

DeRosa University Center Rotary Food Waste Scale

Preliminary Drawings



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MECH 140

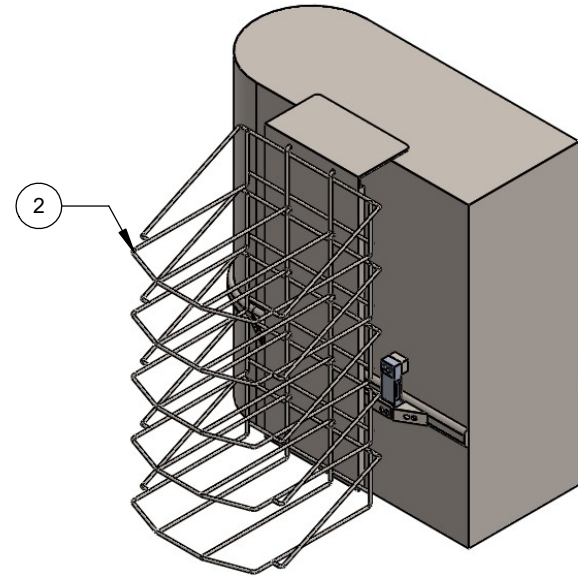
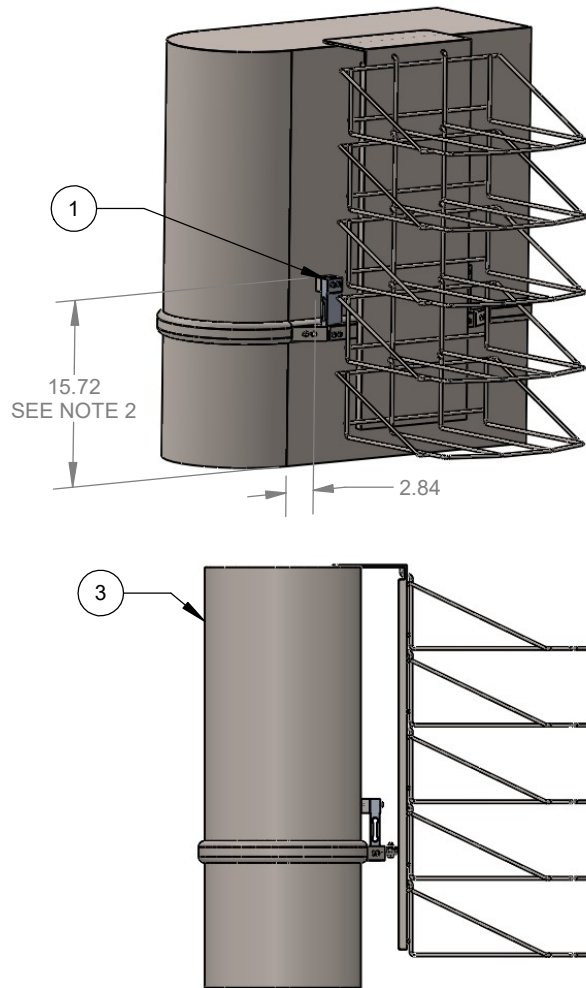
Dr. Watson

December 8, 2022

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Rack.....	9
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B



B

A

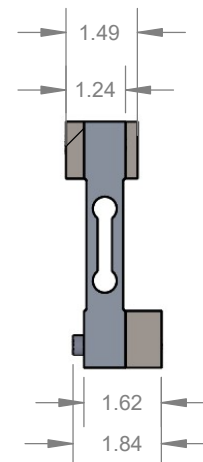
NOTES:

1. ITEM No.'s 2 AND 3 ARE PRE-EXISTING SUBASSEMBLIES IN THE DEROSA UNIVERSITY CENTER.
2. DIMENSIONS PROVIDED ARE TO MARK WHERE ITEM 1b (LOAD CELL BASE) WILL BE ATTACHED ONTO ITEM 3a (ROTARY WALL).

UNLESS OTHERWISE SPECIFIED:			NAME	DATE			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN				TITLE: DUC Rotary Food Waste Scale Assembly		
	CHECKED						
	ENG APPR.						
	MFG APPR.						
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.				SIZE DWG. NO. REV A 1		
MATERIAL SEE ADDITIONAL DRAWINGS	COMMENTS:						
FINISH							
DO NOT SCALE DRAWING					SCALE: 1:16	WEIGHT:	SHEET 1 OF 13

A

1



This diagram shows an exploded view of a mechanical assembly. It consists of five main components labeled 1a through 1e. Component 1a is a blue L-shaped bracket with two circular holes. Component 1b is a grey rectangular block. Component 1c is a long, thin grey plate with four circular holes. Component 1d is a grey triangular wedge with two circular holes. Component 1e is another blue L-shaped bracket, similar to 1a but oriented differently, also with two circular holes. Arrows point from each label to its corresponding component, showing how they fit together into a single assembly.

NOTES:

1. QUARTER INCH SPACE BETWEEN RAMPS AND LOAD CELLS TO NOT INTERFERE WITH LOAD CELL READINGS.
2. ITEM No.'s 1d (LOAD CELL RAMPS) WILL BE BOLTED ON TOP OF ITEM No. 3b (TIRE TRACK).

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±

MATERIAL
SEE ADDITIONAL DRAWINGS
FINISH

COMMENTS:

TITLE:

Item 1:
Load Cell Subassembly

REV

A 2

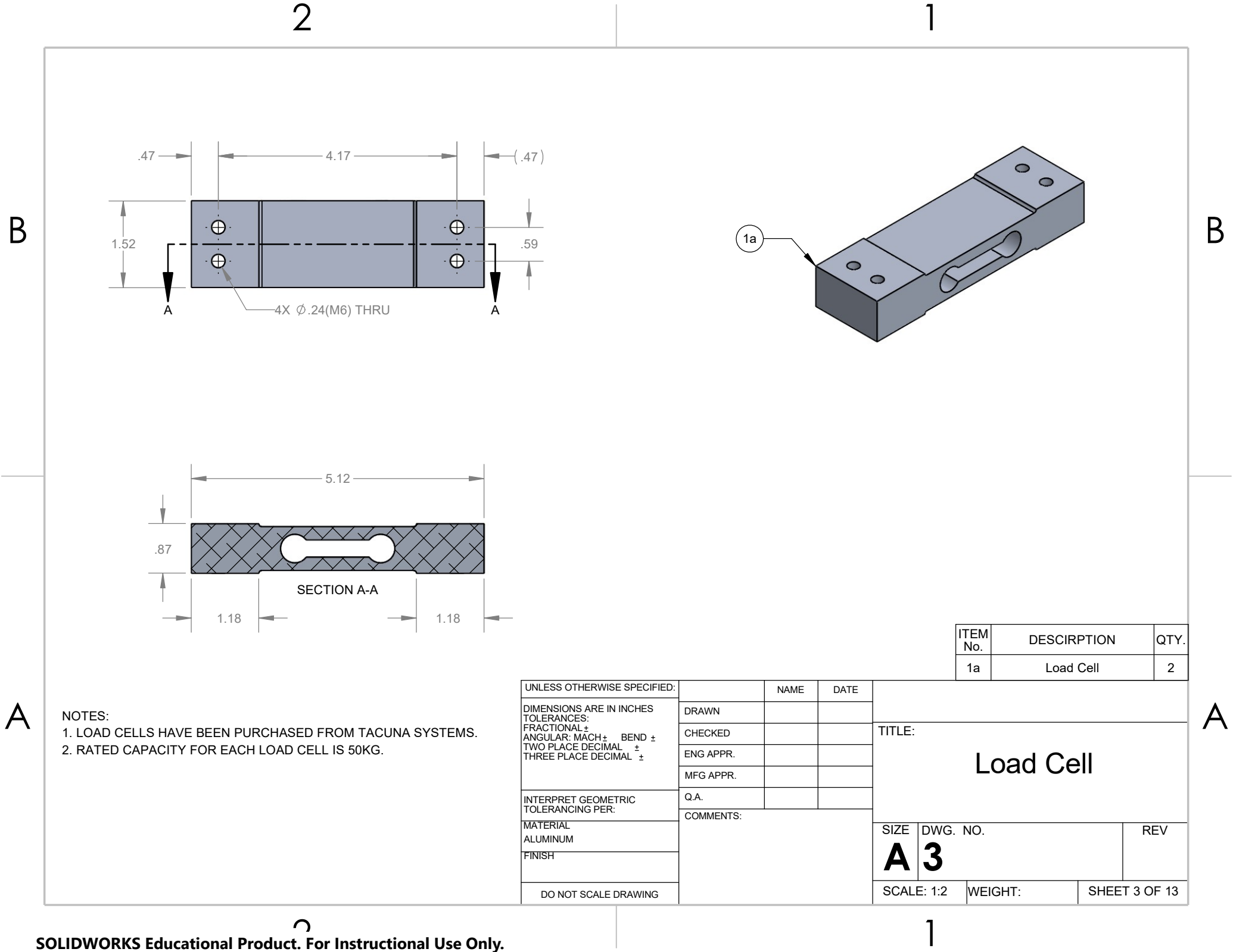
SHEET 2 OF 13

SOLIDWORKS Educational Product. For Instructional Use Only.

1

B

A



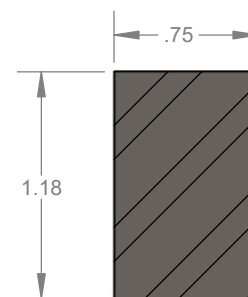
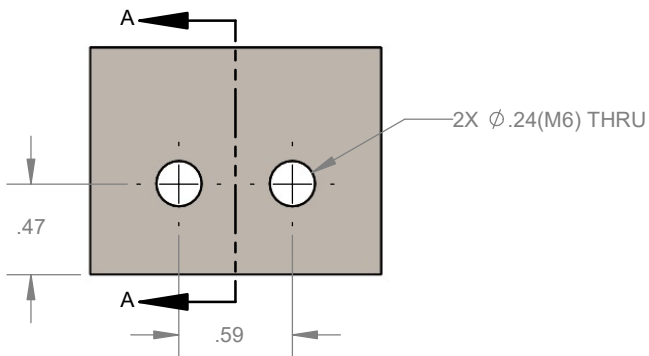
NOTES:
1. LOAD CELLS HAVE BEEN PURCHASED FROM TACUNA SYSTEMS.
2. RATED CAPACITY FOR EACH LOAD CELL IS 50KG.

UNLESS OTHERWISE SPECIFIED:			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN		
	CHECKED		
	ENG APPR.		
	MFG APPR.		
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
MATERIAL ALUMINUM	COMMENTS:		
FINISH			
DO NOT SCALE DRAWING			

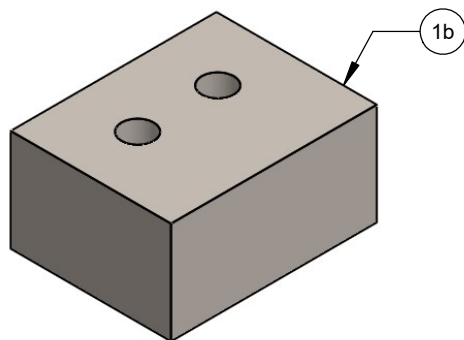
SIZE	DWG. NO.	REV
A	3	
SCALE: 1:2	WEIGHT:	SHEET 3 OF 13

ITEM No.	DESCIRPTION	QTY.
1a	Load Cell	2

TITLE:		
Load Cell		



SECTION A-A



NOTES:
1. LOAD CELL BASES WILL BE FABRICATED.

UNLESS OTHERWISE SPECIFIED:		NAME	DATE			
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN			TITLE: Load Cell Base		
	CHECKED					
	ENG APPR.					
	MFG APPR.					
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV A 4		
MATERIAL	COMMENTS:					
304 STAINLESS STEEL						
FINISH						
DO NOT SCALE DRAWING				SCALE: 1:1	WEIGHT:	SHEET 4 OF 13

ITEM No.	DESCIRPTION	QTY.
1b	Load Cell Base	2

1

TOP VIEW

15.00

.47

.59

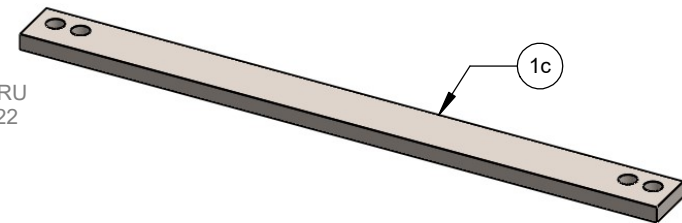
.46

4X $\phi .24$ (M6) THRU
4X $\square \phi .40 \nabla .22$
SEE NOTE 1

A

A

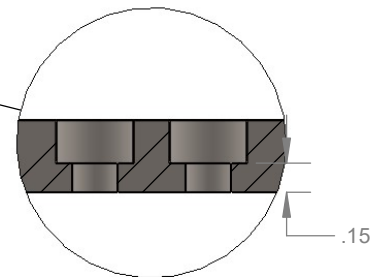
This top view shows a rectangular plate with a total length of 15.00 units. The plate has a central horizontal dashed line. On the left end, there are two circular features, each with a cross inside, representing holes. The distance from the left edge to the center of the first hole is .47 units. The distance between the centers of the two holes is .59 units. The distance from the center of the second hole to the left edge is .46 units. On the right end, there are two circular features, each with a cross inside, representing holes. The distance from the right edge to the center of the first hole is .47 units. The distance between the centers of the two holes is .59 units. The distance from the center of the second hole to the right edge is .46 units. The plate has a thickness of .22 units. The material is 4X $\phi .24$ (M6) THRU. The plate is labeled with 'A' at both ends.



Technical drawing showing the front and bottom views of a mechanical part.

The front view (top) shows a horizontal bar with a circular feature on the right. A dimension of .38 is indicated on the left. The text "SECTION A-A" is centered below the bar.

The bottom view (bottom) shows the underside of the bar, featuring four circular features (likely holes or mounting points) arranged in two pairs at the ends.



DETAIL B
SCALE 1 : 1

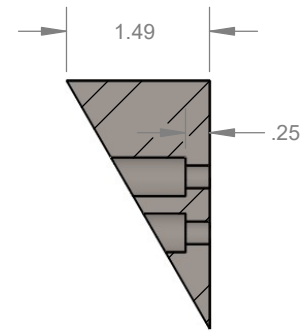
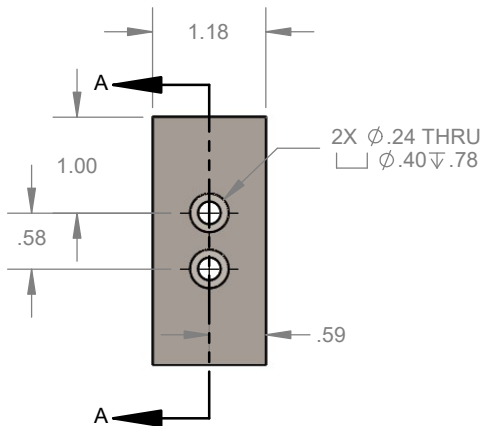
ITEM No.	DESCIRPTION	QTY.
1c	Load Cell Platform	1

NOTES:

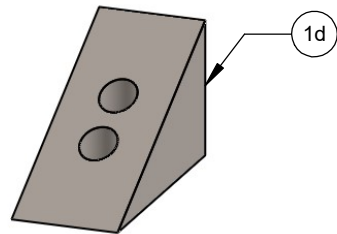
1. HOLES ARE DRILLED SO THAT ITEM No.'s 1e (M6 BOLTS) SIT FLUSH AGAINST THE LOAD CELL PLATFORM.

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div>TITLE:</div> <div>Load Cell Platform</div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN					
	CHECKED					
	ENG APPR.					
	MFG APPR.					
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			<div>SIZE DWG. NO. REV</div> <div>A 5 </div> <div>SCALE: 1:4 WEIGHT: SHEET 5 OF 13</div>		
MATERIAL	COMMENTS:					
304 STAINLESS STEEL						
FINISH						
DO NOT SCALE DRAWING						

1



SECTION A-A



NOTES:

1. LOAD CELL RAMPS WILL BE SPACED A QUARTER OF AN INCH FROM ITEM No.'s 1a (LOAD CELL) TO AVOID ANY INTERFERENCE WITH LOAD CELL MEASUREMENTS.
2. LOAD CELL RAMPS WILL BE BOLTED ON TOP OF ITEM No. 3b (TIRE TRACK).

UNLESS OTHERWISE SPECIFIED:			NAME	DATE	<div>TITLE:</div> <div>Load Cell Ramp</div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN						
	CHECKED						
	ENG APPR.						
	MFG APPR.						
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.				<div>SIZE</div> <div>DWG. NO.</div> <div>REV</div>		
MATERIAL	COMMENTS:						
304 STAINLESS STEEL							
FINISH							
DO NOT SCALE DRAWING					SCALE: 1:2	WEIGHT:	SHEET 6 OF 13

TITLE:

Load Cell Ramp

SIZE

DWG. NO.

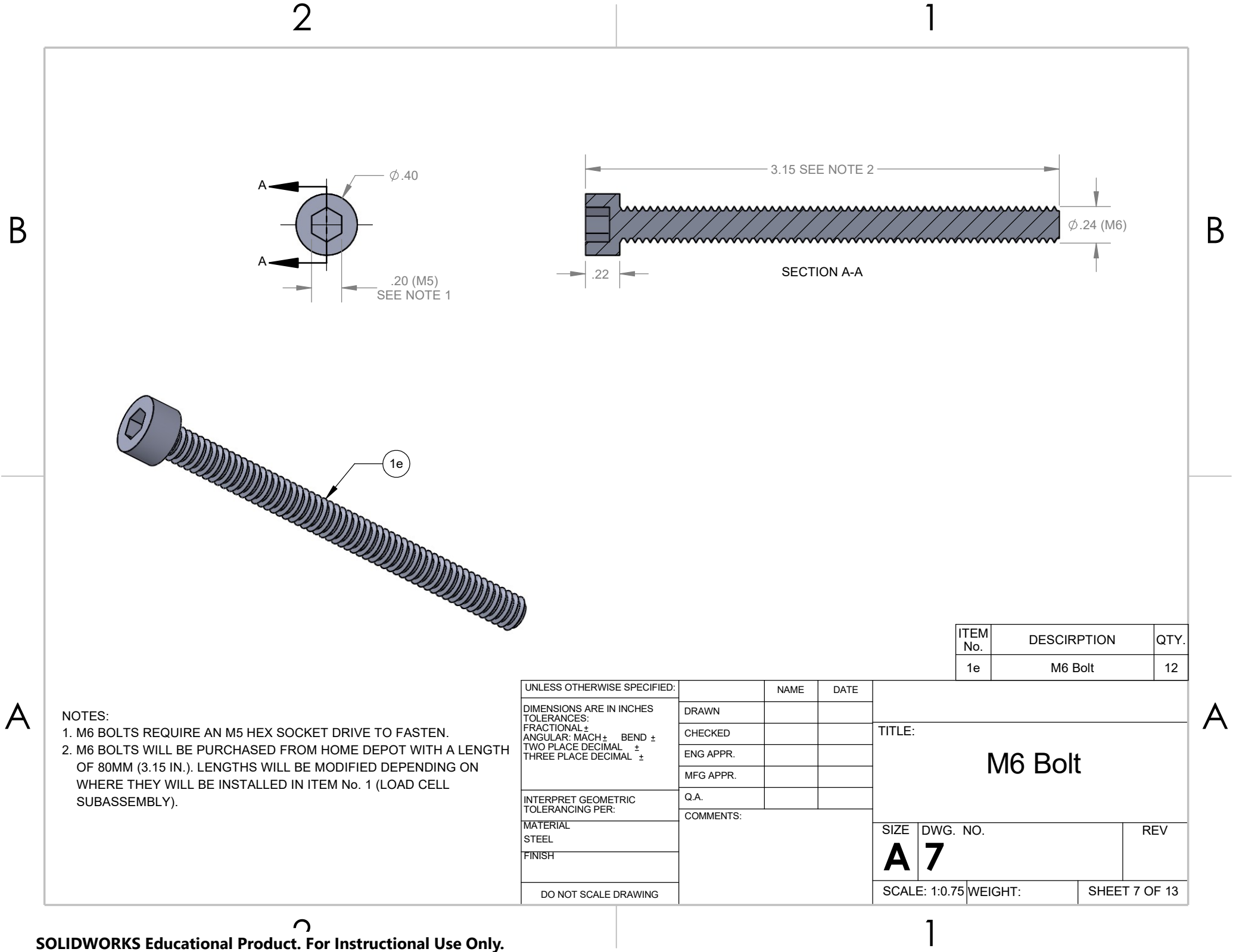
REV

A 6

SCALE: 1:2

WEIGHT:

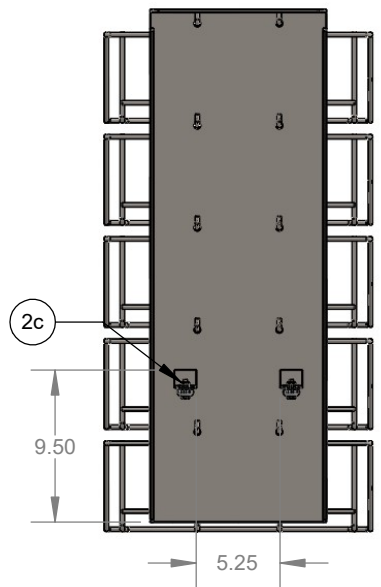
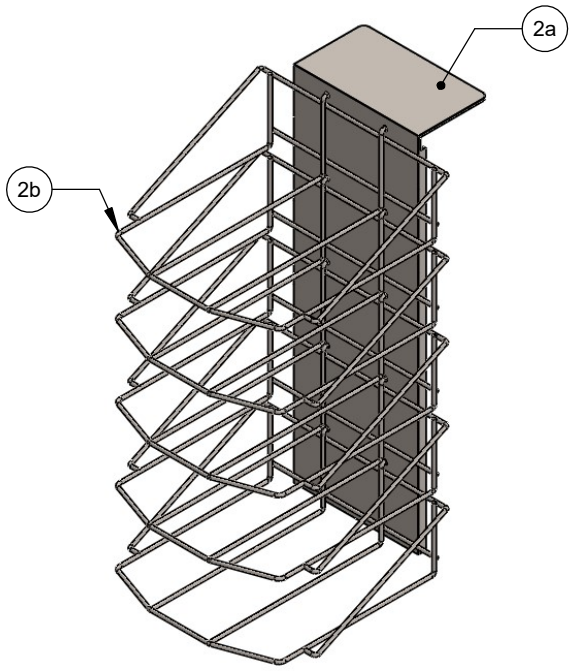
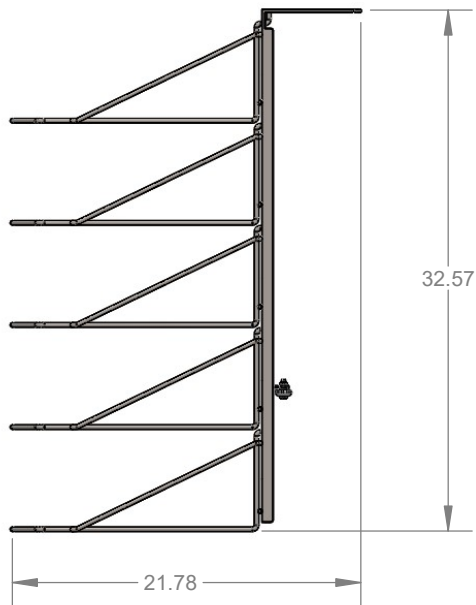
SHEET 6 OF 13



NOTES:
1. M6 BOLTS REQUIRE AN M5 HEX SOCKET DRIVE TO FASTEN.
2. M6 BOLTS WILL BE PURCHASED FROM HOME DEPOT WITH A LENGTH OF 80MM (3.15 IN.). LENGTHS WILL BE MODIFIED DEPENDING ON WHERE THEY WILL BE INSTALLED IN ITEM No. 1 (LOAD CELL SUBASSEMBLY).

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: <div>M6 Bolt</div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN					
	CHECKED					
	ENG APPR.					
	MFG APPR.					
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			<div>SIZE DWG. NO. REV</div> <div>A 7</div> <div>SCALE: 1:0.75 WEIGHT: SHEET 7 OF 13</div>		
MATERIAL	COMMENTS:					
STEEL						
FINISH						
DO NOT SCALE DRAWING						

B



B

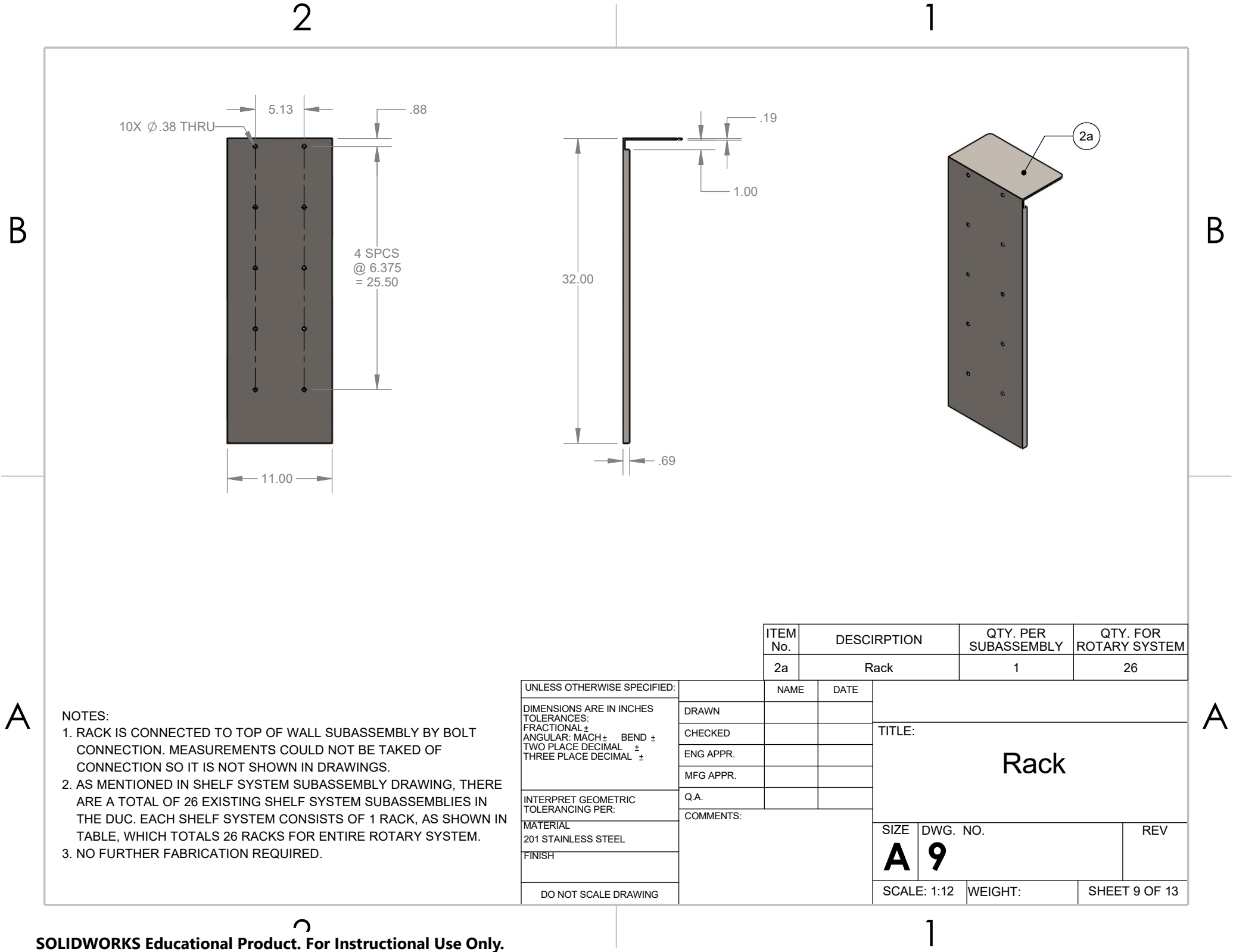
A

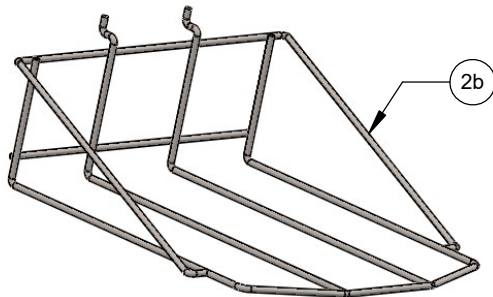
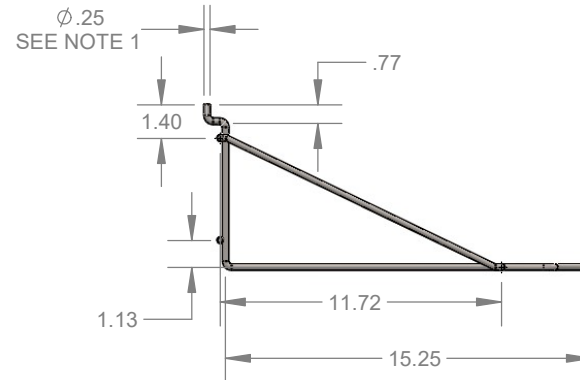
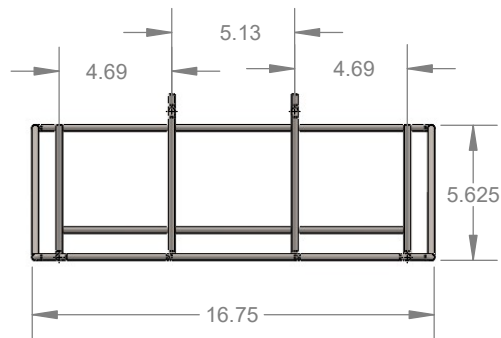
- NOTES:
1. THE ENTIRE SHELF SYSTEM SUBASSMEBLY ALREADY EXISTS IN THE DEROSA UNIVERSITY CENTER AND REQUIRES NO FURTHER FABRICATION.
 2. THE ENTIRE ROTARY SYSTEM CONSISTS OF 26 SHELF SYSTEM SUBASSEMBLIES. EACH SHELF SYSTEM SUBASSEMBLY CONSISTS OF 1 RACK, 5 SHELVES, AND 2 WHEEL ASEEMBLIES, AS LISTED IN THE TABLE. THIS TOTALS IN 26 RACKS, 130 SHLVES, AND 52 WHEEL ASSEMBLIES.

ITEM No.	DESCIRPTION	QTY. PER SUBASSEMBLY	QTY. FOR ROTARY SYSTEM
2a	Rack	1	26
2b	Shelf	5	130
2c	Tire Assembly	2	52

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: Item 2: Shelf System Subassembly		
DIMENSIONS ARE IN INCHES		DRAWN				
TOLERANCES:		CHECKED				
FRACTIONAL ±		ENG APPR.				
ANGULAR: MACH ± BEND ±		MFG APPR.				
TWO PLACE DECIMAL ±		Q.A.		SIZE	DWG. NO.	REV
THREE PLACE DECIMAL ±		COMMENTS:		A 8		
INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:12		
MATERIAL				WEIGHT:		
SEE ADDITIONAL DRAWINGS				SHEET 8 OF 13		
FINISH						
DO NOT SCALE DRAWING						

A





NOTES:

1. DIAMETER IS CONSISTENT THROUGHOUT ENTIRE SHELF.
2. AS MENTIONED IN SHELF SYSTEM SUBASSEMBLY DRAWING, THERE ARE A TOTAL OF 26 EXISTING SHELF SYSTEM SUBASSEMBLIES IN THE DUC. EACH SHELF SYSTEM CONSISTS OF 5 SHELVES, AS SHOWN IN THE TABLE, WHICH TOTALS 130 SHLEVES FOR ENTIRE ROTARY SYSTEM.
3. NO FURTHER FABRICATION REQUIRED.

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL \pm
ANGULAR: MACH \pm BEND \pm
TWO PLACE DECIMAL \pm
THREE PLACE DECIMAL \pm

INTERPRET GEOMETRIC
TOLERANCING PER:

MATERIAL
201 STAINLESS STEEL

FINISH

DO NOT SCALE DRAWING

DRAWN

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

ITEM No.	DESCIRPTION	QTY. PER SUBASSEMBLY	QTY. FOR ROTARY SYSTEM
2b	Shelf	5	130

TITLE:

Shelf

SIZE

A

DWG. NO.

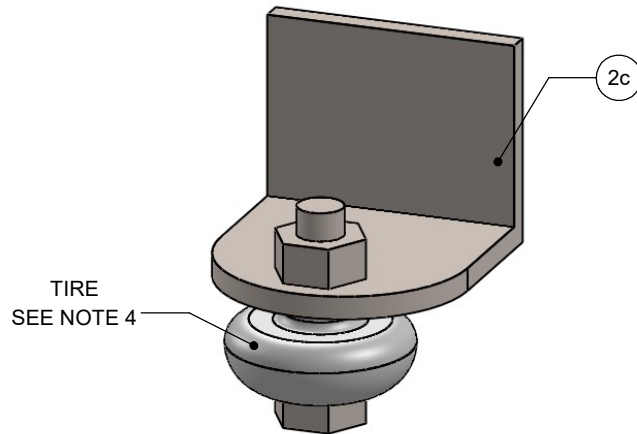
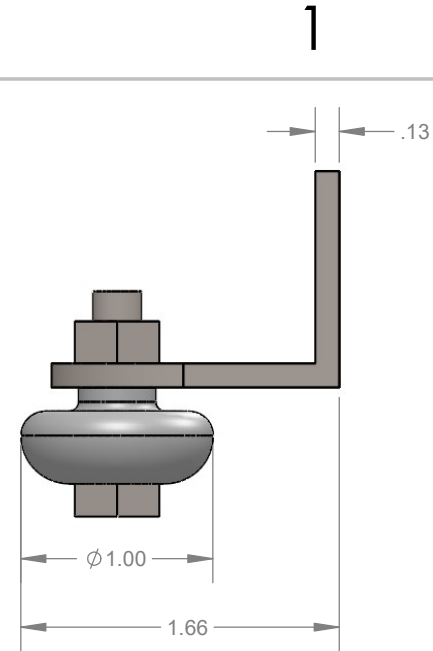
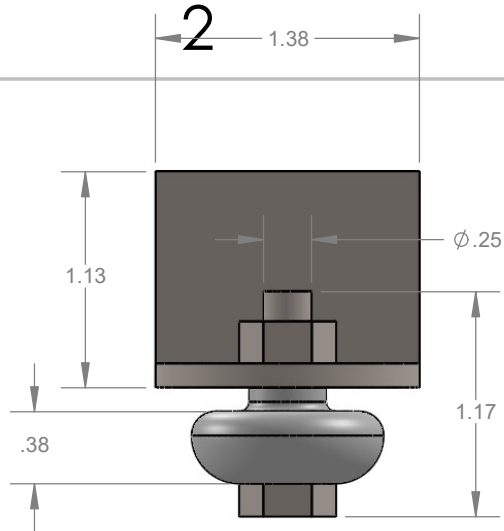
10

REV

SCALE: 1:8

WEIGHT:

SHEET 10 OF 13



NOTES:

1. TIRE ASSEMBLY IS WELDED ONTO BACK OF RACK AS SHOWN IN SHELF SYSTEM SUBASSEMBLY DRAWING.
2. AS MENTIONED IN SHELF SYSTEM SUBASSEMBLY DRAWING, THERE ARE A TOTAL OF 26 EXISTING SHELF SYSTEM SUBASSEMBLIES IN THE DUC. EACH SHELF SYSTEM CONSISTS OF 2 TIRE ASSEMBLIES, AS SHOWN IN THE TABLE, WHICH TOTALS 52 TIRE ASSEMBLIES FOR ENTIRE ROTARY SYSTEM.
3. TIRE ASSEMBLIES ARE SPACED 5.25 INCHES FROM EACHOTHER AS SHOWN IN SHELF SYSTEM SUBASSEMBLY DRAWING.
4. ENTIRE TIRE ASSEMBLY IS MADE FROM 201 STAINLESS STEEL EXCEPT THE TIRES THEMSELVES. THEY APPEAR TO BE MADE OF PLASTIC BUT CANNOT BE CONFIRMED UNTIL WE GET IN CONTACT WITH ROTARY SYSTEM MANUFACTURER.
5. NO FURTHER FABRICATION REQUIRED.

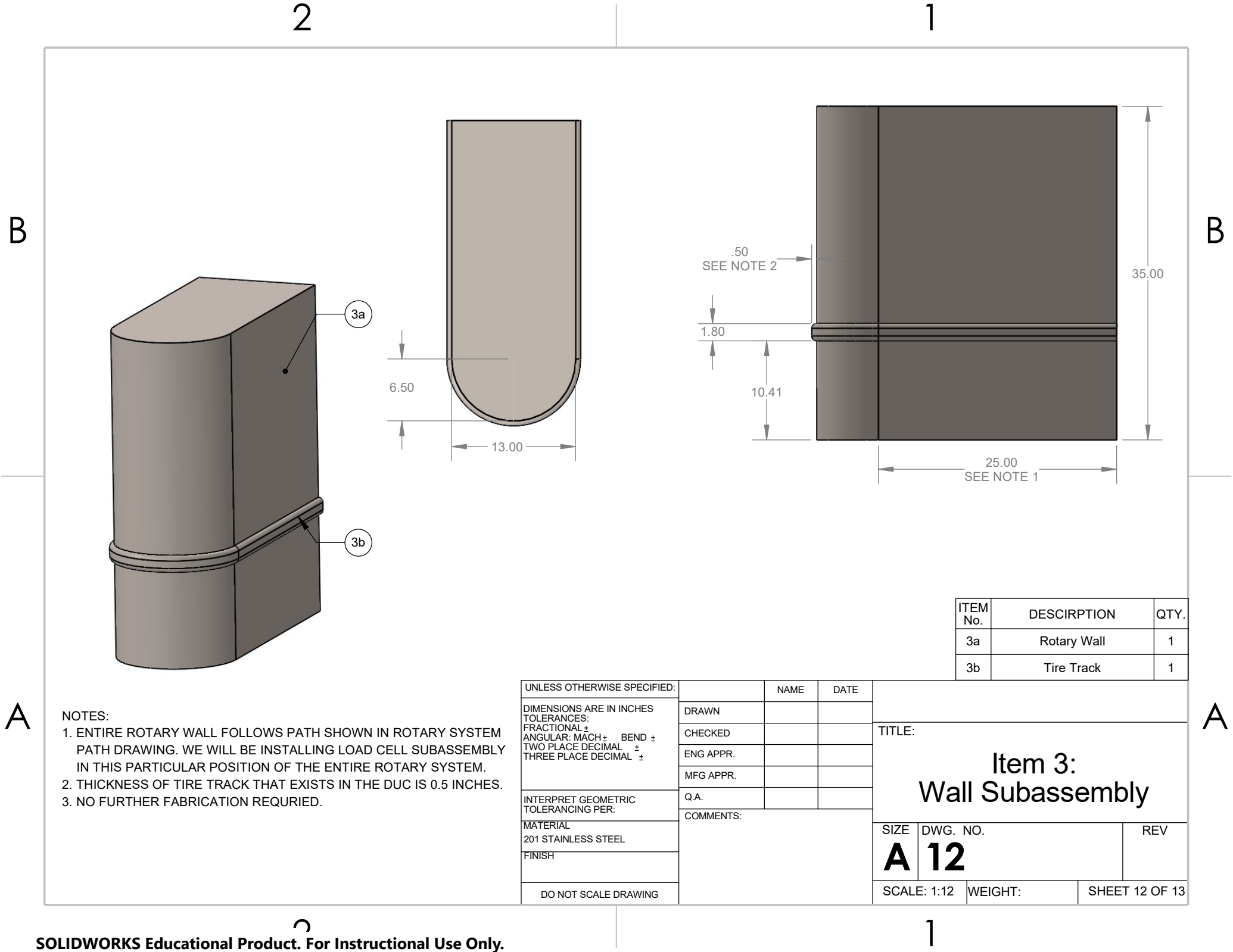
UNLESS OTHERWISE SPECIFIED:	
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN
	CHECKED
	ENG APPR.
	MFG APPR.
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.
MATERIAL SEE NOTE 4	COMMENTS:
FINISH	
DO NOT SCALE DRAWING	

ITEM No.	DESCIRPTION	QTY. PER SUBASSEMBLY	QTY. FOR ROTARY SYSTEM
2c	Tire Assembly	2	52

TITLE:

Tire Assembly

SIZE	DWG. NO.	REV
A	11	
SCALE: 1:1	WEIGHT:	SHEET 11 OF 13



NOTES:

- 1. ENTIRE ROTARY WALL FOLLOWS PATH SHOWN IN ROTARY SYSTEM PATH DRAWING. WE WILL BE INSTALLING LOAD CELL SUBASSEMBLY IN THIS PARTICULAR POSITION OF THE ENTIRE ROTARY SYSTEM.
- 2. THICKNESS OF TIRE TRACK THAT EXISTS IN THE DUC IS 0.5 INCHES.
- 3. NO FURTHER FABRICATION REQUIRED.

UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div>TITLE:</div> <div>Item 3: Wall Subassembly</div>		
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN					
	CHECKED					
	ENG APPR.					
	MFG APPR.					
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			<div>SIZE</div> <div>A 12</div> <div>DWG. NO.</div> <div></div> <div>REV</div> <div></div>		
MATERIAL 201 STAINLESS STEEL	COMMENTS:					
FINISH						
DO NOT SCALE DRAWING				SCALE: 1:12	WEIGHT:	SHEET 12 OF 13

1

B



1. AS SHOWN IN THE DRAWING, THE ENTIRE ROTARY SYSTEM IN THE DUC IS QUITE LARGE AND WE WILL BE WORKING IN ONE PARTICULAR AREA OF THE ROTARY SYSTEM.
2. THE BLUE LINES REPRESENT WALLS IN THE DUC. THESE WALLS INTERFERED WITH OUR ABILITY TO GET DIMENSIONS SO ROTARY SYSTEM PATH IS NOT DRAWN TO SCALE.

A

MATERIALS LIST

Item No.	Description	Fabrication Material	Vendor	Cost	Qty.
1	<i>Load Cell Subassembly</i>	<i>See Below</i>			
1a	<i>Load Cell</i>	N/A	Tacuna Systems	\$90.00	2
1b	<i>Load Cell Base</i>	304 SS	TBD	TBD	2
1c	<i>Load Cell Platform</i>	304 SS	TBD	TBD	1
1d	<i>Load Cell Ramp</i>	304 SS	TBD	TBD	2
1e	<i>M6 Bolts</i>	N/A	Home Depot	\$2.75/2 Bolts	6
2	<i>Shelf System Subassembly</i>	Entire Subassembly Exists in DUC, No Purchase or Fabrication Required.			
2a	<i>Rack</i>				
2b	<i>Shelf</i>				
2c	<i>Tire Assembly</i>				
3	<i>Wall Subassembly</i>	Entire Subassembly Exists in DUC, No Purchase or Fabrication Required.			
3a	<i>Rotary Wall</i>				
3b	<i>Tire Track</i>				