

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TE-23101	SST Top Panel	1
2	TE-23105	SST Bottom Panel	1
3	TE-23109	SST Base	1
4	TE-23111	SST Support	1
5	TE-23113	SST Field Perimeter	1
6	TE-23114	SST Small Vertical	2
7	TE-23115	SST Large Vertical	2
8	TE-23118	Chute Door	1
9	hex_.25_20_2.5_partial	Steel Hex Head Screw, 1/4"-20 x 2-1/2" long, partially threaded	2
10	hex_.25_20_3.5_partial	Steel Hex Head Bolt, 1/4-20 x 3.5", partially threaded	18
11	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	20

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

NE

12/29/2022

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.



**FIRST**  
ROBOTICS  
COMPETITION

**SOLIDWORKS**  
Modeling Solutions Partner

TITLE:

Single  
Substation

SIZE

**C**

DWG. NO.

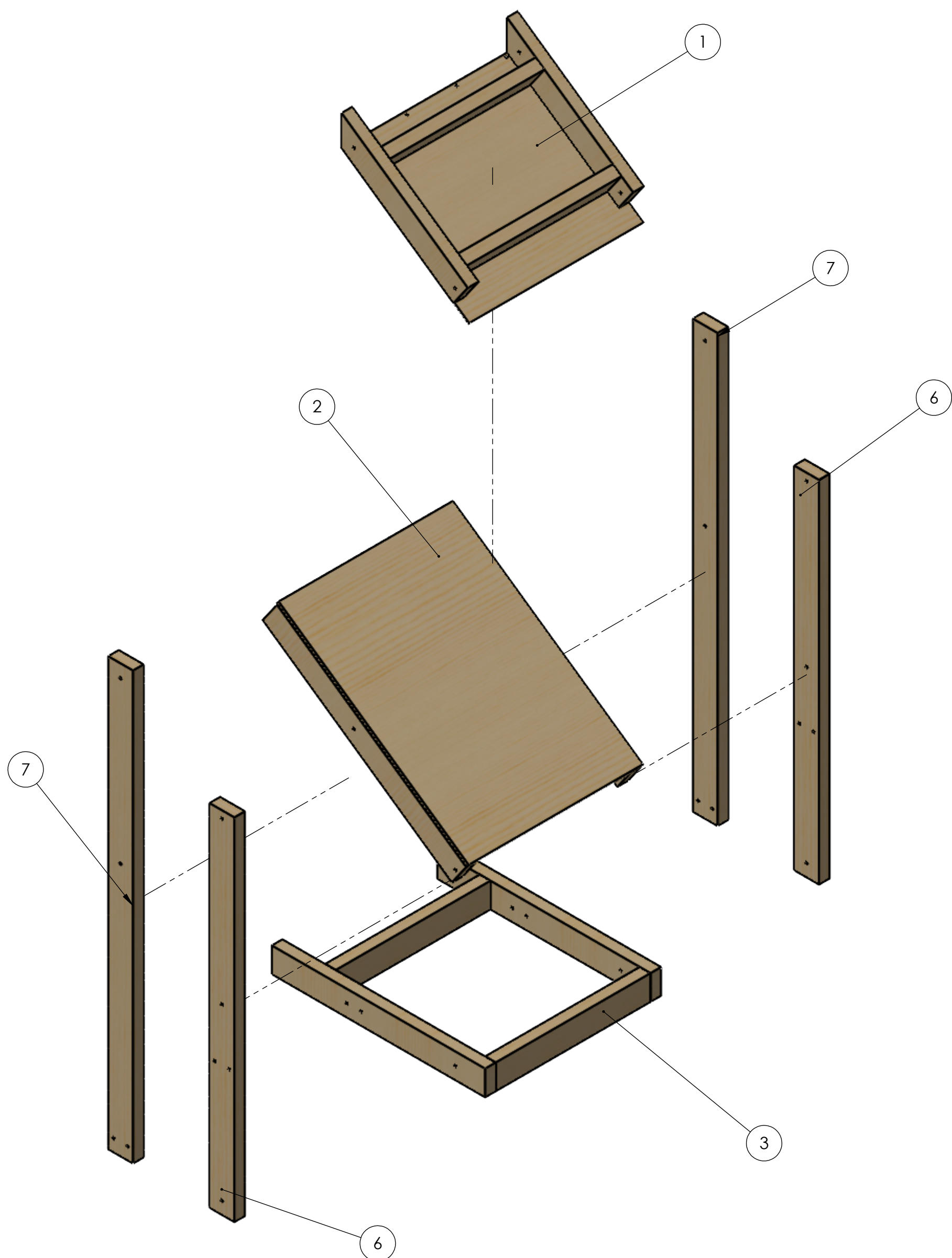
TE-23100

REV

SCALE: 1:5

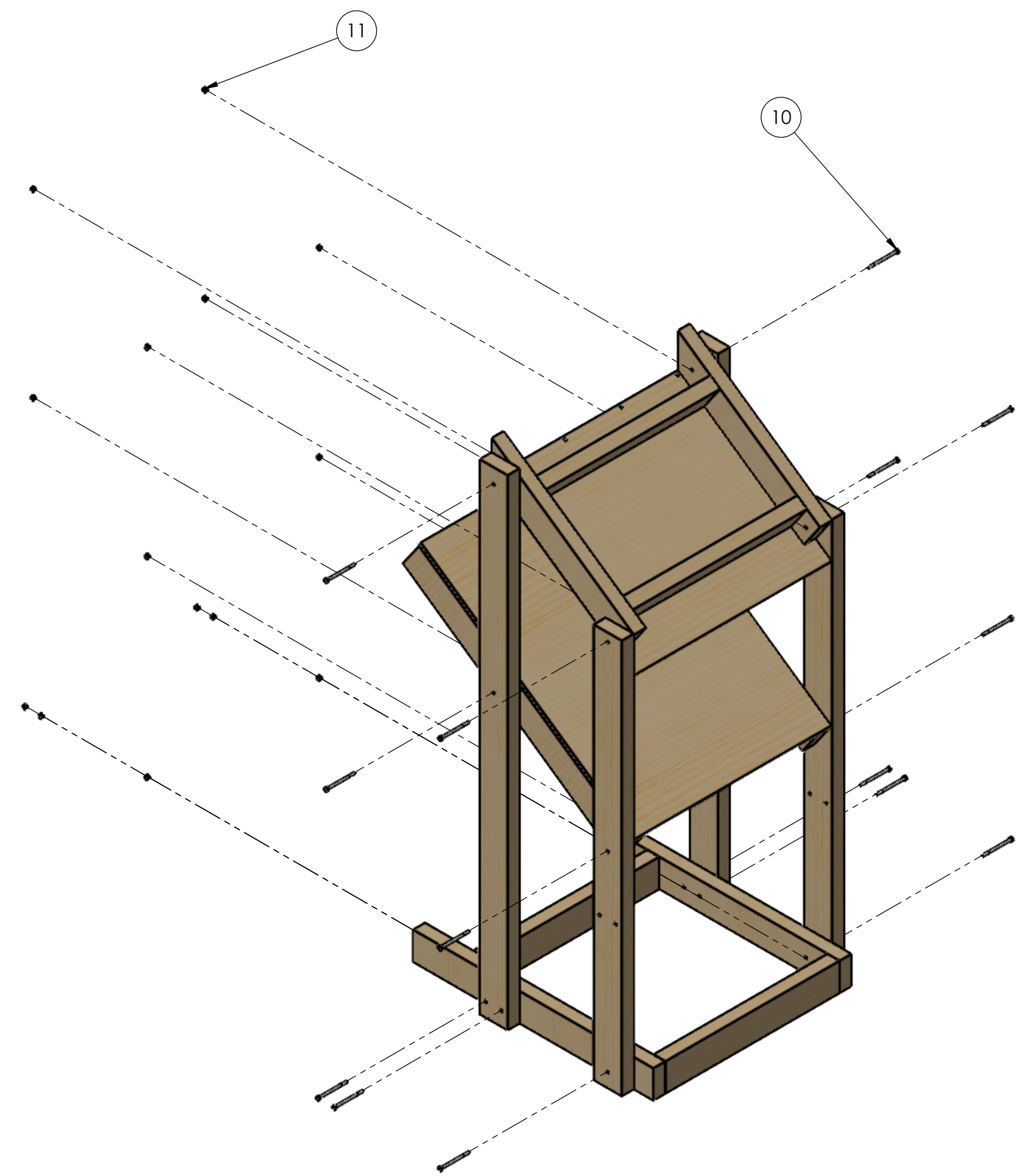
SHEET 1 OF 4







NOTE: ALL NUTS AND BOLTS ARE USED FOR EASE OF ASSEMBLY/DISASSEMBLY. THESE MAY BE REPLACED WITH NUMBER 8 WOOD SCREWS FOR USER WITH THE ABILITY TO STORE A FULLY ASSEMBLED WOODEN SINGLE SUBSTATION. 3" NUMBER 8 WOOD SCREWS ARE RECOMMENDED.

ASSEMBLE 1 , 2 , 3 , 6 , AND 7 TOGETHER USING 7 OF 10 AND 7 OF 11



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:  Single Substation</div></div>		
	DRAWN	NE	12/29/2022			
	PROPRIETARY AND CONFIDENTIAL			THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.		
	COMMENTS: REMOVE ALL BURRS AND SHARP EDGES.					
			SIZE	DWG. NO.	REV	
			C	TE-23100		
			SCALE: 1:10		SHEET 2 OF 4	



4

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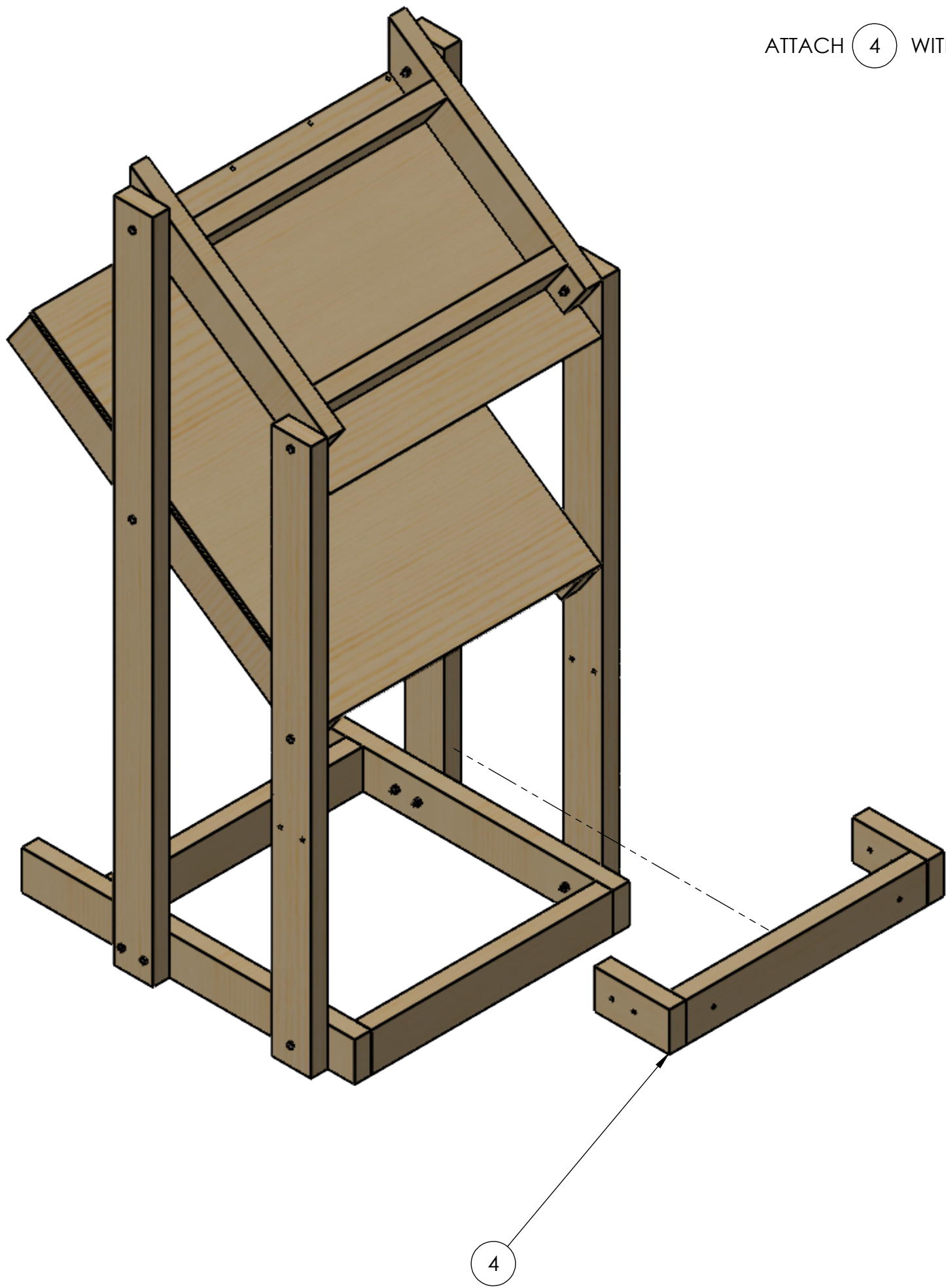
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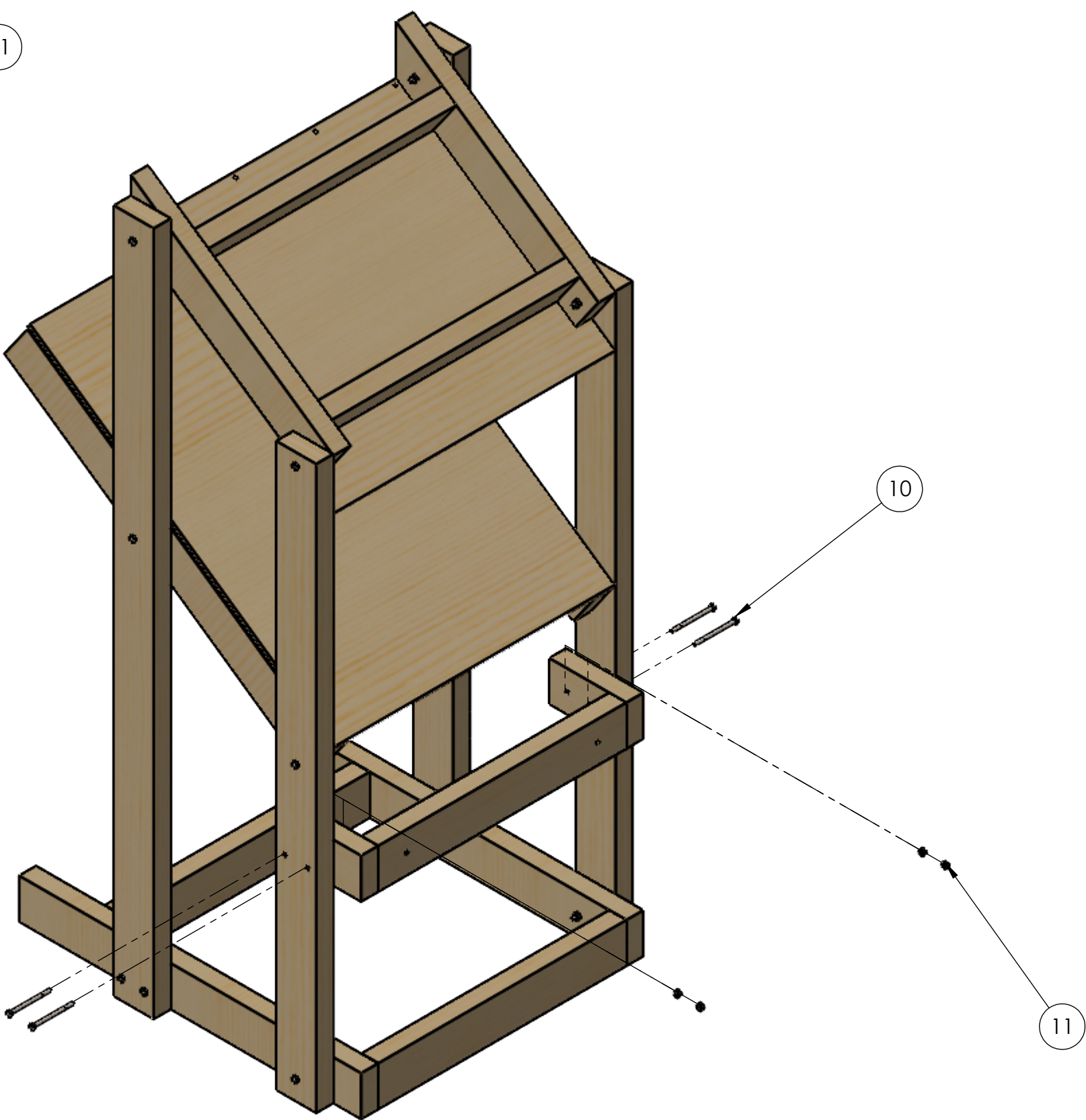
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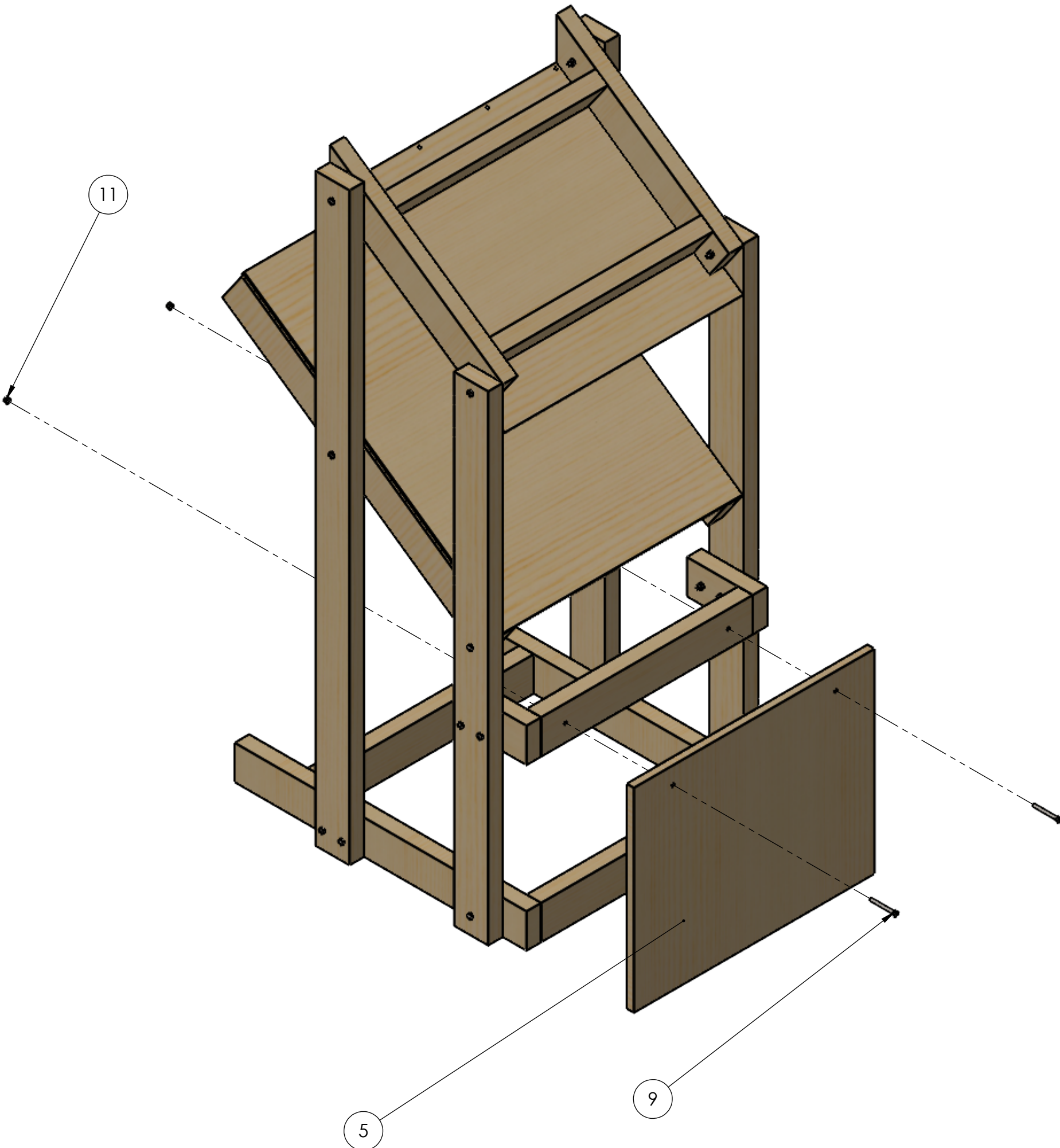
ATTACH 4 WITH 4 OF 10 AND 4 OF 11



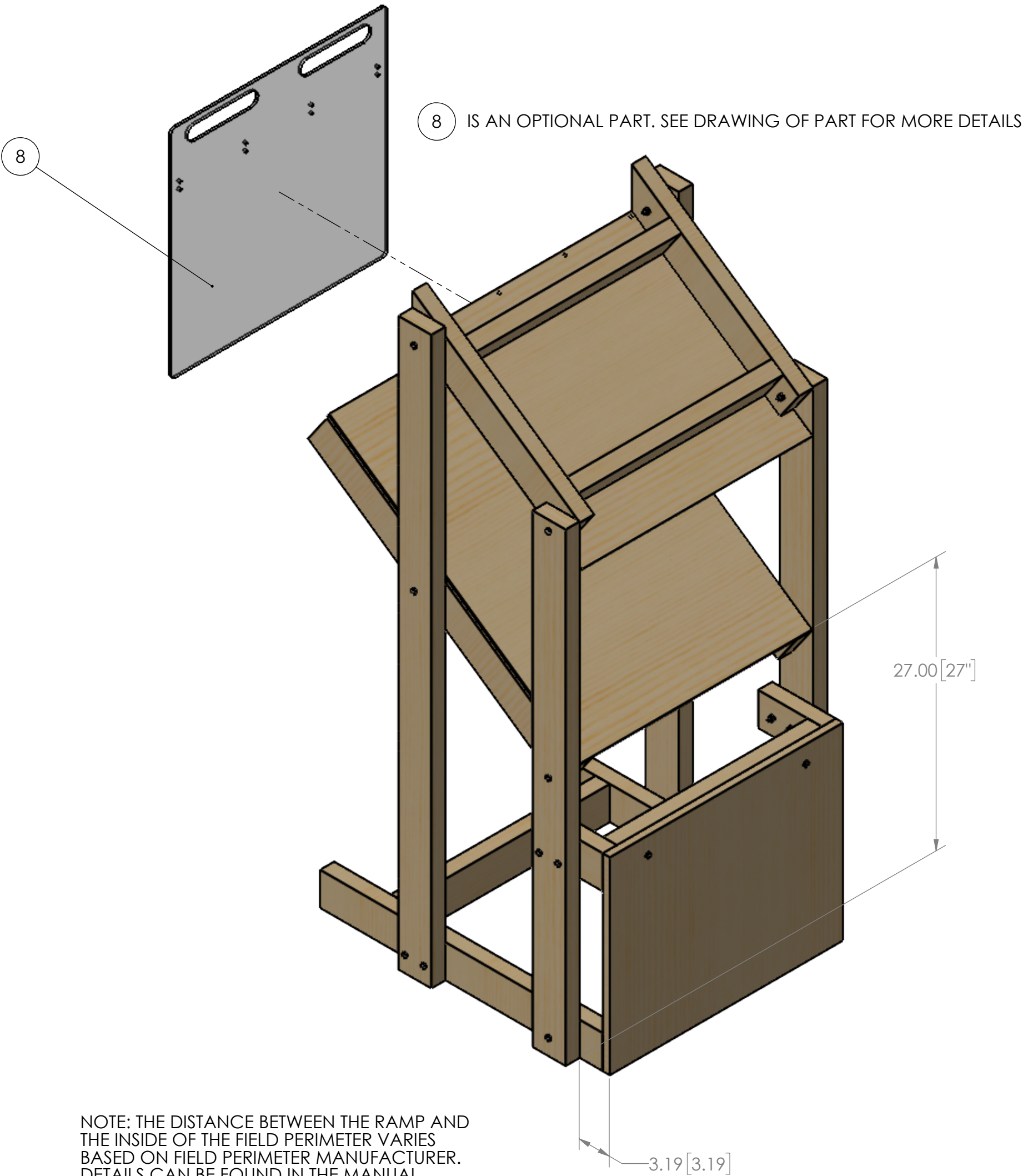
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.13 THREE PLACE DECIMAL ±.125  <b>MATERIAL/FINISH:</b>          DO NOT SCALE DRAWING	TEAM	NAME	DATE	 	
	DRAWN	NE	12/29/2022		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			TITLE:  Single Substation	
	<b>COMMENTS:</b>  REMOVE ALL BURRS AND SHARP EDGES.				
	SIZE		DWG. NO.		REV
C		TE-23100			
SCALE: 1:8			SHEET 3 OF 4		





ATTACH 5 WITH 2 OF 9 AND 2 OF 11



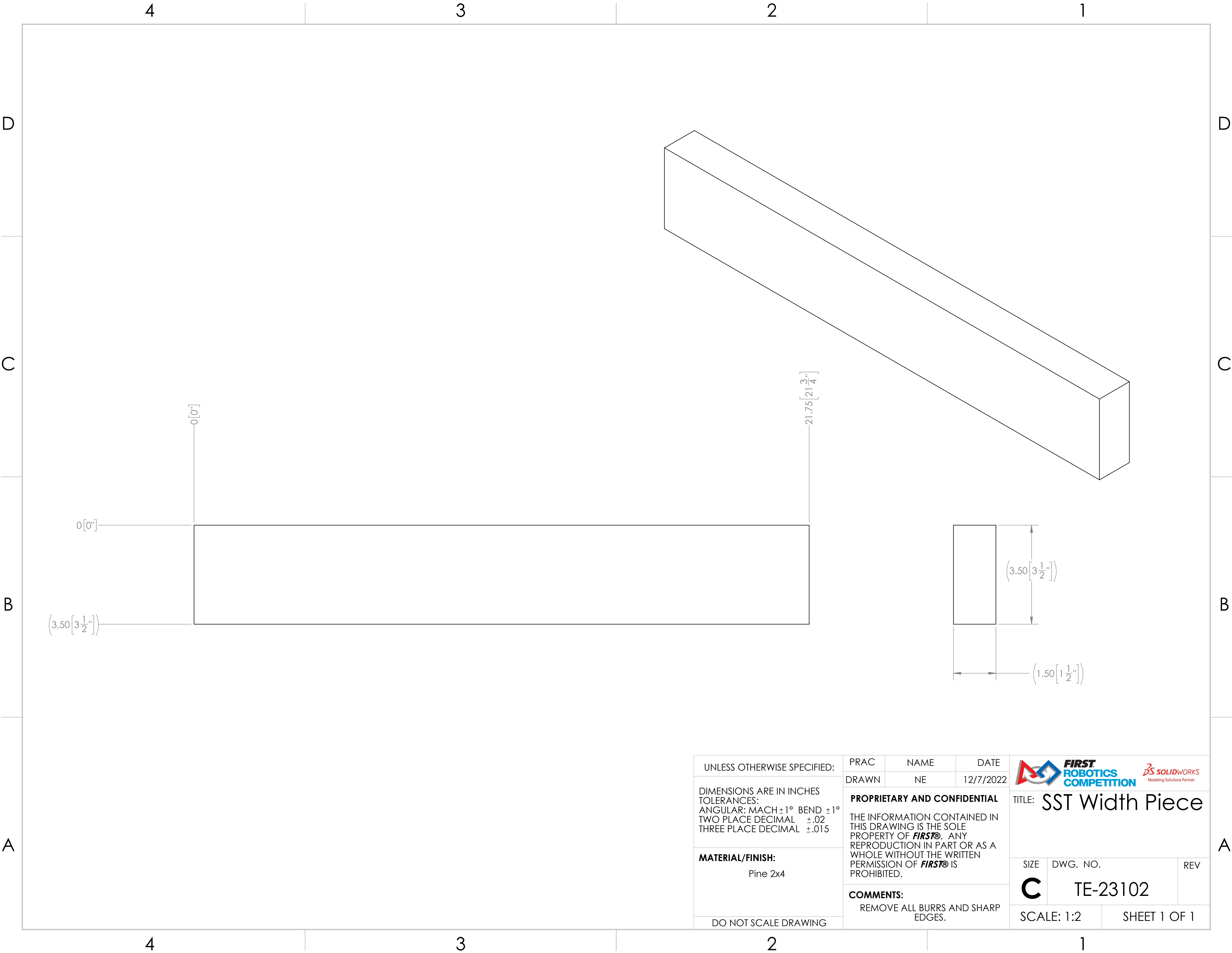
ATTACH 8 WITH 4 CABLE TIES. FASTEN LOOSE ENOUGH TO FUNCTION AS A HINGE

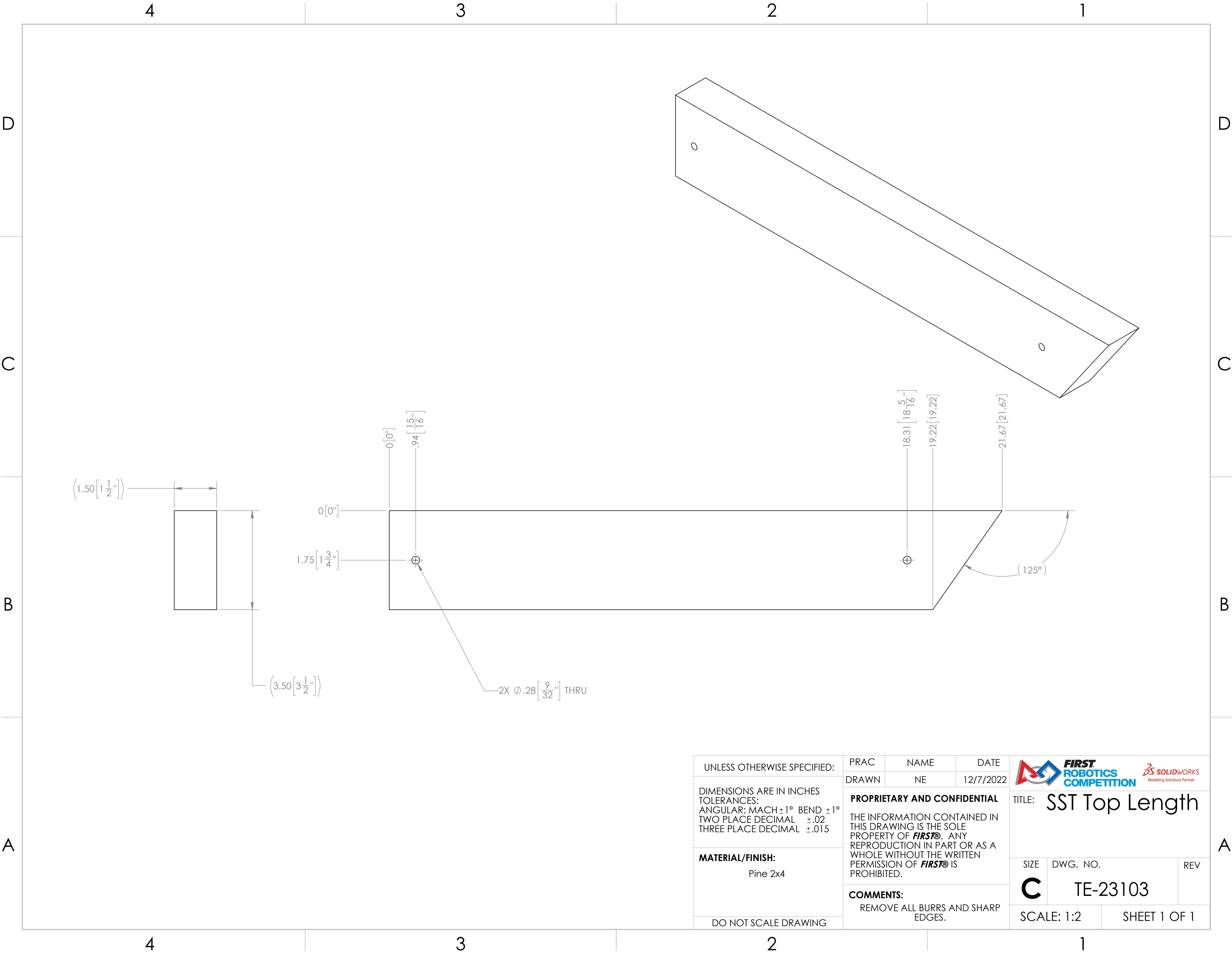




NOTE: THE DISTANCE BETWEEN THE RAMP AND THE INSIDE OF THE FIELD PERIMETER VARIES BASED ON FIELD PERIMETER MANUFACTURER. DETAILS CAN BE FOUND IN THE MANUAL.

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:  Single Substation</div>				
	DRAWN	NE	12/29/2022					
	PROPRIETARY AND CONFIDENTIAL				SIZE	DWG. NO.	REV	
	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.							
COMMENTS:				SCALE: 1:8				
REMOVE ALL BURRS AND SHARP EDGES.								
				SHEET 4 OF 4				

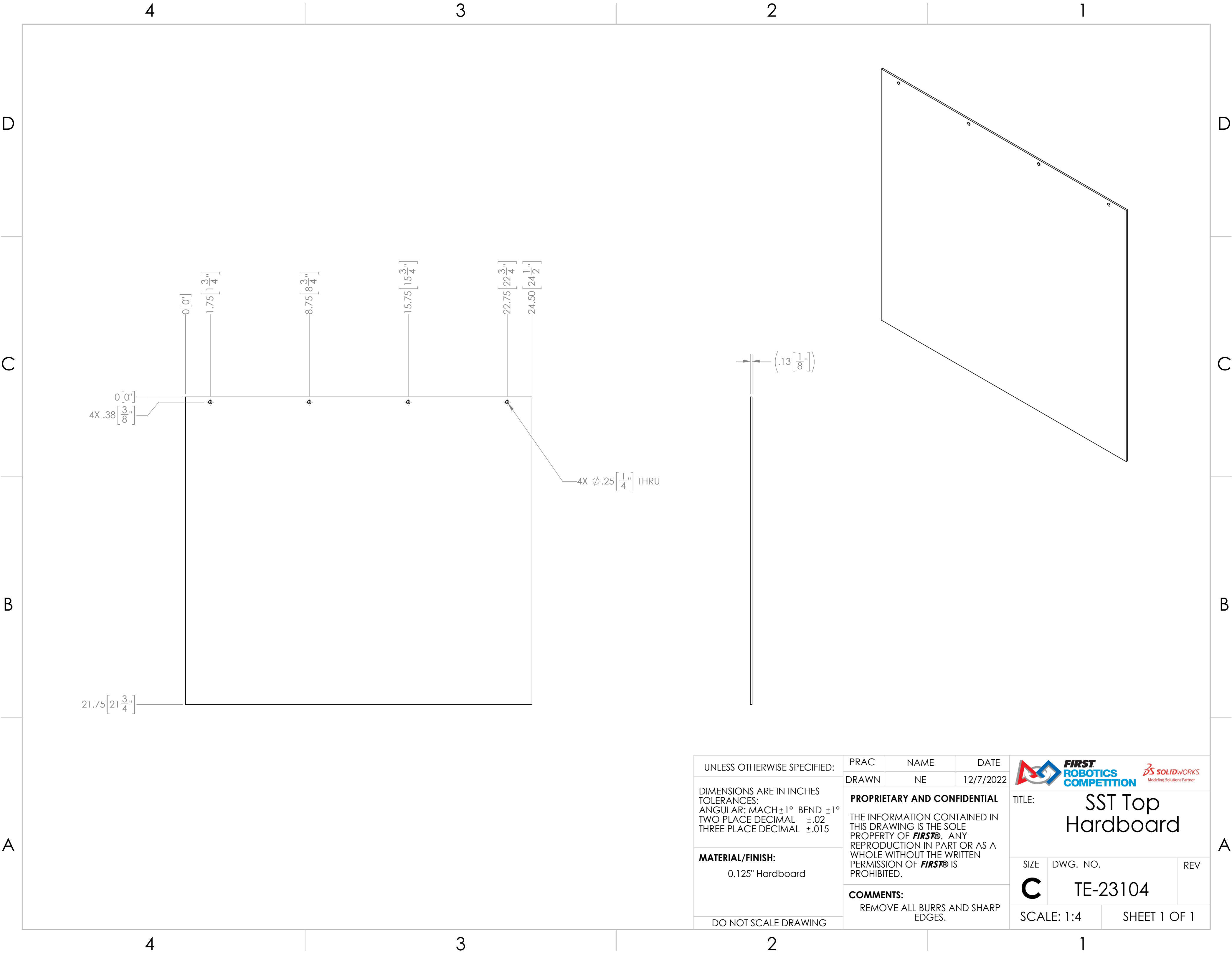








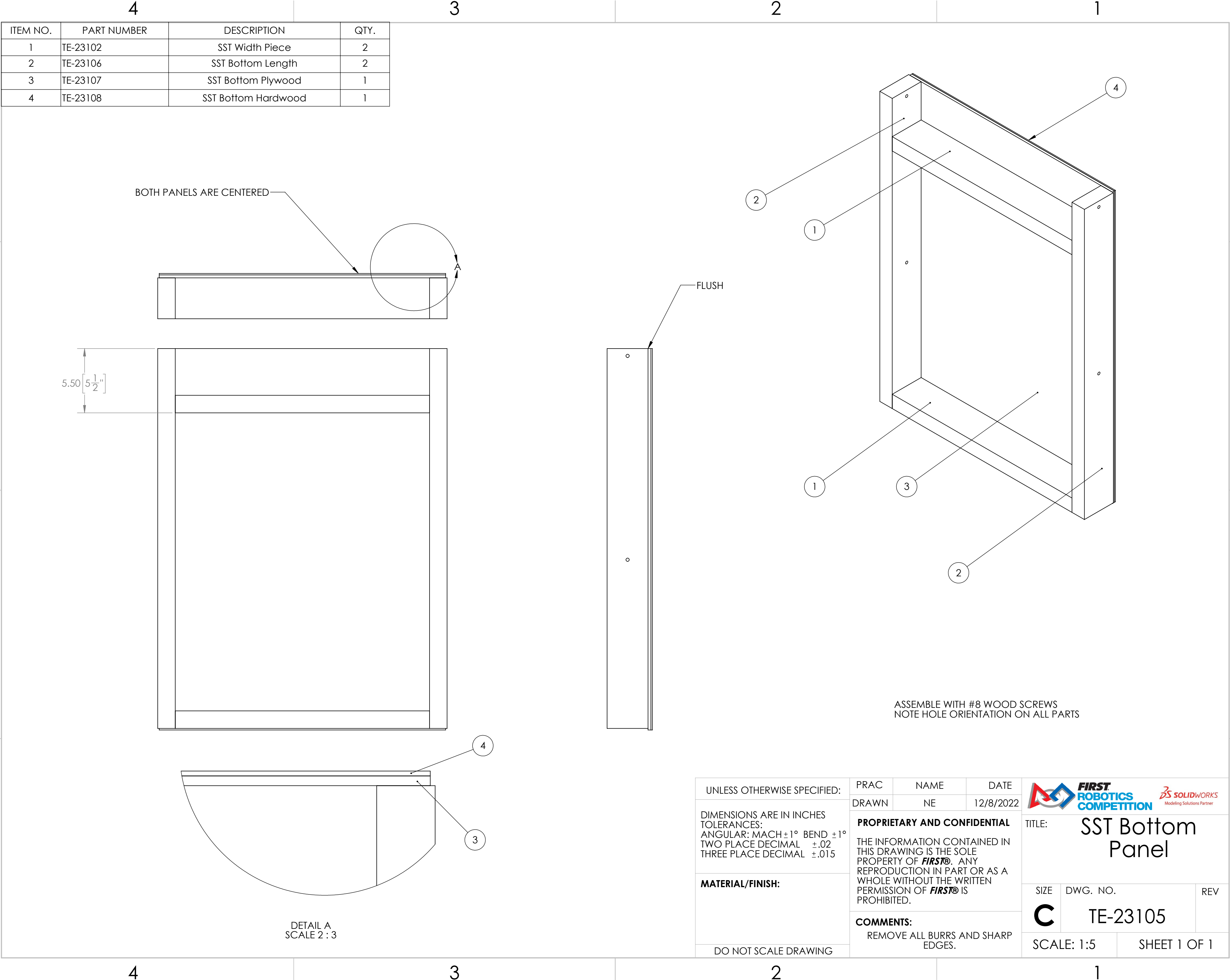
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$  <b>MATERIAL/FINISH:</b>  Pine 2x4  DO NOT SCALE DRAWING	PRAC	NAME	DATE	<div></div> <div>TITLE: SST Top Length</div>		
	DRAWN	NE	12/7/2022			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	TE-23103	
SCALE: 1:2		SHEET 1 OF 1				





UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015  <b>MATERIAL/FINISH:</b> 0.125" Hardboard  DO NOT SCALE DRAWING	PRAC	NAME	DATE	<div></div> <div>TITLE: <b>SST Top Hardboard</b></div>		
	DRAWN	NE	12/7/2022			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	TE-23104	
SCALE: 1:4		SHEET 1 OF 1				





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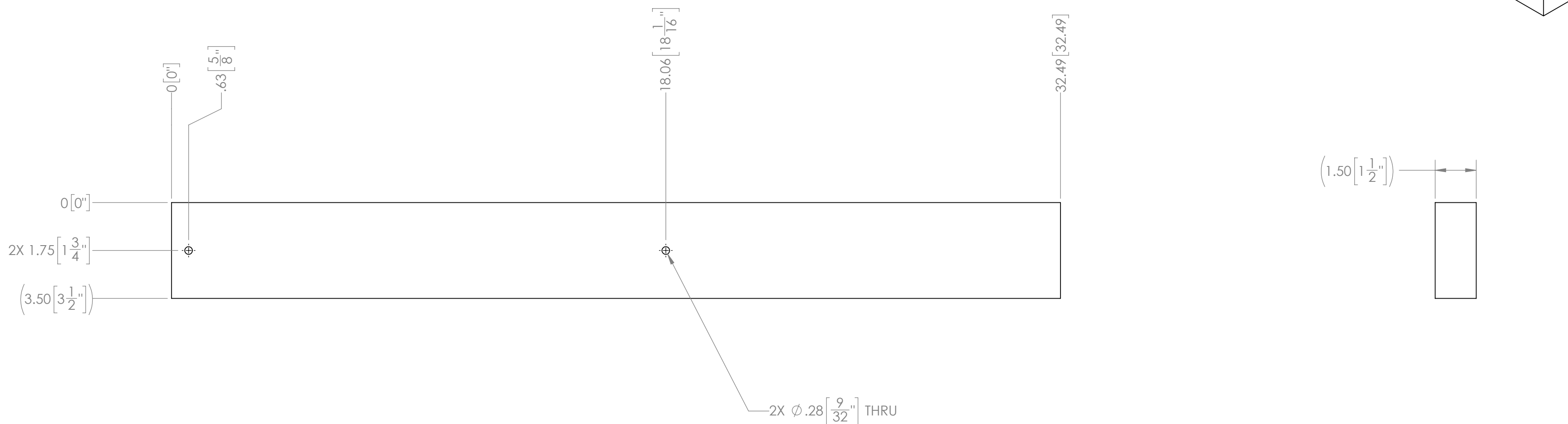
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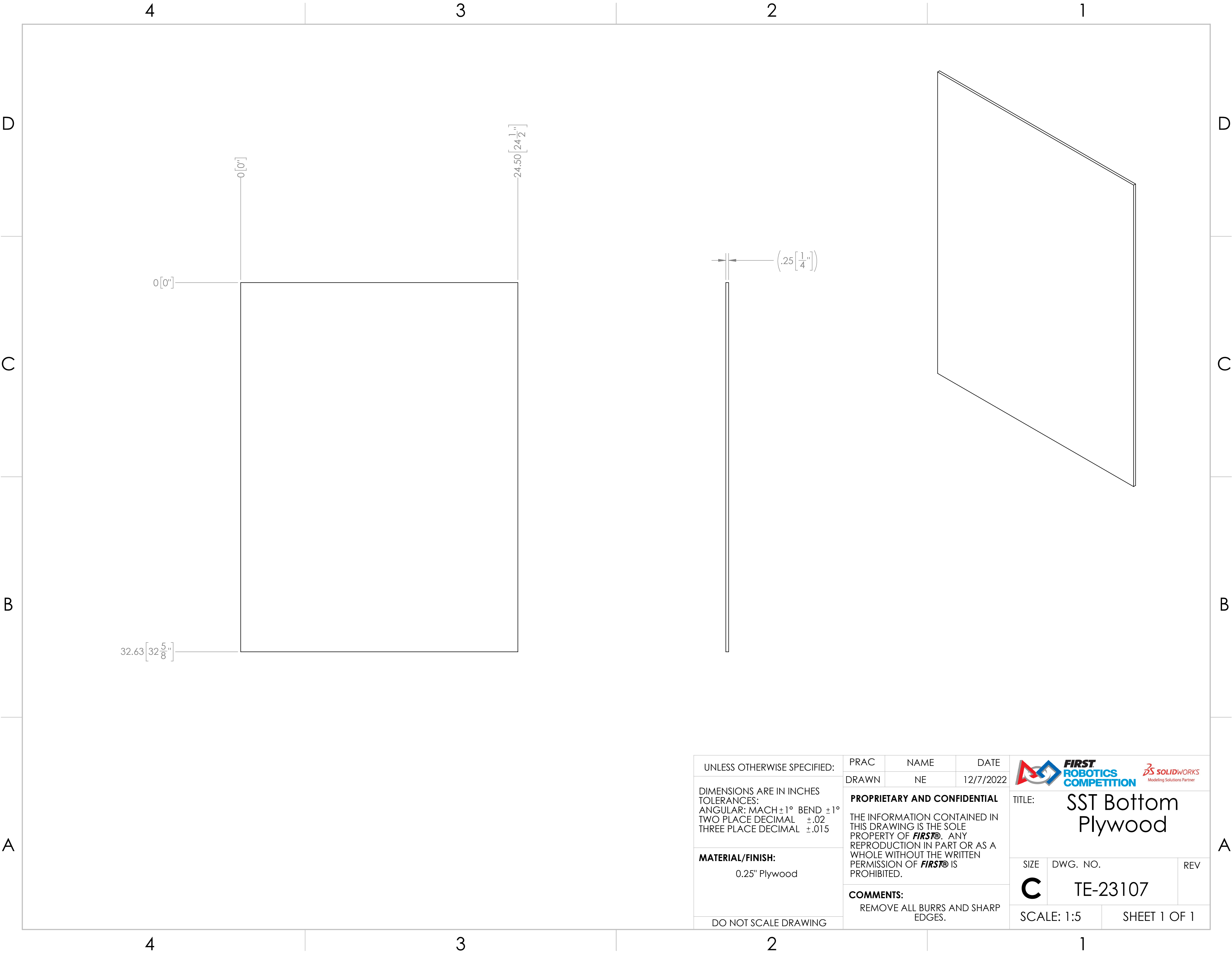
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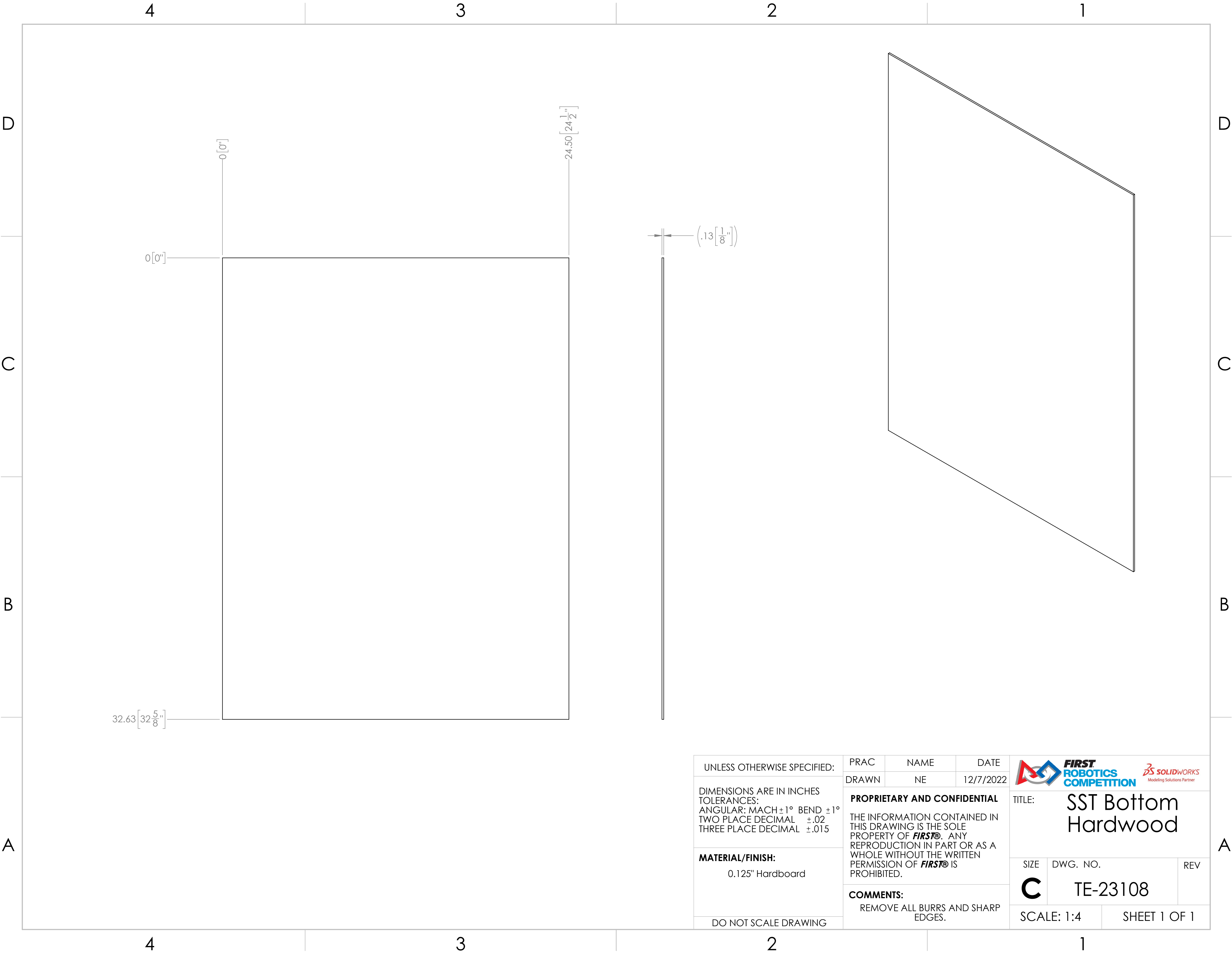




UNLESS OTHERWISE SPECIFIED:		PRAC	NAME	DATE	 	
DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$		DRAWN	NE	12/7/2022		
MATERIAL/FINISH:  Pine 2x4		PROPRIETARY AND CONFIDENTIAL			TITLE:  SST Bottom Length	
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.				
		COMMENTS:  REMOVE ALL BURRS AND SHARP EDGES.			SIZE  C	DWG. NO.  TE-23106
DO NOT SCALE DRAWING					SCALE: 1:3	SHEET 1 OF 1



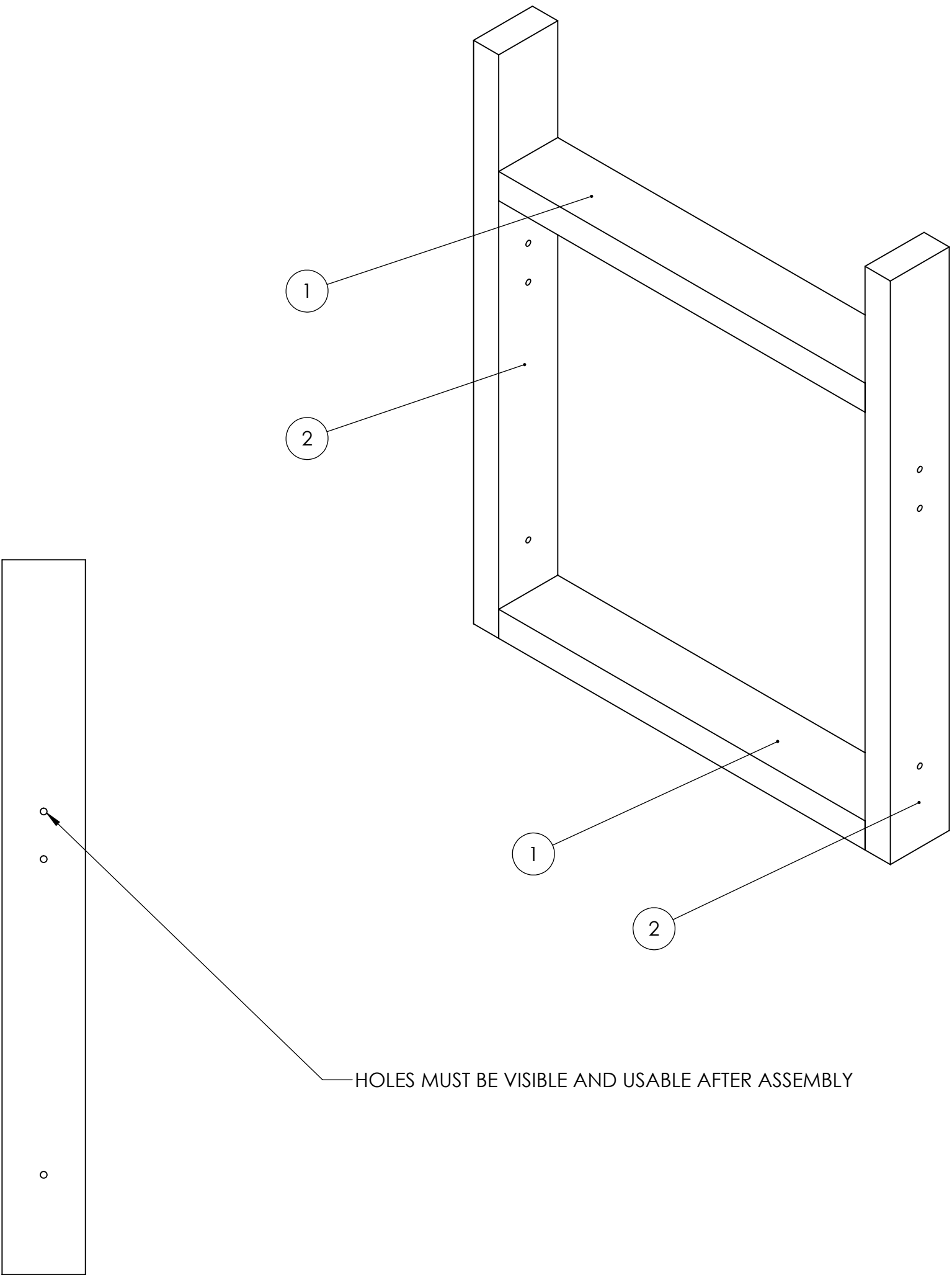
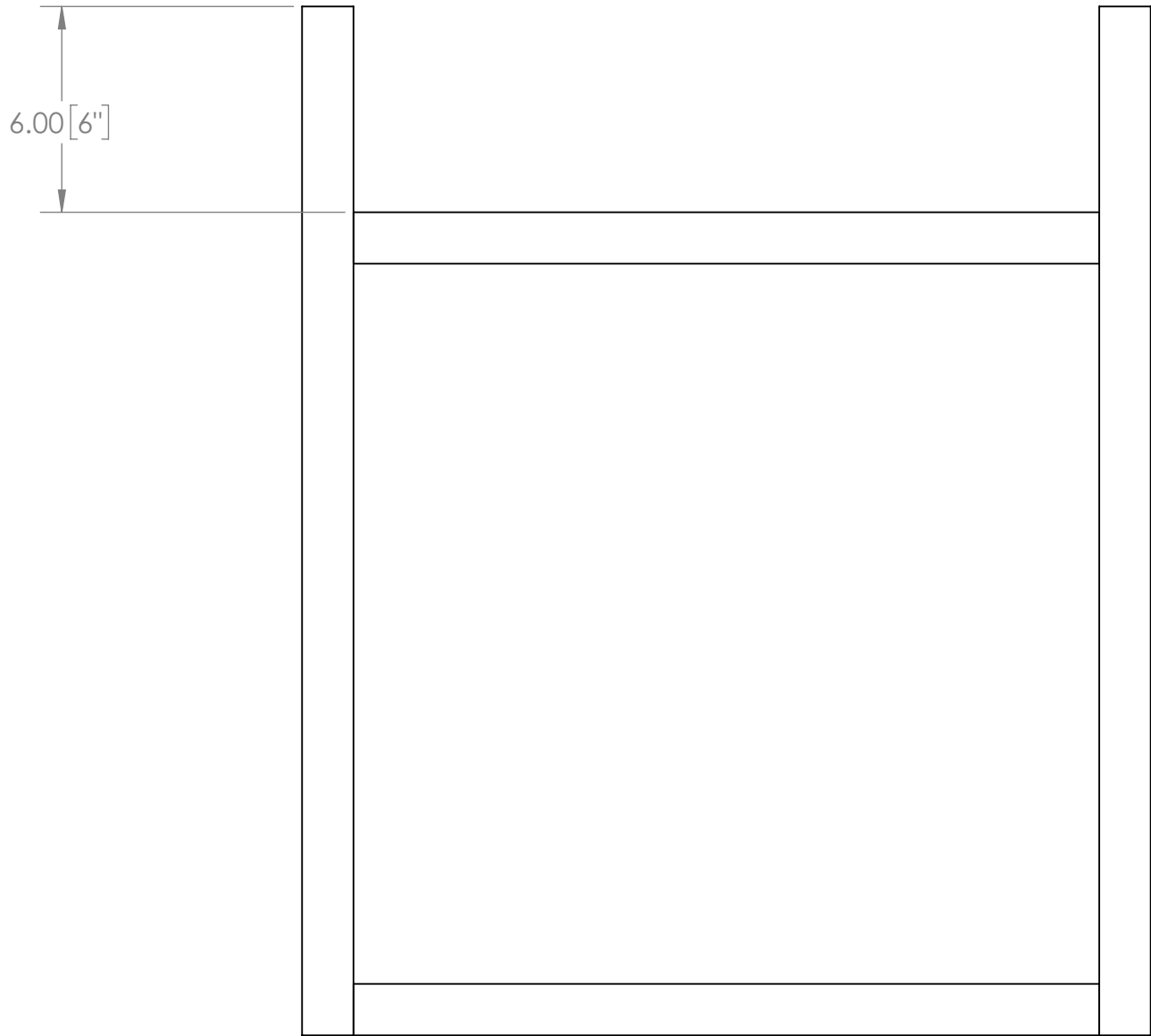
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015  <b>MATERIAL/FINISH:</b>  0.25" Plywood   DO NOT SCALE DRAWING	PRAC	NAME	DATE	<div></div> <div>TITLE: SST Bottom Plywood</div>		
	DRAWN	NE	12/7/2022			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	TE-23107	
SCALE: 1:5		SHEET 1 OF 1				







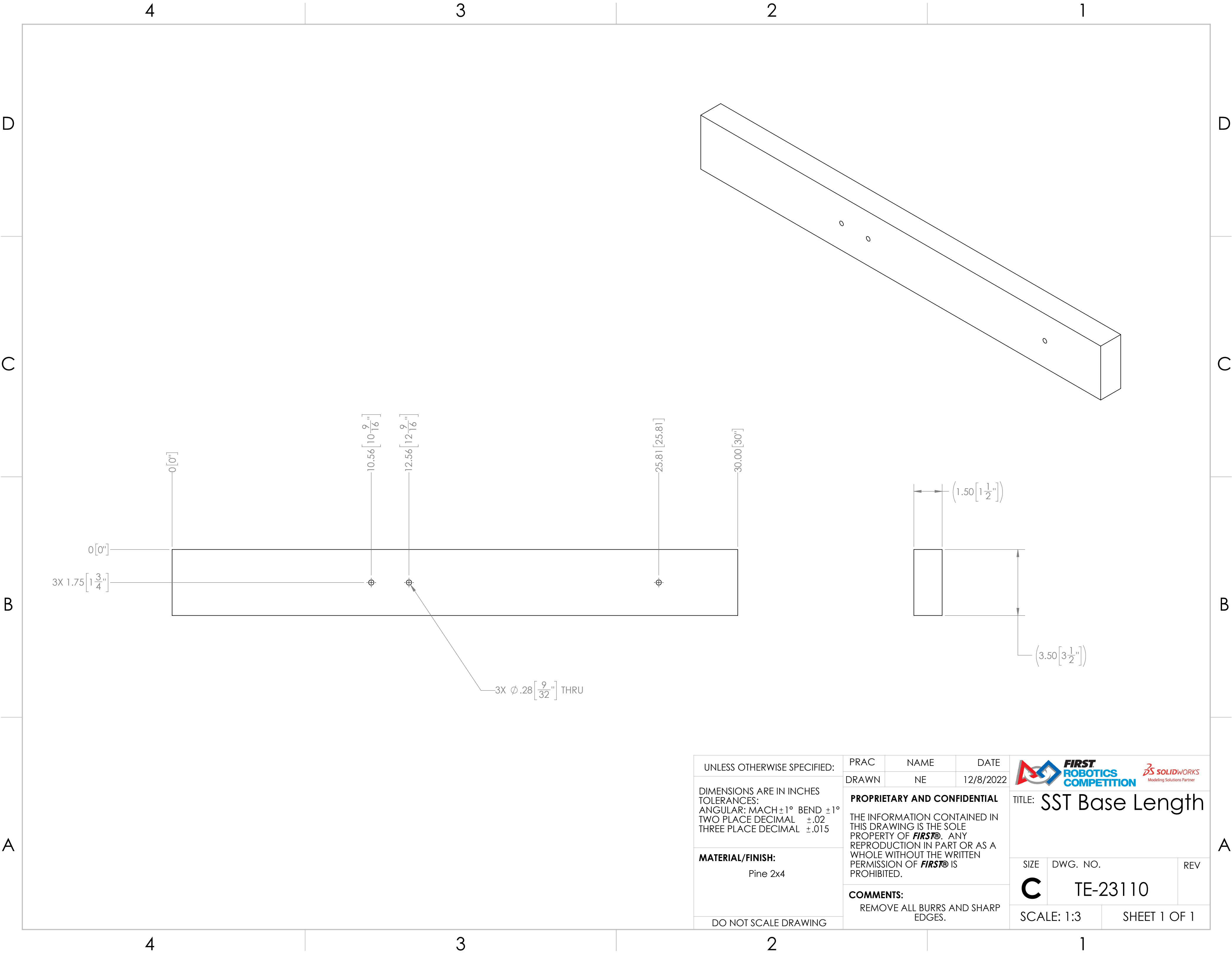
UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015  <b>MATERIAL/FINISH:</b> 0.125" Hardboard  DO NOT SCALE DRAWING	PRAC	NAME	DATE	<div></div> <div>TITLE: SST Bottom Hardwood</div>		
	DRAWN	NE	12/7/2022			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	TE-23108	
SCALE: 1:4		SHEET 1 OF 1				



4			
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	TE-23102	SST Width Piece	2
2	TE-23110	SST Base Length	2



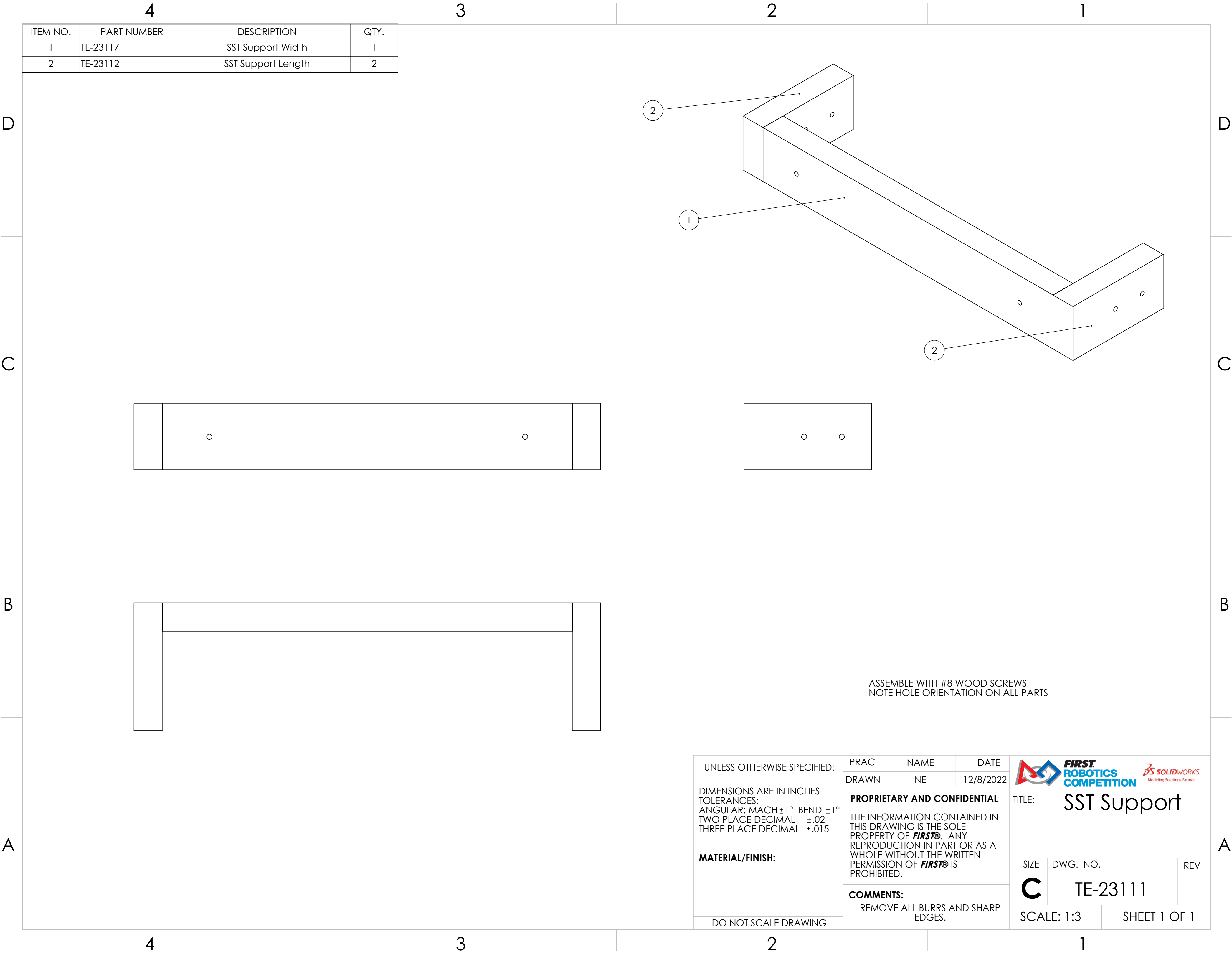
ASSEMBLE WITH #8 WOOD SCREWS  
NOTE HOLE ORIENTATION ON ALL PARTS

UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015  <b>MATERIAL/FINISH:</b>          DO NOT SCALE DRAWING	PRAC	NAME	DATE	 	
	DRAWN	NE	12/8/2022		
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.  <b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			TITLE: SST Base	
			SIZE	DWG. NO.	REV
			C	TE-23109	
			SCALE: 1:5		SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$  <b>MATERIAL/FINISH:</b> Pine 2x4  DO NOT SCALE DRAWING	PRAC	NAME	DATE	<div></div> <div>TITLE: SST Base Length</div>		
	DRAWN	NE	12/8/2022			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	TE-23110	
SCALE: 1:3		SHEET 1 OF 1				





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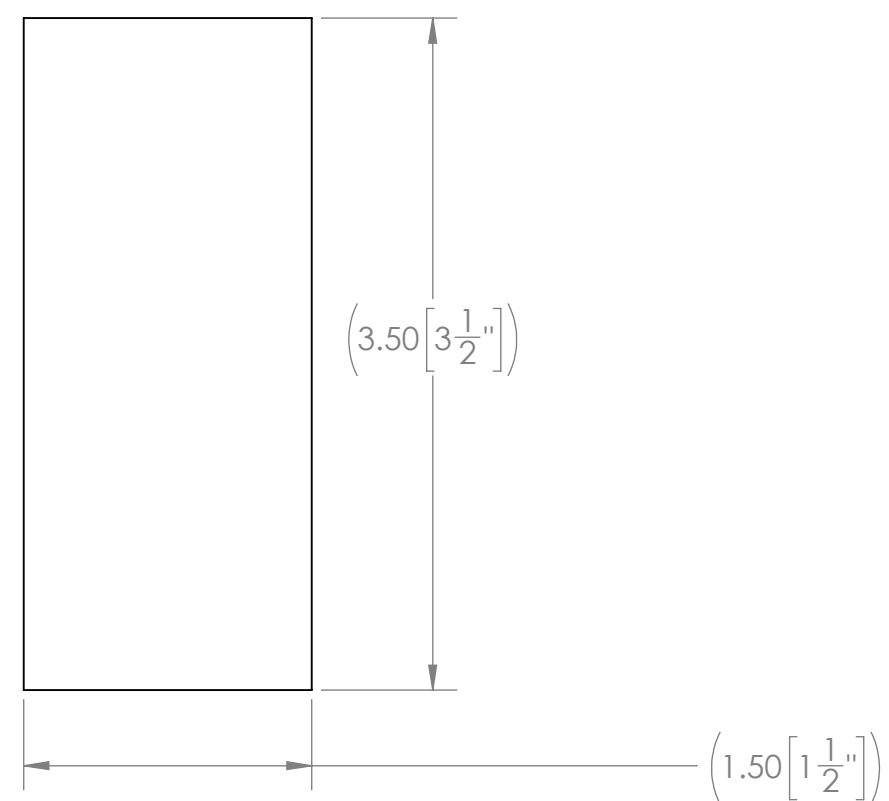
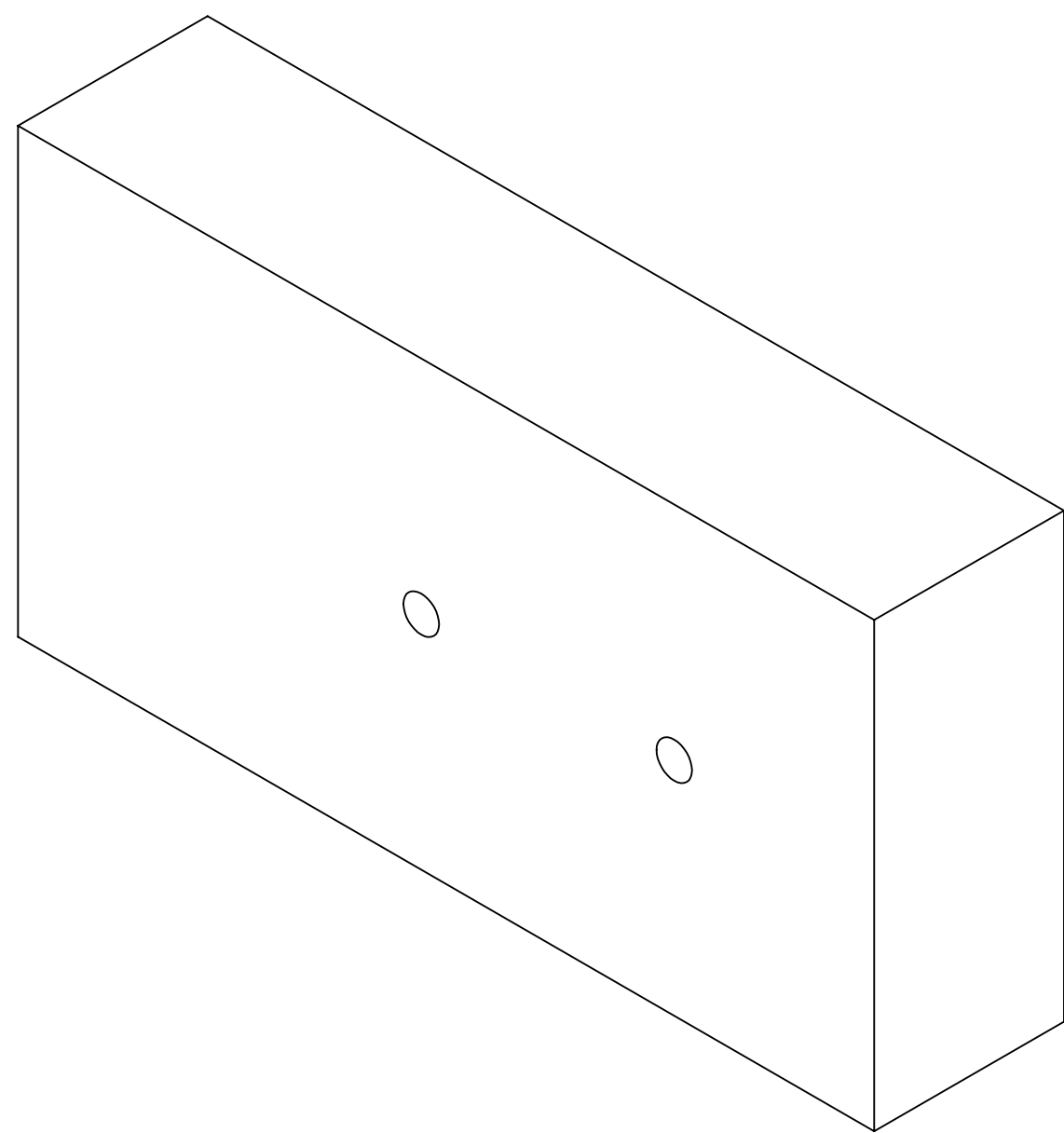
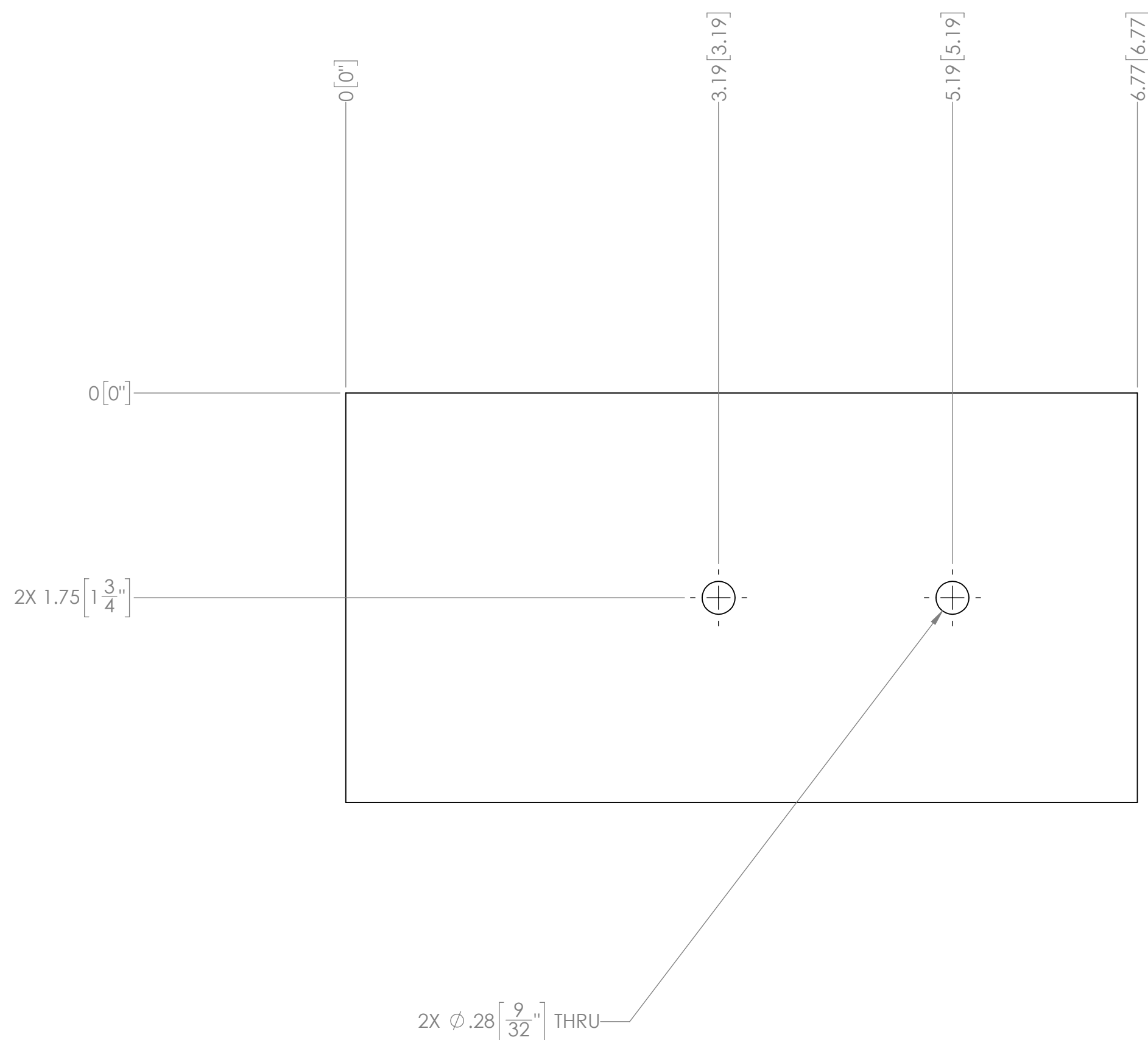
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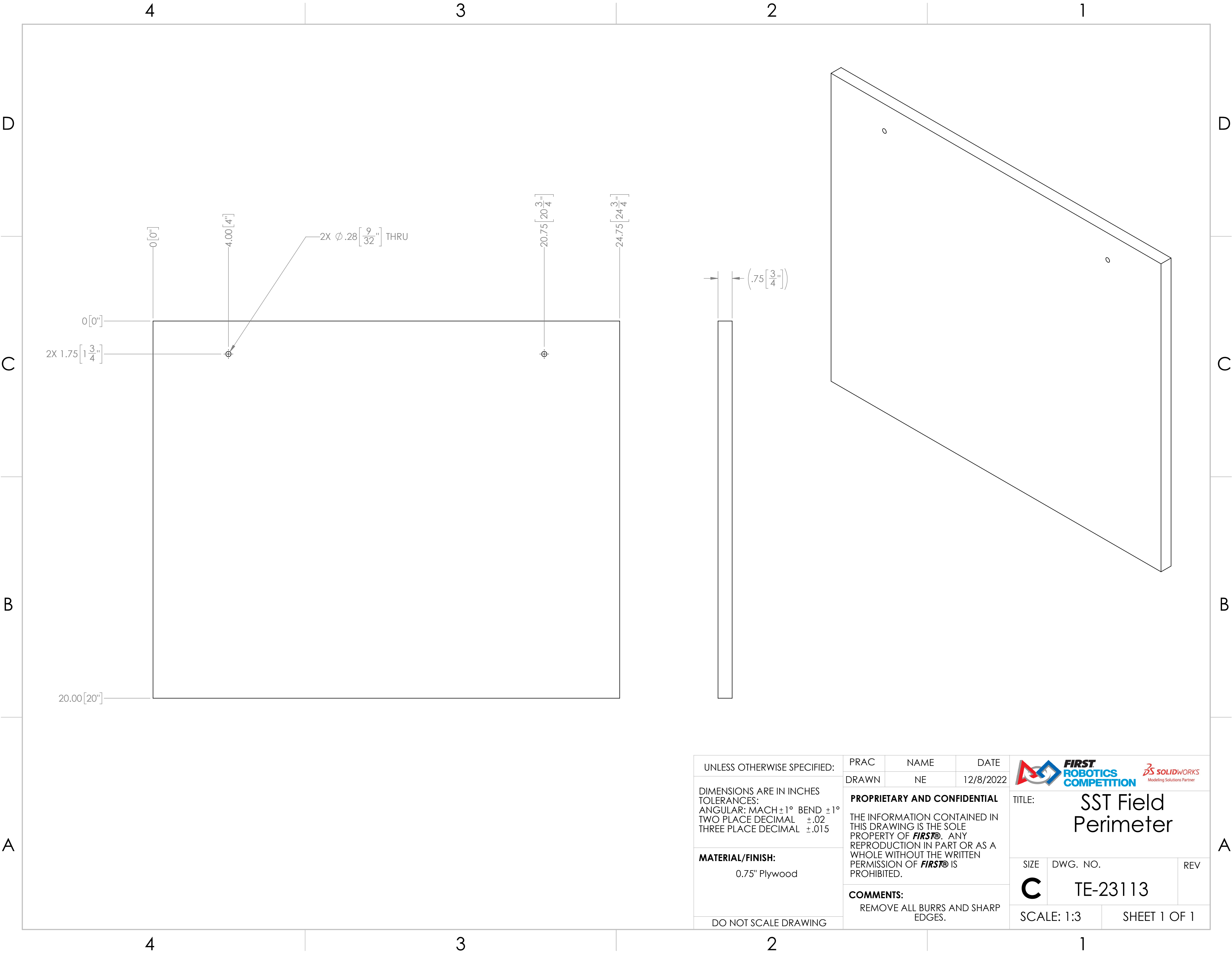
C



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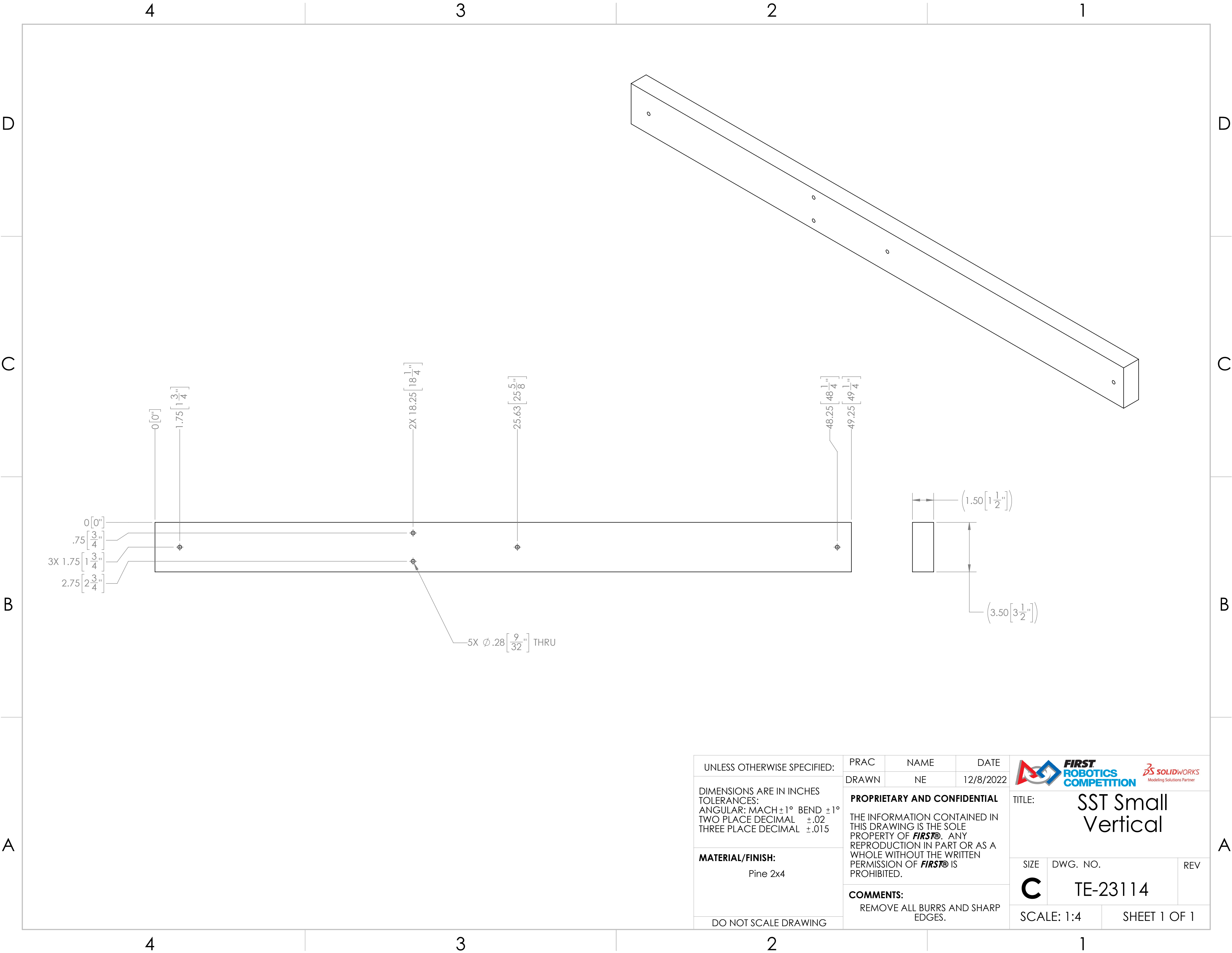




UNLESS OTHERWISE SPECIFIED:		PRAC		NAME		DATE	
DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015		DRAWN		NE		12/8/2022	
		PROPRIETARY AND CONFIDENTIAL					
		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.					
MATERIAL/FINISH:		TITLE:					
Pine 2x4							
DO NOT SCALE DRAWING		COMMENTS:		SIZE			
		REMOVE ALL BURRS AND SHARP EDGES.		DWG. NO.			
				REV			
				C			
				TE-23112			
				SCALE: 1:1			
				SHEET 1 OF 1			

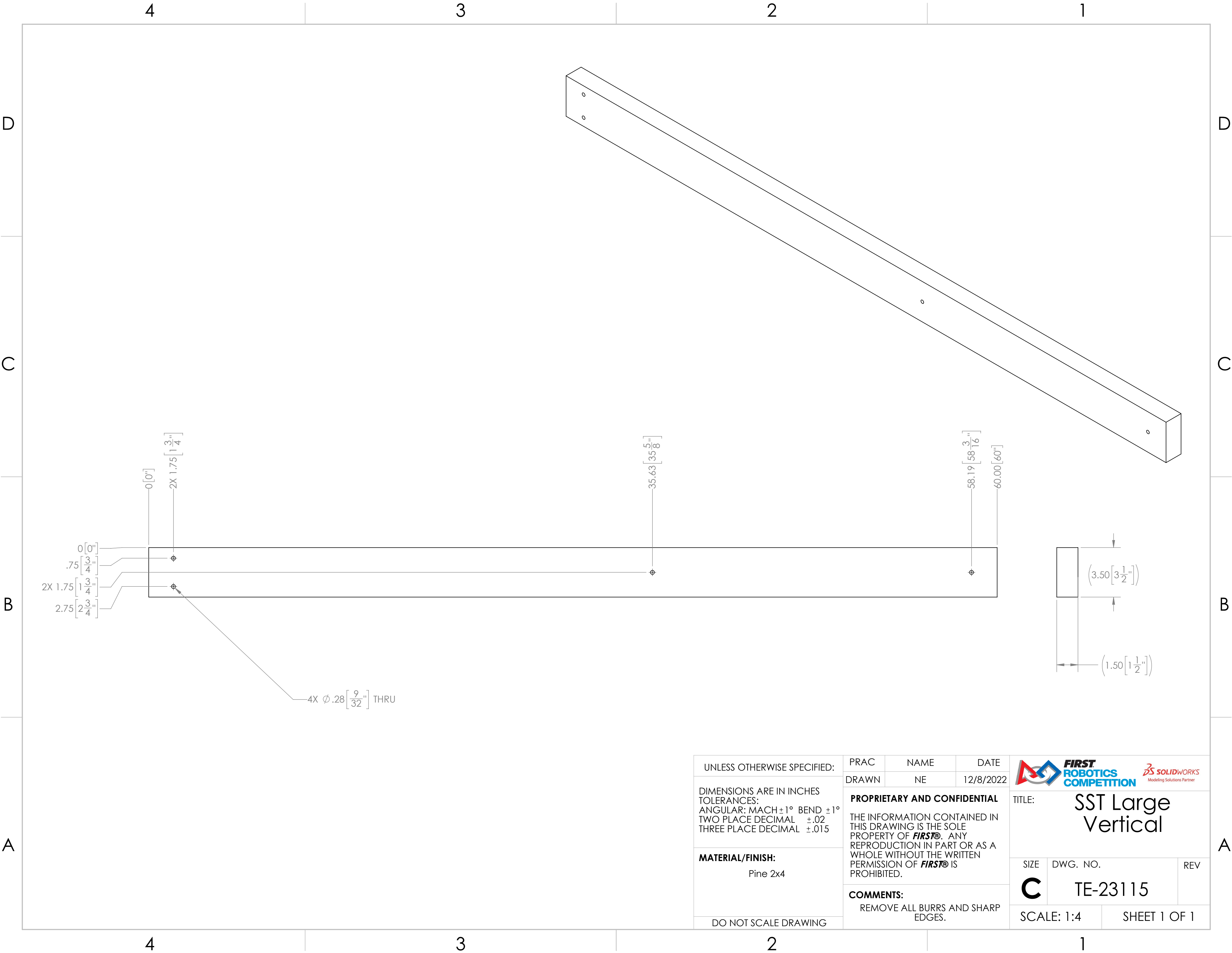




UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015  <b>MATERIAL/FINISH:</b> 0.75" Plywood  DO NOT SCALE DRAWING	PRAC	NAME	DATE	<div></div> <div>TITLE: SST Field Perimeter</div>		
	DRAWN	NE	12/8/2022			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	TE-23113	
SCALE: 1:3		SHEET 1 OF 1				

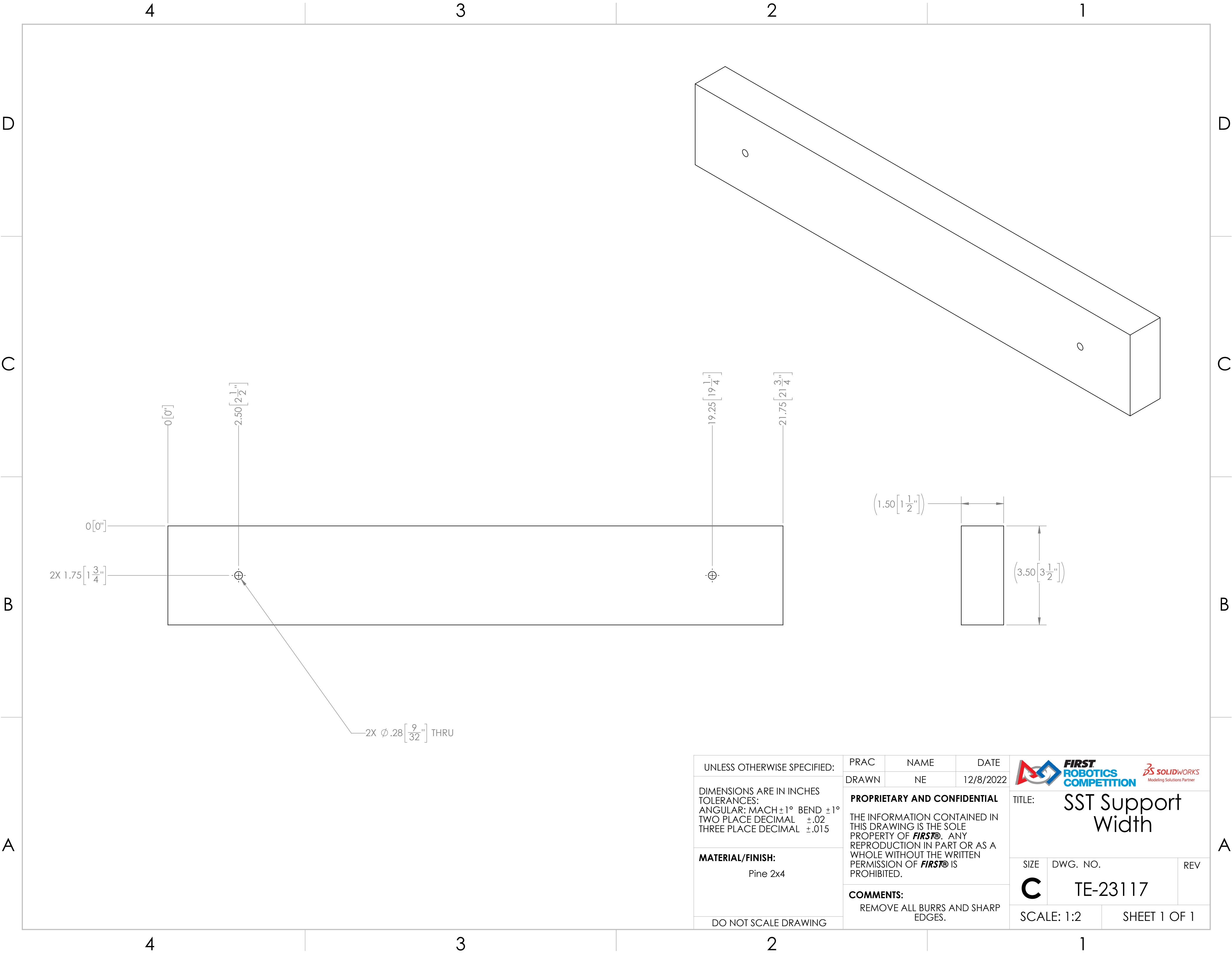






UNLESS OTHERWISE SPECIFIED:	PRAC	NAME	DATE	<div><div></div><div>TITLE: SST Small Vertical</div></div>		
	DRAWN	NE	12/8/2022			
DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.02 THREE PLACE DECIMAL ±.015	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE		
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			DWG. NO.		REV
				C		TE-23114
<b>MATERIAL/FINISH:</b>  Pine 2x4				SCALE: 1:4		SHEET 1 OF 1
DO NOT SCALE DRAWING						



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$  <b>MATERIAL/FINISH:</b> Pine 2x4  DO NOT SCALE DRAWING	PRAC	NAME	DATE	<div></div> <div>TITLE: SST Large Vertical</div>		
	DRAWN	NE	12/8/2022			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	TE-23115	
SCALE: 1:4		SHEET 1 OF 1				



UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .02$ THREE PLACE DECIMAL $\pm .015$  <b>MATERIAL/FINISH:</b> Pine 2x4  DO NOT SCALE DRAWING	PRAC	NAME	DATE	<div></div> <div>TITLE: SST Support Width</div>		
	DRAWN	NE	12/8/2022			
	<b>PROPRIETARY AND CONFIDENTIAL</b>  THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b> . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.			SIZE	DWG. NO.	REV
	<b>COMMENTS:</b> REMOVE ALL BURRS AND SHARP EDGES.			<b>C</b>	TE-23117	
SCALE: 1:2		SHEET 1 OF 1				



4

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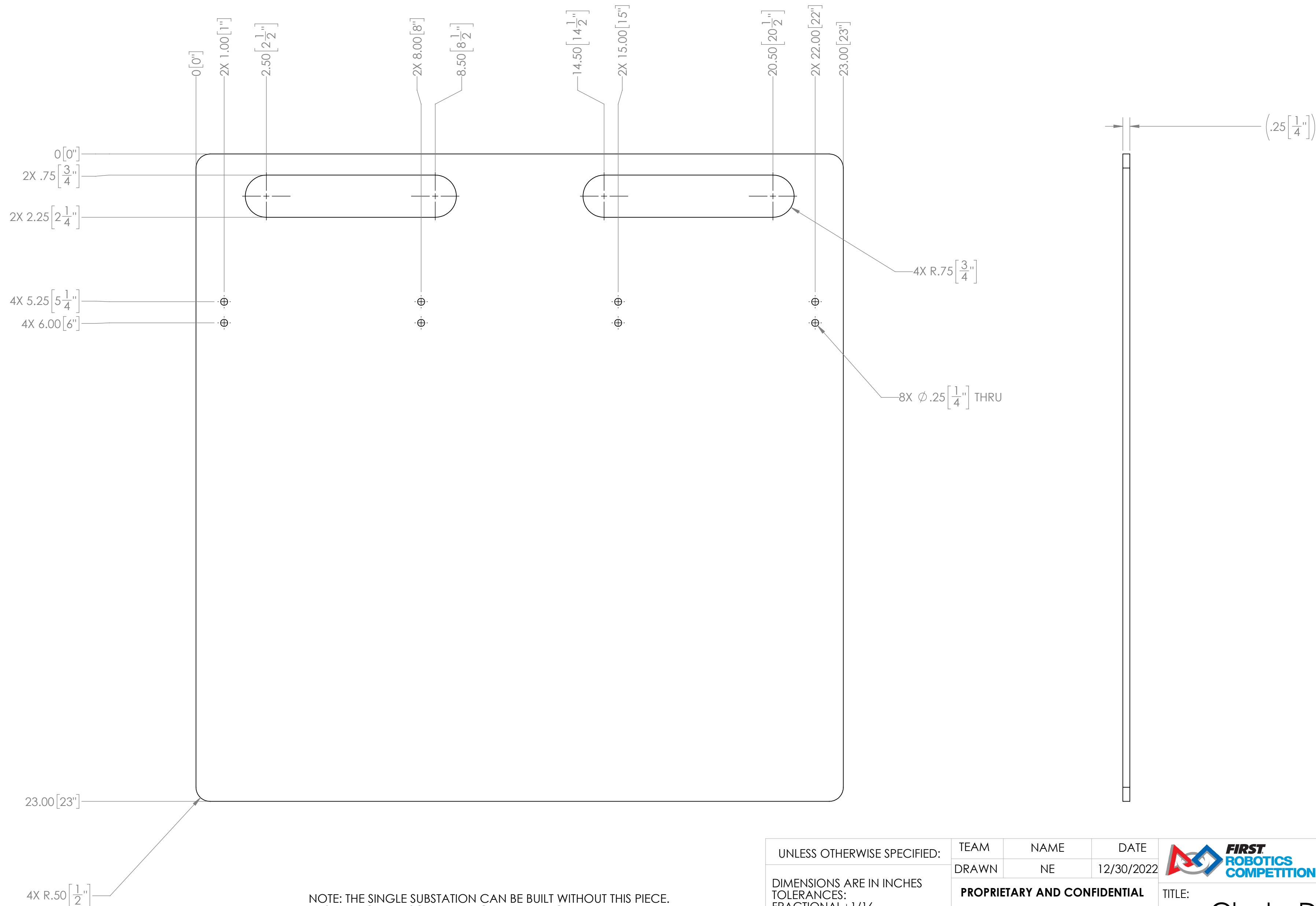
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NOTE: THE SINGLE SUBSTATION CAN BE BUILT WITHOUT THIS PIECE. THIS PART CAN ALSO BE REPLACED WITH ANOTHER MATERIAL. SINGLE SUBSTATION FUNCTIONALITY WILL NOT CHANGE DRAMATICALLY WHEN EXCLUDING THE CHUTE DOOR.

UNLESS OTHERWISE SPECIFIED:		TEAM		NAME		DATE	
<p>DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES:</p> <p>FRACTIONAL <math>\pm 1/16</math></p> <p>ANGULAR: MACH<math>\pm 1^\circ</math> BEND <math>\pm 1^\circ</math></p> <p>TWO PLACE DECIMAL <math>\pm .13</math></p> <p>THREE PLACE DECIMAL <math>\pm .125</math></p> <p><b>MATERIAL/FINISH:</b></p> <p>0.25" Polycarbonate</p> <p>DO NOT SCALE DRAWING</p>		DRAWN		NE		12/30/2022	
		<p><b>PROPRIETARY AND CONFIDENTIAL</b></p> <p>THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <b>FIRST®</b>. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <b>FIRST®</b> IS PROHIBITED.</p>					
		<p><b>COMMENTS:</b></p> <p>REMOVE ALL BURRS AND SHARP EDGES.</p>					
		<p><b>DESIGNER:</b></p> <p>REMOVE ALL BURRS AND SHARP EDGES.</p>					
							
				TITLE:			
				Chute Door			
SIZE		DWG. NO.			REV		
C		TE-23118					
SCALE: 2:5			SHEET 1 OF 1				