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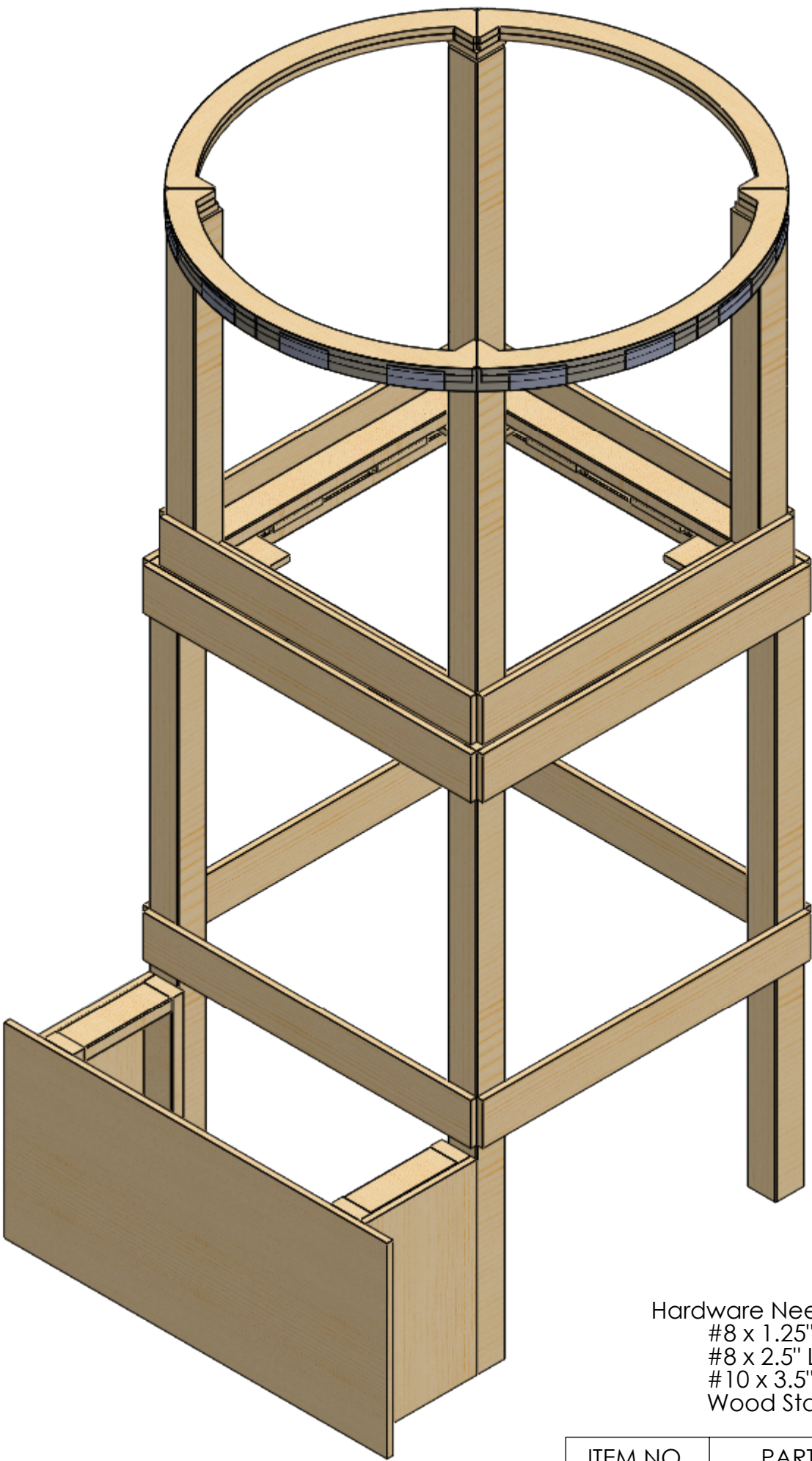
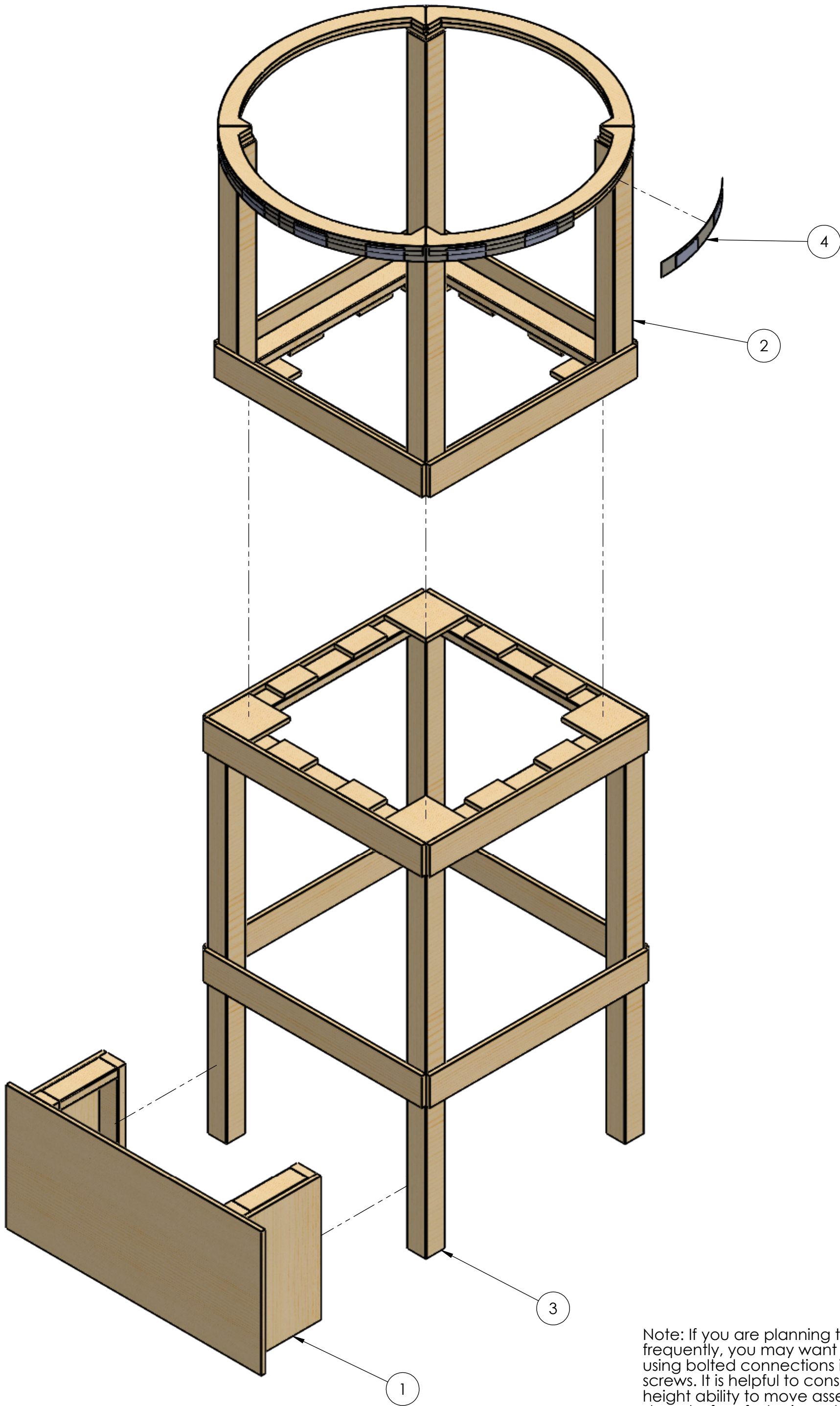
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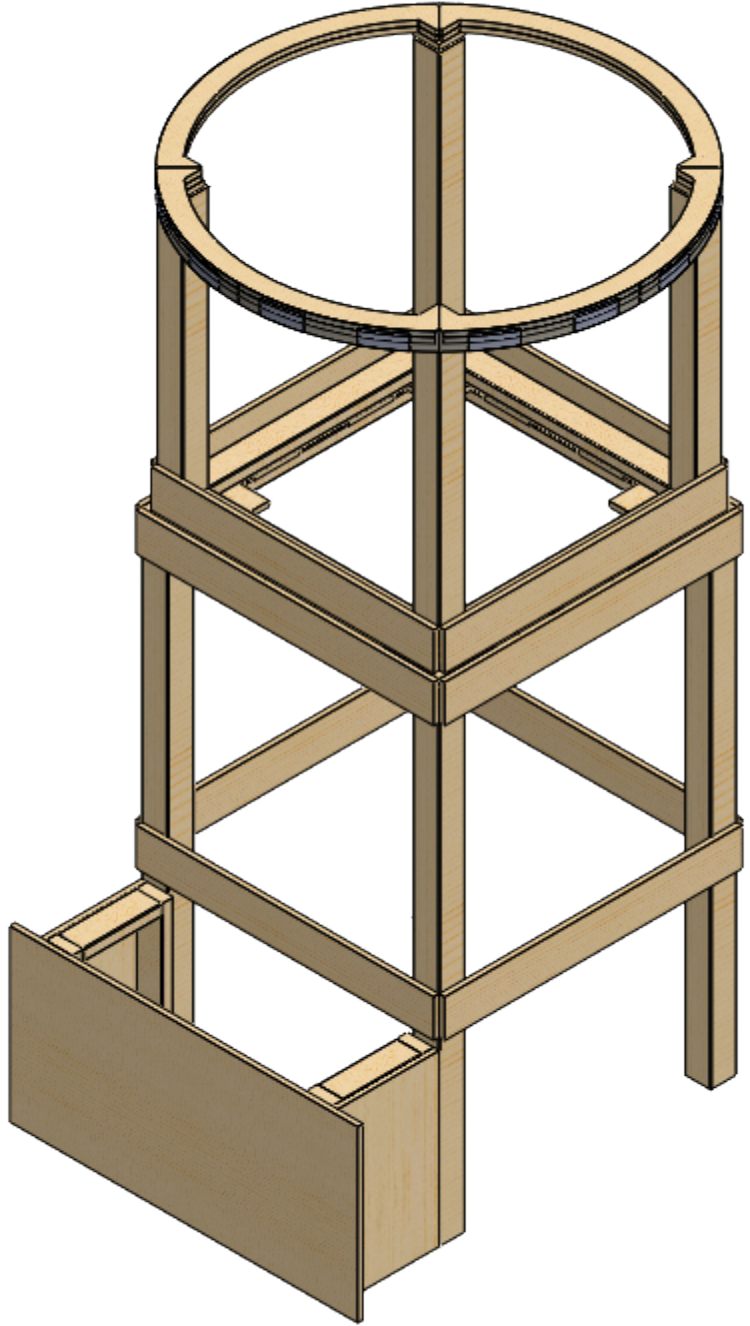
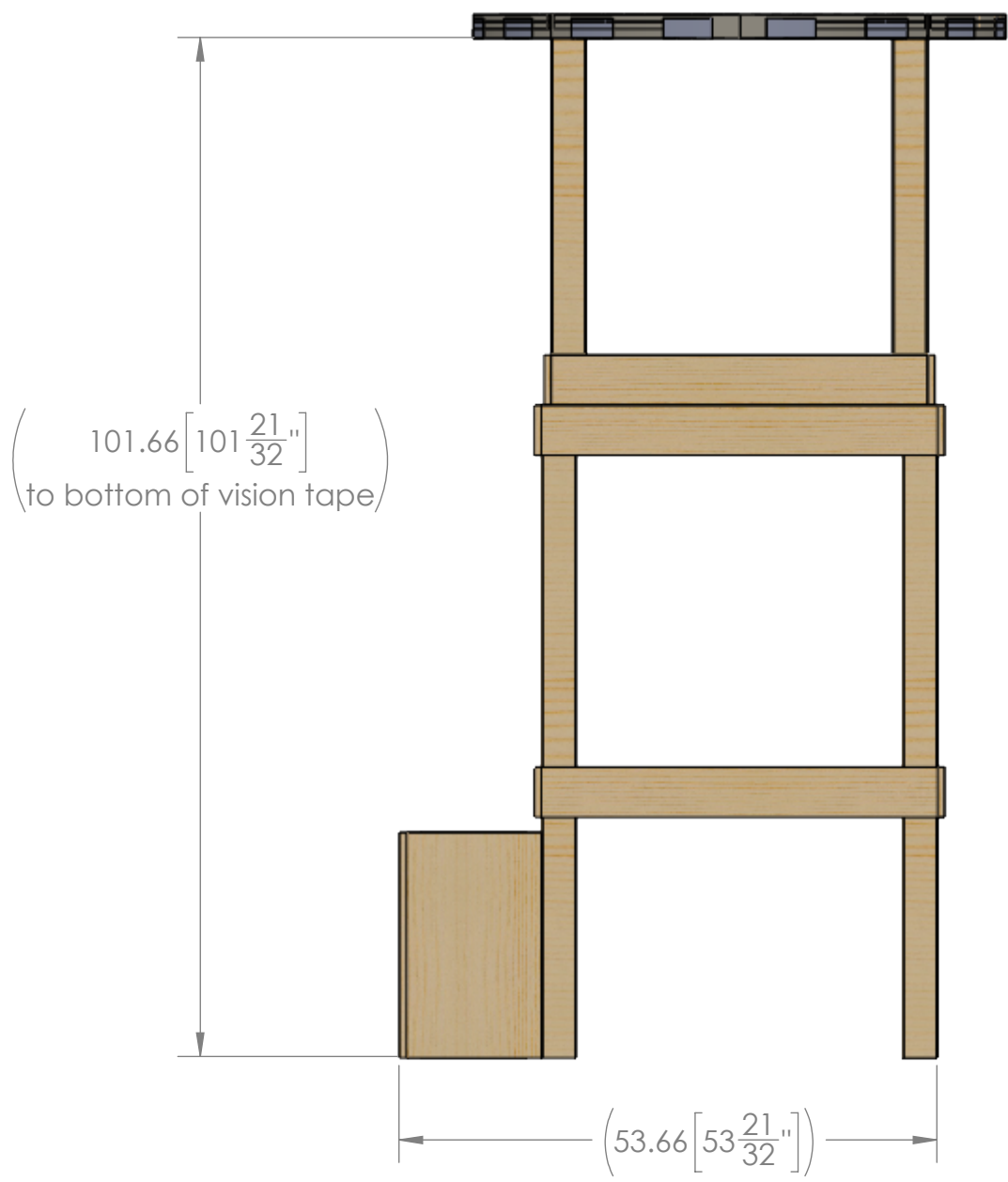
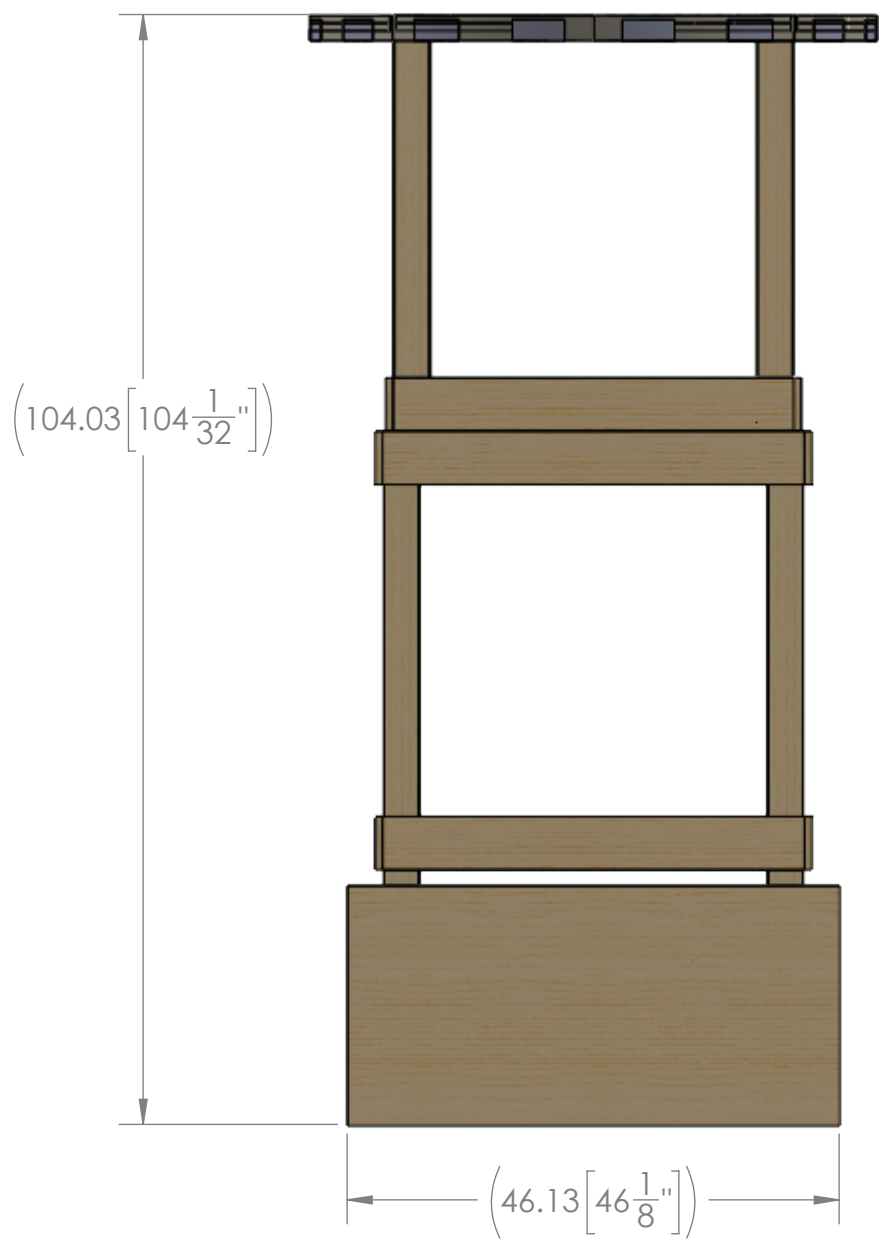
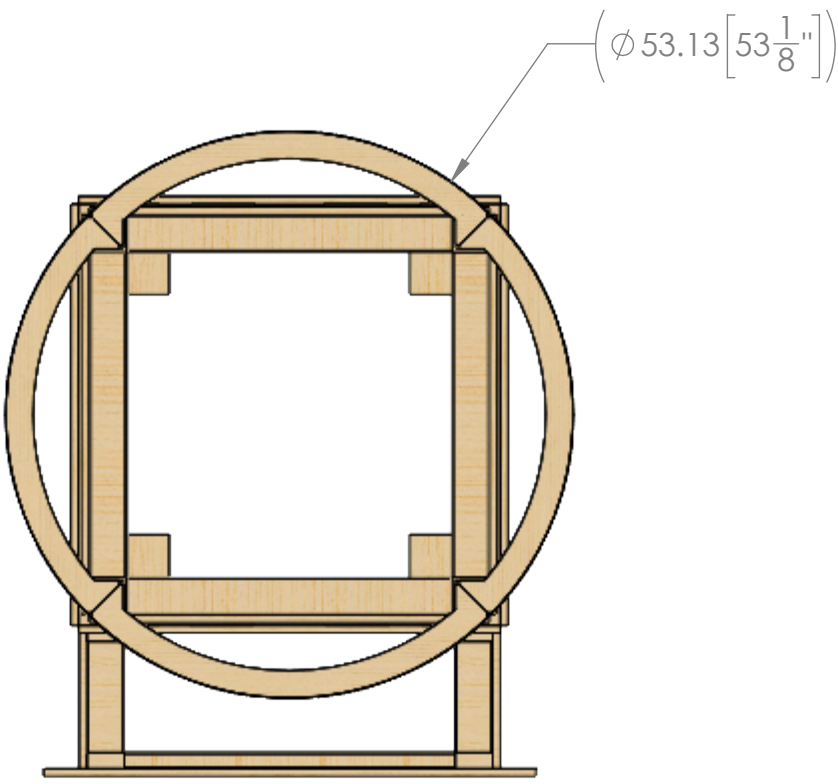
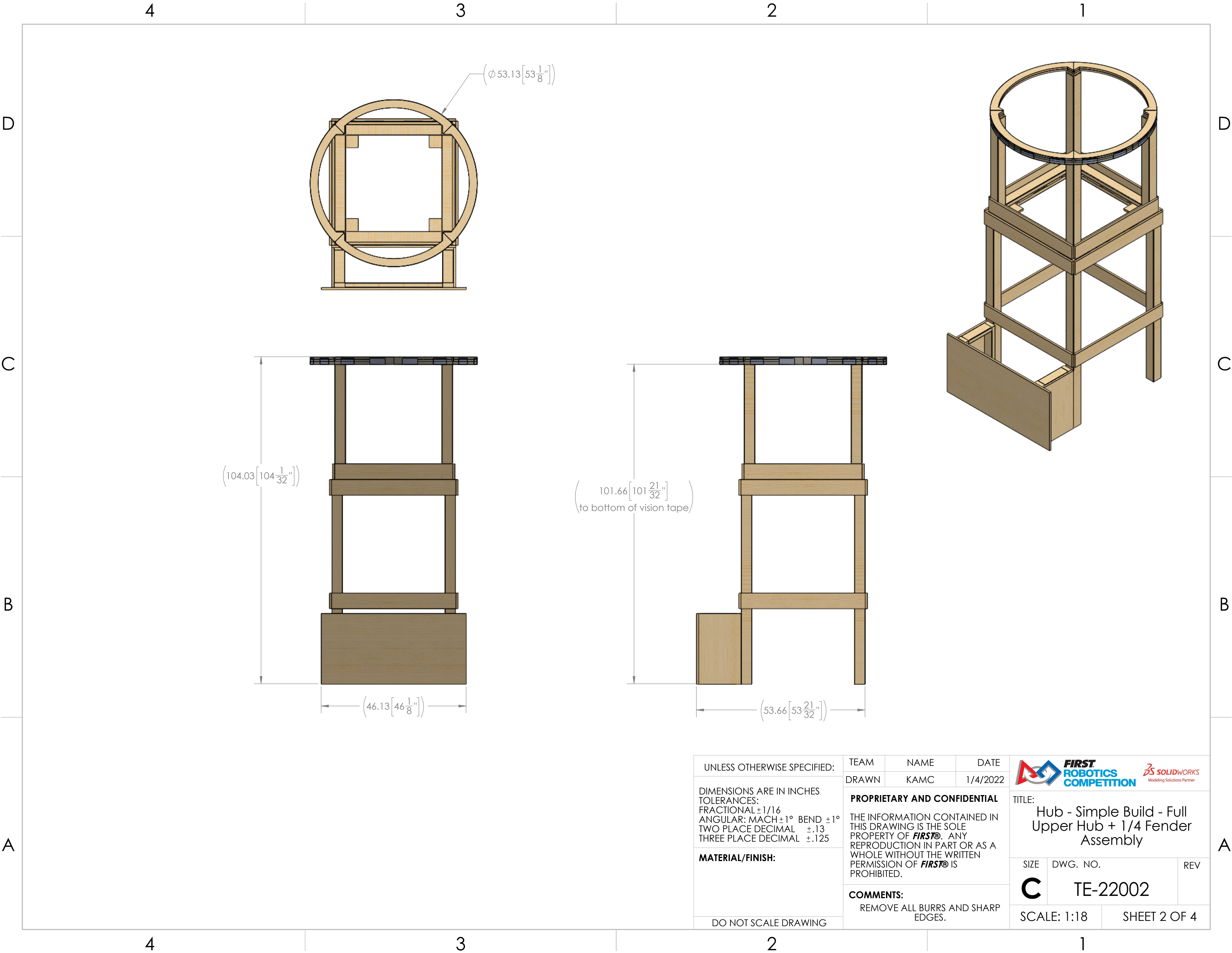
Hardware Needed:
#8 x 1.25" Long Screw - Qty 16
#8 x 2.5" Long Screw - Qty 20
#10 x 3.5" Long Screw - Qty 8
Wood Staples, Thumb Tacks, Tape, etc. for TE-22070 attachment



ITEM NO.	PART NUMBER	DESCRIPTION	
1	TE-22010	Hub - Simple Build - Fender Assembly	1
2	TE-22030	Hub - Simple Build - Upper Hub Goal Assembly	1
3	TE-22040	Hub - Simple Build - Upper Hub Base Assembly	1
4	TE-22070	Hub - Simple Build - Vision Assembly	8

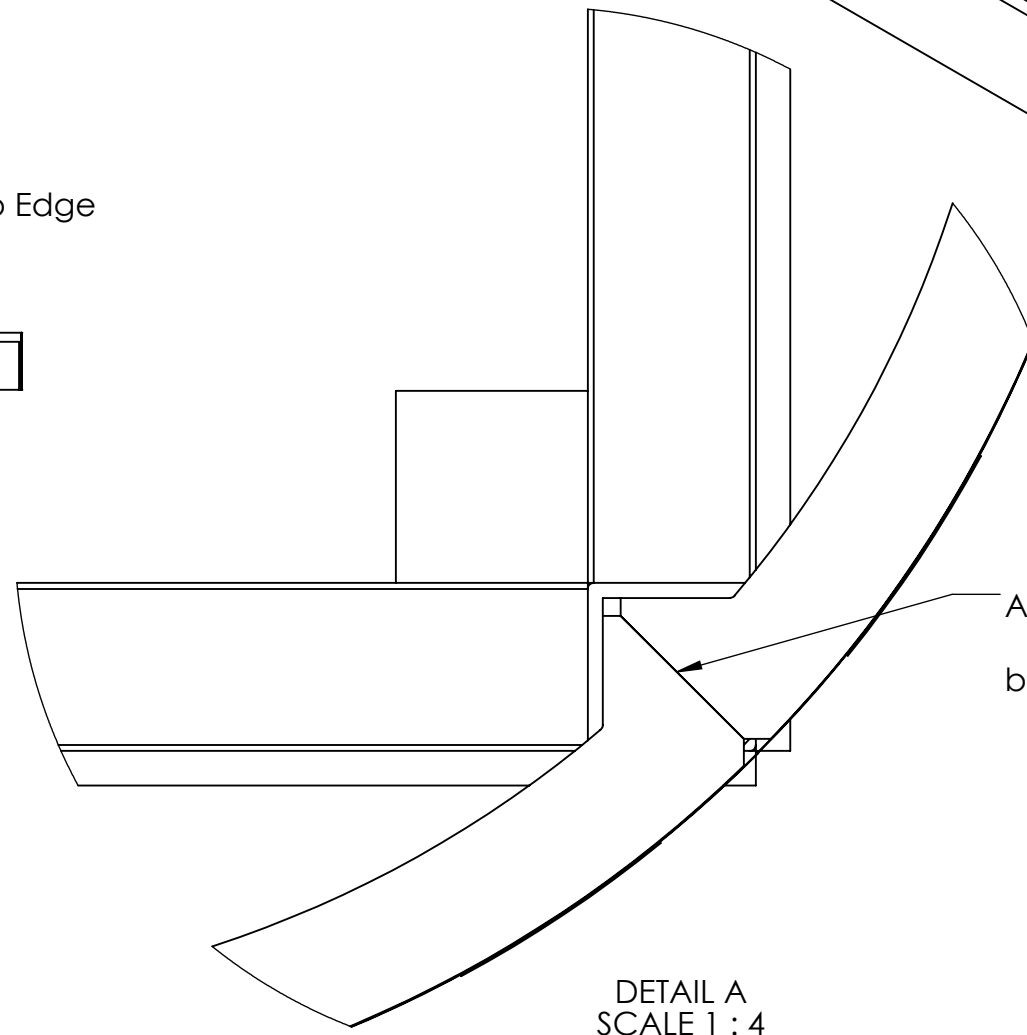
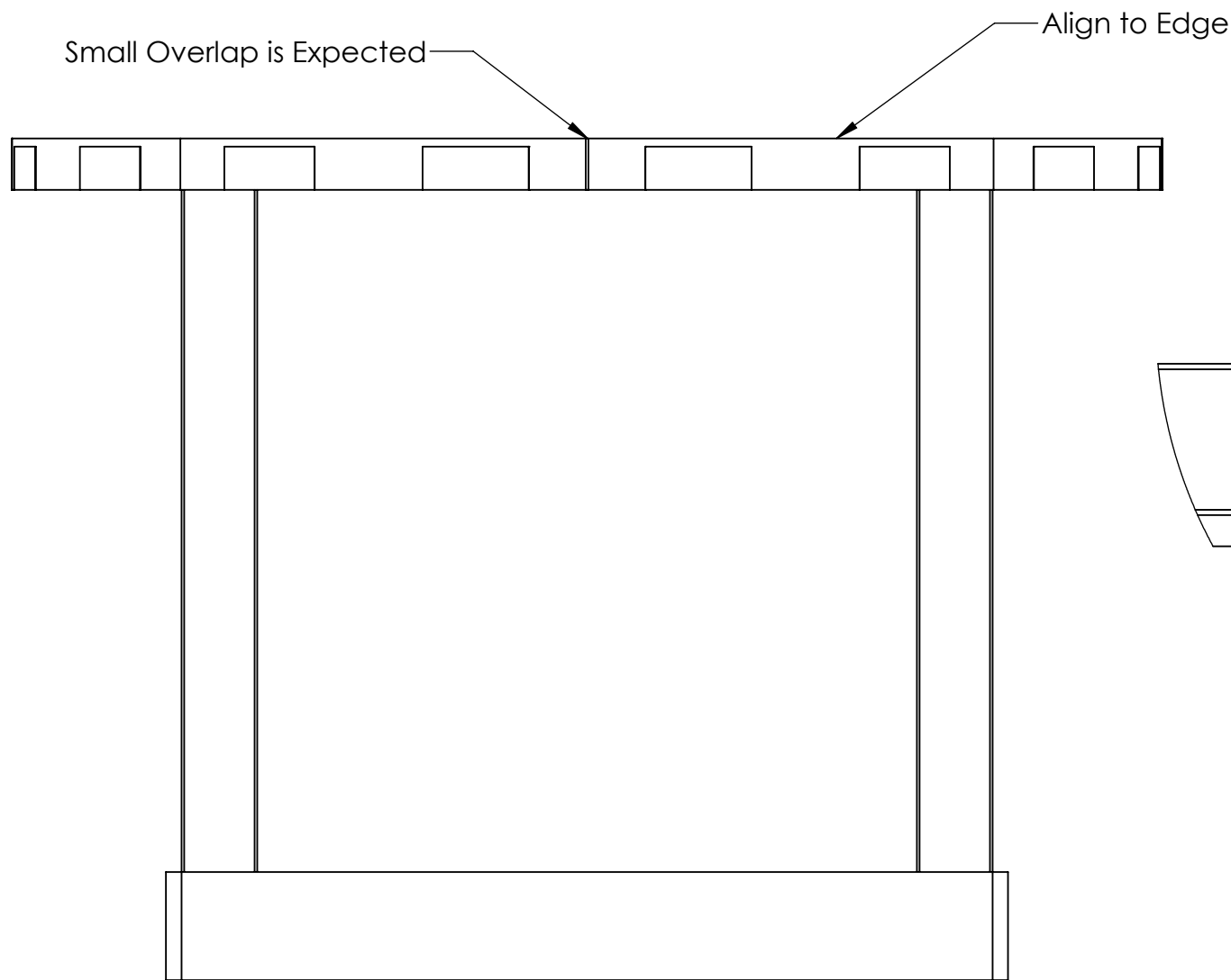
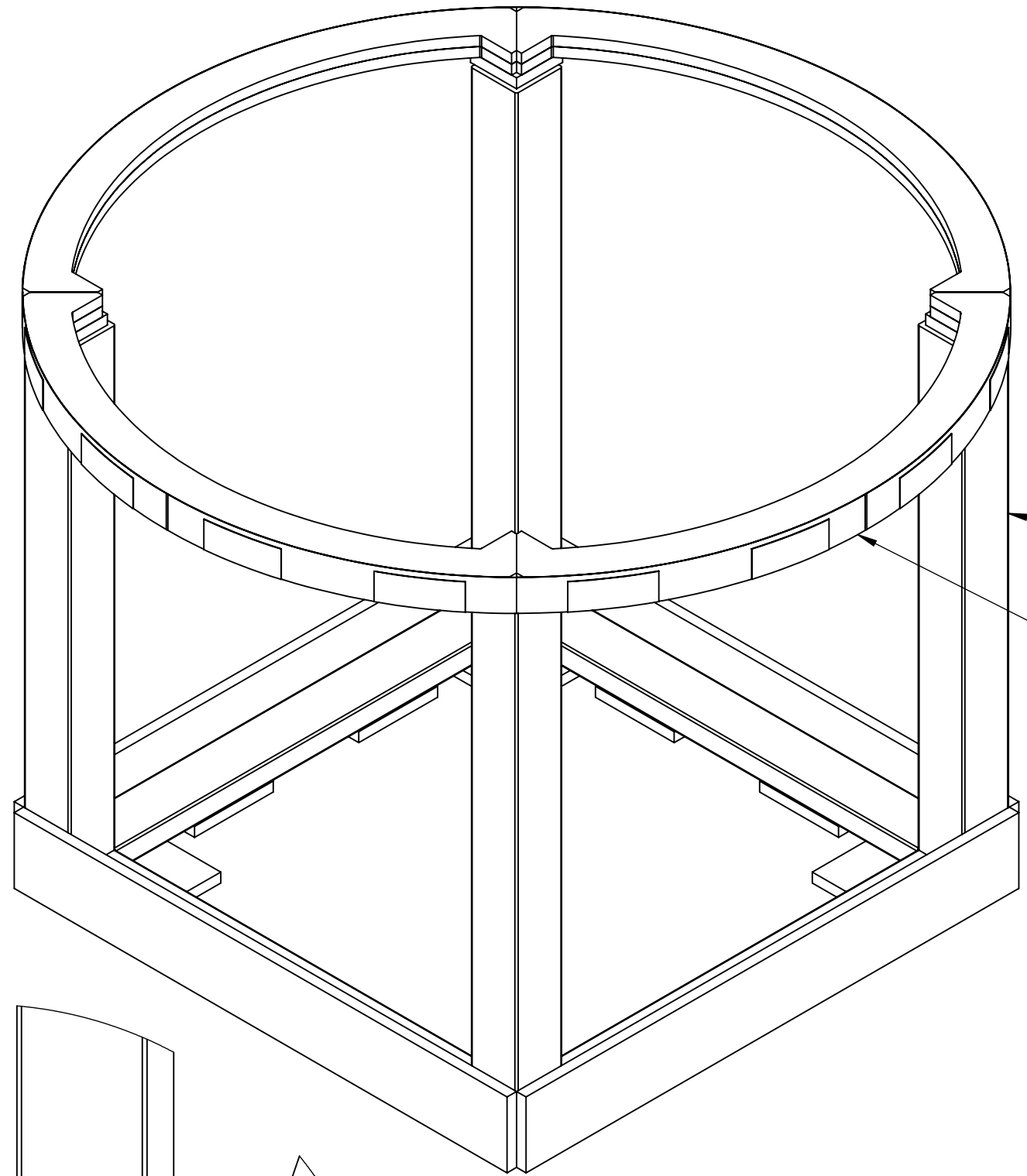
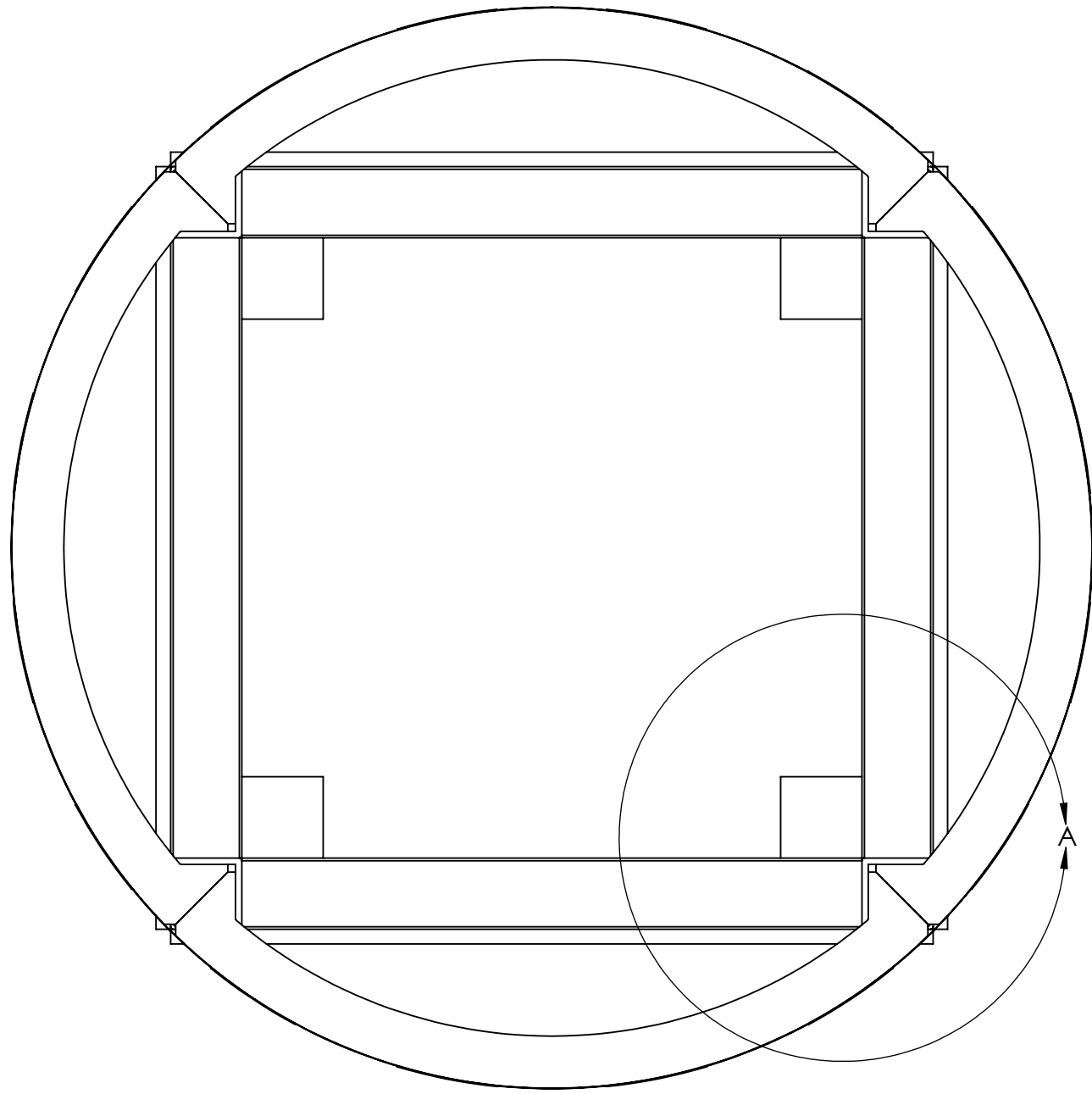
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE
	DRAWN	KAMC	1/4/2022
	PROPRIETARY AND CONFIDENTIAL		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		

 		
TITLE: Hub - Simple Build - Full Upper Hub + 1/4 Fender Assembly		
SIZE C	DWG. NO. TE-22002	REV
SCALE: 1:12		SHEET 1 OF 4

Note: If you are planning to disassemble frequently, you may want to consider using bolted connections instead of screws. It is helpful to consider ceiling height ability to move assembly through doors before fastening sub-assemblies together.





UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	 	
	DRAWN	KAMC	1/4/2022		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			TITLE: Hub - Simple Build - Full Upper Hub + 1/4 Fender Assembly	
			SIZE	DWG. NO.	REV
			C	TE-22002	
			SCALE: 1:18		SHEET 2 OF 4

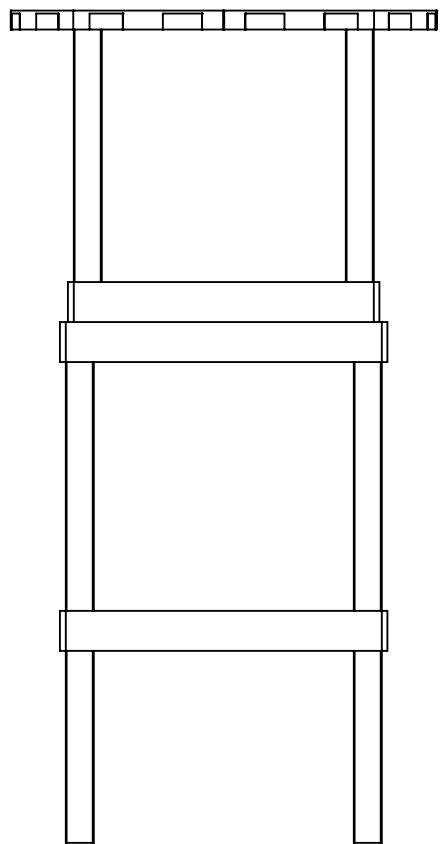
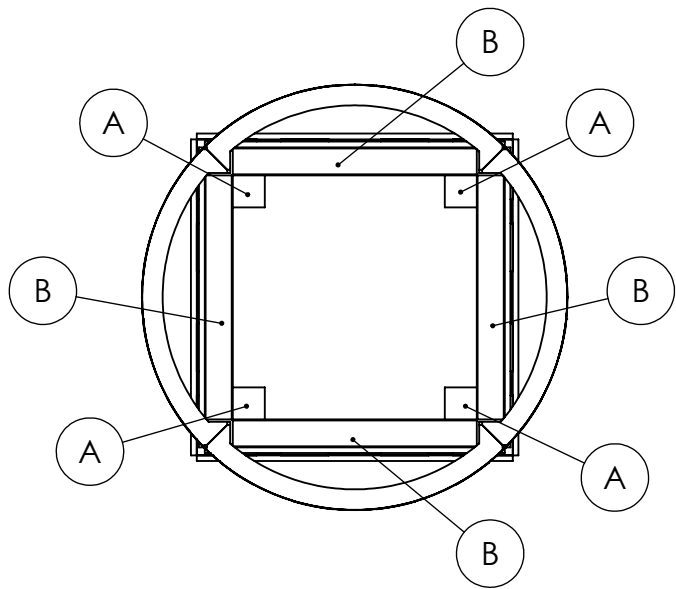


Align edge of (4) with this edge. There will be a gap between (4) and the plywood ring of (2).

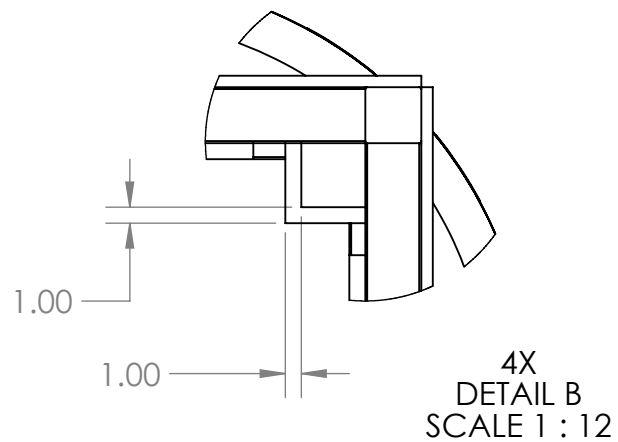
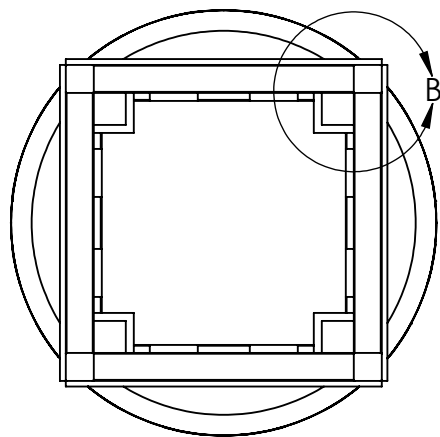
- Align (4) to (2) as shown. Note alignment information called out in Detail A.
- Connect (4) to (2) using a fastener. Some recommendations would be Wood Staples, Thumb Tacks, or Tape,
- Repeat 7x time, until there is a total of 8x (4) attached to (2).

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	 	
	DRAWN	KAMC	1/4/2022		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				TITLE: Hub - Simple Build - Full Upper Hub + 1/4 Fender Assembly
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				SIZE C
		DWG. NO.		REV	
		TE-22002			
		SCALE: 1:8		SHEET 3 OF 4	

Step 2

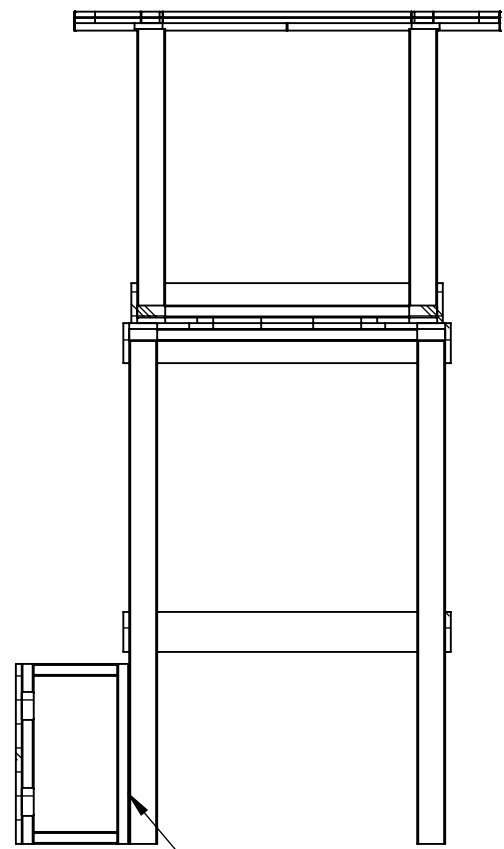


Bottom View

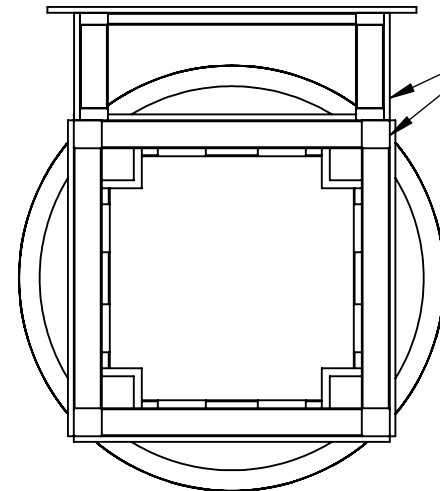
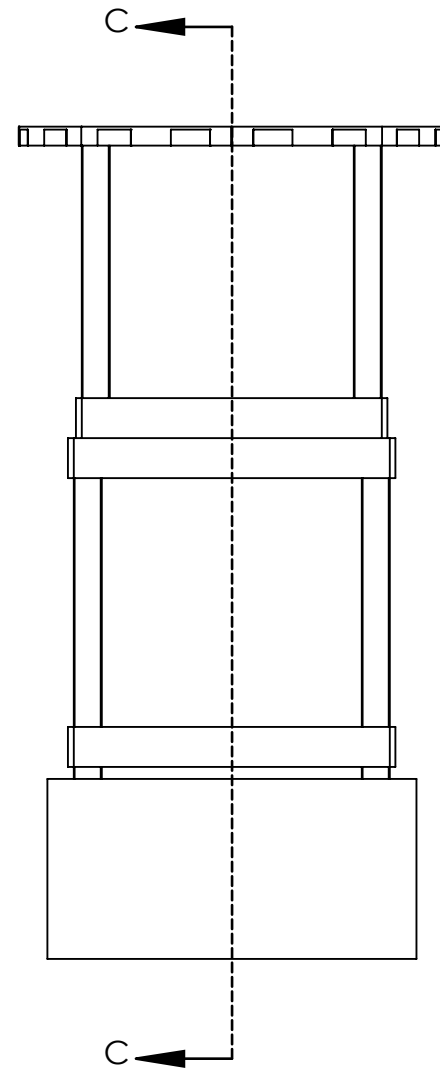


- Align (2) to (3) as shown. Note the dimensions in Detail B.
- Connect using 1.25" and 2.5" Long Screws. It is recommended to use 4x 1.25" long screws into each area indicated by (A). It is recommended to use 5x 2.5" long screws into each area indicated by (B).

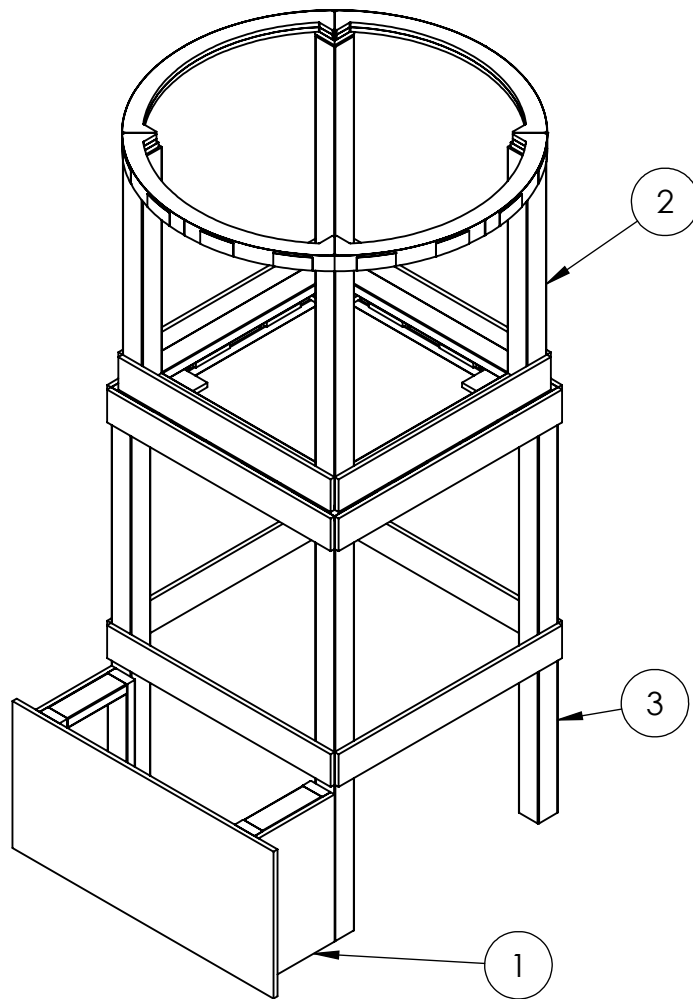
Step 3





SECTION C-C

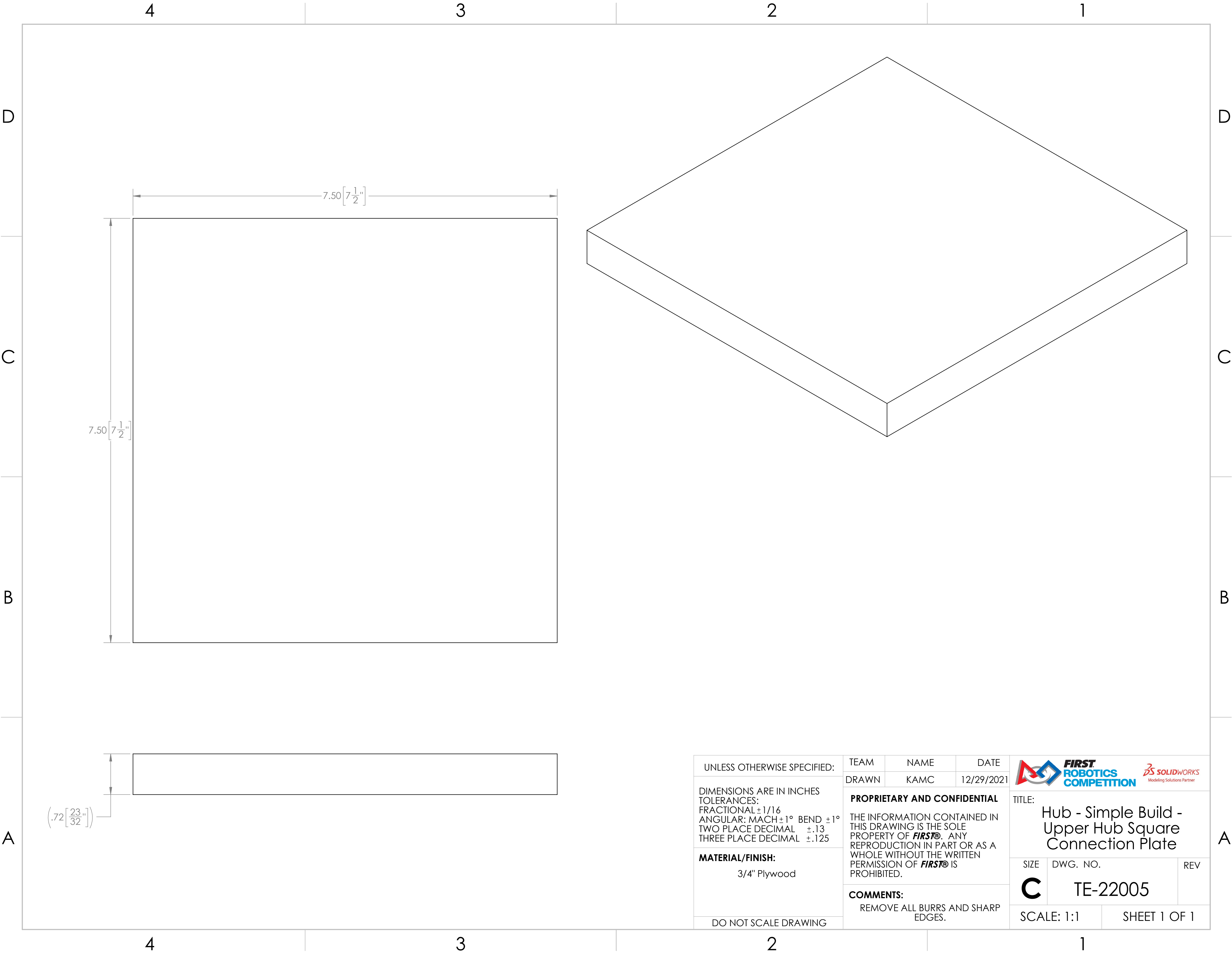


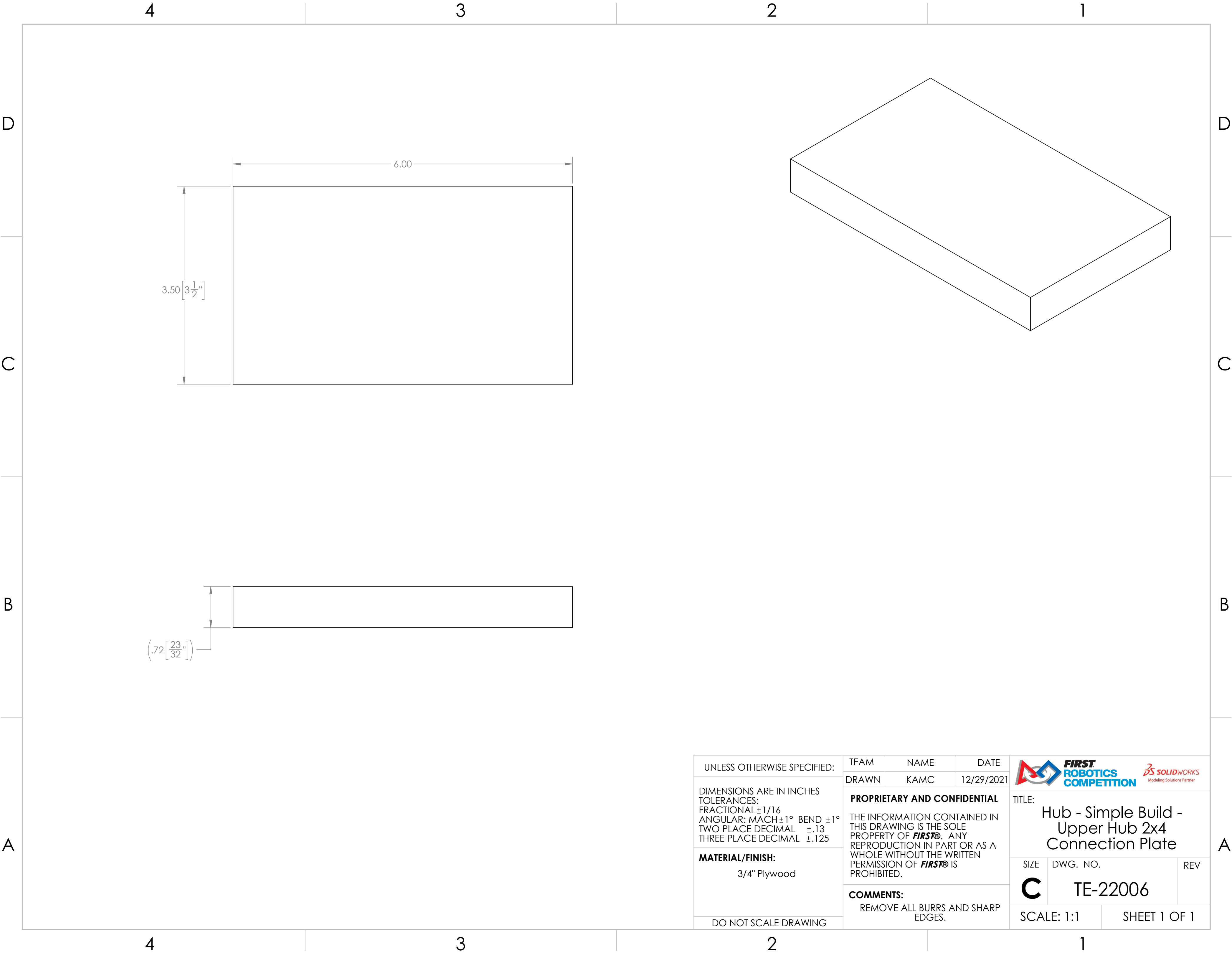
Bottom View





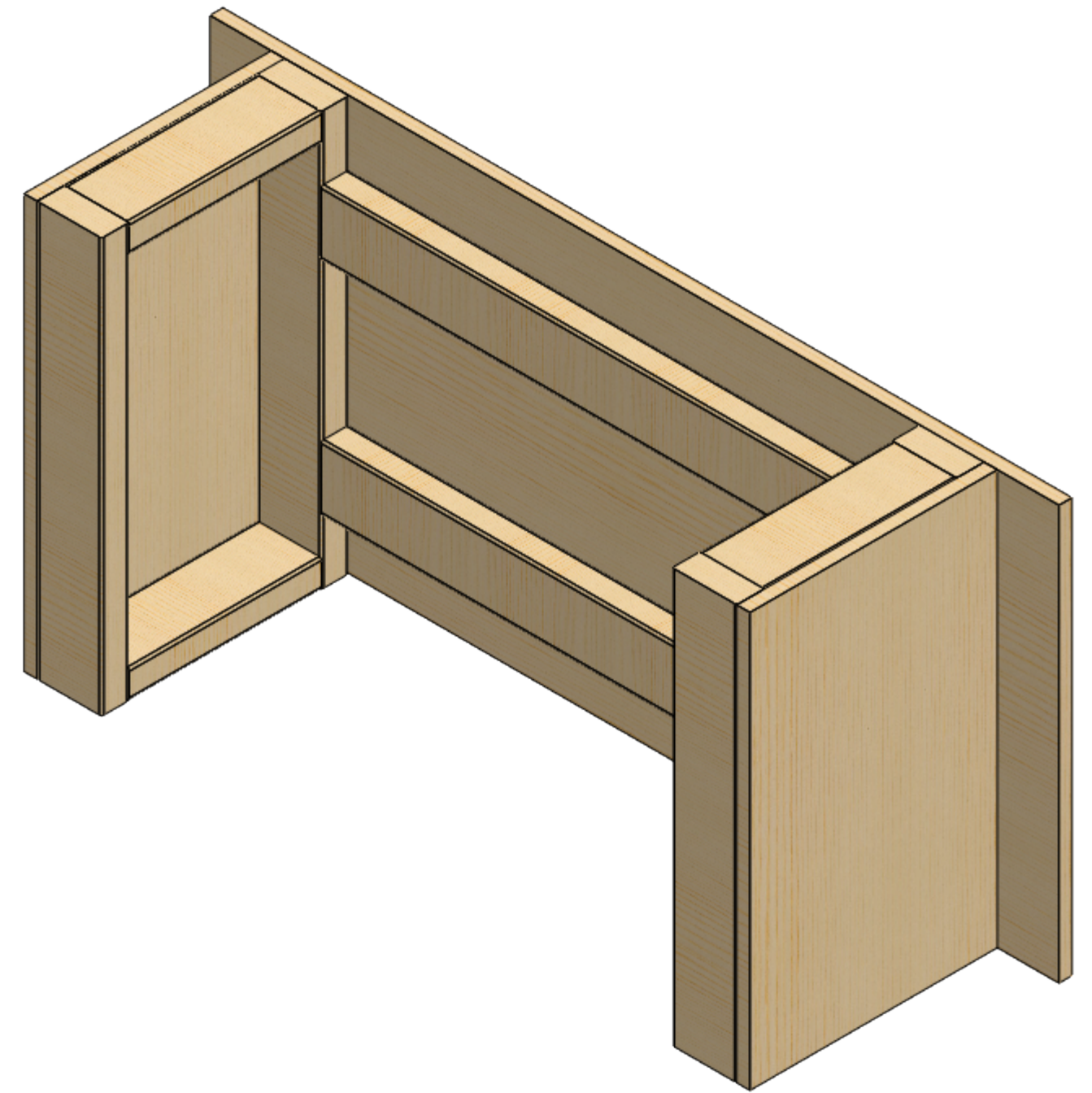
- Align (1) to Step 2 , as shown.
- Connect using 3.5" long screws. It is recommended to use 4x screws into each vertical leg of (3) . The screw head should be on the 2"x4" lumber of (1) .

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	 	
	DRAWN	KAMC	1/4/2022		
	PROPRIETARY AND CONFIDENTIAL			TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED.			Hub - Simple Build - Full Upper Hub + 1/4 Fender Assembly	
COMMENTS:		REMOVE ALL BURRS AND SHARP EDGES.		SIZE	DWG. NO.
				C	TE-22002
				SCALE: 1:24	SHEET 4 OF 4





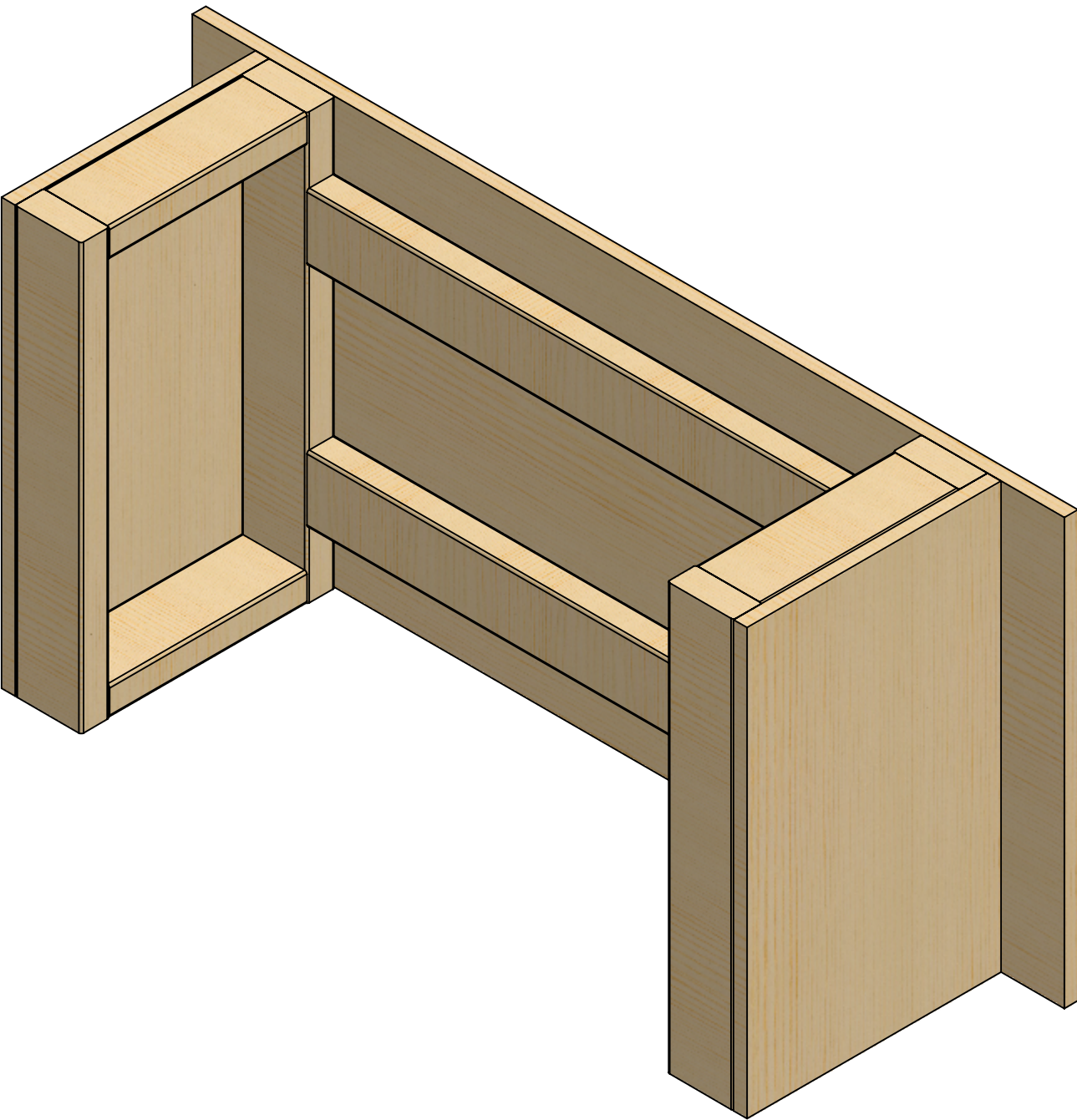




UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div></div>	
	DRAWN	KAMC	12/29/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL			TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Hub - Simple Build - Upper Hub 2x4 Connection Plate	
				SIZE	DWG. NO.
MATERIAL/FINISH: 3/4" Plywood	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	TE-22006
DO NOT SCALE DRAWING				SCALE: 1:1	



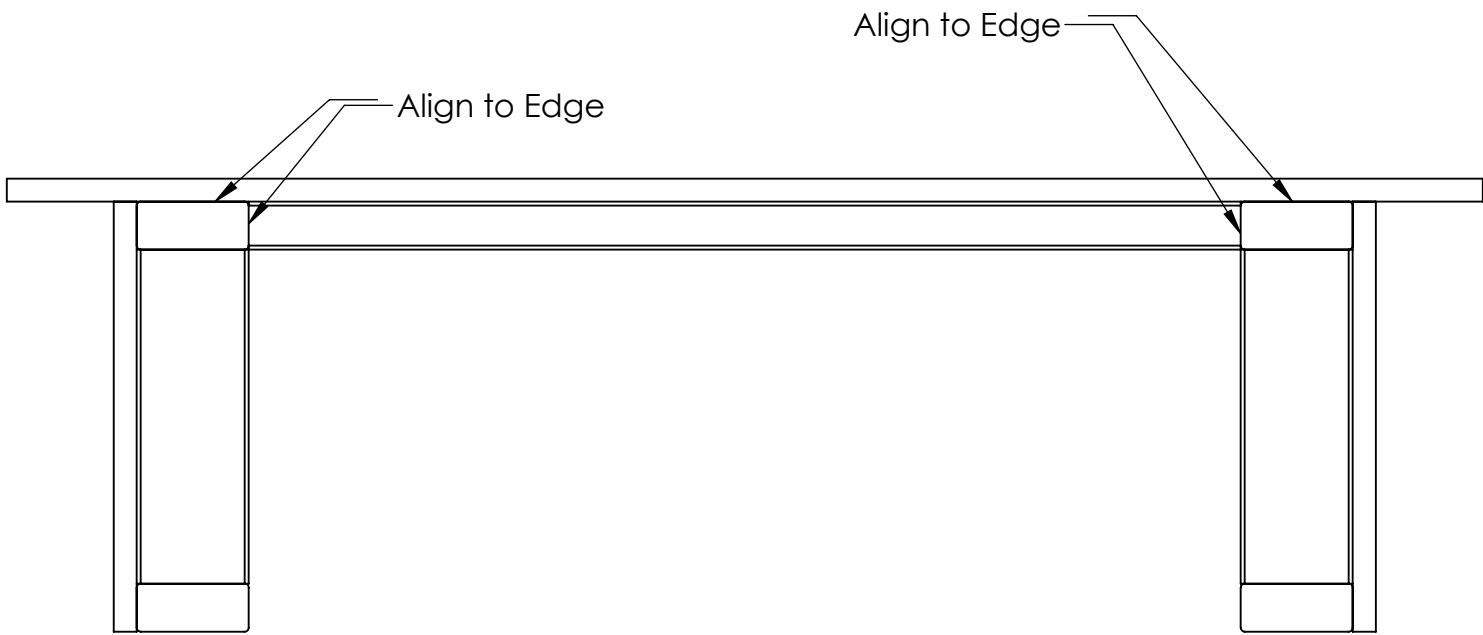
Hardware Needed:
#8 x 2" Long Screw - Qty 10

UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div>SOLIDWORKS Modeling Solutions Partner</div></div>		
	DRAWN	KAMC	12/30/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL			TITLE: Hub - Simple Build - Fender Assembly		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:	COMMENTS:			SIZE	DWG. NO.	REV
	REMOVE ALL BURRS AND SHARP EDGES.			C	TE-22010	
DO NOT SCALE DRAWING				SCALE: 1:6		SHEET 1 OF 3



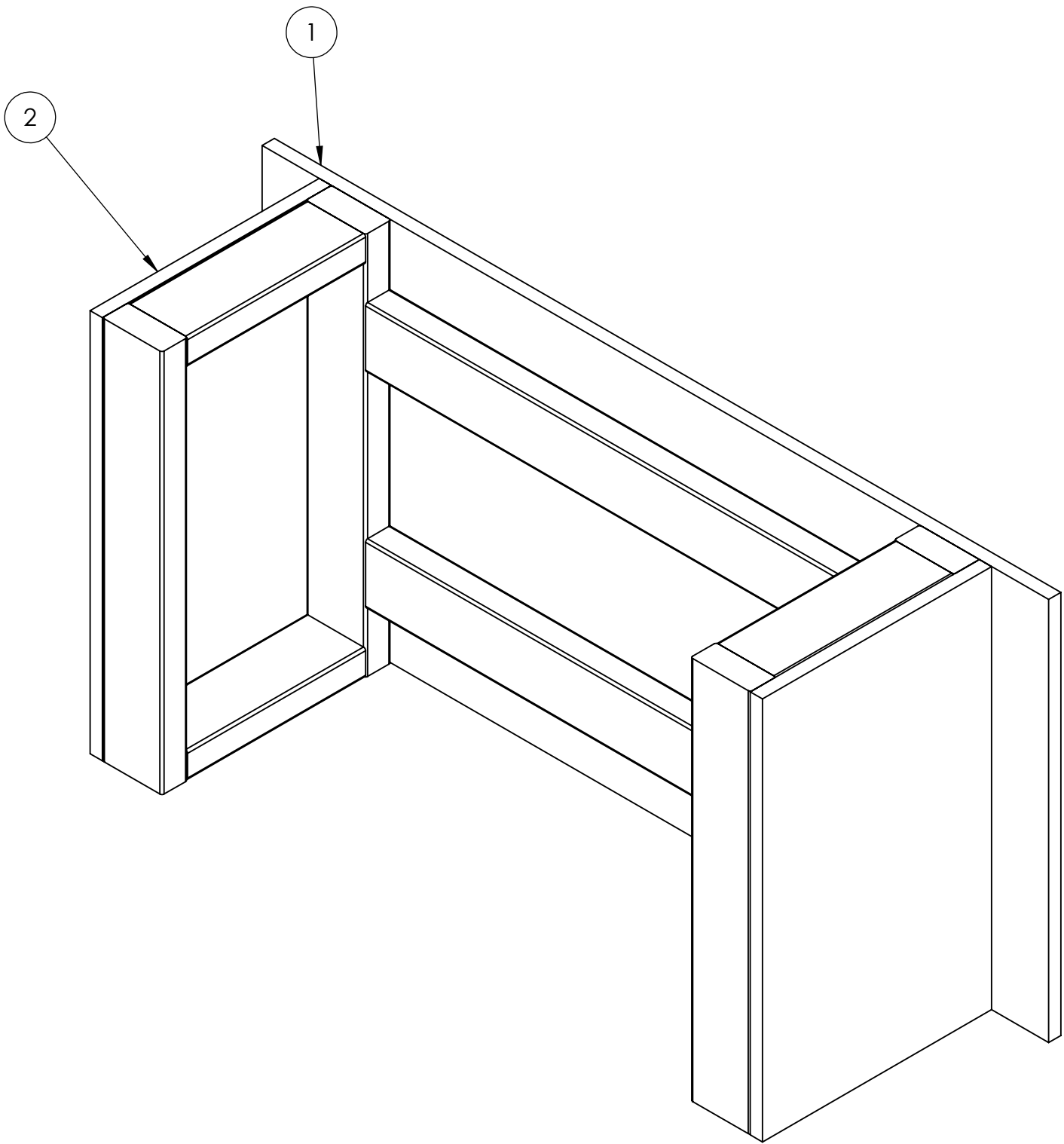
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	DRAWN	KAMC	12/30/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Hub - Simple Build - Fender Assembly	
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. TE-22010 REV
SCALE: 1:6		SHEET 2 OF 3			

Step 1



Step 1:

1. Align 2x (2) to (1) as shown.
2. Connect using 2" long screws. It is recommended to use 5x screws into each (2).



UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .13$
THREE PLACE DECIMAL $\pm .125$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

TEAM

DRAWN

NAME

KAMC

DATE

12/30/2021

PROPRIETARY AND CONFIDENTIAL

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

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.



**FIRST
ROBOTICS
COMPETITION**

SOLIDWORKS
Modeling Solutions Partner

TITLE:

Hub - Simple Build -
Fender Assembly

SIZE

C

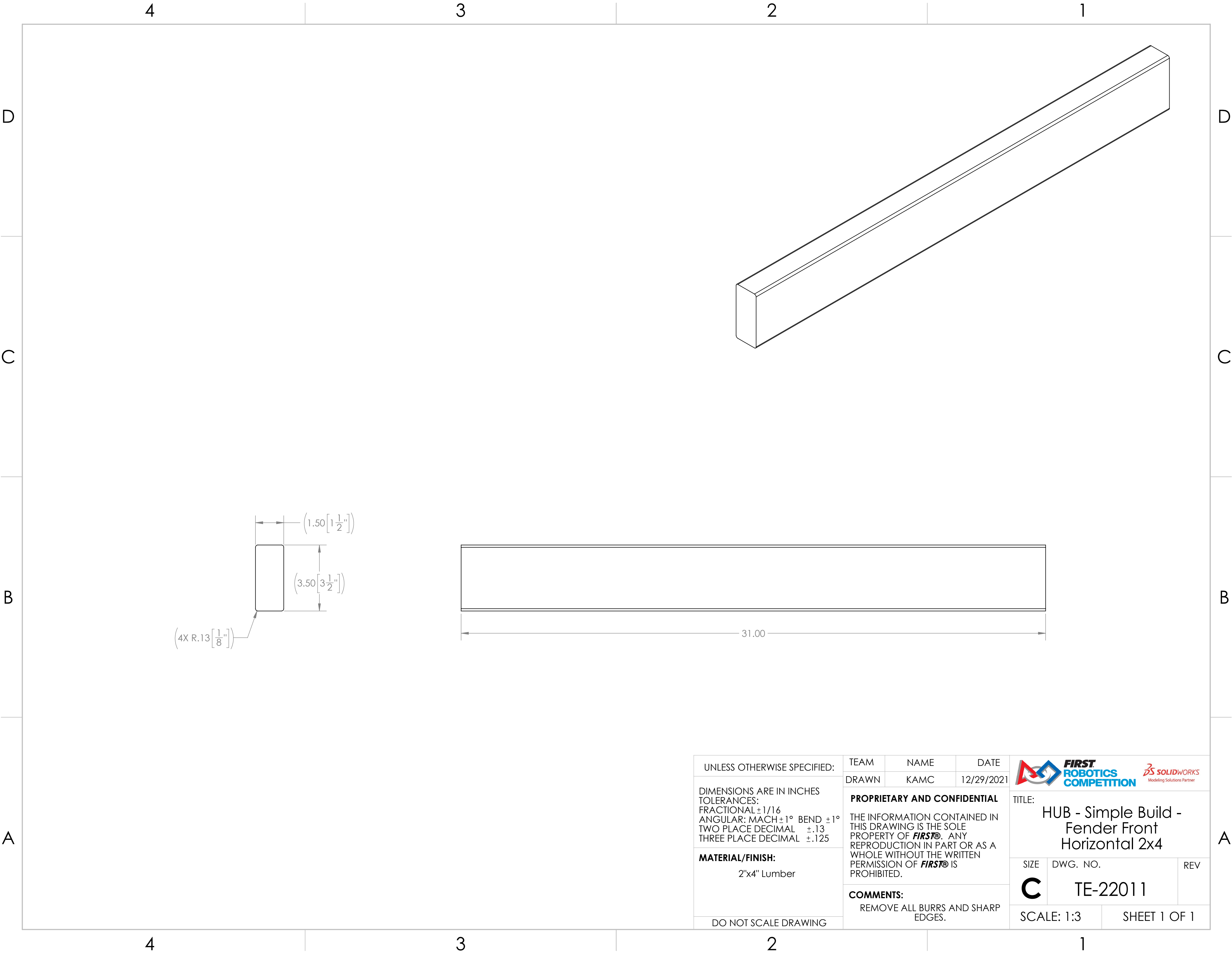
DWG. NO.



TE-22010

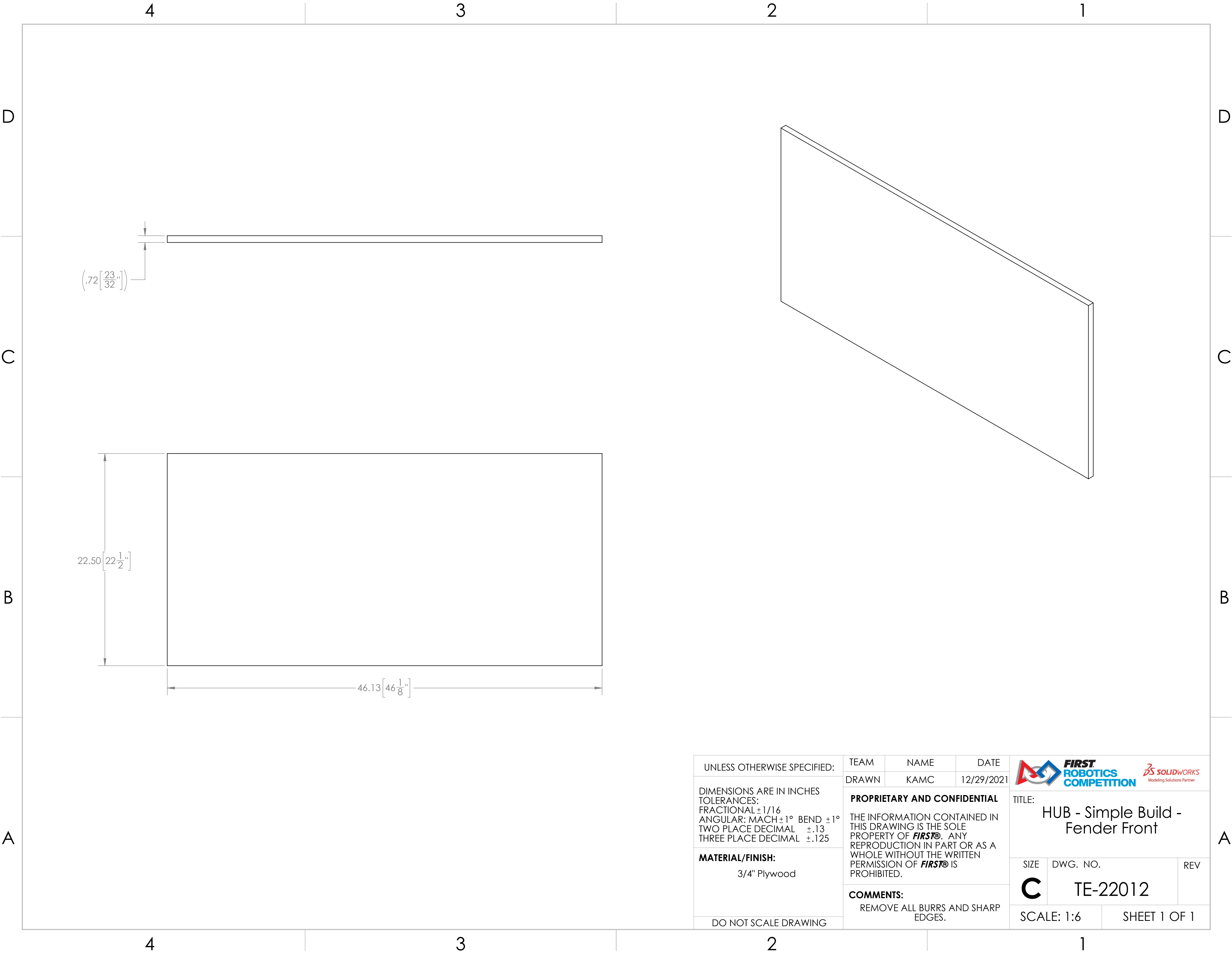
REV



SCALE: 1:6

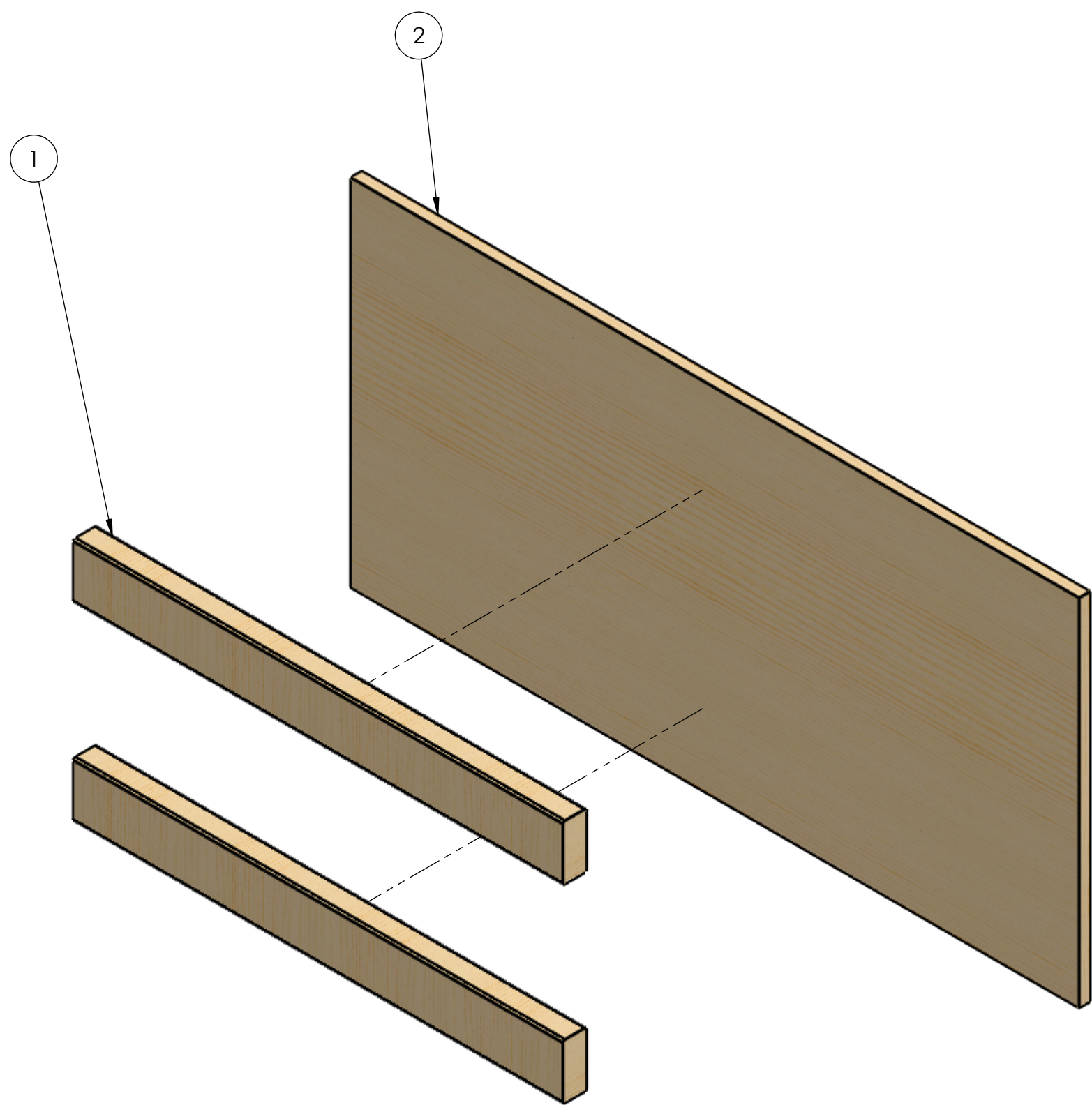
SHEET 3 OF 3



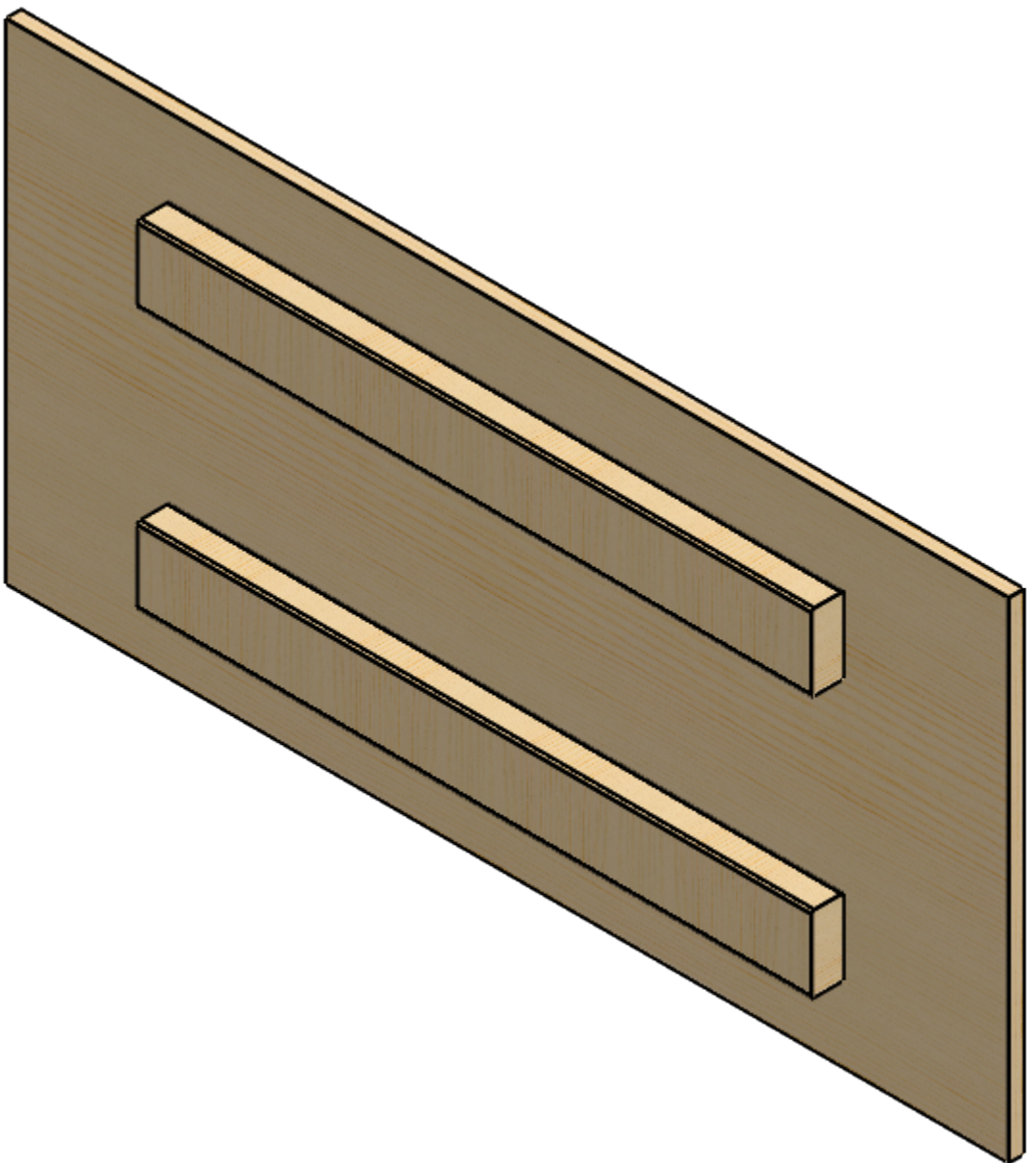
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: 2"x4" Lumber DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div>		
	DRAWN	KAMC	12/29/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				TITLE: HUB - Simple Build - Fender Front Horizontal 2x4	
				SIZE	DWG. NO.	REV
				C	TE-22011	
				SCALE: 1:3		SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: 3/4" Plywood DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div> <div>TITLE: HUB - Simple Build - Fender Front</div>		
	DRAWN	KAMC	12/29/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
SIZE		DWG. NO.		REV		
C		TE-22012				
SCALE: 1:6			SHEET 1 OF 1			





Exploded View

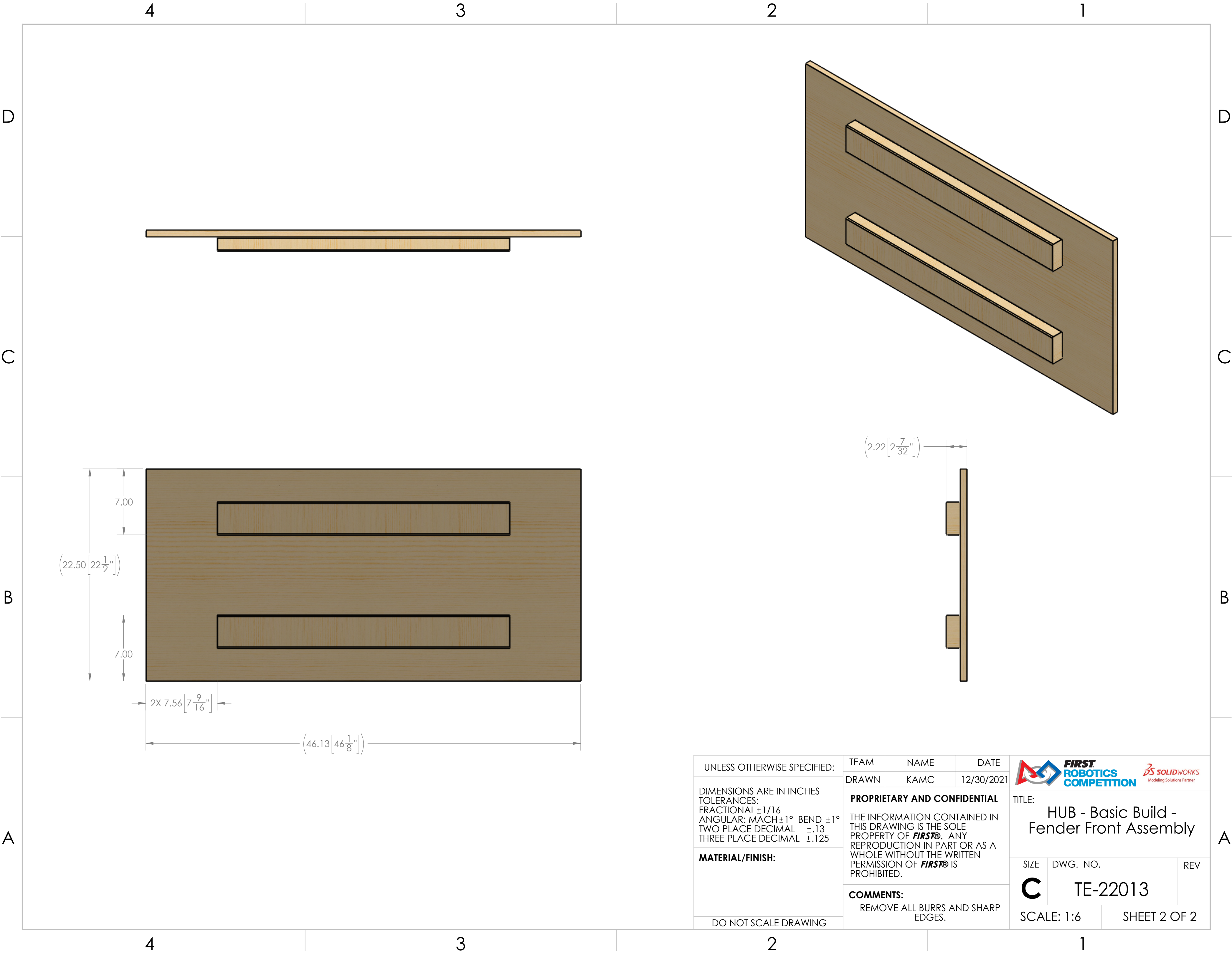




- Step 1:
- Align 2x 1 to 2 as shown, using dimensions provided on Sheet 2.
 - Connect using 2" long screws. It is recommended to use 7x screws into each 1.

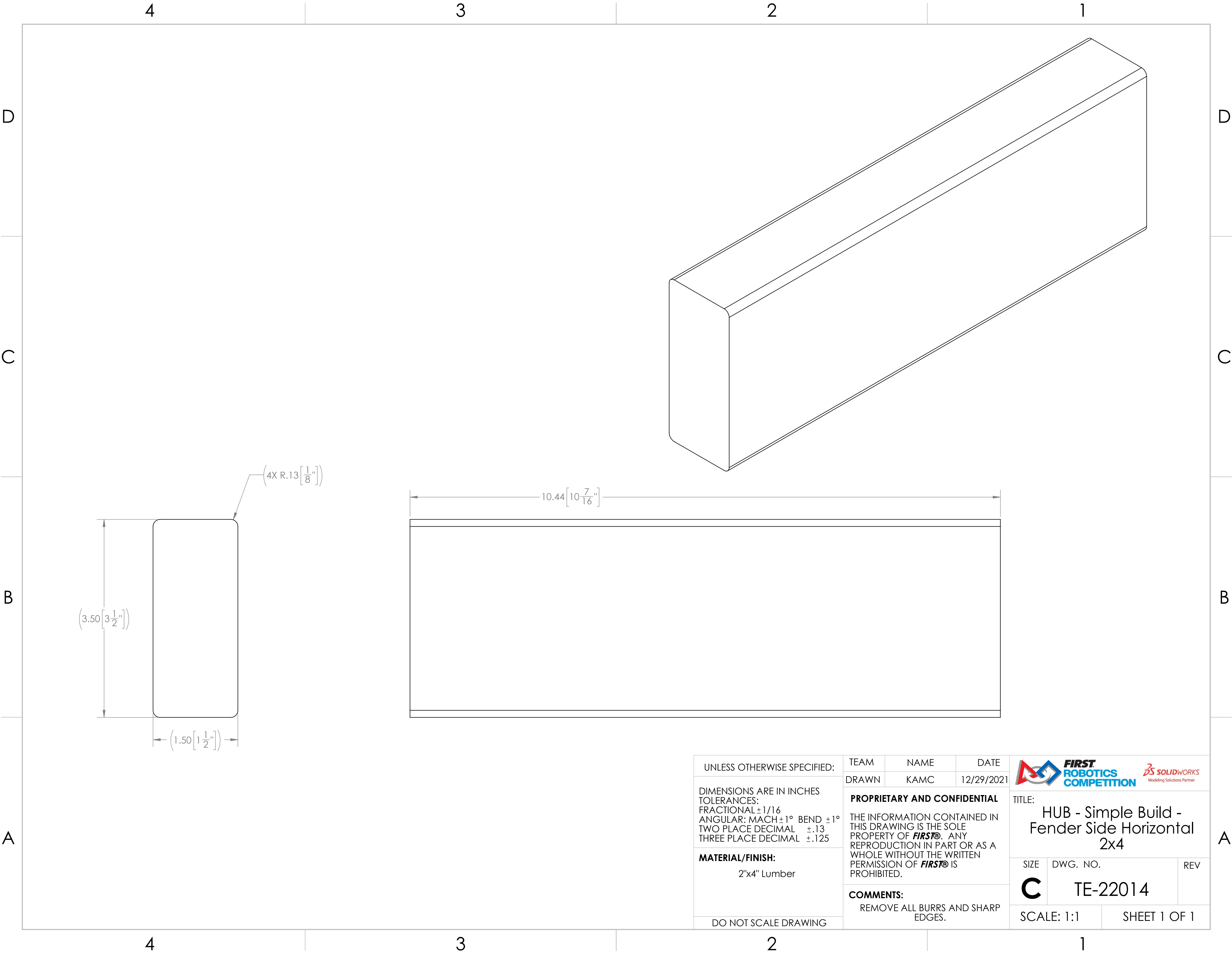
Hardware Needed:
#8 x 2" Long Screws - Qty 14



		ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
		1	TE-22011	HUB - Simple Build - Fender Front Horizontal 2x4	2
		2	TE-22012	HUB - Simple Build - Fender Front	1

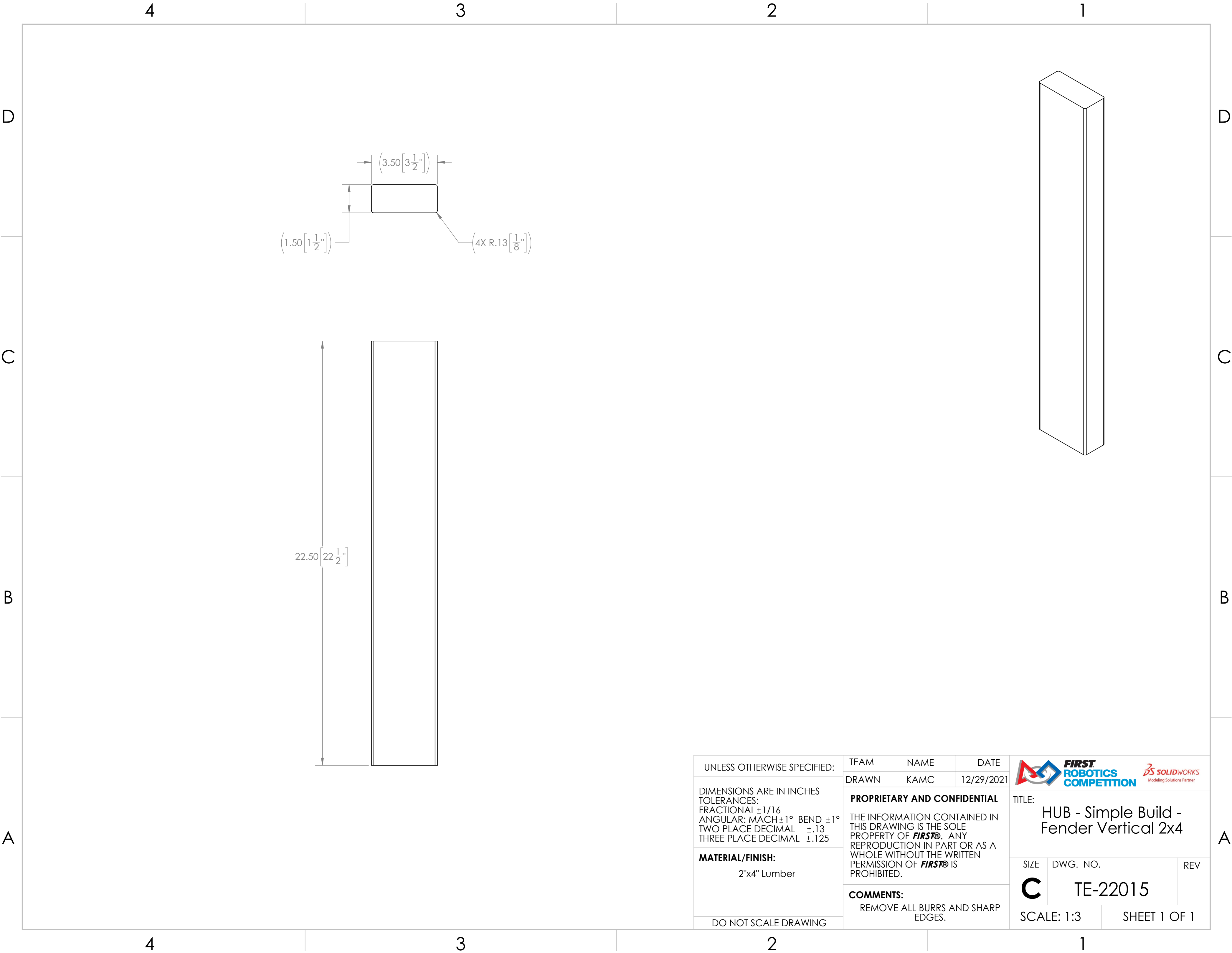
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div><div></div><div>TITLE: HUB - Basic Build - Fender Front Assembly</div></div>				
	DRAWN	KAMC	12/30/2021					
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.				SIZE		DWG. NO.	REV
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				C		TE-22013	
				SCALE: 1:6		SHEET 1 OF 2		





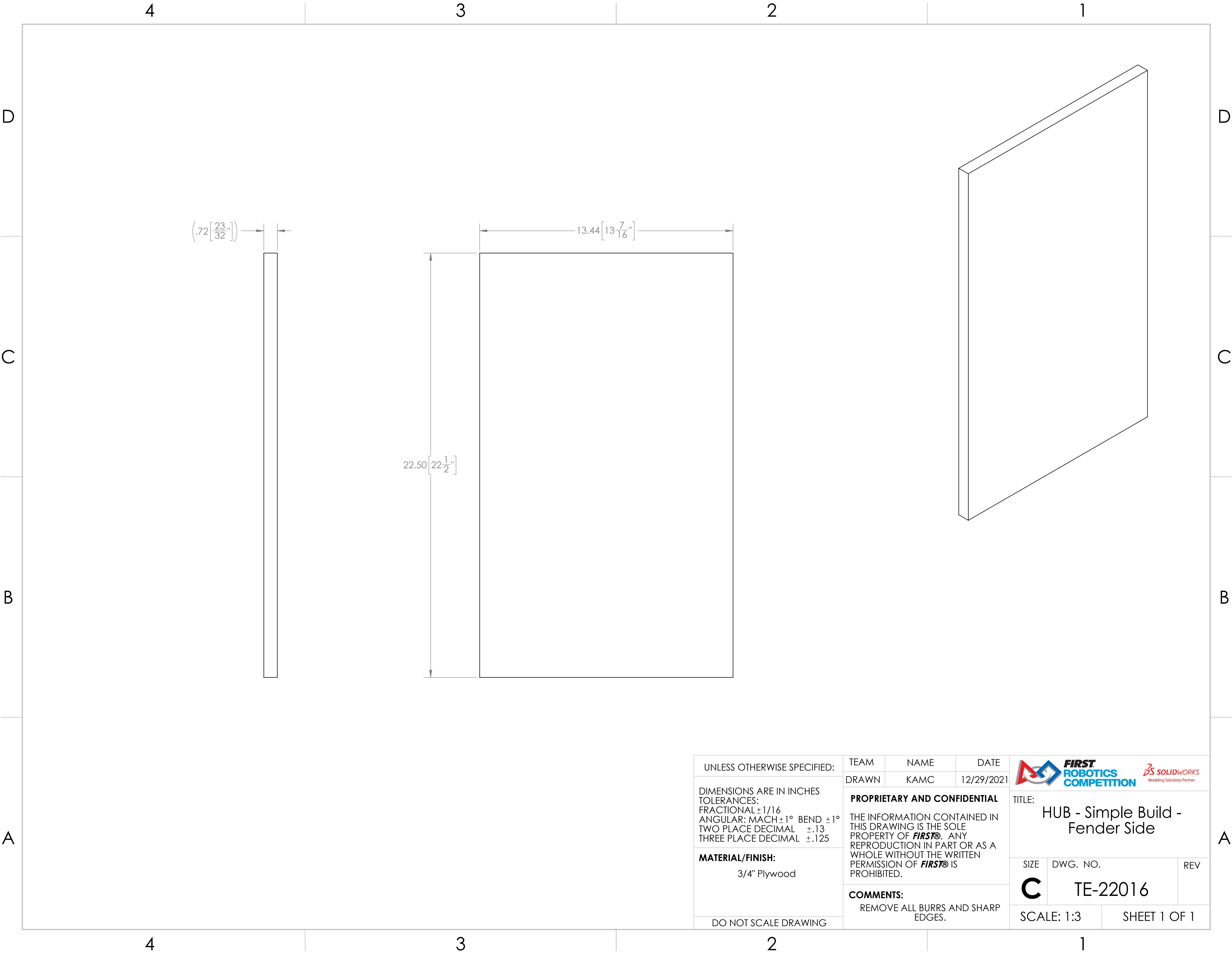
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div></div>		
	DRAWN	KAMC	12/30/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			HUB - Basic Build - Fender Front Assembly		
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	TE-22013	
DO NOT SCALE DRAWING				SCALE: 1:6		SHEET 2 OF 2





UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div></div>		
	DRAWN	KAMC	12/29/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: HUB - Simple Build - Fender Side Horizontal 2x4		
	MATERIAL/FINISH: 2"x4" Lumber	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.
DO NOT SCALE DRAWING	C				TE-22014	
	SCALE: 1:1		SHEET 1 OF 1			



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: 2"x4" Lumber DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div> <div>TITLE: HUB - Simple Build - Fender Vertical 2x4</div>		
	DRAWN	KAMC	12/29/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
				SIZE	DWG. NO.	REV
				C	TE-22015	
				SCALE: 1:3		SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH: 3/4" Plywood DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div>		
	DRAWN	KAMC	12/29/2021			
	PROPRIETARY AND CONFIDENTIAL			TITLE: HUB - Simple Build - Fender Side		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			SIZE C	DWG. NO. TE-22016	REV
COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:3		SHEET 1 OF 1	

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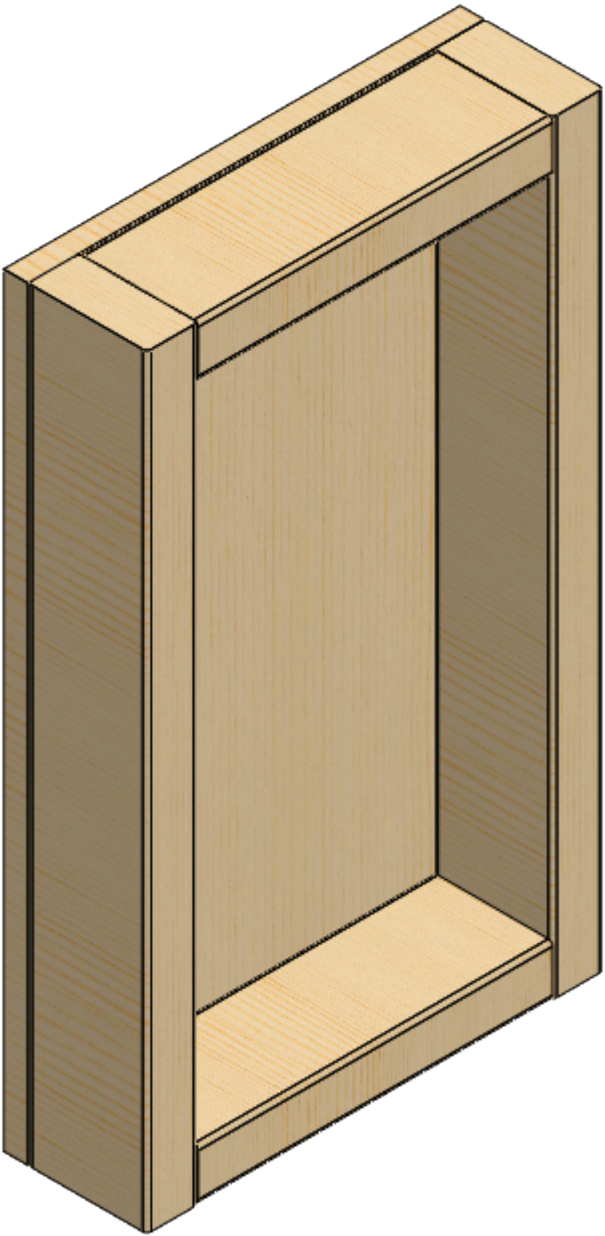
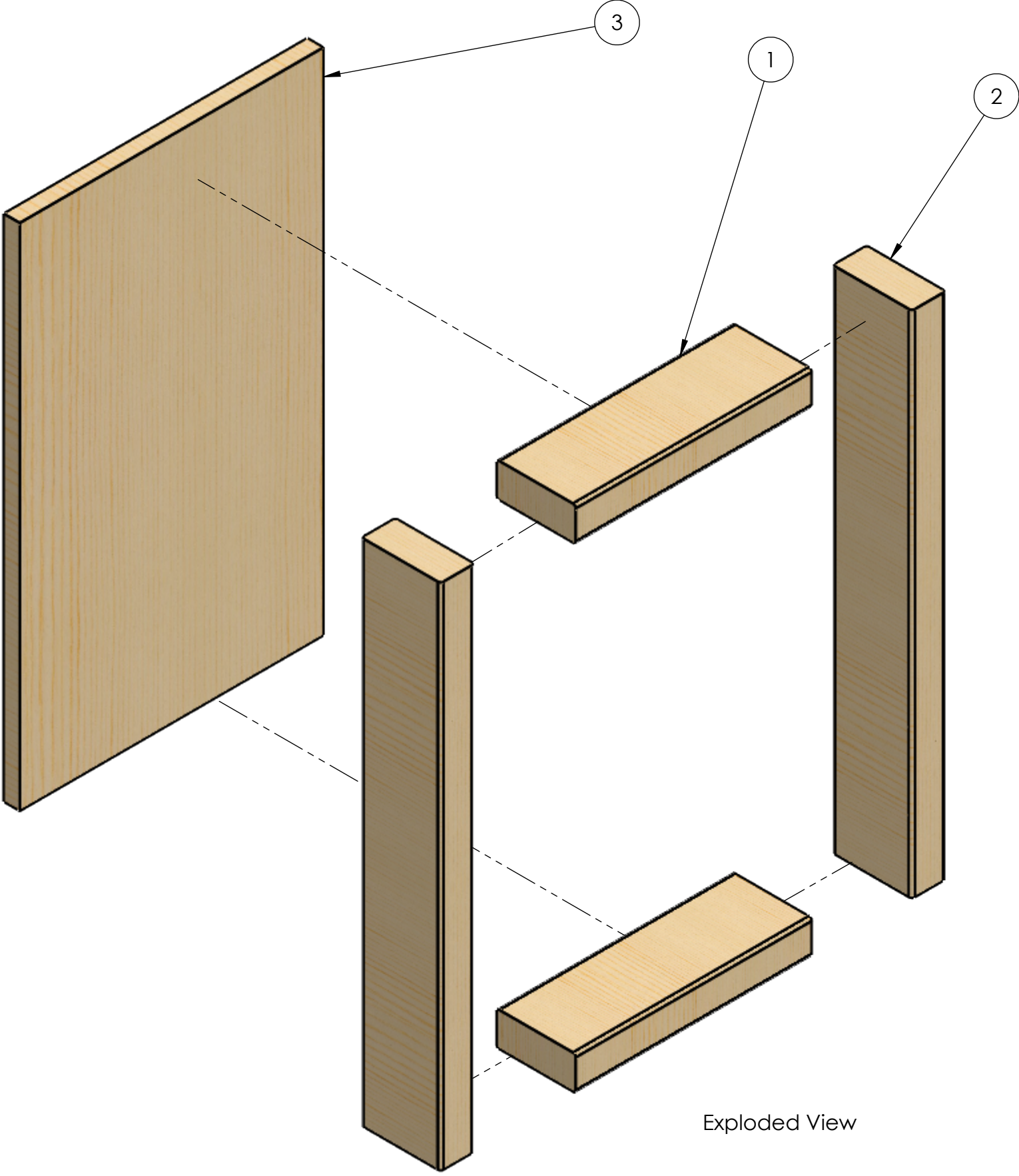
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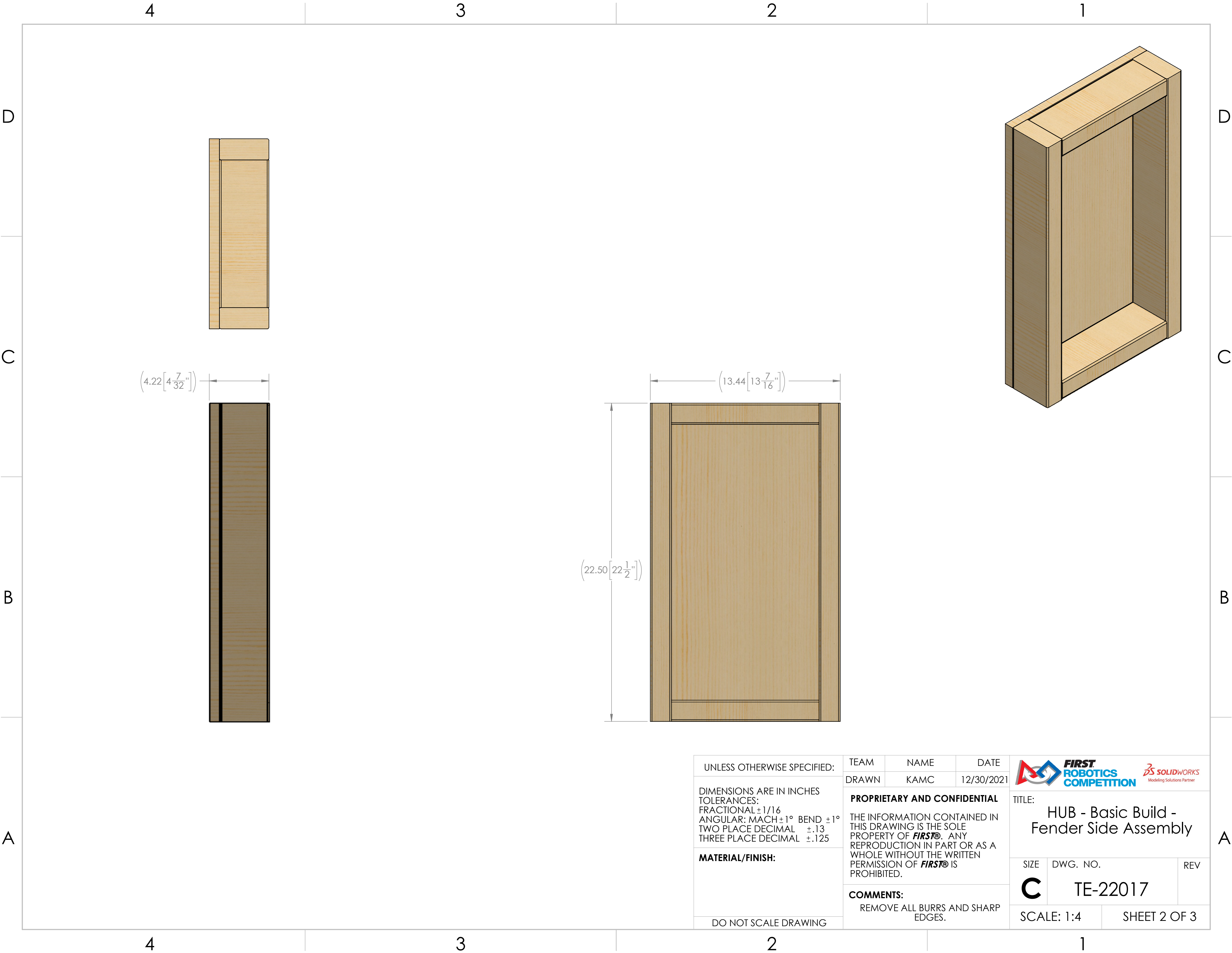
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Hardware:
#8 x 2" Long Screw - Qty 16
#8 x 2.5" Long Screw - Qty 8

ITEM NO.	PART NUMBER	DESCRIPTION	
1	TE-22014	HUB - Simple Build - Fender Side Horizontal 2x4	2
2	TE-22015	HUB - Simple Build - Fender Vertical 2x4	2
3	TE-22016	HUB - Simple Build - Fender Side	1

UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	 		
	DRAWN	KAMC	12/30/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: HUB - Basic Build - Fender Side Assembly		
MATERIAL/FINISH:	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	TE-22017	
DO NOT SCALE DRAWING				SCALE: 1:4		SHEET 1 OF 3



UNLESS OTHERWISE SPECIFIED:		TEAM	NAME	DATE	 	
		DRAWN	KAMC	12/30/2021		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$		PROPRIETARY AND CONFIDENTIAL			TITLE: HUB - Basic Build - Fender Side Assembly	
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED.			SIZE C	DWG. NO. TE-22017
MATERIAL/FINISH:		COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			REV	
DO NOT SCALE DRAWING					SCALE: 1:4	
					SHEET 2 OF 3	

1

Step 2



3

Hidden Lines Shown

Hidden Lines Shown

1. Align 2x (1) and 2x (2), as shown.
2. Attach using 2.5" long screws. It is recommended to use 2x screws into each interface between a (2) and (1).

1. Align **(3)** to the assembly made in Step 1, as shown.
2. Attach using 2" Long Screws. It is recommended to use 5x screws into each **(2)** and 3x screws into each **(1)**.

UNLESS OTHERWISE SPECIFIED:		TEAM	NAME	DATE	<div> FIRST ROBOTICS COMPETITION</div>		<div> SOLIDWORKS Modeling Solutions Partner</div>		
		DRAWN	KAMC	12/30/2021	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.		TITLE: HUB - Basic Build - Fender Side Assembly		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125							SIZE C		DWG. NO. TE-22017
MATERIAL/FINISH:					COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.		SCALE: 1:4		SHEET 3 OF 3
DO NOT SCALE DRAWING									

4

3

2

1

D

D

C

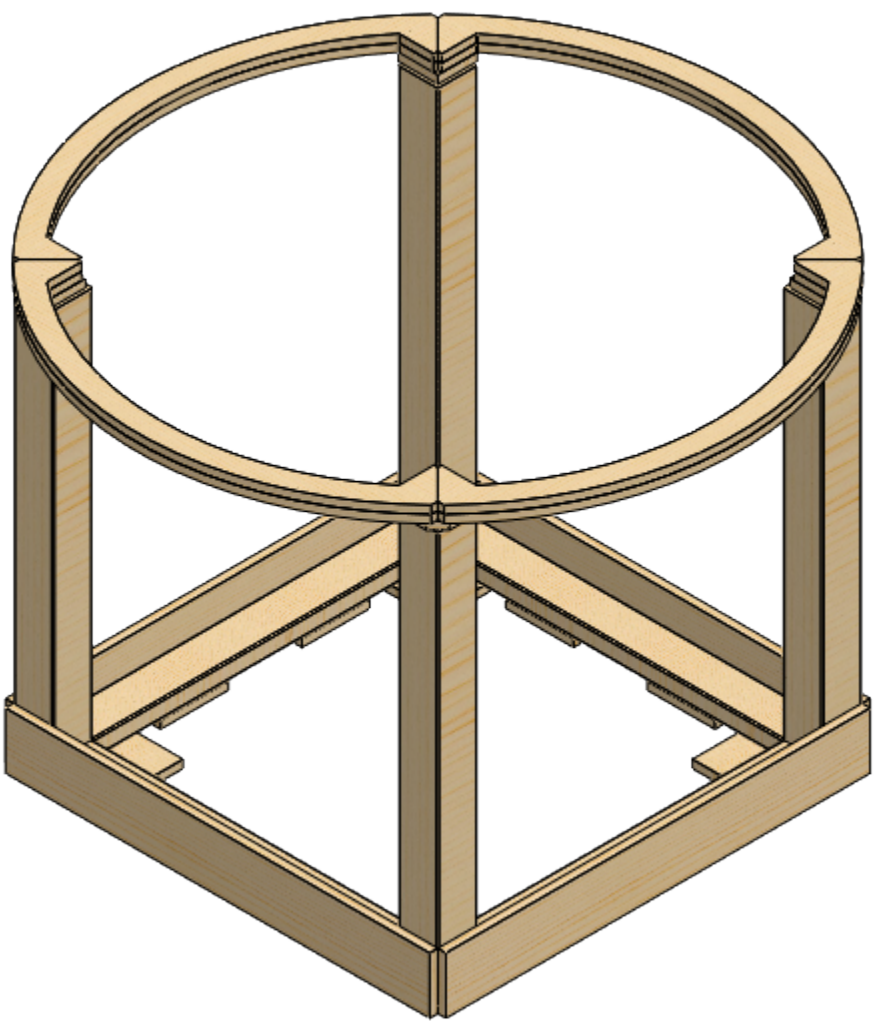
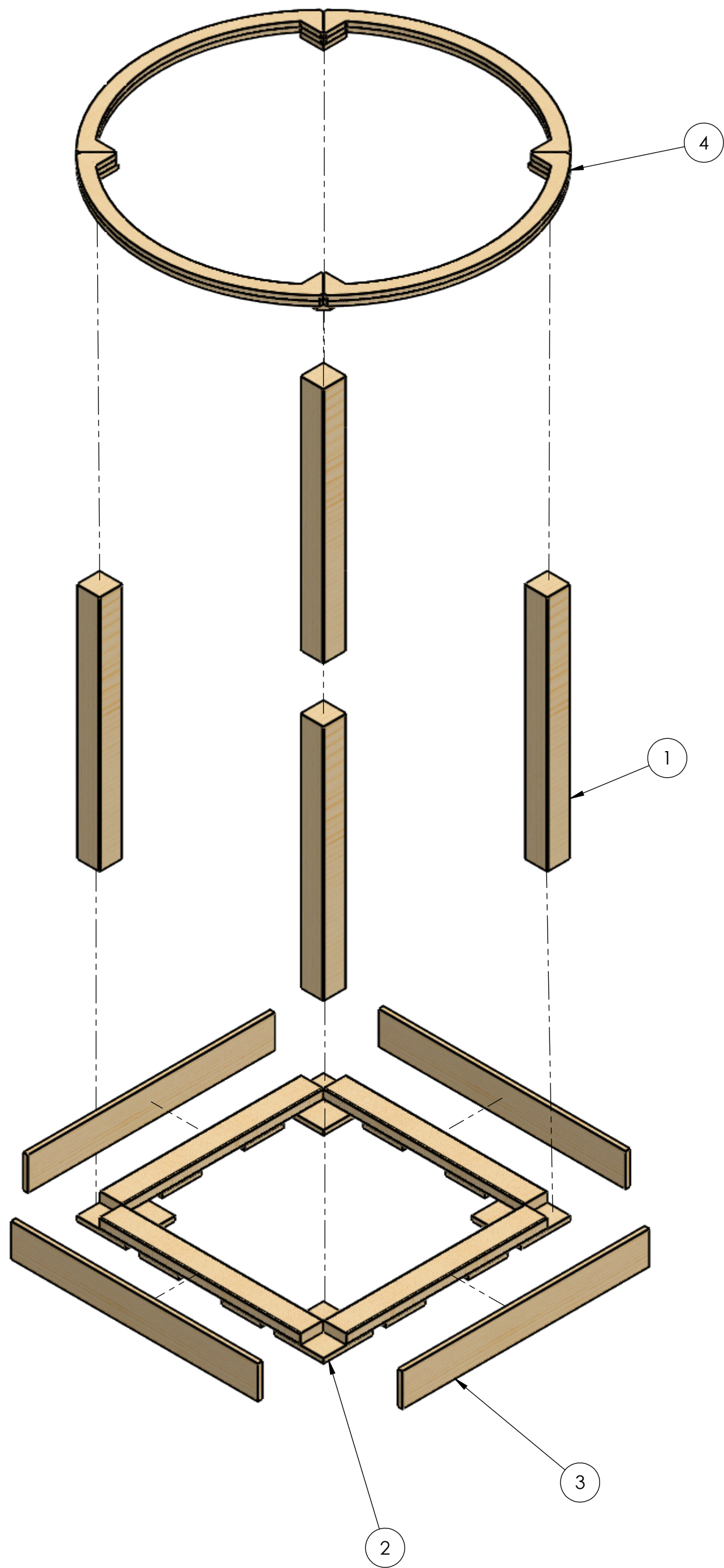
C

B

B

A



A

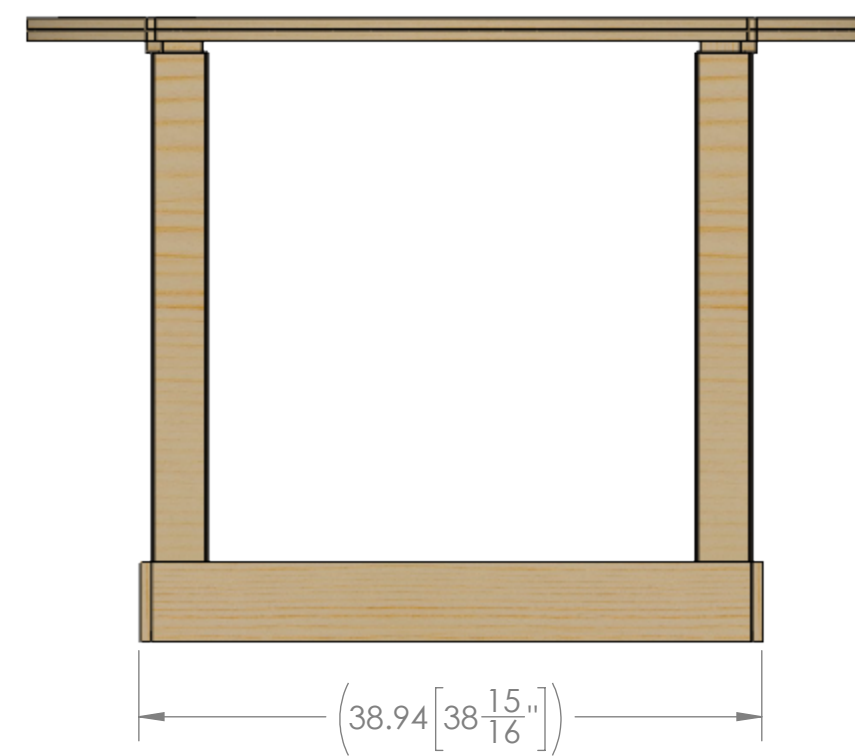
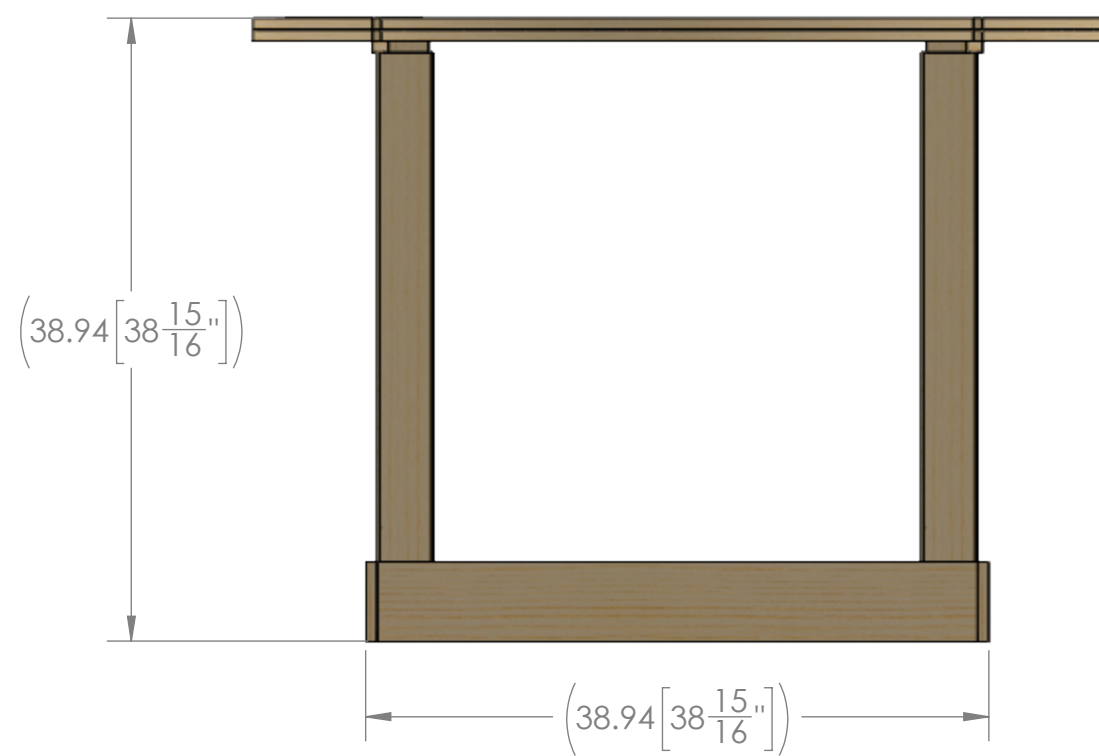
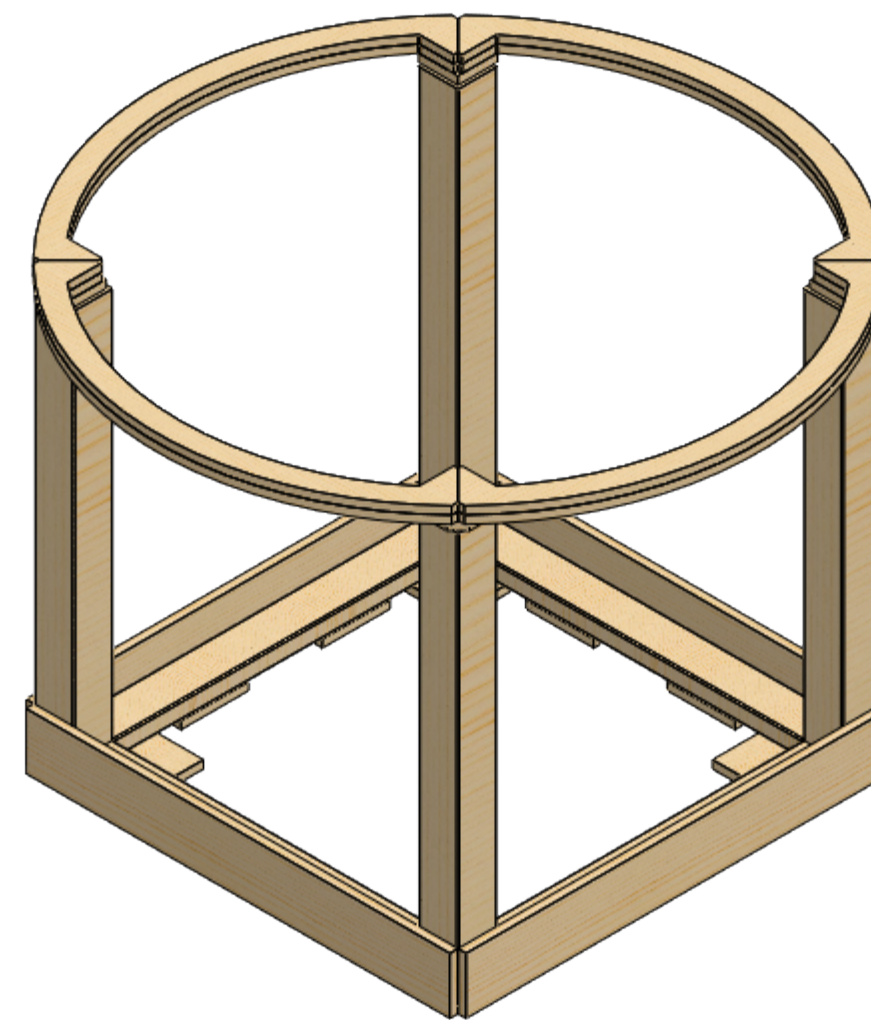
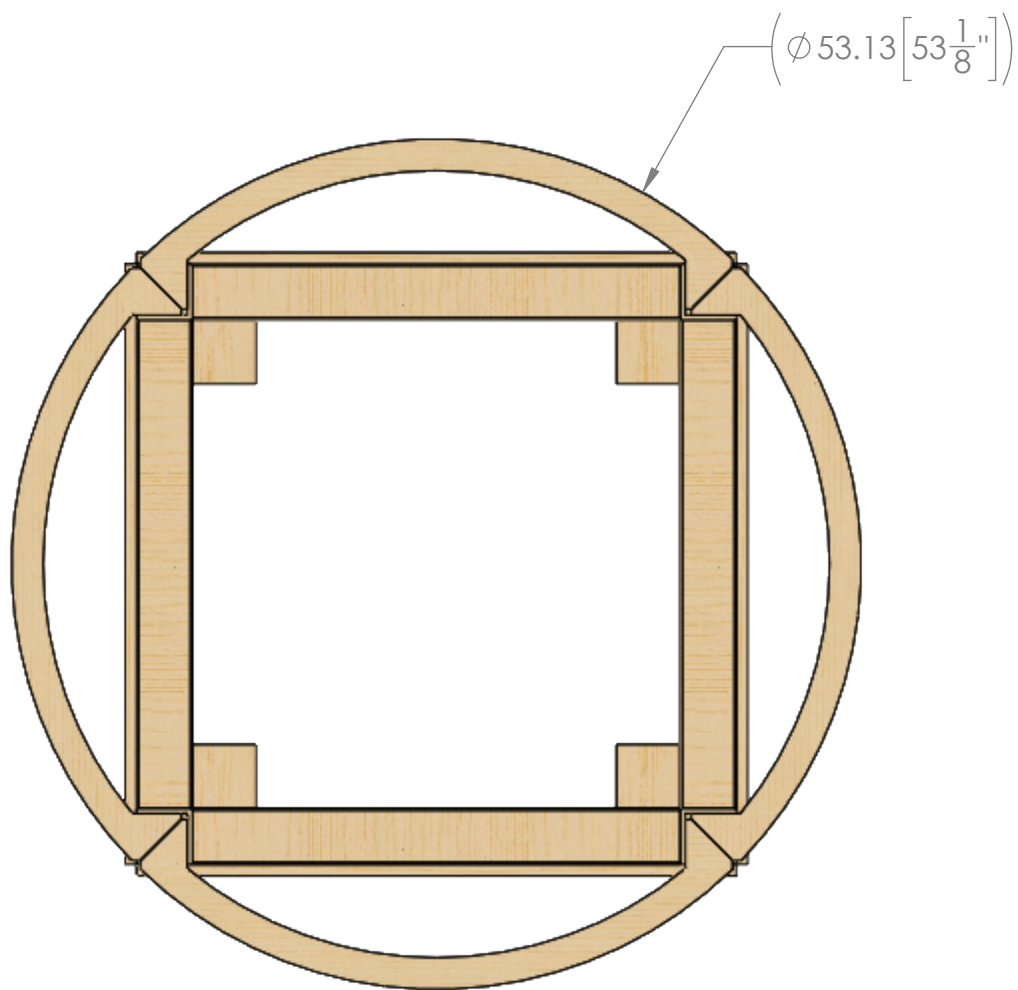




Note:
Use Assembly TE-22030-AM if pairing with AndyMark's
Upper Hub Vision Ring Assembly (AM-4672)

Hardware Needed:
#8 x 1.25" Long Screw - Qty 12
#8 x 2" Long Screw - Qty 48
#10 x 3.5" Long Screw - Qty 16

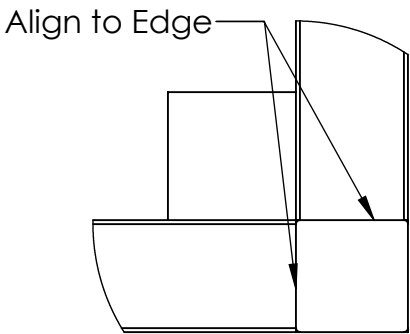
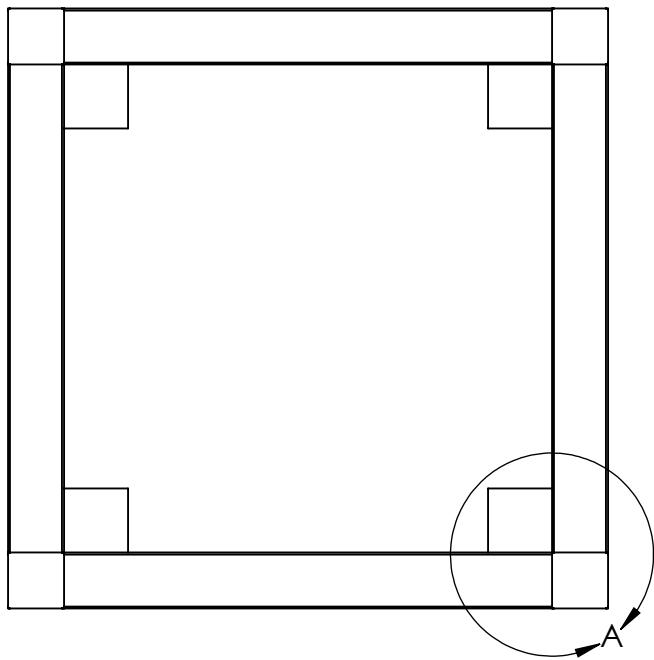
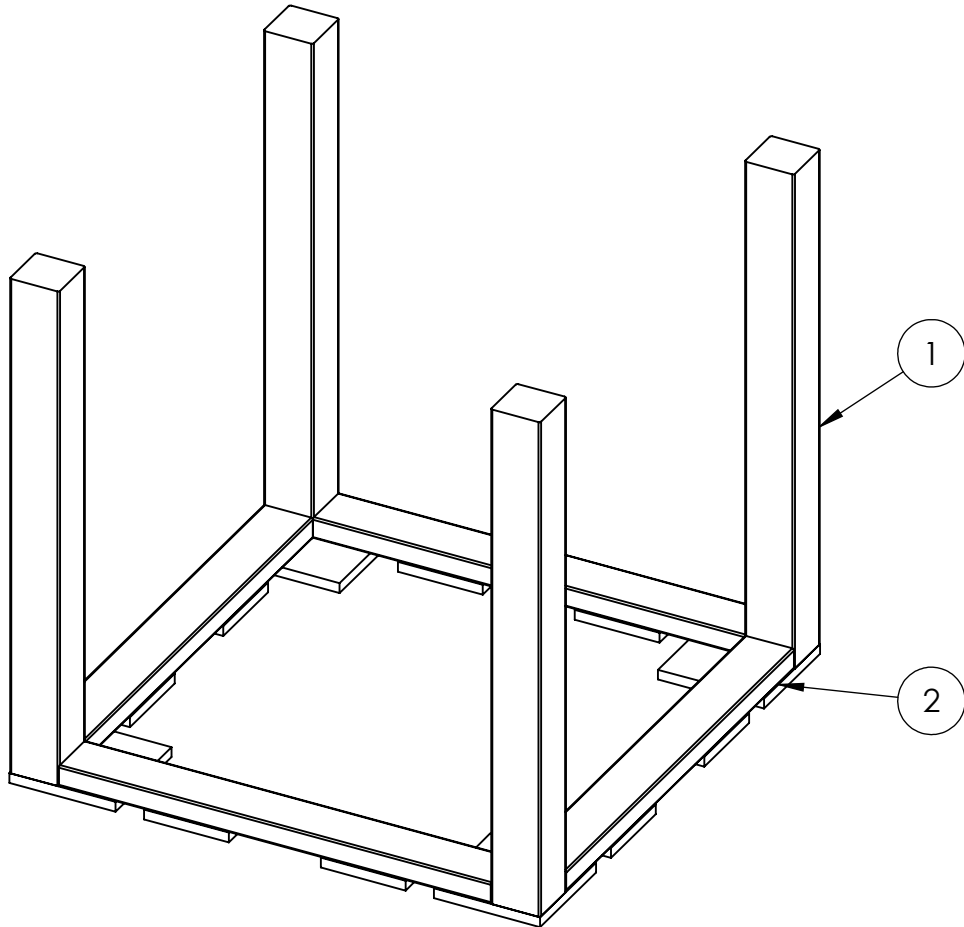
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TE-22036	Hub - Simple Build - Upper Hub Goal 4x4	4
2	TE-22038	Hub - Simple Build - Upper Hub Goal Bottom Assembly	1
3	TE-22037	Hub - Simple Build - Upper Hub Goal Rectangle Connection Plate	4
4	TE-22034	Hub - Simple Build - Upper Hub Full Ring Assembly	1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div> <div>TITLE: Hub - Simple Build - Upper Hub Goal Assembly</div> <div><div>SIZE</div><div>C</div><div>DWG. NO.</div><div>TE-22030</div><div>REV</div></div> <div>SCALE: 1:12</div> <div>SHEET 1 OF 4</div>		
	DRAWN	KAMC	12/30/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					



UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div> FIRST ROBOTICS COMPETITION</div> <div> SOLIDWORKS Modeling Solutions Partner</div>		
	DRAWN	KAMC	12/30/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH:	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Hub - Simple Build - Upper Hub Goal Assembly		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
DO NOT SCALE DRAWING				SIZE C	DWG. NO. TE-22030	REV
				SCALE: 1:12		SHEET 2 OF 4

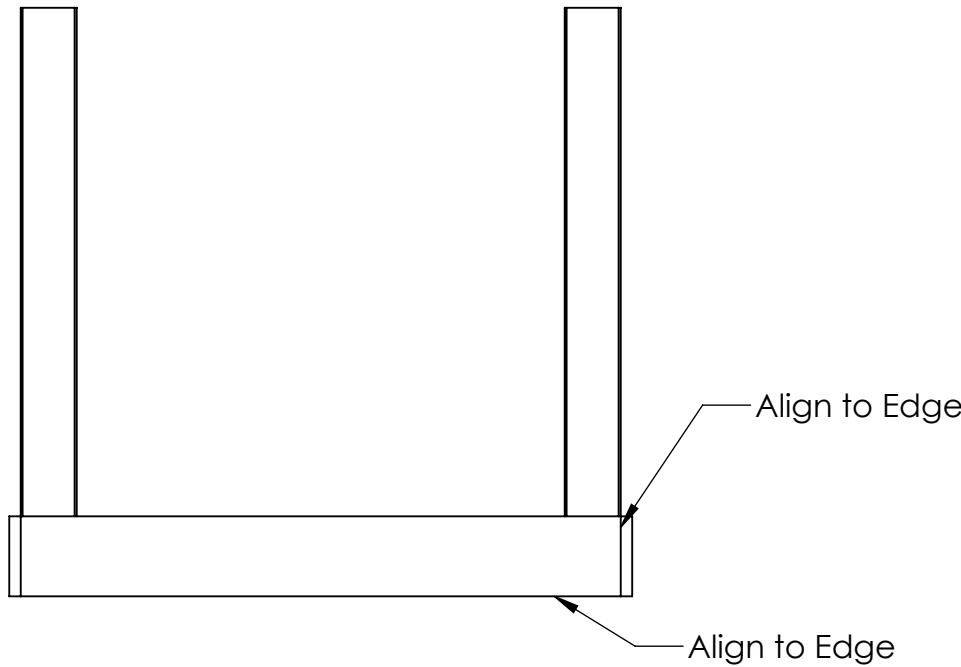
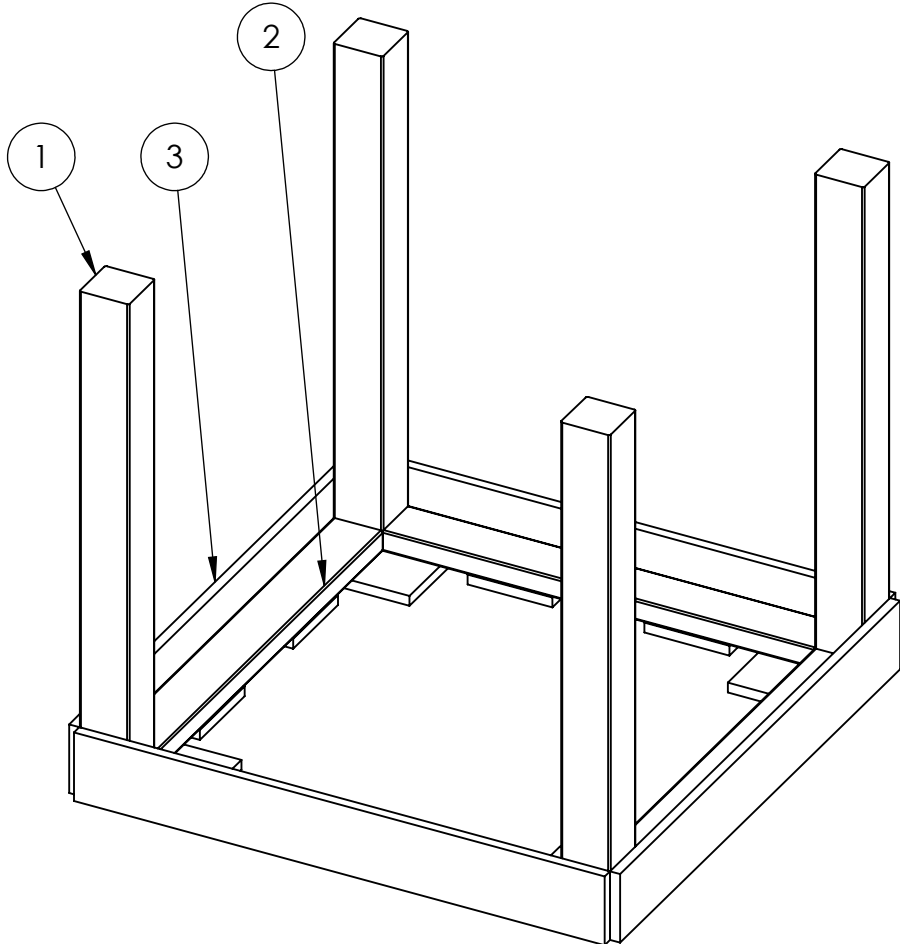
Step 1





4X
DETAIL A
SCALE 1 : 6

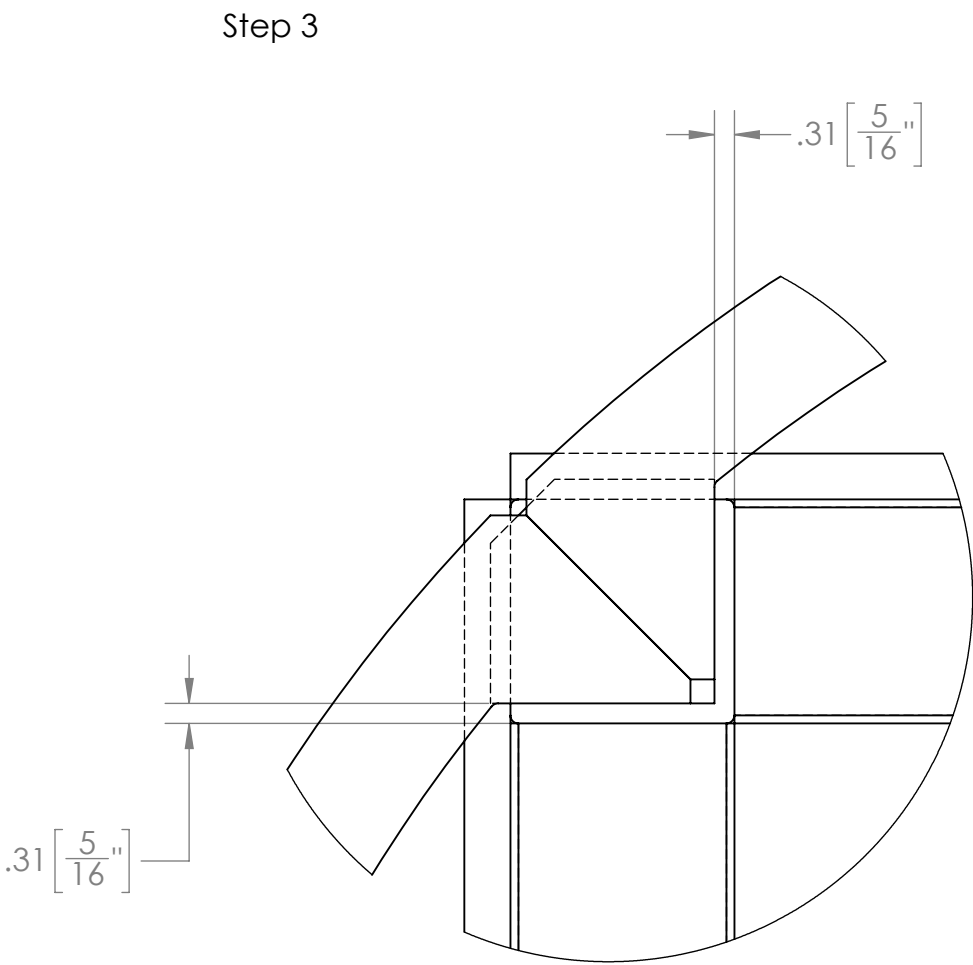
- Align 4x (1) to (2) , as shown.
- Connect using 2" Long Screws. It is recommended to use 4x screws per (1) .

Step 2

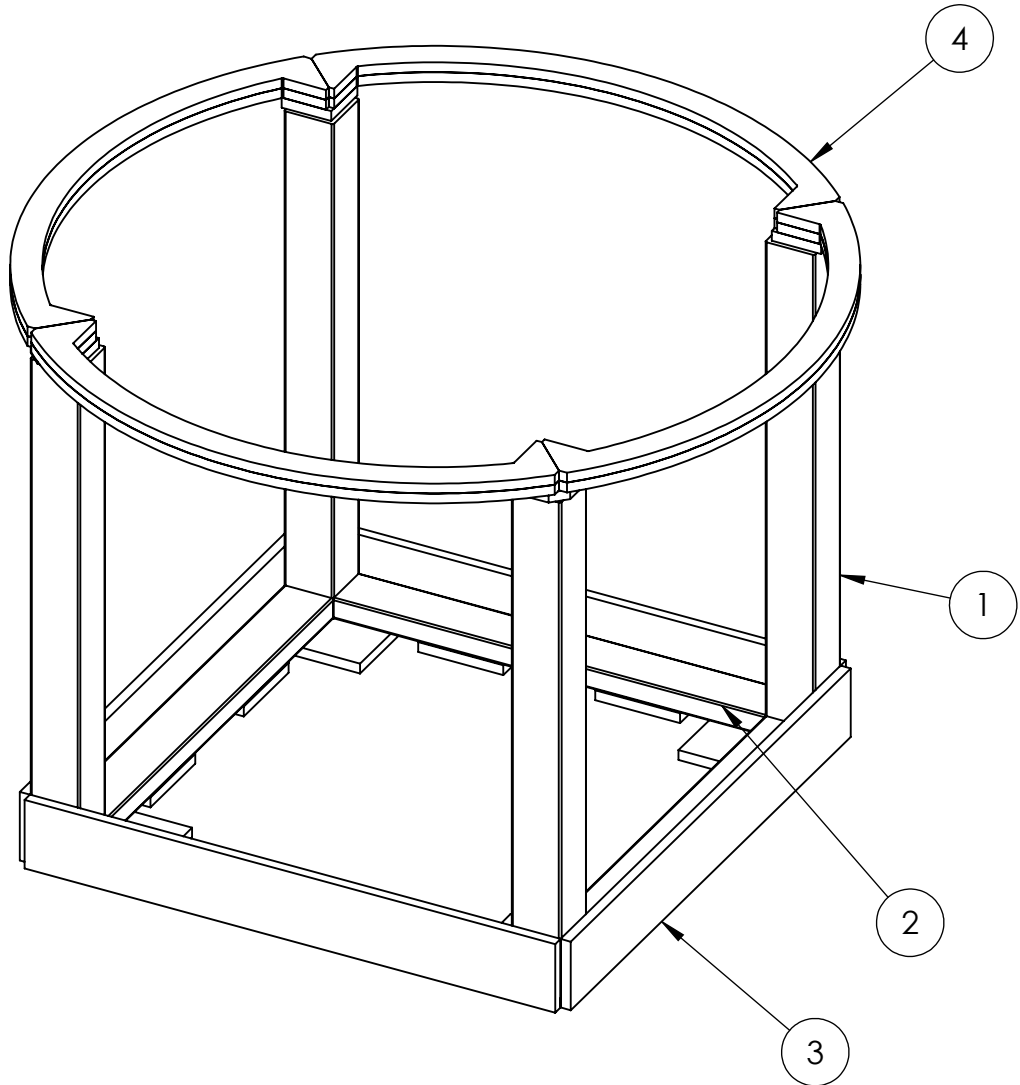
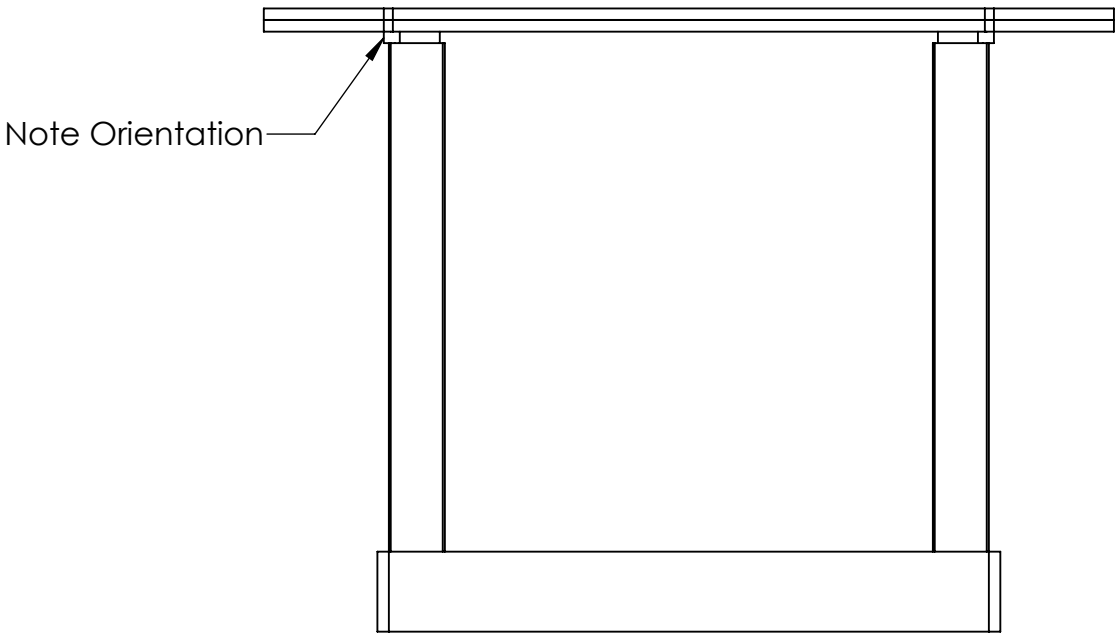
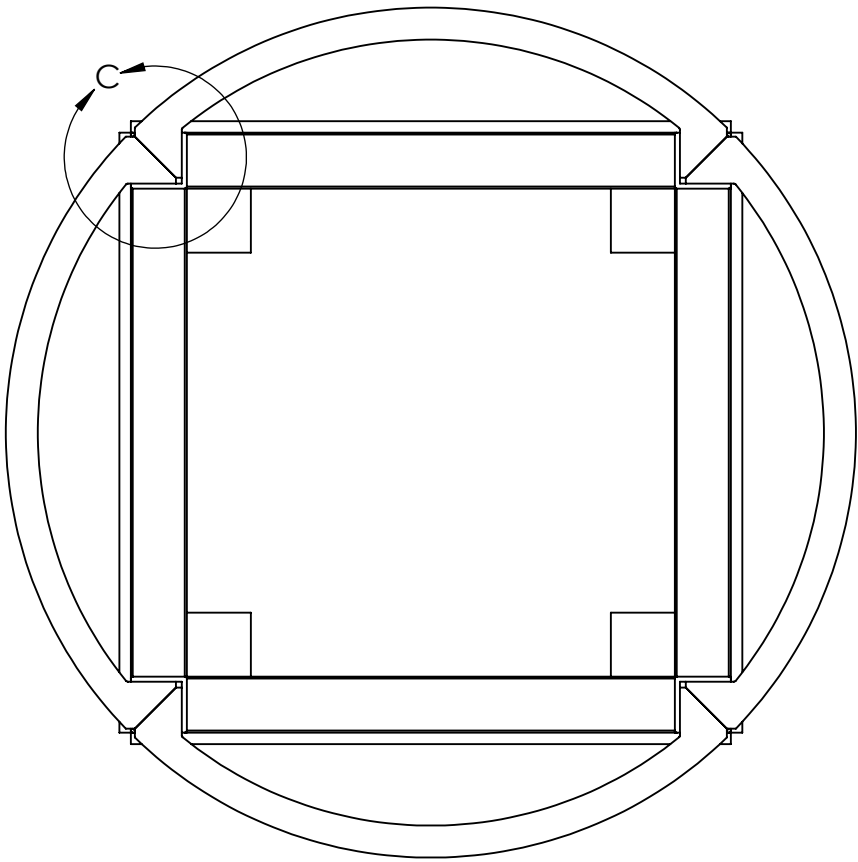


- Align 4x (3) to Step 1 , as shown.
- Attach (3) to (1) using 2" Long Screws. It is recommended to use 8x screws per (3) , 4x into each (1) .
- Attach (3) to the 2"x4" Lumber of (2) using 1.25" Long Screws. It is recommended to use 3x screws per (3) . Be careful to center the screw into the 2"x4" Lumber to avoid splitting the wood.



UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	 			
	DRAWN	KAMC	12/30/2021				
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL			TITLE: Hub - Simple Build - Upper Hub Goal Assembly			
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.						
	COMMENTS:			SIZE		DWG. NO.	REV
MATERIAL/FINISH:				C	TE-22030		
DO NOT SCALE DRAWING	REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:12		SHEET 3 OF 4	

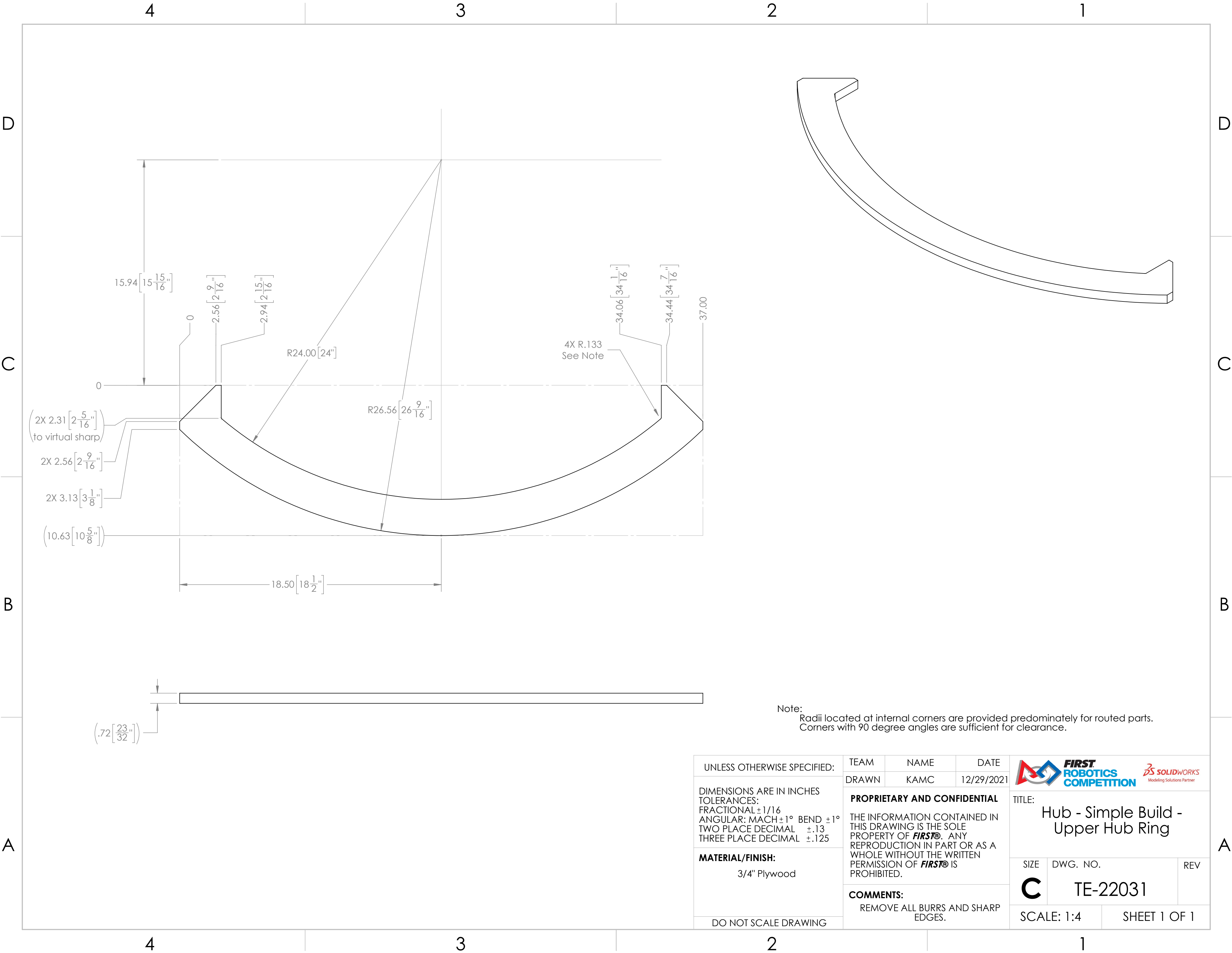


4X
DETAIL C
SCALE 1 : 3
Hidden Lines Shown





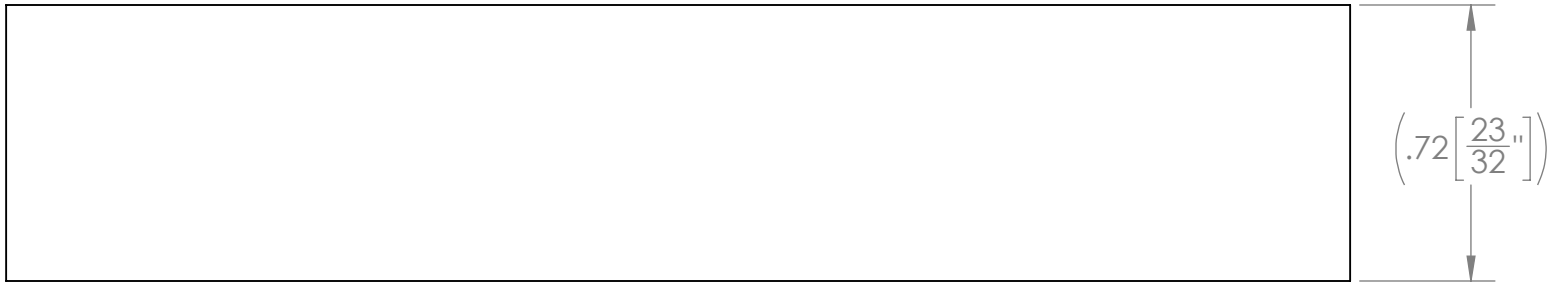
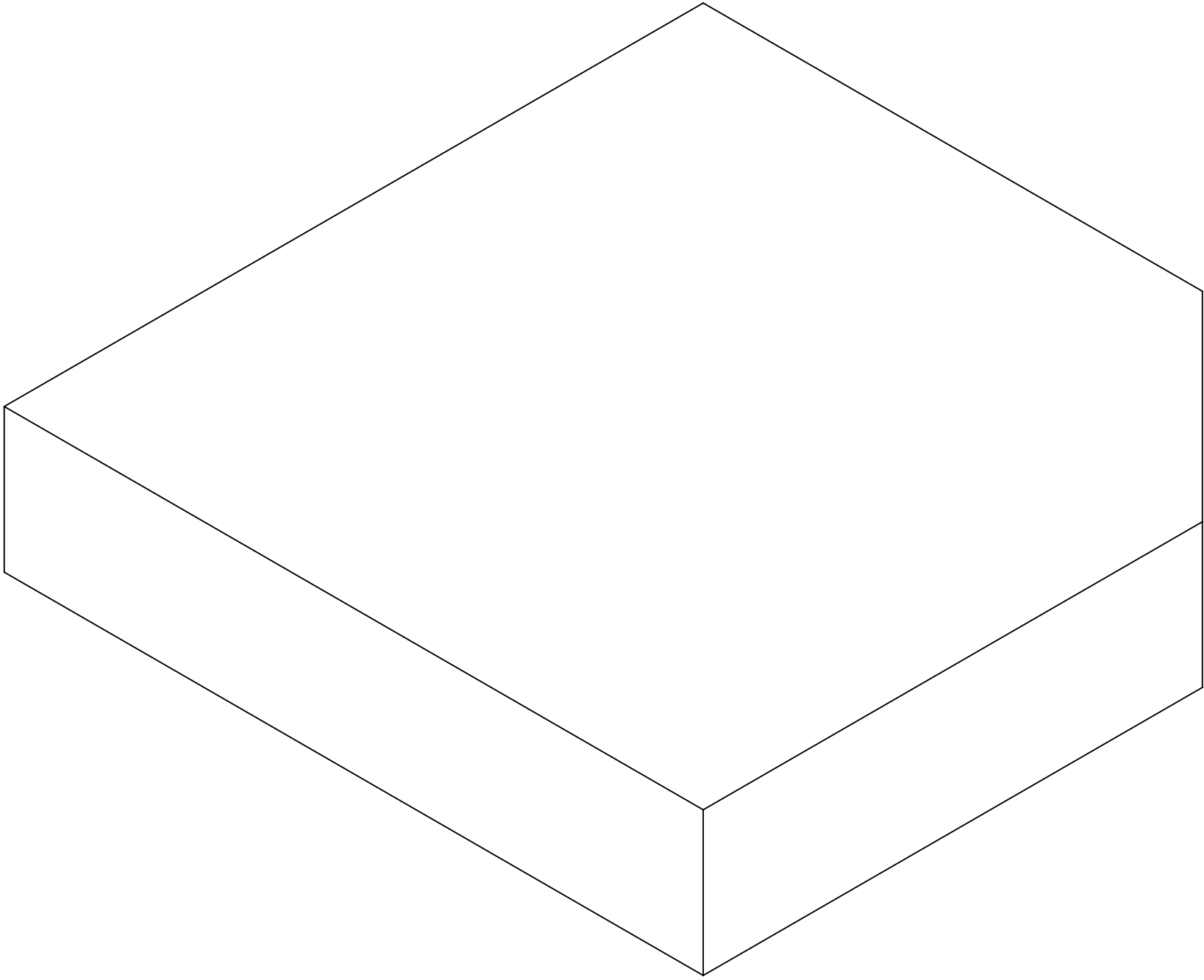
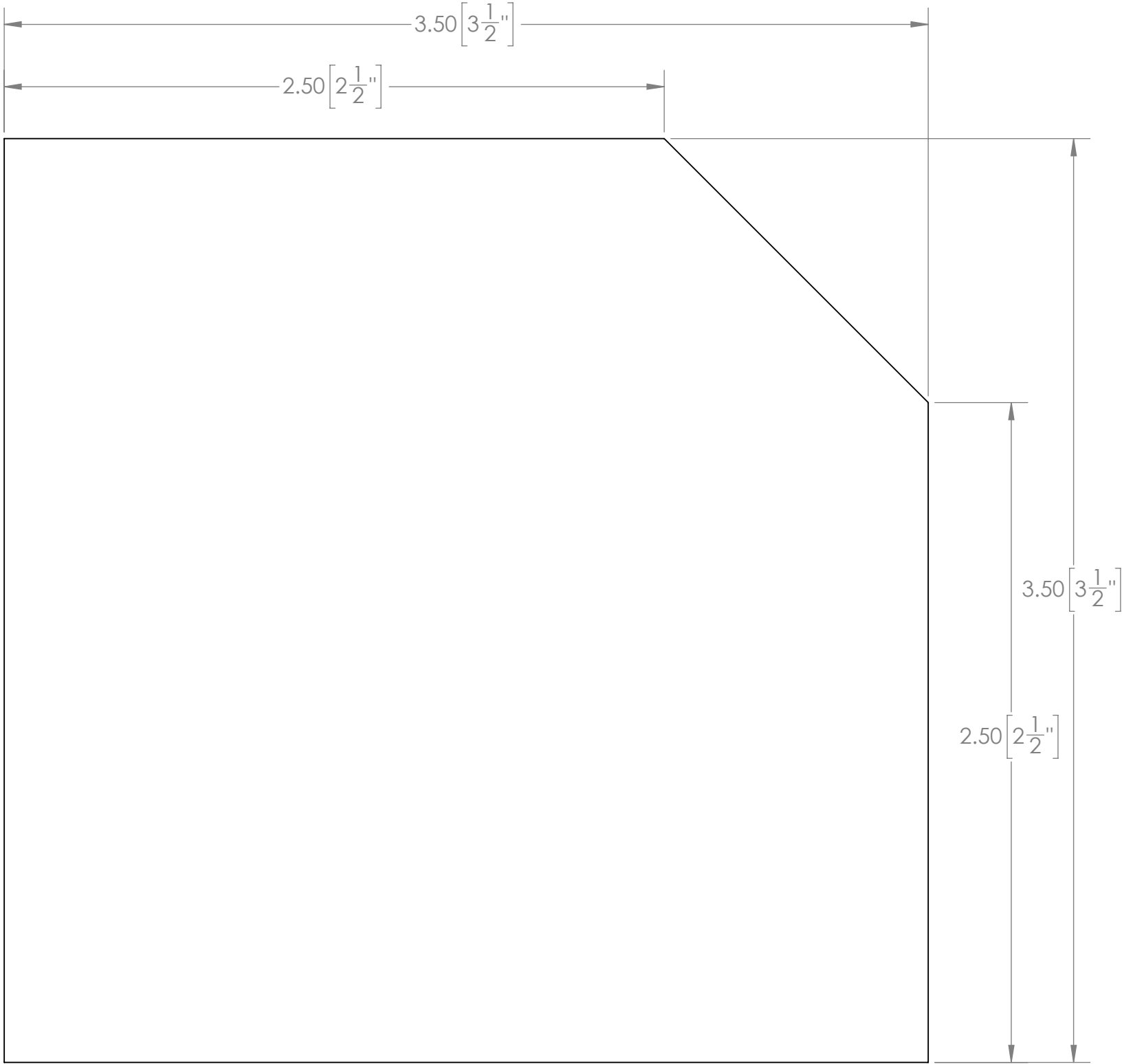
- Align **4** to Step 2, as shown. Note the orientation of **4** .
Note: Warping may be present on **1** . If this is the case, evenly split the difference from the dimensions provided in Detail C to center **4** on assembly.
- Connect using 3.5" Long Screws. It is recommended to use 4x screws into each **1** .



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	 	
	DRAWN	KAMC	12/30/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				TITLE: Hub - Simple Build - Upper Hub Goal Assembly
SIZE		DWG. NO.		REV	
C		TE-22030			
SCALE: 1:12			SHEET 4 OF 4		

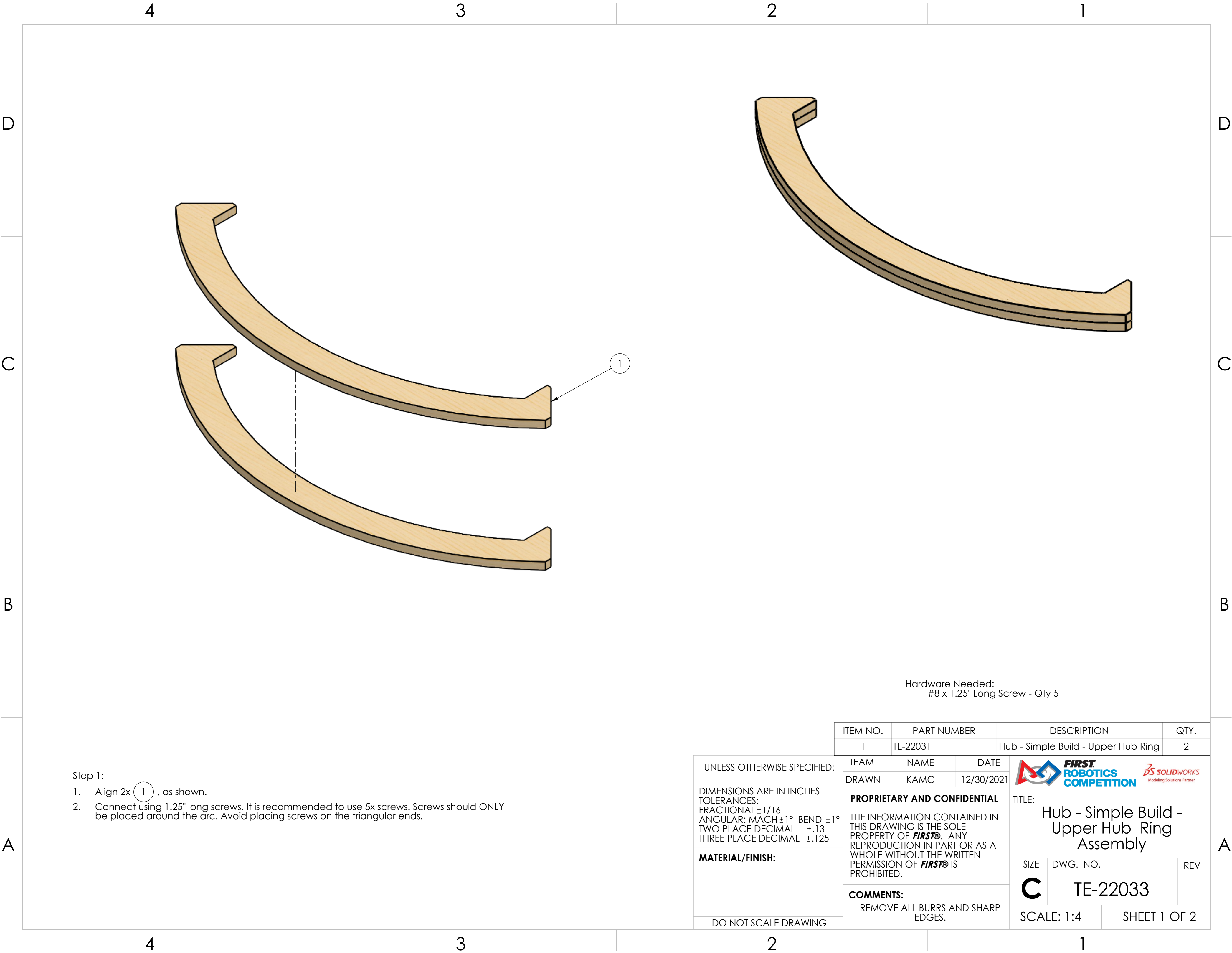


Note:
Radii located at internal corners are provided predominately for routed parts.
Corners with 90 degree angles are sufficient for clearance.

UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div></div>		
	DRAWN	KAMC	12/29/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			TITLE: Hub - Simple Build - Upper Hub Ring		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	TE-22031	
MATERIAL/FINISH: 3/4" Plywood	DO NOT SCALE DRAWING			SCALE: 1:4		SHEET 1 OF 1





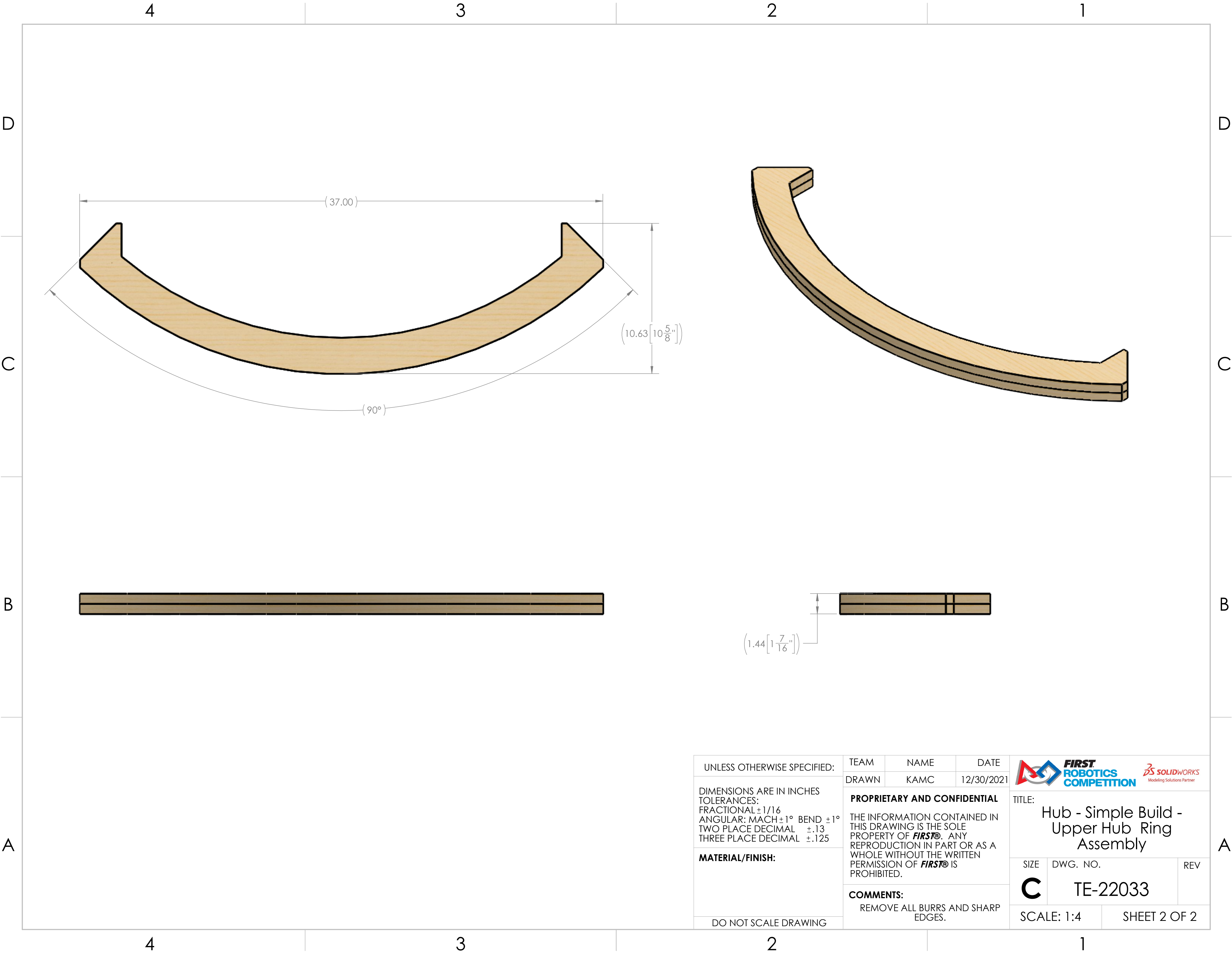
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	DRAWN	KAMC	12/29/2021	DWG. NO. TE-22032		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			REV		
SHEET 1 OF 1						





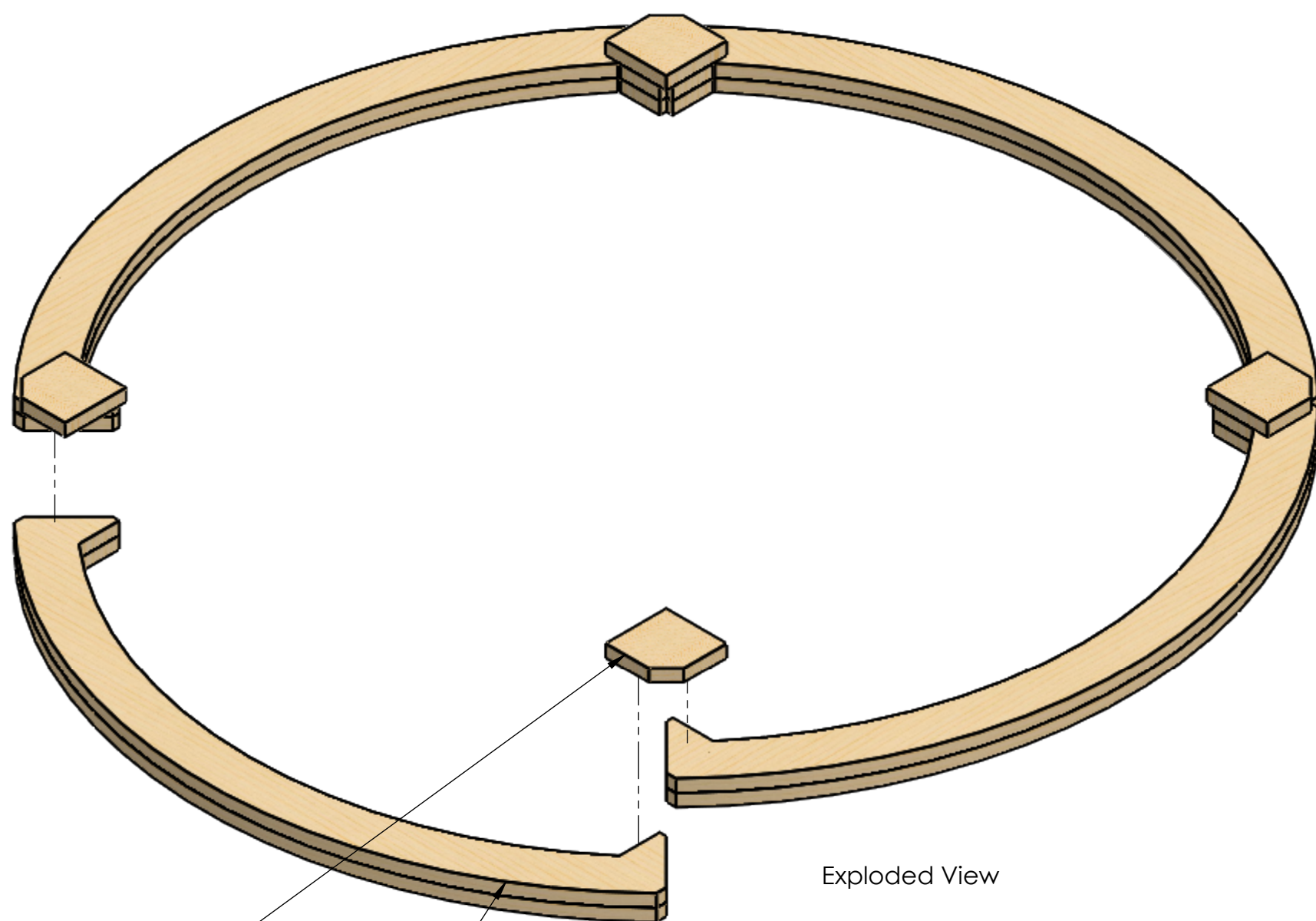
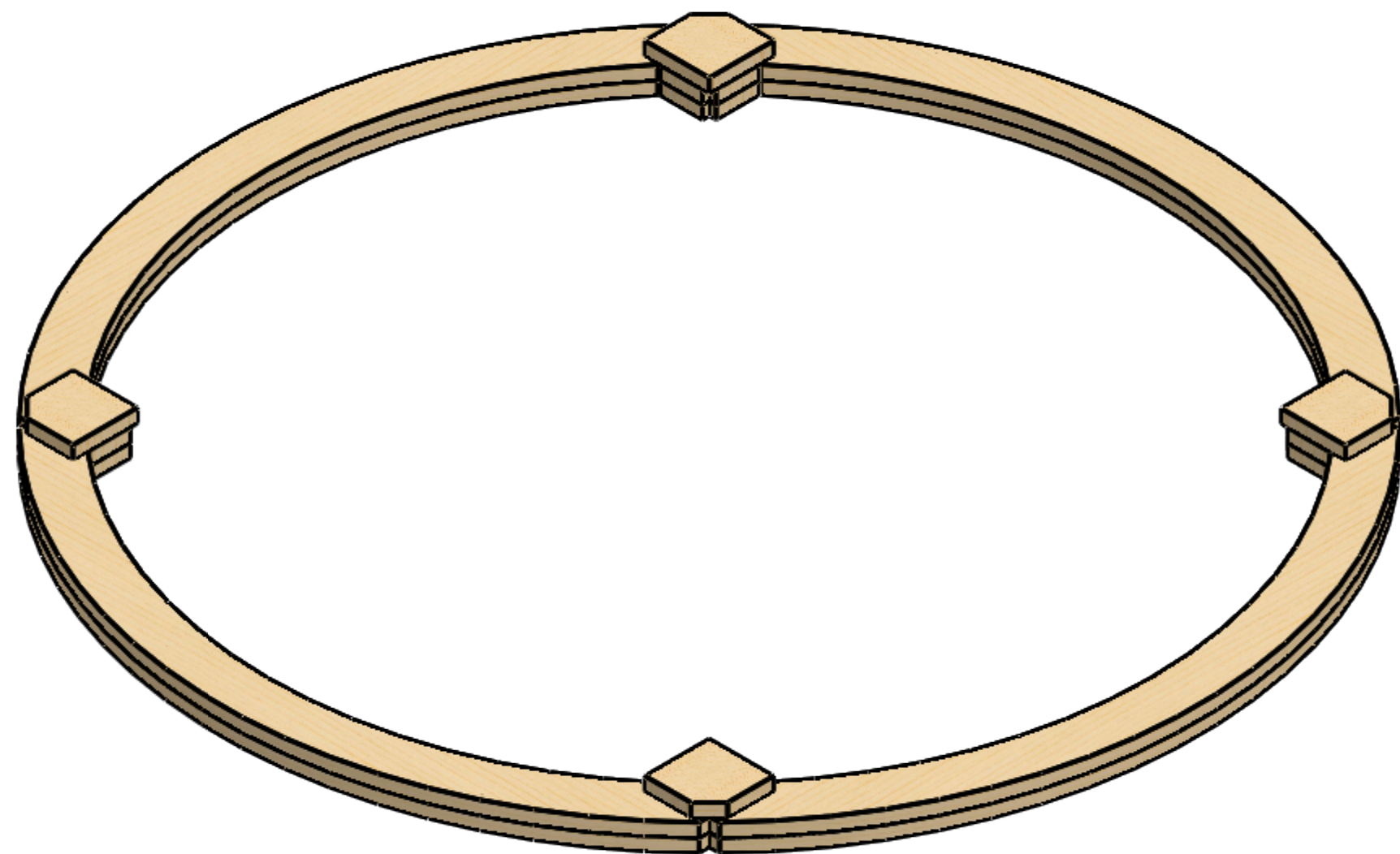
- Step 1:
- Align 2x  , as shown.
 - Connect using 1.25" long screws. It is recommended to use 5x screws. Screws should ONLY be placed around the arc. Avoid placing screws on the triangular ends.

Hardware Needed:
#8 x 1.25" Long Screw - Qty 5

	ITEM NO.		PART NUMBER		DESCRIPTION		QTY.	
	1		TE-22031		Hub - Simple Build - Upper Hub Ring		2	
UNLESS OTHERWISE SPECIFIED:			TEAM	NAME	DATE			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ± .13 THREE PLACE DECIMAL ± .125			DRAWN	KAMC	12/30/2021			
			PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
			COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
MATERIAL/FINISH:			 					
			TITLE: Hub - Simple Build - Upper Hub Ring Assembly					
DO NOT SCALE DRAWING			SIZE	DWG. NO.			REV	
			C	TE-22033				
			SCALE: 1:4		SHEET 1 OF 2			





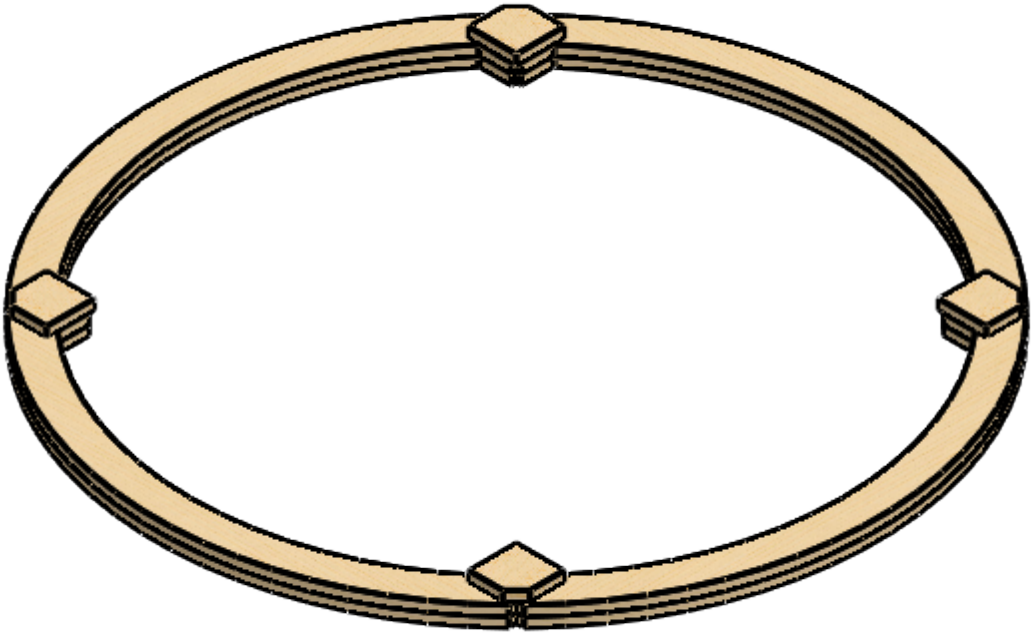
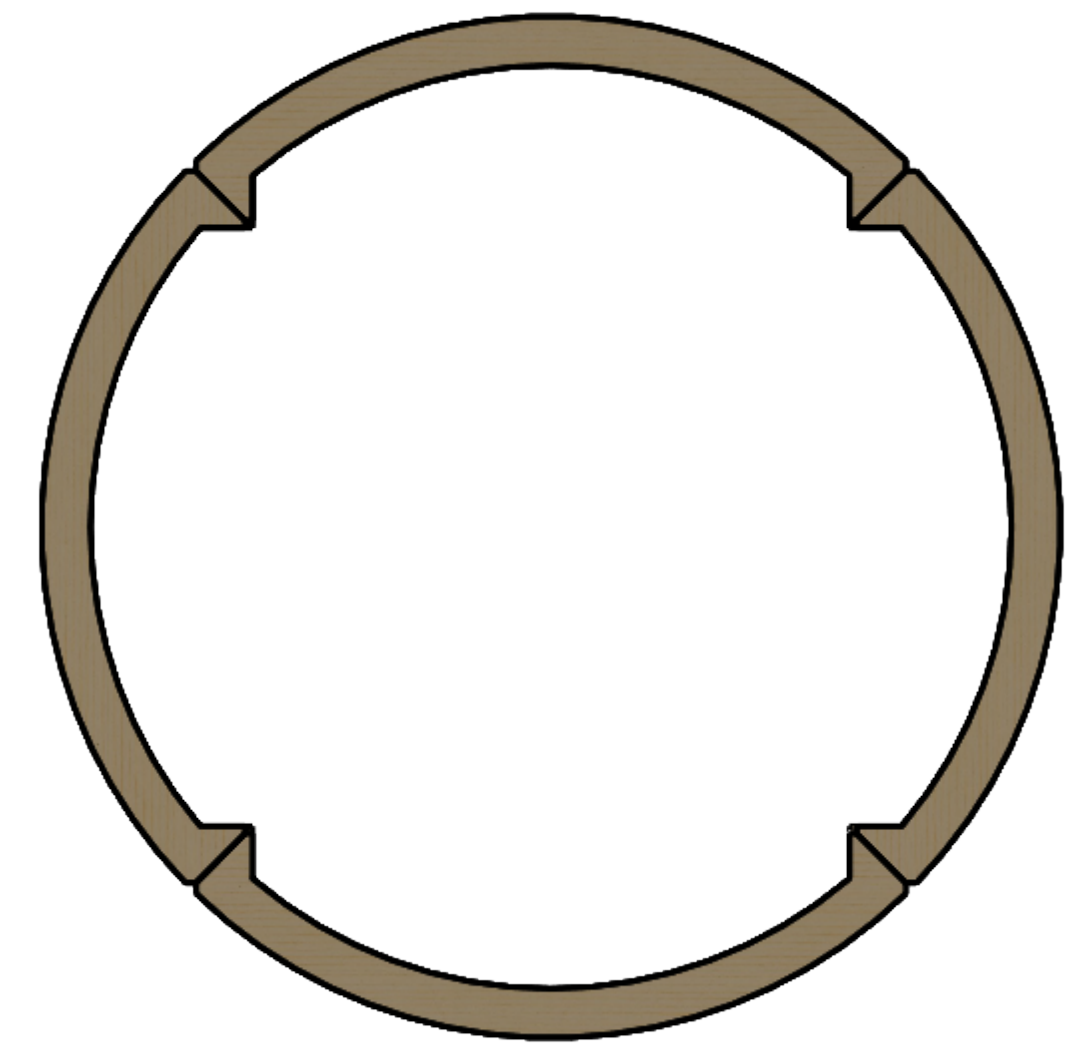
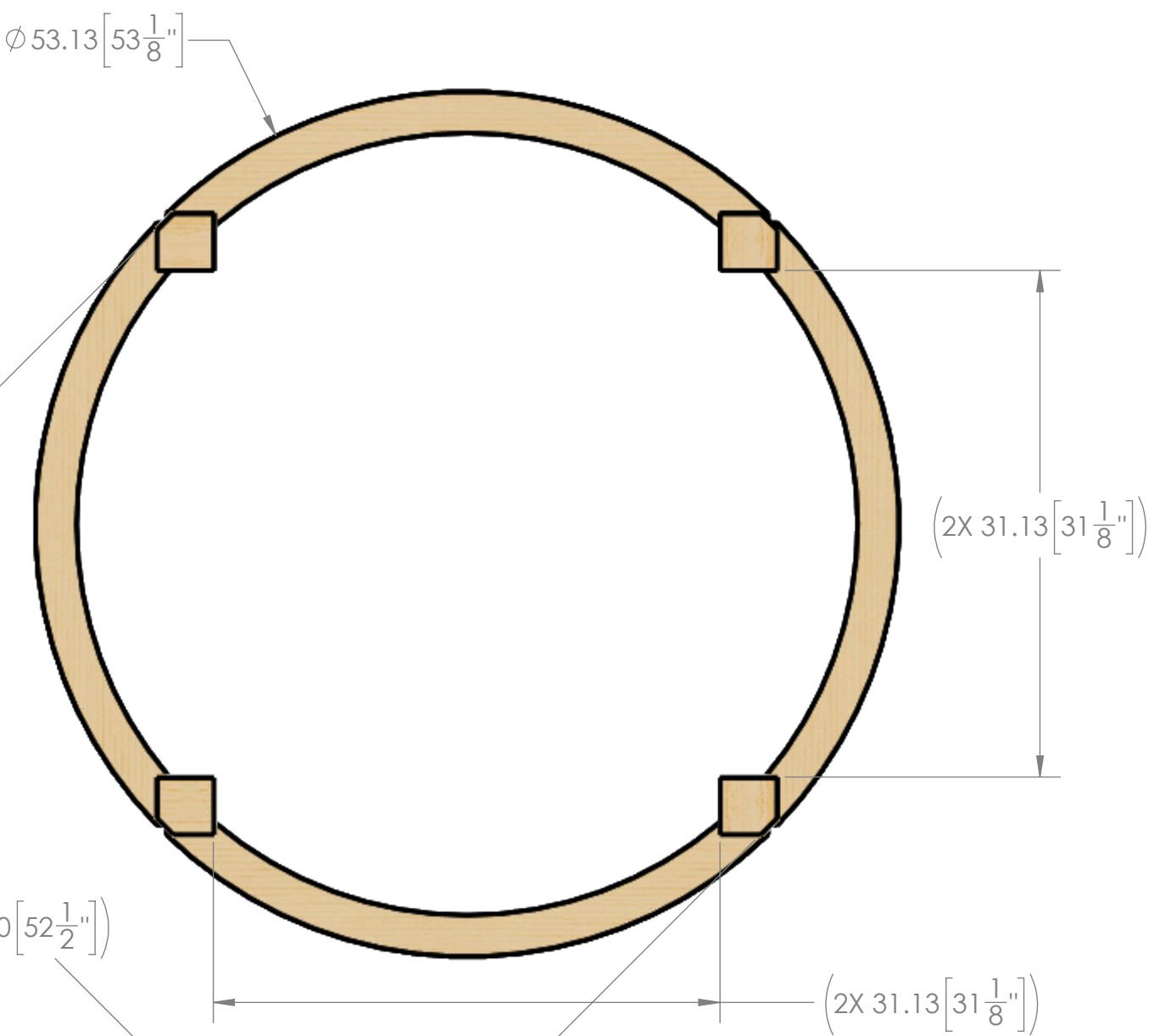
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	DRAWN	KAMC	12/30/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
			C	TE-22033		
			SCALE: 1:4		SHEET 2 OF 2	





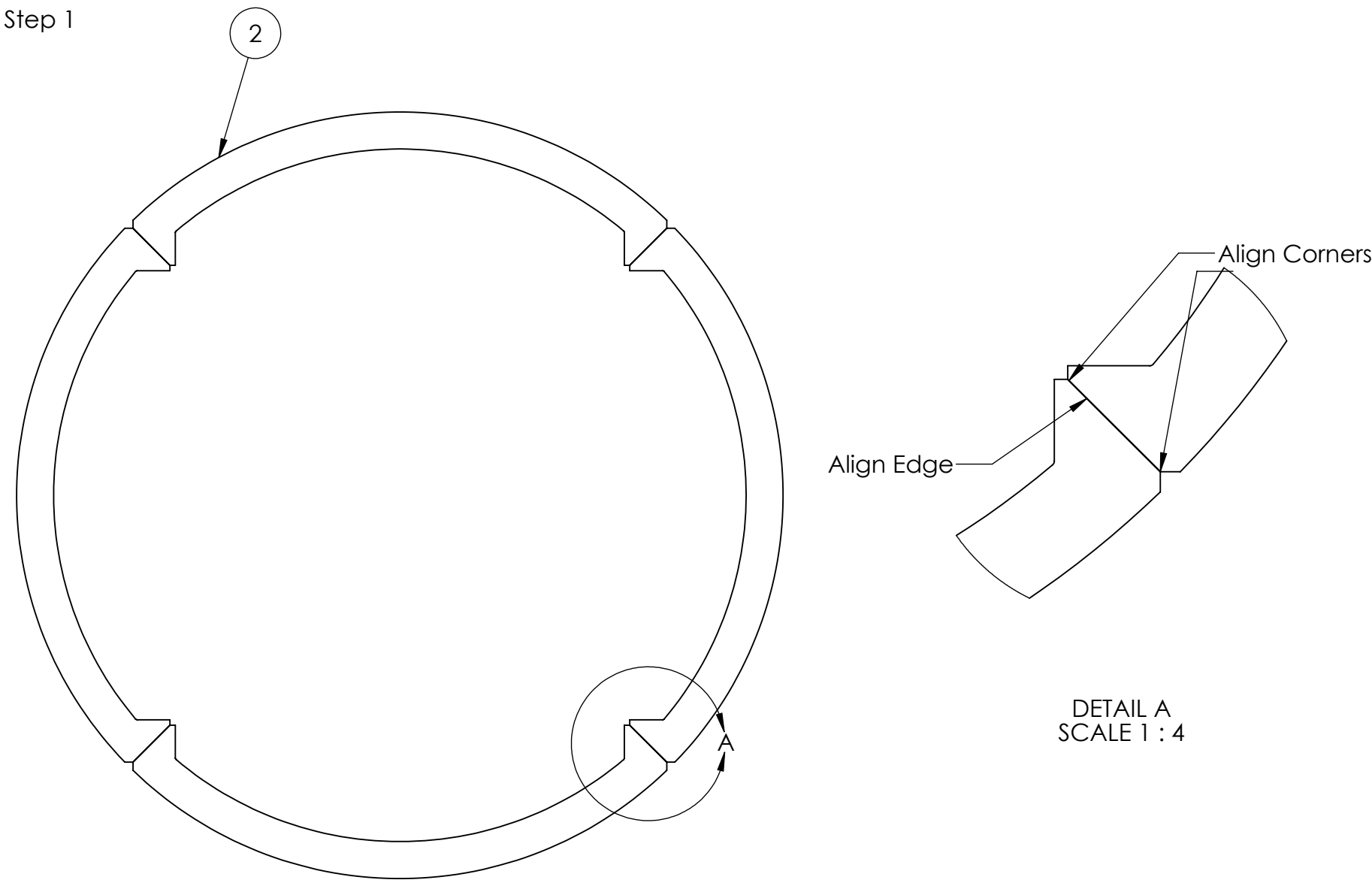
Hardware Needed:
#8 x 2" Long Screw - Qty 8

ITEM NO.	PART NUMBER	DESCRIPTION	
1	TE-22032	Hub - Simple Build - Upper Hub Ring Connection Plate	4
2	TE-22033	Hub - Simple Build - Upper Hub Ring Assembly	4

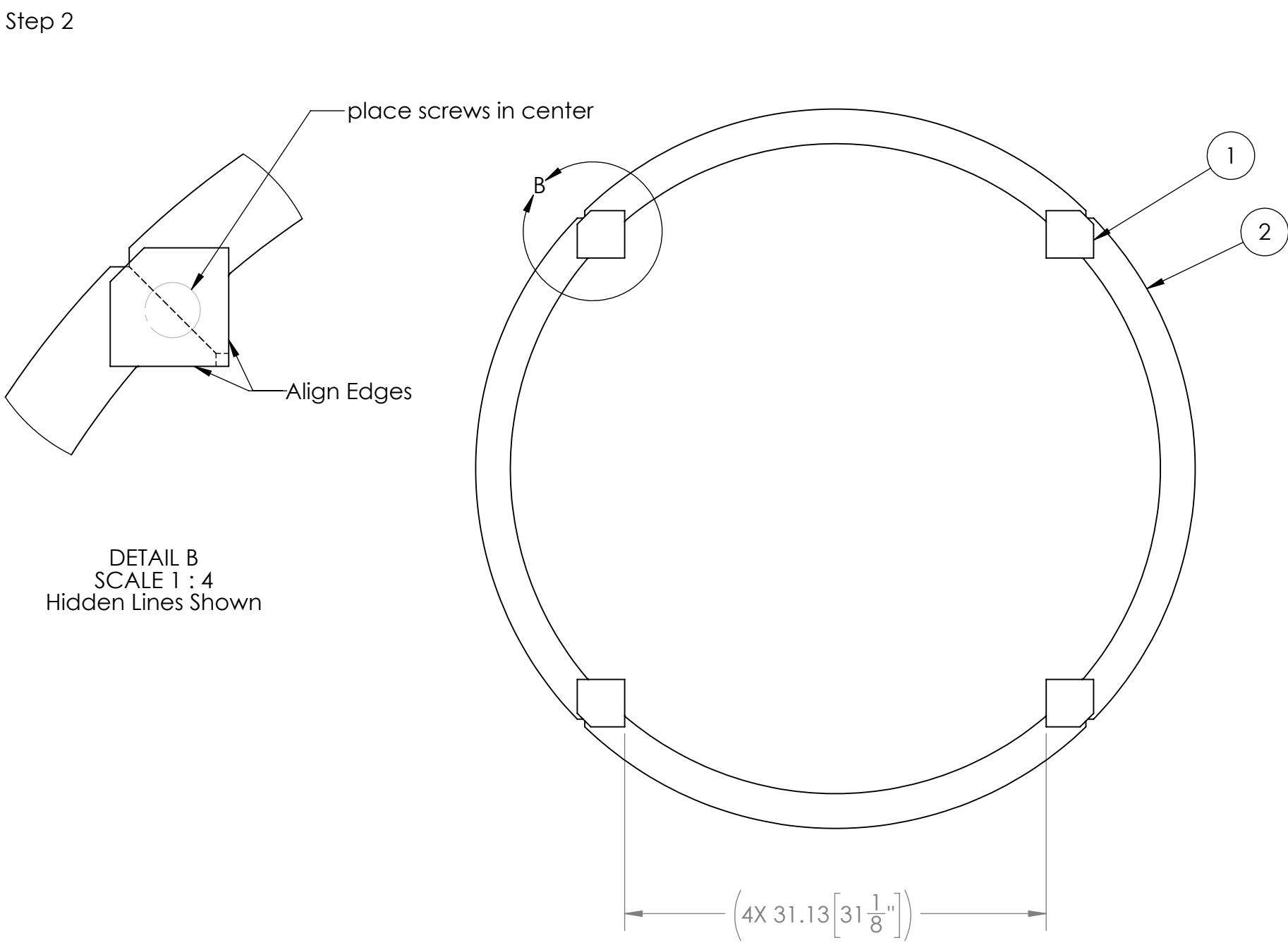
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div> <div>TITLE: Hub - Simple Build - Upper Hub Full Ring Assembly</div> <div><div>SIZE</div><div>DWG. NO.</div><div>REV</div></div> <div><div>C</div><div>TE-22034</div></div> <div>SCALE: 1:6</div> <div>SHEET 1 OF 3</div>		
	DRAWN	KAMC	12/30/2021			
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					





UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	 		
	DRAWN	KAMC	12/30/2021			
	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED.			Hub - Simple Build - Upper Hub Full Ring Assembly		
COMMENTS:		REMOVE ALL BURRS AND SHARP EDGES.		SIZE	DWG. NO.	REV
				C	TE-22034	
				SCALE: 1:10		SHEET 2 OF 3

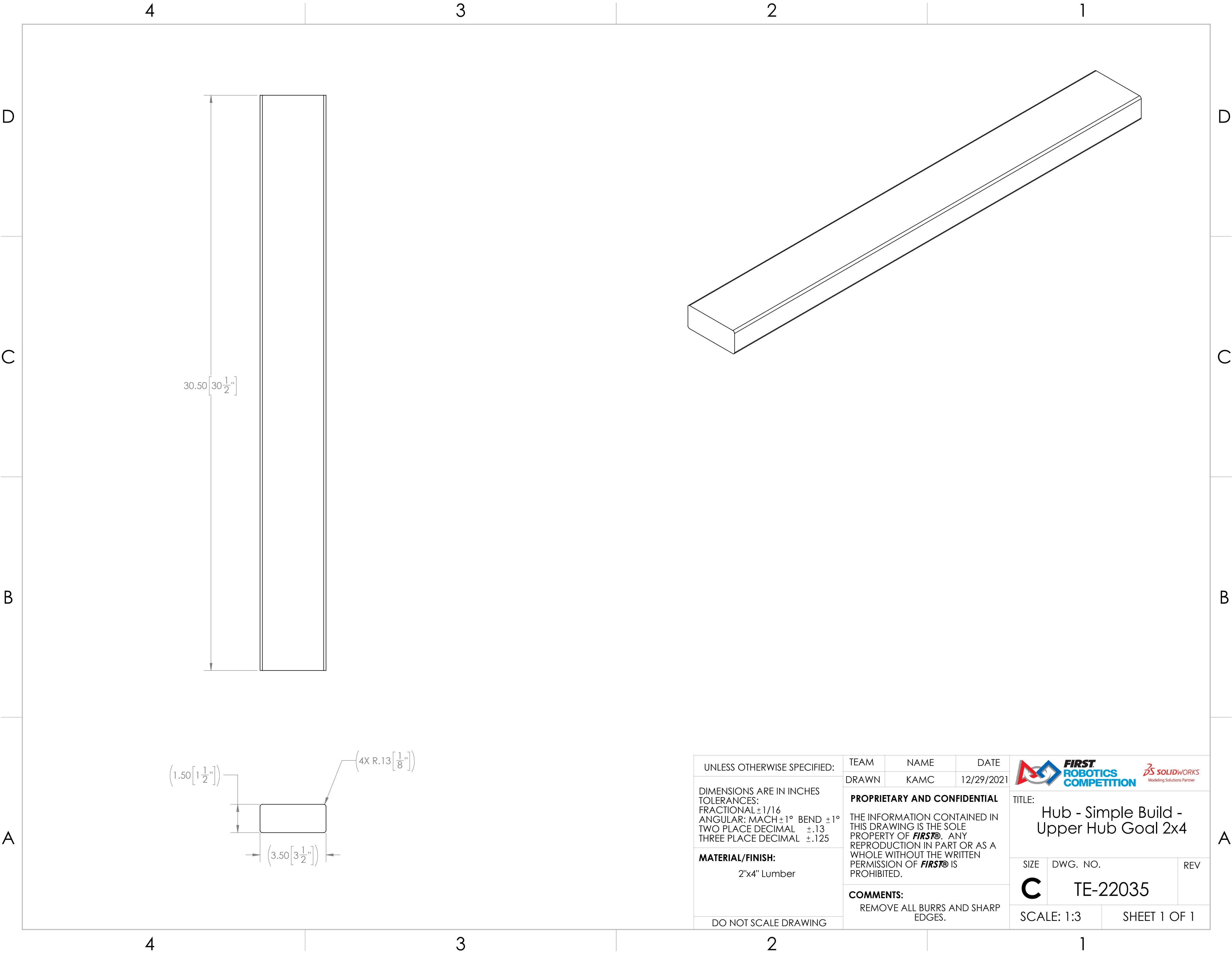




1. Align 4x 2 , as shown. Attachment will happen in next step.

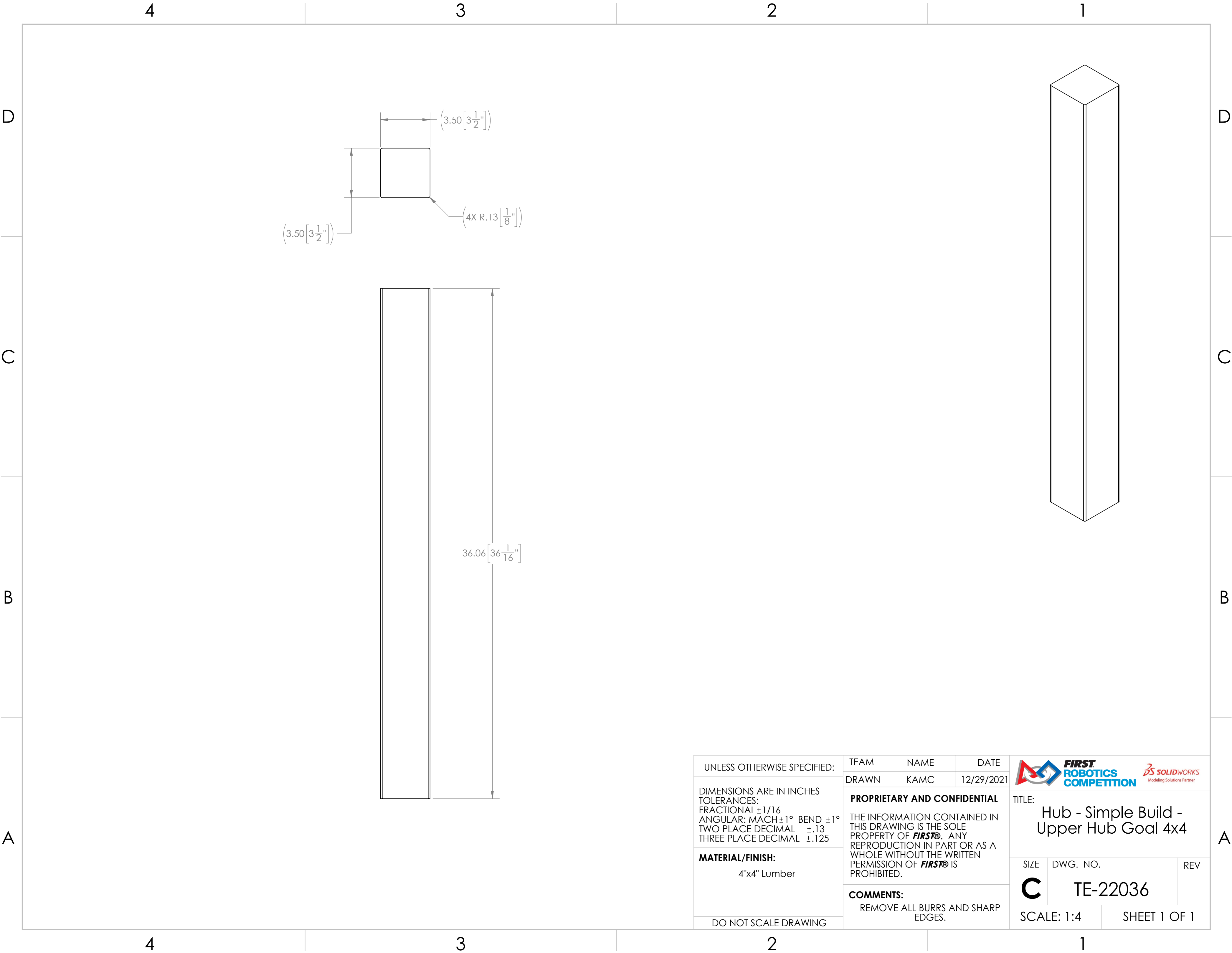




1. Align 4x 1 onto the ring formed in Step 1 , as shown.
2. Connect using 2" long screws. It is recommended to use only 2x screws towards the center of 1 , one into each 2 . This will ensure there is room for connection when added to TE-22030.

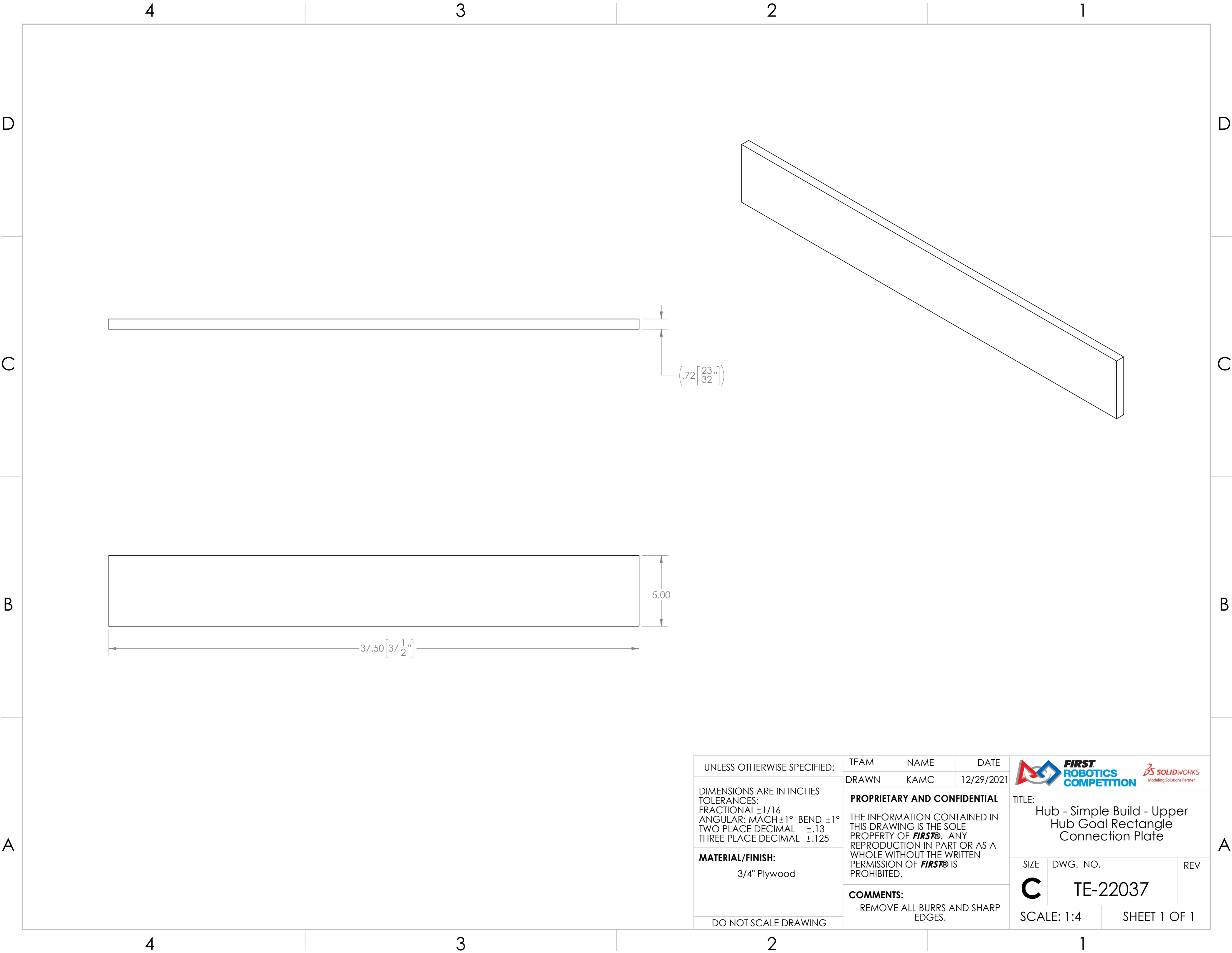
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	DRAWN	KAMC	12/30/2021			
	PROPRIETARY AND CONFIDENTIAL					
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	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					





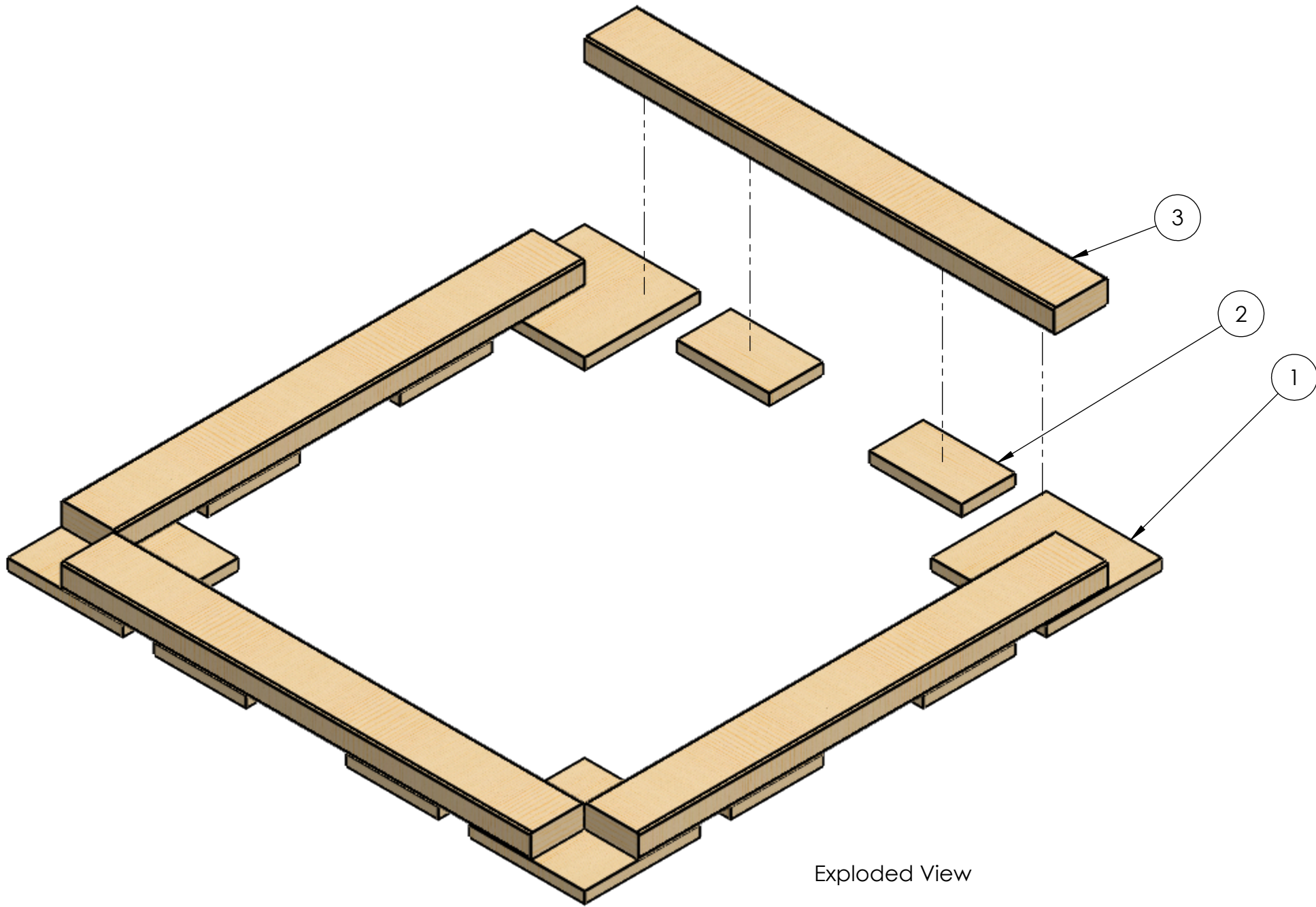
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div></div>			
	DRAWN	KAMC	12/29/2021				
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL			TITLE: Hub - Simple Build - Upper Hub Goal 2x4			
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.						
	MATERIAL/FINISH: 2"x4" Lumber			SIZE C			DWG. NO. TE-22035
DO NOT SCALE DRAWING	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SCALE: 1:3		SHEET 1 OF 1	



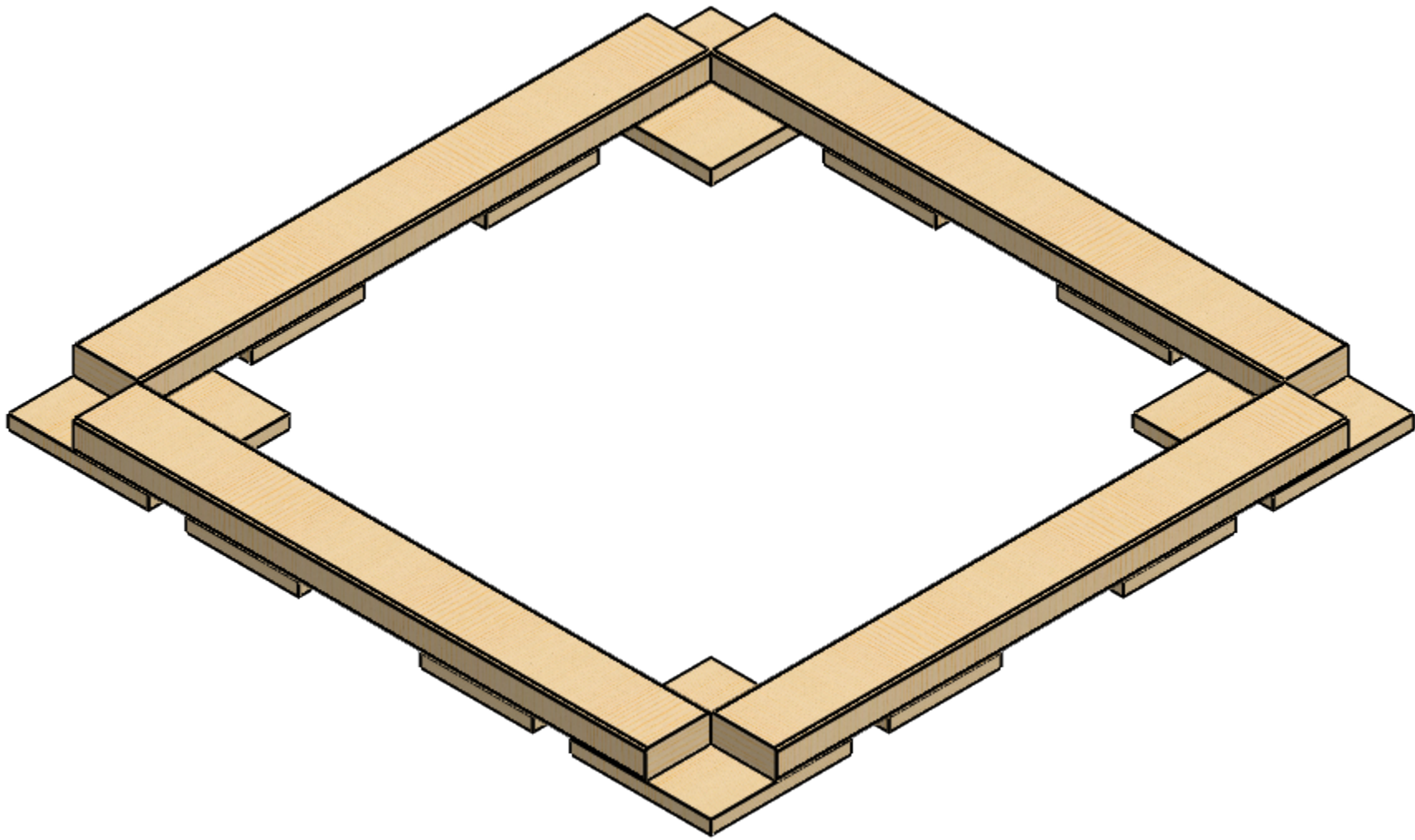
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: 4"x4" Lumber DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div> <div>TITLE: Hub - Simple Build - Upper Hub Goal 4x4</div>	
	DRAWN	KAMC	12/29/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				
SIZE		DWG. NO.		REV	
C		TE-22036			
SCALE: 1:4			SHEET 1 OF 1		



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH: 3/4" Plywood DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div>		
	DRAWN	KAMC	12/29/2021			
	PROPRIETARY AND CONFIDENTIAL			TITLE: Hub - Simple Build - Upper Hub Goal Rectangle Connection Plate		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE C	DWG. NO. TE-22037	REV
SCALE: 1:4		SHEET 1 OF 1				



Exploded View



Hardware Needed:
#8 x 2" Long Screw - Qty 58

ITEM NO.	PART NUMBER	DESCRIPTION	
1	TE-22005	Hub - Simple Build - Upper Hub Square Connection Plate	4
2	TE-22006	Hub - Simple Build - Upper Hub 2x4 Connection Plate	8
3	TE-22035	Hub - Simple Build - Upper Hub Goal 2x4	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 $\pm .13$
THREE PLACE DECIMAL $\pm .125$

MATERIAL/FINISH:

DO NOT SCALE DRAWING

TEAM
DRAWN



NAME
KAMC

DATE
12/30/2021

PROPRIETARY AND CONFIDENTIAL

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

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
Hub - Simple Build - Upper Hub Goal Bottom Assembly

SIZE
C

DWG. NO.
TE-22038

REV

SCALE: 1:6

SHEET 1 OF 3

4

3

2

1

D

D

C

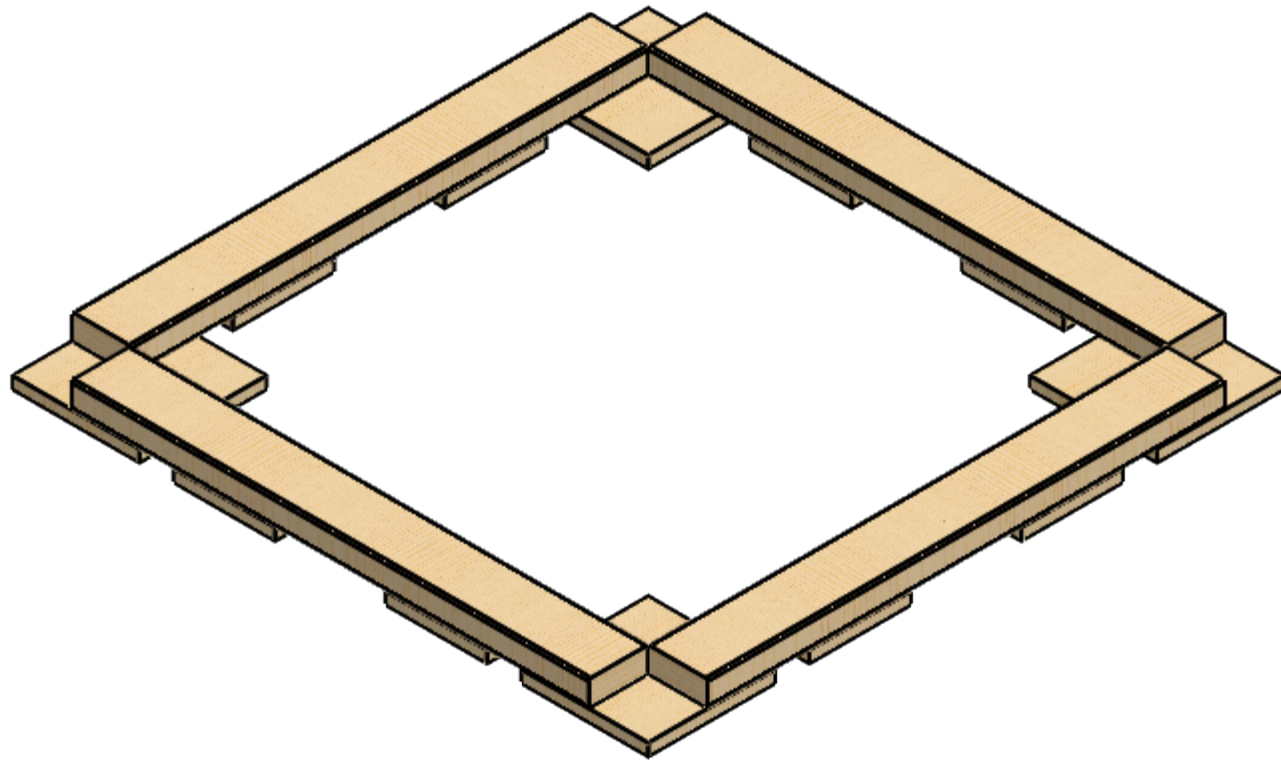
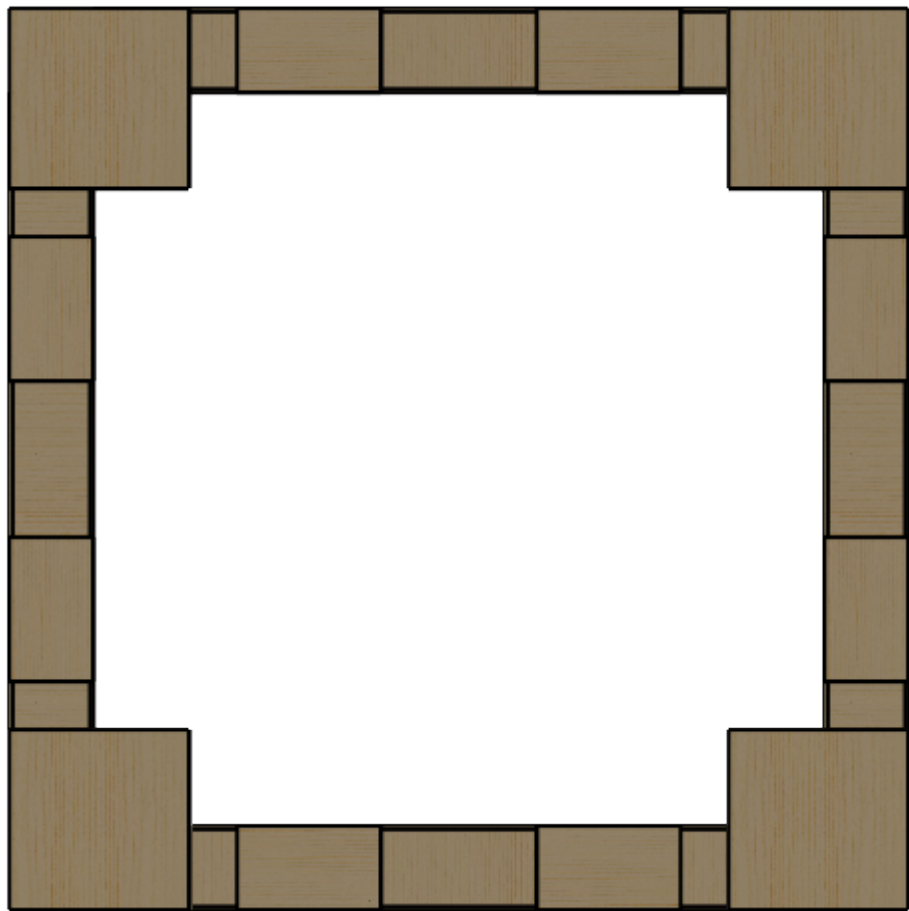
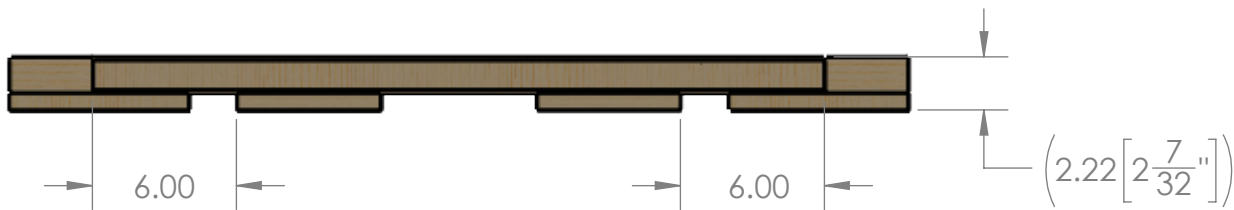
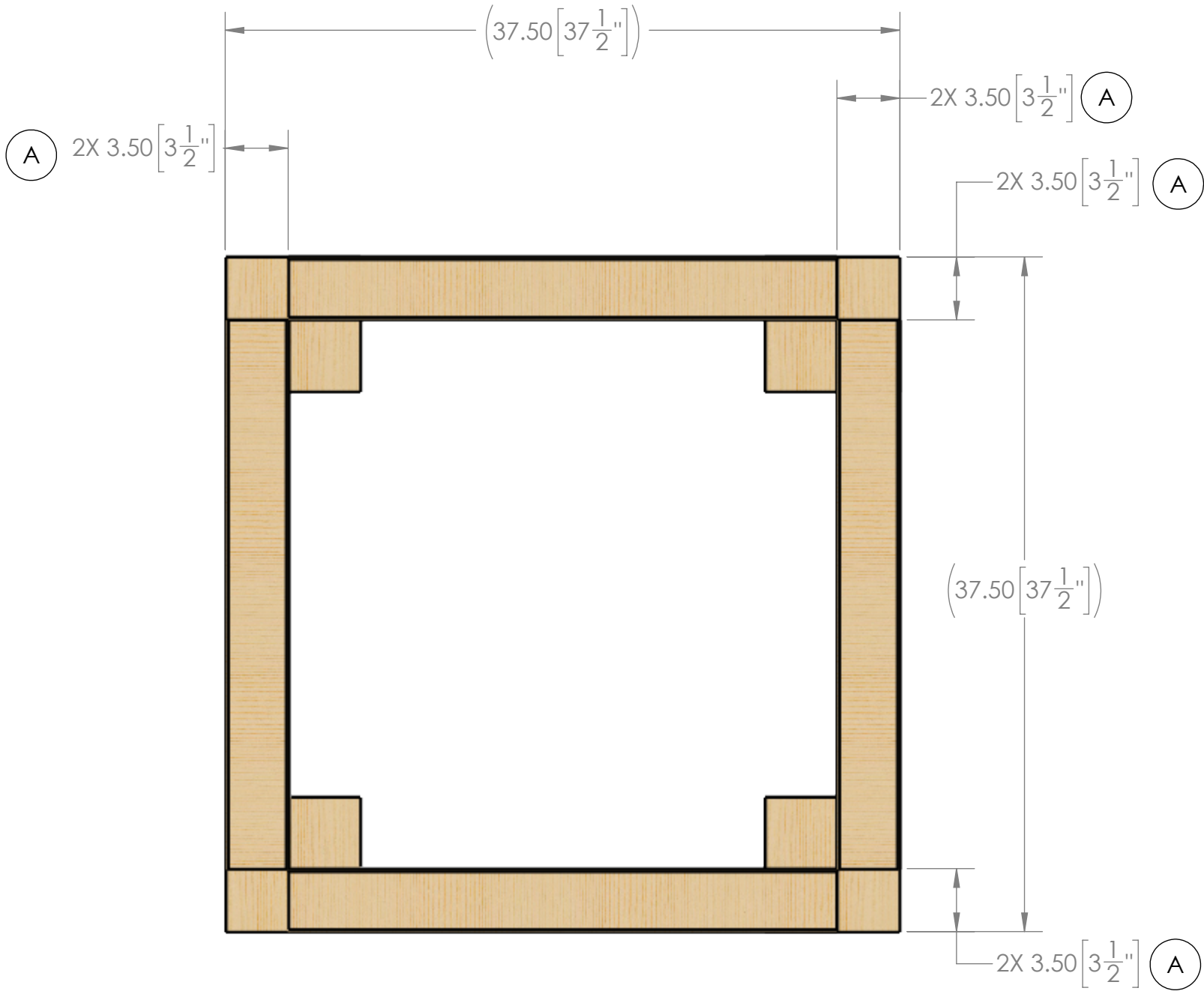
C

B

B



A

A

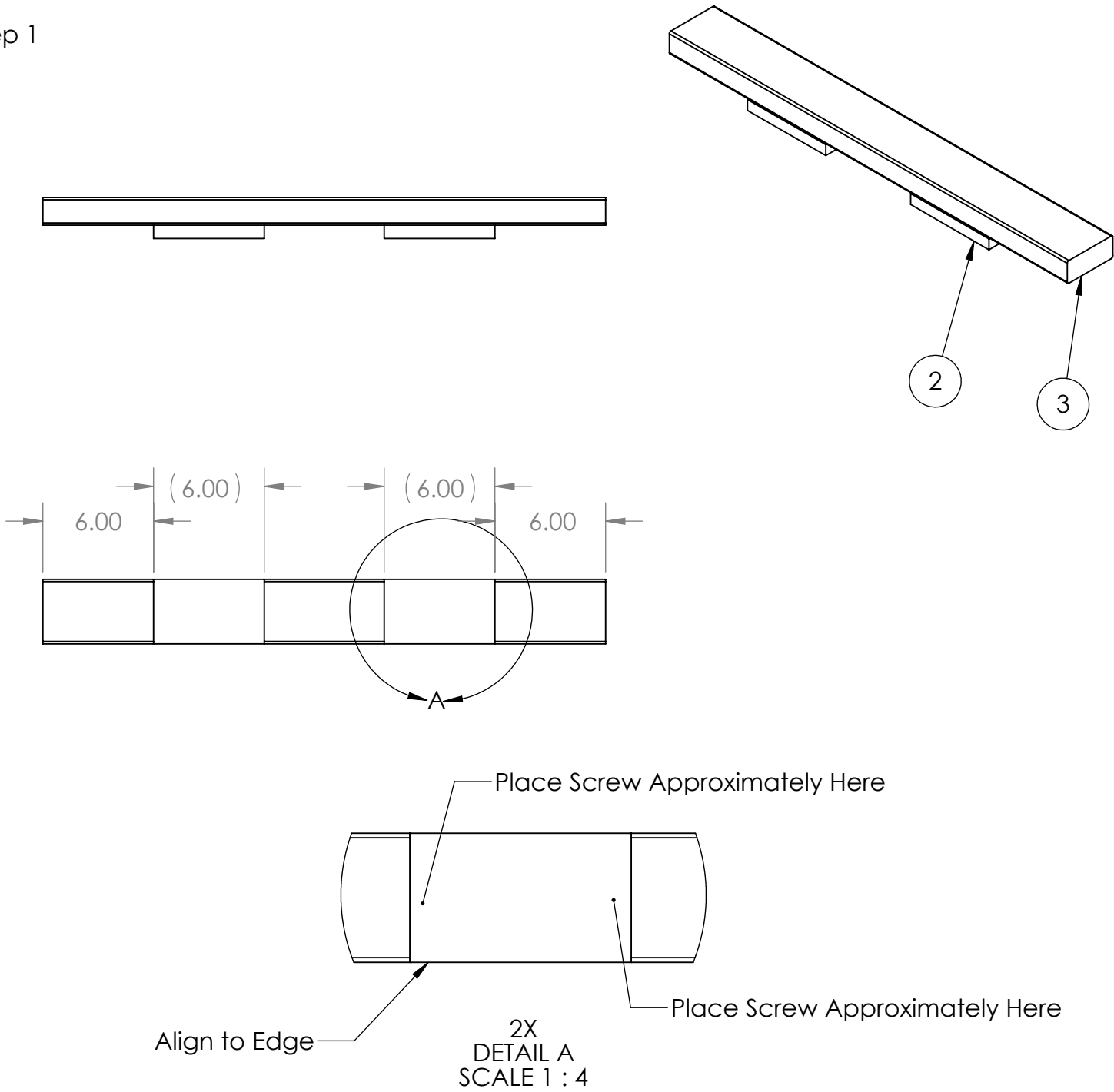


Note:

Dimensions with (A) indicate spacing for 4"x4" lumber from TE-22036 (or TE-22036-AM if you are connecting to AndyMark's Upper Hub Vision Ring AM-4672). It is recommended to measure the cross section of TE-22036 (or TE-22036-AM) and modify these dimensions as needed.

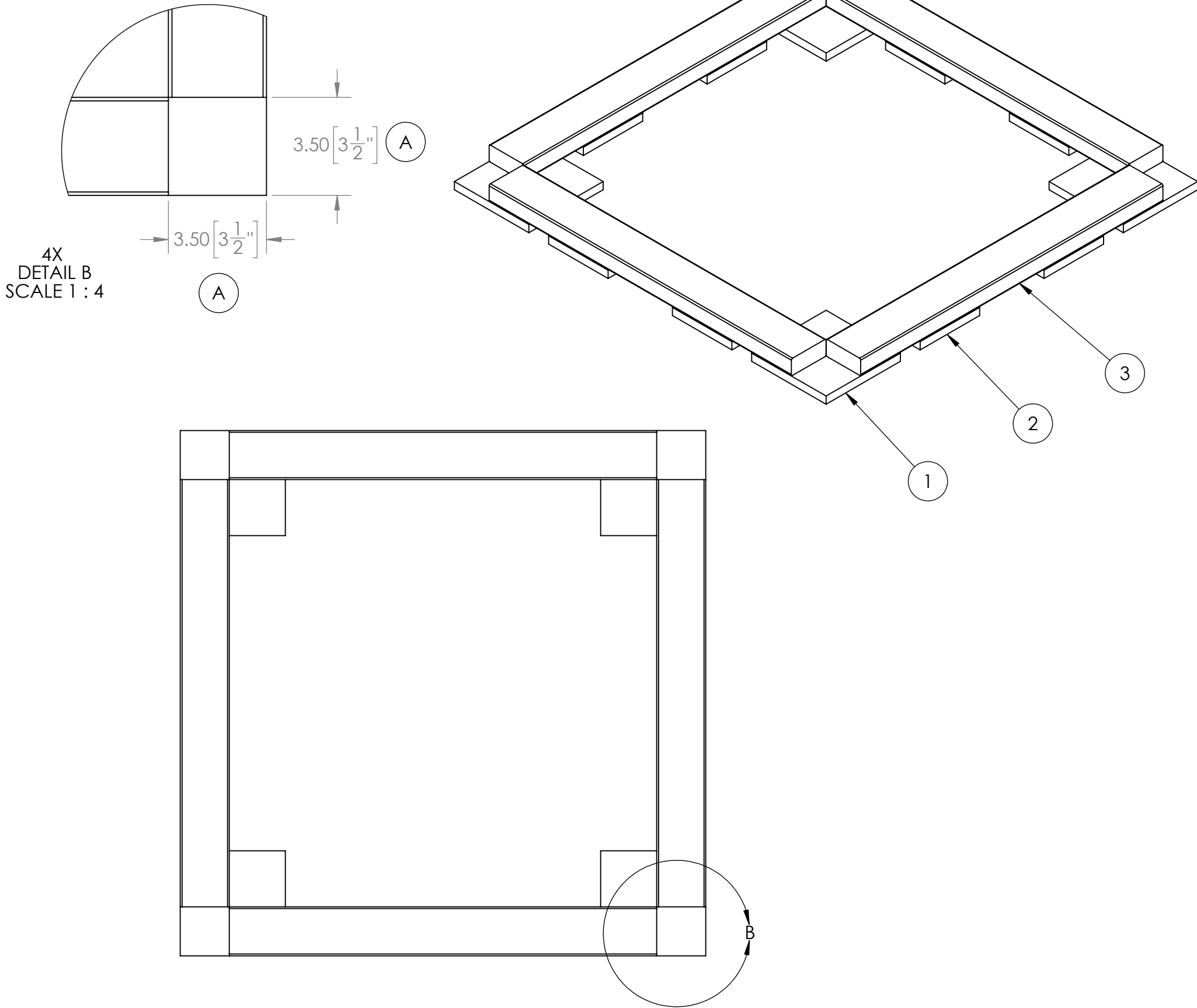
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div> <div>TITLE: Hub - Simple Build - Upper Hub Goal Bottom Assembly</div> <div><div>SIZE</div><div>C</div><div>DWG. NO.</div><div>TE-22038</div><div>REV</div></div> <div>SCALE: 1:8</div> <div>SHEET 2 OF 3</div>
	DRAWN	KAMC	12/30/2021	
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			

Step 1





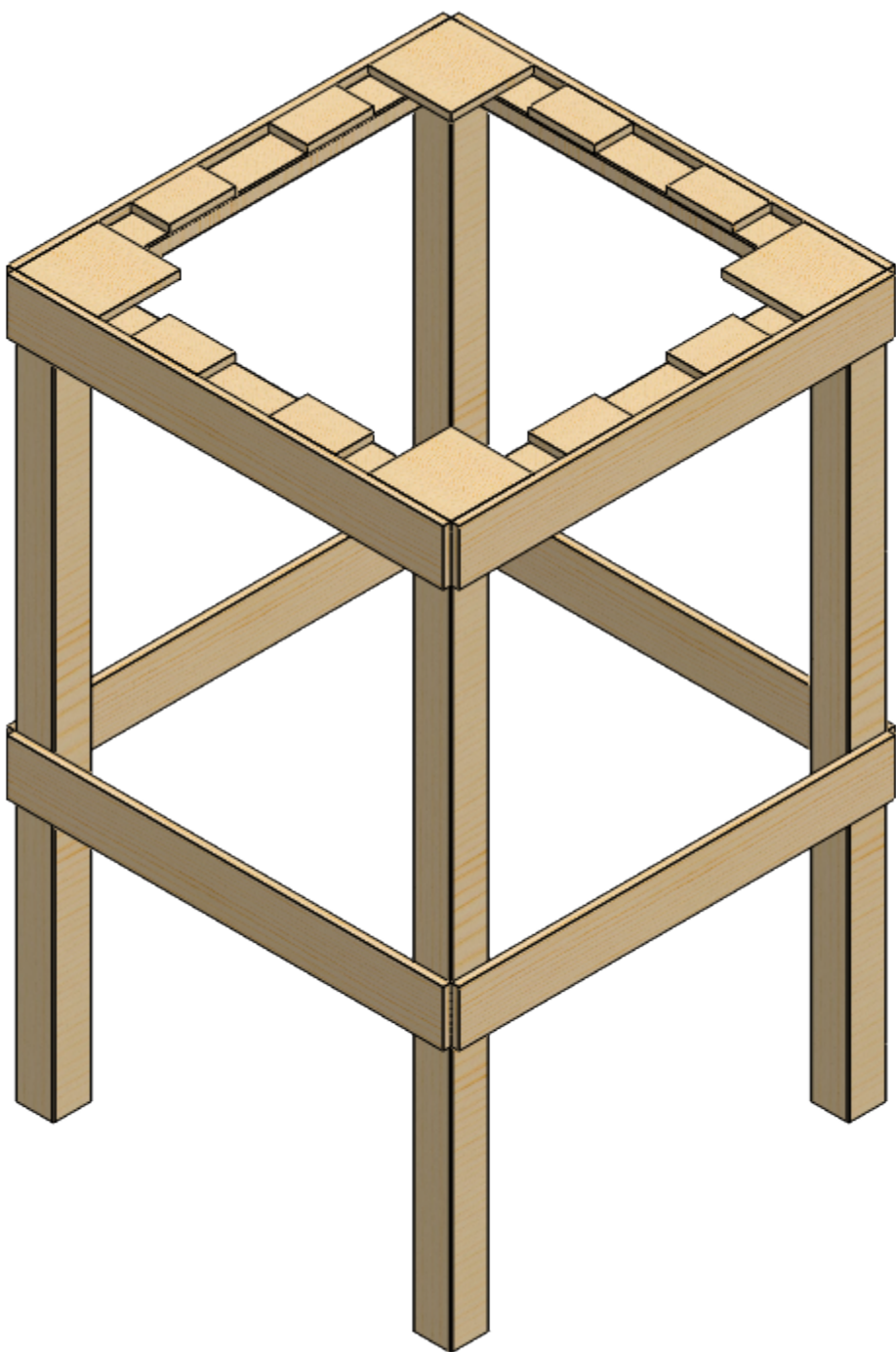
- Align 2x (2) on (3) , as shown.
- Connect using 2" long screws. It is recommended to use 2x screws per (2) and locate them as shown above. Keep center of (2) clear of screws.
- Repeat until you have a total of 4x sub-assemblies.

Step 2





- Align 4x (1) to the 4x Step 1 assemblies, as shown.
Dimensions with (A) indicate spacing for 4"x4" lumber from TE-22036 (or TE-22036-AM if you are connecting to AndyMark's Upper Hub Vision Ring AM-4672). It is recommended to measure the cross section of TE-22036 (or TE-22036-AM) and modify these dimensions as needed.
- Connect using 2" long screws. It is recommended to use 8x screws per (3) , 4x into each end.

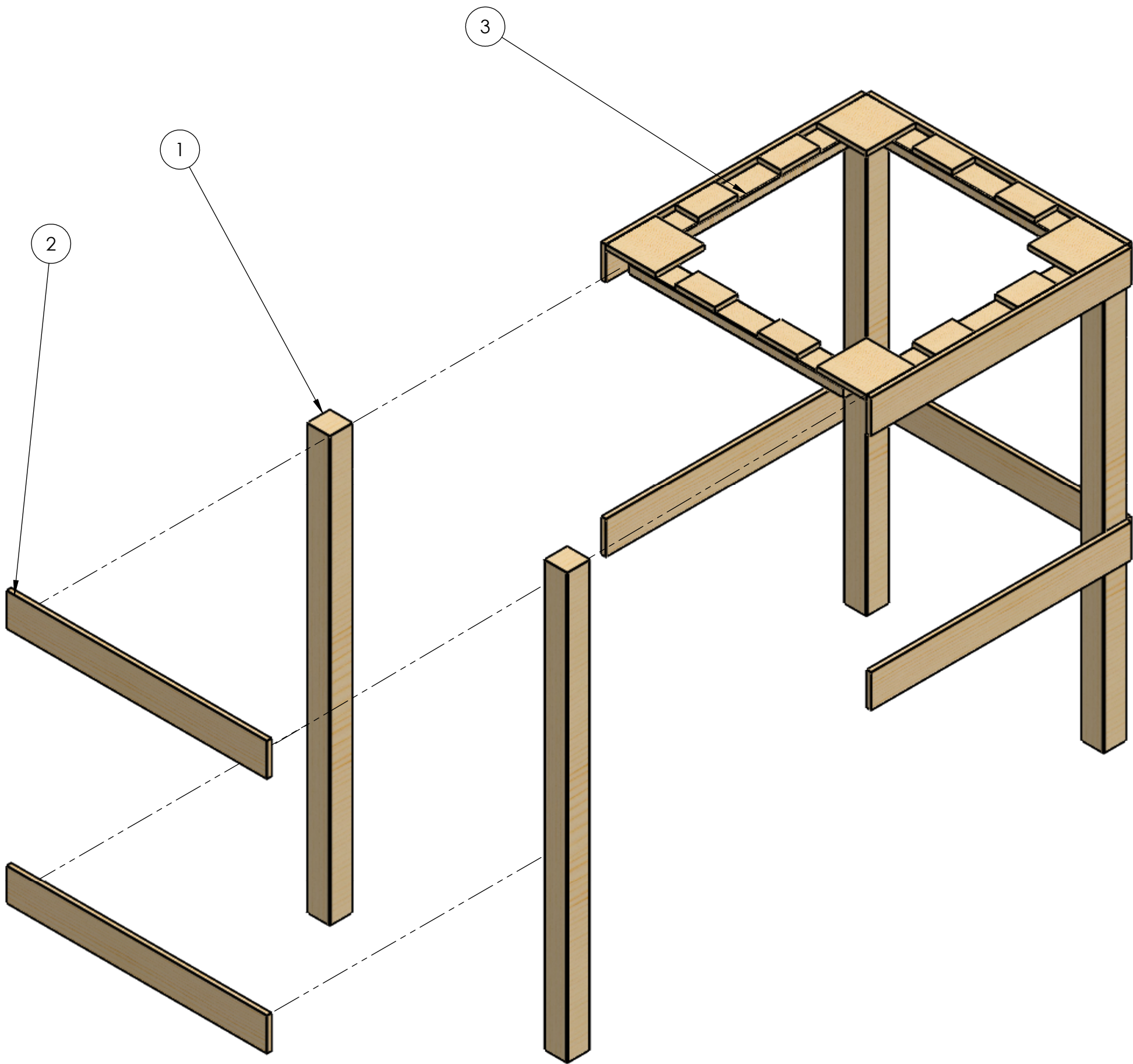
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	 	
	DRAWN	KAMC	12/30/2021		
	PROPRIETARY AND CONFIDENTIAL			TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Hub - Simple Build - Upper Hub Goal Bottom Assembly	
COMMENTS:		REMOVE ALL BURRS AND SHARP EDGES.		SIZE	DWG. NO.
				C	TE-22038
				SCALE: 1:8	SHEET 3 OF 3



Hardware Needed:
#8 x 1.25" Long Screw - Qty 12
#8 x 2" Long Screw - Qty 80

ITEM NO.	PART NUMBER	DESCRIPTION	
1	TE-22042	Hub - Simple Build - Upper Hub Base 4x4	4
2	TE-22043	Hub - Simple Build - Upper Hub Base Rectangle Connexion Plate	8
3	TE-22044	Hub - Simple Build - Upper Hub Base Top Assembly	1

UNLESS OTHERWISE SPECIFIED:		TEAM	NAME	DATE	<div></div>	
		DRAWN	KAMC	12/30/2021		
<div>DIMENSIONS ARE IN INCHES</div> <div>TOLERANCES:</div> <div>FRACTIONAL ±1/16</div> <div>ANGULAR: MACH ±1° BEND ±1°</div> <div>TWO PLACE DECIMAL ±.13</div> <div>THREE PLACE DECIMAL ±.125</div> <div>MATERIAL/FINISH:</div> <div>DO NOT SCALE DRAWING</div>		<div>PROPRIETARY AND CONFIDENTIAL</div> <div>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.</div> <div>COMMENTS:</div> <div>REMOVE ALL BURRS AND SHARP EDGES.</div>			TITLE: <div>Hub - Simple Build - Upper Hub Base Assembly</div>	
		SIZE		DWG. NO.		REV
		C		TE-22040		
SCALE: 1:12				SHEET 1 OF 4		



4

3

2

1

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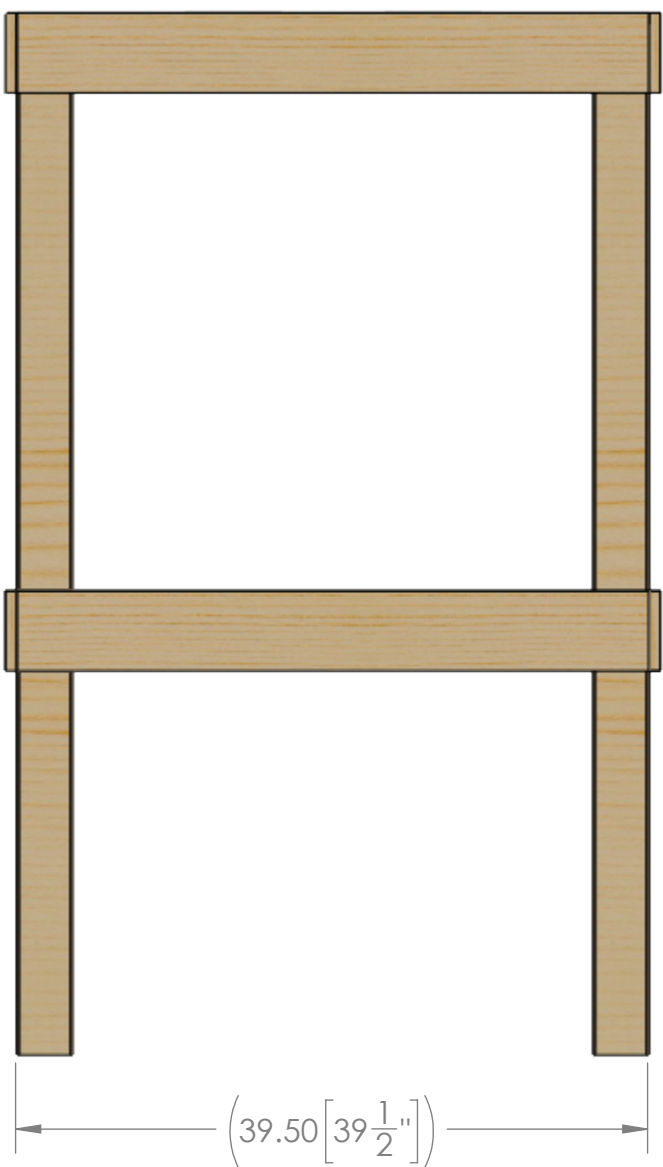
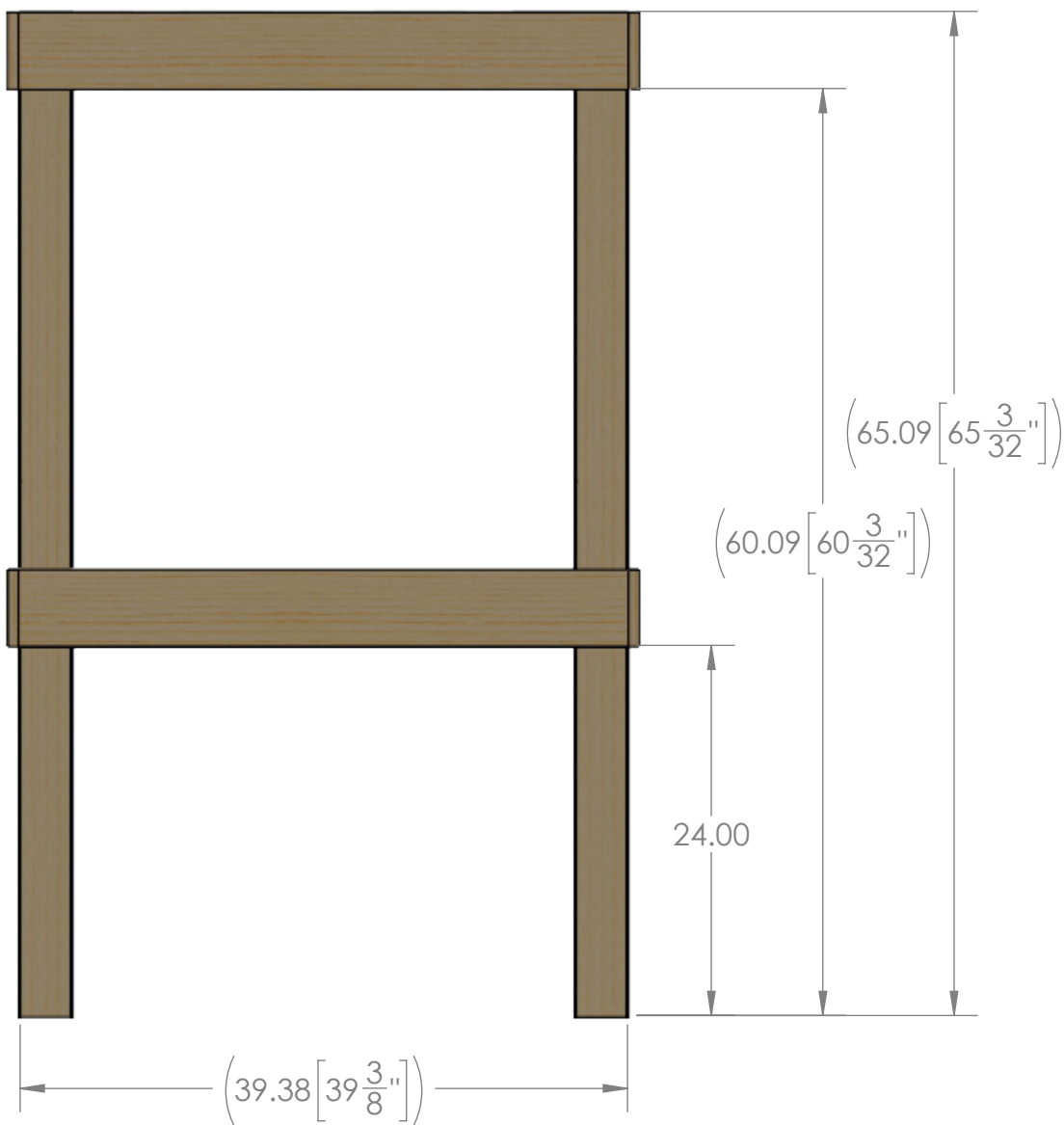
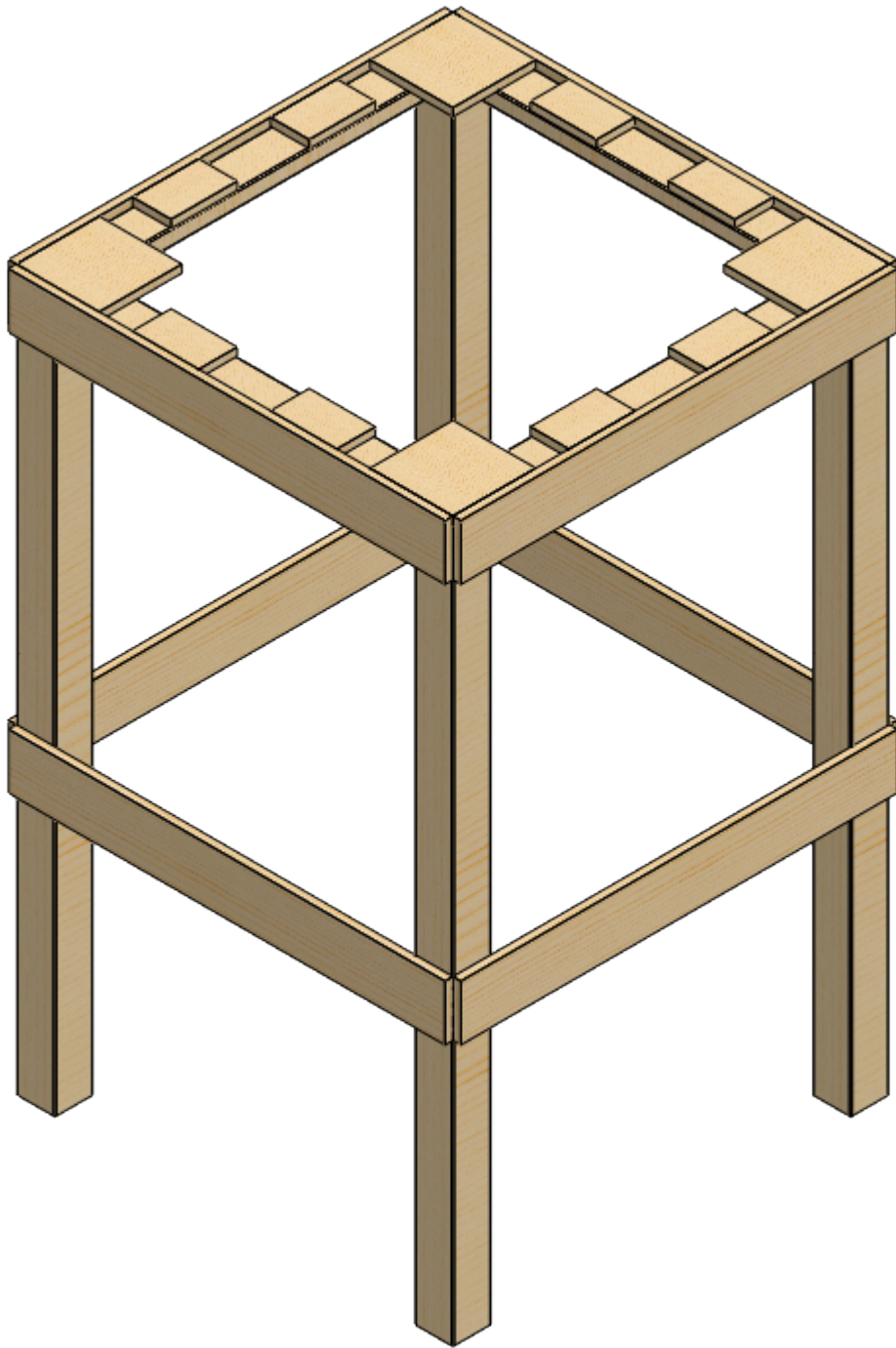
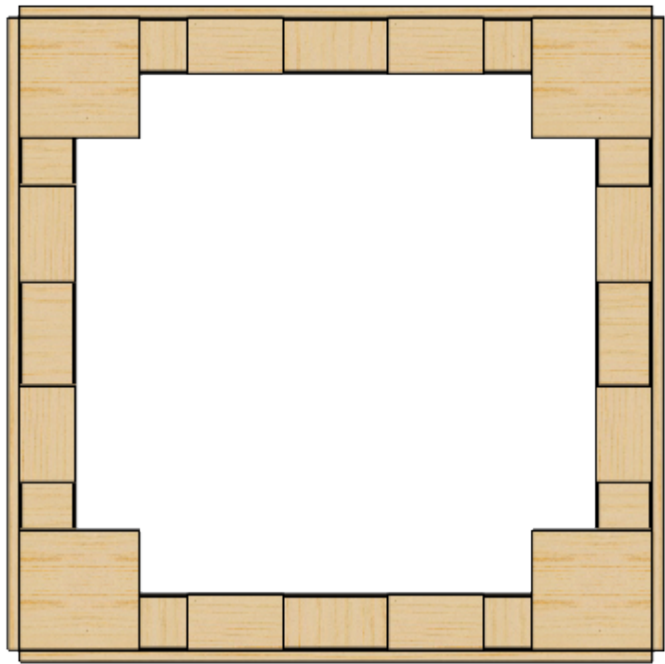
C



B

B

A

A



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	 	
	DRAWN	KAMC	12/30/2021		
	PROPRIETARY AND CONFIDENTIAL			TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Hub - Simple Build - Upper Hub Base Assembly	
COMMENTS:		REMOVE ALL BURRS AND SHARP EDGES.		SIZE	DWG. NO.
				C	TE-22040
				SCALE: 1:12	SHEET 2 OF 4

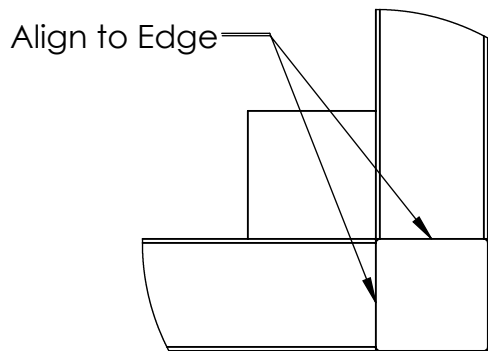
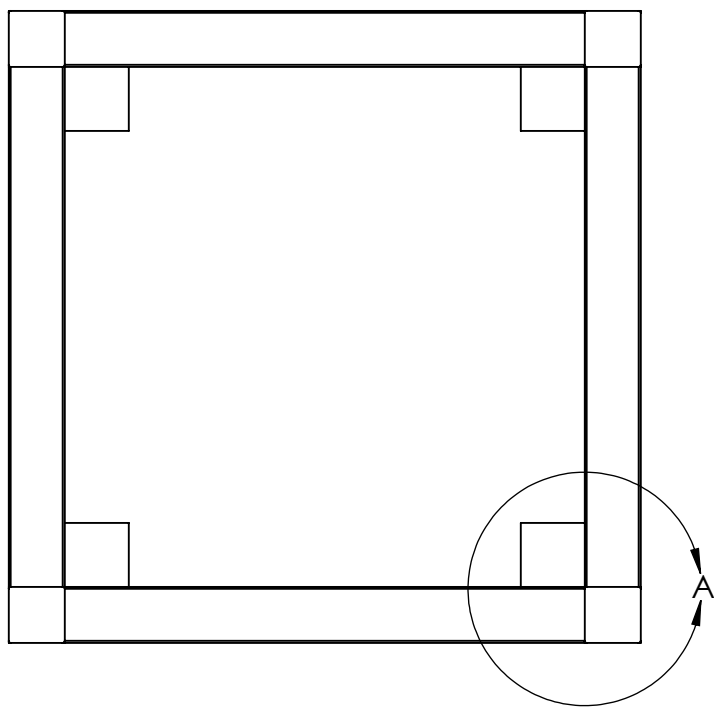
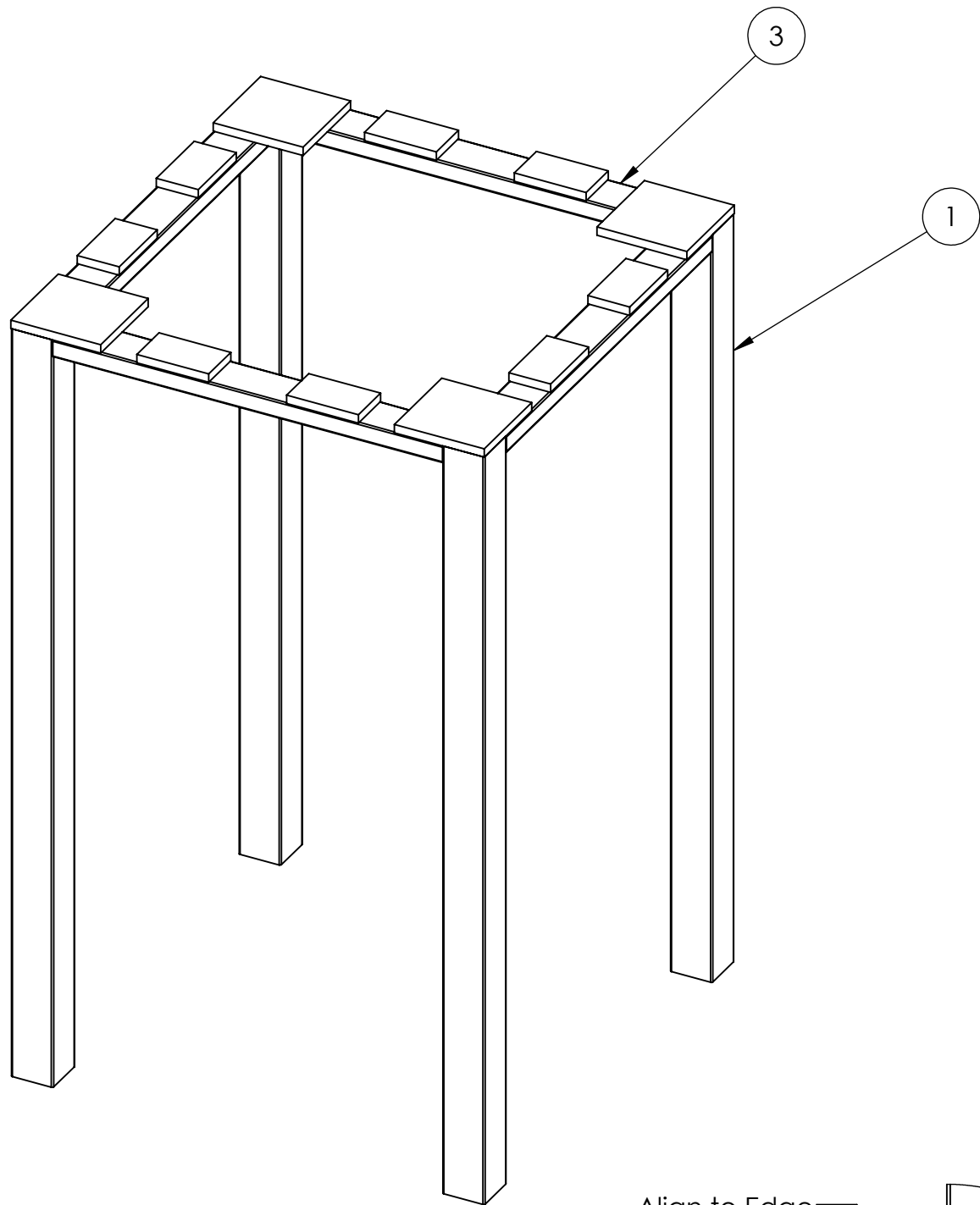
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3

2

1

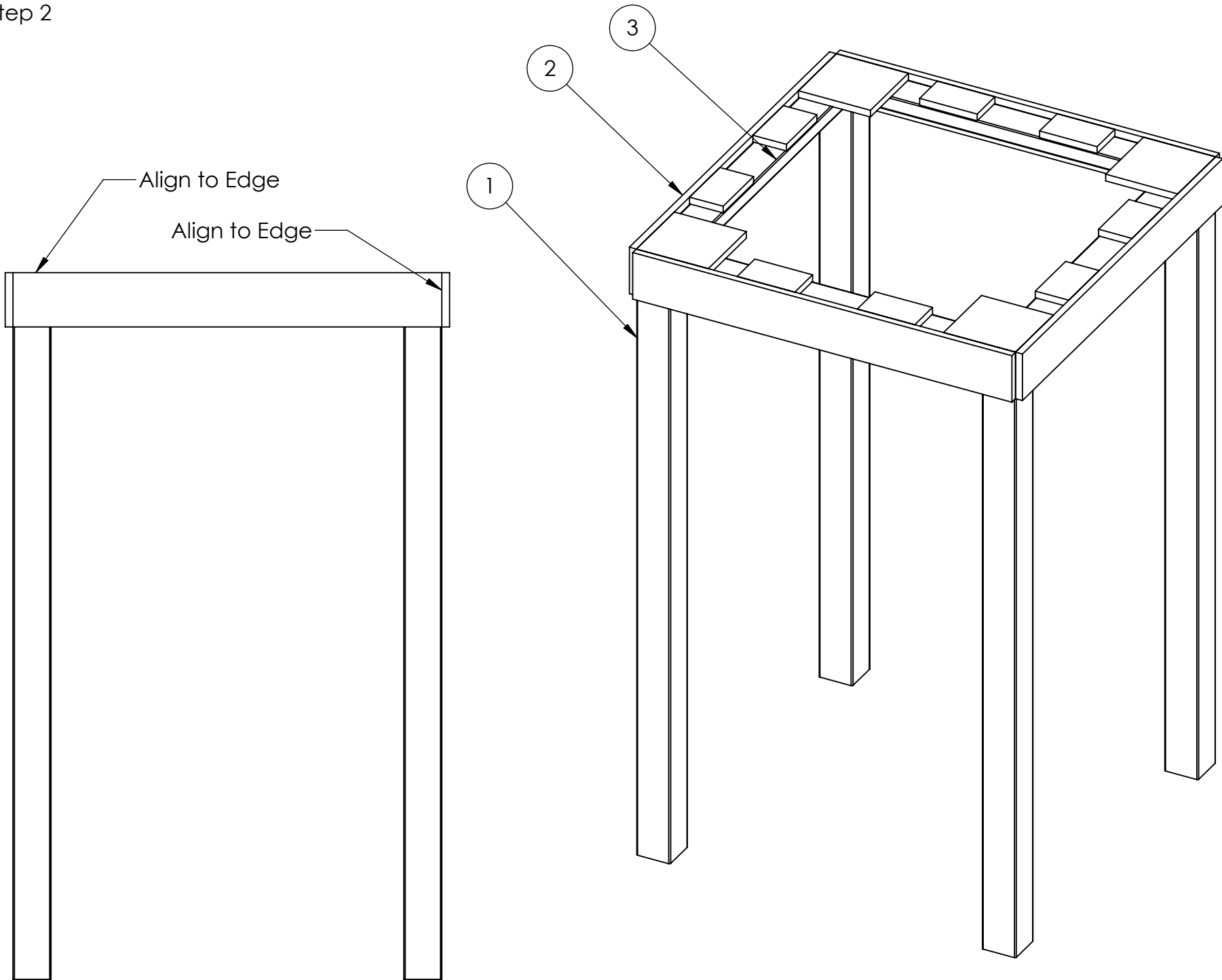
Step 1





4X
DETAIL A
SCALE 1 : 6

- Align 4x (1) to (3) , as shown.
- Connect using 2" Long Screws. It is recommended to use 4x screws per (1) .

Step 2



- Align 4x (2) to Step 1 , as shown.
- Attach (2) to (1) using 2" Long Screws. It is recommended to use 8x screws per (2) , 4x into each (1) .
- Attach (2) to the 2"x4" Lumber of (3) using 1.25" long screws. It is recommended to use 3x screws per (2) . Be careful to center the screw into the 2"x4" Lumber to avoid splitting the wood.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	 	
	DRAWN	KAMC	12/30/2021		
	PROPRIETARY AND CONFIDENTIAL			TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Hub - Simple Build - Upper Hub Base Assembly	
COMMENTS:		REMOVE ALL BURRS AND SHARP EDGES.		SIZE	DWG. NO.
				C	TE-22040
				SCALE: 1:12	SHEET 3 OF 4

D

C

B

A

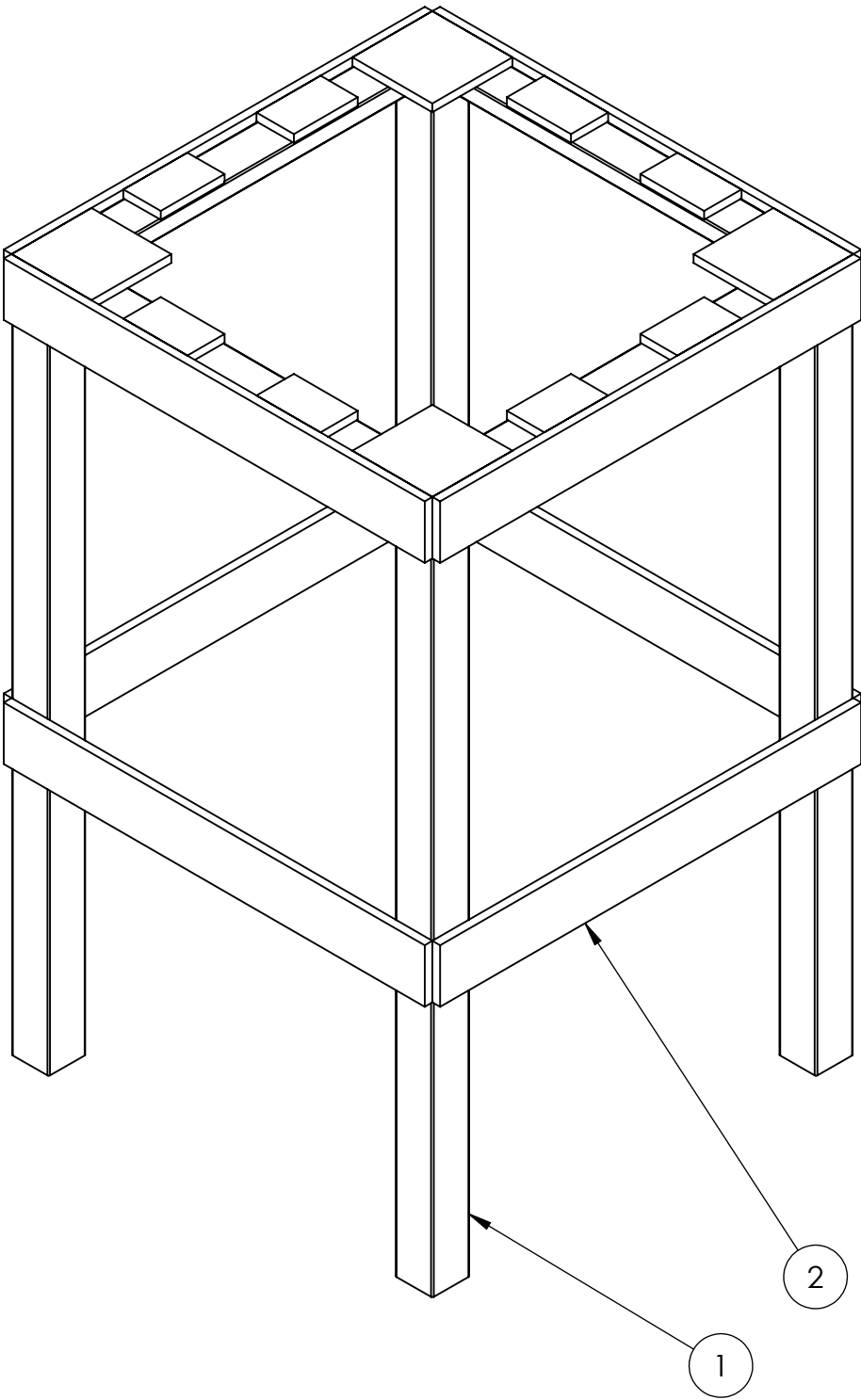
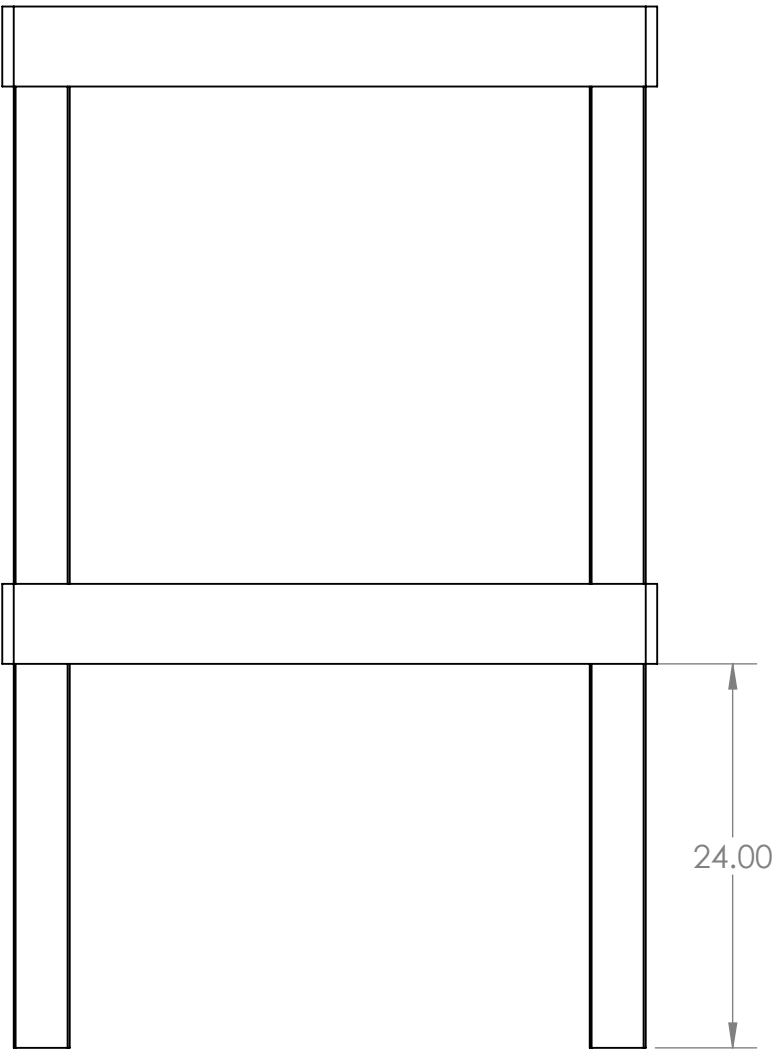
D

C



B

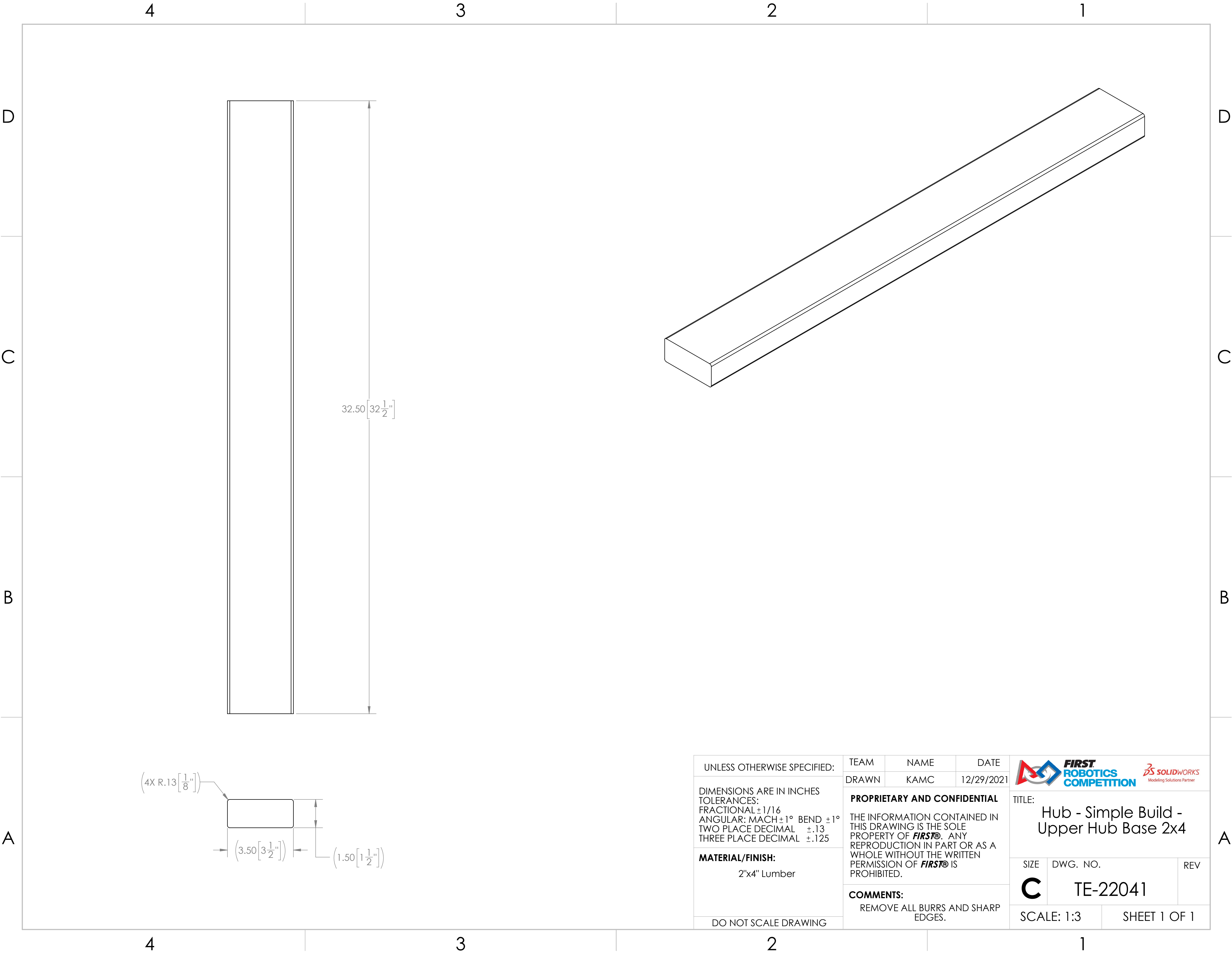
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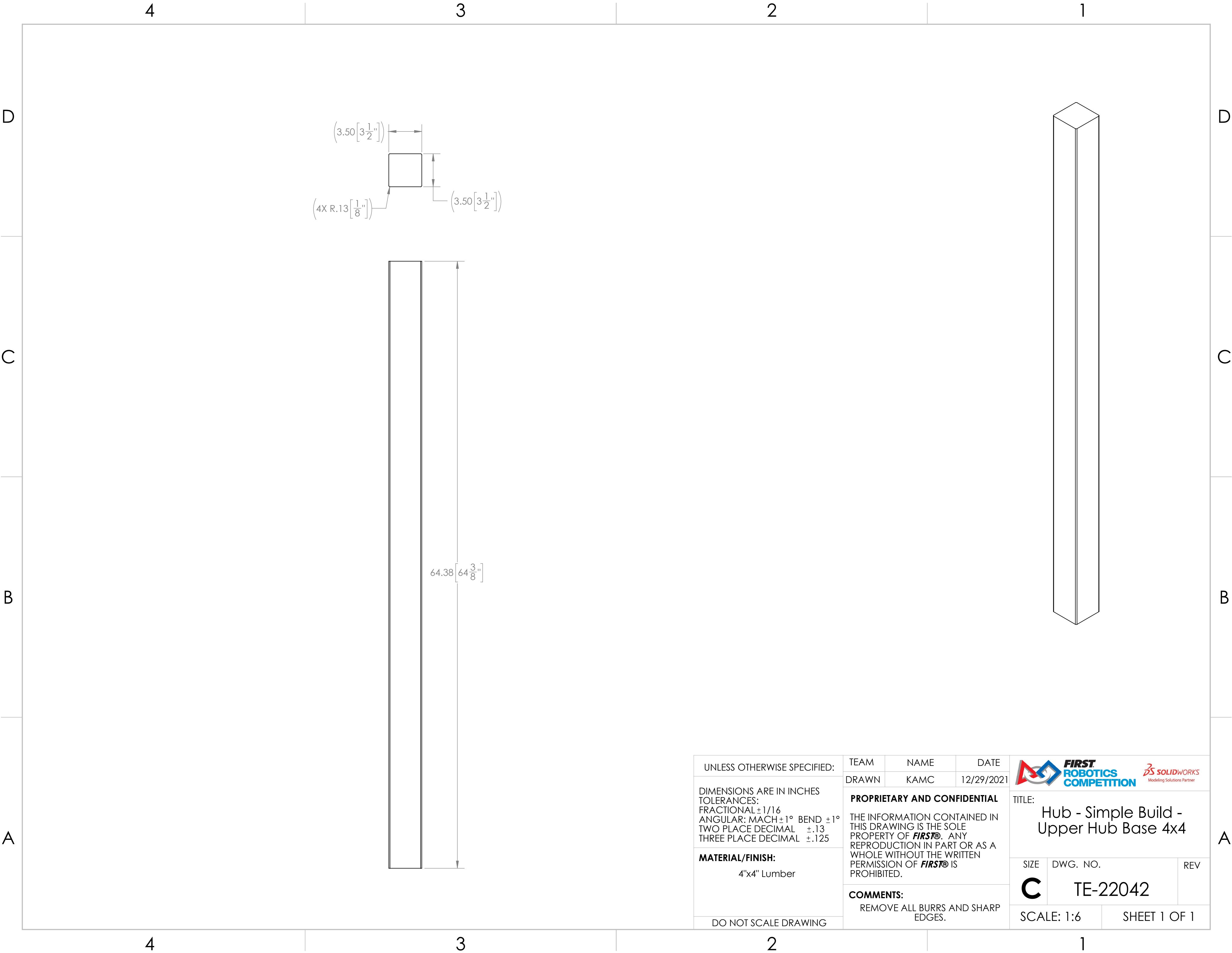
Step 3





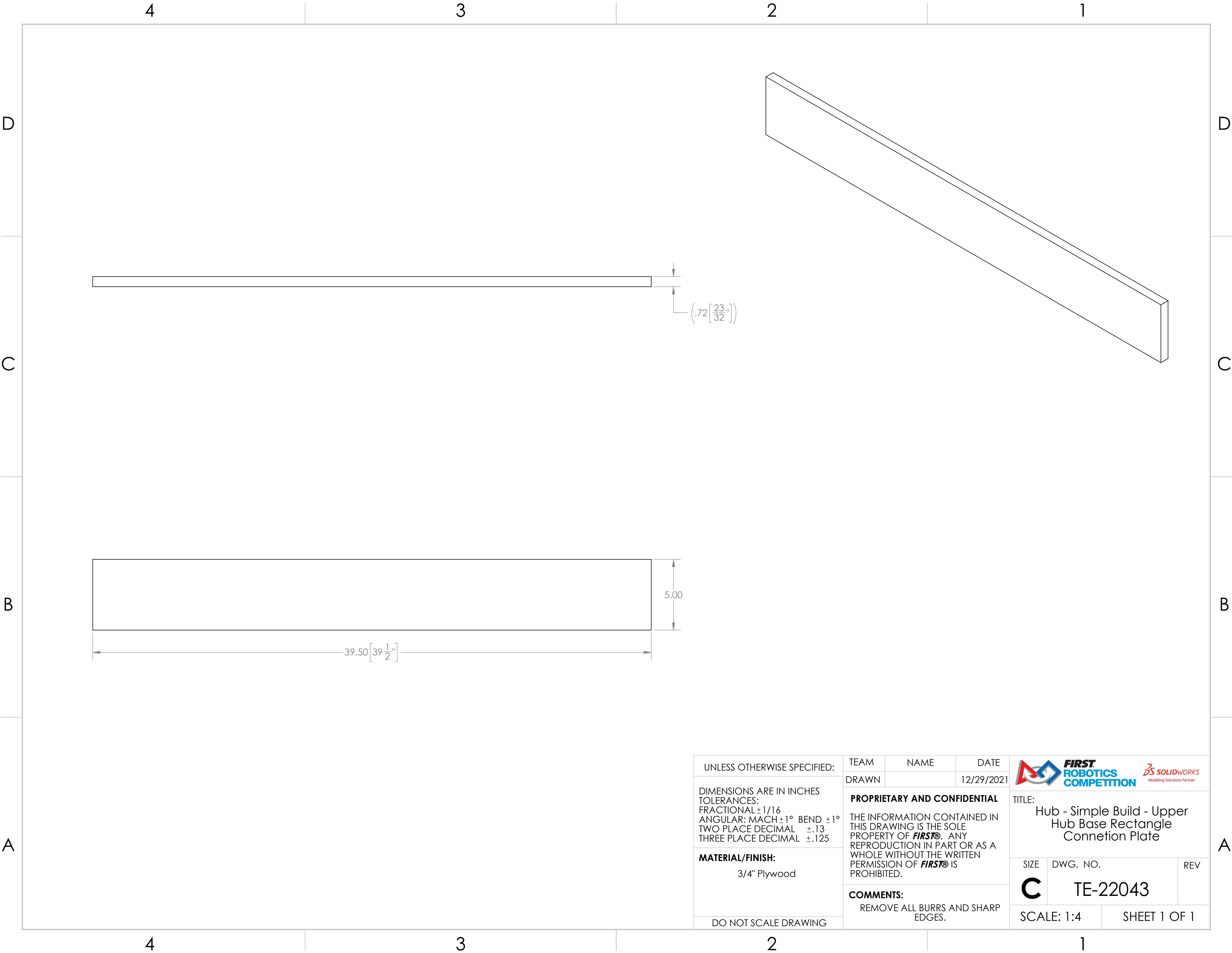
1. Align 4x 2 to Step 2 , as shown.
2. Attach 2 to 1 using 2" Long Screws. It is recommended to use 8x screws per 2 , 4x into each 1 .



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div>	
	DRAWN	KAMC	12/30/2021		
	PROPRIETARY AND CONFIDENTIAL			TITLE:	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Hub - Simple Build - Upper Hub Base Assembly	
COMMENTS:		SIZE	DWG. NO.	REV	
REMOVE ALL BURRS AND SHARP EDGES.		C	TE-22040		
SCALE: 1:12			SHEET 4 OF 4		

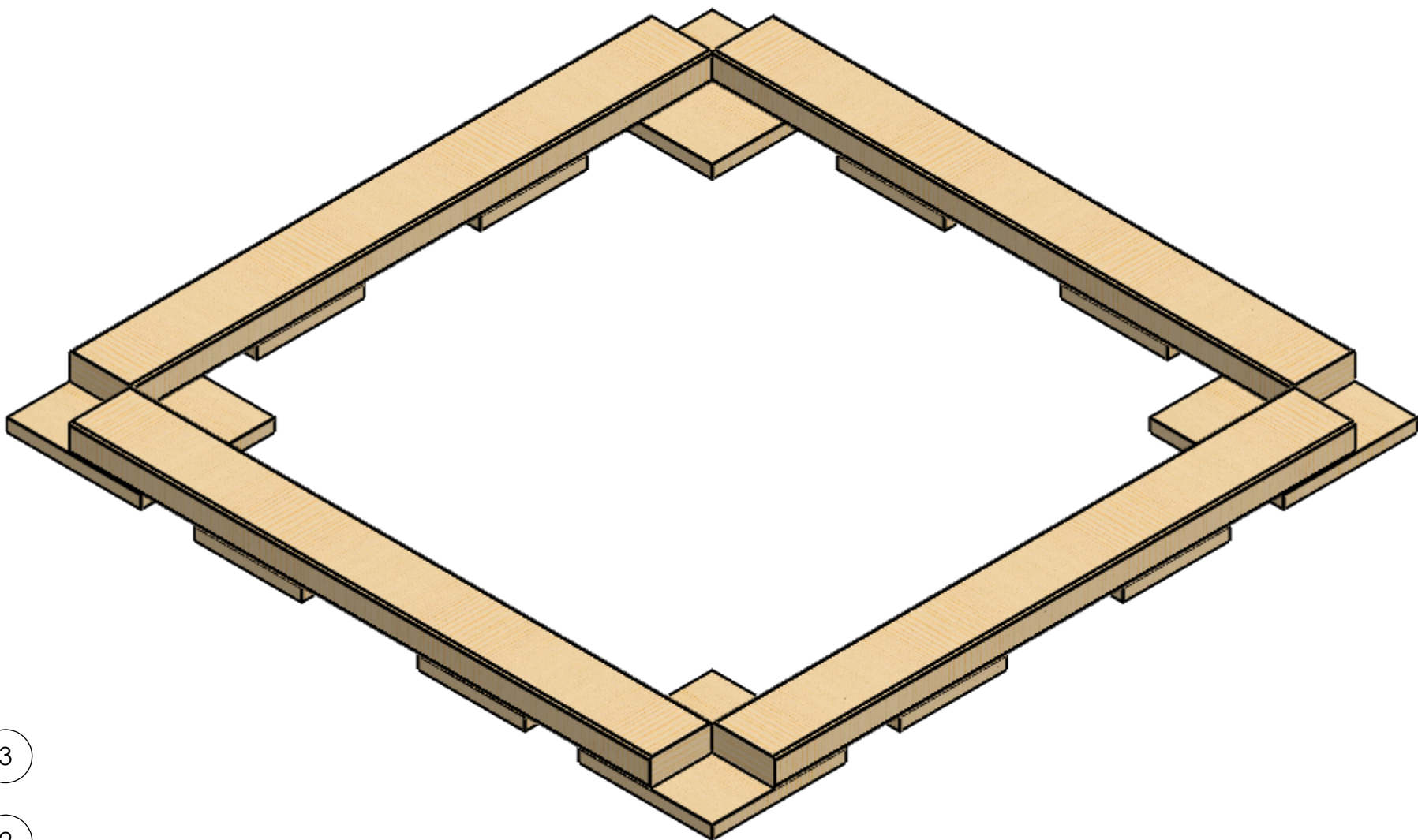
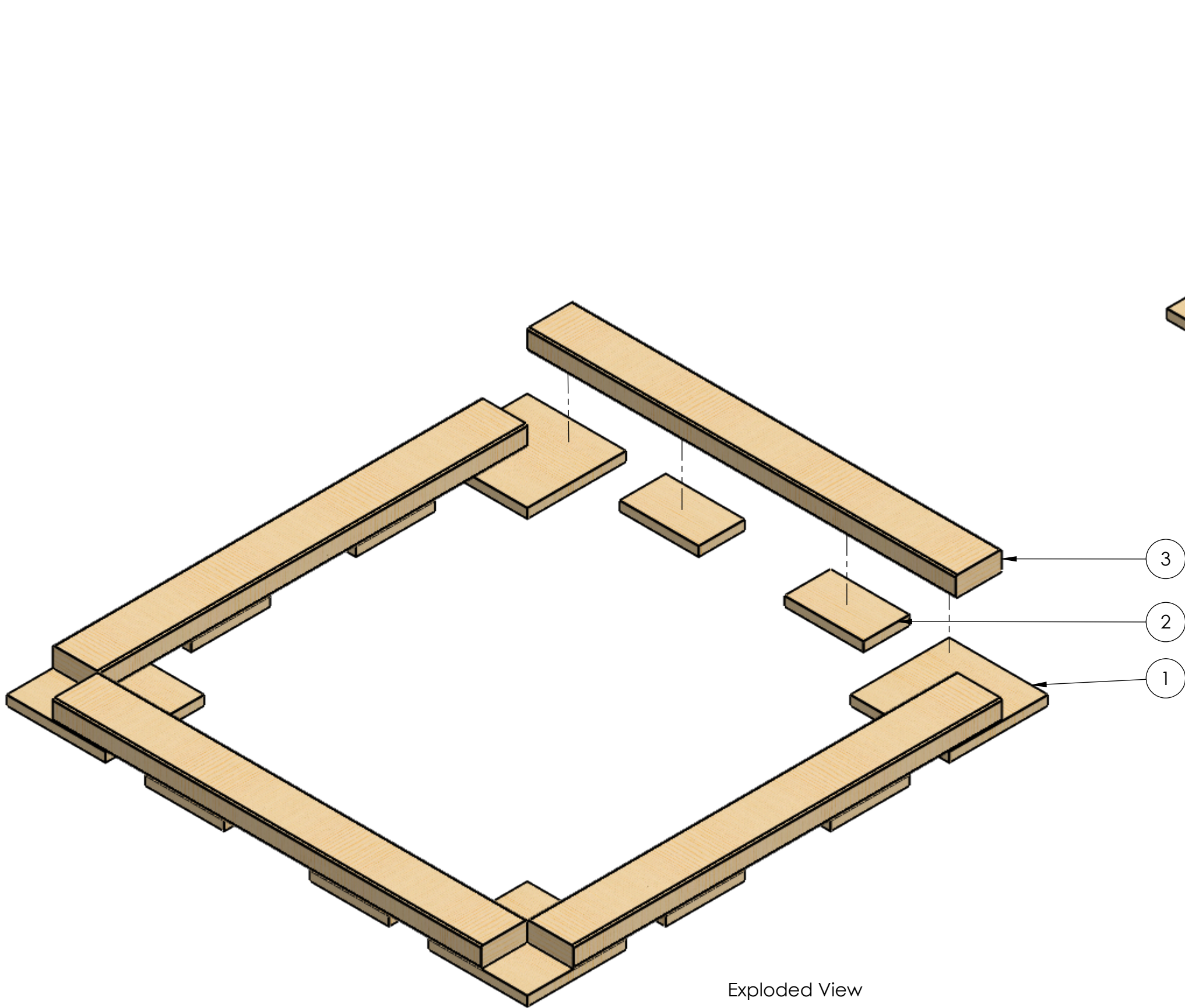




UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div></div>		
	DRAWN	KAMC	12/29/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Hub - Simple Build - Upper Hub Base 4x4		
MATERIAL/FINISH: 4"x4" Lumber	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	TE-22042	
DO NOT SCALE DRAWING				SCALE: 1:6		SHEET 1 OF 1





UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div>Modeling Solutions Partner</div></div>		
	DRAWN		12/29/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Hub - Simple Build - Upper Hub Base Rectangle Connetion Plate		
MATERIAL/FINISH: 3/4" Plywood	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			SIZE	DWG. NO.	REV
				C	TE-22043	
DO NOT SCALE DRAWING				SCALE: 1:4		SHEET 1 OF 1



Hardware Needed:
#8 x 2" Long Screw - Qty 58

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TE-22005	Hub - Simple Build - Upper Hub Square Connection Plate	4
2	TE-22006	Hub - Simple Build - Upper Hub 2x4 Connection Plate	8
3	TE-22041	Hub - Simple Build - Upper Hub Base 2x4	4

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125 MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div><div>SOLIDWORKS Modeling Solutions Partner</div></div>	
	DRAWN	KAMC	12/30/2021		
	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			TITLE: Hub - Simple Build - Upper Hub Base Top Assembly	
			SIZE	DWG. NO.	REV
			C	TE-22044	
			SCALE: 1:6		SHEET 1 OF 3

4

3

2

1

D

D

C

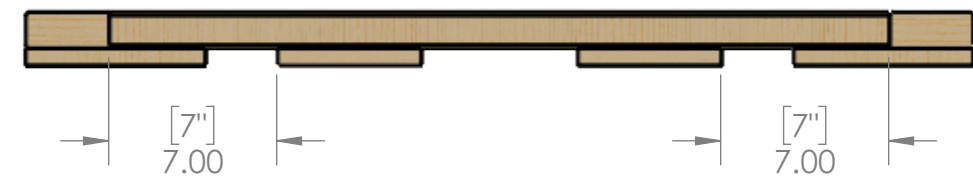
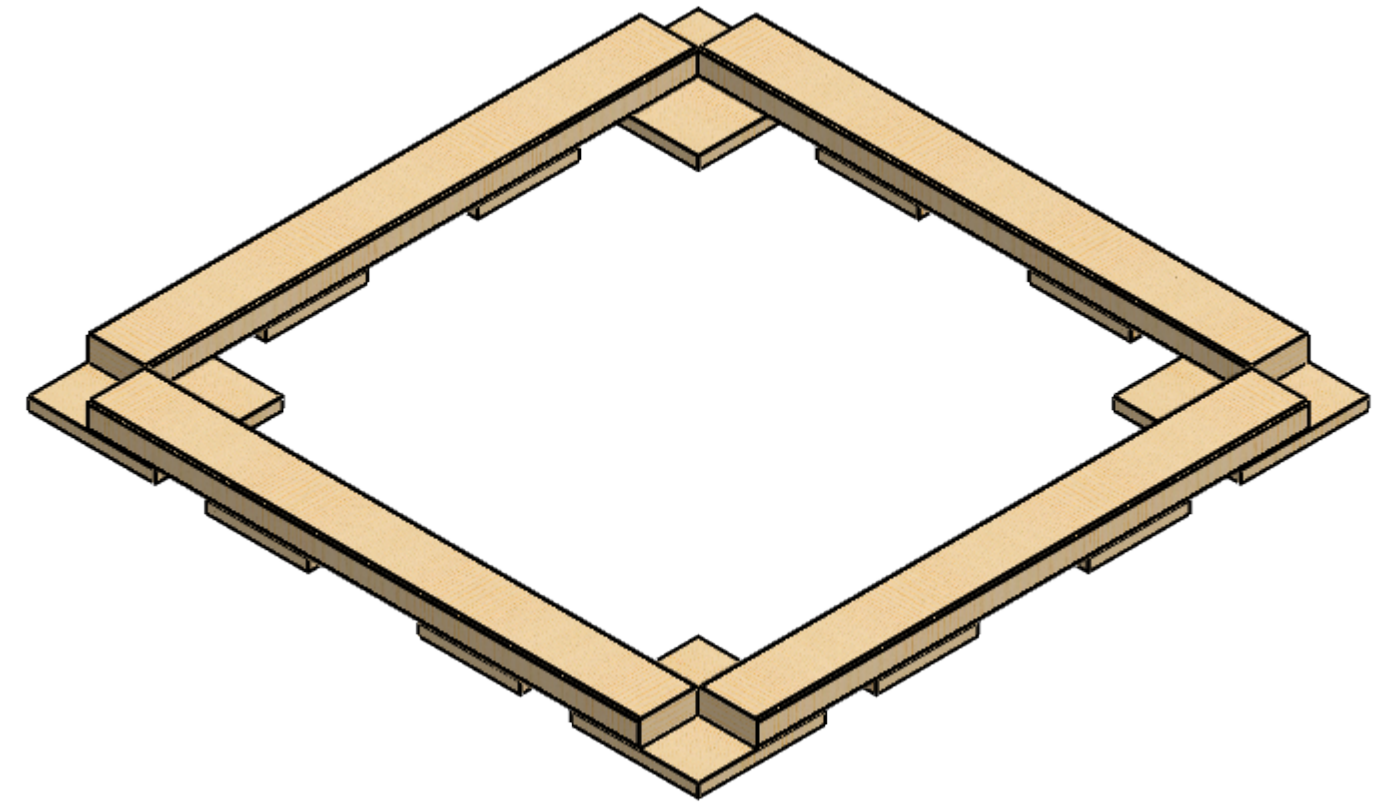
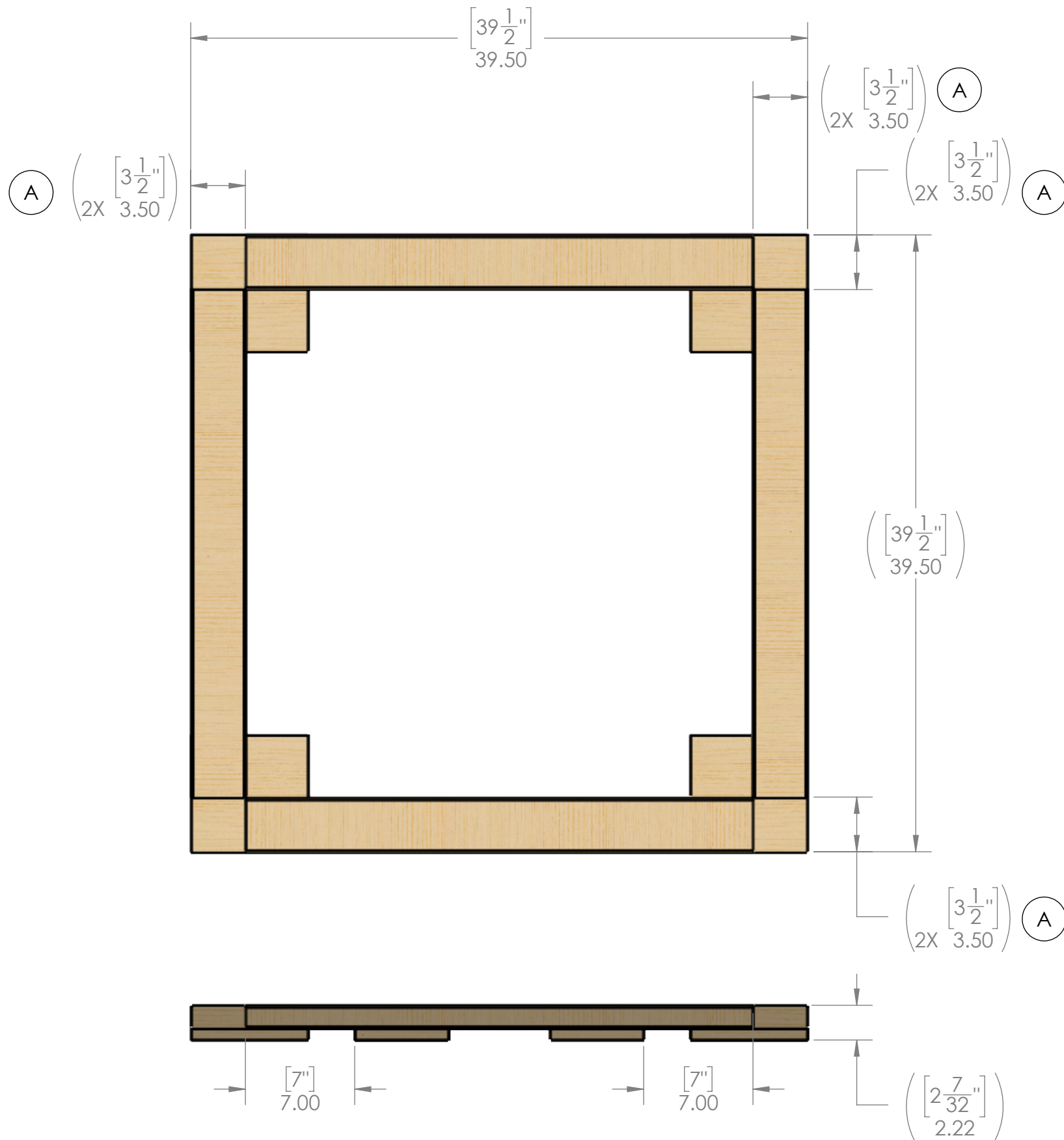
C

B

B



A

A



Note:

Dimensions with (A) indicate spacing for 4"x4" lumber from TE-22042. It is recommended to measure the cross section of TE-22042 and modify these dimensions as needed.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	  TITLE: Hub - Simple Build - Upper Hub Base Top Assembly	
	DRAWN	KAMC	12/30/2021	SIZE	DWG. NO.
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST IS PROHIBITED. COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.				REV	
				C TE-22044	
				SCALE: 1:8	
				SHEET 2 OF 3	

D

C

B

A

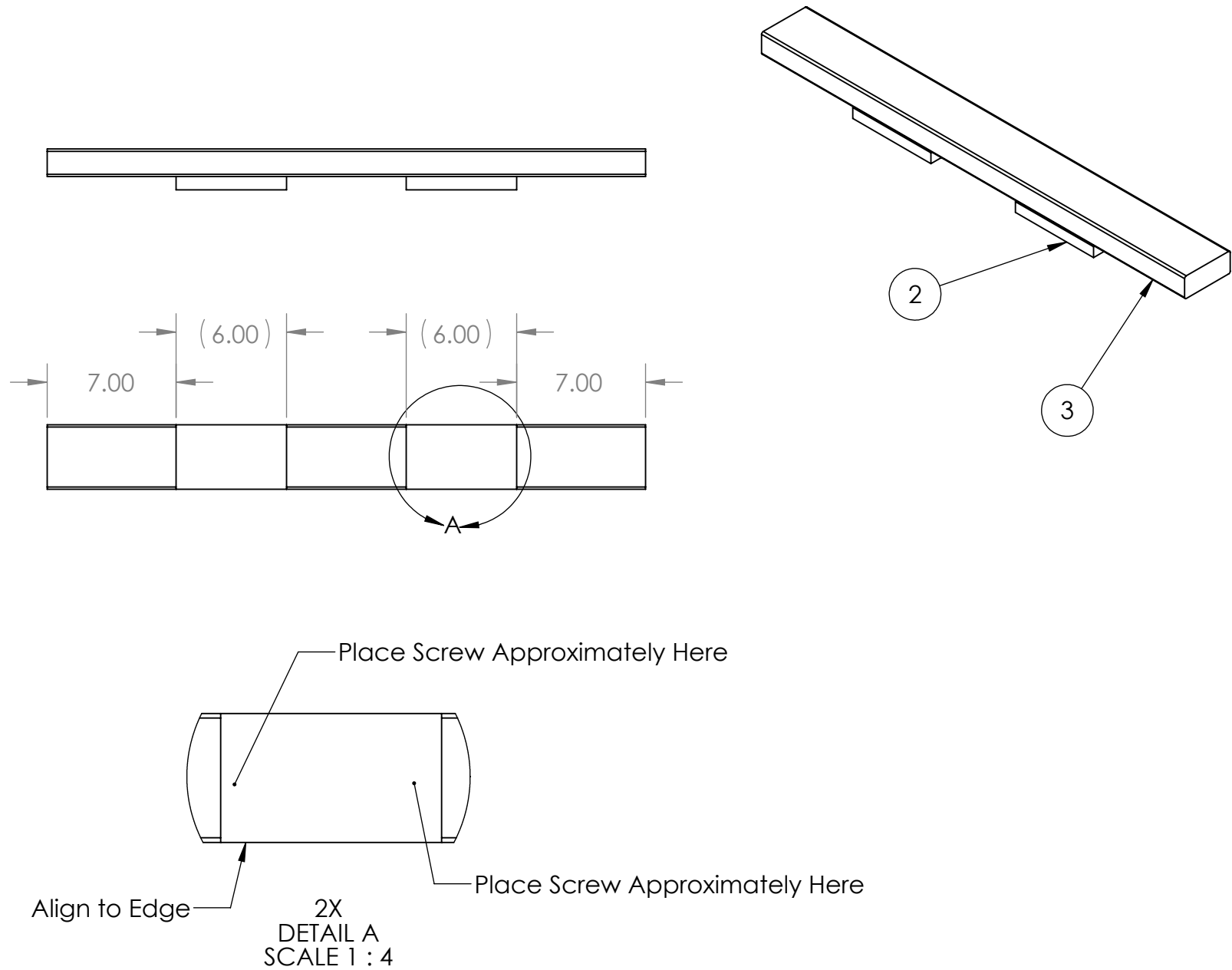
D

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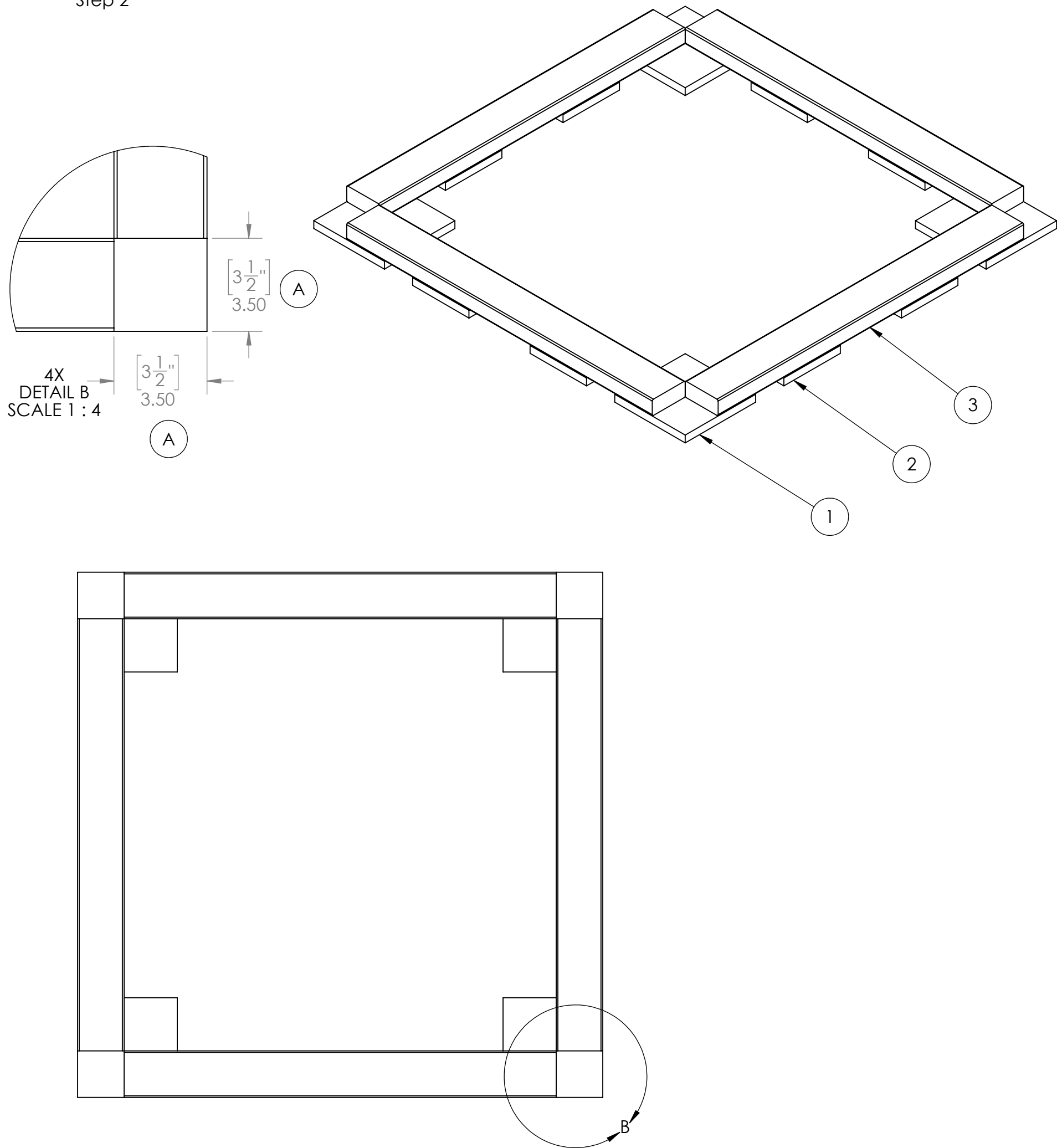
A

Step 1





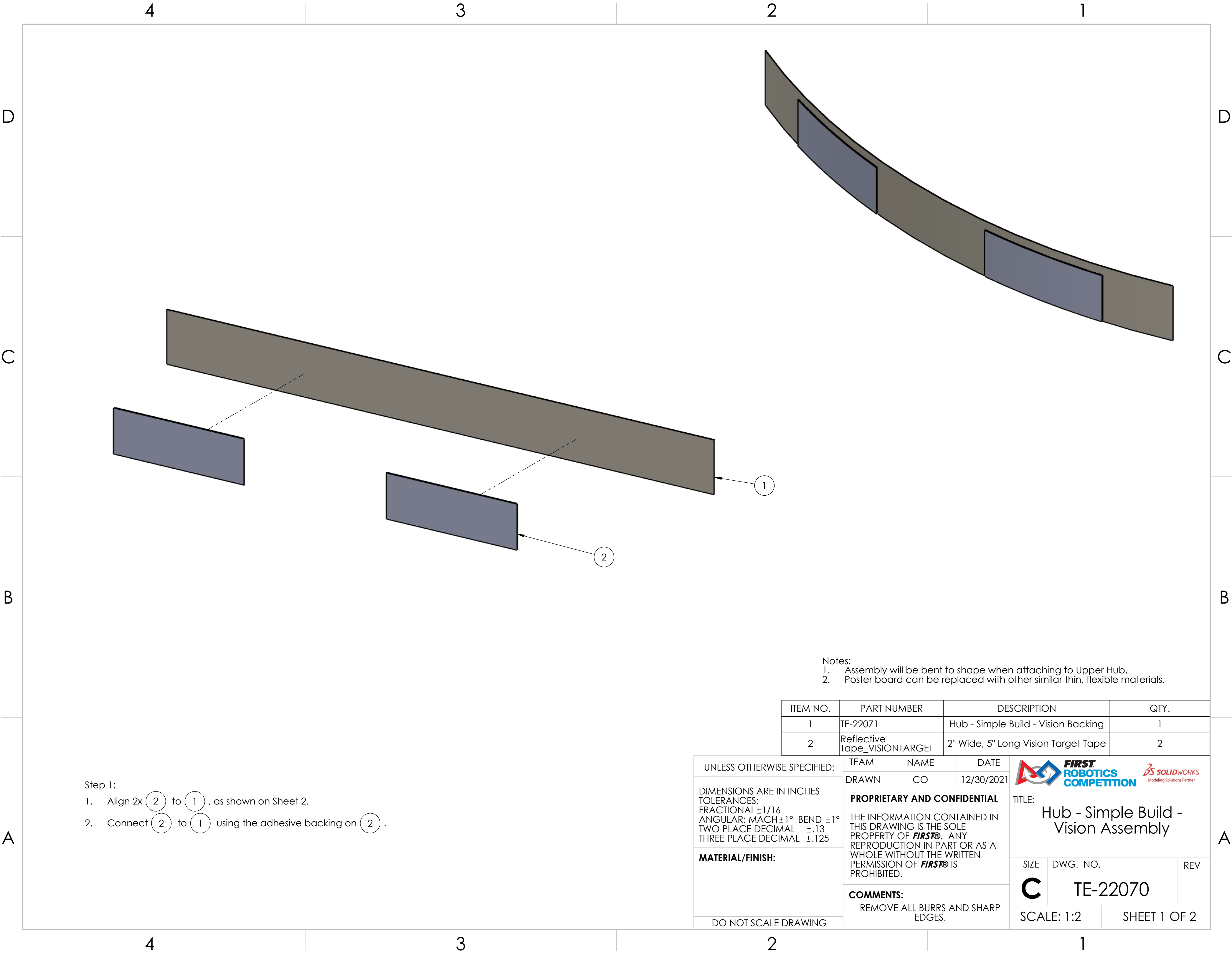
1. Align 2x **2** on **3** , as shown.
2. Connect using 2" long screws. It is recommended to use x2 screws per **2** and locate them as shown above. Keep center of **2** clear of screws.
3. Repeat until you have a total of 4 assemblies.

Step 2



1. Align 4x **1** to the x4 Step 1 assemblies, as shown.
 Dimensions with **A** indicate spacing for 4"x4" lumber from TE-22042. It is recommended to measure the cross section of TE-22042 and modify these dimensions as needed.
2. Connect using 2" long screws. It is recommended to use x8 screws per **2** , x4 into each end.

UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE	<div></div>		
	DRAWN	KAMC	12/30/2021			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST ®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST ® IS PROHIBITED.			TITLE: Hub - Simple Build - Upper Hub Base Top Assembly		
	MATERIAL/FINISH:			SIZE	DWG. NO.	REV
DO NOT SCALE DRAWING	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.			C	TE-22044	
				SCALE: 1:8		SHEET 3 OF 3



- Notes:
- 1. Assembly will be bent to shape when attaching to Upper Hub.
 - 2. Poster board can be replaced with other similar thin, flexible materials.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TE-22071	Hub - Simple Build - Vision Backing	1
2	Reflective Tape_VISIONTARGET	2" Wide, 5" Long Vision Target Tape	2

- Step 1:
- 1. Align 2x (2) to (1) , as shown on Sheet 2.
 - 2. Connect (2) to (1) using the adhesive backing on (2) .

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL $\pm 1/16$
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
TWO PLACE DECIMAL $\pm .13$
THREE PLACE DECIMAL $\pm .125$

MATERIAL/FINISH:



DO NOT SCALE DRAWING

TEAM	NAME	DATE
DRAWN	CO	12/30/2021

PROPRIETARY AND CONFIDENTIAL

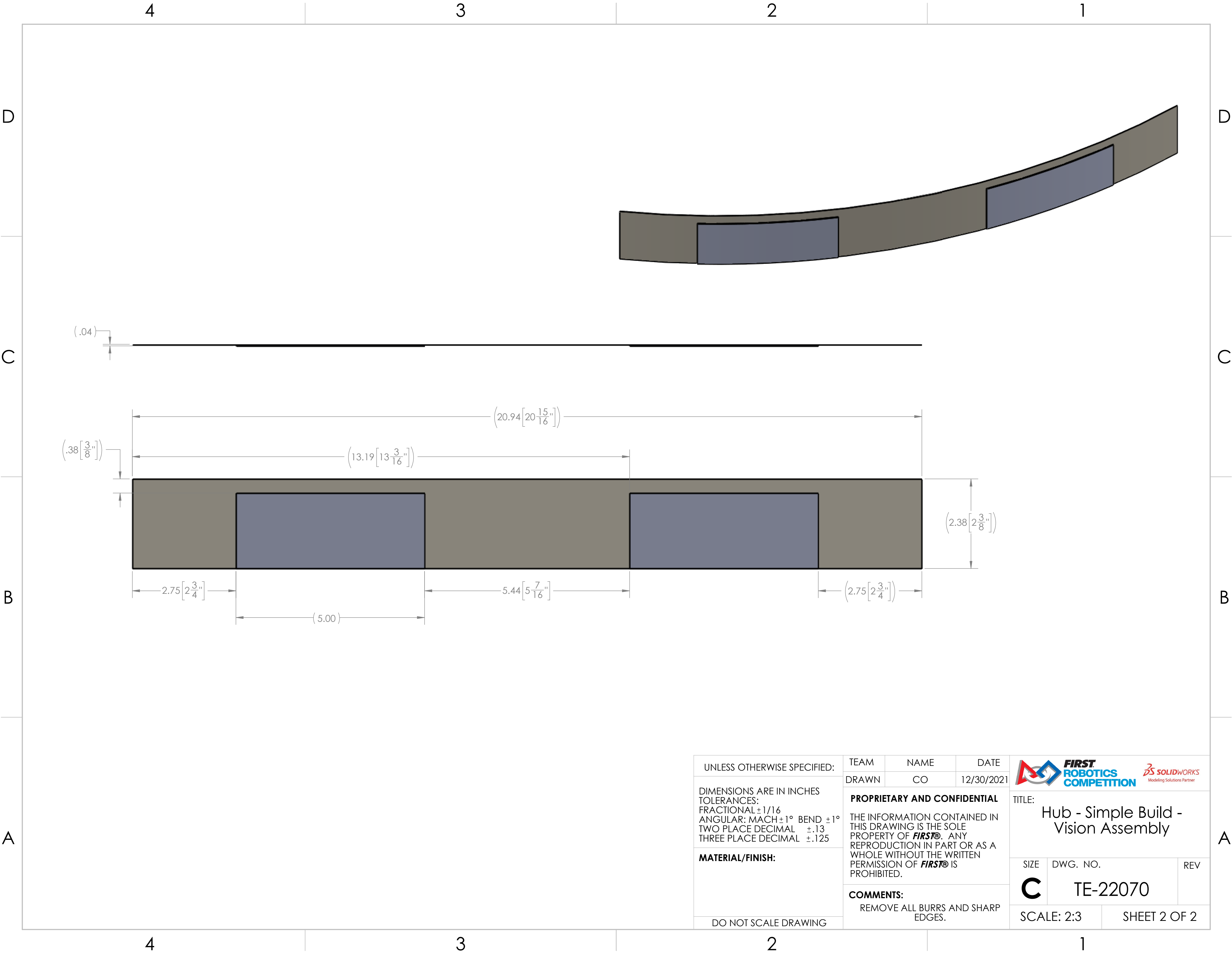
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COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.



TITLE:
Hub - Simple Build - Vision Assembly

SIZE C	DWG. NO. TE-22070	REV
SCALE: 1:2		SHEET 1 OF 2



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .13$ THREE PLACE DECIMAL $\pm .125$ MATERIAL/FINISH: DO NOT SCALE DRAWING	TEAM	NAME	DATE	<div></div>		
	DRAWN	CO	12/30/2021			
	PROPRIETARY AND CONFIDENTIAL			TITLE:		
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST® . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.			Hub - Simple Build - Vision Assembly		
COMMENTS:		REMOVE ALL BURRS AND SHARP EDGES.		SIZE	DWG. NO.	REV
				C	TE-22070	
				SCALE: 2:3		SHEET 2 OF 2

