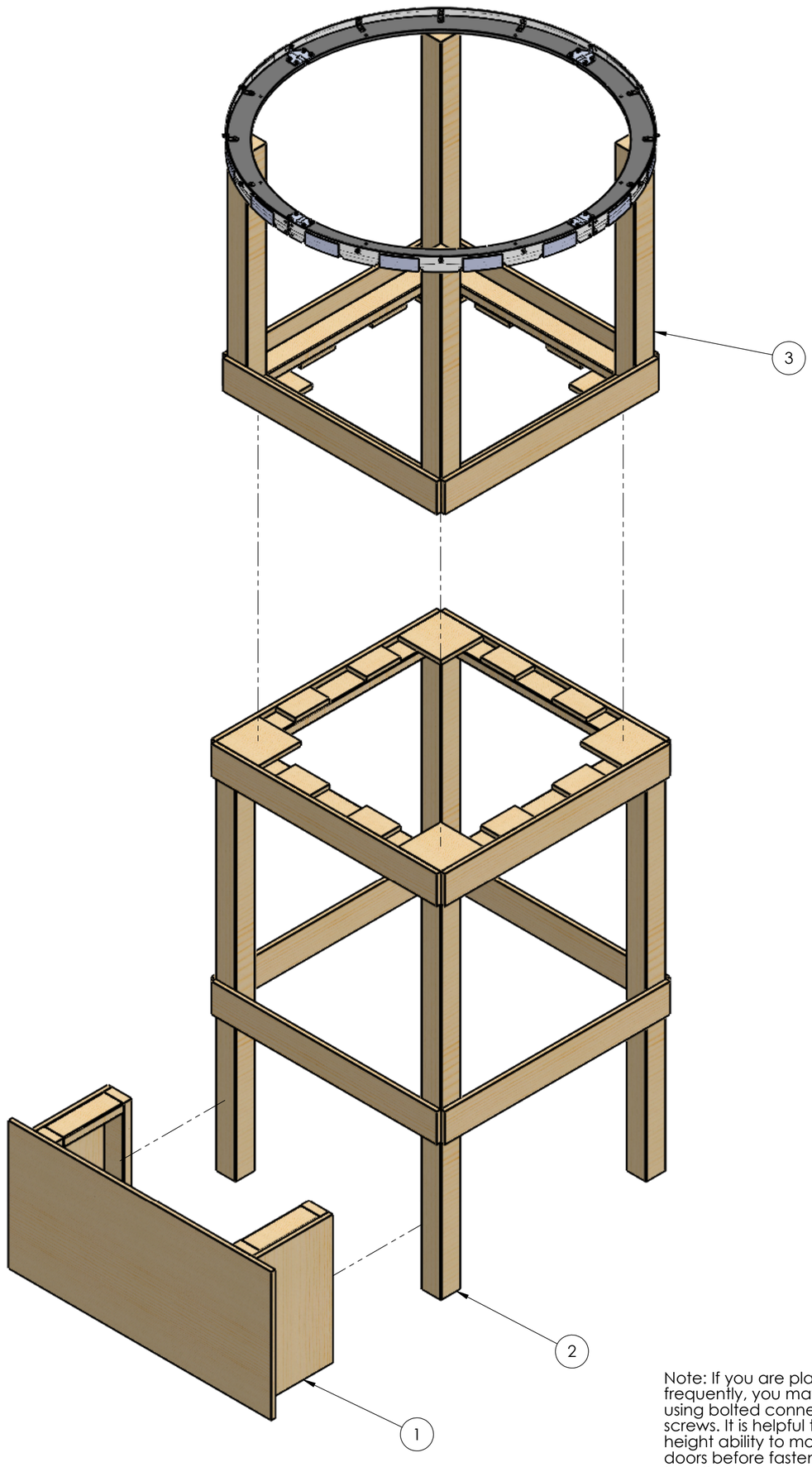
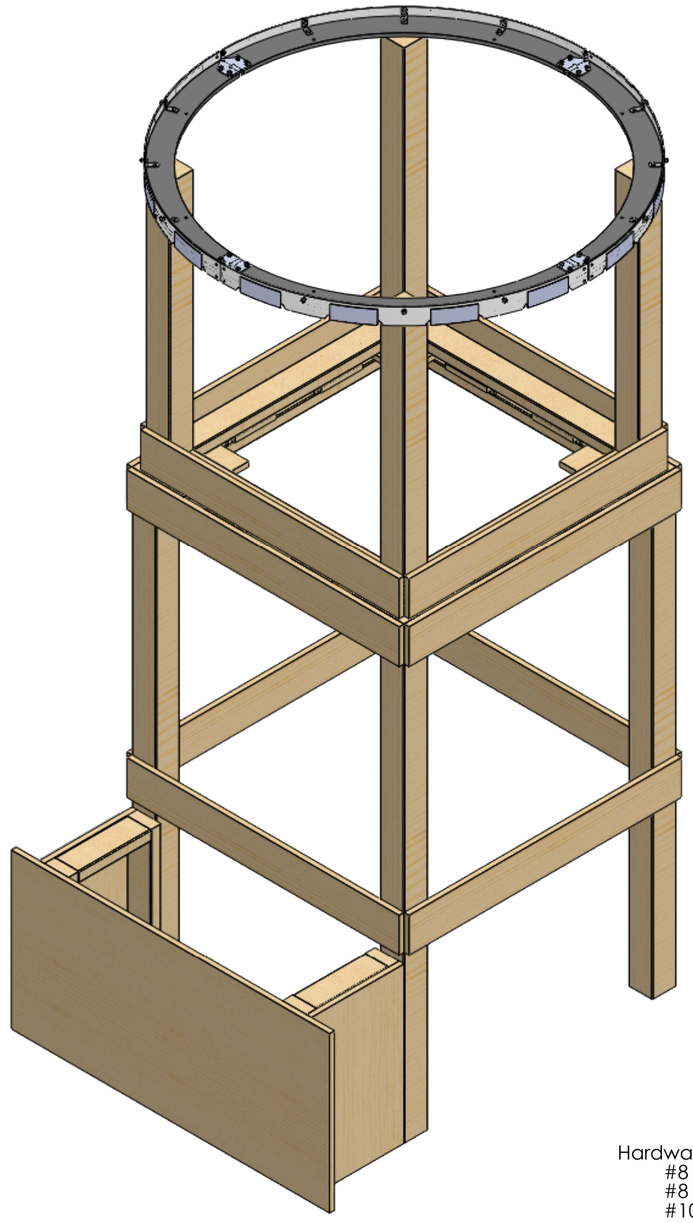




Hardware Needed:
#8 x 1.25" Long Screw - Qty 16
#8 x 2.5" Long Screw - Qty 20
#10 x 3.5" Long Screw - Qty 8

ITEM NO.	PART NUMBER	DESCRIPTION	
1	TE-22010	Hub - Simple Build - Fender Assembly	1
2	TE-22040	Hub - Simple Build - Upper Hub Base Assembly	1
3	TE-22030-AM	Hub - Simple Build - Upper Hub Goal Assembly for AM Ring AM-4672	1

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

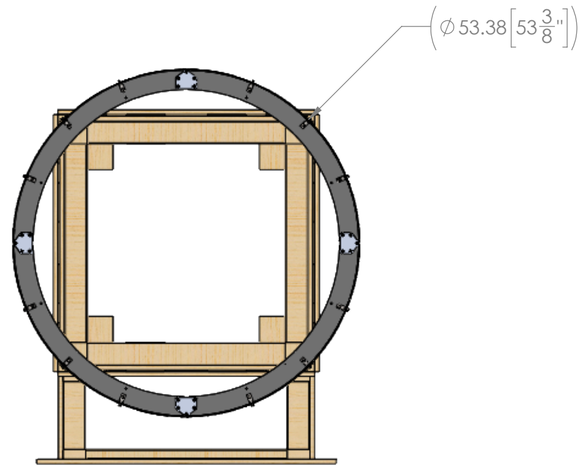
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

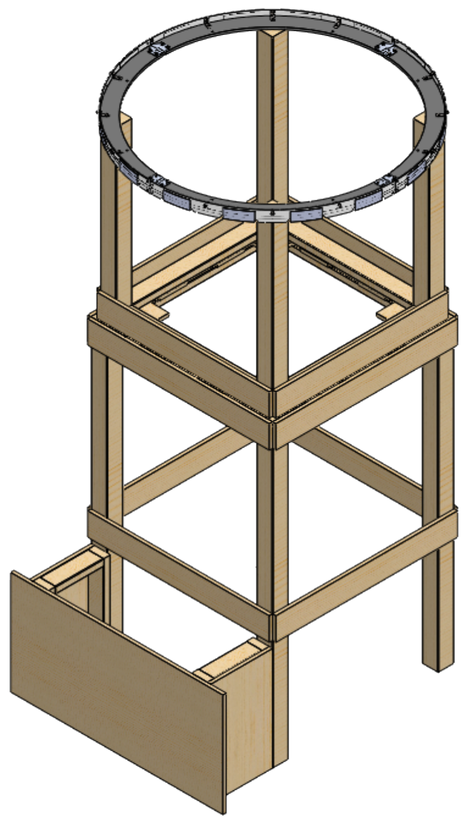
FIRST ROBOTICS COMPETITION
SOLIDWORKS Modeling Solutions Partner

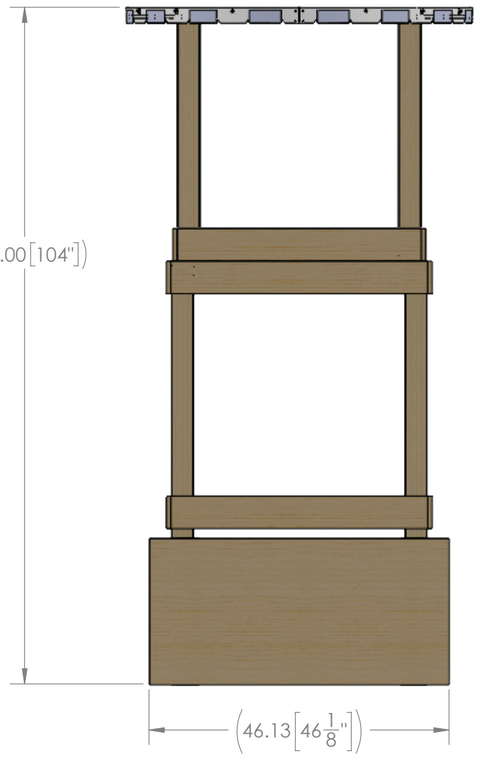
TITLE: Hub - Simple Build - Full Upper Hub for AndyMark Ring AM-4672 + 1/4 Fender Assembly

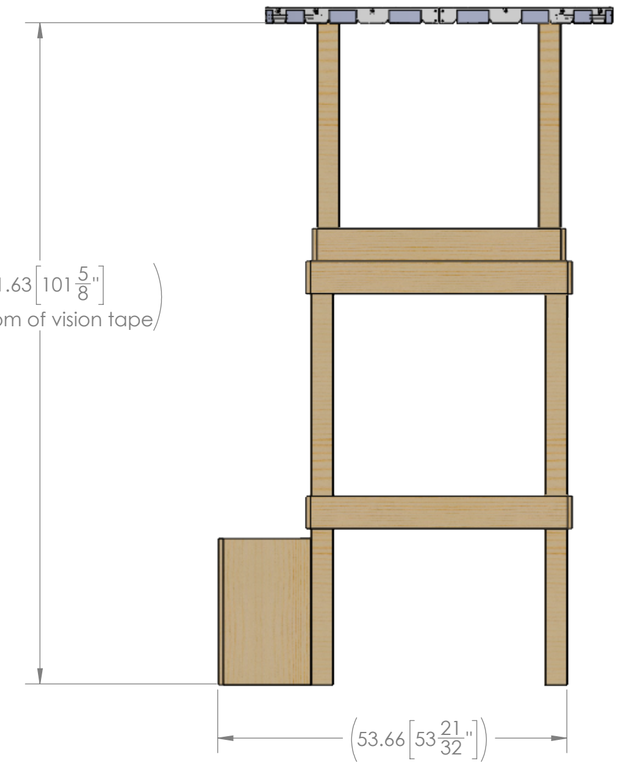
SIZE	DWG. NO.	REV
C	TE-22002-AM	

SCALE: 1:12 SHEET 1 OF 3









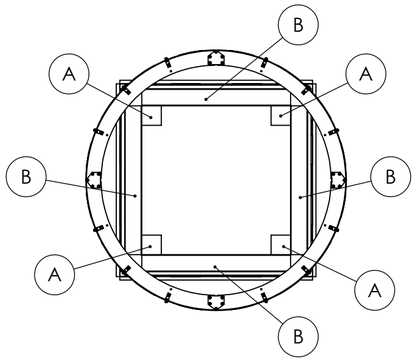
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC 1/4/2022
MATERIAL/FINISH:	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY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

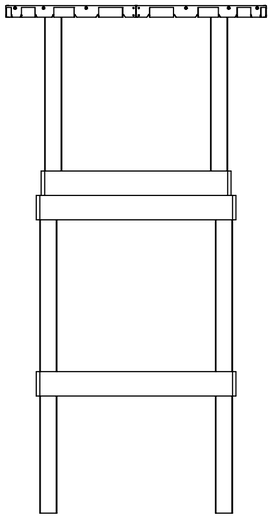
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

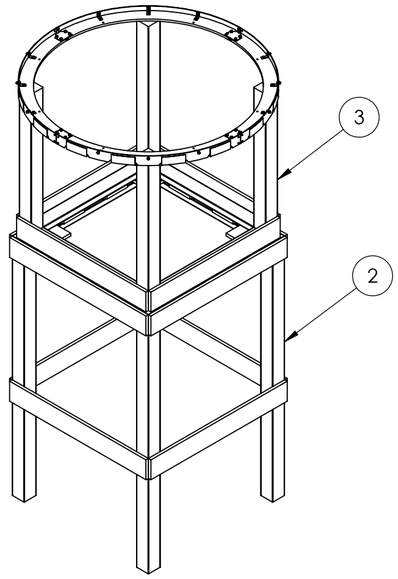
TITLE: Hub - Simple Build - Full Upper Hub for AndyMark Ring AM-4672 + 1/4 Fender Assembly

SIZE	DWG. NO.	REV
C	TE-22002-AM	
SCALE: 1:18	SHEET 2 OF 3	

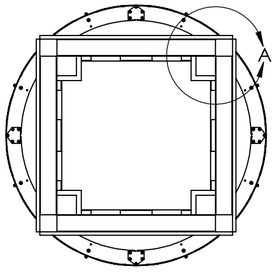
Step 1

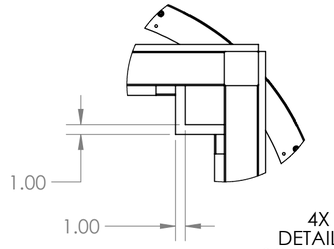






Bottom View

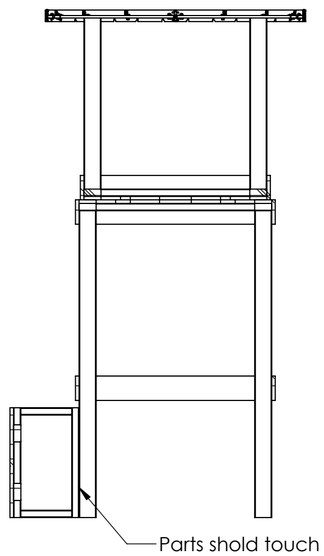




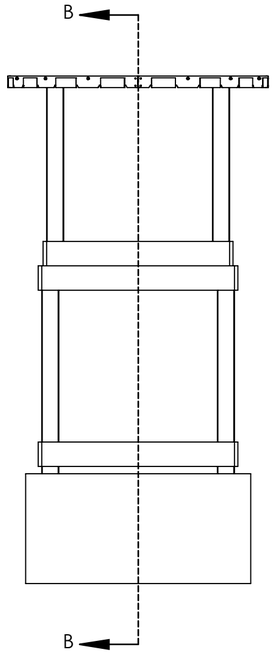
4X
DETAIL A
SCALE 1 : 12

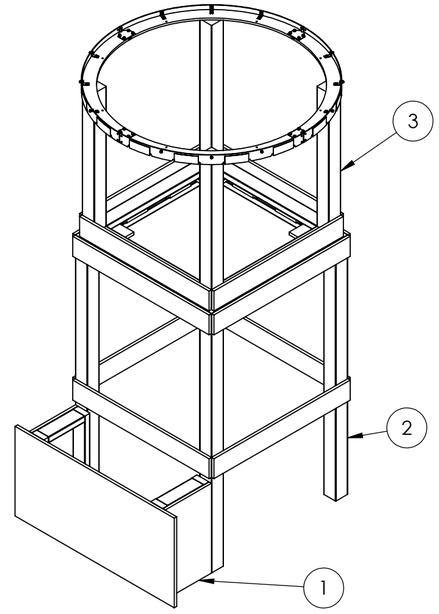
1. Align (3) to (2) as shown. Note the dimensions in Detail A.
2. Connect using 1.25" and 2.5" Long Screws. It is recommended to use 4x 1.25" long screws into each area indicated by (A) . It is recommended to use 5x 2.5" long screws into each area indicated by (B) .

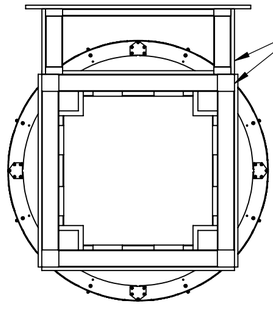
Step 2



SECTION B-B







Bottom View

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

UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE
	DRAWN	KAMC	1/4/2022

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±1/16
ANGULAR: MACH ±1° BEND ±1°
TWO PLACE DECIMAL ±.13
THREE PLACE DECIMAL ±.125

MATERIAL/FINISH:

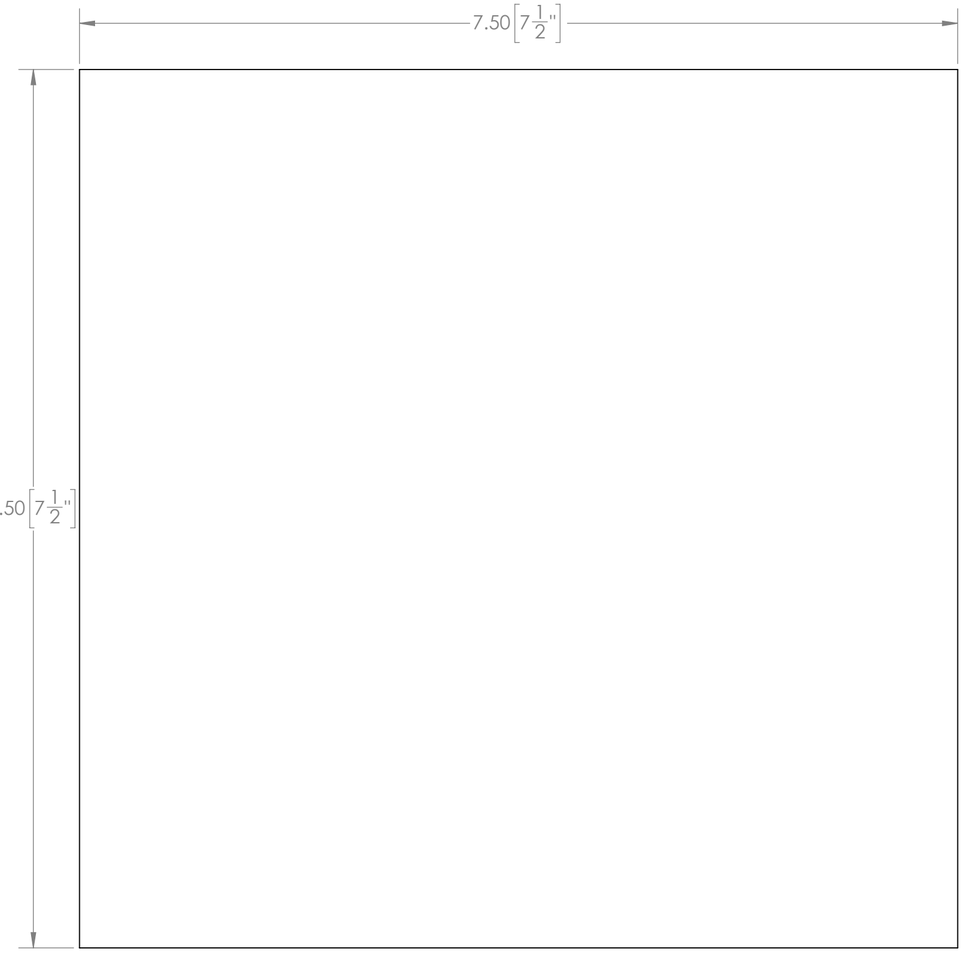
DO NOT SCALE DRAWING

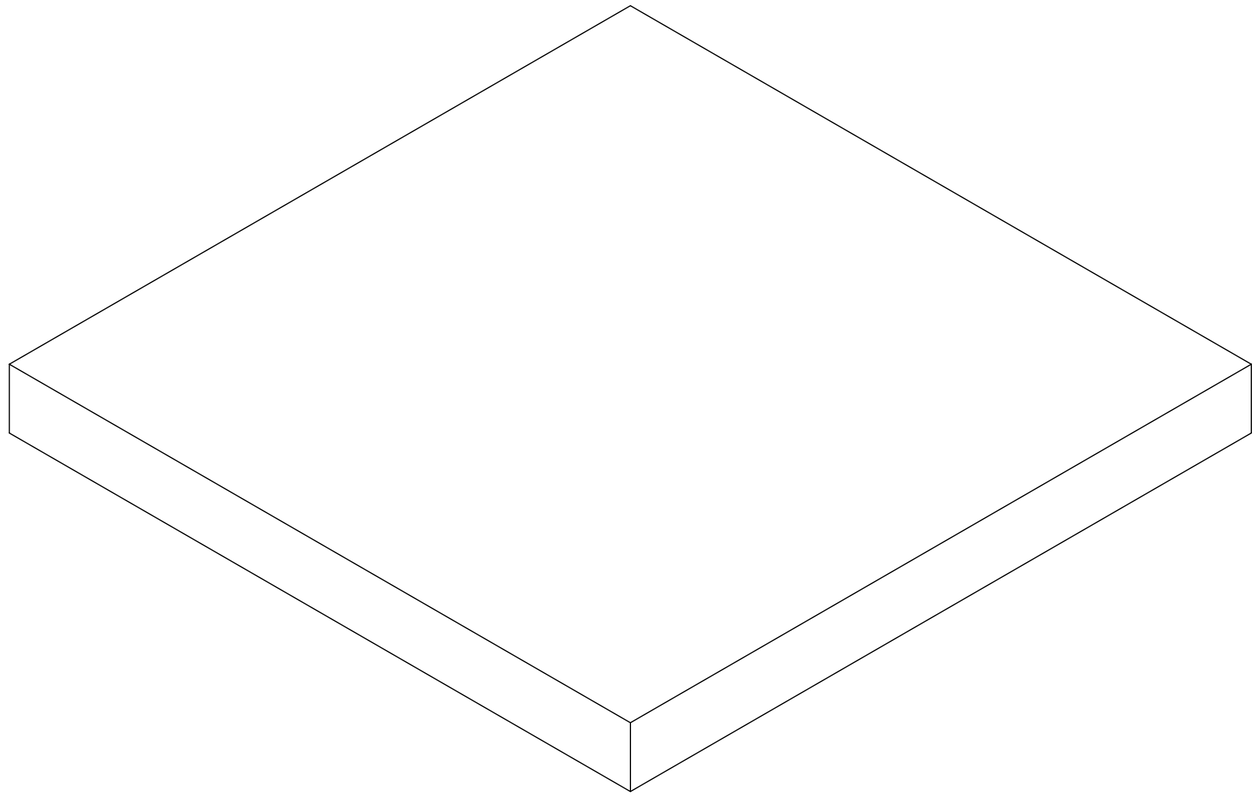
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

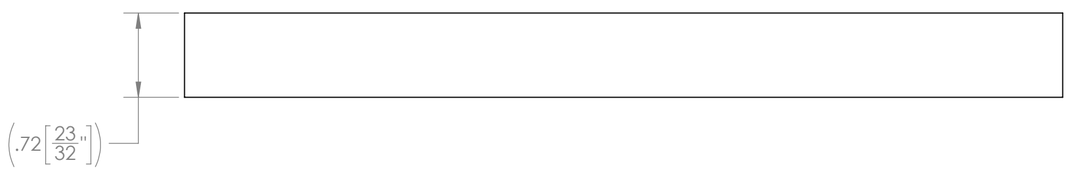
FIRST ROBOTICS COMPETITION
SOLIDWORKS Modeling Solutions Partner

TITLE: Hub - Simple Build - Full Upper Hub for AndyMark Ring AM-4672 + 1/4 Fender Assembly

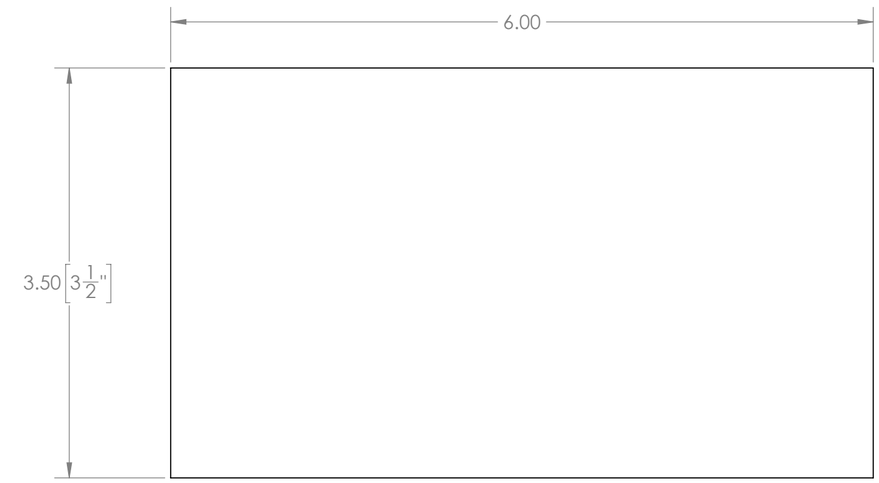
SIZE	DWG. NO.	REV
C	TE-22002-AM	
SCALE: 1:24	SHEET 3 OF 3	

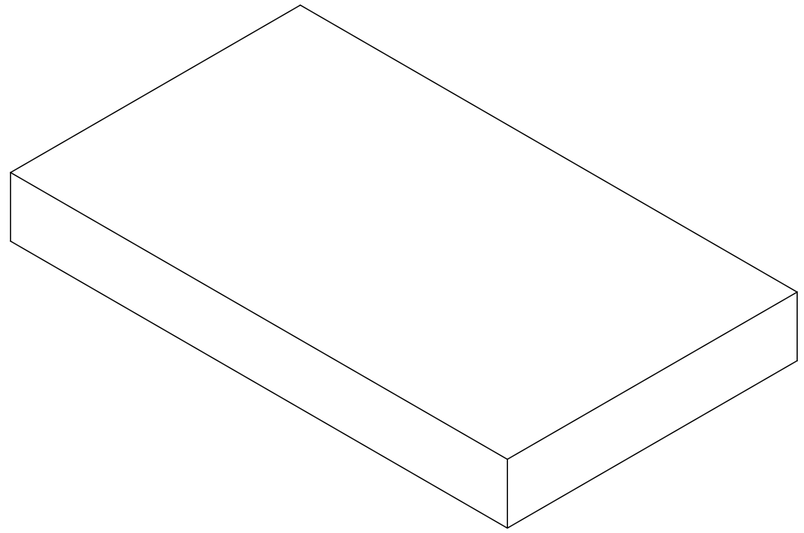


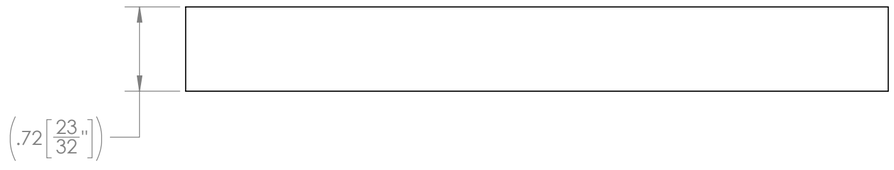




UNLESS OTHERWISE SPECIFIED:	TEAM	NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC / 12/29/2021
MATERIAL/FINISH: 3/4" Plywood	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING 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 Square Connection Plate
DO NOT SCALE DRAWING	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.	SIZE: C / DWG. NO.: TE-22005 / REV: SCALE: 1:1 / SHEET 1 OF 1







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	12/29/2021

MATERIAL/FINISH:

3/4" Plywood

DO NOT SCALE DRAWING

PROPRIETARY AND CONFIDENTIAL

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

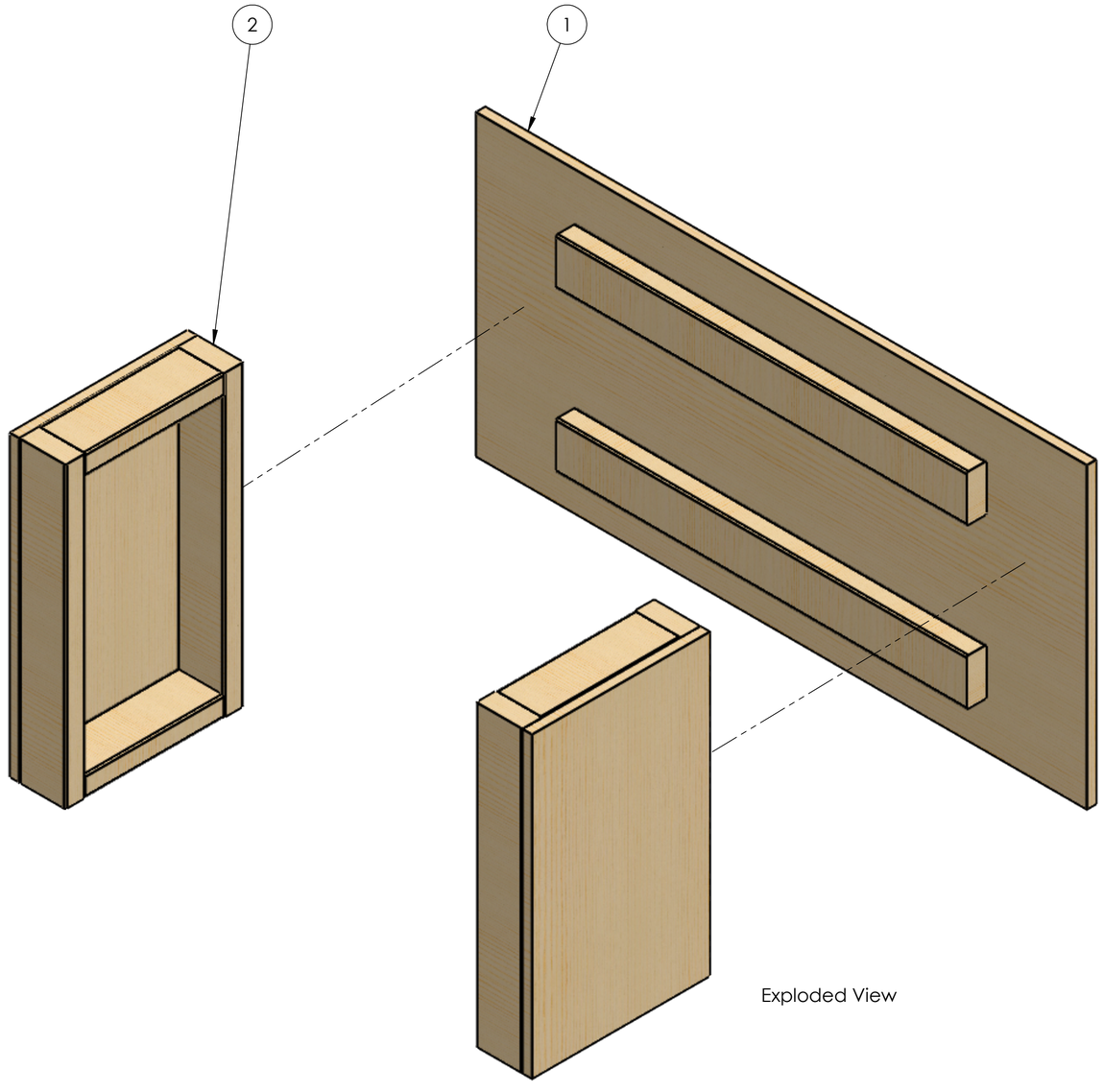
SOLIDWORKS Modeling Solutions Partner

TITLE:

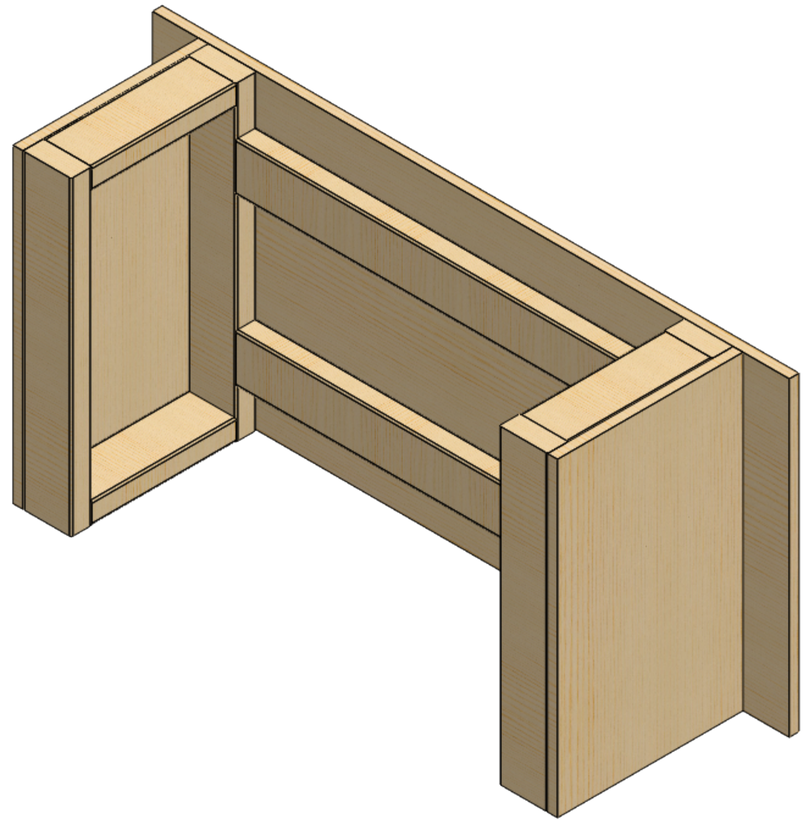
Hub - Simple Build - Upper Hub 2x4 Connection Plate

SIZE	DWG. NO.	REV
C	TE-22006	

SCALE: 1:1 SHEET 1 OF 1



Exploded View



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

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TE-22013	HUB - Basic Build - Fender Front Assembly	1
2	TE-22017	HUB - Basic Build - Fender Side Assembly	2

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

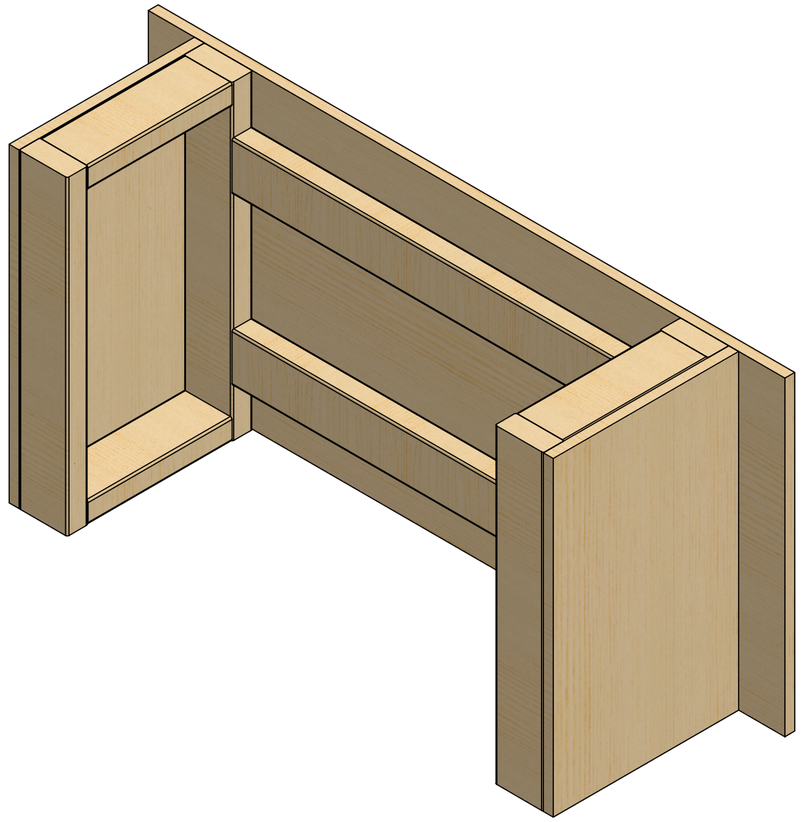
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

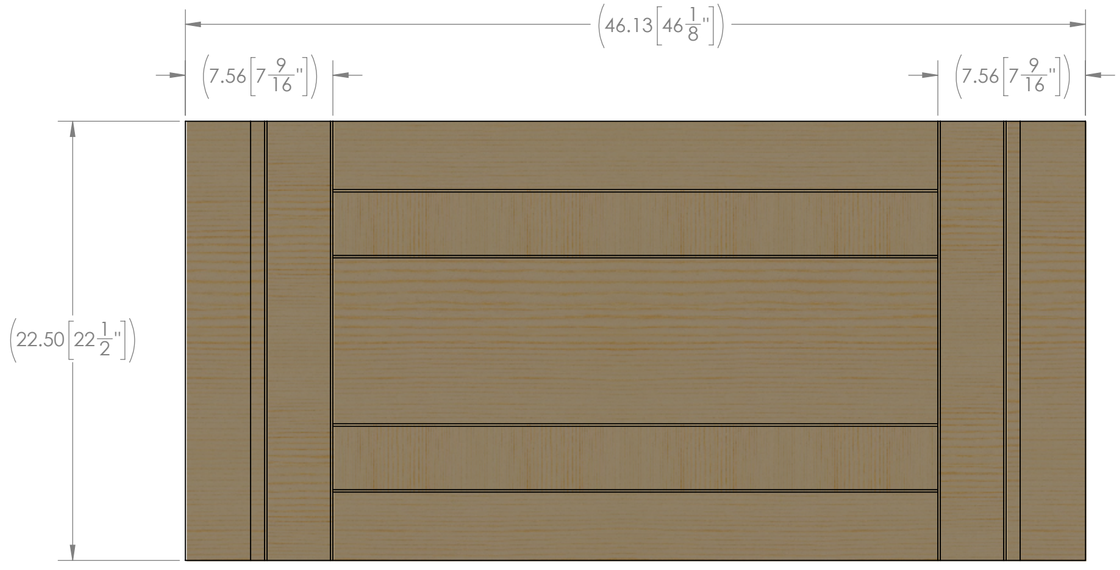
FIRST ROBOTICS COMPETITION
SOLIDWORKS Modeling Solutions Partner

TITLE:
Hub - Simple Build - Fender Assembly

SIZE	DWG. NO.	REV
C	TE-22010	

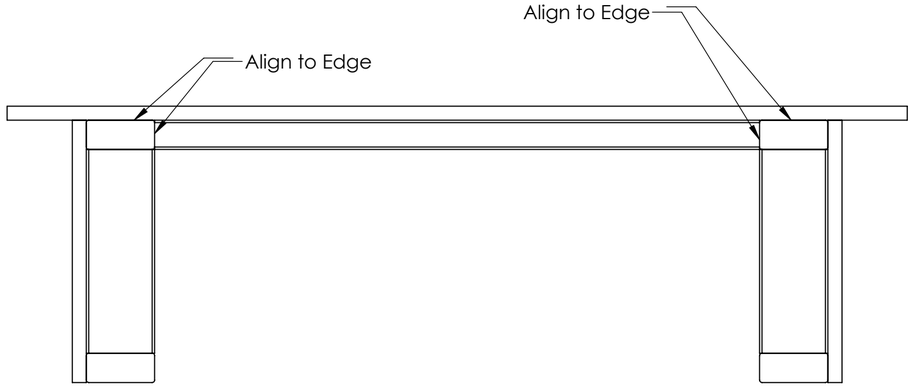
SCALE: 1:6 SHEET 1 OF 3

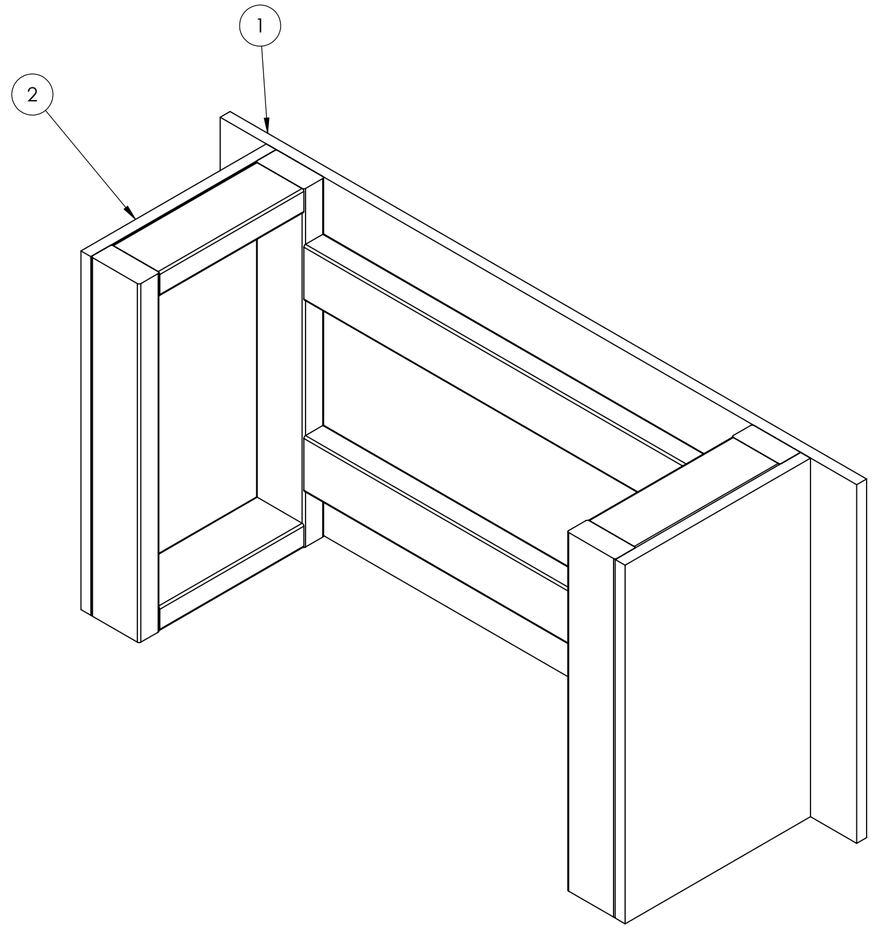




UNLESS OTHERWISE SPECIFIED:	TEAM	NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC 12/30/2021
MATERIAL/FINISH:	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ***FIRST®***. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ***FIRST®*** IS PROHIBITED.	TITLE: Hub - Simple Build - Fender Assembly
DO NOT SCALE DRAWING	**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:	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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

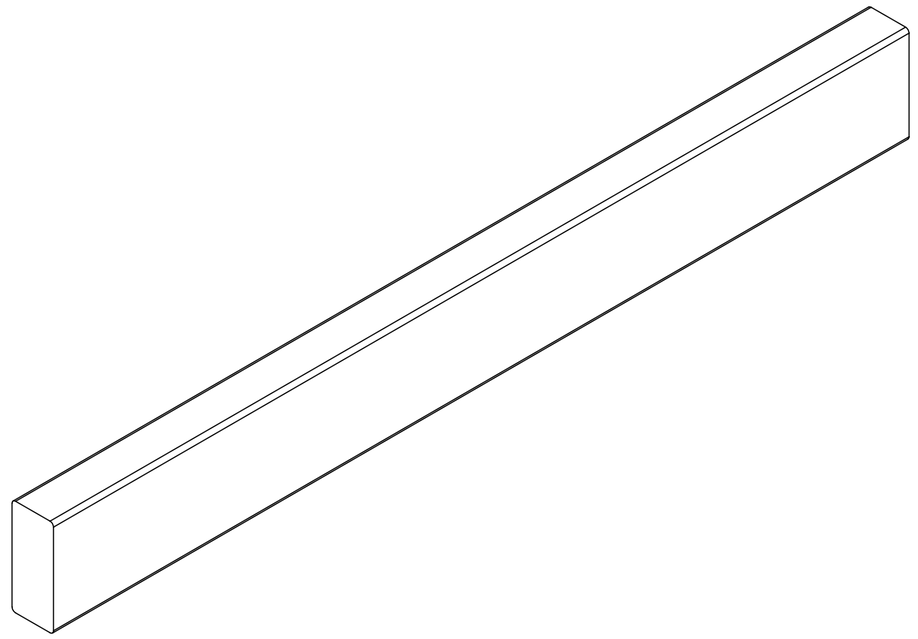
FIRST ROBOTICS COMPETITION

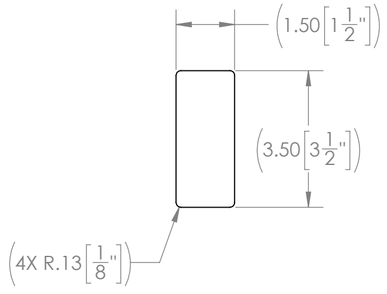
SOLIDWORKS Modeling Solutions Partner

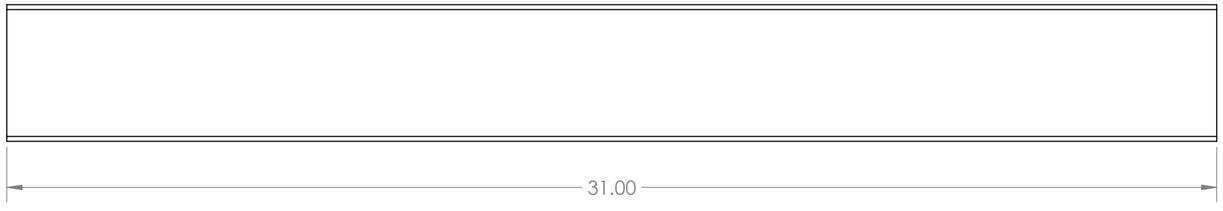
TITLE:

Hub - Simple Build - Fender Assembly

SIZE	DWG. NO.	REV
C	TE-22010	
SCALE: 1:6	SHEET 3 OF 3	







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	12/29/2021

MATERIAL/FINISH:

2"x4" Lumber

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

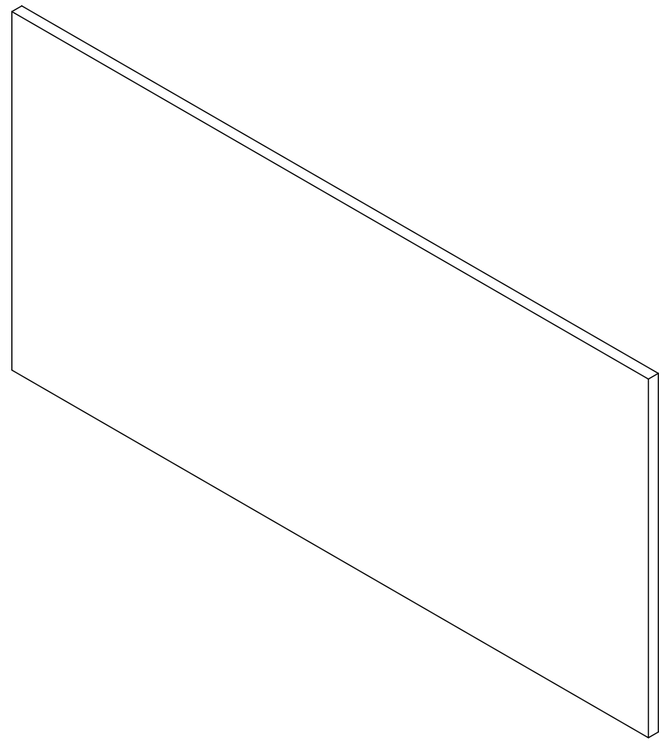
SOLIDWORKS Modeling Solutions Partner

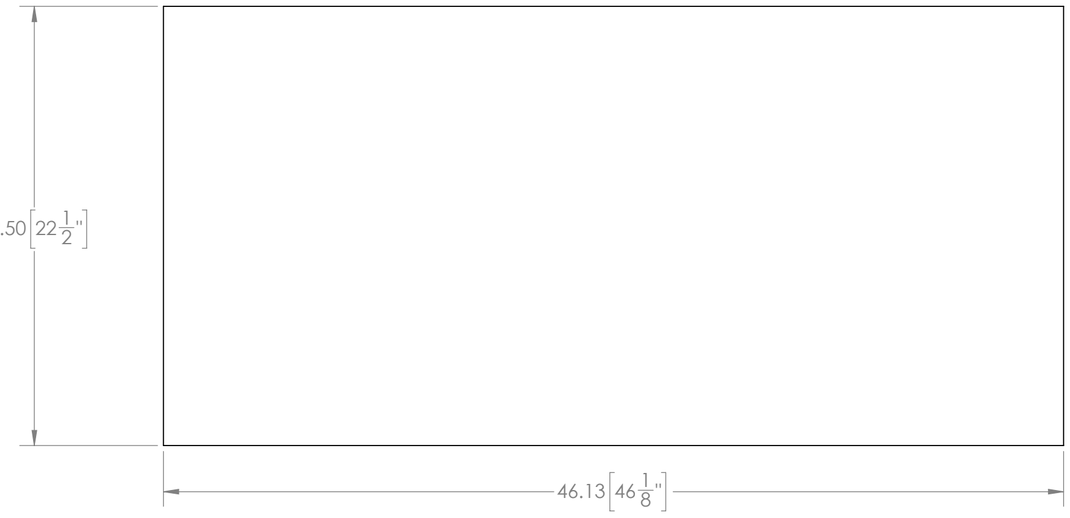
TITLE:

HUB - Simple Build - Fender Front Horizontal 2x4

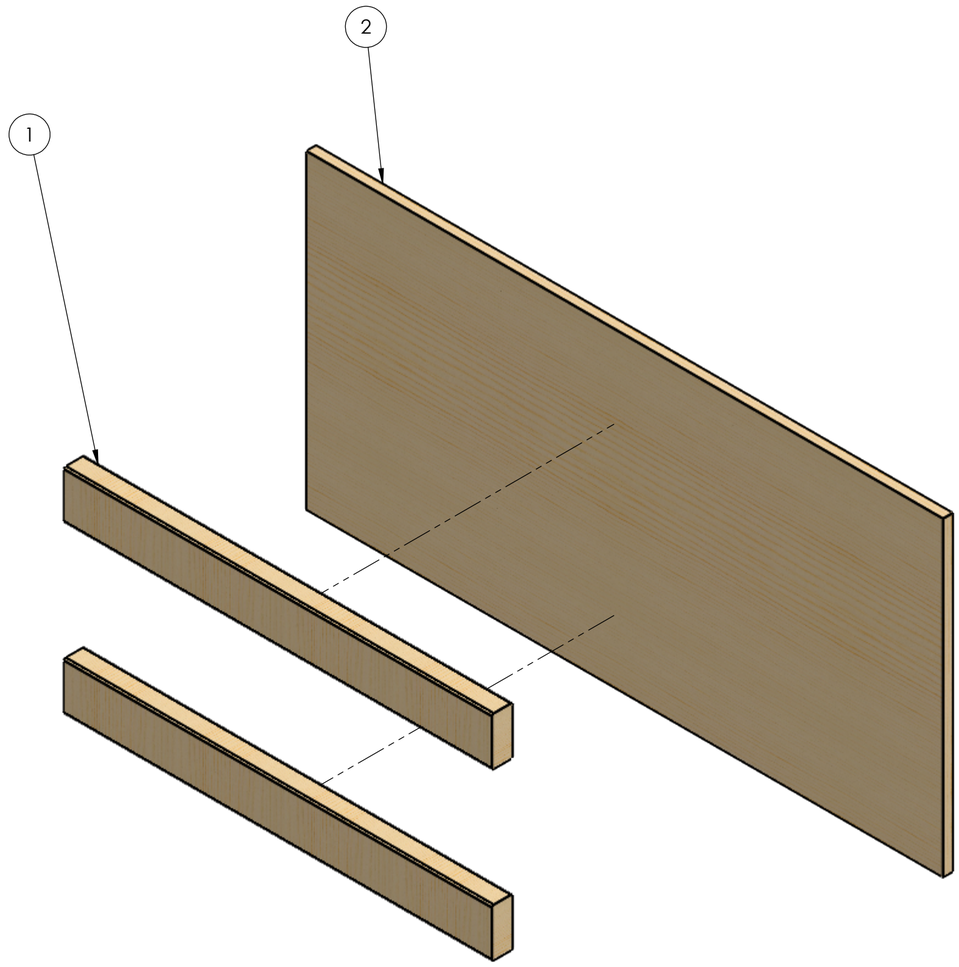
SIZE	DWG. NO.	REV
C	TE-22011	

SCALE: 1:3 | SHEET 1 OF 1

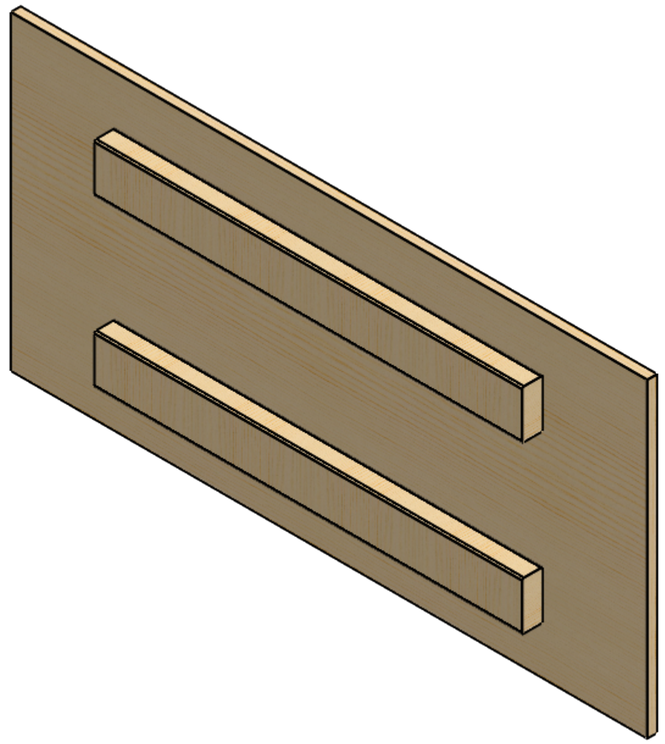




UNLESS OTHERWISE SPECIFIED:	TEAM	NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC 12/29/2021
MATERIAL/FINISH: 3/4" Plywood	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING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



Exploded View



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

Step 1:

1. Align 2x (1) to (2) as shown, using dimensions provided on Sheet 2.
2. Connect using 2" long screws. It is recommended to 7x 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

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

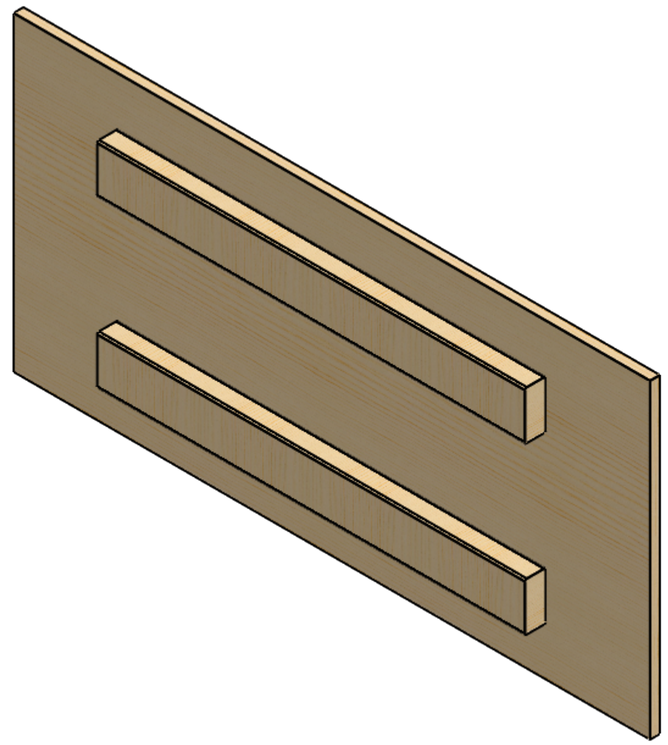
SOLIDWORKS Modeling Solutions Partner

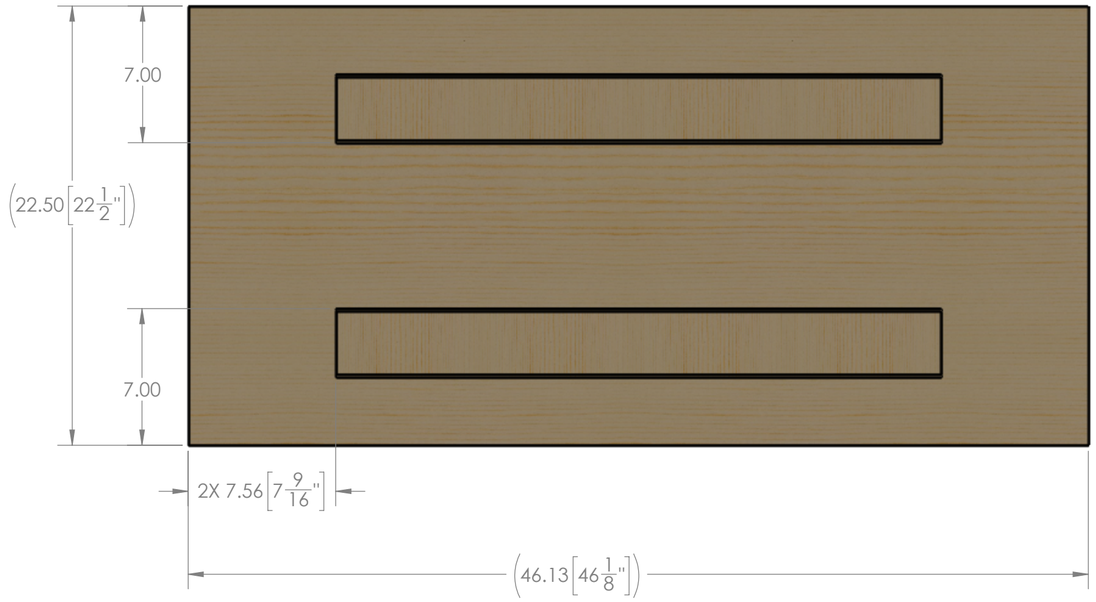
TITLE:

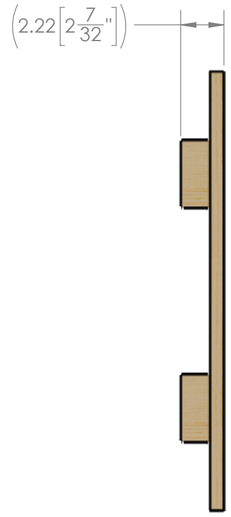
HUB - Basic Build - Fender Front Assembly

SIZE	DWG. NO.	REV
C	TE-22013	

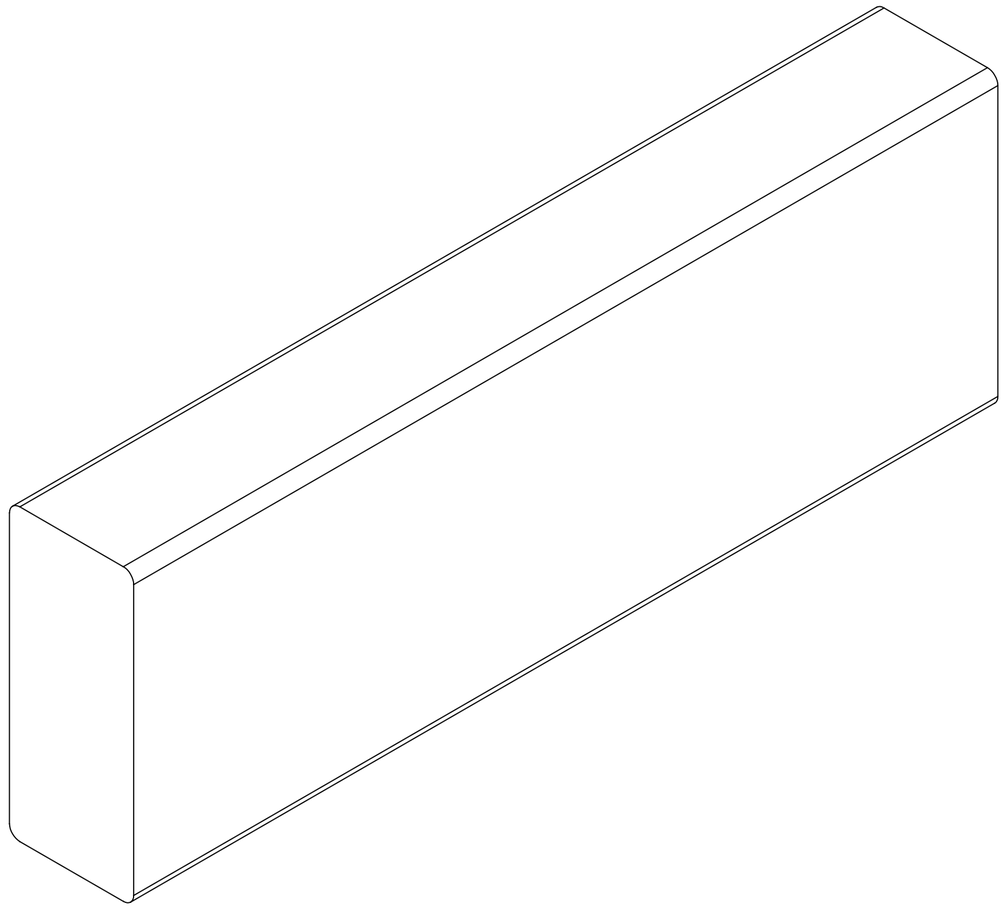
SCALE: 1:6 SHEET 1 OF 2

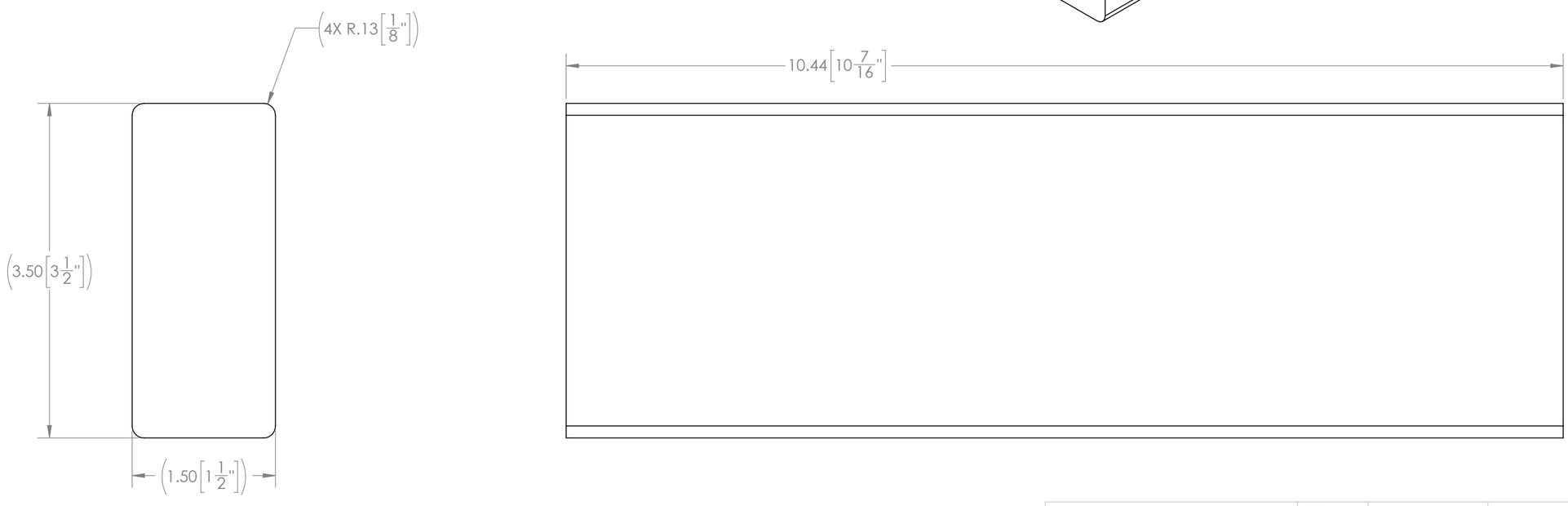






UNLESS OTHERWISE SPECIFIED:	TEAM	NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC 12/30/2021
MATERIAL/FINISH:	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE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





UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE
	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

MATERIAL/FINISH:

2"x4" Lumber

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

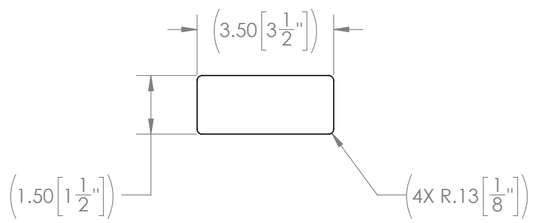
SOLIDWORKS Modeling Solutions Partner

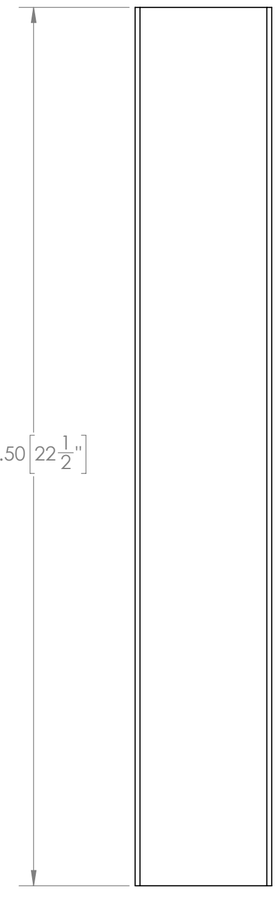
TITLE:

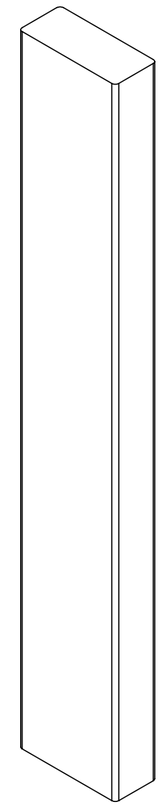
HUB - Simple Build - Fender Side Horizontal 2x4

SIZE	DWG. NO.	REV
C	TE-22014	

SCALE: 1:1 SHEET 1 OF 1





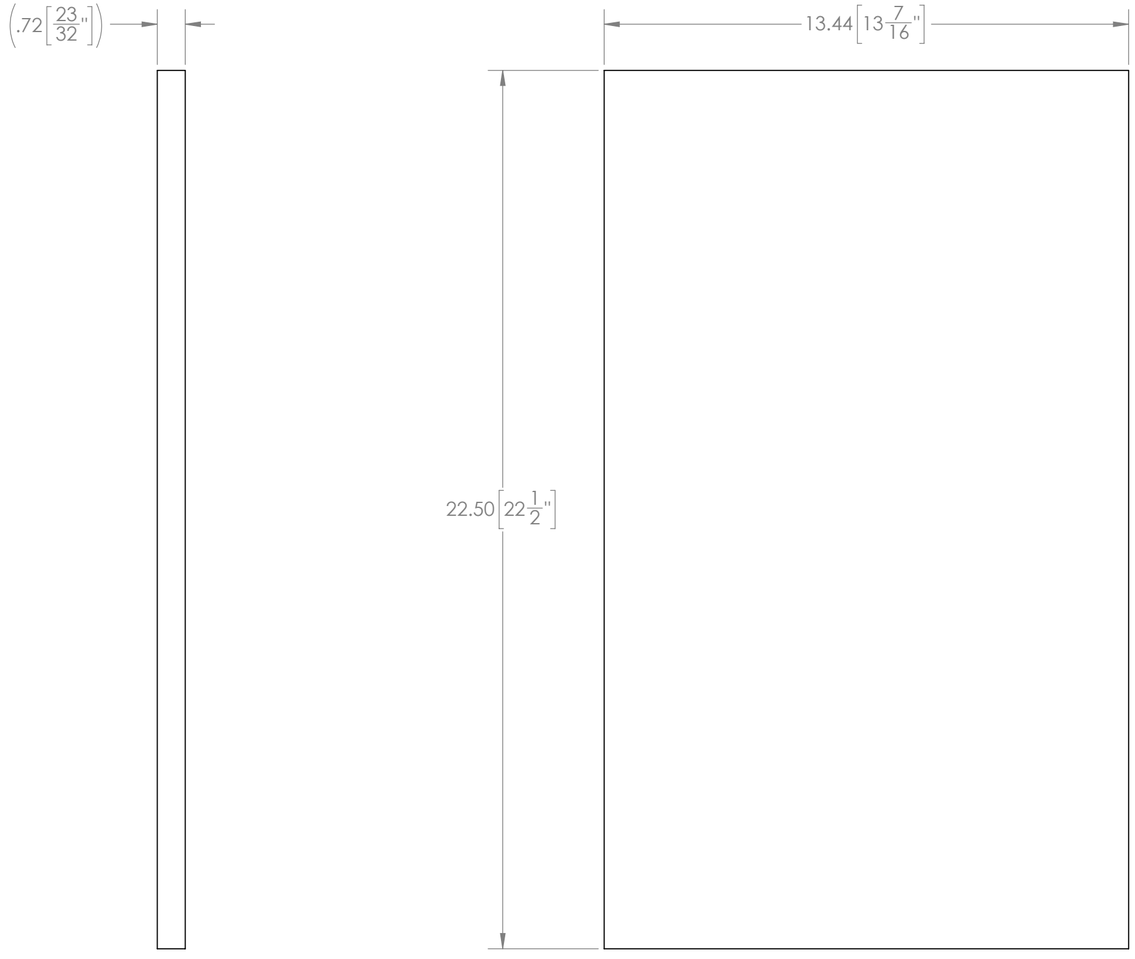


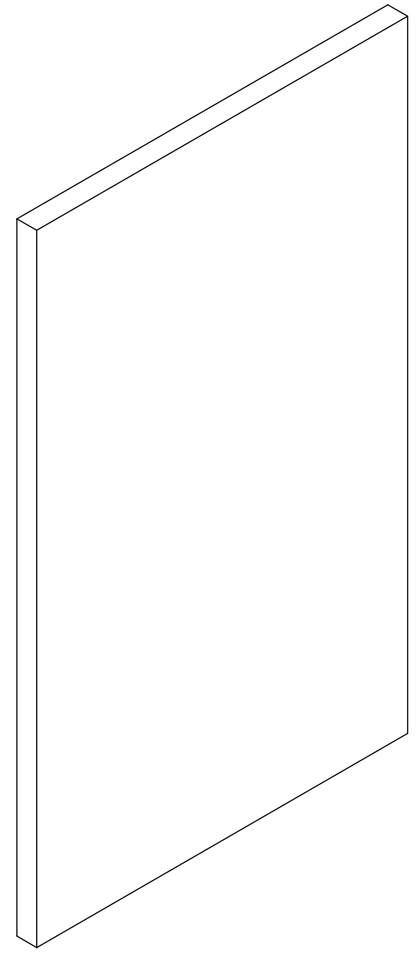
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC 12/29/2021
MATERIAL/FINISH: 2"x4" Lumber	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ***FIRST®***. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ***FIRST®*** IS PROHIBITED.	
DO NOT SCALE DRAWING	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.	

FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

TITLE:
HUB - Simple Build - Fender Vertical 2x4

SIZE	DWG. NO.	REV
C	TE-22015	
SCALE: 1:3	SHEET 1 OF 1	





UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE
	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

MATERIAL/FINISH:

3/4" Plywood

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

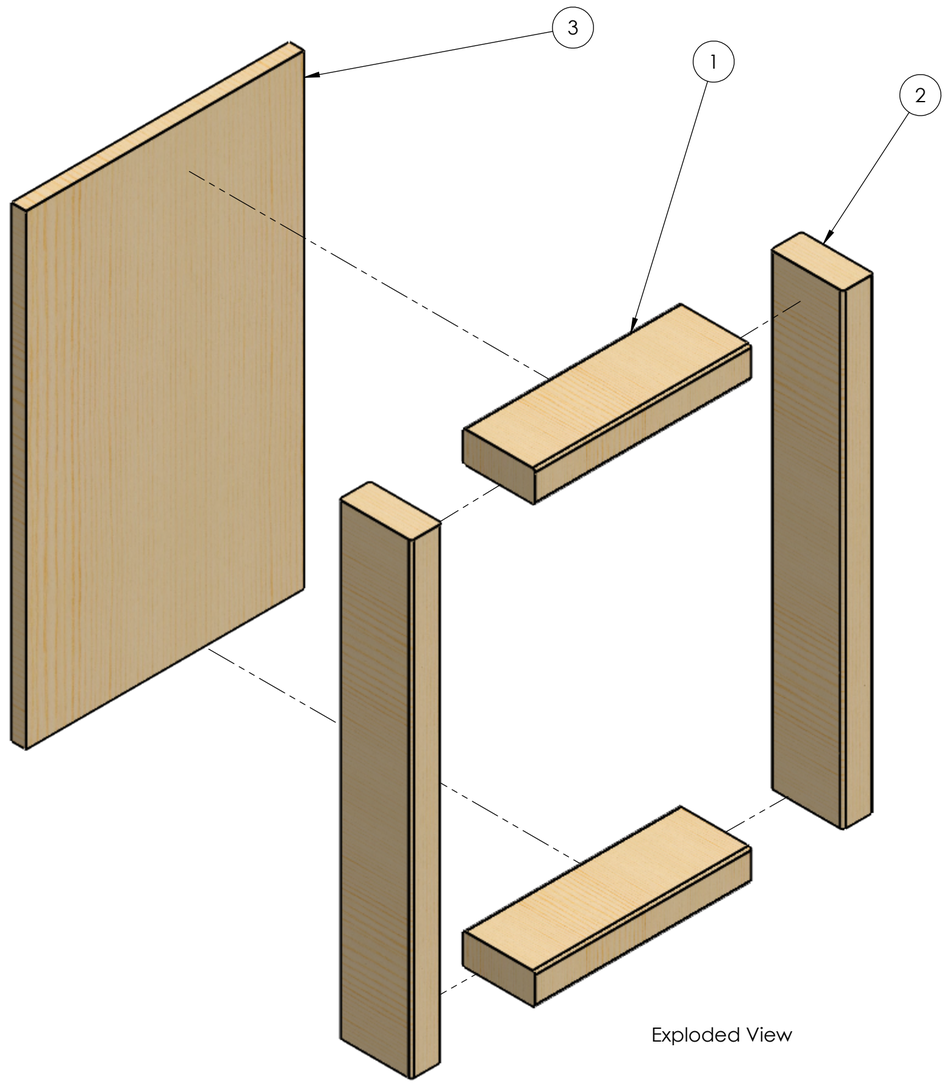
SOLIDWORKS Modeling Solutions Partner

TITLE:

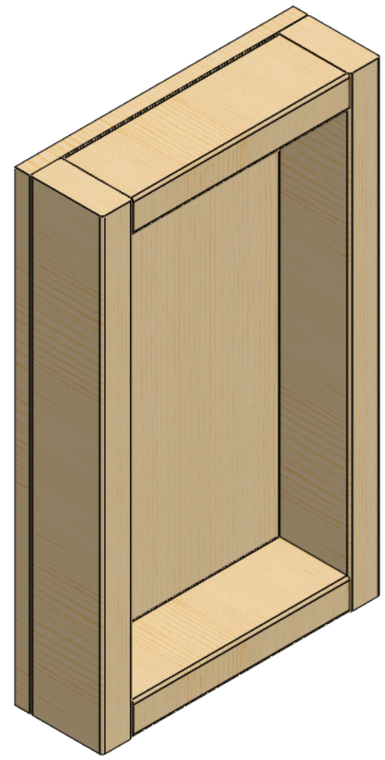
HUB - Simple Build - Fender Side

SIZE	DWG. NO.	REV
C	TE-22016	

SCALE: 1:3 | SHEET 1 OF 1



Exploded View



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:

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

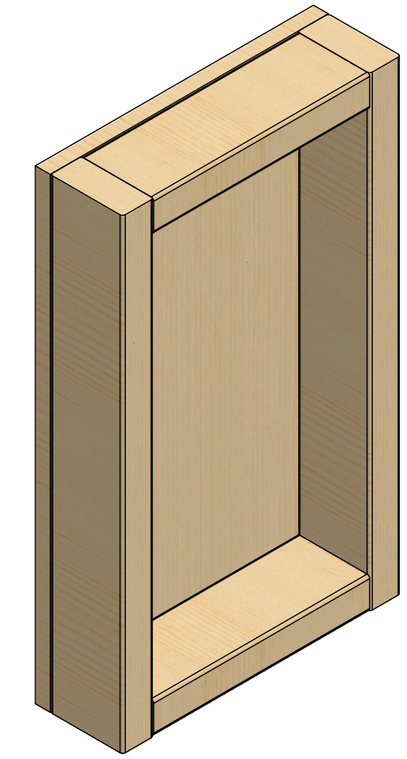
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

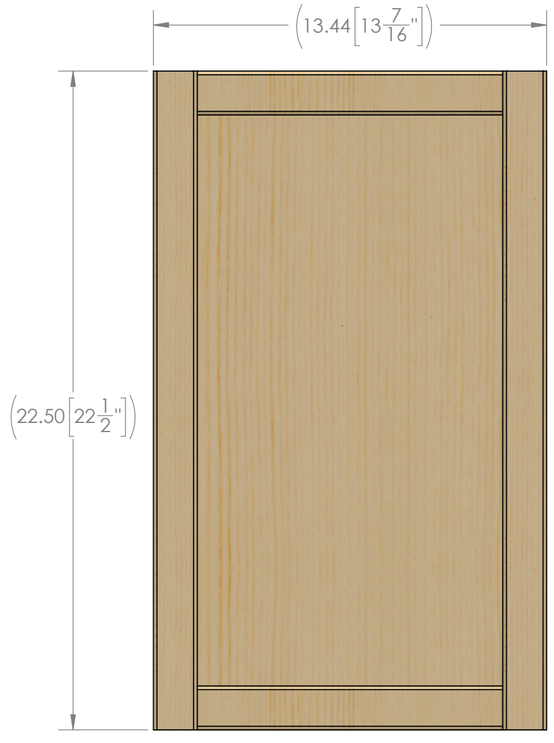
FIRST ROBOTICS COMPETITION
SOLIDWORKS Modeling Solutions Partner

TITLE:
HUB - Basic Build - Fender Side Assembly

SIZE	DWG. NO.	REV
C	TE-22017	

SCALE: 1:4 SHEET 1 OF 3





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
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.		
DO NOT SCALE DRAWING	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.		

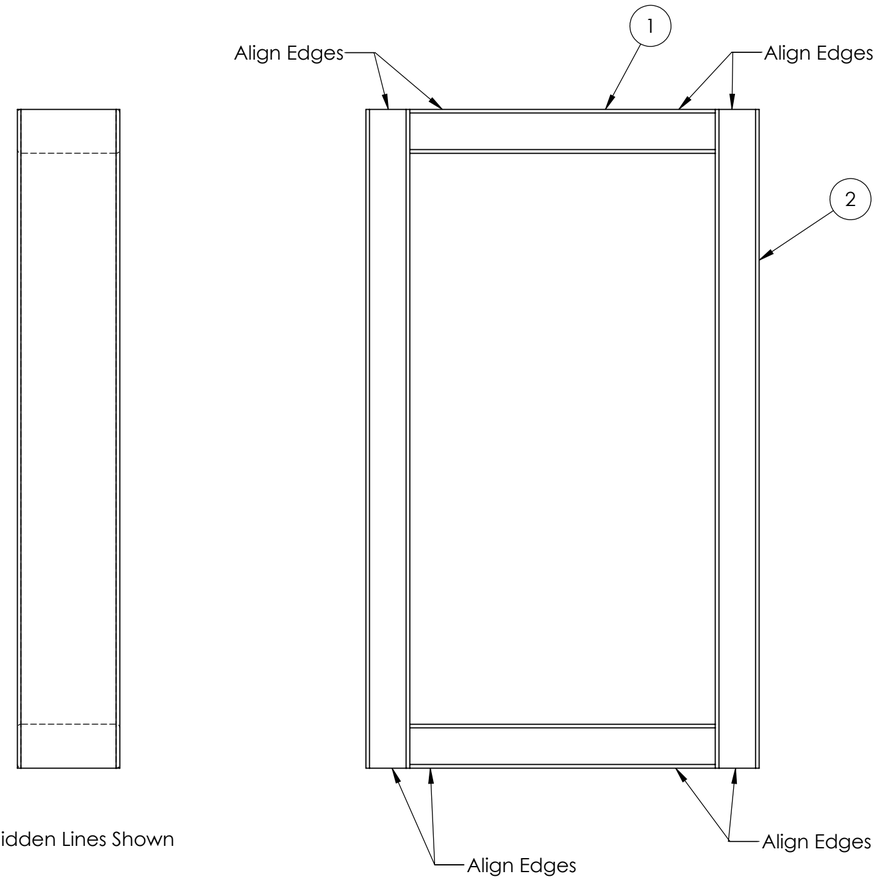
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

TITLE:

HUB - Basic Build - Fender Side Assembly

SIZE	DWG. NO.	REV
C	TE-22017	
SCALE: 1:4	SHEET 2 OF 3	

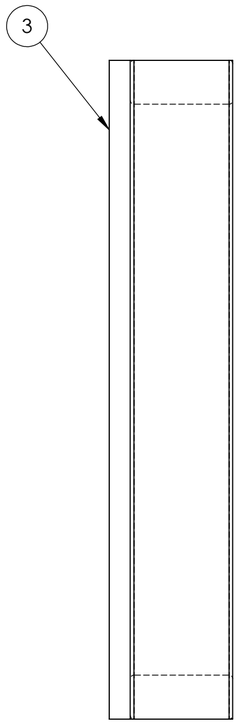
Step 1



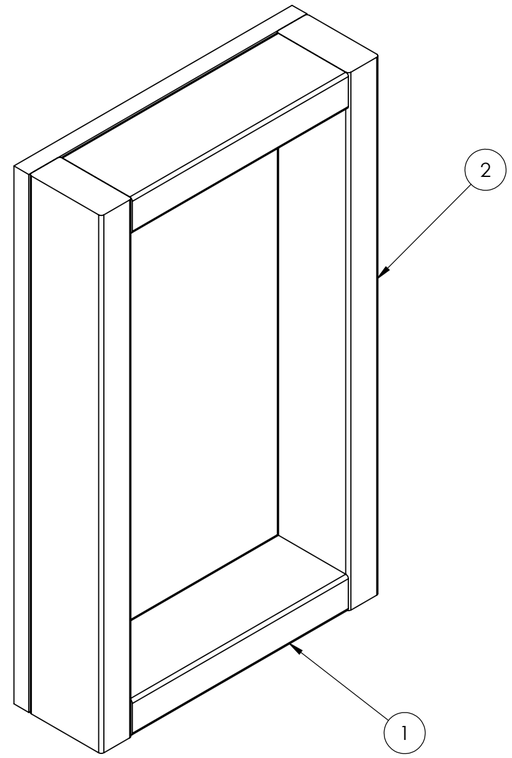
Hidden Lines Shown

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).

Step 2



Hidden Lines Shown



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
	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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

COMMENTS:

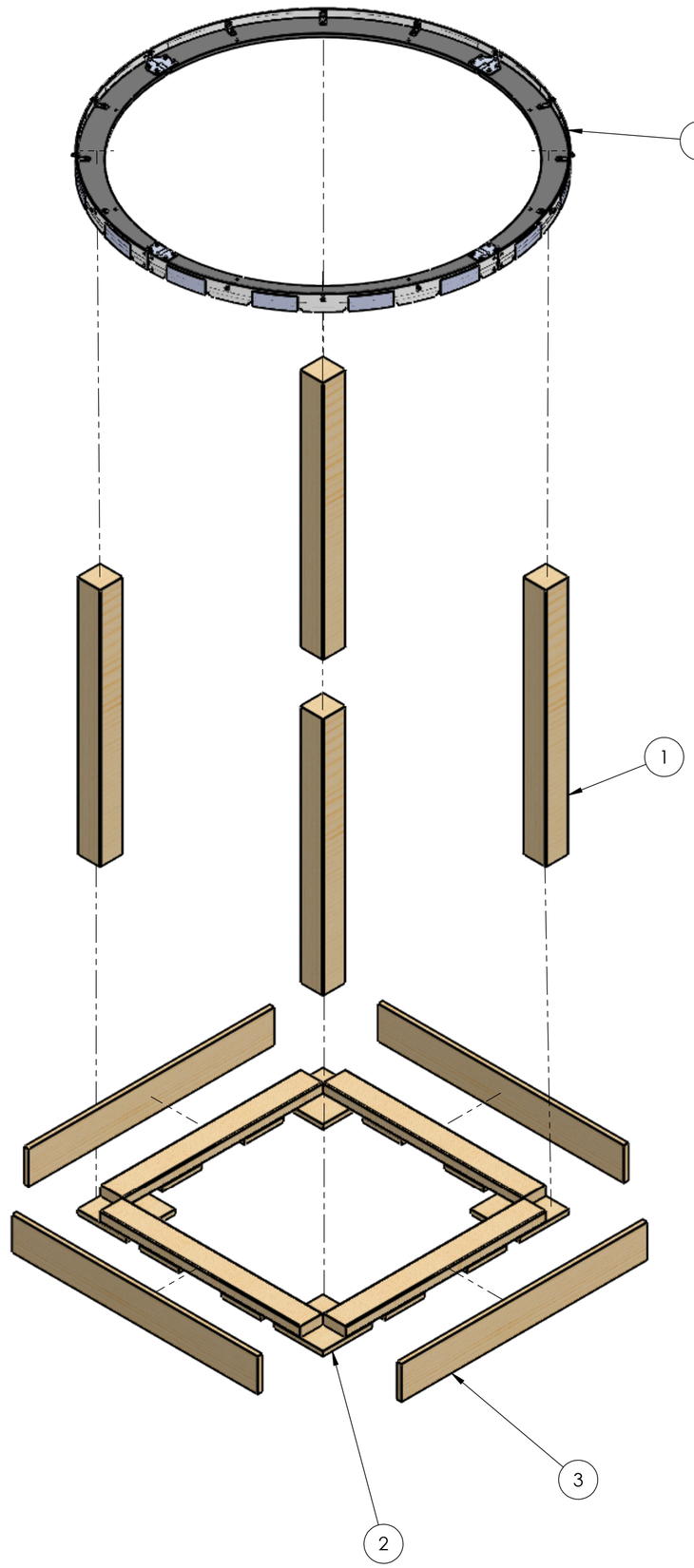
REMOVE ALL BURRS AND SHARP EDGES.

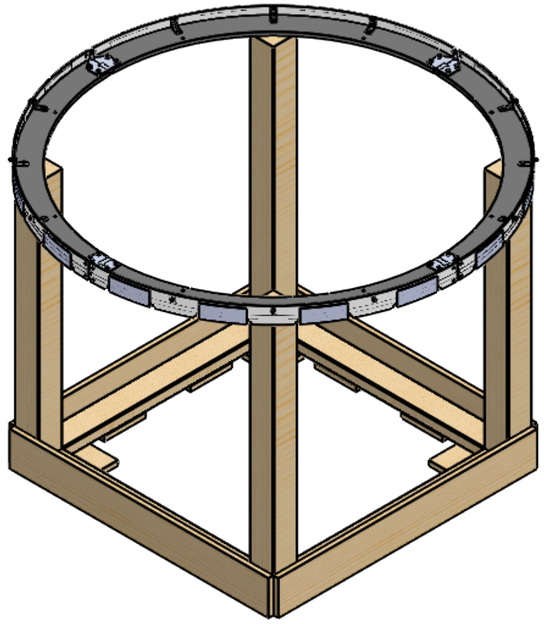
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

TITLE:

HUB - Basic Build - Fender Side Assembly

SIZE	DWG. NO.	REV
C	TE-22017	
SCALE: 1:4	SHEET 3 OF 3	





Note: Use Assembly TE-22030-AM if pairing with AndyMark's AM-4672 Assembly

Hardware Needed:
#8 x 1.25" Long Screw - Qty 12
#8 x 2" Long Screw - Qty 60

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TE-22036-AM	Hub - Simple Build - Upper Hub Goal 4x4 for AM Ring AM-4672	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	AM-4672	AndyMark Produced - Upper Hub Vision Ring	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

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

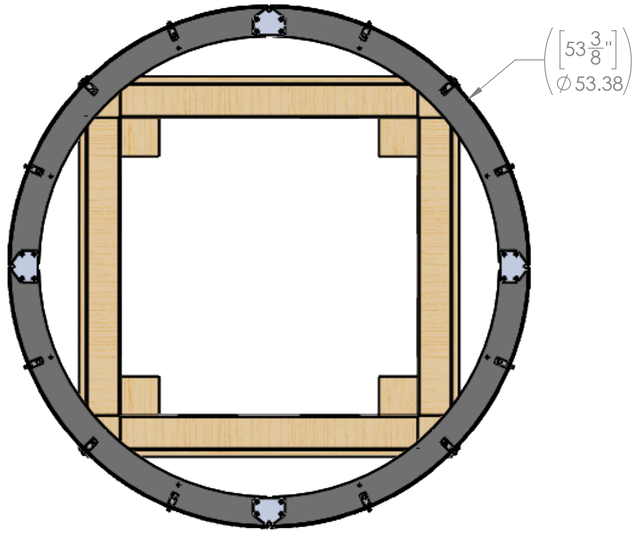
SOLIDWORKS Modeling Solutions Partner

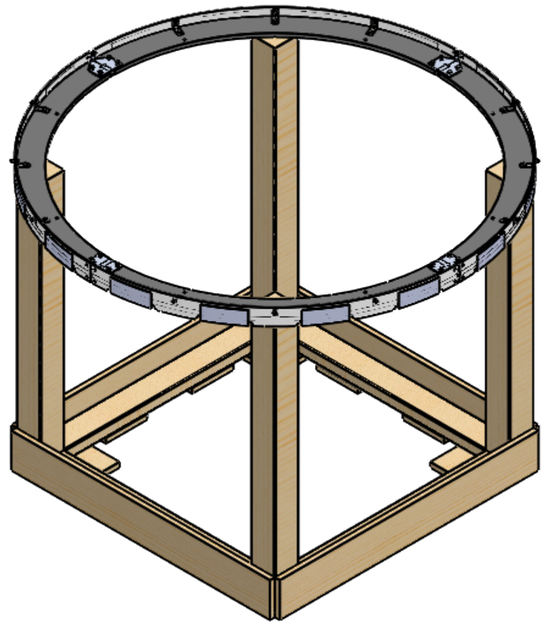
TITLE:

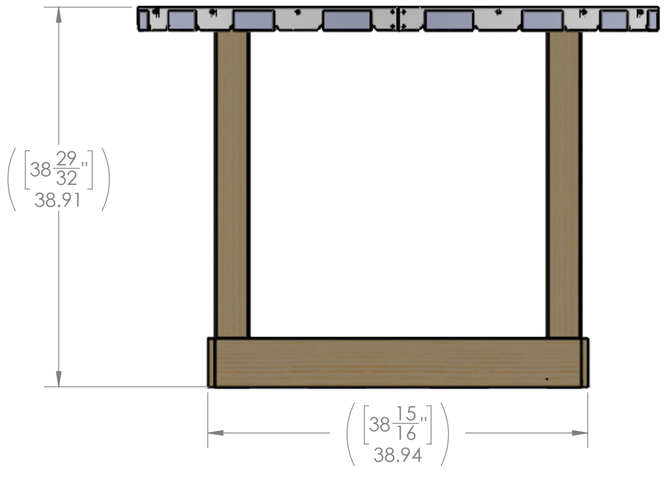
Hub - Simple Build - Upper Hub Goal Assembly for AM Ring AM-4672

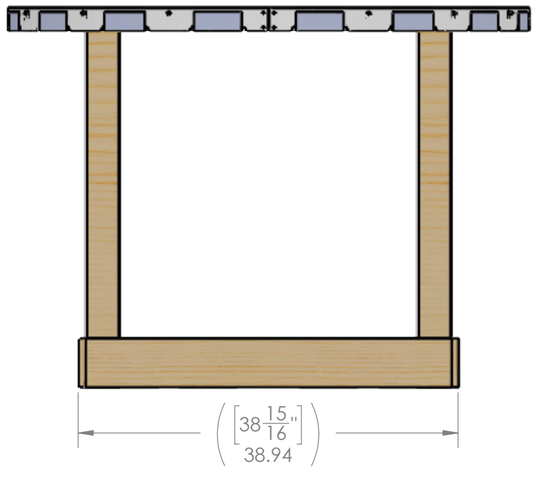
SIZE	DWG. NO.	REV
C	TE-22030-AM	

SCALE: 1:12 SHEET 1 OF 4









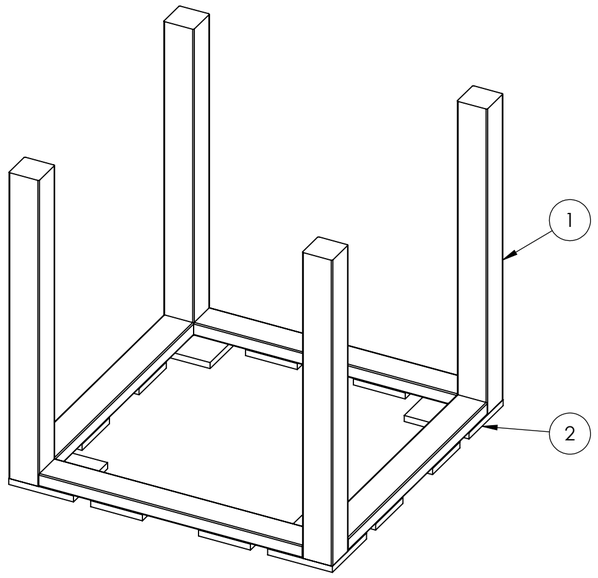
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC	12/30/2021
MATERIAL/FINISH:	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ***FIRST®***. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ***FIRST®*** IS PROHIBITED.		
DO NOT SCALE DRAWING	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.		

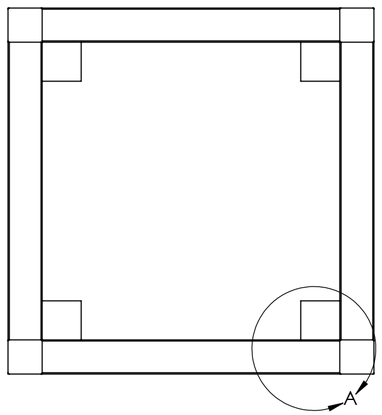
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

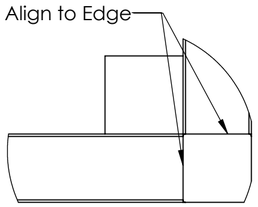
TITLE:
Hub - Simple Build - Upper Hub Goal Assembly for AM Ring AM-4672

SIZE	DWG. NO.	REV
C	TE-22030-AM	
SCALE: 1:12	SHEET 2 OF 4	

Step 1



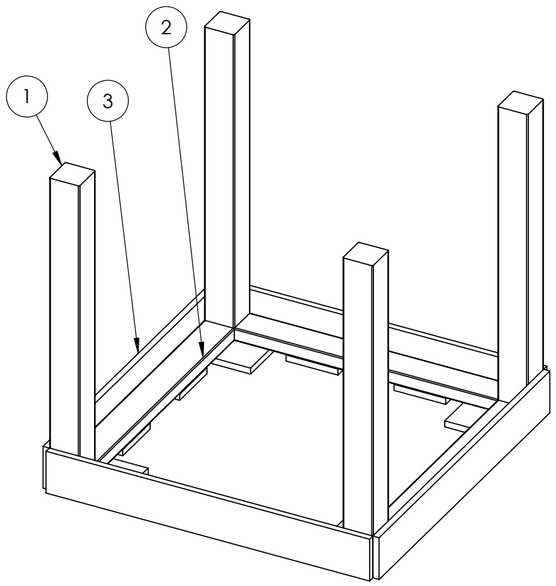


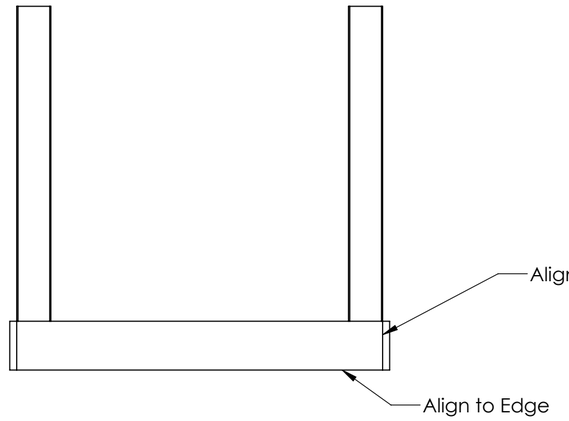


4X
DETAIL A
SCALE 1 : 6

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

Step 2





1. Align 4x (3) to Step 1 , as shown.
2. Attach (3) to (1) using 2" Long Screws. It is recommended to use x8 screws per (3) , x4 into each (1) .
3. Attach (3) to the 2"x4" Lumber of (2) using 1.25" Long Screws. It is recommended to use x3 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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

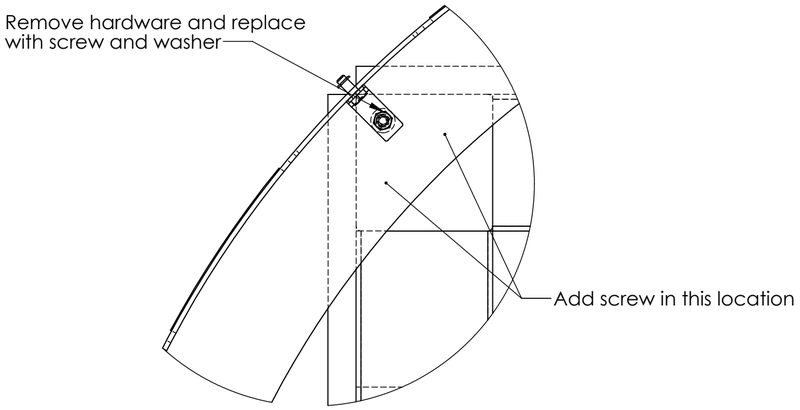
FIRST ROBOTICS COMPETITION
SOLIDWORKS Modeling Solutions Partner

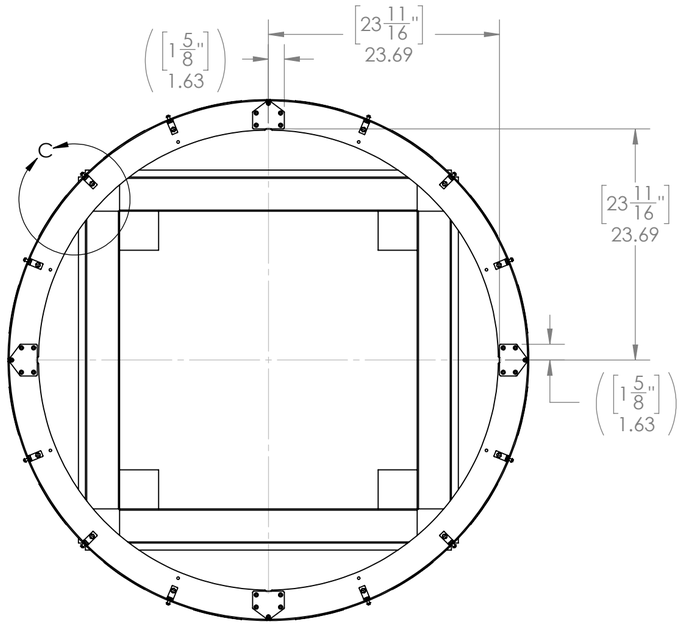
TITLE:
Hub - Simple Build - Upper Hub Goal Assembly for AM Ring AM-4672

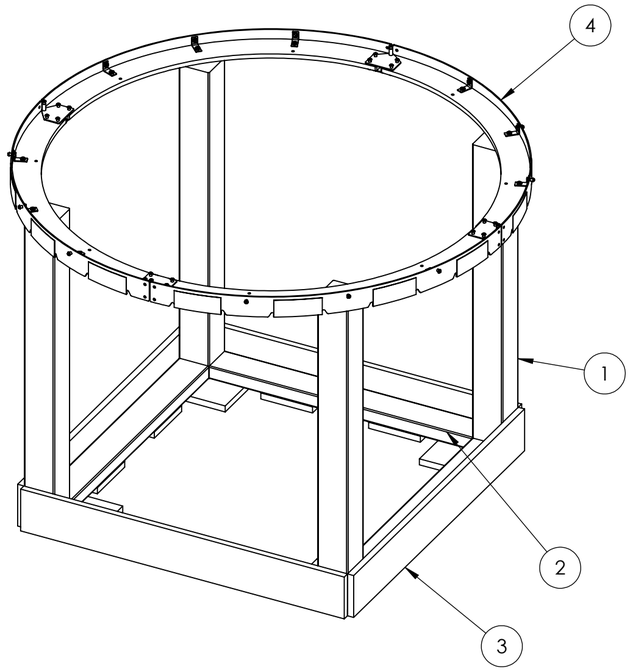
SIZE	DWG. NO.	REV
C	TE-22030-AM	

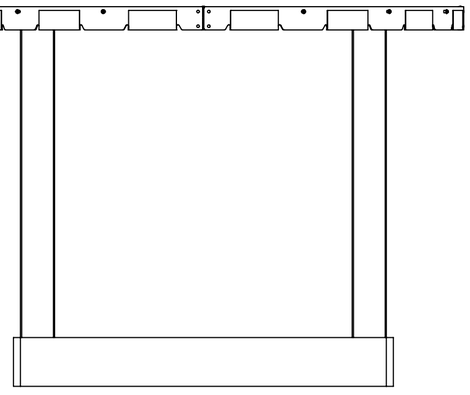
SCALE: 1:12 SHEET 3 OF 4

Step 3









4X
DETAIL C
SCALE 1 : 3
Hidden Lines Shown

1. Remove center bolt stack from (4) as shown in Detail C.
2. Align (4) to Step 2, as shown.

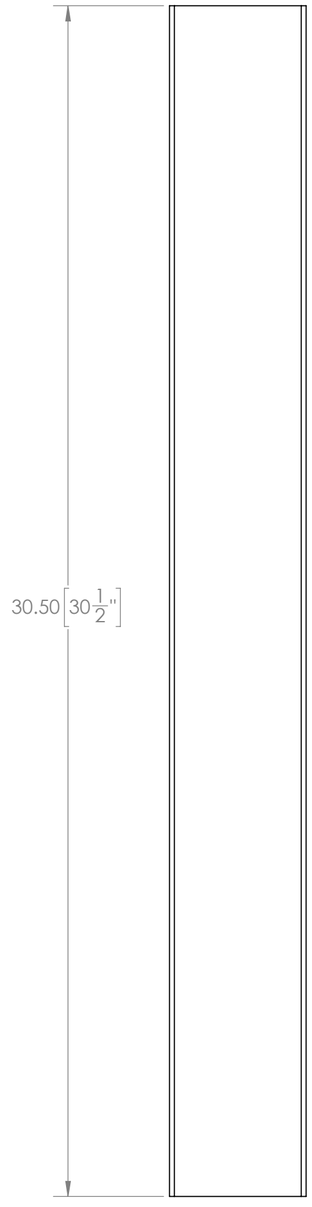
   Note: Warping may be present on (1). If this is the case, evenly split the difference from the dimensions provided to center (4) on assembly.
3. Connect using 2" Long Screws and 1/4" Washers. It is recommended to use 1x Washer (salvage from AM-4672) and 1x Screw to replace the removed bolt stack. It is recommended to use an additional 2x screws into the HDPE of (4) into each (1). Note: drilling under-sized pilot holes into the HDPE may allow for easier assembly.

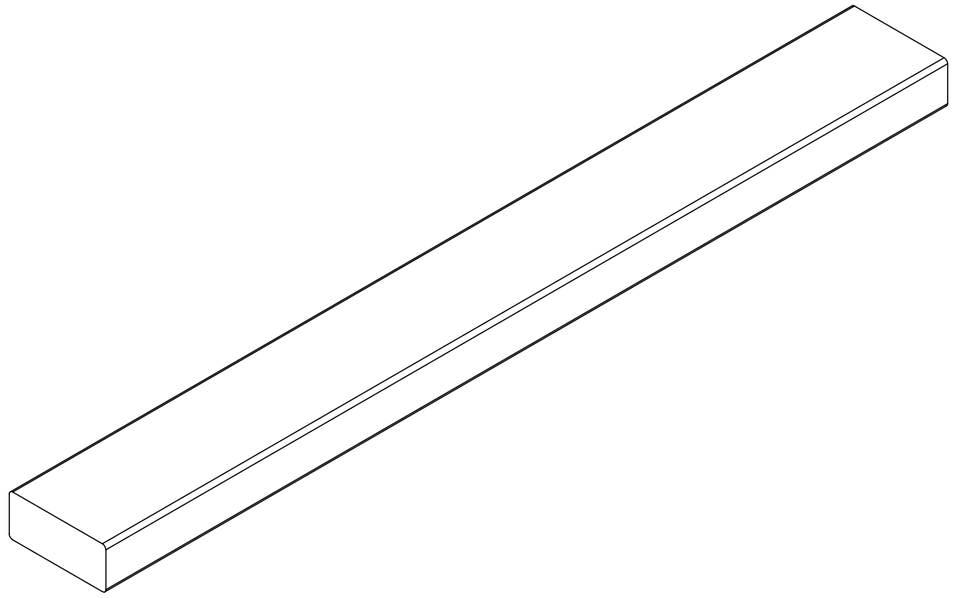
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC	12/30/2021
MATERIAL/FINISH:	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ***FIRST®***. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ***FIRST®*** IS PROHIBITED.		
DO NOT SCALE DRAWING	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.		

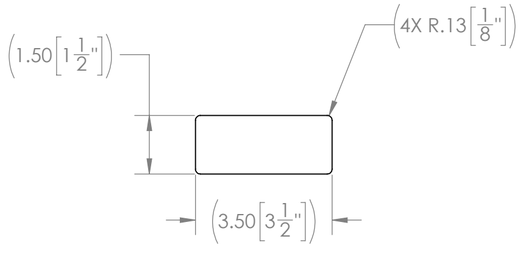
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

TITLE:
Hub - Simple Build - Upper Hub Goal Assembly for AM Ring AM-4672

SIZE	DWG. NO.	REV
C	TE-22030-AM	
SCALE: 1:12	SHEET 4 OF 4	







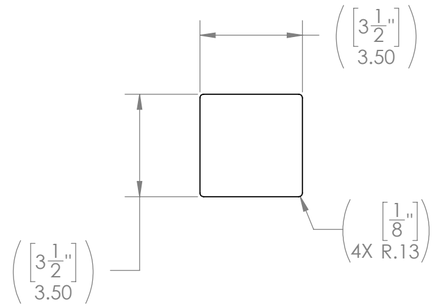
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC 12/29/2021
MATERIAL/FINISH: 2"x4" Lumber	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ***FIRST®***. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ***FIRST®*** IS PROHIBITED.	
DO NOT SCALE DRAWING	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.	

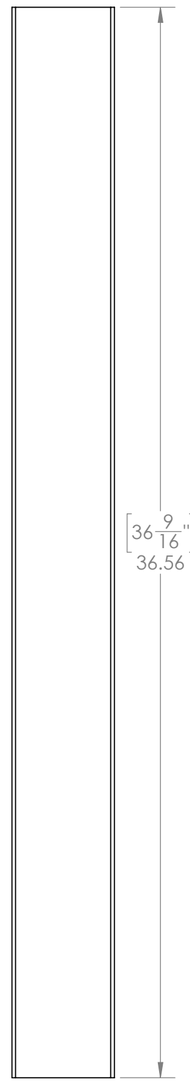
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

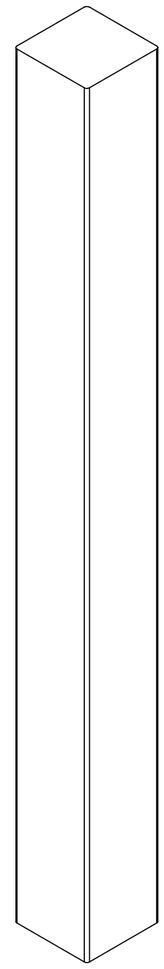
TITLE:

Hub - Simple Build - Upper Hub Goal 2x4

SIZE	DWG. NO.	REV
C	TE-22035	
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
DRAWN	KAMC	12/29/2021

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

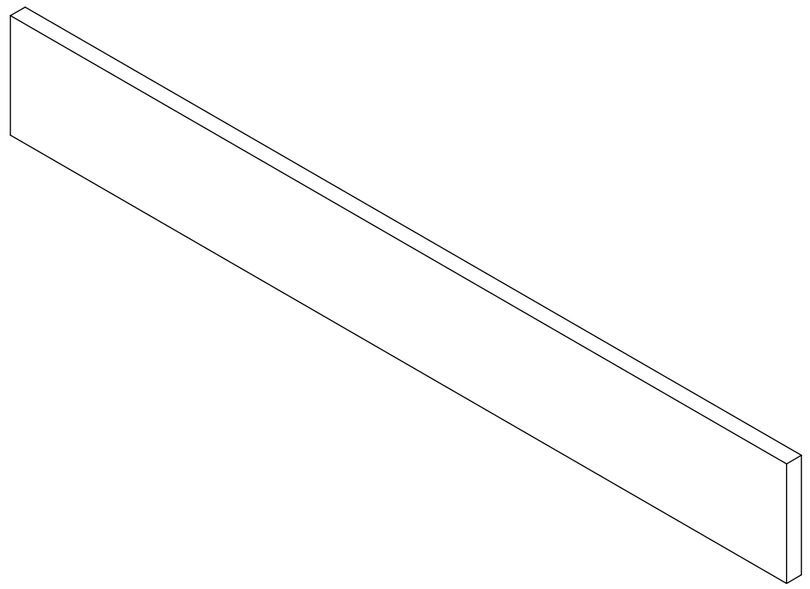
SOLIDWORKS Modeling Solutions Partner

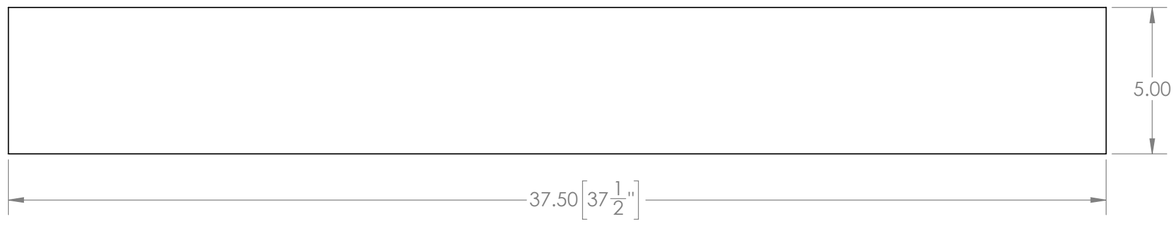
TITLE:

Hub - Simple Build - Upper Hub Goal 4x4 for AM Ring AM-4672

SIZE	DWG. NO.	REV
C	TE-22036-AM	

SCALE: 1:4 SHEET 1 OF 1





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	12/29/2021

MATERIAL/FINISH:

3/4" Plywood

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

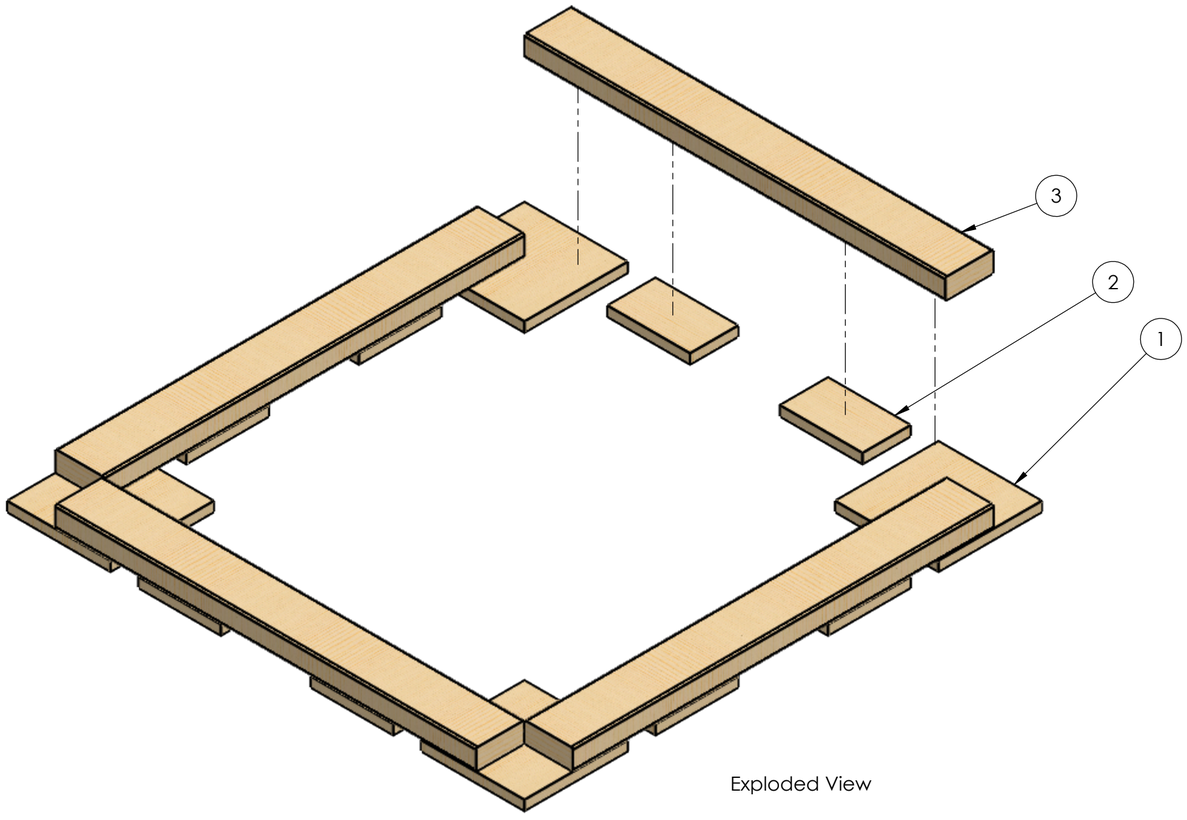
SOLIDWORKS Modeling Solutions Partner

TITLE:

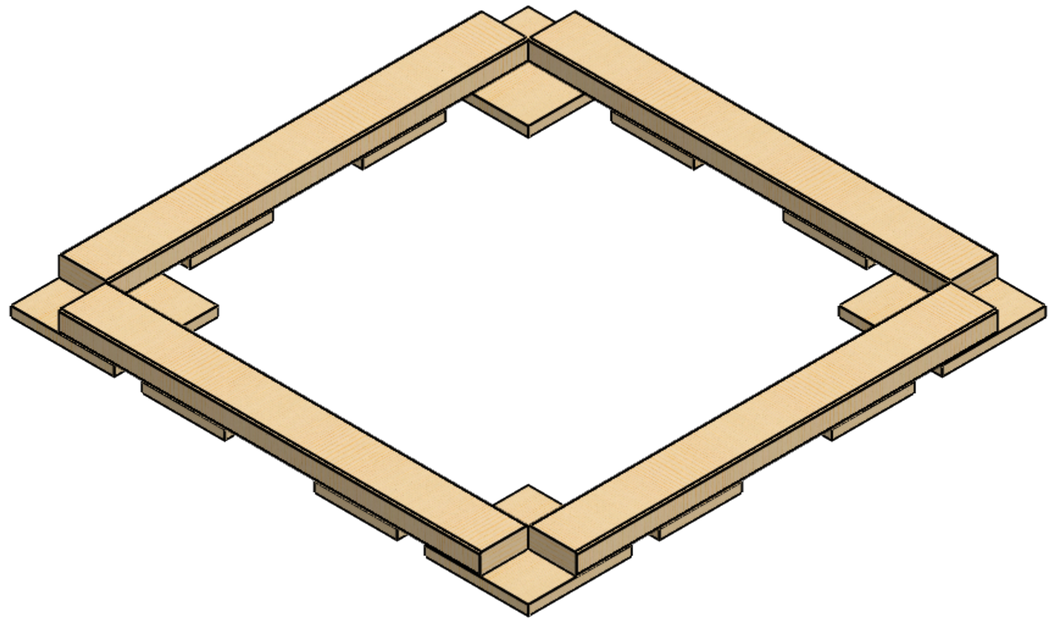
Hub - Simple Build - Upper Hub Goal Rectangle Connection Plate

SIZE	DWG. NO.	REV
C	TE-22037	

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 ±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

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

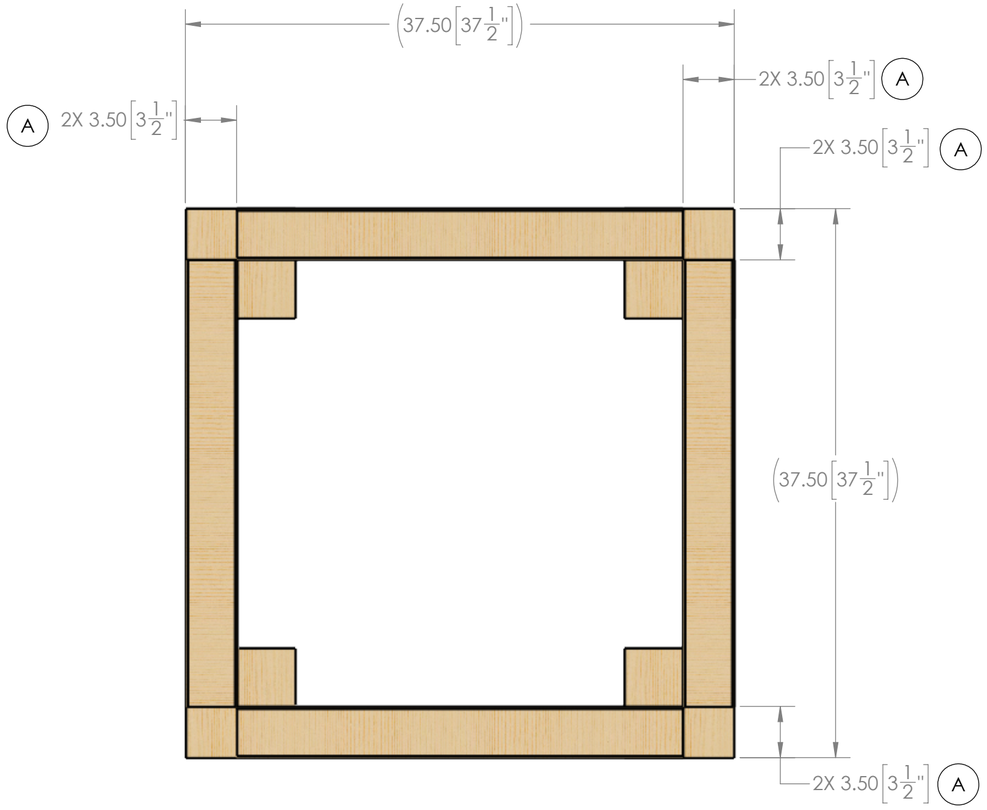
SOLIDWORKS Modeling Solutions Partner

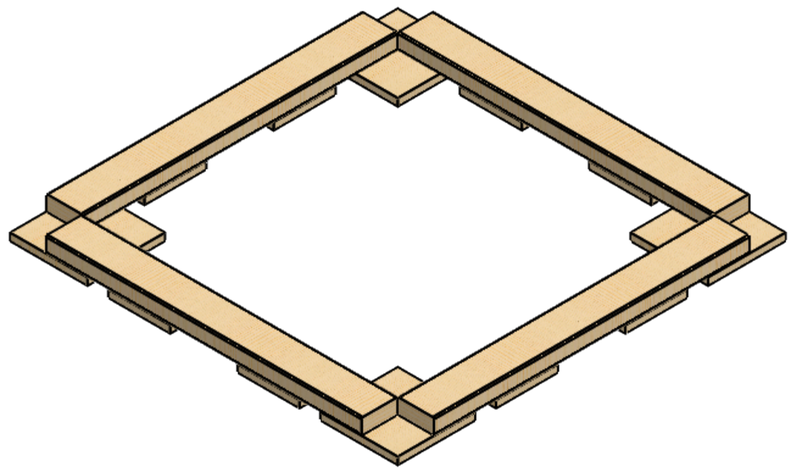
TITLE:

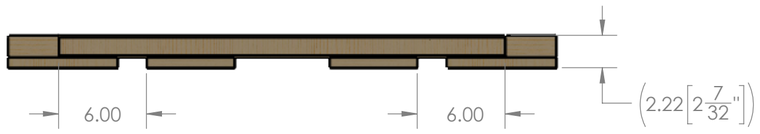
Hub - Simple Build - Upper Hub Goal Bottom Assembly

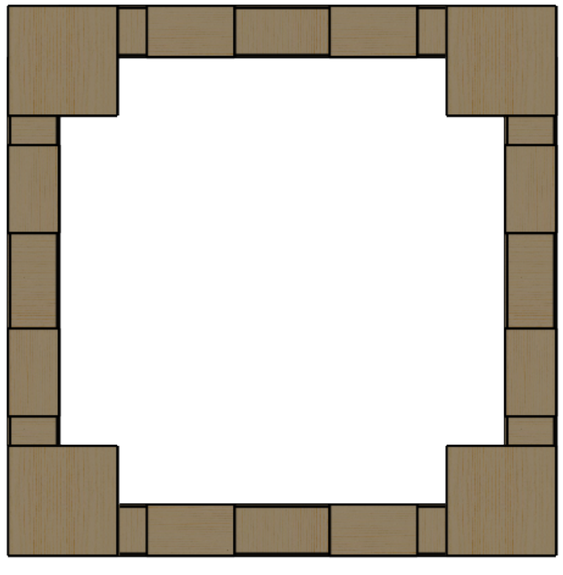
SIZE	DWG. NO.	REV
C	TE-22038	

SCALE: 1:6 SHEET 1 OF 3









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:	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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

SOLIDWORKS Modeling Solutions Partner

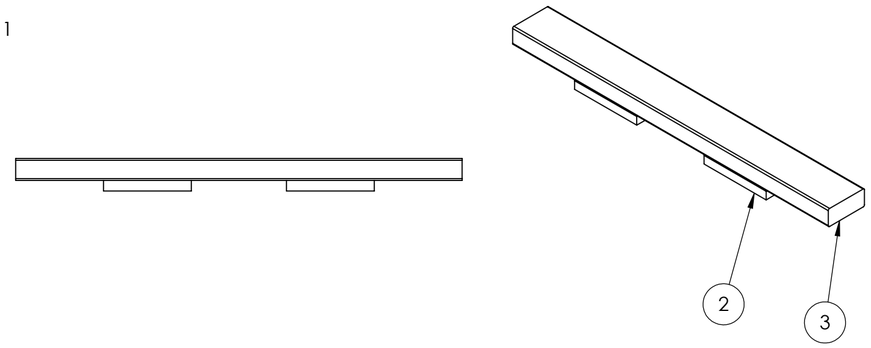
TITLE:

Hub - Simple Build - Upper Hub Goal Bottom Assembly

SIZE	DWG. NO.	REV
C	TE-22038	

SCALE: 1:8 SHEET 2 OF 3

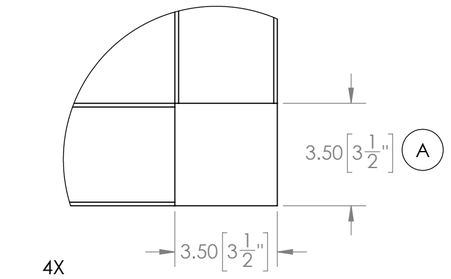
Step 1



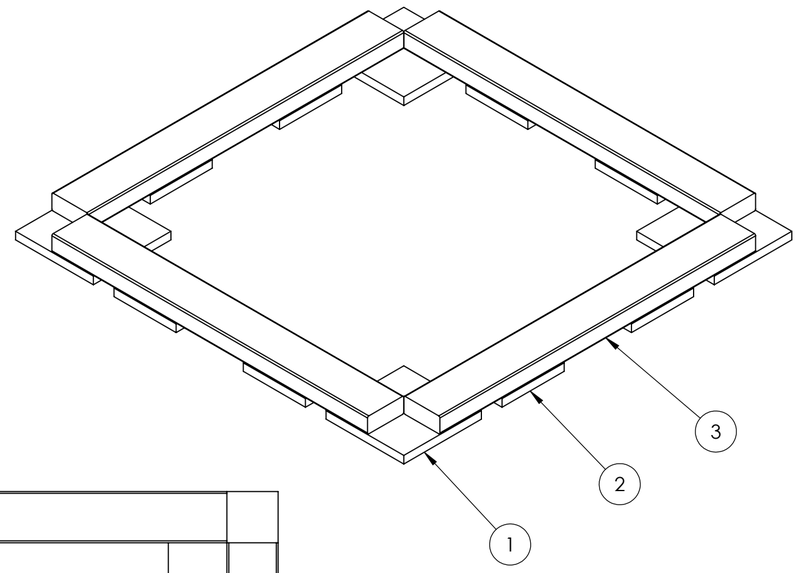
2X
DETAIL A
SCALE 1 : 4

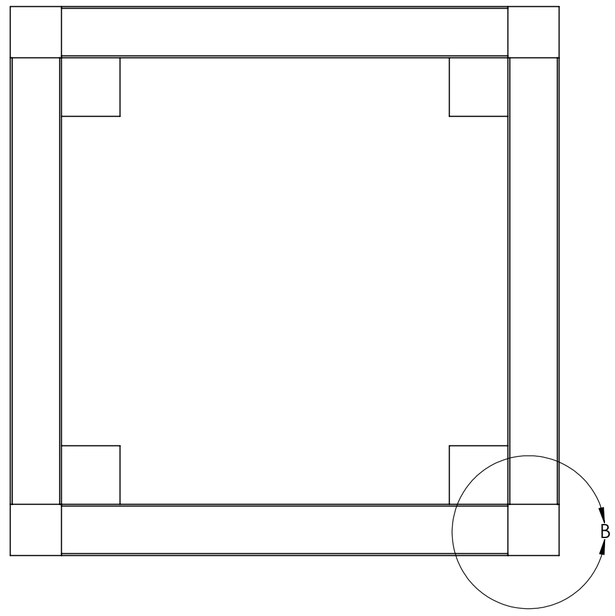
1. Align 2x (2) on (3), as shown.
2. Connect using 2" long screws. It is recommended to use 2x screws per (2) and locate them as shown above. Keep center of (2) clear of screws.
3. Repeat until you have a total of 4x sub-assemblies.

Step 2



4X
DETAIL B
SCALE 1 : 4





1. 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.
2. Connect using 2" long screws. It is recommended to use 8x screws per (3), 4x into each end.

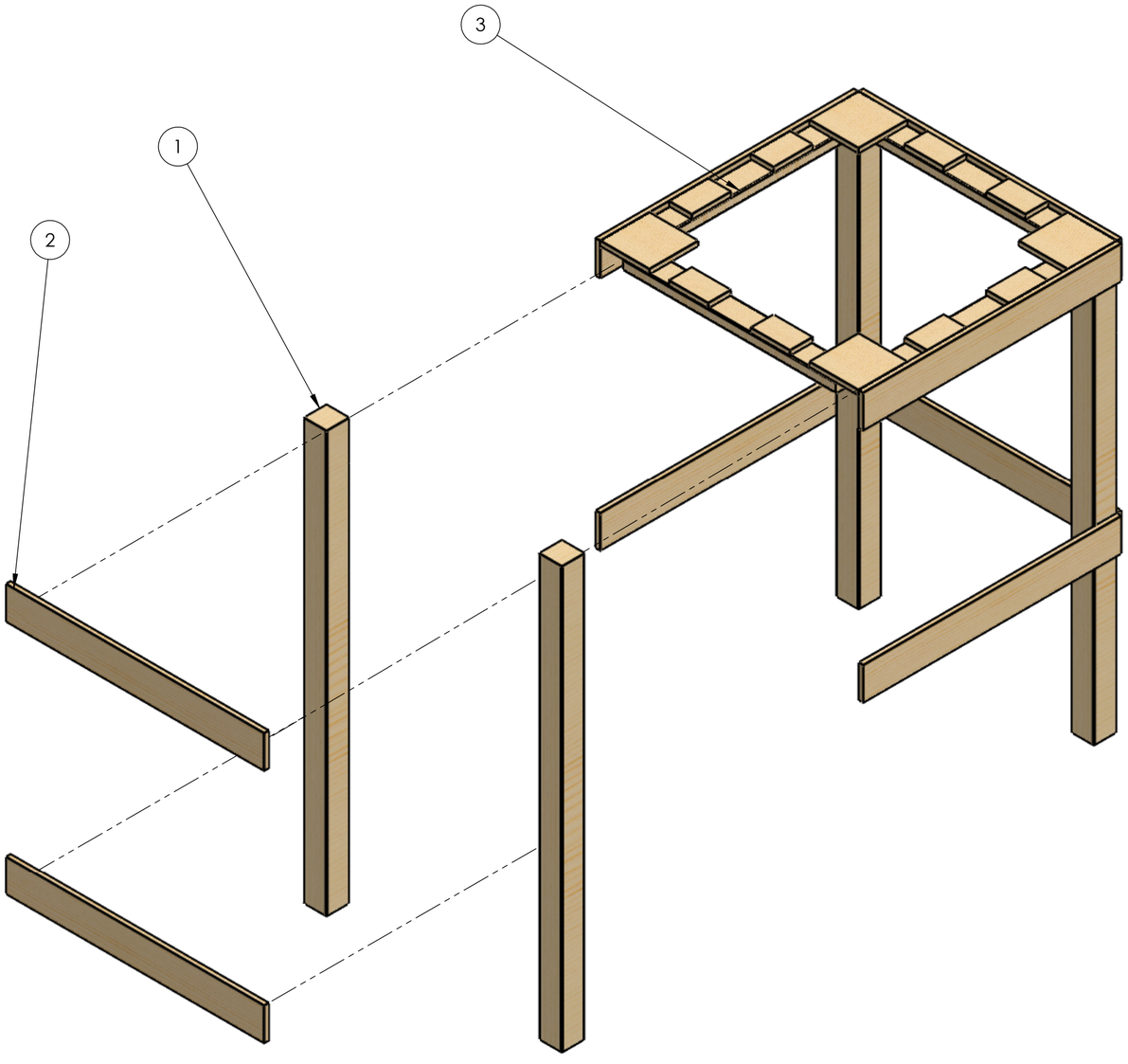
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME	DATE
	DRAWN	KAMC	12/30/2021
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ***FIRST®***. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ***FIRST®*** IS PROHIBITED.		
MATERIAL/FINISH:	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.		
DO NOT SCALE DRAWING			

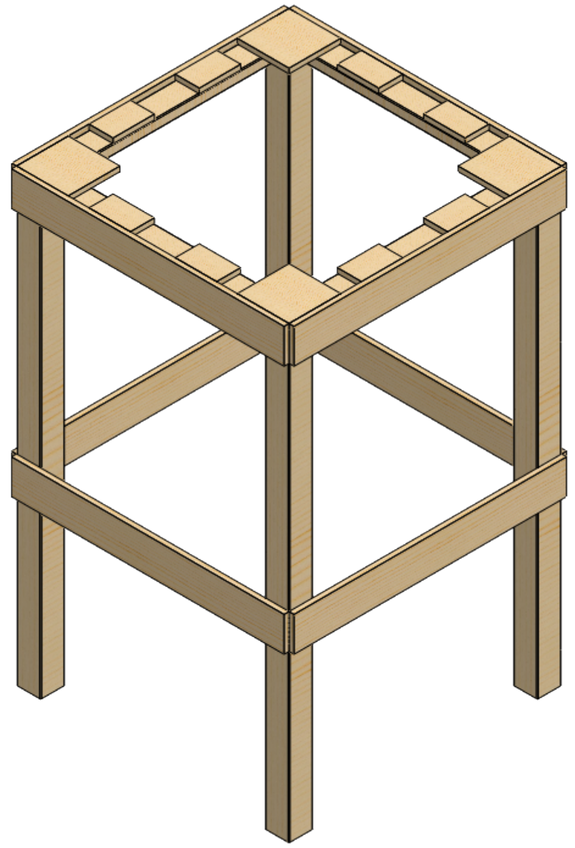
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

TITLE:

Hub - Simple Build - Upper Hub Goal Bottom Assembly

SIZE	DWG. NO.	REV
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 Connetion Plate	8
3	TE-22044	Hub - Simple Build - Upper Hub Base Top 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

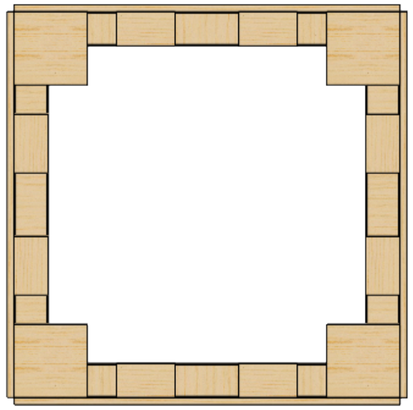
TEAM	NAME	DATE
DRAWN	KAMC	12/30/2021

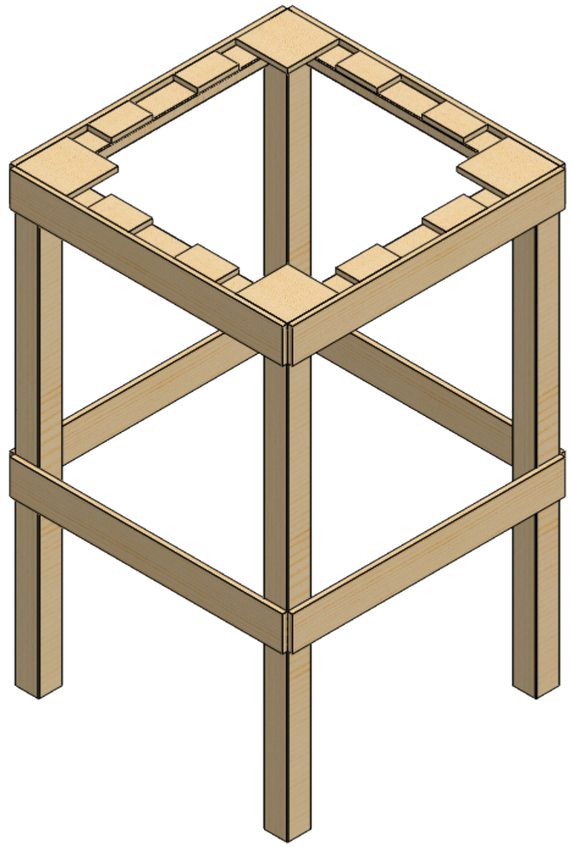
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

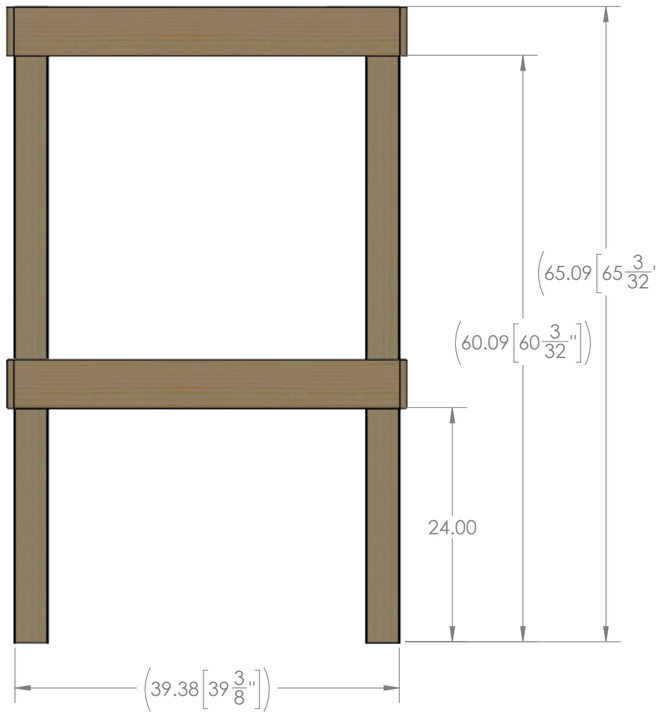
FIRST ROBOTICS COMPETITION
SOLIDWORKS Modeling Solutions Partner

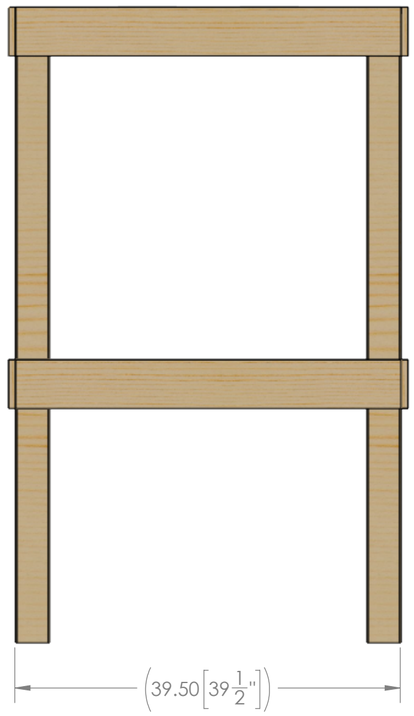
TITLE:
Hub - Simple Build - Upper Hub Base Assembly

SIZE	DWG. NO.	REV
C	TE-22040	
SCALE: 1:12	SHEET 1 OF 4	









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
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.	
DO NOT SCALE DRAWING	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.	

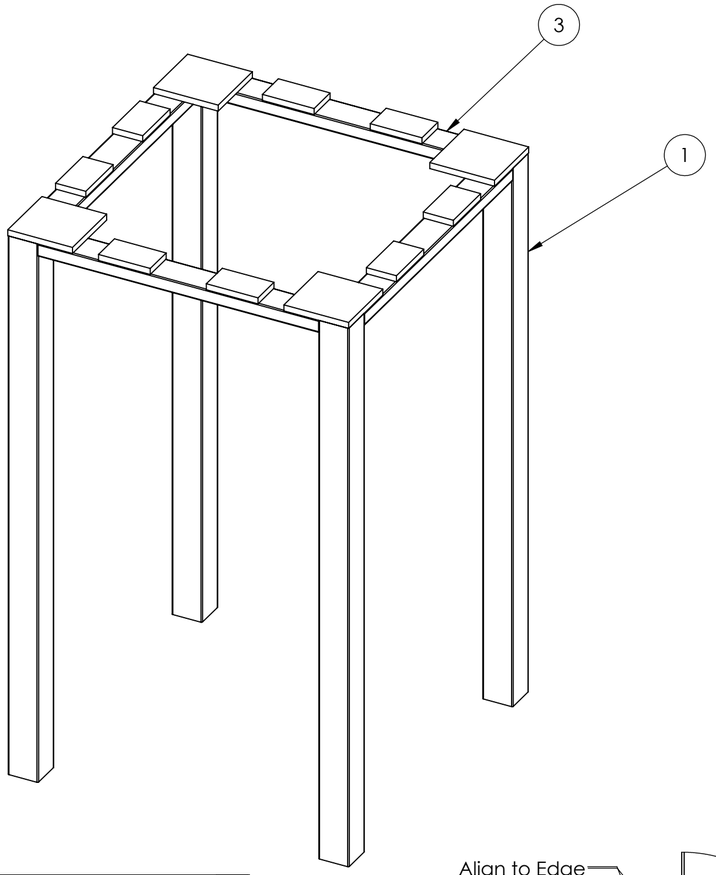
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

TITLE:

Hub - Simple Build - Upper Hub Base Assembly

SIZE	DWG. NO.	REV
C	TE-22040	
SCALE: 1:12	SHEET 2 OF 4	

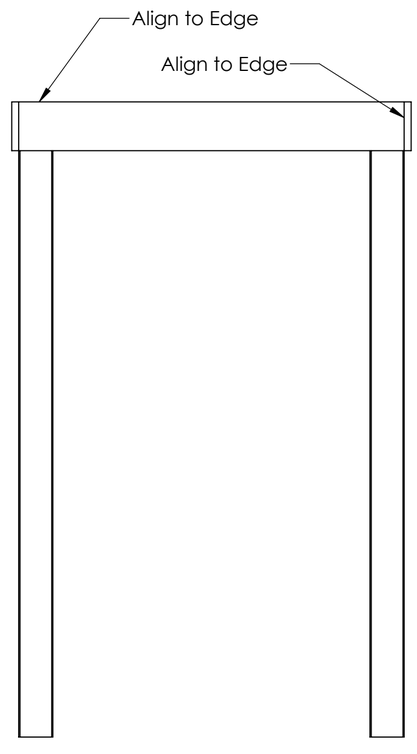
Step 1

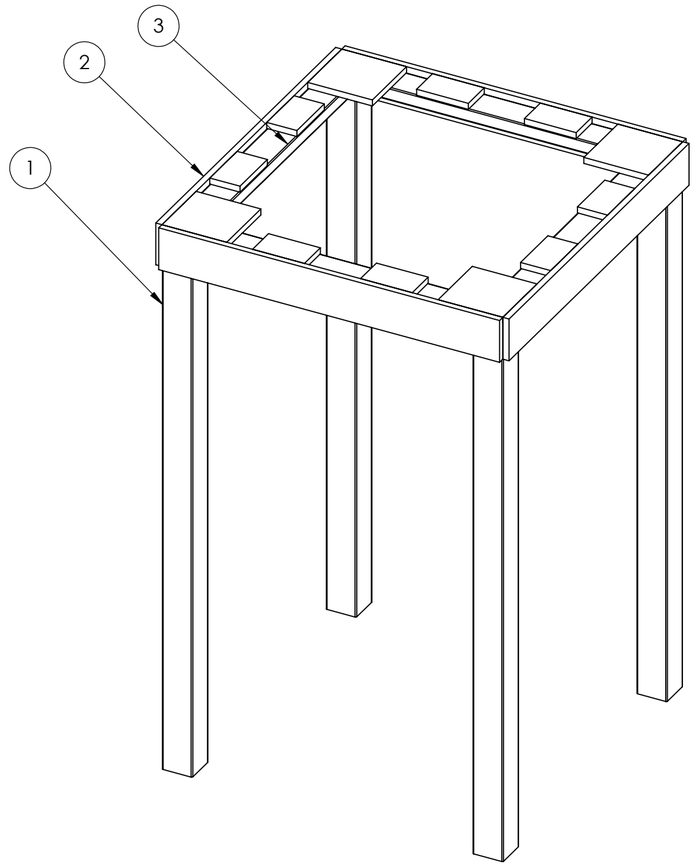


4X
DETAIL A
SCALE 1 : 6

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

Step 2





1. Align 4x (2) to Step 1 , as shown.
2. Attach (2) to (1) using 2" Long Screws. It is recommended to use 8x screws per (2), 4x into each (1).
3. 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:	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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

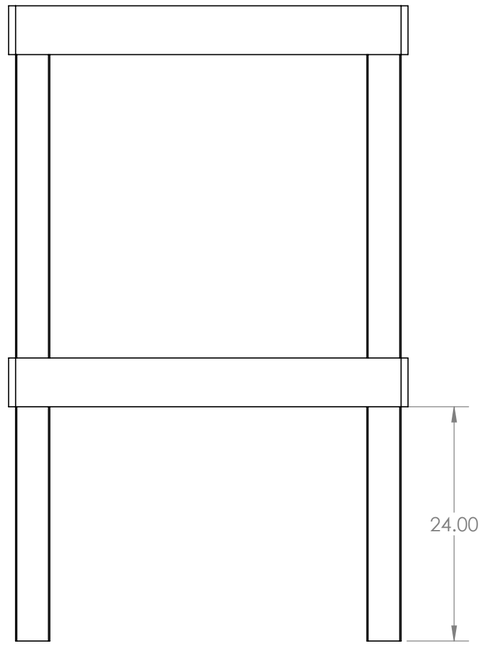
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

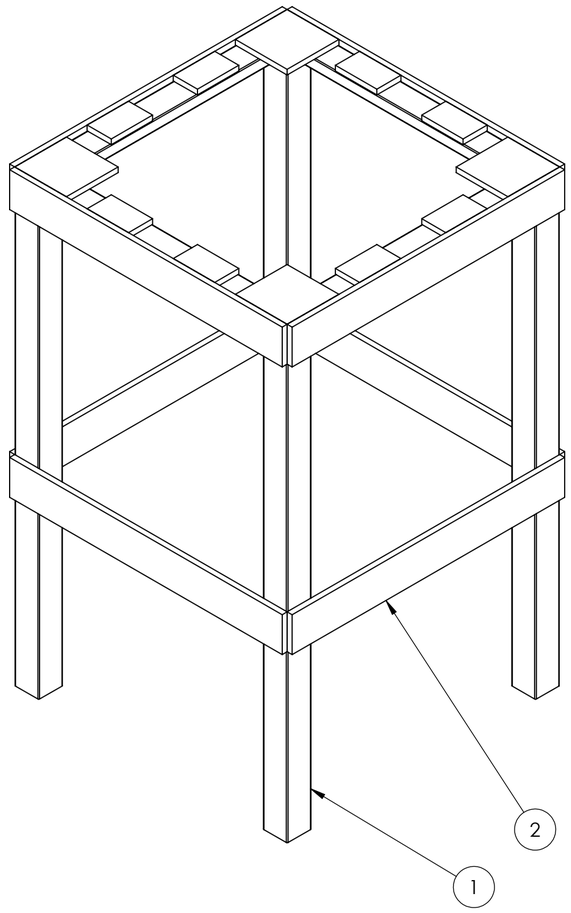
FIRST ROBOTICS COMPETITION
SOLIDWORKS Modeling Solutions Partner

TITLE:
Hub - Simple Build - Upper Hub Base Assembly

SIZE	DWG. NO.	REV
C	TE-22040	
SCALE: 1:12	SHEET 3 OF 4	

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:	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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

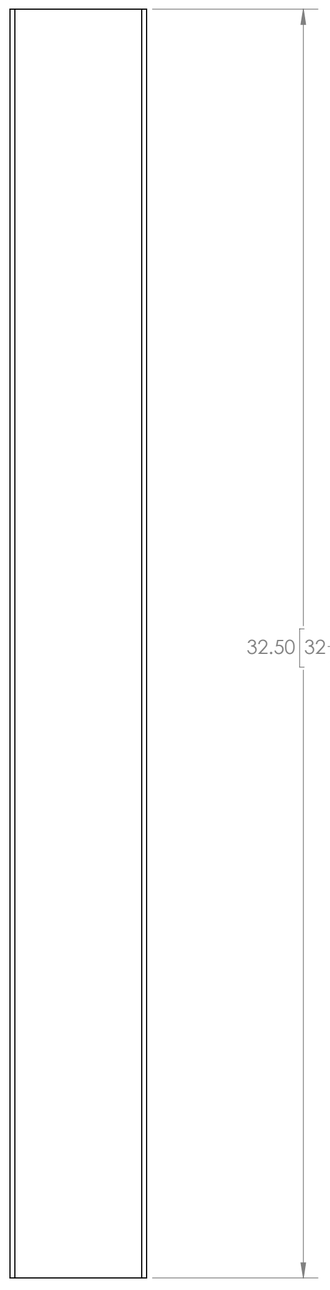
FIRST ROBOTICS COMPETITION

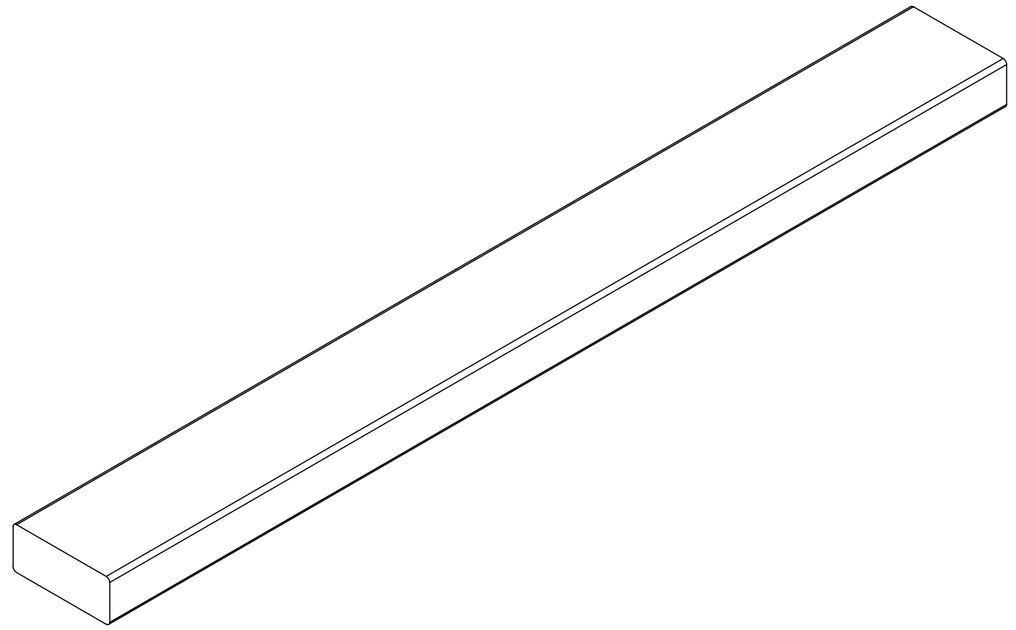
SOLIDWORKS Modeling Solutions Partner

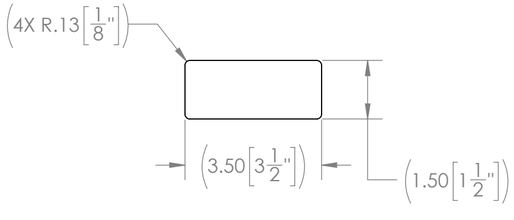
TITLE:

Hub - Simple Build - Upper Hub Base Assembly

SIZE	DWG. NO.	REV
C	TE-22040	
SCALE: 1:12	SHEET 4 OF 4	







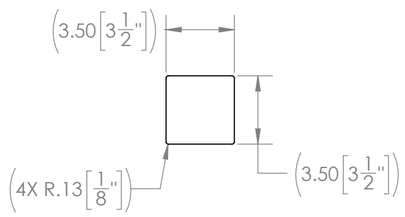
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC 12/29/2021
MATERIAL/FINISH: 2"x4" Lumber	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ***FIRST®***. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ***FIRST®*** IS PROHIBITED.	
DO NOT SCALE DRAWING	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.	

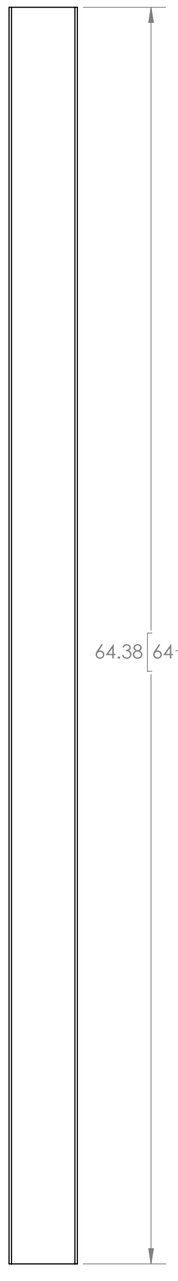
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

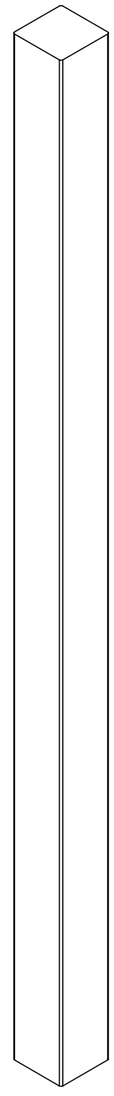
TITLE:

Hub - Simple Build - Upper Hub Base 2x4

SIZE	DWG. NO.	REV
C	TE-22041	
SCALE: 1:3	SHEET 1 OF 1	





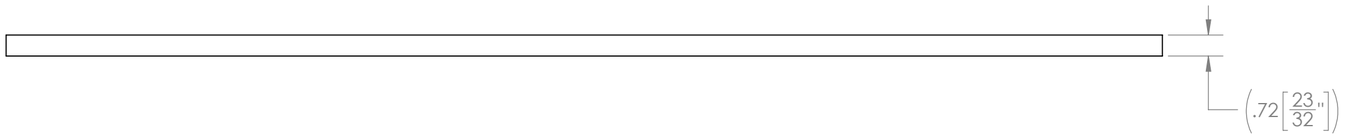


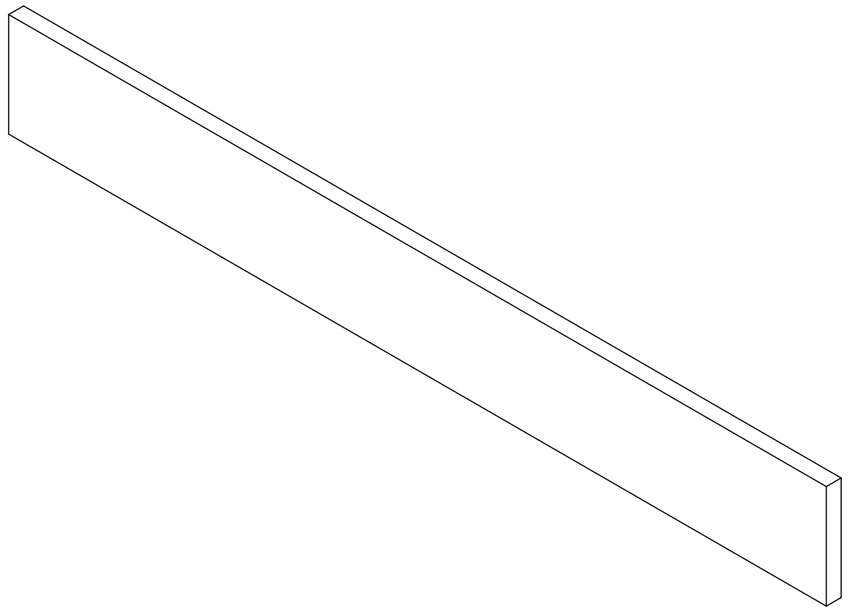
UNLESS OTHERWISE SPECIFIED:	TEAM	NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125	DRAWN	KAMC 12/29/2021
MATERIAL/FINISH: 4"x4" Lumber	**PROPRIETARY AND CONFIDENTIAL** THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF ***FIRST®***. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF ***FIRST®*** IS PROHIBITED.	
DO NOT SCALE DRAWING	**COMMENTS:** REMOVE ALL BURRS AND SHARP EDGES.	

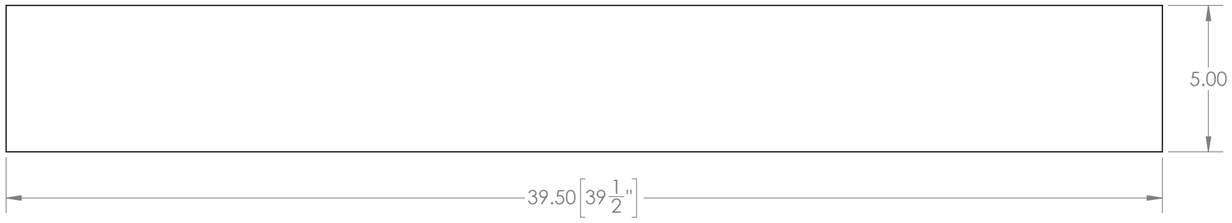
FIRST ROBOTICS COMPETITION — SOLIDWORKS Modeling Solutions Partner

TITLE:
Hub - Simple Build - Upper Hub Base 4x4

SIZE	DWG. NO.	REV
C	TE-22042	
SCALE: 1:6	SHEET 1 OF 1	







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		12/29/2021

MATERIAL/FINISH:

3/4" Plywood

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

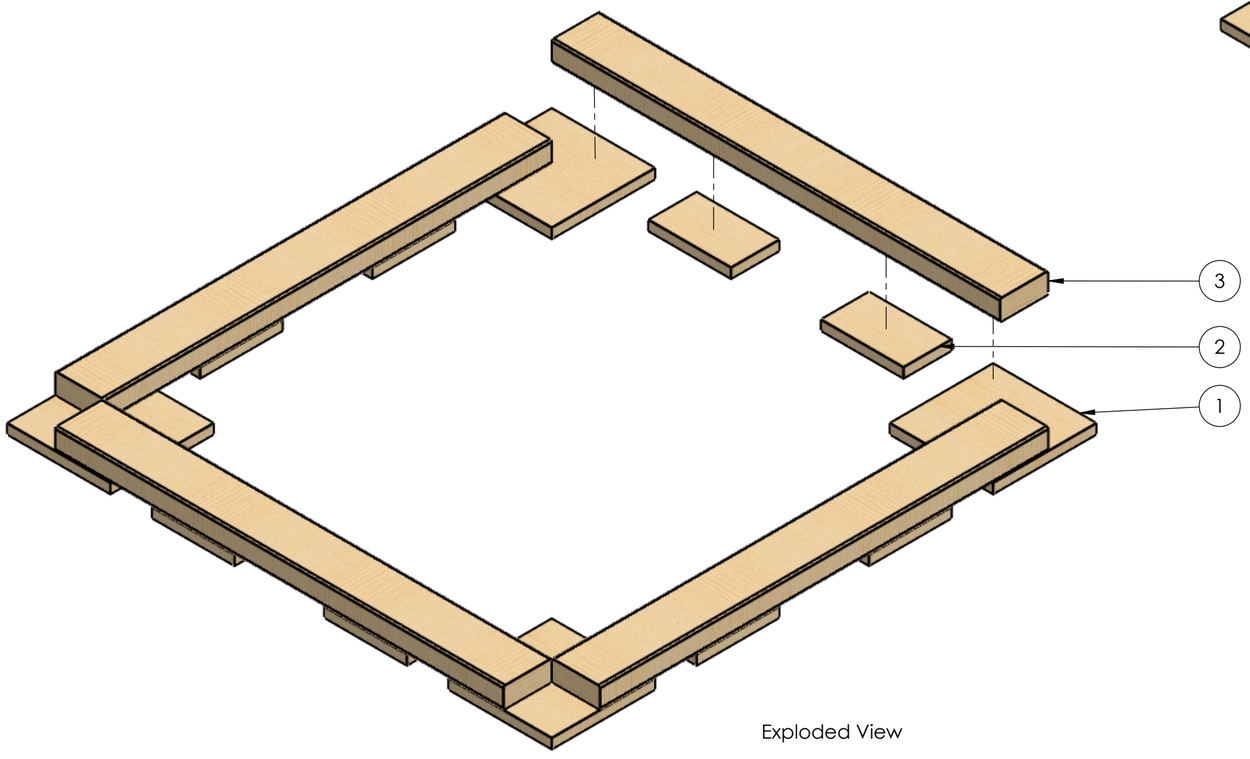
SOLIDWORKS Modeling Solutions Partner

TITLE:

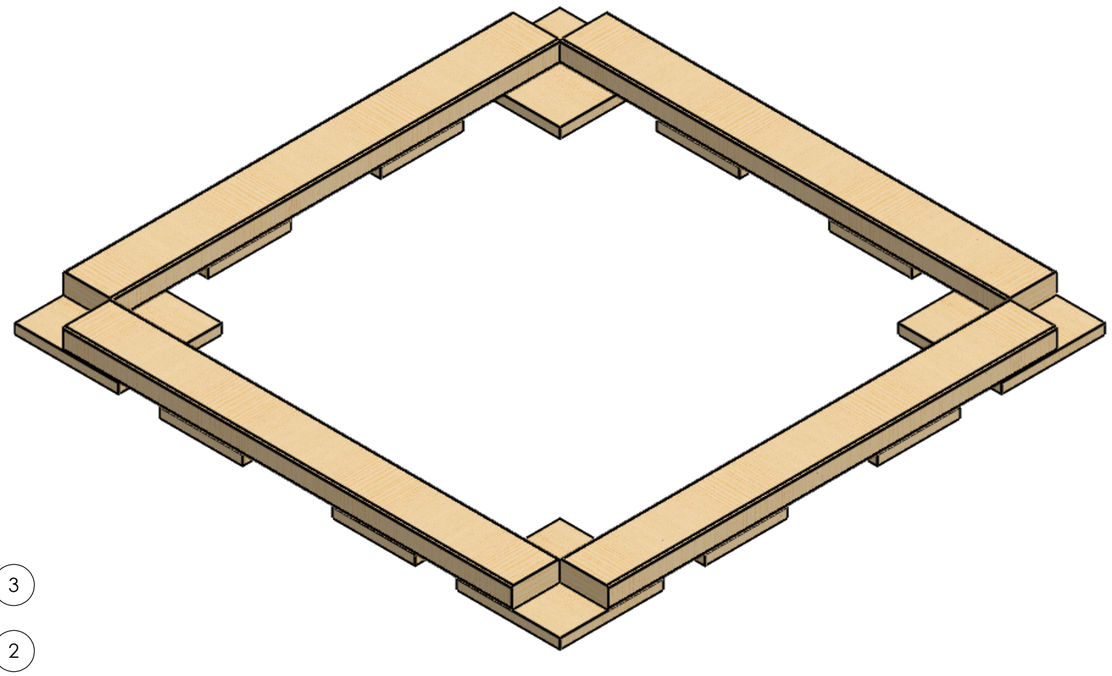
Hub - Simple Build - Upper Hub Base Rectangle Connetion Plate

SIZE	DWG. NO.	REV
C	TE-22043	

SCALE: 1:4 SHEET 1 OF 1



Exploded View



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
DRAWN	KAMC	12/30/2021	

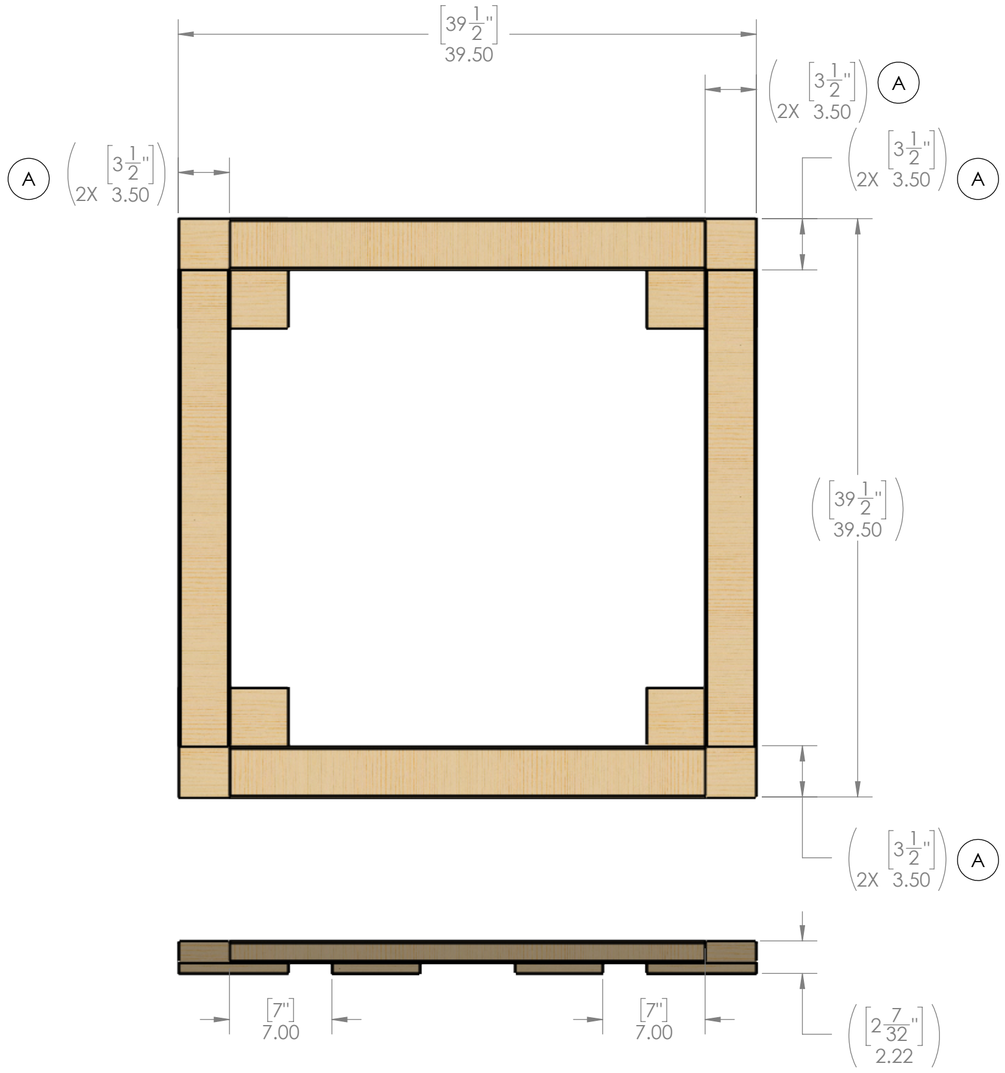
COMMENTS:
REMOVE ALL BURRS AND SHARP EDGES.

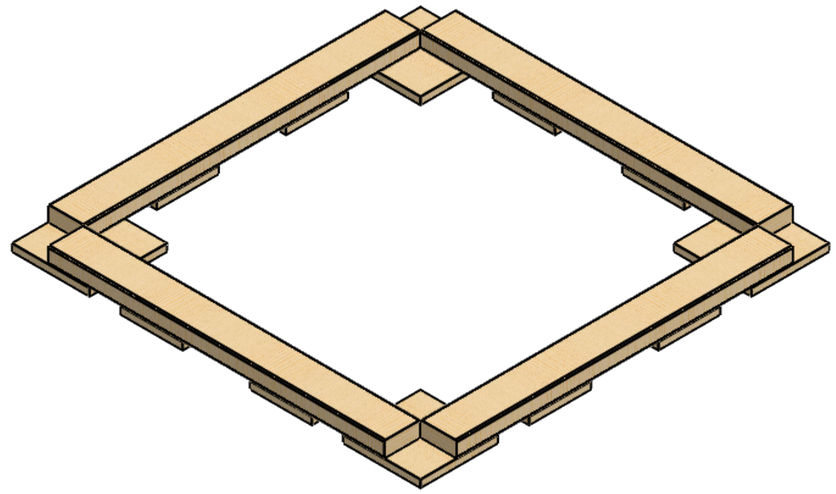
FIRST ROBOTICS COMPETITION
SOLIDWORKS Modeling Solutions Partner

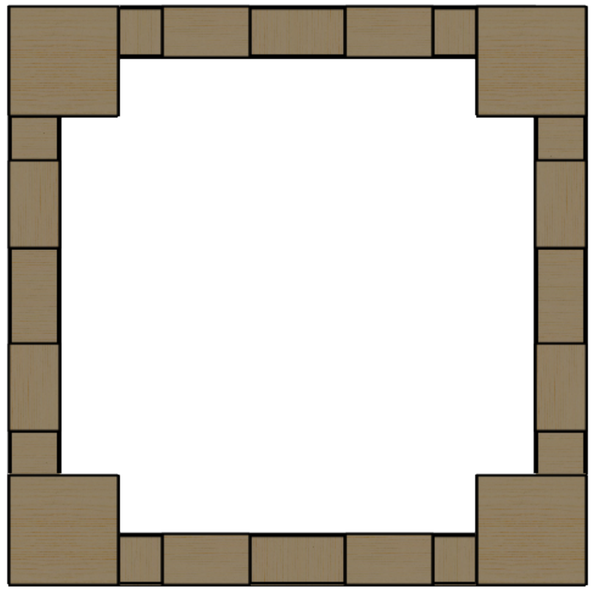
TITLE:
Hub - Simple Build - Upper Hub Base Top Assembly

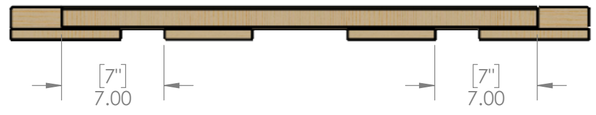
SIZE	DWG. NO.	REV
C	TE-22044	

SCALE: 1:6 SHEET 1 OF 3









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:	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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

SOLIDWORKS Modeling Solutions Partner

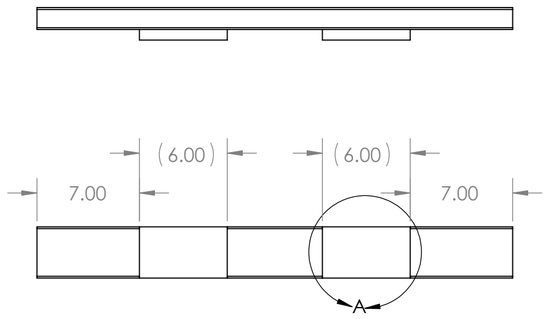
TITLE:

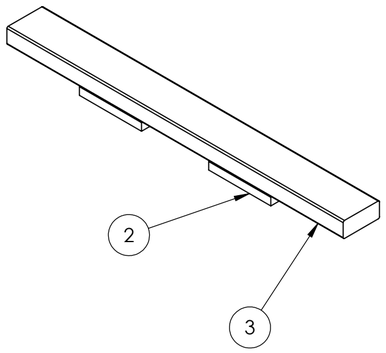
Hub - Simple Build - Upper Hub Base Top Assembly

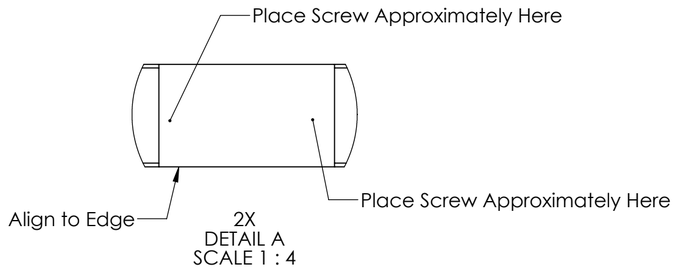
SIZE	DWG. NO.	REV
C	TE-22044	

SCALE: 1:8 SHEET 2 OF 3

Step 1

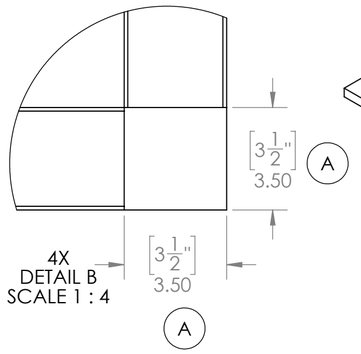


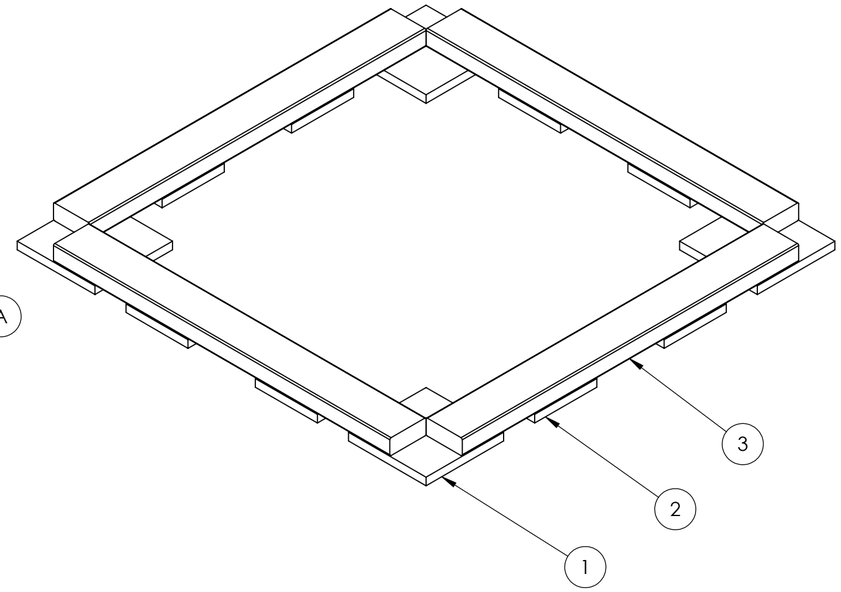


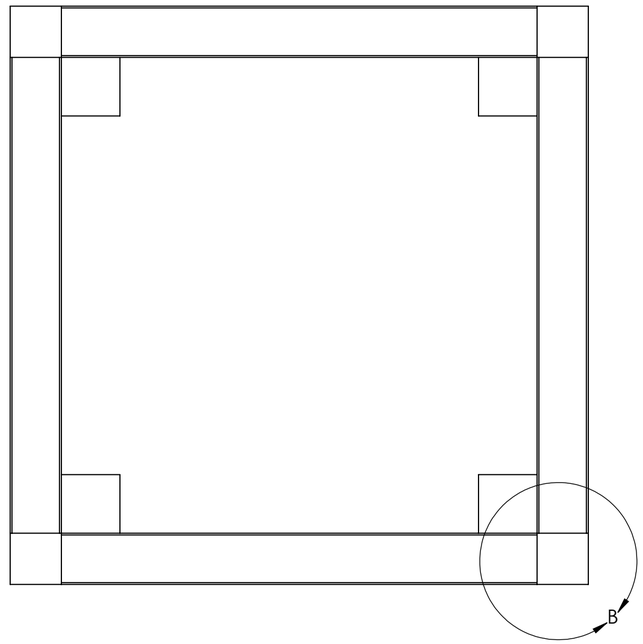


1. Align 2x (2) on (3), as shown.
2. Connect using 2" long screws. It is recommended to use x2 screws per (2) and locate them as shown above. Keep center of (2) clear of screws.
3. Repeat until you have a total of 4 assemblies.

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
	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

MATERIAL/FINISH:

DO NOT SCALE DRAWING

COMMENTS:

REMOVE ALL BURRS AND SHARP EDGES.

FIRST ROBOTICS COMPETITION

SOLIDWORKS Modeling Solutions Partner

TITLE:

Hub - Simple Build - Upper Hub Base Top Assembly

SIZE	DWG. NO.	REV
C	TE-22044	
SCALE: 1:8	SHEET 3 OF 3	