

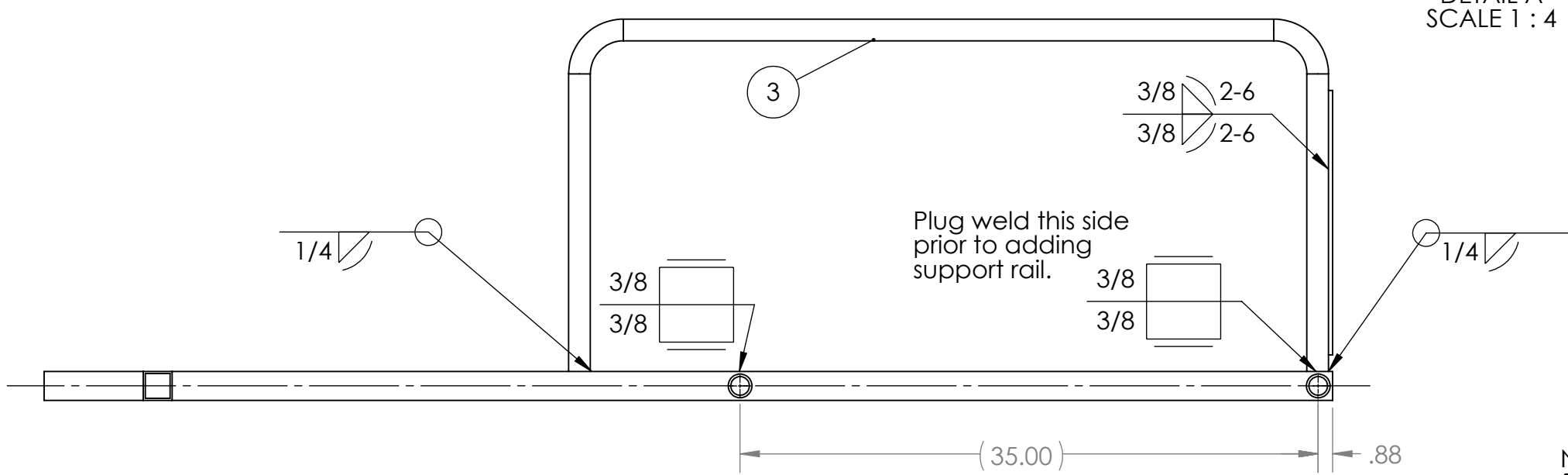
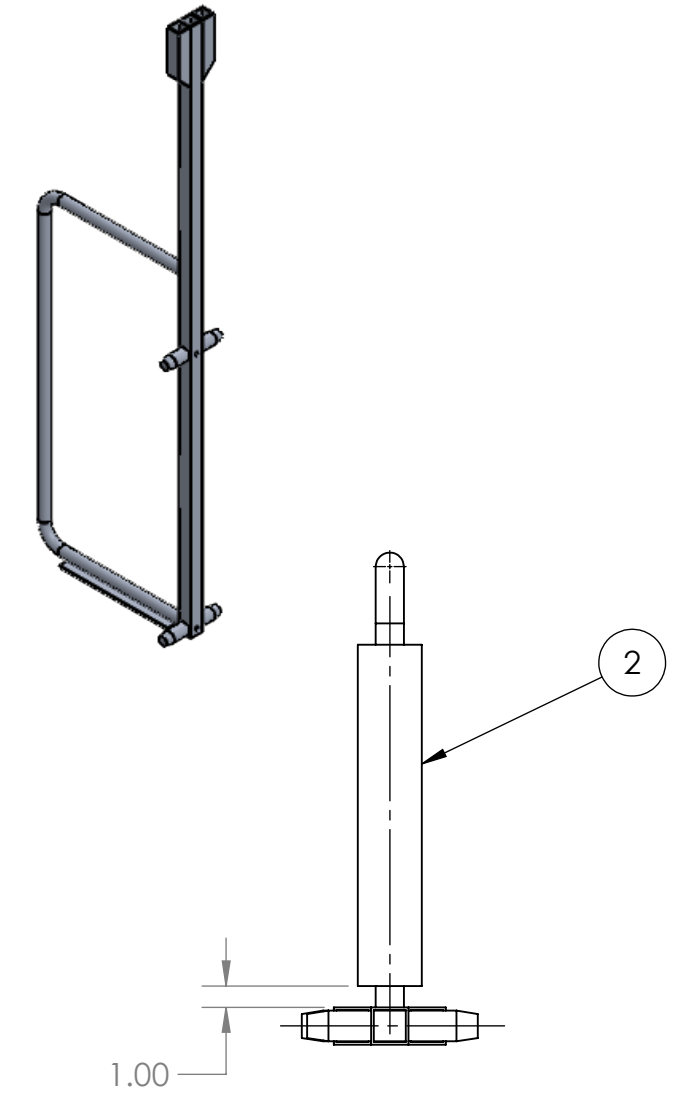
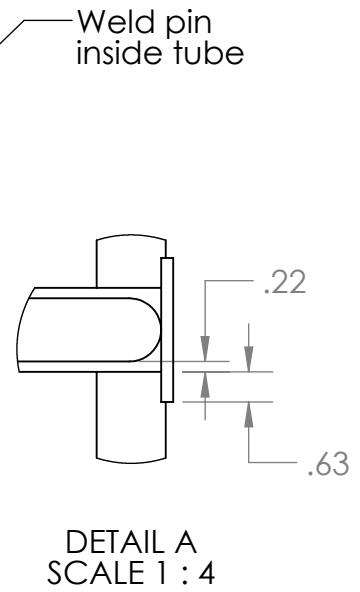
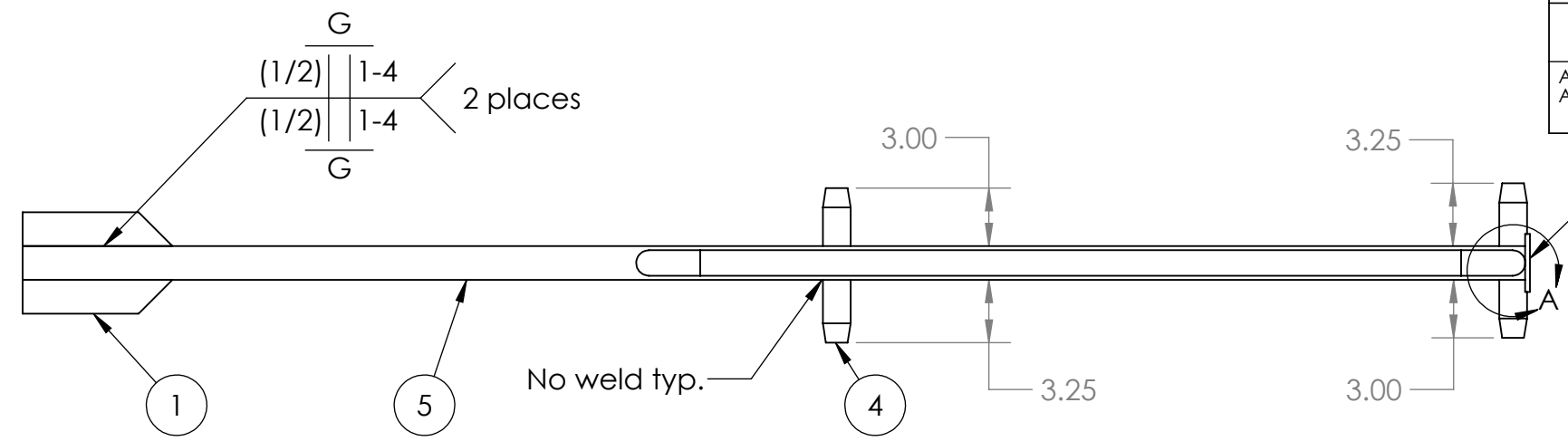
4

3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Redraw	5/14/2008	narosenberg
A4, 2-A2, 2-B4	B	Items renumbered, solid rod diameter updated, drawing reformatted.	3/19/2020	CPO



Notes:  
1. Remove all sharp edges

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00001-01	1 3/4" x 1 3/4" x 1/8" 6061 Aluminum Tubing	2
2	FE-00001-02	1/4" 6061 Aluminum Plate	1
3	FE-00001-03	1" Schedule 40 Aluminum Tube	1
4	FE-00001-04	1 7/16" Dia. 6061 Aluminum Solid Rod	2
5	FE-00001-05	1 3/4" x 1 3/4" x 1/8" 6061 Aluminum Tubing	1

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

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

TITLE:  
**Drivers Station Support**

SIZE **B** DWG. NO. **FE-00001** REV **B**

SCALE: 1:9 WEIGHT: SHEET 1 OF 3

4

3

2

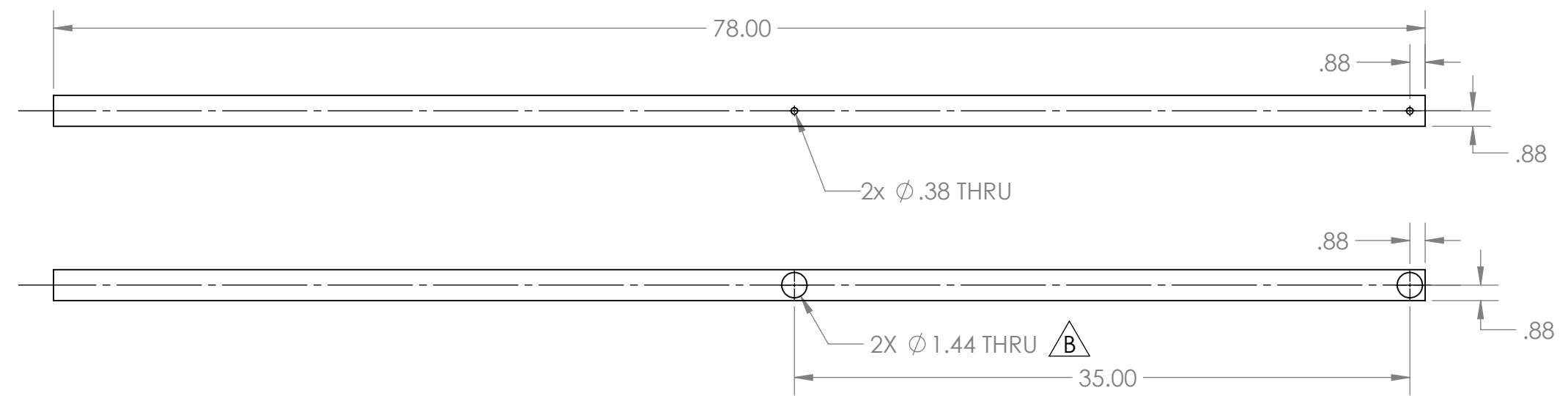
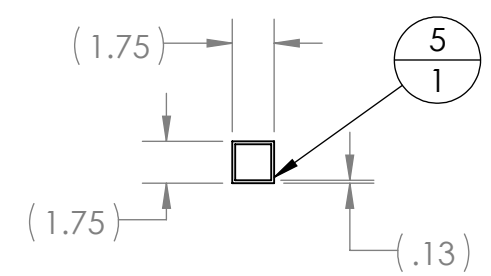
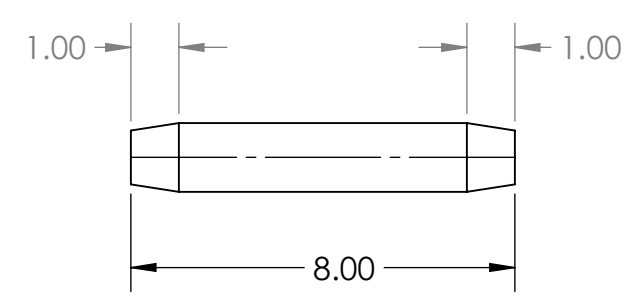
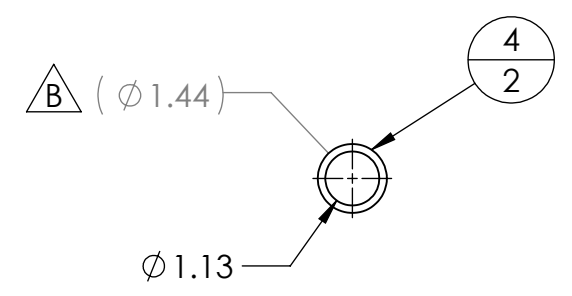
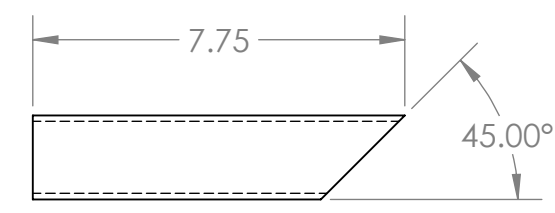
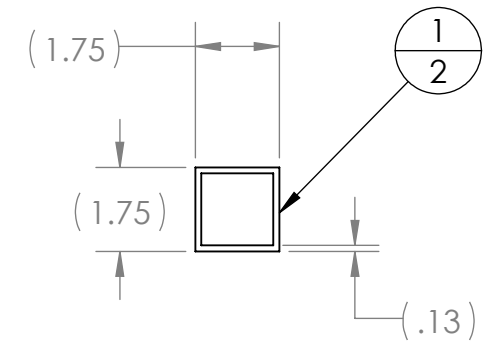
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4

3

2

1



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



TITLE:  
**Drivers Station Support**

SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00001</b>	<b>B</b>
SCALE: 1:2	WEIGHT:	SHEET 2 OF 3

4

3

2

1

B

B

A

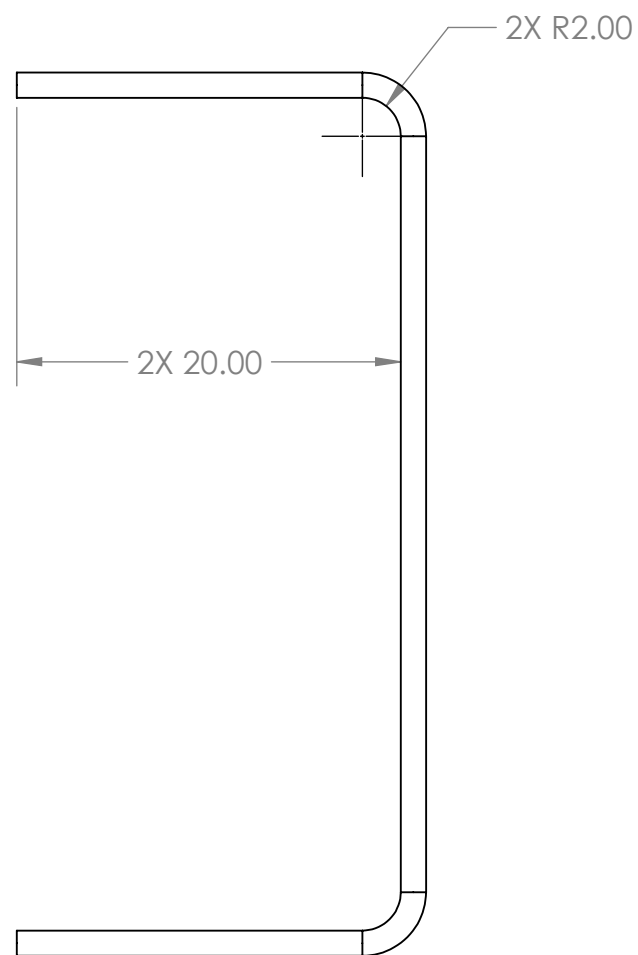
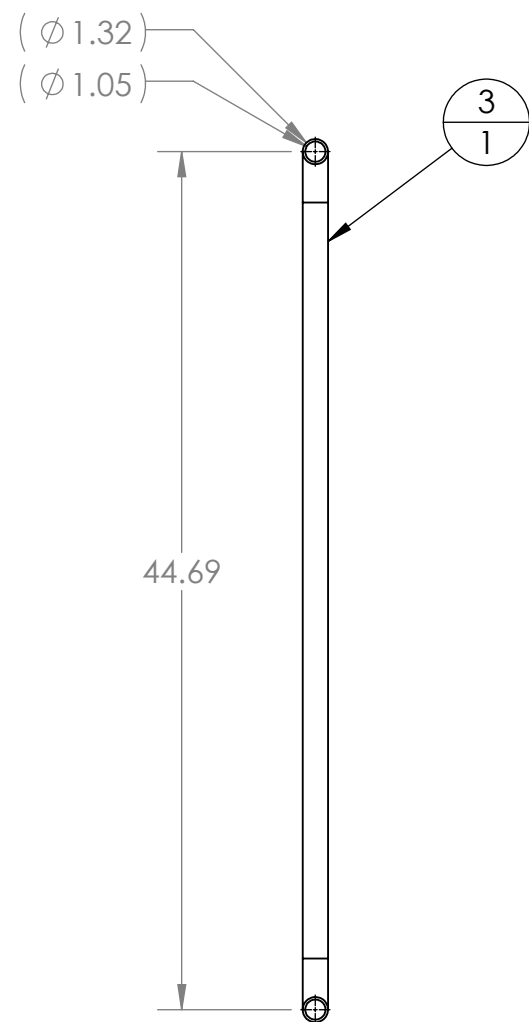
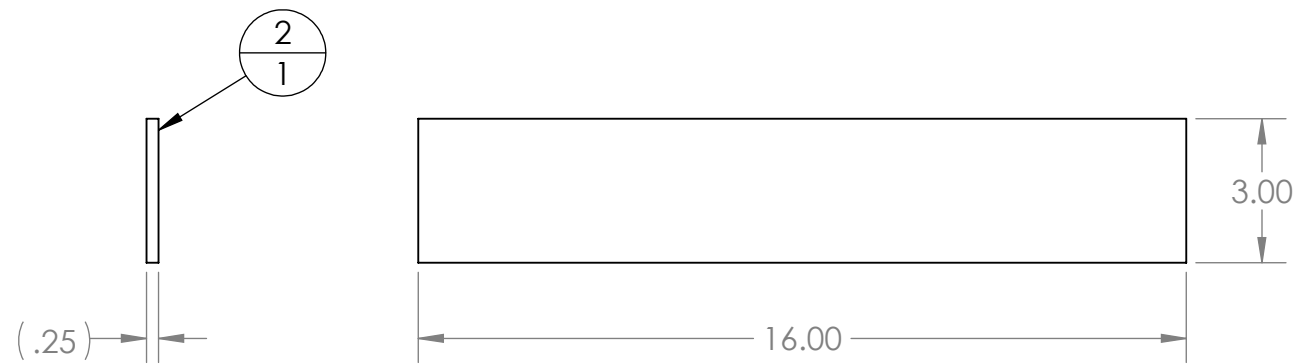
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4



3

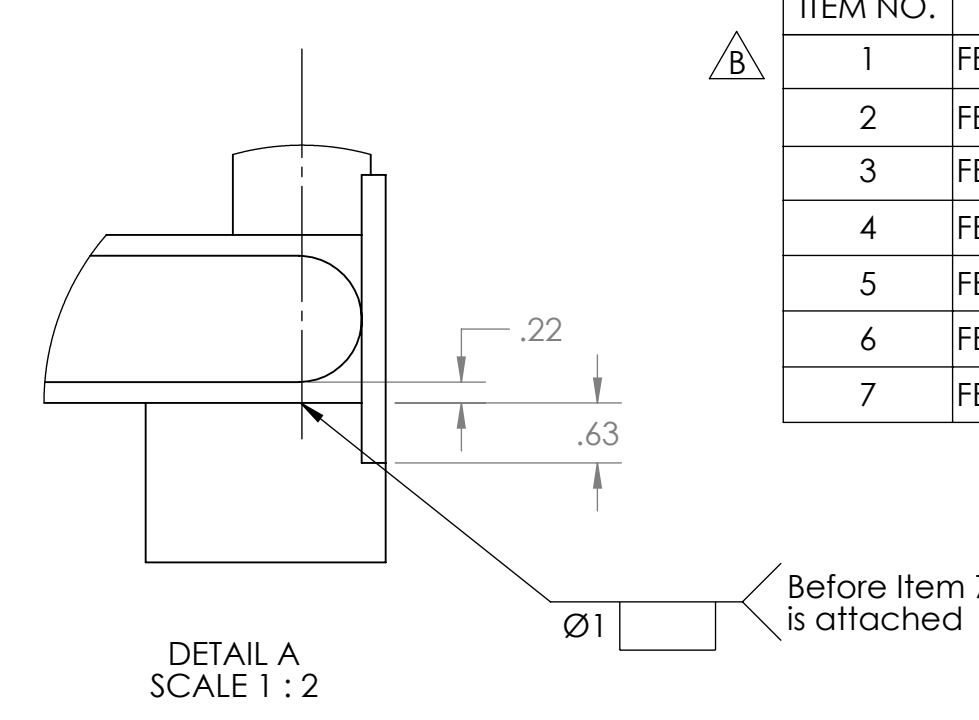
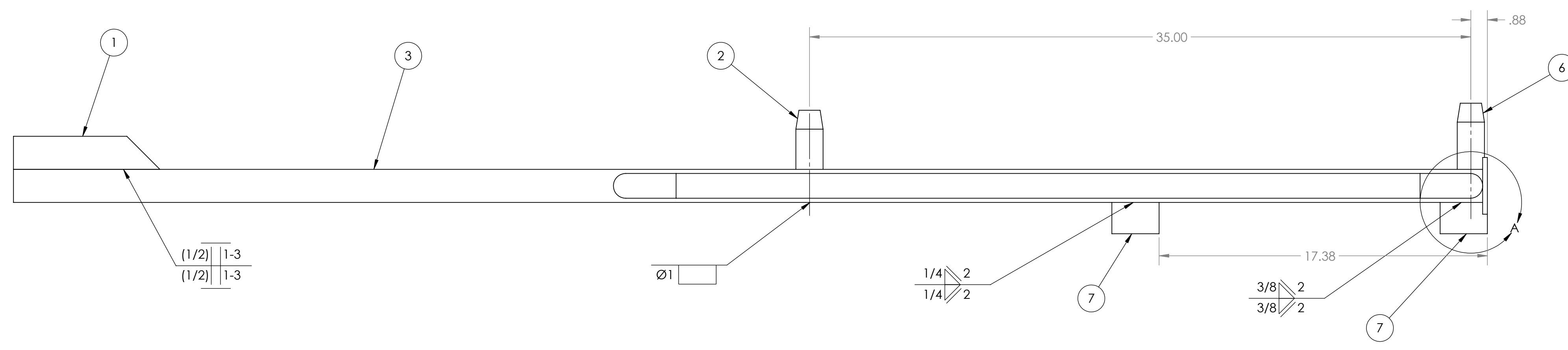
2

1



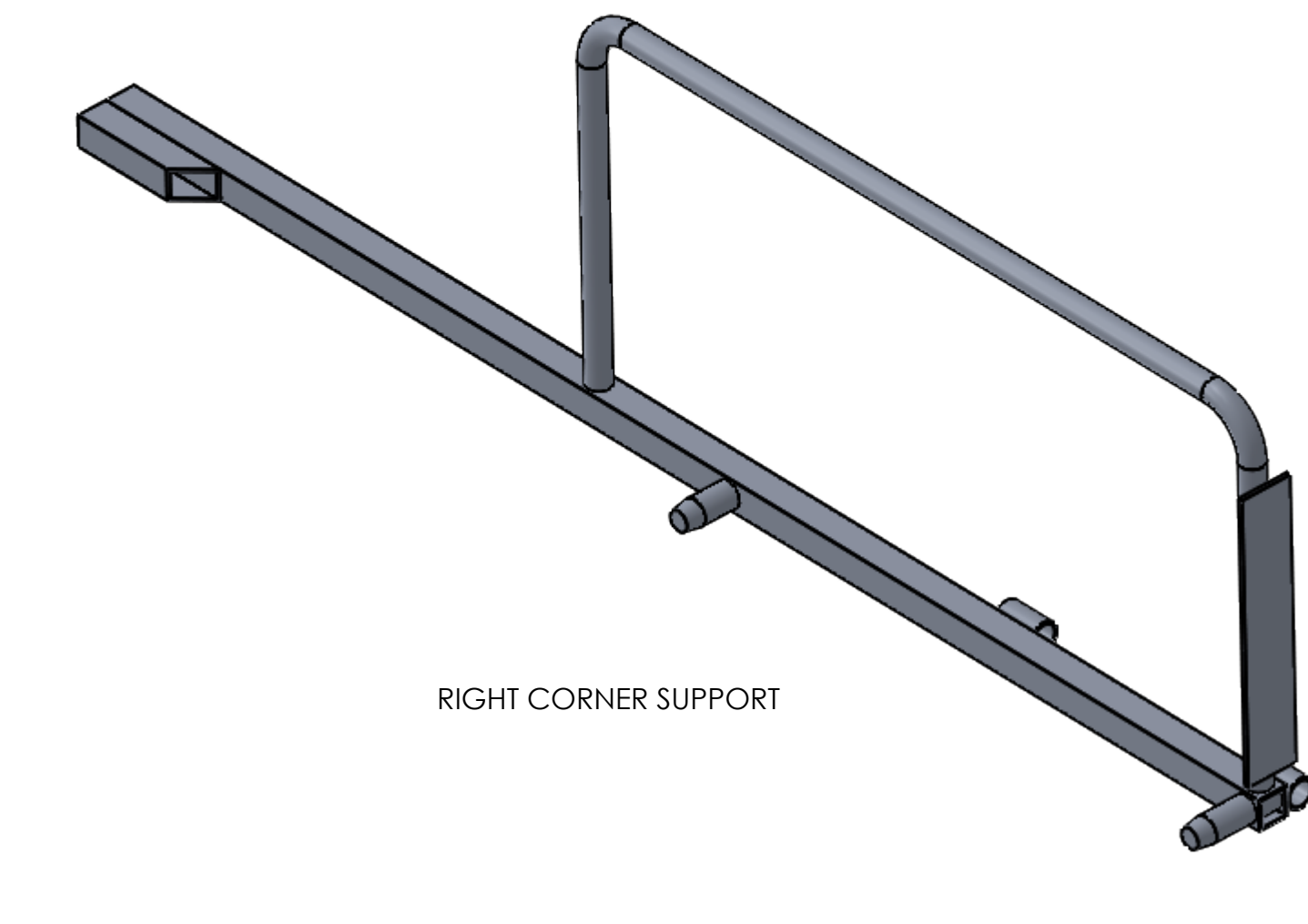
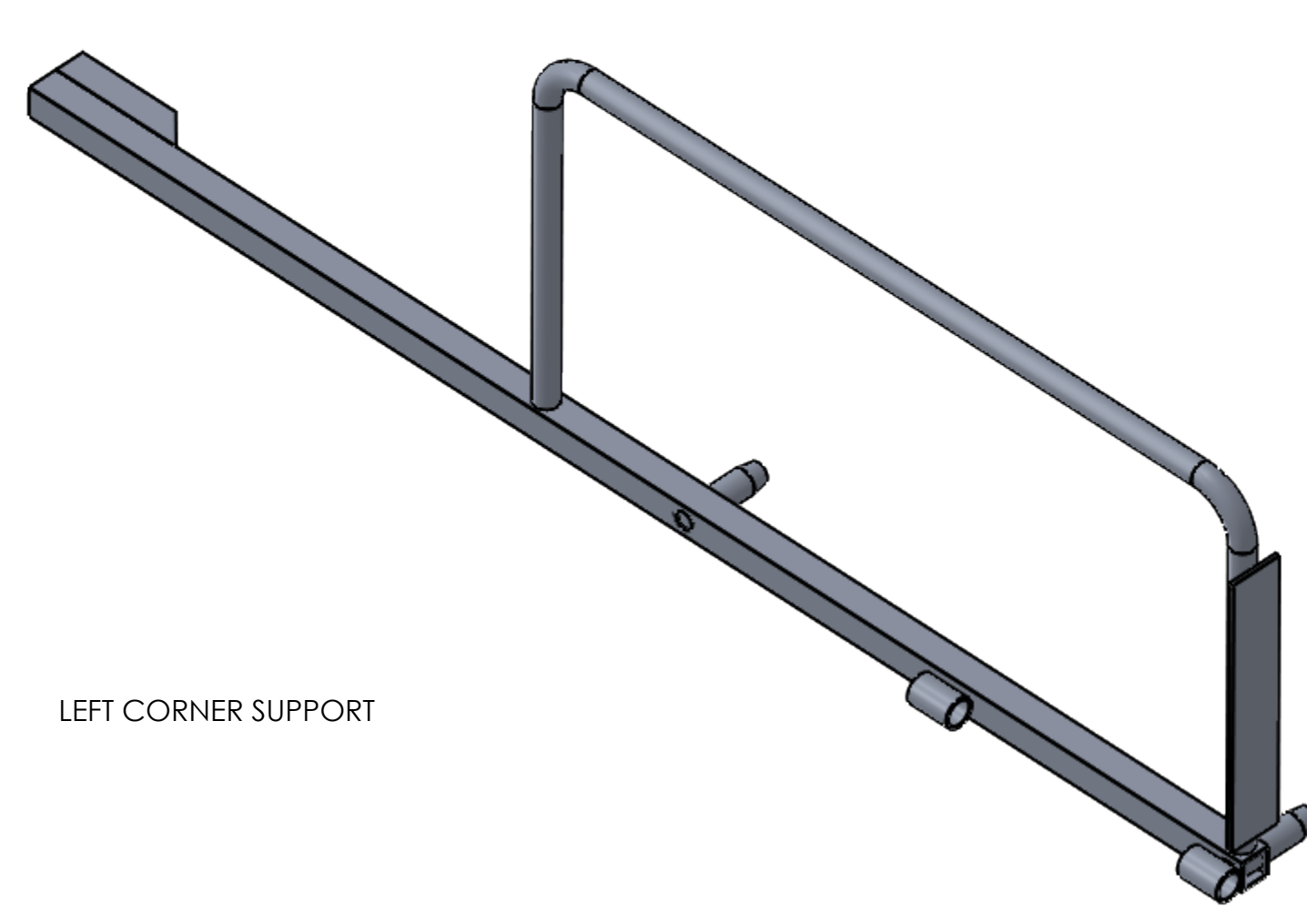
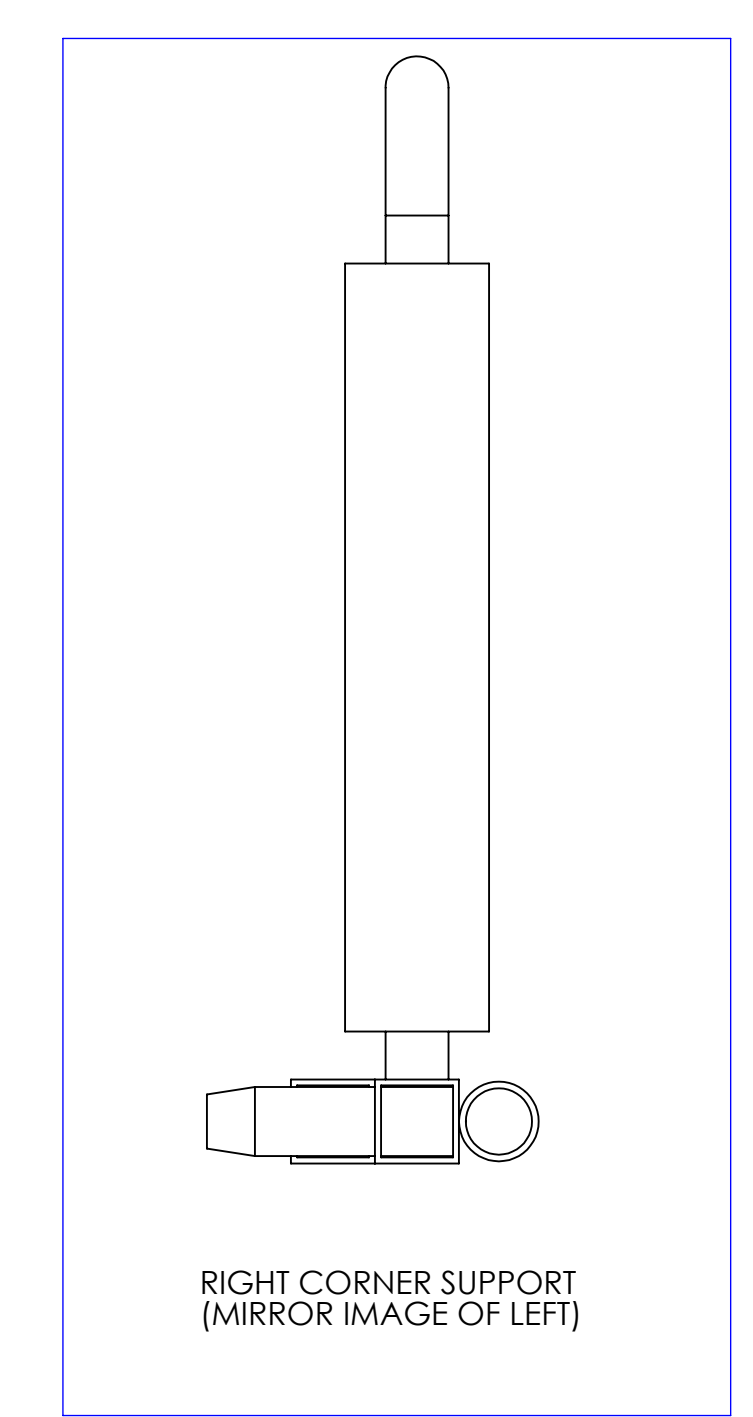
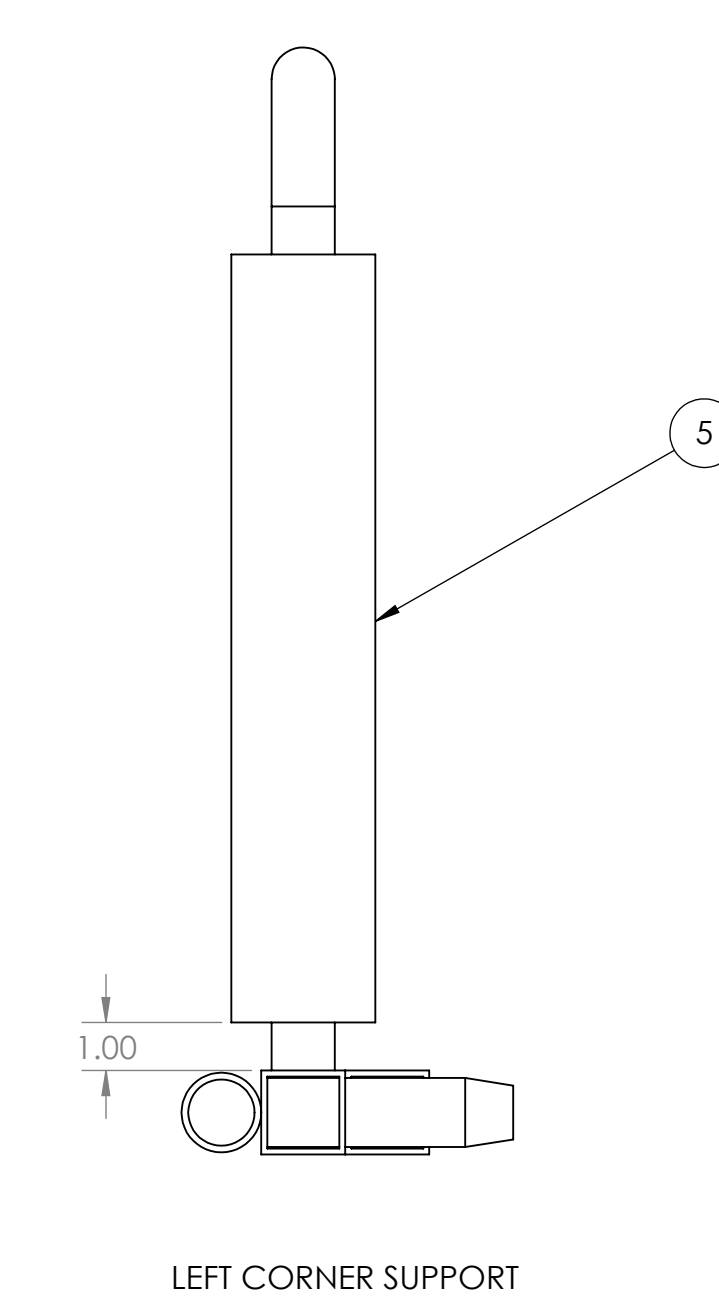
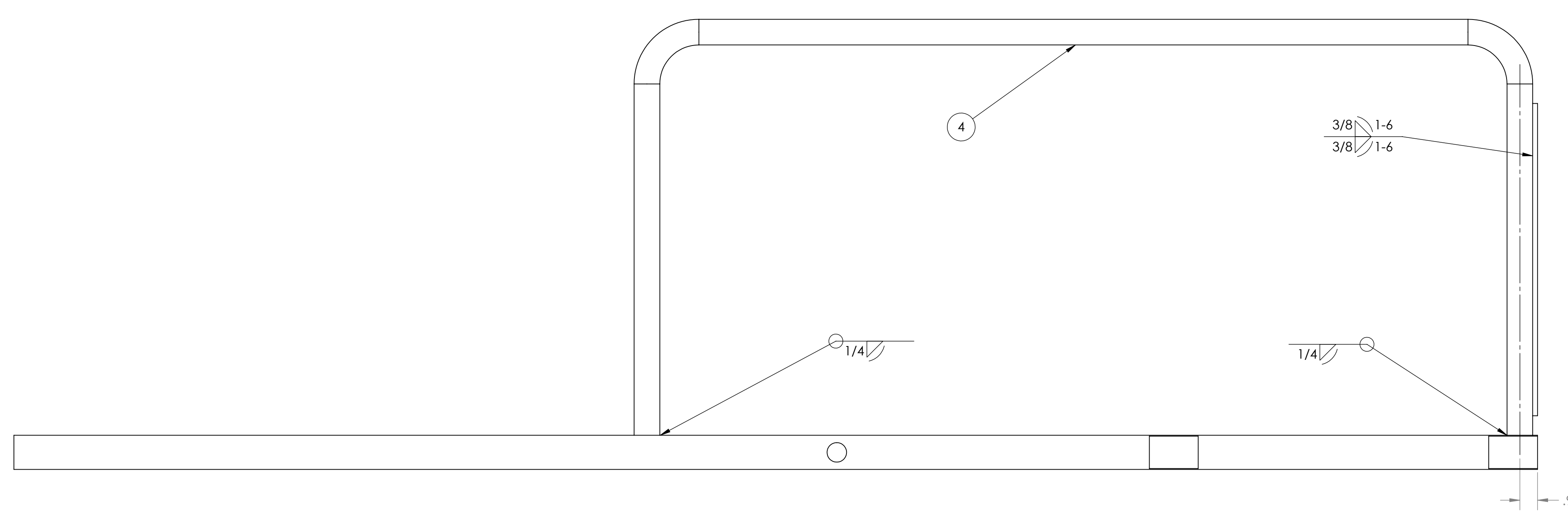
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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN		
		INTERPRET GEOMETRIC TOLERANCING PER:	CHECKED		SIZE <b>B</b> DWG. NO. <b>FE-00001</b> REV <b>B</b>
		MATERIAL	ENG APPR.		
NEXT ASSY	USED ON	FINISH	MFG APPR.		SHEET 3 OF 3
APPLICATION		DO NOT SCALE DRAWING	Q.A.	COMMENTS:	



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	1	Redraw	5/19/2008	narosenberg
D2	B	Items renumbered, drawing reformatted	3/19/2020	CPO

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00002-01	1 3/4" x 1 3/4" x 1/8" 6061 Aluminum Tubing	1
2	FE-00002-02	1 7/16" Dia. 6061 Aluminum Solid Rod	1
3	FE-00002-03	1 3/4" x 1 3/4" x 1/8" 6061 Aluminum Tubing	1
4	FE-00002-04	1" Schedule 40 Aluminum Tube	1
5	FE-00002-05	3" x 1/4" 6061 Aluminum Bar	1
6	FE-00002-06	1 7/16" Dia. 6061 Aluminum Solid Rod	1
7	FE-00002-07	1 1/4" Schedule 40 Aluminum Tube	2



- Notes:
1. Left corner support shown, right is same components, mirror image assy
  2. Remove all sharp edges

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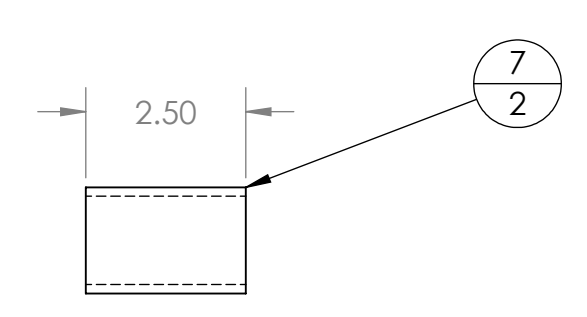
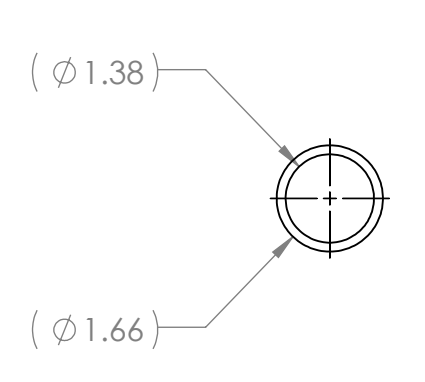
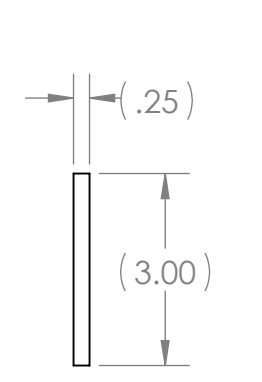
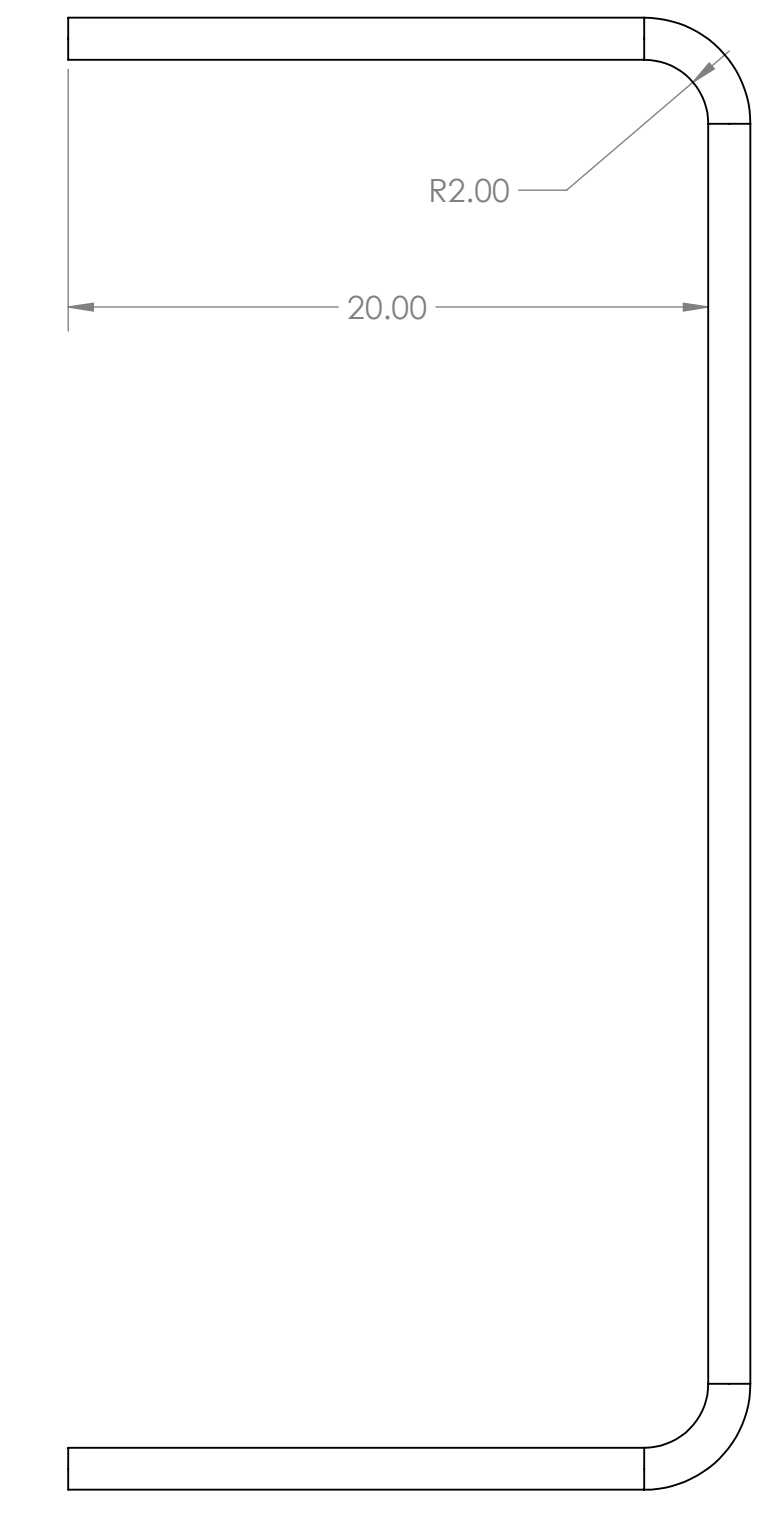
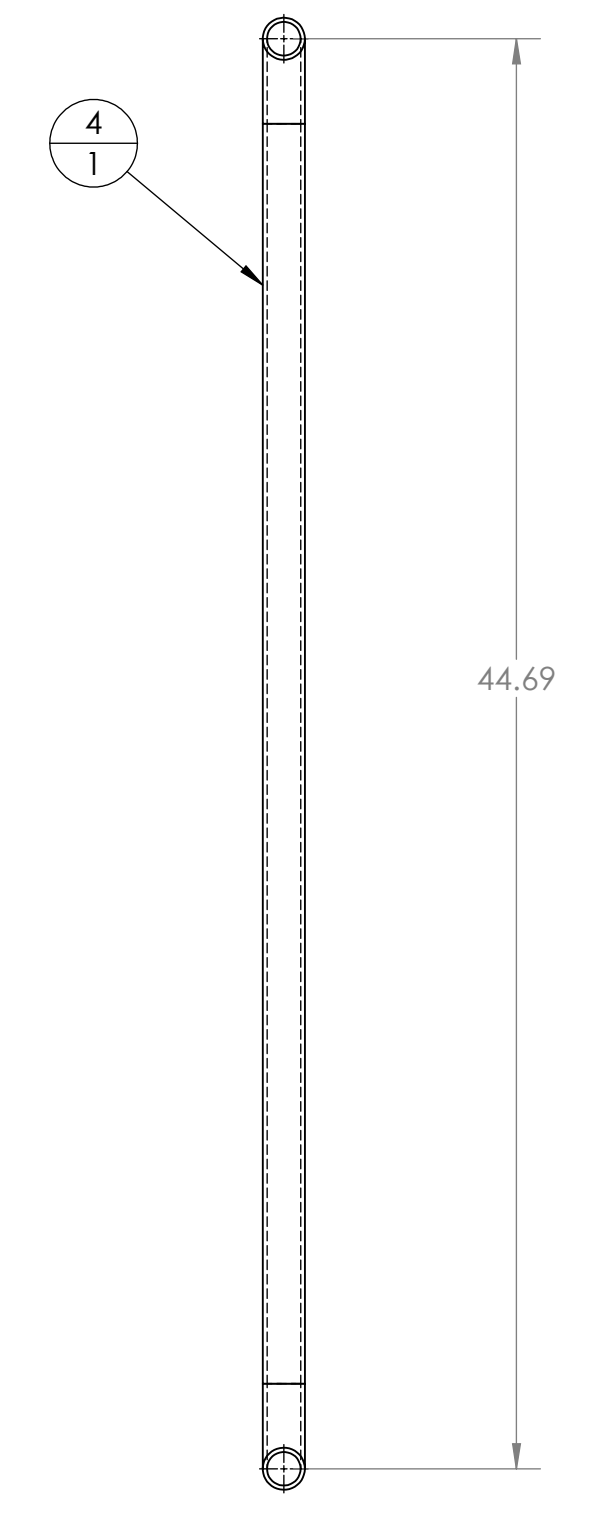
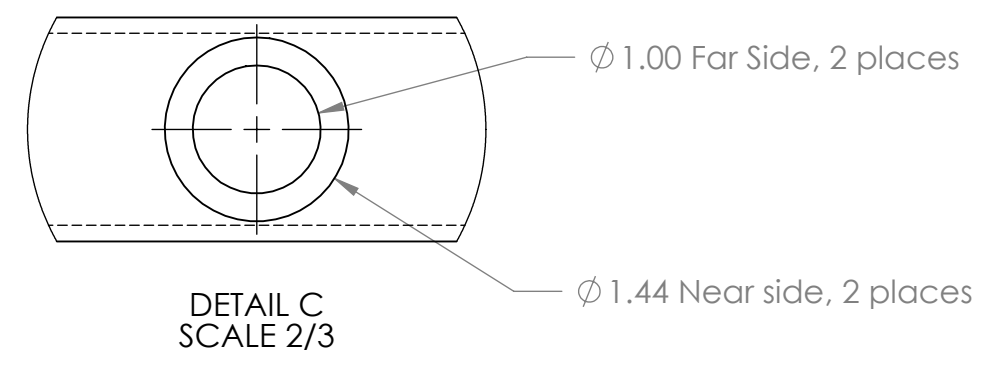
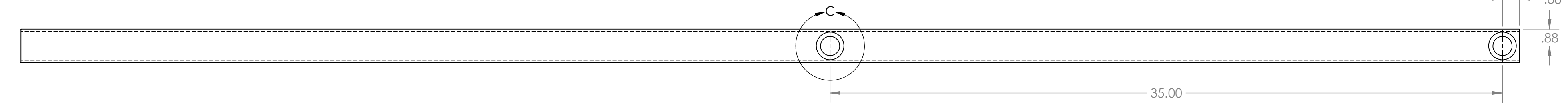
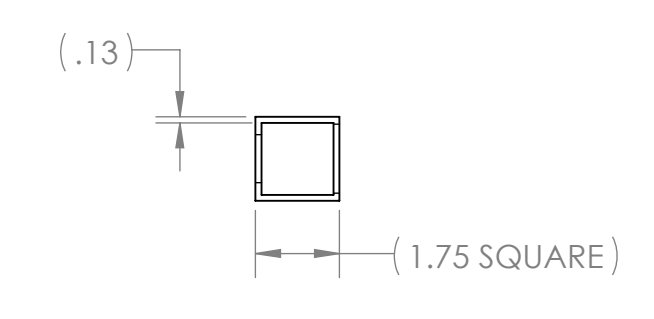
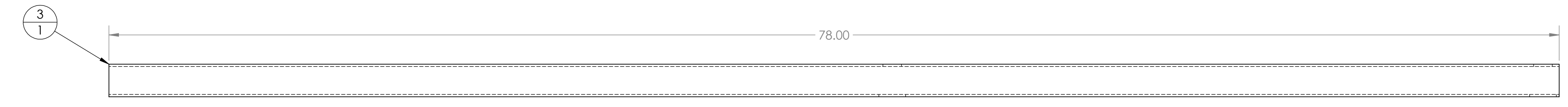
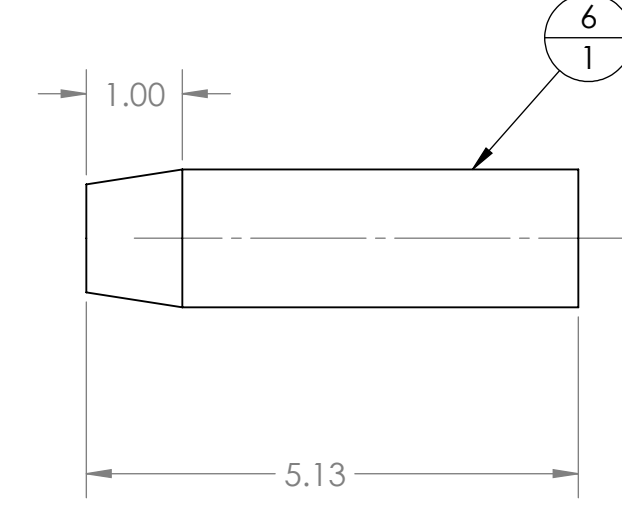
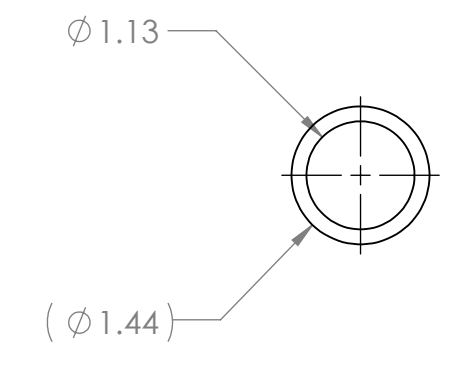
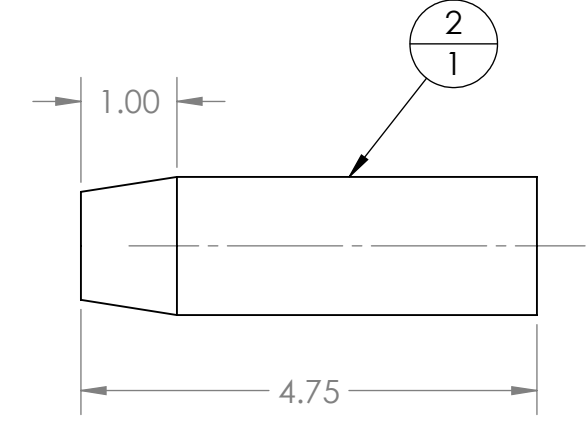
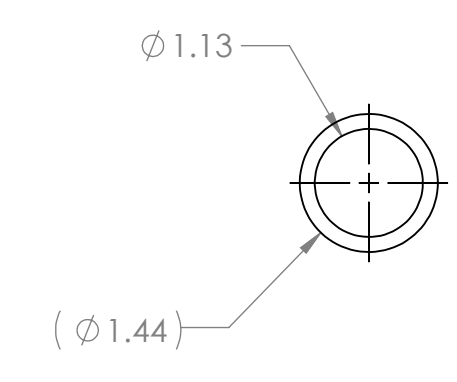
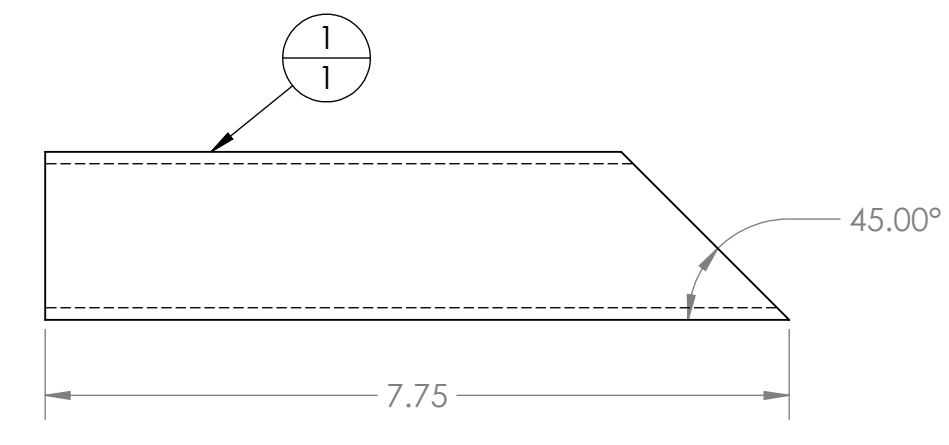
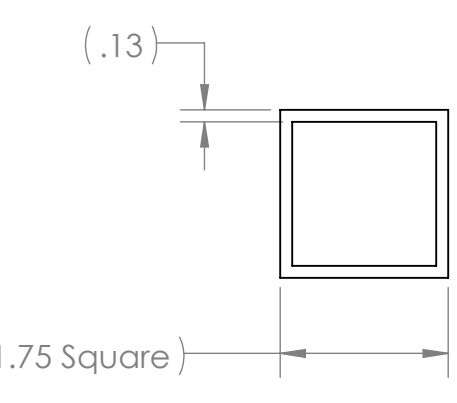
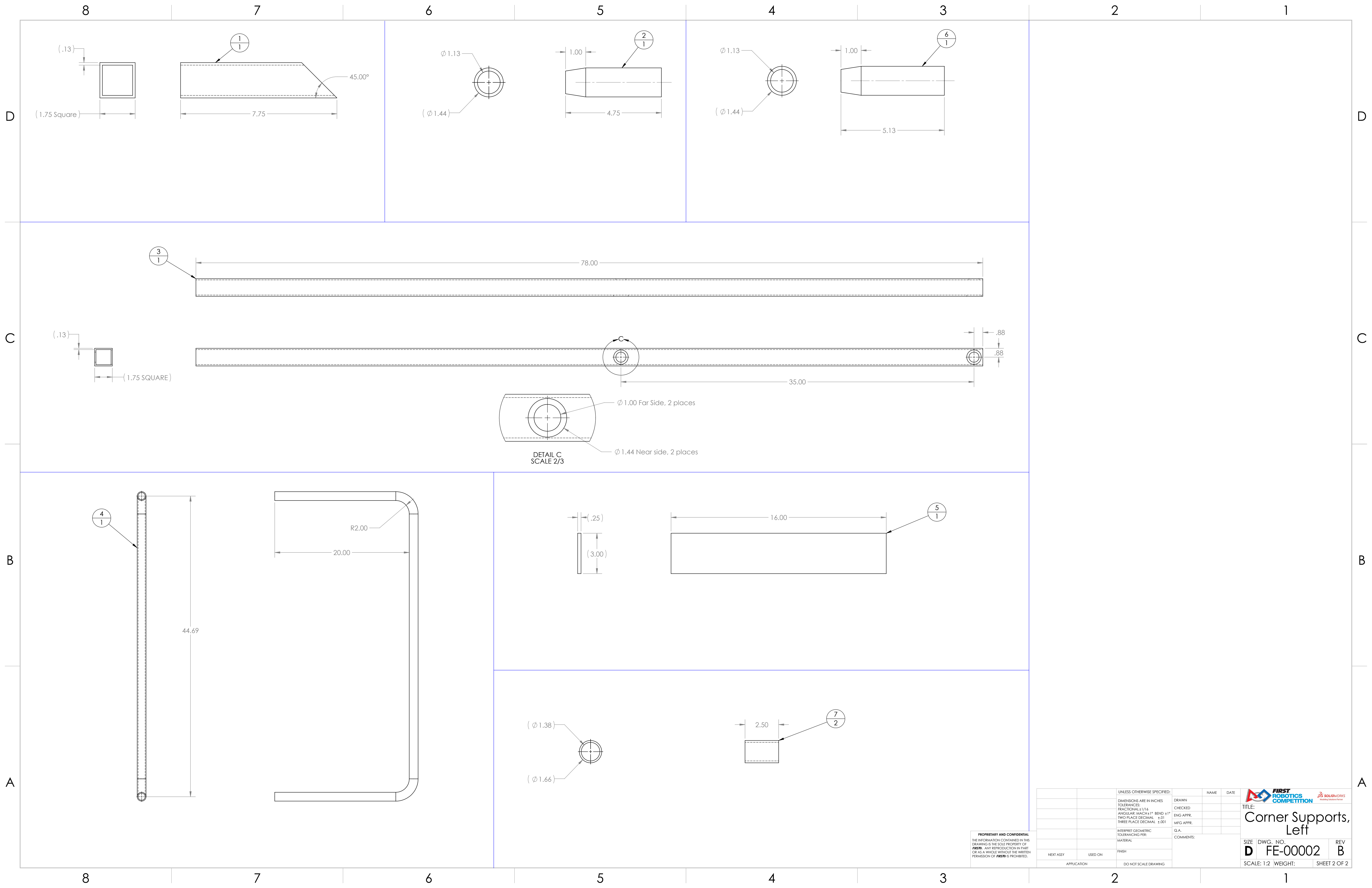
UNLESS OTHERWISE SPECIFIED:		NAME		DATE
DIMENSIONS ARE IN INCHES	DRAWN			
TOLERANCES:	CHECKED			
FRACTIONAL: 1/16	ENG APPR.			
ANGULAR: MACH ±1° BEND ±1°	MEG APPR.			
TWO PLACE DECIMAL ±.01	Q.A.			
THREE PLACE DECIMAL ±.001	COMMENTS:			
INTERPRET GEOMETRIC TOLERANCING PER:				
MATERIAL:				
FINISH:	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

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

TITLE: **Corner Supports, Left**

SIZE DWG. NO. REV: **D FE-00002 B**

SCALE: 1:4 WEIGHT: SHEET 1 OF 2



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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DRAWN			
CHECKED			
ENG APPR.			
MFG APPR.			
INTERPRET GEOMETRIC TOLERANCING PER:		Q.A. COMMENTS:	
MATERIAL:			
FINISH:			
APPLICATION	DO NOT SCALE DRAWING		

**FIRST ROBOTICS COMPETITION** **SOLIDWORKS**  
 TITLE: **Corner Supports, Left**  
 SIZE DWG. NO. REV: **D FE-00002 B**  
 SCALE: 1:2 WEIGHT: SHEET 2 OF 2

4

3

2

1

B

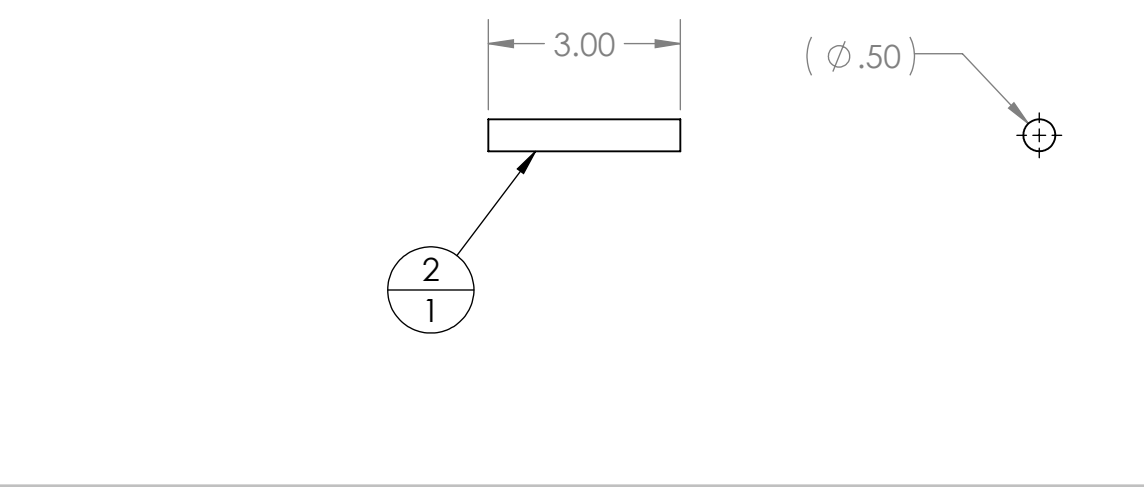
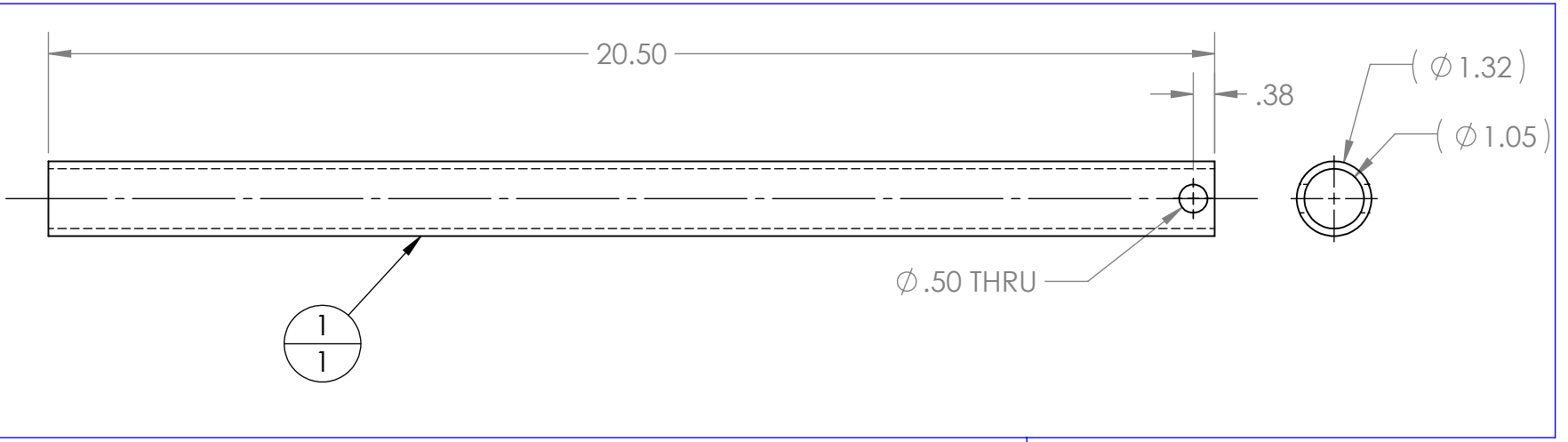
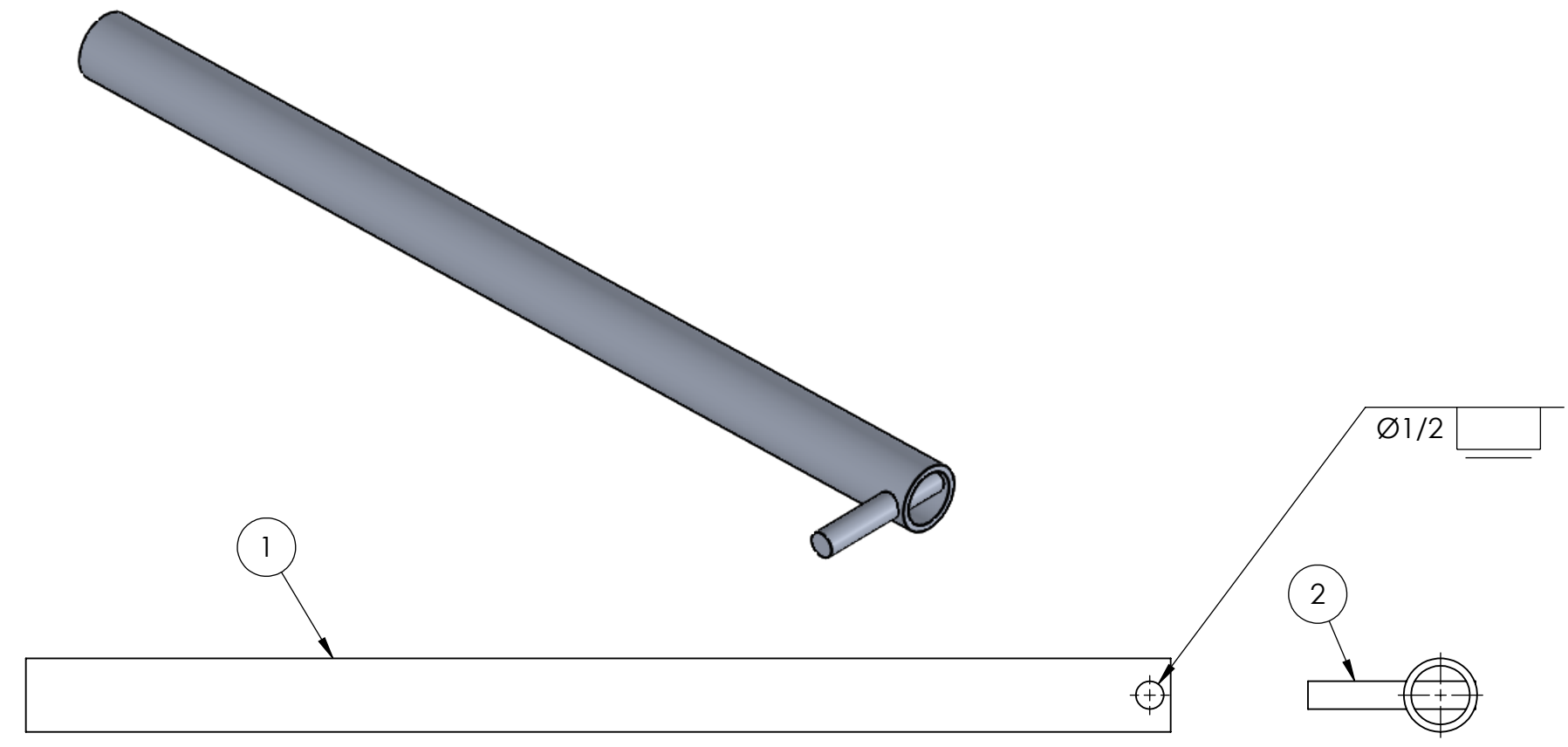
B

A

A

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Redraw	5/20/2008	narosenberg
	B	Drawing reformatted	3/19/2020	CPO

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00003-01	1" Schedule 40 6061 Aluminum Tube	1
2	FE-00003-02	1/2" 6061 Aluminum Rod	1



Notes:  
1. Remove all sharp edges

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

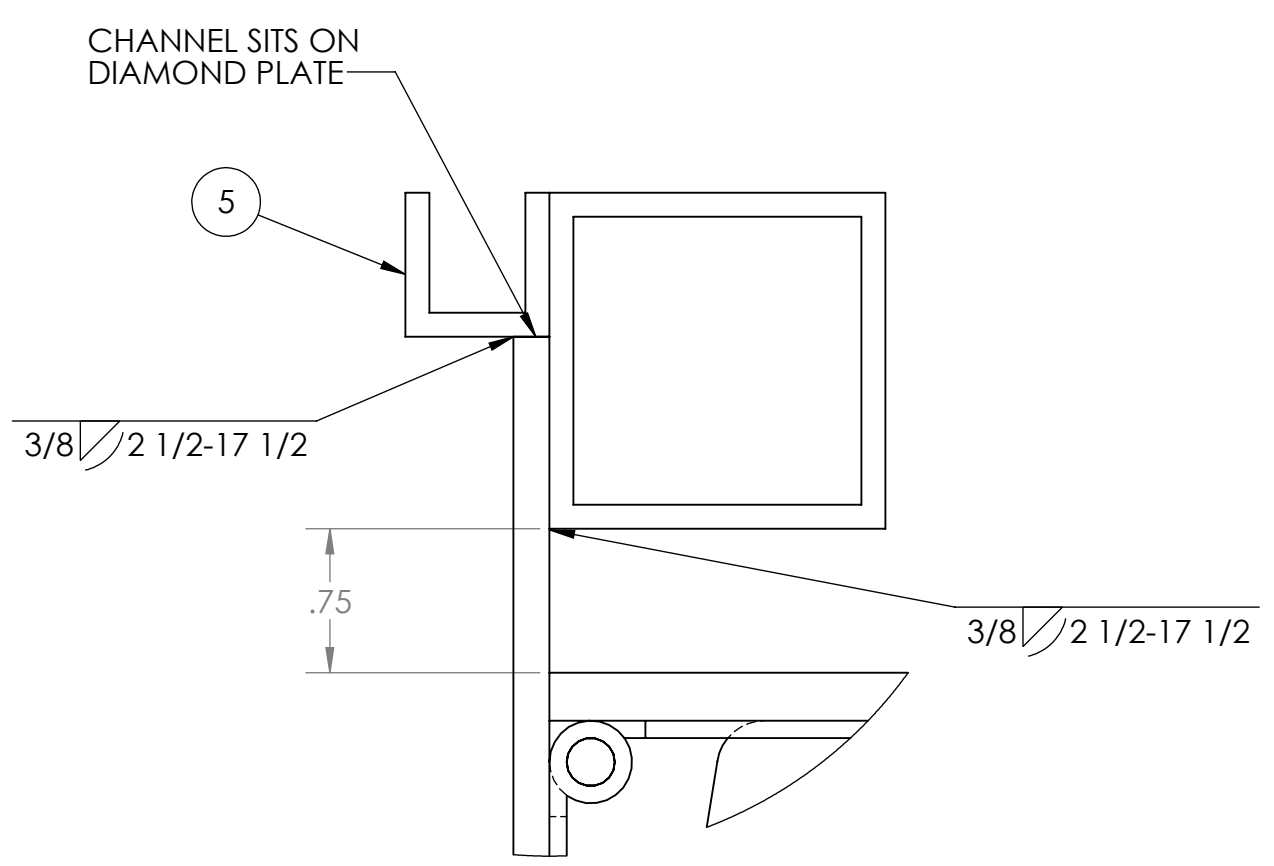
**FIRST ROBOTICS COMPETITION** **SOLIDWORKS** Modeling Solutions Partner

TITLE:  
**Rail Pin Assy**

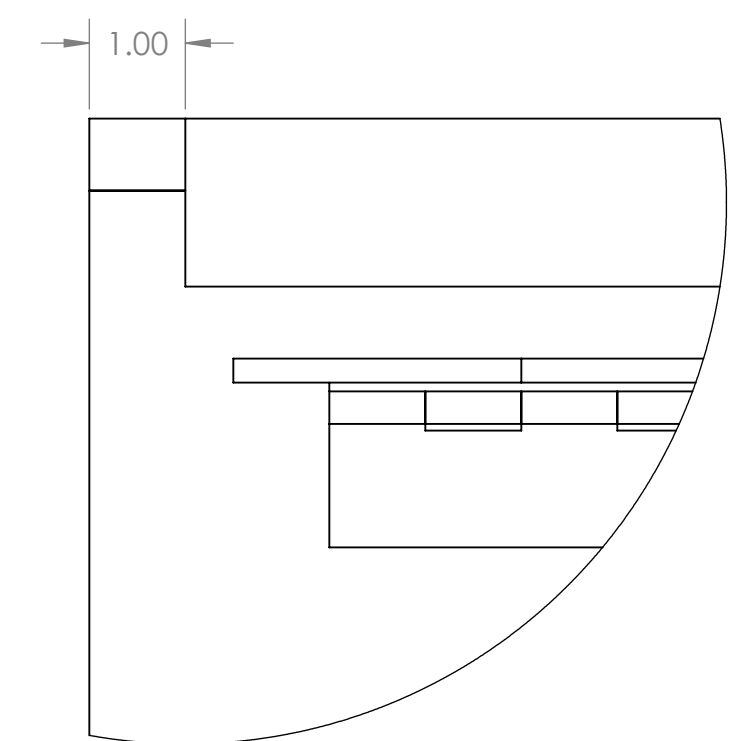
SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00003</b>	<b>B</b>

SCALE: 1:3 WEIGHT: SHEET 1 OF 1





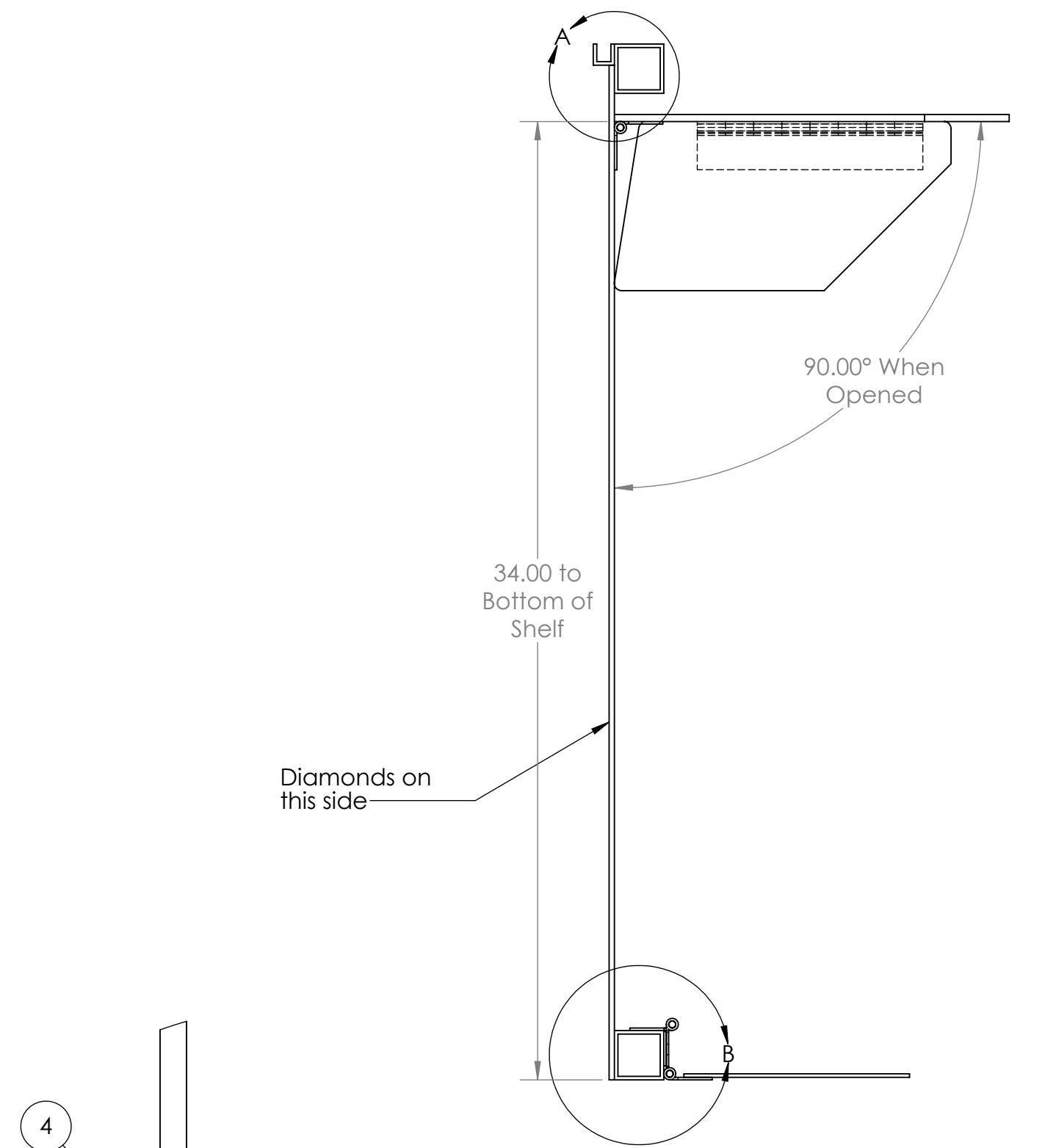
DETAIL A  
SCALE 1 : 1



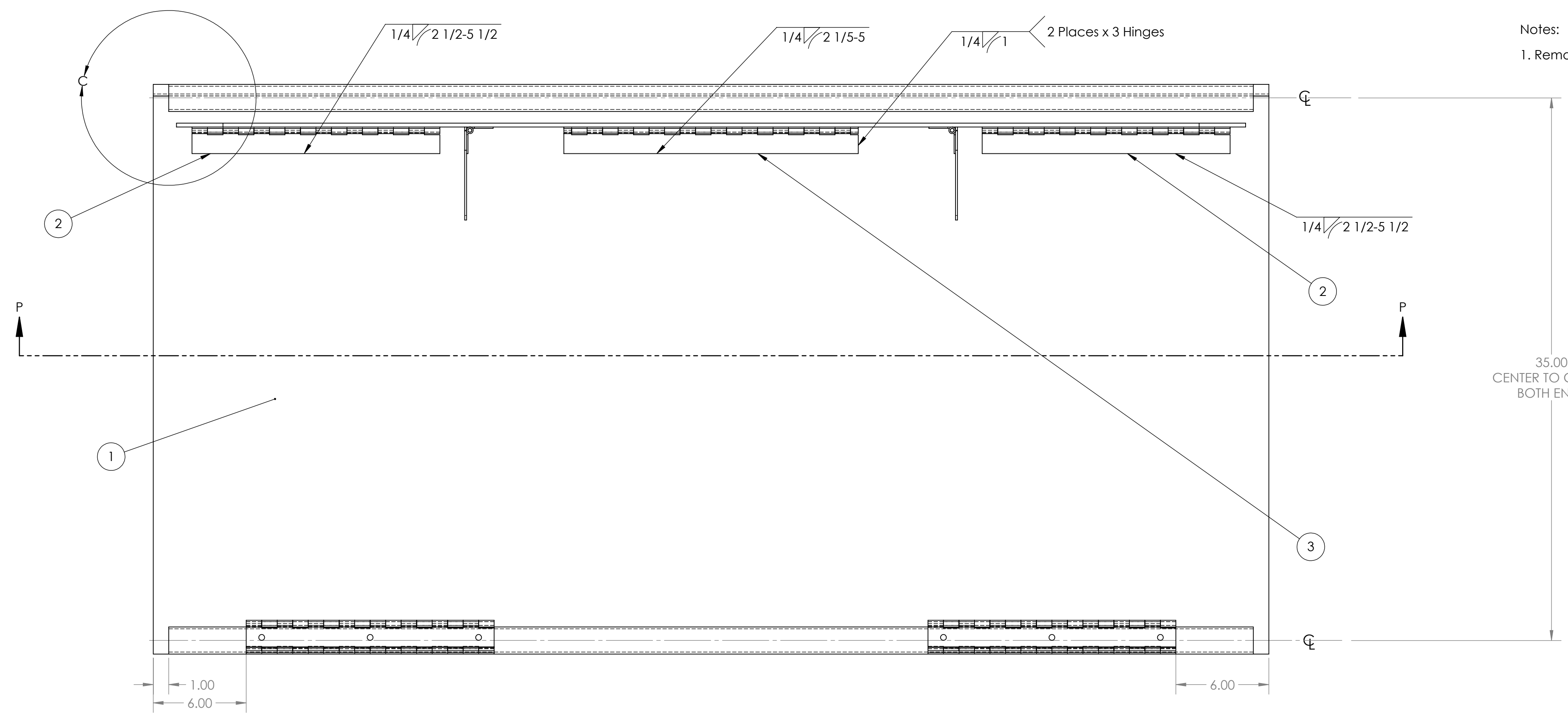
DETAIL C  
SCALE 1 : 2

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	1	Redraw	5/20/2008	narosenberg
2-D7	2	Weld size changed for consistency, drawing reformatted.	3/19/2020	CPO

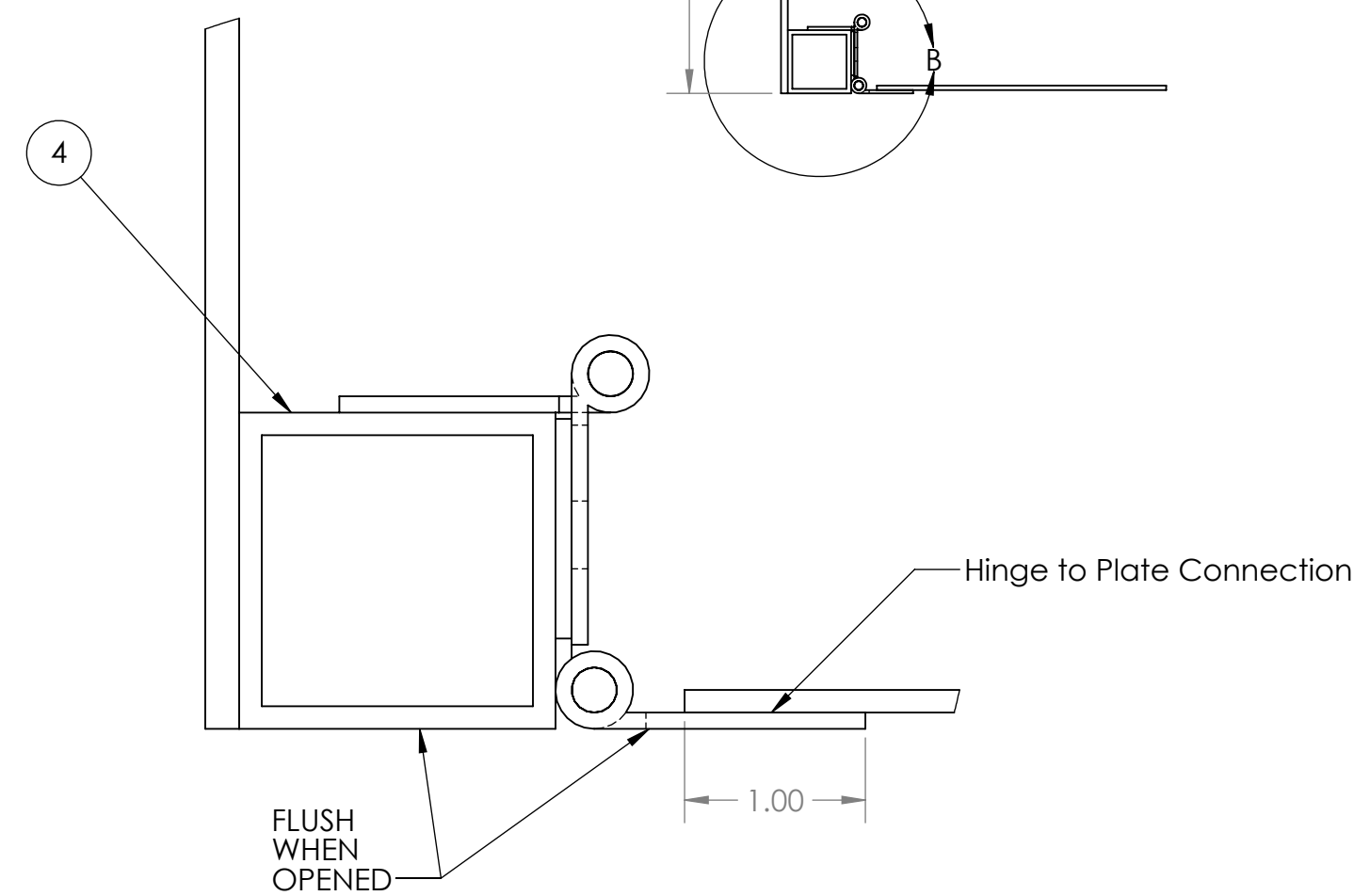
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00004-01	3/16 Aluminum Diamond Plate	1
2	FE-00004-02	Hinge, Aluminum 3" x .09", 1/4" Pin	2
3	FE-00004-03	Hinge, Aluminum 3" x .09", 1/4" Pin	1
4	FE-00004-04	1 3/4" x 1 3/4" x 1/8" Square 6061 Aluminum Tubing	2
5	FE-00004-05	3/4" x 3/4" x 1/8" 6061 Aluminum 'U' Channel	1
6	FE-00004-06	1/4" 6061 Aluminum Plate	1
7	FE-00004-07	Hinge, Aluminum 3" x .09", 1/4" Pin (2 Pieces Welded)	2
8	FE-00004-08	Hinge, Aluminum 3" x .09", 1/4" Pin	2
9	FE-00004-09	1/8" 6061 Aluminum Plate	2
10	FE-00004-10	1/8" 6061 Aluminum Plate	2



DETAIL B  
SCALE 1 : 1



Notes:  
1. Remove all sharp edges and burrs



DETAIL B  
SCALE 1 : 1

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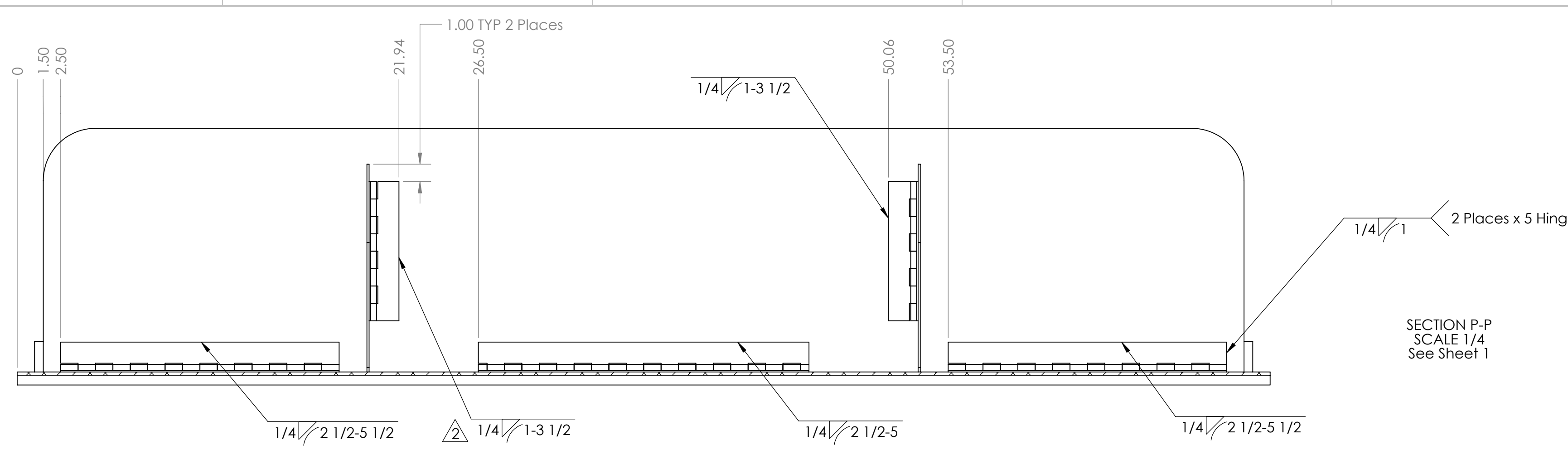
UNLESS OTHERWISE SPECIFIED:		DRAWN		NAME		DATE	
DIMENSIONS ARE IN INCHES		DRAWN					
TOLERANCES:		CHECKED					
FRACTIONAL: 1/16		ENG APPR.					
ANGULAR: MACH ±1° BEND ±1°		MEG APPR.					
TWO PLACE DECIMAL ±.01		Q.A.					
THREE PLACE DECIMAL ±.001		COMMENTS:					
INTERPRET GEOMETRIC TOLERANCING PER:	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

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

TITLE: **End Panel**

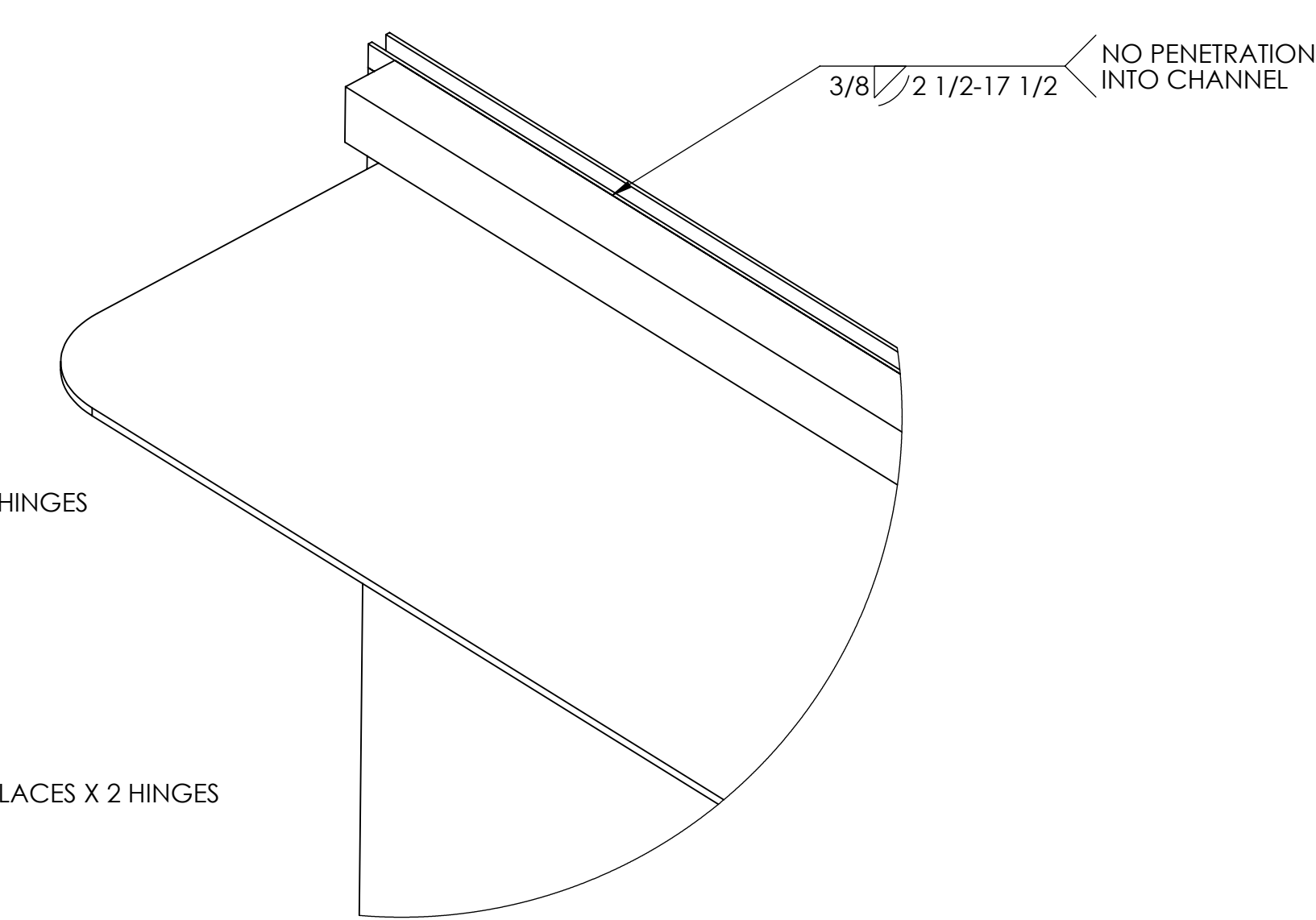
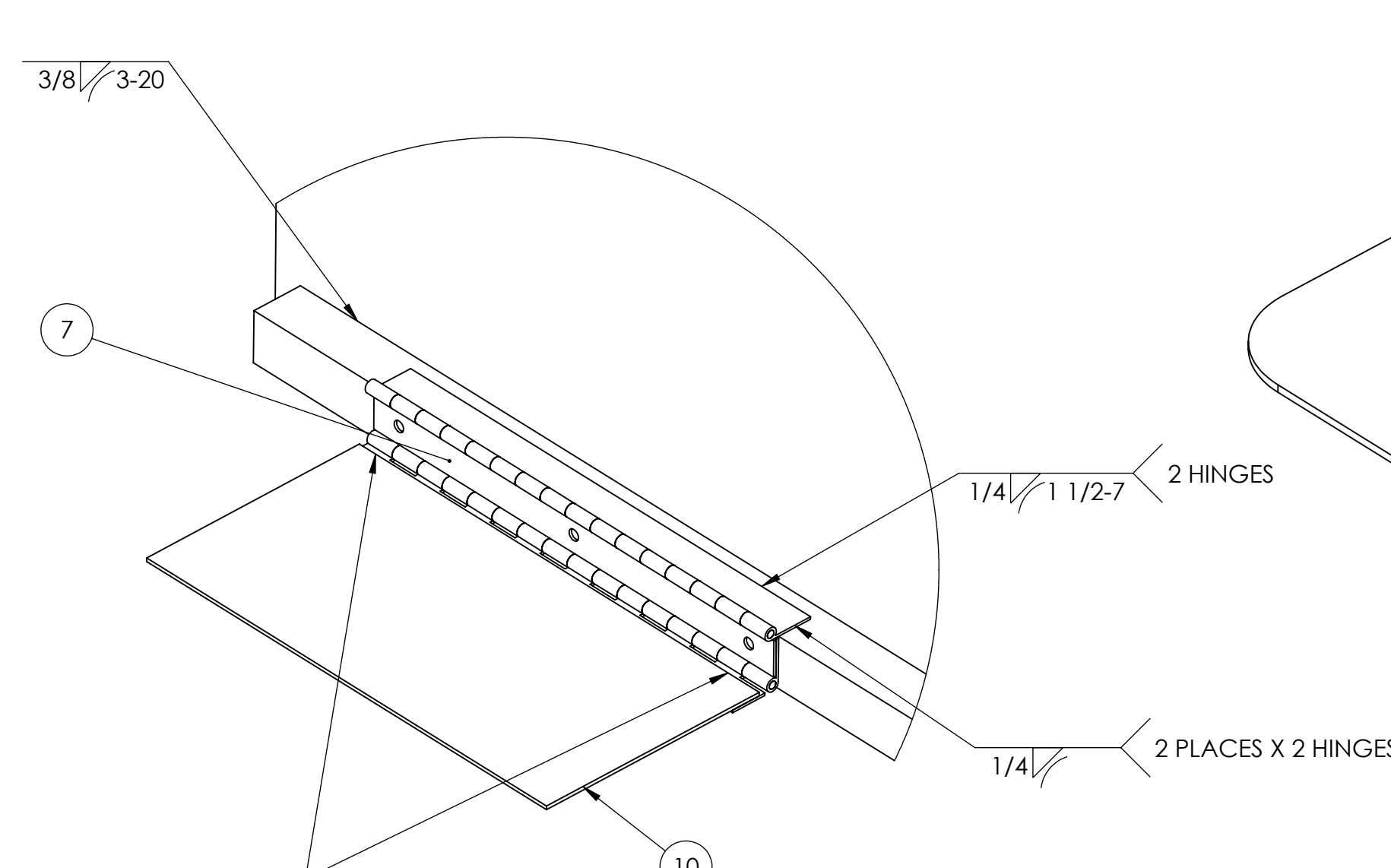
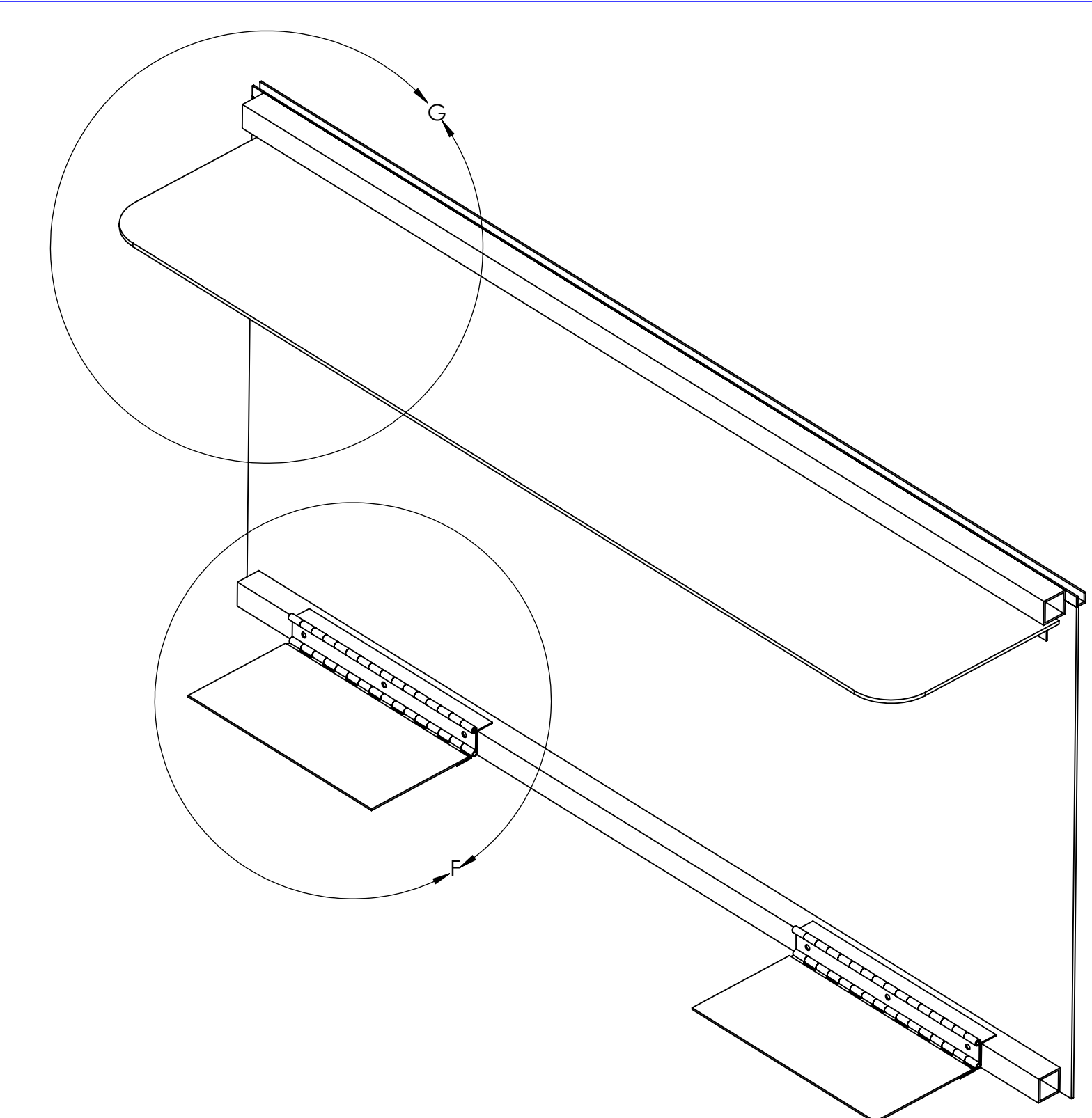
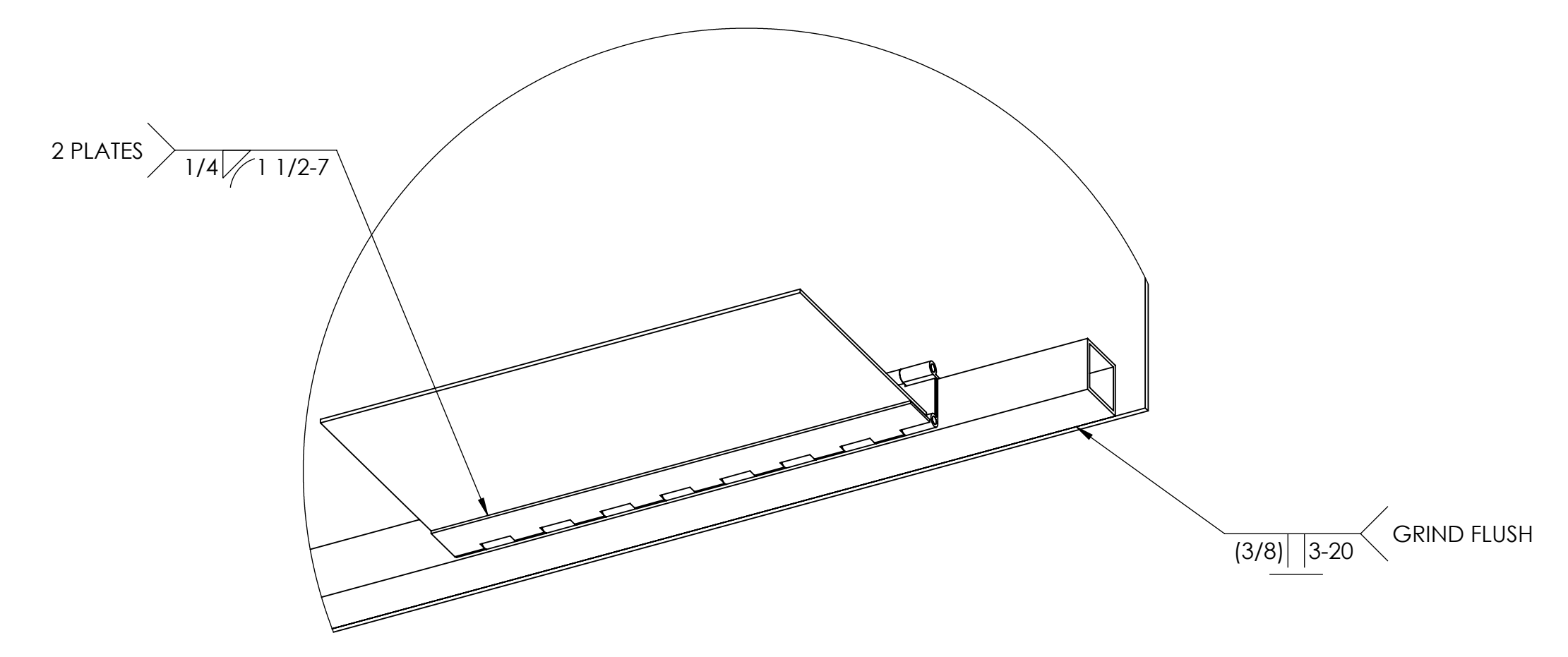
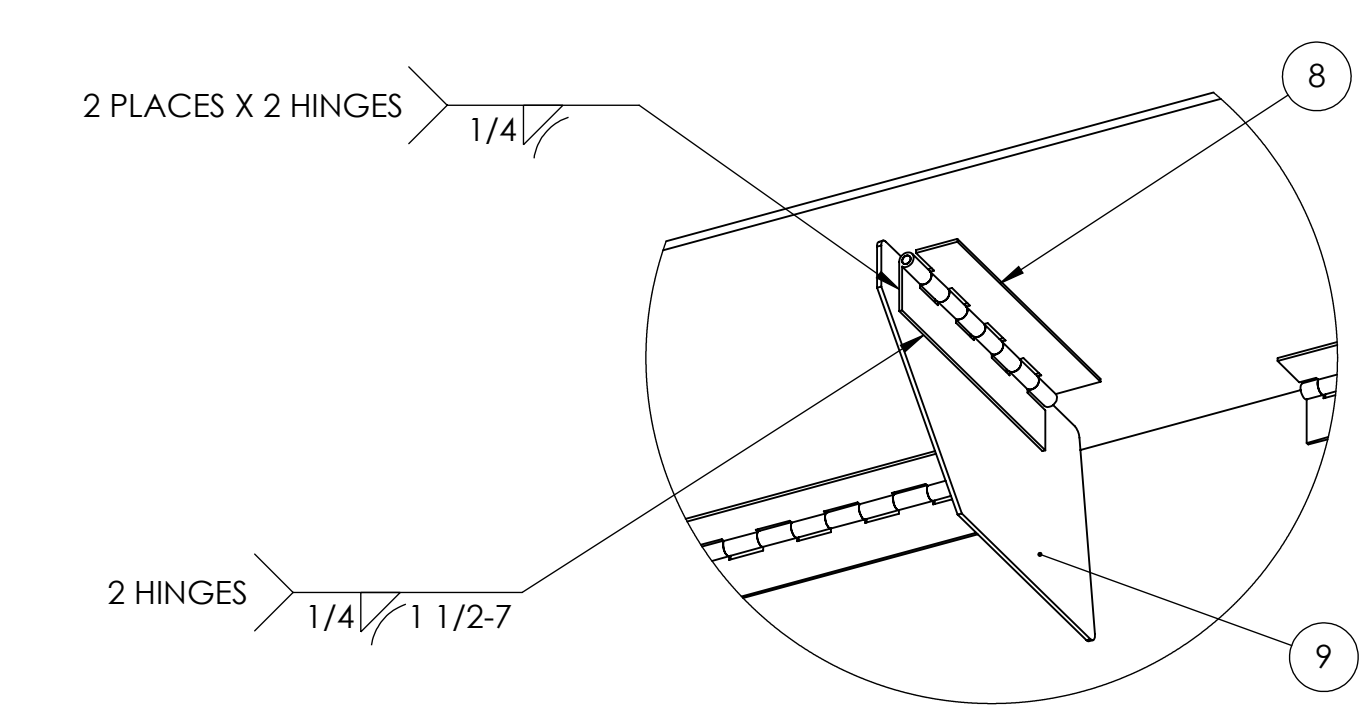
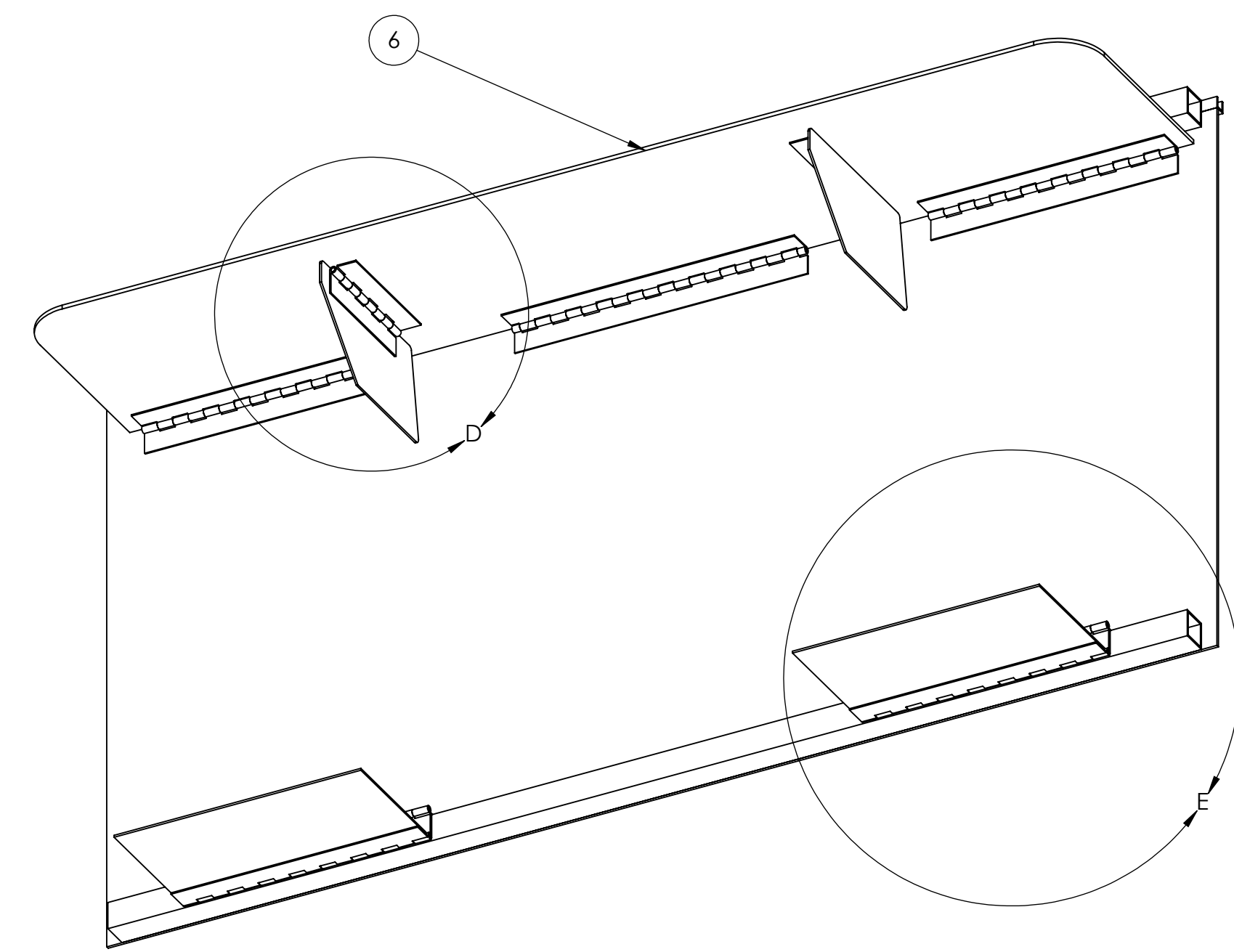
SIZE DWG. NO. REV  
**D FE-00004 B**

SCALE: 1:5 WEIGHT: SHEET 1 OF 3



Notes:  
1. Remove all sharp edges and burrs

SECTION P-P  
SCALE 1/4  
See Sheet 1



WELD APPLICABLE  
HINGE FINGERS,  
2 PER STOP PLATE HINGE

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN		
TOLERANCES:	CHECKED		
FRACTIONAL: 1/16	ENG APPR.		
ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
TWO PLACE DECIMAL ±.01	Q.A.		
THREE PLACE DECIMAL ±.001	COMMENTS:		
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL:			
FINISH:			
APPLICATION	DO NOT SCALE DRAWING		

**FIRST ROBOTICS COMPETITION** **SOLIDWORKS** Building Solutions Partner

TITLE: **End Panel**

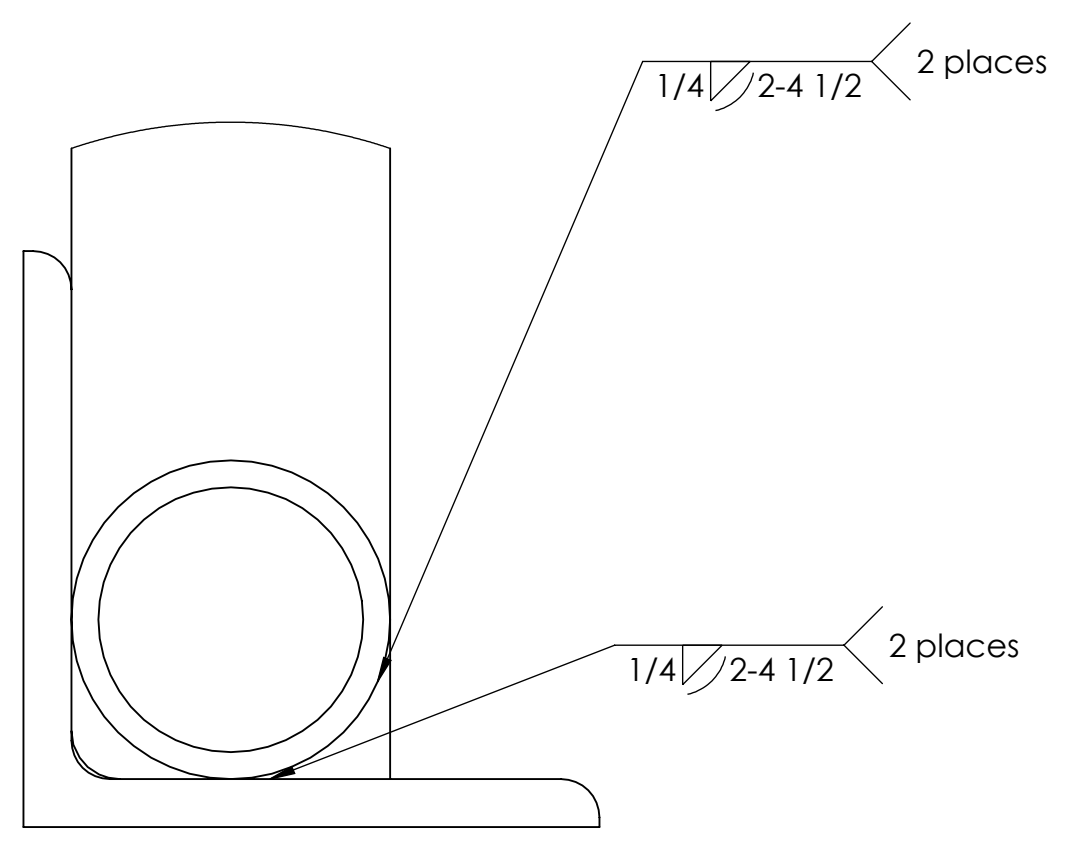
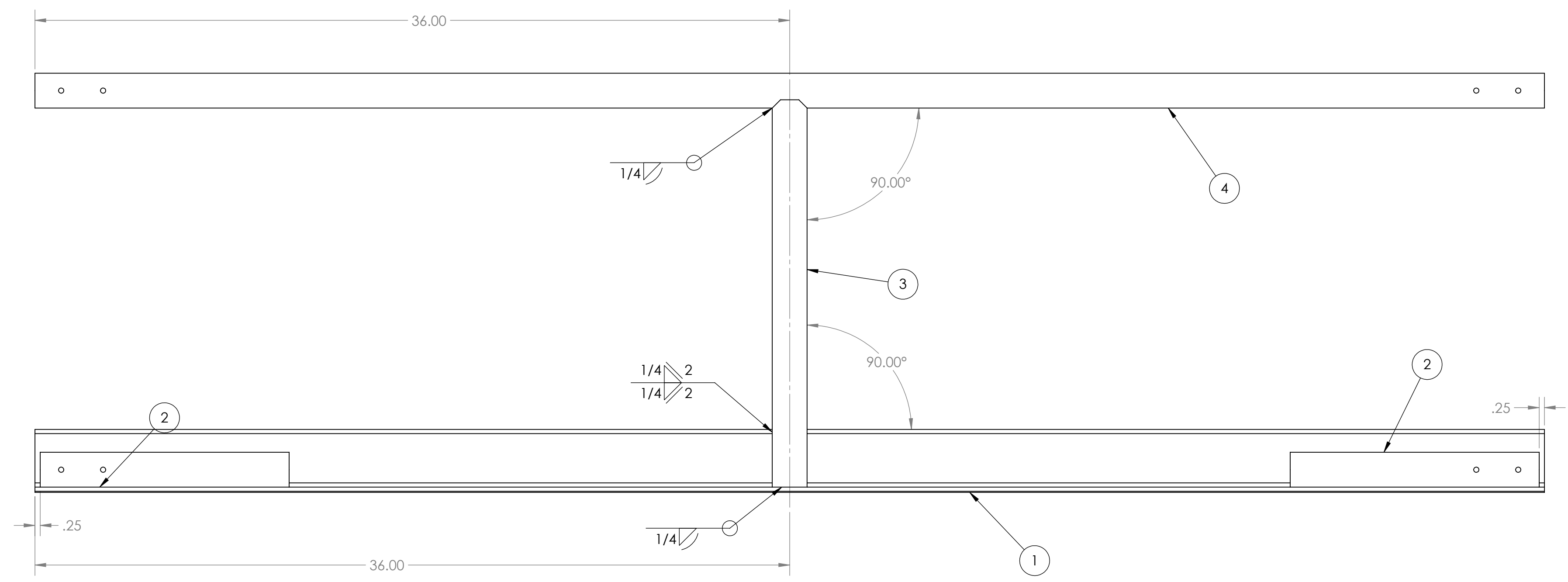
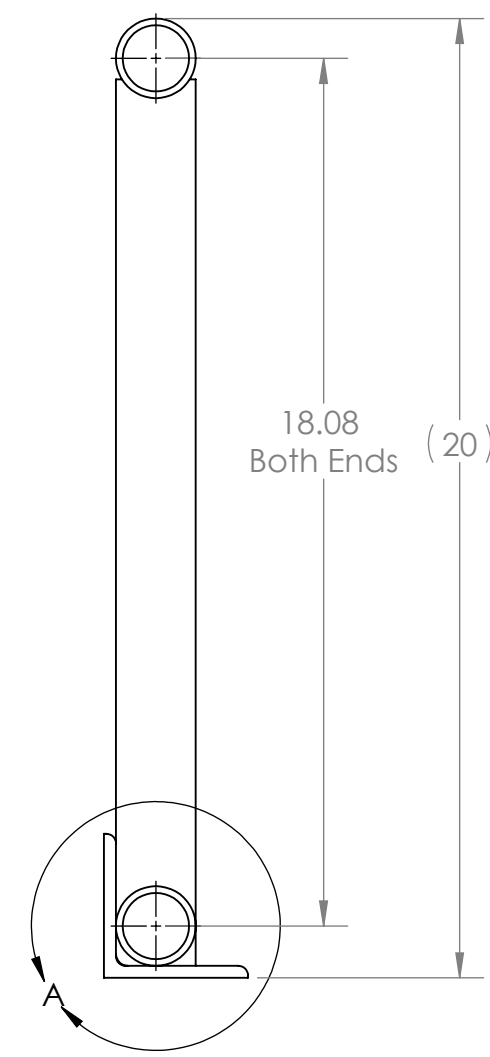
SIZE DWG. NO. REV  
**D FE-00004 B**

WEIGHT: SHEET 2 OF 3

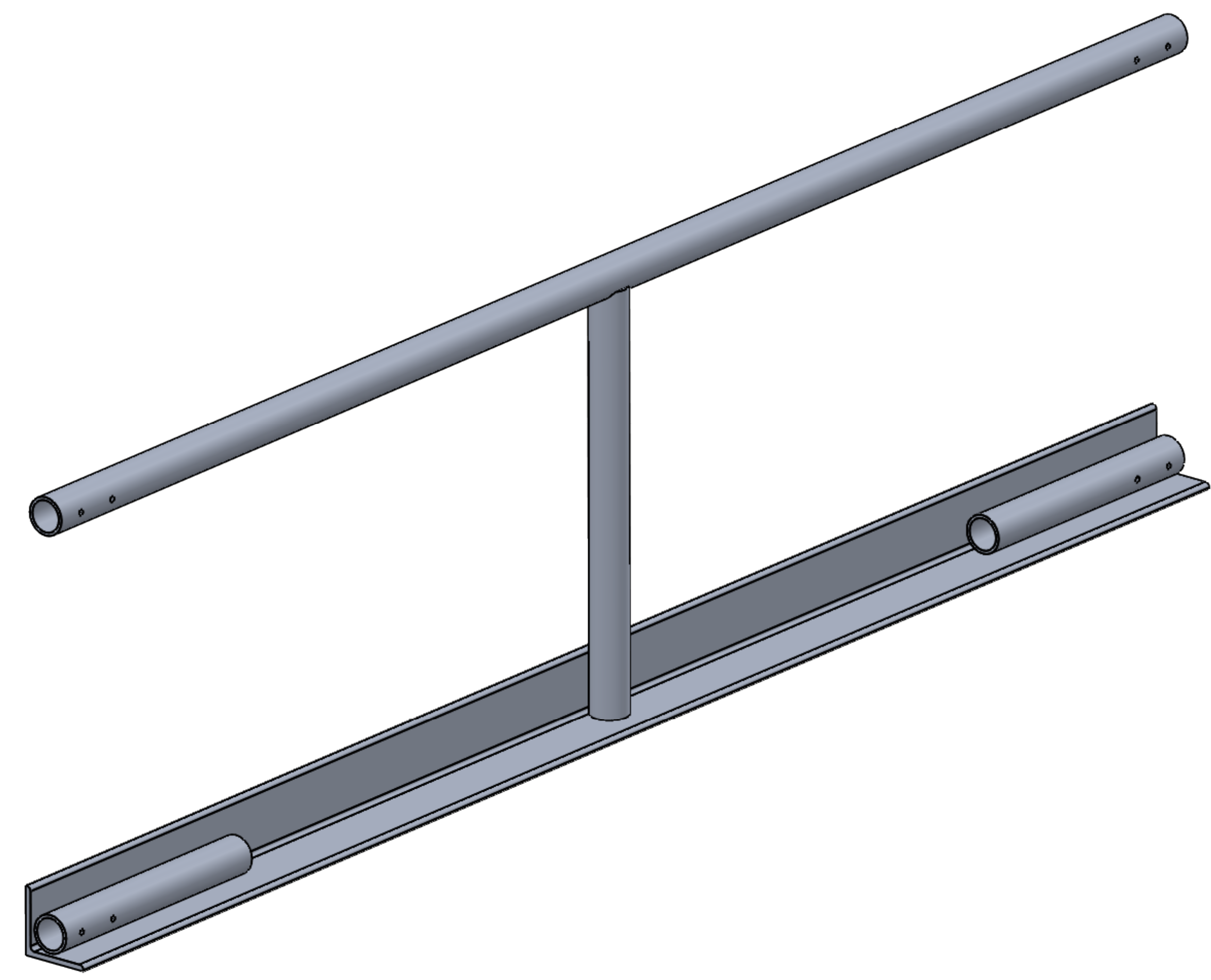




REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Redrawn	5/28/2008	narosenberg
	B	Drawing reformatted	3/19/2020	CPO



DETAIL A  
SCALE 1:1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00005-01	3" x 3" x 1/4" 6061-T6 Aluminum Angle	1
2	FE-00005-02	1 1/4" Schedule 40 6061-T6 Aluminum Pipe	2
3	FE-00005-03	1 1/4" Schedule 40 6061-T6 Aluminum Pipe	1
4	FE-00005-04	1 1/4" Schedule 40 6061-T6 Aluminum Pipe	1

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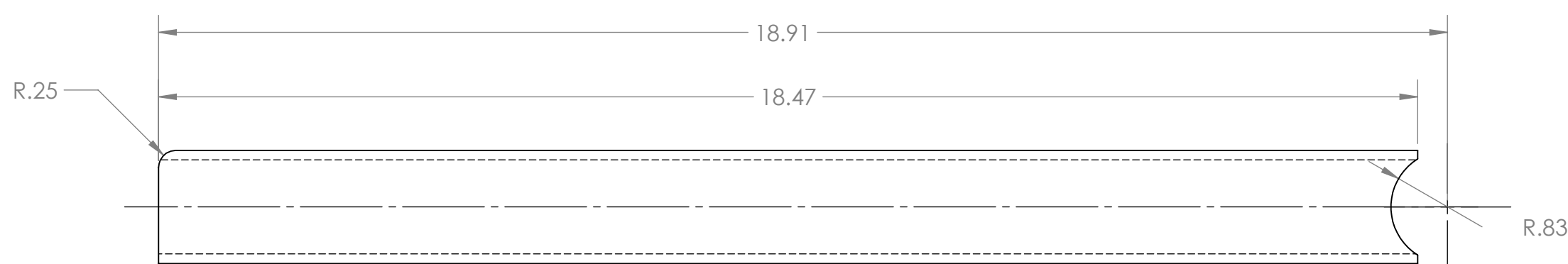
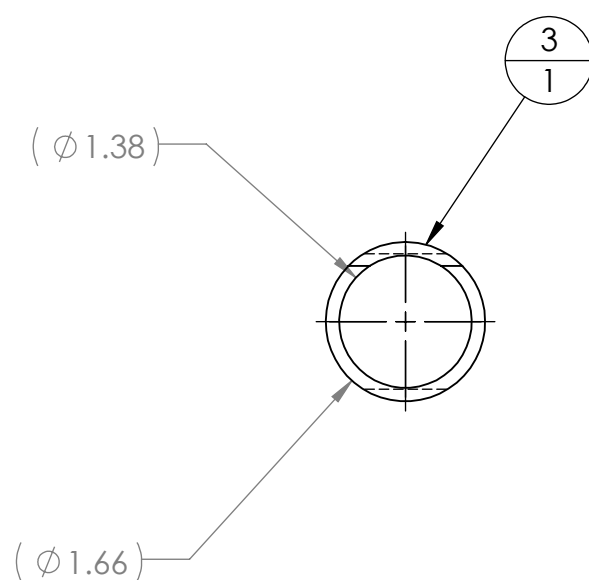
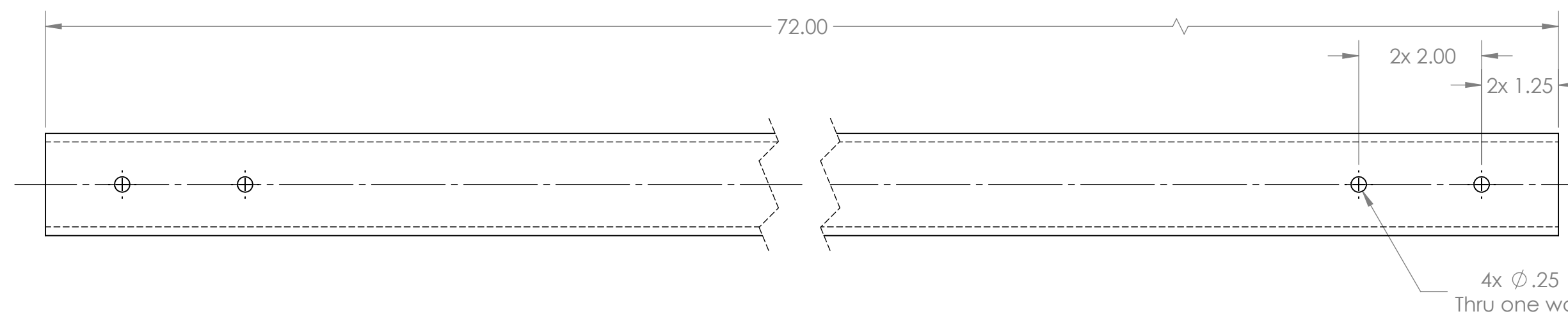
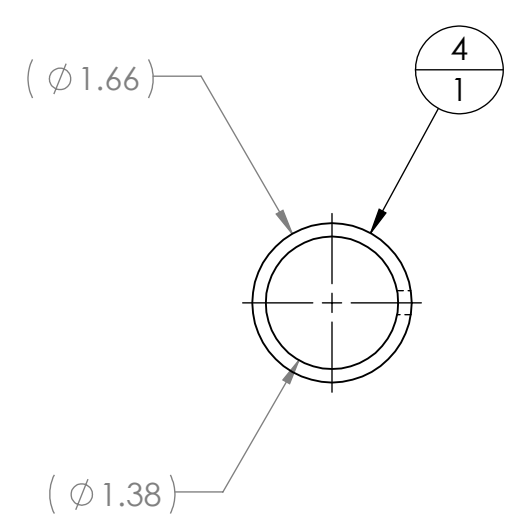
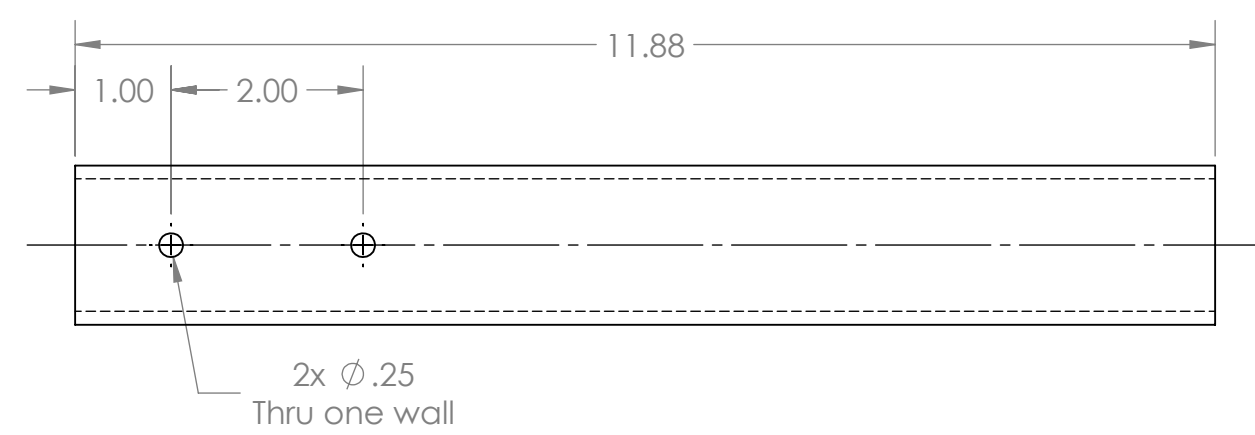
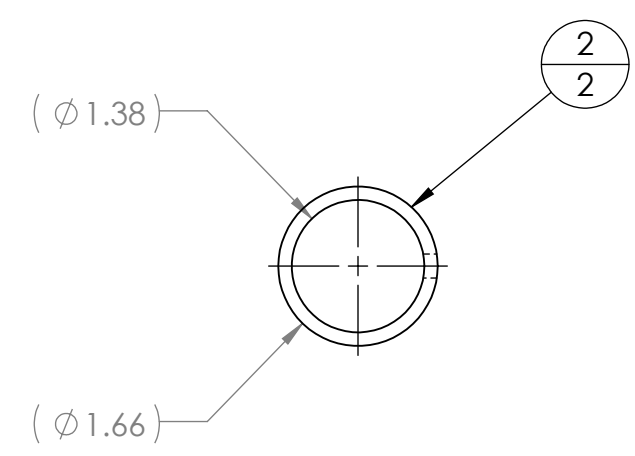
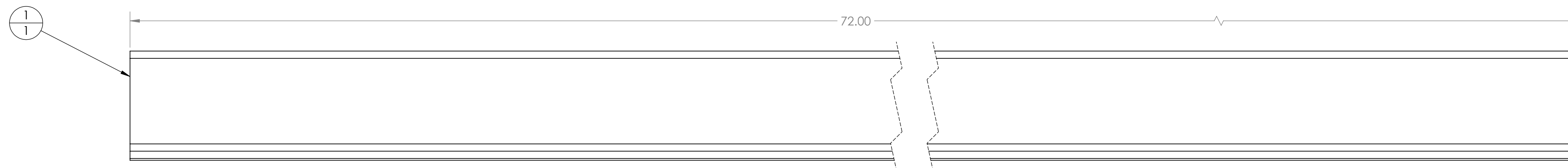
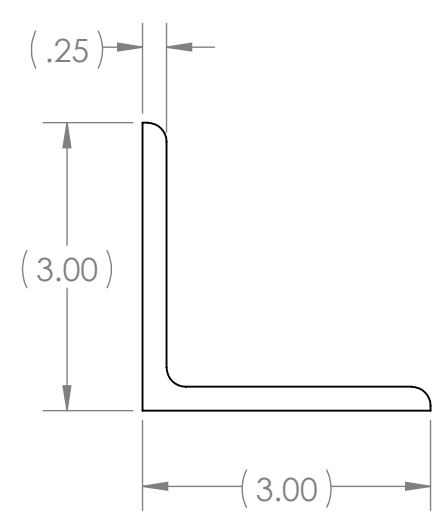
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TOLERANCES:	ENG APPR.		
FRACTIONAL: 1/16	MFG APPR.		
ANGULAR: MACH ±1° BEND ±1°			
TWO PLACE DECIMAL ±.01			
THREE PLACE DECIMAL ±.001			
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL:			
FINISH:			
APPLICATION:			
DO NOT SCALE DRAWING			

**FIRST ROBOTICS COMPETITION** **SOLIDWORKS**  
Robotics Education Partner

TITLE: **Field Rail**

SIZE DWG. NO. REV  
**D FE-00005 B**

SCALE: 1:4 WEIGHT: SHEET 1 OF 2



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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DRAWN			
CHECKED			
ENG APPR.			
MFG APPR.			
INTERPRET GEOMETRIC TOLERANCING PER:		Q.A. COMMENTS:	
MATERIAL:			
FINISH:			
APPLICATION	DO NOT SCALE DRAWING		

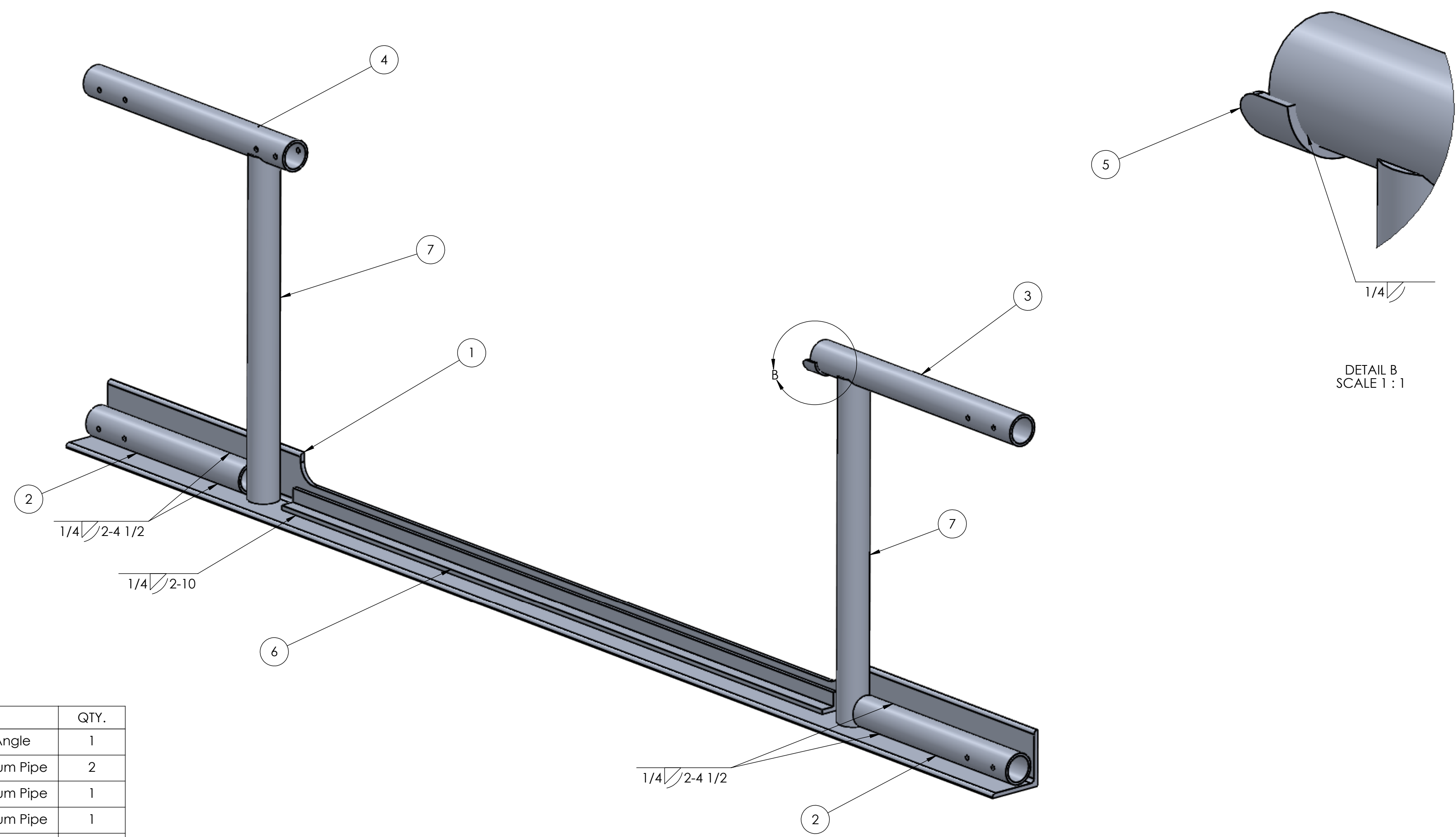
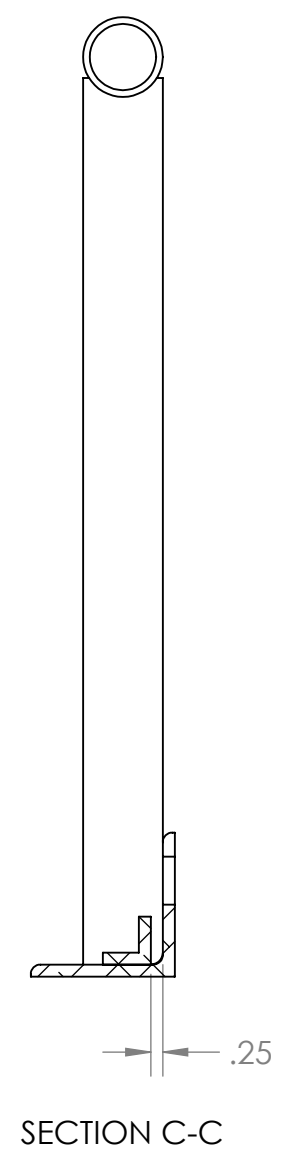
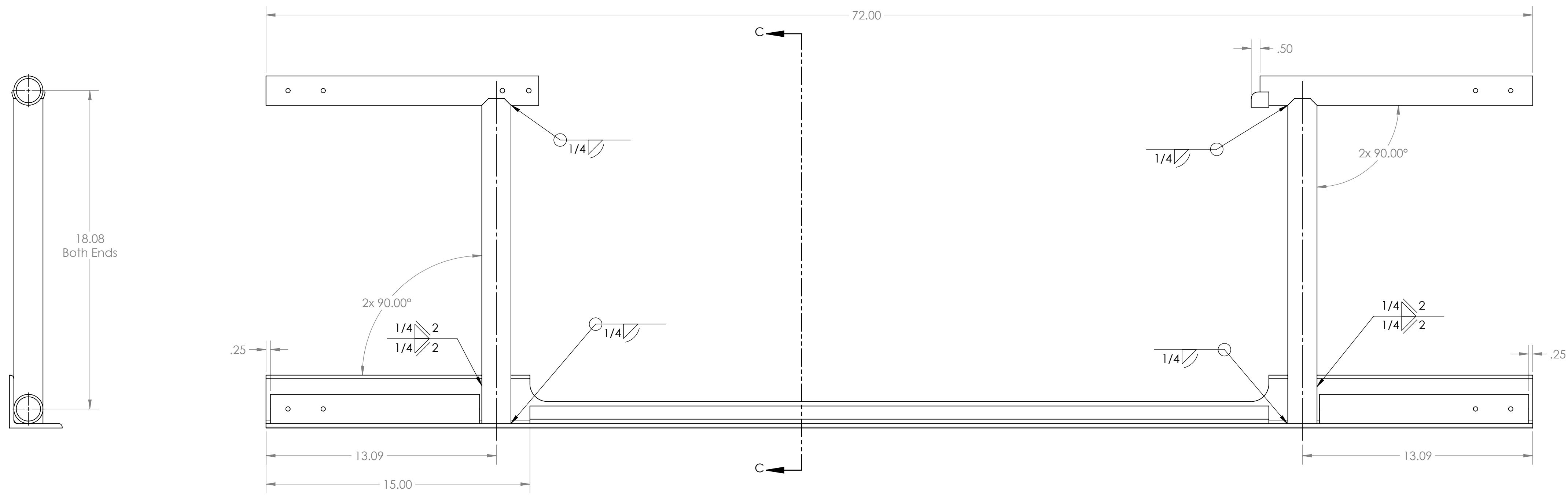
**FIRST ROBOTICS COMPETITION** **SOLIDWORKS** Robotics Solution Partner

TITLE: **Field Rail**

SIZE DWG. NO. REV  
**D FE-00005 B**

SCALE: 1:2 WEIGHT: SHEET 2 OF 2

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Redrawn	8/7/2008	narosenberg
A7, 2-B6, 3-C6	B	Parts renumbered, drawing reformatted, hole diameter updated, hole changed to thru one wall for consistency.	3/20/2020	CPO



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00006-01	3" x 3" x 1/4" 6061-T6 Aluminum Angle	1
2	FE-00006-02	1-1/4" Schedule 40 6061-T6 Aluminum Pipe	2
3	FE-00006-03	1-1/4" Schedule 40 6061-T6 Aluminum Pipe	1
4	FE-00006-04	1-1/4" Schedule 40 6061-T6 Aluminum Pipe	1
5	FE-00006-05	1-1/2" Schedule 40 6061-T6 Aluminum Pipe	1
6	FE-00006-06	1" x 1" x 1/4" 6061-T6 Aluminum Angle	1
7	FE-00006-07	1-1/4" Schedule 40 6061-T6 Aluminum Pipe	2

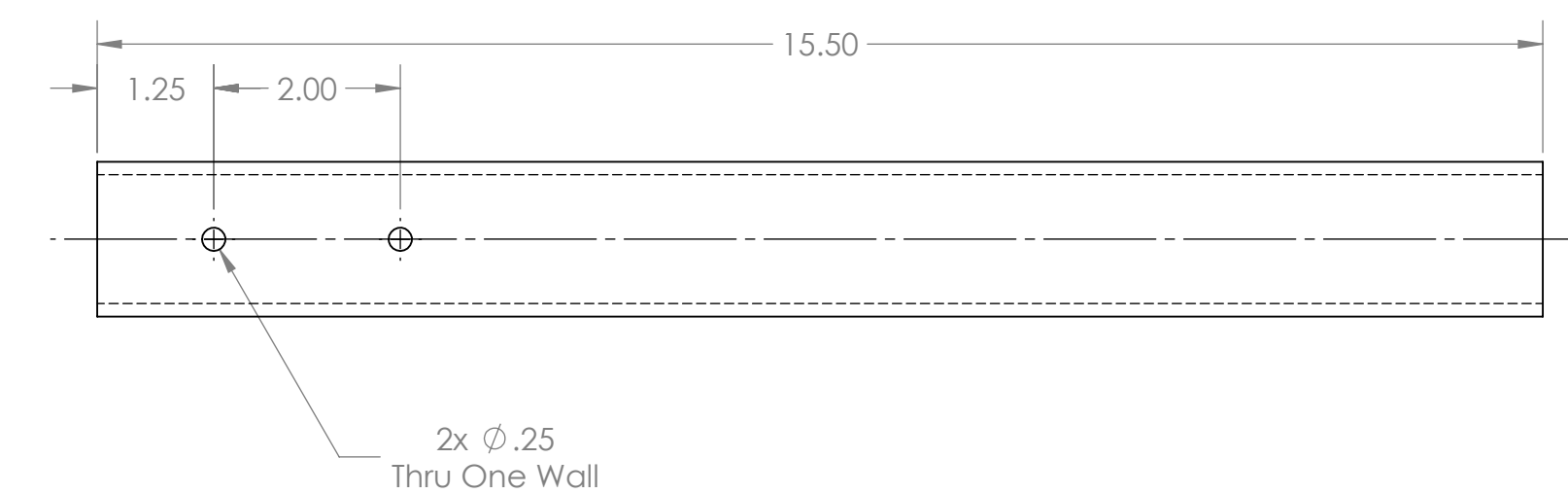
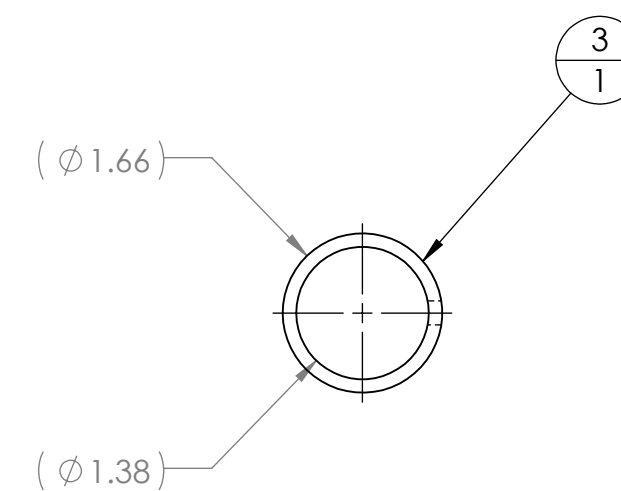
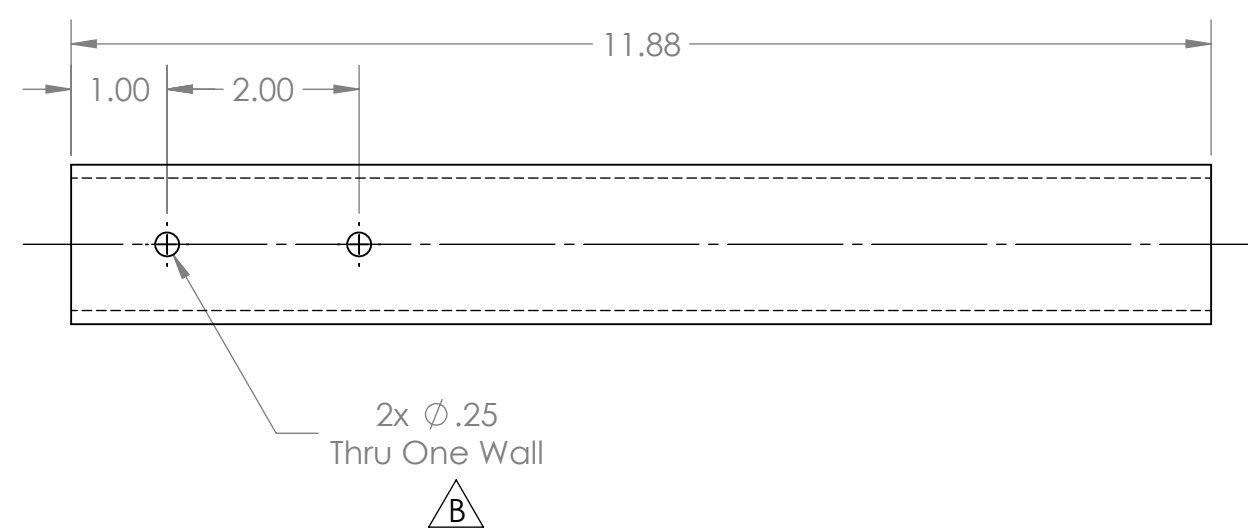
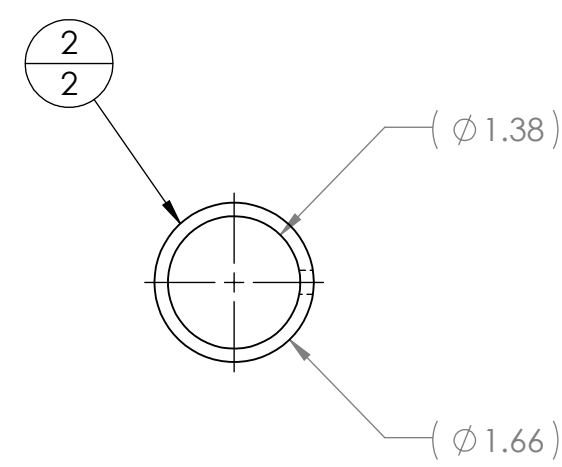
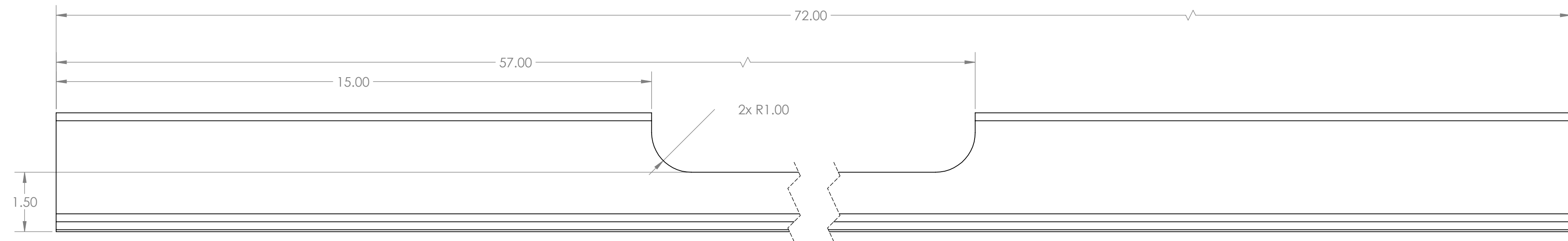
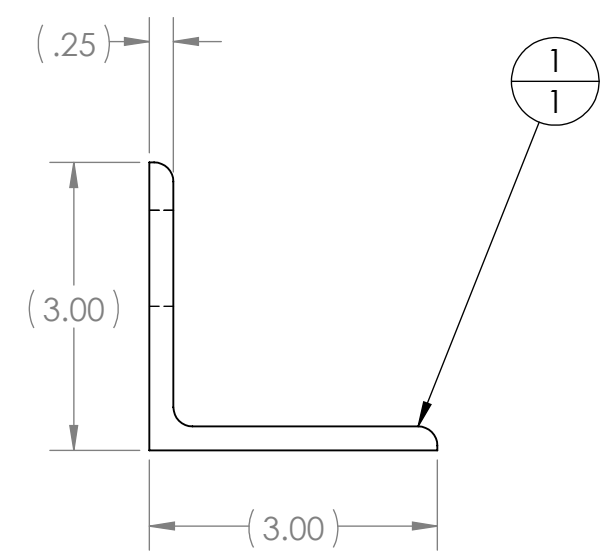
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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: 1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001		DRAWN	NAME	DATE
INTERPRET GEOMETRIC TOLERANCING PER:	MATERIAL	CHECKED		
FINISH		ENG APPR.		
APPLICATION	DO NOT SCALE DRAWING	MFG APPR.		
		Q.A. COMMENTS:		

TITLE: **Field Gate, Weldment**

SIZE DWG. NO. **D FE-00006** REV **B**

SCALE: 1:4 WEIGHT: SHEET 1 OF 3

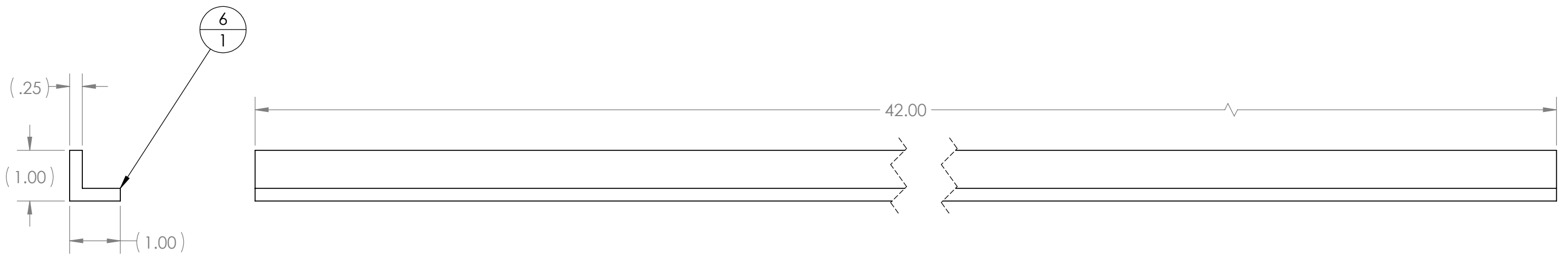
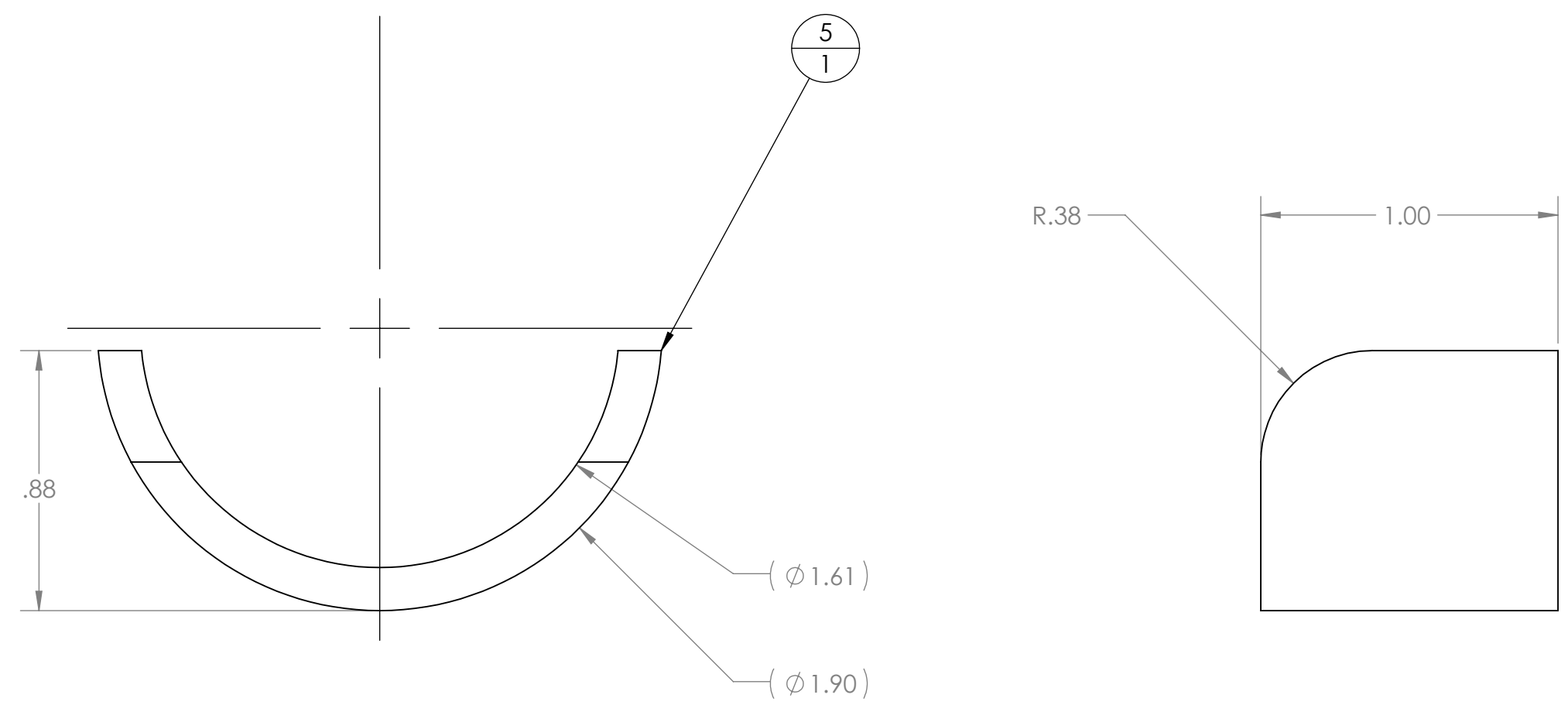
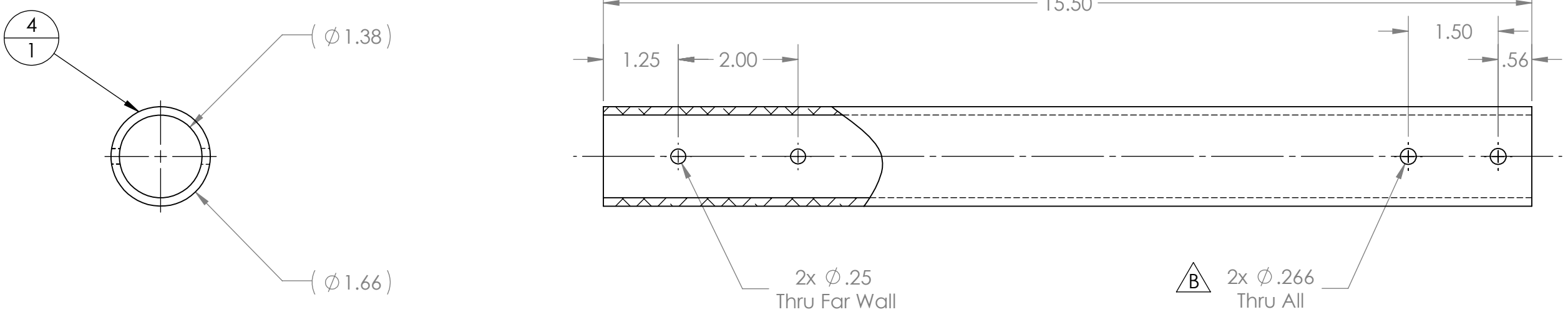


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UNLESS OTHERWISE SPECIFIED:		DRAWN	NAME	DATE
DIMENSIONS ARE IN INCHES		CHECKED		
TOLERANCES:		ENG APPR.		
FRACTIONAL: 1/16		MFG APPR.		
ANGULAR: MACH ±1° BEND ±1°		Q.A.		
TWO PLACE DECIMAL ±.01		COMMENTS:		
THREE PLACE DECIMAL ±.001				
INTERPRET GEOMETRIC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

**FIRST ROBOTICS COMPETITION** **SOLIDWORKS**  
**Field Gate, Weldment**  
 SIZE DWG. NO. REV  
**D FE-00006 B**  
 WEIGHT: SHEET 2 OF 3





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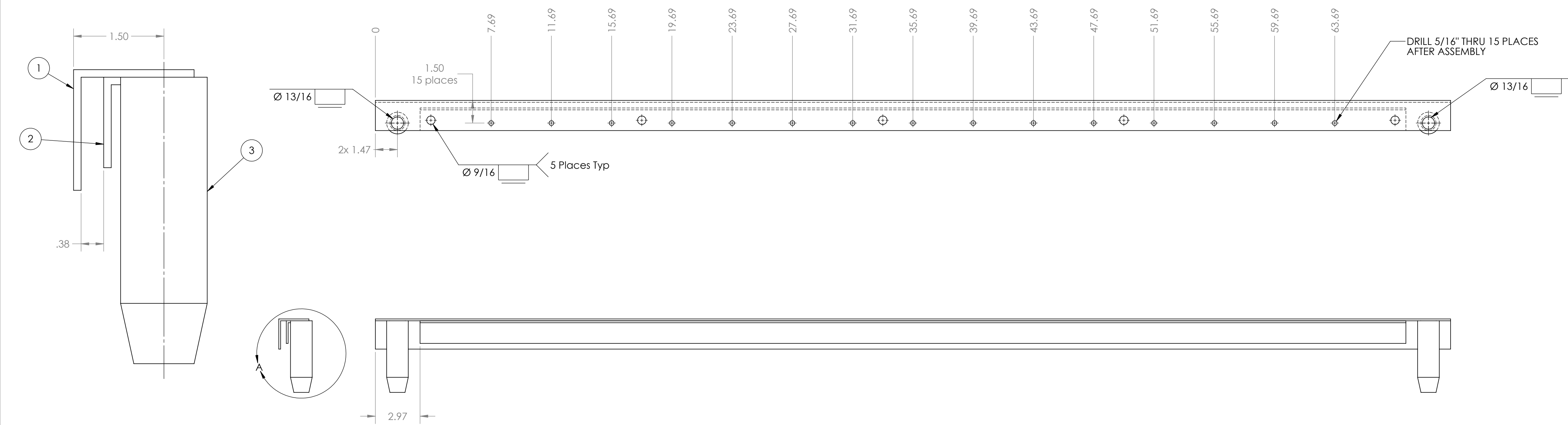
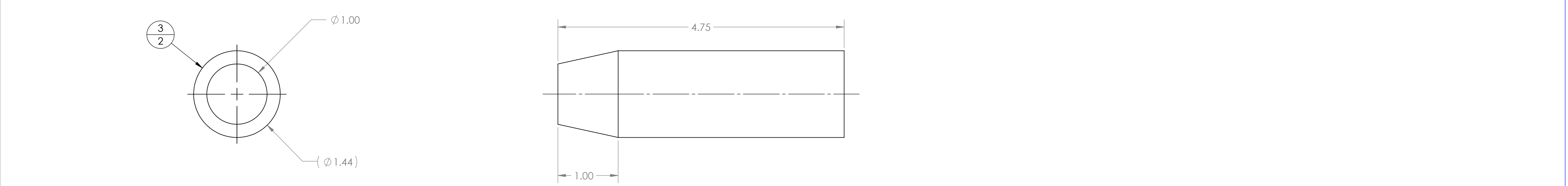
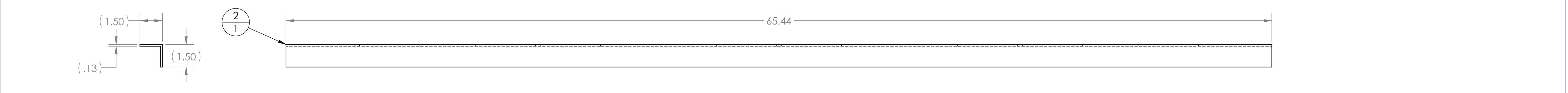
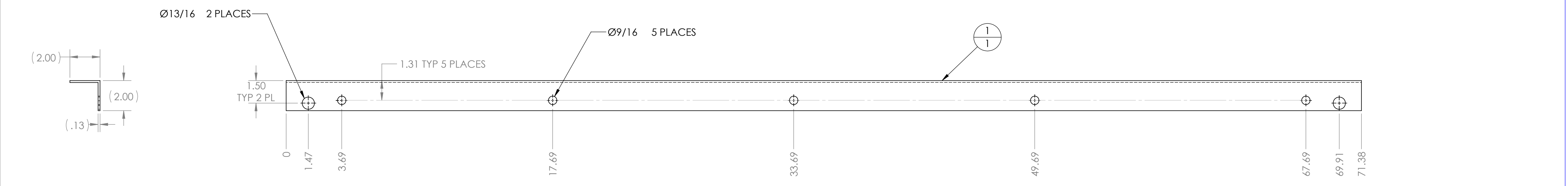
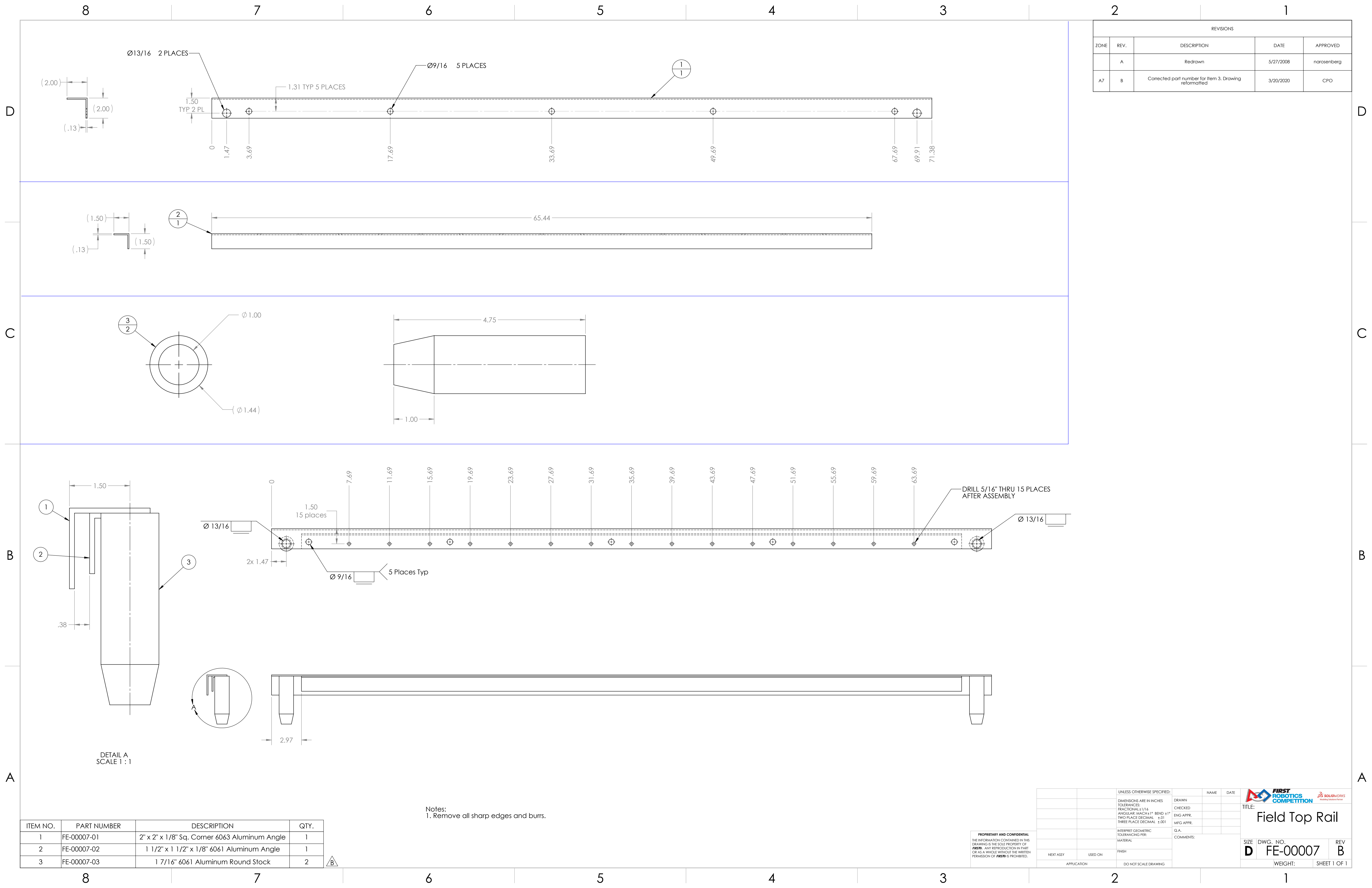
UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN		
TOLERANCES:	CHECKED		
FRACTIONAL: 1/16	ENG APPR.		
ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
TWO PLACE DECIMAL ±.01	Q.A.		
THREE PLACE DECIMAL ±.001	COMMENTS:		
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL:			
FINISH:			
APPLICATION	DO NOT SCALE DRAWING		

**FIRST ROBOTICS COMPETITION** **SOLIDWORKS**  
 Welding Solution Partner

TITLE: **Field Gate, Weldment**

SIZE DWG. NO. REV  
**D FE-00006 B**

WEIGHT: SHEET 3 OF 3



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00007-01	2" x 2" x 1/8" Sq. Corner 6063 Aluminum Angle	1
2	FE-00007-02	1 1/2" x 1 1/2" x 1/8" 6061 Aluminum Angle	1
3	FE-00007-03	1 7/16" 6061 Aluminum Round Stock	2

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

**TITLE:** Field Top Rail

**SIZE DWG. NO. REV**  
**D FE-00007 B**

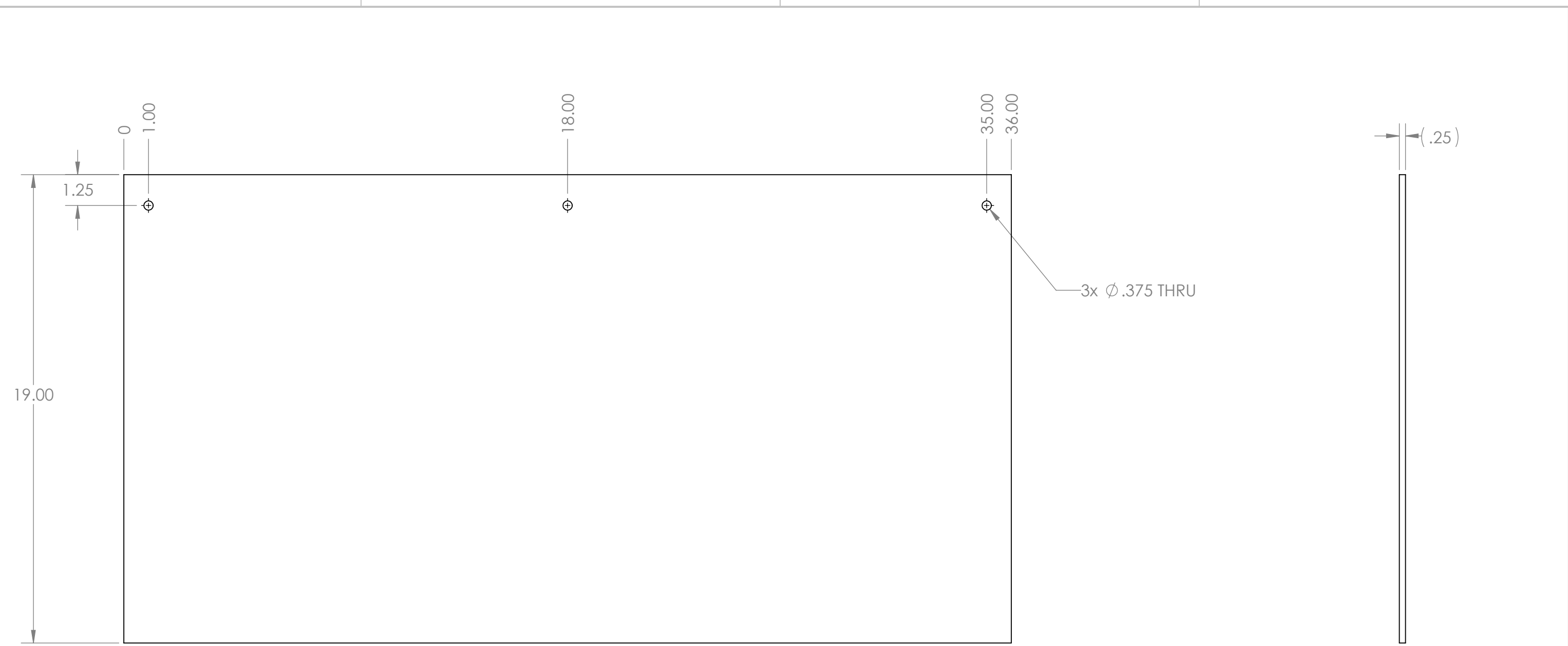
**WEIGHT: SHEET 1 OF 1**

4

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1



3x Ø .375 THRU

(.25)

19.00

1.25

1.00

18.00

35.00  
36.00

Notes:

- 1. Material: 1/4" Thick Clear Polycarbonate.
- 2. Remove all sharp edges.

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



TITLE:  
**Field Plastic "A"**

SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00008</b>	

SCALE: 1:4 WEIGHT: SHEET 1 OF 1

4

3

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1

4

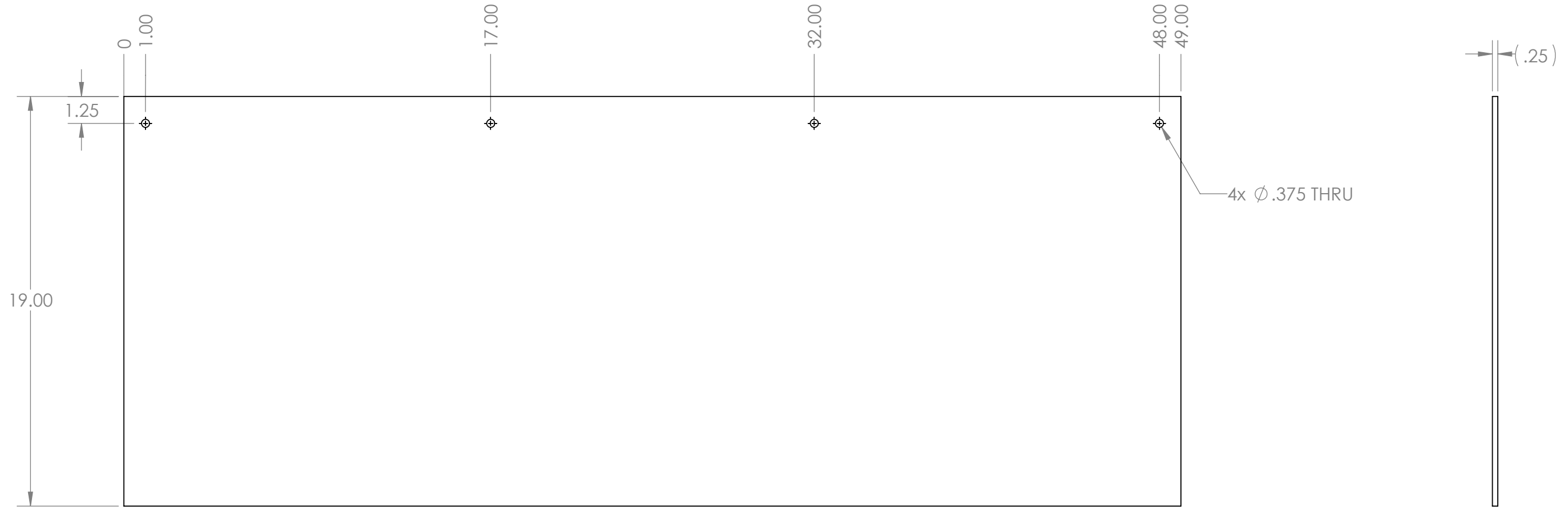
3

2

1

B

B





Notes:

- 1. Material: 1/4" Thick Clear Polycarbonate.
- 2. Remove all sharp edges.

A

A

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN		
		INTERPRET GEOMETRIC TOLERANCING PER:	CHECKED		SIZE DWG. NO. REV <b>B FE-00009</b>
		MATERIAL	ENG APPR.		
NEXT ASSY	USED ON	FINISH	MFG APPR.		SCALE: 1:5 WEIGHT: SHEET 1 OF 1
APPLICATION		DO NOT SCALE DRAWING	Q.A.	COMMENTS:	

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4

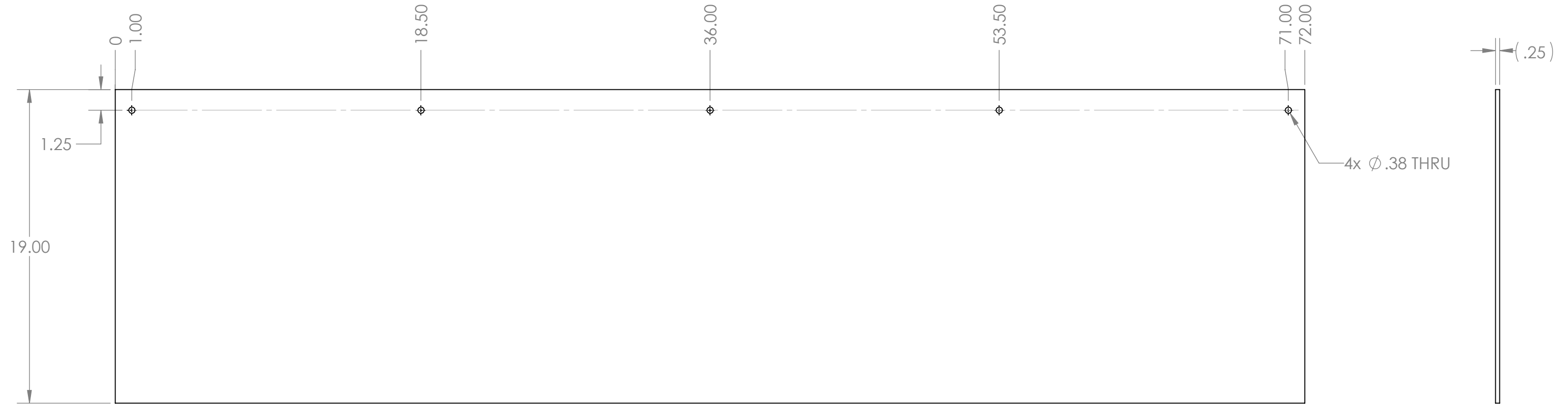
3

2

1

B

B



Notes:

- 1. Material: 1/4" Thick Clear Polycarbonate.
- 2. Remove all sharp edges.

A

A

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



TITLE:  
**Field Plastic "C"**

SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00010</b>	
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1

4

3

2

1



4

3

2

1

B

B

A

A



Notes:  
 1. Material: 3/8" Thick Acrylic Sheet

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



TITLE: <b>Drivers Station Acrylic</b>		
SIZE <b>B</b>	DWG. NO. <b>FE-00012</b>	REV
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1

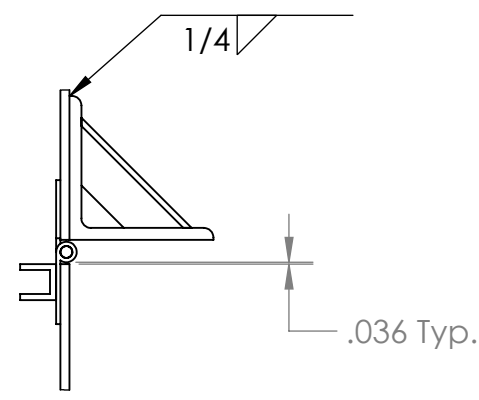
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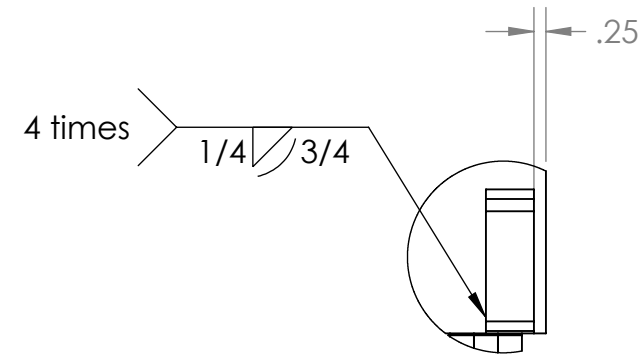
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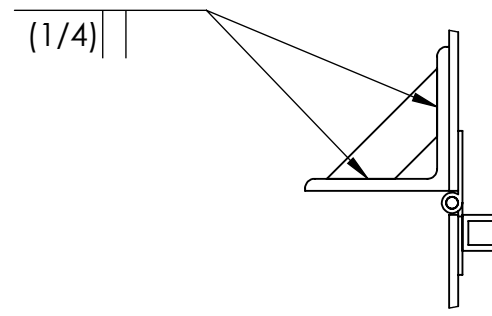
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Redrawn	5/27/2008	narosenberg
	B	Drawing Reformatted	3/20/2020	CPO



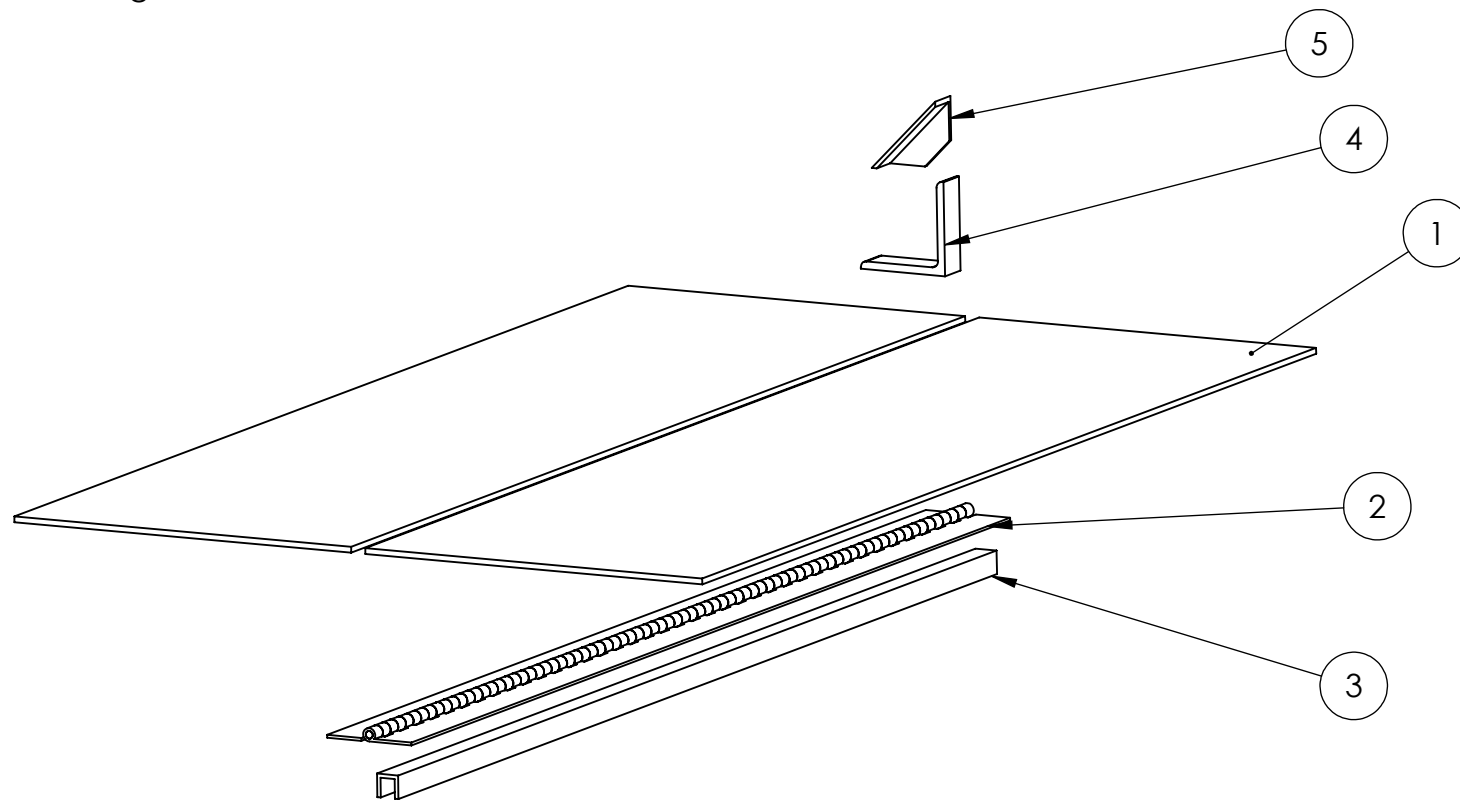
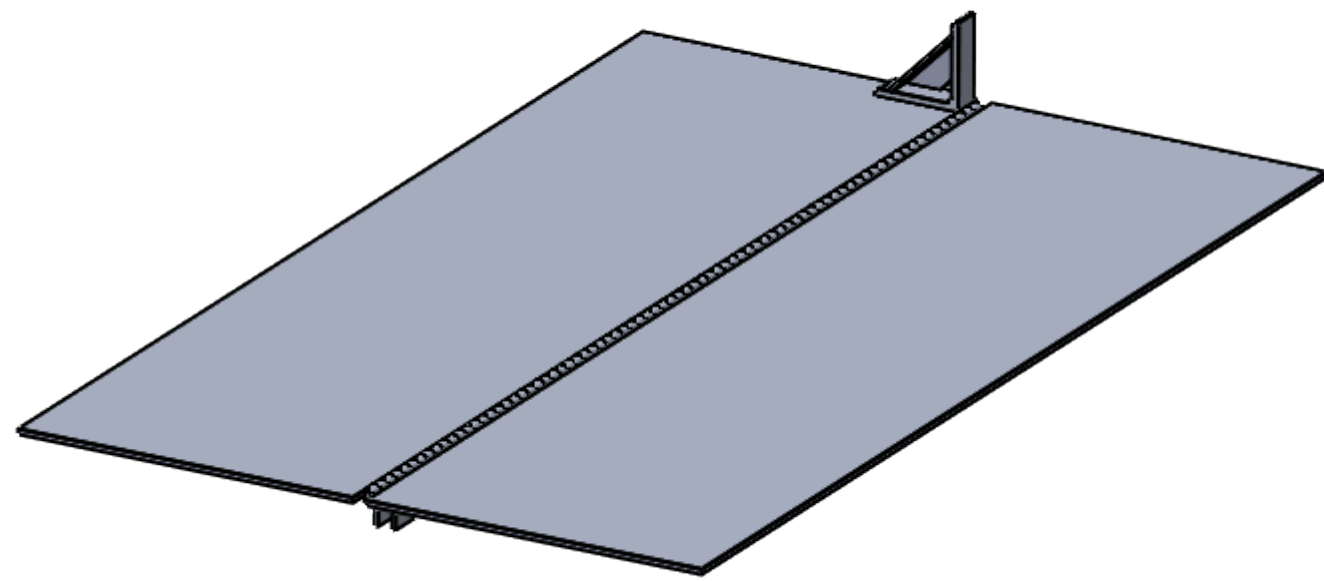
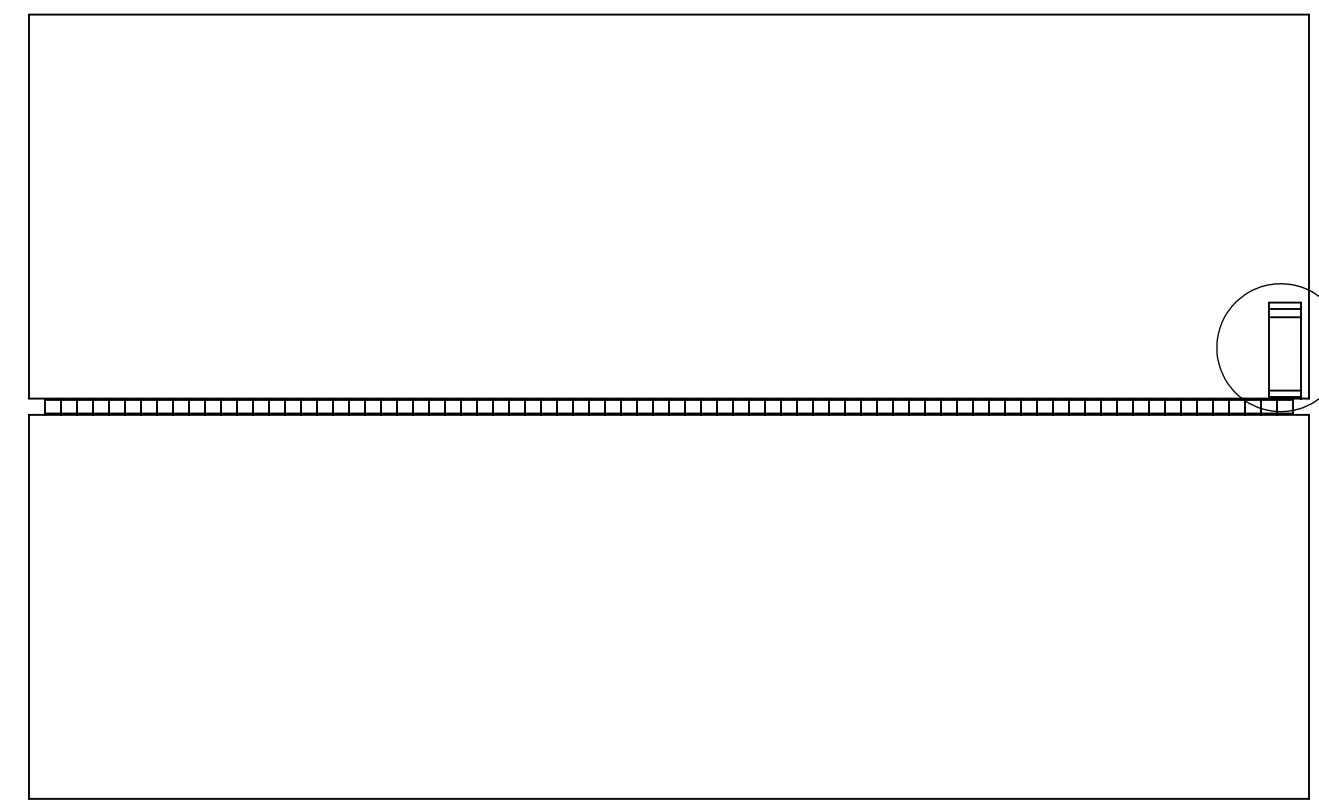
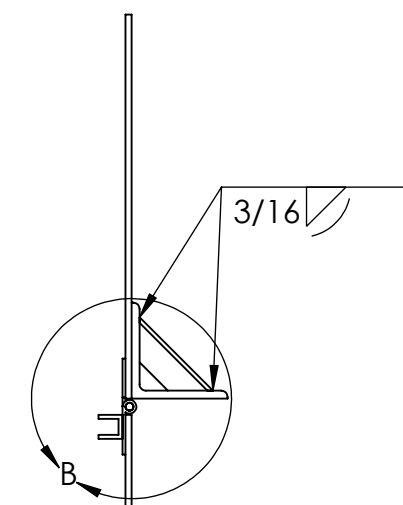
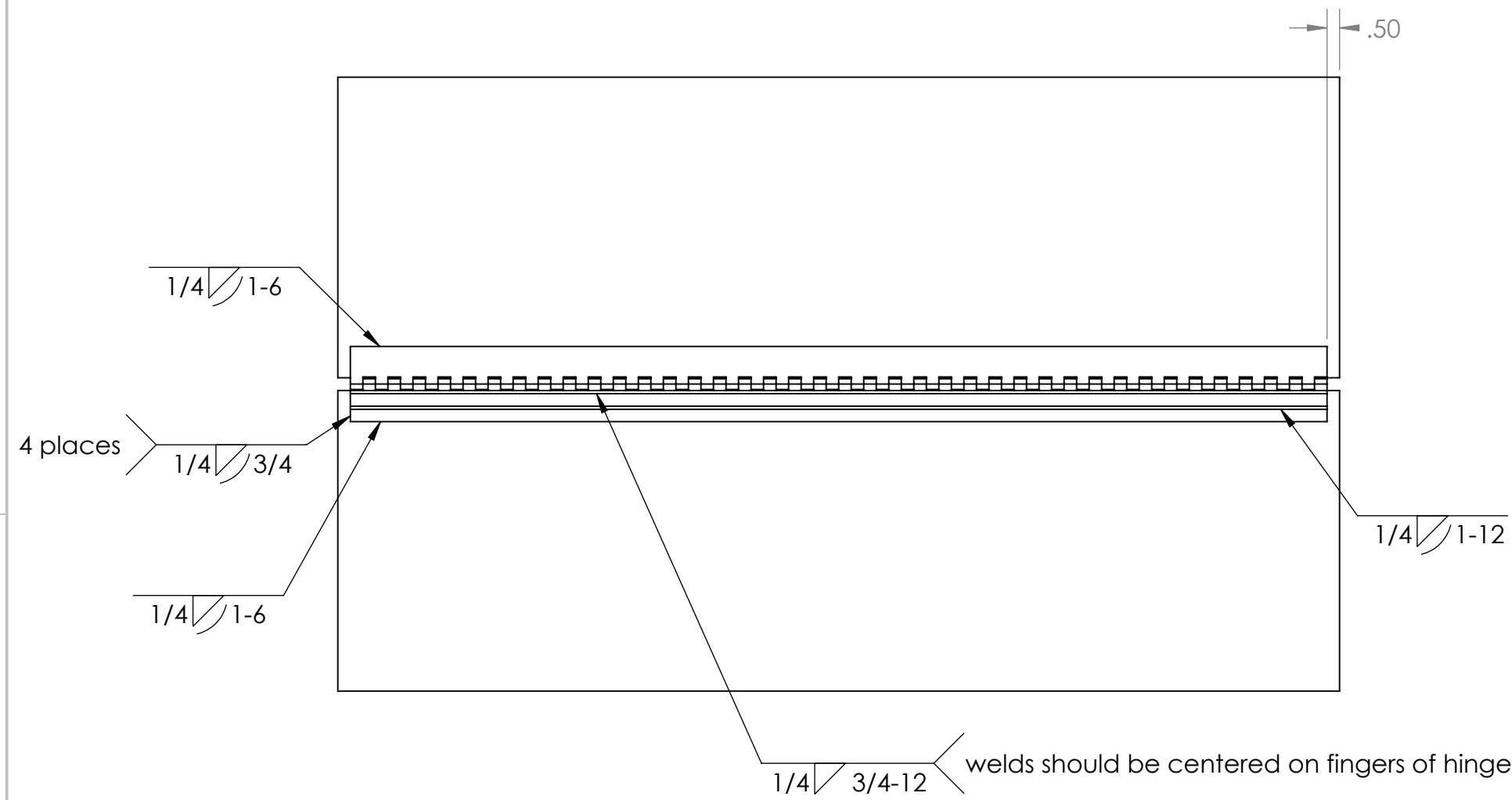
DETAIL B  
SCALE 1 : 4



DETAIL A  
SCALE 1 : 4



DETAIL C  
SCALE 1 : 4



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00014-01	3/16" 3003 Aluminum Diamond Plate	2
2	FE-00014-02	3" Aluminum Hinge, 1/4" Pin	1
3	FE-00014-03	3/4" x 3/4" x 1/8" 6061-T6 Aluminum 'U' Channel	1
4	FE-00014-04	3" x 3" x 1/4" 6061-T6 Aluminum Angle	1
5	FE-00014-05	1" x 1" x 1/8" 6061-T6 Aluminum Angle	1

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES			
TOLERANCES:			
FRACTIONAL: ±1/16			
ANGULAR: MACH ±1° BEND ±1°			
TWO PLACE DECIMAL ±.01			
THREE PLACE DECIMAL ±.001			
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL			
FINISH			
NEXT ASSY	USED ON		
APPLICATION			

DRAWN	ENG APPR.	MFG APPR.	Q.A.	COMMENTS:

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

TITLE: **Field Entry Ramp**

SIZE DWG. NO. REV  
**C** FE-00014 **B**

SCALE: 1:6 WEIGHT: SHEET 1 OF 2

4

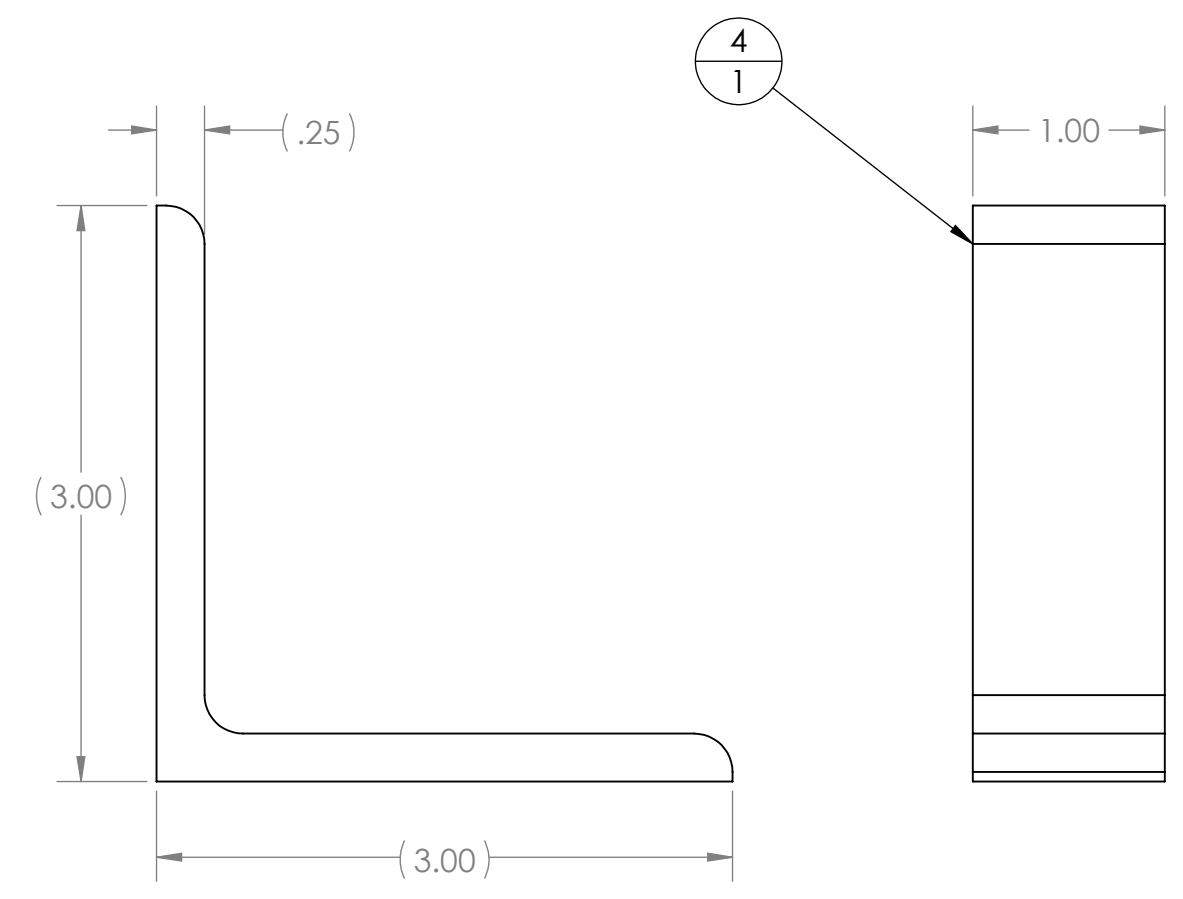
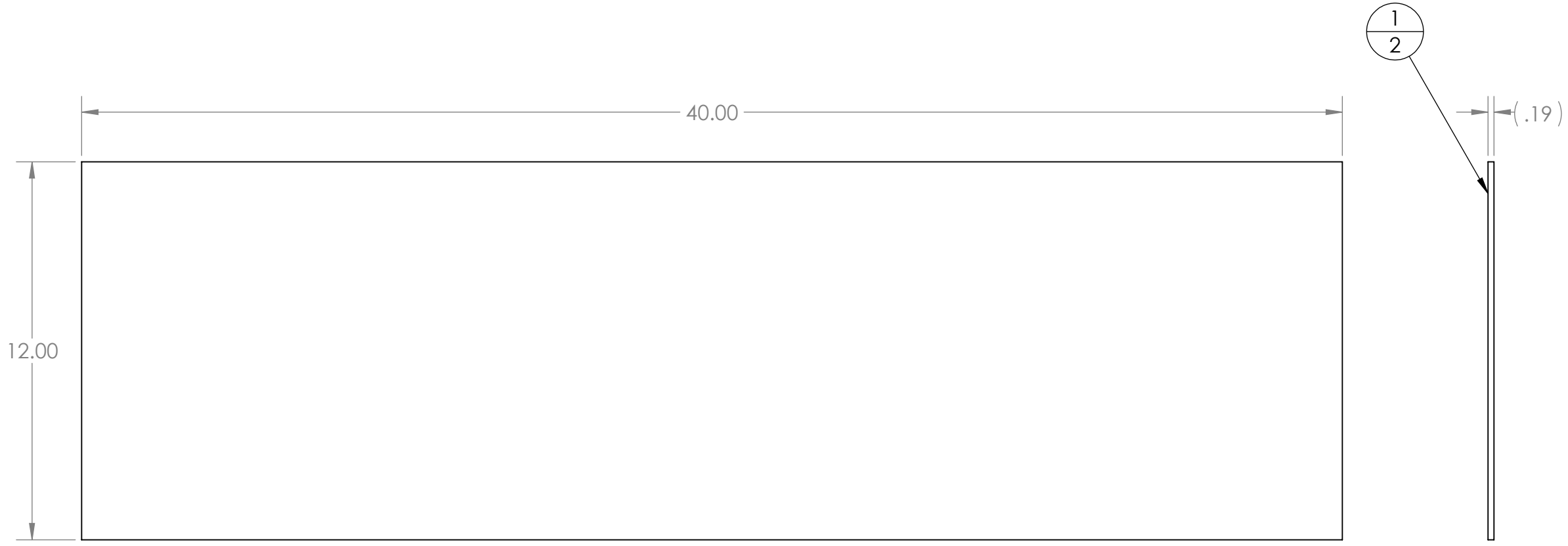
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2

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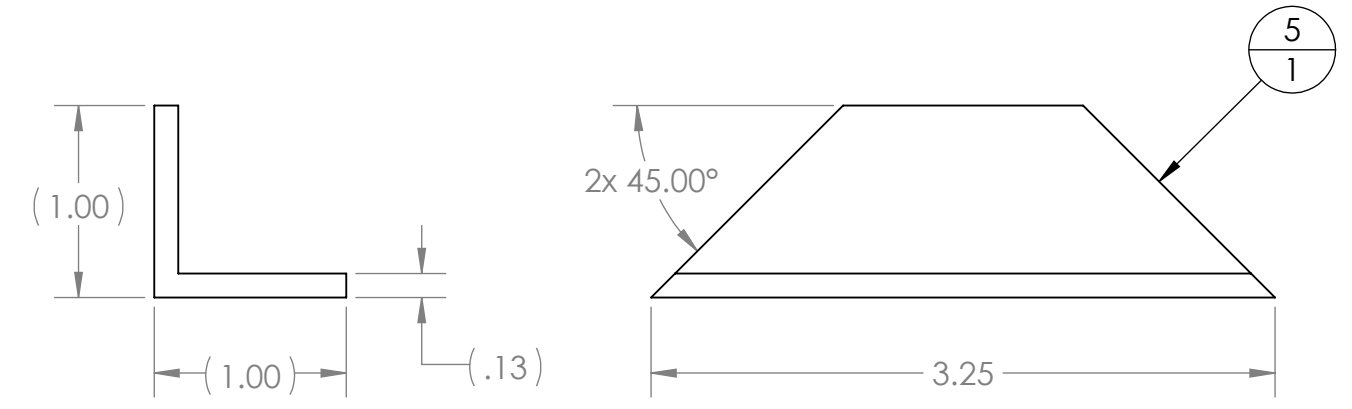
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D



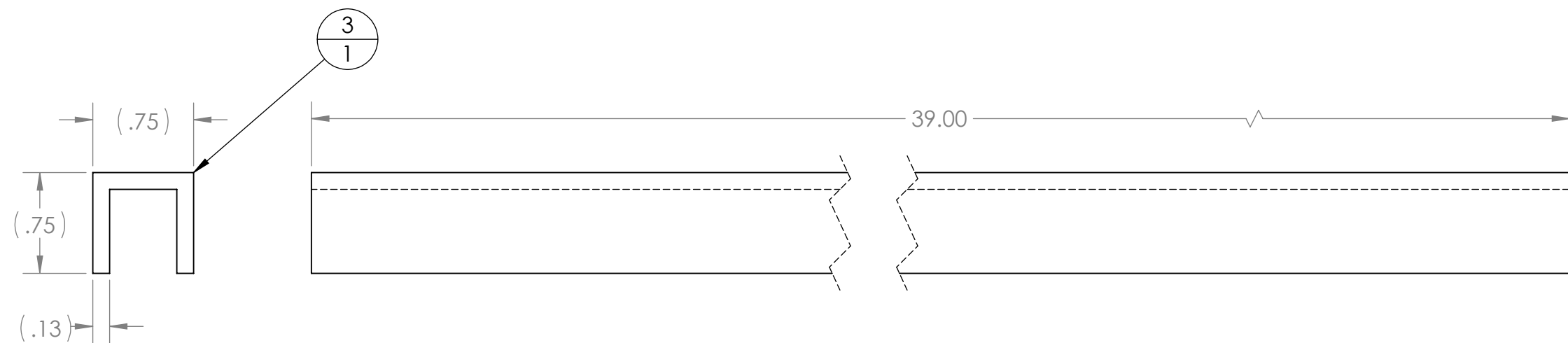
C

C



B

B



Note: Remove all sharp edges.

A

A

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

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

TITLE:  
**Field Entry Ramp**

SIZE	DWG. NO.	REV
<b>C</b>	<b>FE-00014</b>	<b>B</b>
WEIGHT:		SHEET 2 OF 2

4

3

2

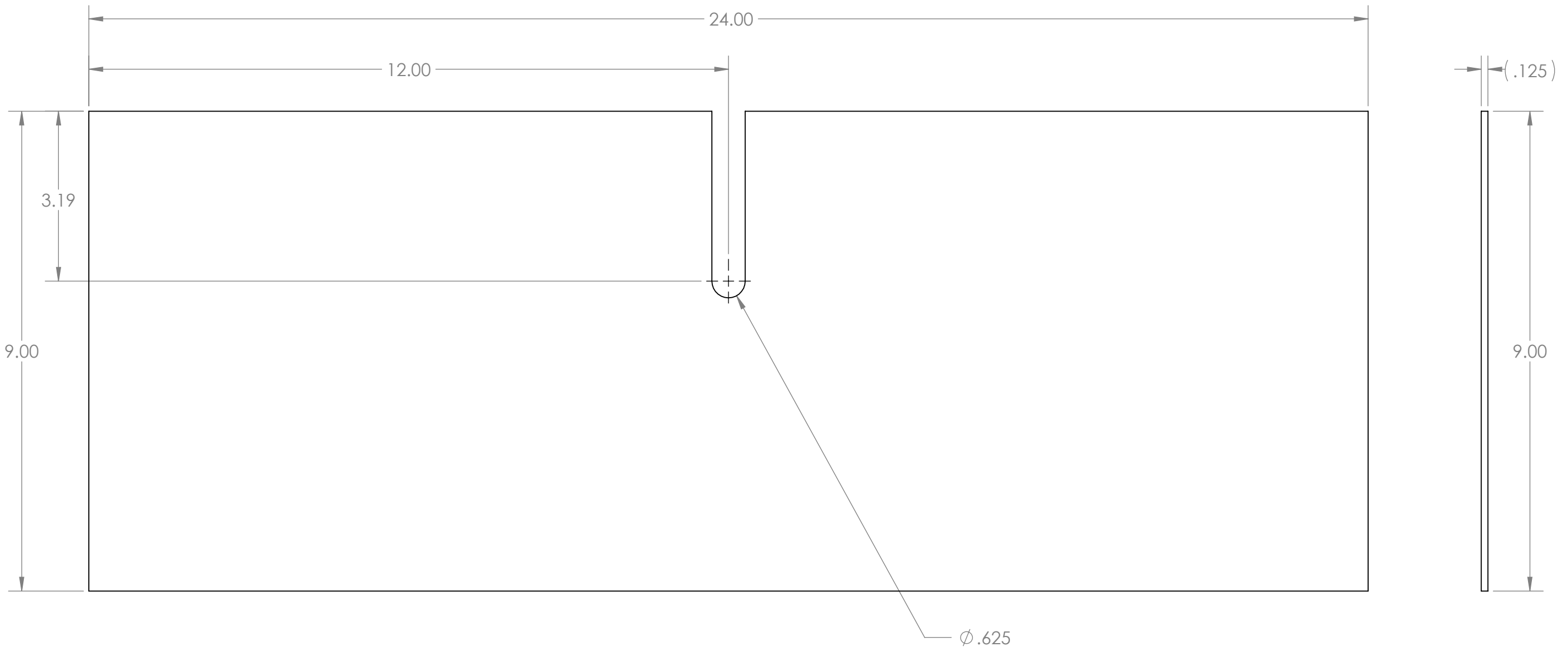
1

4

3

2

1



- Notes:
1. Material: 1/8" Thick HDPE, Yellow.
  2. Remove all sharp edges.

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



TITLE:		
<h1>Trip Guard</h1>		
SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00015</b>	
SCALE: 1:2	WEIGHT:	SHEET 1 OF 1

4

3

2

1

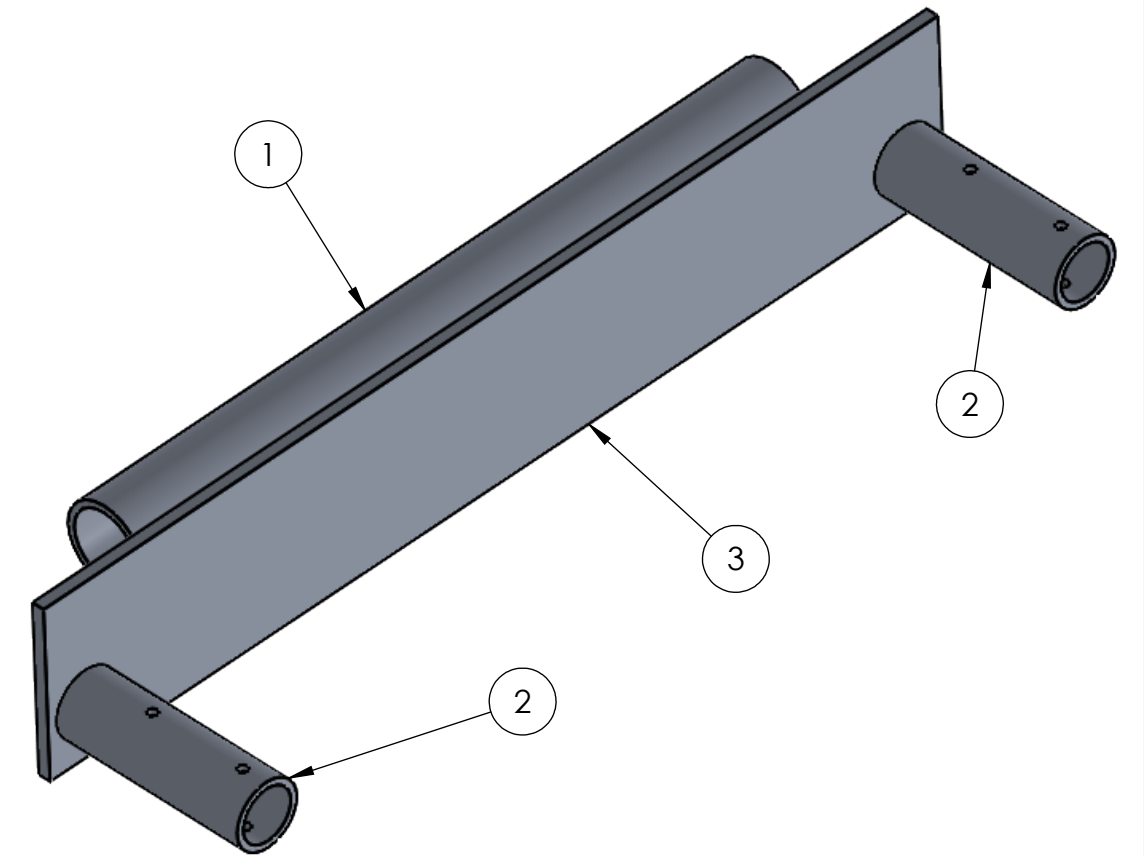
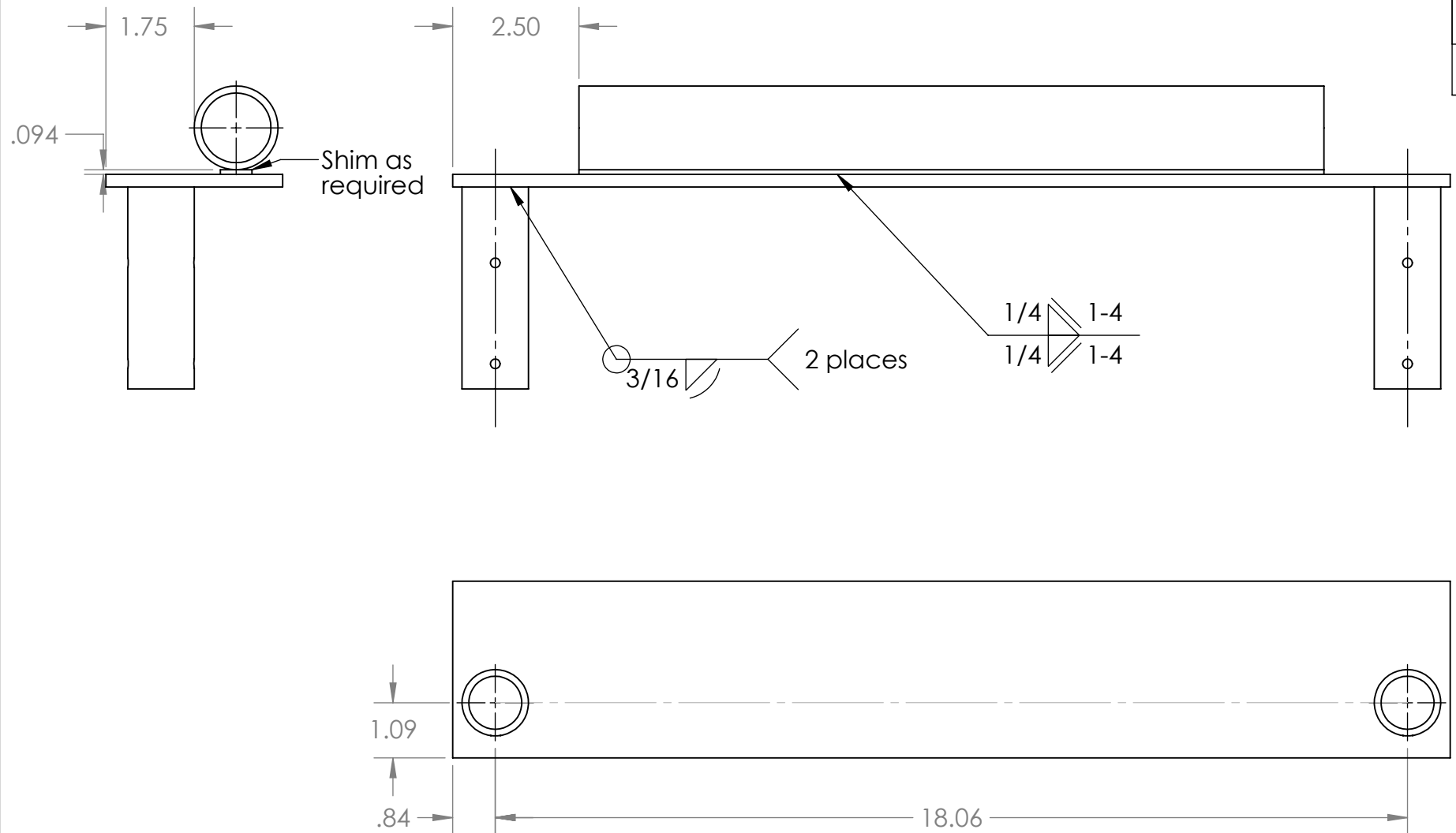
4

3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Redrawn	5/30/2008	narosenberg
	B	Drawing reformatted.	3/20/2020	CPO



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00018-01	1 1/4" Schedule 40 6061-T6 Aluminum Pipe	1
2	FE-00018-02	1" Schedule 40 6061-T6 Aluminum Pipe	2
3	FE-00018-03	3 1/2" x 1/4" 6061-T6 Aluminum Bar	1

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

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

TITLE: **Corner Connector**

SIZE **B** DWG. NO. **FE-00018** REV **B**

SCALE: 1:3 WEIGHT: SHEET 1 OF 2

4

3

2

1

A

A

B

B



4

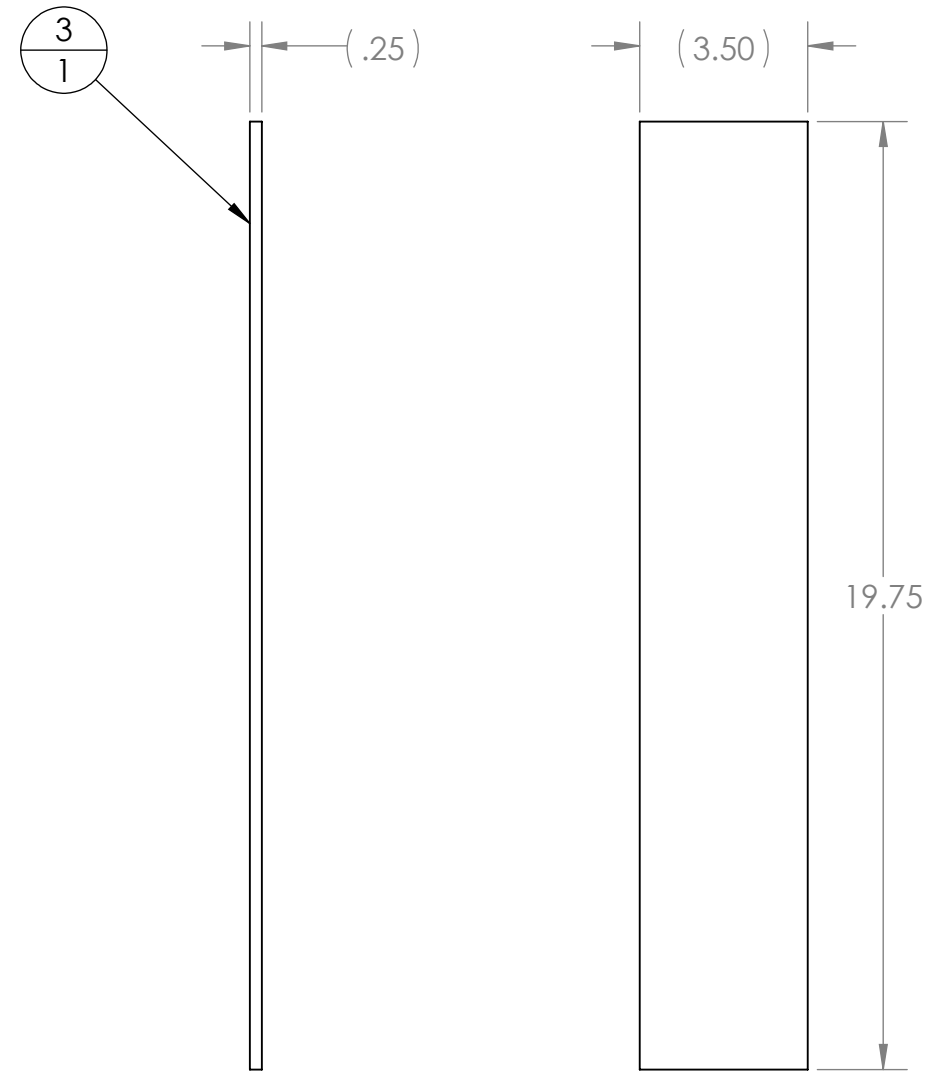
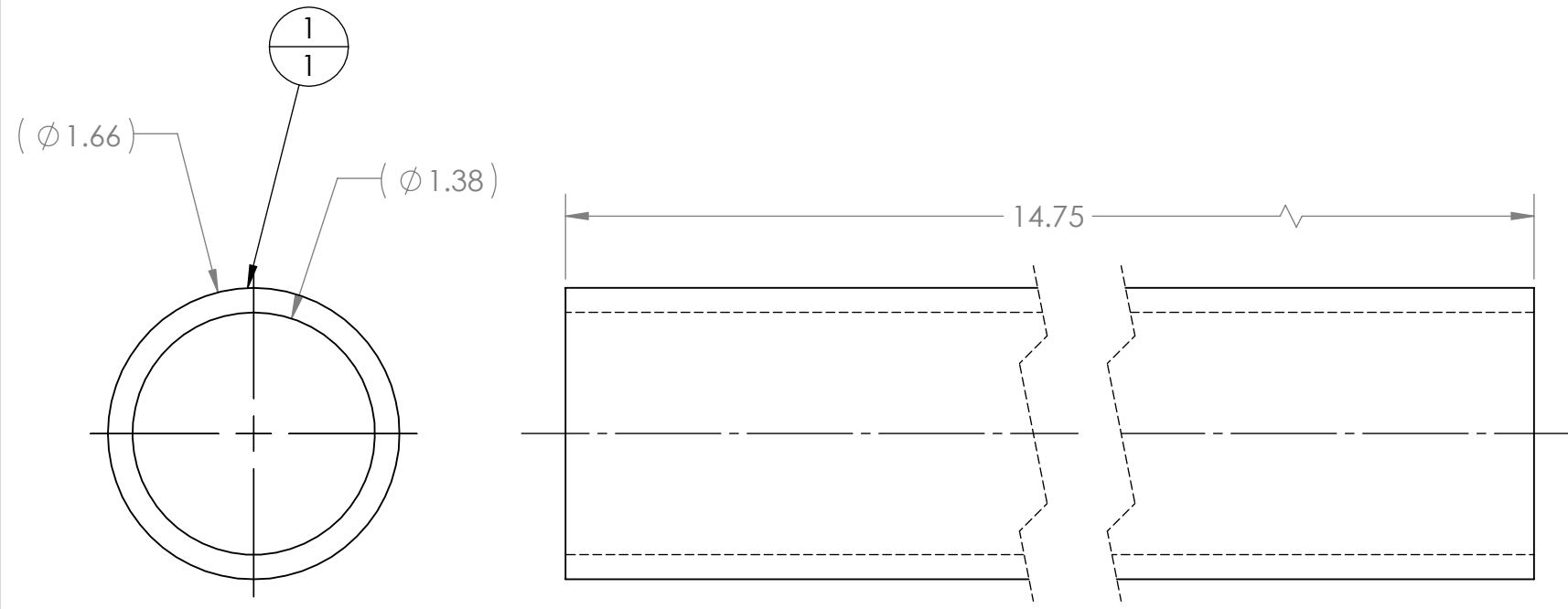
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2

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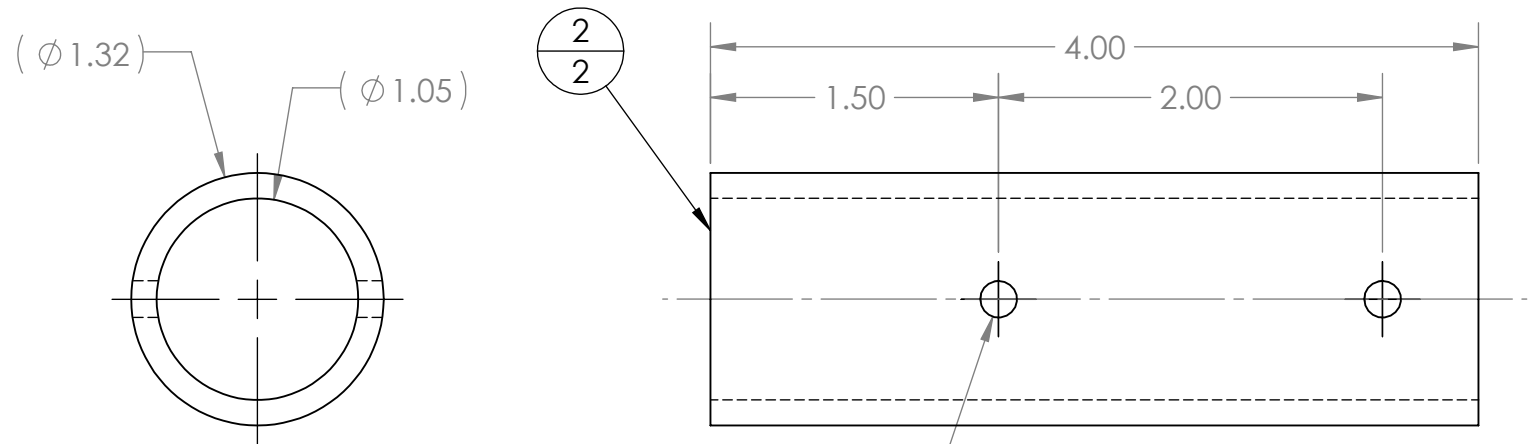
B

B



A

A





2x  $\phi$ .191 THRU  
#11 Drill

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

 		
TITLE:		
<h1>Corner Connector</h1>		
SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00018</b>	<b>B</b>
WEIGHT:		SHEET 2 OF 2

4

3

2

1

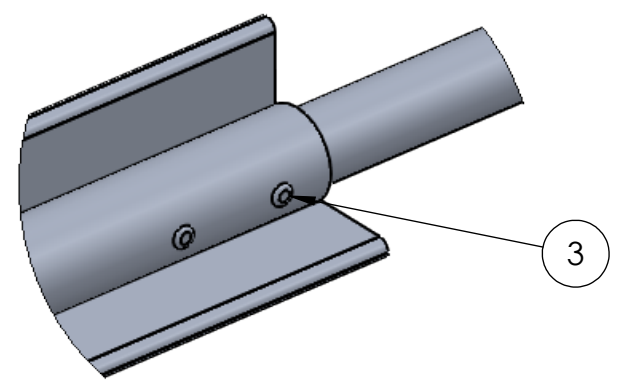
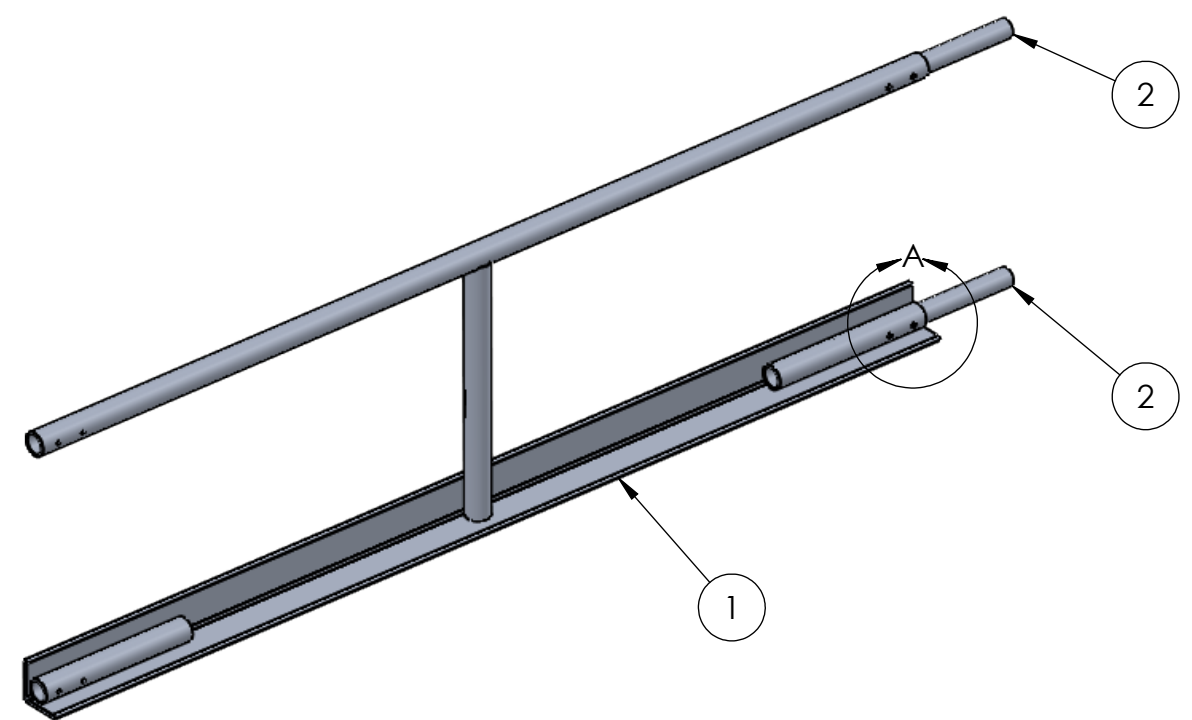
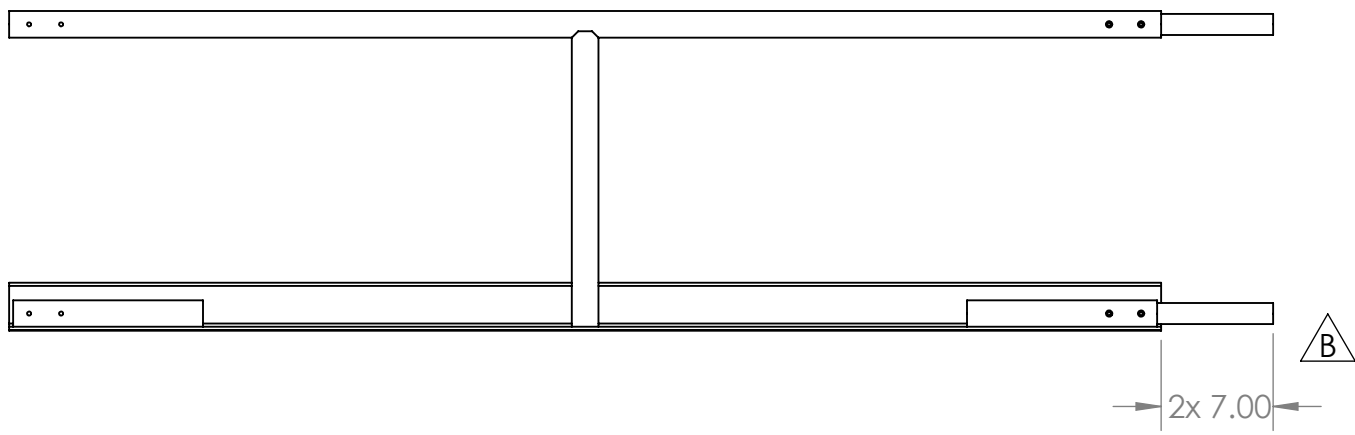
4

3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2	B	Connector Pin moved so both are on same side of assembly	3/15/2018	CPO
A4	C	Rivet description and part number changed to add more detail.	3/20/2020	CPO



DETAIL A  
SCALE 1 : 3

C

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00005	Field Rail	1
2	FE-00026	Connector Pin	2
3	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	4

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



TITLE: <b>Field Rail Assy - Mid</b>		
SIZE <b>B</b>	DWG. NO. <b>FE-00022</b>	REV <b>C</b>
SCALE: 1:12 WEIGHT:		SHEET 1 OF 1

4

3

2

1

B

B

A

A

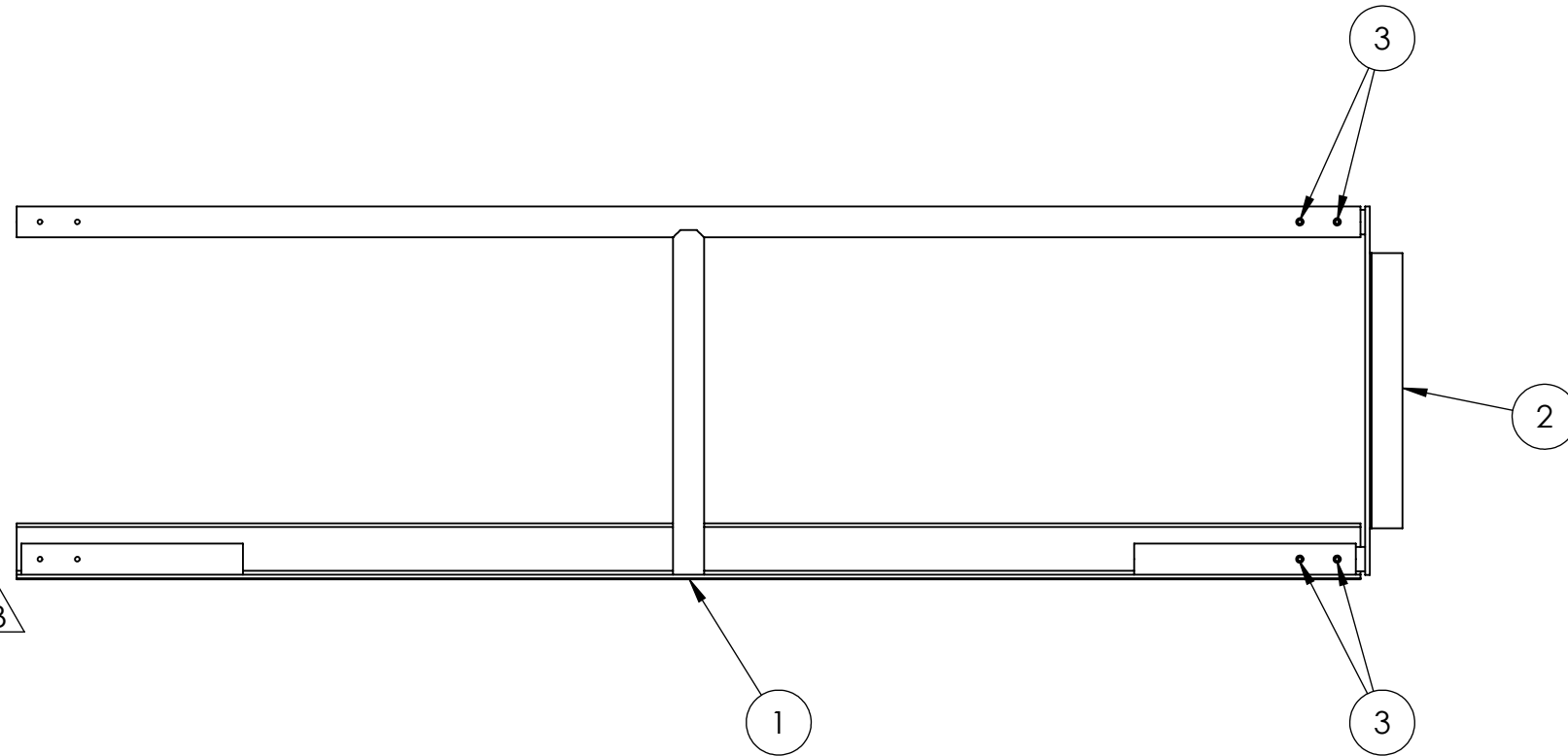
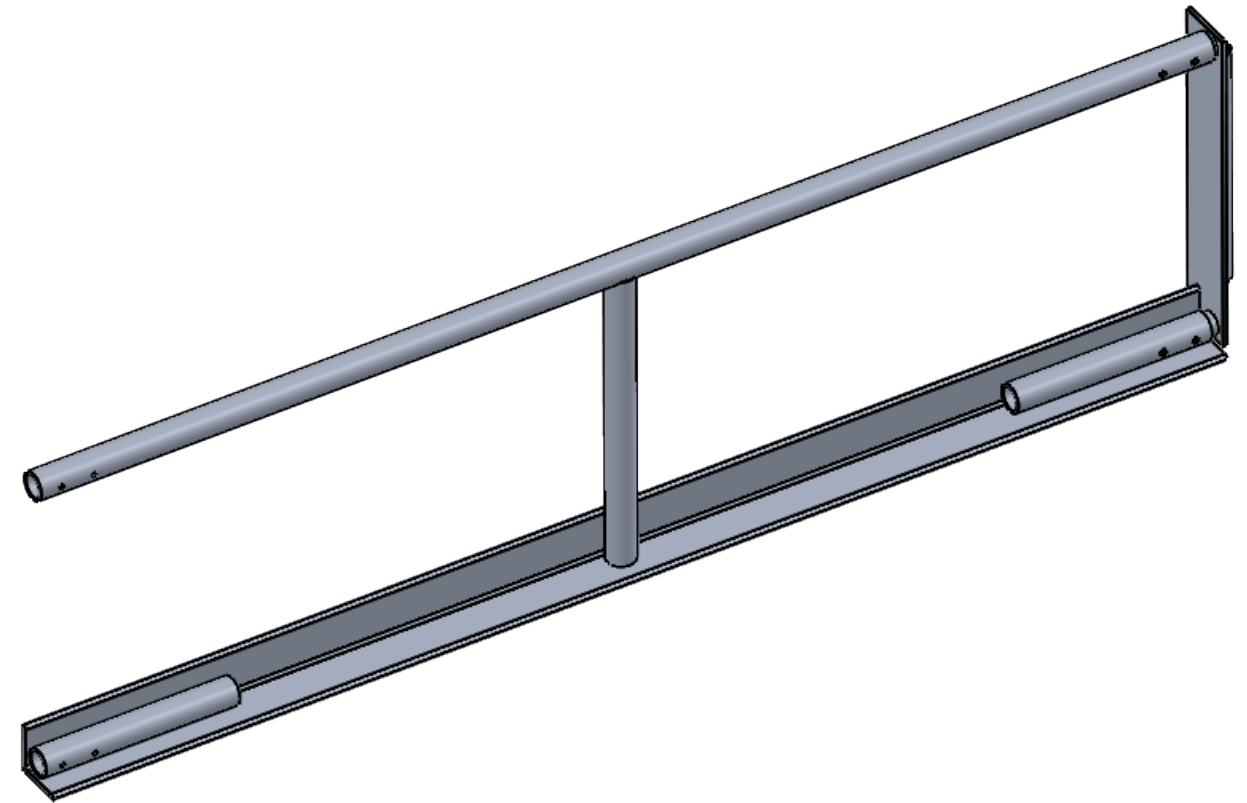
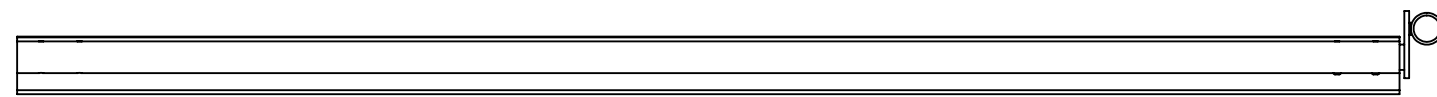
4

3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A4	B	Removed use of FE-00018 Connector Pin, modified rivet part number and description.	3/20/2020	CPO



B

B

B

A

A

B

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00005	Field Rail	1
2	FE-00018	Corner Connector	1
3	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	4

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



TITLE:		
Field Rail Assy - Left		
SIZE	DWG. NO.	REV
<b>B</b>	FE-00023	<b>B</b>
SCALE: 1:10 WEIGHT:		SHEET 1 OF 1

4

3

2

1

4

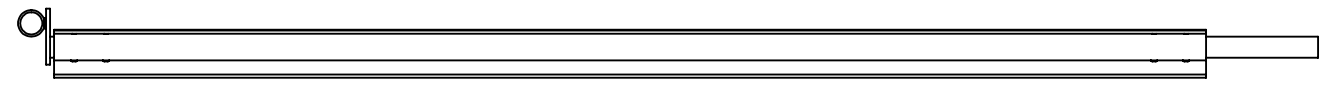
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2

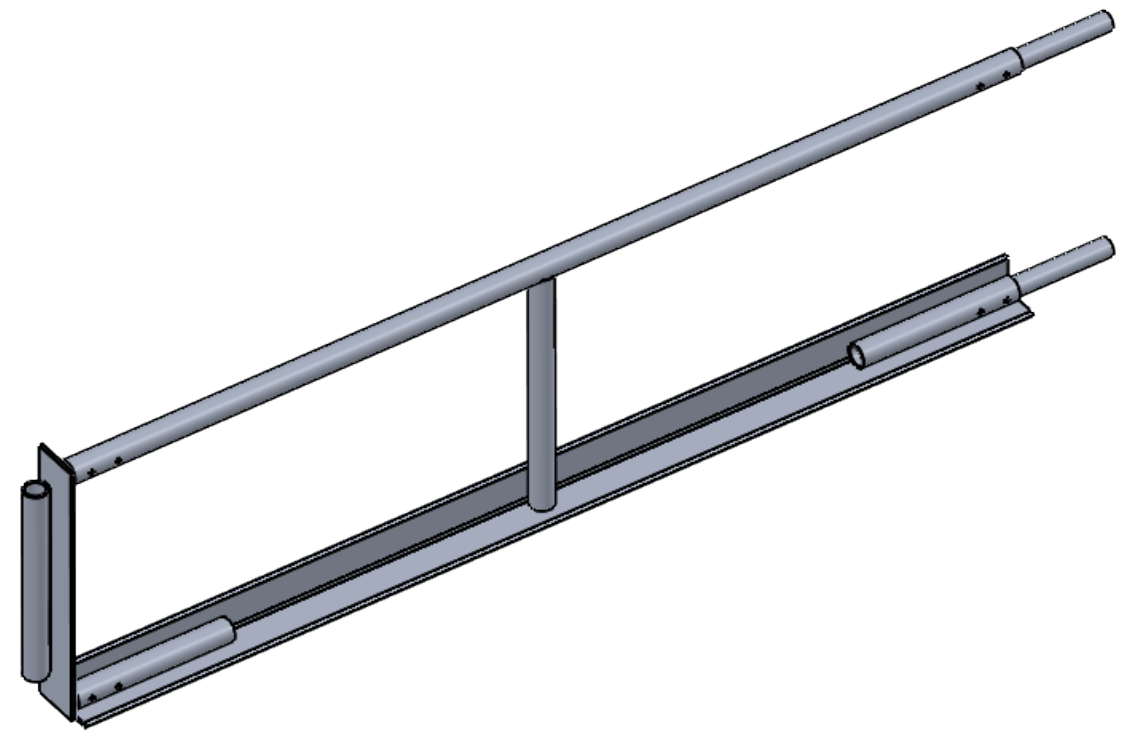
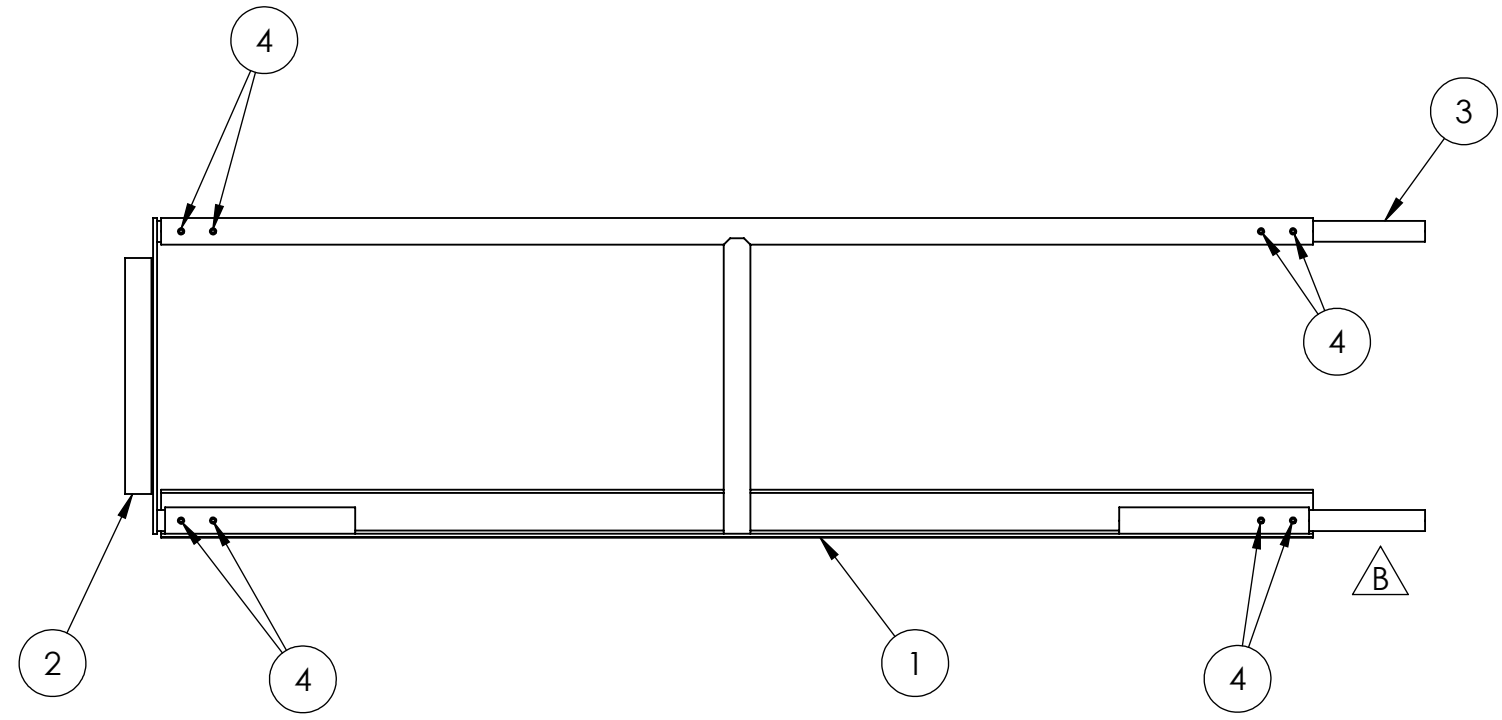
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3, A4	B	Additional FE-00026 Connector Pin added to assembly, rivet part number and description modified	3/20/2020	CPO

B



B



A

A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00005	Field Rail	1
2	FE-00018	Corner Connector	1
3	FE-00026	Connector Pin	2
4	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	8

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



TITLE:		
Field Rail Assy - Right		
SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00024</b>	<b>B</b>
SCALE: 1:12 WEIGHT:		SHEET 1 OF 1

4

3

2

1

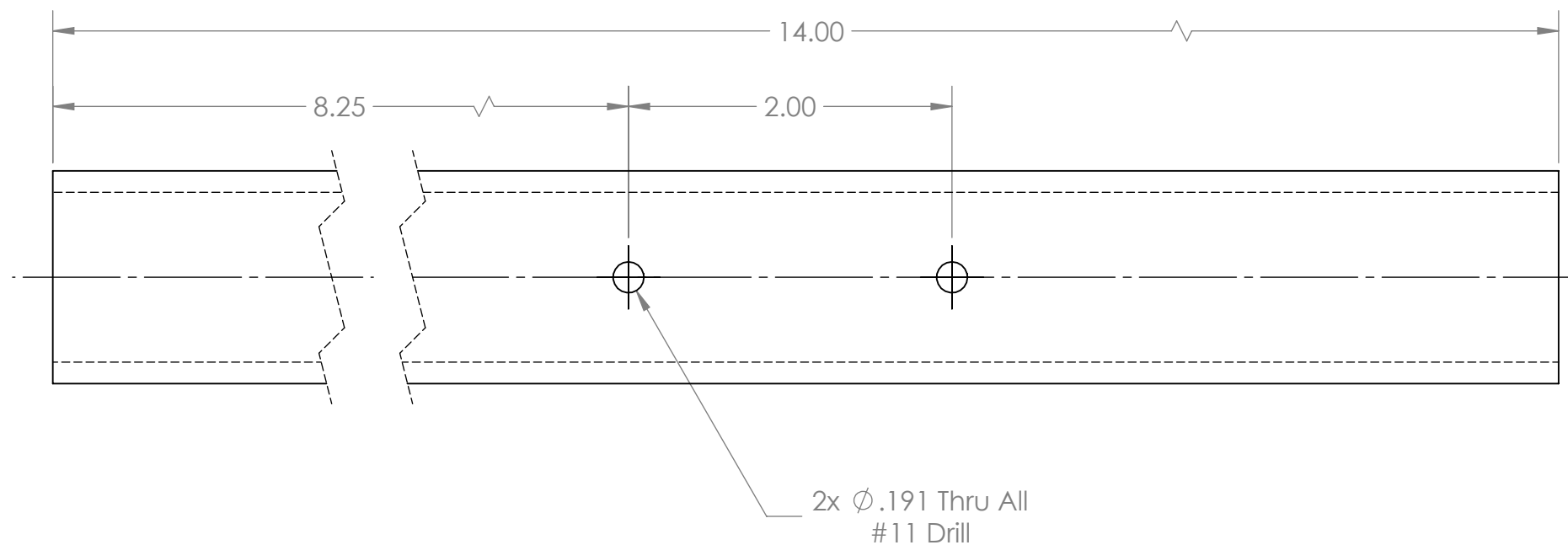
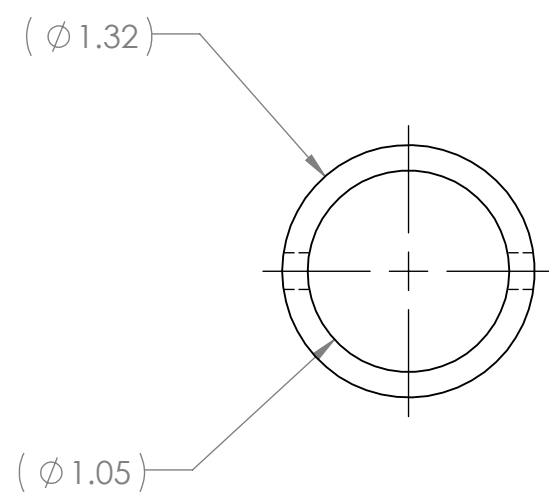
4

3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	redrawn	6/5/2008	dfoster



- Notes:
1. Material: 1" Schedule 40 Pipe, 6061-T6 Aluminum
  2. Remove all sharp edges

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



TITLE:		
<b>Connector Pin</b>		
SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00026</b>	<b>A</b>
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

4

3

2

1



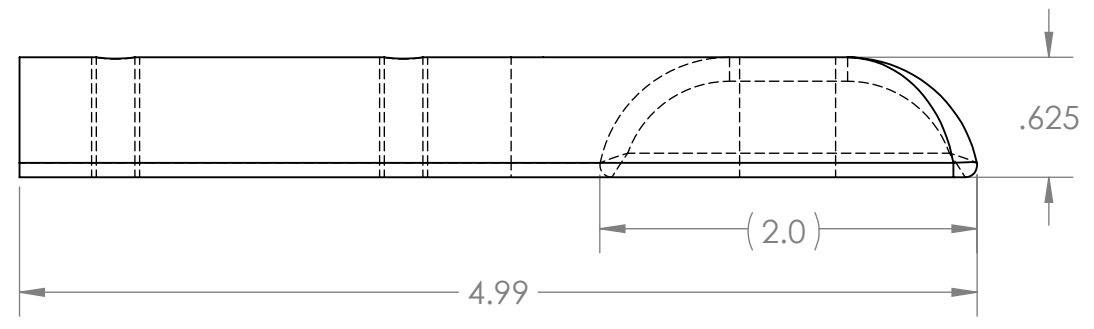
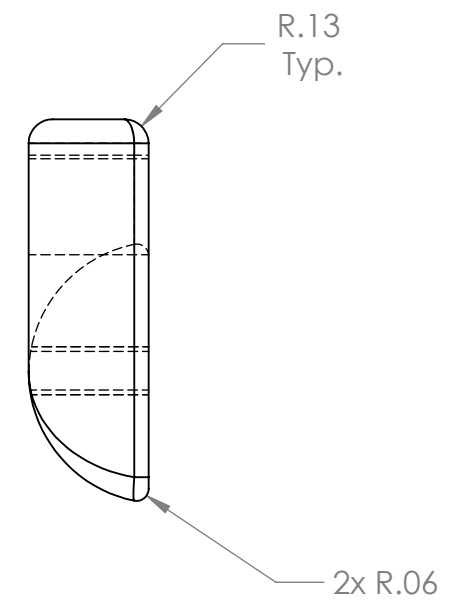
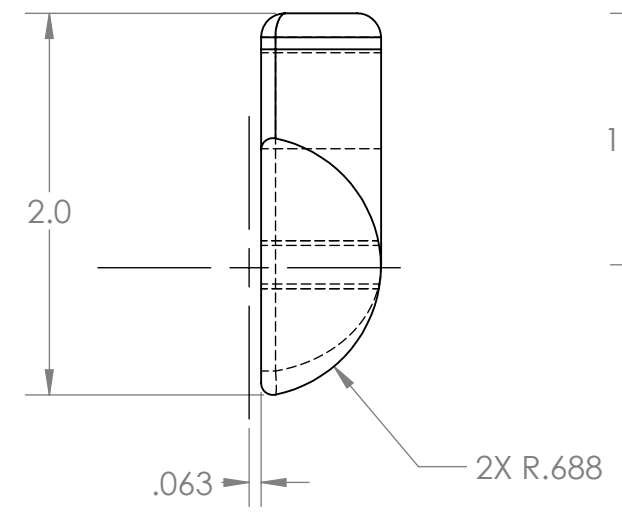
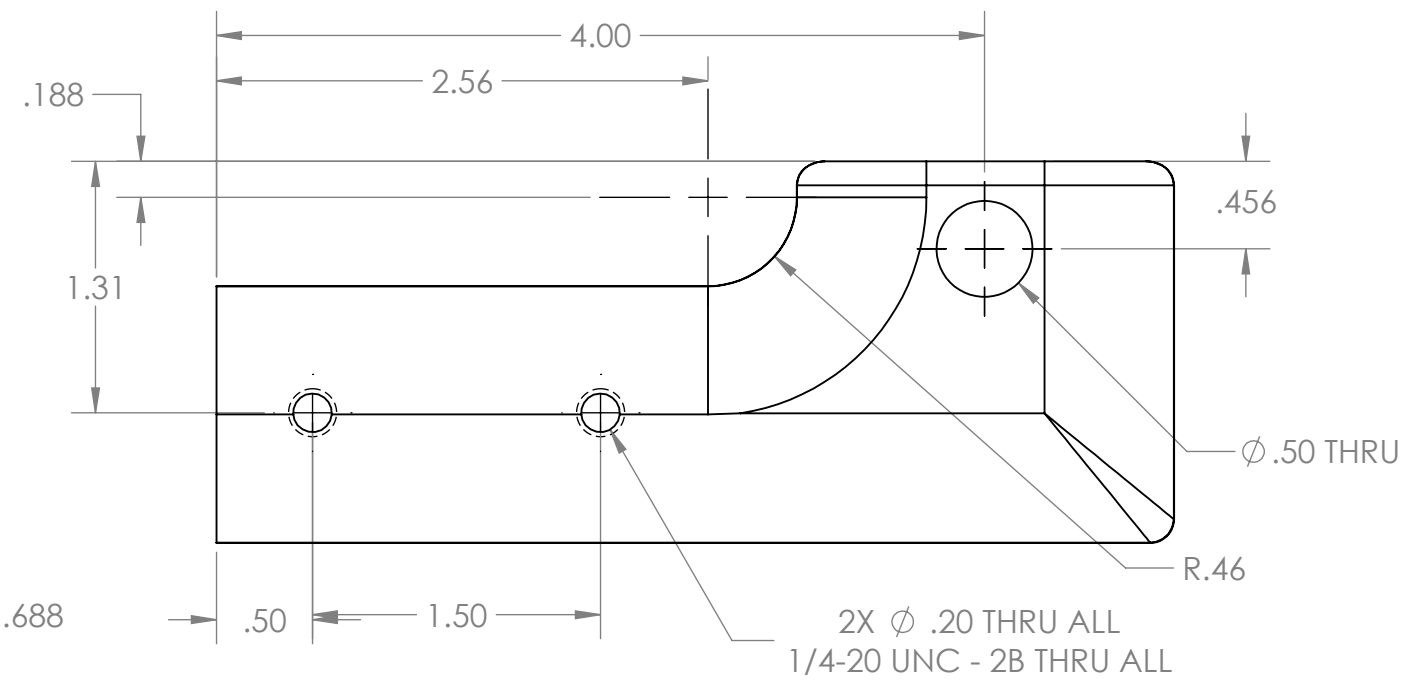
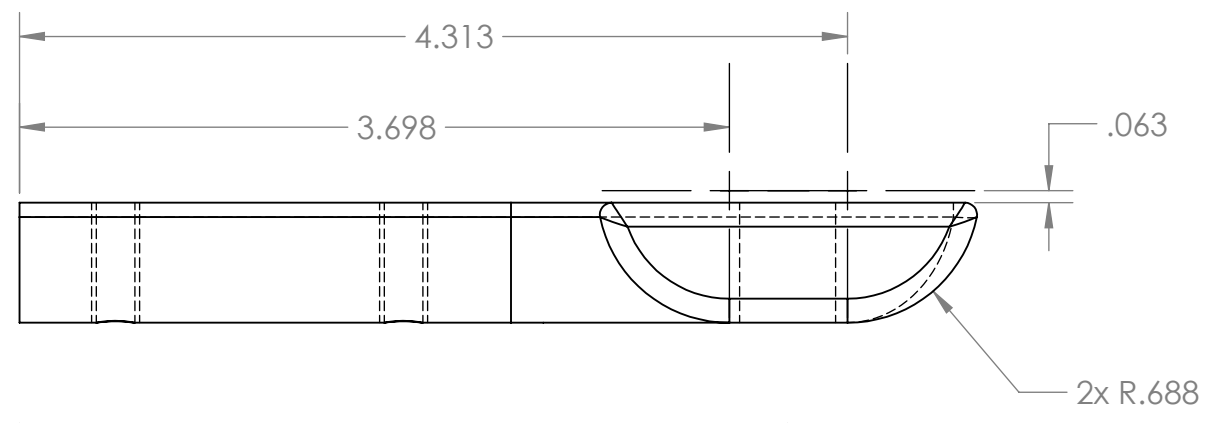
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3

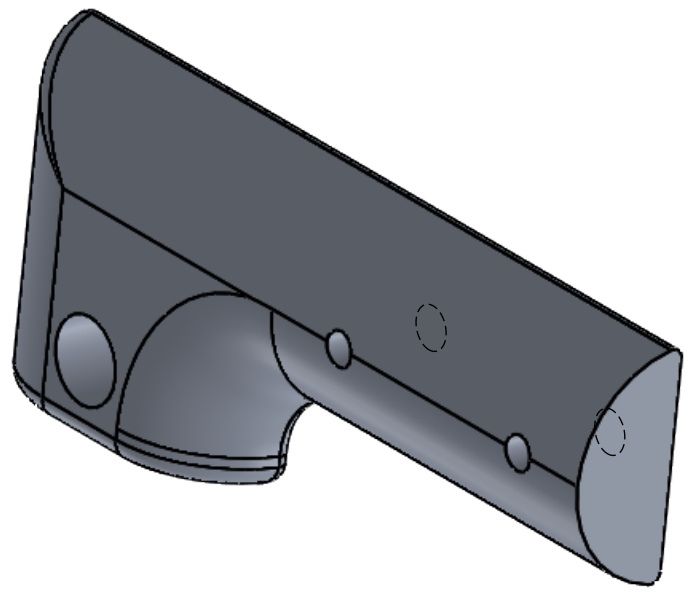
2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	redrawn	8/8/2008	dfoster



- Notes:
1. Material: 6063 Aluminum
  2. Remove all sharp edges



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

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

TITLE: **Hinge, Insert**

SIZE <b>B</b>	DWG. NO. <b>FE-00027</b>	REV <b>A</b>
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

4

3

2

1

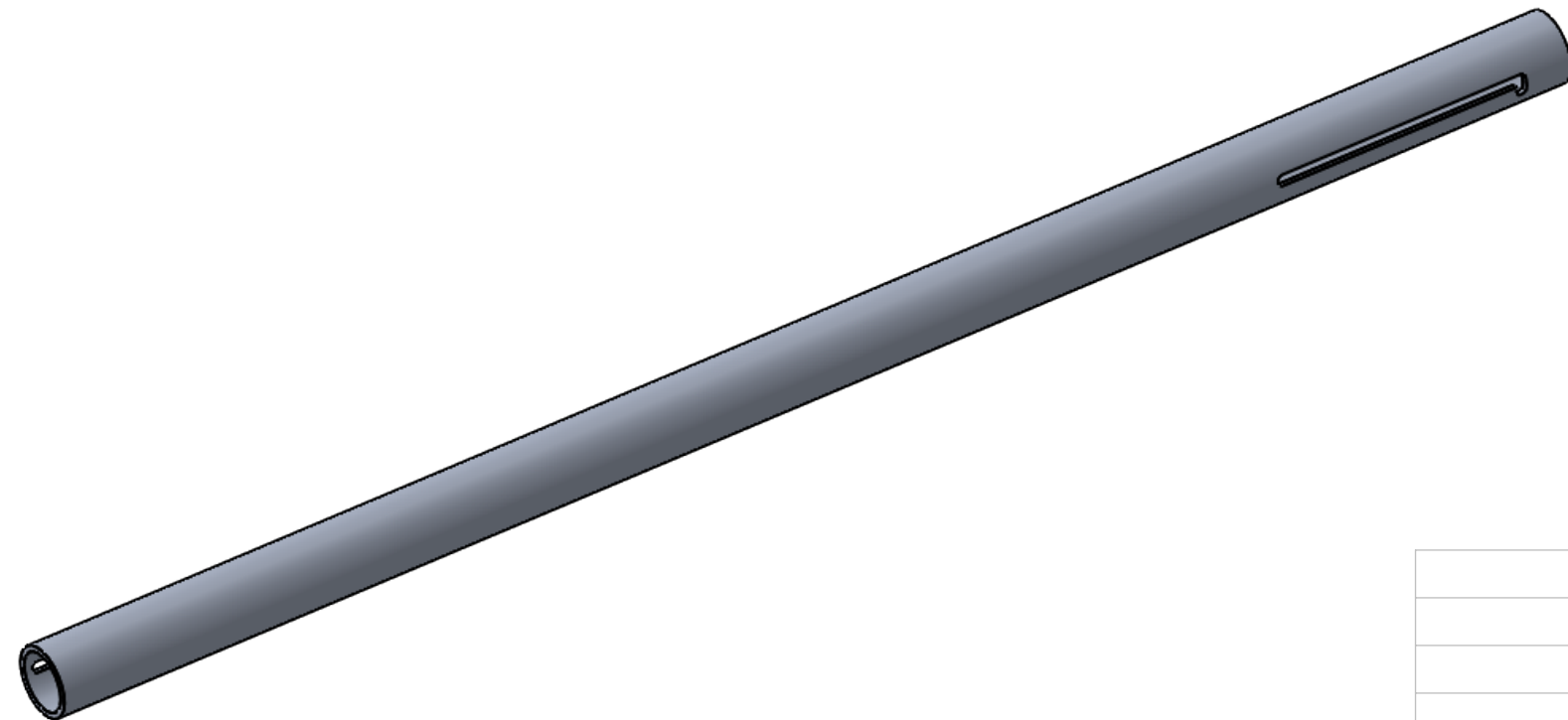
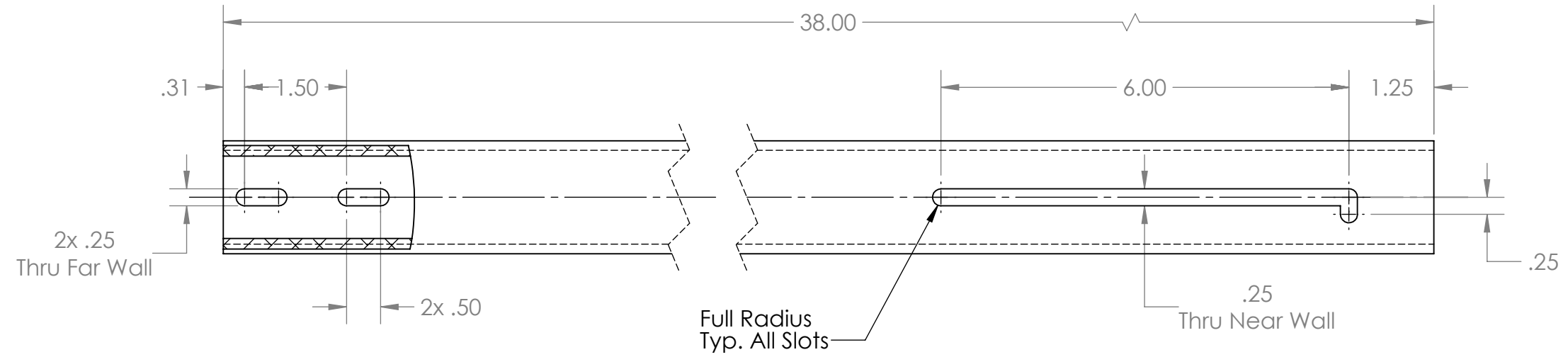
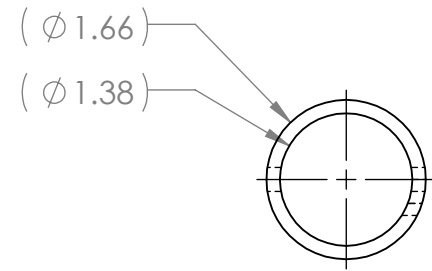
4

3

2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Redrawn	8/6/2008	dfoster



- Notes:  
 1. Material: 1-1/4" Aluminum 6061-T6 Schedule 40 Pipe  
 2. Remove all sharp edges.

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UNLESS OTHERWISE SPECIFIED:		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 $\pm .001$		DRAWN		
INTERPRET GEOMETRIC TOLERANCING PER:		CHECKED		TITLE:
MATERIAL		ENG APPR.		Arm, Field Gate
FINISH		MFG APPR.		SIZE DWG. NO. REV
NEXT ASSY	USED ON	Q.A.		<b>B</b> FE-00028 <b>A</b>
APPLICATION		COMMENTS:		WEIGHT: SHEET 1 OF 1
DO NOT SCALE DRAWING				

4

3

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1

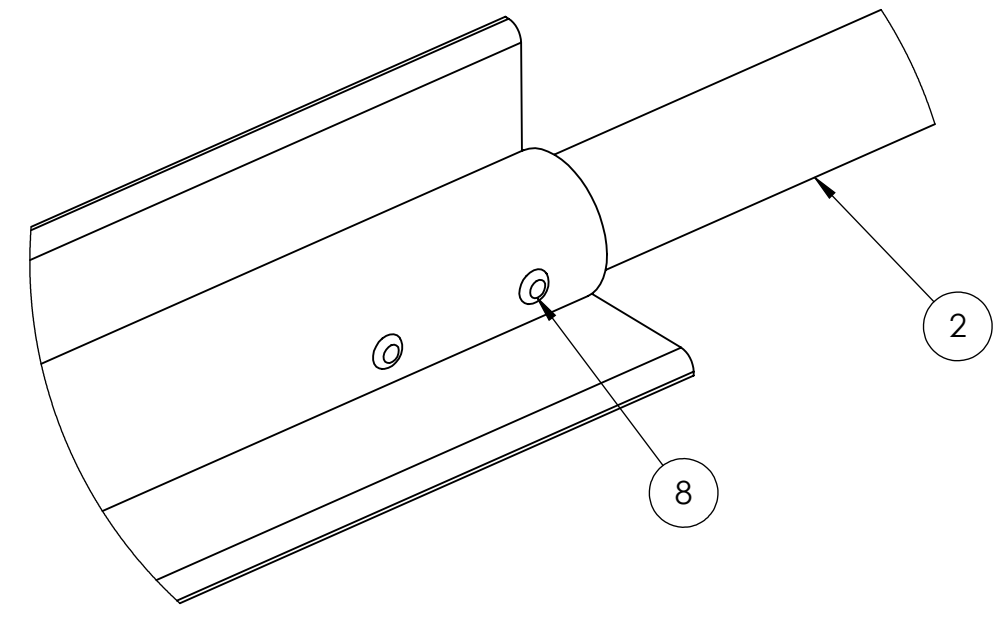
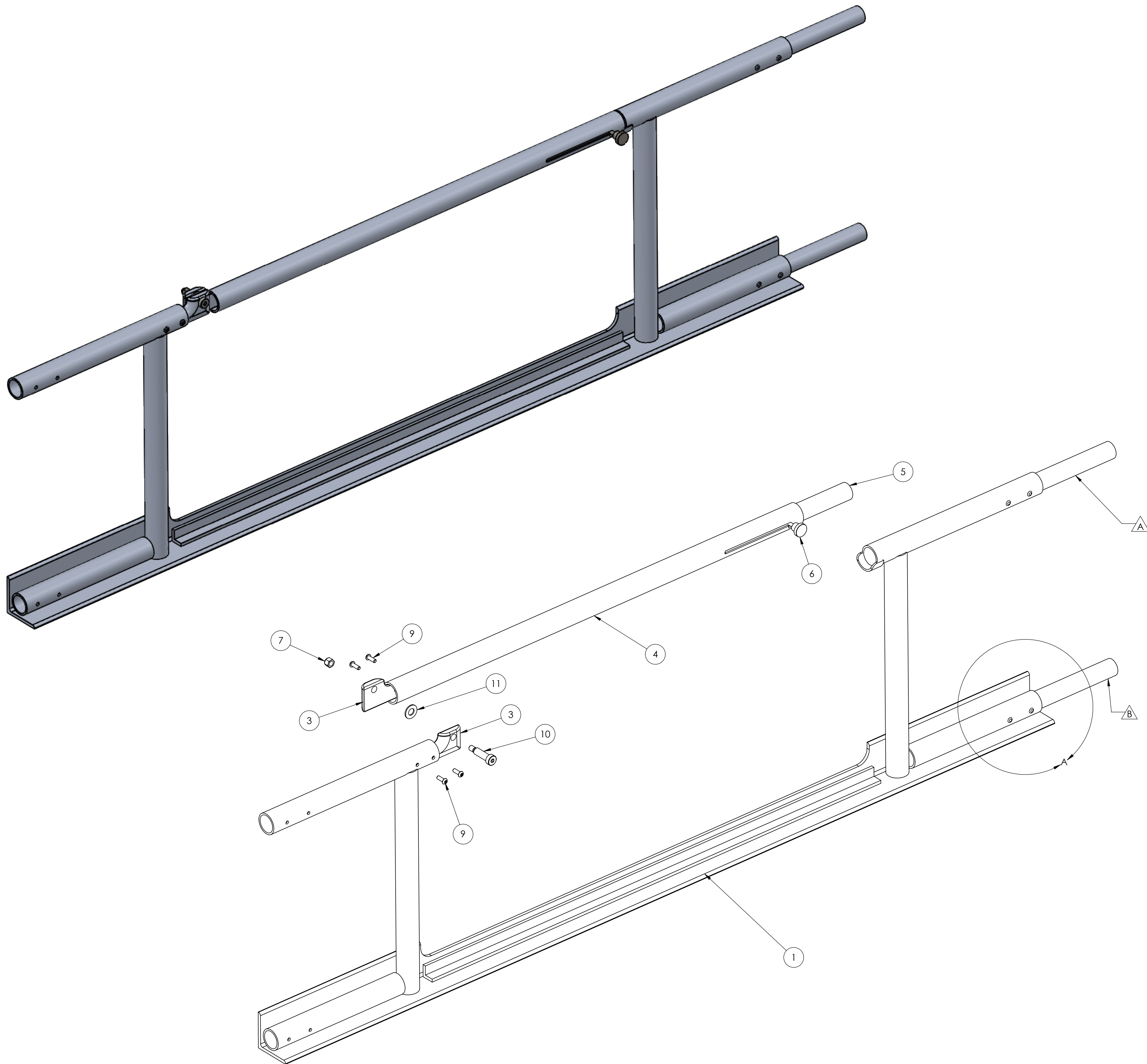
B

B

A

A

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A7, C2, C3	A	Relocated Item 3 (x2), Relocated Detail A	1/7/2009	dfoster
A2, B3	B	Relocated Item 2, renumbered items, hardware part number and descriptions modified.	3/23/2020	CPO



DETAIL A  
SCALE 1 : 2  
Typ. 2 Places

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00006	Field Gate, Weldment	1
2	FE-00026	Connector Pin	2
3	FE-00027	Hinge, Insert	2
4	FE-00028	Arm, Field Gate	1
5	FE-00031	Slide, Gate	1
6	FE-00054	Knob, Round Knurled with threaded Stud McMaster Carr 6091K61	1
7	nylock_.375_16	Steel Nylon-Insert Locknut, 3/8"-16	1
8	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	4
9	round_hex_.25_20_.75_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 3/4" long, fully threaded	4
10	shoulder_.375_16_.5_1.5	3/8-16 Socket Head Shoulder Screw, 1/2" x 1.5"	1
11	washer_flat_.5	Flat Washer for 1/2" Screw	1

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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: 1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MEG APPR.		
Q.A.		
COMMENTS:		
MATERIAL		
FINISH		
APPLICATION		DO NOT SCALE DRAWING

**FIRST ROBOTICS COMPETITION** **SOLIDWORKS**  
**Field Gate, Assembly**  
 SIZE DWG. NO. REV  
**D FE-00029 B**  
 SCALE: 1:4 WEIGHT: SHEET 1 OF 1

4

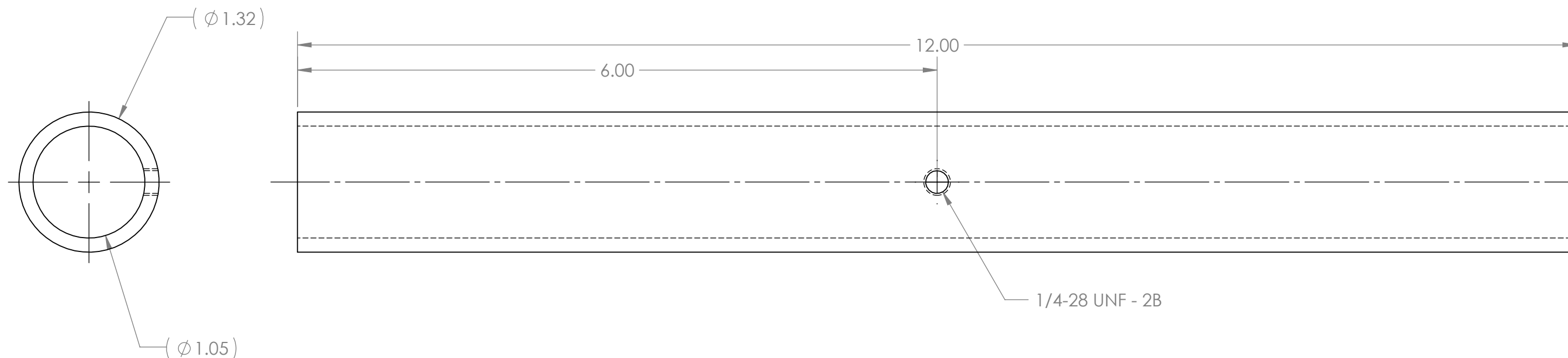
3

2

1

B



B



Notes:

- 1. Material: 1" Schedule 40 Aluminum 6061-T6.
- 2. Remove all sharp edges.

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN		
		INTERPRET GEOMETRIC TOLERANCING PER:	CHECKED		TITLE: <b>Slide, Gate</b>
		MATERIAL	ENG APPR.		
NEXT ASSY	USED ON	FINISH	MFG APPR.		SIZE DWG. NO. REV
APPLICATION		DO NOT SCALE DRAWING	Q.A.		<b>B</b> FE-00031
			COMMENTS:		SCALE: 1:1 WEIGHT: SHEET 1 OF 1

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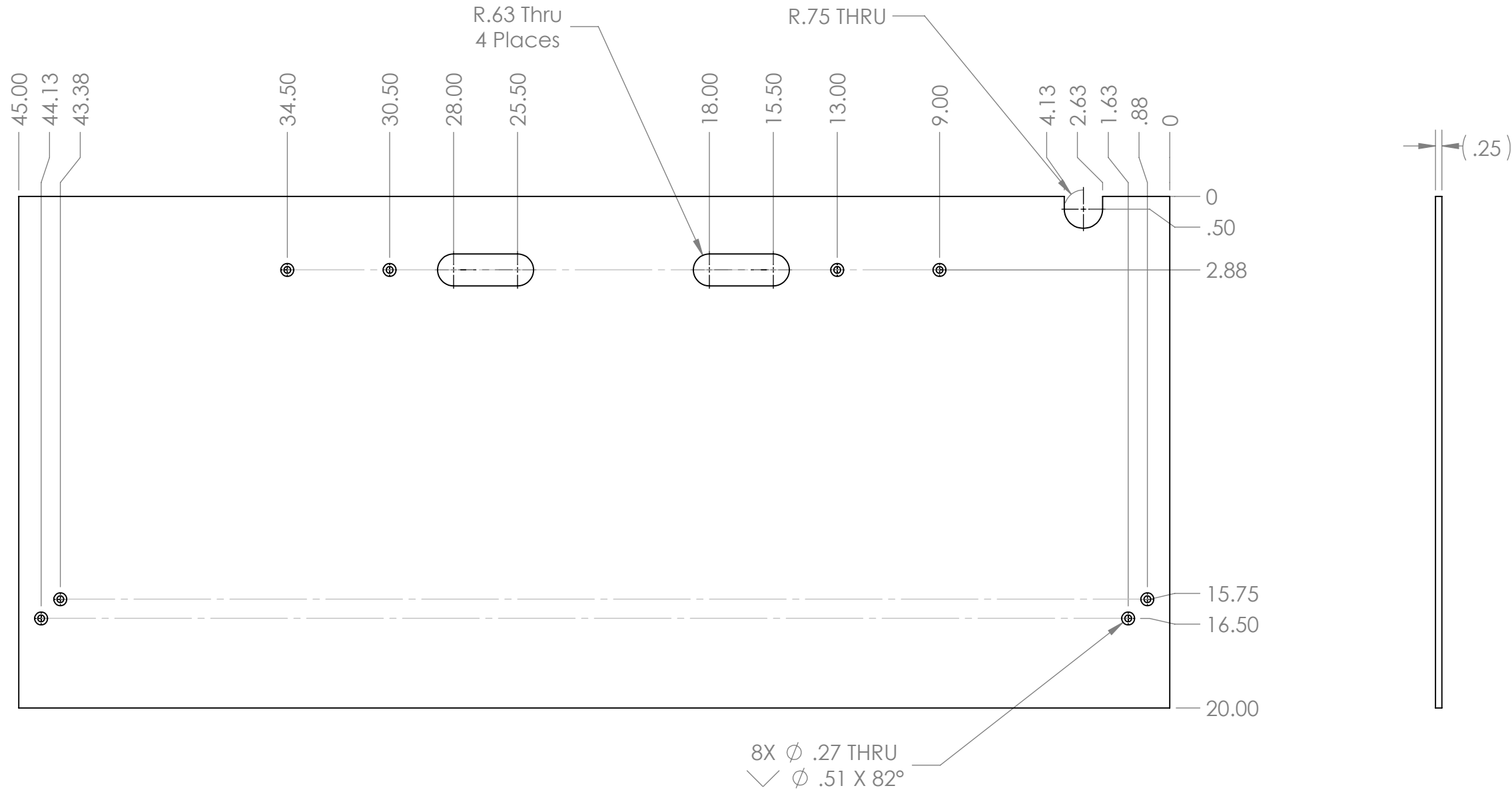
3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	Added counter sinks, hand holes and a notch	9/23/14	MLC

B



B

A

A

- Notes:
1. Material: 1/4" Clear Polycarbonate
  2. Remove all burrs and sharp edges.

8X Ø .27 THRU  
 ✓ Ø .51 X 82°

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



TITLE:  
**Field Plastic "G"**

SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00044</b>	<b>A</b>

SCALE: 1:5 WEIGHT: SHEET 1 OF 1

4

3

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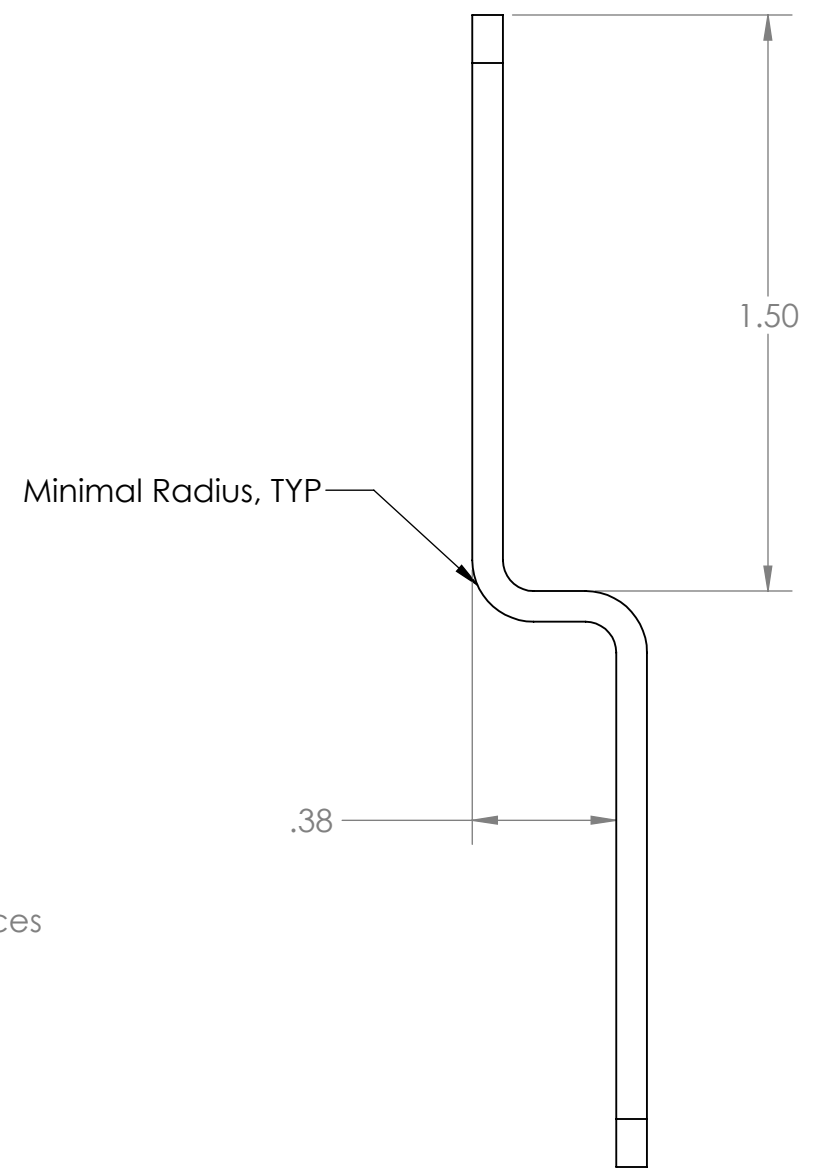
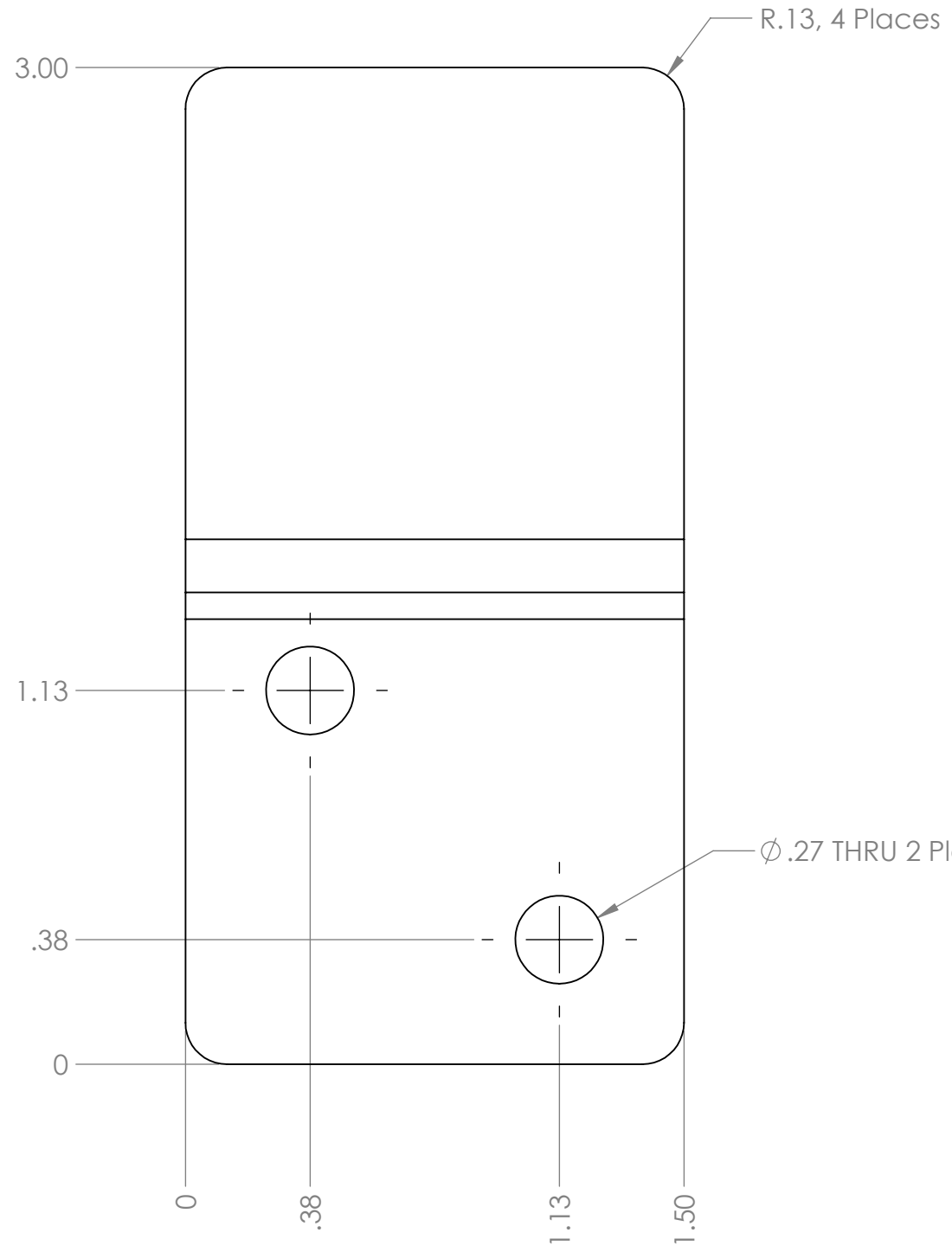
1

B

B

A

A



- Notes:
- 12 Gauge 5052 Aluminum
  - Remove all burrs and sharp edges

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

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

TITLE:  
**Lower Z-Bracket, Gate Plastic**

SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00045</b>	

SCALE: 2:1 WEIGHT: SHEET 1 OF 1

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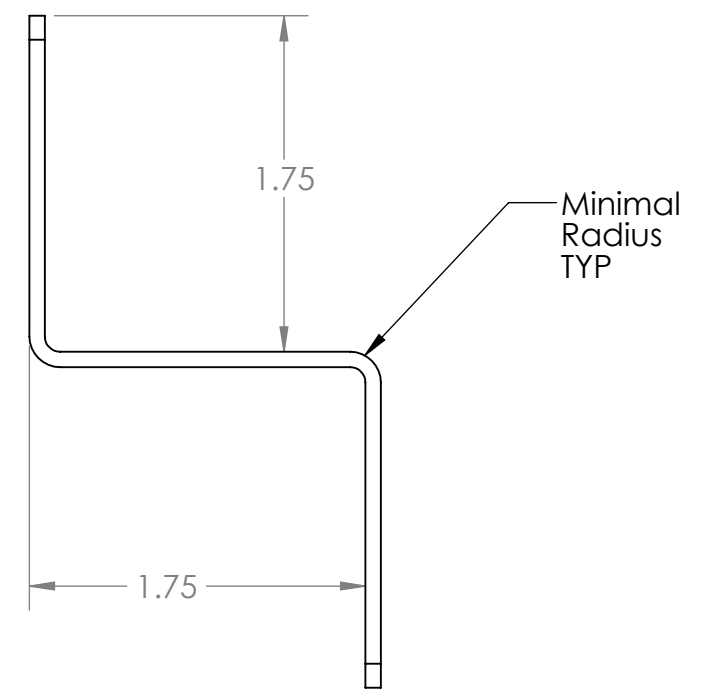
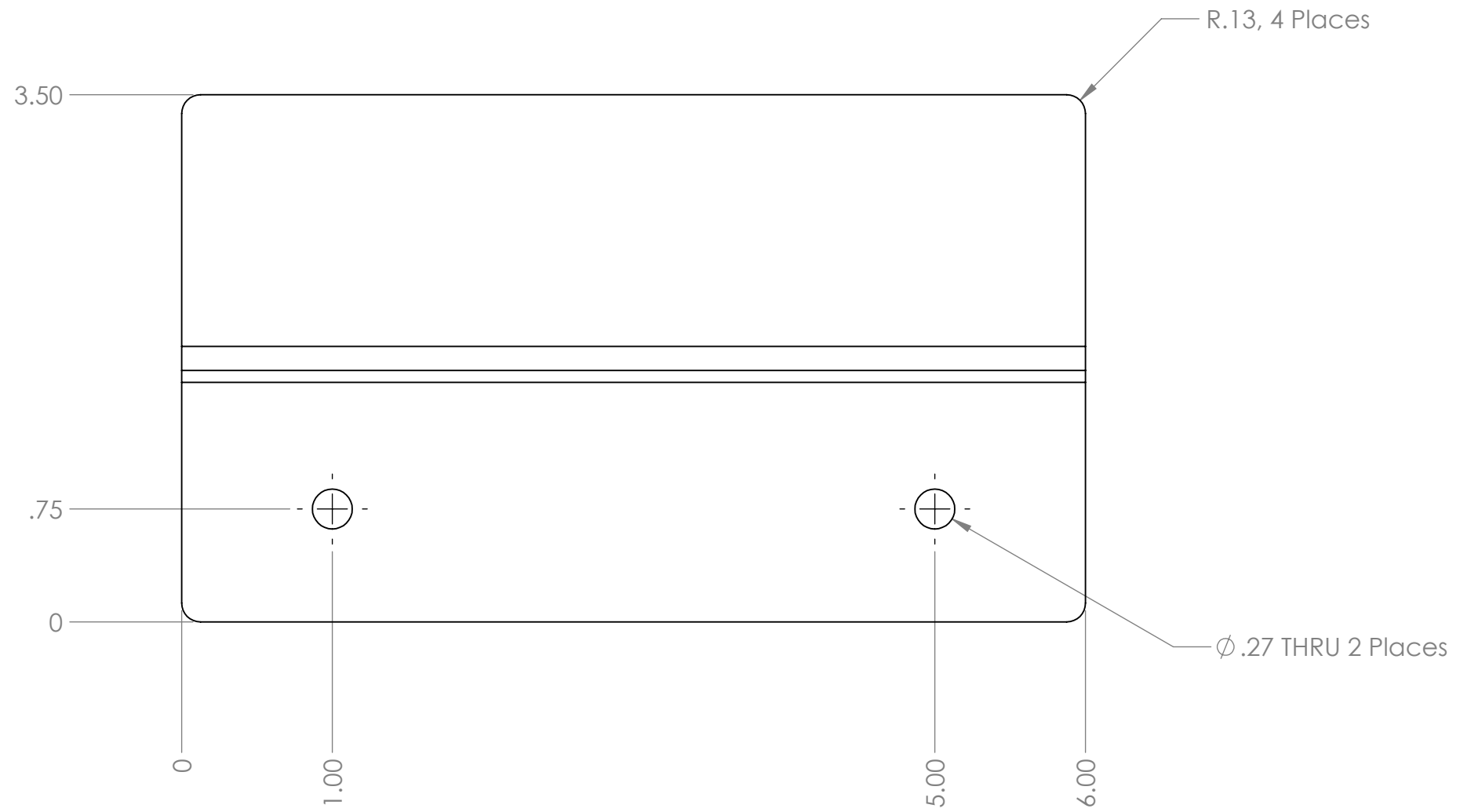
1

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- Notes:
- 12 Gauge 5052 Aluminum
  - Remove all burrs and sharp edges

**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.

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



TITLE:  
**Upper Z-Bracket,  
 Gate Plastic**

SIZE DWG. NO. REV  
**B FE-00046**

SCALE: 1:1 WEIGHT: SHEET 1 OF 1

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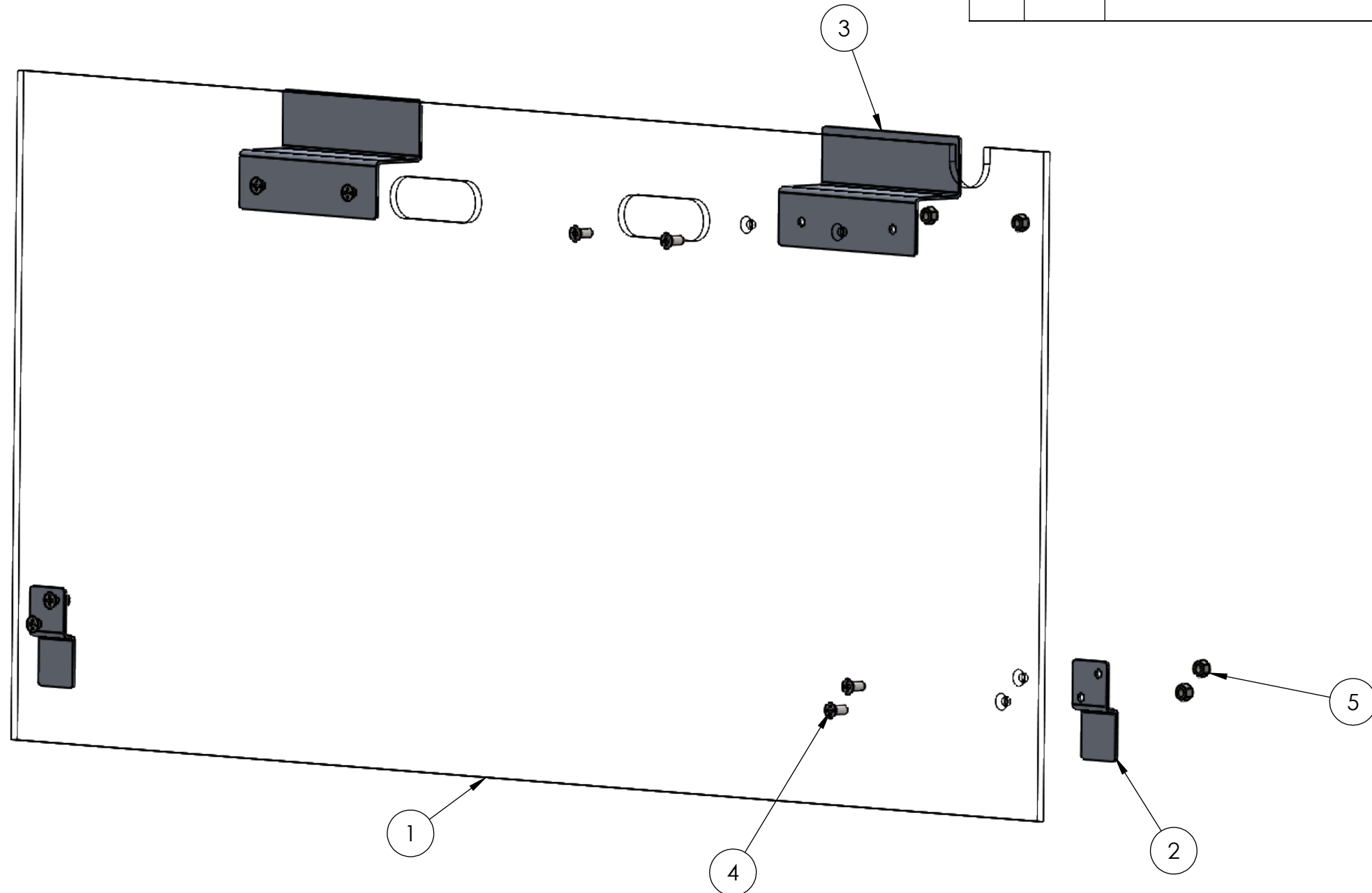
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A4	A	Fastener part number and descriptions modified.	3/23/2020	CPO



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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00044	Field Plastic "G"	1
2	FE-00045	Lower Z-Bracket, Gate Plastic	2
3	FE-00046	Upper Z-Bracket, Gate Plastic	2
4	flat_phil_.25_20_.625	Steel Phillips Flat Head Screw, 1/4"x20 x 5/8" long, fully threaded	8
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	8

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

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

TITLE: **Gate Plastic Assembly**

SIZE **B** DWG. NO. **FE-00047** REV **A**

SCALE: 1:4 WEIGHT: SHEET 1 OF 1

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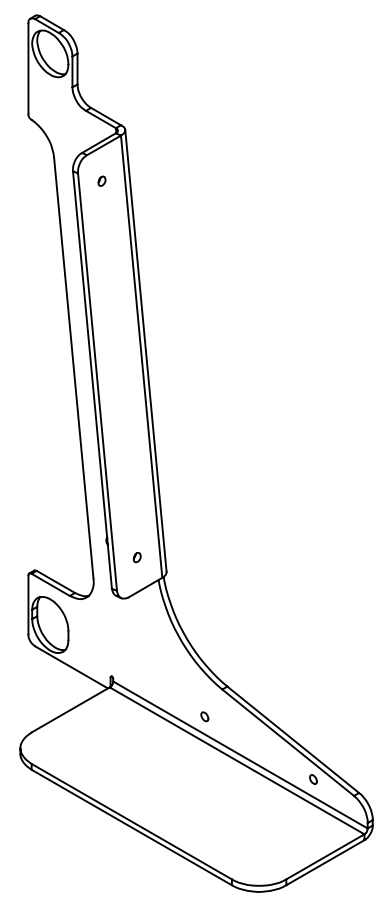
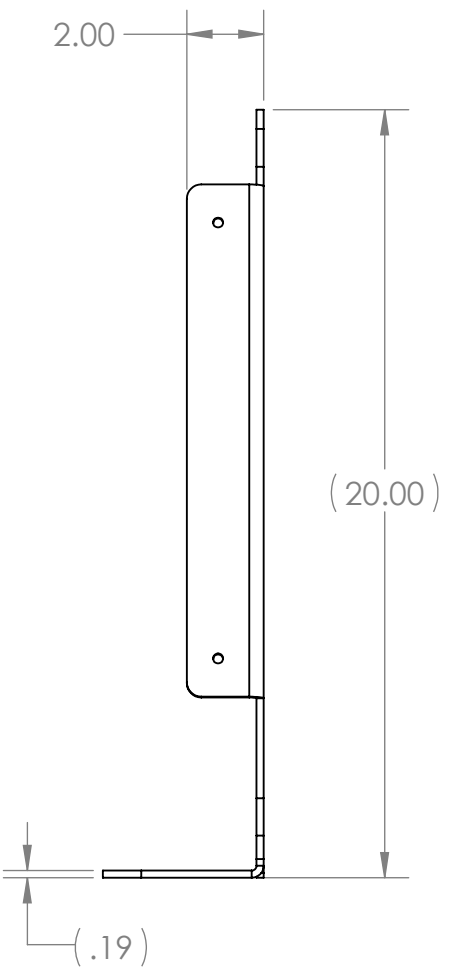
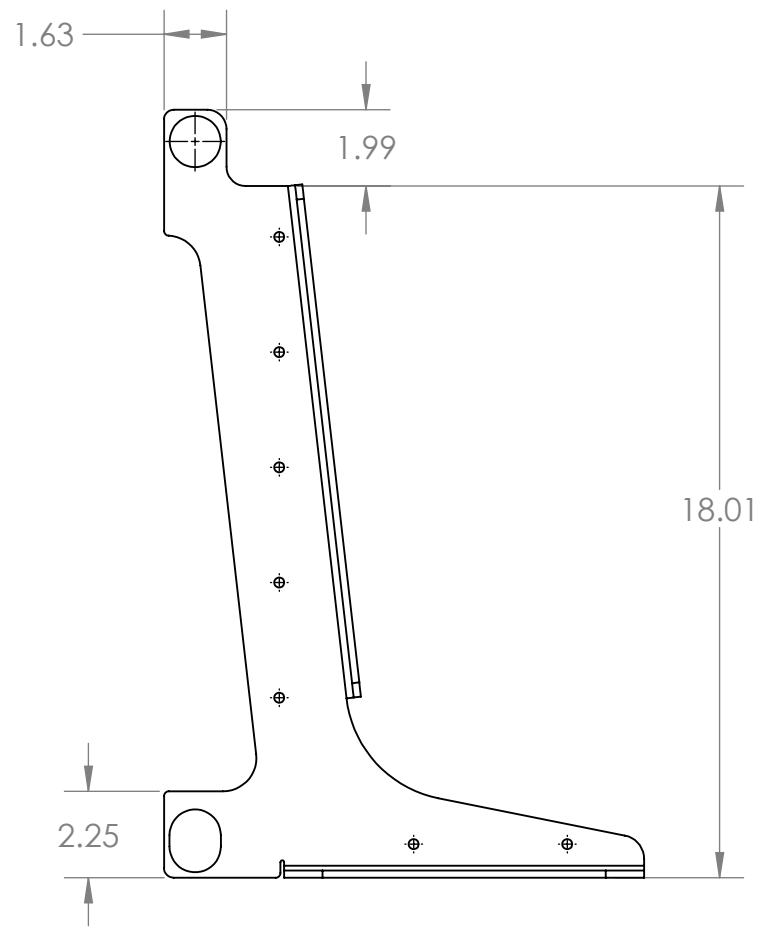
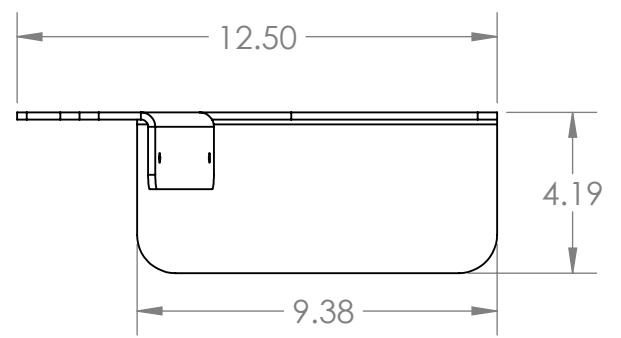
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Note:

Material: 5052 Aluminum Sheet, 3/16" Thick

This drawing represents overall dimensions for AndyMark AM-2810. Please see the AndyMark website for more details regarding part dimensions.

**PROPRIETARY AND CONFIDENTIAL**  
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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	
		TOLERANCES:	CHECKED	
		FRACTIONAL: ±1/16	ENG APPR.	
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.	
		TWO PLACE DECIMAL ±.01	Q.A.	
		THREE PLACE DECIMAL ±.001	COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		



TITLE:		
<h1>Outrigger</h1>		
SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00050</b>	
SCALE: 1:5	WEIGHT:	SHEET 1 OF 1

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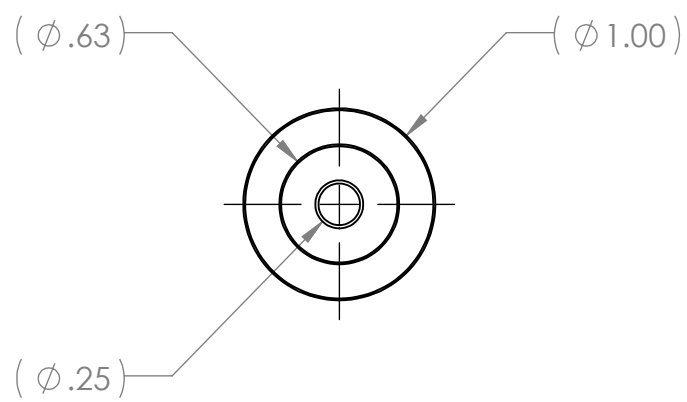
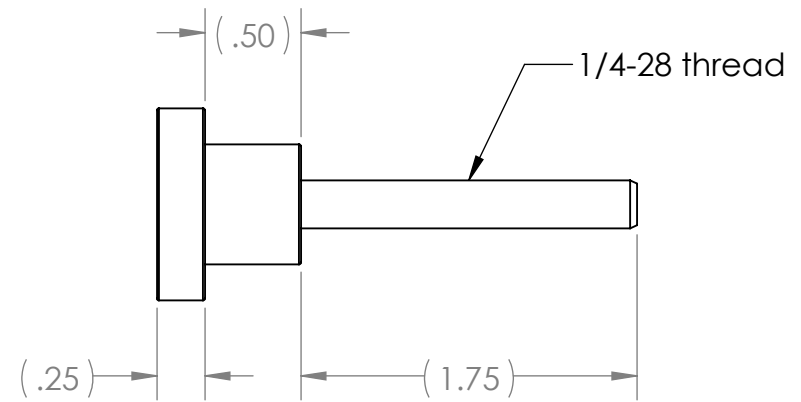
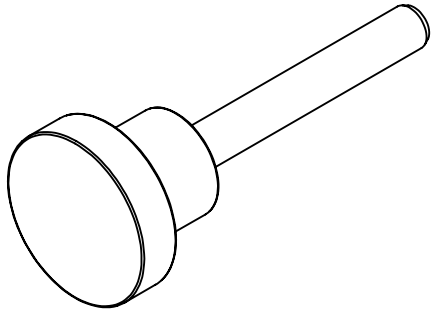
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Notes:

- 1. Description: 303 Stainless Steel Knurled Knob with 1/4"-28 Thread 1-3/4" Long Stud, 1" Head Diameter
- 2. Vendor: McMaster-Carr
- 3. Part Number: 6091K61
- 4. Equivalent substitutions allowed

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



TITLE:  
**Knob, Round Knurled with threaded Stud McMaster Carr 6091K61**

SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-00054</b>	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

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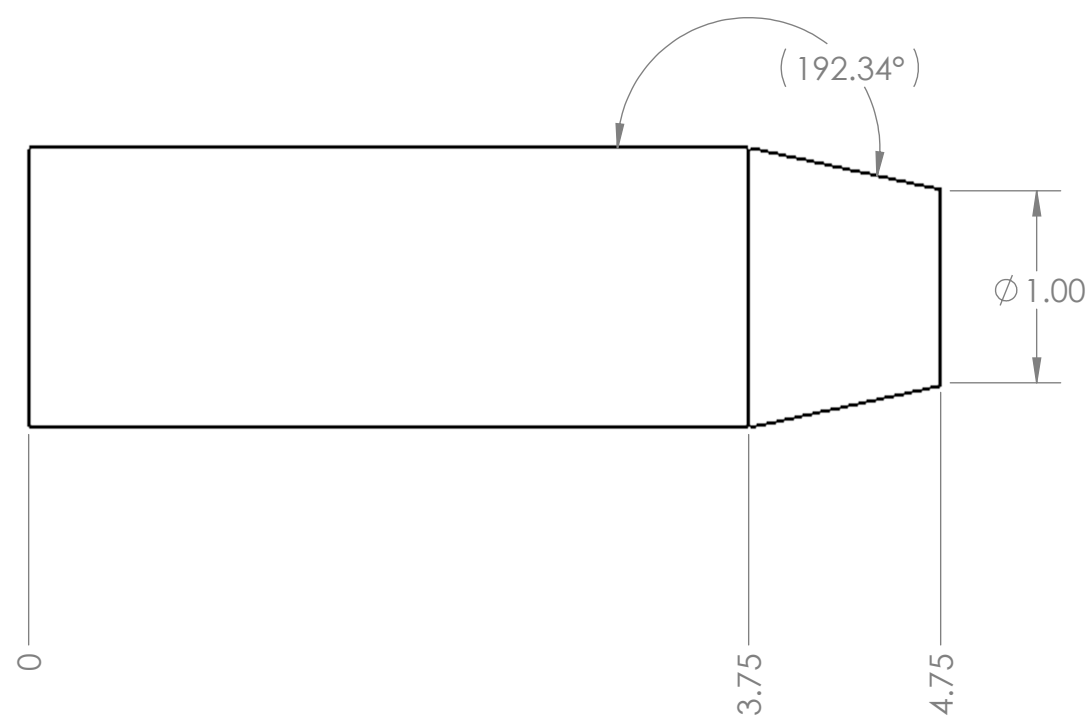
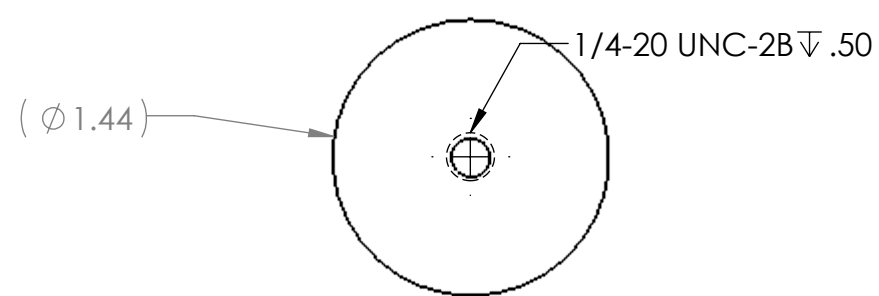
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UNLESS OTHERWISE SPECIFIED:

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

**MATERIAL/FINISH:**  
 1-7/16" round 6061

DO NOT SCALE DRAWING

VEND	NAME	DATE
DRAWN	NW	8/22/2022

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



TITLE:  
**Top Rail, Post**

SIZE	DWG. NO.	REV
<b>C</b>	FE-00060	

SCALE: 1:1 SHEET 1 OF 1

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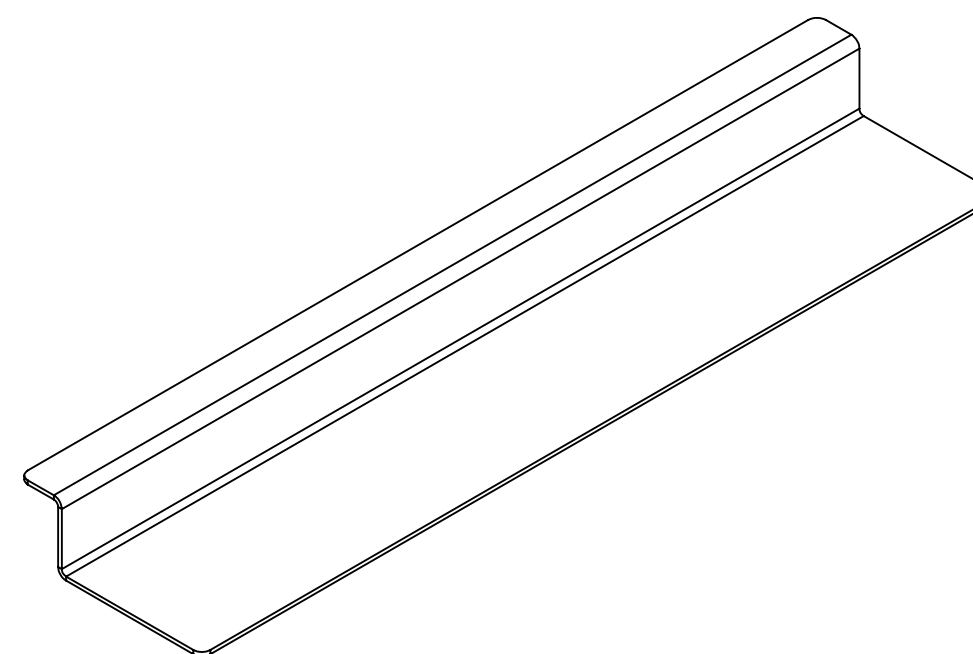
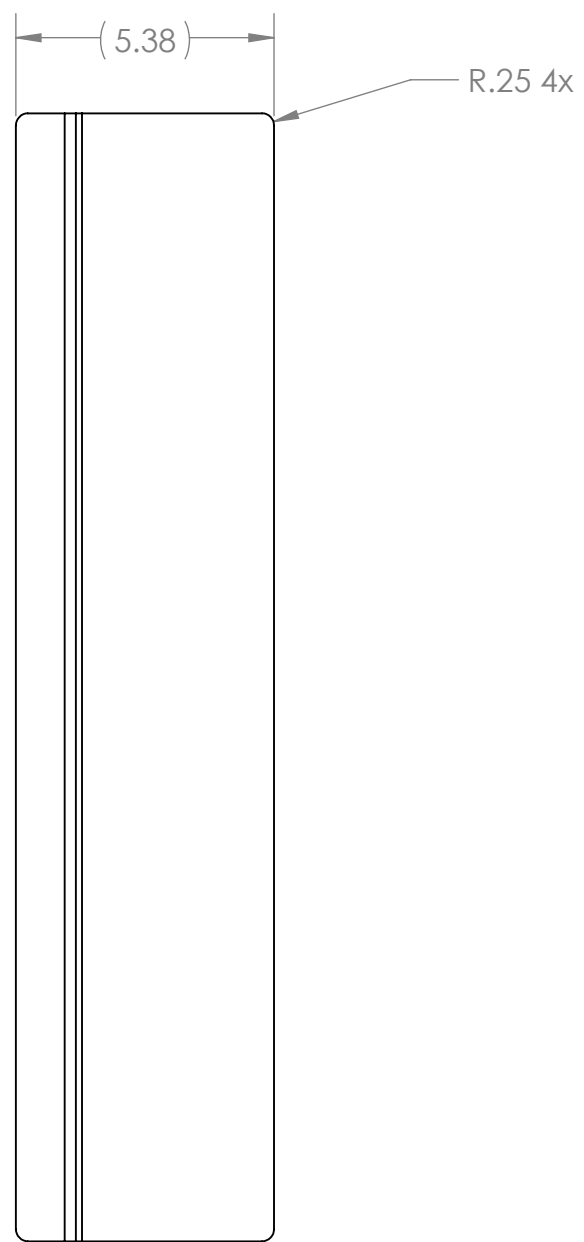
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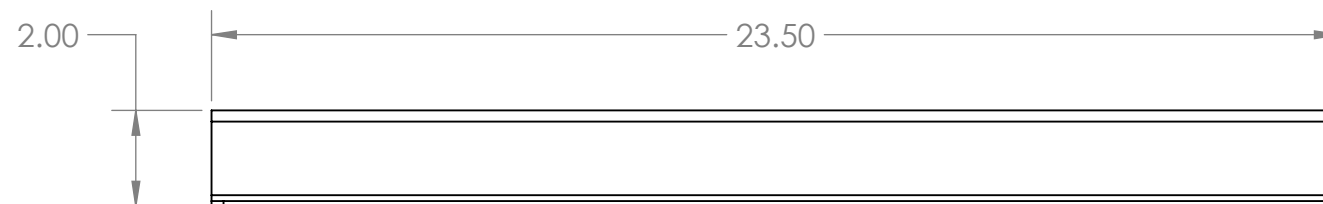
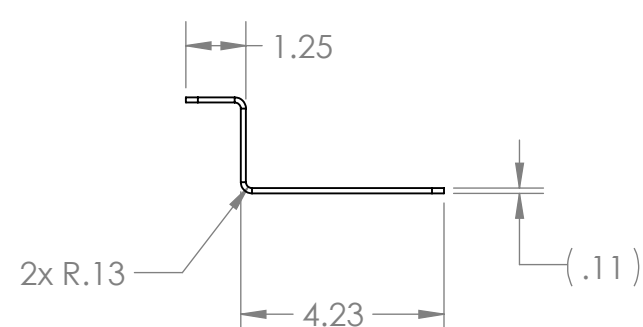


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UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .02 THREE PLACE DECIMAL ± .010  <b>MATERIAL/FINISH:</b> 12 ga pre-plated steel  DO NOT SCALE DRAWING	BEND	NAME	DATE	 
	DRAWN	NW	8/24/2022	
<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:
				Anchor
		SIZE	DWG. NO.	REV
		<b>C</b>	FE-00070	
			SCALE: 1:4	SHEET 1 OF 1

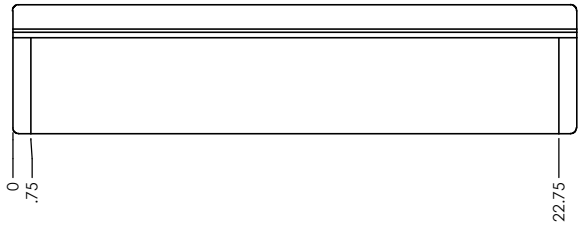
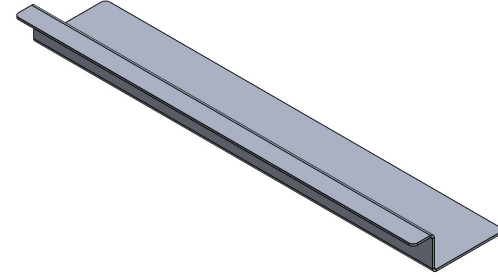
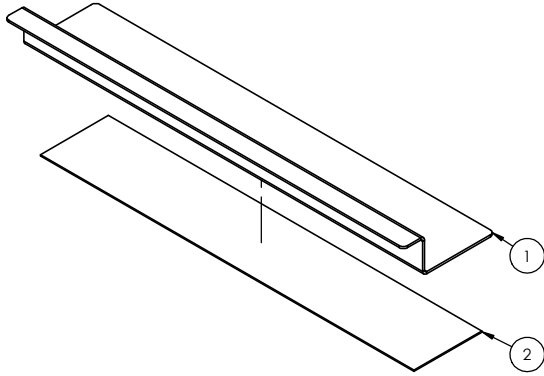
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-00070	Anchor	1
2	Hook_4_22	4" x 22" Hook, Adhesive Backed	1



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/2$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .50$	FIELD	NAME	DATE
	DRAWN	NW	10/3/2022
MATERIAL/FINISH:	<b>PROPRIETARY AND CONFIDENTIAL</b> THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING	TITLE: FE-00070 w/ hook		REV
	SIZE	DWG. NO.	REV
	<b>C</b>	FE-00071	
	SCALE: 1:4	SHEET 1 OF 1	







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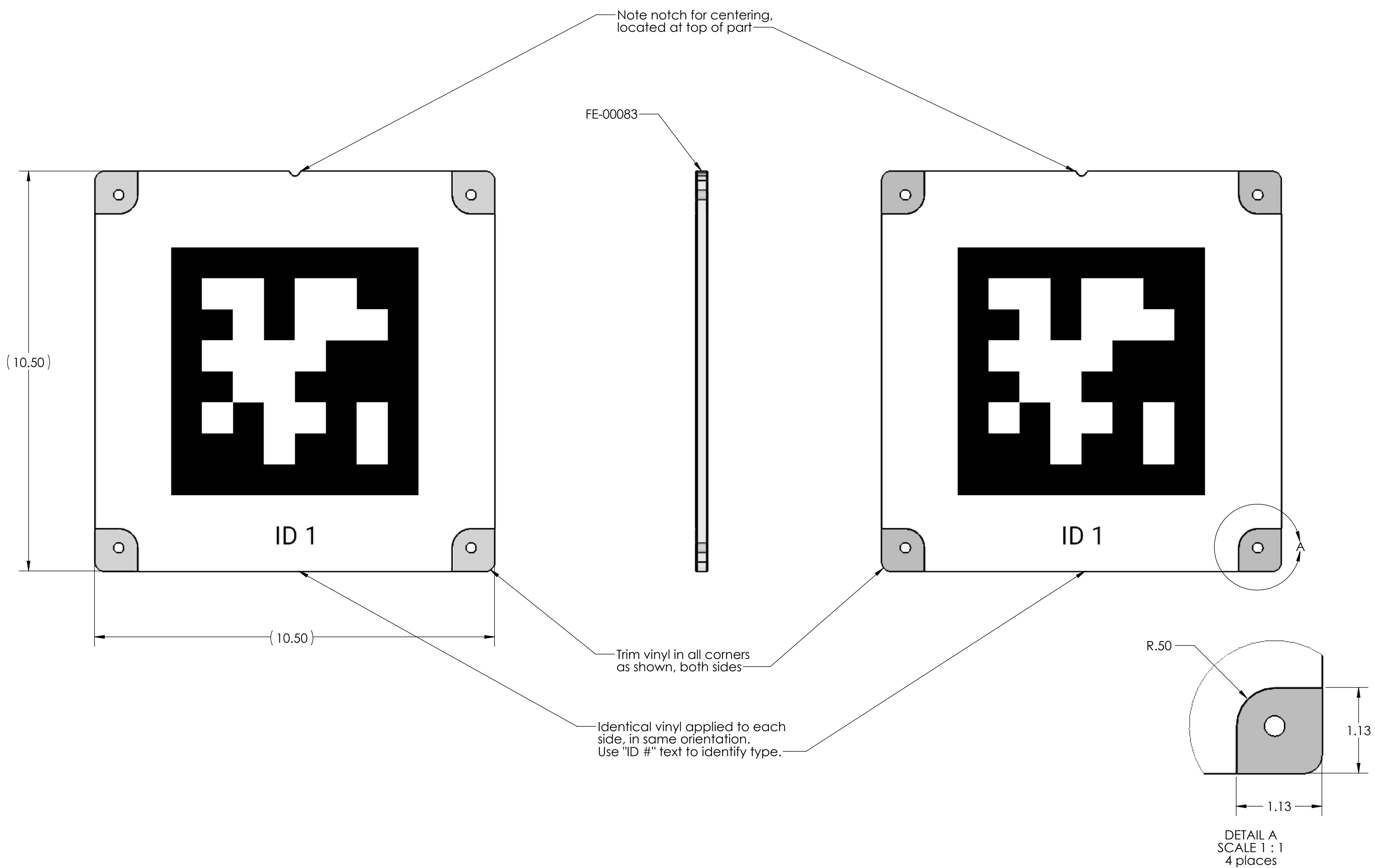
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Notes:  
1. Matte vinyl

Tag Variations			
Part Number	Vinyl Image	Vinyl QTY per field	Part QTY per field
FE-00083-ID1	FE-00083-ID1-Vinyl	2	1
FE-00083-ID2	FE-00083-ID2-Vinyl	2	1
FE-00083-ID3	FE-00083-ID3-Vinyl	2	1
FE-00083-ID4	FE-00083-ID4-Vinyl	2	1
FE-00083-ID5	FE-00083-ID5-Vinyl	2	1
FE-00083-ID6	FE-00083-ID6-Vinyl	2	1
FE-00083-ID7	FE-00083-ID7-Vinyl	2	1
FE-00083-ID8	FE-00083-ID8-Vinyl	2	1
FE-00083-ID9	FE-00083-ID9-Vinyl	2	1
FE-00083-ID10	FE-00083-ID10-Vinyl	2	1

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/2 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .50  <b>MATERIAL/FINISH:</b> Polycarbonate/Vinyl  DO NOT SCALE DRAWING	FIELD	NAME	DATE	
	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.				TITLE:
				<h1>AprilTag</h1>
<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.		SIZE	DWG. NO.	REV
		<b>C</b>	FE-00083	
		SCALE: 1:2		SHEET 1 OF 3

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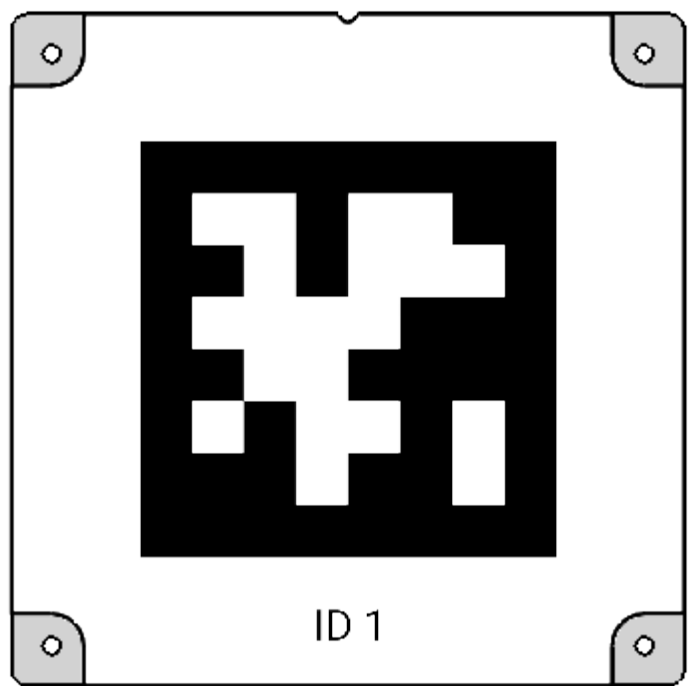
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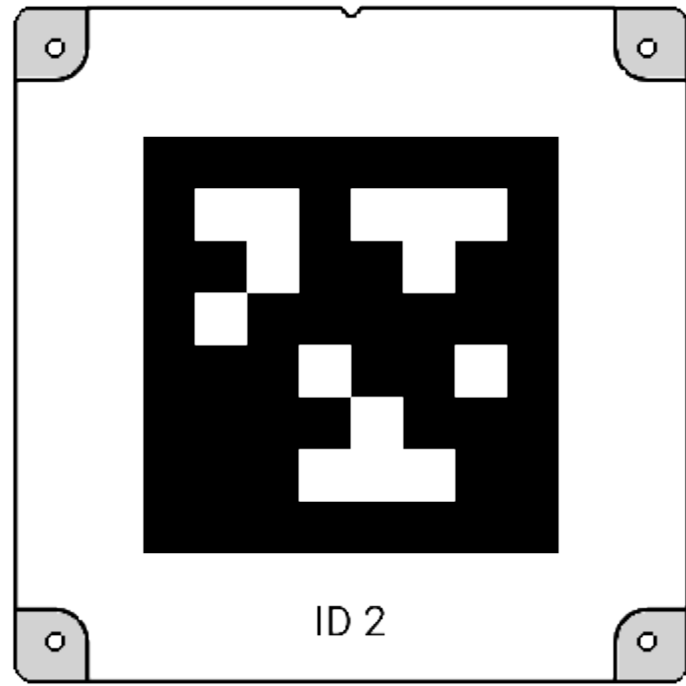
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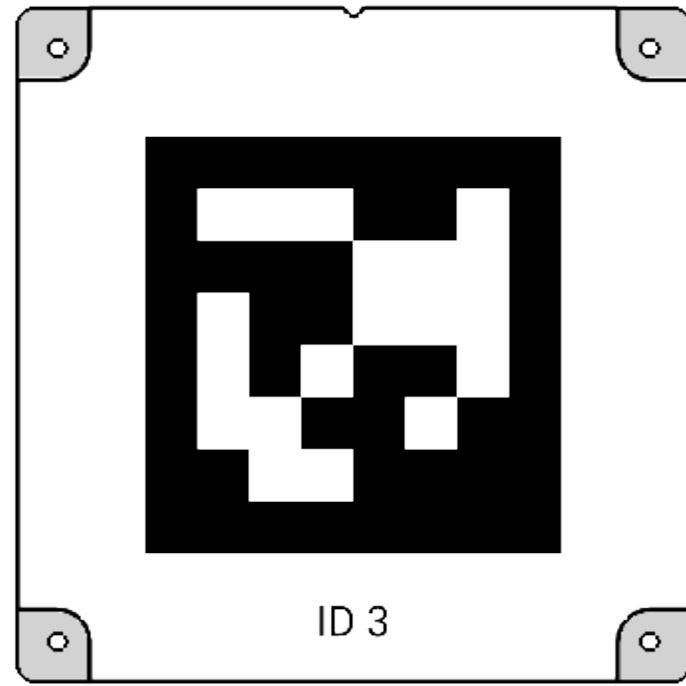
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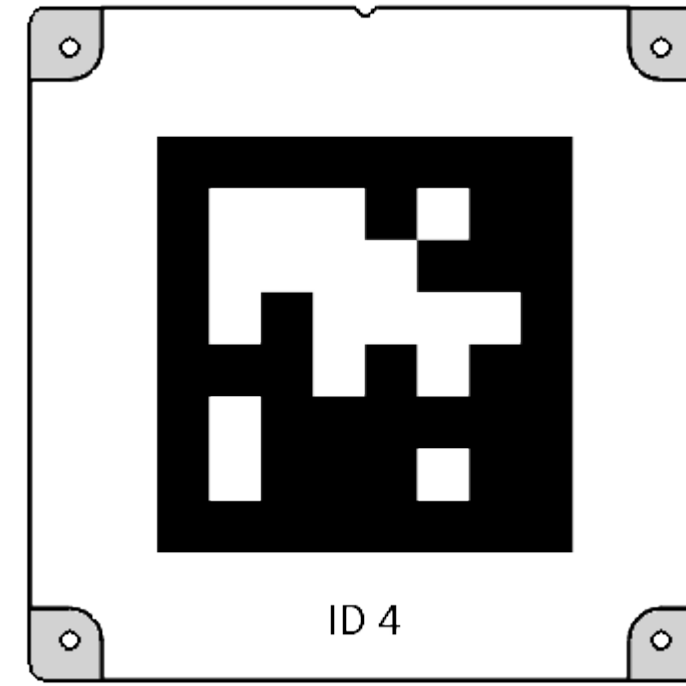
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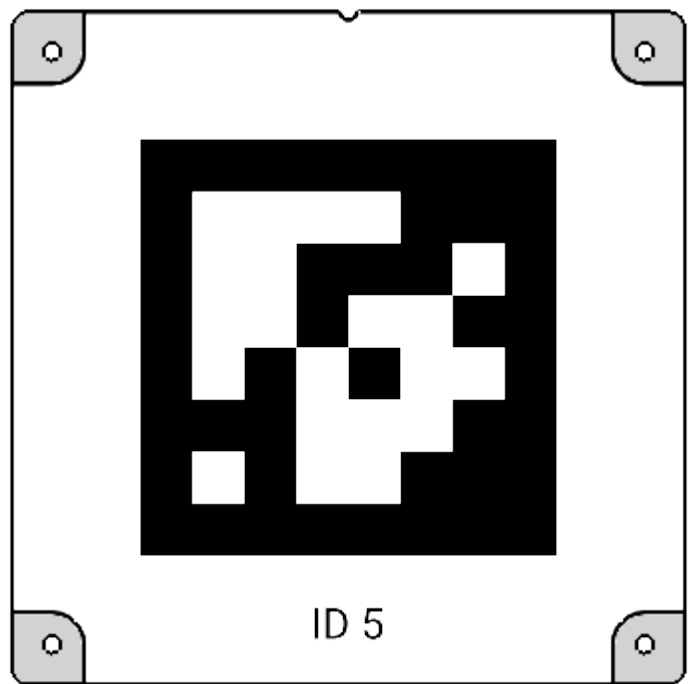
ID 3

FE-00083-ID3



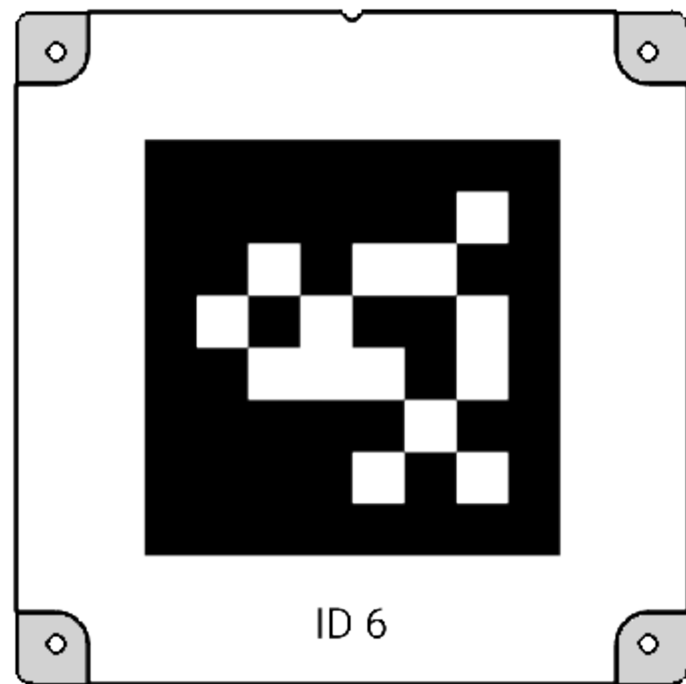
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FE-00083-ID4



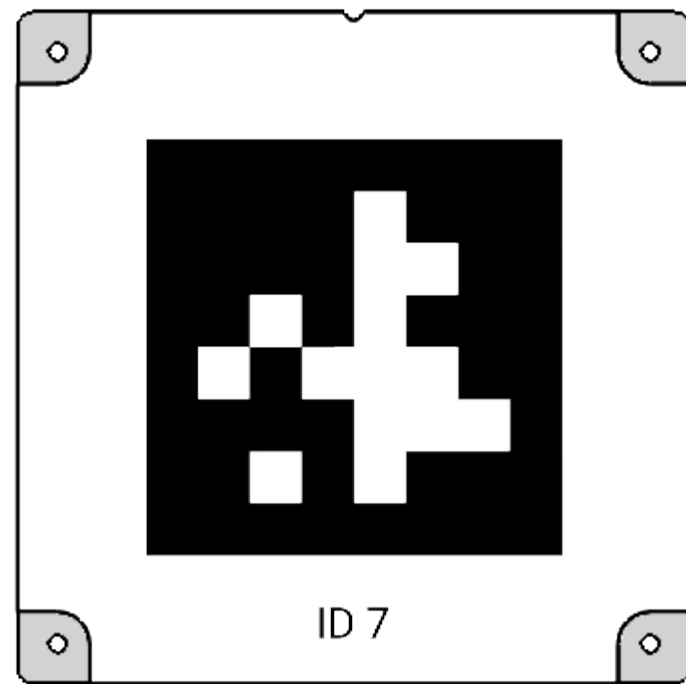
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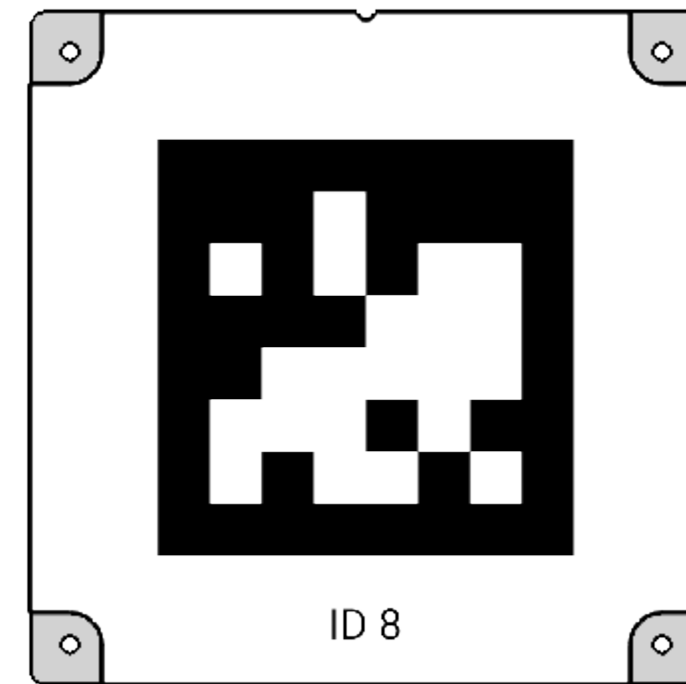
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FE-00083-ID6



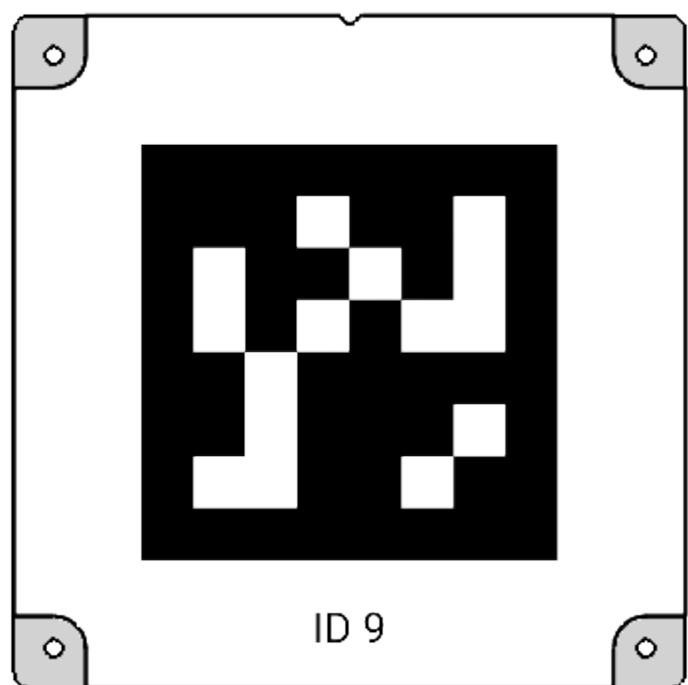
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FE-00083-ID7



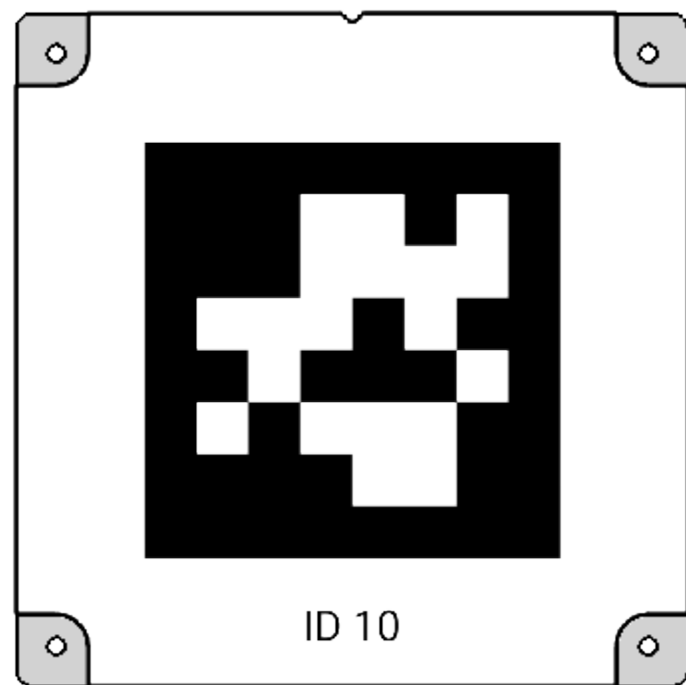
ID 8

FE-00083-ID8



ID 9



FE-00083-ID9



ID 10

FE-00083-ID10

UNLESS OTHERWISE SPECIFIED:	FIELD	NAME	DATE
	DRAWN	CO	9/6/2023
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.		
<b>MATERIAL/FINISH:</b>	Polycarbonate/Vinyl		
<b>COMMENTS:</b>	REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

TITLE: **AprilTag**

SIZE	DWG. NO.	REV
<b>C</b>	<b>FE-00083</b>	

SCALE: 1:3      SHEET 2 OF 3

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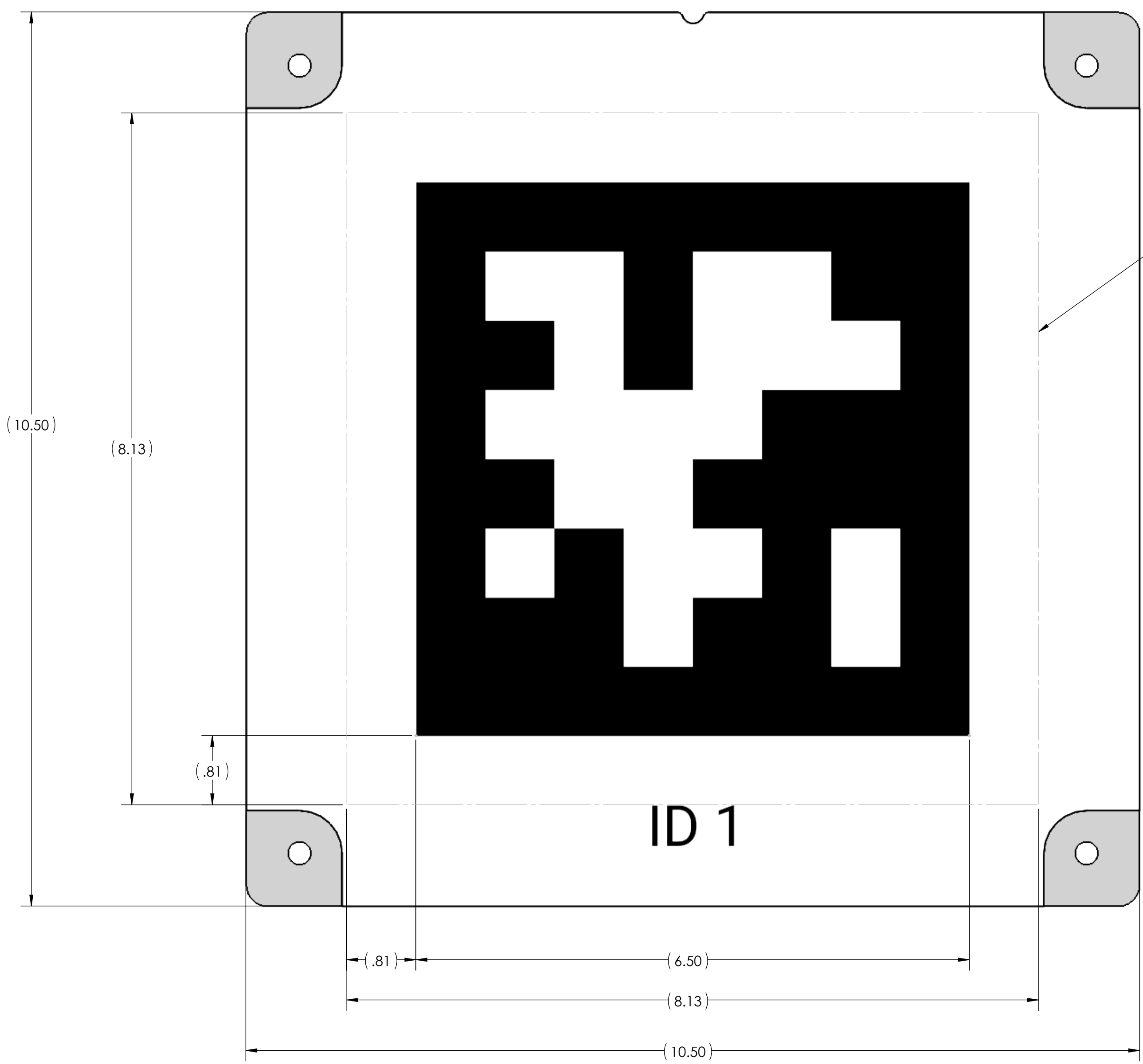
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Square added for drawing reference only. Square represents outer border of AprilTag feature.

ID 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 $\pm .50$  <b>MATERIAL/FINISH:</b> Polycarbonate/Vinyl  DO NOT SCALE DRAWING	FIELD	NAME	DATE		
	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.				TITLE:
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				AprilTag  SIZE DWG. NO. REV <b>C</b> FE-00083 SCALE: 1:1 SHEET 3 OF 3

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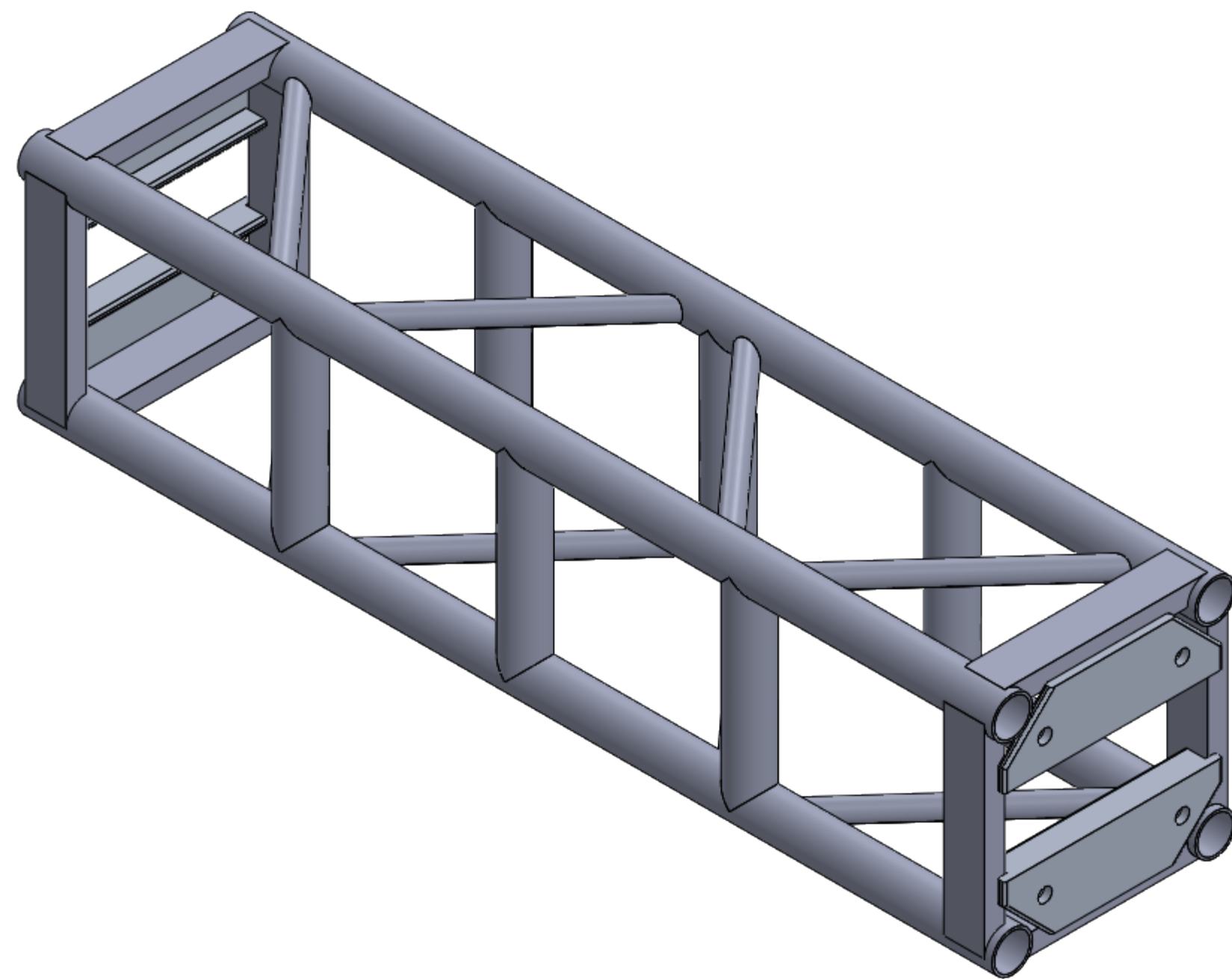
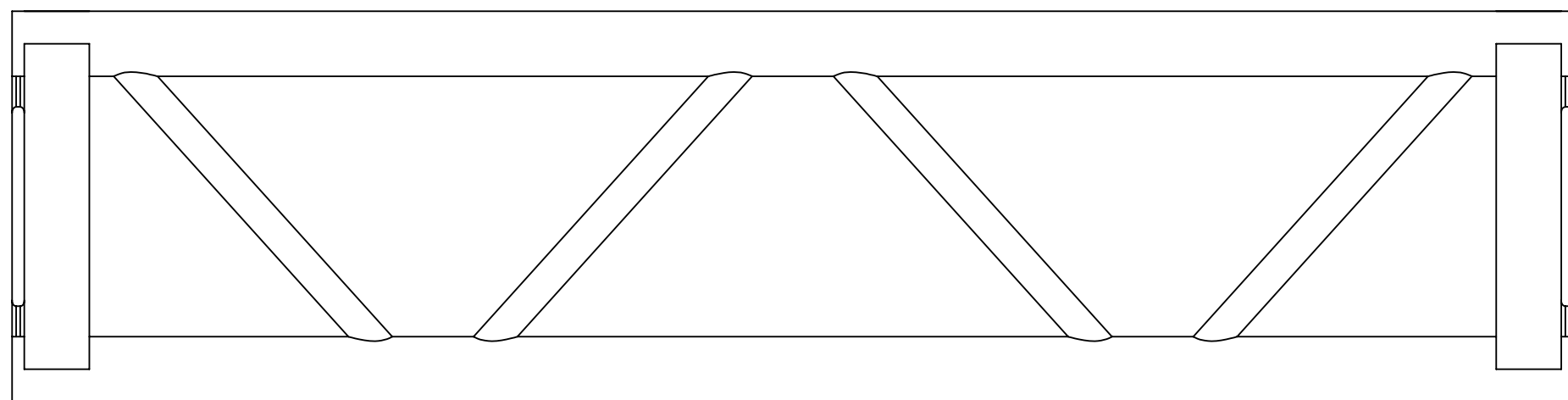
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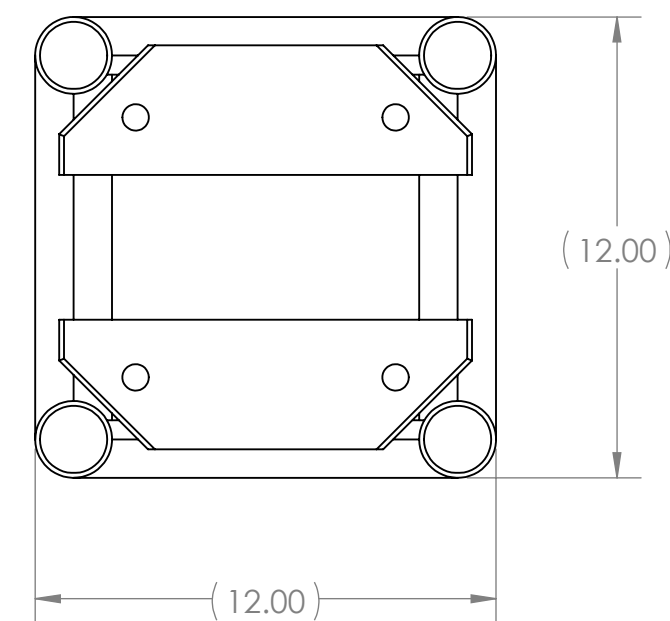
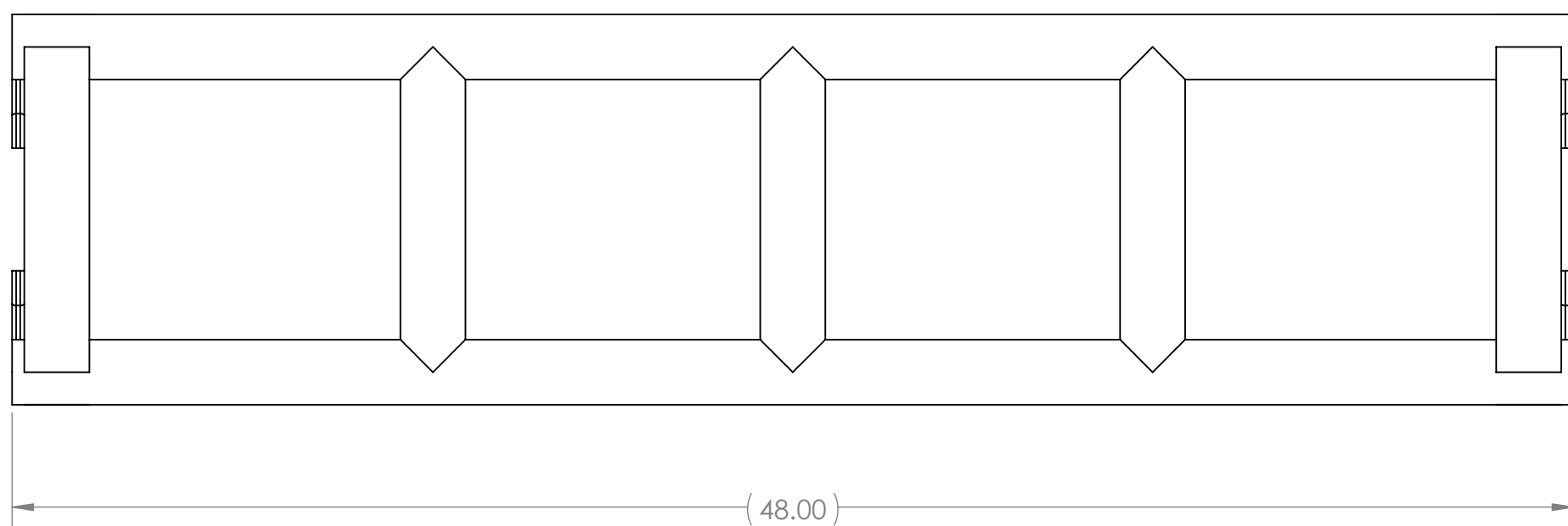
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**DESCRIPTION:** 6061-T6 ALUMINUM - LIGHT DUTY TRUSS,  
48" X 12" X 12"

**VENDOR:** TOTAL STRUCTURES

**PART NUMBER:** TS 1212LD-048P

**NOTE:** SUBSTITUTIONS NOT ALLOWED

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$  <b>MATERIAL/FINISH:</b>   DO NOT SCALE DRAWING	VEND	NAME	DATE	 
	DRAWN	kcarlson	3/23/2020	
	<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>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>4' x 1' x 1' Square Truss</b>
SIZE		DWG. NO.	REV	
<b>C</b>		FE-01002		
SCALE: 1:5		SHEET 1 OF 1		

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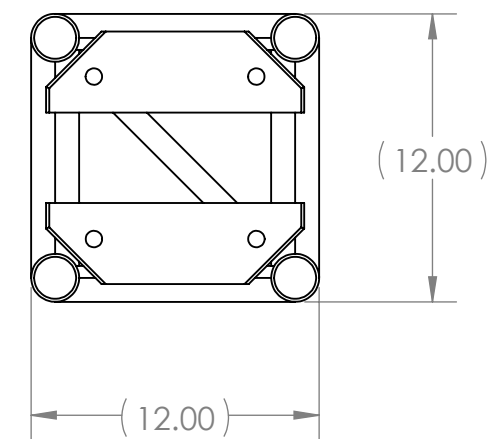
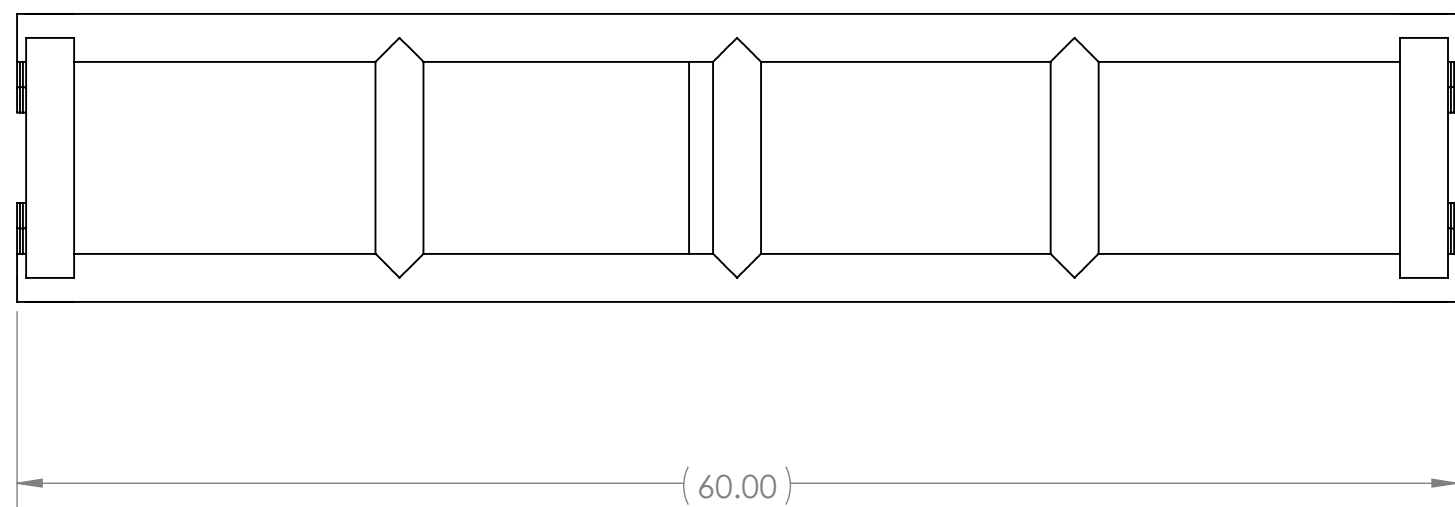
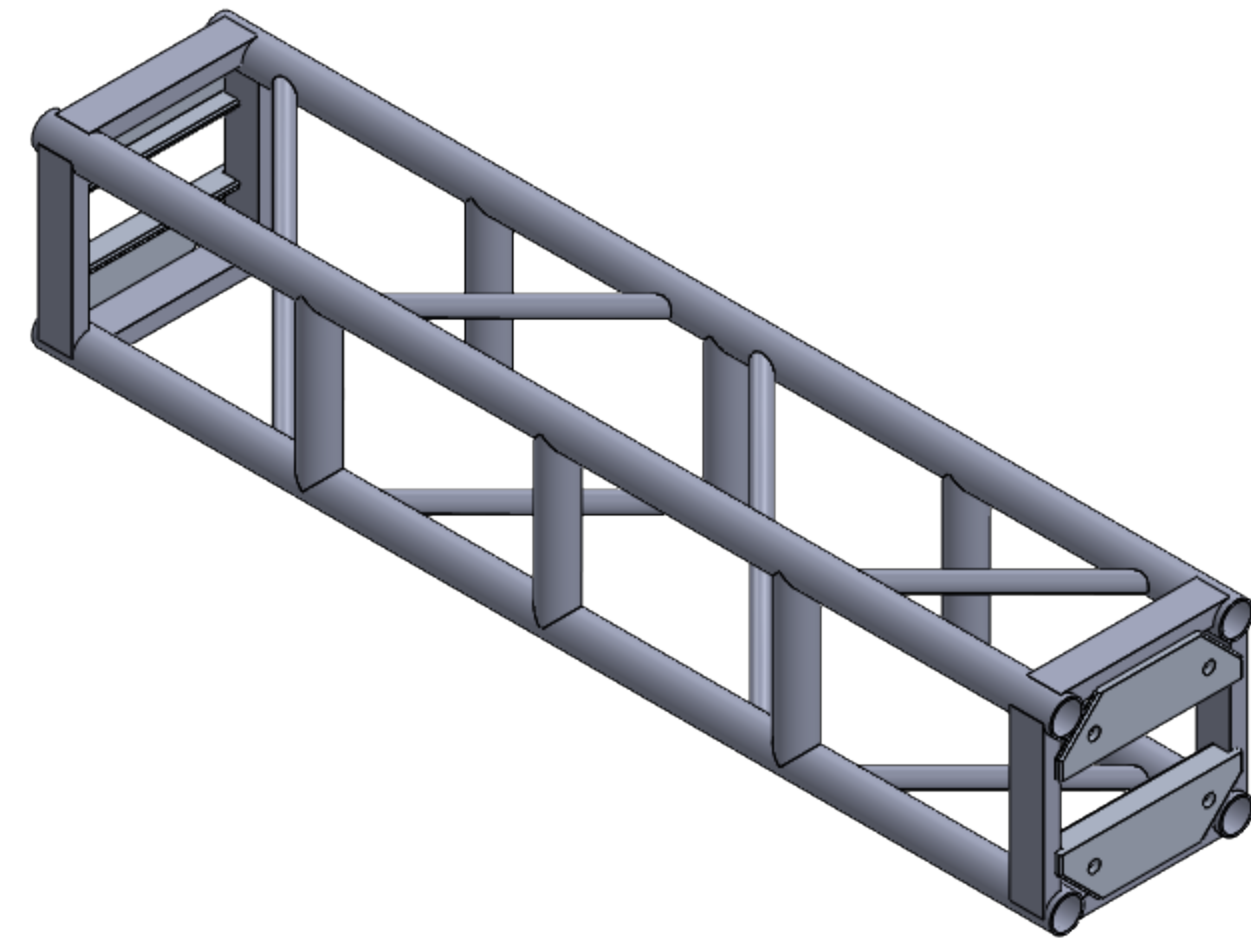
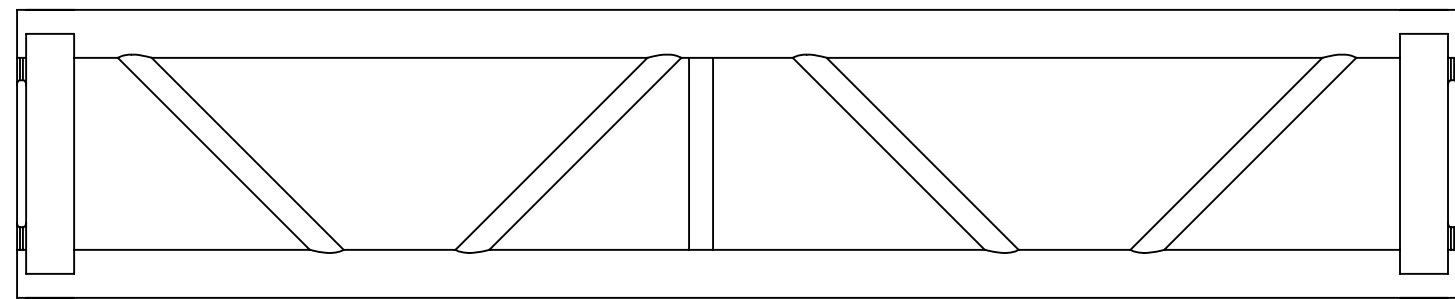
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**DESCRIPTION:** 6061-T6 ALUMINUM - LIGHT DUTY TRUSS,  
60" X 12" X 12"

**VENDOR:** TOTAL STRUCTURES

**PART NUMBER:** TS 1212LD-060P

**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	VEND	NAME	DATE	 
	DRAWN	kcarlson	3/23/2020	
<b>MATERIAL/FINISH:</b>	<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.			5' x 1' x 1' Square Truss
<b>COMMENTS:</b>	REMOVE ALL BURRS AND SHARP EDGES.			SIZE DWG. NO. REV
DO NOT SCALE DRAWING				<b>C</b> FE-01003
				SCALE: 1:8 SHEET 1 OF 1

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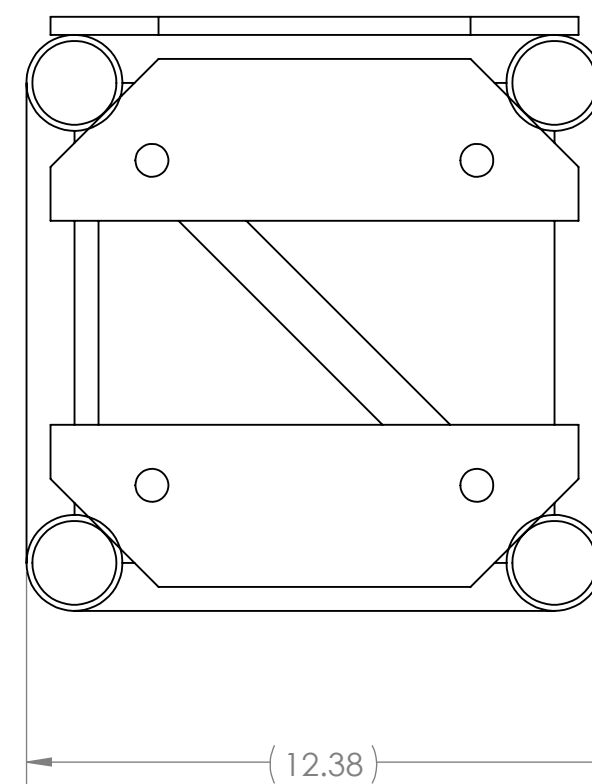
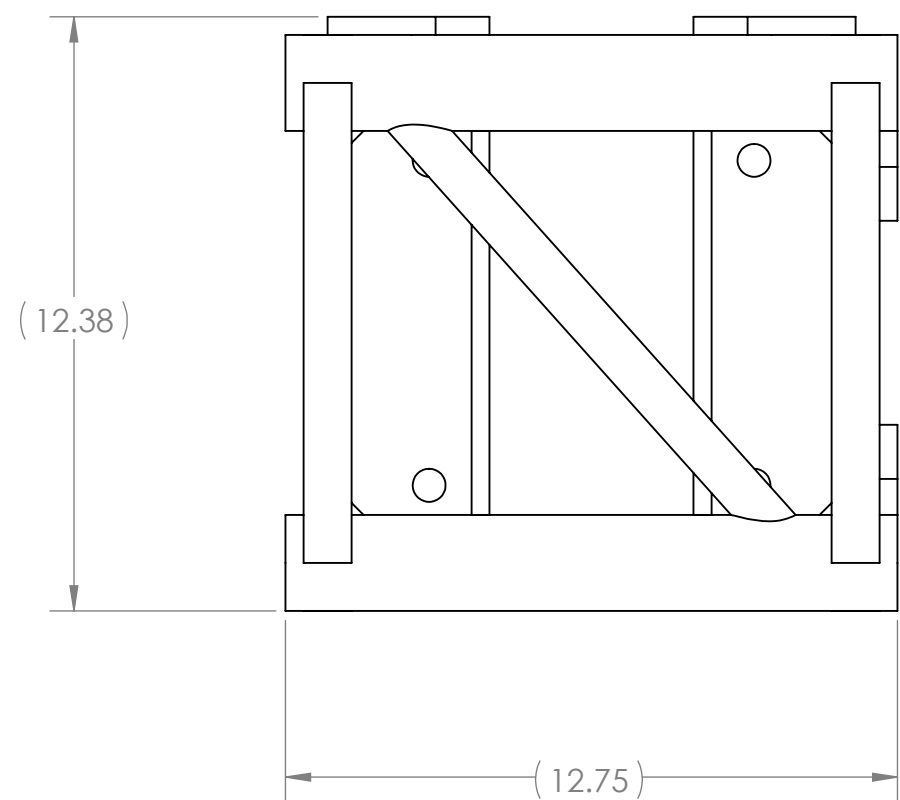
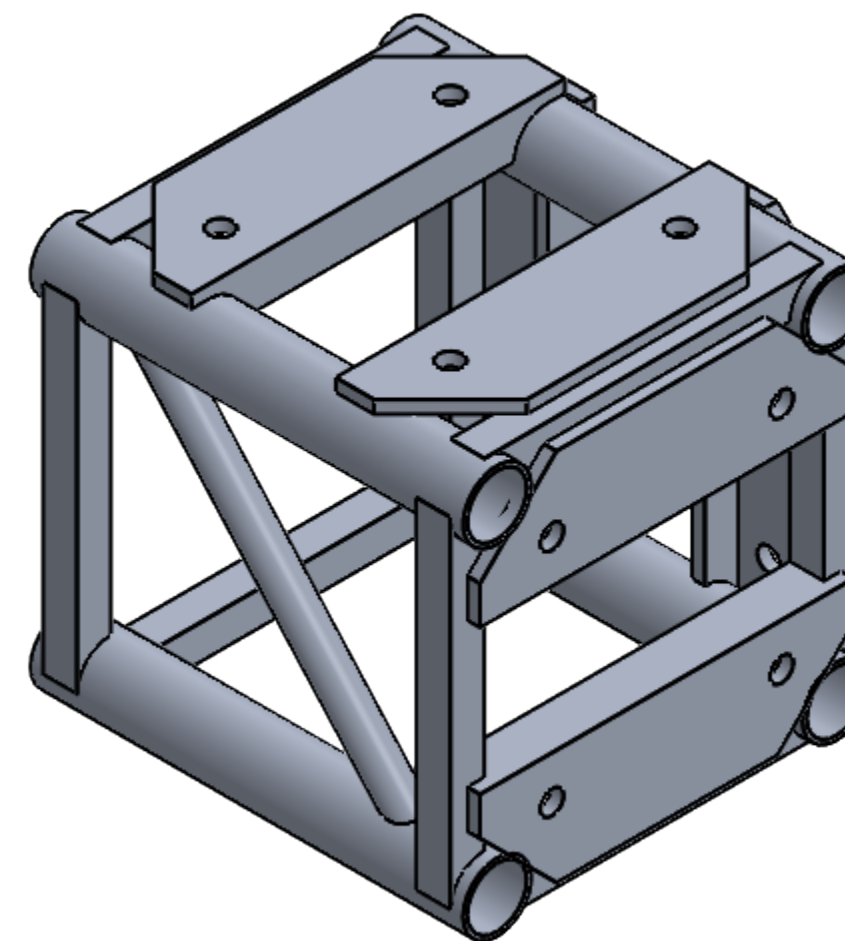
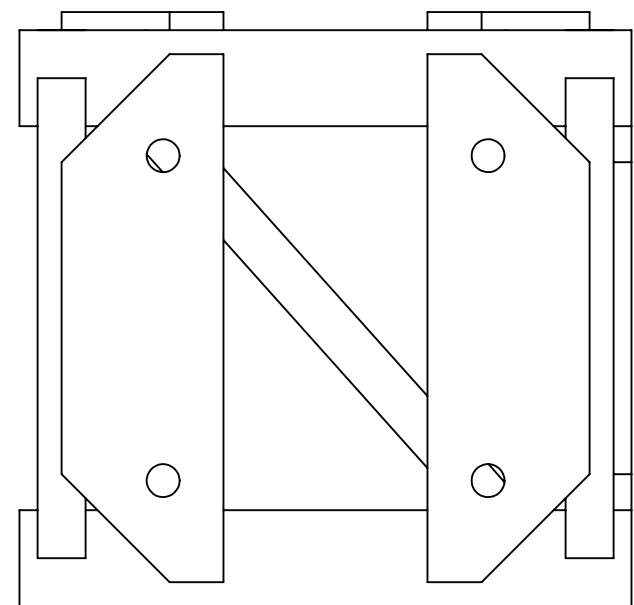


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**DESCRIPTION:** 6061-T6 ALUMINUM - LIGHT DUTY TRUSS, 3-SIDED CORNER BLOCK

**VENDOR:** TOTAL STRUCTURES

**PART NUMBER:** TS 1212LD-C3P

**NOTE:** SUBSTITUTIONS NOT ALLOWED

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .005$  <b>MATERIAL/FINISH:</b>     <b>DO NOT SCALE DRAWING</b>	VEND	NAME	DATE
	DRAWN	kcarlson	3/23/2020
	<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:  
**3 Way Corner Block**

SIZE DWG. NO. REV

**C** FE-01012

SCALE: 1:4 SHEET 1 OF 1

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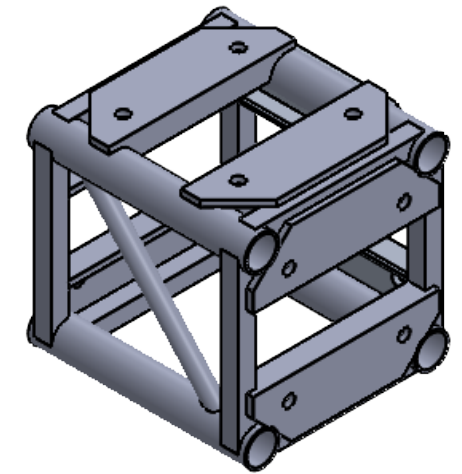
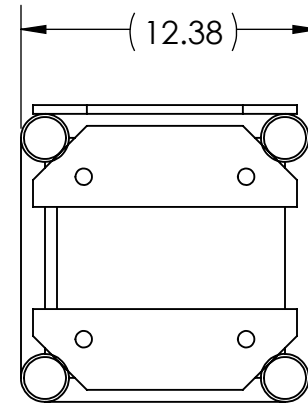
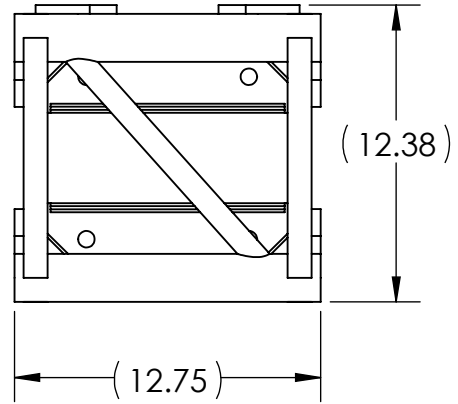
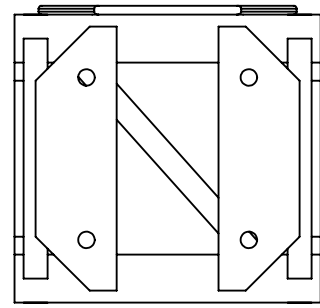
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Added Note	10/28/2019	KAMC



**DESCRIPTION:** 6061-T6 ALUMINUM - LIGHT DUTY TRUSS, 4-SIDED CORNER BLOCK

**VENDOR:** TOTAL STRUCTURES

**PART NUMBER:** TS 1212LD-C4P

**NOTE:** SUBSTITUTIONS NOT ALLOWED



**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.

		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC
		TOLERANCES:	CHECKED	9/23/19
		FRACTIONAL ±1/16	ENG APPR.	
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.	
		TWO PLACE DECIMAL ±.01	Q.A.	
		THREE PLACE DECIMAL ±.001	COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
		APPLICATION		
		DO NOT SCALE DRAWING		

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

TITLE:  
 TS 1212LD-C4P, 4 Way Corner Block Light Duty Truss, Total Structures

SIZE	DWG. NO.	REV
<b>B</b>	<b>FE-01013</b>	

SCALE: 1:8 WEIGHT: SHEET 1 OF 1

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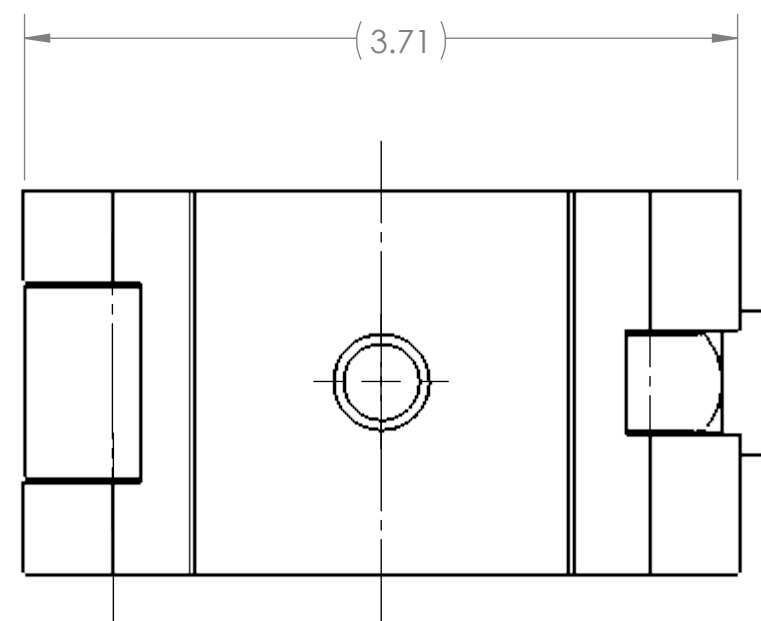
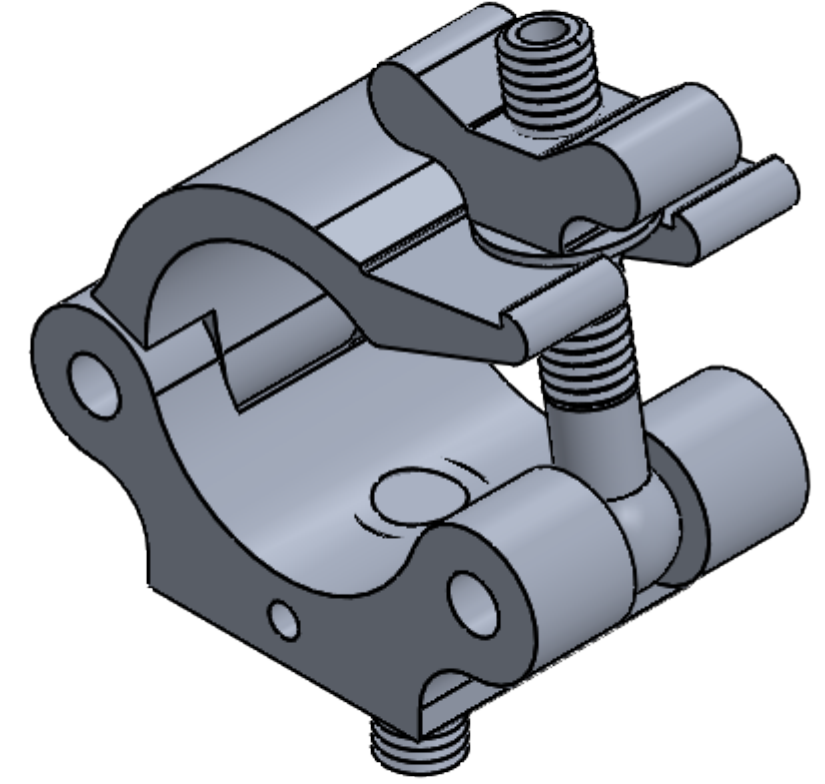
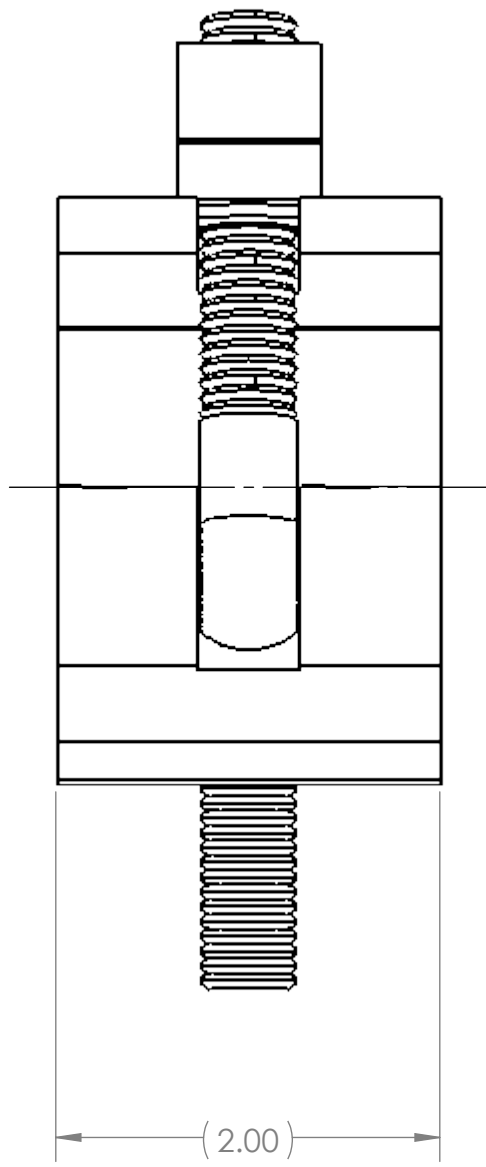
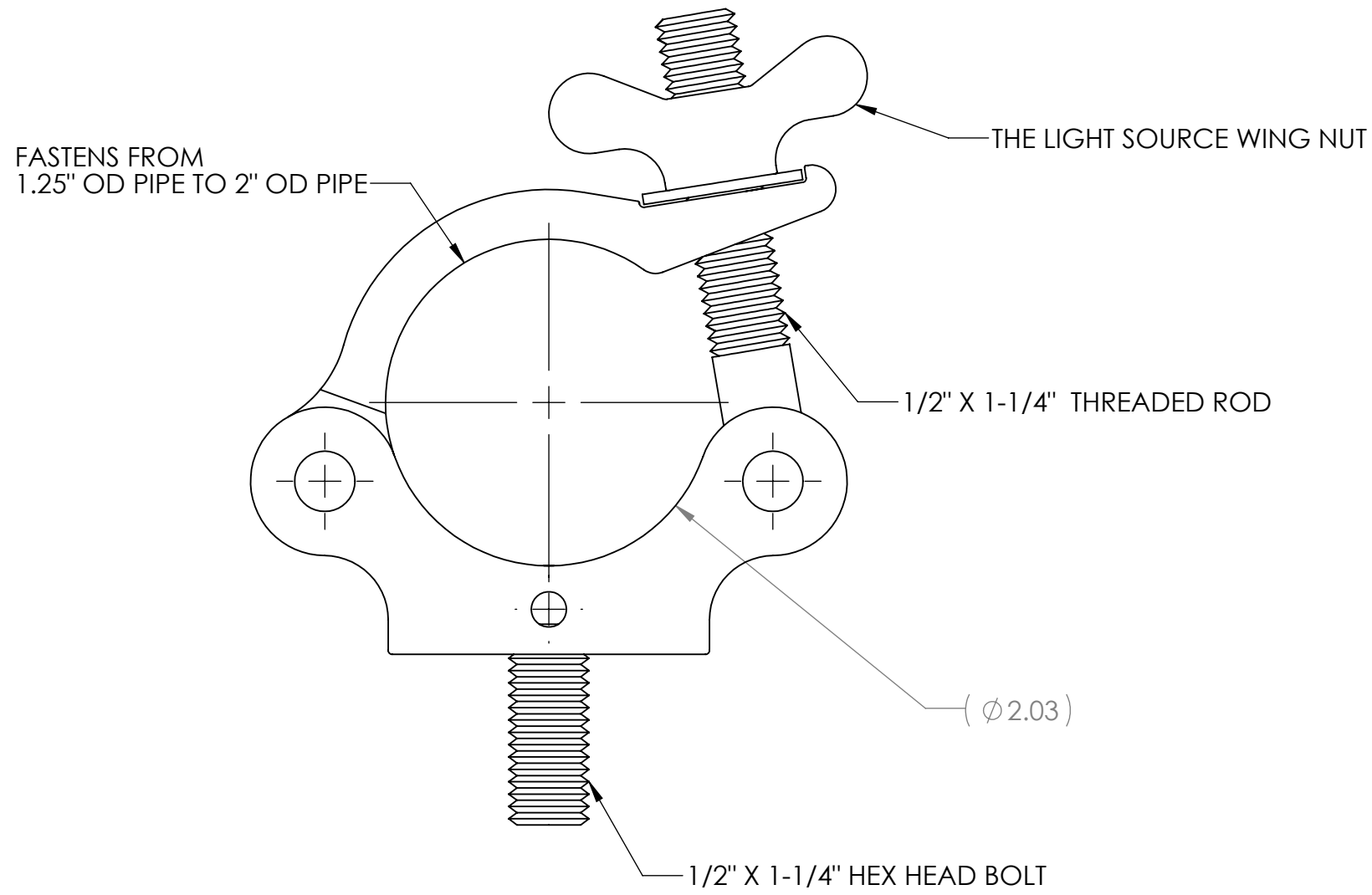


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**DESCRIPTION:** CHEESE BOROUGH FOR TRUSS - MLM MEGA COUPLER, SILVER  
**VENDOR:** TOTAL STRUCTURES VIA THE LIGHT SOURCE  
**PART NUMBER:** MLM MEGA COUPLER  
**NOTE:** SUBSTITUTIONS NOT ALLOWED

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .01 THREE PLACE DECIMAL ± .005  <b>MATERIAL/FINISH:</b>  DO NOT SCALE DRAWING	VEND	NAME	DATE		
	DRAWN	kcarlson	3/23/2020		
	<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>Cheeseborough for Truss _ Single</b>
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.				SIZE DWG. NO. REV <b>C</b> FE-01016 SCALE: 1:1 SHEET 1 OF 1

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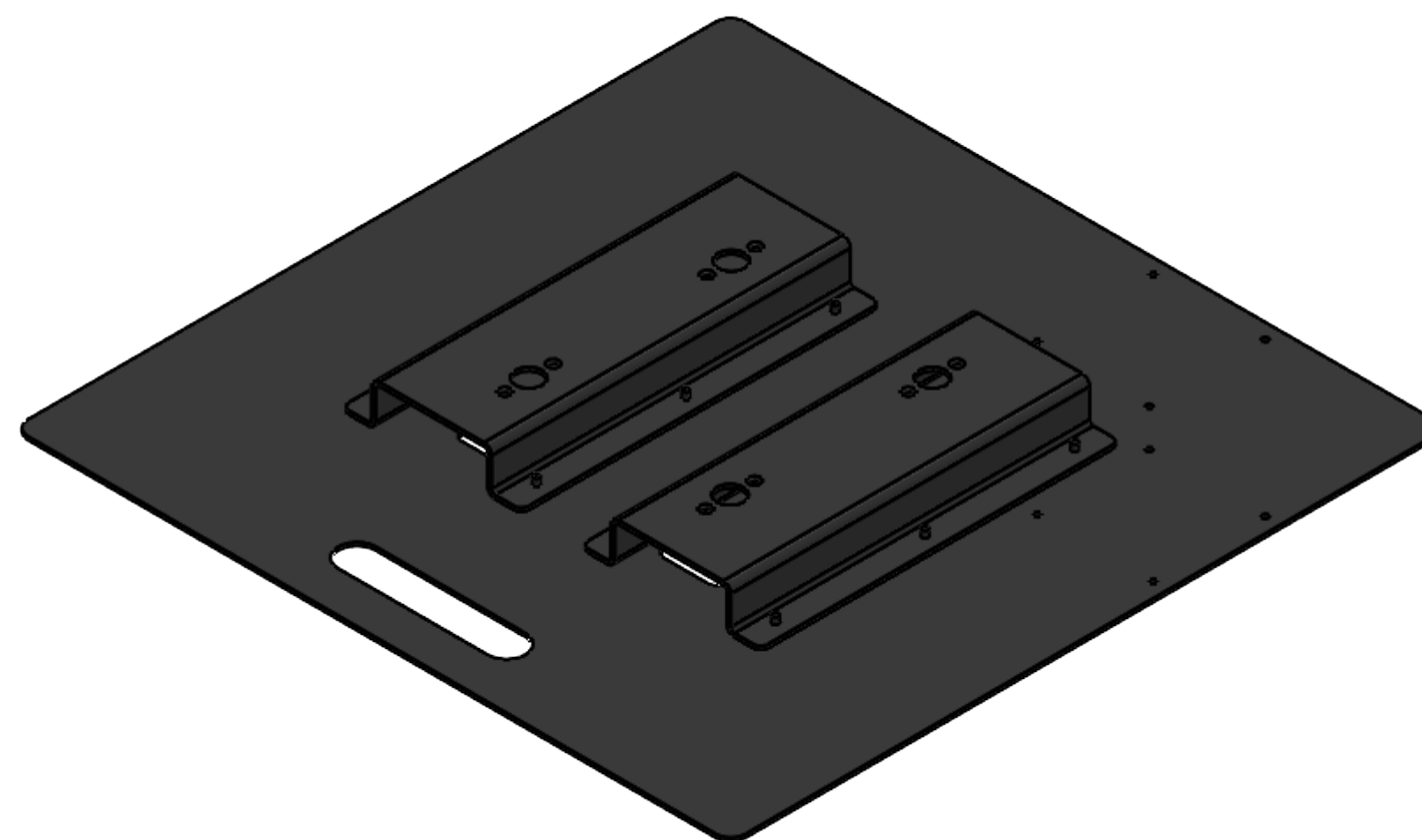
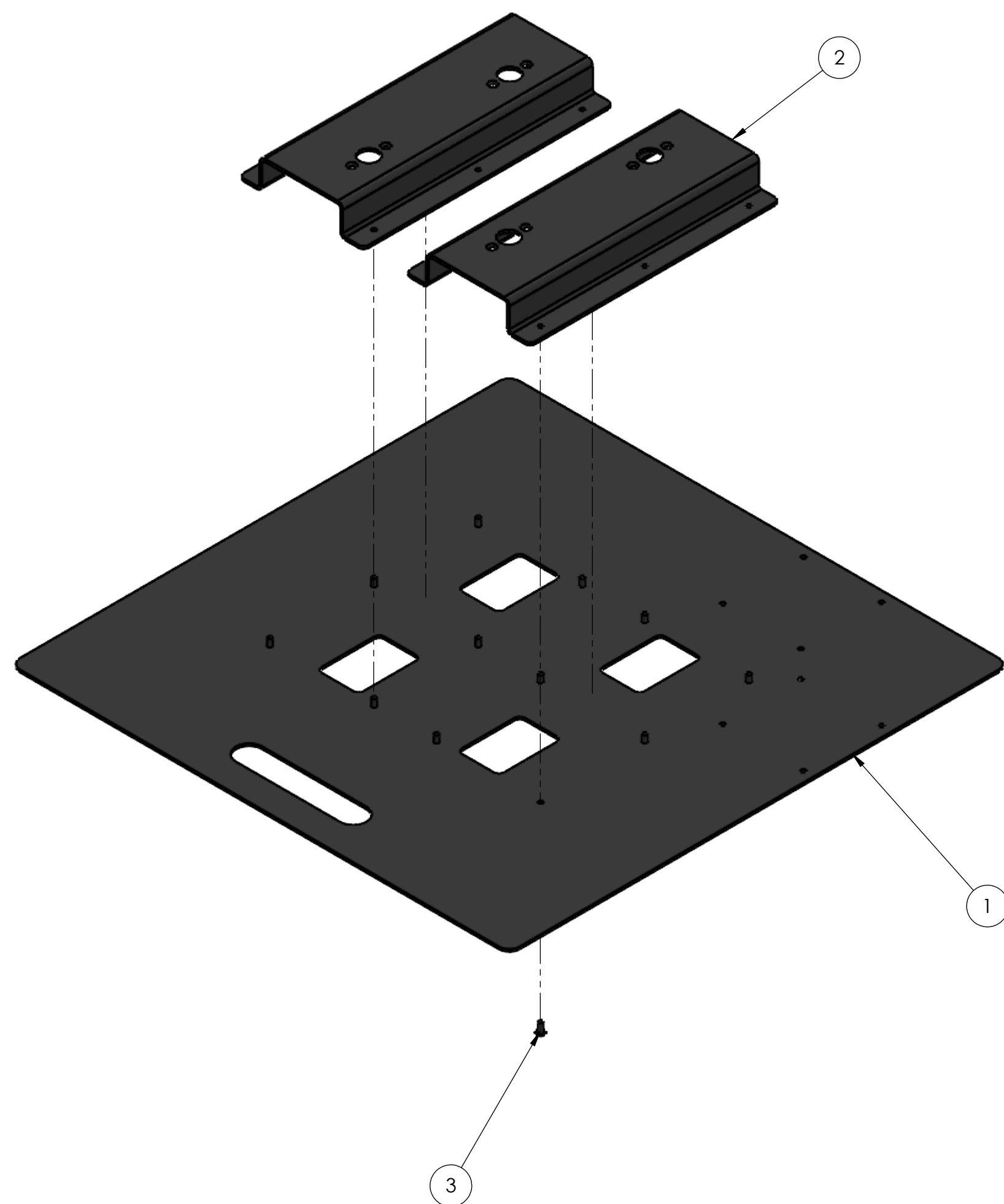
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Notes:

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

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	FE-01020-01	Truss Base - Sheet Metal Assembly, Base Plate	1
2	FE-01020-02	Truss Base - Sheet Metal Assembly, Truss Feet	2
3	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	12

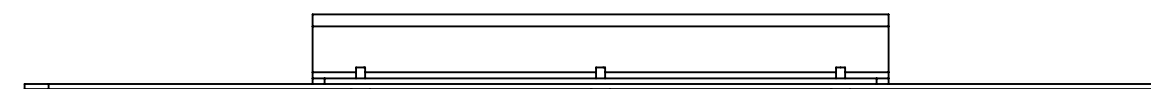
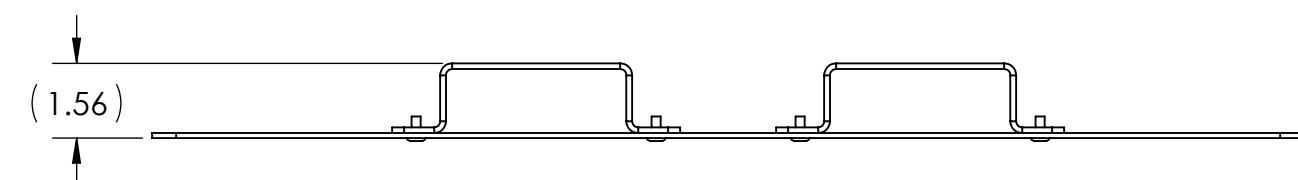
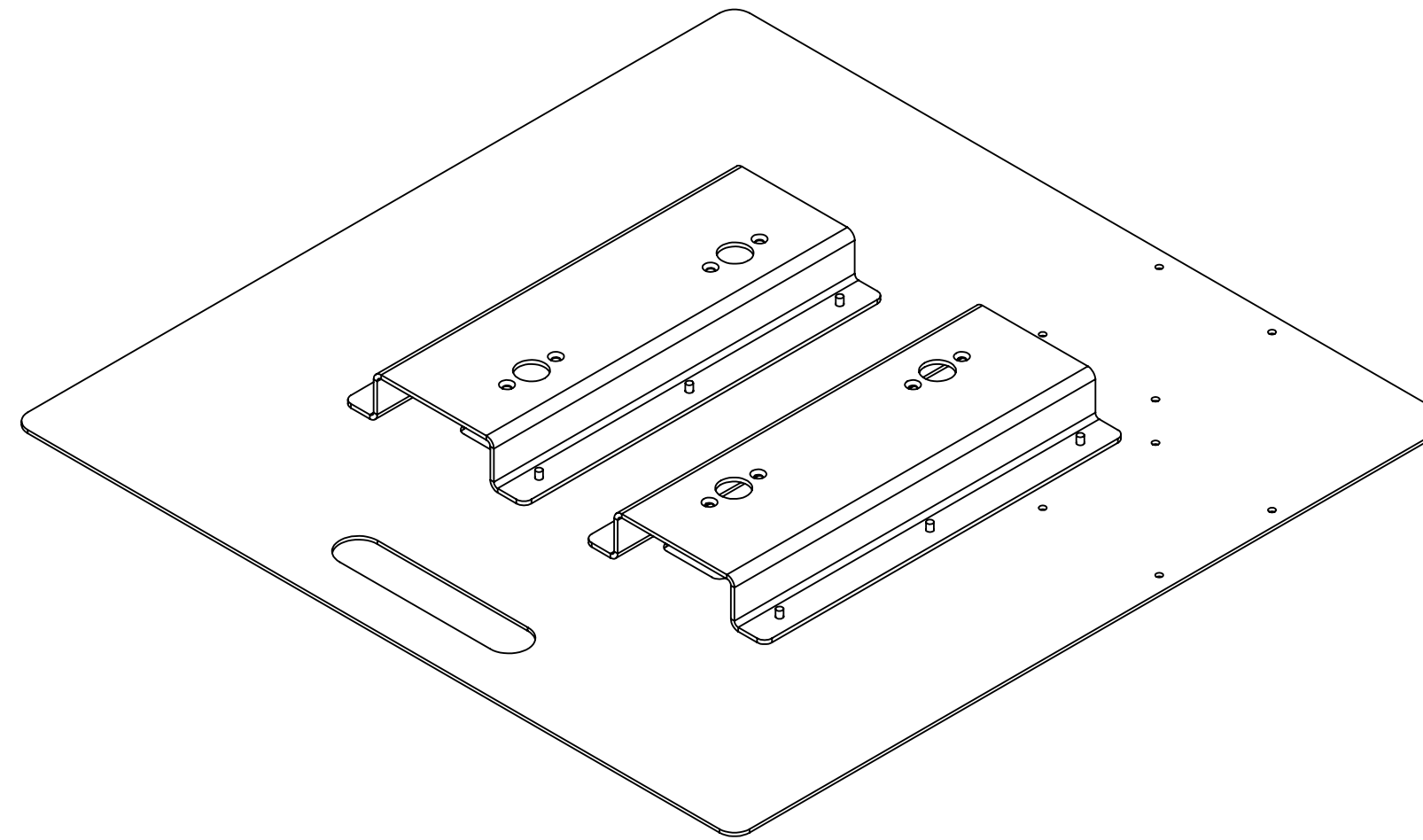
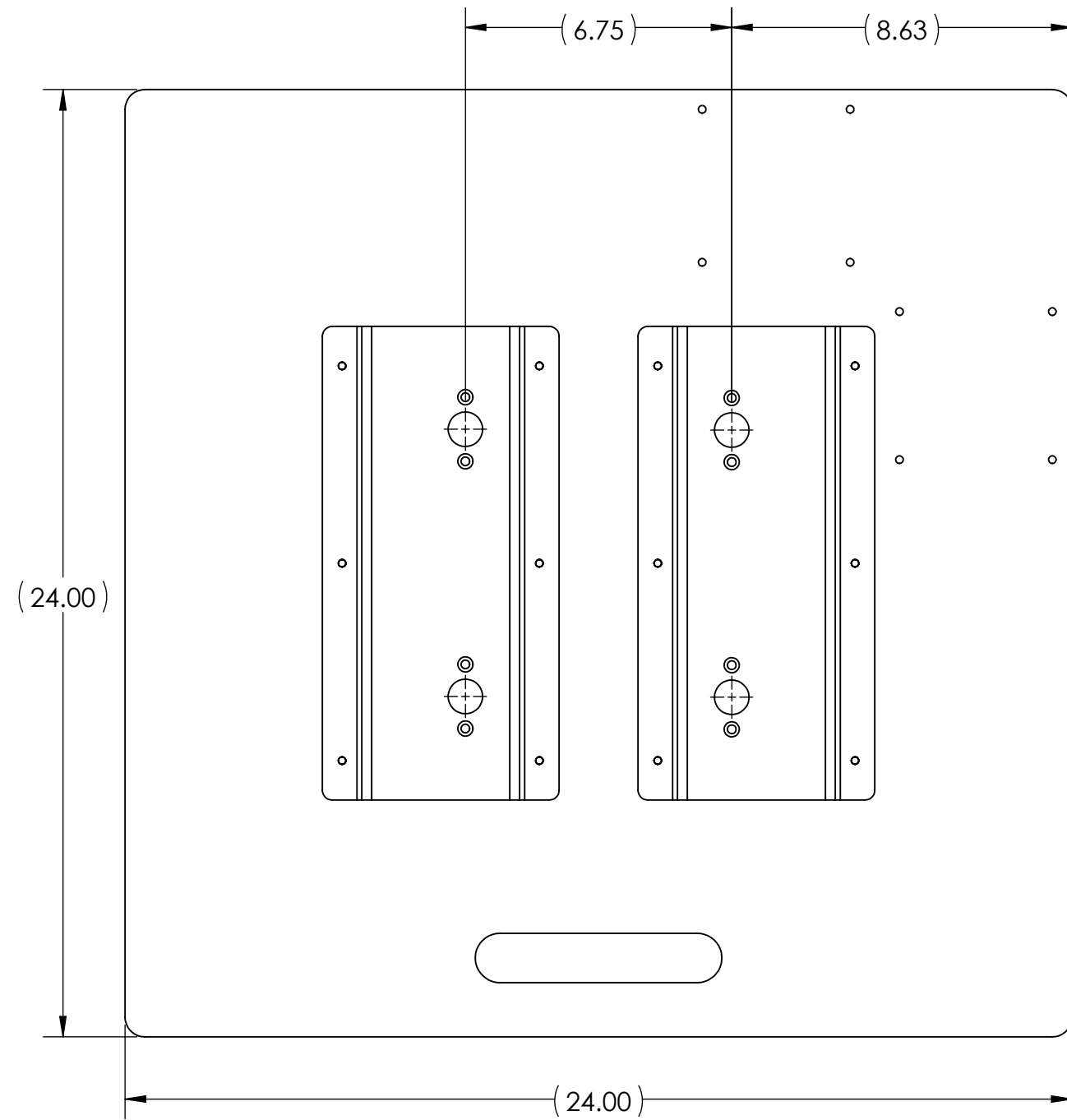
UNLESS OTHERWISE SPECIFIED:		BEND	NAME	DATE	 
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .02 THREE PLACE DECIMAL ± .010		DRAWN	JO	7/18/2023	
<b>MATERIAL/FINISH:</b> Low Carbon Steel, Powder Coat Black		<b>PROPRIETARY AND CONFIDENTIAL</b> THE 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 Base - Sheet Metal Assembly
DO NOT SCALE DRAWING		<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE DWG. NO. REV <b>C</b> FE-01020
		SCALE: 1:4			SHEET 1 OF 4



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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .010$	BEND	NAME	DATE	 
	DRAWN	JO	7/18/2023	
<b>MATERIAL/FINISH:</b> Low Carbon Steel, Powder Coat Black	<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>Truss Base - Sheet Metal Assembly</b>
DO NOT SCALE DRAWING	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			SIZE DWG. NO. REV <b>C</b> FE-01020
	SCALE: 1:4			SHEET 2 OF 4

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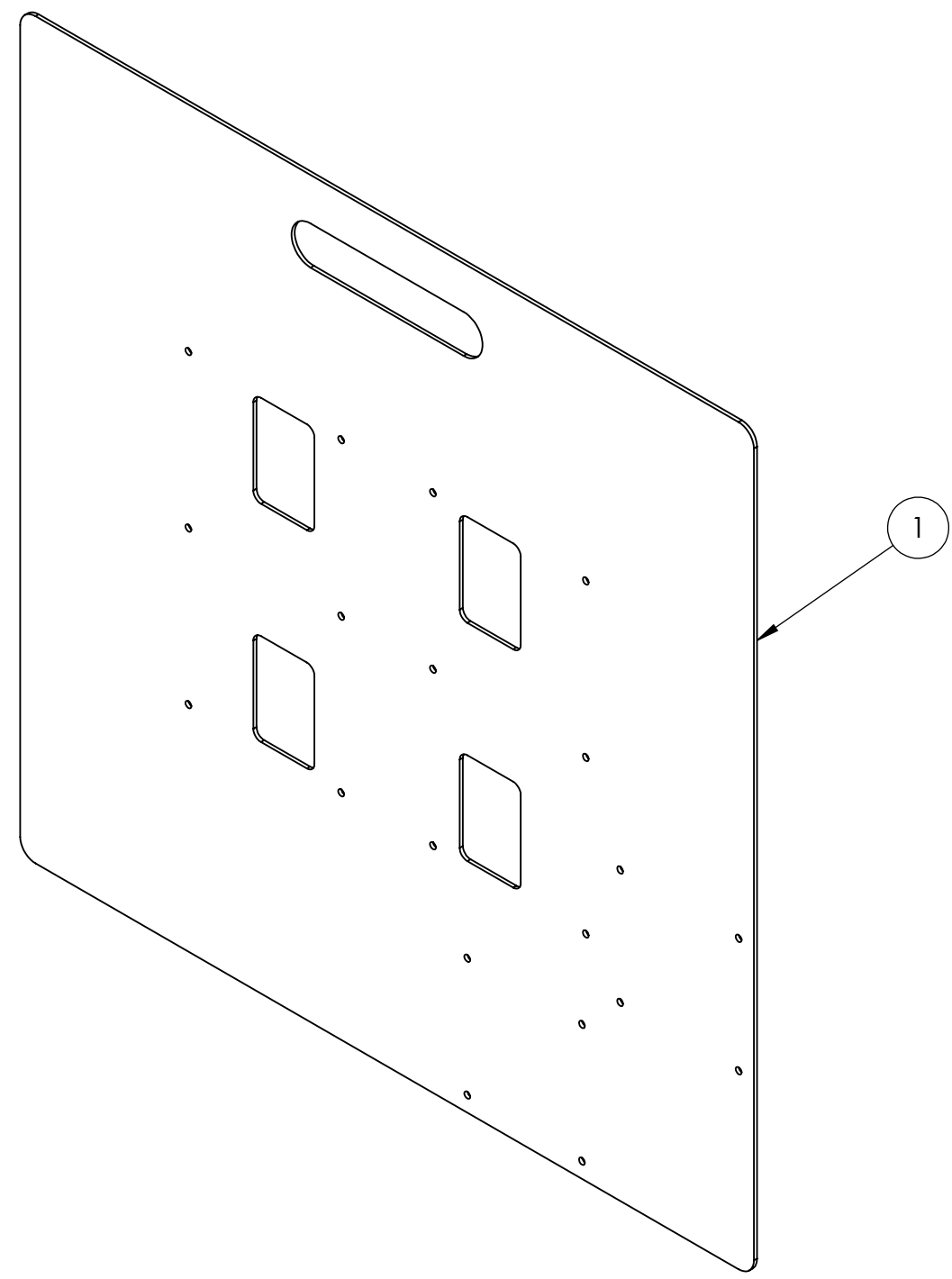
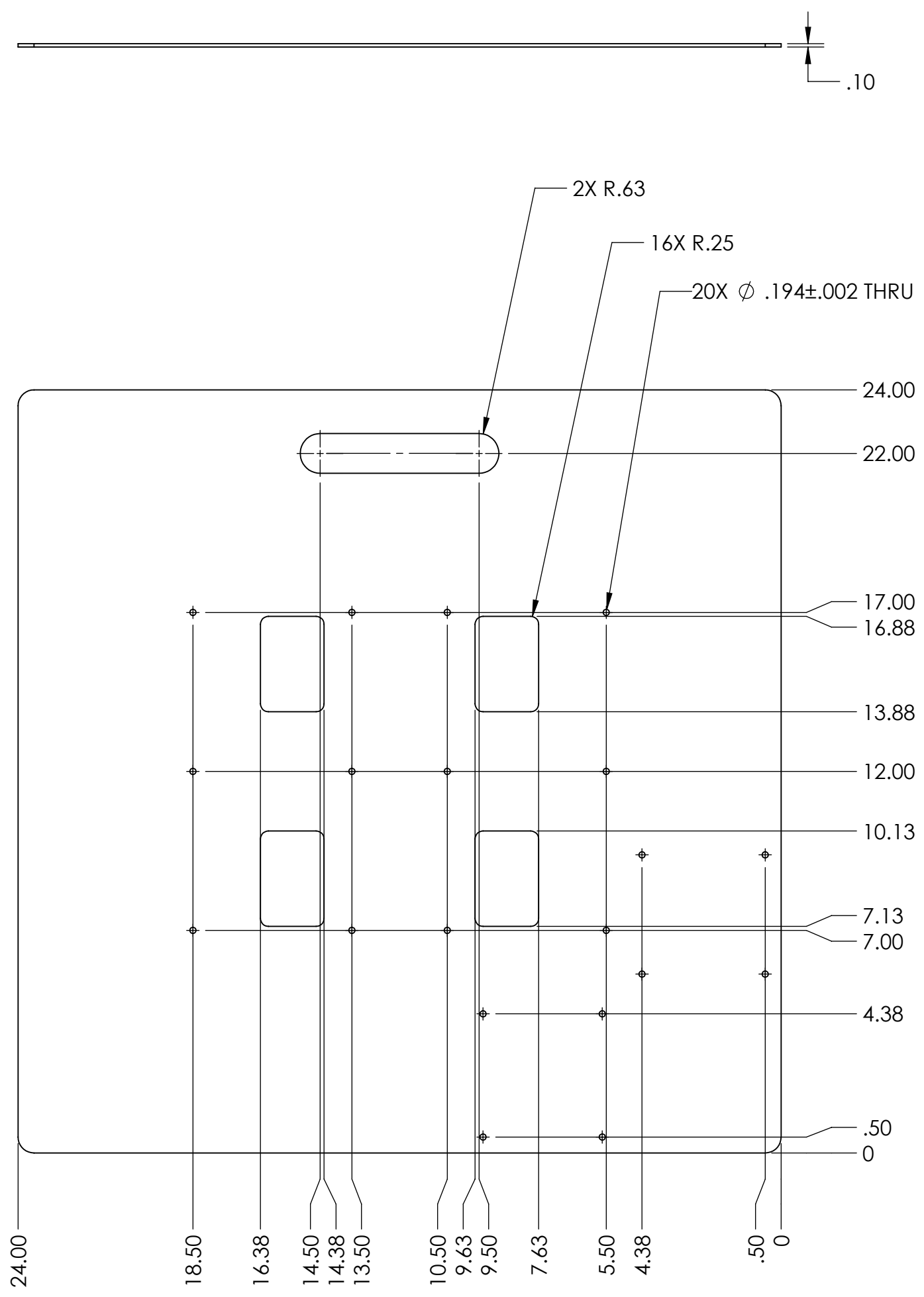
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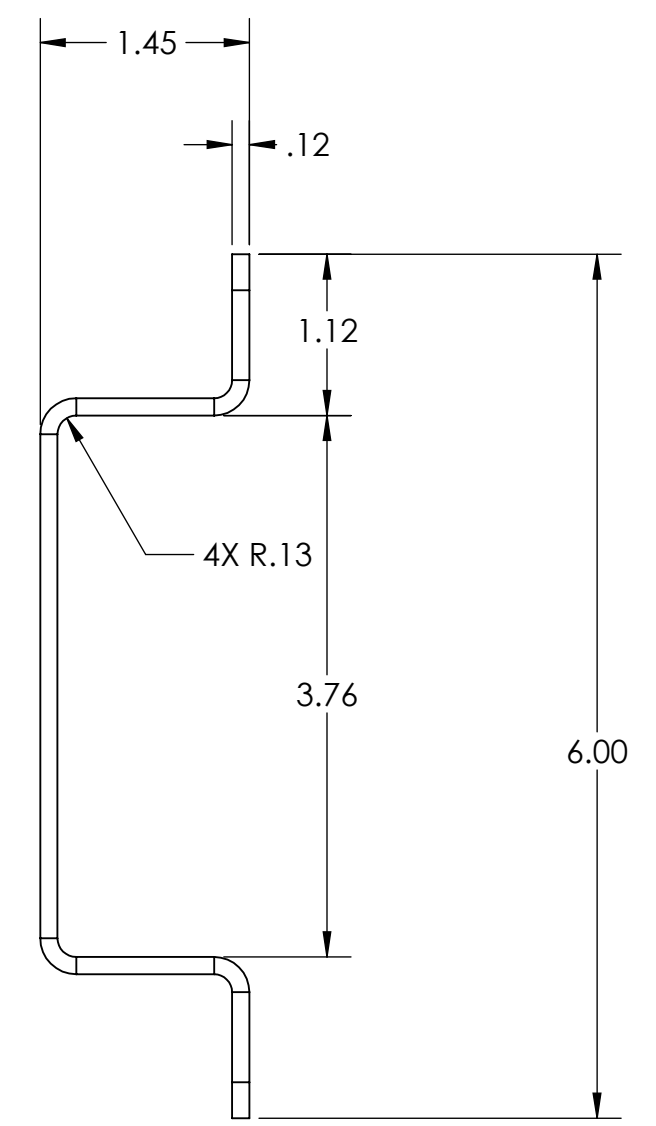
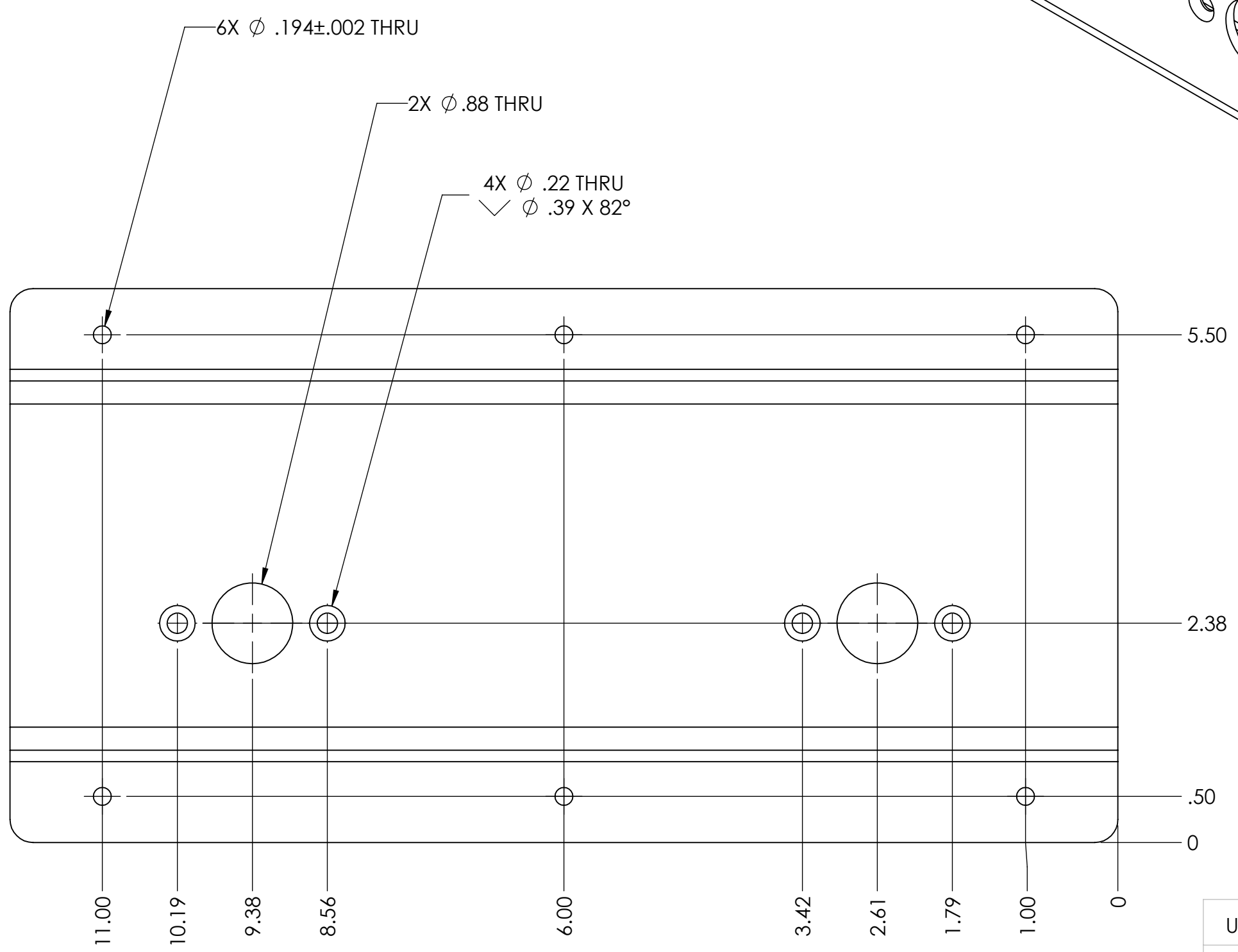
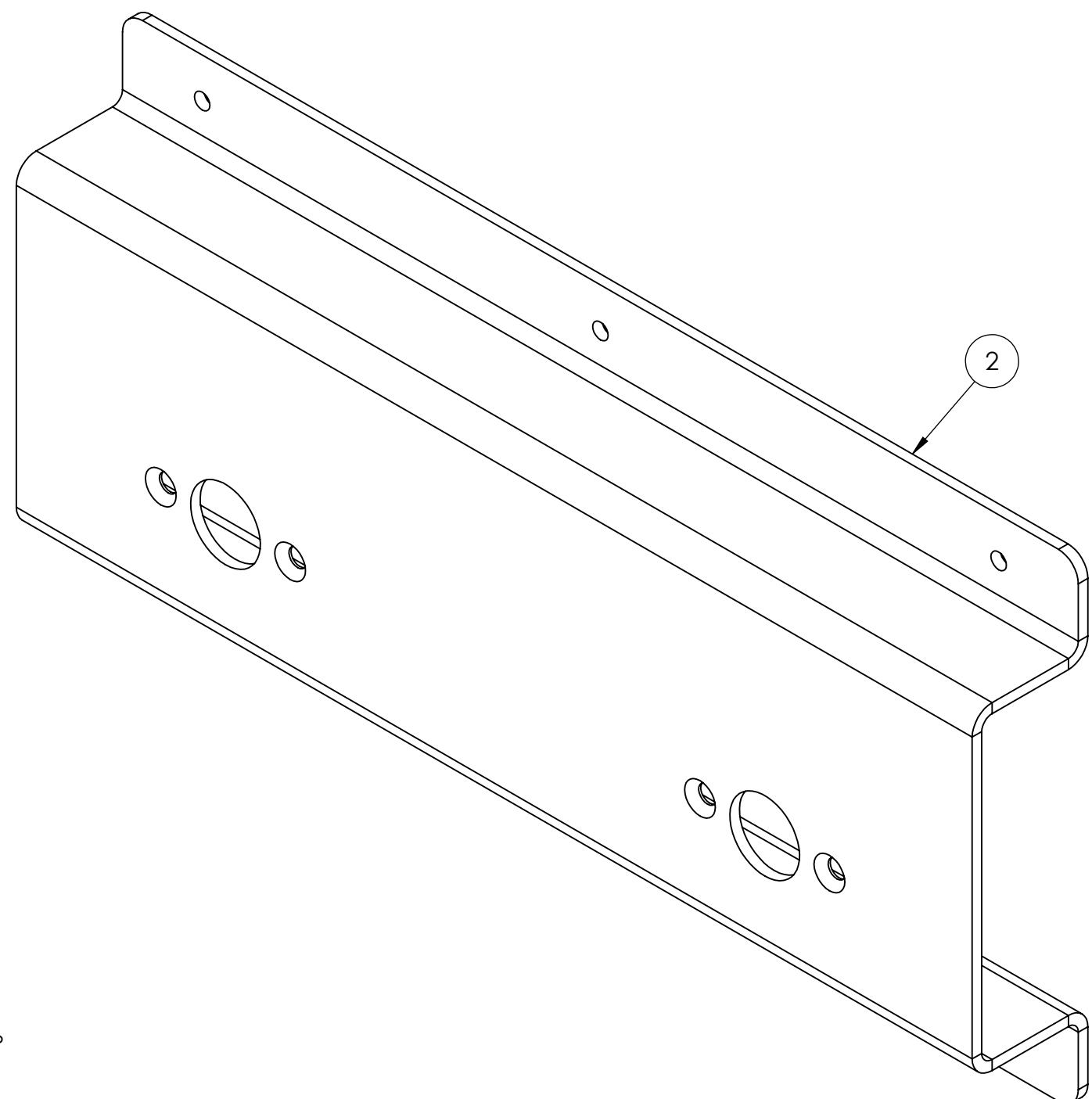
UNLESS OTHERWISE SPECIFIED:	BEND	NAME	DATE	
	DRAWN	JO	7/18/2023	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .02 THREE PLACE DECIMAL ± .010	<b>PROPRIETARY AND CONFIDENTIAL</b> THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE: <b>Truss Base - Sheet Metal Assembly</b>
	<b>MATERIAL/FINISH:</b> Low Carbon Steel, Powder Coat Black			COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.
DO NOT SCALE DRAWING				SCALE: 1:4 SHEET 3 OF 4


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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> Low Carbon Steel, Powder Coat Black  DO NOT SCALE DRAWING	BEND	NAME	DATE	 <b>FIRST ROBOTICS COMPETITION</b> Modeling Solutions Partner
	DRAWN	JO	7/18/2023	
	<b>PROPRIETARY AND CONFIDENTIAL</b>			TITLE: <b>Truss Base - Sheet Metal Assembly</b>  SIZE DWG. NO. REV <b>C</b> FE-01020  SCALE: 3:4 SHEET 4 OF 4
	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.			

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