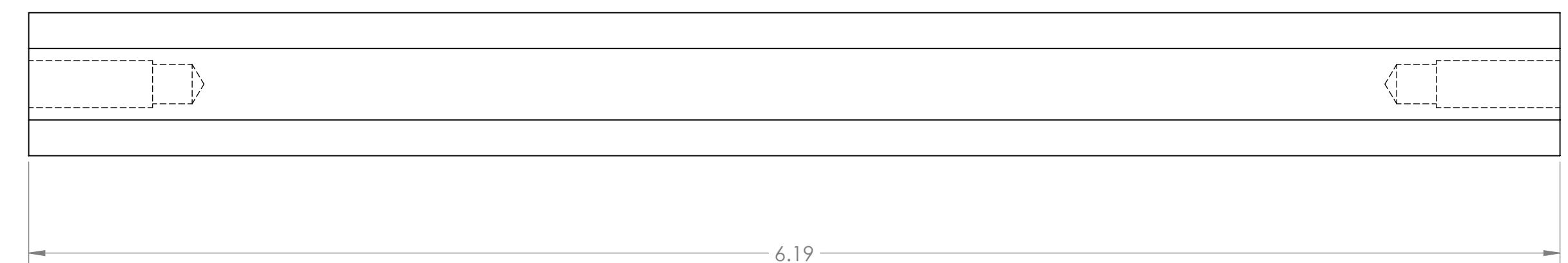
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2X ϕ .16 \pm .66
10-32 UNF \pm .50



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/24/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 1/2" Hex shaft, 7075 aluminum			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**High Agitator
Drive Hex Shaft**

SIZE DWG. NO. REV
C GE-22448

SCALE: 2:1 SHEET 1 OF 1

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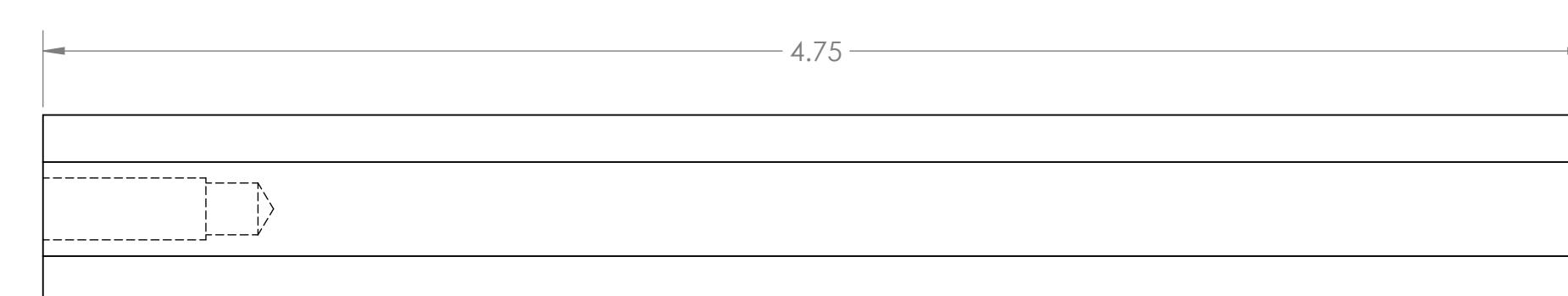
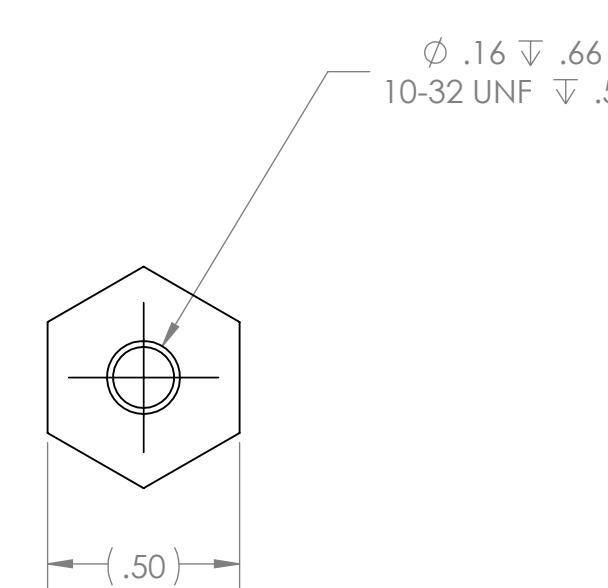
C

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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .01$
THREE PLACE DECIMAL $\pm .005$

MATERIAL/FINISH:

1/2" Hex shaft, 7075
aluminum

DO NOT SCALE DRAWING

VEND NAME DATE

DRAWN CO 6/24/2021

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
Low Agitator Drive Hex Shaft

SIZE DWG. NO. REV

C GE-22449

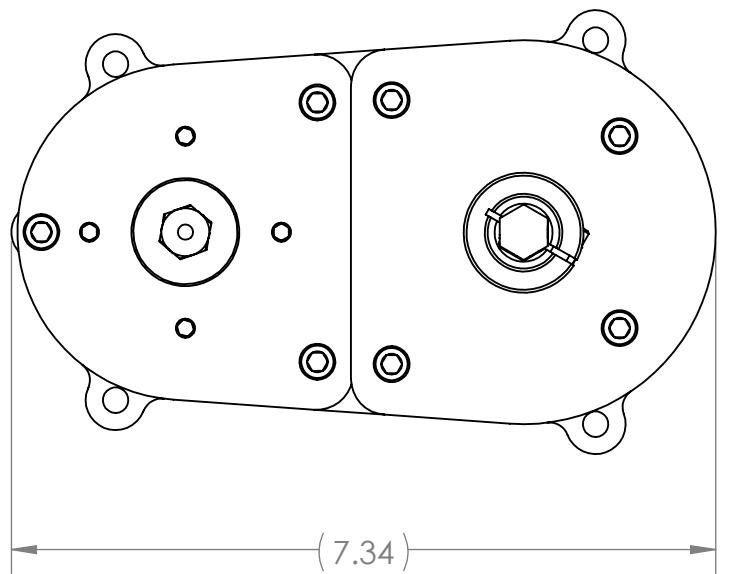
SCALE: 2:1 SHEET 1 OF 1

4

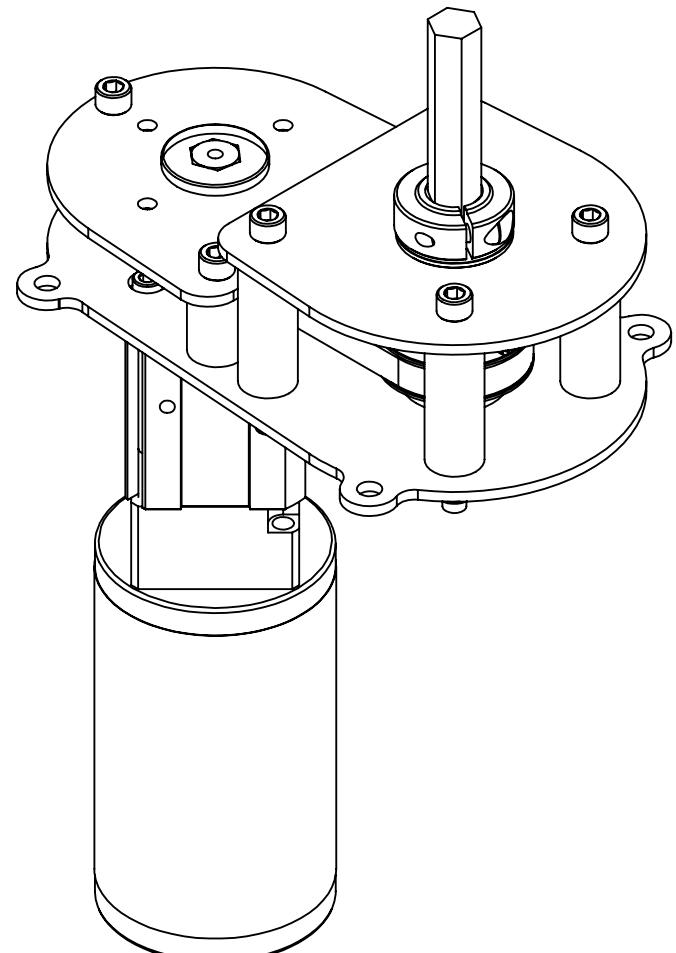
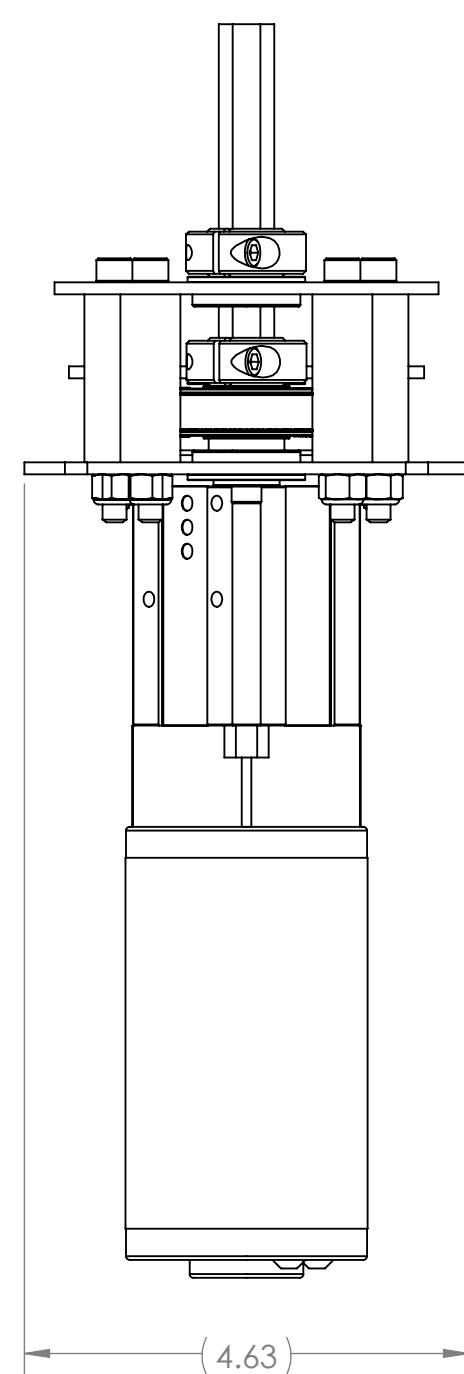
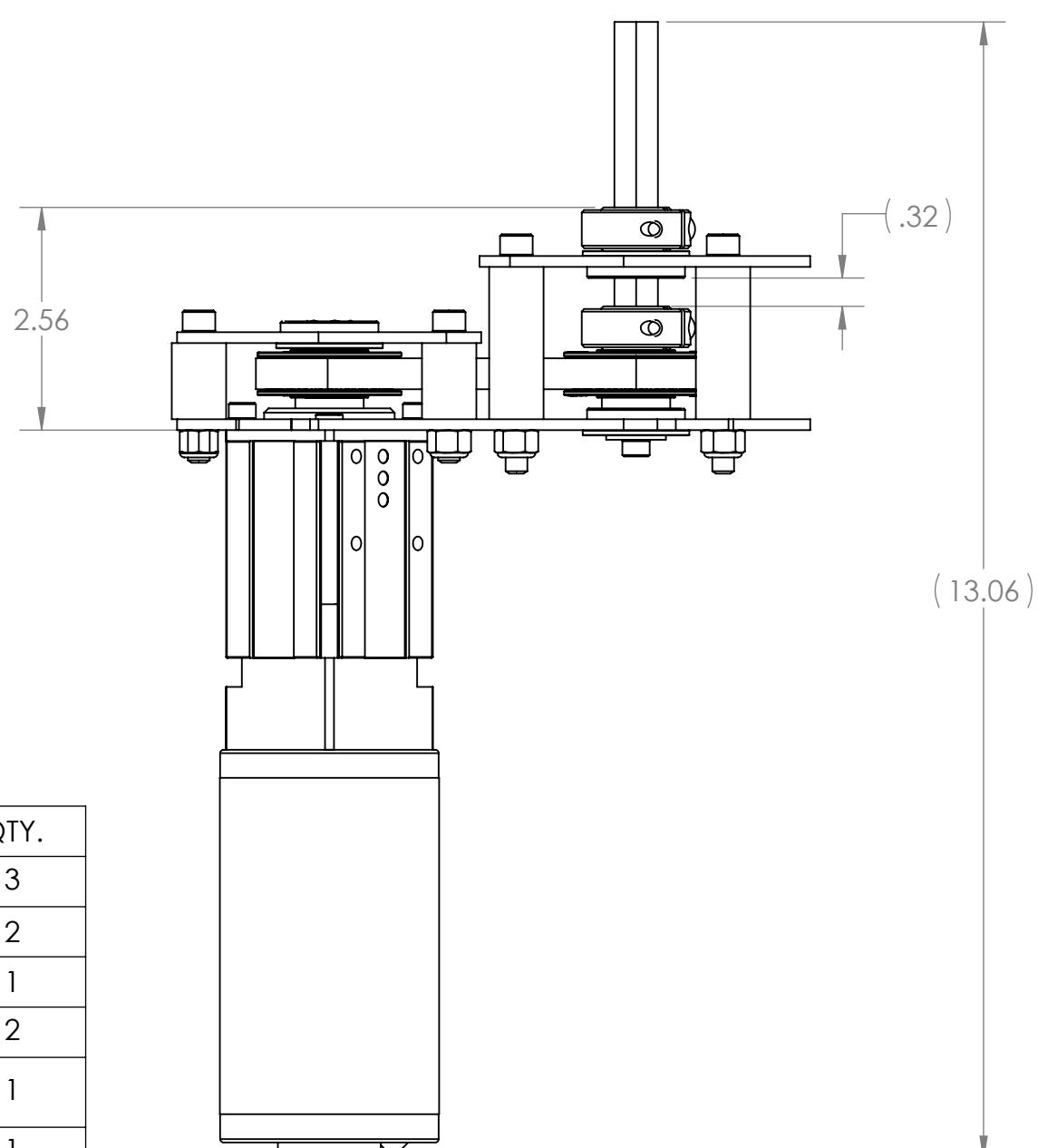
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-D4, 3-D4	A	Added notes for use of glue on pulleys. Updates made to geometry of GE-22442, GE-22443, GE-22444	8/17/2021	CPO
A3	B	Two fasteners changed from hex head to socket head bolts.	10/27/2021	CPO



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22437	1/2 in. Hex Bearing	3
2	GE-22438	1/2 in. Hex Shaft Collar	2
3	GE-22439	60t 9mm wide 5mm HTD belt	1
4	GE-22440	24 tooth 5mm HTD hex bore pulley	2
5	GE-22441-080	80:1 CIM Sport Gearbox with CIM Motor	1
6	GE-22442	Agitator Baseplate	1
7	GE-22443	Agitator Gearbox Auxiliary Plate	1
8	GE-22444	Agitator Output Shaft Auxiliary Plate	1
9	GE-22445-125	1/2 in. hex molded spacer, 1/8 in. long	2
10	GE-22449	Low Agitator Drive Hex Shaft	1
11	socket_hex_.25_20_1.5_partial	Socket Head Screw, 1/4-20 x 1.5" long, partially threaded	3
12	socket_hex_.25_20_2.5_partial	Socket Head Screw, 1/4-20 x 2.5" long, partially threaded	4
13	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	7
14	socket_hex_10_32_.5_nylon	Socket Head Screw, 10-32 x 0.5" long, with nylon patch	3
15	spacer_.252_.625_1.75	Spacer, .252 ID, .625 OD, 1.75 long	4
16	spacer_.252_.625_.875	Spacer, .252 ID, .625 OD, .875 long	3
17	washer_flat_10_oversized	Oversized flat Washer for #10 Screw	1

B

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DRAWN	CO	6/24/2021	
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COMMENTS:			
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DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION Modeling Solutions Partner

TITLE: Low Agitator Drive Assembly

SIZE DWG. NO. **REV**

C GE-22450 **B**

SCALE: 1:2 **SHEET 1 OF 4**

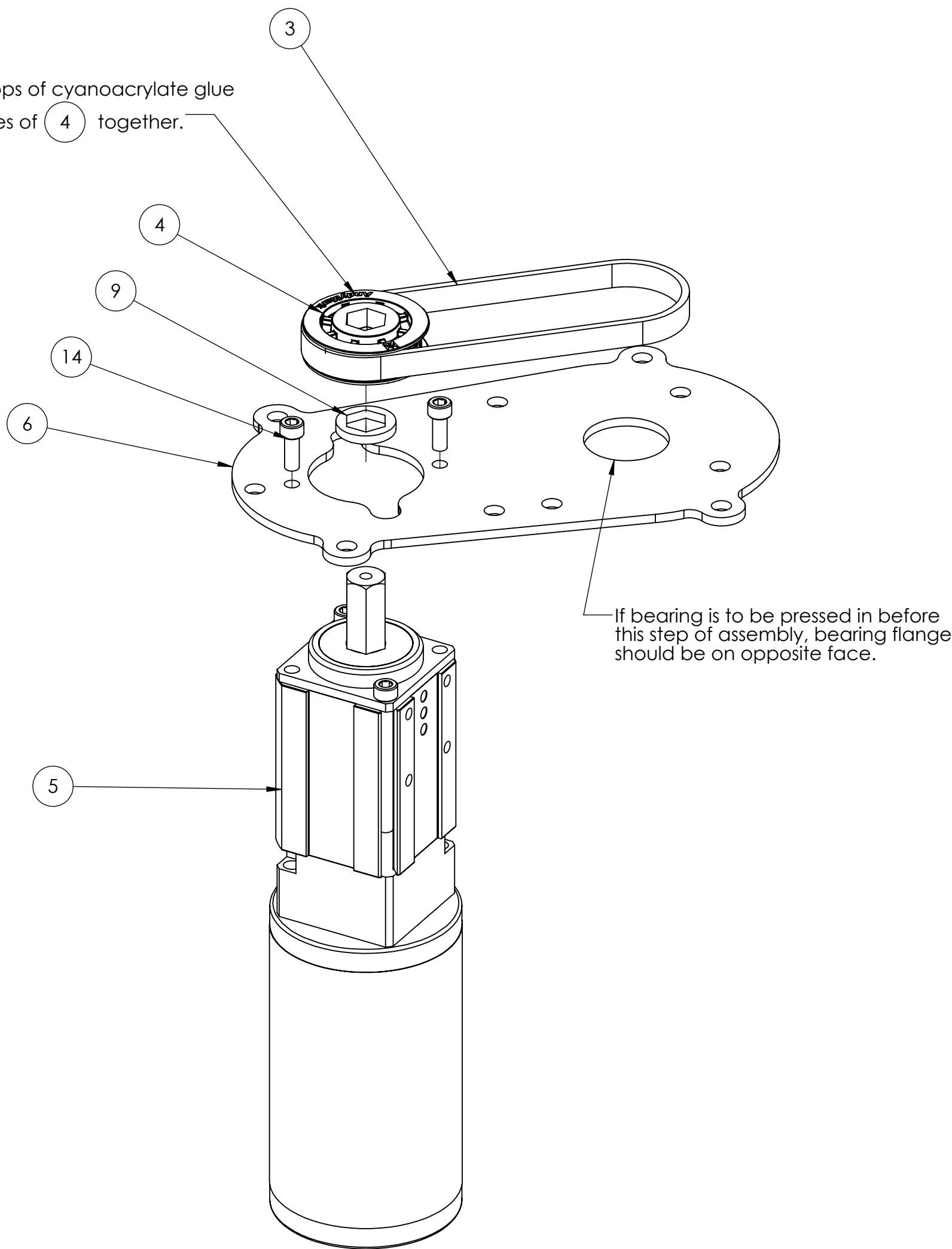
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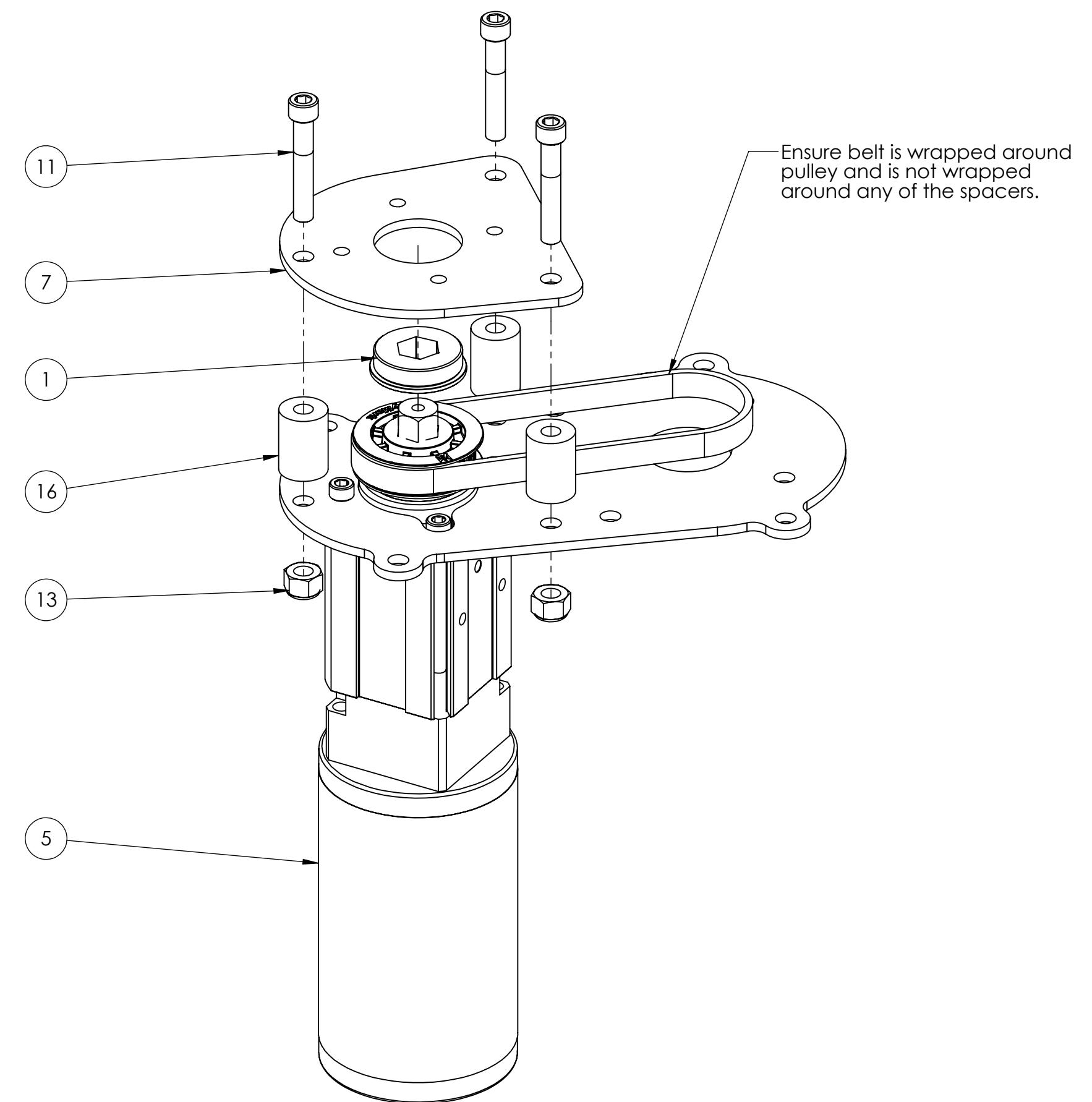
1

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Notes:

1. Attach (5) to (6) using (14).
2. Slide (9) and (4) in order onto the shaft of (5).
3. Place (3) onto (4).



Notes:

1. Insert or press (1) into (7).
2. Slide (1) (7) onto the shaft of (5), noting flange orientation.
3. Attach (1) (7) to the assembly using (16) to space the plates and (11) and (13) to fasten. Be careful of belt routing.

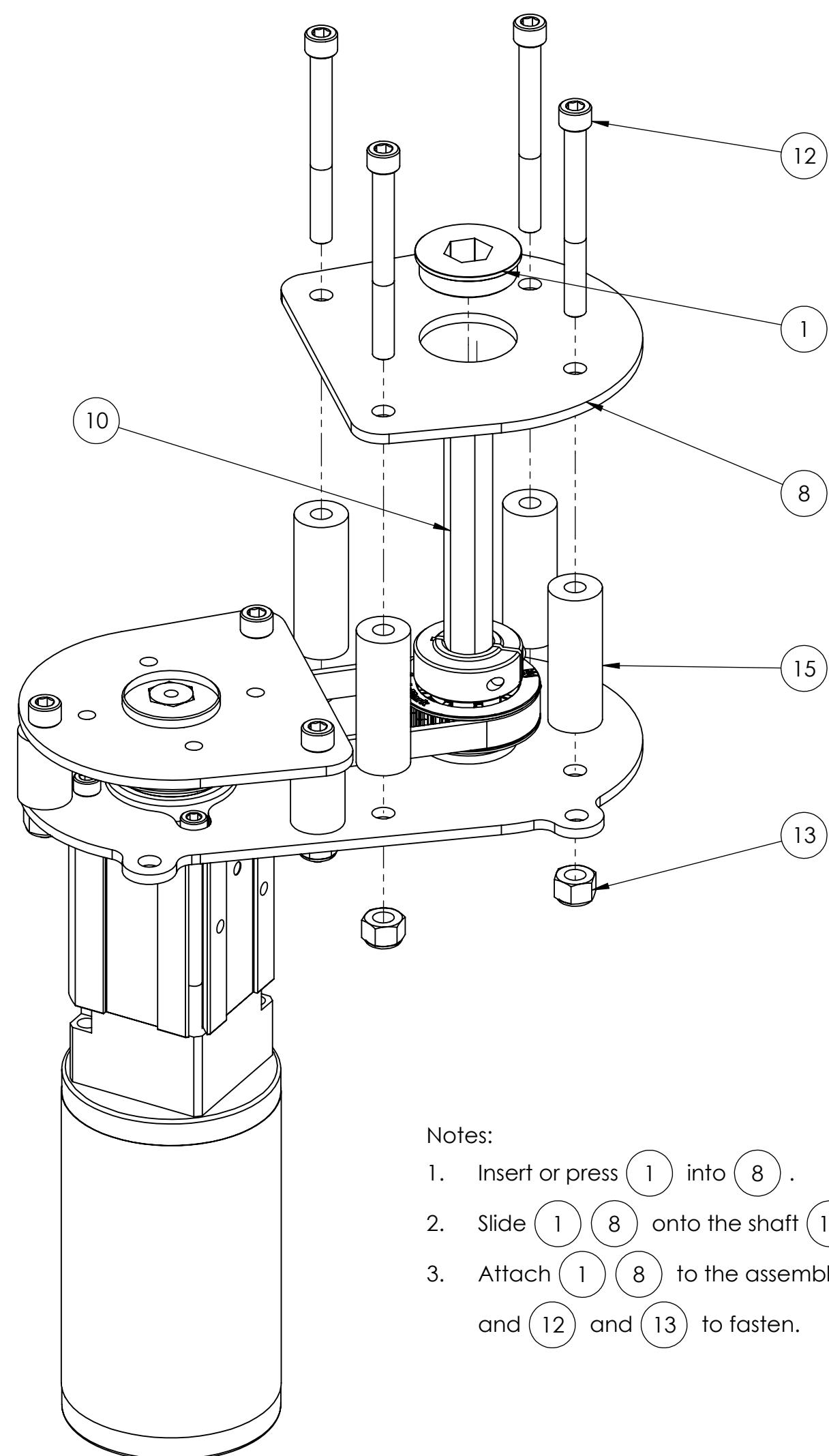
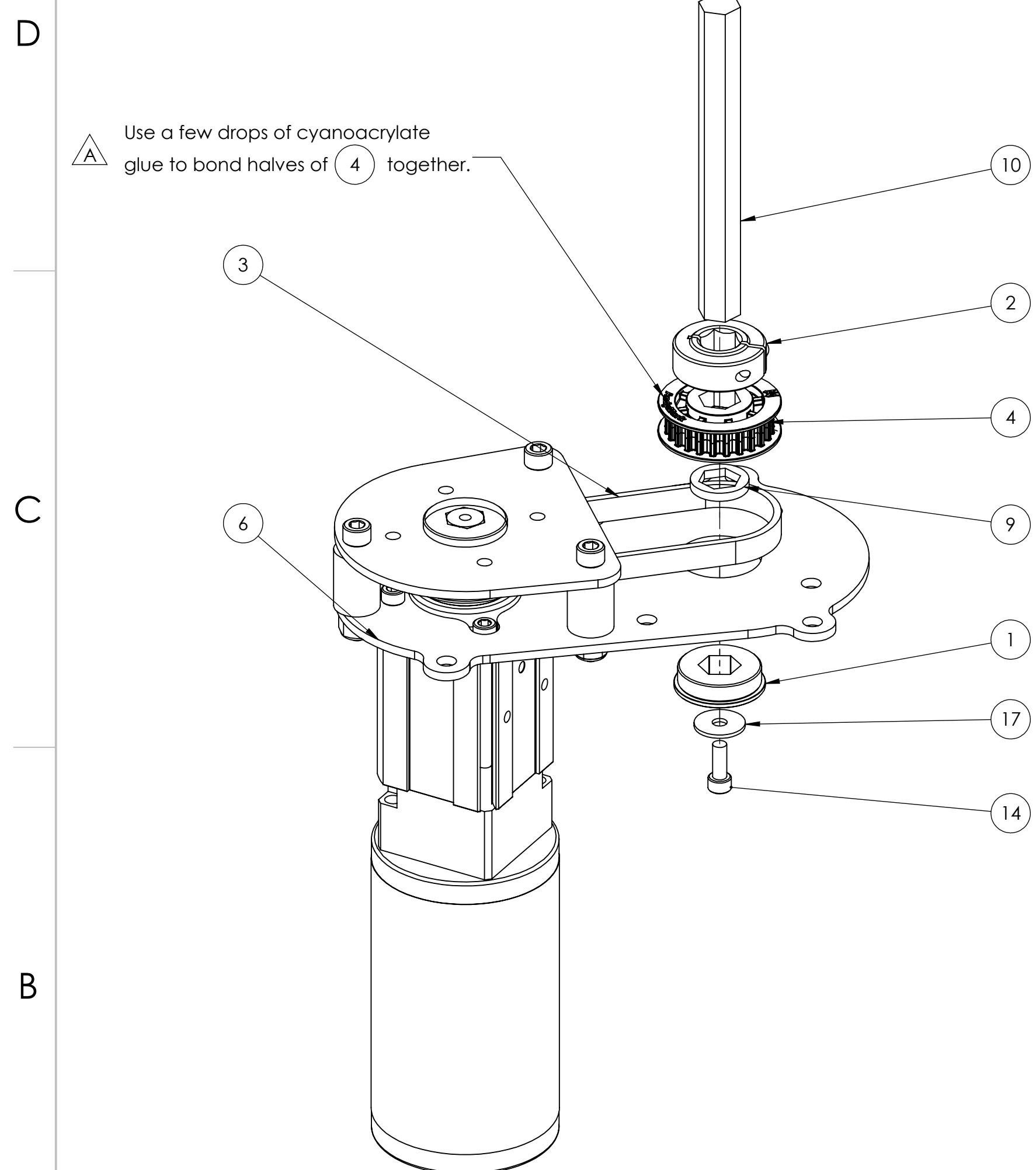
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/24/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
	C	GE-22450	B
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING	SCALE: 2:3	SHEET 2 OF 4	

4

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Notes:

1. Insert or press 1 into 8 .
2. Slide 1 8 onto the shaft 10 , noting flange orientation.
3. Attach 1 8 to the assembly using 15 to space the plates and 12 and 13 to fasten.

Notes:

1. If not already done, press or insert 1 into 6 , noting flange orientation.
2. Slide items 2 , 4 , and 9 onto 10 , being careful of order, and note orientation of 10 as only one side is tapped.
3. Slide shaft into place, aligning 3 onto 4 , then aligning 10 with 1 .
4. Attach 14 and 17 to 10 . 17 must be large enough diameter to prevent shaft being pulled past bearing.
5. With bottom of 10 coincident with bottom of 1 , and 2 4 9 all flush to each other and 1 , tighten set screw on 2 .

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	CO	6/24/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$				
PROPRIETARY AND CONFIDENTIAL				
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MATERIAL/FINISH:		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING				

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Low Agitator
Drive Assembly**

SIZE DWG. NO. REV
C GE-22450 B

SCALE: 2:3 SHEET 3 OF 4

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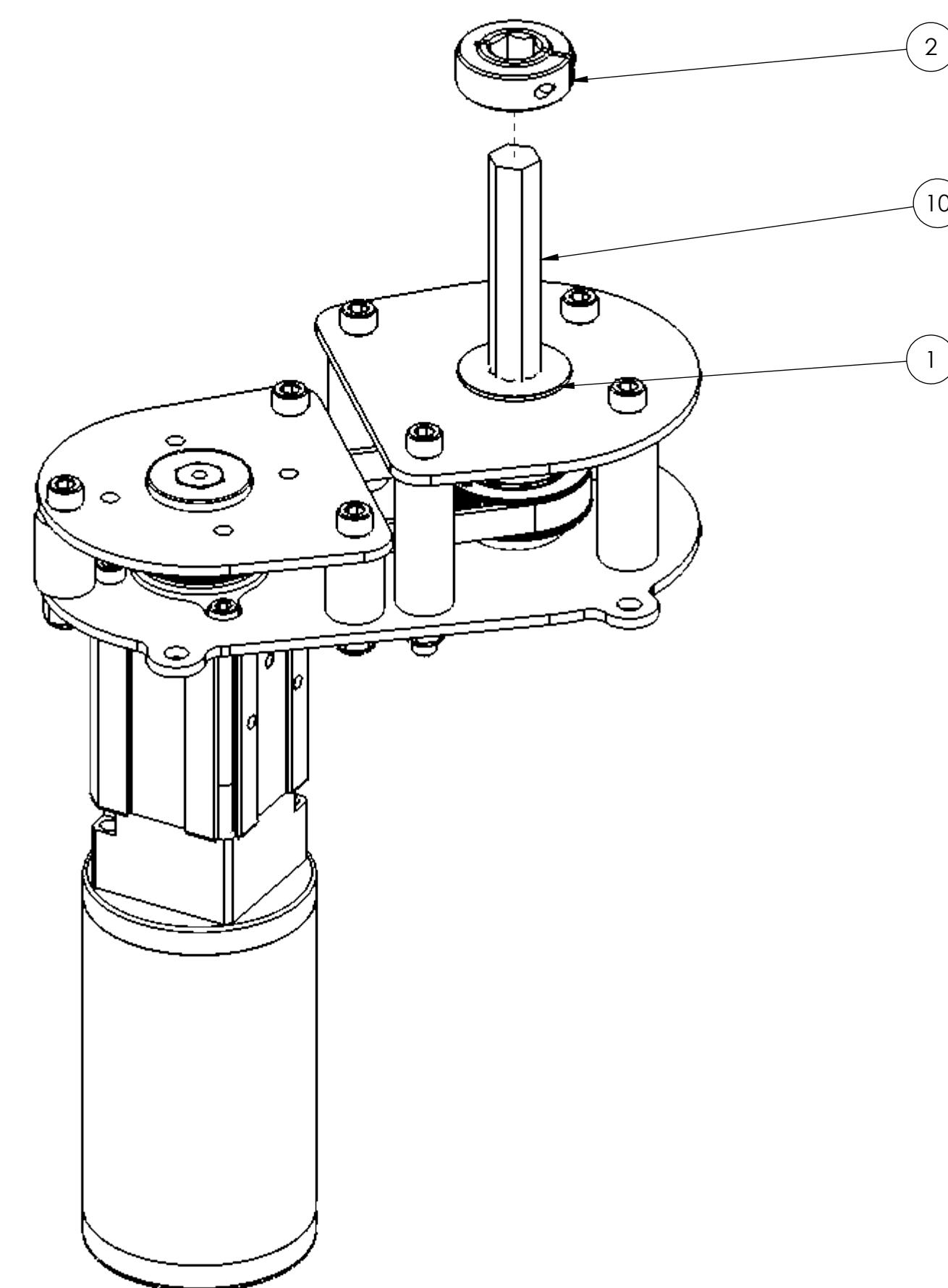
C

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Notes:

1. Slide (2) onto (10).
2. Ensuring (2) is flush with (1), tighten set screw on (2).

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/24/2021	
PROPRIETARY AND CONFIDENTIAL			
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COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
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COMPETITION**  SOLIDWORKS
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TITLE:
**Low Agitator
Drive Assembly**

SIZE DWG. NO. REV
C GE-22450 B

SCALE: 2:3 SHEET 4 OF 4

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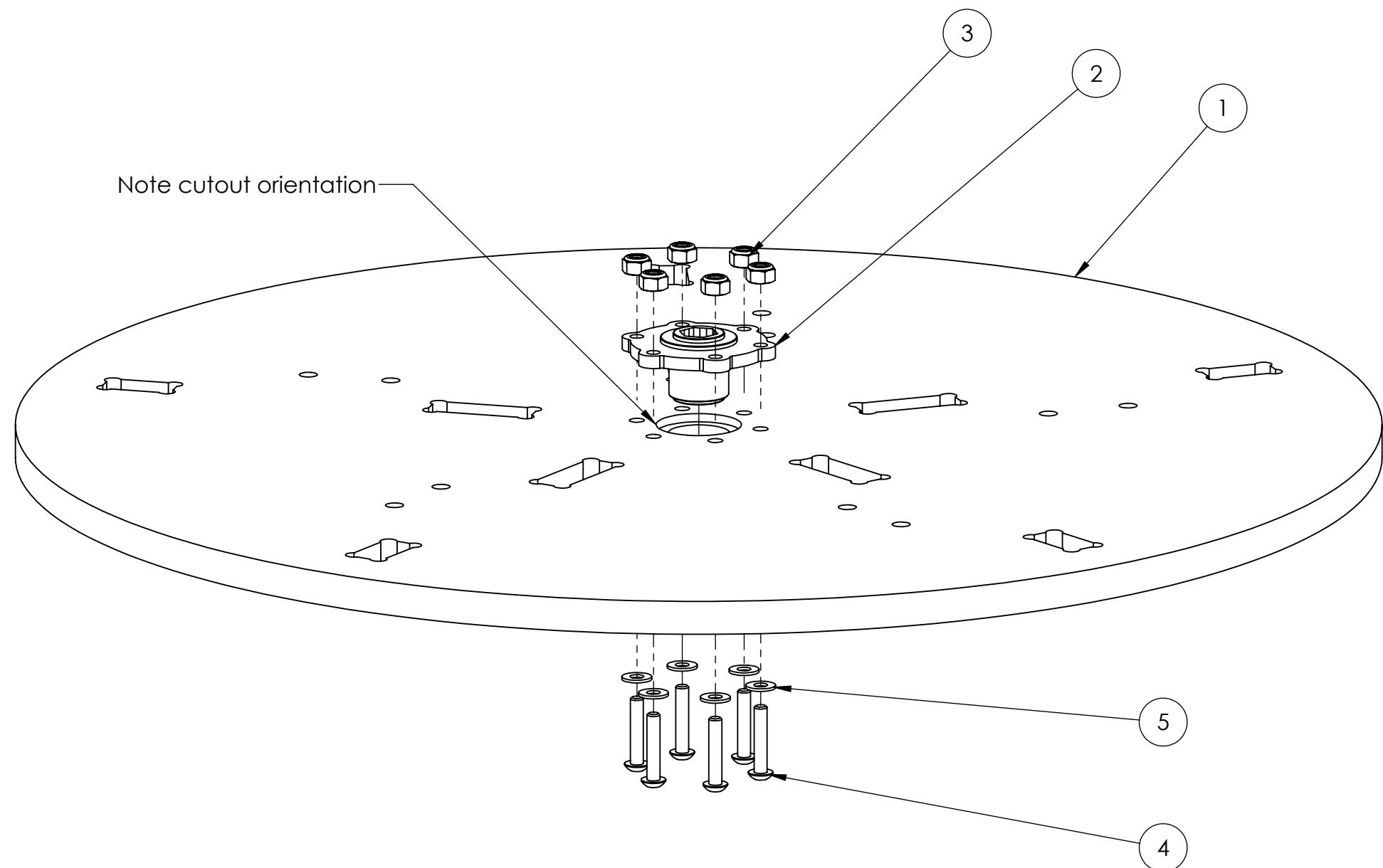
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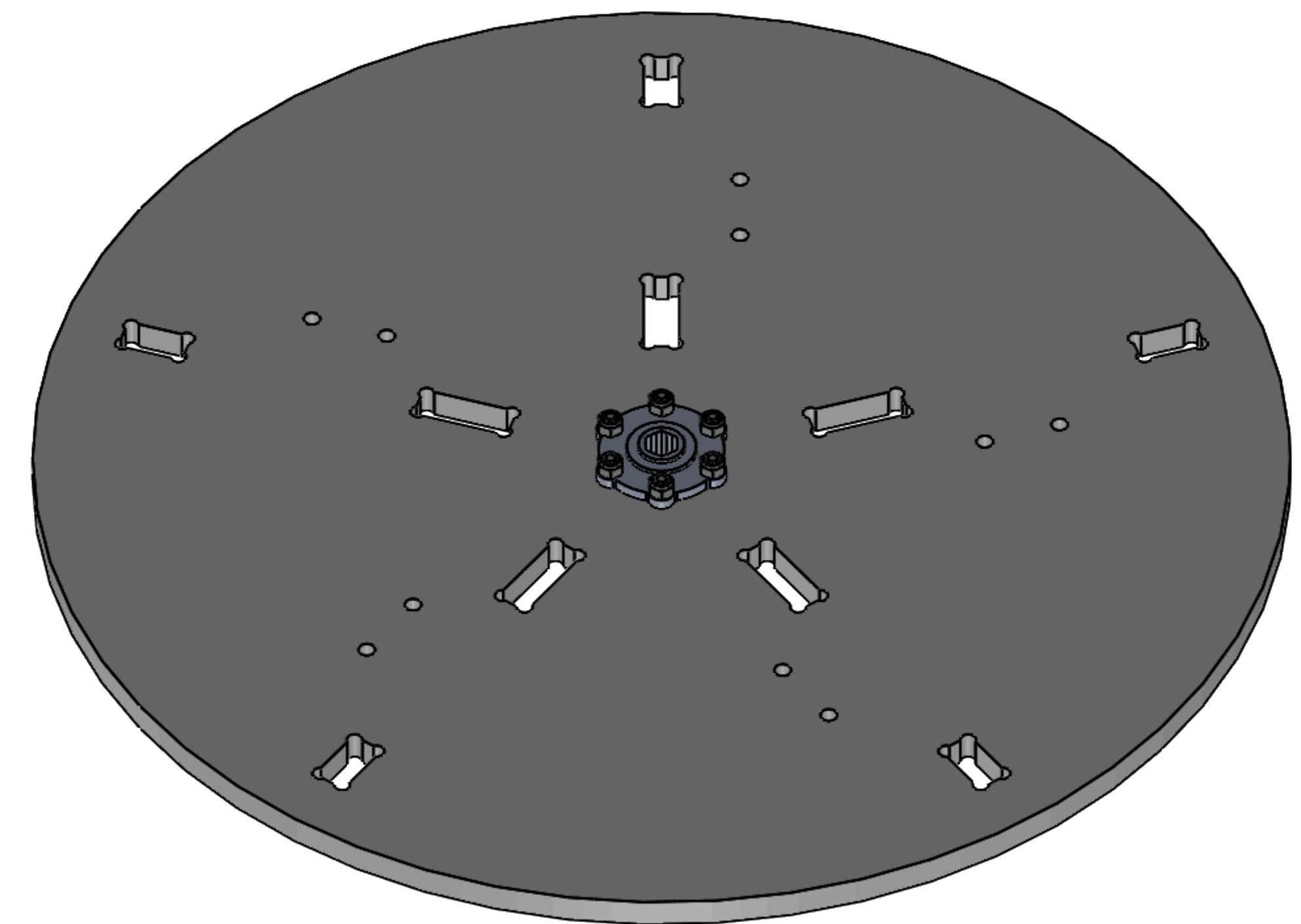
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- Notes:
1. Attach (2) to (1) as shown using (4), (5), and (3).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22434	Low Agitator Wheel Base	1
2	GE-22436	AndyMark 1/2 in. Hex Hub	1
3	nylock_10_32	Low-Strength Steel Nylon-Insert Locknut, Zinc-Plated, 10-32 Thread Size	6
4	round_hex_10_32_1_full	Round Head Hex, 10-32 x 1.00" long, fully threaded	6
5	washer_flat_10	Flat Washer for #10 Screw	6



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DRAWN	CO	12/29/2021	
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MATERIAL/FINISH:			
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

TITLE: Low Agitator Wheel Base Assembly

SIZE DWG. NO. REV

C GE-22451

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

SCALE: 1:2 SHEET 1 OF 1

D

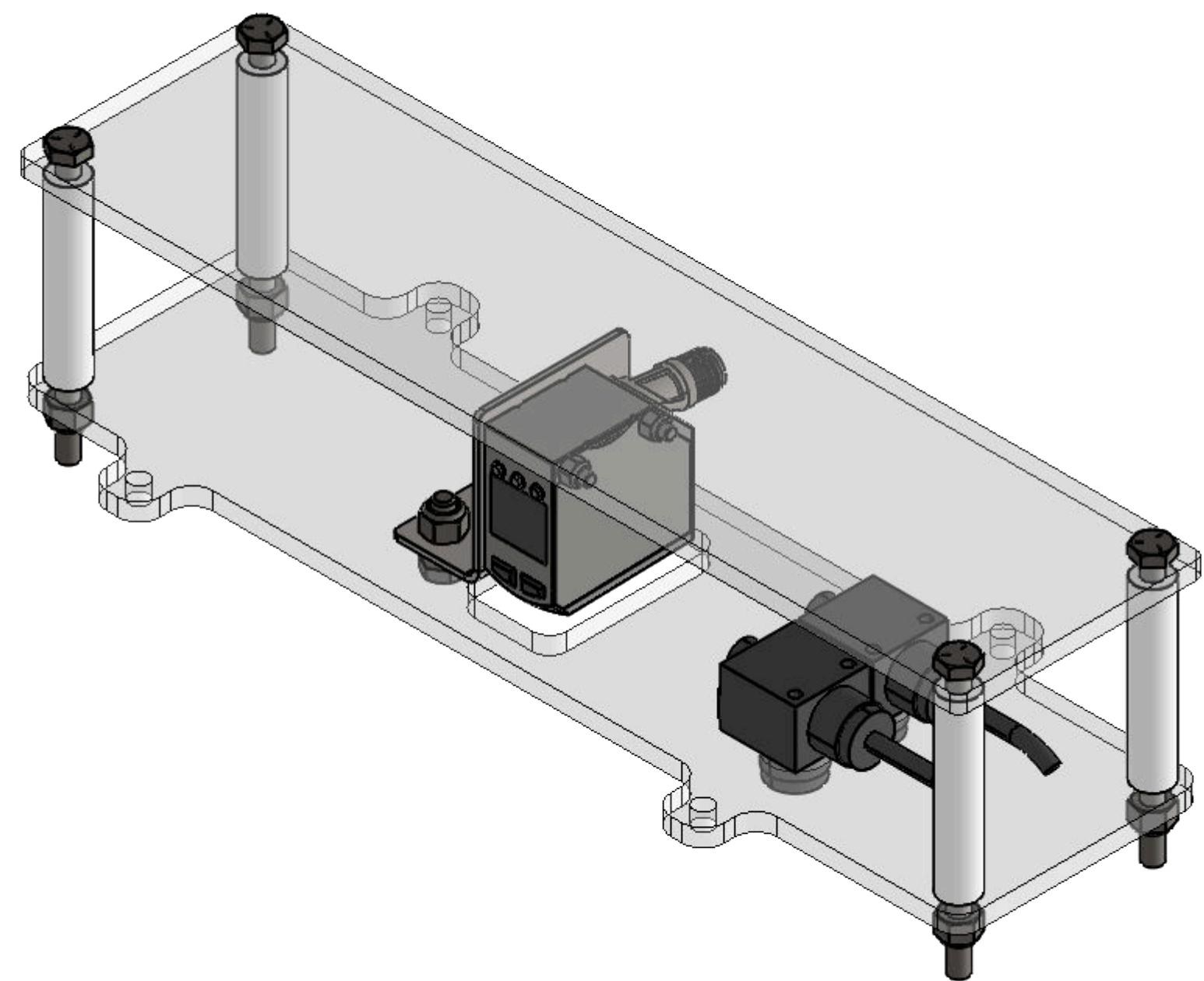
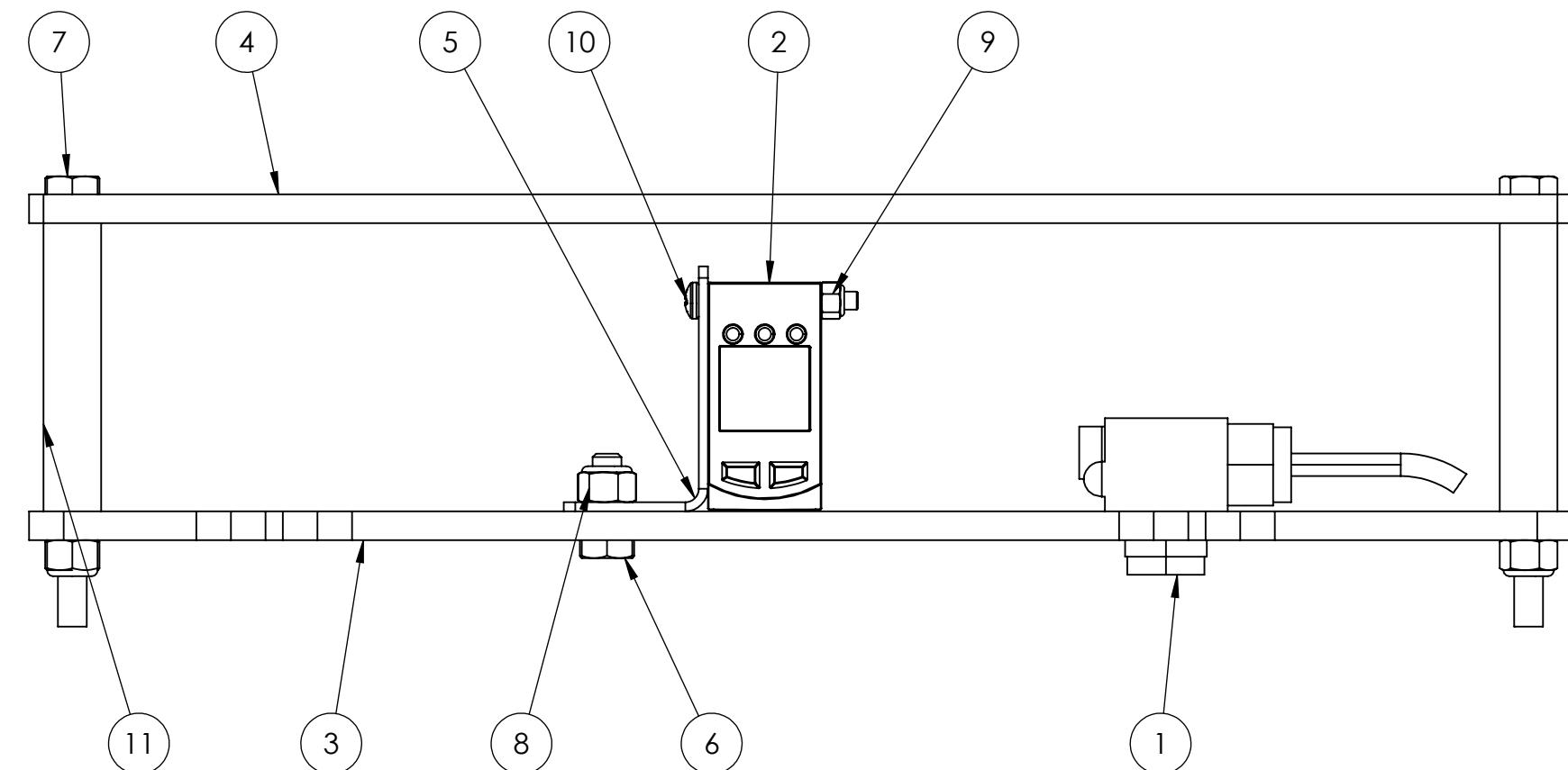
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	42ef_dc	RightSight Sensor	2
2	46CLR	46CLR	1
3	GE-22462	Sensor Plate	1
4	GE-22463	Sensor Shield	1
5	GE-22464	Color Sensor Bracket	1
6	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	2
7	hex_.25_20_3.75_partial	Steel Hex Head Bolt, 1/4-20 x 3.75", partially threaded	4
8	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	6
9	nylock_M4	Nylock M4	2
10	Pan_phil_M4_35	Pan Head Phillips Drive, M4 x 35mm Long, Fully Threaded	2
11	spacer_.252_.5_2.5	Spacer, .252 ID, .5 OD, 2.5 long	4

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/16/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$			
MATERIAL/FINISH:	TITLE: Sensor Box Assembly		
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.	SIZE	DWG. NO.	REV
C	GE-22461		
SCALE: 2:3		SHEET 1 OF 2	
DO NOT SCALE DRAWING			

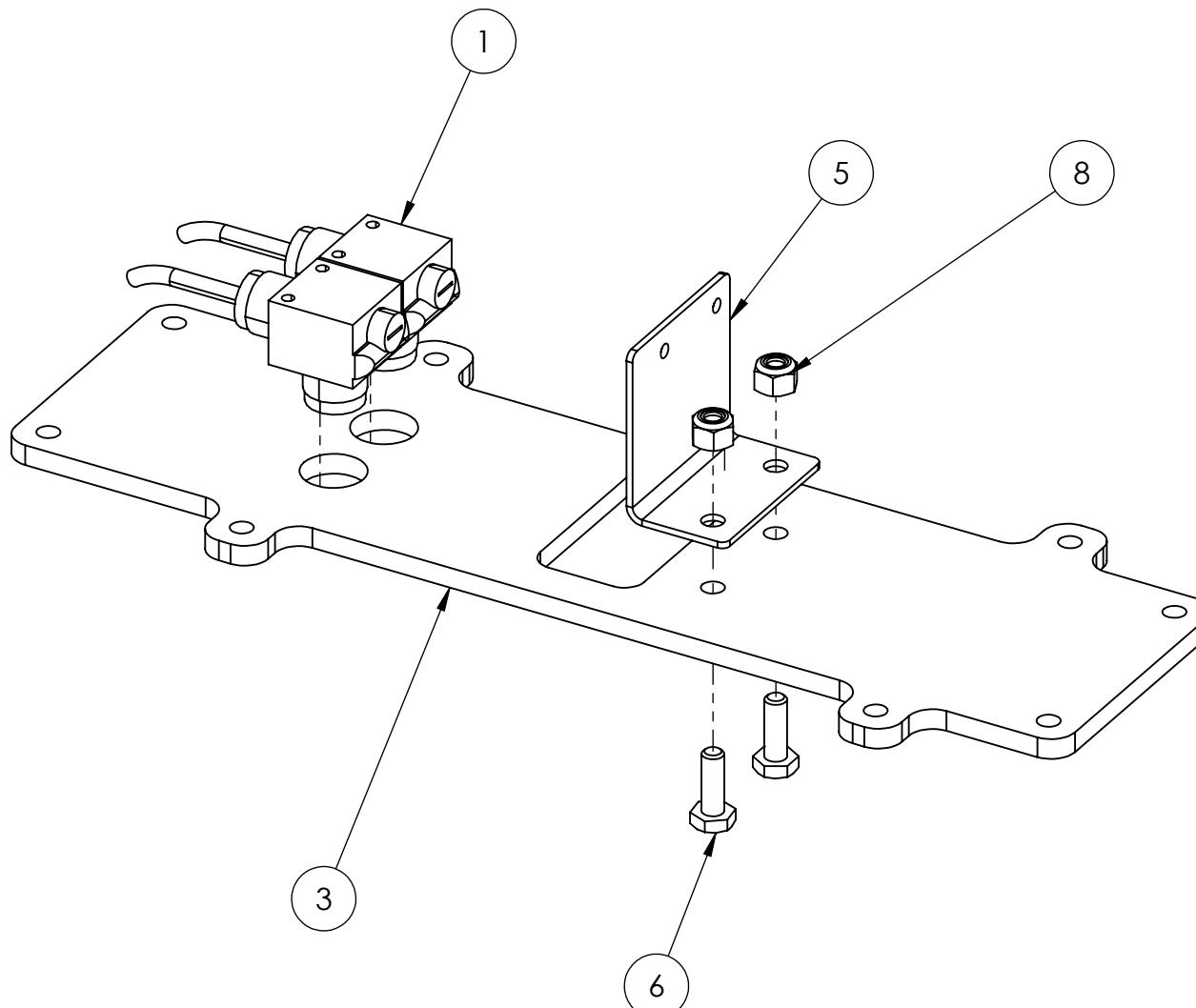
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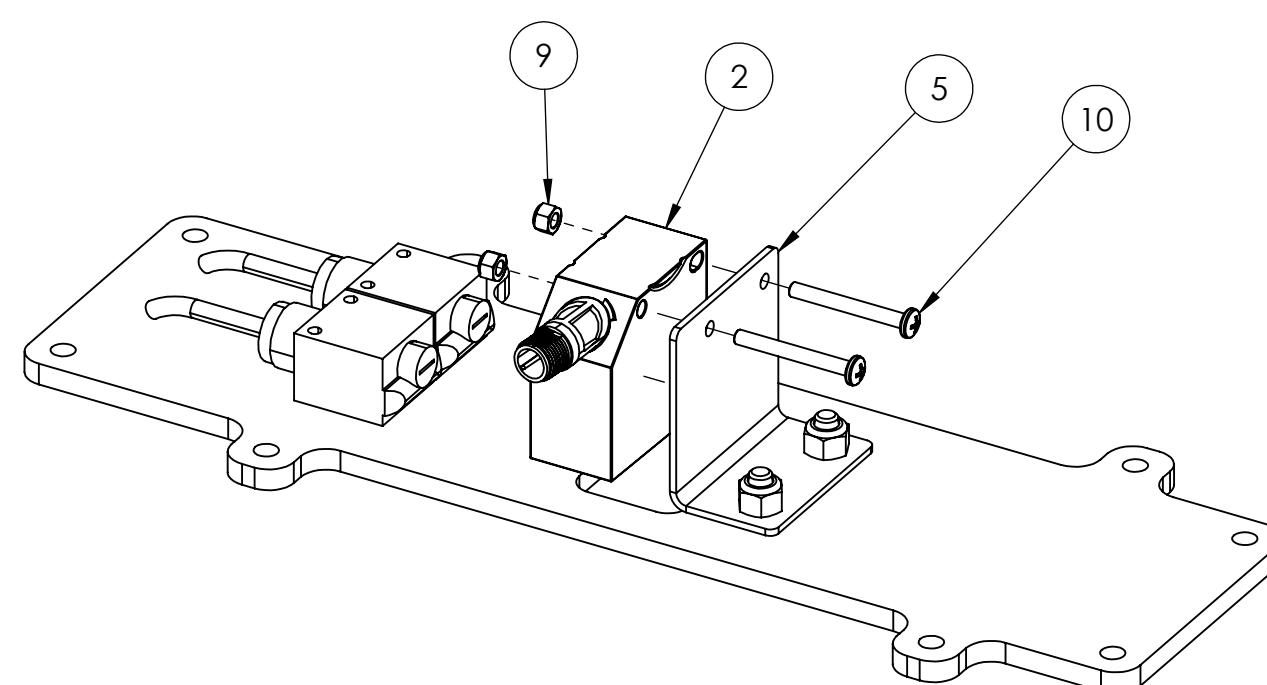
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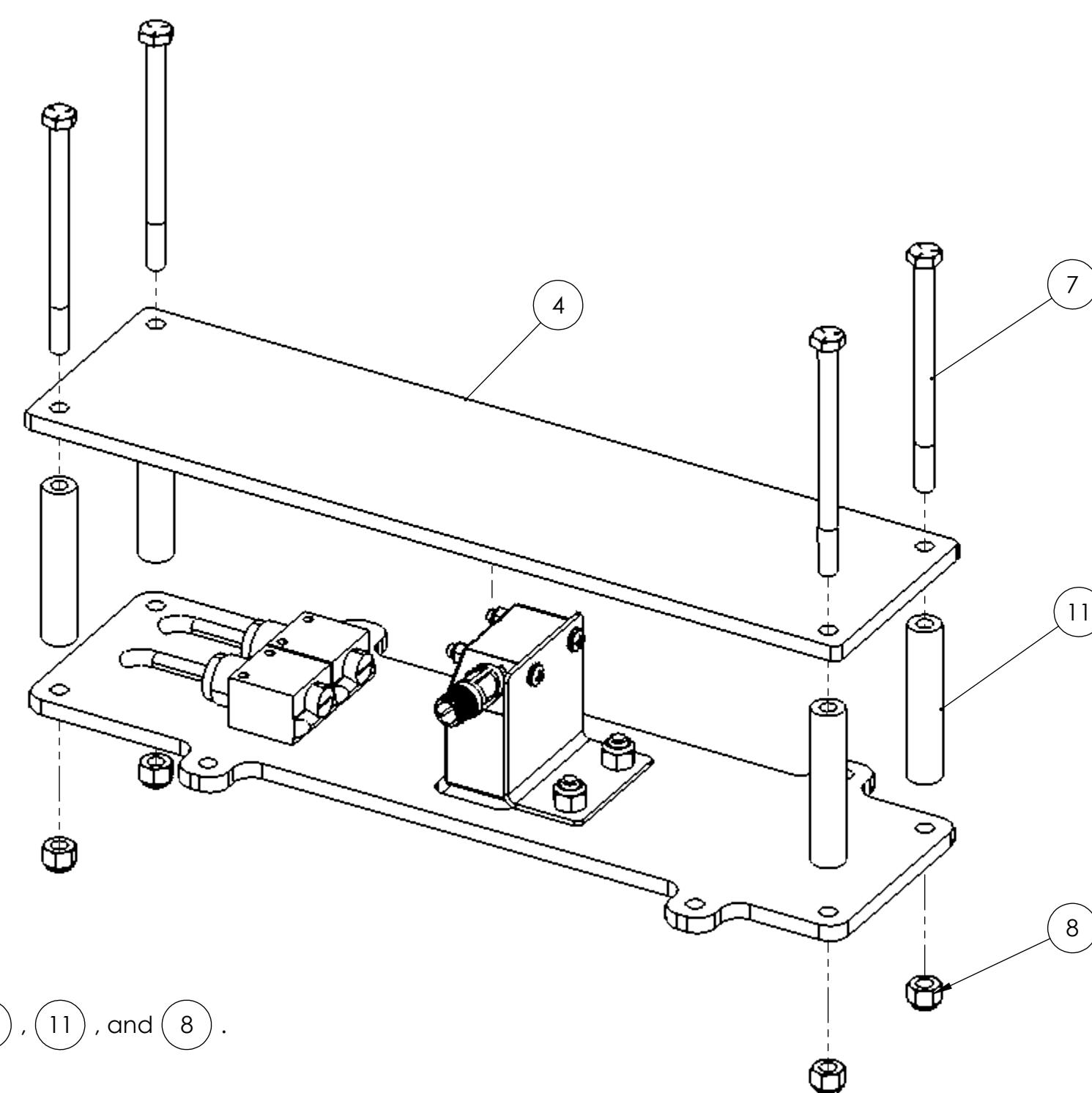
Notes:

1. Attach **5** to **3** using **6** and **8**.
2. Attach **1** to **3**.



Notes:

1. Attach **2** to **5** in orientation shown using **9** and **10**.



Notes:

1. Attach **4** to assembly using **7**, **11**, and **8**.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$

VEND NAME DATE

DRAWN CO 12/16/2021

SOLIDWORKS
Modeling Solutions Partner

TITLE:

Sensor Box
Assembly

SIZE

DWG. NO.

REV

C

GE-22461

MATERIAL/FINISH:

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING

SCALE: 1:2

SHEET 2 OF 2

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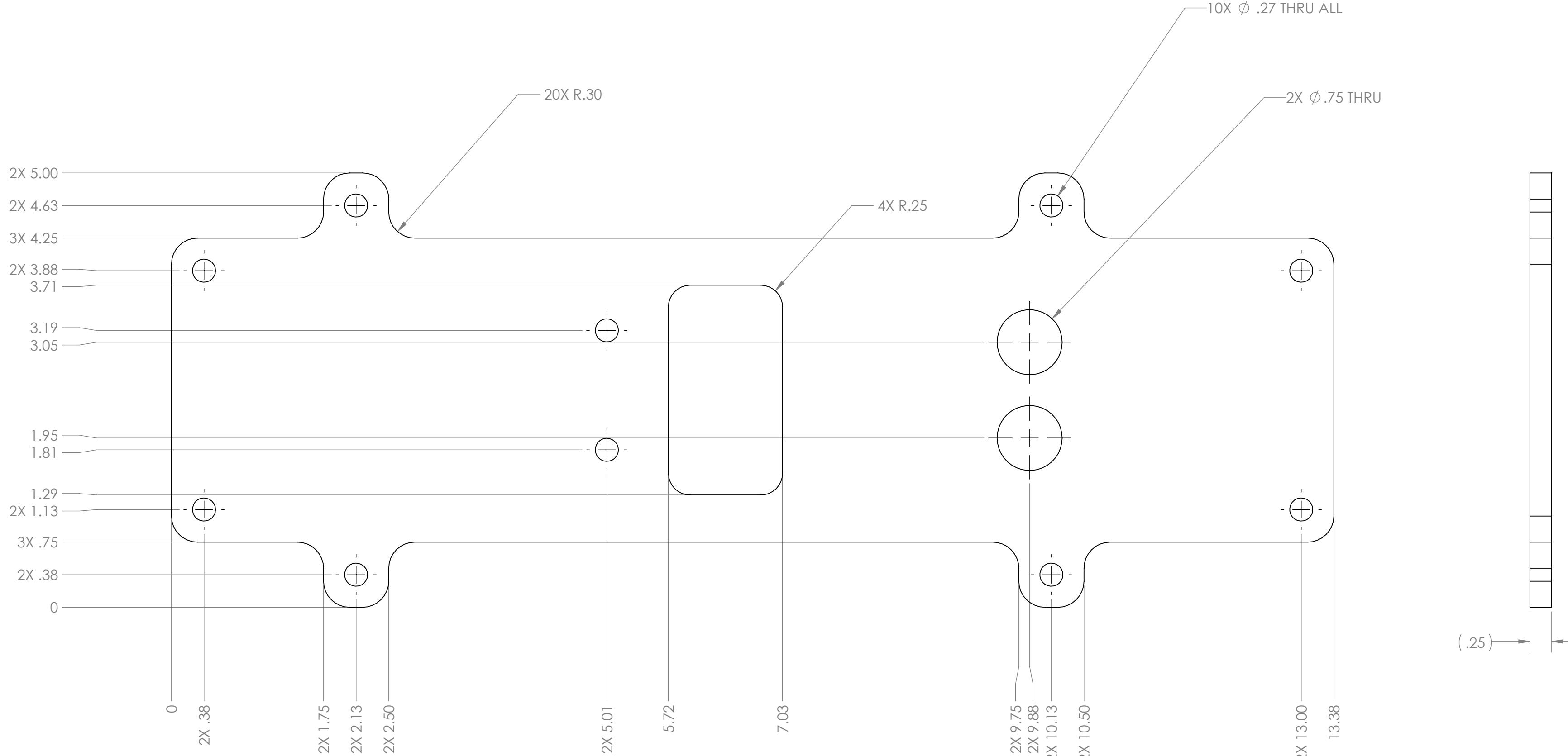
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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/28/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
1/4" thk. Polycarbonate, Clear	C	GE-22462	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:1	SHEET 1 OF 1	

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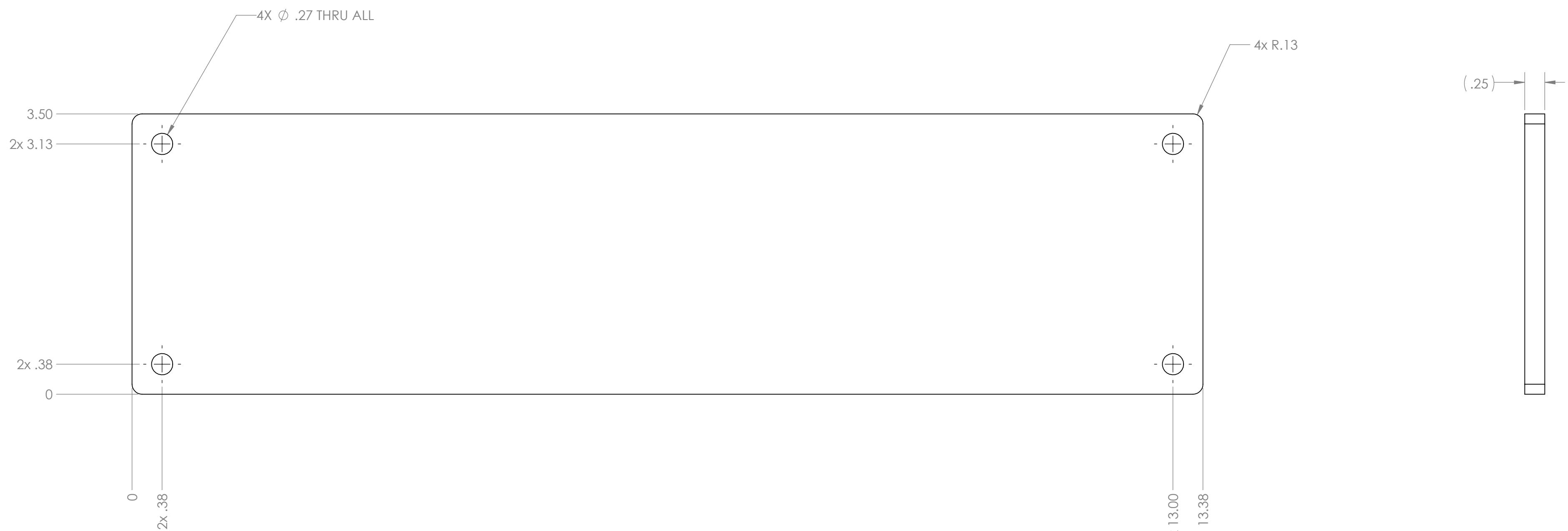
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Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	6/28/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
1/4" thk. Polycarbonate, Clear	C	GE-22463	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:1	SHEET 1 OF 1	

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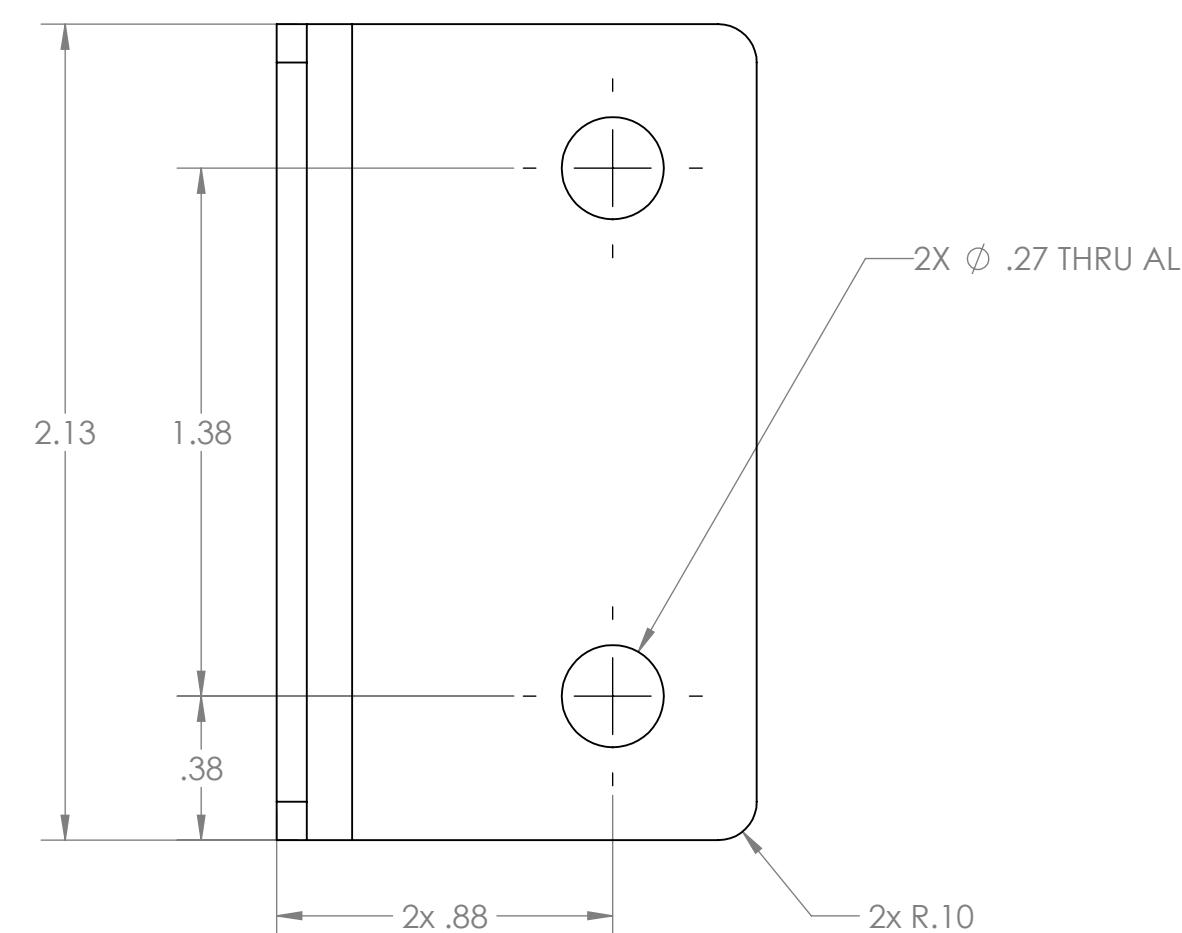
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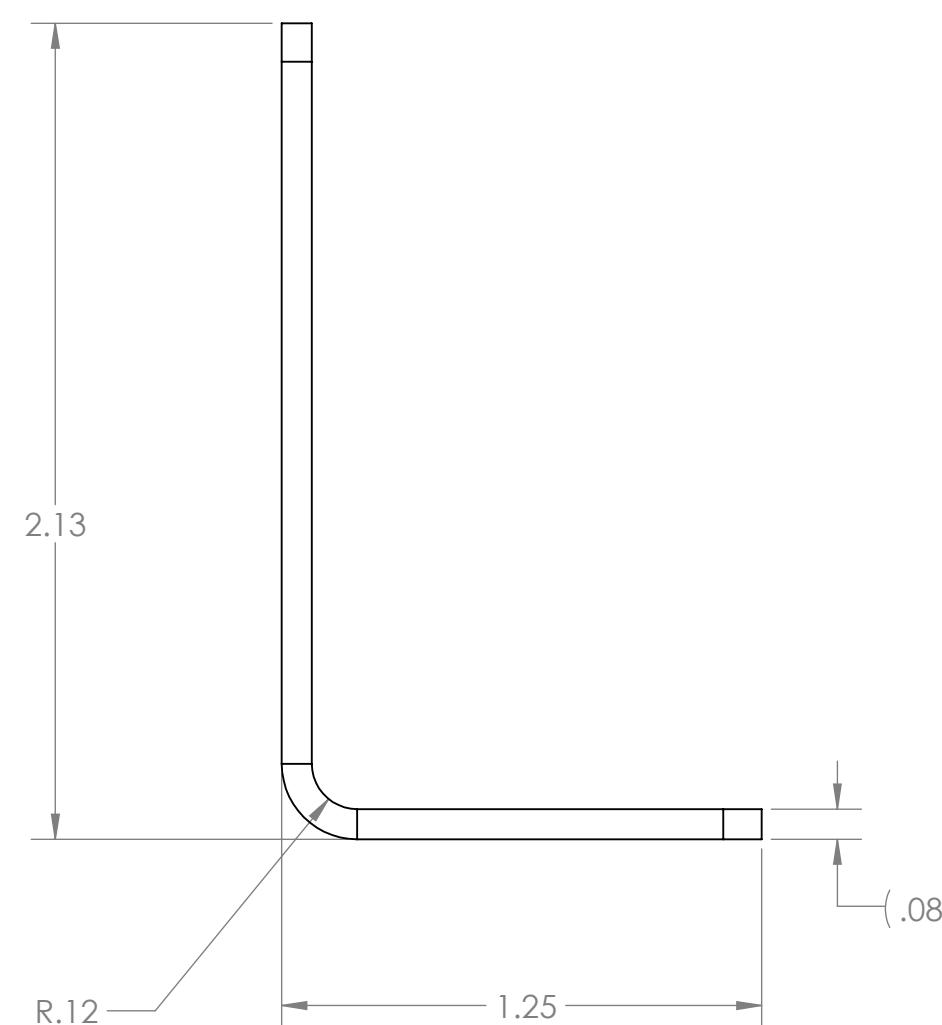
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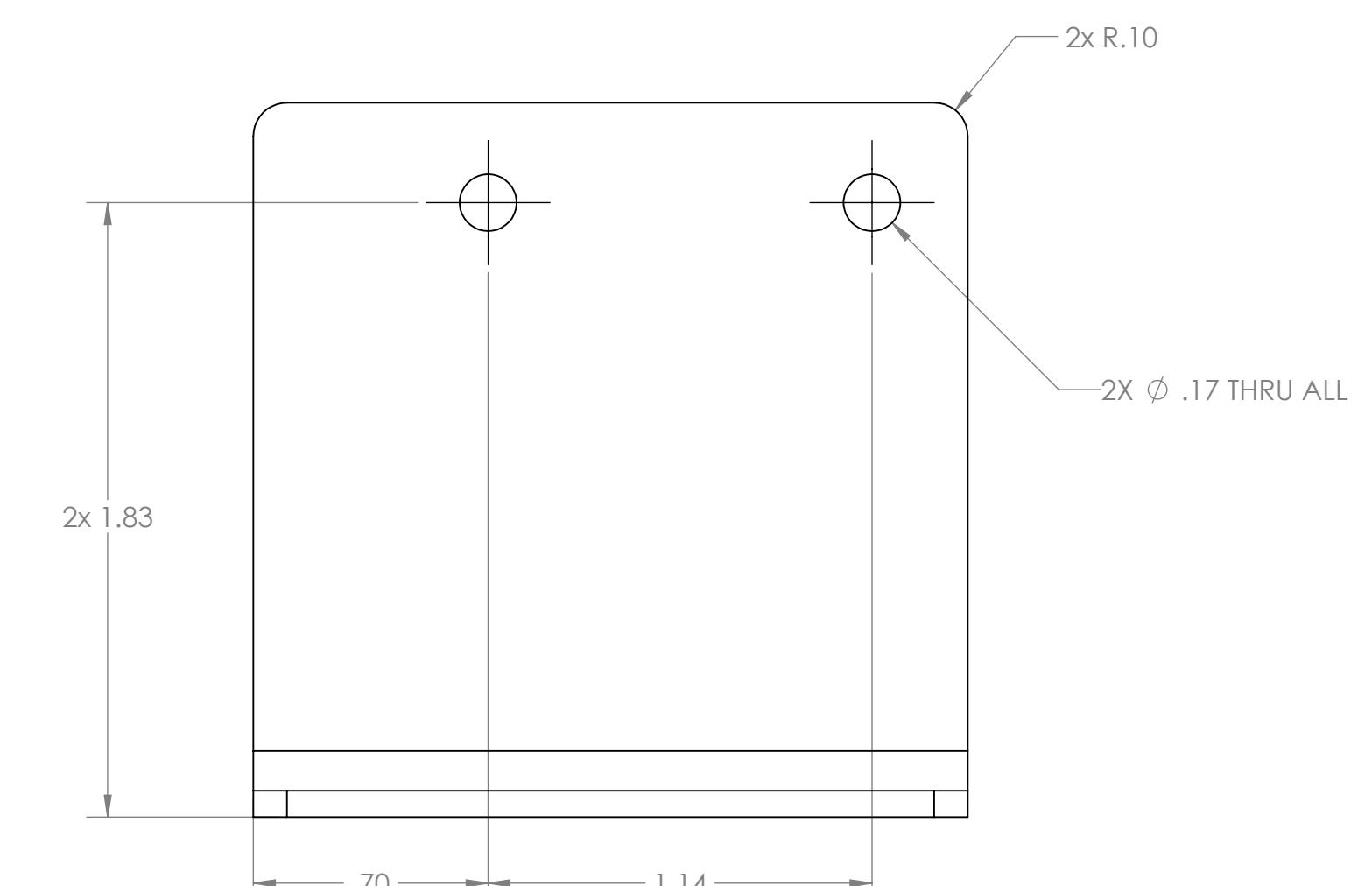
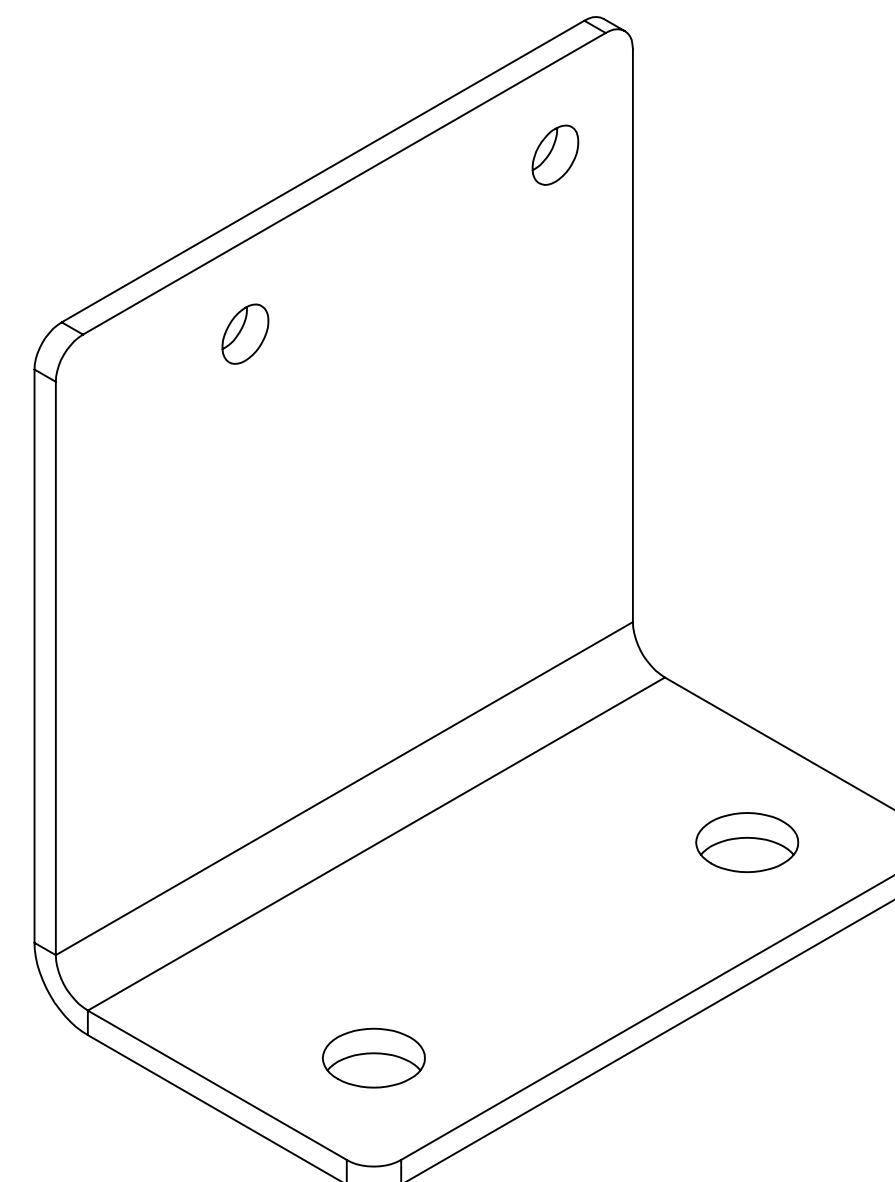
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Notes:
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE
DRAWN	CO	6/28/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH: 14 Ga. Preplated steel			
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			

 **FIRST
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TITLE:
**Color Sensor
Bracket**

SIZE DWG. NO. REV

C GE-22464

SCALE: 2:1 SHEET 1 OF 1

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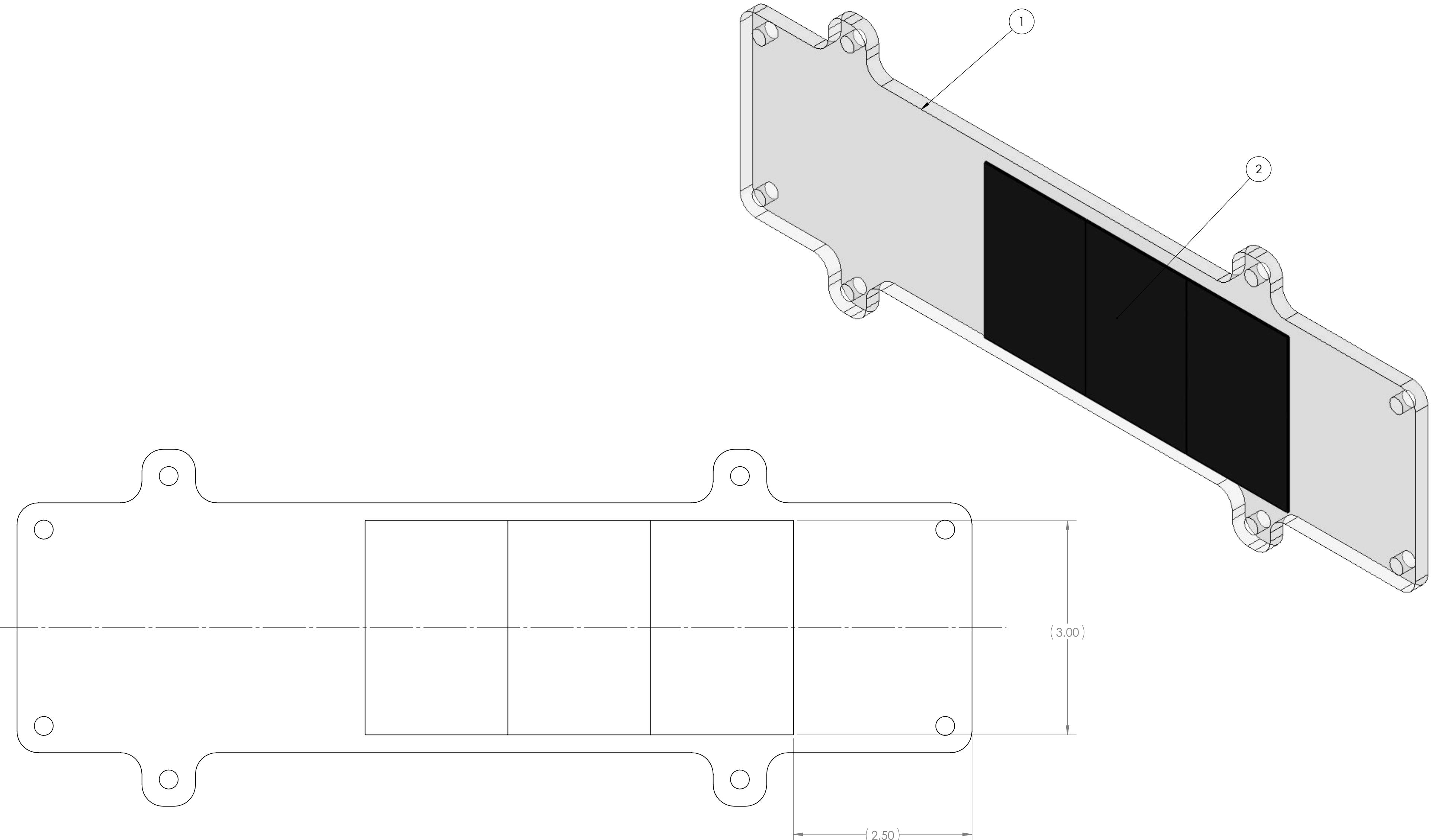
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-22462	Sensor Plate	1
2	tape_SENSORDIFFUSER	2" wide x 3" long black gaff tape	3

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	CO	12/16/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	PROPRIETARY AND CONFIDENTIAL		
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION Modeling Solutions Partner

Sensor Light Shield

SIZE DWG. NO. REV

C GE-22466

SCALE: 1:1 SHEET 1 OF 1

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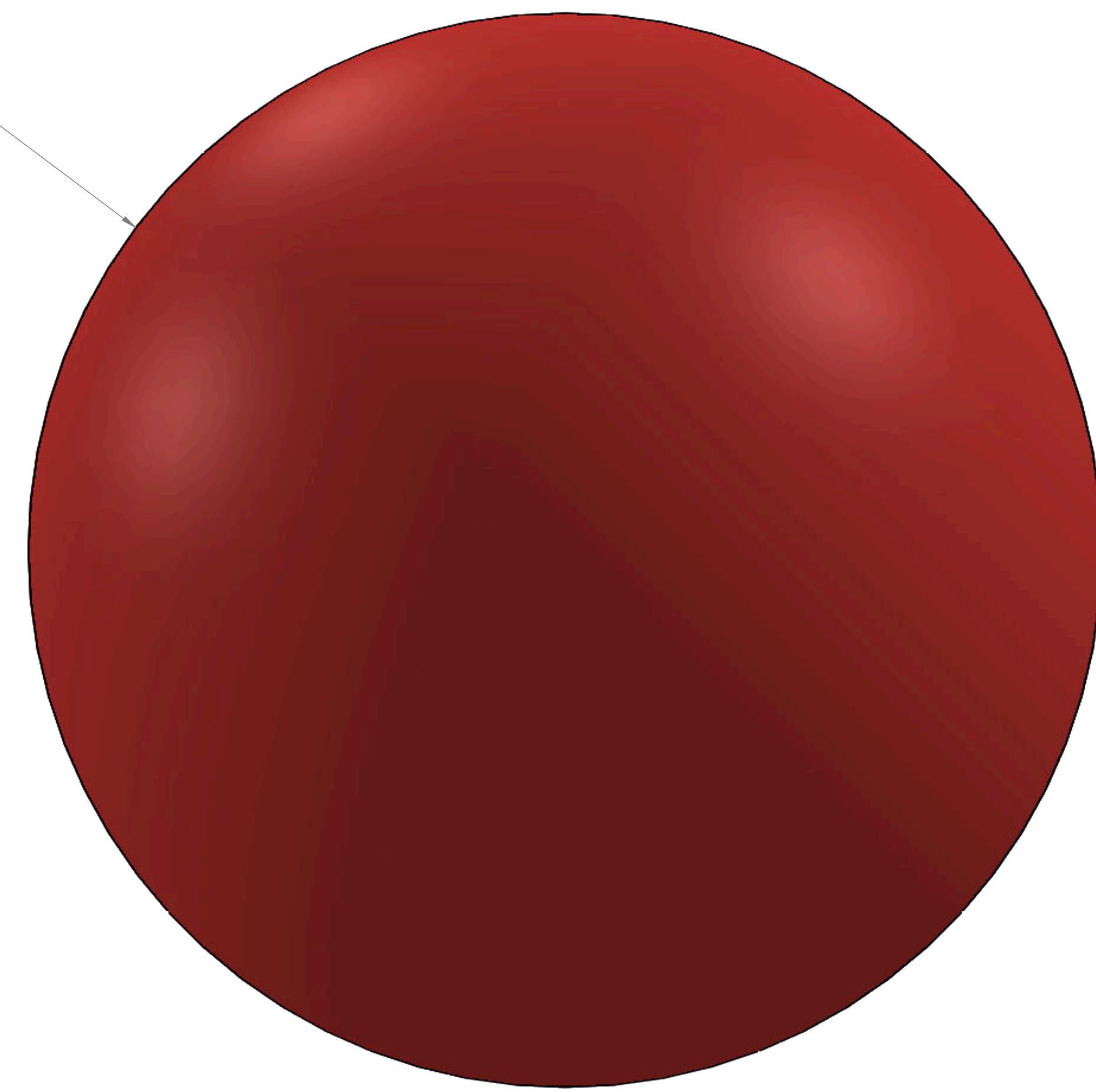
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 $(\phi 9.44)$ 

- Notes:
1. Description: 9.5 inch oversized tennis ball, red
 2. Source: AndyMark
 3. Item#: am-4600_red
 4. To be inflated to 3.5 PSI

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
	DRAWN	CO	12/30/2021
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COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING			
 FIRST ROBOTICS COMPETITION  <small>SOLIDWORKS Modeling Solutions Partner</small>			
TITLE: Cargo - Red			
SIZE DWG. NO. REV			
C GE-22497			
SCALE: 1:1 SHEET 1 OF 1			

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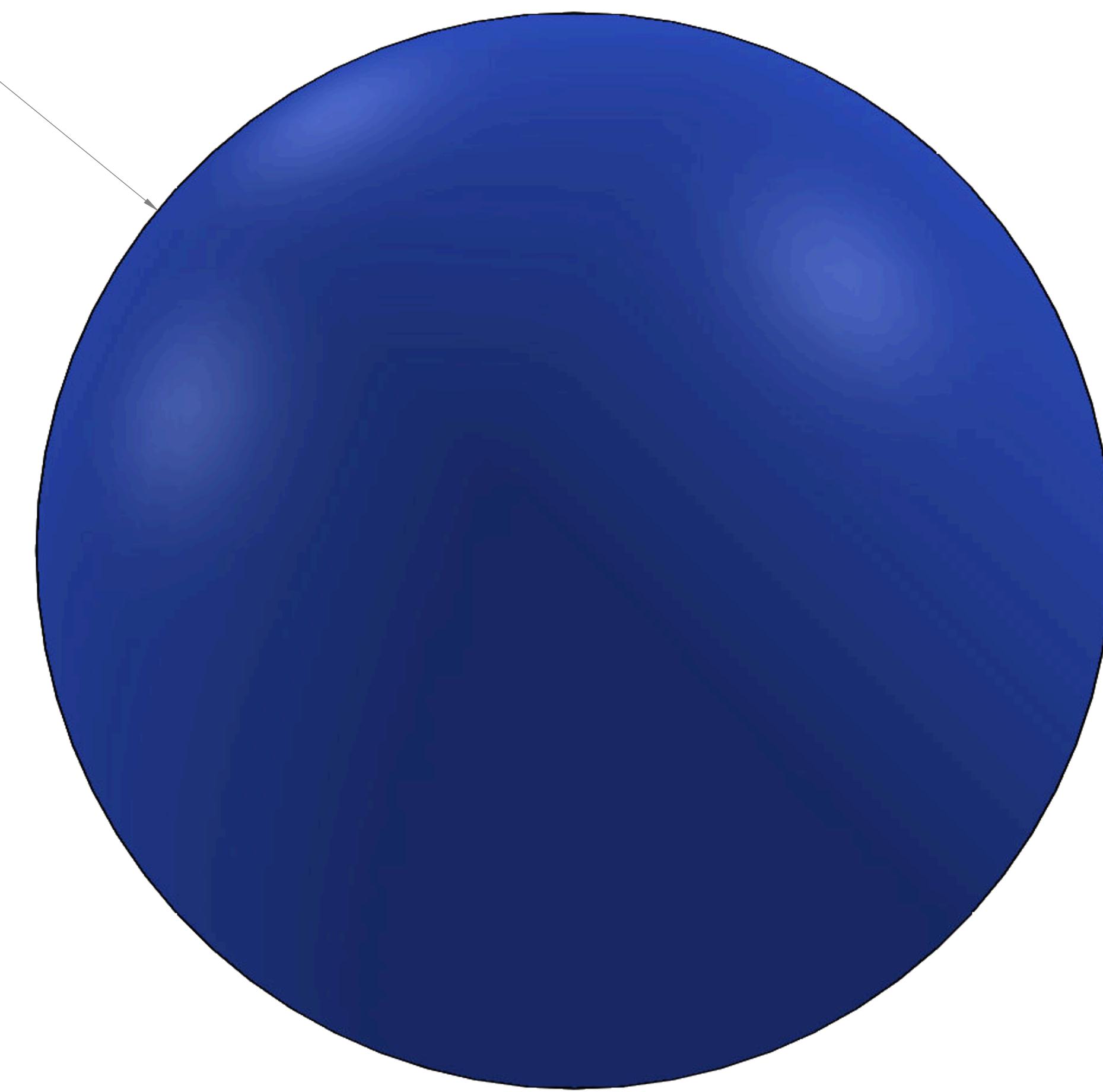
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 $(\phi 9.44)$ 

- Notes:
1. Description: 9.5 inch oversized tennis ball, blue
 2. Source: AndyMark
 3. Item#: am-4600_blue
 4. To be inflated to 3.5 PSI

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	CO	12/30/2021	
PROPRIETARY AND CONFIDENTIAL			
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
	C	GE-22498	
COMMENTS:		REMOVE ALL BURRS AND SHARP EDGES.	
DO NOT SCALE DRAWING		SCALE: 1:1	SHEET 1 OF 1

4

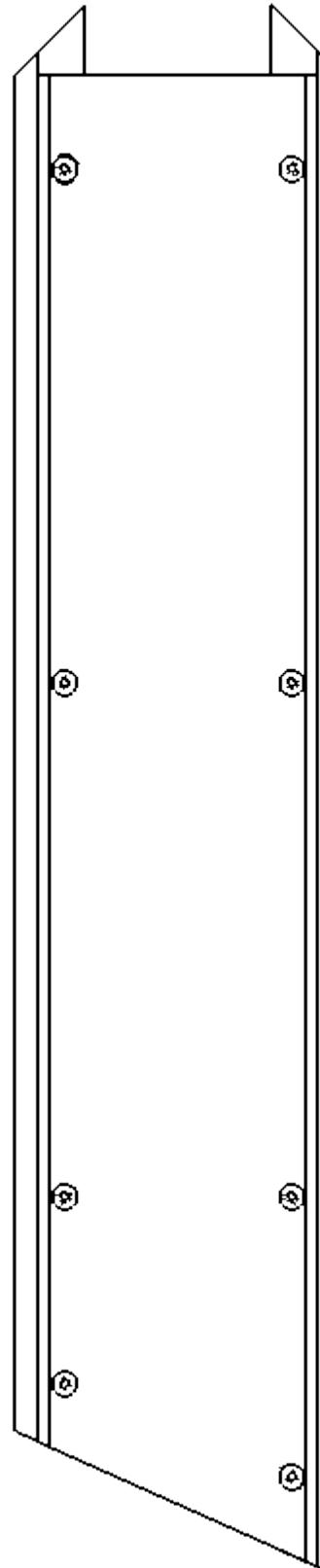
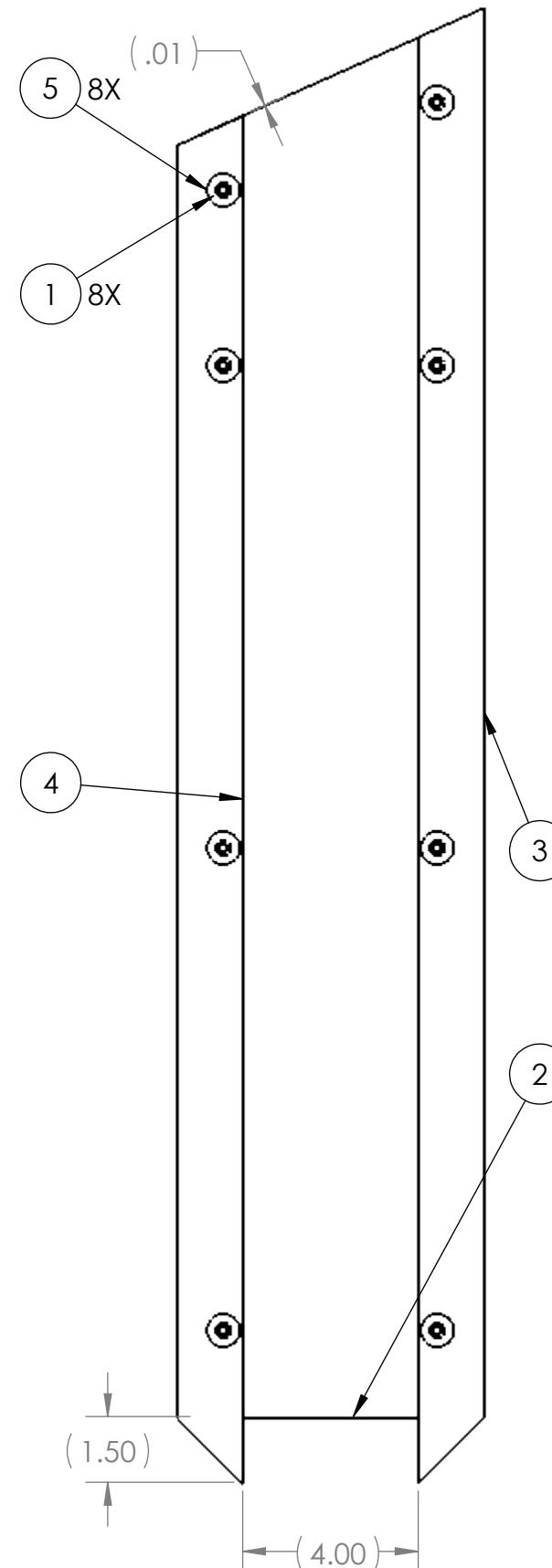
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ITEM NO.	PART NUMBER	DESCRIPTION	
1	Flat Hex .25_20_.75	Flat Hex .25_20_.75	8
2	GE-22601	Cable protector top angled	1
3	GE-22602	Cable protector side right angled	1
4	GE-22603	Cable protector side left angled	1
5	TeeNut_ultra_split_rst_.25_20	.25-20 TeeNut ultra split resistant	8

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Added sheet 2	1/5/2022	DAF



Notes:

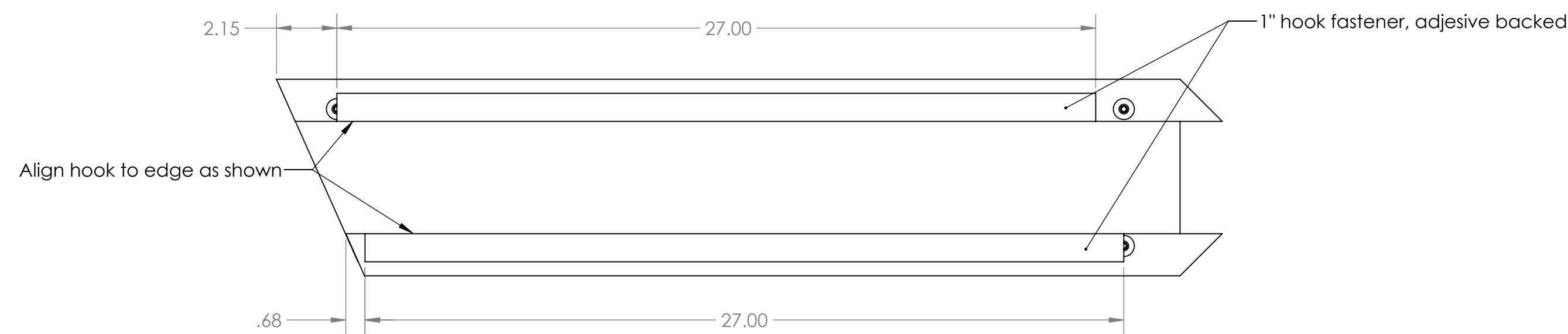
1. Insert (5) 8X to (4) and (3).
2. Attach (2) to (4) and (3) with (1) 8X.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NW	7/29/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$	PROPRIETARY AND CONFIDENTIAL		
MATERIAL/FINISH:	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

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TITLE: **Angled cable protector**
 SIZE **C** DWG. NO. **GE-22600** REV. **A**
 SCALE: 1:4 SHEET 1 OF 2

Post Manufacturing Instructions



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NW	7/29/2021
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$			
TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$			
MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.	
COMMENTS:	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING	SIZE	DWG. NO.	REV
	C	GE-22600	A
	SCALE: 1:4	SHEET 2 OF 2	

 **FIRST
ROBOTICS
COMPETITION**  SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Angled cable
protector**

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D

C

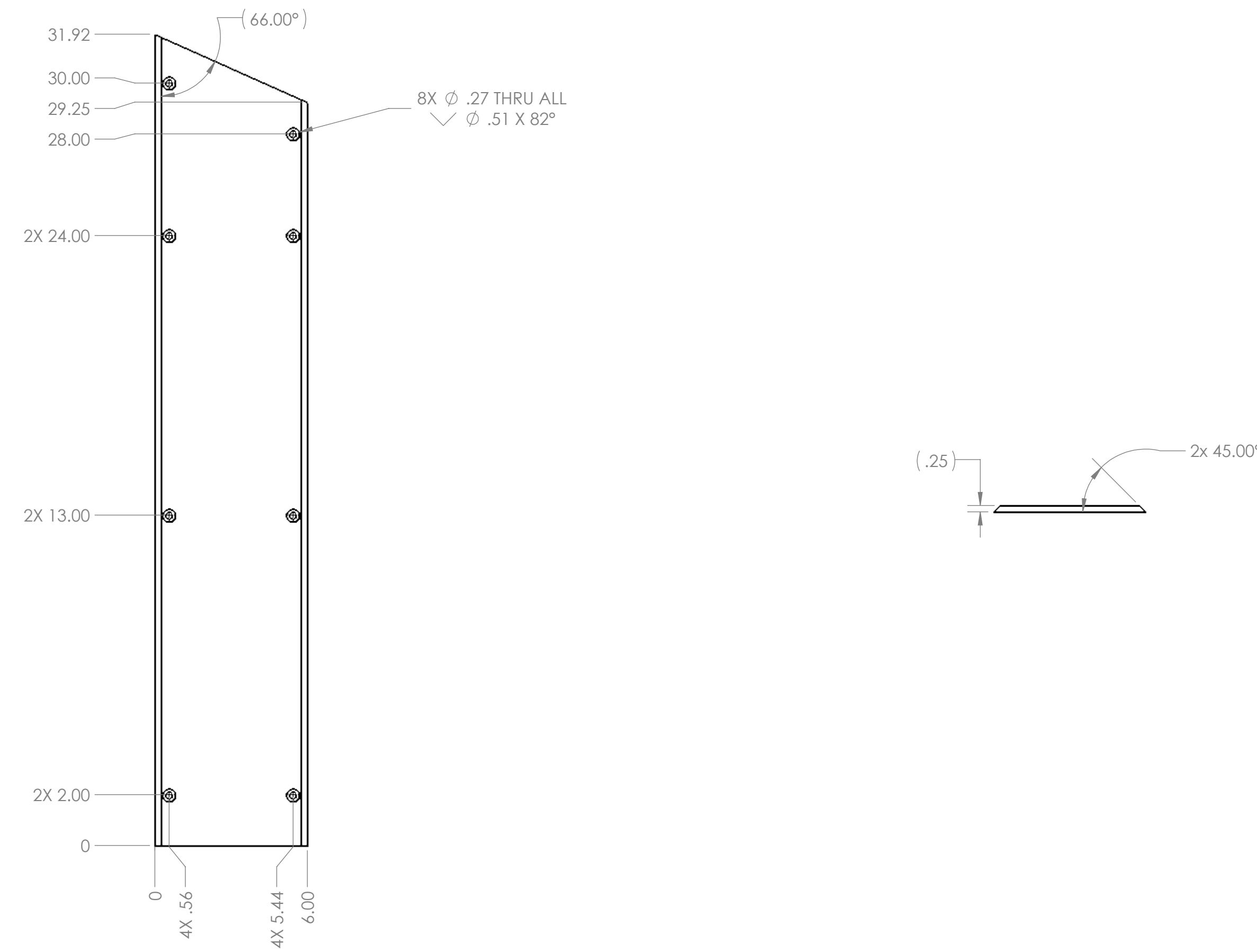
C

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A



FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE: Cable protector top angled
SIZE DWG. NO. REV
C GE-22601

SCALE: 1:8 SHEET 1 OF 1

D

D

C

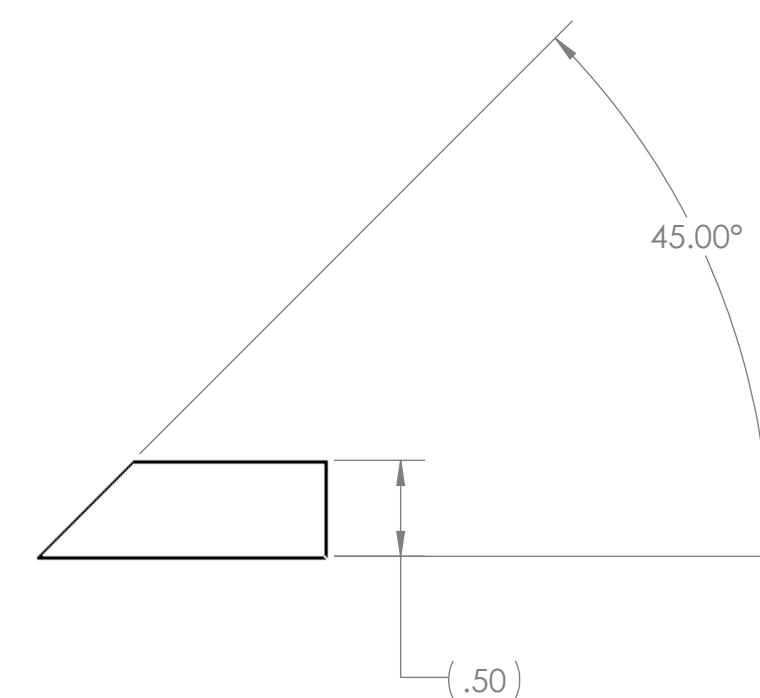
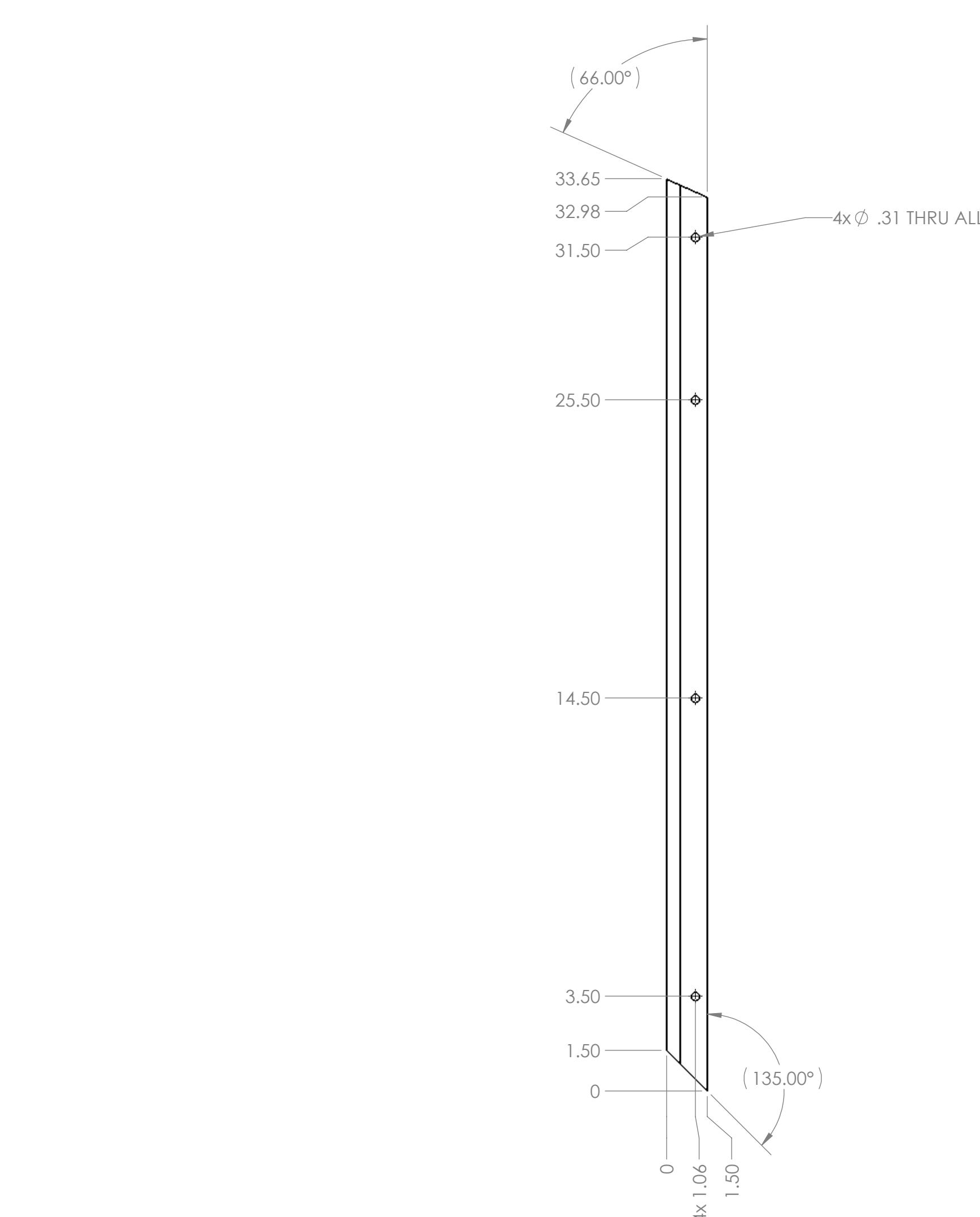
C

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UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	NW	6/8/2021
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
HDPE Black high gloss smooth	C	GE-22602	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:8	SHEET 1 OF 1	

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Cable protector
side right angled

SIZE DWG. NO. REV
C GE-22602

SCALE: 1:8 SHEET 1 OF 1

D

D

C

C

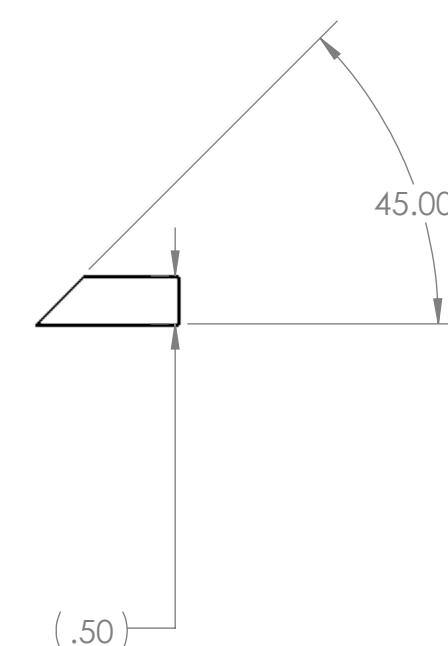
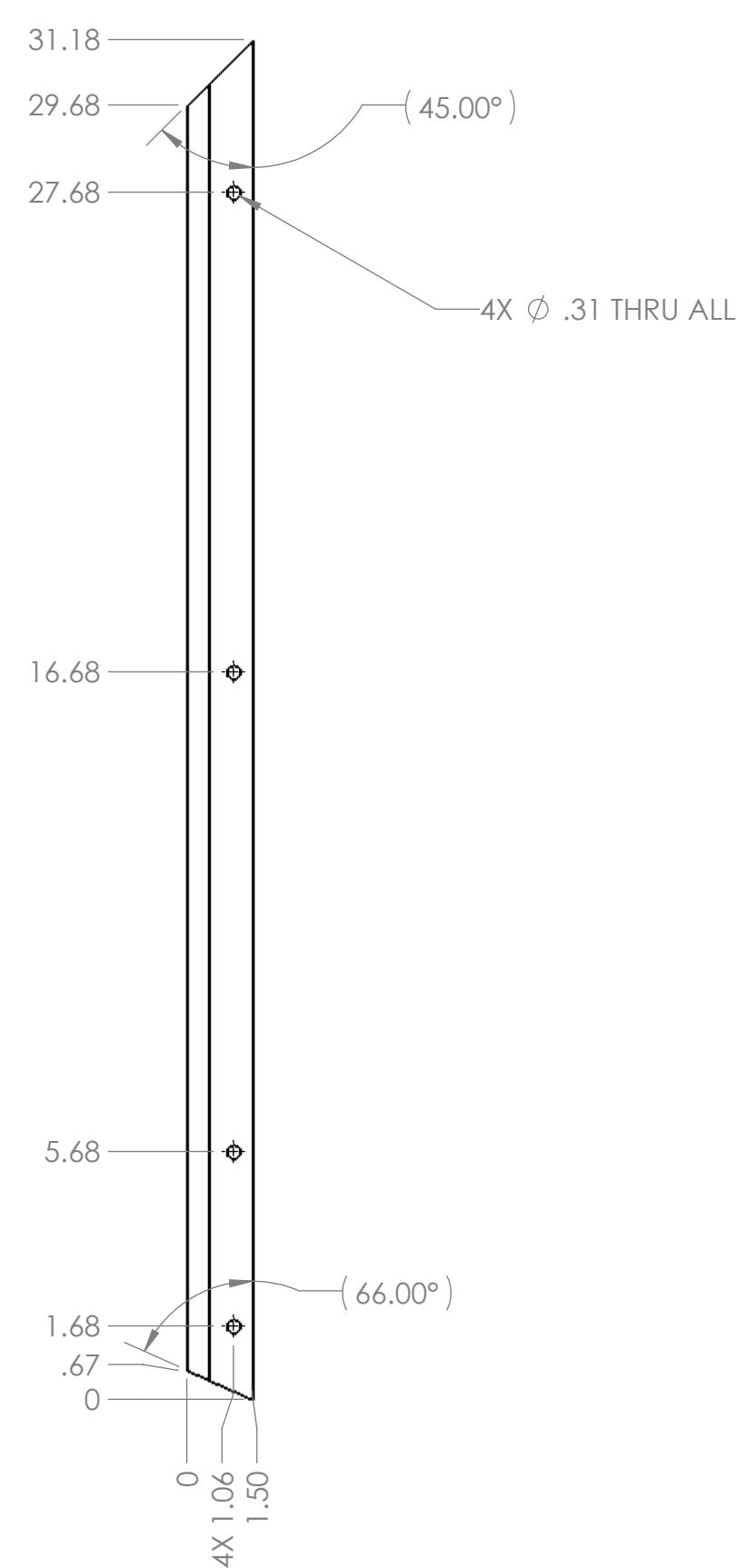
B

B

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Notes:
 1. Material: 0.5" HDPE, Black high gloss smooth.
 2. Remove all burrs and sharp edges
 3. Label with part number



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE
DRAWN	NW	6/7/2021	
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MATERIAL/FINISH:	SIZE	DWG. NO.	REV
HDPE Black high glass smooth	C	GE-22603	
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			
DO NOT SCALE DRAWING	SCALE: 1:8	SHEET 1 OF 1	

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Cable protector
side left angled**

SIZE DWG. NO. REV
C GE-22603

SCALE: 1:8 SHEET 1 OF 1

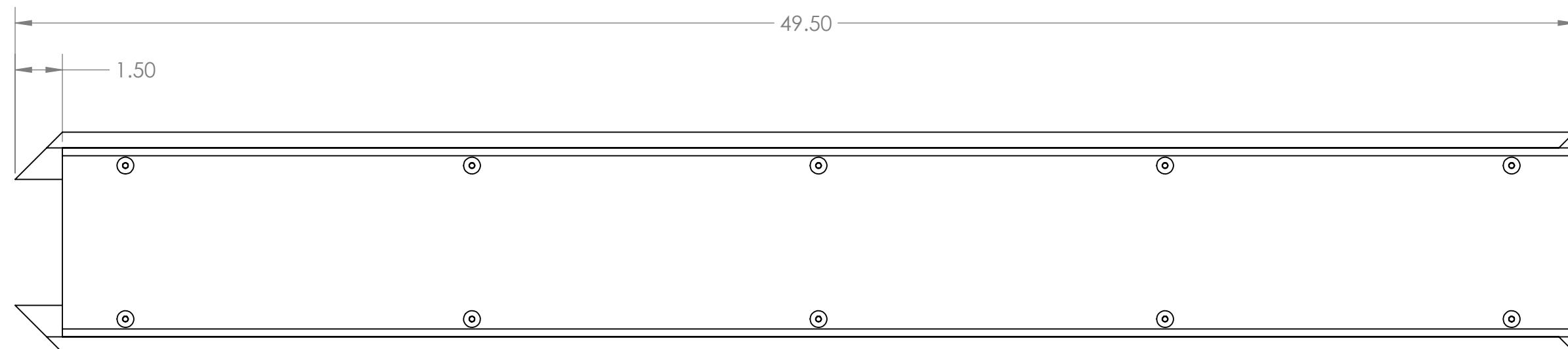
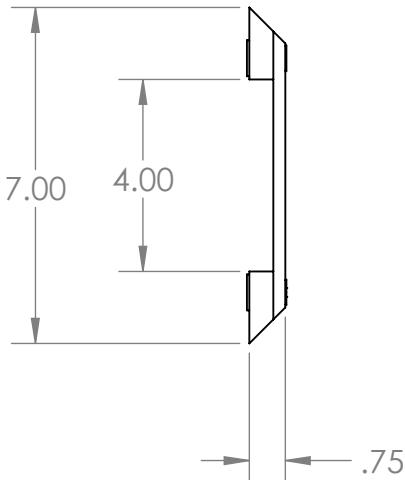
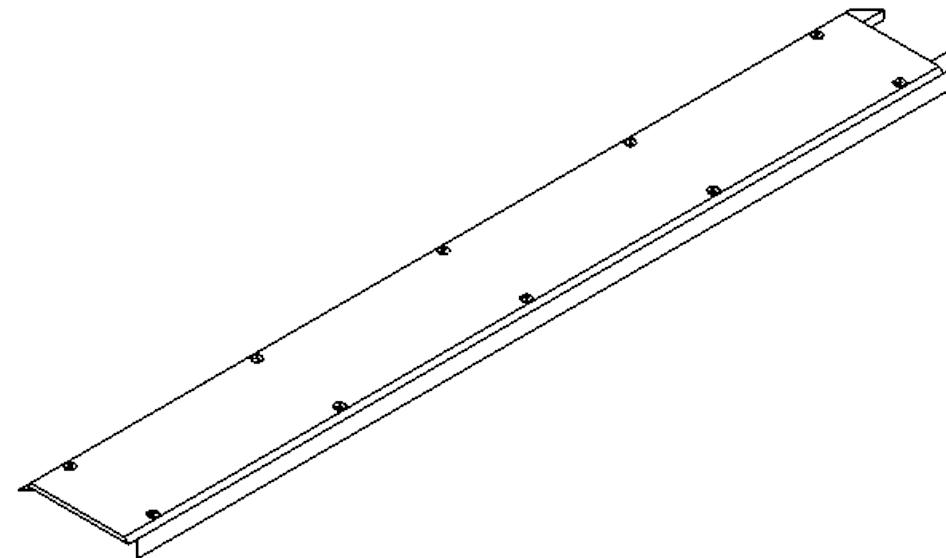
4

3

2

1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00301	Side angle left	1
2	FE-00303	Side angle right	1
3	FE-00302	Cable protector top	1
4	Flat Hex .25_20_.75	Flat Hex .25_20_.75	10
5	TeeNut_ultra_split_rst_.25_20	.25-20 TeeNut ultra split resistant	10



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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SCALE: 1:12		WEIGHT:	SHEET 1 OF 2		
SIZE		DWG. NO.	REV		
B		FE-00300			

4

3

2

1

4

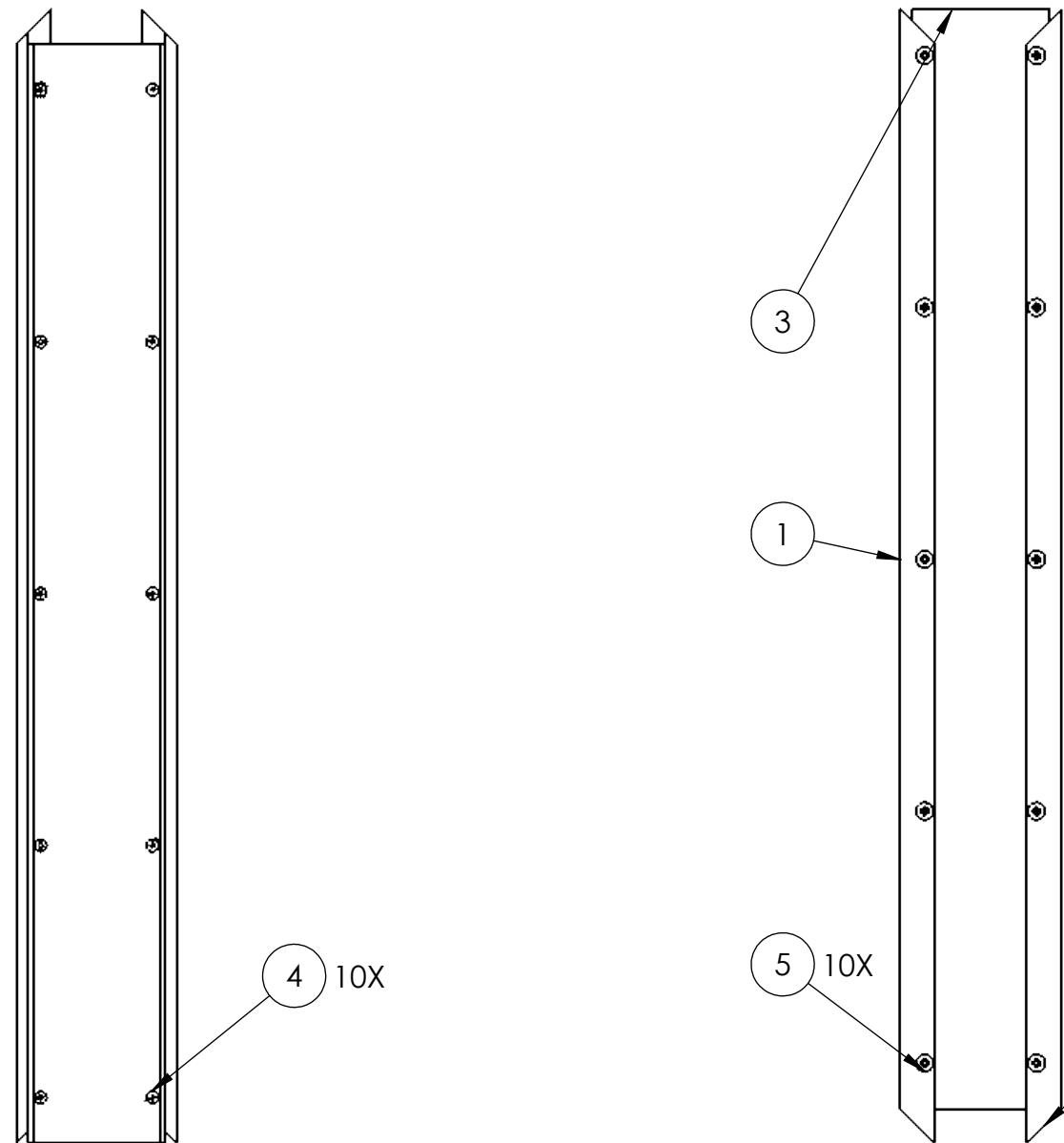
3

2

1

B

B



- Notes:
1. Insert **5** 10X in to the bottom of **1** and **2**.
 2. Attach **3** to **1** an **2** with **4** 10X .

A

A

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: HDPE Cable Protector

B	FE-00300	REV
SCALE: 1:12	WEIGHT:	SHEET 2 OF 2

4

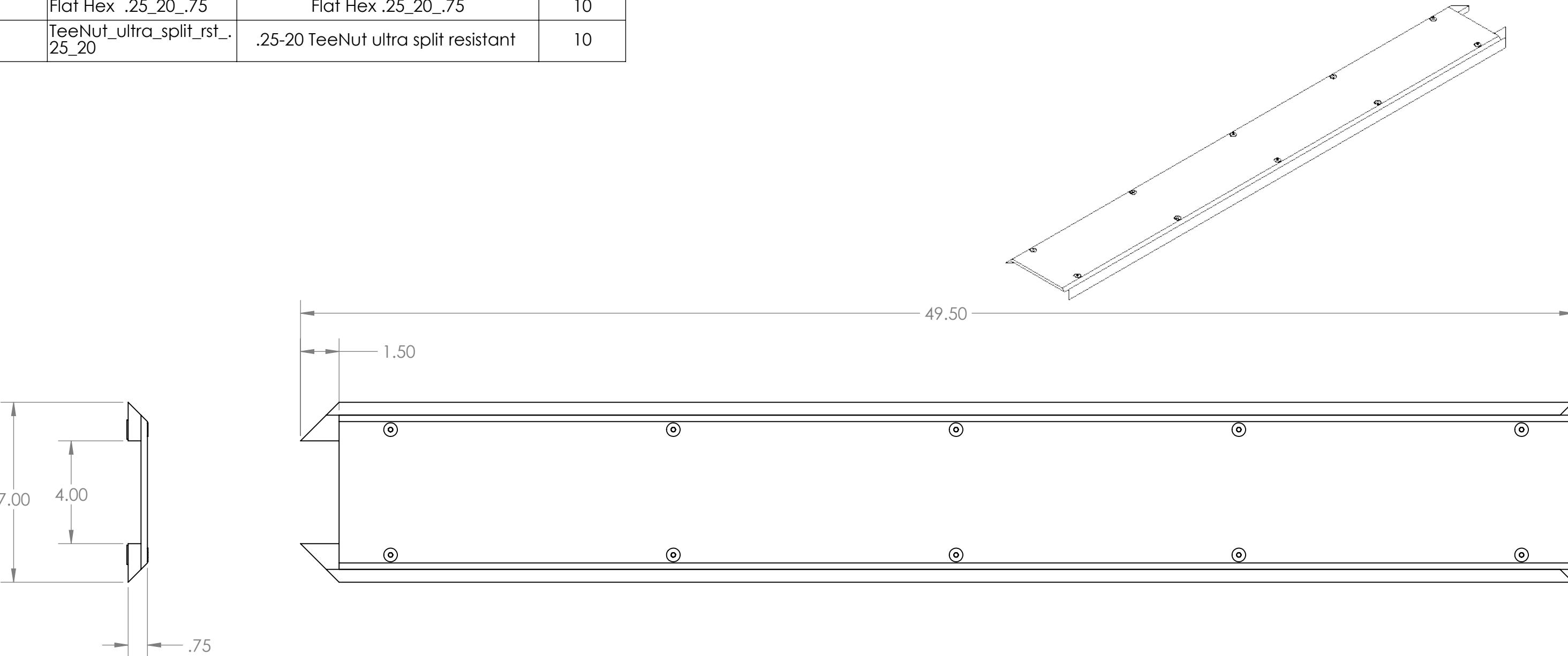
3

2

1

ITEM NO.	PART NUMBER	DESCRIPTION	
1	FE-00301	Side angle left	1
2	FE-00303	Side angle right	1
3	FE-00302	Cable protector top	1
4	Flat Hex .25_20_.75	Flat Hex .25_20_.75	10
5	TeeNut_ultra_split_rst_.25_20	.25-20 TeeNut ultra split resistant	10

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Added sheet 3	1/5/2022	DAF



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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SIZE	DWG. NO.	REV			
B	FE-00300	A			
SCALE: 1:12	WEIGHT:	SHEET 1 OF 3			

4

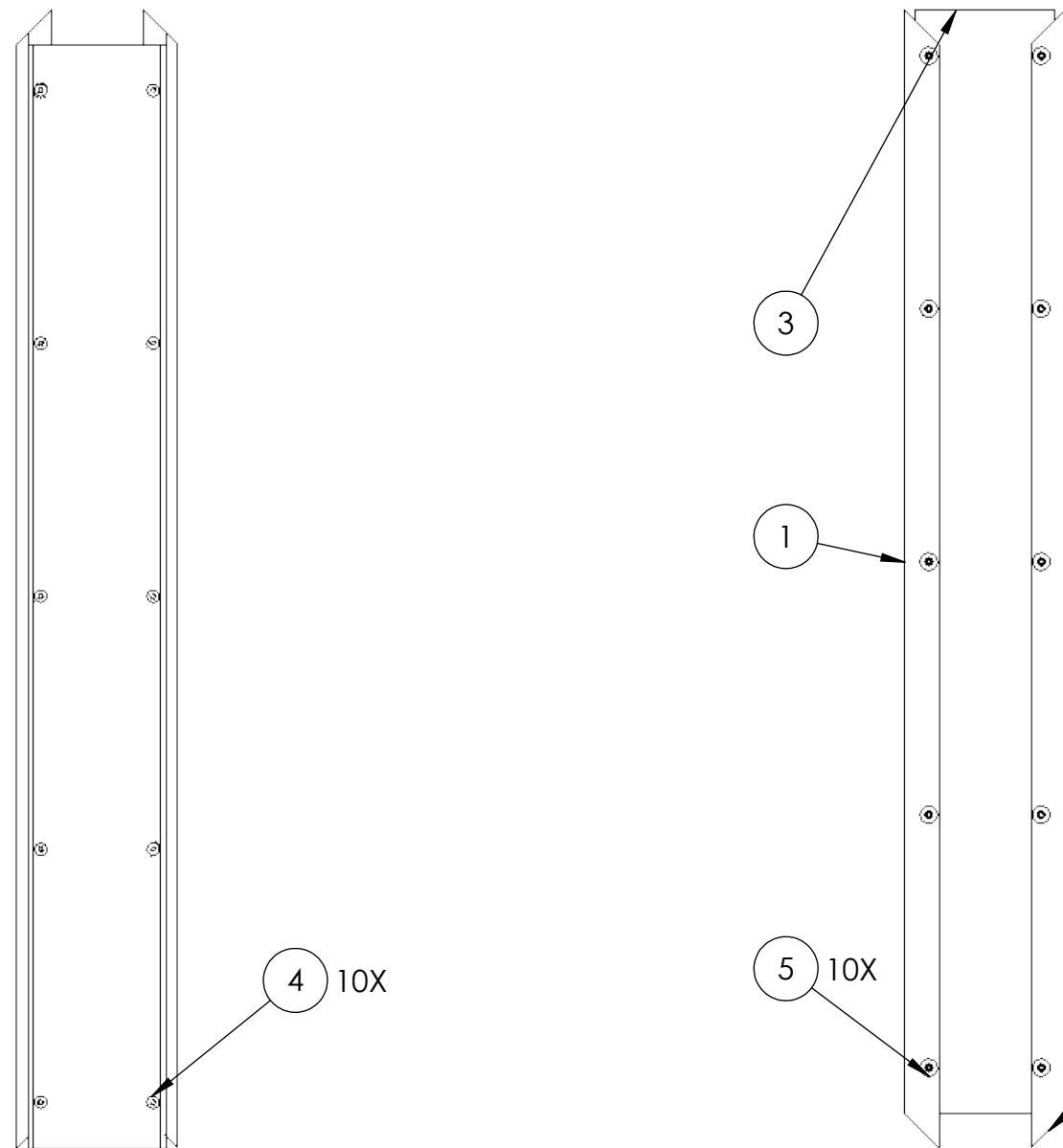
3

2

1

B

B



- Notes:
1. Insert **5** 10X in to the bottom of **1** and **2**.
 2. Attach **3** to **1** an **2** with **4** 10X .

A

A

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: HDPE Cable Protector

SIZE	DWG. NO.	REV
B	FE-00300	A

SCALE: 1:12 WEIGHT: SHEET 2 OF 3

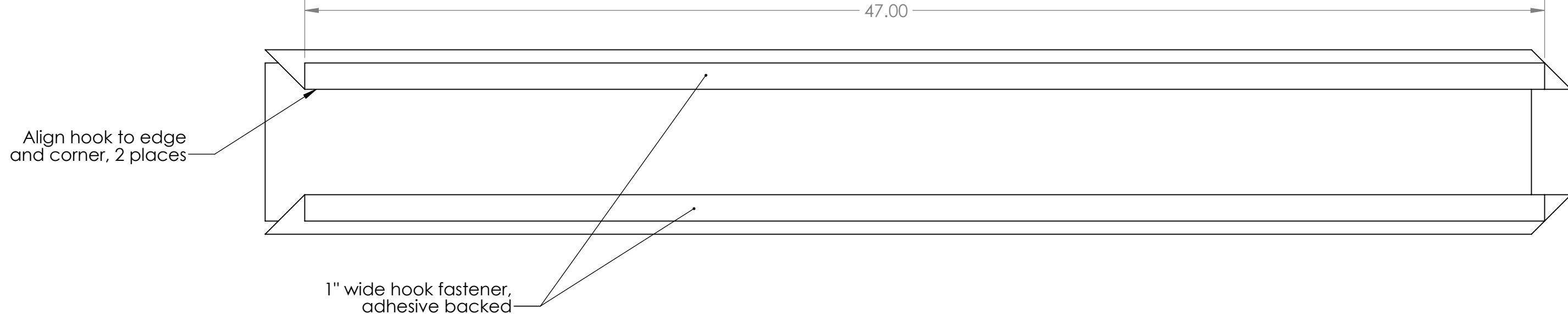
4

3

2

1

Post Manufacturing Instructions



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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: HDPE Cable Protector

SIZE DWG. NO. **B** FE-00300 **REV** **A**

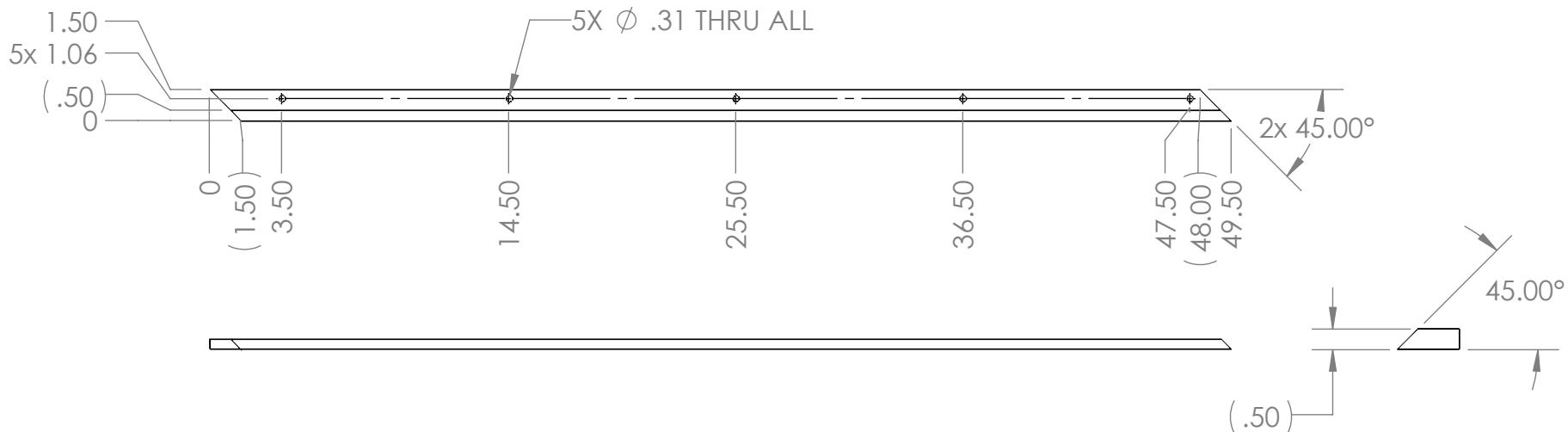
SCALE: 1:12 WEIGHT: SHEET 3 OF 3

2

1

B

B



A

A

		UNLESS OTHERWISE SPECIFIED:				
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$		DRAWN	NAME	DATE
		INTERPRET GEOMETRIC TOLERANCING PER:		CHECKED		
		MATERIAL HDPE Black		ENG APPR.		
		NEXT ASSY		MFG APPR.		
		USED ON		Q.A.		
		FINISH		COMMENTS:		
		APPLICATION		DO NOT SCALE DRAWING		
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DS SOLIDWORKS
Modeling Solutions Partner

TITLE:
Side angle left

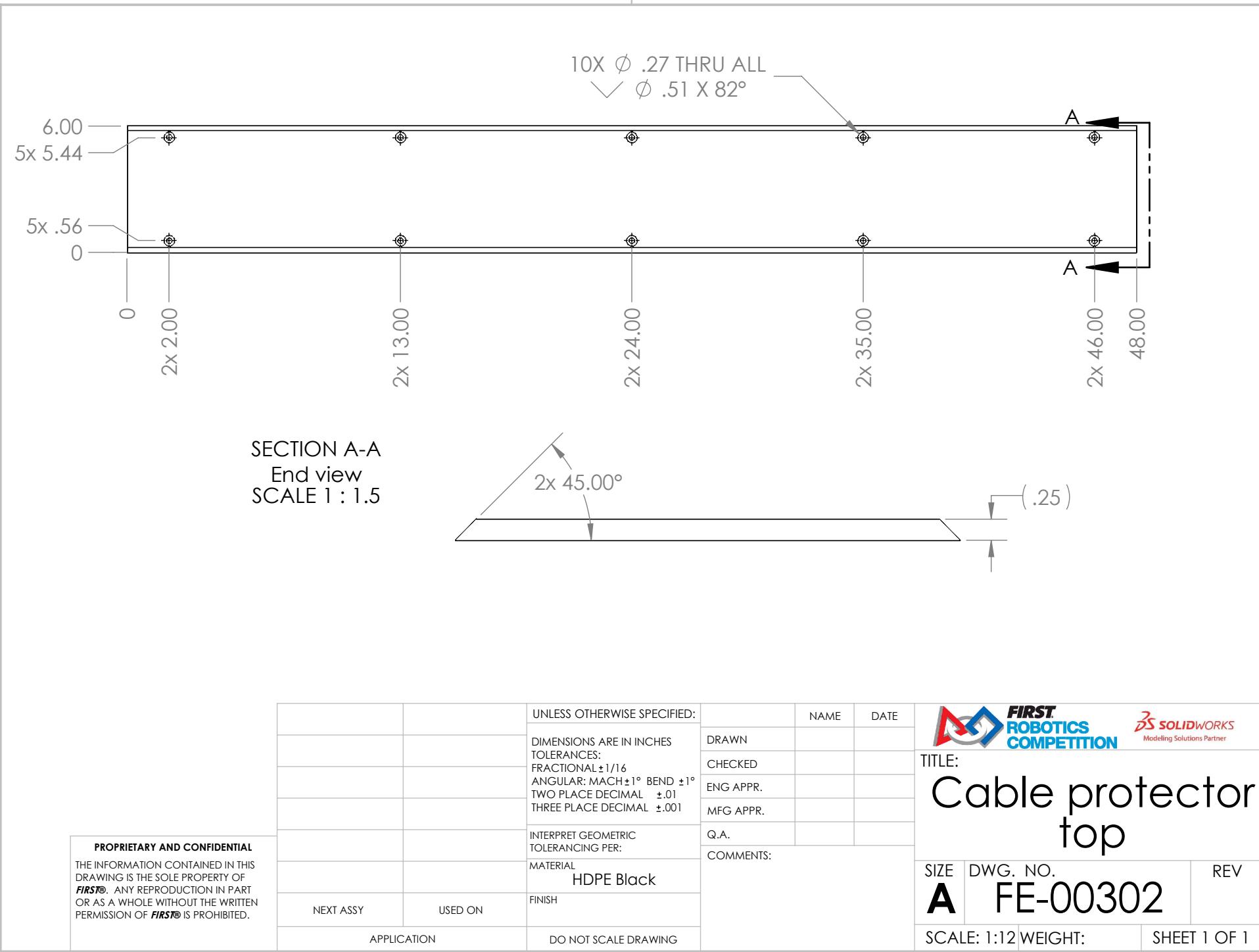
SIZE	DWG. NO.	REV
A	FE-00301	
SCALE: 1:12		WEIGHT:
		SHEET 1 OF 1

2

1

2

1



2

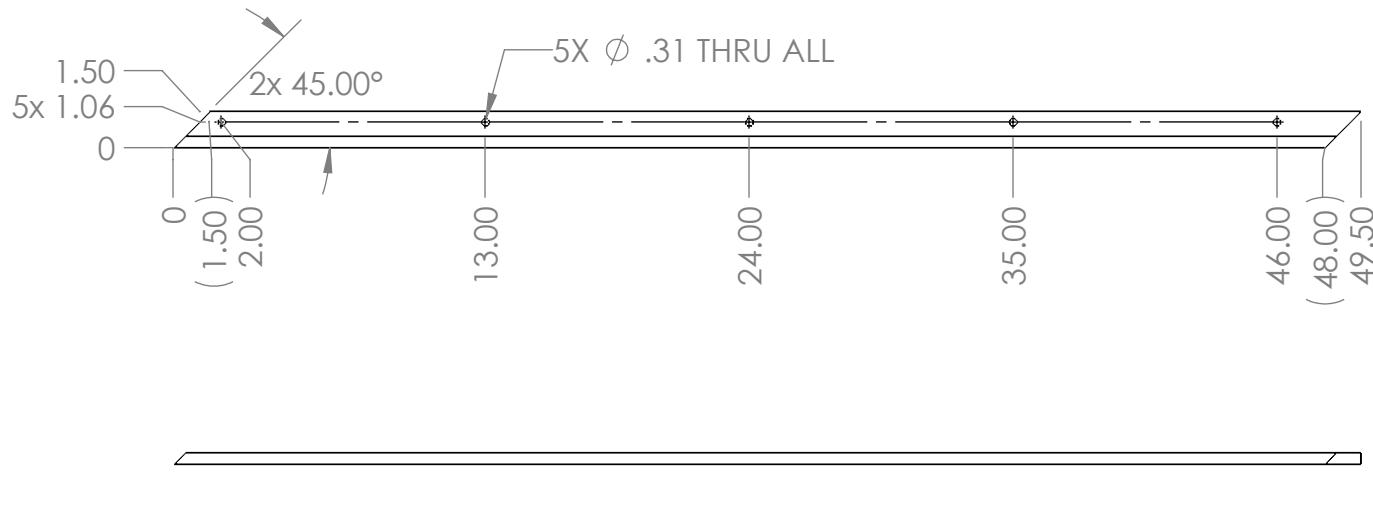
1

2

1

B

B



A

A

		UNLESS OTHERWISE SPECIFIED:			NAME	DATE
		DIMENSIONS ARE IN INCHES		DRAWN		
		TOLERANCES:		CHECKED		
		FRACTIONAL $\pm 1/16$		ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$		MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$		Q.A.		
		THREE PLACE DECIMAL $\pm .001$		COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
		HDPE Black				
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				

 FIRST
ROBOTICS
COMPETITION

 SOLIDWORKS
Modeling Solutions Partner

TITLE:
Side angle right

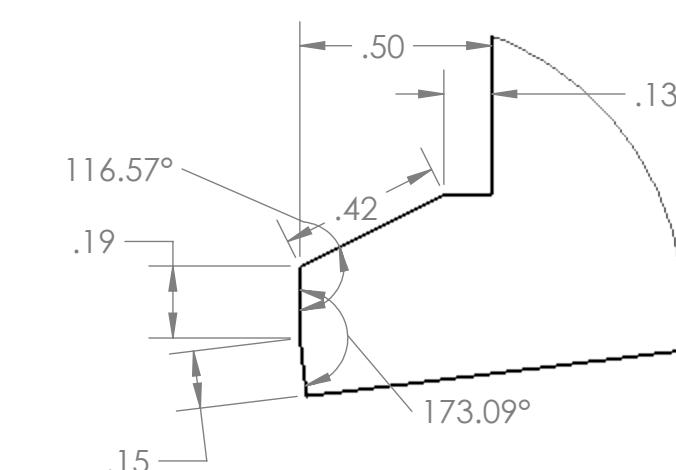
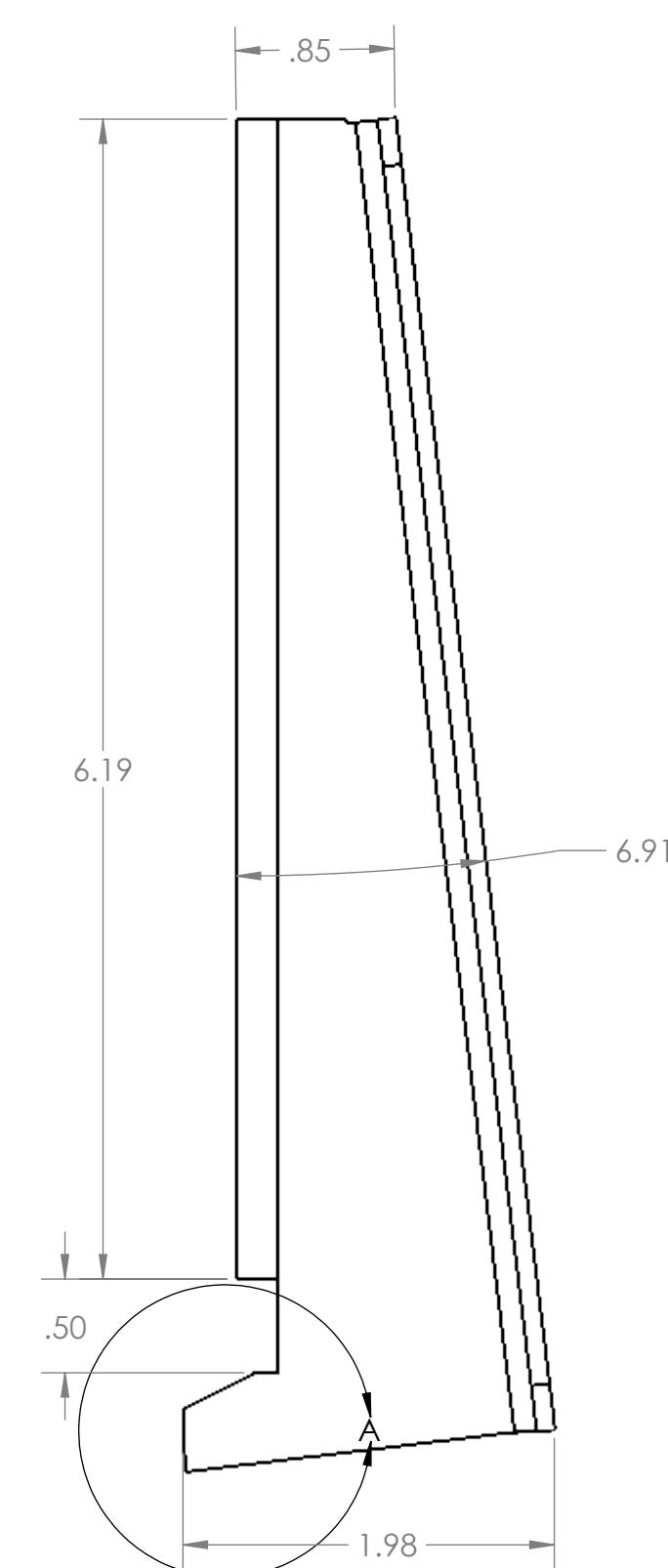
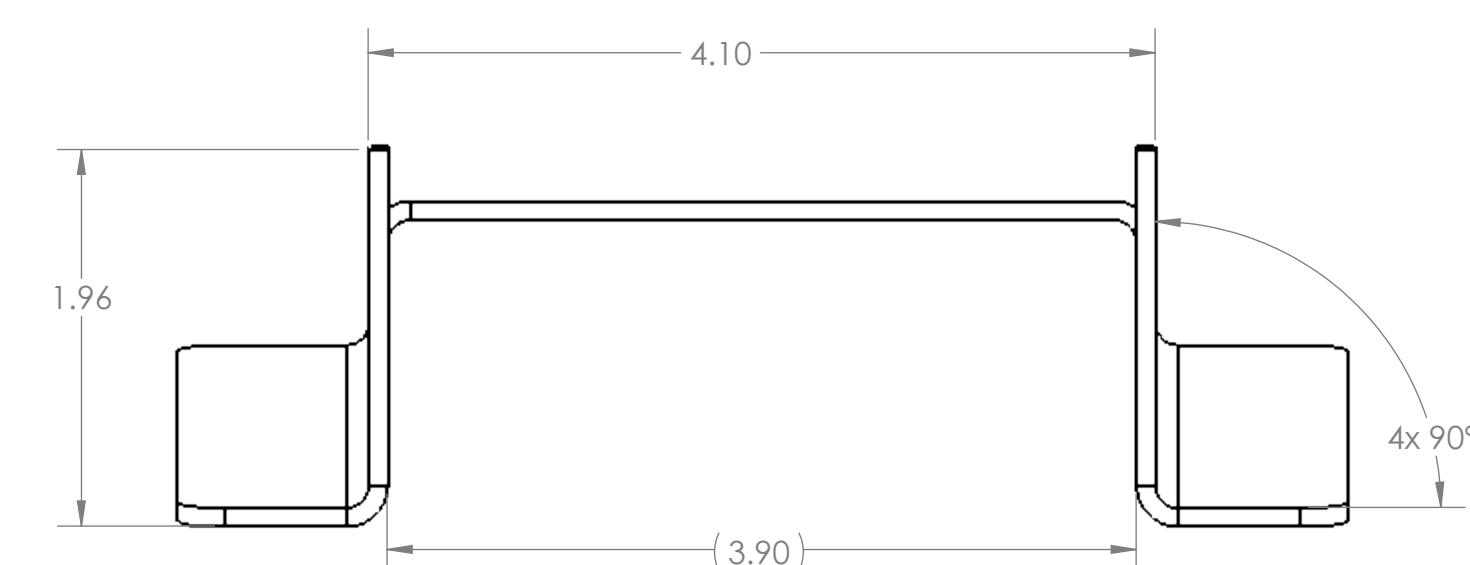
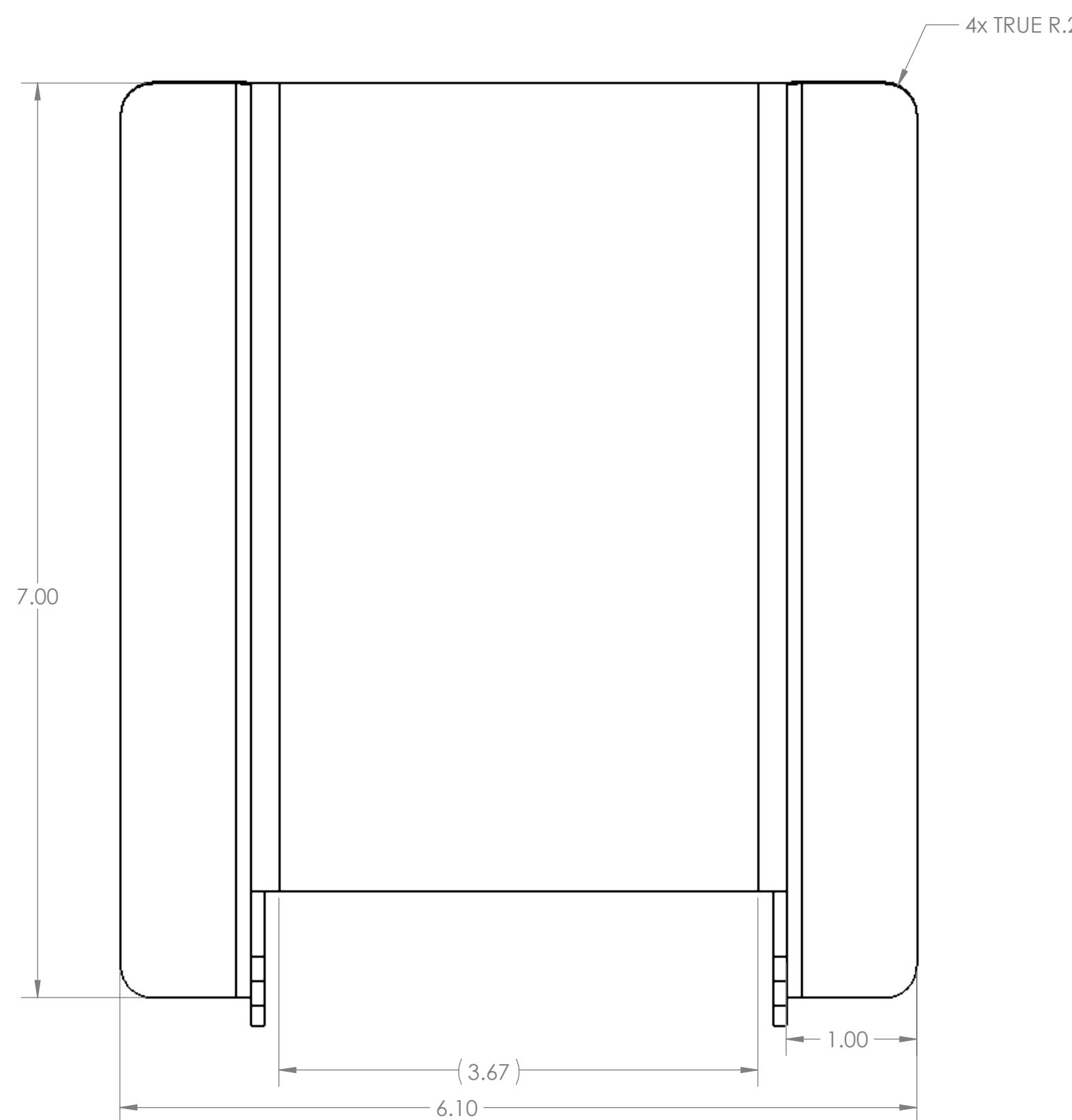
SIZE	DWG. NO.	REV
A	FE-00303	
SCALE: 1:12	WEIGHT:	SHEET 1 OF 1

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2

1

D

DETAIL A
SCALE 2 : 1

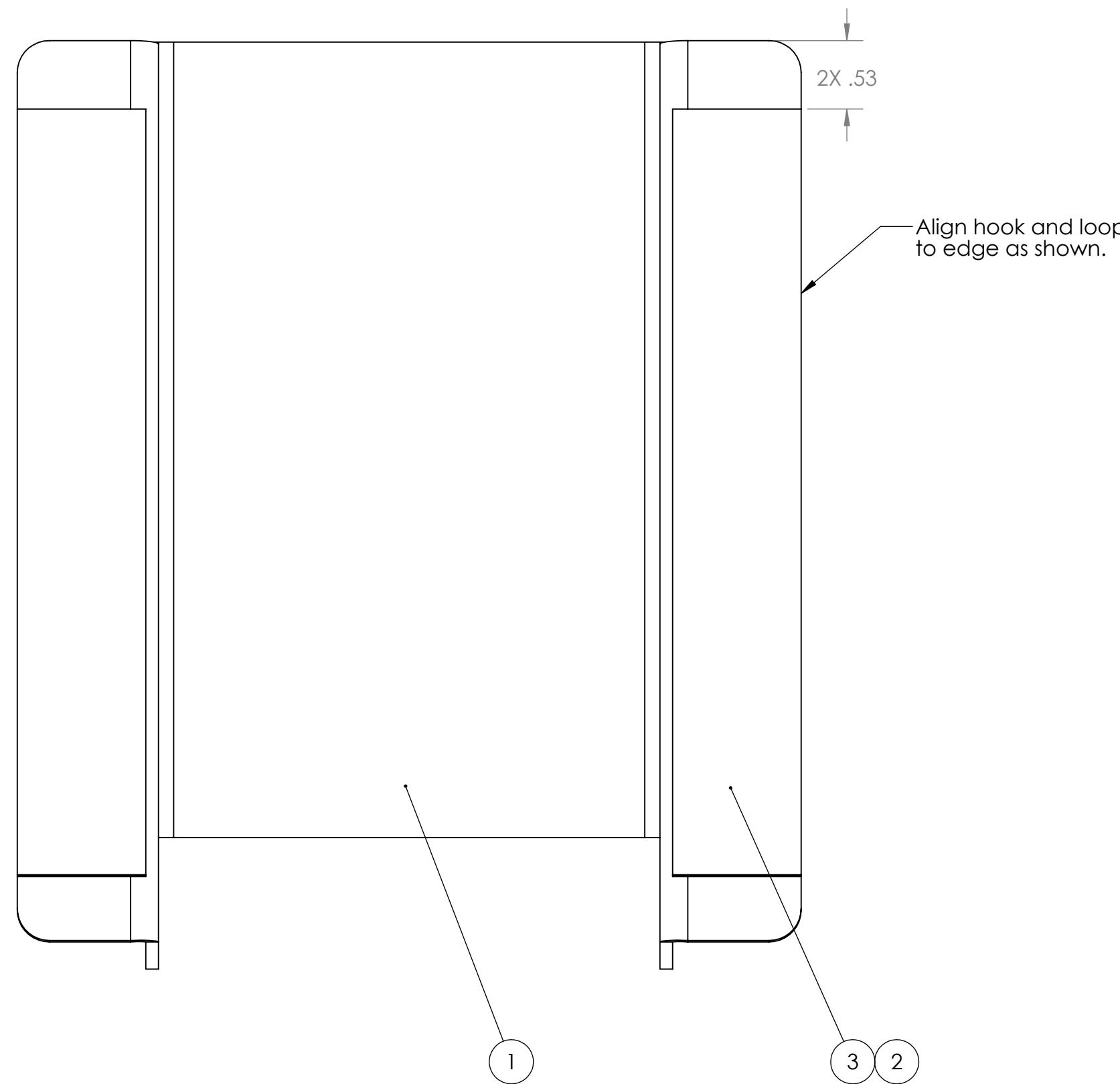
UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE
		DRAWN	NW	7/8/2021
DIMENSIONS ARE IN INCHES				
TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$				
TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$				
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MATERIAL/FINISH: 12 gau steel powder coated black				
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING				

 **FIRST
ROBOTICS
COMPETITION**  **SOLIDWORKS**
Modeling Solutions Partner

TITLE:
**Cable protector
exit segment**

SIZE DWG. NO. REV
C FE-00304

SCALE: 1:1 SHEET 1 OF 1



Assembly Notes:

1. Apply hook fastener to FE-00304.
2. Apply loop fastener to the hook fastener, but leave the plastic backing on the adhesive until assembly on the field

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00304	Cable protector exit segment	1
2	Hook_1_6	1" x 6" Hook, Adhesive Backed	2
3	Loop_1_6	1" x 6" Loop, Adhesive Backed	2
UNLESS OTHERWISE SPECIFIED:			
FIELD NAME DATE			
DRAWN DF 1/5/2022			
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MATERIAL/FINISH:			
DO NOT SCALE DRAWING			
COMMENTS:			
REMOVE ALL BURRS AND SHARP EDGES.			
FIRST ROBOTICS COMPETITION			
SOLIDWORKS Modeling Solutions Partner			
TITLE: Cable protector exit segment with hook			
SIZE DWG. NO. REV			
C FE-00305			
SCALE: 1:1 SHEET 1 OF 1			