

4

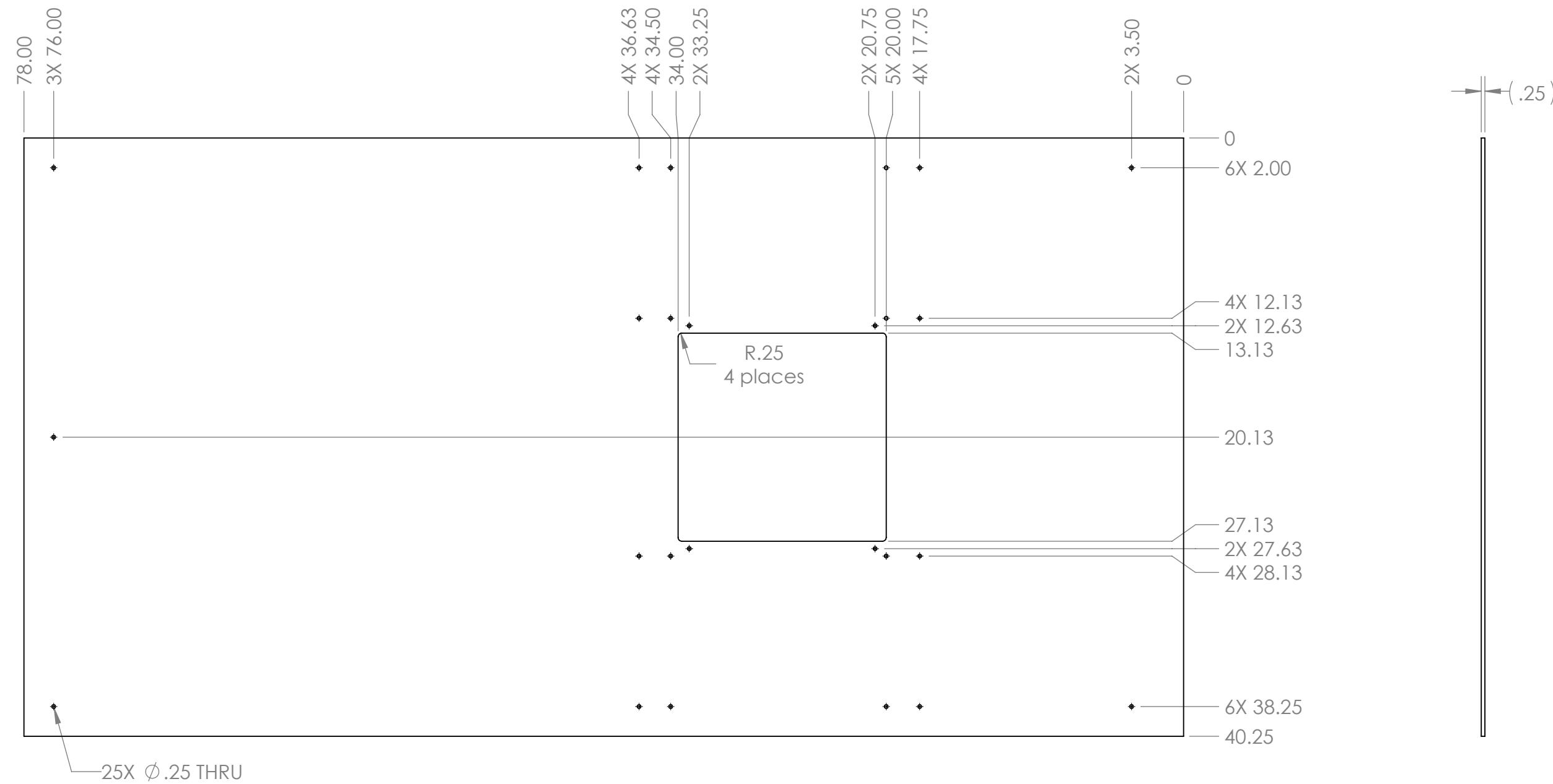
3

2

1

B

B



A

A

Notes:

1. Material: 1/4" thick, clear polycarbonate.
2. Remove all burrs and sharp edges

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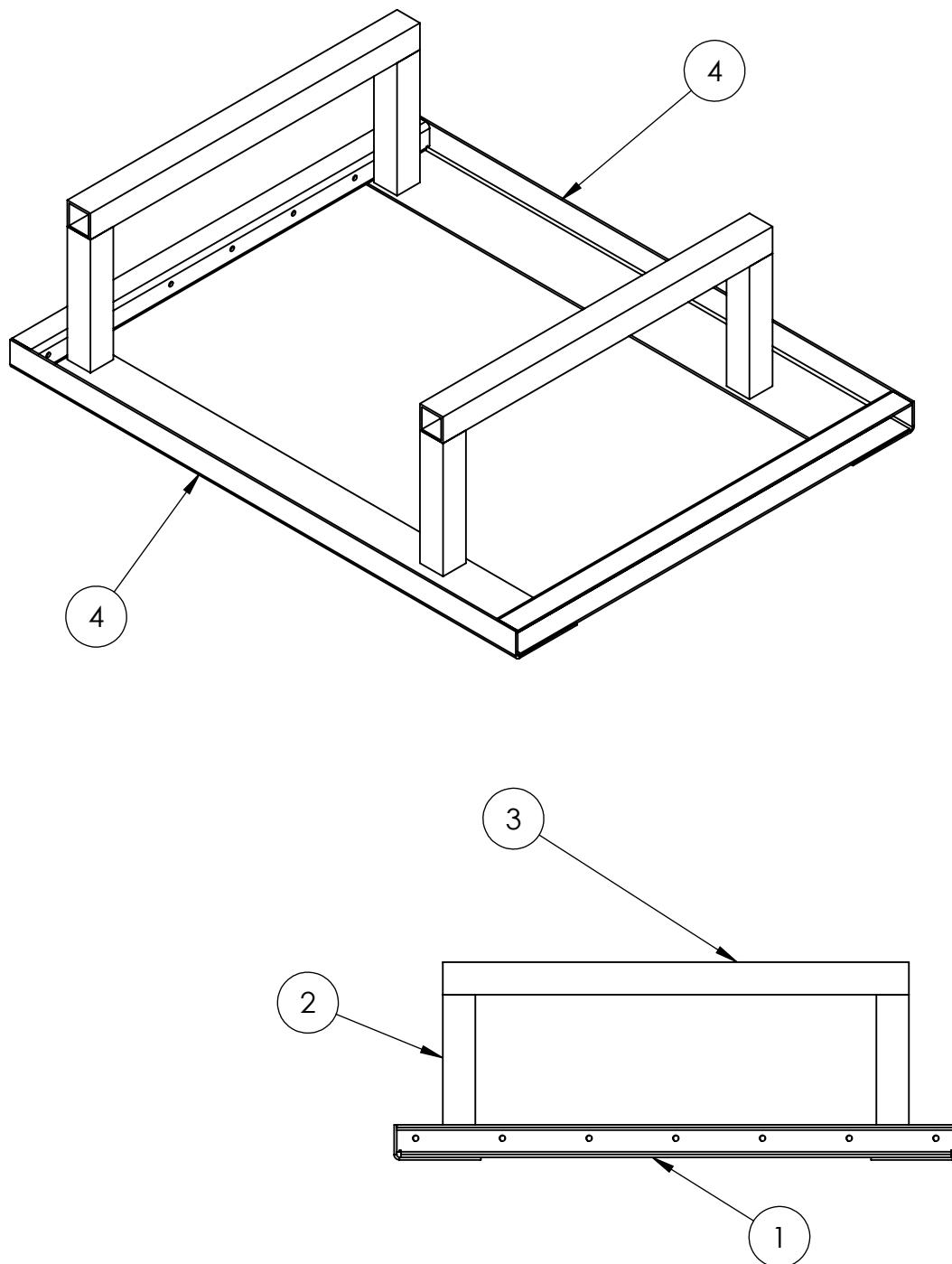
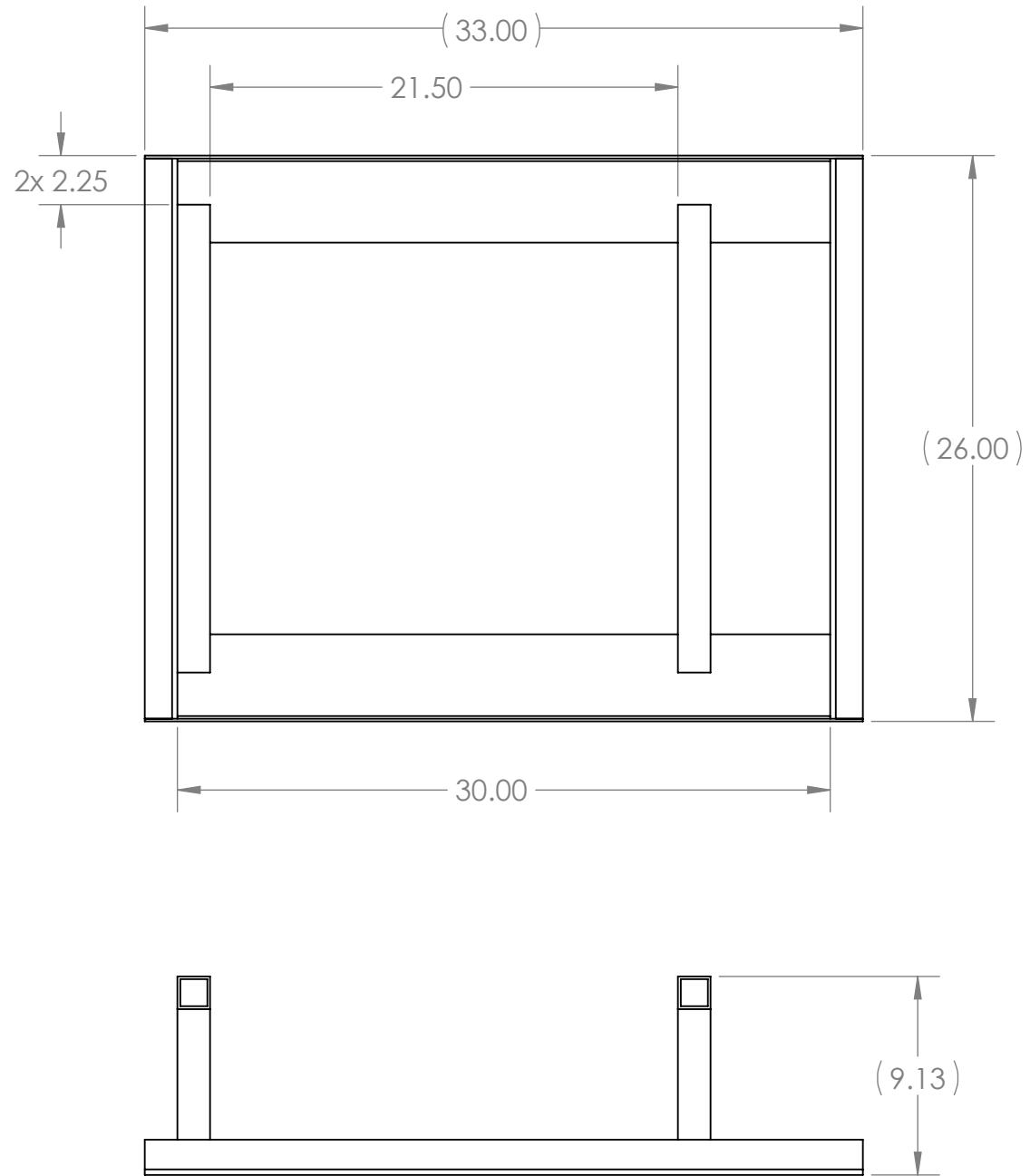
		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	NAME	DATE
		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
	NEXT ASSY	USED ON	FINISH	
		APPLICATION	DO NOT SCALE DRAWING	
SIZE	DWG. NO.		REV	
B	GE-18004			
SCALE: 1:8	WEIGHT:		SHEET 1 OF 1	

4

3

2

1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18006-01	1/8" thk., 5052 Aluminum Sheet	2
2	GE-18006-02	1.5" x .125" thk. Square Tubing, 6063 Aluminum	4
3	GE-18006-03	1.5" x .125" thk. Square Tubing, 6063 Aluminum	2
4	GE-18006-04	1/8" thk., 5052 Aluminum Sheet	2

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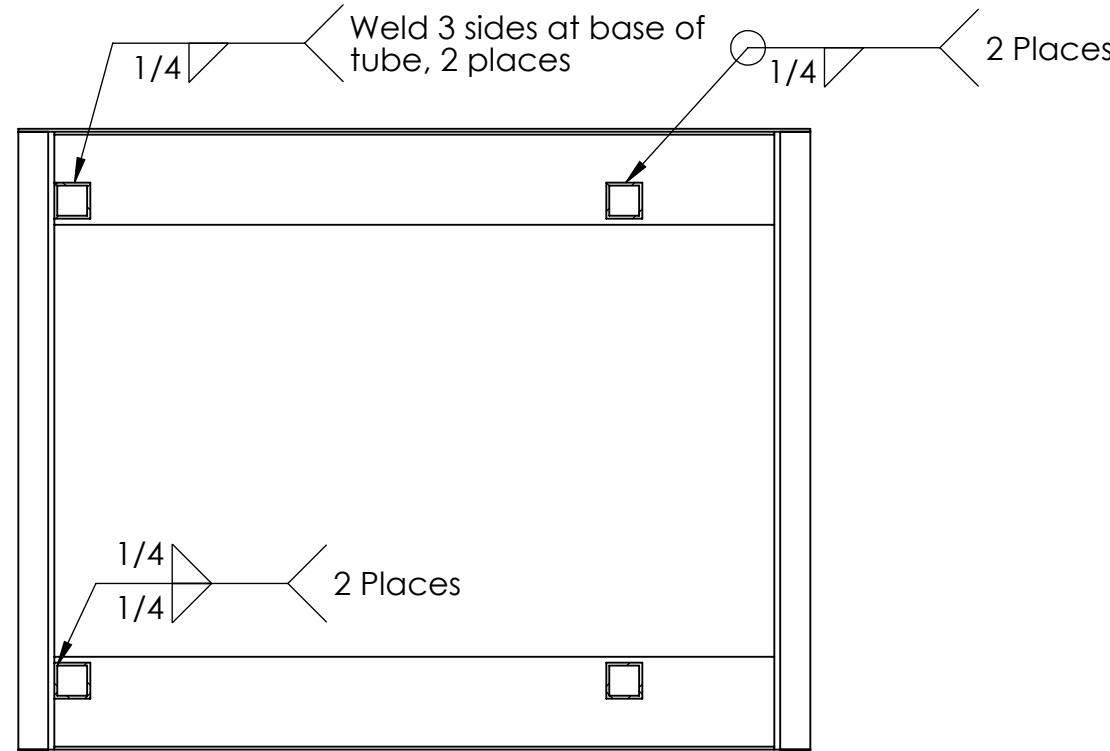
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 FIRST ROBOTICS COMPETITION  SOLIDWORKS <small>Modeling Solutions Partner</small>
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			CHECKED			
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
		MATERIAL	COMMENTS:			
NEXT ASSY	USED ON	FINISH		SIZE B DWG. NO. GE-18006 REV		
APPLICATION		DO NOT SCALE DRAWING		SCALE: 1:8	WEIGHT:	SHEET 1 OF 3

4

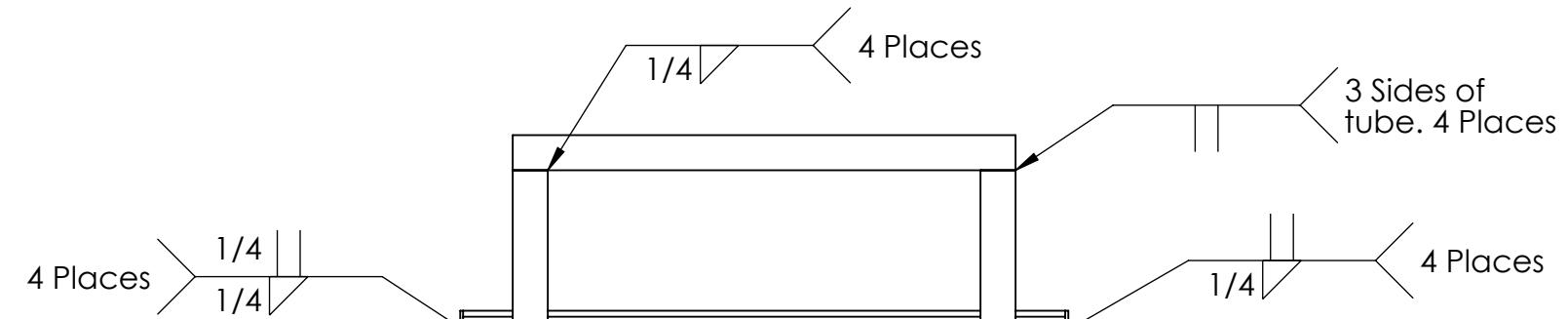
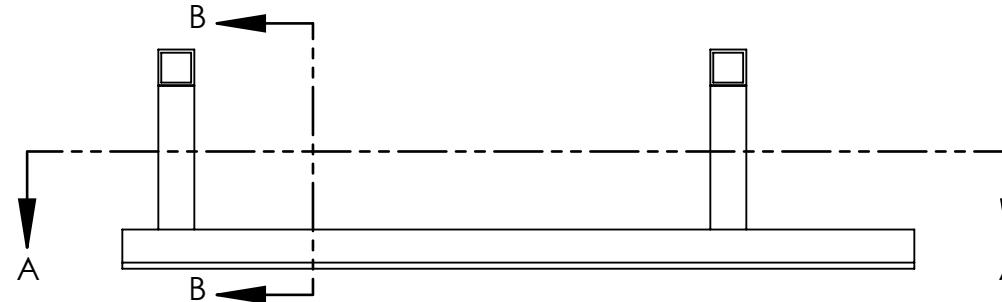
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2

1



SECTION A-A



SECTION B-B

		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 $\pm .001$			
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	

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FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

ROLLER BASE

SIZE DWG. NO. REV
B GE-18006

SCALE: 1:8 WEIGHT: SHEET 2 OF 3

4

3

2

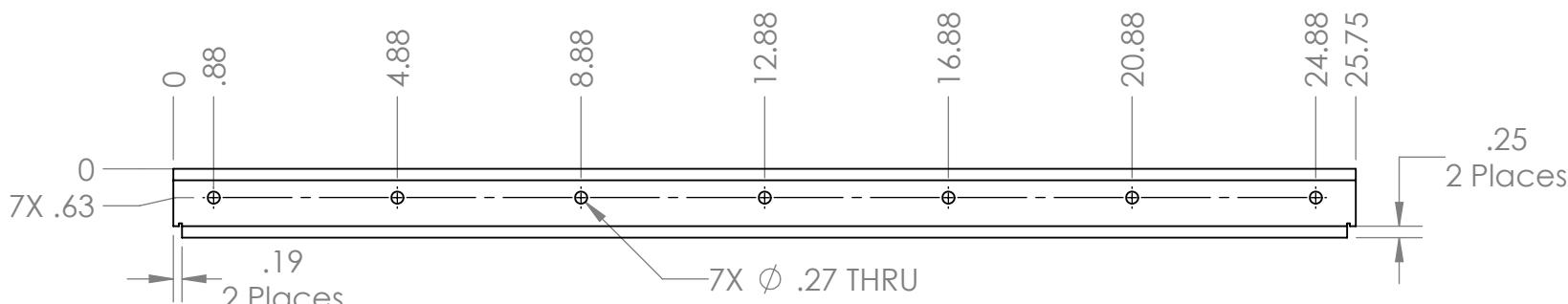
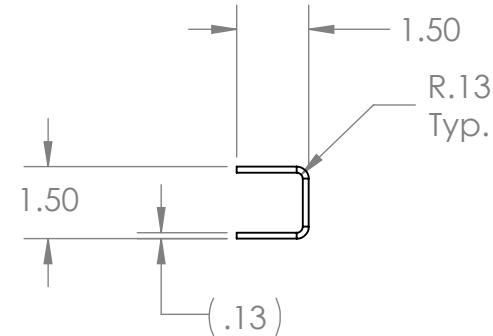
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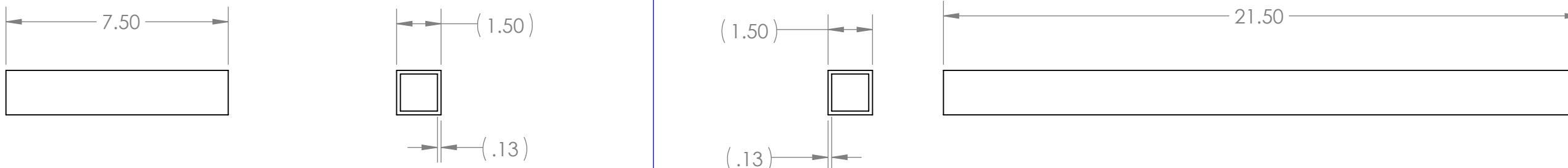
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B

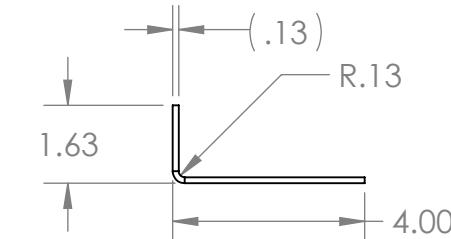
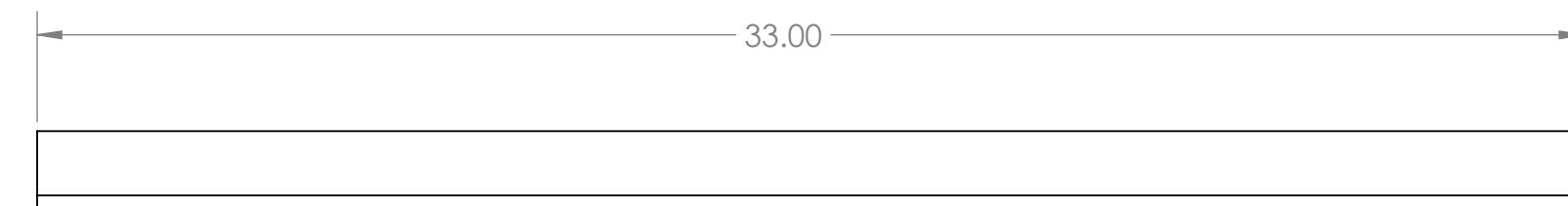
B

Item 1: GE-18006-01
Quantity: 2
Material: 1/8" Thick, 5052 Aluminum Sheet



Item 2: GE-18006-02
Quantity: 4
Material 1-1/2" x .125" thick. Square Tubing, 6063 Aluminum

Item 3: GE 18006-03
Quantity: 4
Material 1-1/2" x .125" thick. Square Tubing, 6063 Aluminum



Item 4: GE18006-04
Quantity: 2
Material: 1/8" Thick, 5052 Aluminum Sheet

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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 $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

ROLLER BASE

SIZE	DWG. NO.	REV
B	GE-18006	
SCALE: 1:8	WEIGHT:	SHEET 3 OF 3

4

3

2

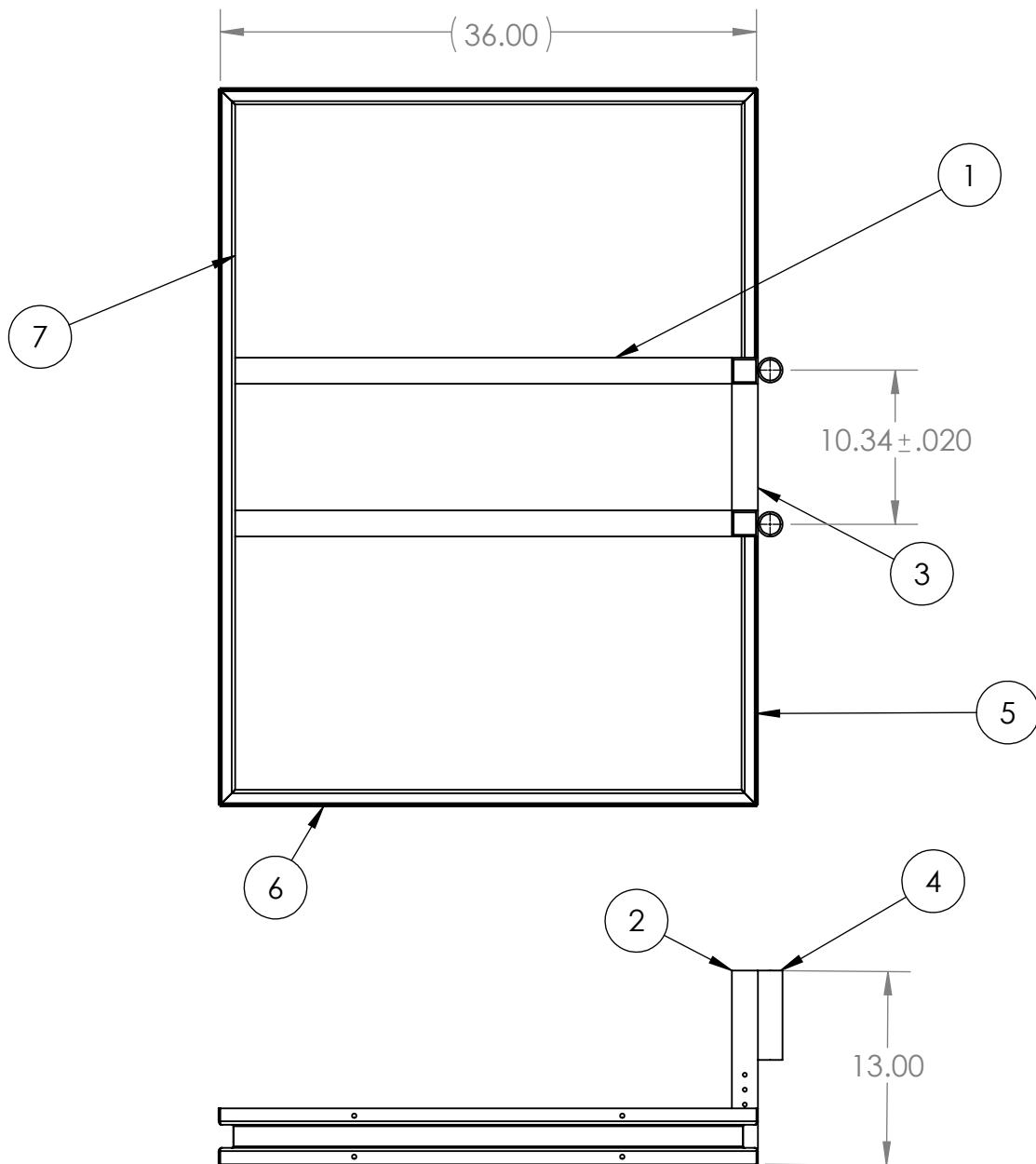
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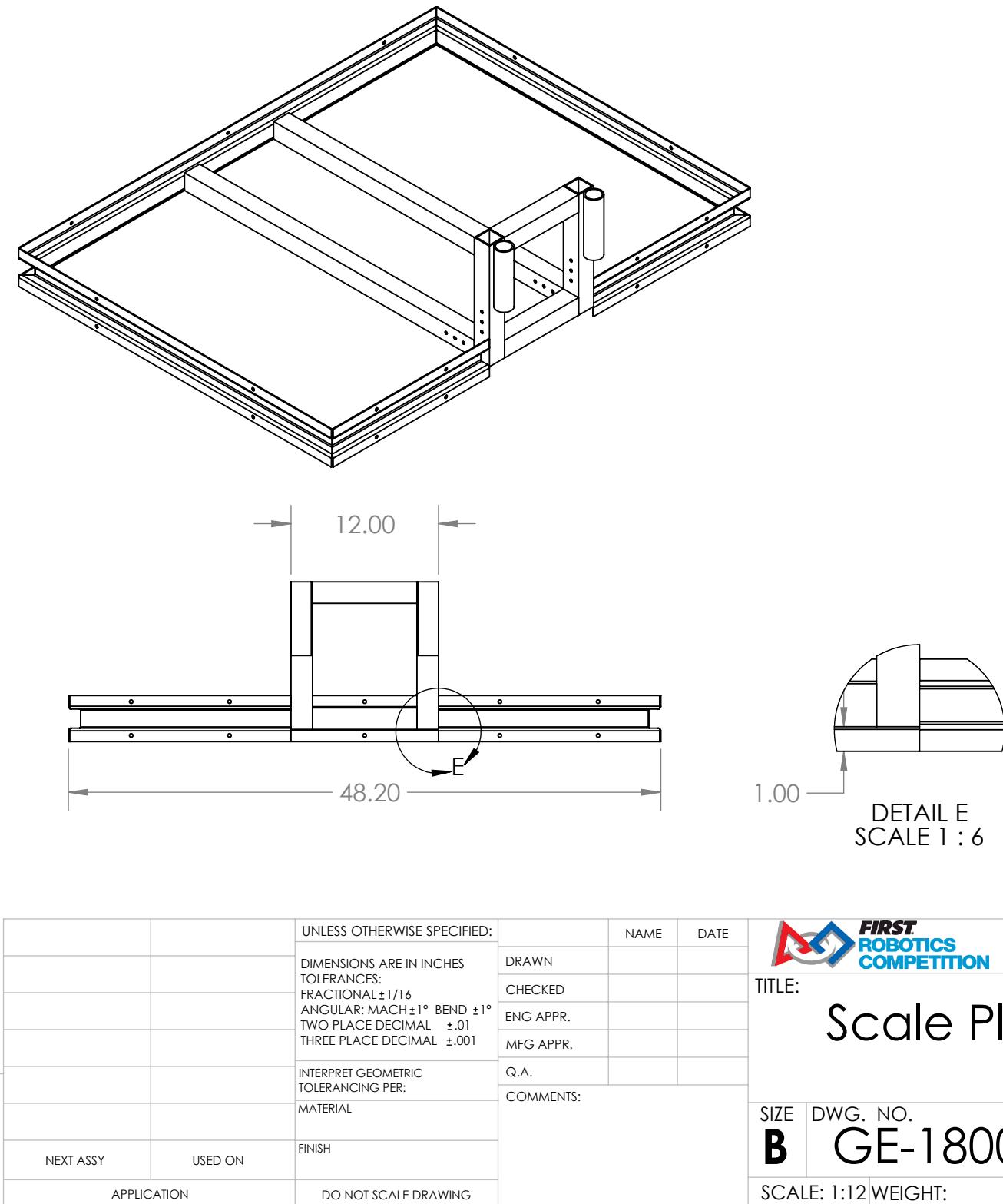
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18007-1	1.75" x .125" thk. Square Tube, 6063 Aluminum	2
2	GE-18007-2	1.75" x .125" thk. Square Tube, 6063 Aluminum	2
3	GE-18007-3	1.75" x .125" Thk. Square Tube, 6063 Aluminum	2
4	GE-18007-4	1.25" Schedule 40 Pipe, 6061 Aluminum	2
5	GE-18007-5	10 Gauge 5052 Aluminum Sheet	2
6	GE-18007-6	10 Gauge 5052 Aluminum Sheet	2
7	GE-18007-7	10 Gauge 5052 Aluminum Sheet	1

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-B1	1	Weld note added	12/7/2017	CPO
3-A3, 3-B2	2	Holes added to support use of GE-18134	3/6/2018	CPO



4

3

2

1

1.00

SECTION D-D

B

B

2 Places 2 Places

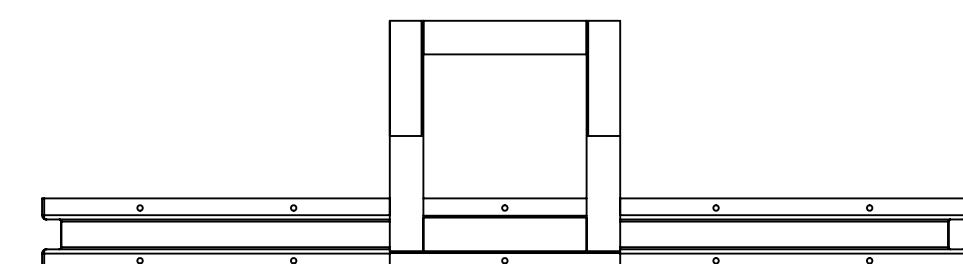
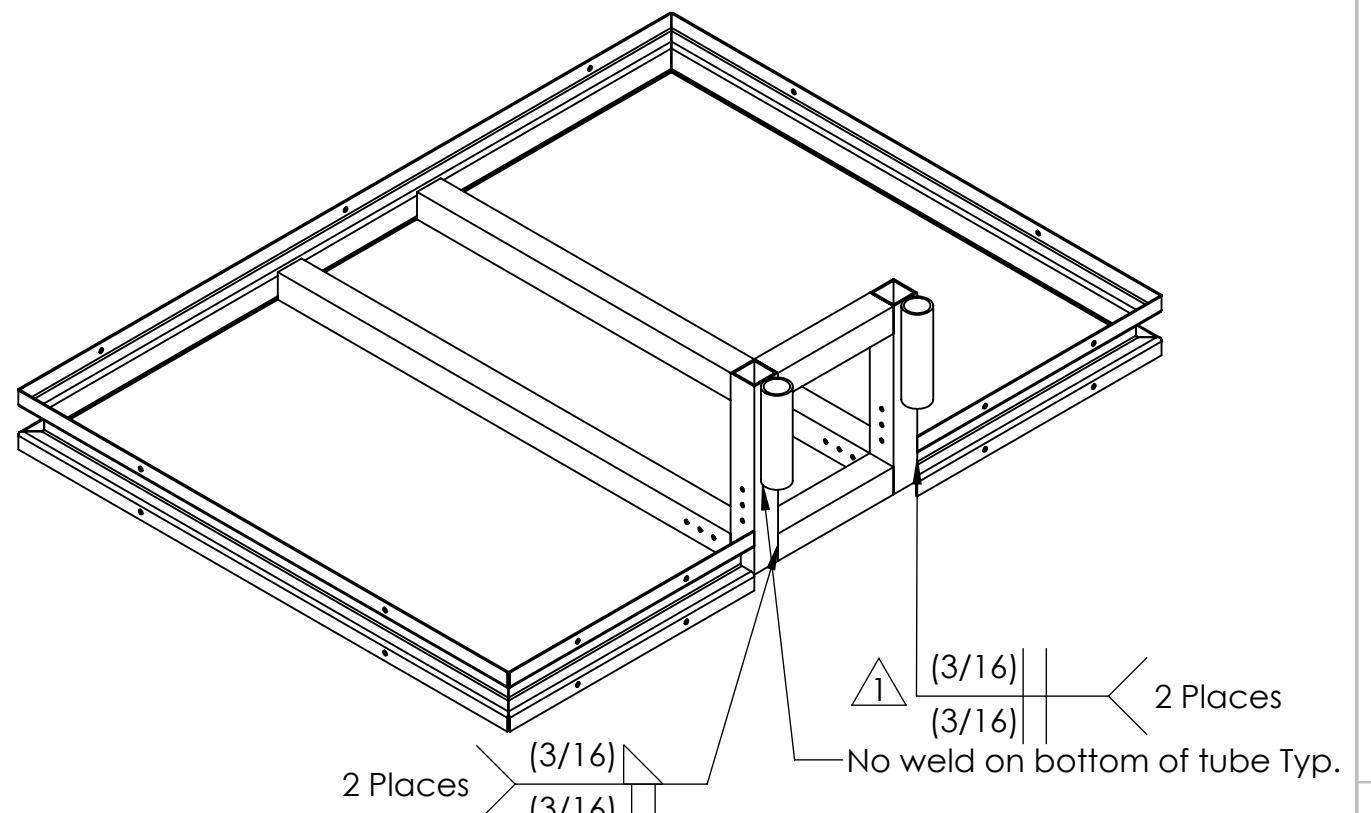
1/4 (1/4) 2 Places

No weld penetration
permissible on inside
surface of item 4

4 Places 2 Places

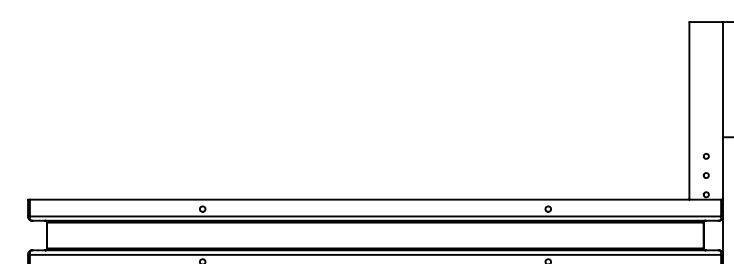
2 Places

1/4 1.5-4.5 2 Places



A

A



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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DRAWN		DIMENSIONS ARE IN INCHES		
CHECKED		TOLERANCES: 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:				
MATERIAL				
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:

Scale Plate

SIZE DWG. NO. REV
B GE-18007 2

SCALE: 1:10 WEIGHT: SHEET 2 OF 7

4

3

2

1

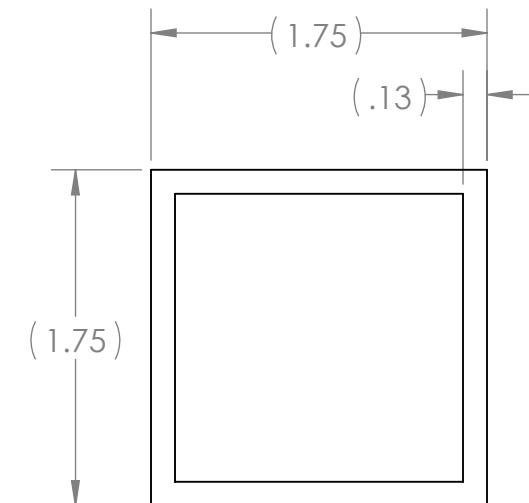
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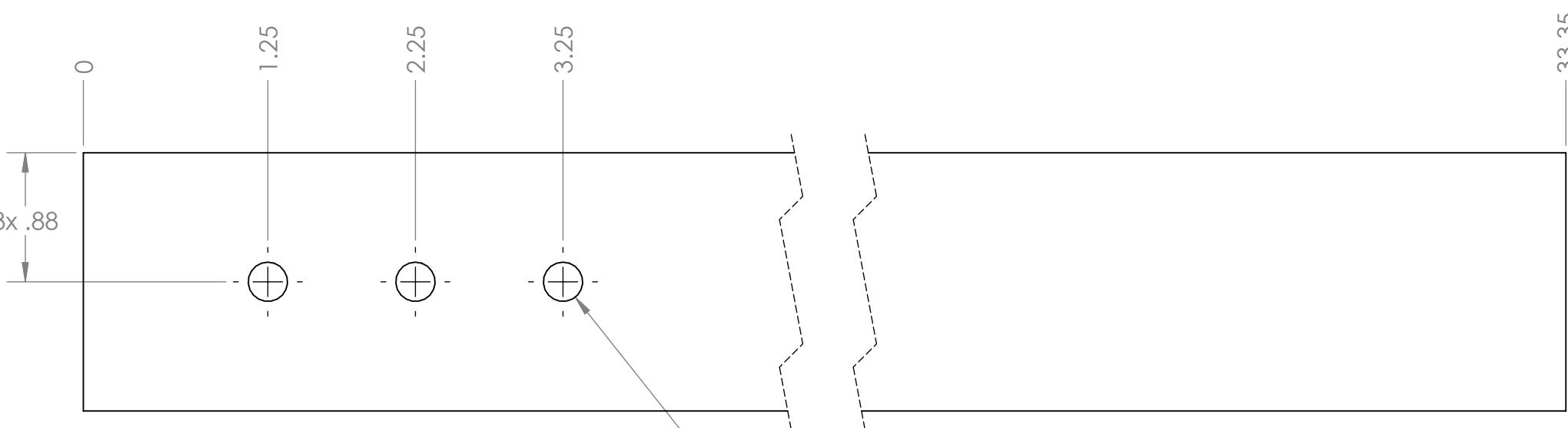
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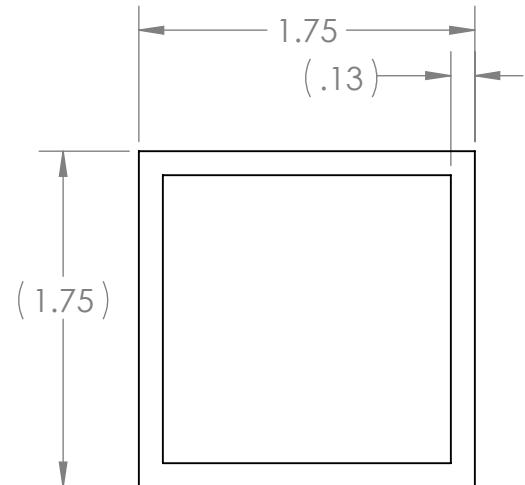
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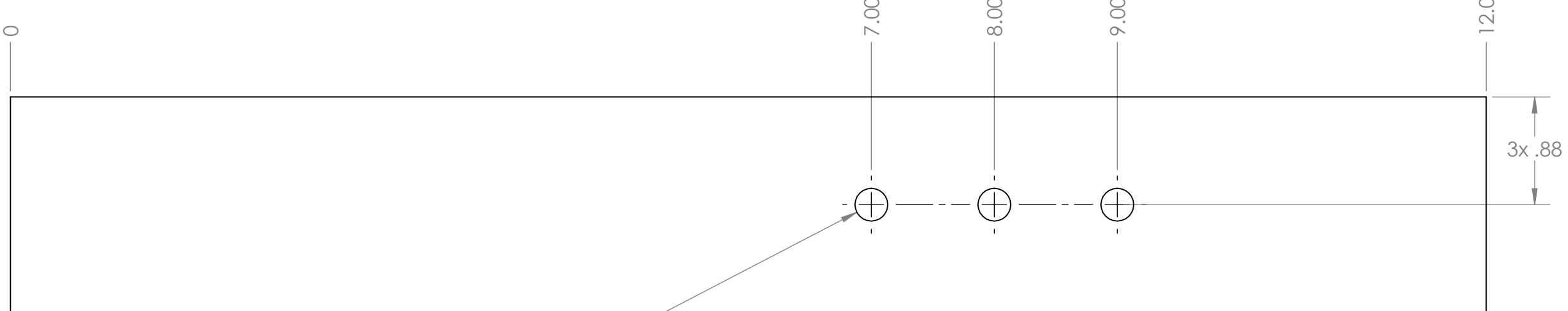
Item: GE-18007-01
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
Scale 1:1
QTY: 2



3X Ø .27 THRU ALL
to be drilled at time
of installation of GE-18314



Item: GE-18007-02
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
Scale 1:1
QTY: 2



3X Ø .27 THRU ALL
to be drilled at time of
installation of GE-18314

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

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Title:
Scale Plate

SIZE **DWG. NO.** **REV**
B **GE-18007** **2**
SCALE: 1:1 WEIGHT: SHEET 3 OF 7

4

3

2

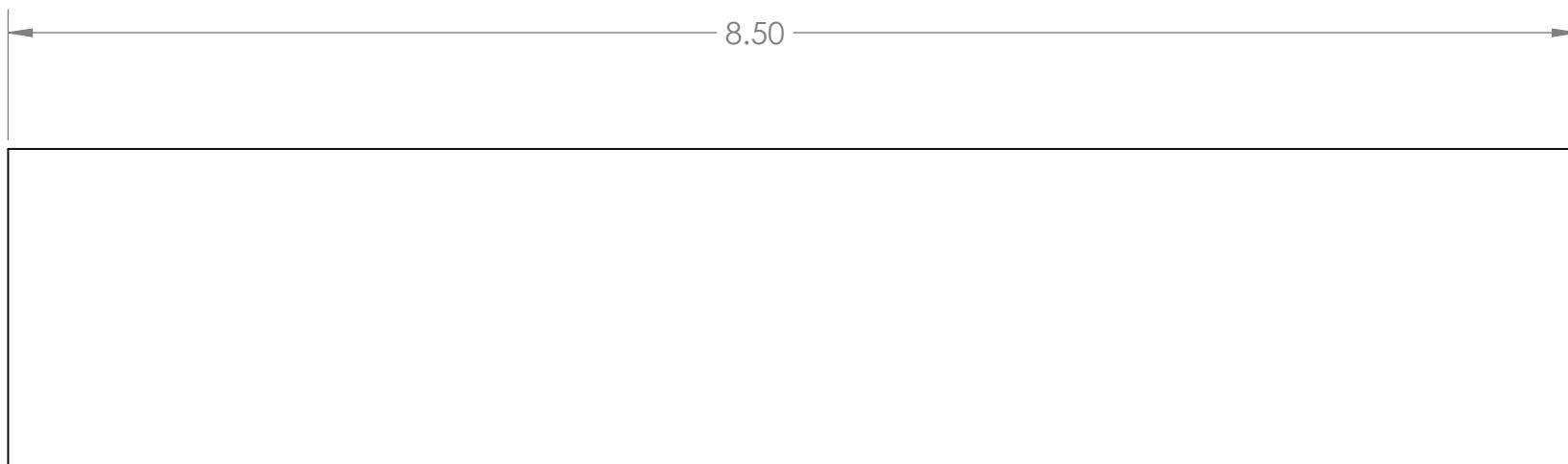
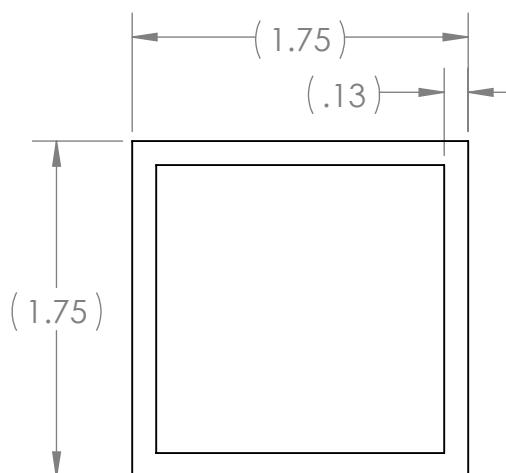
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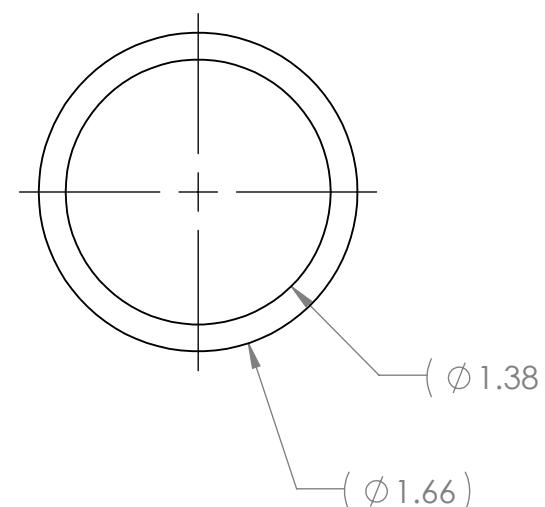
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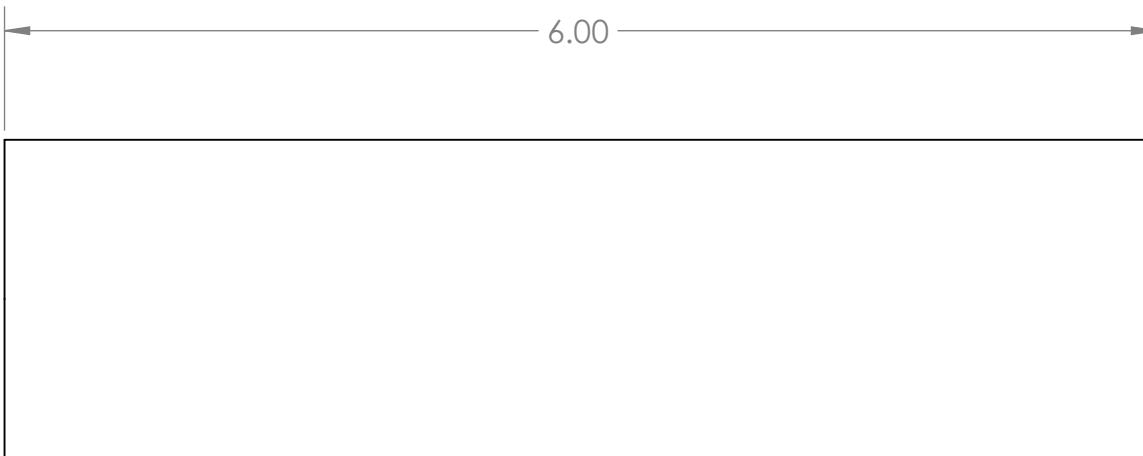
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Item: GE-18007-03
 Material 1.75" x .125" thk. Square Tube, 6063 Aluminum
 Scale 1:1
 QTY: 2



Item: GE-18007-04
 Material: 1.25" Schedule 40 Pipe, 6061 Aluminum
 Scale 1:1
 QTY: 2



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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
 Modeling Solutions Partner

Title: Scale Plate

SIZE	DWG. NO.	REV
B	GE-18007	2
SCALE: 1:1	WEIGHT:	SHEET 4 OF 7

4

3

2

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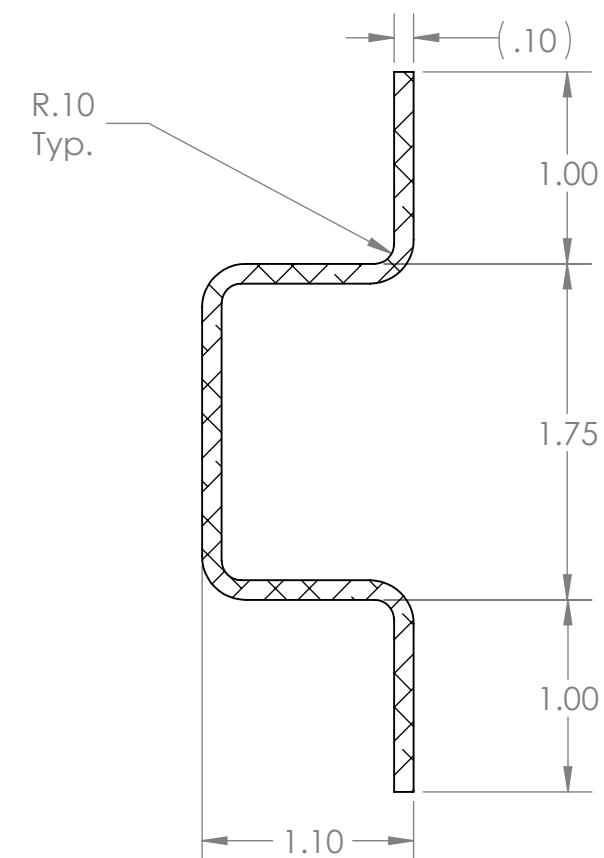
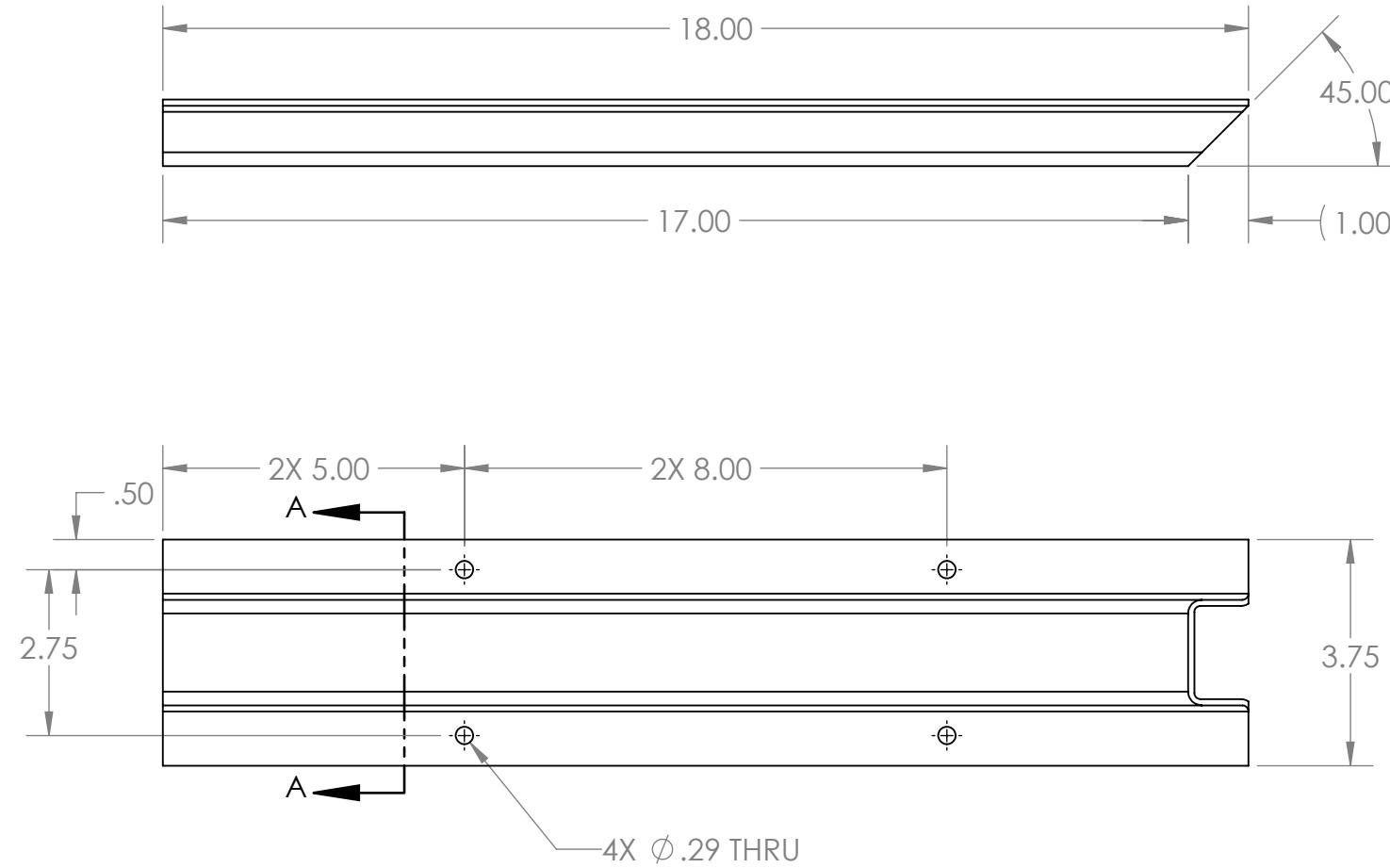
4

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B



SECTION A-A
SCALE 1 : 1

A

Item: GE-18007-05
Material: 10 Gauge 5052 Aluminum Sheet
Scale 1:3
Qty: 2

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
SIZE	DWG. NO.		REV		
B	GE-18007		2		
SCALE: 1:3	WEIGHT:		SHEET 5 OF 7		

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Scale Plate

4

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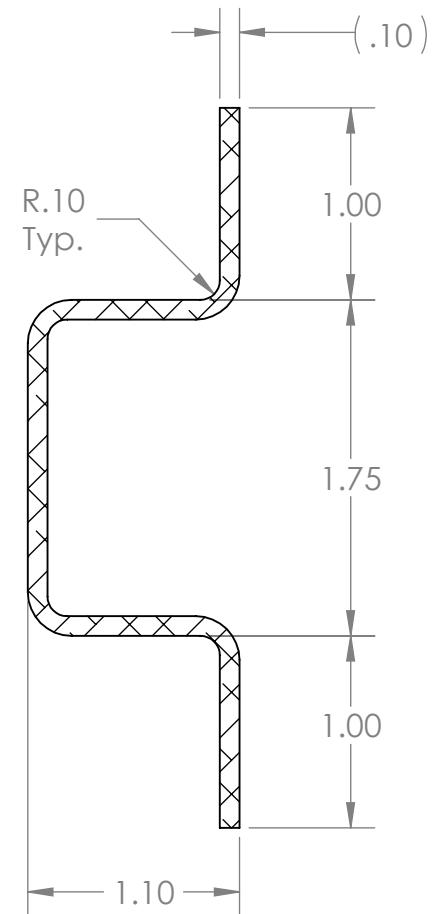
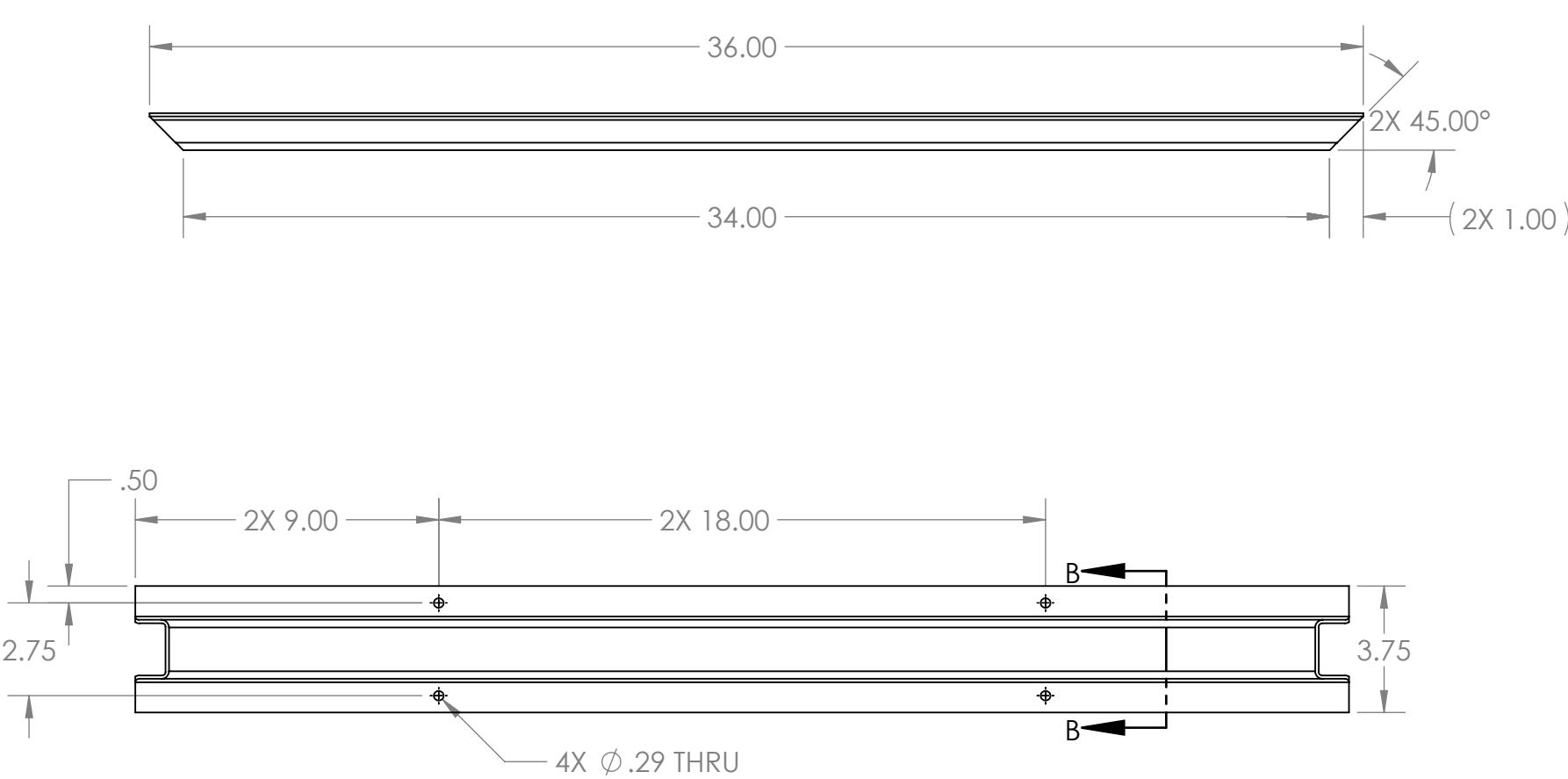
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Item: GE-18007-06
 Material: 10 Gauge 5052 Aluminum Sheet
 Scale 1:5
 Qty: 2

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
SIZE	DWG. NO.		REV		
B	GE-18007		2		
SCALE: 1:5	WEIGHT:		SHEET 6 OF 7		

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
 Modeling Solutions Partner

Scale Plate

4

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2

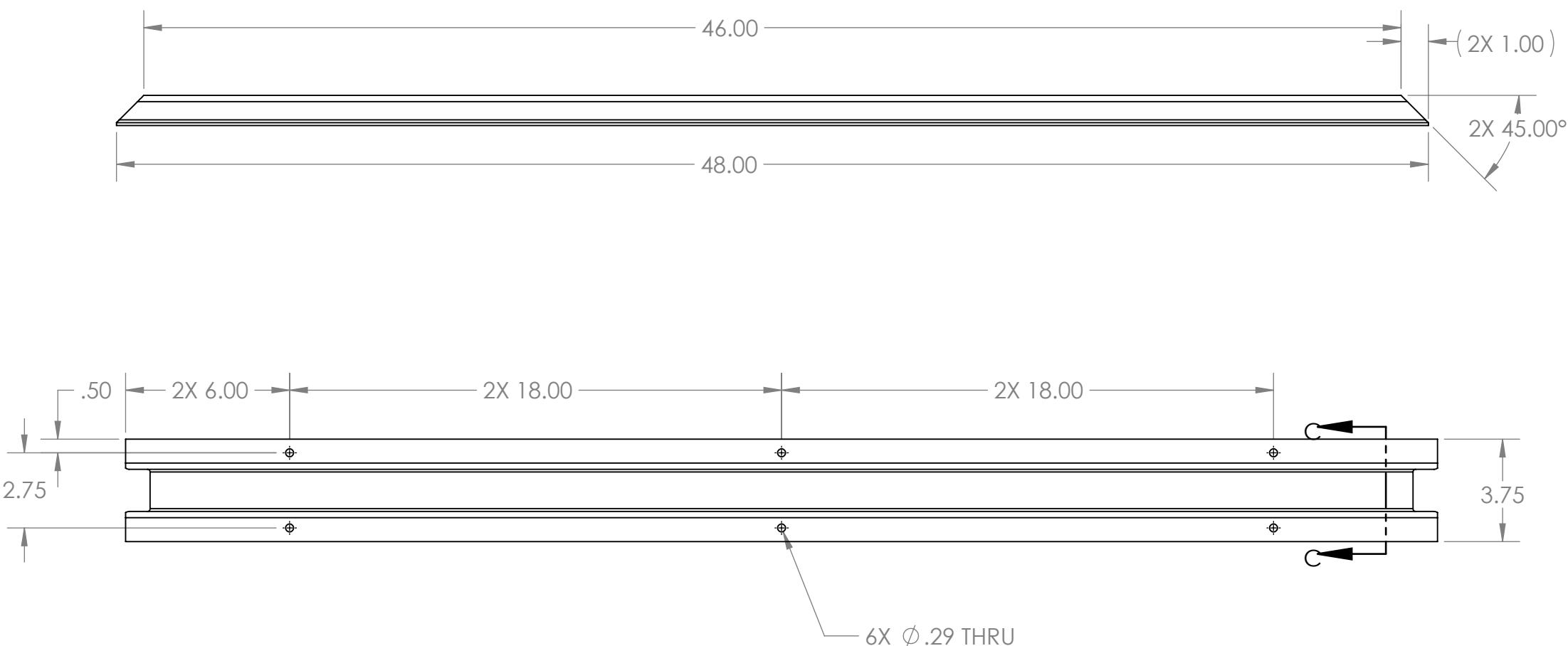
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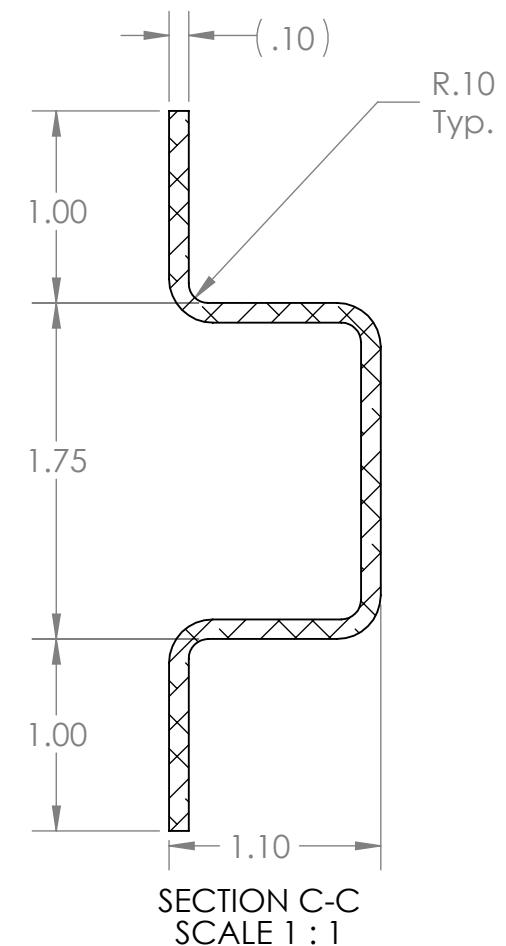
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1



Item: GE-18007-07
 Material: 10 Gauge 5052 Aluminum Sheet
 Scale 1:5
 Qty: 1



4

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2

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			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Scale Plate

SIZE DWG. NO. **REV**
B GE-18007 **2**

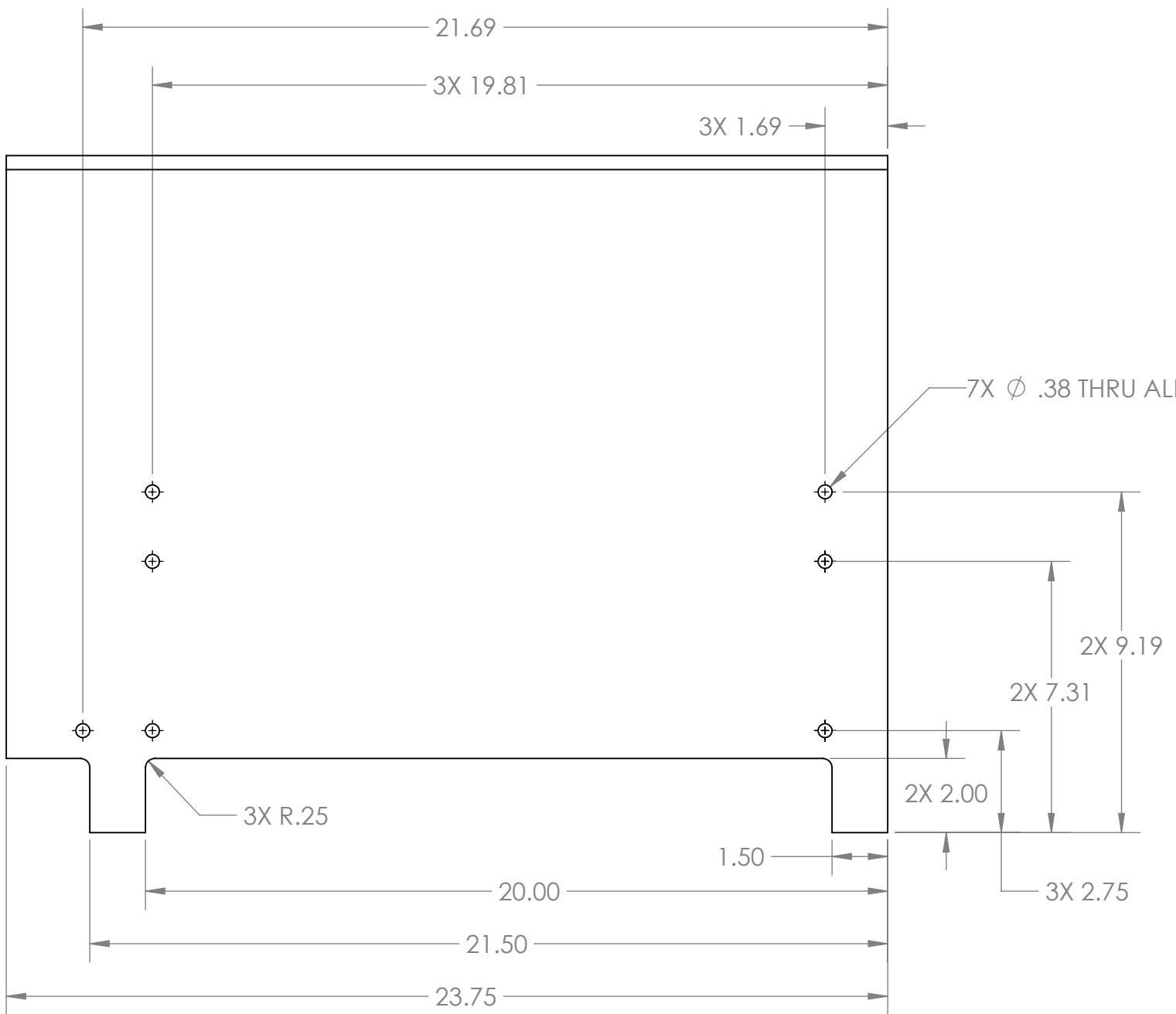
SCALE: 1:5 WEIGHT: SHEET 7 OF 7

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Roller Tunnel

SIZE	DWG. NO.	REV
B	GE-18008	
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1

4

3

2

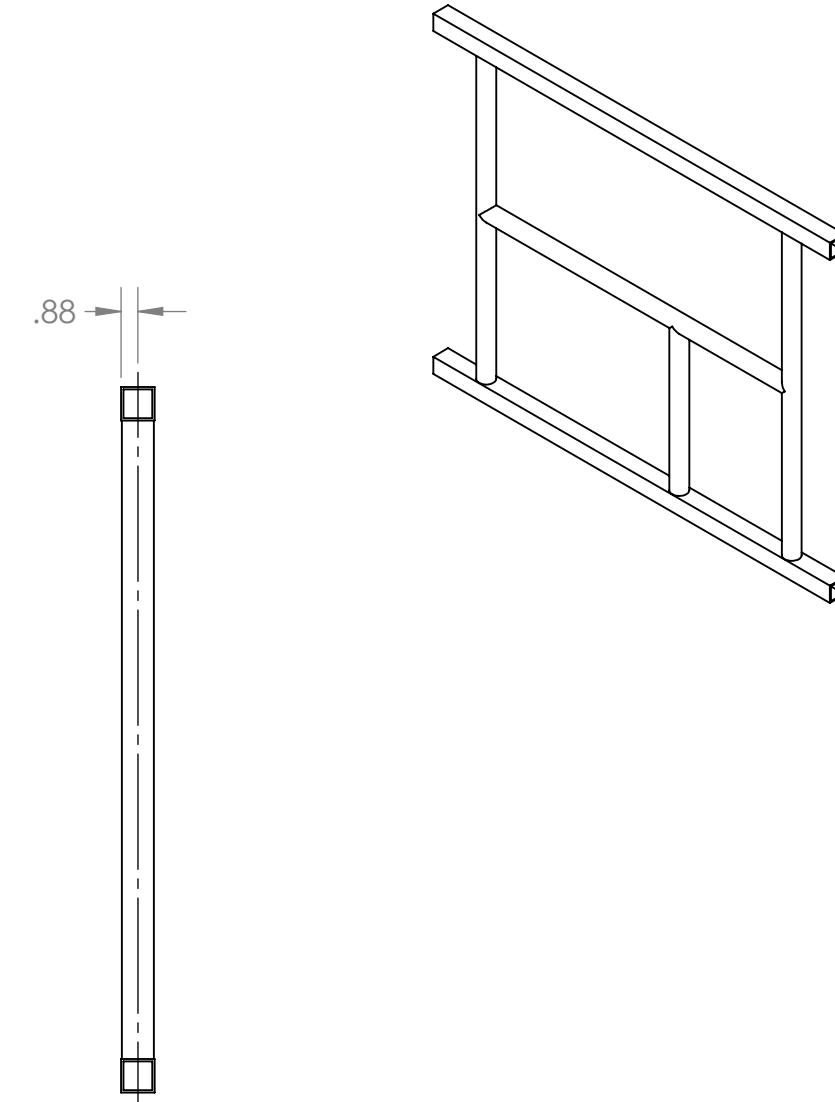
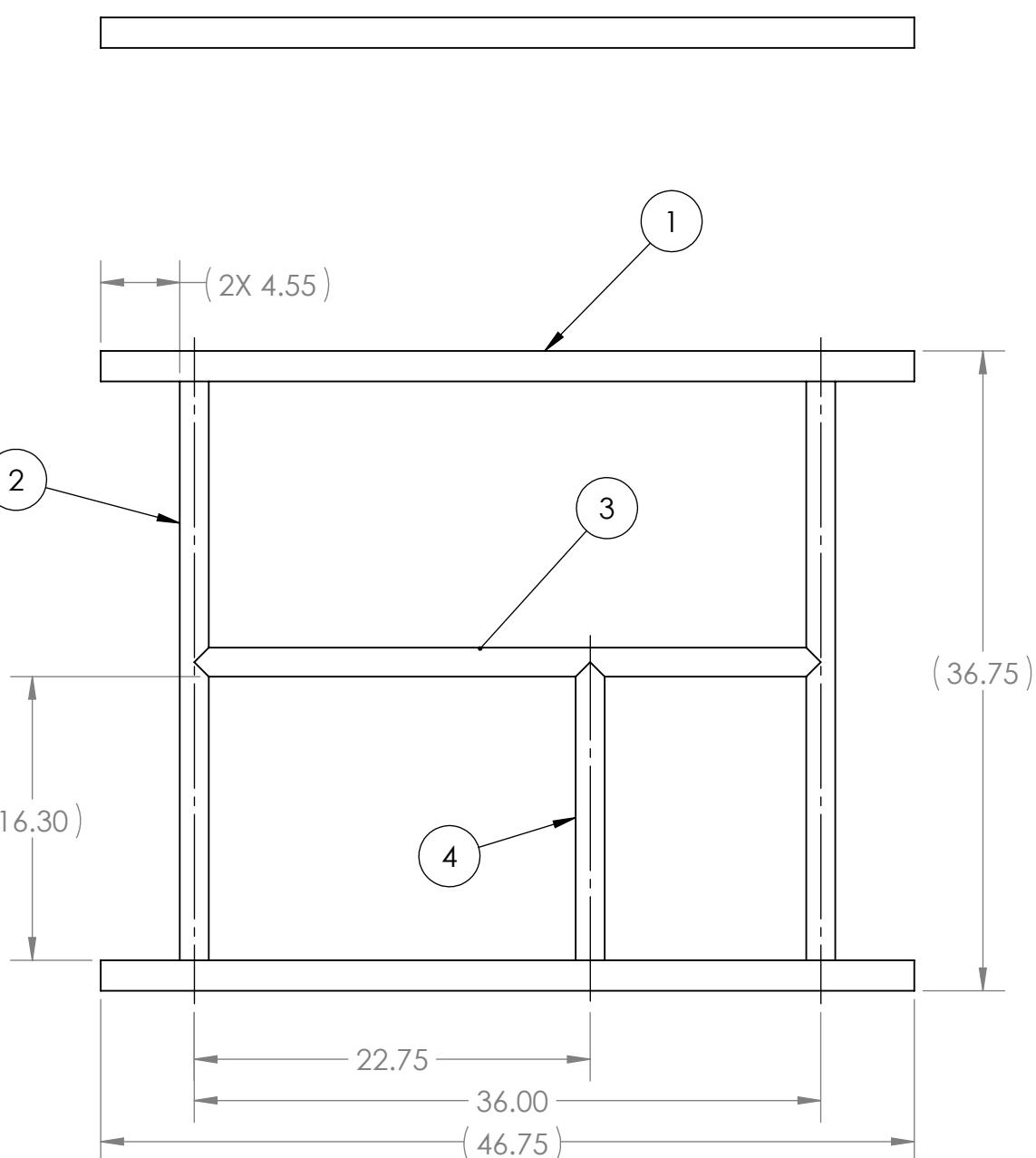
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B

B

A

A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18009-01	1.75" x .125" thk. Square Tube, 6063 Aluminum	2
2	GE-18009-02	1-1/4" Schedule 40 Pipe, 6061 Aluminum	2
3	GE-18009-03	1-1/4" Schedule 40 Pipe, 6061 Aluminum	1
4	GE-18009-04	1-1/4" Schedule 40 Pipe, 6061 Aluminum	1

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
	NEXT ASSY	USED ON		
		APPLICATION	DO NOT SCALE DRAWING	
SIZE	DWG. NO.		REV	
B	GE-18009			
SCALE: 1:10	WEIGHT:		SHEET 1 OF 3	

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Title:
Exchange Frame

4

3

2

1

4

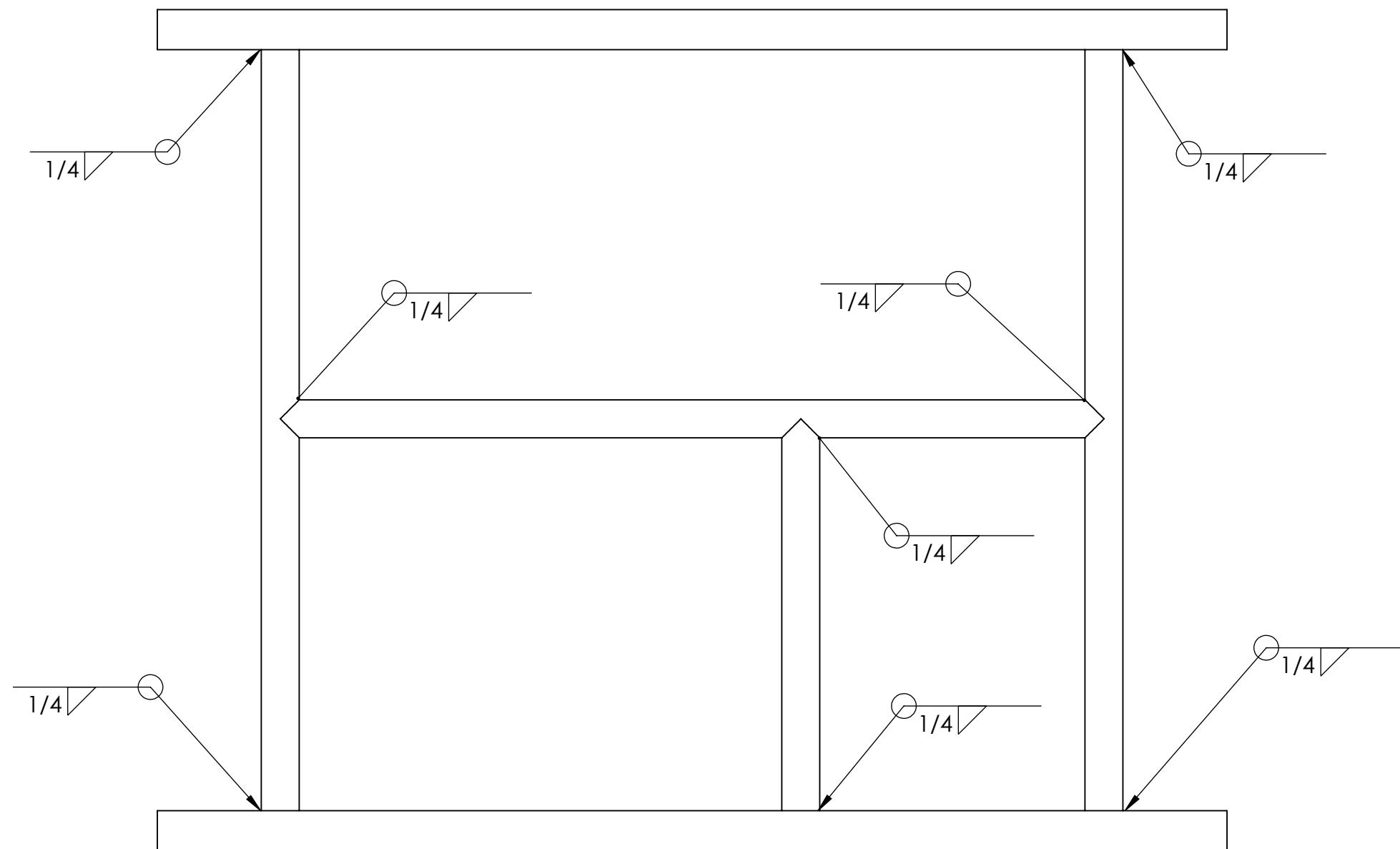
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2

1

B

B



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 $\pm .001$		NAME	DATE
		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Exchange Frame

SIZE	DWG. NO.	REV
B	GE-18009	
SCALE: 1:10	WEIGHT:	SHEET 2 OF 3

4

3

2

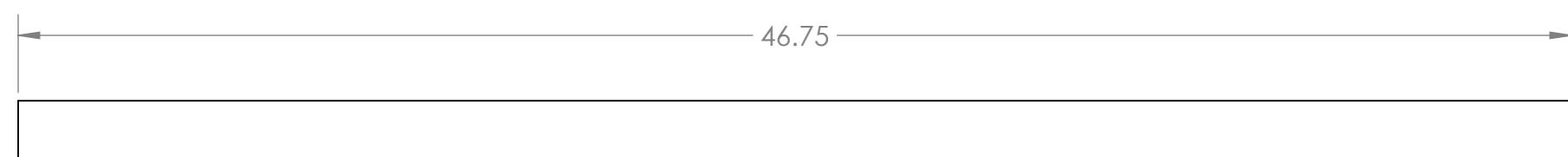
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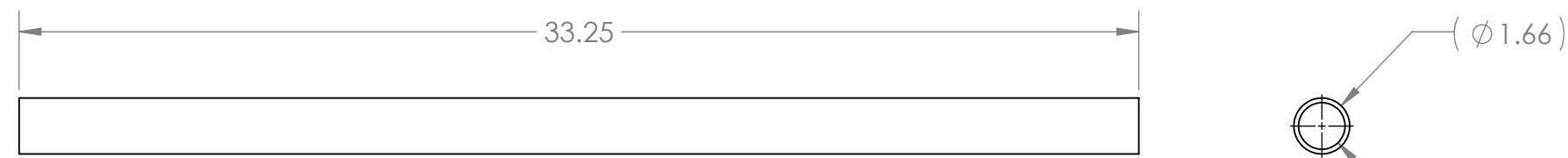
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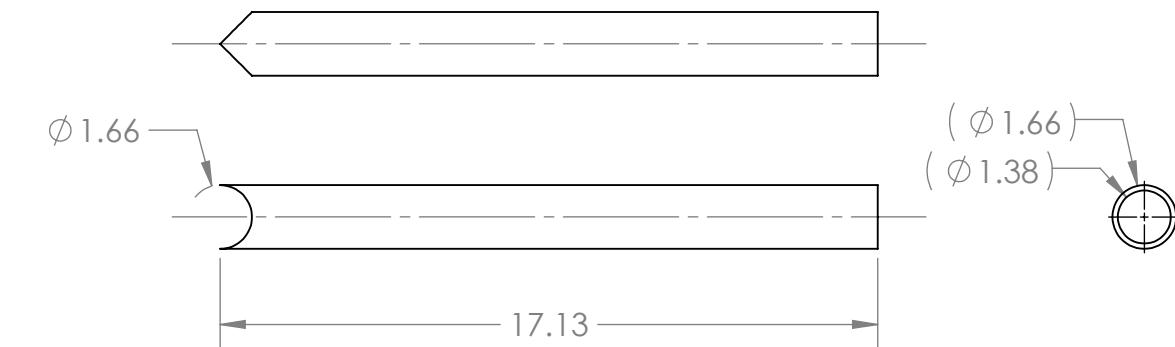
Item: GE-18009-01
Quantity: 2
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum



Item: GE-18009-02
Quantity: 2
Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum



Item: GE-18009-03
Quantity: 1
Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum



Item: GE-18009-04
Quantity: 1
Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum

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	DRAWN			
	CHECKED			
	ENG APPR.			
	MFG APPR.			
	Q.A.			
	COMMENTS:			
NEXT ASSY	USED ON	MATERIAL		
		FINISH		
APPLICATION		DO NOT SCALE DRAWING		
SCALE: 1:5	WEIGHT:	SHEET 3 OF 3	SIZE	DWG. NO.
B	GE-18009		REV	

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Exchange Frame

4

3

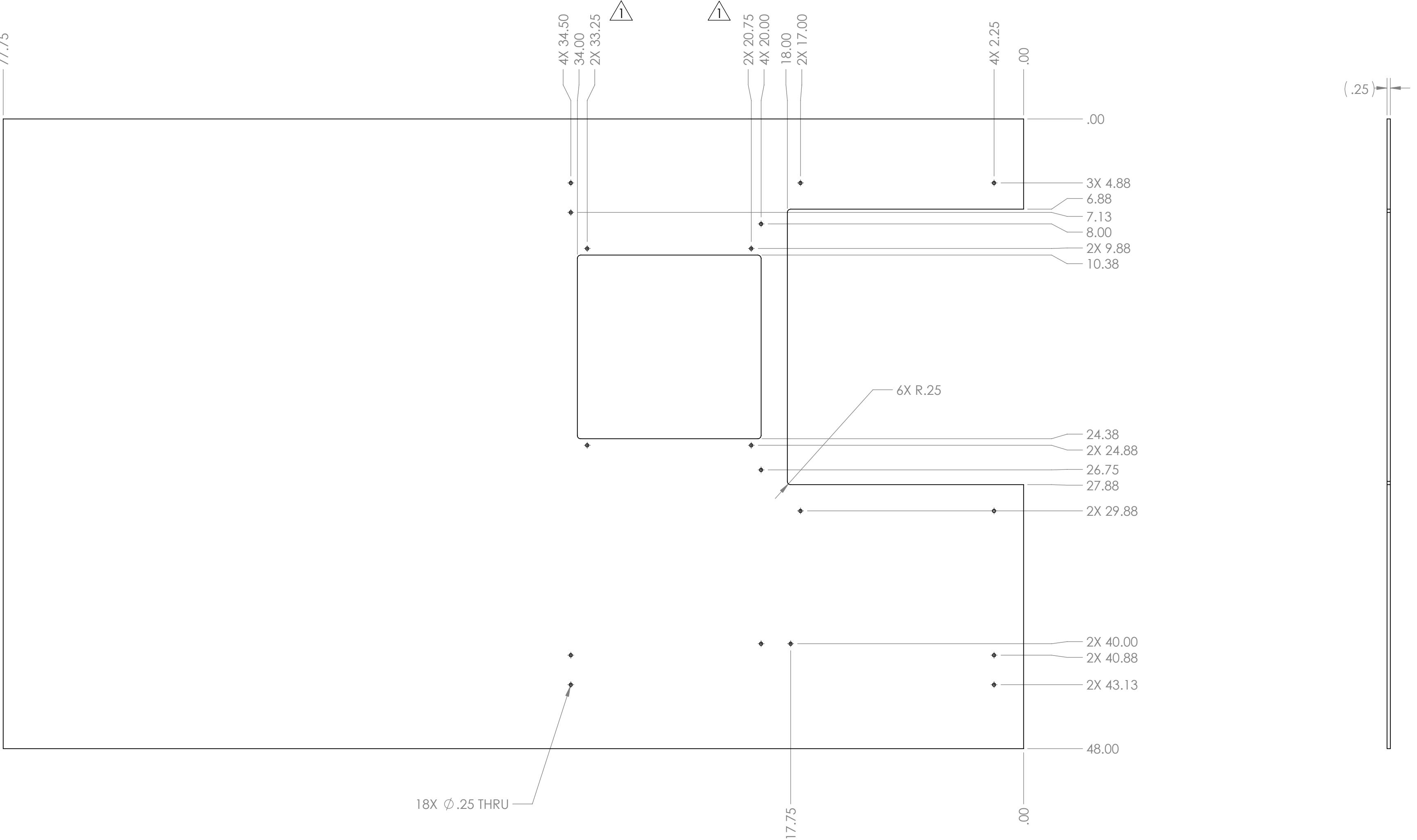
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
D2, D3	1	33.25 was 33.75, 20.75 was 20.25	10/30/17	DAF

D



Notes:

- Material: 1/4" thk. clear polycarbonate
- Remove all burrs and sharp edges

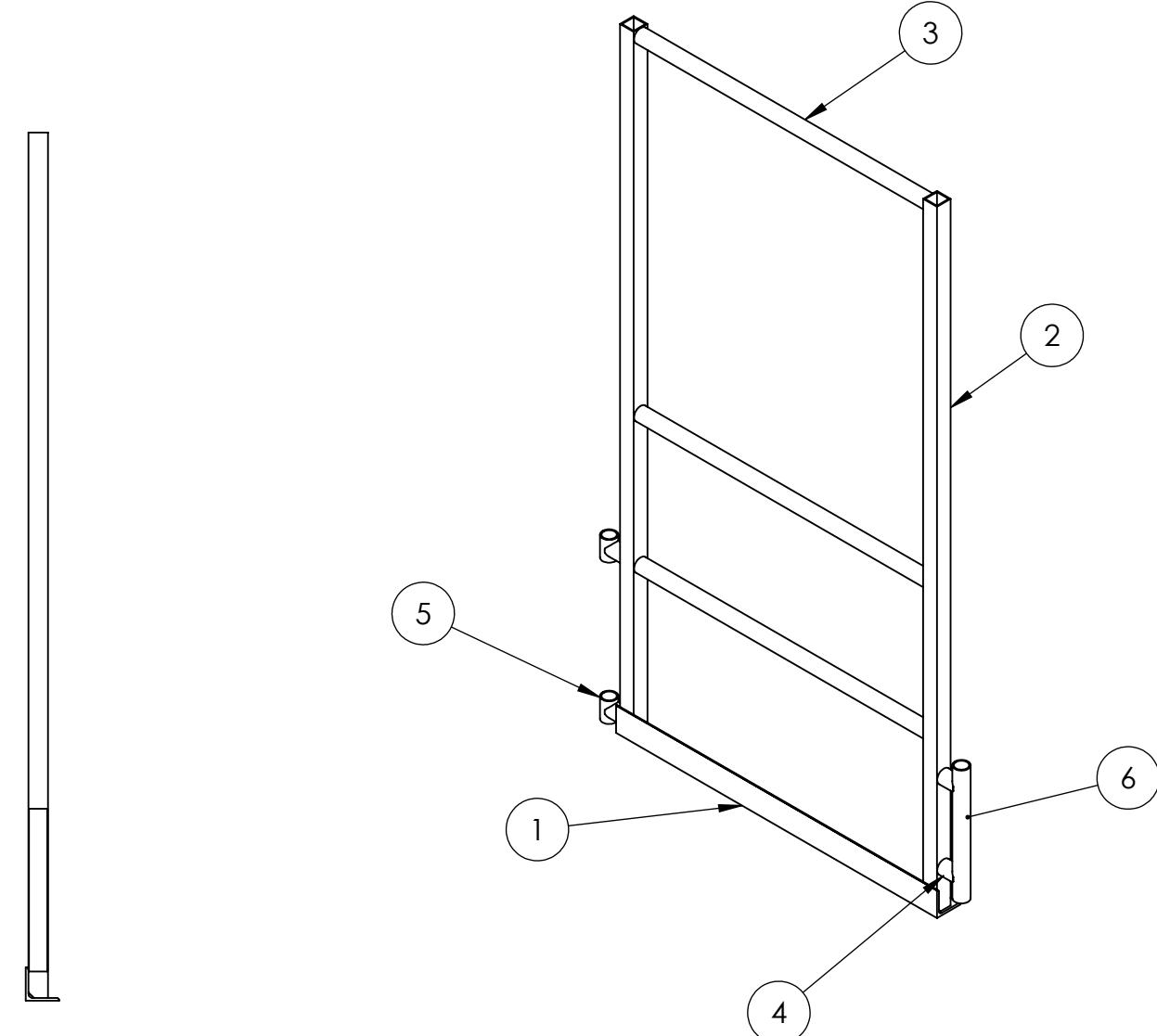
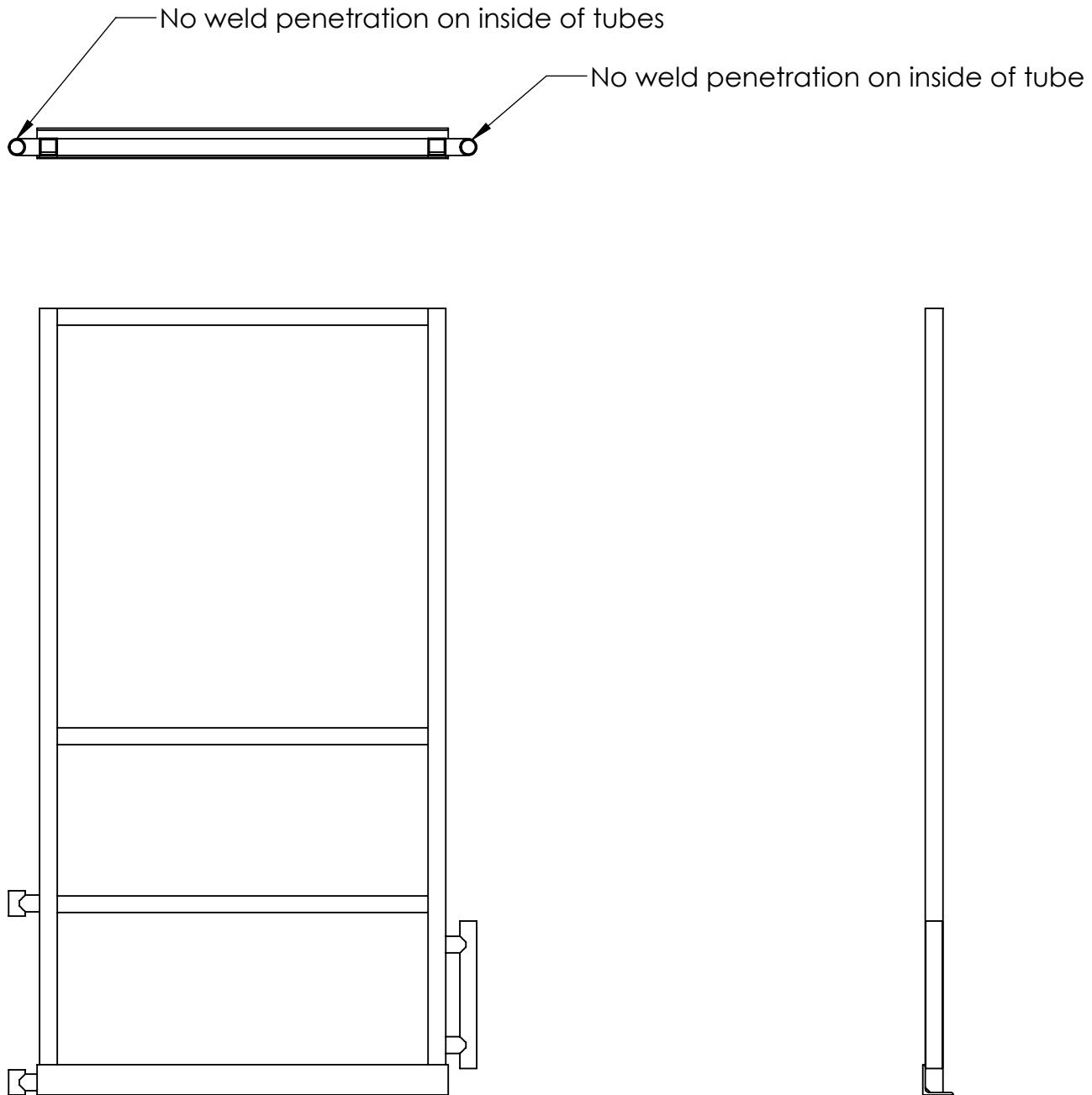
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4

3

2

1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18011-01	3" x .25" thk. Angle, 6061 Aluminum	1
2	GE-18011-02	1.75" x .125" thk. Square Tube, 6061 Aluminum	2
3	GE-18011-03	1-1/4" Schedule 40 Pipe, 6061 Aluminum	3
4	GE-18011-04	1-1/4" Schedule 40 Pipe, 6061 Aluminum	4
5	GE-18011-05	1-1/4" Schedule 40 Pipe, 6061 Aluminum	2
6	GE-18011-06	1-1/4" Schedule 40 Pipe, 6061 Aluminum	1

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
	NEXT ASSY	USED ON			
		APPLICATION	DO NOT SCALE DRAWING		
SIZE	DWG. NO.			REV	
B	GE-18011				
SCALE: 1:16	WEIGHT:			SHEET 1 OF 3	

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

**Portal Frame -
Left**

4

3

2

1

4

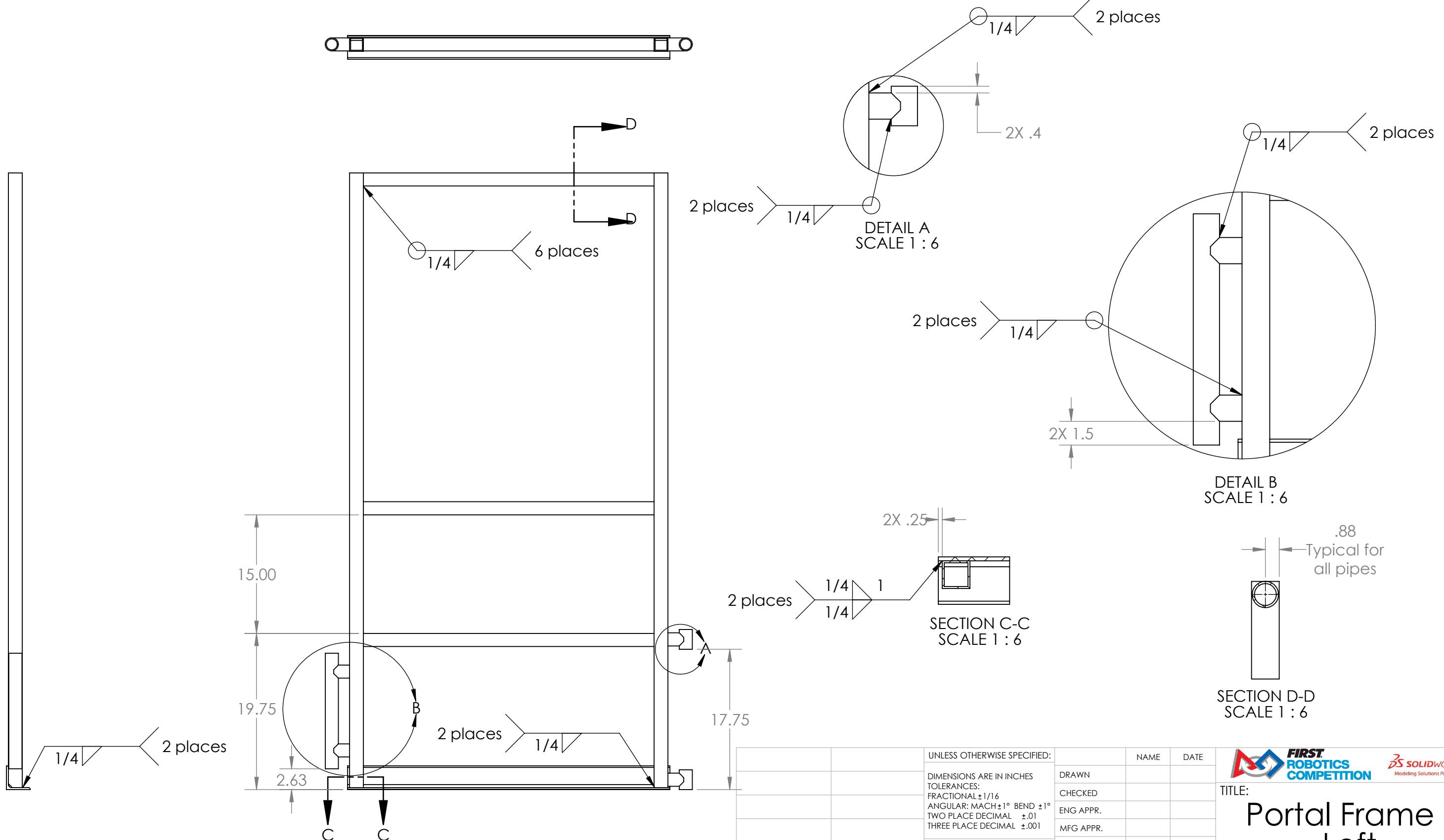
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B

B



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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: $\pm .001$				
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
NEXT ASSY		FINISH				
		APPLICATION			COMMENTS:	
		DO NOT SCALE DRAWING				

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Portal Frame -
Left**

SIZE **B** DWG. NO. **GE-18011** REV

SCALE: 1:12 WEIGHT: SHEET 2 OF 3

4

3

2

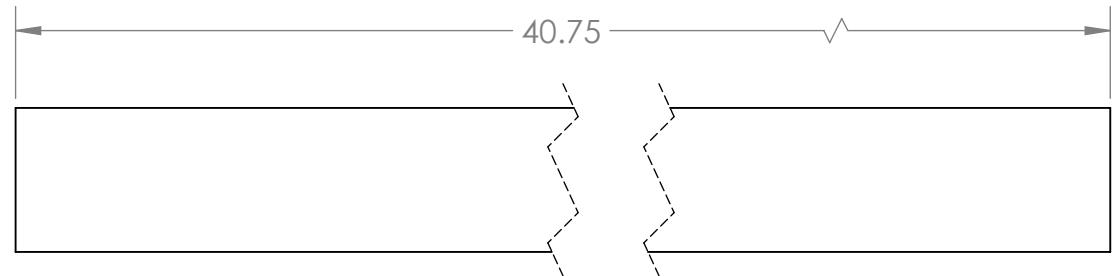
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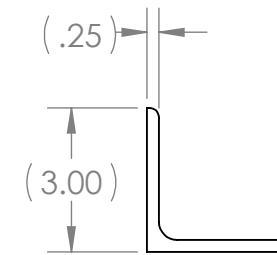
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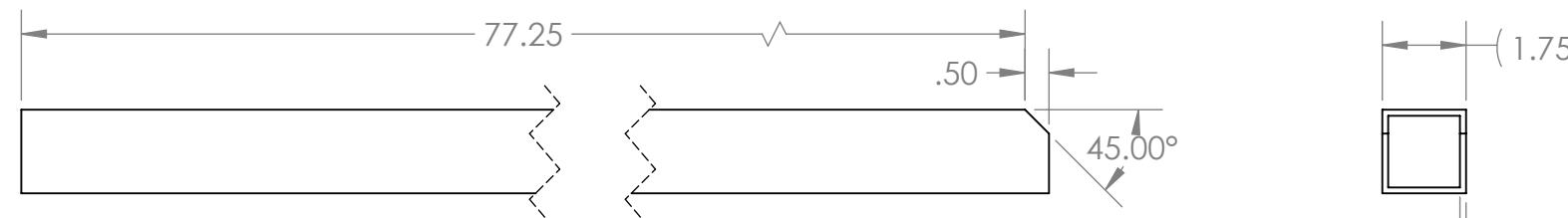
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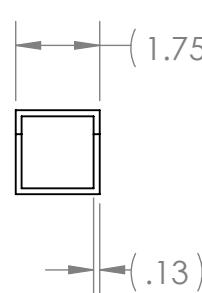
Item 1: GE-18011-01
Qty: 1
Material: 3" x .25" thk. Angle, 6061 Aluminum



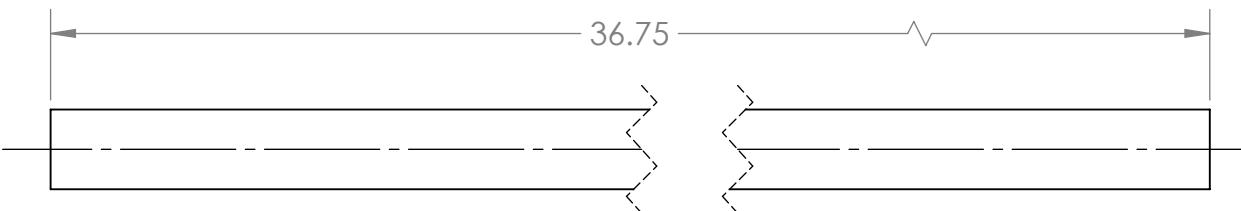
Item 1: GE-18011-04
Qty: 4
Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum



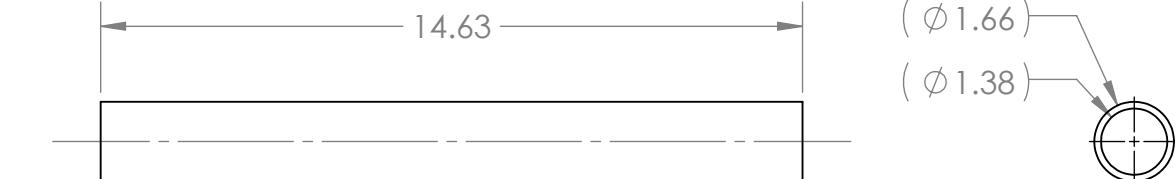
Item 1: GE-18011-02
Qty: 2
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum



Item 1: GE-18011-05
Qty: 2
Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum



Item 1: GE-18011-03
Qty: 3
Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum



Item 1: GE-18011-06
Qty: 1
Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Portal Frame - Left

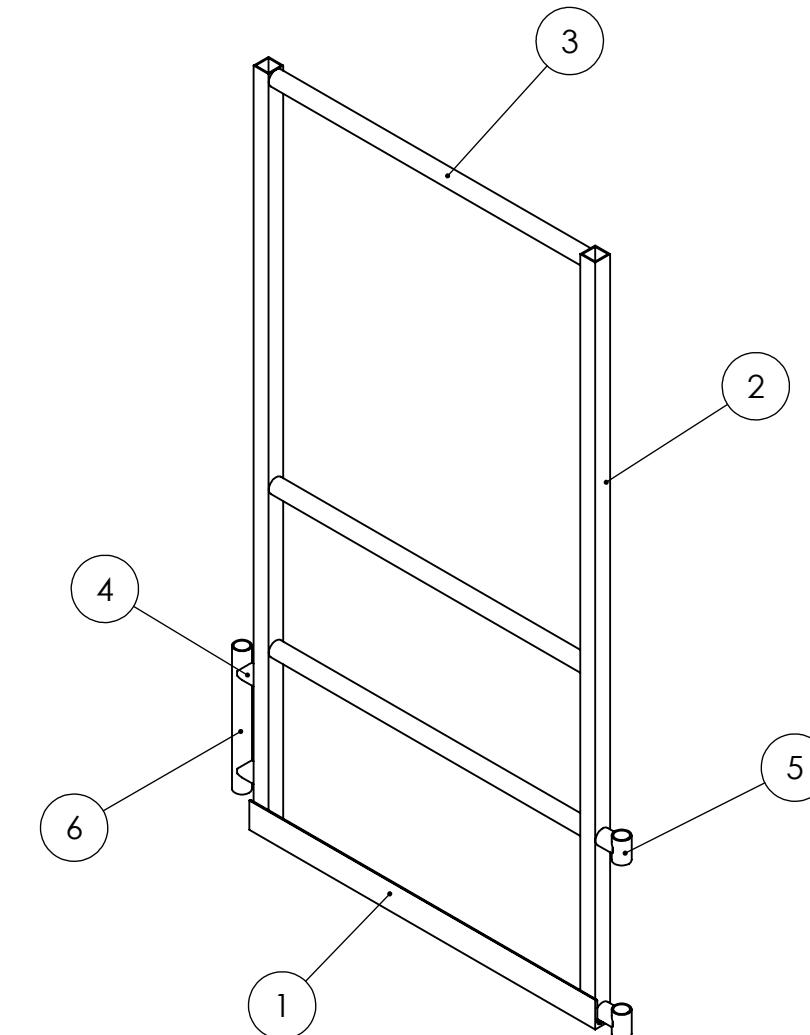
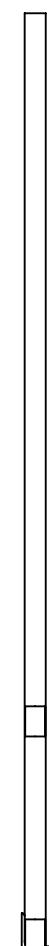
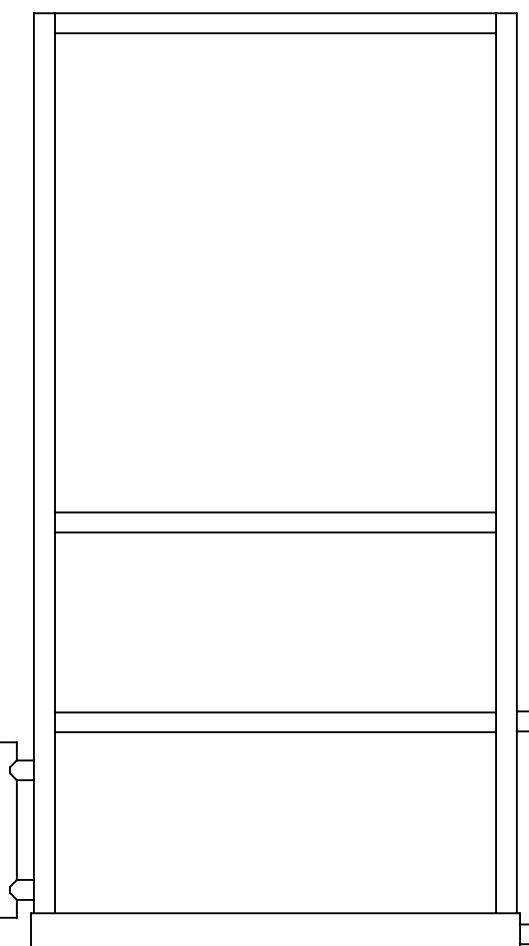
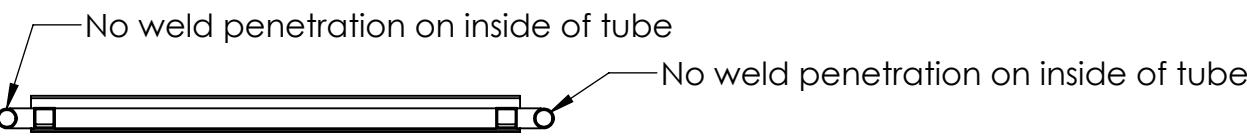
SIZE	DWG. NO.	REV
B	GE-18011	
SCALE: 1:4	WEIGHT:	SHEET 3 OF 3

4

3

2

1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18012-01	3" x .25" thk. Angle, 6061 Aluminum	1
2	GE-18012-02	1.75" x .125 thk. Square Tubing, 6061 Aluminum	2
3	GE-18012-03	1-1/4" Schedule 40 Pipe, 6061 Aluminum	3
4	GE-18012-04	1-1/4" Schedule 40 Pipe, 6061 Aluminum	4
5	GE-18012-05	1-1/4" Schedule 40 Pipe, 6061 Aluminum	2
6	GE-18012-06	1-1/4" Schedule 40 Pipe, 6061 Aluminum	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.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
	NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING	

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Portal Frame - Right

SIZE **DWG. NO.** **REV**
B **GE-18012**

SCALE: 1:16 **WEIGHT:** **SHEET 1 OF 3**

4

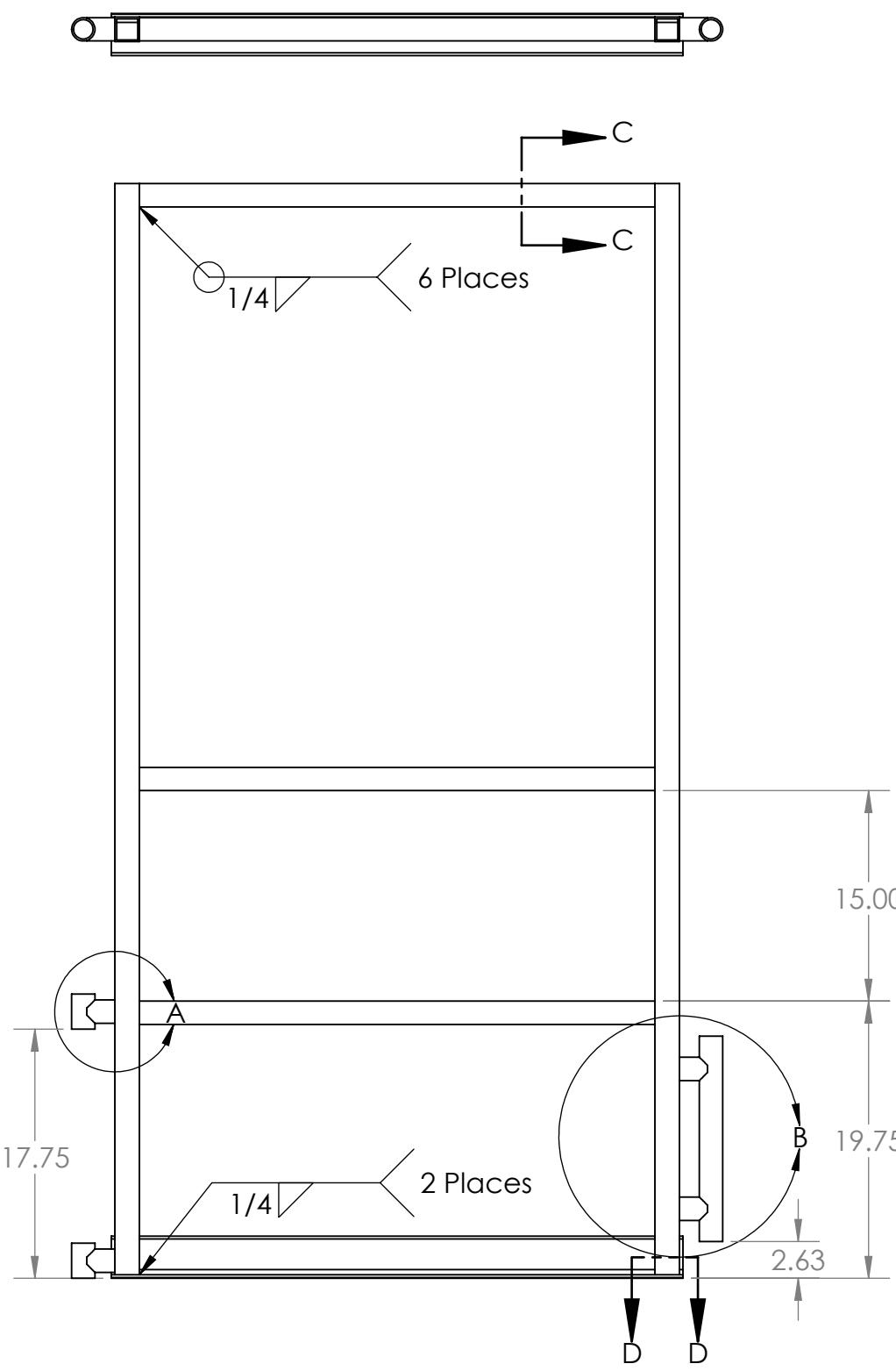
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B

B



		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		
NEXT ASSY		FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
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Portal Frame - Right

SIZE DWG. NO. REV
B GE-18012

SCALE: 1:12 WEIGHT: SHEET 2 OF 3

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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		
NEXT ASSY		FINISH		
APPLICATION		DO NOT SCALE DRAWING		

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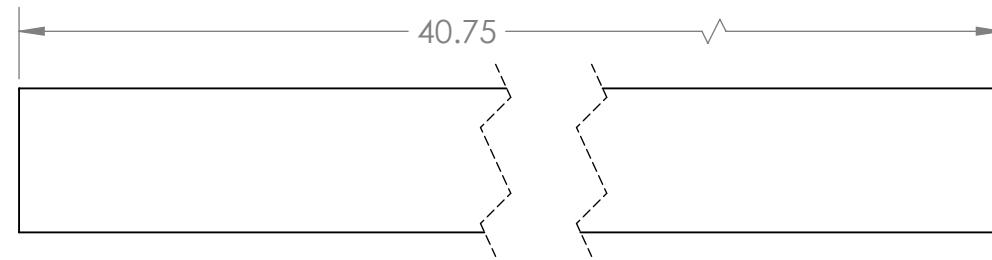
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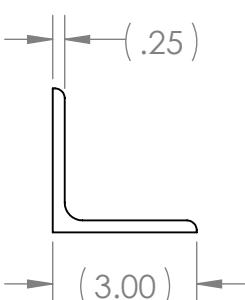
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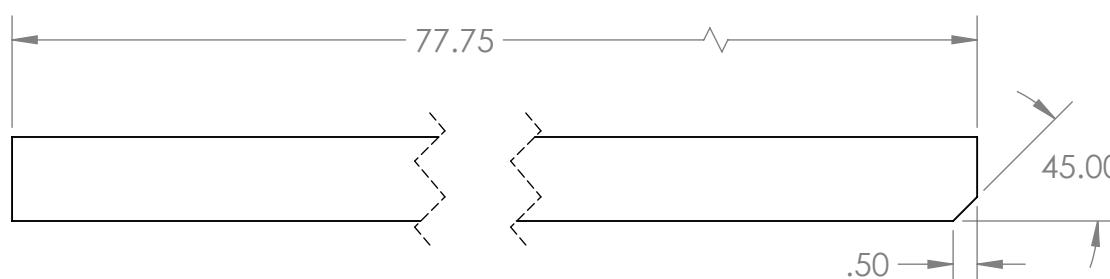
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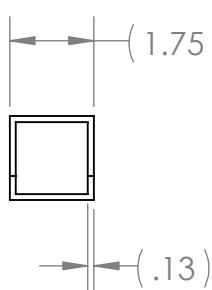
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Qty: 1
Material 3" x .25" thick Angle, 6061 Aluminum



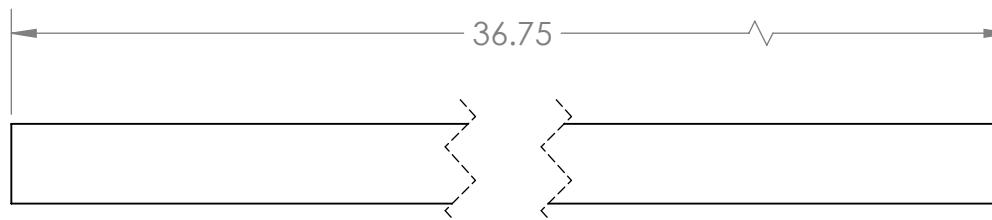
Item: GE18012-04
Qty: 4
Material 1-1/4" Schedule 40 Pipe, 6061 Aluminum



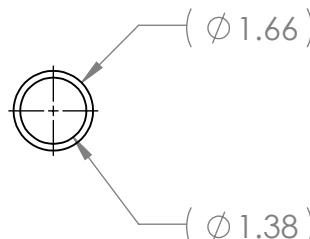
Item: GE18012-02
Qty: 2
Material 1.75" x .125" thick Square Tubing, 6061 Aluminum



Item: GE18012-05
Qty: 2
Material 1-1/4" Schedule 40 Pipe, 6061 Aluminum



Item: GE18012-03
Qty: 3
Material 1-1/4" Schedule 40 Pipe, 6061 Aluminum



Item: GE18012-06
Qty: 1
Material 1-1/4" Schedule 40 Pipe, 6061 Aluminum

		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	NAME	DATE
	DRAWN			
	CHECKED			
	ENG APPR.			
	MFG APPR.			
	Q.A.			
	COMMENTS:			
NEXT ASSY	USED ON	MATERIAL		
		FINISH		
APPLICATION		DO NOT SCALE DRAWING		
SCALE: 1:4	WEIGHT:	SHEET 3 OF 3	SIZE	DWG. NO.
B	GE-18012		REV	

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FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:

**Portal Frame -
Right**

SIZE DWG. NO. REV

B GE-18012

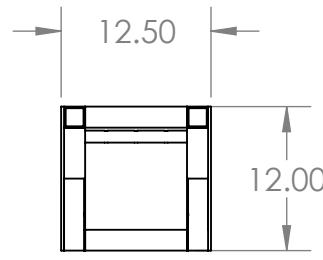
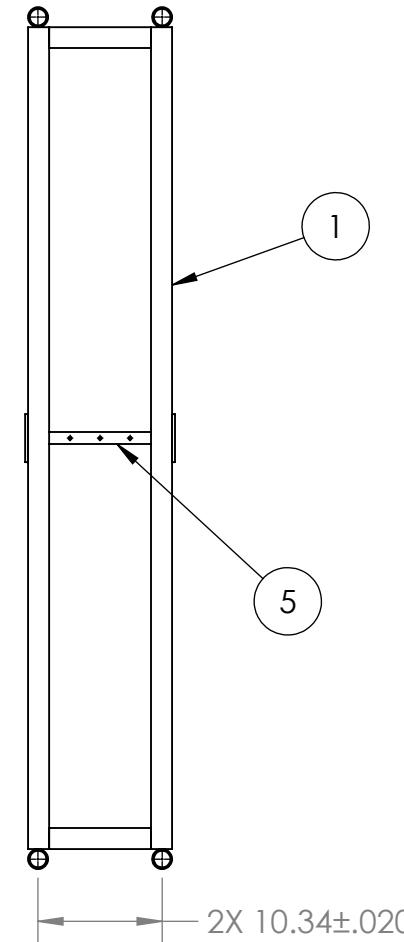
SCALE: 1:4 WEIGHT: SHEET 3 OF 3

4

3

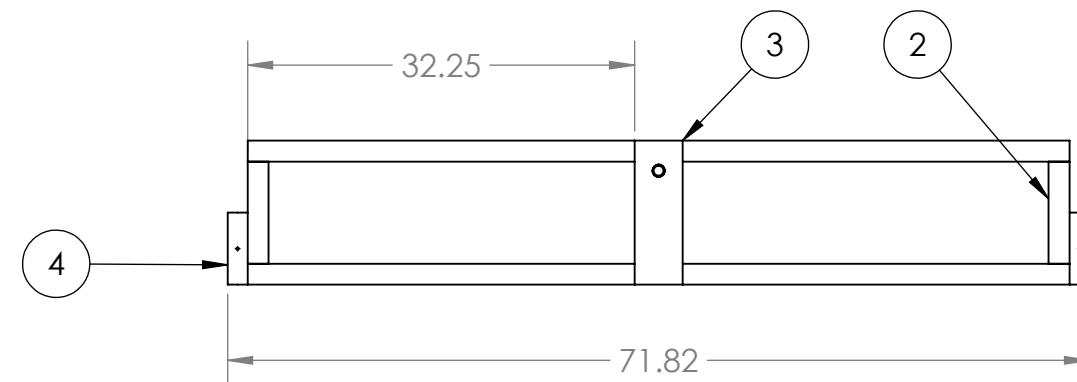
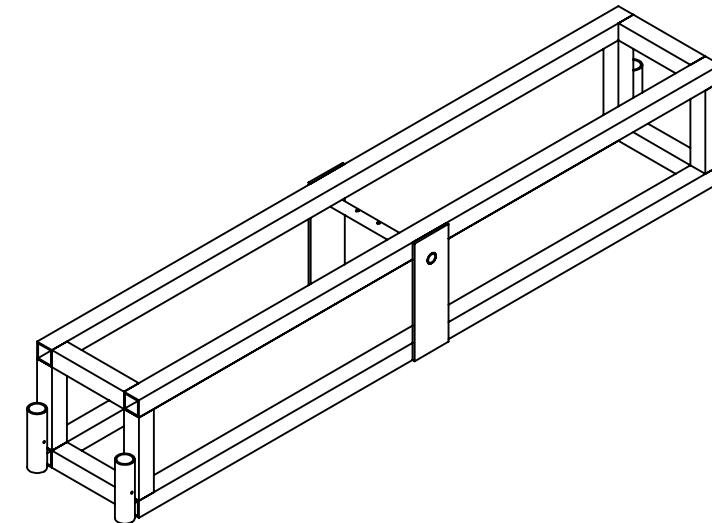
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1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18013-1	1.75" x .125" thk. Square Tube, 6063 Aluminum	4
2	GE-18013-2	1.75" x .125" thk. Square Tube, 6063 Aluminum	8
3	GE-18013-3	.25" thk. Plate, 6061 Aluminum	2
4	GE-18013-4	1.25" Schedule 40 Pipe, 6061 Aluminum	4
5	GE-18013-5	1" OD x 0.095" thk. Tube, 6061 Aluminum	1

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-B3	2	Added weld note	11/17/17	CPO

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Switch Arm

SIZE	DWG. NO.	REV
B	GE-18013	2

SCALE: 1:16 WEIGHT: SHEET 1 OF 5

4

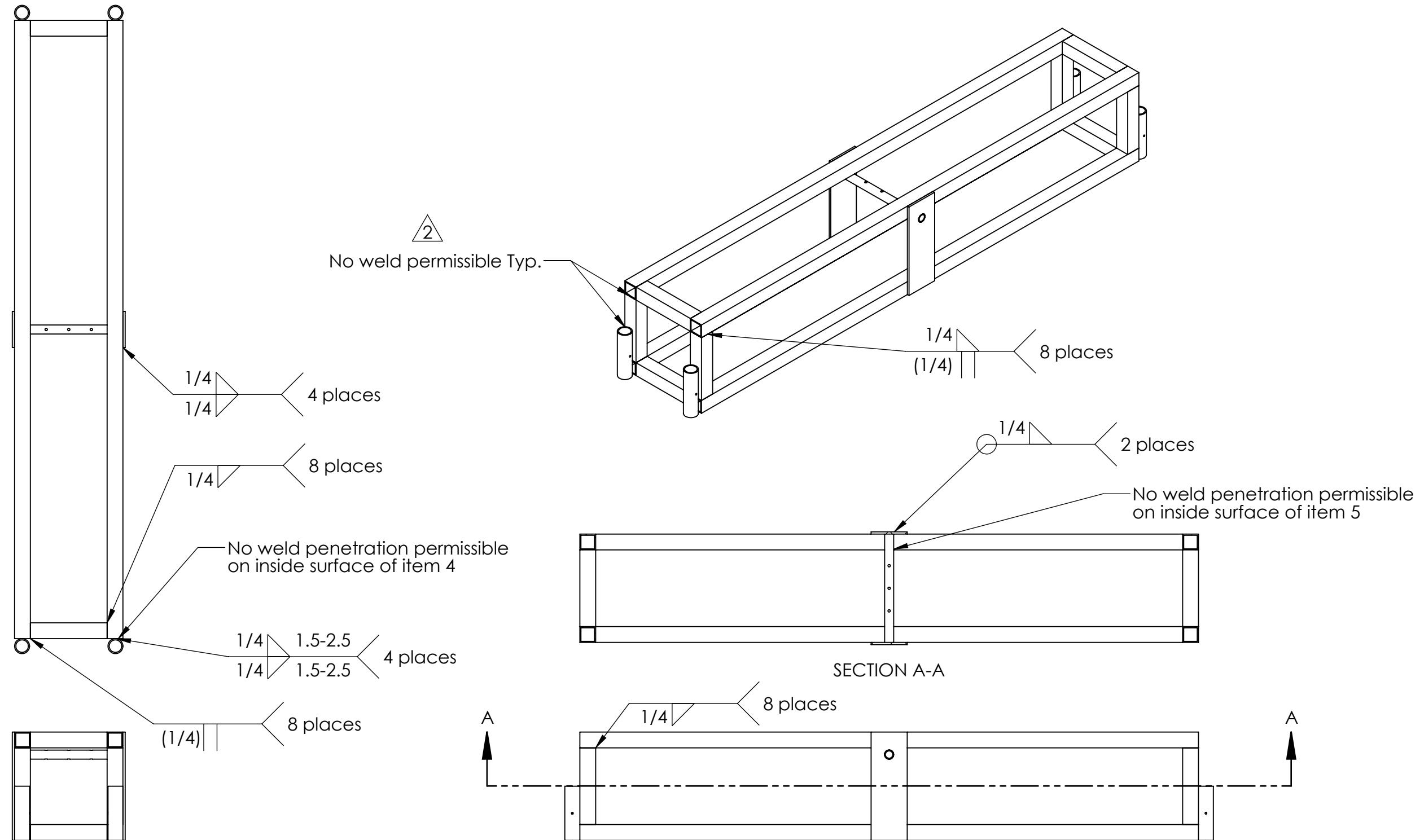
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B

B



A

A

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Switch Arm

SIZE DWG. NO. REV
B GE-18013 2

SCALE: 1:12 WEIGHT: SHEET 2 OF 5

4

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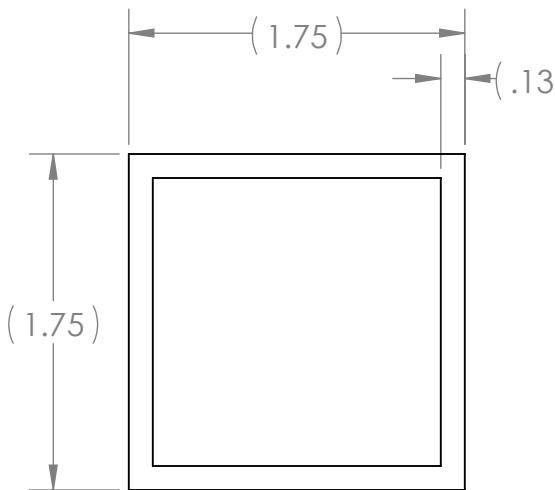
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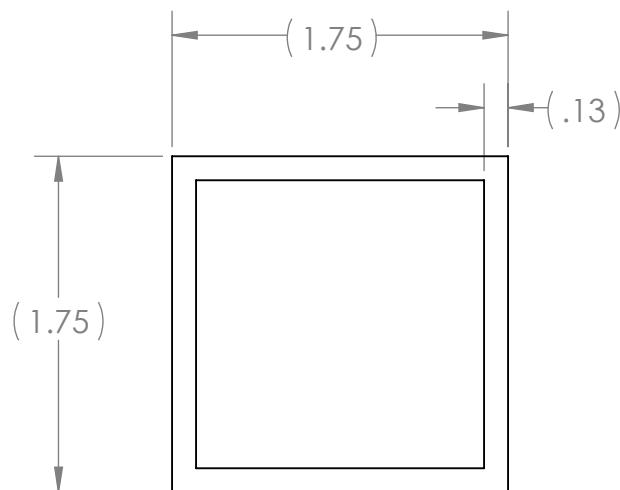
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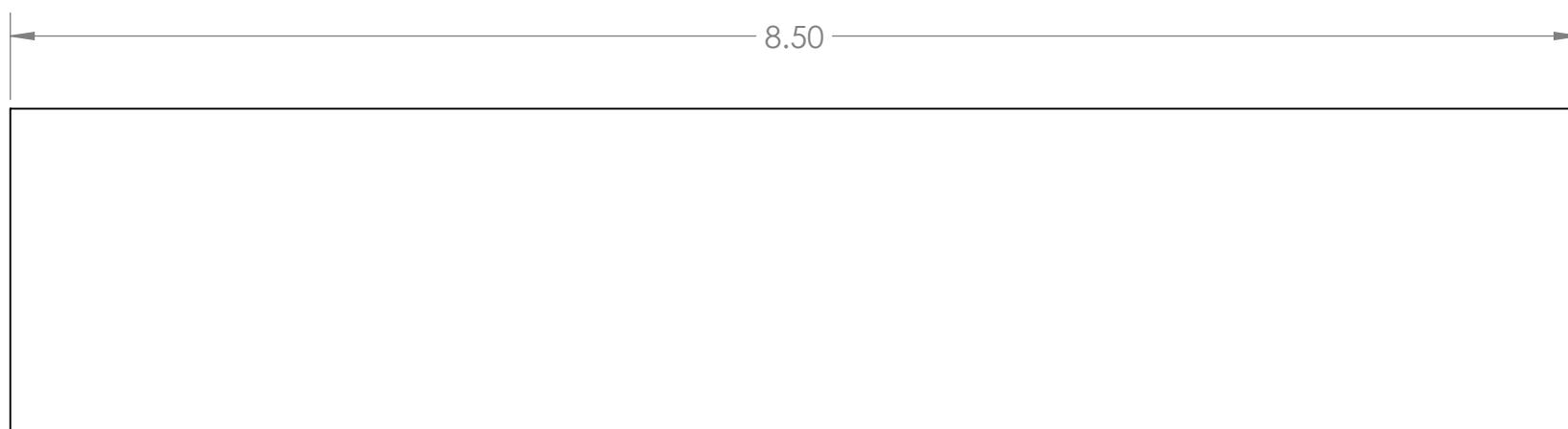
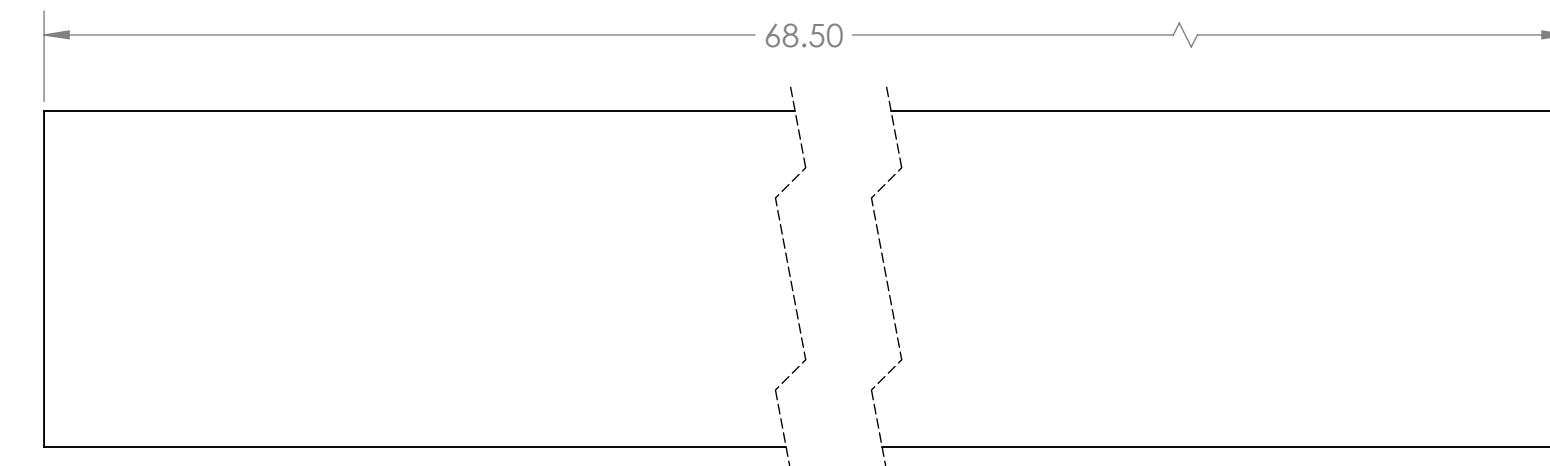
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Item: GE-18013-1
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
QTY: 4



Item: GE-18013-2
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
QTY: 8



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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 $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Switch Arm

SIZE	DWG. NO.	REV
B	GE-18013	2
SCALE: 1:1	WEIGHT:	SHEET 3 OF 5

4

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4

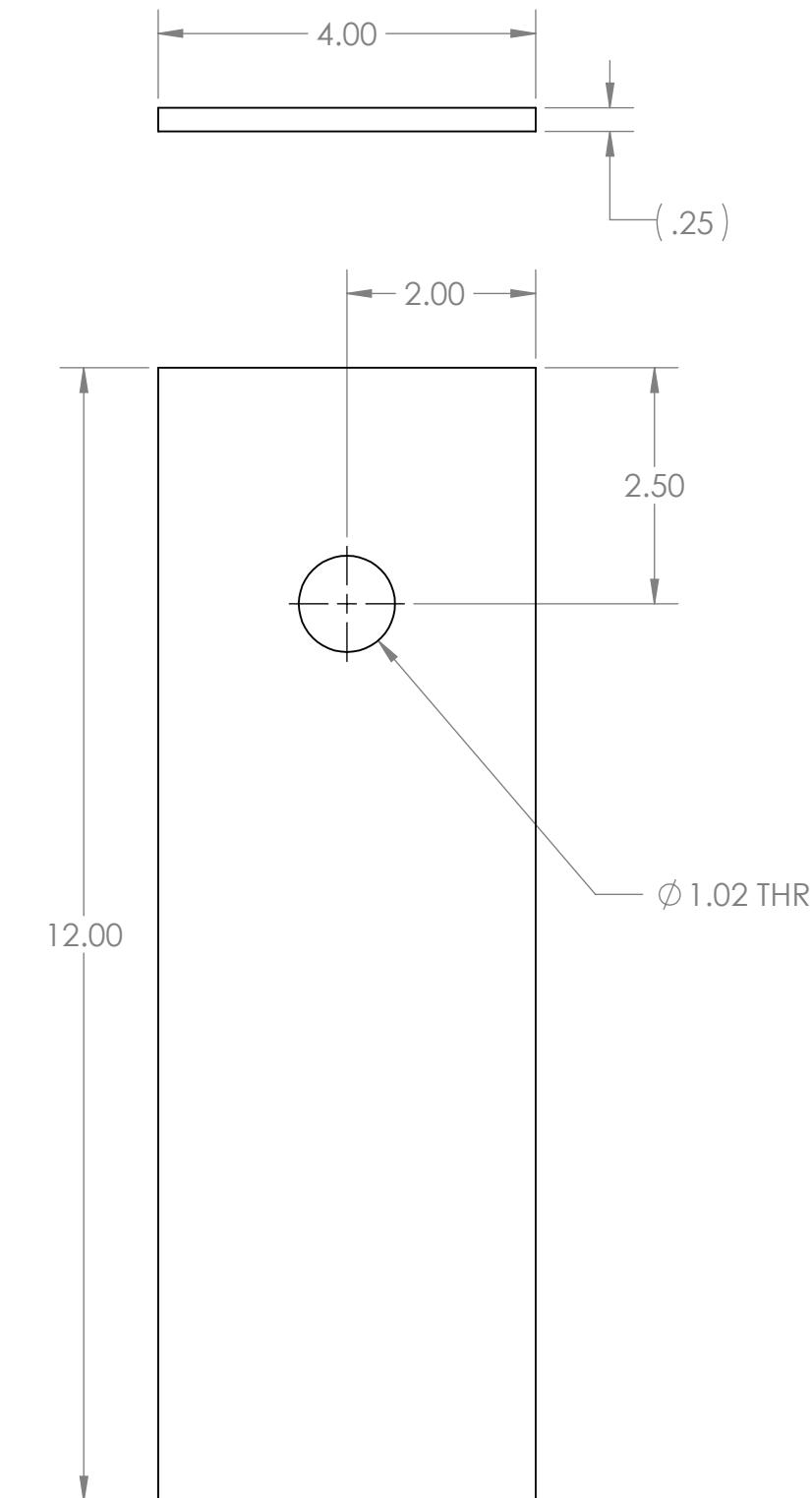
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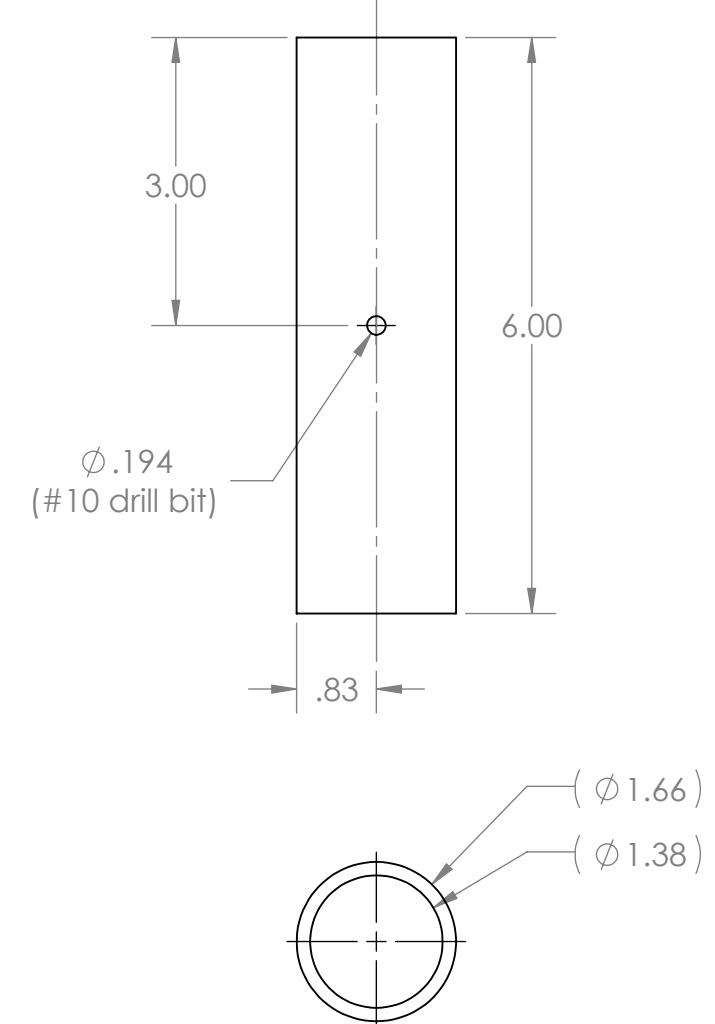
B

B



Item: GE-18013-3
Material: 0.25" thk. Plate, 6061 Aluminum
QTY: 2

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Item: GE-18013-4
Material: 1.25" Schedule 40 Pipe, 6061 Aluminum
QTY: 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 $\pm .001$	NAME	DATE
	DRAWN			
	CHECKED			
	ENG APPR.			
	MFG APPR.			
	Q.A.			
	COMMENTS:			
NEXT ASSY	USED ON	MATERIAL		
		FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Switch Arm

SIZE	DWG. NO.	REV
B	GE-18013	2
SCALE: 1:2	WEIGHT:	SHEET 4 OF 5

4

3

2

1

4

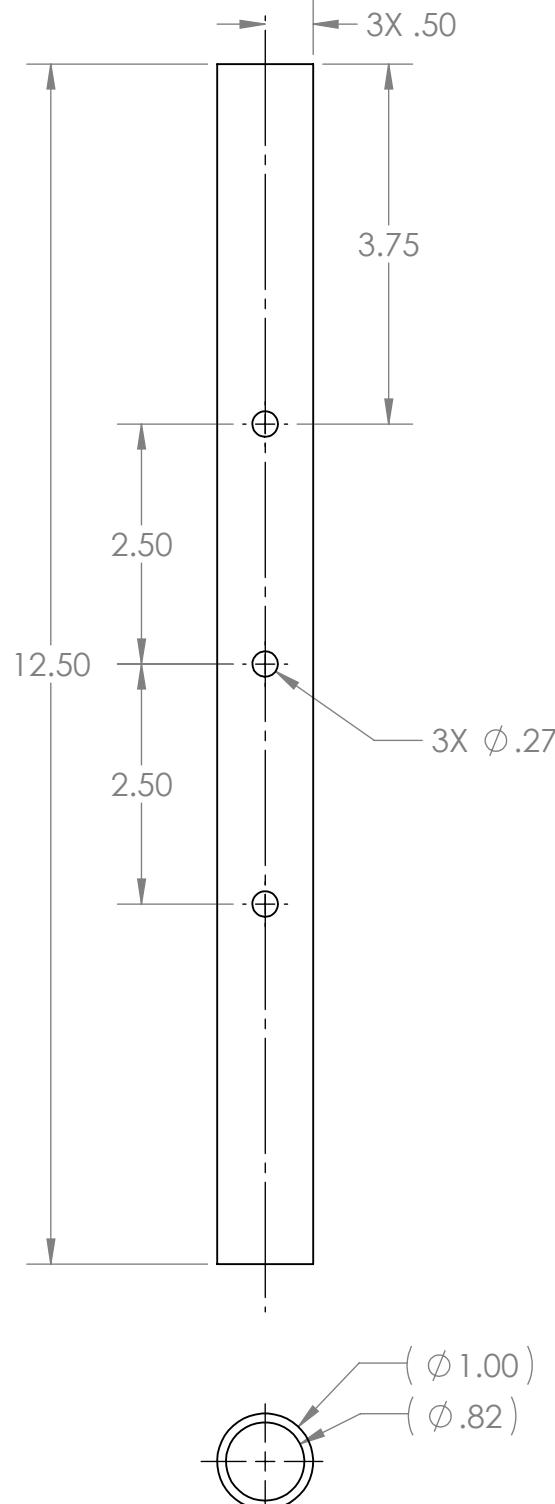
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2

1

B

B



Item: GE-18013-5
Material: 1" OD x 0.095" thk. tube, 6061 Aluminum
QTY: 1

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		UNLESS OTHERWISE SPECIFIED:			
		DIMENSIONS ARE IN INCHES			
		TOLERANCES:			
		FRACTIONAL $\pm 1/16$			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$			
		TWO PLACE DECIMAL $\pm .01$			
		THREE PLACE DECIMAL $\pm .001$			
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SCALE: 1:2		SIZE	DWG. NO.	REV	
B		GE-18013	2		
SCALE: 1:2		WEIGHT:	SHEET 5 OF 5		

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Switch Arm

TITLE:
GE-18013

SIZE DWG. NO. REV
B **GE-18013** **2**

SCALE: 1:2 WEIGHT: SHEET 5 OF 5

4

3

2

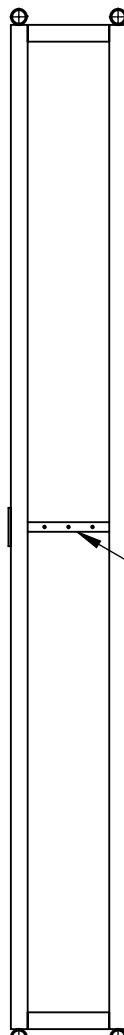
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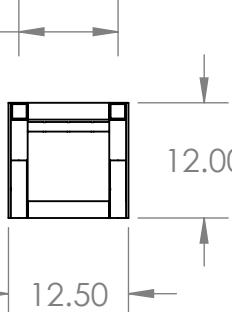
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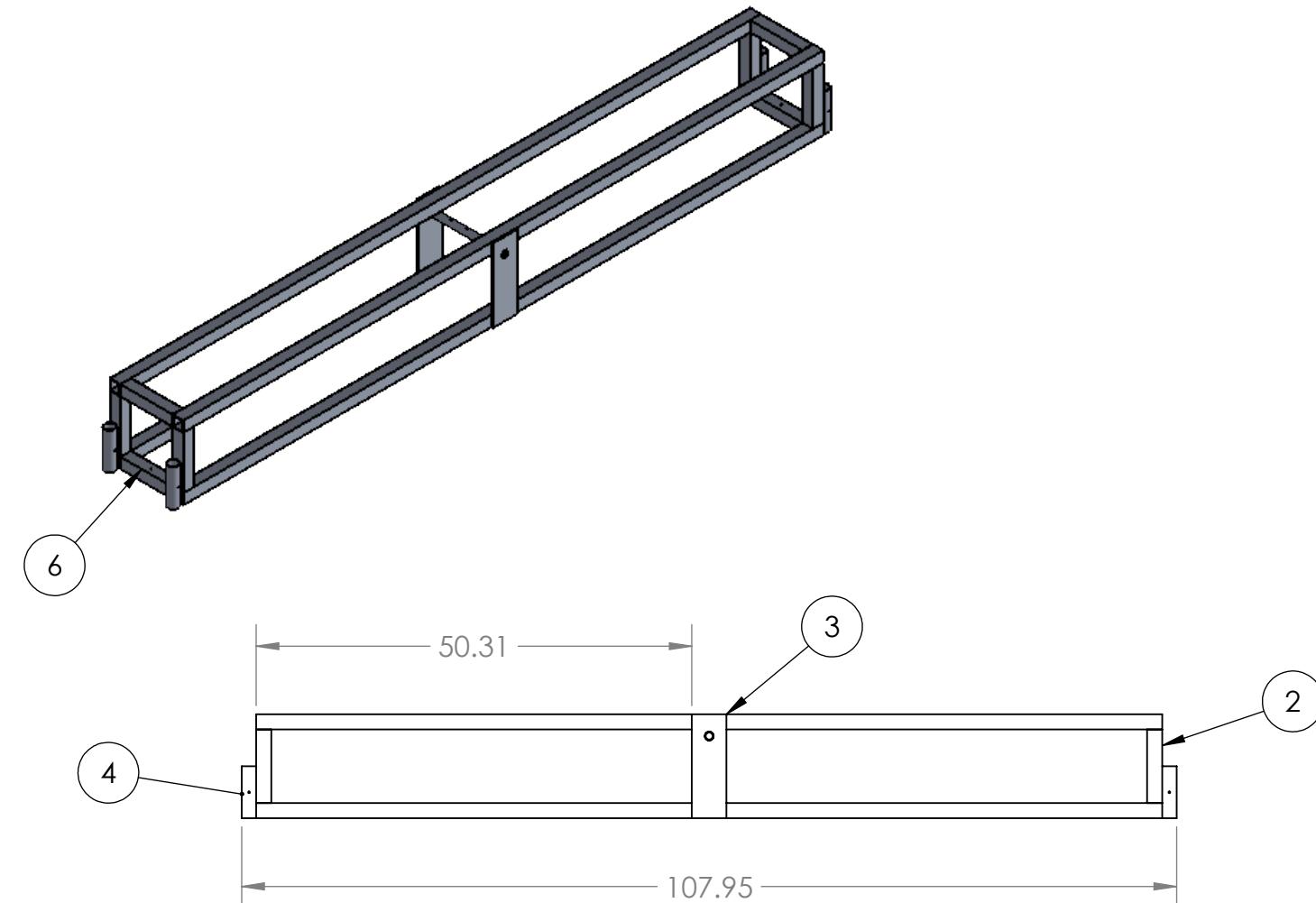
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1



5



3

2

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18014-1	1.75" x .125" thk. Square Tube, 6063 Aluminum	4
2	GE-18014-2	1.75" x .125" thk. Square Tube, 6063 Aluminum	6
3	GE-18014-3	0.25" thk. plate, 6061 Aluminum	2
4	GE-18014-4	1.25" Schedule 40 Pipe, 6061 Aluminum	4
5	GE-18014-5	1" OD x 0.095" thk. Tube, 6061 Aluminum	1
6	GE-18014-6	1.75" x .125" thk. Square Tube, 6063 Aluminum	2

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
5-B3, 5-B4	2	Added locating dimensions for holes on GE-18014-5	11/9/2017	CPO
2-B3	3	Added weld note	11/17/2017	CPO

		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.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		
SIZE	DWG. NO.	REV		
B	GE-18014	3		
SCALE: 1:20	WEIGHT:	SHEET 1 OF 5		

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Scale Arm

4

3

2

1

4

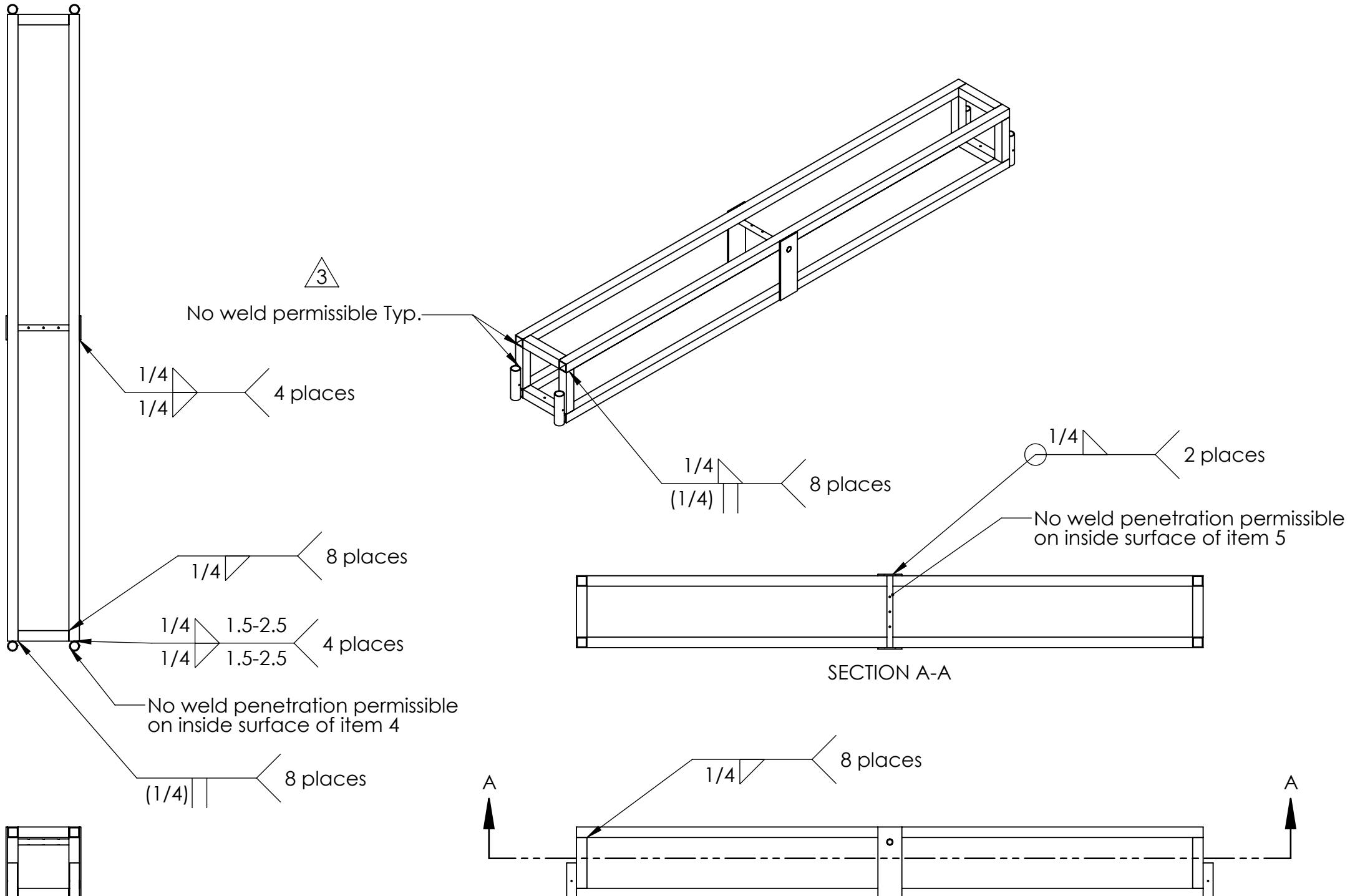
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2

1

B

B



A

A

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Scale Arm

SIZE DWG. NO. REV
B GE-18014 3

SCALE: 1:20 WEIGHT: SHEET 2 OF 5

4

3

2

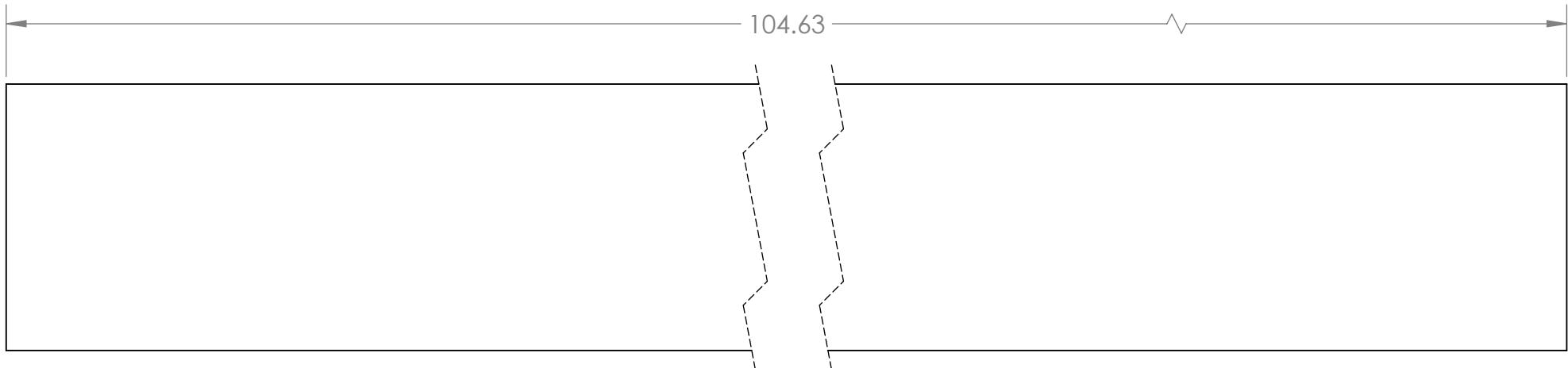
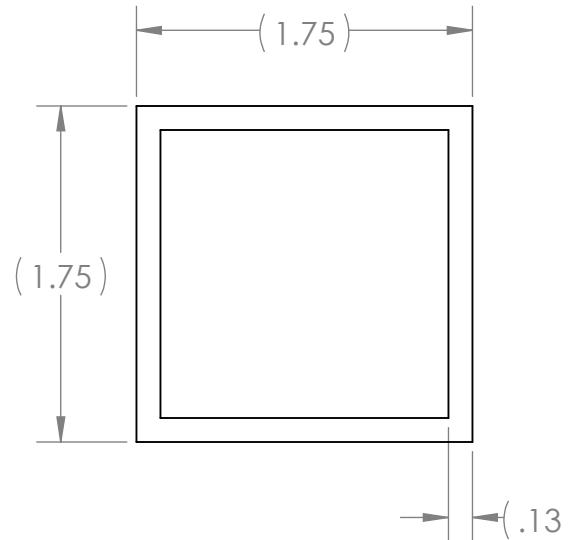
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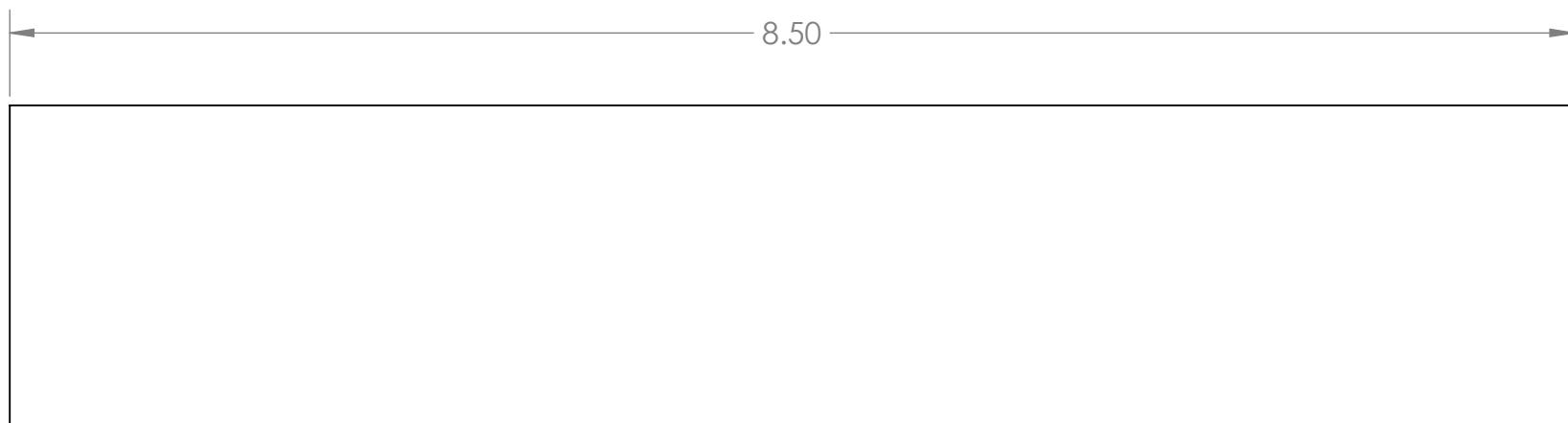
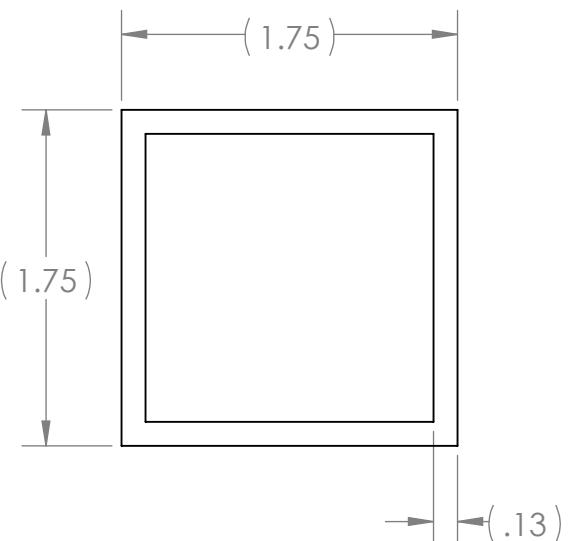
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2

1



Item: GE-18014-1
 Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
 Scale: 1:1
 QTY: 4



Item: GE-18014-2
 Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
 Scale: 1:1
 QTY: 6

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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	
			SCALE: 1:1	WEIGHT:	SHEET 3 OF 5

 FIRST
ROBOTICS
COMPETITION

 SOLIDWORKS
Modeling Solutions Partner

Scale Arm

SIZE DWG. NO. REV
B GE-18014 3

4

3

2

1

4

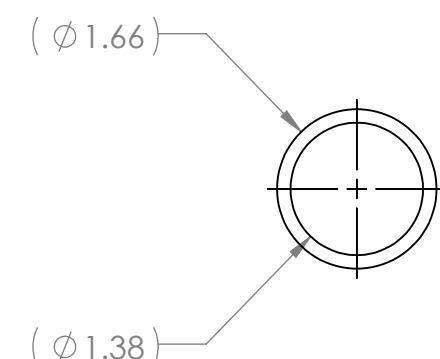
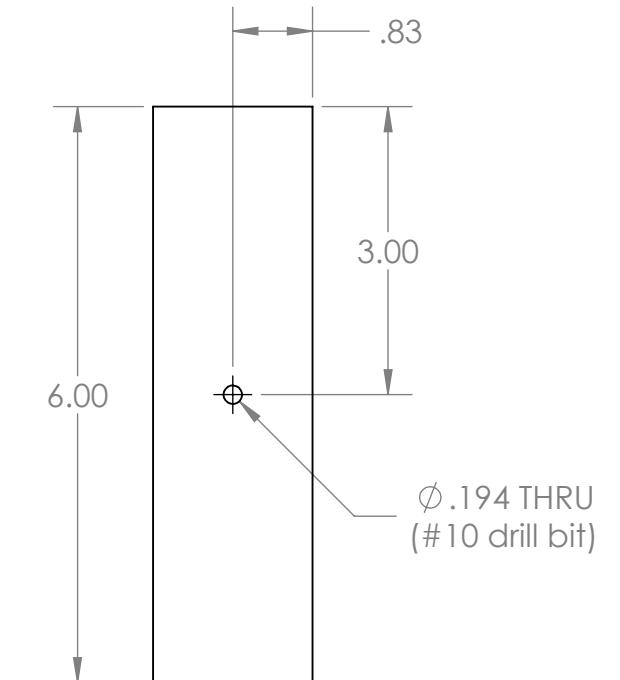
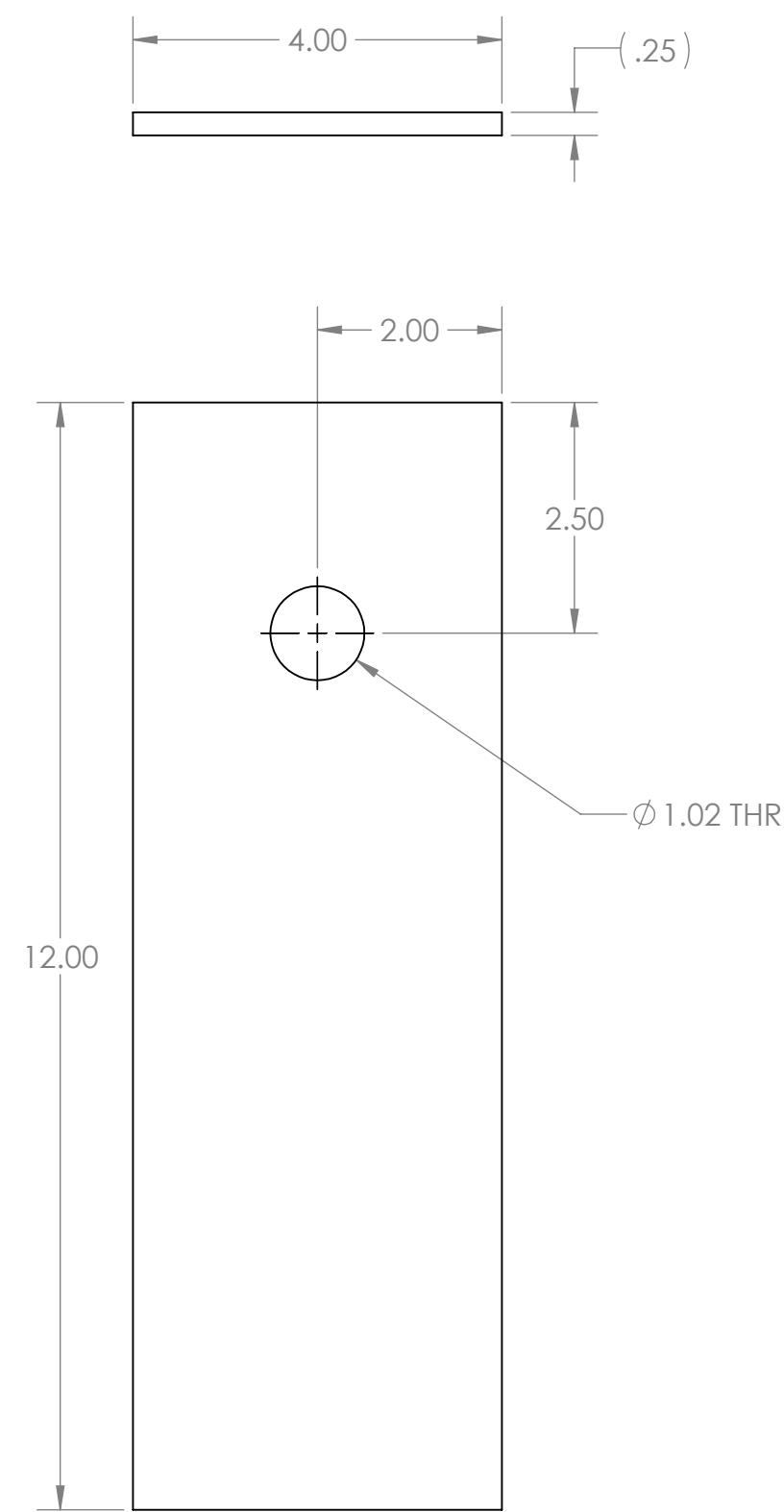
3

2

1

B

B



Item: GE-18014-4
Material: 1.25" Schedule 40 Pipe, 6061 Aluminum
Scale: 1:2
QTY: 4

		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	

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Title: Scale Arm

Size DWG. NO. REV
B GE-18014 3

Scale: 1:2 Weight: Sheet 4 of 5

4

3

2

1

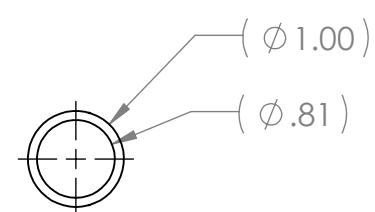
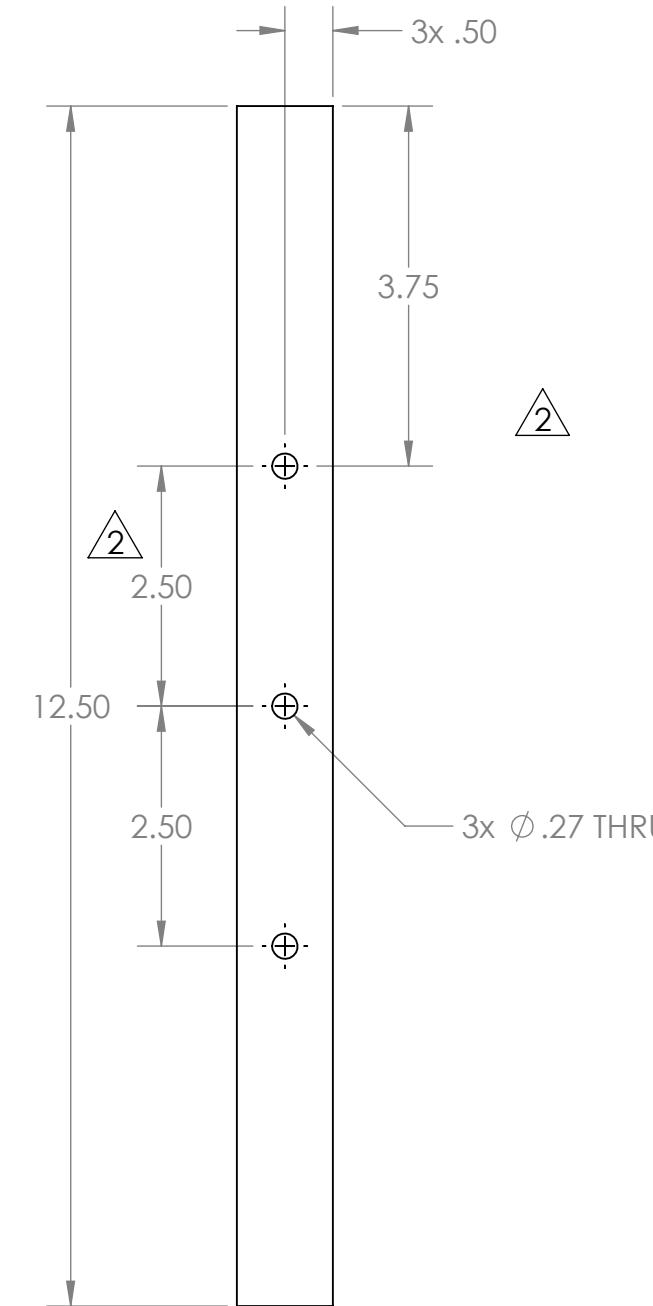
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4

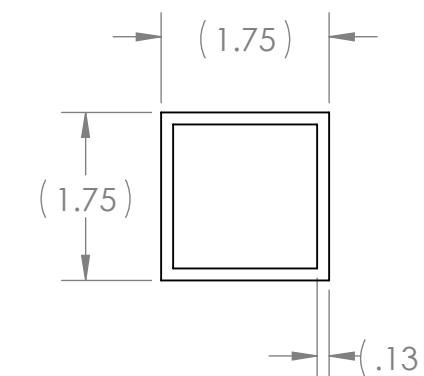
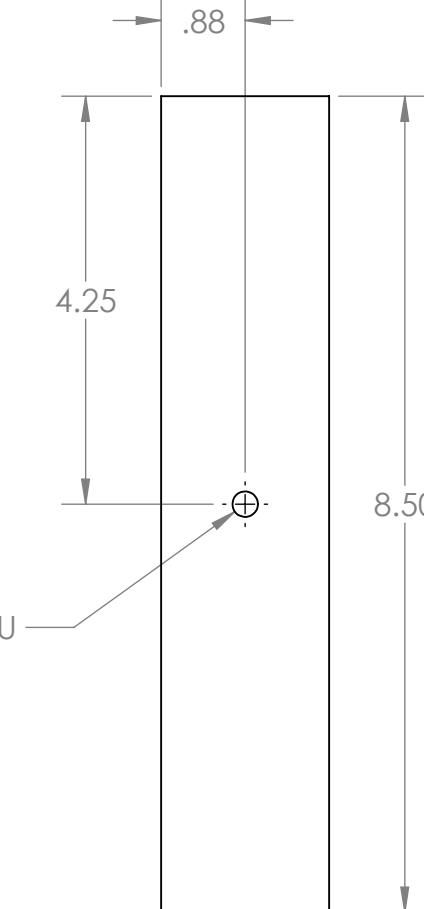
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2

1



Item: GE-18014-5
Material: 1" OD x 0.095" thk. Tube, 6061 Aluminum
Scale: 1:2
QTY: 4



Item: GE-18014-6
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
Scale: 1:2
QTY: 2

		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			
	NEXT ASSY	USED ON	FINISH		
	APPLICATION		DO NOT SCALE DRAWING		

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FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Scale Arm

SIZE DWG. NO. REV
B GE-18014 3

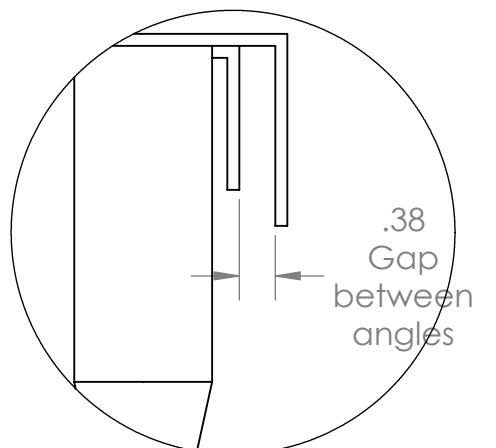
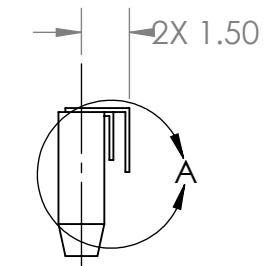
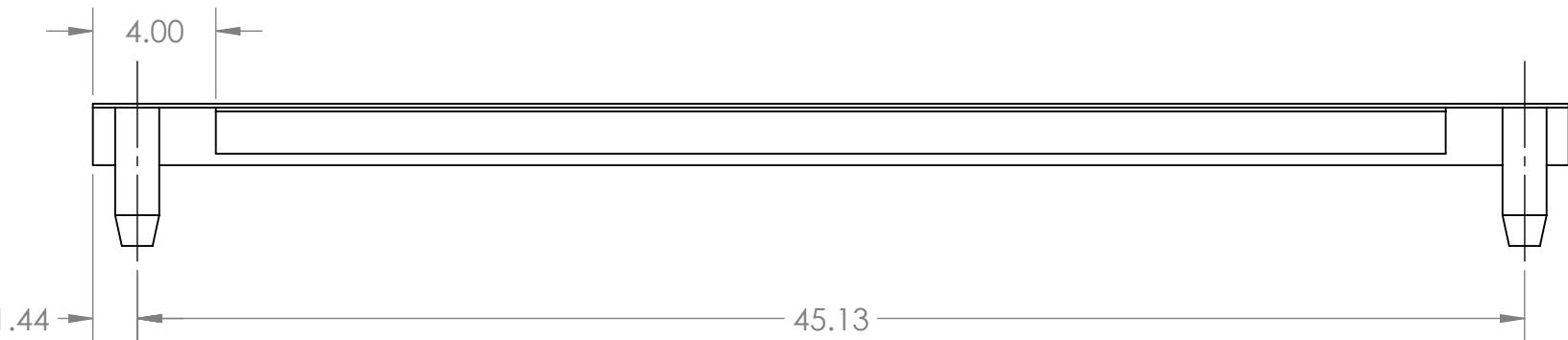
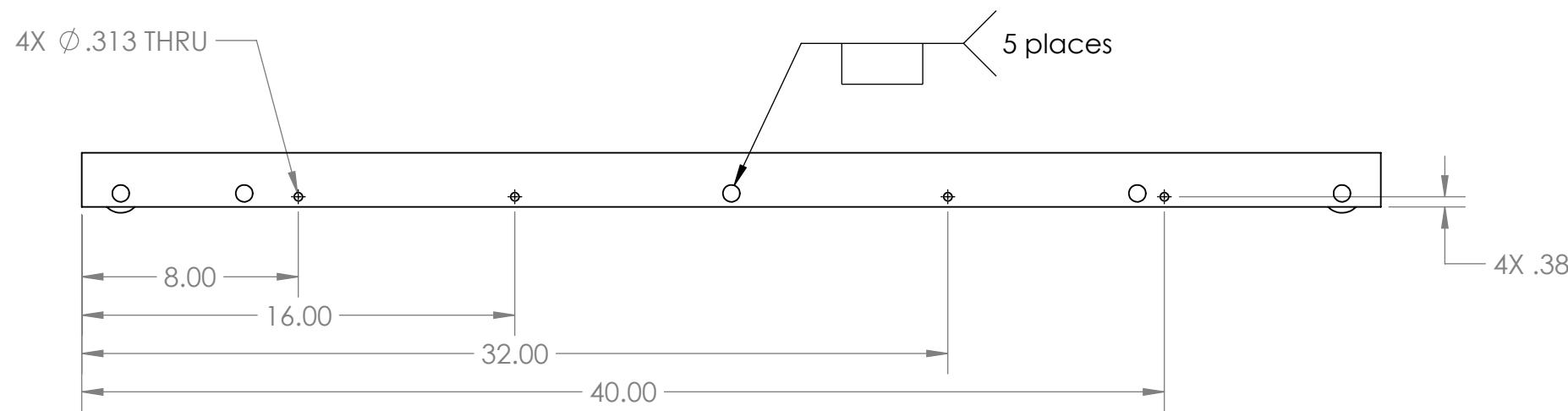
SCALE: 1:2 WEIGHT: SHEET 5 OF 5

4

3

2

1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18015-01	2" x .125" thk. Angle, 6063 Aluminum	1
2	GE-18015-02	1-7/16" Round Bar, 6061 Aluminum	2
3	GE-18015-03	1-1/2" x .125" thk. Angle, 6063 Aluminum	1

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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:		
			MATERIAL		
			FINISH		
			APPLICATION	DO NOT SCALE DRAWING	
SIZE	DWG. NO.		REV		
B	GE-18015				
SCALE: 1:6	WEIGHT:	SHEET 1 OF 2			

1

4

3

2

A

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:

**Top Rail,
Exchange**

SIZE DWG. NO. REV

B **GE-18015**

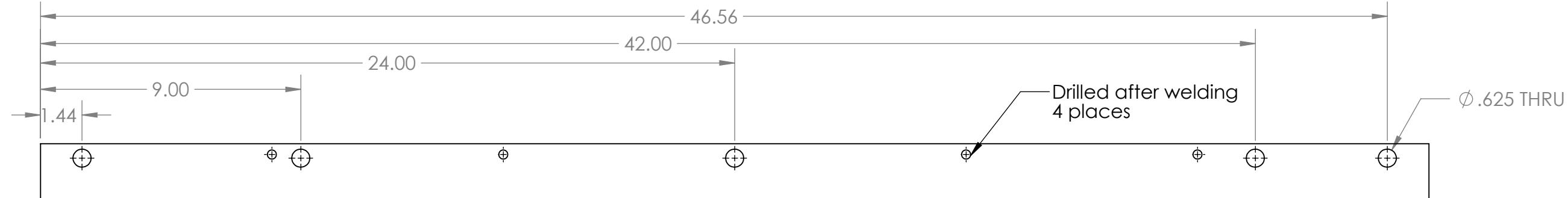
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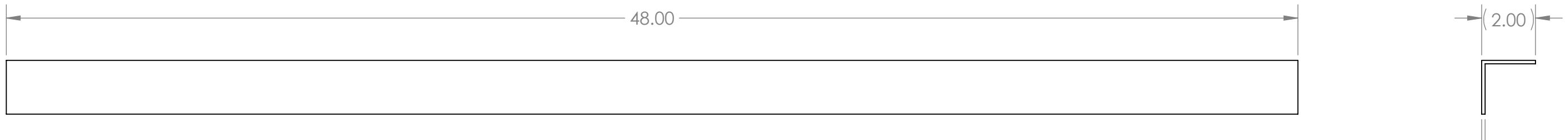
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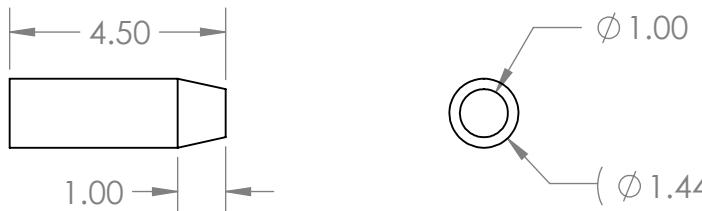


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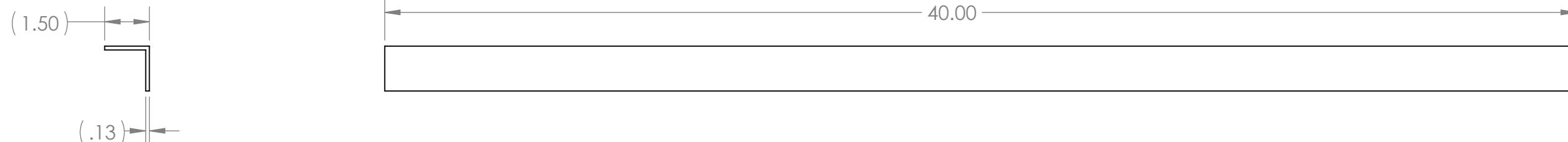
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Item: GE-18015-01
Qty: 1
Material: 2" x .125" thk. Angle, 6063 Aluminum



Item: GE-18015-02
Qty: 2
Material: 1-7/16" Round Bar, 6061 Aluminum



Item: GE-18015-03
Qty: 1
Material: 1-1/2" x .125" thk. Angle, 6063 Aluminum

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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			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Top Rail, Exchange

SIZE DWG. NO. REV
B **GE-18015**

SCALE: 1:4 WEIGHT: SHEET 2 OF 2

4

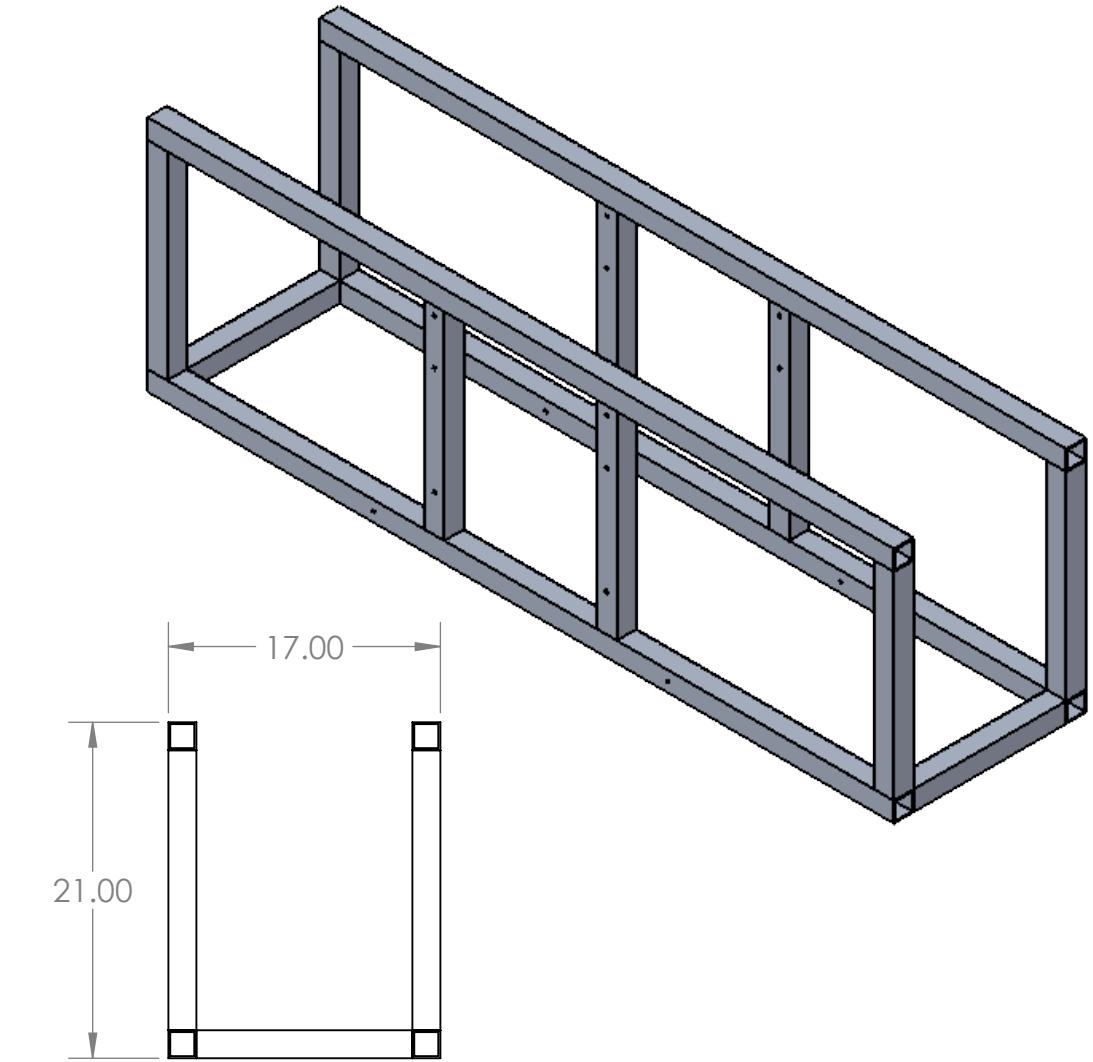
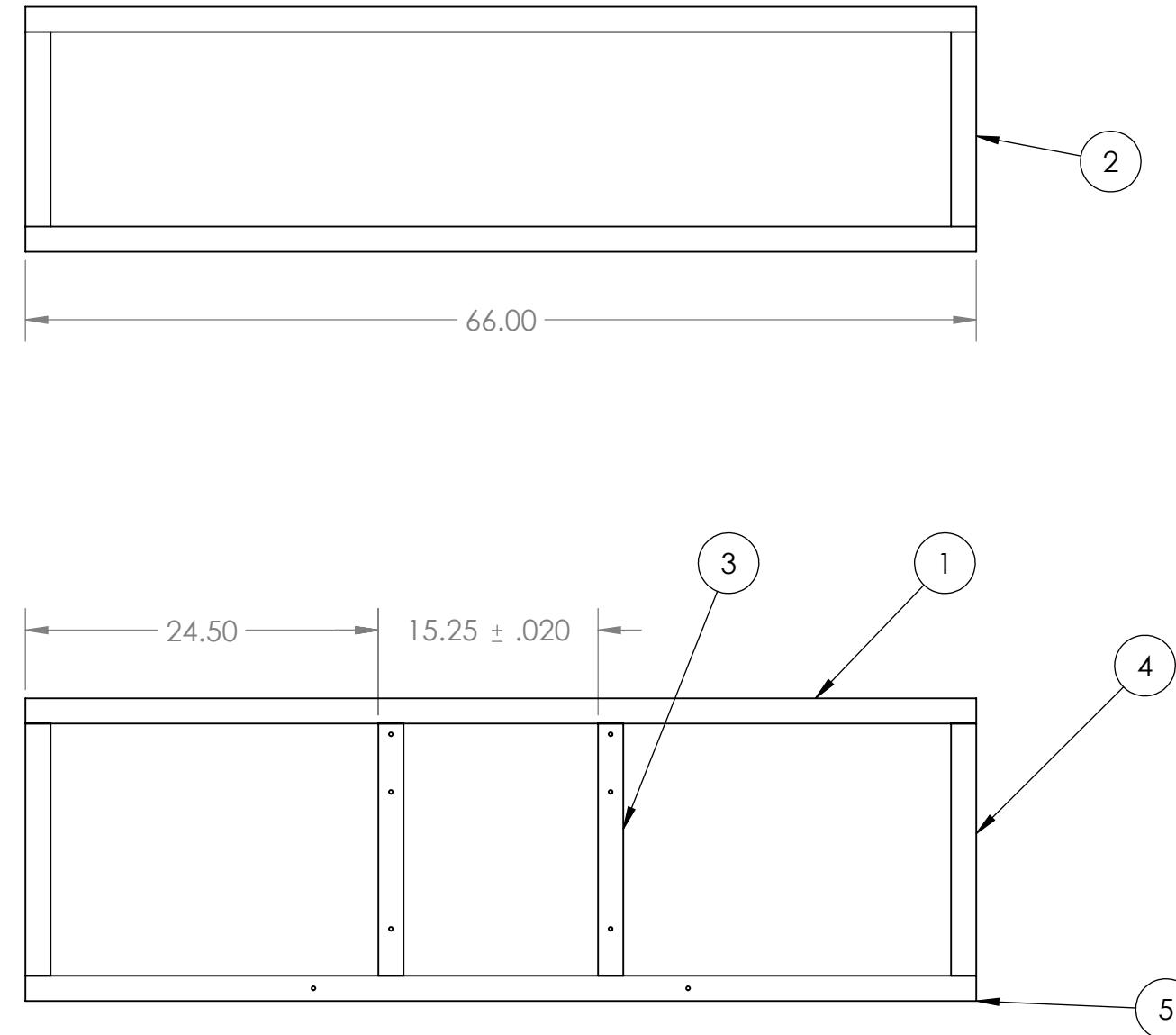
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2

1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
4-B3	2	Added hole to GE-18016-3	11/6/2017	CPO
A4, 3 B4, 5- B3	3	Added two of part GE-18016-5 to replace two GE-18016-1	11/21/2017	CPO



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18016-1	1.75" x .125" thk. Square Tube, 6063 Aluminum	2
2	GE-18016-2	1.75" x .125" thk. Square Tube, 6063 Aluminum	2
3	GE-18016-3	1.75" x .125" thk. Square Tube, 6063 Aluminum	4
4	GE-18016-4	1.75" x .125" thk. Square Tube, 6063 Aluminum	4
5	GE-18016-5	1.75" x .125" thk. Square Tube, 6063 Aluminum	2

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
		APPLICATION	DO NOT SCALE DRAWING		
SIZE	DWG. NO.	REV			
B	GE-18016	3			
SCALE: 1:12	WEIGHT:	SHEET 1 OF 5			

FIRST
ROBOTICS
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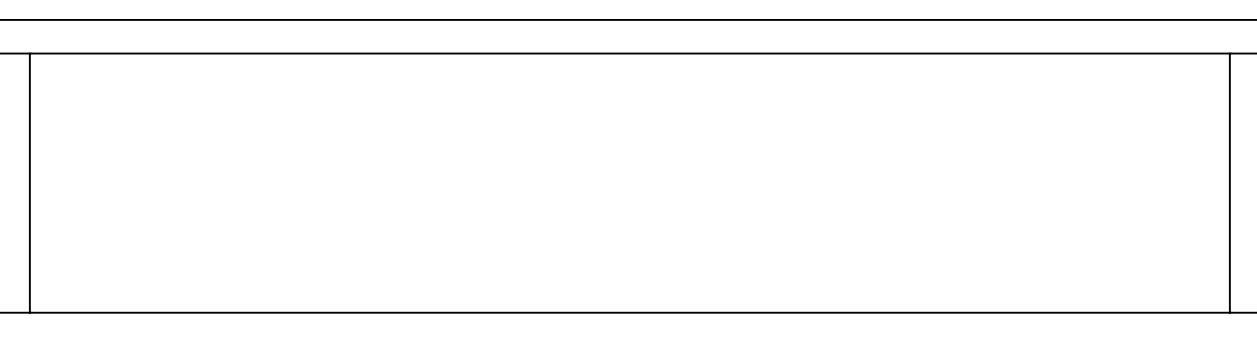
TITLE:
Switch Frame

4

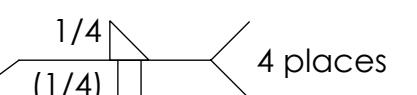
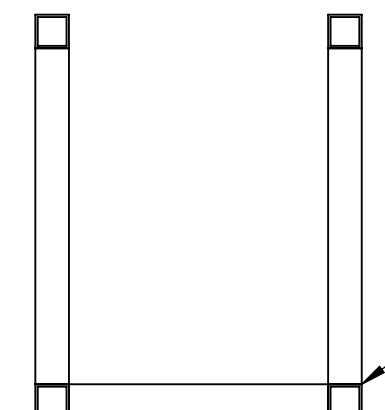
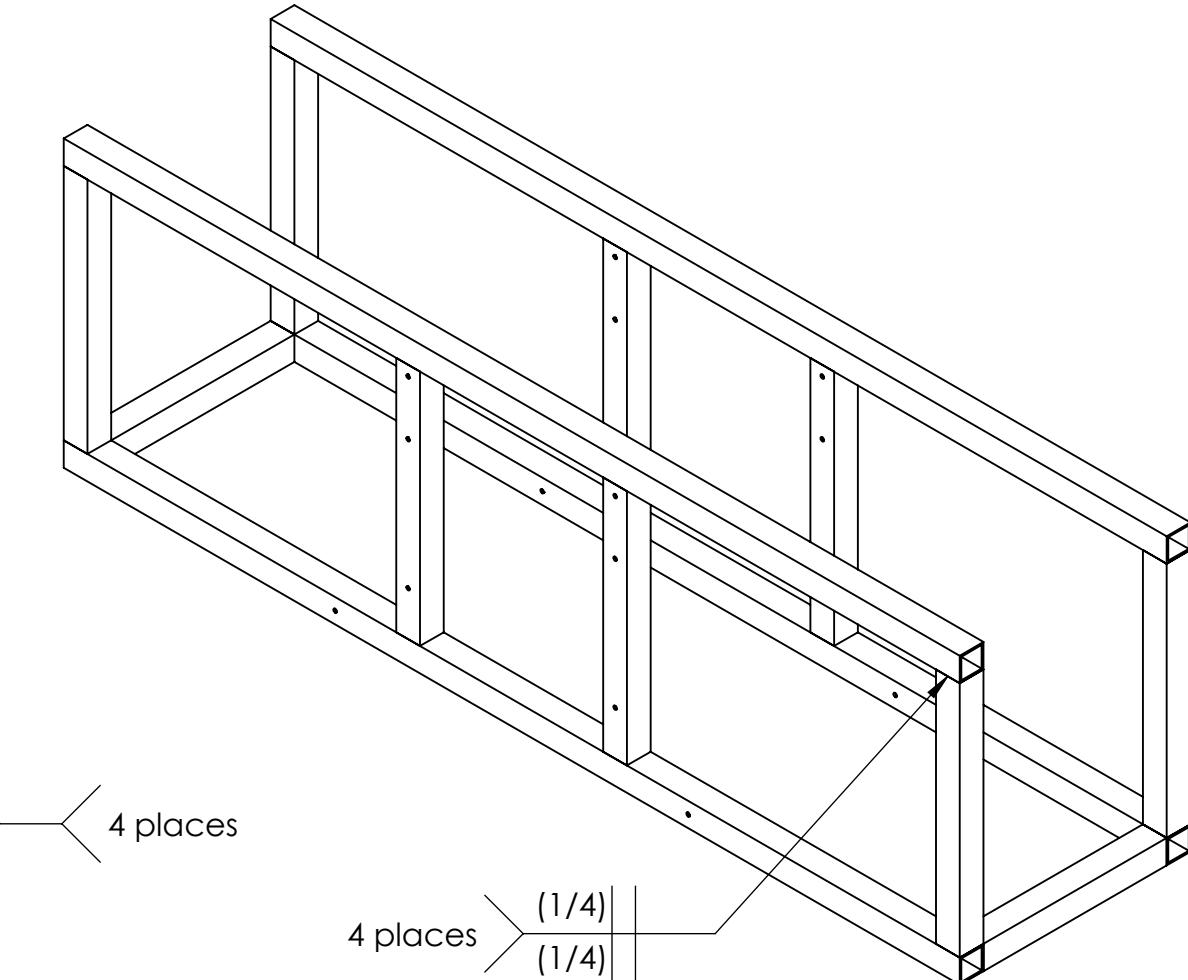
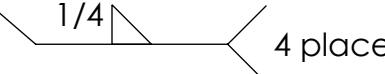
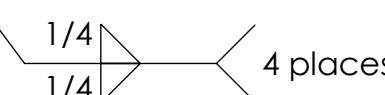
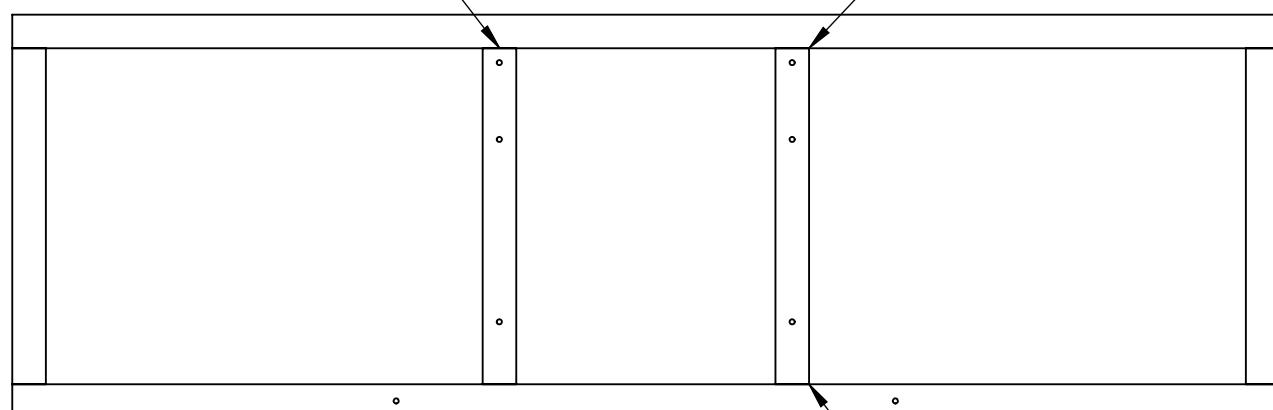
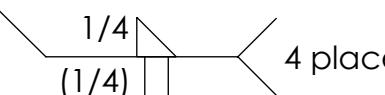
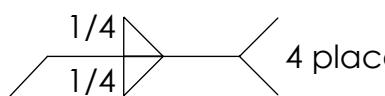
3

2

1



No weld permissible
on face of item 3 (4x)



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		DIMENSIONS ARE IN INCHES	NAME	DATE	
		TOLERANCES:			
		FRACTIONAL: $\pm 1/16$			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$			
		TWO PLACE DECIMAL $\pm .01$			
		THREE PLACE DECIMAL $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY		FINISH			
APPLICATION		DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Switch Frame

SIZE	DWG. NO.	REV
B	GE-18016	3
SCALE: 1:10	WEIGHT:	SHEET 2 OF 5

4

3

2

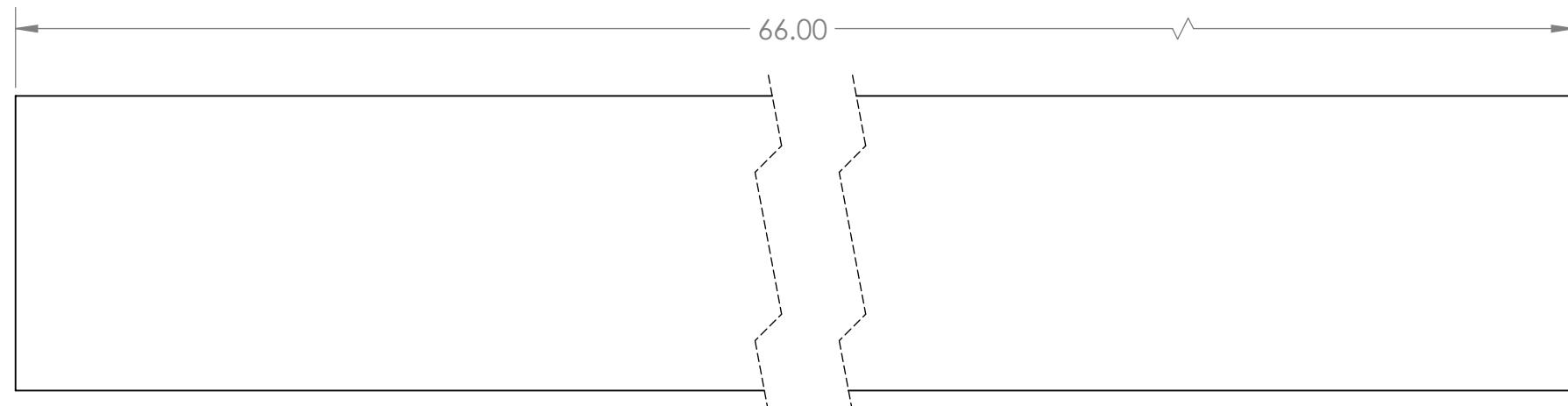
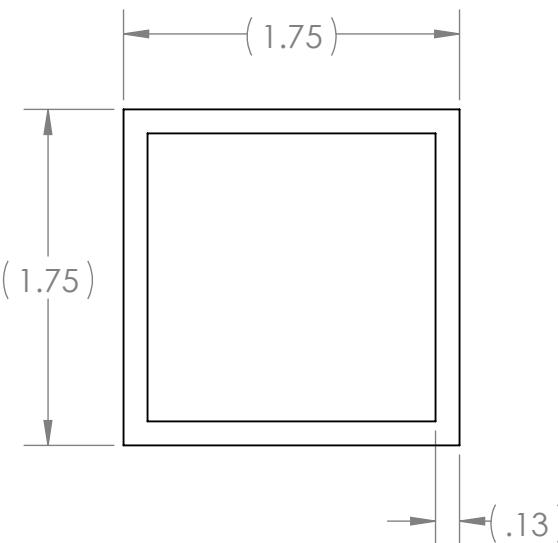
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4

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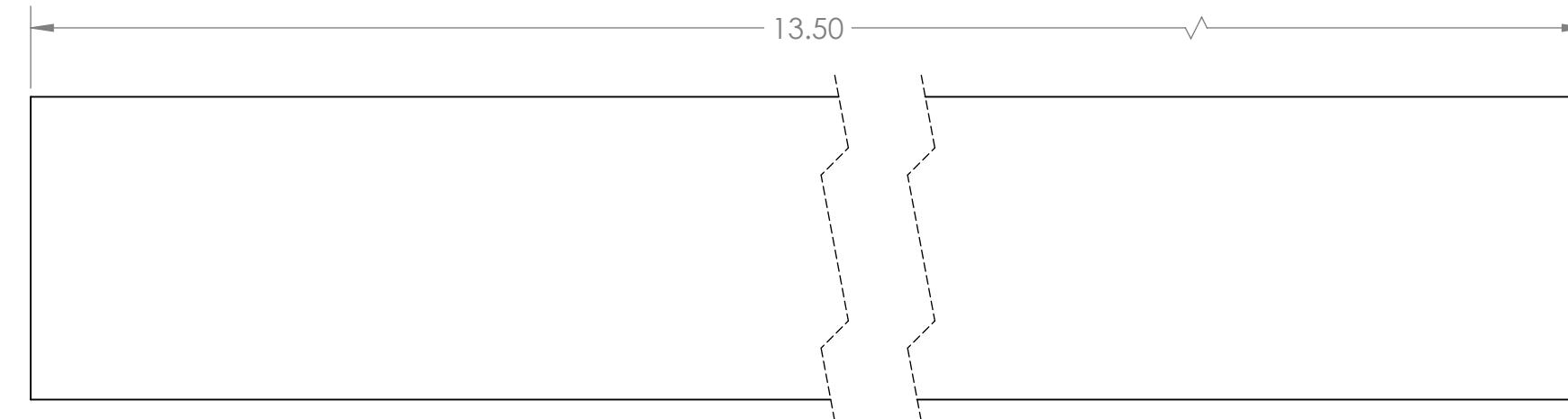
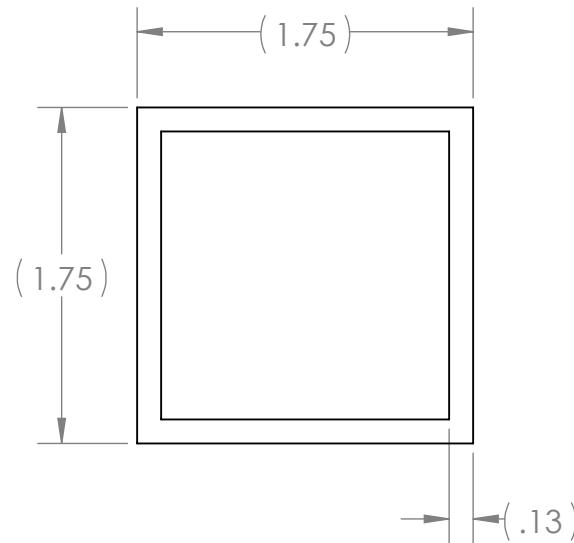
2

1



Item: GE-18016-1
 Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
 Scale: 1:1
 QTY: 2

△3



Item: GE-18016-2
 Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
 Scale: 1:1
 QTY: 2

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SIZE	DWG. NO.			REV	
B	GE-18016				3
SCALE: 1:1	WEIGHT:				SHEET 3 OF 5

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
 Modeling Solutions Partner

Switch Frame

4

3

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1

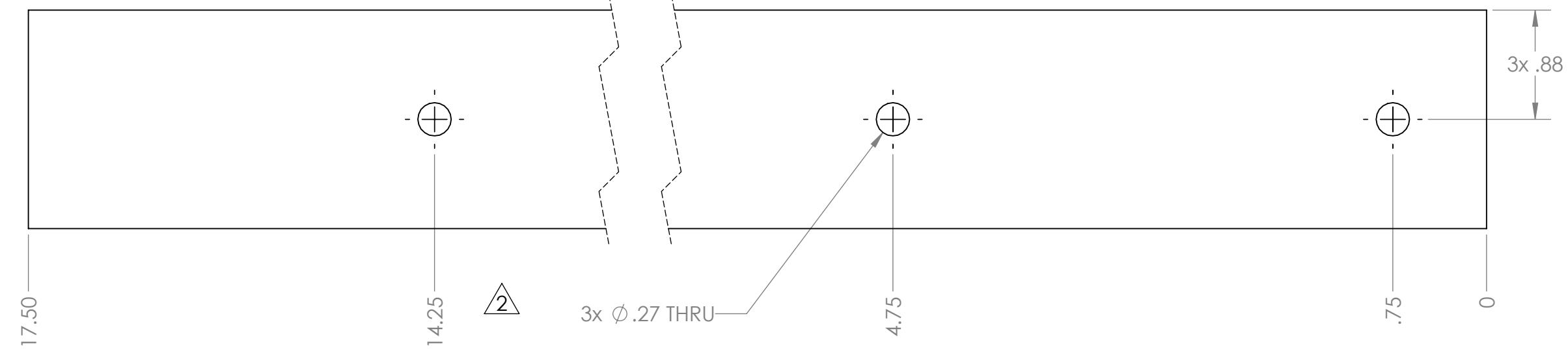
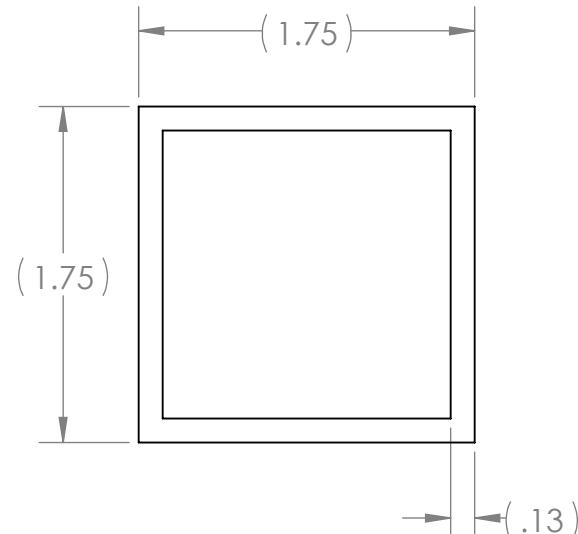
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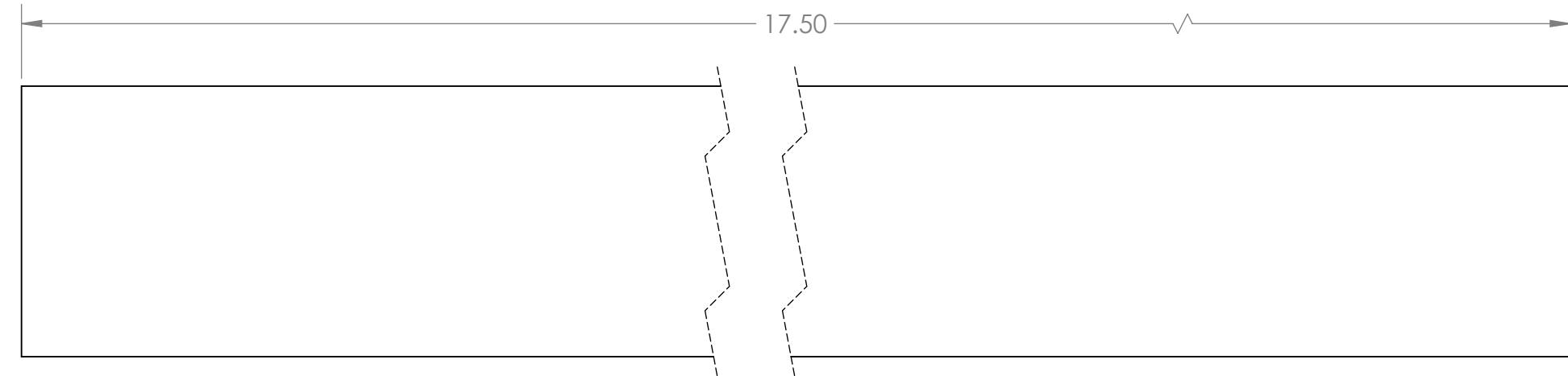
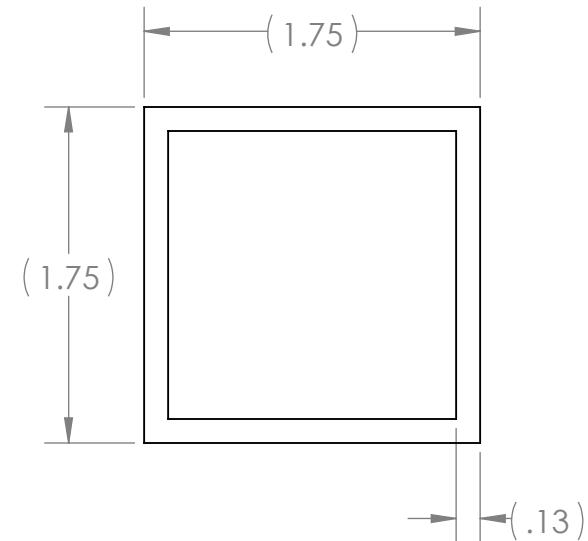
2

1

B



Item: GE-18016-3
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
Scale: 1:1
QTY: 4



Item: GE-18016-4
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
Scale: 1:1
QTY: 4

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		NEXT ASSY	USED ON	FINISH
		APPLICATION		DO NOT SCALE DRAWING
SIZE	DWG. NO.		REV	
B	GE-18016			3
SCALE: 1:1	WEIGHT:		SHEET	4 OF 5

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Switch Frame

4

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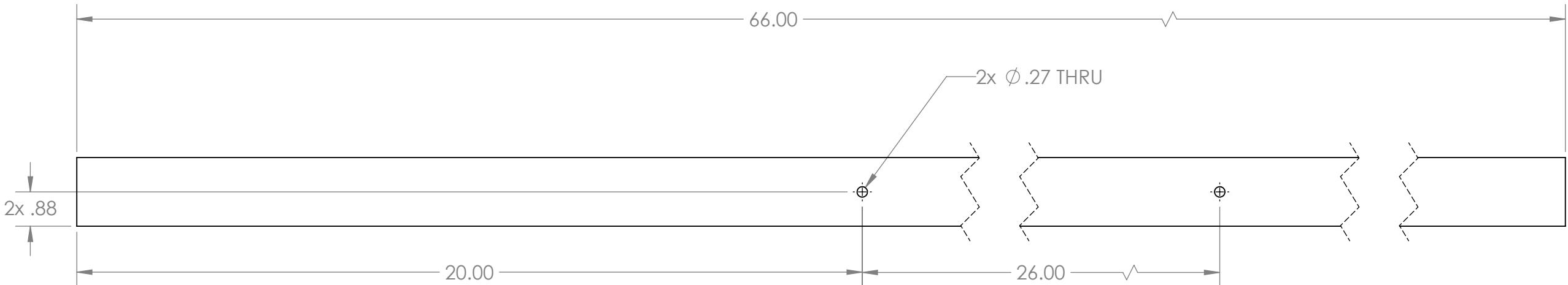
3

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Item: GE-18016-5
 Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
 Scale: 1:3
 QTY: 2

3

A

A

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
SIZE	DWG. NO.		REV		
B	GE-18016		3		
SCALE: 1:3	WEIGHT:		SHEET 5 OF 5		

 **FIRST
ROBOTICS
COMPETITION** 
TITLE:
Switch Frame

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8x ϕ .27 THRU

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2x 5.00

2x 13.00

16.88

2x R.25

31.13

2x 35.00

2x 43.00

48.00

48.00

4x .50

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4x 3.25

18.00

13.13

(.25)

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Notes:

1. Material: 1/4" thick, clear polycarbonate.
2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	NAME	DATE
		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE	DWG. NO.		REV	
B	GE-18017			
SCALE: 1:4	WEIGHT:		SHEET 1 OF 1	



SOLIDWORKS
Modeling Solutions Partner

TITLE:
Plate Back Wall

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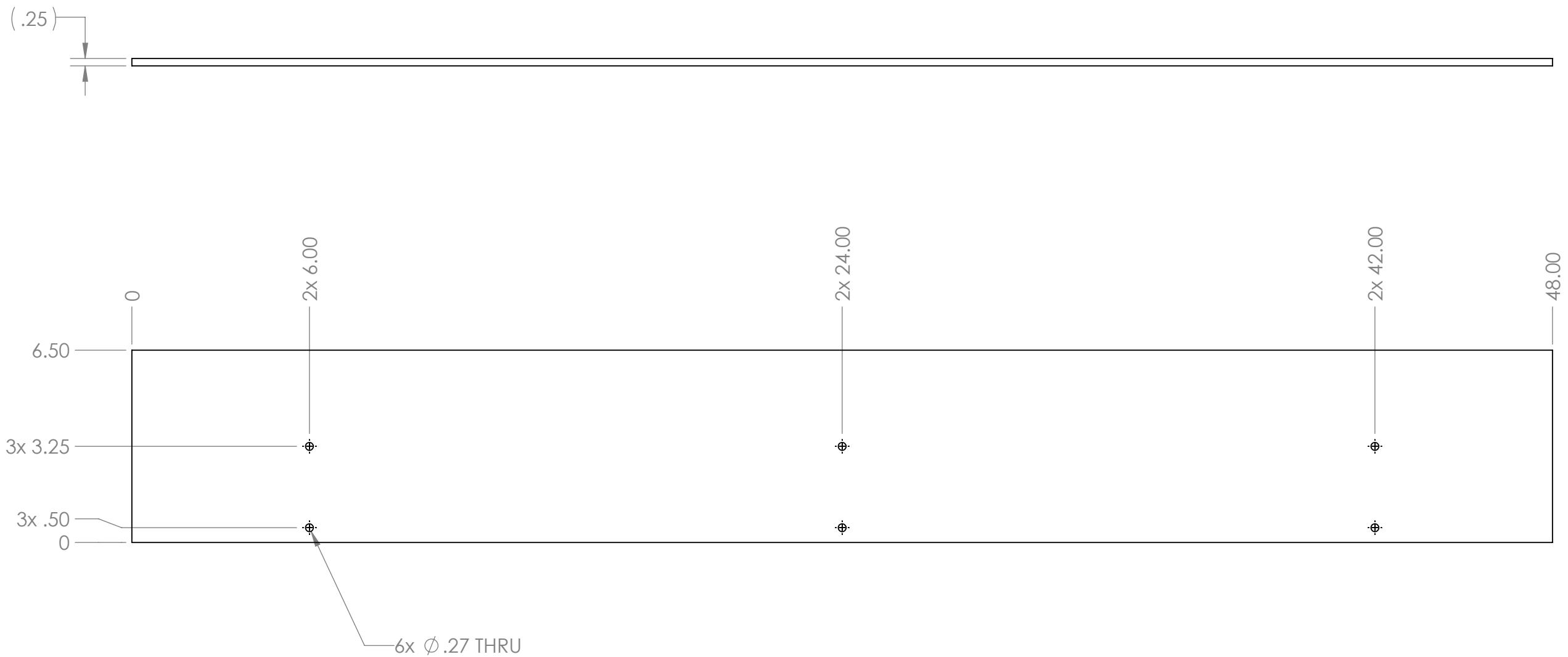
3

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Notes:

1. Material: 1/4" thick, clear polycarbonate.
2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$		NAME	DATE
		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
SIZE	DWG. NO.		REV		
B	GE-18018				
SCALE: 1:4	WEIGHT:		SHEET 1 OF 1		

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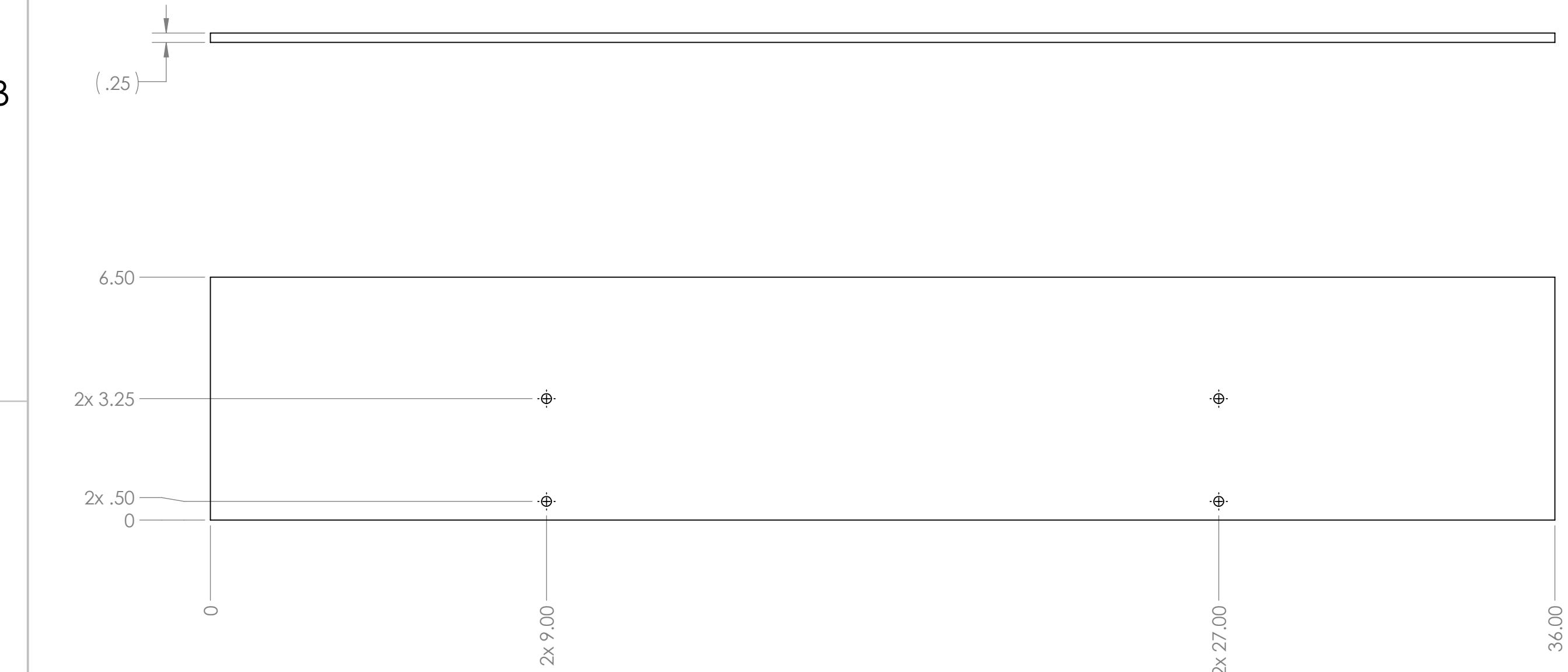
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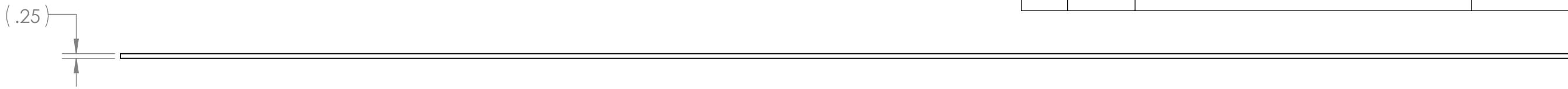
Notes:

- Notes:

 1. Material: 1/4" thick, clear polycarbonate.
 2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 FIRST ROBOTICS COMPETITION  SOLIDWORKS <small>Modeling Solutions Partner</small>
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			
		MATERIAL				
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				
SIZE DWG. NO. REV B GE-18019 1						
SCALE: 1:3 WEIGHT: SHEET 1 OF 1						

**Notes:**

1. Material: 1/4" thick, clear polycarbonate.
2. Remove all burrs and 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 $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:	ENG APPR.	MFG APPR.	
		MATERIAL			
NEXT ASSY	USED ON	FINISH	Q.A. COMMENTS:		
APPLICATION		DO NOT SCALE DRAWING			
B	GE-18020	3			
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1			

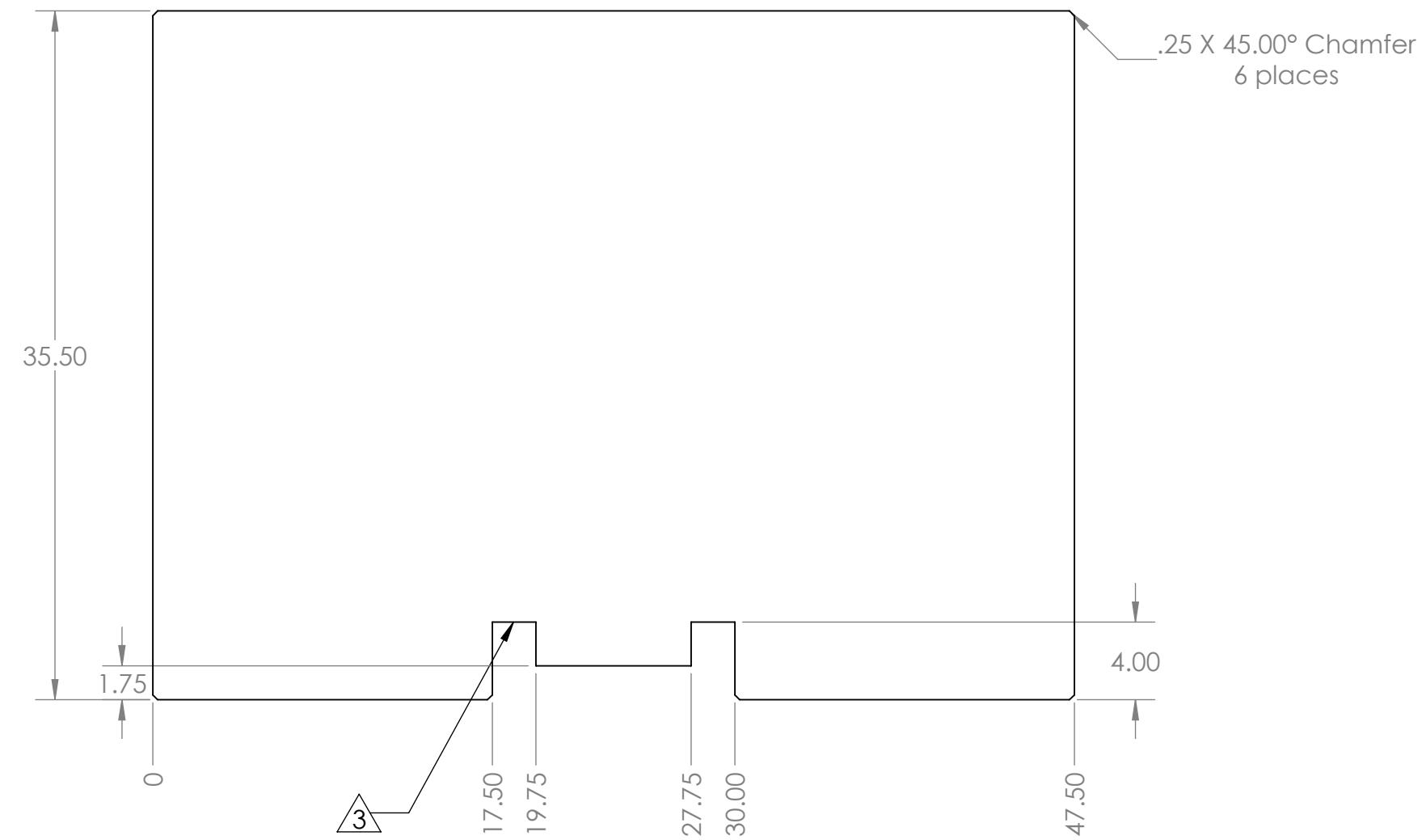
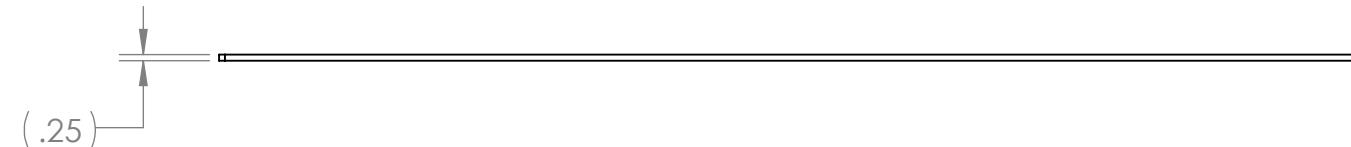
FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Scale Side Cover
Polycarbonate

SIZE DWG. NO. REV
B **GE-18020** **3**

SCALE: 1:6 WEIGHT: SHEET 1 OF 1



- Notes:
1. Material: 1/4" thick, black HDPE
 2. Surface: Textured, Orange Peel
 3. Remove all burrs and sharp edges

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A4	2	Changed material thickness in note to match part dimension	12/7/2017	CPO
A3	3	Added notched cutout for use of GE-18134	3/6/2018	CPO

		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$, BEND $\pm 1^\circ$ TWO PLACE DECIMAL: $\pm .01$ THREE PLACE DECIMAL: $\pm .001$	NAME	DATE
DRAWN				
CHECKED				
ENG APPR.				
MFG APPR.				
Q.A.				
COMMENTS:				
SIZE	DWG. NO.	REV		
B	GE-18021	3		
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1		

FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner

Scale and Switch Basket, Plate

4

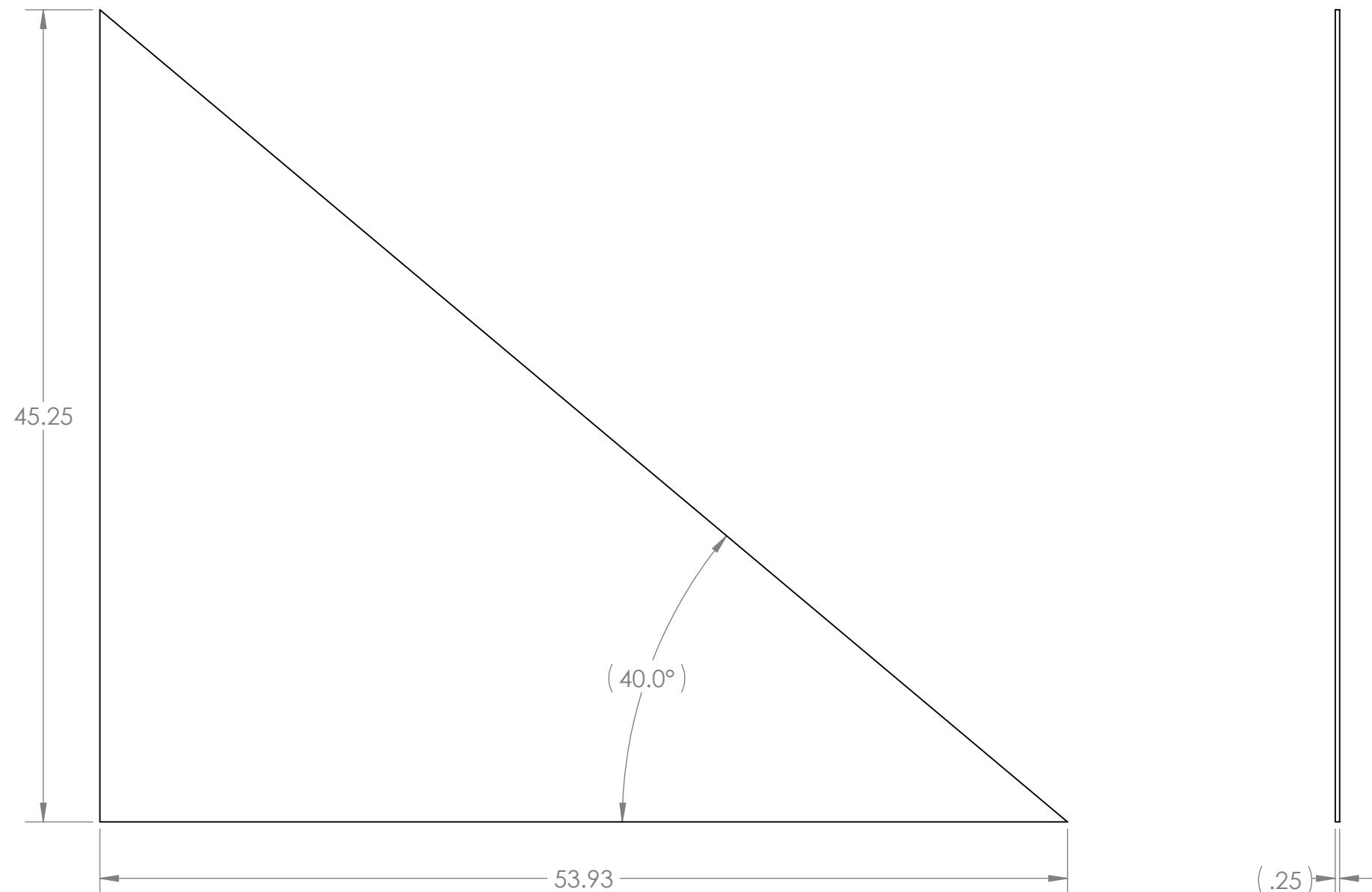
3

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A

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Notes:

1. Material: 1/4" thick, clear polycarbonate.
2. Remove all burrs and 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 $\pm .01$		COMMENTS:	
		THREE PLACE DECIMAL $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		NEXT ASSY USED ON FINISH			
		APPLICATION DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
 Modeling Solutions Partner

TITLE: Scale Outrigger Side Cover Polycarbonate
SIZE: B **DWG. NO.:** GE-18022 **REV:**

SCALE: 1:8 **WEIGHT:** **SHEET 1 OF 1**

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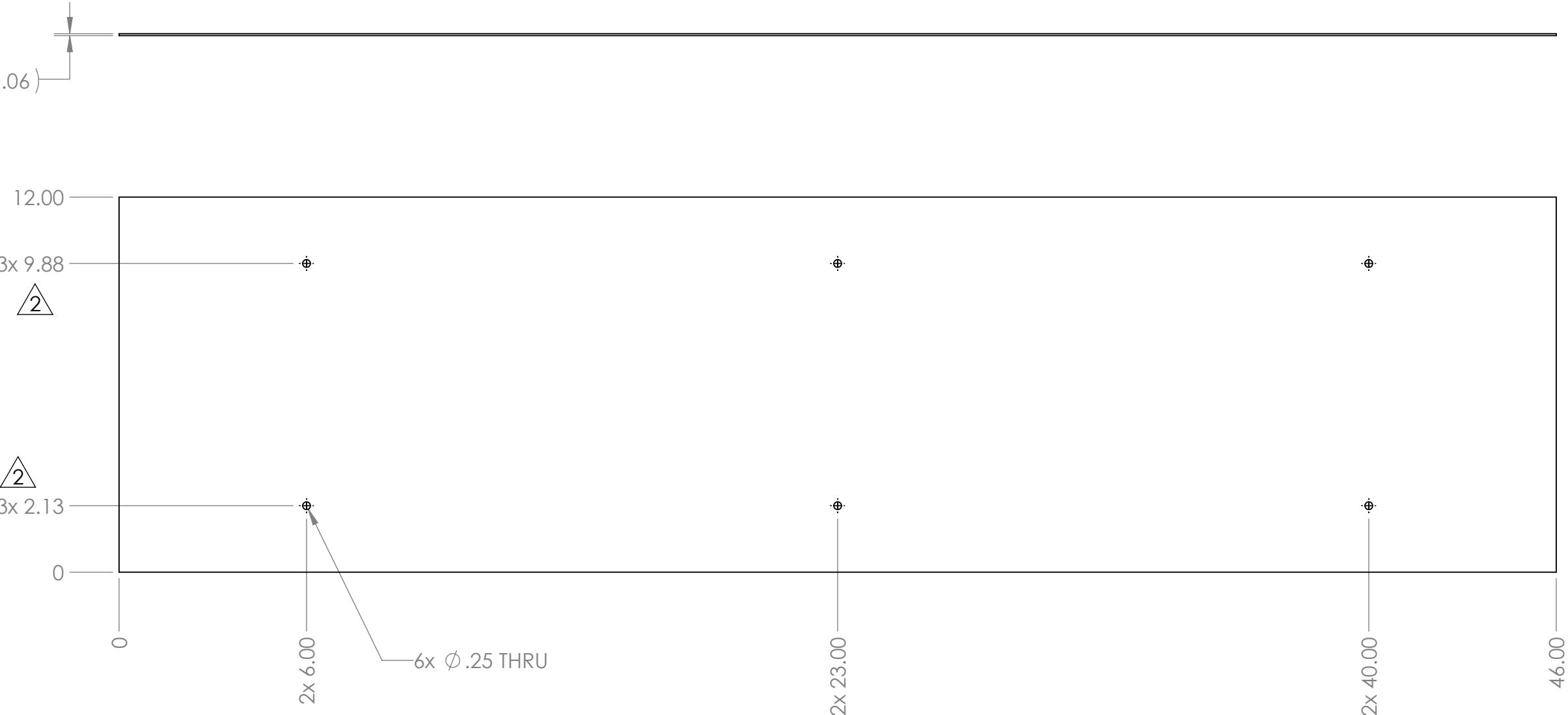
2

1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A4, B4	2	Hole location of 6 holes changed.	11/17/2017	CPO

B



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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SCALE: 1:4		WEIGHT:	SHEET 1 OF 1	
SIZE B		DWG. NO. GE-18023	REV. 2	
TITLE: Scale Arm Cover Polycarbonate				
FIRST ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner				

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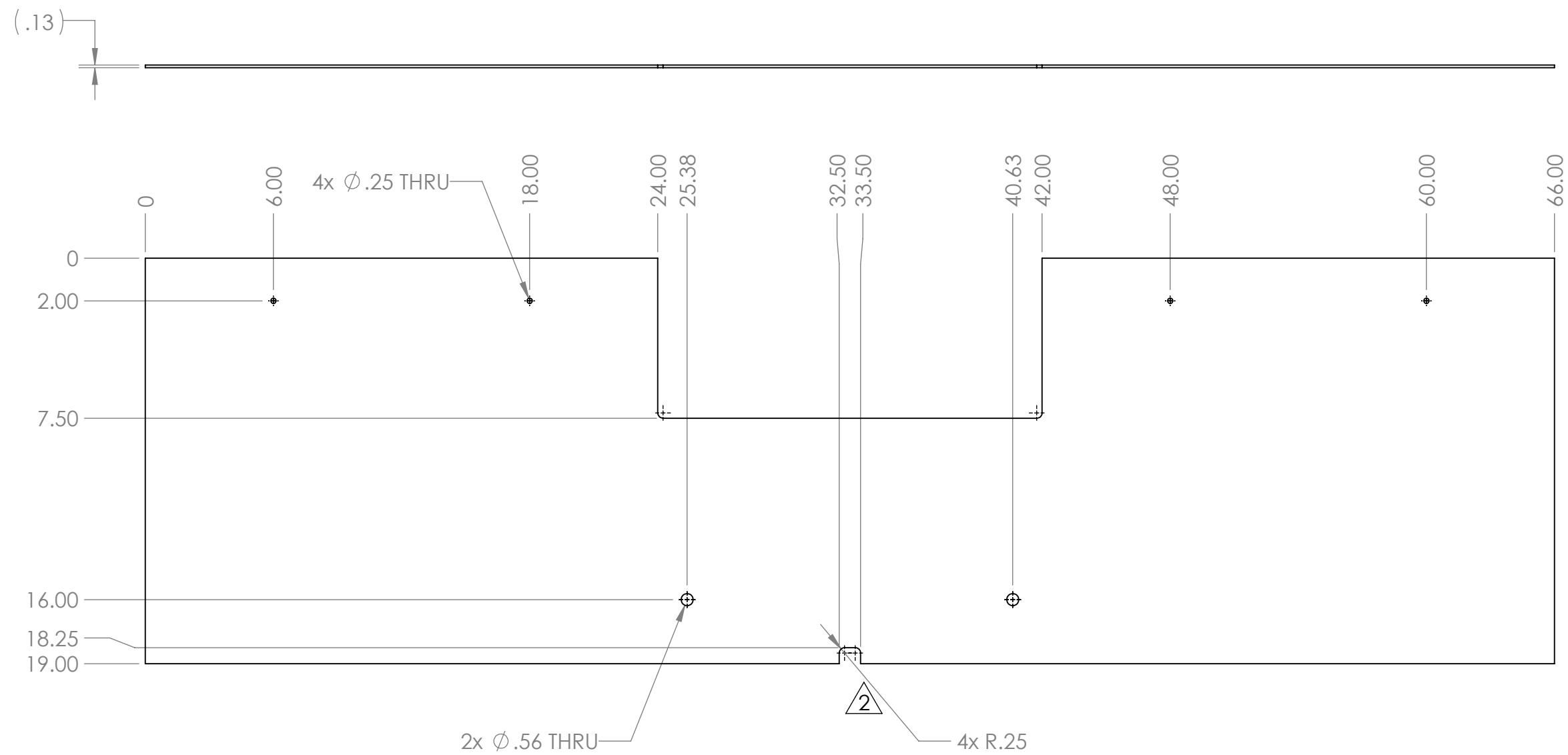
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2	2	Added cutout	11/17/2017	CPO



Notes:

- Material: 1/8" thick, clear polycarbonate.
- Remove all burrs and sharp edges.

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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.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE	DWG. NO.	REV		
B	GE-18024	2		
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1		



SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Switch Base Cover
Polycarbonate**

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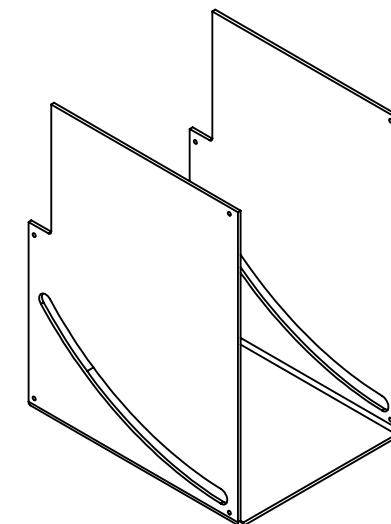
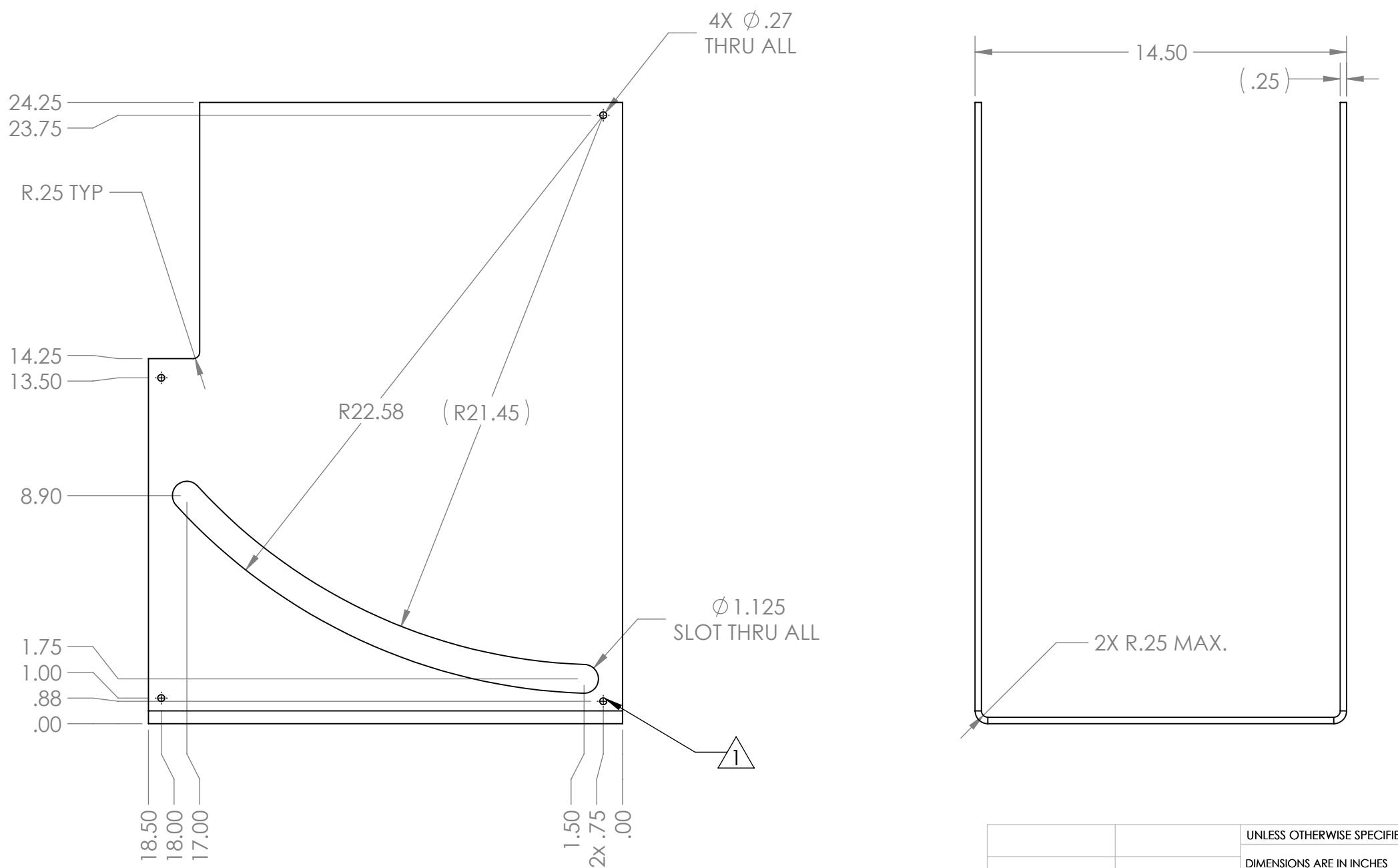
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	1	Added additional 0.27" diameter hole.	1/8/2018	CPO



Notes:

1. Material: 1/4" thick, clear polycarbonate
2. Remove all burrs and sharp edges

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN				
			CHECKED				
			ENG APPR.				
			MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.				
		MATERIAL	COMMENTS:				
NEXT ASSY	USED ON	FINISH				B GE-18025	SIZE DWG. NO. REV 1
APPLICATION		DO NOT SCALE DRAWING					
			SCALE: 1:5	WEIGHT:	SHEET 1 OF 1		

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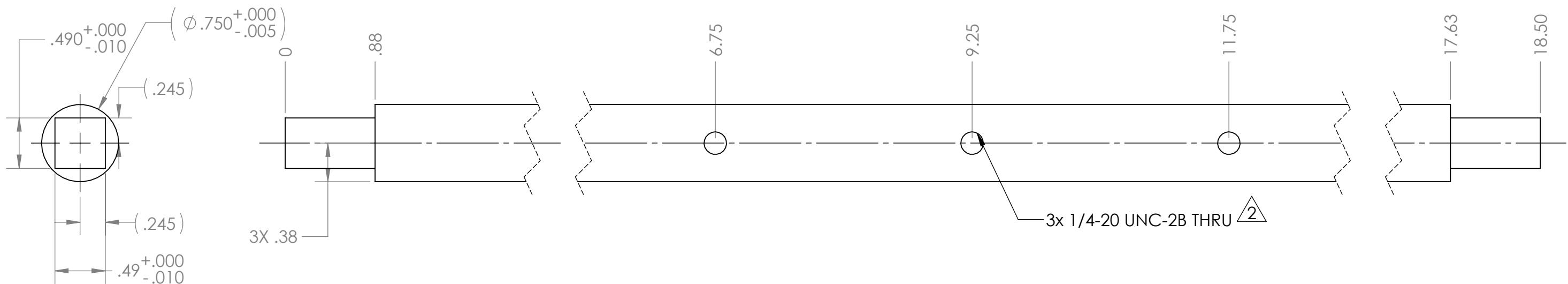
1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A1, A4	2	Material Changed. 3 Clearance holes changed to 1/4-20 tapped holes	11/17/2017	CPO

B

B



- Notes:
 1. Material: 3/4" Rotary Shaft, 1045 Steel
 2. Finish: Clear Zinc

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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			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
 Modeling Solutions Partner
 TITLE: **Switch/Scale Arm Shaft**
 SIZE **B** DWG. NO. **GE-18026** REV. **2**
 SCALE: 1:1 WEIGHT: SHEET 1 OF 1

4

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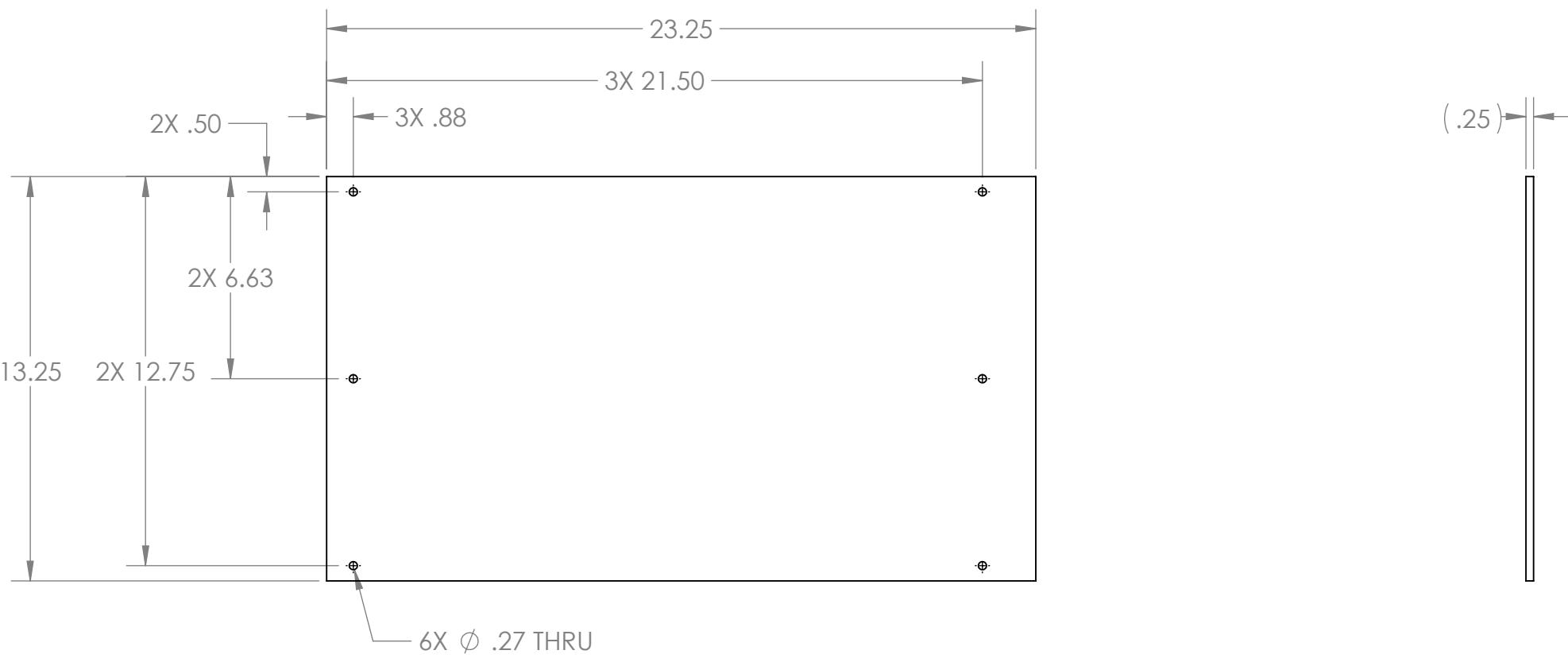
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- Notes:**
1. Material: 1/4" thick, clear polycarbonate
 2. Remove all burrs and sharp edges

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SIZE	DWG. NO.			REV	
B	GE-18027				
SCALE: 1:5	WEIGHT:			SHEET 1 OF 1	

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FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Pusher Panel

SIZE DWG. NO.
B **GE-18027**

SCALE: 1:5 WEIGHT: SHEET 1 OF 1

4

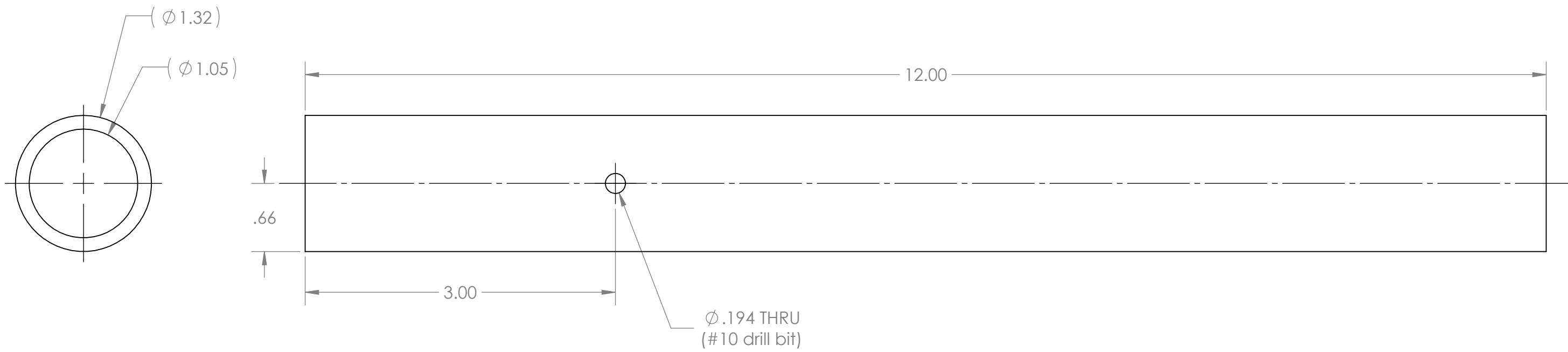
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B

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Notes:

1. Material: 1" Schedule 40 Pipe, 6061 Aluminum
2. Remove all burrs and sharp edges

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SIZE	DWG. NO.			REV	
B	GE-18028				
SCALE: 1:1	WEIGHT:			SHEET 1 OF 1	

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FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

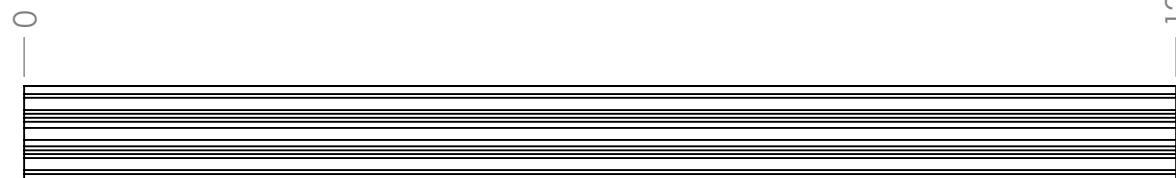
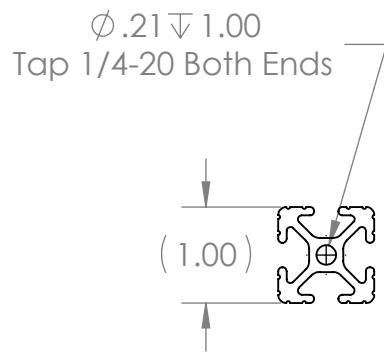
Plate Mount Pin

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B

B



Note:

1. 80-20 aluminum extrusion
2. Remove all burrs and 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					
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING					



SOLIDWORKS
Modeling Solutions Partner

TITLE:

80-20 Extrusion

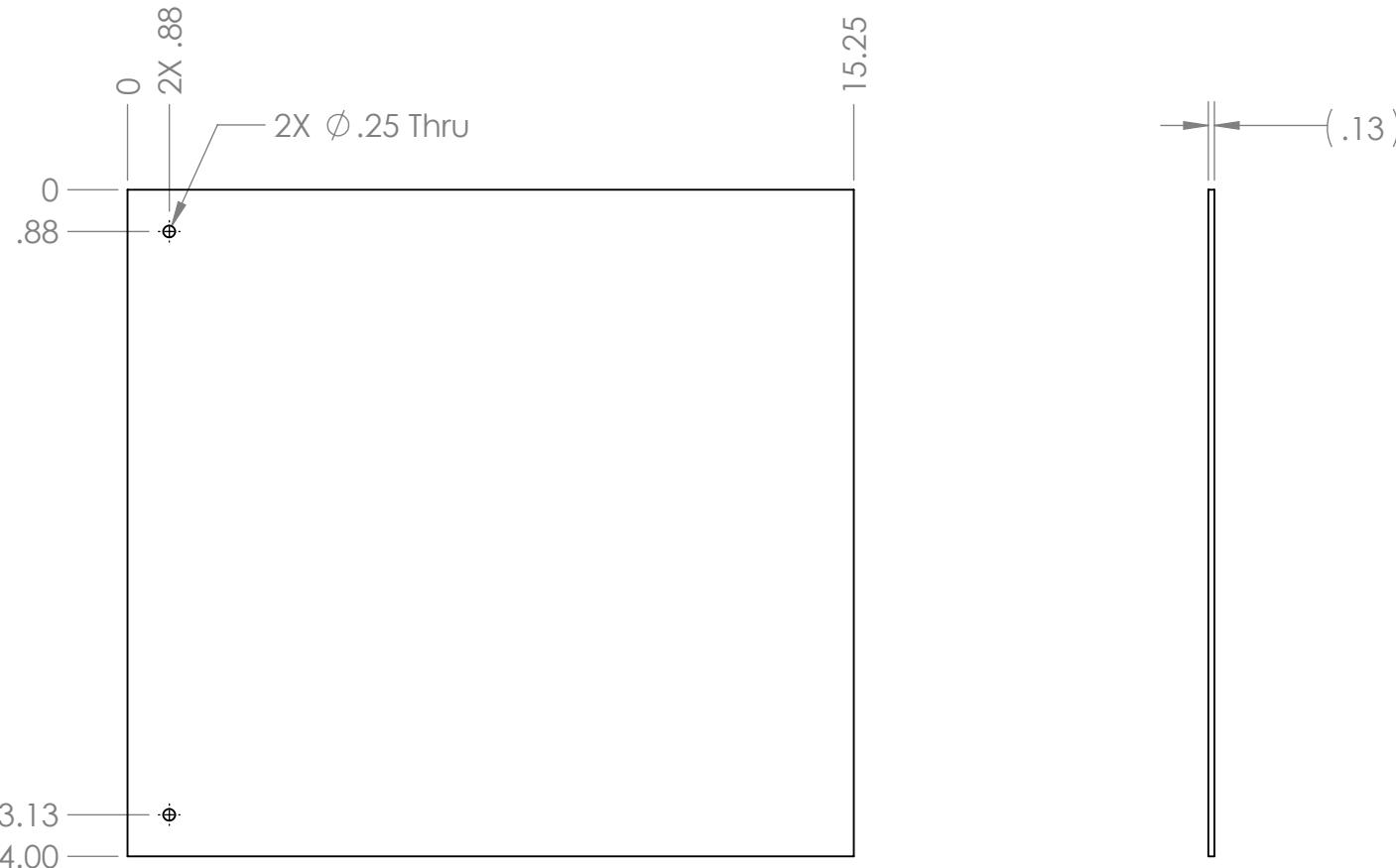
SIZE	DWG. NO.	REV
A	GE-18030	
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

2

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Notes:

1. 1/8" smooth HDPE, red or blue
2. Remove burrs and sharp edges

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		UNLESS OTHERWISE SPECIFIED:		COMMENTS:	
		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 $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		NEXT ASSY			
		USED ON			
		FINISH			
		APPLICATION		DO NOT SCALE DRAWING	

SIZE	DWG. NO.	REV
A	GE-18031	
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1



SOLIDWORKS
Modeling Solutions Partner

TITLE:

Vault HDPE Bottom Side

2

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4

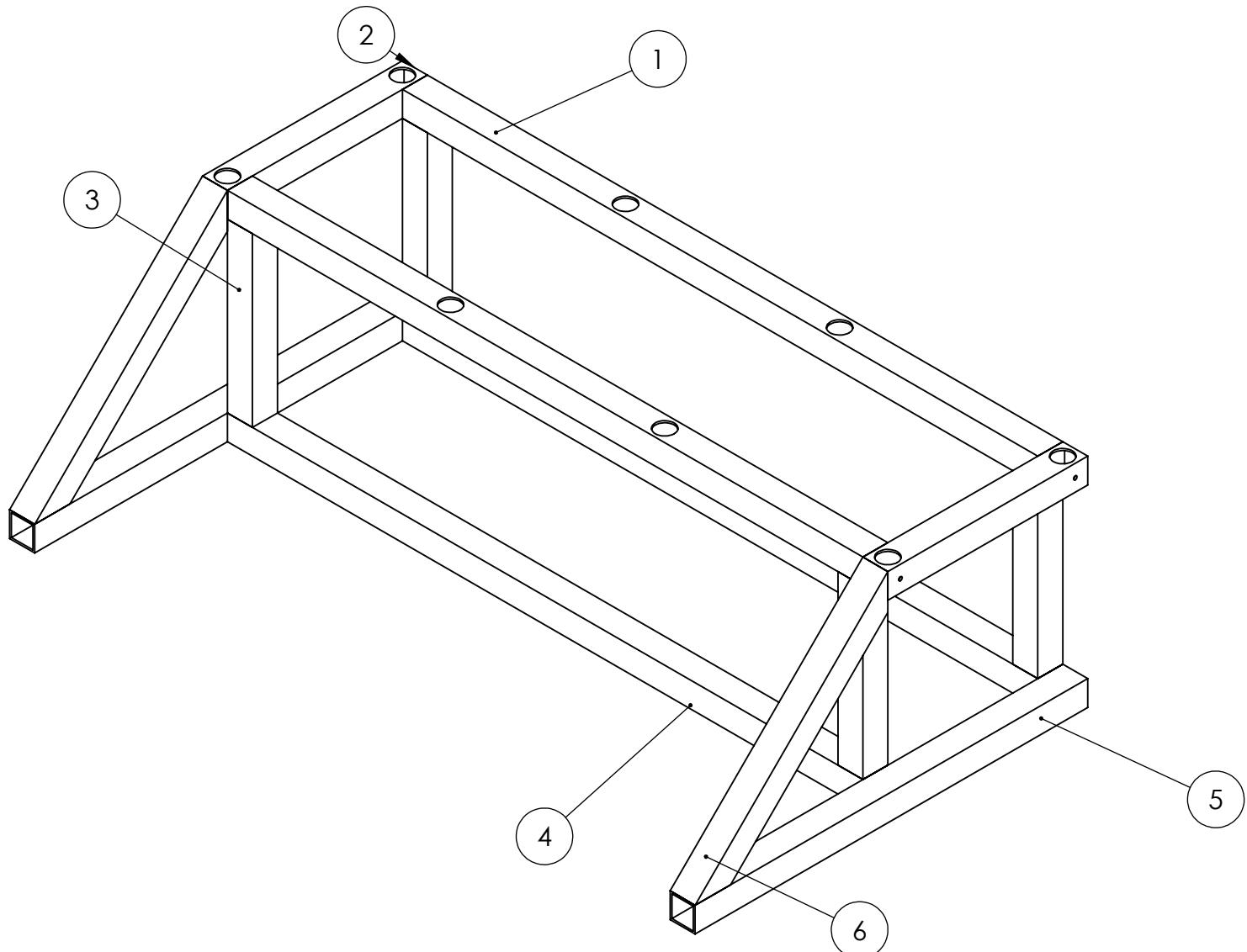
3

2

1

B

B



Bill of Material

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18032-01	1 3/4", 1/8" Thick Square Tube 6063 Aluminum	2
2	GE-18032-02	1 3/4", 1/8" Thick Square Tube 6063 Aluminum	2
3	GE-18032-03	1 3/4", 1/8" Thick Square Tube 6063 Aluminum	4
4	GE-18032-05	1 3/4", 1/8" Thick Square Tube 6063 Aluminum	2
5	GE-18032-04	1 3/4", 1/8" Thick Square Tube 6063 Aluminum	2
6	GE-18032-06	1 3/4", 1/8" Thick Square Tube 6063 Aluminum	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		NAME	DATE
		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON	APPLICATION	DWG. NO. B GE-18032 REV		
		DO NOT SCALE DRAWING	SCALE: 1:8	WEIGHT:	SHEET 1 OF 7

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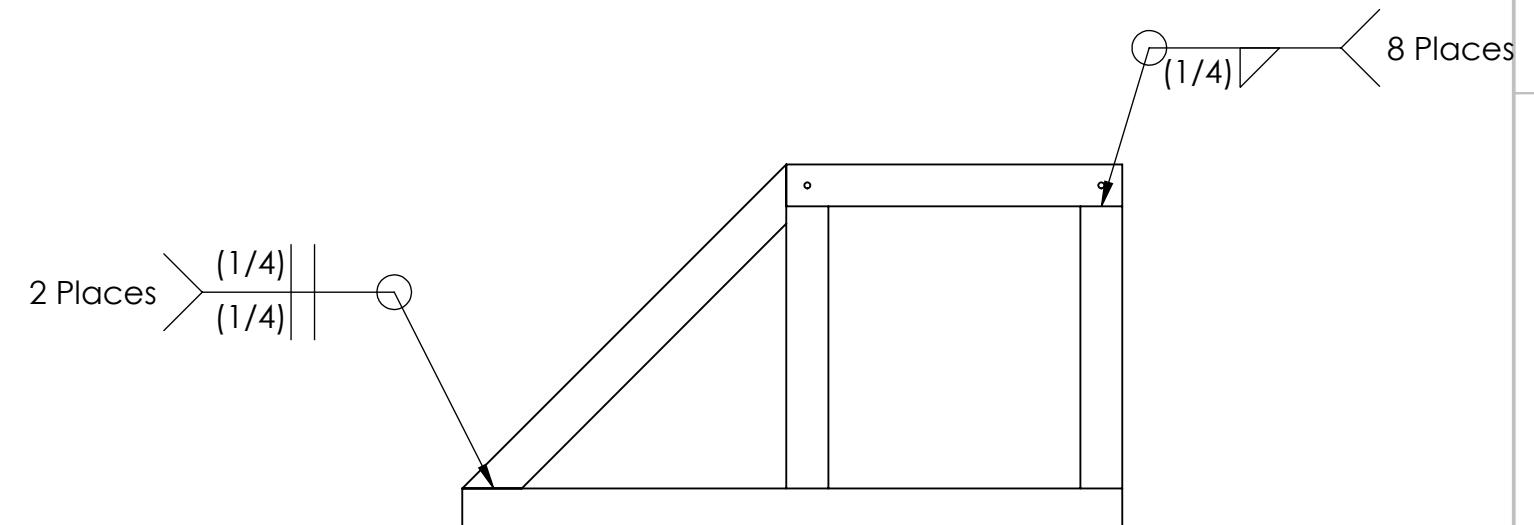
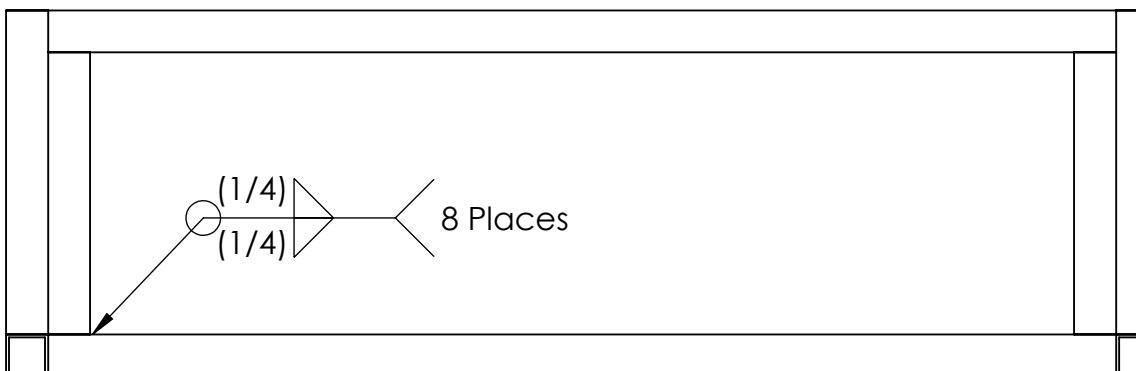
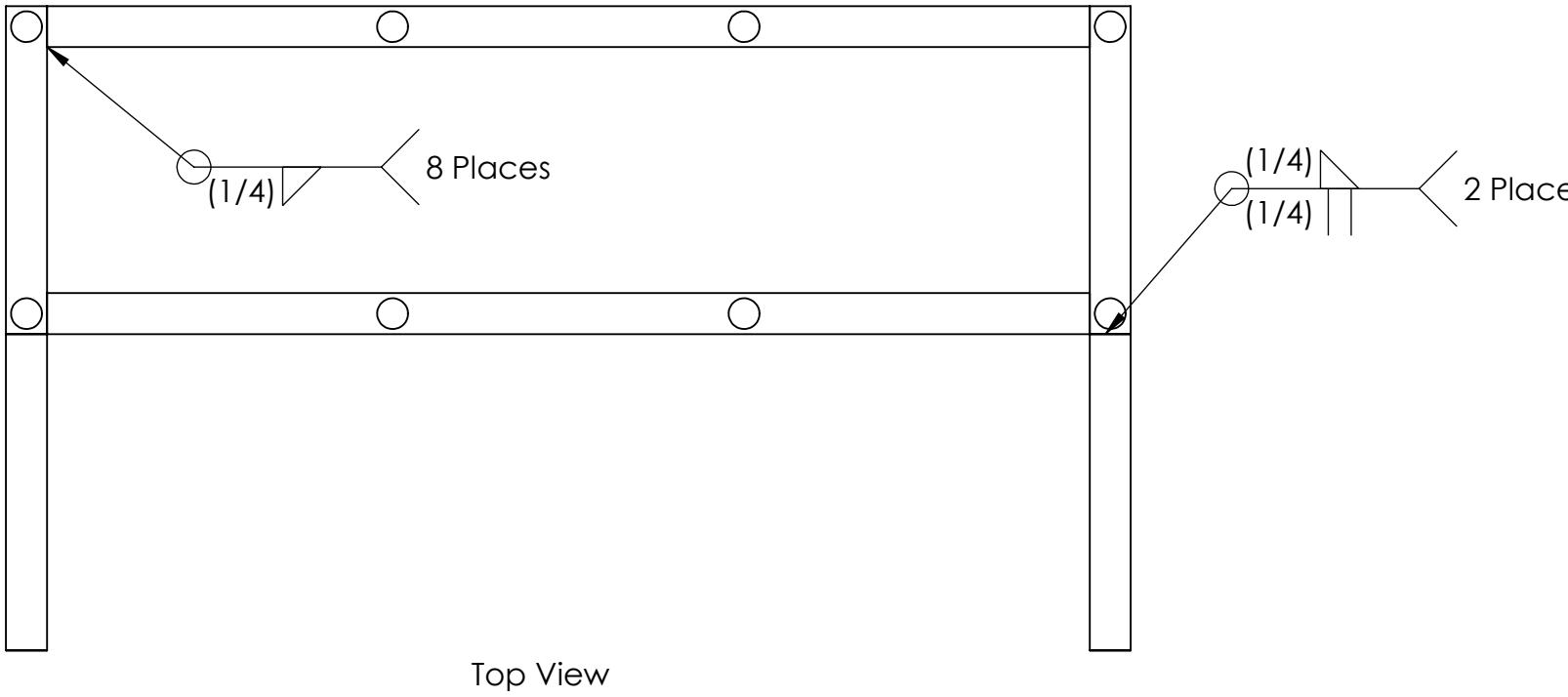
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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Vault Base

SIZE DWG. NO. **B** GE-18032 **REV**

SCALE: 1:8 WEIGHT: SHEET 2 OF 7

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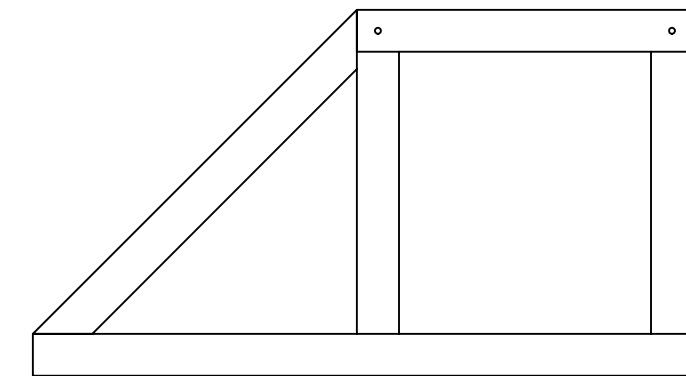
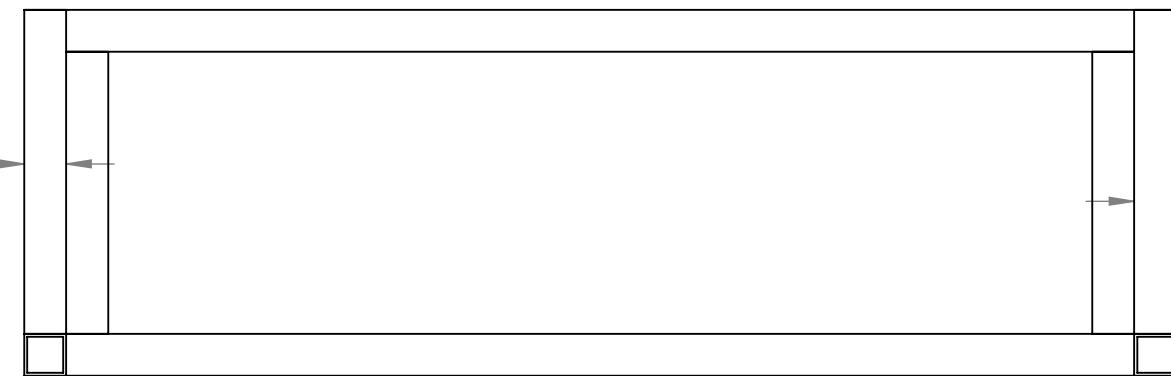
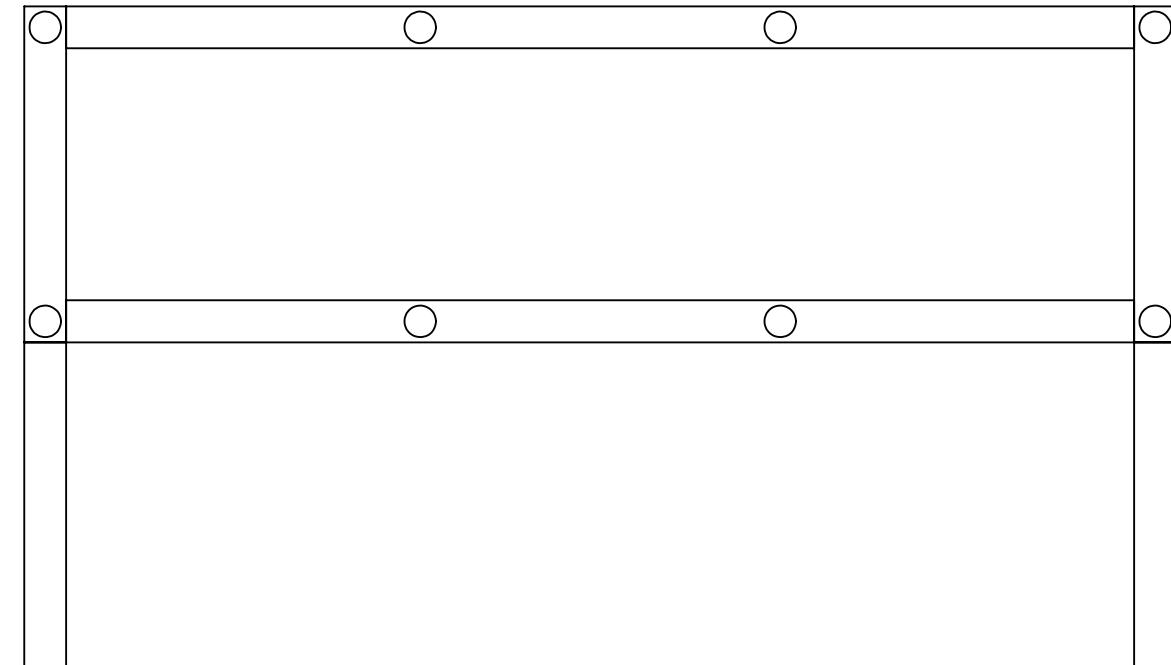
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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
B	GE-18032				
SCALE: 1:8	WEIGHT:				
					SHEET 3 OF 7

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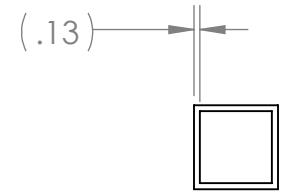
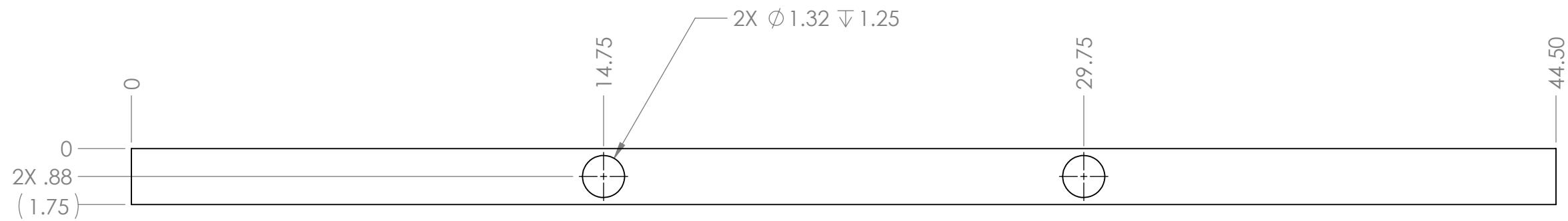
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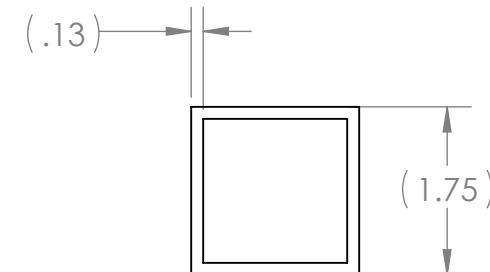
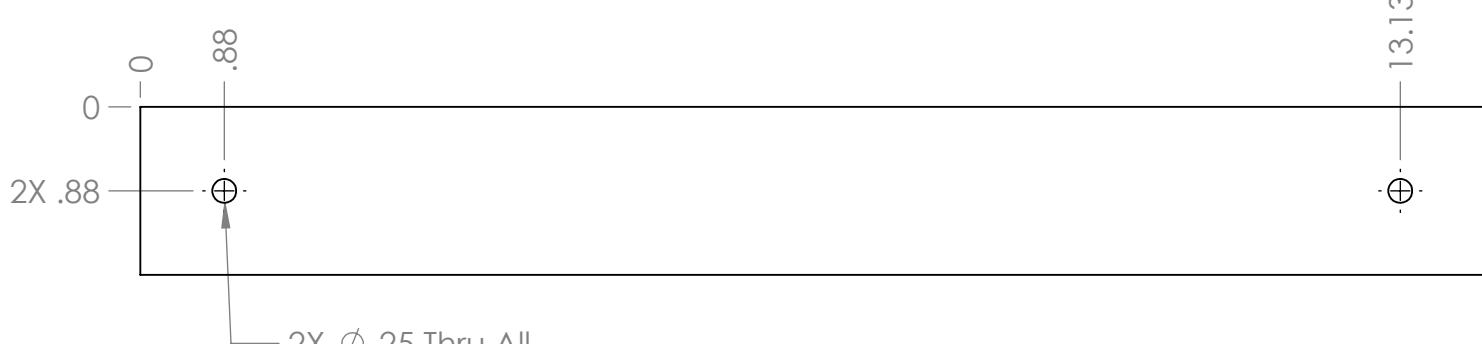
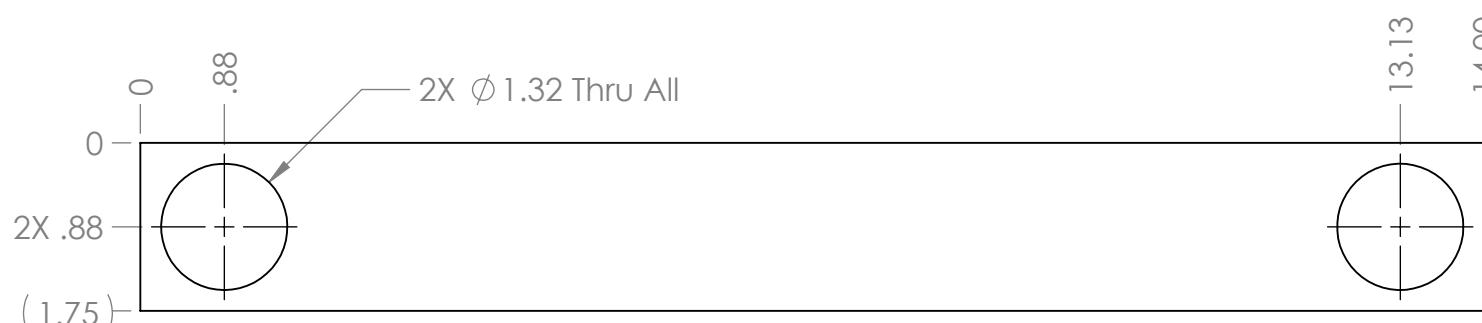
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Item Number: GE-18032-01
 Material: 1 3/4", 1/8" Thick Square Tube 6063 Aluminum
 Remove Sharp Edges and Burrs
 QTY:2



Item Number: GE-18032-02
 Material: 1 3/4", 1/8" Thick Square Tube 6063 Aluminum
 Remove Sharp Edges and Burrs
 QTY:2

		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 .001	NAME	DATE
		INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL	Q.A.	COMMENTS:
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Vault Base

SIZE DWG. NO. **B** GE-18032 **REV**

SCALE: 1:2 WEIGHT: SHEET 4 OF 7

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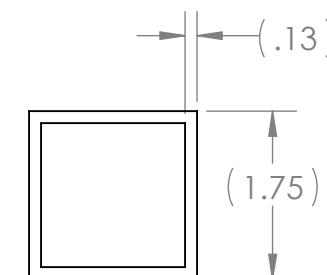
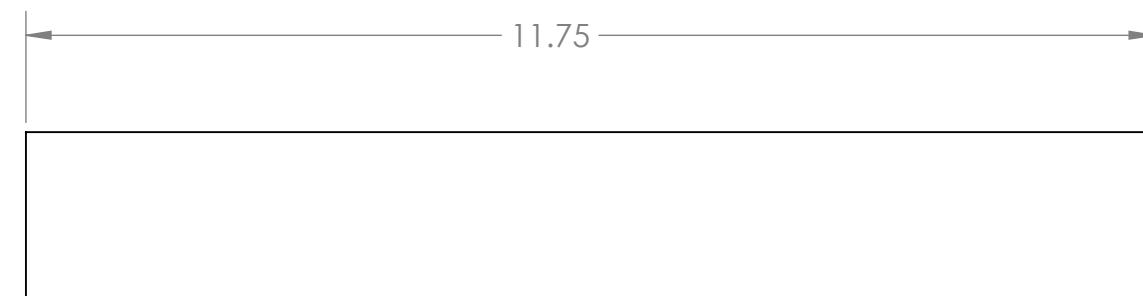
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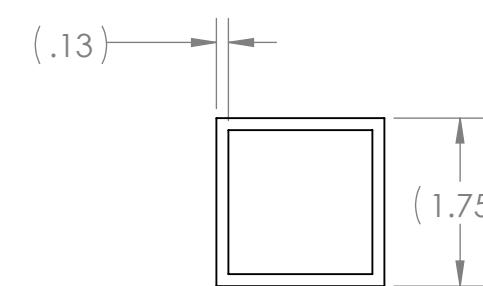
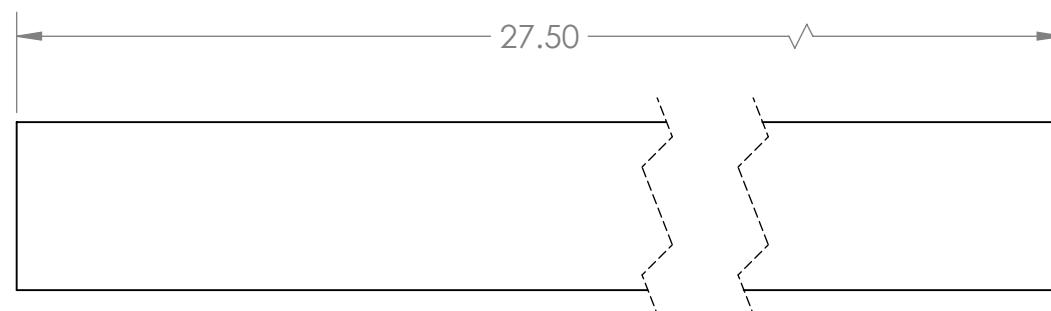
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Item Number: GE-18032-03
Material: 1 3/4" 6063 Aluminum Square Tube
Remove Sharp Edges and Burrs
QTY:4



Item Number: GE-18032-04
Material: 1 3/4" 6063 Aluminum Square Tube
Remove Sharp Edges and Burrs
QTY: 2

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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 $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Vault Base

SIZE	DWG. NO.	REV
B	GE-18032	
SCALE: 1:2	WEIGHT:	SHEET 5 OF 7

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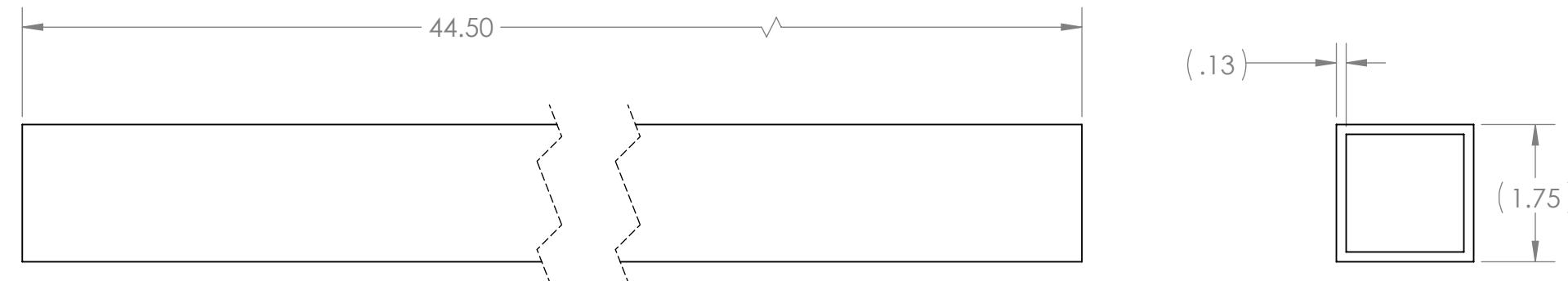
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Item Number: GE-18032-05
 Material: 1 3/4" 6063 Aluminum Square Tube
 Remove Sharp Edges and Burs
 QTY:2

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES		DRAWN	
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		TWO PLACE DECIMAL $\pm .01$		Q.A.	
		THREE PLACE DECIMAL $\pm .001$		COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
	NEXT ASSY	USED ON	FINISH		
		APPLICATION	DO NOT SCALE DRAWING		
SIZE	DWG. NO.			REV	
B	GE-18032				
SCALE: 1:2	WEIGHT:			SHEET 6 OF 7	

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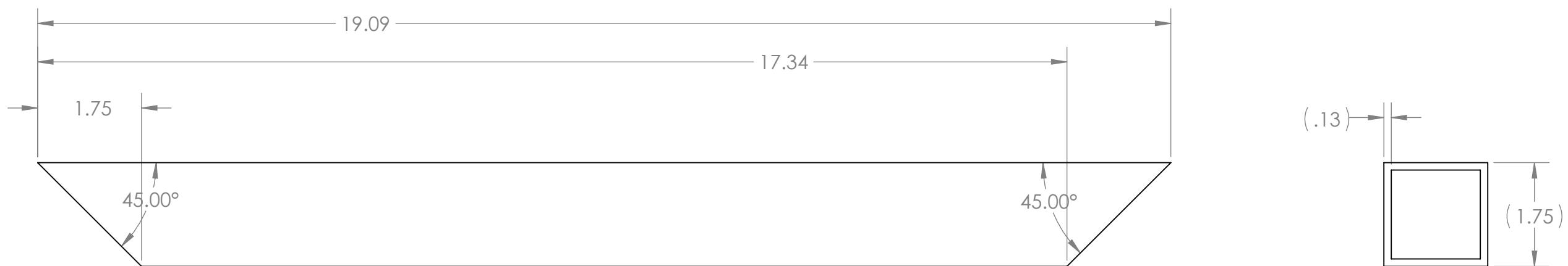
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Item Number: GE-18032-06
 Material: 1 3/4" 6063 Aluminum Square Tube
 Remove Sharp Edges and Burs
 QTY:2

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
	APPLICATION	DO NOT SCALE DRAWING			
SIZE	DWG. NO.		REV		
B	GE-18032				
SCALE: 1:2	WEIGHT:		SHEET 7 OF 7		

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FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
 Modeling Solutions Partner

TITLE:
Vault Base

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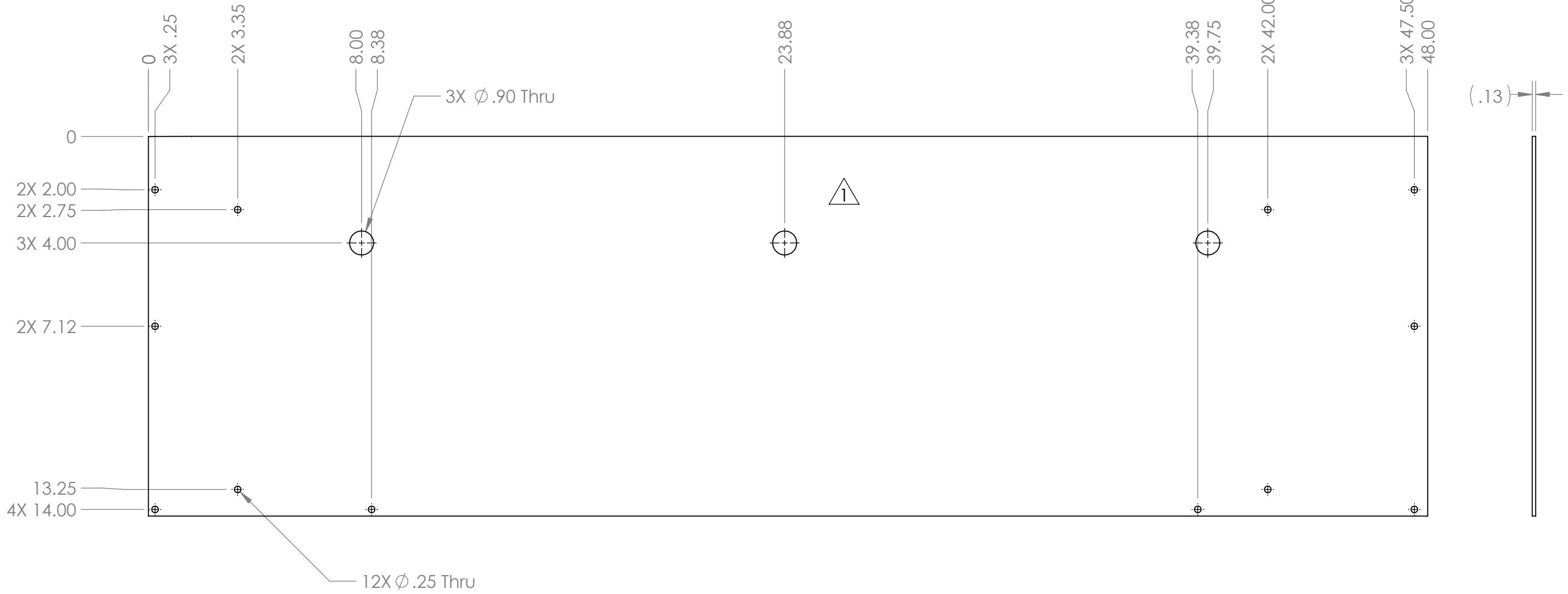
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2	1	Removed holes and added holes at 3.35 and 42.00	11/20/2017	MXS

B

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Note

1. 1/8" thk. clear Polycarbonate
2. Remove sharp edges and burrs

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE DWG. NO.		REV		
B GE-18033		1		
SCALE: 1:8		WEIGHT:	SHEET 1 OF 1	

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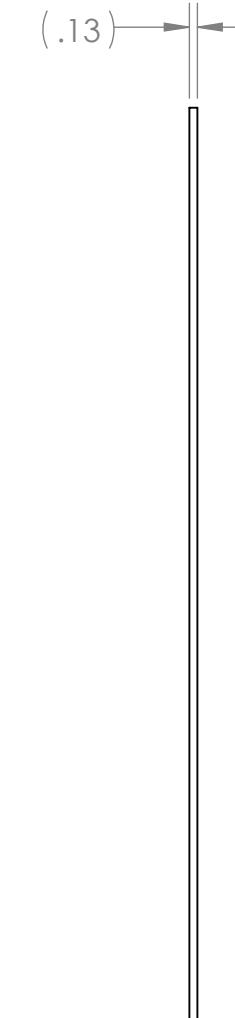
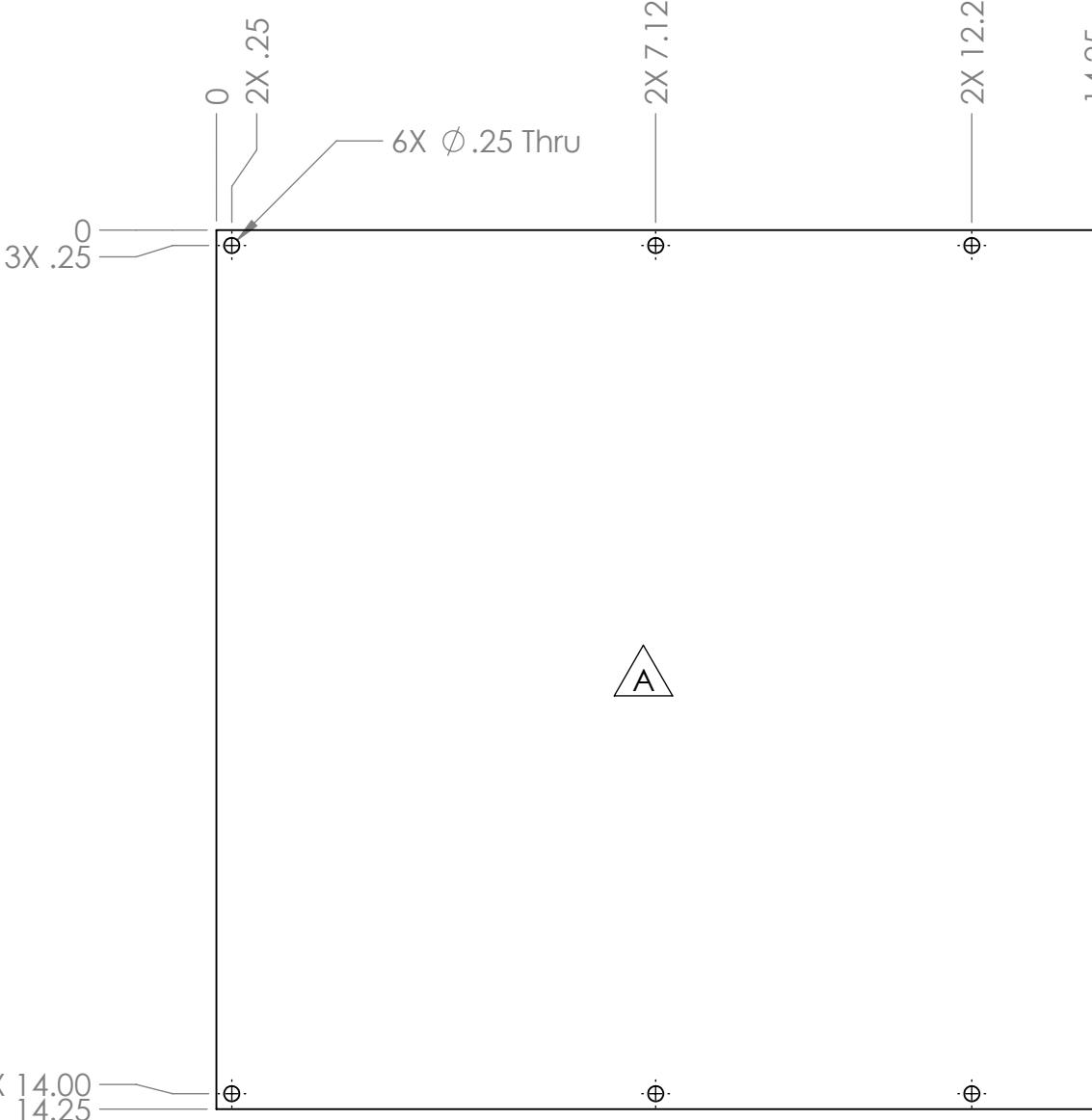
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Note
 1. 1 1/8" thk. smooth HDPE, blue or red
 2. Remove sharp edges and burrs

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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:		
		MATERIAL		
INTERPRET GEOMETRIC TOLERANCING PER:				
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
 Modeling Solutions Partner

Vault HDPE Top Side

SIZE	DWG. NO.	REV
B	GE-18034	A
SCALE: 1:3	WEIGHT:	SHEET 1 OF 1

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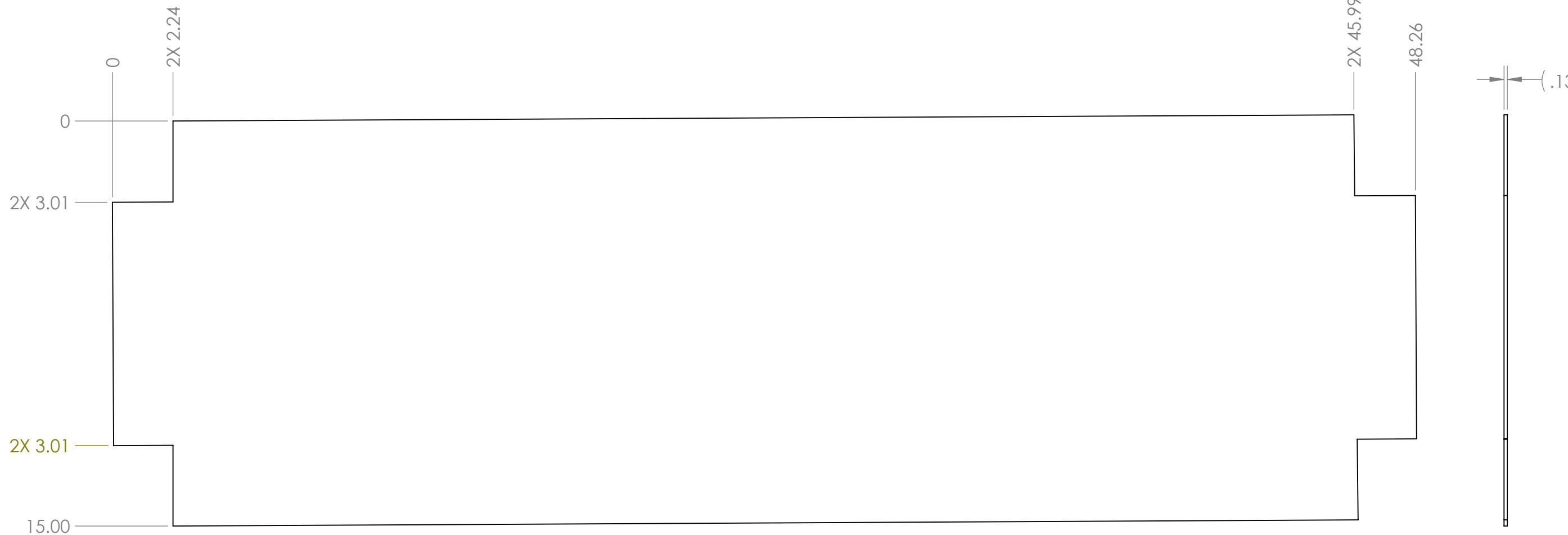
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		TOLERANCES:		CHECKED	
		FRACTIONAL $\pm 1/16$		ENG APPR.	
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$		MFG APPR.	
		TWO PLACE DECIMAL $\pm .01$		Q.A.	
		THREE PLACE DECIMAL $\pm .001$		COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Vault HDPE Bottom Back

SIZE DWG. NO. REV
B GE-18035

SCALE: 1:4 WEIGHT: SHEET 1 OF 1

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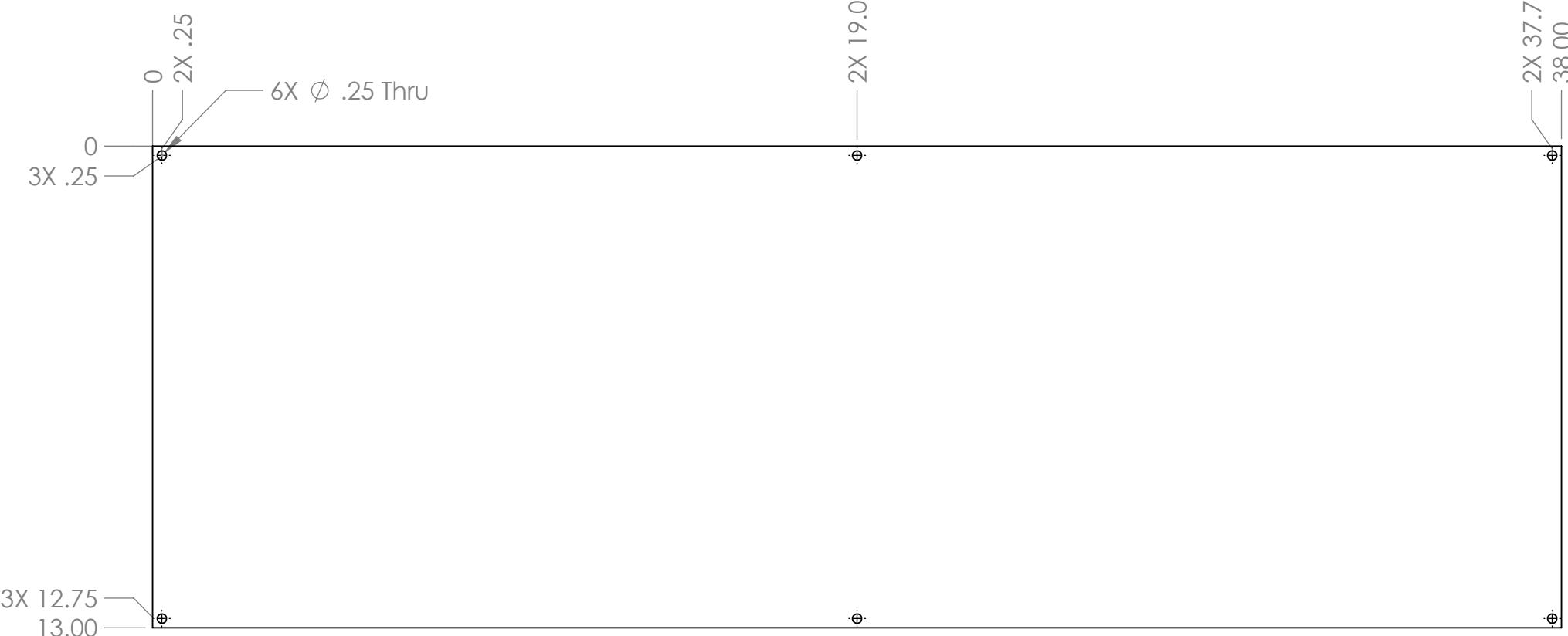
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Notes:

1. 1/8" thk. clear polycarbonate
2. Remove all sharp edges and burrs

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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			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			
TITLE: Vault Polycarbonate Middle Insert					
SIZE B	DWG. NO. GE-18036	REV			
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1			

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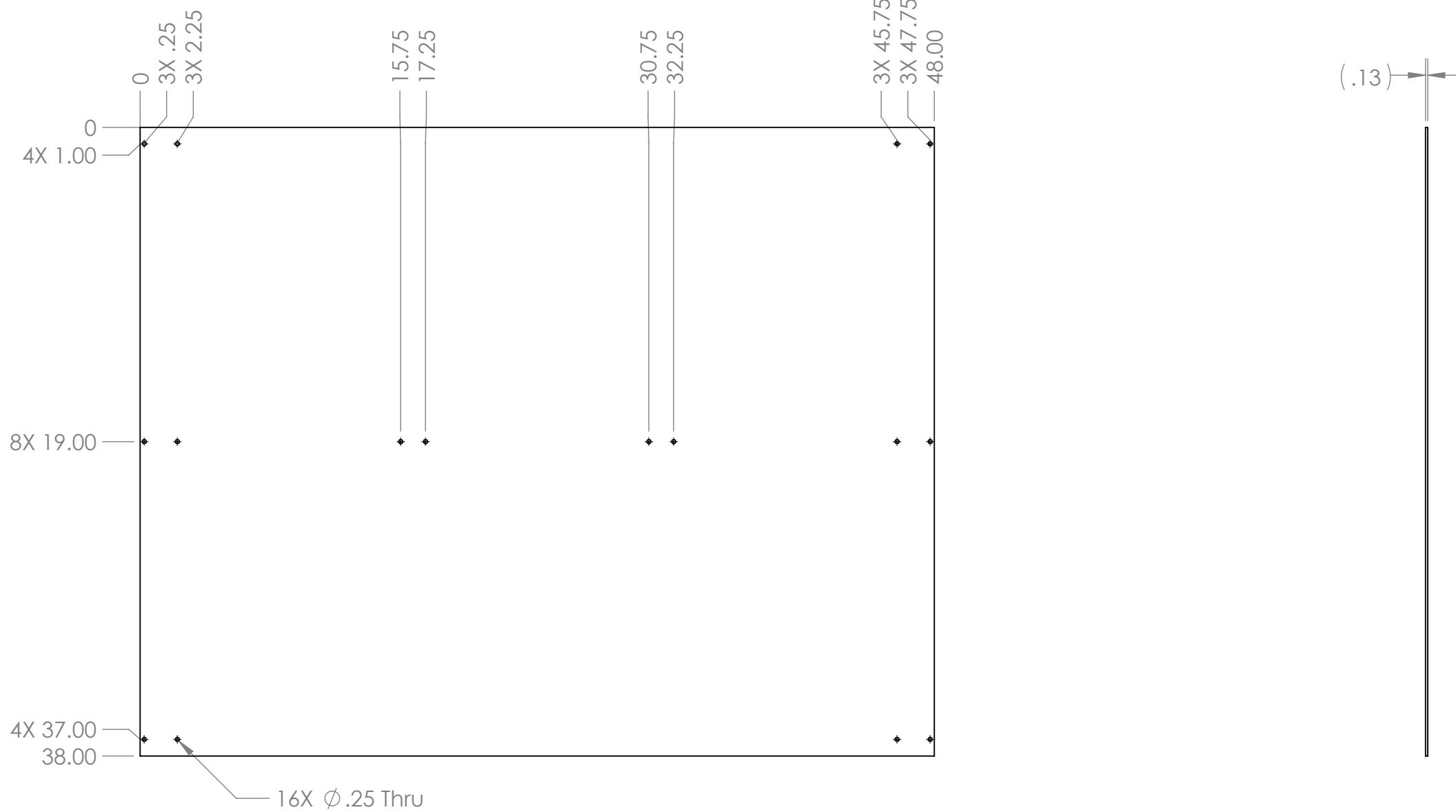
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		INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.	COMMENTS:
NEXT ASSY	USED ON	MATERIAL			
		FINISH			
APPLICATION		DO NOT SCALE DRAWING			
FIRST ROBOTICS COMPETITION	SOLIDWORKS Modeling Solutions Partner	TITLE: Vault Polycarbonate Backstop			
B	GE-18037	SIZE	DWG. NO.	REV	
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1			

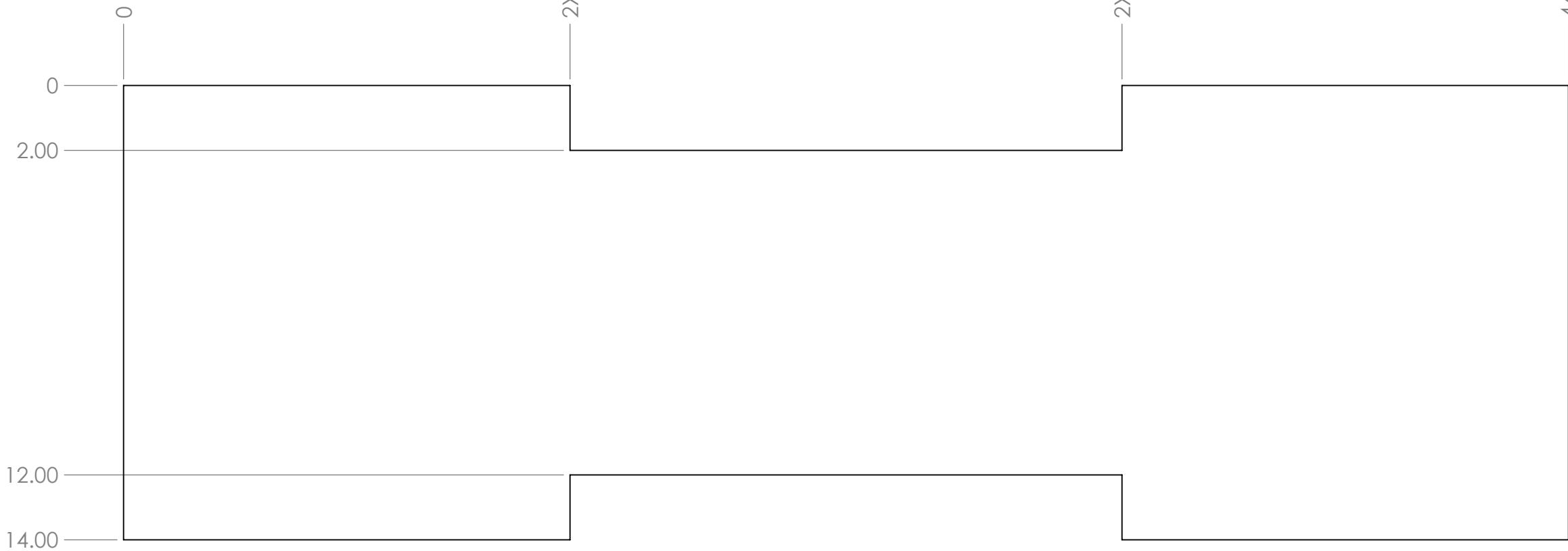
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Notes:

1. 1/4" thk. clear polycarbonate
2. Remove all sharp edges and burrs

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FRACTIONAL $\pm 1/16$		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$					
TWO PLACE DECIMAL $\pm .01$		THREE PLACE DECIMAL $\pm .001$					
INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.					
MATERIAL		COMMENTS:					
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING					

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Vault Polycarbonate Bottom Floor

SIZE	DWG. NO.	REV
B	GE-18038	

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

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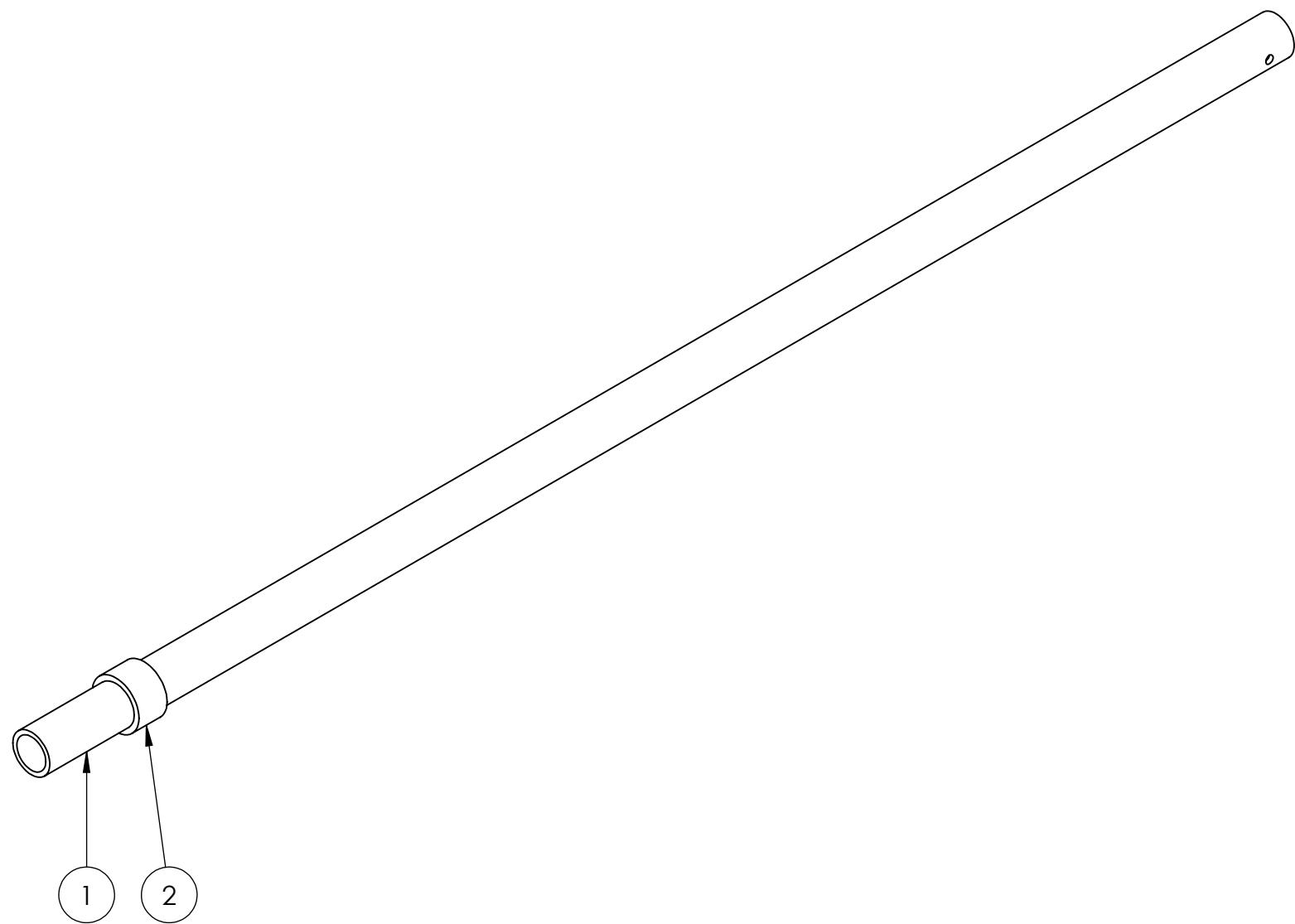
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18039-01	1" Schedule 40 Aluminum Pipe	1
2	GE-18039-02	1 1/4" Schedule 40 Aluminum Pipe	1

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner
TITLE: **Vault Support Pipes**
SIZE **B** DWG. NO. **GE-18039** REV **1**
SCALE: 1:4 WEIGHT: **1** SHEET 1 OF 5

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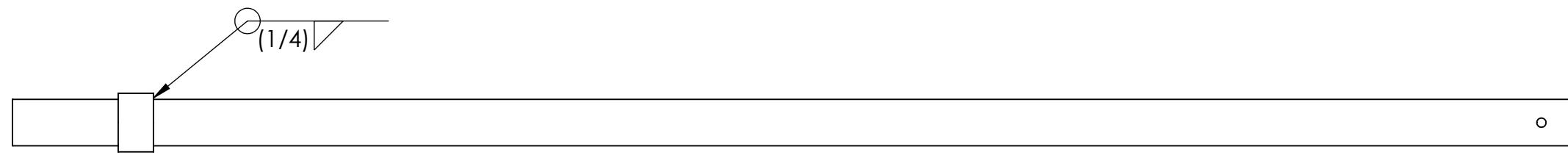
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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$		NAME	DATE
		DRAWN			
		CHECKED			
		ENG APPR.			
	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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Vault Support Pipes

B	GE-18039	REV
SCALE: 1:8	WEIGHT:	SHEET 2 OF 5

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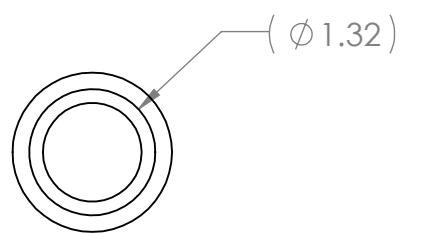
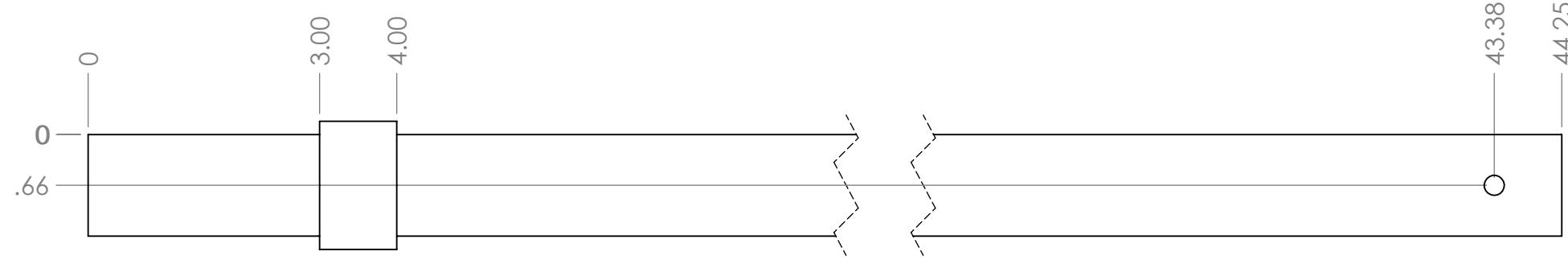
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DIMENSIONS ARE IN INCHES			DRAWN		
TOLERANCES:			CHECKED		
FRACTIONAL $\pm 1/16$			ENG APPR.		
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$			MFG APPR.		
TWO PLACE DECIMAL $\pm .01$			Q.A.		
THREE PLACE DECIMAL $\pm .001$			COMMENTS:		
		INTERPRET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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Vault Support Pipes

SIZE	DWG. NO.	REV
B	GE-18039	

SCALE: 1:8 WEIGHT: SHEET 3 OF 5

4

3

2

1

4

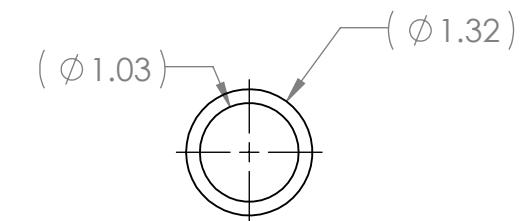
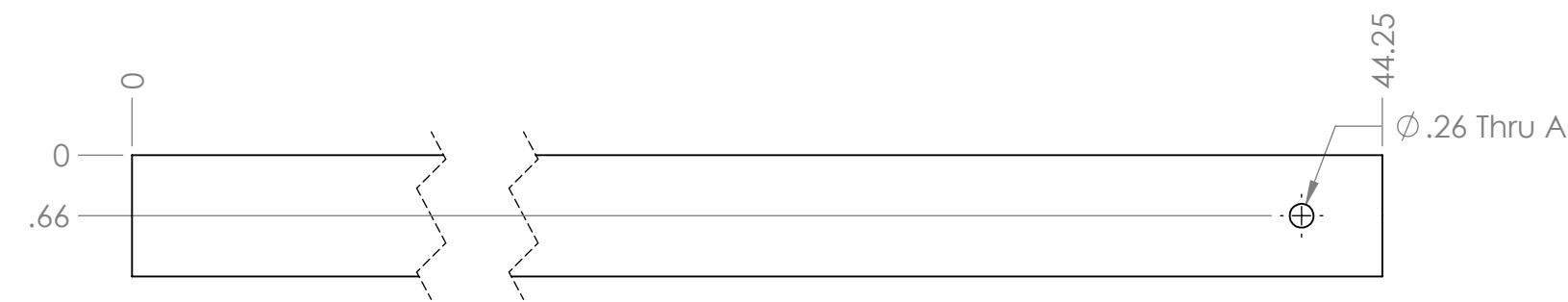
3

2

1

B

B



Notes:

1. GE-18039-01
2. 1" Schedule 40 Aluminum Pipe

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Vault Support Pipes

SIZE	DWG. NO.	REV
B	GE-18039	
SCALE: 1:8	WEIGHT:	SHEET 4 OF 5

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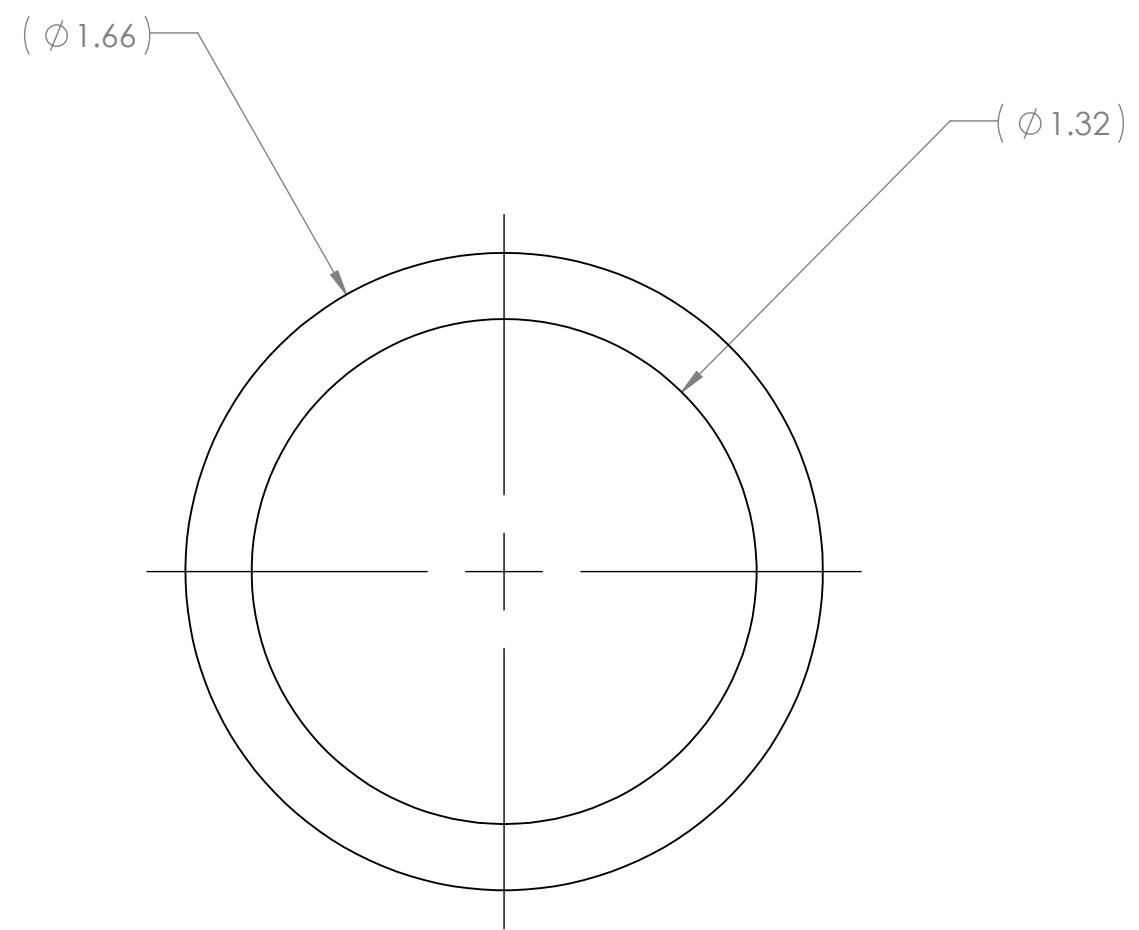
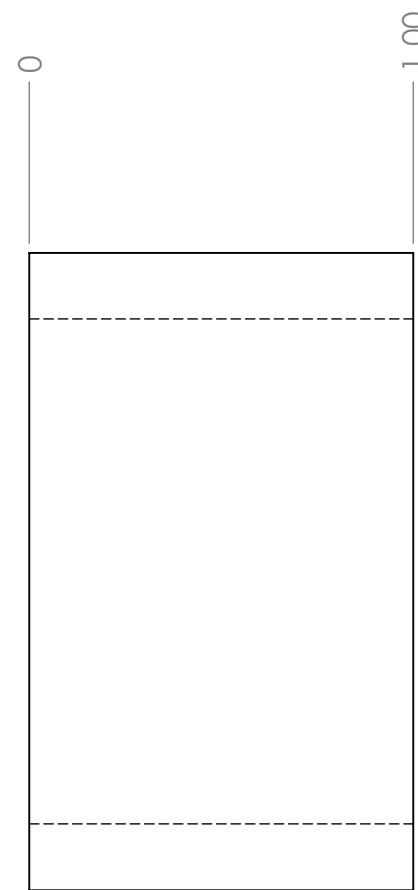
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Notes:

1. GE-18039-01
2. 1 1/4" Schedule 40 Aluminum Pipe

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
B	GE-18039				
SCALE: 1:8	WEIGHT:				
		SHEET 5 OF 5			

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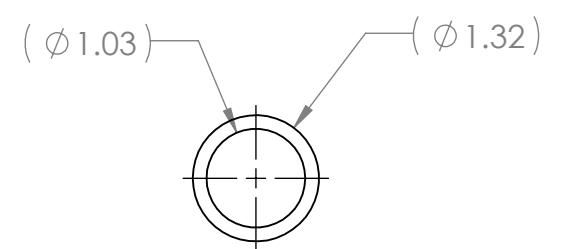
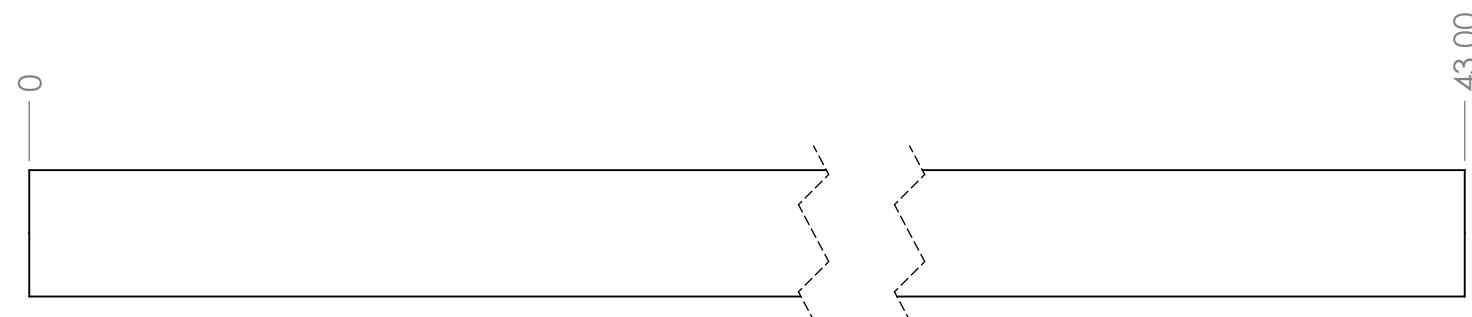
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Notes:

1. 1.1" Schedule 40 Aluminum Pipe
2. Remove all sharp edges and burrs

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
B	GE-18040				
SCALE: 1:2	WEIGHT:	SHEET 1 OF 1			

4

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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B4	1	Added holes are 3.35 and 42	11/20/2017	MXS

B

B



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Notes:

1. 1/8" thk. clear polycarbonate
2. Remove all sharp edges and burrs

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE	DWG. NO.	REV		
B	GE-18041	1		
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1		

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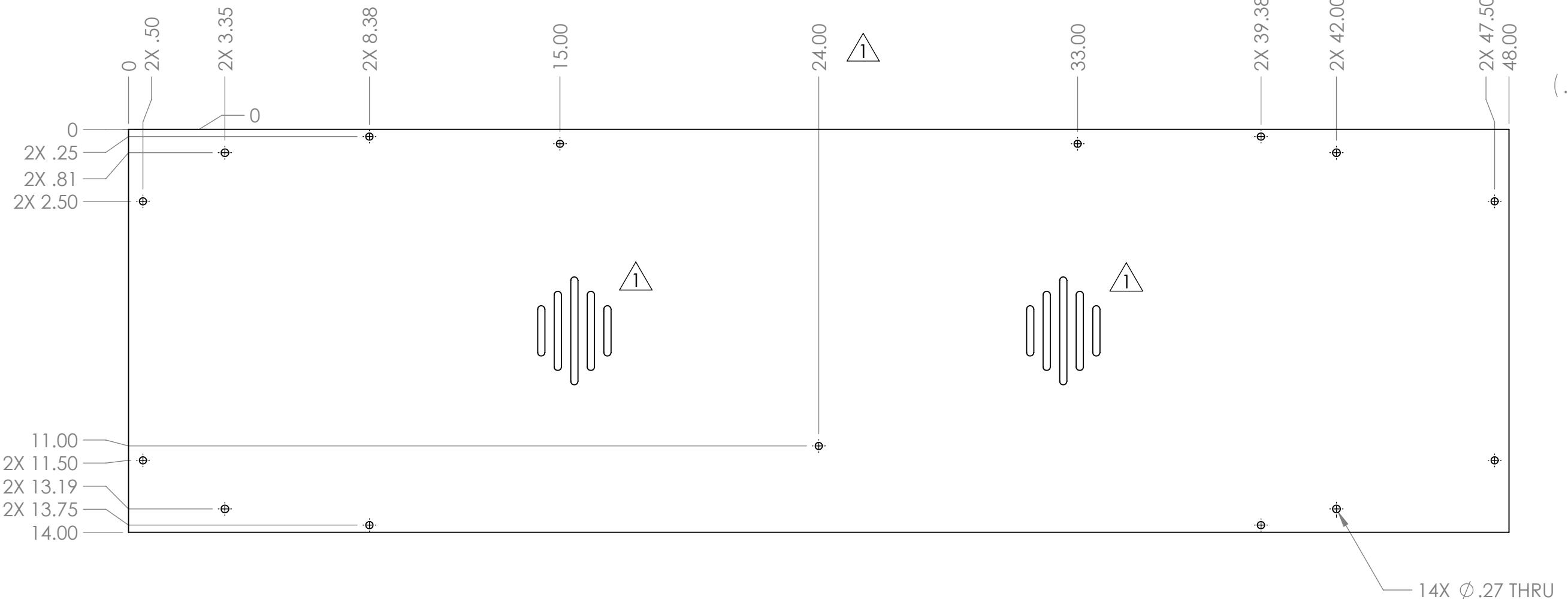
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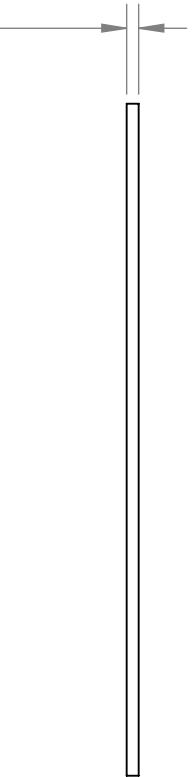
REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B3	1	Moved hole at 23.53 to center, added vent holes	11/16/2017	MXS

B



B



Notes:

1. 1/4" thk. smooth HDPE, red or blue
2. Remove all sharp edges and burrs

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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:		Q.A.	COMMENTS:	
MATERIAL				
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Vault HDPE Top

SIZE	DWG. NO.	REV
B	GE-18044	1
SCALE: 1:4	WEIGHT:	SHEET 1 OF 2

4

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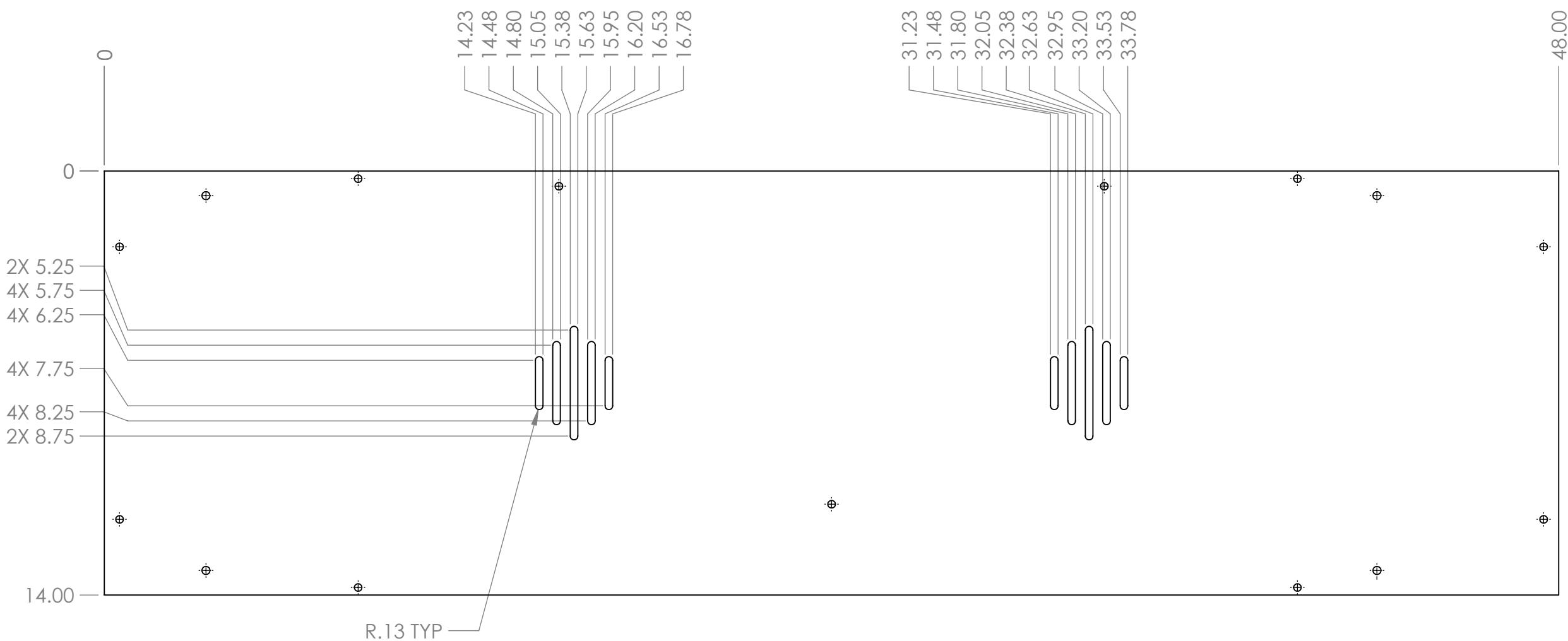
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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
B	GE-18044	1			
SCALE: 1:4	WEIGHT:	SHEET 2 OF 2			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Vault HDPE Top

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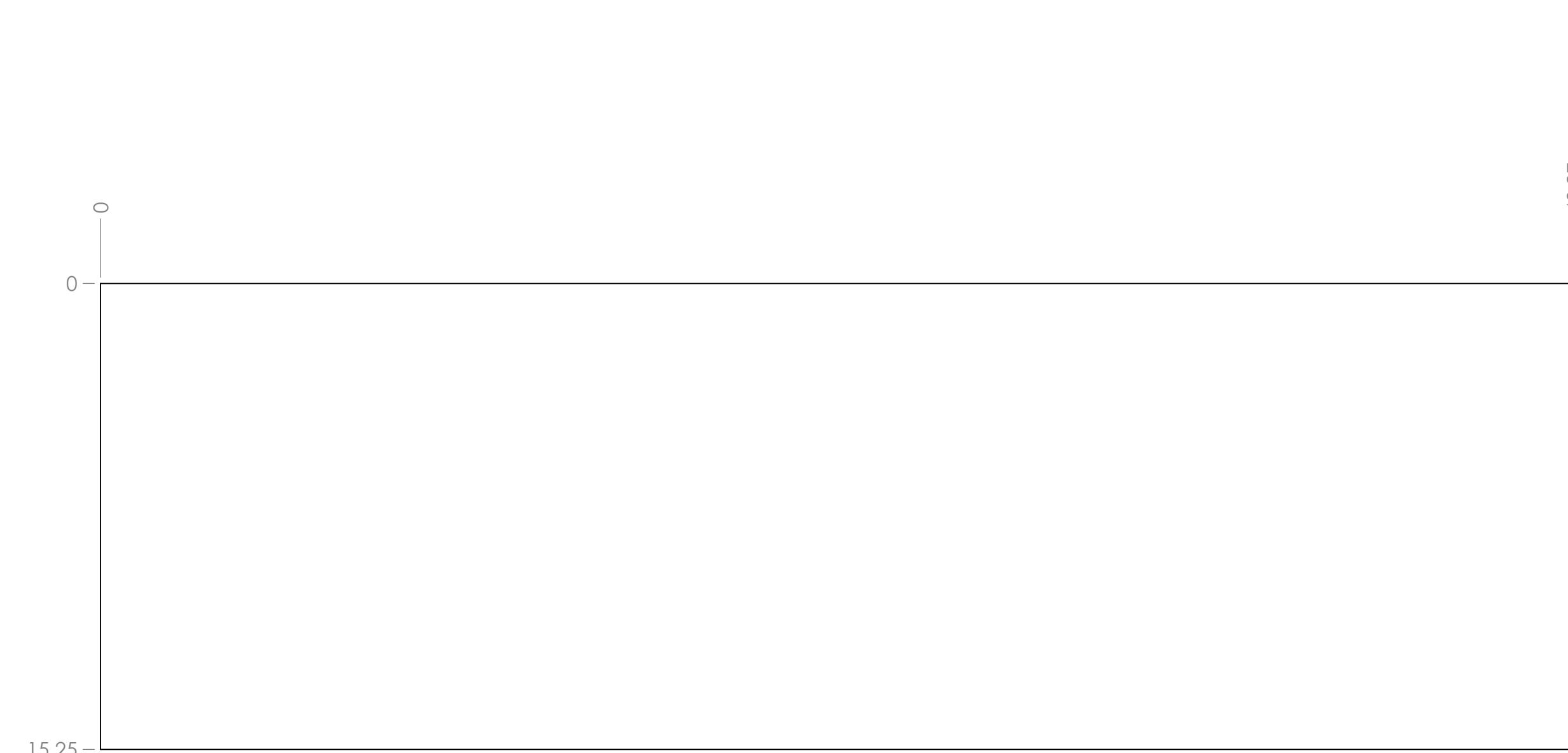
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15.25

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B

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Notes:

1. 1/8" thk. clear polycarbonate
2. Remove all sharp edges and burrs

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

FIRST ROBOTICS COMPETITION 
SOLIDWORKS
 Modeling Solutions Partner
TITLE: Vault Polycarbonate Bottom Front
SIZE DWG. NO. **B** GE-18045 **REV**
SCALE: 1:4 **WEIGHT:** **SHEET 1 OF 1**

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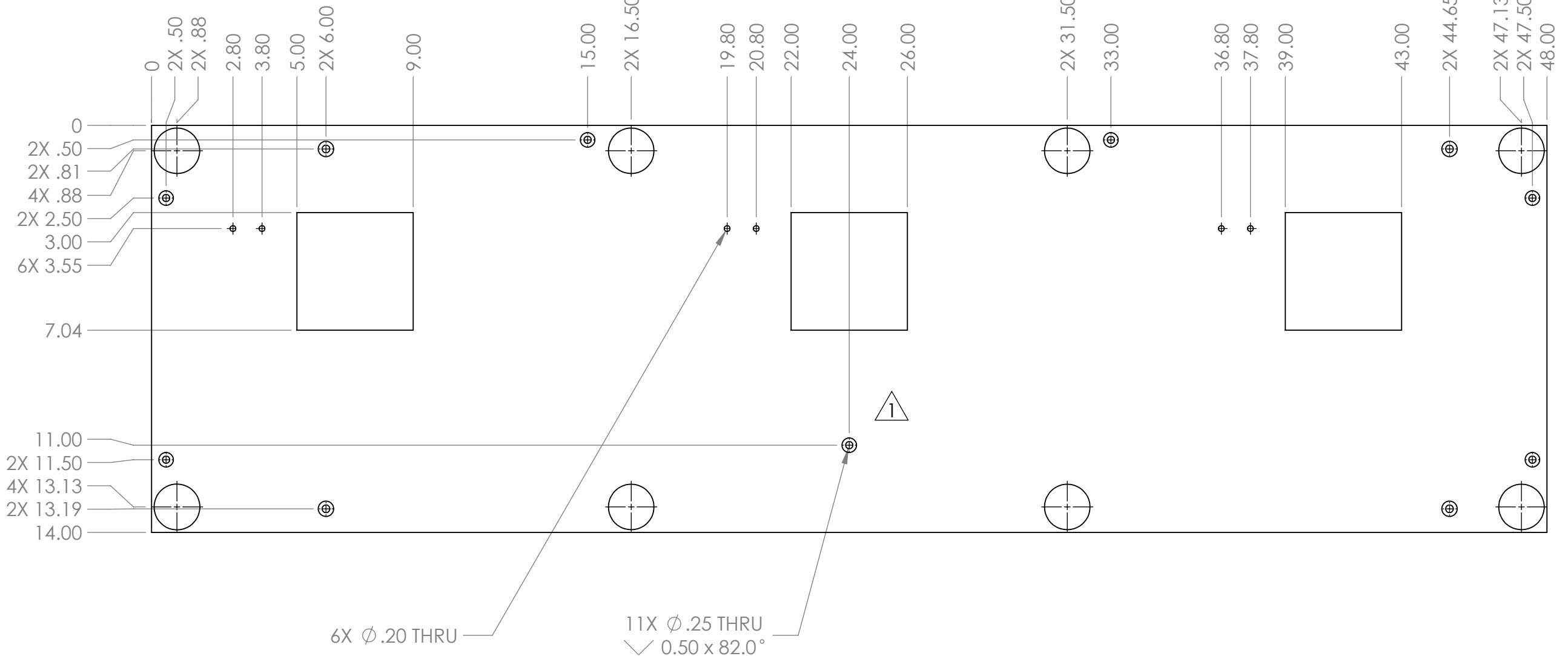
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	1	Hole moved to 24" (centered); countersunk all .25" holes	11/16/2017	MXS

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	
SIZE	DWG. NO.	REV	
B	GE-18046	1	
SCALE: 1:4	WEIGHT:	SHEET 1 OF 2	

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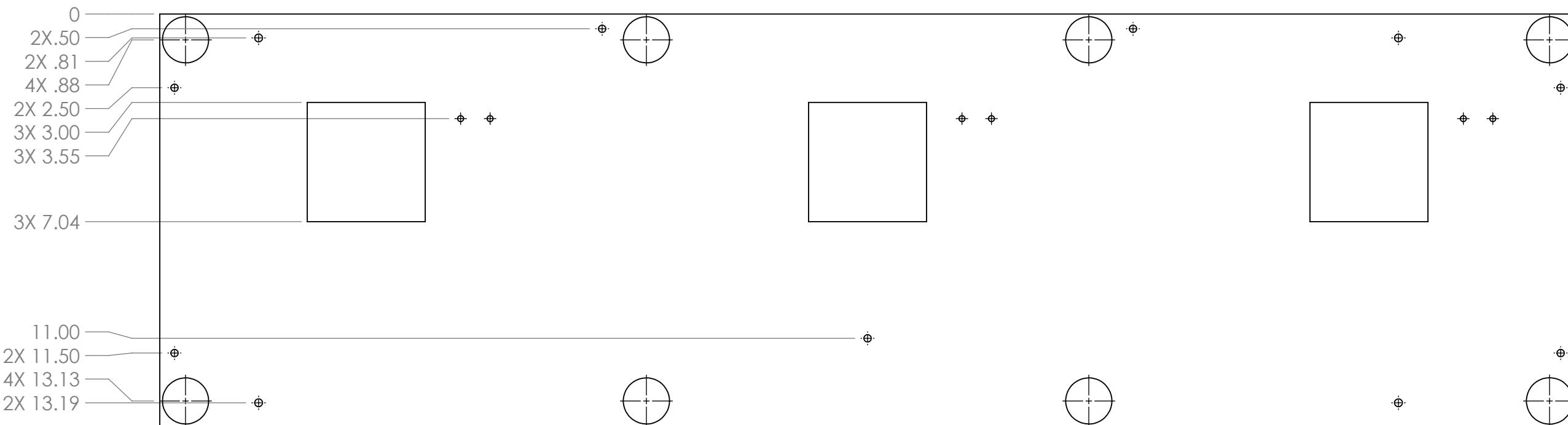
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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
	NEXT ASSY	USED ON	FINISH		
		APPLICATION	DO NOT SCALE DRAWING		

**FIRST
ROBOTICS
COMPETITION** **SOLIDWORKS**
Modeling Solutions Partner
TITLE: **Vault
Polycarbonate Top
Base**
SIZE **B** DWG. NO. **GE-18046** REV **1**
SCALE: 1:4 WEIGHT: **1** SHEET 2 OF 2

4

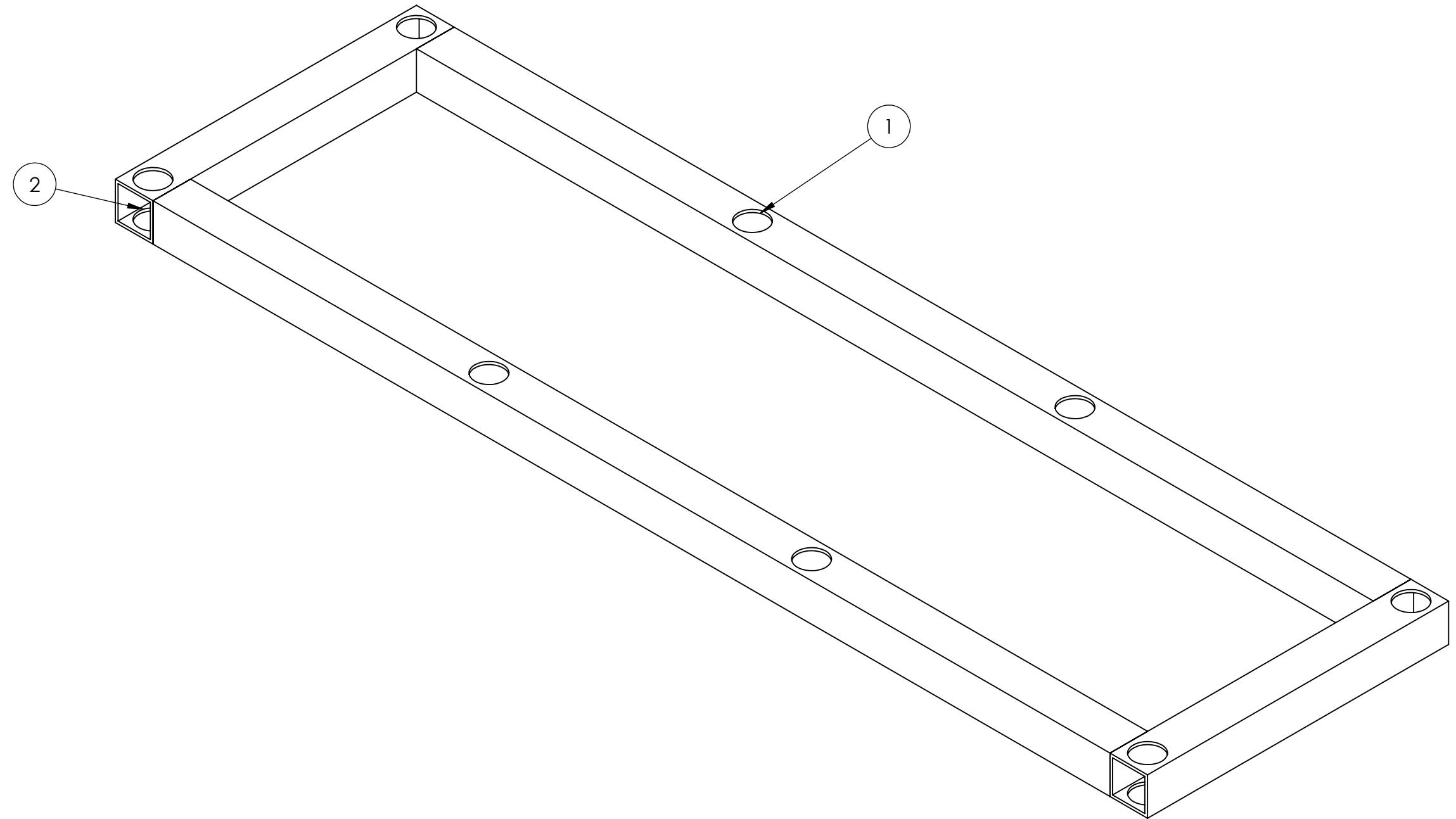
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18047-01	1 3/4", 1/8" Thick Square Tube, 6063 Aluminum	2
2	GE-18047-02	1 3/4", 1/8" Thick Square Tube, 6063 Aluminum	2

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS:	
		MATERIAL			
		FINISH			
	NEXT ASSY	USED ON			
	APPLICATION	DO NOT SCALE DRAWING			
SIZE	DWG. NO.		REV		
B	GE-18047				
SCALE: 1:4	WEIGHT:		SHEET 1 OF 3		

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

TITLE:
Vault Top Frame

4

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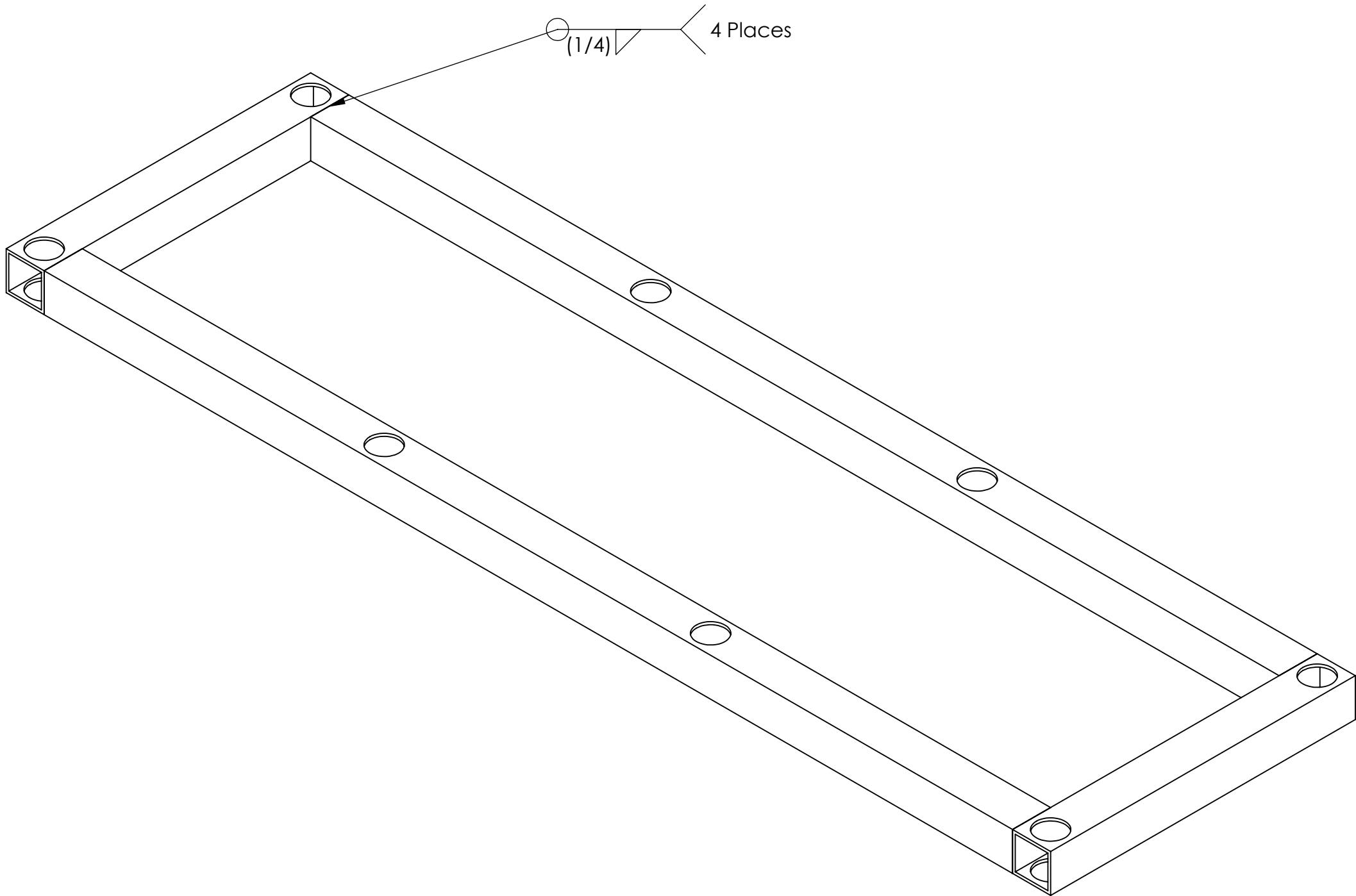
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18047-01	1 3/4", 1/8" Thick Square Tube, 6063 Aluminum	2
2	GE-18047-02	1 3/4", 1/8" Thick Square Tube, 6063 Aluminum	2

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
	NEXT ASSY	USED ON			
		APPLICATION	DO NOT SCALE DRAWING		
SIZE	DWG. NO.			REV	
B	GE-18047				
SCALE: 1:8	WEIGHT:			SHEET 2 OF 3	

FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE:
Vault Top Frame

4

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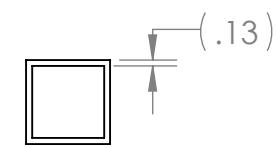
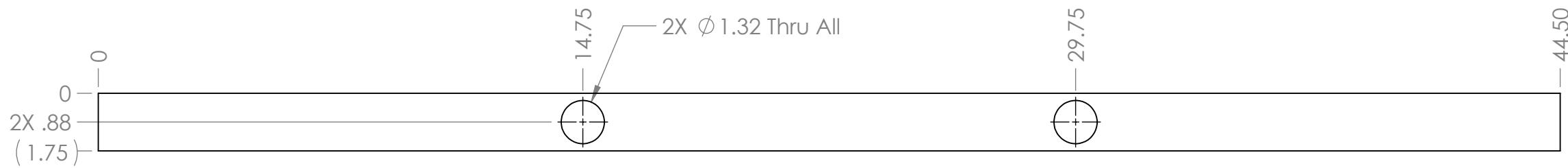
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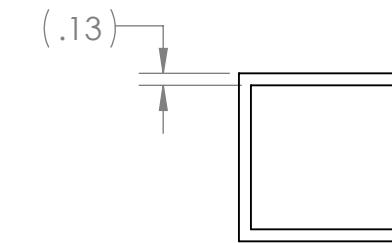
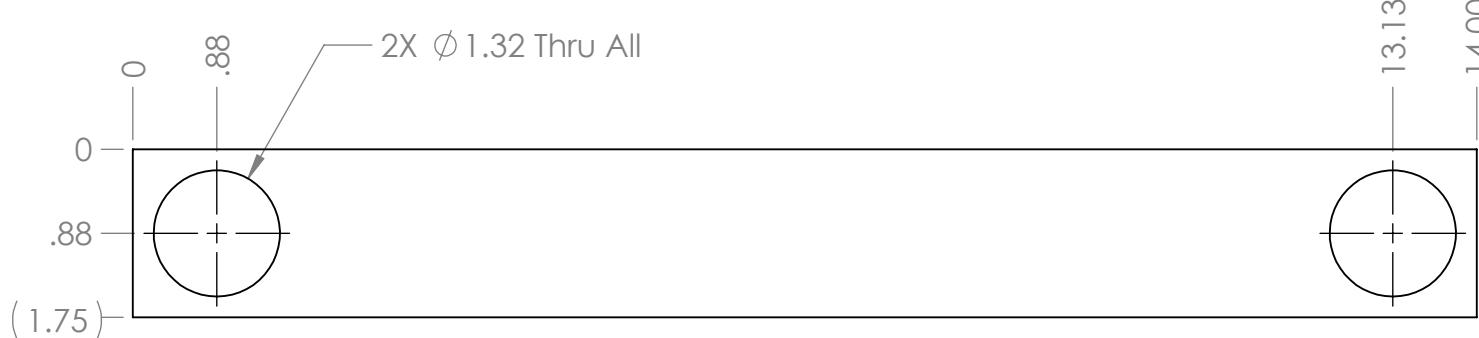
1

B

B



Item Number: GE-18047-01
 Material: 1 3/4", 1/8" Thick Square Tube, 6063 Aluminum
 Qty: 2



Item Number: GE-18047-02
 Material: 1 3/4", 1/8" Thick Square Tube, 6063 Aluminum
 Qty: 2

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE	DWG. NO.		REV	
B	GE-18047			
SCALE: 1:8	WEIGHT:		SHEET 3 OF 3	

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
 Modeling Solutions Partner

TITLE:
Vault Top Frame

4

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2

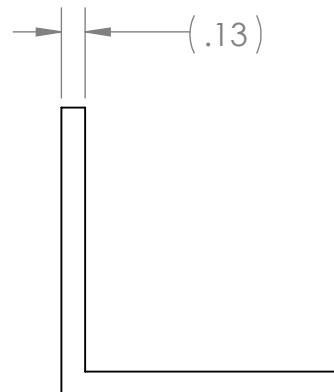
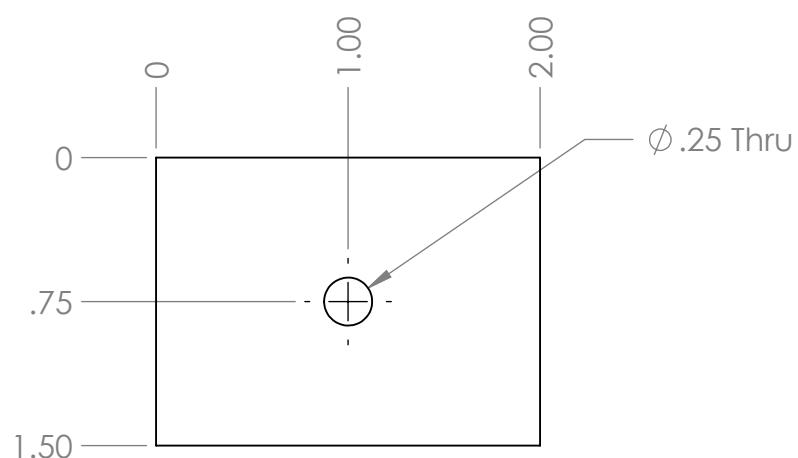
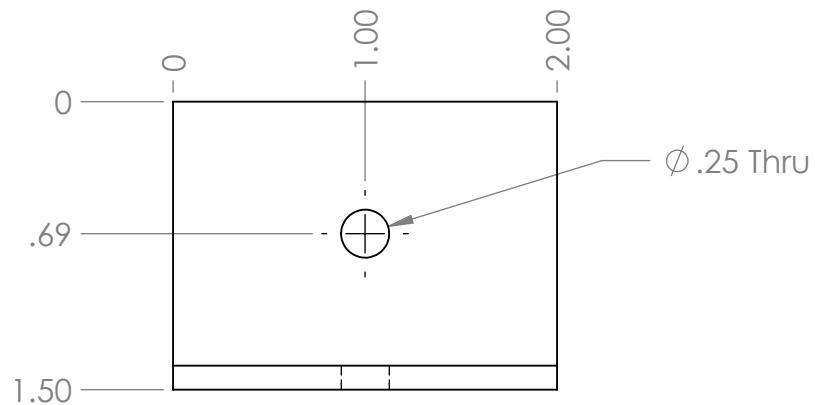
1

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B

B



Notes:
 1. Material: 1-1/2" 1/8" Thick
 Aluminum Angle
 2. Remove all burrs and 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					
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING					



SOLIDWORKS
Modeling Solutions Partner

TITLE:

Vault Bracket

SIZE	DWG. NO.	REV
A	GE-18048	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

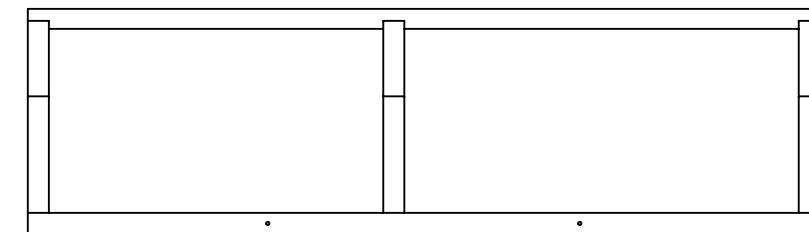
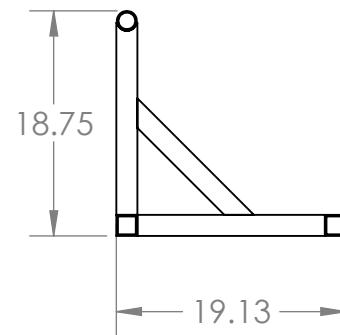
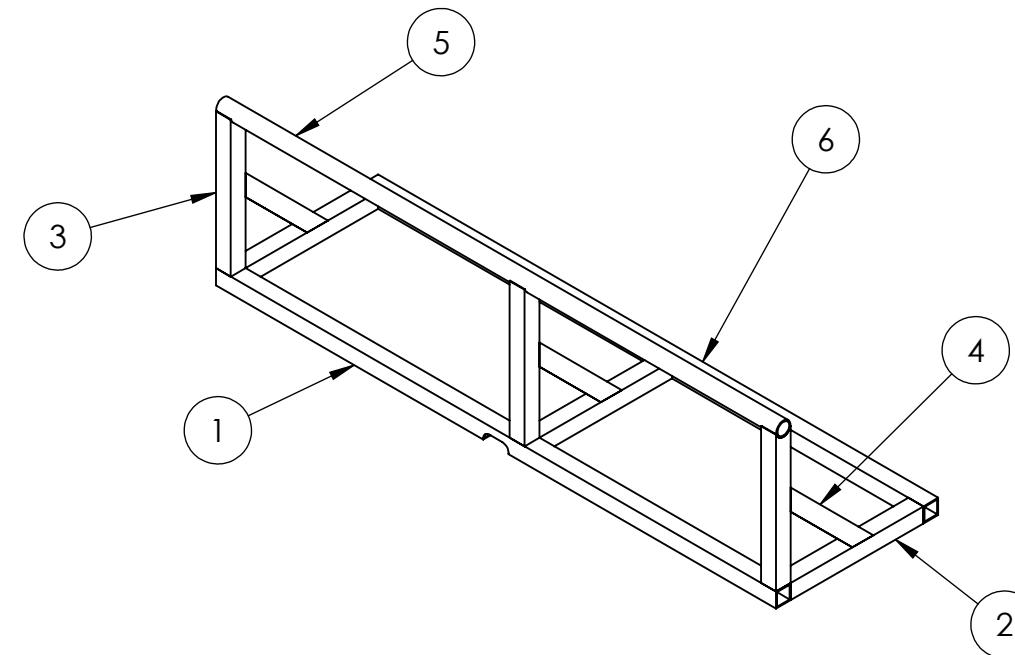
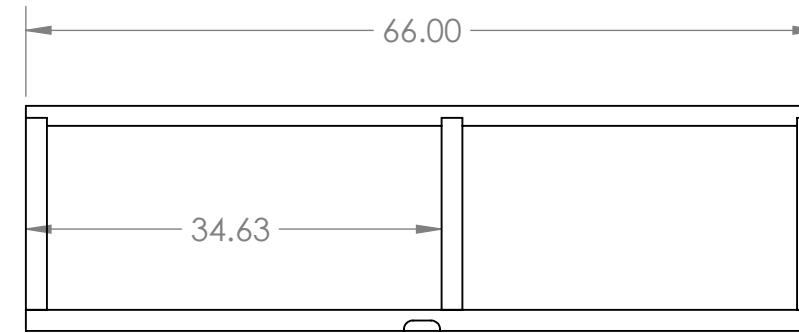
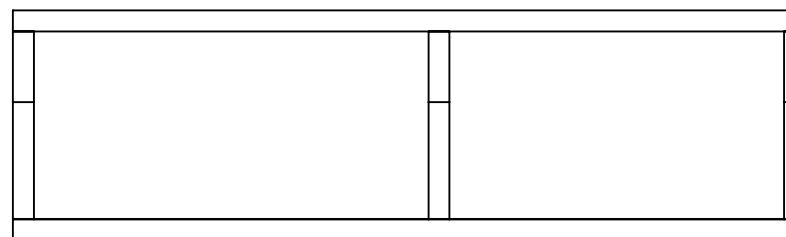
2

1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A1, 3-A2	1	Added two holes to GE-18051-06	11/21/17	CPO

B



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18051-01	1.75" x .125" thk. Square Tube, 6061 Aluminum	1
2	GE-18051-02	1.75" x .125" thk. Square Tube, 6061 Aluminum	3
3	GE-18051-03	1.75" x .125" thk. Square Tube, 6061 Aluminum	3
4	GE-18051-04	1.75" x .125" thk. Square Tube, 6061 Aluminum	3
5	GE-18051-05	1-1/4" Schedule 40 Pipe, 6061 Aluminum	1
6	GE-18051-06	1.75" x .125" thk. Square Tube, 6061 Aluminum	1

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
		APPLICATION	DO NOT SCALE DRAWING		
SIZE	DWG. NO.	REV			
B	GE-18051	1			
SCALE: 1:16	WEIGHT:	SHEET 1 OF 3			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Side Frame,
Fence

4

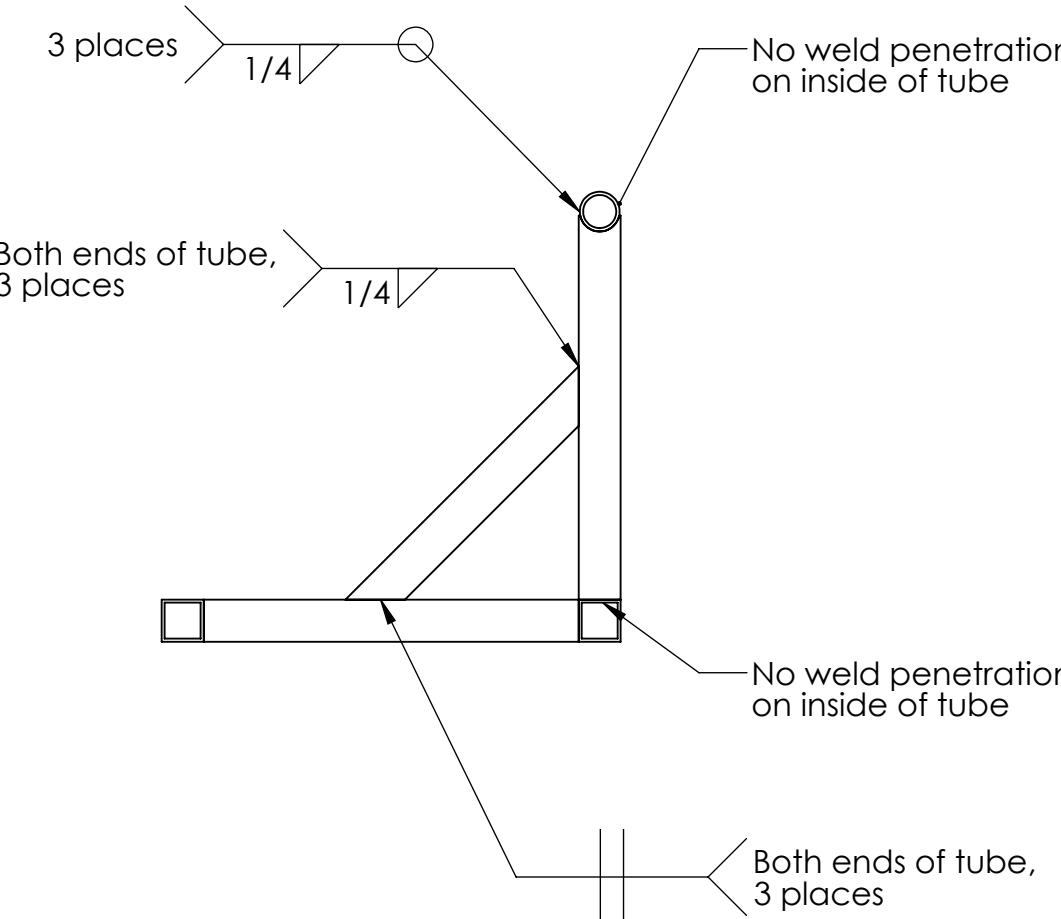
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES		DRAWN	
		TOLERANCES:		CHECKED	
		FRACTIONAL: $\pm 1/16$		ENG APPR.	
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$		MFG APPR.	
		TWO PLACE DECIMAL $\pm .01$		Q.A.	
		THREE PLACE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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Title: Side Frame, Fence

Size: B **Dwg. No.:** GE-18051 **Rev.:** 1

Scale: 1:8 **Weight:** **Sheet 2 of 3**

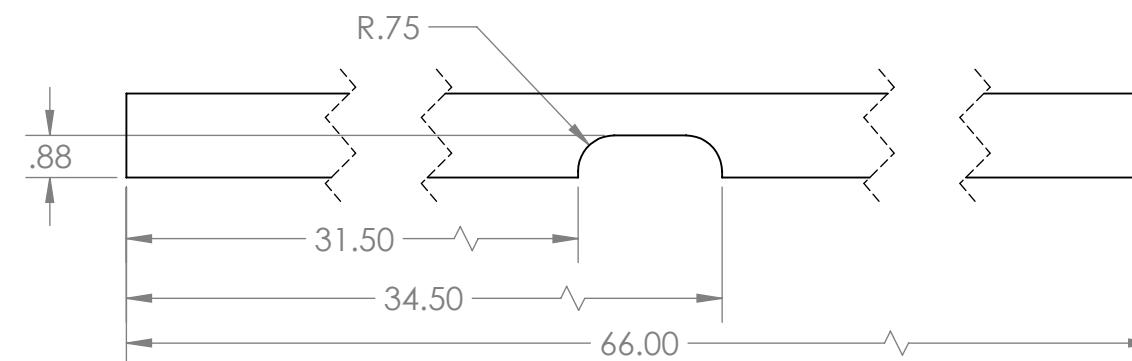
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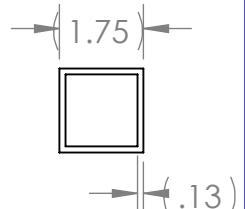
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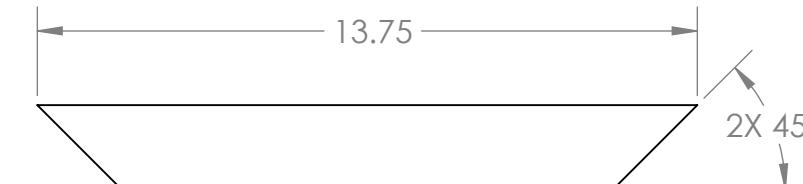


Item: GE-18051-01
Qty: 1
Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum

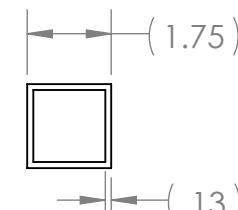
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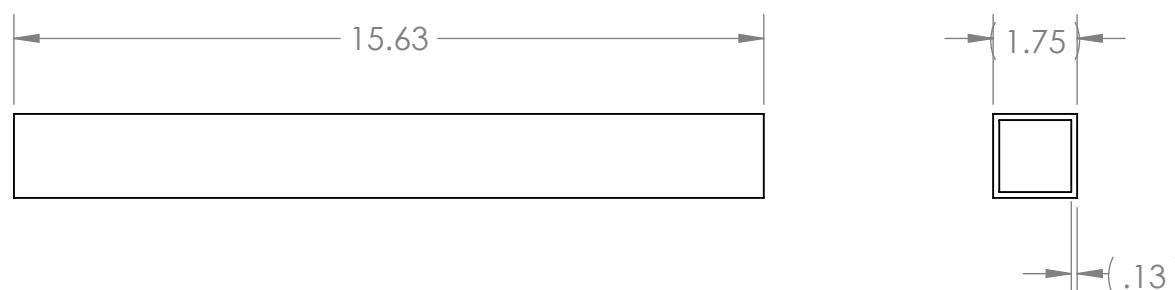


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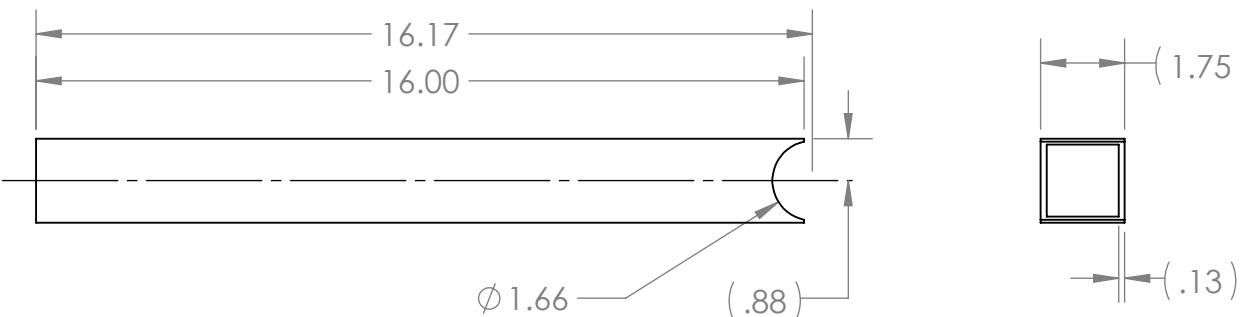
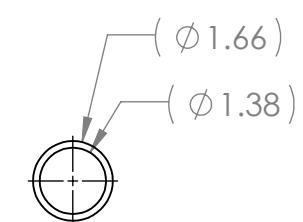


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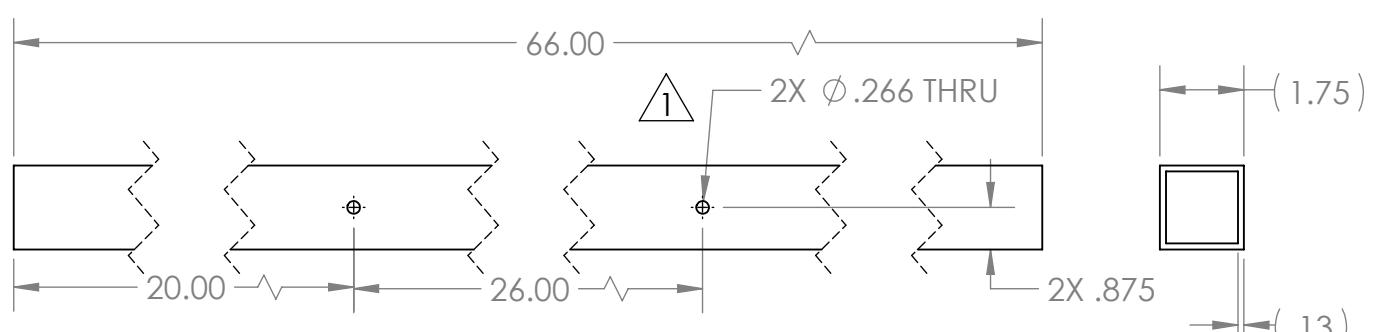
Item: GE-18051-02
Qty: 3
Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum



Item: GE-18051-03
Qty: 3
Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum

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Item: GE-18051-04
Qty: 3
Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum



Item: GE-18051-06
Qty: 1
Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Side Frame, Fence

SIZE	DWG. NO.	REV
B	GE-18051	1
SCALE: 1:4	WEIGHT:	SHEET 3 OF 3

4

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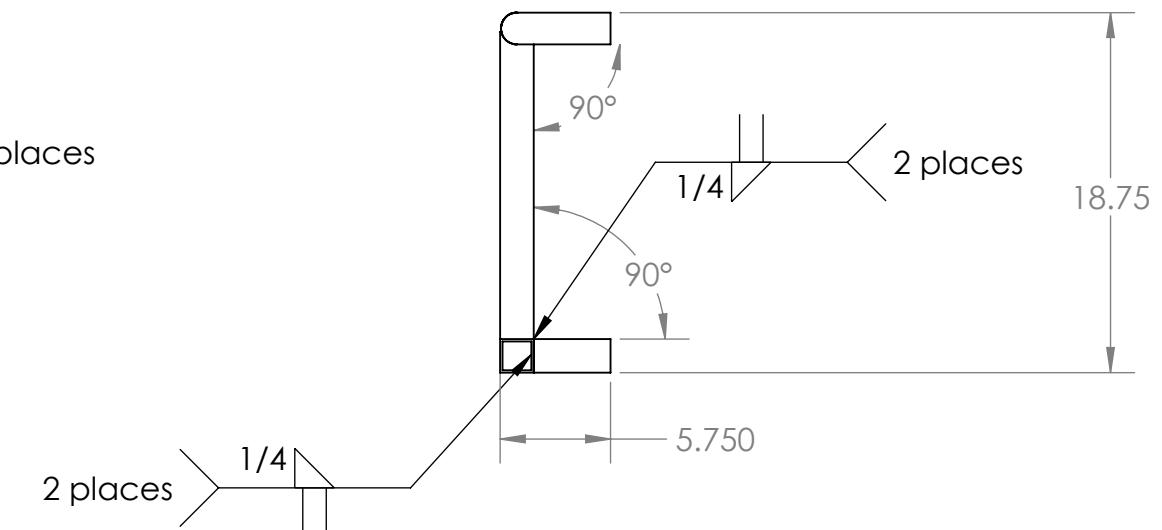
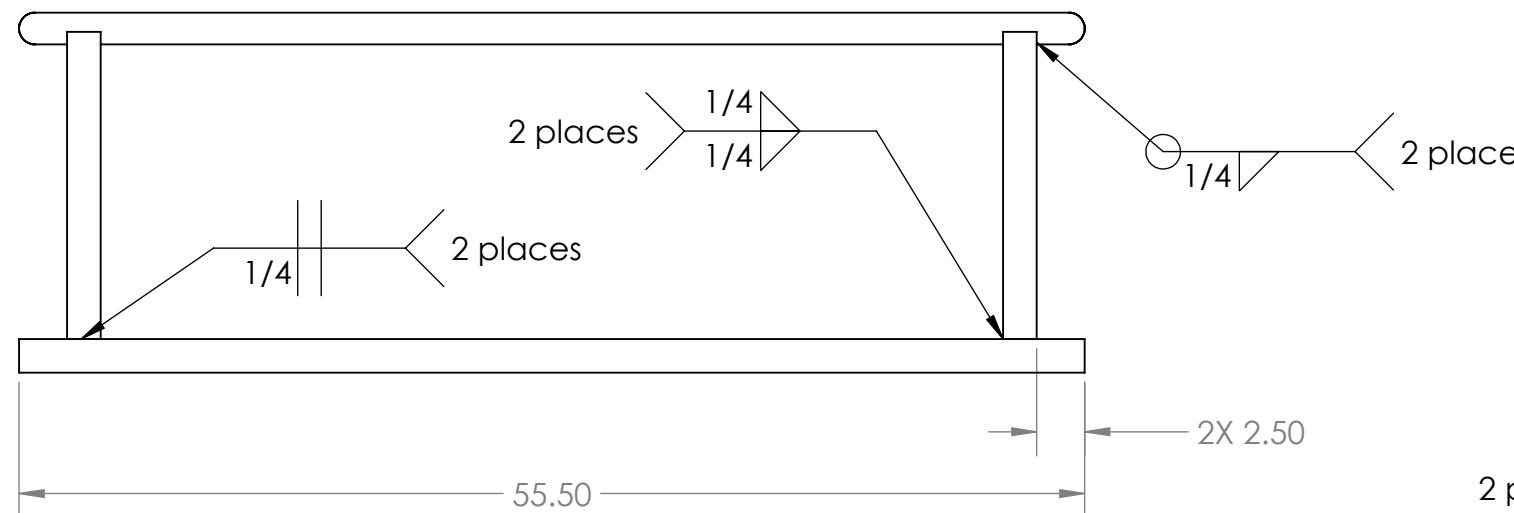
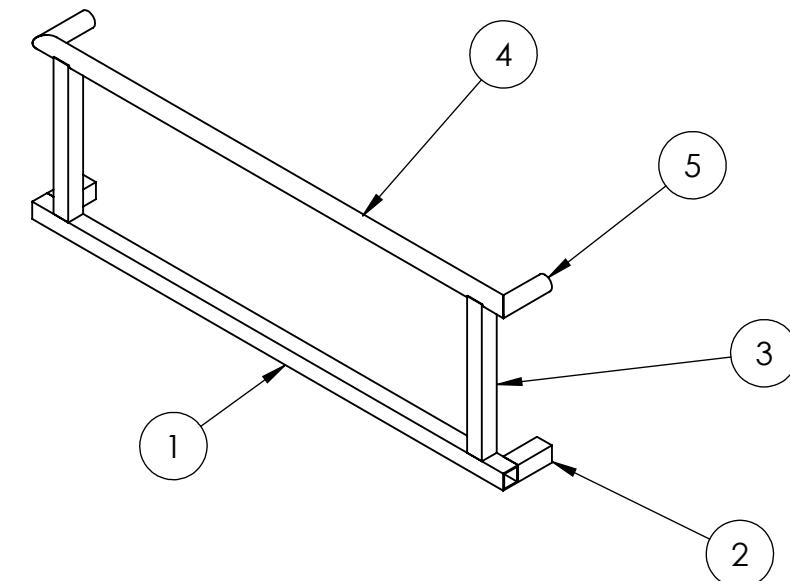
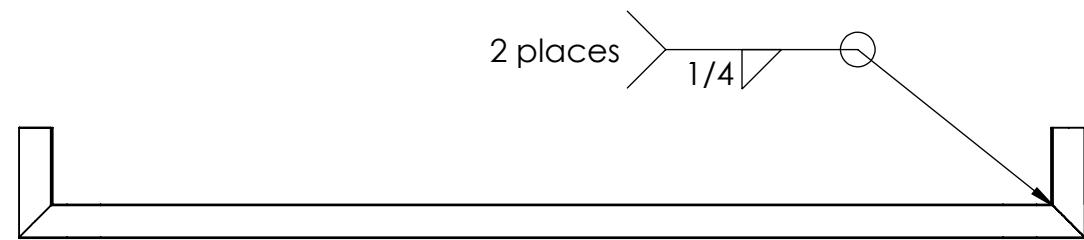
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1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18052-01	1.75" x .125" thk. Square Tube, 6061 Aluminum	1
2	GE-18052-02	1.75" x .125" thk. Square Tube, 6061 Aluminum	2
3	GE-18052-03	1.75" x .125" thk. Square Tube, 6061 Aluminum	2
4	GE-18052-04	1-1/4" Schedule 40 Pipe, 6061 Aluminum	1
5	GE-18052-05	1-1/4" Schedule 40 Pipe, 6061 Aluminum	2

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INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:	
MATERIAL	NEXT ASSY USED ON	
FINISH	APPLICATION	
DO NOT SCALE DRAWING	SIZE DWG. NO. REV	
B GE-18052		SCALE: 1:10 WEIGHT: SHEET 1 OF 2

**End Frame,
Fence**

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

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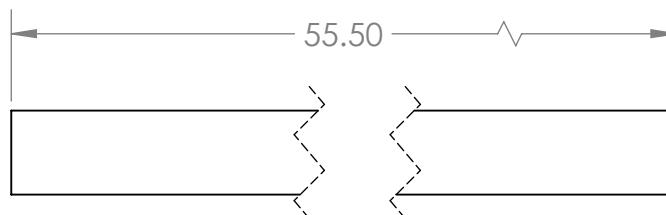
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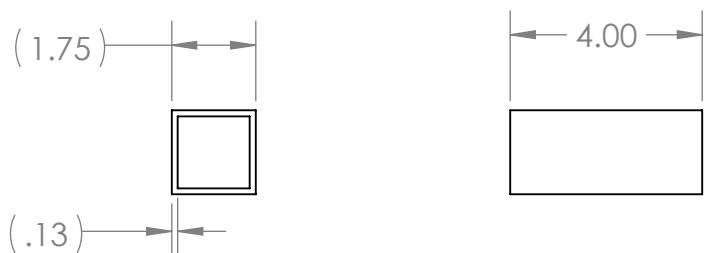
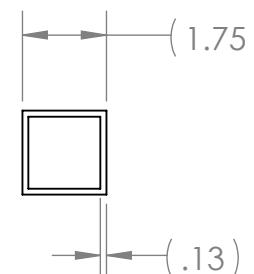
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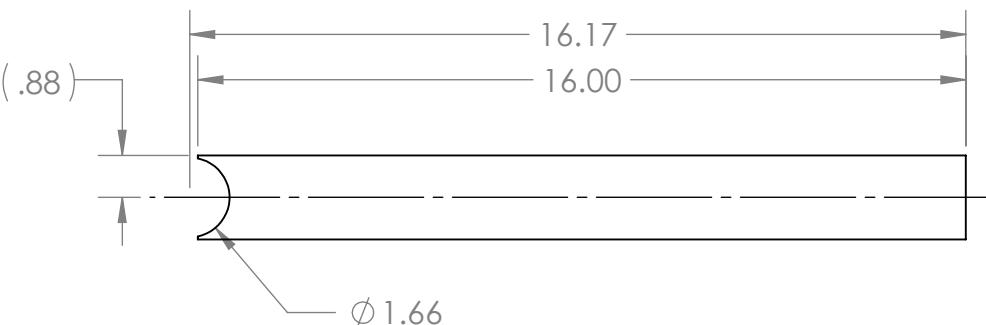
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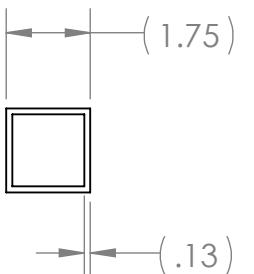
Item: GE-18052-01
Qty: 1
Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum



Item: GE-18052-02
Qty: 2
Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum



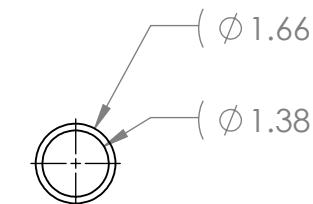
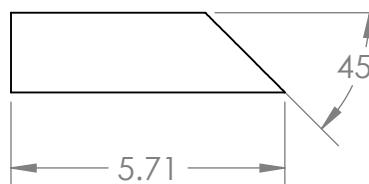
Item: GE-18052-03
Qty: 2
Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum



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Item: GE-18052-04
Qty: 1
Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum



Item: GE-18052-05
Qty: 2
Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: End Frame, Fence
SIZE: B **DWG. NO.:** GE-18052 **REV:**

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

4

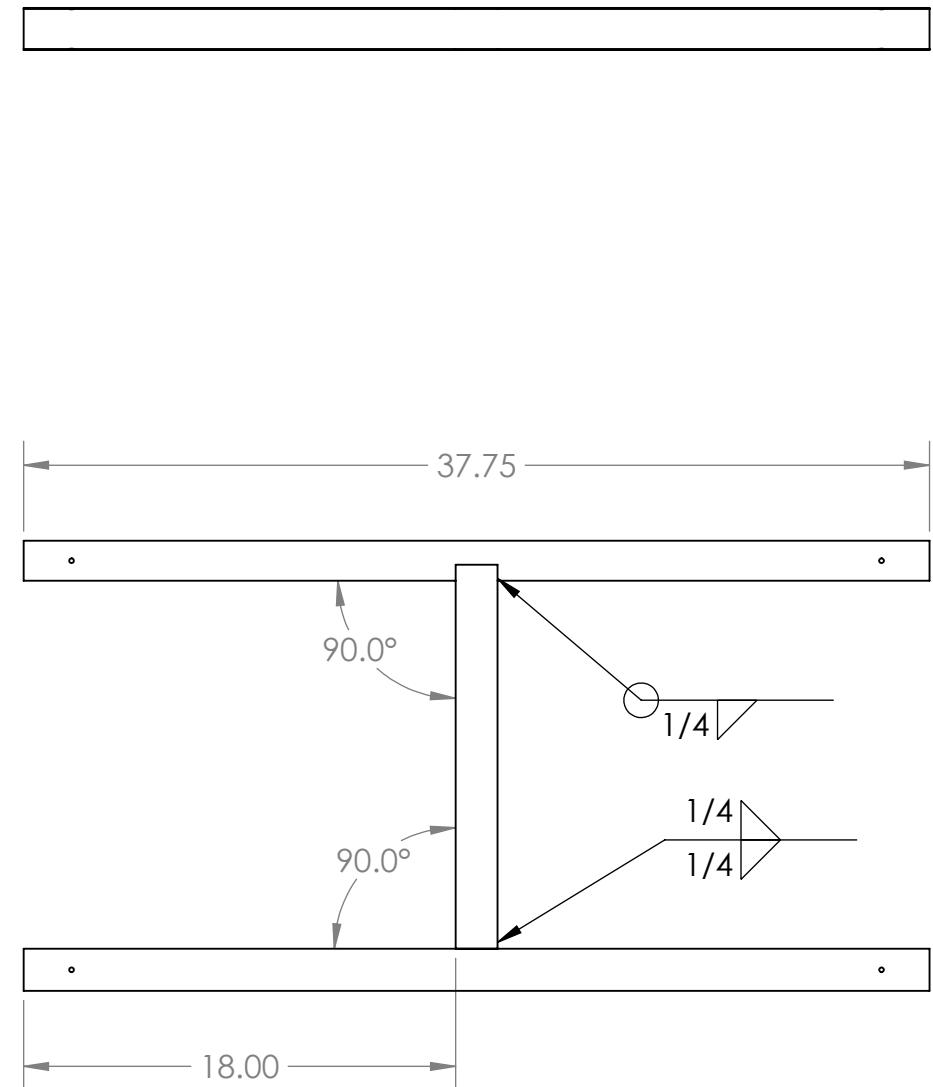
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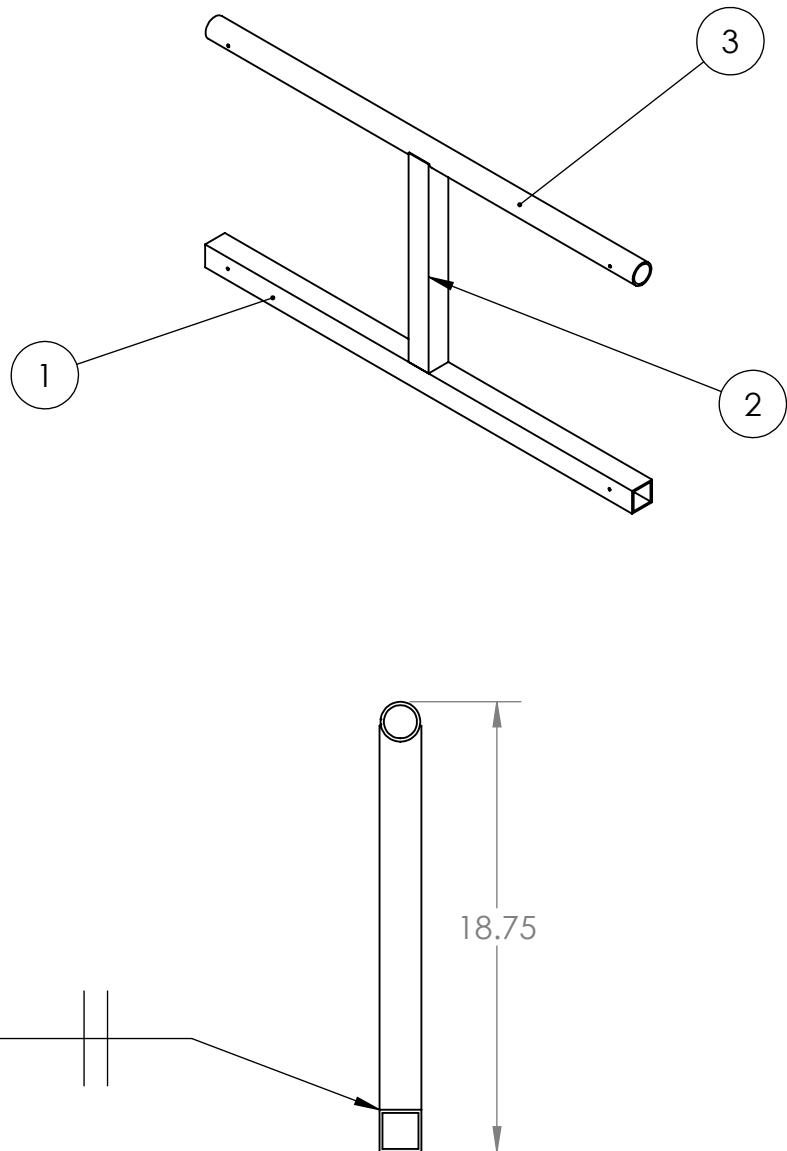
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18053-01	1.75" x .125" thk. Square Tube, 6061 Aluminum	1
2	GE-18053-02	1.75" x .125" thk. Square Tube, 6061 Aluminum	1
3	GE-18053-03	1-1/4" Schedule 40 Pipe, 6061 Aluminum	1

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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.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
	NEXT ASSY	USED ON		
		APPLICATION	DO NOT SCALE DRAWING	
SIZE	DWG. NO.	REV		
B	GE-18053			
SCALE: 1:8	WEIGHT:	SHEET 1 OF 2		

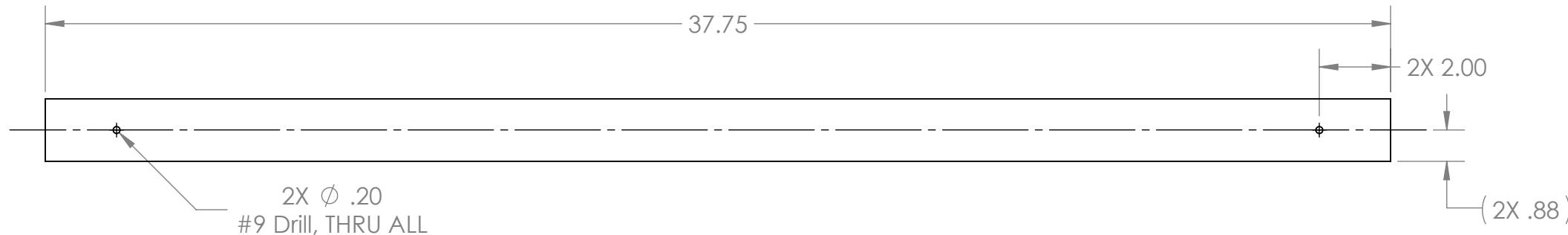


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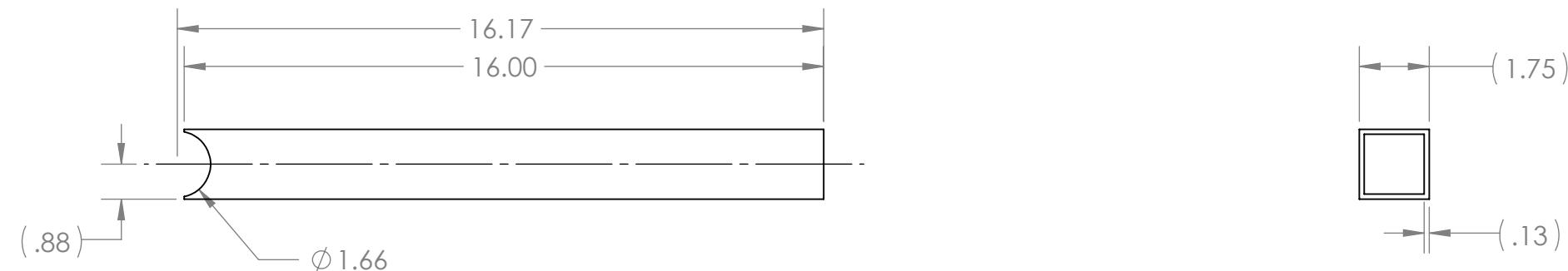
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Item: GE-18053-01

Qty: 1

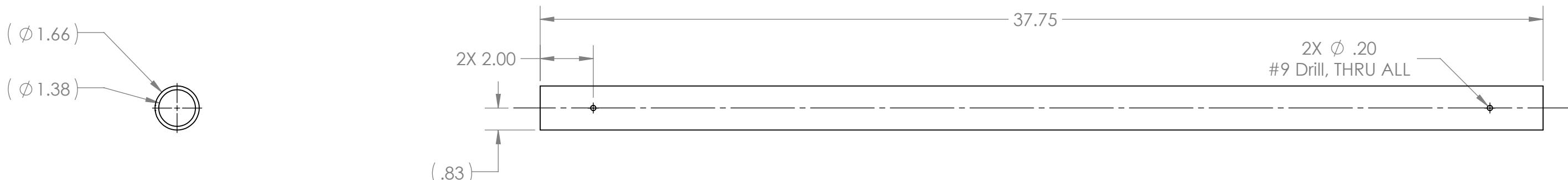
Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum



Item: GE-18053-02

Qty: 1

Material: 1.75" x .125" thk. Square Tube, 6061 Aluminum



Item: GE-18053-03

Qty: 1

Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Connecting Frame, Fence

SIZE	DWG. NO.	REV
B	GE-18053	
SCALE: 1:4	WEIGHT:	SHEET 2 OF 2

4

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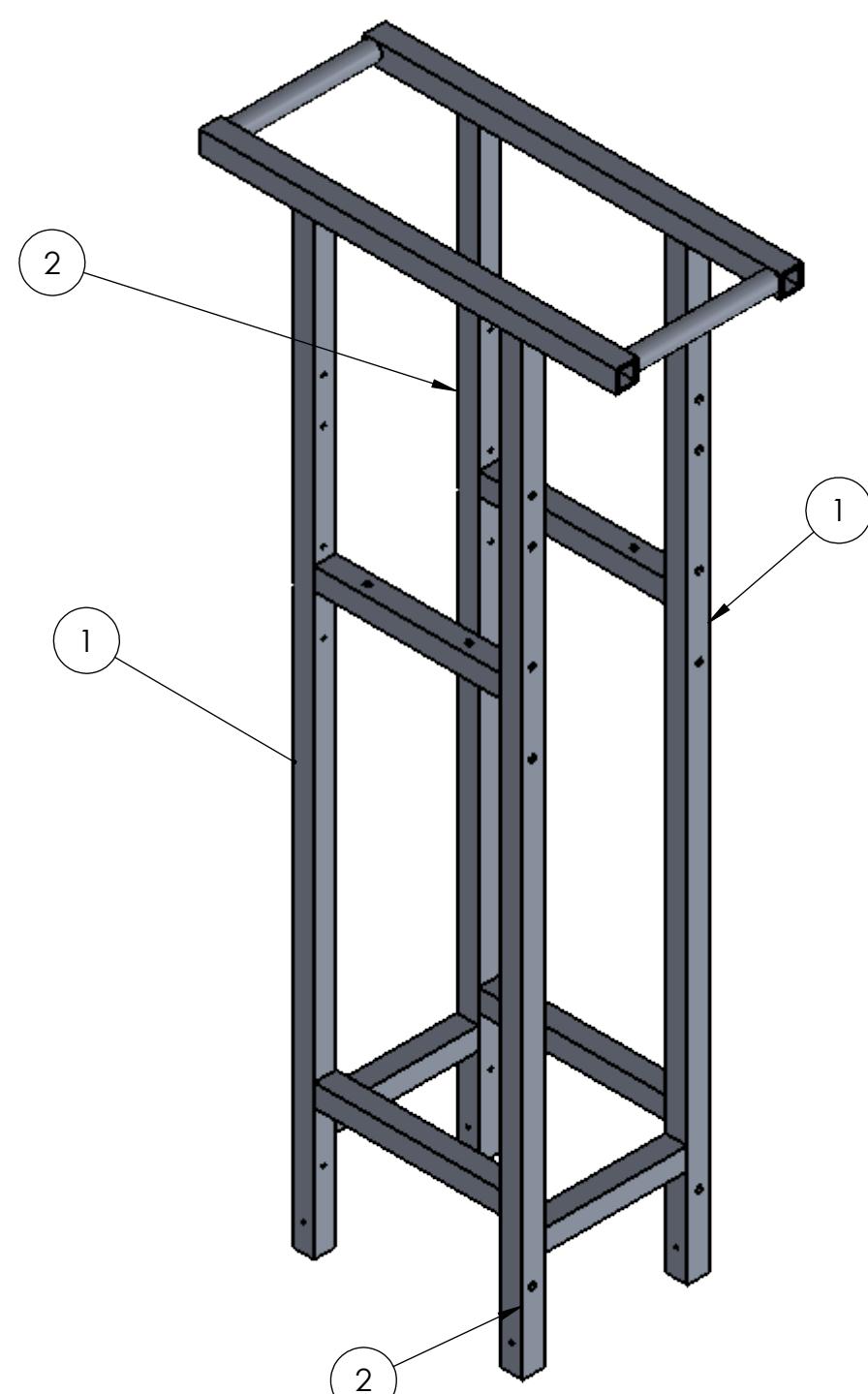
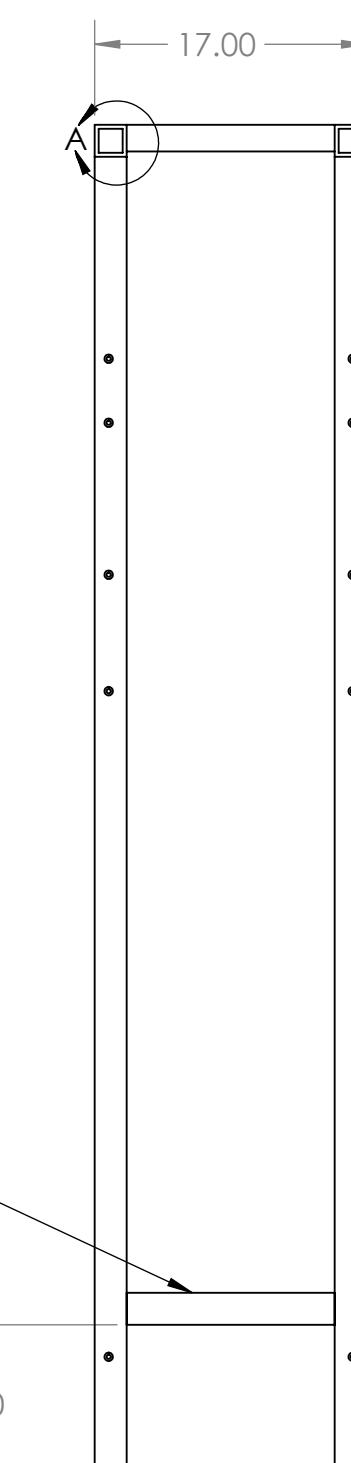
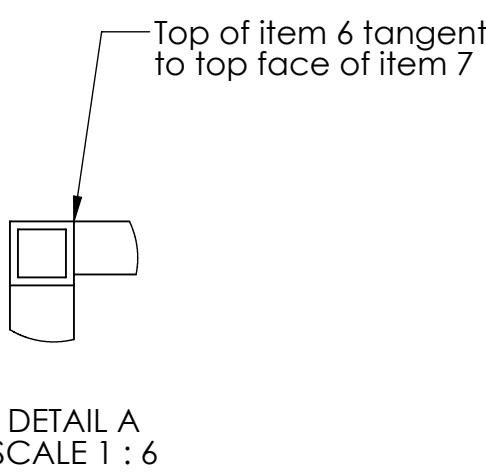
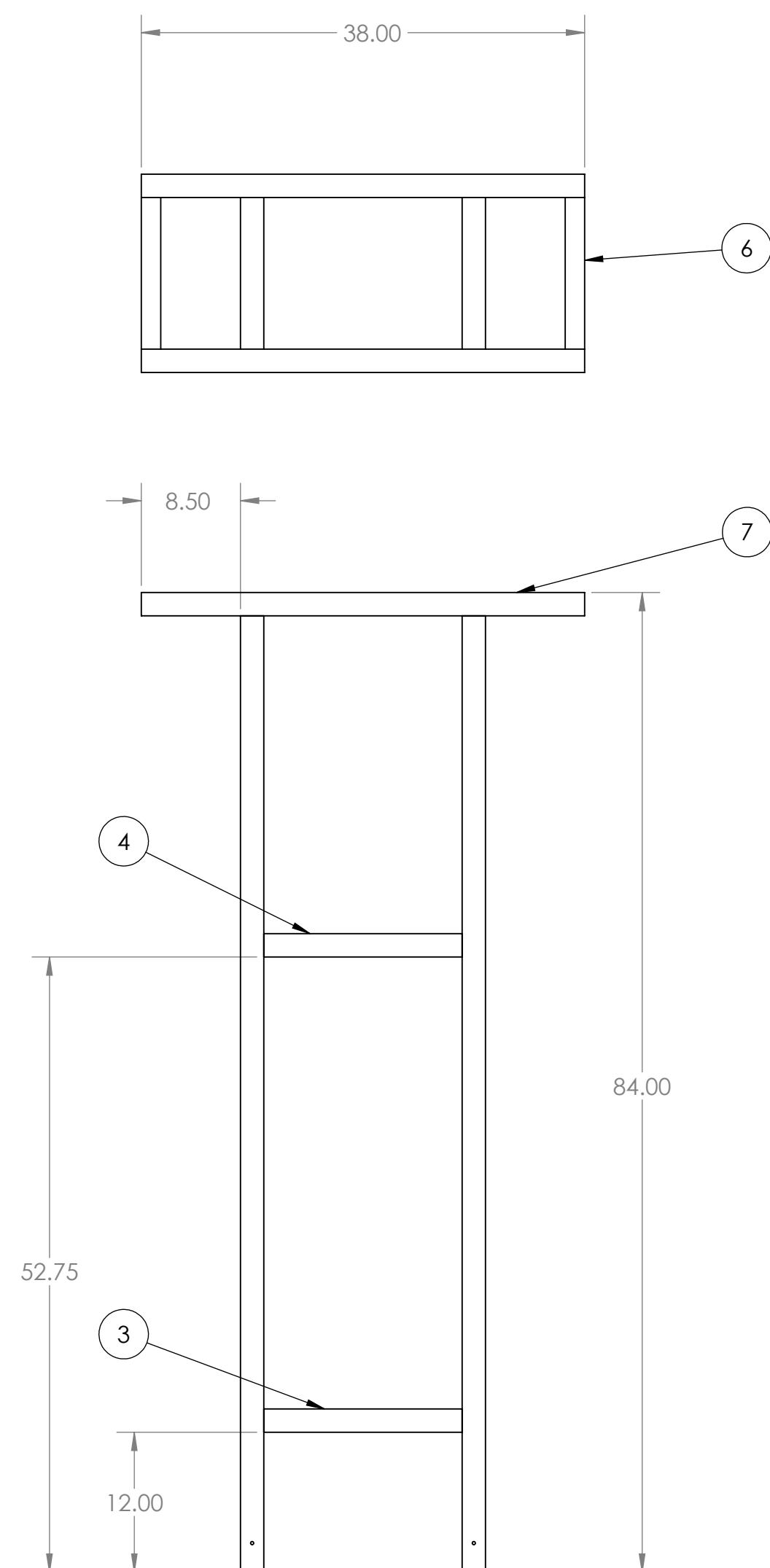
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D

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18054-1	2" x .25" thk. Square Tube, 6061 Aluminum	2
2	GE-18054-2	2" x .25" thk. Square Tube, 6061 Aluminum	2
3	GE-18054-3	2" x .25" thk. Square Tube, 6061 Aluminum	2
4	GE-18054-4	2" x .25" thk. Square Tube, 6061 Aluminum	2
5	GE-18054-5	2" x .25" thk. Square Tube, 6061 Aluminum	2
6	GE-18054-6	1-1/4" Schedule 40 Pipe, 6061 Aluminum	2
7	GE-18054-7	2" x .25" thk. Square Tube, 6061 Aluminum	2

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	DRAWN				
		TWO PLACE DECIMAL $\pm .01$	CHECKED				
		THREE PLACE DECIMAL $\pm .001$	ENG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	MFG APPR.				
		MATERIAL	Q.A.	COMMENTS:			
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING		SIZE	DWG. NO.	REV	
				C	GE-18054		
			SCALE: 1:12	WEIGHT:	SHEET 1 OF 6		

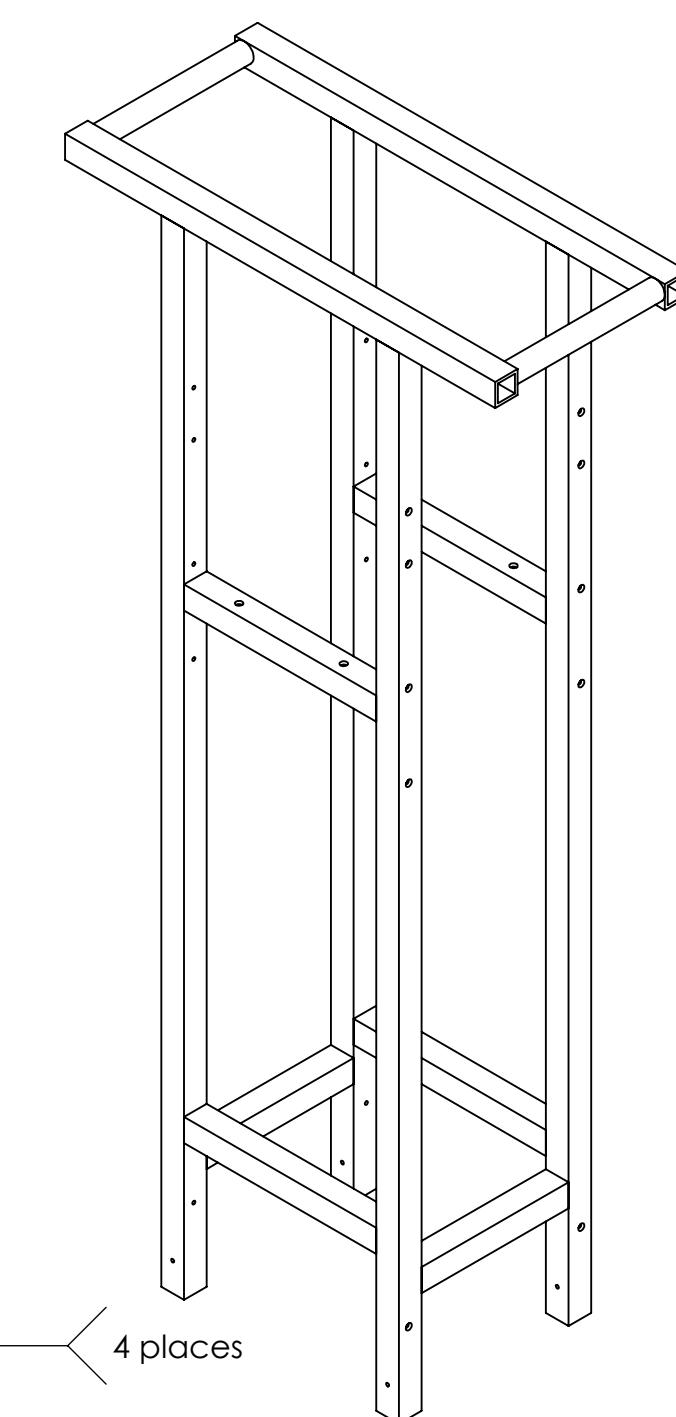
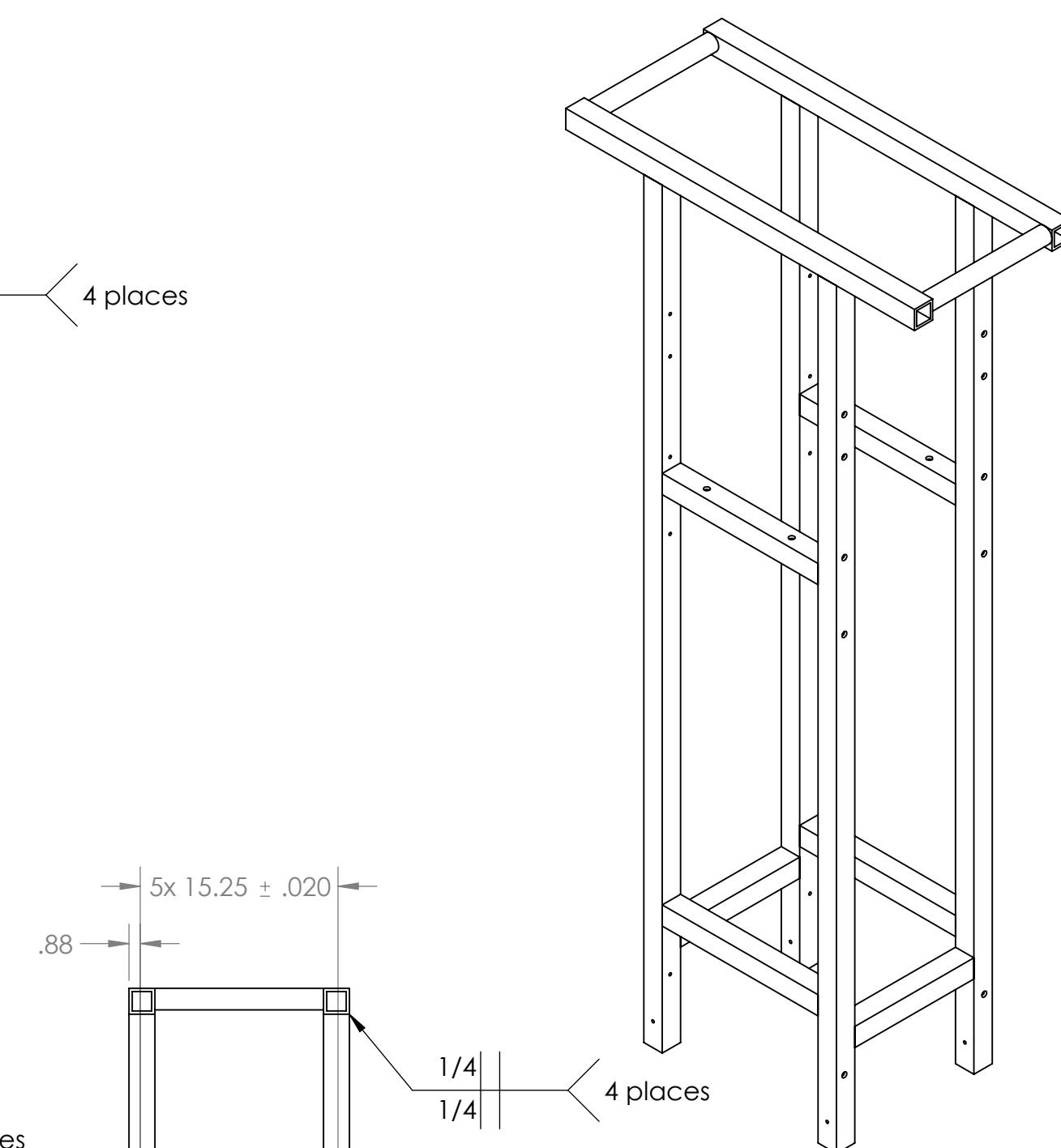
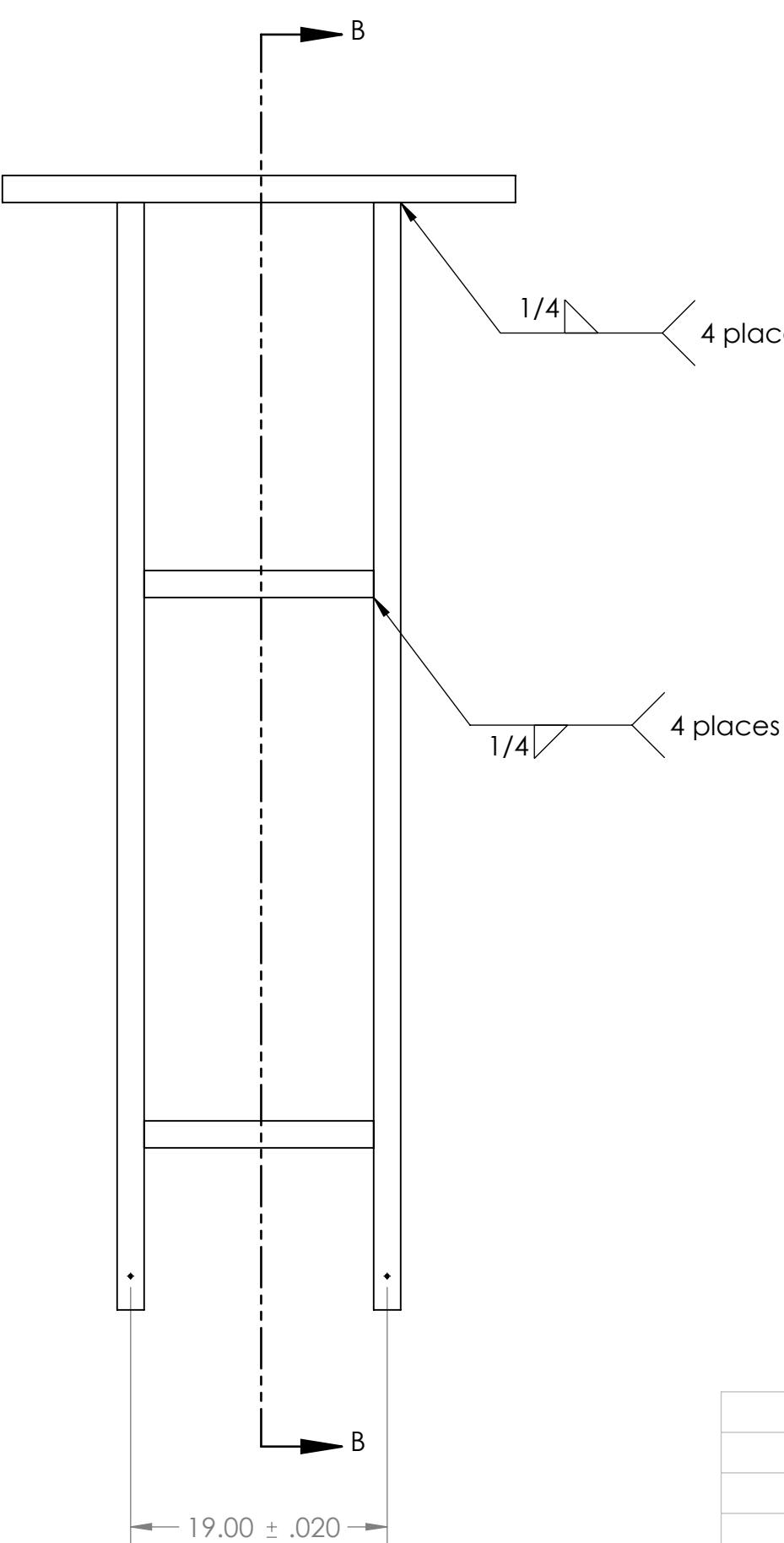
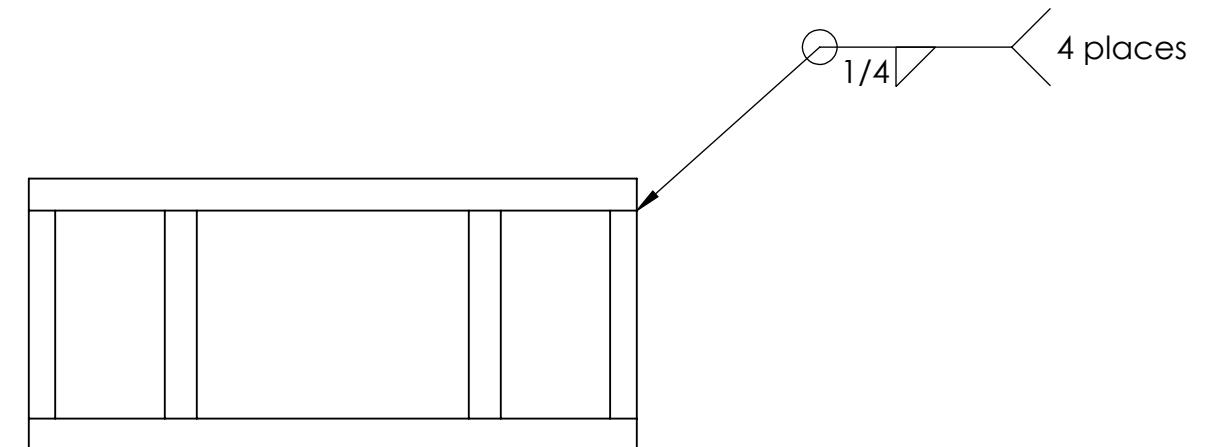
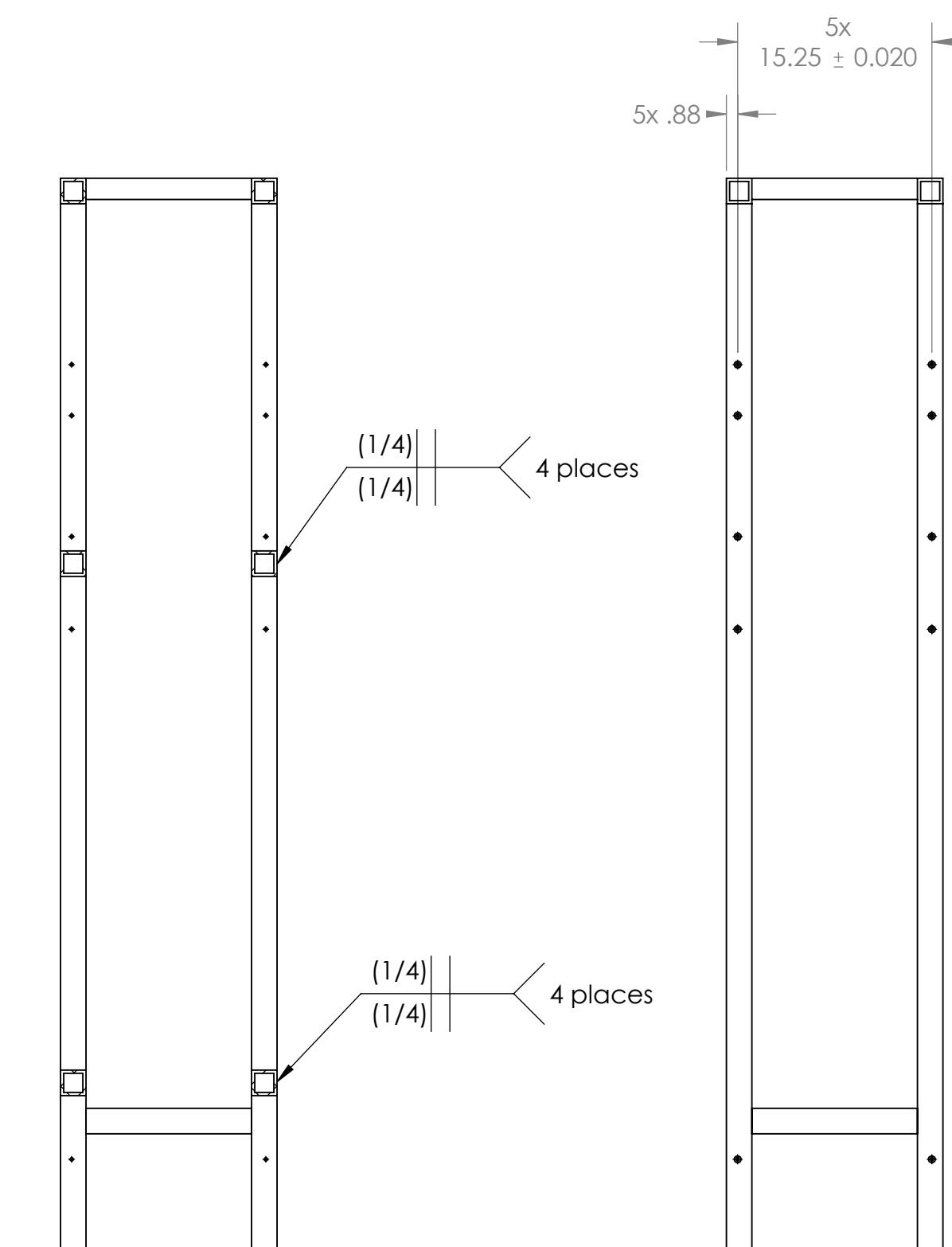
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SECTION B-B

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

FIRST[®] ROBOTICS COMPETITION  SOLIDWORKS
Modeling Solutions Partner

TITLE: Scale Frame

SIZE DWG. NO. REV
C GE-18054

SCALE: 1:12 WEIGHT: SHEET 2 OF 6

4

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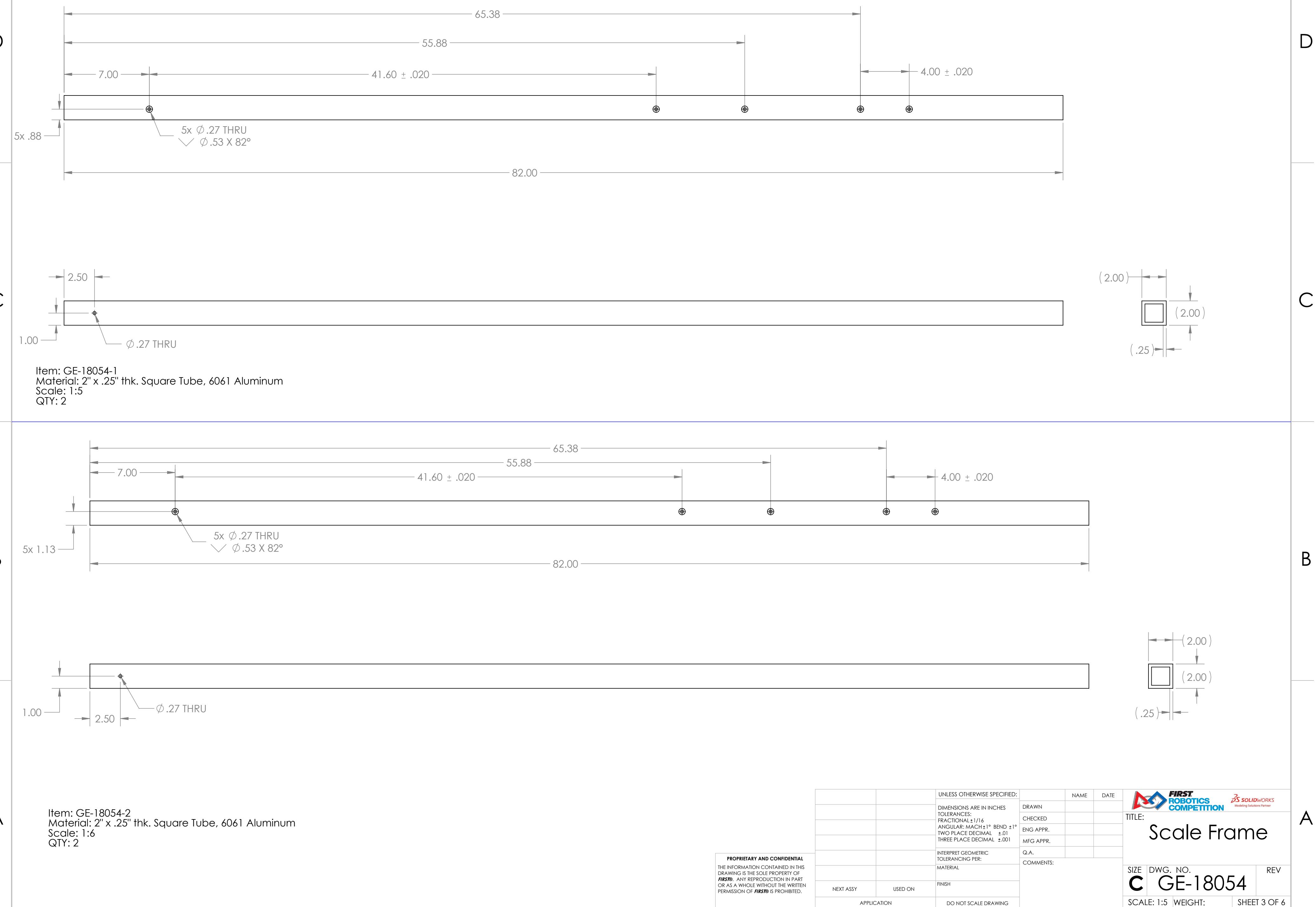
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Item: GE-18054-2
Material: 2" x .25" thk. Square Tube, 6061 Aluminum
Scale: 1:6
QTY: 2

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	DRAWN					
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH				SIZE C	DWG. NO. GE-18054	REV
APPLICATION		DO NOT SCALE DRAWING						
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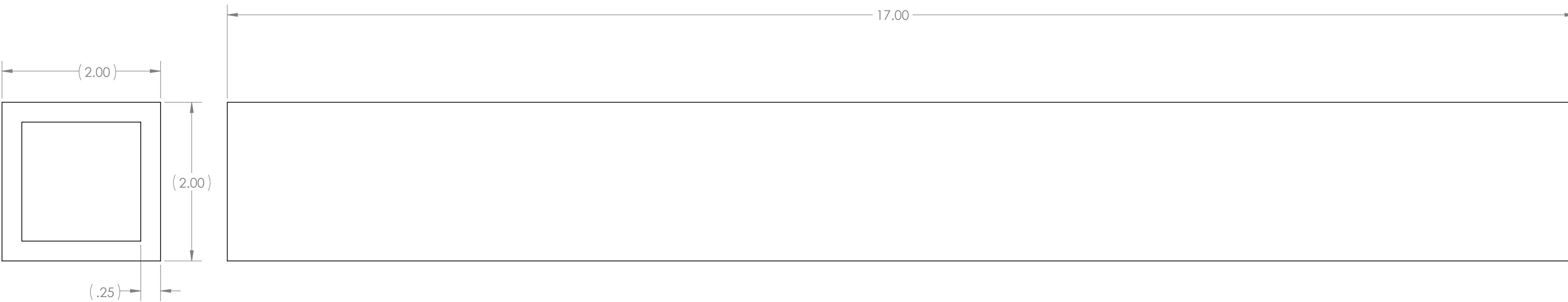
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Item: GE-18054-3
 Material: 2" x .25" thk. Square Tube, 6061 Aluminum
 Scale: 1:1
 QTY: 2

C

C



Item: GE-18054-4
 Material: 2" x .25" thk. Square Tube, 6061 Aluminum
 Scale: 1:1
 QTY: 2

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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			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	

FIRST[®] ROBOTICS COMPETITION  Modeling Solutions Partner

TITLE:
Scale Frame

SIZE DWG. NO. REV
C GE-18054

SCALE: 1:1 WEIGHT: SHEET 4 OF 6

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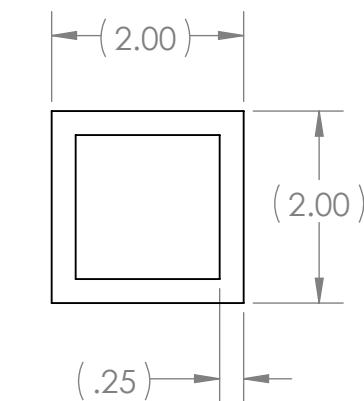
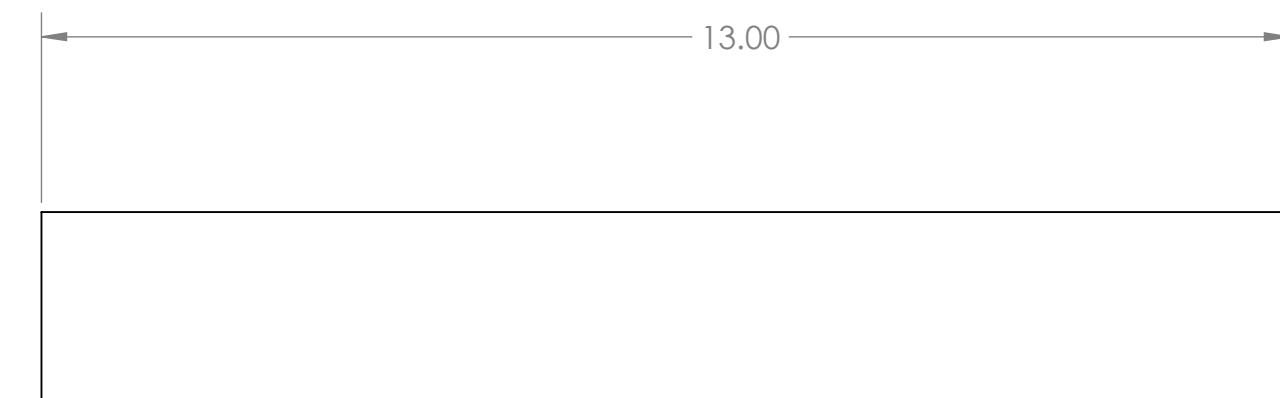
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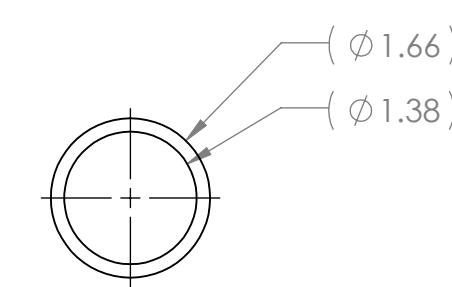
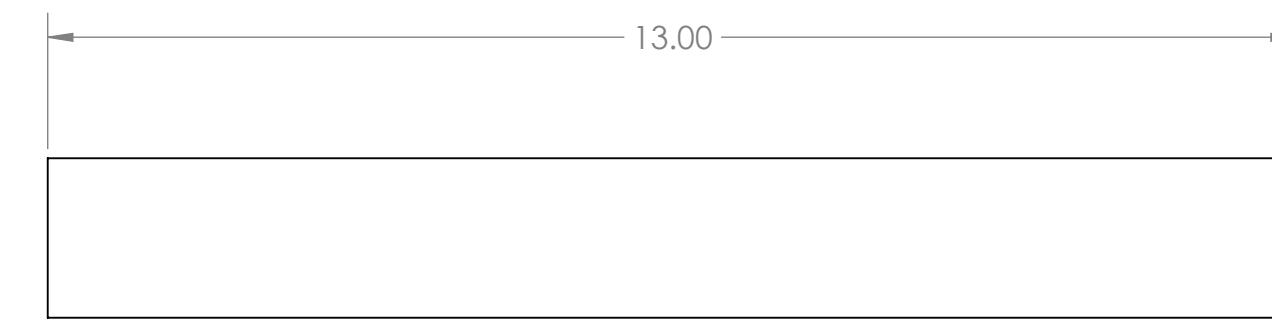
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C

Item: GE-18054-5
 Material: 2" x .25" thk. Square Tube, 6061 Aluminum
 Scale: 1:1
 QTY: 2

B

B



A

A

Item: GE-18054-6
 Material: 1-1/4" Schedule 40 Pipe, 6061 Aluminum
 Scale: 1:1
 QTY: 2

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES PER:	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		

FIRST[®] ROBOTICS COMPETITION **SOLIDWORKS**
 Modeling Solutions Partner
 TITLE: Scale Frame
 SIZE DWG. NO. REV
C GE-18054
 SCALE: 1:2 WEIGHT: SHEET 5 OF 6

4

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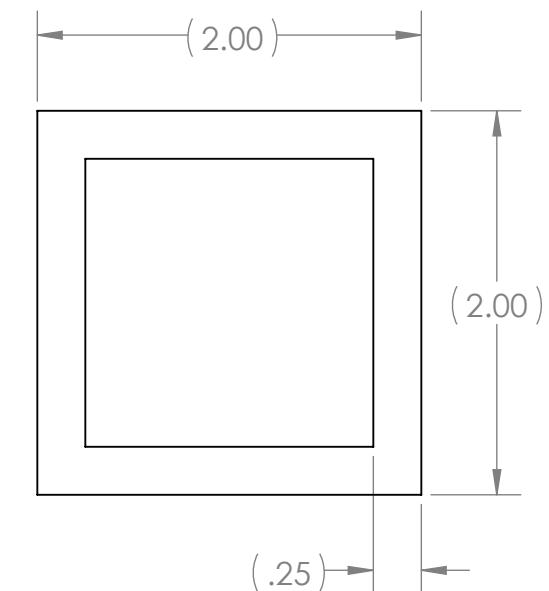
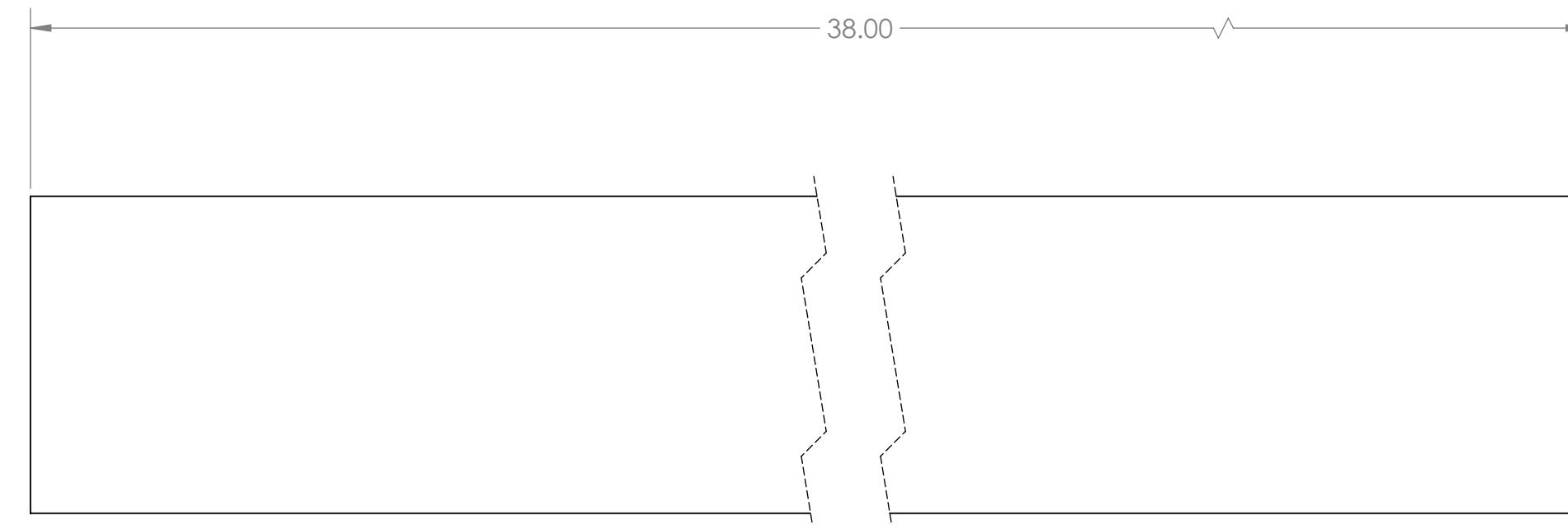
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Item: GE-18054-7
 Material: 2" x .25" thk. Square Tube, 6061 Aluminum
 Scale: 1:1
 QTY: 2

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
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		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			
NEXT ASSY	USED ON	FINISH			
	APPLICATION	DO NOT SCALE DRAWING			

FIRST[®] ROBOTICS COMPETITION SOLIDWORKS Modeling Solutions Partner
Scale Frame
 SIZE DWG. NO. REV
C GE-18054
 SCALE: 1:1 WEIGHT: SHEET 6 OF 6

4

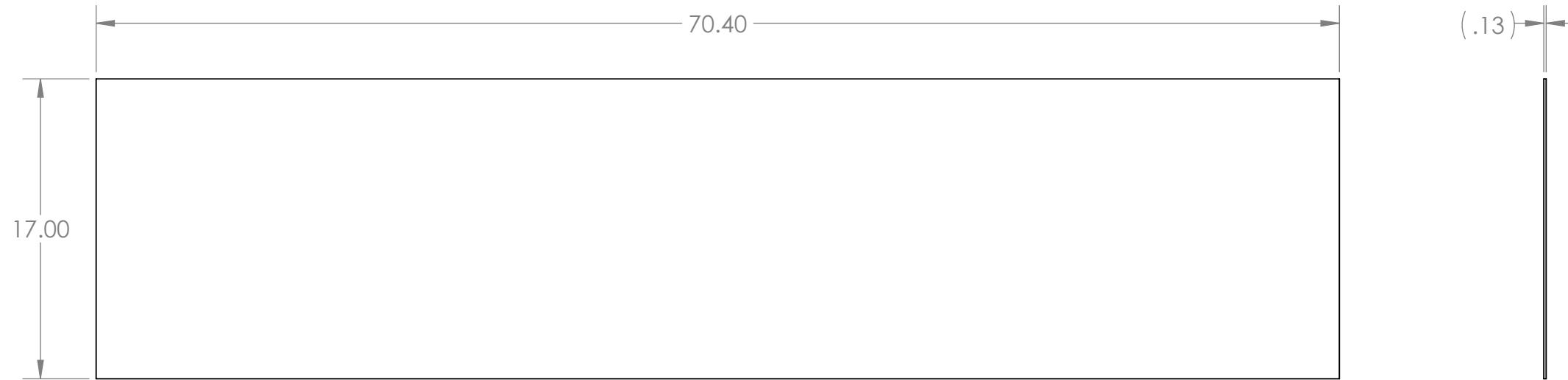
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**Notes:**

1. Material: 1/8" thick, clear polycarbonate.
2. Remove all burrs and sharp edges.

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
 Modeling Solutions Partner

TITLE: Outrigger Top Polycarbonate

B	DWG. NO.	REV
GE-18055		
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1

4

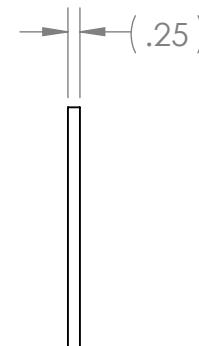
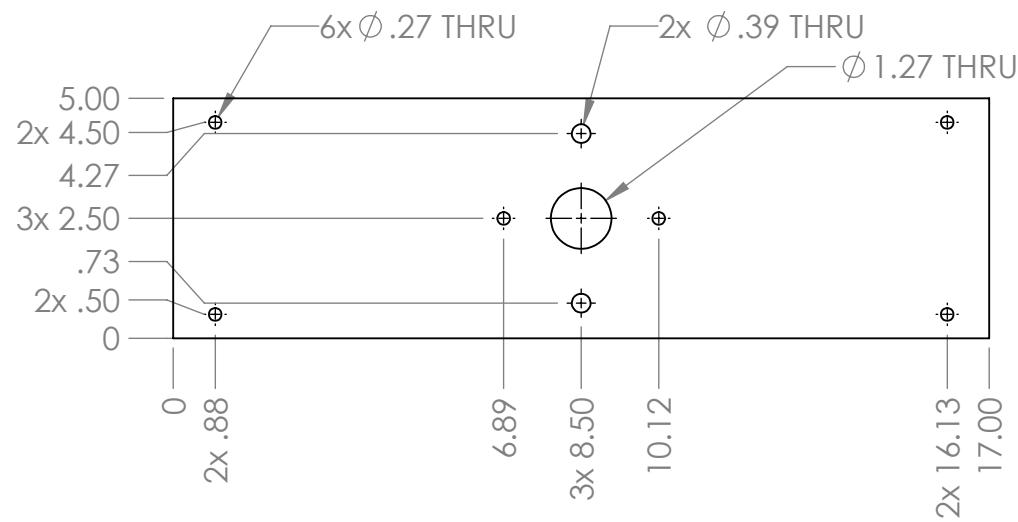
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Notes:

1. Material: 1/4" thick, clear polycarbonate.
2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:				
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				
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				



SOLIDWORKS
Modeling Solutions Partner

TITLE:

Bearing Damper Polycarbonate

SIZE	DWG. NO.	REV
A	GE-18056	
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

4

3

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Notes:

1. Material: 1/8" thick, black HDPE.
2. Surface: Smooth texture.
3. Remove all burrs and sharp edges.

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Title: Scale Side HDPE

SIZE	DWG. NO.	REV
B	GE-18057	
SCALE: 1:3	WEIGHT:	SHEET 1 OF 1

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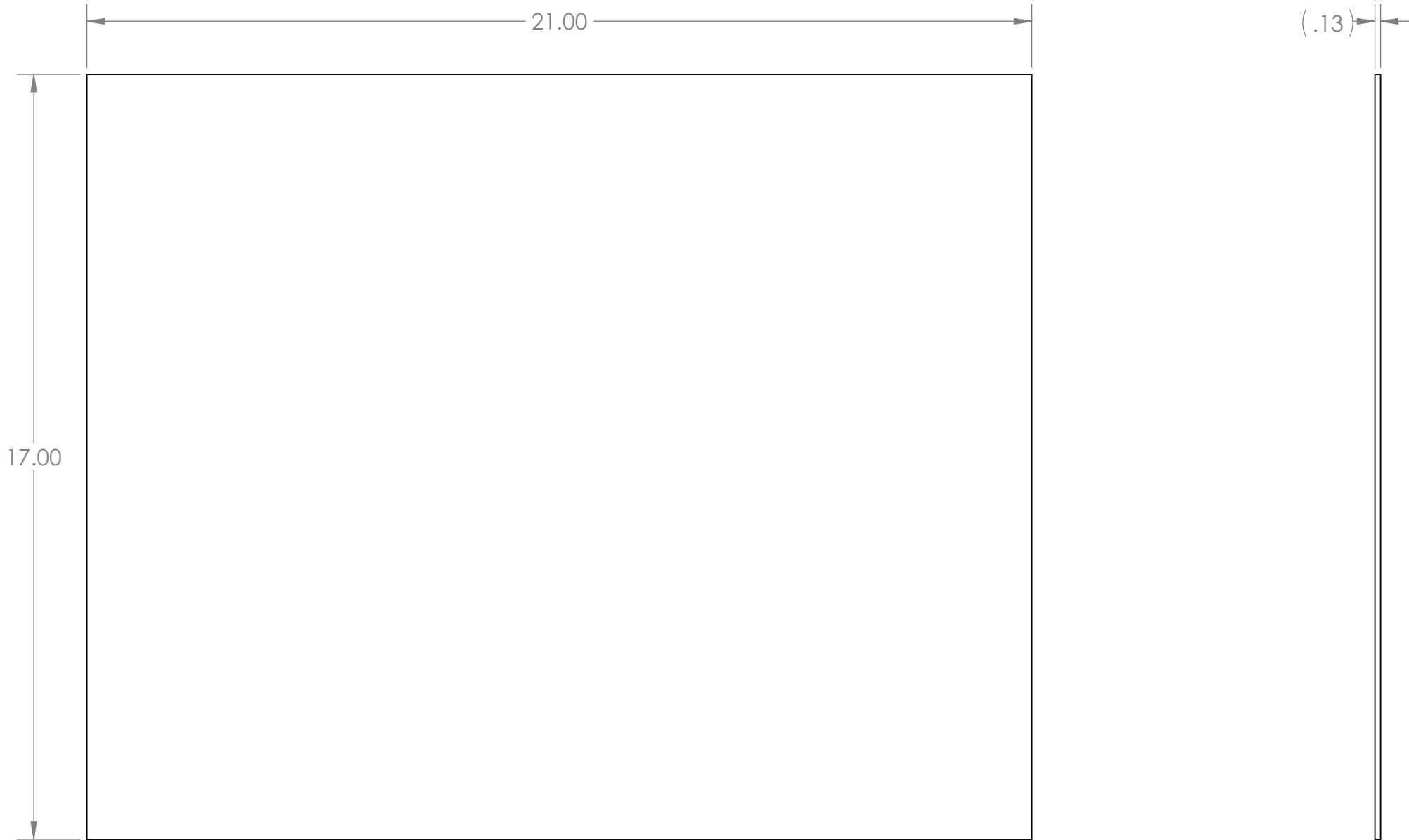
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Notes:

1. Material: 1/8" thick, black HDPE.
2. Surface: Smooth texture.
3. Remove all burrs and sharp edges

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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$		NAME	DATE
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		ENG APPR.			
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		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
B	GE-18058				
SCALE: 1:3	WEIGHT:				
		SHEET 1 OF 1			

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Notes:

1. Material: 1/8" thick, black HDPE.
2. Surface: Smooth texture.
3. Remove all burrs and sharp edges.

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Sensor Curtain

SIZE	DWG. NO.	REV
B	GE-18059	
SCALE: 1:2	WEIGHT:	SHEET 1 OF 1

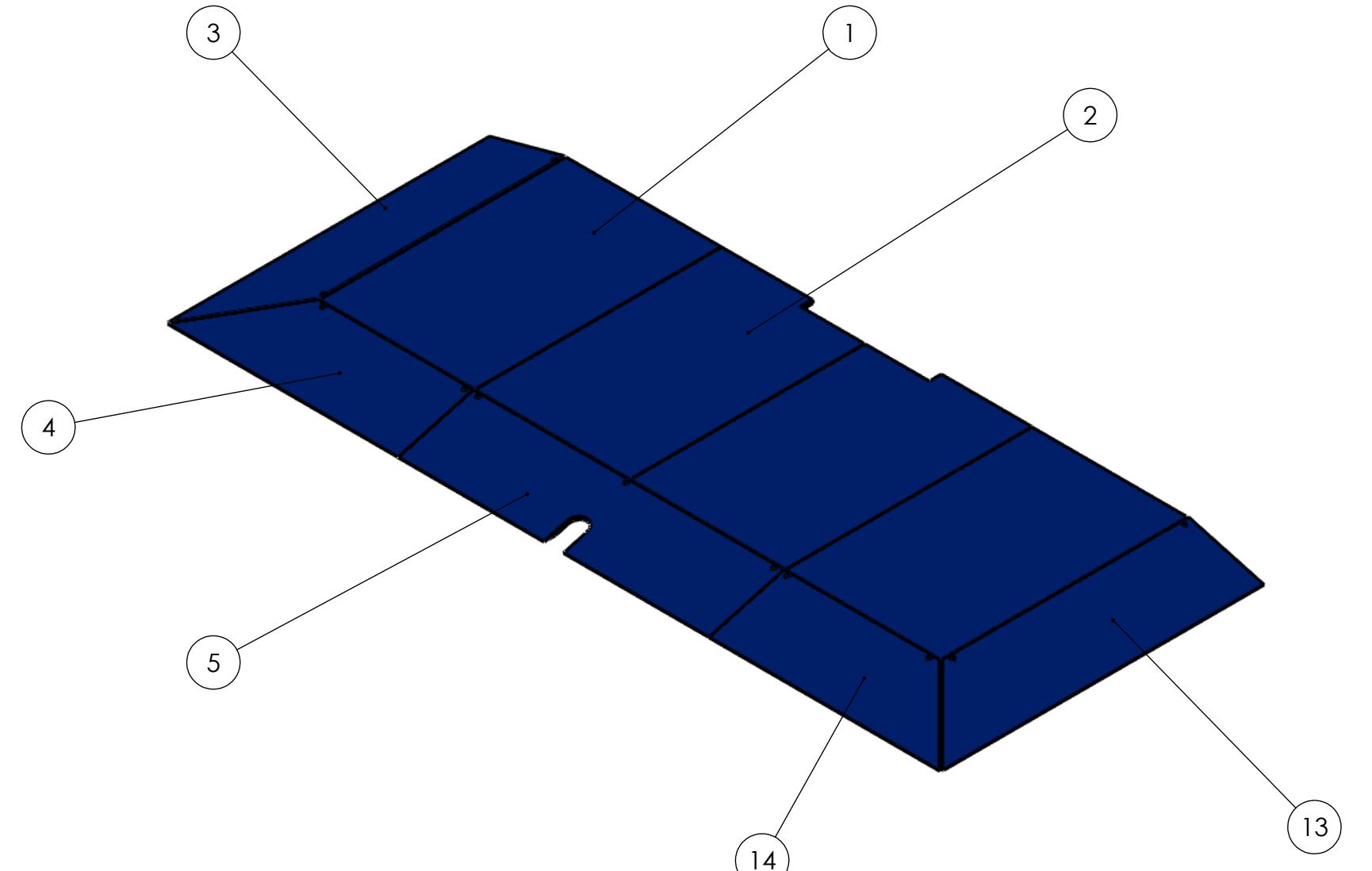
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-A4	1	Changed part number called out in note to match displayed part.	1/12/2018	CPO

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ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	GE-18061	Platform Top	2
2	GE-18062	Platform Top Notch	2
3	GE-18063	Platform Short Side	1
4	GE-18064	Platform Long Side	1
5	GE-18065	Platform Long Side Middle	1
6	GE-18066	Platform Brace, Long Side 1	4
7	GE-18067	Platform Brace, Long Side 2	2
8	GE-18068	Platform Brace, Short Side 1	6
9	GE-18069	Platform Brace, Mid Section	2
10	GE-18070	Platform Angle, Short Side	2
11	GE-18071	Platform Angle, Long Side	2
12	GE-18072	Platform Angle, Long Side Middle	1
13	GE-18073	Platform Short Side Mirrored	1
14	GE-18074	Platform Long Side Mirrored	1
15	GE-18105	Platform Brace, Short Side 2	2
16	flat_hex_.25_20_1	Steel Hex Flat Head Screw, 1/4"-20 x 1" long, fully threaded	11
17	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	11

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		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		
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NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		

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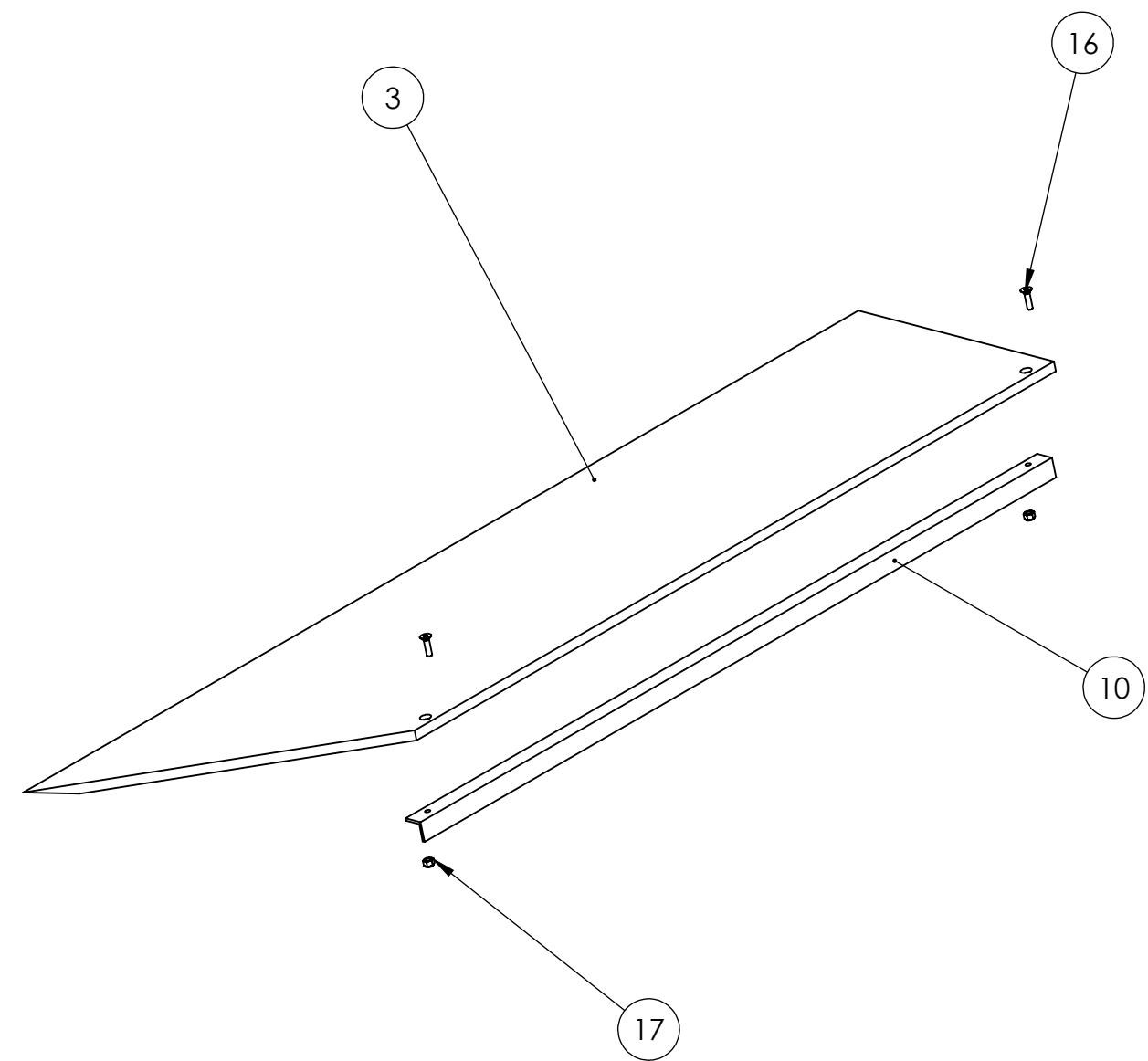
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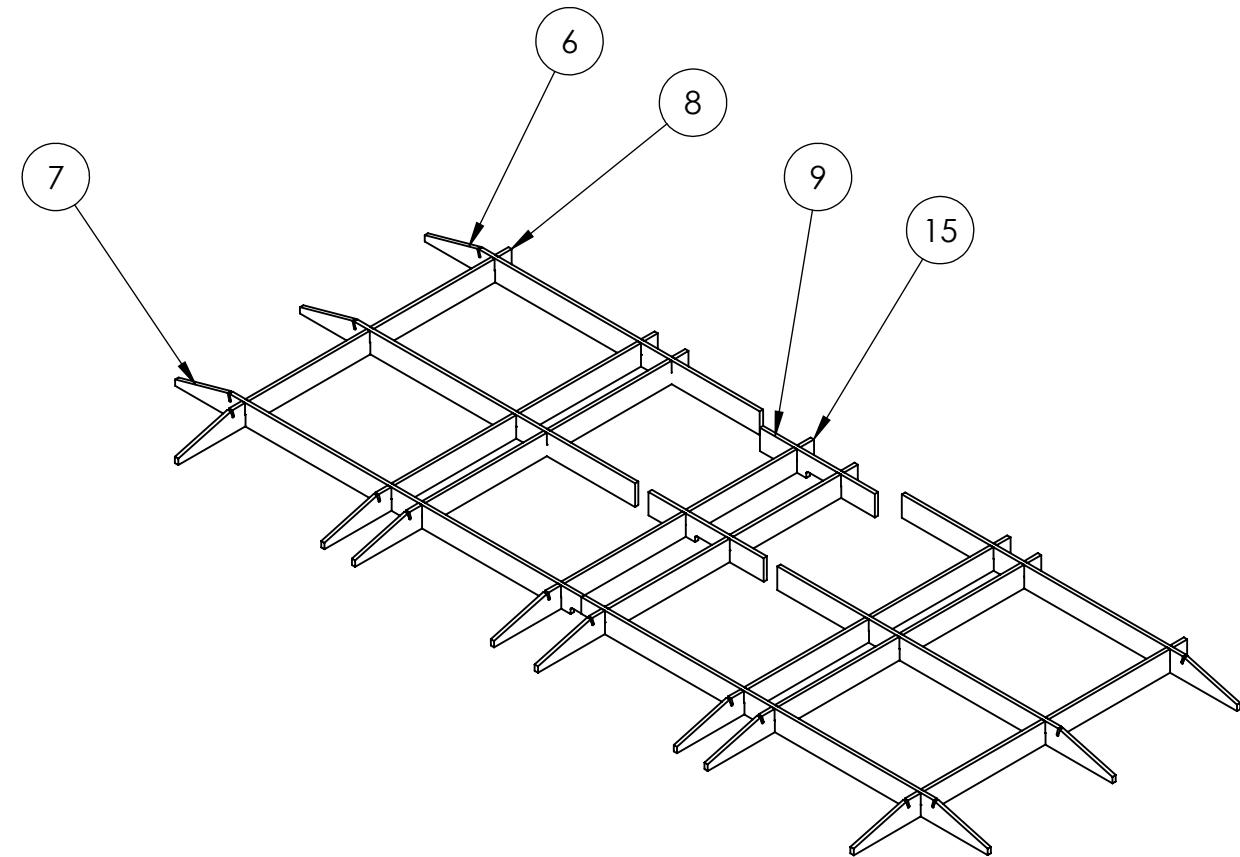


Notes:

1
Bolt Item 10 to Item 3 using Items 16 and 17. Repeat steps for the following Items, using Items 16 and 17 to fasten:

HDPE	Aluminum Angle
Item 4	Item 11
Item 5	Item 12
Item 13	Item 10
Item 14	Item 11

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Notes:

Slot Items 6, 7, 8, 9, 15 together.

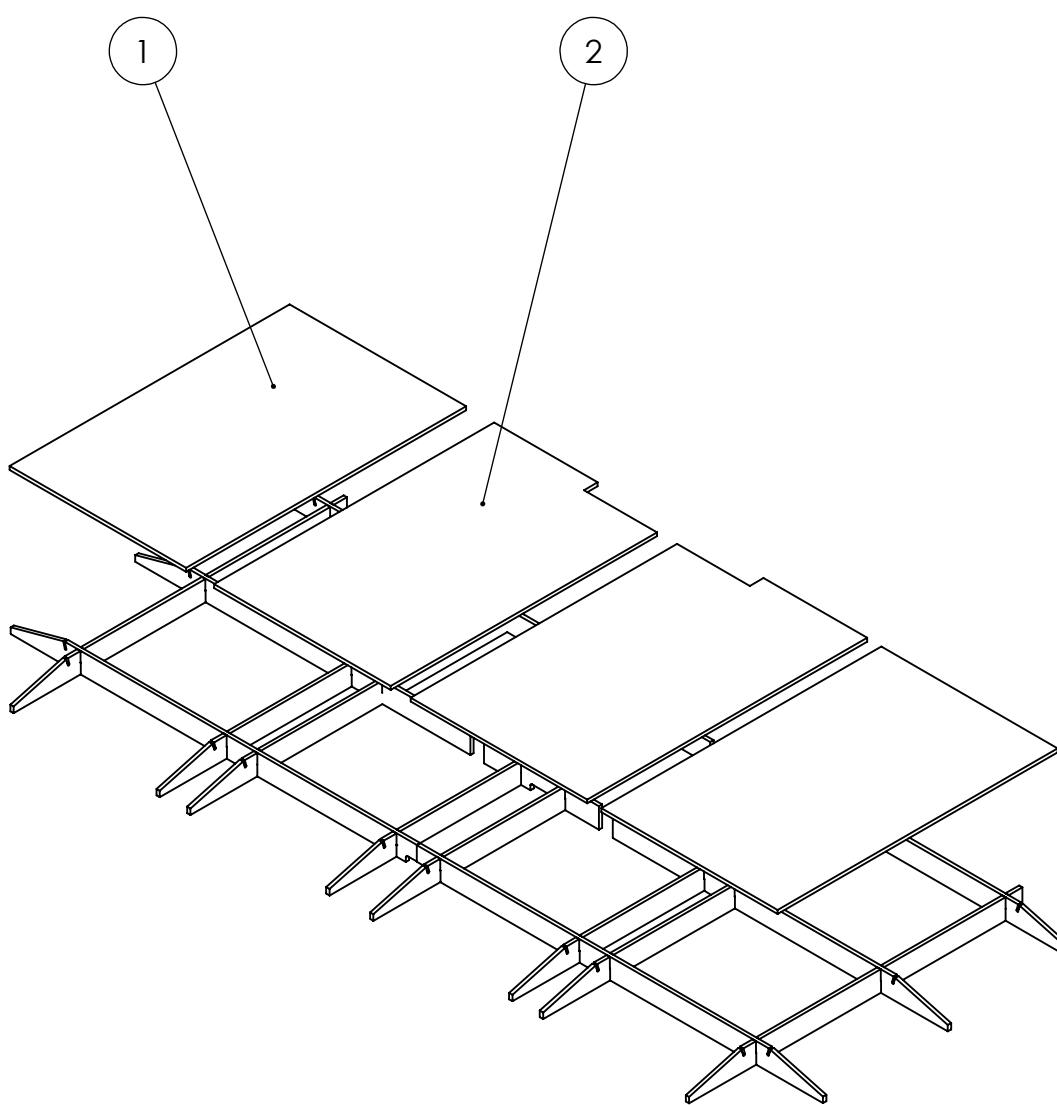
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		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
NEXT ASSY	USED ON	INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
APPLICATION		DO NOT SCALE DRAWING		
		SIZE DWG. NO. REV		
B		GE-18060 1		
SCALE: 1:32		WEIGHT:	SHEET 2 OF 3	

4

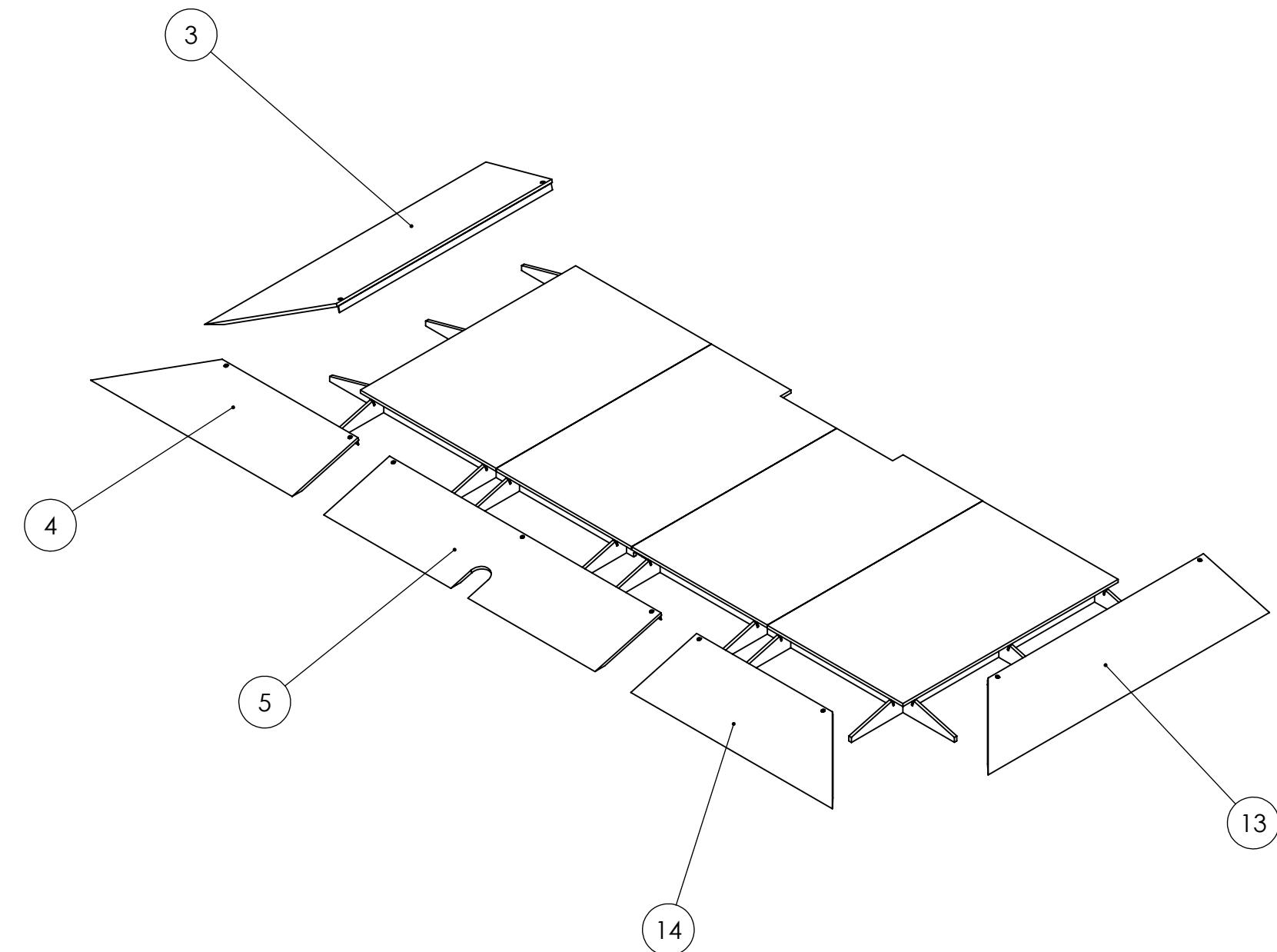
3

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Notes:
Attach Items 1 and 2 using hook and loop.



Notes:
Attach Items 3, 4, 5, 13, and 14 by sliding the aluminum angles into the slots on Items 6, 7, 8, 9, 15.

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		TOLERANCES:		CHECKED	
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		TWO PLACE DECIMAL $\pm .01$		Q.A.	
		THREE PLACE DECIMAL $\pm .001$		COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Platform

B **GE-18060** **1**

SIZE DWG. NO. REV
SCALE: 1:32 WEIGHT: SHEET 3 OF 3

4

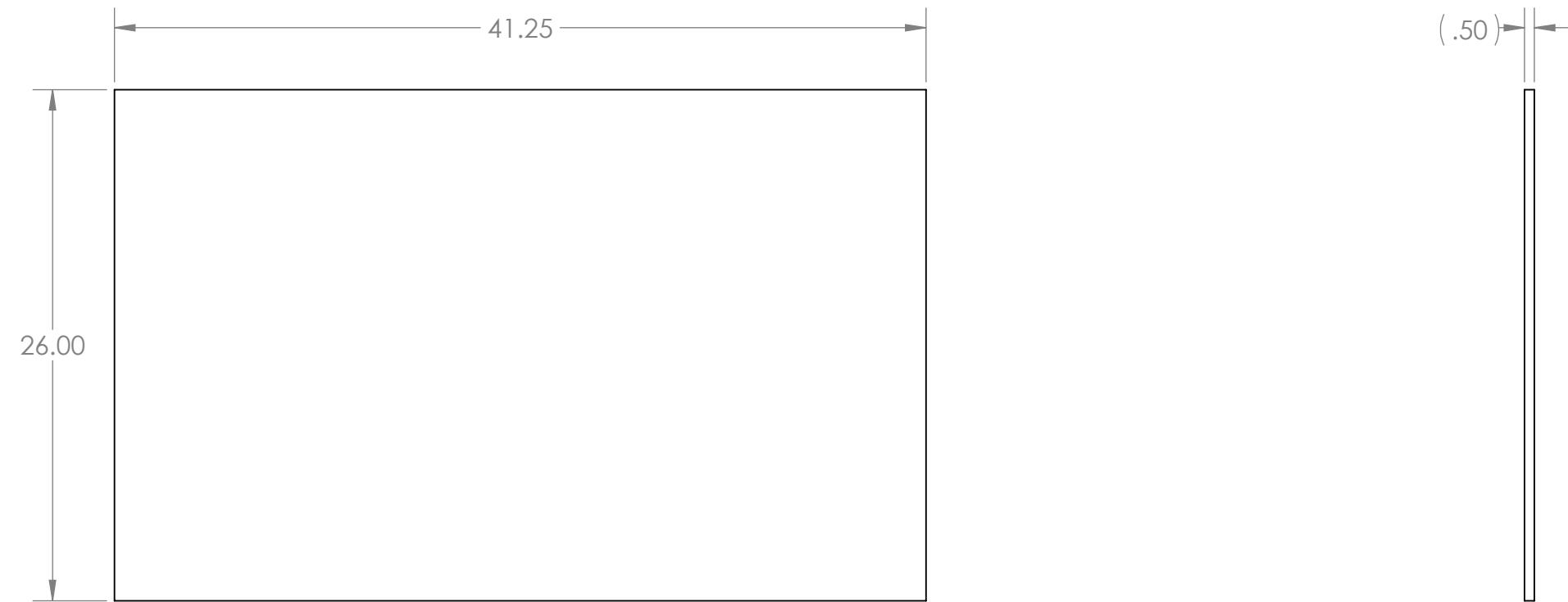
3

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Notes:

1. Material: 1/2" thk. HDPE, red or blue
2. Surface: Matte texture
3. Remove all burrs and sharp edges

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
B	GE-18061				
SCALE: 1:8	WEIGHT:				
					SHEET 1 OF 1

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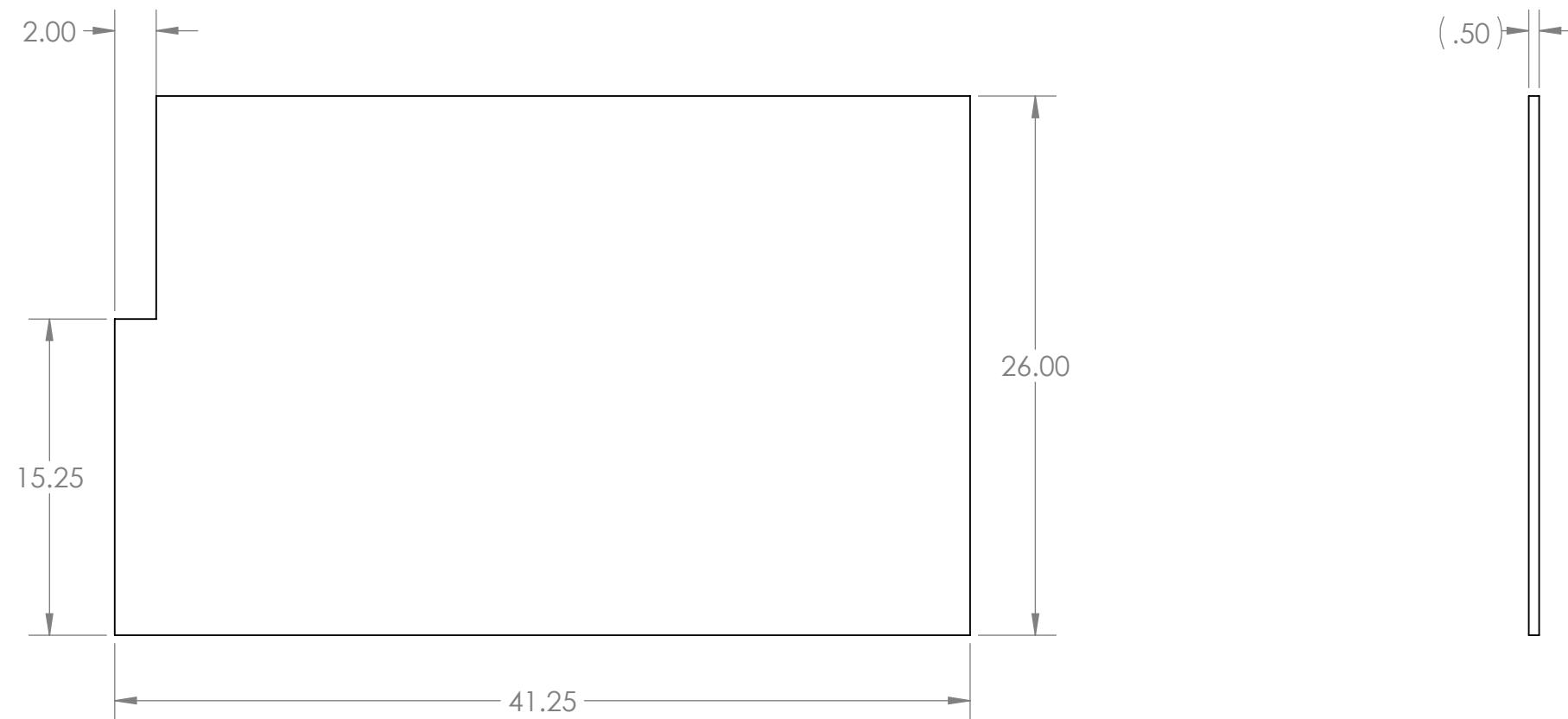
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Notes:

1. Material: 1/2" thk. textured HDPE, red or blue
2. Surface: Matte texture
3. Remove all burrs and sharp edges

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		ENG APPR.			
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		Q.A.			
		COMMENTS:			
		MATERIAL			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
SIZE	DWG. NO.	REV			
B	GE-18062				
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1			

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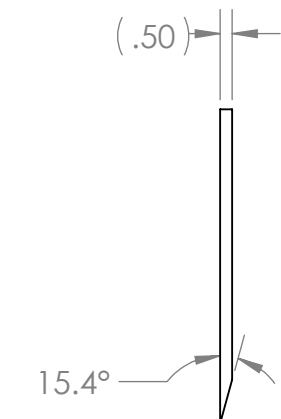
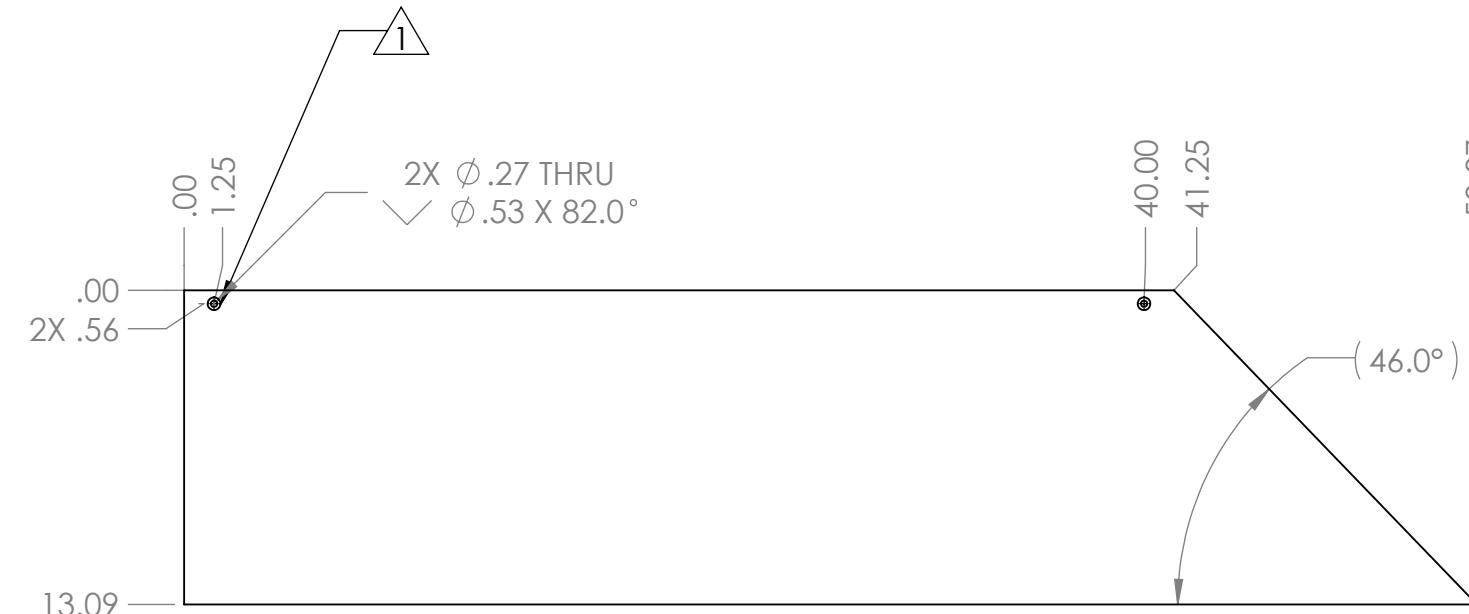
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	1	Changed number and location of holes	11/30/2017	JRF



- Notes:
1. Material: 1/2" thk. HDPE, red or blue
 2. Surface: Matte texture
 3. Remove all burrs and sharp edges

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		DRAWN		
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		MATERIAL		
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NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE	DWG. NO.	REV		
B	GE-18063	1		
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1		

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Platform Short
Side**

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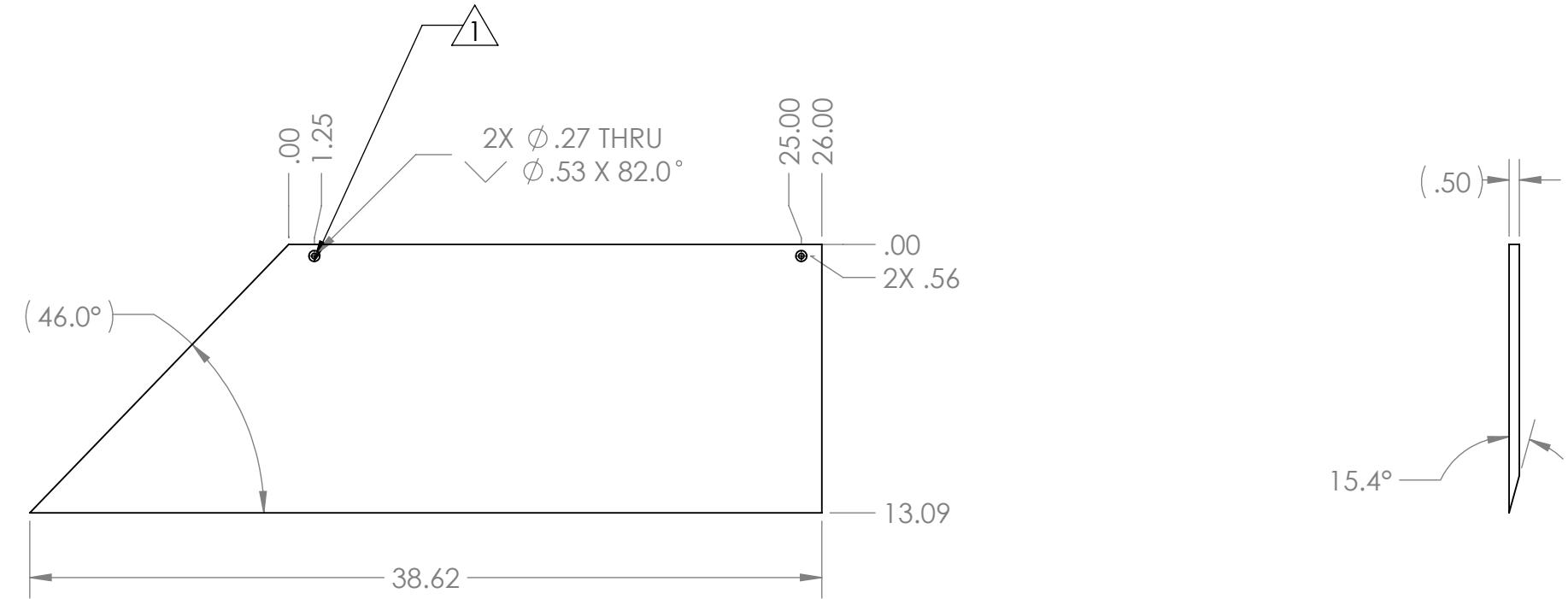
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	1	Changed number and location of holes; decreased length of part	11/30/17	JRF

B

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Notes:

1. Material: 1/2" thk. HDPE, red or blue
2. Surface: Matte texture
3. Remove all burrs and sharp edges

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE DWG. NO.		REV		
B GE-18064		1		
SCALE: 1:8		WEIGHT:	SHEET 1 OF 1	

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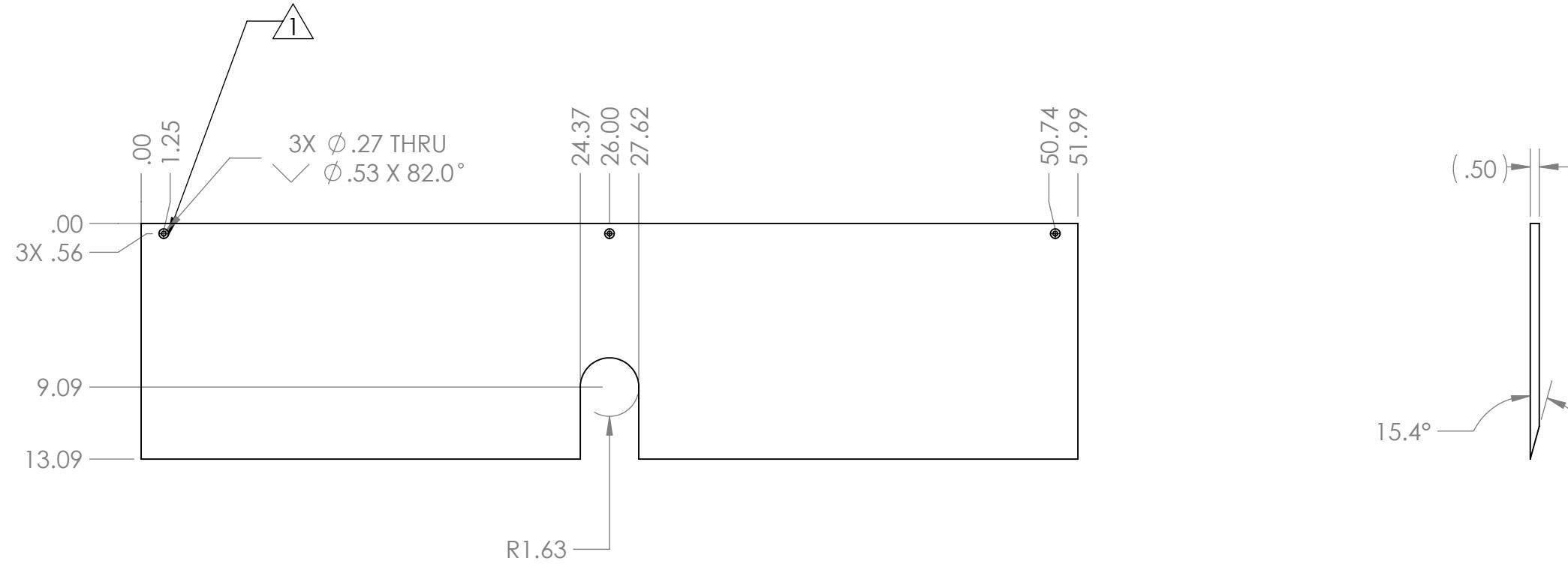
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	1	Changed number and location of holes; increased length of part	11/30/17	JRF



- Notes:
1. Material: 1/2" thk. textured HDPE, red or blue
 2. Surface: Matte texture
 3. Remove all burrs and sharp edges

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Platform Long Side Middle

SIZE	DWG. NO.	REV
B	GE-18065	1
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1

4

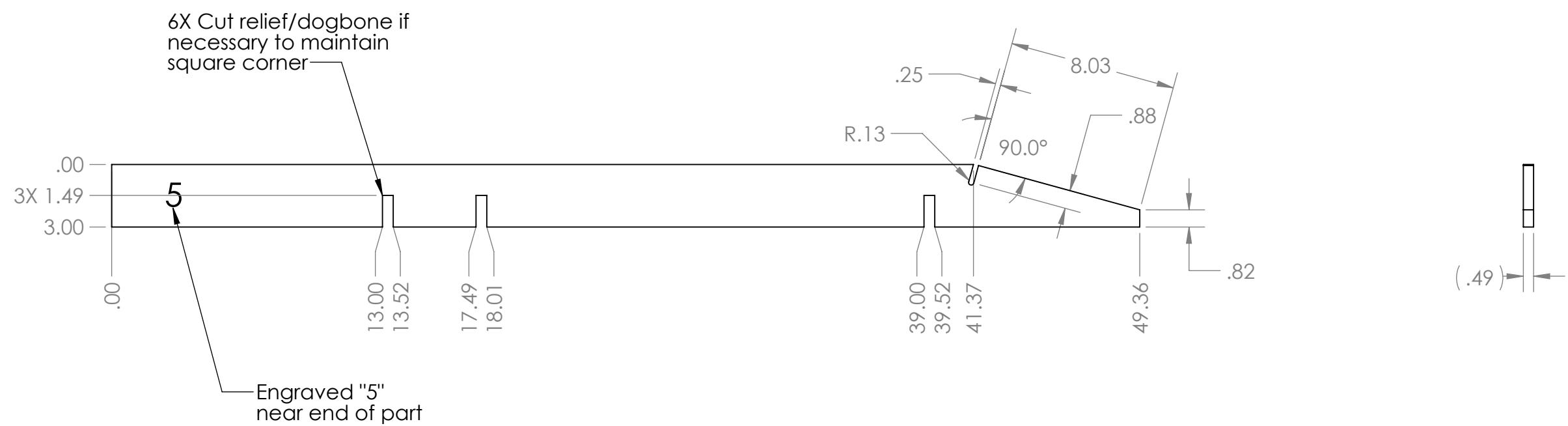
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Notes:

1. Material: 1/2" thk. textured HDPE, any color
2. Surface: Smooth texture
3. Remove all burrs and sharp edges

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

**Platform Brace,
Long Side 1**

SIZE DWG. NO. REV
B GE-18066

SCALE: 1:6 WEIGHT: SHEET 1 OF 1

4

3

2

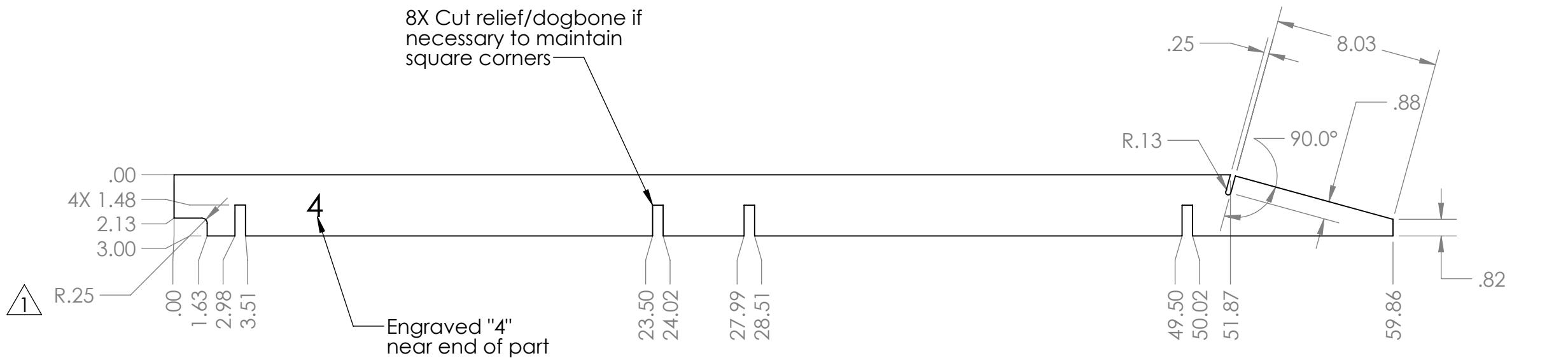
1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B4	1	Added dimension to specify fillet radius.	1/3/2018	CPO

B

B



A

A

Notes:

1. Material: 1/2" thk. HDPE, any color
2. Surface: Smooth texture
3. Remove all burrs and sharp edges

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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	NAME	DATE
		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE DWG. NO.		REV		
B GE-18067		1		
SCALE: 1:6		WEIGHT:		
		SHEET 1 OF 1		

4

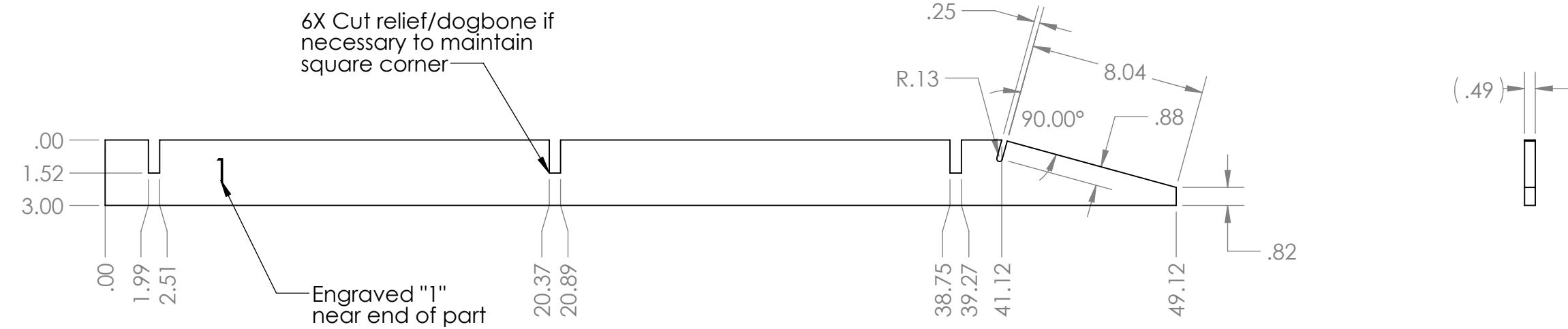
3

2

1

B

B



A

A

Notes:

1. Material: 1/2" thk. HDPE, any color
2. Surface: Smooth texture
3. Remove all burrs and sharp edges

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

**Platform Brace,
Short Side 1**

B **GE-18068**

SIZE DWG. NO. REV
SCALE: 1:6 WEIGHT: SHEET 1 OF 1

4

3

2

1

4

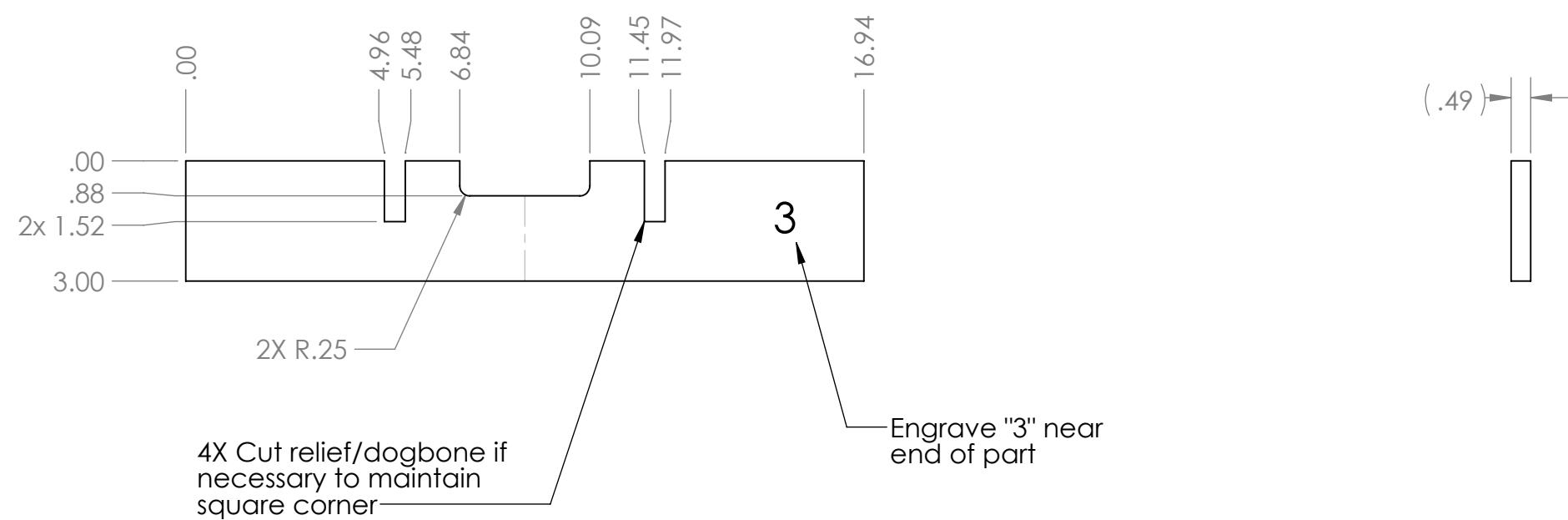
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2

1

B

B



A

A

Notes:

- Material: 1/2" thk. HDPE, any color
- Surface: Smooth texture
- Remove all burrs and sharp edges

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		NEXT ASSY	USED ON	FINISH
		APPLICATION		DO NOT SCALE DRAWING
B	GE-18069			
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1		

4

3

2

1

4

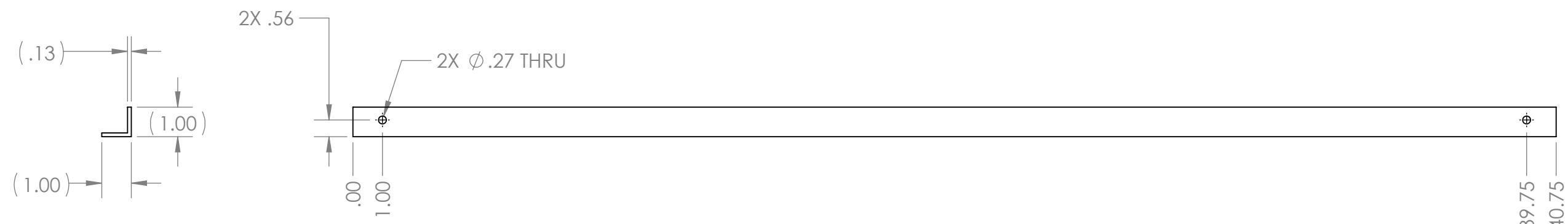
3

2

1

B

B



- Notes:
1. Material: 1" x 1" x .125" thick angle, 6061 aluminum
 2. Remove all burrs and sharp edges

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		UNLESS OTHERWISE SPECIFIED:		TITLE: Platform Angle, Short Side	SIZE B DWG. NO. GE-18070 REV			
		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:		Q.A. COMMENTS:				
		MATERIAL						
		NEXT ASSY						
		USED ON						
		APPLICATION		FINISH		SCALE: 1:4 WEIGHT: SHEET 1 OF 1		
		DO NOT SCALE DRAWING						

4

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2

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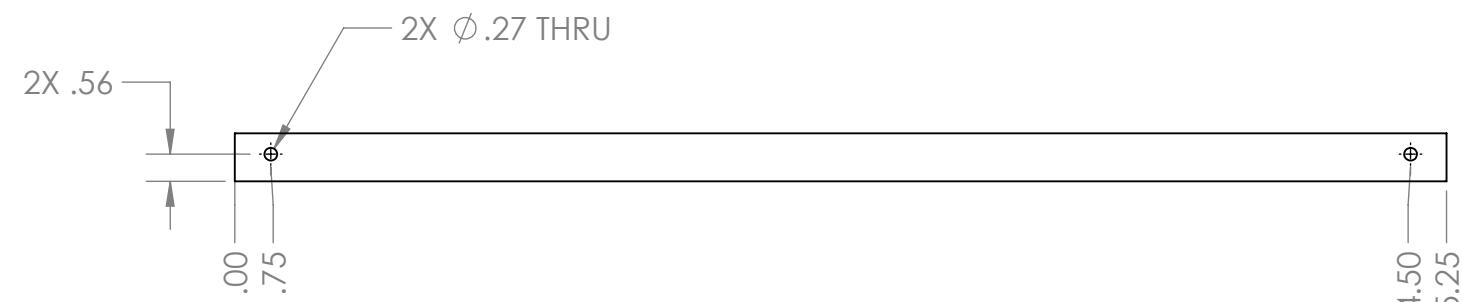
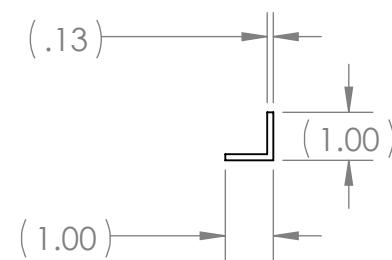
3

2

1

B

B



Notes:

1. Material: 1" x 1" x .125" thick angle, 6061 aluminum
2. Remove all burrs and sharp edges

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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$		NAME	DATE
		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
B	GE-18071				
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

**Platform Angle,
Long Side**

4

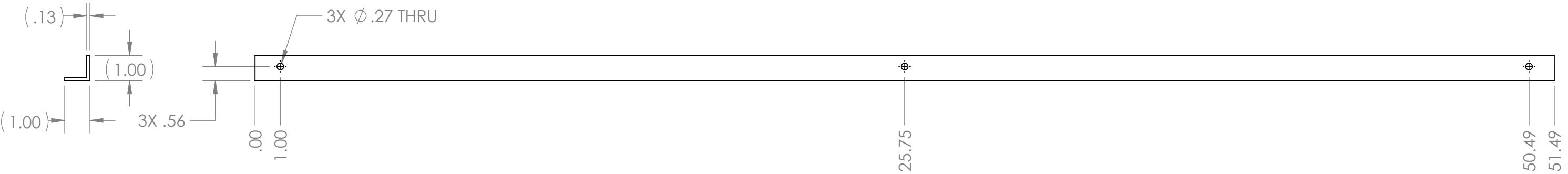
3

2

1

B

B



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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SIZE	DWG. NO.				REV
B	GE-18072				
SCALE: 1:4	WEIGHT:				SHEET 1 OF 1

4

3

2

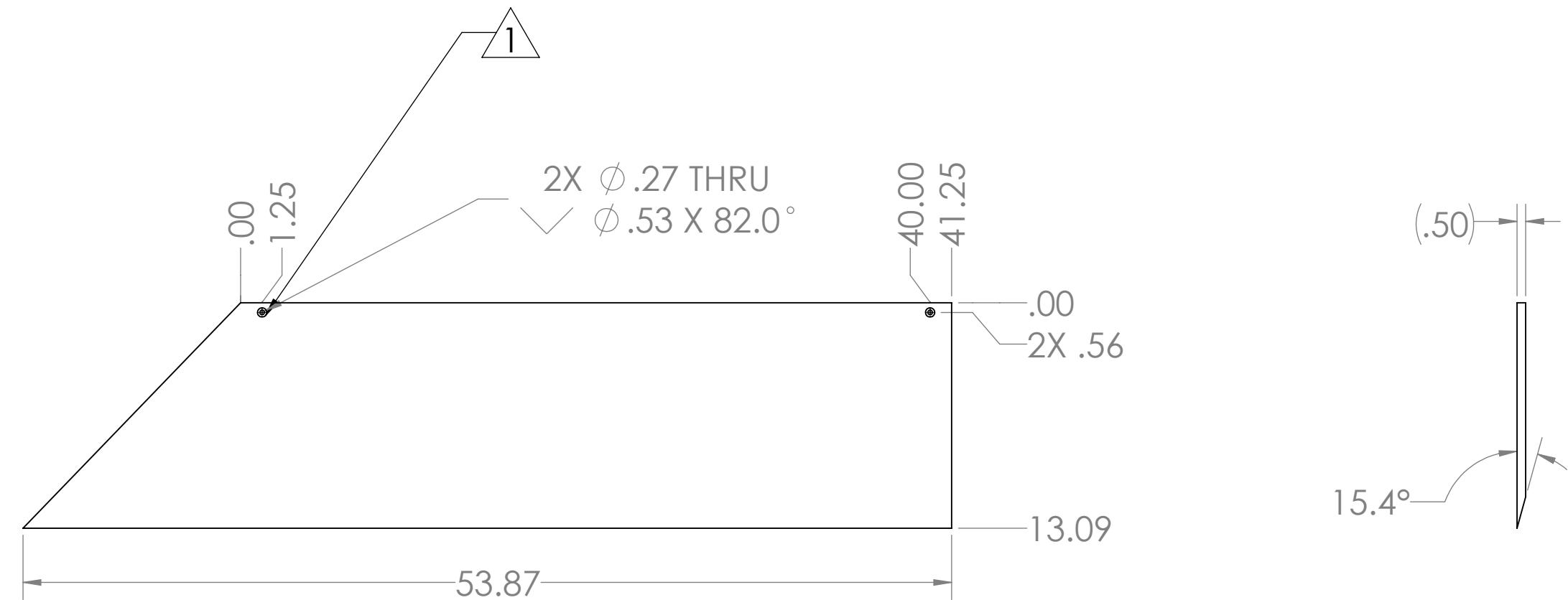
1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3	1	Changed number and location of holes	11/30/17	JRF

B

B



Notes:

1. Material: 1/2" thk. HDPE, red or blue
2. Surface: Matte texture
3. Remove all burrs and sharp edges

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 FIRST ROBOTICS COMPETITION
		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			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			
		MATERIAL				
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				
SCALE: 1:8 WEIGHT: SHEET 1 OF 1						

4

3

2

1

4

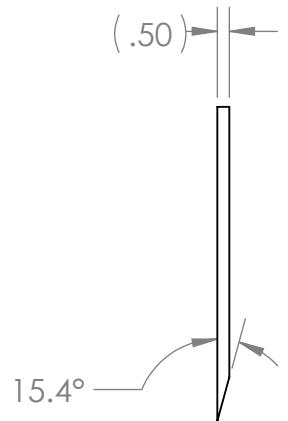
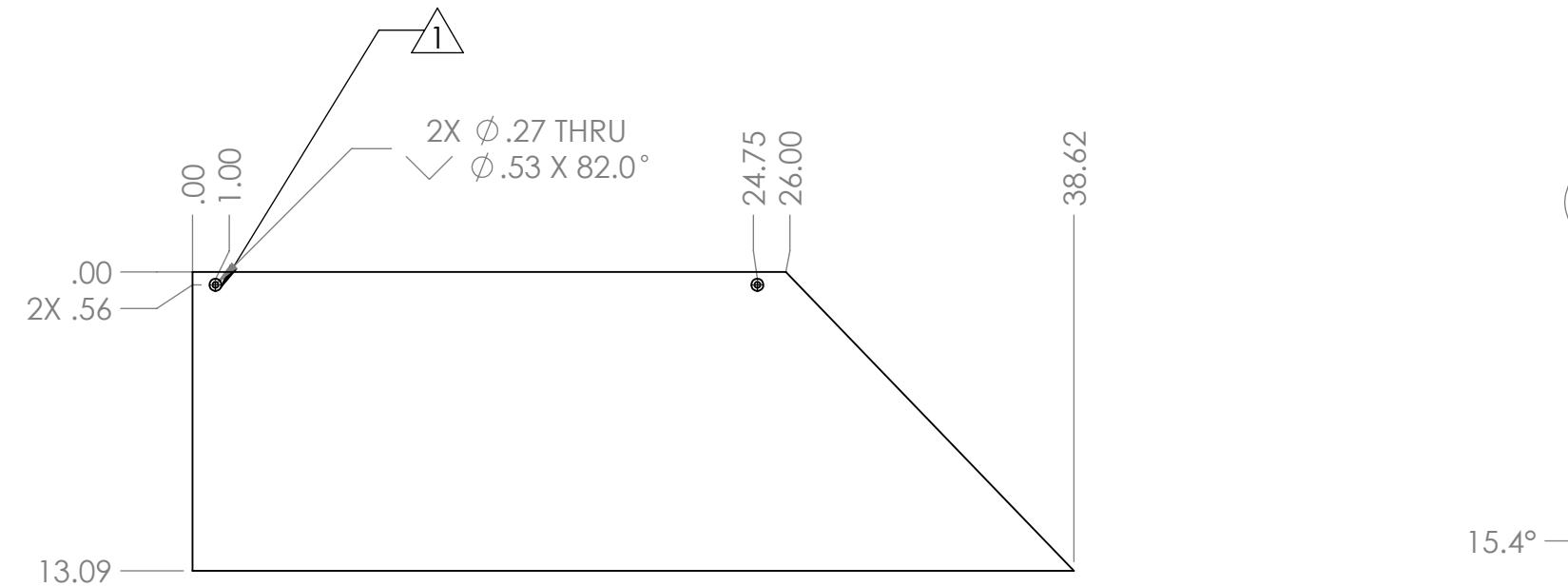
3

2

1

B

B



- Notes:
1. Material: 1/2" thk. HDPE, red or blue
 2. Surface: Matte texture
 3. Remove all burrs and sharp edges

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		INTERPRET GEOMETRIC TOLERANCING PER:		
		NEXT ASSY	USED ON	FINISH
		APPLICATION	DO NOT SCALE DRAWING	
SIZE	DWG. NO.	REV		
B	GE-18074	1		
SCALE: 1:8	WEIGHT:	SHEET 1 OF 1		

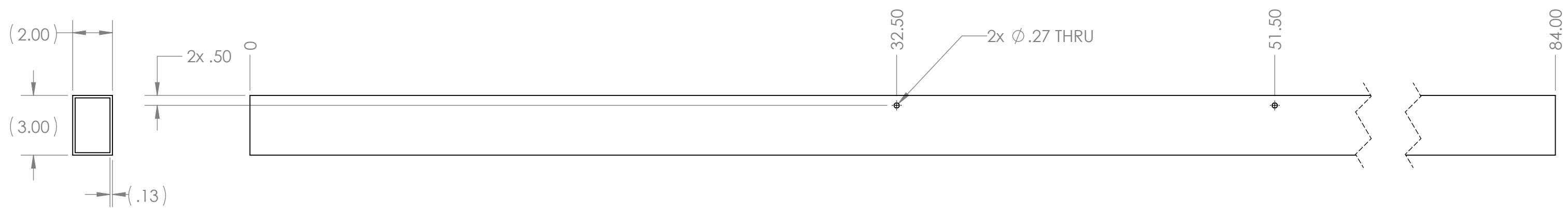
4

3

2

1

B



B

Notes:

1. Material: 3" x 2" x 1/8" thk. Rectangular Tube, 6061 Aluminum.
2. Remove all burrs and sharp edges.

A

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
B	GE-18075				
SCALE: 1:5	WEIGHT:	SHEET 1 OF 1			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Title:
Scale Base
Outrigger

4

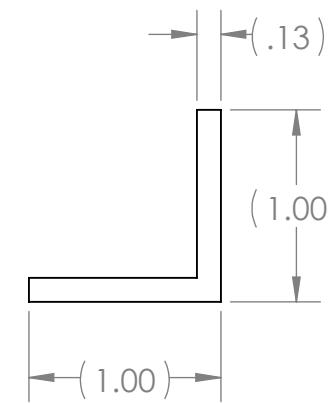
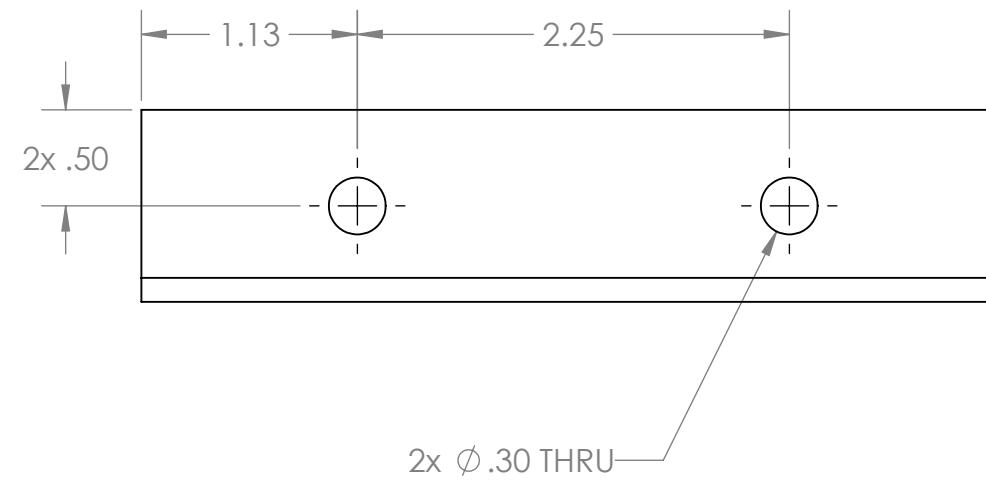
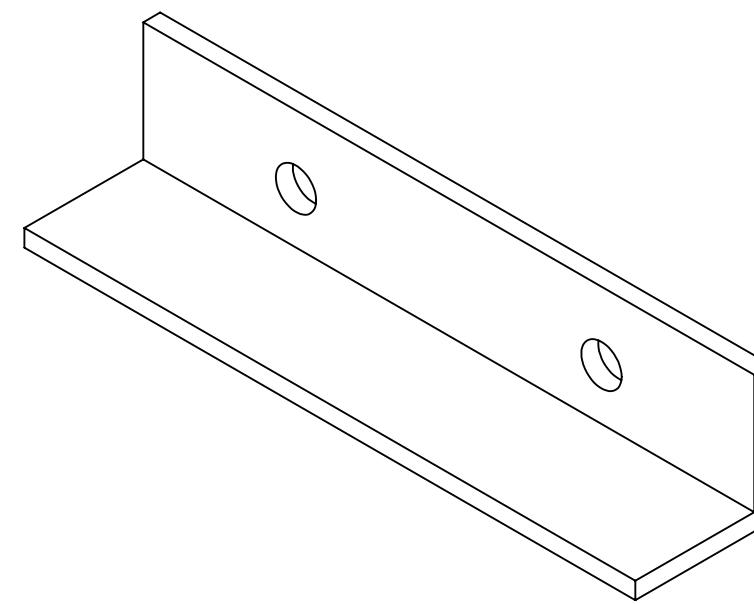
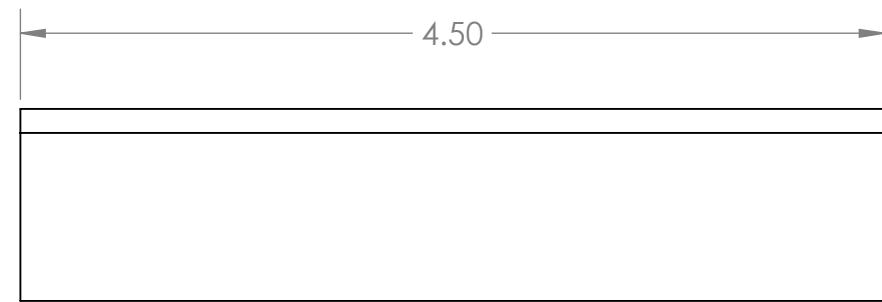
3

2

1

B

B



Notes:

1. Material: 1" x 1" x 1/8" thk. 90 degree angle, 6061 Aluminum.
2. 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	
			SCALE: 1:1	WEIGHT:	SHEET 1 OF 1
			SIZE	DWG. NO.	REV
B				GE-18076	

 **FIRST**
ROBOTICS
COMPETITION

 **SOLIDWORKS**
Modeling Solutions Partner

Scale Angle Brace

4

3

2

1

4

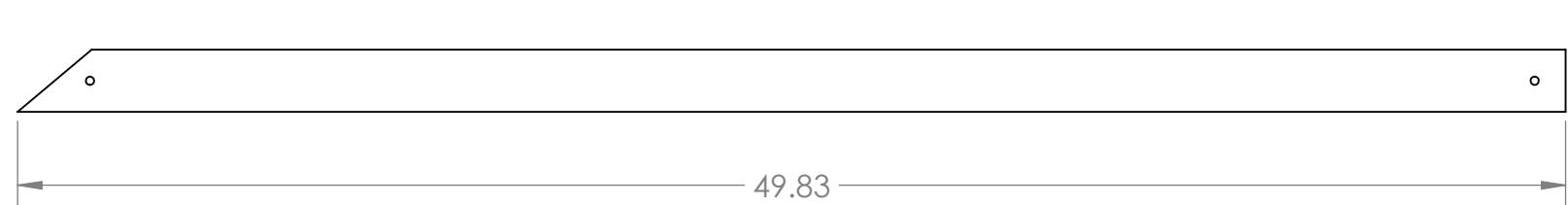
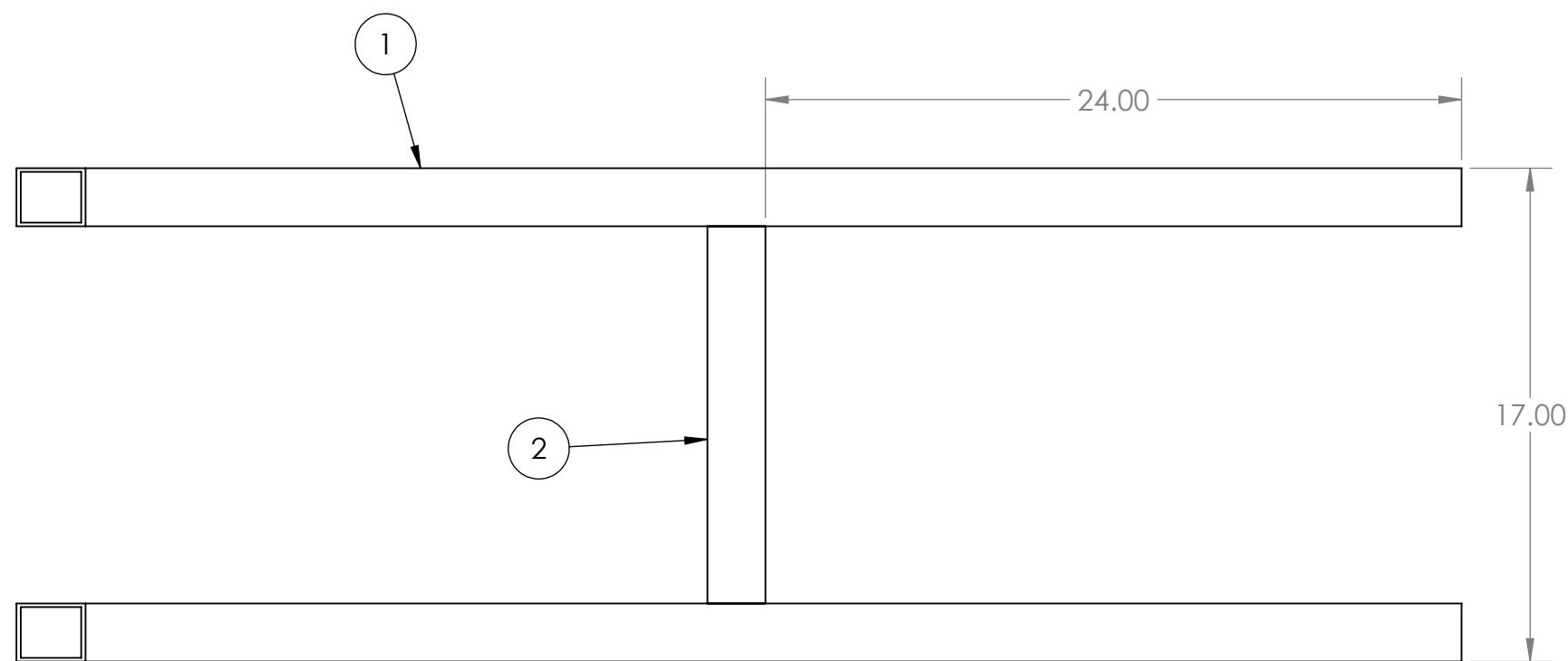
3

2

1

B

B



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18077-1	2" x .125" thk. Square Tube, 6061 Aluminum	2
2	GE-18077-2	2" x .125" thk. Square Tube, 6061 Aluminum	1

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
		APPLICATION	DO NOT SCALE DRAWING		
SIZE	DWG. NO.	REV			
B	GE-18077				
SCALE: 1:6	WEIGHT:	SHEET 1 OF 3			

FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE:
Outrigger Wing Horizontal

SIZE DWG. NO. REV
B GE-18077

4

3

2

1



1/4
1/4
2 places



2 places

(1/4)



B

B

A

A

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
B	GE-18077				
SCALE: 1:6	WEIGHT:	SHEET 2 OF 3			

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
 Modeling Solutions Partner

TITLE:
Outrigger Wing
Horizontal

SIZE DWG. NO. REV

4

3

2

1

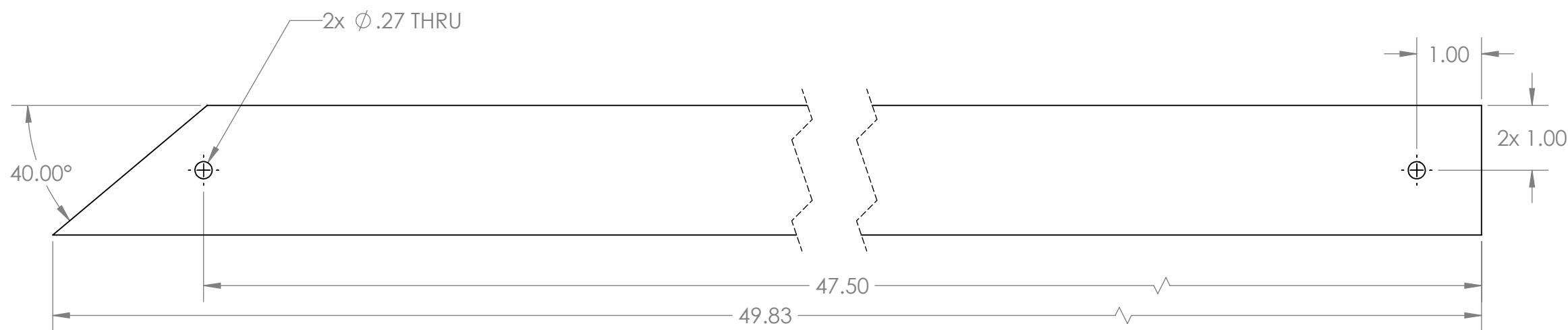
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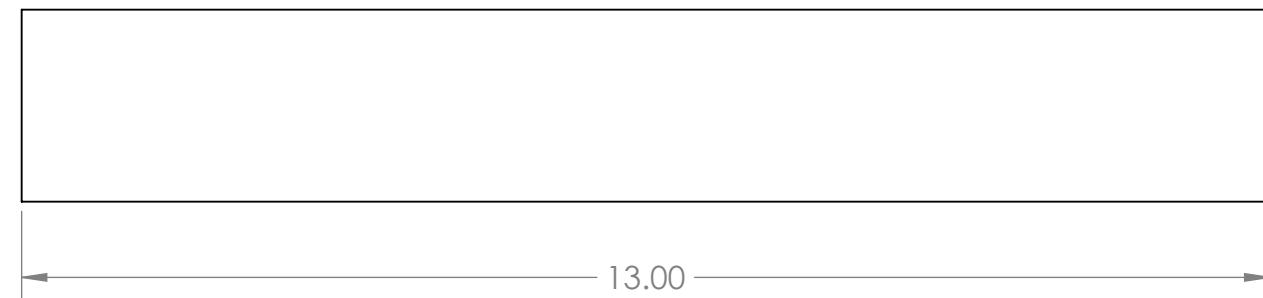
2

1

B



ITEM: GE-18077-1
 Material: 2" x .125" thk. Square Tube, 6061 Aluminum
 Scale: 1:2
 QTY: 2



ITEM: GE-18077-2
 Material: 2" x .125" thk. Square Tube, 6061 Aluminum
 Scale: 1:2
 QTY: 1

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DIMENSIONS ARE IN INCHES		TOLERANCES:			
FRACTIONAL $\pm 1/16$		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$			
TWO PLACE DECIMAL $\pm .01$		THREE PLACE DECIMAL $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING	COMMENTS:		
SCALE: 1:2		WEIGHT:	SHEET 3 OF 3		
B		GE-18077	REV		

 FIRST
ROBOTICS
COMPETITION

 SOLIDWORKS
Modeling Solutions Partner

TITLE:

**Outrigger Wing
Horizontal**

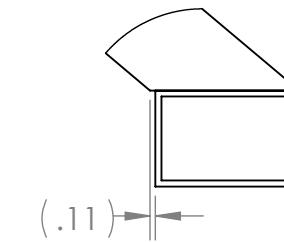
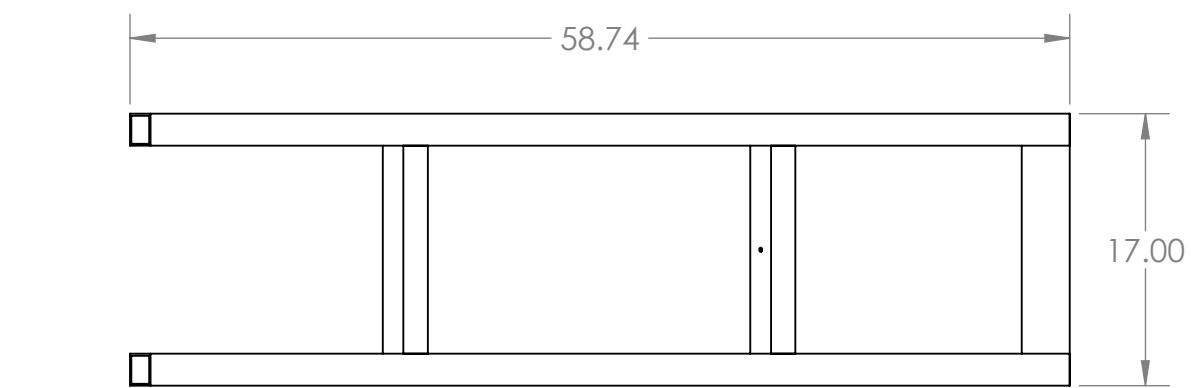
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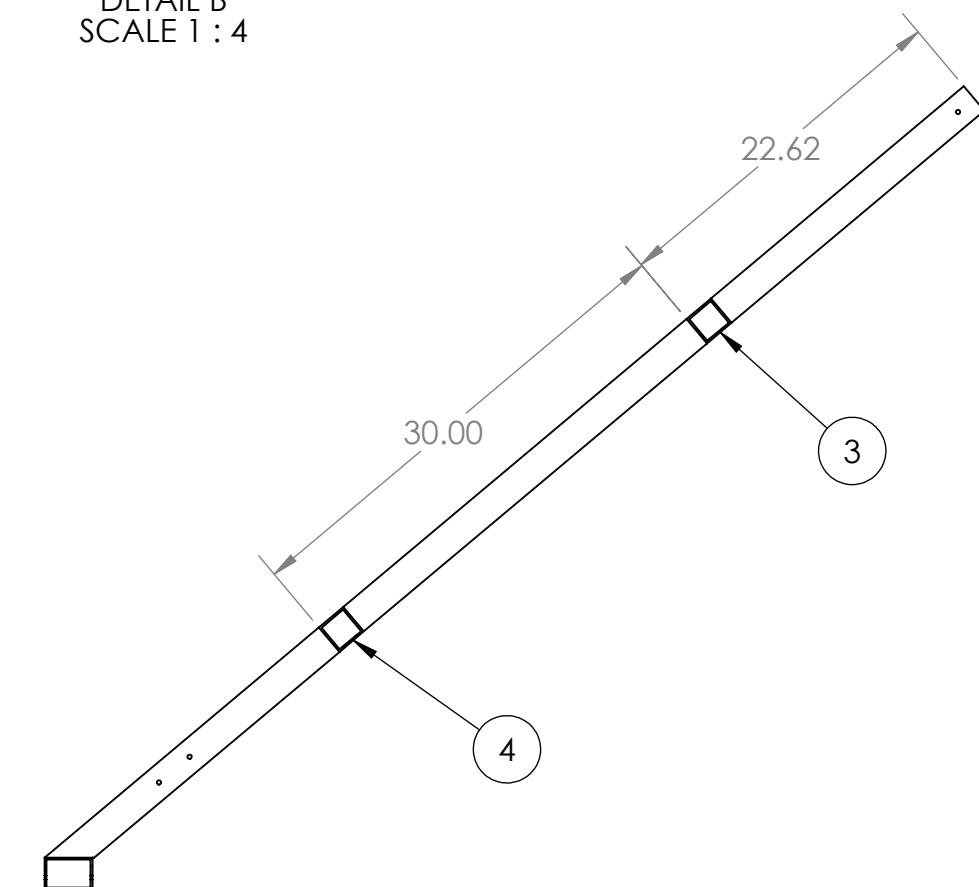
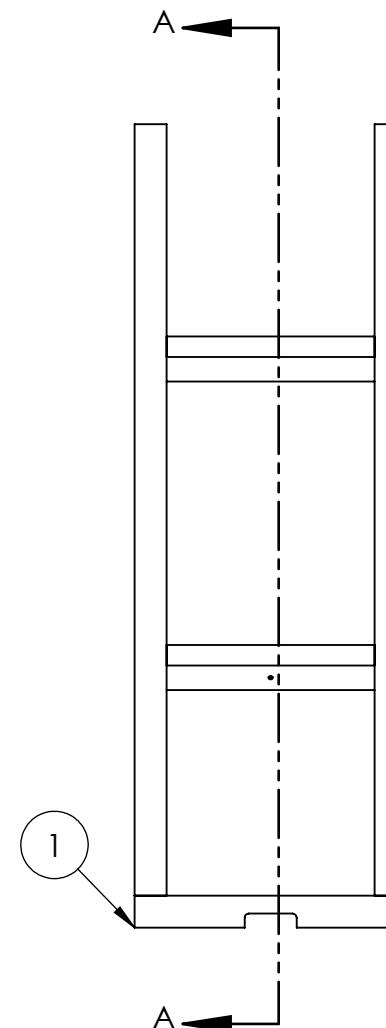
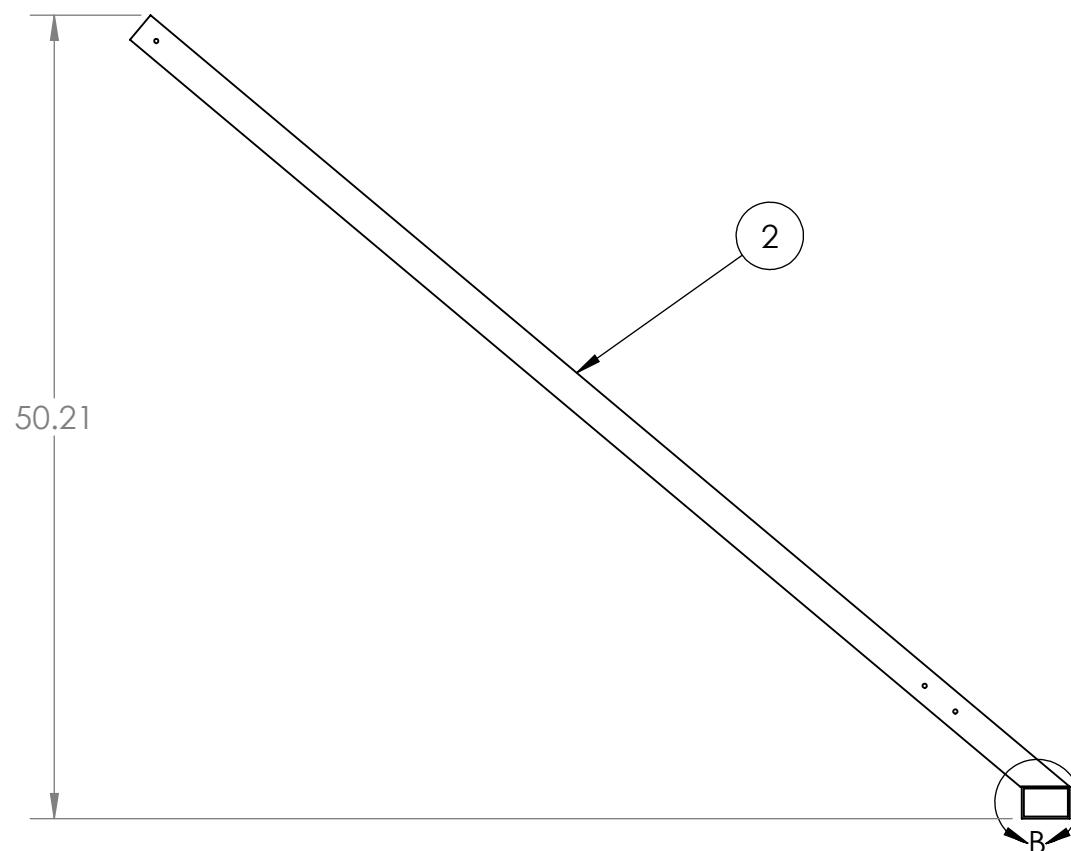
2

1

B



DETAIL B
SCALE 1 : 4



SECTION A-A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18078-1	3" x 2" x .125" thk. Rectangular Tube, 6061 Aluminum	1
2	GE-18078-2	2" x .125" thk. Square Tube, 6061 Aluminum	2
3	GE-18078-3	2" x .125" thk. Square Tube, 6061 Aluminum	1
4	GE-18078-4	2" x .125" thk. Square Tube, 6061 Aluminum	1

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 FIRST ROBOTICS COMPETITION	TITLE: <h1>Outrigger Wing Diagonal</h1>
		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				
			CHECKED				
			ENG APPR.				
			MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.				
		MATERIAL	COMMENTS:			SIZE DWG. NO. B GE-18078 REV SCALE: 1:12 WEIGHT: SHEET 1 OF 4	
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING					

4

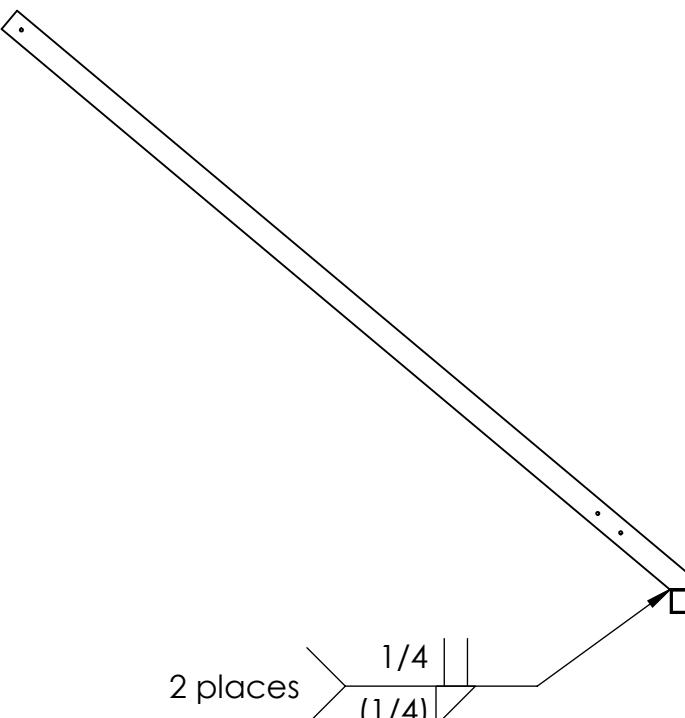
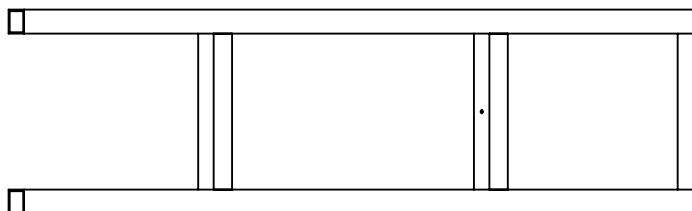
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2

1

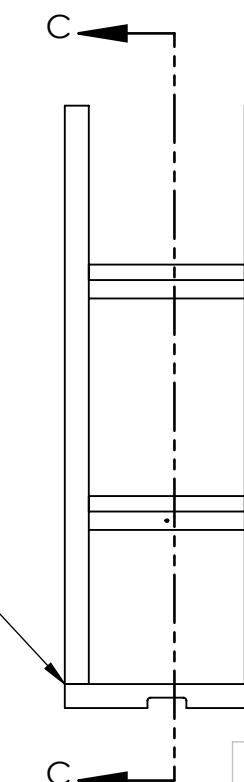
B

B



2 places
 $\frac{1}{4}$
 (1/4)

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C

C

		UNLESS OTHERWISE SPECIFIED:					
DIMENSIONS ARE IN INCHES					DRAWN	NAME	DATE
TOLERANCES:					CHECKED		
FRACTIONAL: $\pm\frac{1}{16}$					ENG APPR.		
ANGULAR: MACH $\pm 1^\circ$					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	

 FIRST
 ROBOTICS
 COMPETITION

 SOLIDWORKS
 Modeling Solutions Partner

TITLE: Outrigger Wing Diagonal

SIZE DWG. NO. REV
B GE-18078

SCALE: 1:16 WEIGHT: SHEET 2 OF 4

4

3

2

1

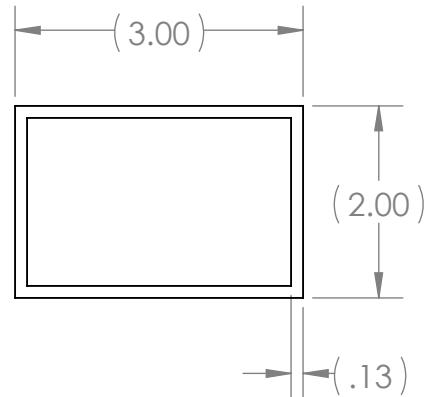
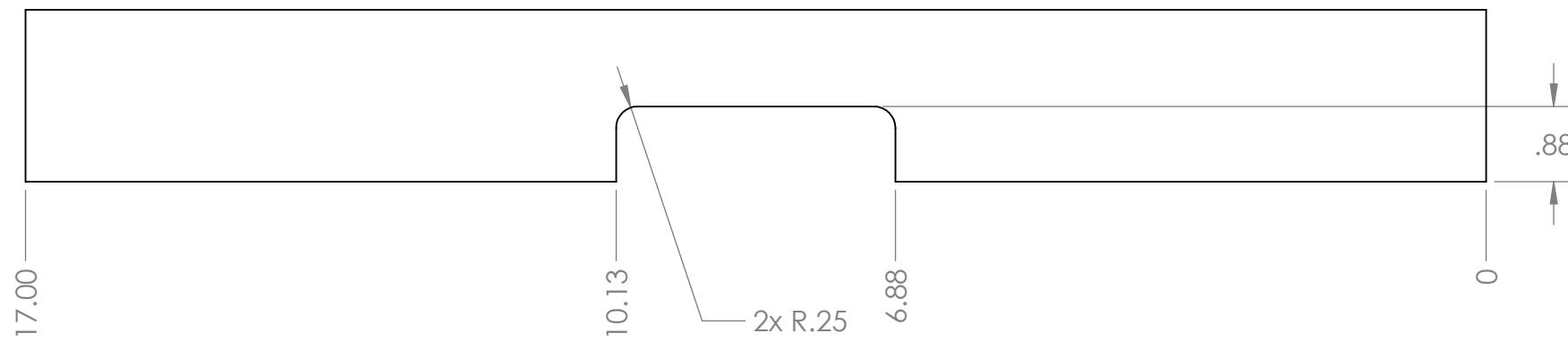
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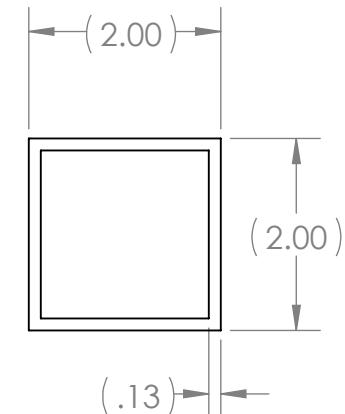
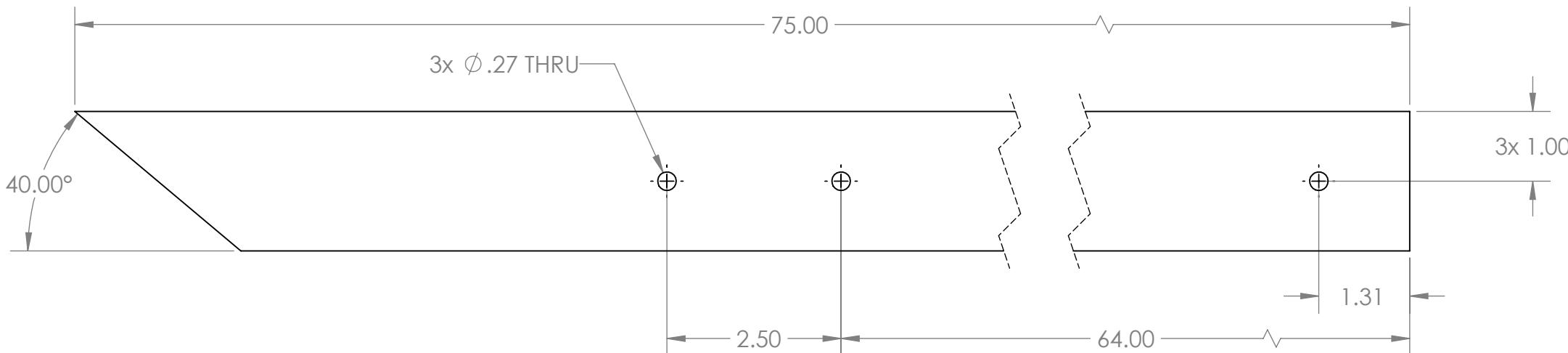
2

1

B



Item: GE-18078-1
Material: 3" x 2" x .125" thk. Rectangular Tube, 6061 Aluminum
Scale: 1:2
QTY: 1



Item: GE-18078-2
Material: 2" x .125" thk. Square Tube, 6061 Aluminum
Scale: 1:2
QTY: 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	NAME	DATE
	DRAWN			
	CHECKED			
	ENG APPR.			
	MFG APPR.			
	Q.A.			
	COMMENTS:			
NEXT ASSY	USED ON	INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL		
APPLICATION	FINISH			
	DO NOT SCALE DRAWING			
SIZE	DWG. NO.			REV
B	GE-18078			
SCALE: 1:2	WEIGHT:			SHEET 3 OF 4

 FIRST ROBOTICS COMPETITION  SOLIDWORKS
Modeling Solutions Partner

Title:
Outrigger Wing Diagonal

4

3

2

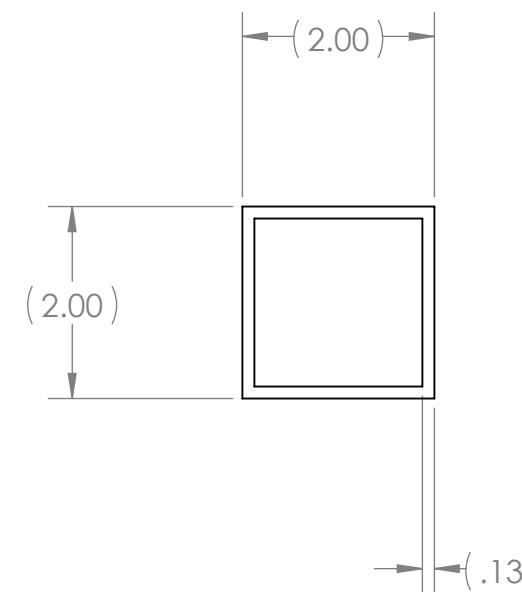
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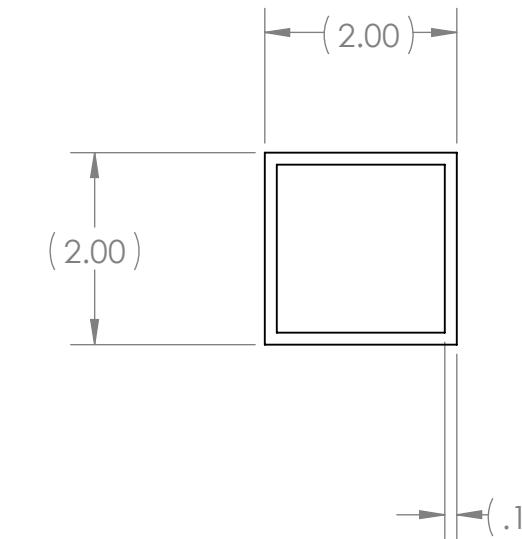
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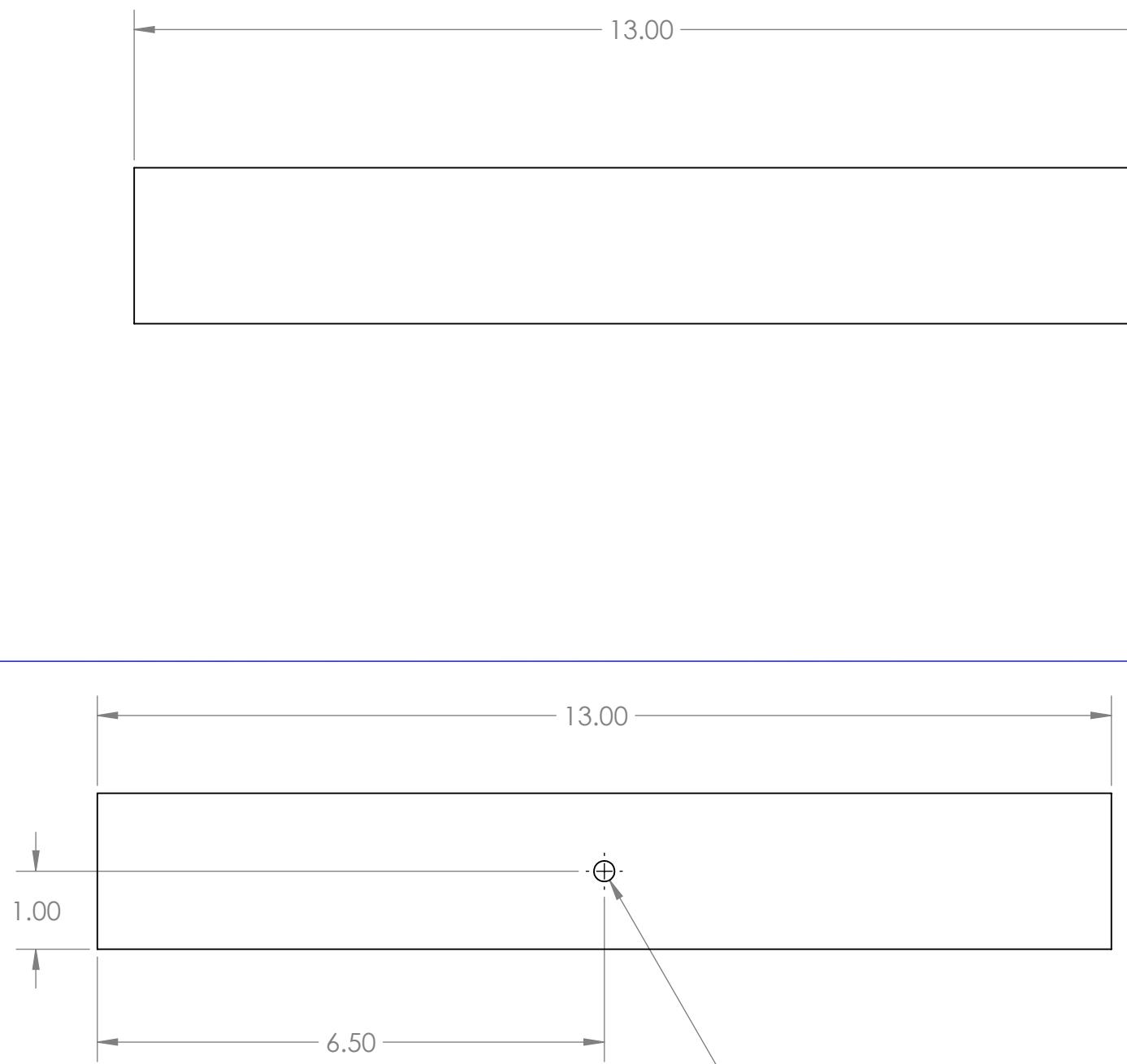
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Item: GE-18078-3
Material: 2" x .125" thk. Square Tube, 6061 Aluminum
Scale: 1:2
QTY: 1



Item: GE-18078-4
Material: 2" x .125" thk. Square Tube, 6061 Aluminum
Scale: 1:2
QTY: 1



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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
	NEXT ASSY	USED ON	FINISH		
		APPLICATION	DO NOT SCALE DRAWING		
SIZE	DWG. NO.			REV	
B	GE-18078				
SCALE: 1:2	WEIGHT:			SHEET 4 OF 4	

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

Title:
**Outrigger Wing
Diagonal**

4

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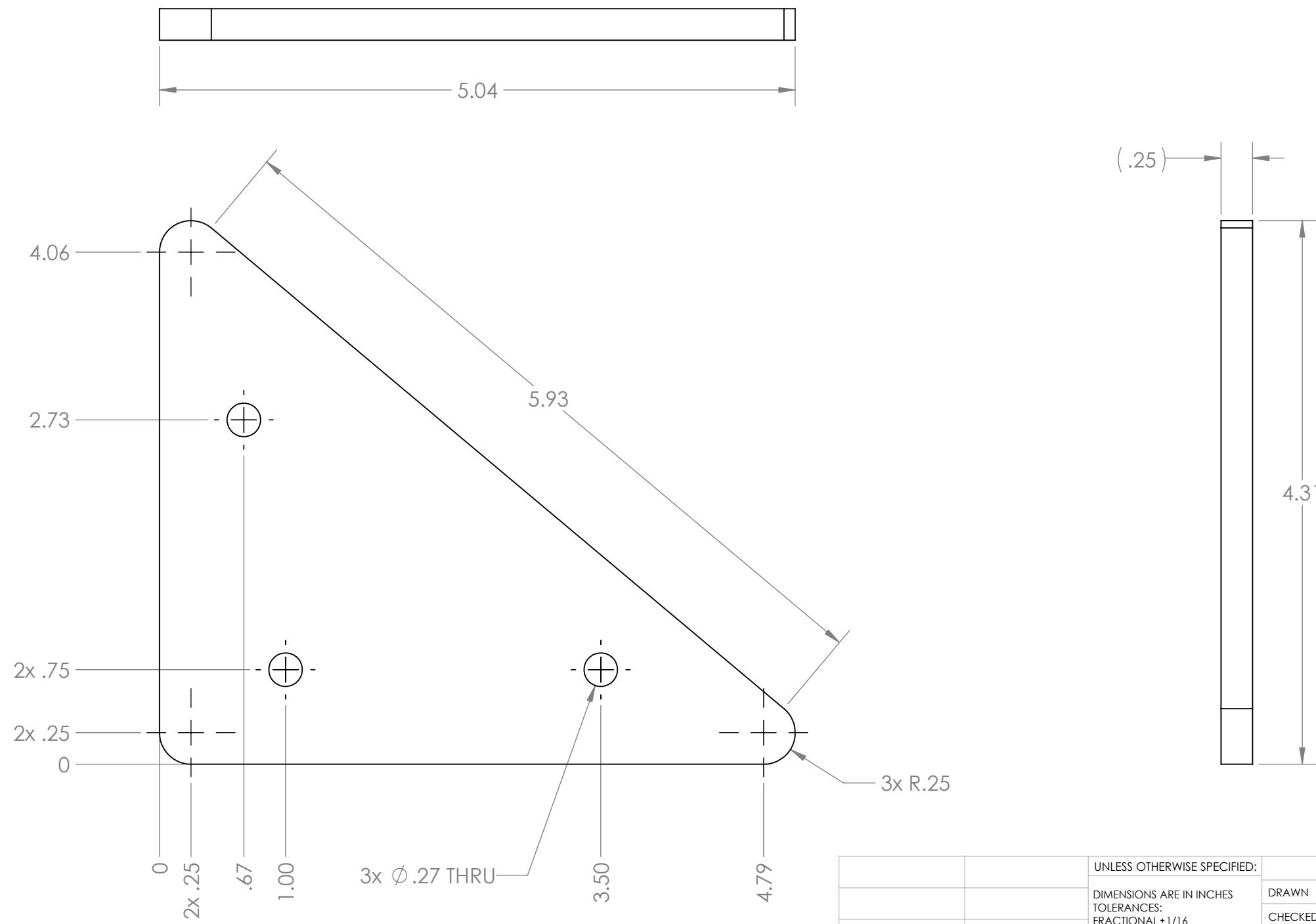
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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Title: Outrigger Wing Plate

SIZE	DWG. NO.	REV
B	GE-18079	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

4

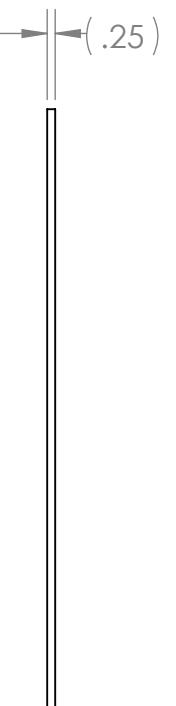
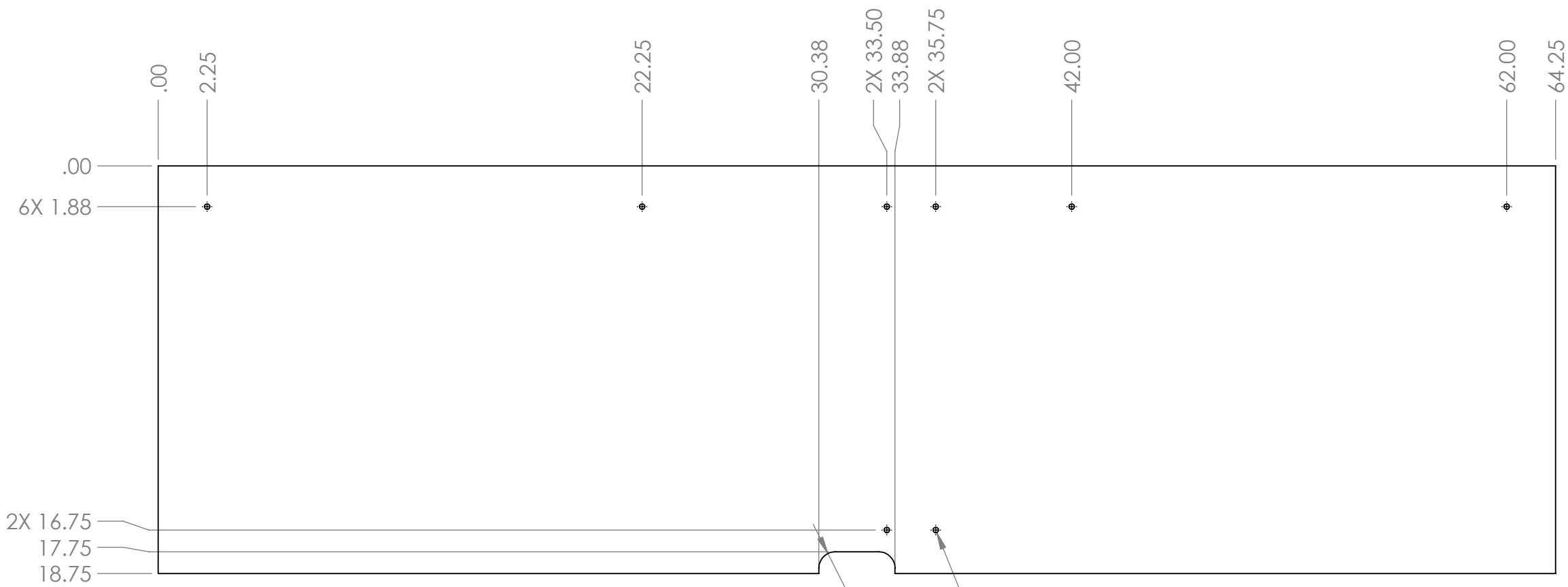
3

2

1

B

B



Notes:

1. Material: 1/4" thick, clear polycarbonate
2. Remove all burrs and sharp edges

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		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:		Q.A.	COMMENTS:
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			
FIRST ROBOTICS COMPETITION	SOLIDWORKS Modeling Solutions Partner	TITLE: Fence Polycarb, Middle			
B	GE-18080	SIZE	DWG. NO.	REV	
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1			

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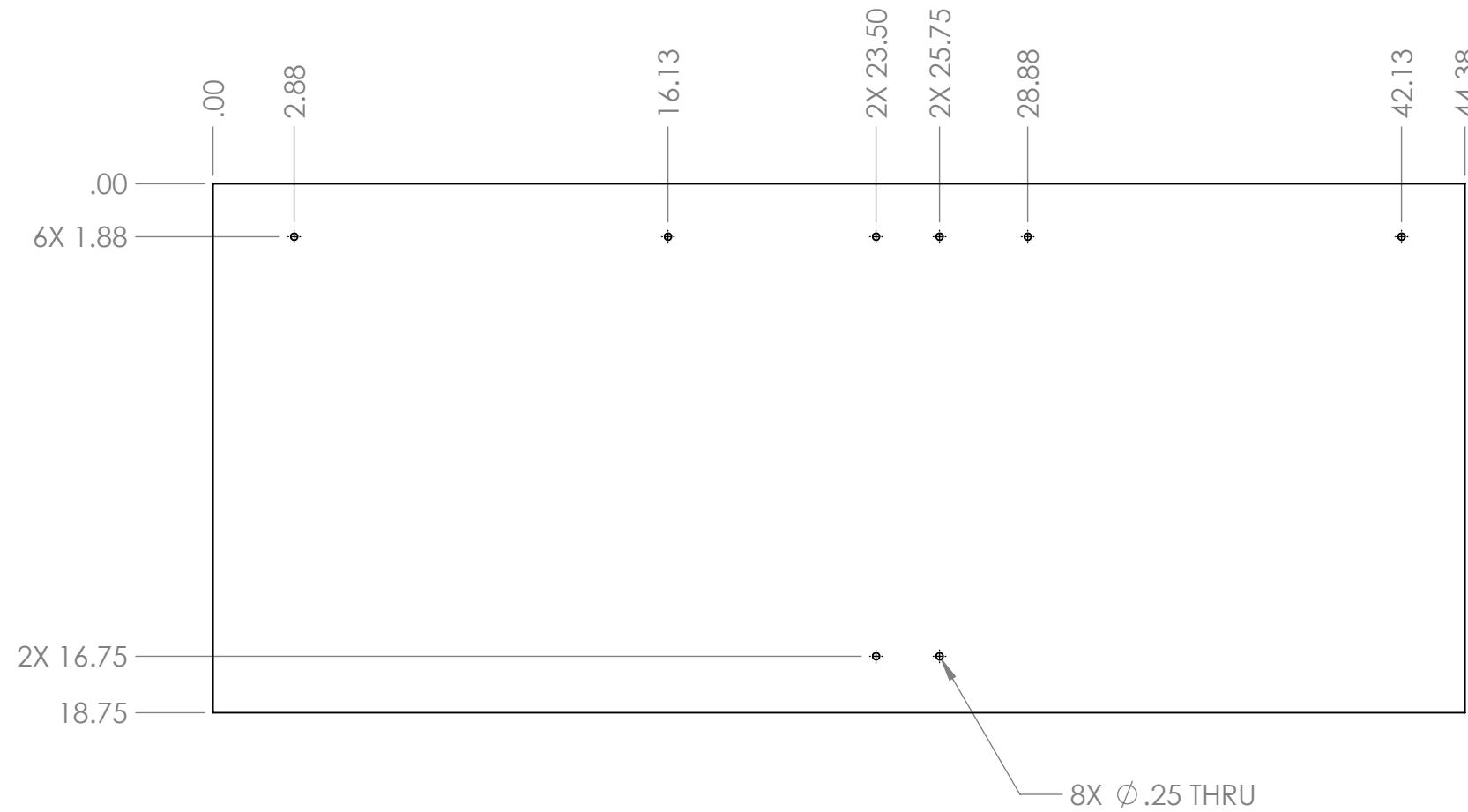
3

2

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B

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Notes:

1. Material: 1/4" thick, clear polycarbonate
2. Remove all burrs and 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 $\pm .001$				
		INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.	COMMENTS:	
NEXT ASSY	USED ON	MATERIAL		FINISH		
APPLICATION		DO NOT SCALE DRAWING				
A	B	C	D	E	F	

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Fence Polycarb,
Outer Side

SIZE	DWG. NO.	REV
B	GE-18081	
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1

4

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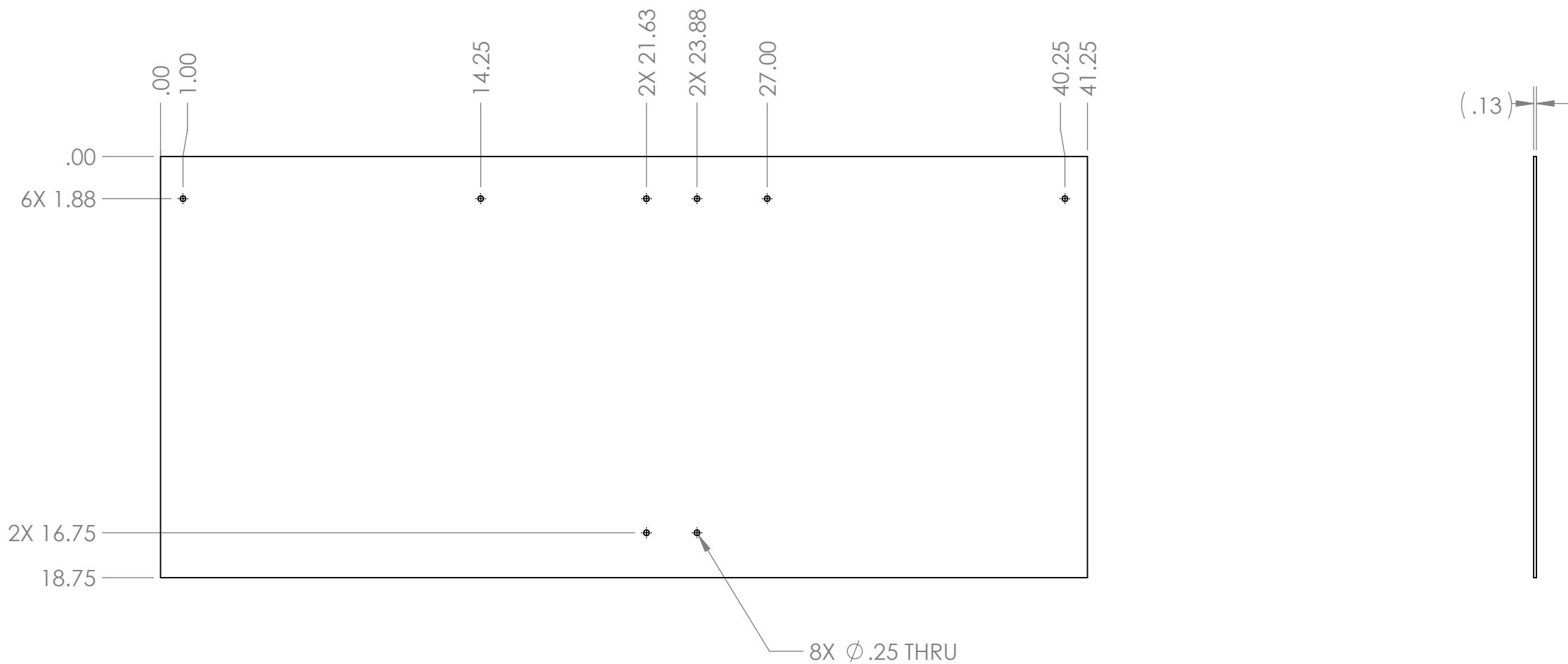
3

2

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B

B



A

A

Notes:

1. Material: 1/8" thick, clear polycarbonate
2. Remove all burrs and sharp edges

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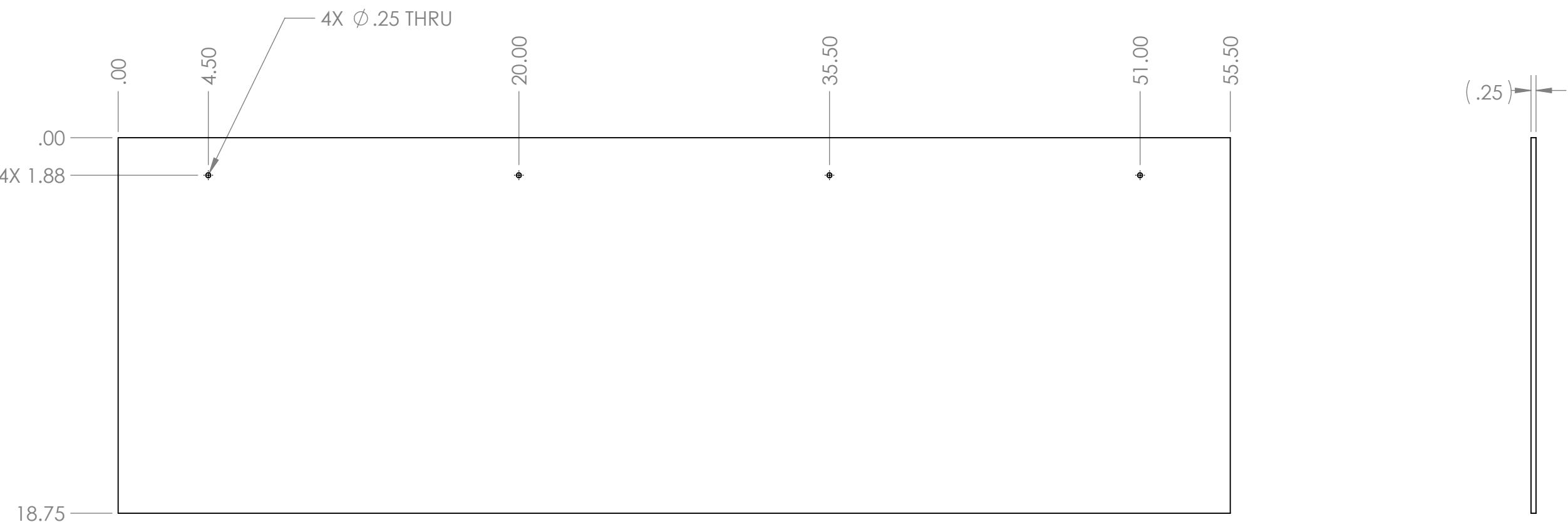
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		INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.	COMMENTS:
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			
FIRST ROBOTICS COMPETITION	SOLIDWORKS Modeling Solutions Partner	TITLE: Fence Polycarb, Inner Side			
B	GE-18082	SIZE	DWG. NO.	REV	
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1			

4

3

2

1



- Notes:
1. Material: 1/4" thick, clear polycarbonate
 2. Remove all burrs and sharp edges

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NEXT ASSY	USED ON	INTERPRET GEOMETRIC TOLERANCING PER:		ENG APPR.	MFG APPR.
		MATERIAL	FINISH		
APPLICATION		DO NOT SCALE DRAWING		COMMENTS:	

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Fence Polycarb,
Outer End

SIZE	DWG. NO.	REV
B	GE-18083	
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1

4

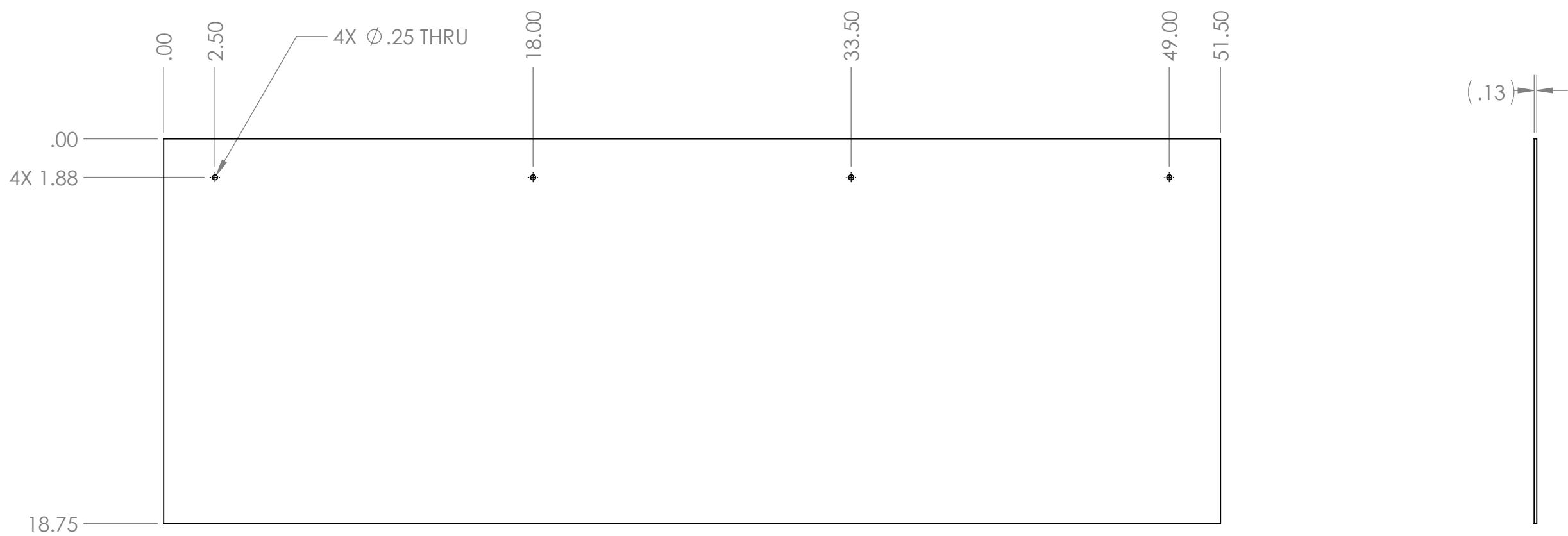
3

2

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B

B



A

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Notes:

1. Material: 1/8" thick, clear polycarbonate
2. Remove all burrs and sharp edges

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
B	GE-18084				
SCALE: 1:6	WEIGHT:				
		SHEET 1 OF 1			

4

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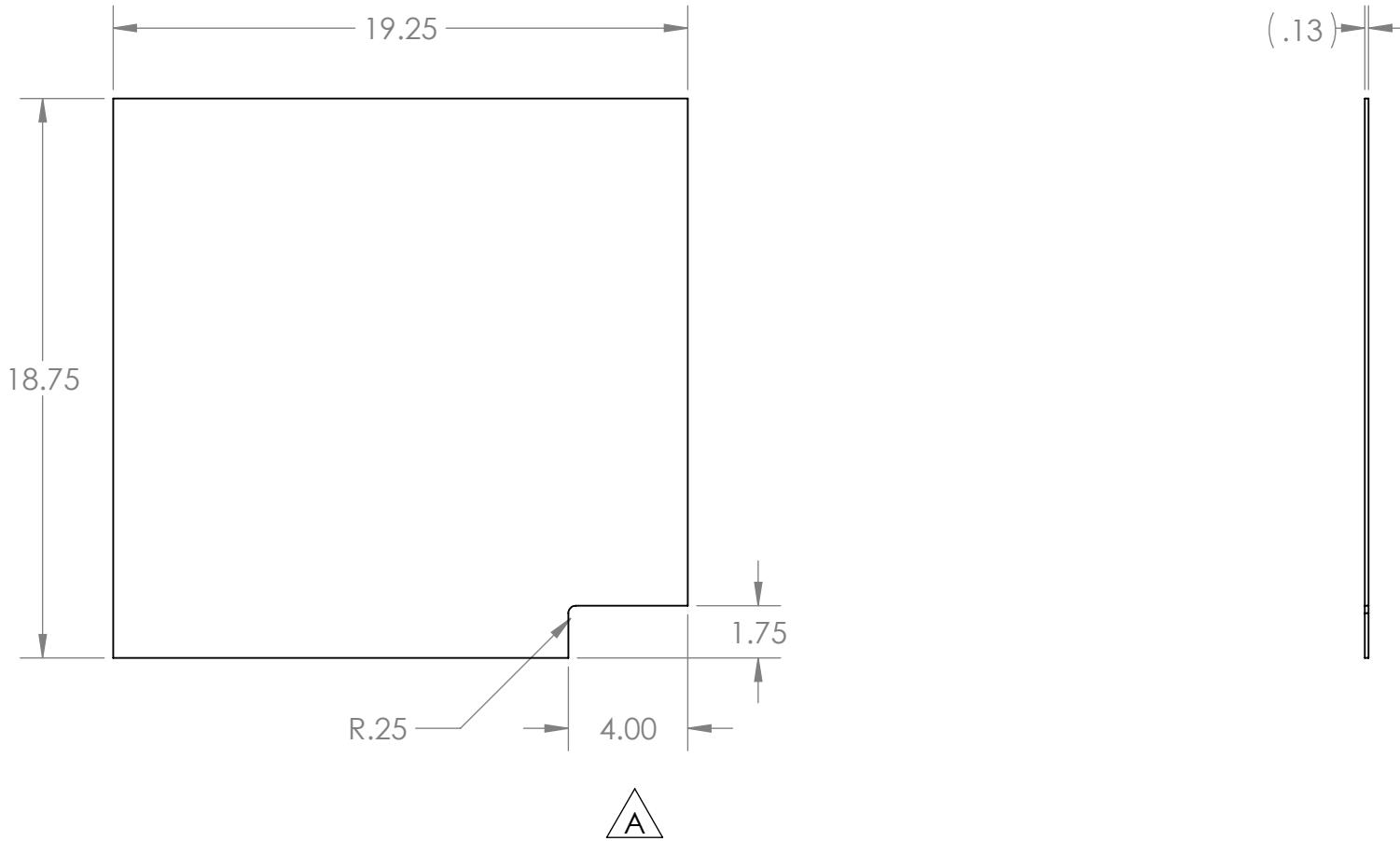
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Added notch	12/2/2017	DAF

B

B



- Notes:
- Material: 1/8" thick, clear polycarbonate
 - Remove all burrs and sharp edges

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SIZE	DWG. NO.	REV			
B	GE-18085	A			
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1			

FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Fence Polycarb,
Guard**

SIZE DWG. NO.
B GE-18085 A

SCALE: 1:6 WEIGHT: SHEET 1 OF 1

4

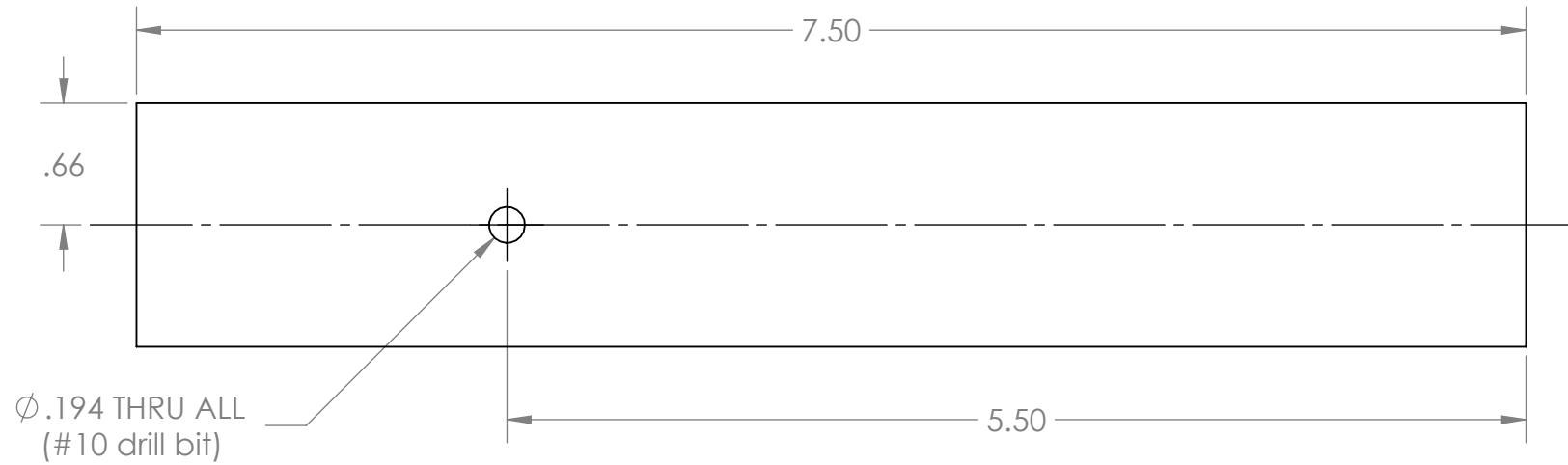
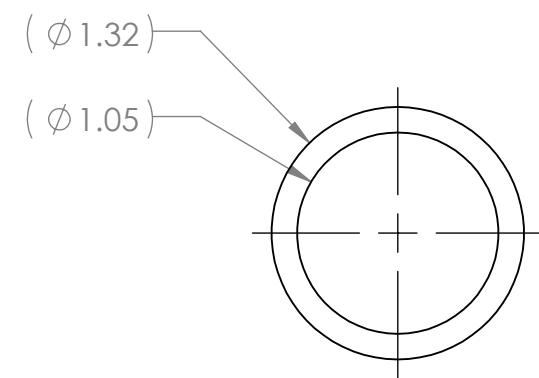
3

2

1

B

B



Notes:

1. Material: 1" Schedule 40 Pipe, 6061 Aluminum
2. Remove all burrs and sharp edges

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		UNLESS OTHERWISE SPECIFIED:		NAME _____ DATE _____ DRAWN _____ CHECKED _____ ENG APPR. _____ MFG APPR. _____ Q.A. _____ COMMENTS: _____	
		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			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			
B	GE-18086	A		SIZE DWG. NO. REV	
SCALE: 1:1		WEIGHT:		SHEET 1 OF 1	

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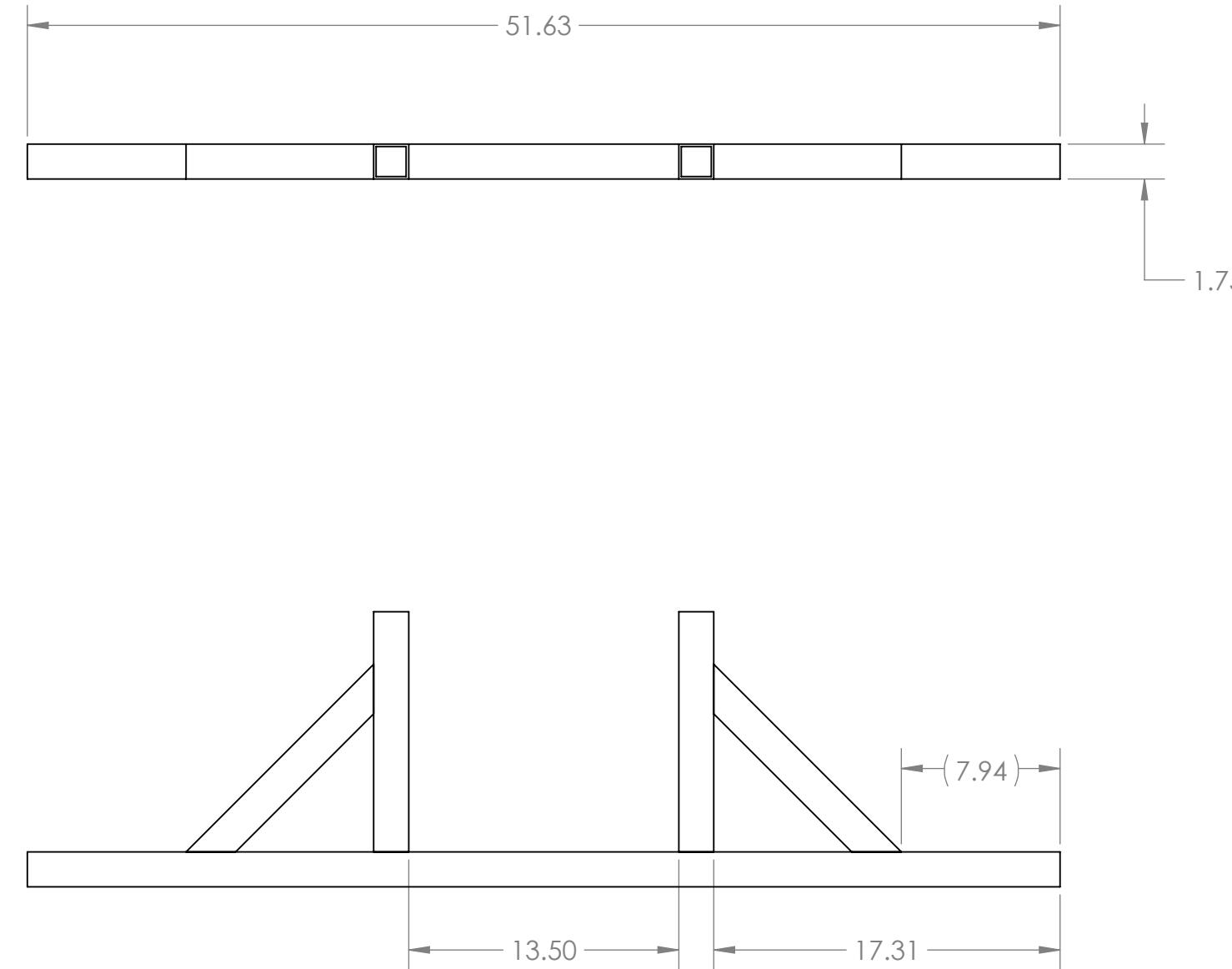
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1

B

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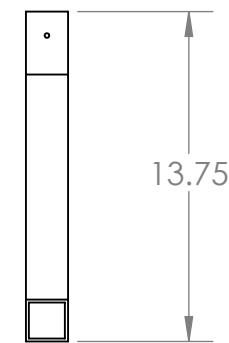
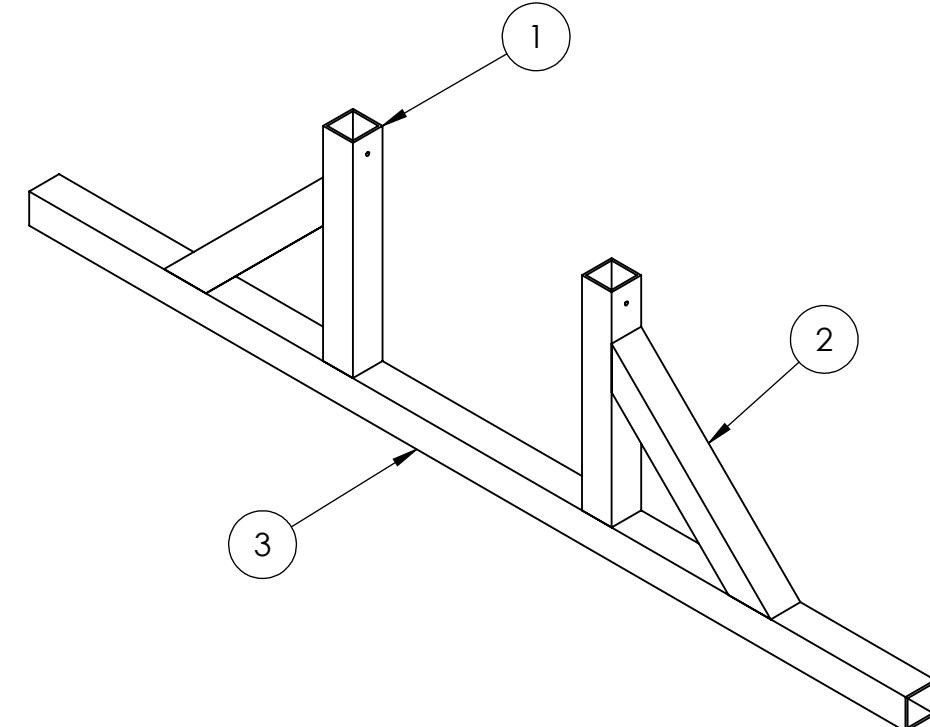
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A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18087-1	1.75" x .125" thk. Square Tube, 6063 Aluminum	2
2	GE-18087-2	1.75" x .125" thk. Square Tube, 6063 Aluminum	2
3	GE-18087-3	1.75" x .125" thk. Square Tube, 6063 Aluminum	1

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
	NEXT ASSY	USED ON		
		APPLICATION	DO NOT SCALE DRAWING	
SIZE	DWG. NO.		REV	
B	GE-18087			
SCALE: 1:8	WEIGHT:		SHEET 1 OF 3	



FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

Switch Fence Brace

SIZE DWG. NO. REV
B GE-18087

SCALE: 1:8 WEIGHT: SHEET 1 OF 3

4

3

2

1

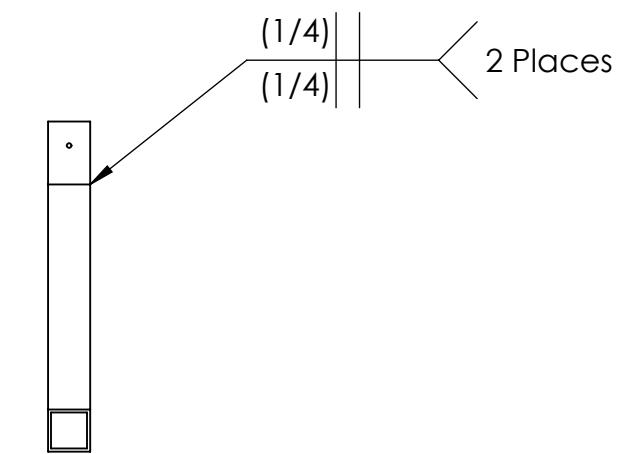
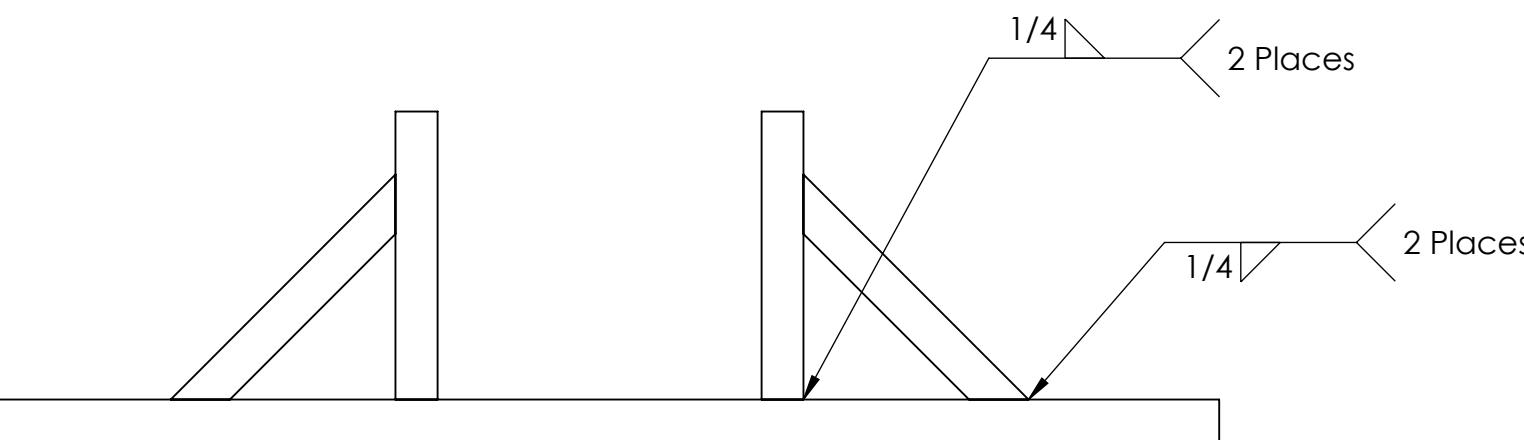
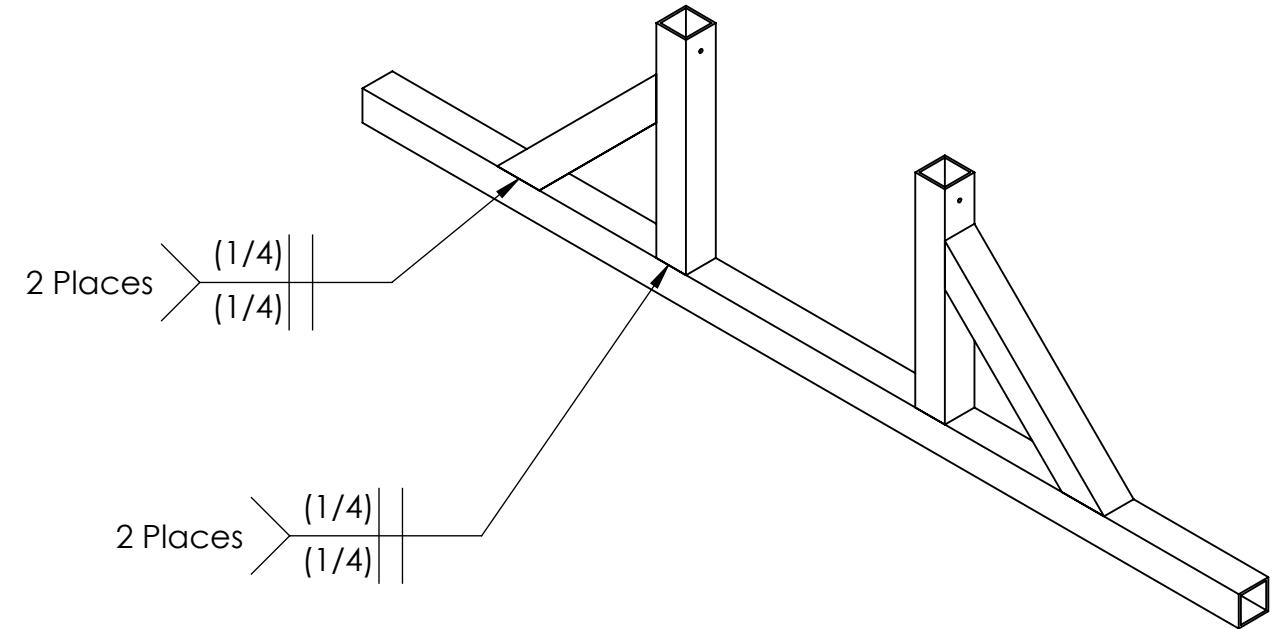
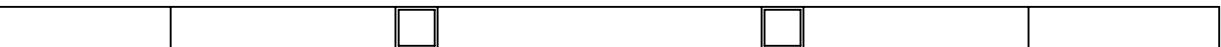
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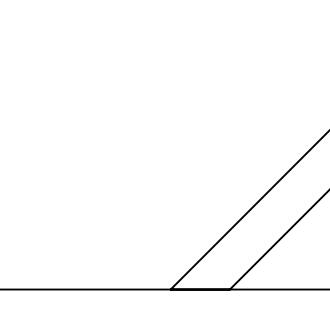
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B



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DIMENSIONS ARE IN INCHES				
TOLERANCES:				
FRACTIONAL $\pm 1/16$				
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$				
TWO PLACE DECIMAL $\pm .01$				
THREE PLACE DECIMAL $\pm .001$				
INTERPRET GEOMETRIC TOLERANCING PER:				
MATERIAL				
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		
SCALE: 1:8		WEIGHT:	SHEET 2 OF 3	

 FIRST
ROBOTICS
COMPETITION  SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Switch Fence
Brace**

SIZE DWG. NO. REV
B GE-18087

4

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2

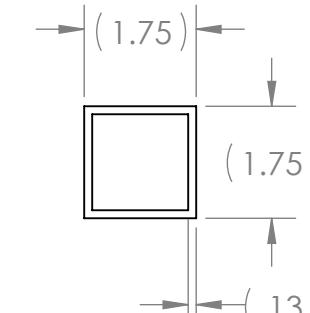
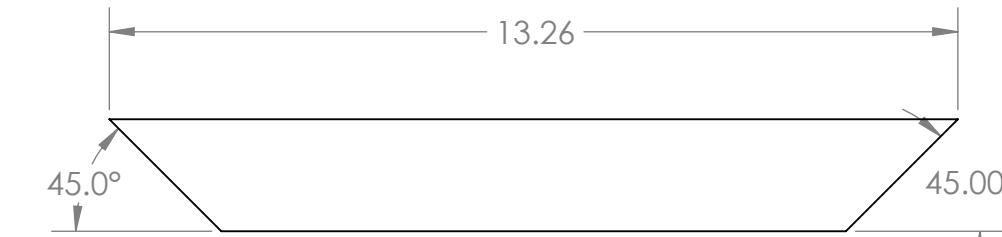
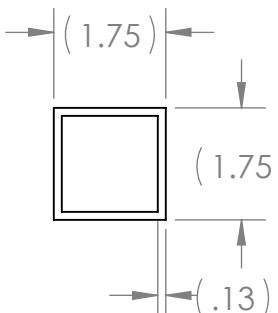
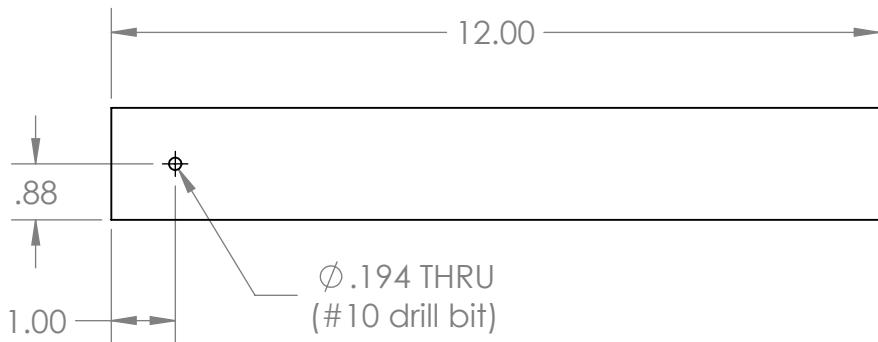
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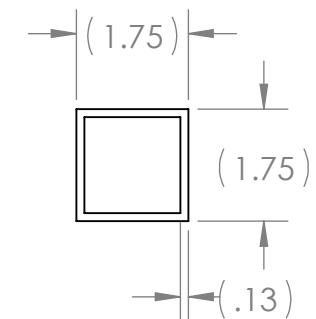
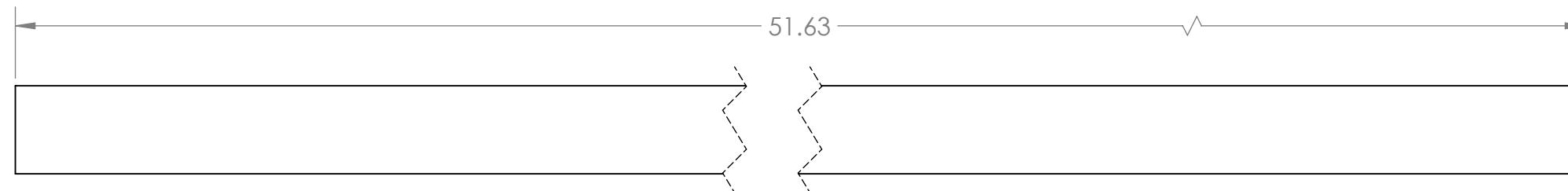
2

1



Item: GE-18087-1
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
QTY: 2

Item: GE-18087-2
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
QTY: 2



Item: GE-18087-3
Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
QTY: 1

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Switch Fence Brace

SIZE	DWG. NO.	REV
B	GE-18087	
SCALE: 1:3	WEIGHT:	SHEET 3 OF 3

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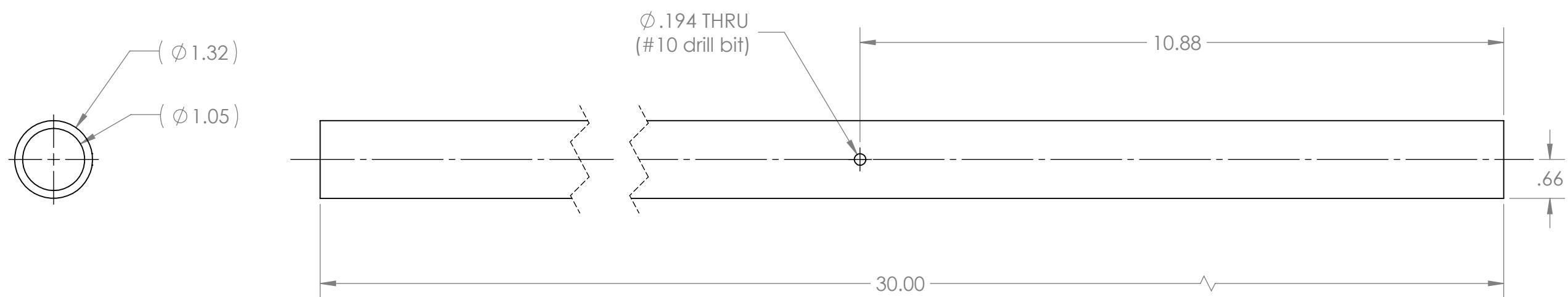
3

2

1

B

B



Notes:

1. Material: 1" Schedule 40 Pipe, 6061 Aluminum
2. Remove all burrs and 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			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

**Switch Fence
Brace Pin**

SIZE	DWG. NO.	REV
B	GE-18088	
SCALE: 1:2	WEIGHT:	SHEET 1 OF 1

4

3

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1

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2

1

B

B



A

A

Notes:

1. Description: 1-3/8 Dia. Conveyor Roller, for 30" frame width
2. Material: Galvanized Steel
3. Source: McMaster-Carr
4. Item#: 2282T25

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		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.	COMMENTS:
		MATERIAL		
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Roller, Conveyor

SIZE DWG. NO. **B** GE-18090 **REV**

SCALE: 1:4 WEIGHT: SHEET 1 OF 1

4

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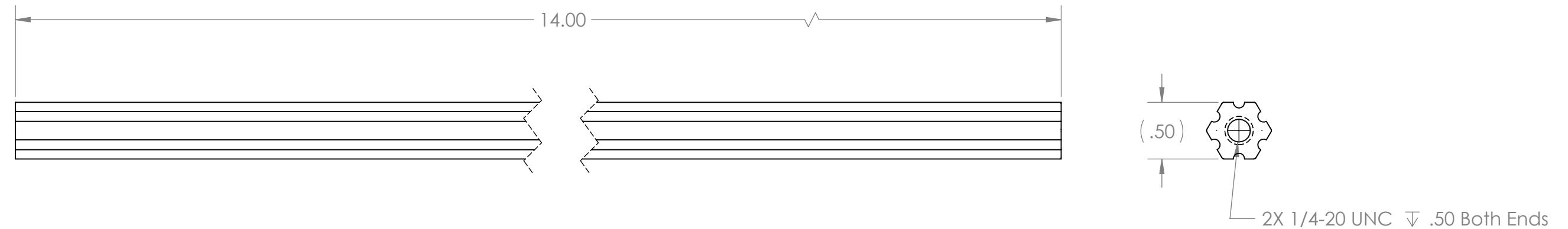
3

2

1

B

B



A

A

- Notes:
1. Material: Aluminum
 2. Vendor: AndyMark
 3. Remove all burrs or sharp edges

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		DRAWN	DAF	11/26/17	
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SIZE	DWG. NO.				REV
B	GE-18091				
SCALE: 1:1	WEIGHT:				SHEET 1 OF 1

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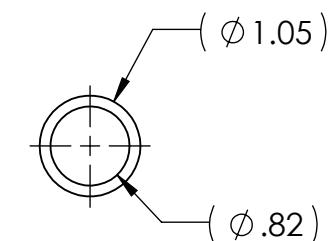
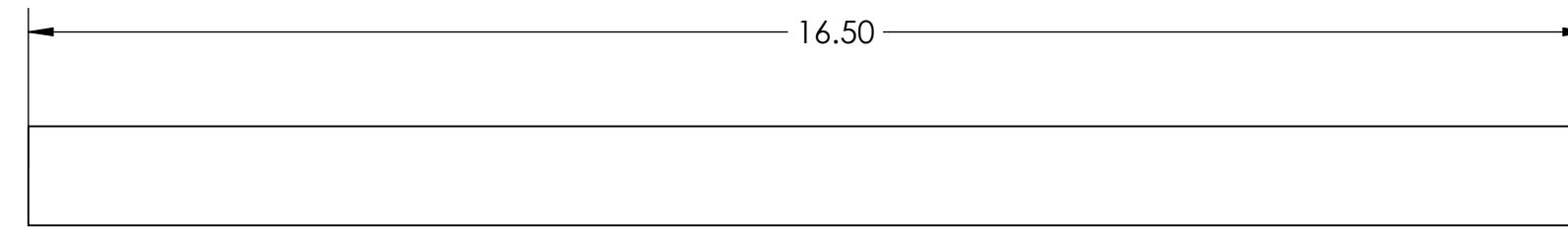
3

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B

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Notes:

1. Material: 3/4" Schedule 40 Pipe, White PVC
2. Remove all burrs and sharp edges

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		DRAWN	DAF	11/26/17
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE	DWG. NO.		REV	
B	GE-18092			
SCALE: 1:2	WEIGHT:		SHEET 1 OF 1	

4

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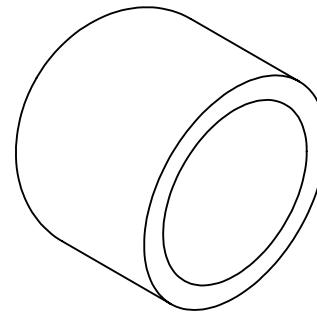
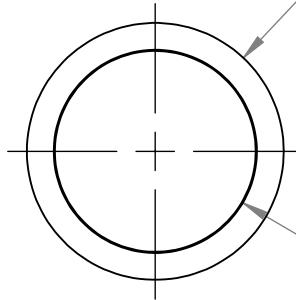
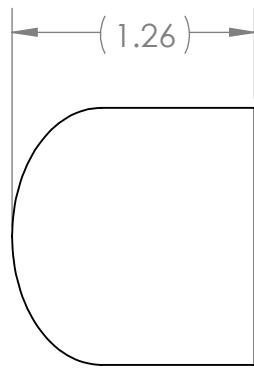
1

FIRST
ROBOTICS
COMPETITION 
Modeling Solutions Partner

Handle, Chute

B

B



Notes:

1. Description: End Cap for 3/4" Schedule 40 Pipe
2. Material: White PVC

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

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

TITLE:

End Cap, PVC

SIZE	DWG. NO.	REV
A	GE-18093	
SCALE: 1:1		WEIGHT:
SHEET 1 OF 1		

4

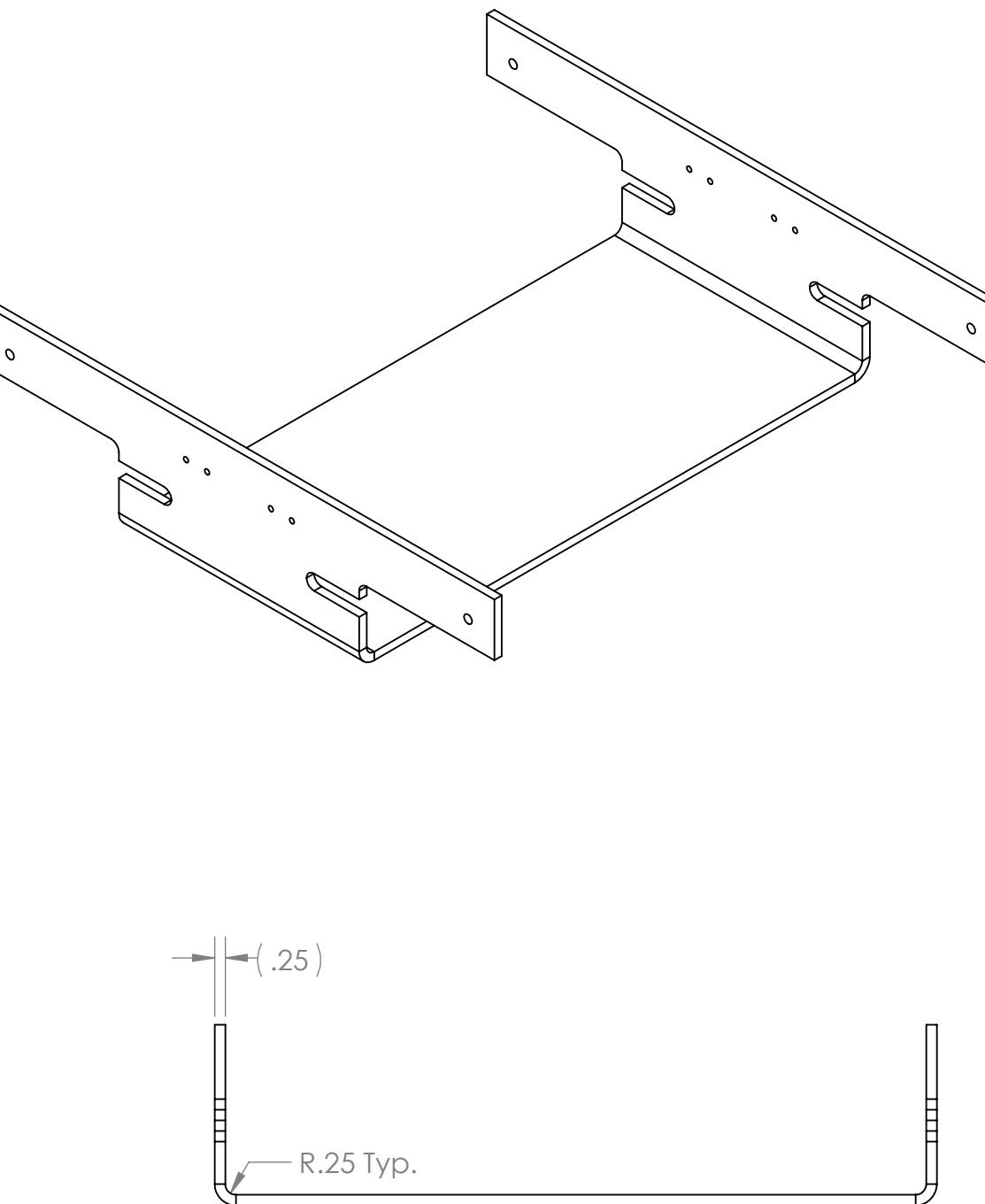
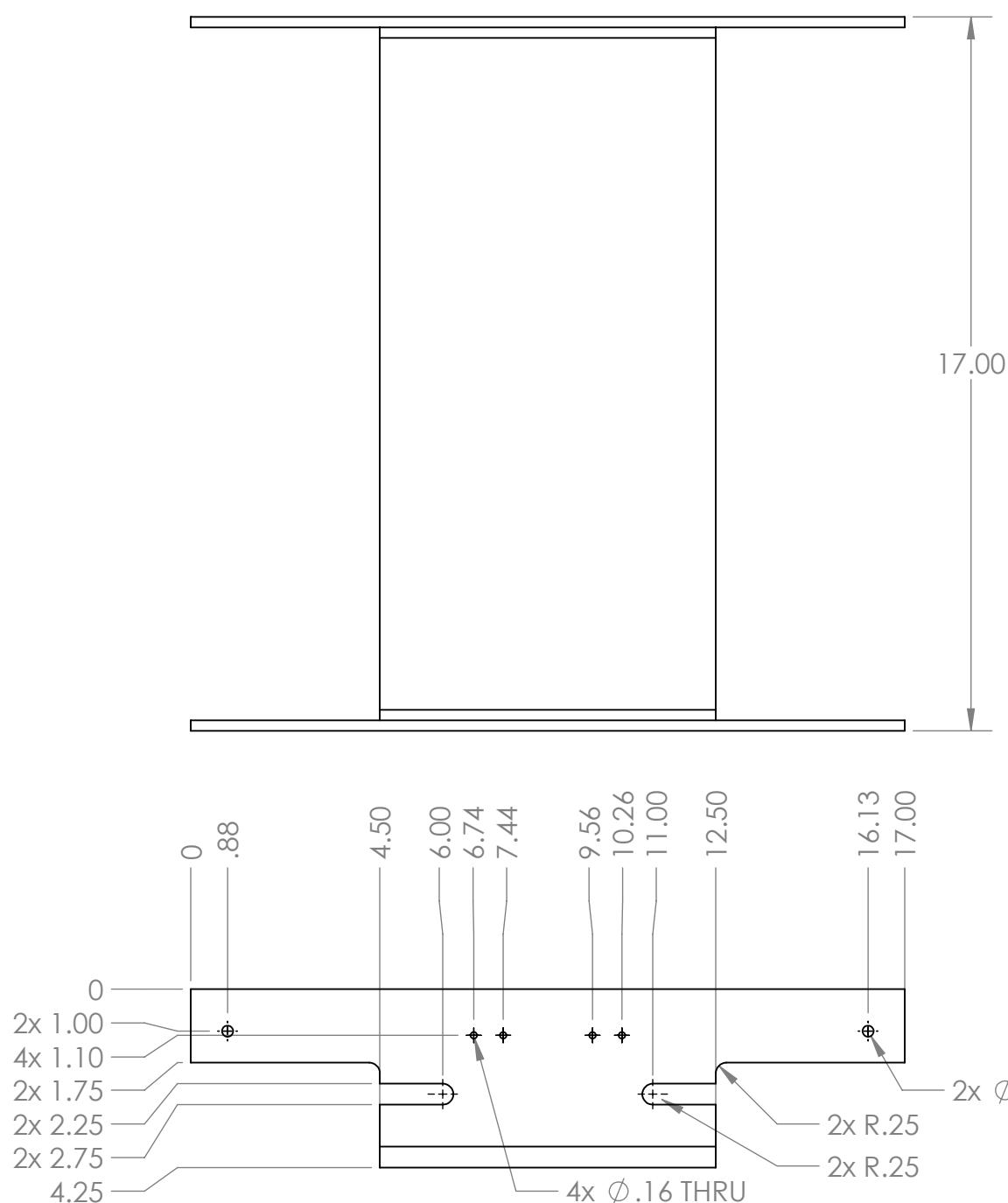
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B

B



- Notes:
- Material: 1/4" thick, clear polycarbonate
 - Remove all burrs and sharp edges.

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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 Casey O'Connor	DATE 11/28/2017		
		INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL	Q.A.	COMMENTS:		
NEXT ASSY	USED ON	FINISH				
APPLICATION	DO NOT SCALE DRAWING					

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Title: Scale Sensor Mount

SIZE	DWG. NO.	REV
B	GE-18094	
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

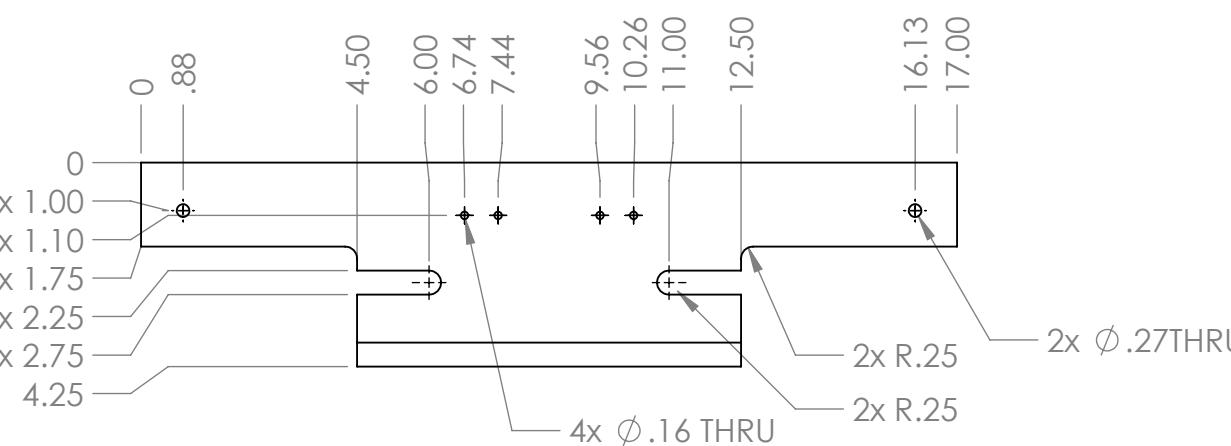
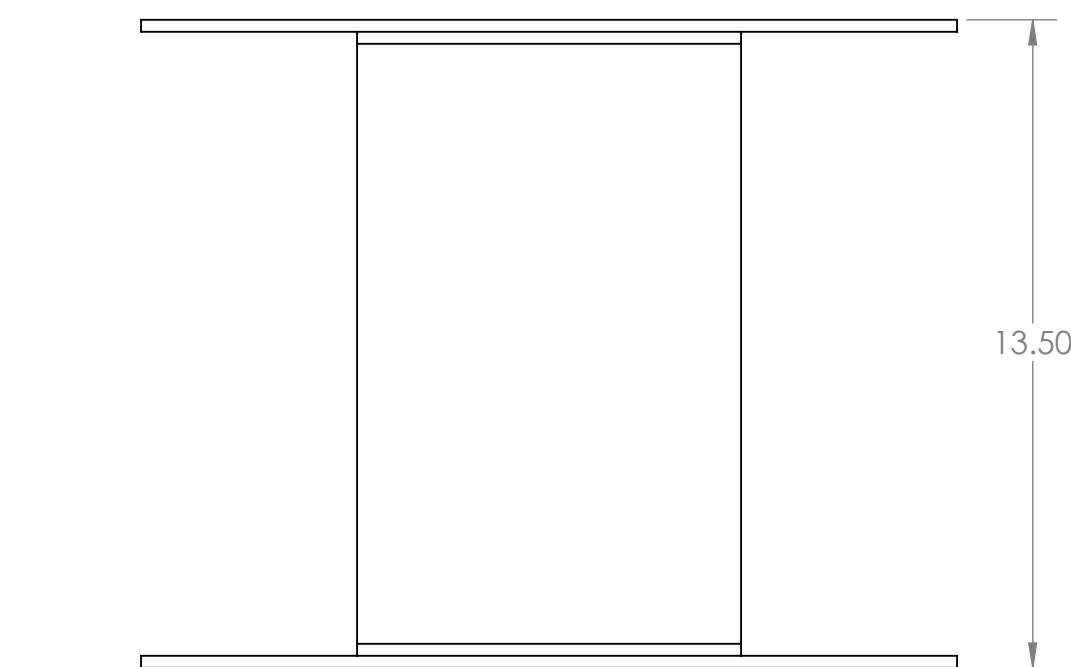
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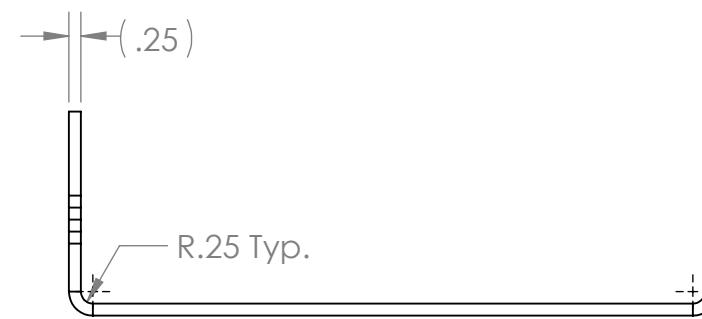
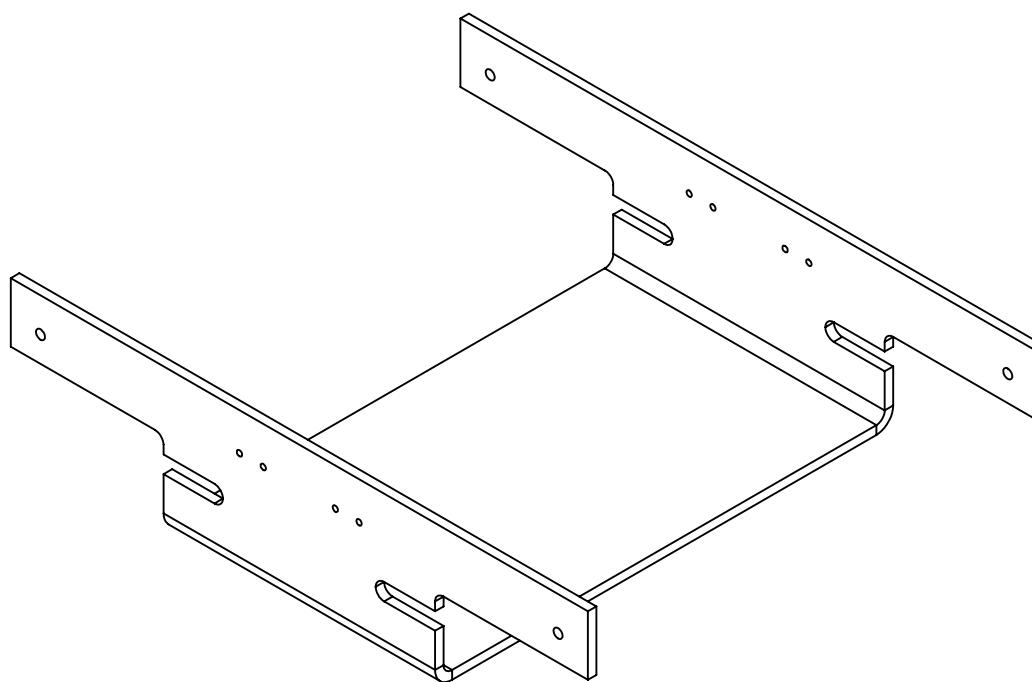
1

B



- Notes:
- Material: 1/4" thick, clear polycarbonate
 - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	NAME Casey O'Connor	DATE 11/28/2017
		DRAWN	CHECKED	
		ENG APPR.	MFG APPR.	
		Q.A.	COMMENTS:	
		MATERIAL		
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Switch Sensor Mount

SIZE	DWG. NO.	REV
B	GE-18095	
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

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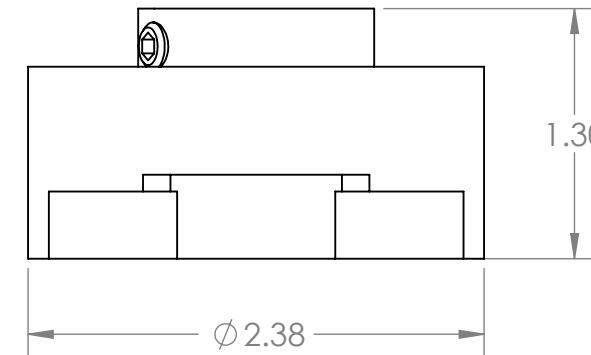
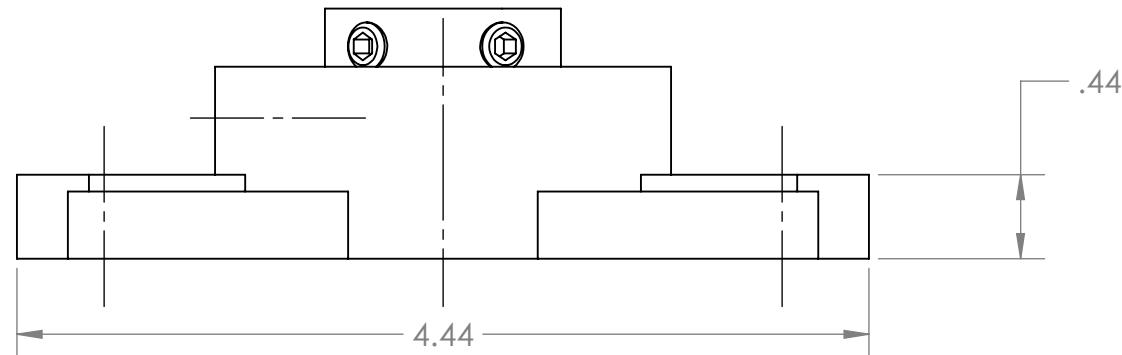
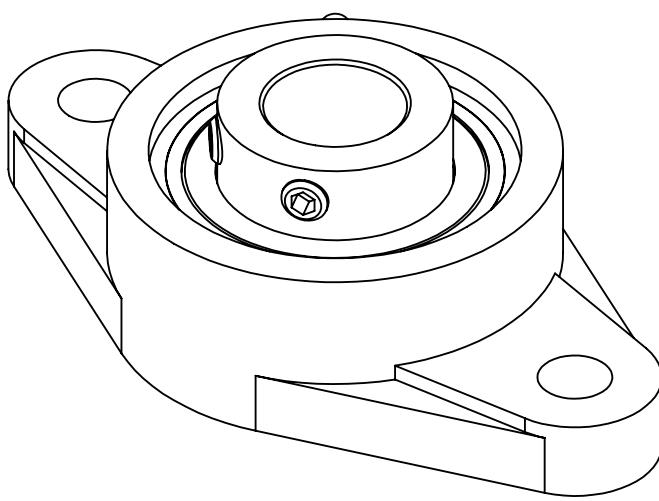
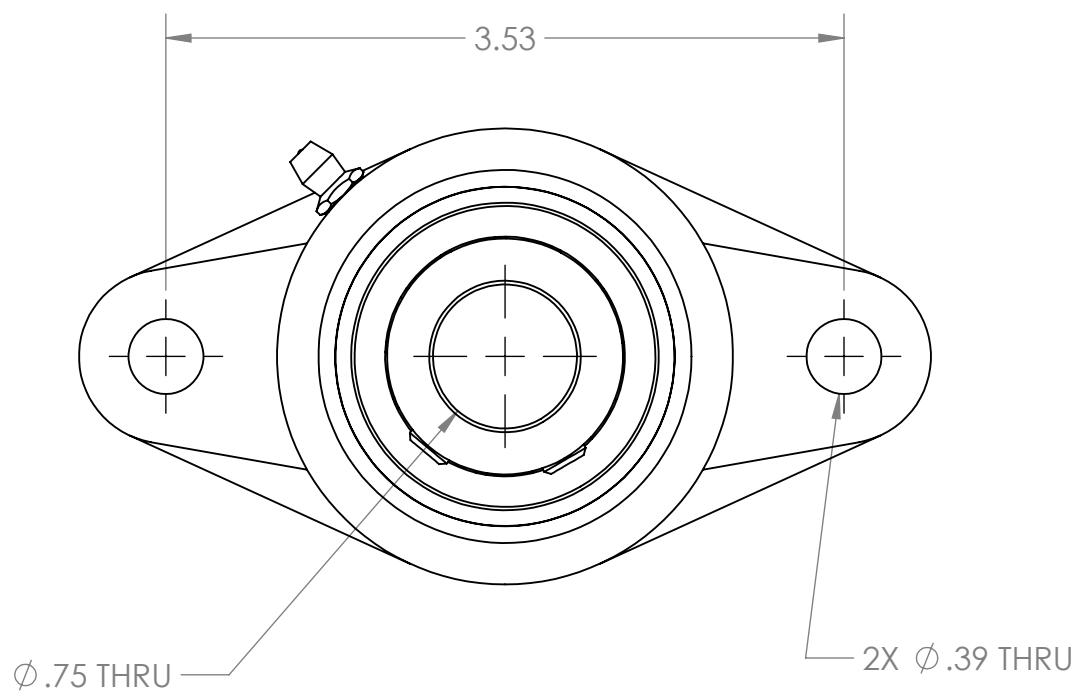
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**Notes:**

1. Description: 2-Bolt Flange Bearing 3/4" Bore Dia.
2. Source: Grainger
3. Item #: 36UX95
4. Equivalent substitutions allowed

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Title: Scale/Switch Bearing
Size: B **Dwg. No.:** GE-18096 **Rev.:**

Scale: 1:1 **Weight:** **Sheet 1 of 1**

4

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A technical drawing of a circular component. The outermost boundary is a thick circle. Inside it is a thinner circle, and further inside is a square cutout. Two small circles with cross-hairs are positioned on the left and right sides, each with a leader line pointing to the text "2X Ø.27 THRU". Above the top center of the component, there is a dimension ".50" with arrows indicating height. Below the bottom center, there is a dimension "3.23" with arrows indicating width. To the right of the component, there are two vertical dimension lines with arrows: one at ".50" on the right side and another at ".50" on the far right edge.

A technical drawing of a rectangular component. The width of the main body is labeled as 3.74. The total height of the component is labeled as .45. There are small rectangular features at the top left and bottom right corners.

A diagram showing a circular coil with a central diamond-shaped core. The diamond shape is formed by two intersecting lines that meet at the center. The entire assembly is enclosed within concentric circles representing the coil's turns.

A diagram showing a rectangular component. A horizontal slot is positioned near the bottom edge. A dimension line with arrows at both ends spans the width of the slot, labeled "2.76".

Notes

- NOTES:

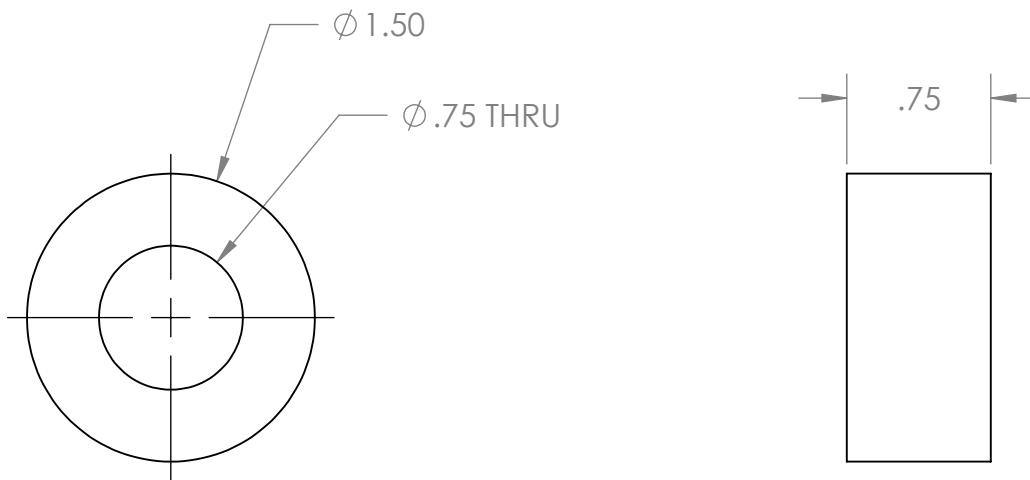
 1. Description: Rotary Speed Limiter, Opening for Square shaft, 1437 in.-oz Maximum Torque
 2. Source: McMaster-Carr
 3. Item #: 6597K24
 4. Equivalent substitutions allowed

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	DRAWN			
		TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	CHECKED			
		INTERPRET GEOMETRIC TOLERANCING PER:	ENG APPR.			
		MATERIAL	MFG APPR.			
NEXT ASSY	USED ON	FINISH	Q.A.			
APPLICATION		DO NOT SCALE DRAWING	COMMENTS:			
				SIZE	DWG. NO.	REV
				B	GE-18097	
				SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

B

B



Notes:

1. Description: Nylon Unthreaded Spacer
2. Source: McMaster-Carr
3. Item#: 94639A891
4. Equivalent substitutions allowed

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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					
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING					

 **FIRST**
ROBOTICS
COMPETITION 
SOLIDWORKS
Modeling Solutions Partner

TITLE:

Switch Shaft Spacer

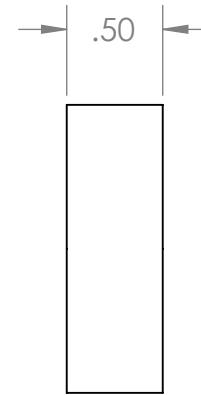
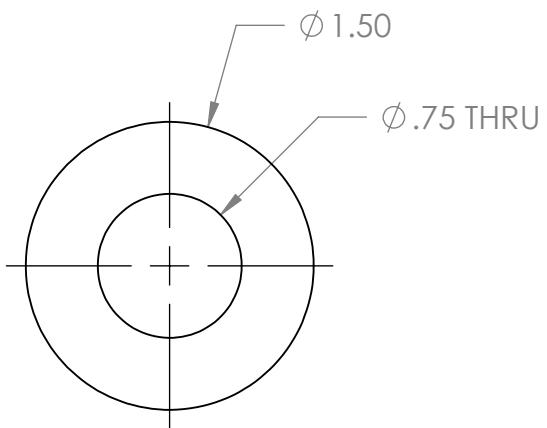
SIZE	DWG. NO.	REV
A	GE-18098	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

2

1

B

B



Notes:

1. Description: Nylon Unthreaded Spacer
2. Source: McMaster-Carr
3. Item#: 94639A889
4. Equivalent substitutions allowed

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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				
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				

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 **FIRST**
ROBOTICS
COMPETITION

 **SOLIDWORKS**
Modeling Solutions Partner

TITLE:

Scale Shaft Spacer

SIZE	DWG. NO.	REV
A	GE-18099	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

4

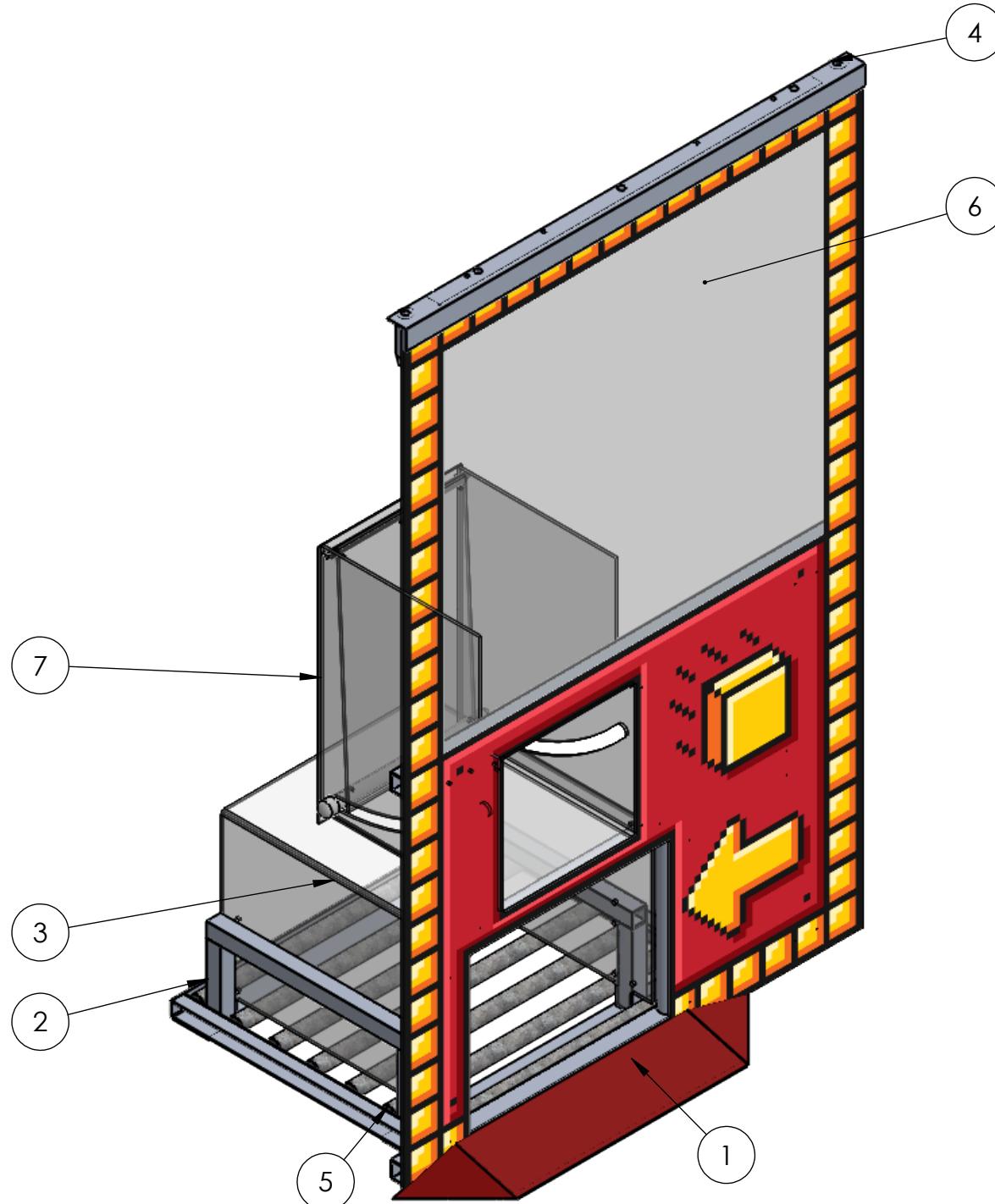
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B

B



ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	GE-18009	Exchange Frame	1
2	GE-18006	Roller Base	1
3	GE-18008	Roller Tunnel	1
4	GE-18015	Top Rail, Exchange	1
5	2282T25	Roller, Conveyor	7
6	GE-18010	Exchange Plastic	1
7	GE-18101	Assembly, Chute	1
8	GE-18127	Ramp, Exchange	1

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

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE: Assembly, Exchange

SIZE B DWG. NO. GE-18100 REV

SCALE: 1:12 WEIGHT: SHEET 1 OF 2

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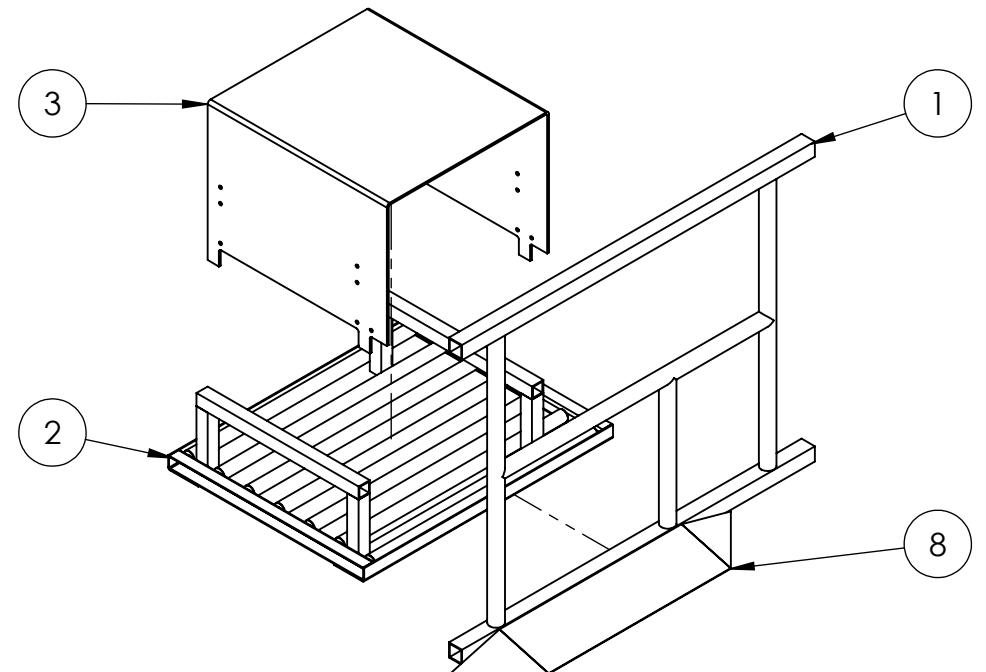
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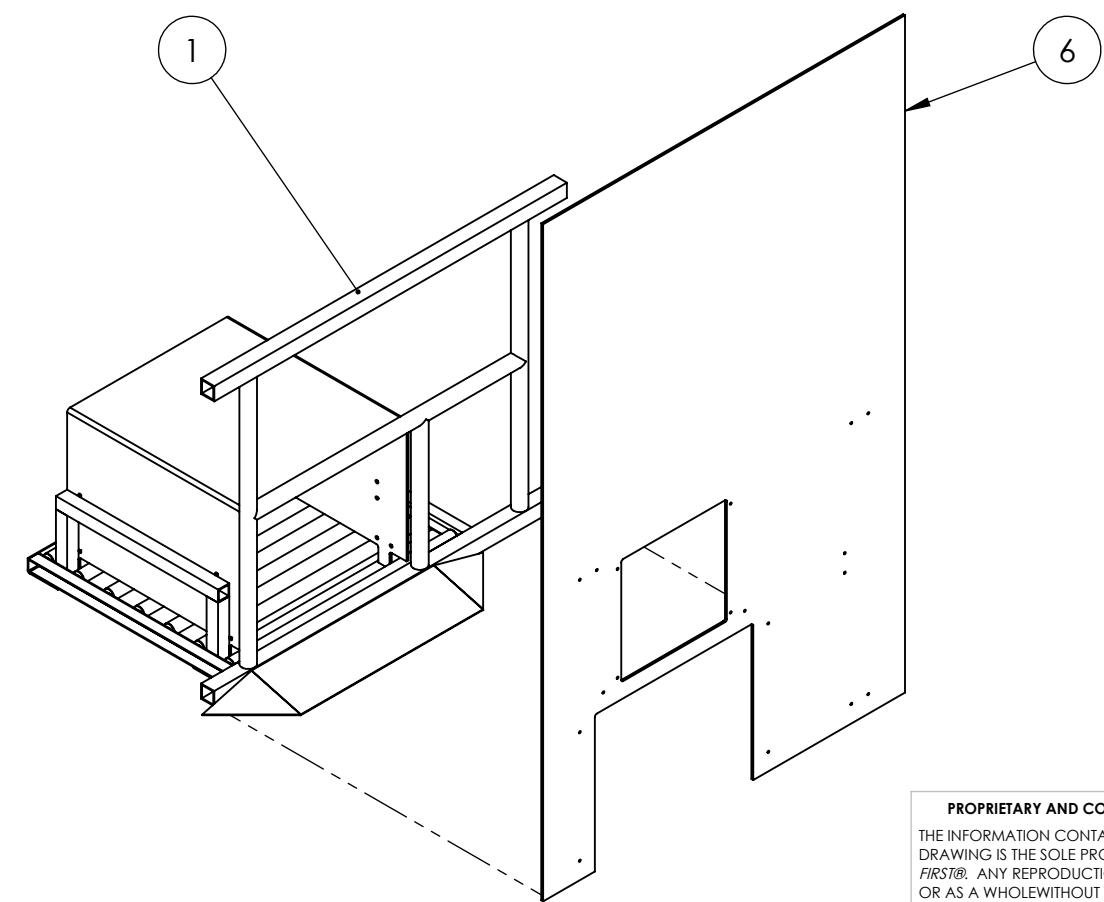
B

B



Notes:

1. Attach Item 1 to field perimeter.
2. Place Item 8 in front of Item 1.
3. Place Item 2 behind Item 1, with rails centered on the opening.
4. Center item 3 on rollers, flush with edges of guard and rail.



Notes:

1. Attach Item 6 to Item 1 using cable ties.

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Assembly, Exchange

SIZE	DWG. NO.	REV
B	GE-18100	
SCALE: 1:18	WEIGHT:	SHEET 2 OF 2

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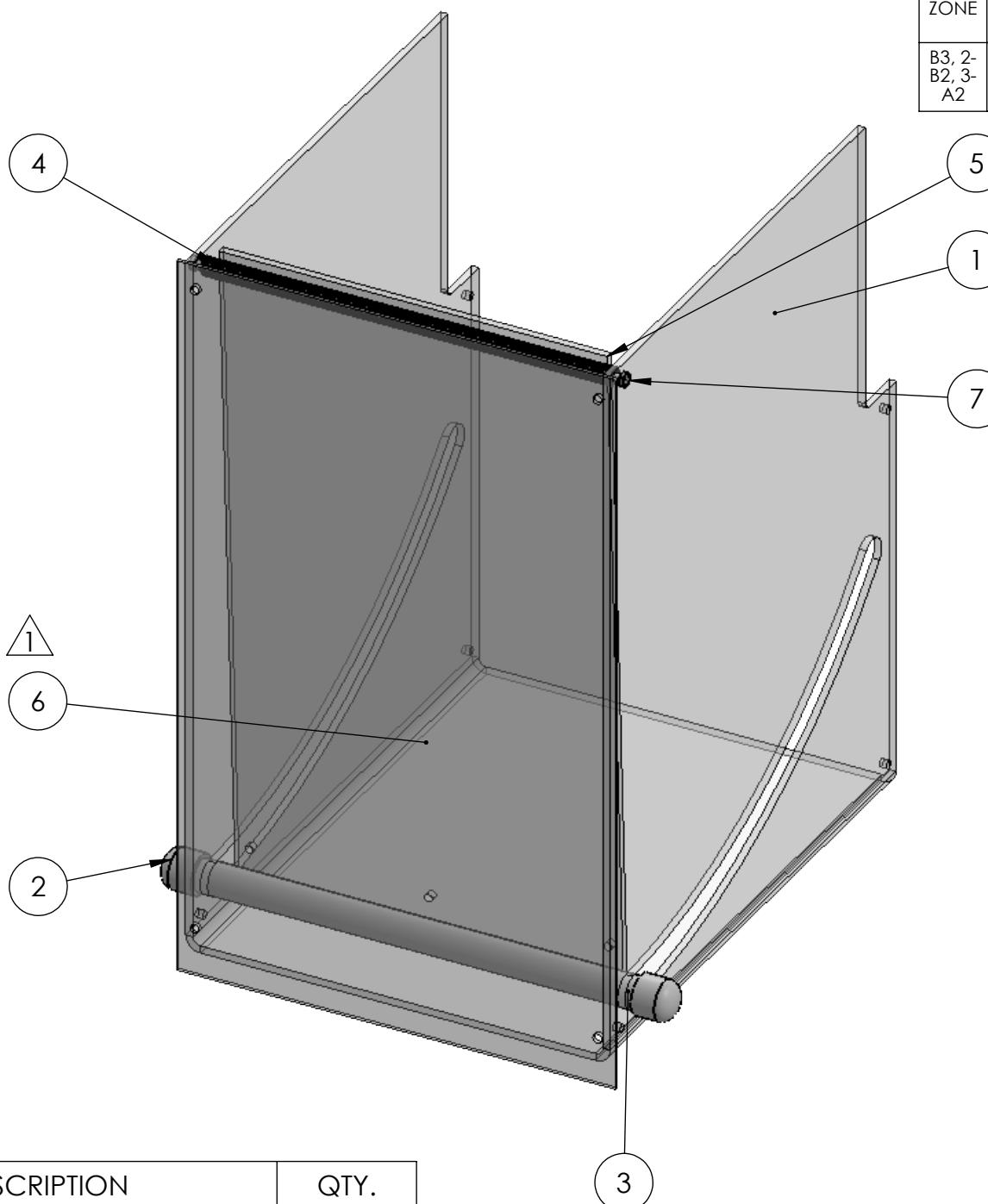
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B3, 2- B2, 3- A2	1	Added ite GE-18130 Chute Back Wall. Updated fastener used.	1/8/2018	CPO



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18025	Chute Body	1
2	GE-18093	End Cap, PVC	2
3	GE-18092	Handle, Chute	1
4	GE-18091	Churro, 14"	1
5	GE-18027	Pusher Panel	1
6	GE-18130	Chute Back Wall	1
7	hex_.25_20_.75	Steel Hex Head Screw, 1/4"-20 x 3/4" long, fully threaded	2

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

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Assembly, Chute

SIZE DWG. NO. REV
B GE-18101 1
SCALE: 1:5 WEIGHT: SHEET 1 OF 3

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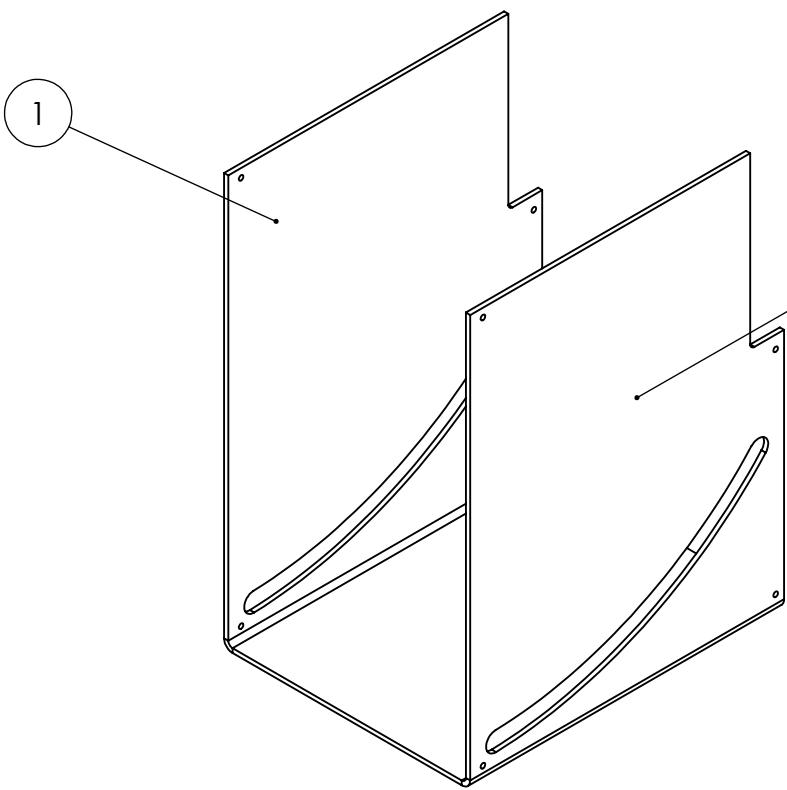
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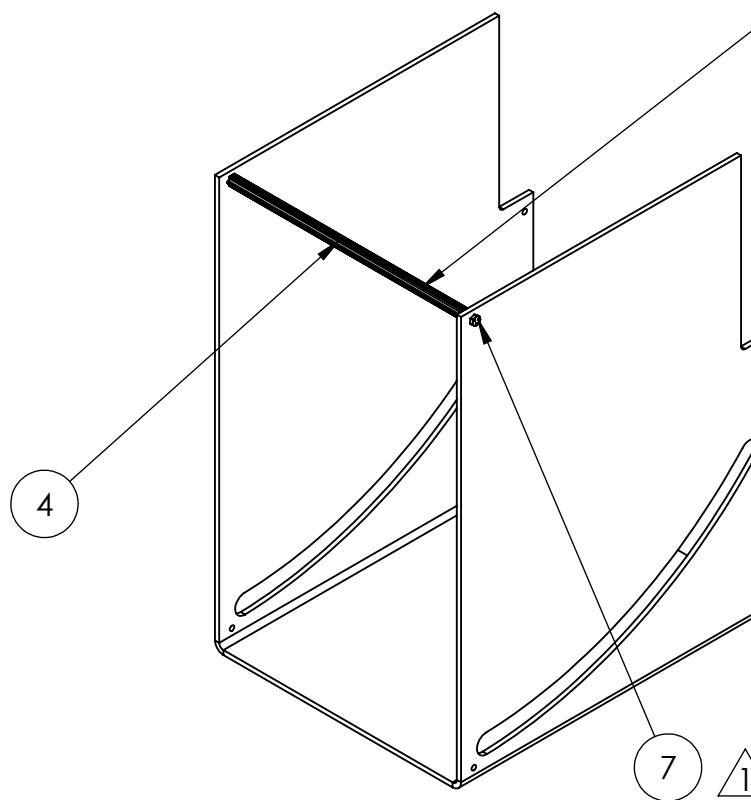
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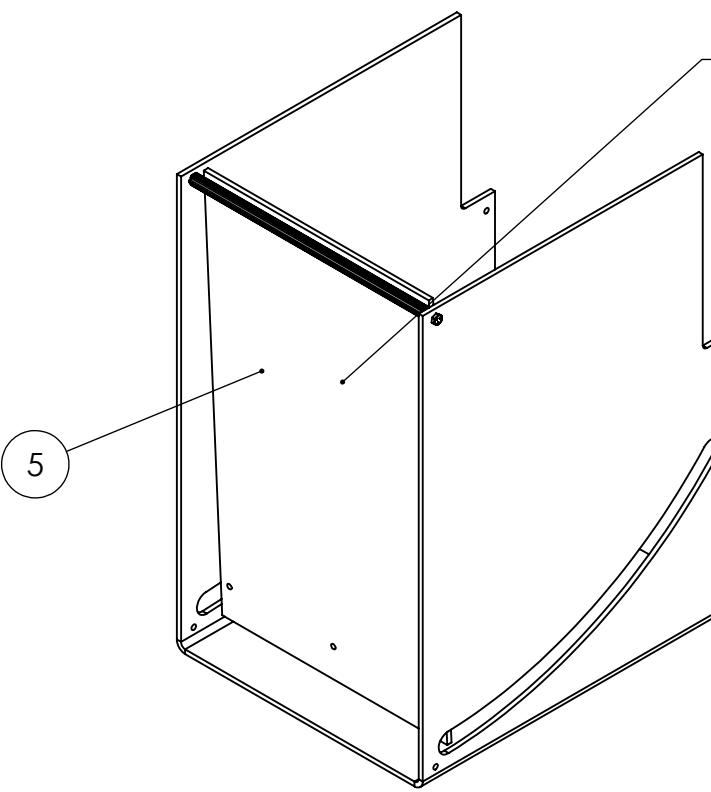
1



Step 1:
Fix Item 1 to station.



Step 2:
Add Item 4 and attach using Item 7 (qty: 2).



Step 3:
Attach Item 5 using cable ties to Item 4.

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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 $\pm .001$				
INTERPRET GEOMETRIC TOLERANCING PER:				
MATERIAL				
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST[®] ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Assembly, Chute

SIZE DWG. NO. REV
B **GE-18101** **1**

SCALE: 1:8 WEIGHT: SHEET 2 OF 3

4

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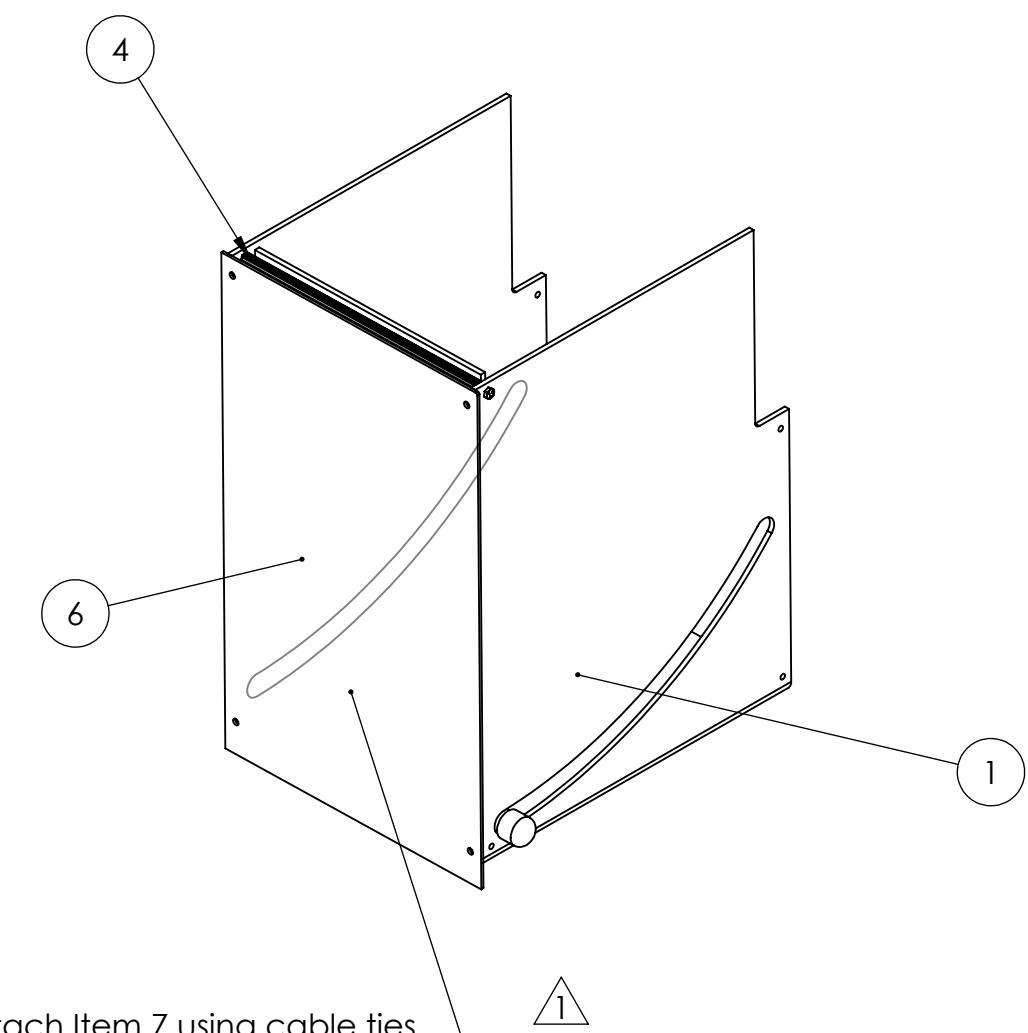
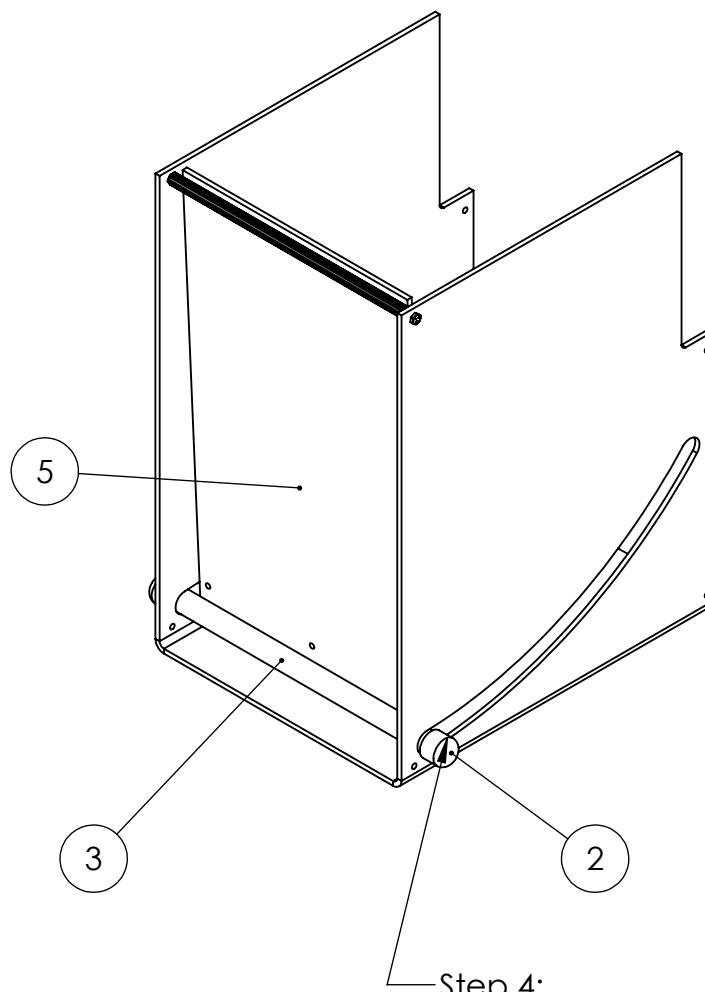
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES			
		TOLERANCES:			
		FRACTIONAL: ±1/16			
		ANGULAR: MACH ±1° BEND ±1°			
		TWO PLACE DECIMAL ±.01			
		THREE PLACE DECIMAL ±.001			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Assembly, Chute

SIZE DWG. NO. REV
B **GE-18101** **1**

SCALE: 1:8 WEIGHT: SHEET 3 OF 3

4

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4

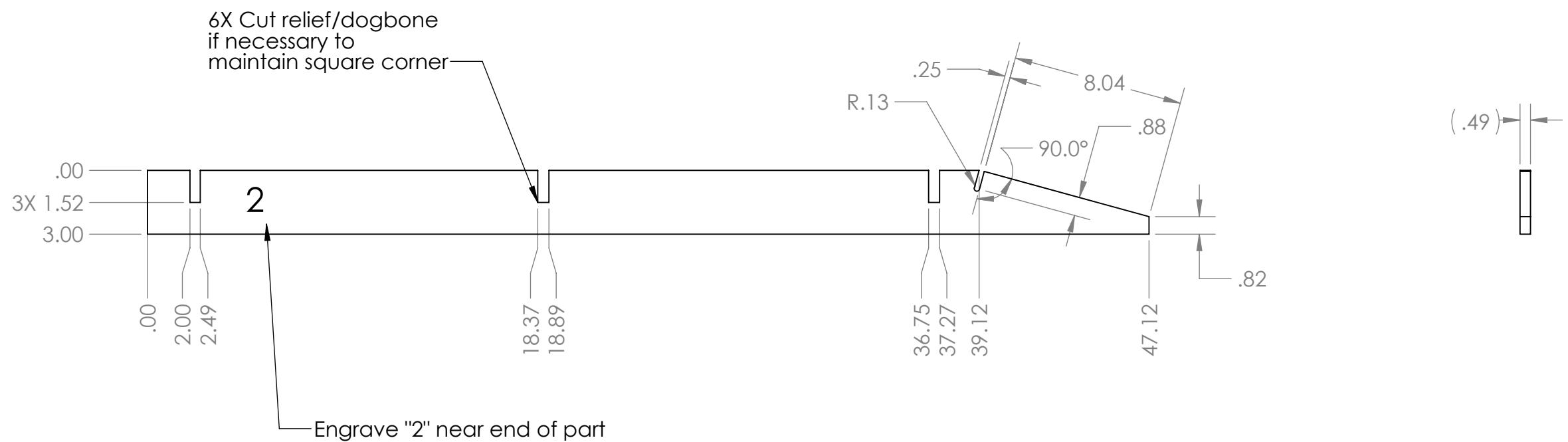
3

2

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B

B



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Notes:

1. Material: 1/2" HDPE, any color
2. Surface: Smooth texture
3. Remove all burrs and sharp edges

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

**Platform Brace,
Short Side 2**

SIZE DWG. NO. REV
B GE-18105

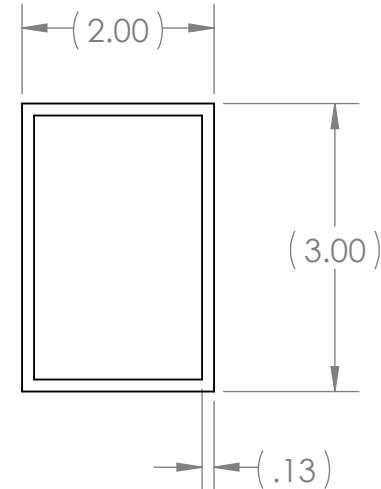
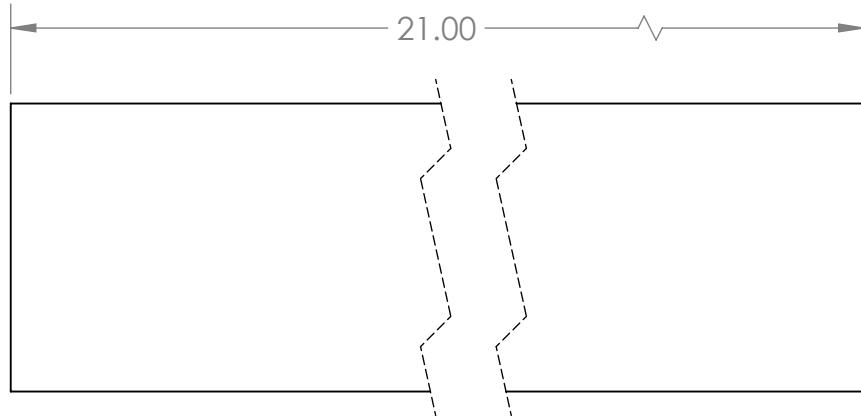
SCALE: 1:6 WEIGHT: SHEET 1 OF 1

4

3

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**Notes:**

1. Materials: 3" x 2" x 1/8" thk. Rectangular Tube, 6063 Aluminum
2. Remove all burrs and sharp edges

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

FIRST ROBOTICS COMPETITION  **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Scale Lockout Bar

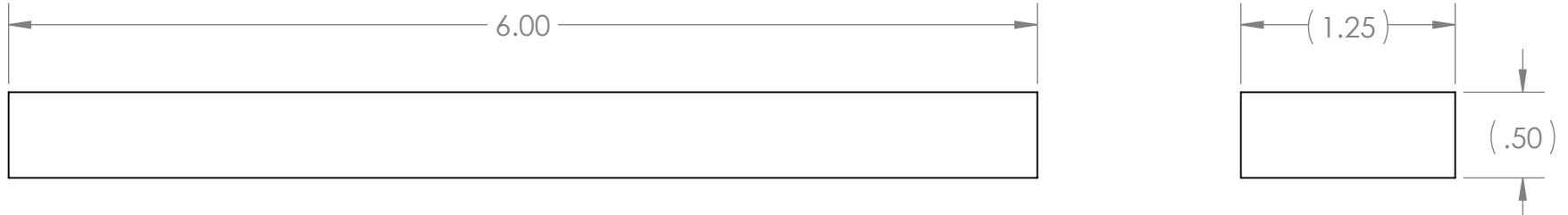
SIZE	DWG. NO.	REV
A	GE-18106	
SCALE: 1:2		WEIGHT:
SHEET 1 OF 1		

2

1

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Notes:

1. Material: 1.25" x .5" Low-carbon Steel Bar
2. Remove all burrs and 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:		
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NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				

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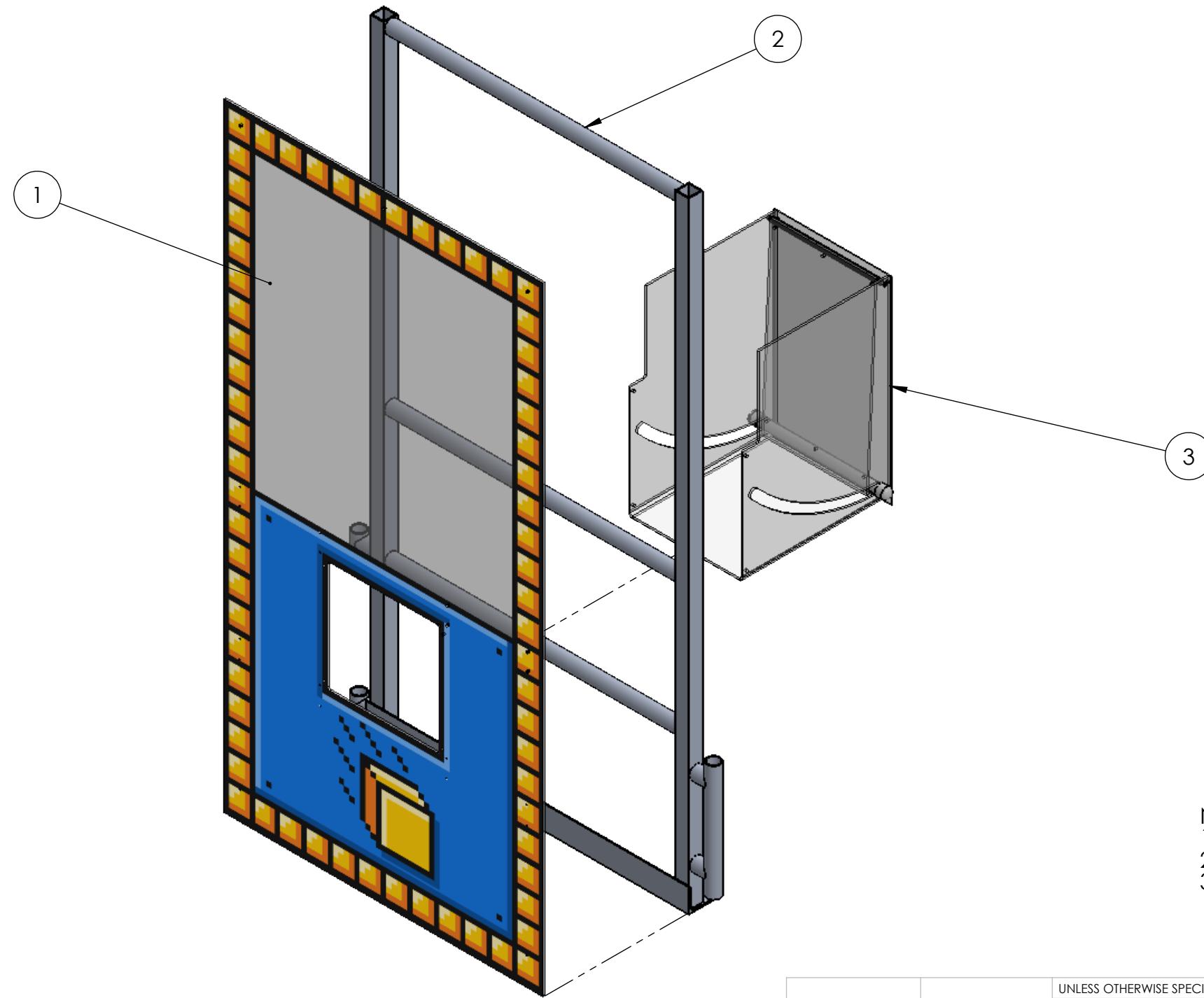
	FIRST ROBOTICS COMPETITION		SOLIDWORKS Modeling Solutions Partner
TITLE: Scale/Switch Counterweight			
SIZE	DWG. NO.	REV	
A	GE-18107		
SCALE: 1:1		WEIGHT:	SHEET 1 OF 1

4

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1



Notes:

1. Attach Item 2 to field perimeter.
2. Attach Item 1 to Item 2 using cable ties.
3. Attach Item 3 to Item 1 using cable ties.

ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	GE-18004	Panel, Portal	1
2	GE-18011	Portal Frame - Left	1
3	GE-18101	Assembly, Chute	1

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS:	
		MATERIAL			
		NEXT ASSY	USED ON	FINISH	
		APPLICATION		DO NOT SCALE DRAWING	
SIZE		DWG. NO.		REV	
B		GE-18108			
SCALE: 1:12		WEIGHT:		SHEET 1 OF 1	

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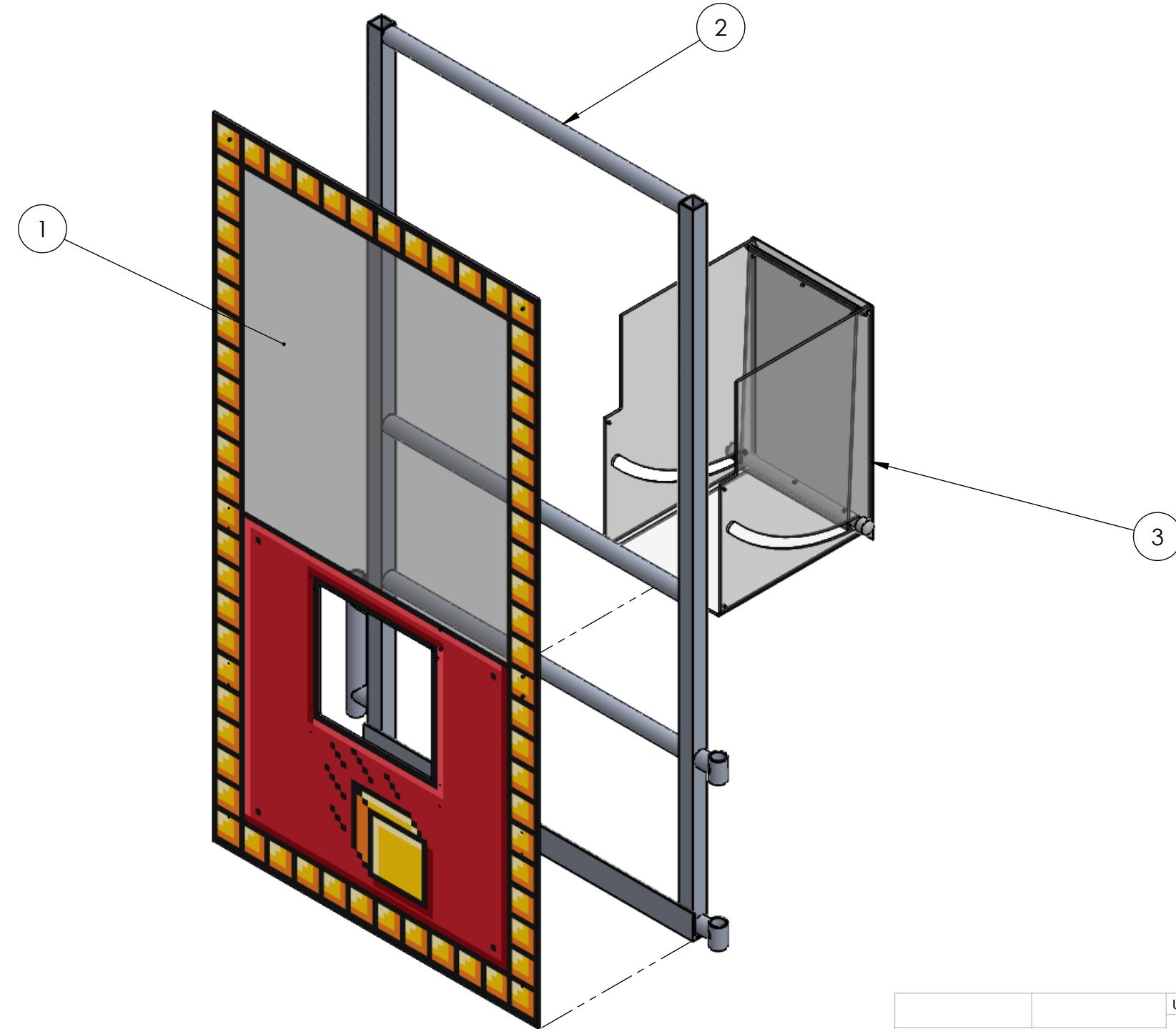
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- Notes:**
1. Attach Item 2 to field perimeter.
 2. Attach Item 1 to Item 2 using cable ties.
 3. Attach Item 3 to Item 1 using cable ties.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18004	Panel, Portal	1
2	GE-18012	Portal Frame - Right	1
3	GE-18101	Assembly, Chute	1

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Portal - Right

SIZE DWG. NO. **B** GE-18109 **REV**

SCALE: 1:12 WEIGHT: SHEET 1 OF 1

4

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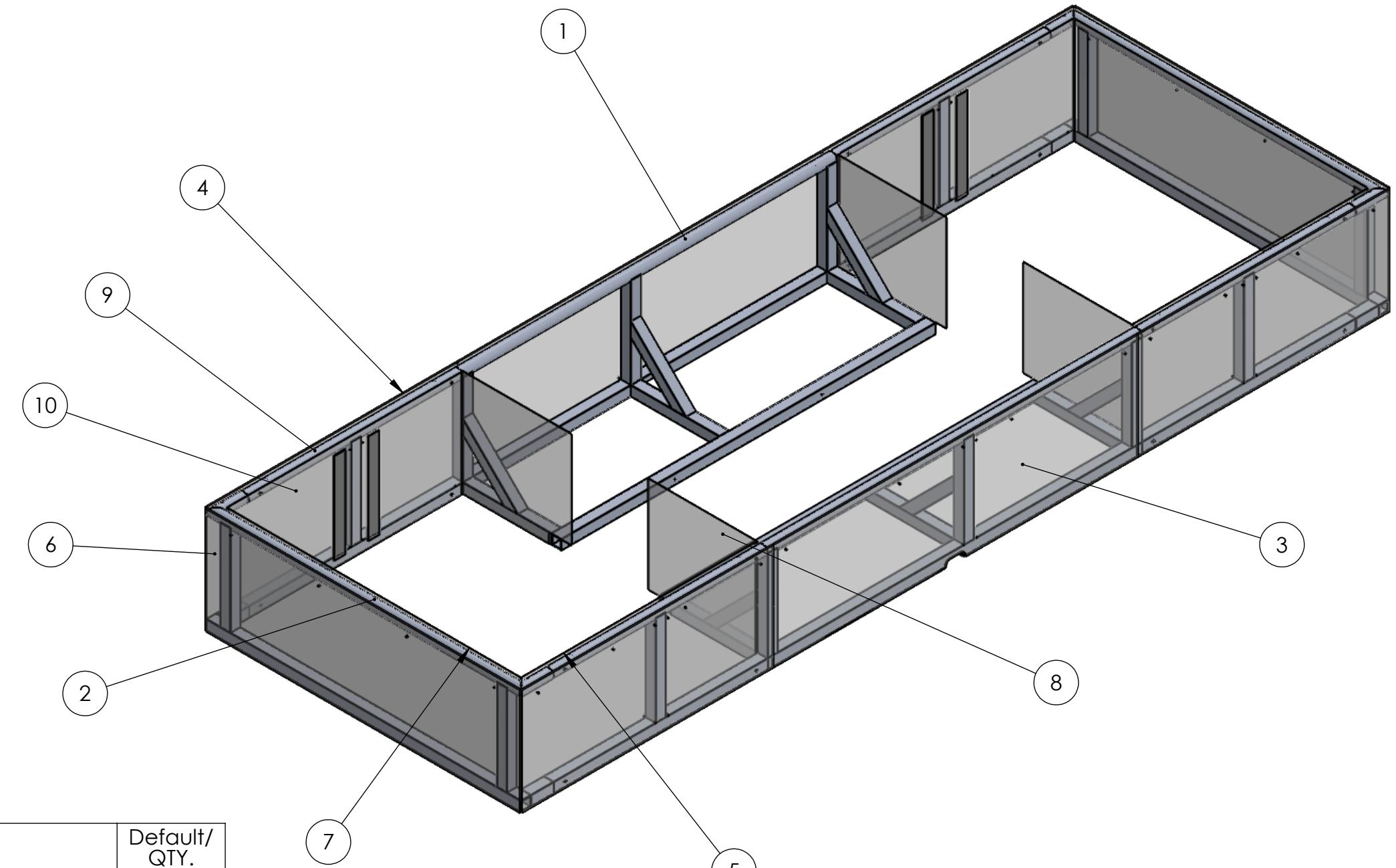
1

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ITEM NO.	PART NUMBER	DESCRIPTION	Default QTY.
1	GE-18051	Side Frame, Fence	2
2	GE-18052	End Frame, Fence	2
3	GE-18080	Fence Polycarb, Middle	2
4	GE-18081	Fence Polycarb, Outer Side	4
5	GE-18082	Fence Polycarb, Inner Side	2
6	GE-18083	Fence Polycarb, Outer End	2
7	GE-18084	Fence Polycarb, Inner End	2
8	GE-18085	Fence Polycarb, Guard	4
9	GE-18111	Connecting Frame Assembly	4
10	GE-18115	Vision Fence Polycarbonate	2

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 FIRST ROBOTICS COMPETITION	TITLE: <h1>Fence Assembly</h1>	
		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						
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING						
						SIZE	DWG. NO.	REV
						B	GE-18110	
						SCALE: 1:32	WEIGHT:	SHEET 1 OF 3

4

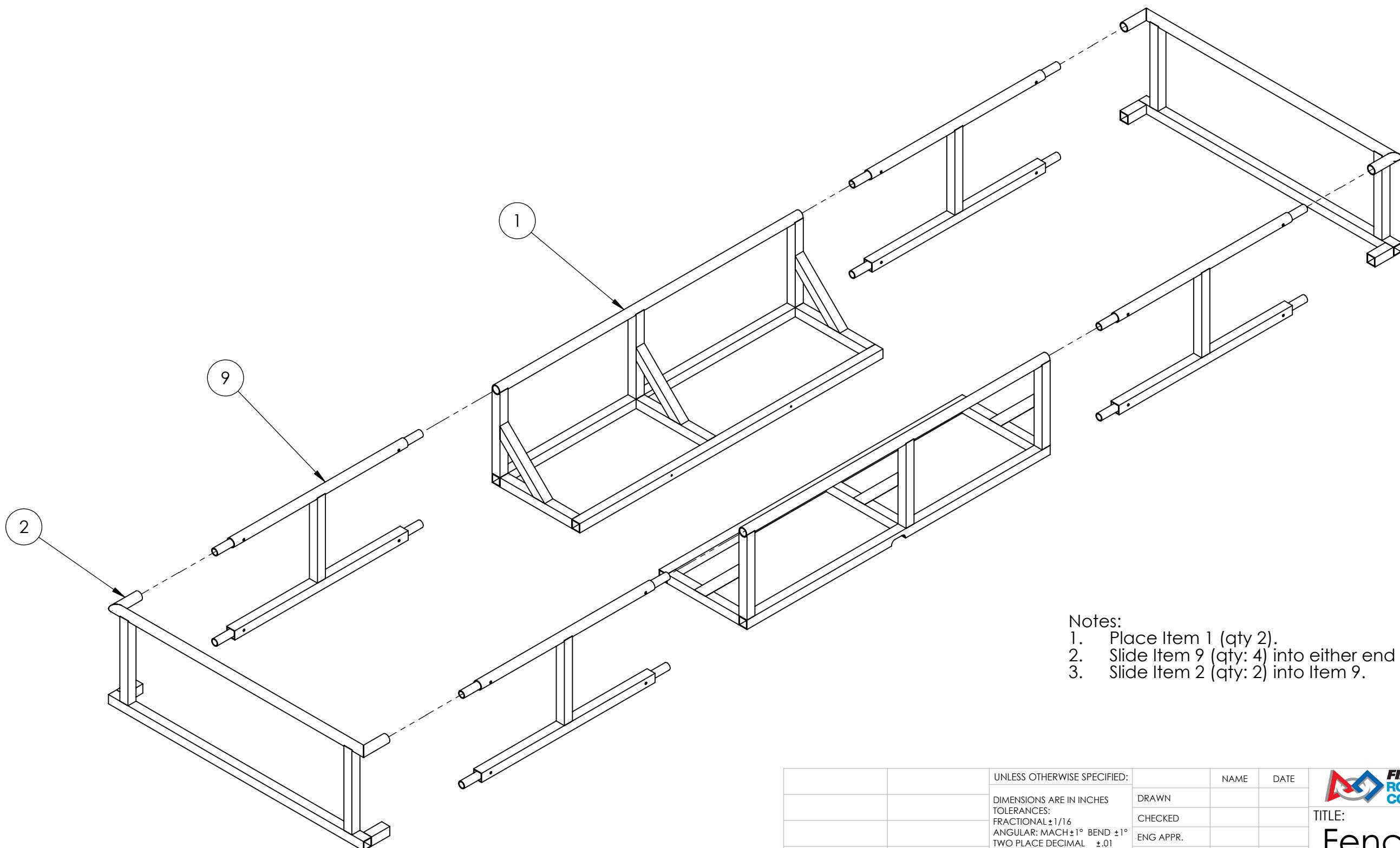
3

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B

B

**Notes:**

1. Place Item 1 (qty 2).
2. Slide Item 9 (qty: 4) into either end of Item 1.
3. Slide Item 2 (qty: 2) into Item 9.

		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN		
TOLERANCES:		CHECKED		
FRACTIONAL: $\pm\frac{1}{16}$		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		
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Fence Assembly

SIZE DWG. NO. **B** GE-18110 **REV**

SCALE: 1:32 WEIGHT: SHEET 2 OF 3

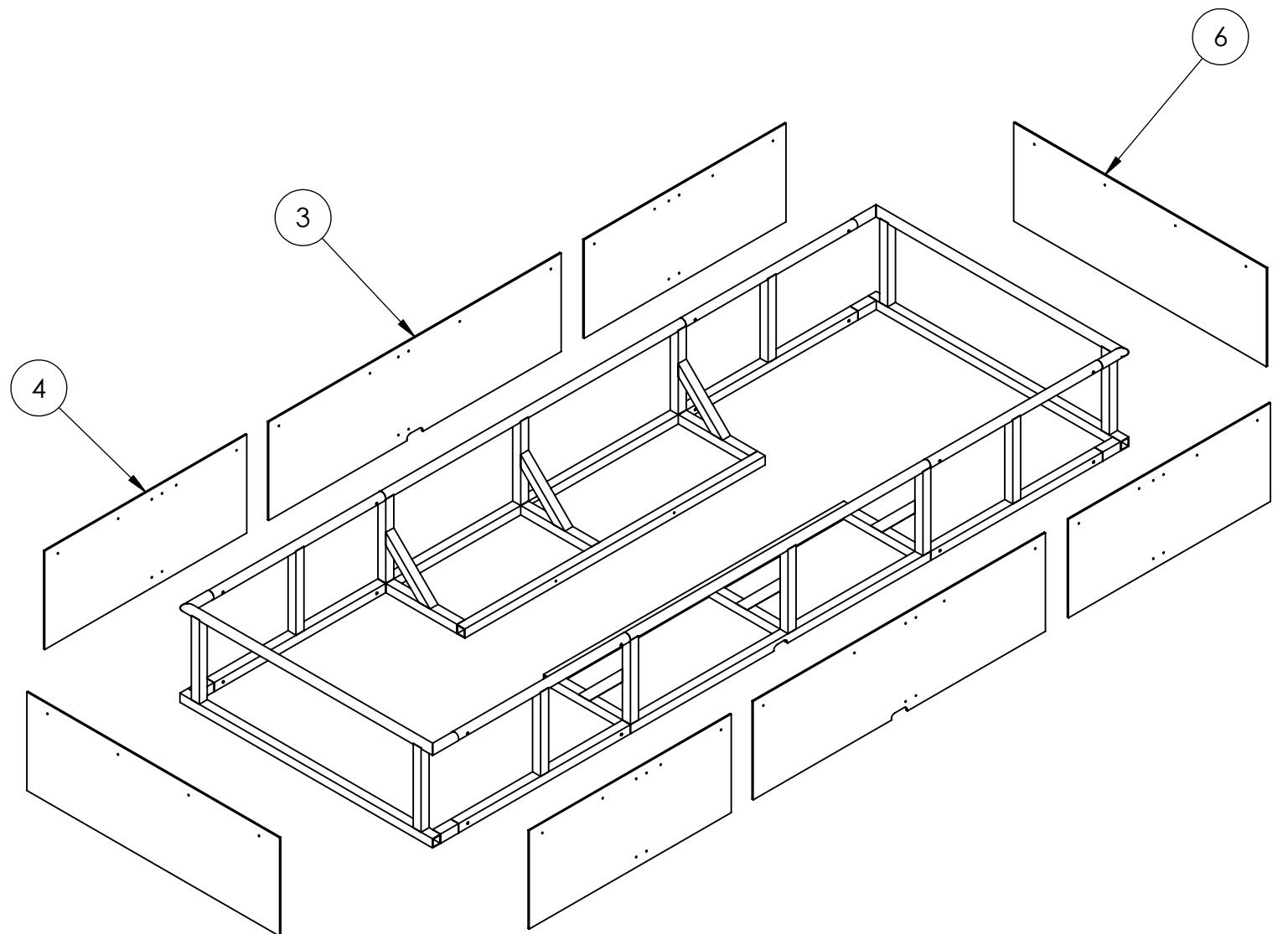
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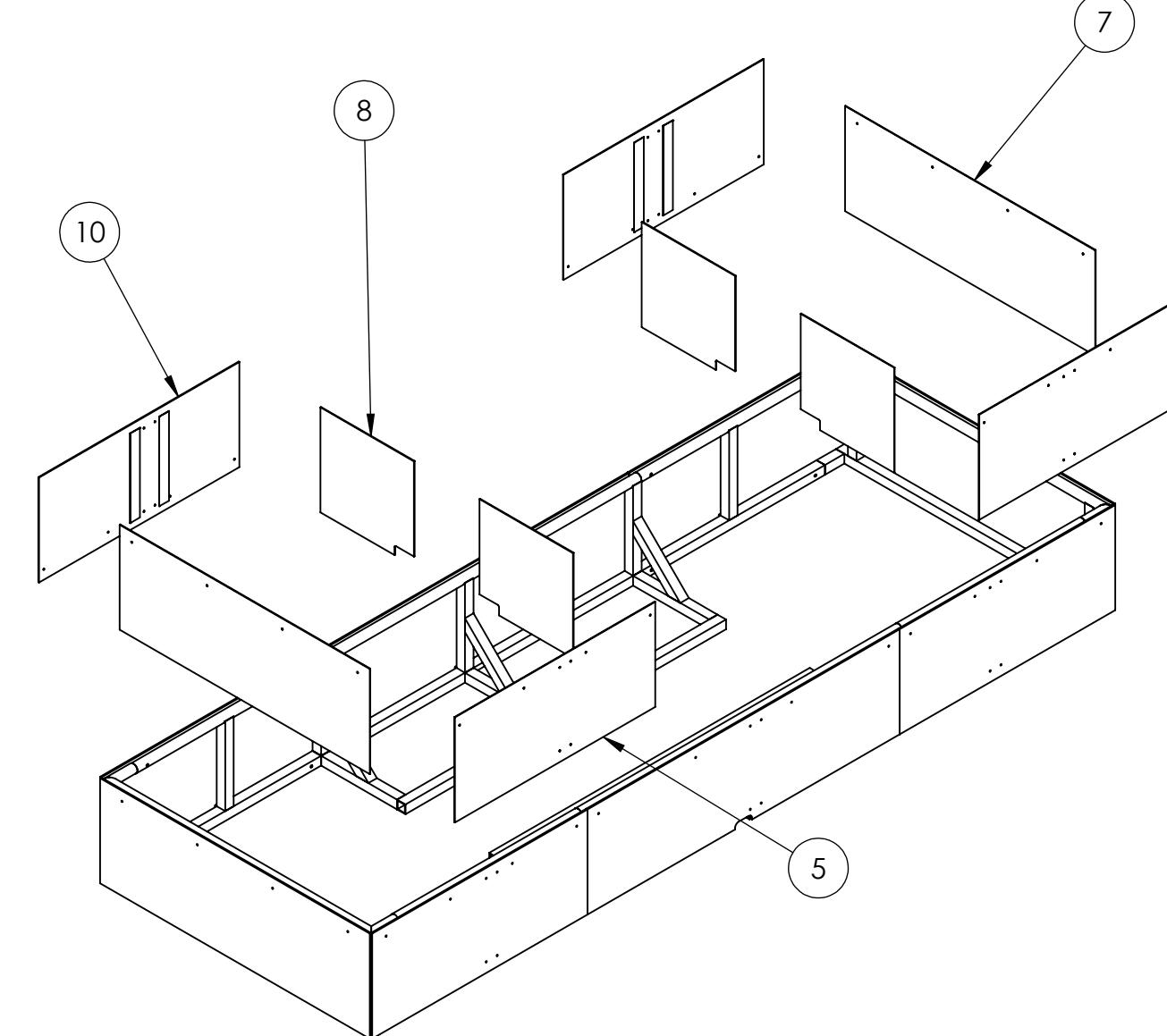
2

1



Notes:

1. Attach Items 3 (qty: 2), 4 (qty: 4), 6 (qty: 2) with cable ties on top of panel and through vertical supports, and hook and loop on bottom.



Notes:

- NOTES:

 1. Attach Items 5 (qty: 2), 7 (qty: 2), 10 (qty: 2) with cable ties through top holes and around vertical supports.
 2. Attach Item 8 (qty: 4) with hook and loop.

		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 FIRST ROBOTICS COMPETITION	TITLE: <h1>Fence Assembly</h1>
		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				
			CHECKED				
			ENG APPR.				
			MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.				
		MATERIAL	COMMENTS:			SIZE DWG. NO. B GE-18110	REV
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING					
SCALE: 1:32		WEIGHT:	SHEET 3 OF 3				

4

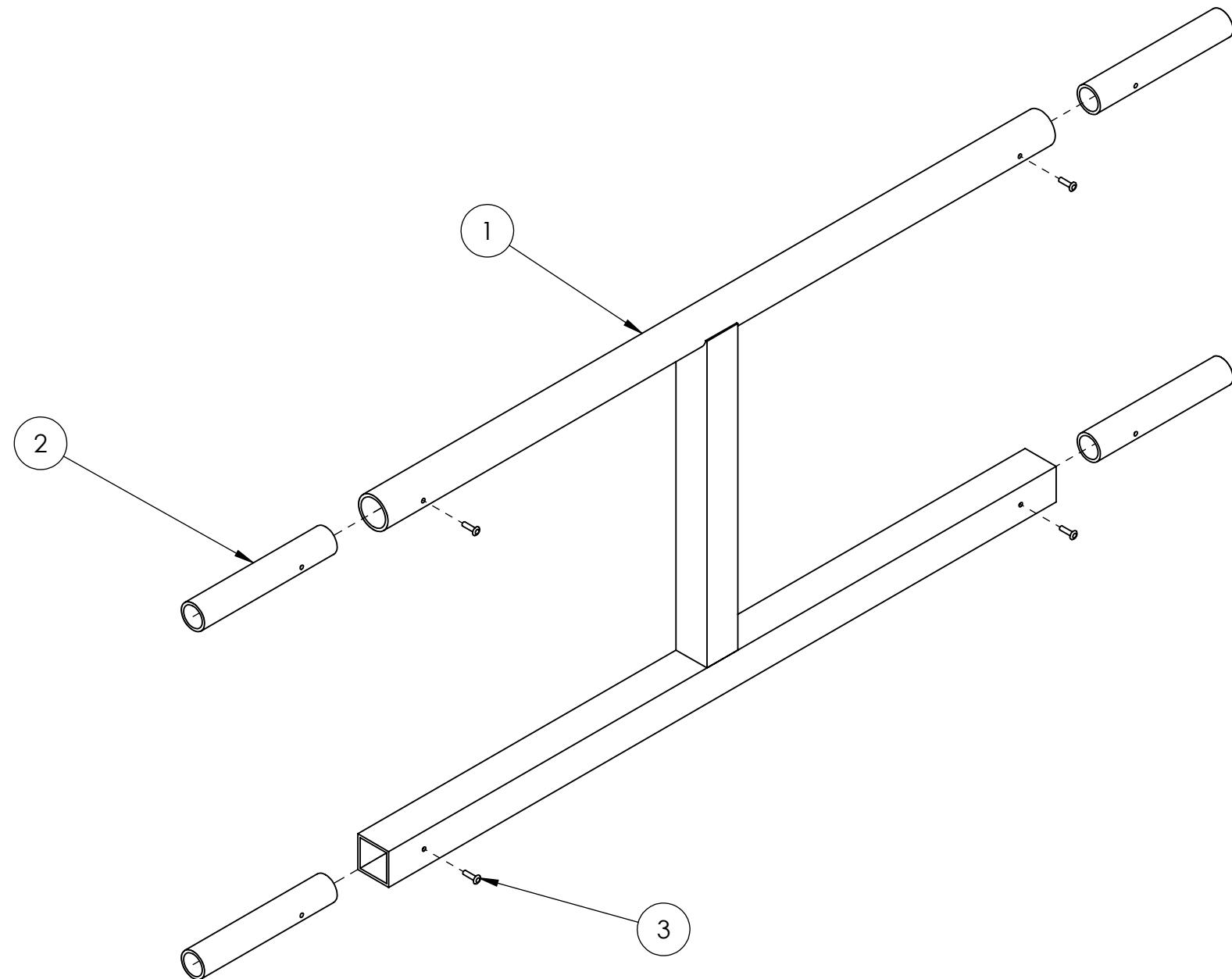
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B



A

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ITEM NO.	PART NUMBER	DESCRIPTION	Default QT Y.
1	GE-18053	Connecting Frame, Fence	1
2	GE-18086	Fence Pin	4
3	rivet_.1875_.376-.5	3/16" Aluminum Rivet, .376-.5 Grip Range	4

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		NEXT ASSY	USED ON	FINISH
		APPLICATION		DO NOT SCALE DRAWING
SIZE	DWG. NO.	REV		
B	GE-18111			
SCALE: 1:16	WEIGHT:	SHEET 1 OF 1		

4

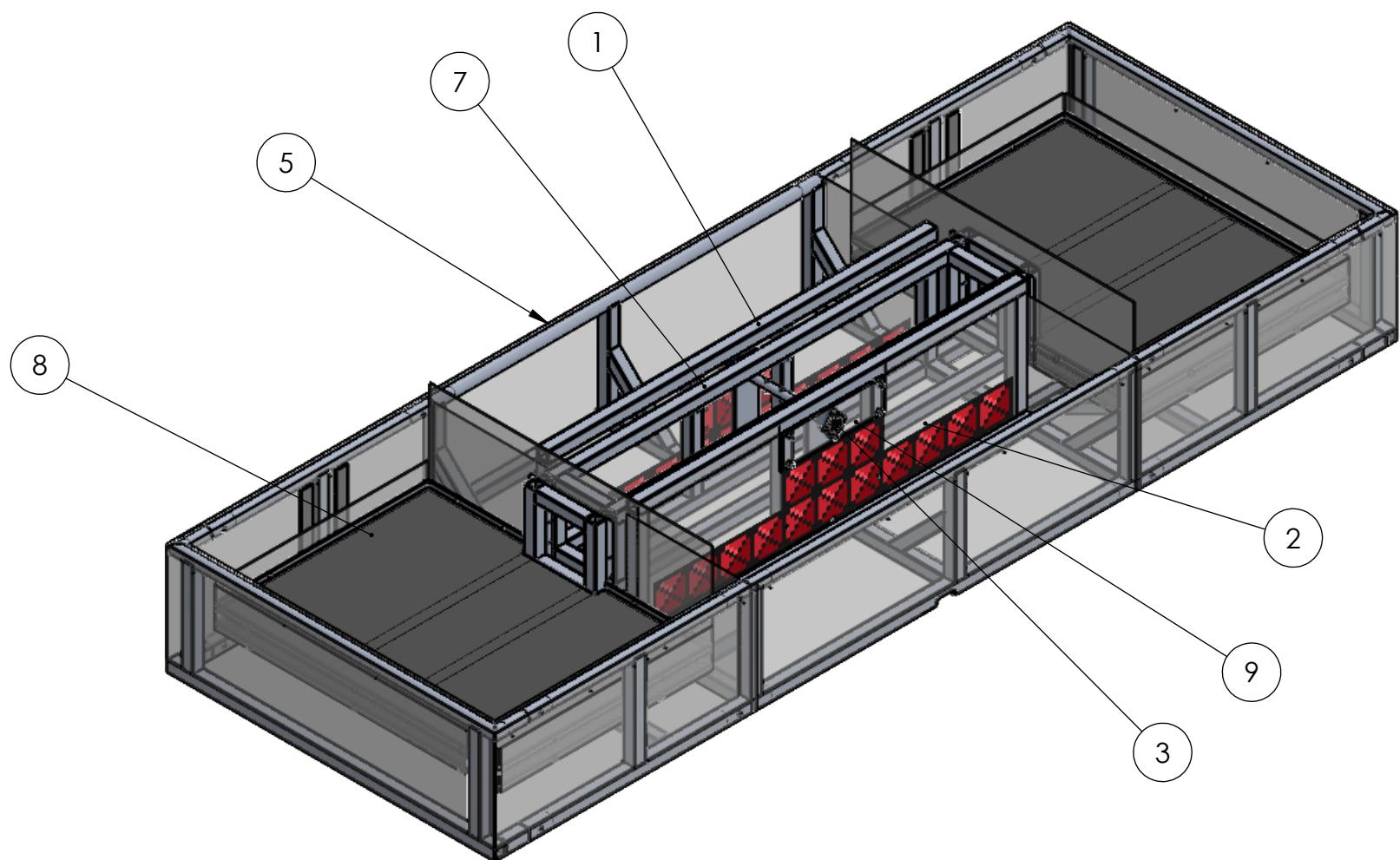
3

2

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B

B



ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	GE-18016	Switch Frame	1
2	GE-18024	Switch Base Cover Polycarbonate	2
3	GE-18026	Switch/Scale Arm Shaft	1
4	GE-18098	Switch Shaft Spacer	2
5	GE-18110	Fence Assembly	1
6	GE-18113	Switch Fence Brace Assembly	2
7	GE-18114	Switch Arm Assembly	1
8	GE-18121	Basket Assembly	2
9	GE-18122	Bearing/Damper Assembly	2
10	hex_.25_20_2.75_partial	Steel Hex Head Screw, 1/4"-20 x 2-3/4" long, partially threaded	9
11	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	12
12	hex_.25_20_1.5	Steel Hex Head Screw, 1/4"-20 x 1-1/2" long, fully threaded	3

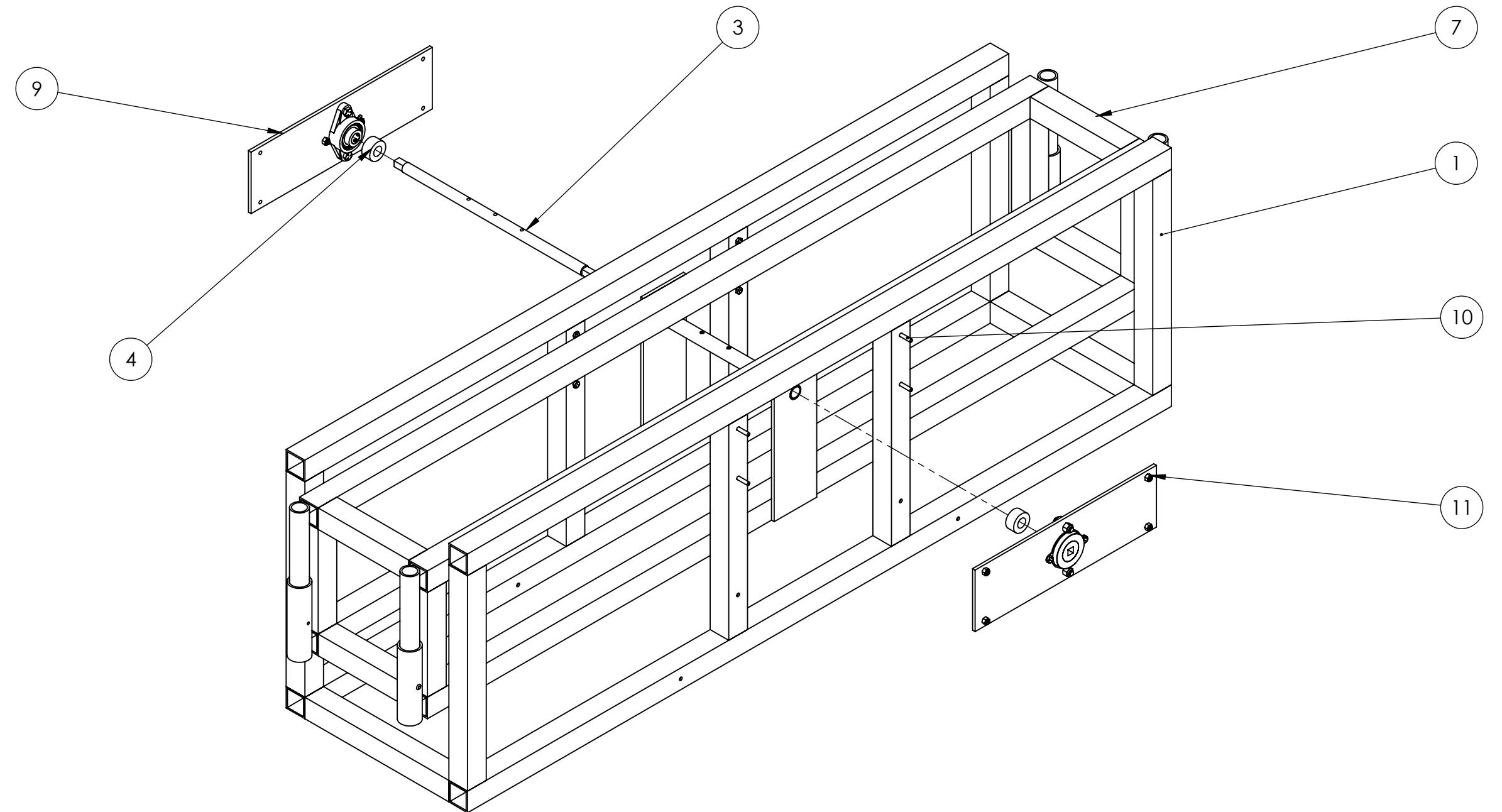
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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING	
SCALE: 1:32 WEIGHT:				SHEET 1 OF 3

 FIRST ROBOTICS COMPETITION  SOLIDWORKS
Modeling Solutions Partner

Switch Assembly

SIZE DWG. NO. REV
B GE-18112



Notes:

- NOTES:

 1. Slide Item 3 (the shaft) through tube on Item 7. Slide Item 4 (qty: 2) to either end of Item 3.
 2. Align the shaft to the bearing and dampers of Item 9. Bolt Item 9 (qty: 2) to Item 1 using Items 10 (qty: 8) and 11 (qty: 8)

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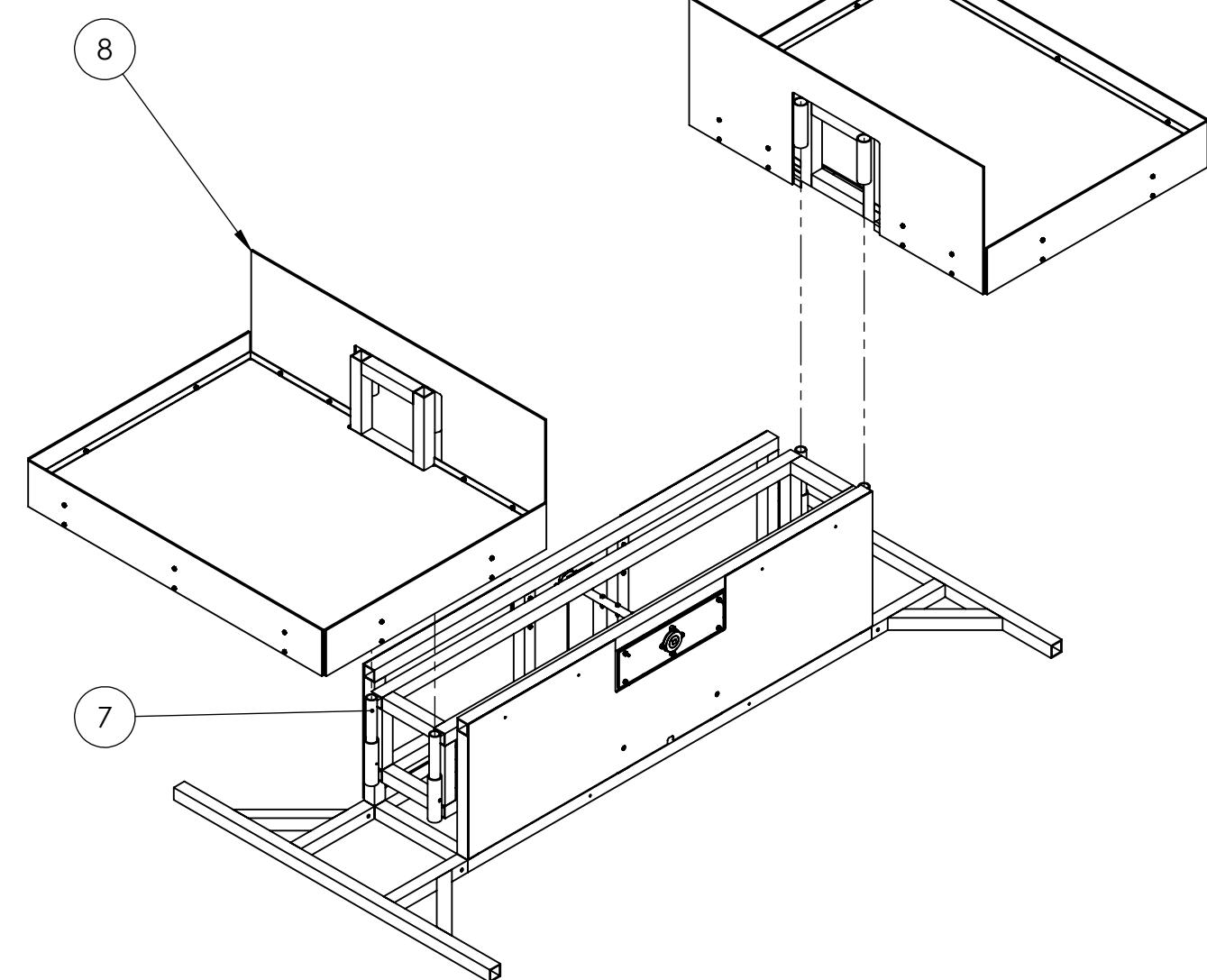
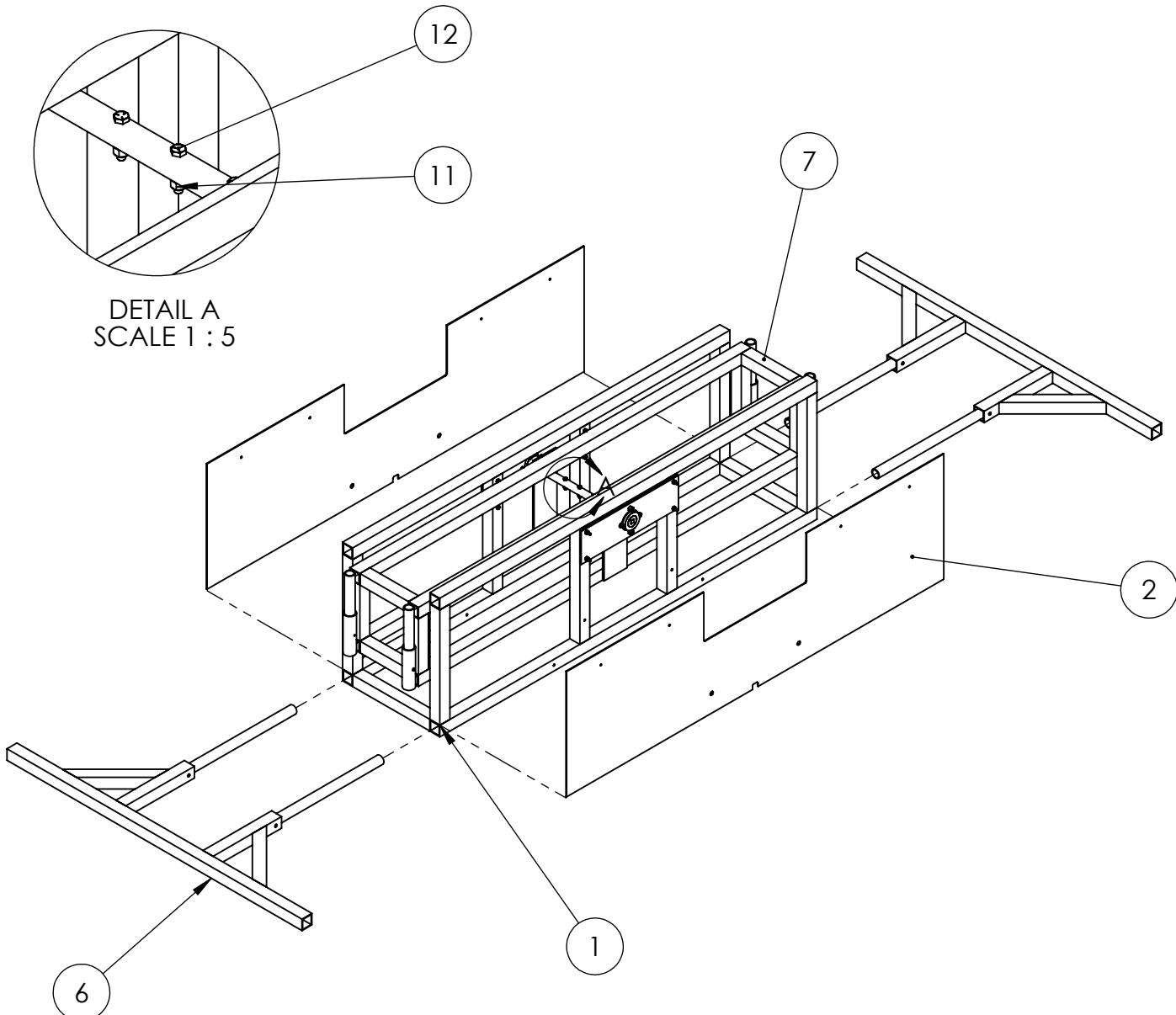
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			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			
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		MATERIAL				
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				
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Notes:

1. Align Item 3 (the shaft) through the tube of Item 7 and secure alignment using Items 11 (qty: 3) and 12 (qty: 3).
2. (Not pictured) Build Item 5 around the assembly, following assembly drawings for GE-18110.

Notes:

1. Align Item 3 (the shaft) through the tube of Item 7 and secure alignment using Items 11 (qty: 3) and 12 (qty: 3).
2. Slide Item 6 (qty: 2) into Item 1.
3. Attach Items 2 to Item 1 using cable ties.

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				
SIZE	DWG. NO.				REV
B	GE-18112				
SCALE: 1:32	WEIGHT:				SHEET 3 OF 3

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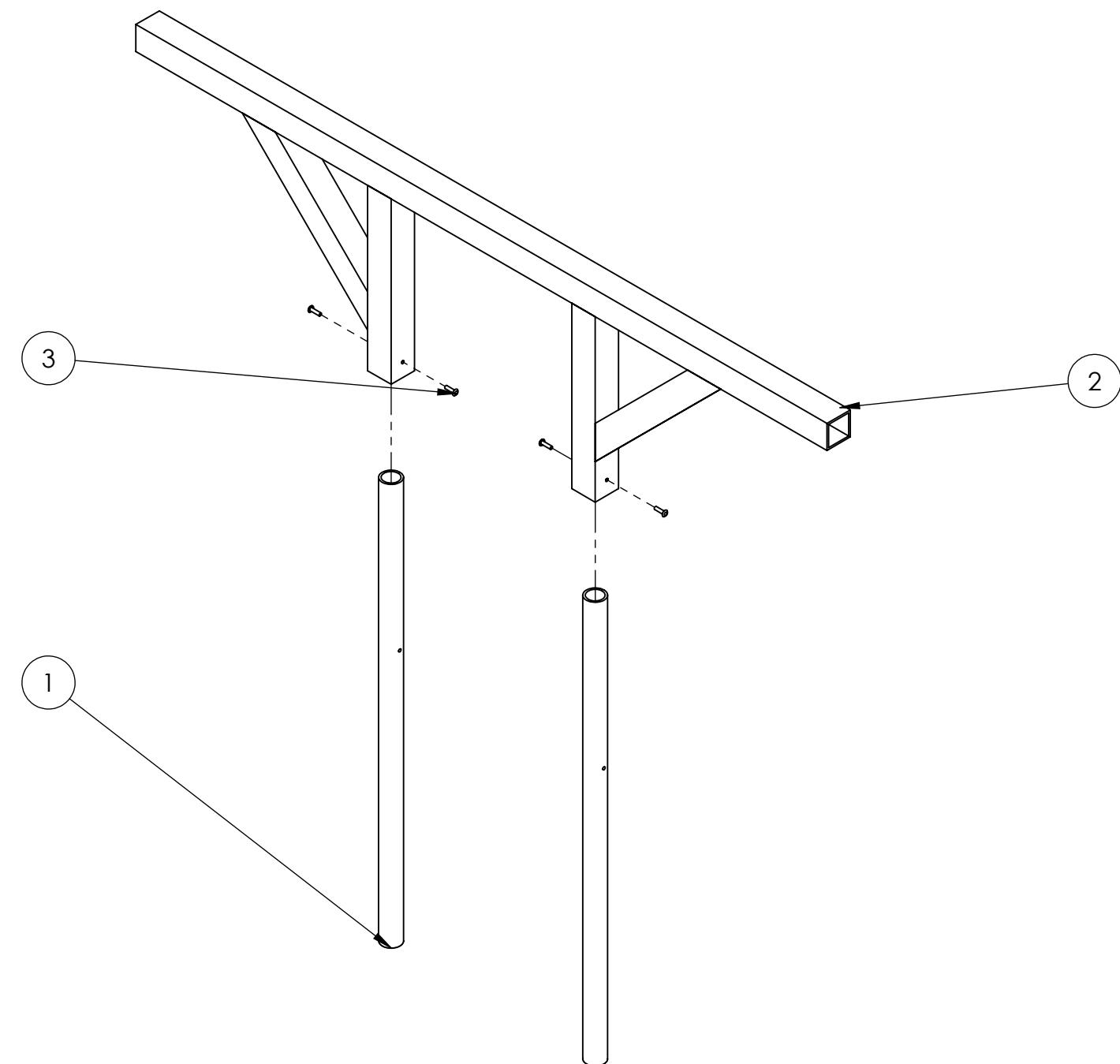
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B

B



A

A

ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	GE-18088	Switch Fence Brace Pin	2
2	GE-18087	Switch Fence Brace	1
3	rivet_.1875_.376-.5	3/16" Aluminum Rivet, .376-.5 Grip Range	4

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

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE: Switch Fence
Brace Assembly

SIZE DWG. NO. REV
B GE-18113

SCALE: 1:8 WEIGHT: SHEET 1 OF 1

4

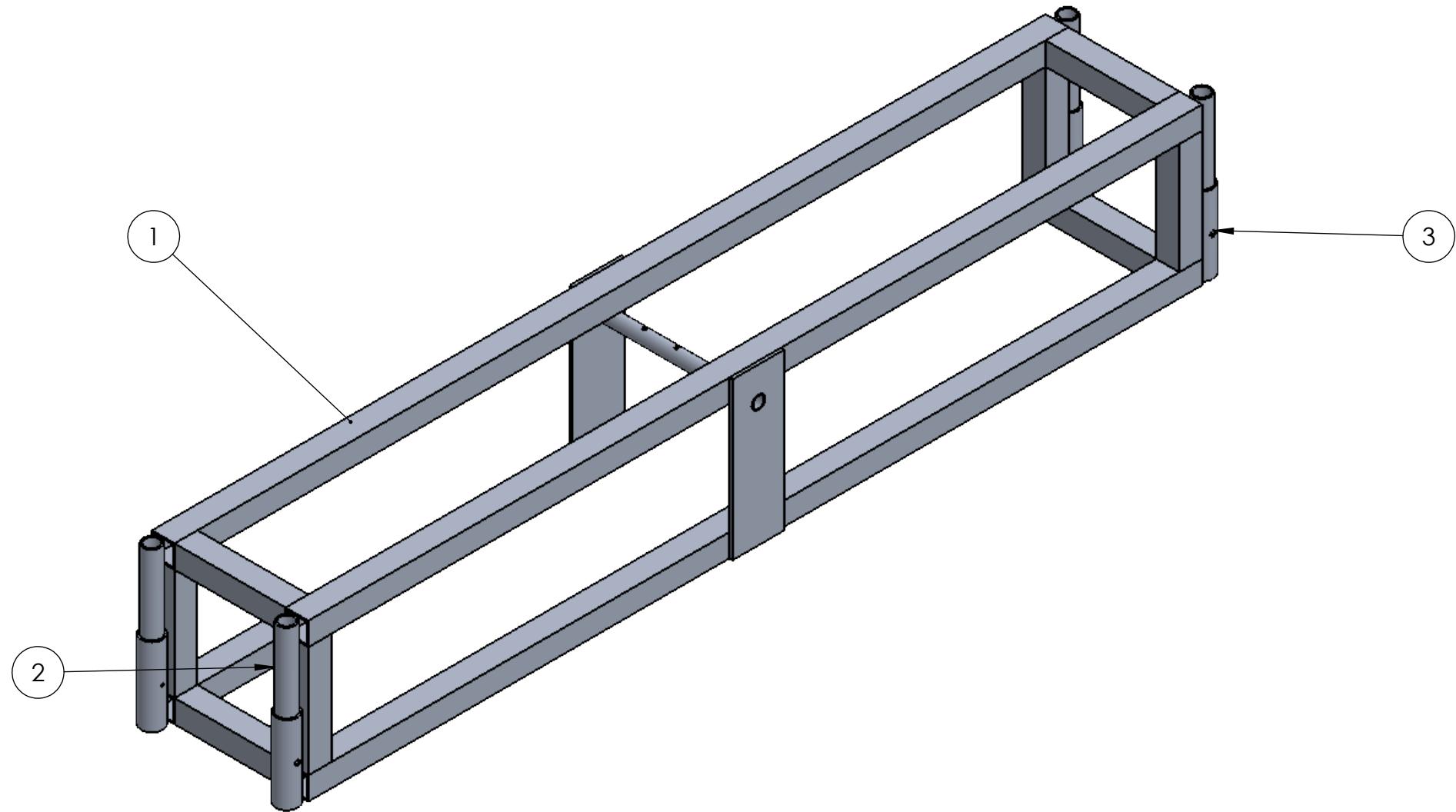
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ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	GE-18013	Switch Arm	1
2	GE-18028	Plate Mount Pin	4
3	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	4

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Switch Arm Assembly

B **GE-18114**

SIZE DWG. NO. REV
SCALE: 1:8 WEIGHT: SHEET 1 OF 2

4

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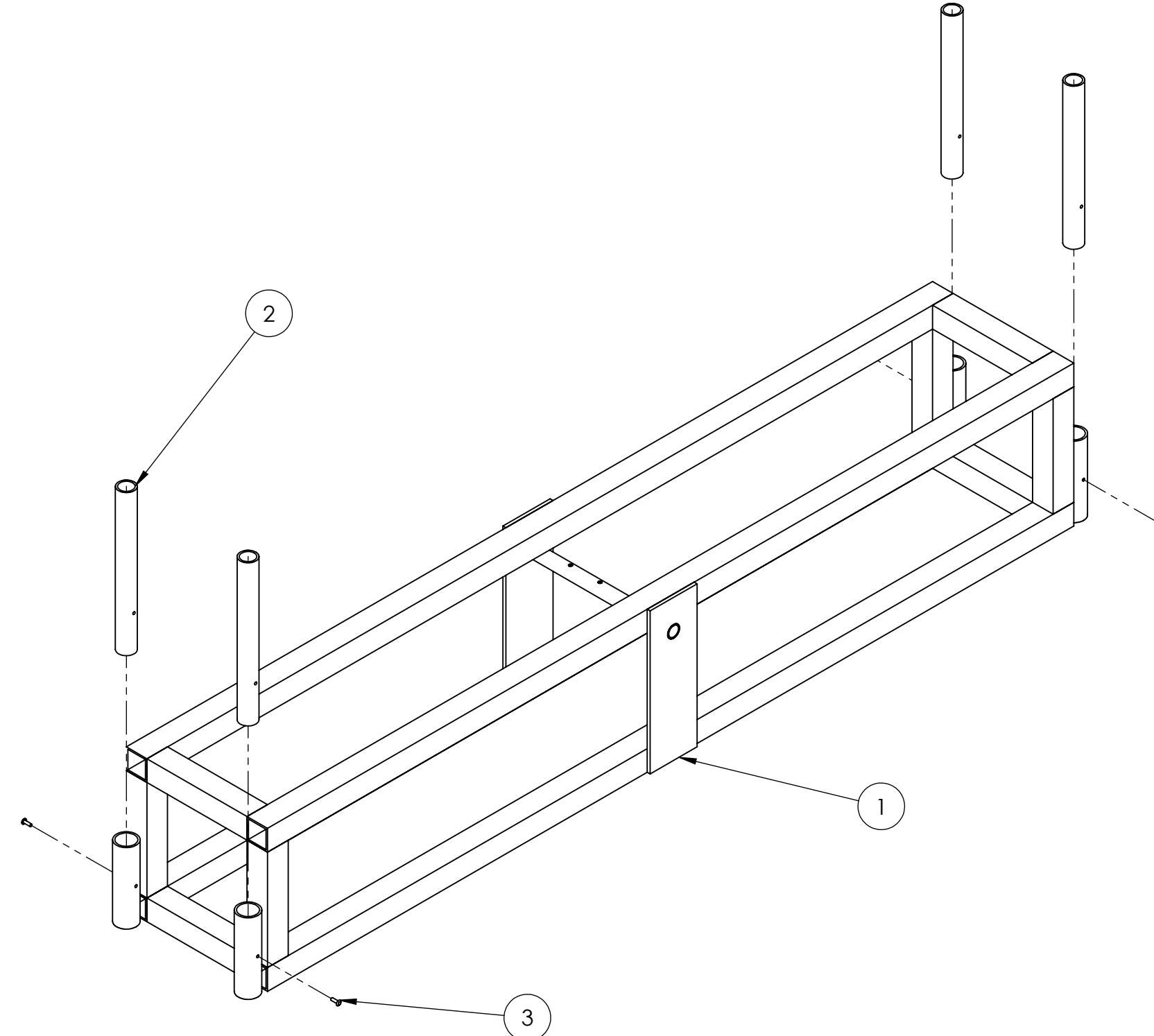
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Notes:

- Fasten Item 2 (qty: 4) to Item 1, using Item 3 (qty: 4).

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Switch Arm Assembly

SIZE	DWG. NO.	REV
B	GE-18114	
SCALE: 1:12	WEIGHT:	SHEET 2 OF 2

4

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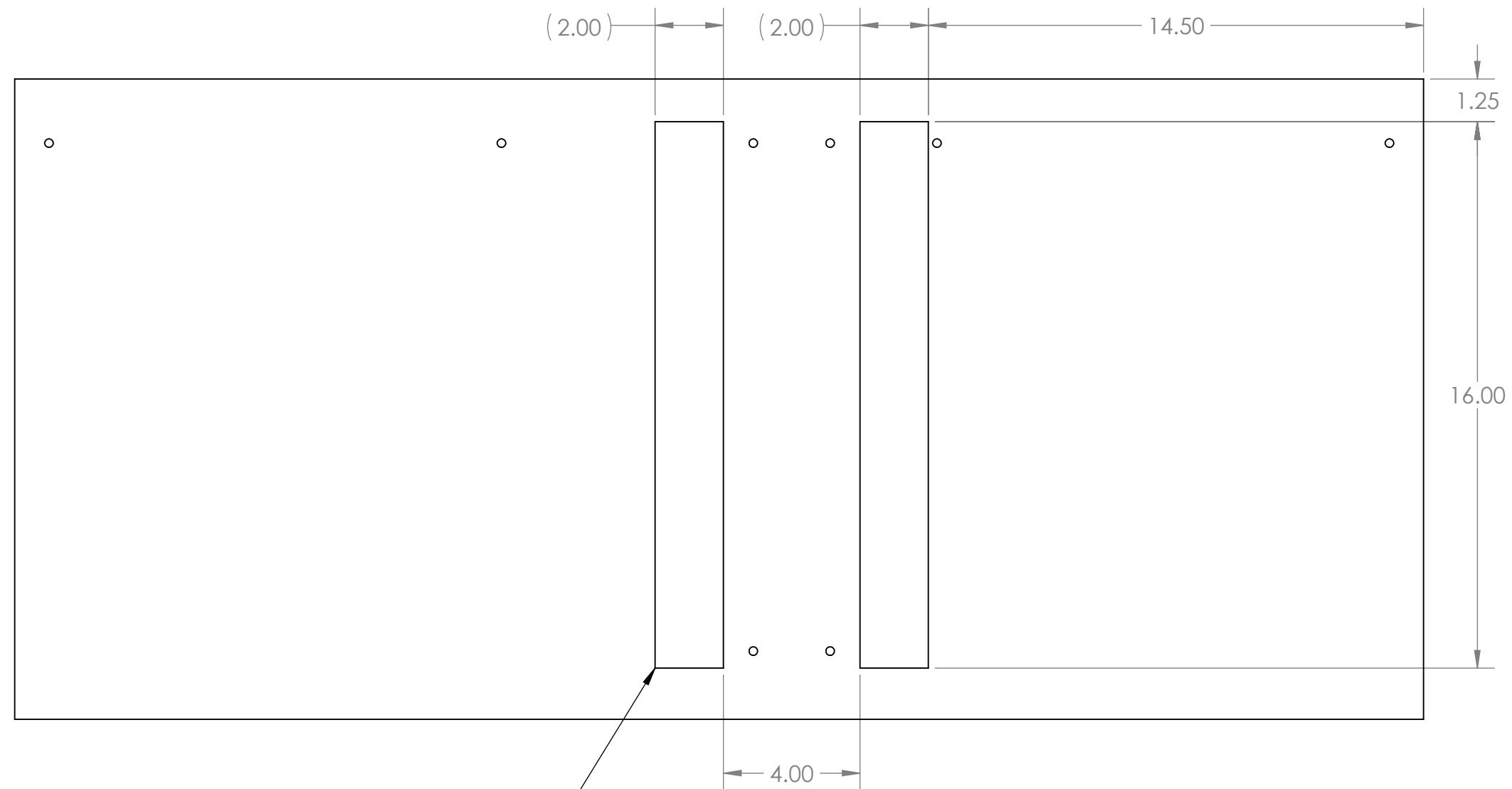
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Notes:

1. Retroreflective tape to be applied to both sides of GE-18082.
2. It is expected that the top and bottom of the tape will be partially obscured during assembly. The amount of tape visible may also vary with viewing angle.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18082	Fence Polycarb, Inner Side	1
2	VisionTape	2" wide Retroreflective tape	4

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Vision Fence Polycarbonate

SIZE	DWG. NO.	REV
B	GE-18115	
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

4

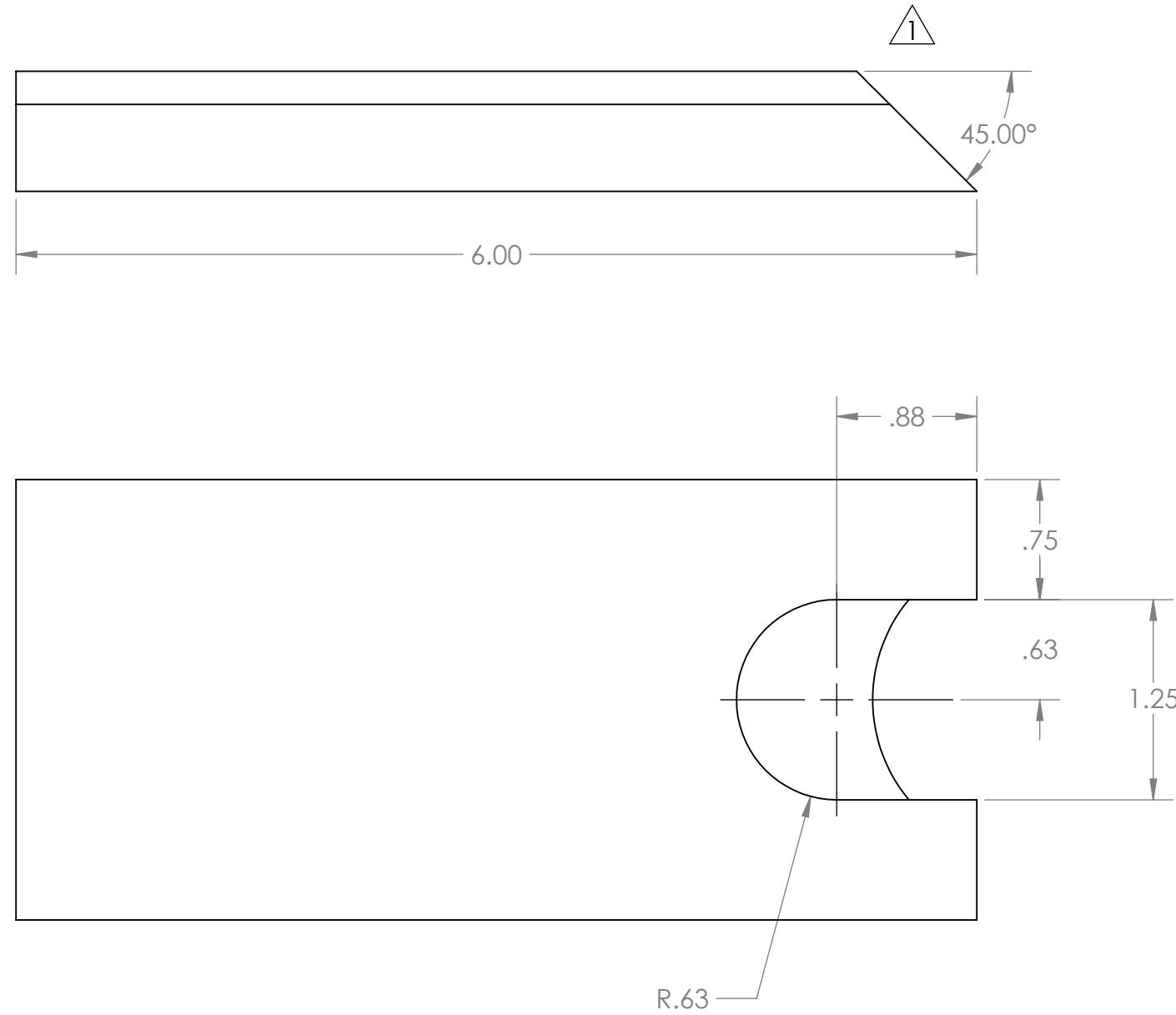
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B1, B3	1	Miter cut moved to opposite end of part. Some dimensions updated for accuracy.	2/12/2018	CPO



Notes:

1. Description: Cable Shield Cord Cover
2. Source: Electriduct
3. Item #: CSX-3 Black
4. Equivalent substitutions allowed

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SIZE	DWG. NO.	REV		
B	GE-18118	1		
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1		

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
**Short Mitered
Wire Protector**

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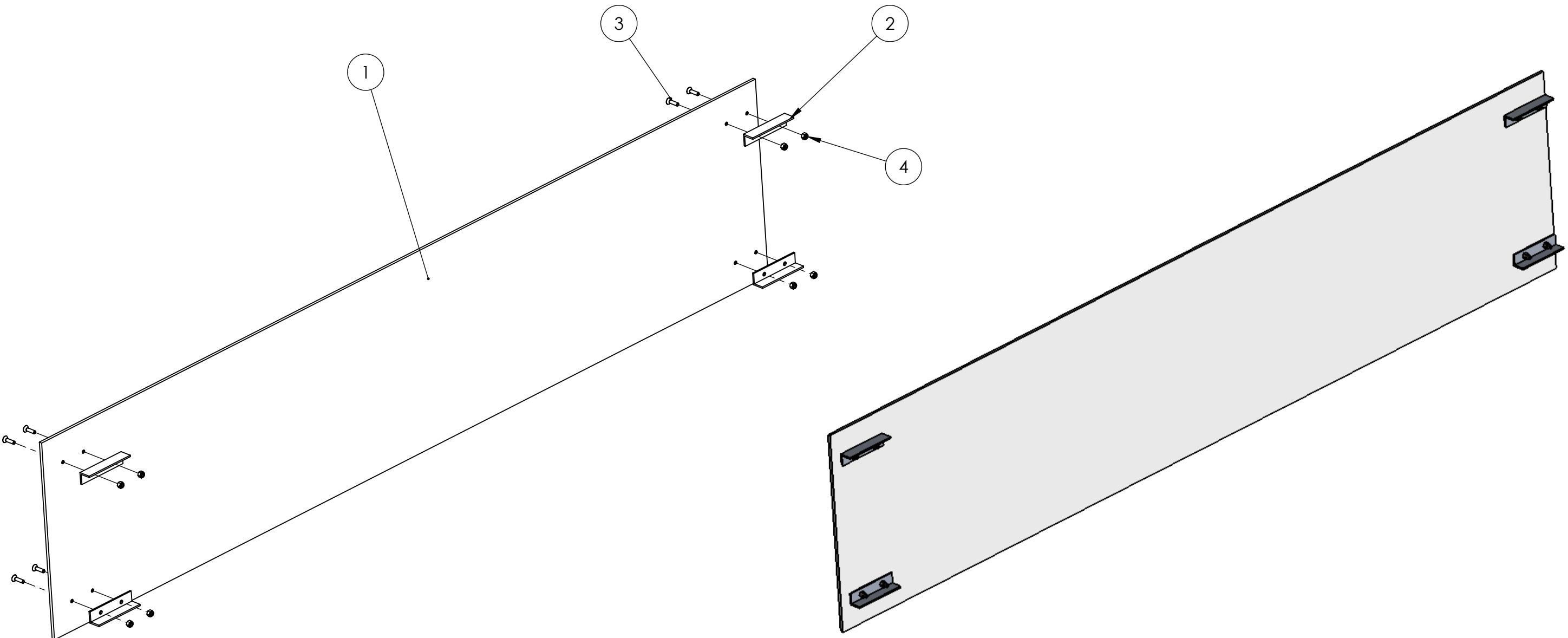
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B

B



A

A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18020	Scale Side Cover Polycarbonate	1
2	GE-18076	Scale Angle Brace	4
3	flat_hex_.25_20_1	Steel Hex Flat Head Screw, 1/4"-20 x 1" long, fully threaded	8
4	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	8

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		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	

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Scale Side Cover Polycarbonate Sub Assembly

SIZE DWG. NO. REV
B **GE-18119**

SCALE: 1:8 WEIGHT: SHEET 1 OF 1

4

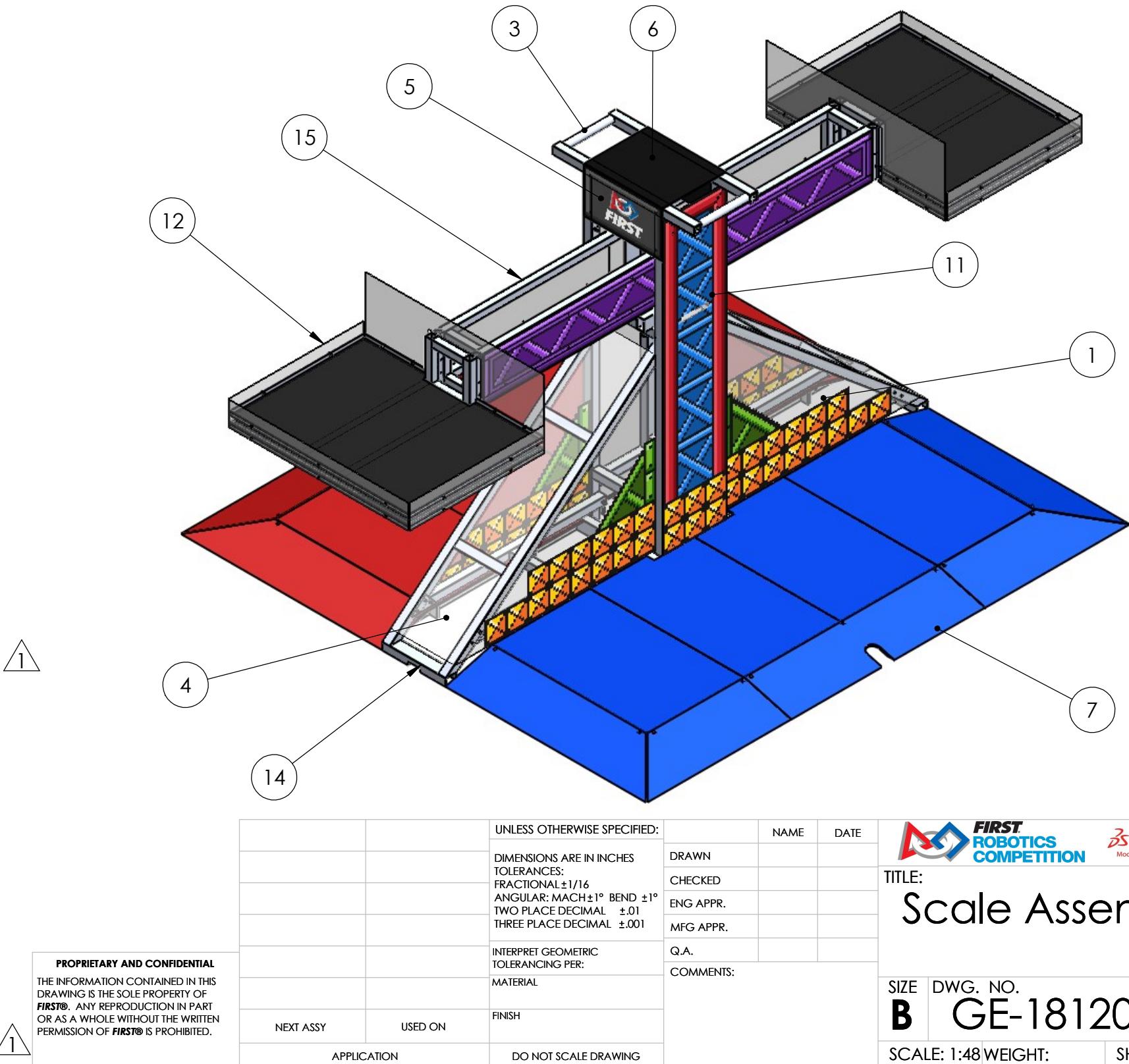
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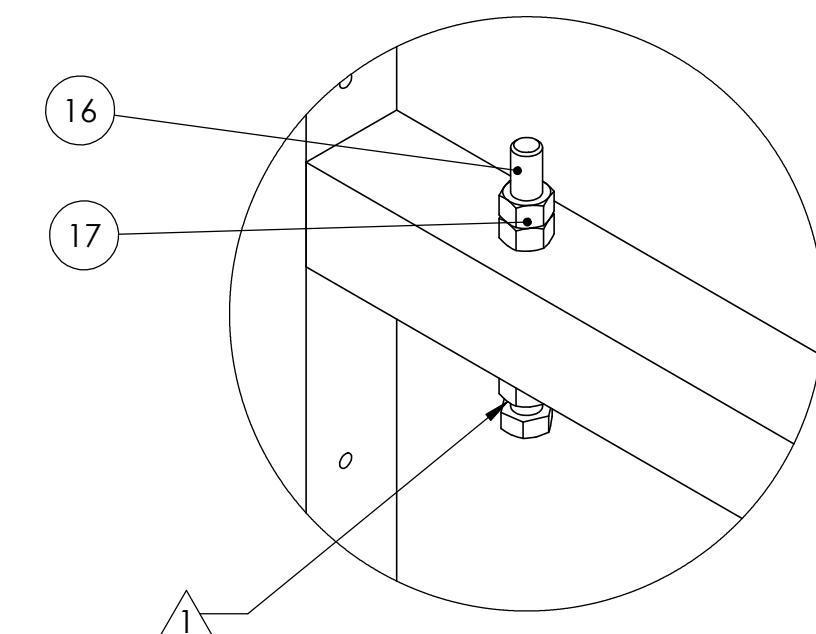
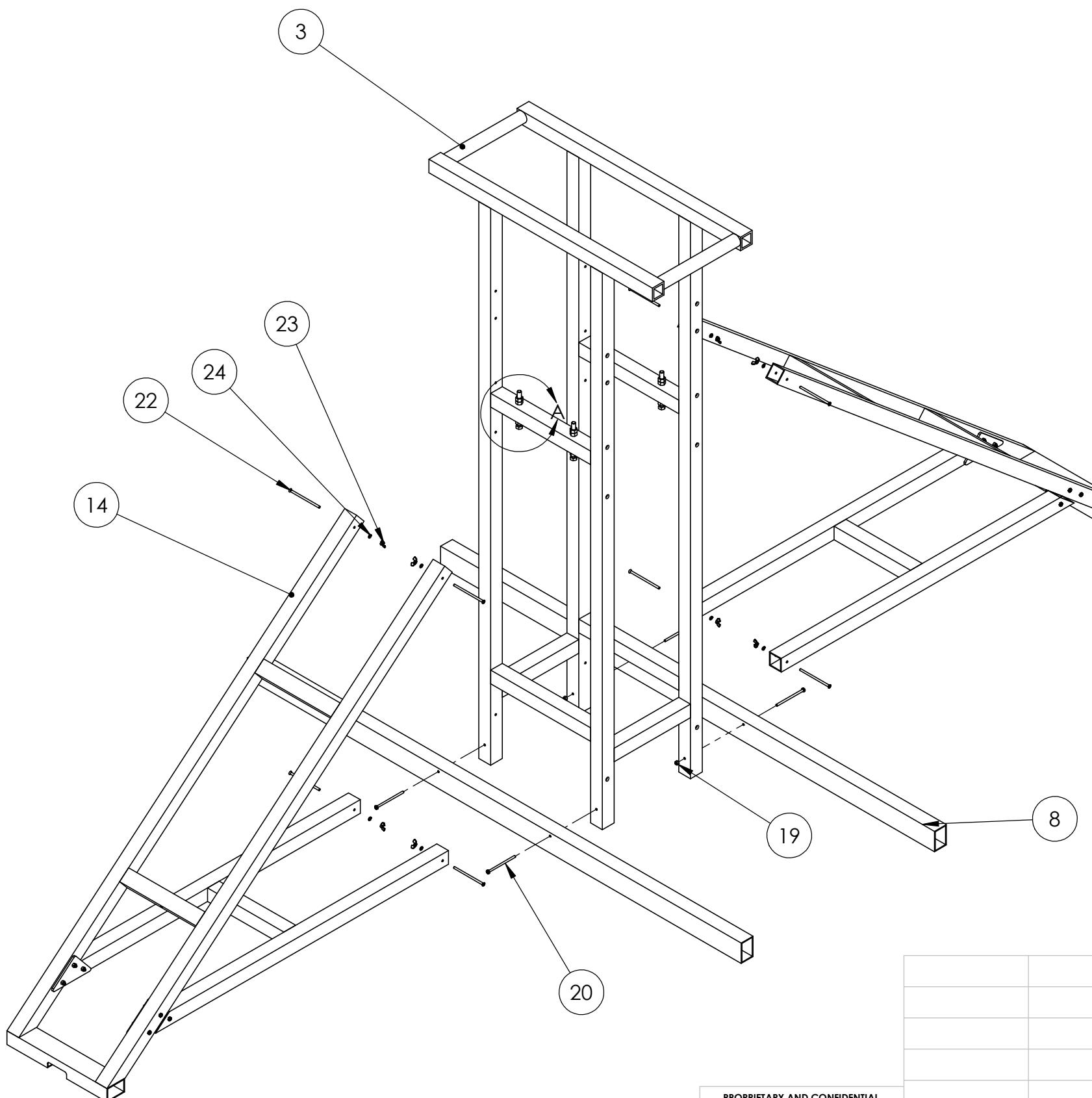
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3, 2-A2, 2-B2, 5-A2, 5-A3	1	Added GE-18131 to assembly, Added qty. 4 additional hexnut_.5_13	2/13/2018	CPO

ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	GE-18022	Scale Outrigger Side Cover Polycarbonate	4
2	GE-18026	Switch/Scale Arm Shaft	1
3	GE-18054	Scale Frame	1
4	GE-18055	Outrigger Top Polycarbonate	2
5	GE-18057	Scale Side HDPE	2
6	GE-18058	Scale Top HDPE	1
7	GE-18060	Platform	2
8	GE-18075	Scale Base Outrigger	2
9	GE-18099	Scale Shaft Spacer	2
10	GE-18106	Scale Lockout Bar	2
11	GE-18119	Scale Side Cover Polycarbonate Sub Assembly	2
12	GE-18121	Basket Assembly	2
13	GE-18122	Bearing/Damper Assembly	2
14	GE-18123	Outrigger Assembly	2
15	GE-18125	Scale Arm Assembly	1
16	hex_.5_13_5	Steel Hex Head Screw, 1/2"-13 x 5" long, fully threaded	4
17	hexnut_.5_13	Steel Hex Nut, 1/2"-13	12
18	hex_.25_20_1.5	Steel Hex Head Screw, 1/4"-20 x 1-1/2" long, fully threaded	3
19	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	19
20	hex_.25_20_4.5_partial	Steel Hex Head Screw, 1/4"-20 x 4-1/2" long, partially threaded	4
21	flat_phil_.25_20_2.75	Steel Phillips Flat Head Screw, 1/4"-20 x 2-3/4" long, fully threaded	12
22	flat_phil_.25_20_5	Steel Phillips Flat Head Screw, 1/4"-20 x 5" long, fully threaded	8
23	wing_.25_20	Steel Wing Nut, 1/4"-20, 31/64" Base Diameter	8
24	washer_split_.26_.487	Steel Split Lock Washer for 1/4" Screw	8
25	GE-18131	Scale Wear Protector	4



4 3 2 1



DETAIL A
SCALE 1 : 3

Notes:

1. Attach Items 8 (qty: 2) to Item 3 using Items 19 and 20.
2. Attach Items 14 (qty: 2) to Item 3 using Items 22, 23 and 24.
3. Bolt Items 16 (qty: 4) and 17 (qty: 12) through Item 3.

1

		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		
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		ENG APPR.		
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		COMMENTS:		
		MATERIAL		
		FINISH		
	NEXT ASSY	USED ON		
	APPLICATION	DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Scale Assembly

SIZE DWG. NO. REV
B GE-18120 1

SCALE: 1:48 WEIGHT: SHEET 2 OF 5

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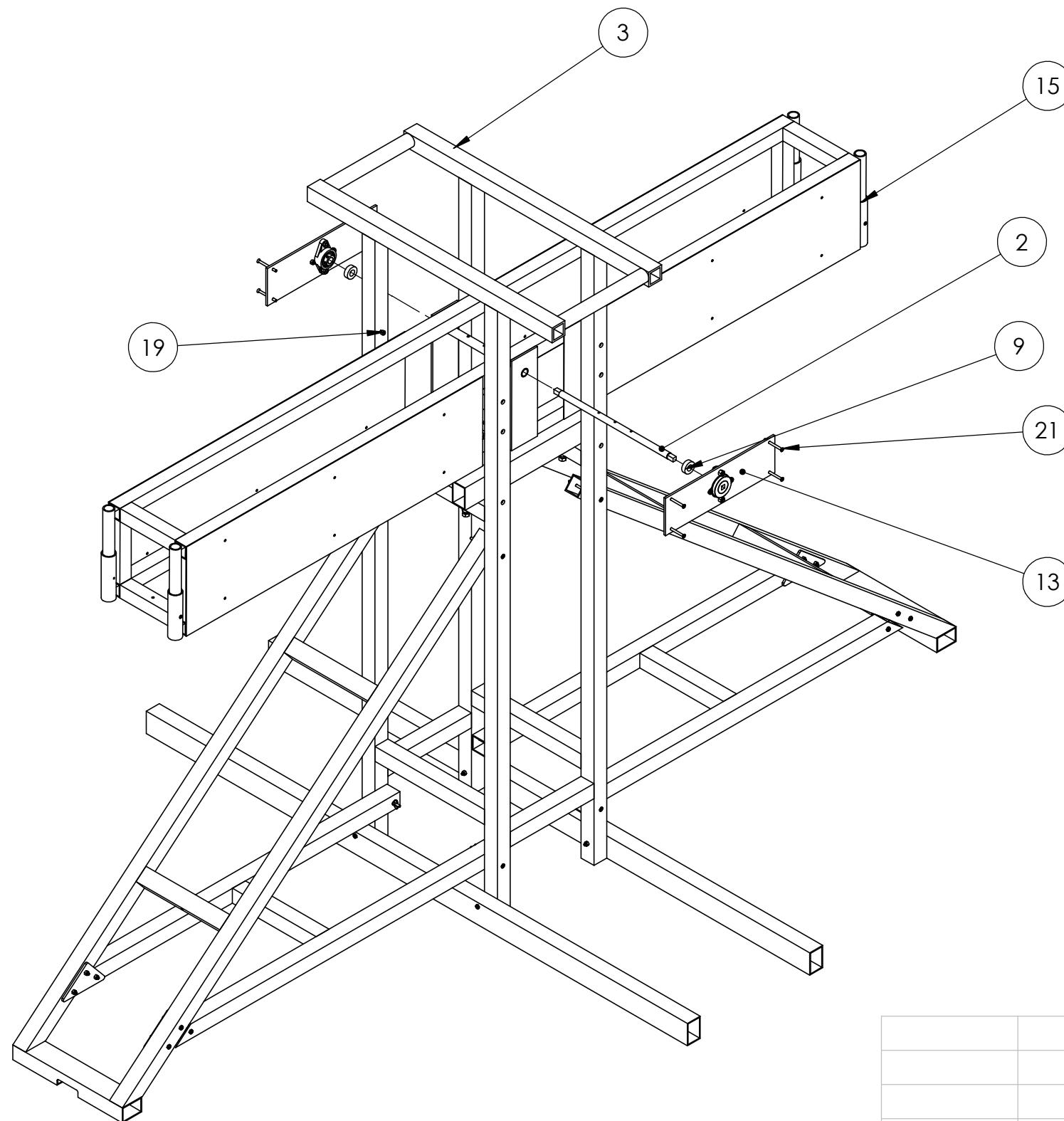
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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
		MATERIAL	COMMENTS:			
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				
SIZE DWG. NO. REV B GE-18120 1 SCALE: 1:48 WEIGHT: SHEET 3 OF 5						

Notes:

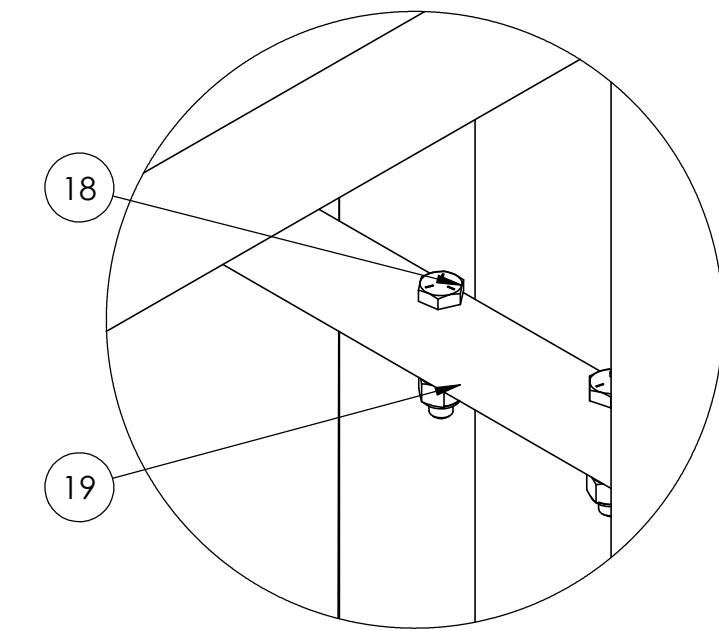
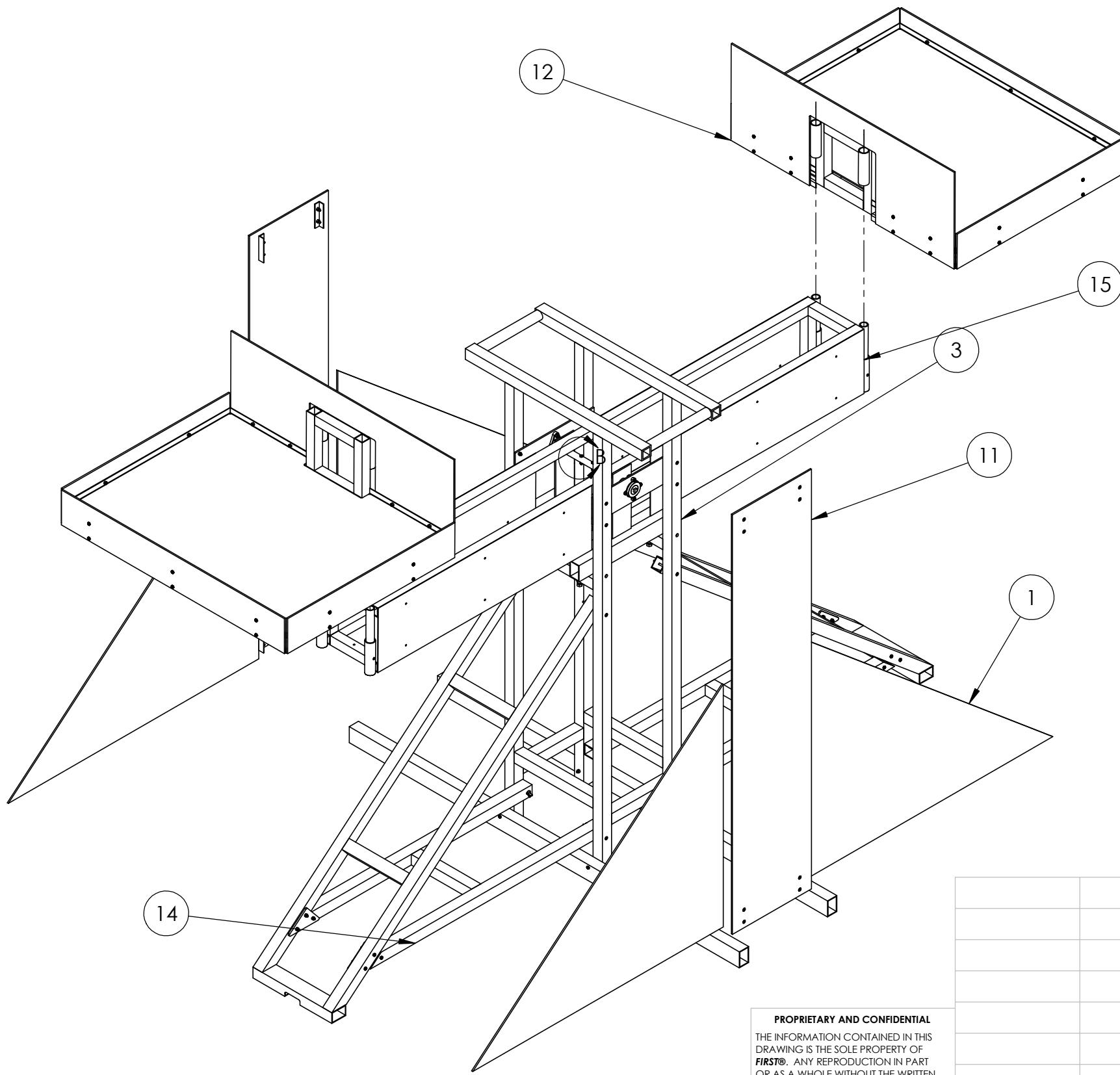
1. Slide item 2 (the shaft) through the tube on Item 15. Slide Items 9 (qty: 2) to either side of Item 2.
 2. Align the shaft to the bearings and dampers of Item 13 (qty: 2). Bolt Items 13 to Item 3 using Items 21 and 23. Please note that Items 13 go to the inside of the frame of Item 3.

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DETAIL B
SCALE 1 : 2

Notes:

1. Align Item 2 (the shaft) through the tube of Item 17 and secure alignment using Items 18 (qty: 3) and 19 (qty: 3).
2. Slide Items 12 (qty: 2) onto the pins of Item 15.
3. Attach Items 11 to Item 3 using hook and loop.
4. Attach Items 1 to Items 14 using hook and loop.

		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:		Q.A.	COMMENTS:
NEXT ASSY		USED ON		MATERIAL	
		FINISH			
APPLICATION		DO NOT SCALE DRAWING			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Scale Assembly

SIZE DWG. NO. **B** GE-18120 **REV** **1**

SCALE: 1:48 WEIGHT: SHEET 4 OF 5

4

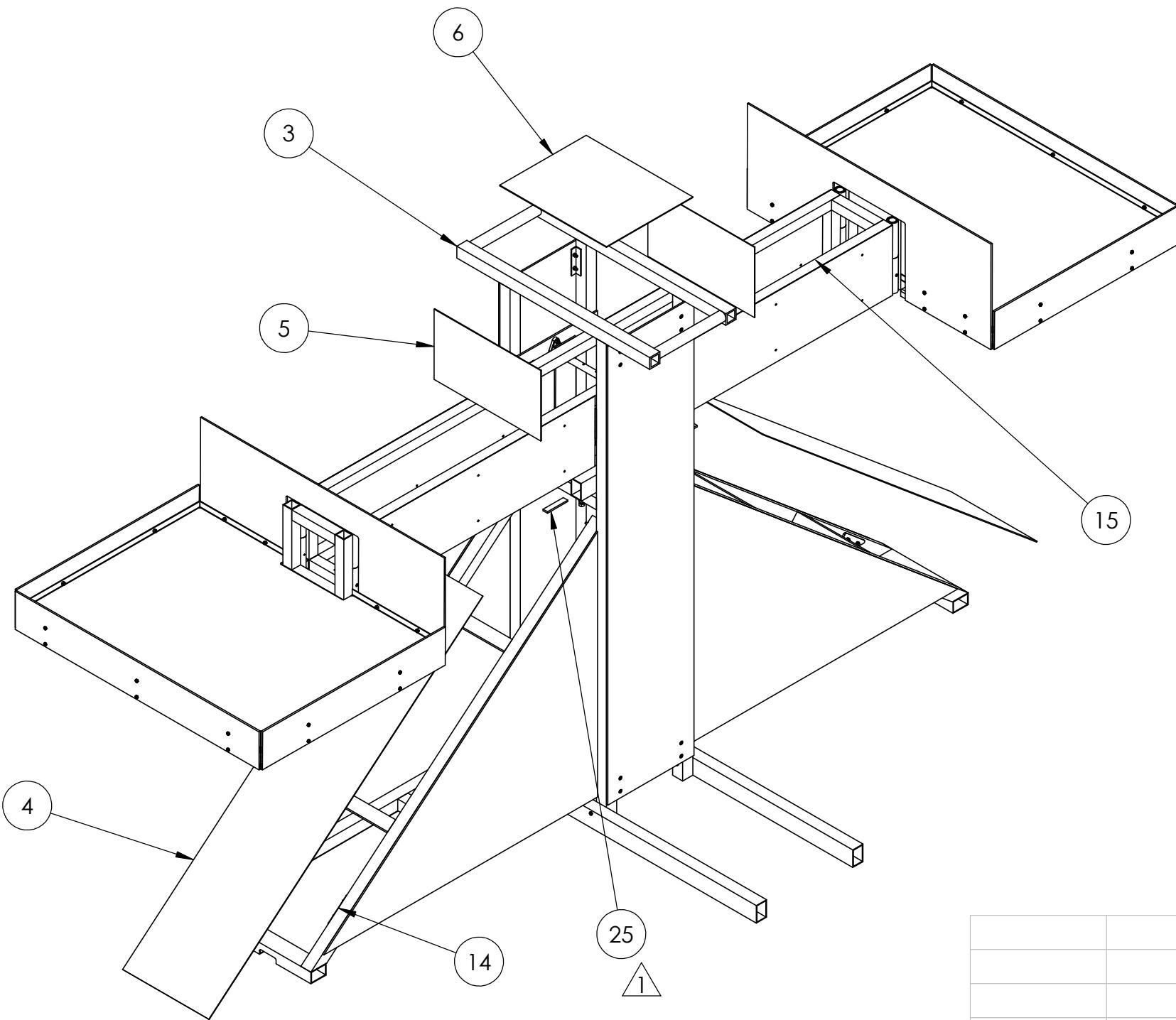
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		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION	DO NOT SCALE DRAWING				

FIRST
ROBOTICS
COMPETITION

SOLIDWORKS
Modeling Solutions Partner

TITLE:
Scale Assembly

SIZE DWG. NO. **B** GE-18120 **REV** **1**

SCALE: 1:48 WEIGHT: SHEET 5 OF 5

4

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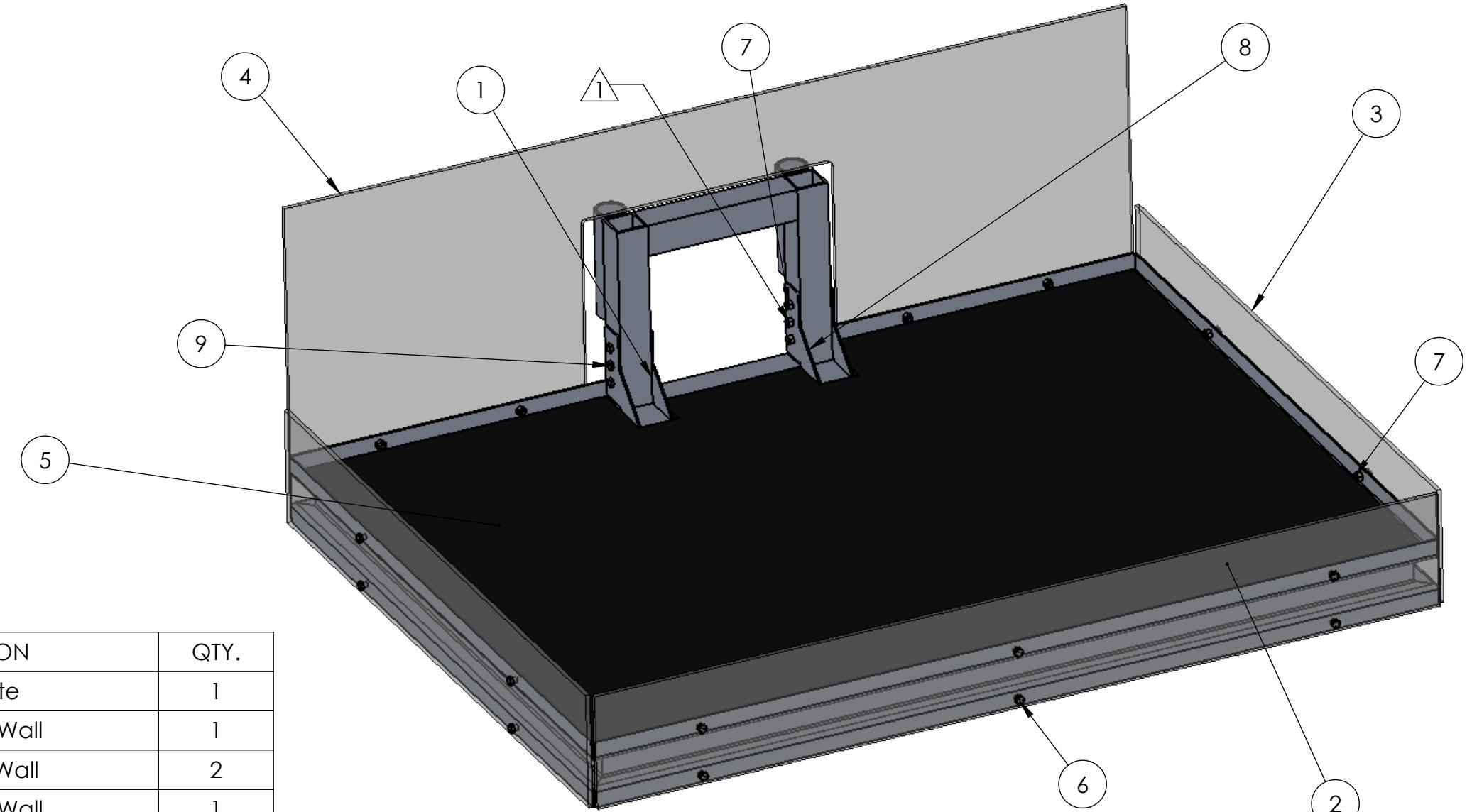
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, 2-B3	1	GE-18134 and associated hardware added to assembly.	3/6/2018	CPO

B

B



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18007	Scale Plate	1
2	GE-18018	Plate Front Wall	1
3	GE-18019	Plate Side Wall	2
4	GE-18017	Plate Back Wall	1
5	GE-18021	Scale and Switch Basket, Plate	1
6	hex_.25_20_.75	Steel Hex Head Screw, 1/4"-20 x 3/4" long, fully threaded	22
7	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	34
8	GE-18134	Plate Gusset Brace	4
9	hex_.25_20_2.25_partial	Steel Hex Head Screw, 1/4"-20 x 2-1/4" long, partially threaded	12

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		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	
SIZE	DWG. NO.				REV
B	GE-18121				1
SCALE: 1:7	WEIGHT:				SHEET 1 OF 2

 FIRST ROBOTICS COMPETITION  SOLIDWORKS Modeling Solutions Partner

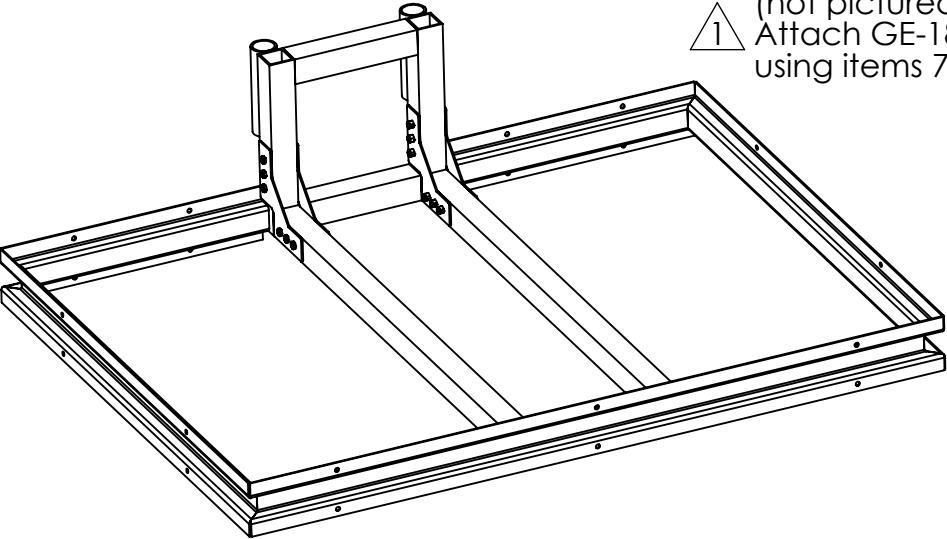
TITLE:
Basket Assembly

4

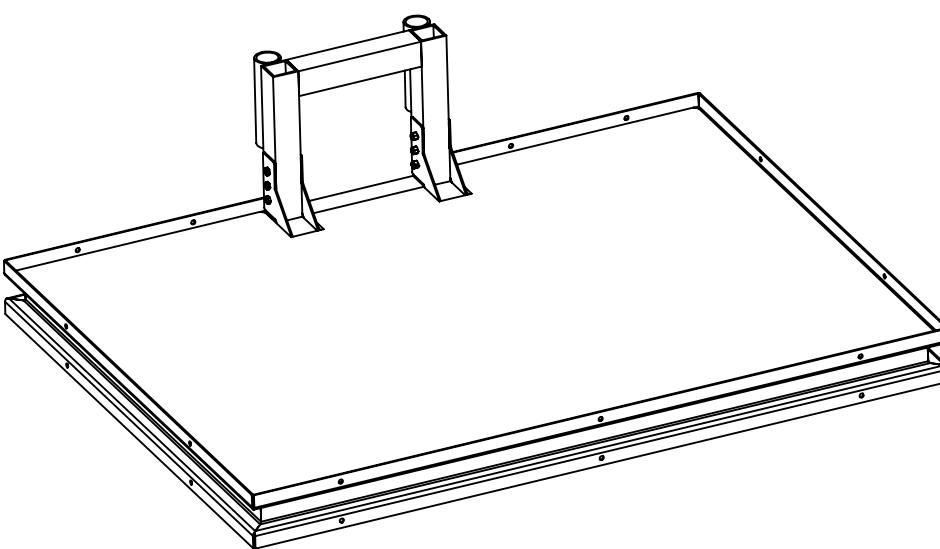
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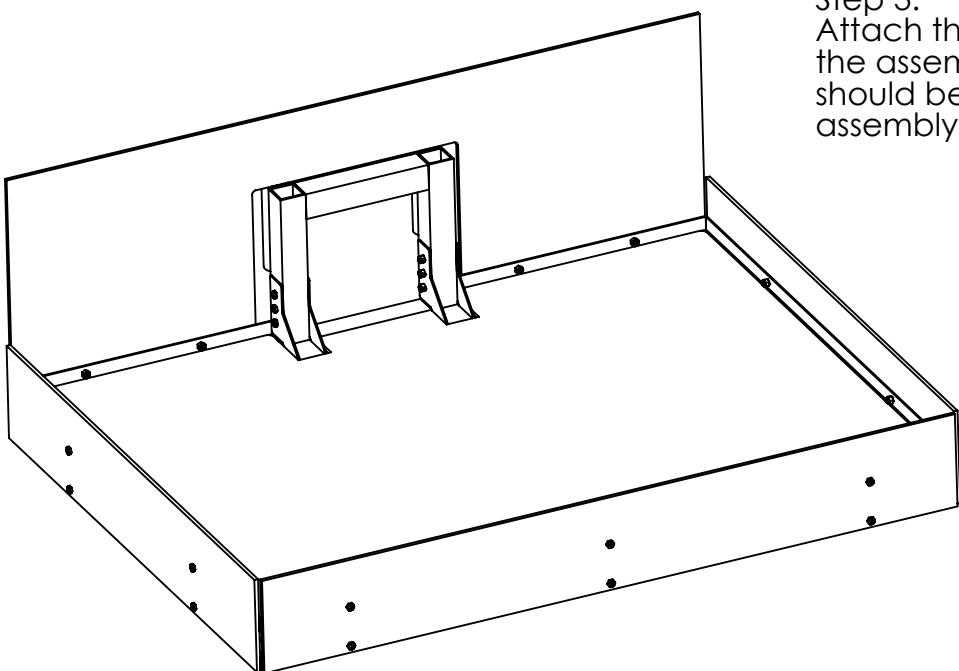
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Step 1:
Acquire GE-18007 part.
Confirm all lights are mounted properly
(not pictured).
1 Attach GE-18134 (qty. 4) as shown
using items 7 and 9



Step 2:
Place GE-18021 onto the
assembly, textured side up.



Step 3:
Attach the four plate walls to
the assembly. The bolt heads
should be on the outside of the
assembly.

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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			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Basket Assembly

SIZE	DWG. NO.	REV
B	GE-18121	1
SCALE: 1:12	WEIGHT:	SHEET 2 OF 2

4

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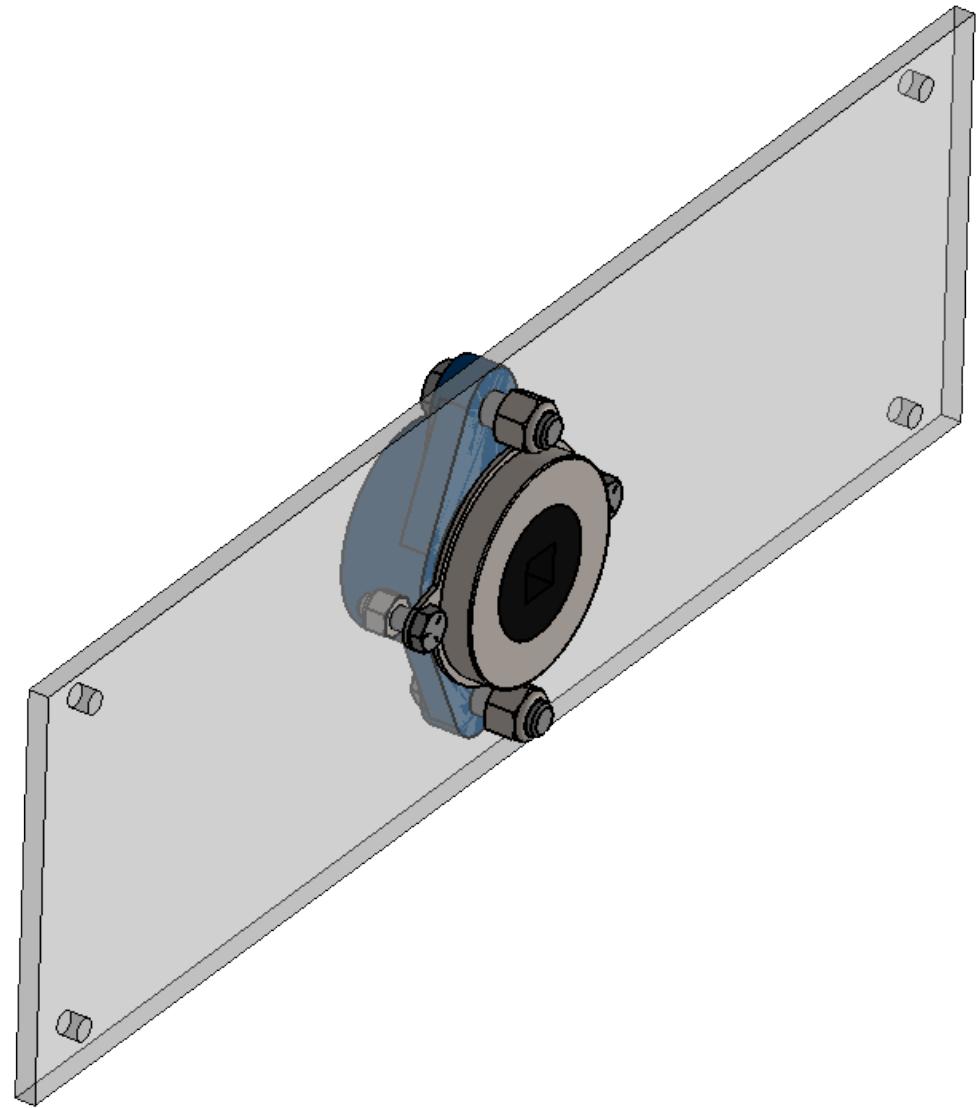
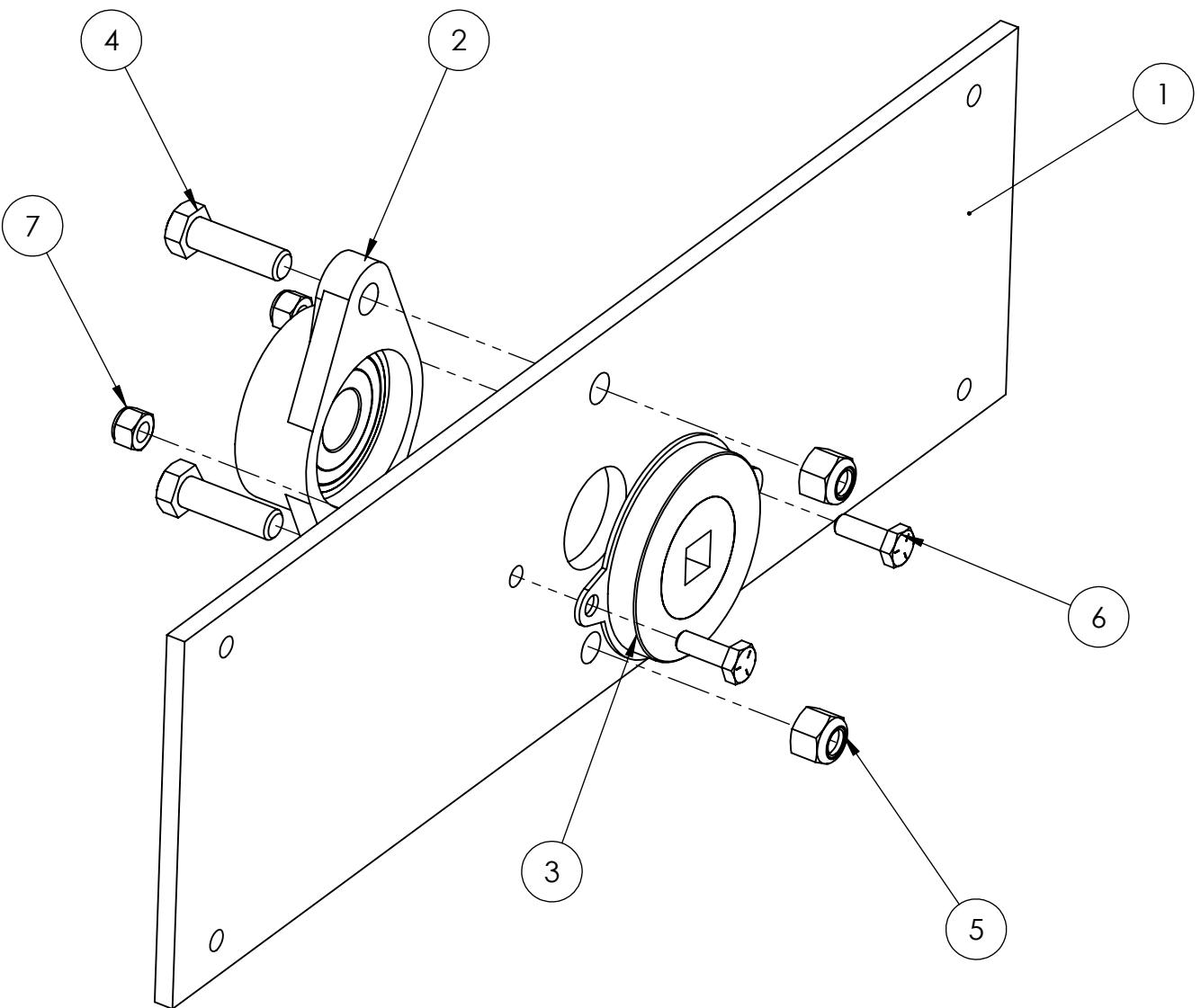
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Notes:

1. Bolts should not be fully tightened until mounted with a Switch/Scale Arm Shaft (GE-18026).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18056	Bearing Damper Polycarbonate	1
2	GE-18096	Scale/Switch Bearing	1
3	GE-18097	Scale/Switch Damper	1
4	hex_.375_16_1.25	Steel Hex Head Screw, 3/8"-16 x 1-1/4" long, fully threaded	2
5	nylock_.375_16	Steel Nylon-Insert Locknut, 3/8"-16	2
6	hex_.25_20_.75	Steel Hex Head Screw, 1/4"-20 x 3/4" long, fully threaded	2
7	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	2

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		ENG APPR.		
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		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
	NEXT ASSY	USED ON		
		APPLICATION	DO NOT SCALE DRAWING	
SIZE	DWG. NO.		REV	
B	GE-18122			
SCALE: 1:2	WEIGHT:		SHEET 1 OF 1	

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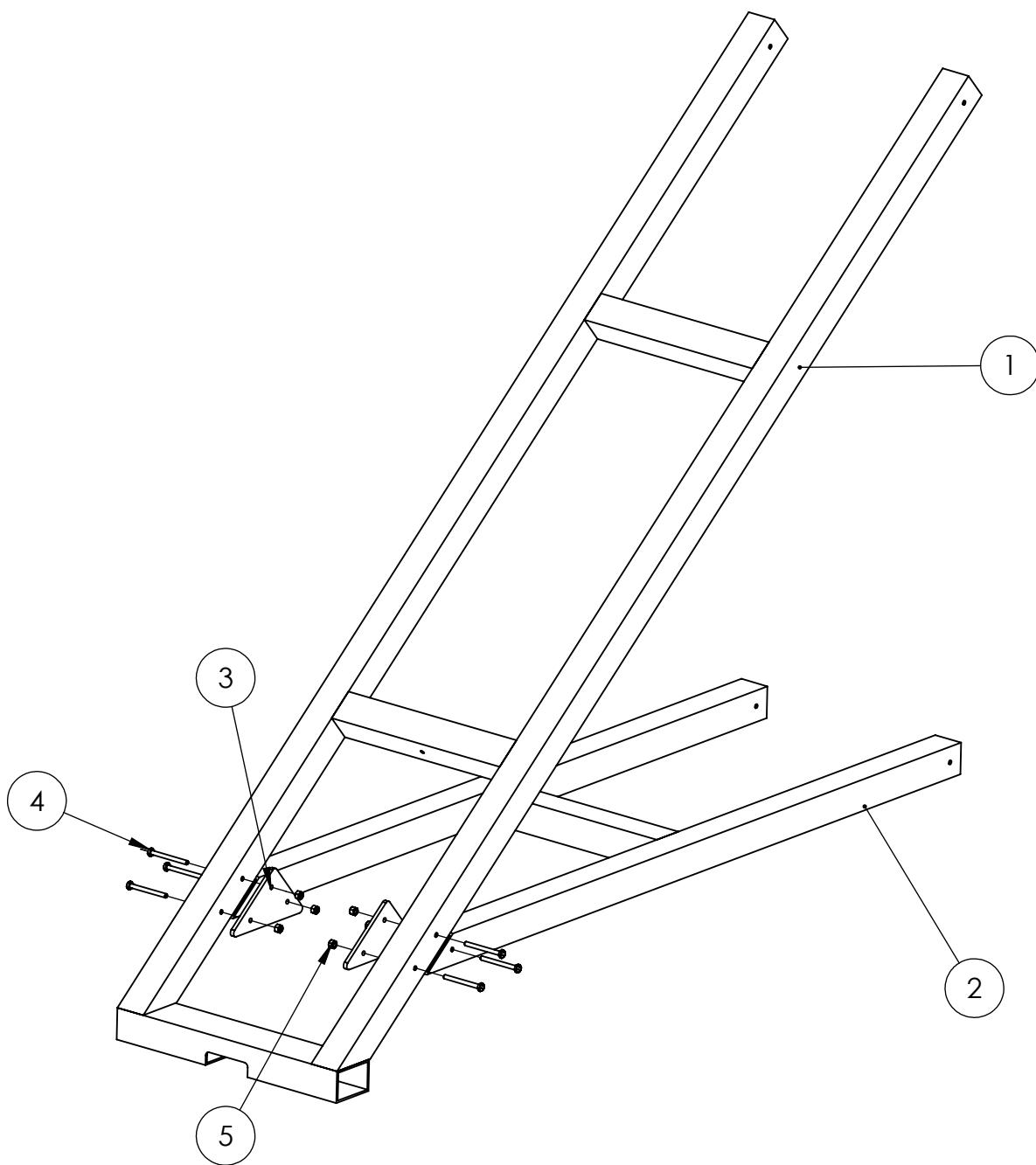
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18078	Outrigger Wing Diagonal	1
2	GE-18077	Outrigger Wing Horizontal	1
3	GE-18079	Outrigger Wing Plate	2
4	hex_.25_20_2.75_part ial	Steel Hex Head Screw, 1/4"-20 x 2-3/4" long, partially threaded	6
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	6

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		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
	NEXT ASSY	USED ON			
		APPLICATION	DO NOT SCALE DRAWING		
SIZE	DWG. NO.			REV	
B	GE-18123				
SCALE: 1:10	WEIGHT:			SHEET 1 OF 1	

FIRST
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TITLE:
**Outrigger
Assembly**

SIZE DWG. NO. REV
B GE-18123

SCALE: 1:10 WEIGHT: SHEET 1 OF 1

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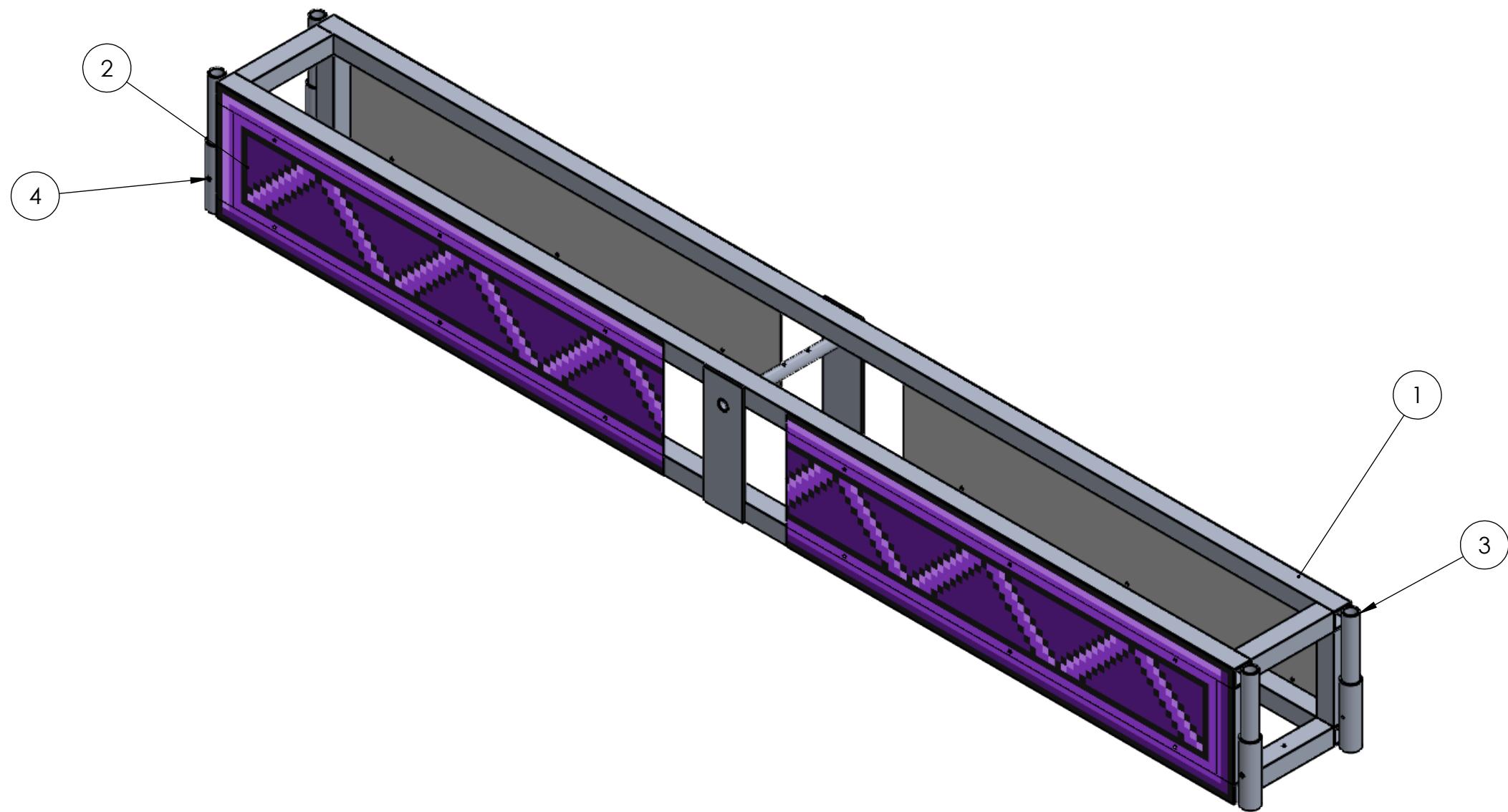
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ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	GE-18014	Scale Arm	1
2	GE-18023	Scale Arm Cover Polycarbonate	4
3	GE-18028	Plate Mount Pin	4
4	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	4

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NEXT ASSY	USED ON			
APPLICATION	DO NOT SCALE DRAWING			
SCALE: 1:24		WEIGHT:	SHEET 1 OF 2	

**FIRST
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COMPETITION** **SOLIDWORKS**
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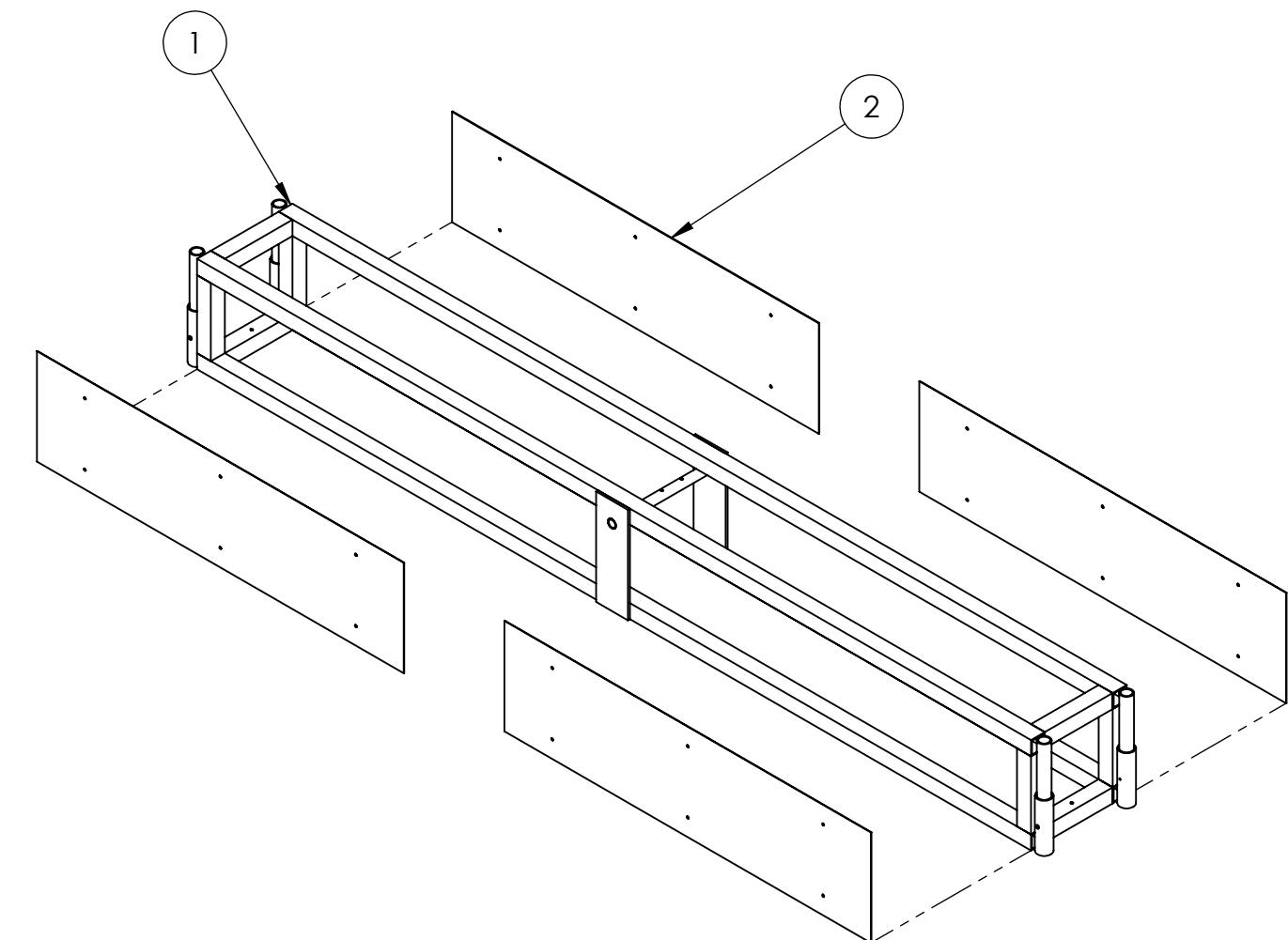
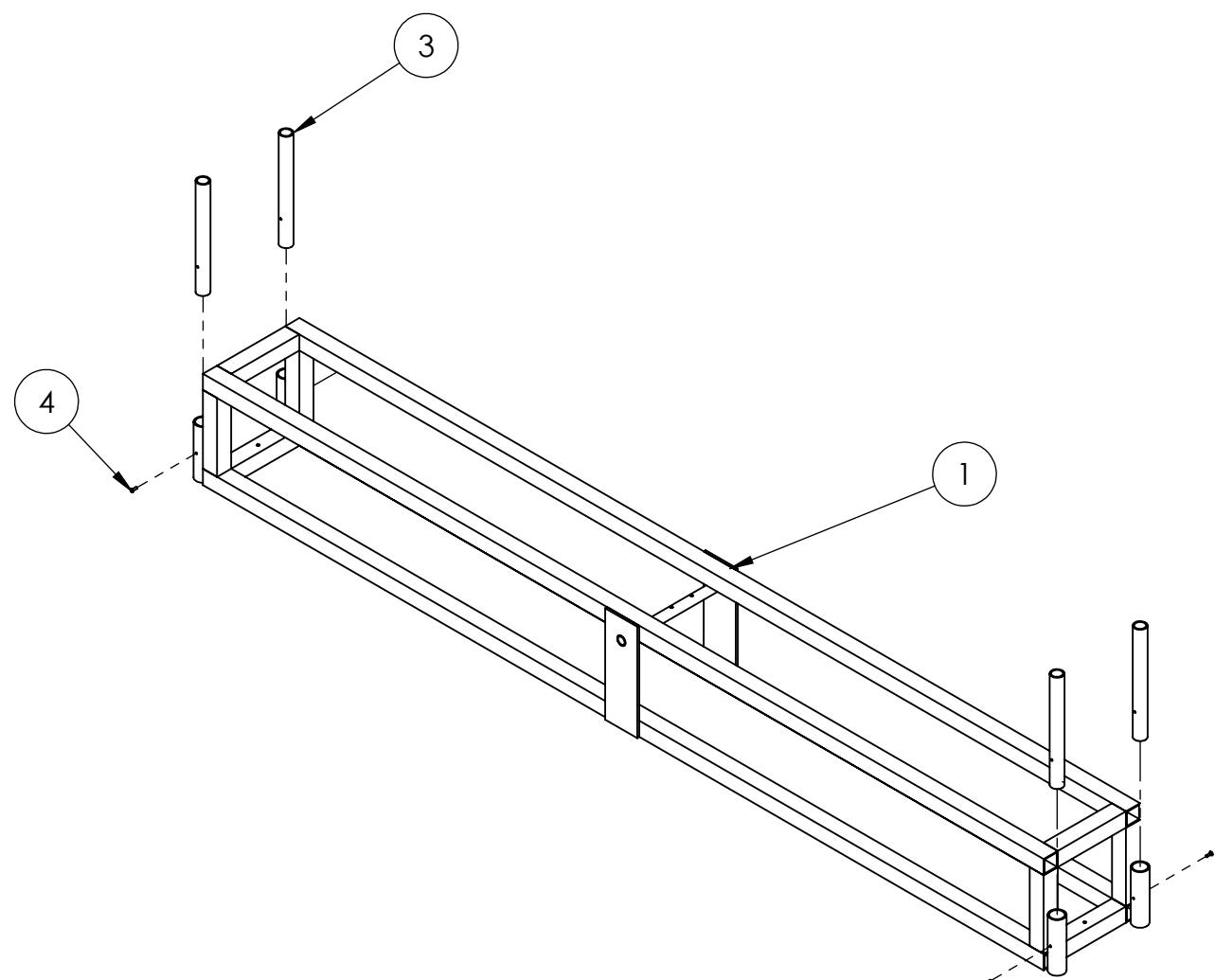
Title: Scale Arm Assembly
Size: DWG. NO. **B** **GE-18125** **Rev:**

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Note:

1. Attach Item 3 (qty: 4) to Item 1 using Item 4 (qty: 4).

Note:

1. Attach Item 2 (qty: 4) to Item 1 with cable ties after the rest of GE-18120 is assembled.

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Title: Scale Arm Assembly

Size: B **Dwg. No.:** GE-18125 **Rev.:**

Scale: 1:24 **Weight:**

Sheet 2 of 2

4

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2

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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
2-A3	1	Revised note to refer to correct ITEM NO.	1/12/2018	CPO

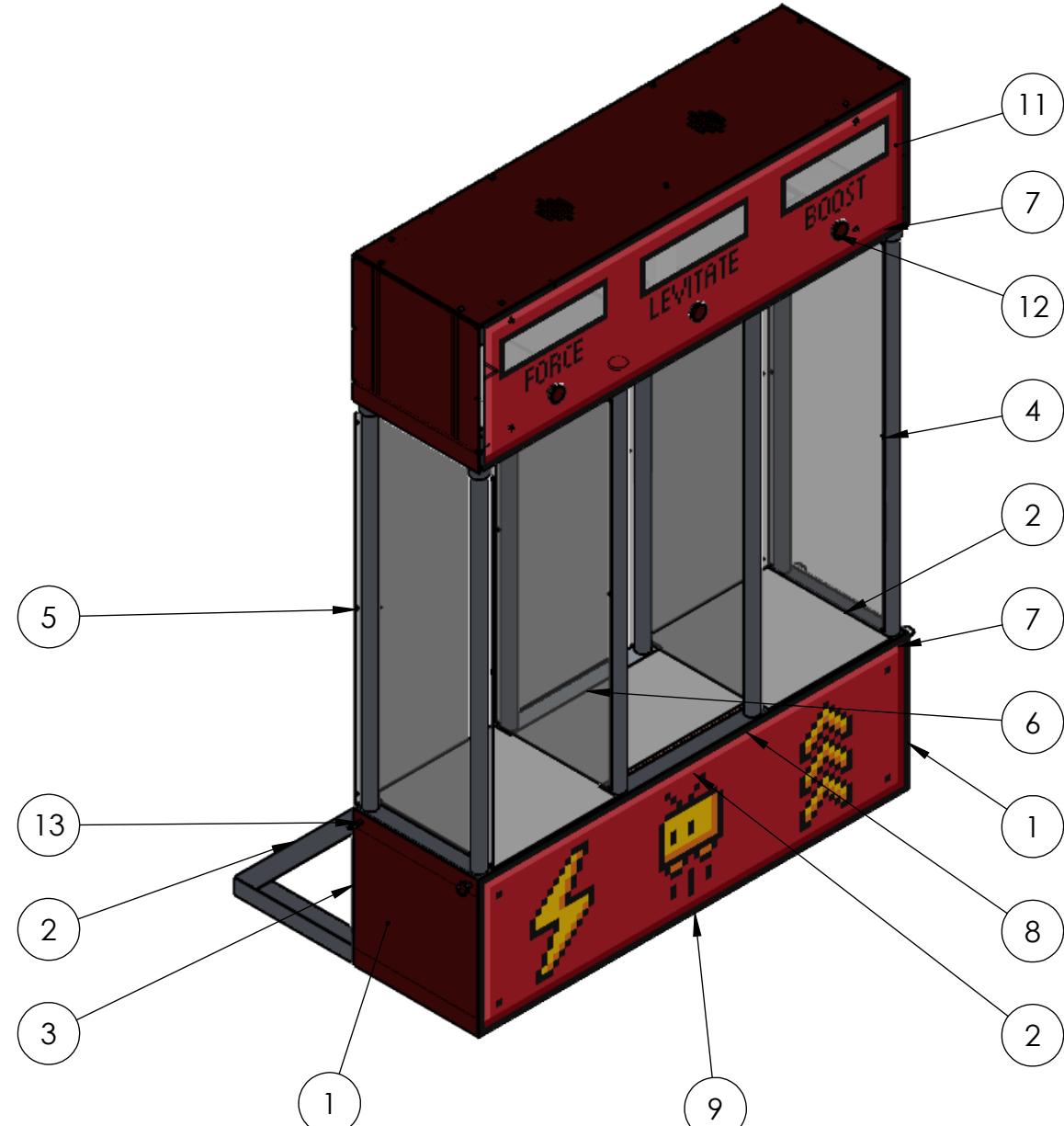
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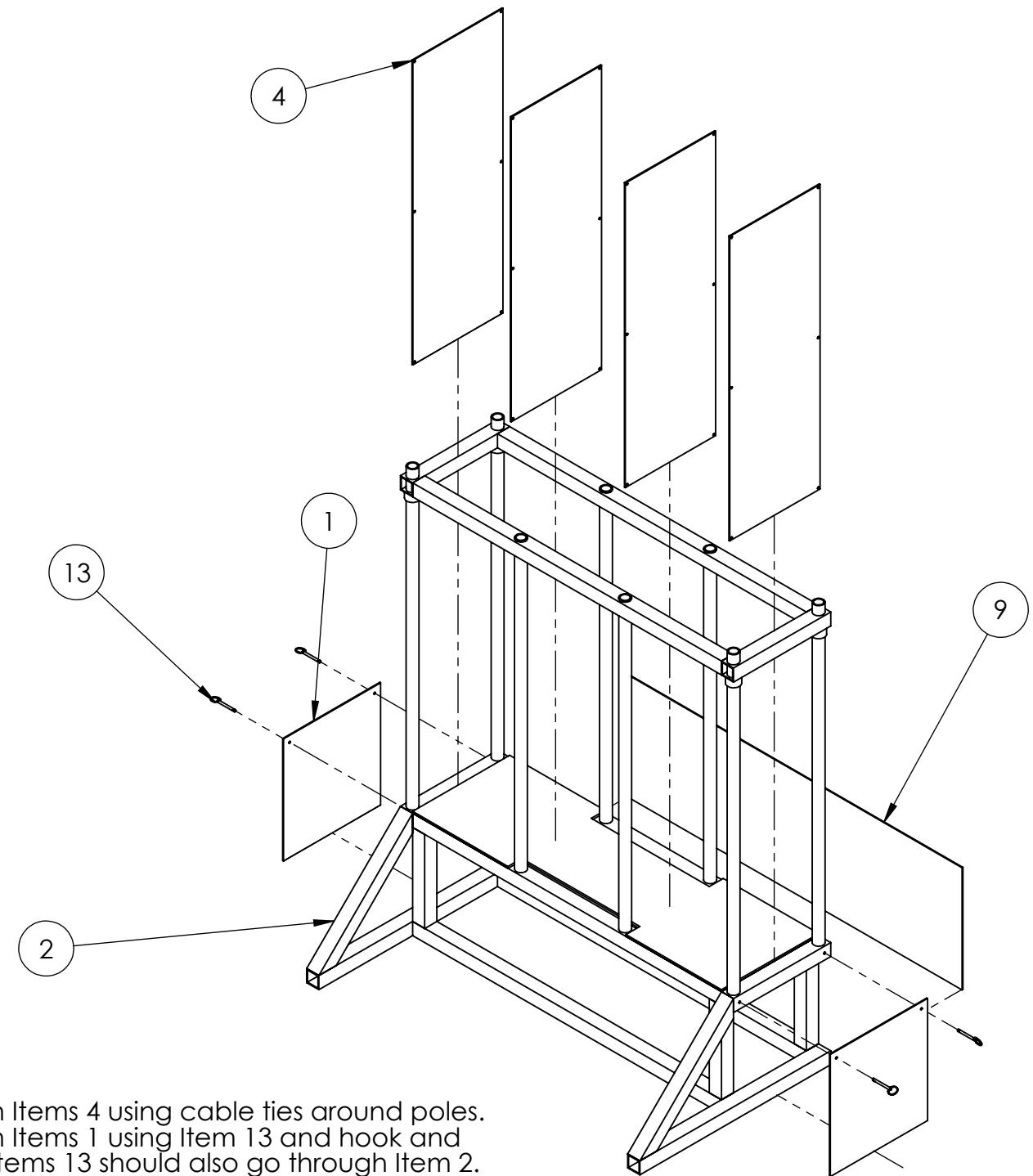
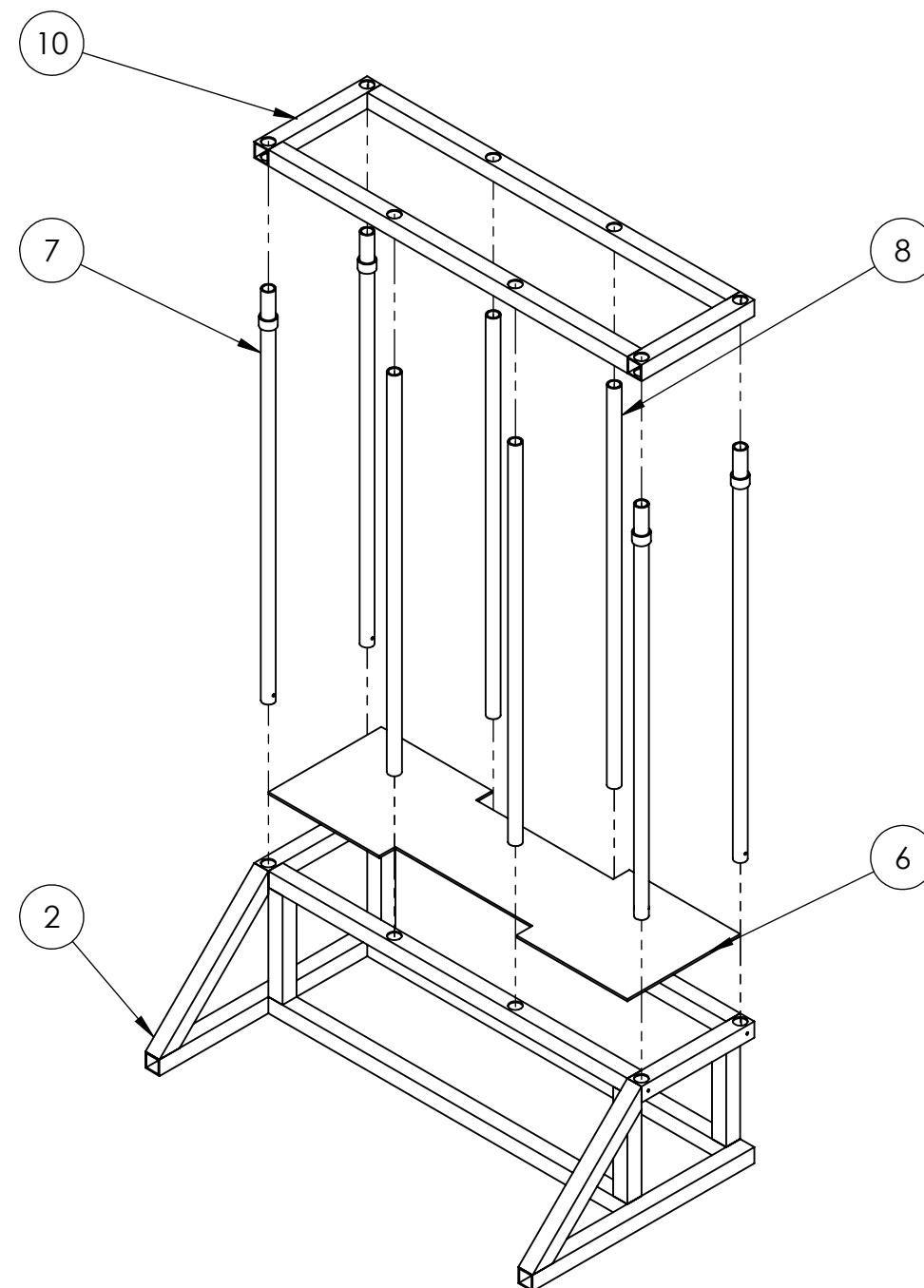
ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	GE-18031	Vault HDPE Bottom Side	2
2	GE-18032	Vault Base	1
3	GE-18035	Vault HDPE Bottom Back	1
4	GE-18036	Vault Polycarbonate Middle Insert	4
5	GE-18037	Vault Polycarbonate Backstop	1
6	GE-18038	Vault Polycarbonate Bottom Floor	1
7	GE-18039	Vault Support Pipes	4
8	GE-18040	Vault Middle Support Pipes	4
9	GE-18045	Vault Polycarbonate Bottom Front	1
10	GE-18047	Vault Top Frame	1
11	GE-18129	Vault Top Assembly	1
12	Vault_Button		3
13	pin_quick_ring_.25_2	SS Ring-Grip Quick-Release Pin, 1/4" diameter, 2" long	4
14	hex_.25_20_.75	Steel Hex Head Screw, 1/4"-20 x 3/4" long, fully threaded	12
15	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	12

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		
SIZE	DWG. NO.		REV	
B	GE-18126		1	
SCALE: 1:14	WEIGHT:	SHEET 1 OF 3		



4 3 2 1



Notes:

1. Attach Items 4 using cable ties around poles.
2. Attach Items 1 using Item 13 and hook and loop. Items 13 should also go through Item 2.
3. Attach Item 9 using hook and loop.

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
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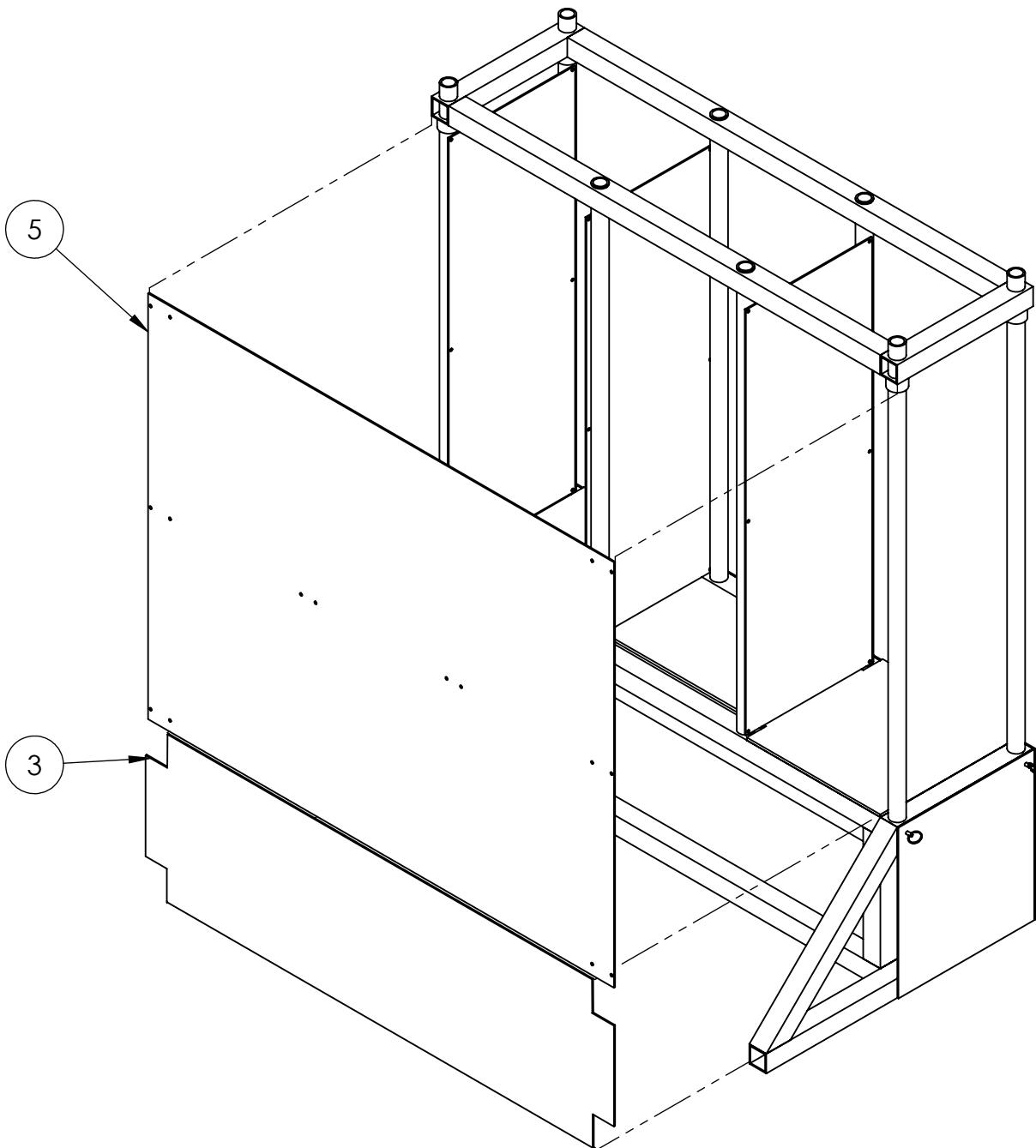
TITLE: Vault Assembly

SIZE DWG. NO. **B** GE-18126 **REV** **1**

SCALE: 1:12 WEIGHT: SHEET 2 OF 3

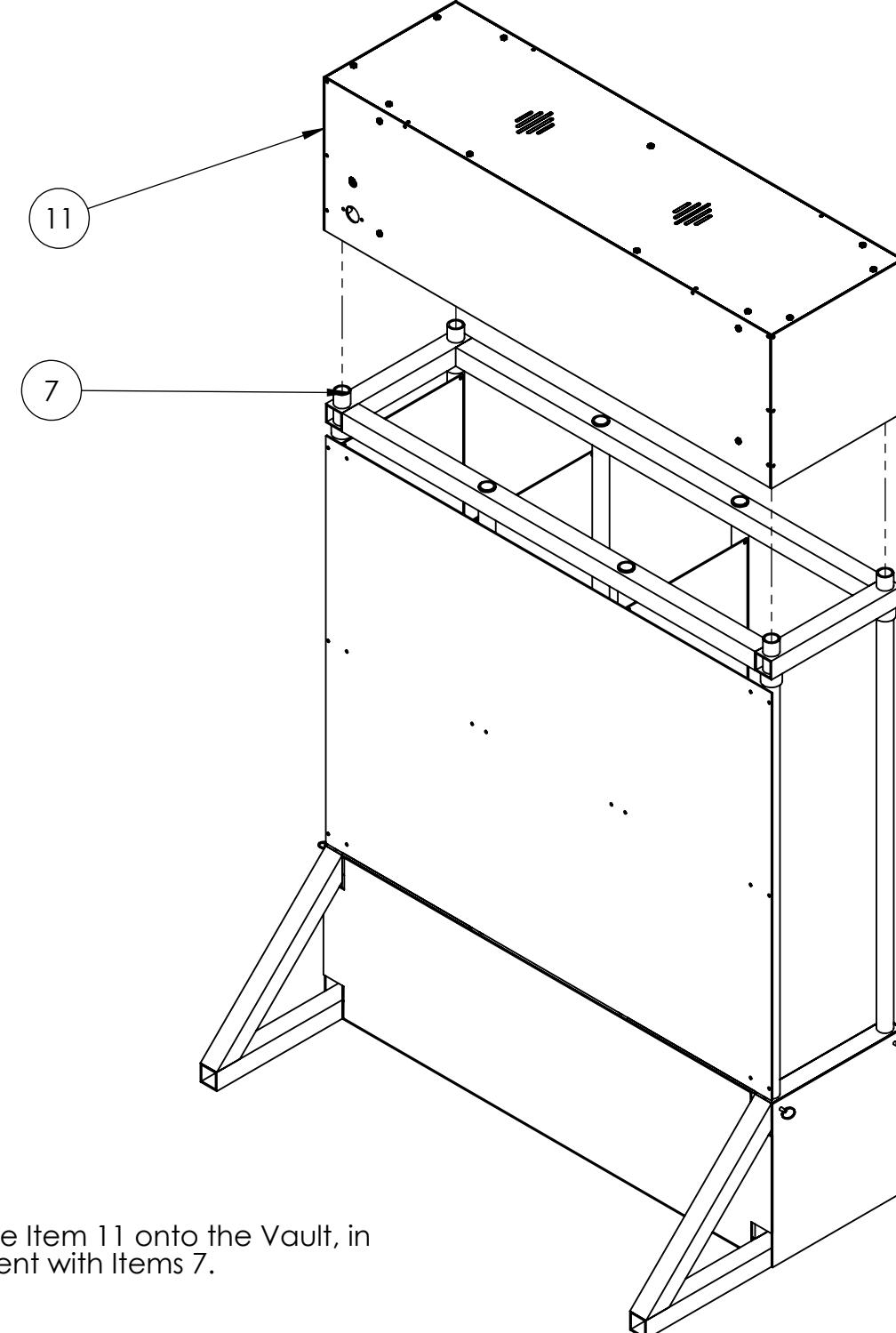
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4 3 2 1



- Notes:
1. Attach Item 5 using cable ties around poles.
 2. Attach Item 3 using hook and loop.

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- Notes:
1. Place Item 11 onto the Vault, in alignment with Items 7.

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Vault Assembly

SIZE **DWG. NO.** **REV**
B **GE-18126** **1**

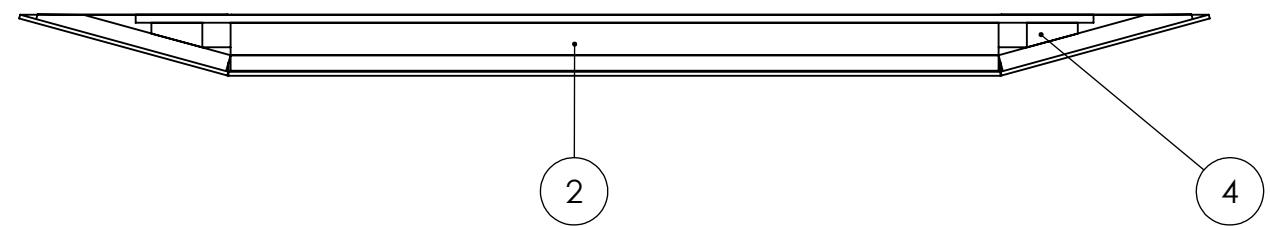
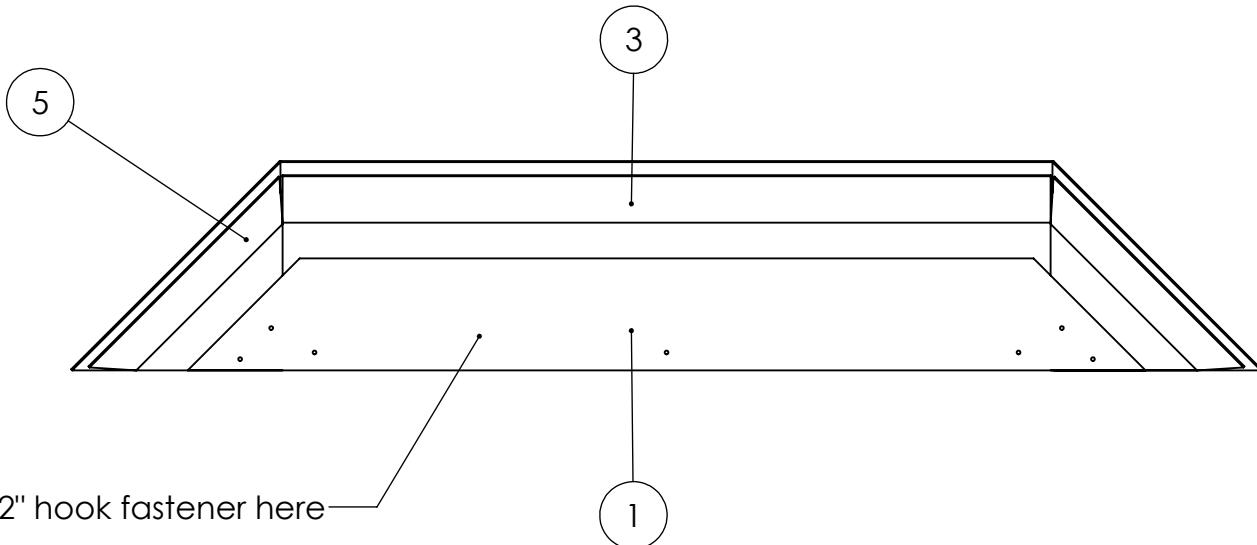
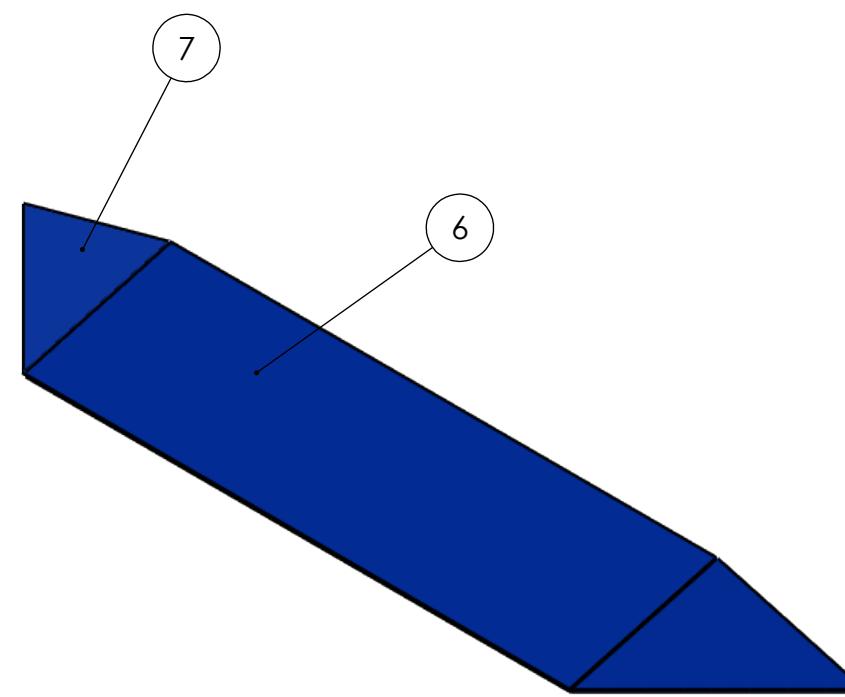
SCALE: 1:12 WEIGHT: SHEET 3 OF 3

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1



B

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ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	GE-18127-01	1/4" thk. Polycarb, clear	1
2	GE-18127-02	2"x4" Pine	1
3	GE-18127-03	1/2" AC Plywood	1
4	GE-18127-04	2"x4" Pine	2
5	GE-18127-05	1/2" AC Plywood	2
6	GE-18127-06	1/8" thk. HDPE, red or blue	1
7	GE-18127-07	1/8" thk. HDPE, red or blue	2

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		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG APPR.			
		Q.A.			
		COMMENTS:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
SCALE: 1:6	WEIGHT:	SHEET 1 OF 6			

FIRST ROBOTICS COMPETITION
SOLIDWORKS
Modeling Solutions Partner

Ramp, Exchange

B GE-18127

REV
SCALE: 1:6 WEIGHT: SHEET 1 OF 6

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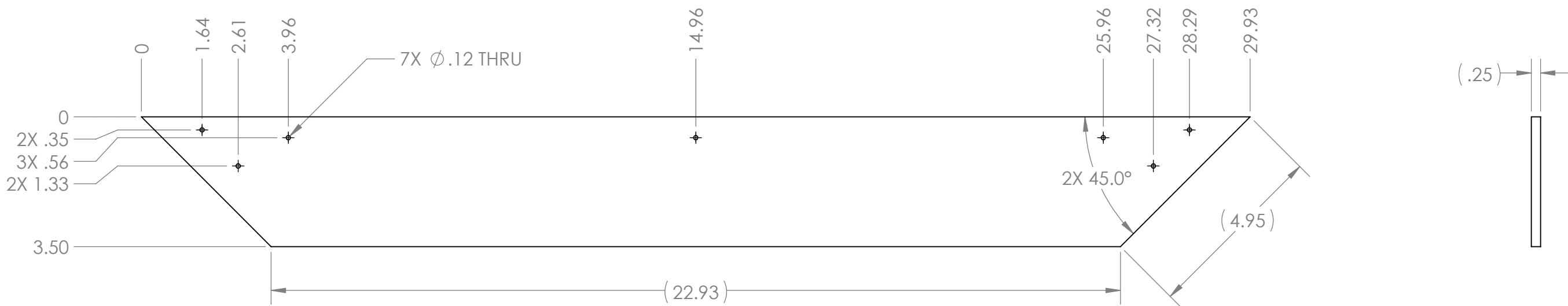
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Item: GE-18127-01

Material: 1/4" thk. clear polycarbonate

QTY: 1

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		UNLESS OTHERWISE SPECIFIED:		NAME _____ DATE _____ DRAWN _____ CHECKED _____ ENG APPR. _____ MFG APPR. _____ Q.A. _____ COMMENTS: _____	
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		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			
B	GE-18127	SIZE DWG. NO. REV			
SCALE: 1:4		WEIGHT:	SHEET 2 OF 6		

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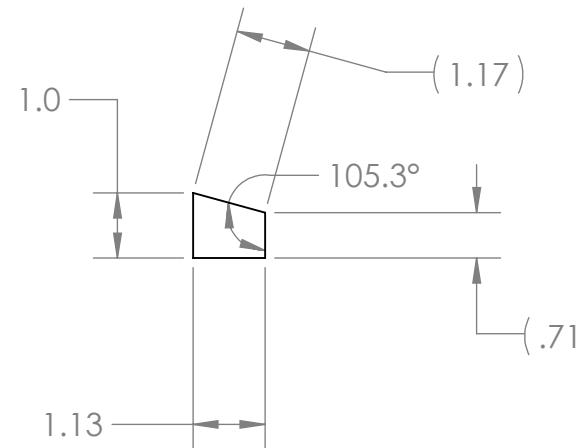
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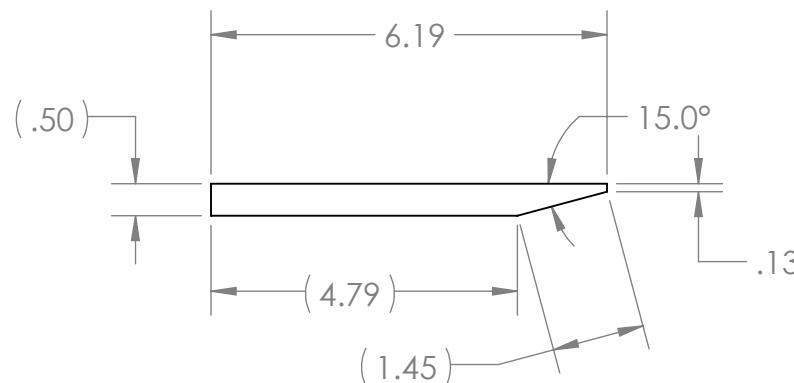
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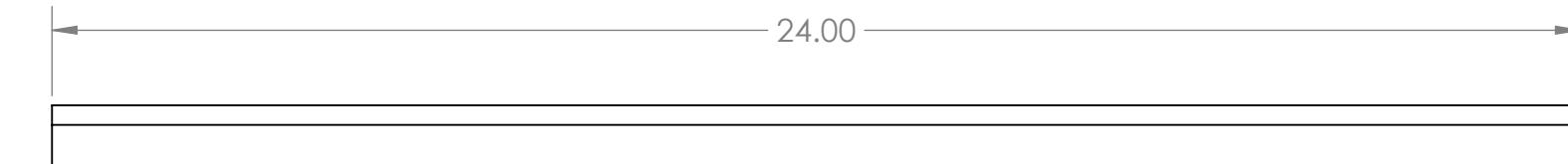


Item: GE-18127-02
Material: 2"x4" Pine
QTY: 1



Item: GE-18127-03
Material: 1/2" AC Plywood
QTY: 1

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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			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING	COMMENTS:		
SOLIDWORKS					
FIRST ROBOTICS COMPETITION					
Ramp, Exchange					
GE-18127					
SCALE: 1:3	WEIGHT:	SHEET 3 OF 6			

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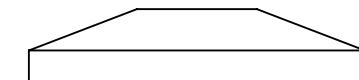
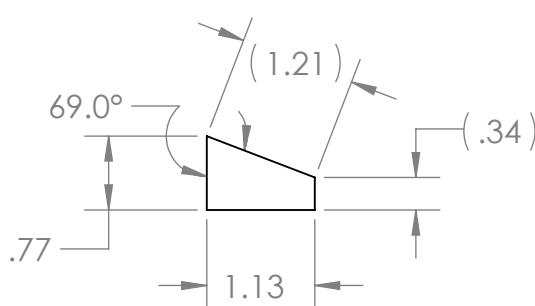
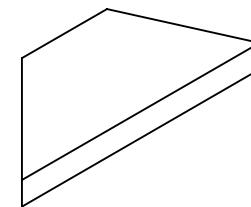
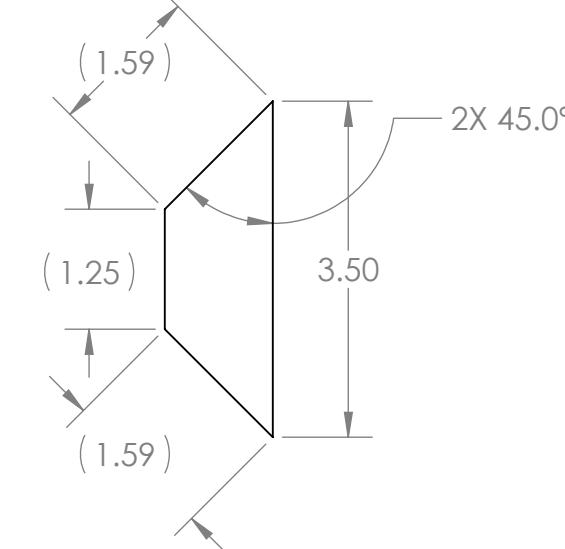
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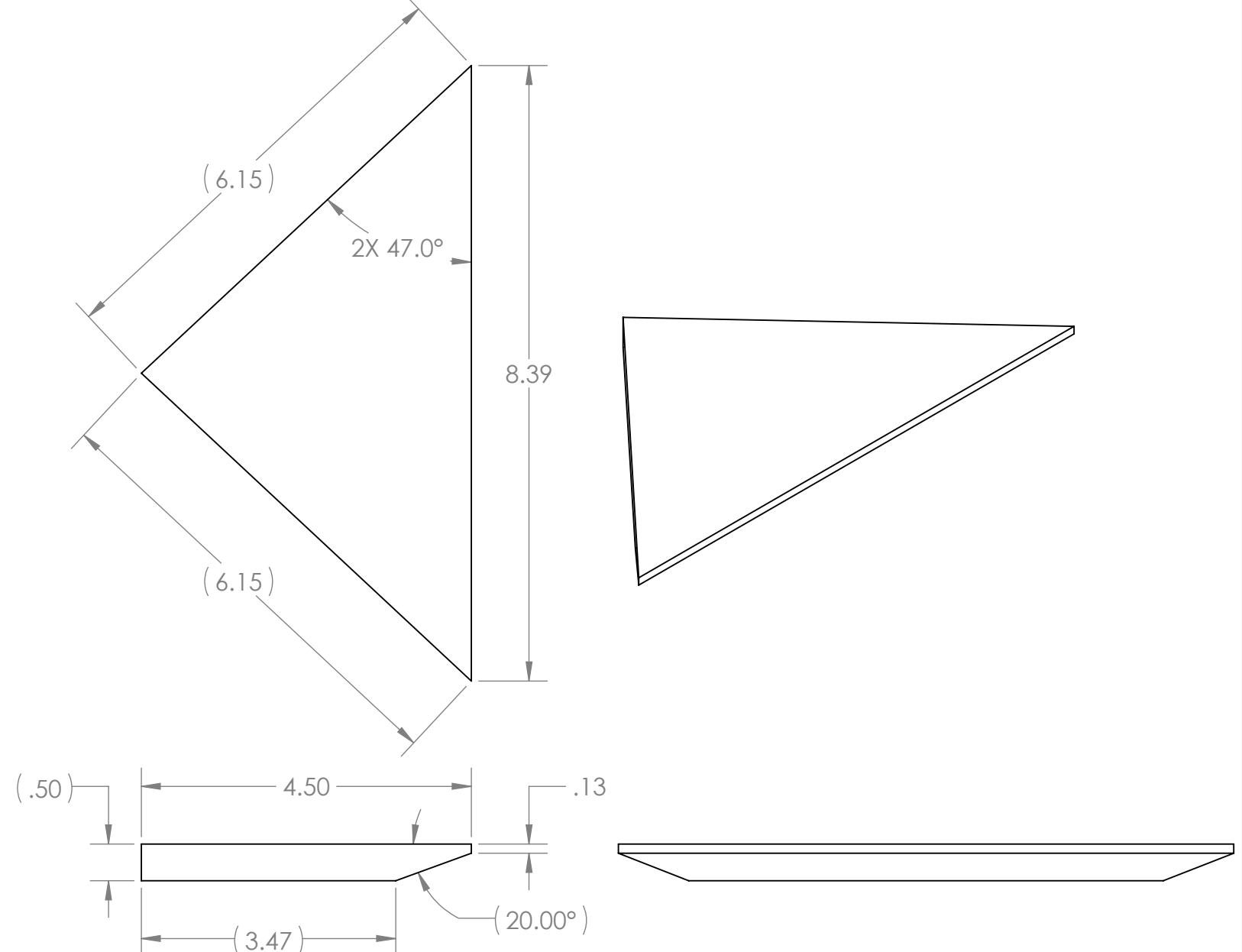
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B



Item: GE-18127-04
Material: 2"x4" Pine
QTY: 2

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Item: GE-18127-05
Material: 1/2" AC Plywood
QTY: 2

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	DRAWN			
	CHECKED			
	ENG APPR.			
	MFG APPR.			
	Q.A.			
	COMMENTS:			
NEXT ASSY	USED ON	MATERIAL		
		FINISH		
APPLICATION		DO NOT SCALE DRAWING		
SCALE: 1:2	WEIGHT:	SHEET 4 OF 6	SIZE	DWG. NO. REV
B	GE-18127			

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner
TITLE: Ramp, Exchange
SIZE DWG. NO. REV
B GE-18127
SCALE: 1:2 WEIGHT: SHEET 4 OF 6

4

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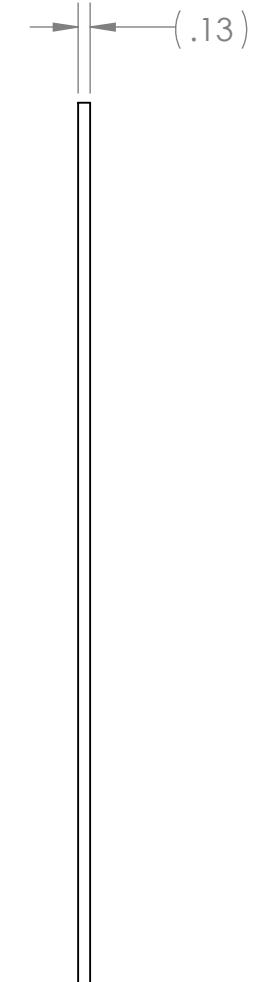
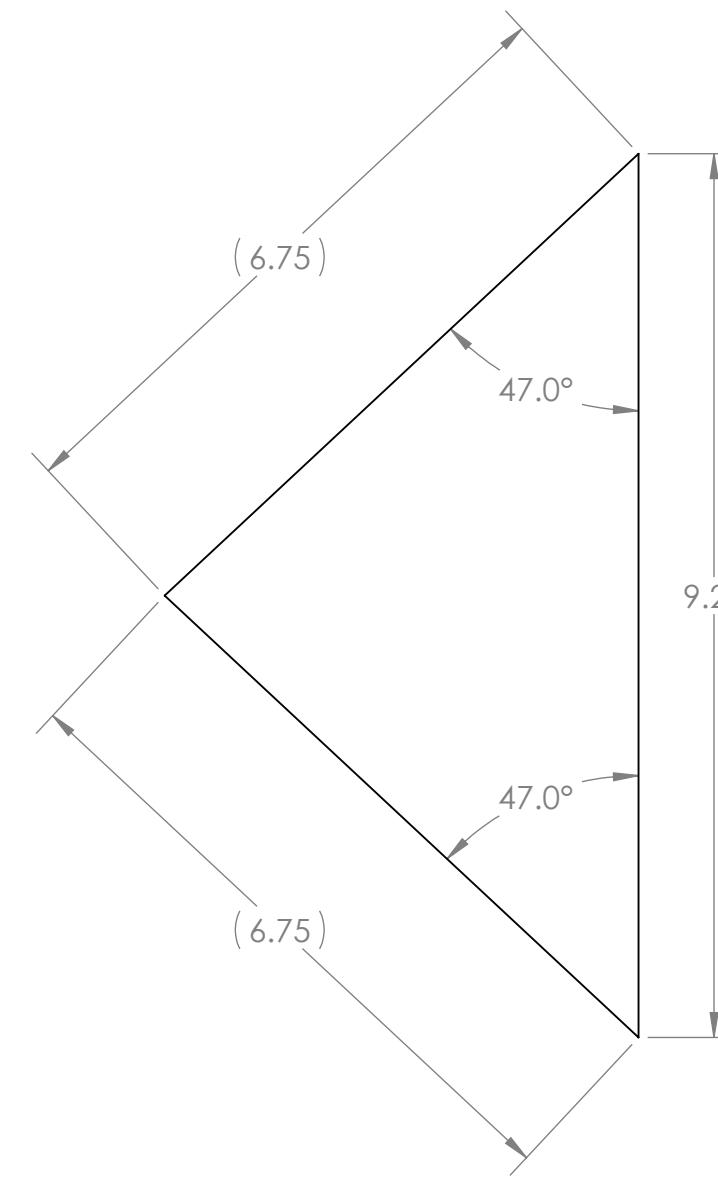
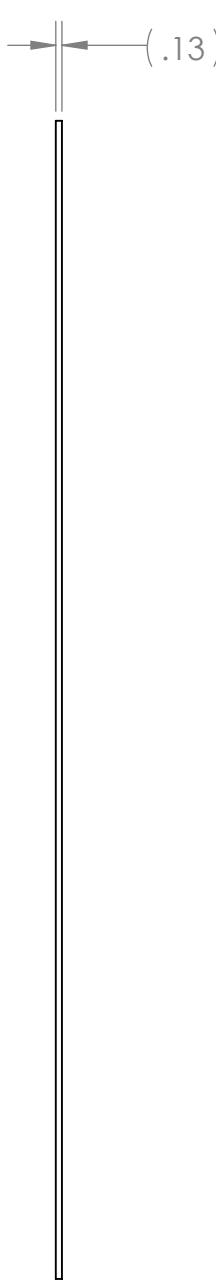
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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: **Ramp, Exchange**

SIZE	DWG. NO.	REV
B	GE-18127	
SCALE: 1:2	WEIGHT:	SHEET 5 OF 6

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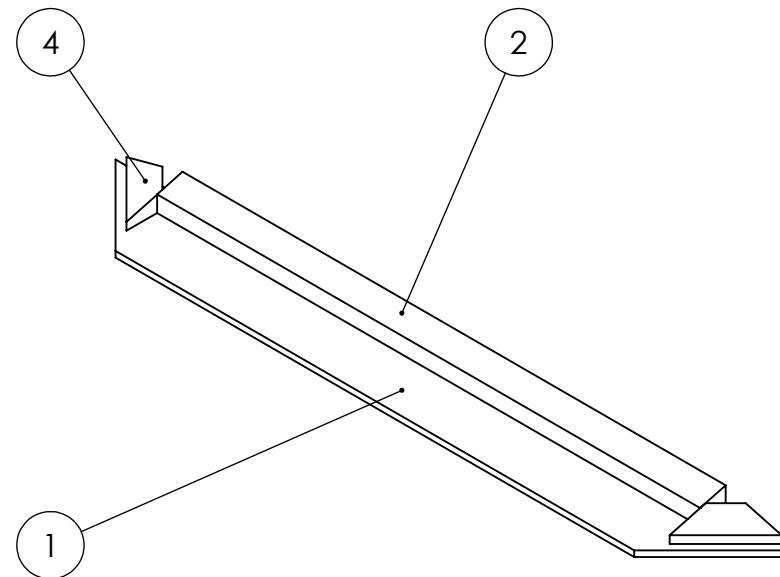
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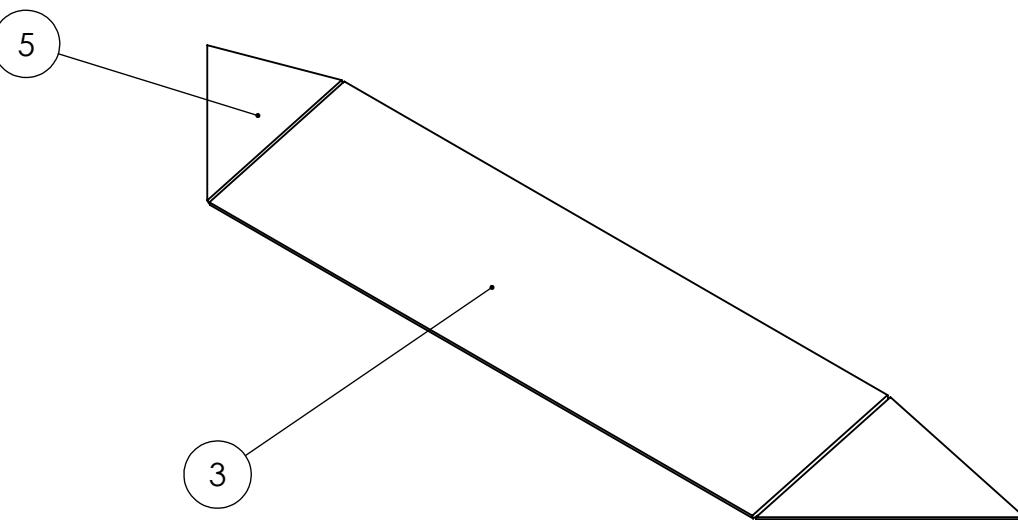
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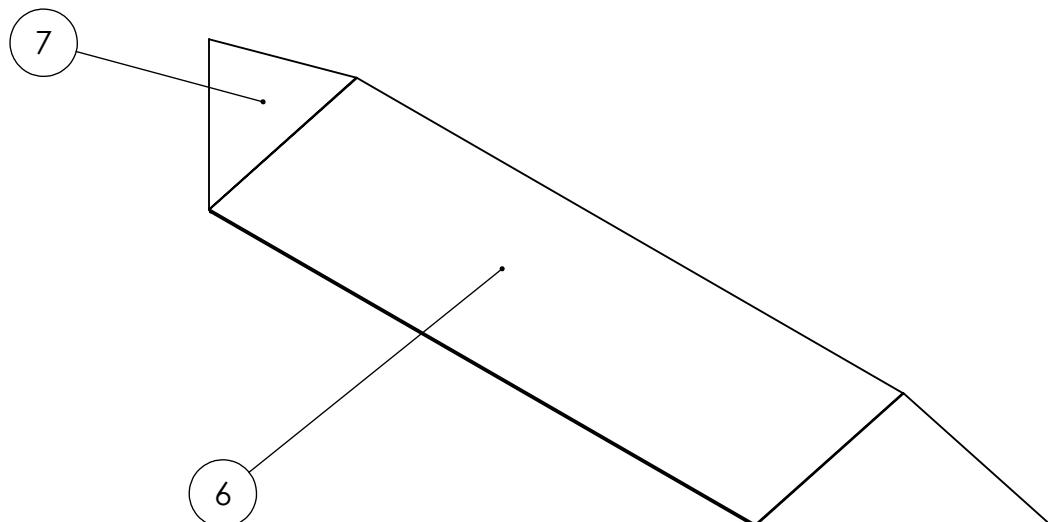
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Step 1: Attach Item 2 and Item 4 (qty: 2) to Item 1 using wood screws through the holes in Item 1.



Step 2: Attach Item 3 and Item 5 (qty: 2) to Item 4 and Item 2 using wood screws.



Step 3: Attach Item 6 and Item 7 (qty: 2) to Item 5 and Item 6 using double stick tape.

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		DIMENSIONS ARE IN INCHES		DRAWN	
		TOLERANCES:		CHECKED	
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		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			
	NEXT ASSY	USED ON	FINISH		
	APPLICATION		DO NOT SCALE DRAWING		

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Ramp, Exchange

B **GE-18127**

SIZE DWG. NO. REV
SCALE: 1:6 WEIGHT: SHEET 6 OF 6

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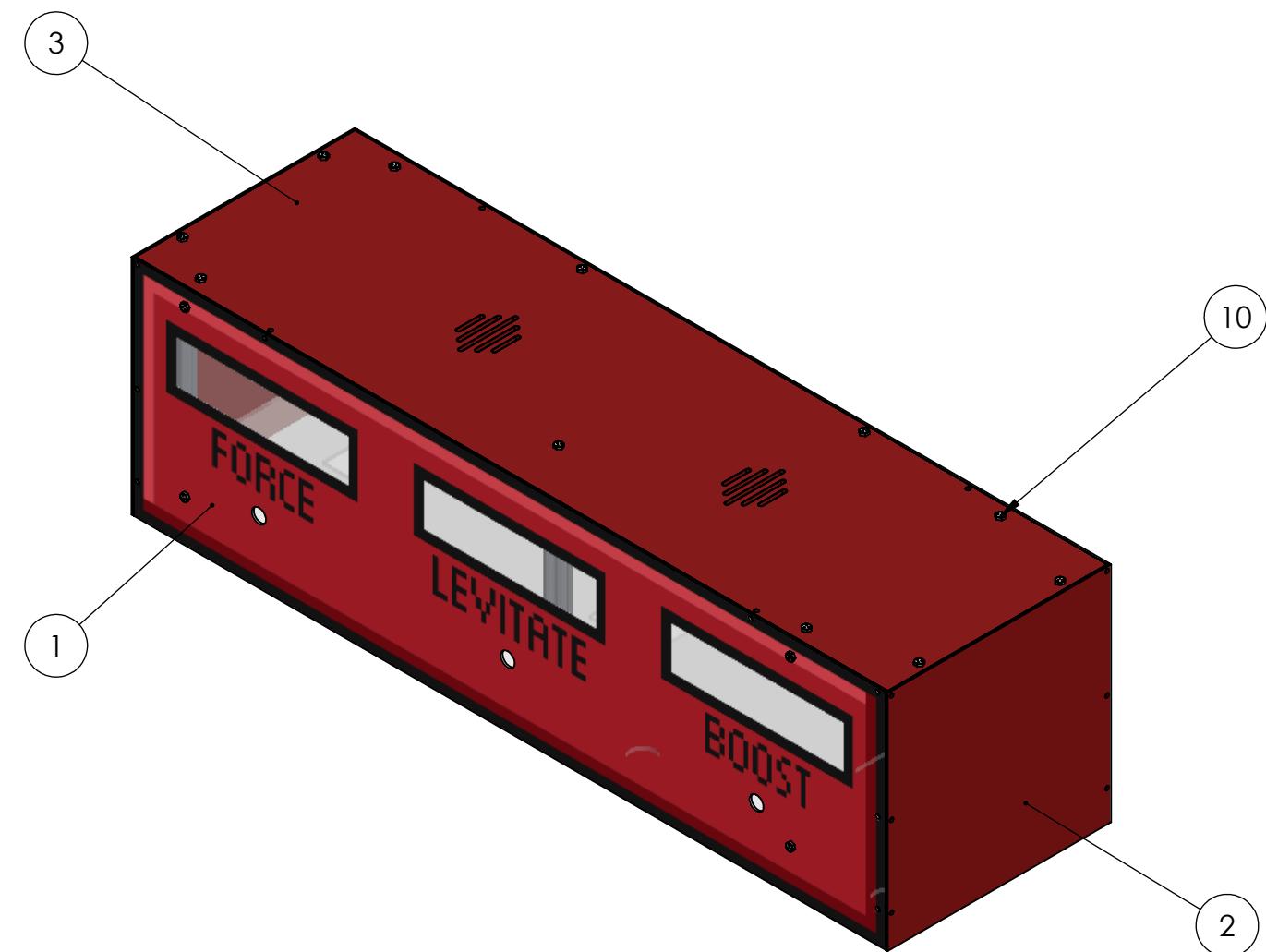
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B

B



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-18033	Vault polycarbonate Top Front Face	1
2	GE-18034	Vault HDPE Top Side	2
3	GE-18044	Vault HDPE Top	1
4	GE-18041	Vault Polycarbonate Top Backside	1
5	GE-18046	Vault Polycarbonate Top Base	1
6	GE-18030	80-20 Extrusion	7
7	GE-18048	Vault Bracket	8
8	flat_hex_.25_20_1	Steel Hex Flat Head Screw, 1/4"-20 x 1" long, fully threaded	11
9	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	16
10	hex_.25_20_.75	Steel Hex Head Screw, 1/4"-20 x 3/4" long, fully threaded	19

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		DRAWN		
		CHECKED		
		ENG APPR.		
		MFG APPR.		
		Q.A.		
		COMMENTS:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING	
SCALE: 1:8 WEIGHT: SHEET 1 OF 3				

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
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TITLE: **Vault Top Assembly**

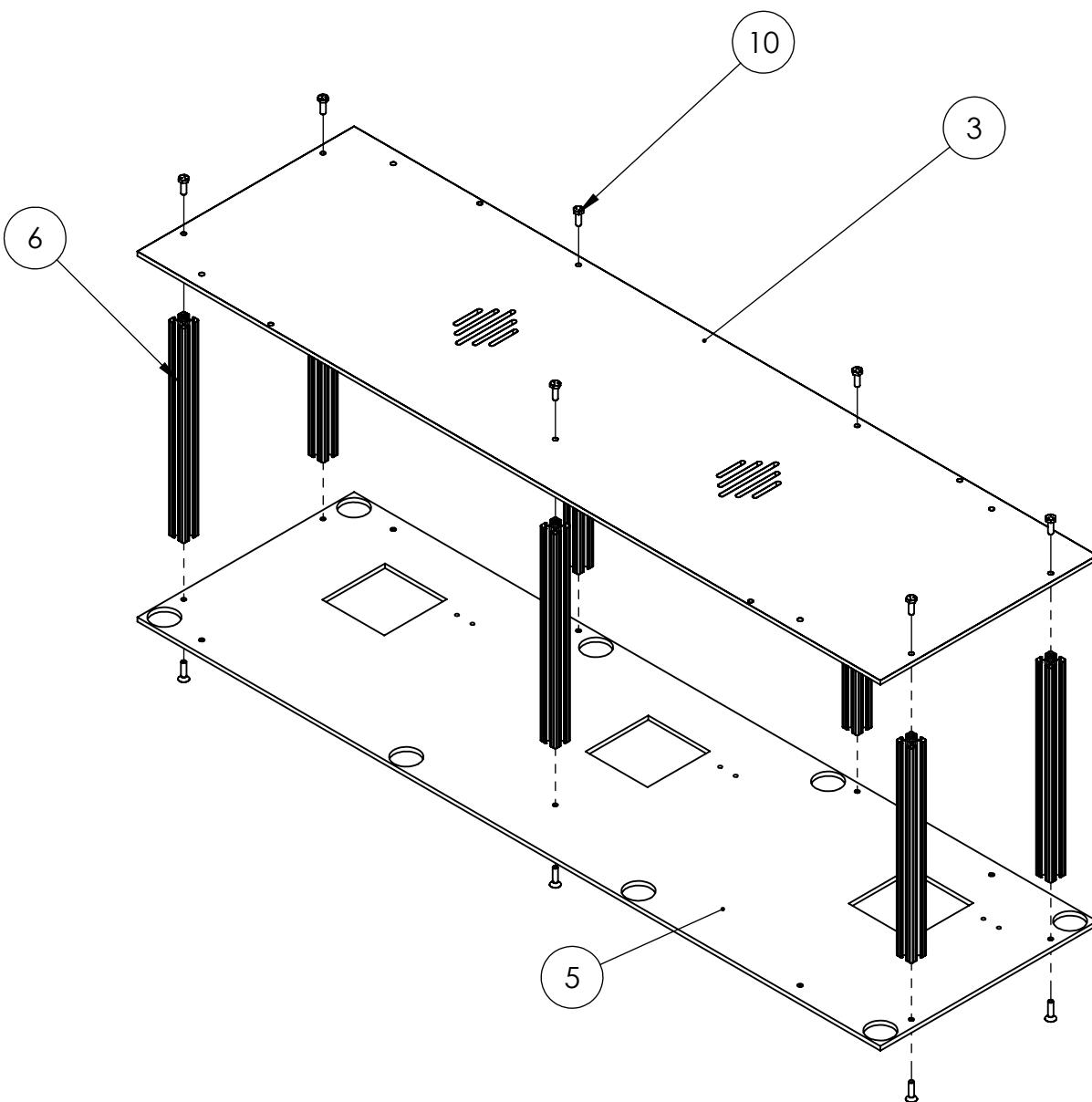
SIZE **DWG. NO.** **REV**
B **GE-18129**

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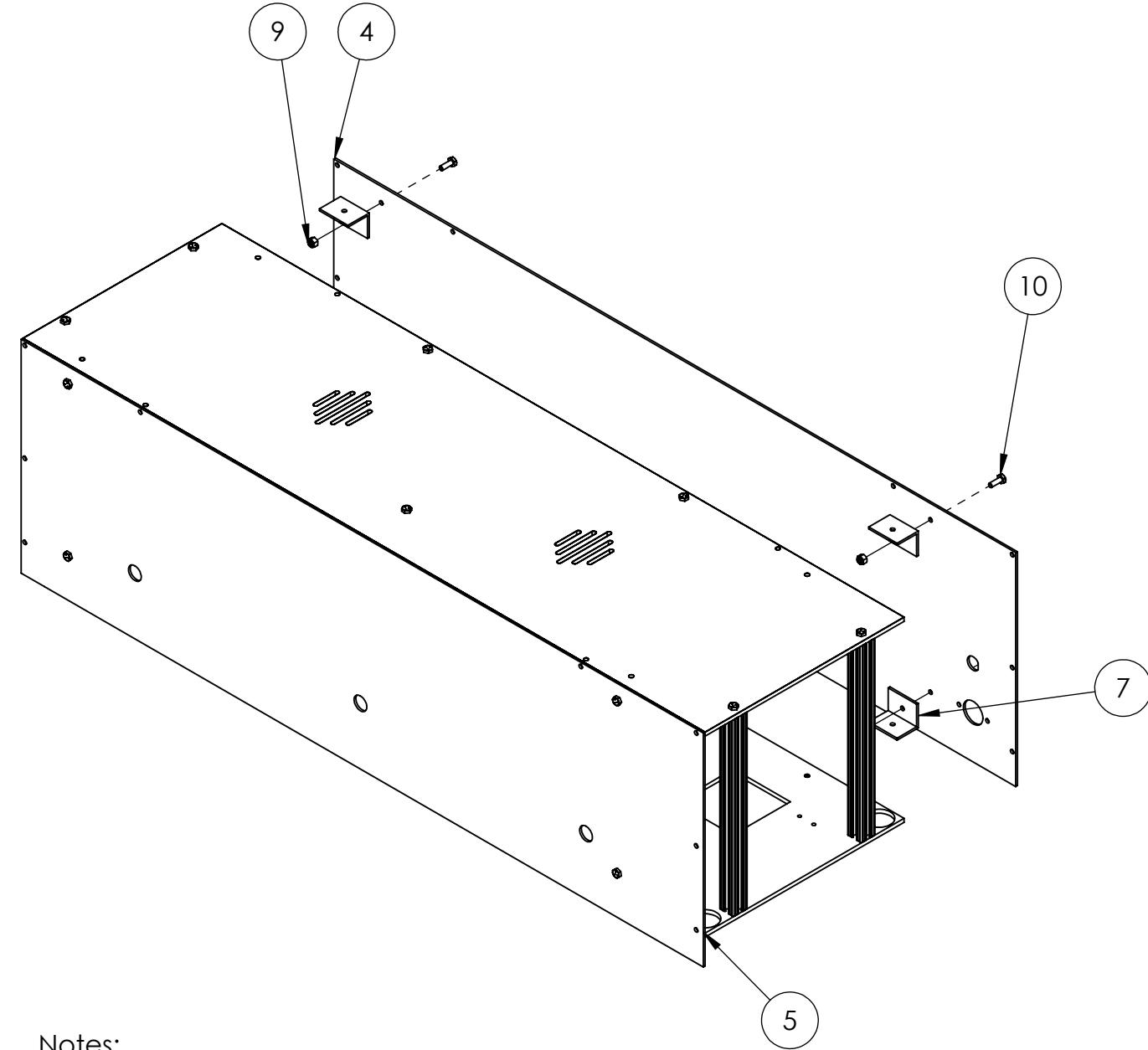
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1



Notes:
1. Use Item 10 to fasten Item 3 and Item 5 to Item 6 (qty. 7)

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Notes:
1. Use Item 10 and 9 to fasten item 7 bracket with 4
2. Repeat with item 5 face

		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 $\pm .001$		
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
	NEXT ASSY	USED ON	FINISH	
	APPLICATION		DO NOT SCALE DRAWING	

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

Vault Top Assembly

B **GE-18129**

SIZE DWG. NO. REV
SCALE: 1:8 WEIGHT: SHEET 2 OF 3

4

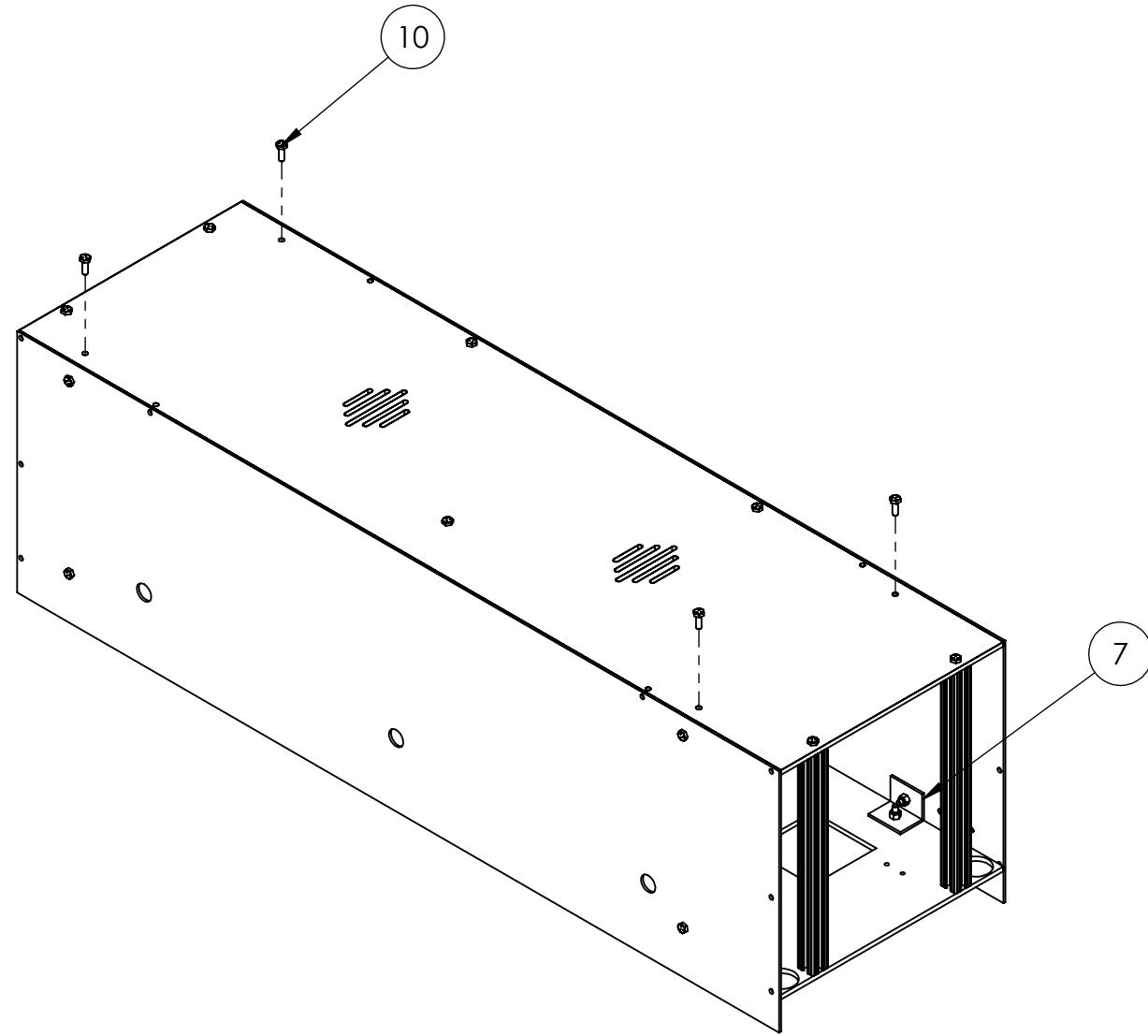
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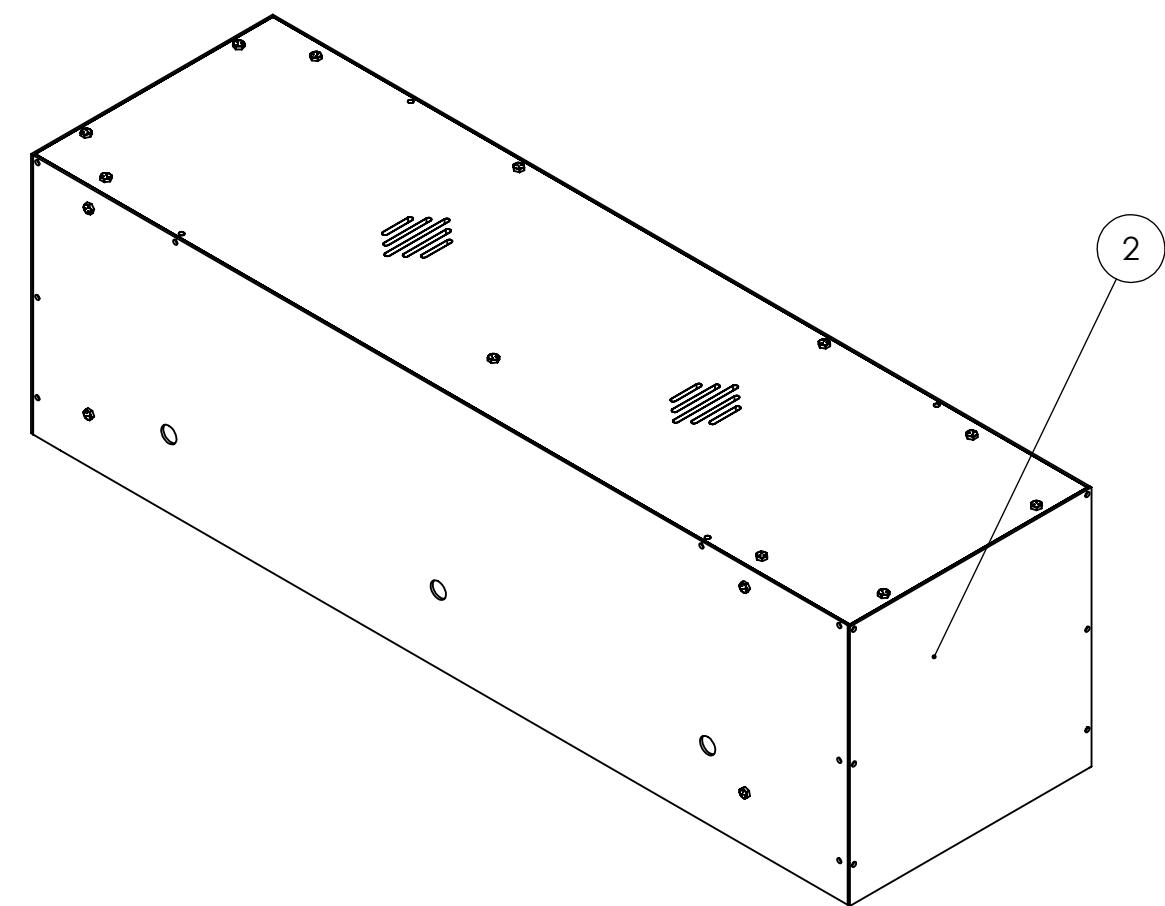
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Notes:
1. Finish attaching top and faces using Items 10 and 7



Notes:

1. Attach Item 2 using cable ties
2. Repeat on opposite side

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: Vault Top Assembly

SIZE B **DWG. NO.** GE-18129 **REV**

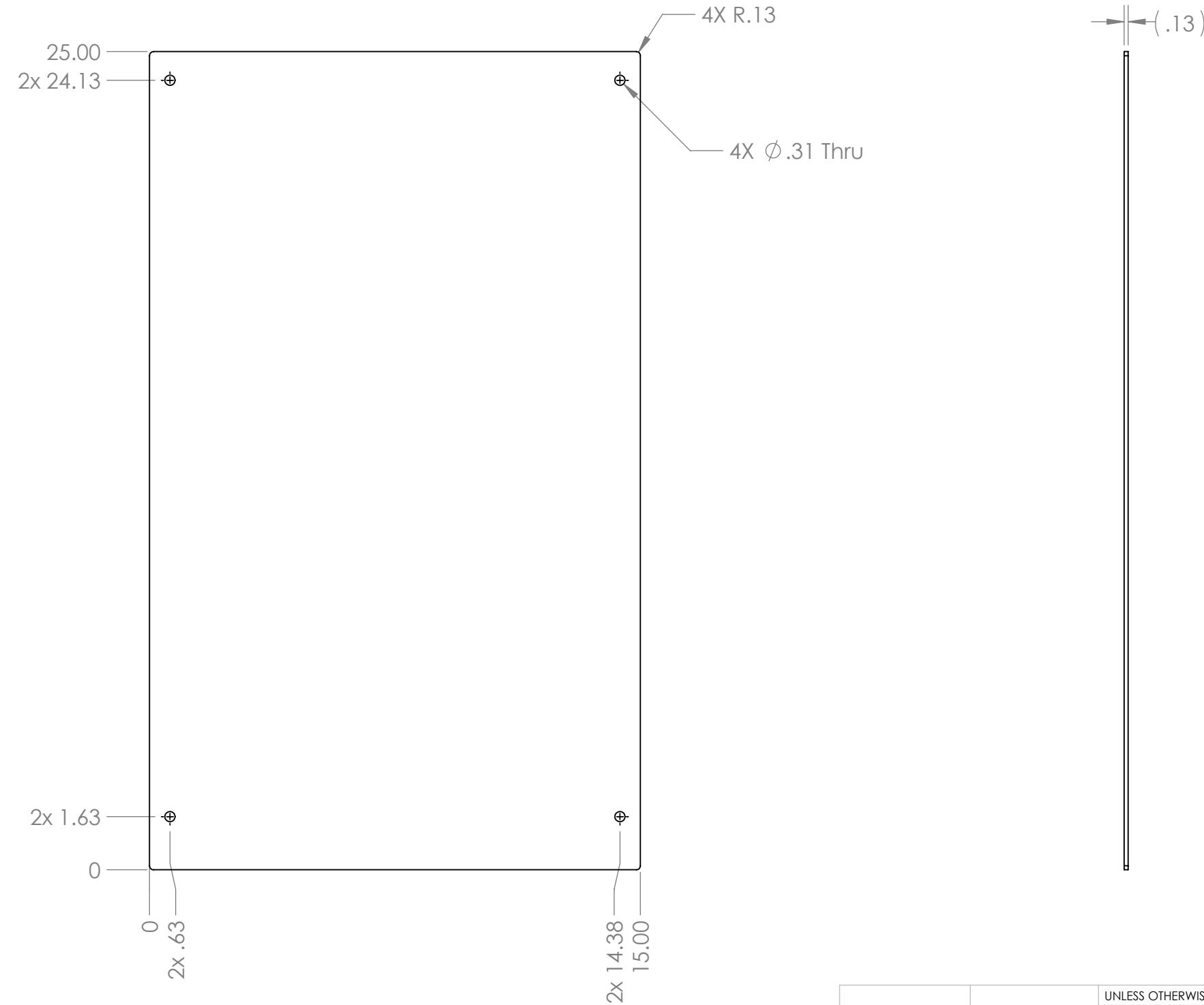
SCALE: 1:8 **WEIGHT:** **SHEET 3 OF 3**

4

3

2

1



Notes:

1. Material: 1/8" thk. clear polycarbonate
2. Remove all burrs and sharp edges

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 FIRST ROBOTICS COMPETITION	TITLE: <h1>Chute Back Wall</h1>	
		DIMENSIONS ARE IN INCHES	DRAWN					
		TOLERANCES:	CHECKED					
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		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				SIZE DWG. NO. B GE-18130	REV	
		TOLERANCING PER:						
		MATERIAL						
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

4

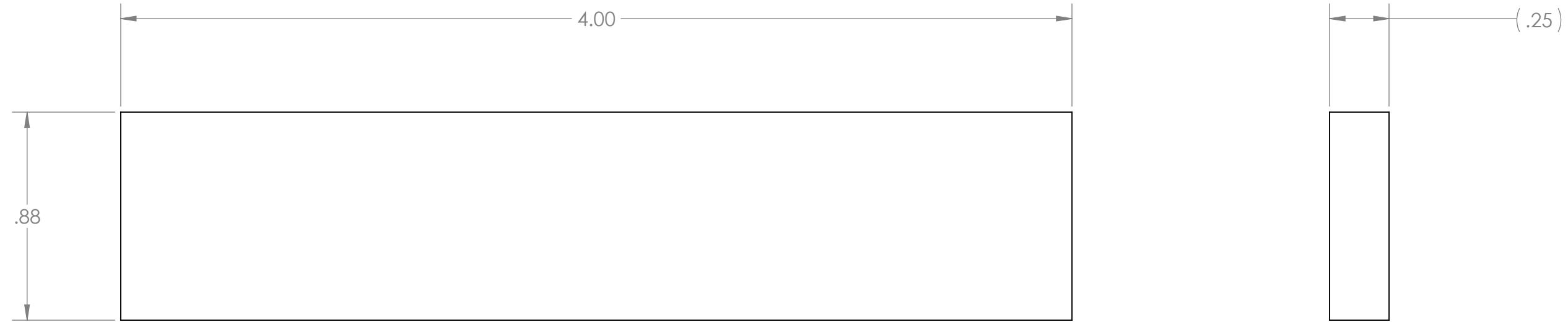
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2

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B

B



Notes:

1. Material: 1/4" thk. HDPE
2. Remove all burrs and sharp edges

A

A

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
 Modeling Solutions Partner

Scale Wear Protector

B	GE-18131	REV
SCALE: 2:1	WEIGHT:	SHEET 1 OF 1

4

3

2

1

4

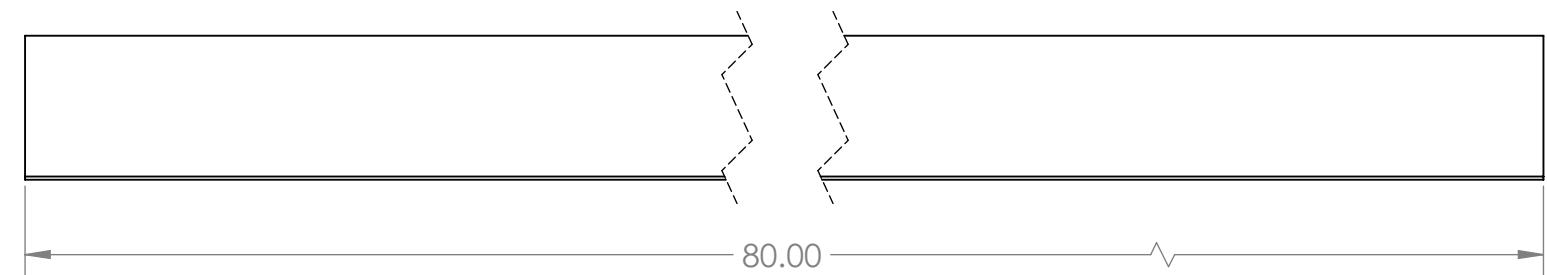
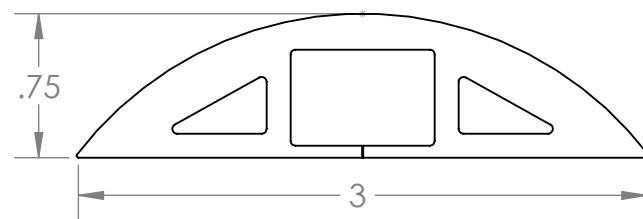
3

2

1

B

B



Notes.

1. Description: Cable Protector, 1-Channel, Black, 25 ft. x 3/4"H, Max. Cable Dia.: 1/2"
2. Source: Grainger
3. Item #: 5D687
4. Equivalent substitutions allowed

4

3

2

1

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner
TITLE: Scale-Switch
Cable Protector
SIZE DWG. NO. REV
B GE-18132
SCALE: 1:1 WEIGHT: SHEET 1 OF 1

4

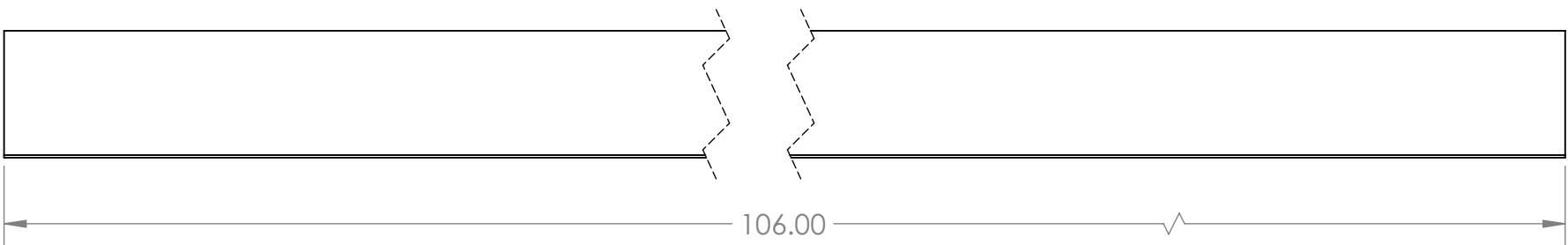
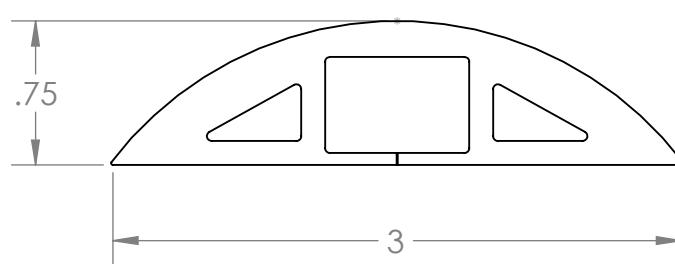
3

2

1

B

B



Notes:

1. Description: Cable Protector, 1-Channel, Black, 25 ft. x 3/4"H, Max. Cable Dia.: 1/2"
2. Source: Grainger
3. Item #: 5D687
4. Equivalent substitutions allowed

4

3

2

1

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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner
TITLE: Scale-Side Border Cable Protector
SIZE DWG. NO. REV
B GE-18133
SCALE: 1:1 WEIGHT: SHEET 1 OF 1

4

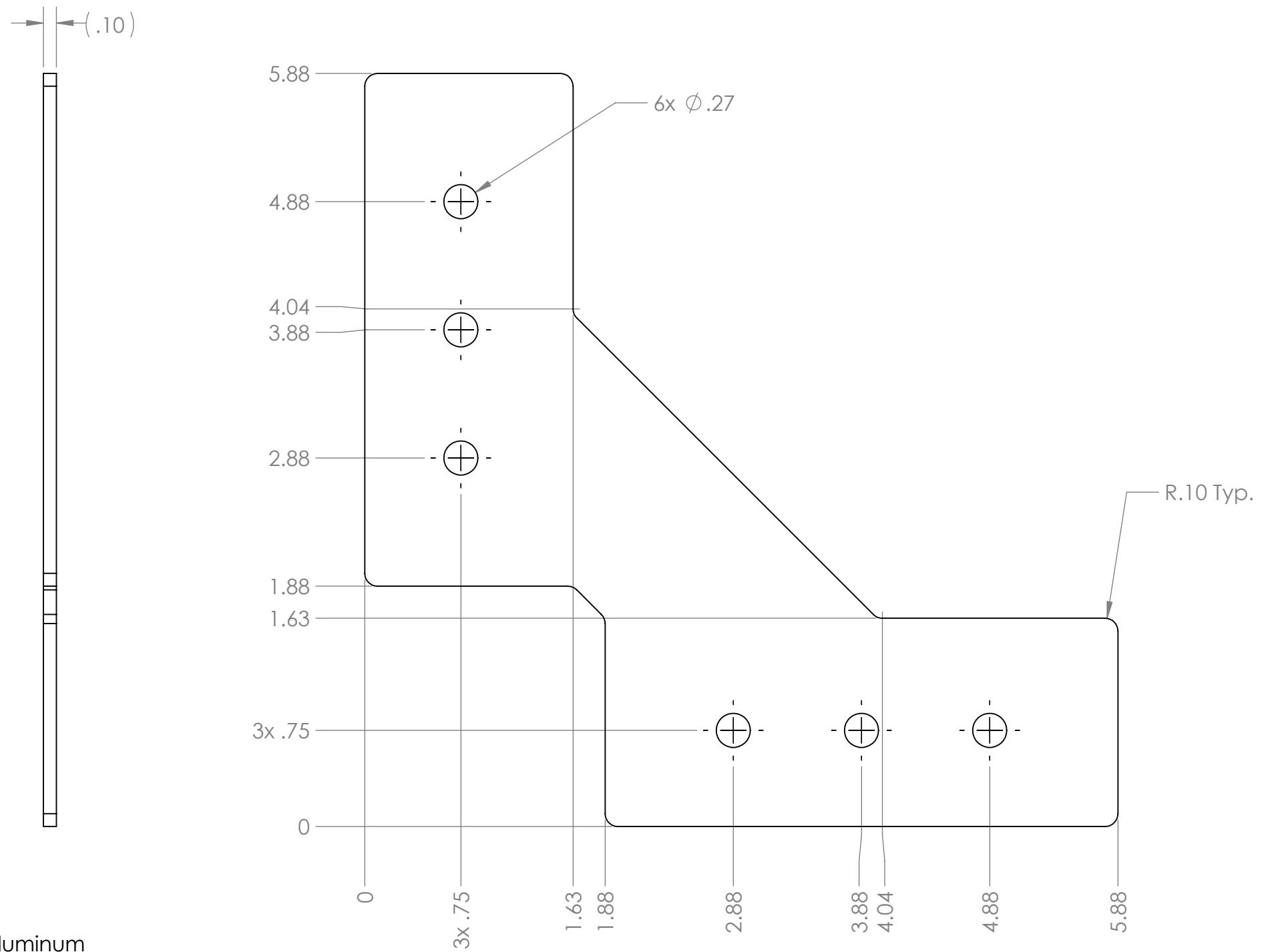
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		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$		NAME	DATE
		DRAWN			
		CHECKED			
		ENG APPR.			
		MFG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

FIRST ROBOTICS COMPETITION **SOLIDWORKS**
Modeling Solutions Partner

TITLE: **Plate Gusset Brace**

SIZE **B** DWG. NO. **GE-18134** REV **1**

SCALE: 1:1 WEIGHT: SHEET 1 OF 1