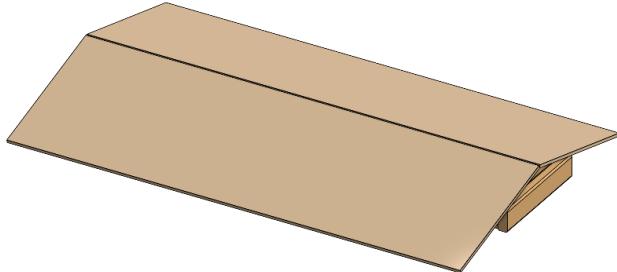


## TE-26100 BUMP



### Description

This is a Bump, designed so that teams can practice driving and auto routines. Each field element has multiple versions designed for teams. Before constructing this assembly, be sure to check [the Playing FIELD webpage](#) to confirm the design is the best fit for your team. In this document, you will find assembly instructions and drawings for this design.

### CAD Files

CAD files are available in two formats. Links to both versions can be found on [the Playing FIELD webpage](#).

The Onshape version of the CAD files can be accessed. This design was created in Onshape, a *FIRST®* Modeling Solutions Sponsor.



STEP files of this assembly are included for the convenience of non-Onshape users.

### Drawings

All drawing files have been exported to PDF Format. Drawings show the dimensions and details required to cut out individual parts. Assembly instructions can be found below in this document.

### Shopping List (if building multiple team element designs, plywood and lumber can be consolidated):

Plywood and Lumber (Example Cut List is at end of Readme):

- 2" x 4" x 8' Lumber – 5 Pieces
- 4' x 8' x 1/2" Thick Plywood – 1 Sheet

Hardware/Other:

- #8 Wood Screws x 2.5" long – Approximately 60 Pieces
- #8 Wood Screws x 1.5" long – Approximately 24 Pieces

## Notes about Hardware

All wood screws can be replaced with nuts and bolts of your choosing to make the design easier to disassemble and store. If this is not a concern for your team, wood screws will make for a sturdier assembly.

## Notes about Materials

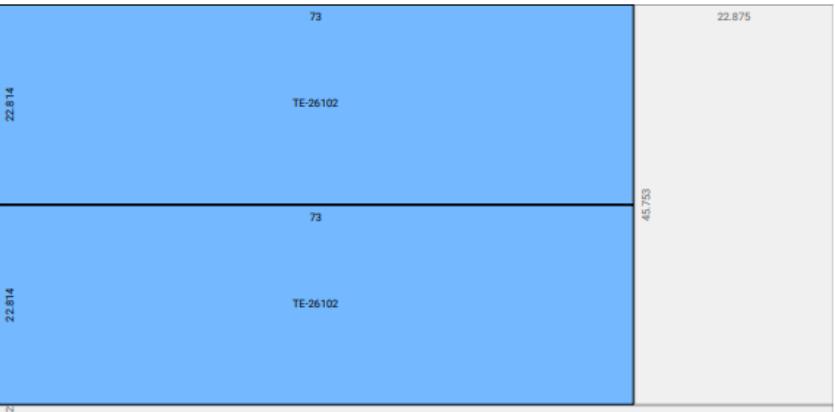
- Plywood and Hardboard Sheets – quality of plywood is up to the user. Plywood of lower qualities may contain voids and may warp more than high quality plywood. All dimensions listed are “nominal”. For example,  $\frac{1}{2}$ ” plywood is typically  $15/32$ ”.
- Lumber - quality of lumber is up to the user. Please keep in mind that lumber of lower qualities may warp more than high quality lumber. All dimensions below are the “mill cut” dimensions. For example, 2” x 4” lumber is really  $1\frac{1}{2}$ ” x  $3\frac{1}{2}$ ”.

## Example Cut List (All units are Inches)

2x4 Lumber (can be combined with all other Team Elements to reduce number of purchased pieces. Be sure to note required repetitions – how many times each Layout ID needs to be cut):

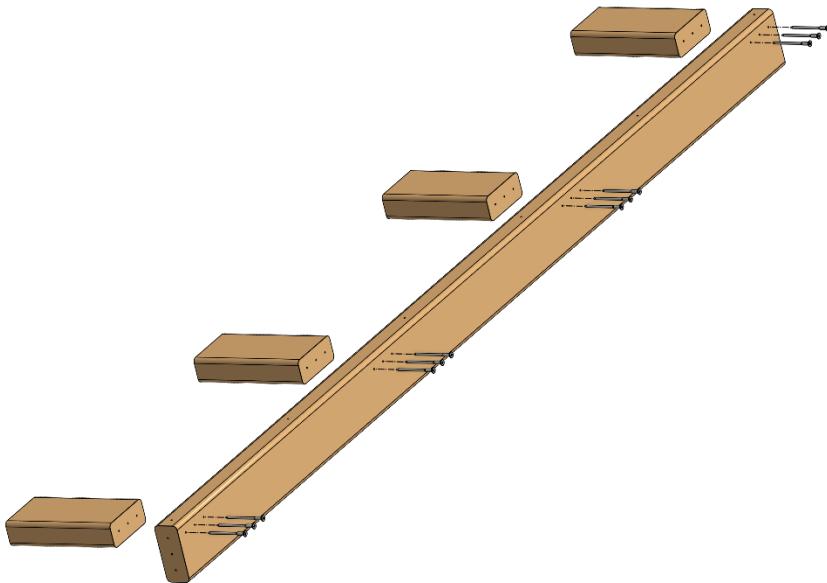
Layout ID	Repetition	Stock length	Part length / Label	Qty	Cuts in layout			
A	2x	96	67 / TE-26103	1				
			8.875 / TE-26104	1				
			6.5 / TE-26105	3				
					The number of cuts	5		
					Waste			
					Material remnant	0		
					Cut	0.625		
67 TE-26103					8.875 TE-26104	6.5 TE-26105	6.5 TE-26105	6.5 TE-26105
Layout ID	Repetition	Stock length	Part length / Label	Qty	Cuts in layout			
B	2x	96	67 / TE-26103	1				
			18 / TE-26106	1				
			8.875 / TE-26104	1				
					The number of cuts	3		
					Waste			
					Material remnant	1.75		
					Cut	0.375		
67 TE-26103					18 TE-26106	8.875 TE-26104		
Layout ID	Repetition	Stock length	Part length / Label	Qty	Cuts in layout			
C	1x	96	6.5 / TE-26105	2				
					The number of cuts	2		
					Waste			
					Material remnant	82.75		
					Cut	0.25		
6.5 TE-26105	6.5 TE-26105							

1/2" Plywood (can be combined with all other Team Elements to reduce number of purchased panels):

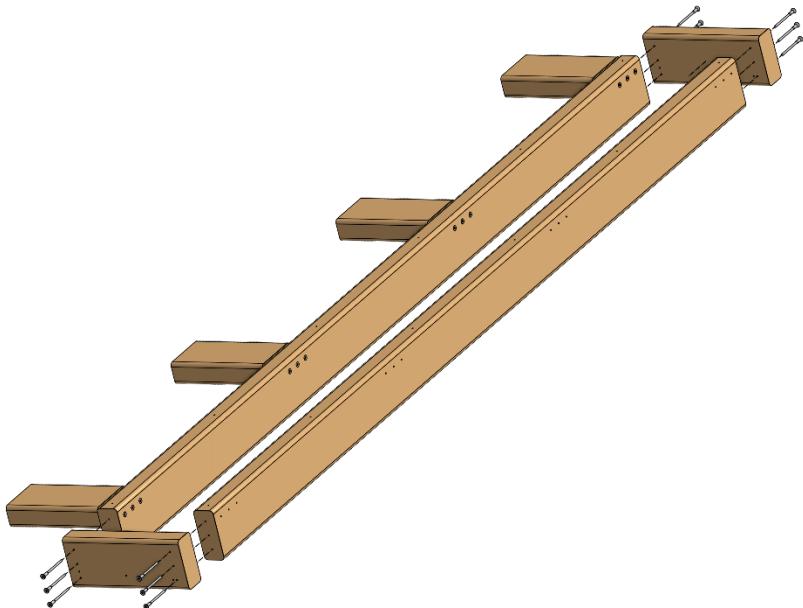
Layout ID	Repetition	Stock dimensions	Panel	Qty
A	1x	96 x 48	73 x 22.814 / TE-26102	2
				
Cuts in layout				
The length of cuts				214.753
The number of cuts				3

## Assembly Instructions

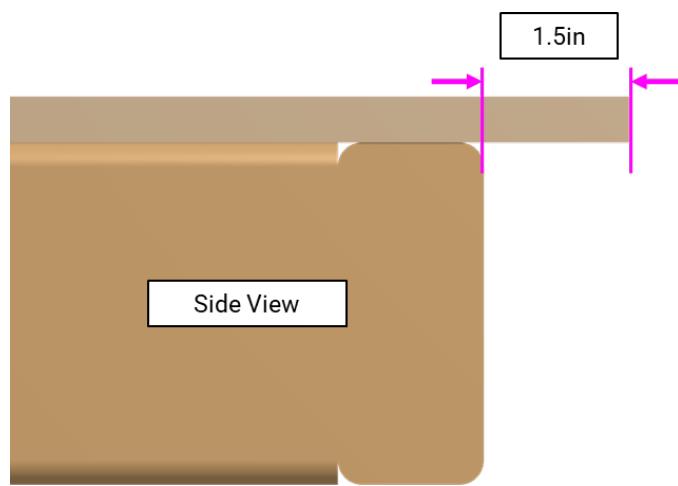
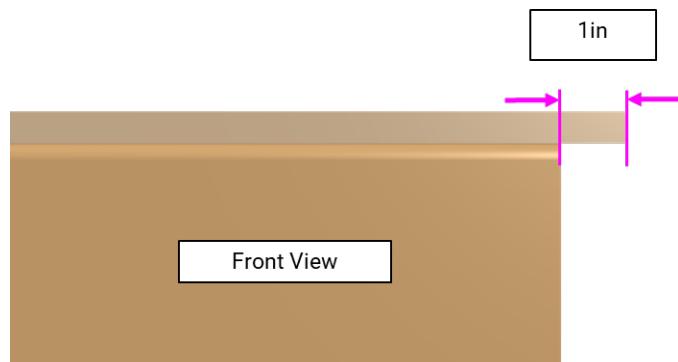
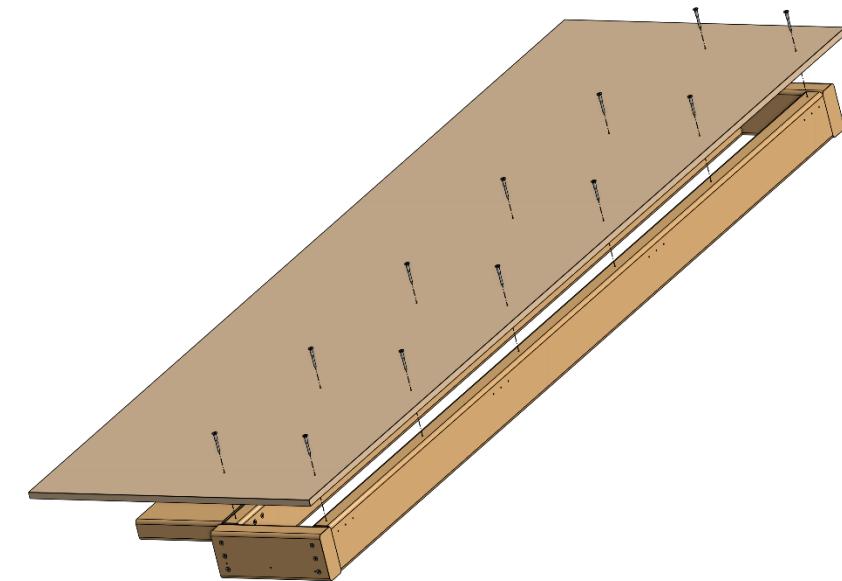
1. Fasten 4, TE-26105 (Supporting Beams) equally spaced out along the bottom TE-26103 (Bump Horizontal Beam) using 2-1/2in screws.



2. Fasten the rest of the base together using two TE-26104 (Bump Vertical Beam) and the last TE-26103 (Bump Horizontal Beam) using 2-1/2in screws.



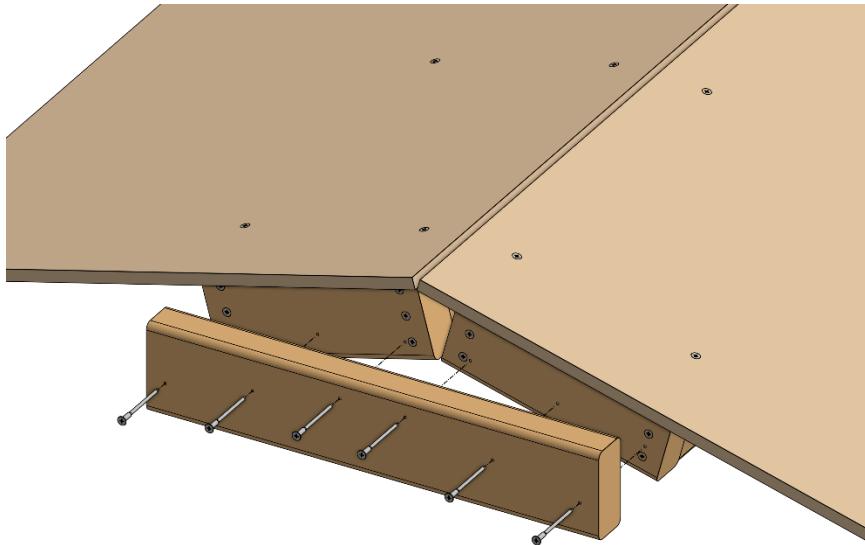
3. Attach TE-26102 (Bump Floor) on top of the base assembly offsetting it 1.5in from each side and 1in from the front using 1-1/2in screws



4. Repeat Steps 1-4 and build another TE-26101 (Bump Structure)
5. Using a Leveling App on your phone, rotate both TE-26101 (Bump Structure) until they are at a 15-degree angle from the floor.

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6. After both TE-26101 (Bump Structure) are in place, use TE-26106 (Bump Cross Beam) on both sides to screw both structures into place.



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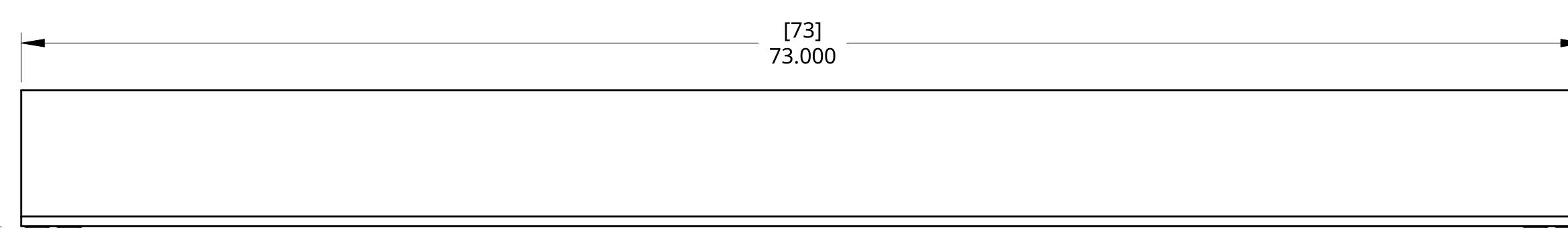
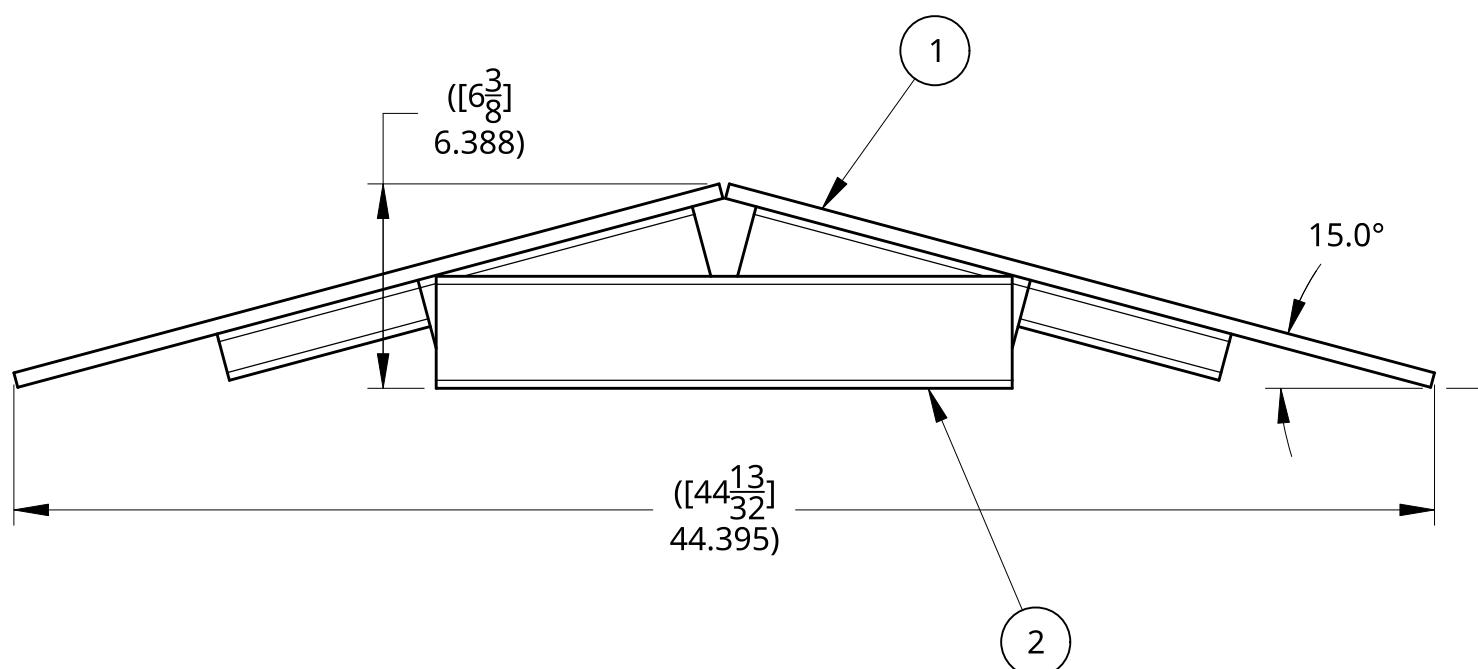
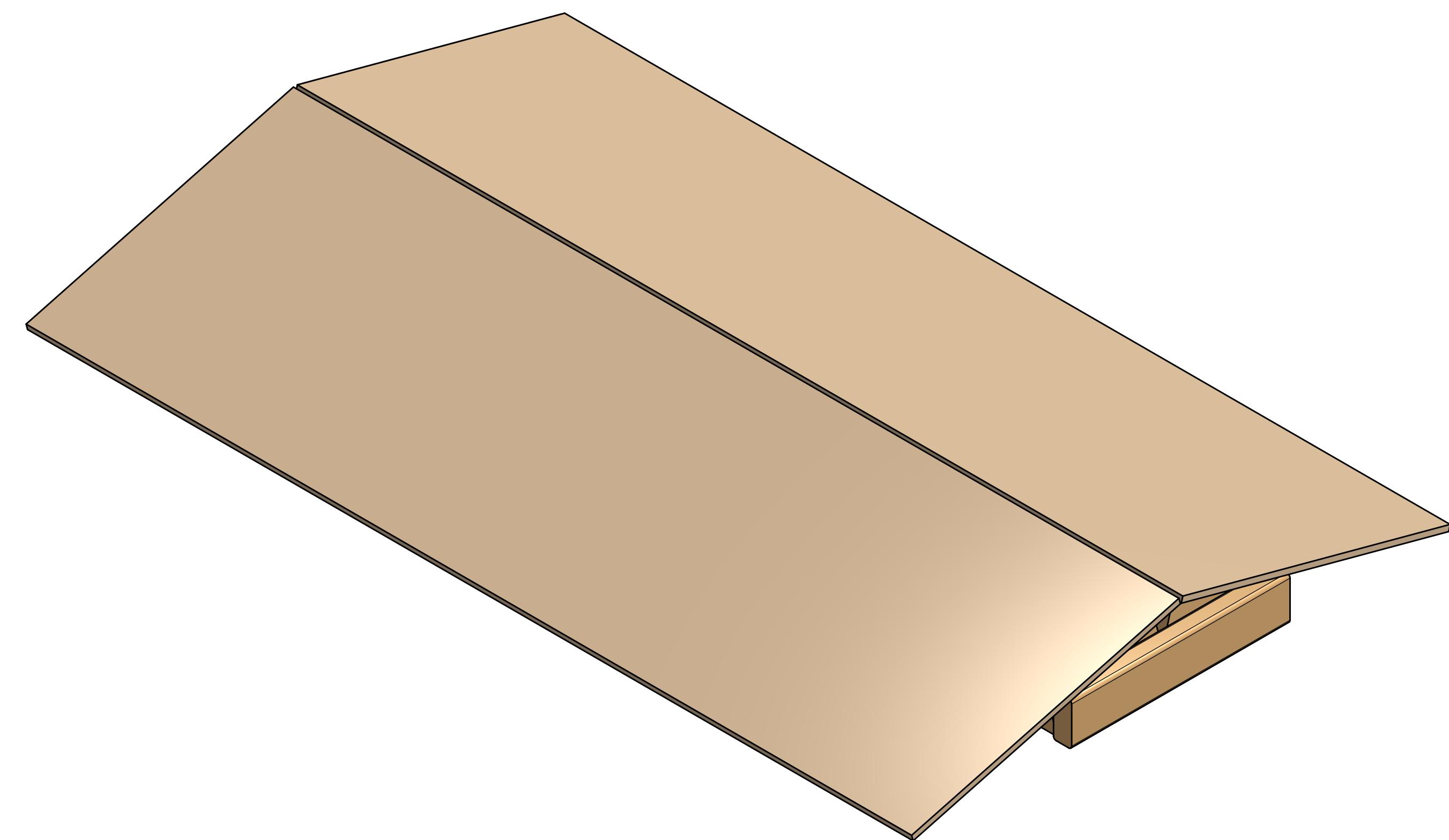
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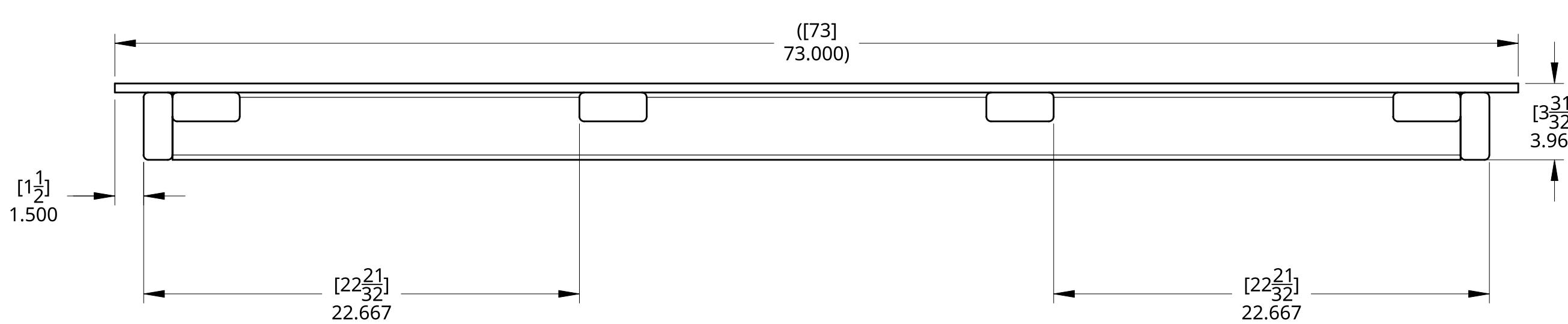
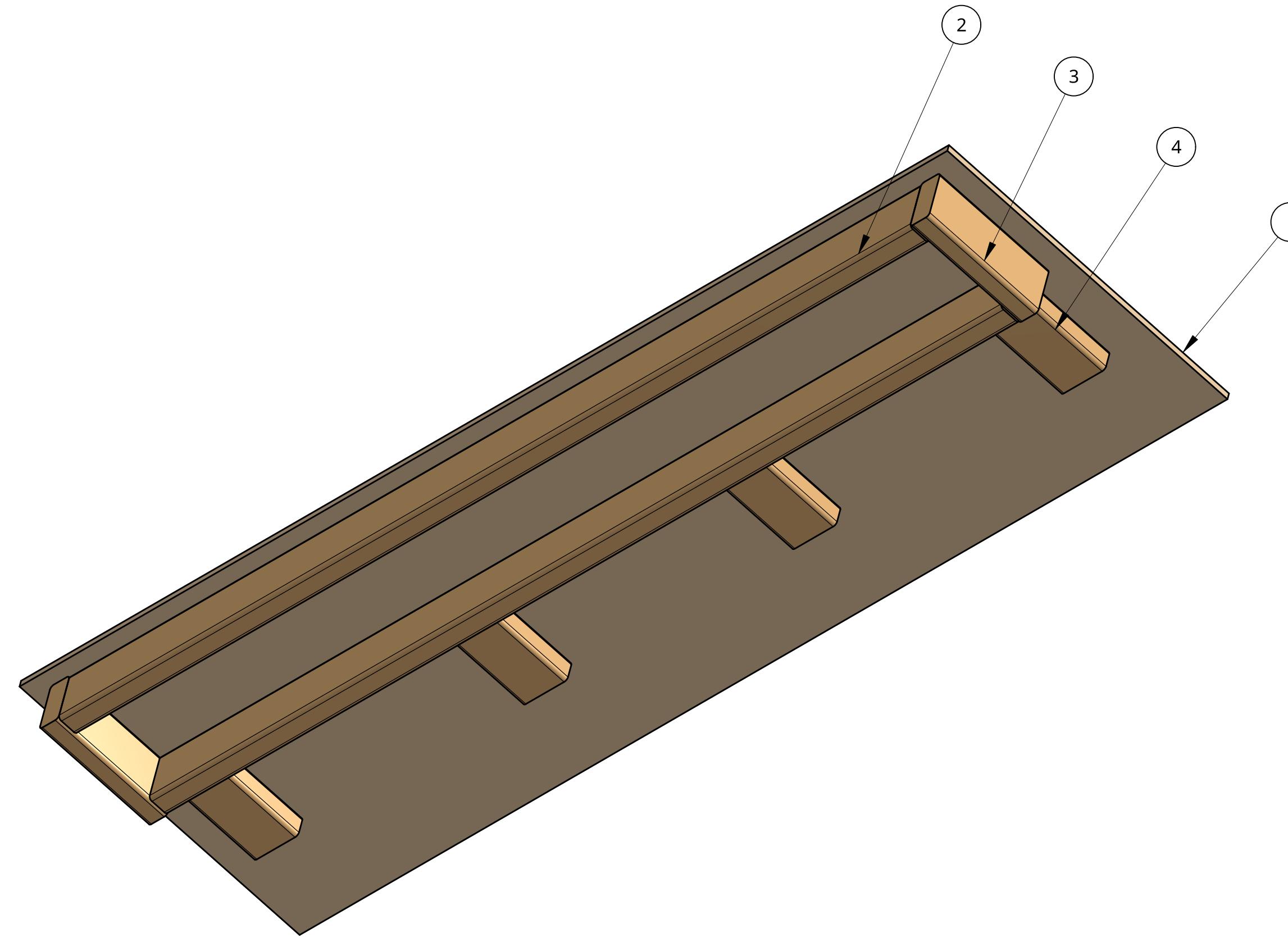
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Item	Quantity	Part number	Description
1	2	TE-26101	Bump Structure
2	2	TE-26106	Bump Cross Beam

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES ANGULAR = $\pm 1^\circ$ FRACTIONAL = $\pm 1/16$	TEAM	NAME	DATE	FIRST ROBOTICS COMPETITION
	DRAWN	AV	10/18/2025	
DO NOT SCALE DRAWING				MATERIAL
BREAK ALL SHARP EDGES AND REMOVE BURRS				TITLE
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.				TE BUMP
	SIZE	DWG NO.		
	C			TE-26100
SCALE	1:6			REV.
				1 of 1



Item	Quantity	Part number	Description
1	1	TE-26102	Bump Floor
2	2	TE-26103	Bump Horizontal Beam
3	2	TE-26104	Bump Vertical Beam
4	4	TE-26105	Bump Support Beam

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES ANGULAR = $\pm 1^\circ$ FRACTIONAL = $\pm 1/16$	TEAM	NAME	DATE	FIRST ROBOTICS COMPETITION
	DRAWN	AV	10/18/2025	
DO NOT SCALE DRAWING				MATERIAL
BREAK ALL SHARP EDGES AND REMOVE BURRS				TITLE
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.				BUMP STRUCTURE
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SCALE	1:6			SHEET
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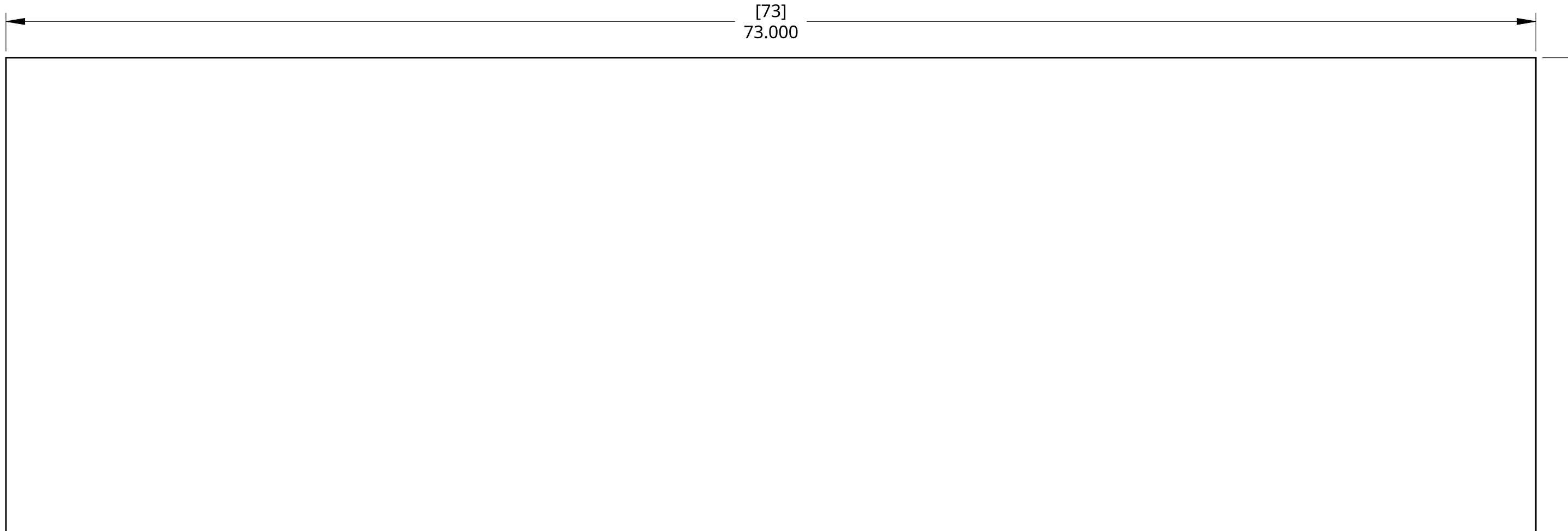
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DO NOT SCALE DRAWING	MATERIAL		TITLE		
BREAK ALL SHARP EDGES AND REMOVE BURRS					
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FIRST®. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FIRST® IS PROHIBITED.	1/2" PLYWOOD		BUMP FLOOR		
	SIZE	DWG NO.	TE-26102		
	SCALE	REV.	1:5	SHEET 1 of 1	

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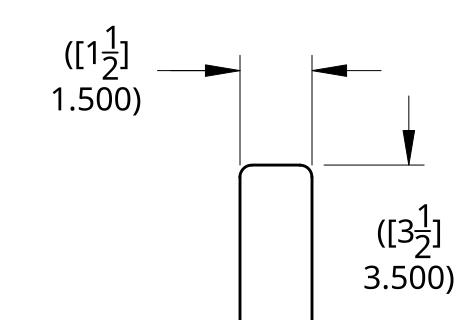
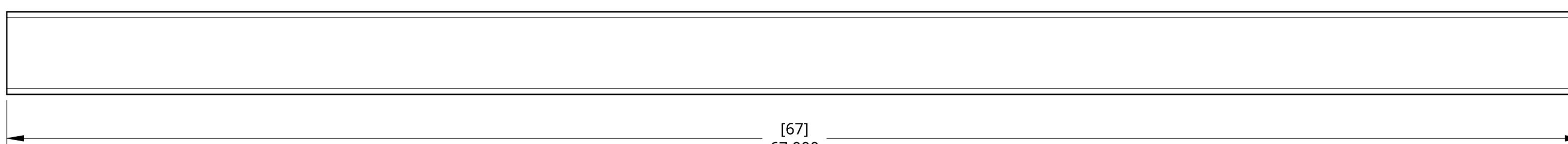
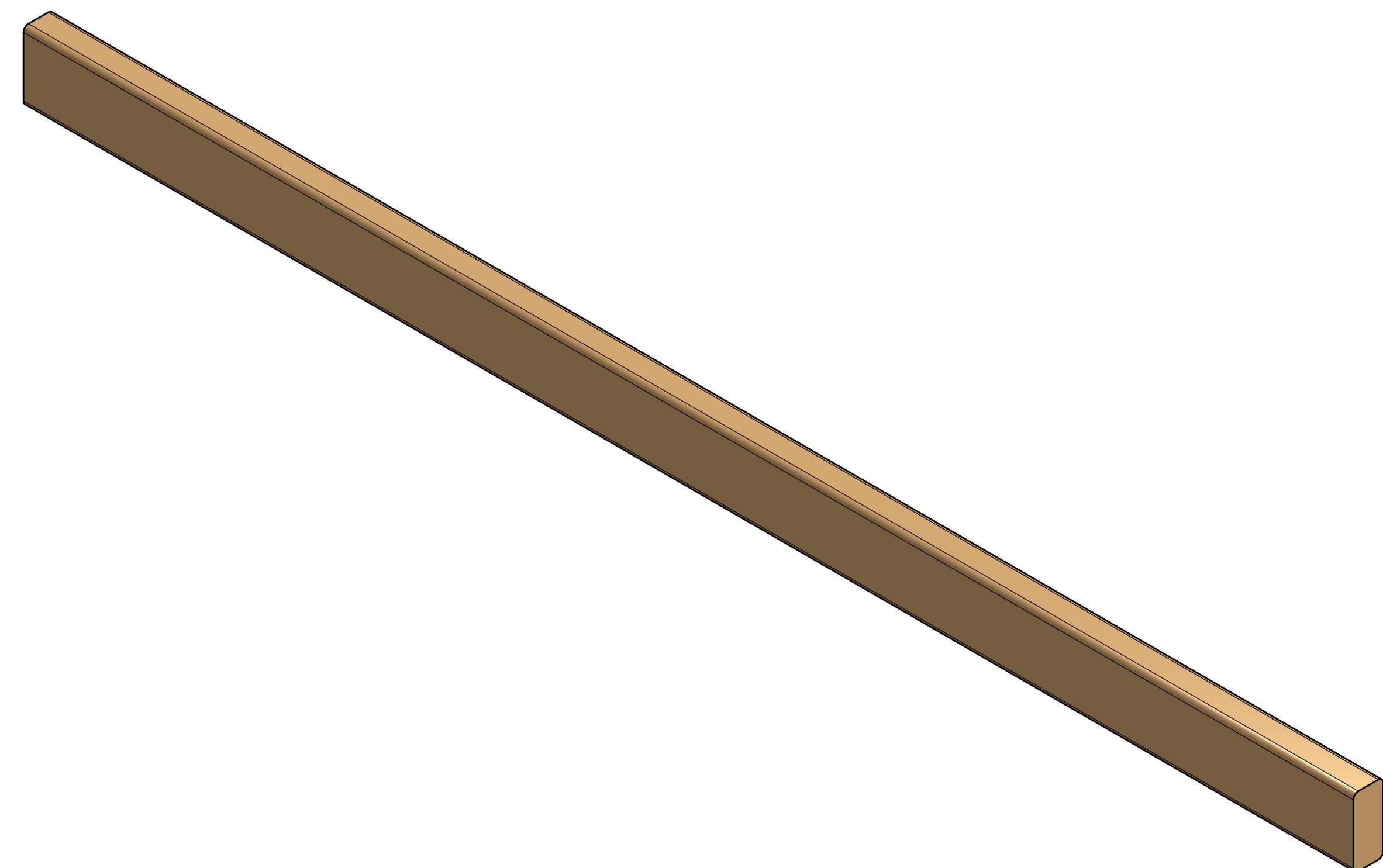
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DO NOT SCALE DRAWING	MATERIAL 2X4 LUMBER	TITLE BUMP HORIZONTAL BEAM		
BREAK ALL SHARP EDGES AND REMOVE BURRS				
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SIZE C	DWG NO.	TE-26103	REV.	
SCALE 1:4	SHEET	1 of 1		

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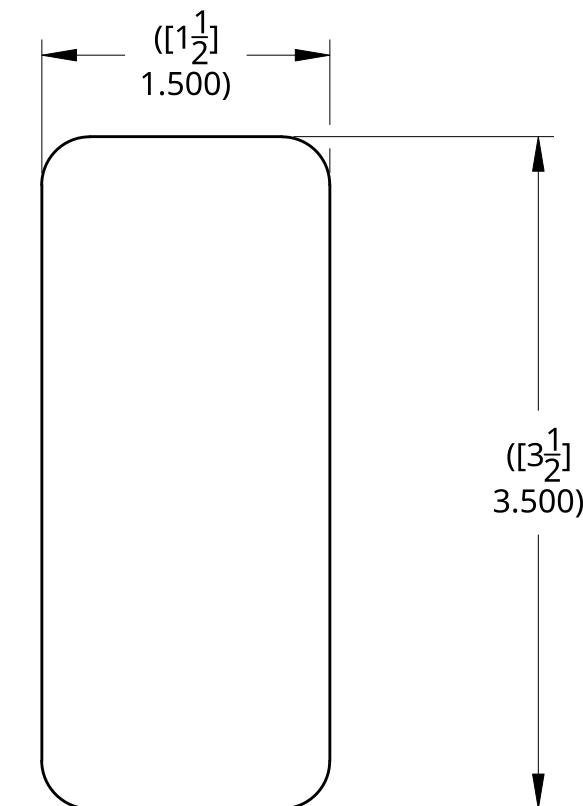
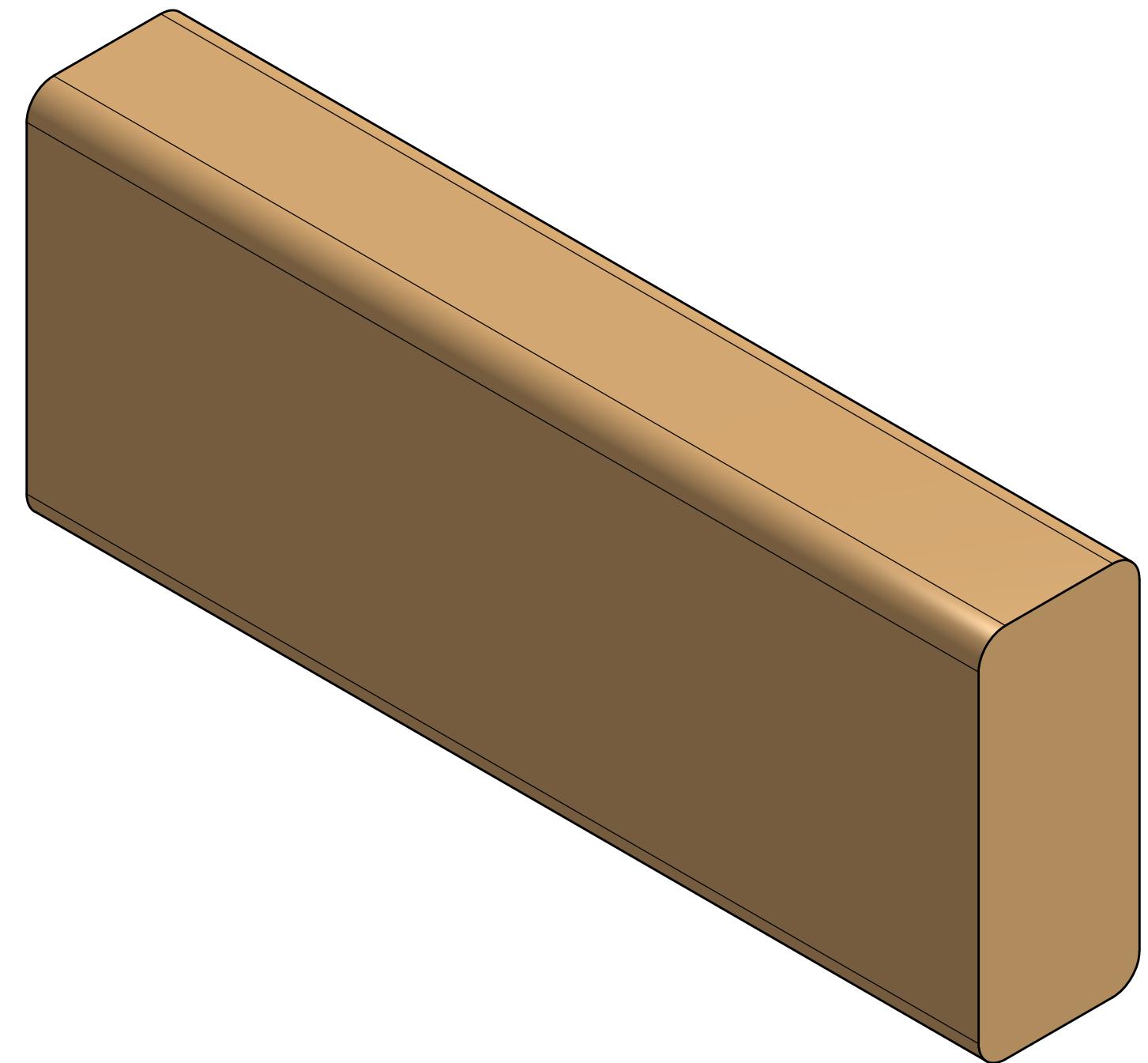
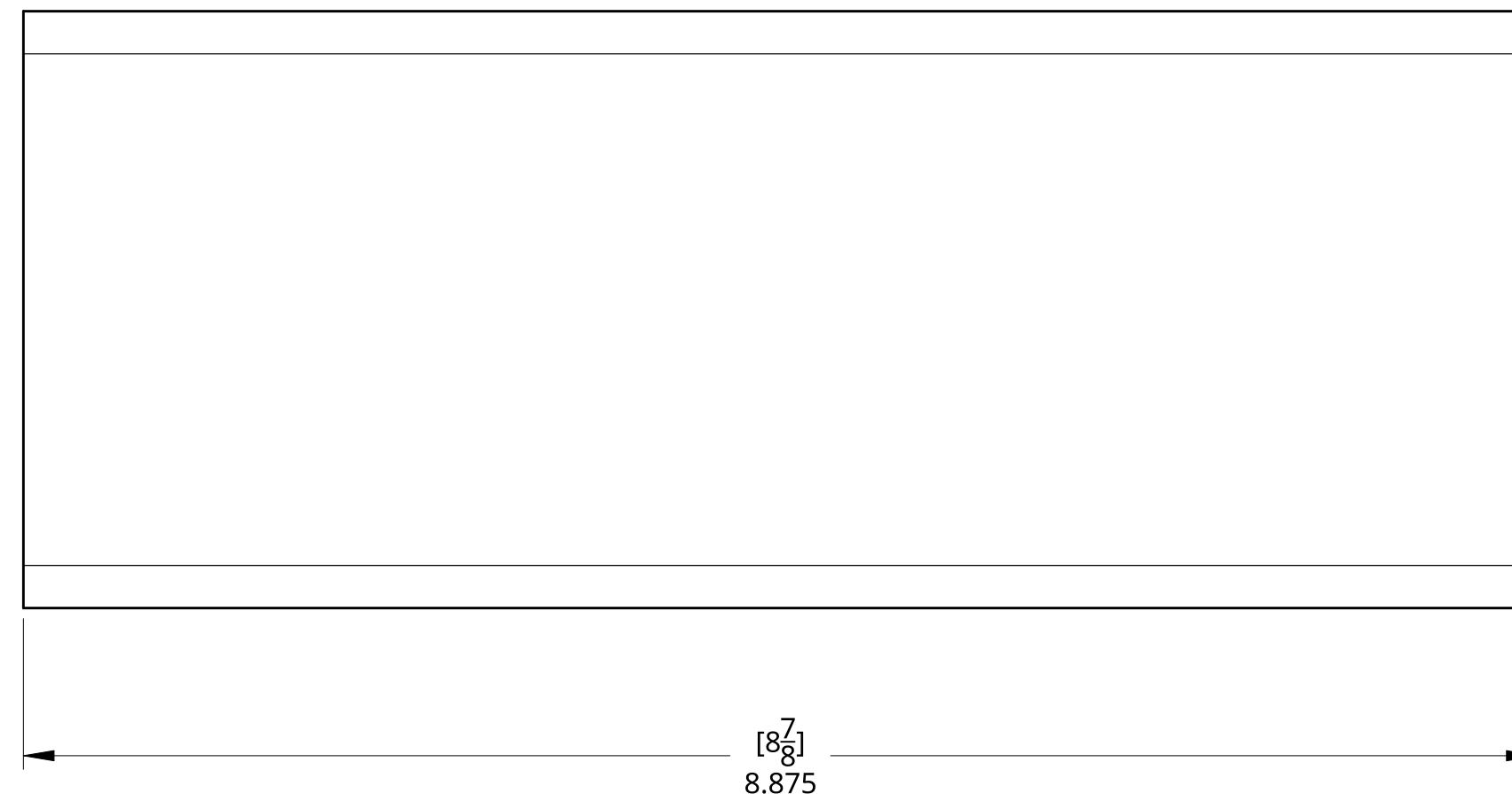
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DO NOT SCALE DRAWING	MATERIAL	TITLE	2X4 LUMBER	BUMP VERTICAL BEAM
BREAK ALL SHARP EDGES AND REMOVE BURRS				
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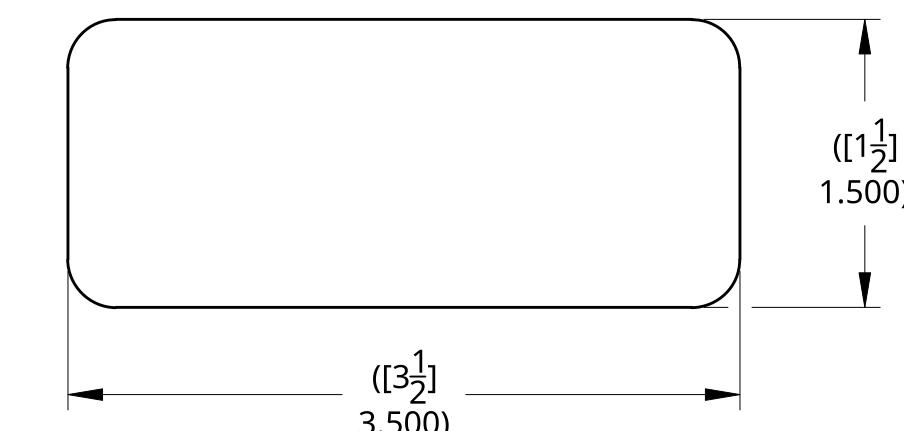
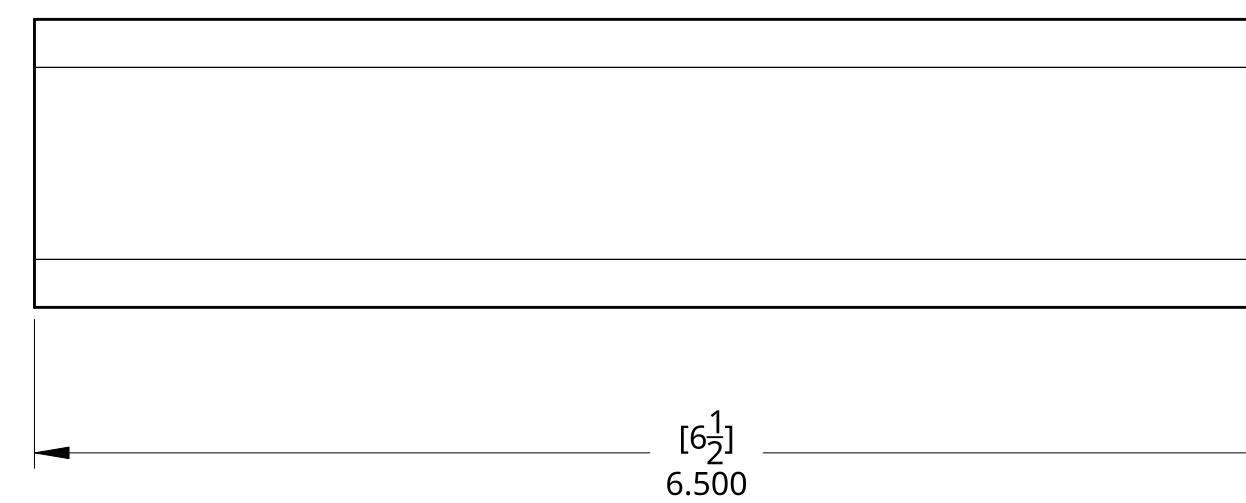
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DIMENSIONS ARE IN INCHES  
ANGULAR =  $\pm 1^\circ$   
FRACTIONAL =  $\pm 1/16$

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TEAM NAME DATE

DRAWN AV 10/21/2025

MATERIAL

2X4 LUMBER



BUMP SUPPORT BEAM

SIZE C DWG NO. TE-26105 REV.

SCALE 1:1 SHEET 1 of 1

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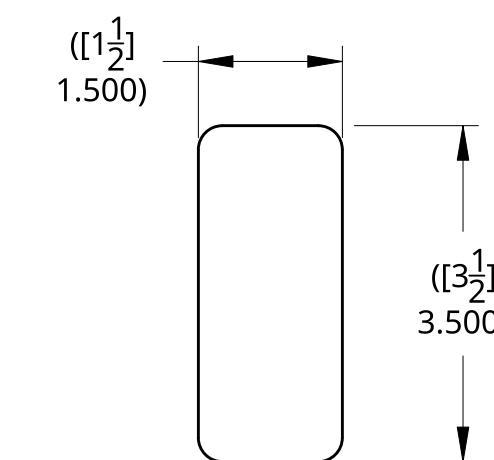
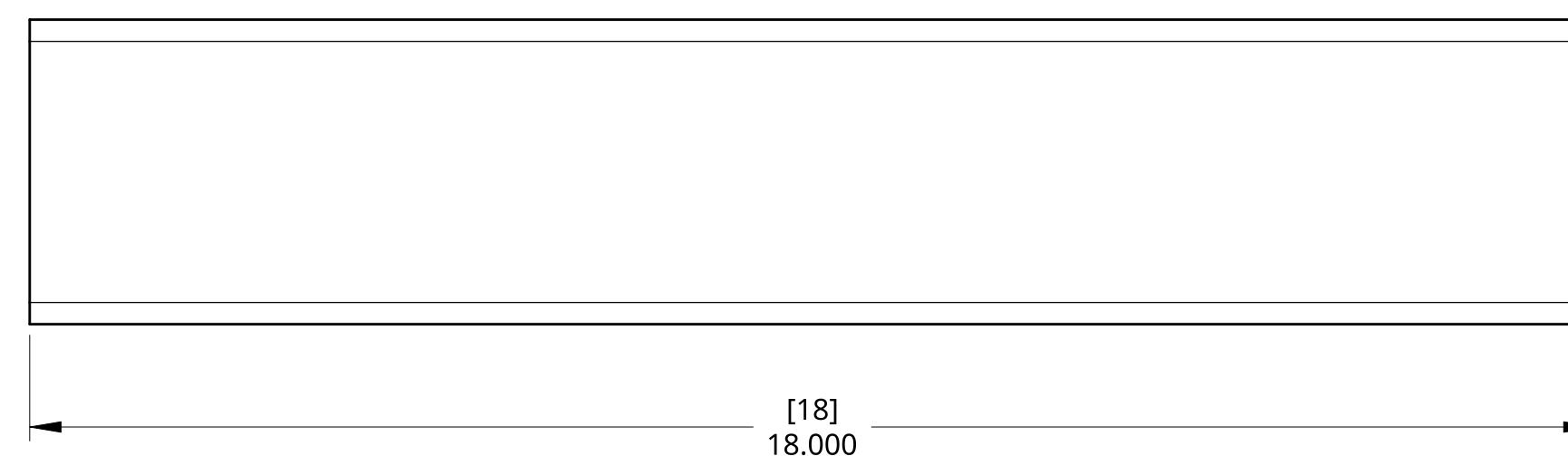
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	DRAWN	AV	10/18/2025	
DO NOT SCALE DRAWING	MATERIAL 2X4 LUMBER	TITLE BUMP CROSS BEAM		
BREAK ALL SHARP EDGES AND REMOVE BURRS				
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SIZE C	DWG NO.	TE-26106	REV.	
SCALE 1:2	SHEET	1 of 1		