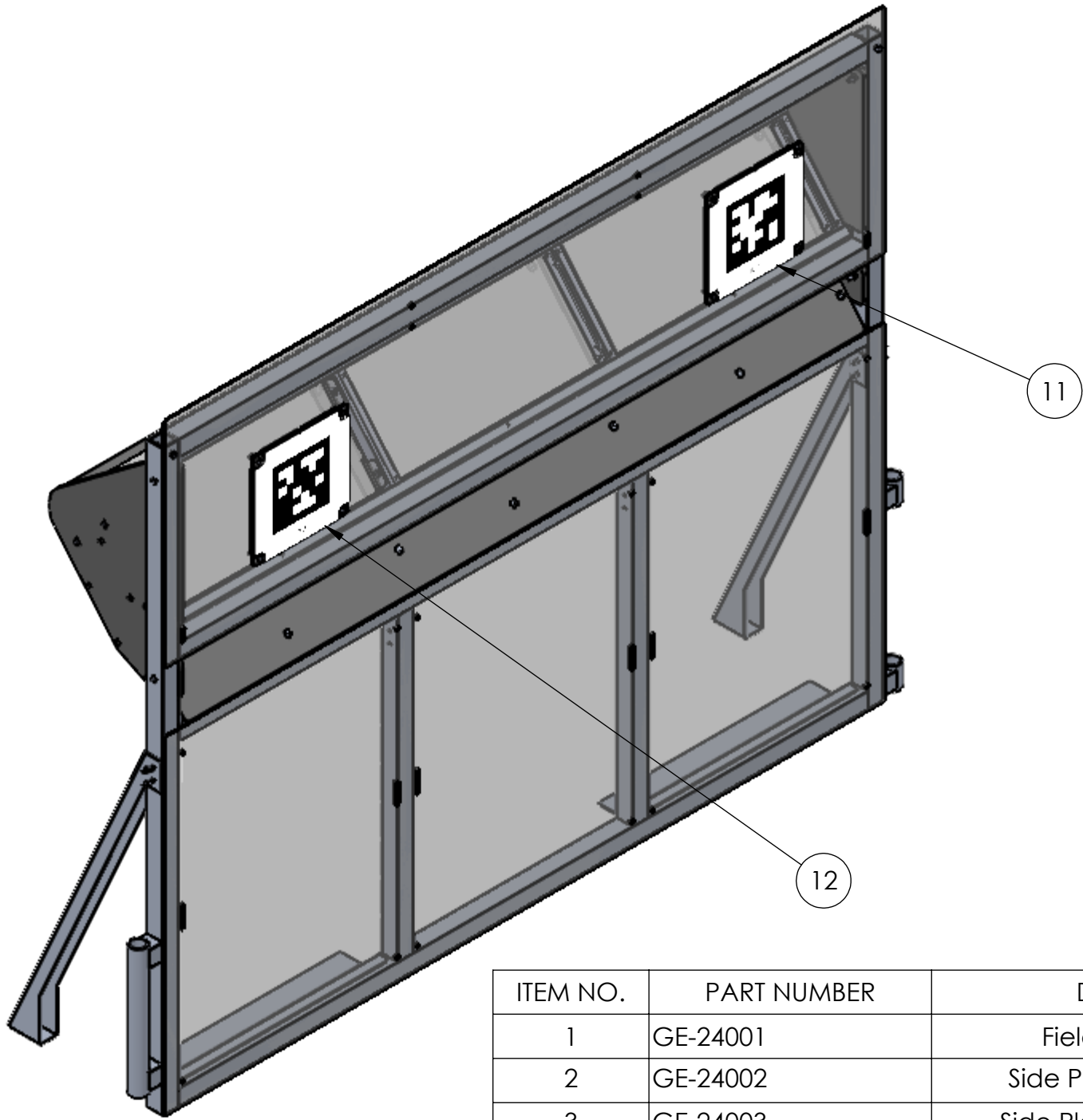


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-B1, 2-B2	A	Sheet 2 added	12/19/2023	JO



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24001	Field Border Frame	1
2	GE-24002	Side Plate Assembly Left	1
3	GE-24003	Side Plate Assembly Right	1
4	GE-24006	Lower Front Plastic	1
5	GE-24007	Upper Front Plastic	1
6	GE-24008	Chute Ramp Assembly	1
7	GE-24013	Chute Cover Assembly	1
8	GE-24017	Frame Support Leg	2
9	GE-24018	Chute Divider	2
10	FE-00070	Anchor	2
11	FE-00083-ID1	AprilTag	1
12	FE-00083-ID2	AprilTag	1
13	Configurable Bolt	1" Long 1/4-20 Hex Head Bolt	20
14	Configurable Bolt	2.5" Long 1/4-20 Hex Head Bolt	2
15	Configurable Bolt	3" Long 1/4-20 Hex Head Bolt	4
16	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	14
17	98320A143	Zinc-Plated Steel Ring-Grip Quick-Release Pin	4

UNLESS OTHERWISE SPECIFIED:

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

**MATERIAL/FINISH:**

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	JO	12/18/2023

**PROPRIETARY AND CONFIDENTIAL**

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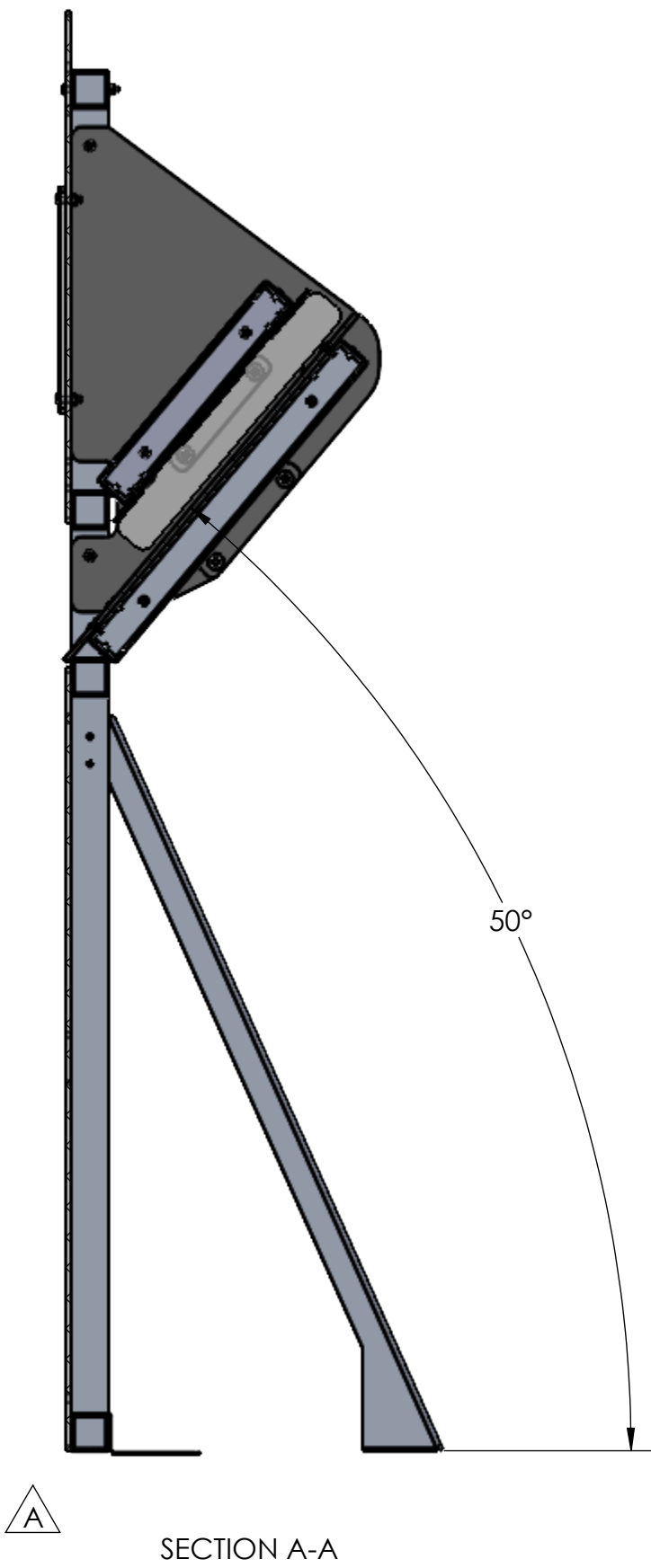
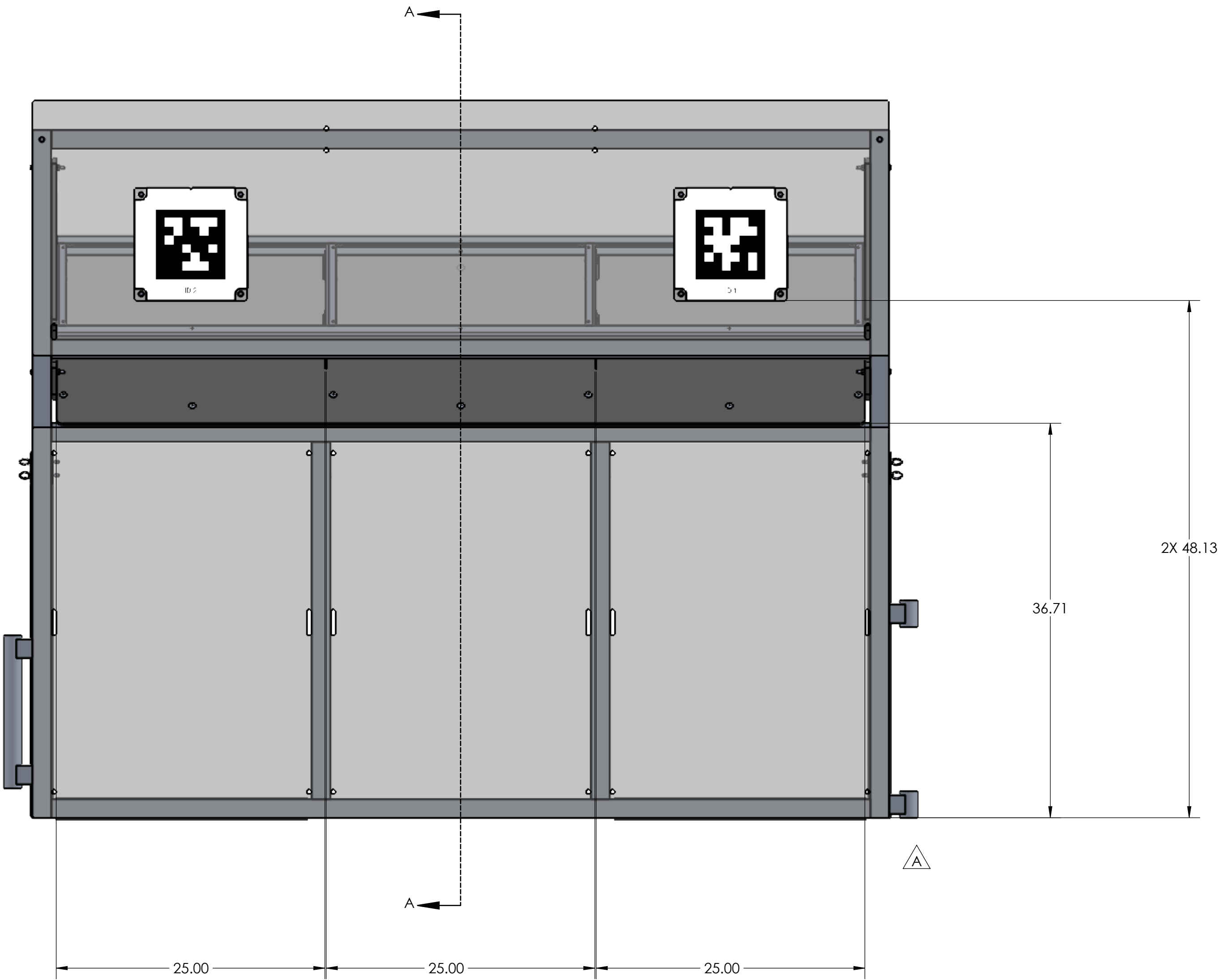
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

TITLE: <b>Source</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24000</b>	REV <b>A</b>
SCALE: 1:8		SHEET 1 OF 7

Notes:

Blue Source shown above, Red Source has 1 flipped and different ID numbers on April Tags

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



UNLESS OTHERWISE SPECIFIED:

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

**MATERIAL/FINISH:**

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	JO	12/18/2023

**PROPRIETARY AND CONFIDENTIAL**

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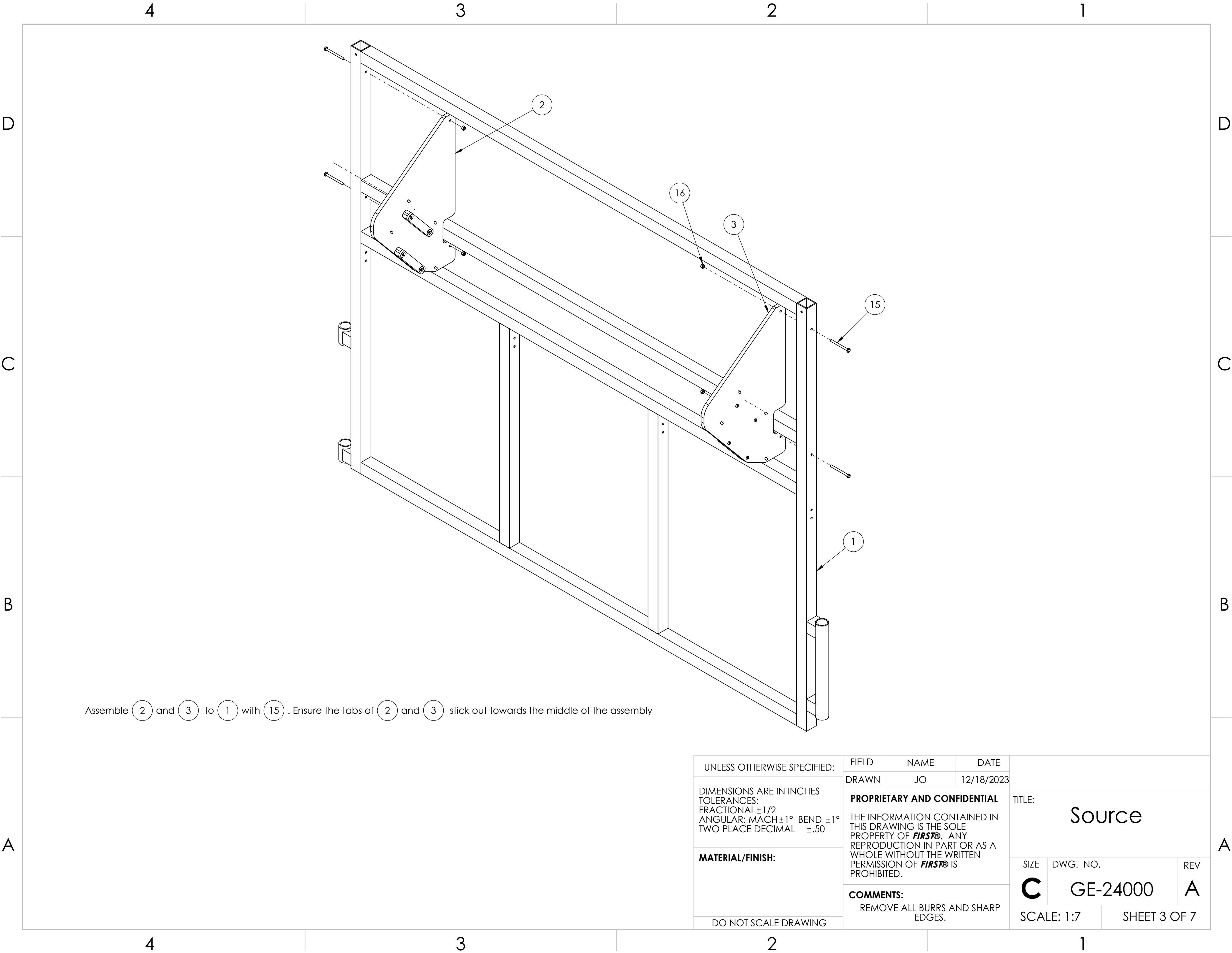
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



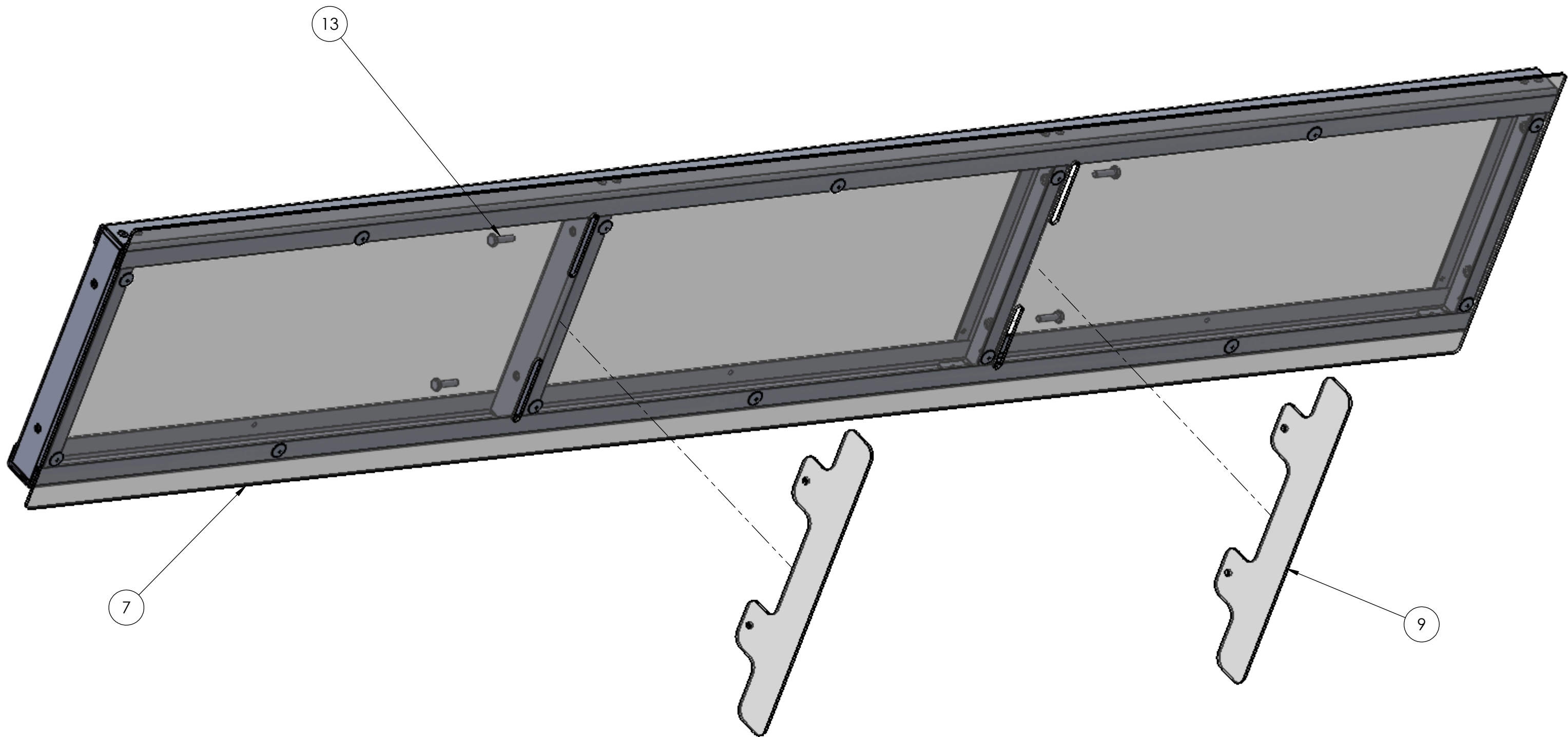
TITLE: Source

SIZE	DWG. NO.	REV
C	GE-24000	A

SCALE: 1:8 SHEET 2 OF 7



UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	TITLE:		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		DRAWN	JO	12/18/2023			
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL			Source		
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
		COMMENTS:					
DO NOT SCALE DRAWING		REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
					C	GE-24000	A
					SCALE: 1:7		SHEET 3 OF 7



Slide (9) through the slots in (7) and attach with (13).

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

NAME

DATE

DRAWN

JO

12/18/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.

TITLE:

Source

SIZE

**C**

DWG. NO.

GE-24000

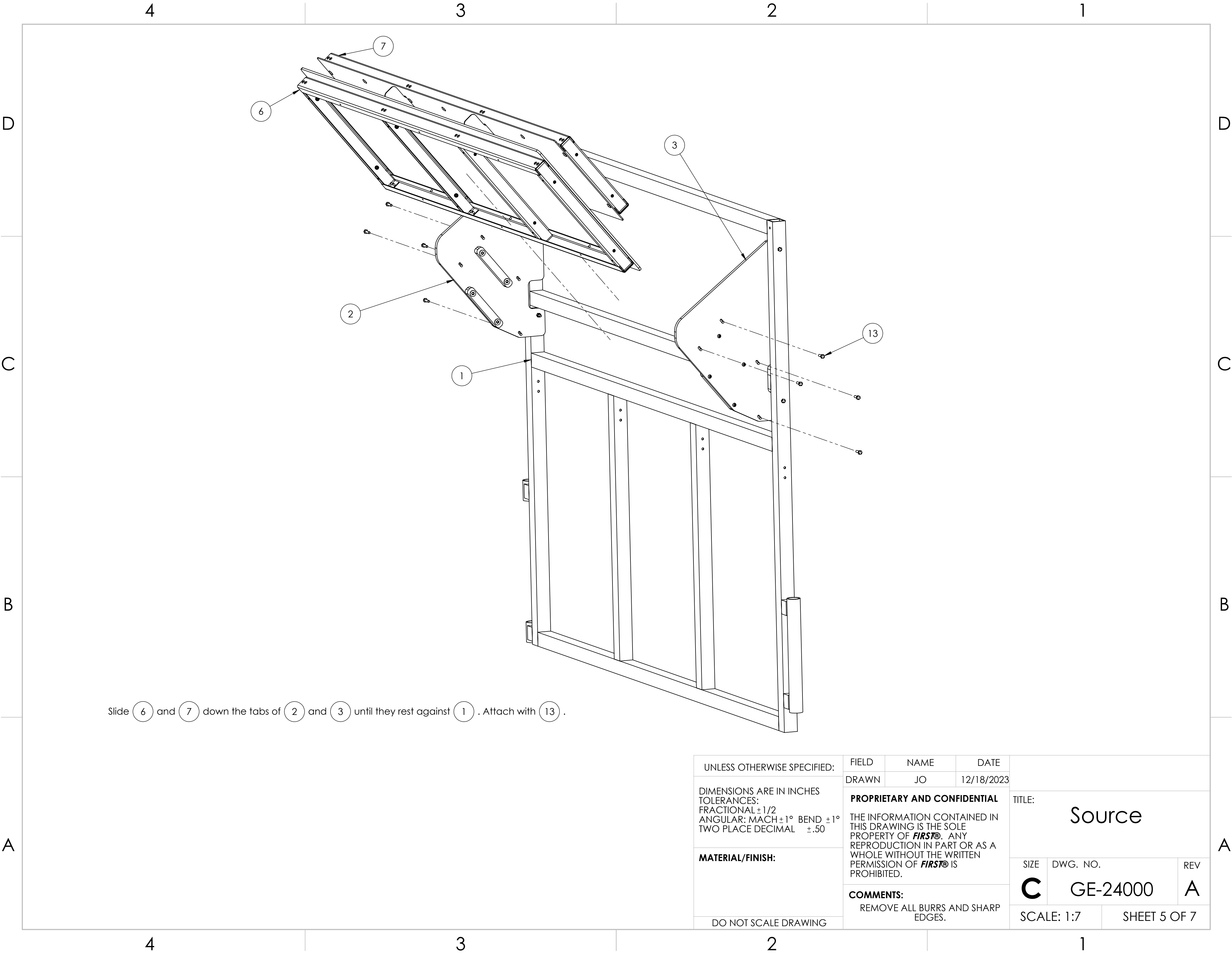
REV

**A**

SCALE: 1:4

SHEET 4 OF 7





Slide 6 and 7 down the tabs of 2 and 3 until they rest against 1 . Attach with 13 .

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	TITLE:		
		DRAWN	JO	12/18/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			Source		
<b>MATERIAL/FINISH:</b>							
		<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
					C	GE-24000	A
DO NOT SCALE DRAWING					SCALE: 1:7		SHEET 5 OF 7



4

3

2

1

D

D

C

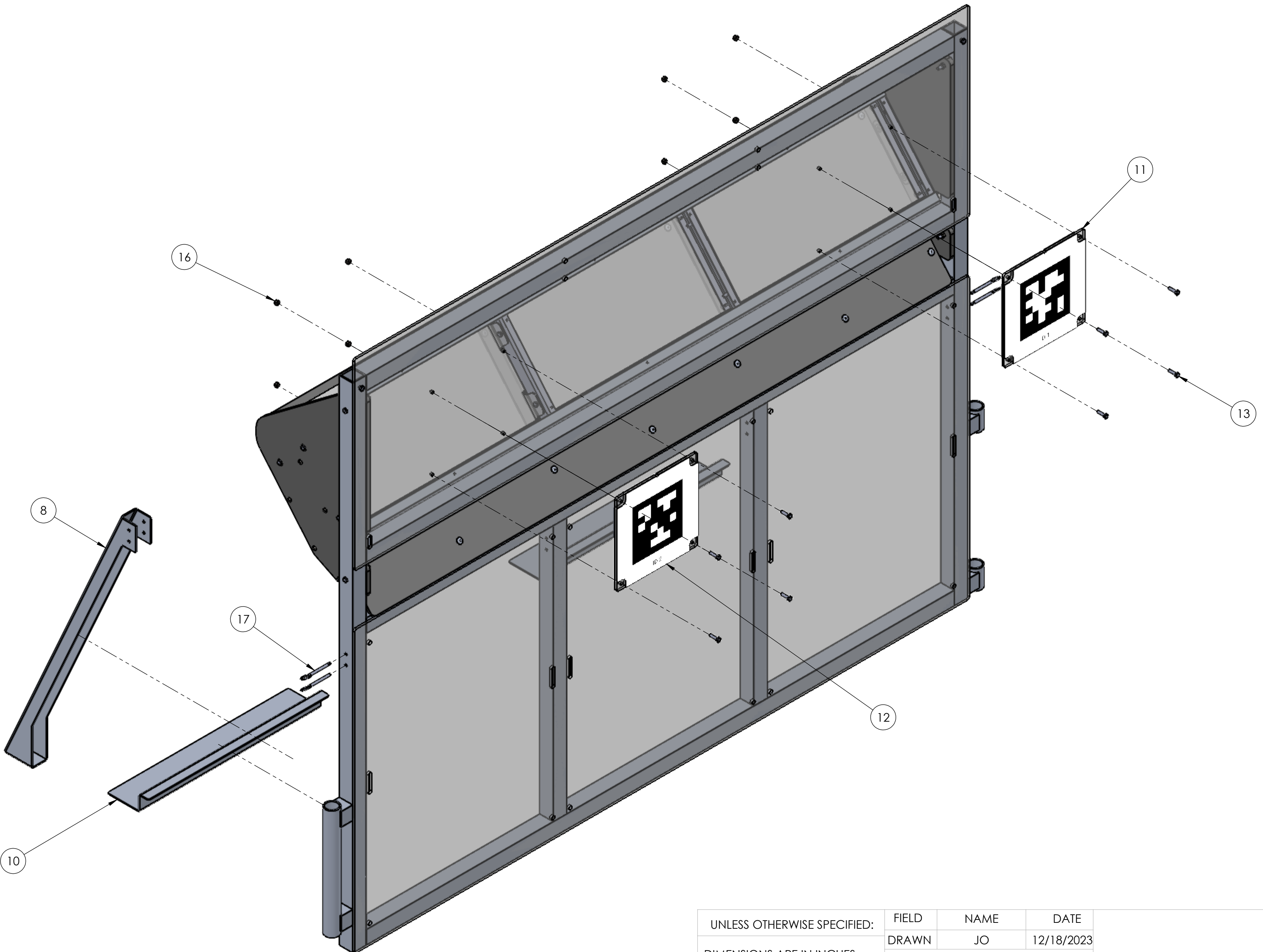
C

B

B

A

A



Attach (8) to the assembly with (17).

Slide (10) into place along floor and over the assembly.

Attach the correct (11) and (12) with (13) and (16).

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

NAME

DATE

DRAWN

JO

12/18/2023

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WHOLE WITHOUT THE WRITTEN  
PERMISSION OF **FIRST®** IS  
PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP  
EDGES.

TITLE:

Source

SIZE

C

DWG. NO.

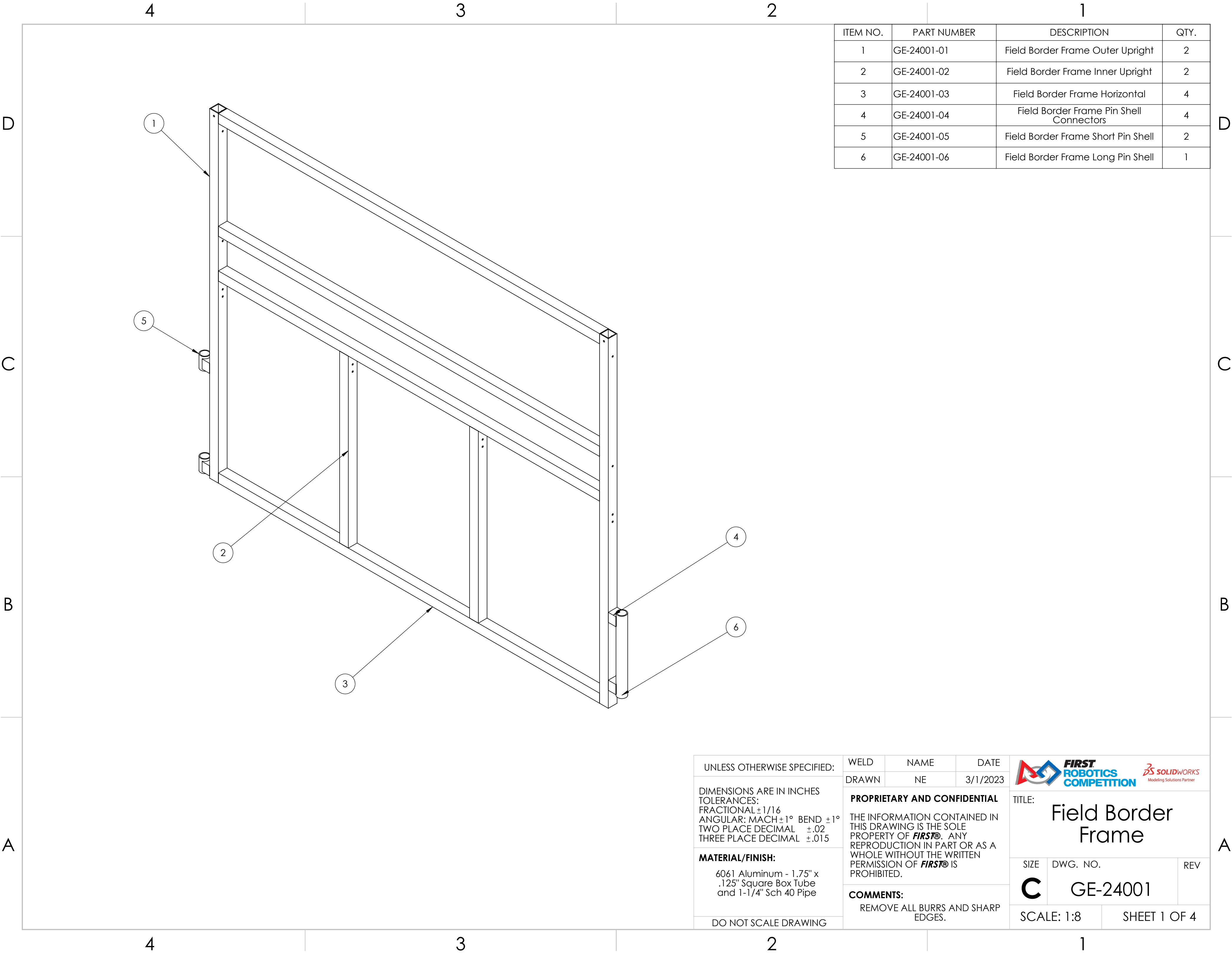
GE-24000

REV

A

SCALE: 1:6.5

SHEET 7 OF 7



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24001-01	Field Border Frame Outer Upright	2
2	GE-24001-02	Field Border Frame Inner Upright	2
3	GE-24001-03	Field Border Frame Horizontal	4
4	GE-24001-04	Field Border Frame Pin Shell Connectors	4
5	GE-24001-05	Field Border Frame Short Pin Shell	2
6	GE-24001-06	Field Border Frame Long Pin Shell	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  $\pm .02$   
THREE PLACE DECIMAL  $\pm .015$

MATERIAL/FINISH:  
6061 Aluminum - 1.75" x  
.125" Square Box Tube  
and 1-1/4" Sch 40 Pipe

DO NOT SCALE DRAWING

WELD

NAME

DATE

DRAWN



NE

3/1/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
**Field Border Frame**

SIZE

DWG. NO.

REV

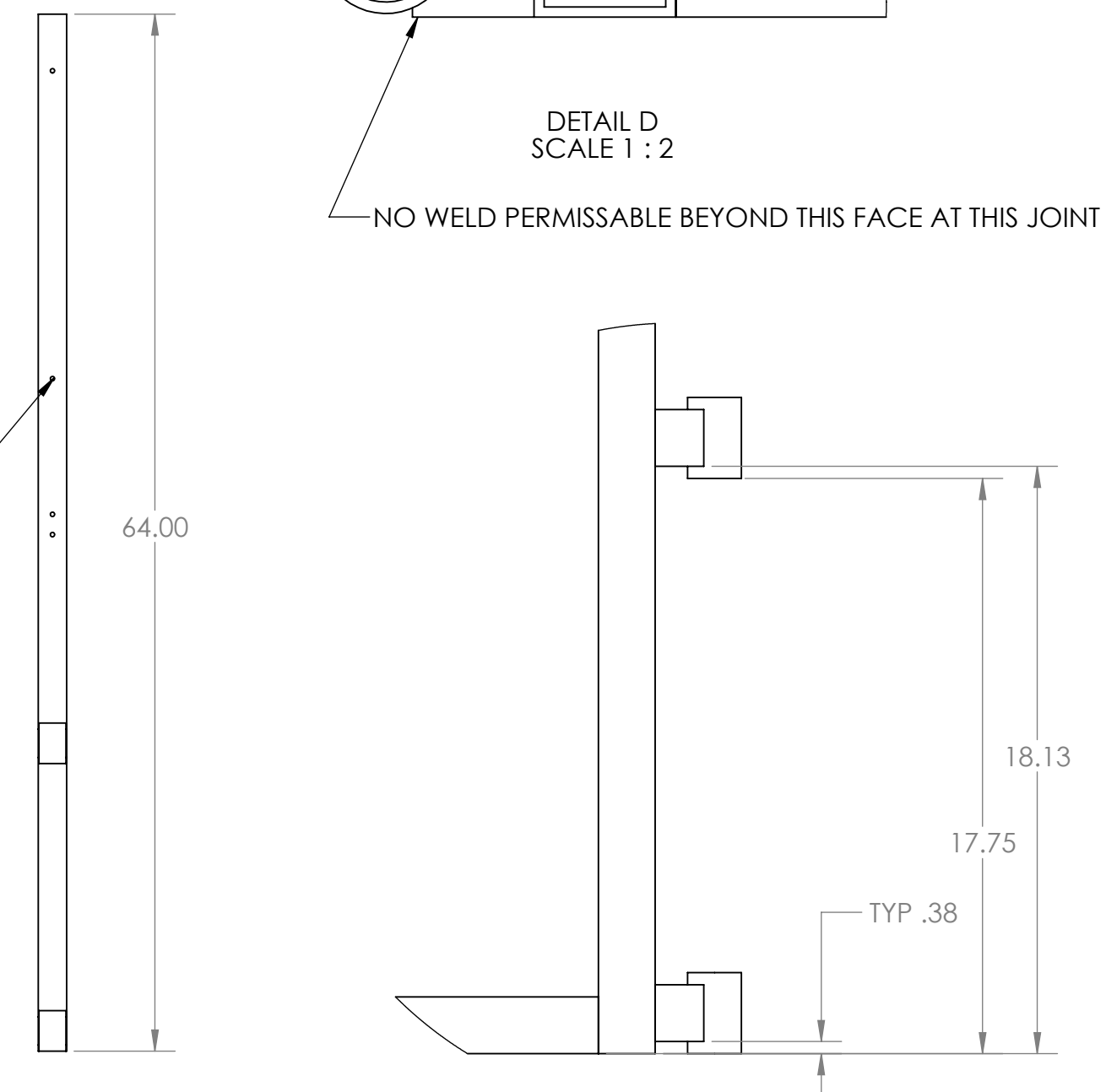
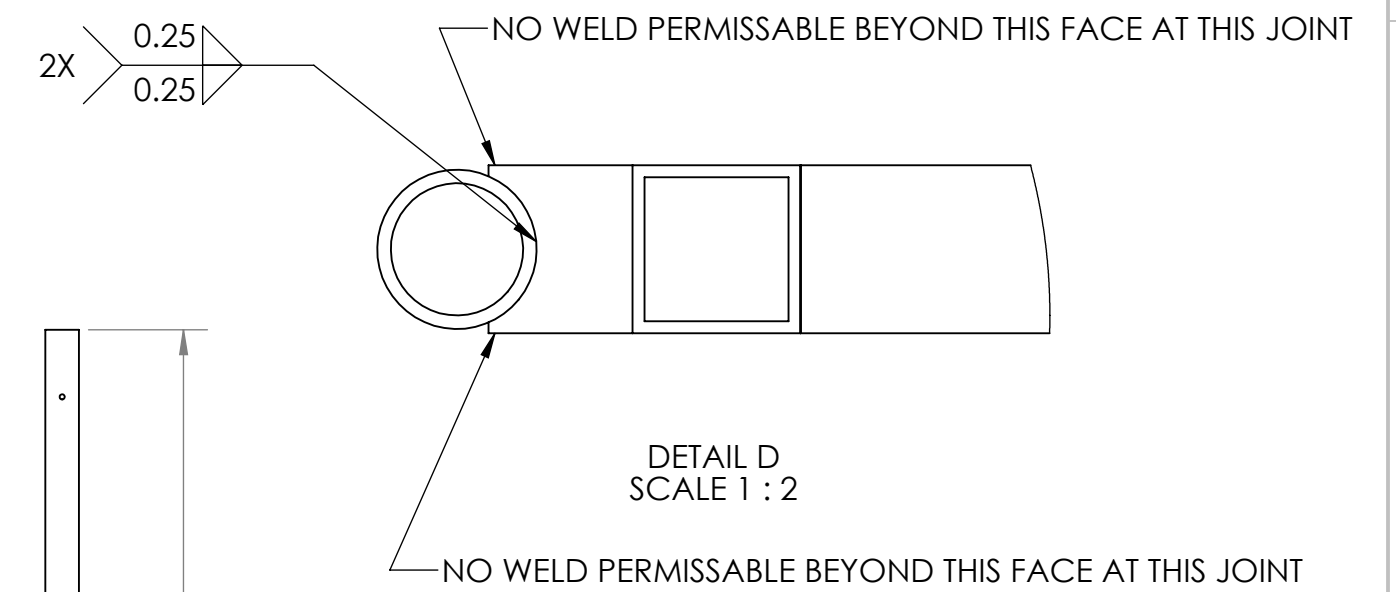
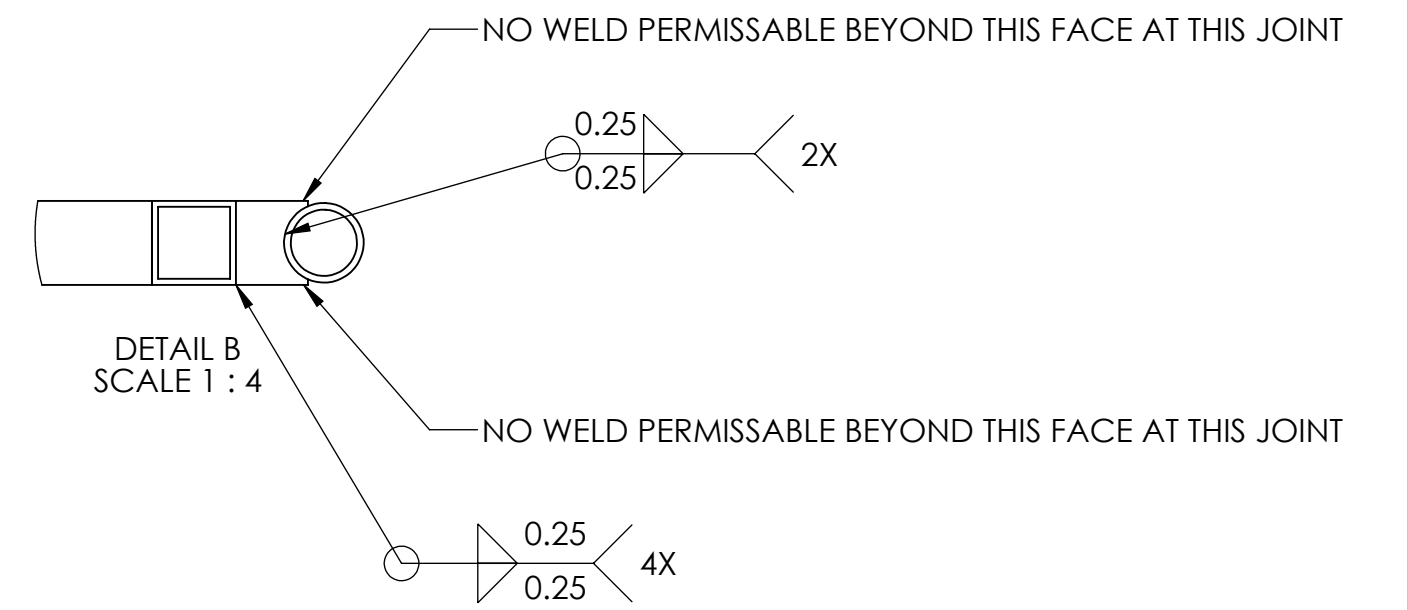
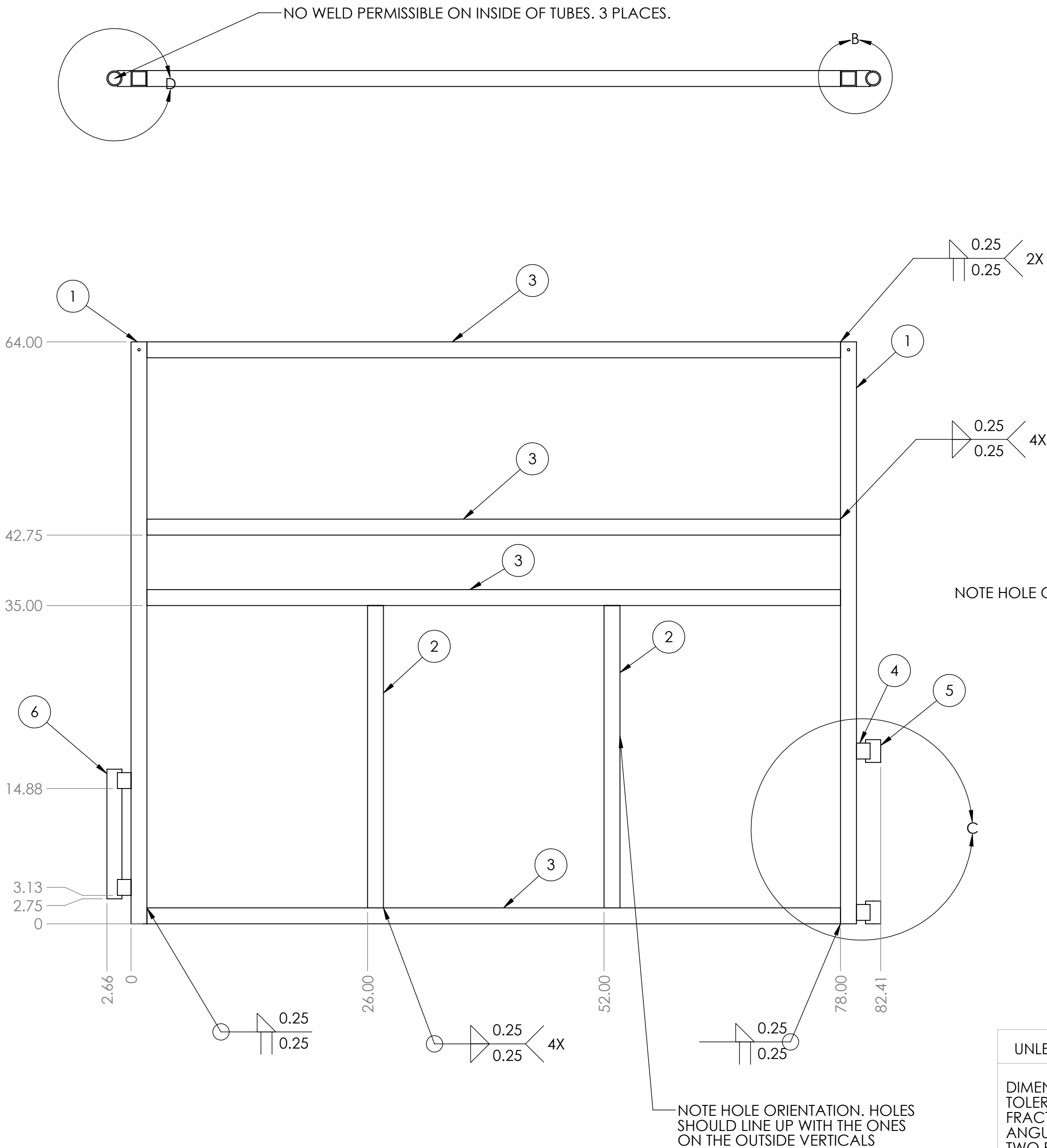
**C**

GE-24001



SCALE: 1:8

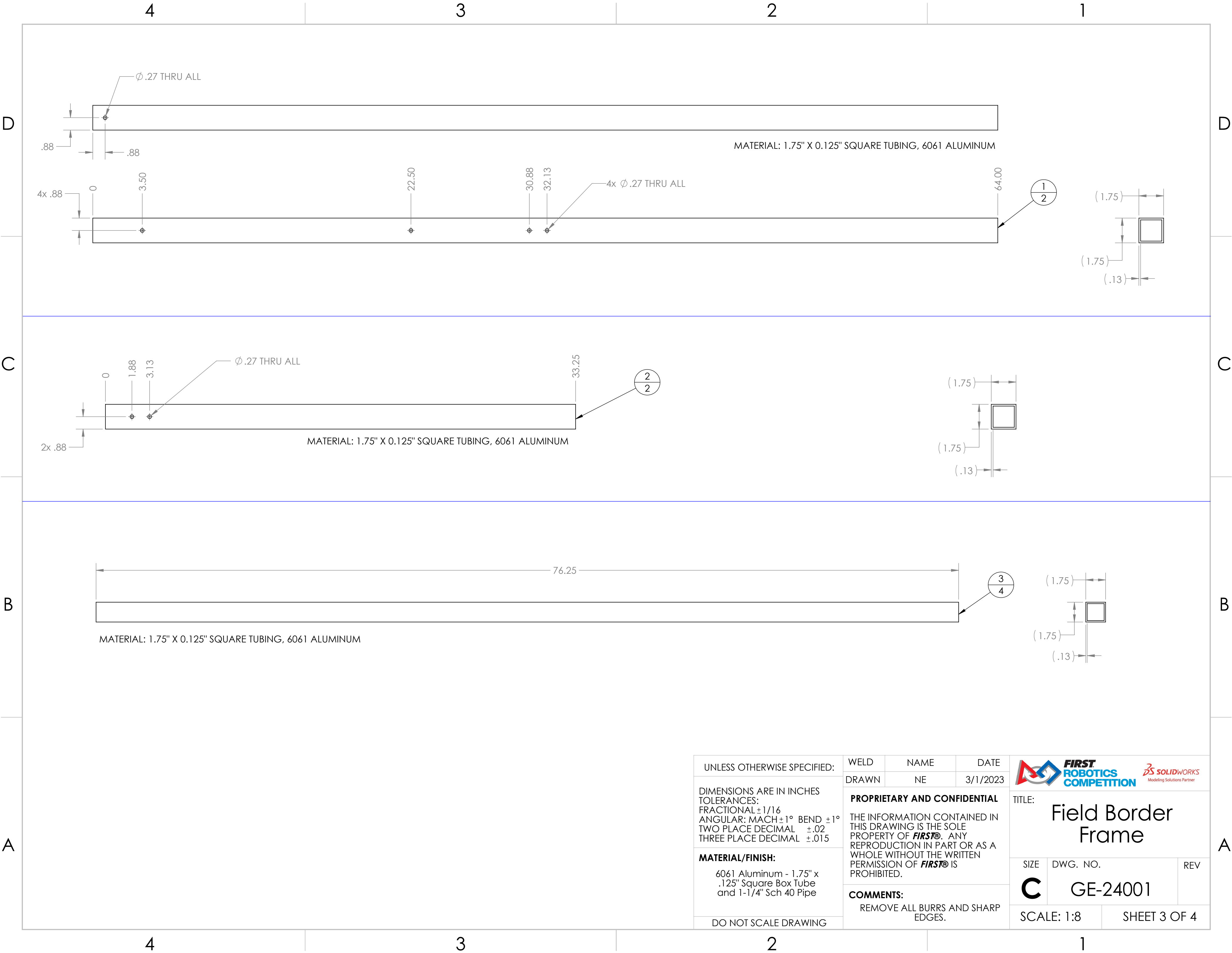
SHEET 1 OF 4





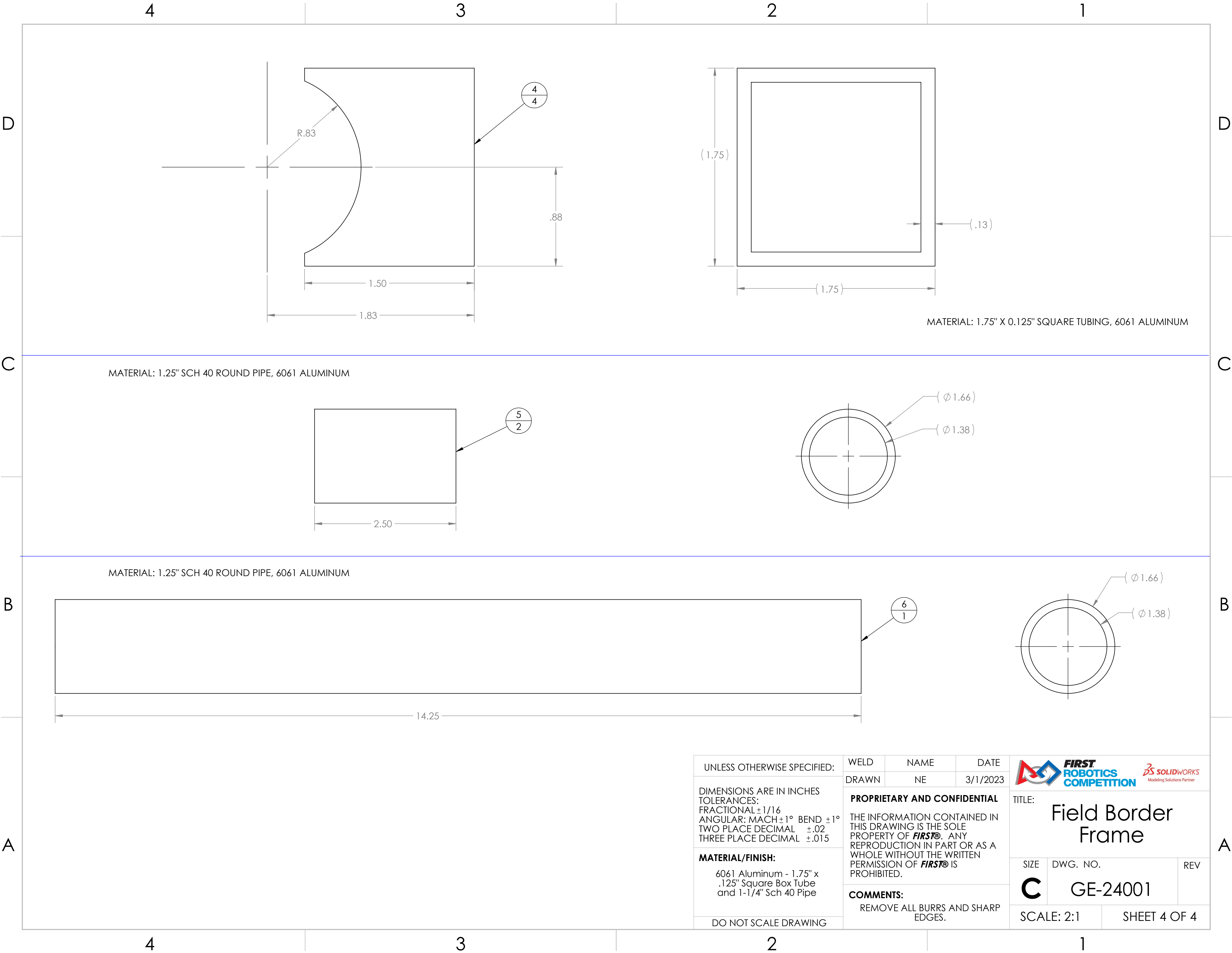


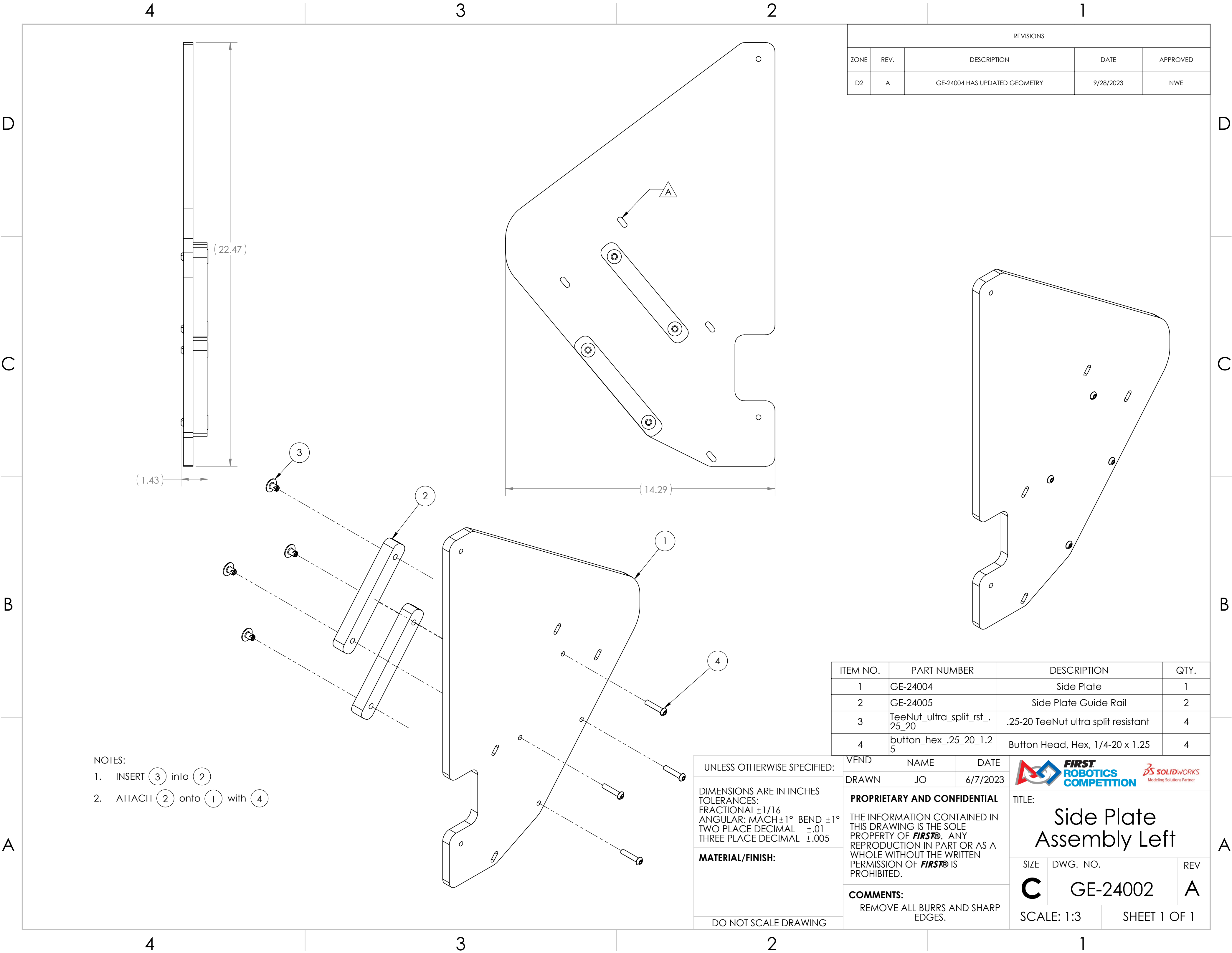
DETAIL C  
SCALE 1 : 5

UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div> <b>FIRST</b> <b>ROBOTICS</b> <b>COMPETITION</b></div> <div> <b>SOLIDWORKS</b> Modelling Solutions Partner</div>		
	DRAWN	NE	3/1/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	PROPRIETARY AND CONFIDENTIAL			TITLE:  Field Border Frame		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
6061 Aluminum - 1.75" x .125" Square Box Tube and 1-1/4" Sch 40 Pipe				C	GE-24001	
DO NOT SCALE DRAWING				SCALE: 1:10		SHEET 2 OF 4

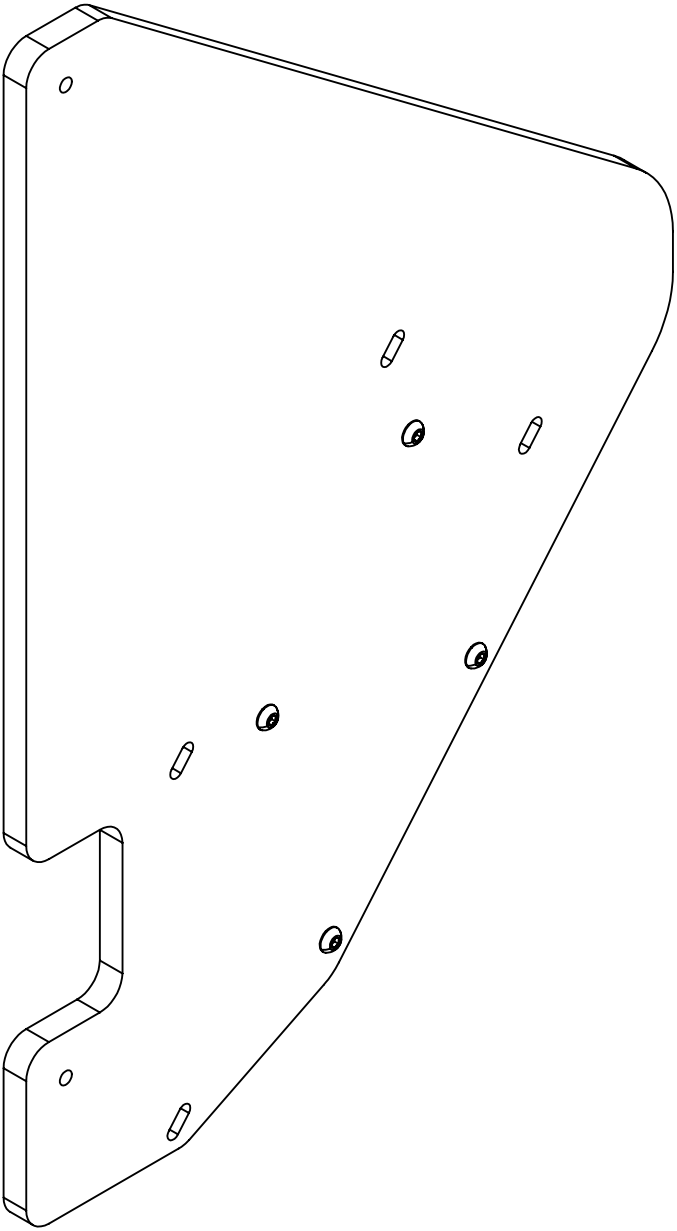


UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div><div></div><div>TITLE: <b>Field Border Frame</b></div></div>		
	DRAWN	NE	3/1/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE <b>C</b>  DWG. NO. <b>GE-24001</b>  REV		
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH:  6061 Aluminum - 1.75" x .125" Square Box Tube and 1-1/4" Sch 40 Pipe				SCALE: 1:8		SHEET 3 OF 4
DO NOT SCALE DRAWING						







REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
D2	A	GE-24004 HAS UPDATED GEOMETRY	9/28/2023	NWE



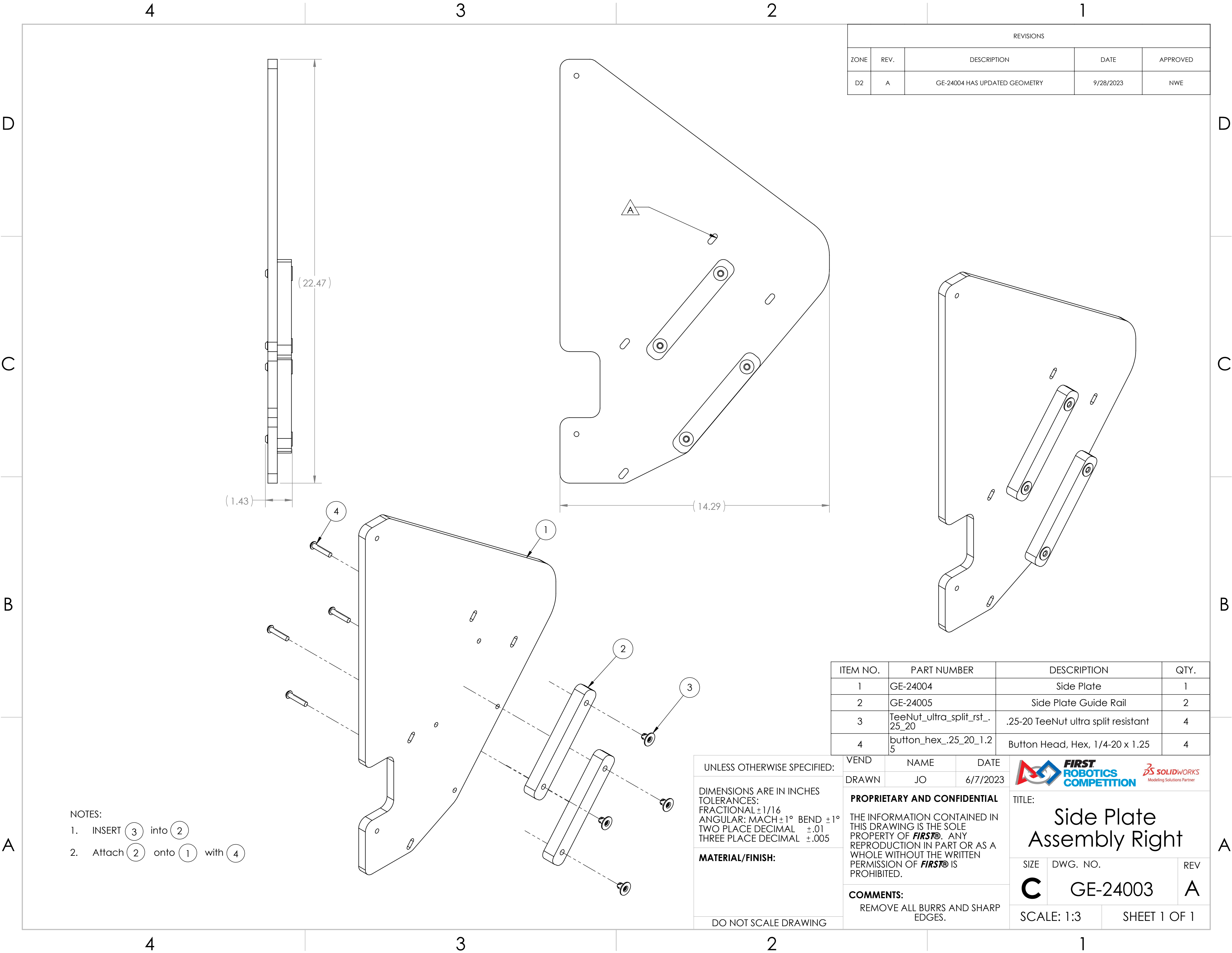
NOTES:

- 1. INSERT (3) into (2)
- 2. ATTACH (2) onto (1) with (4)

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	 <b>FIRST ROBOTICS COMPETITION</b>		 <b>SOLIDWORKS</b> Modeling Solutions Partner	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005		DRAWN	JO	6/7/2023	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			
<b>MATERIAL/FINISH:</b>		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.						
DO NOT SCALE DRAWING					TITLE:		Side Plate Assembly Left	
		SIZE		DWG. NO.		REV		
		C		GE-24002		A		
		SCALE: 1:3			SHEET 1 OF 1			







REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
D2	A	GE-24004 HAS UPDATED GEOMETRY	9/28/2023	NWE

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24004	Side Plate	1
2	GE-24005	Side Plate Guide Rail	2
3	TeeNut_ultra_split_rst_.25_20	.25-20 TeeNut ultra split resistant	4
4	button_hex_.25_20_1.25	Button Head, Hex, 1/4-20 x 1.25	4

VEND	NAME	DATE
DRAWN	JO	6/7/2023



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

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:

Side Plate  
Assembly Right

SIZE

C

DWG. NO.

GE-24003

REV

A

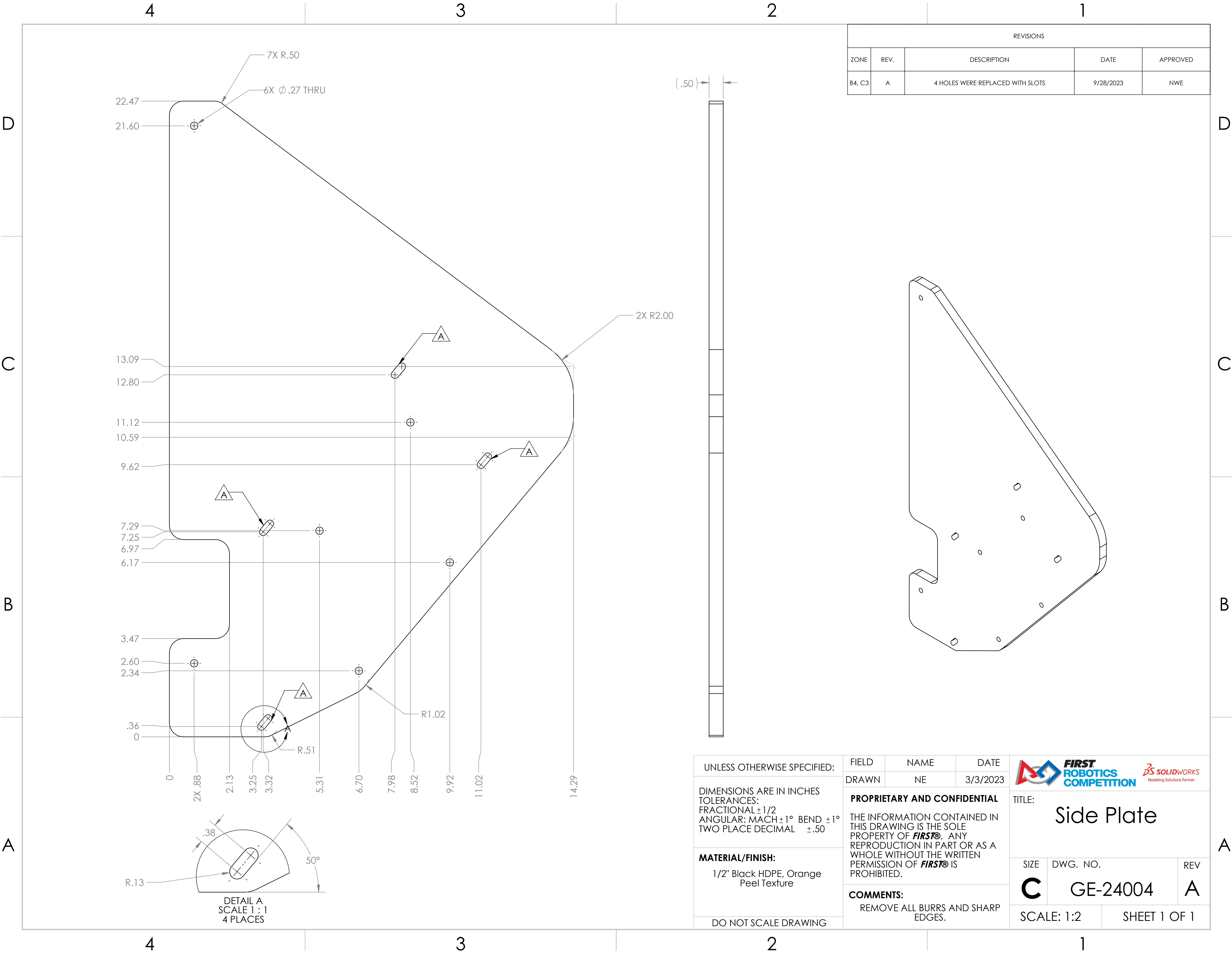
SCALE: 1:3

SHEET 1 OF 1

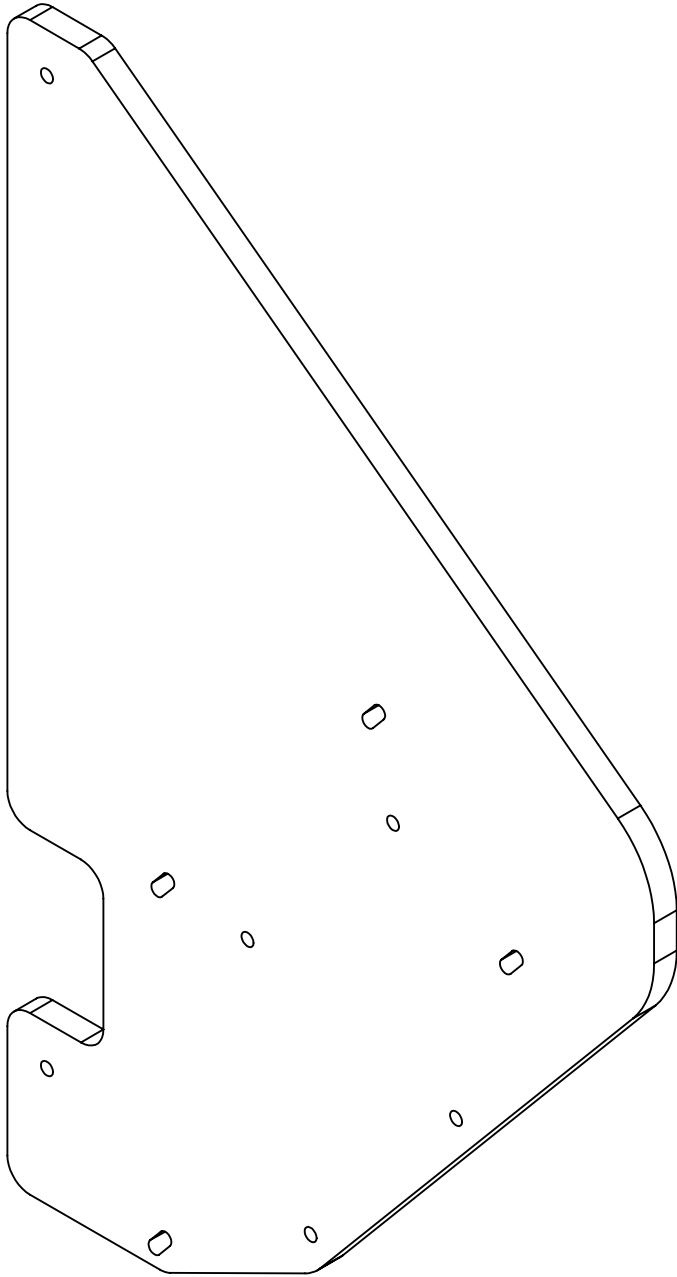
NOTES:



1. INSERT (3) into (2)
2. Attach (2) onto (1) with (4)

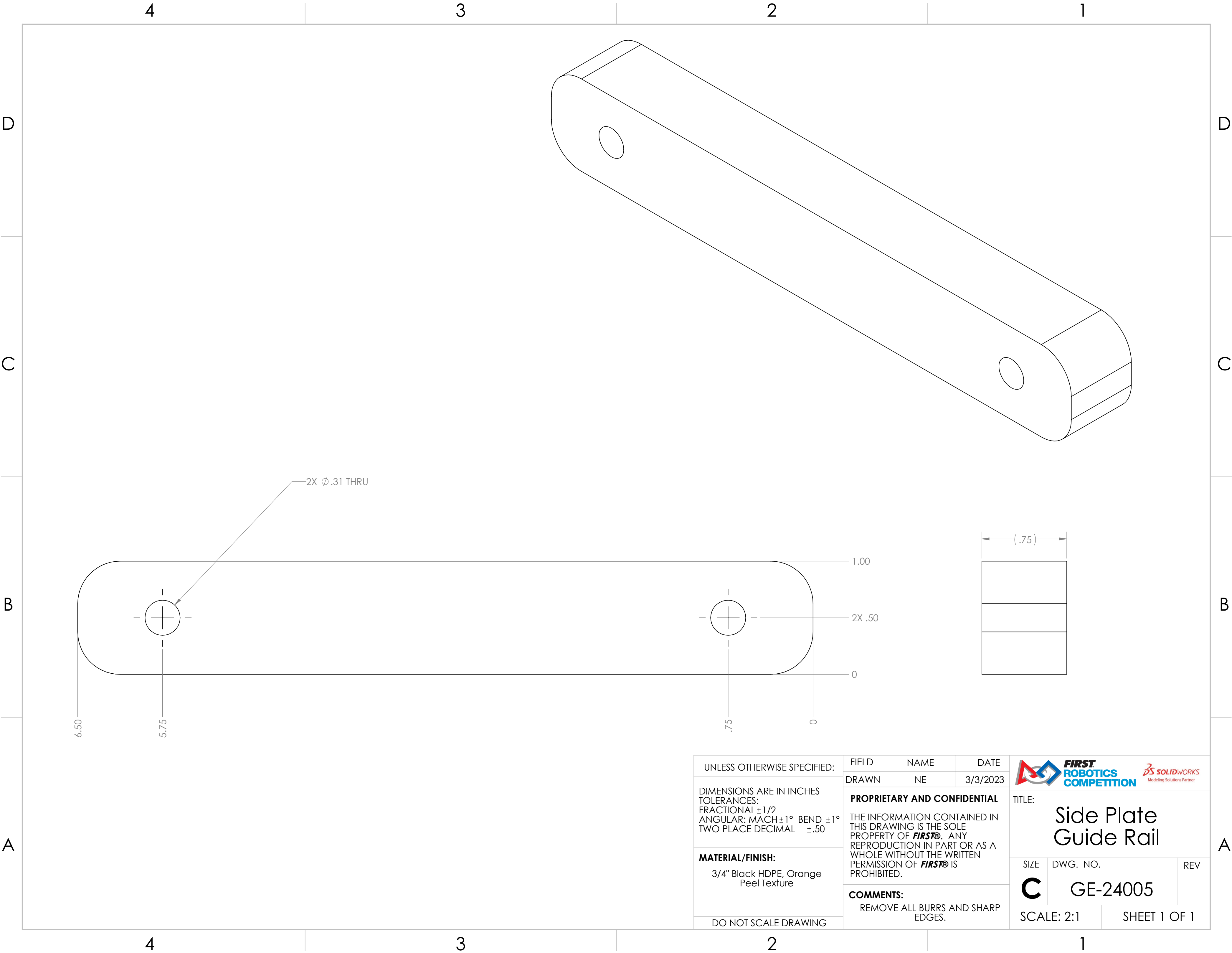
DO NOT SCALE DRAWING





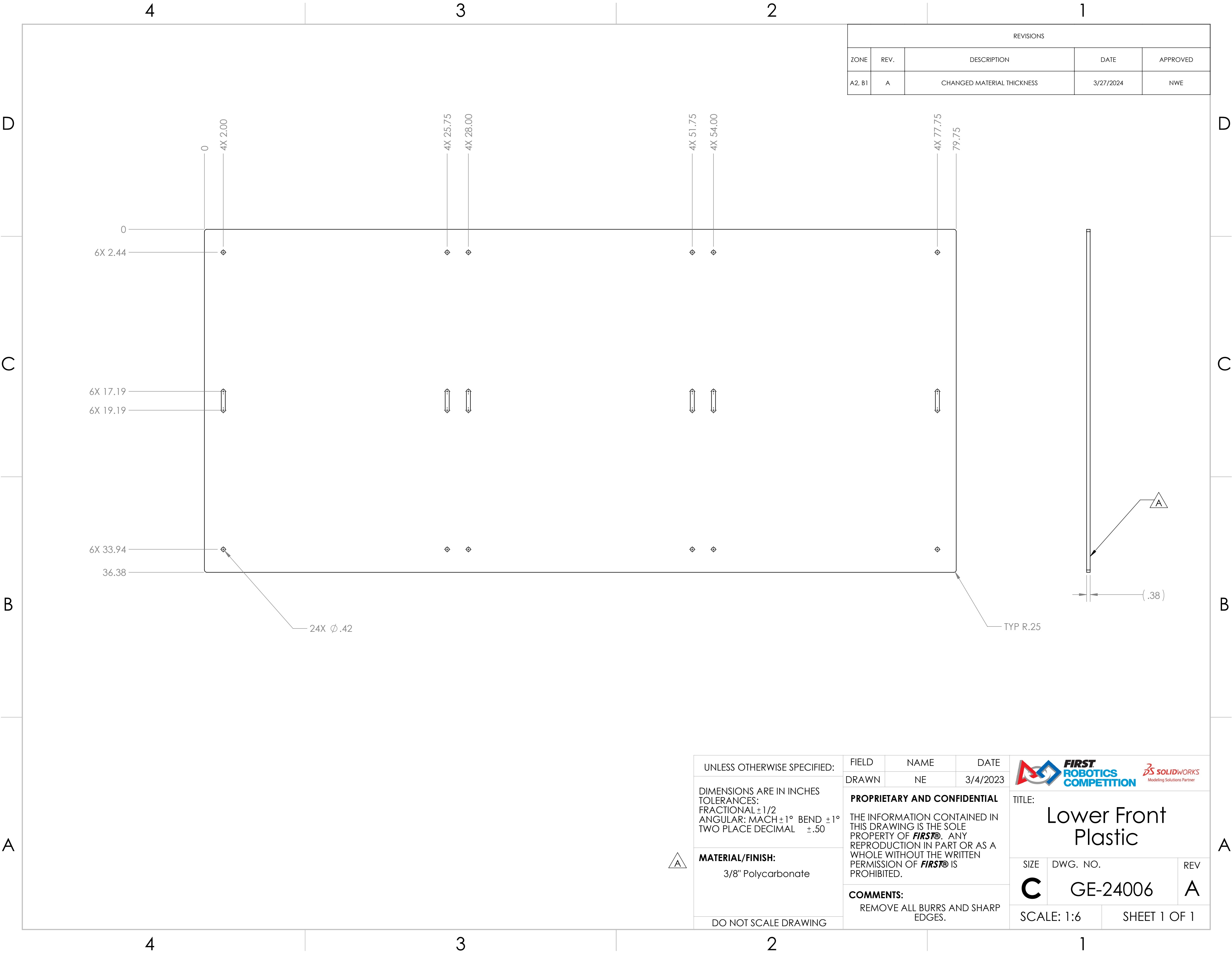
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B4, C3	A	4 HOLES WERE REPLACED WITH SLOTS	9/28/2023	NWE





UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 			
		DRAWN	NE	3/3/2023				
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Side Plate			
<b>MATERIAL/FINISH:</b>  1/2" Black HDPE, Orange Peel Texture		<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV	
					C	GE-24004	A	
DO NOT SCALE DRAWING					SCALE: 1:2		SHEET 1 OF 1	



UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	DRAWN	NE	3/3/2023	TITLE:  Side Plate Guide Rail		
MATERIAL/FINISH:  3/4" Black HDPE, Orange Peel Texture	PROPRIETARY AND CONFIDENTIAL			THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	COMMENTS:			SIZE	DWG. NO.	REV
DO NOT SCALE DRAWING	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24005	
				SCALE: 2:1		SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, B1	A	CHANGED MATERIAL THICKNESS	3/27/2024	NWE

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	DRAWN	NE	3/4/2023	TITLE:  Lower Front Plastic		
MATERIAL/FINISH:  3/8" Polycarbonate	PROPRIETARY AND CONFIDENTIAL  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
				C	GE-24006	A
DO NOT SCALE DRAWING	COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:6		SHEET 1 OF 1



4

3

2

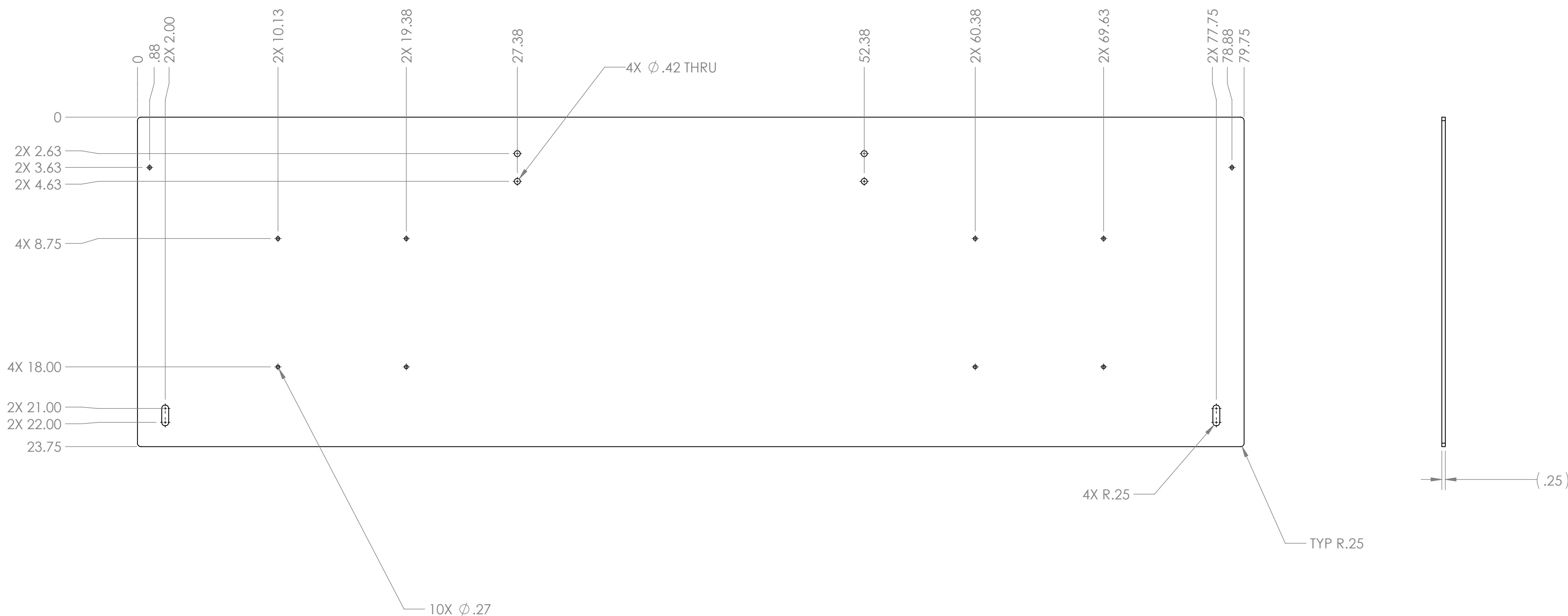
1



D

C

B

A



UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 		
<p>DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES:</p> <p>FRACTIONAL <math>\pm 1/2</math></p> <p>ANGULAR: MACH <math>\pm 1^\circ</math> BEND <math>\pm 1^\circ</math></p> <p>TWO PLACE DECIMAL <math>\pm .50</math></p>		DRAWN	NE	3/4/2023	<p>TITLE:</p> <p>Upper Front Plastic</p>		
		PROPRIETARY AND CONFIDENTIAL					
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:		COMMENTS:			SIZE		
1/4" Polycarbonate							
DO NOT SCALE DRAWING		REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO.		REV
					C		GE-24007
					SCALE: 1:6		SHEET 1 OF 1

D

C

B

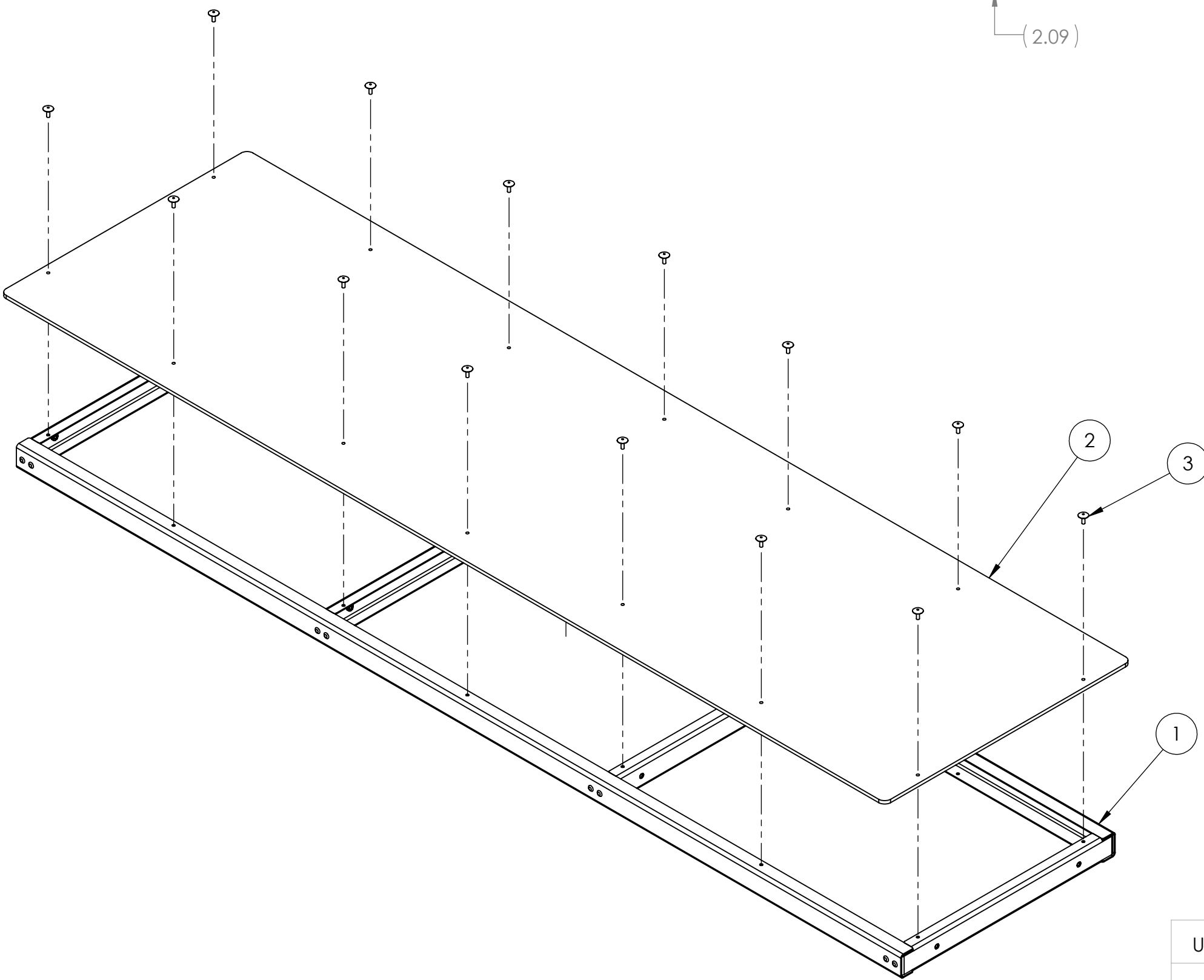
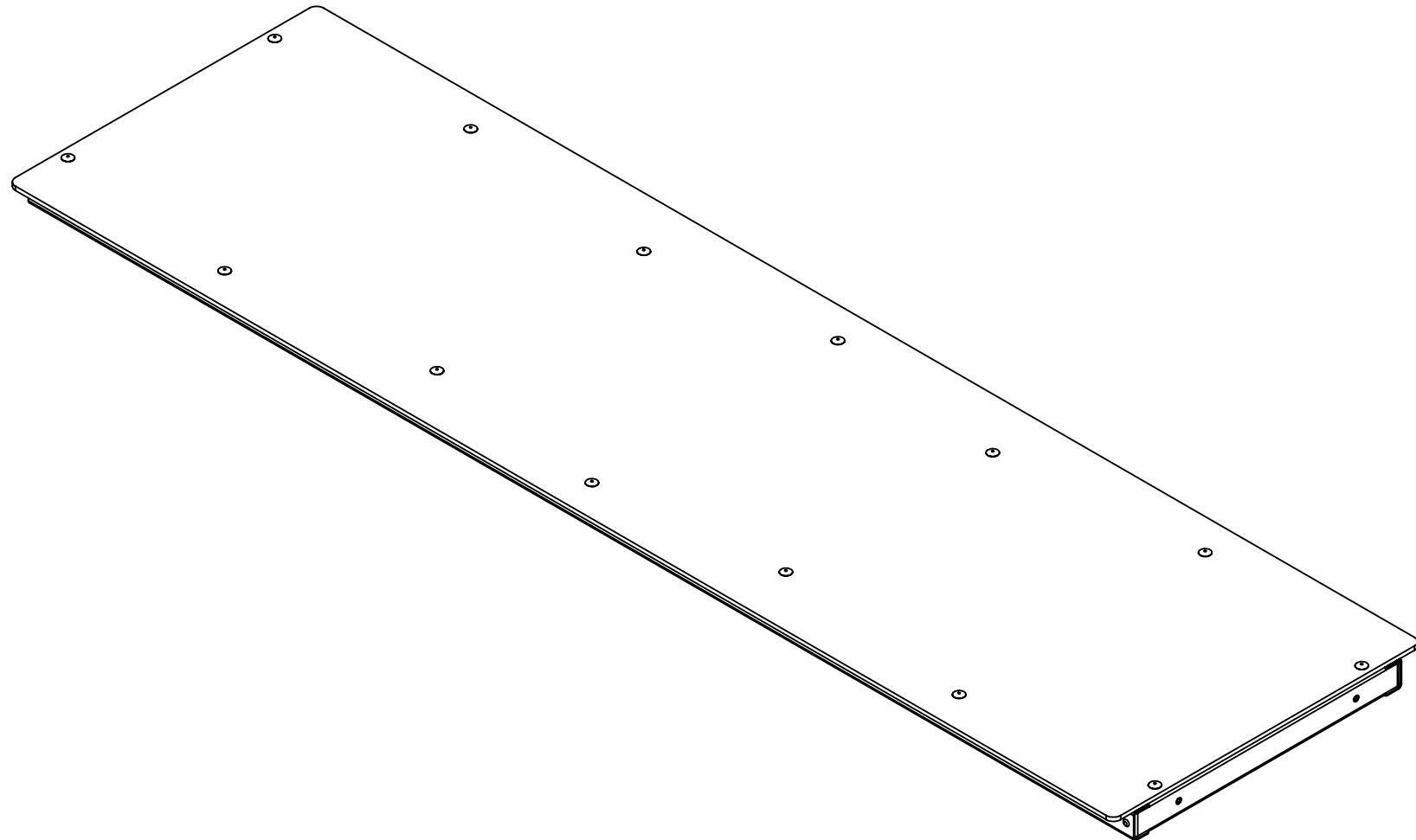
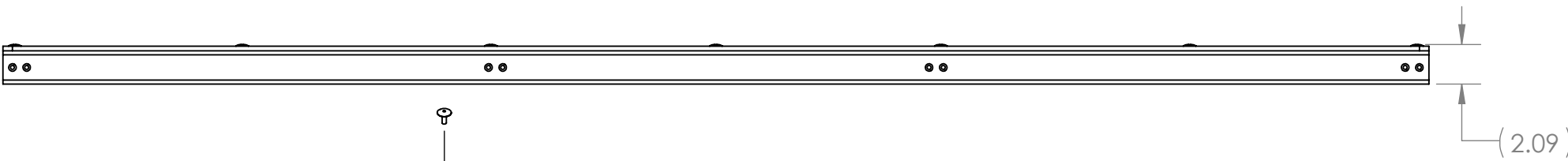
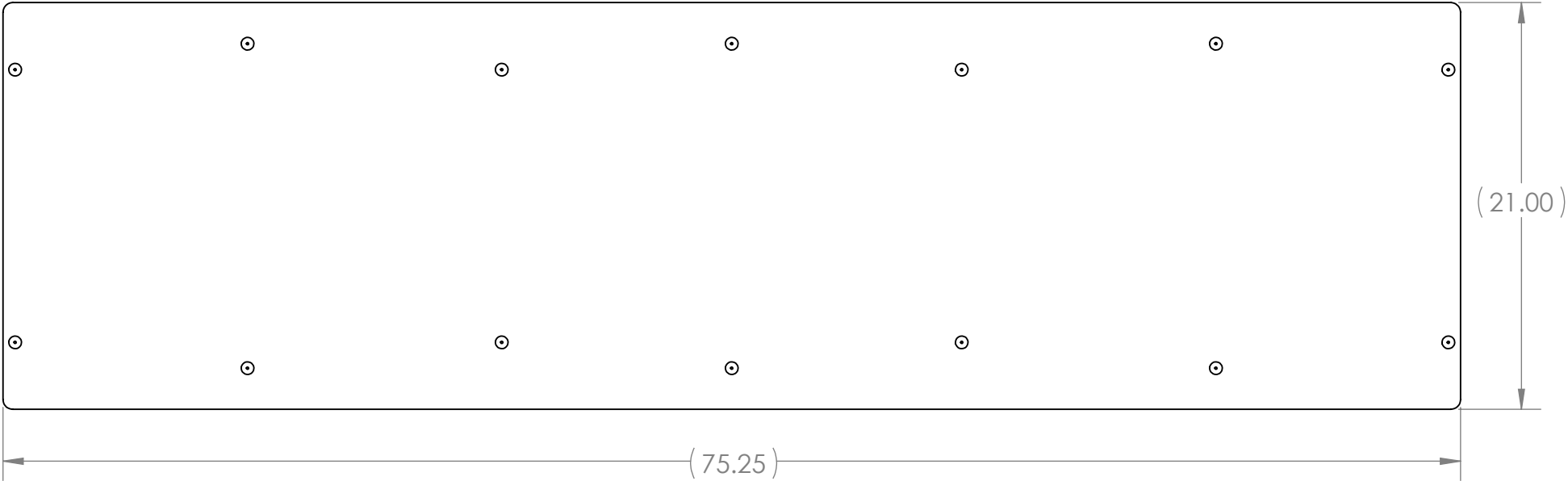
A

D

C

B

A

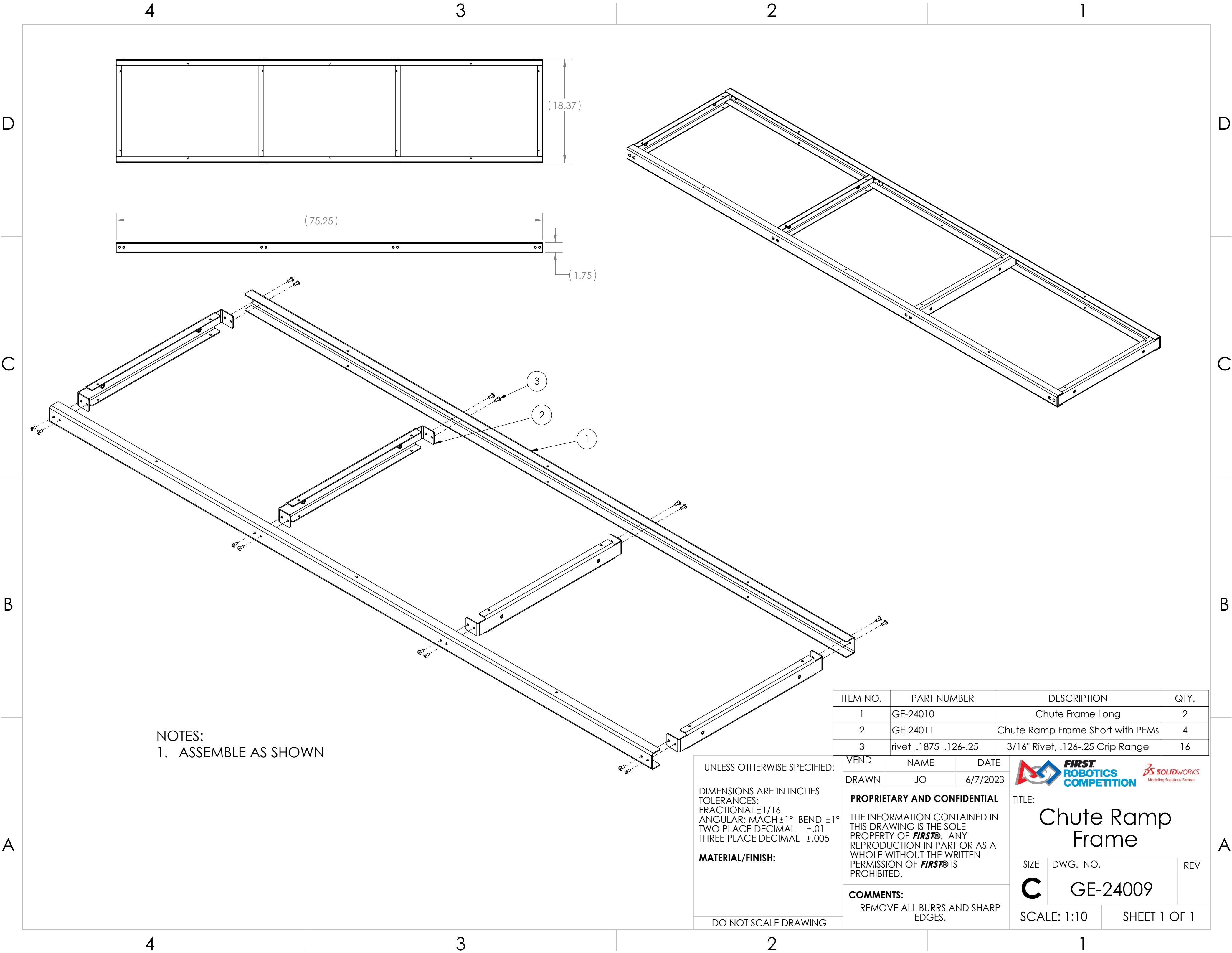


- NOTES:
- 1. ASSEMBLE AS SHOWN
  - 2. LABEL ASSEMBLY WITH PART NUMBER

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24009	Chute Ramp Frame	1
2	GE-24012	Chute Ramp HDPE	1
3	rivet_.1875_.251-.375_largeHead	3/16" Large Head Aluminum Rivet, .251-.375 Grip Range	14



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	JO	6/7/2023
MATERIAL/FINISH:			PROPRIETARY AND CONFIDENTIAL		
DO NOT SCALE DRAWING			THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> IS PROHIBITED.		
			COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
			TITLE: <b>Chute Ramp Assembly</b>		
			SIZE <b>C</b>	DWG. NO. <b>GE-24008</b>	REV
			SCALE: 1:8		SHEET 1 OF 1





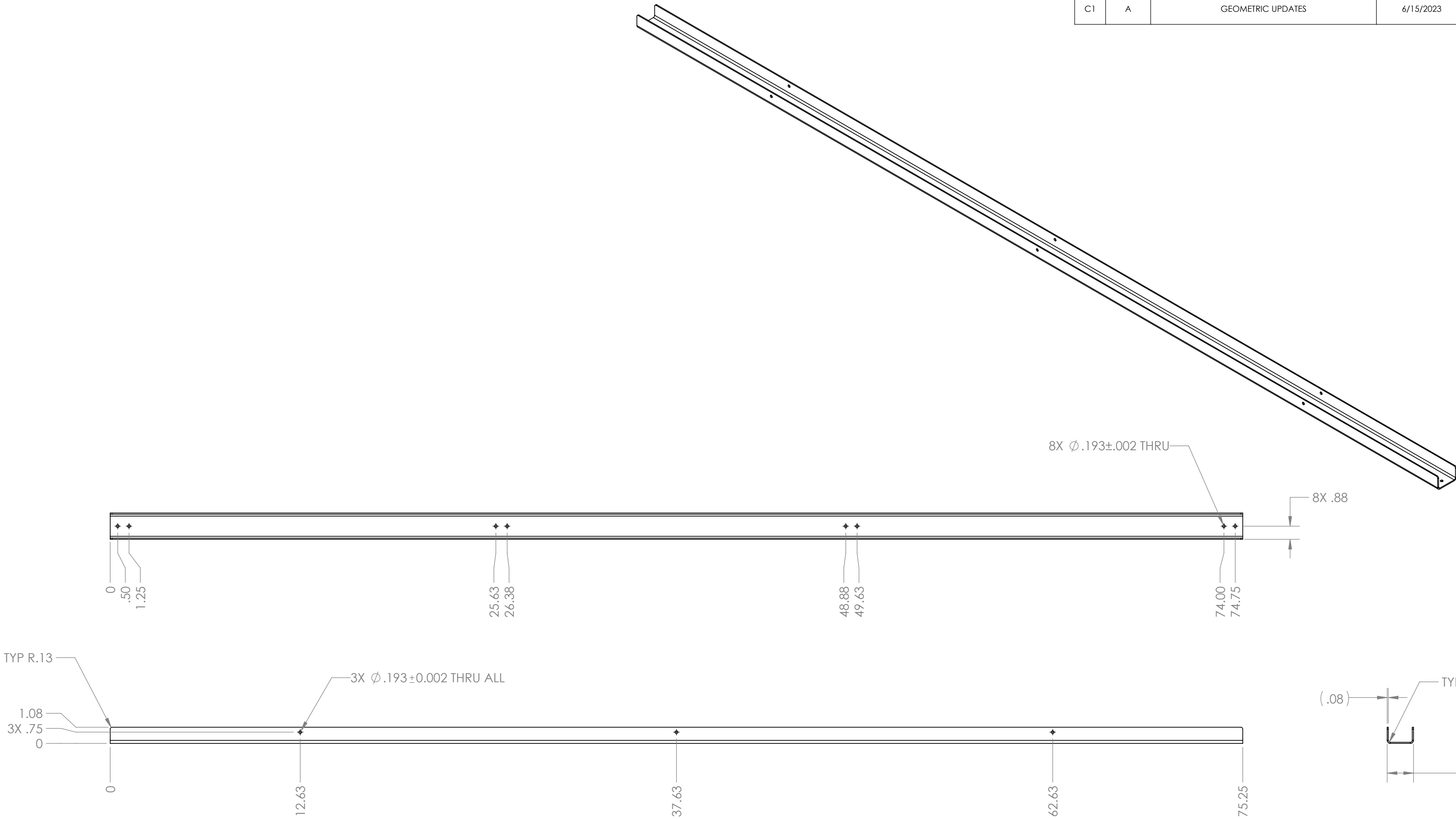
NOTES:  
1. ASSEMBLE AS SHOWN

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24010	Chute Frame Long	2
2	GE-24011	Chute Ramp Frame Short with PEMs	4
3	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	16

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	 <b>FIRST ROBOTICS COMPETITION</b>		 <b>SOLIDWORKS</b> 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 $\pm .005$		DRAWN	JO	6/7/2023	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			
<b>MATERIAL/FINISH:</b>		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.						
DO NOT SCALE DRAWING					TITLE:		Chute Ramp Frame	
		SIZE		DWG. NO.		REV		
		C		GE-24009				
		SCALE: 1:10			SHEET 1 OF 1			





REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C1	A	GEOMETRIC UPDATES	6/15/2023	NWE

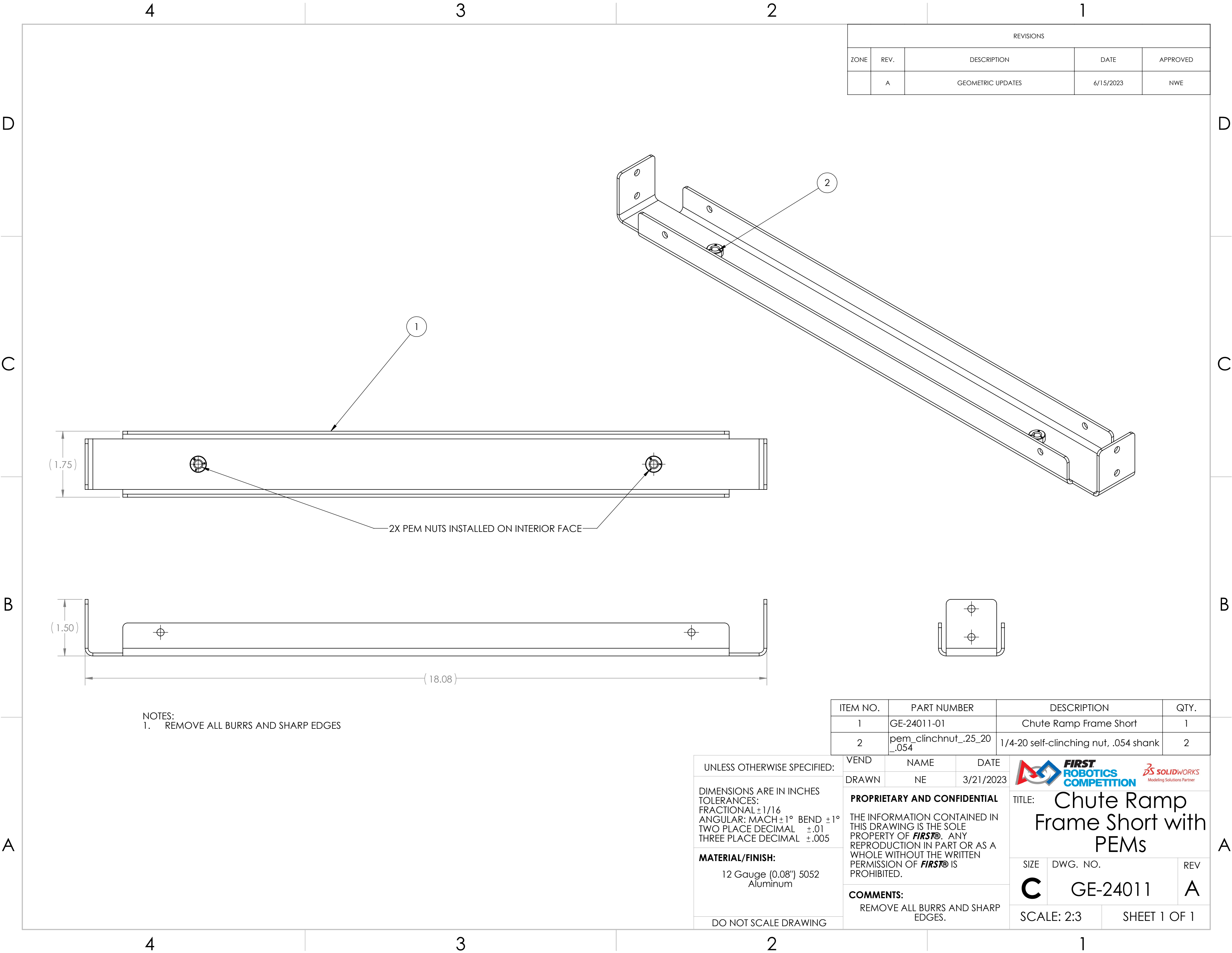


NOTES:  
1. REMOVE ALL BURRS AND SHARP EDGES

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 $\pm .010$  <b>MATERIAL/FINISH:</b> 12 Gauge (0.08") 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE
	DRAWN	NE	3/21/2023
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: <div>Chute Frame Long</div>		
SIZE <div>C</div>	DWG. NO. <div>GE-24010</div>	REV <div>A</div>
SCALE: 1:5		SHEET 1 OF 1







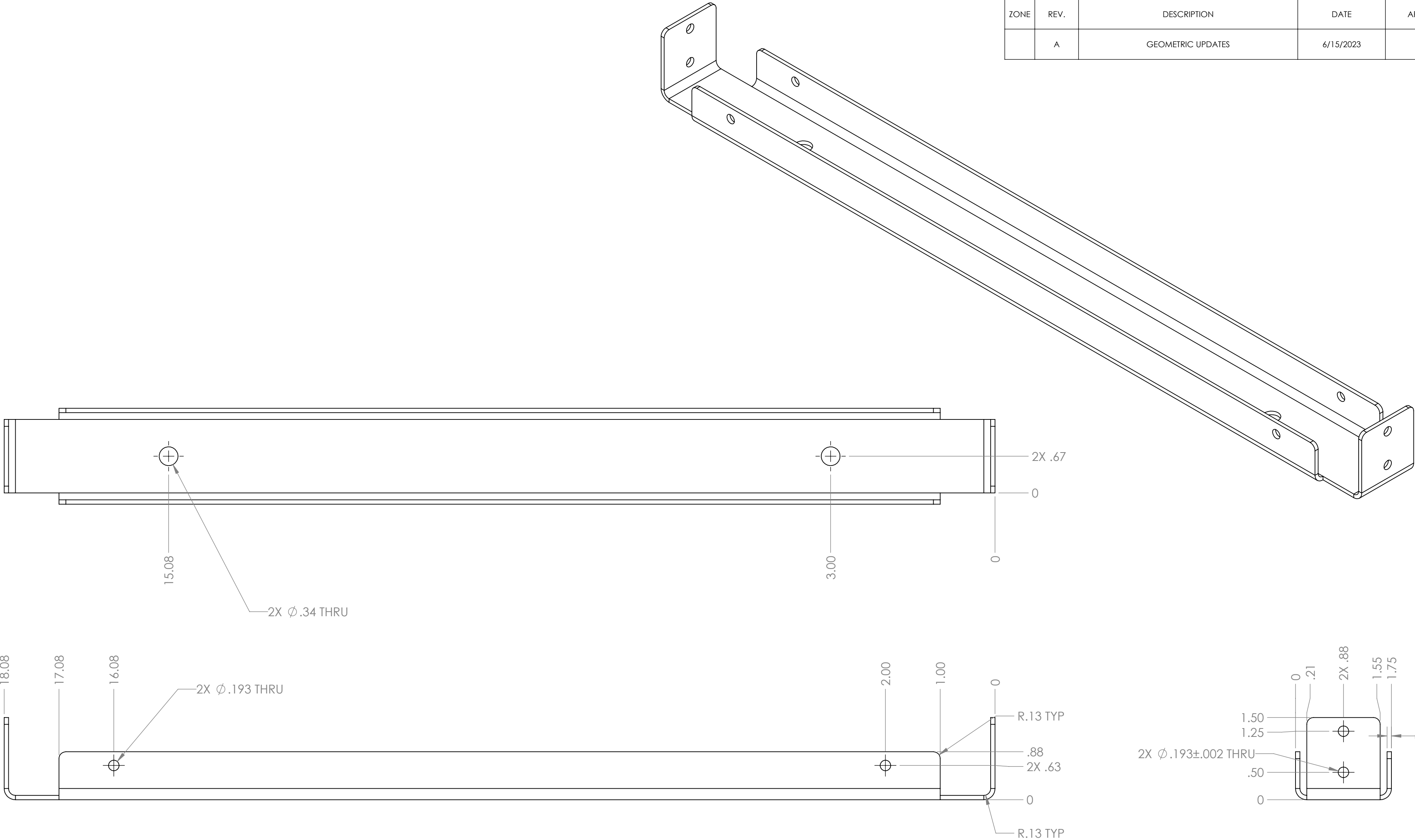
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	GEOMETRIC UPDATES	6/15/2023	NWE

NOTES:  
1. REMOVE ALL BURRS AND SHARP EDGES



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24011-01	Chute Ramp Frame Short	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	2

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div></div><div>TITLE: Chute Ramp Frame Short with PEMs</div></div>		
	DRAWN	NE	3/21/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	COMMENTS:					
MATERIAL/FINISH:	REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
12 Gauge (0.08") 5052 Aluminum				C	GE-24011	A
DO NOT SCALE DRAWING				SCALE: 2:3		SHEET 1 OF 1

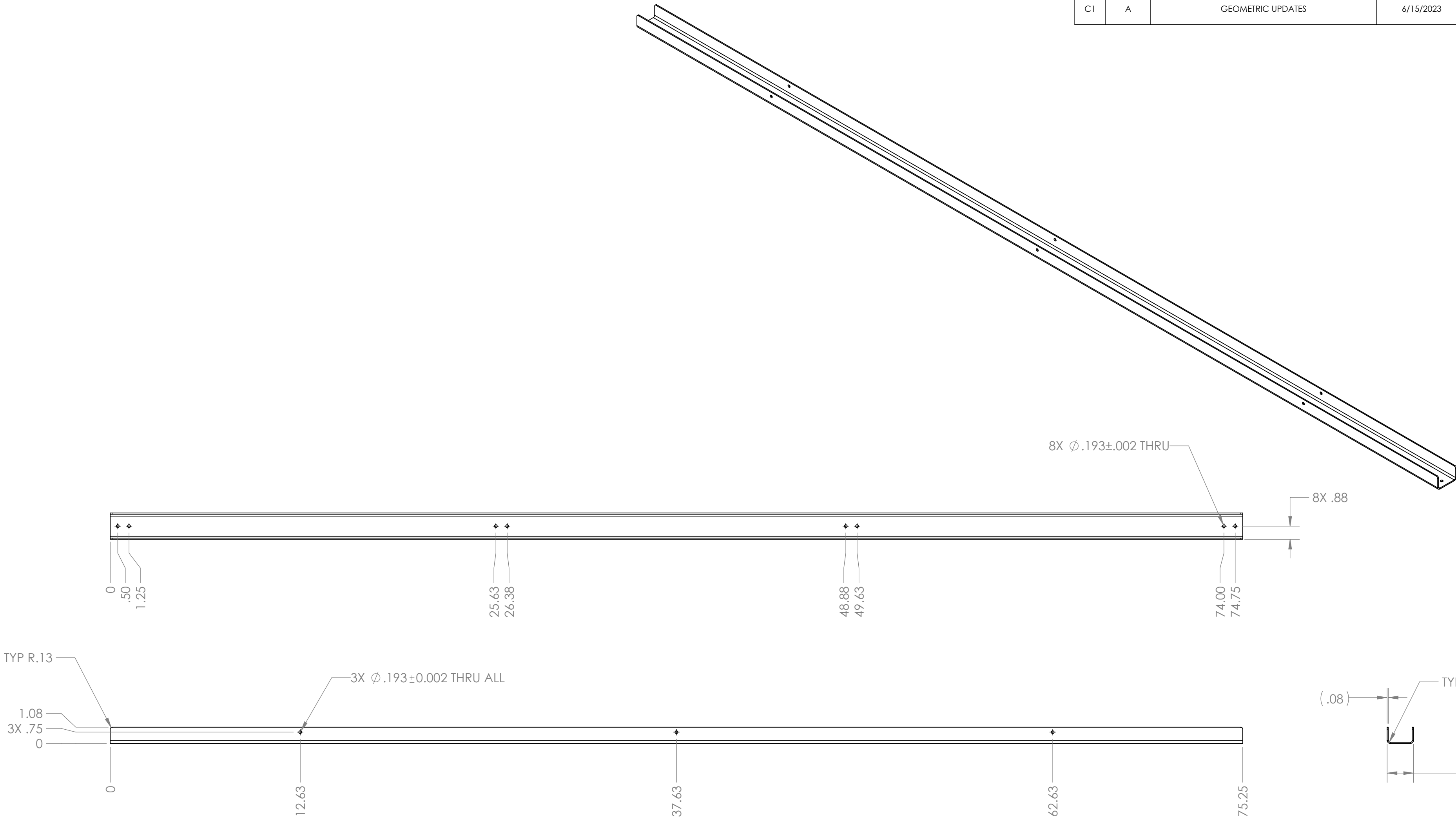
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	GEOMETRIC UPDATES	6/15/2023	NWE



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 $\pm .010$  <b>MATERIAL/FINISH:</b>  12 Gauge (0.08") 5052 Aluminum  DO NOT SCALE DRAWING	BEND DRAWN	NAME JO	DATE 6/6/2023
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: <b>Chute Ramp Frame Short</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24011-01</b>	REV <b>A</b>
SCALE: 3:4		SHEET 1 OF 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C1	A	GEOMETRIC UPDATES	6/15/2023	NWE



NOTES:  
1. REMOVE ALL BURRS AND SHARP EDGES

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:**  
12 Gauge (0.08") 5052  
Aluminum

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	NE	3/21/2023

**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.

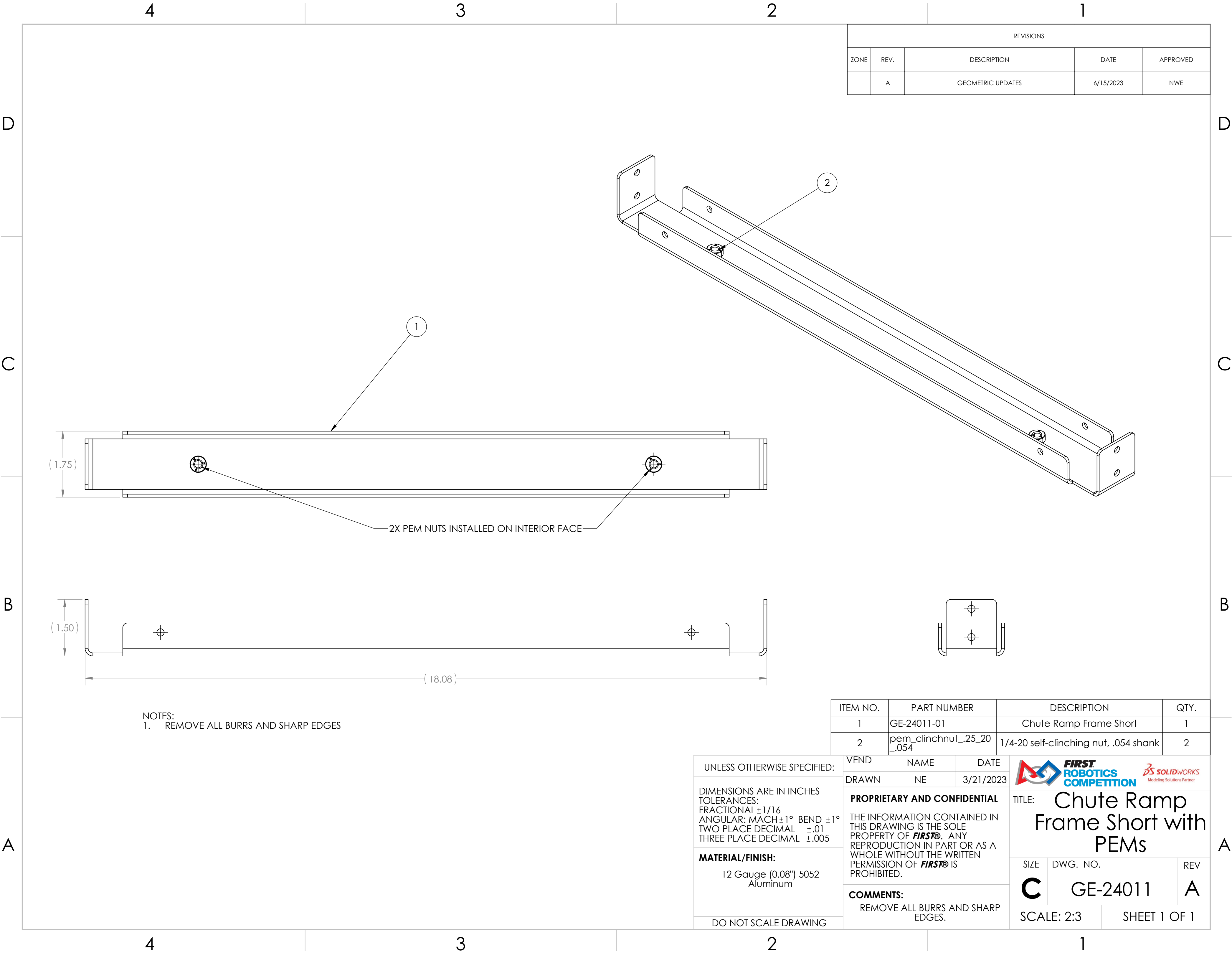
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
**Chute Frame Long**

SIZE	DWG. NO.	REV
<b>C</b>	GE-24010	<b>A</b>



SCALE: 1:5 SHEET 1 OF 1



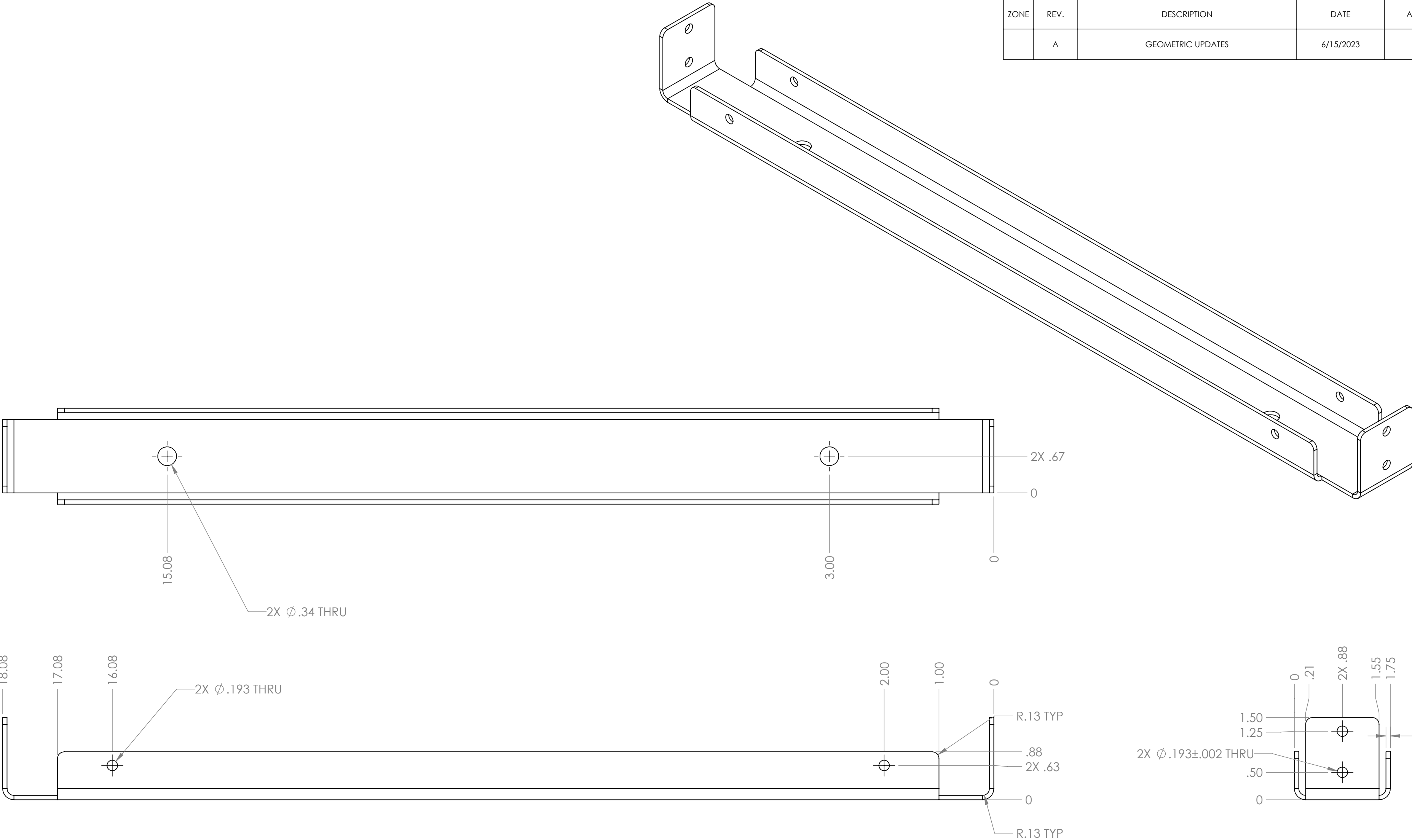
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	GEOMETRIC UPDATES	6/15/2023	NWE

NOTES:  
1. REMOVE ALL BURRS AND SHARP EDGES



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24011-01	Chute Ramp Frame Short	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	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 $\pm .005$  <b>MATERIAL/FINISH:</b>  12 Gauge (0.08") 5052 Aluminum  DO NOT SCALE DRAWING		VEND	NAME	DATE	 	
		DRAWN	NE	3/21/2023		
<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			TITLE: Chute Ramp Frame Short with PEMs	
					SIZE: <b>C</b>	DWG. NO. GE-24011 REV A
					SCALE: 2:3 SHEET 1 OF 1	

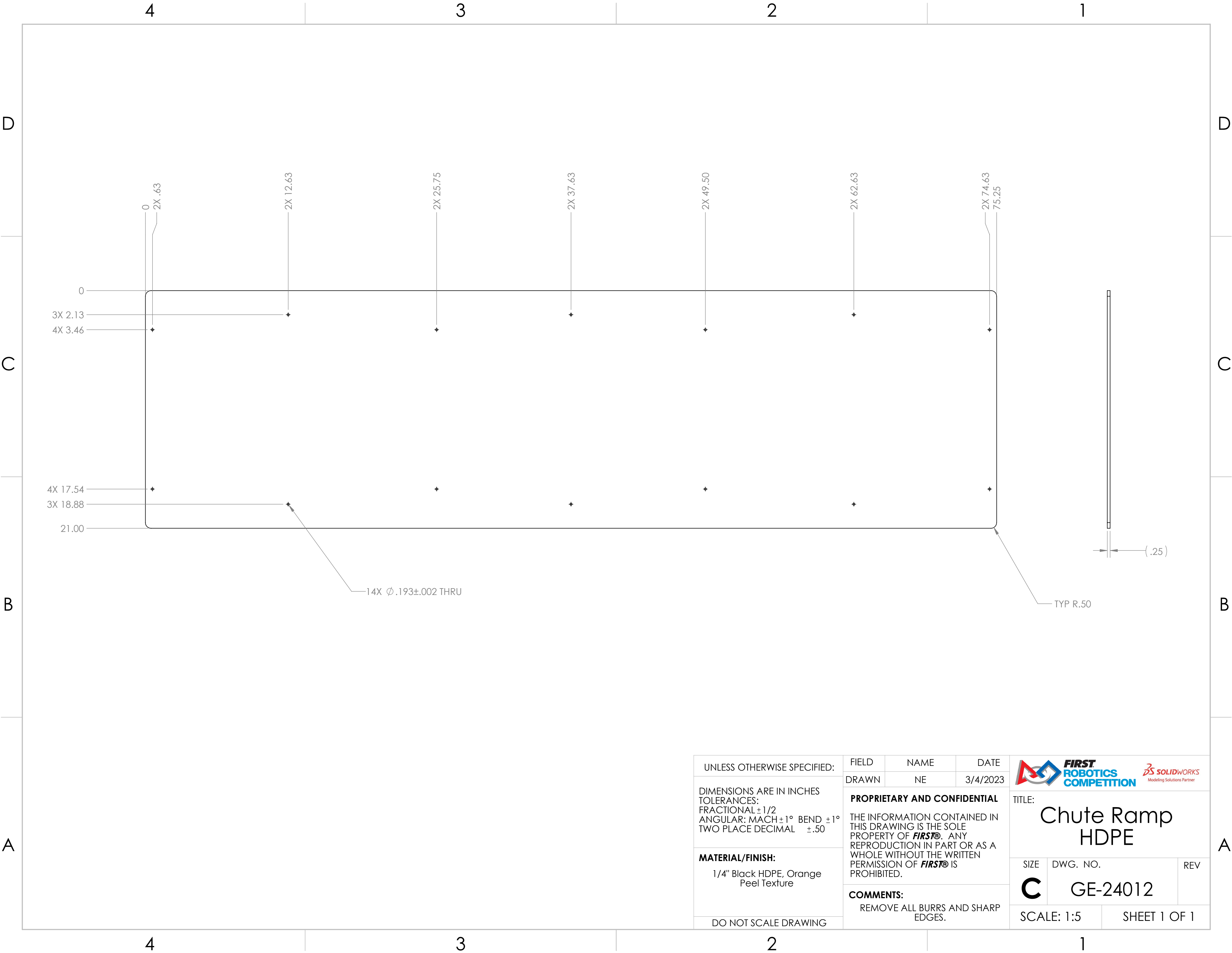
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	GEOMETRIC UPDATES	6/15/2023	NWE





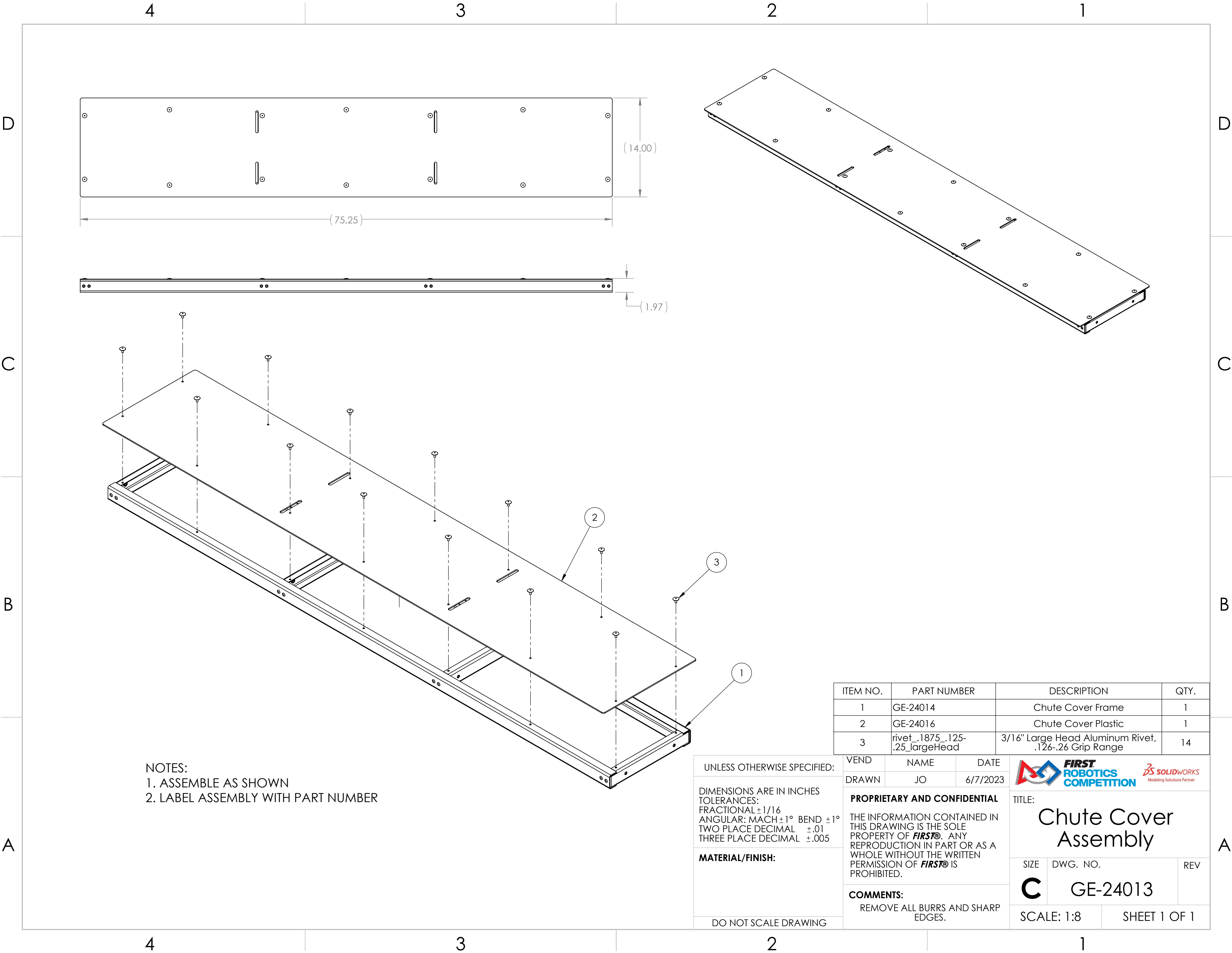
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$  <b>MATERIAL/FINISH:</b>  12 Gauge (0.08") 5052 Aluminum  DO NOT SCALE DRAWING	BEND DRAWN	NAME JO	DATE 6/6/2023
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: <b>Chute Ramp Frame Short</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24011-01</b>	REV <b>A</b>
SCALE: 3:4		SHEET 1 OF 1







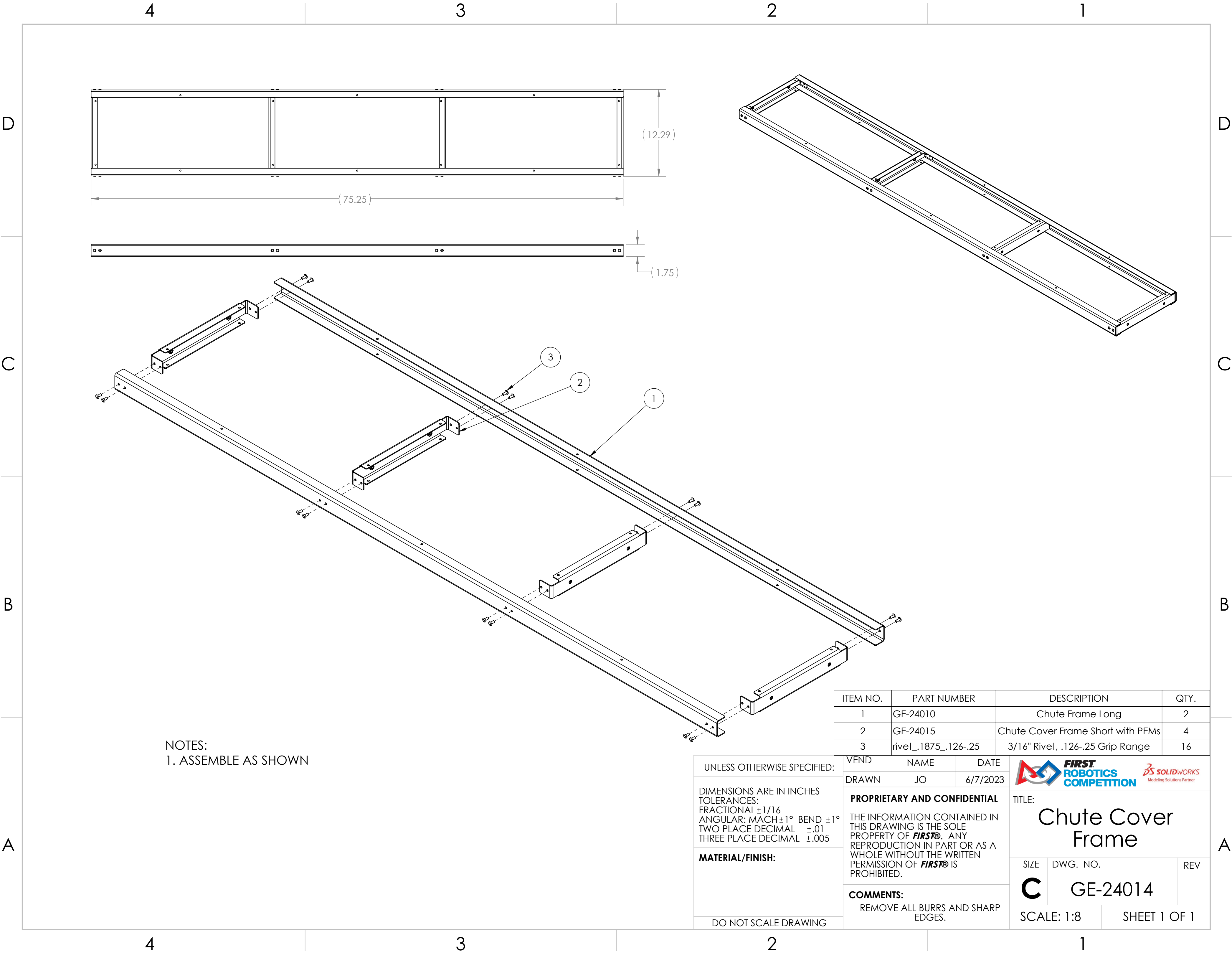
UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div>		
	DRAWN	NE	3/4/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Chute Ramp HDPE		
<b>MATERIAL/FINISH:</b>  1/4" Black HDPE, Orange Peel Texture				SIZE	DWG. NO.	REV
				C	GE-24012	
DO NOT SCALE DRAWING	<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:5		SHEET 1 OF 1



NOTES:  
1. ASSEMBLE AS SHOWN  
2. LABEL ASSEMBLY WITH PART NUMBER

		ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
		1	GE-24014	Chute Cover Frame	1
		2	GE-24016	Chute Cover Plastic	1
		3	rivet_.1875_.125-.25_largeHead	3/16" Large Head Aluminum Rivet, .126-.26 Grip Range	14

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	<div></div>	
<p>DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES:</p> <p>FRACTIONAL <math>\pm 1/16</math></p> <p>ANGULAR: MACH <math>\pm 1^\circ</math> BEND <math>\pm 1^\circ</math></p> <p>TWO PLACE DECIMAL <math>\pm .01</math></p> <p>THREE PLACE DECIMAL <math>\pm .005</math></p>		DRAWN	JO	6/7/2023	<p>TITLE:</p> <p>Chute Cover Assembly</p>	
		PROPRIETARY AND CONFIDENTIAL				
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				
		COMMENTS:				
MATERIAL/FINISH:		REMOVE ALL BURRS AND SHARP EDGES.			SIZE	
DO NOT SCALE DRAWING					DWG. NO.	
					REV	
					C	
					GE-24013	
					SCALE: 1:8	
					SHEET 1 OF 1	



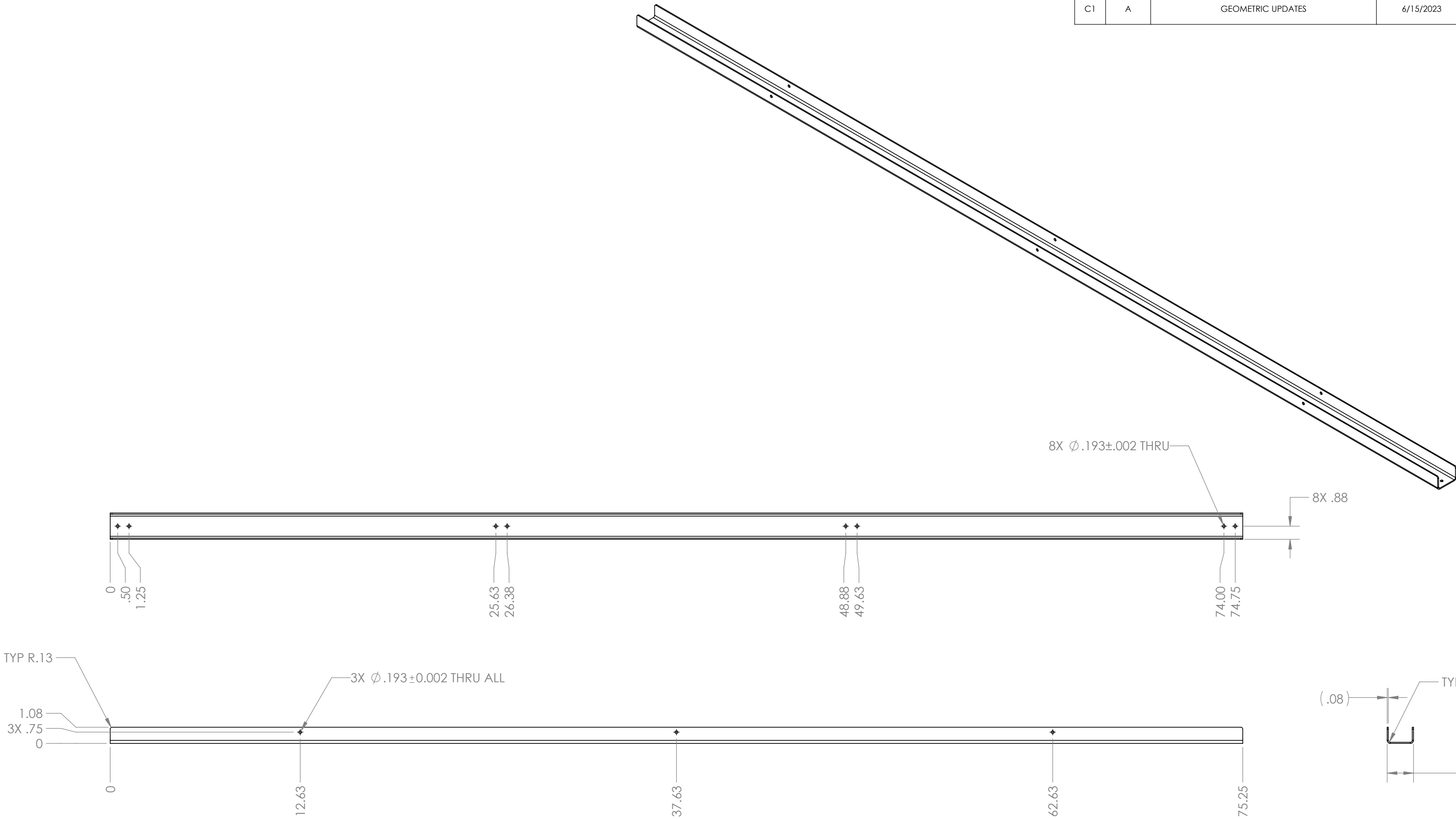
NOTES:  
1. ASSEMBLE AS SHOWN

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24010	Chute Frame Long	2
2	GE-24015	Chute Cover Frame Short with PEMs	4
3	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	16

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	JO	6/7/2023
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL		
DO NOT SCALE DRAWING		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> IS PROHIBITED.		
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
		TITLE: Chute Cover Frame		
		SIZE C	DWG. NO. GE-24014	REV
		SCALE: 1:8		SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C1	A	GEOMETRIC UPDATES	6/15/2023	NWE



NOTES:  
1. REMOVE ALL BURRS AND SHARP EDGES

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:**  
12 Gauge (0.08") 5052  
Aluminum

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	NE	3/21/2023

**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.

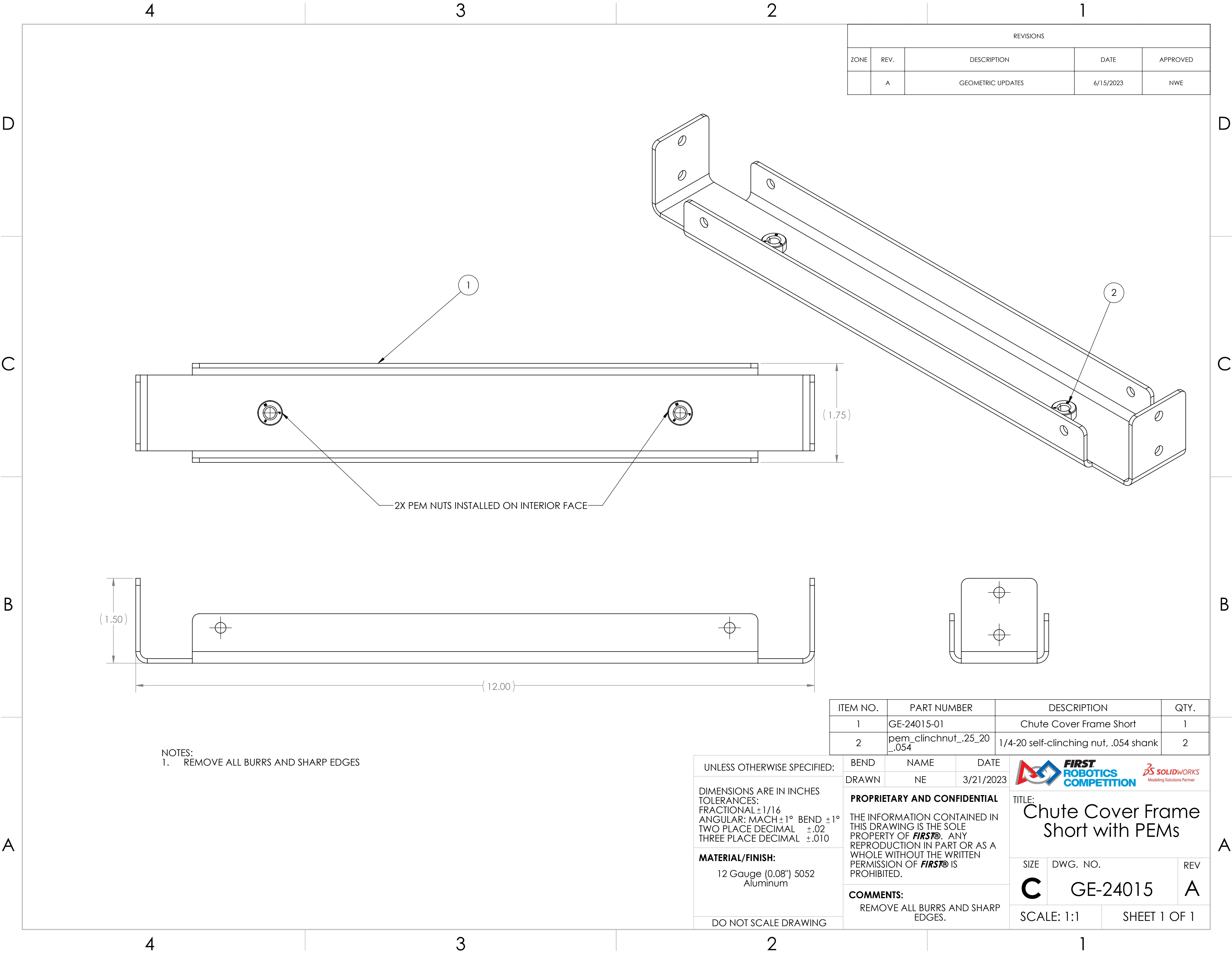
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
**Chute Frame Long**

SIZE	DWG. NO.	REV
<b>C</b>	GE-24010	<b>A</b>



SCALE: 1:5 SHEET 1 OF 1



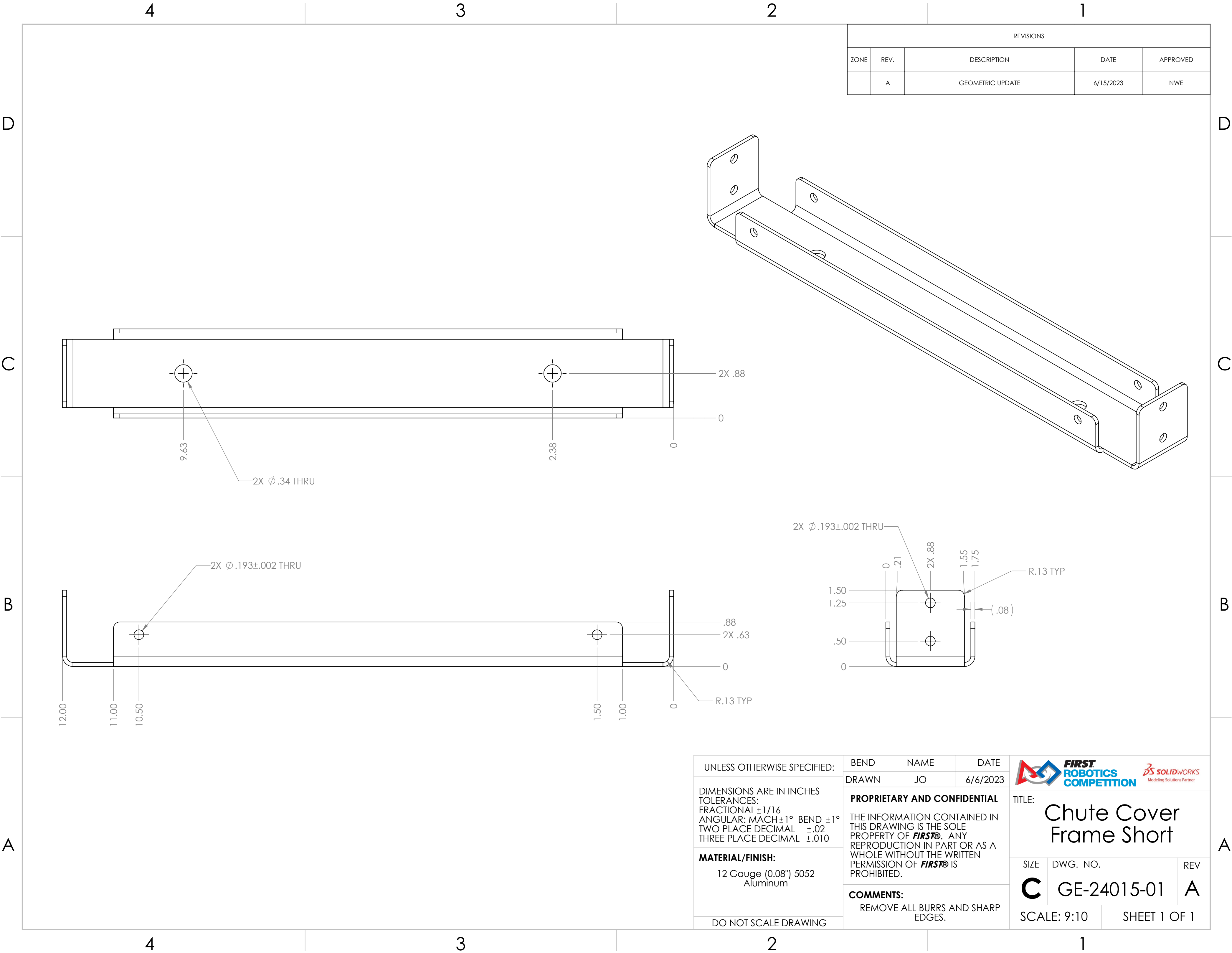
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	GEOMETRIC UPDATES	6/15/2023	NWE

NOTES:  
1. REMOVE ALL BURRS AND SHARP EDGES

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24015-01	Chute Cover Frame Short	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	2

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>		
	DRAWN	NE	3/21/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			Chute Cover Frame		
				Short with PEMs		
MATERIAL/FINISH:  12 Gauge (0.08") 5052 Aluminum	COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-24015	A
DO NOT SCALE DRAWING				SCALE: 1:1		SHEET 1 OF 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  $\pm .02$   
THREE PLACE DECIMAL  $\pm .010$

**MATERIAL/FINISH:**  
12 Gauge (0.08") 5052  
Aluminum

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	JO	6/6/2023

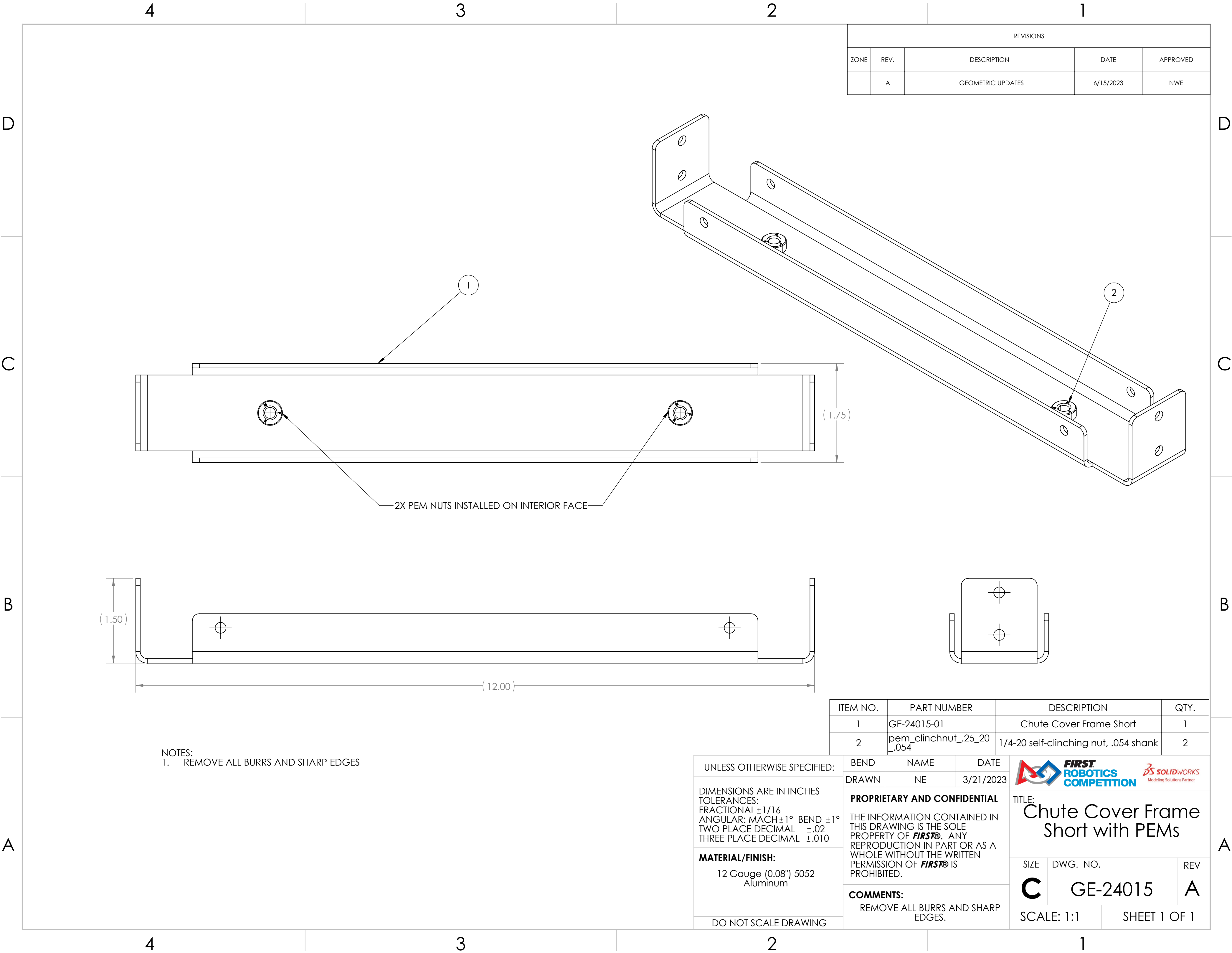
**PROPRIETARY AND CONFIDENTIAL**

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: <b>Chute Cover Frame Short</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24015-01</b>	REV <b>A</b>
SCALE: 9:10		SHEET 1 OF 1

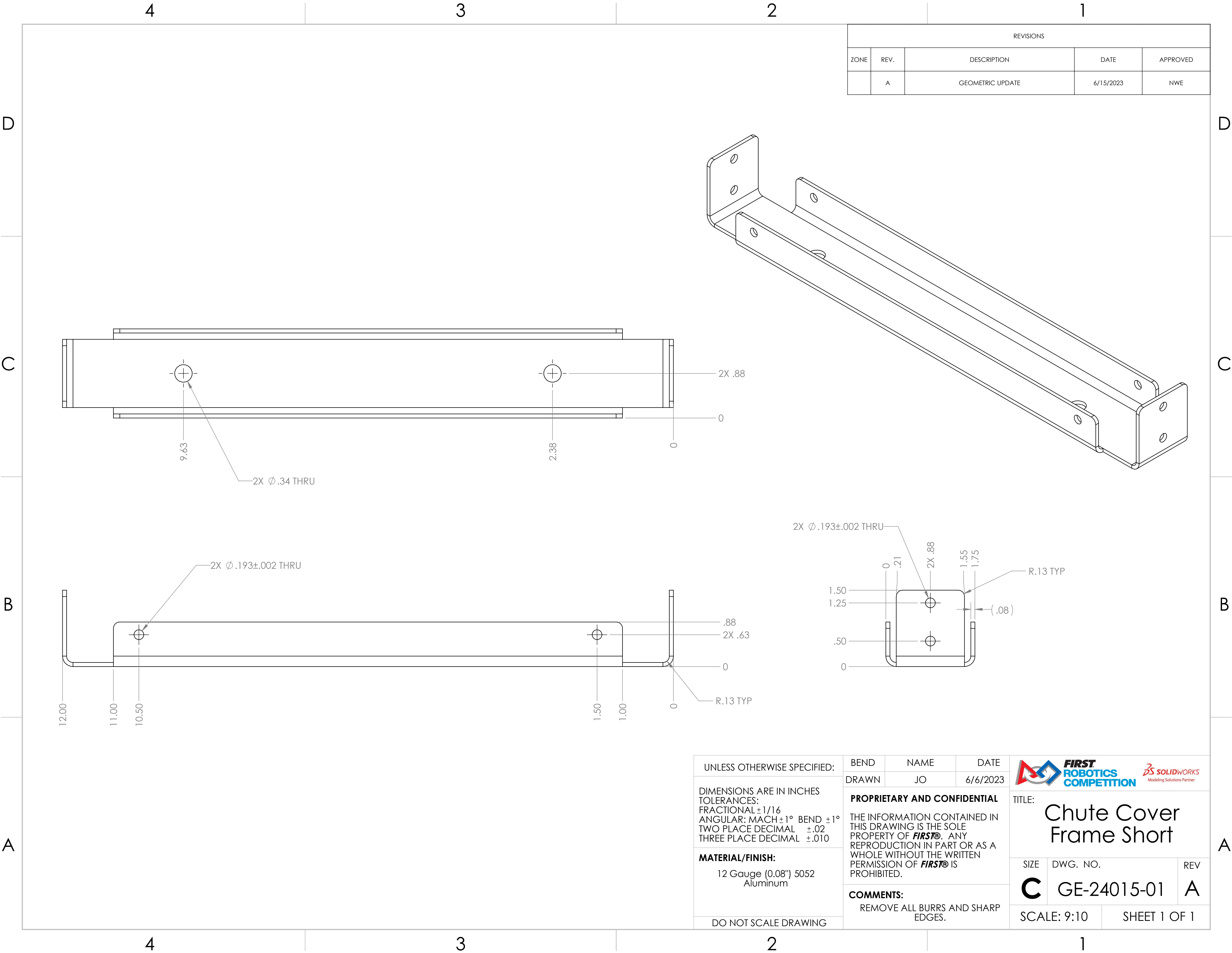


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	GEOMETRIC UPDATES	6/15/2023	NWE

NOTES:  
1. REMOVE ALL BURRS AND SHARP EDGES

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24015-01	Chute Cover Frame Short	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	2

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>		
	DRAWN	NE	3/21/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			Chute Cover Frame Short with PEMs		
MATERIAL/FINISH:  12 Gauge (0.08") 5052 Aluminum	COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-24015	A
DO NOT SCALE DRAWING				SCALE: 1:1		SHEET 1 OF 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  $\pm .02$   
THREE PLACE DECIMAL  $\pm .010$

**MATERIAL/FINISH:**  
12 Gauge (0.08") 5052  
Aluminum

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	JO	6/6/2023

**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.

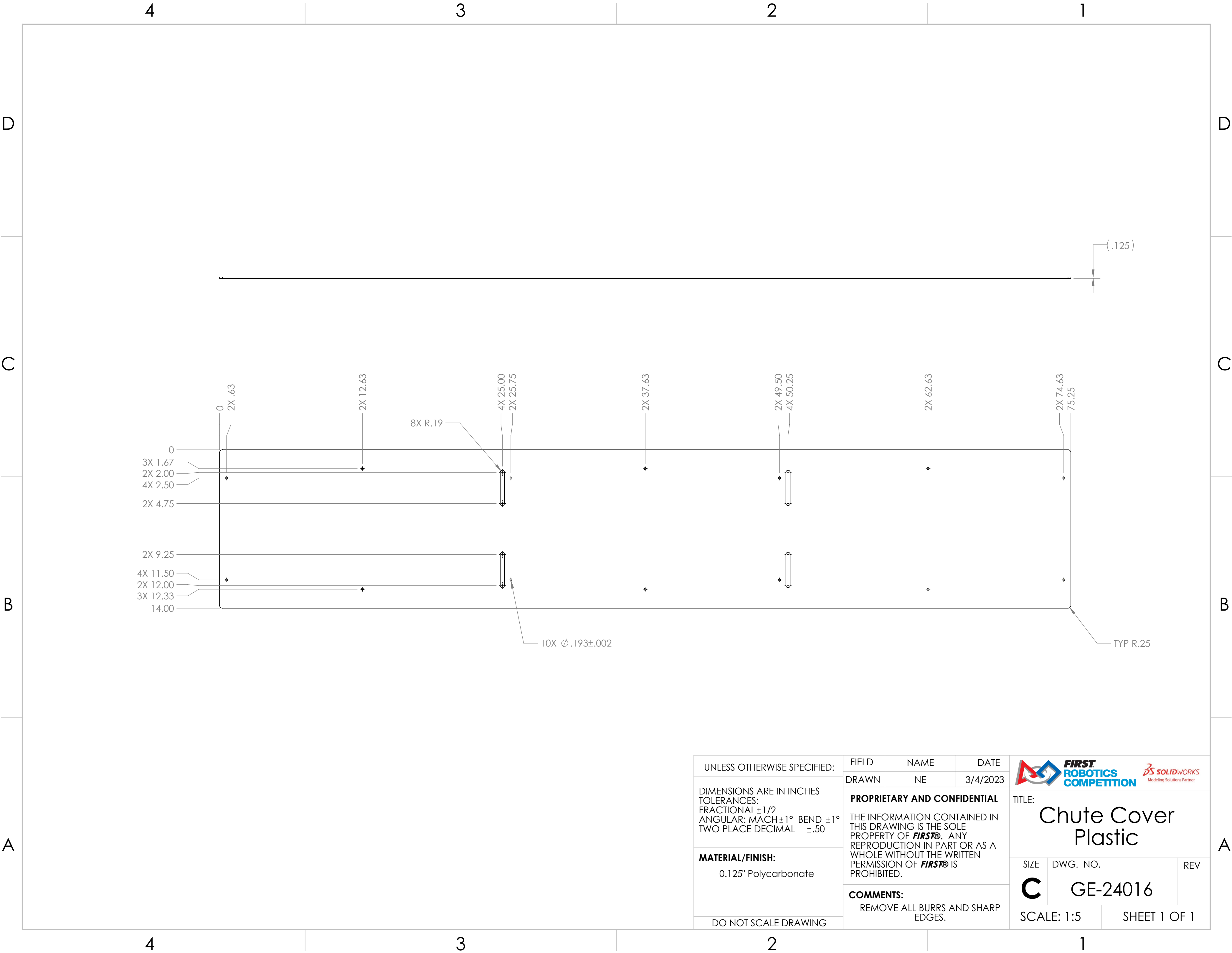
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.





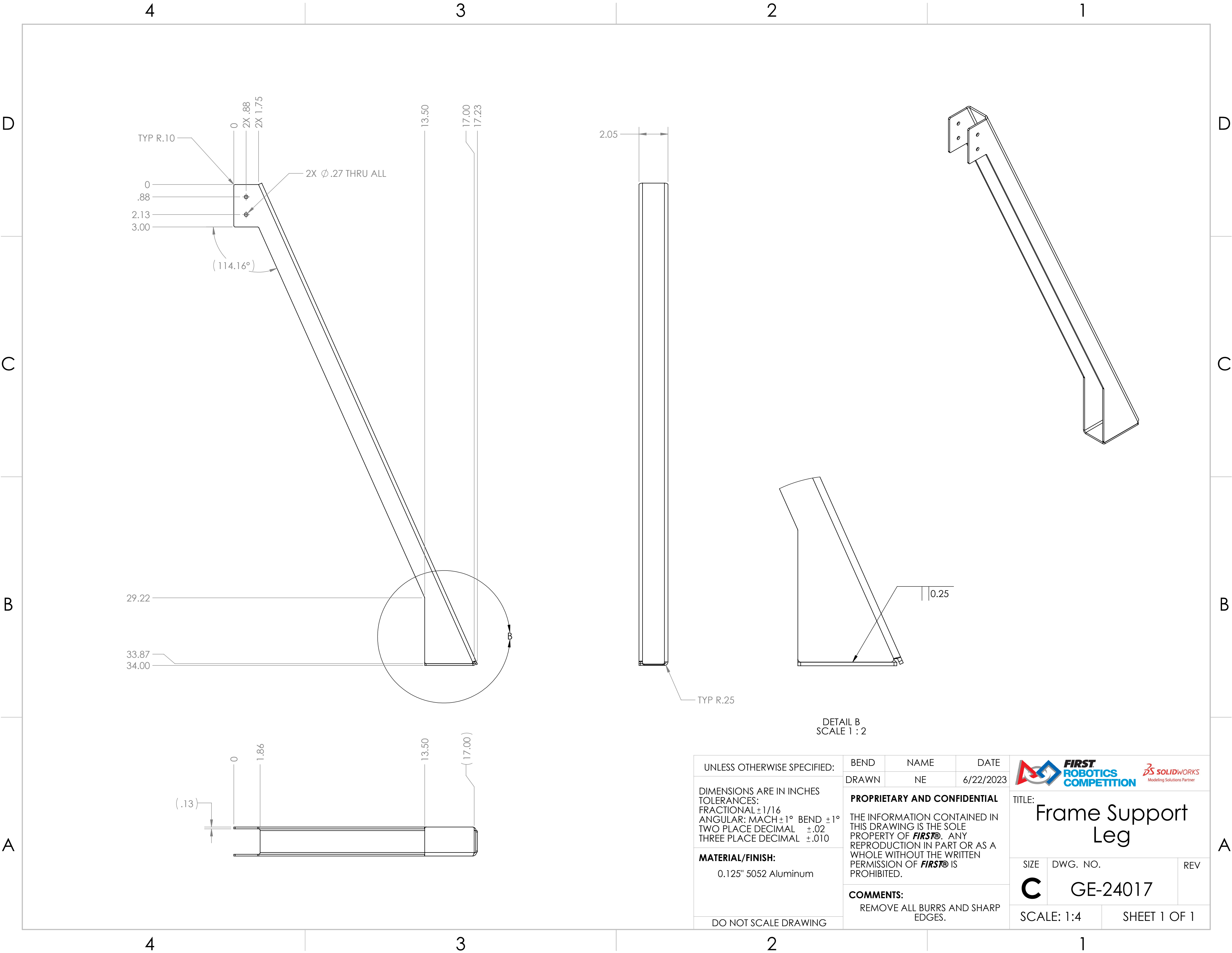
TITLE:  
**Chute Cover  
Frame Short**

SIZE	DWG. NO.	REV
<b>C</b>	GE-24015-01	<b>A</b>

SCALE: 9:10 SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	FIELD	NAME	DATE	<div></div> <div>TITLE: Chute Cover Plastic</div>		
	DRAWN	NE	3/4/2023			
MATERIAL/FINISH:  0.125" Polycarbonate	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
				C	GE-24016	
DO NOT SCALE DRAWING	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:5		SHEET 1 OF 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  $\pm .02$   
THREE PLACE DECIMAL  $\pm .010$

**MATERIAL/FINISH:**  
0.125" 5052 Aluminum

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	NE	6/22/2023

**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.

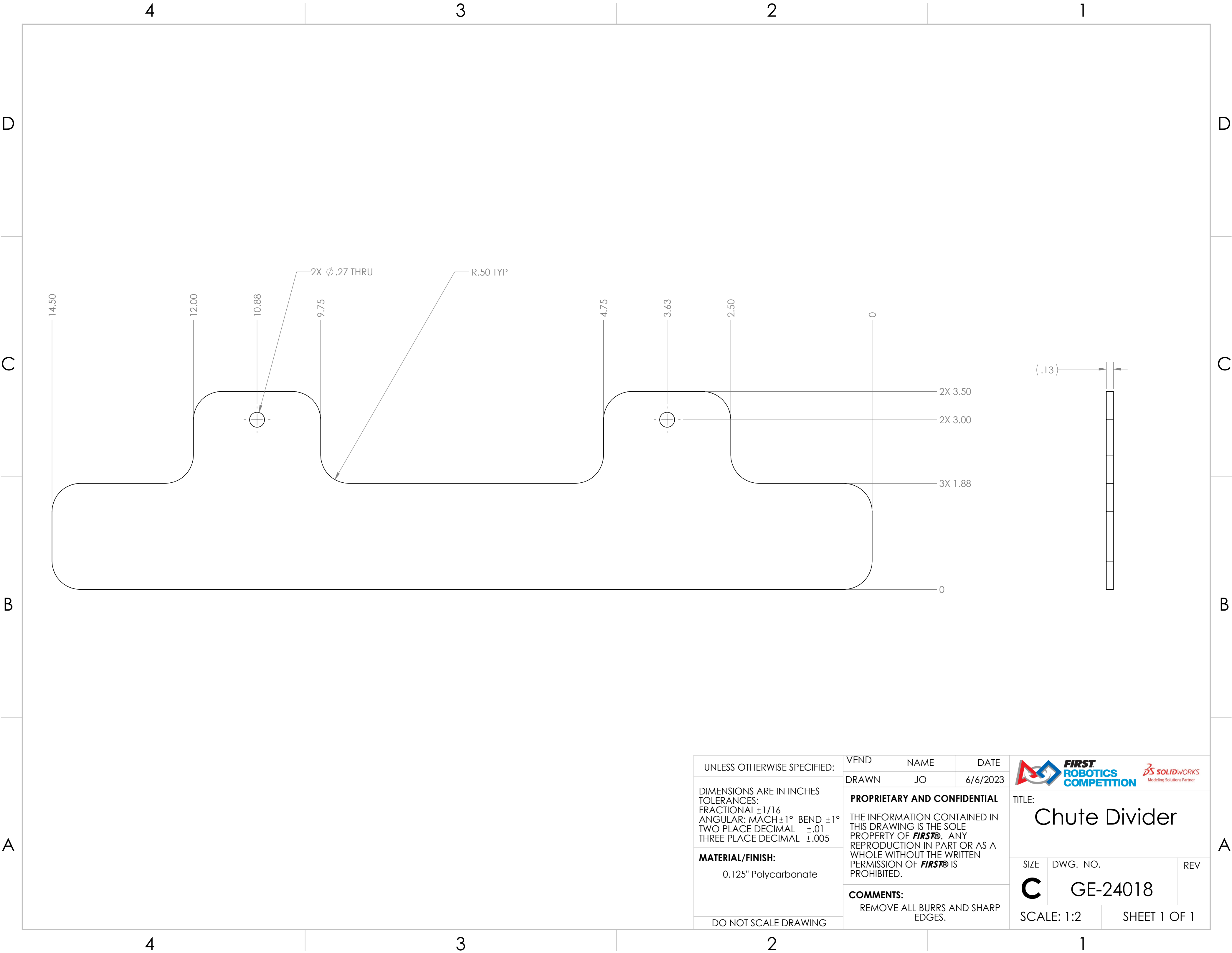




TITLE: **Frame Support Leg**

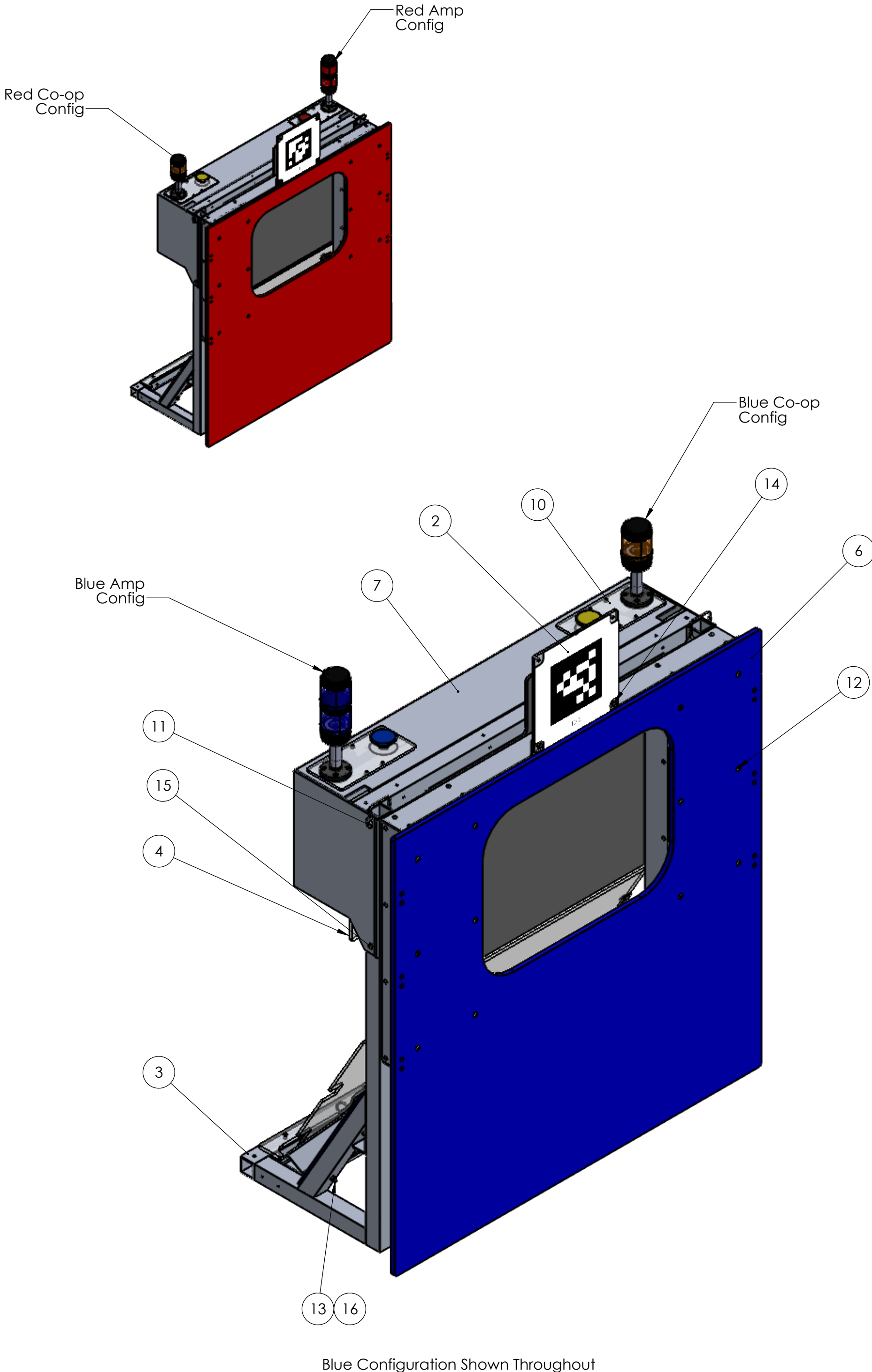
SIZE	DWG. NO.	REV
<b>C</b>	GE-24017	

SCALE: 1:4 SHEET 1 OF 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 $\pm .005$  <b>MATERIAL/FINISH:</b>  0.125" Polycarbonate  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Chute Divider</div>		
	DRAWN	JO	6/6/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE <b>C</b>	DWG. NO. GE-24018	REV
SCALE: 1:2		SHEET 1 OF 1				



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-B2	A	Added Sheet 2	12/20/2023	DAF

ITEM NO.	PART NUMBER	DESCRIPTION	BLUE CONFIG QTY.	RED CONFIG QTY.
1	FE-00083-ID5	AprilTag	-	1
2	FE-00083-ID6	AprilTag	1	-
3	GE-24101	Amp Permanent Assembly	1	1
4	GE-24113	Truss Capture Large	1	1
5	GE-24114	Front Red	1	-
6	GE-24115	Front Blue	-	1
7	GE-24116	Stacklight and Button Box	1	1
8	GE-24118	Ring Counter Red	1	-
9	GE-24119	Ring Counter Blue	-	1
10	GE-24128	Stacklight and Button Plate Assembly	2	2
11	98416A013	pin_clevis_.25_2.1875	2	2
12	flat_phil_.25_20_1	Steel Phillips Flat Head Screw, 1/4"x20 x 1" long, fully threaded	12	12
13	flat_phil_.25_20_2.5	Steel Phillips Flat Head Screw, 1/4"-20 x 2-1/2" long, fully threaded	4	4
14	hex_.25_20_0.75	Steel Hex Head Screw, 1/4"-20 x 0.75" long, fully threaded	2	2
15	hex_.25_20_2.5_partial	Steel Hex Head Screw, 1/4"-20 x 2-1/2" long, partially threaded	2	2
16	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	6	6

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	DF	12/18/2023

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:

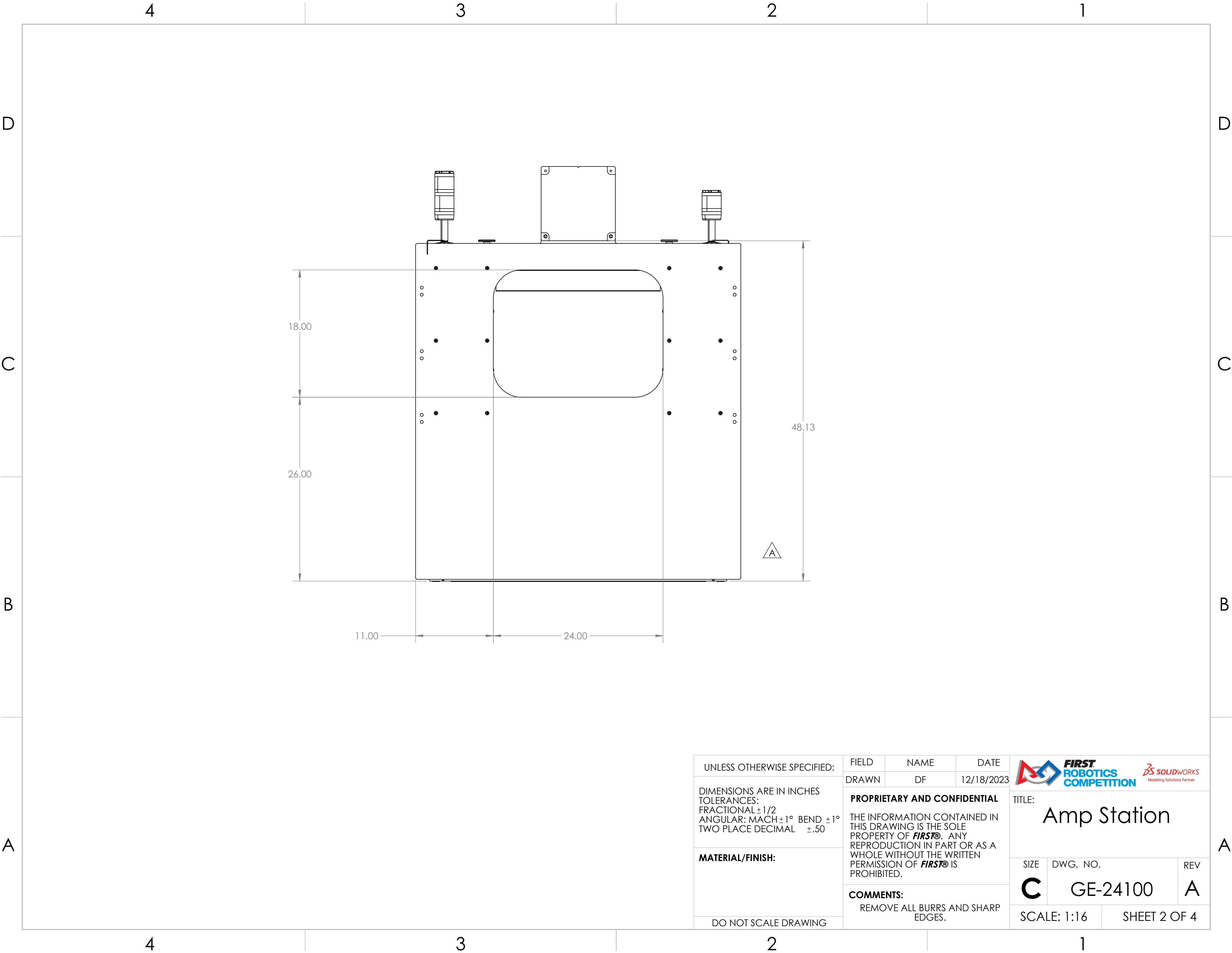
REMOVE ALL BURRS AND SHARP EDGES.



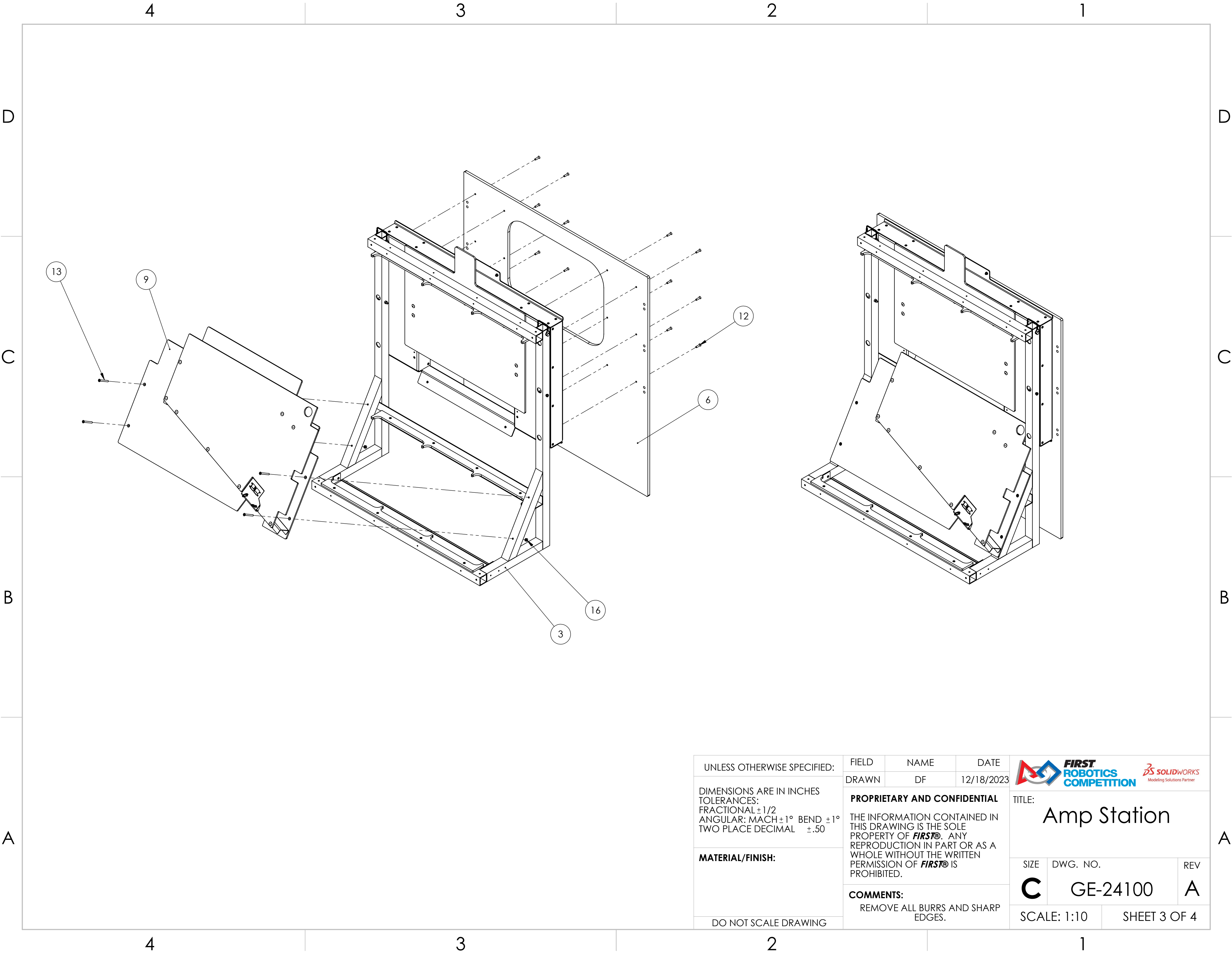
TITLE:  
Amp Station



SIZE	DWG. NO.	REV
C	GE-24100	A

SCALE: 1:8 SHEET 1 OF 4



UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE
		DRAWN	DF	12/18/2023
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
		TITLE: <b>Amp Station</b>		
<b>MATERIAL/FINISH:</b>		SIZE DWG. NO. REV		
		<b>C</b> GE-24100 <b>A</b>		
DO NOT SCALE DRAWING		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		
		SCALE: 1:16 SHEET 2 OF 4		



UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 
		DRAWN	DF	12/18/2023	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		<b>PROPRIETARY AND CONFIDENTIAL</b> THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE: <b>Amp Station</b>
<b>MATERIAL/FINISH:</b>		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE <b>C</b>
DO NOT SCALE DRAWING					DWG. NO. <b>GE-24100</b>
					REV <b>A</b>
					SCALE: 1:10
					SHEET 3 OF 4

D

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B

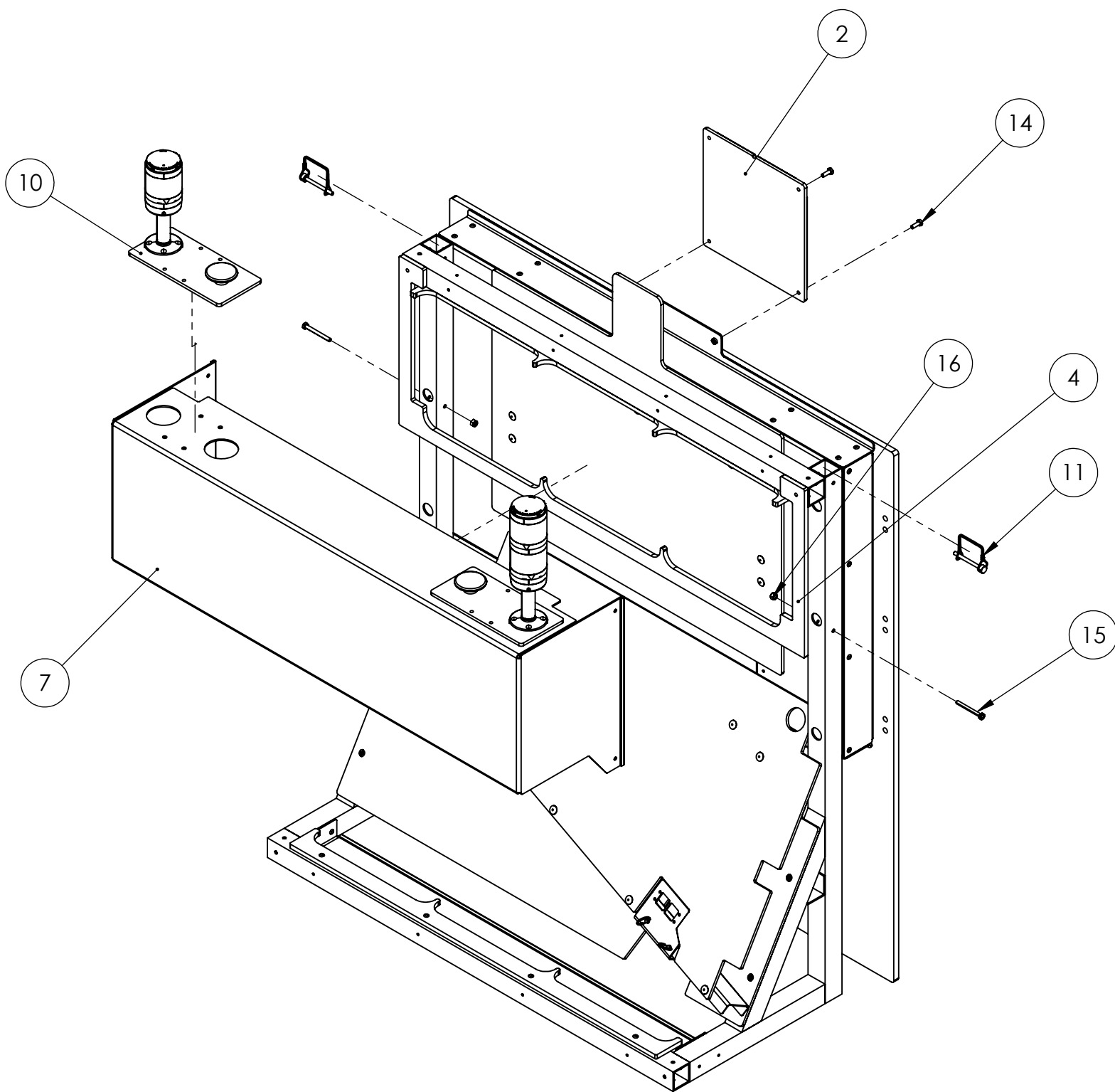
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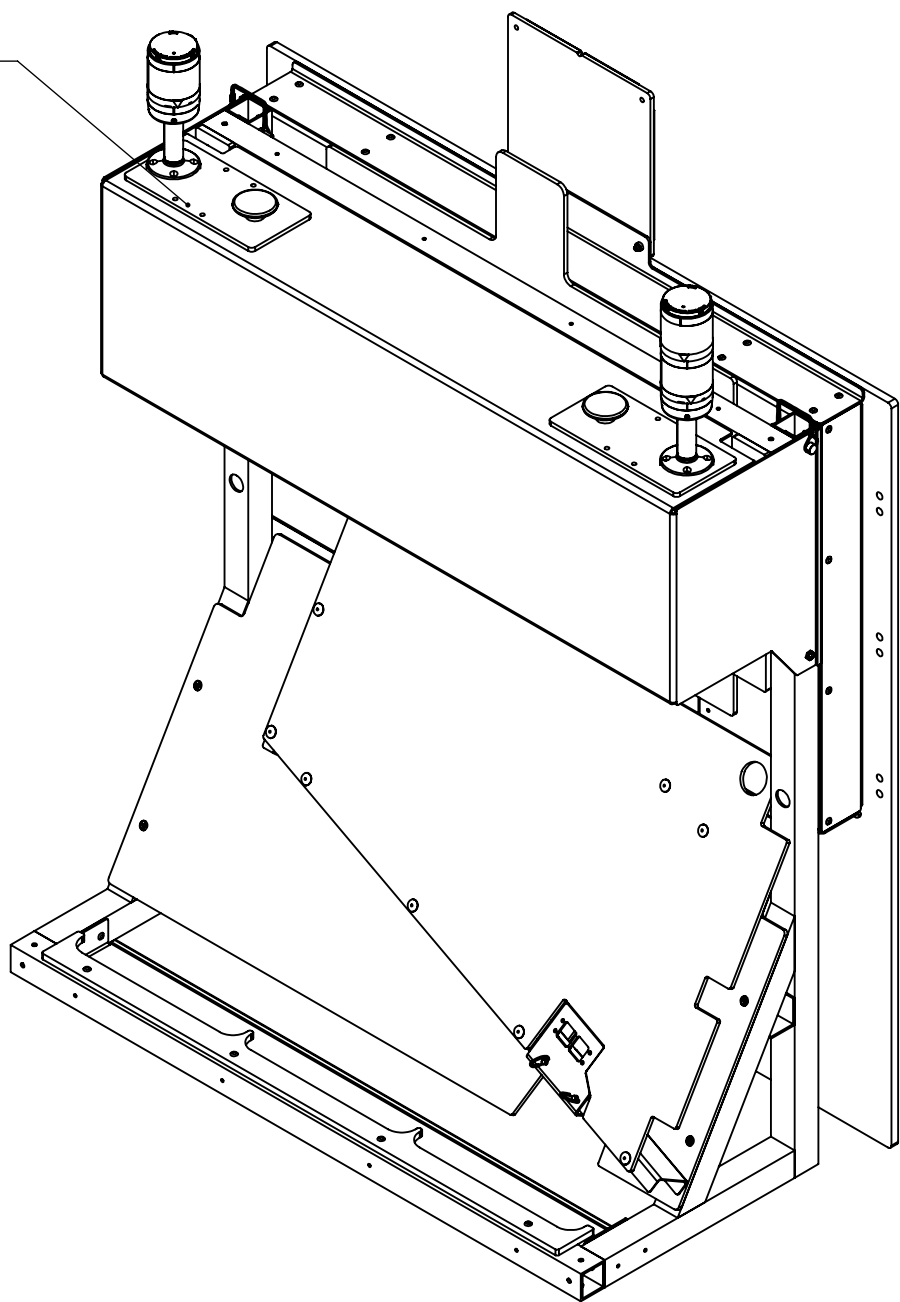
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Attach with cable ties. 4 places



UNLESS OTHERWISE SPECIFIED:

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

**MATERIAL/FINISH:**

DO NOT SCALE DRAWING

FIELD

NAME

DATE

DRAWN

DF

12/18/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.



**FIRST**  
ROBOTICS  
COMPETITION

**3D SOLIDWORKS**  
Modeling Solutions Partner

TITLE:

Amp Station

SIZE

**C**

DWG. NO.

GE-24100

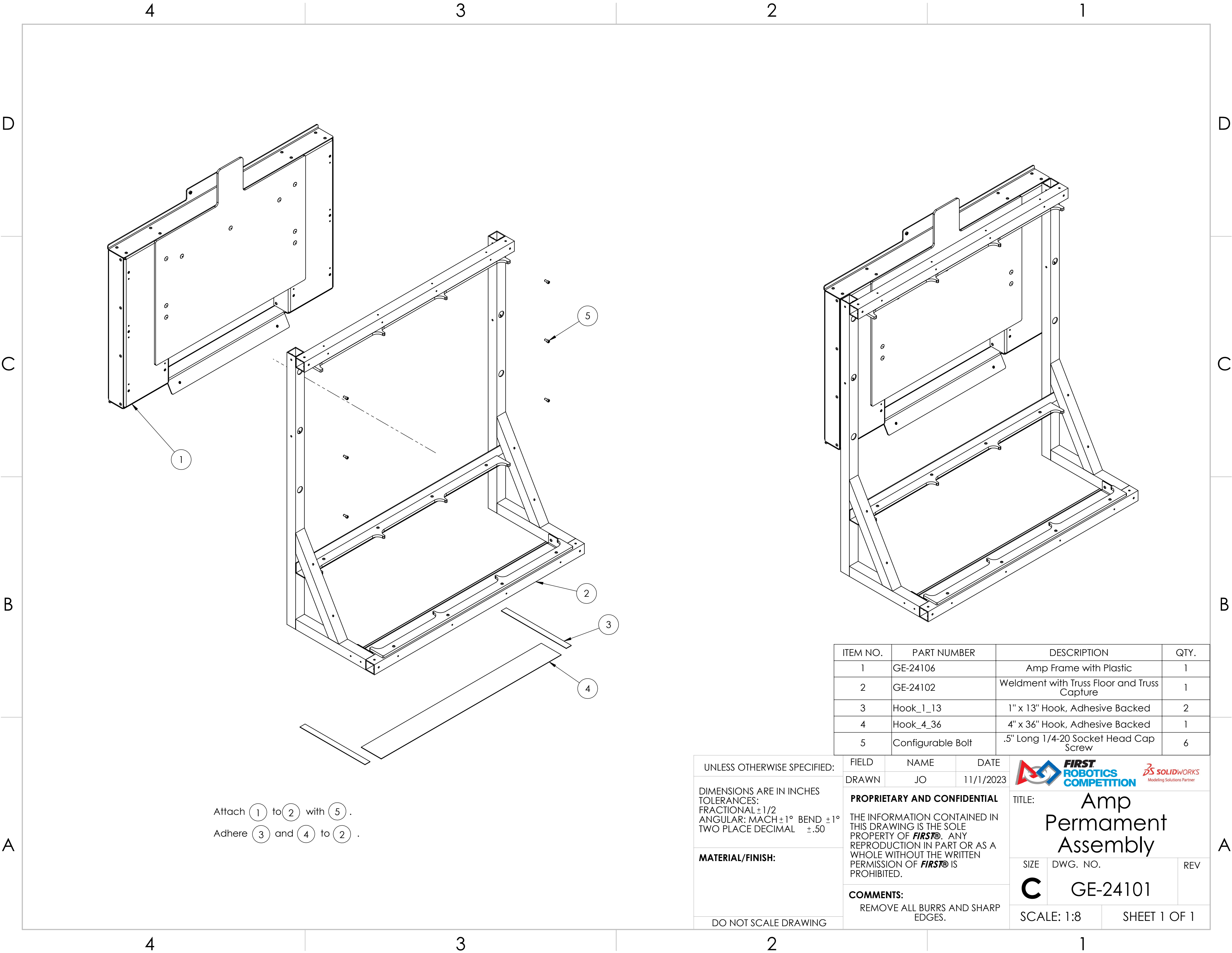
REV

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SCALE: 1:10

SHEET 4 OF 4





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24106	Amp Frame with Plastic	1
2	GE-24102	Weldment with Truss Floor and Truss Capture	1
3	Hook_1_13	1" x 13" Hook, Adhesive Backed	2
4	Hook_4_36	4" x 36" Hook, Adhesive Backed	1
5	Configurable Bolt	.5" Long 1/4-20 Socket Head Cap Screw	6

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	<div></div>		
		DRAWN	JO	11/1/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Amp Permanent Assembly		
<b>MATERIAL/FINISH:</b>					SIZE	DWG. NO.	REV
					C	GE-24101	
DO NOT SCALE DRAWING		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:8		SHEET 1 OF 1

4

3

2

1

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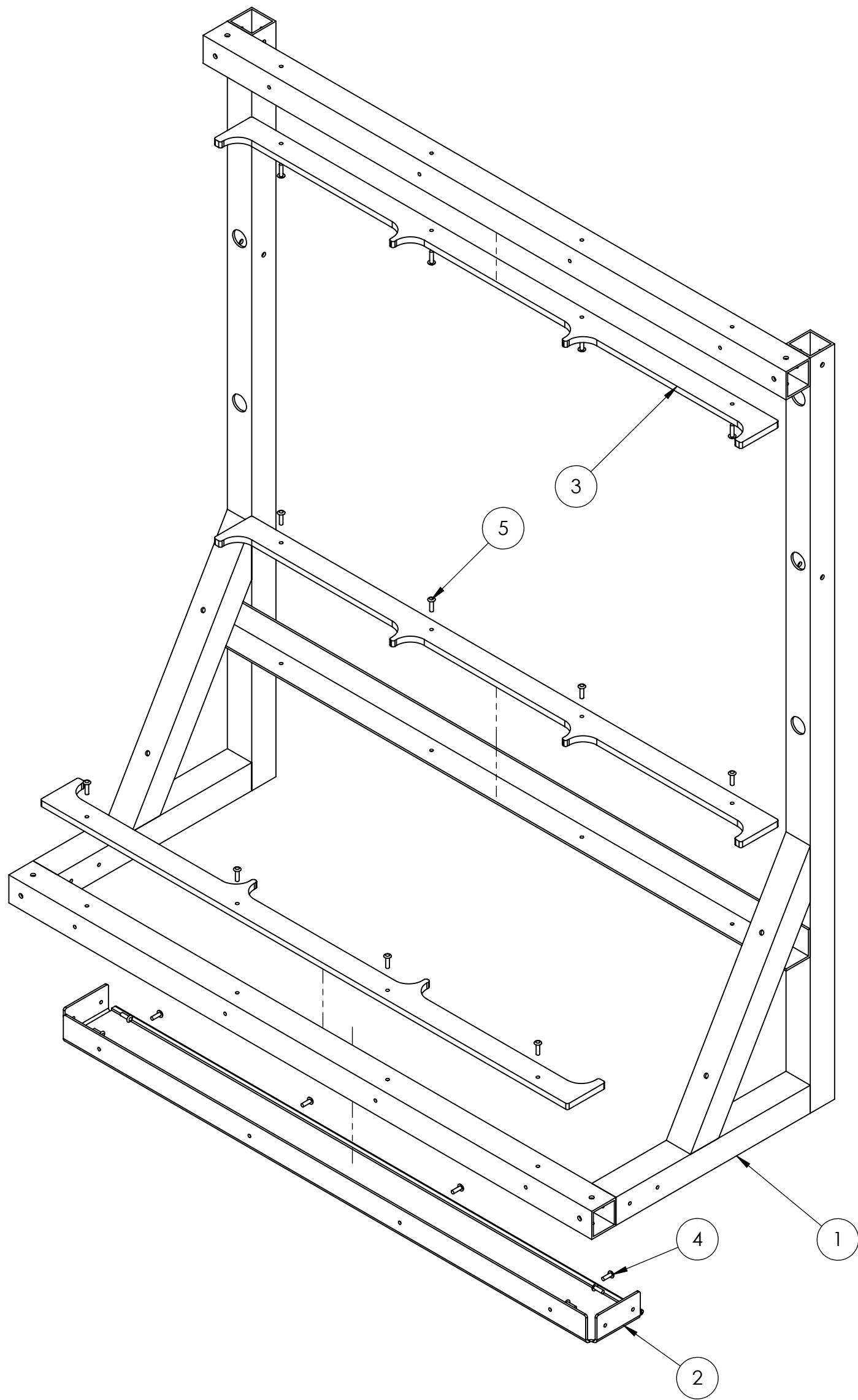
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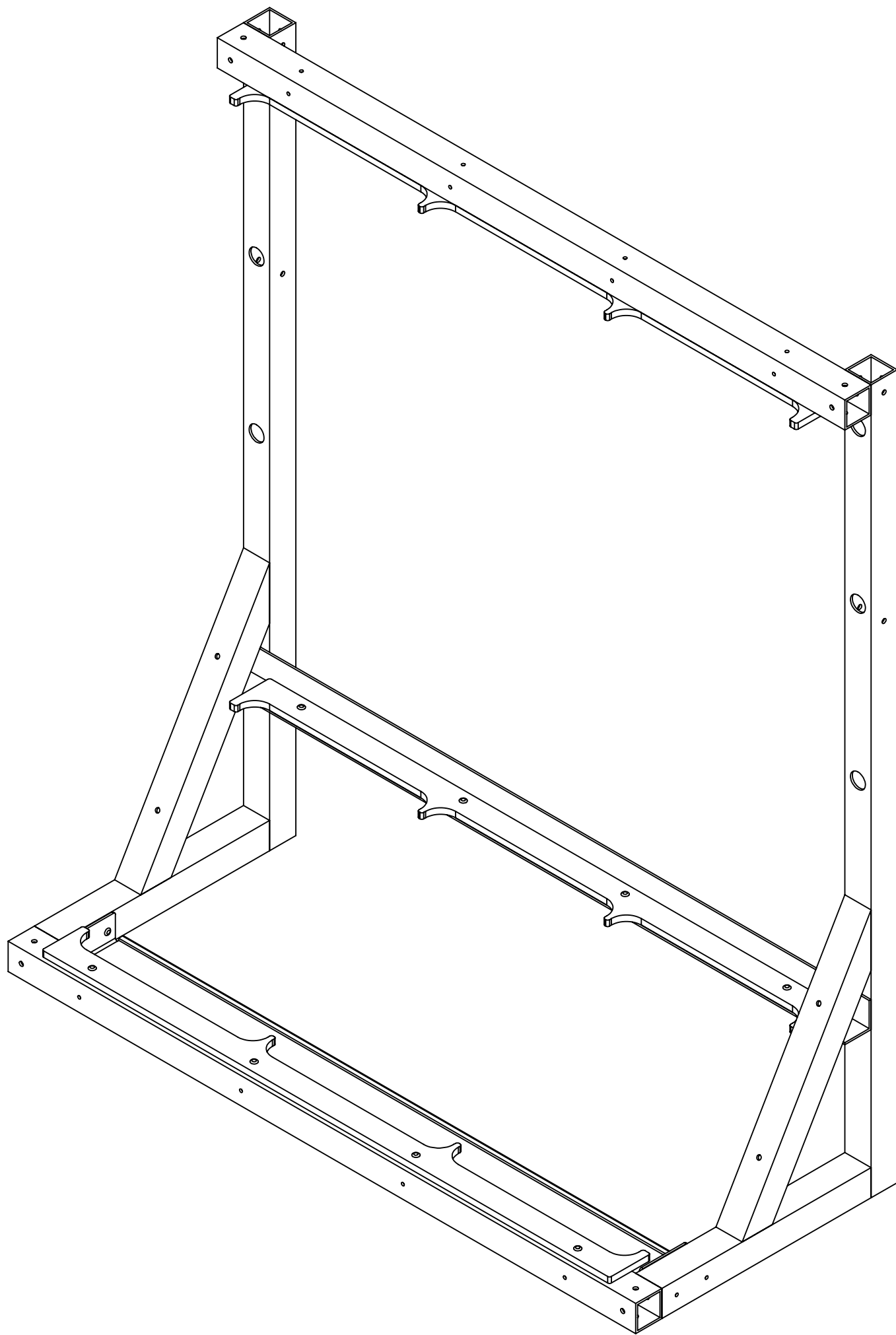
B

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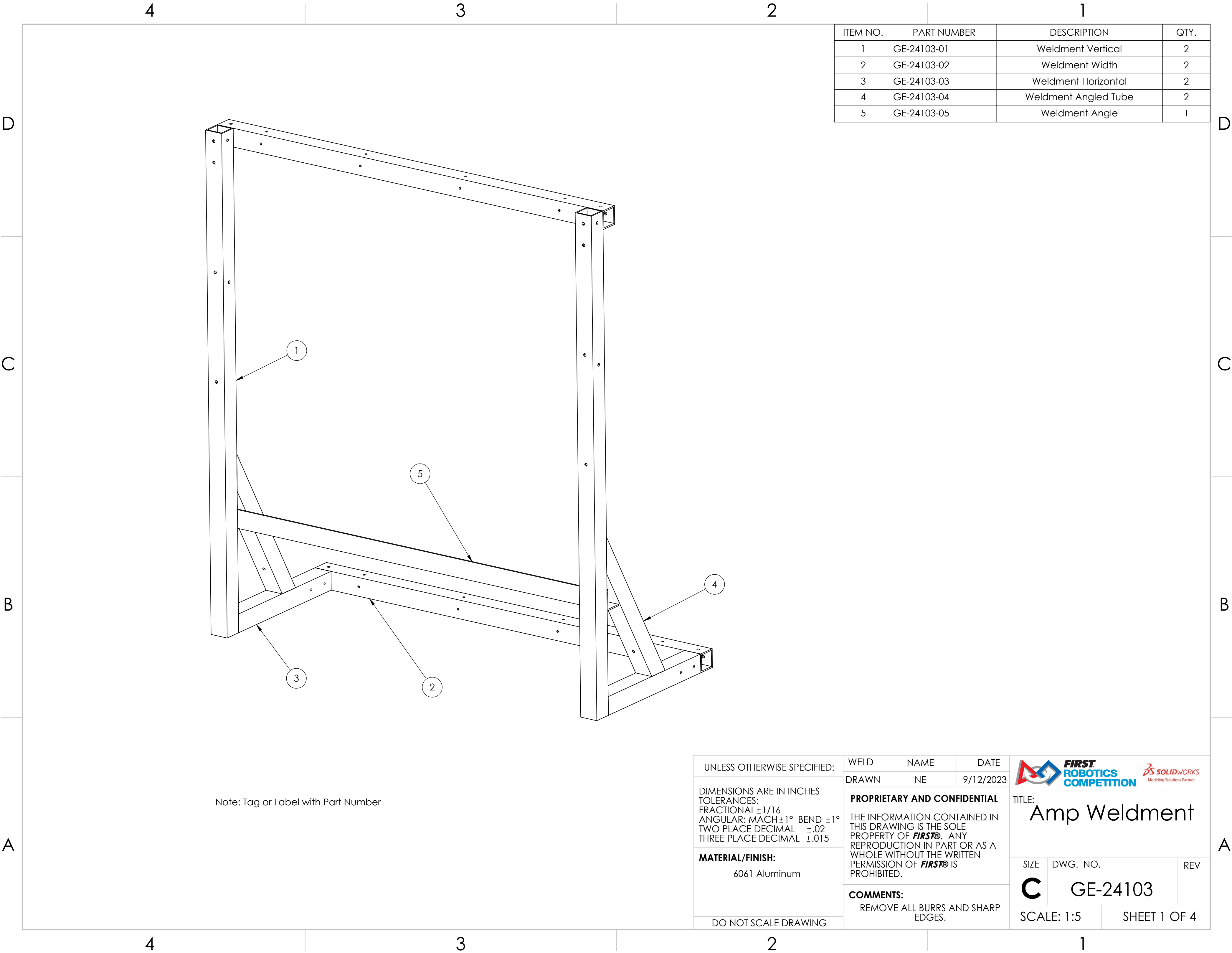


Attach (3) to (1) with (5) in 3 places.  
Attach (2) to (1) with (4)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24103	Amp Weldment	1
2	GE-24104	Truss Floor	1
3	GE-24105	Truss Capture Small	3
4	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	8
5	rivet_.1875_.376-.5	3/16" Aluminum Rivet, .376-.5 Grip Range	12

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50  <b>MATERIAL/FINISH:</b>     <b>DO NOT SCALE DRAWING</b>	FIELD	NAME	DATE	<div></div> <div>TITLE: Weldment with Truss Floor and Truss Capture</div> <div><div>SIZE</div><div>DWG. NO.</div><div>REV</div></div> <div><div>C</div><div>GE-24102</div></div> <div><div>SCALE: 1:6</div><div>SHEET 1 OF 1</div></div>
	DRAWN	JO	11/1/2023	
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24103-01	Weldment Vertical	2
2	GE-24103-02	Weldment Width	2
3	GE-24103-03	Weldment Horizontal	2
4	GE-24103-04	Weldment Angled Tube	2
5	GE-24103-05	Weldment Angle	1

Note: Tag or Label with Part Number

UNLESS OTHERWISE SPECIFIED:		WELD	NAME	DATE
		DRAWN	NE	9/12/2023
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 $\pm .015$		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		
MATERIAL/FINISH:  6061 Aluminum		TITLE: <b>Amp Weldment</b>		
DO NOT SCALE DRAWING		SIZE <b>C</b>	DWG. NO. <b>GE-24103</b>	REV
		SCALE: 1:5		SHEET 1 OF 4



1

D





-NO WELD PERMISSIBLE ON OUTSIDE FACE FOR THIS WELD

- NOTE HOLE ORIENTATION

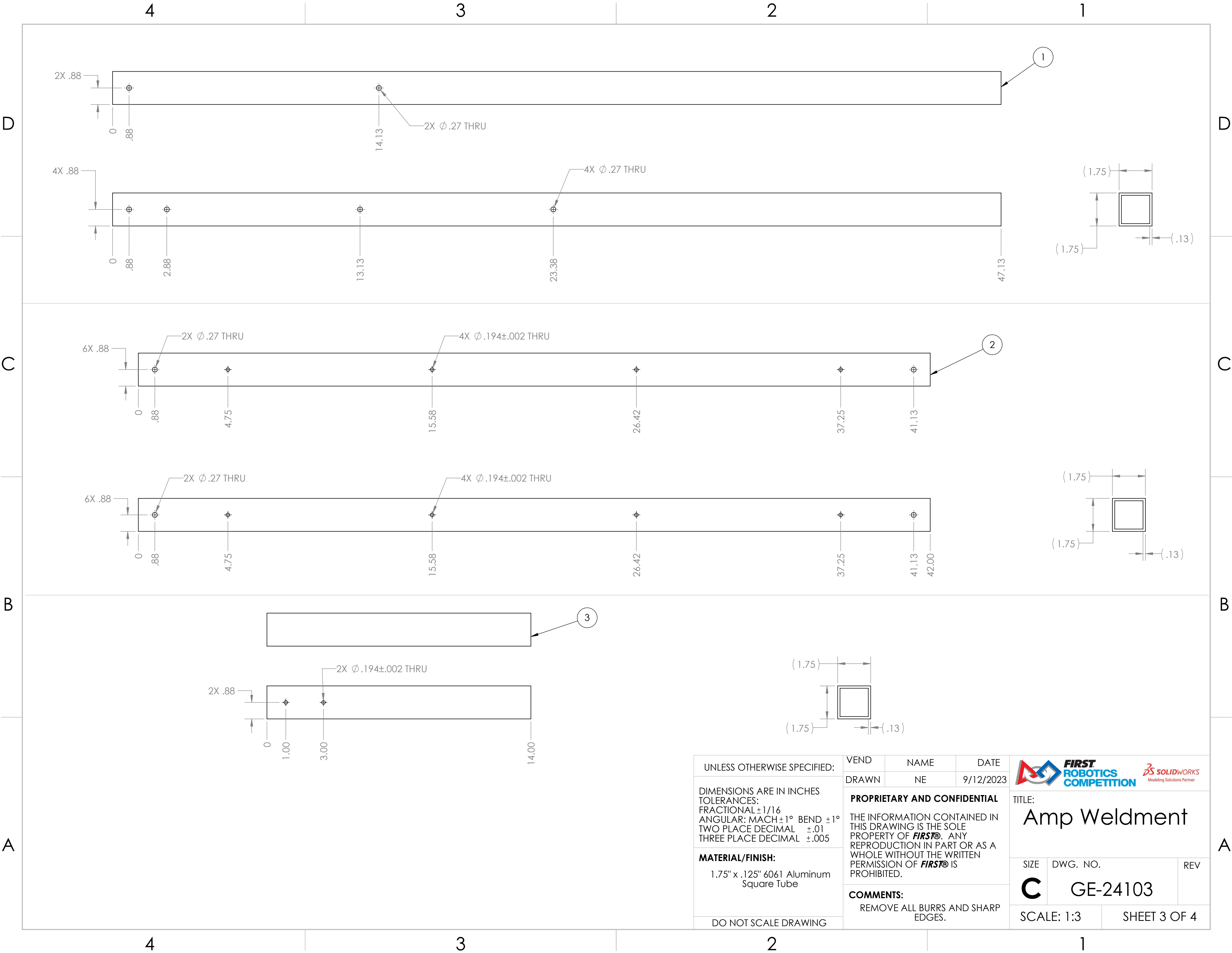


-NO WELD PERMISSIBLE ON  
BOTTOM OF THIS JOINT

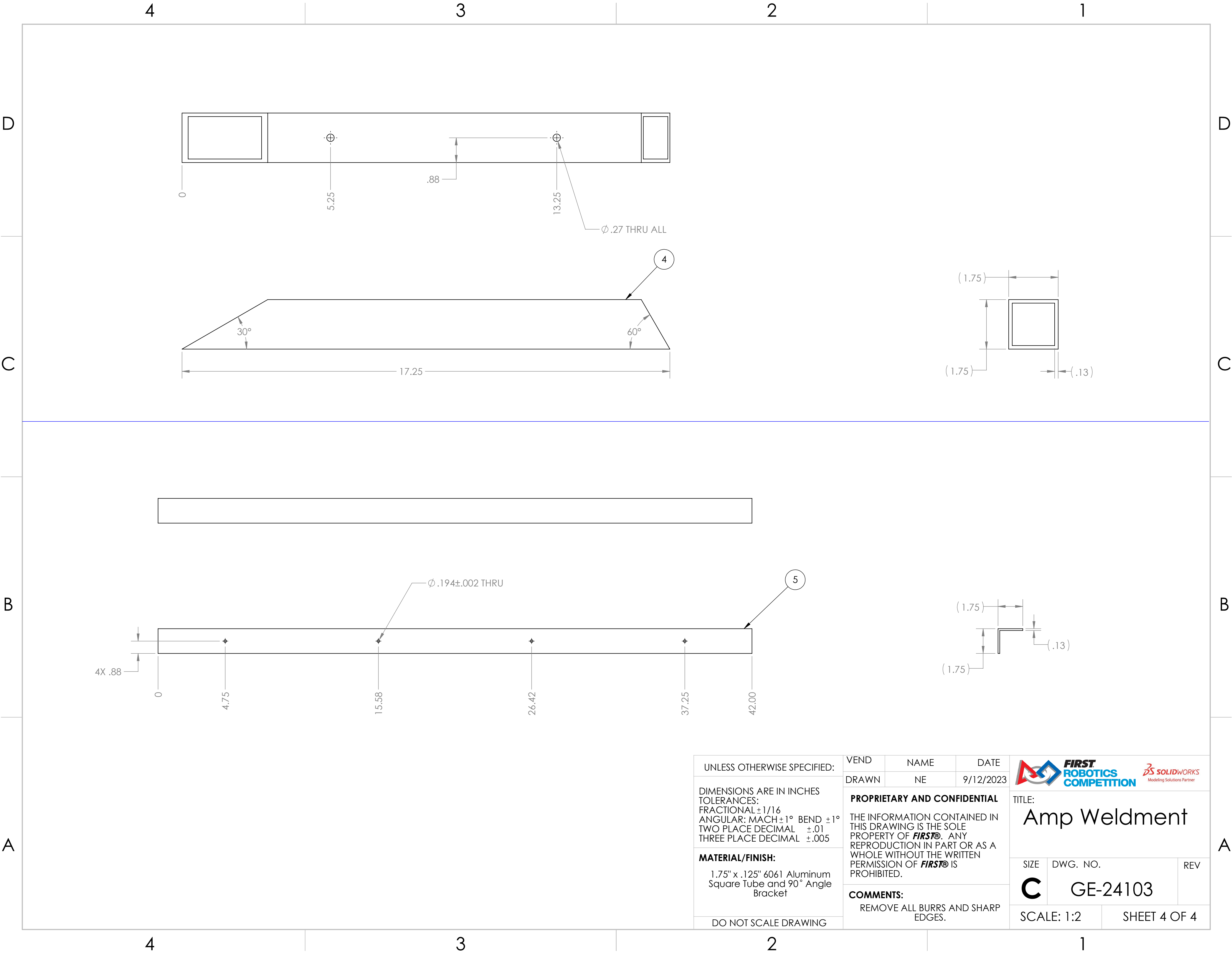
UNLESS OTHERWISE SPECIFIED:		WELD	NAME	DATE	 	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$		DRAWN	NE	9/12/2023	TITLE:  Amp Weldment	
MATERIAL/FINISH:  6061 Aluminum		PROPRIETARY AND CONFIDENTIAL  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE  C	
DO NOT SCALE DRAWING		COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO.  GE-24103	REV
					SCALE: 1:8	
					SHEET 2 OF 4	



A

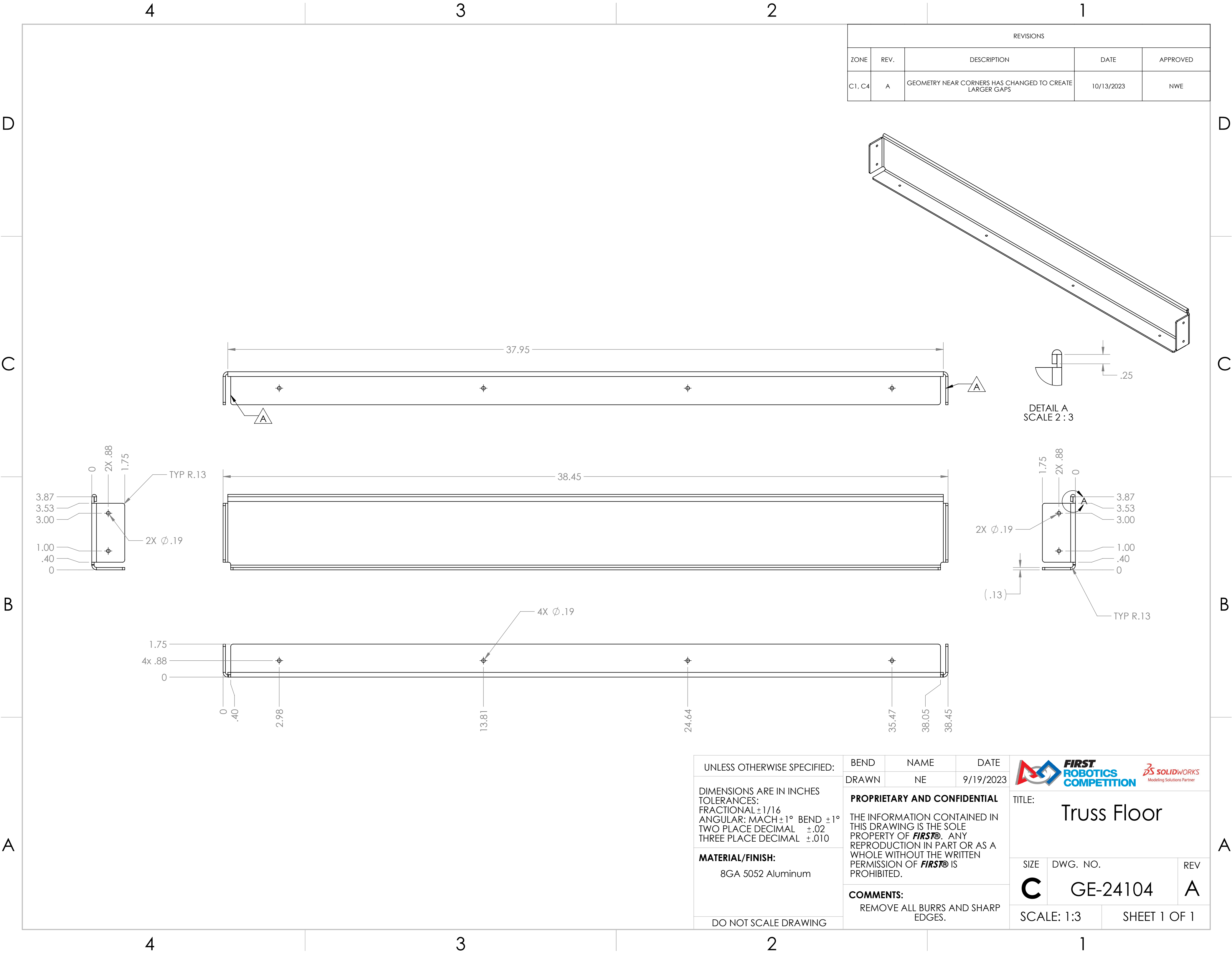
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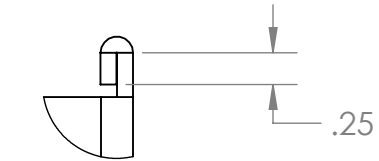




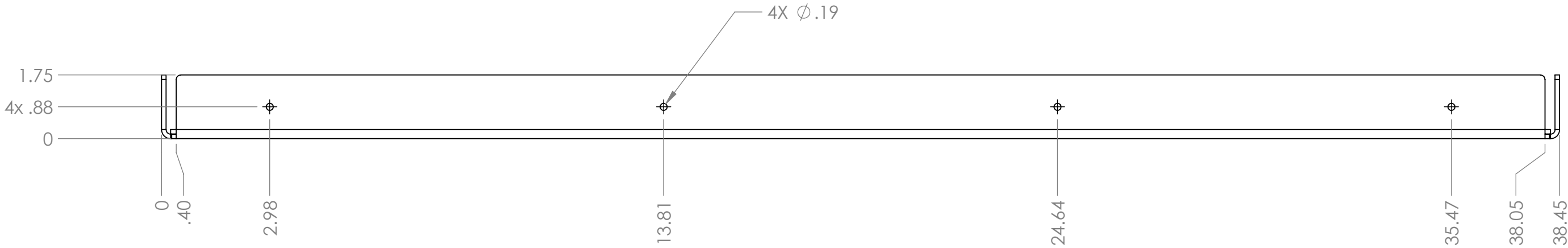
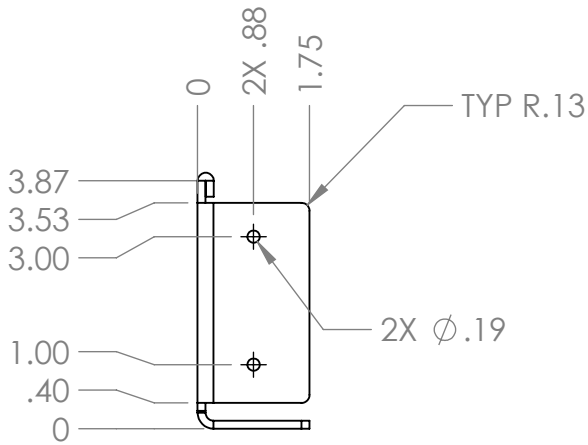
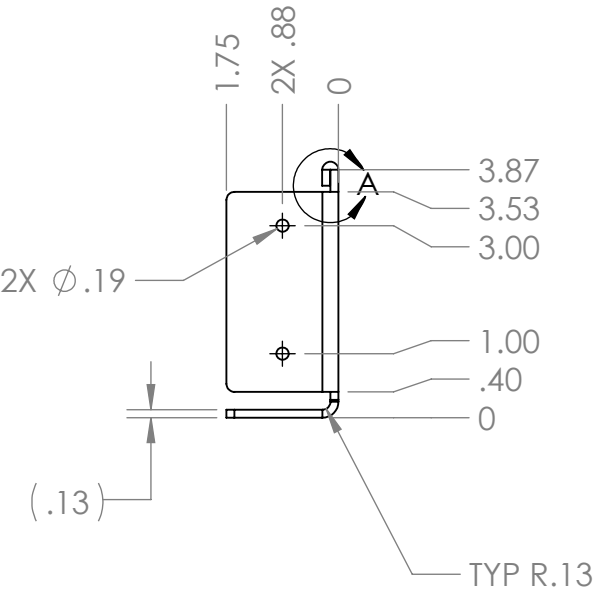
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$  <b>MATERIAL/FINISH:</b>  1.75" x .125" 6061 Aluminum Square Tube and 90° Angle Bracket  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <b>Amp Weldment</b></div>		
	DRAWN	NE	9/12/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24103	
SCALE: 1:2		SHEET 4 OF 4				





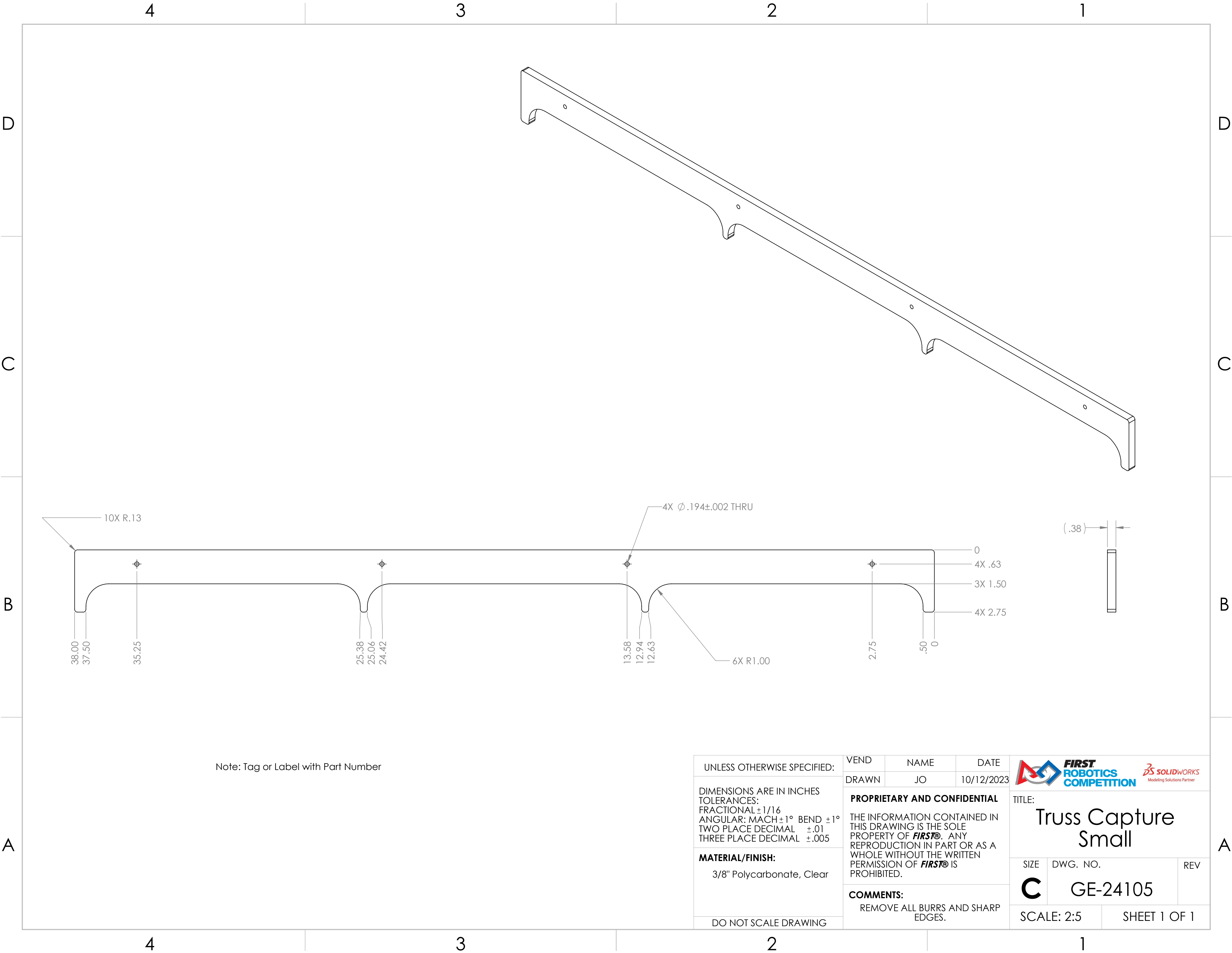
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C1, C4	A	GEOMETRY NEAR CORNERS HAS CHANGED TO CREATE LARGER GAPS	10/13/2023	NWE



DETAIL A  
SCALE 2 : 3



UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE	<div></div>		
		DRAWN	NE	9/19/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Truss Floor		
<b>MATERIAL/FINISH:</b>  8GA 5052 Aluminum		<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
					C	GE-24104	A
DO NOT SCALE DRAWING					SCALE: 1:3		SHEET 1 OF 1



Note: 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:**  
3/8" Polycarbonate, Clear

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	10/12/2023

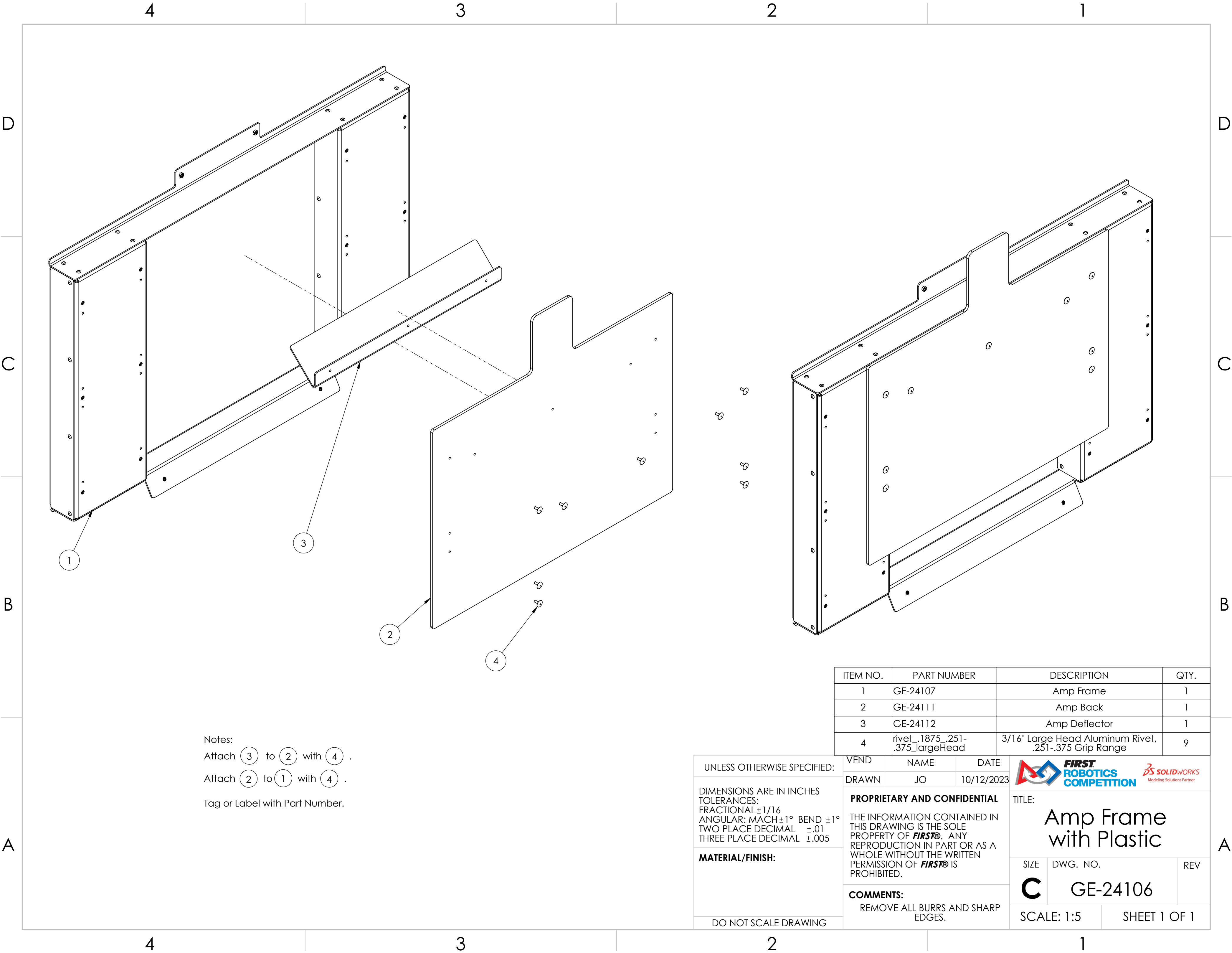
**PROPRIETARY AND CONFIDENTIAL**  
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
**Truss Capture Small**

SIZE <b>C</b>	DWG. NO. <b>GE-24105</b>	REV
SCALE: 2:5		SHEET 1 OF 1



Notes:  
Attach 3 to 2 with 4 .  
Attach 2 to 1 with 4 .  
Tag or Label with Part Number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24107	Amp Frame	1
2	GE-24111	Amp Back	1
3	GE-24112	Amp Deflector	1
4	rivet_.1875_.251-.375_largeHead	3/16" Large Head Aluminum Rivet, .251-.375 Grip Range	9

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES  
TOLERANCES:  
FRACTIONAL ±1/16  
ANGULAR: MACH ±1° BEND ±1°  
TWO PLACE DECIMAL ±.01  
THREE PLACE DECIMAL ±.005

MATERIAL/FINISH:

DO NOT SCALE DRAWING

VEND  
DRAWN


NAME  
JO


DATE  
10/12/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:  
REMOVE ALL BURRS AND SHARP EDGES.





TITLE:  
**Amp Frame with Plastic**

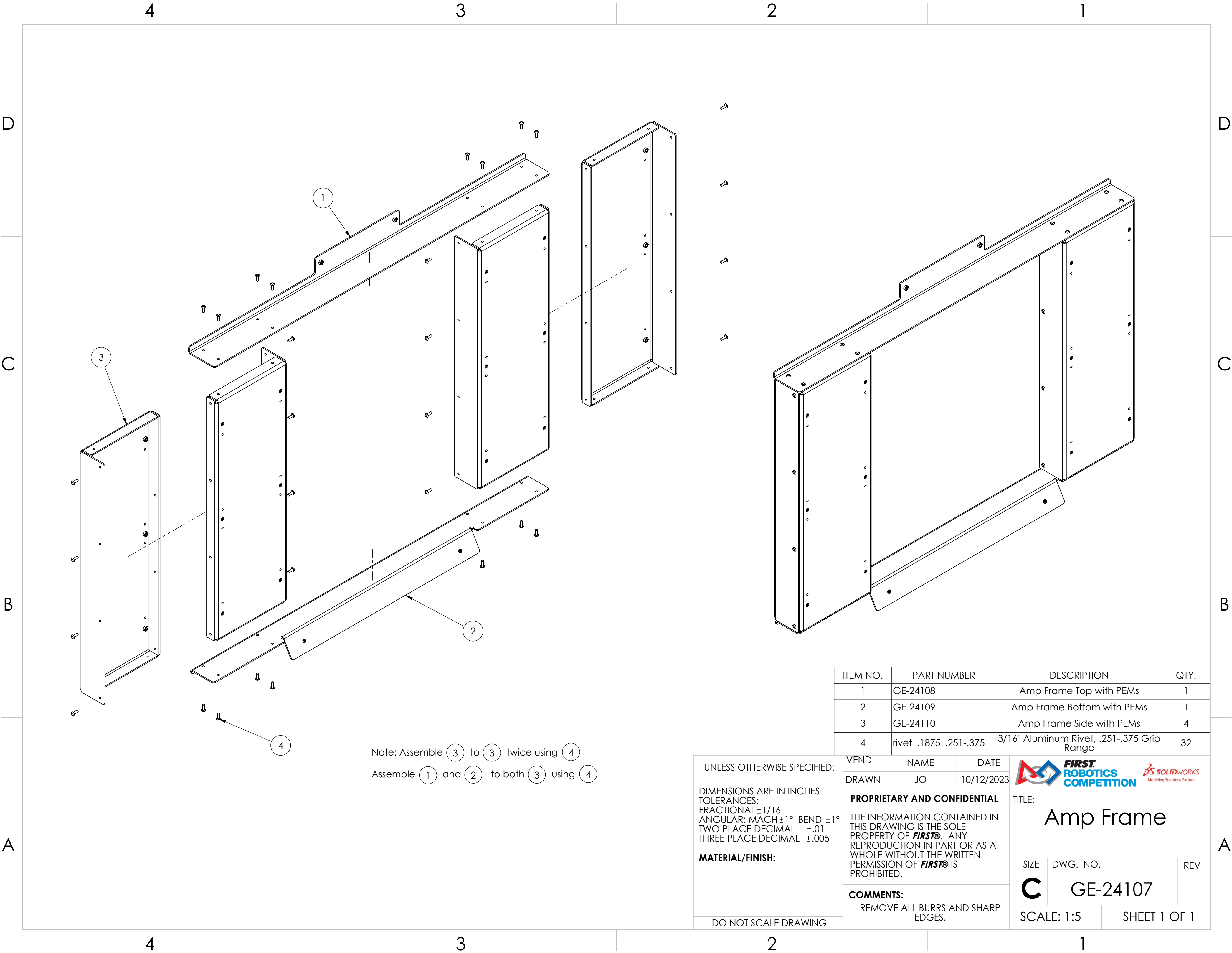
SIZE  
**C**

DWG. NO.  
**GE-24106**

REV



SCALE: 1:5

SHEET 1 OF 1

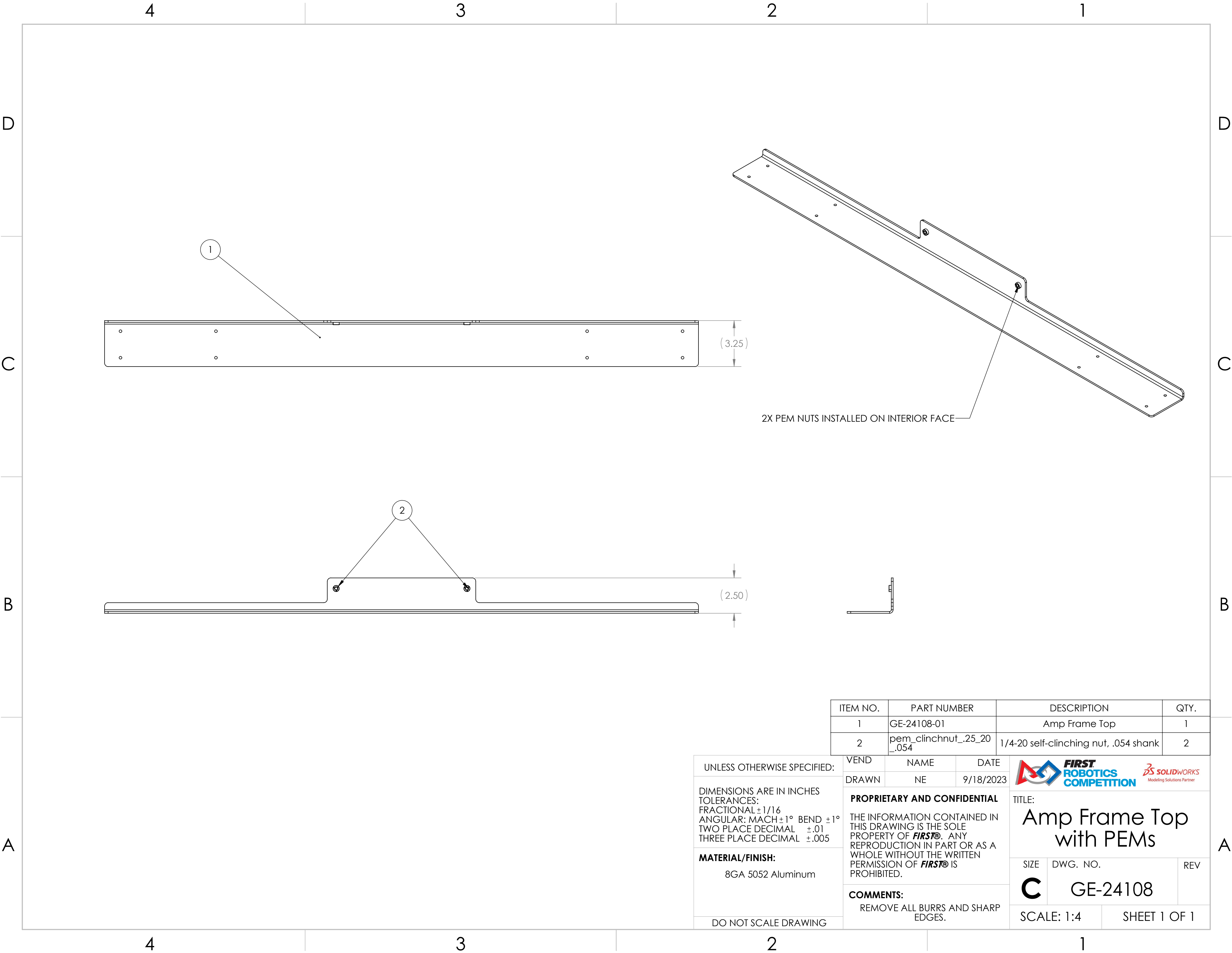


Note: Assemble (3) to (3) twice using (4)  
Assemble (1) and (2) to both (3) using (4)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24108	Amp Frame Top with PEMs	1
2	GE-24109	Amp Frame Bottom with PEMs	1
3	GE-24110	Amp Frame Side with PEMs	4
4	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	32

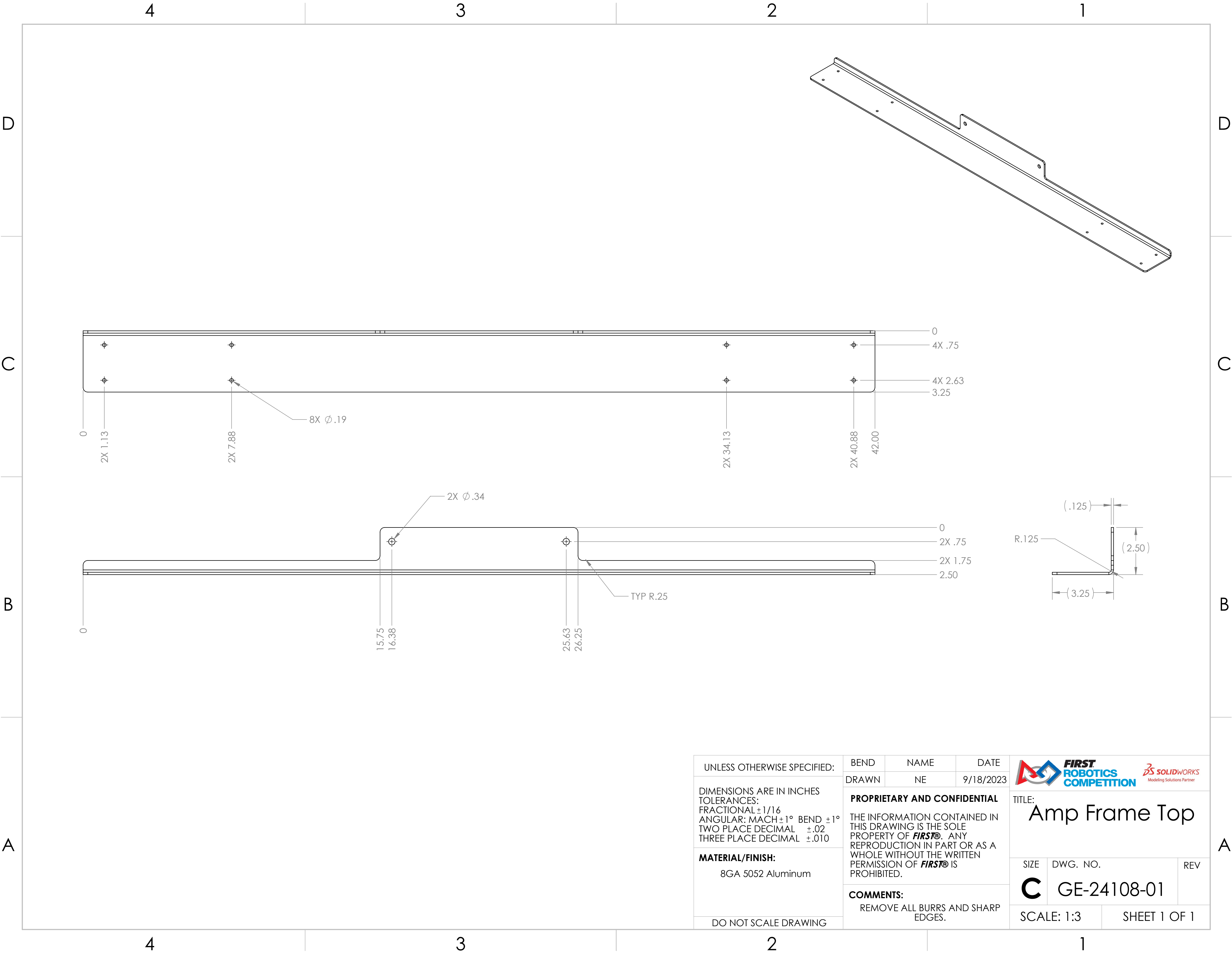
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	JO	10/12/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:  Amp Frame		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24107	
DO NOT SCALE DRAWING				SCALE: 1:5		SHEET 1 OF 1





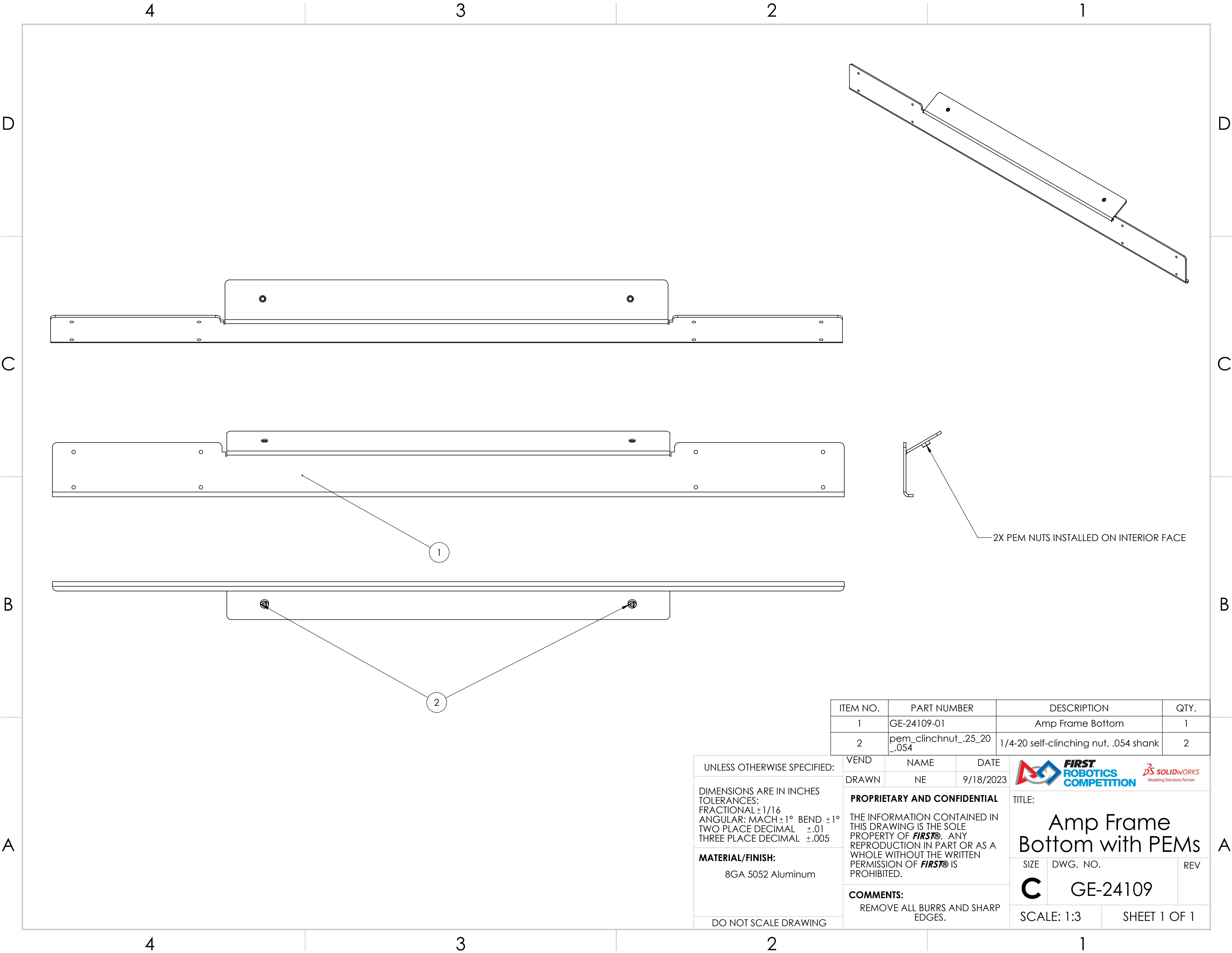


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24108-01	Amp Frame Top	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	2

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  8GA 5052 Aluminum  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <b>Amp Frame Top with PEMs</b></div> <div>SIZE: <b>C</b> DWG. NO.: <b>GE-24108</b> REV:  <div>SCALE: 1:4 SHEET 1 OF 1</div></div>					
	DRAWN	NE	9/18/2023						
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.								
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.								





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 $\pm .010$  <b>MATERIAL/FINISH:</b> 8GA 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	  TITLE: <b>Amp Frame Top</b>	
	DRAWN	NE	9/18/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE <b>C</b>	DWG. NO. GE-24108-01
SCALE: 1:3		SHEET 1 OF 1			



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24109-01	Amp Frame Bottom	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	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 $\pm .005$
<b>MATERIAL/FINISH:</b> 8GA 5052 Aluminum
DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	NE	9/18/2023
<b>PROPRIETARY AND CONFIDENTIAL</b> THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: <b>Amp Frame Bottom with PEMs</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24109</b>	REV
SCALE: 1:3		SHEET 1 OF 1

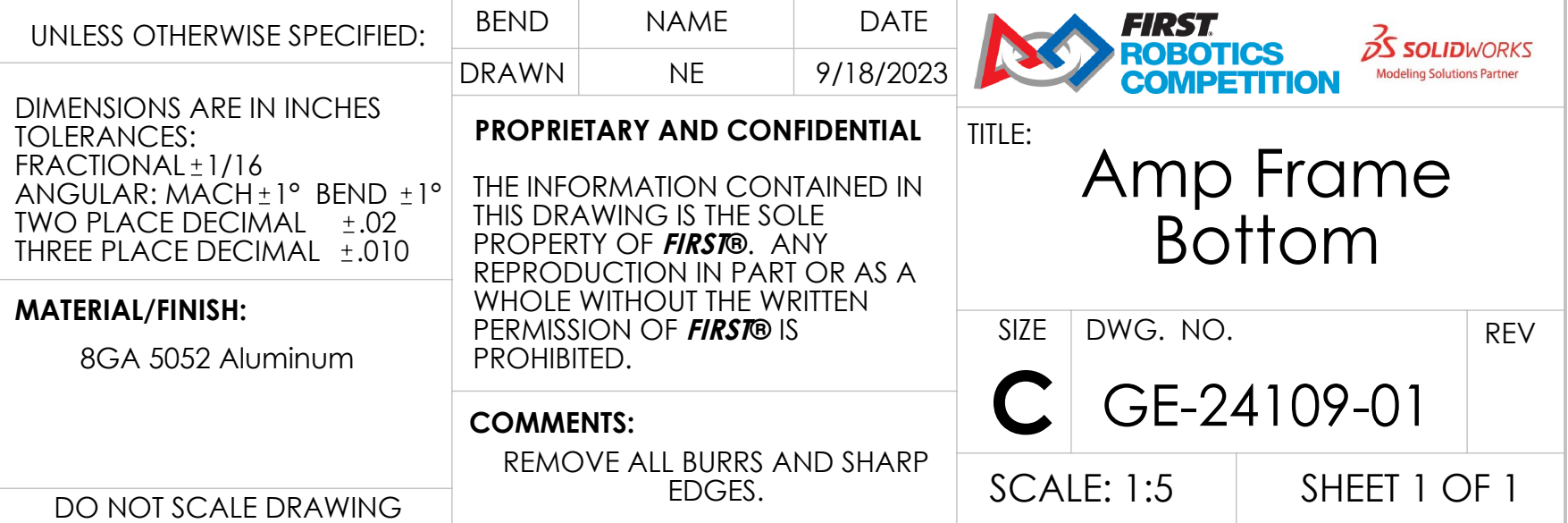
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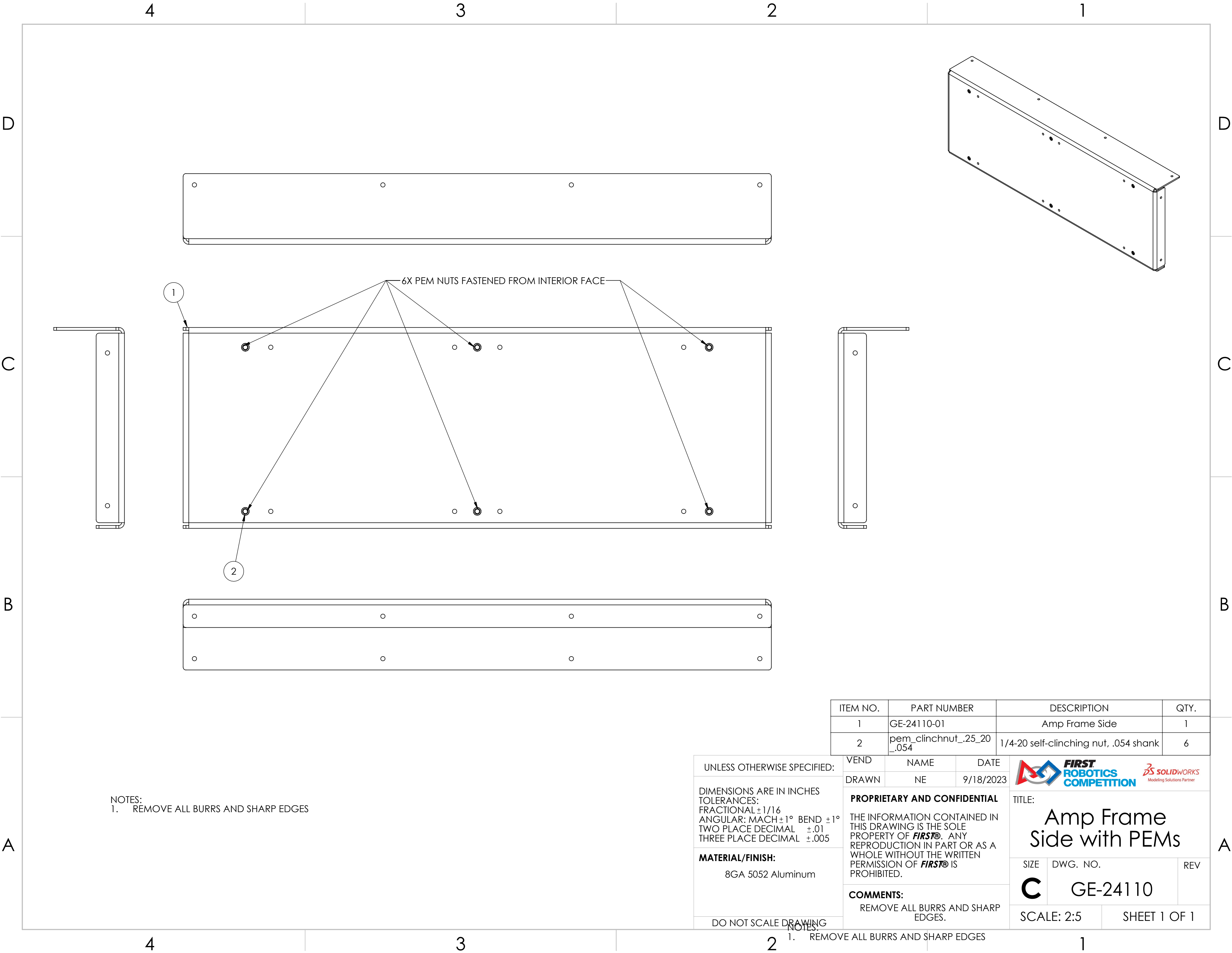
D

C



B

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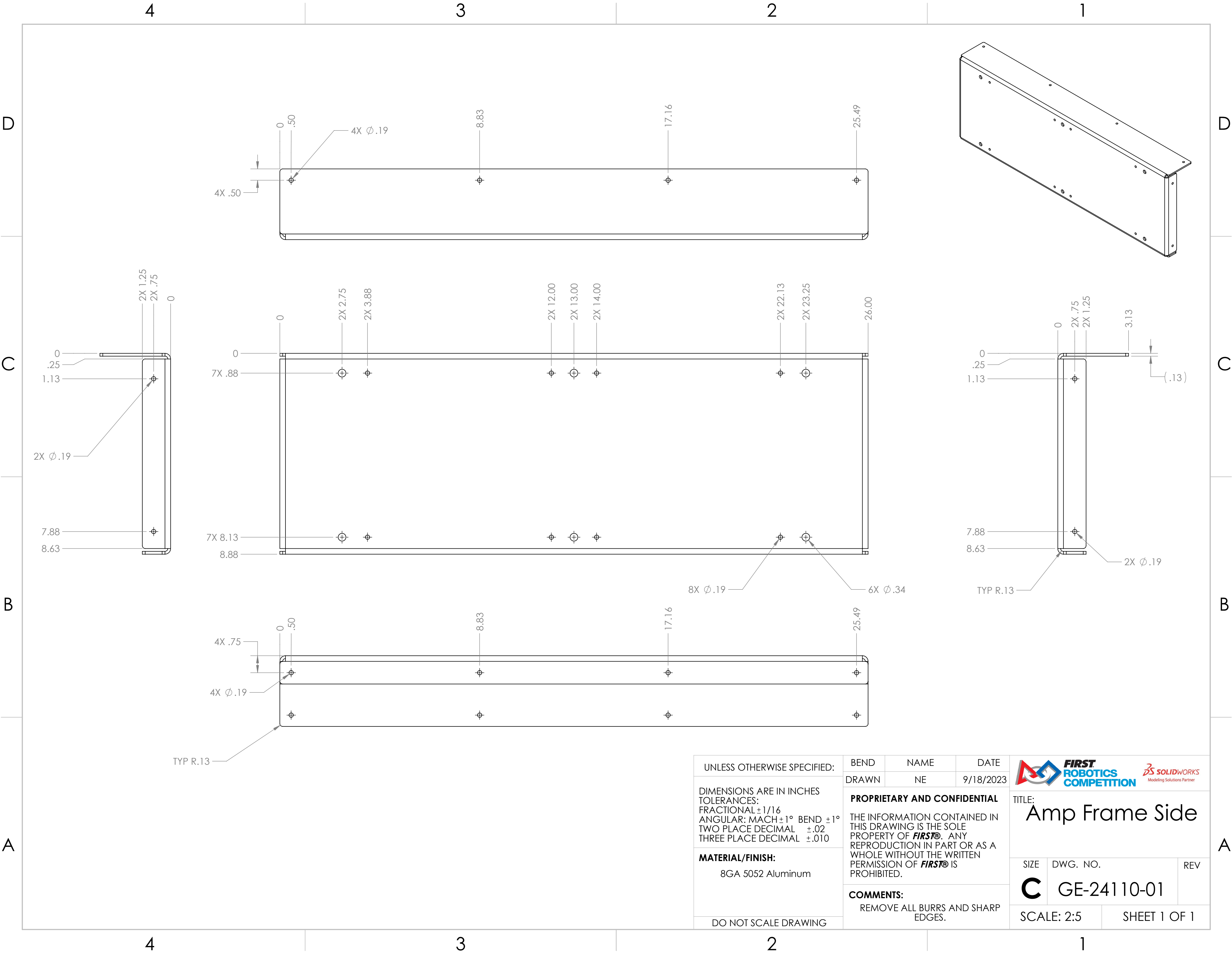






NOTES:  
1. REMOVE ALL BURRS AND SHARP EDGES

		ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
		1	GE-24110-01	Amp Frame Side	1
		2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	6
UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	<div></div>
		DRAWN	NE	9/18/2023	
<div>DIMENSIONS ARE IN INCHES</div> <div>TOLERANCES:</div> <div>FRACTIONAL <math>\pm 1/16</math></div> <div>ANGULAR: MACH <math>\pm 1^\circ</math> BEND <math>\pm 1^\circ</math></div> <div>TWO PLACE DECIMAL <math>\pm .01</math></div> <div>THREE PLACE DECIMAL <math>\pm .005</math></div> <div>MATERIAL/FINISH:</div> <div>8GA 5052 Aluminum</div> <div>DO NOT SCALE DRAWING</div>		PROPRIETARY AND CONFIDENTIAL			<div>TITLE:</div> <div>Amp Frame Side with PEMs</div> <div>SIZE</div> <div>DWG. NO.</div> <div>REV</div> <div>C</div> <div>GE-24110</div> <div>SCALE: 2:5</div> <div>SHEET 1 OF 1</div>
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> ®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> ® IS PROHIBITED.			
		COMMENTS:			
		REMOVE ALL BURRS AND SHARP EDGES.			





UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010  <b>MATERIAL/FINISH:</b>  8GA 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: Amp Frame Side</div>		
	DRAWN	NE	9/18/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE <b>C</b>	DWG. NO. GE-24110-01	REV
				SCALE: 2:5	SHEET 1 OF 1	

4

3

2

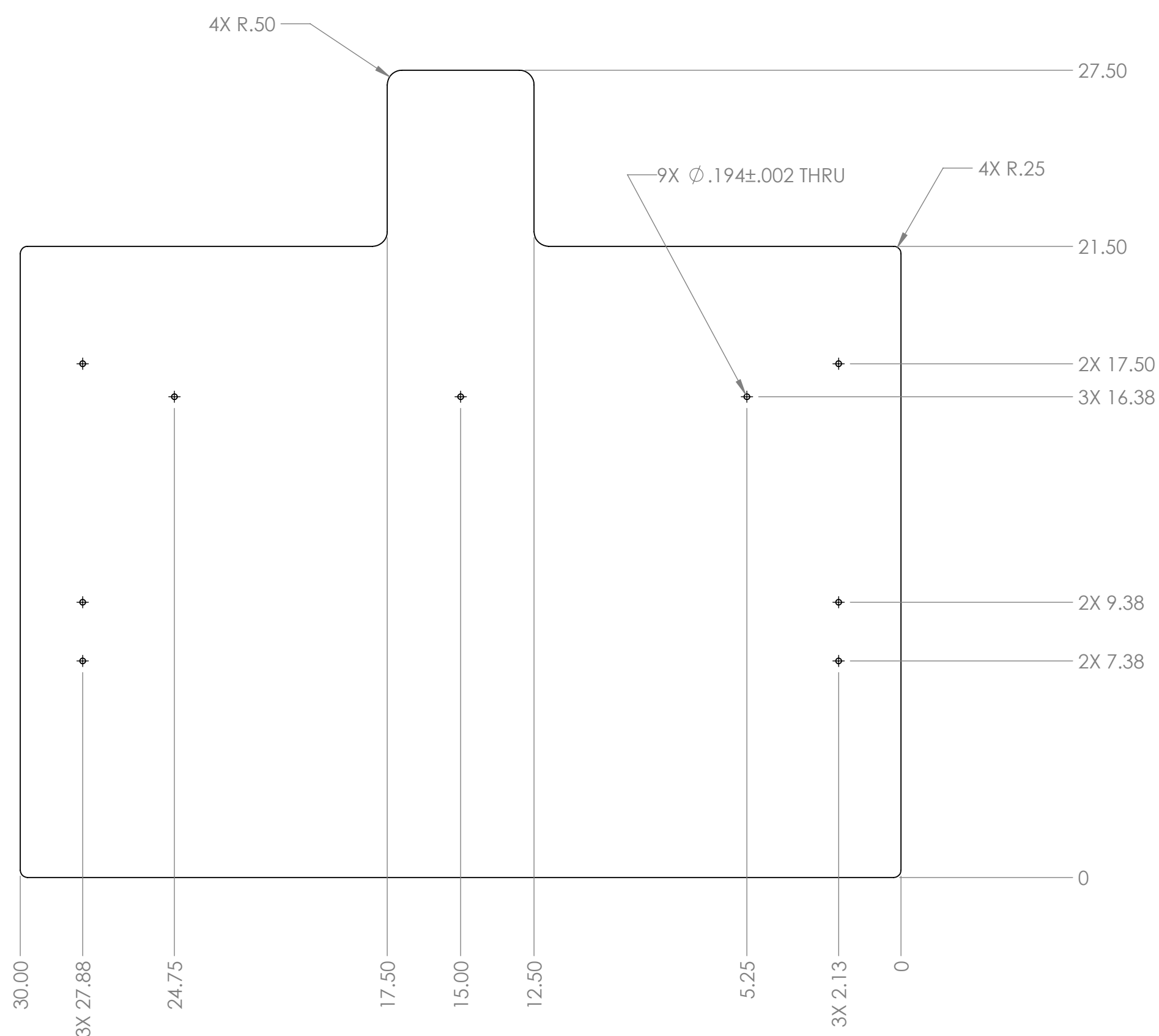
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D

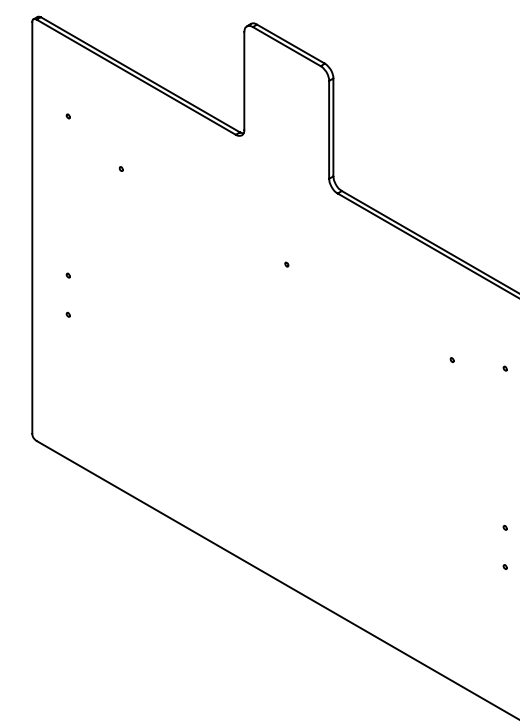
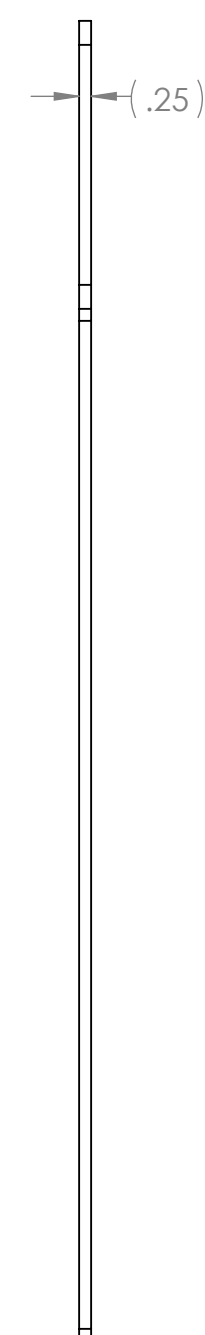
C



B

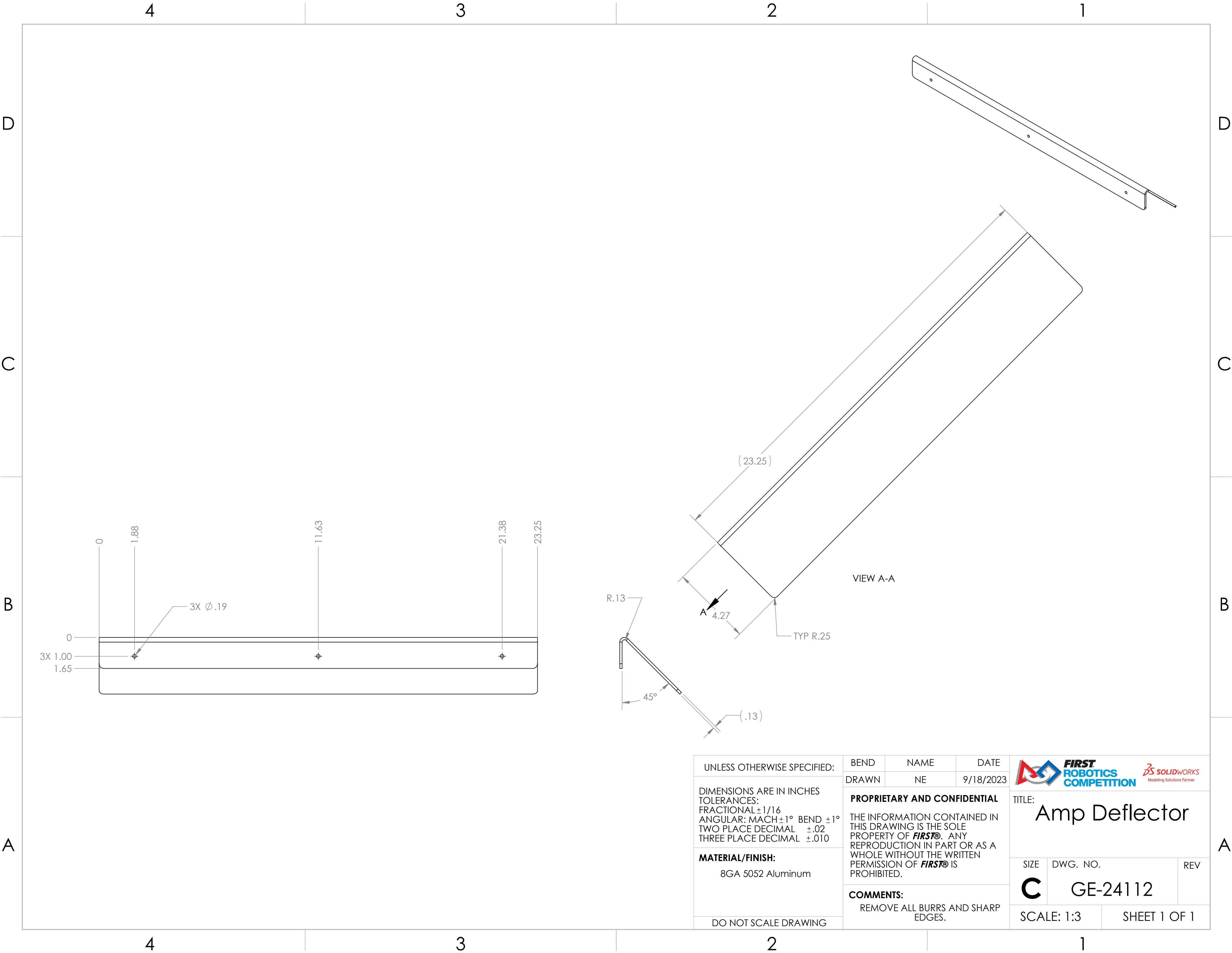
A





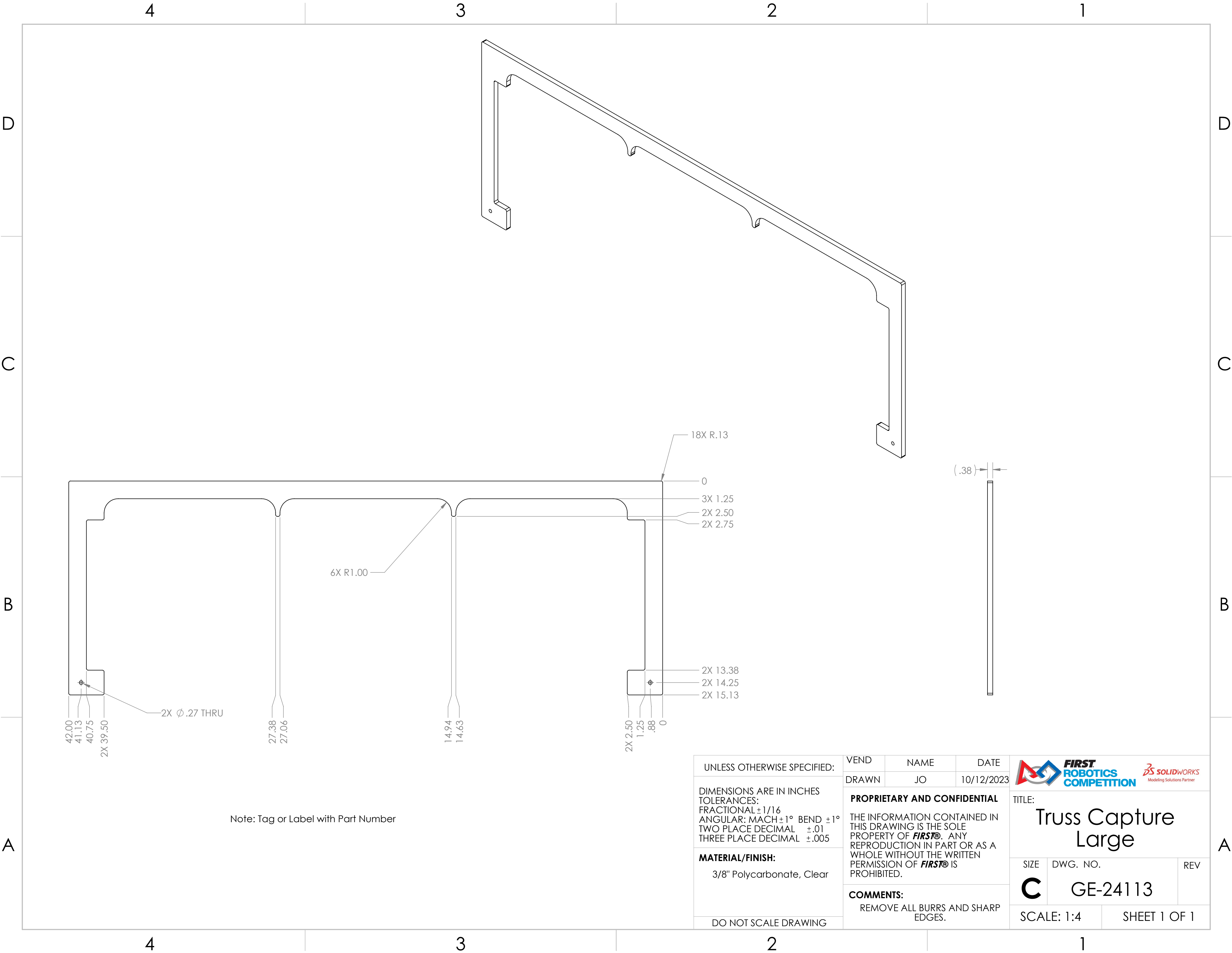
Note: Tag or Label with Part Number



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		JO		10/12/2023	
MATERIAL/FINISH:  1/4" HDPE, Black Matte Finish		PROPRIETARY AND CONFIDENTIAL					
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING		<div><div></div><div>TITLE:  Amp Back</div></div> <div><div><div>SIZE</div><div>C</div></div><div>DWG. NO. GE-24111</div><div>REV</div></div> <div>SCALE: 1:4</div> <div>SHEET 1 OF 1</div>					



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010  <b>MATERIAL/FINISH:</b>  8GA 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <b>Amp Deflector</b></div>		
	DRAWN	NE	9/18/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24112	
SCALE: 1:3		SHEET 1 OF 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:**  
3/8" Polycarbonate, Clear


DO NOT SCALE DRAWING

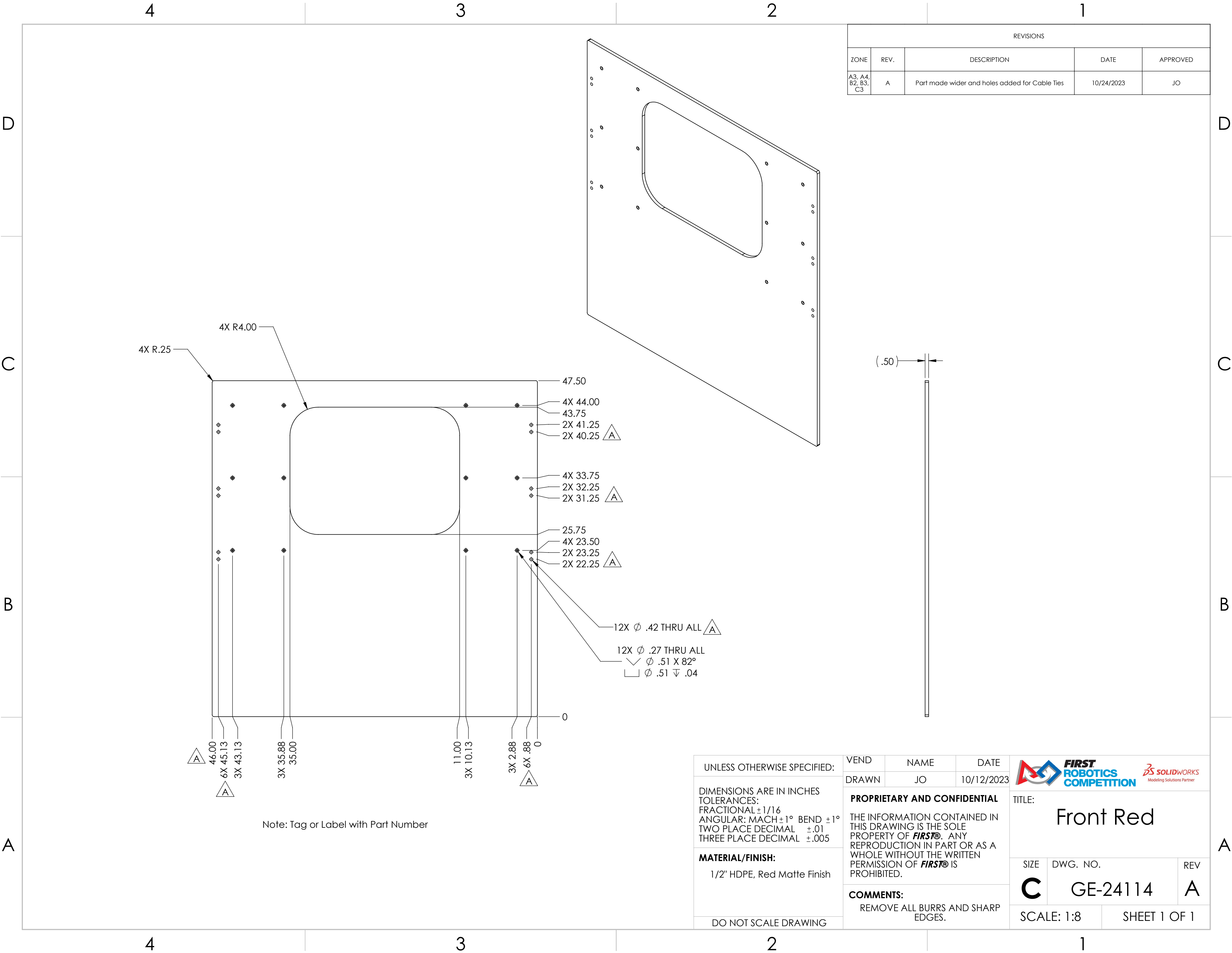
VEND	NAME	DATE
DRAWN	JO	10/12/2023

**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: Truss Capture Large		
SIZE <b>C</b>	DWG. NO. GE-24113	REV
SCALE: 1:4		SHEET 1 OF 1



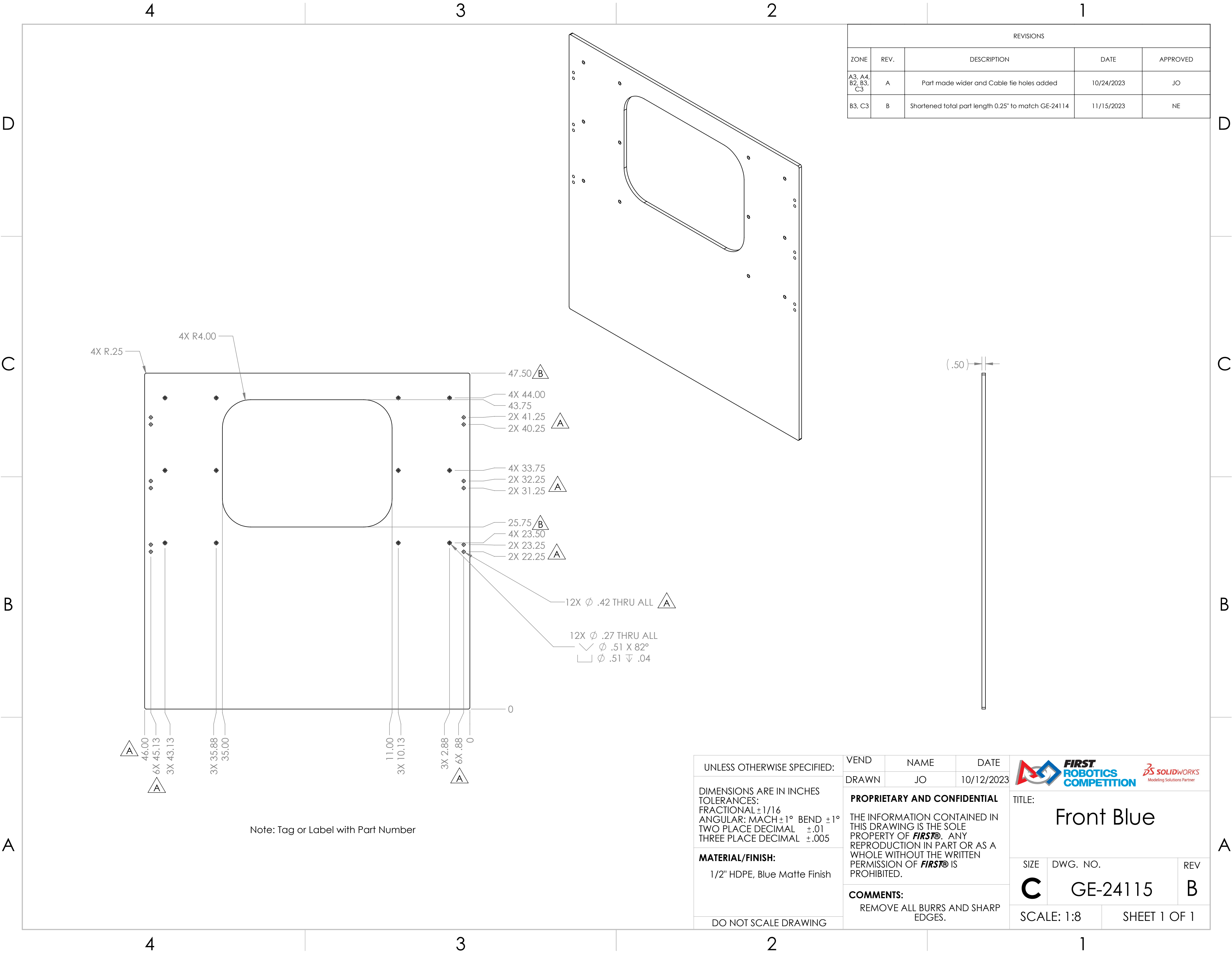
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3, A4, B2, B3, C3	A	Part made wider and holes added for Cable Ties	10/24/2023	JO

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 $\pm .005$
<b>MATERIAL/FINISH:</b> 1/2" HDPE, Red Matte Finish
DO NOT SCALE DRAWING

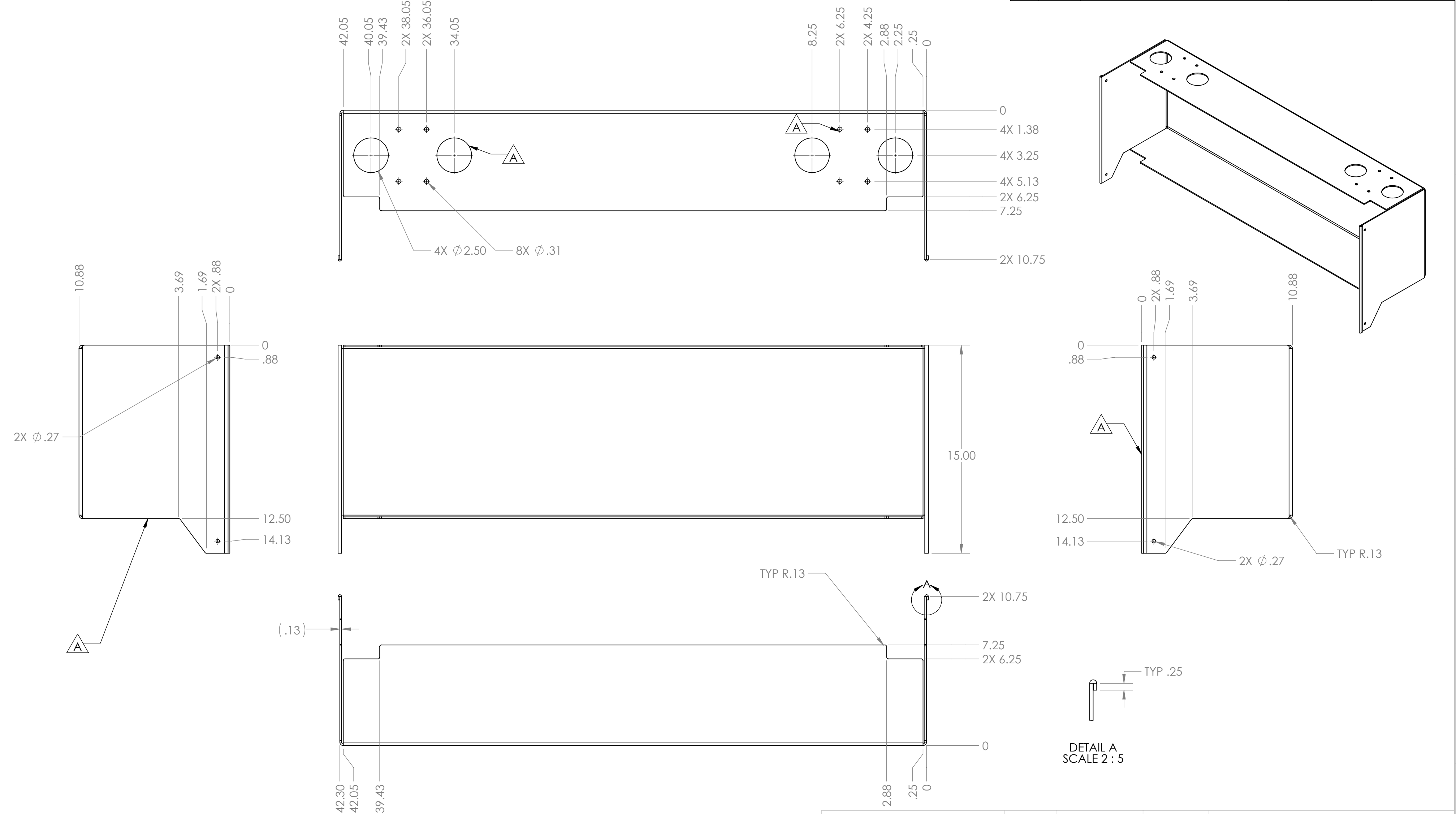
VEND	NAME	DATE
DRAWN	JO	10/12/2023
<b>PROPRIETARY AND CONFIDENTIAL</b> THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Front Red		
SIZE C	DWG. NO. GE-24114	REV A
SCALE: 1:8		SHEET 1 OF 1





REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B4, C2, D2, D3	A	TOTAL PART SIZE HAS CHANGED, ALONG WITH HOLE PATTERN ON TOP	10/13/2023	NWE



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:**  
8GA 5052 Aluminum

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	NE	9/19/2023

**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.

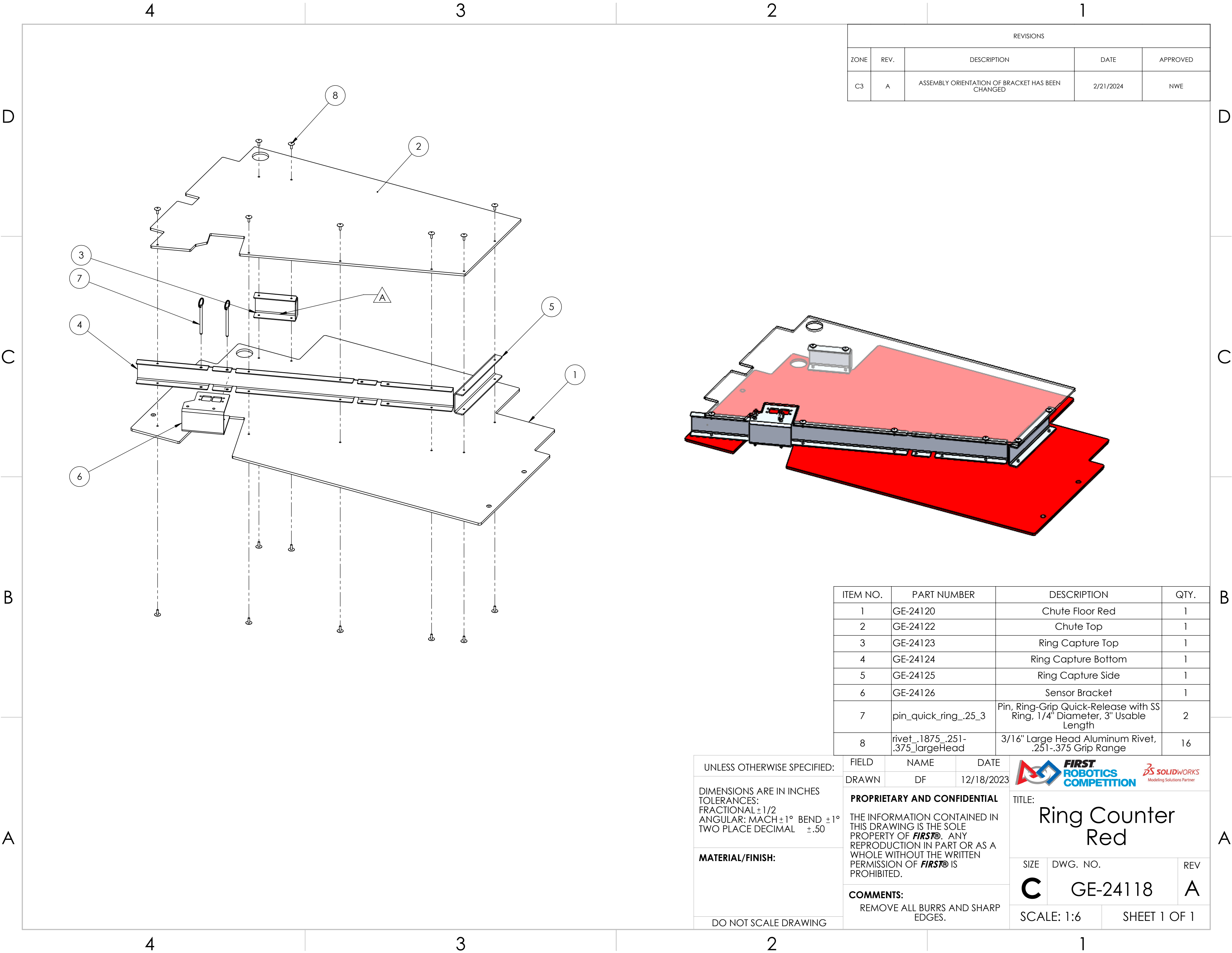
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
**Stacklight and Button Box**



SIZE	DWG. NO.	REV
<b>C</b>	GE-24116	<b>A</b>

SCALE: 1:5 SHEET 1 OF 1

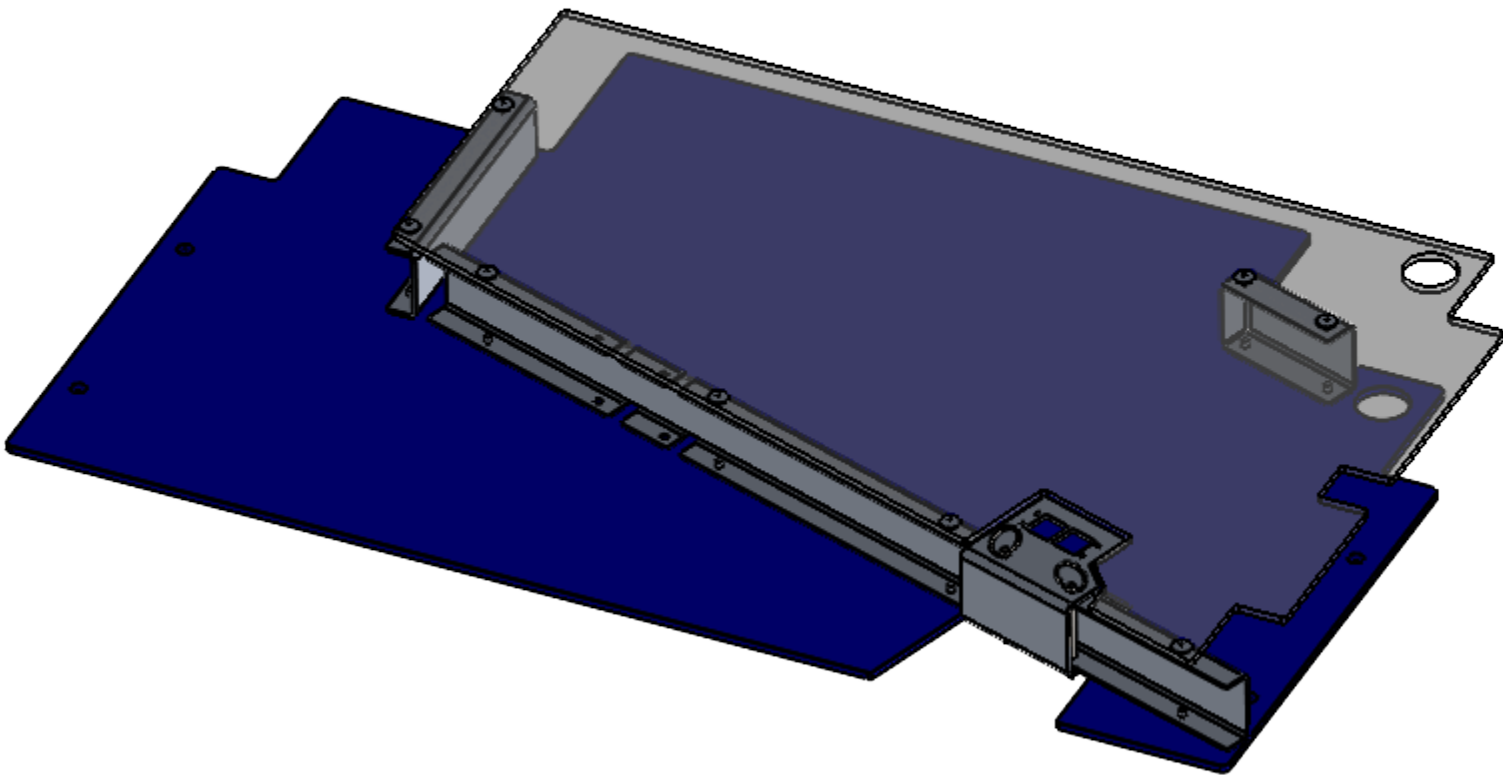
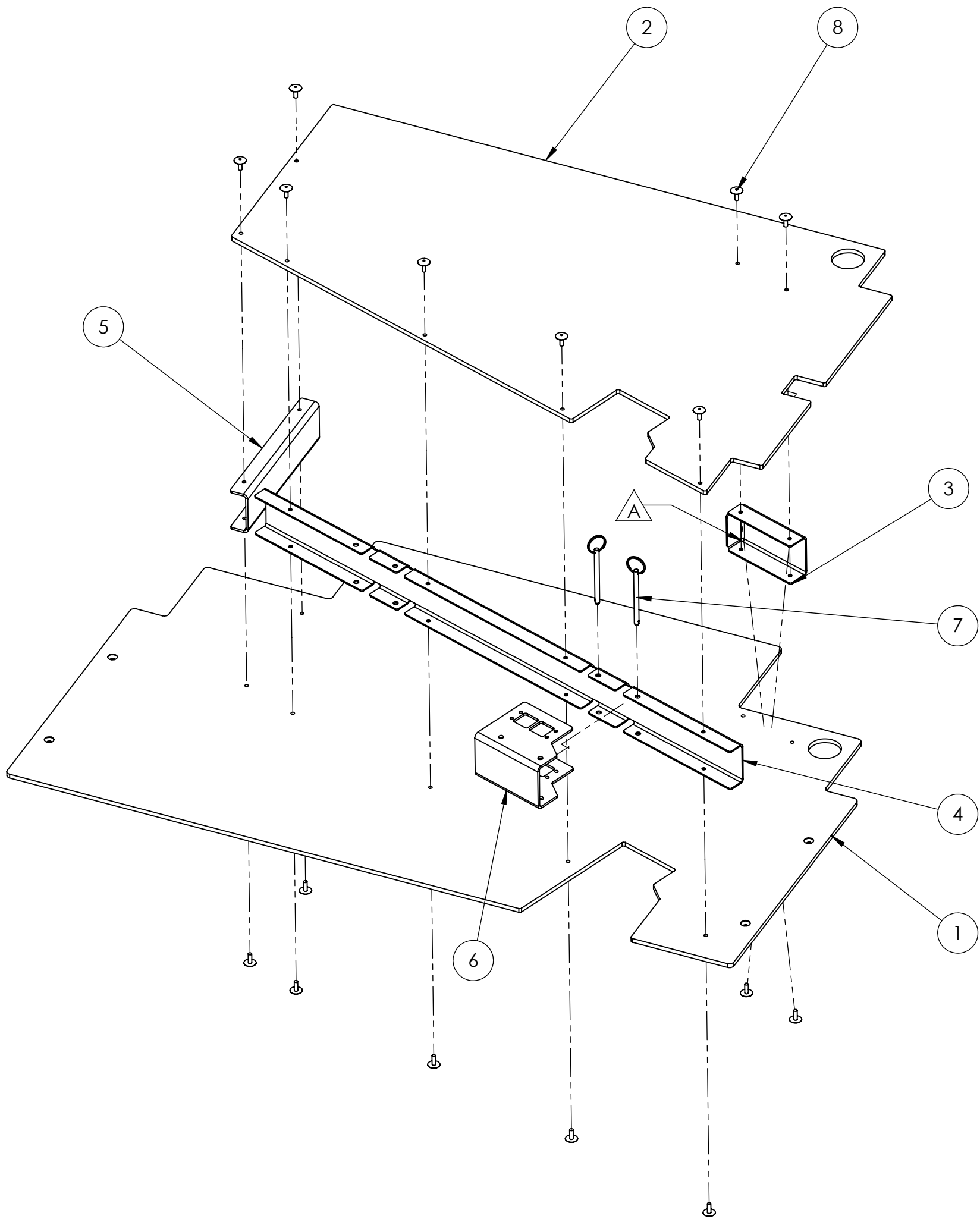


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C3	A	ASSEMBLY ORIENTATION OF BRACKET HAS BEEN CHANGED	2/21/2024	NWE



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24120	Chute Floor Red	1
2	GE-24122	Chute Top	1
3	GE-24123	Ring Capture Top	1
4	GE-24124	Ring Capture Bottom	1
5	GE-24125	Ring Capture Side	1
6	GE-24126	Sensor Bracket	1
7	pin_quick_ring_.25_3	Pin, Ring-Grip Quick-Release with SS Ring, 1/4" Diameter, 3" Usable Length	2
8	rivet_.1875_.251-.375_largeHead	3/16" Large Head Aluminum Rivet, .251-.375 Grip Range	16

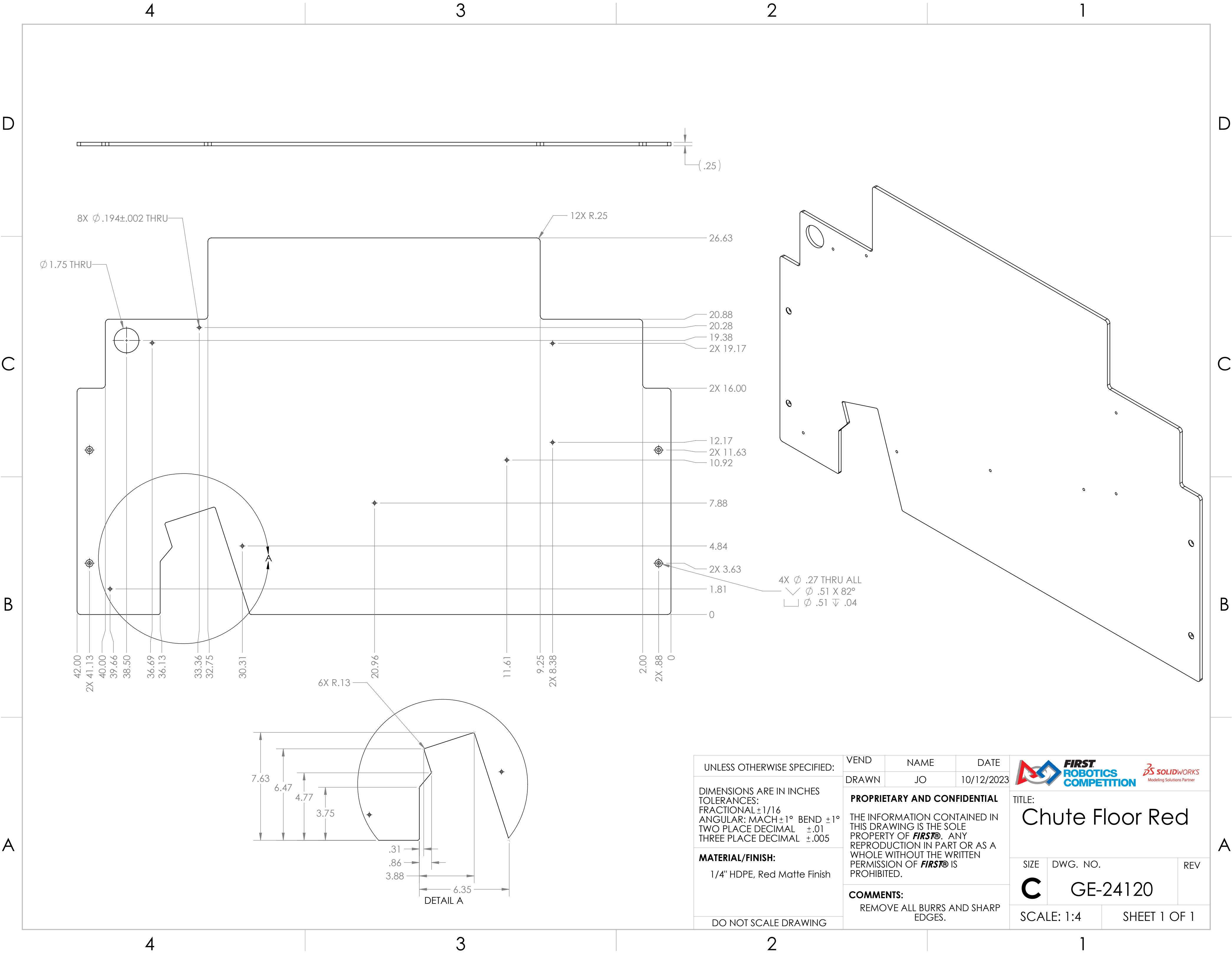
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50  <b>MATERIAL/FINISH:</b>          DO NOT SCALE DRAWING	FIELD	NAME	DATE
	DRAWN	DF	12/18/2023
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		
<div><div><div><b>FIRST</b> ROBOTICS COMPETITION</div></div><div><div><b>SOLIDWORKS</b> Modeling Solutions Partner</div></div></div> <div>TITLE:  Ring Counter Red</div> <div><div>SIZE <b>C</b></div><div>DWG. NO.  GE-24118</div><div>REV  <b>A</b></div></div> <div>SCALE: 1:6</div> <div>SHEET 1 OF 1</div>			

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C3	A	ASSEMBLY ORIENTATION OF BRACKET HAS CHANGED	2/21/2024	NWE



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24121	Chute Floor Blue	1
2	GE-24122	Chute Top	1
3	GE-24123	Ring Capture Top	1
4	GE-24124	Ring Capture Bottom	1
5	GE-24125	Ring Capture Side	1
6	GE-24126	Sensor Bracket	1
7	pin_quick_ring_.25_3	Pin, Ring-Grip Quick-Release with SS Ring, 1/4" Diameter, 3" Usable Length	2
8	rivet_.1875_.251-.375_largeHead	3/16" Large Head Aluminum Rivet, .251-.375 Grip Range	16

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50  <b>MATERIAL/FINISH:</b>     <b>DO NOT SCALE DRAWING</b>	FIELD	NAME	DATE	<div></div> <div>TITLE: <h1>Ring Counter Blue</h1></div>		
	DRAWN	DF	12/18/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				<div><div>SIZE</div><div>C</div></div> <div><div>DWG. NO.</div><div>GE-24119</div></div> <div><div>REV</div><div>A</div></div>	
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.					



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:**  
1/4" HDPE, Red Matte Finish

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	10/12/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

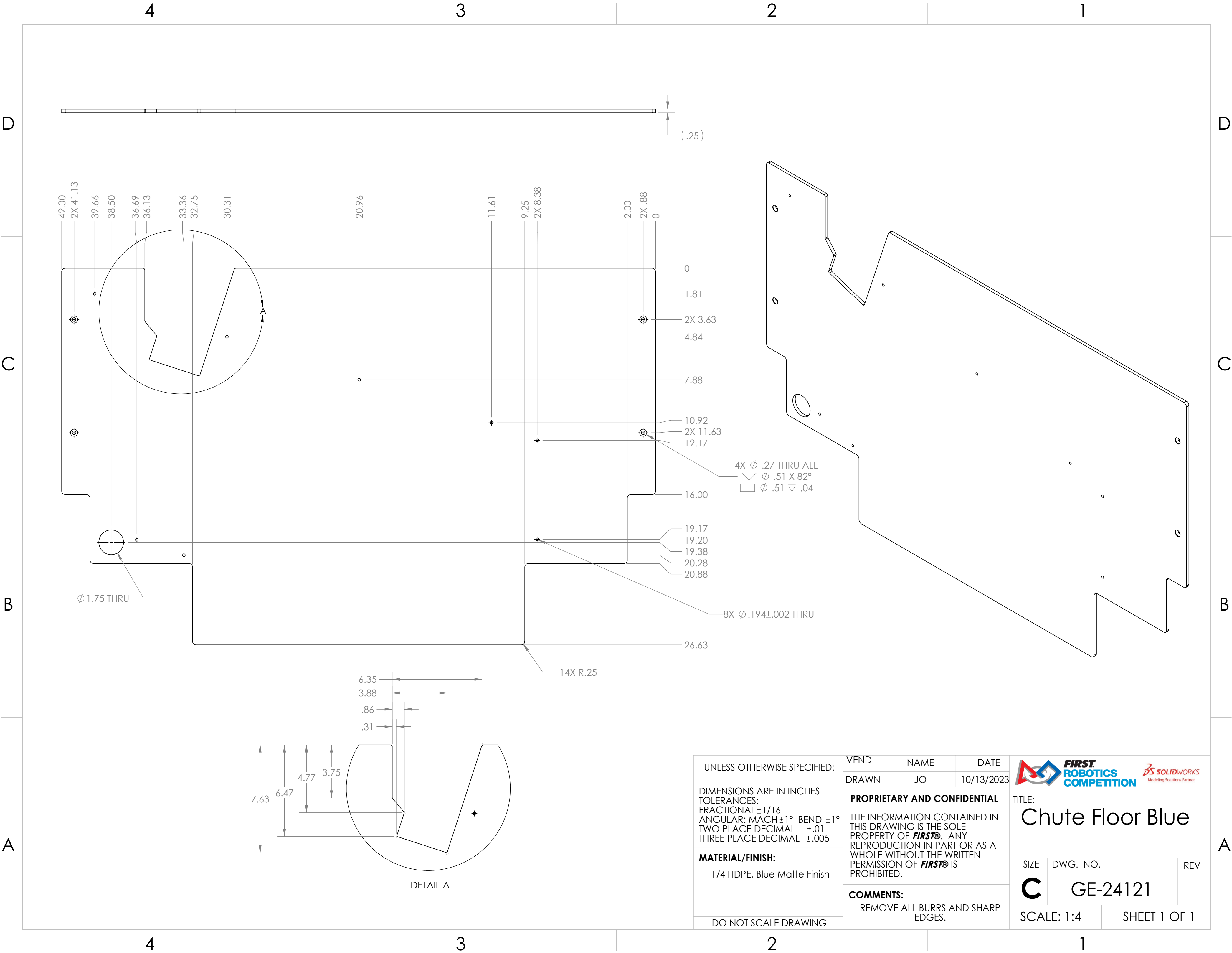


TITLE:  
**Chute Floor Red**

SIZE	DWG. NO.	REV
<b>C</b>	GE-24120	

SCALE: 1:4 SHEET 1 OF 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:**  
1/4 HDPE, Blue Matte Finish

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

JO

10/13/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.



**FIRST**  
ROBOTICS  
COMPETITION



TITLE:

Chute Floor Blue

SIZE

DWG. NO.

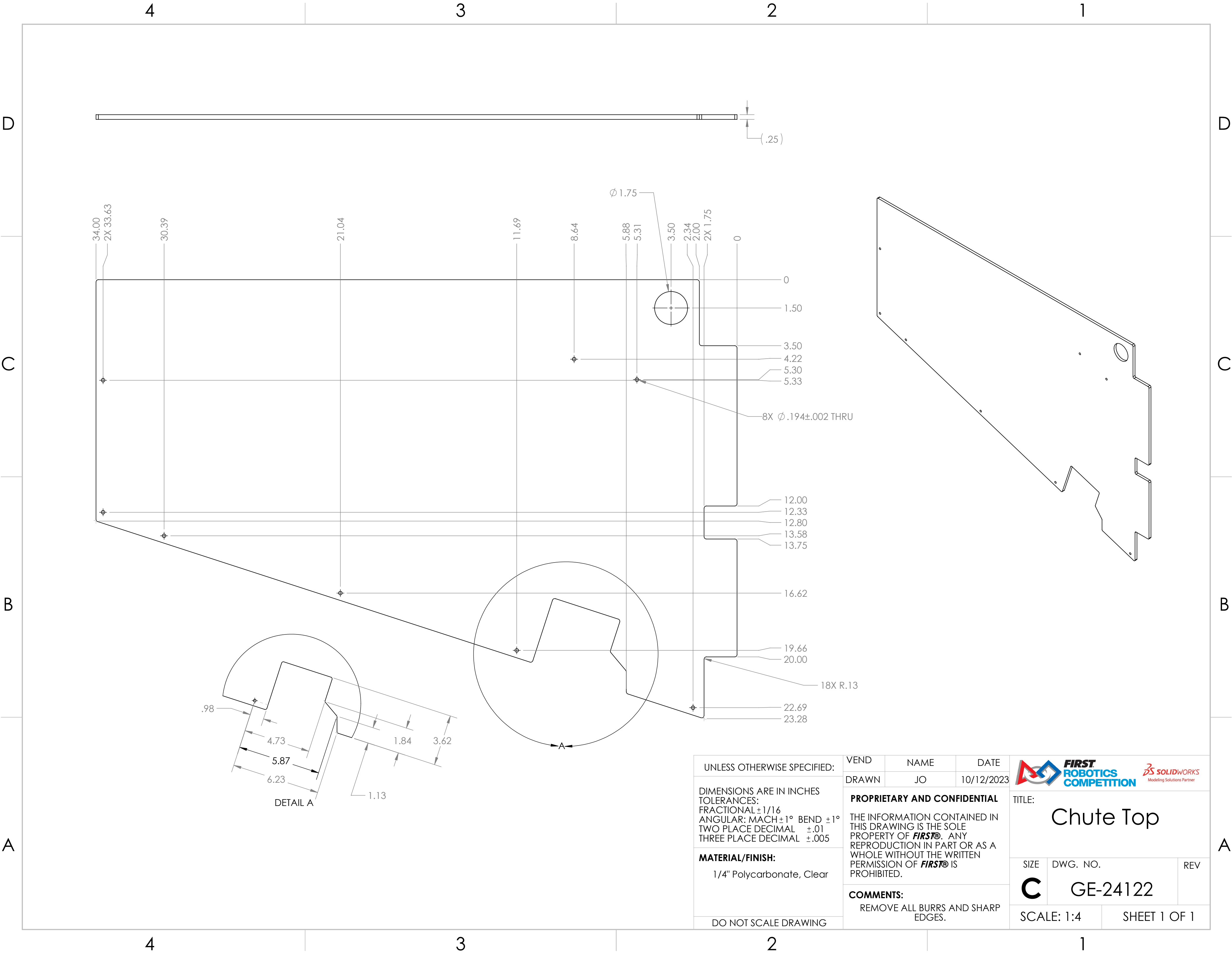
REV

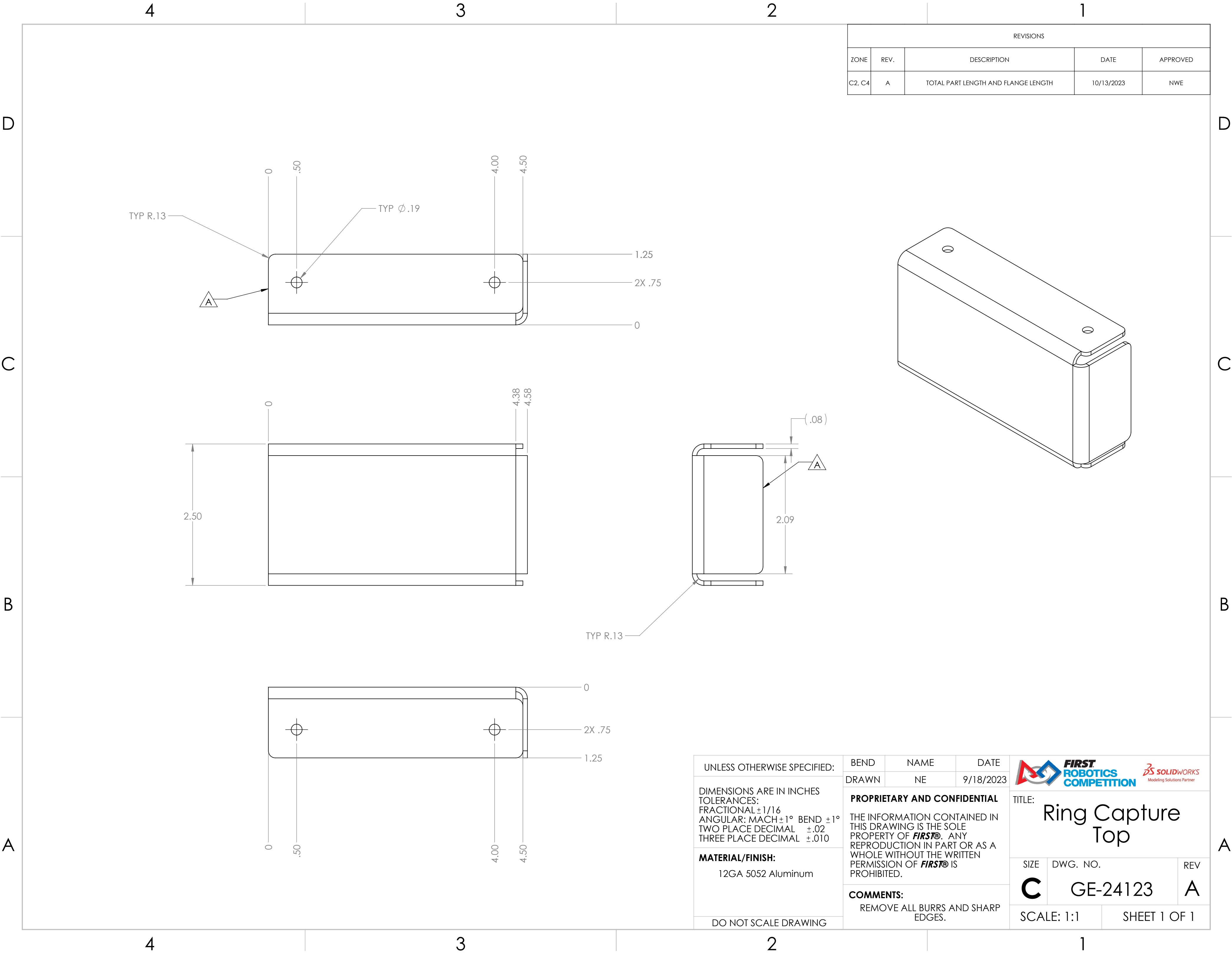
**C**

GE-24121



SCALE: 1:4

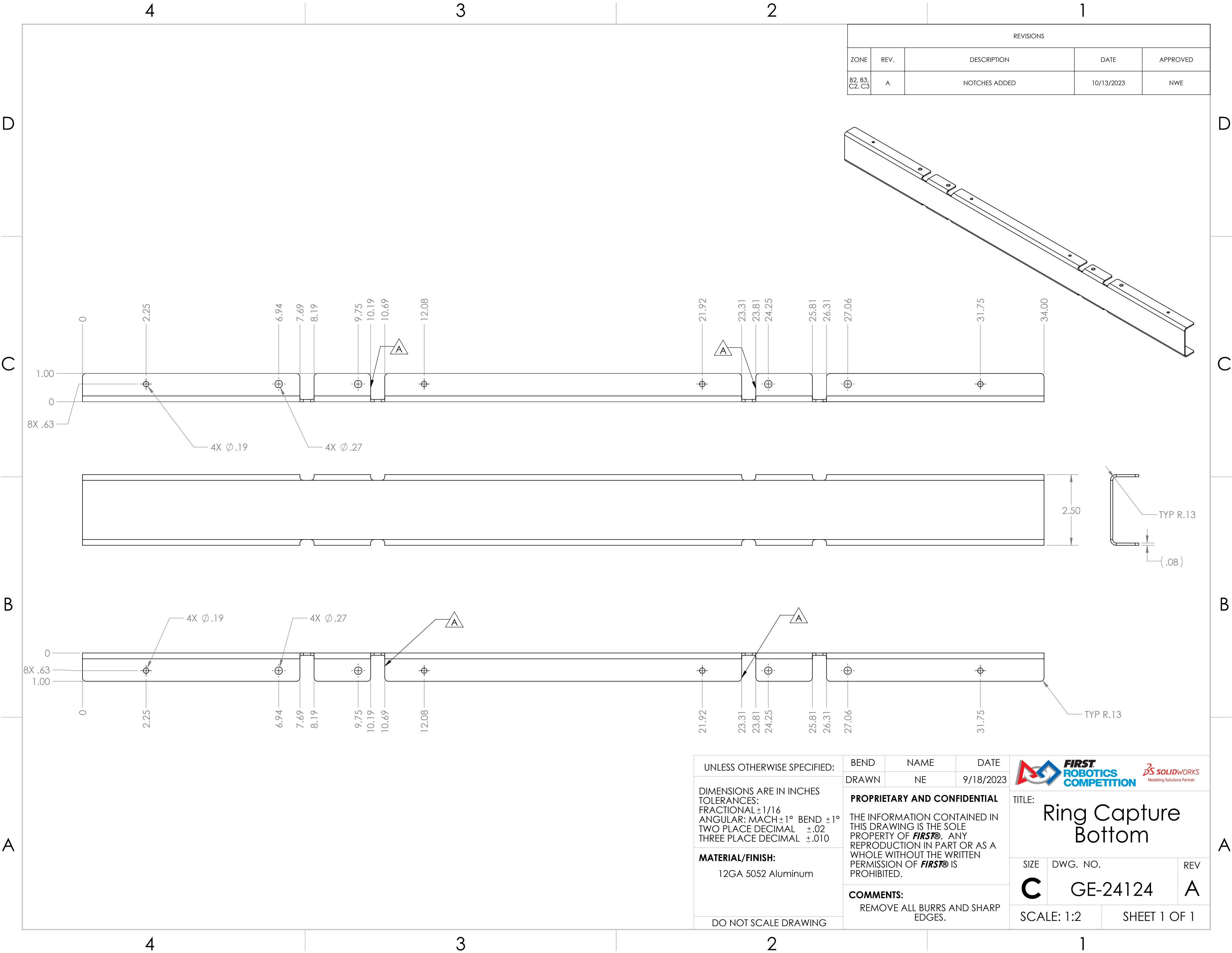
SHEET 1 OF 1







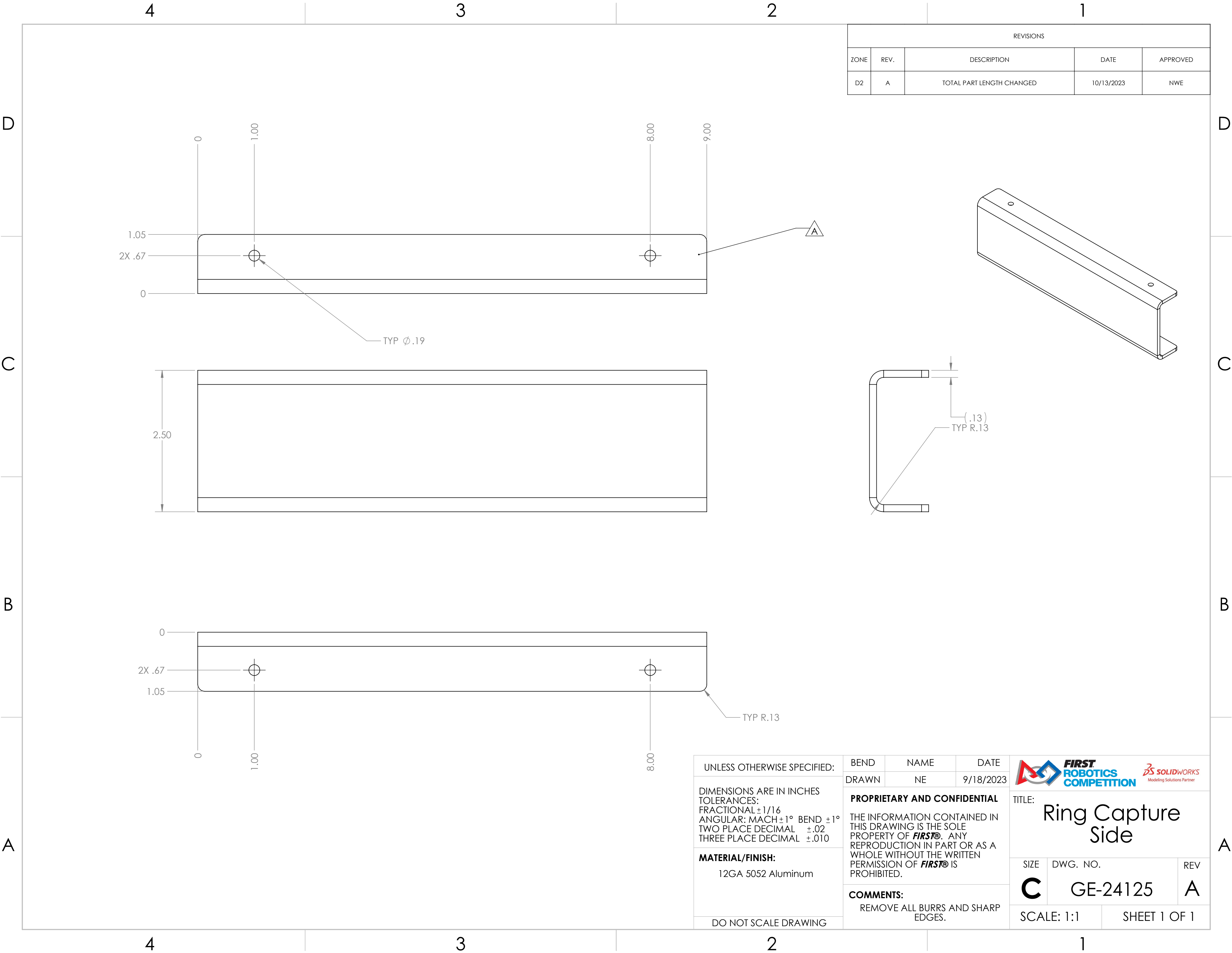
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C2, C4	A	TOTAL PART LENGTH AND FLANGE LENGTH	10/13/2023	NWE

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>		
	DRAWN	NE	9/18/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE:  Ring Capture Top		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
12GA 5052 Aluminum				C	GE-24123	A
DO NOT SCALE DRAWING				SCALE: 1:1		SHEET 1 OF 1

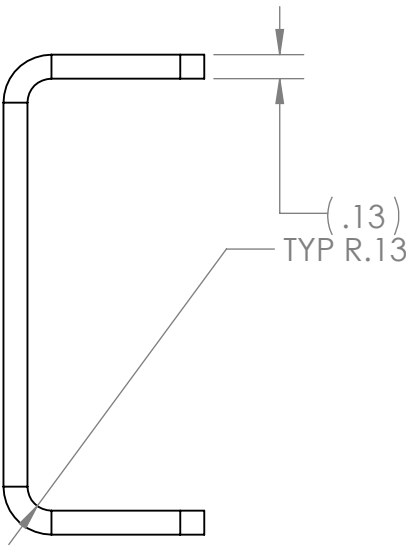
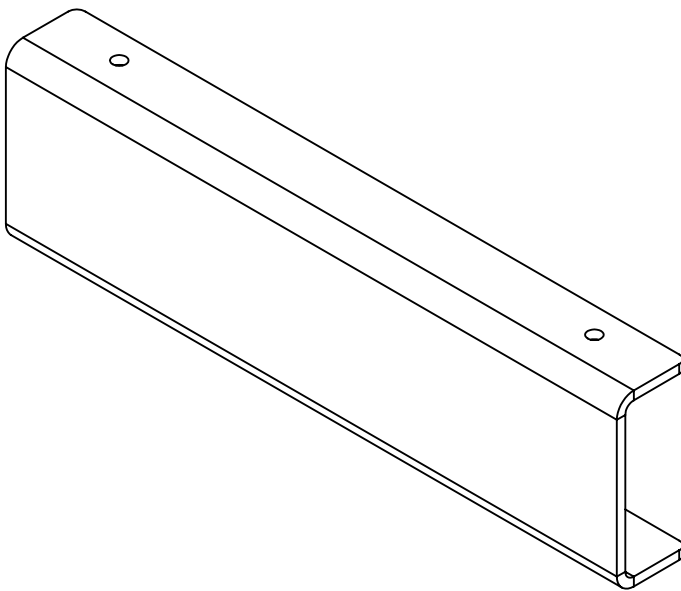




REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B3, C2, C3	A	NOTCHES ADDED	10/13/2023	NWE

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>		
	DRAWN	NE	9/18/2023			
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			TITLE:  Ring Capture Bottom		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
	COMMENTS:			SIZE		DWG. NO.
MATERIAL/FINISH:	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24124	A
12GA 5052 Aluminum				SCALE: 1:2		SHEET 1 OF 1
DO NOT SCALE DRAWING						



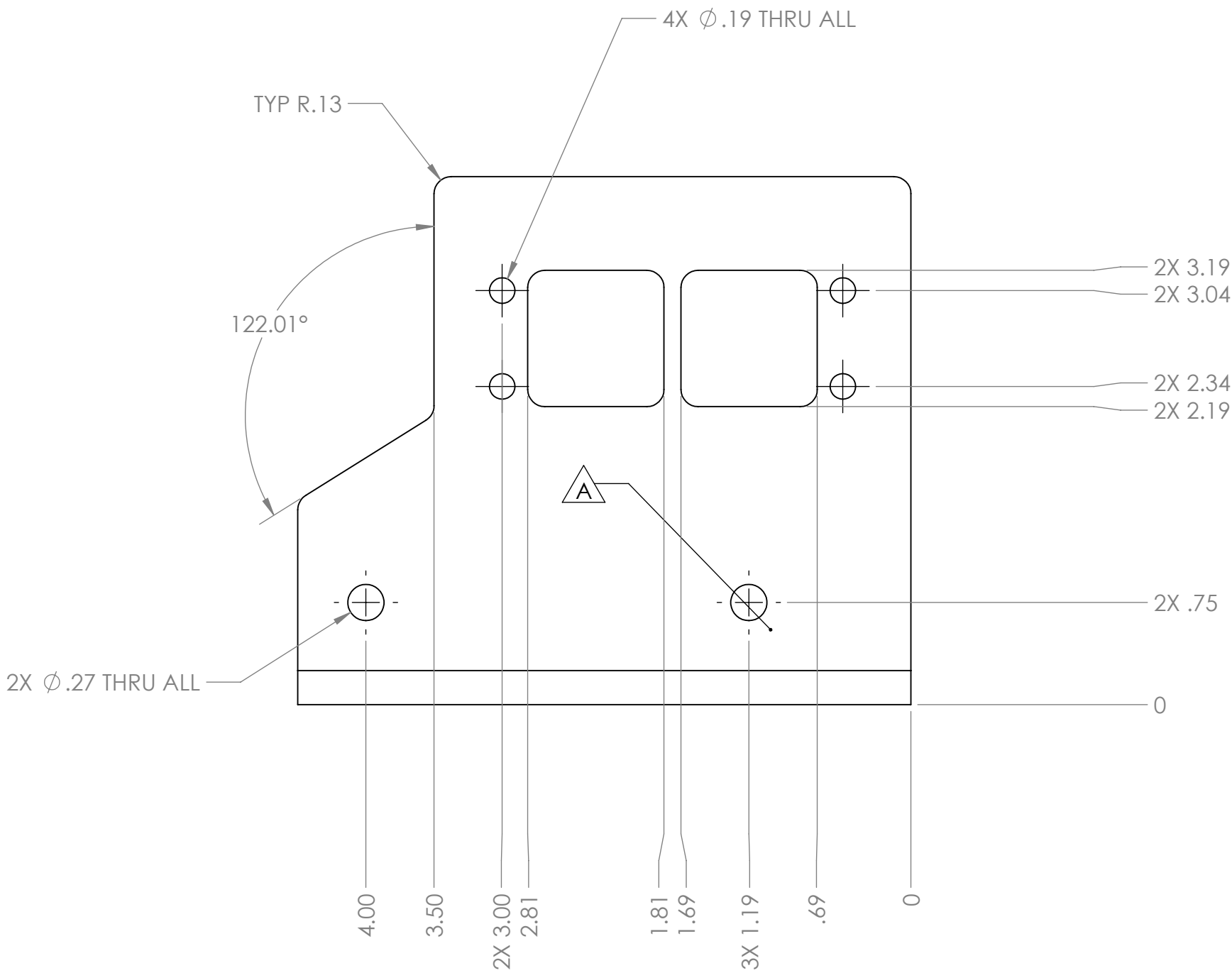
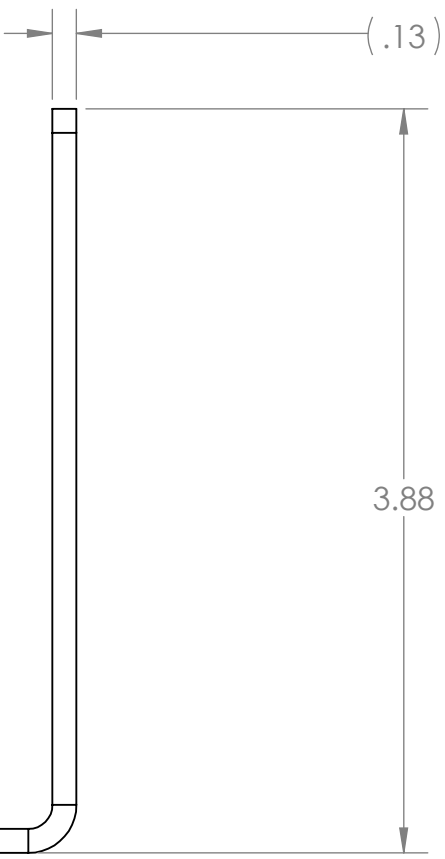
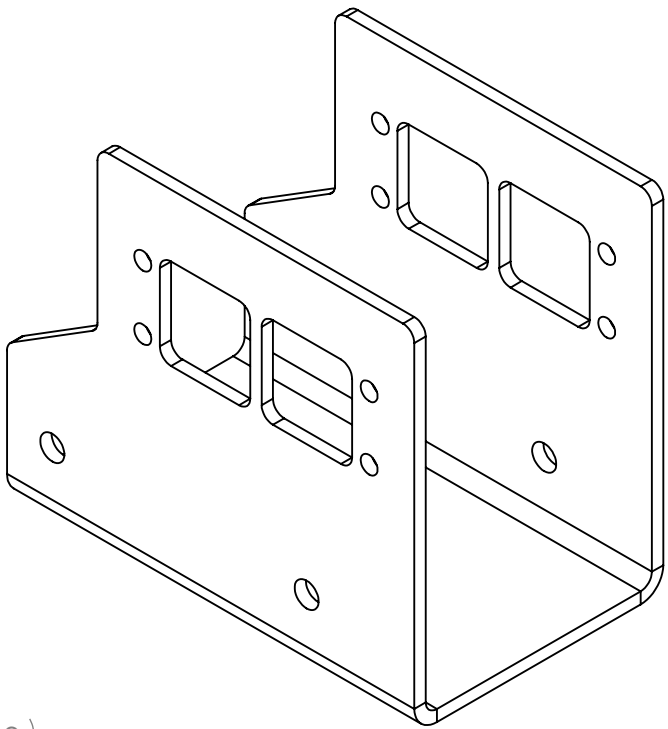
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
D2	A	TOTAL PART LENGTH CHANGED	10/13/2023	NWE





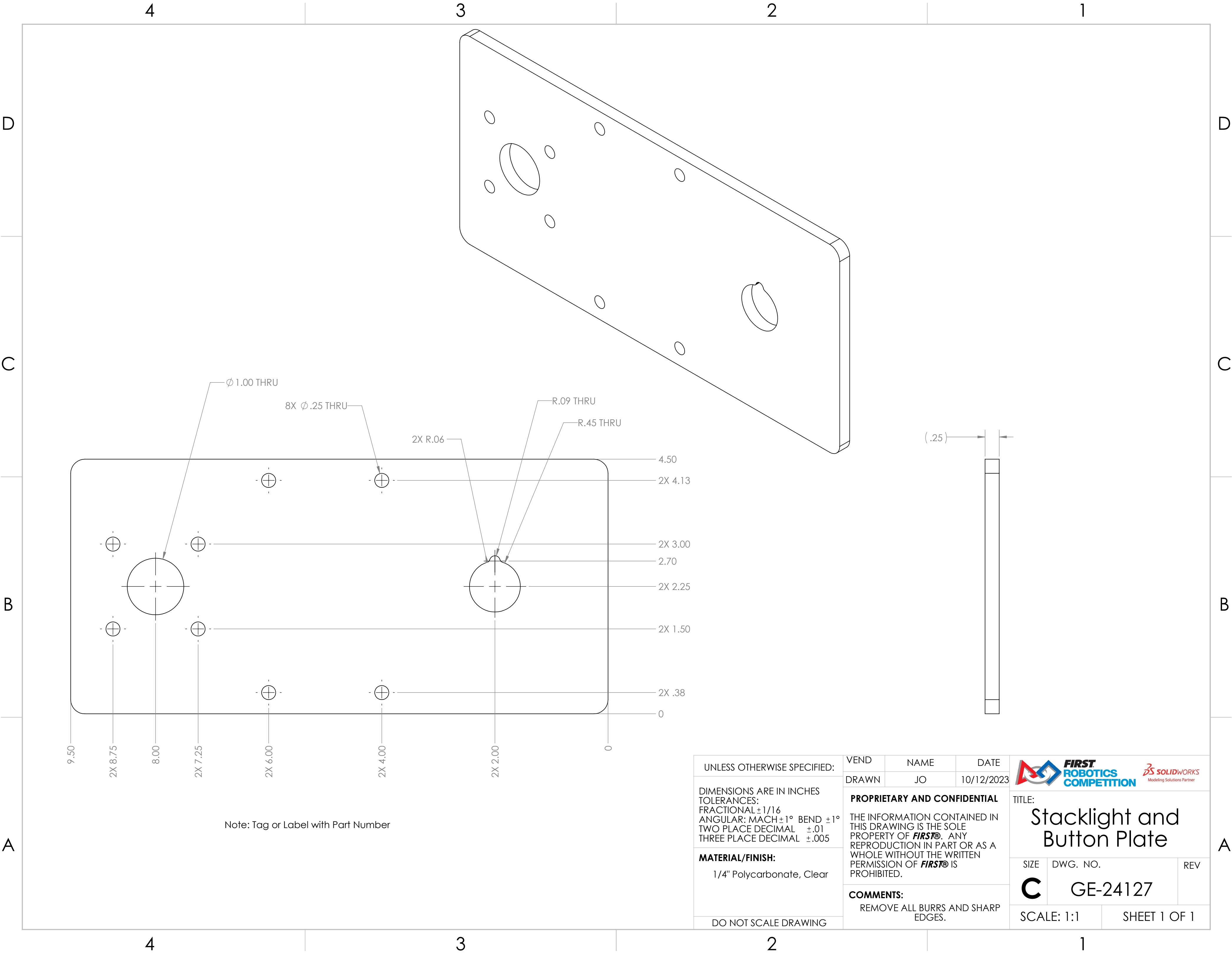
UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	  TITLE: <div>Ring Capture Side</div>
	DRAWN	NE	9/18/2023	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$	PROPRIETARY AND CONFIDENTIAL			SIZE <div>C</div>
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			
MATERIAL/FINISH: 12GA 5052 Aluminum	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			REV <div>A</div>
DO NOT SCALE DRAWING				SCALE: 1:1 SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	A	HOLE LOCATION MOVED	10/13/2023	NWE



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 $\pm .010$  <b>MATERIAL/FINISH:</b> 8GA 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <b>Sensor Bracket</b></div>		
	DRAWN	NE	9/18/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24126	<b>A</b>
			SCALE: 1:1		SHEET 1 OF 1	



Note: 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:**  
1/4" Polycarbonate, Clear


DO NOT SCALE DRAWING

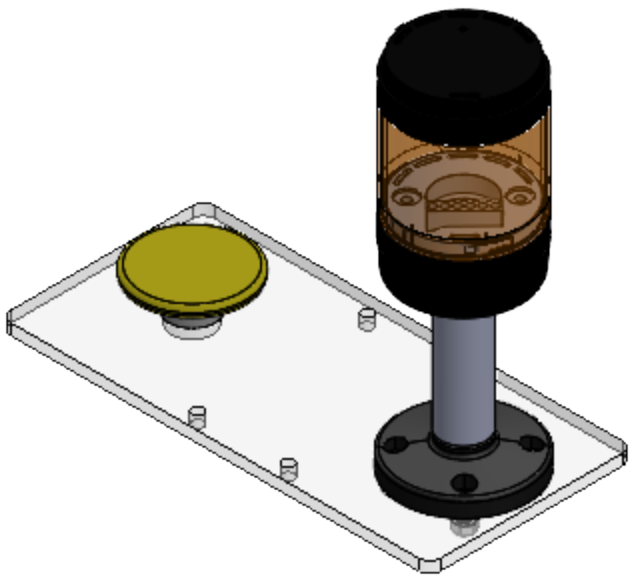
VEND	NAME	DATE
DRAWN	JO	10/12/2023

**PROPRIETARY AND CONFIDENTIAL**

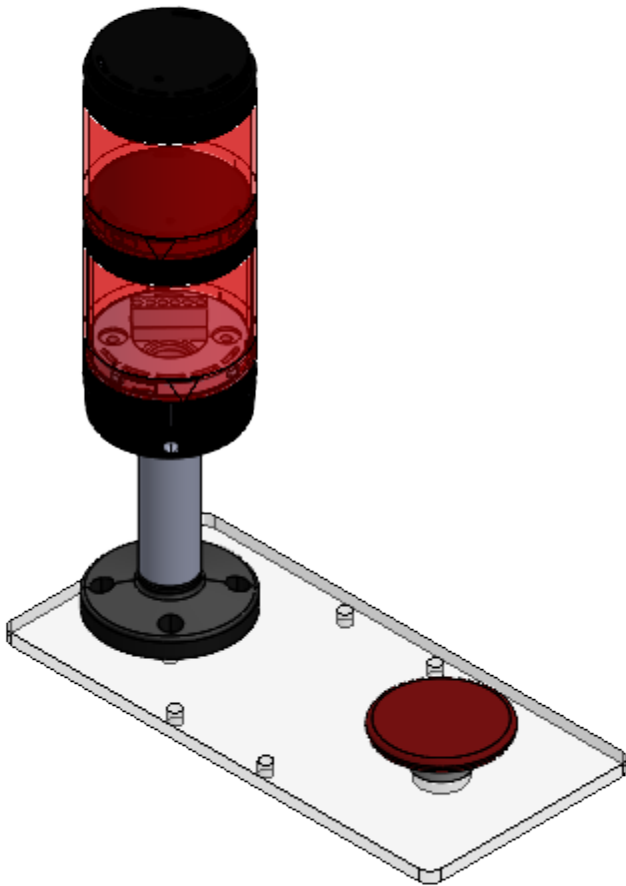
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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

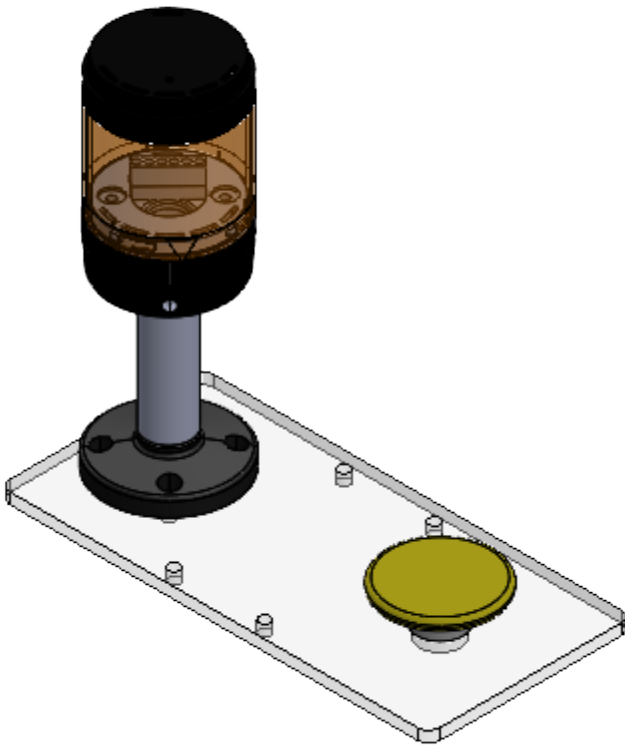
		
TITLE: <b>Stacklight and Button Plate</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24127</b>	REV
SCALE: 1:1		SHEET 1 OF 1



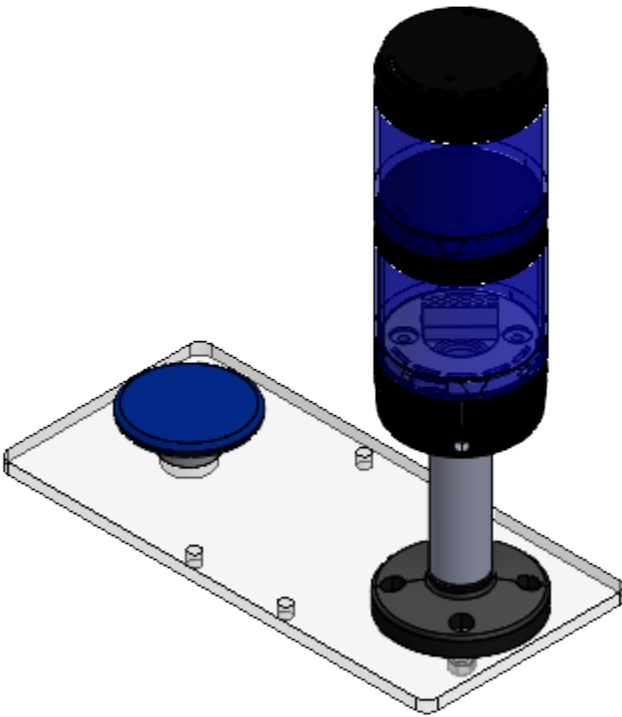
Red Co-op



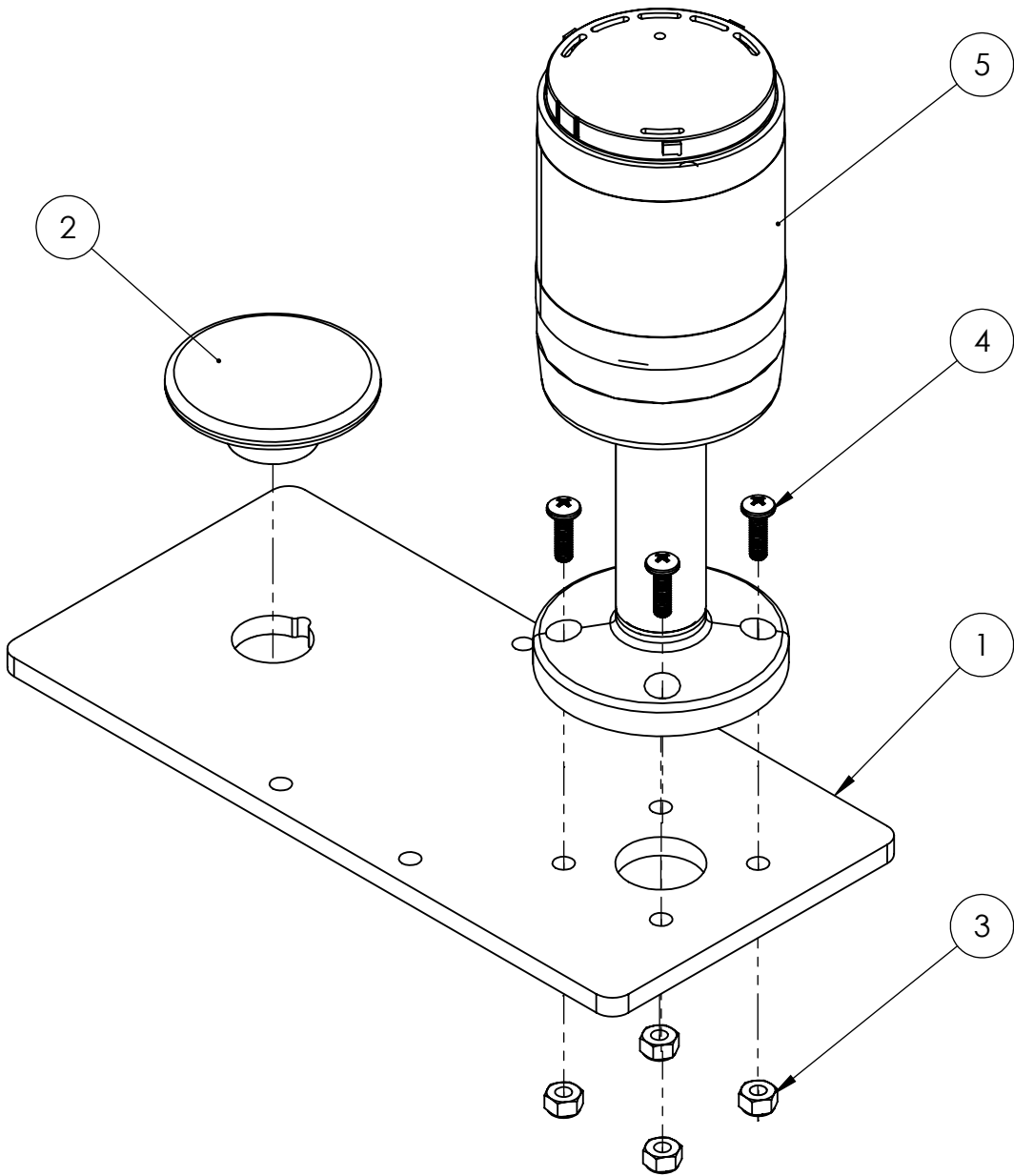
Red Amp



Blue Co-op



Blue Amp



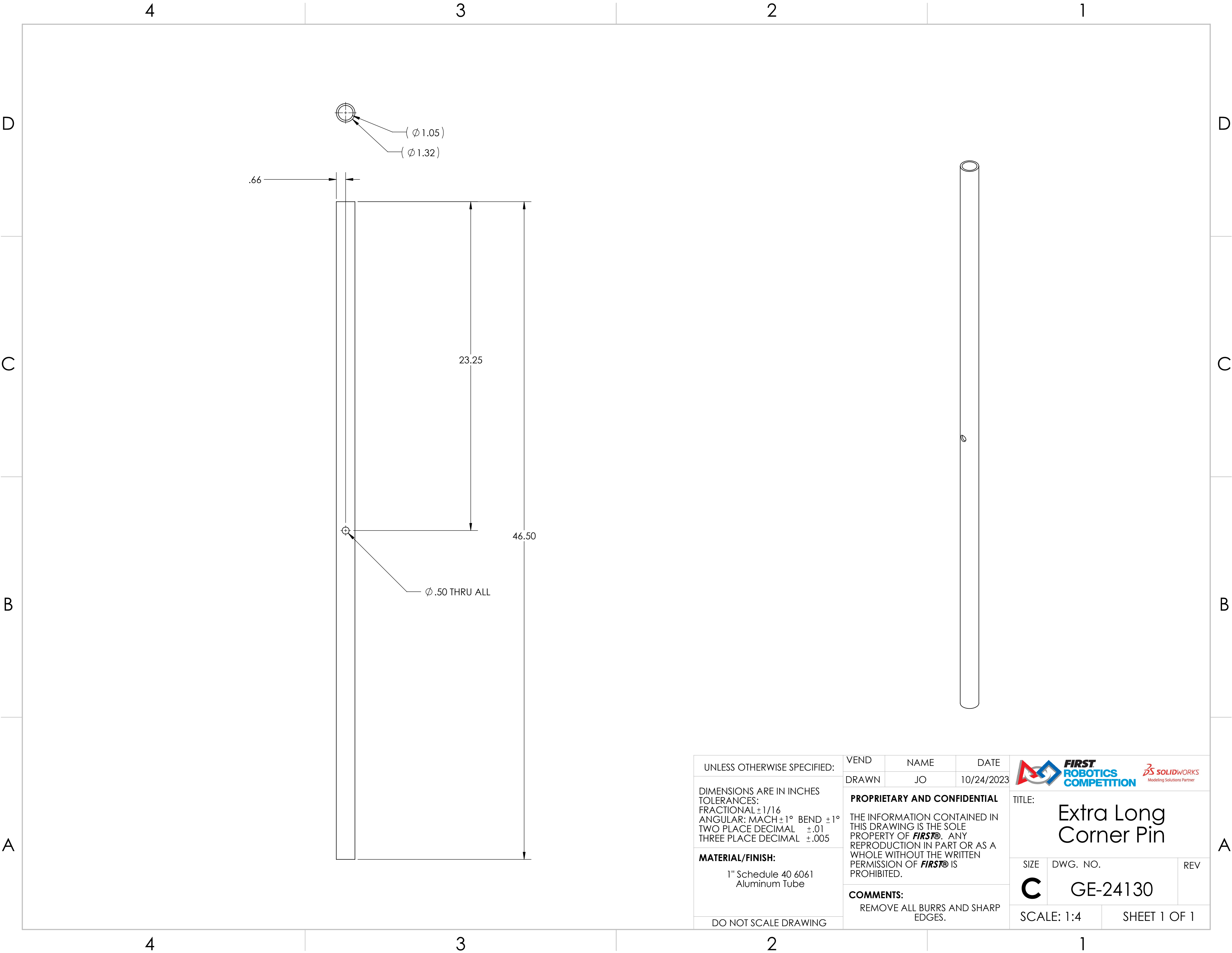
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24127	Stacklight and Button Plate	1
2	Amp_Button_Yellow	Button, Push, Yellow	1
3	nylock_10_32	Low-Strength Steel Nylon-Insert Locknut, Zinc-Plated, 10-32 Thread Size	4
4	Pan_phil_10-32_.625	Pan head Phil 10-32 x 5/8	4
5	StackLight_Assembly	Stack Light Assembly	1



Note:

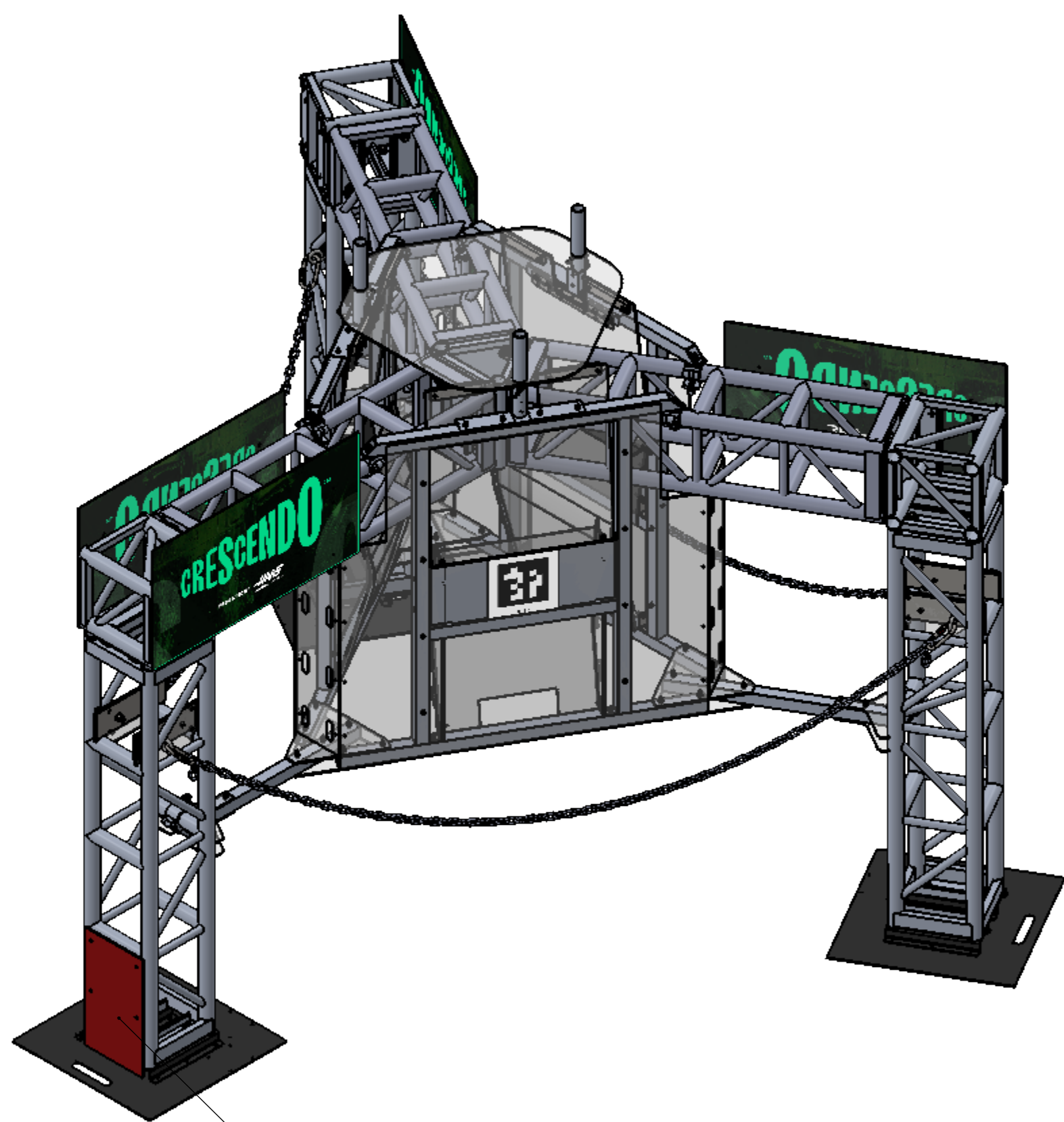
1. ② comes in the following configurations:
- Red Co-op
  - Red Boost
  - Blue Co-op
  - Blue Boost

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	DF	12/18/2023
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
		TITLE: Stacklight and Button Plate Assembly		REV
		SIZE: C	DWG. NO.: GE-24128	
		SCALE: 1:2 SHEET 1 OF 1		





UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1" Schedule 40 6061 Aluminum Tube  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE:  Extra Long Corner Pin</div>		
	DRAWN	JO	10/24/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE <b>C</b>	DWG. NO. GE-24130	REV
SCALE: 1:4		SHEET 1 OF 1				



There is a blue configuration for this plastic

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24201	Stage Top	1
2	GE-24202	Stage Vinyl Logo	4
3	GE-24204	Stage Face Filler Poly	3
4	GE-24205	Stage Chain	3
5	GE-24207-RED	Podium - Red	1
6	GE-24208	Chain Plate with Fasteners	6
7	GE-24210	Base Truss Assembly	1
8	GE-24220	Wall Assembly	3
9	GE-24250	Stage Lateral Support	3
10	3216T41_Carabiner	Carabiner, Locking Steel, .38 thick	6
11	hex_.25_20_3-partial	Steel Hex Head Screw, 1/4"-20 x 3" long, partially threaded	12
12	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	12
13	pin_wire_lock_.25_2.18 75	1/4" Steel Wire Lock Pin, 3 1/16" Long, 2 3/16" Usable Length	3

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES  
TOLERANCES:  
FRACTIONAL ± 1/2  
ANGULAR: MACH ± 1° BEND ± 1°  
TWO PLACE DECIMAL ± .50

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD  
DRAWN



NAME  
DF

DATE  
12/19/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
Stage Assembly

SIZE  
C

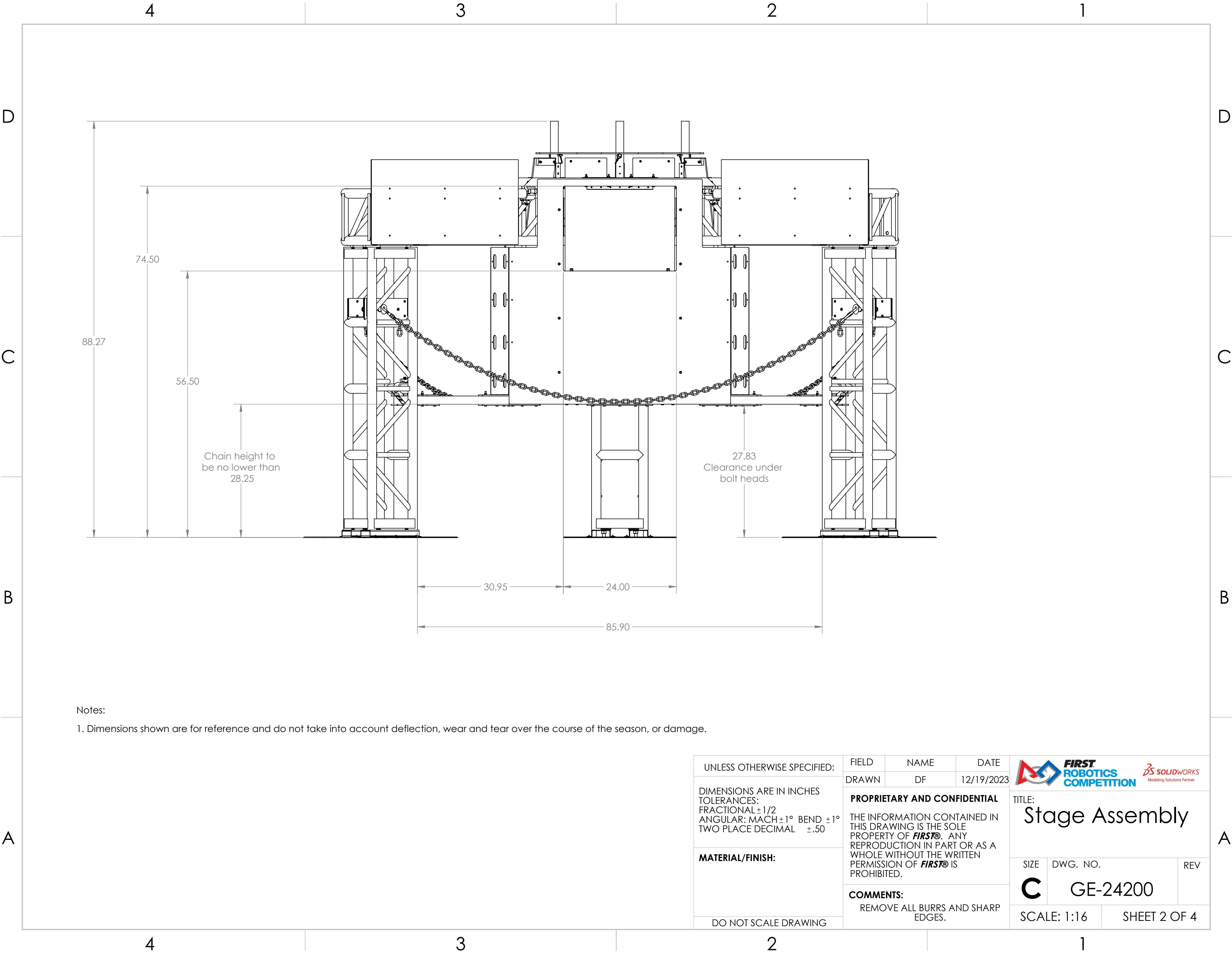
DWG. NO.  
GE-24200

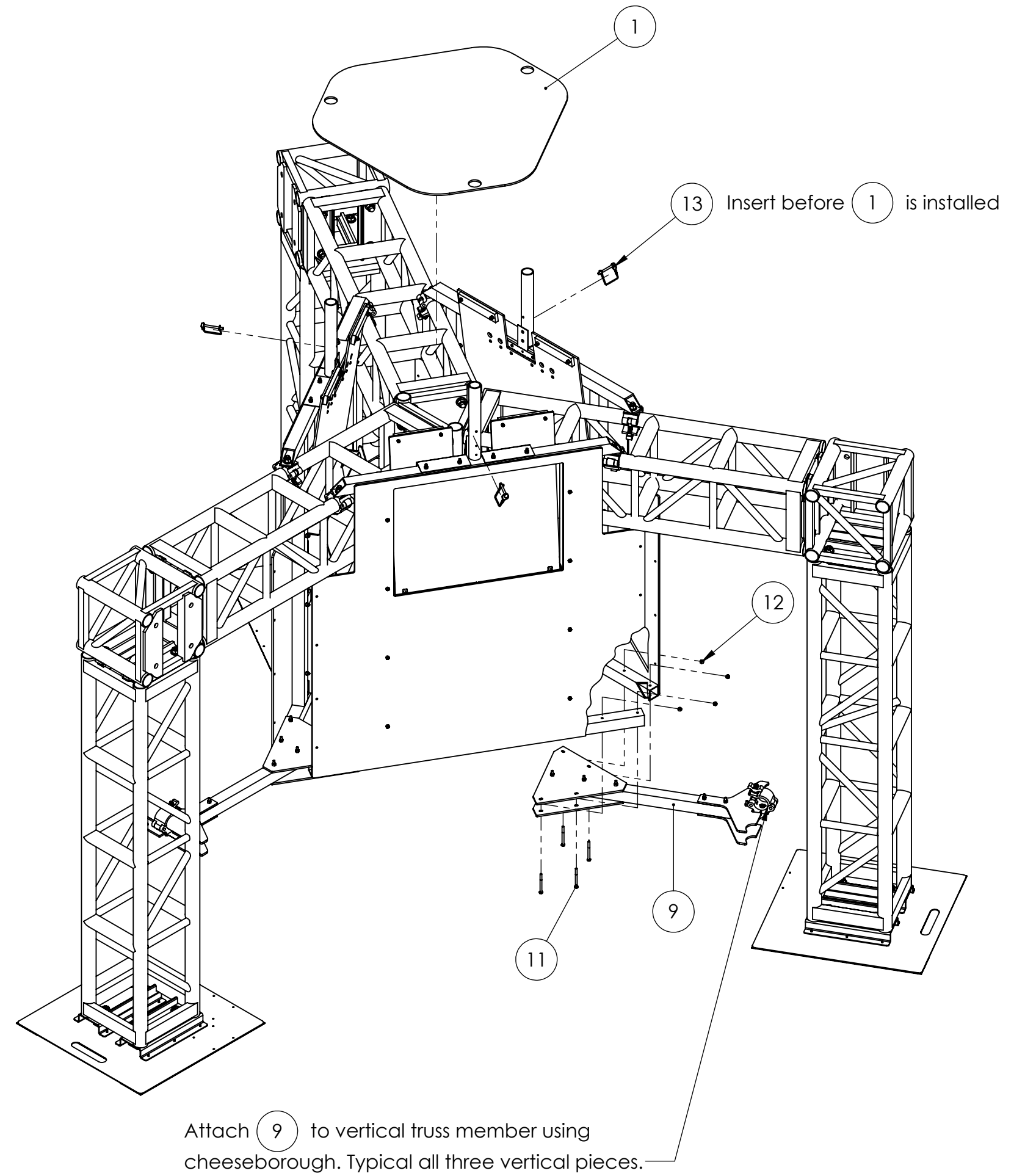
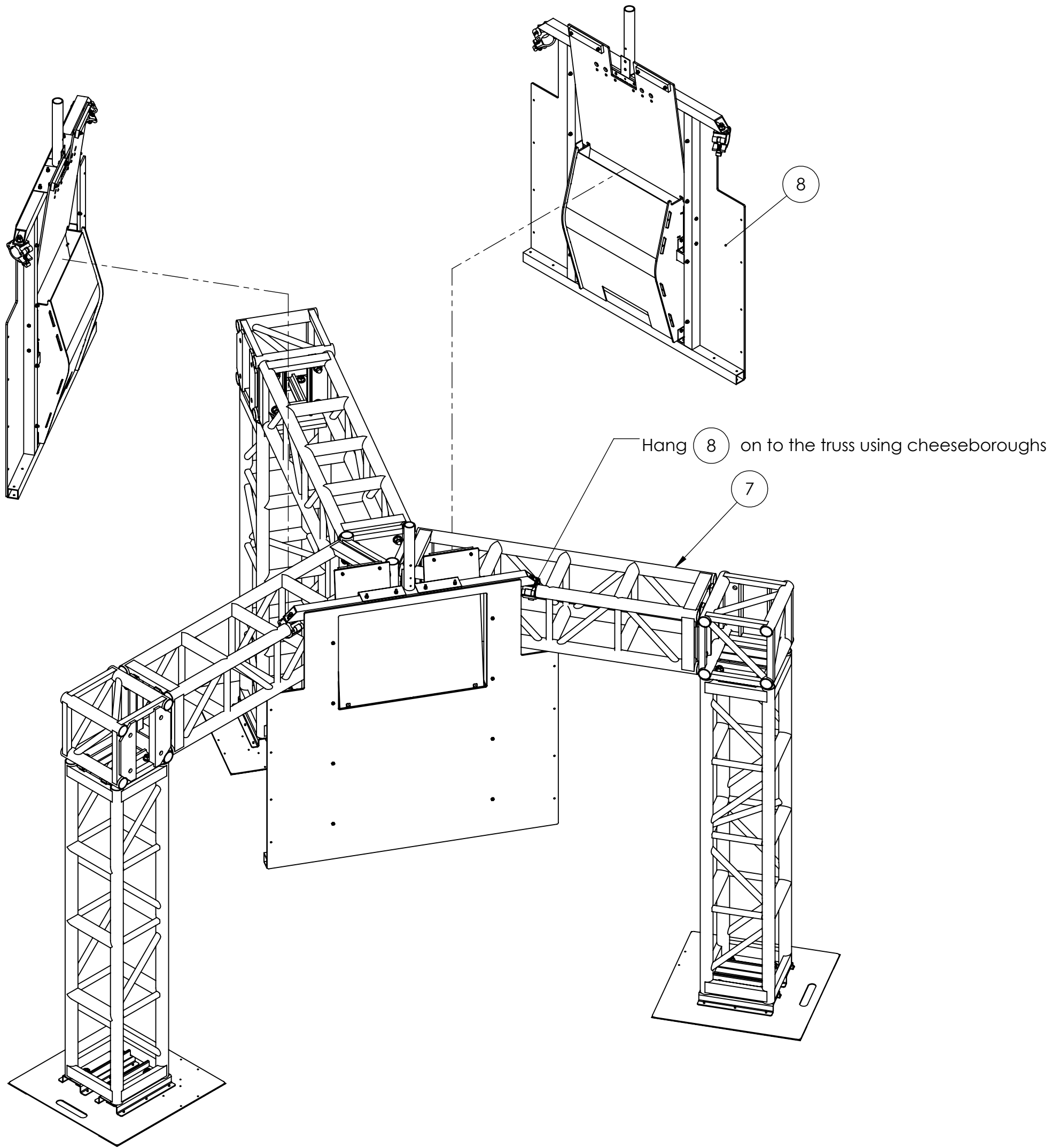
REV



SCALE: 1:16

SHEET 1 OF 4







UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div>		
	DRAWN	DF	12/19/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/2 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .50	PROPRIETARY AND CONFIDENTIAL			TITLE: <div>Stage Assembly</div>		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24200	
DO NOT SCALE DRAWING				SCALE: 1:16		SHEET 3 OF 4

4

3

2

1

D

D

C

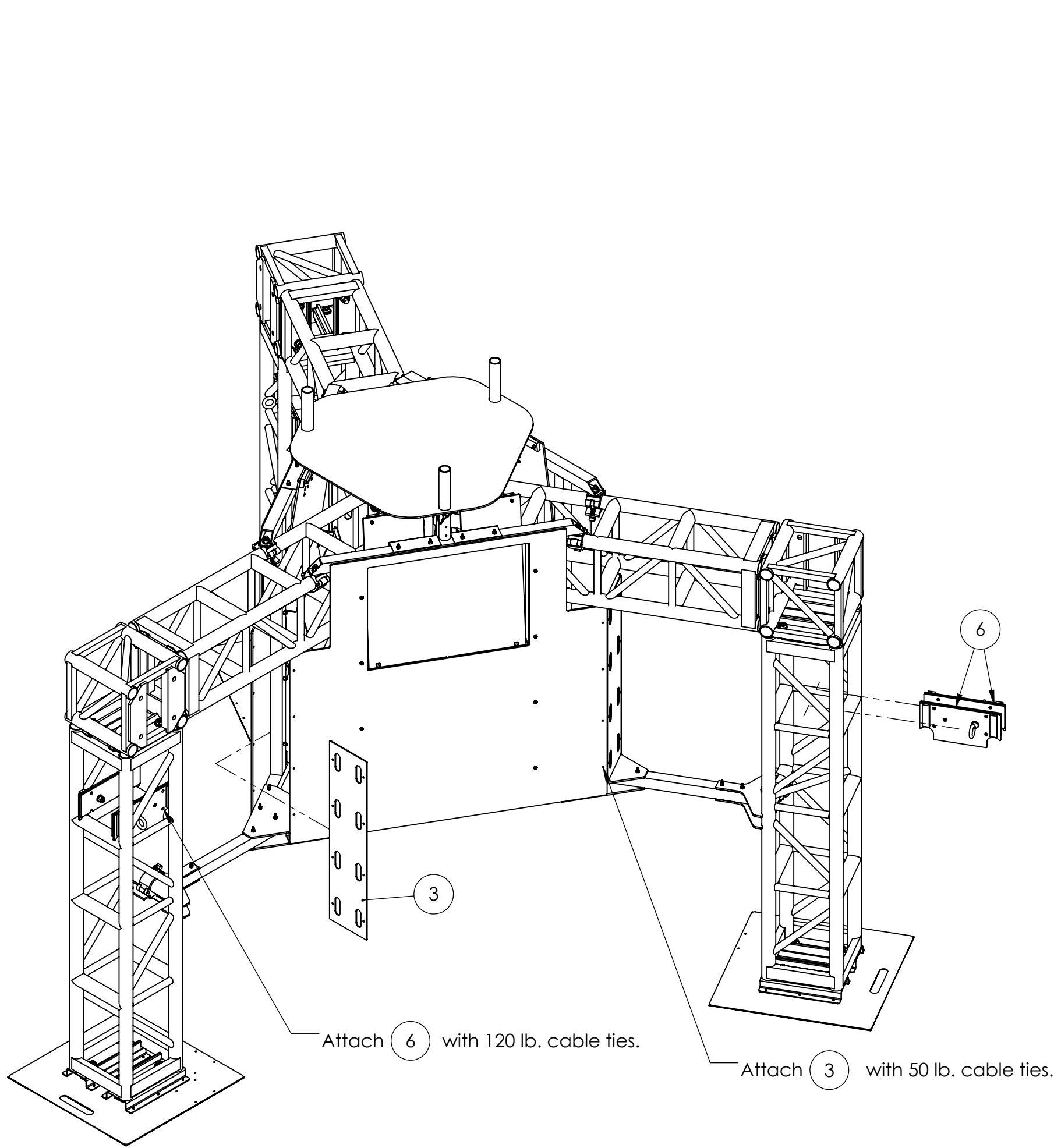
C

B

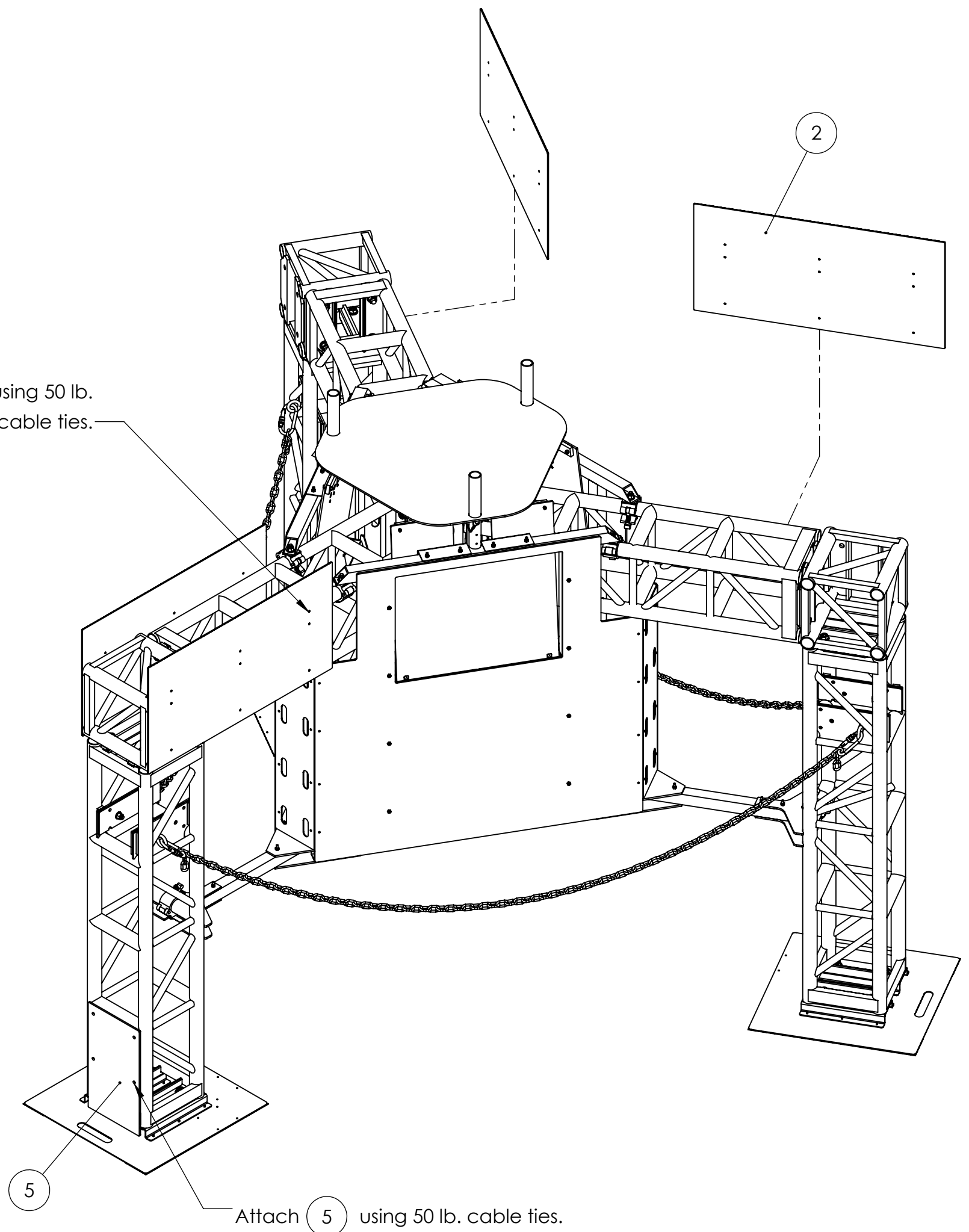
B



A

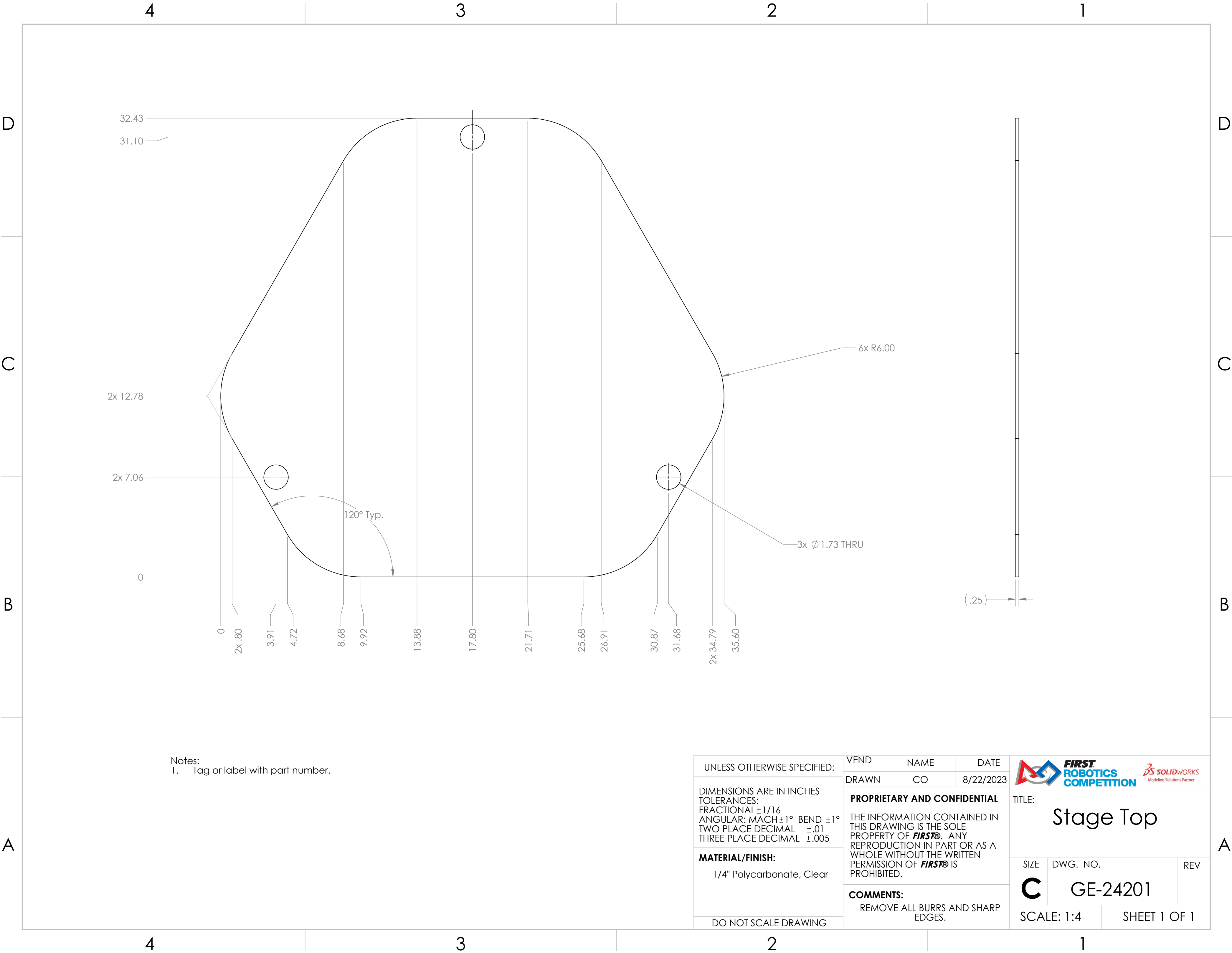
A



Attach 2 using 50 lb. black cable ties.



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$  <b>MATERIAL/FINISH:</b>    <b>DO NOT SCALE DRAWING</b>	FIELD	NAME	DATE	 	
	DRAWN	DF	12/19/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				TITLE: <b>Stage Assembly</b>
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				SIZE <b>C</b> DWG. NO. <b>GE-24200</b> REV  SCALE: 1:16 SHEET 4 OF 4



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:**  
1/4" Polycarbonate, Clear

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	8/22/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

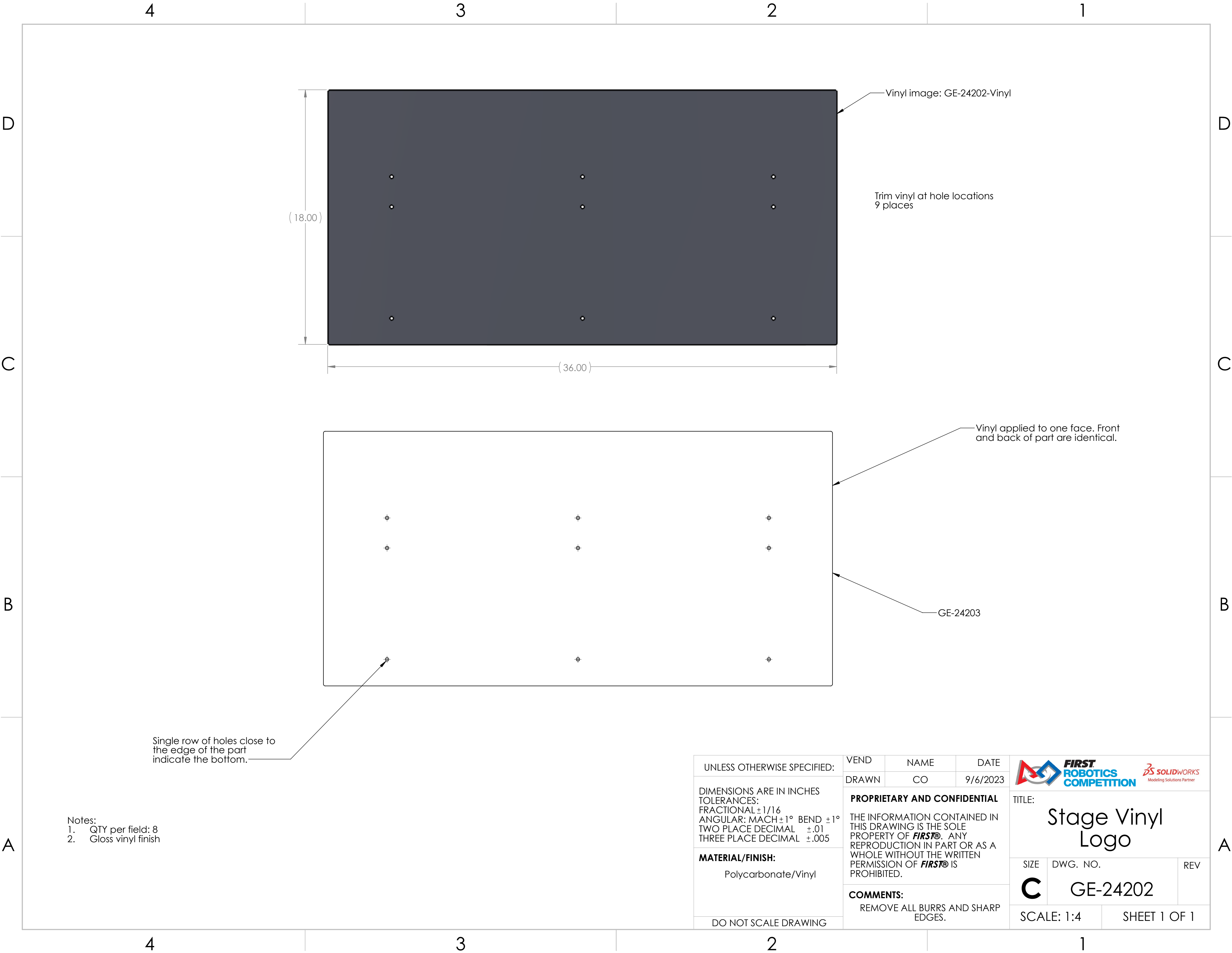


TITLE:  
**Stage Top**



SIZE	DWG. NO.	REV
<b>C</b>	<b>GE-24201</b>	

SCALE: 1:4 SHEET 1 OF 1

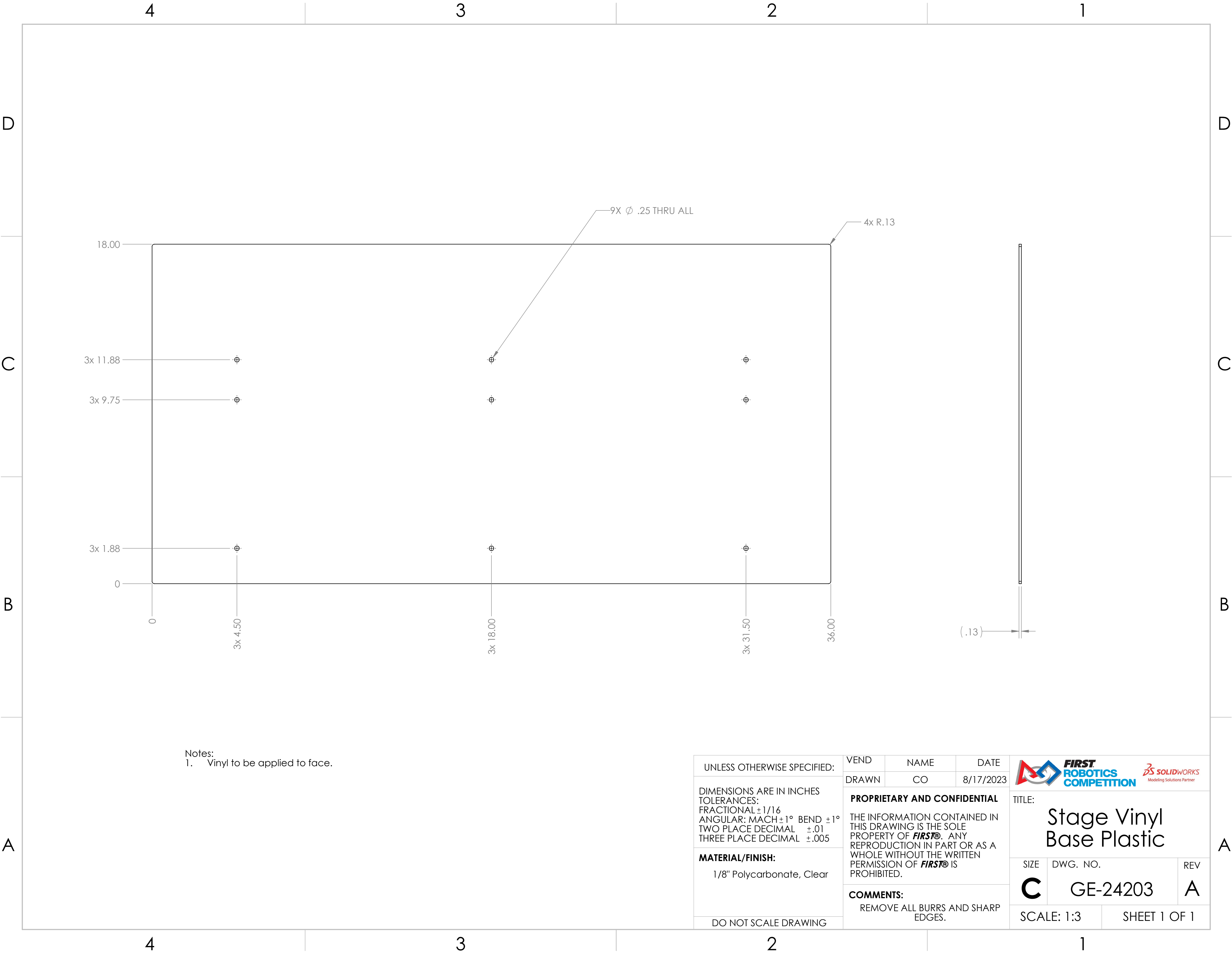






- Notes:
- QTY per field: 8
  - Gloss vinyl finish

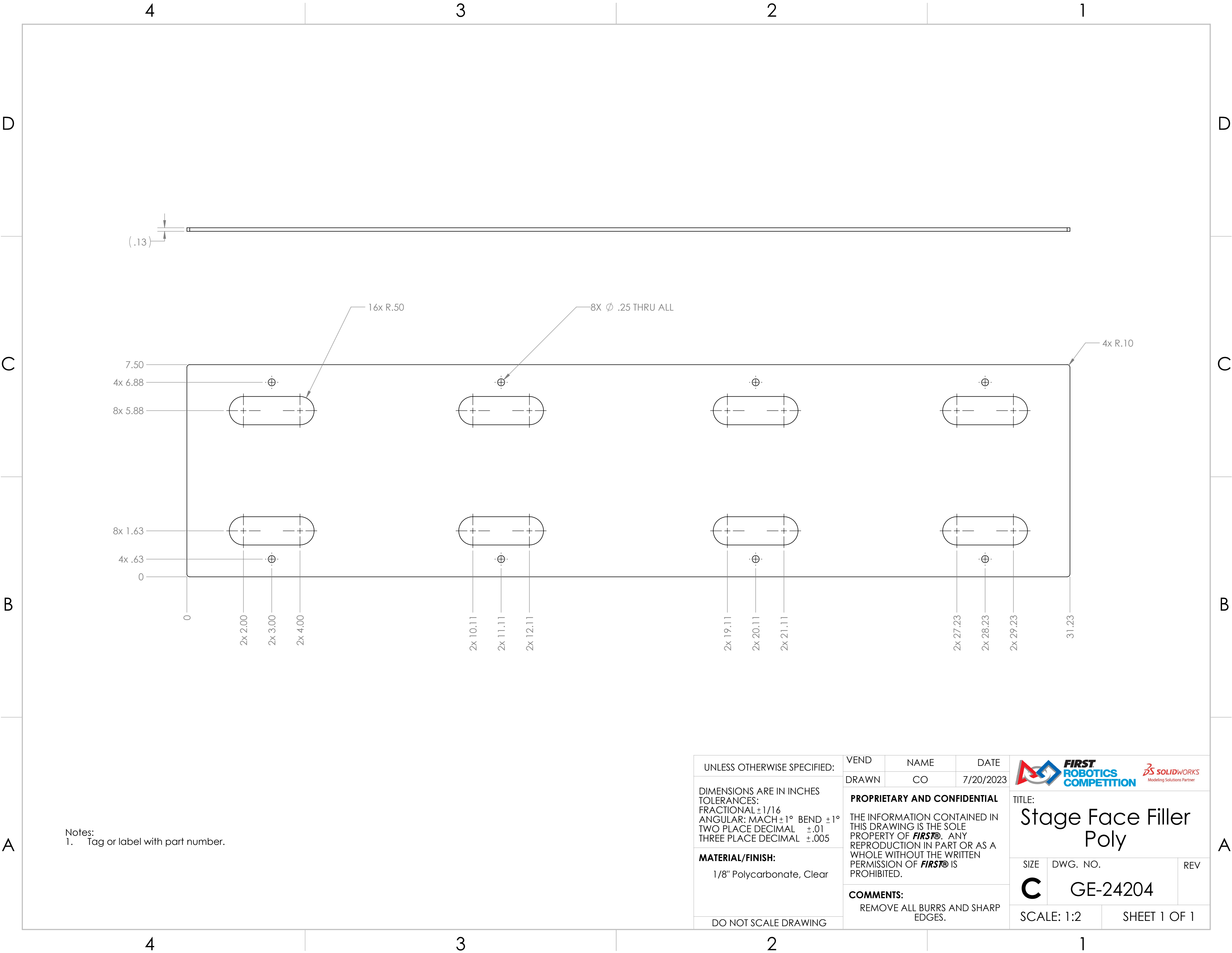
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  Polycarbonate/Vinyl  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Stage Vinyl Logo</h1></div>		
	DRAWN	CO	9/6/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.					
				SIZE	DWG. NO.	REV
				<b>C</b>	GE-24202	
				SCALE: 1:4		SHEET 1 OF 1







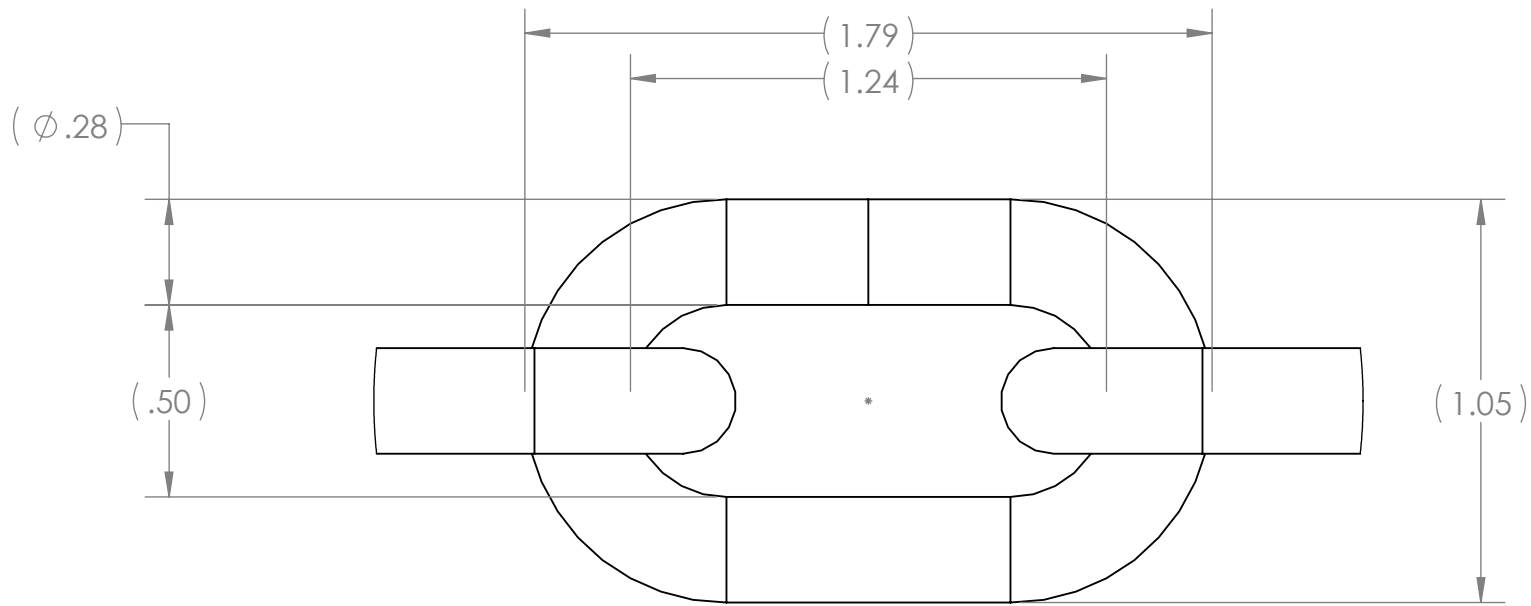
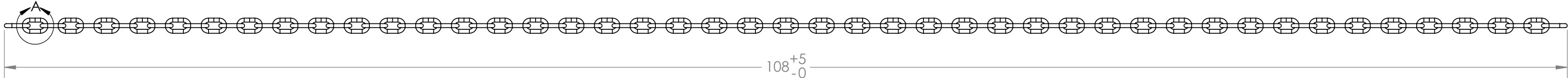
Notes:  
1. Vinyl to be applied to face.

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 $\pm .005$  <b>MATERIAL/FINISH:</b>  1/8" Polycarbonate, Clear  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE:  Stage Vinyl Base Plastic</div>		
	DRAWN	CO	8/17/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24203	<b>A</b>
SCALE: 1:3		SHEET 1 OF 1				





Notes:  
1. Tag or label with part number.

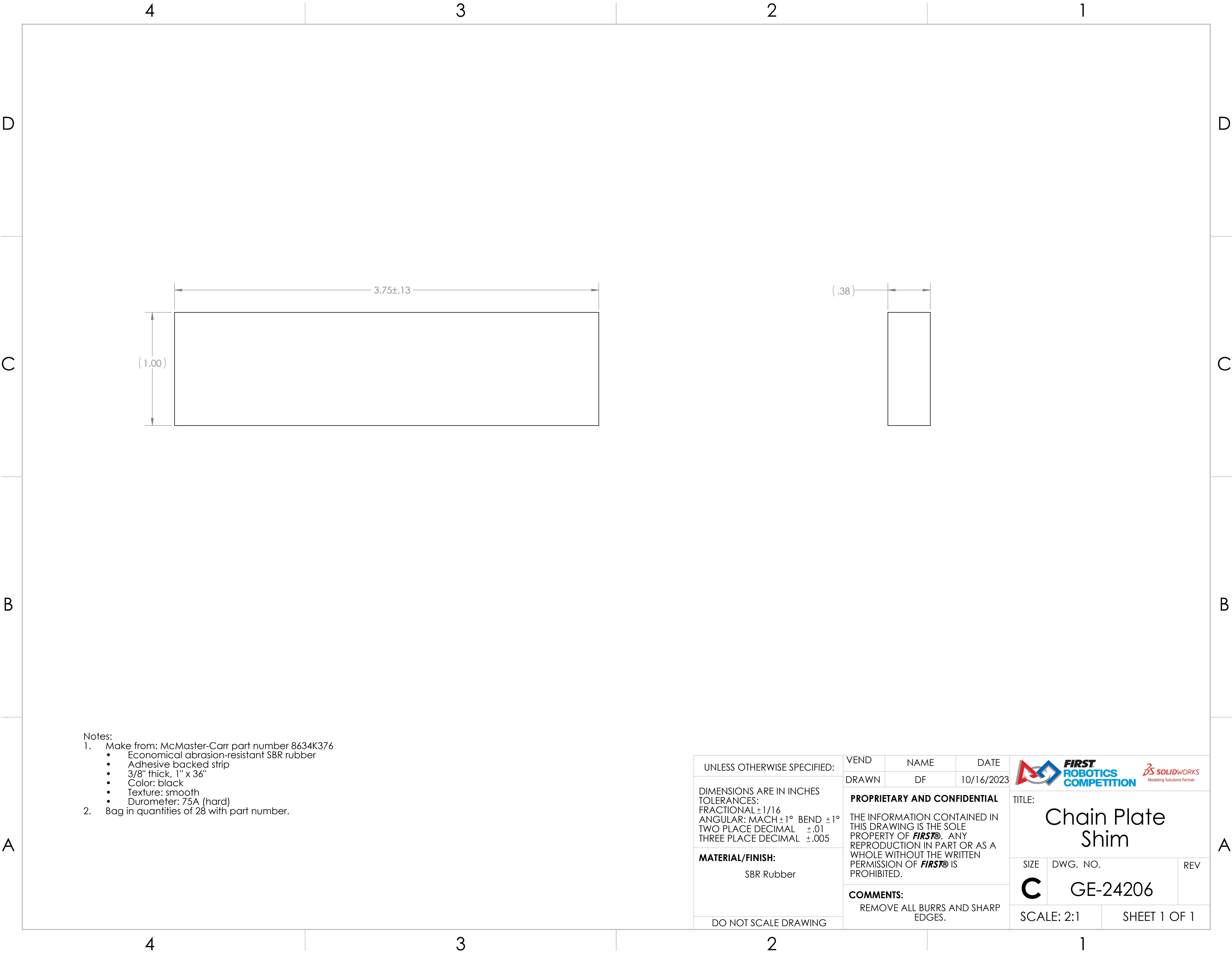
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$  <b>MATERIAL/FINISH:</b>  1/8" Polycarbonate, Clear   DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Stage Face Filler Poly</div>		
	DRAWN	CO	7/20/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24204	
SCALE: 1:2		SHEET 1 OF 1				





DETAIL A  
SCALE 2 : 1

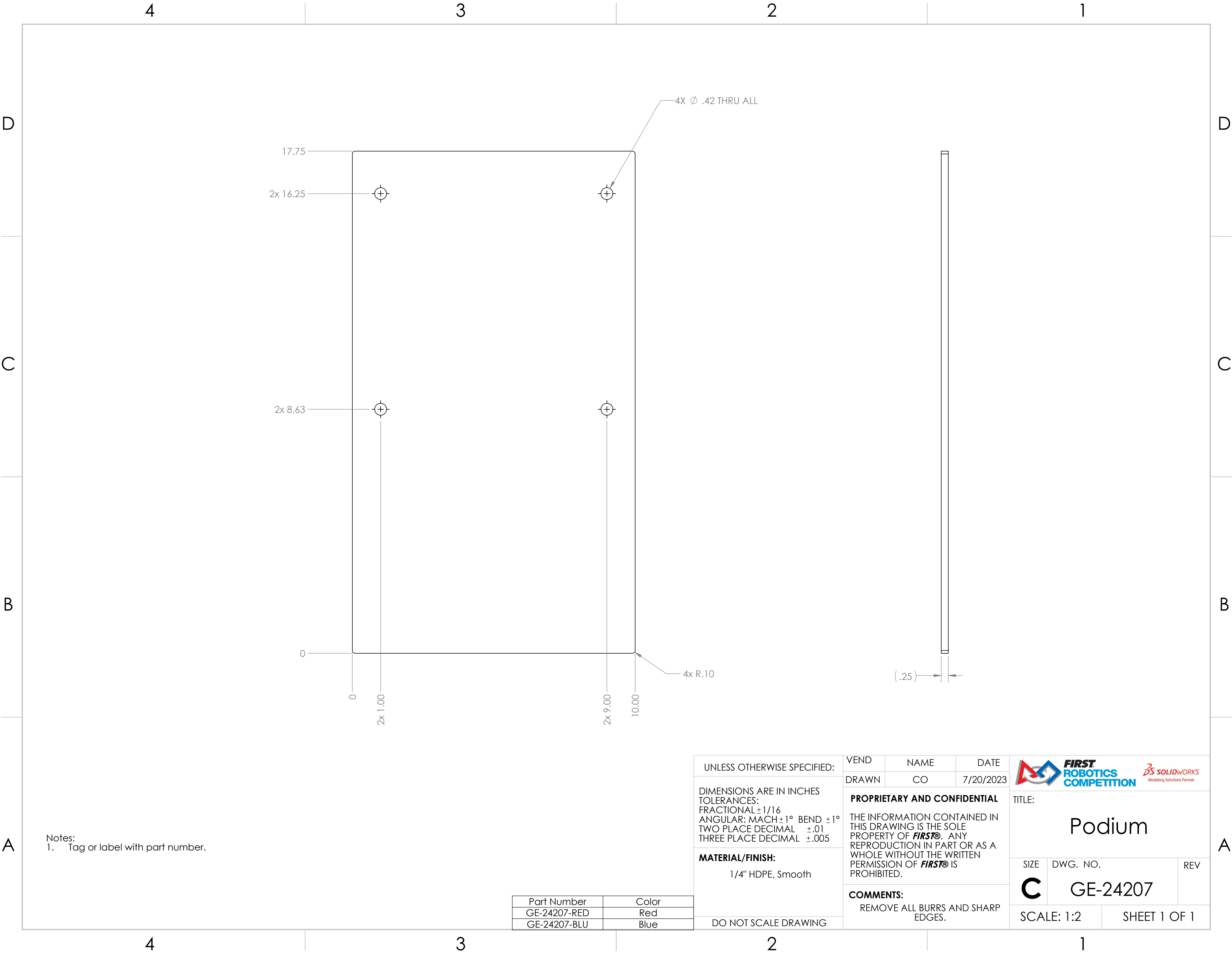
- Notes:
1. Supplier: Perfection Chain Products
  2. Packaged in groups of 9
  3. Individual link dimensions provided as reference for teams based on a measured sample. Sizes of chain of a given grade and trade size vary.

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 $\pm .005$  <b>MATERIAL/FINISH:</b>  Grade 43 Zinc Plated Chain, 1/4" Trade Size  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div><div></div><div>TITLE: <h1>Stage Chain</h1></div></div>		
	DRAWN	CO	9/25/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
C		GE-24205-straight		SCALE: 1:6		
				SHEET 1 OF 1		





- Notes:
1. Make from: McMaster-Carr part number 8634K376
    - Economical abrasion-resistant SBR rubber
    - Adhesive backed strip
    - 3/8" thick, 1" x 36"
    - Color: black
    - Texture: smooth
    - Durometer: 75A (hard)
  2. Bag in quantities of 28 with part number.

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  SBR Rubber  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE:  Chain Plate Shim</div>		
	DRAWN	DF	10/16/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE <b>C</b>	DWG. NO. GE-24206	REV
SCALE: 2:1		SHEET 1 OF 1				

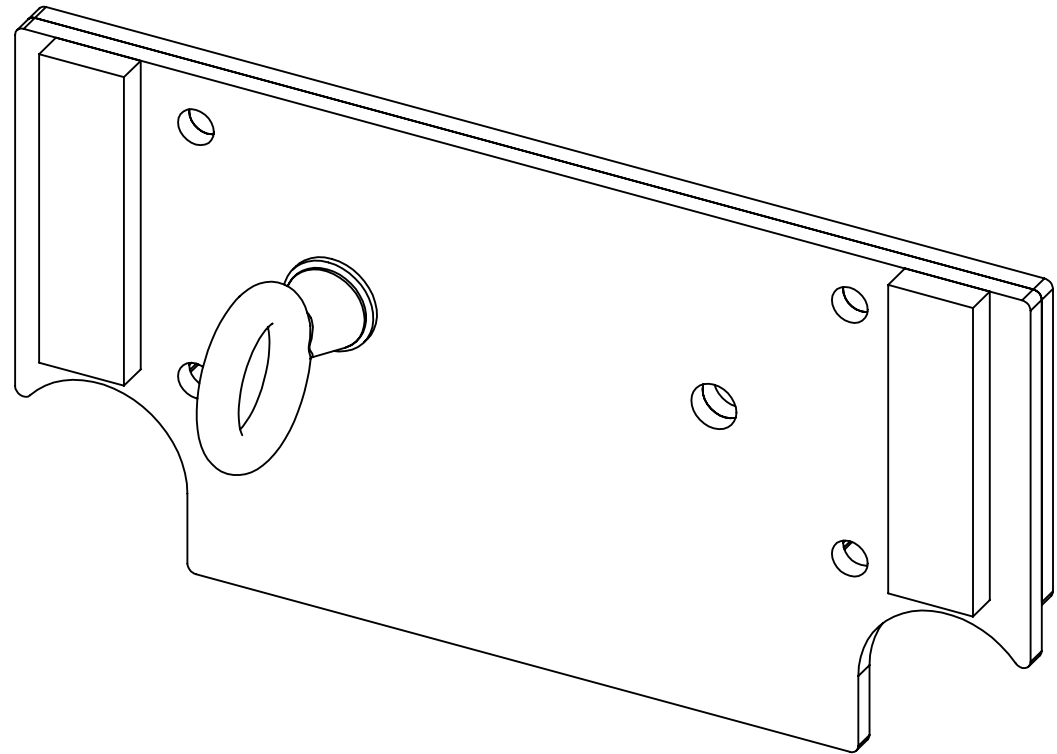


Notes:  
1. Tag or label with part number.

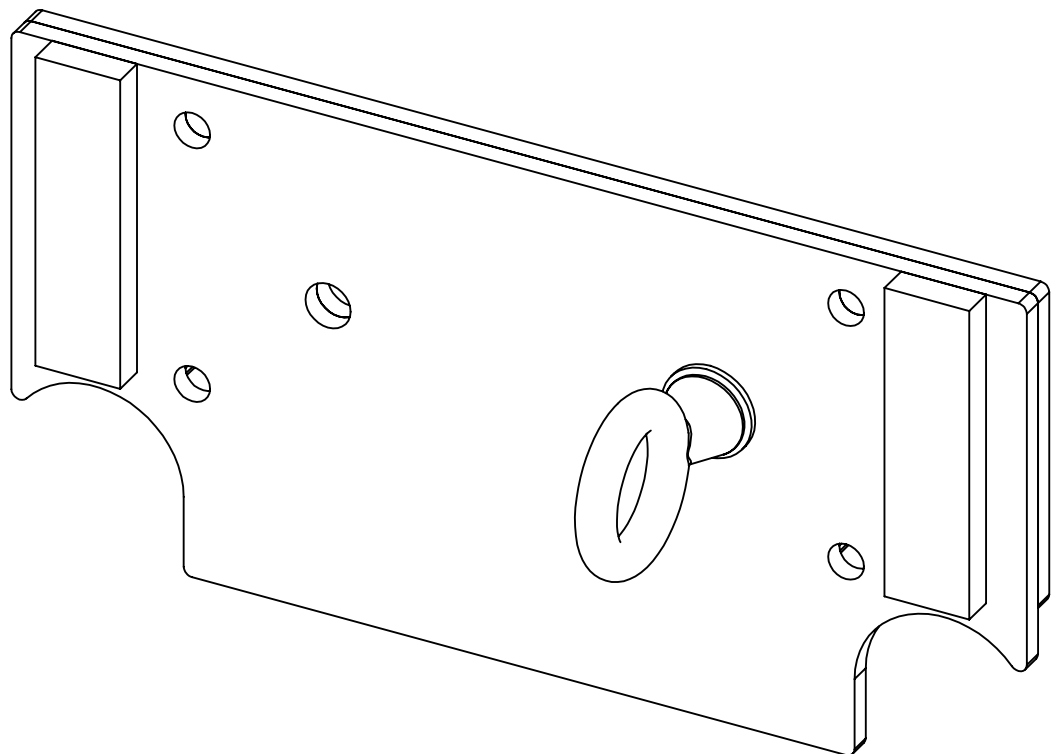
Part Number	Color
GE-24207-RED	Red
GE-24207-BLU	Blue

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	CO	7/20/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Podium		
<b>MATERIAL/FINISH:</b>  1/4" HDPE, Smooth	<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-24207	
DO NOT SCALE DRAWING				SCALE: 1:2		SHEET 1 OF 1

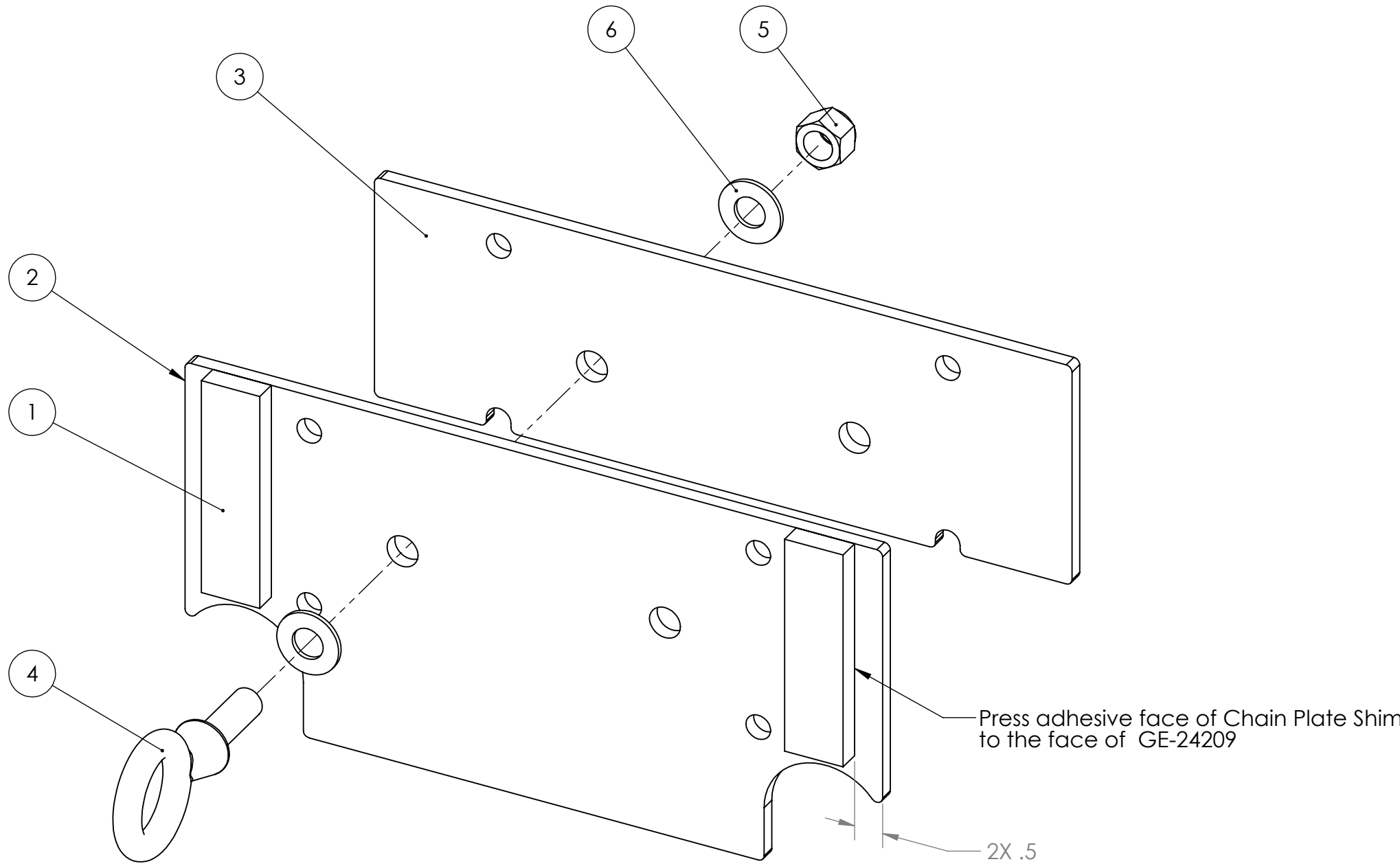






Left Version

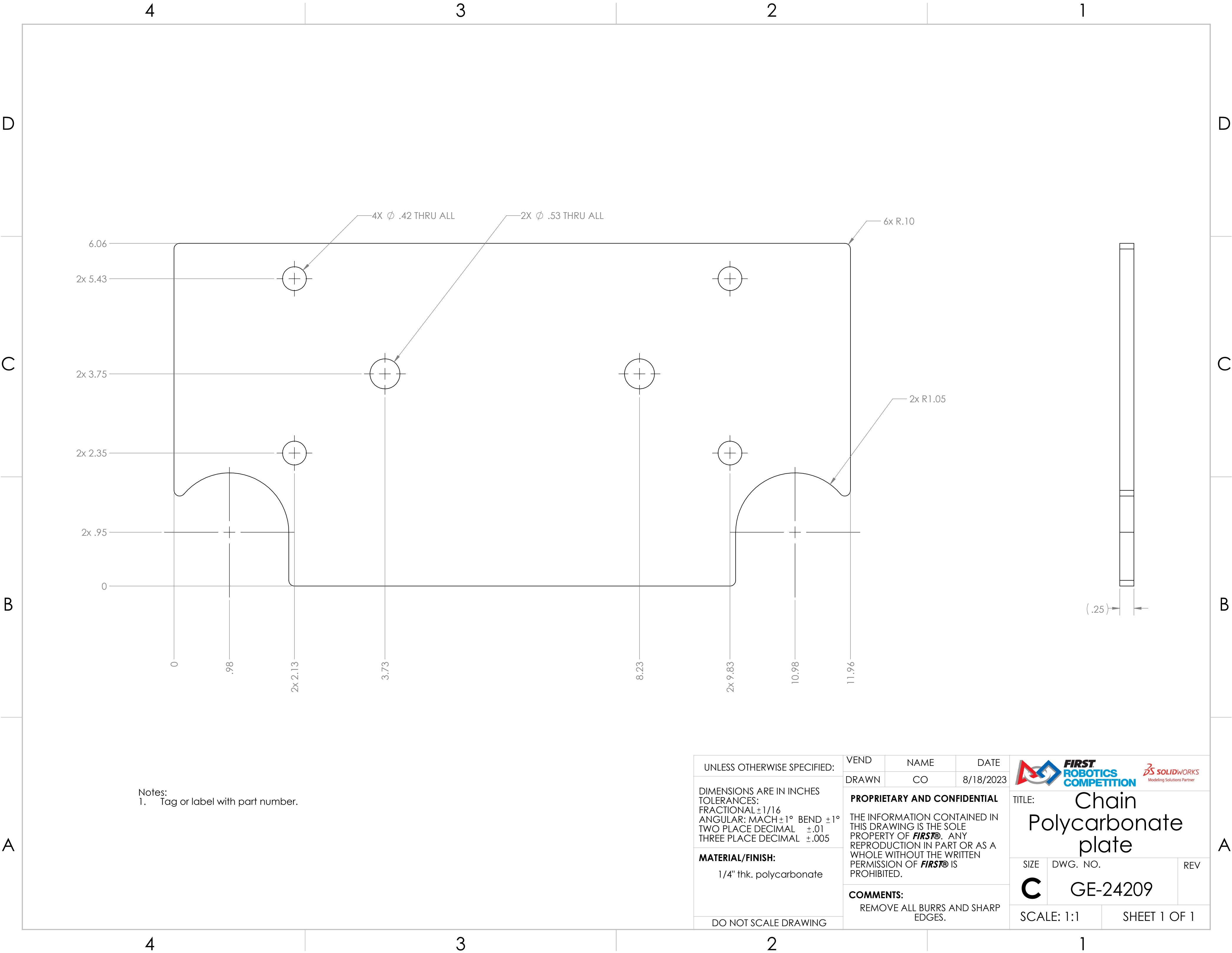


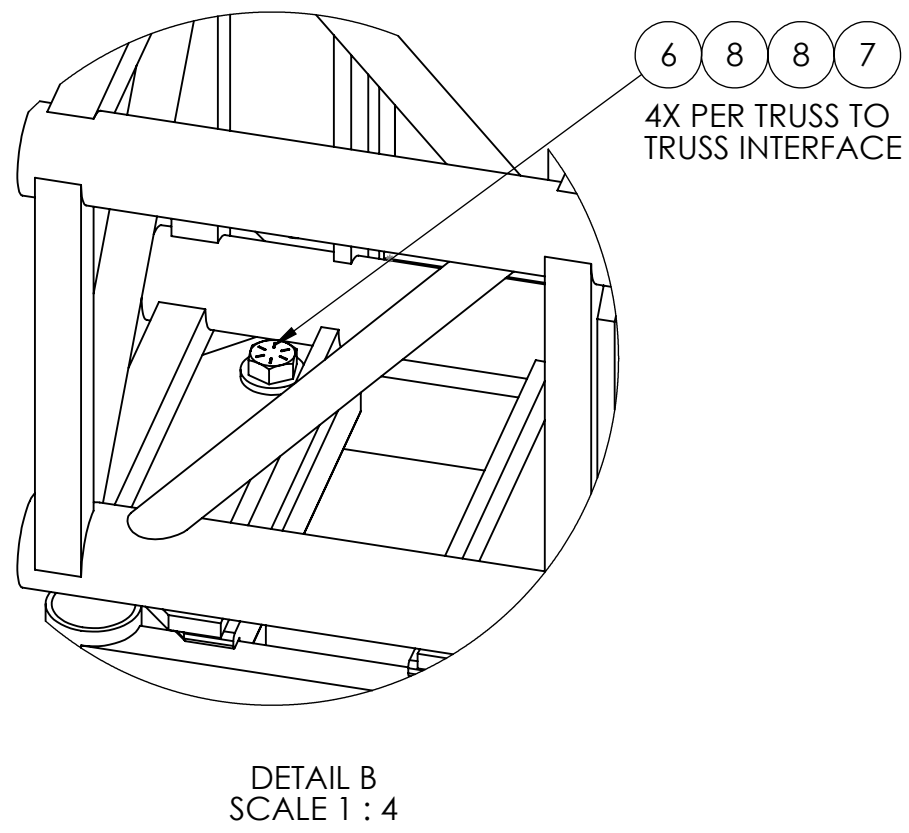
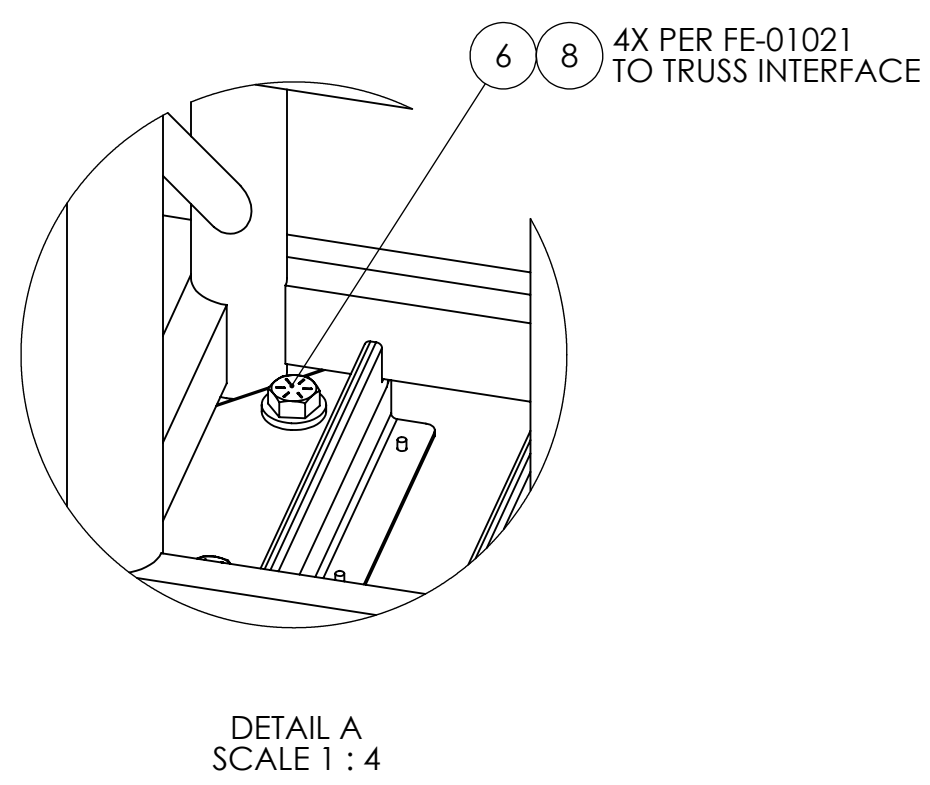
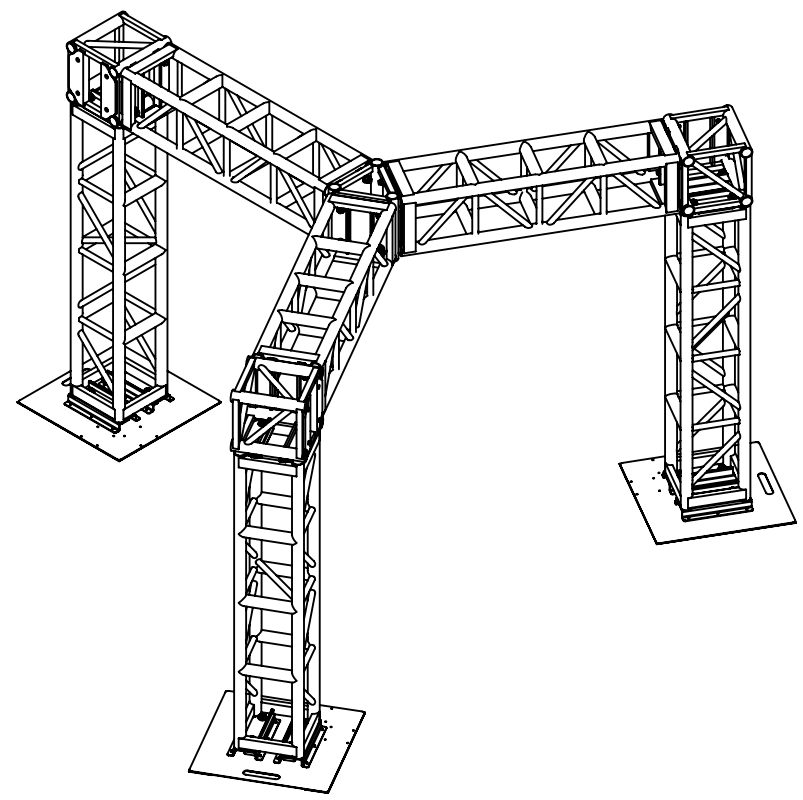
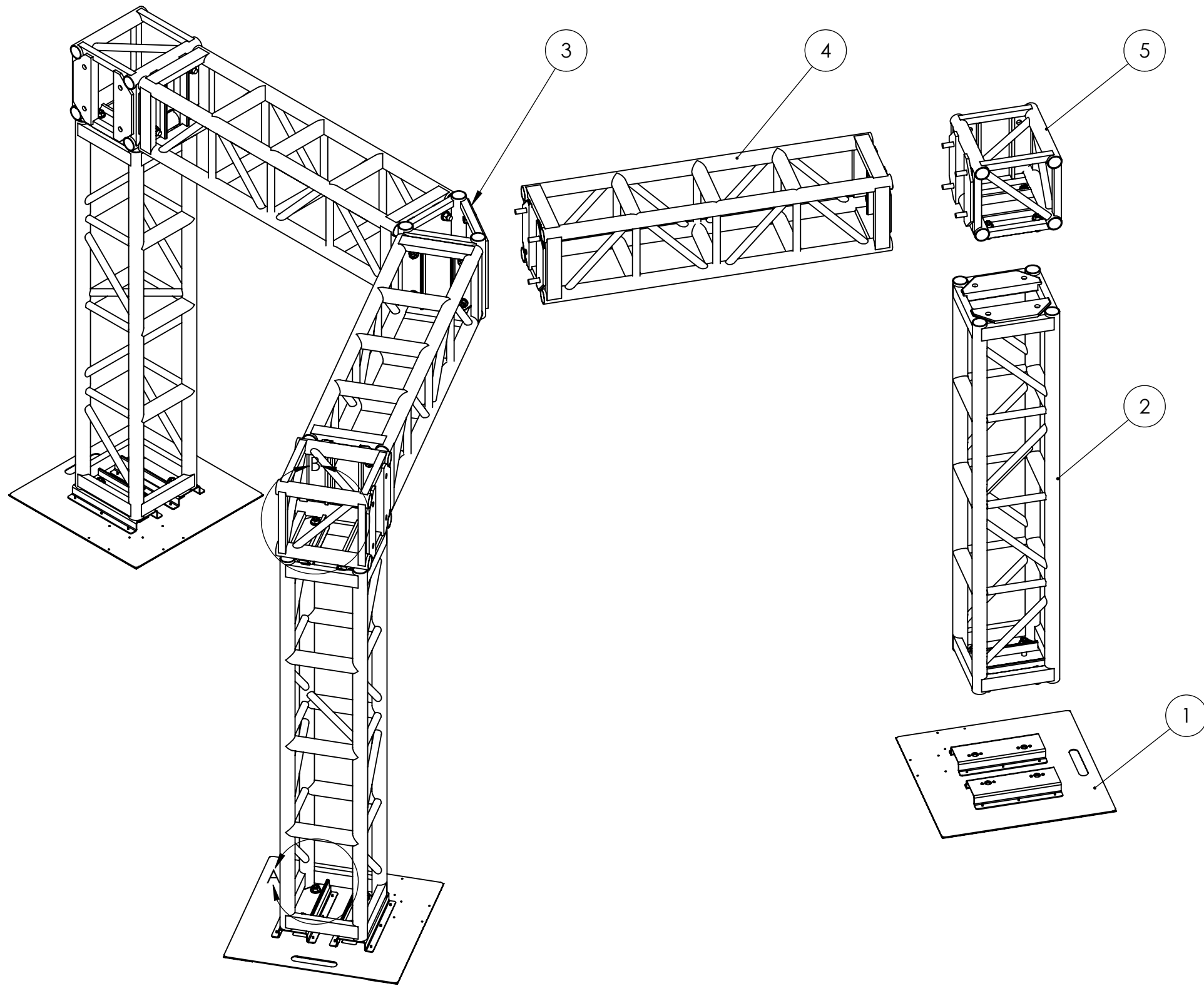
Right Version



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24206	Chain Plate Shim	2
2	GE-24209	Chain Polycarbonate plate	1
3	GE-24213	Chain Metal plate	1
4	eyebolt_shoulder_.5_13_1.5	Steel Eyebolt with Shoulder, 1/2"-13 x 1.5" long, fully threaded	1
5	nylock_.5_13	Steel nylon-insert locknut, 1/2" - 13	1
6	washer_flat_.5	Flat Washer for 1/2" Screw	2

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 	
<p>DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL <math>\pm 1/2</math> ANGULAR: MACH <math>\pm 1^\circ</math> BEND <math>\pm 1^\circ</math> TWO PLACE DECIMAL <math>\pm .50</math></p> <p><b>MATERIAL/FINISH:</b></p> <p><b>DO NOT SCALE DRAWING</b></p>		DRAWN	DF	11/27/2023	<p>TITLE:</p> <p>Chain Plate with Fasteners</p>	
		<p><b>PROPRIETARY AND CONFIDENTIAL</b></p> <p>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b>. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.</p>				
		<p><b>COMMENTS:</b></p> <p>REMOVE ALL BURRS AND SHARP EDGES.</p>			SIZE	DWG. NO.
					C	GE-24208
					SCALE: 1:2	
					SHEET 1 OF 1	





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-01021	Truss Base	3
2	FE-01003	5' x 1' x 1' Square Truss	3
3	GE-24211	Triangular Truss Block	1
4	FE-01002	4' x 1' x 1' Square Truss	3
5	FE-01012	3 Way Corner Block	3
6	hex_.625_11_2.00	Hex Head Bolt, 5/8"-11 Thread, 2" length	48
7	hexnut_.625_11	5/8"-11 hex nut	36
8	washer_flat_.625	Flat washer for 5/8" screw	84

UNLESS OTHERWISE SPECIFIED:

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

**MATERIAL/FINISH:**

**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	DF	12/7/2023

**PROPRIETARY AND CONFIDENTIAL**

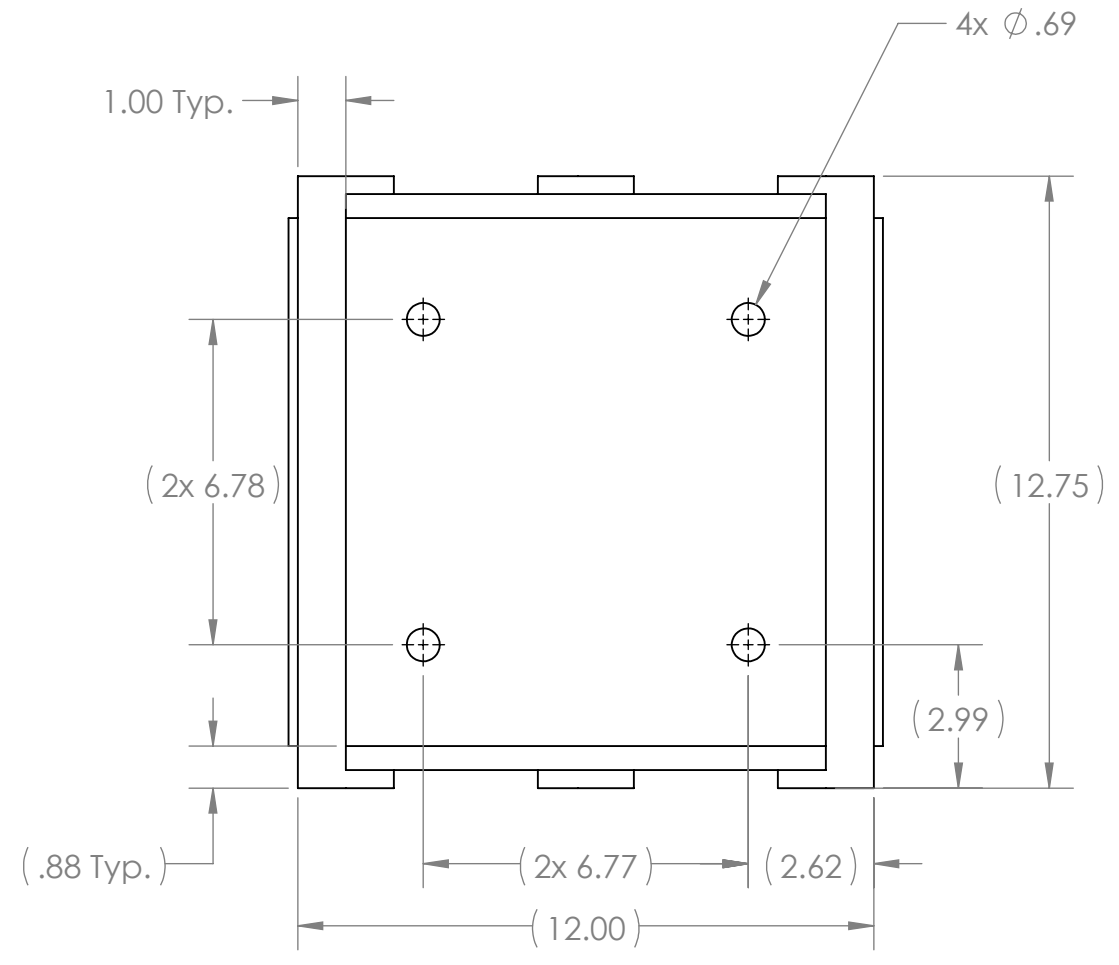
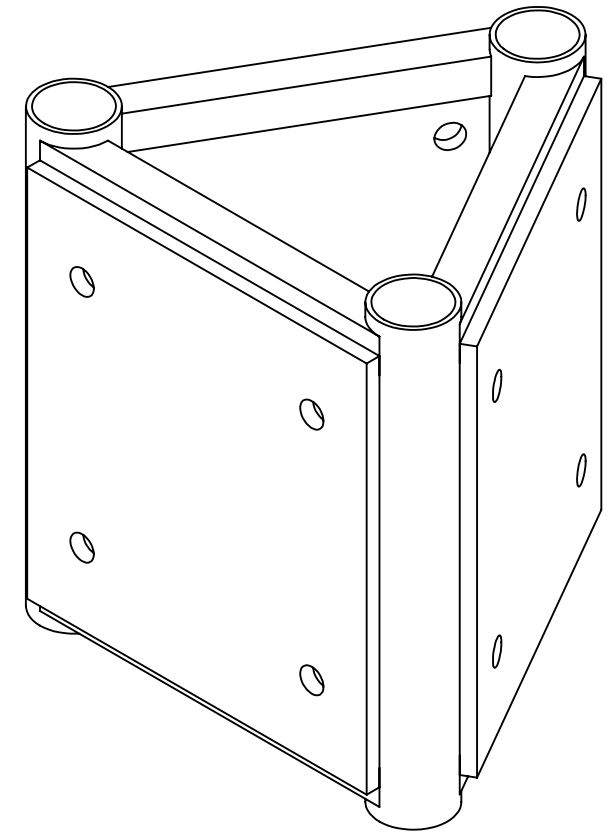
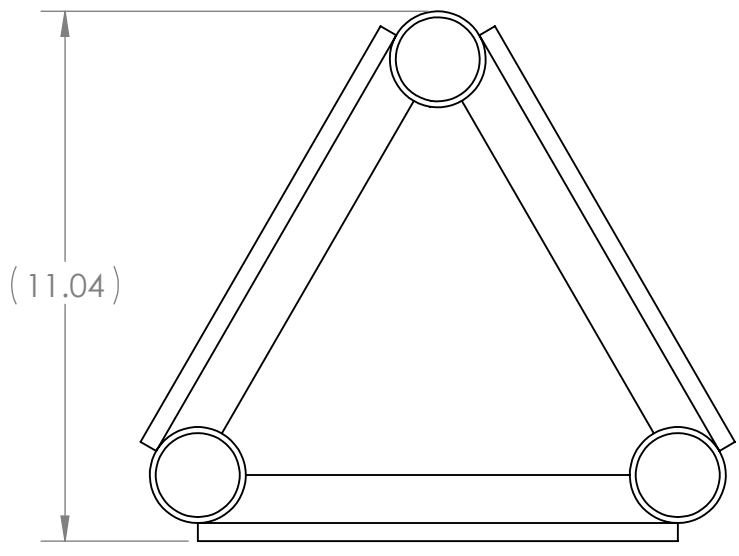
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**COMMENTS:**



REMOVE ALL BURRS AND SHARP EDGES.



TITLE: <b>Base Truss Assembly</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24210</b>	REV
SCALE: 1:16		SHEET 1 OF 1



- Notes:
- 1. Description: 6061-T6 Aluminum - Light Duty 3 Way Spoke Corner Block
  - 2. Vendor: Total Structures
  - 3. Part Number: 1212LD 3WAY SPOKE
  - 4. Note: Substitutions not allowed

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .01 THREE PLACE DECIMAL ± .005  MATERIAL/FINISH:    DO NOT SCALE DRAWING	VEND	NAME	DATE	<div><div></div><div>TITLE: Triangular Truss Block</div></div>		
	DRAWN	CO	7/20/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				C	GE-24211	
				SCALE: 1:4		SHEET 1 OF 1

4

3

2

1

D

D

C

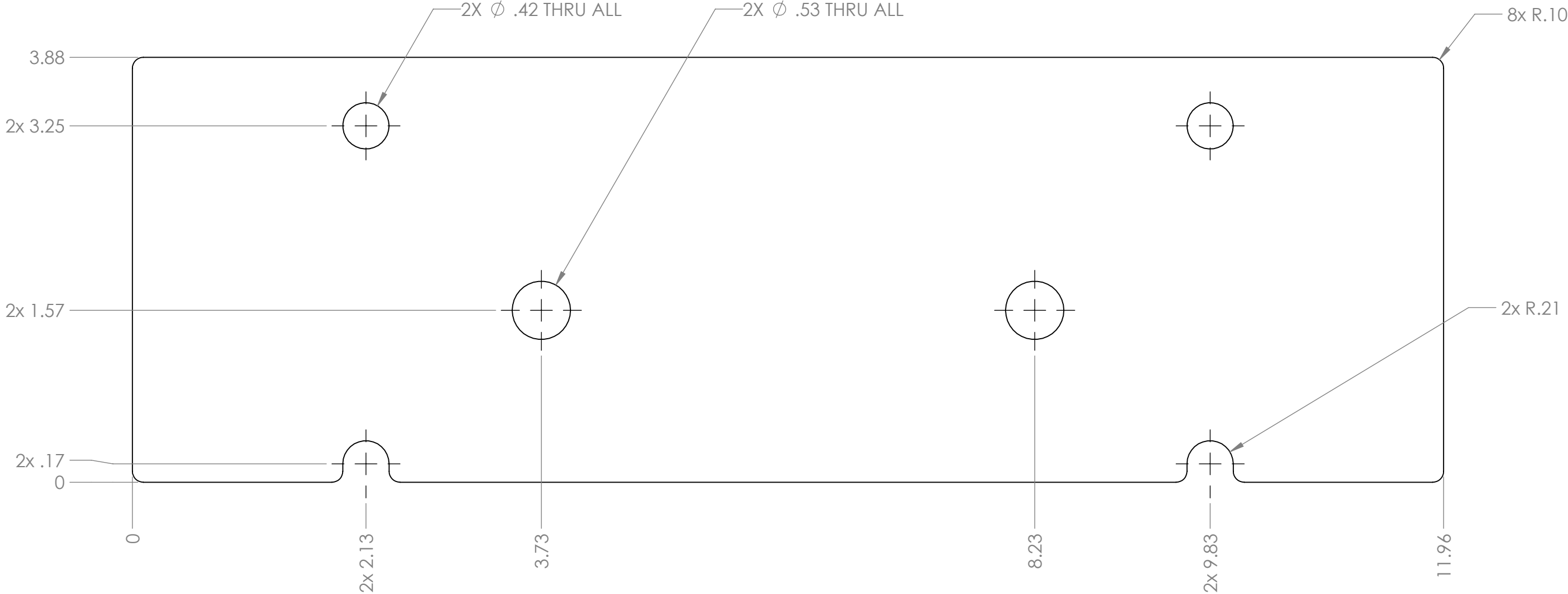
C

B

B

A

A



Notes:  
1. Tag or label with part number.  
2. Finish: Zinc plated.

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:**  
1/4" thk. A36 Steel

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	9/14/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

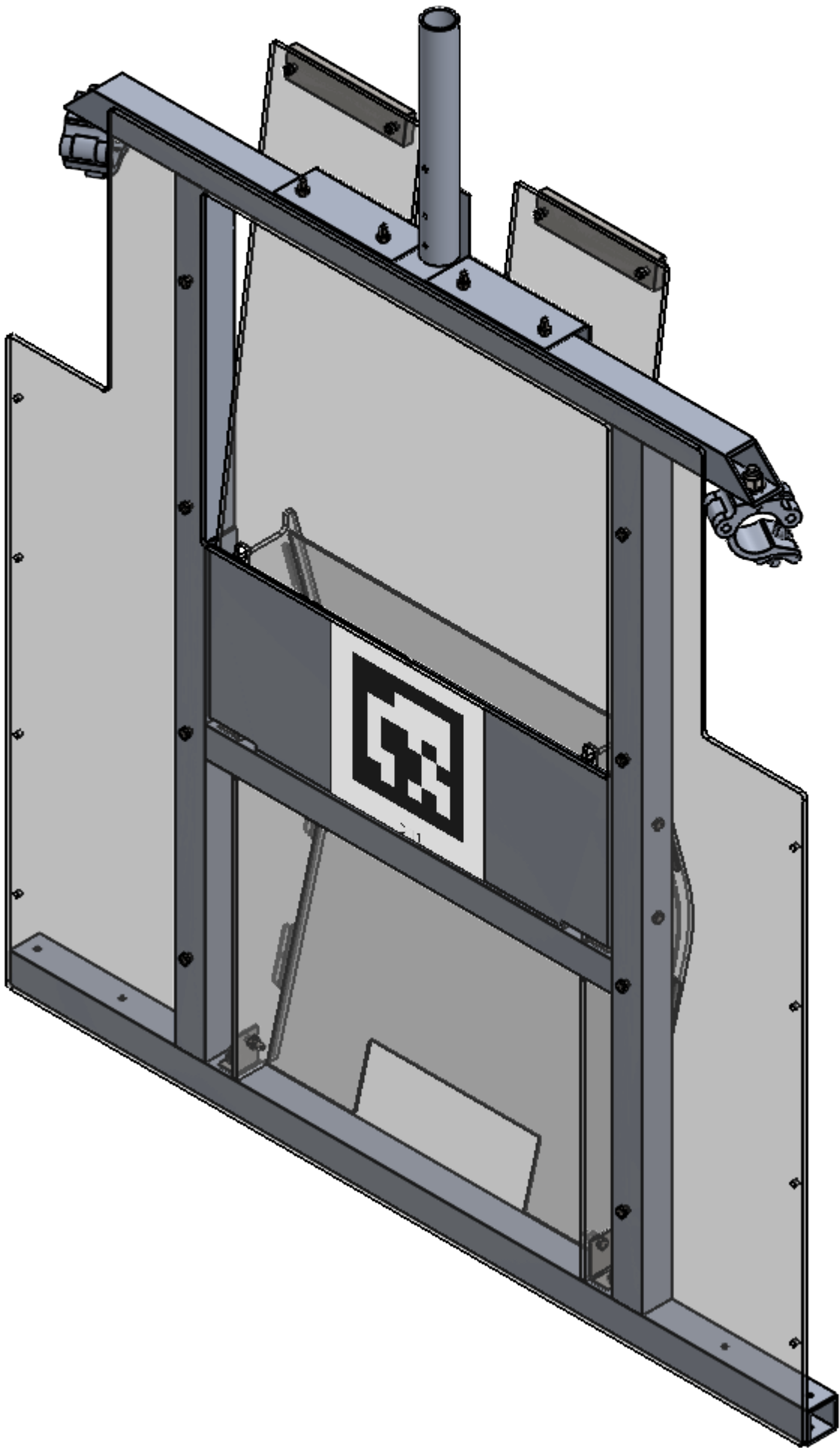


TITLE:  
**Chain Metal plate**

SIZE <b>C</b>	DWG. NO. <b>GE-24213</b>	REV
------------------	-----------------------------	-----

SCALE: 1:1      SHEET 1 OF 1





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24221	Endgame Weldment	1
2	GE-24222	Wall poly	1
3	GE-24230	Flap/Pole Assembly	1
4	GE-24240	Chute	1
5	GE-24224	Stage AprilTag	1
6	FE-01016	Cheeseborough for Truss _ Single	2
7	hex_.25_20_2.5_partial	Steel Hex Head Screw, 1/4"-20 x 2-1/2" long, partially threaded	20
8	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	16
9	hex_.5_13_1.25	Steel Hex Head Screw, 1/2"-13 x 1.25" long, fully threaded	2
10	nylock_.5_13	steel nylon-insert locknut, 1/2" - 13	2
11	washer_flat_.5	Flat Washer for 1/2" Screw	2

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

DRAWN

NAME

DF

DATE

12/4/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



**FIRST**  
ROBOTICS  
COMPETITION



Modeling Solutions Partner

TITLE:

Wall Assembly

SIZE

C

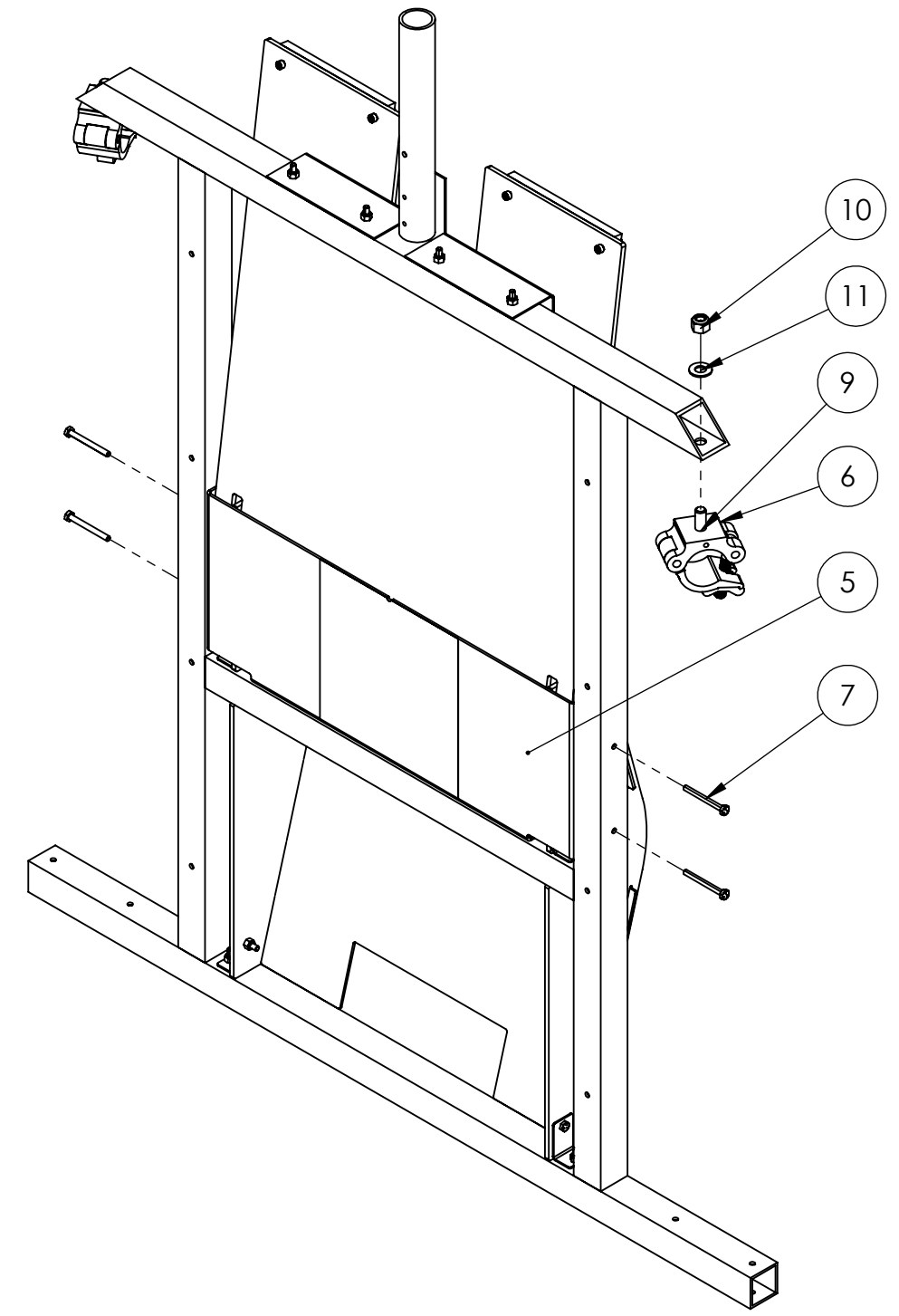
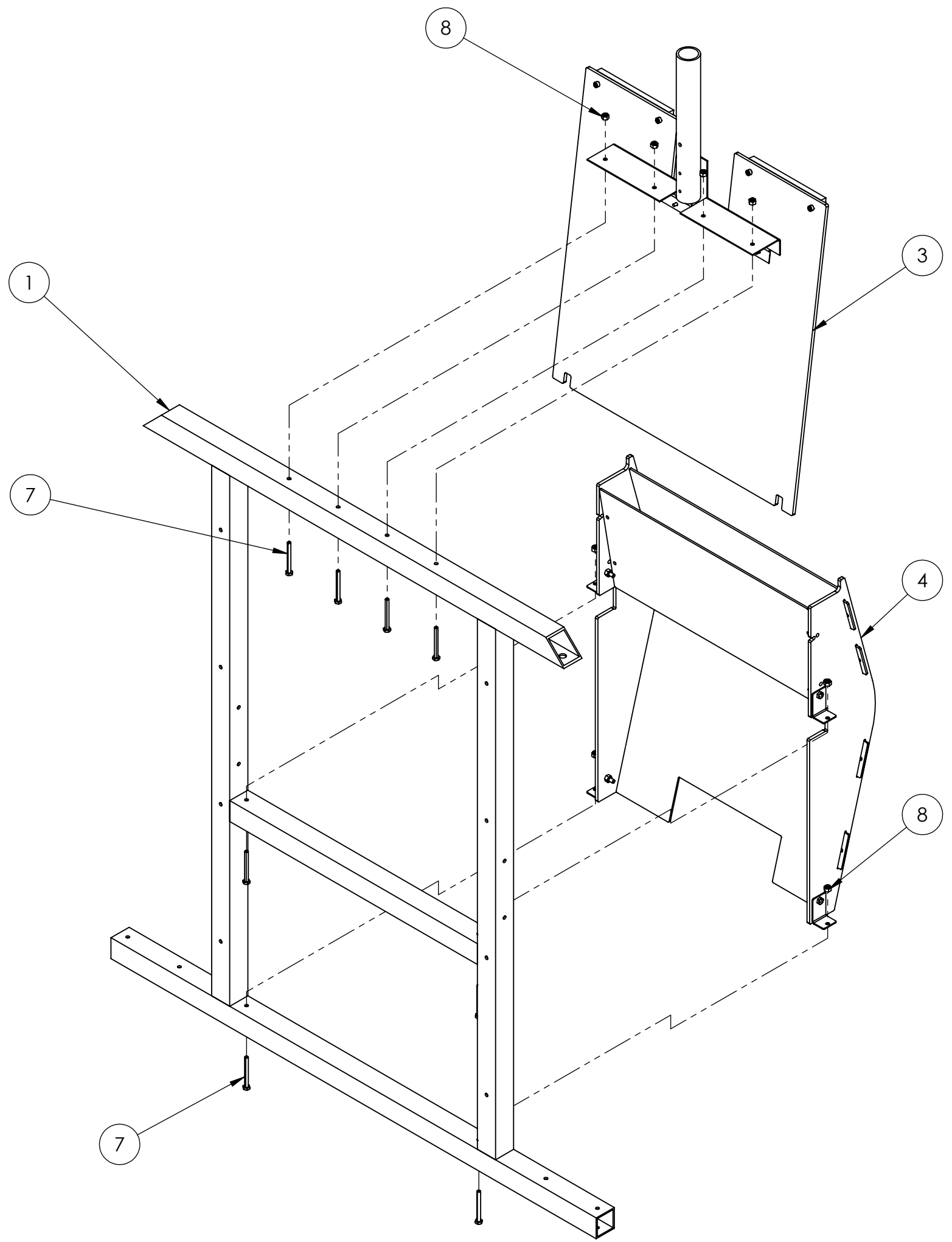
DWG. NO.



GE-24220

REV

SCALE: 1:8

SHEET 1 OF 3



UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div><b>SOLIDWORKS</b> Modeling Solutions Partner</div></div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	DRAWN	DF	12/4/2023	TITLE: <div>Wall Assembly</div>		
MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24220	
DO NOT SCALE DRAWING				SCALE: 1:8		SHEET 2 OF 3

4

3

2

1

D

D

C

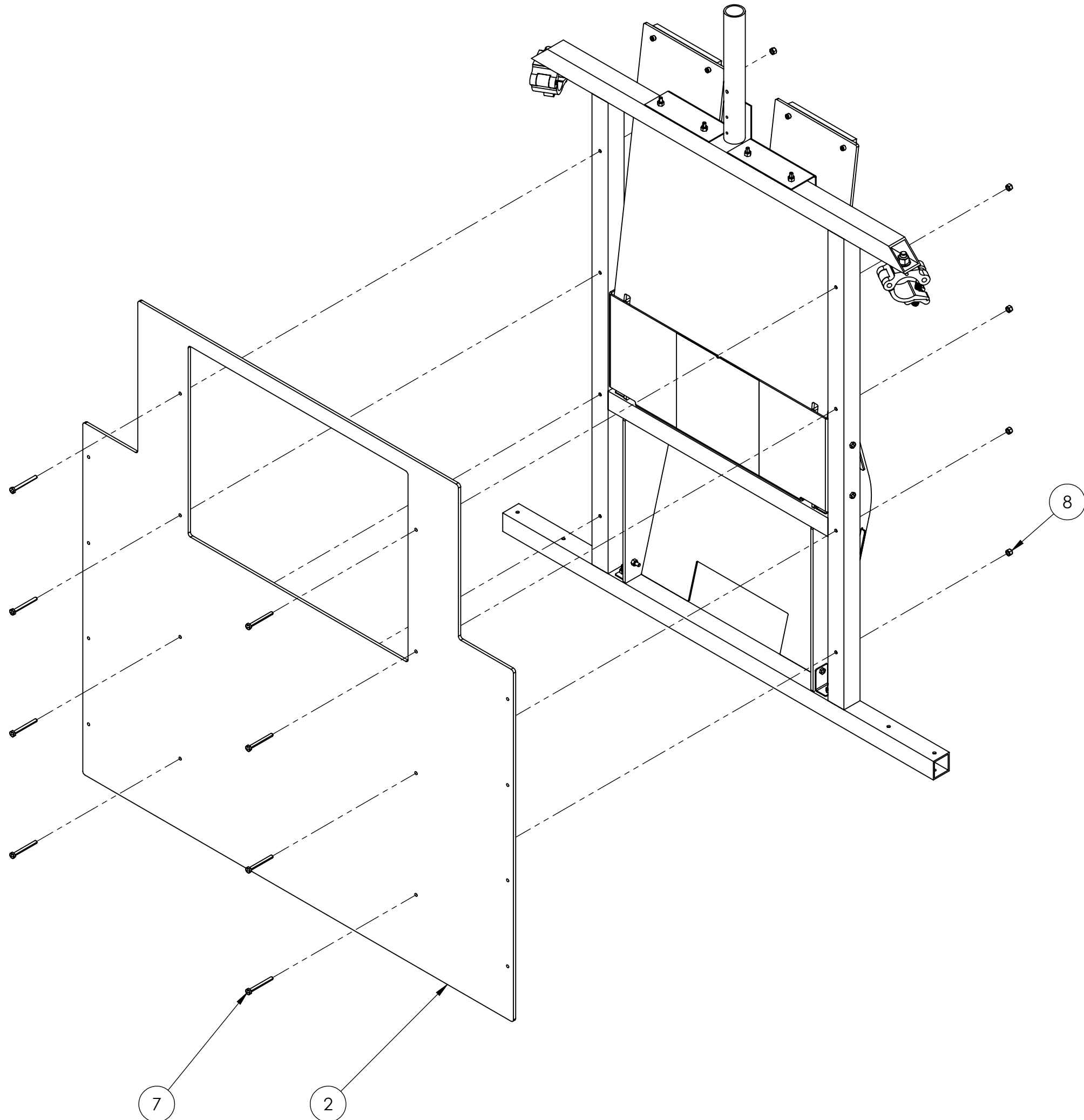
C



B

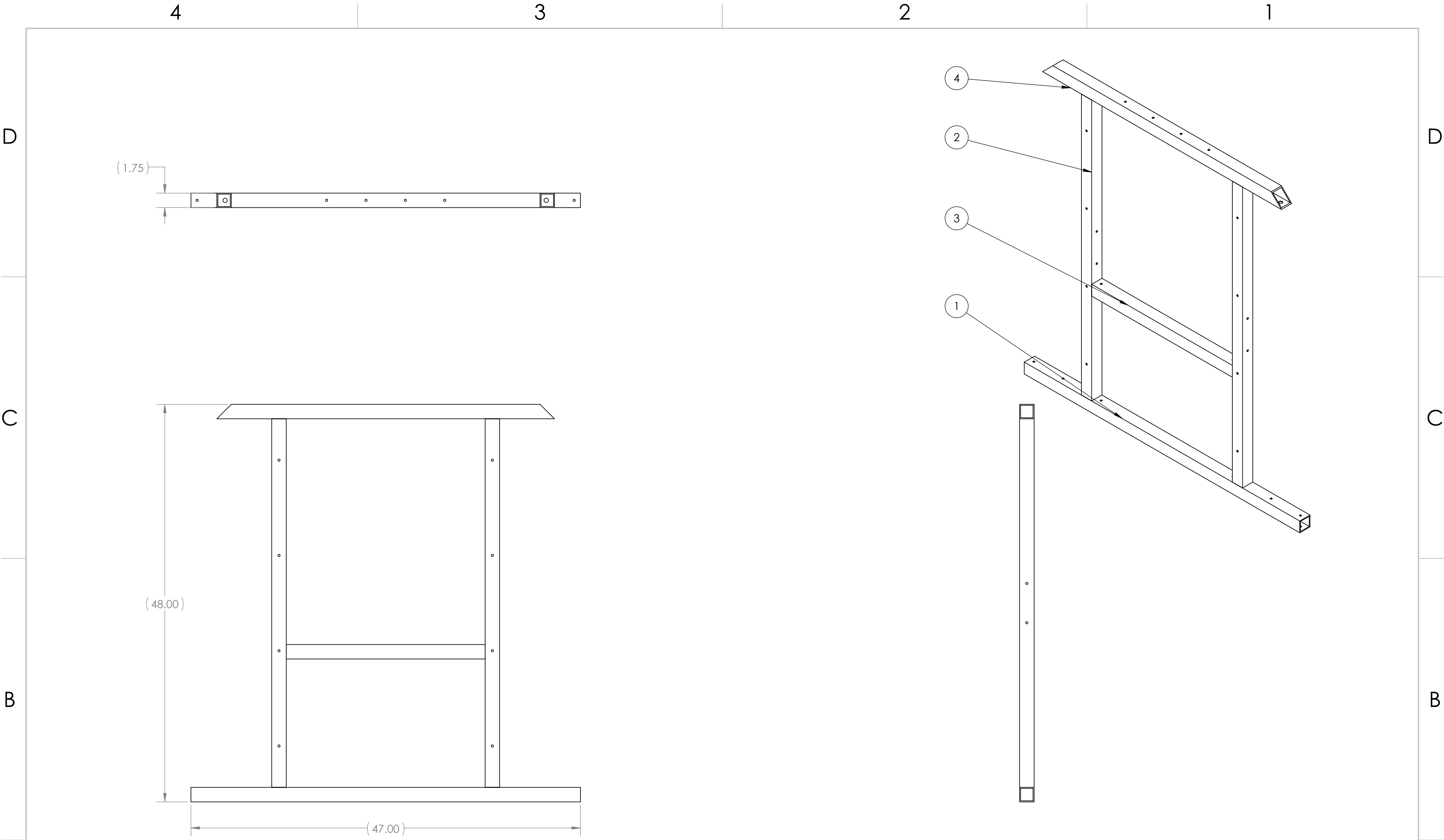
B

A

A





UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div> <div>TITLE: Wall Assembly</div>	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	DRAWN	DF	12/4/2023		
MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL			SIZE C	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				
DO NOT SCALE DRAWING	COMMENTS:			DWG. NO.	
	REMOVE ALL BURRS AND SHARP EDGES.			GE-24220	
				SCALE: 1:8	REV
				SHEET 3 OF 3	



Notes:  
1. Tag or label with part number.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24221-01	1.75" x .125" thk. Square Tubing, 6061	1
2	GE-24221-02	1.75" x .125" thk. Square Tubing, 6061	2
3	GE-24221-03	1.75" x .125" thk. Square Tubing, 6061	1
4	GE-24221-04	1.75" x .125" thk. Square Tubing, 6061	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 $\pm .02$ THREE PLACE DECIMAL $\pm .015$  <b>MATERIAL/FINISH:</b>  1.75" x .125" thk. Square Tubing, 6061 Aluminum	WELD	NAME	DATE
	DRAWN	CO	7/24/2023
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		
	DO NOT SCALE DRAWING		



TITLE:  
**Endgame Weldment**

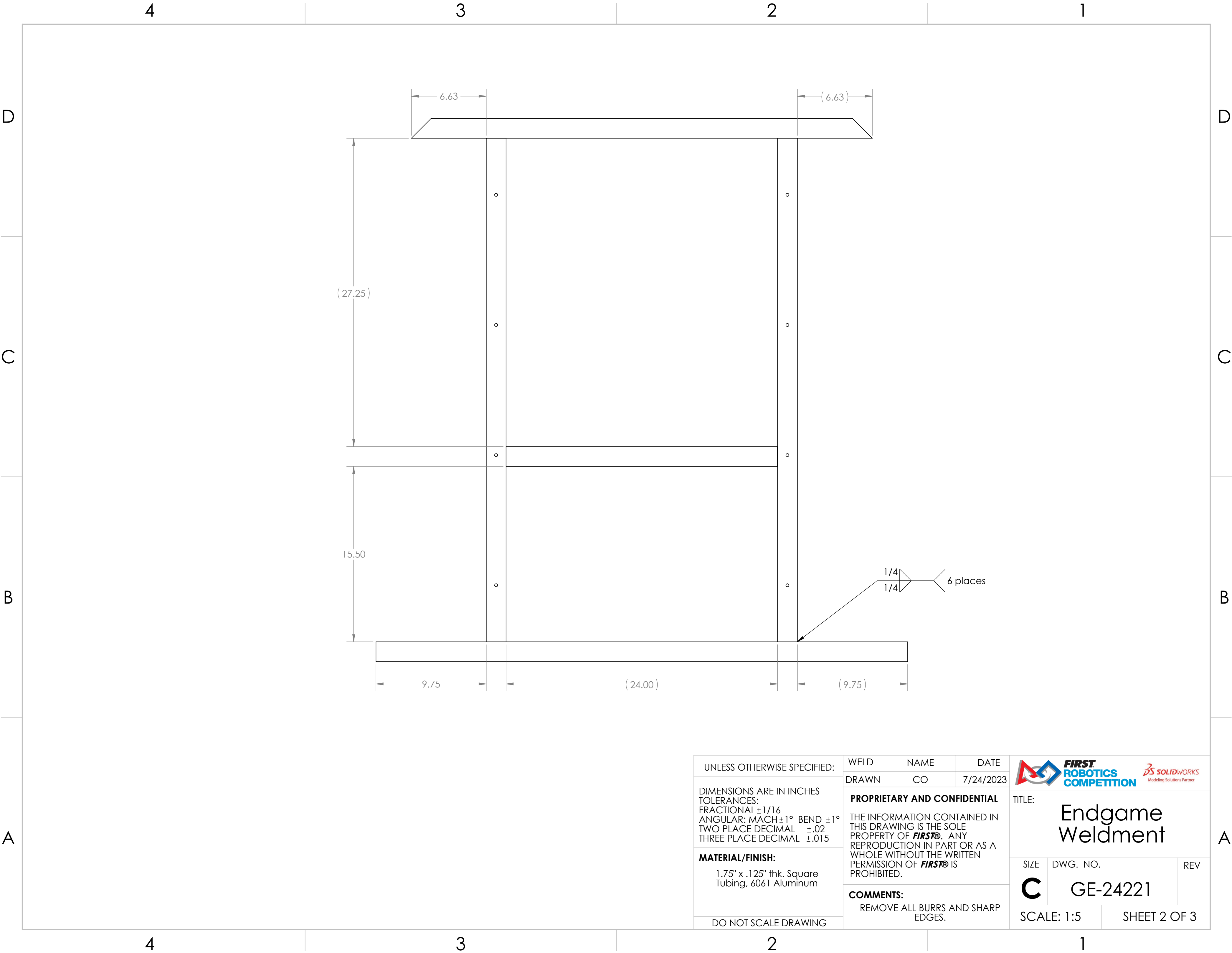
SIZE  
**C**

DWG. NO.  
**GE-24221**

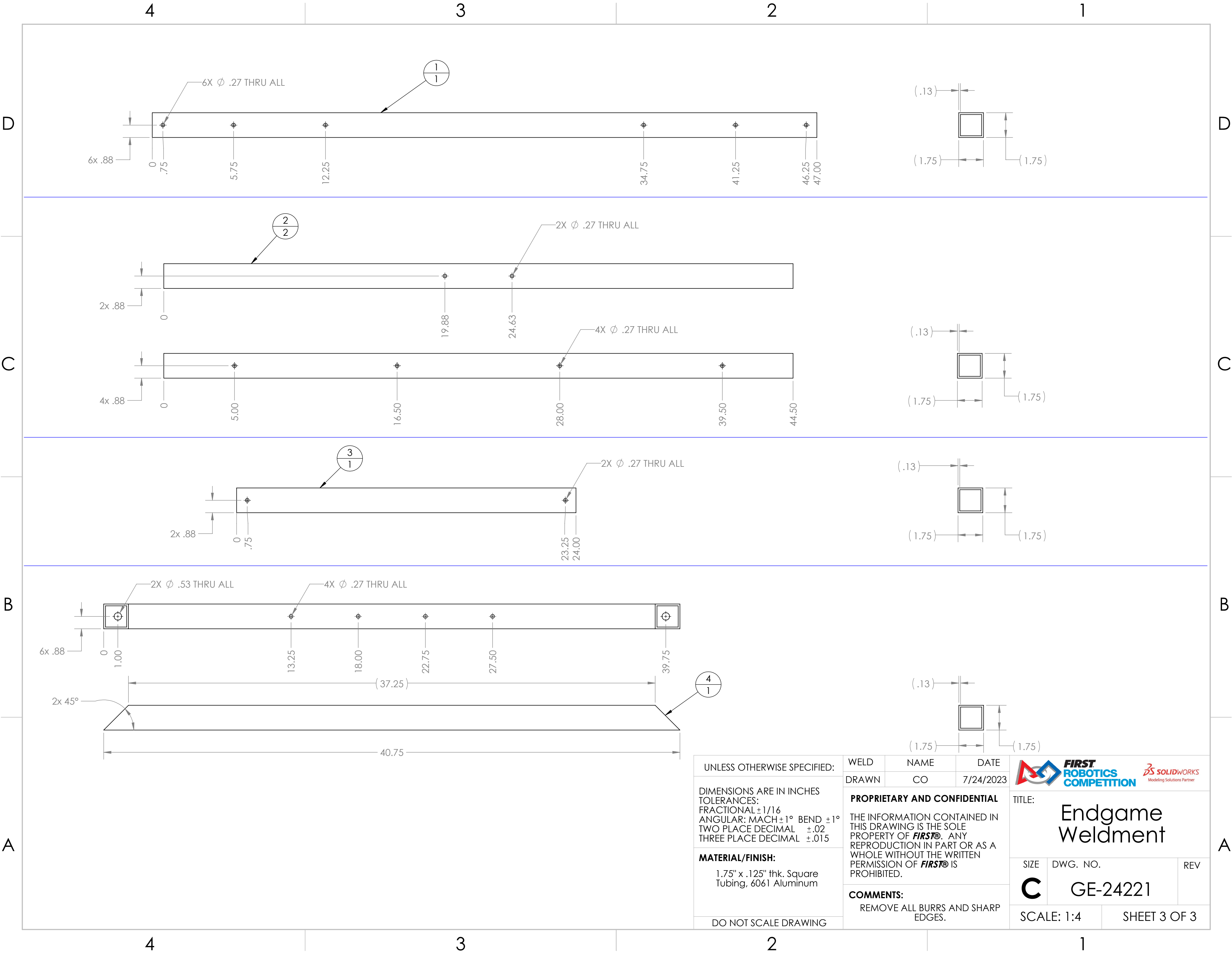
REV

SCALE: 1:8

SHEET 1 OF 3







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:**  
1.75" x .125" thk. Square  
Tubing, 6061 Aluminum

DO NOT SCALE DRAWING

WELD

DRAWN

NAME

CO

DATE

7/24/2023

**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:**

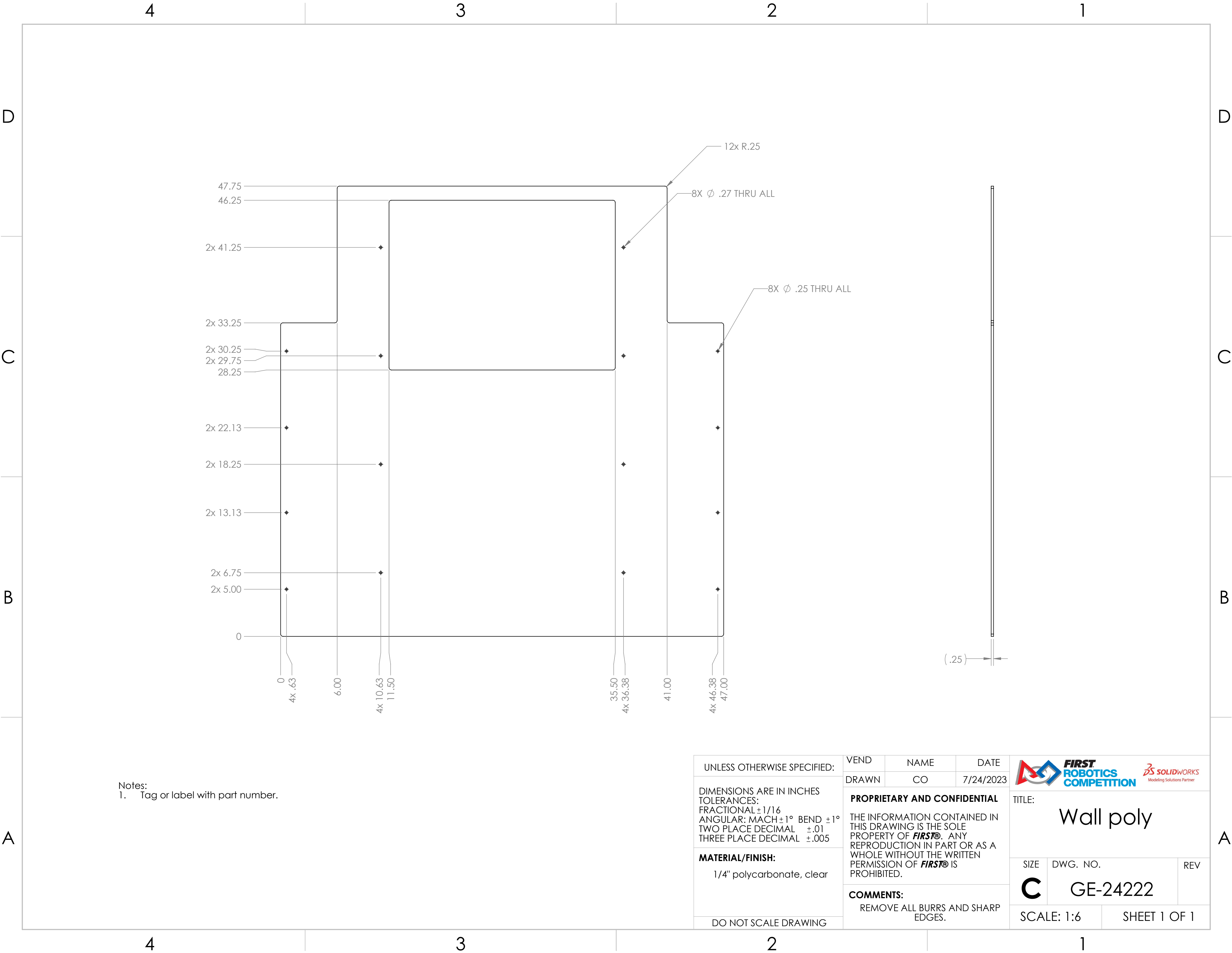
REMOVE ALL BURRS AND SHARP  
EDGES.





TITLE:  
**Endgame  
Weldment**

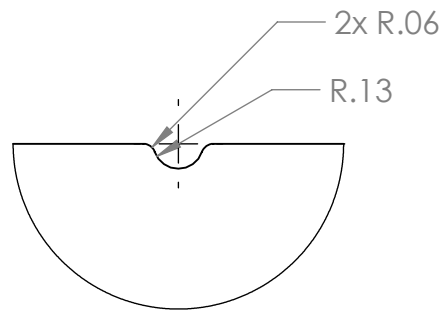
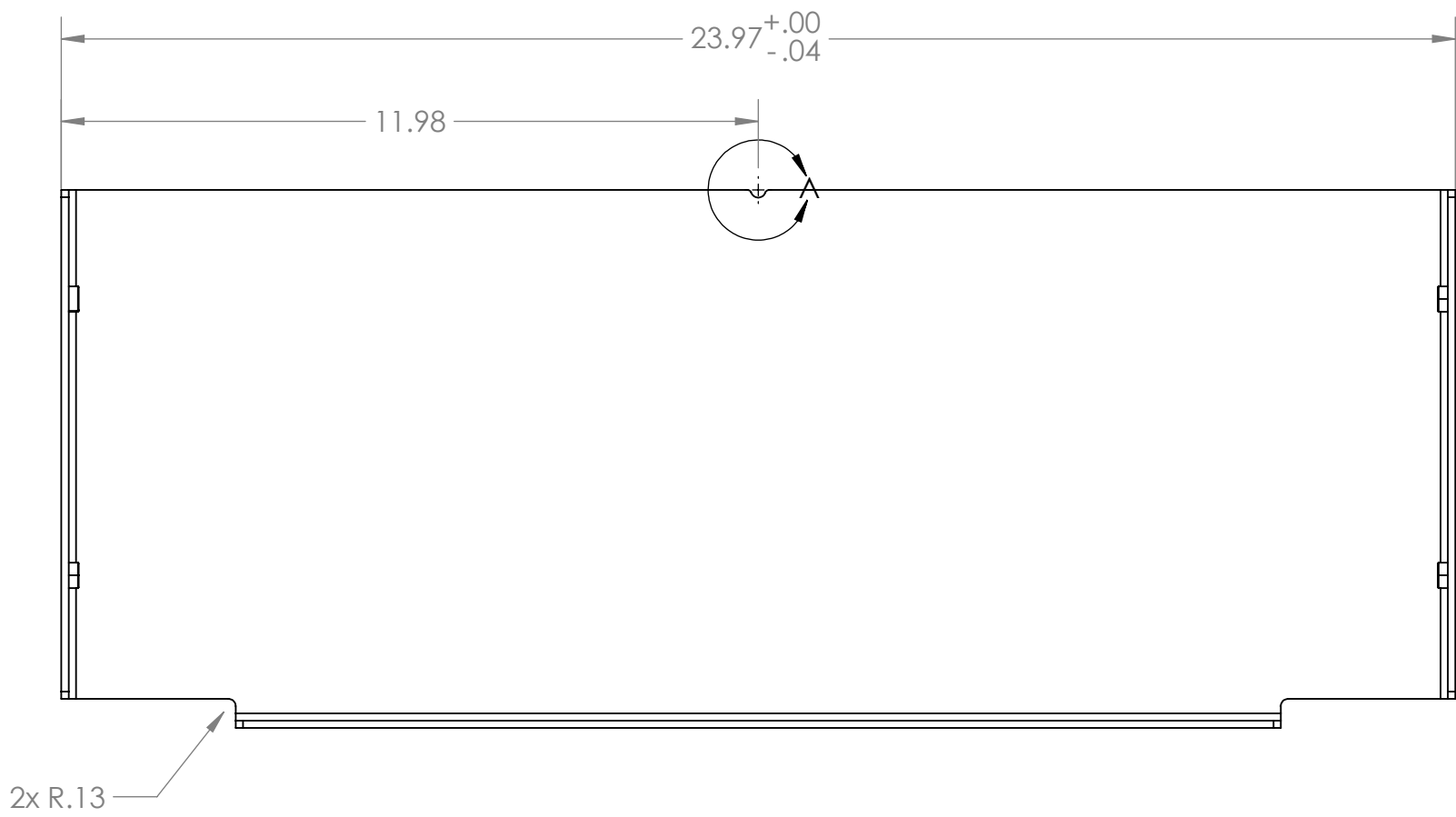
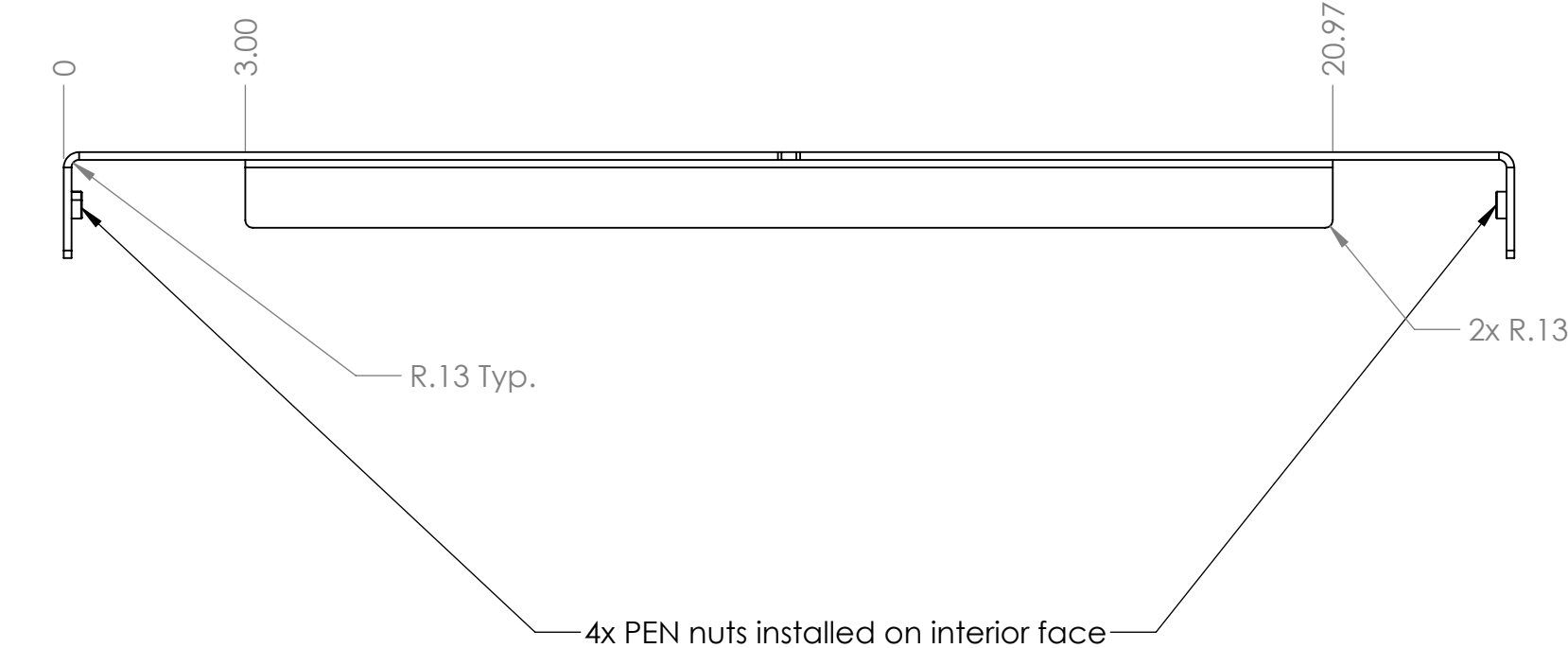
SIZE <b>C</b>	DWG. NO. <b>GE-24221</b>	REV
------------------	-----------------------------	-----

SCALE: 1:4	SHEET 3 OF 3
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Notes:  
1. Tag or label with part number.

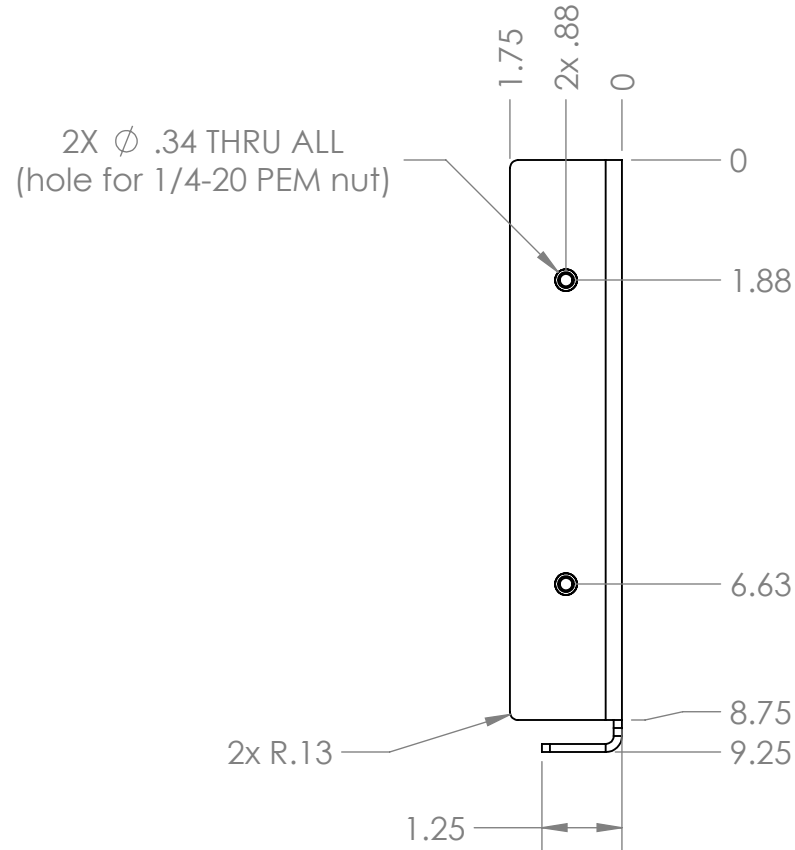
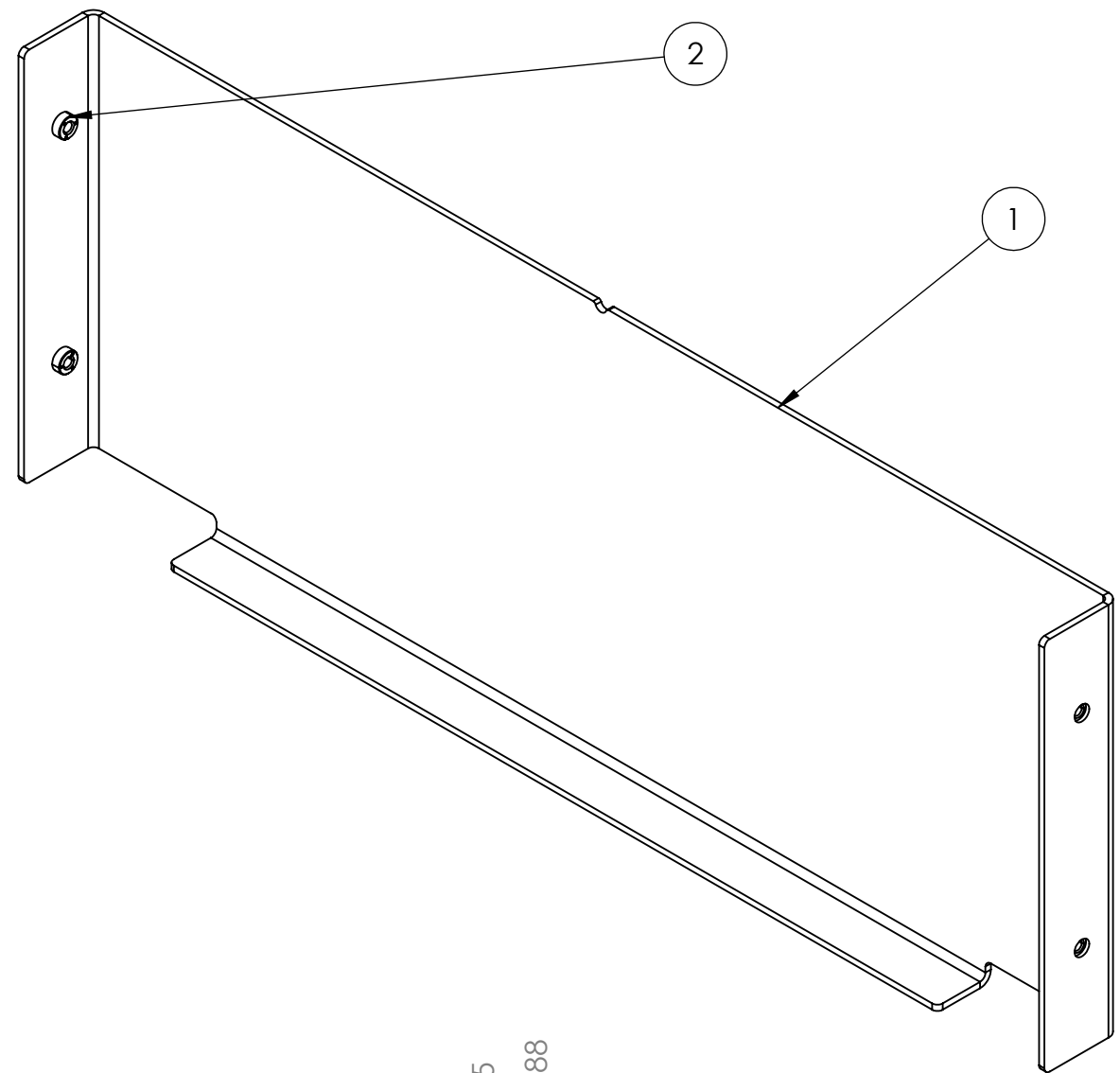
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Wall poly</h1></div>		
	DRAWN	CO	7/24/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24222	
				SCALE: 1:6		SHEET 1 OF 1
MATERIAL/FINISH:  1/4" polycarbonate, clear						
DO NOT SCALE DRAWING						





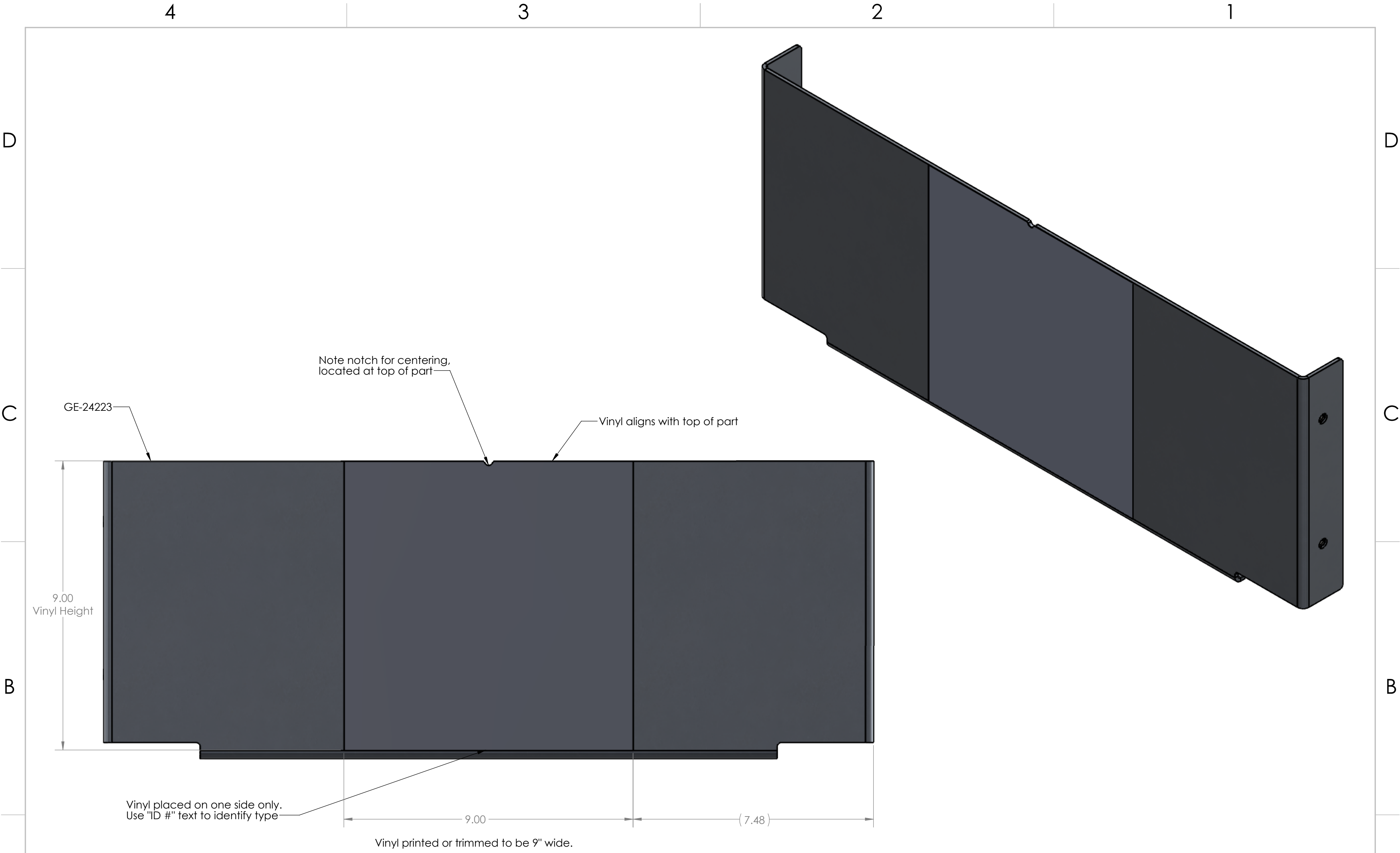
DETAIL A  
SCALE 1 : 1

Notes:  
1. Vinyl to be applied to face.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24223-01	8 Ga. Aluminum 5052	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	4



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 $\pm .010$  <b>MATERIAL/FINISH:</b> 8 Ga. Aluminum 5052  DO NOT SCALE DRAWING	BEND DRAWN	NAME CO	DATE 7/24/2023	  TITLE: <b>Endgame April Base</b>  SIZE <b>C</b> SCALE: 1:3	DWG. NO. <b>GE-24223</b> SHEET 1 OF 1	REV <b>A</b>
	PROPRIETARY AND CONFIDENTIAL  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> IS PROHIBITED.					
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					



Notes:  
1. Matte vinyl

Tag Variations			
Part Number	Vinyl Image	Vinyl QTY per field	Part QTY per field
GE-24224-ID11	GE-24224-ID11-Vinyl	1	1
GE-24224-ID12	GE-24224-ID12-Vinyl	1	1
GE-24224-ID13	GE-24224-ID13-Vinyl	1	1
GE-24224-ID14	GE-24224-ID14-Vinyl	1	1
GE-24224-ID15	GE-24224-ID15-Vinyl	1	1
GE-24224-ID16	GE-24224-ID16-Vinyl	1	1

UNLESS OTHERWISE SPECIFIED:  
  
DIMENSIONS ARE IN INCHES  
TOLERANCES:  
FRACTIONAL  $\pm 1/2$   
ANGULAR: MACH  $\pm 1^\circ$  BEND  $\pm 1^\circ$   
TWO PLACE DECIMAL  $\pm .50$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	CO	9/7/2023
<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		



TITLE:  
Stage AprilTag

SIZE	DWG. NO.	REV
C	GE-24224	
SCALE: 1:2		SHEET 1 OF 3

4

3

2

1

D

D

GE-24224-ID11

GE-24224-ID12

C

C

GE-24224-ID13



GE-24224-ID14

B

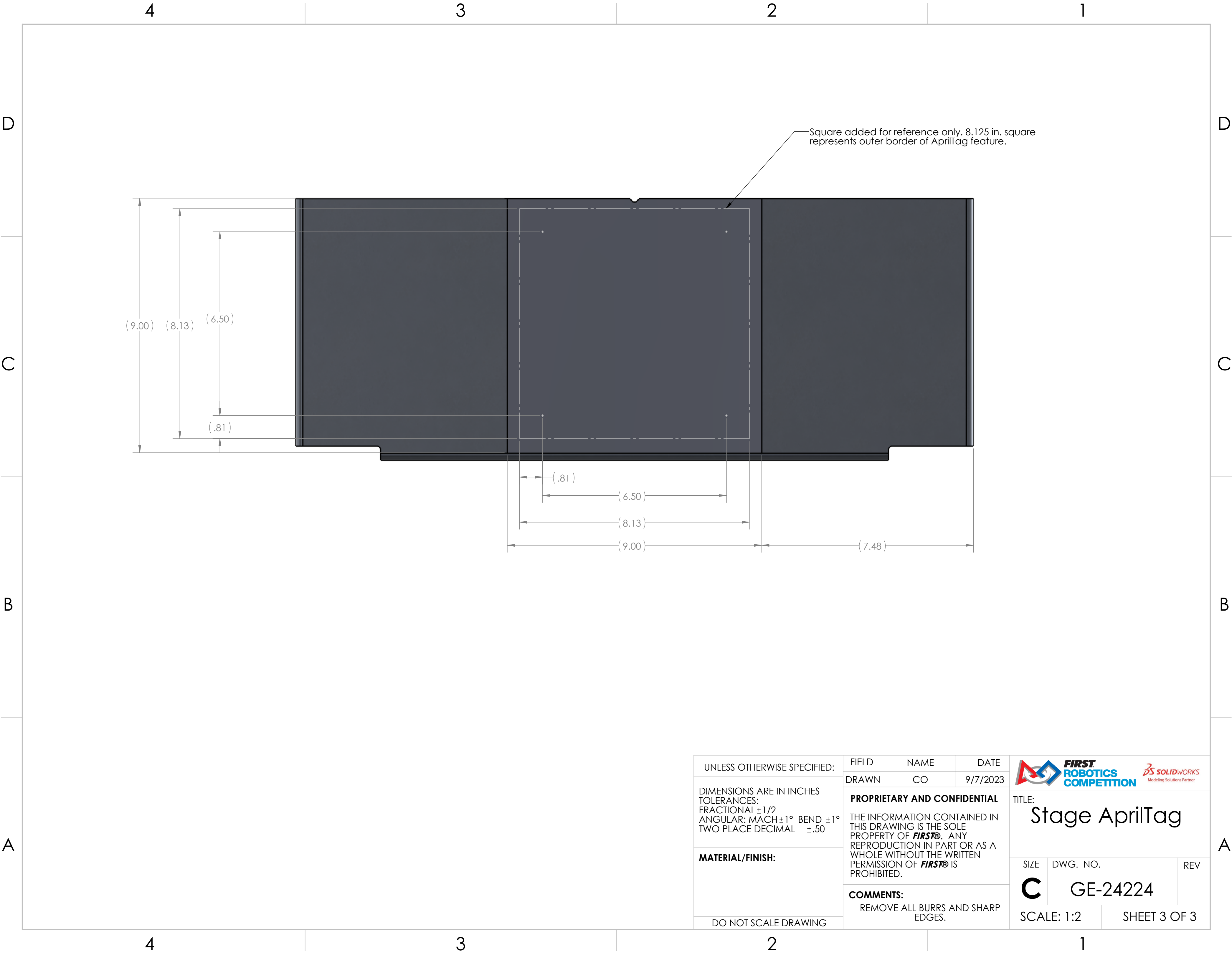
B



GE-24224-ID15

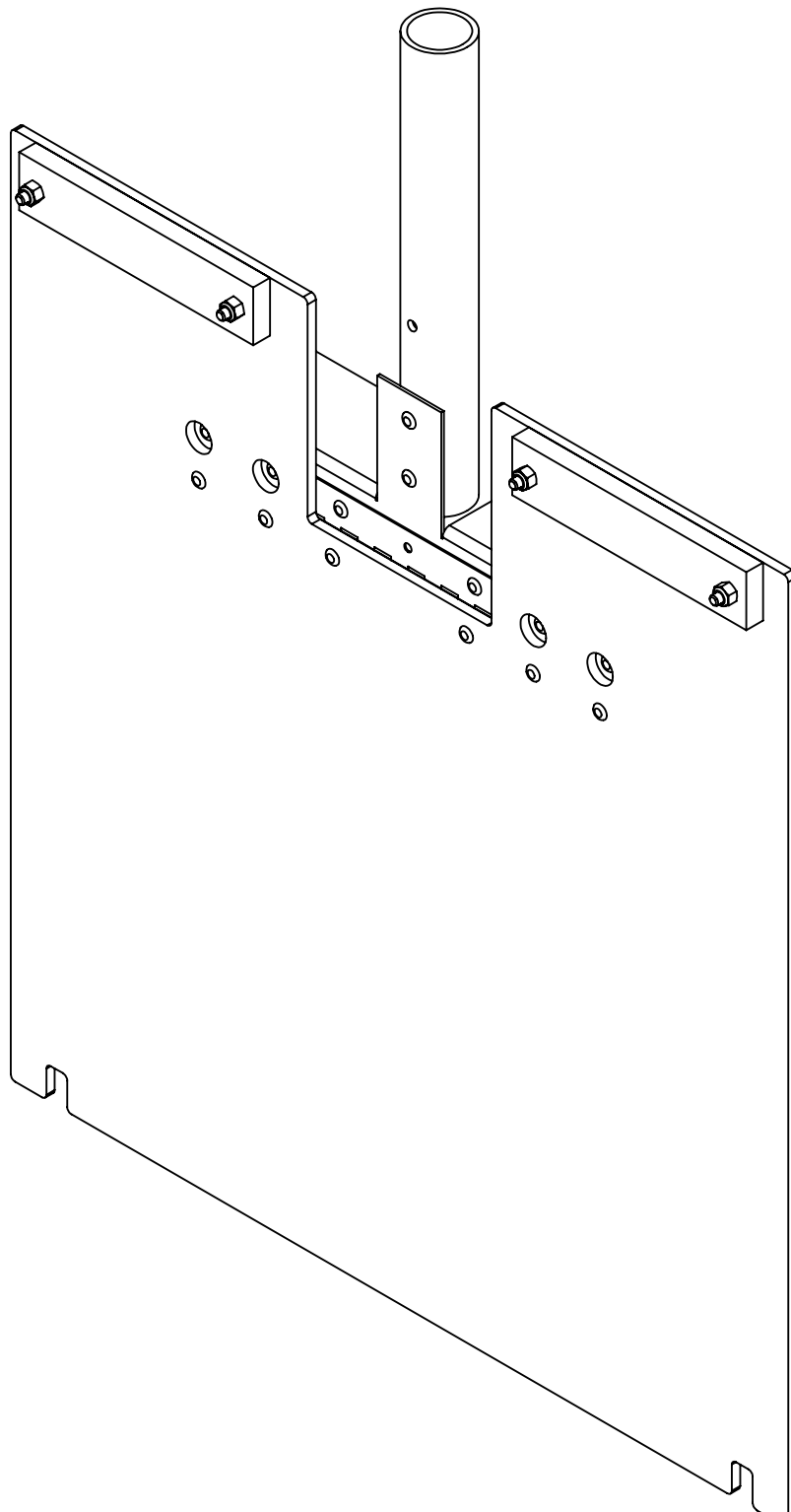
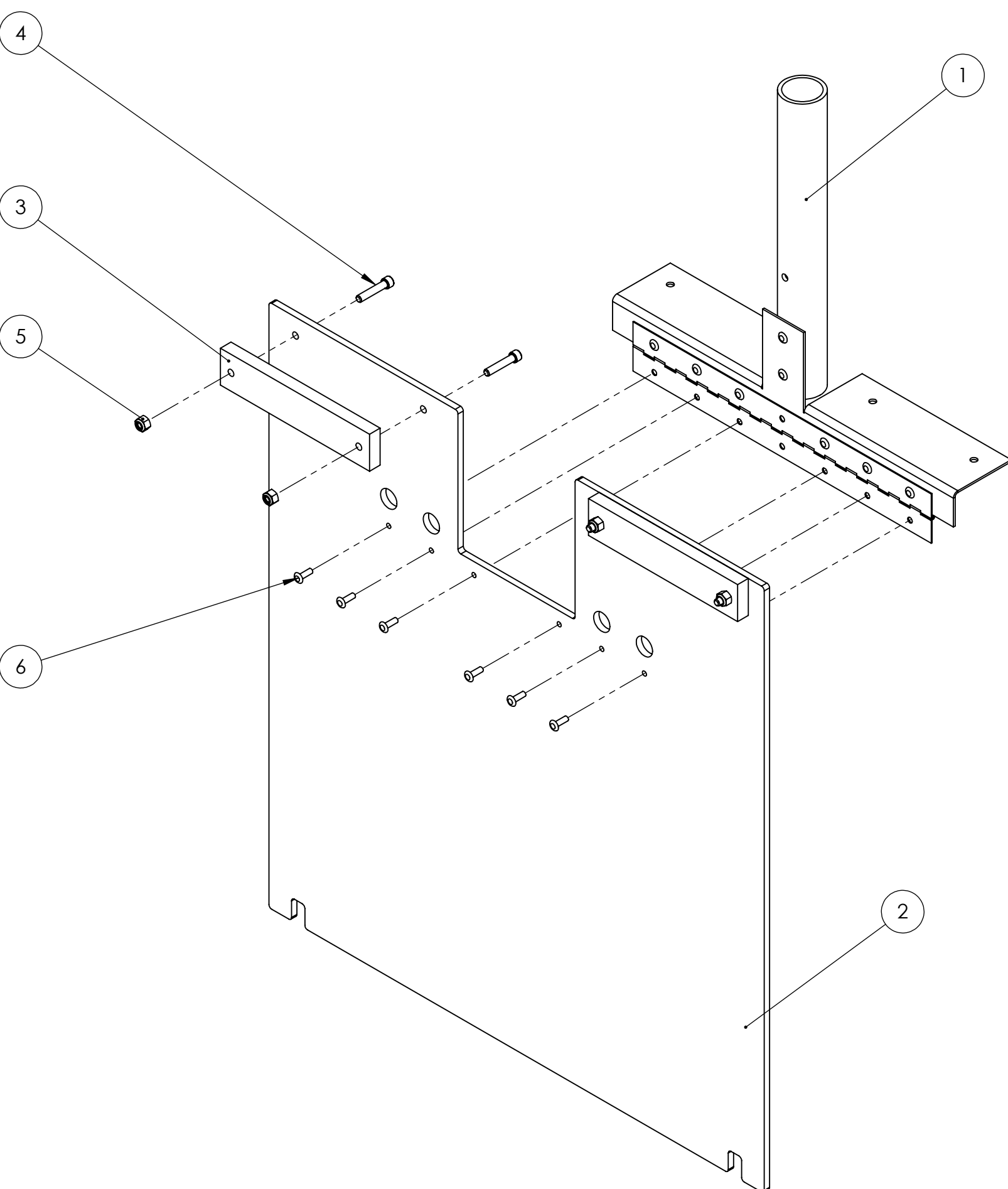
GE-24224-ID16

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 	
		DRAWN	CO	9/7/2023		
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			TITLE:  Stage AprilTag	
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				
MATERIAL/FINISH:		COMMENTS:			SIZE  C	
		REMOVE ALL BURRS AND SHARP EDGES.				
DO NOT SCALE DRAWING					DWG. NO.  GE-24224	
					REV	
					SCALE: 1:3	
					SHEET 2 OF 3	





UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div> <div>TITLE: Stage AprilTag</div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	DRAWN	CO	9/7/2023			
MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL			SIZE		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
DO NOT SCALE DRAWING	COMMENTS:			C		DWG. NO.
	REMOVE ALL BURRS AND SHARP EDGES.					
				SCALE: 1:2		REV
				GE-24224		SHEET 3 OF 3



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24231	Flap Hinge Microphone Subassembly	1
2	GE-24232	Flap	1
3	GE-24233	Flap Weight	2
4	socket_hex_.25_20_1.25	Socket Head Screw, 1/4-20 x 1.25" long, fully threaded	4
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4
6	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	6

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

NAME

DATE

DRAWN

DF


11/27/2023


PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

 **FIRST**  
ROBOTICS  
COMPETITION

 **SOLIDWORKS**  
Modeling Solutions Partner

TITLE:

Flap/Pole Assembly

SIZE

DWG. NO.

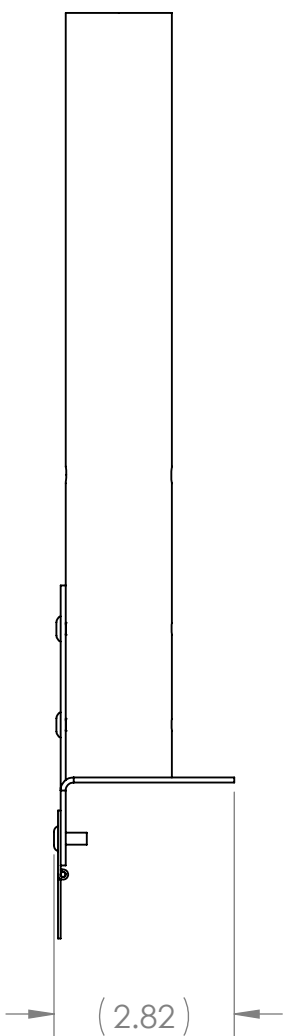
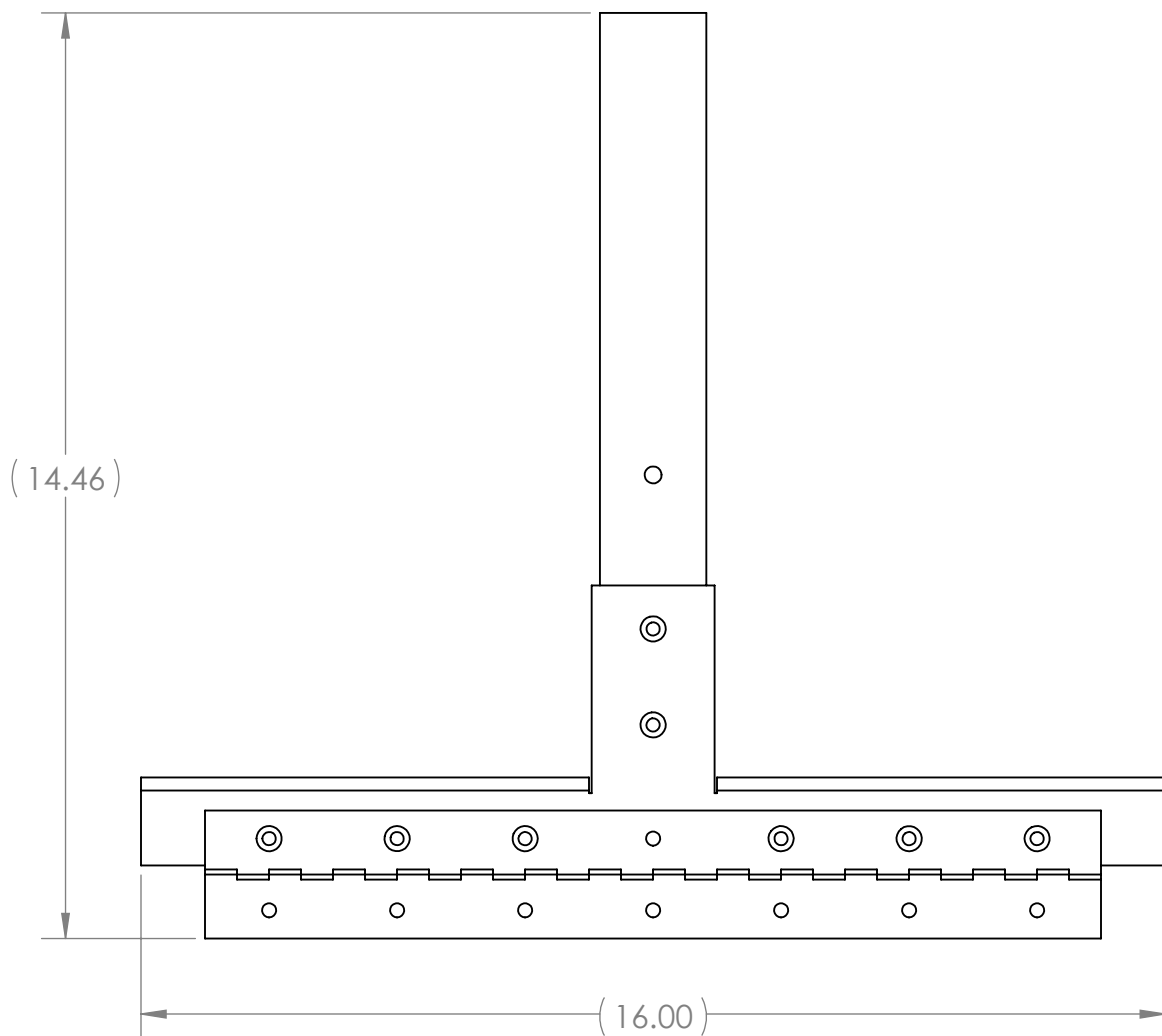
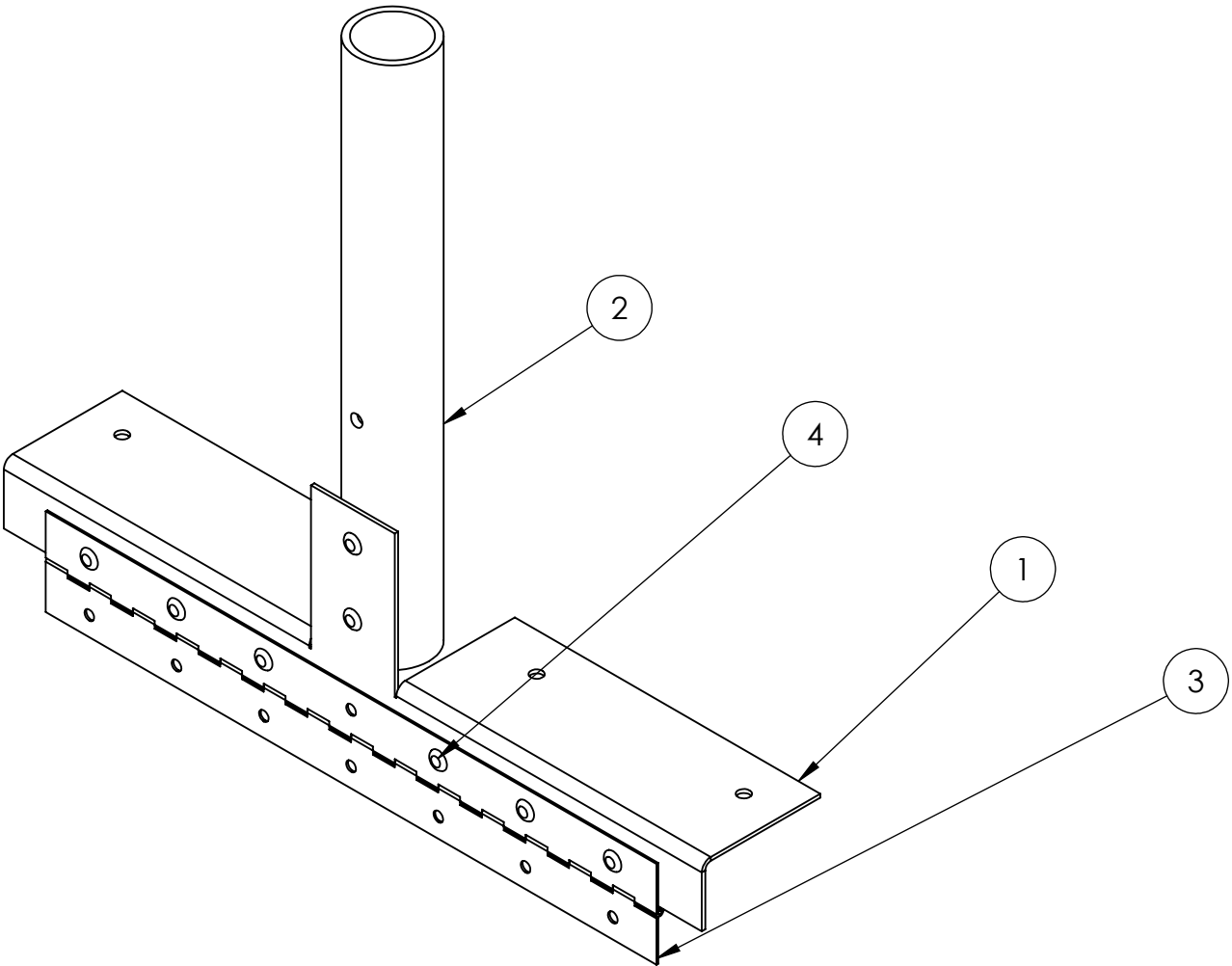
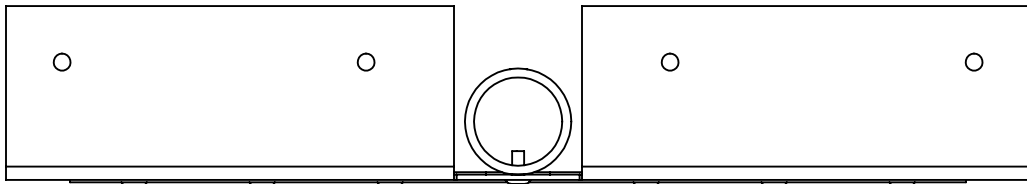
REV

**C**

GE-24230

SCALE: 1:4

SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24231-01	12 ga. Aluminum 5052	1
2	GE-24231-02	1.25" Schedule 40 Pipe, 6061 Aluminum	1
3	GE-24231-03	0.04" x 2.0" x 14 Steel Hinge with Nickel Plate & Mounting Holes	1
4	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	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  $\pm .02$   
THREE PLACE DECIMAL  $\pm .010$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

BEND

NAME

DATE

DRAWN

CO



8/22/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

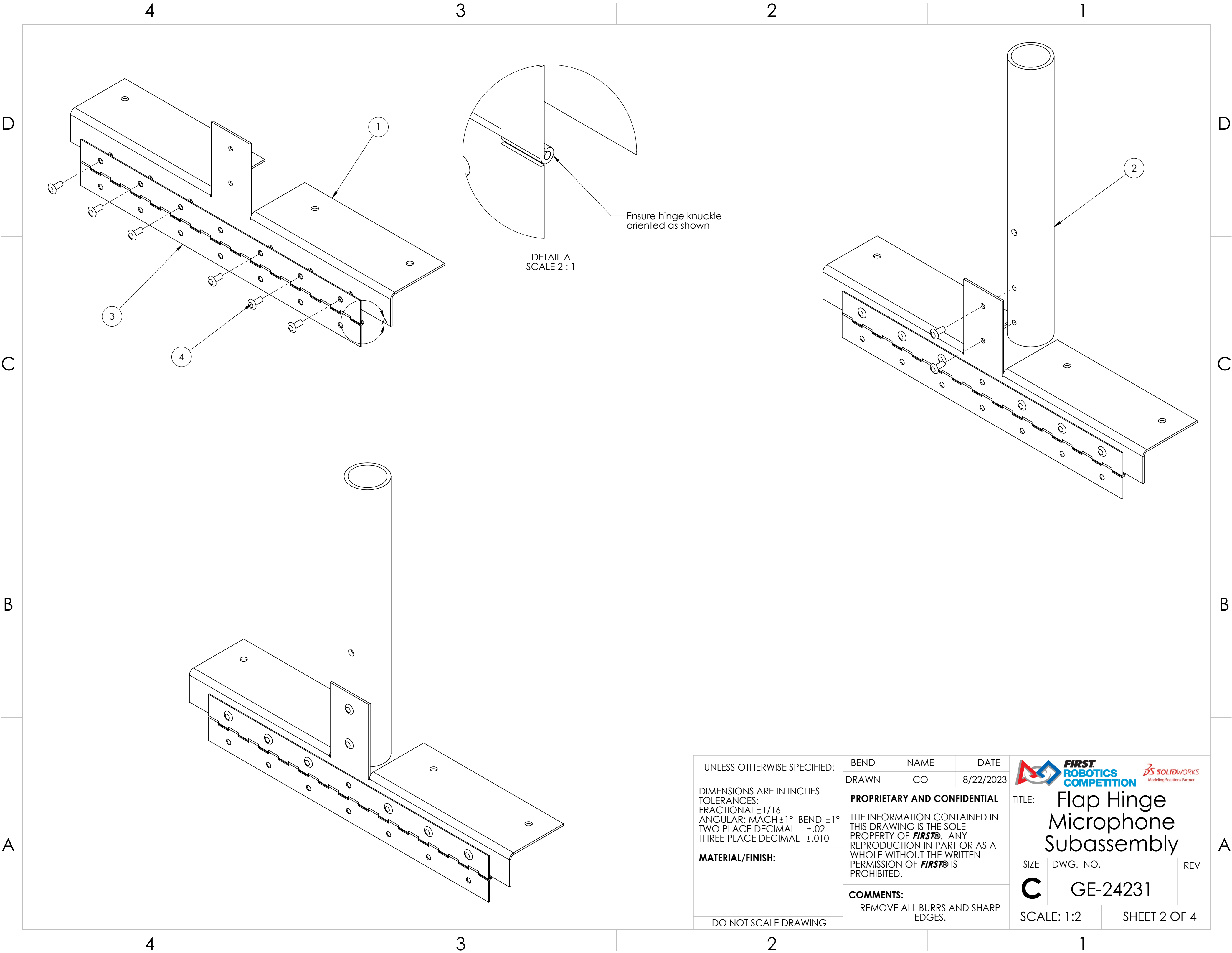
REMOVE ALL BURRS AND SHARP EDGES.

TITLE: Flap Hinge Microphone Subassembly

SIZE C DWG. NO. GE-24231 REV

SCALE: 1:3 SHEET 1 OF 4



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:

DO NOT SCALE DRAWING

BEND

DRAWN

NAME

CO

DATE

8/22/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



**FIRST**  
ROBOTICS  
COMPETITION



Modeling Solutions Partner

TITLE:

Flap Hinge  
Microphone  
Subassembly

SIZE

**C**

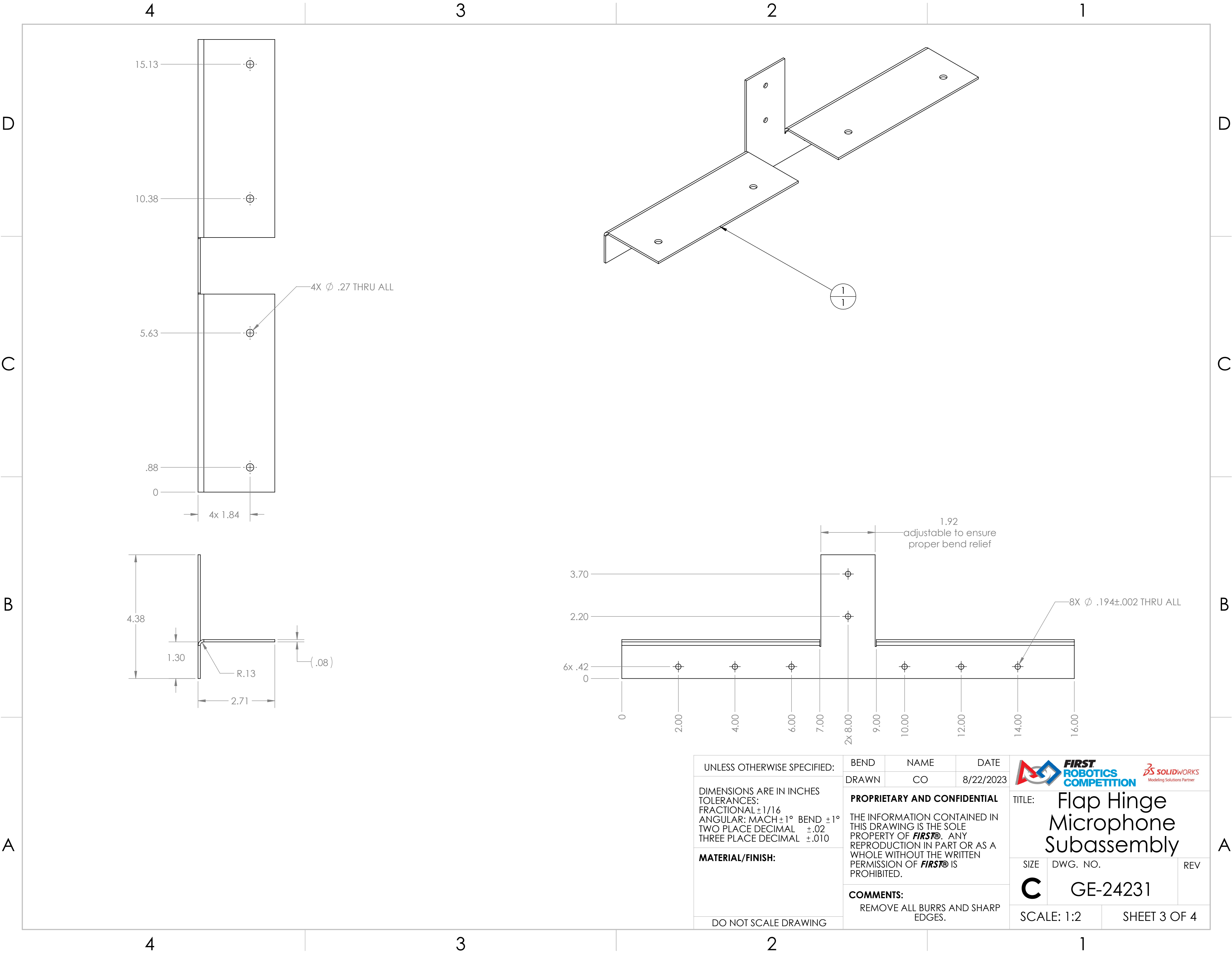
DWG. NO.

GE-24231

REV

SCALE: 1:2

SHEET 2 OF 4



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:**

DO NOT SCALE DRAWING

BEND

DRAWN

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.

NAME

CO

DATE

8/22/2023



**FIRST**  
**ROBOTICS**  
**COMPETITION**



Modeling Solutions Partner

TITLE:

Flap Hinge  
Microphone  
Subassembly

SIZE

**C**

DWG. NO.

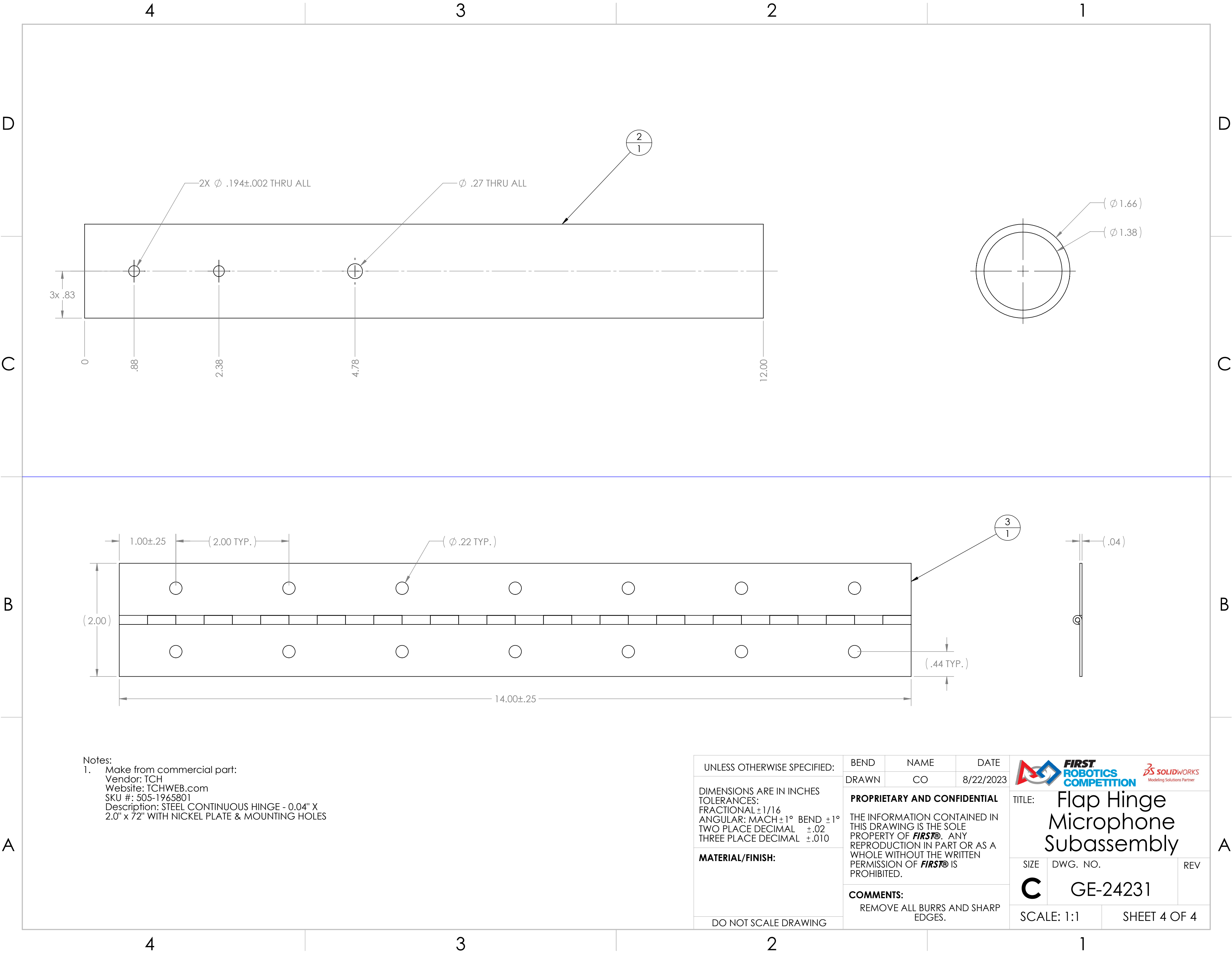
GE-24231

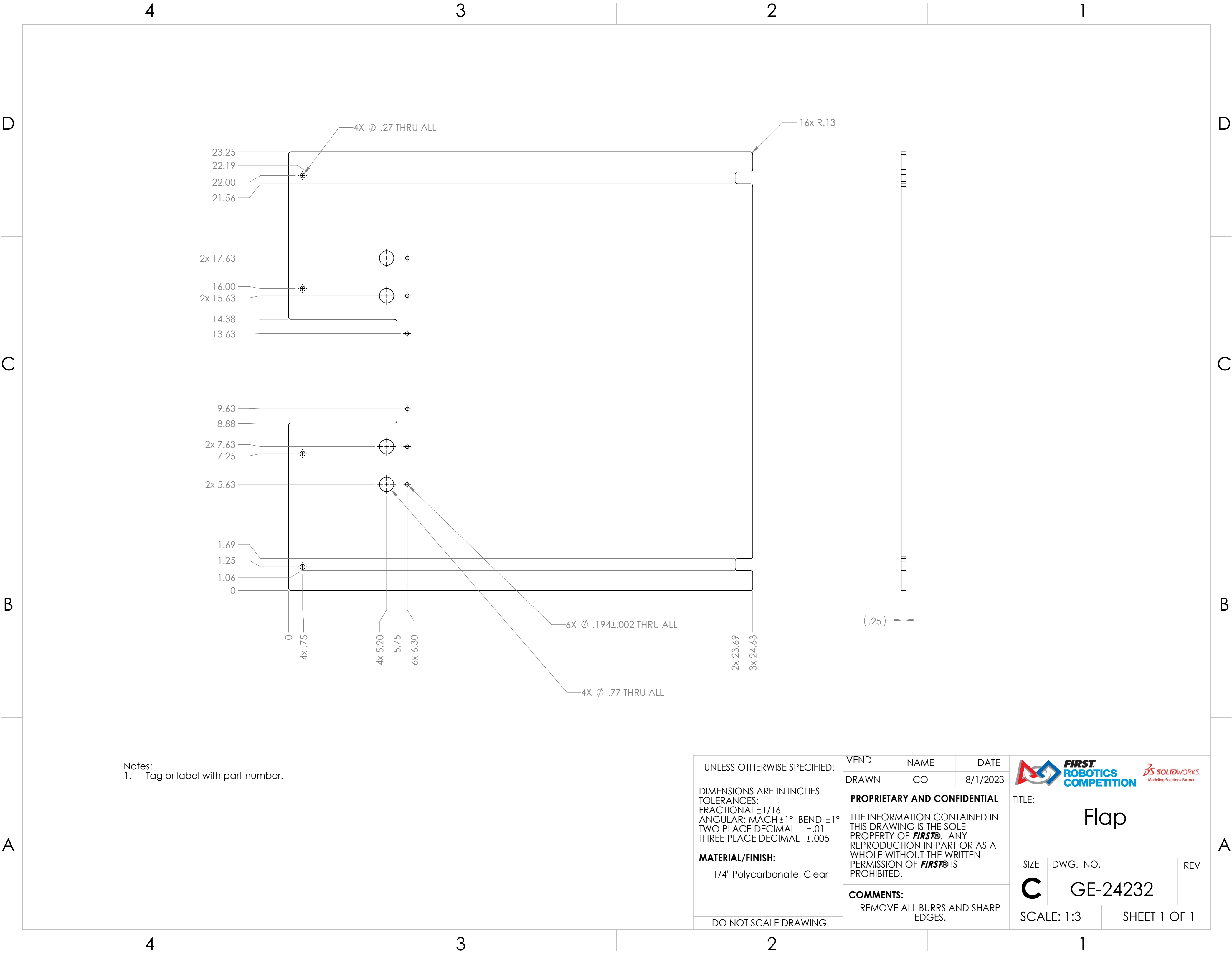
REV

SCALE: 1:2



SHEET 3 OF 4

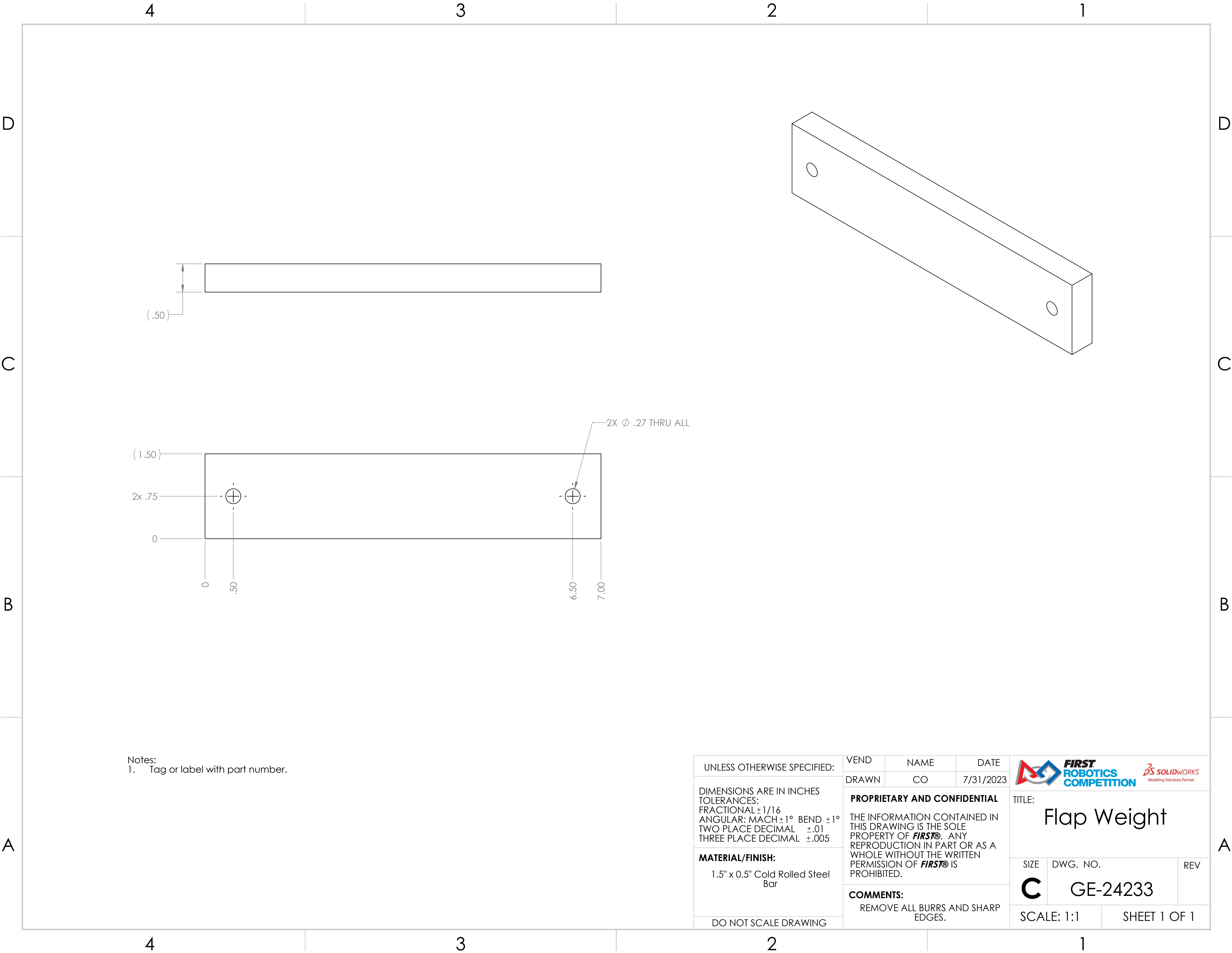


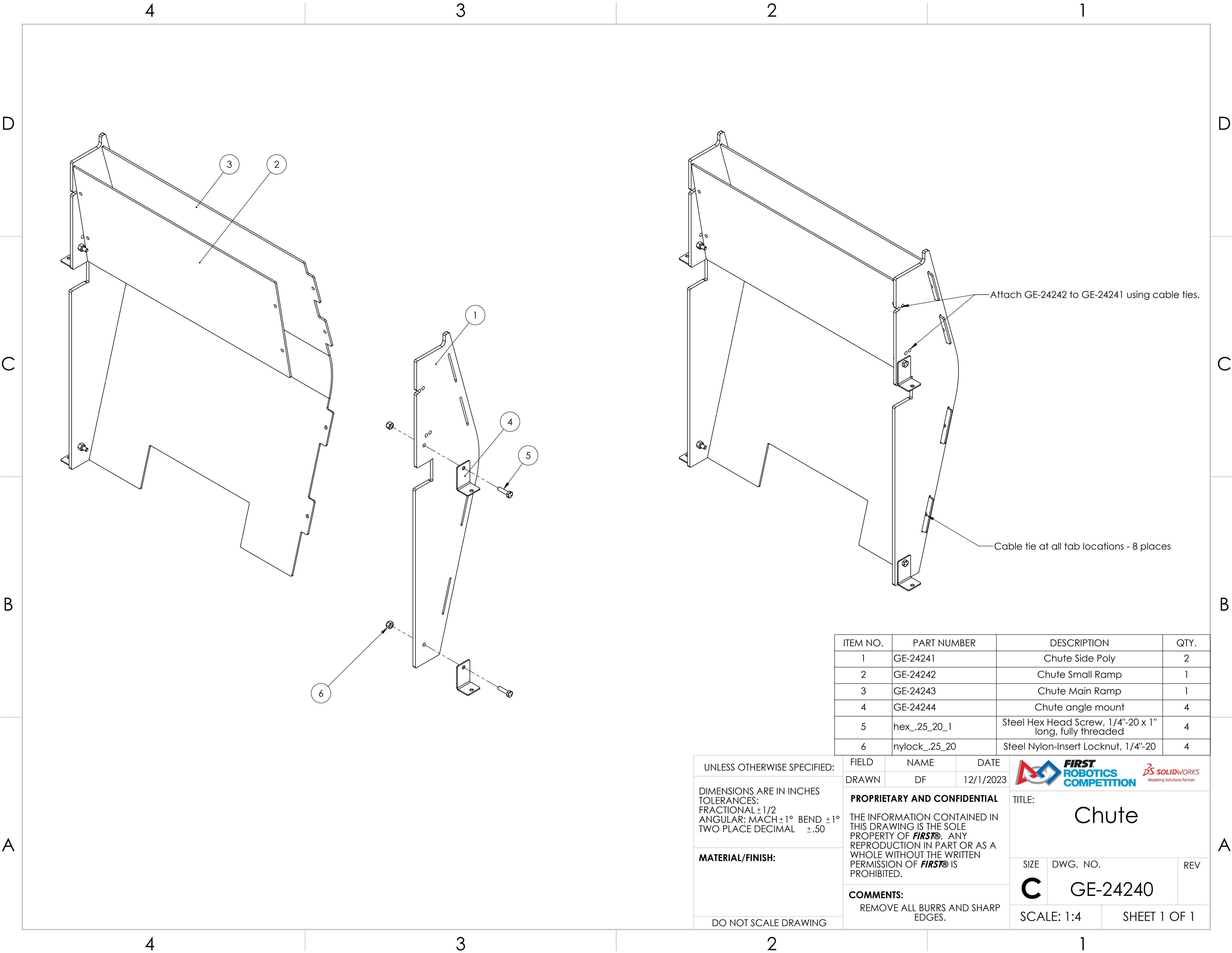






Notes:  
1. Tag or label with part number.

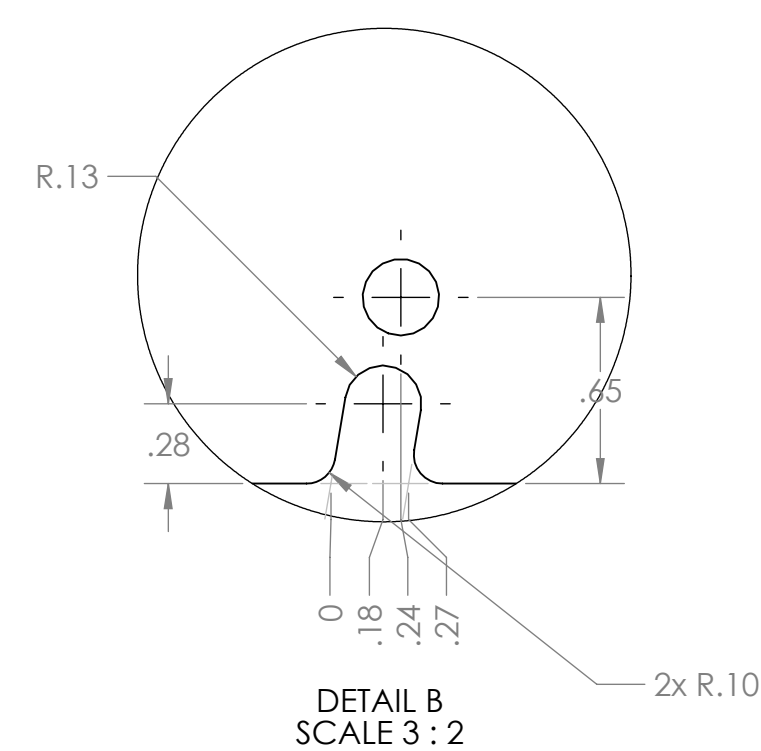
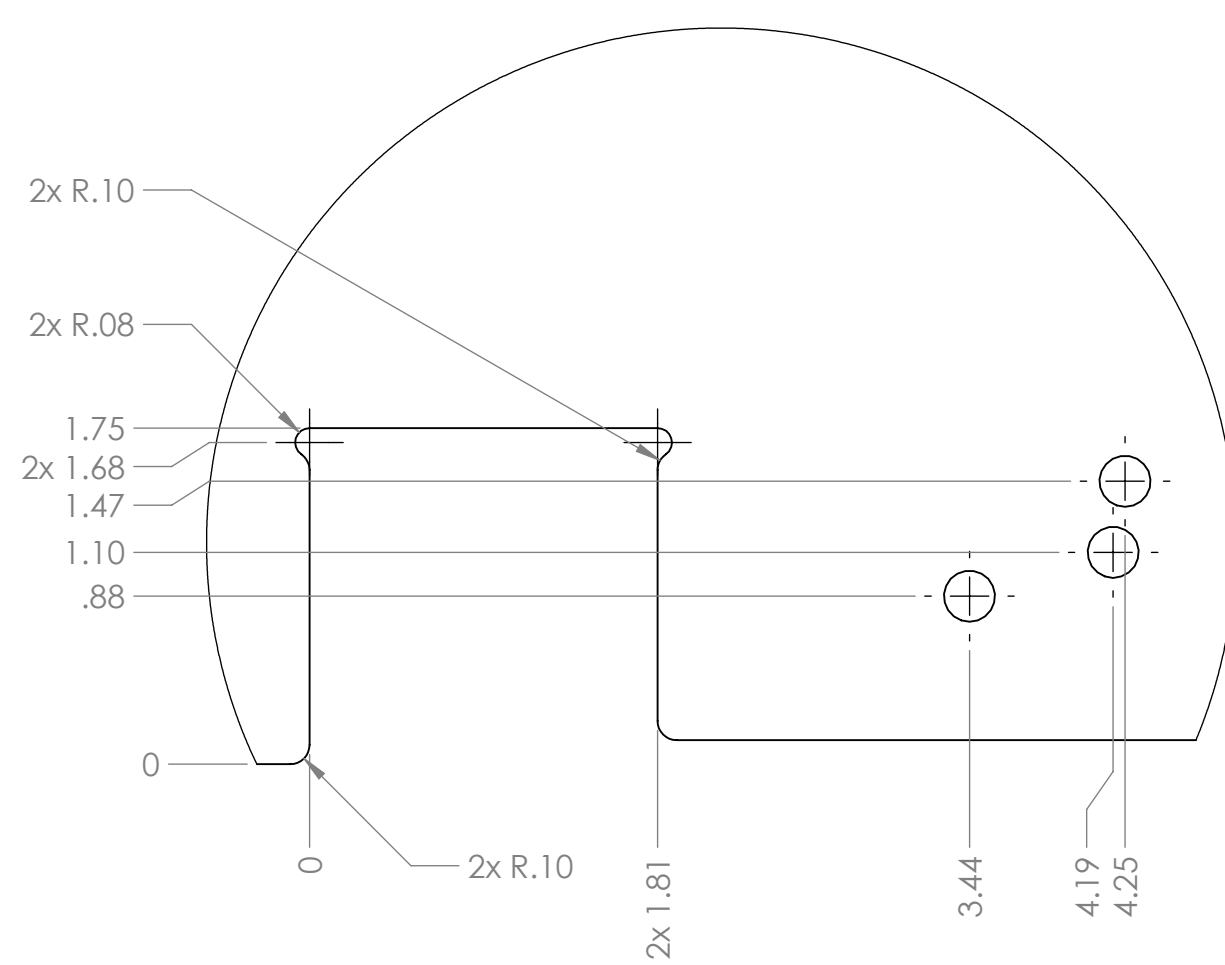
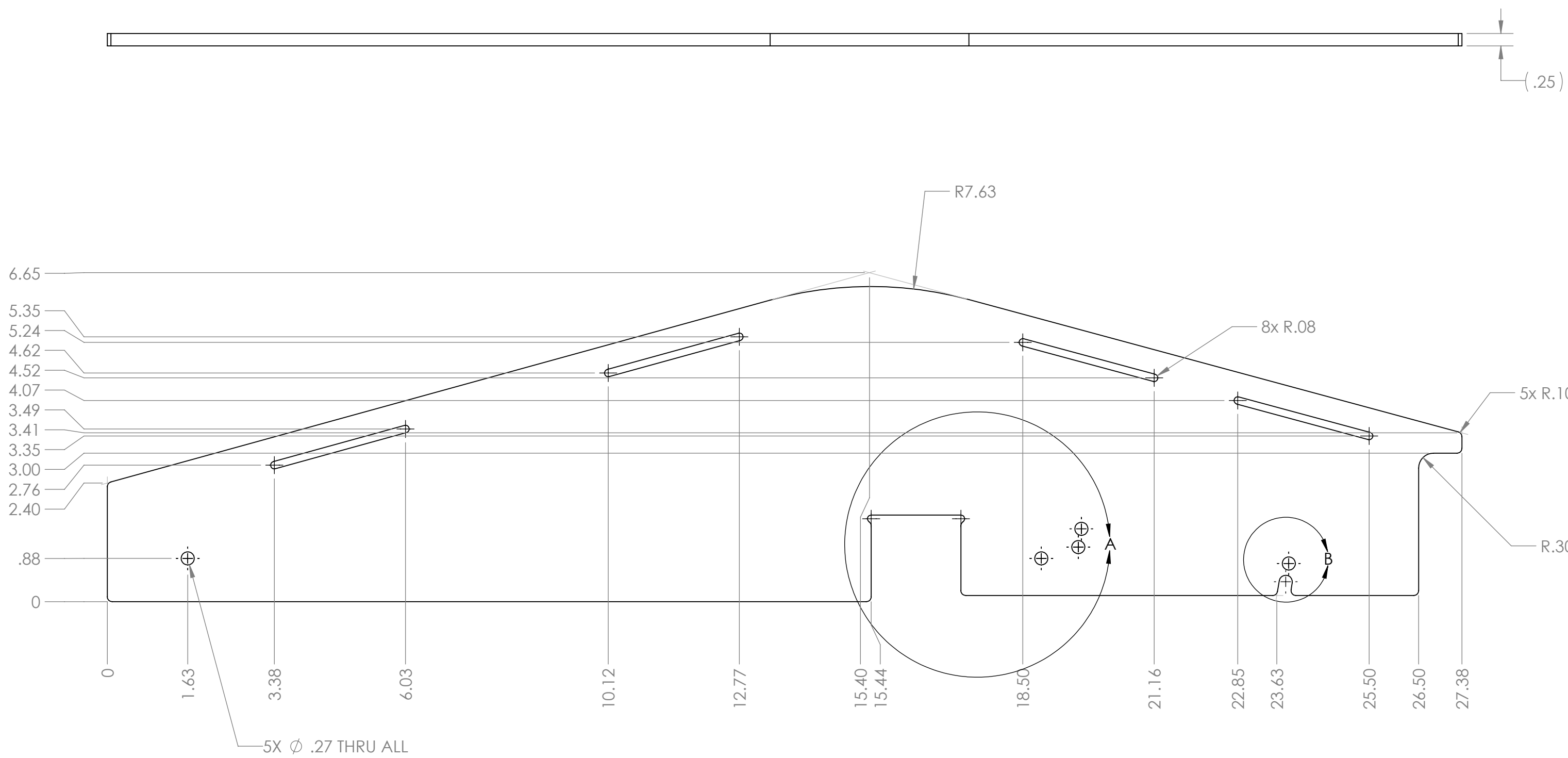
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE:  Flap</div>		
	DRAWN	CO	8/1/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	COMMENTS:					
	REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH:	1/4" Polycarbonate, Clear			SIZE	DWG. NO.	REV
				C	GE-24232	
DO NOT SCALE DRAWING				SCALE: 1:3		SHEET 1 OF 1







ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24241	Chute Side Poly	2
2	GE-24242	Chute Small Ramp	1
3	GE-24243	Chute Main Ramp	1
4	GE-24244	Chute angle mount	4
5	hex_.25_20_1	Steel Hex Head Screw, 1/4"-20 x 1" long, fully threaded	4
6	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4

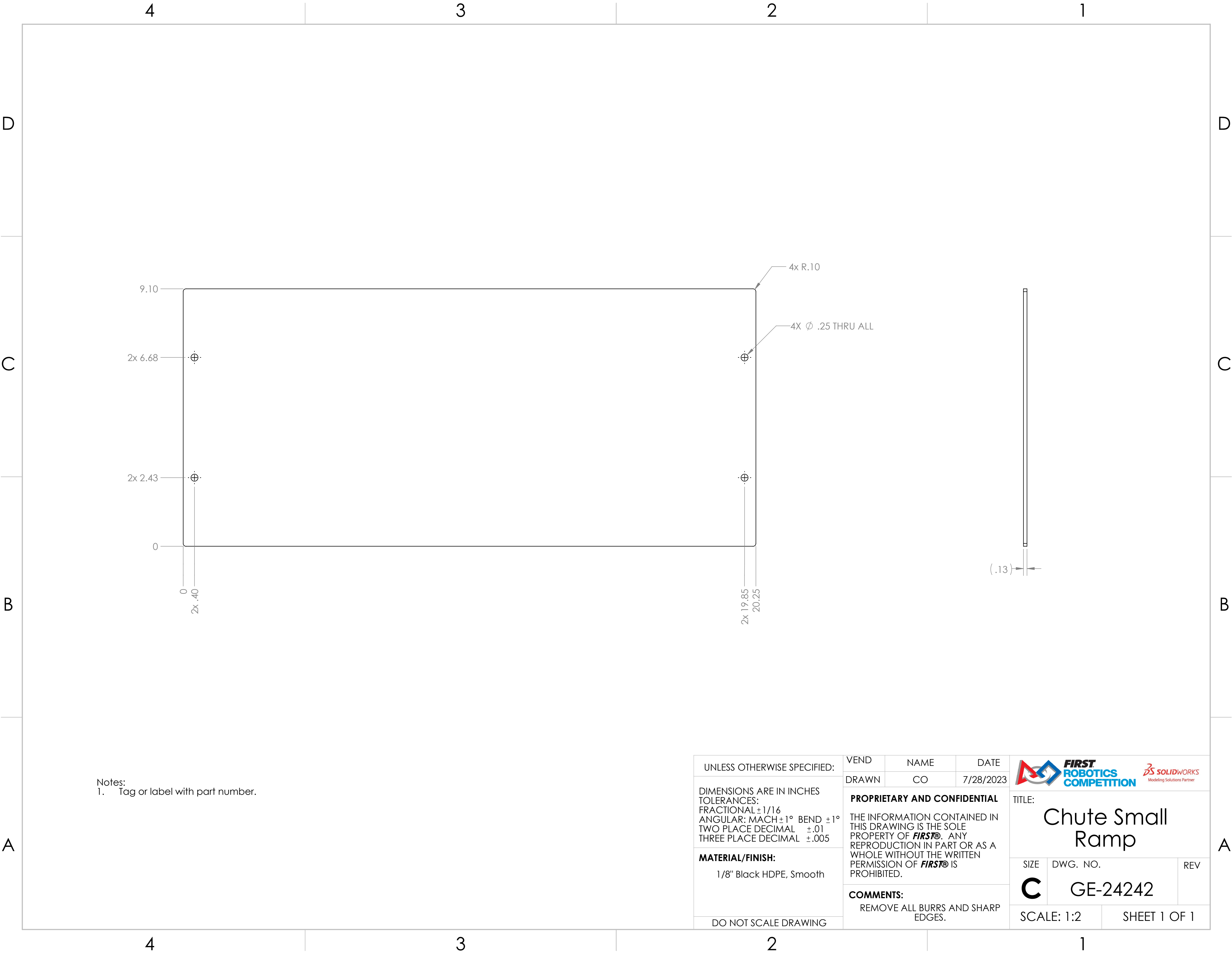
UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div>		
	DRAWN	DF	12/1/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Chute		
	<b>MATERIAL/FINISH:</b>			SIZE	DWG. NO.	REV
DO NOT SCALE DRAWING	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24240	
				SCALE: 1:4		SHEET 1 OF 1





Notes:  
1. Tag or label with part number.

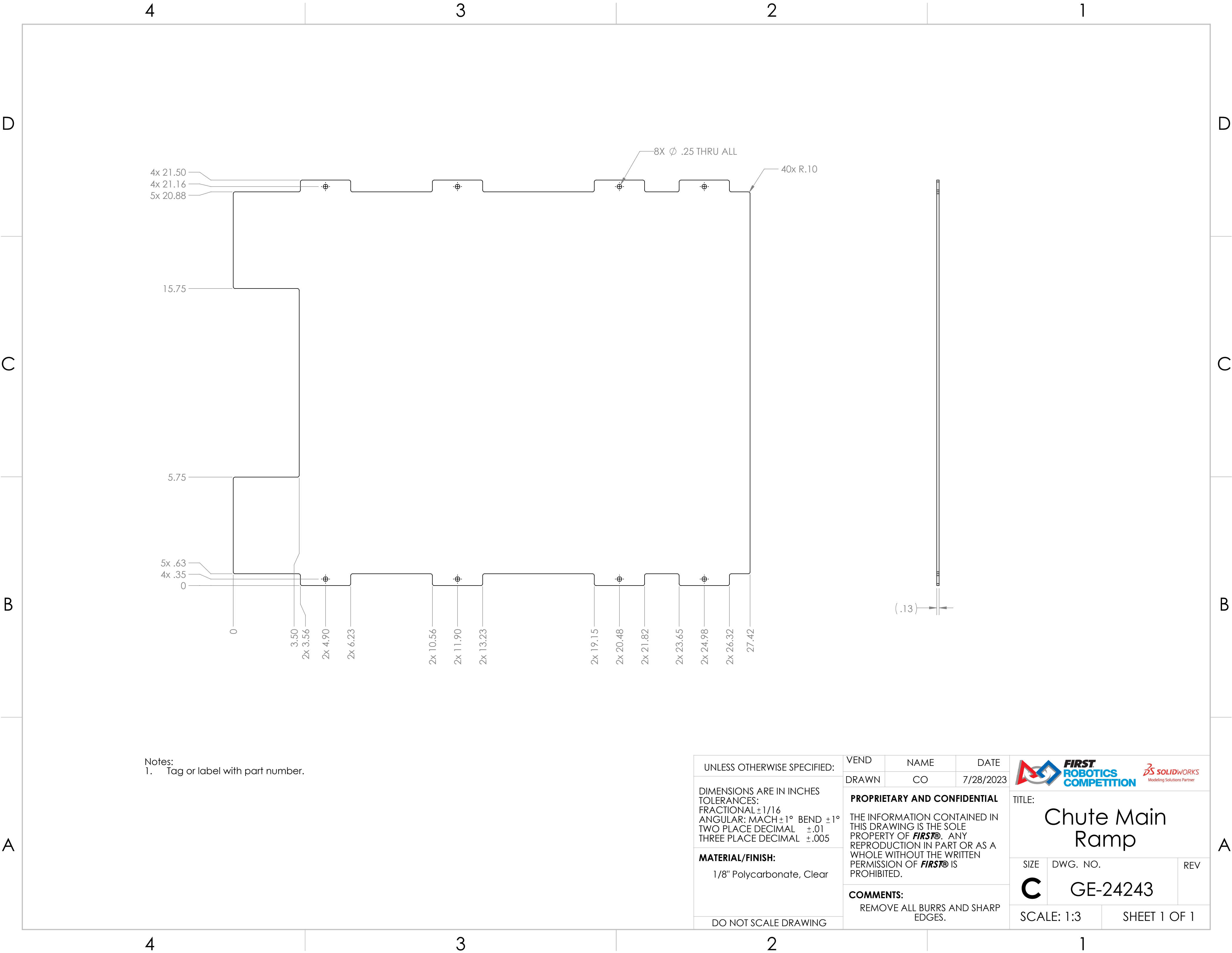
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1/4" Polycarbonate, Clear  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Chute Side Poly</h1></div>		
	DRAWN	CO	7/25/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24241	
			SCALE: 1:2		SHEET 1 OF 1	







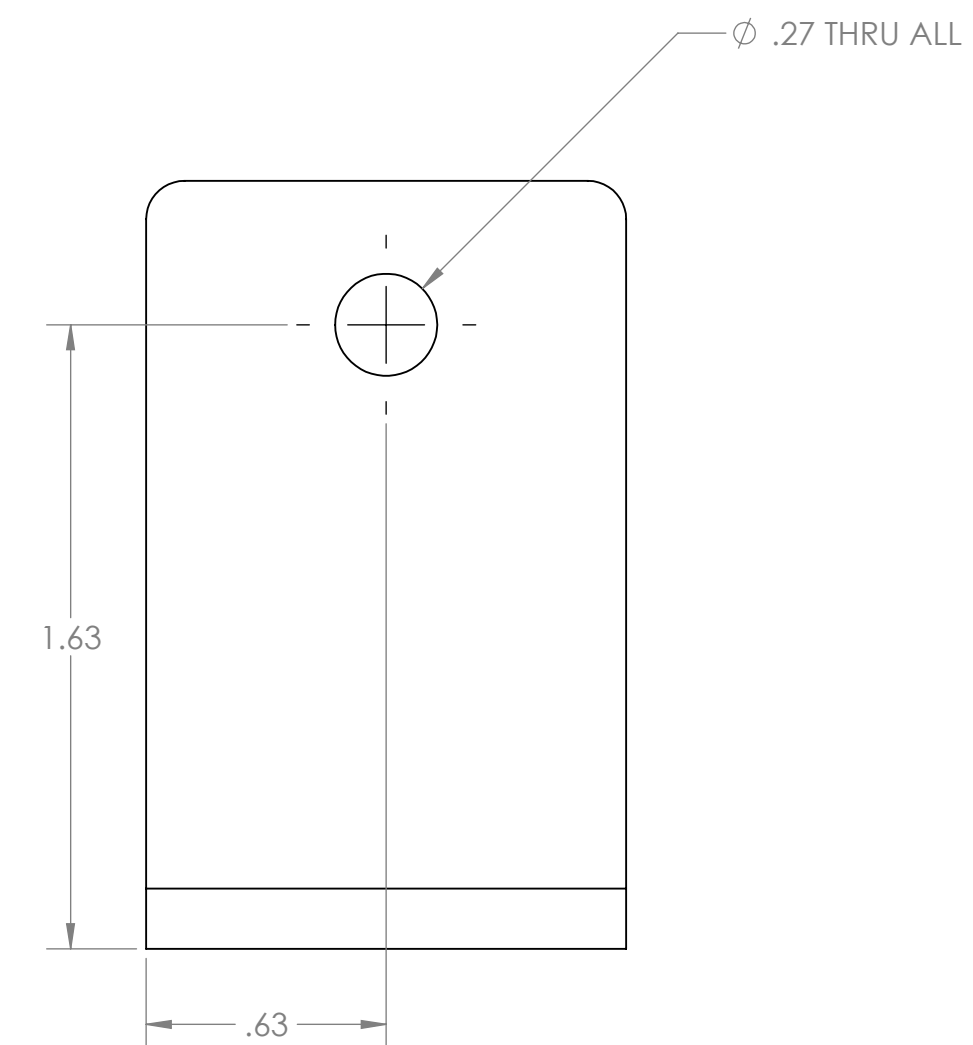
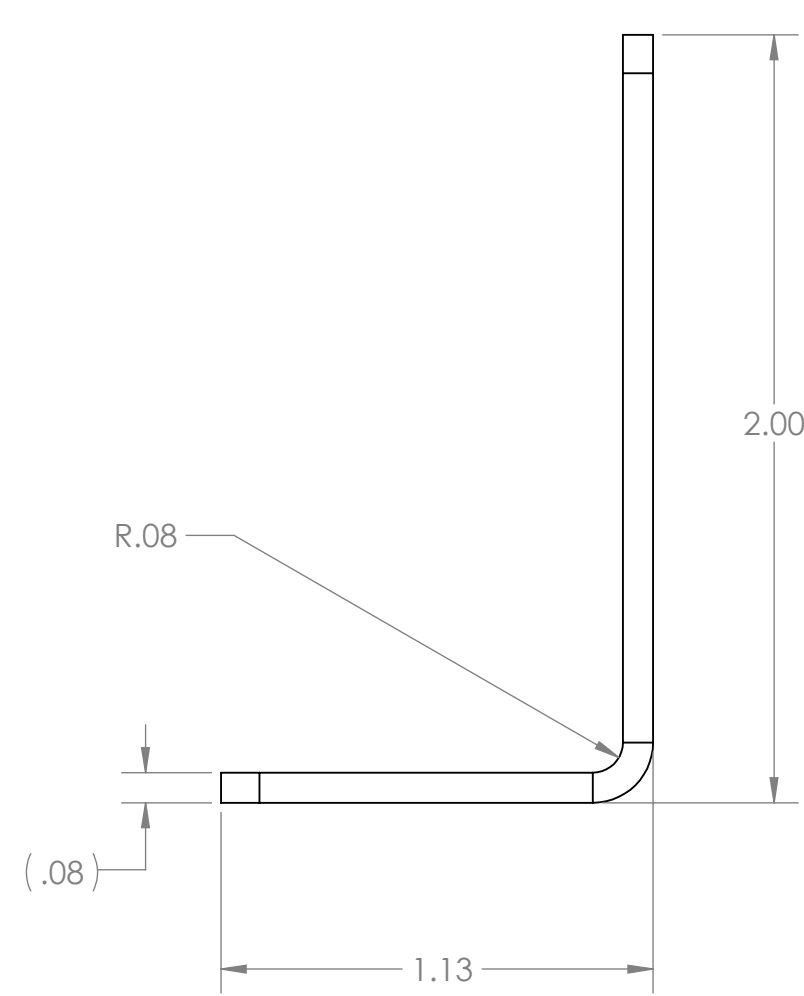
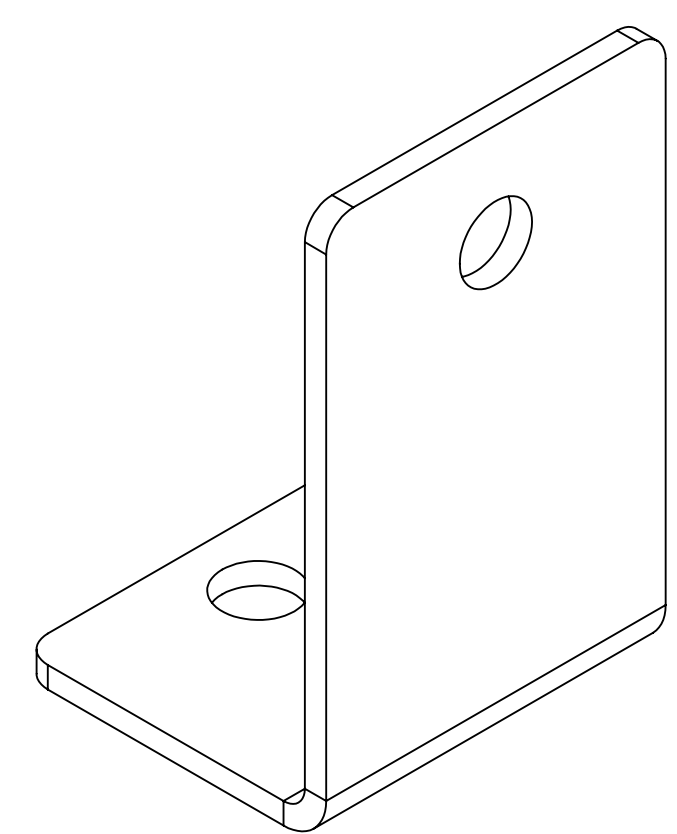
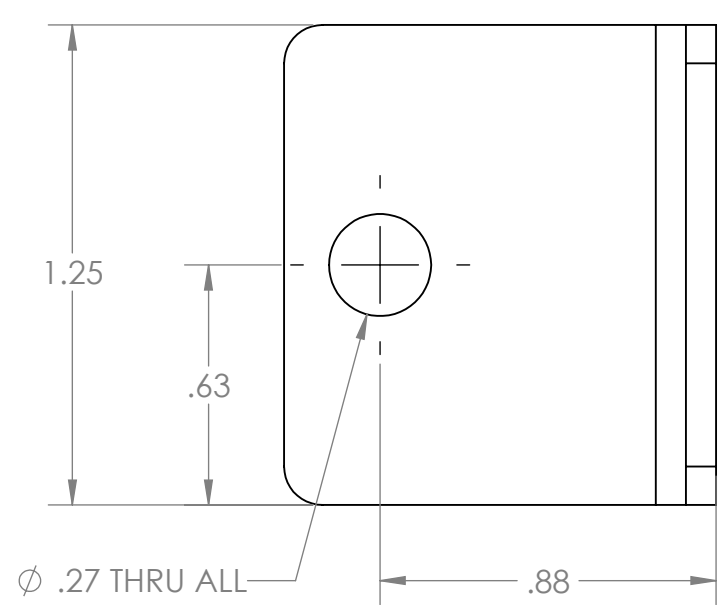
Notes:  
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> TITLE: <h1>Chute Small Ramp</h1>		
	DRAWN	CO	7/28/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			SIZE <b>C</b>		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:  1/8" Black HDPE, Smooth	COMMENTS:			DWG. NO.		REV
	REMOVE ALL BURRS AND SHARP EDGES.			GE-24242		
DO NOT SCALE DRAWING				SCALE: 1:2		SHEET 1 OF 1





Notes:  
1. Tag or label with part number.

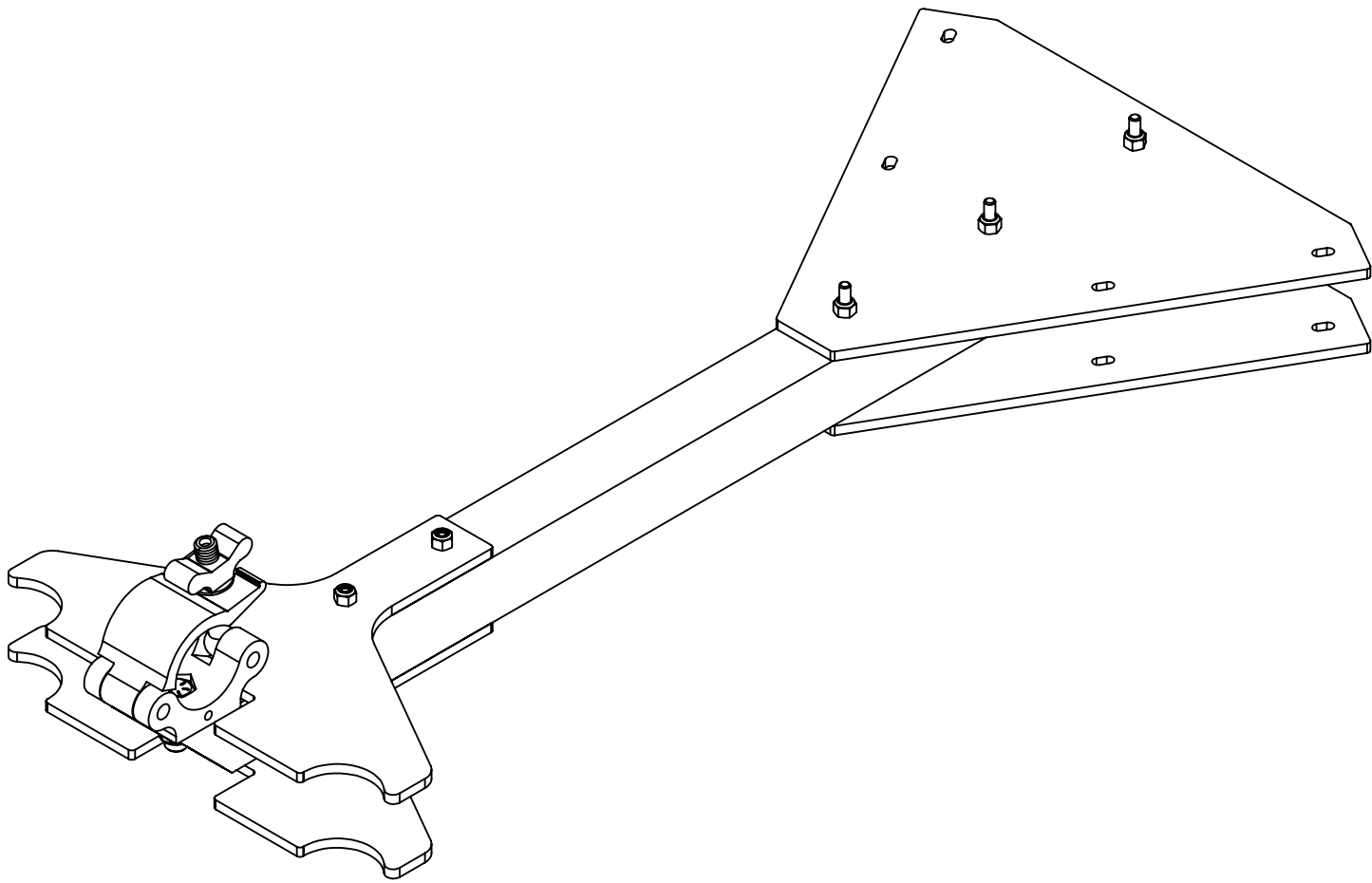
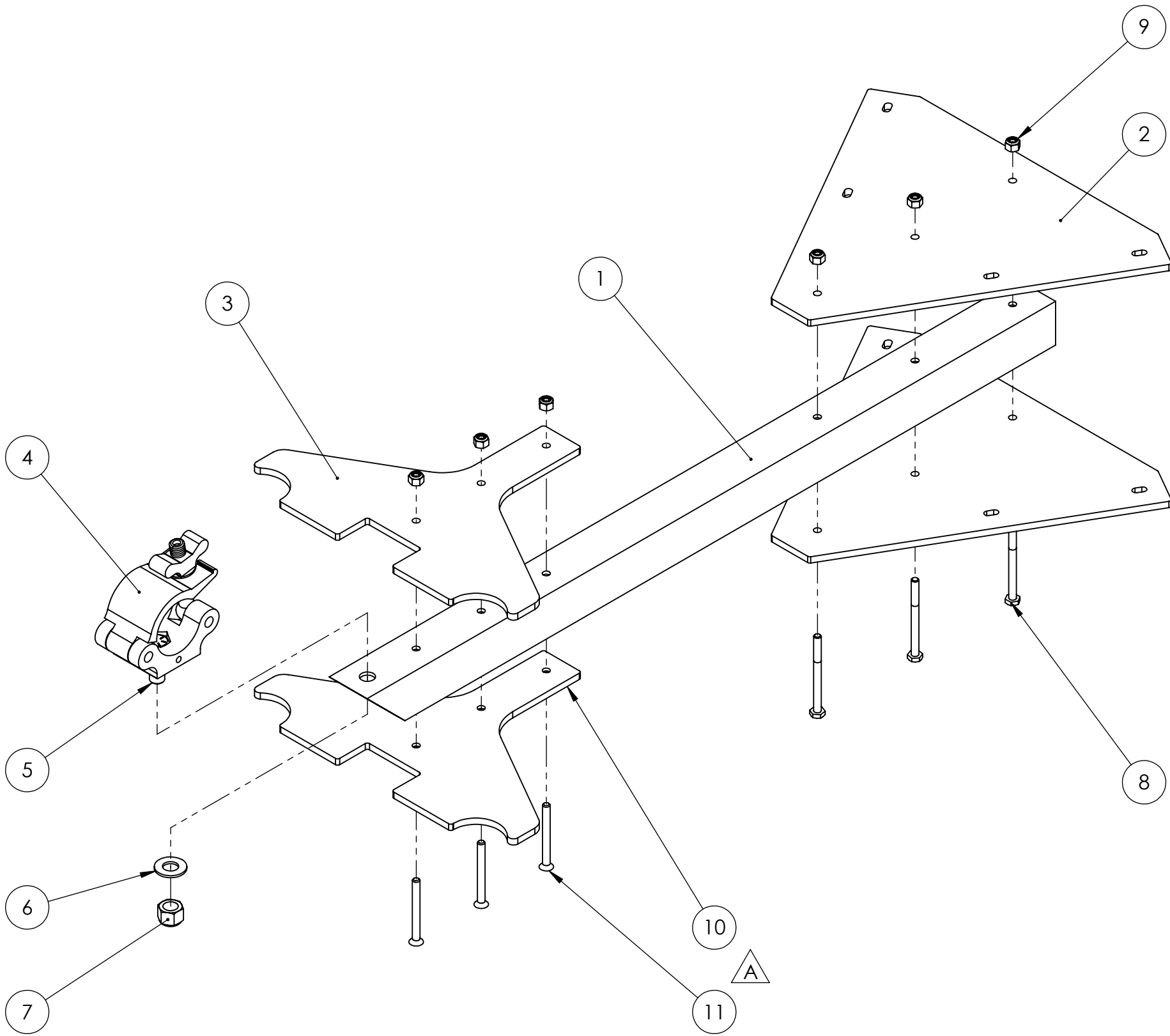
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$  <b>MATERIAL/FINISH:</b>  1/8" Polycarbonate, Clear   DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	CO	7/28/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				TITLE:  Chute Main Ramp
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				SIZE <b>C</b> DWG. NO. GE-24243 REV
SCALE: 1:3		SHEET 1 OF 1			



- Notes:
- 1. Tag or label with part number.
  - 2. Package in groups of 12 or 24.

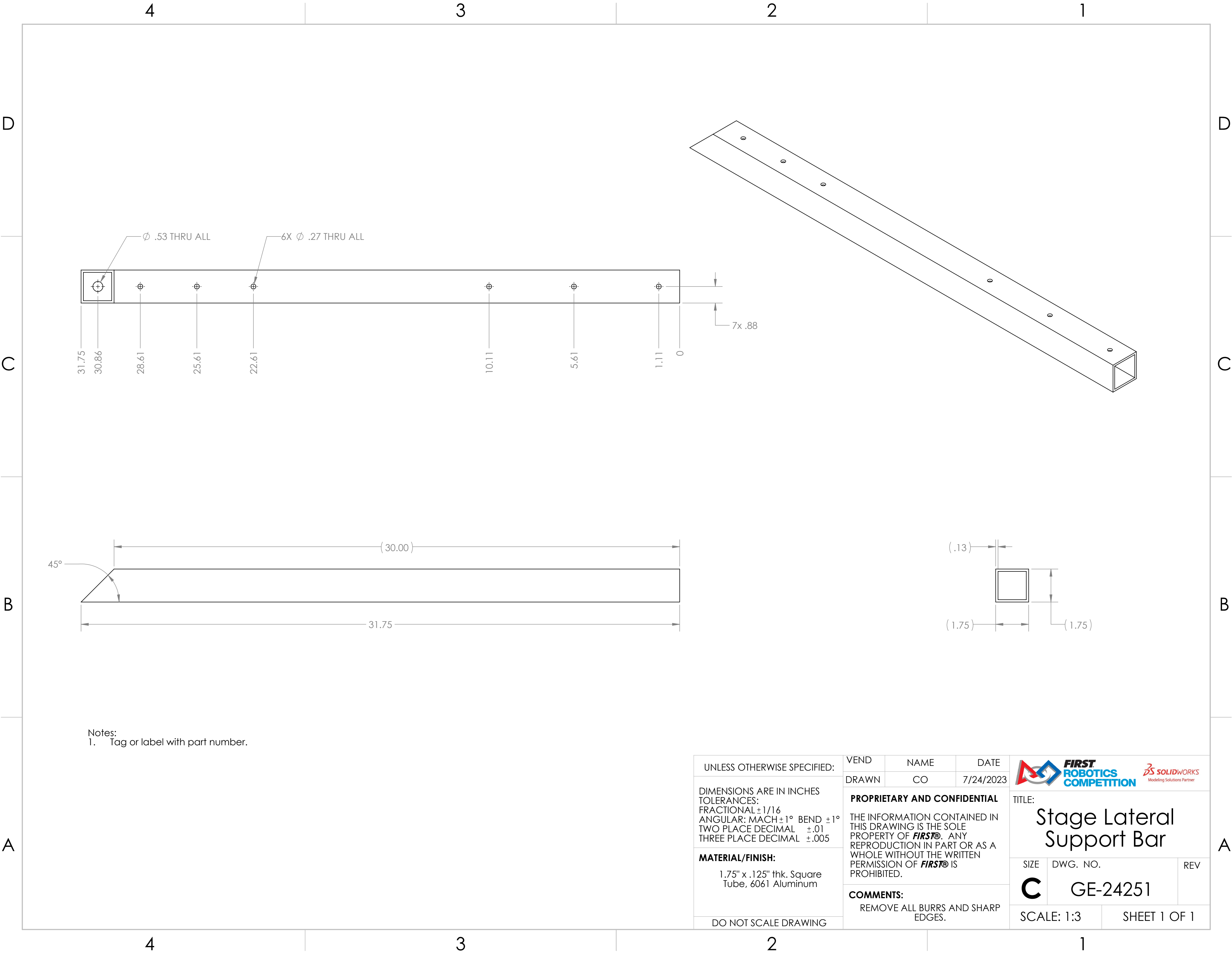
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010  <b>MATERIAL/FINISH:</b>  14 Ga. Preplated Steel   DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div>		
	DRAWN	CO	7/31/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Chute angle mount		
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
C				GE-24244		
SCALE: 2:1				SHEET 1 OF 1		

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, B3	A	Added Items 10 and 11	2/20/2024	DAF





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24251	Stage Lateral Support Bar	1
2	GE-24253	Stage Lateral Support Center Brace	2
3	GE-24252	Stage Lateral Support Truss Brace	1
4	FE-01016	Cheeseborough for Truss _ Single	1
5	hex_.5_13_1.25	Steel Hex Head Screw, 1/2"-13 x 1.25" long, fully threaded	1
6	washer_flat_.5	Flat Washer for 1/2" Screw	1
7	nylock_.5_13	Steel Nylon-Insert Locknut, 1/2" - 13	1
8	hex_.25_20_3_partial	Steel Hex Head Screw, 1/4"-20 x 3" long, partially threaded	3
9	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	6
10	GE-24254	Stage Lateral Support Truss Brace	1
11	flat_phil_.25_20_2.5	Steel Phillips Flat Head Screw, 1/4"-20 x 2-1/2" long, fully threaded	3

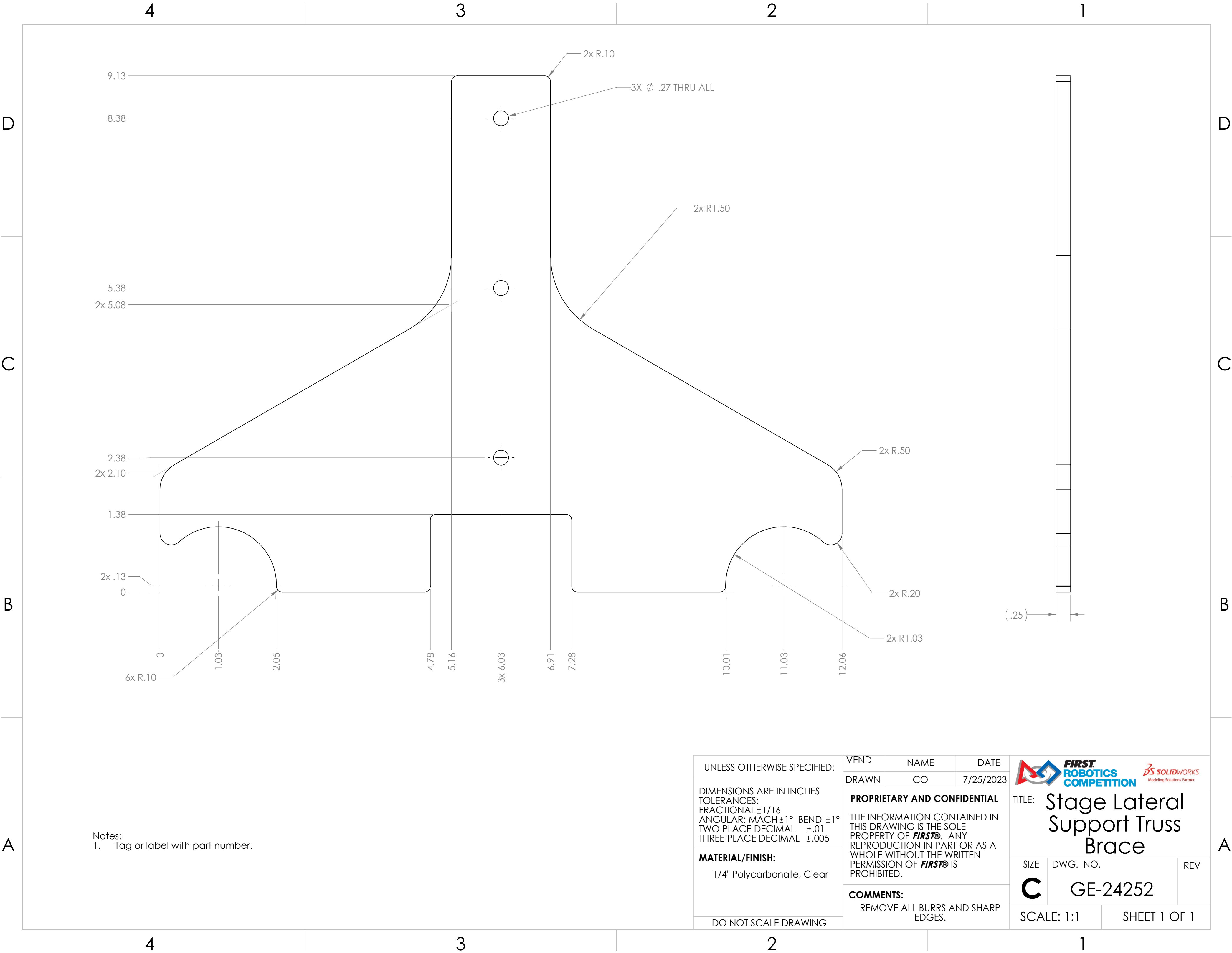
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$  <b>MATERIAL/FINISH:</b>     <b>DO NOT SCALE DRAWING</b>	FIELD DRAWN	NAME DF	DATE 11/27/2023	<div><div><div><div></div><div>FIRST</div><div>ROBOTICS</div><div>COMPETITION</div></div><div><div>3S</div><div>SOLIDWORKS</div><div>Modeling Solutions Partner</div></div></div><div>TITLE:  Stage Lateral Support</div><div><div>SIZE <b>C</b></div><div>DWG. NO. GE-24250</div><div>REV A</div></div><div>SCALE: 1:4</div><div>SHEET 1 OF 1</div></div>		
	<b>PROPRIETARY AND CONFIDENTIAL</b>					
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.					





Notes:  
1. Tag or label with part number.

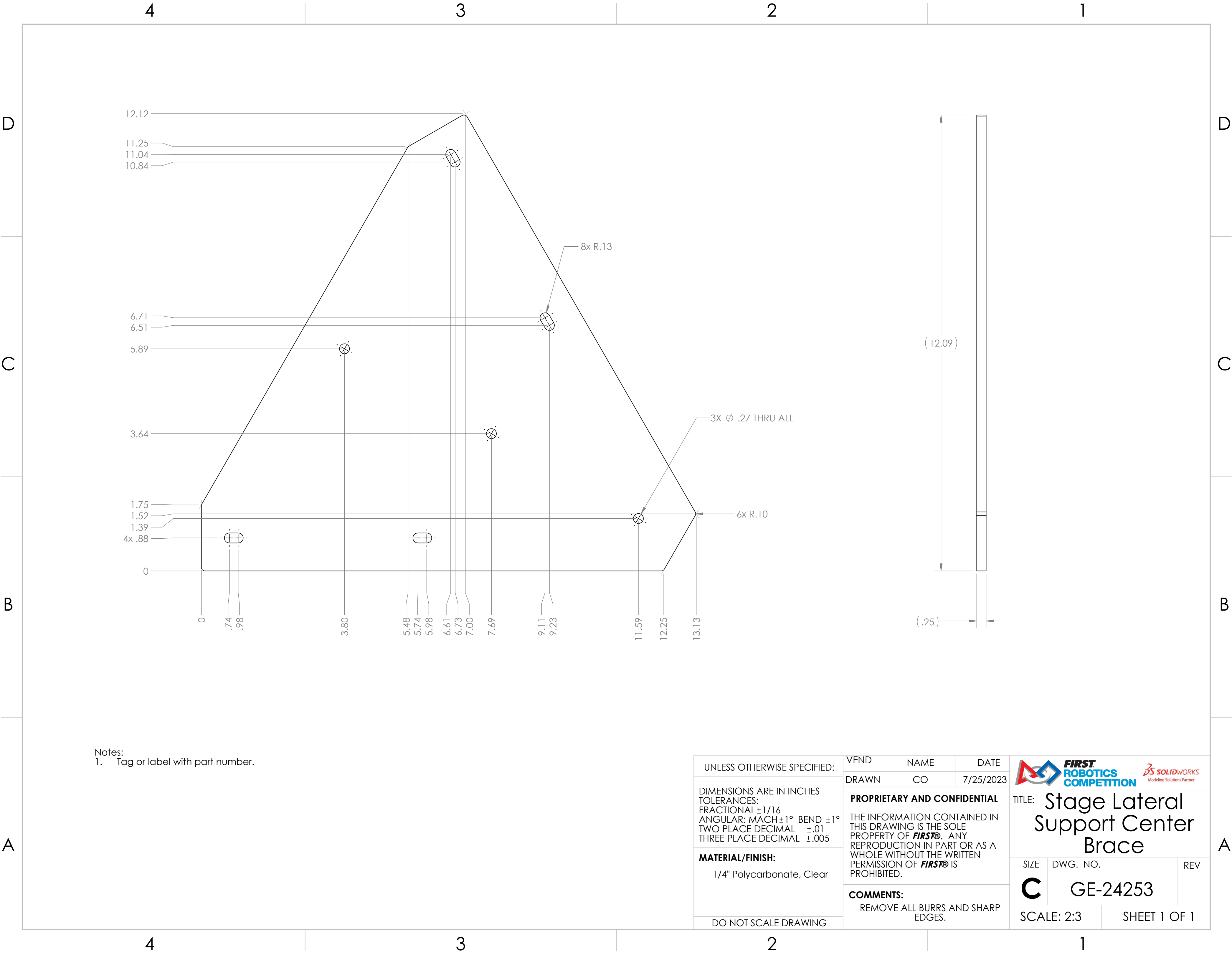
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$  <b>MATERIAL/FINISH:</b>  1.75" x .125" thk. Square Tube, 6061 Aluminum  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Stage Lateral Support Bar</h1></div>		
	DRAWN	CO	7/24/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24251	
SCALE: 1:3		SHEET 1 OF 1				





Notes:  
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1/4" Polycarbonate, Clear  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div><div></div><div>TITLE: Stage Lateral Support Truss Brace</div></div>	
	DRAWN	CO	7/25/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				
SIZE		DWG. NO.		REV	
C		GE-24252			
SCALE: 1:1		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:**  
1/4" Polycarbonate, Clear

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	CO	7/25/2023

**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.

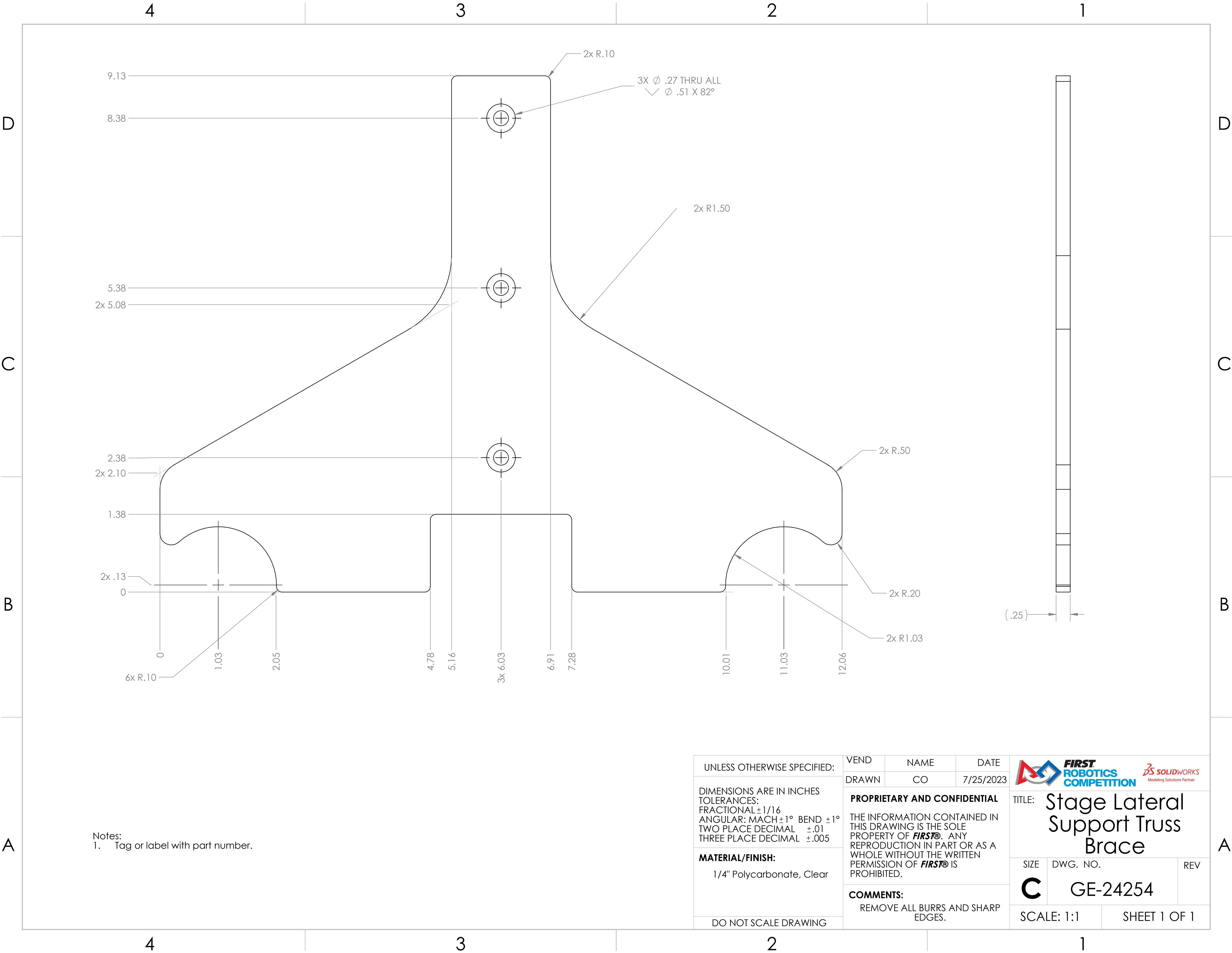
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.





TITLE: Stage Lateral Support Center Brace

SIZE	DWG. NO.	REV
<b>C</b>	GE-24253	

SCALE: 2:3	SHEET 1 OF 1
------------	--------------



Notes:  
1. Tag or label with part number.

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div><div>SOLIDWORKS Modeling Solutions Partner</div></div></div>		
	DRAWN	CO	7/25/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE: Stage Lateral Support Truss Brace		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
	MATERIAL/FINISH:  1/4" Polycarbonate, Clear	COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
DO NOT SCALE DRAWING				C	GE-24254	
				SCALE: 1:1		SHEET 1 OF 1

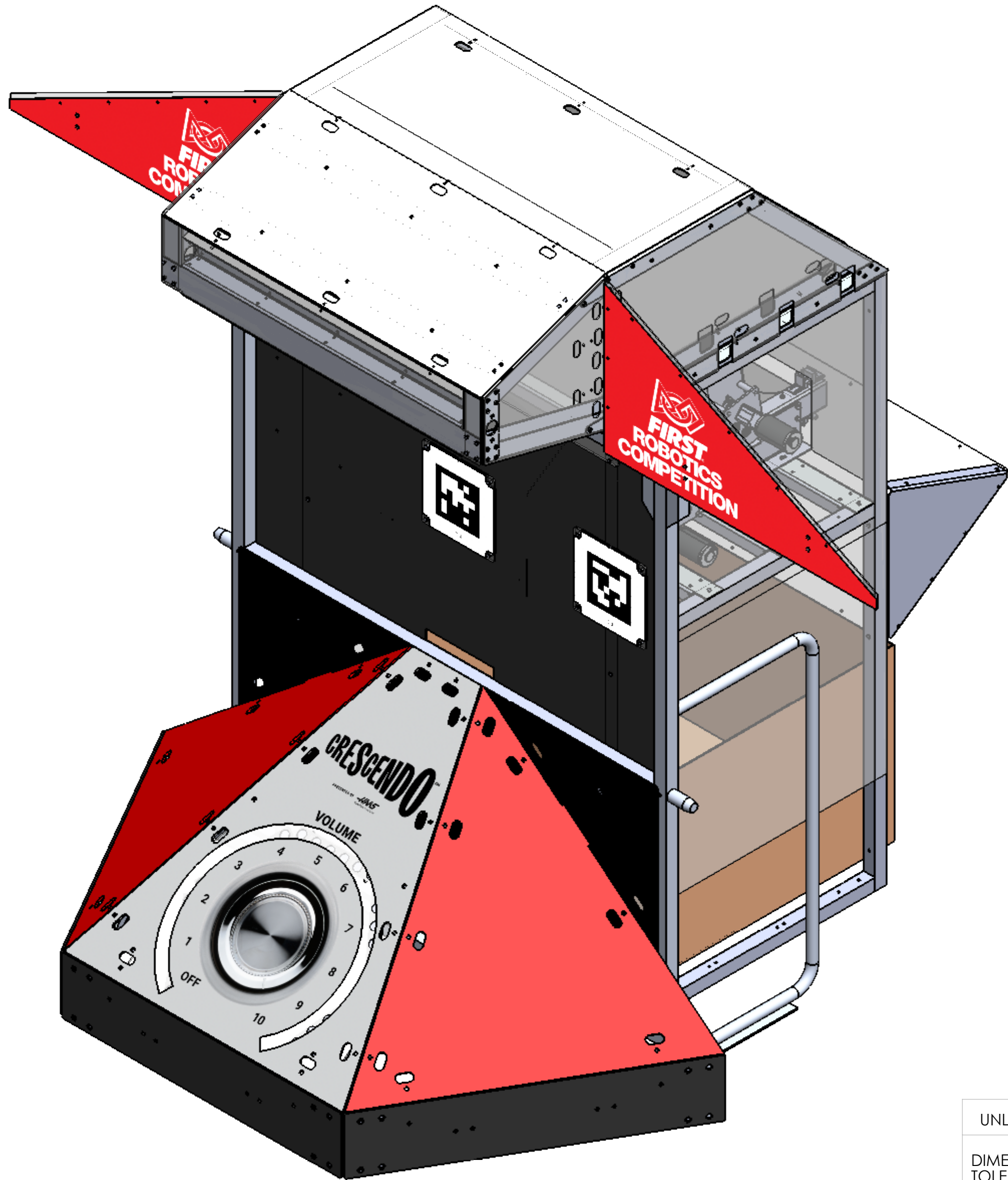
4

3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, 4-C3	A	GE-24394 added to assembly	2/21/2024	JO



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00001	Drivers Station Support	2
2	GE-24301	Speaker Side Frame	2
3	GE-24302	Speaker Crossbeams with PEMs	4
4	GE-24303	Side Guard Walls	4
5	GE-24306	Speaker Back Cover	1
6	GE-24307	Speaker Inner Side Ramp	2
7	GE-24308	Speaker Inner Back Ramp	1
8	GE-24309	Speaker Inner Side Wall	2
9	GE-24310	Speaker Top Frame	1
10	GE-24321	Backboard Bracket	4
11	GE-24322	Speaker Alliance Wall Plastic	1
12	GE-24325	Briweld Field Crossbeam Assembly	1
13	GE-24330	Subwoofer	1
14	GE-24331	Wall Goal Frame Weldment	1
15	GE-24350	Ring Counter	1
16	GE-24391	Collection Ramp w/ PEMs	2
17	GE-24392	Collection Ramp	1
18	GE-24328-LeftRed	Speaker Wing Plastic with Vinyl	1
19	barLight-36		3
20	GE-24328-RightRed	Speaker Wing Plastic with Vinyl	1
21	S-4478	Cardboard Box	1
22	FE-00083-ID3	AprilTag	1
23	FE-00083-ID4	AprilTag	1
24	Configurable Bolt	1" Long 1/4-20 Hex Head Bolt	28
25	Configurable Bolt	2.5" Long 1/4-20 Hex Head Bolt	24
26	Configurable Bolt	1/4-20 Hex Head Bolt 4" Long	4
27	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	32
28	GE-24394	Speaker Front Wall Addition	1



UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	JO	12/19/2023

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.



**FIRST**  
ROBOTICS  
COMPETITION



TITLE:

Speaker

SIZE

C

DWG. NO.

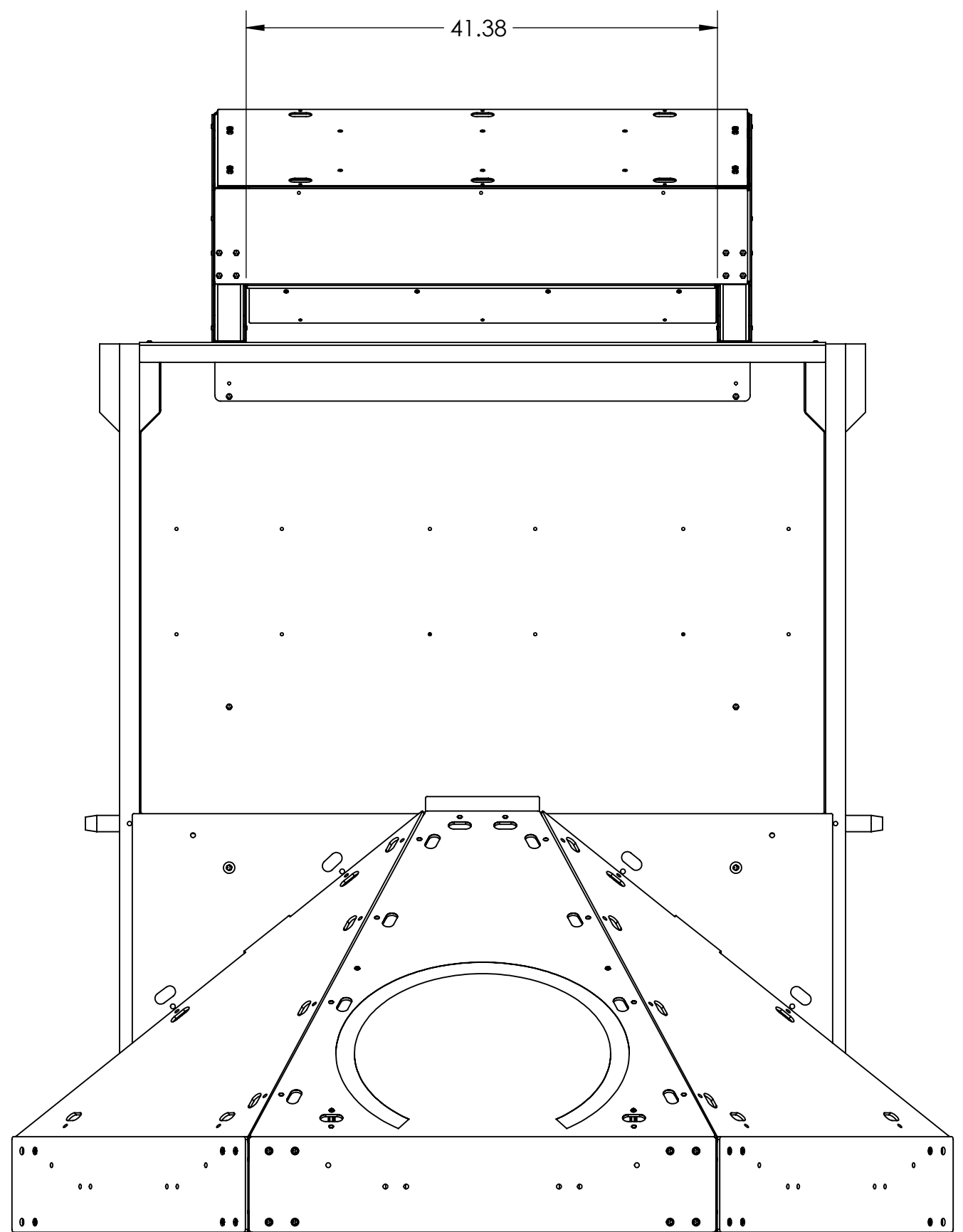
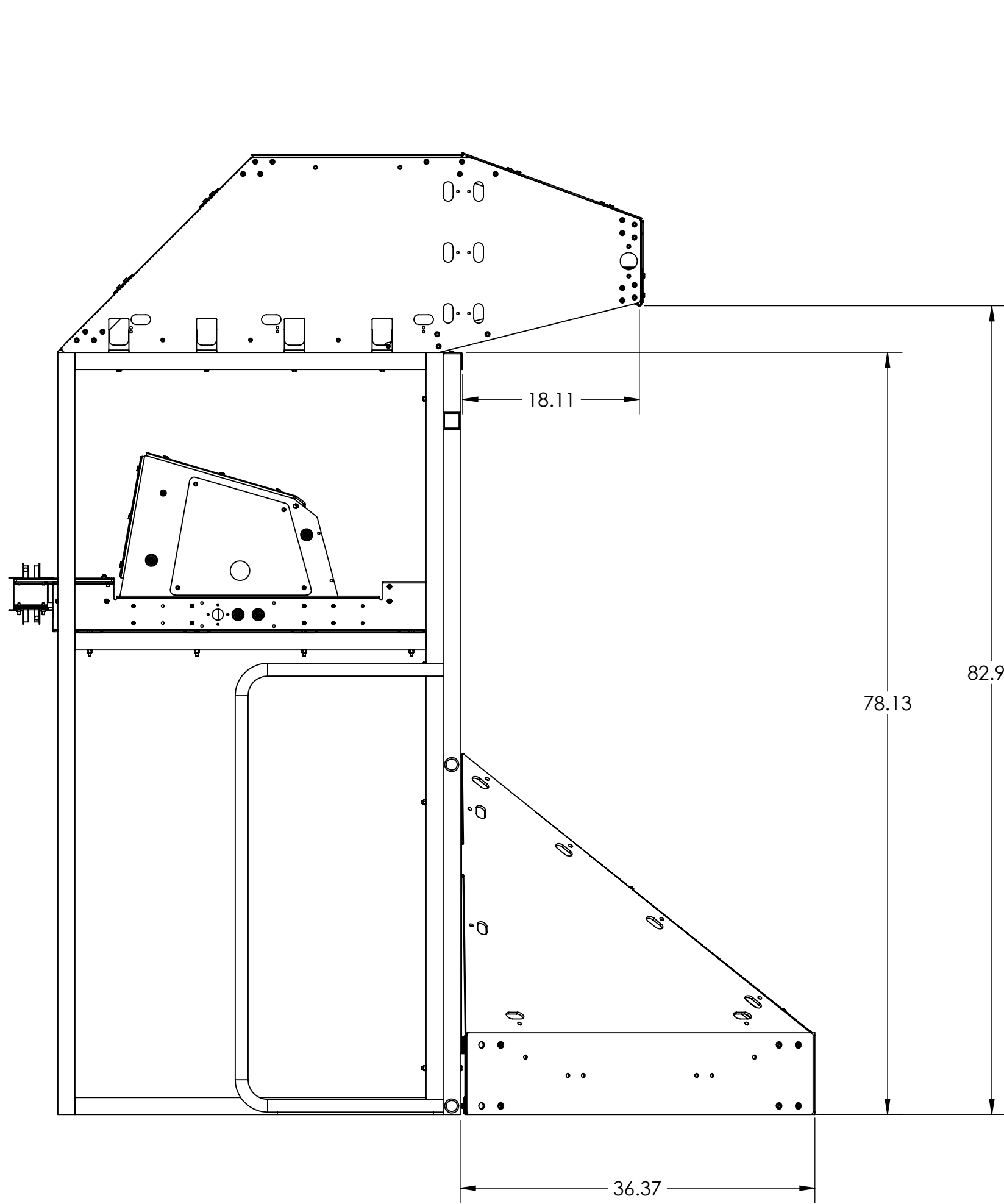
GE-24300

REV

A

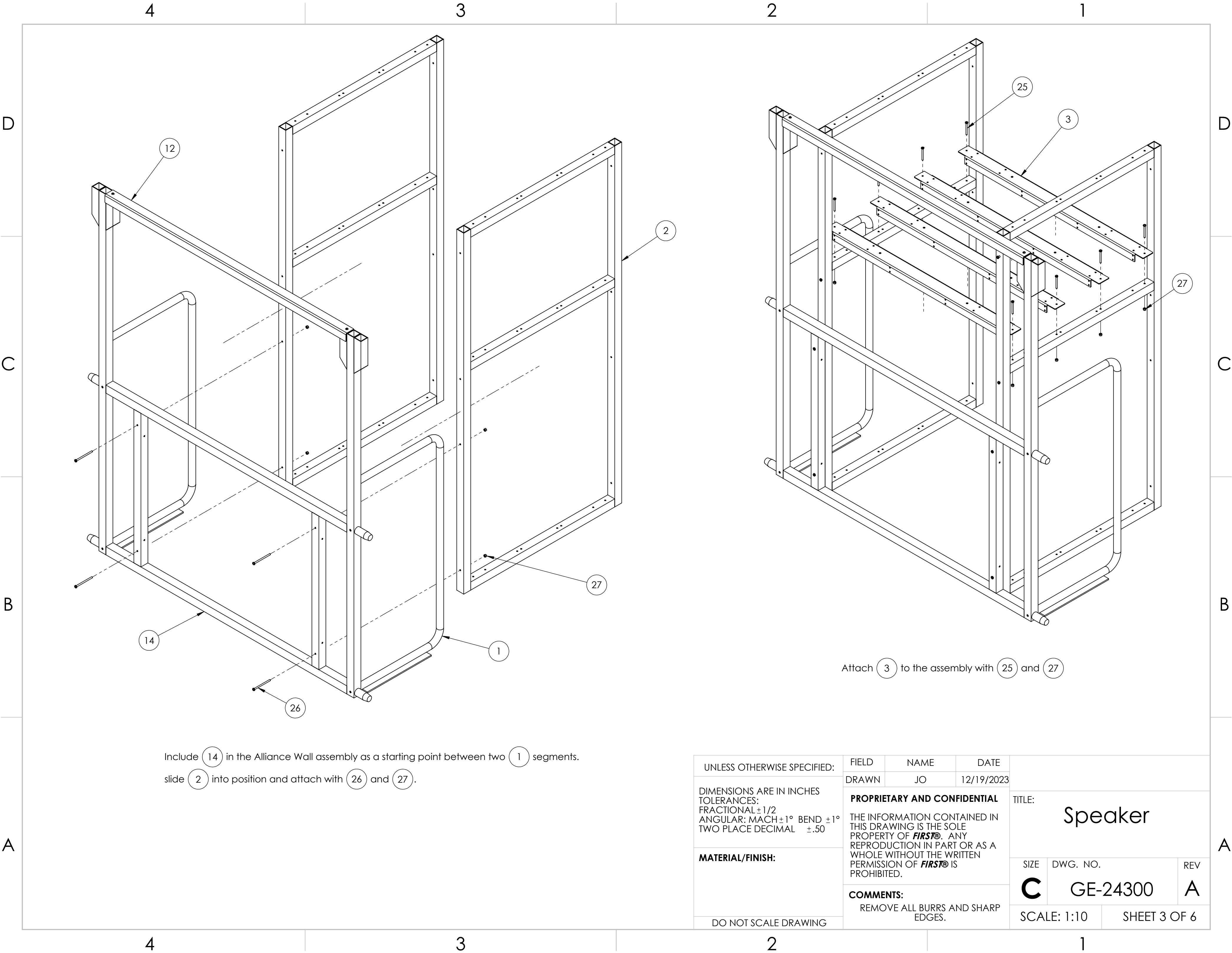
SCALE: 1:10

SHEET 1 OF 6



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$  <b>MATERIAL/FINISH:</b>          DO NOT SCALE DRAWING	FIELD	NAME	DATE	TITLE:  Speaker		
	DRAWN	JO	12/19/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24300	<b>A</b>
SCALE: 1:12		SHEET 2 OF 6				

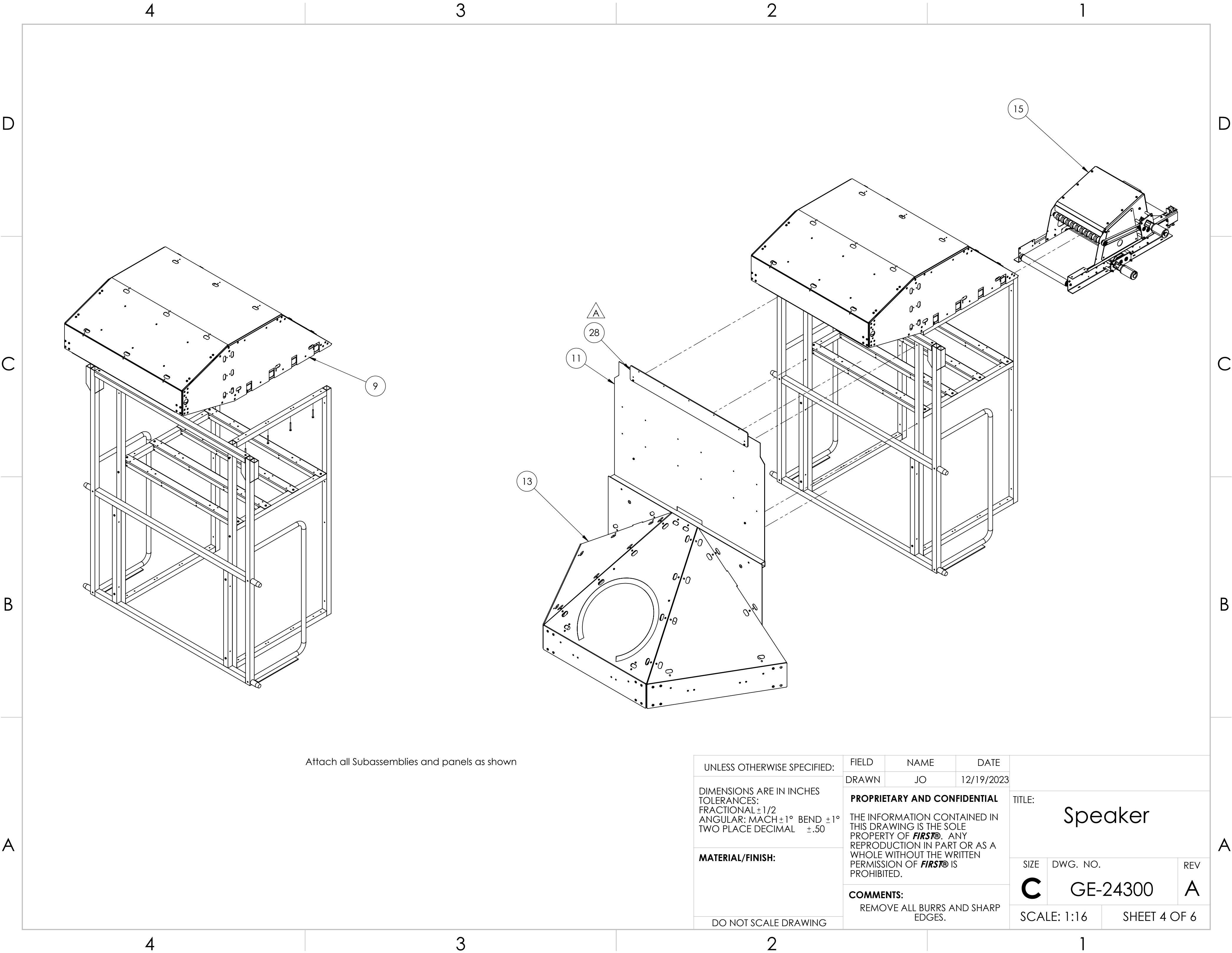




Include (14) in the Alliance Wall assembly as a starting point between two (1) segments.  
slide (2) into position and attach with (26) and (27).

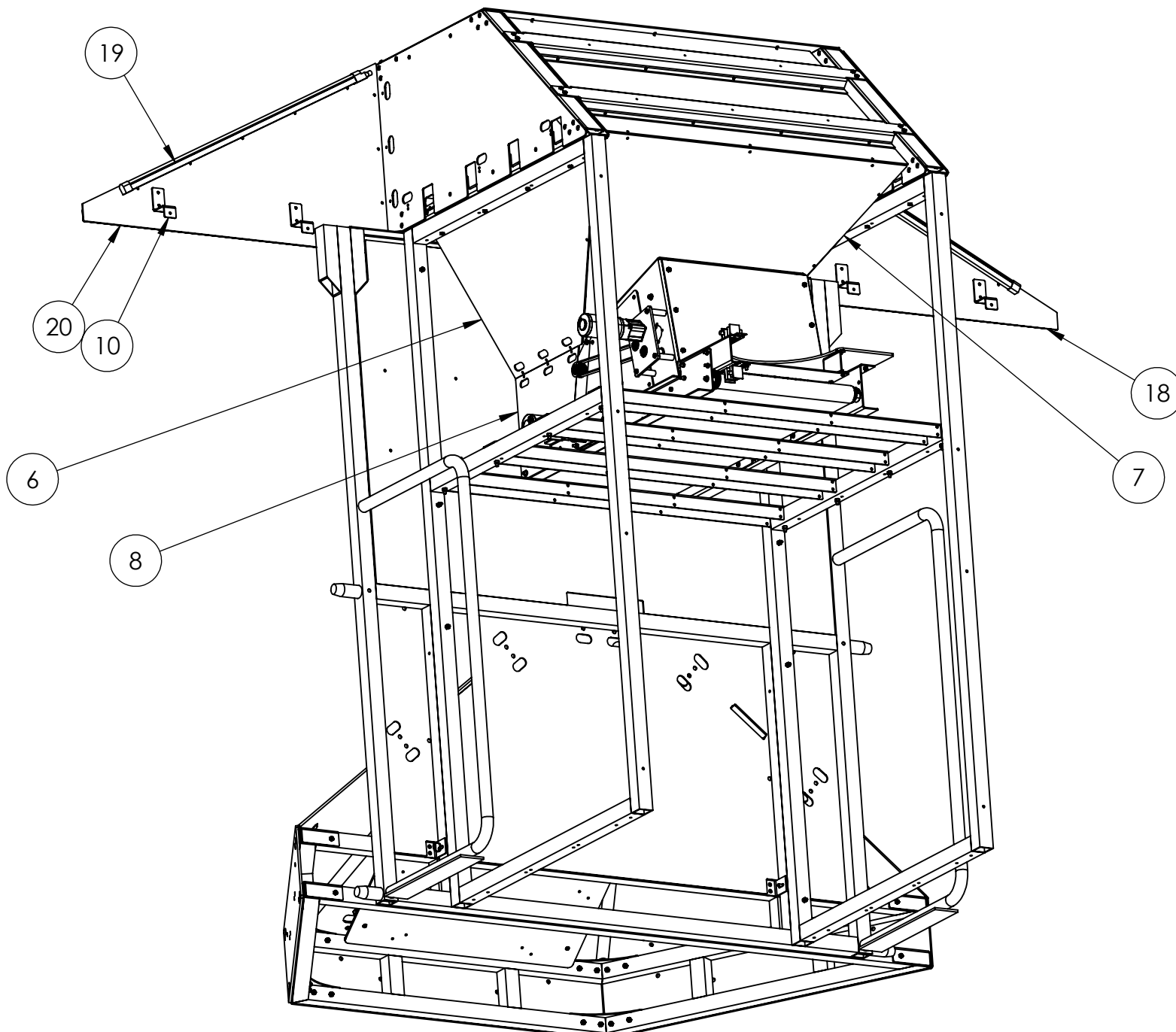
Attach (3) to the assembly with (25) and (27)

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	TITLE:  Speaker		
	DRAWN	JO	12/19/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE  C		
	<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.					
	<b>MATERIAL/FINISH:</b>				REV  A	
DO NOT SCALE DRAWING				SCALE: 1:10		SHEET 3 OF 6

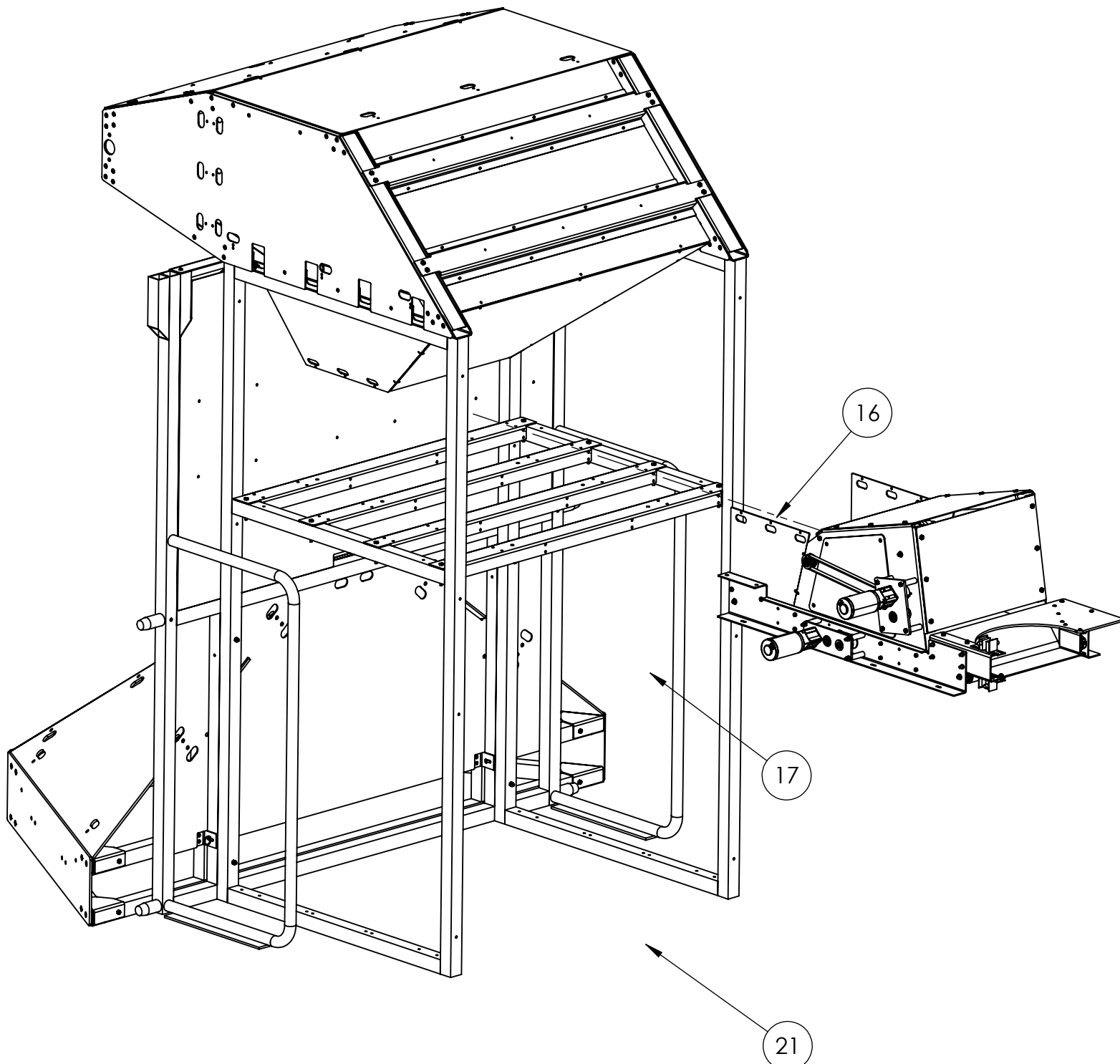


Attach all Subassemblies and panels as shown

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	TITLE:  Speaker						
	DRAWN	JO	12/19/2023							
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE <b>C</b>			DWG. NO. <b>GE-24300</b>		REV <b>A</b>	
<b>MATERIAL/FINISH:</b>	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:16			SHEET 4 OF 6			
DO NOT SCALE DRAWING										

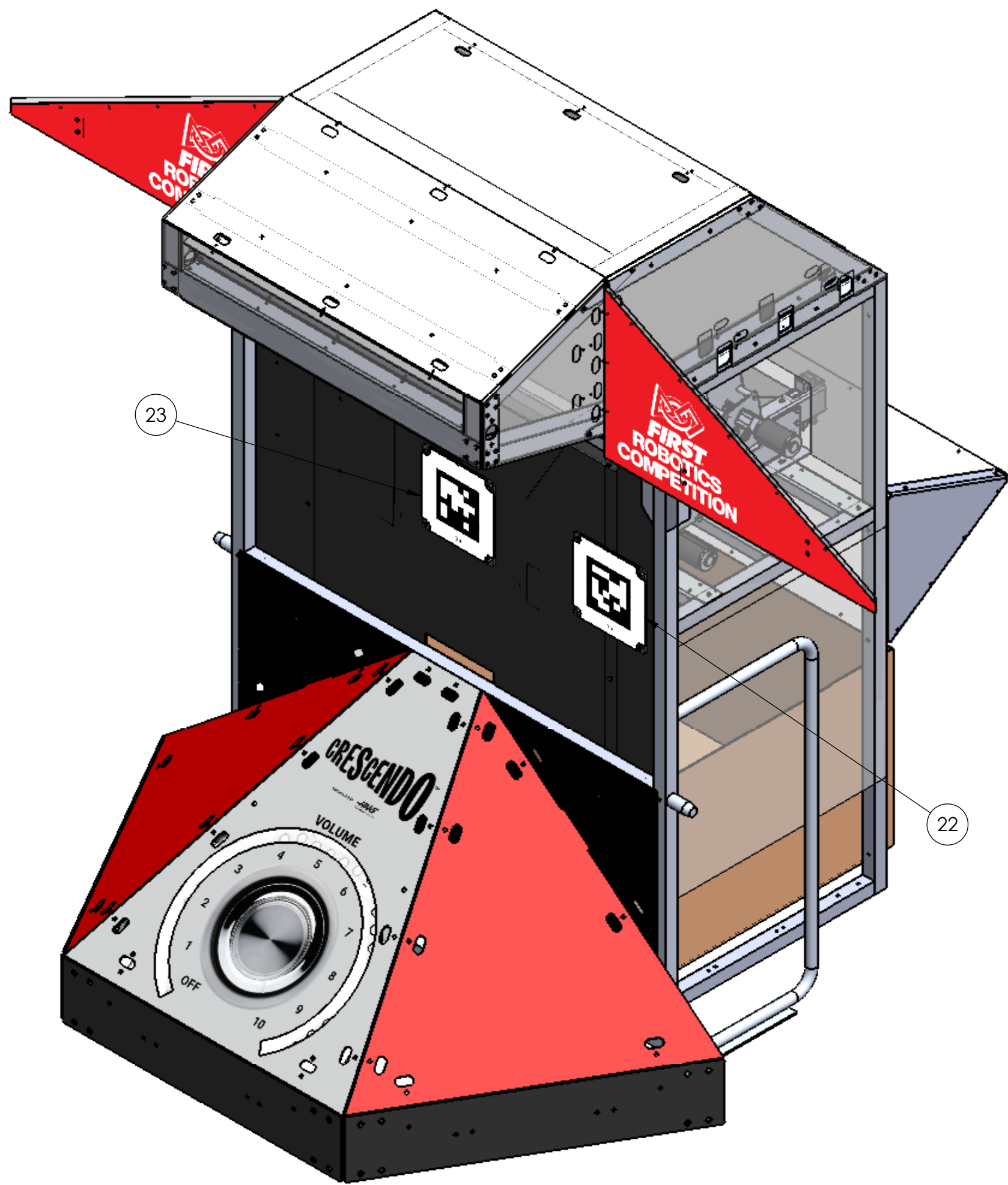


Attach Ramps, Wings and Lights with 50lb Cable Ties

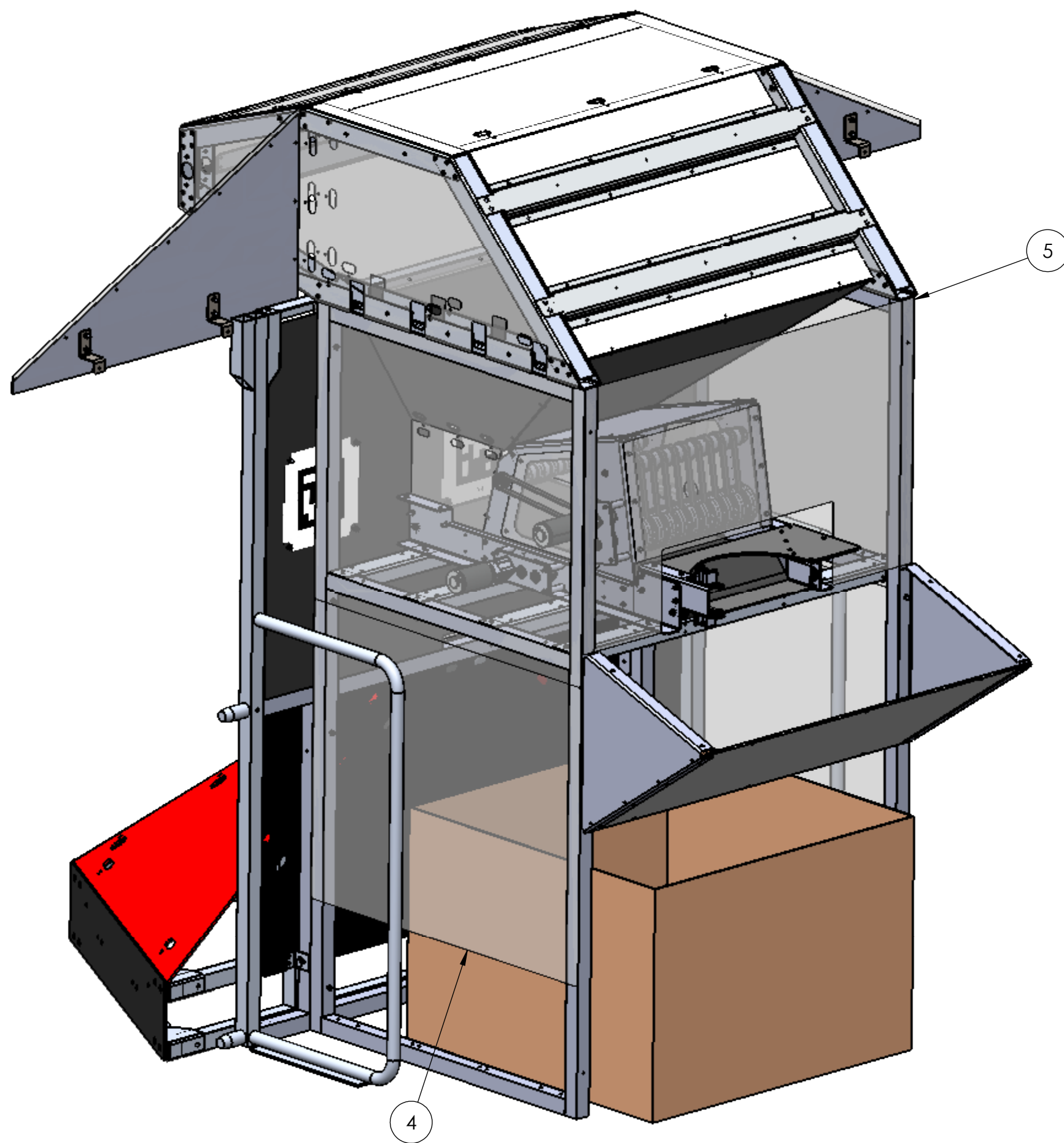


Attach 16 to assembly with 1" bolts, then attach 17 with 50lb cable ties  
Slide 21 into place under ring counter

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	TITLE: <div>Speaker</div>		
	DRAWN	JO	12/19/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	PROPRIETARY AND CONFIDENTIAL			SIZE <div>C</div> DWG. NO. <div>GE-24300</div> REV <div>A</div>		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
	MATERIAL/FINISH:	COMMENTS: <div>REMOVE ALL BURRS AND SHARP EDGES.</div>			SCALE: 1:16	
DO NOT SCALE DRAWING						



Attach 22 and 23 with 1" bolts and locknuts



Attach 4 and 5 with hook and loop adhesive

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD	NAME	DATE
DRAWN	JO	12/19/2023

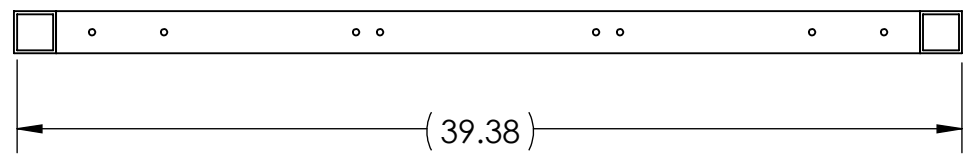
**PROPRIETARY AND CONFIDENTIAL**  
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

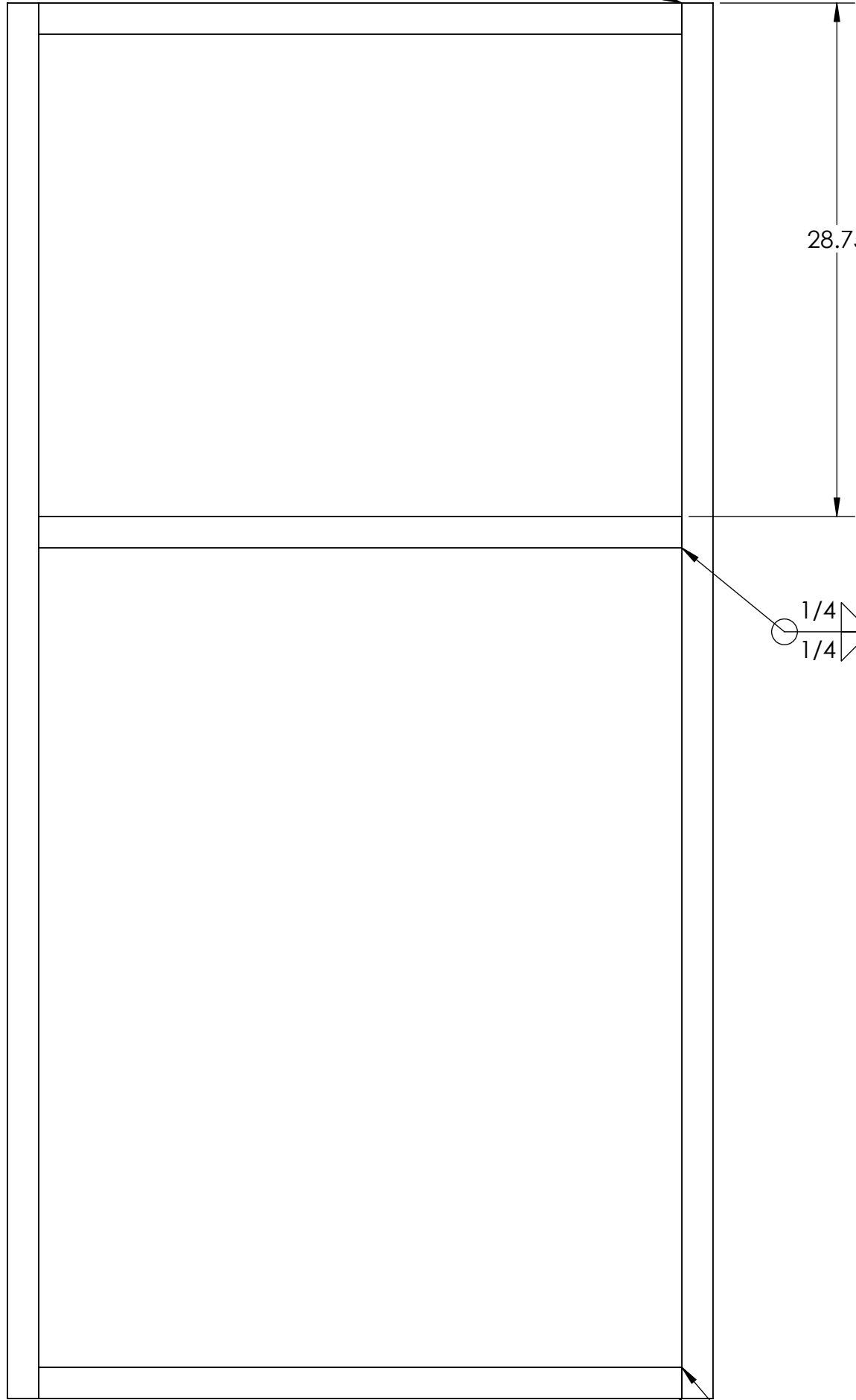
TITLE: Speaker

SIZE	DWG. NO.	REV
C	GE-24300	A

SCALE: 1:12 SHEET 6 OF 6



Grind Welds to flat on this edge

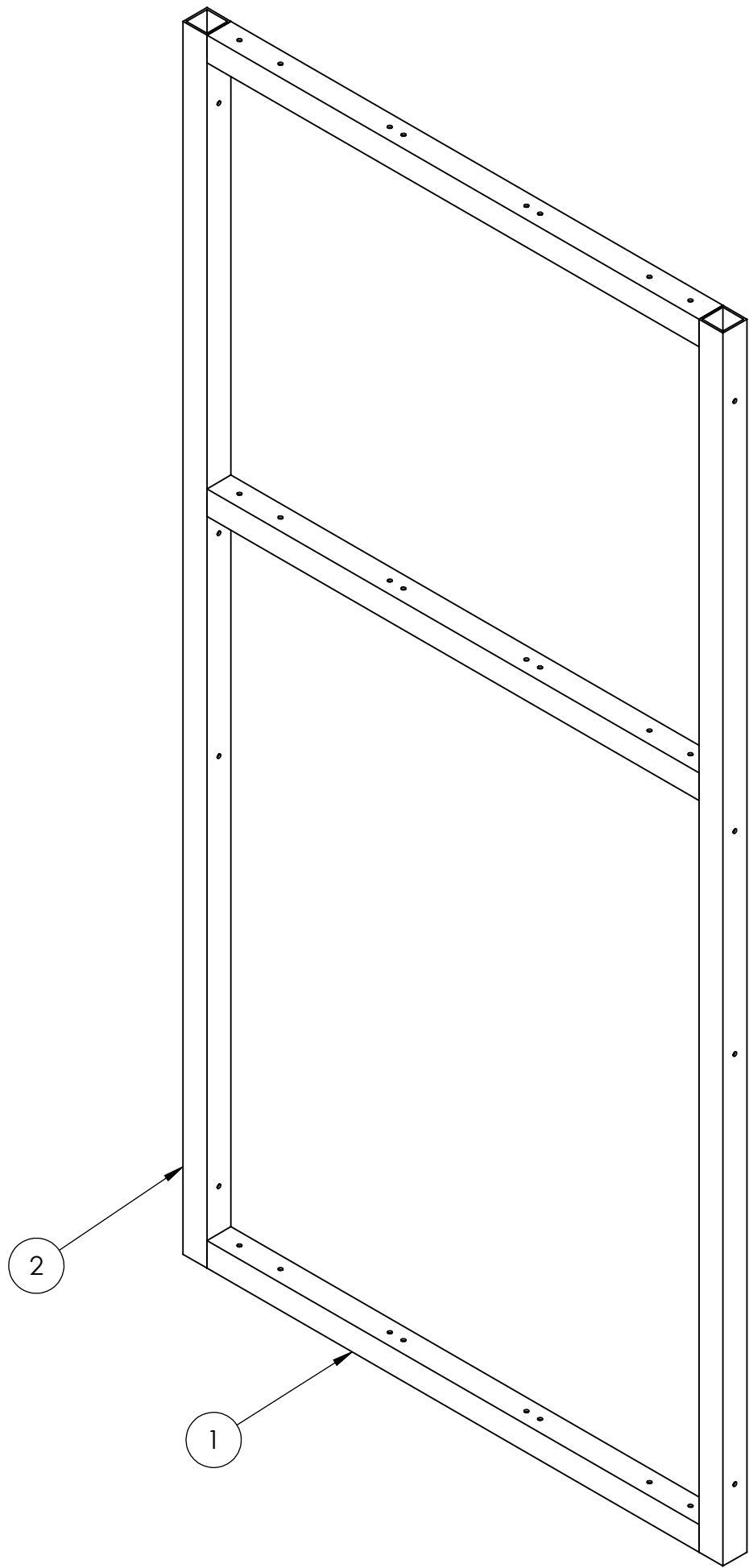
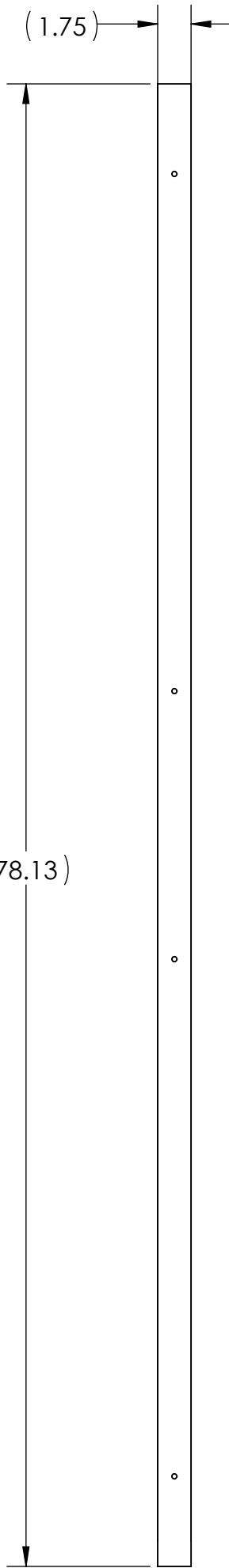


Grind Welds to flat on this edge



Notes:  
Note hole orientation before welding  
Tag or Label with Part Number

1/4  
1/4  
2X

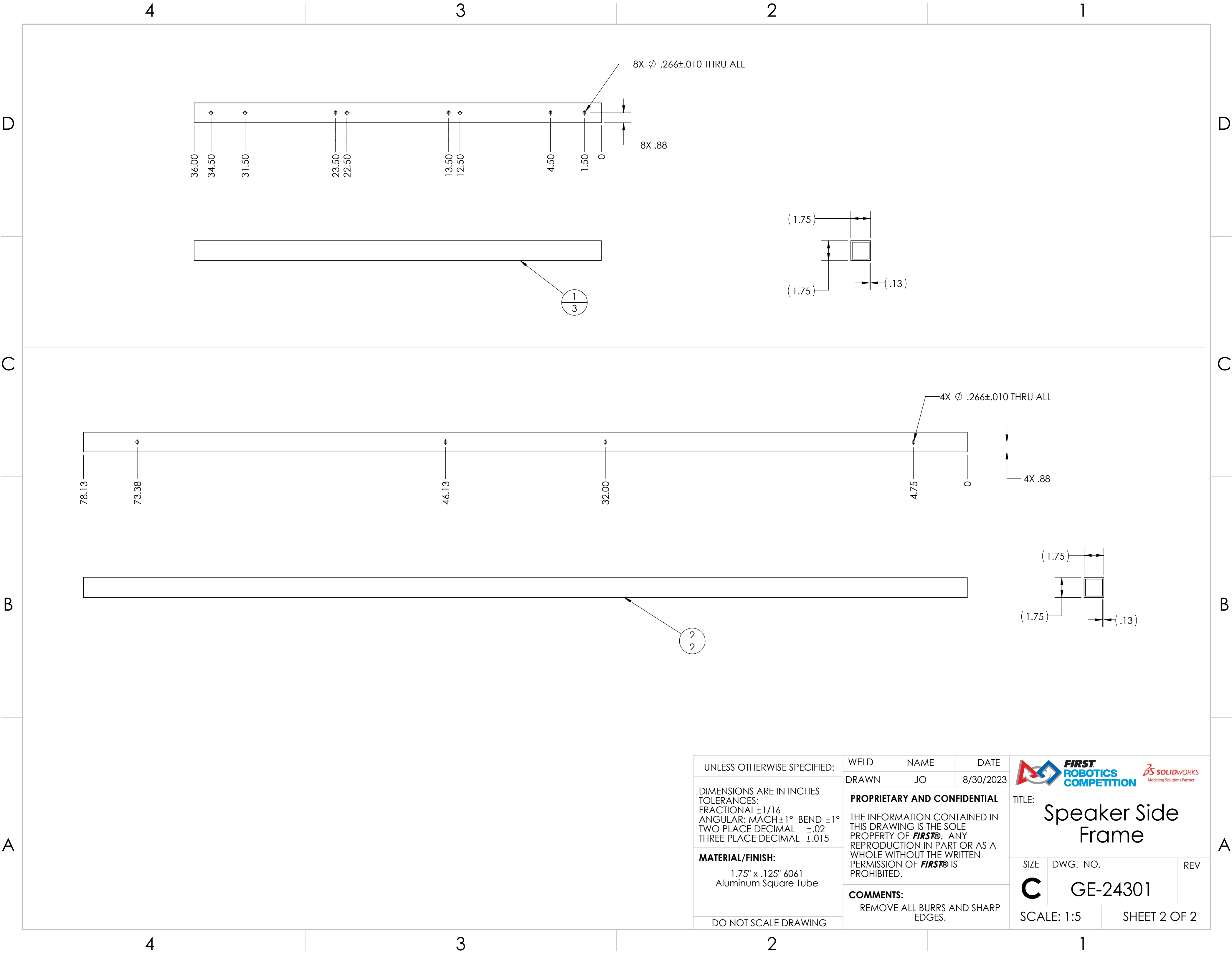
1/4  
4X





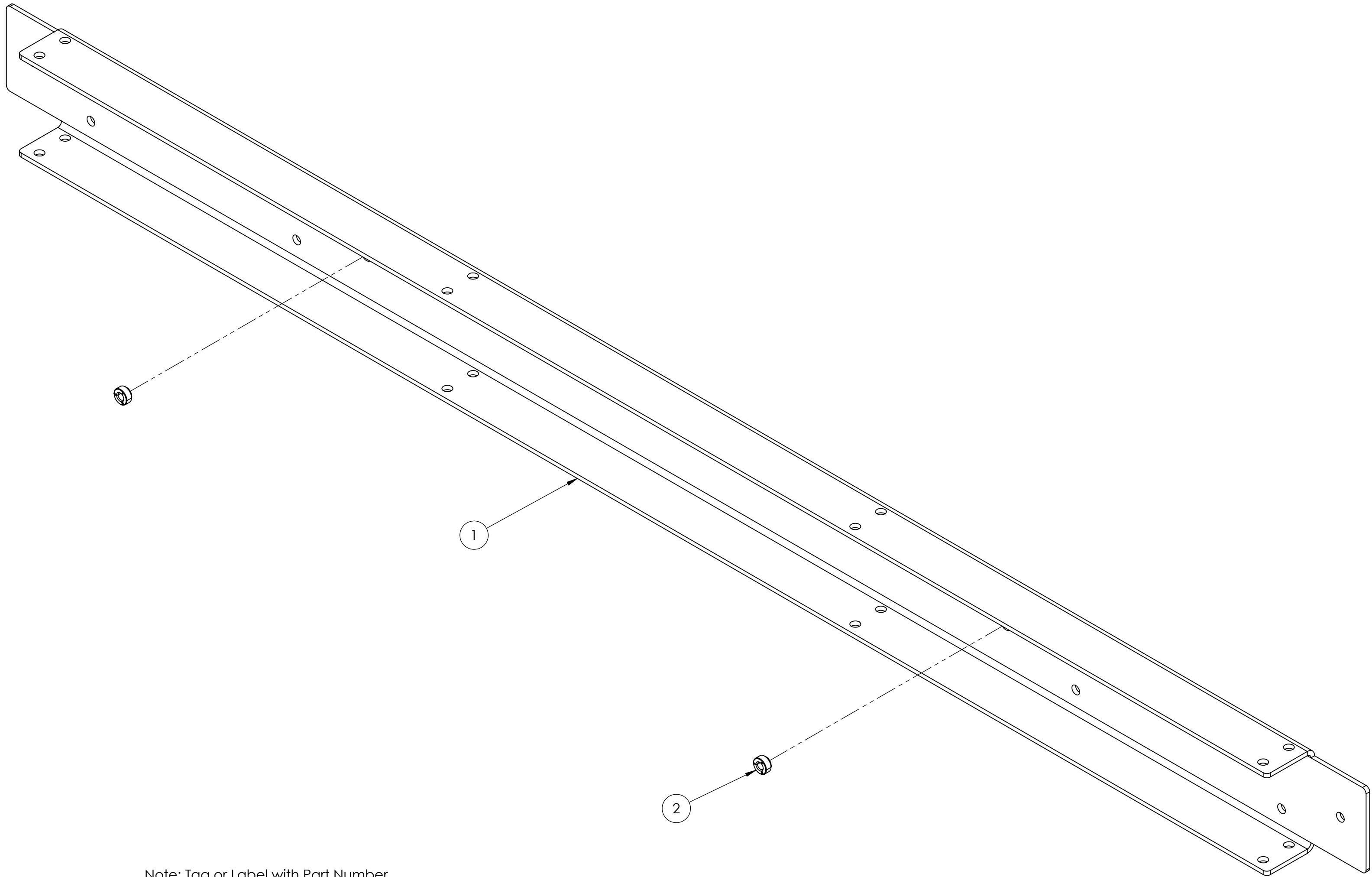
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24301-01	Speaker Depth Tube	3
2	GE-24301-02	Speaker Frame Height Tube	2

UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div>Modeling Solutions Partner</div></div>		
	DRAWN	JO	8/30/2023			
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			TITLE:  Speaker Side Frame		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> ®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> ® IS PROHIBITED.					
MATERIAL/FINISH:  1.75" x .125" 6061 Aluminum Square Tube	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24301	
DO NOT SCALE DRAWING				SCALE: 1:8		SHEET 1 OF 2







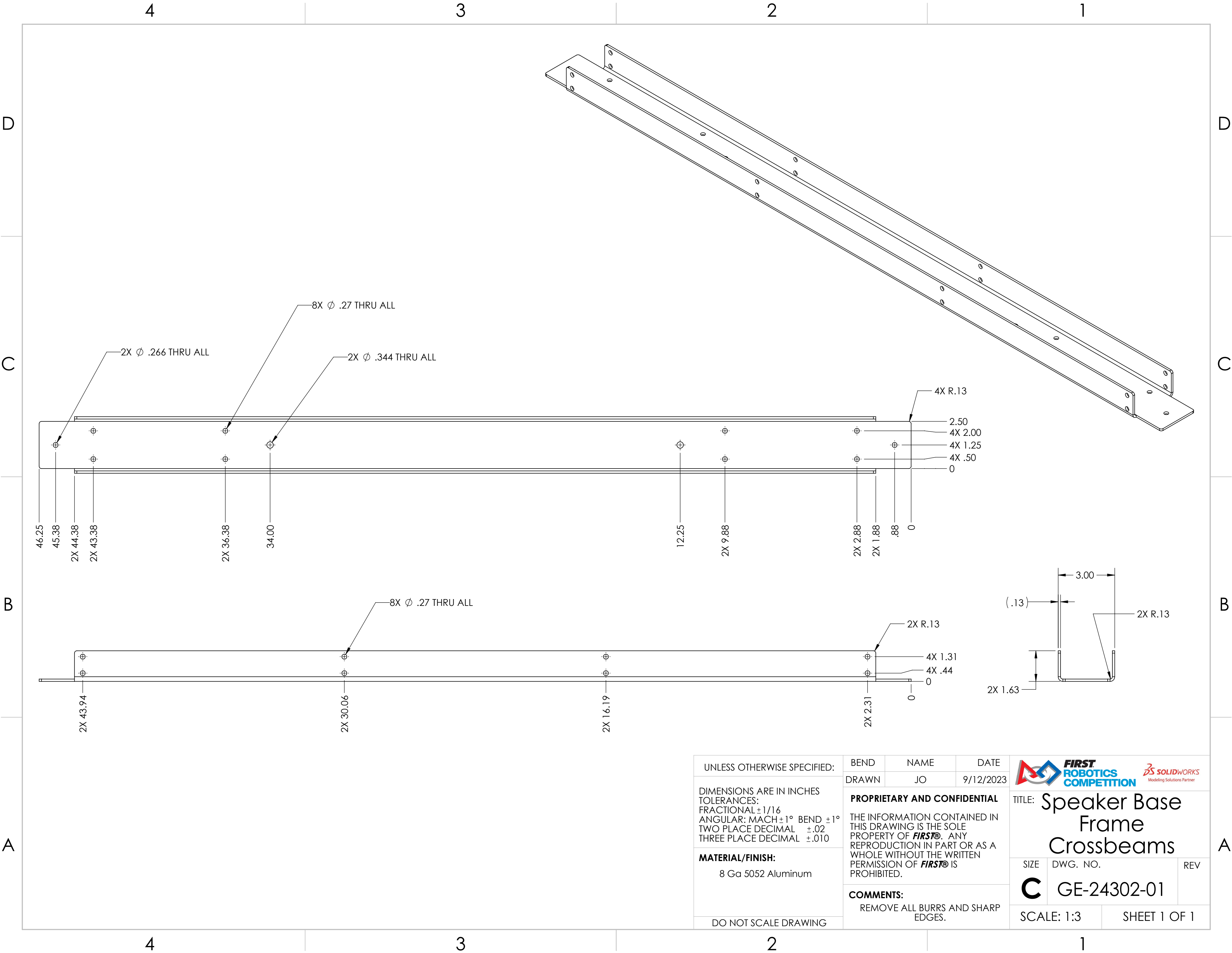
UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div></div>		
	DRAWN	JO	8/30/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	PROPRIETARY AND CONFIDENTIAL			TITLE:  Speaker Side Frame		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:  1.75" x .125" 6061 Aluminum Square Tube	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24301	
DO NOT SCALE DRAWING				SCALE: 1:5		SHEET 2 OF 2



Note: Tag or Label with Part Number

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24302-01	Speaker Base Frame Crossbeams	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	2

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>     <b>DO NOT SCALE DRAWING</b>	VEND	NAME	DATE	<div></div> <div>TITLE: <b>Speaker Crossbeams with PEMs</b></div>			
	DRAWN	JO	10/6/2023				
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				<b>C</b>	GE-24302	
SCALE: 1:2		SHEET 1 OF 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  $\pm .02$   
THREE PLACE DECIMAL  $\pm .010$

**MATERIAL/FINISH:**  
8 Ga 5052 Aluminum

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	JO	9/12/2023

**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.

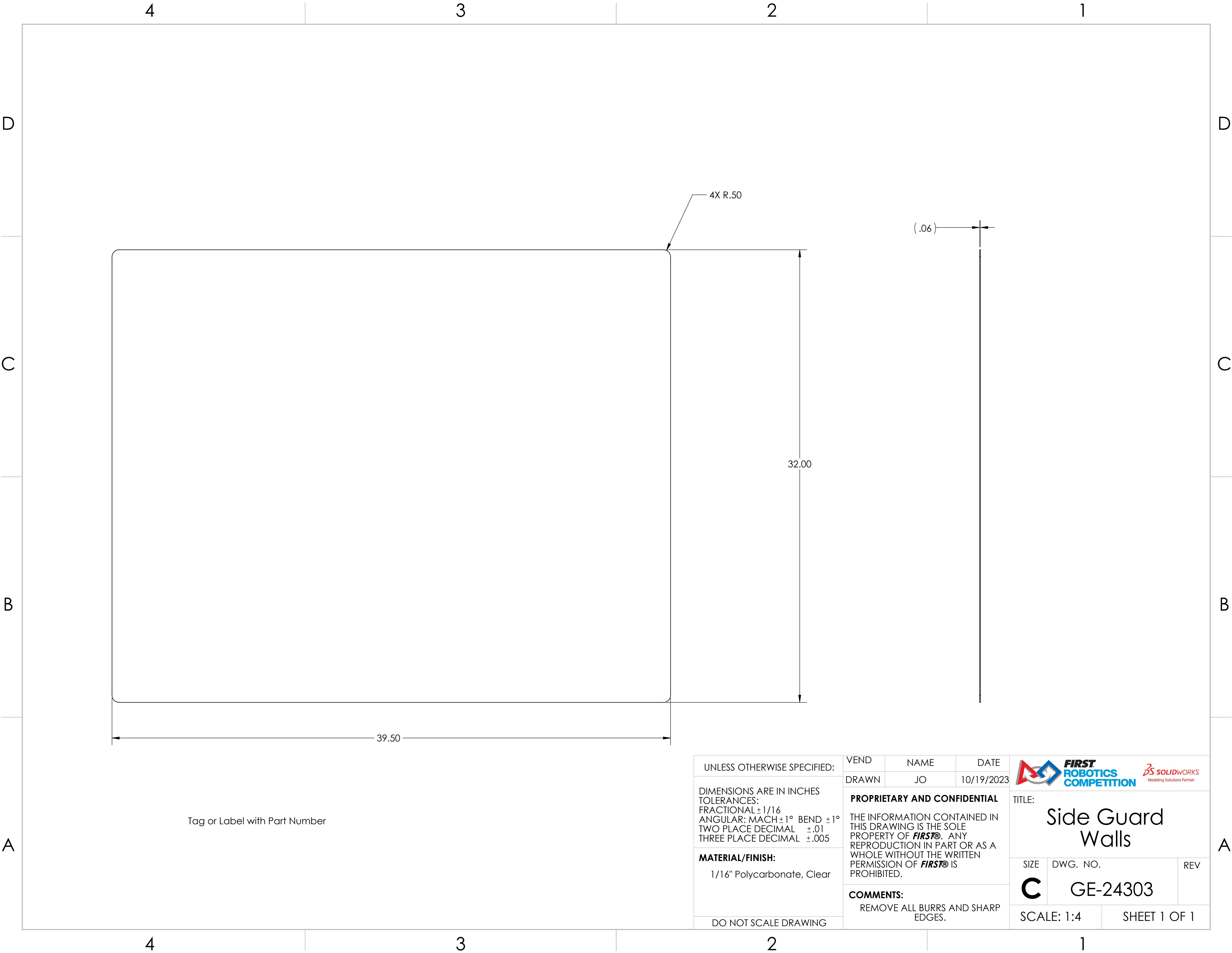
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.





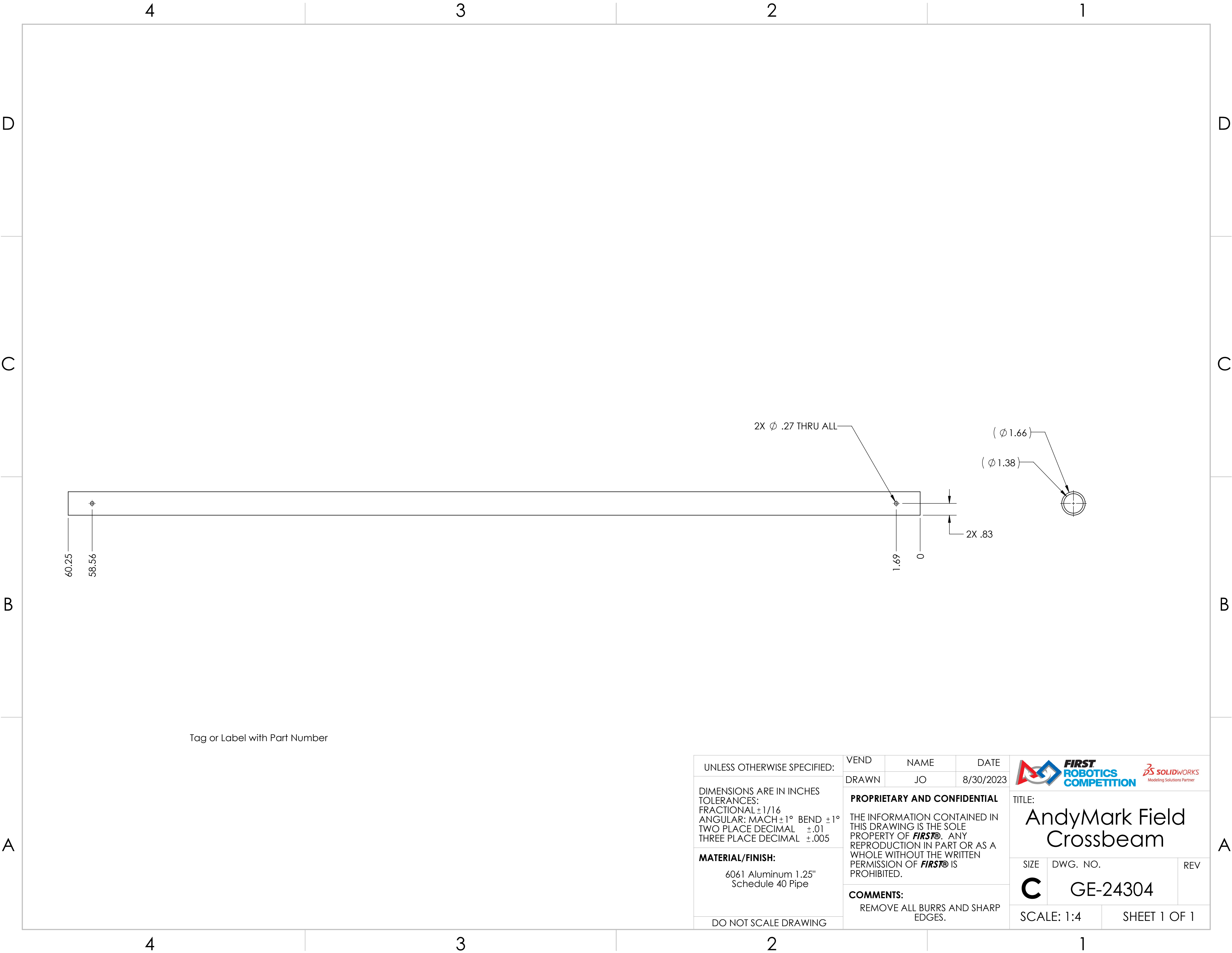
TITLE: **Speaker Base  
Frame  
Crossbeams**



SIZE	DWG. NO.	REV
<b>C</b>	GE-24302-01	

SCALE: 1:3 SHEET 1 OF 1

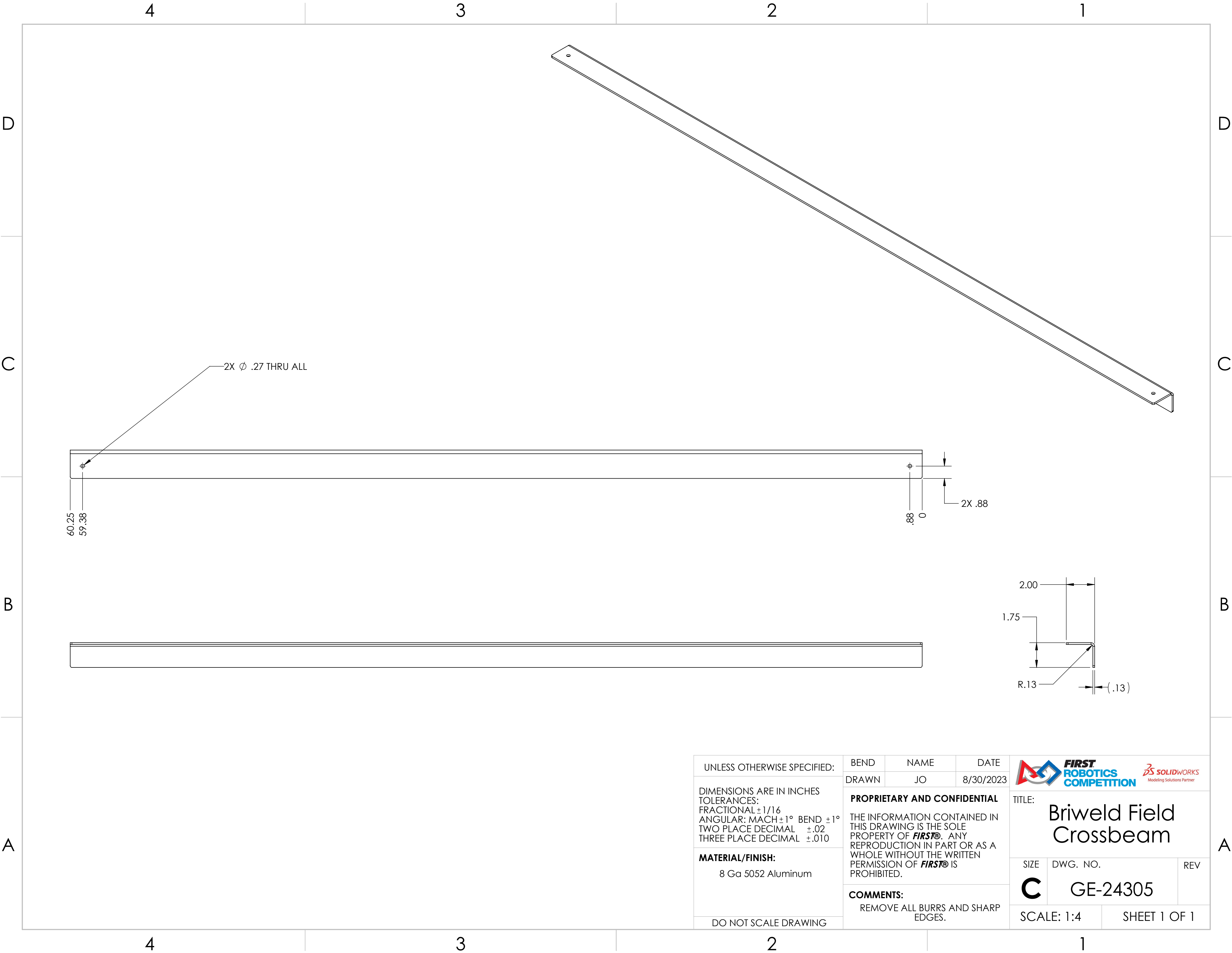




UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1/16" Polycarbonate, Clear    DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE:  Side Guard Walls</div>		
	DRAWN	JO	10/19/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				<b>C</b>	GE-24303	
				SCALE: 1:4		SHEET 1 OF 1

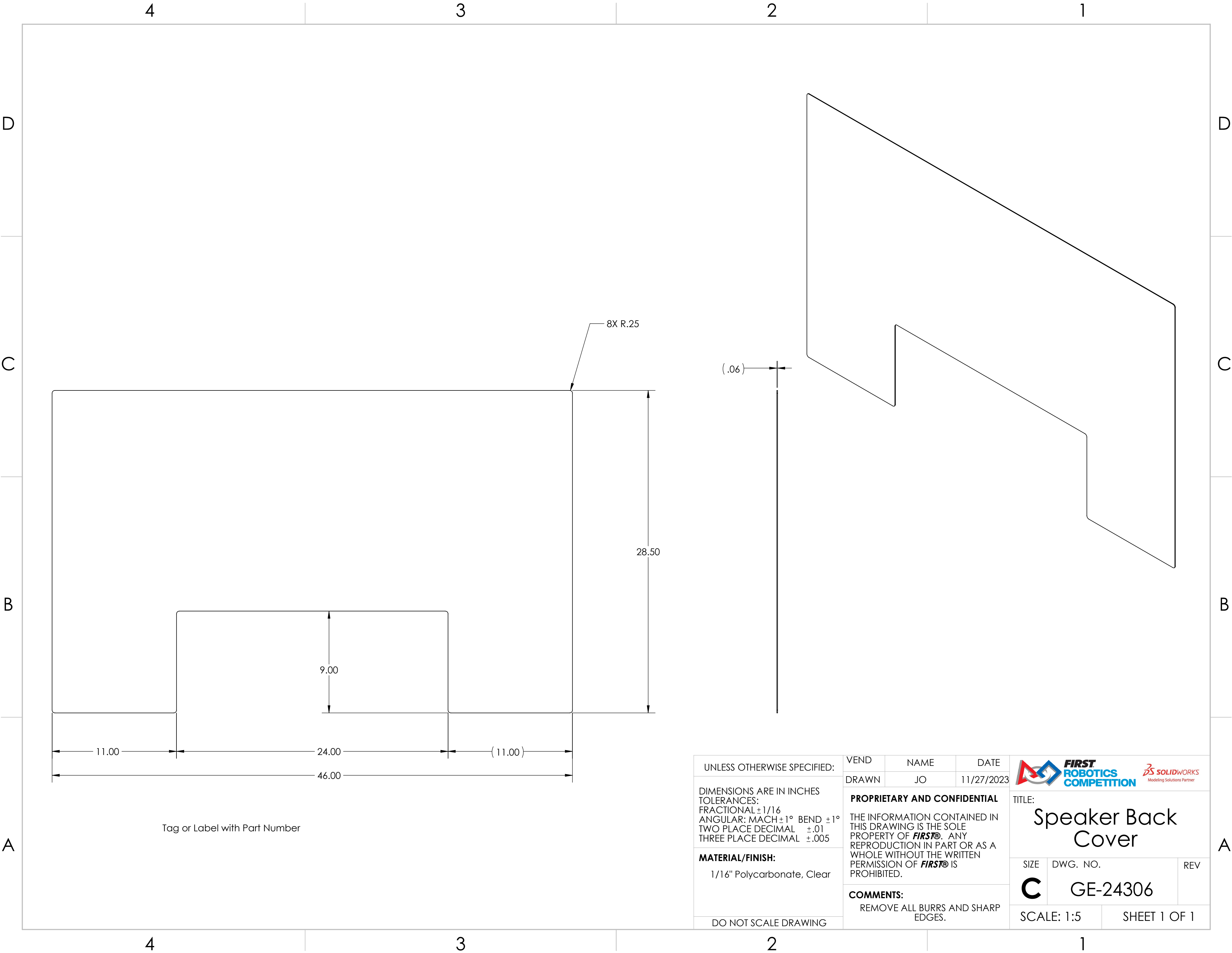


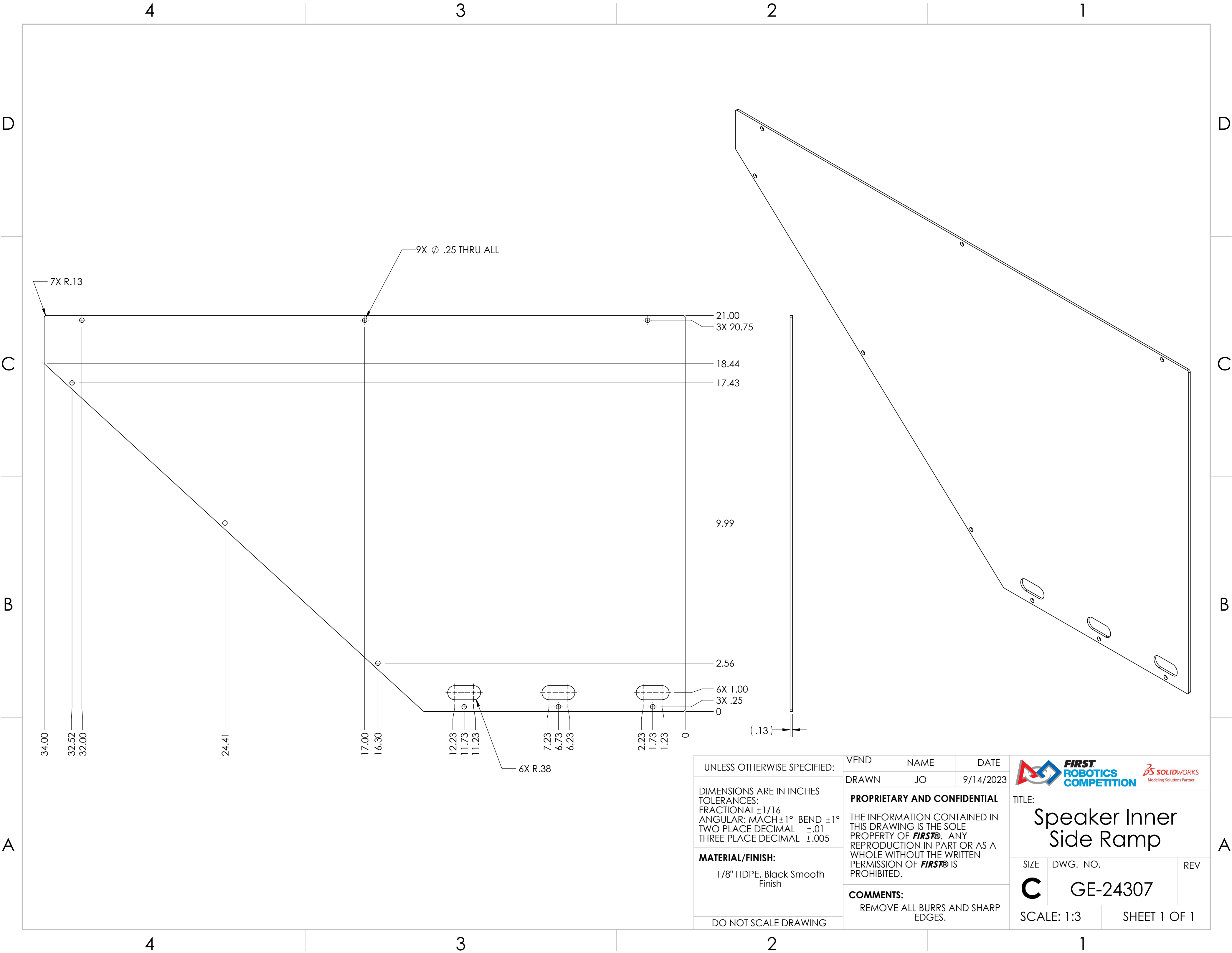
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	JO	8/30/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:  AndyMark Field Crossbeam		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:  6061 Aluminum 1.25" Schedule 40 Pipe	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24304	
DO NOT SCALE DRAWING				SCALE: 1:4		SHEET 1 OF 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 $\pm .02$ THREE PLACE DECIMAL $\pm .010$  <b>MATERIAL/FINISH:</b>  8 Ga 5052 Aluminum   DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <b>Briweld Field Crossbeam</b></div>		
	DRAWN	JO	8/30/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24305	
SCALE: 1:4		SHEET 1 OF 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:**  
1/8" HDPE, Black Smooth Finish

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	9/14/2023

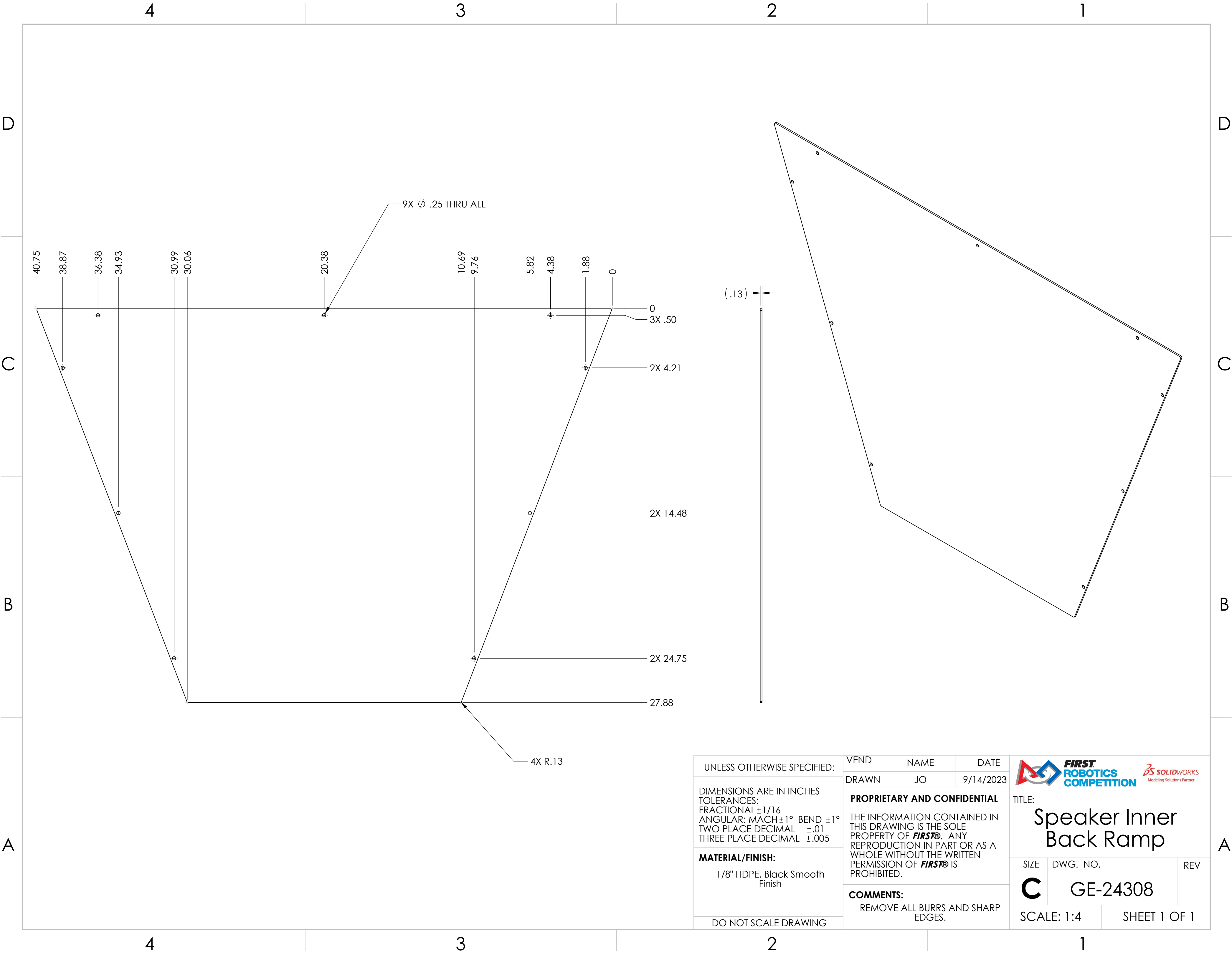
**PROPRIETARY AND CONFIDENTIAL**  
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.



**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

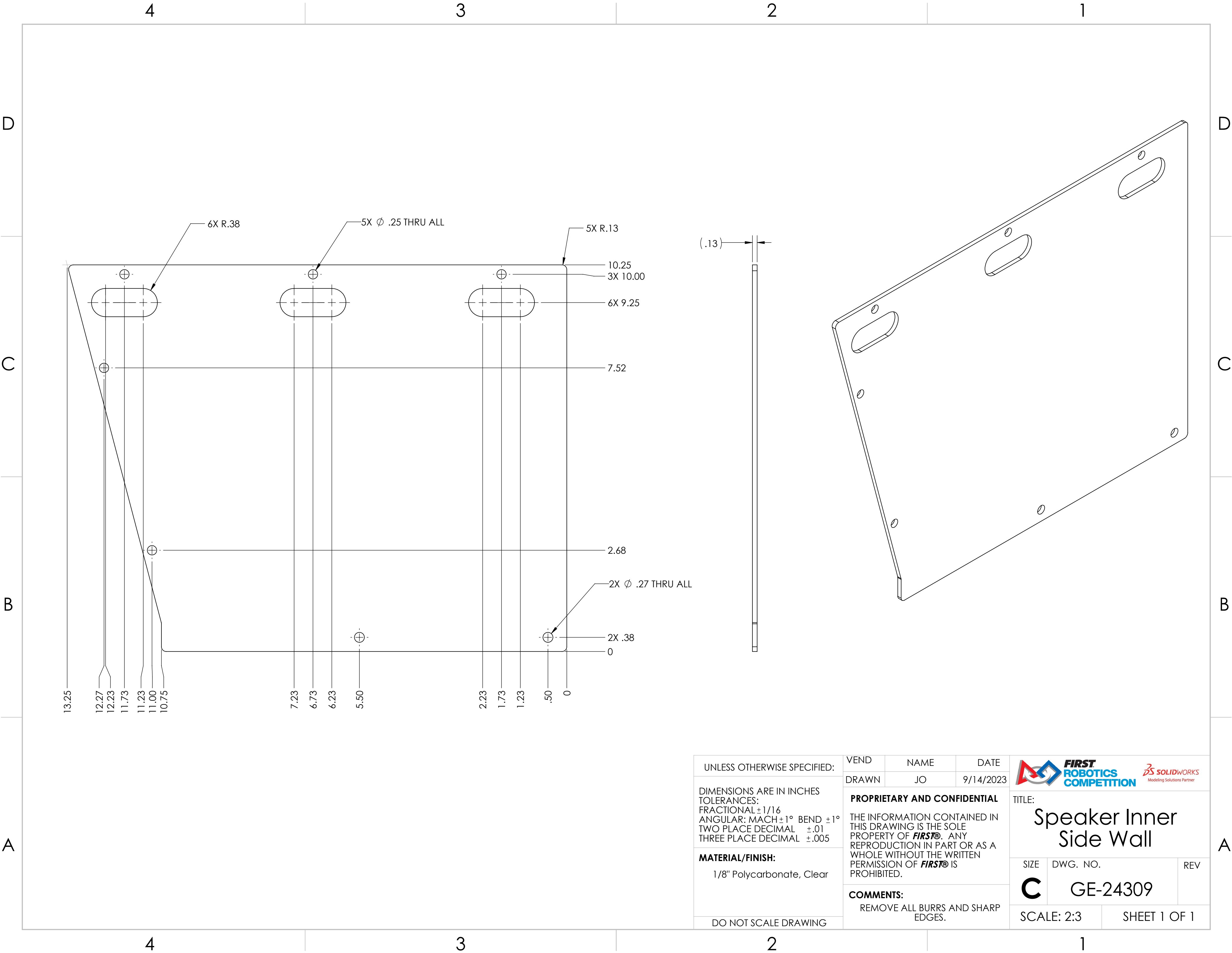




TITLE: <b>Speaker Inner Side Ramp</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24307</b>	REV

SCALE: 1:3      SHEET 1 OF 1



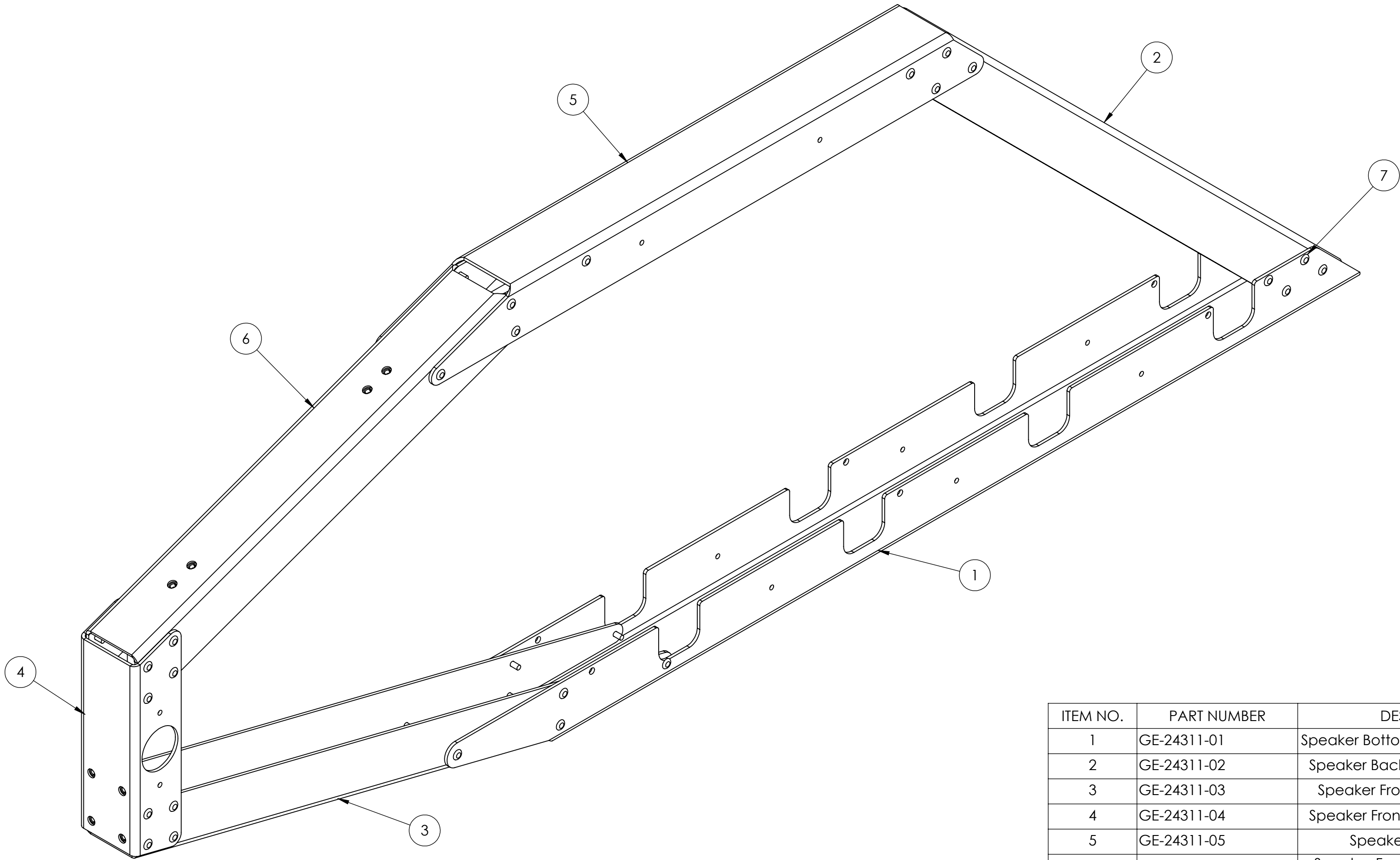
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$  <b>MATERIAL/FINISH:</b>  1/8" HDPE, Black Smooth Finish  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <b>Speaker Inner Back Ramp</b></div>		
	DRAWN	JO	9/14/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24308	
SCALE: 1:4		SHEET 1 OF 1				



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1/8" Polycarbonate, Clear  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <b>Speaker Inner Side Wall</b></div>		
	DRAWN	JO	9/14/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				<b>C</b>	GE-24309	
				SCALE: 2:3		SHEET 1 OF 1

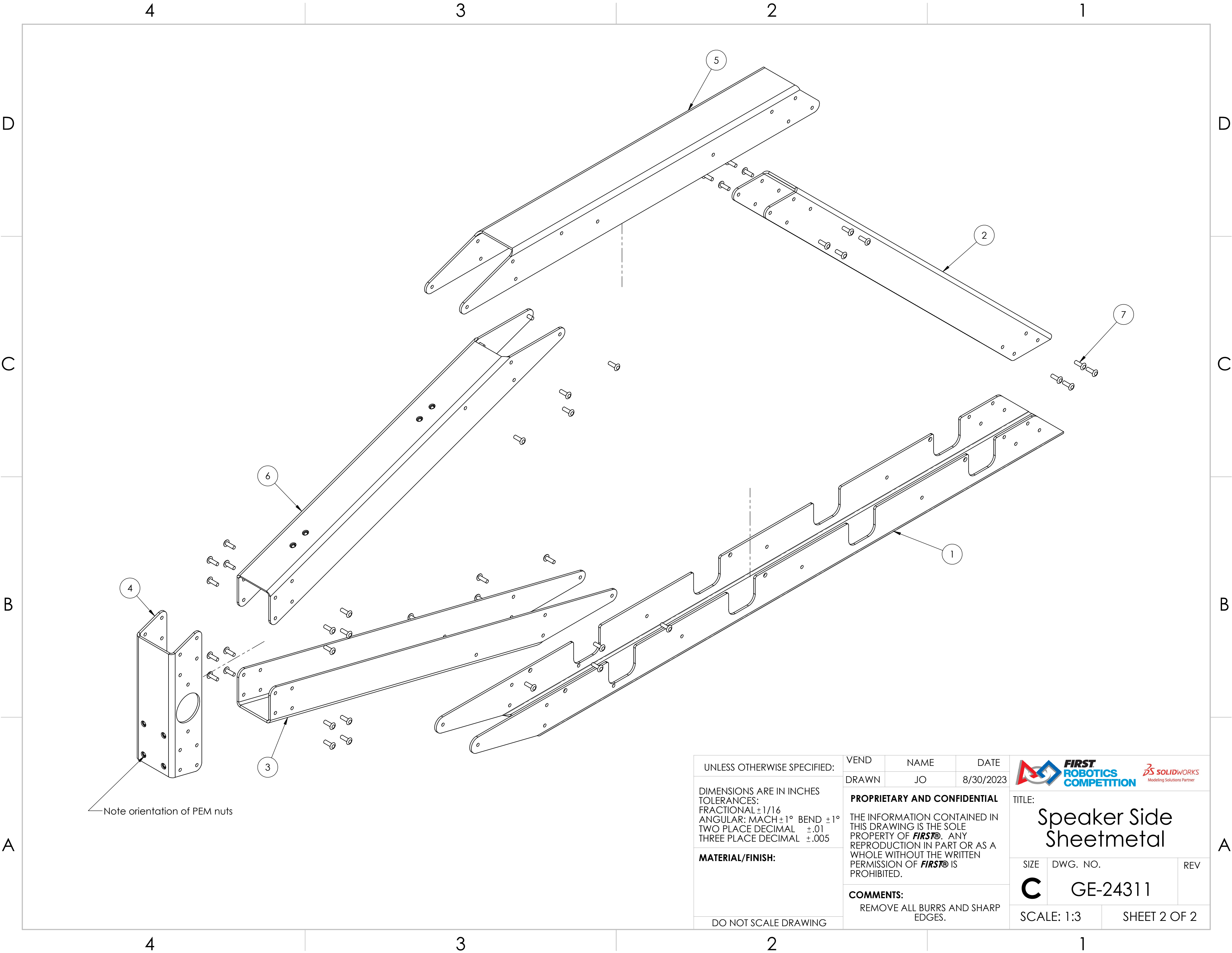






ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24311-01	Speaker Bottom Channel with PEMs	1
2	GE-24311-02	Speaker Back Channel with PEMs	1
3	GE-24311-03	Speaker Front Bottom Channel	1
4	GE-24311-04	Speaker Front Channel with PEMs	1
5	GE-24311-05	Speaker Top Channel	1
6	GE-24311-06	Speaker Front Top Channel with PEMs	1
7	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	48

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 $\pm .005$  <b>MATERIAL/FINISH:</b>     <b>DO NOT SCALE DRAWING</b>	VEND	NAME	DATE	TITLE:  <b>Speaker Side Sheetmetal</b>	
	DRAWN	JO	8/30/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24311
		SCALE: 1:3		SHEET 1 OF 2	



Note orientation of PEM nuts

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

DRAWN

NAME

JO

DATE

8/30/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.

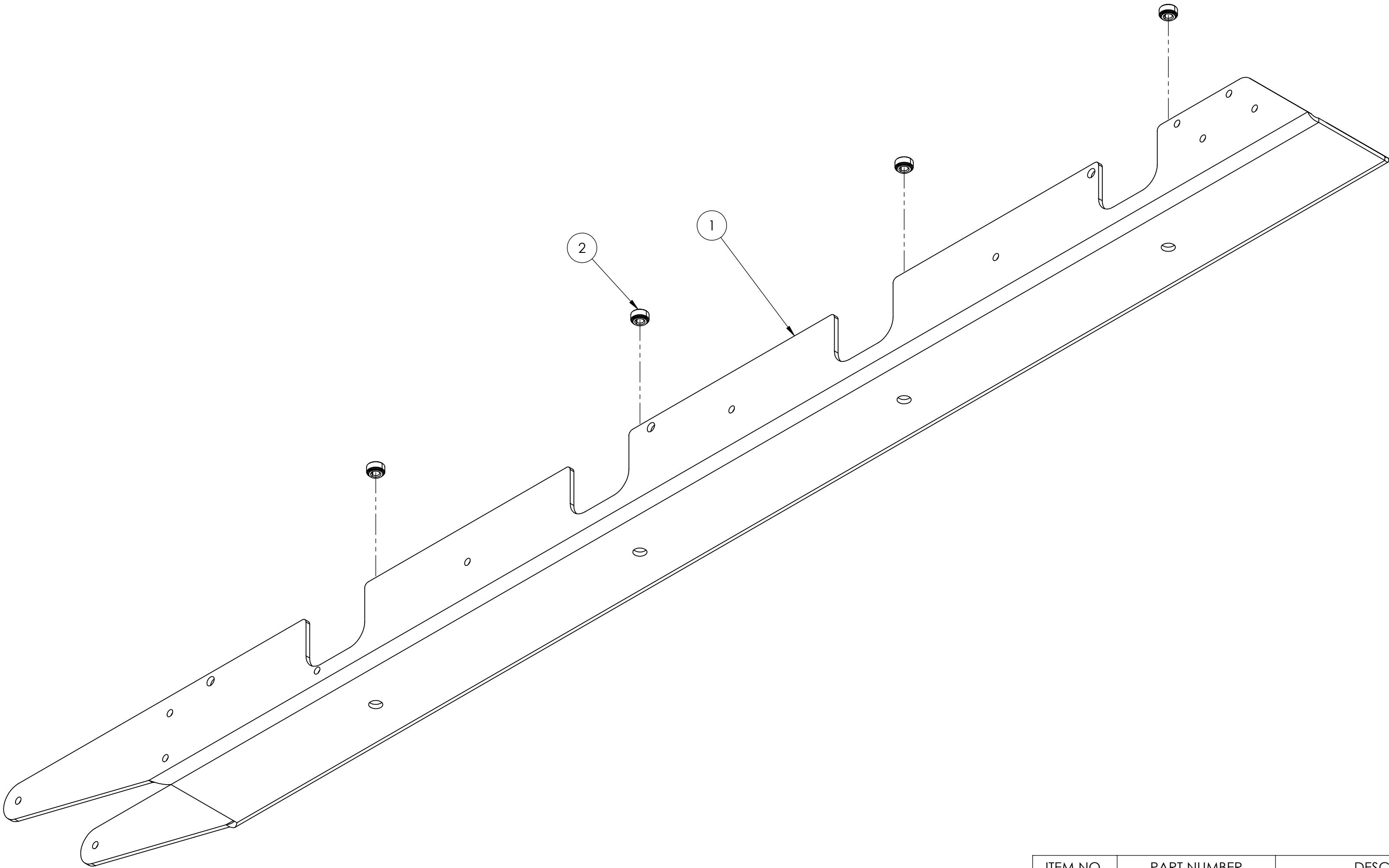


TITLE:  
**Speaker Side Sheetmetal**

SIZE DWG. NO. REV

**C** GE-24311

SCALE: 1:3 SHEET 2 OF 2



Notes:  
Insert PEM hardware as shown

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24311-07	Speaker Bottom Channel	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	4

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	JO	8/30/2023

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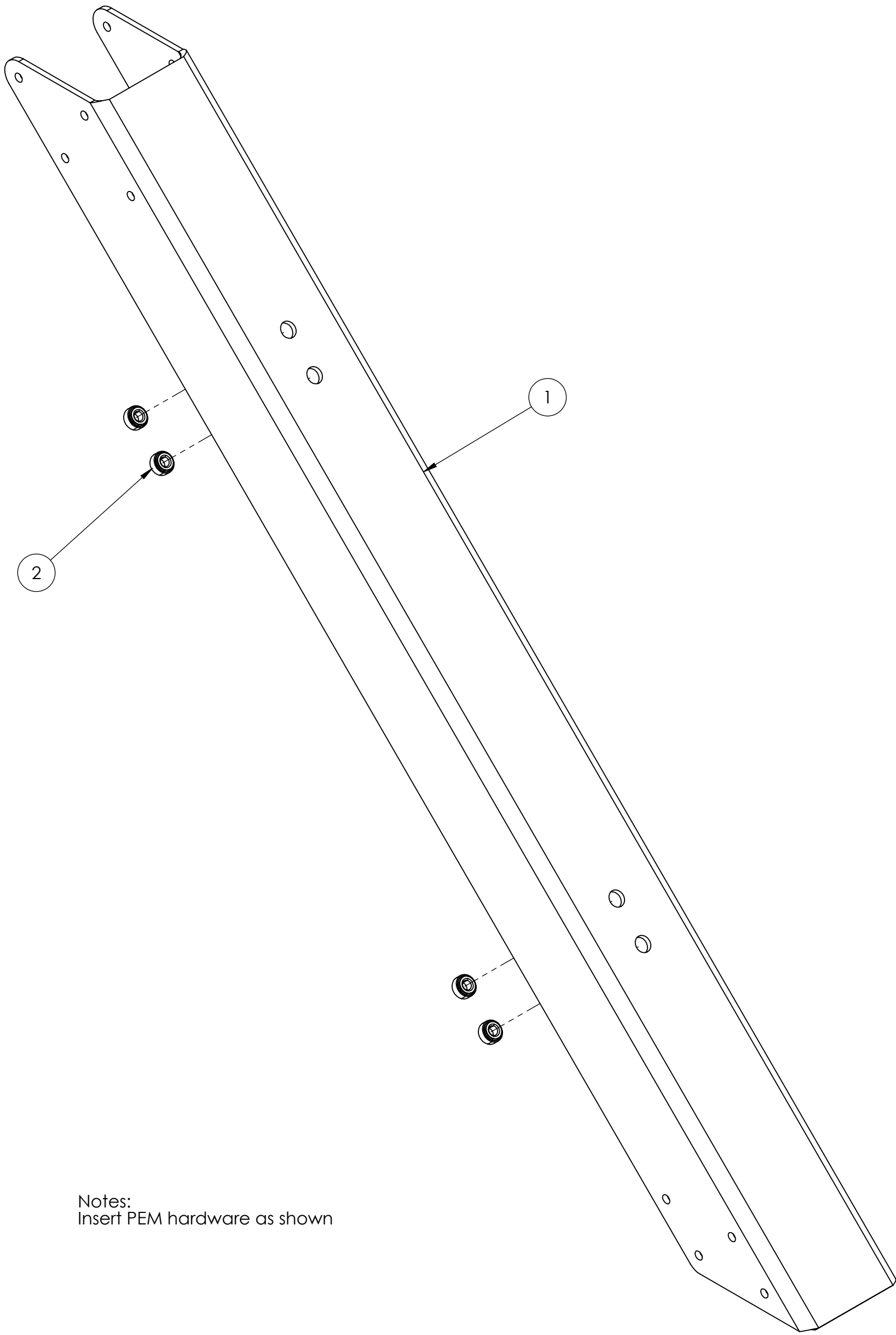
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE: **Speaker Bottom Channel with PEMs**

SIZE	DWG. NO.	REV
<b>C</b>	GE-24311-01	

SCALE: 1:2      SHEET 1 OF 1



Notes:  
Insert PEM hardware as shown

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24311-08	Speaker Back Channel	1
2	pem_clinchnut_.25_20 _.054	1/4-20 self-clinching nut, .054 shank	4

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

JO

8/30/2023

PROPRIETARY AND CONFIDENTIAL

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WHOLE WITHOUT THE WRITTEN  
PERMISSION OF **FIRST®** IS  
PROHIBITED.

COMMENTS:

REMOVE ALL BURRS AND SHARP  
EDGES.



**FIRST**  
ROBOTICS  
COMPETITION



Modeling Solutions Partner

TITLE: **Speaker Back  
Channel with  
PEMs**

SIZE

**C**

DWG. NO.

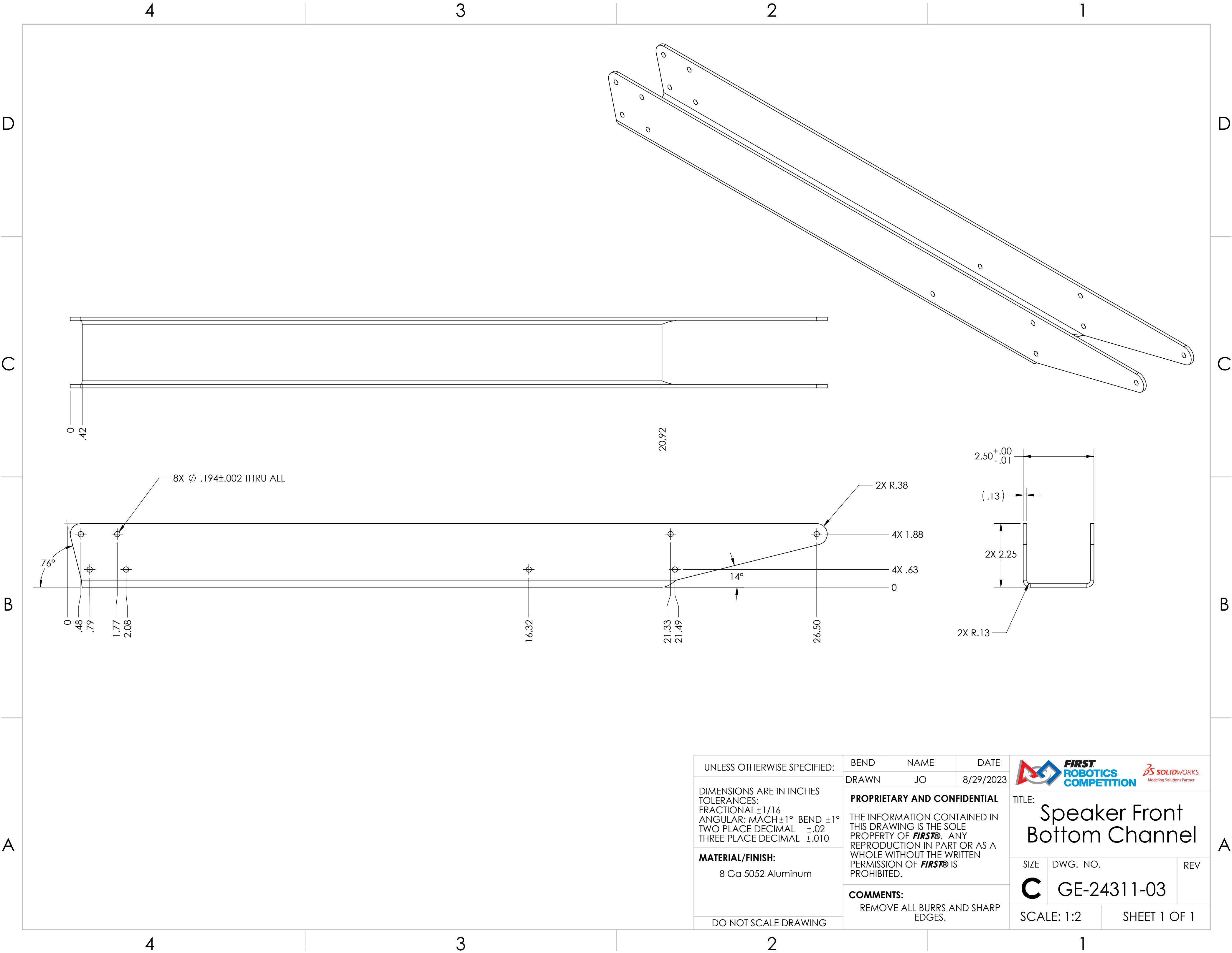
**GE-24311-02**

REV

SCALE: 1:2

SHEET 1 OF 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  $\pm .02$   
THREE PLACE DECIMAL  $\pm .010$

**MATERIAL/FINISH:**  
8 Ga 5052 Aluminum

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	JO	8/29/2023

**PROPRIETARY AND CONFIDENTIAL**  
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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

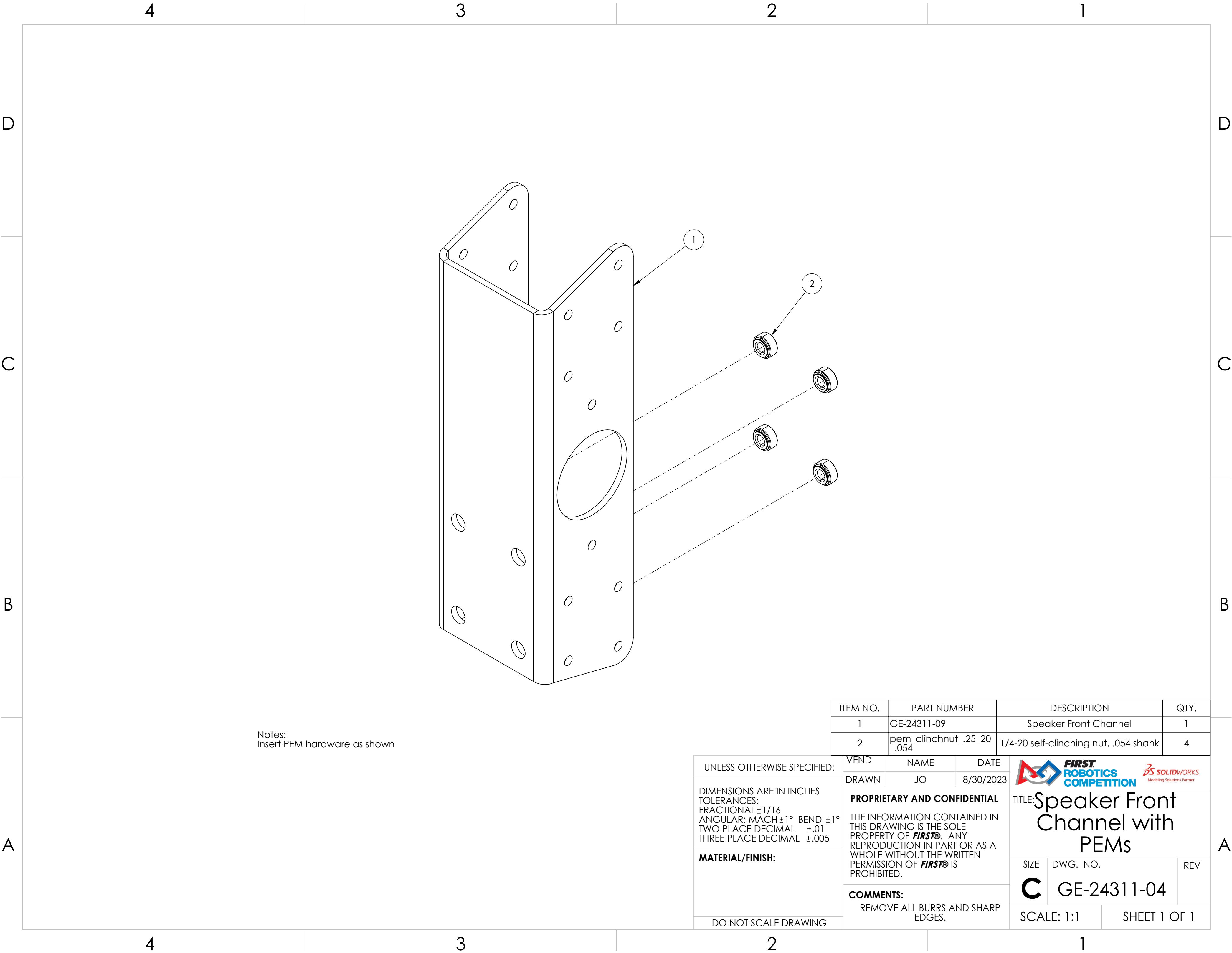


TITLE:  
**Speaker Front Bottom Channel**

SIZE DWG. NO. REV



**C** GE-24311-03

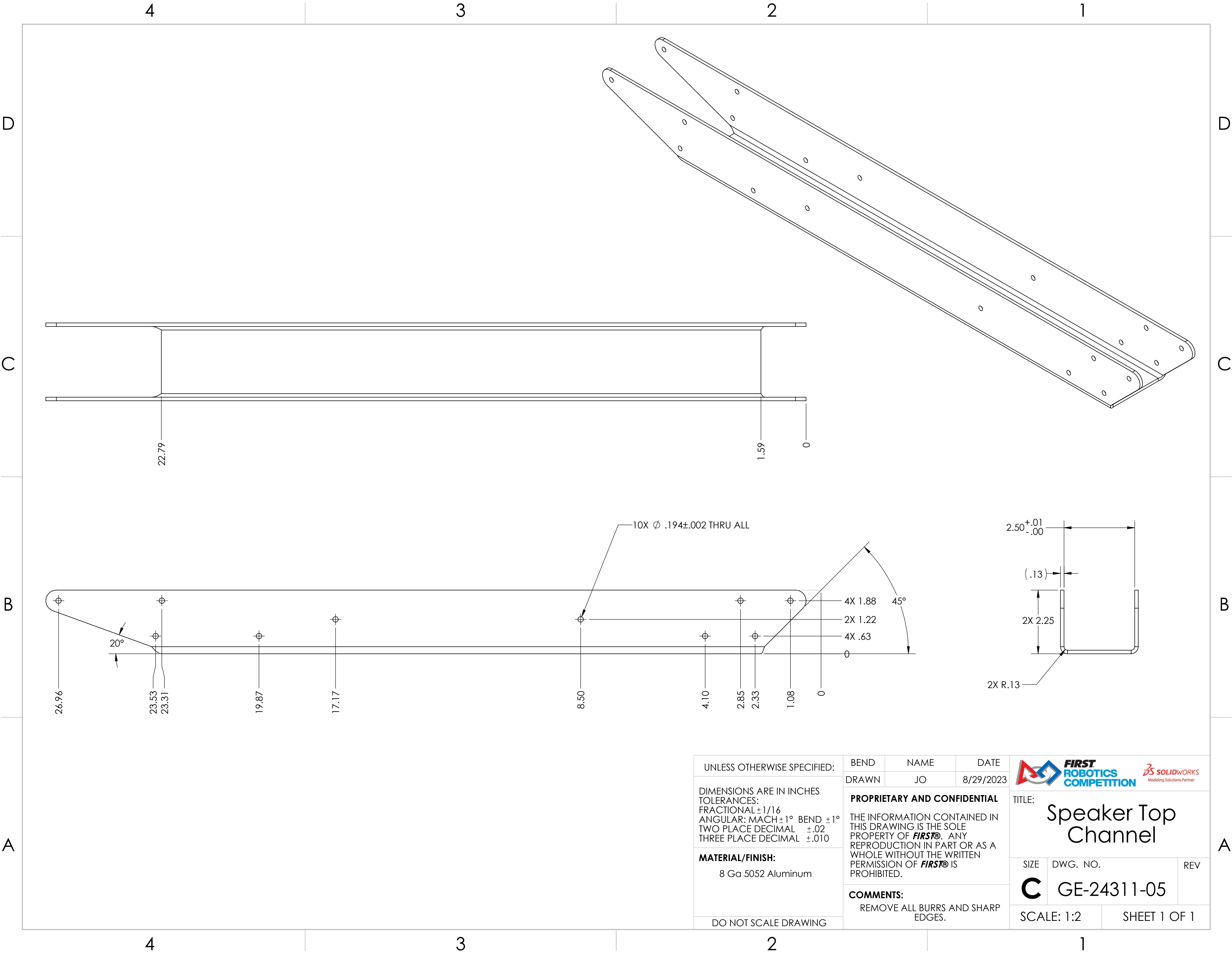
SCALE: 1:2 SHEET 1 OF 1





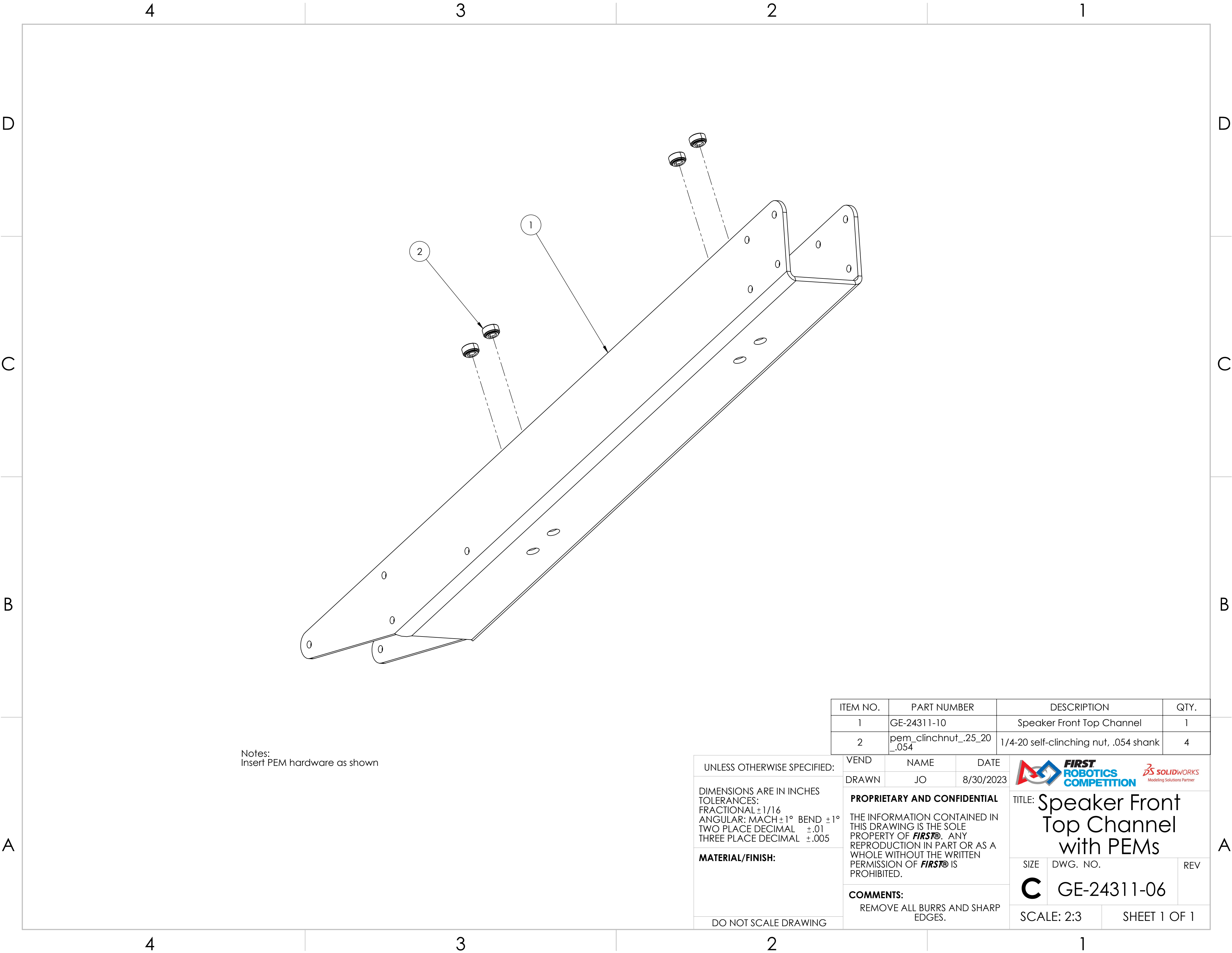
Notes:  
Insert PEM hardware as shown

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24311-09	Speaker Front Channel	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	4

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div></div><div>TITLE: <b>Speaker Front Channel with PEMs</b></div></div>	
	DRAWN	JO	8/30/2023		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO.	
REV					
<b>MATERIAL/FINISH:</b>				<b>C</b>	GE-24311-04
DO NOT SCALE DRAWING				SCALE: 1:1	SHEET 1 OF 1





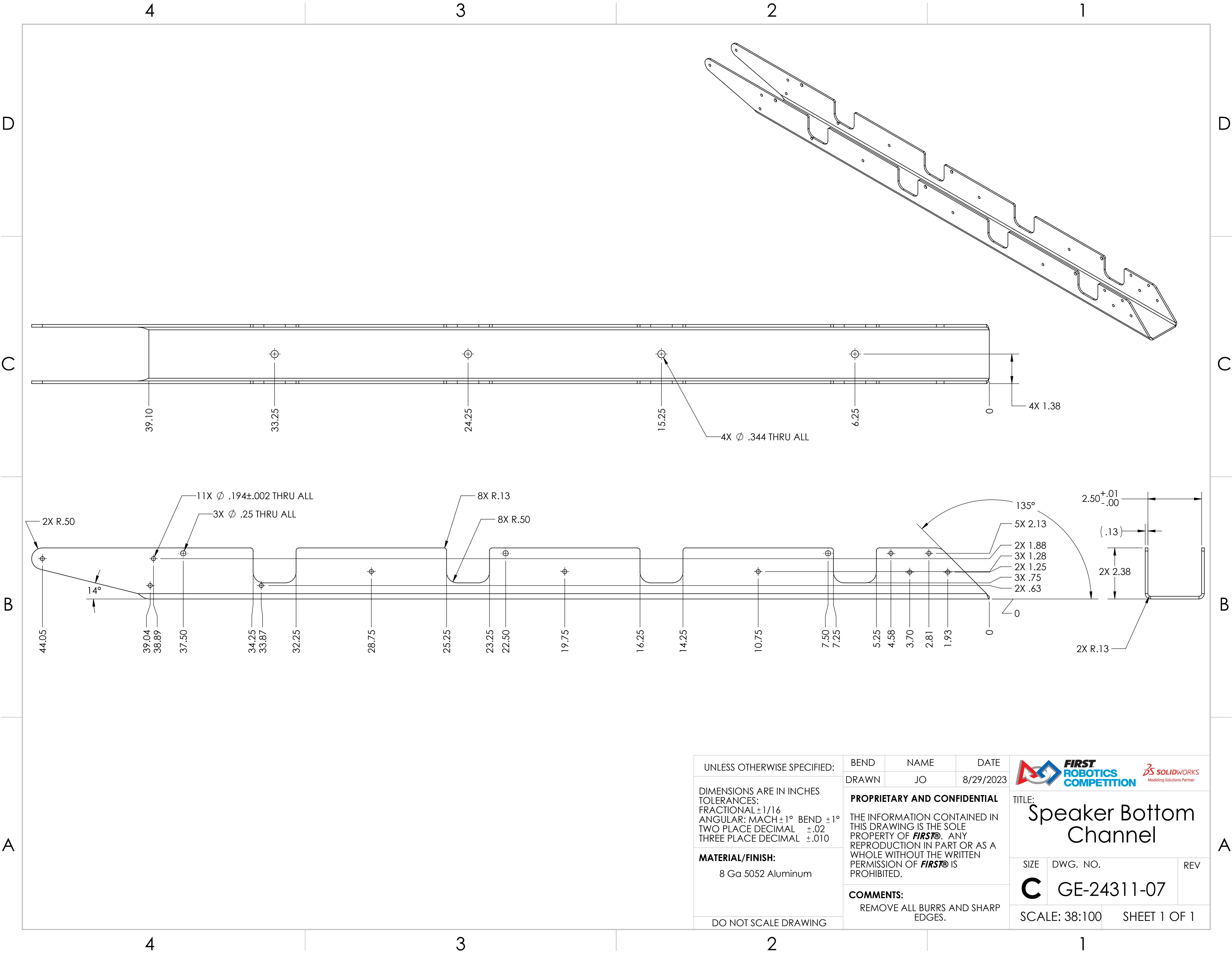
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$  <b>MATERIAL/FINISH:</b> 8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	  TITLE: <b>Speaker Top Channel</b>	
	DRAWN	JO	8/29/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24311-05
SCALE: 1:2		SHEET 1 OF 1			





Notes:  
Insert PEM hardware as shown

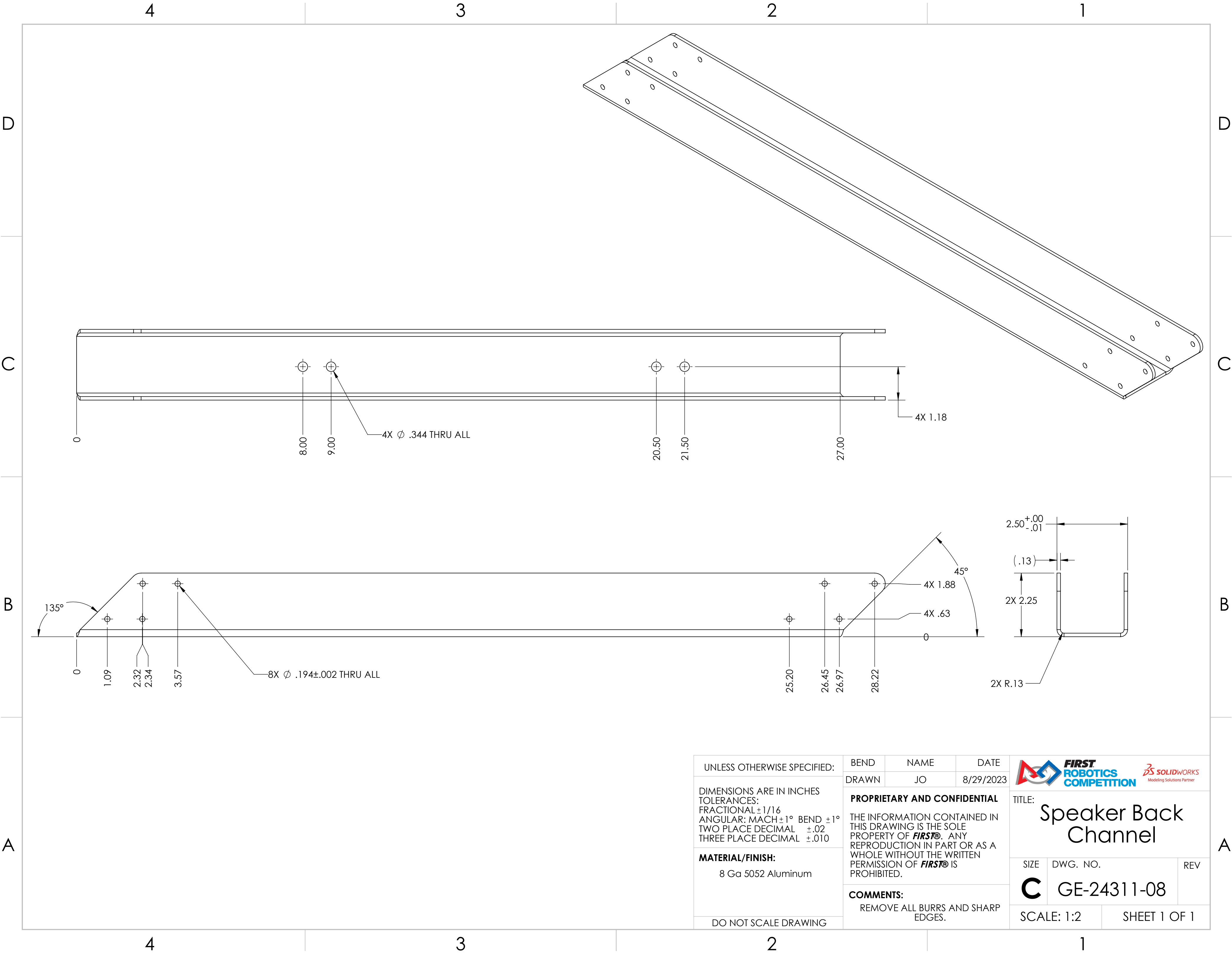
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24311-10	Speaker Front Top Channel	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	4



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  MATERIAL/FINISH:    DO NOT SCALE DRAWING	VEND	NAME	DATE	<div><div></div><div>TITLE: Speaker Front Top Channel with PEMs</div></div>											
	DRAWN	JO	8/30/2023												
	PROPRIETARY AND CONFIDENTIAL				SIZE			DWG. NO.			REV				
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> ®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> ® IS PROHIBITED.														
COMMENTS:				C			GE-24311-06			SCALE: 2:3			SHEET 1 OF 1		
REMOVE ALL BURRS AND SHARP EDGES.															

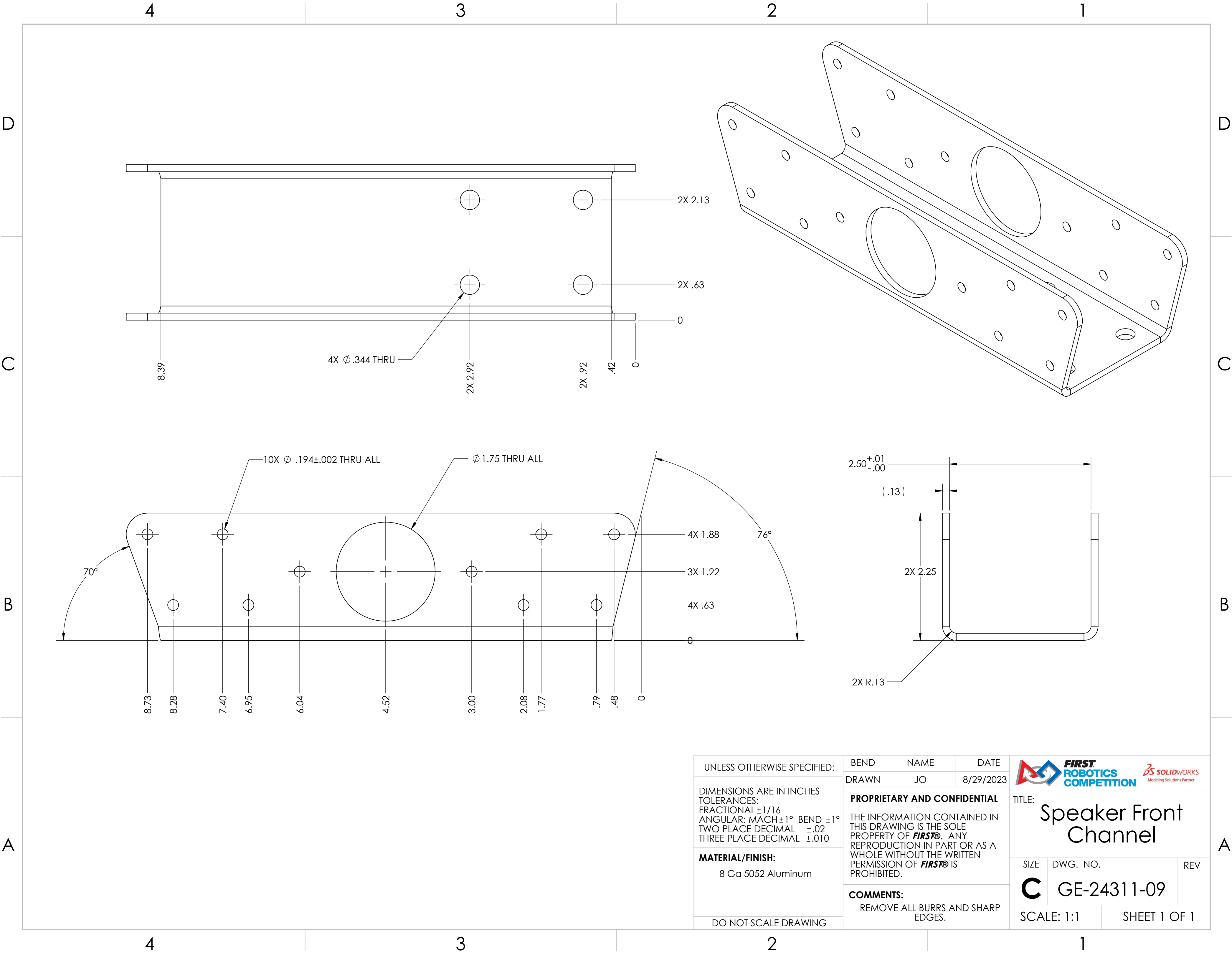




UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010  <b>MATERIAL/FINISH:</b>  8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <b>Speaker Bottom Channel</b></div> <div>SIZE <b>C</b></div> <div>DWG. NO. <b>GE-24311-07</b></div> <div>REV</div> <div>SCALE: 38:100</div> <div>SHEET 1 OF 1</div>	
	DRAWN	JO	8/29/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>				
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				

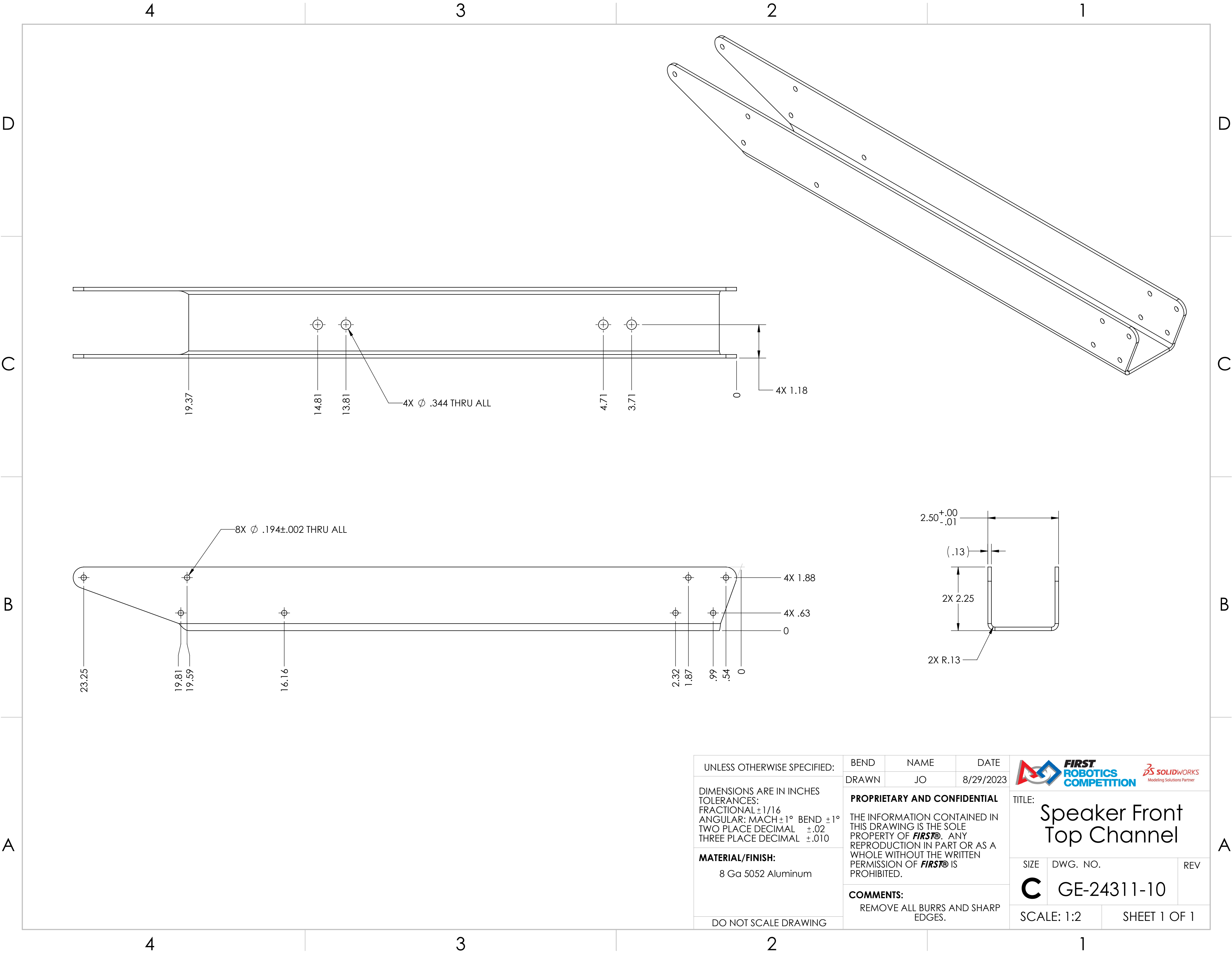






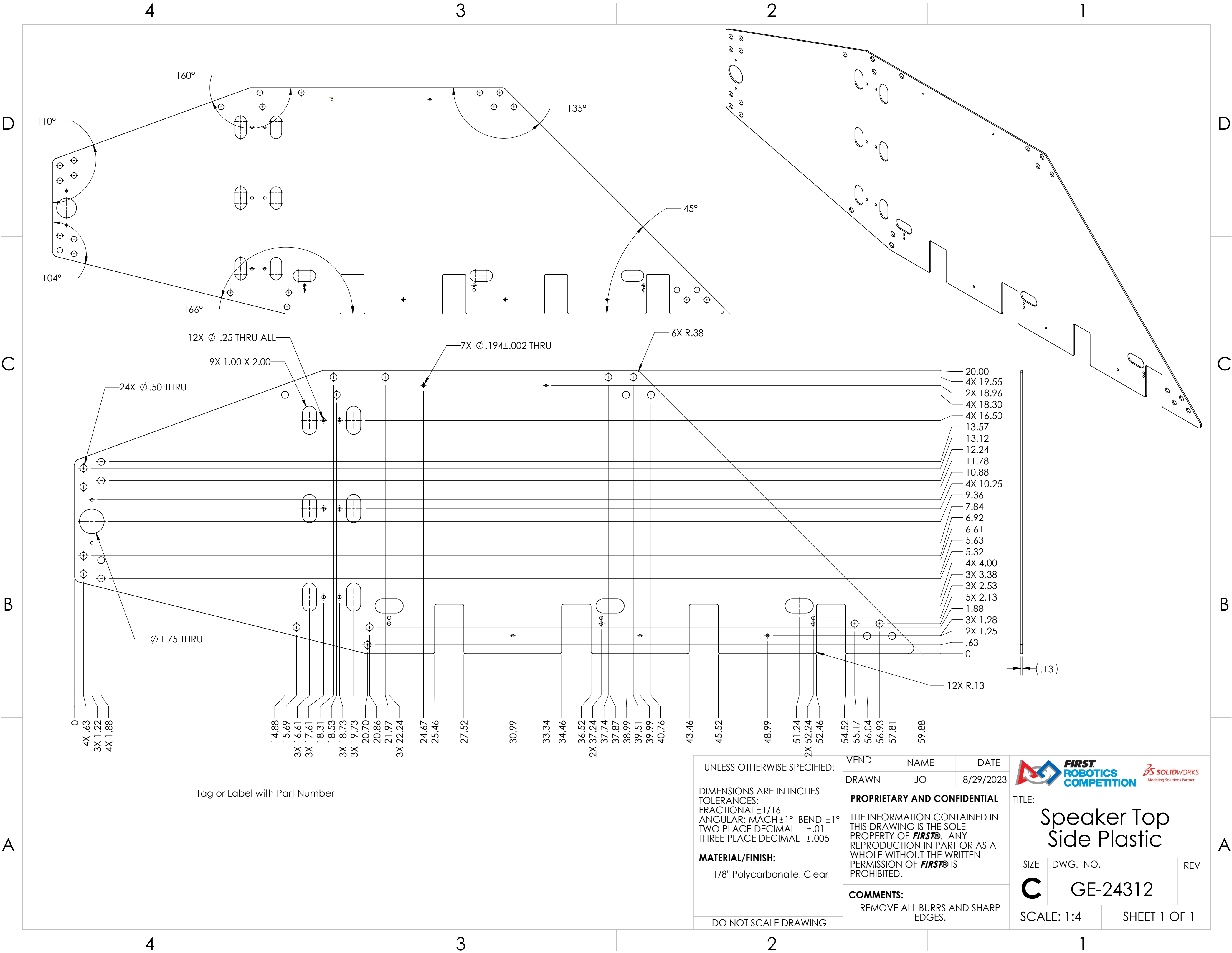
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010  <b>MATERIAL/FINISH:</b>  8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <h1>Speaker Back Channel</h1></div>			
	DRAWN	JO	8/29/2023				
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				C	GE-24311-08	
				SCALE: 1:2		SHEET 1 OF 1	



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010  <b>MATERIAL/FINISH:</b> 8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	 	
	DRAWN	JO	8/29/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				TITLE: <b>Speaker Front Channel</b>
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				SIZE <b>C</b> DWG. NO. <b>GE-24311-09</b> REV
SCALE: 1:1				SHEET 1 OF 1	



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm$ 1/16 ANGULAR: MACH $\pm$ 1° BEND $\pm$ 1° TWO PLACE DECIMAL $\pm$ .02 THREE PLACE DECIMAL $\pm$ .010  <b>MATERIAL/FINISH:</b> 8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <b>Speaker Front Top Channel</b></div>		
	DRAWN	JO	8/29/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24311-10	
SCALE: 1:2		SHEET 1 OF 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:**  
1/8" Polycarbonate, Clear

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	8/29/2023

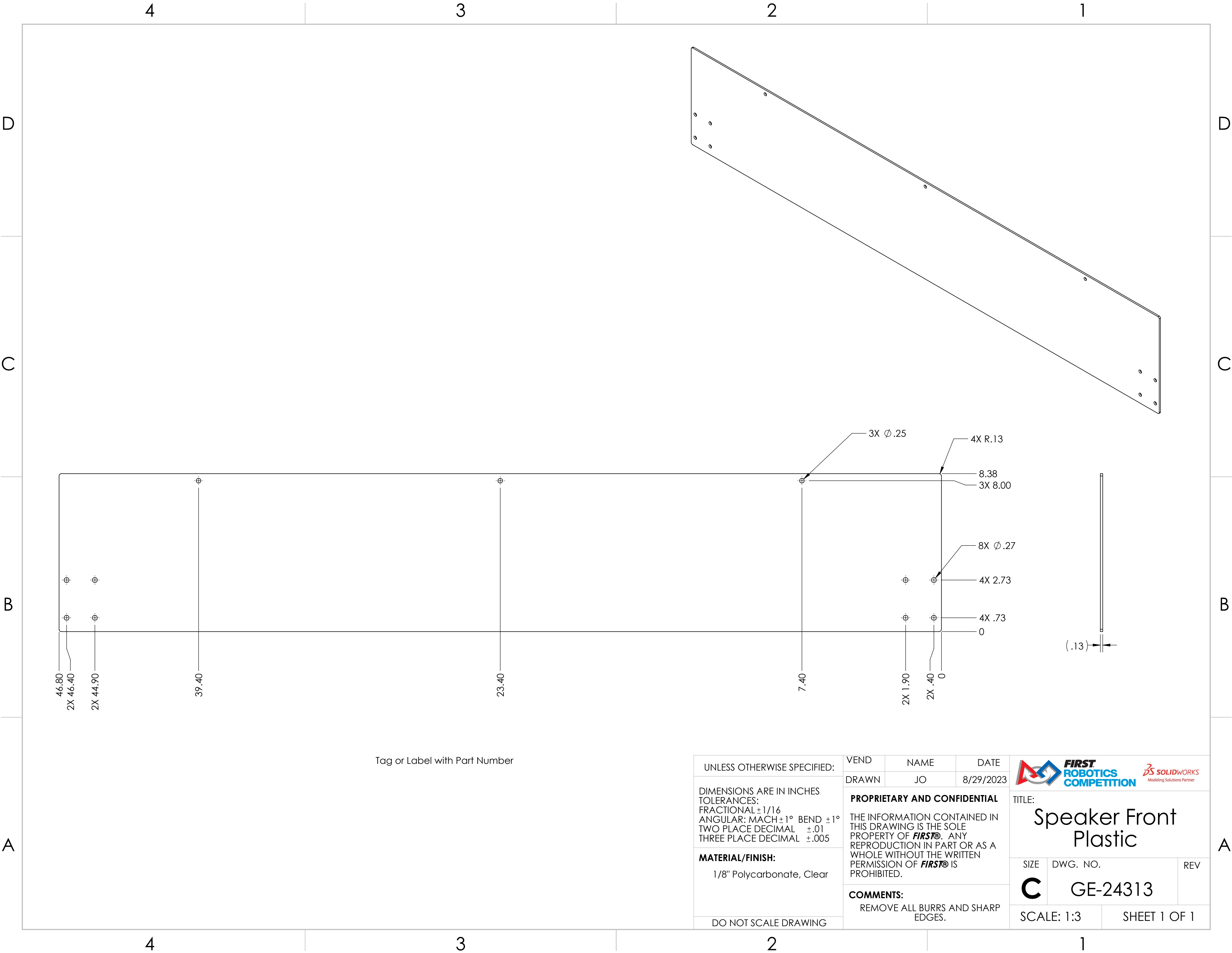
**PROPRIETARY AND CONFIDENTIAL**



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.



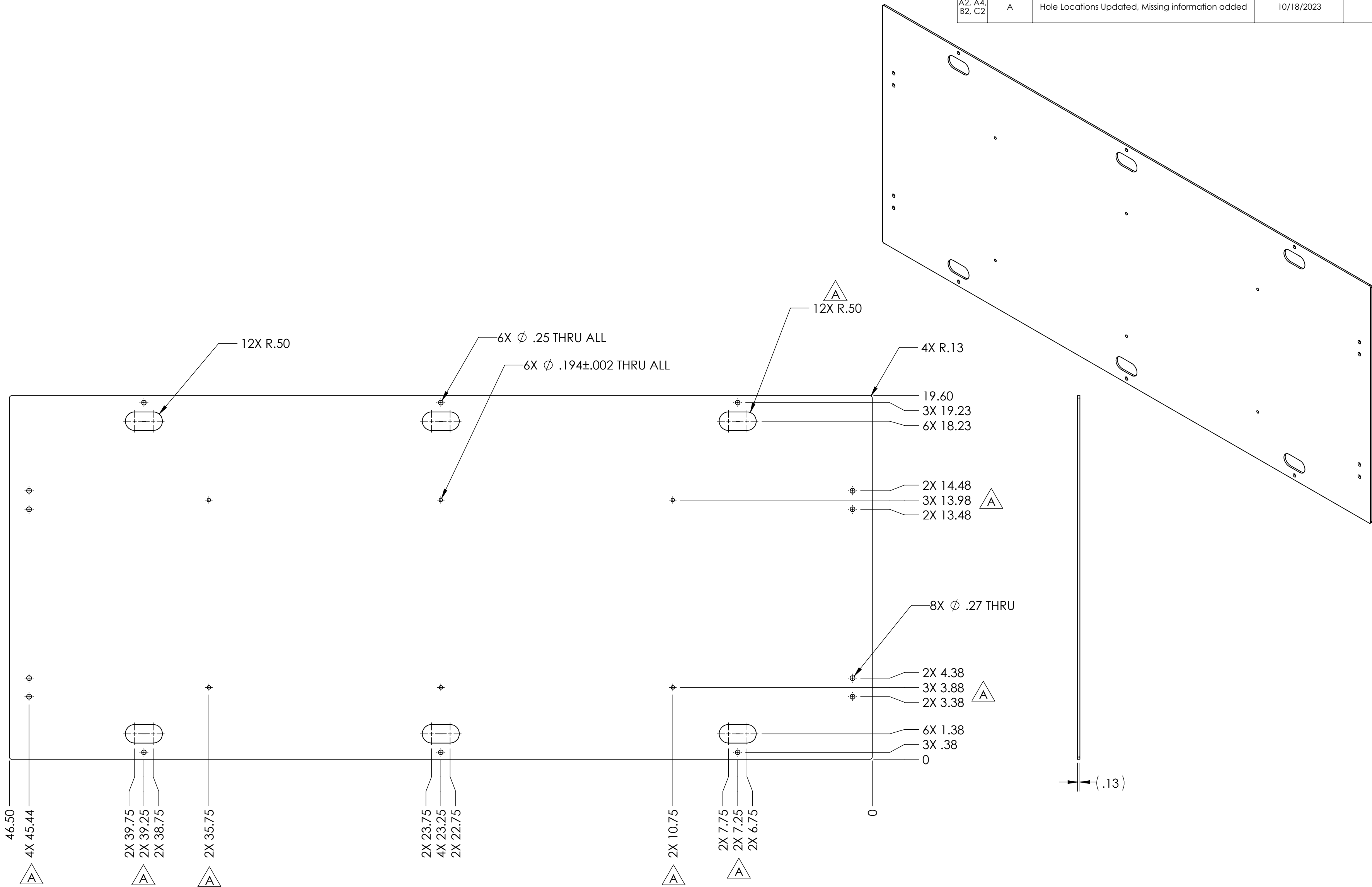
TITLE: <b>Speaker Top Side Plastic</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24312</b>	REV
SCALE: 1:4		SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1/8" Polycarbonate, Clear  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <b>Speaker Front Plastic</b></div> <div><div>SIZE</div><div>DWG. NO.</div><div>REV</div></div> <div><div>C</div><div>GE-24313</div></div> <div>SCALE: 1:3</div> <div>SHEET 1 OF 1</div>					
	DRAWN	JO	8/29/2023						
	<b>PROPRIETARY AND CONFIDENTIAL</b>								
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.								



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A4, B2, C2	A	Hole Locations Updated, Missing information added	10/18/2023	JO



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" HDPE, White, Smooth Finish

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	8/29/2023

**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.

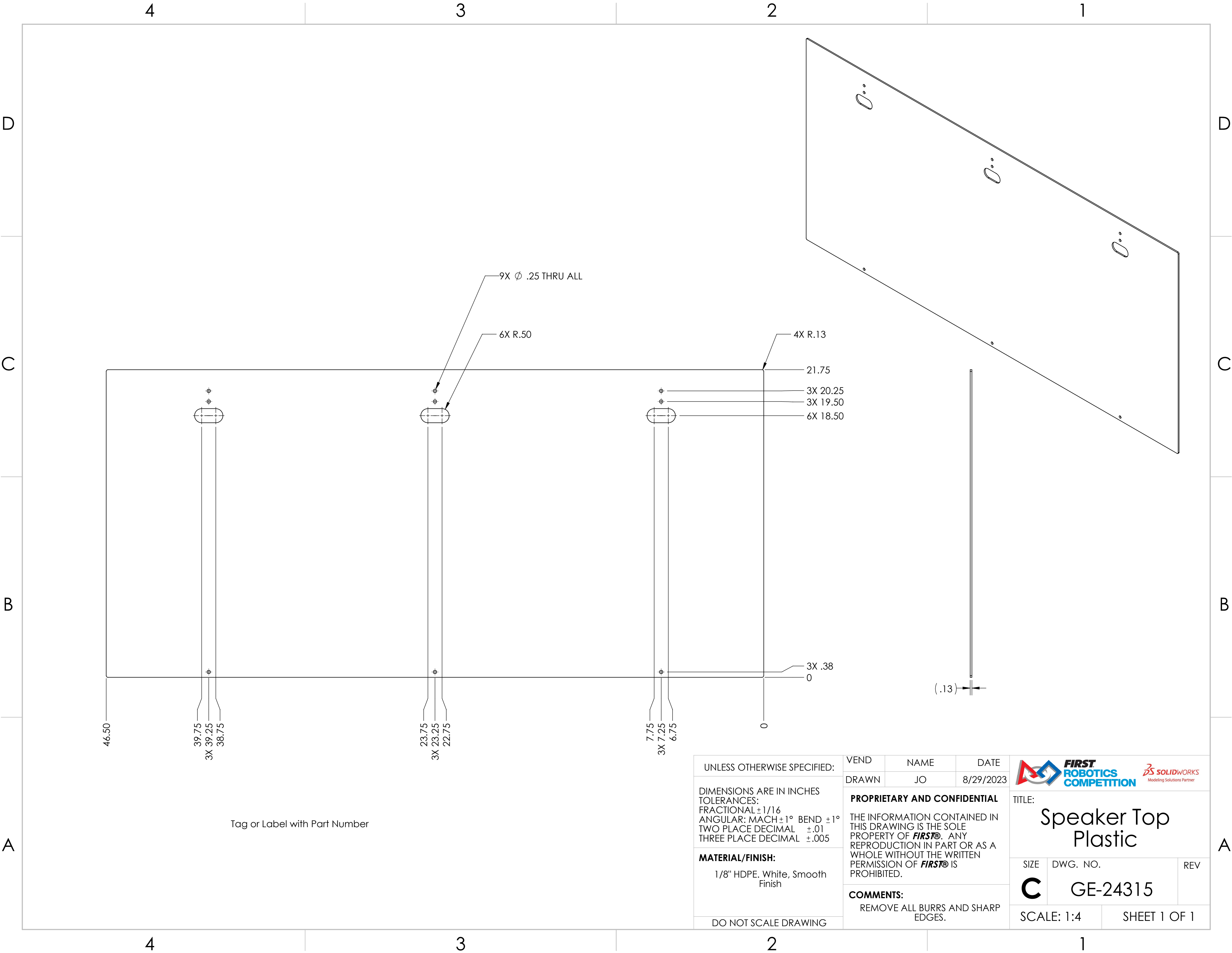
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
**Speaker Front Top Plastic**

SIZE	DWG. NO.	REV
<b>C</b>	GE-24314	<b>A</b>

SCALE: 1:4 SHEET 1 OF 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:**  
1/8" HDPE. White, Smooth Finish



DO NOT SCALE DRAWING

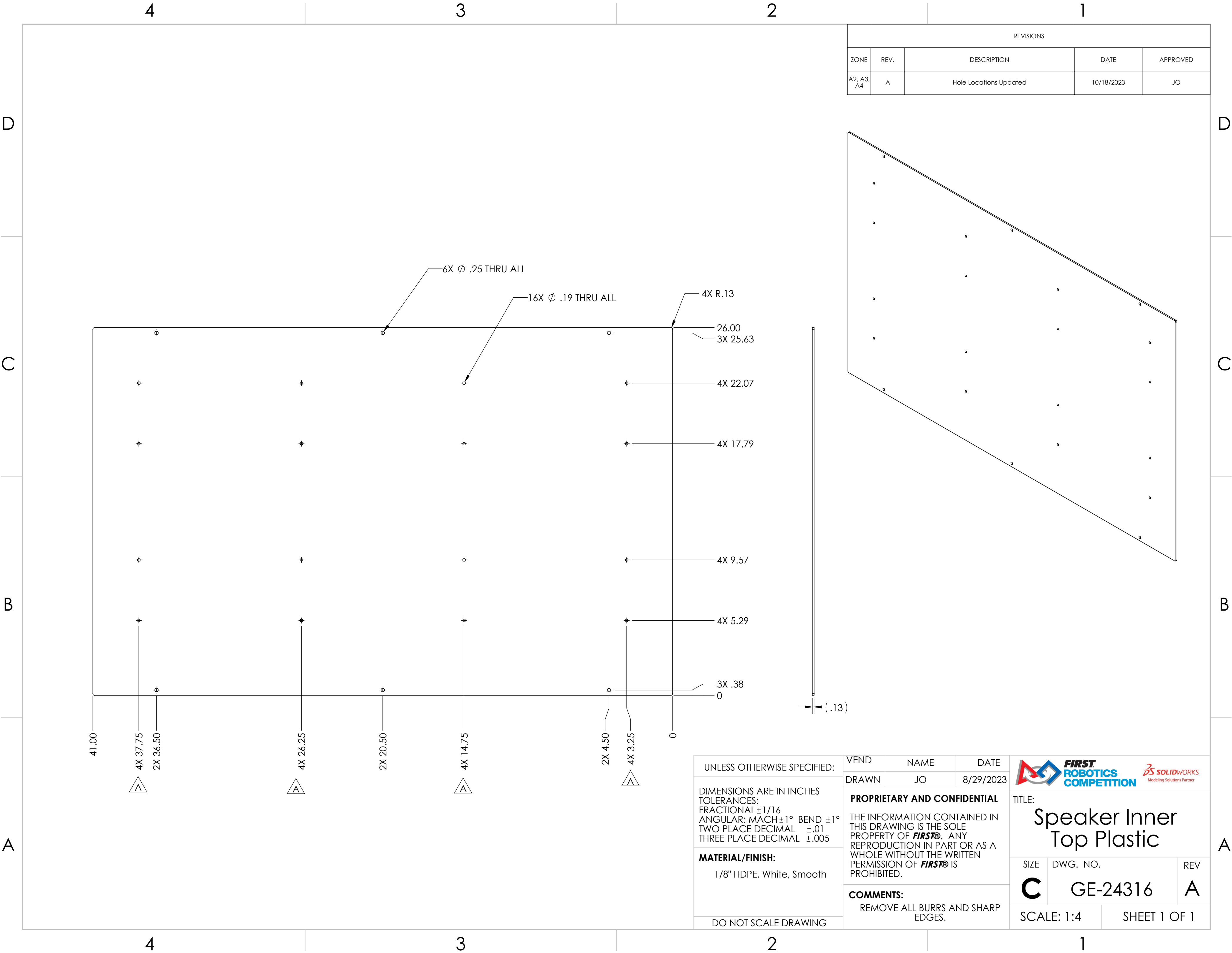
VEND	NAME	DATE
DRAWN	JO	8/29/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

 		
TITLE: <b>Speaker Top Plastic</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24315</b>	REV
SCALE: 1:4		SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A3, A4	A	Hole Locations Updated	10/18/2023	JO

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" HDPE, White, Smooth



DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	8/29/2023

**PROPRIETARY AND CONFIDENTIAL**

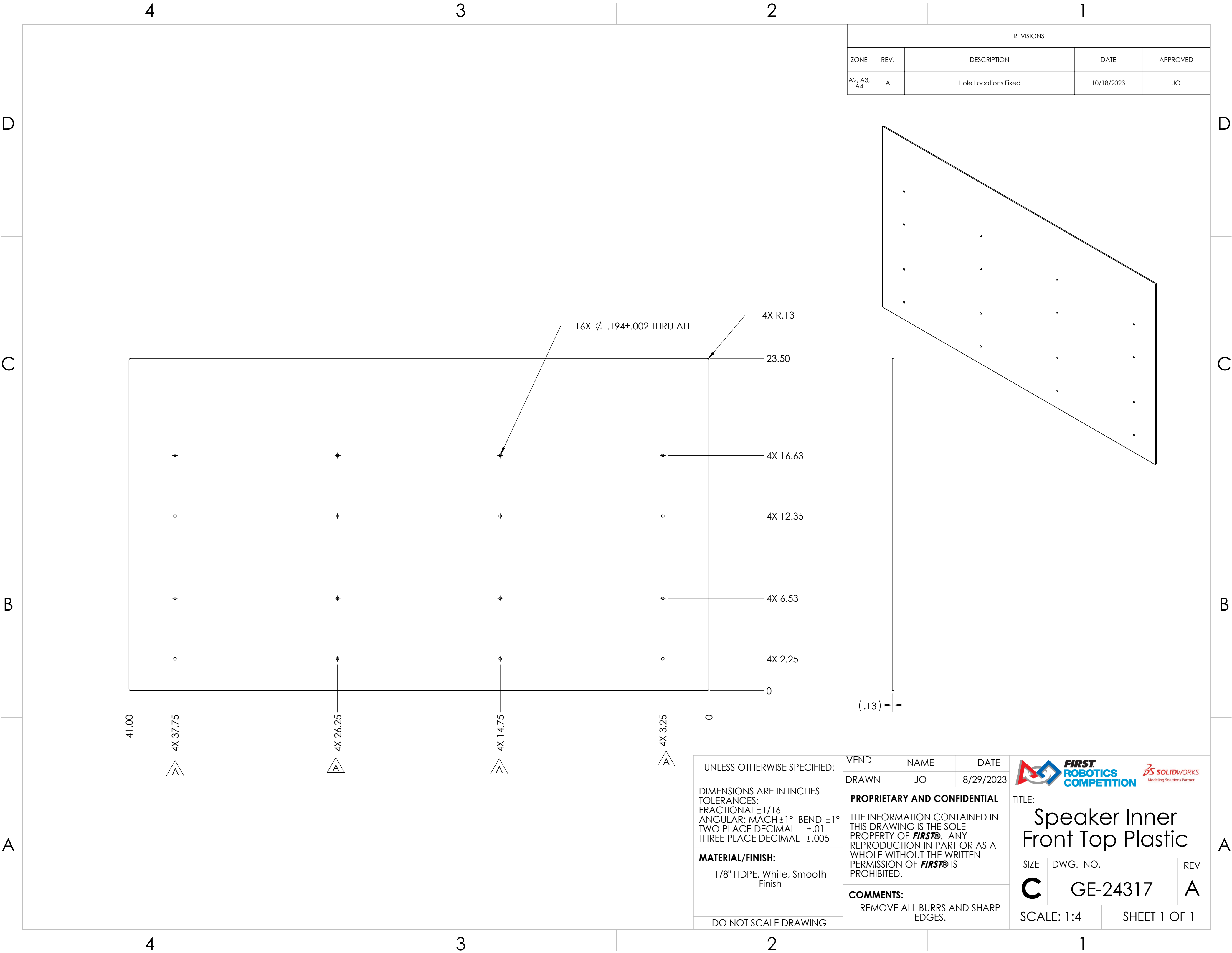
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF **FIRST®**. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF **FIRST®** IS PROHIBITED.

**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.





TITLE:  
**Speaker Inner Top Plastic**

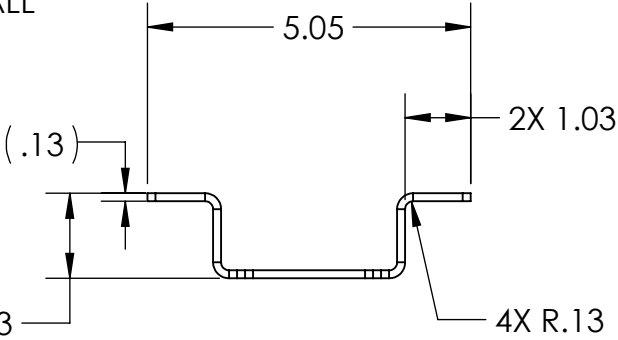
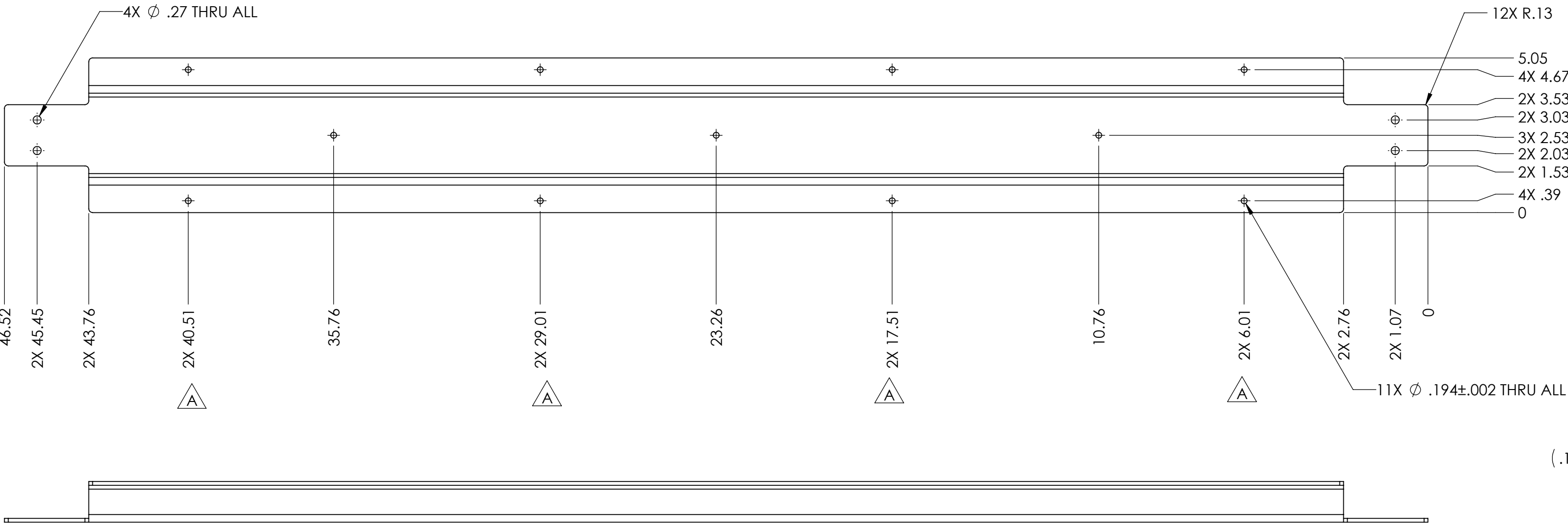
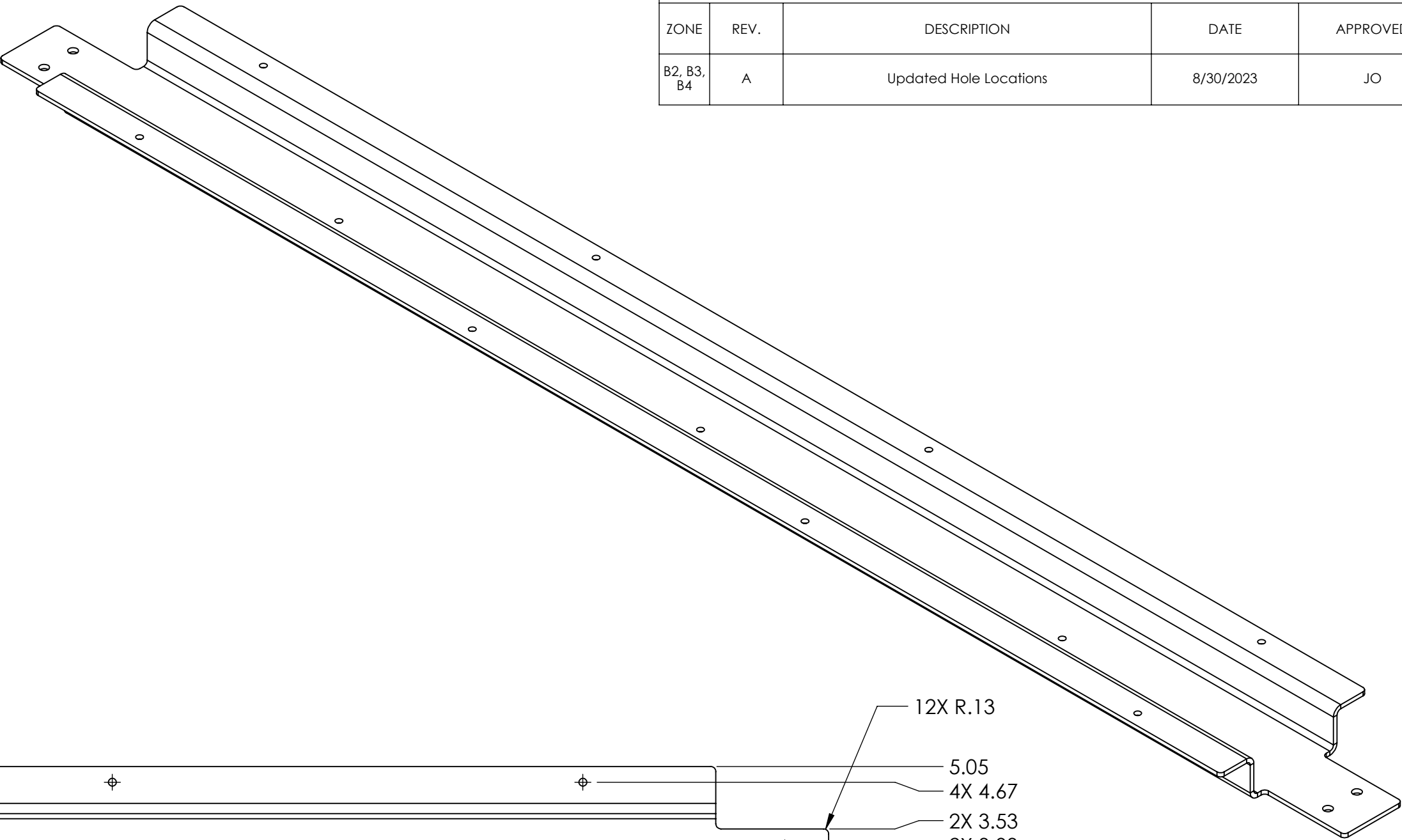
SIZE <b>C</b>	DWG. NO. <b>GE-24316</b>	REV <b>A</b>
SCALE: 1:4		SHEET 1 OF 1





REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A3, A4	A	Hole Locations Fixed	10/18/2023	JO

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	JO	8/29/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:  Speaker Inner Front Top Plastic		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:  1/8" HDPE, White, Smooth Finish	COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			SIZE  C	DWG. NO.  GE-24317	REV  A
DO NOT SCALE DRAWING				SCALE: 1:4		SHEET 1 OF 1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B3, B4	A	Updated Hole Locations	8/30/2023	JO



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010  <b>MATERIAL/FINISH:</b> 8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE
	DRAWN	JO	8/28/2023
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		

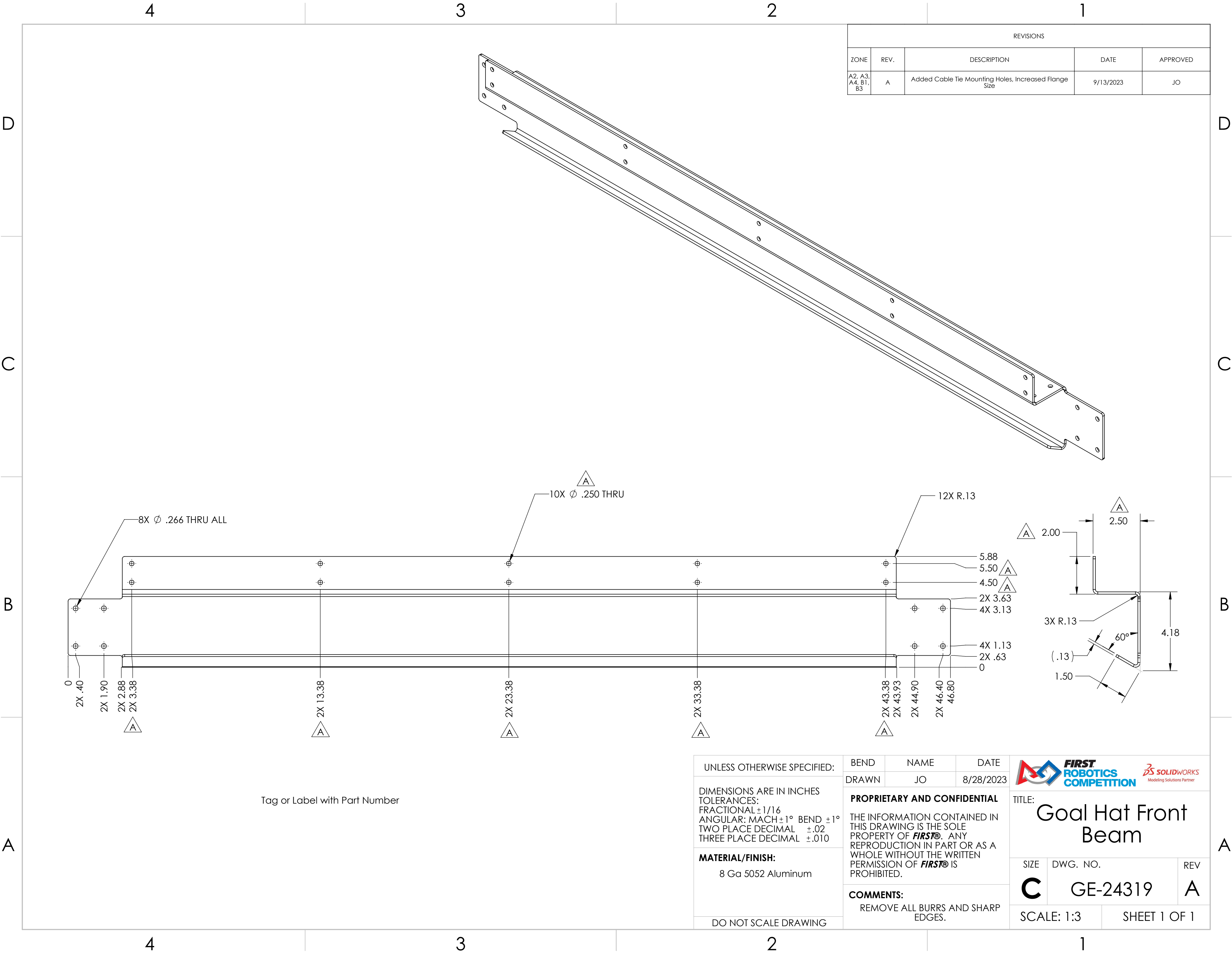


TITLE: **Goal Hat Crossbeam**

SIZE	DWG. NO.	REV
<b>C</b>	<b>GE-24318</b>	<b>B</b>



SCALE: 1:3      SHEET 1 OF 1

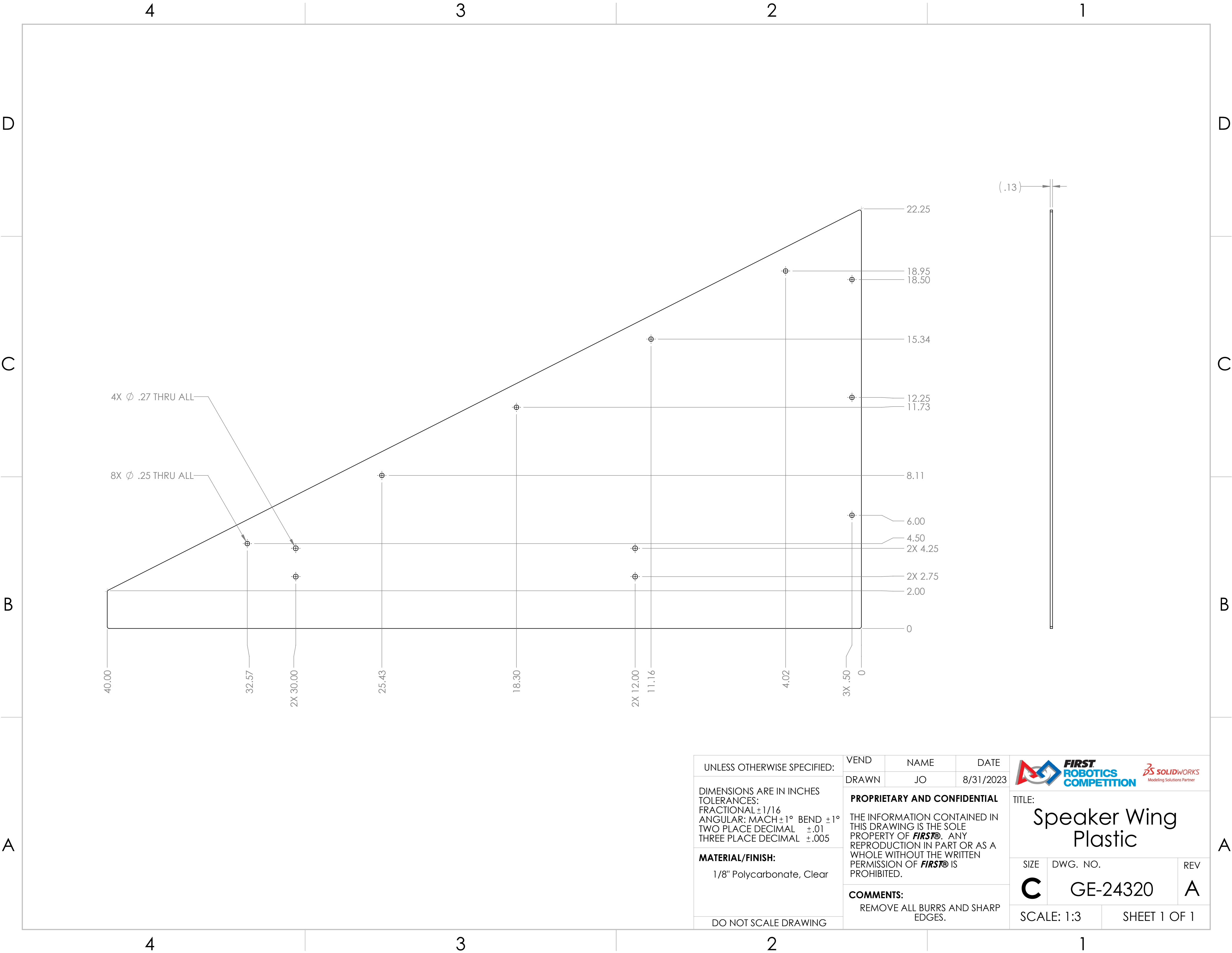






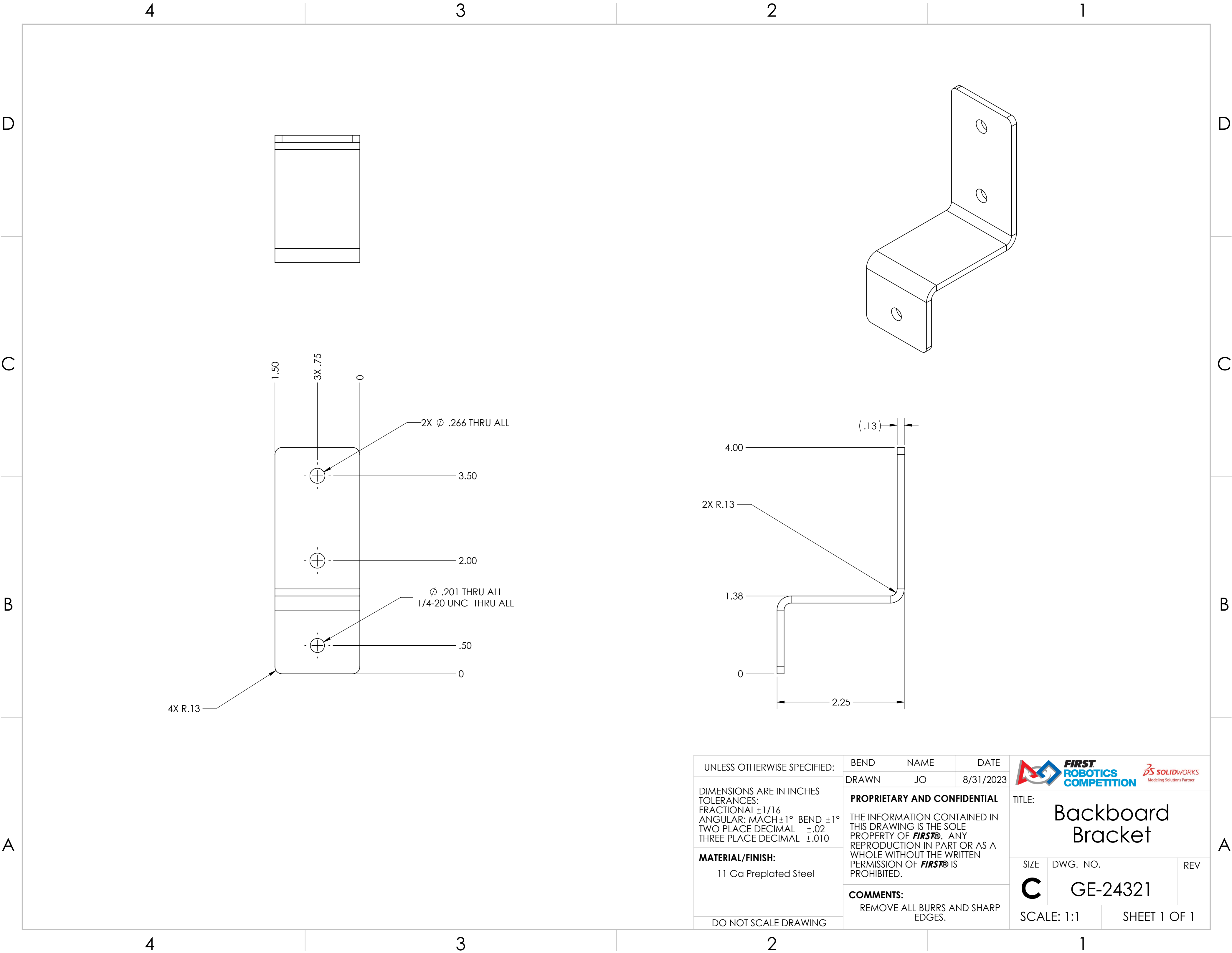
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A3, A4, B1, B3	A	Added Cable Tie Mounting Holes, Increased Flange Size	9/13/2023	JO



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 $\pm .010$  <b>MATERIAL/FINISH:</b>  8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE
	DRAWN	JO	8/28/2023
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		

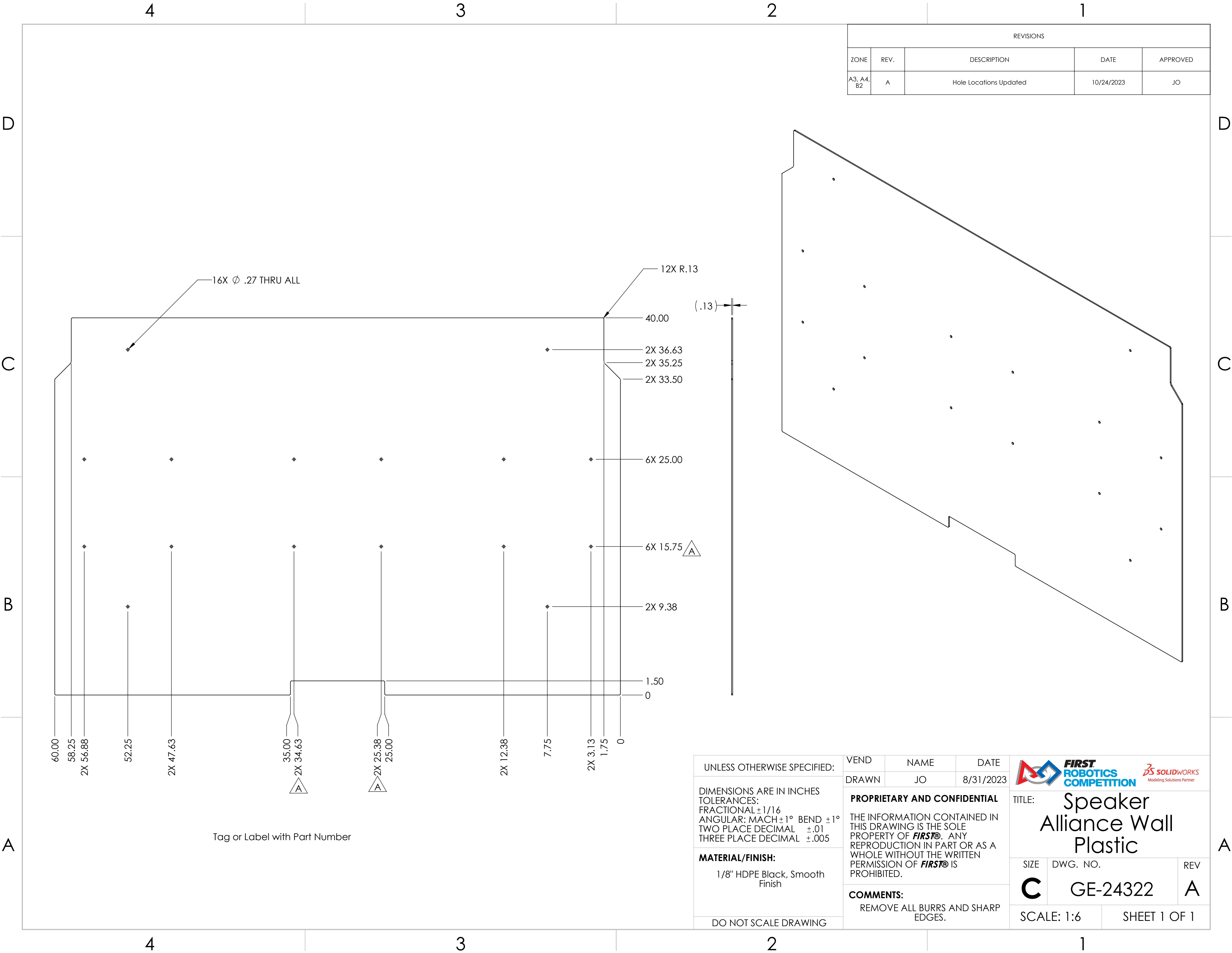
 		
TITLE: Goal Hat Front Beam		
SIZE C	DWG. NO. GE-24319	REV A
SCALE: 1:3		SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	JO	8/31/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:  Speaker Wing Plastic		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
	MATERIAL/FINISH:  1/8" Polycarbonate, Clear			SIZE DWG. NO. REV		
DO NOT SCALE DRAWING	COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			C GE-24320 A		
				SCALE: 1:3 SHEET 1 OF 1		



UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div></div>		
	DRAWN	JO	8/31/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			TITLE:  Backboard Bracket		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
	COMMENTS:			SIZE	DWG. NO.	REV
MATERIAL/FINISH:	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24321	
11 Ga Preplated Steel						
DO NOT SCALE DRAWING				SCALE: 1:1		SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3, A4, B2	A	Hole Locations Updated	10/24/2023	JO

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" HDPE Black, Smooth Finish

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	8/31/2023

**PROPRIETARY AND CONFIDENTIAL**  
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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE: **Speaker Alliance Wall Plastic**

SIZE	DWG. NO.	REV
<b>C</b>	<b>GE-24322</b>	<b>A</b>

SCALE: 1:6 SHEET 1 OF 1

4

3

2

1

D

D

C

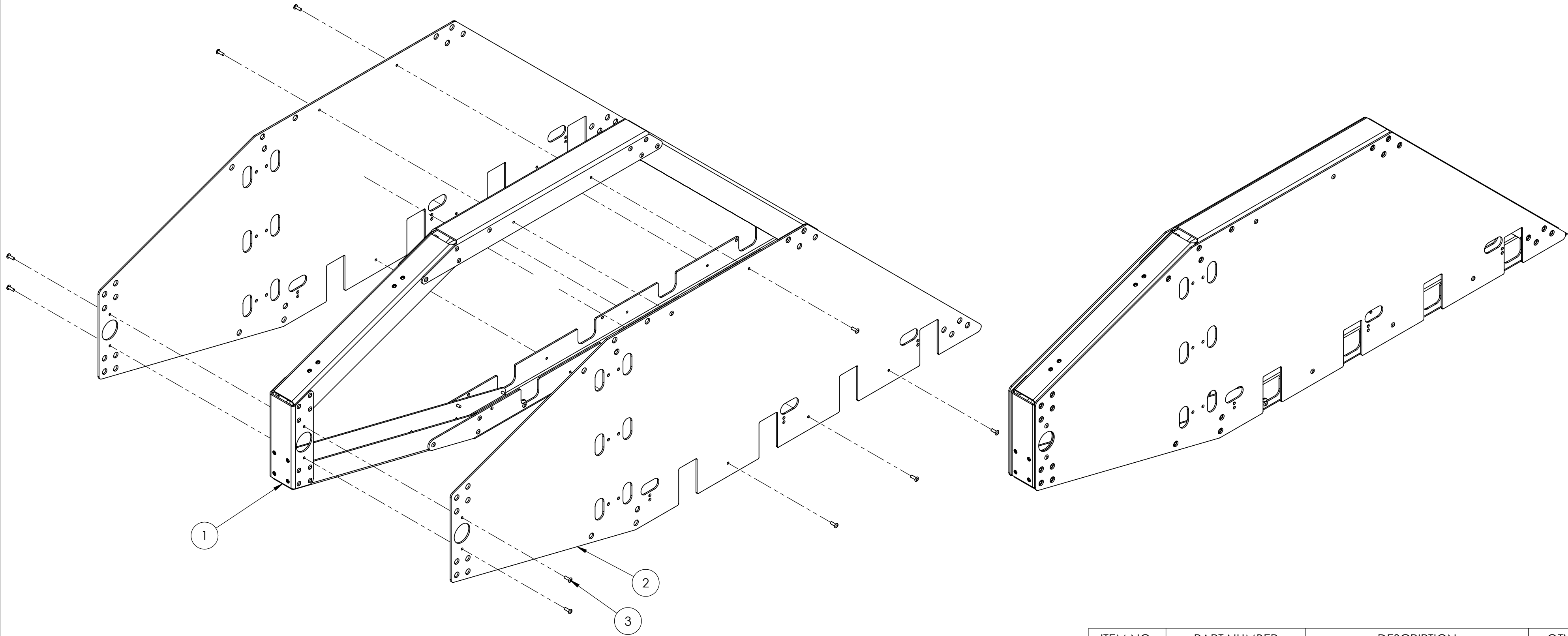
C

B

B



A

A



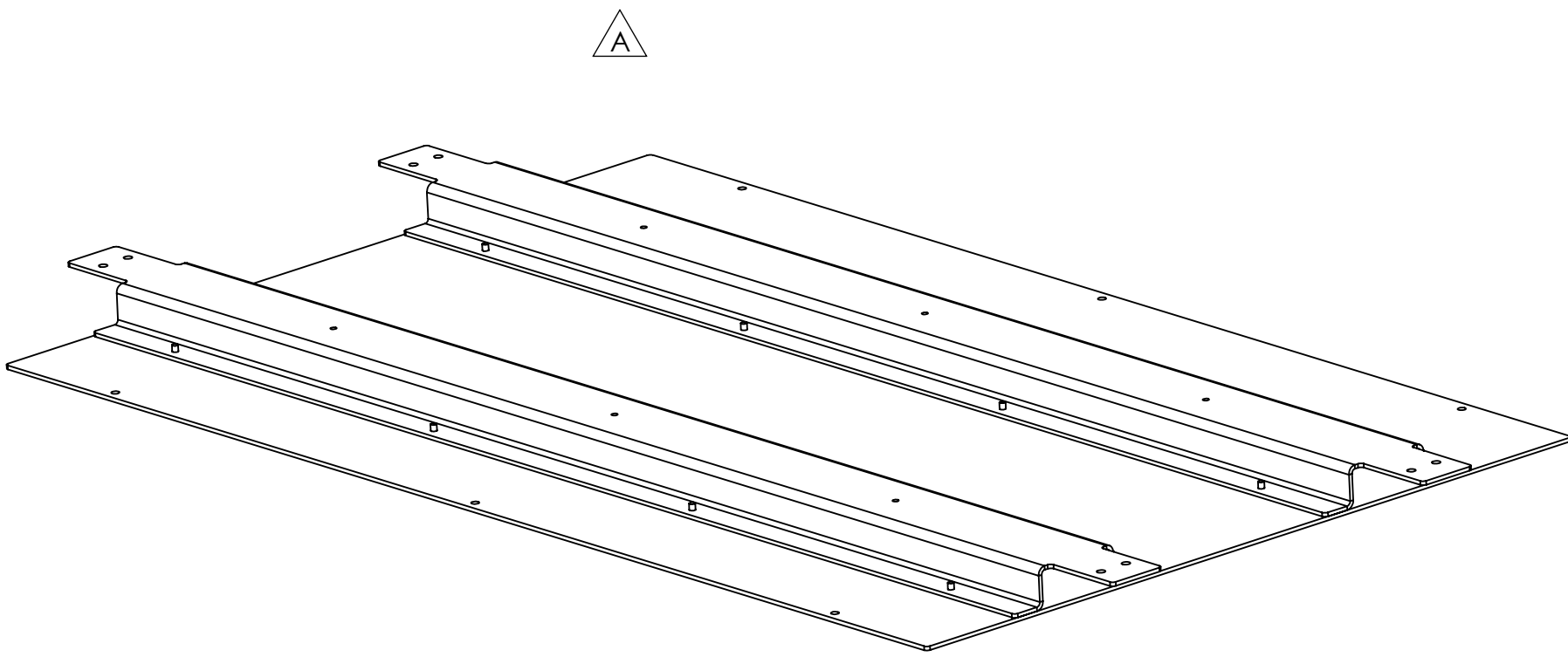
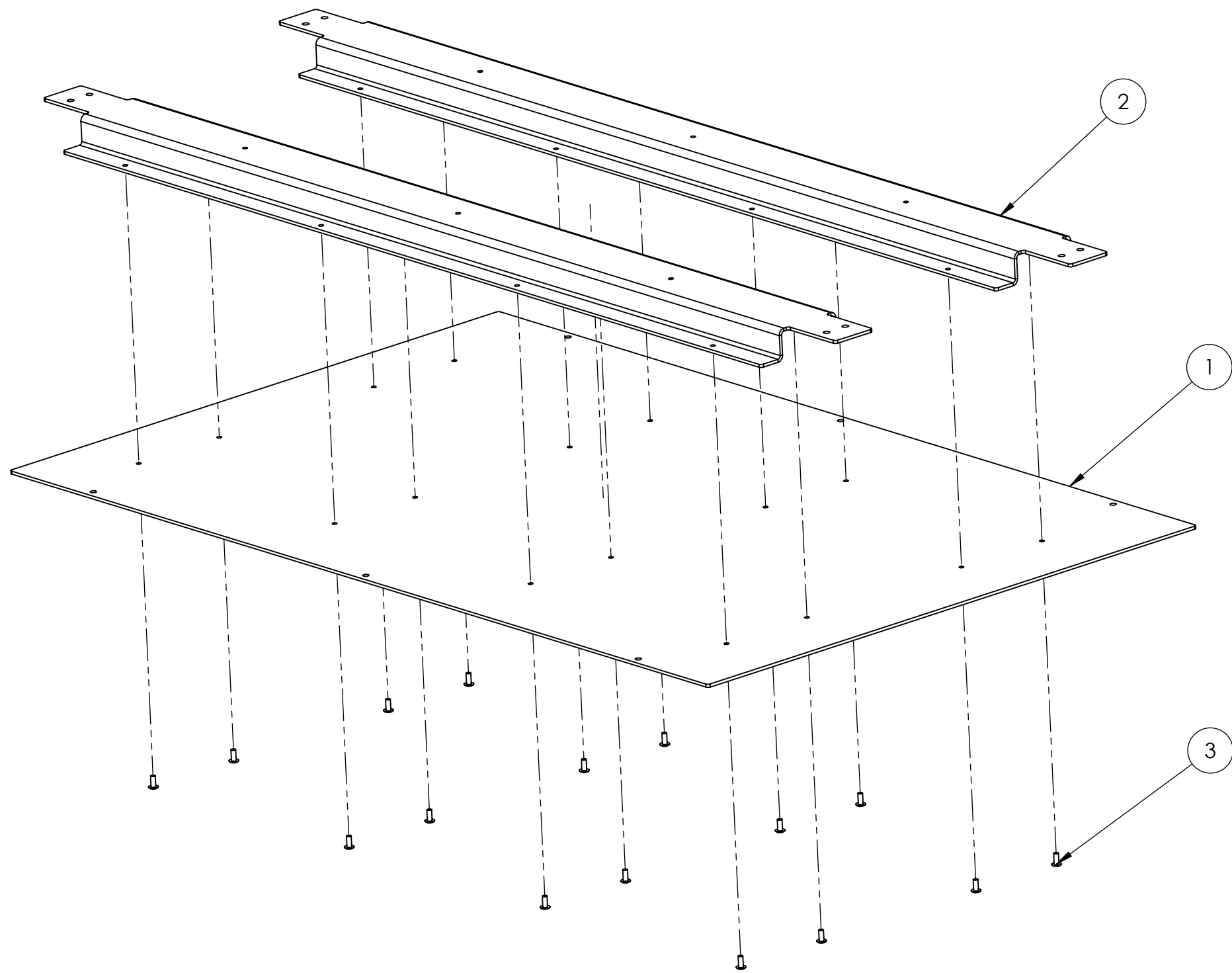
Notes:  
Assemble 2 to 1 using 3  
Tag or Label with Part Number

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24311	Speaker Side Sheetmetal	1
2	GE-24312	Speaker Top Side Plastic	2
3	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	14

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	<div></div> <div>TITLE:</div> <div>Speaker Side Assembly</div>	
		DRAWN	JO	8/30/2023		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005		PROPRIETARY AND CONFIDENTIAL			SIZE	
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				
MATERIAL/FINISH:		COMMENTS:			DWG. NO.	
		REMOVE ALL BURRS AND SHARP EDGES.			REV	
DO NOT SCALE DRAWING					C	
					GE-24323	
					SCALE: 1:6	
					SHEET 1 OF 1	





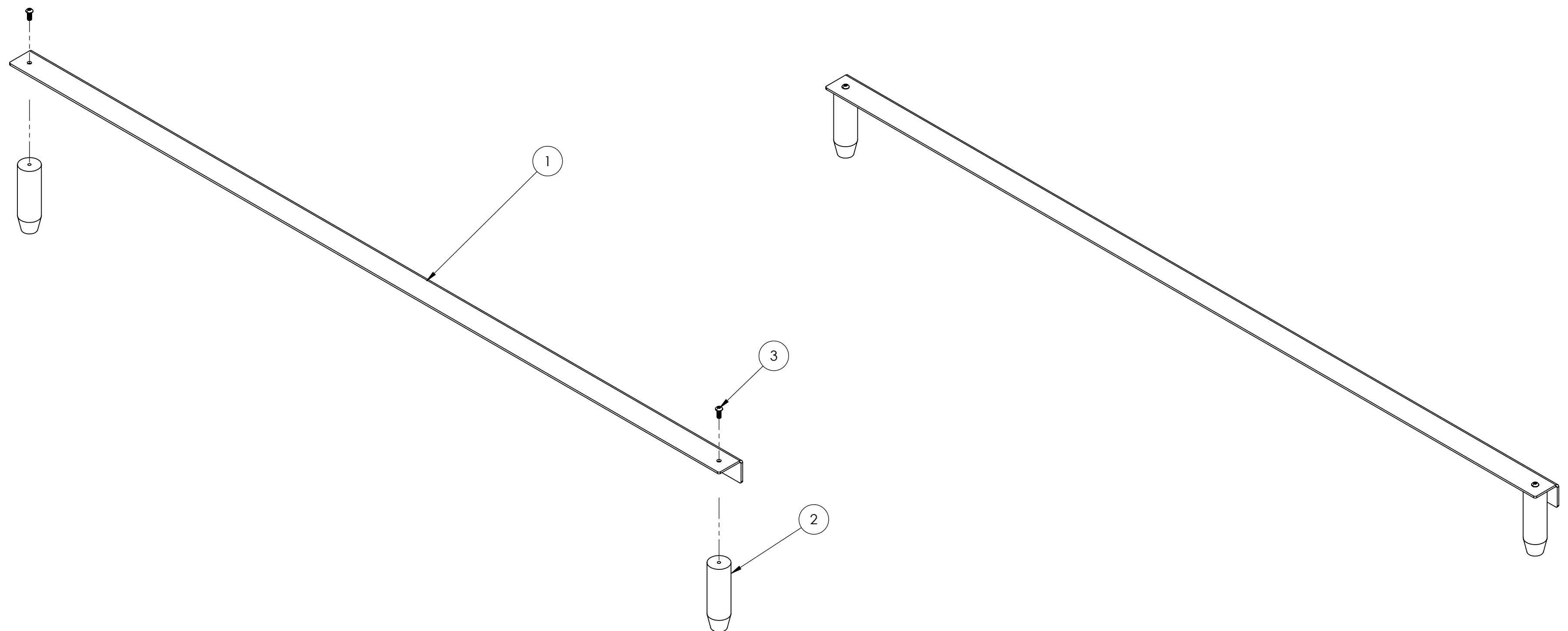
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C2	A	All Parts updated to fix symmetry issues	10/18/2023	JO



Notes:  
Assemble (2) to (1) using (3)  
Tag or Label with Part Number

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24316	Speaker Inner Top Plastic	1
2	GE-24318	Goal Hat Crossbeam	2
3	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	16



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	JO	8/30/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			Speaker Back Assembly		
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24324	A
DO NOT SCALE DRAWING				SCALE: 1:5		SHEET 1 OF 1

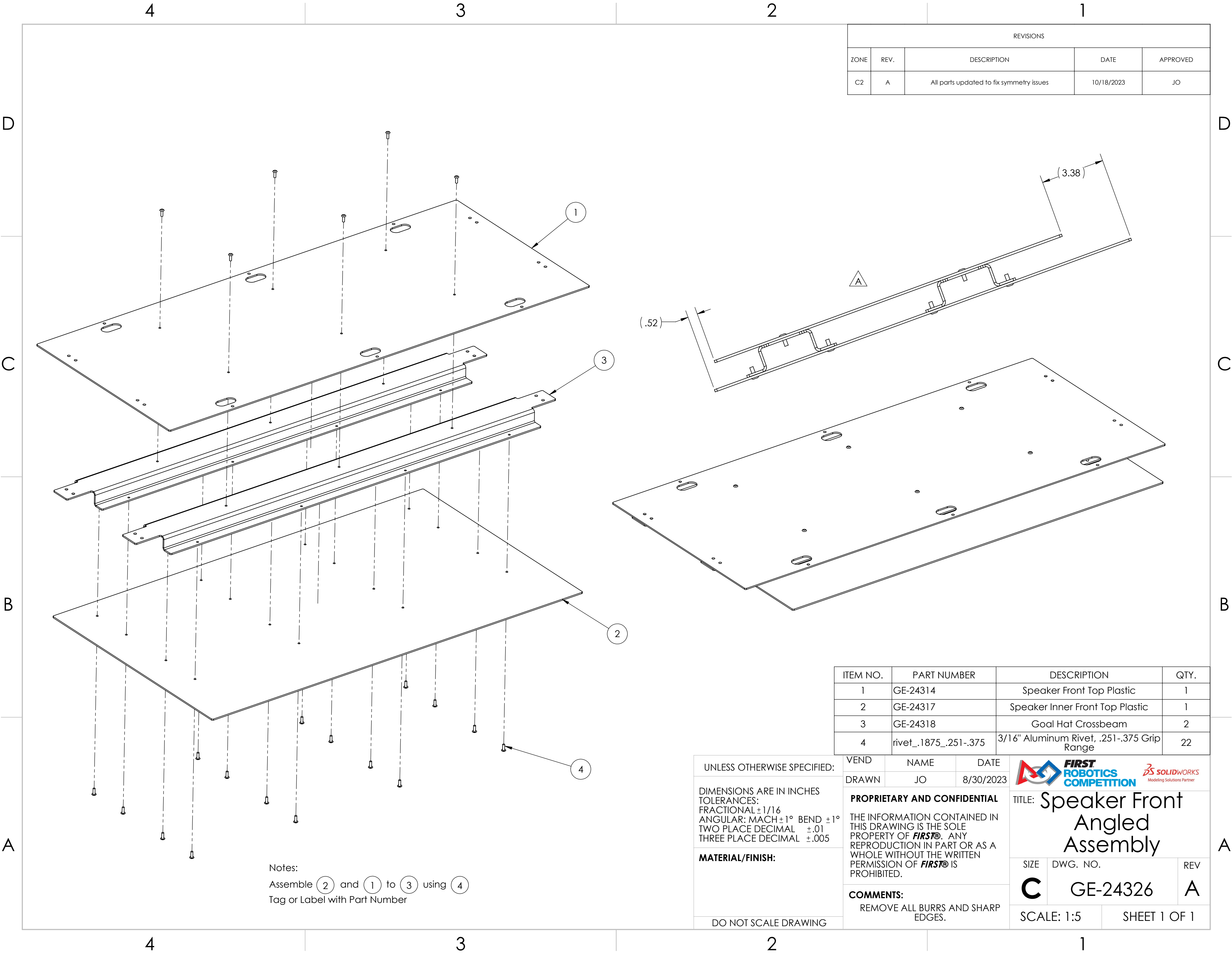


Notes:

Assemble (2) to (1) using (3)  
Tag or Label with Part Number



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24305	Briweld Field Crossbeam	1
2	FE-00060	Top Rail, Post	2
3	button_hex_.25_20_.625	1/4-20 x 5/8" Long Button Head Cap Screw	2

UNLESS OTHERWISE SPECIFIED:	VEN	NAME	DATE	 <b>FIRST</b> <b>ROBOTICS</b> <b>COMPETITION</b> 
	DRAWN	JO	8/30/2023	
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			
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 $\pm .005$	<b>MATERIAL/FINISH:</b>			TITLE: <b>Briweld Field Crossbeam Assembly</b>
DO NOT SCALE DRAWING	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE DWG. NO. <b>C GE-24325</b> REV
	SCALE: 1:5		SHEET 1 OF 1	

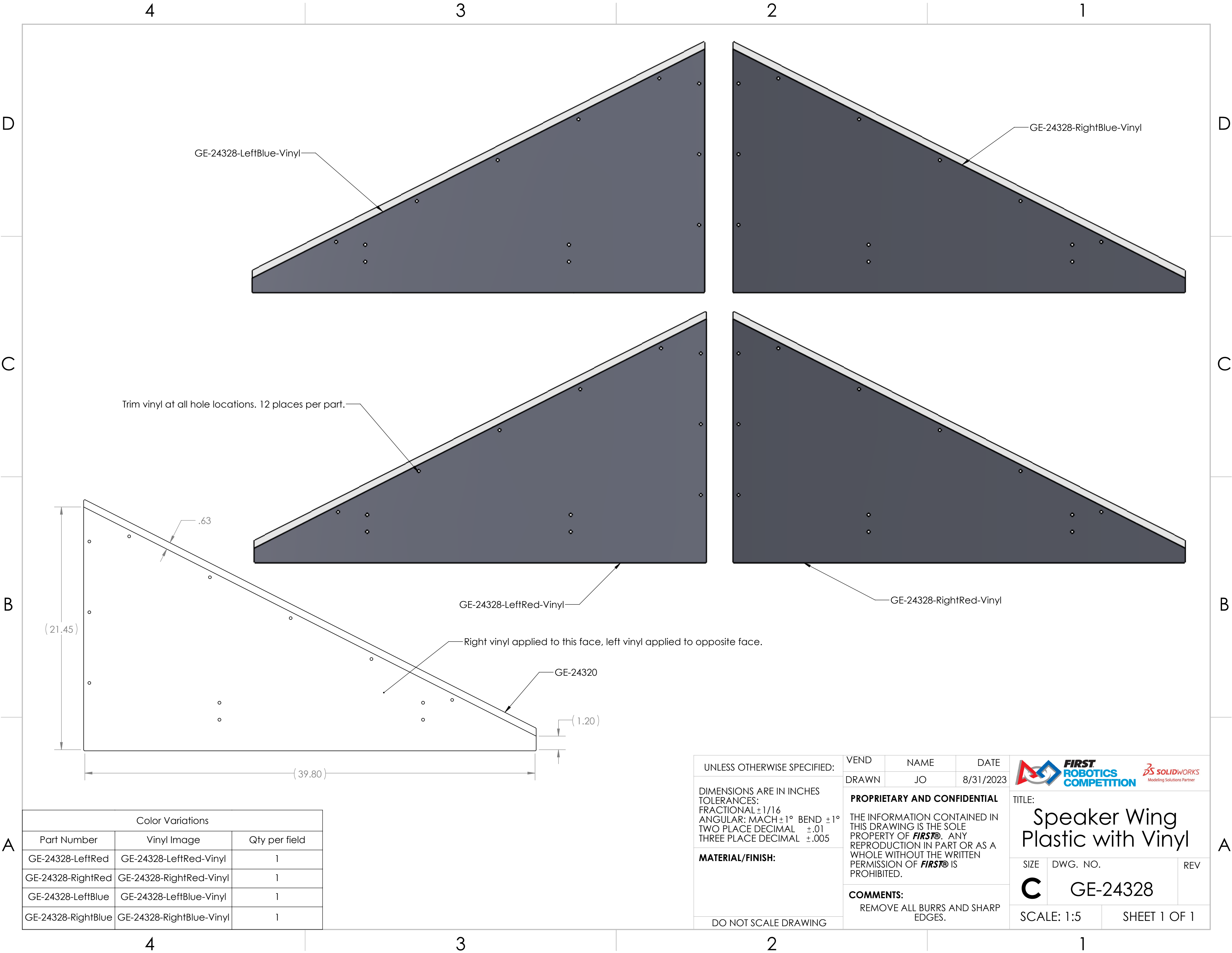




REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C2	A	All parts updated to fix symmetry issues	10/18/2023	JO

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24314	Speaker Front Top Plastic	1
2	GE-24317	Speaker Inner Front Top Plastic	1
3	GE-24318	Goal Hat Crossbeam	2
4	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	22

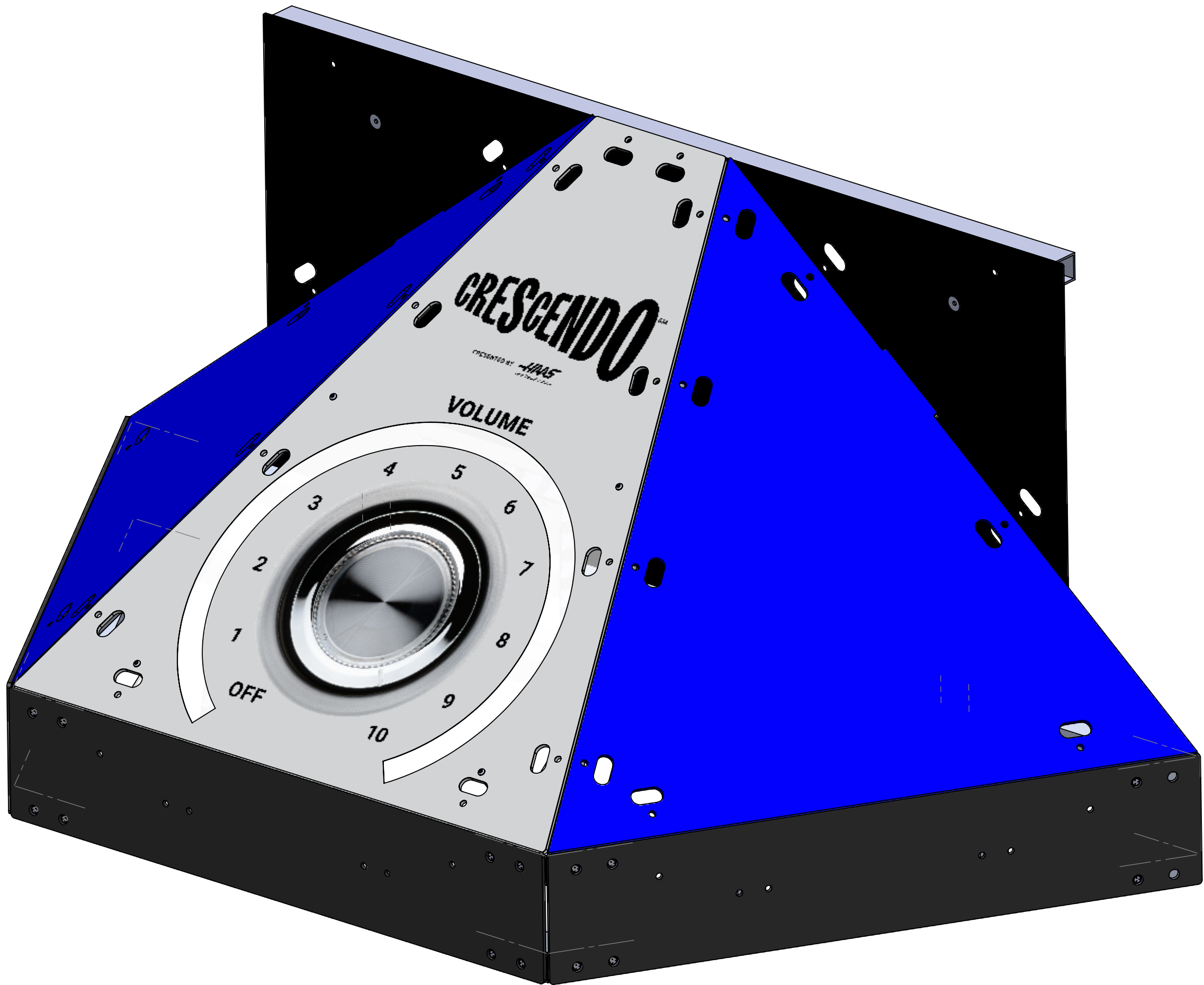
UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	<div></div>	
		DRAWN	JO	8/30/2023		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE: Speaker Front Angled Assembly	
<b>MATERIAL/FINISH:</b>					SIZE DWG. NO. REV	
		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			C GE-24326 A	
DO NOT SCALE DRAWING					SCALE: 1:5 SHEET 1 OF 1	

Notes:  
Assemble 2 and 1 to 3 using 4  
Tag or Label with Part Number



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  MATERIAL/FINISH:    DO NOT SCALE DRAWING	VEND		NAME		DATE		<div></div> <div>TITLE: <b>Speaker Wing Plastic with Vinyl</b></div>	
	DRAWN		JO		8/31/2023			
	PROPRIETARY AND CONFIDENTIAL							
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.							
COMMENTS:								
REMOVE ALL BURRS AND SHARP EDGES.								
		SIZE		DWG. NO.			REV	
		C		GE-24328				
SCALE: 1:5				SHEET 1 OF 1				

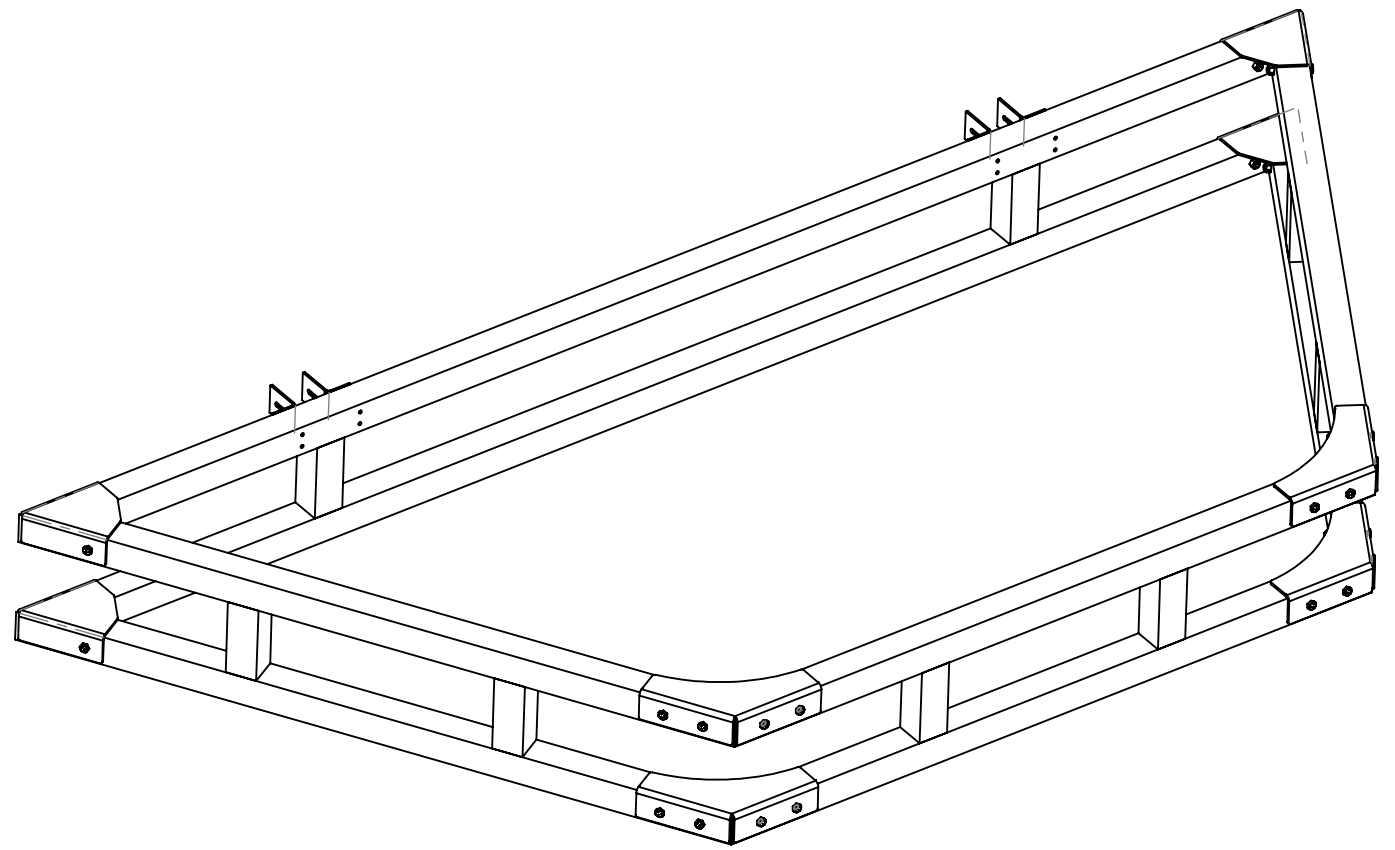
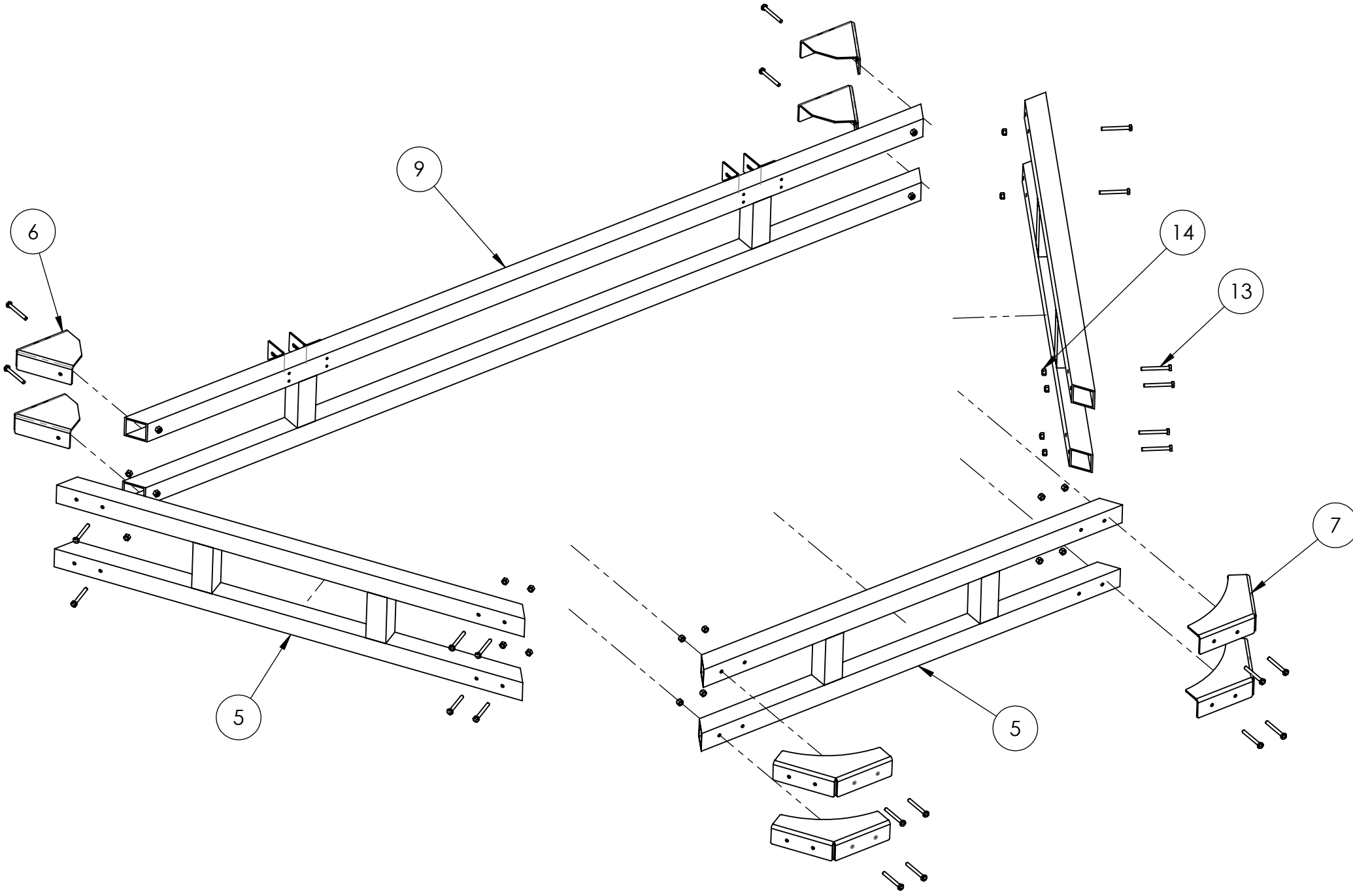






ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24331	Wall Goal Frame Weldment	1
2	GE-24332	Subwoofer Backboard	1
3	GE-24333	Subwoofer Side Panel	2
4	GE-24335	Subwoofer Bumper	3
5	GE-24336	Subwoofer Small Frame	3
6	GE-24338	Subwoofer Back Bracket	4
7	GE-24339	Front Subwoofer Bracket	4
8	GE-24341	Subwoofer Support Pipe	2
9	GE-24342	Subwoofer Back Frame with Brackets	1
10	GE-24343	Subwoofer Middle Panel with Vinyl	1
11	GE-24345	Subwoofer Light Panel Assembly	1
12	Configurable Bolt	.75" Long 1/4-20 Button Head Cap Screw	8
13	Configurable Bolt	2.25" Long 1/4-20 Hex Head Bolt	24
14	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	24
15	91780A363_Female Threaded Hex Standoff	Female Threaded Hex Standoff, 1/4-20 x 1" Long	4
16	98320A143	Zinc-Plated Steel Ring-Grip Quick-Release Pin	2

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	JO	11/1/2023
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL		
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> IS PROHIBITED.		
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
		TITLE: Subwoofer		
		SIZE C	DWG. NO. GE-24330	REV
		SCALE: 1:6 SHEET 1 OF 6		

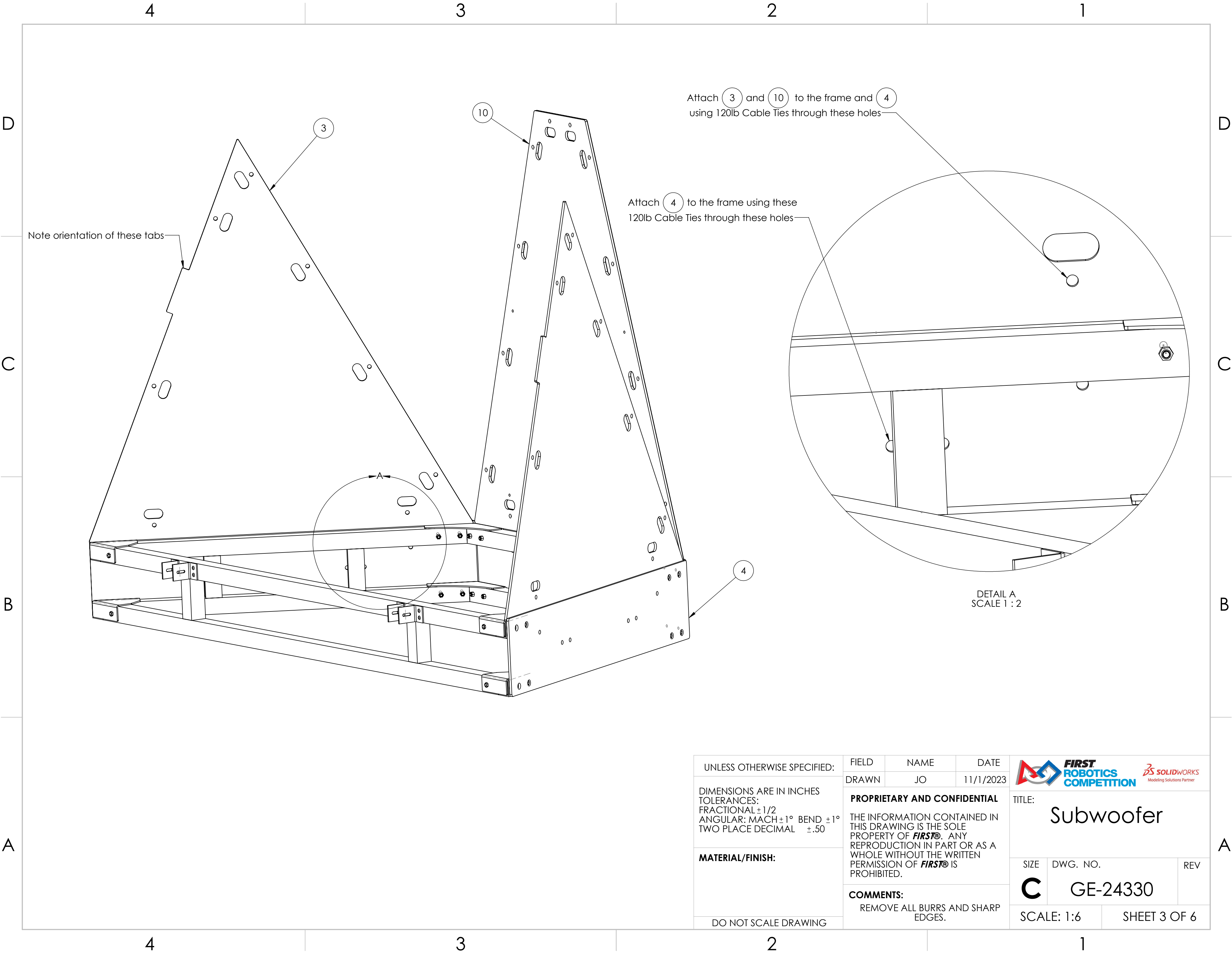




Assemble as shown, do not over-tighten bolts

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div><div></div><div>TITLE: <h1>Subwoofer</h1></div></div>	
	DRAWN	JO	11/1/2023		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24330
SCALE: 1:10				SHEET 2 OF 6	
MATERIAL/FINISH:				REV	
DO NOT SCALE DRAWING					





UNLESS OTHERWISE SPECIFIED:

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

**MATERIAL/FINISH:**

DO NOT SCALE DRAWING

FIELD

DRAWN

NAME

JO

DATE

11/1/2023

**PROPRIETARY AND CONFIDENTIAL**

THE INFORMATION CONTAINED IN  
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REPRODUCTION IN PART OR AS A  
WHOLE WITHOUT THE WRITTEN  
PERMISSION OF **FIRST®** IS  
PROHIBITED.

**COMMENTS:**

REMOVE ALL BURRS AND SHARP  
EDGES.



**FIRST  
ROBOTICS  
COMPETITION**



TITLE:

Subwoofer

SIZE

**C**

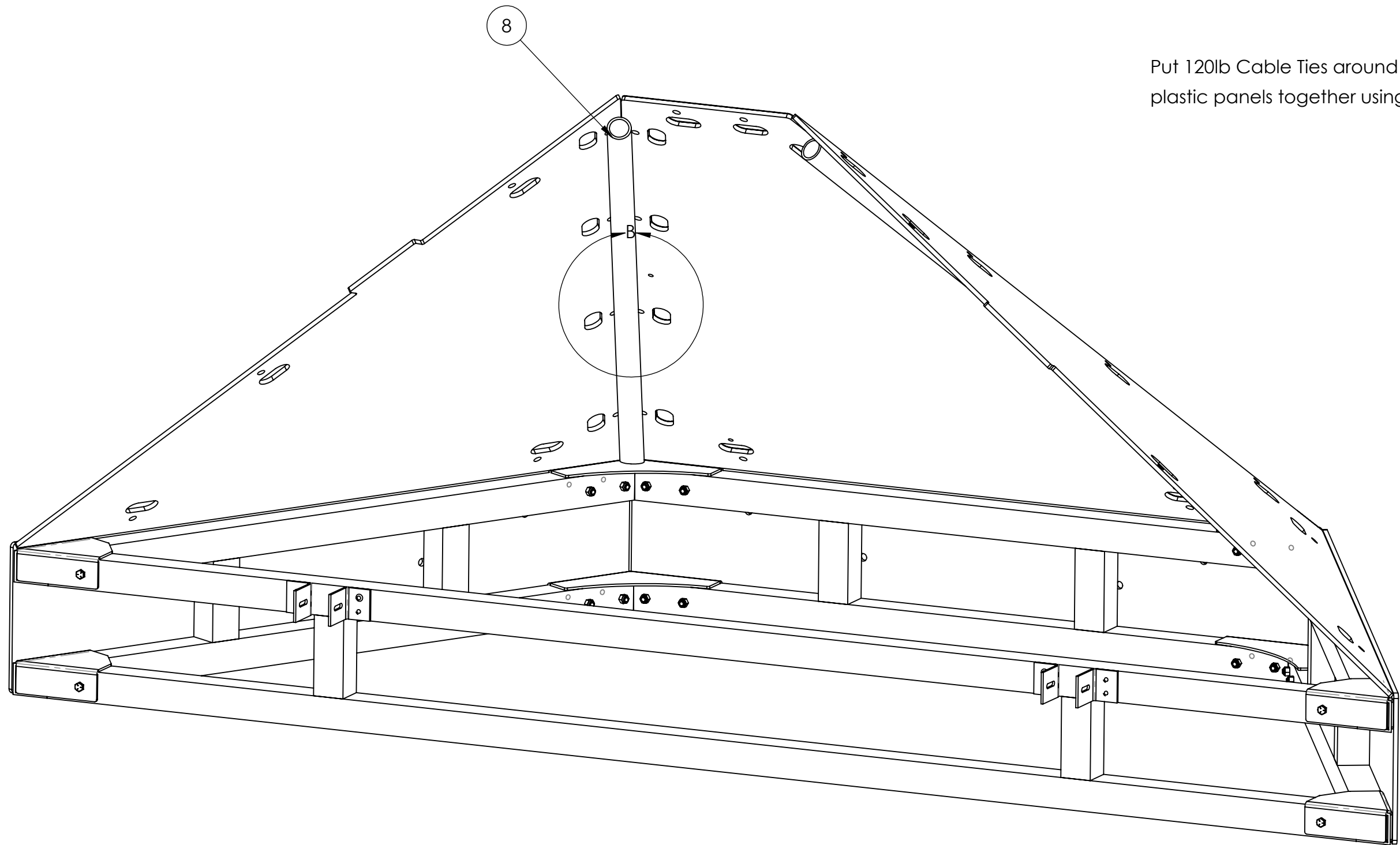
DWG. NO.

GE-24330

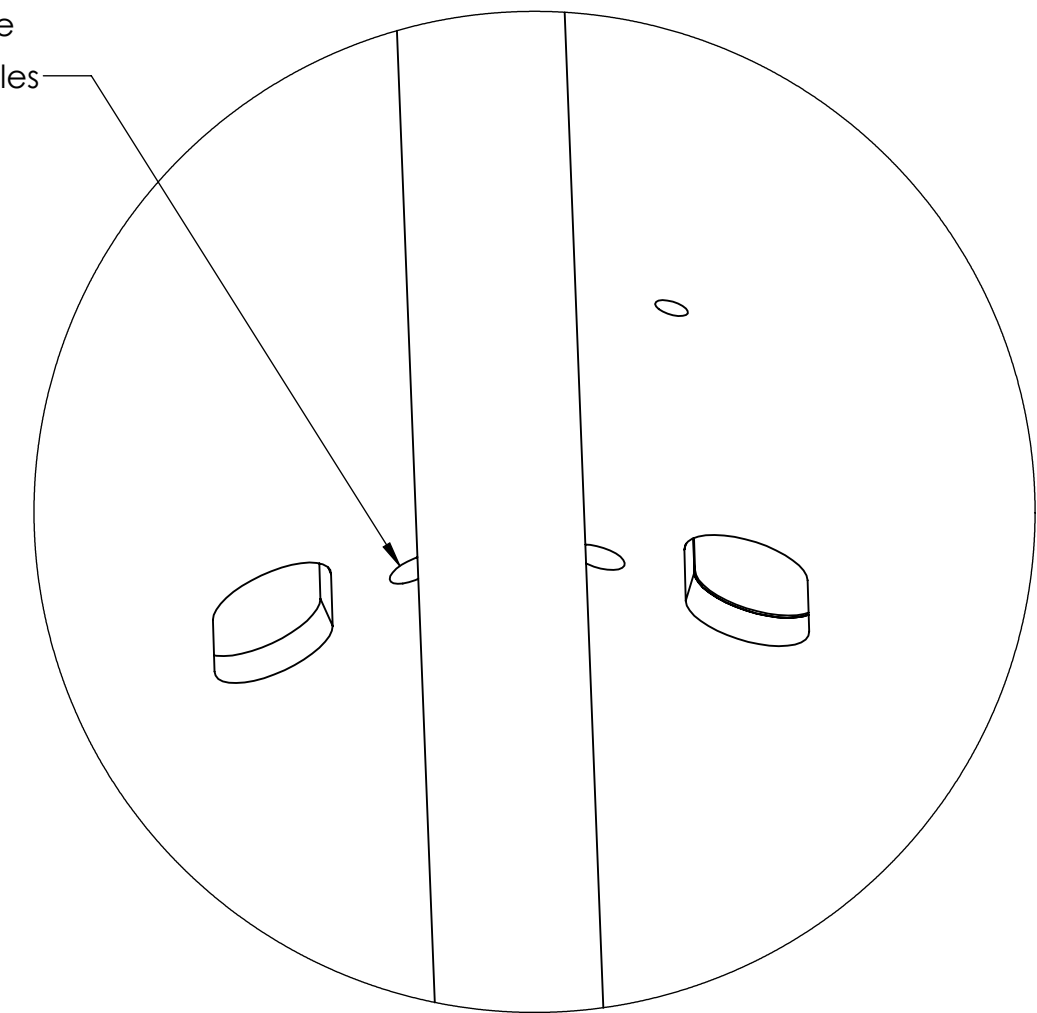
REV

SCALE: 1:6



SHEET 3 OF 6



Put 120lb Cable Ties around (8) to tie plastic panels together using these holes



DETAIL B  
SCALE 2 : 3

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div><div></div><div>TITLE: Subwoofer</div></div>		
	DRAWN	JO	11/1/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.50	PROPRIETARY AND CONFIDENTIAL			SIZE DWG. NO. REV		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			C GE-24330		
	REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING				SCALE: 1:6		SHEET 4 OF 6

4

3

2

1

D

D

C

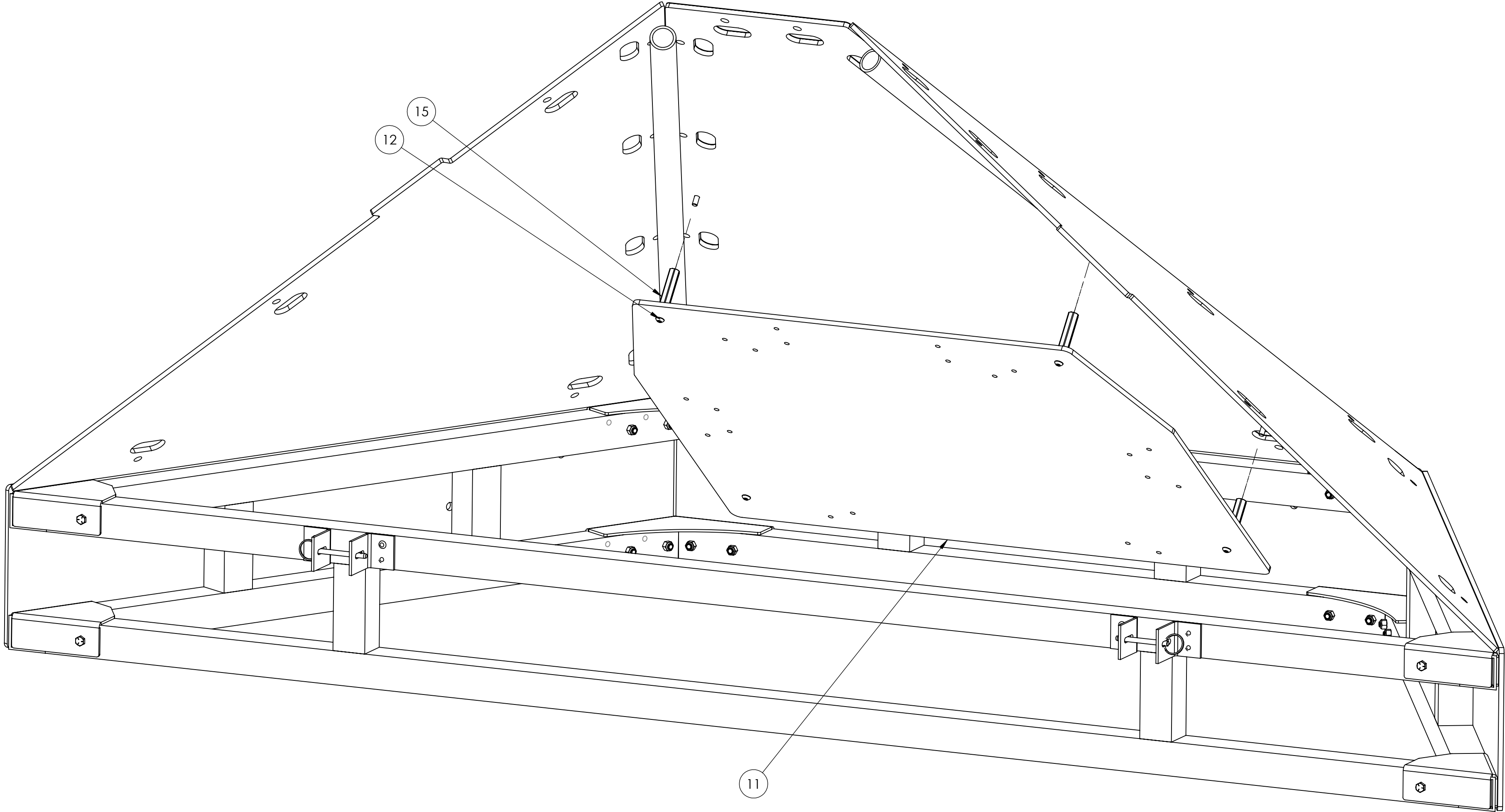
C

B

B

A

A



Attach (11) to the underside of the assembly with (15) and (12).

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

NAME

DATE

DRAWN

JO

11/1/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



**FIRST**  
ROBOTICS  
COMPETITION



Modeling Solutions Partner

TITLE:

Subwoofer

SIZE

DWG. NO.

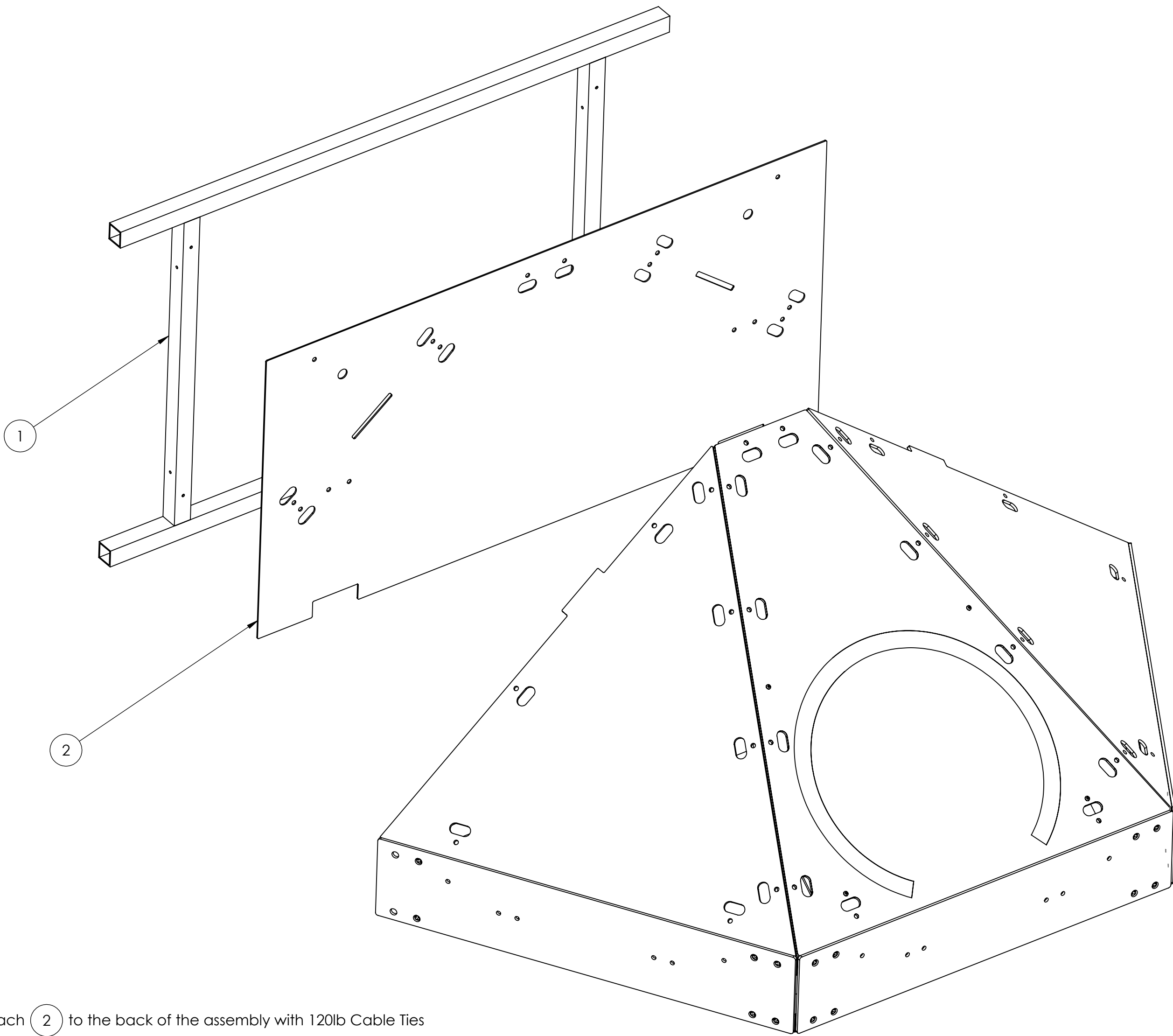
REV

C

GE-24330

SCALE: 1:4

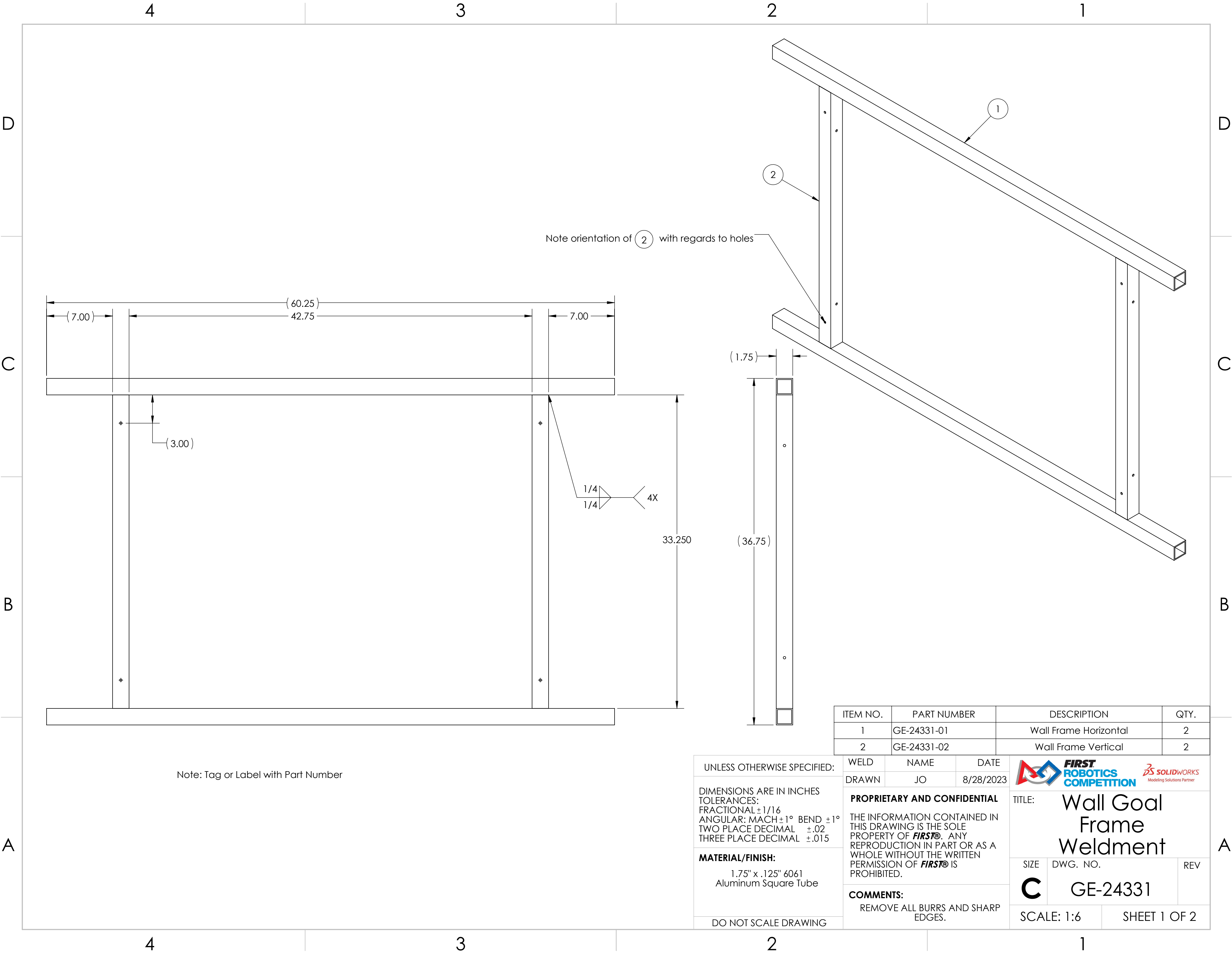
SHEET 5 OF 6



Attach ② to the back of the assembly with 120lb Cable Ties  
Slide assembly up to ① and attach with pins


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	JO	11/1/2023
MATERIAL/FINISH:		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
DO NOT SCALE DRAWING		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		
		TITLE: <b>Subwoofer</b>		
		SIZE <b>C</b>	DWG. NO. <b>GE-24330</b>	REV
		SCALE: 1:8      SHEET 6 OF 6		





Note orientation of 2 with regards to holes

Note: Tag or Label with Part Number

	ITEM NO.		PART NUMBER		DESCRIPTION		QTY.		
	1		GE-24331-01		Wall Frame Horizontal		2		
2		GE-24331-02		Wall Frame Vertical		2			
UNLESS OTHERWISE SPECIFIED:				WELD		NAME		DATE	
<p>DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES:</p> <p>FRACTIONAL <math>\pm 1/16</math></p> <p>ANGULAR: MACH <math>\pm 1^\circ</math> BEND <math>\pm 1^\circ</math></p> <p>TWO PLACE DECIMAL <math>\pm .02</math></p> <p>THREE PLACE DECIMAL <math>\pm .015</math></p> <p><b>MATERIAL/FINISH:</b></p> <p>1.75" x .125" 6061 Aluminum Square Tube</p> <p>DO NOT SCALE DRAWING</p>				DRAWN		JO		8/28/2023	
				<p><b>PROPRIETARY AND CONFIDENTIAL</b></p> <p>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b>. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.</p> <p><b>COMMENTS:</b></p> <p>REMOVE ALL BURRS AND SHARP EDGES.</p>					
				<p><b>TITLE:</b></p> <p>Wall Goal Frame Weldment</p>					
				SIZE		DWG. NO.			
C		GE-24331							
SCALE: 1:6				SHEET 1 OF 2					



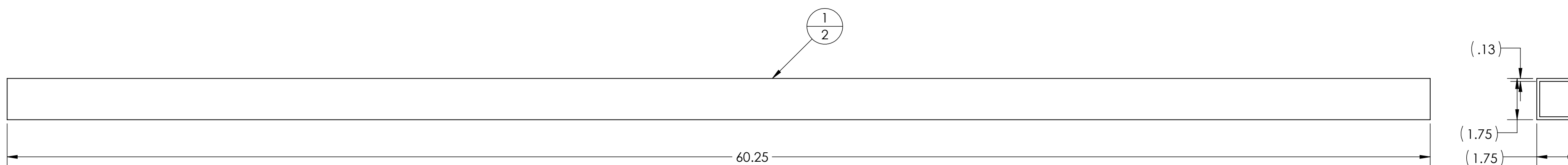
4

3

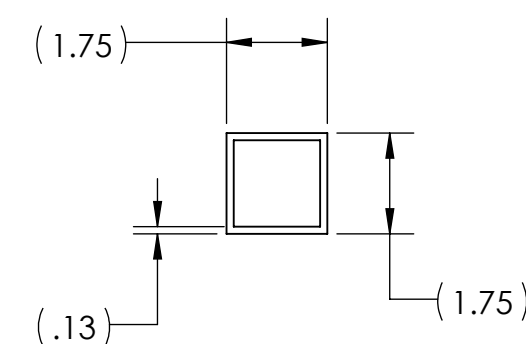
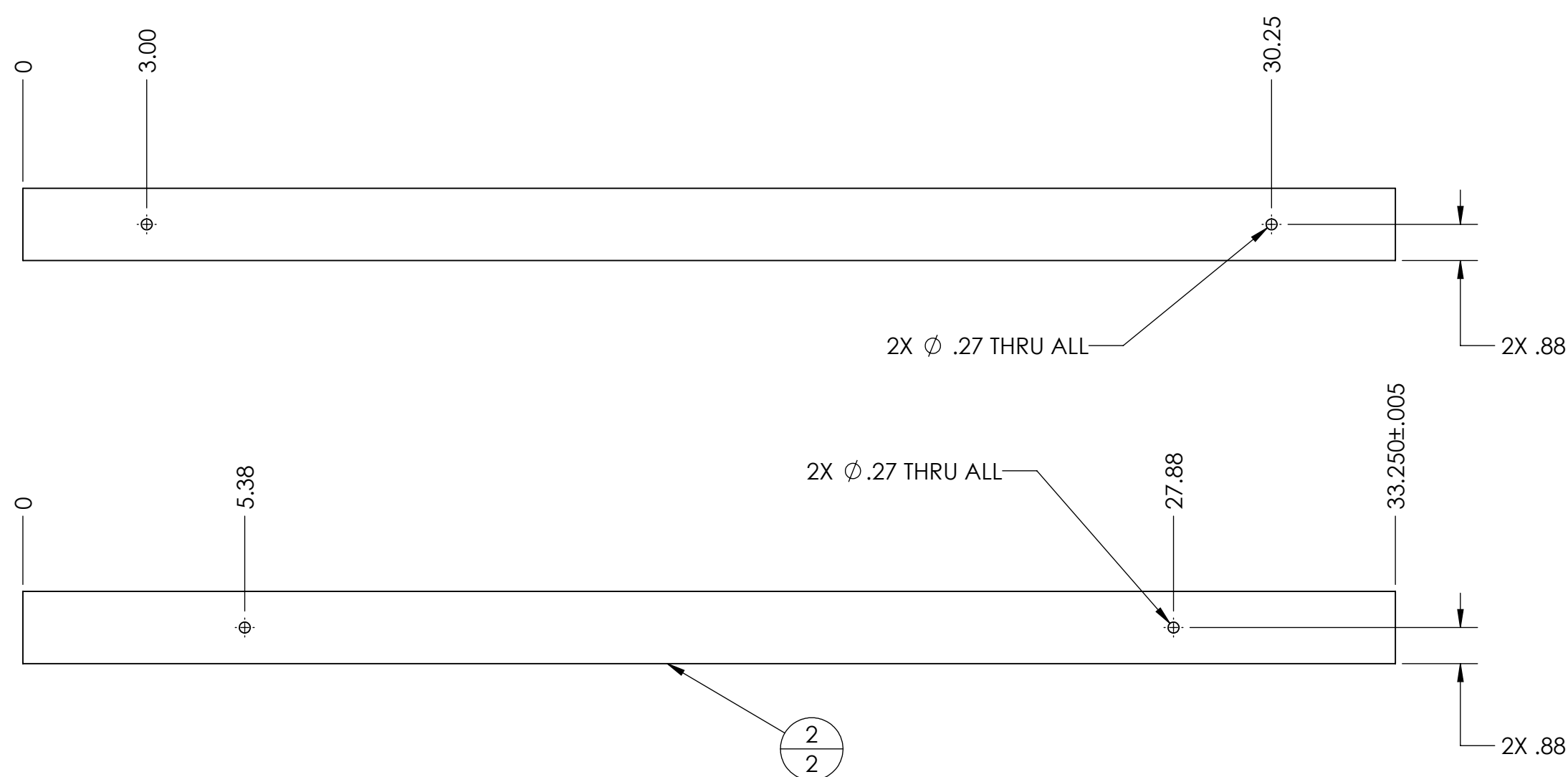
2

1

D



C



B

A

UNLESS OTHERWISE SPECIFIED:

WELD
------

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  $\pm .015$

**MATERIAL/FINISH:**  
1.75" x .125" 6061  
Aluminum Square Tube

DO NOT SCALE DRAWING

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:

# Wall Goal Frame Weldment

SIZE

DWG. NO.	
----------	--

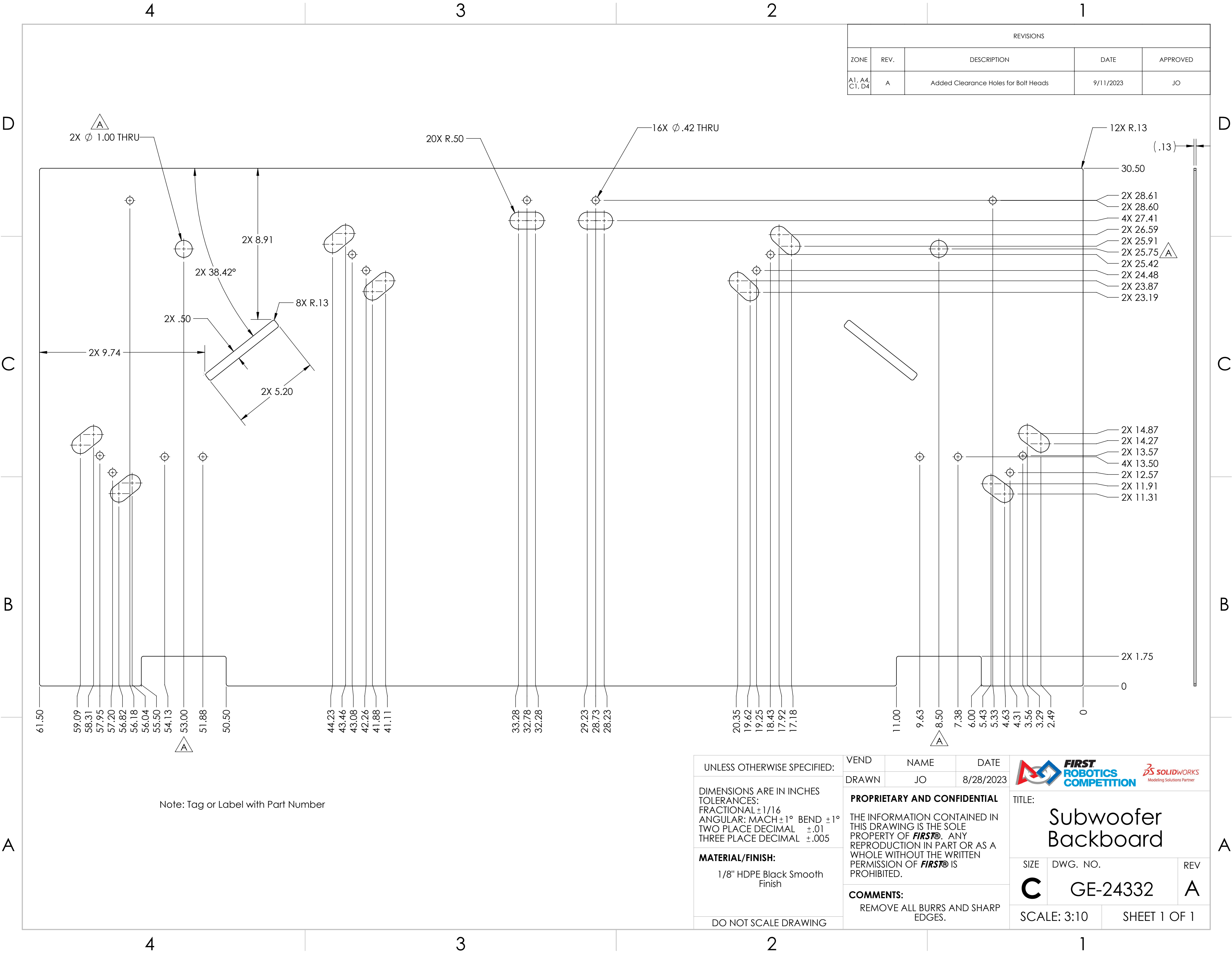
RFV

C

GE-24331

SCALE: 3:10



SHEET 2 OF 2

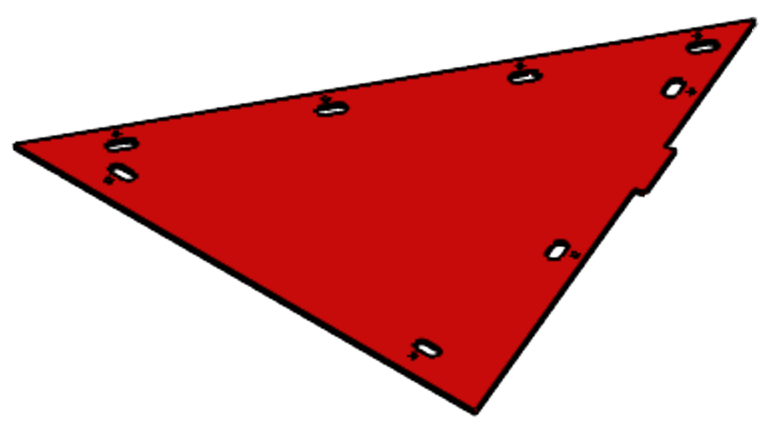
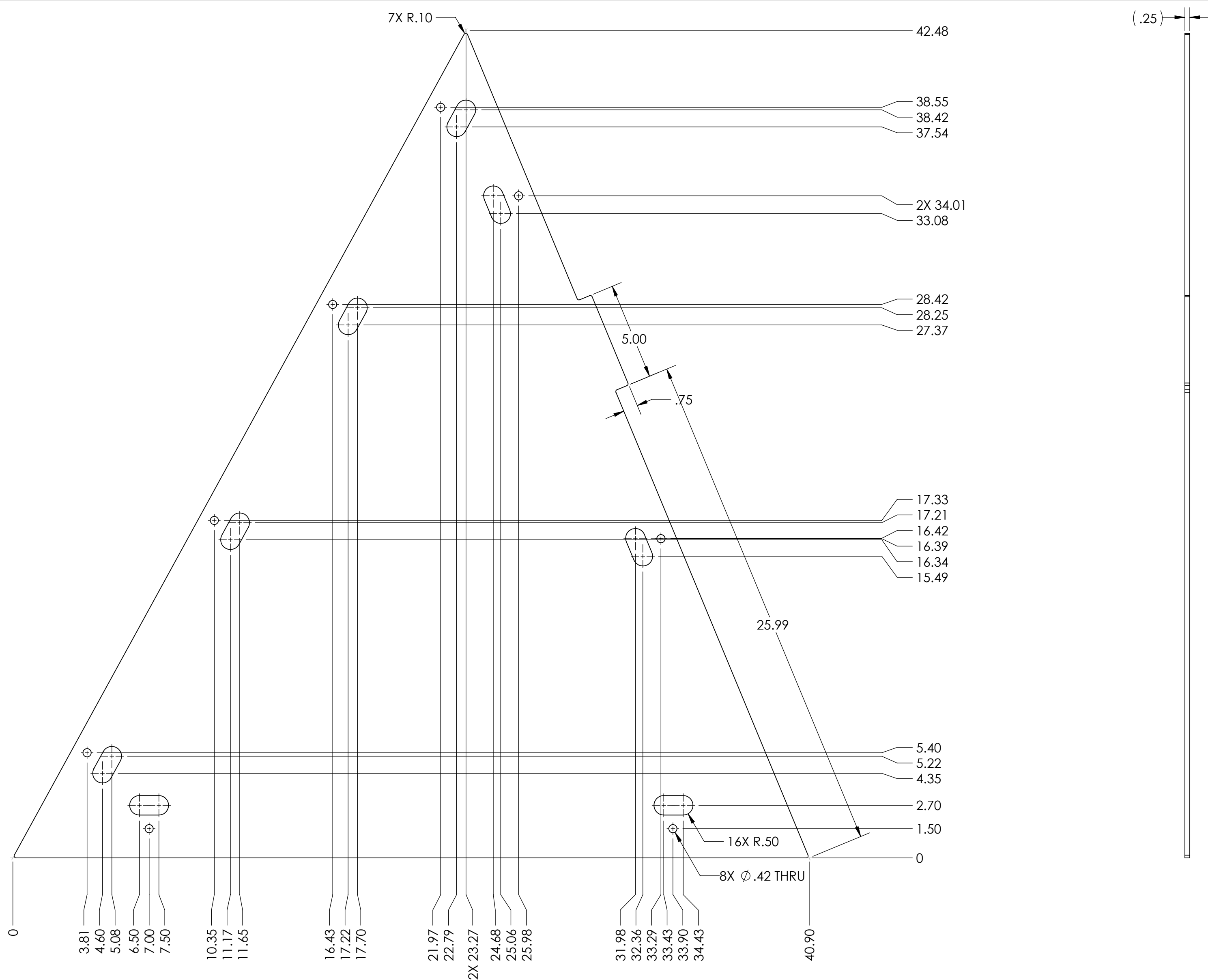


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A1, A4, C1, D4	A	Added Clearance Holes for Bolt Heads	9/11/2023	JO

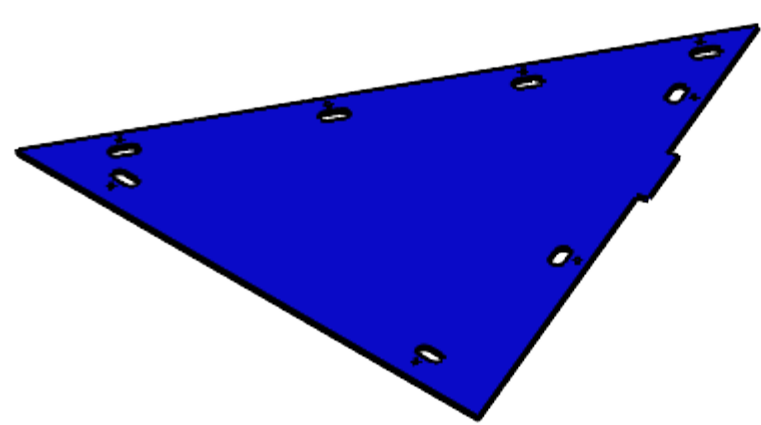
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005
<b>MATERIAL/FINISH:</b> 1/8" HDPE Black Smooth Finish
DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	8/28/2023
<b>PROPRIETARY AND CONFIDENTIAL</b> THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		



 		
TITLE: <b>Subwoofer Backboard</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24332</b>	REV <b>A</b>
SCALE: 3:10		SHEET 1 OF 1

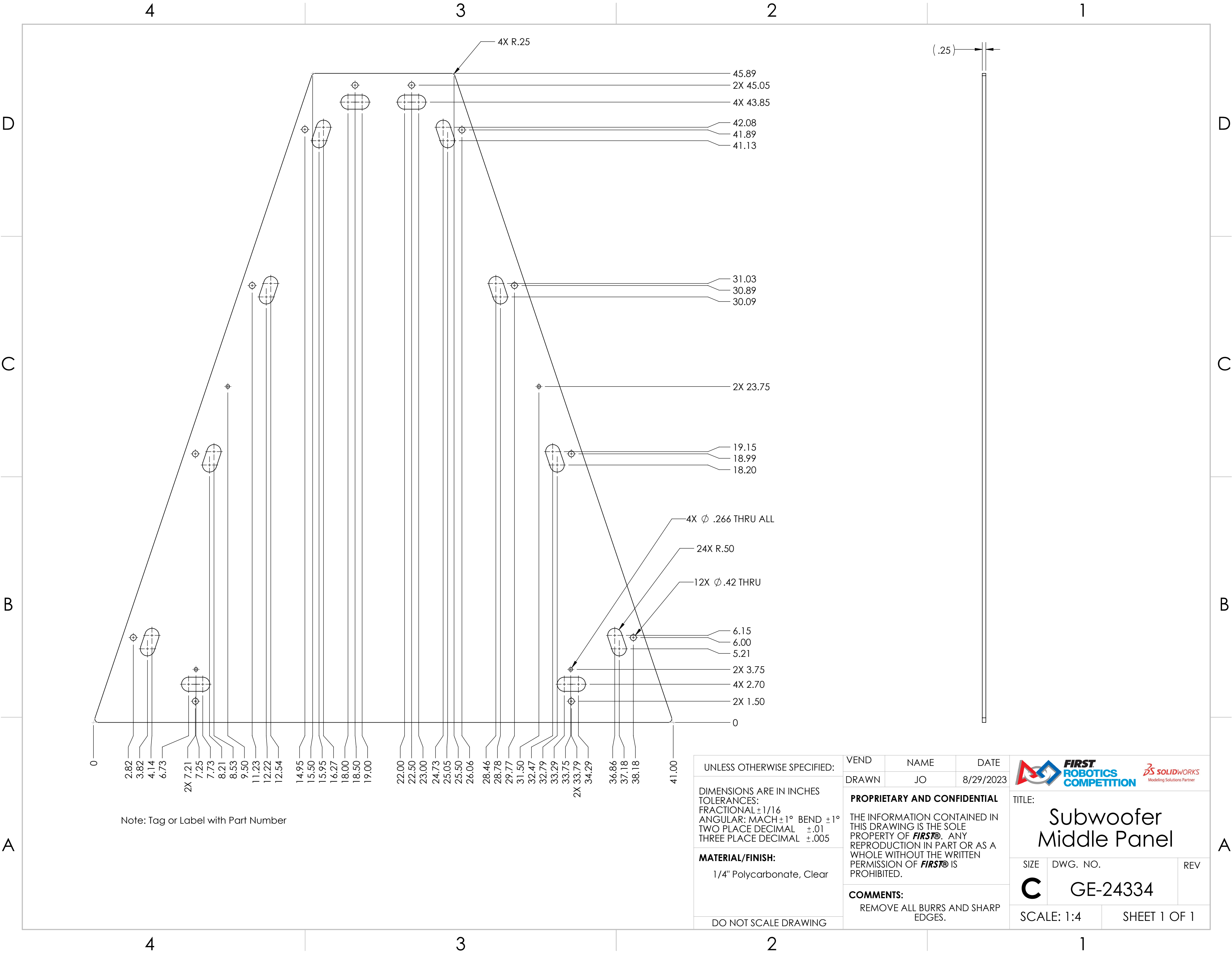


GE-24333-RED



GE-24333-BLUE

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1/4" HDPE, Matte Finish, See Part Number For Color  DO NOT SCALE DRAWING	VEND	NAME	DATE	 	
	DRAWN	JO	8/28/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Subwoofer Side Panel	
	<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.			SIZE  C	DWG. NO.  GE-24333
			SCALE: 1:4		SHEET 1 OF 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:**  
1/4" Polycarbonate, Clear

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	8/29/2023

**PROPRIETARY AND CONFIDENTIAL**  
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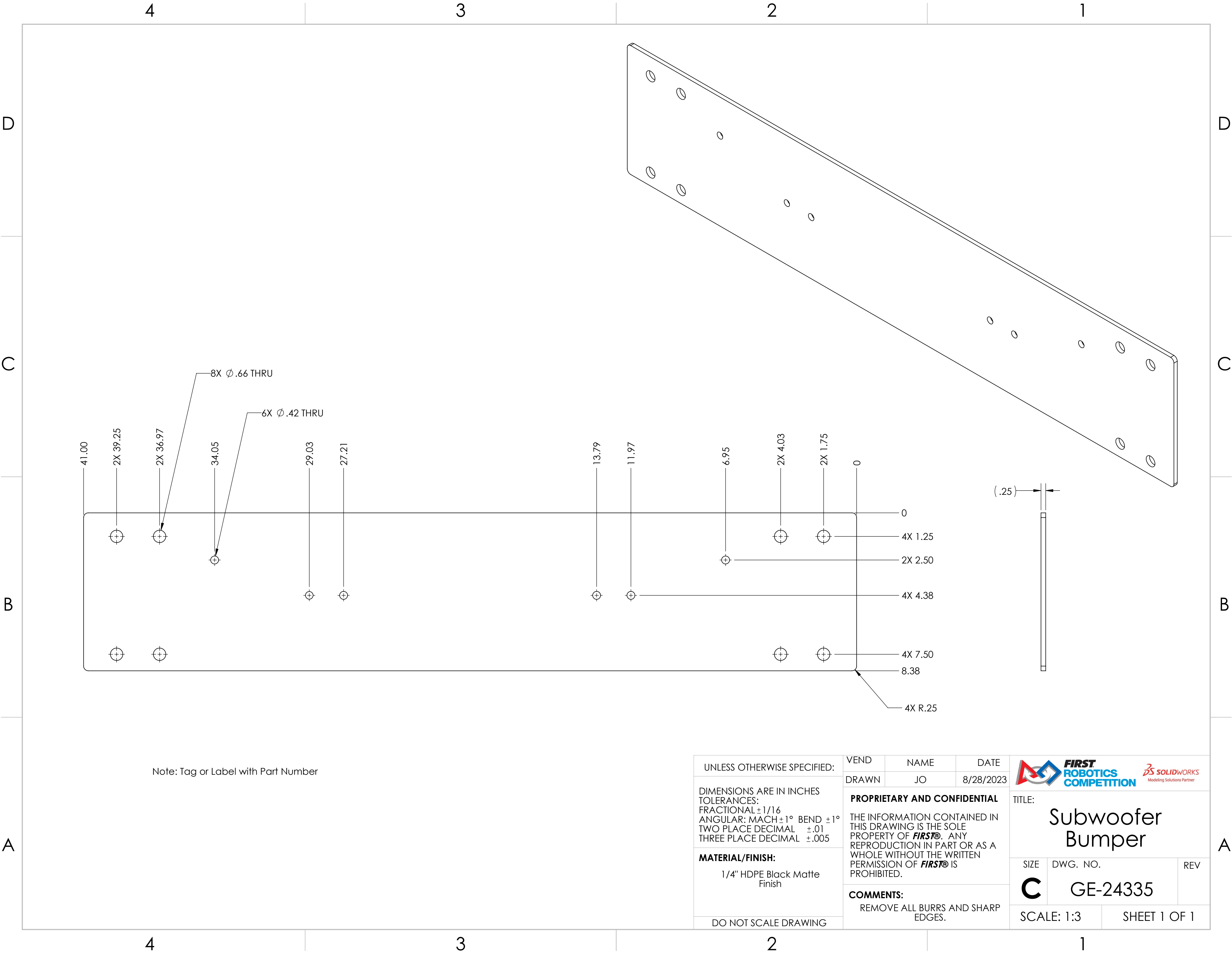
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.






TITLE:  
**Subwoofer Middle Panel**

SIZE	DWG. NO.	REV
<b>C</b>	<b>GE-24334</b>	

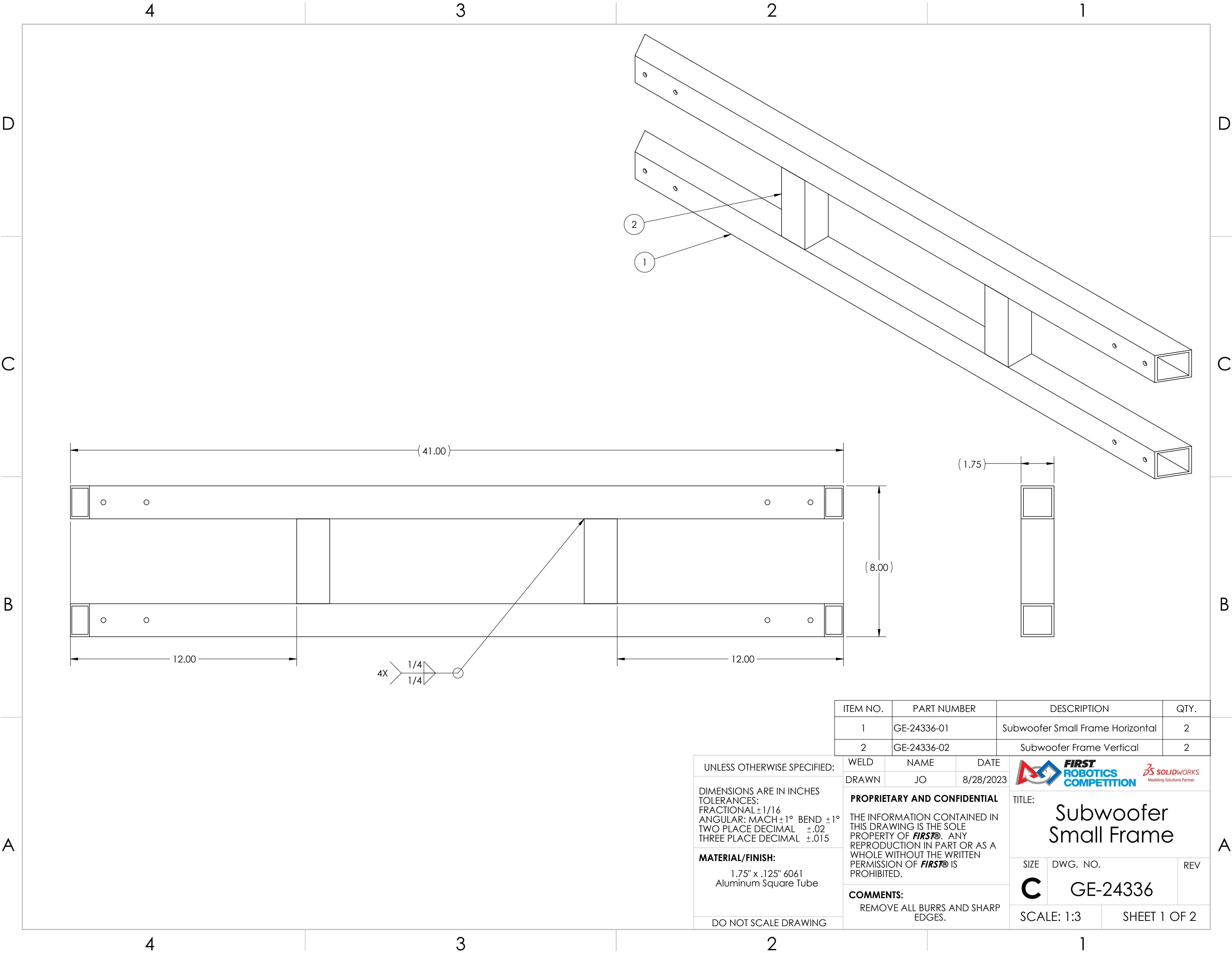
SCALE: 1:4 SHEET 1 OF 1



Note: Tag or Label with Part Number

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	JO	8/28/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:  Subwoofer Bumper		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:  1/4" HDPE Black Matte Finish	COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	GE-24335	
DO NOT SCALE DRAWING				SCALE: 1:3		SHEET 1 OF 1





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24336-01	Subwoofer Small Frame Horizontal	2
2	GE-24336-02	Subwoofer Frame Vertical	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:**  
1.75" x .125" 6061  
Aluminum Square Tube

DO NOT SCALE DRAWING

WELD	NAME	DATE
DRAWN	JO	8/28/2023

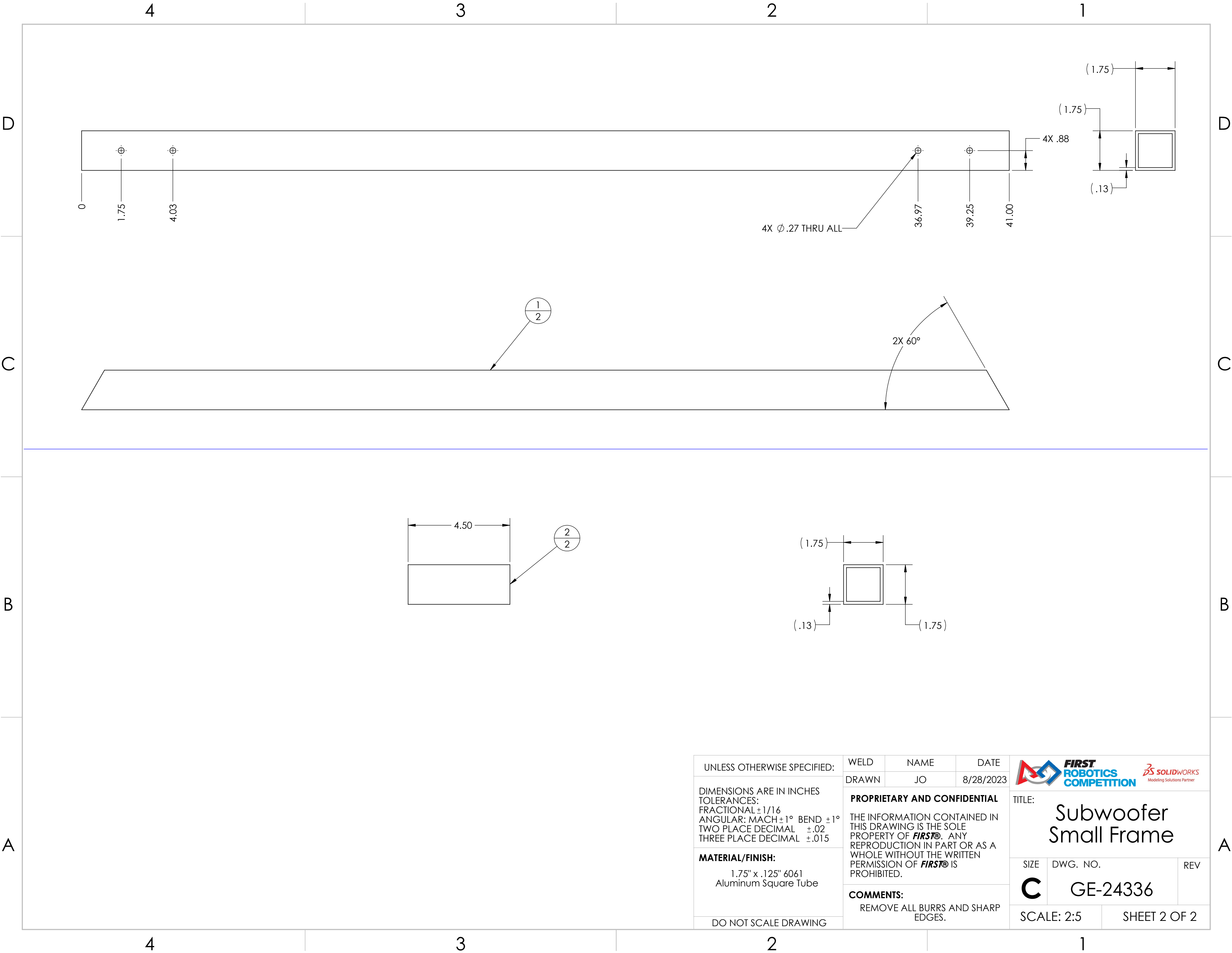
**PROPRIETARY AND CONFIDENTIAL**  
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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

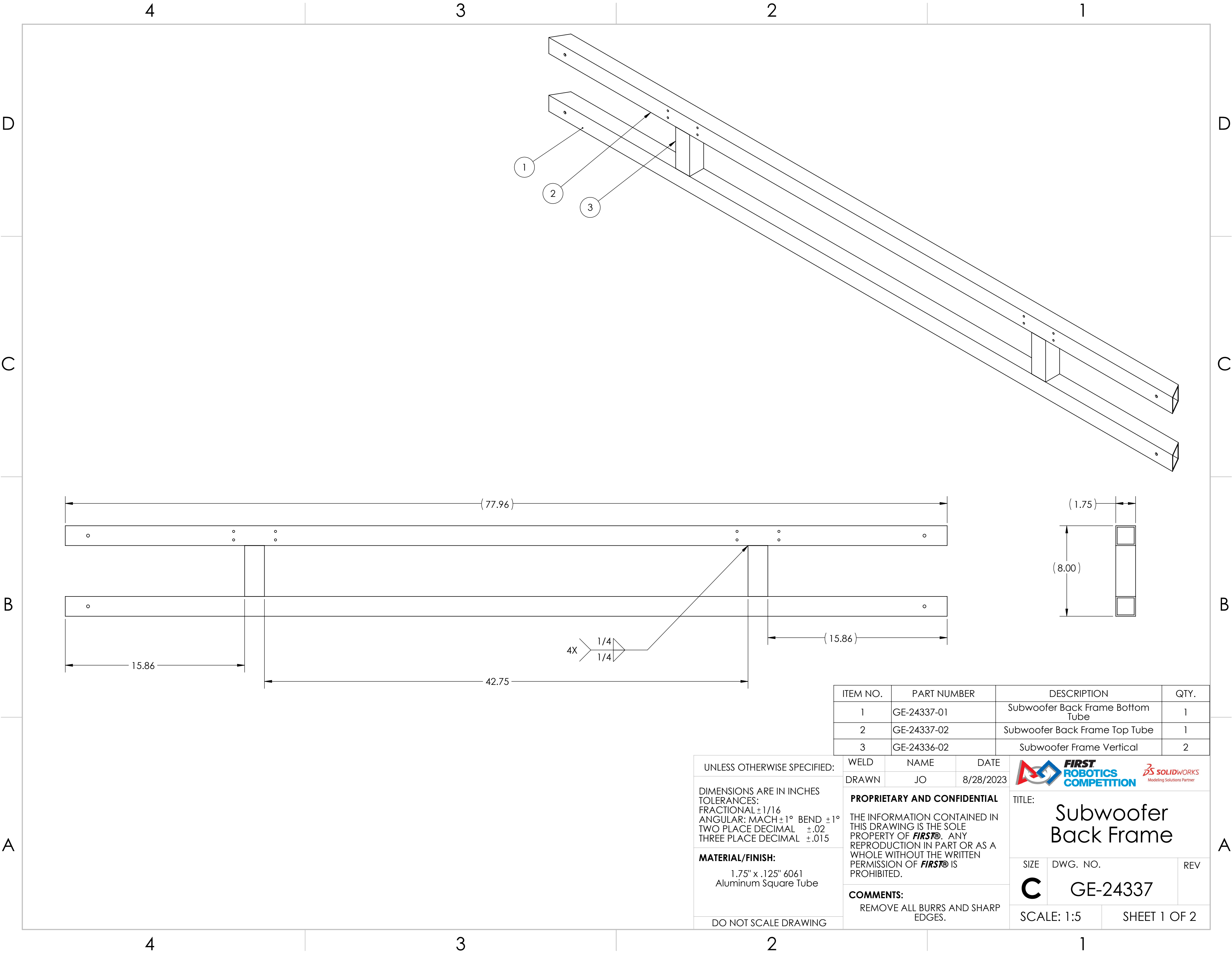


TITLE:  
**Subwoofer Small Frame**



SIZE <b>C</b>	DWG. NO. <b>GE-24336</b>	REV
SCALE: 1:3		SHEET 1 OF 2

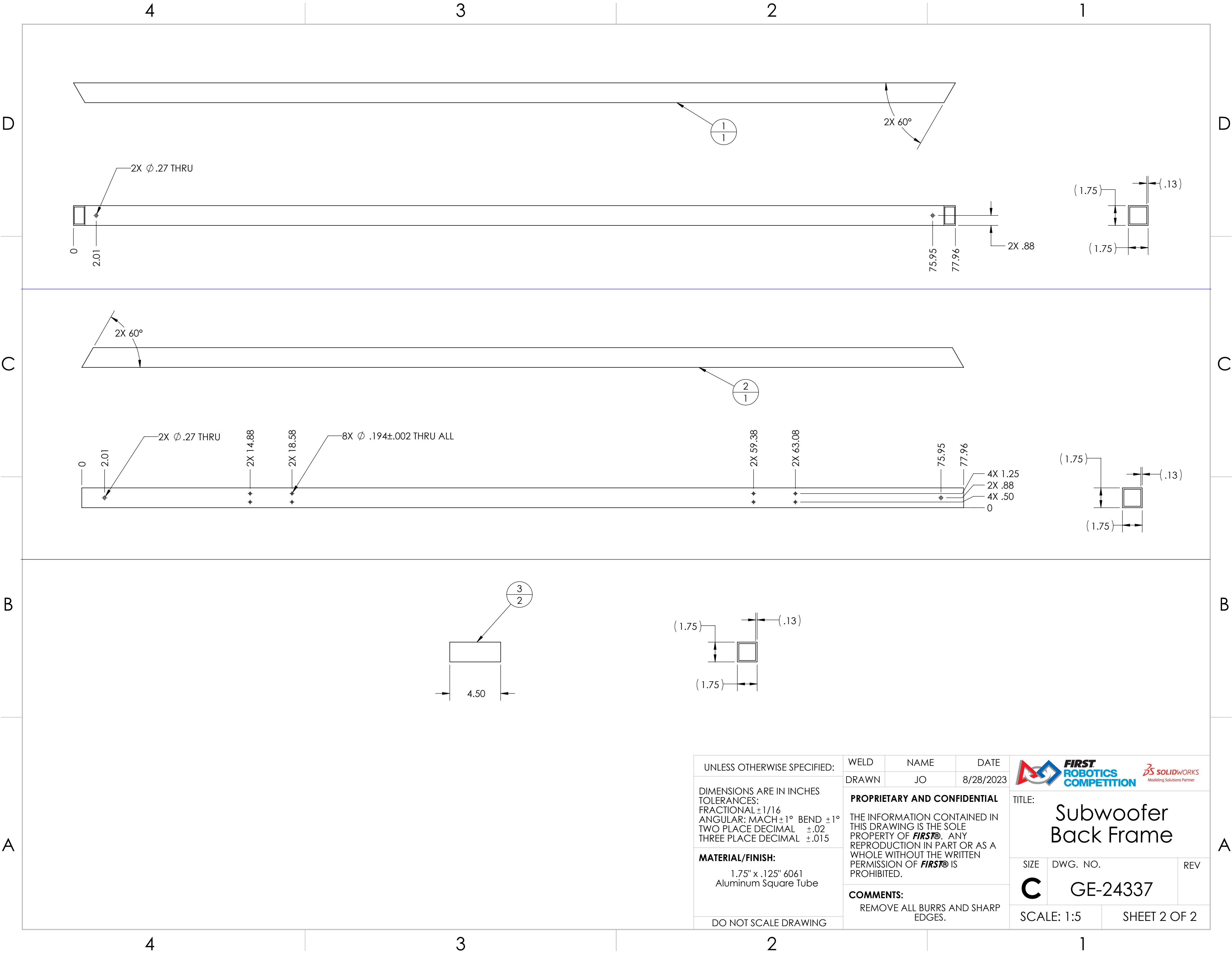




UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div></div> <div>TITLE: <h1>Subwoofer Small Frame</h1></div>		
	DRAWN	JO	8/28/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	PROPRIETARY AND CONFIDENTIAL			SIZE <b>C</b>		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:  1.75" x .125" 6061 Aluminum Square Tube	COMMENTS:			DWG. NO.		REV
	REMOVE ALL BURRS AND SHARP EDGES.			GE-24336		
DO NOT SCALE DRAWING				SCALE: 2:5		SHEET 2 OF 2

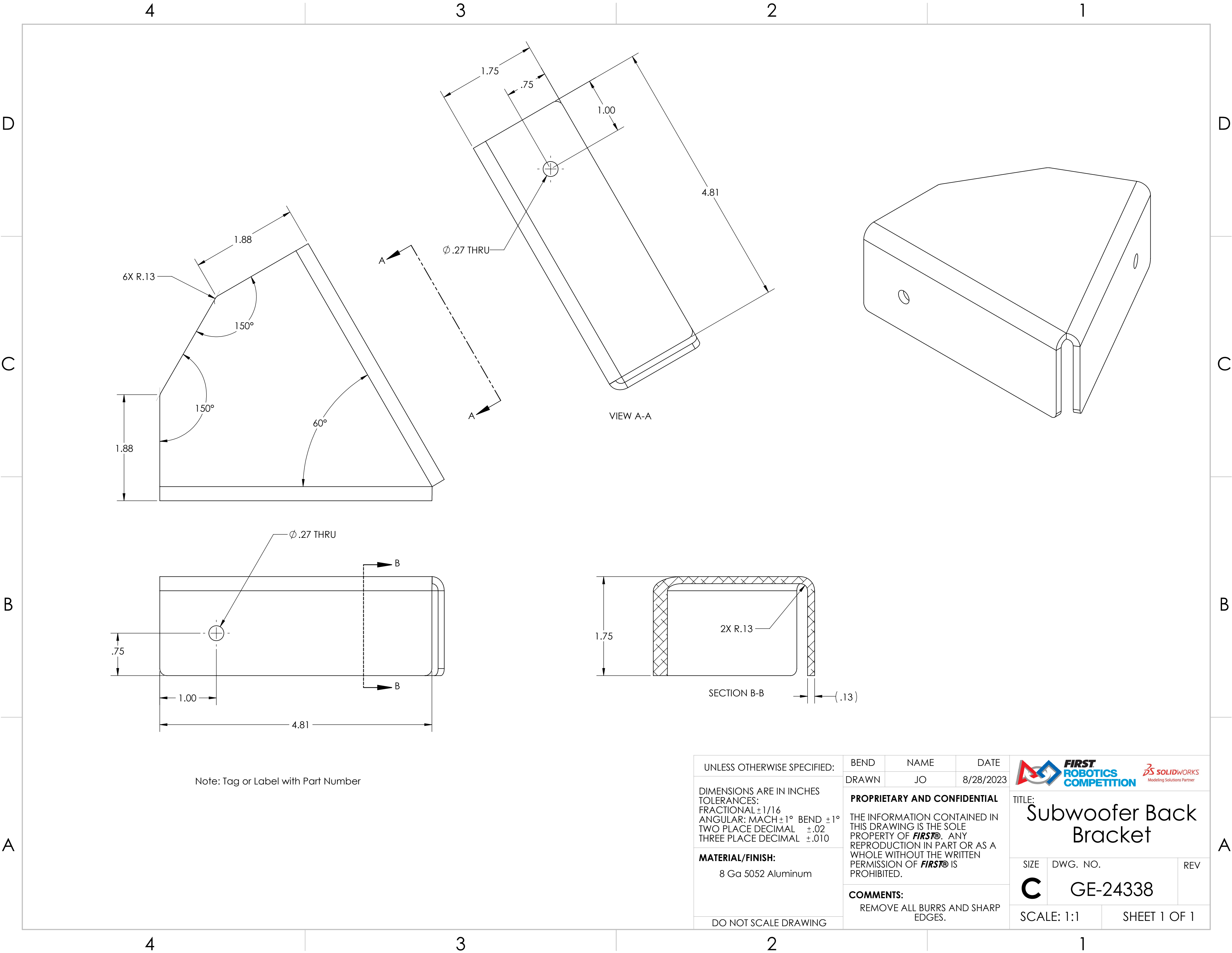




ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24337-01	Subwoofer Back Frame Bottom Tube	1
2	GE-24337-02	Subwoofer Back Frame Top Tube	1
3	GE-24336-02	Subwoofer Frame Vertical	2

UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div><div></div><div>TITLE: Subwoofer Back Frame</div></div>		
	DRAWN	JO	8/28/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	PROPRIETARY AND CONFIDENTIAL			THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	COMMENTS:					
MATERIAL/FINISH:	REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
1.75" x .125" 6061 Aluminum Square Tube				C	GE-24337	
DO NOT SCALE DRAWING				SCALE: 1:5		SHEET 1 OF 2

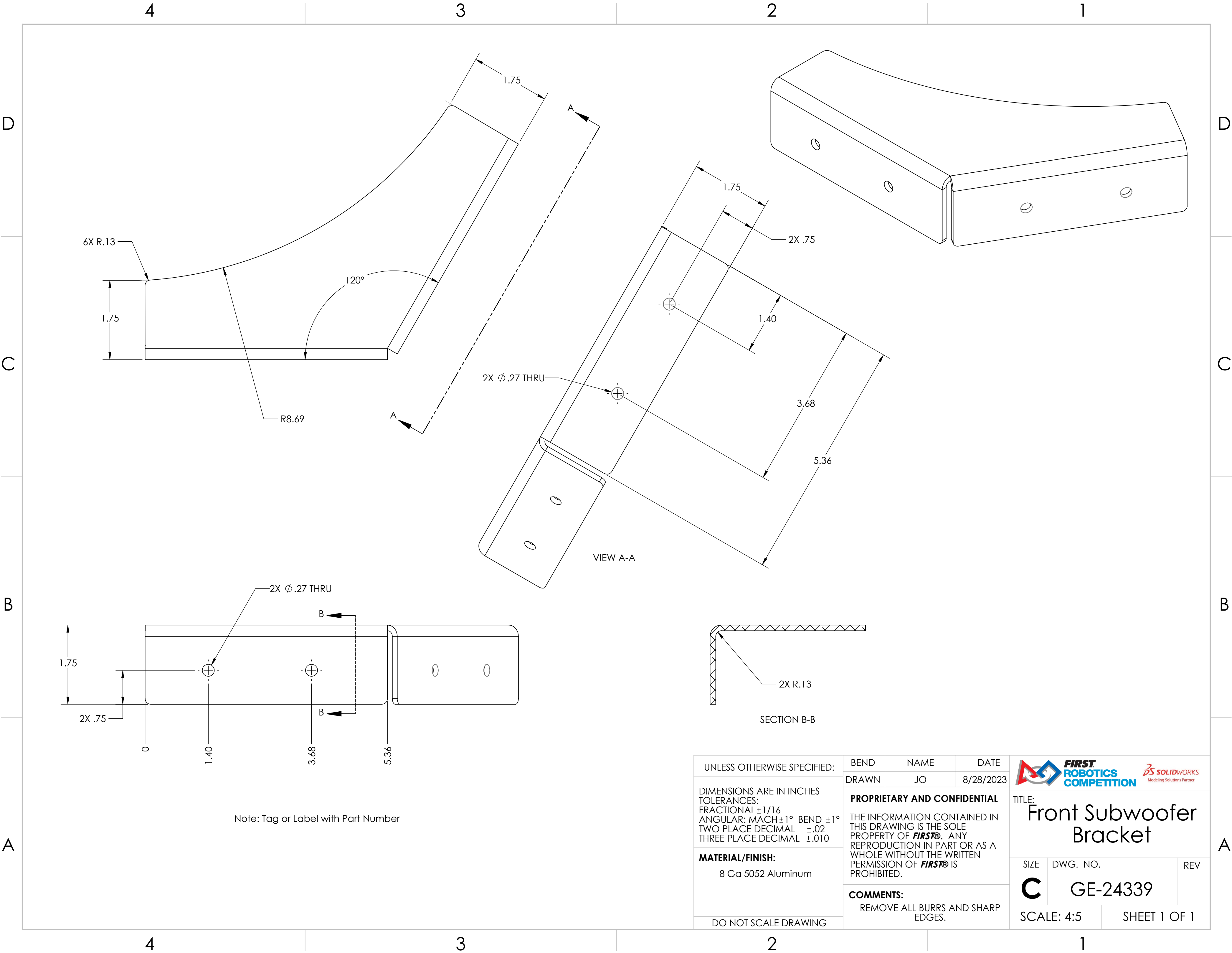


UNLESS OTHERWISE SPECIFIED:	WELD	NAME	DATE	<div></div> <div>TITLE: <h1>Subwoofer Back Frame</h1></div>		
	DRAWN	JO	8/28/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24337	
<b>MATERIAL/FINISH:</b>  1.75" x .125" 6061 Aluminum Square Tube				SCALE: 1:5		SHEET 2 OF 2
DO NOT SCALE DRAWING						





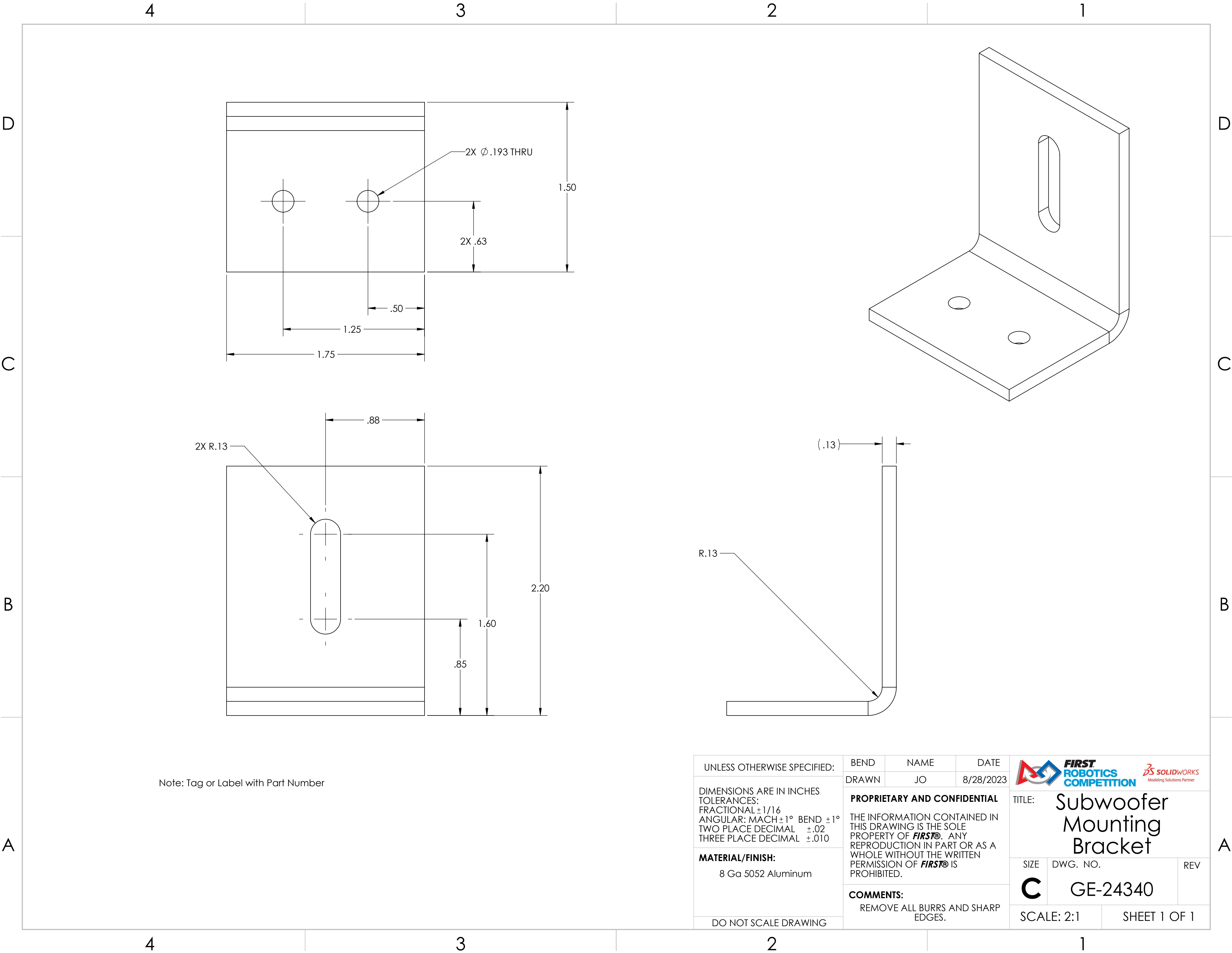
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .02 THREE PLACE DECIMAL ± .010  <b>MATERIAL/FINISH:</b> 8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div><div></div><div>TITLE: Subwoofer Back Bracket</div></div>	
	DRAWN	JO	8/28/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24338
SCALE: 1:1		SHEET 1 OF 1			

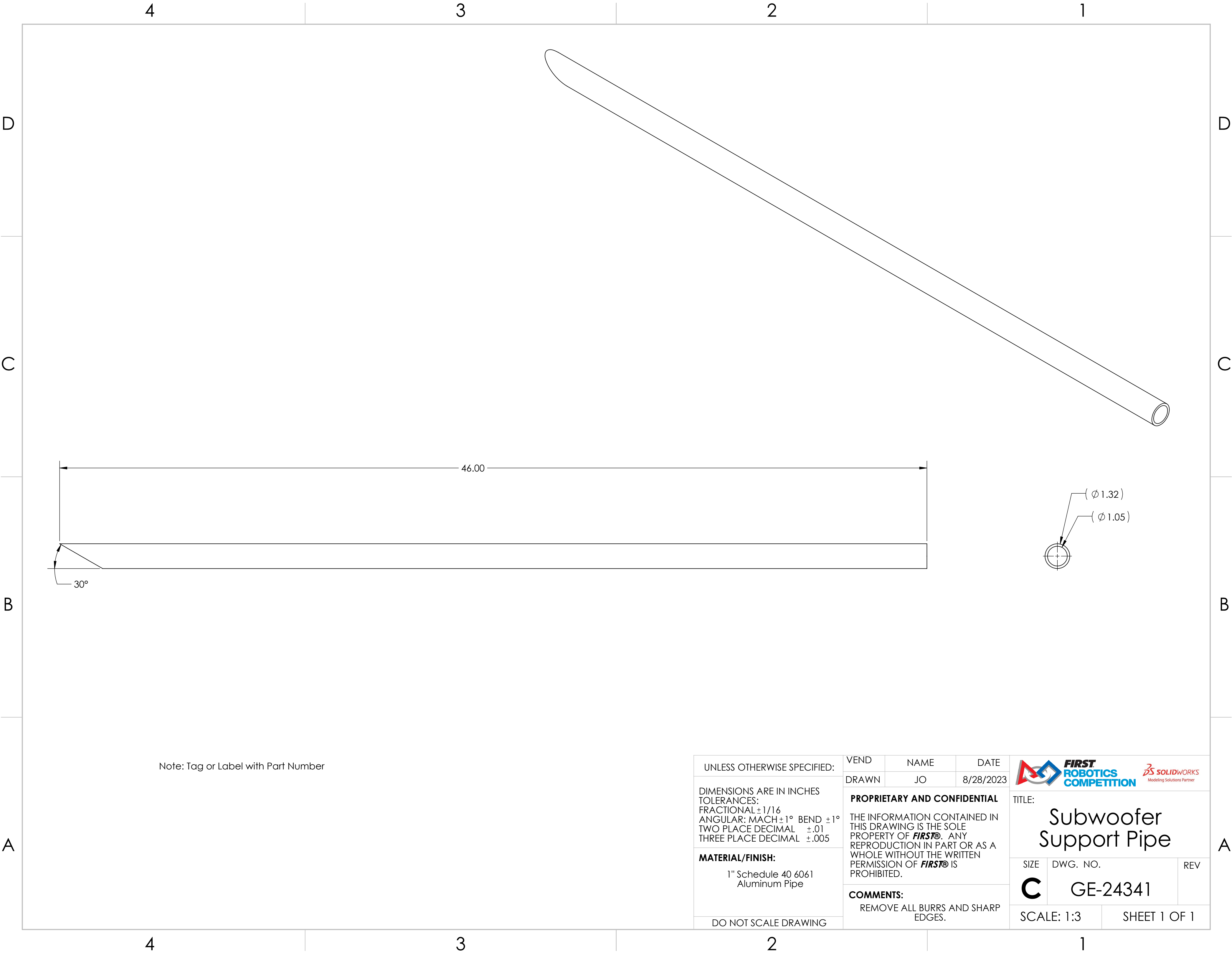






Note: Tag or Label with Part Number

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 $\pm .010$  <b>MATERIAL/FINISH:</b>  8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <b>Front Subwoofer Bracket</b></div>	
	DRAWN	JO	8/28/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24339
SCALE: 4:5		SHEET 1 OF 1			





Note: 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 $\pm .005$  <b>MATERIAL/FINISH:</b>  1" Schedule 40 6061 Aluminum Pipe  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE:  Subwoofer Support Pipe</div>		
	DRAWN	JO	8/28/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24341	
		SCALE: 1:3		SHEET 1 OF 1		

4

3

2

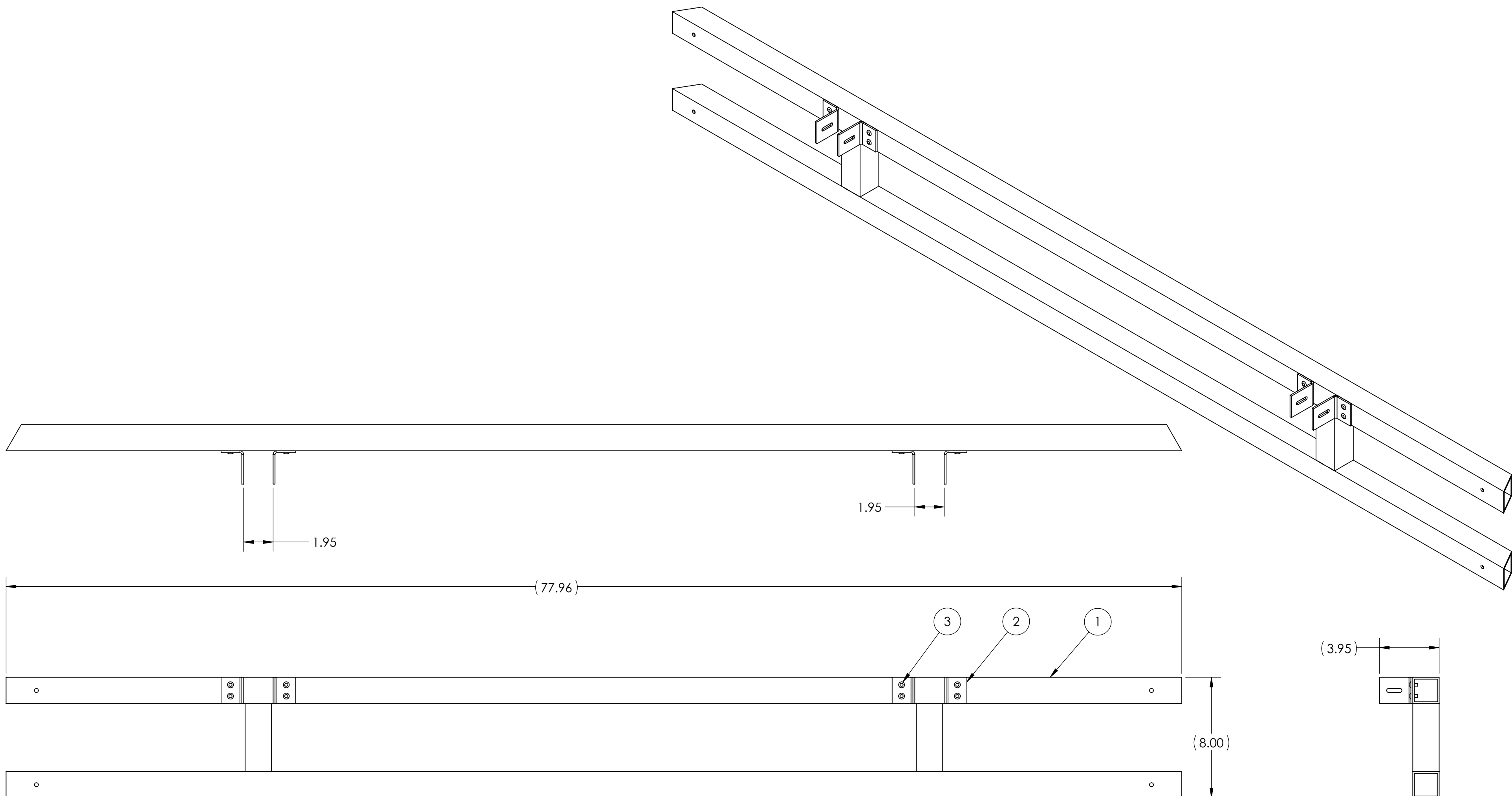
1

D

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Notes:

Attach (2) to (1) with (3)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24337	Subwoofer Back Frame	1
2	GE-24340	Subwoofer Mounting Bracket	4
3	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	8

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		JO		8/28/2023	
		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.					
		DO NOT SCALE DRAWING					
<b>MATERIAL/FINISH:</b>		 					
		TITLE: Subwoofer Back Frame with Brackets					
		SIZE		DWG. NO.			REV
		C		GE-24342			
		SCALE: 1:5			SHEET 1 OF 1		

4

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GE-24343-Vinyl  
Apply vinyl to one face. Front  
and back of part are identical.

Cut out vinyl at all slot and hole locations.  
28 places.

Translucent vinyl to be mounted on the  
opposite side of the plastic in this area.

GE-24334

Notes:  
1. QTY per field: 2  
2. Gloss vinyl finish

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

NAME

DATE

DRAWN

DF

10/18/2023

PROPRIETARY AND CONFIDENTIAL

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

COMMENTS:

REMOVE ALL BURRS AND SHARP  
EDGES.



**FIRST**  
ROBOTICS  
COMPETITION



Modeling Solutions Partner

TITLE: Subwoofer  
Middle Panel  
with Vinyl

SIZE

DWG. NO.

REV

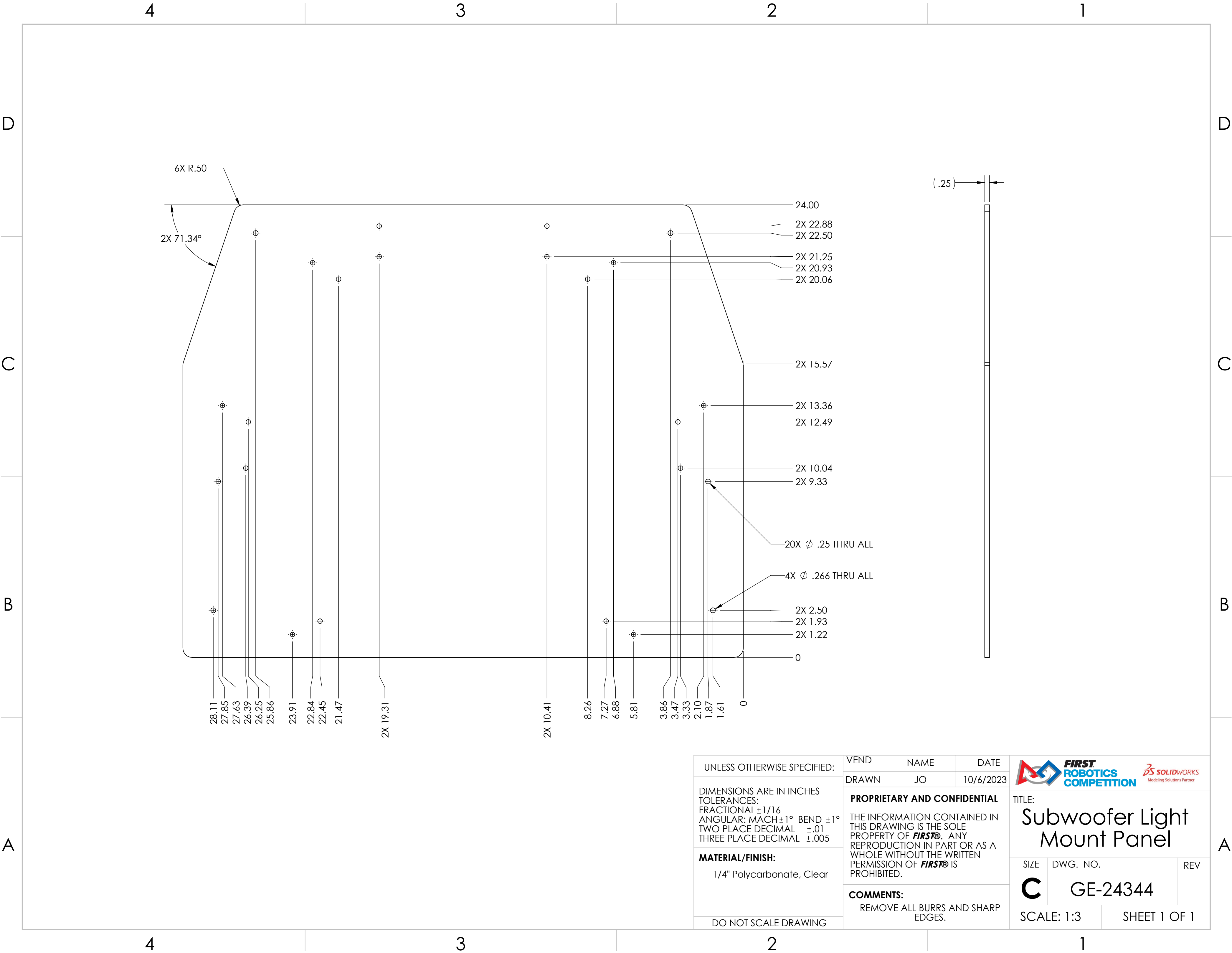
C



GE-24343

SCALE: 1:4

SHEET 1 OF 1





UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1/4" Polycarbonate, Clear  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <b>Subwoofer Light Mount Panel</b></div>		
	DRAWN	JO	10/6/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				SIZE	DWG. NO.
				<b>C</b>	GE-24344	
				SCALE: 1:3		SHEET 1 OF 1

4

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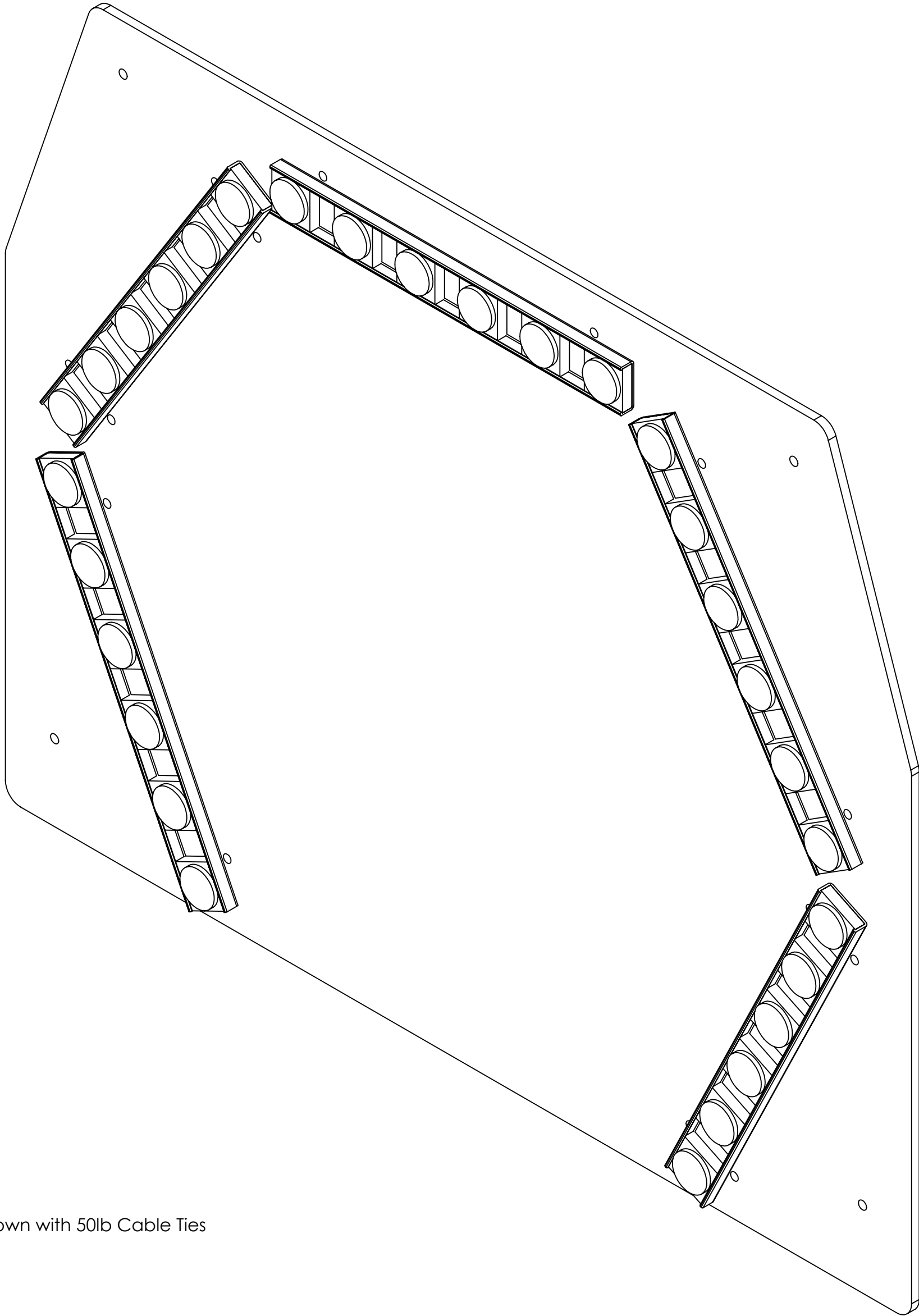
C

B

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A

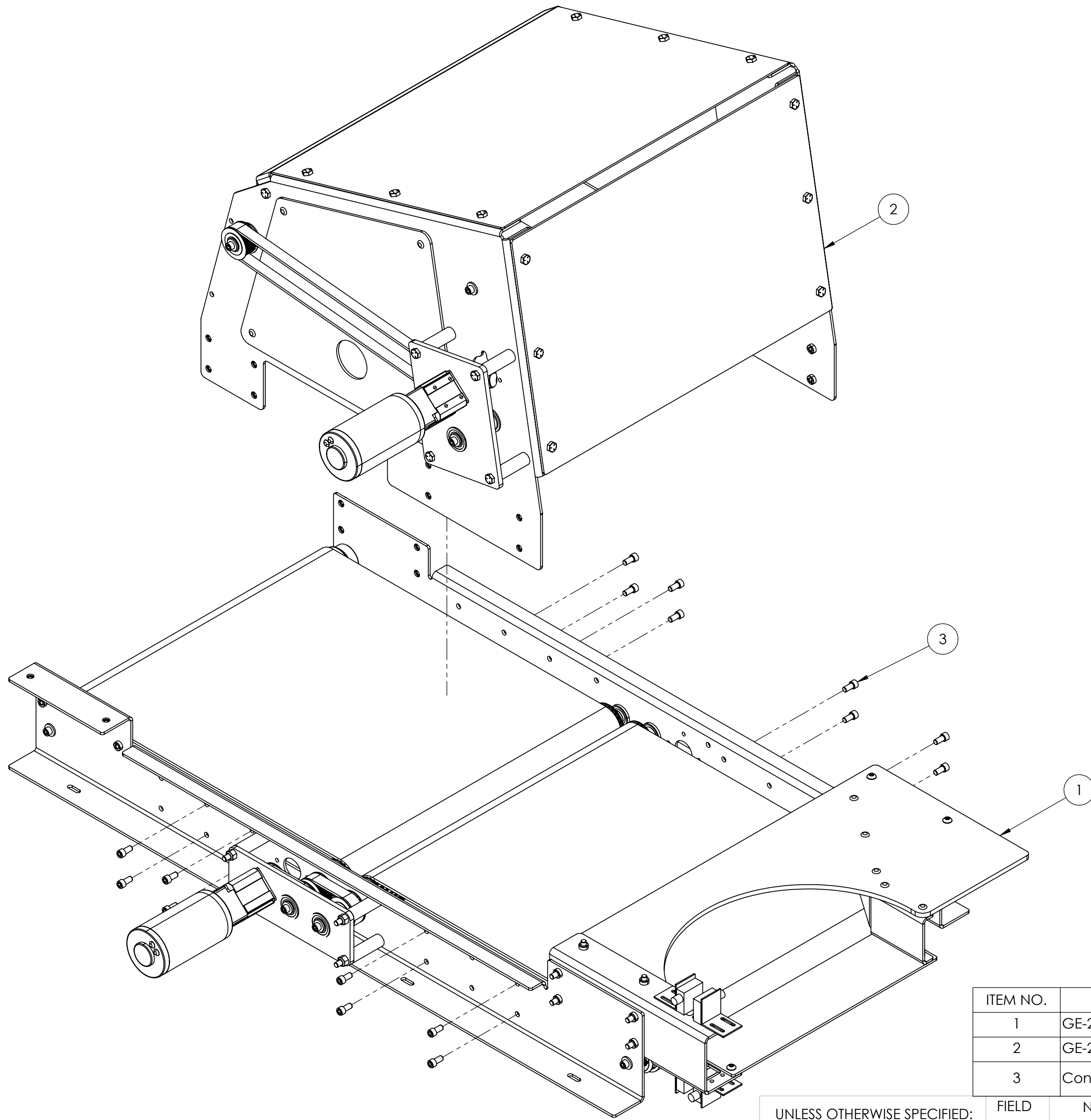
A





Attach Ligths as shown with 50lb Cable Ties

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24344	Subwoofer Light Mount Panel	1
2	lightTrackWithLights_duckbill		5

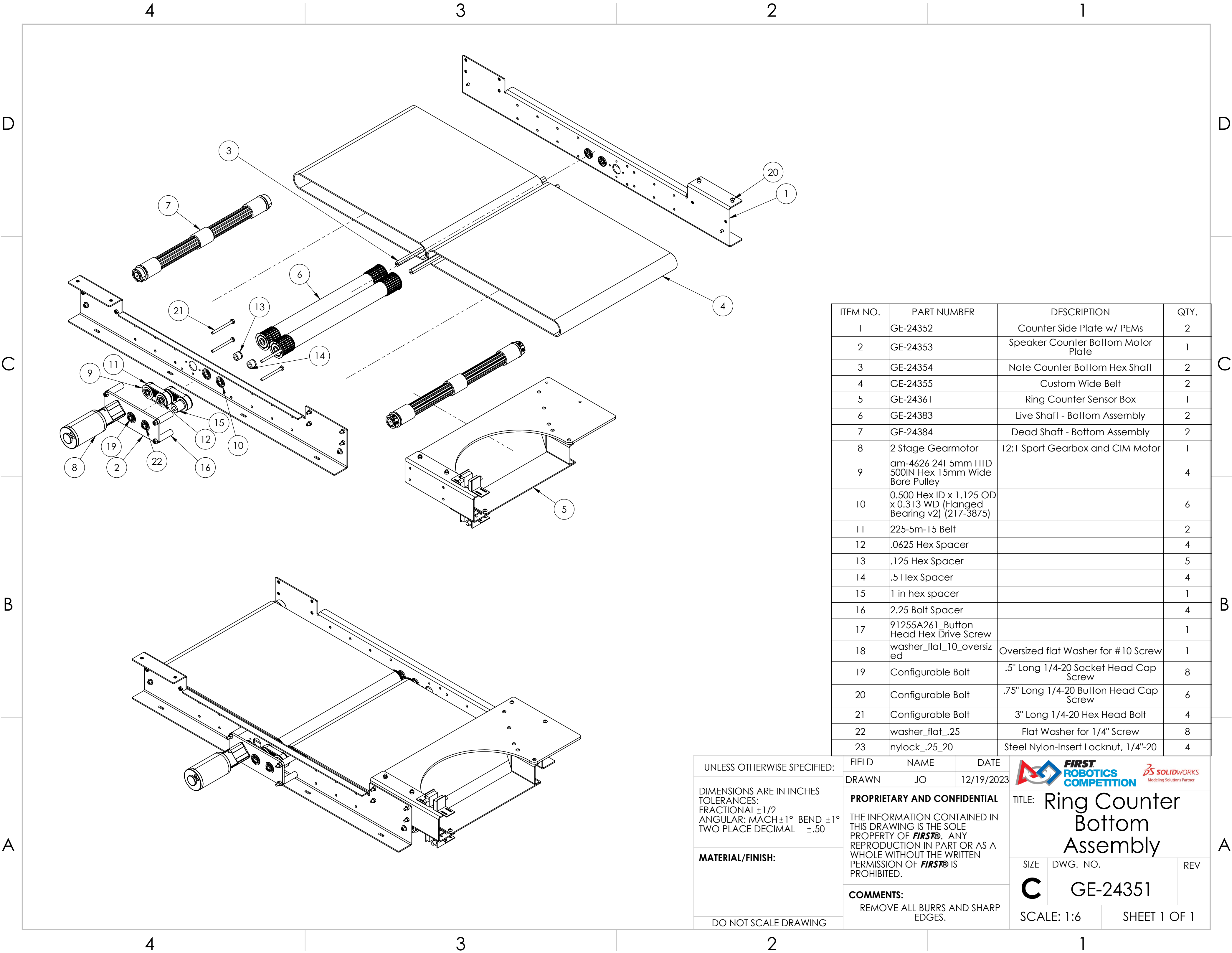
UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	<div> <b>FIRST ROBOTICS COMPETITION</b></div> <div> <b>SOLIDWORKS</b> Modeling Solutions Partner</div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		DRAWN	JO	12/19/2023			
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL			TITLE:		
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			Subwoofer Light Panel Assembly		
DO NOT SCALE DRAWING		COMMENTS:			SIZE	DWG. NO.	REV
		REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24345	
					SCALE: 1:2.5		SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24351	Ring Counter Bottom Assembly	1
2	GE-24370	Ring Counter Top Assembly	1
3	Configurable Bolt	.5" Long 1/4-20 Socket Head Cap Screw	16

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	 		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		DRAWN	JO	12/19/2023	TITLE:  Ring Counter		
		PROPRIETARY AND CONFIDENTIAL			SIZE  C		
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:		COMMENTS:			DWG. NO.		REV
DO NOT SCALE DRAWING		REMOVE ALL BURRS AND SHARP EDGES.			GE-24350		
		SCALE: 1:4		SHEET 1 OF 1			





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24352	Counter Side Plate w/ PEMs	2
2	GE-24353	Speaker Counter Bottom Motor Plate	1
3	GE-24354	Note Counter Bottom Hex Shaft	2
4	GE-24355	Custom Wide Belt	2
5	GE-24361	Ring Counter Sensor Box	1
6	GE-24383	Live Shaft - Bottom Assembly	2
7	GE-24384	Dead Shaft - Bottom Assembly	2
8	2 Stage Gearmotor	12:1 Sport Gearbox and CIM Motor	1
9	am-4626 24T 5mm HTD 500IN Hex 15mm Wide Bore Pulley		4
10	0.500 Hex ID x 1.125 OD x 0.313 WD (Flanged Bearing v2) (217-3875)		6
11	225-5m-15 Belt		2
12	.0625 Hex Spacer		4
13	.125 Hex Spacer		5
14	.5 Hex Spacer		4
15	1 in hex spacer		1
16	2.25 Bolt Spacer		4
17	91255A261 Button Head Hex Drive Screw		1
18	washer_flat_10_oversized	Oversized flat Washer for #10 Screw	1
19	Configurable Bolt	.5" Long 1/4-20 Socket Head Cap Screw	8
20	Configurable Bolt	.75" Long 1/4-20 Button Head Cap Screw	6
21	Configurable Bolt	3" Long 1/4-20 Hex Head Bolt	4
22	washer_flat_.25	Flat Washer for 1/4" Screw	8
23	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4



UNLESS OTHERWISE SPECIFIED:  
  
DIMENSIONS ARE IN INCHES  
TOLERANCES:  
FRACTIONAL  $\pm 1/2$   
ANGULAR: MACH  $\pm 1^\circ$  BEND  $\pm 1^\circ$   
TWO PLACE DECIMAL  $\pm .50$   
  
**MATERIAL/FINISH:**  
  
  
  
  
**DO NOT SCALE DRAWING**

FIELD  
DRAWN

NAME  
JO

DATE  
12/19/2023

**PROPRIETARY AND CONFIDENTIAL**  
  
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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE: Ring Counter Bottom Assembly

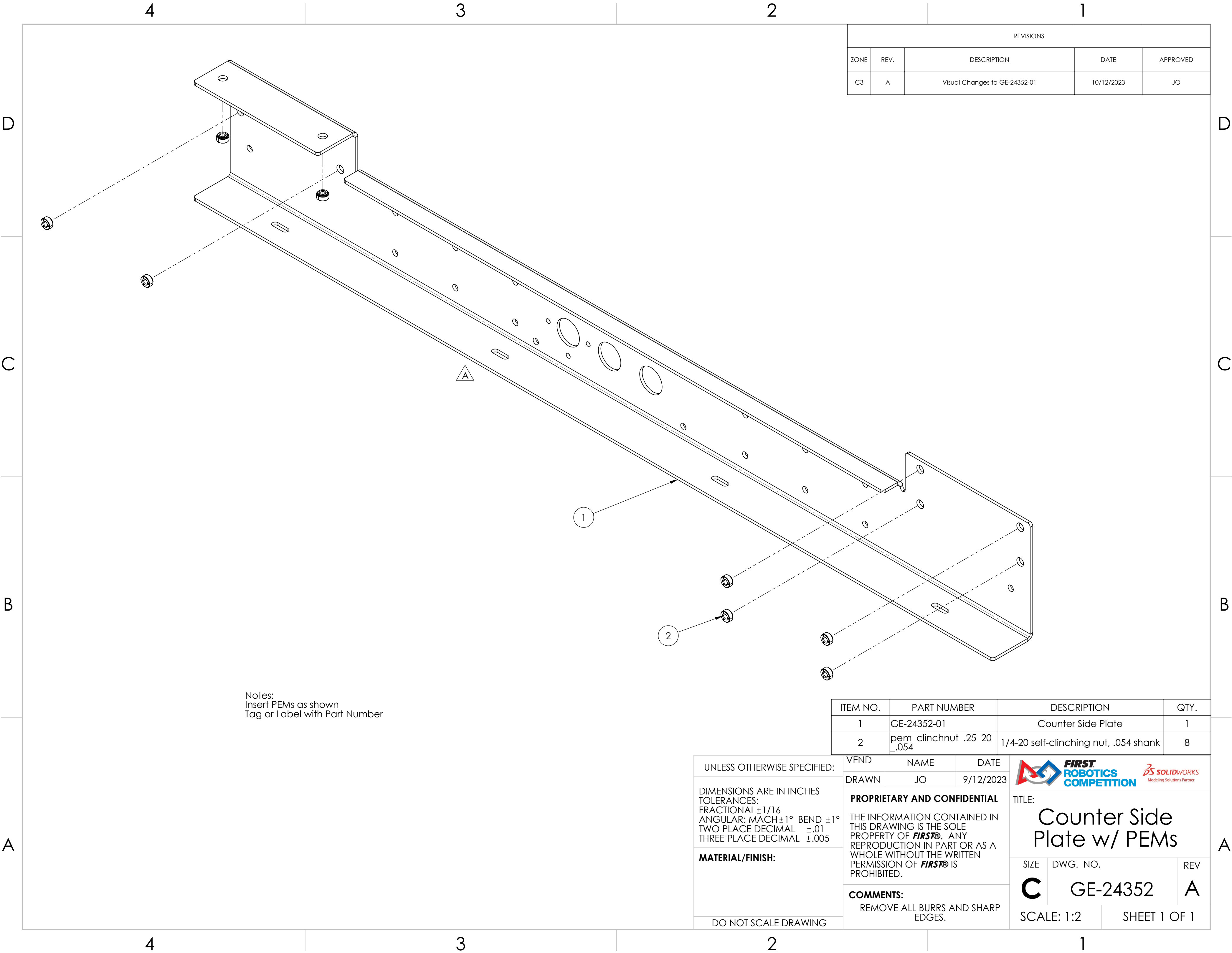
SIZE  
**C**

DWG. NO.  
GE-24351

REV

SCALE: 1:6



SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C3	A	Visual Changes to GE-24352-01	10/12/2023	JO

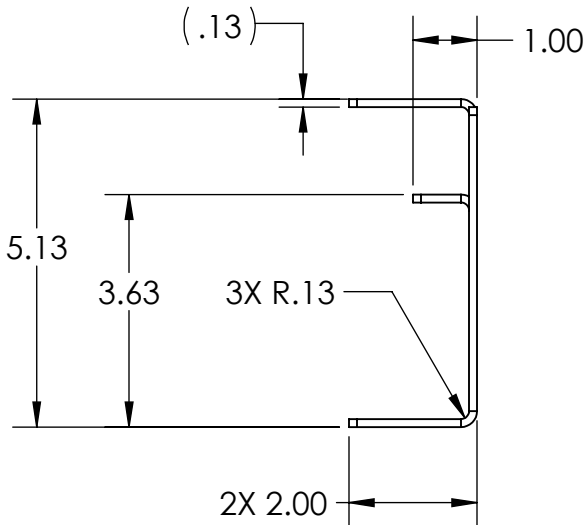
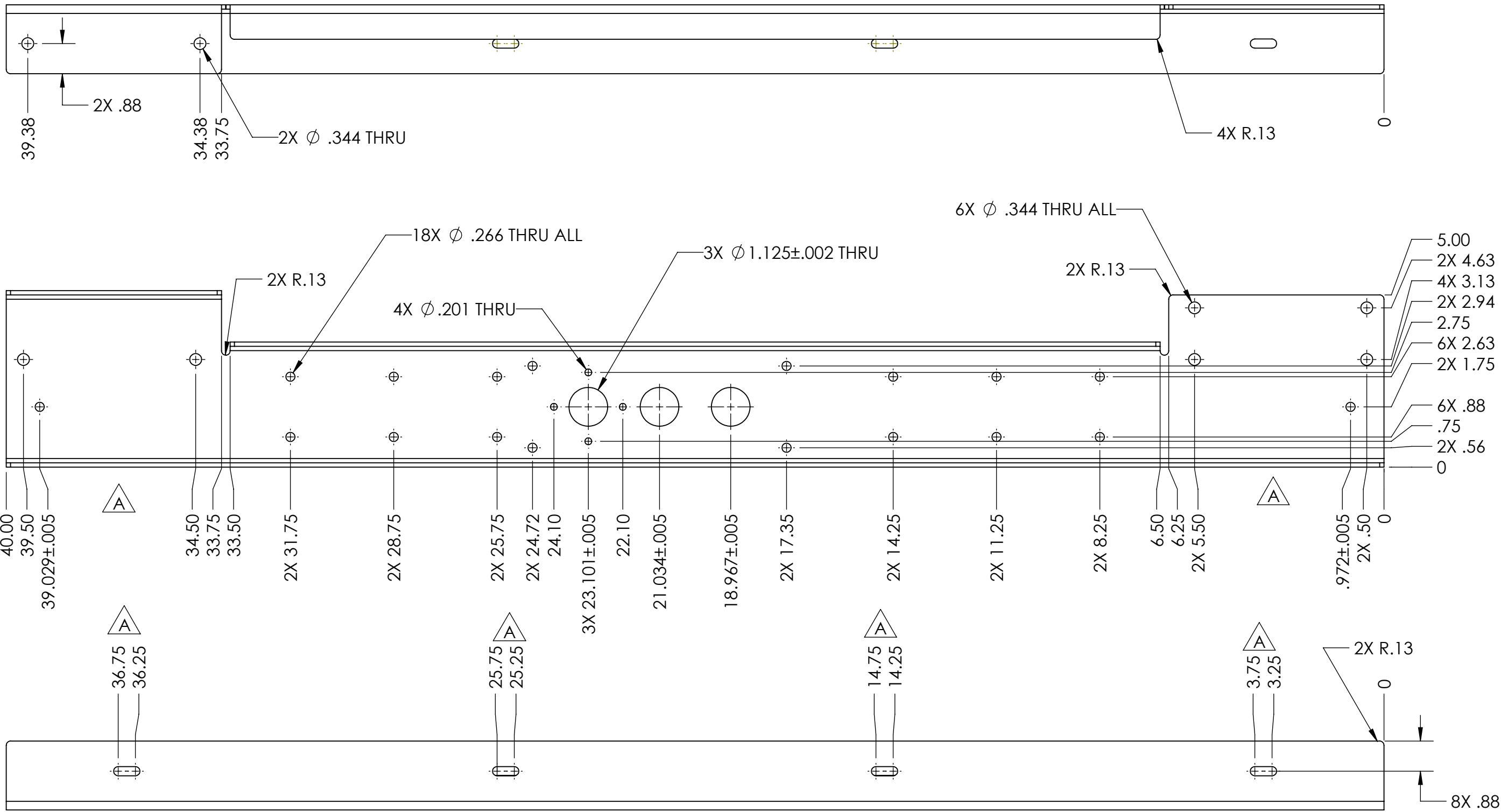
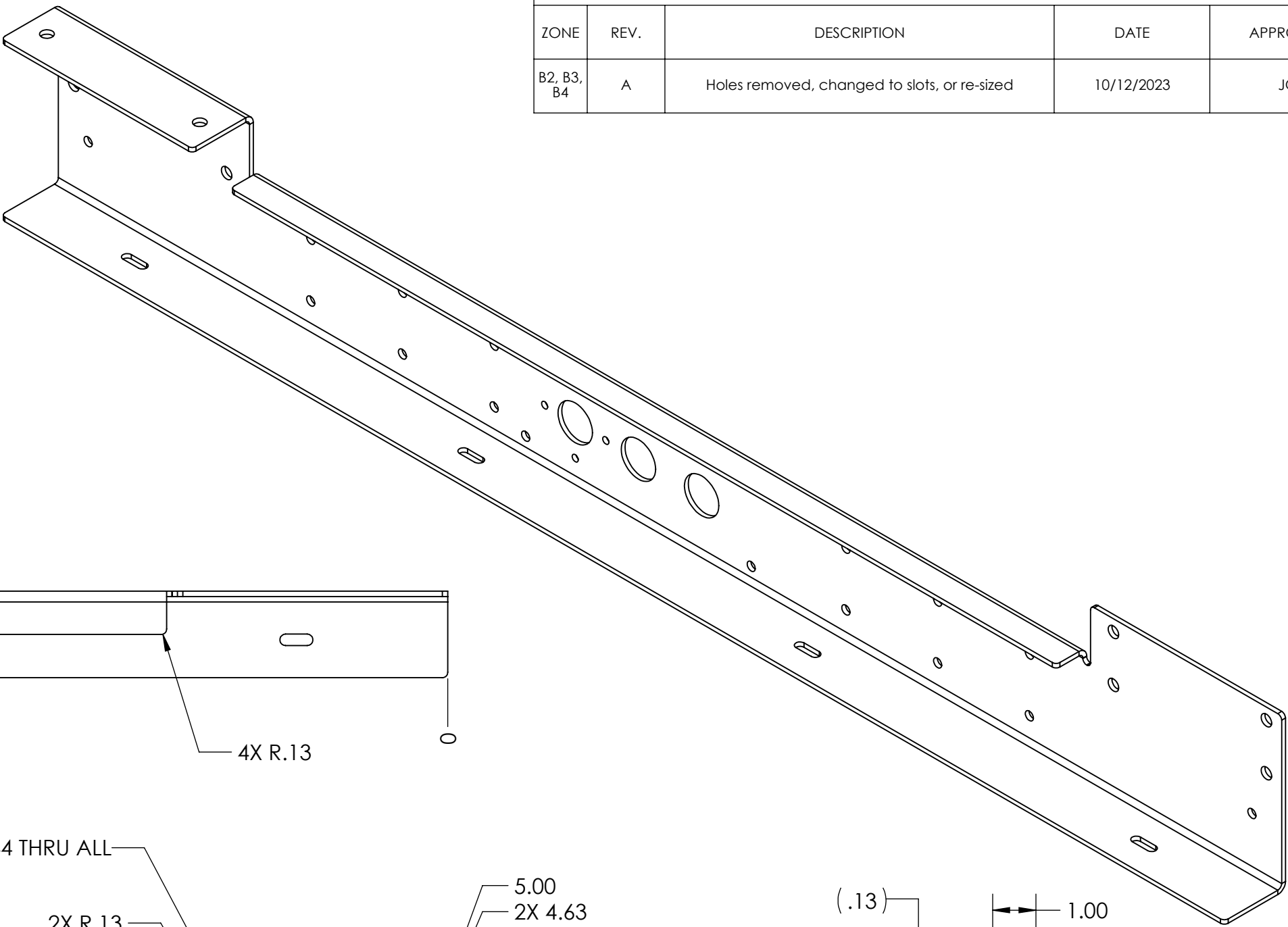
Notes:  
Insert PEMs as shown  
Tag or Label with Part Number

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24352-01	Counter Side Plate	1
2	pem_clinchnut_.25_20 _.054	1/4-20 self-clinching nut, .054 shank	8

UNLESS OTHERWISE SPECIFIED:	VEND		NAME		DATE		 	
	DRAWN		JO		9/12/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	<b>PROPRIETARY AND CONFIDENTIAL</b>						TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.						Counter Side Plate w/ PEMs	
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.						SIZE: DWG. NO. REV	
DO NOT SCALE DRAWING							C GE-24352 A	
	SCALE: 1:2						SHEET 1 OF 1	



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B3, B4	A	Holes removed, changed to slots, or re-sized	10/12/2023	JO



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 5052 Aluminum

DO NOT SCALE DRAWING

BEND	NAME	DATE
DRAWN	JO	9/12/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.

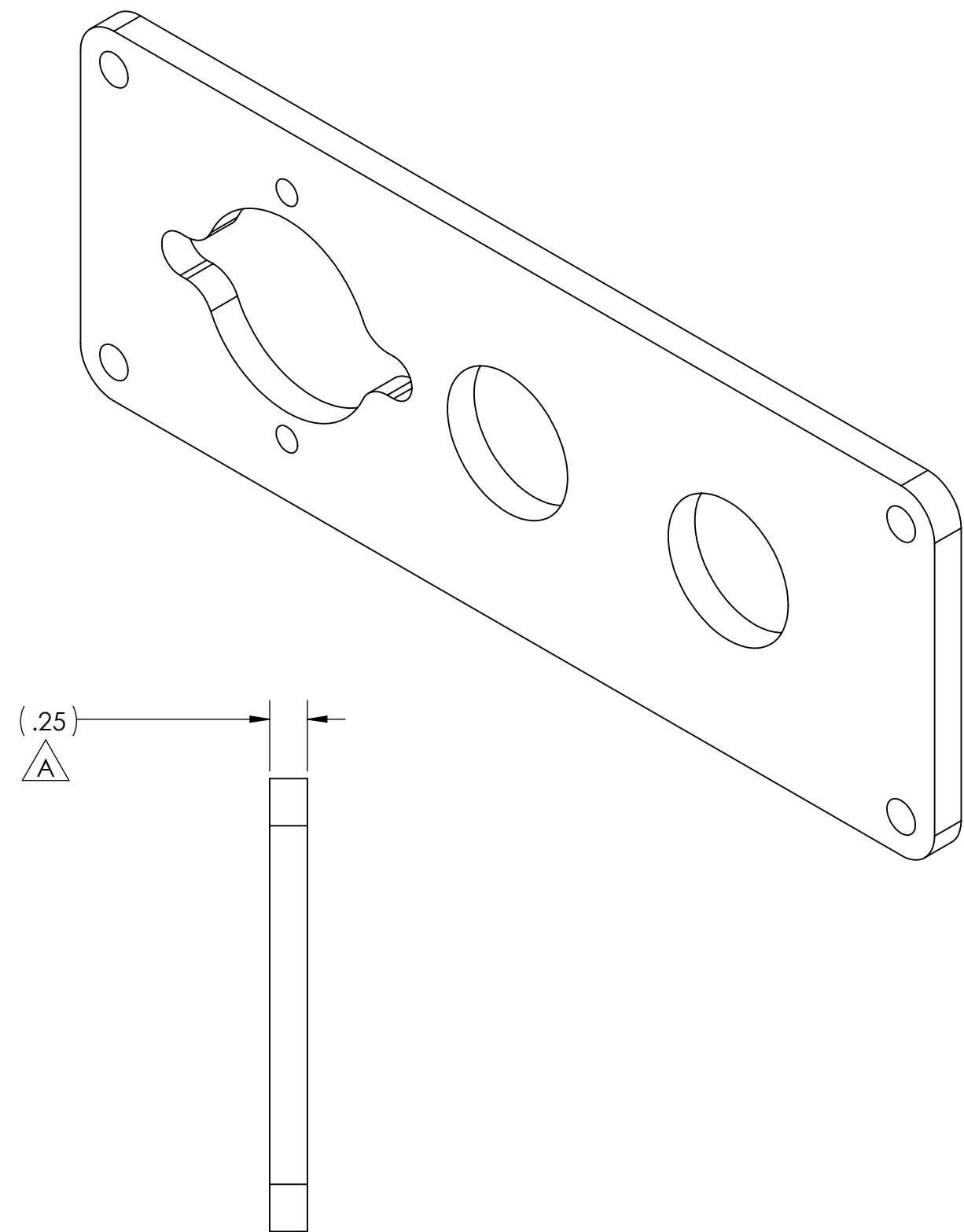
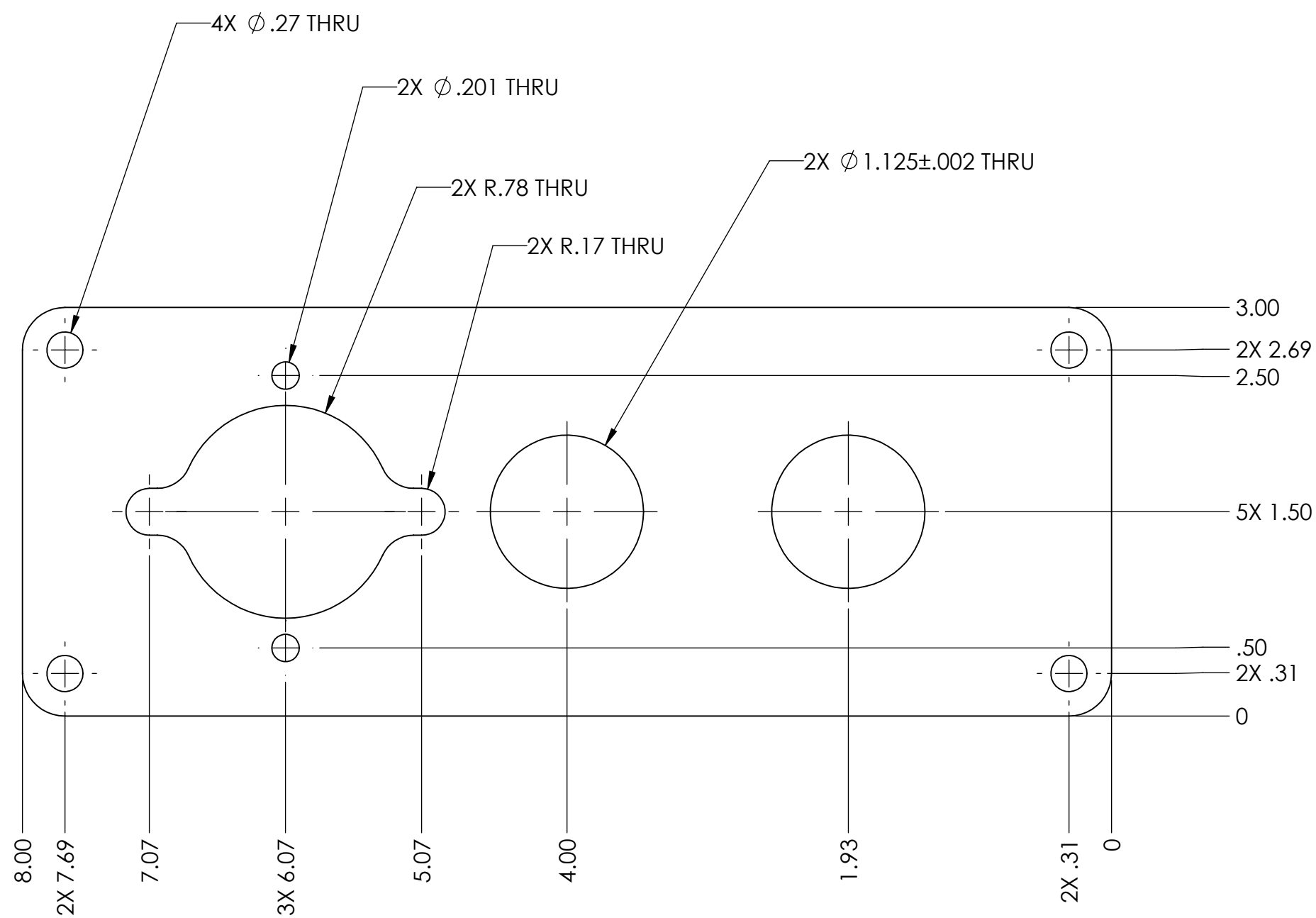




TITLE:  
**Counter Side Plate**

SIZE	DWG. NO.	REV
<b>C</b>	GE-24352-01	<b>A</b>

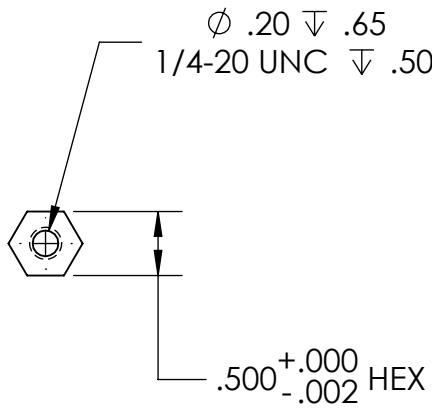
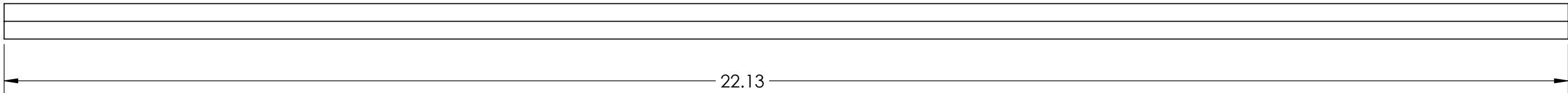
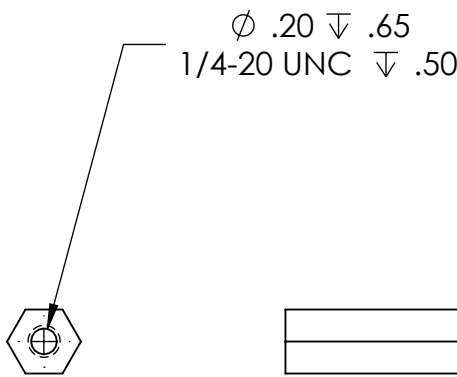
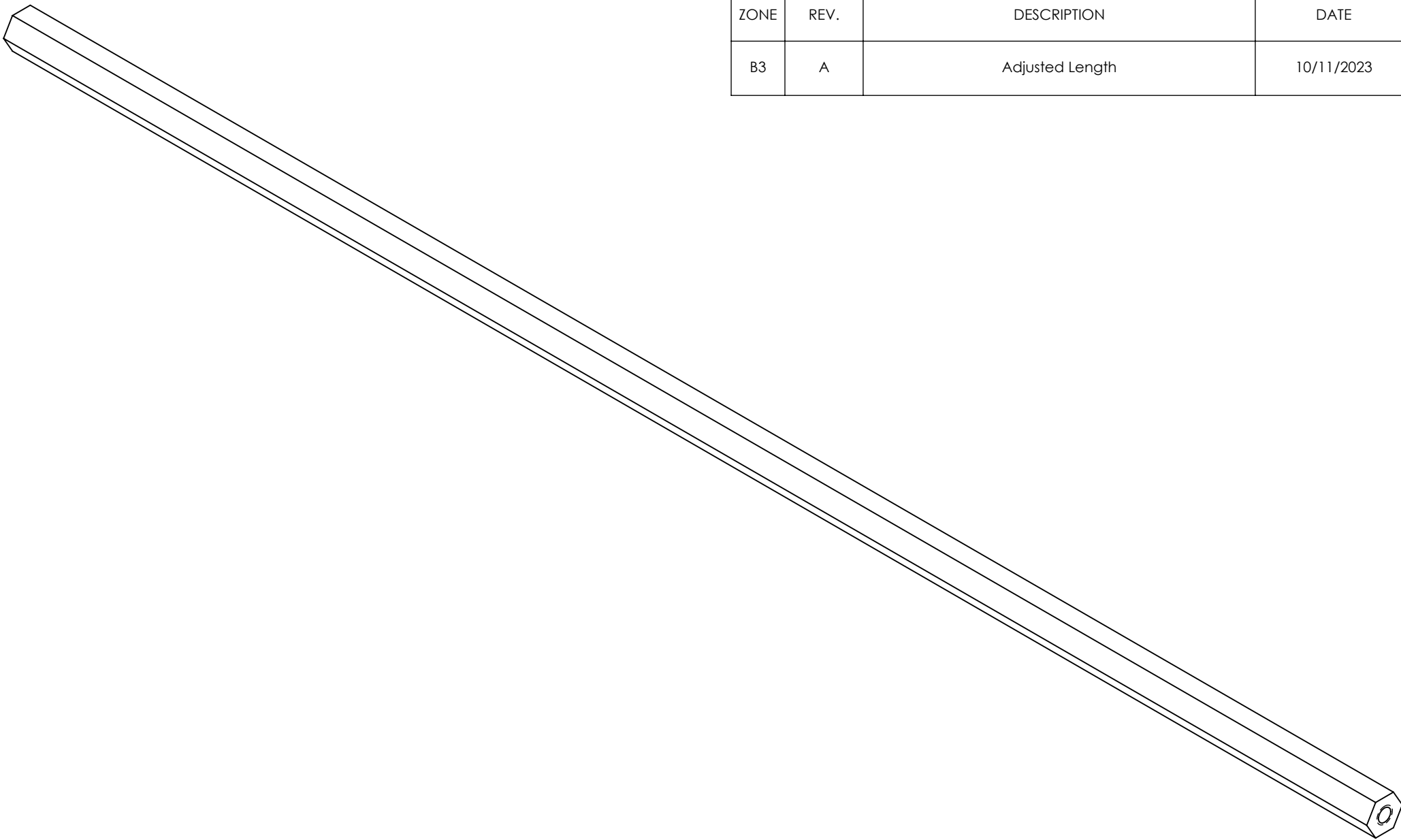
SCALE: 1:3 SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, C2	A	Thickness Increased	10/11/2023	JO





UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1/4" 6061 Aluminum  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div>		
	DRAWN	JO	9/14/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.					
TITLE:			Speaker Counter Bottom Motor Plate			
SIZE	DWG. NO.		REV			
C	GE-24353		A			
SCALE: 1:1		SHEET 1 OF 1				

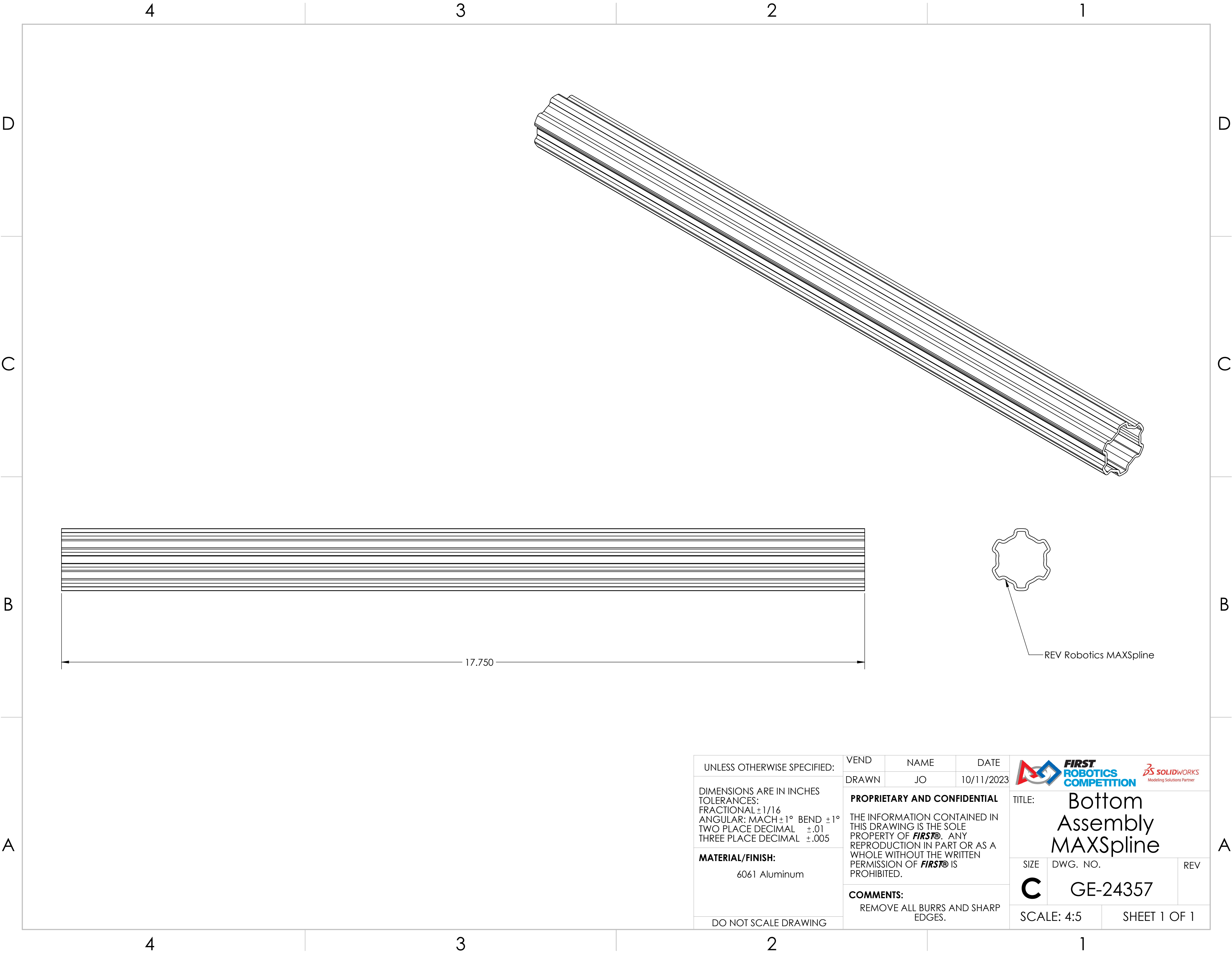
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	A	Adjusted Length	10/11/2023	JO



UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div> <div>TITLE: Note Counter Bottom Hex Shaft</div>		
	DRAWN	JO	9/12/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			SIZE DWG. NO. REV <div>C</div> GE-24354A		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH: 1018 Steel 1/2" Hex Shaft				SCALE: 2:3		SHEET 1 OF 1
DO NOT SCALE DRAWING						

Specs:  
168 Tooth, RT-25 Profile  
Length: 17.50" Long

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  REV Robotics RT-25 Belt          DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div>		
	DRAWN	JO	10/11/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>			TITLE:  Custom Wide Belt		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV	
			C	GE-24355		
			SCALE: 1:4		SHEET 1 OF 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:**

6061 Aluminum

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

JO

10/11/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.



**FIRST  
ROBOTICS  
COMPETITION**



TITLE:

Bottom  
Assembly  
MAXSpline

SIZE

DWG. NO.

REV

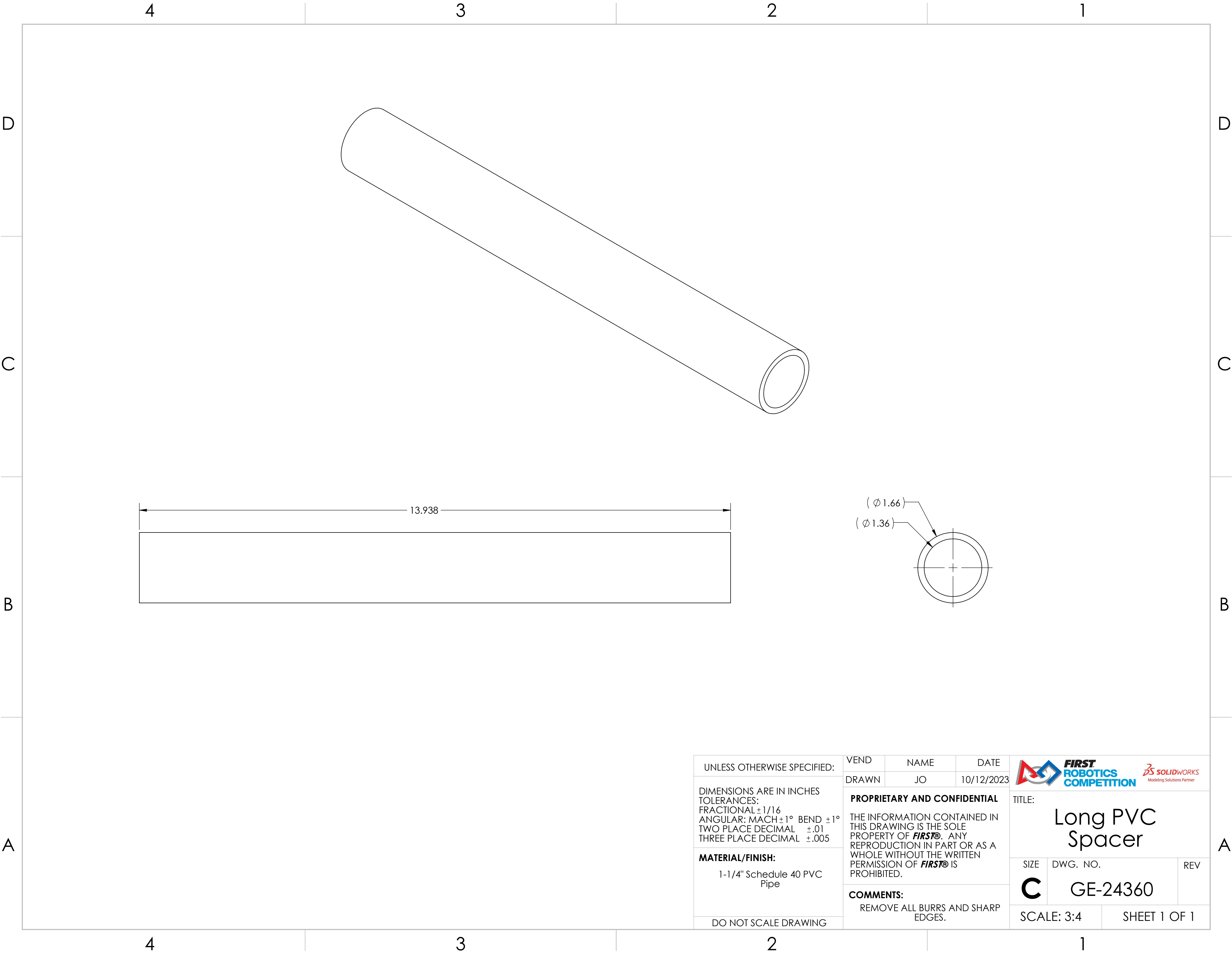
**C**

GE-24357

SCALE: 4:5

SHEET 1 OF 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:**  
1-1/4" Schedule 40 PVC  
Pipe



DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	10/12/2023

**PROPRIETARY AND CONFIDENTIAL**

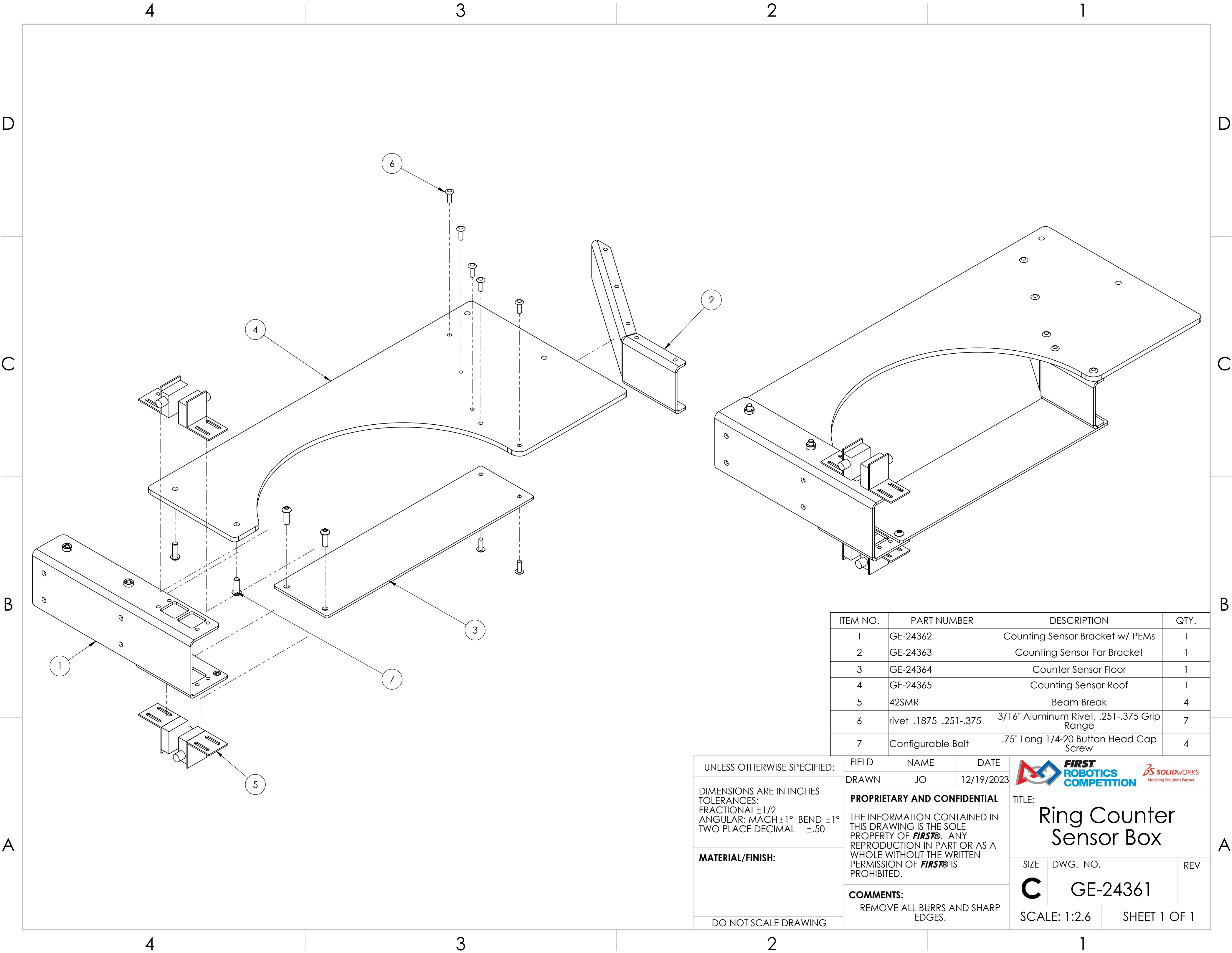
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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.





TITLE:  
**Long PVC  
Spacer**

SIZE <b>C</b>	DWG. NO. <b>GE-24360</b>	REV
SCALE: 3:4		SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24362	Counting Sensor Bracket w/ PEMs	1
2	GE-24363	Counting Sensor Far Bracket	1
3	GE-24364	Counter Sensor Floor	1
4	GE-24365	Counting Sensor Roof	1
5	42SMR	Beam Break	4
6	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	7
7	Configurable Bolt	.75" Long 1/4-20 Button Head Cap Screw	4

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	 	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	DRAWN	JO	12/19/2023	TITLE:  Ring Counter Sensor Box	
	PROPRIETARY AND CONFIDENTIAL			SIZE C	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				
MATERIAL/FINISH:	COMMENTS:			DWG. NO.	
DO NOT SCALE DRAWING	REMOVE ALL BURRS AND SHARP EDGES.			REV	
				GE-24361	
				SCALE: 1:2.6	
				SHEET 1 OF 1	

4

3

2

1

D

D

C

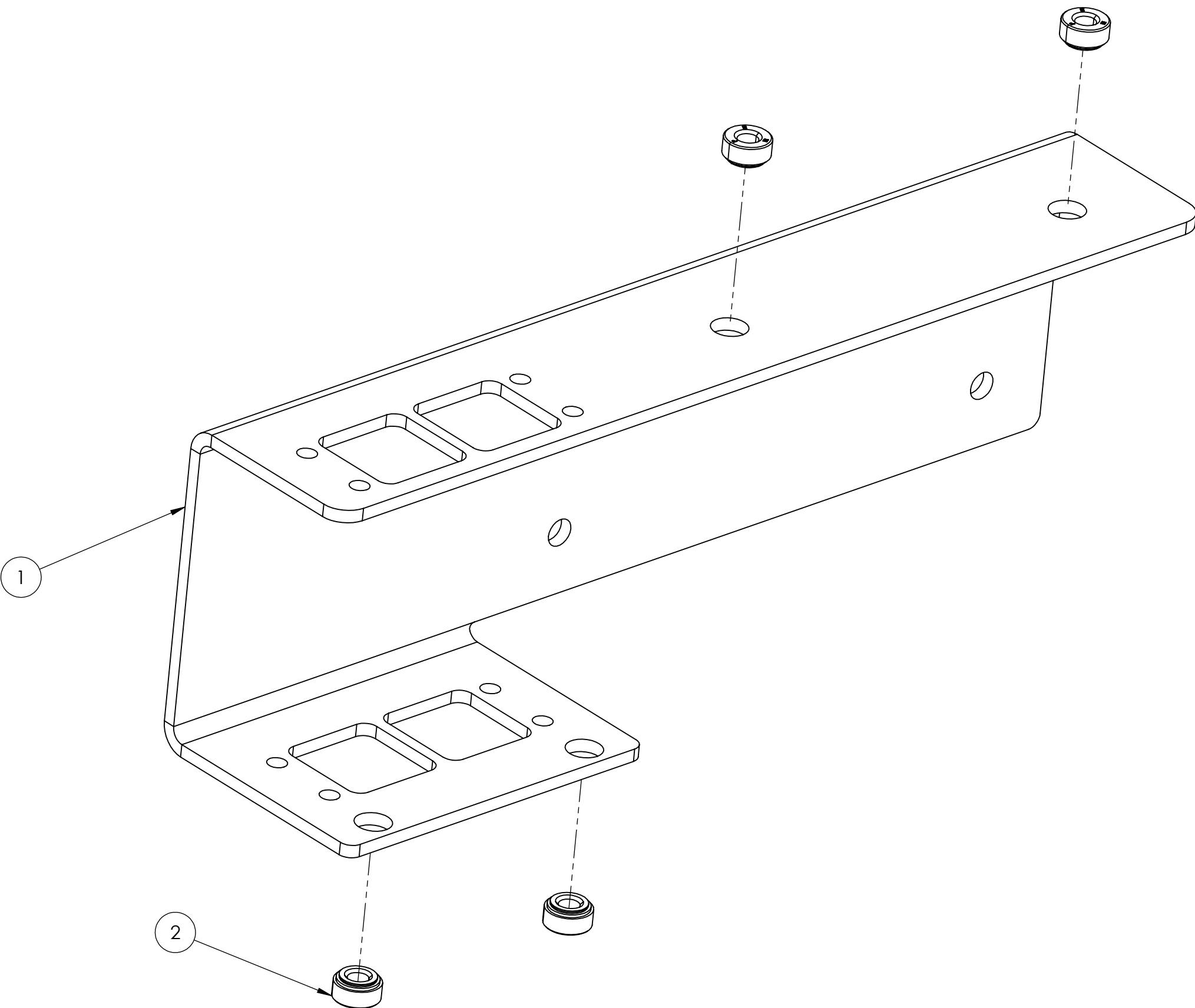
C

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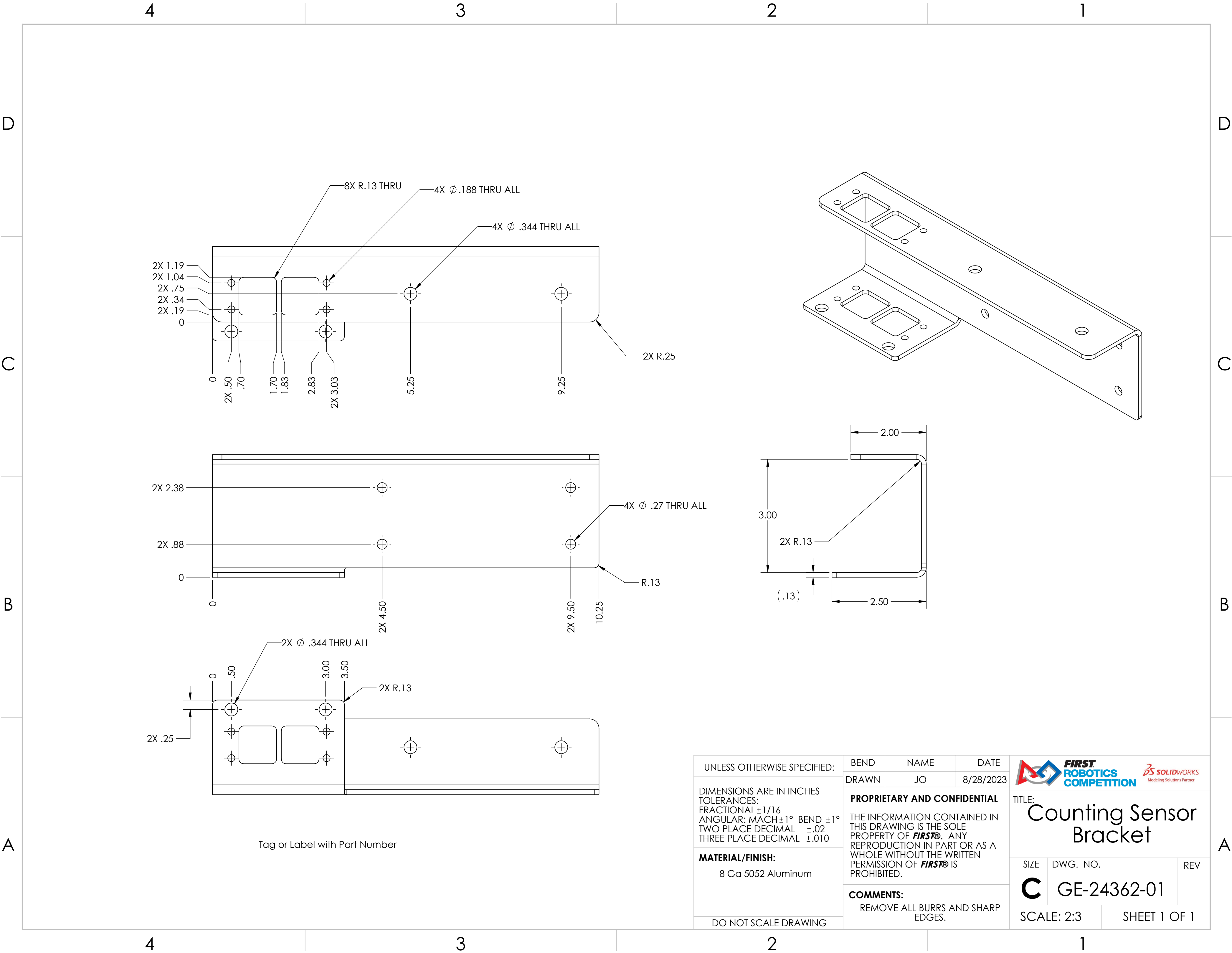
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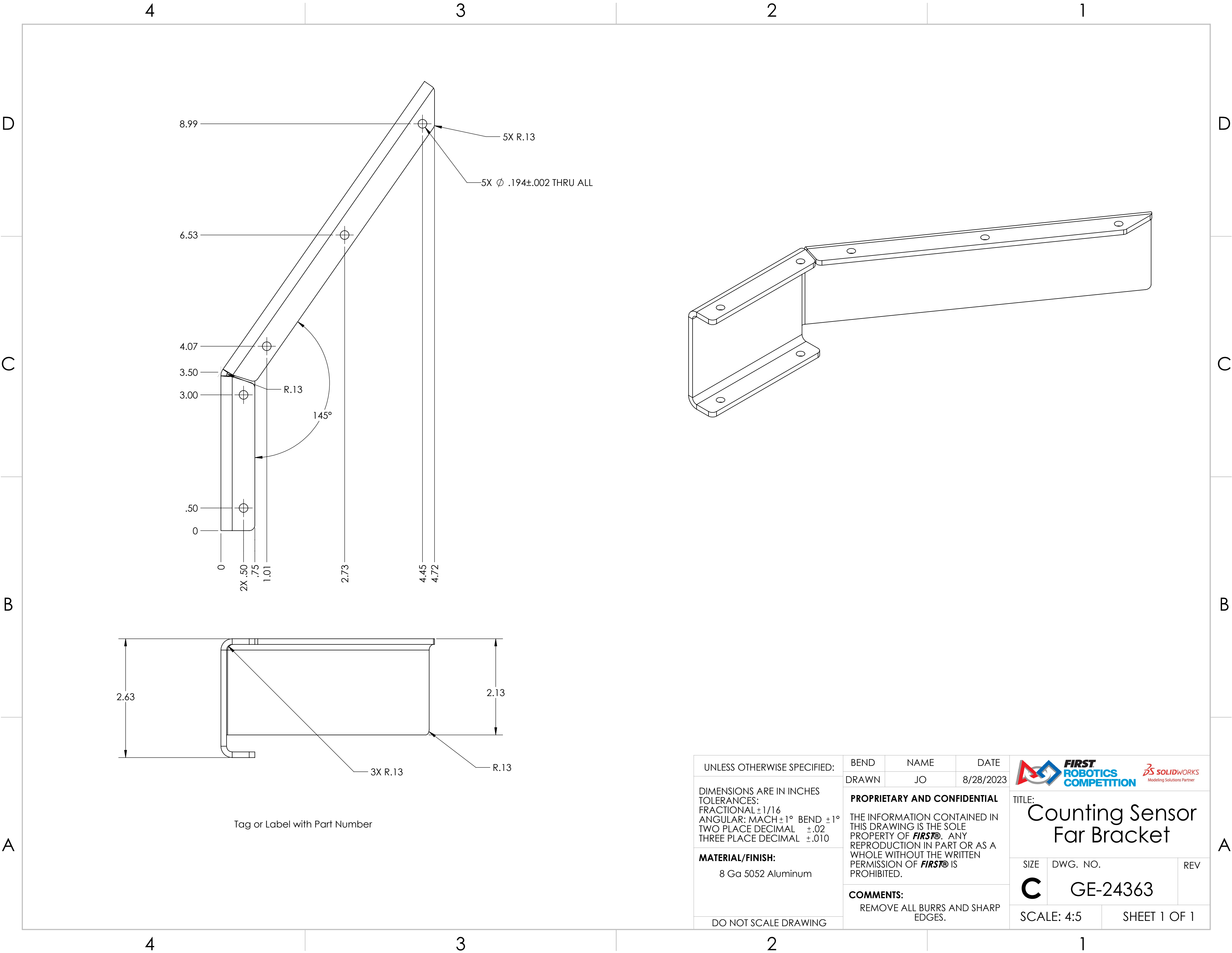
Tag or Label with Part Number



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24362-01	Counting Sensor Bracket	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	4

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 $\pm .005$  <b>MATERIAL/FINISH:</b>     <b>DO NOT SCALE DRAWING</b>	VEND	NAME	DATE	<div></div> <b>TITLE:</b> Counting Sensor Bracket w/ PEMs		
	DRAWN	JO	10/19/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24362	
		SCALE: 1:1		SHEET 1 OF 1		

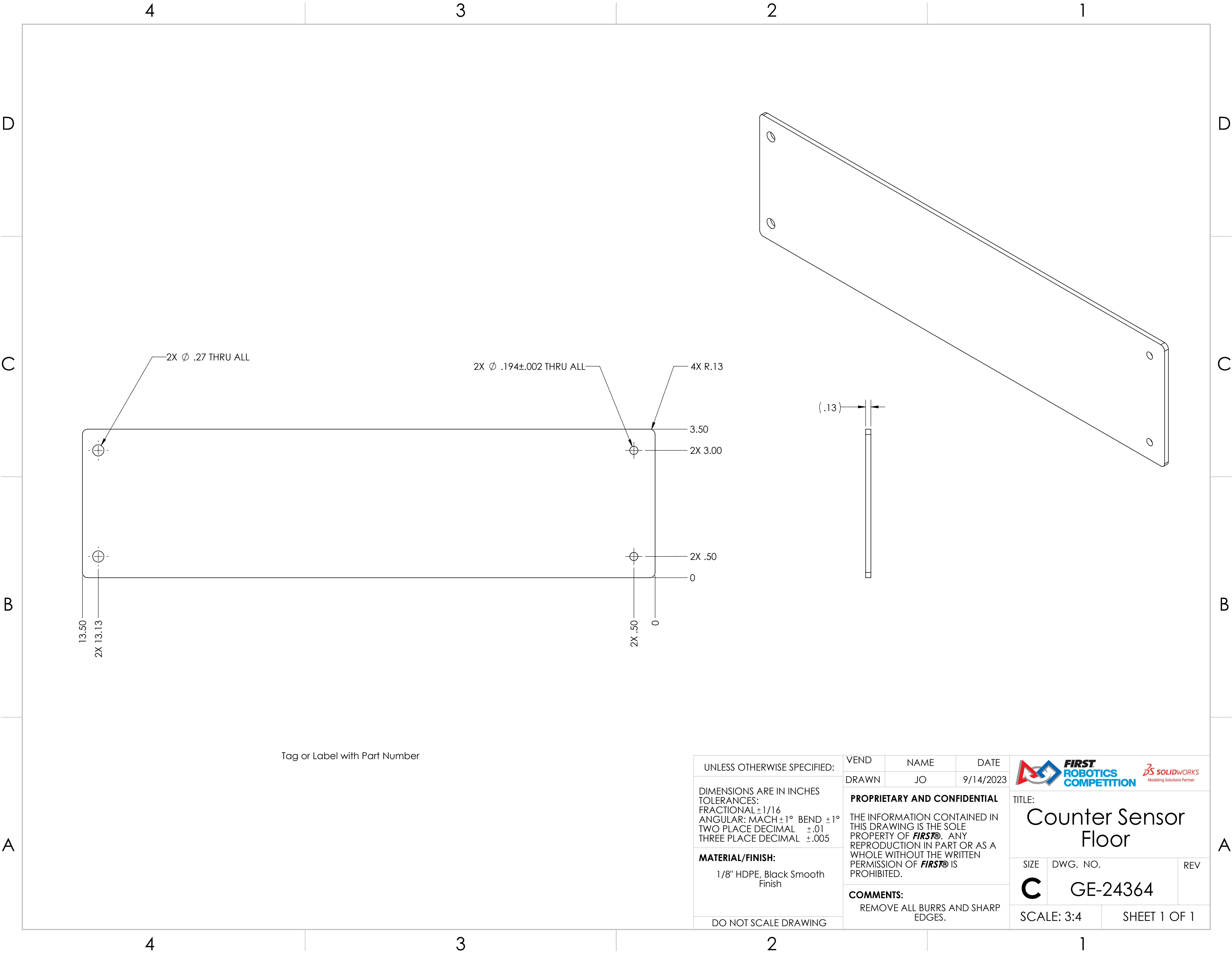


UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$  <b>MATERIAL/FINISH:</b> 8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: Counting Sensor Bracket</div>	
	DRAWN	JO	8/28/2023		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24362-01
SCALE: 2:3		SHEET 1 OF 1			





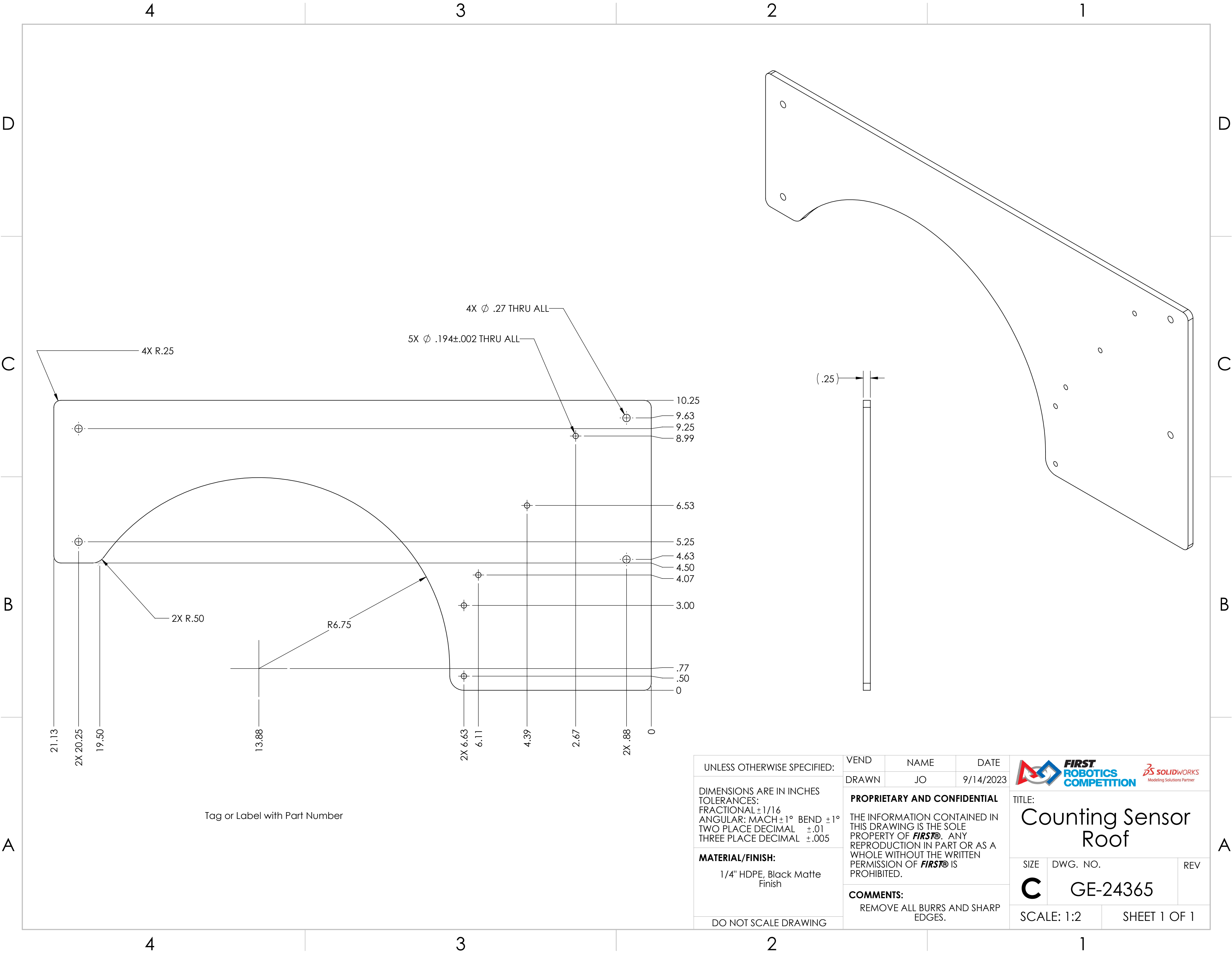
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010  <b>MATERIAL/FINISH:</b>  8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE	<div></div> <div>TITLE: <b>Counting Sensor Far Bracket</b></div>		
	DRAWN	JO	8/28/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.					
SIZE		DWG. NO.		REV		
<b>C</b>		GE-24363				
SCALE: 4:5			SHEET 1 OF 1			

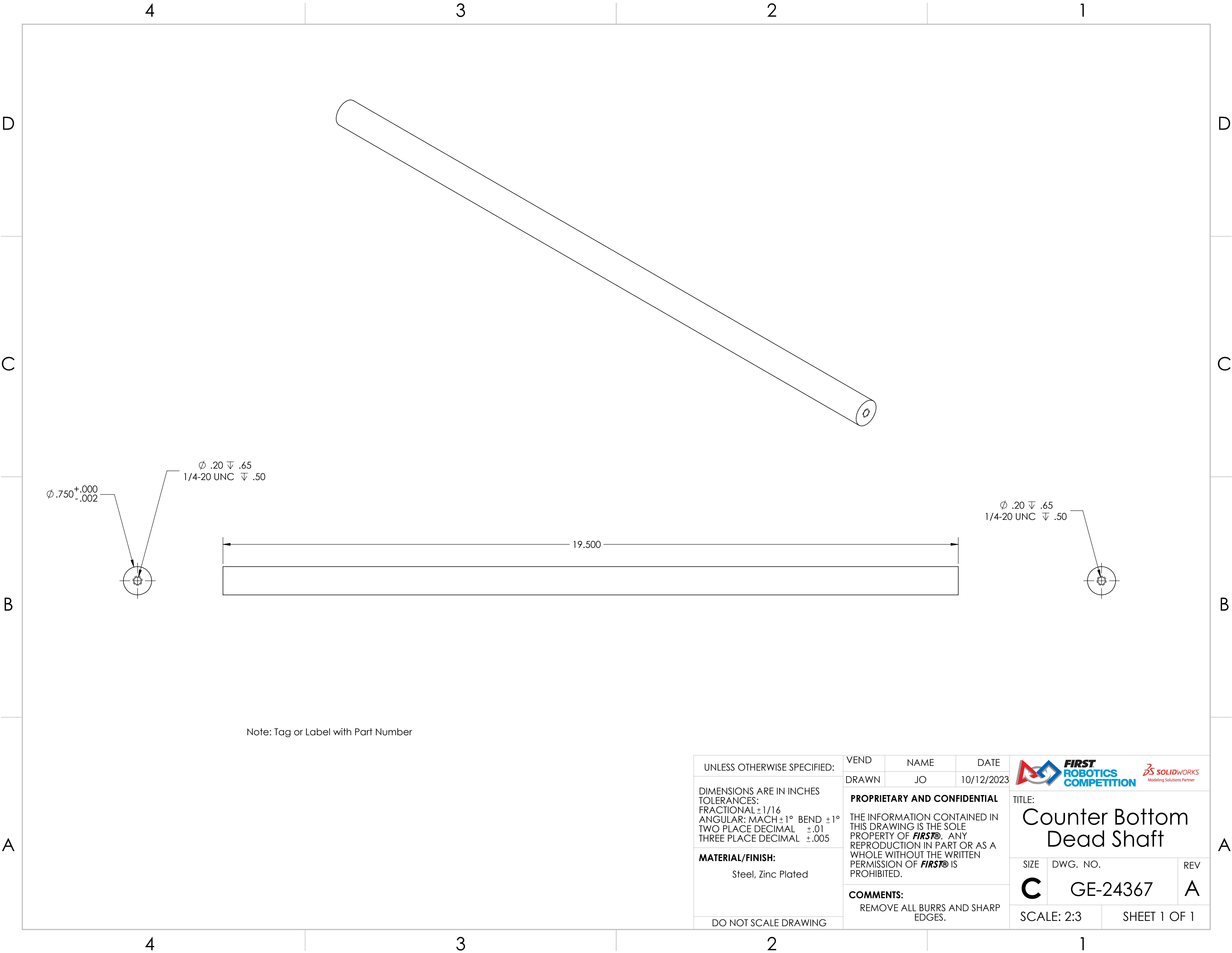






Tag or Label with Part Number

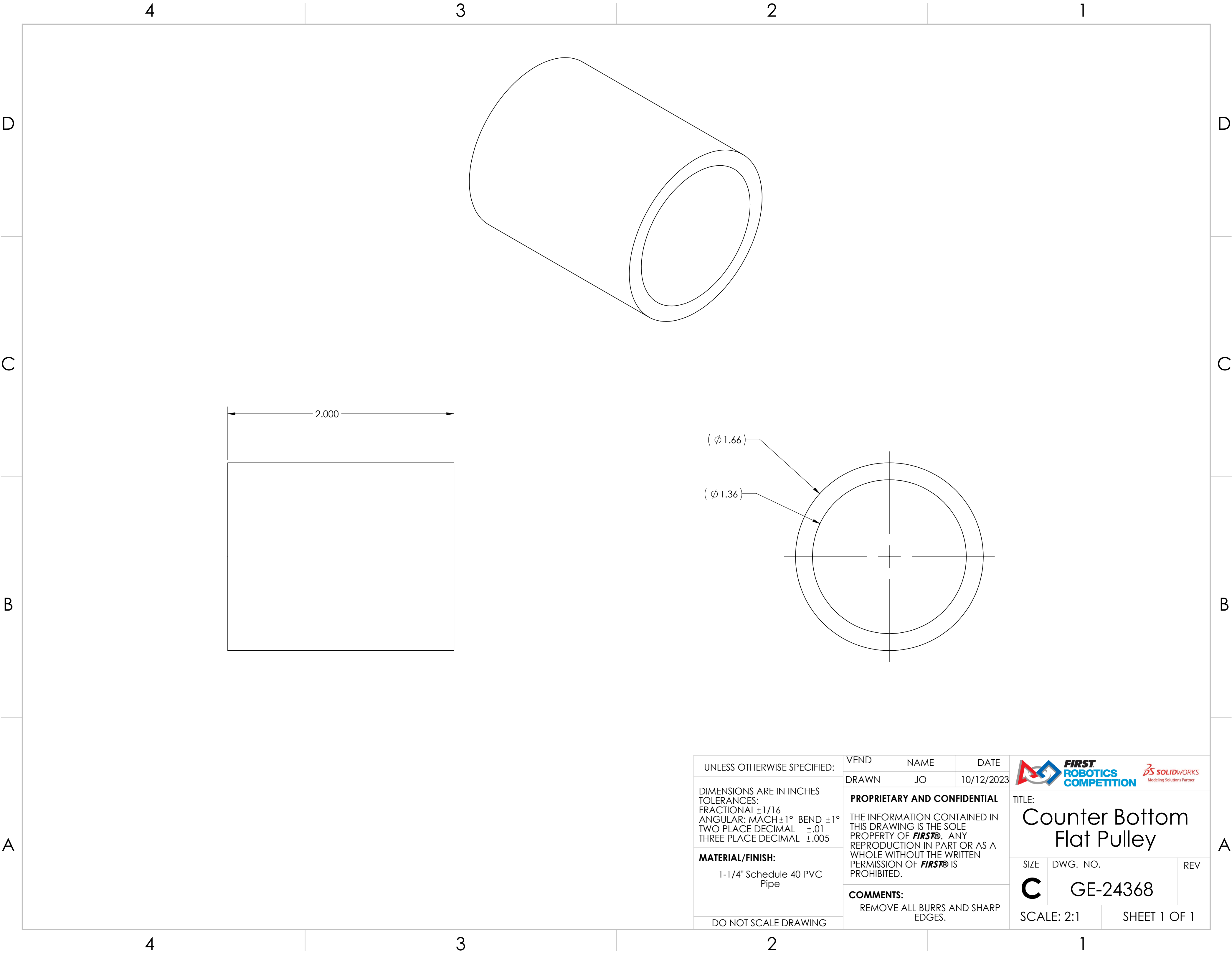
UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div><div><b>FIRST</b> ROBOTICS COMPETITION</div><div><div><b>SOLIDWORKS</b> Modeling Solutions Partner</div></div></div>		
	DRAWN	JO	9/14/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Counter Sensor Floor		
	<b>MATERIAL/FINISH:</b>  1/8" HDPE, Black Smooth Finish			SIZE	DWG. NO.	REV
DO NOT SCALE DRAWING	<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24364	
				SCALE: 3:4		SHEET 1 OF 1







Note: Tag or Label with Part Number

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  Steel, Zinc Plated  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <b>Counter Bottom Dead Shaft</b></div>		
	DRAWN	JO	10/12/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.					
				SIZE	DWG. NO.	REV
				C	GE-24367	A
				SCALE: 2:3		SHEET 1 OF 1



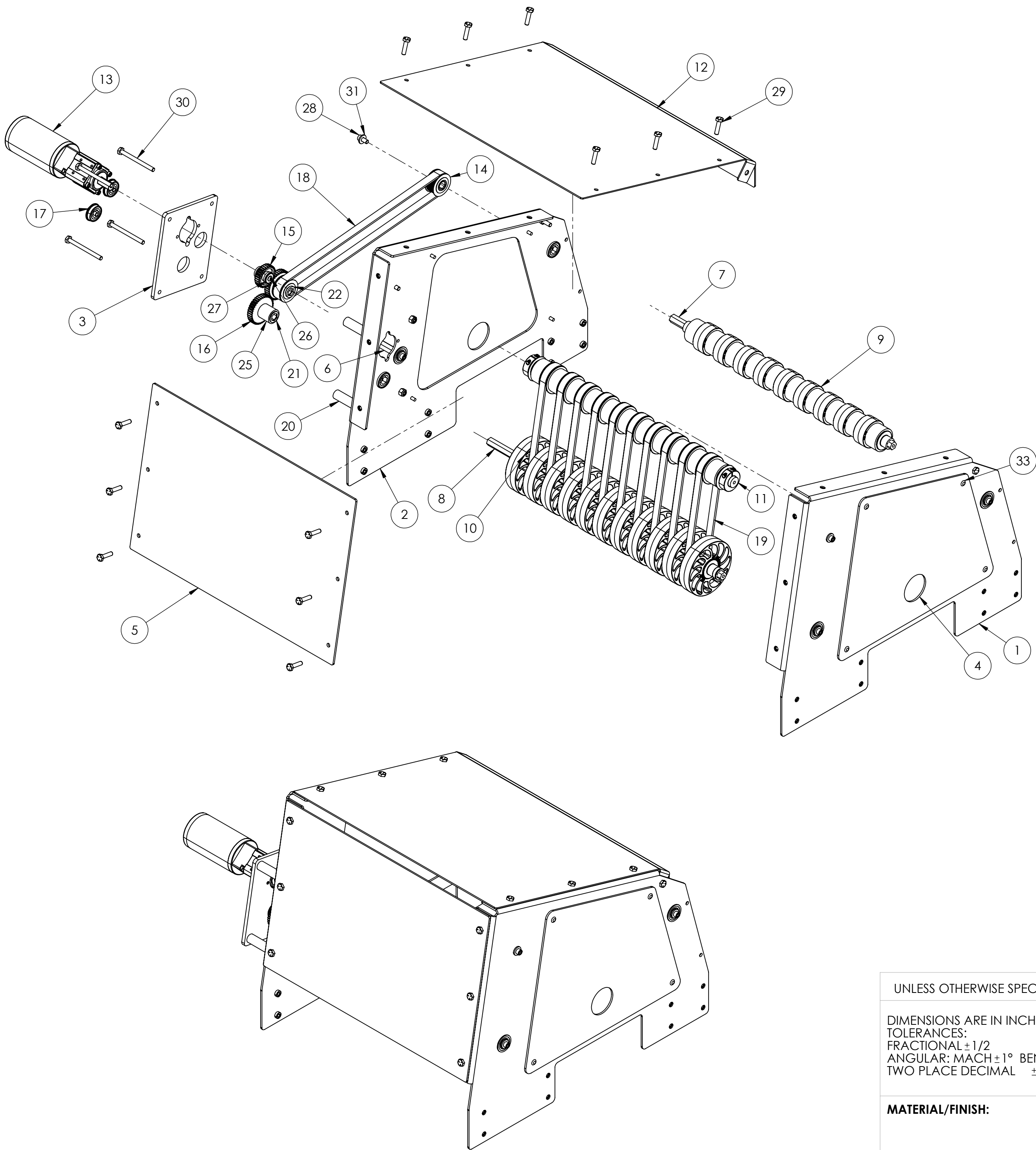
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1-1/4" Schedule 40 PVC Pipe  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div><div></div><div>TITLE: <b>Counter Bottom Flat Pulley</b></div></div>		
	DRAWN	JO	10/12/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24368	
SCALE: 2:1		SHEET 1 OF 1				

D

C

B

A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24371	Counter Top Left Plate w/ PEMs	1
2	GE-24372	Counter Top Right Plate w/ PEMs	1
3	GE-24373	Counter Upper Motor Plate	1
4	GE-24374	Speaker Counter Side Shield	2
5	GE-24375	Speaker Counter Back Cover	1
6	GE-24377	Counter Top Short Hex Shaft	1
7	GE-24378	Counter Top Medium Hex Shaft	1
8	GE-24379	Counter Top Long Hex Shaft	1
9	GE-24385	Roller Shaft - Top Assembly	1
10	GE-24386	Live Shaft - Top Assembly	1
11	GE-24387	Dead Shaft - Top Assembly	1
12	GE-24390	Counter Roof w/ PEMs	1
13	2 Stage Gearmotor	12:1 Sport Gearbox and CIM Motor	1
14	am-4626 24T 5mm HTD 500IN Hex 15mm Wide Bore Pulley		2
15	am-4215 30T 20DP 500hex 375 FW		1
16	am-4710 40T 20DP 500hex 375 FW		2
17	0.500 Hex ID x 1.125 OD x 0.313 WD (Flanged Bearing v2) (217-3875)		7
18	850-5m-15 Belt		1
19	80 tooth RT-25 Belt		10
20	2.25 Bolt Spacer		4
21	.0625 Hex Spacer		4
22	.125 Hex Spacer		6
23	.25 Hex Spacer		5
24	.5 Hex Spacer		4
25	1 in hex spacer		1
26	91255A261 Button Head Hex Drive Screw		1
27	washer_flat_10_oversized	Oversized flat Washer for #10 Screw	1
28	Configurable Bolt	.5" Long 1/4-20 Socket Head Cap Screw	8
29	Configurable Bolt	1" Long 1/4-20 Hex Head Bolt	14
30	Configurable Bolt	3" Long 1/4-20 Hex Head Bolt	4
31	washer_flat_.25	Flat Washer for 1/4" Screw	8
32	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4
33	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	8

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	JO	12/19/2023
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL		
DO NOT SCALE DRAWING		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST</b> IS PROHIBITED.		
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
		TITLE: <b>Ring Counter Top Assembly</b>		
		SIZE	DWG. NO.	REV
		<b>C</b>	GE-24370	
		SCALE: 1:5 SHEET 1 OF 1		



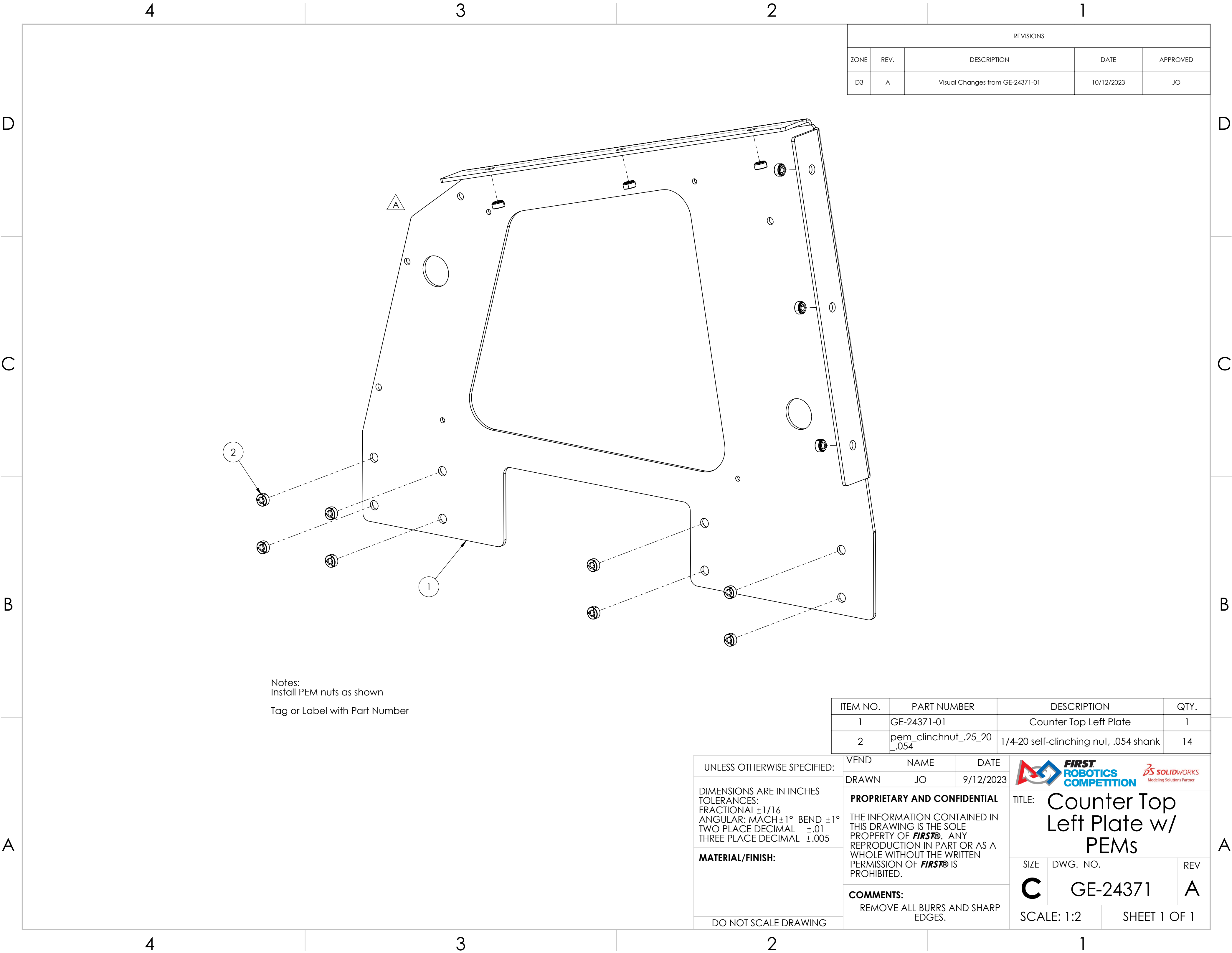
D

C

B

A







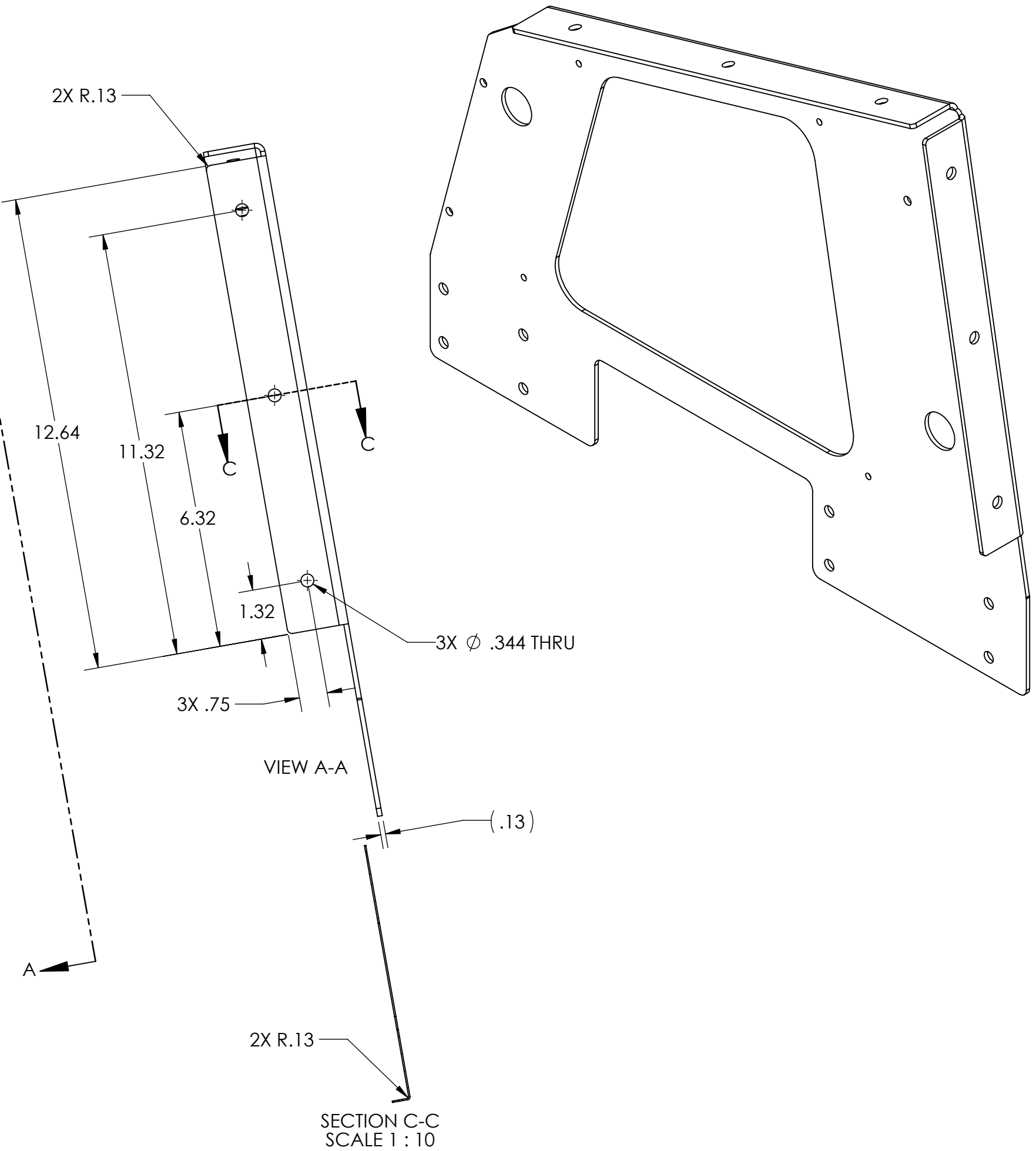
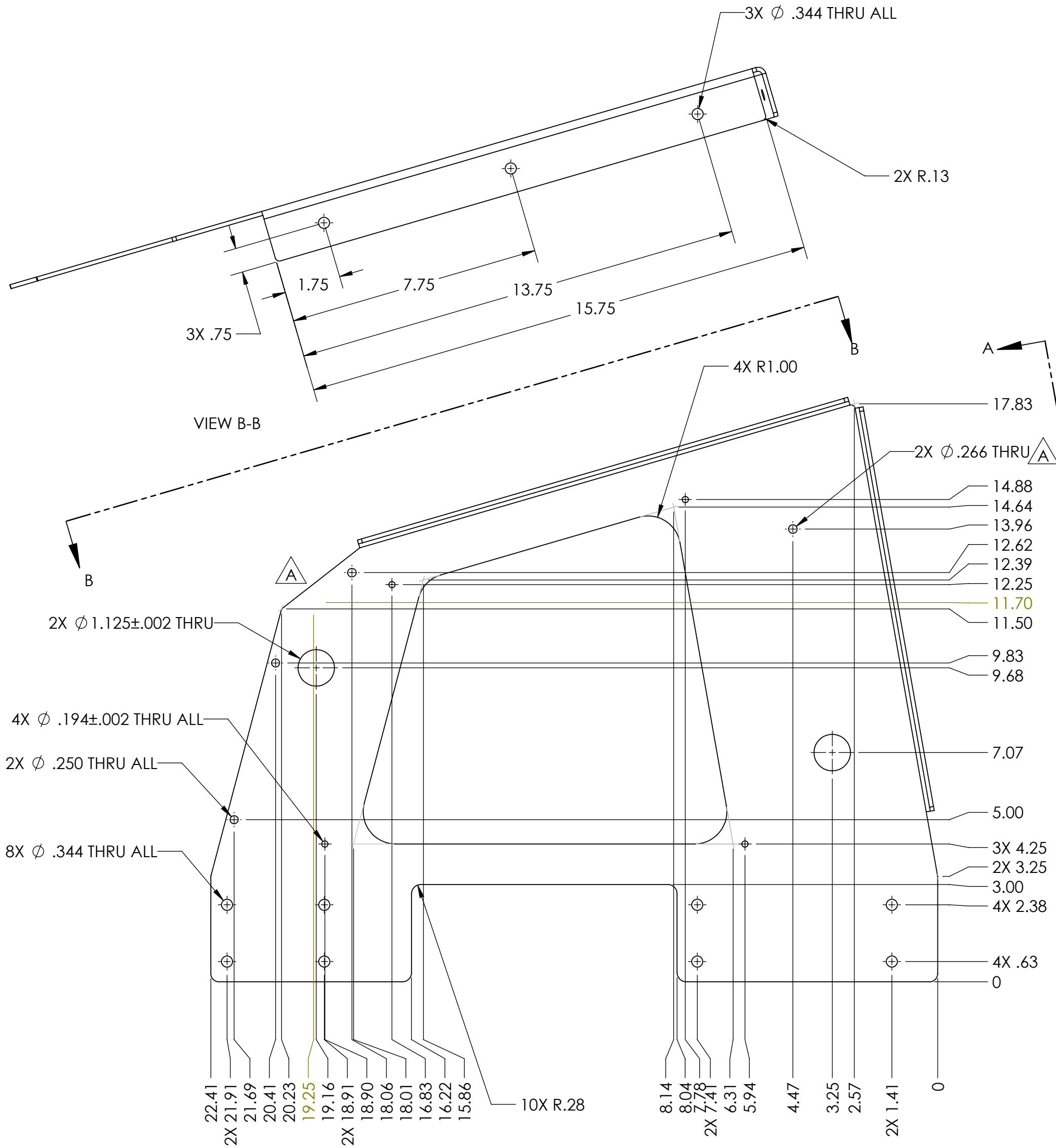
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
D3	A	Visual Changes from GE-24371-01	10/12/2023	JO

Notes:  
Install PEM nuts as shown  
Tag or Label with Part Number

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24371-01	Counter Top Left Plate	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	14

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	<div></div>										
<div>DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005</div> <div>MATERIAL/FINISH:</div> <div>DO NOT SCALE DRAWING</div>		DRAWN	JO	9/12/2023	<div>TITLE: Counter Top Left Plate w/ PEMs</div> <table><tr><td>SIZE</td><td>DWG. NO.</td><td>REV</td></tr><tr><td>C</td><td>GE-24371</td><td>A</td></tr><tr><td colspan="2">SCALE: 1:2</td><td>SHEET 1 OF 1</td></tr></table>		SIZE	DWG. NO.	REV	C	GE-24371	A	SCALE: 1:2		SHEET 1 OF 1
		SIZE	DWG. NO.	REV											
		C	GE-24371	A											
SCALE: 1:2		SHEET 1 OF 1													
<div>PROPRIETARY AND CONFIDENTIAL</div> <div>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b>. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.</div> <div>COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.</div>															

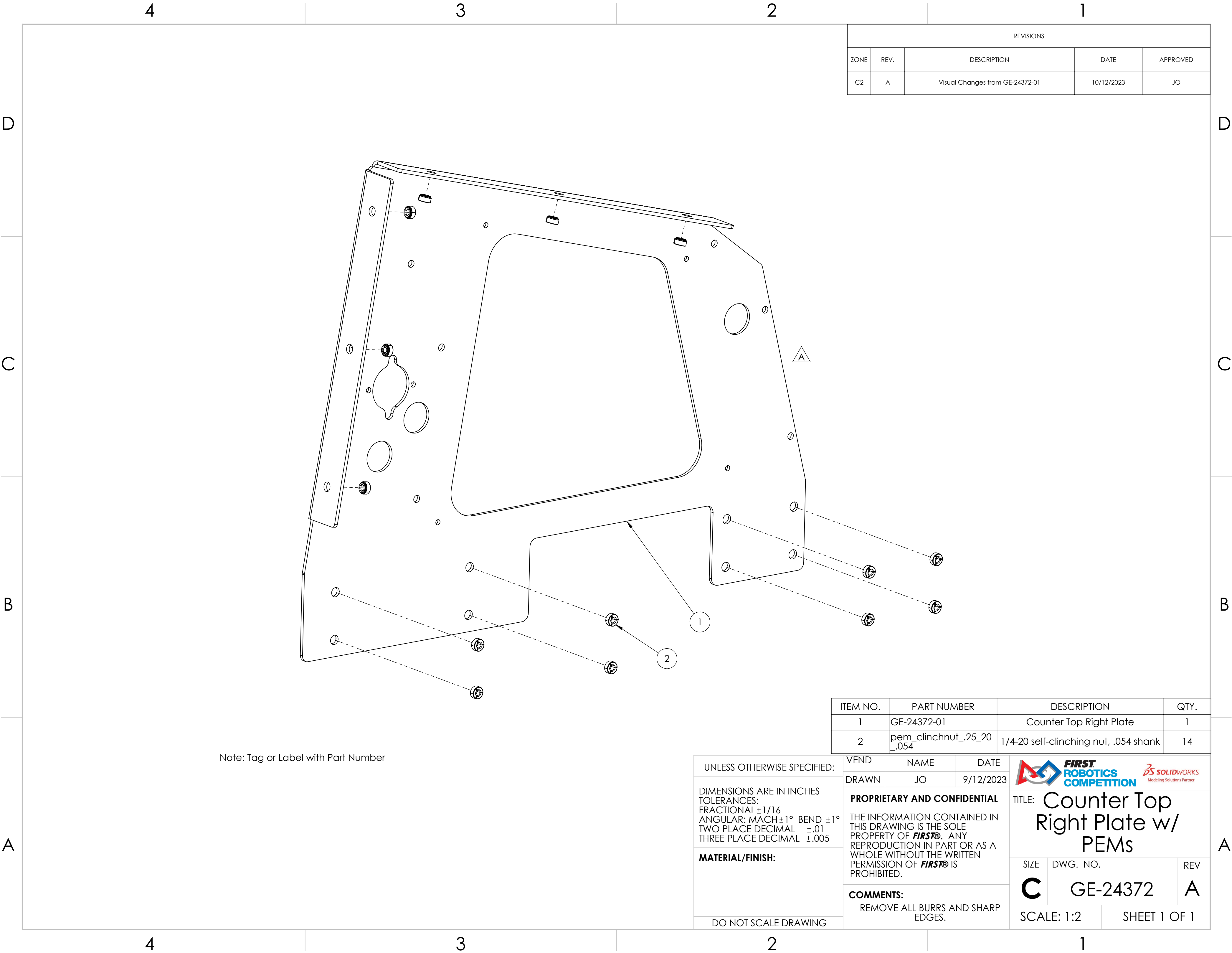
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C2, C4	A	One hole removed, one re-sized	10/12/2023	JO



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm$ 1/16 ANGULAR: MACH $\pm$ 1° BEND $\pm$ 1° TWO PLACE DECIMAL $\pm$ .02 THREE PLACE DECIMAL $\pm$ .010  <b>MATERIAL/FINISH:</b>  8 Ga 5052 Aluminum  DO NOT SCALE DRAWING	BEND	NAME	DATE
	DRAWN	JO	9/12/2023
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		



TITLE: <b>Counter Top Left Plate</b>		
SIZE <b>C</b>	DWG. NO. <b>GE-24371-01</b>	REV <b>A</b>
SCALE: 1:3		SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
C2	A	Visual Changes from GE-24372-01	10/12/2023	JO

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24372-01	Counter Top Right Plate	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	14

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

JO



9/12/2023

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: Counter Top Right Plate w/ PEMs

SIZE

DWG. NO.

REV

C

GE-24372

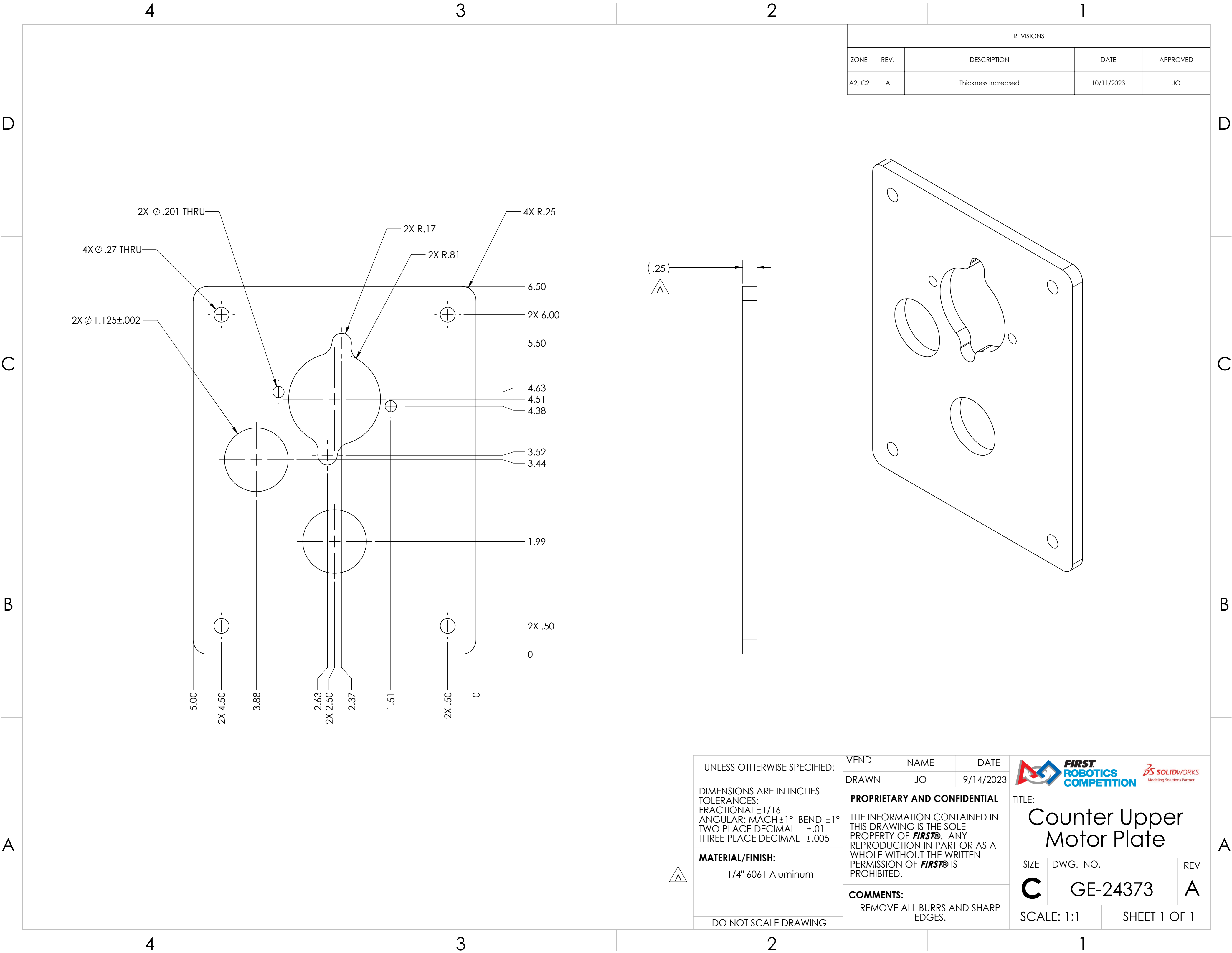
A

SCALE: 1:2



SHEET 1 OF 1





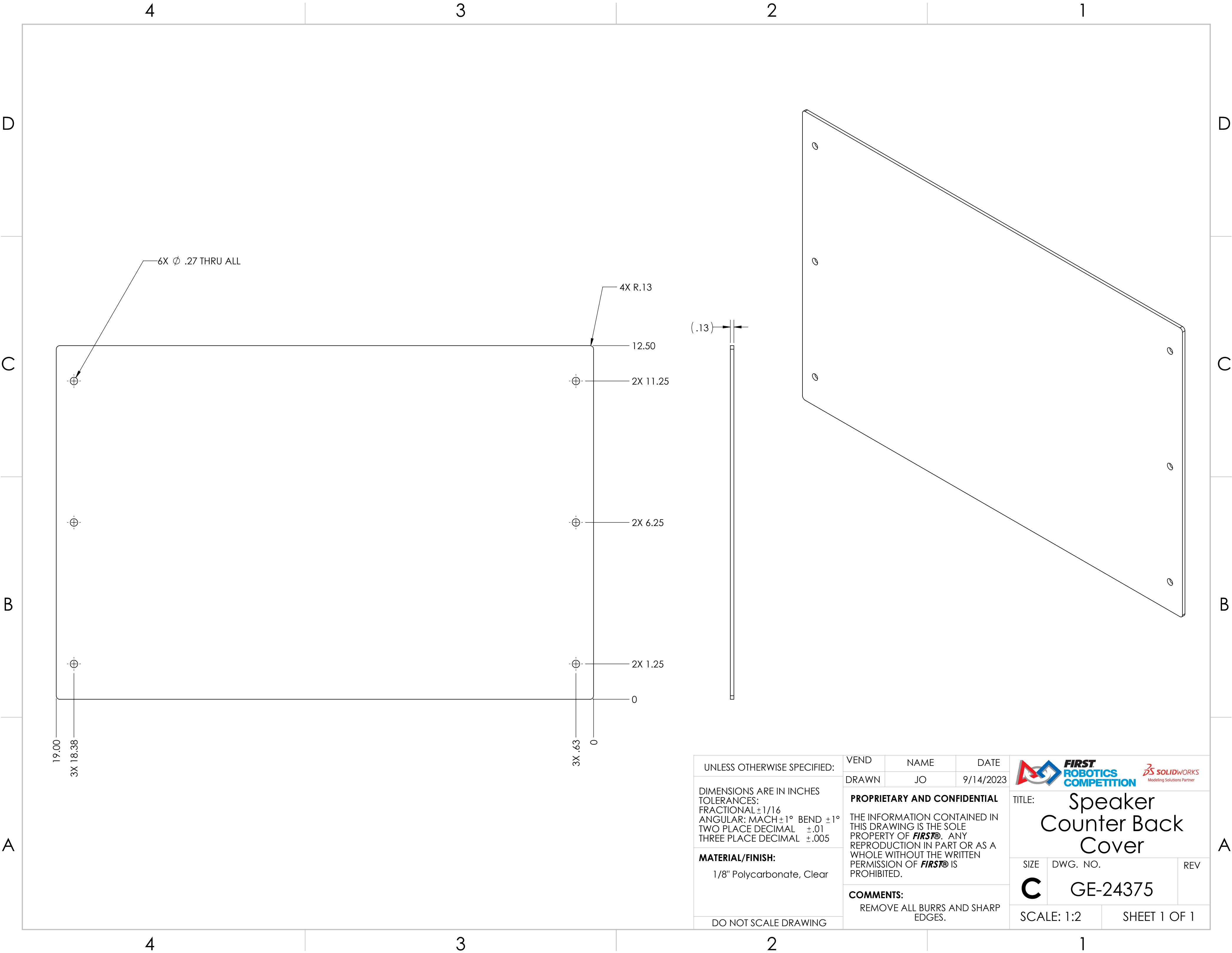


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, C2	A	Thickness Increased	10/11/2023	JO

UNLESS OTHERWISE SPECIFIED:		VEND	NAME	DATE	<div></div>	
<div>DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005</div> <div>MATERIAL/FINISH:  1/4" 6061 Aluminum</div> <div>DO NOT SCALE DRAWING</div>		DRAWN	JO	9/14/2023	<div>TITLE:</div> <div>Counter Upper Motor Plate</div>	
		PROPRIETARY AND CONFIDENTIAL				
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			<div>SIZE</div> <div>C</div> <div>DWG. NO.</div> <div>GE-24373</div> <div>REV</div> <div>A</div>	
		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
					SCALE: 1:1	
					SHEET 1 OF 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:**  
1/8" Polycarbonate, Clear

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	9/14/2023

**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.

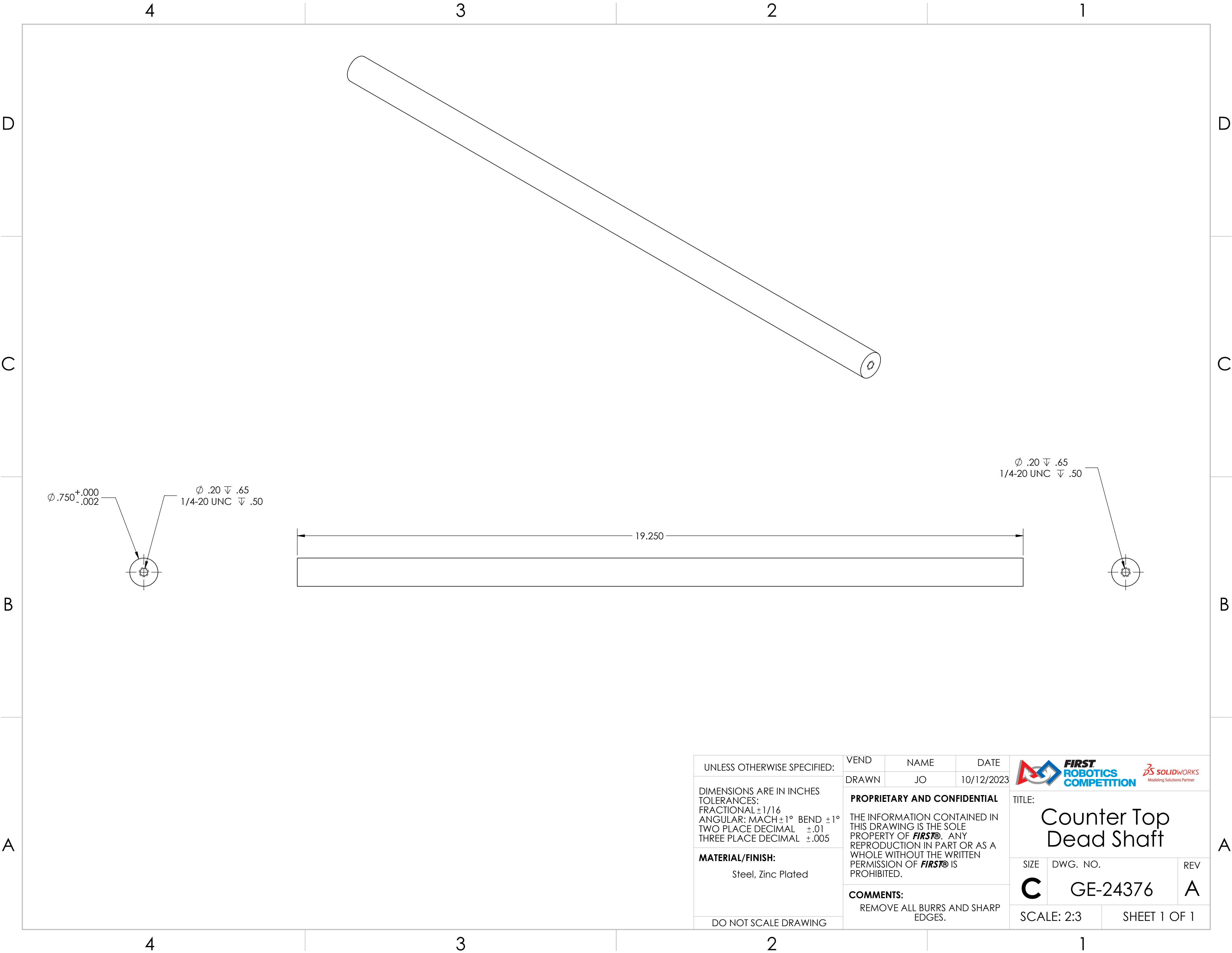
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.





TITLE: **Speaker Counter Back Cover**

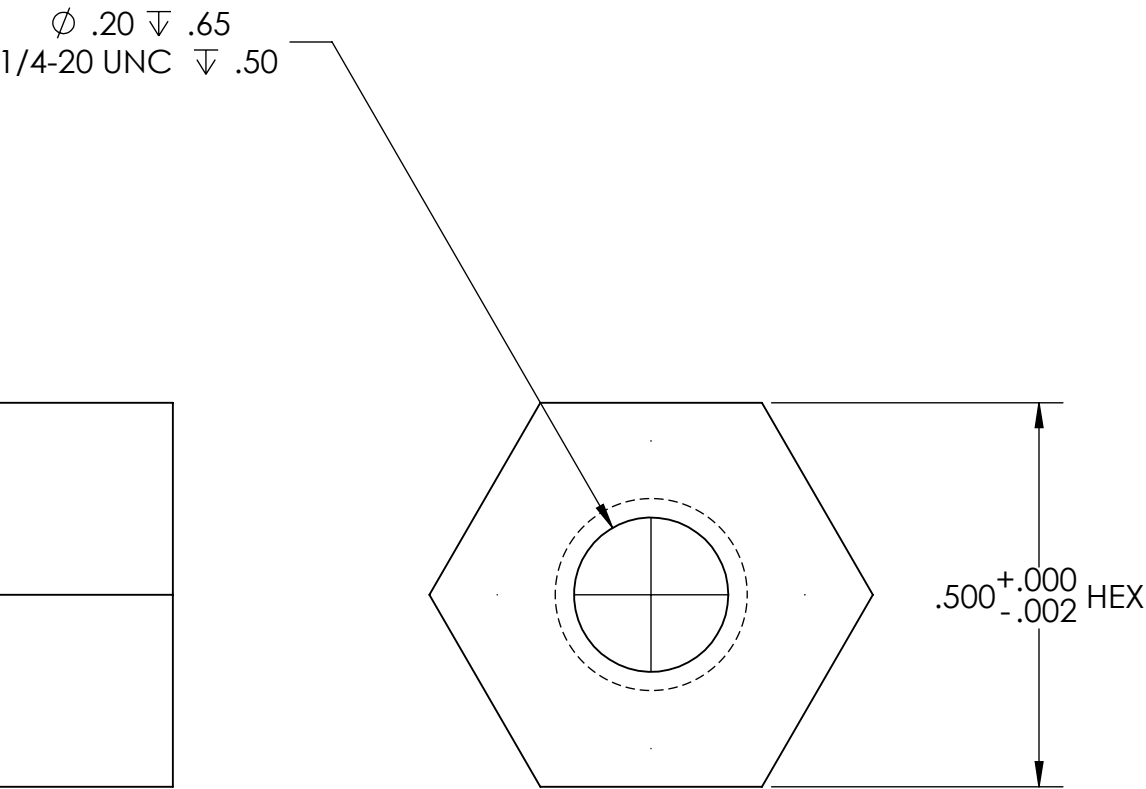
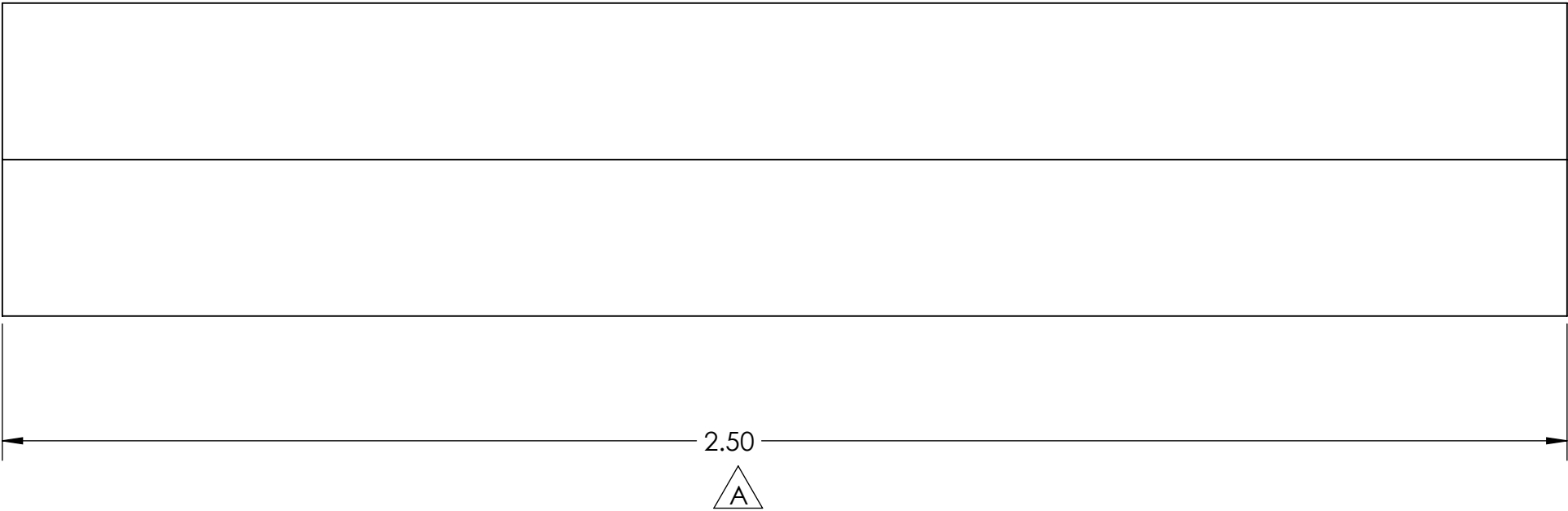
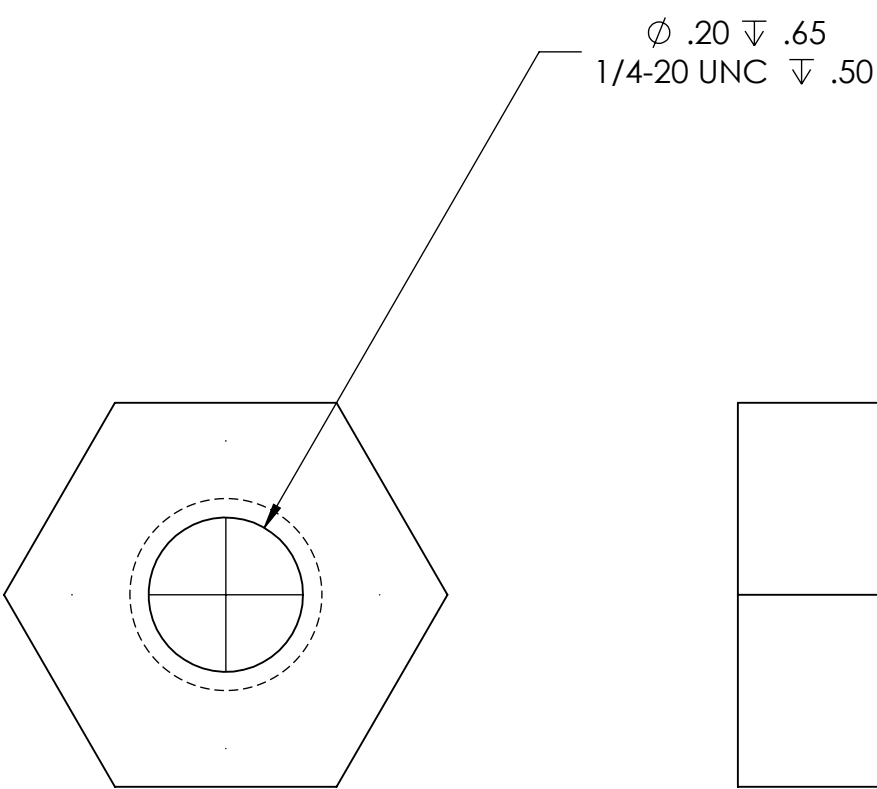
SIZE	DWG. NO.	REV
<b>C</b>	GE-24375	

SCALE: 1:2 SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  Steel, Zinc Plated  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: <h1>Counter Top Dead Shaft</h1></div> <table><tr><td>SIZE</td><td>DWG. NO.</td><td>REV</td></tr><tr><td><b>C</b></td><td>GE-24376</td><td><b>A</b></td></tr><tr><td colspan="2">SCALE: 2:3</td><td>SHEET 1 OF 1</td></tr></table>		SIZE	DWG. NO.	REV	<b>C</b>	GE-24376	<b>A</b>	SCALE: 2:3		SHEET 1 OF 1
	SIZE	DWG. NO.	REV											
	<b>C</b>	GE-24376	<b>A</b>											
SCALE: 2:3		SHEET 1 OF 1												
DRAWN	JO	10/12/2023												
<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.														

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	A	Adjusted Length	10/11/2023	JO



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:**  
1018 Steel 1/2" Hex Shaft

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	JO	9/12/2023

**PROPRIETARY AND CONFIDENTIAL**

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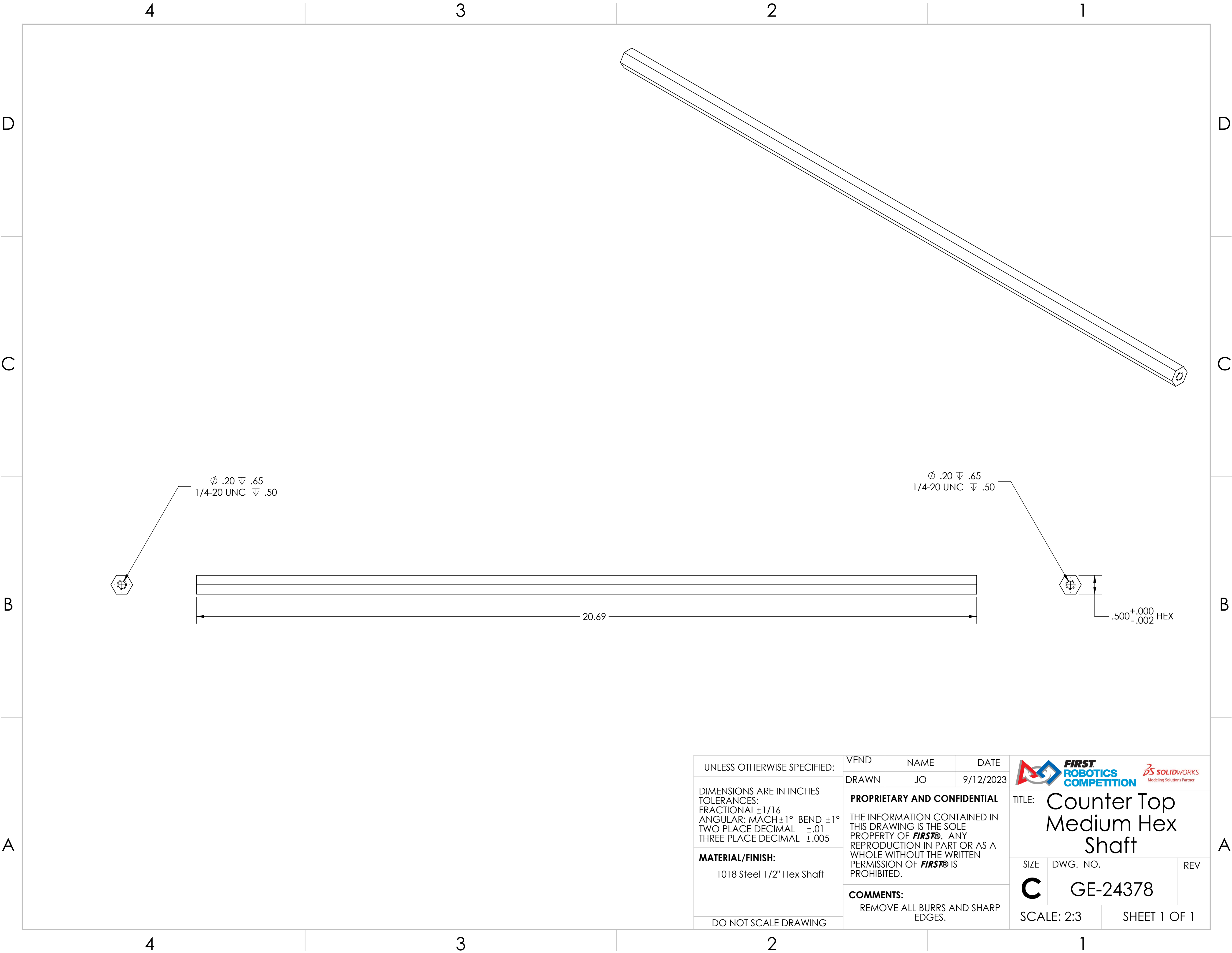
**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.





TITLE:  
**Counter Top Short Hex Shaft**

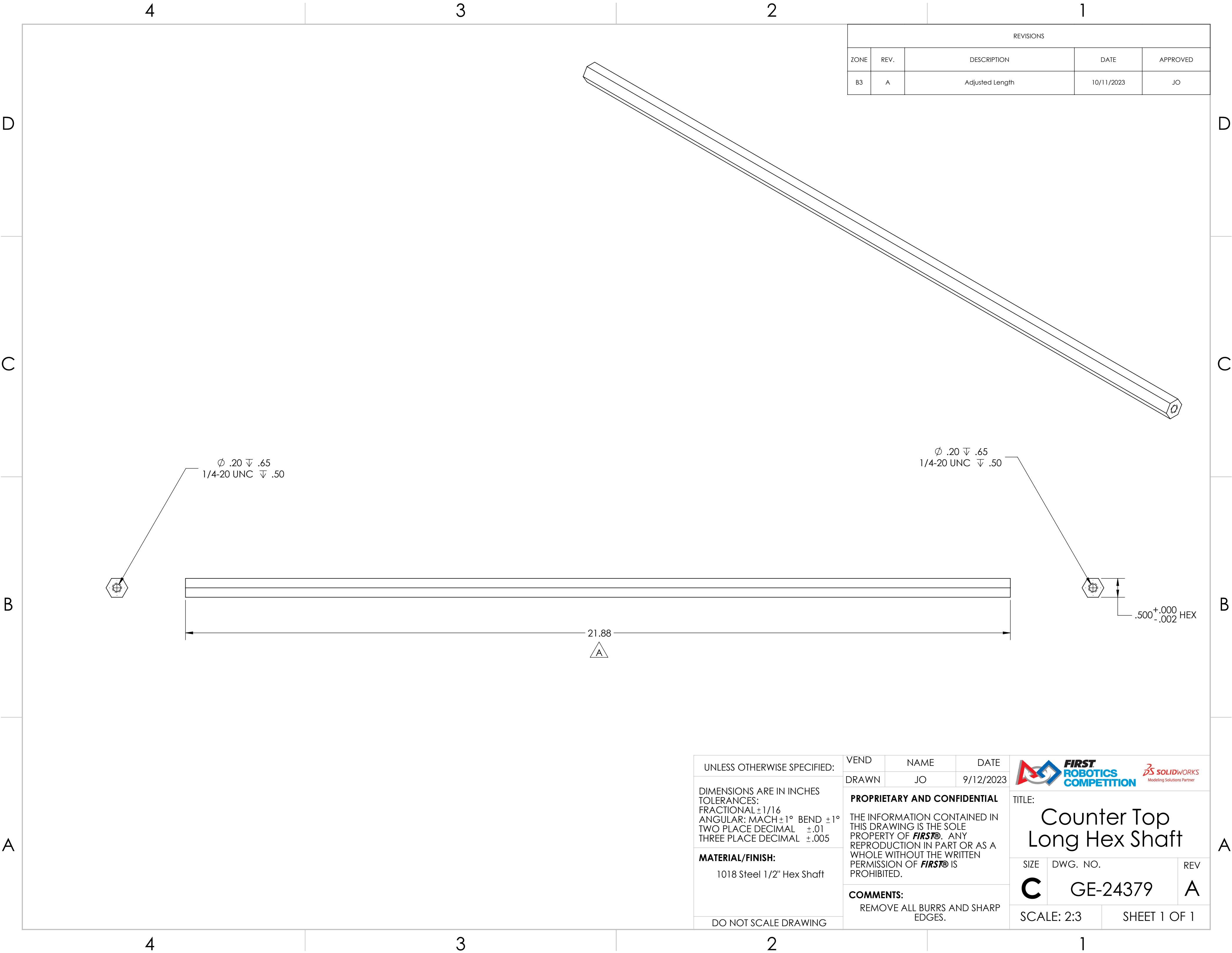
SIZE	DWG. NO.	REV
<b>C</b>	GE-24377	<b>A</b>

SCALE: 4:1      SHEET 1 OF 1





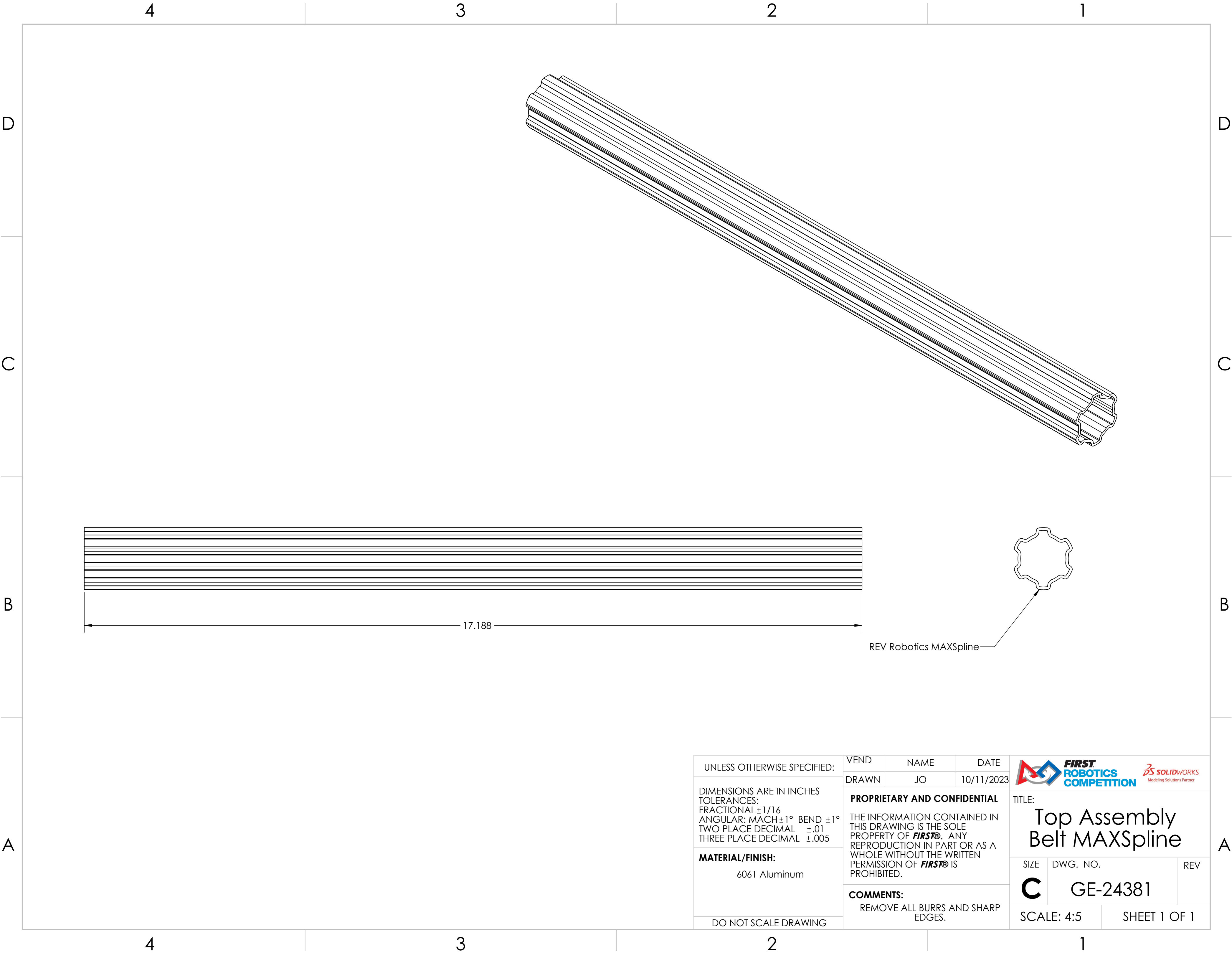
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1018 Steel 1/2" Hex Shaft  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE: Counter Top Medium Hex Shaft</div>		
	DRAWN	JO	9/12/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24378	
		SCALE: 2:3		SHEET 1 OF 1		





REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	A	Adjusted Length	10/11/2023	JO

UNLESS OTHERWISE SPECIFIED:	VEND	NAME	DATE	<div></div>		
	DRAWN	JO	9/12/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005	PROPRIETARY AND CONFIDENTIAL			TITLE:  Counter Top Long Hex Shaft		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
	COMMENTS:			SIZE		DWG. NO.
MATERIAL/FINISH:	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24379	A
1018 Steel 1/2" Hex Shaft						
DO NOT SCALE DRAWING				SCALE: 2:3		SHEET 1 OF 1



REV Robotics MAXSpline

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:**  
6061 Aluminum

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

JO

10/11/2023

**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.



**FIRST**  
ROBOTICS  
COMPETITION



Modeling Solutions Partner

TITLE:

Top Assembly  
Belt MAXSpline

SIZE

**C**

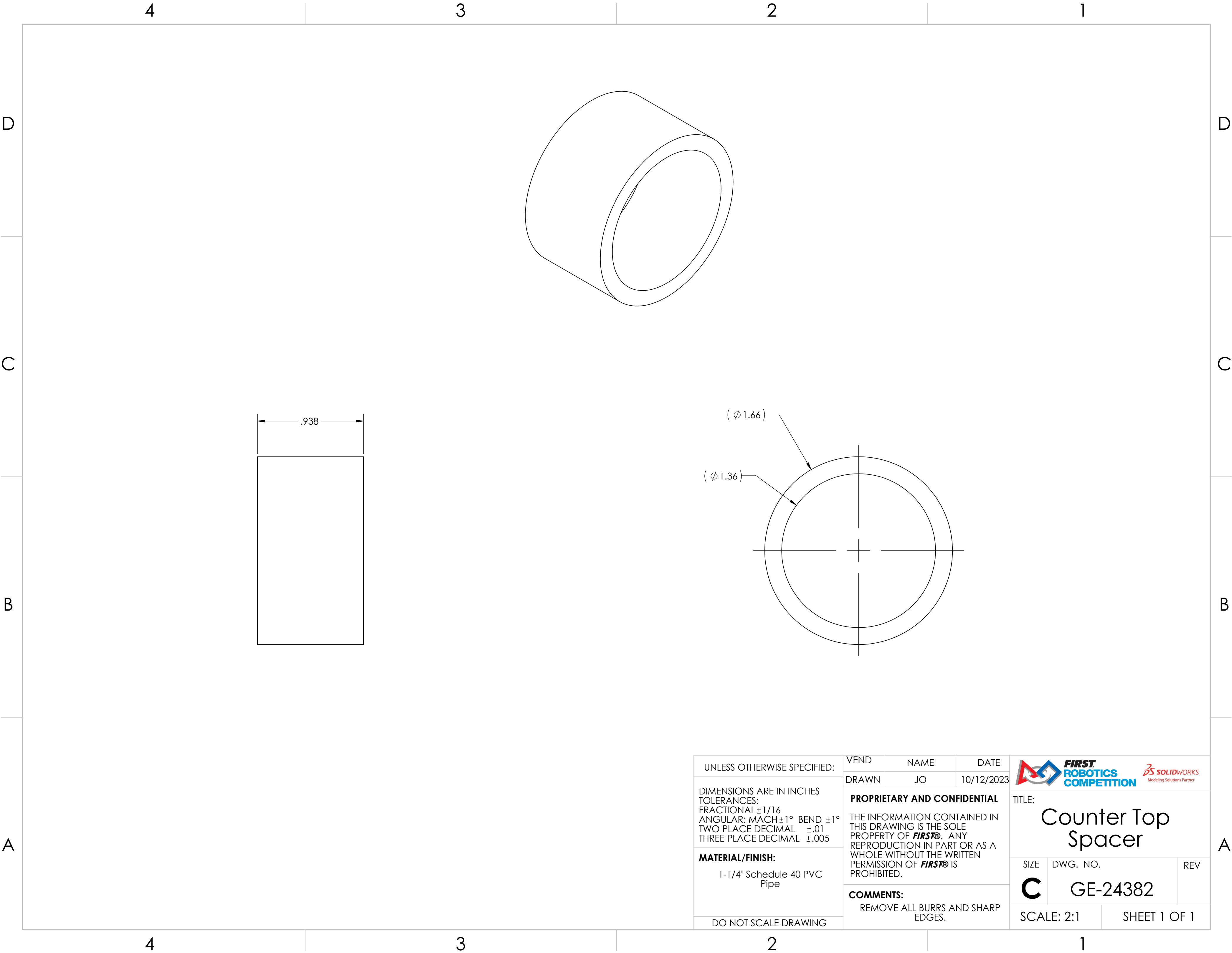
DWG. NO.



GE-24381

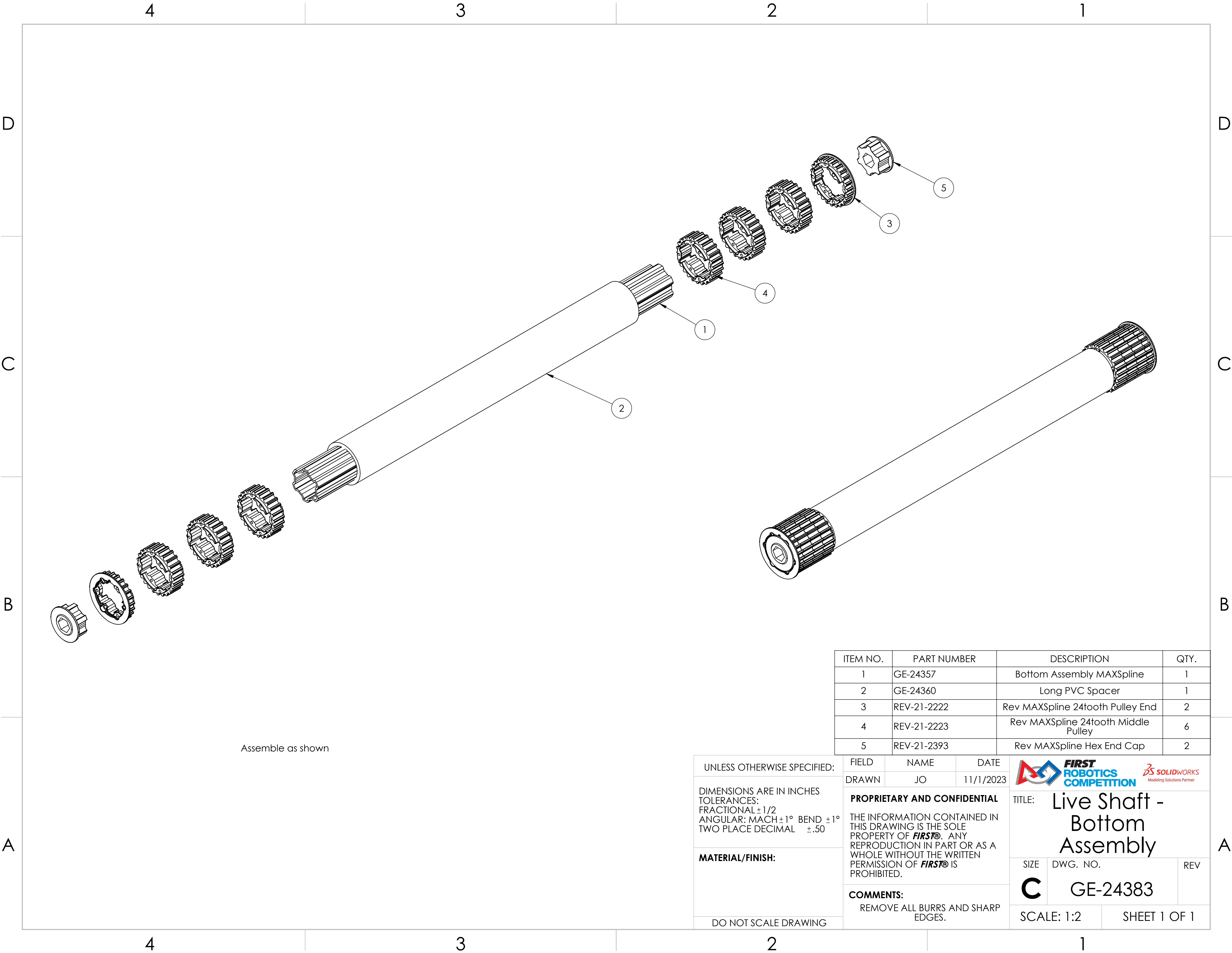
REV

SCALE: 4:5

SHEET 1 OF 1





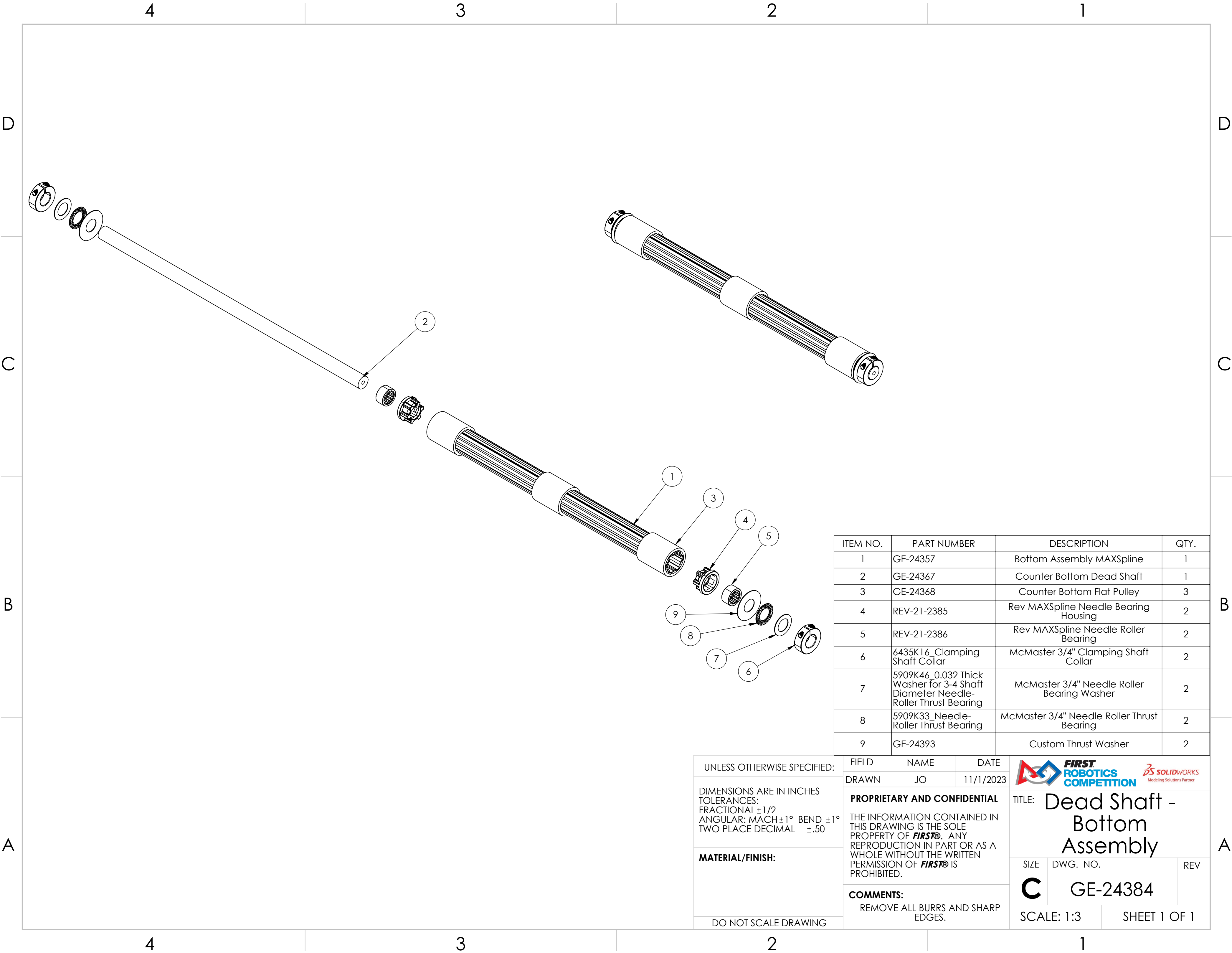
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.005  <b>MATERIAL/FINISH:</b>  1-1/4" Schedule 40 PVC Pipe  DO NOT SCALE DRAWING	VEND	NAME	DATE	<div></div> <div>TITLE:  Counter Top Spacer</div>		
	DRAWN	JO	10/12/2023			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	GE-24382	
SCALE: 2:1		SHEET 1 OF 1				



Assemble as shown

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24357	Bottom Assembly MAXSpline	1
2	GE-24360	Long PVC Spacer	1
3	REV-21-2222	Rev MAXSpline 24tooth Pulley End	2
4	REV-21-2223	Rev MAXSpline 24tooth Middle Pulley	6
5	REV-21-2393	Rev MAXSpline Hex End Cap	2

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	<div></div>		
		DRAWN	JO	11/1/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE: Live Shaft - Bottom Assembly		
<b>MATERIAL/FINISH:</b>		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
					C	GE-24383	
DO NOT SCALE DRAWING					SCALE: 1:2		SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24357	Bottom Assembly MAXSpline	1
2	GE-24367	Counter Bottom Dead Shaft	1
3	GE-24368	Counter Bottom Flat Pulley	3
4	REV-21-2385	Rev MAXSpline Needle Bearing Housing	2
5	REV-21-2386	Rev MAXSpline Needle Roller Bearing	2
6	6435K16_Clamping Shaft Collar	McMaster 3/4" Clamping Shaft Collar	2
7	5909K46_0.032 Thick Washer for 3-4 Shaft Diameter Needle-Roller Thrust Bearing	McMaster 3/4" Needle Roller Bearing Washer	2
8	5909K33_Needle-Roller Thrust Bearing	McMaster 3/4" Needle Roller Thrust Bearing	2
9	GE-24393	Custom Thrust Washer	2

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

DRAWN

NAME

JO

DATE



11/1/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE: **Dead Shaft - Bottom Assembly**

SIZE

DWG. NO.

REV

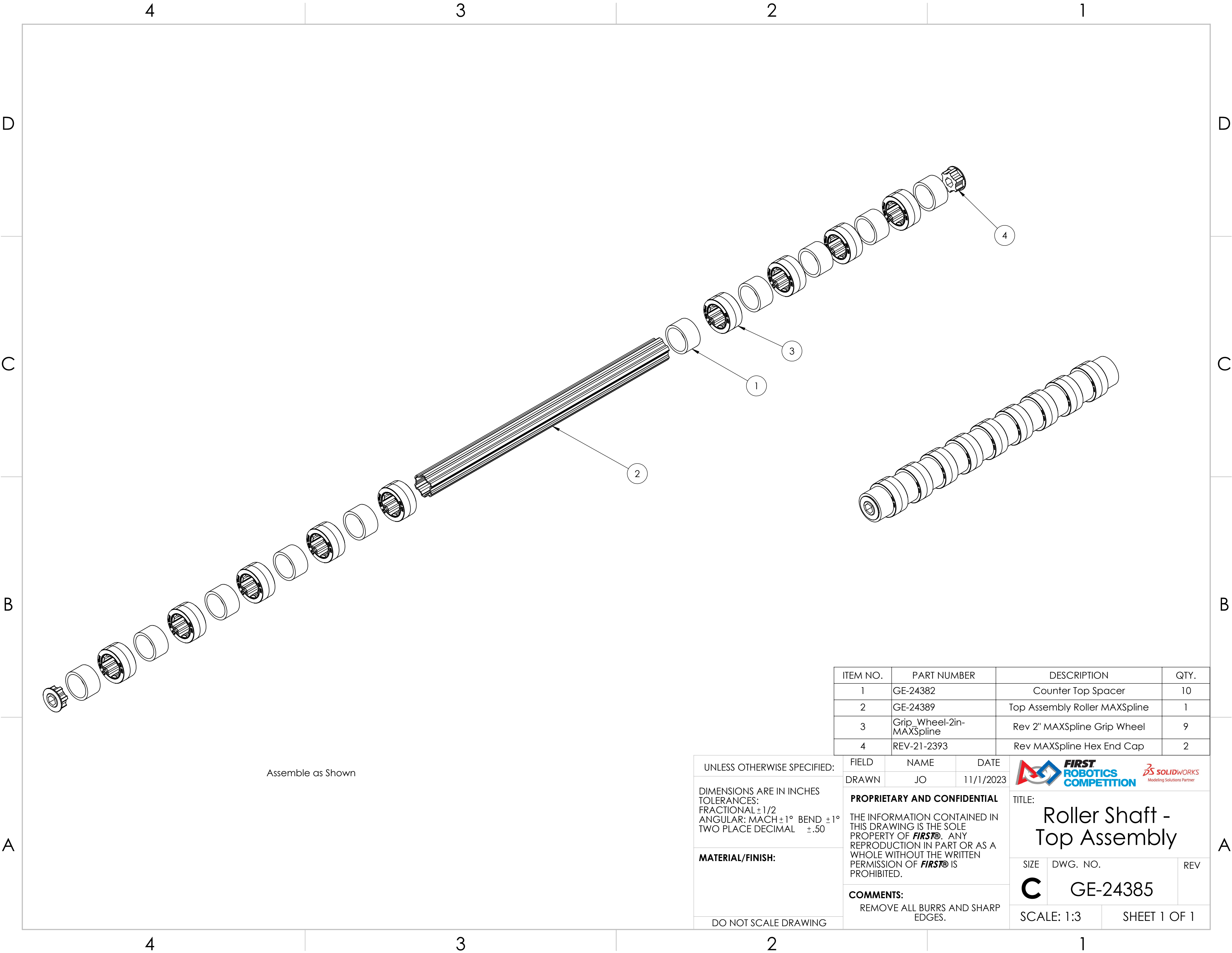
**C**

GE-24384

SCALE: 1:3



SHEET 1 OF 1





Assemble as Shown

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24382	Counter Top Spacer	10
2	GE-24389	Top Assembly Roller MAXSpline	1
3	Grip_Wheel-2in-MAXSpline	Rev 2" MAXSpline Grip Wheel	9
4	REV-21-2393	Rev MAXSpline Hex End Cap	2

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE	<div></div>		
	DRAWN	JO	11/1/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/2 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.50	PROPRIETARY AND CONFIDENTIAL			TITLE:  Roller Shaft - Top Assembly		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24385	
DO NOT SCALE DRAWING				SCALE: 1:3		SHEET 1 OF 1

4

3

2

1

D

D

C

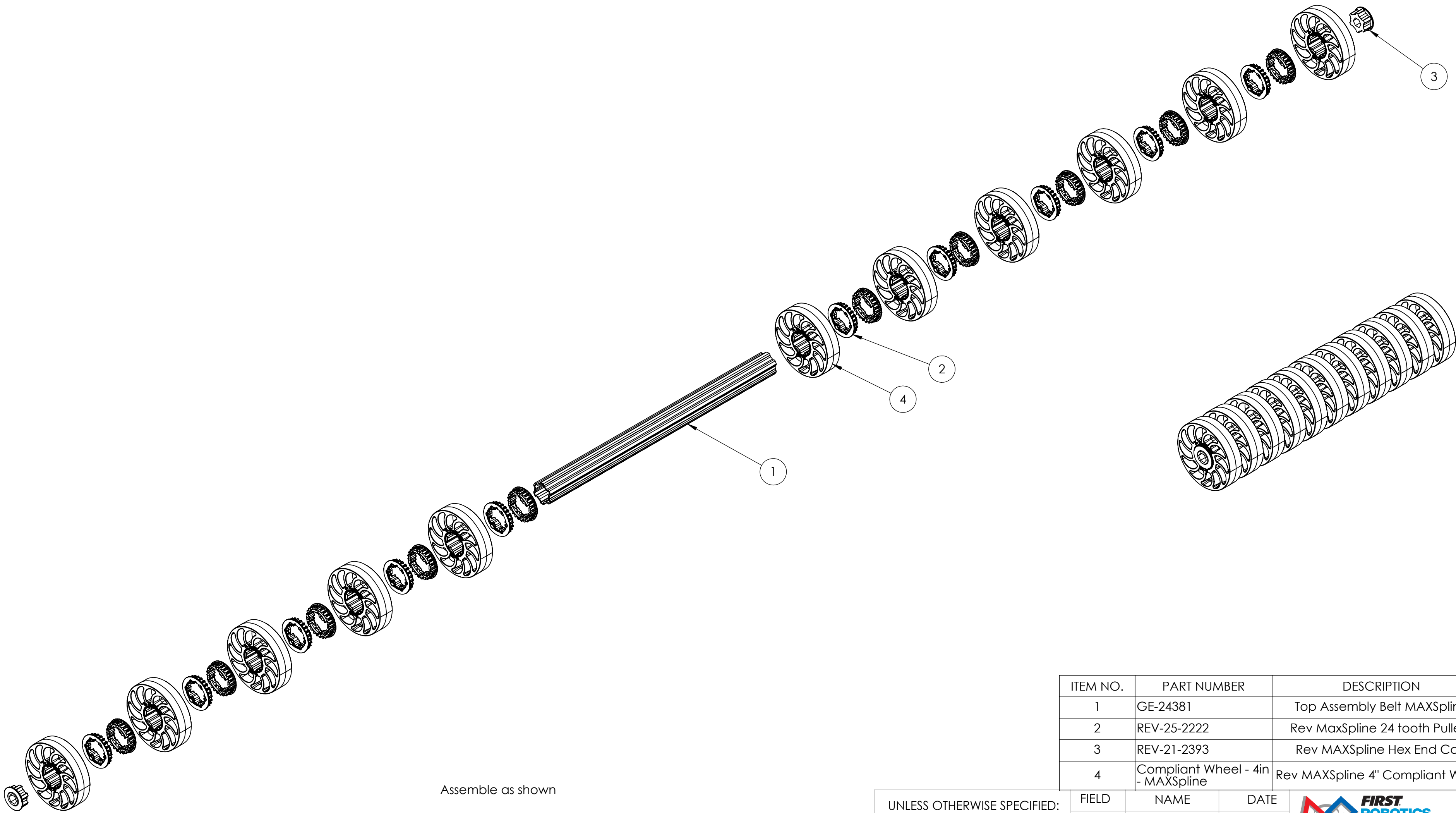
C

B



B

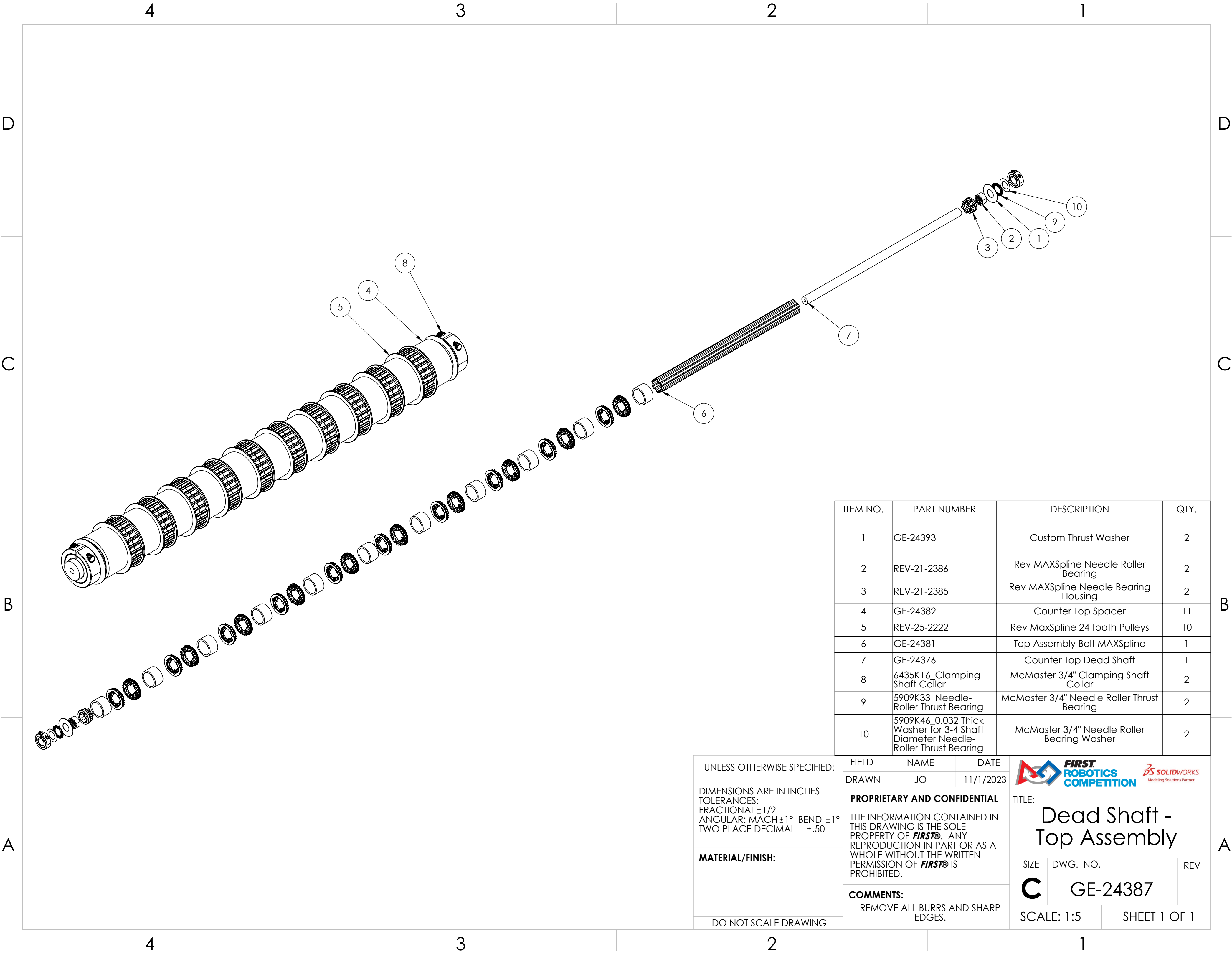
A

A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24381	Top Assembly Belt MAXSpline	1
2	REV-25-2222	Rev MaxSpline 24 tooth Pulleys	10
3	REV-21-2393	Rev MAXSpline Hex End Cap	2
4	Compliant Wheel - 4in - MAXSpline	Rev MAXSpline 4" Compliant Wheel	11

UNLESS OTHERWISE SPECIFIED:		FIELD	NAME	DATE	<div></div>		
		DRAWN	JO	11/1/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  <div>Live Shaft - Top Assembly</div>		
<b>MATERIAL/FINISH:</b>					SIZE	DWG. NO.	REV
		<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.			C	GE-24386	
DO NOT SCALE DRAWING					SCALE: 1:4		SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24393	Custom Thrust Washer	2
2	REV-21-2386	Rev MAXSpline Needle Roller Bearing	2
3	REV-21-2385	Rev MAXSpline Needle Bearing Housing	2
4	GE-24382	Counter Top Spacer	11
5	REV-25-2222	Rev MaxSpline 24 tooth Pulleys	10
6	GE-24381	Top Assembly Belt MAXSpline	1
7	GE-24376	Counter Top Dead Shaft	1
8	6435K16_Clamping Shaft Collar	McMaster 3/4" Clamping Shaft Collar	2
9	5909K33_Needle-Roller Thrust Bearing	McMaster 3/4" Needle Roller Thrust Bearing	2
10	5909K46_0.032 Thick Washer for 3-4 Shaft Diameter Needle-Roller Thrust Bearing	McMaster 3/4" Needle Roller Bearing Washer	2

UNLESS OTHERWISE SPECIFIED:

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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

FIELD

DRAWN

NAME

JO

DATE



11/1/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:

Dead Shaft - Top Assembly

SIZE

C

DWG. NO.

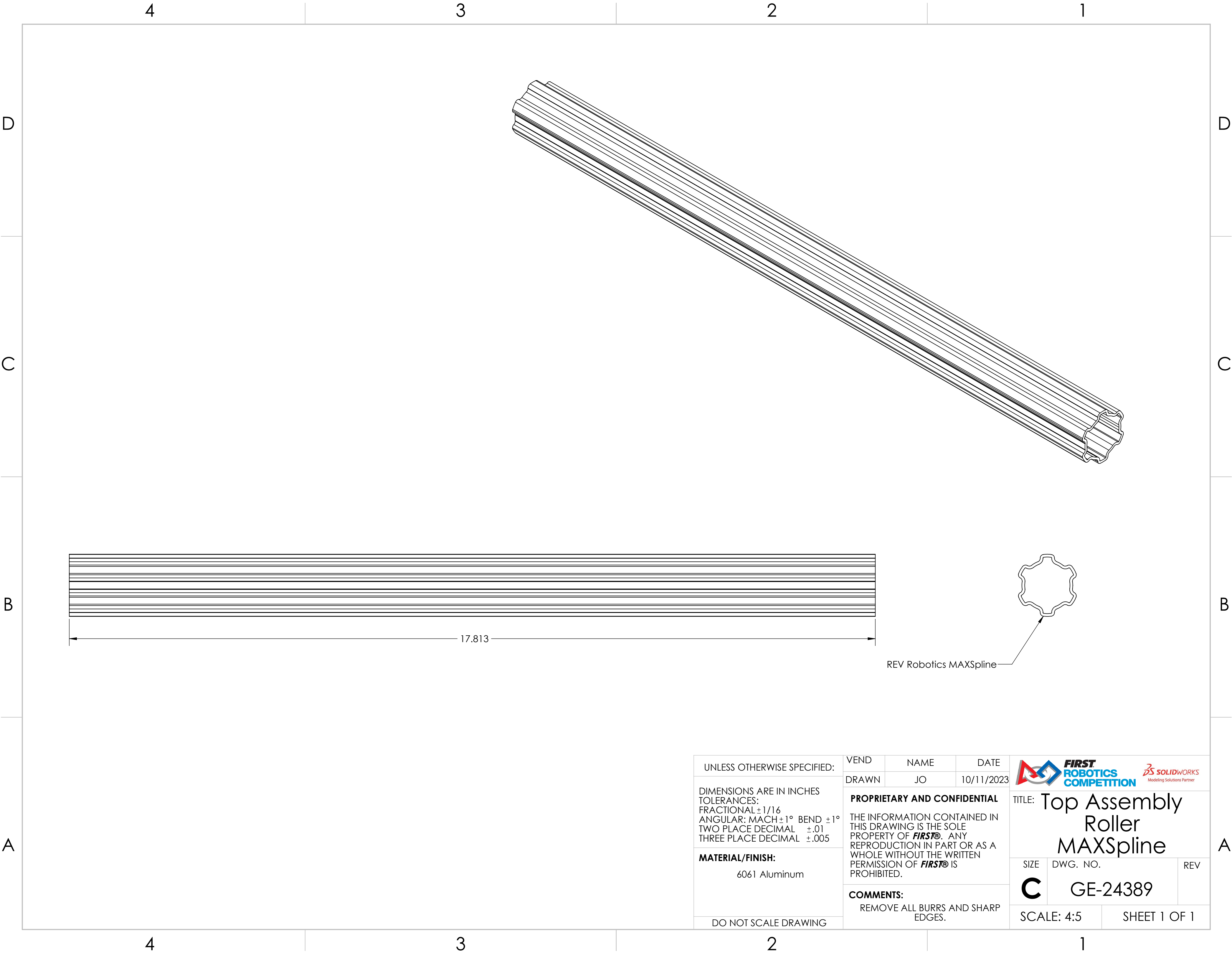
GE-24387

REV

SCALE: 1:5

SHEET 1 OF 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:**  
6061 Aluminum

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

JO

10/11/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.



**FIRST  
ROBOTICS  
COMPETITION**



Modeling Solutions Partner

TITLE: **Top Assembly  
Roller  
MAXSpline**

SIZE

**C**

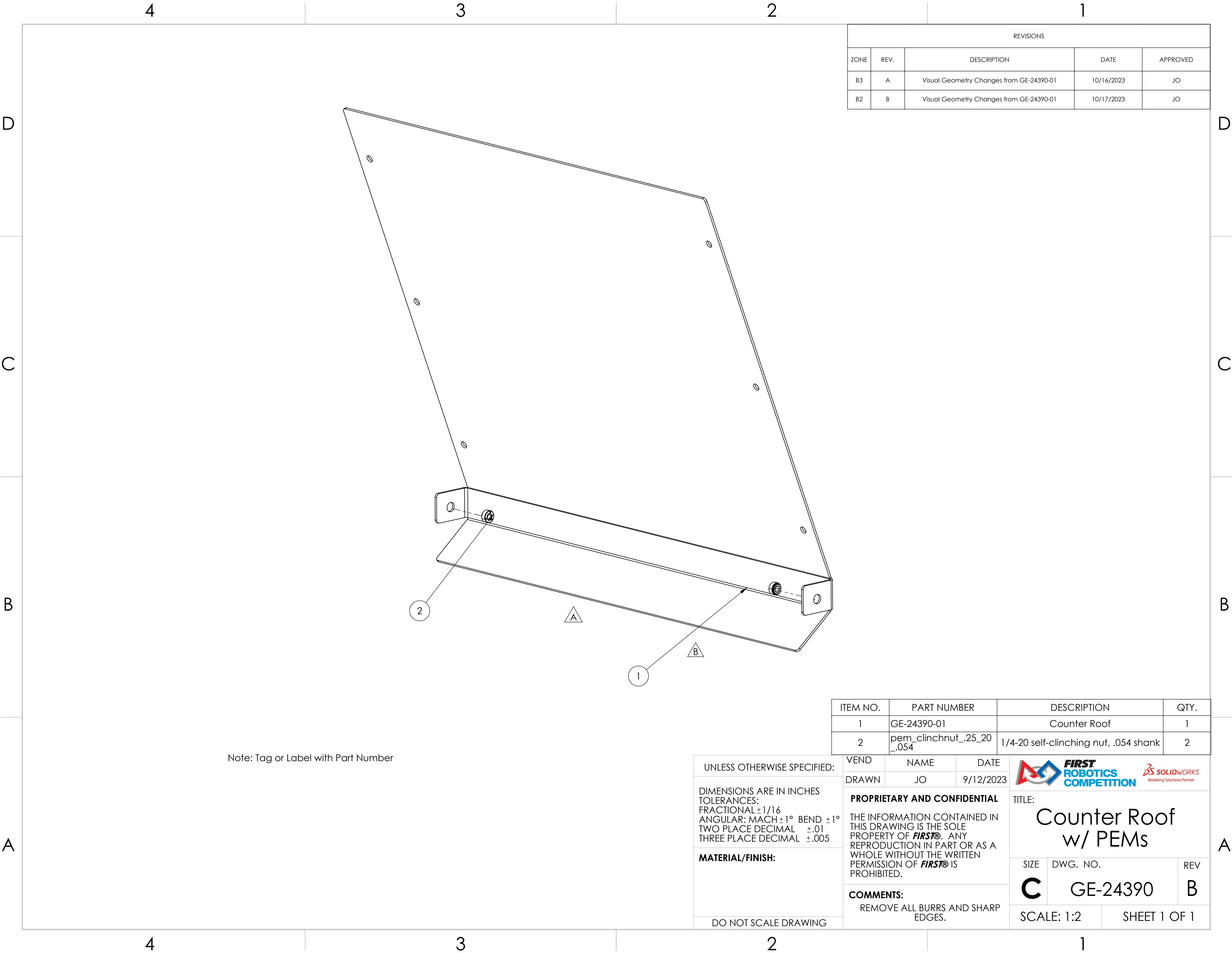
DWG. NO.

**GE-24389**

REV

SCALE: 4:5

SHEET 1 OF 1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	A	Visual Geometry Changes from GE-24390-01	10/16/2023	JO
B2	B	Visual Geometry Changes from GE-24390-01	10/17/2023	JO

Note: Tag or Label with Part Number

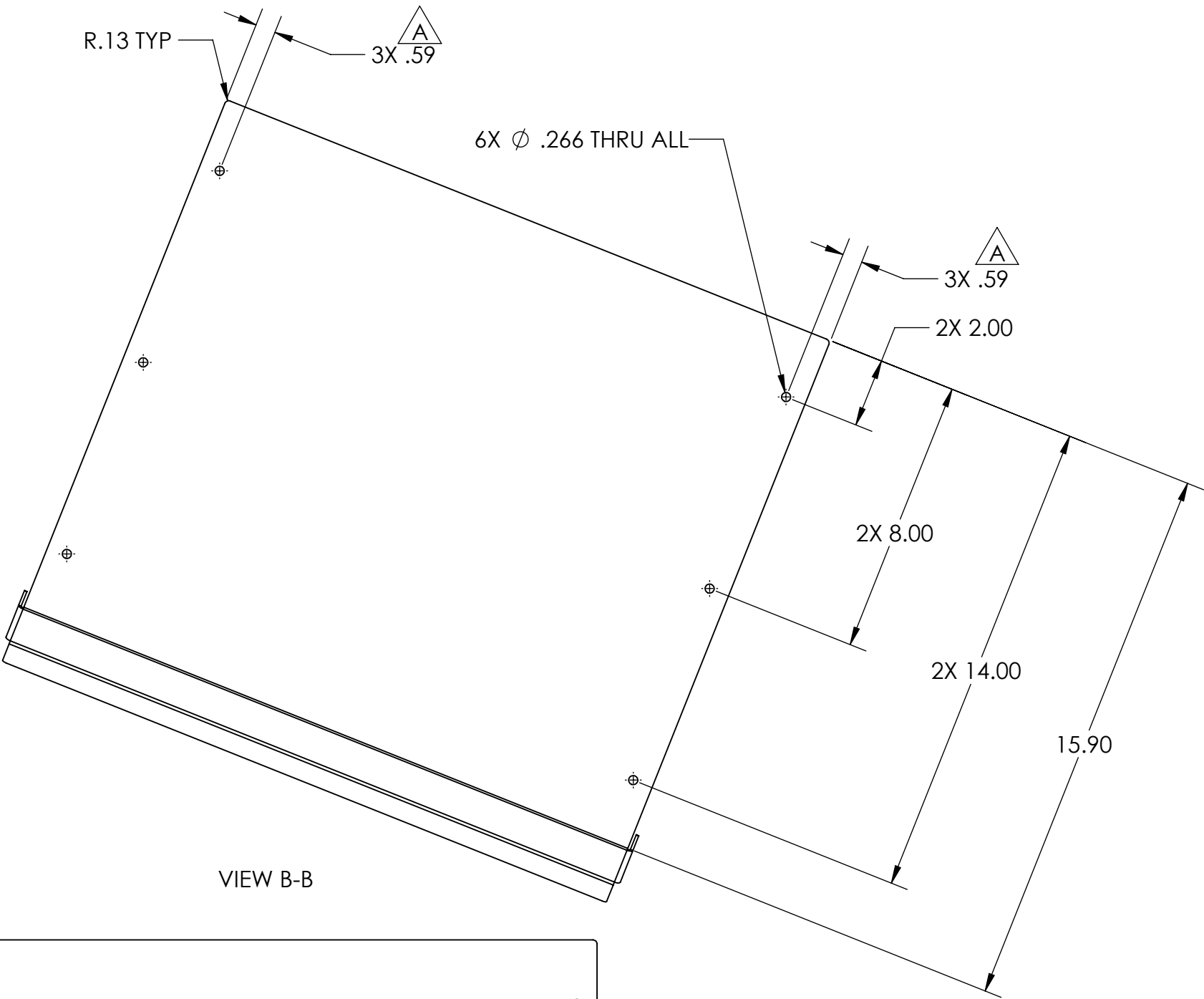
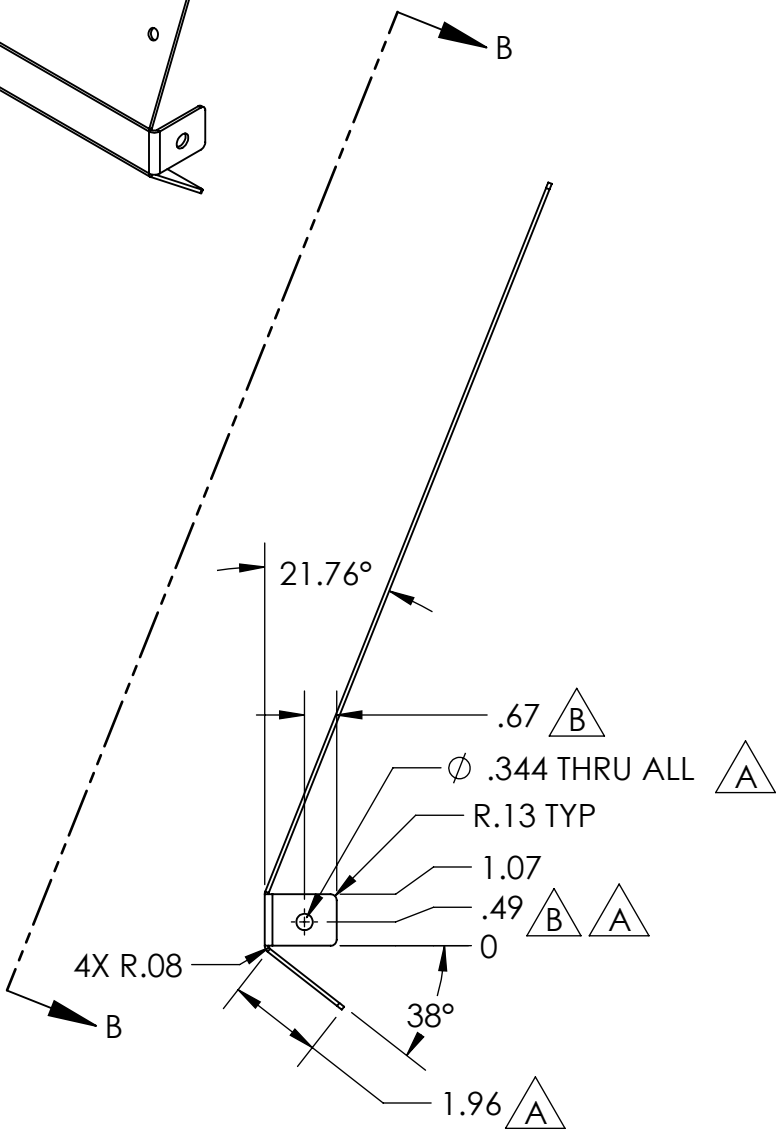
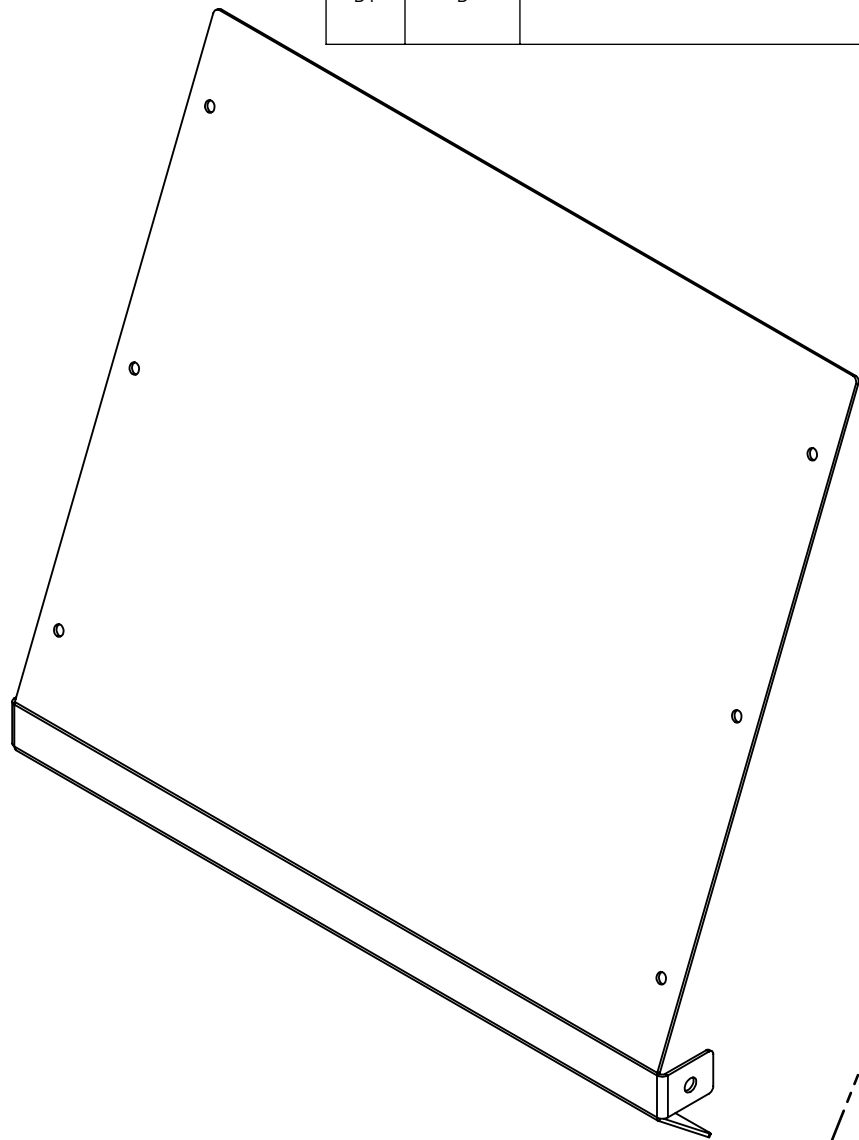
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24390-01	Counter Roof	1
2	pem_clinchnut_.25_20 _.054	1/4-20 self-clinching nut, .054 shank	2



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	JO	9/12/2023
MATERIAL/FINISH:		PROPRIETARY AND CONFIDENTIAL		
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
DO NOT SCALE DRAWING		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
		TITLE: <b>Counter Roof w/ PEMs</b>		
		SIZE <b>C</b>	DWG. NO. <b>GE-24390</b>	REV <b>B</b>
		SCALE: 1:2		SHEET 1 OF 1

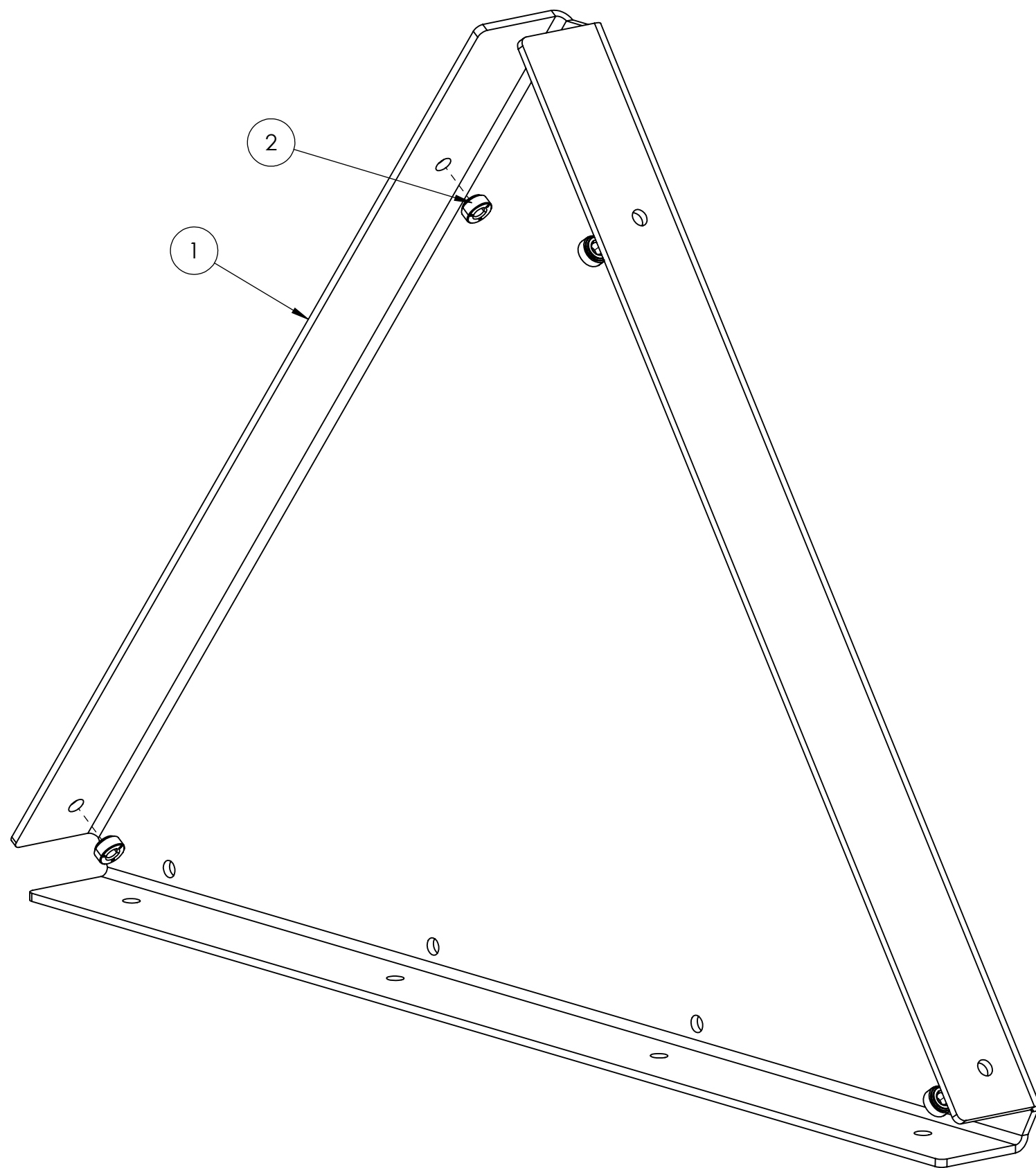




REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A1, B1, D3, D4	A	Changes to Side and Bottom Flanges, and hole locations	10/16/2023	JO
B1	B		10/17/2023	





UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE	 		
		DRAWN	JO	9/12/2023			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Counter Roof		
<b>MATERIAL/FINISH:</b>  12 Ga 5052 Aluminum		<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
					<b>C</b>	GE-24390-01	<b>B</b>
DO NOT SCALE DRAWING					SCALE: 1:4		SHEET 1 OF 1



Notes:  
Assemble as shown  
Tag or Label with Part Number

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24391-01	Collection Side Ramp	1
2	pem_clinchnut_.25_20_.054	1/4-20 self-clinching nut, .054 shank	4

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		JO		10/19/2023	
		<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
		<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH:		 <b>FIRST ROBOTICS COMPETITION</b> 					
DO NOT SCALE DRAWING							
		TITLE:  <h1>Collection Ramp w/ PEMs</h1>					
		SIZE		DWG. NO.			REV
		C		GE-24391			
		SCALE: 1:2			SHEET 1 OF 1		

D

D

C

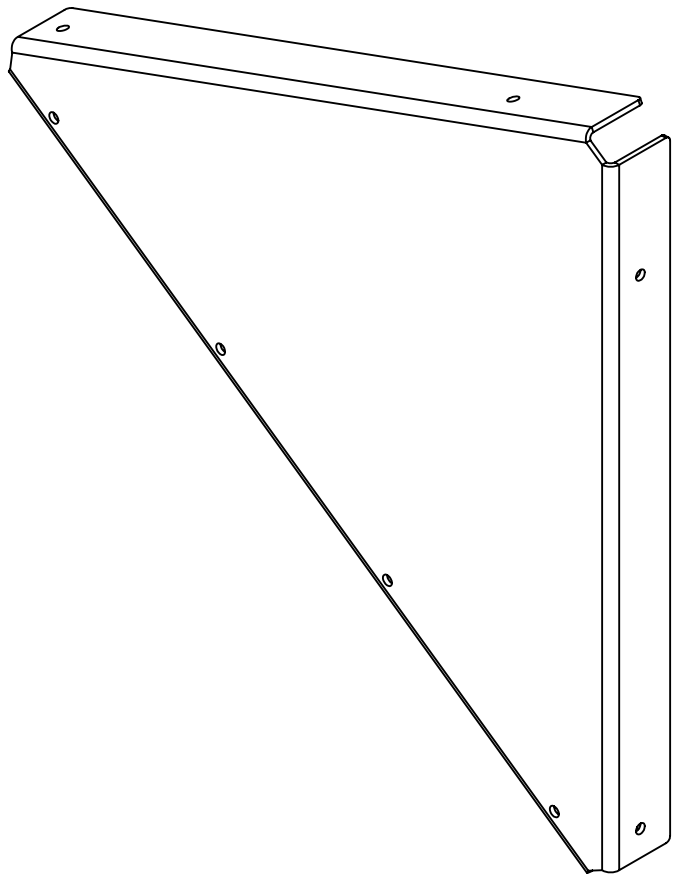
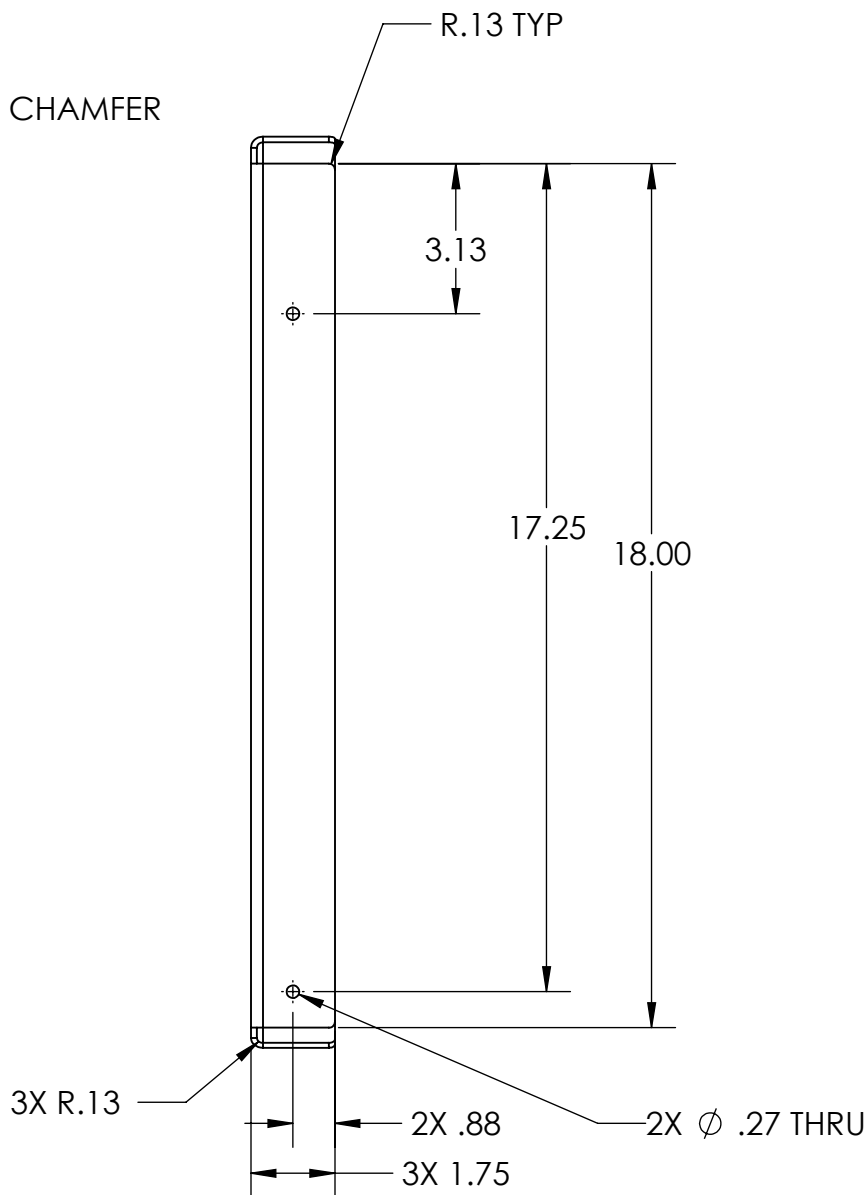
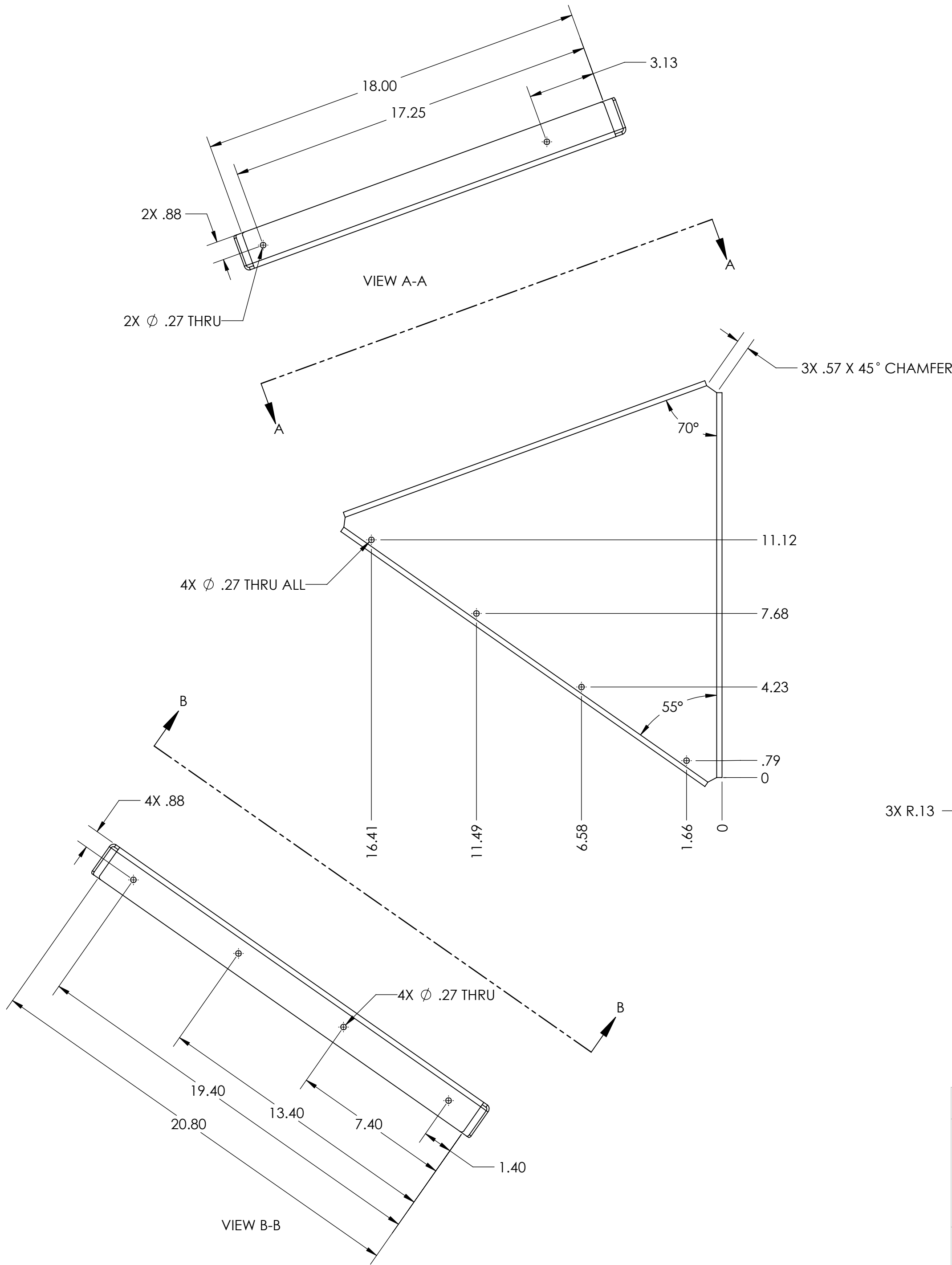
C

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  $\pm .02$   
THREE PLACE DECIMAL  $\pm .010$

**MATERIAL/FINISH:**  
8 Ga 5052 Aluminum

DO NOT SCALE DRAWING

BEND

DRAWN

NAME

JO

DATE

10/19/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
**Collection Side Ramp**

SIZE

**C**

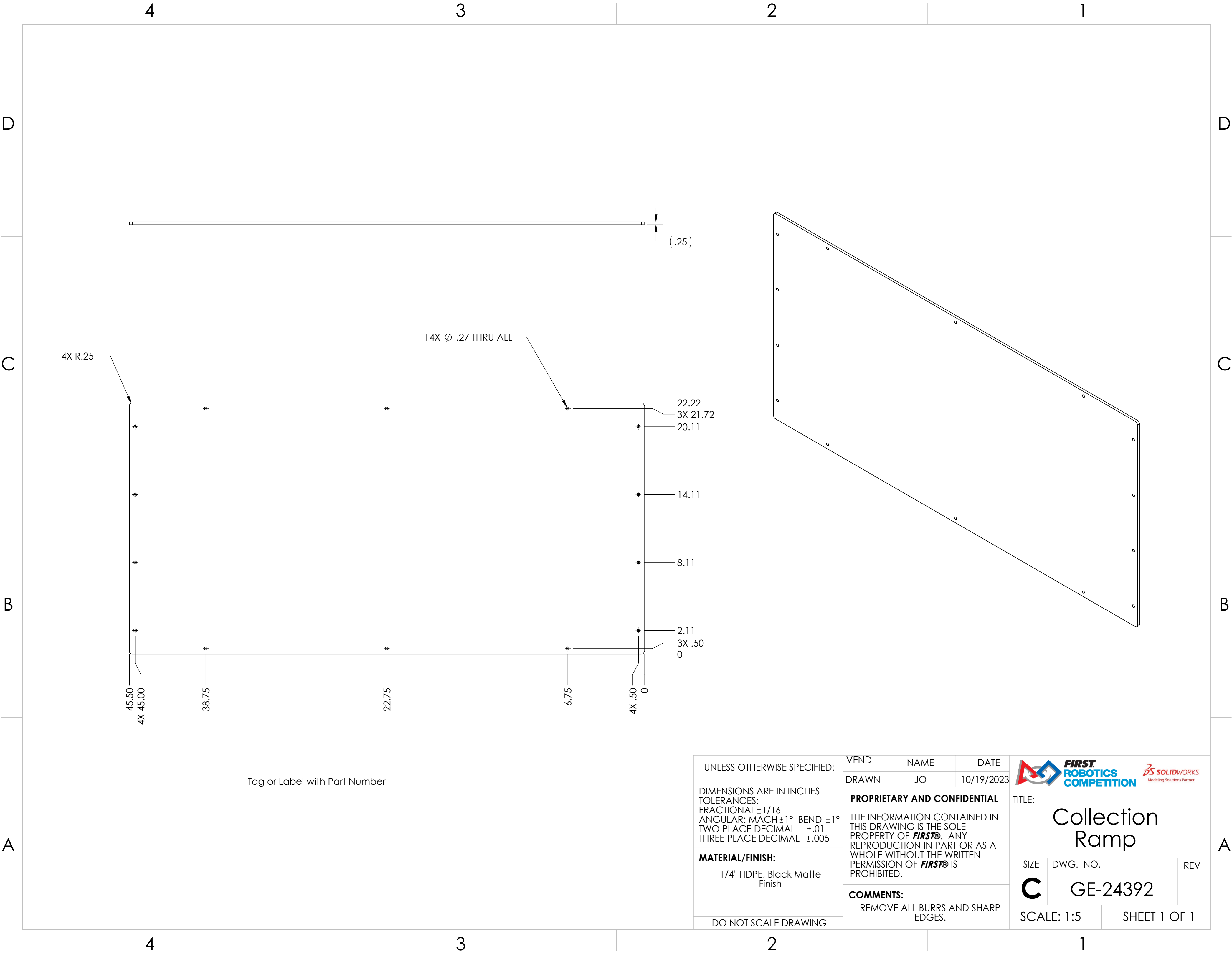
DWG. NO.

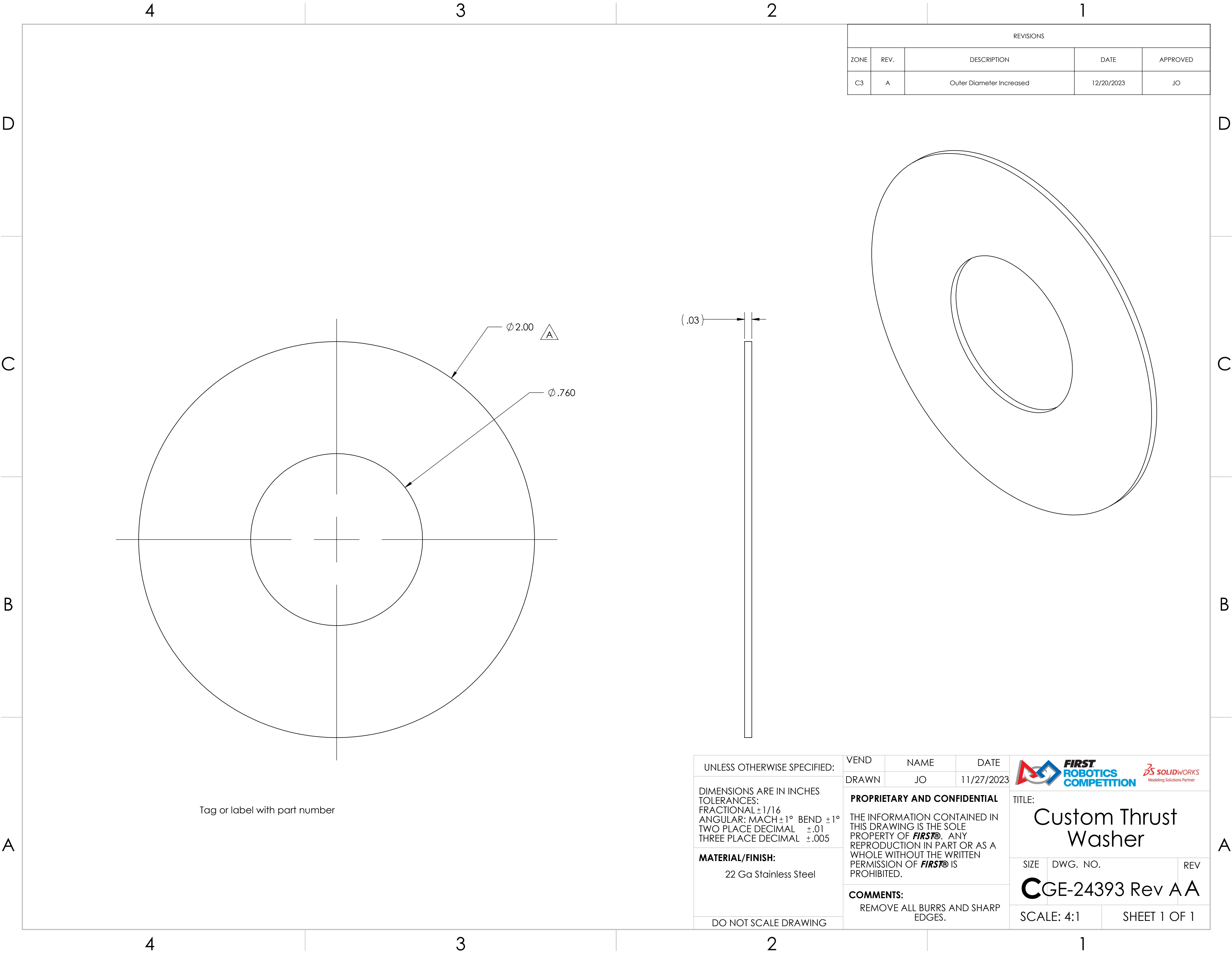
**GE-24391-01**

REV

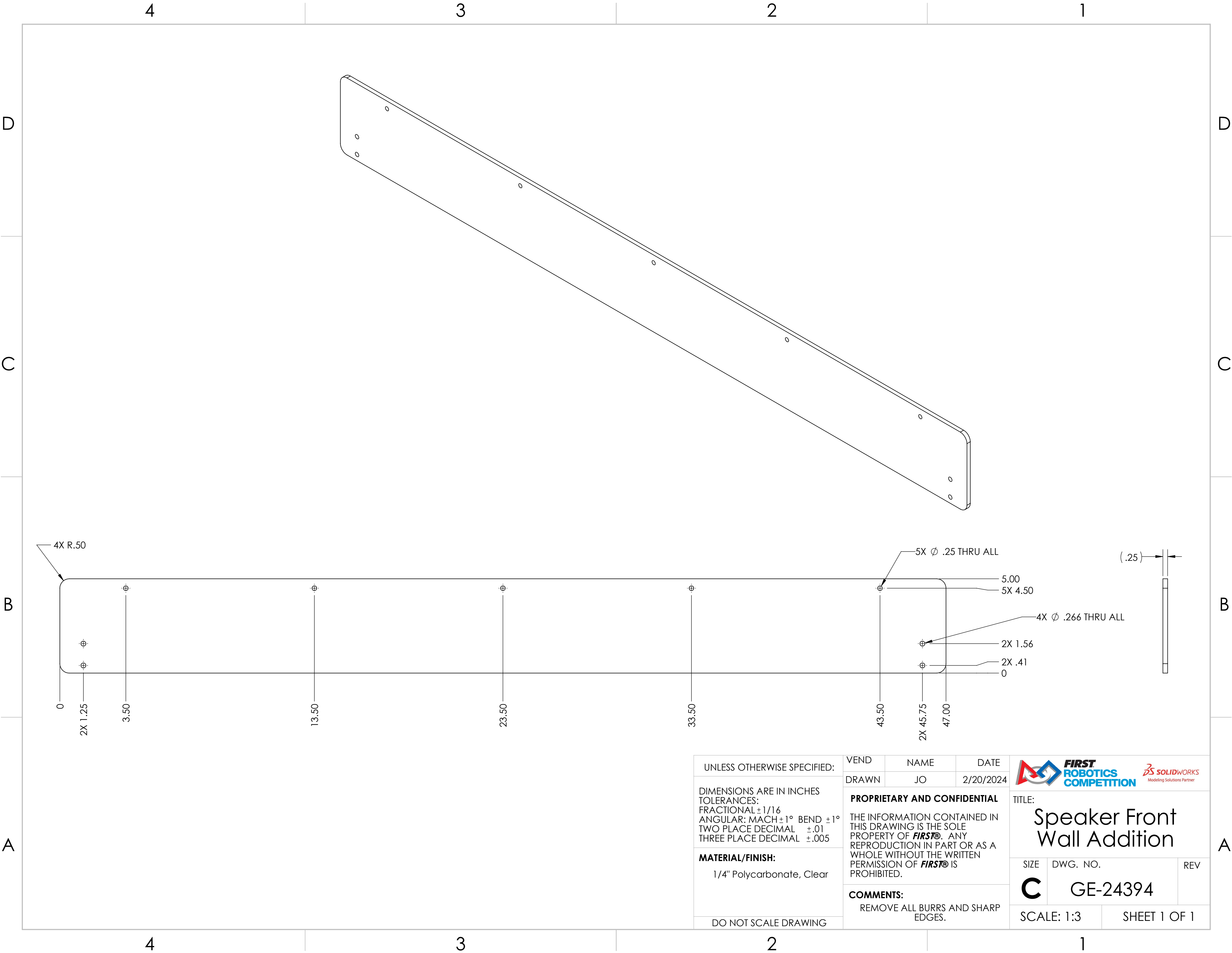
SCALE: 1:4

SHEET 1 OF 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:**  
1/4" Polycarbonate, Clear

DO NOT SCALE DRAWING

VEND

NAME

DATE

DRAWN

JO

2/20/2024

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**

REMOVE ALL BURRS AND SHARP EDGES.



**FIRST**  
ROBOTICS  
COMPETITION



Modeling Solutions Partner

TITLE:

Speaker Front  
Wall Addition

SIZE

**C**

DWG. NO.

GE-24394

REV

SCALE: 1:3

SHEET 1 OF 1

4

3

2

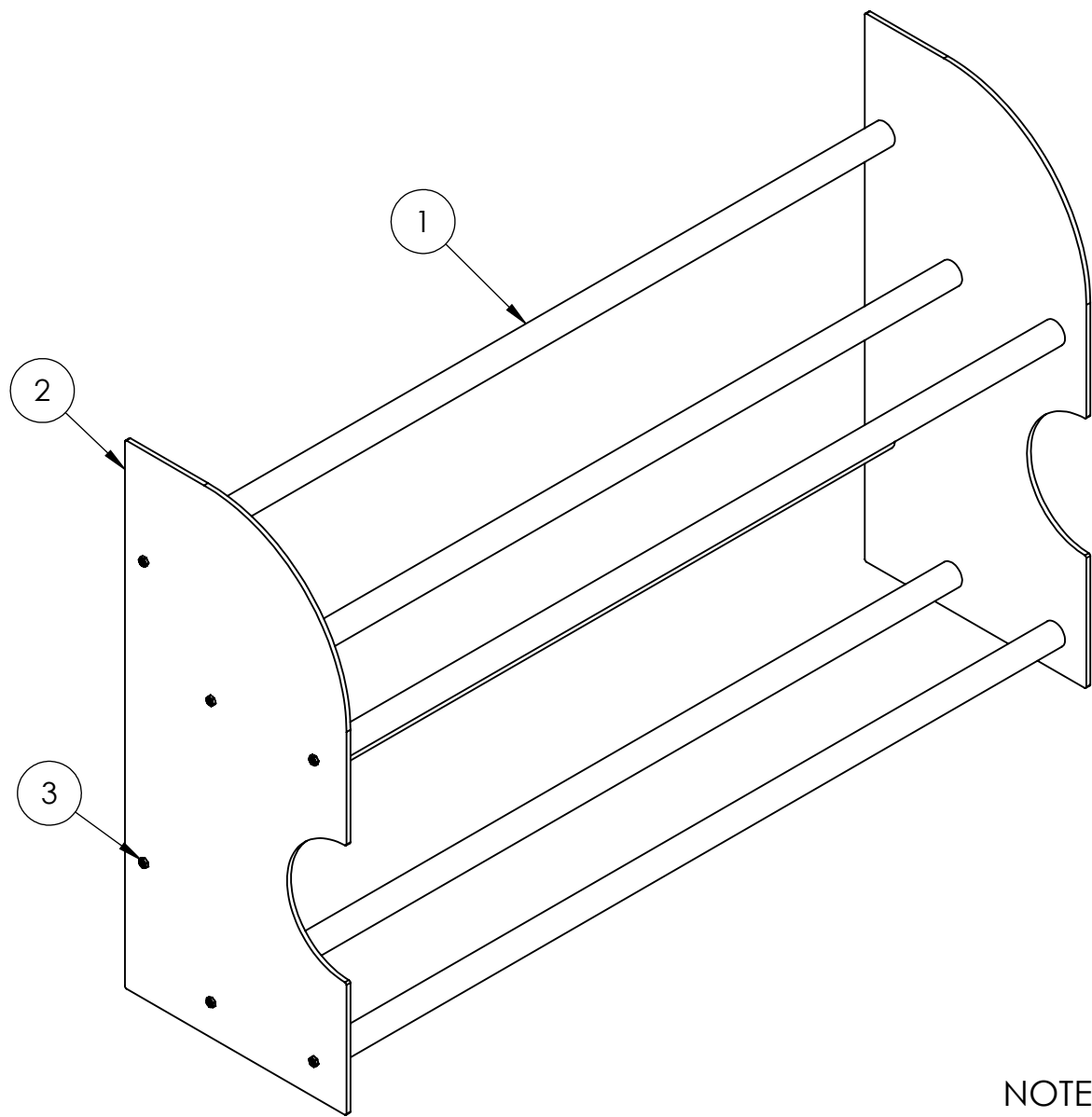
1

D

C

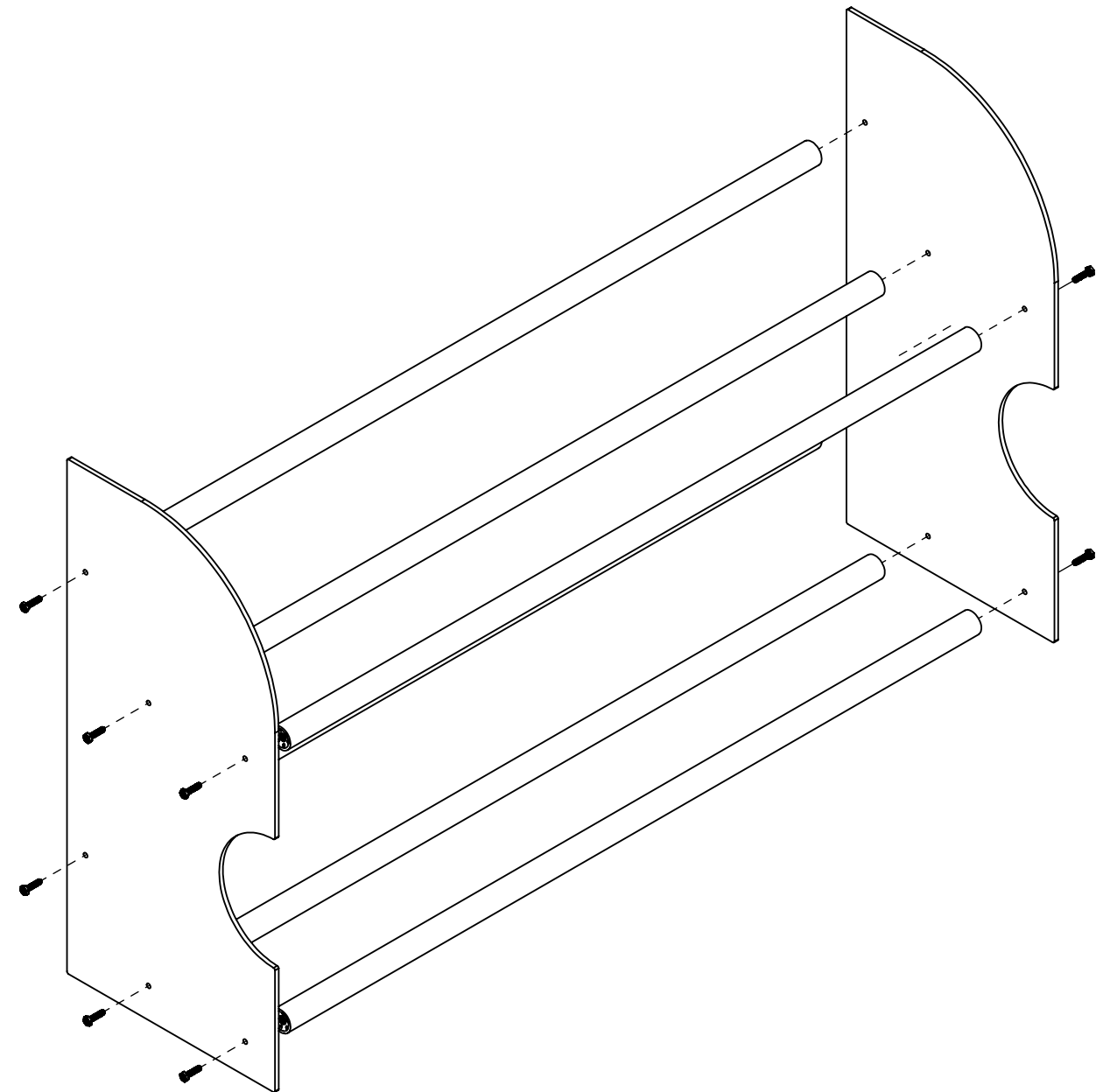
B

A




NOTES:

1. Bolt the tubes to the side panels




ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24401	Pipe_Tubenut	6
2	GE-24403	Plastic Side Panel	2
3	91286A109	High-Strength Grade 8 Steel Hex Head Screw	12

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		EA		8/2/2023	
		PROPRIETARY AND CONFIDENTIAL					
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.					
MATERIAL/FINISH:		COMMENTS:					
		REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING							



**FIRST**  
ROBOTICS  
COMPETITION



**SOLIDWORKS**  
Modeling Solutions Partner

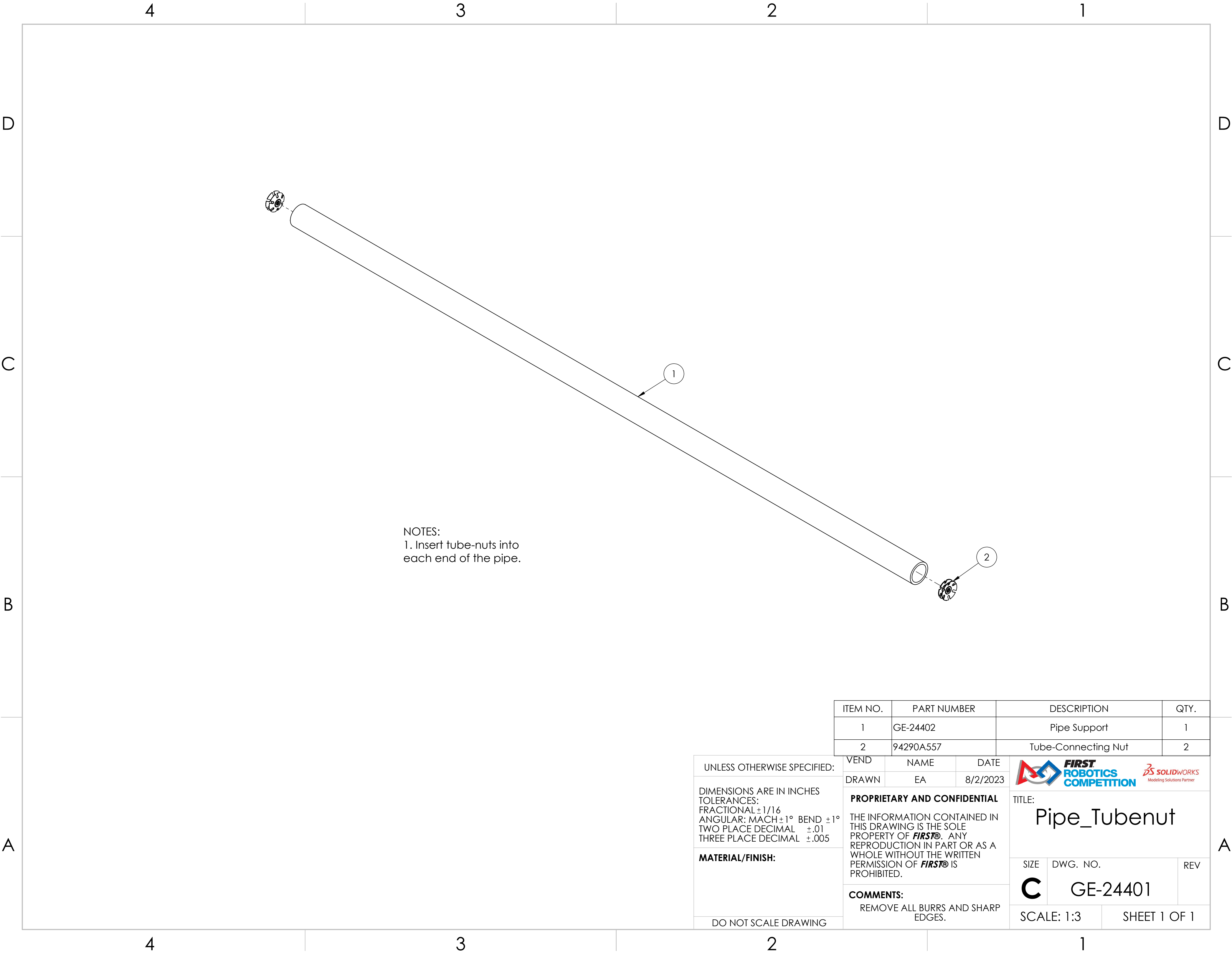
TITLE:		
Note Holder		
SIZE	DWG. NO.	REV
C	GE-24400	
SCALE: 1:8		SHEET 1 OF 1

4

3

2

1



NOTES:  
1. Insert tube-nuts into  
each end of the pipe.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-24402	Pipe Support	1
2	94290A557	Tube-Connecting Nut	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:

DO NOT SCALE DRAWING

VEND  
DRAWN



NAME  
EA

DATE  
8/2/2023

PROPRIETARY AND CONFIDENTIAL

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COMMENTS:  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
**Pipe\_Tubenut**

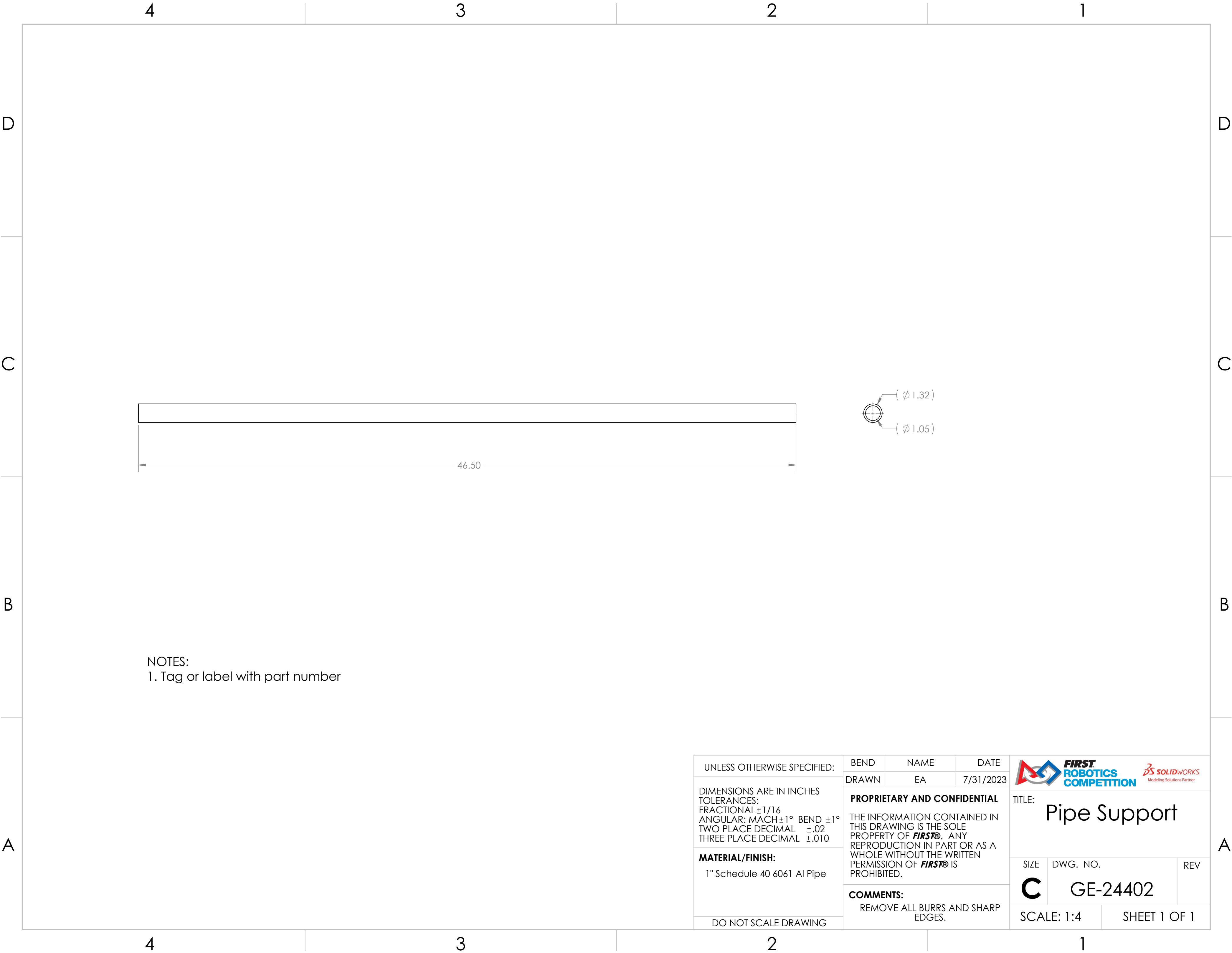
SIZE  
**C**

DWG. NO.  
**GE-24401**



REV

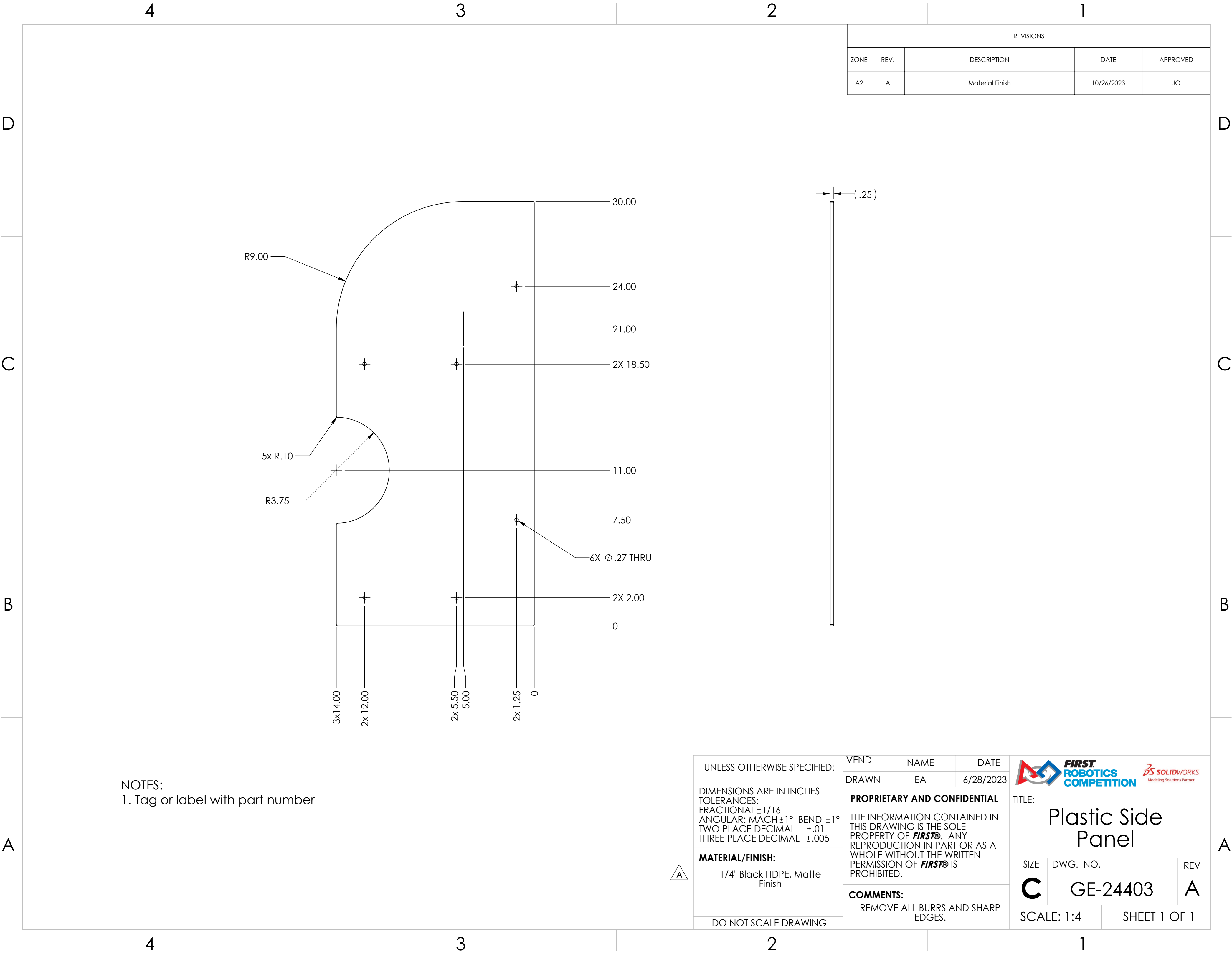
SCALE: 1:3

SHEET 1 OF 1



NOTES:  
1. Tag or label with part number

UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	<div><div></div><div>TITLE: Pipe Support</div></div>	
	DRAWN	EA	7/31/2023		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.010	PROPRIETARY AND CONFIDENTIAL			SIZE C	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				
MATERIAL/FINISH:  1" Schedule 40 6061 Al Pipe	COMMENTS:			DWG. NO.	
	REMOVE ALL BURRS AND SHARP EDGES.			GE-24402	
DO NOT SCALE DRAWING				REV	
				SCALE: 1:4	
			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:**  
1/4" Black HDPE, Matte Finish

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	EA	6/28/2023

**PROPRIETARY AND CONFIDENTIAL**

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**COMMENTS:**  
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:  
**Plastic Side Panel**

SIZE	DWG. NO.	REV
<b>C</b>	GE-24403	<b>A</b>

SCALE: 1:4 SHEET 1 OF 1