


A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:	NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
		MATERIAL	DESIGN/ENGR	C. O'BRIEN				2/2020
	DIMENSIONS: INCHES [MILLIMETERS]	N/A	DRAWN	W. SPIVEY	9/2020	IIHS SIDE IMPACT CART		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
					SCALE: 1:48 WEIGHT:1900 KG SHEET 1 of 63			
		DO NOT SCALE DRAWING						

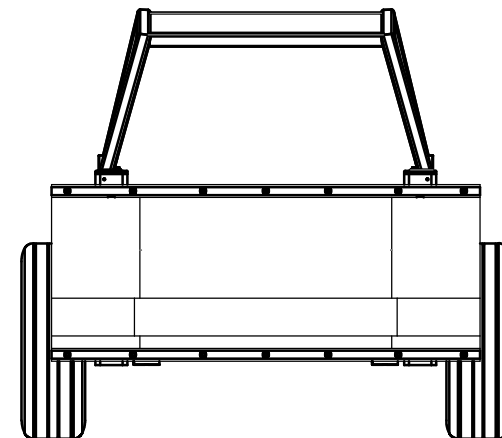
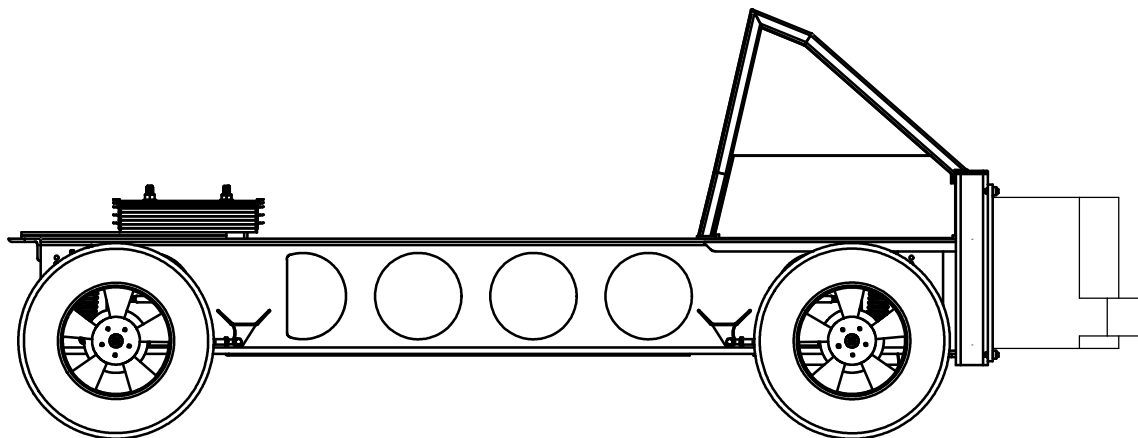
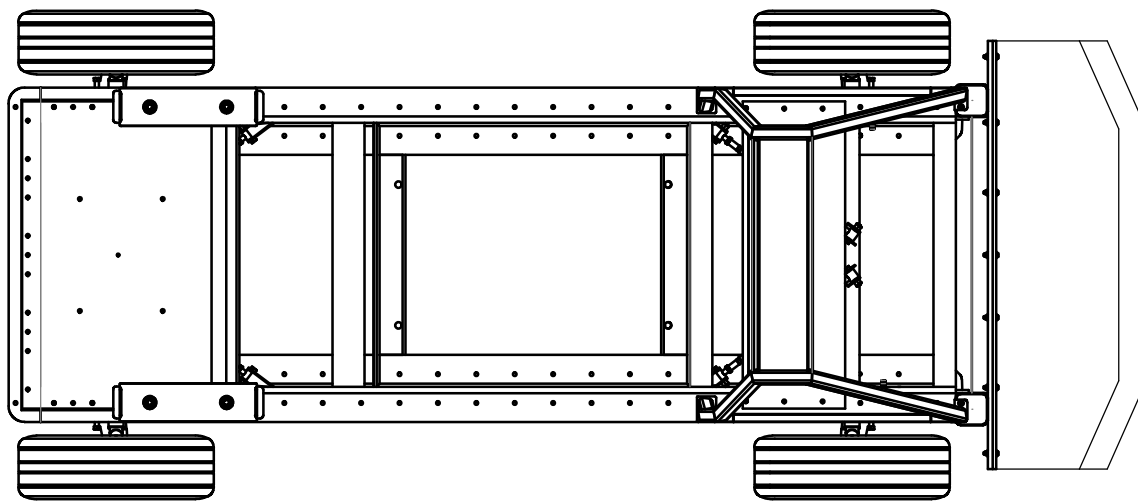
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4


3

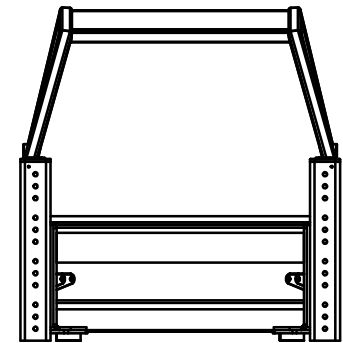
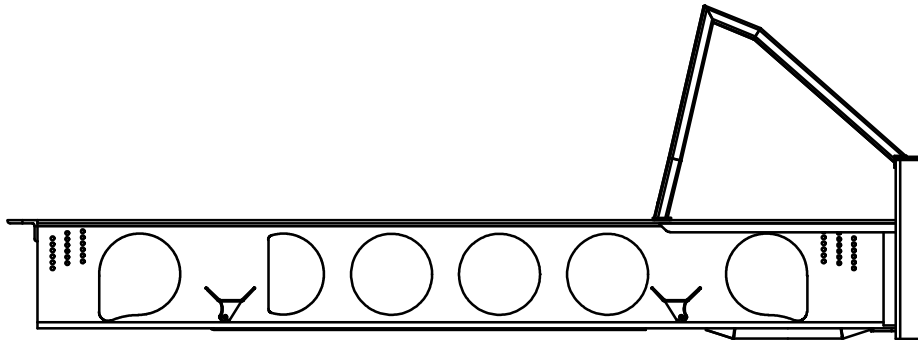
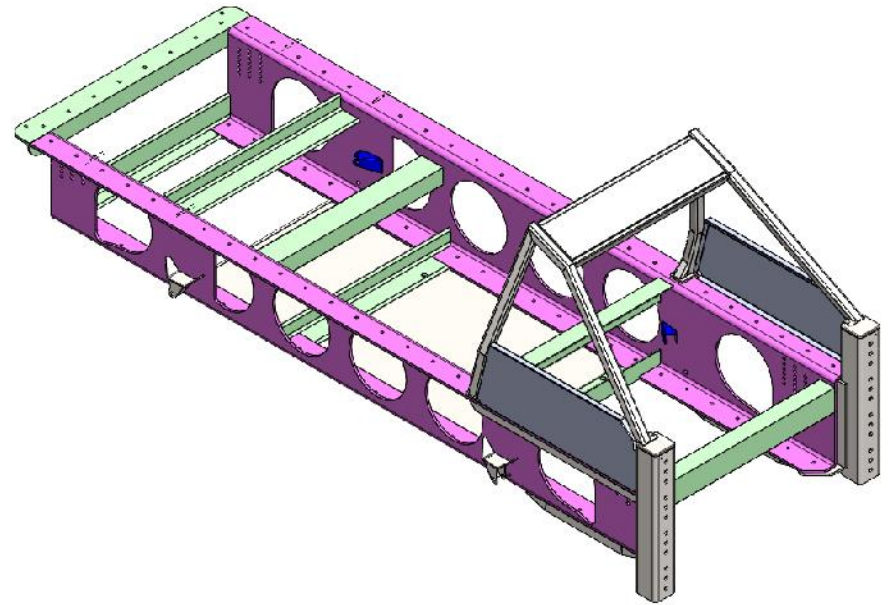
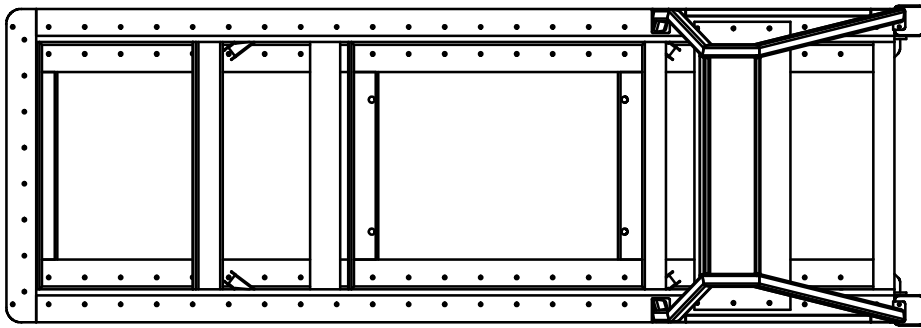
2

1



**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
			MATERIAL	DESIGN/ENGR	C. O'BRIEN		2/2020	
	DIMENSIONS: INCHES [MILLIMETERS]	N/A		DRAWN	W. SPIVEY		9/2020	
				CHECKED	R. JONES	9/2020		
				COMMENTS:			IIHS SIDE IMPACT CART WITH BARRIER	
		DO NOT SCALE DRAWING				SCALE: 1:48	WEIGHT: 1900 KG	SHEET 2 of 63



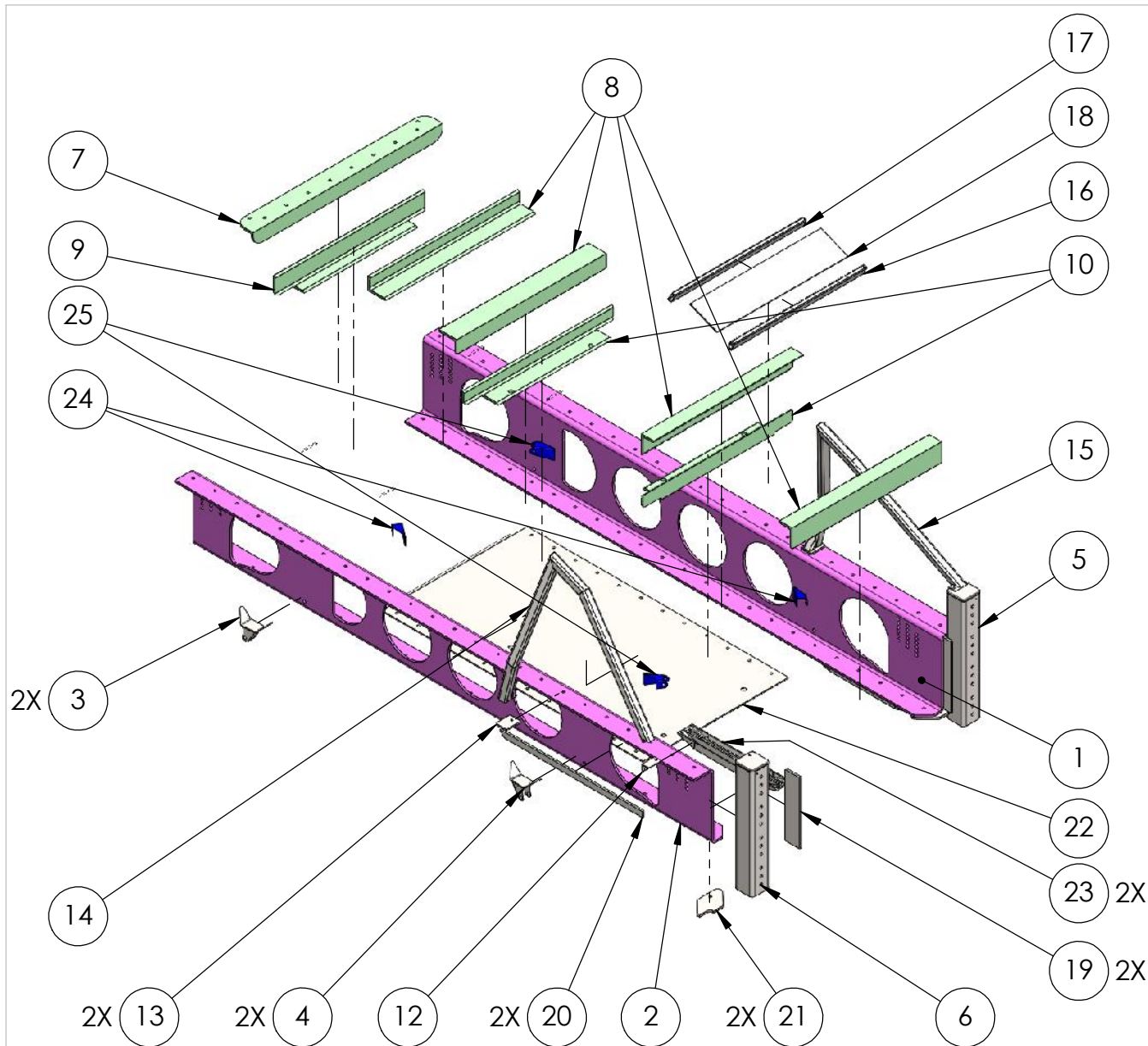
**DRAWING NOT
FOR PRODUCTION USE**

A4 <small>THIRD ANGLE PROJECTION</small> <small>DIMENSIONS: INCHES (MILLIMETERS)</small>	UNLESS OTHERWISE SPECIFIED:		NAME	DATE
	MATERIAL		DESIGN/ENGR	C. O'BRIEN 2/2020
	N/A		DRAWN	W. SPIVEY 9/2020
			CHECKED	R. JONES 9/2020
	DO NOT SCALE DRAWING		COMMENTS:	

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600


WELDMENT COMPLETE

SCALE: 1:24 WEIGHT: 780 KG SHEET 3 of 63



ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	Z CHANNEL	6	1
2	Z CHANNEL	5	1
3	LOWER CONTROL ARM FRAME MOUNT ASSEMBLY, R REAR, L FRT	28	2
4	LOWER CONTROL ARM FRAME MOUNT ASSEMBLY, L REAR, R FRT	28	2
5	BARRIER STANCHION, LEFT	15	1
6	BARRIER STANCHION, RIGHT	15	1
7	REAR UPPER CROSSMEMBER	11	1
8	CHASSIS CROSSMEMBER SQUARE	8	4
9	CHASSIS CROSSMEMBER NOTCHED	10	1
10	CHASSIS CROSSMEMBER NOTCHED SHORT LEG	9	2
12	GREENHOUSE FRONT TAB	46	1
13	GREENHOUSE REAR TAB	47	1
14	GREENHOUSE TUBING, RIGHT	45	1
15	GREENHOUSE TUBING, LEFT	45	1
16	FRT CAM PLATE CROSSMEMBER	45	1
17	REAR CAM PLATE CROSSMEMBER	45	1
18	CAMERA MOUNT PLATE	48	1
19	BARRIER STANCHION FILLER PLATE	20	2
20	UPPER FLANGE REINFORCEMENT	26	2
21	LOWER BARRIER STANCHION GUSSET	25	2
22	FLOOR PAN ASSEMBLY	13	1
23	AXLE HOLE LWR CHANNEL REINFORCEMENT	22	2
24	UPPER CONTROL ARM FRAME MOUNT, R REAR, L FRT	32	2
25	UPPER CONTROL ARM FRAME MOUNT, L REAR, R FRT	32	2

**DRAWING NOT
FOR PRODUCTION USE**

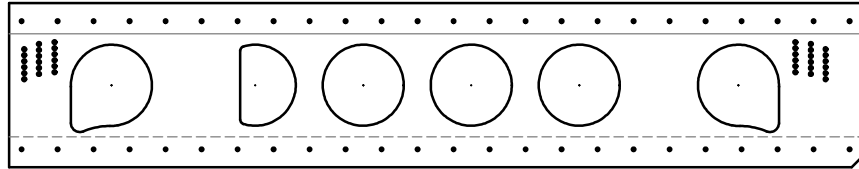
A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:			NAME	DATE
		MATERIAL		DESIGN/ENGR	C. O'BRIEN	2/2020
		N/A		DRAWN	W. SPIVEY	9/2020
				CHECKED	R. JONES	9/2020
				COMMENTS:		
DIMENSIONS: INCHES [MILLIMETERS]						
		DO NOT SCALE DRAWING				

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600

WELDMENTS EXPLODED VIEW

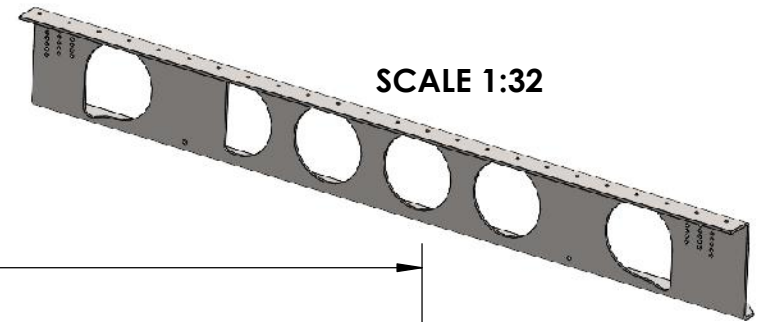
SCALE: 1:24 WEIGHT: N/A SHEET 4 of 63

UP 90° R.5

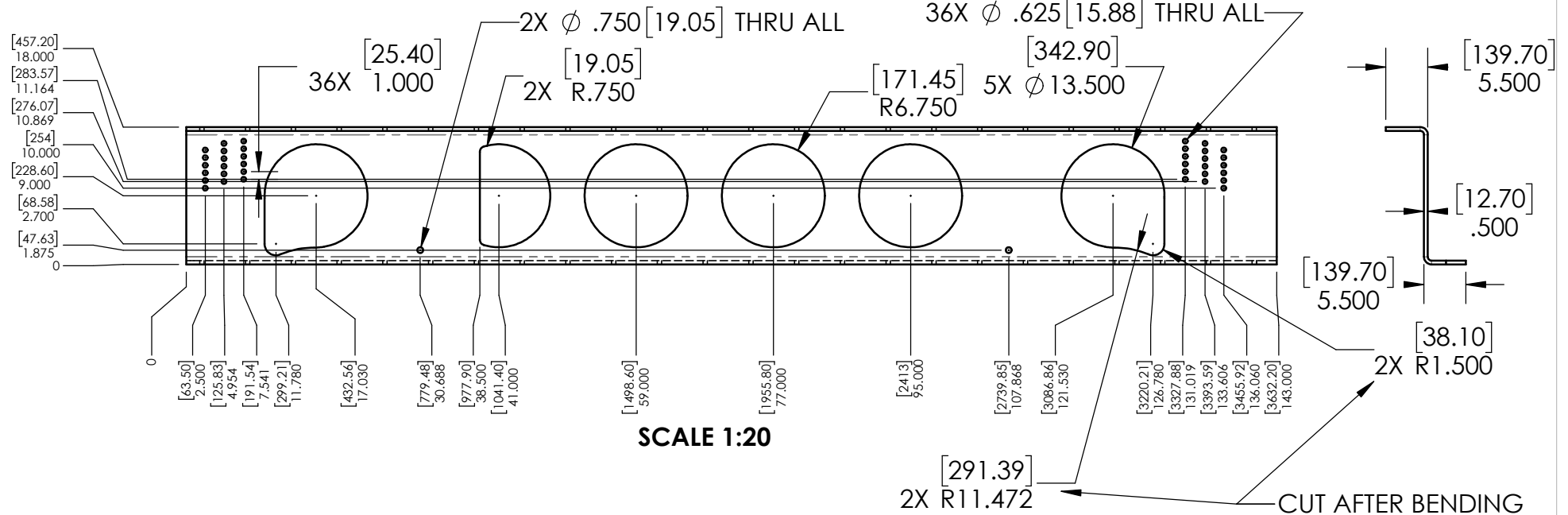
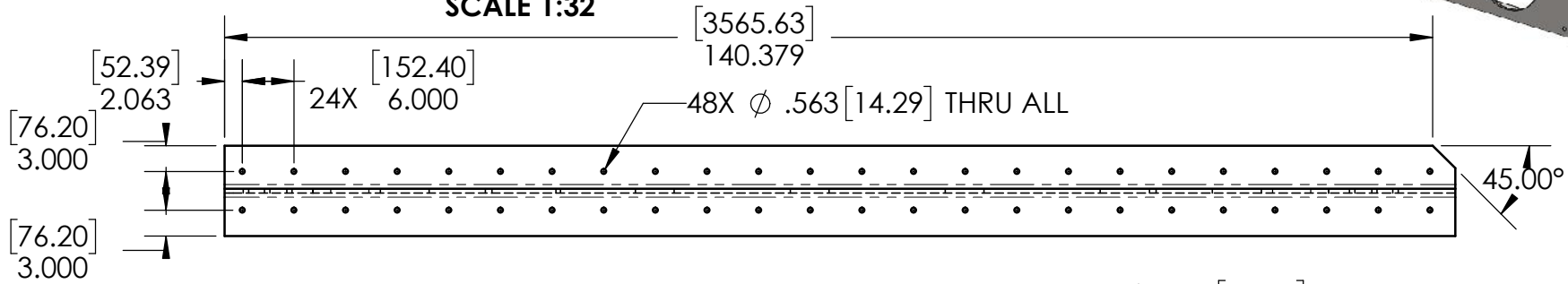


DOWN 90° R.5

SCALE 1:32




SCALE 1:32



SCALE 1:20

**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED: MATERIAL A572 GR50 DO NOT SCALE DRAWING	DESIGN/ENGR	C. O'BRIEN	1/3/2020	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600
			DRAWN	R. JONES	2/6/2020	
	DIMENSIONS: INCHES [MILLIMETERS]		CHECKED			
			COMMENTS:			
						RIGHT Z-CHANNEL
SCALE: VARIES WEIGHT: 197 KG SHEET 5 of 63						

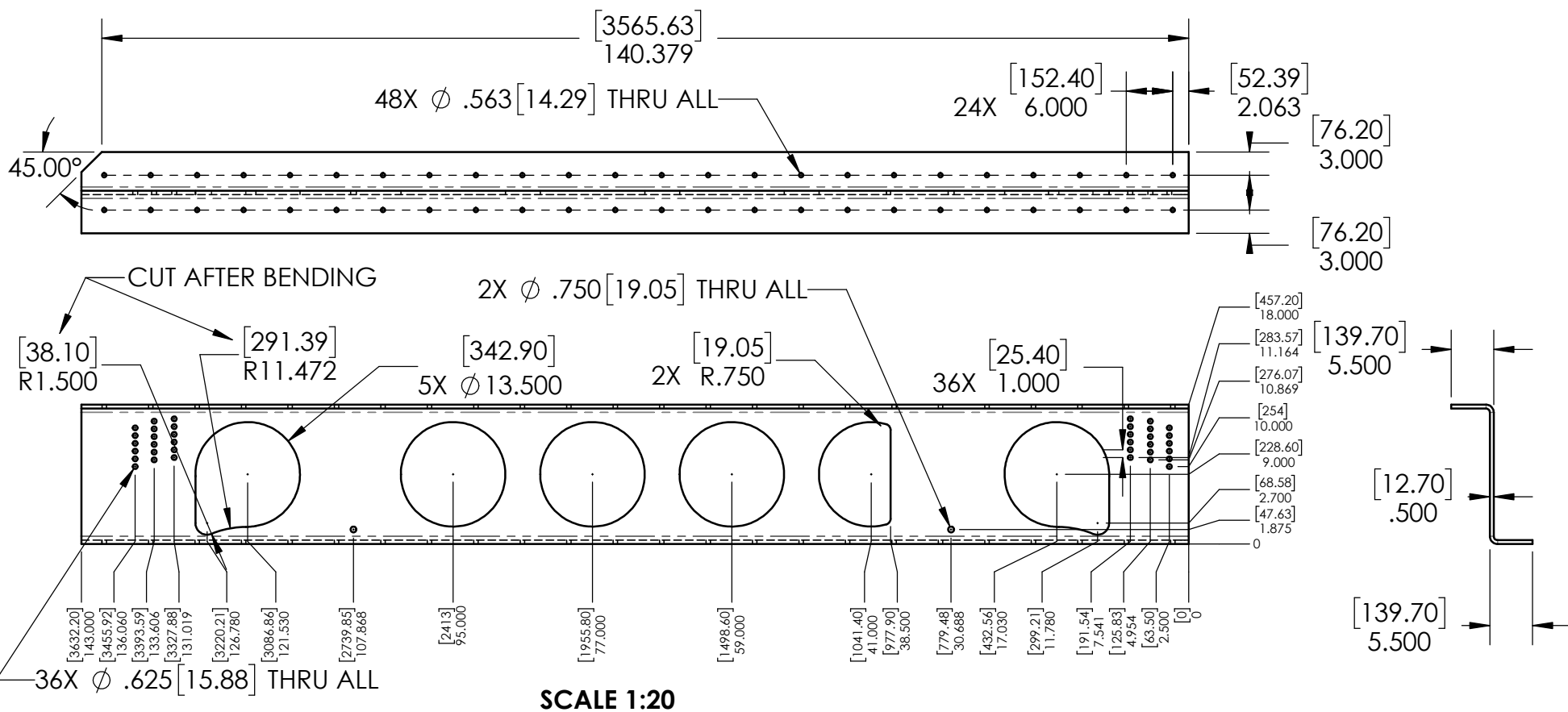
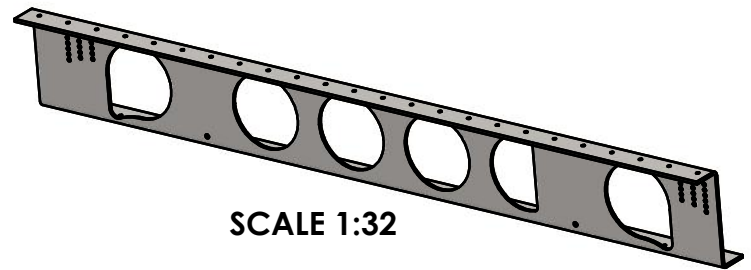
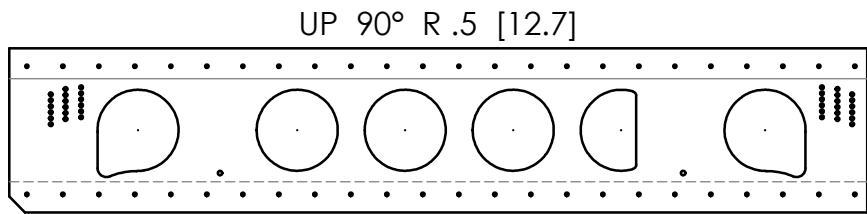
5

4


3

2

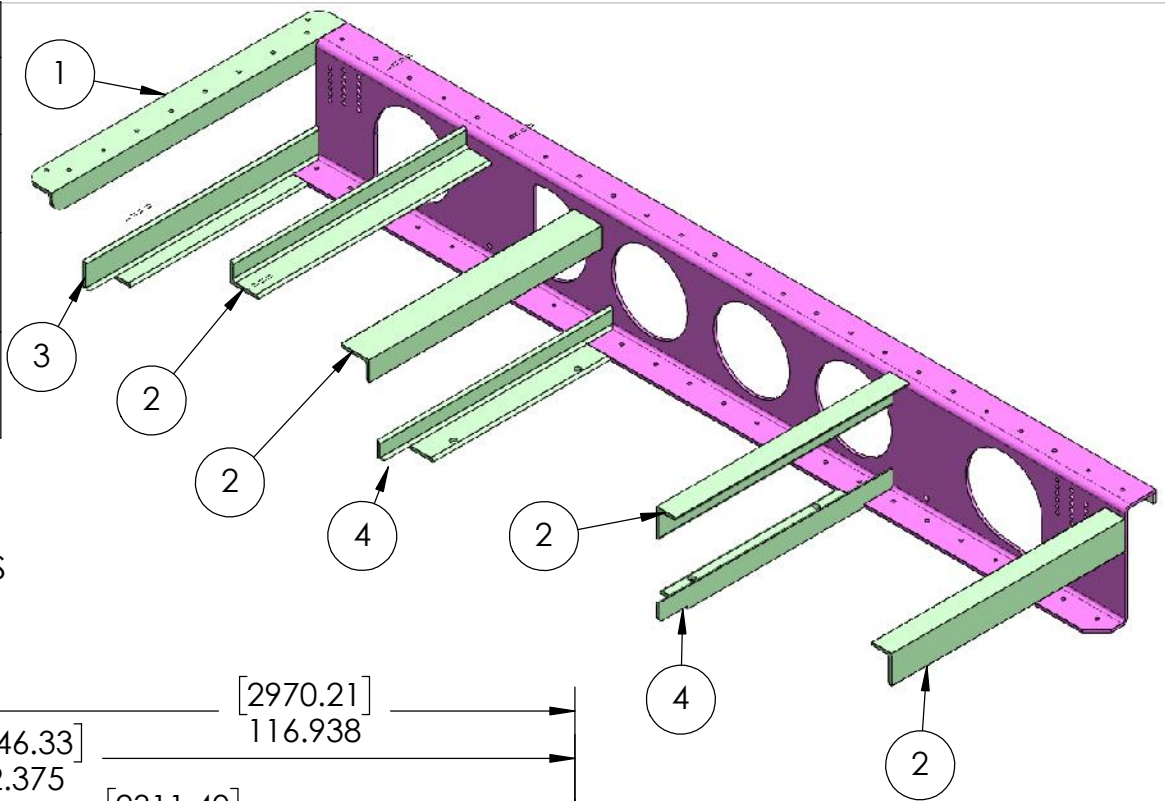
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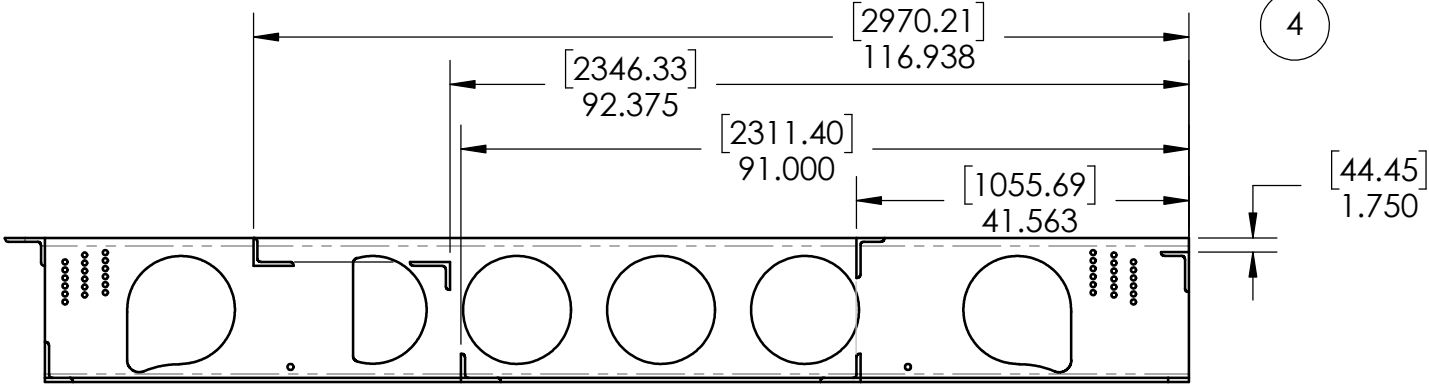
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	1/3/2020			
		A572 GR50	DRAWN	R. JONES	2/4/2020			
			CHECKED					
			COMMENTS:					
DIMENSIONS: INCHES [MILLIMETERS]						LEFT Z-CHANNEL		
		DO NOT SCALE DRAWING				SCALE: VARIES	WEIGHT: 197 KG	SHEET 6 of 63

ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	REAR UPPER CROSSMEMBER	11	1
2	CHASSIS CROSSMEMBER SQUARE	8	4
3	CHASSIS CROSSMEMBER NOTCHED	10	1
4	CHASSIS CROSSMEMBER NOTCHED SHORT LEG	9	2



ALL CROSSMEMBERS WELDED ALL AROUND AT CONNECTION TO Z-CHANNELS

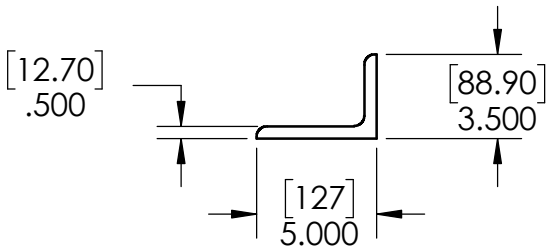
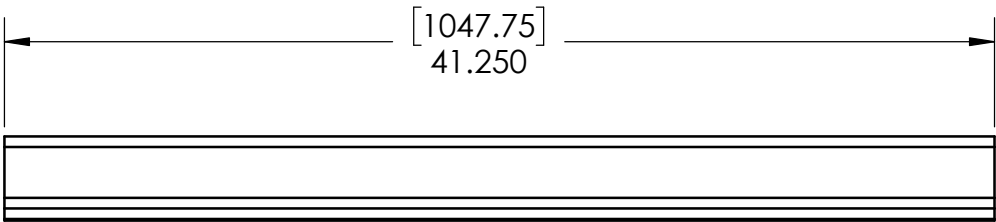
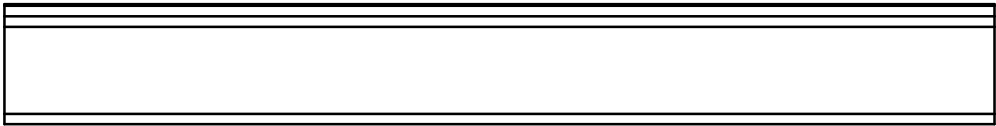
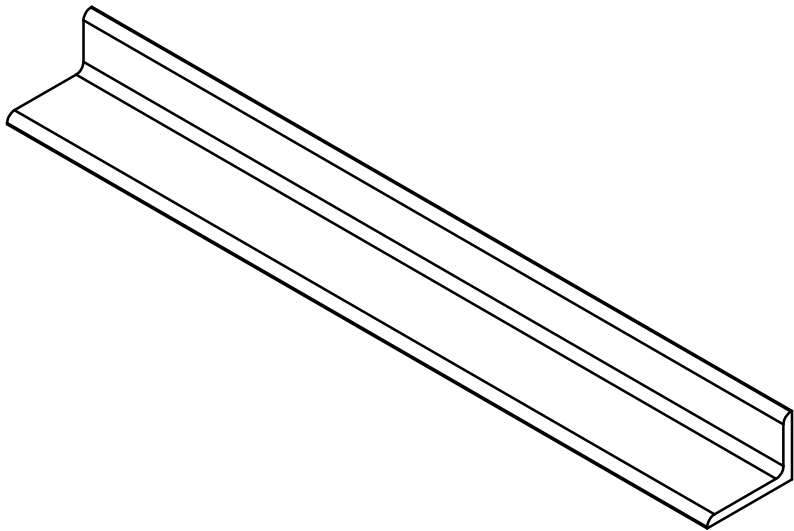


LEFT SIDE SHOWN, RIGHT SIDE SIMLIAR

**DRAWING NOT
FOR PRODUCTION USE**


A4 <small>THIRD ANGLE PROJECTION</small> <small>DIMENSIONS: INCHES [MILLIMETERS]</small>	<small>UNLESS OTHERWISE SPECIFIED:</small> MATERIAL N/A	<small>DESIGN/ENGR</small> C. O'BRIEN	<small>NAME</small> C. O'BRIEN	<small>DATE</small> 2/2020
		<small>DRAWN</small> W. SPIVEY	<small>NAME</small> W. SPIVEY	<small>DATE</small> 9/2020
		<small>CHECKED</small> R. JONES	<small>NAME</small> R. JONES	<small>DATE</small> 9/2020
		<small>COMMENTS:</small>		
	<small>DO NOT SCALE DRAWING</small>			

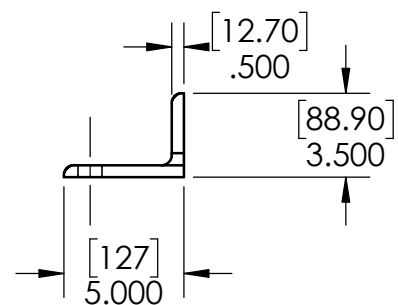
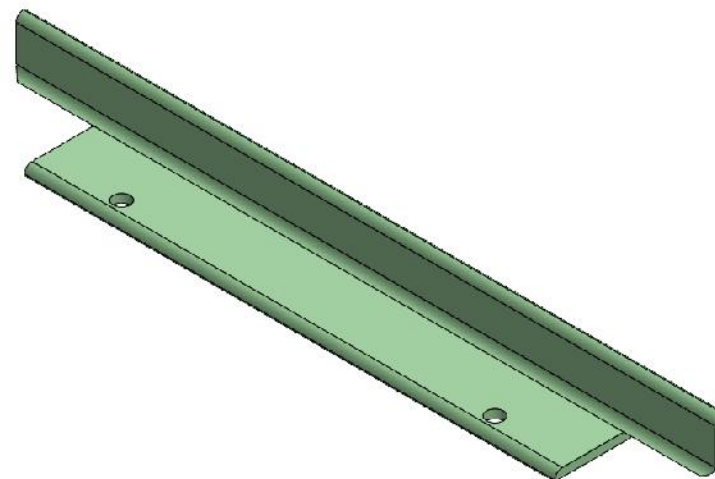
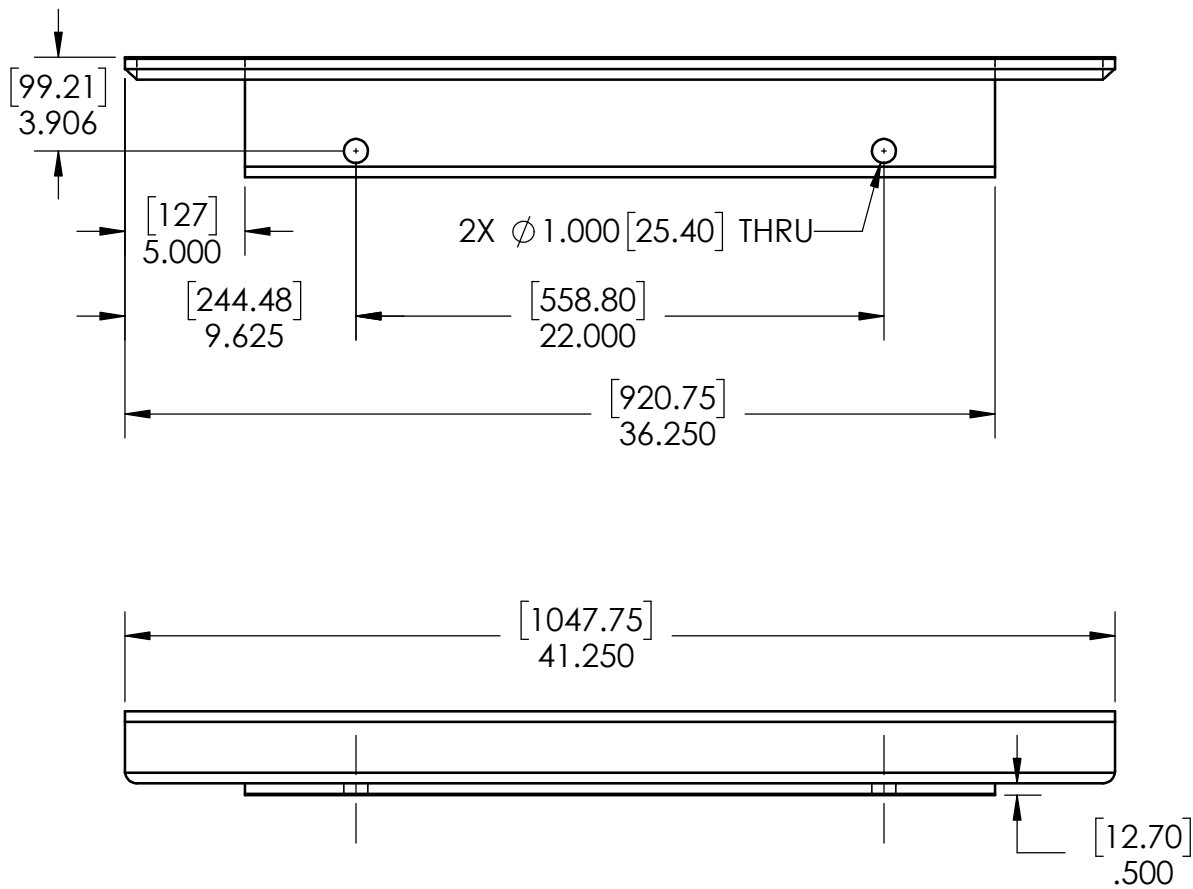
Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
CHASSIS CROSSMEMBER PLACEMENT		
SCALE: 1:48	WEIGHT: N/A	SHEET 7 of 63



FROM 5X3.5X.5 ANGLE

**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:			NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL		DESIGN/ENGR	C. O'BRIEN	2/2020			
		ASTM A36		DRAWN	W. SPIVEY	9/2020			
				CHECKED	R. JONES	9/2020			
				COMMENTS:					
DIMENSIONS: INCHES [MILLIMETERS]							CHASSIS CROSSMEMBER SQUARE		
		DO NOT SCALE DRAWING					SCALE: 1:8	WEIGHT: 20 KG	SHEET 8 of 63



FROM 5X3.5X.5 ANGLE

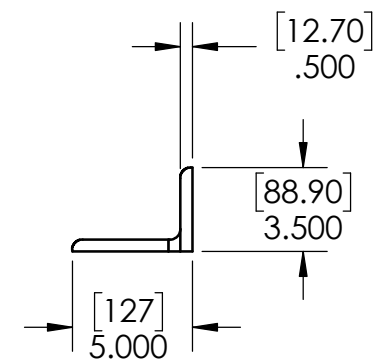
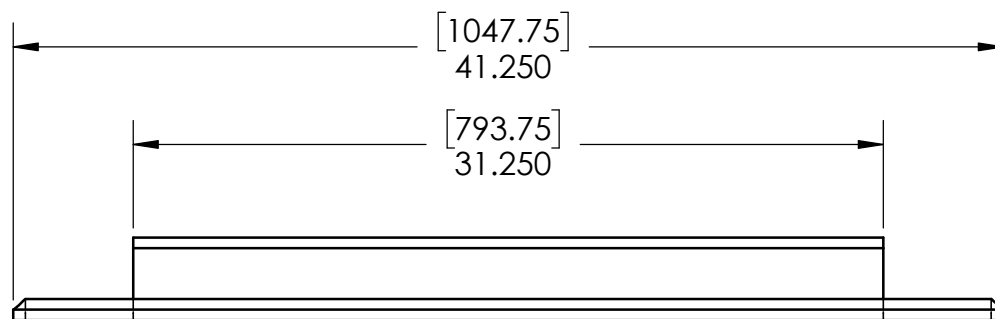
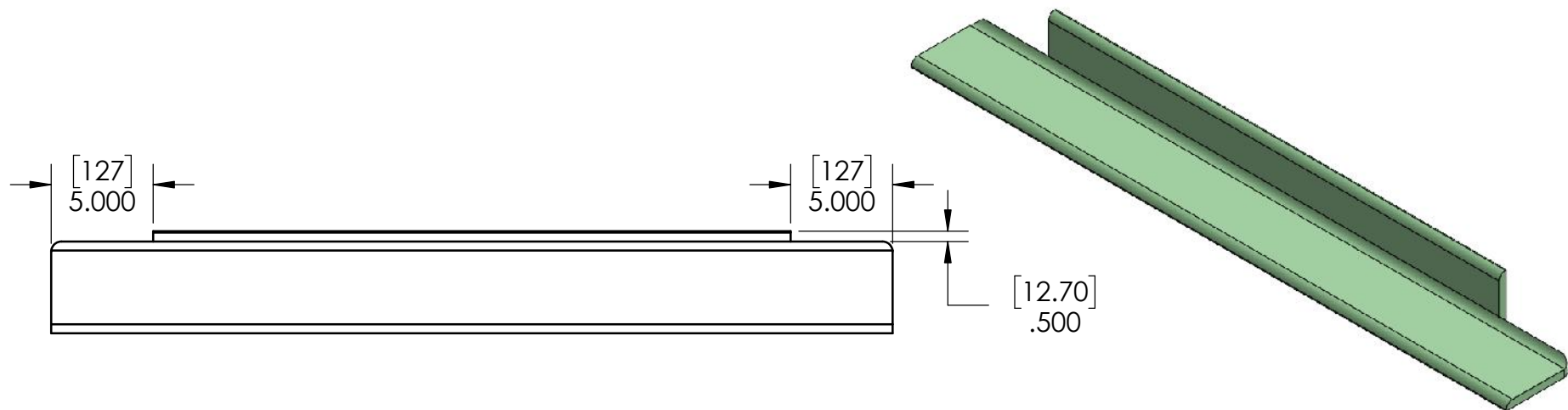
**DRAWING NOT
FOR PRODUCTION USE**

A4 THIRD ANGLE PROJECTION DIMENSIONS: INCHES (MILLIMETERS)	UNLESS OTHERWISE SPECIFIED: MATERIAL ASTM A36	DESIGN/ENGR	C. O'BRIEN	DATE	2/2020
		DRAWN	W. SPIVEY	DATE	9/2020
		CHECKED	R. JONES	DATE	9/2020
		COMMENTS:			
		DO NOT SCALE DRAWING			

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600


**CHASSIS CROSSMEMBER
NOTCHED SHORT LEG**

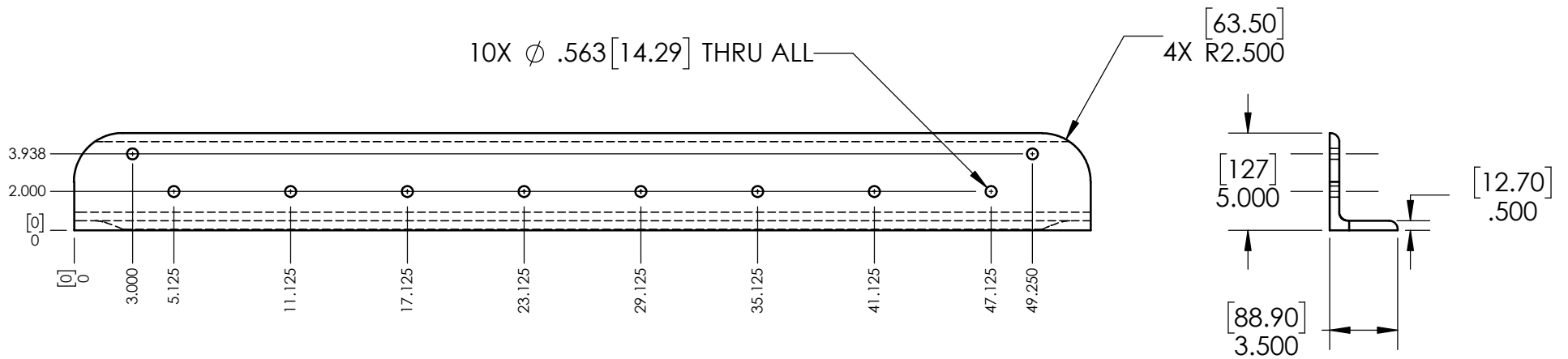
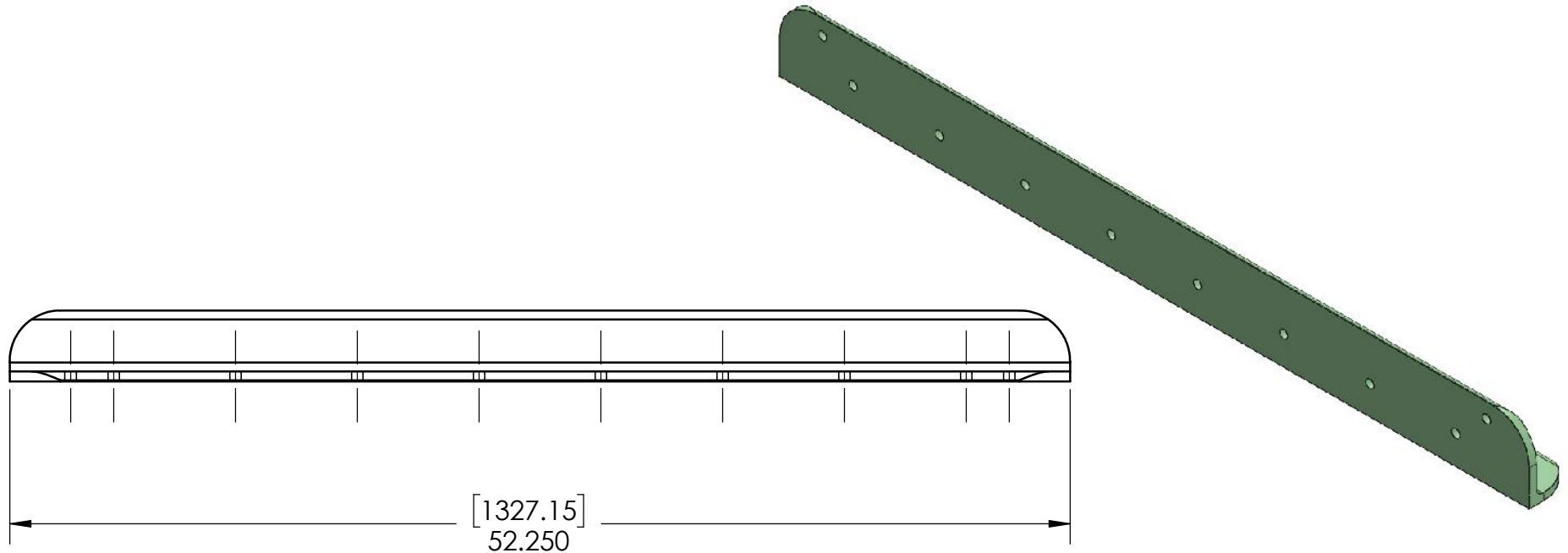
SCALE: 1:8 WEIGHT: 17 KG SHEET 9 of 63



FROM 5X3.5X.5 ANGLE


**DRAWING NOT
FOR PRODUCTION USE**

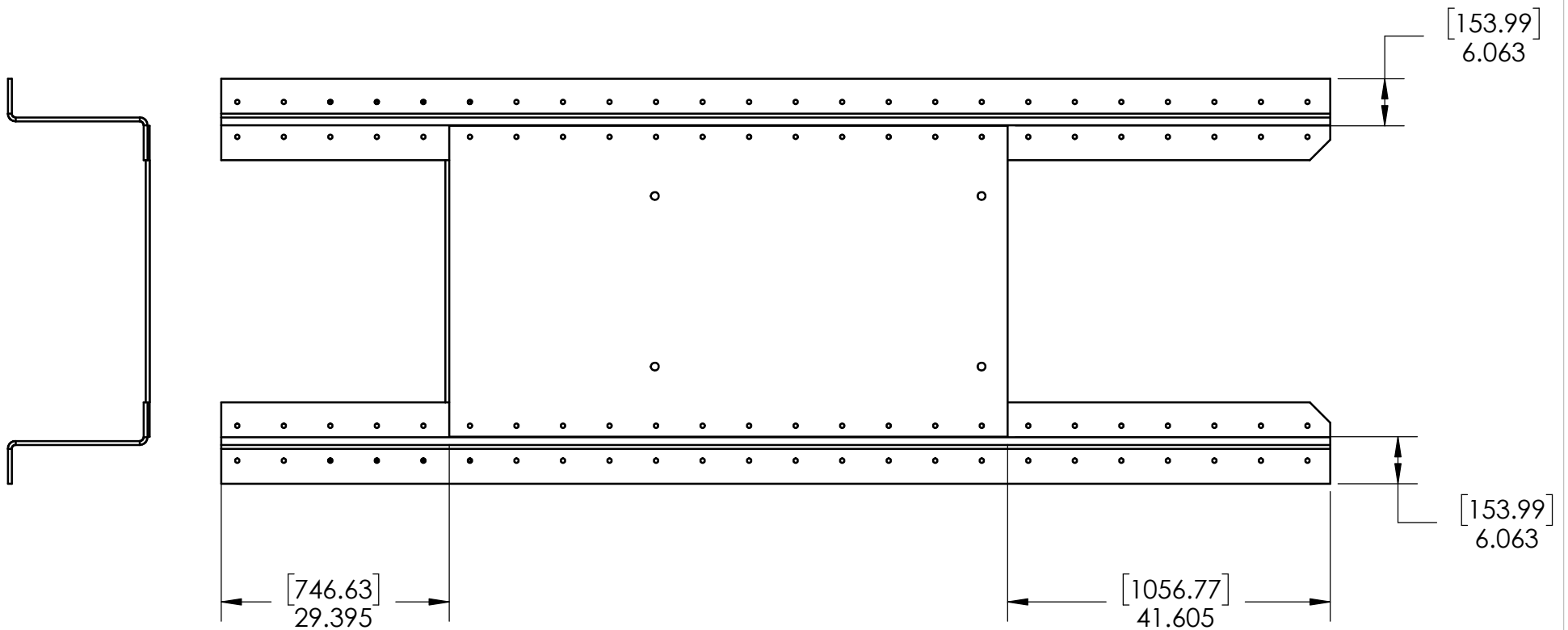
A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020				
	DIMENSIONS: INCHES [MILLIMETERS]	ASTM A36		DRAWN	W. SPIVEY	9/2020	CHASSIS CROSSMEMBER NOTCHED		
				CHECKED	R. JONES	9/2020			
				COMMENTS:					
		DO NOT SCALE DRAWING				SCALE: 1:8	WEIGHT: 18 KG	SHEET 10 of 63	



FROM 5X3.5X.5 ANGLE

**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]	ASTM A36	DRAWN	W. SPIVEY	9/2020	REAR UPPER CROSSMEMBER		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
						SCALE: 1:24 WEIGHT: 26 kg SHEET 11 of 63		
		DO NOT SCALE DRAWING						



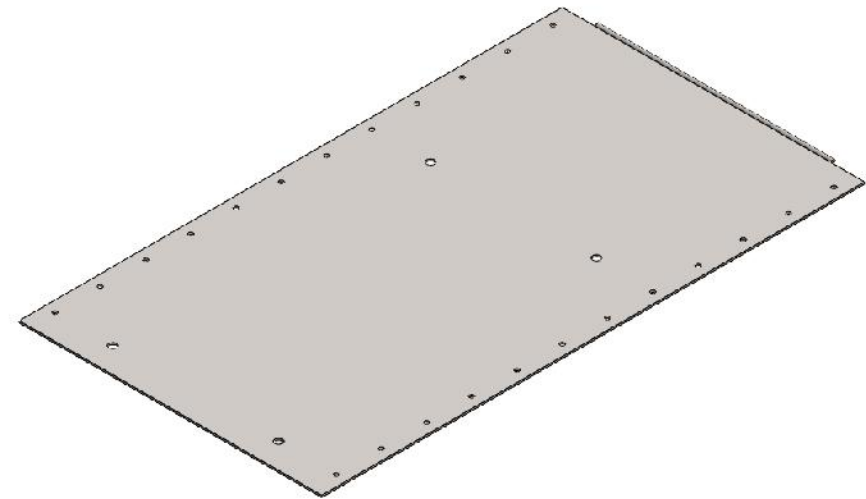
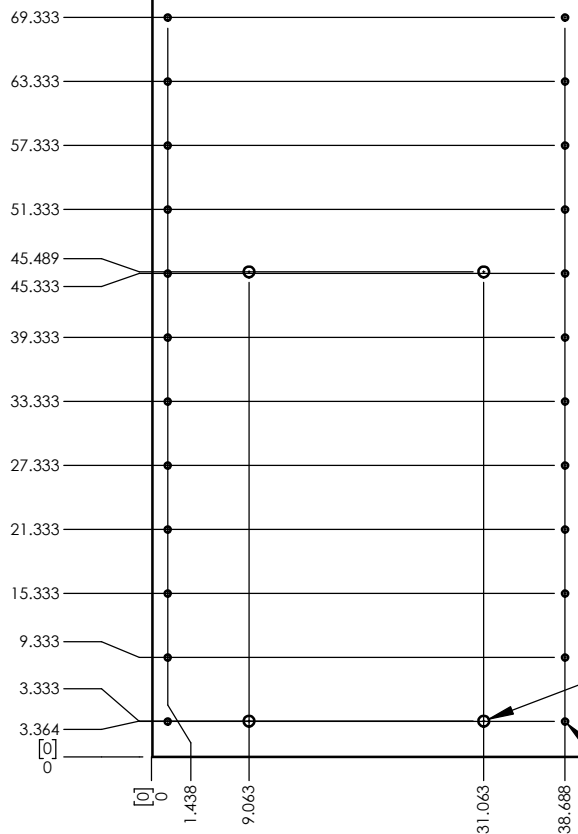
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
			MATERIAL	DESIGN/ENGR	C. O'BRIEN				2/2020
	DIMENSIONS: INCHES [MILLIMETERS]	N/A		DRAWN	W. SPIVEY	9/2020	CHASSIS FLOORPAN PLACEMENT		
				CHECKED	R. JONES	9/2020			
				COMMENTS:					
			DO NOT SCALE DRAWING			SCALE: 1:30 WEIGHT: N/A SHEET 12 of 63			

[112.71]
4.438

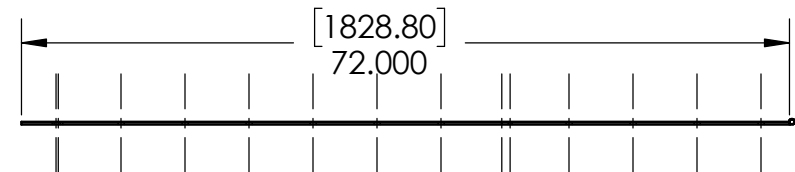
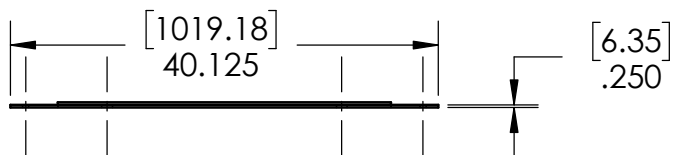
[793.75]
31.250

Ø .625" [15.88] ROD WELDED ALONG CENTER BACK OF FLOOR PAN




4X Ø 1.000 [25.40] THRU

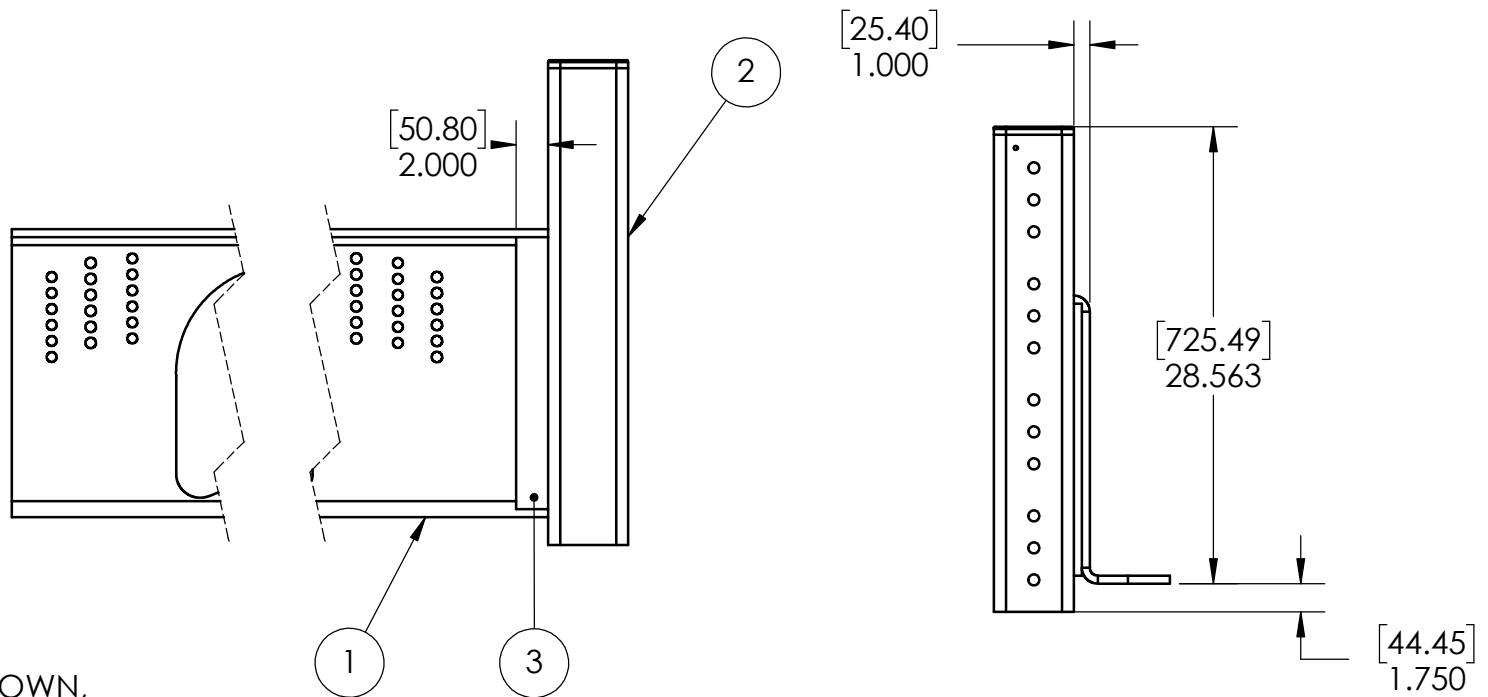
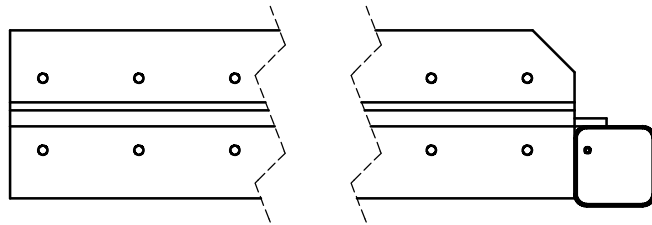
24X Ø .563 [14.29] THRU



**DRAWING NOT
FOR PRODUCTION USE**


A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
		ASTM A36	DRAWN	W. SPIVEY	9/2020			
			CHECKED	R. JONES	9/2020			
				COMMENTS:				
DIMENSIONS: INCHES [MILLIMETERS]						CHASSIS FLOORPAN ASSEMBLY		
		DO NOT SCALE DRAWING				SCALE: 1:24	WEIGHT: 92 KG	SHEET 13 of 63

ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	Z CHANNEL	5	1
2	BARRIER STANCHION	15	2
3	BARRIER STANCHION FILLER PLATE	20	2

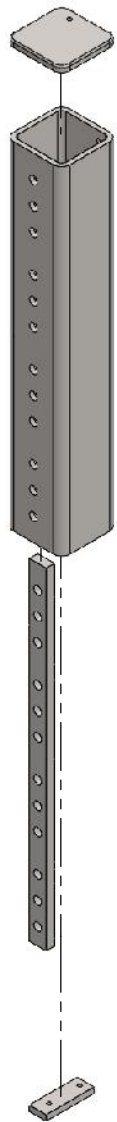
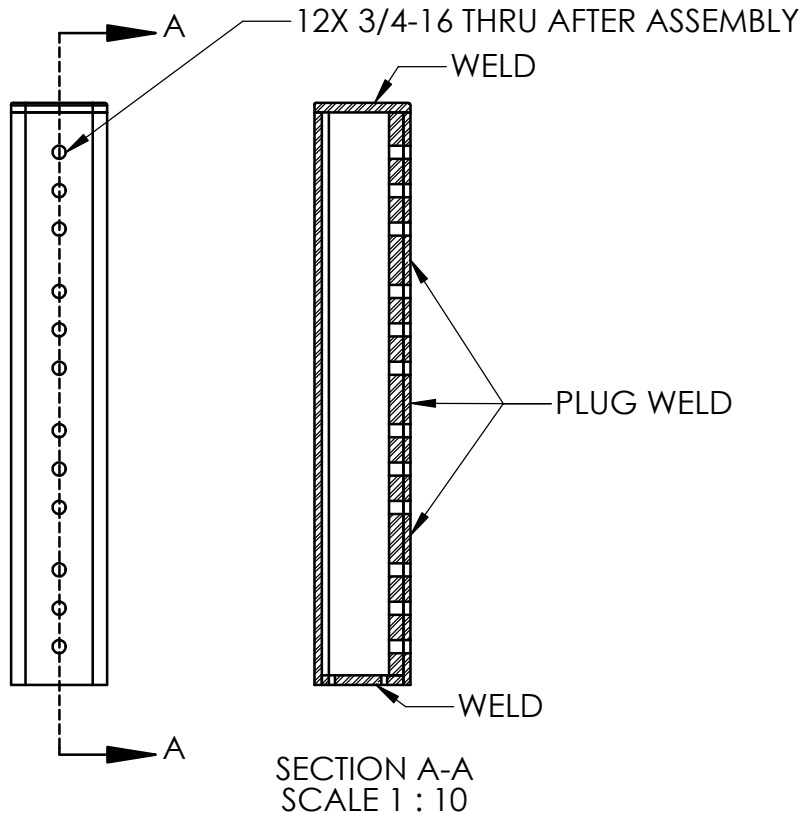
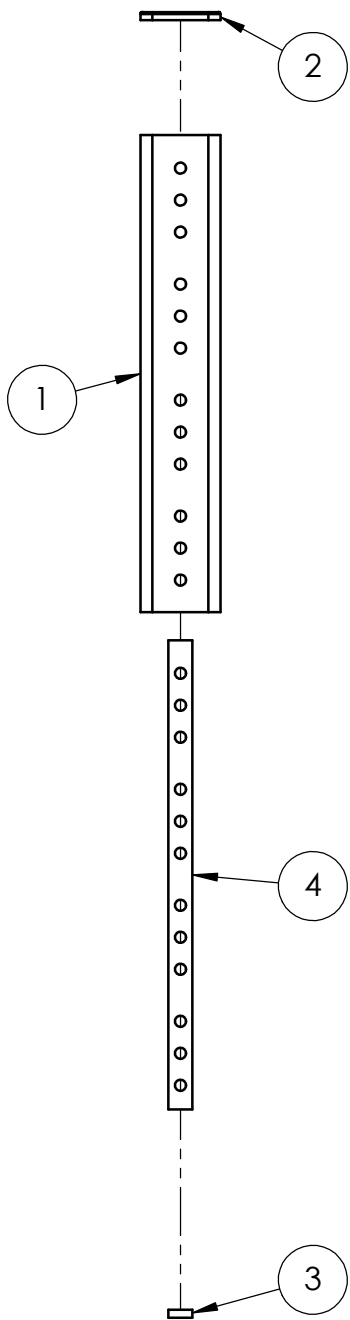


RIGHT SIDE SHOWN,
LEFT SIDE OPPOSITE


**DRAWING NOT
FOR PRODUCTION USE**

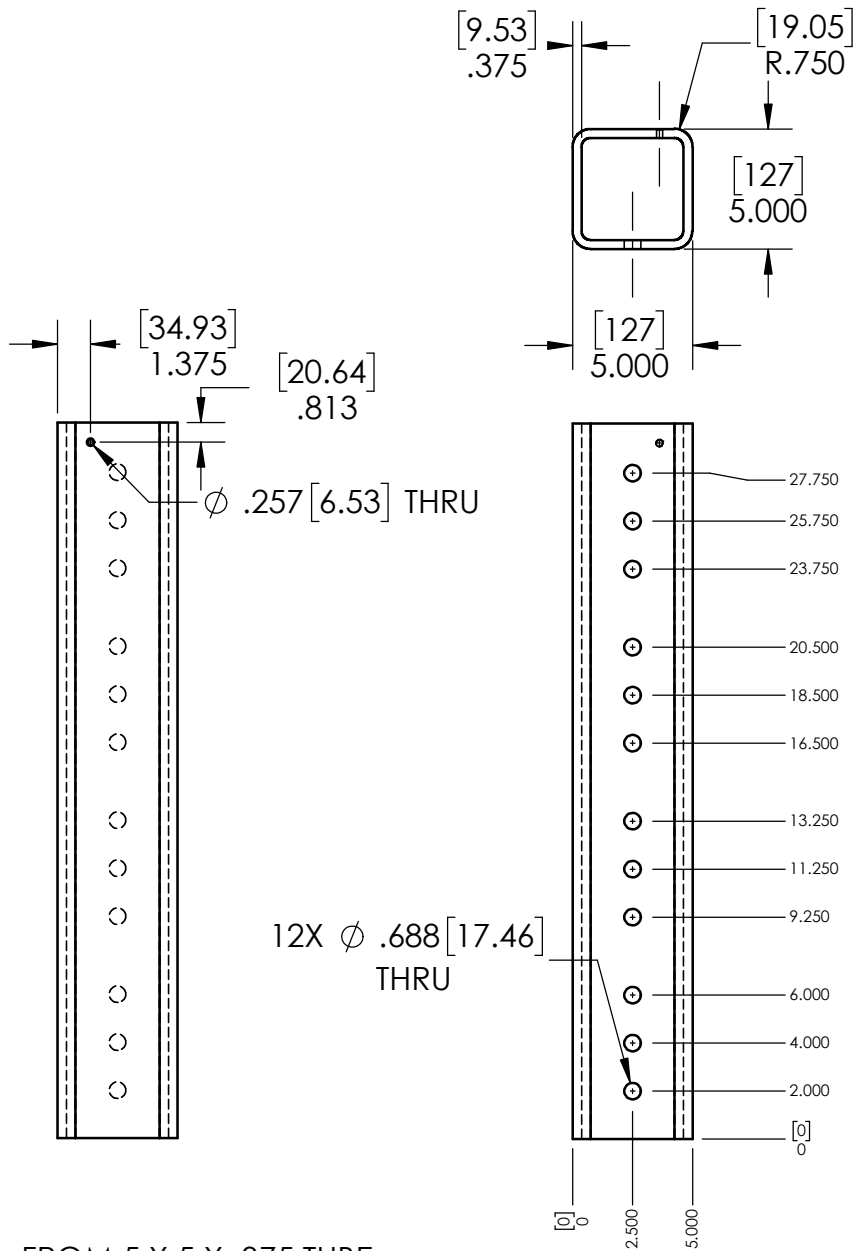
A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]	N/A	DRAWN	W. SPIVEY	9/2020			
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
						BARRIER STANCHION PLACEMENT		
		DO NOT SCALE DRAWING				SCALE: 1:24	WEIGHT: N/A	SHEET 14 of 63

ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	BARRIER STANCHION TUBE	16	1
2	BARRIER STANCHION END CAP	17	1
3	BARRIER STANCHION BOTTOM PLATE	19	1
4	BARRIER STANCHION HOLE REINFORCEMENT	18	1




**DRAWING NOT
FOR PRODUCTION USE**

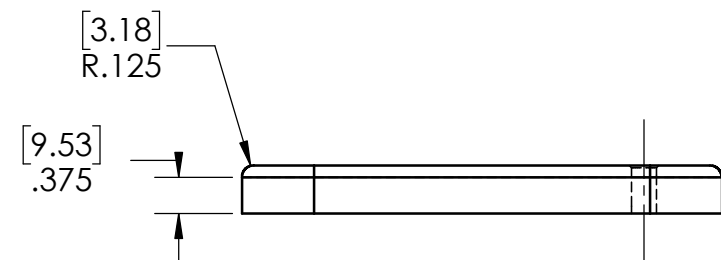
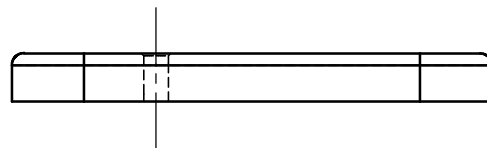
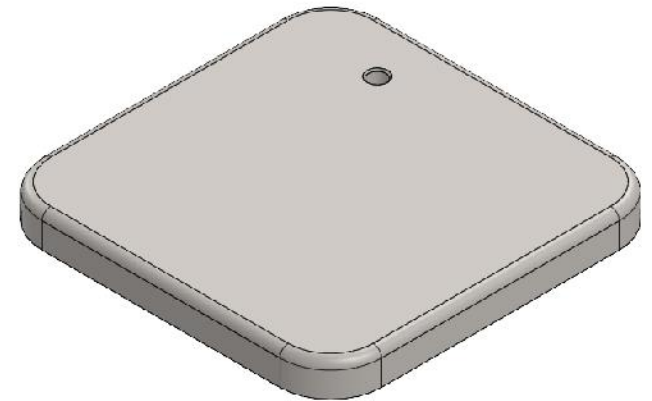
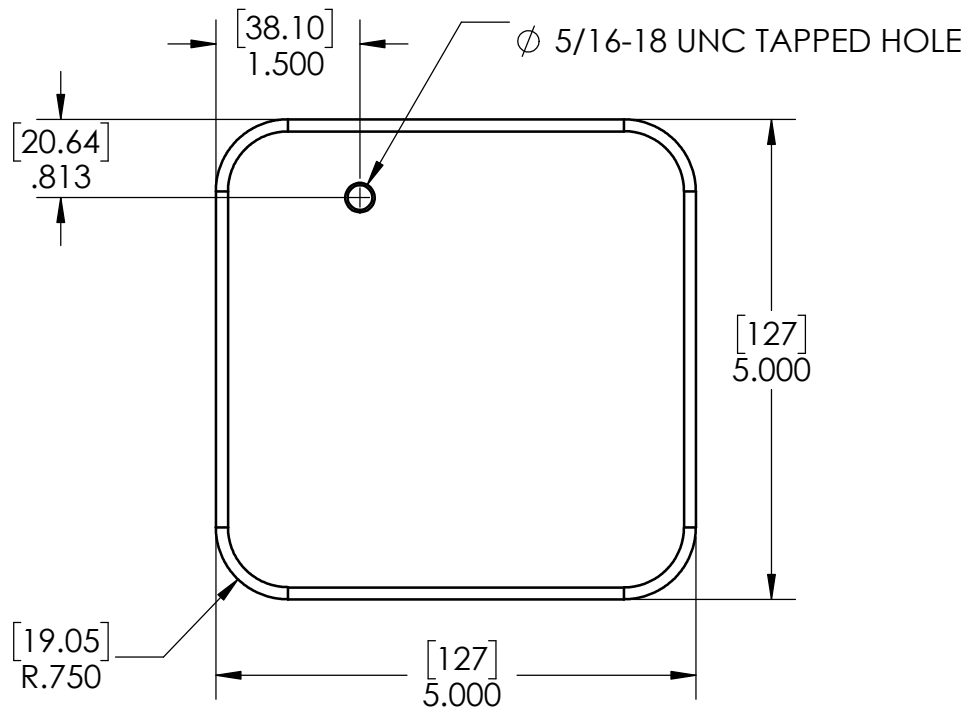
A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:			NAME	DATE
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020	
		N/A	DRAWN	W. SPIVEY	9/2020	
			CHECKED	R. JONES	9/2020	
			COMMENTS:			
			DO NOT SCALE DRAWING			



FROM 5 X 5 X .375 TUBE

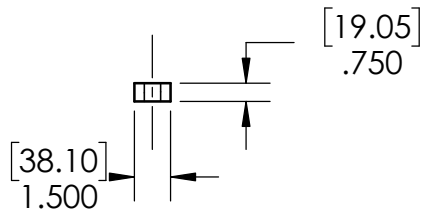
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020	BARRIER STANCHION TUBE		
	ASTM A500	DRAWN	W. SPIVEY	9/2020				
		CHECKED	R. JONES	9/2020				
	COMMENTS:							
DIMENSIONS: INCHES [MILLIMETERS]						SCALE: 1:16 WEIGHT: 24 KG SHEET 16 of 63		
DO NOT SCALE DRAWING								

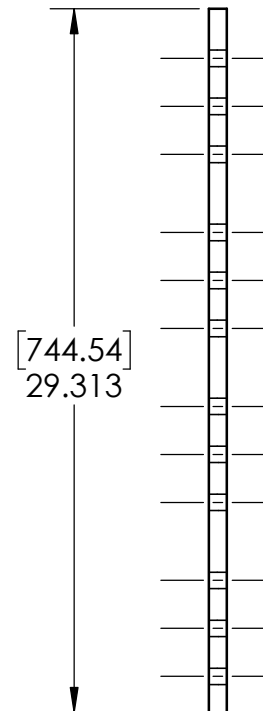
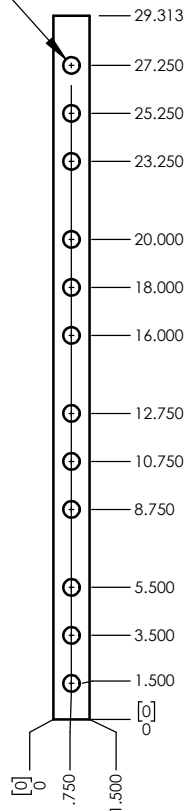


**DRAWING NOT
FOR PRODUCTION USE**


A4 THIRD ANGLE PROJECTION 	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600
	MATERIAL	ASTM A500	DESIGN/ENGR	C. O'BRIEN	2/2020
			DRAWN	W. SPIVEY	9/2020
			CHECKED	R. JONES	9/2020
			COMMENTS:		BARRIER STANCHION END CAP
		DO NOT SCALE DRAWING			
			SCALE: 1:2	WEIGHT: 1.5 KG	SHEET 17 of 63



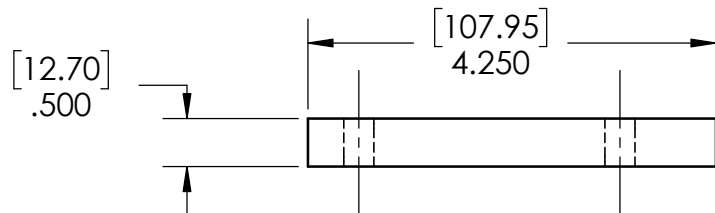
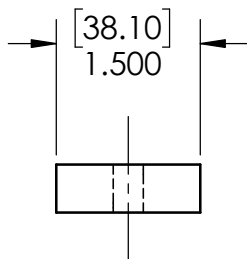
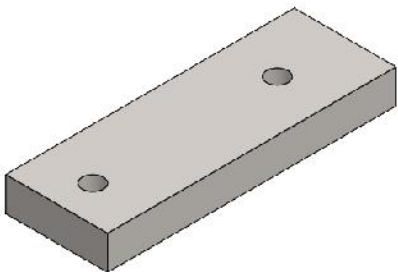
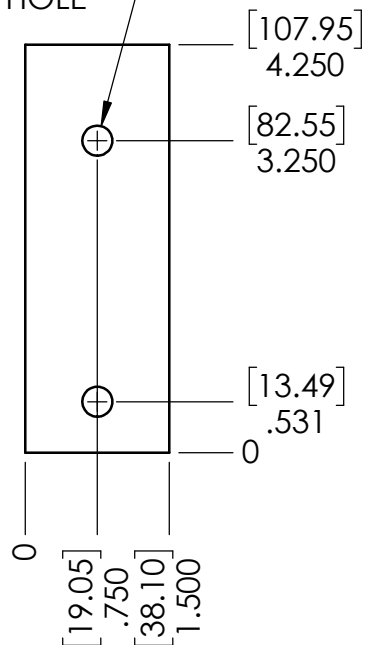
12X ϕ .688[17.46] THRU




**DRAWING NOT
FOR PRODUCTION USE**

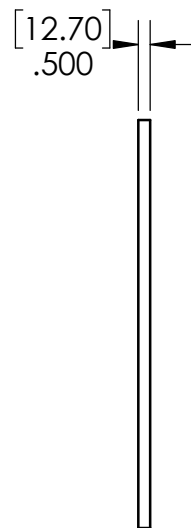
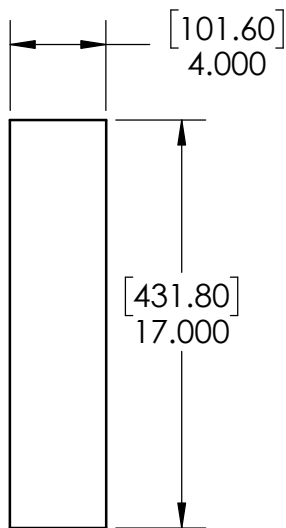
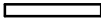
A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020	<div>BARRIER STANCHION HOLE REINFORCEMENT</div>		
	DIMENSIONS: INCHES [MILLIMETERS]	ASTM A36	DRAWN	W. SPIVEY	9/2020			
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
		DO NOT SCALE DRAWING				SCALE: 1:8	WEIGHT: 3.8 KG	SHEET 18 of 63

2X 3/8-16 UNC TAPPED HOLE



**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600 BARRIER STANCHION BOTTOM PLATE		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
		ASTM A36	DRAWN	W. SPIVEY	9/2020			
			CHECKED	R. JONES	9/2020			
		COMMENTS:						
DIMENSIONS: INCHES [MILLIMETERS]						SCALE: 1:2 WEIGHT: 0.4 KG SHEET 19 of 63		
DO NOT SCALE DRAWING								



**DRAWING NOT
FOR PRODUCTION USE**

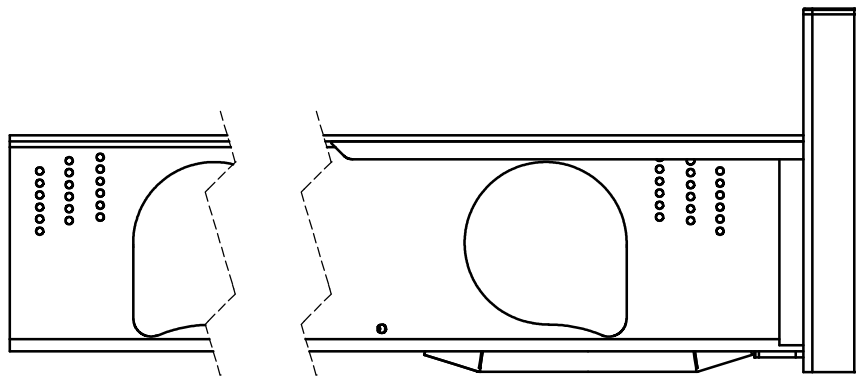
A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:	NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
		MATERIAL	DESIGN/ENGR	C. O'BRIEN				2/2020
	DIMENSIONS: INCHES [MILLIMETERS]	ASTM A36	DRAWN	W. SPIVEY	9/2020	BARRIER STANCHION FILLER PLATE		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
		DO NOT SCALE DRAWING			SCALE: 1:8	WEIGHT: 4.3 KG	SHEET 20 of 63	

4

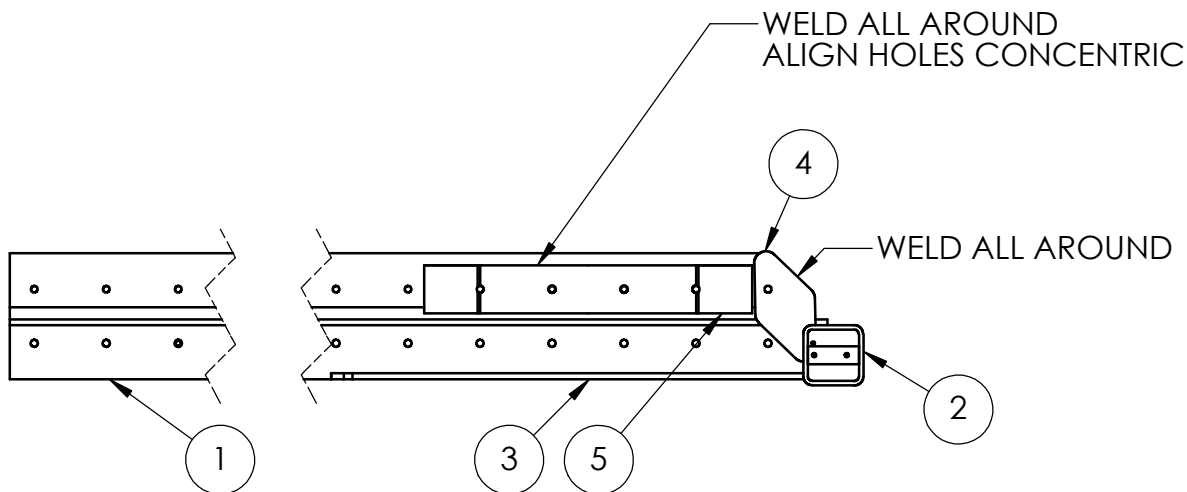
3

2


1



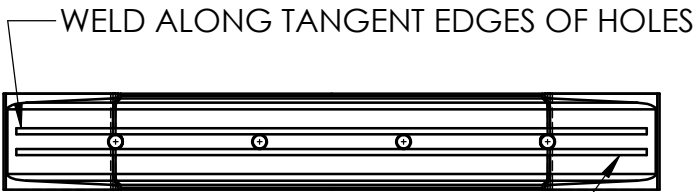
ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	Z CHANNEL	6	1
2	BARRIER STANCHION	15	1
3	UPPER FLANGE REINFORCEMENT	26	2
4	LOWER BARRIER STANCHION GUSSET	25	2
5	LOWER AXLE HOLE REINFORCEMENT	22	2



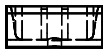
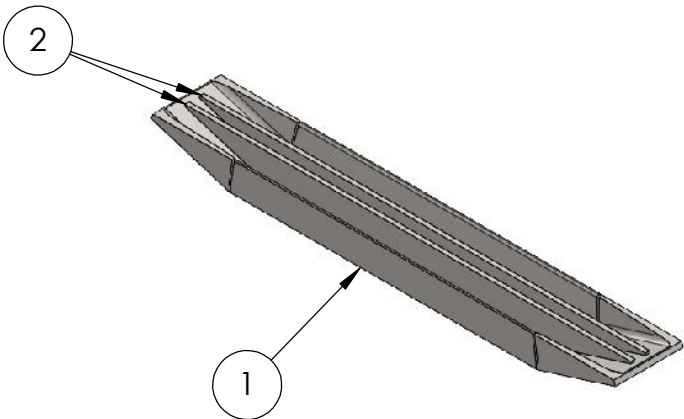
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]	N/A	DRAWN	W. SPIVEY	9/2020	CHASSIS REINFORCEMENT PLACEMENT		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
		DO NOT SCALE DRAWING				SCALE: 1:48	WEIGHT: N/A	SHEET 21 of 63


ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	LOWER AXLE HOLE REINFORCEMENT CHANNEL	23	1
2	RIB	24	2

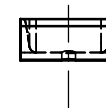
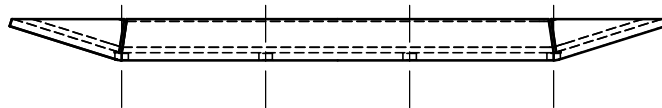
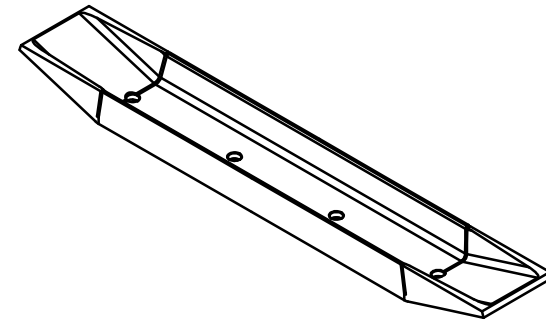
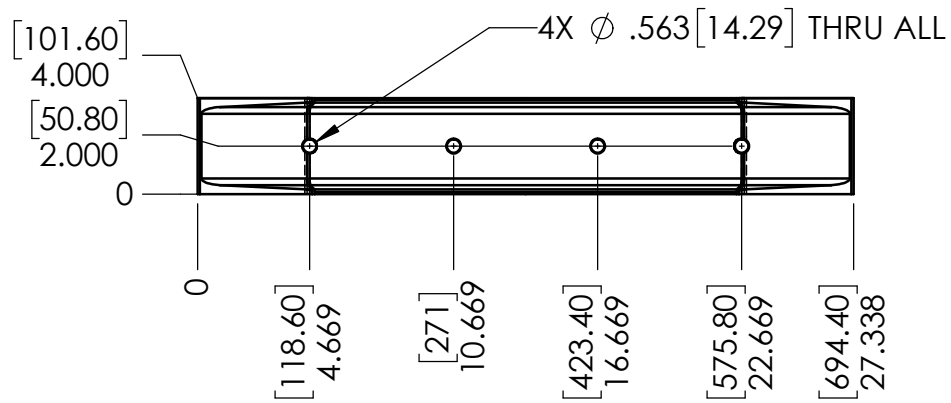


WELD ALONG TANGENT EDGES OF HOLES



**DRAWING NOT
FOR PRODUCTION USE**

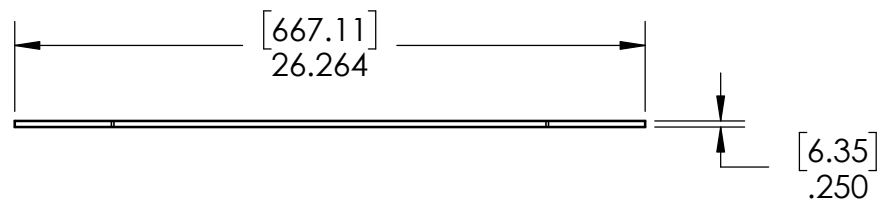
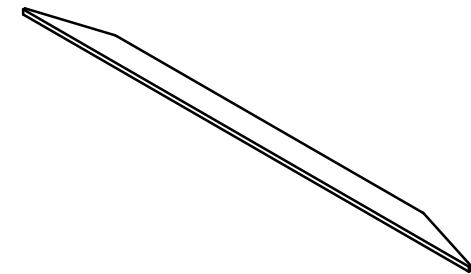
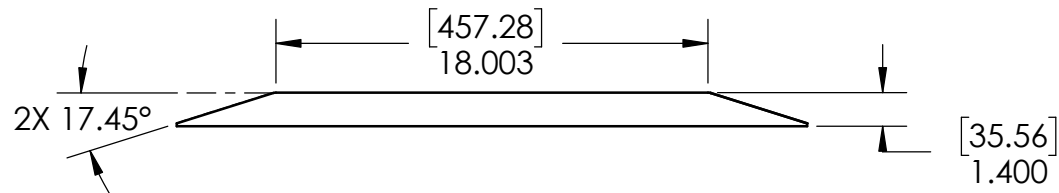
A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020				
	DIMENSIONS: INCHES [MILLIMETERS]	N/A		DRAWN	W. SPIVEY	9/2020	LOWER AXLE HOLE REINFORCEMENT ASSEMBLY		
				CHECKED	R. JONES	9/2020			
				COMMENTS:					
						SCALE: 1:8	WEIGHT: 9 KG	SHEET 22 of 63	
		DO NOT SCALE DRAWING							




FROM C4X7.25 CHANNEL

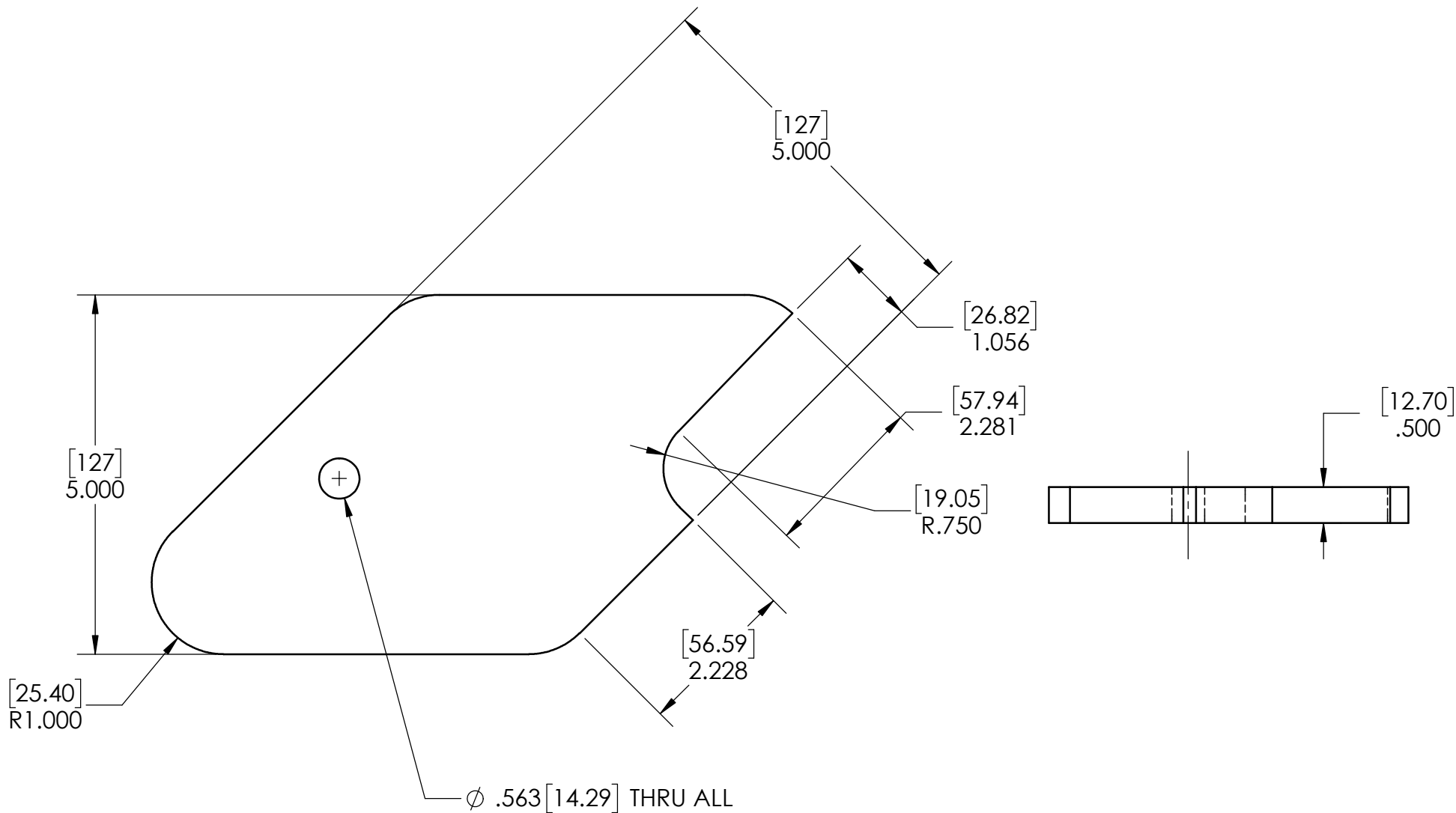
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020				
	DIMENSIONS: INCHES [MILLIMETERS]	ASTM A36		DRAWN	W. SPIVEY	9/2020	LOWER AXLE HOLE REINFORCEMENT CHANNEL		
				CHECKED	R. JONES	9/2020			
			COMMENTS:						
						SCALE: 1:8 WEIGHT: 7 KG SHEET 23 of 63			
		DO NOT SCALE DRAWING							




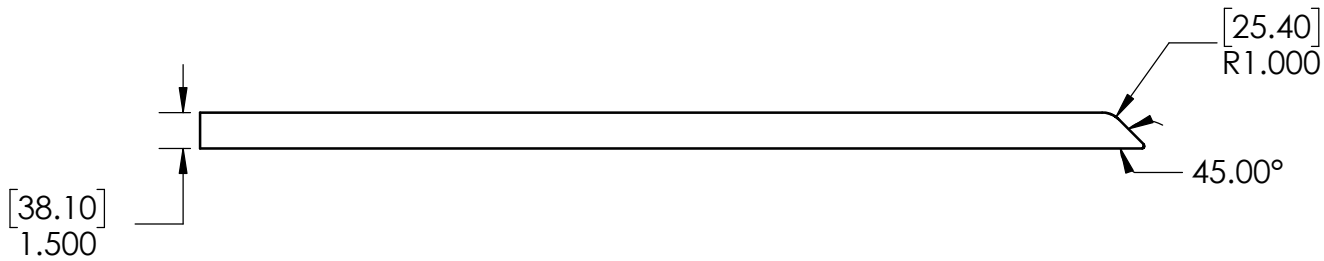
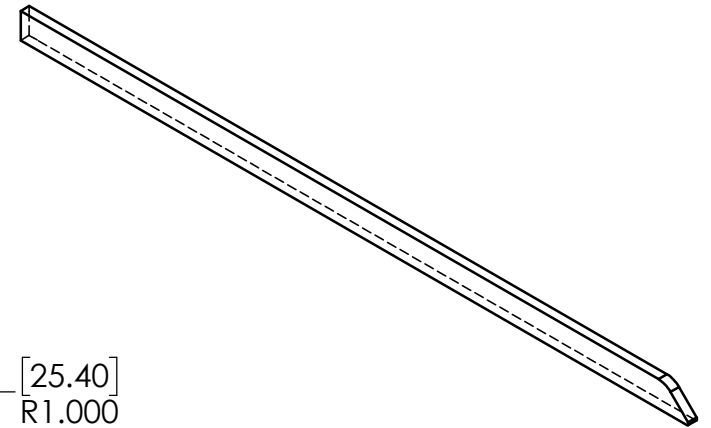
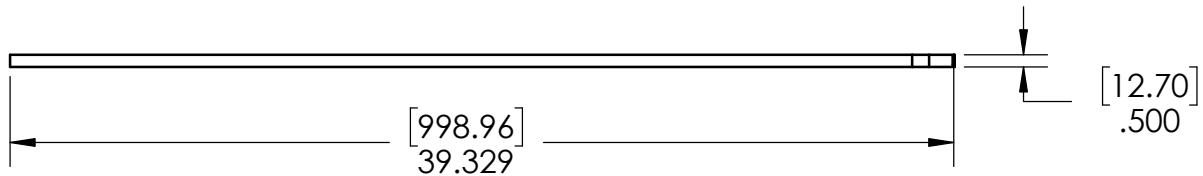
**DRAWING NOT
FOR PRODUCTION USE**

A4	<div>THIRD ANGLE PROJECTION</div> 	UNLESS OTHERWISE SPECIFIED:	NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
		MATERIAL	DESIGN/ENGR	C. O'BRIEN				2/2020
		ASTM A36	DRAWN	W. SPIVEY	9/2020	LOWER AXLE HOLE REINFORCMENT RIB		
			CHECKED	R. JONES	9/2020			
				COMMENTS:				
DIMENSIONS: INCHES (MILLIMETERS)					SCALE: 1:8	WEIGHT: 1 KG	SHEET 24 of 63	
		DO NOT SCALE DRAWING						




**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]	ASTM A36	DRAWN	W. SPIVEY	9/2020	STANCHION GUSSET		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
						SCALE: 1:2 WEIGHT: 1.9 KG SHEET 25 of 63		
		DO NOT SCALE DRAWING						



**DRAWING NOT
FOR PRODUCTION USE**

<div>A4</div> <div>THIRD ANGLE PROJECTION</div> <div></div> <div>DIMENSIONS: INCHES [MILLIMETERS]</div>	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div>Insurance Institute for Highway Safety</div> <div>988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600</div> <div>UPPER FLANGE REINFORCEMENT</div> <div>SCALE: 1:8 WEIGHT: 3.7 KG SHEET 26 of 63</div>	
	MATERIAL	ASTM A36	DESIGN/ENGR	C. O'BRIEN		2/2020
			DRAWN	W. SPIVEY		9/2020
			CHECKED	R. JONES		9/2020
	COMMENTS:					
	DO NOT SCALE DRAWING					

5

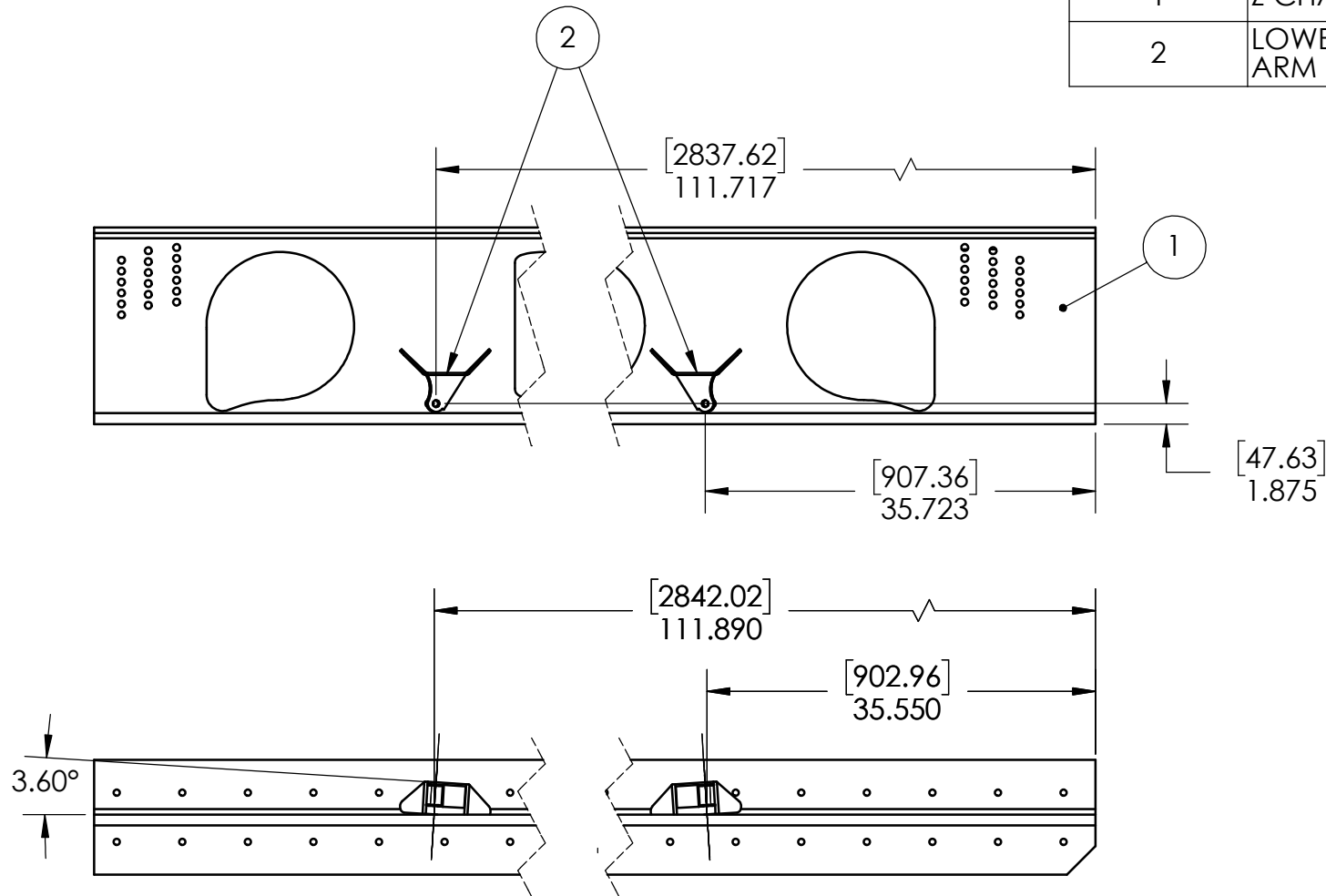
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3

2

1

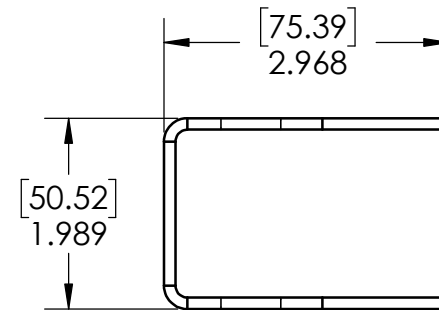
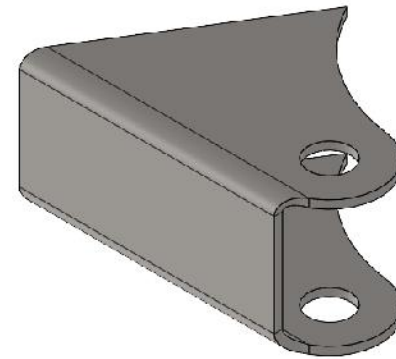
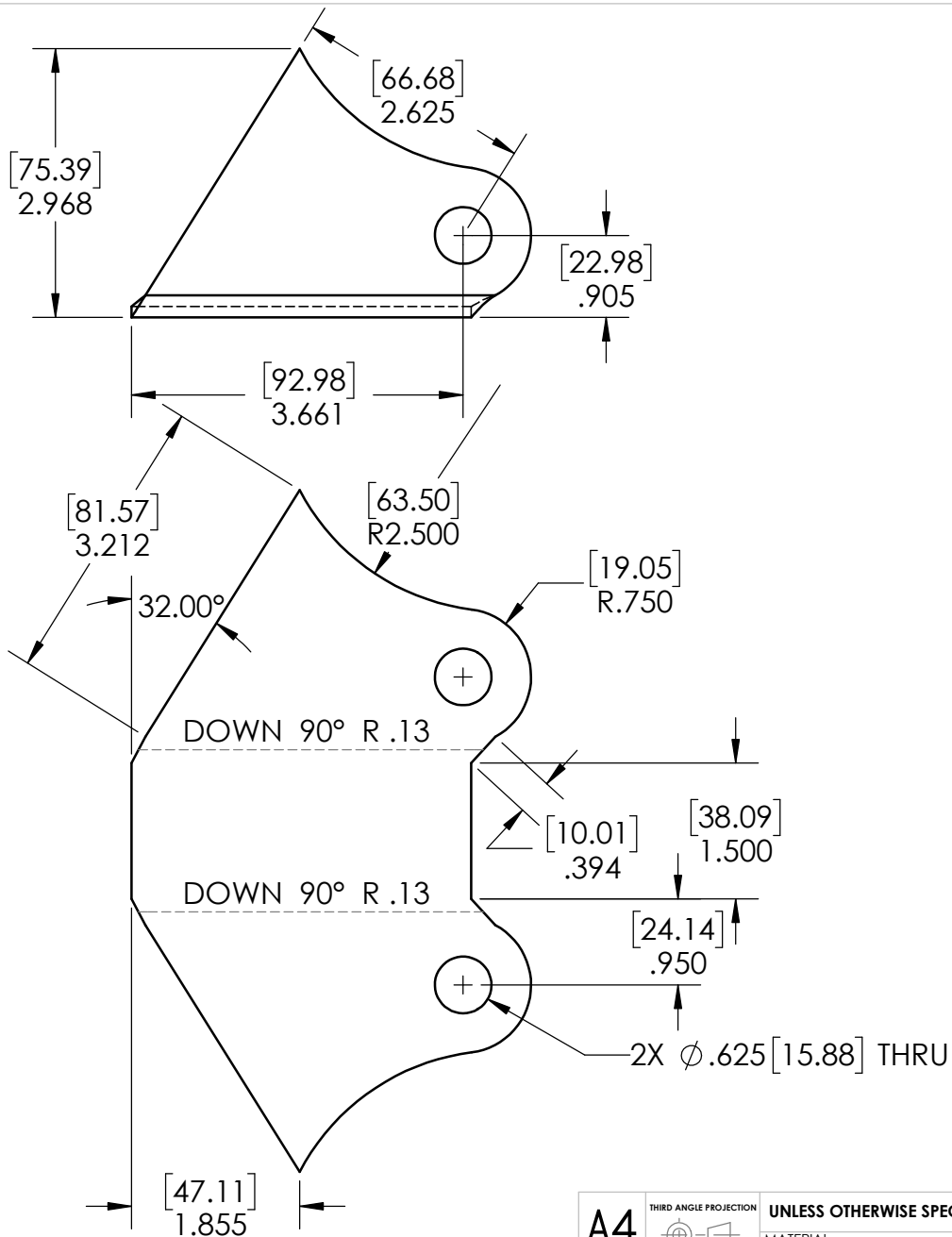
ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	Z CHANNEL		2
2	LOWER CONTROL ARM FRAME MOUNT	28	4



RIGHT OUTSIDE CHANNEL SHOWN,
LEFT SIMILAR

**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
			MATERIAL	DESIGN/ENGR	C. O'BRIEN				2/2020
	DIMENSIONS: INCHES [MILLIMETERS]	N/A		DRAWN	W. SPIVEY	9/2020	LOWER CONTROL ARM MOUNT PLACEMENT		
				CHECKED	R. JONES	9/2020			
				COMMENTS:					
			DO NOT SCALE DRAWING			SCALE: 1:48 WEIGHT: N/A SHEET 27 of 63			



**DRAWING NOT
FOR PRODUCTION USE**

A4 THIRD ANGLE PROJECTION

DIMENSIONS:
INCHES [MILLIMETERS]

UNLESS OTHERWISE SPECIFIED:

MATERIAL

AISI C1018

DO NOT SCALE DRAWING

DESIGN/ENGR

DRAWN

CHECKED

COMMENTS:

NAME

C. O'BRIEN

W. SPIVEY

R. JONES

DATE

2/2020

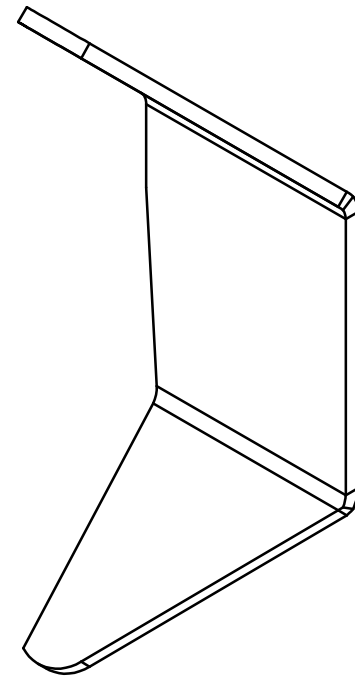
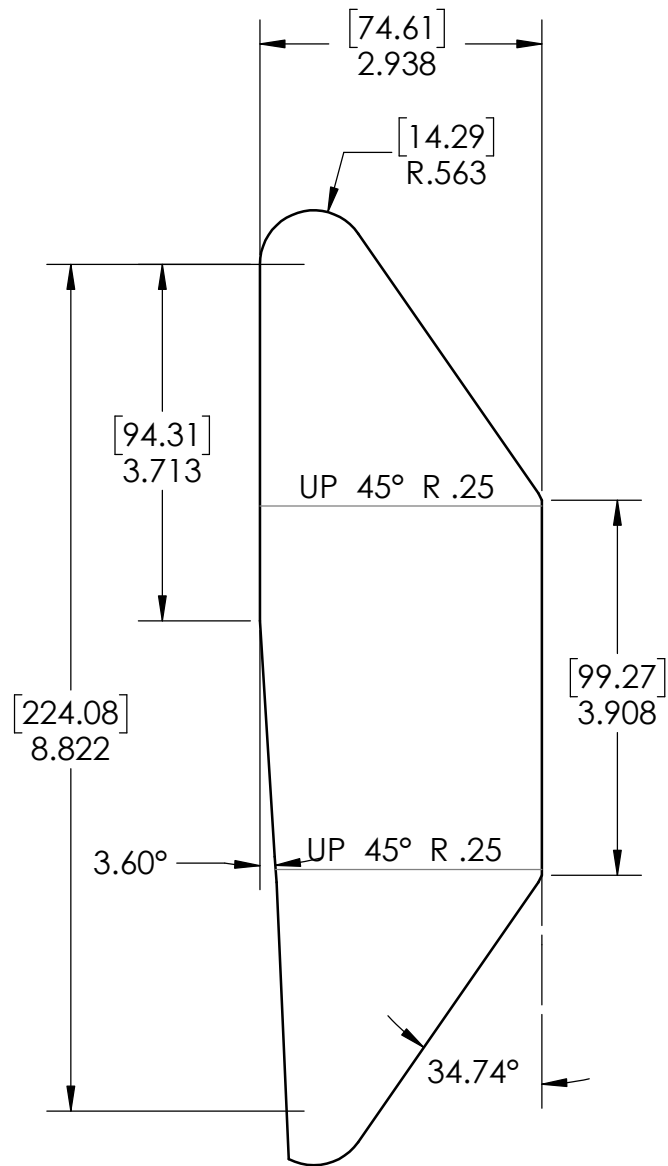
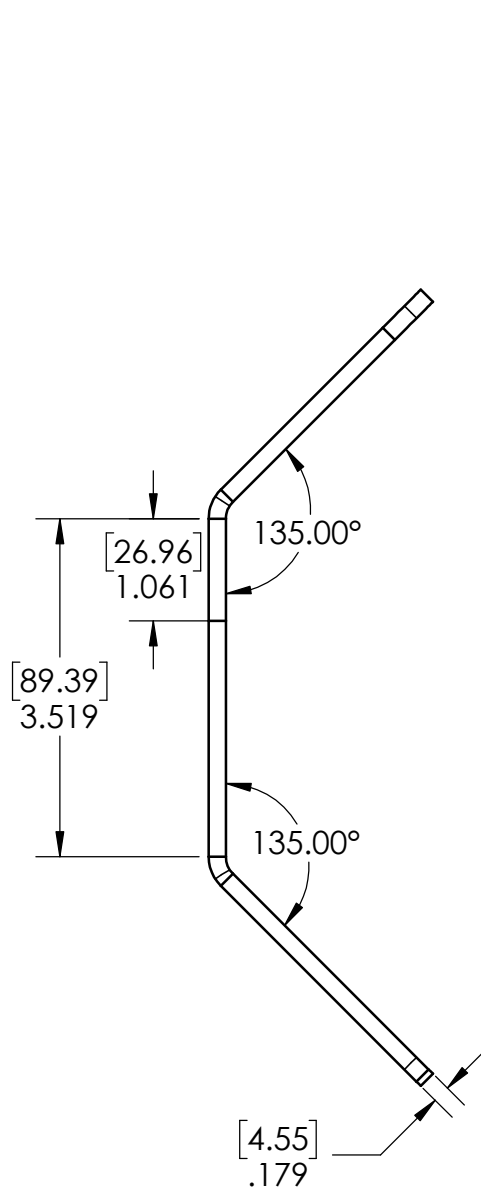
9/2020

9/2020

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600

**LOWER CONTROL
ARM FRAME TAB**

SCALE: 1:2 WEIGHT: 0.3 KG SHEET 29 of 63



**DRAWING NOT
FOR PRODUCTION USE**

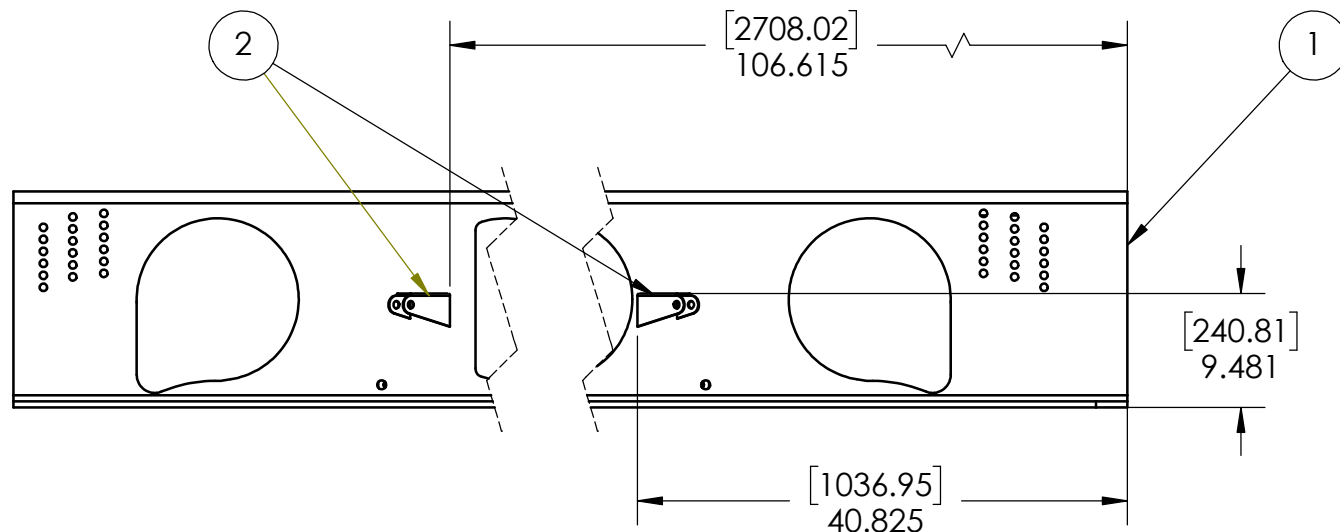
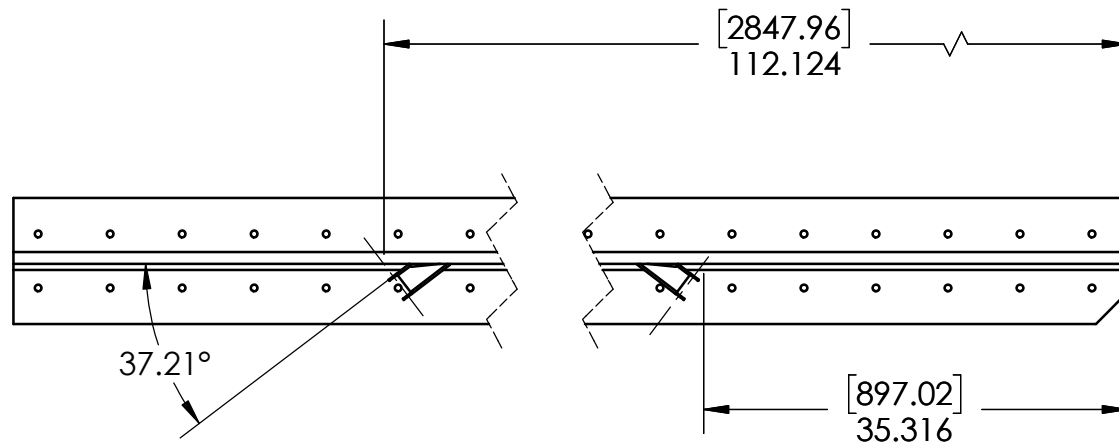
A4 <small>THIRD ANGLE PROJECTION</small> 	UNLESS OTHERWISE SPECIFIED:		NAME	DATE
	MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020
	AISI C1018	DRAWN	W. SPIVEY	9/2020
		CHECKED	R. JONES	9/2020
		COMMENTS:		
DIMENSIONS: INCHES [MILLIMETERS]				
DO NOT SCALE DRAWING				

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600

LOWER CONTROL ARM FRAME PLATE


SCALE: 1:2 WEIGHT: 0.5 KG SHEET 30 of 63

ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	Z CHANNEL	5, 6	2
2	UPPER CONTROL ARM FRAME MOUNT	32	4



LEFT INSIDE CHANNEL SHOWN,
RIGHT SIDE SIMILAR

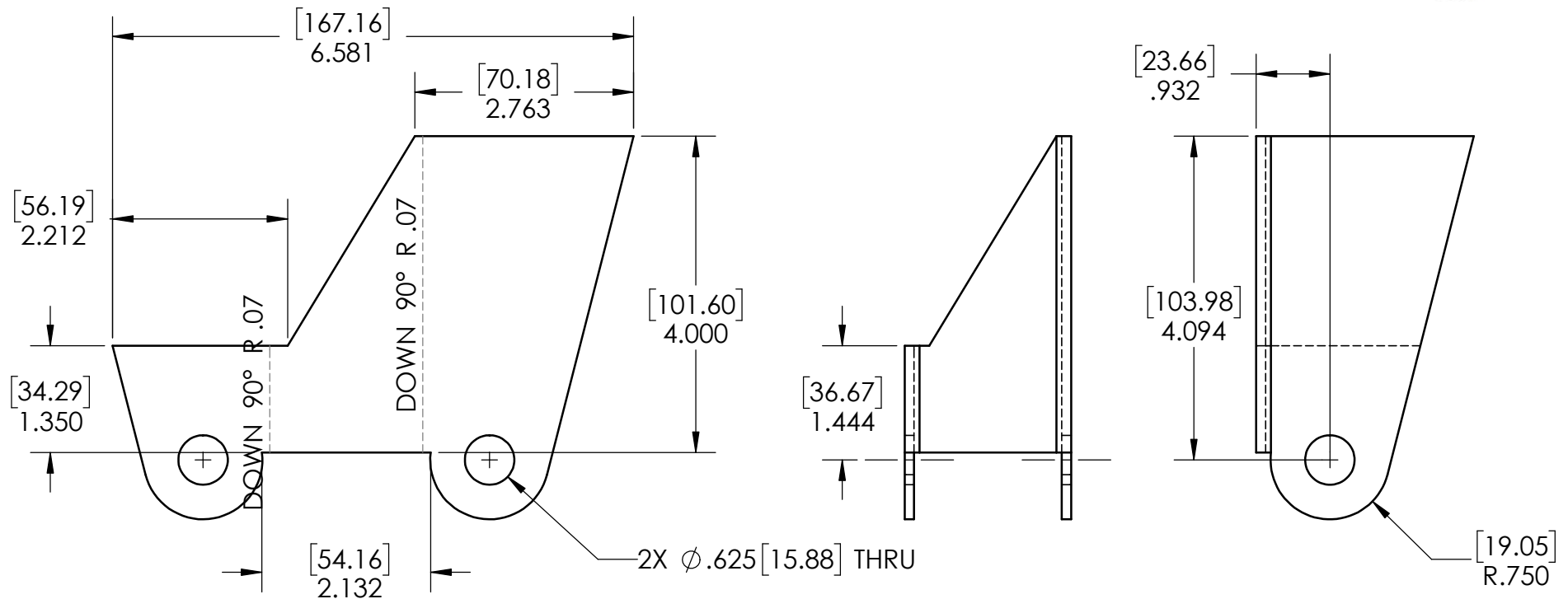
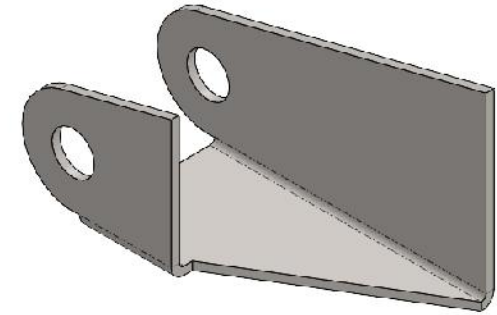
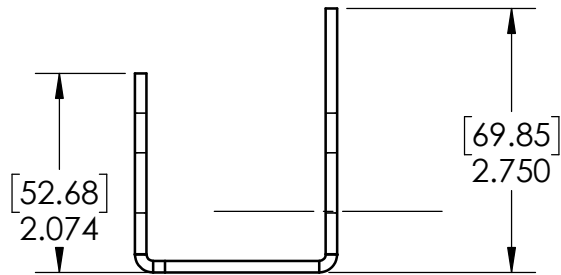
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020
	DIMENSIONS: INCHES [MILLIMETERS]	N/A	DRAWN	W. SPIVEY	9/2020
			CHECKED	R. JONES	9/2020
			COMMENTS:		
			DO NOT SCALE DRAWING		

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600

**UPPER CONTROL ARM
PLACEMENT**

SCALE: 1:8 WEIGHT: N/A SHEET 31 of 63



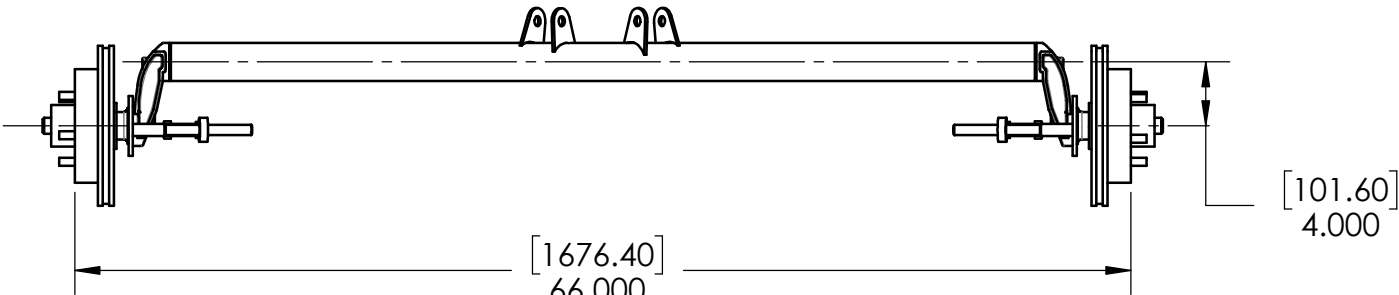
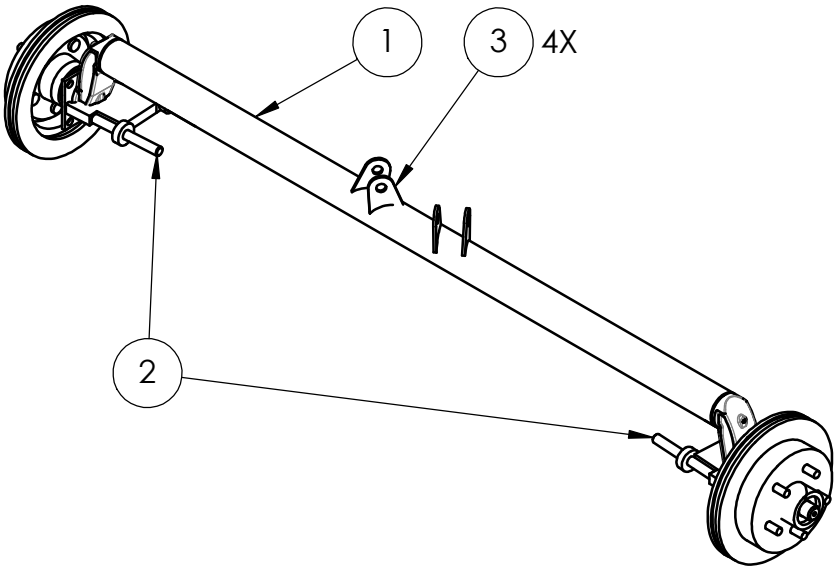
LEFT REAR, FRONT RIGHT SHOWN
RIGHT REAR, FRONT LEFT SIMILAR

SEE VENDOR LIST PAGE 62 FOR
SUPPLIERS. PART DETAILED FOR
PRODUCTION.


**DRAWING NOT
FOR PRODUCTION USE**

A4	<div>THIRD ANGLE PROJECTION</div>	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
		AISI C1018	DRAWN	W. SPIVEY	9/2020			
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
DIMENSIONS: INCHES [MILLIMETERS]						UPPER CONTROL ARM FRAME MOUNT		
		DO NOT SCALE DRAWING				SCALE: 1:2	WEIGHT: 0.4 KG	SHEET 32 of 63

ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	3500# 4" DROP 66" HUB-HUB AXLE ASSEMBLY W/ DISC BRAKES	63	1
2	LOWER SHOCK MOUNT ASSEMBLY	36	2
3	UPPER CONTROL ARM TAB	35	4



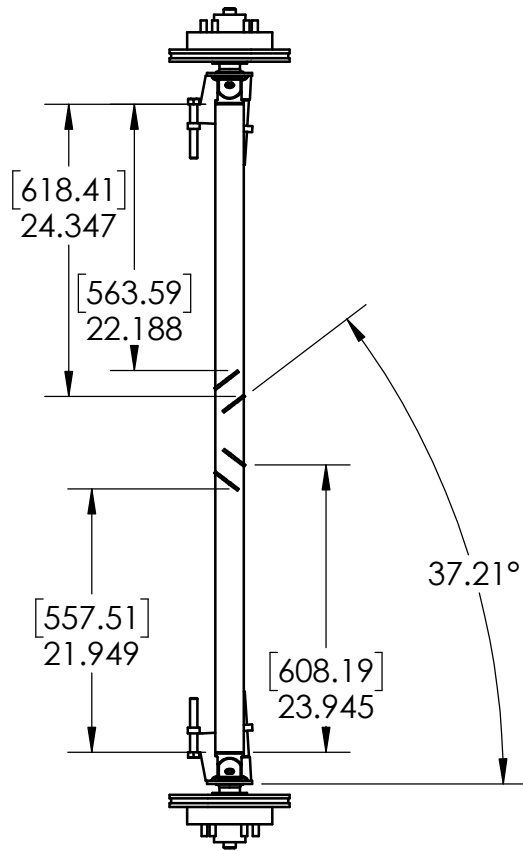
**DRAWING NOT
FOR PRODUCTION USE**

A4 <small>THIRD ANGLE PROJECTION</small>  <small>DIMENSIONS: INCHES (MILLIMETERS)</small>	UNLESS OTHERWISE SPECIFIED:		NAME	DATE
	MATERIAL		DESIGN/ENGR	C. O'BRIEN 2/2020
	N/A		DRAWN	W. SPIVEY 9/2020
			CHECKED	R. JONES 9/2020
			COMMENTS:	
	DO NOT SCALE DRAWING			

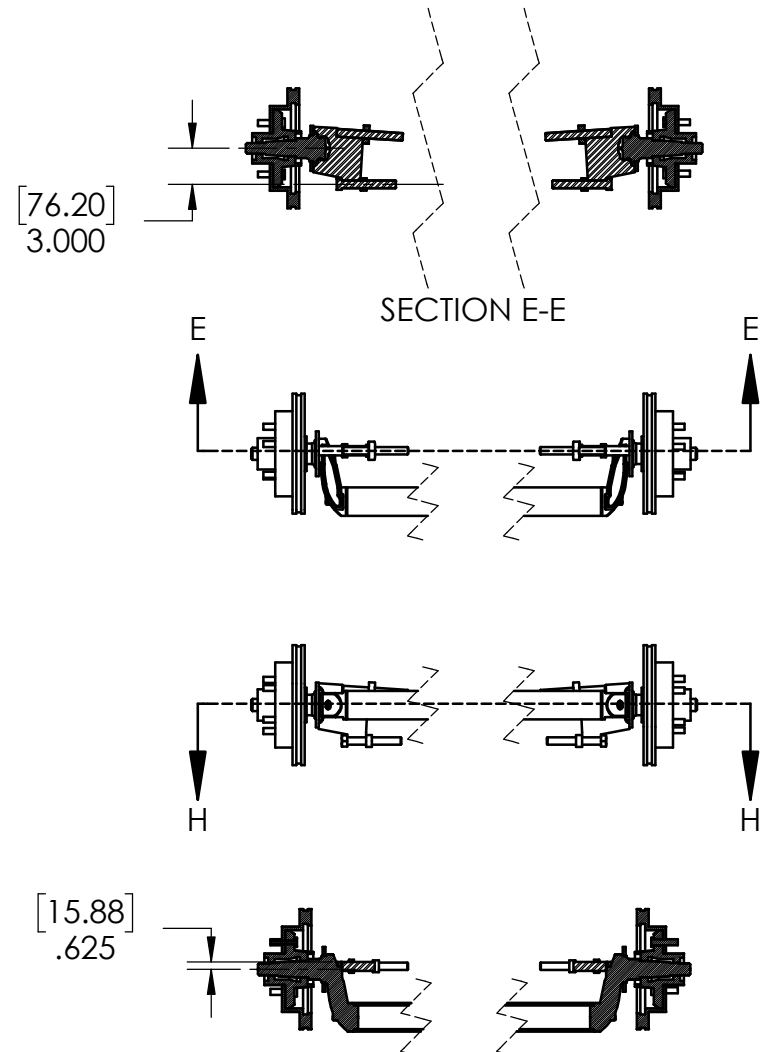
Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600

DETAILED AXLE ASSEMBLY

SCALE: 1:12 WEIGHT: 44 KG SHEET 33 of 63



CONTROL ARM TAB



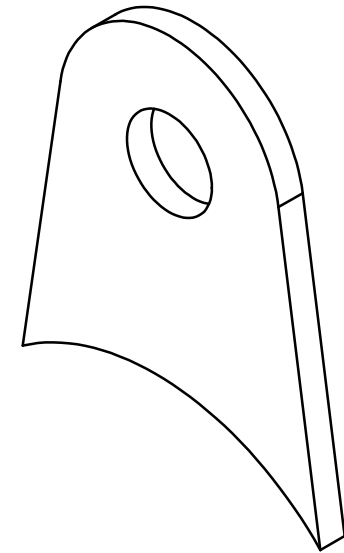
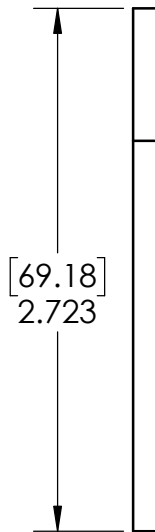
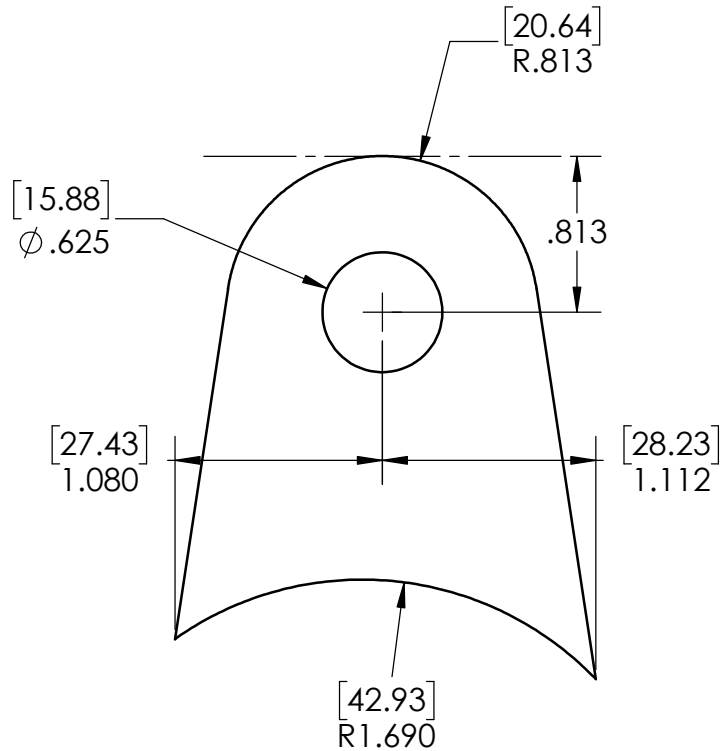
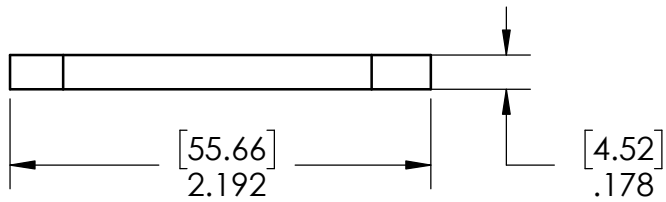
SECTION H-H

LOWER SHOCK MOUNT


RECOMMEND ATTACHING CONTROL ARM
TABS IN-SITU WITH CONTROL ARMS ATTACHED
RESPECTIVE ENDS

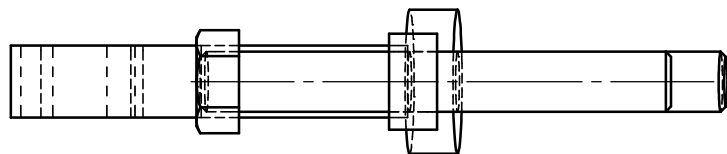
**DRAWING NOT
FOR PRODUCTION USE**

<div>A4</div> <div>THIRD ANGLE PROJECTION</div> <div></div> <div>DIMENSIONS: INCHES [MILLIMETERS]</div>	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div>Insurance Institute for Highway Safety</div> <div>988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600</div> <div>CONTROL ARM TAB AND LOWER SHOCK MOUNT PLACEMENT</div> <div>SCALE: 1:16</div> <div>WEIGHT: N/A</div> <div>SHEET 34 of 63</div>	
	MATERIAL		DESIGN/ENGR	C. O'BRIEN		2/2020
	N/A		DRAWN	W. SPIVEY		9/2020
			CHECKED	R. JONES		9/2020
			COMMENTS:			
	DO NOT SCALE DRAWING					

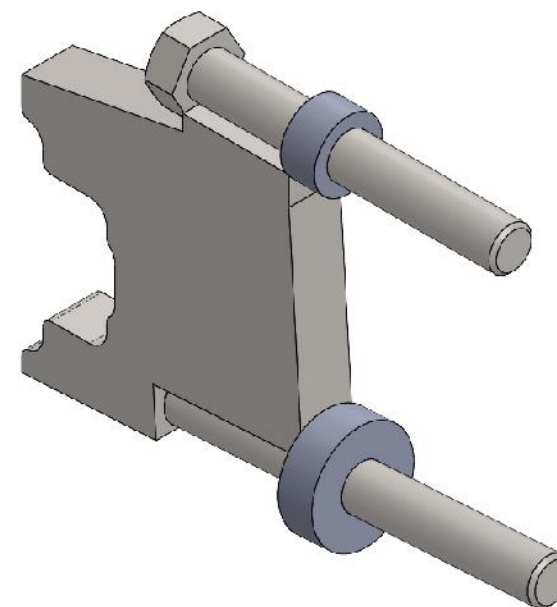
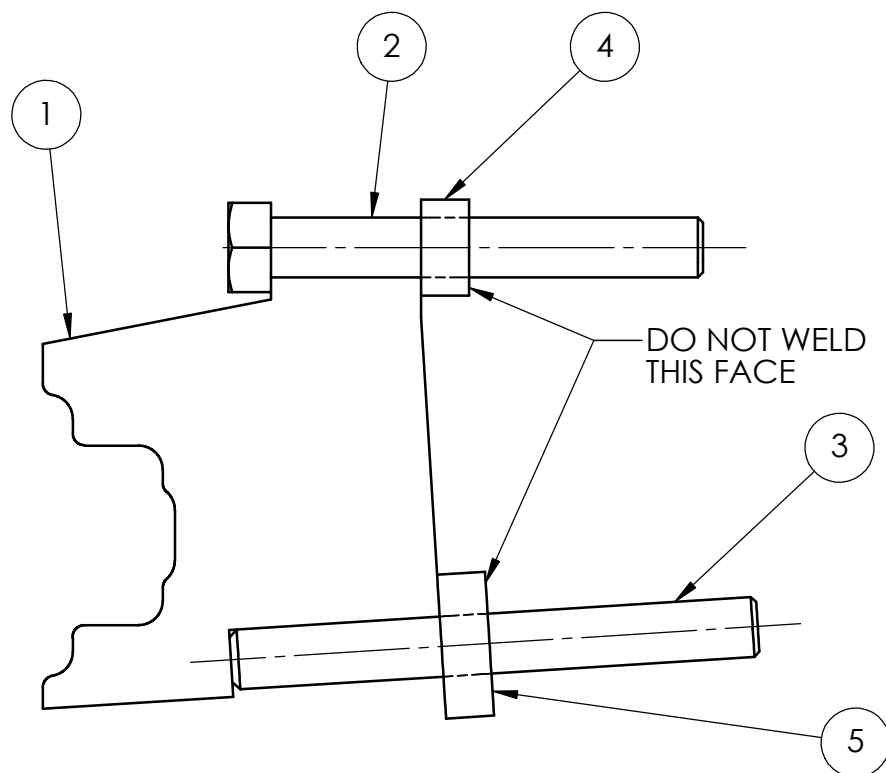


**DRAWING NOT
FOR PRODUCTION USE**

A4  <small>THIRD ANGLE PROJECTION</small> <small>DIMENSIONS: INCHES [MILLIMETERS]</small>	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600 UPPER CONTROL ARM TAB SCALE: 1:1 WEIGHT: 0.08 KG SHEET 35 of 63
	MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020	
	AISI C1018	DRAWN	W. SPIVEY	9/2020	
		CHECKED	R. JONES	9/2020	
		COMMENTS:			
	DO NOT SCALE DRAWING				

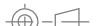


ITEM NO.	PART NUMBER	PAGE NO.	QTY.
1	LOWER SHOCK MOUNT PLATE	37	1
2	HEX BOLT 5/8-11X4.5		1
3	MOD HEX BOLT 5/8-11X5.5 CUT OFF HEX HEAD		1
4	SHOCK SPACER	38	1
5	ROD END SPACER	38	1



WELD ALL AROUND

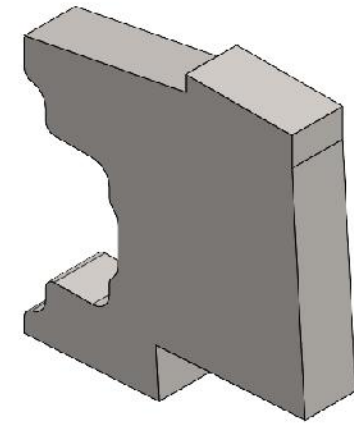
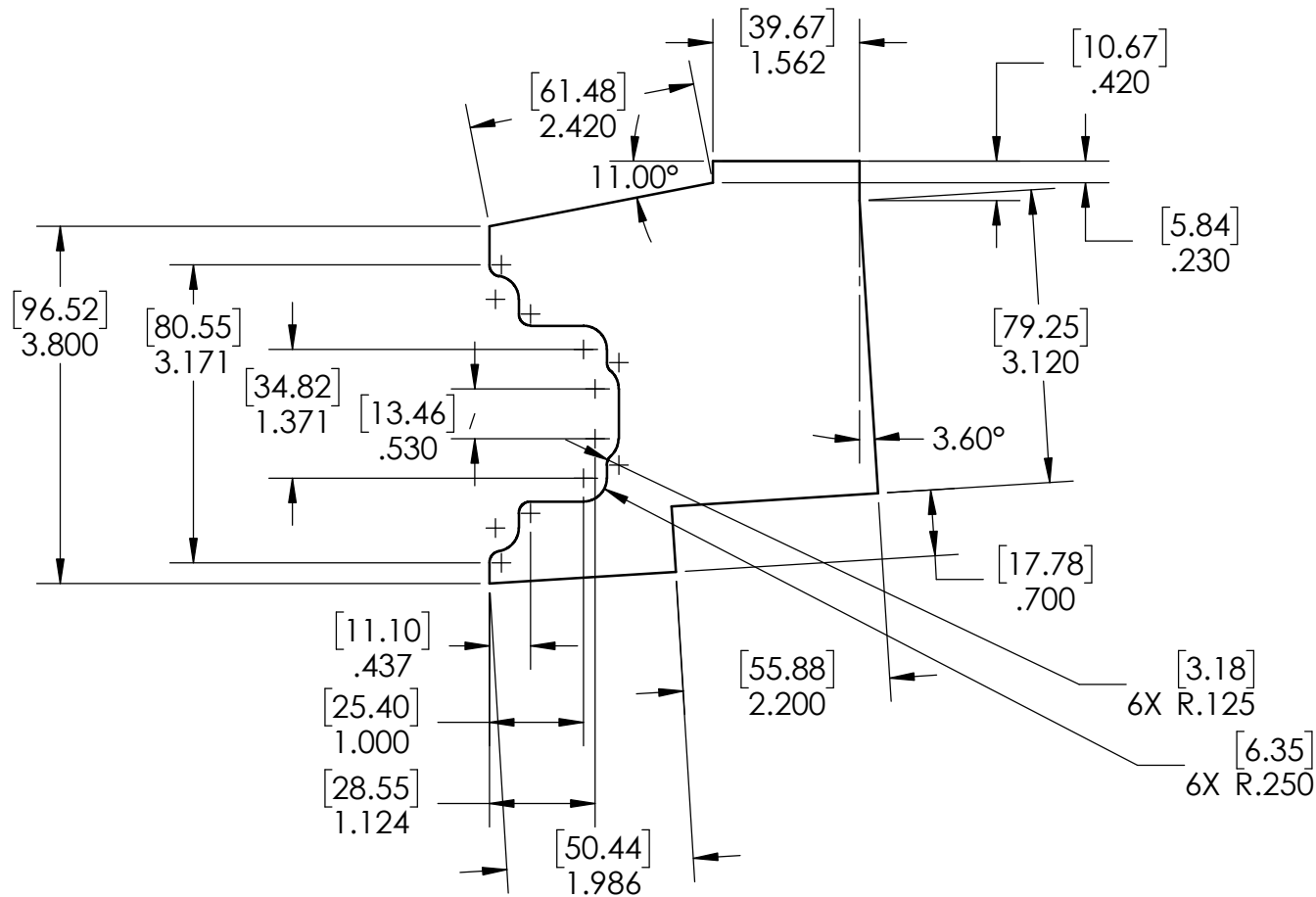
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE
			DESIGN/ENGR	C OBRIEN	2/2020
			DRAWN	W SPIVEY	9/2020
			CHECKED	R JONES	9/2020
			COMMENTS:		
DIMENSIONS: INCHES [MILLIMETERS]					
		DO NOT SCALE DRAWING			

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600

LOWER SHOCK MOUNT ASSEMBLY

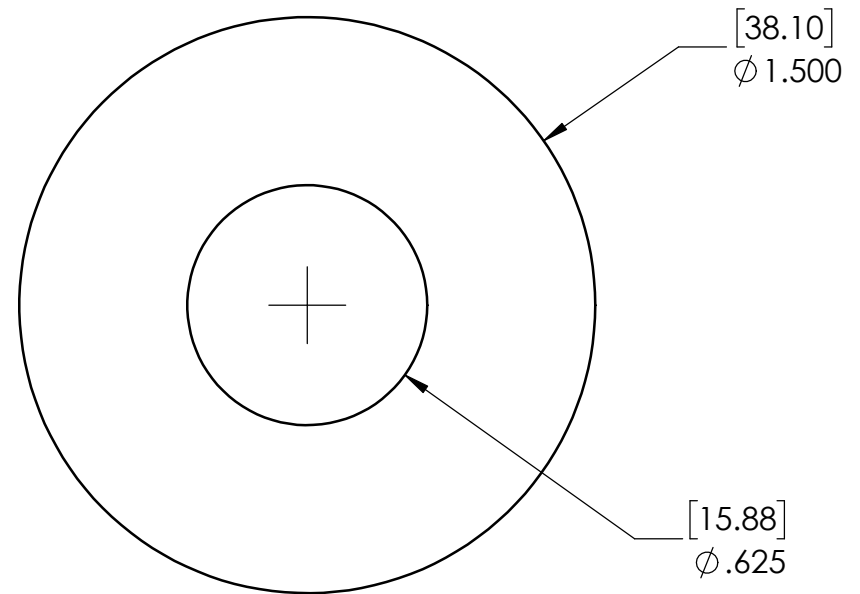
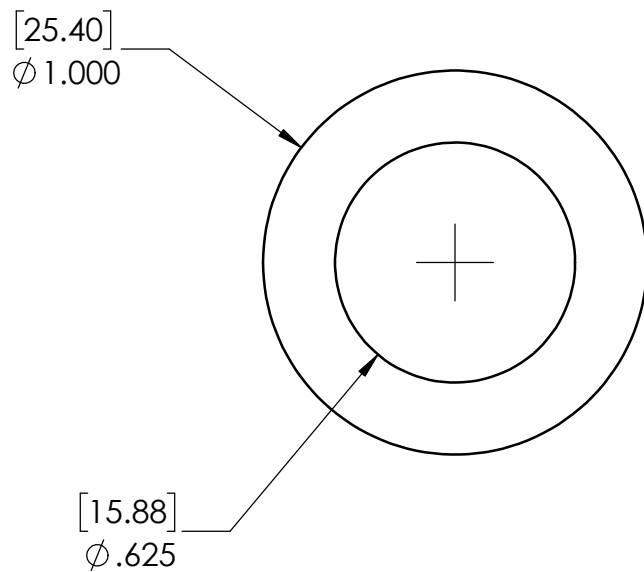
SCALE: 1:2 WEIGHT: 1.7 KG SHEET 36 of 63



FROM .75" PLATE

**DRAWING NOT
FOR PRODUCTION USE**


A4	<div>THIRD ANGLE PROJECTION</div> <div></div>	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
DIMENSIONS: INCHES [MILLIMETERS]		ASTM A36	DRAWN	W. SPIVEY	9/2020	LOWER SHOCK MOUNT PLATE		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
		DO NOT SCALE DRAWING				SCALE: 1:2	WEIGHT: 1.2 KG	SHEET 37 of 63

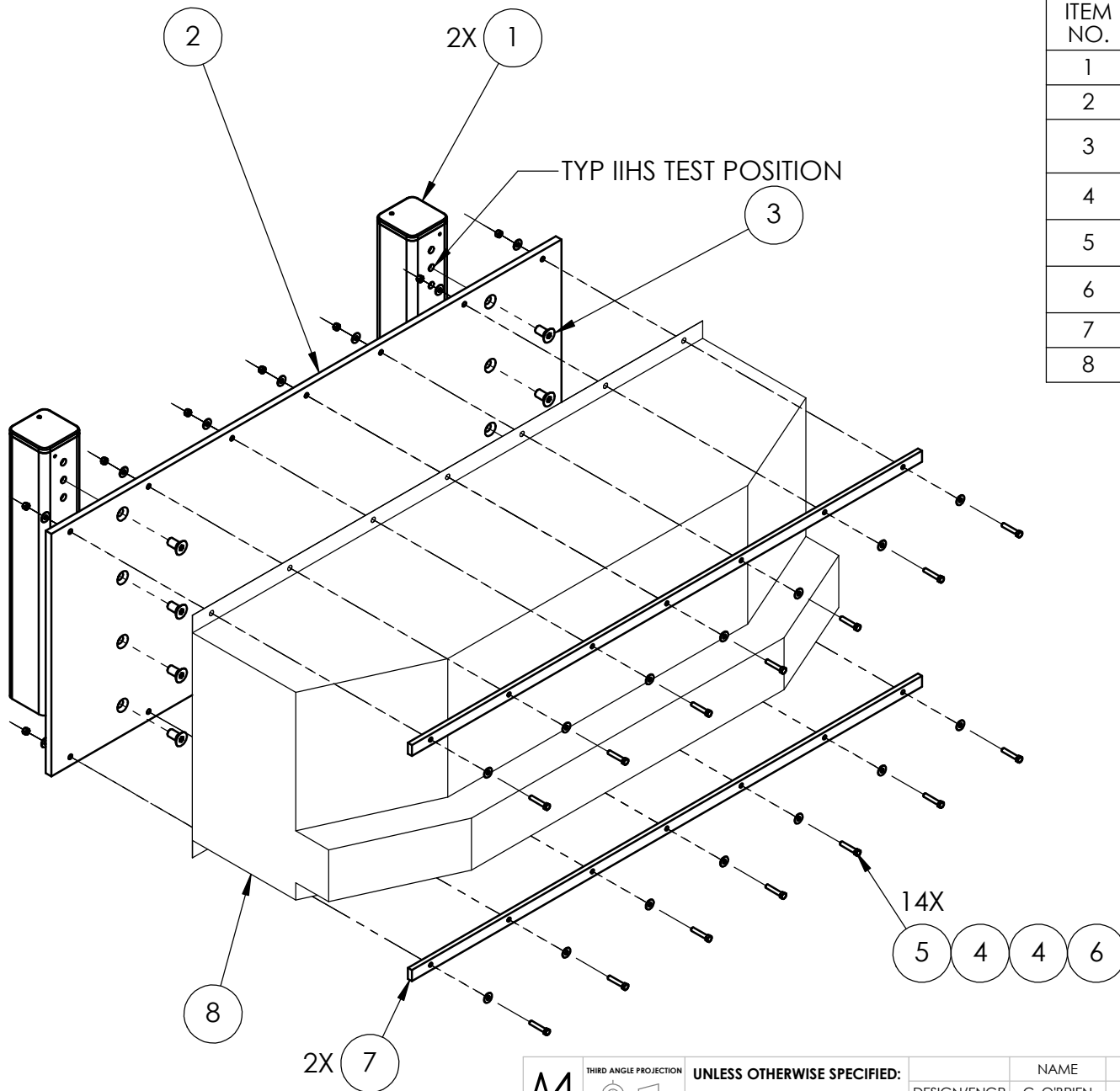


SHOCK SPACER

ROD END SPACER

**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety			
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020	988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
		AISI 1018		DRAWN	W. SPIVEY	9/2020	LOWER SHOCK MOUNT SPACERS		
				CHECKED	R. JONES	9/2020			
				COMMENTS:					
DIMENSIONS: INCHES [MILLIMETERS]						SCALE: 2:1 WEIGHT: N/A SHEET 38 of 63			
		DO NOT SCALE DRAWING							



ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	BARRIER STANCHION	15	1
2	BARRIER BACKING PLATE	40	1
3	SCHCSCREW 0.75-16X1.5X1.5-HX-N		8
4	REGULAR FW 0.375		28
5	HBOLT 0.3750-16X2X1-N		14
6	HNUT 0.3750-16-D-N		14
7	BARRIER CLAMP BAR	43	2
8	DEFORMABLE BARRIER		1

BARRIER BACKING PLATE HEIGHT
ADJUSTABLE IN 2" INCREMENTS,
FLIP FOR 1" INCREMENT

**DRAWING NOT
FOR PRODUCTION USE**

A4 DIMENSIONS: INCHES (MILLIMETERS)	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:	NAME	DATE
	MATERIAL	N/A	DESIGN/ENGR	C. O'BRIEN 2/2020
			DRAWN	W. SPIVEY 9/2020
			CHECKED	R. JONES 9/2020
			COMMENTS:	
DO NOT SCALE DRAWING				

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600

FRONT BARRIER ASSEMBLY

SCALE: 1:15 WEIGHT: 238 KG SHEET 39 of 63

5

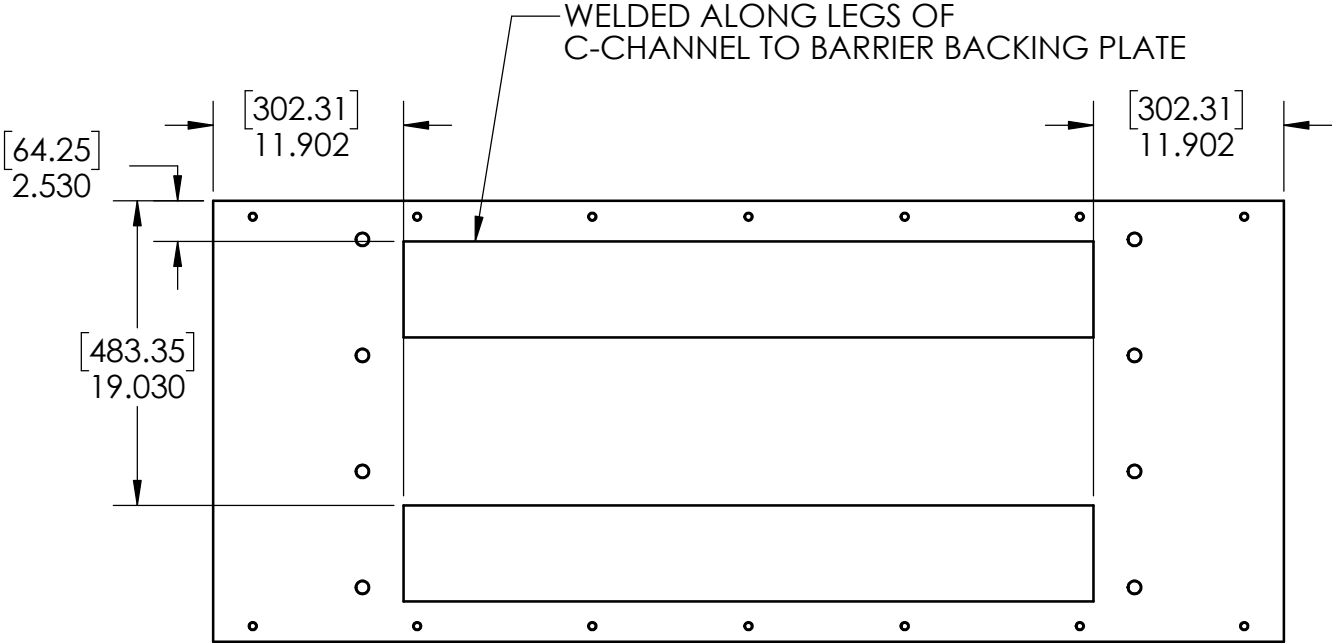
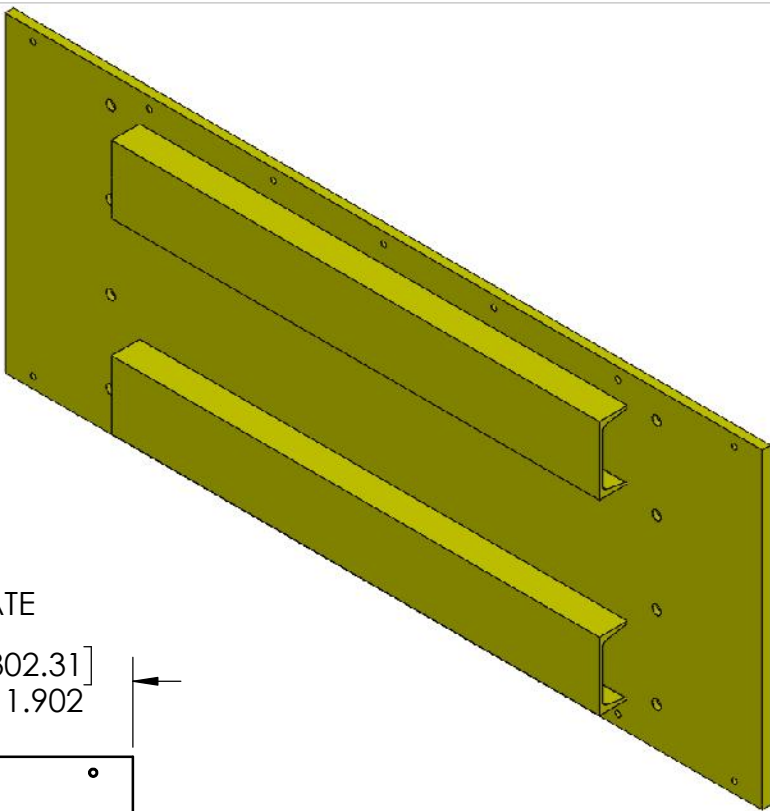
4

3


2

1

ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	BARRIER BACKING PLATE	40	1
2	BACKING PLATE RIB	41	2



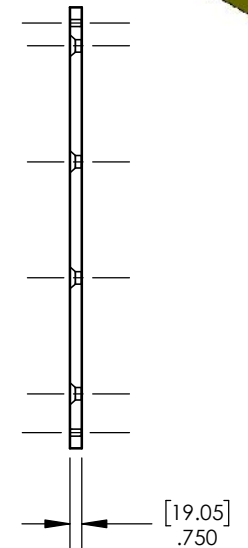
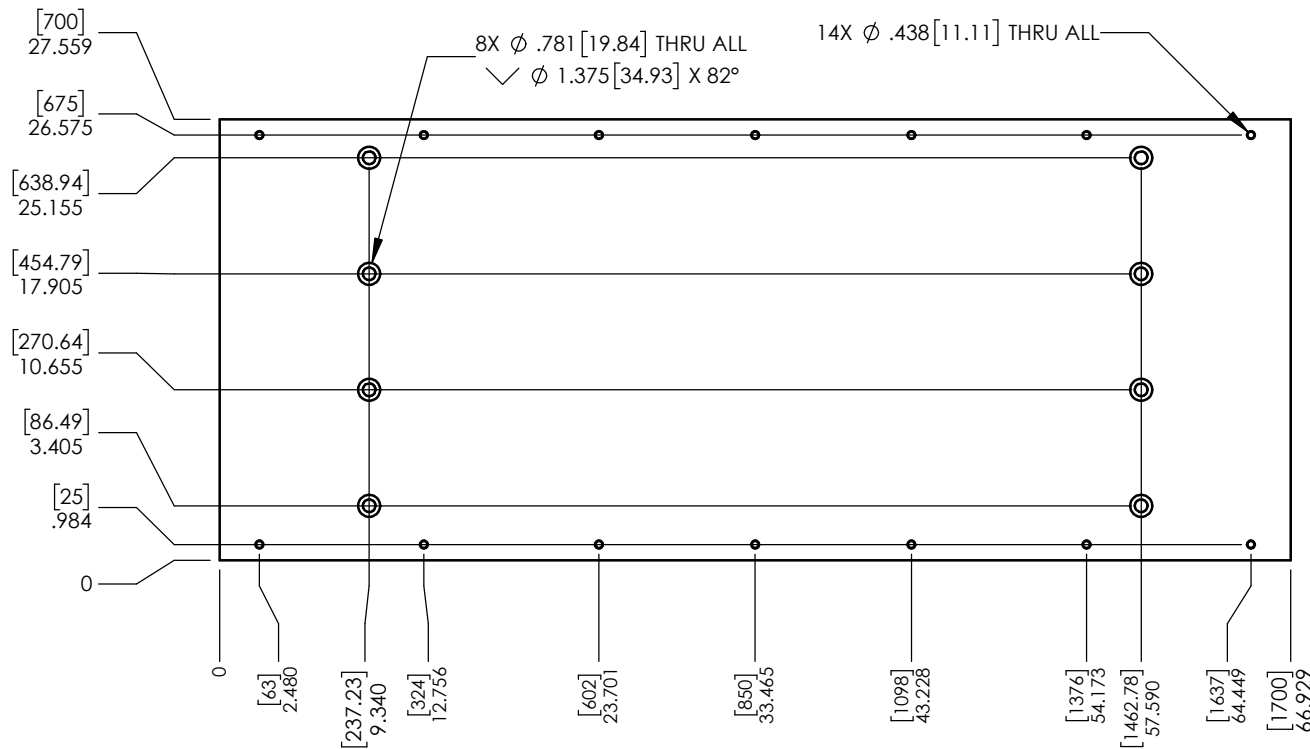
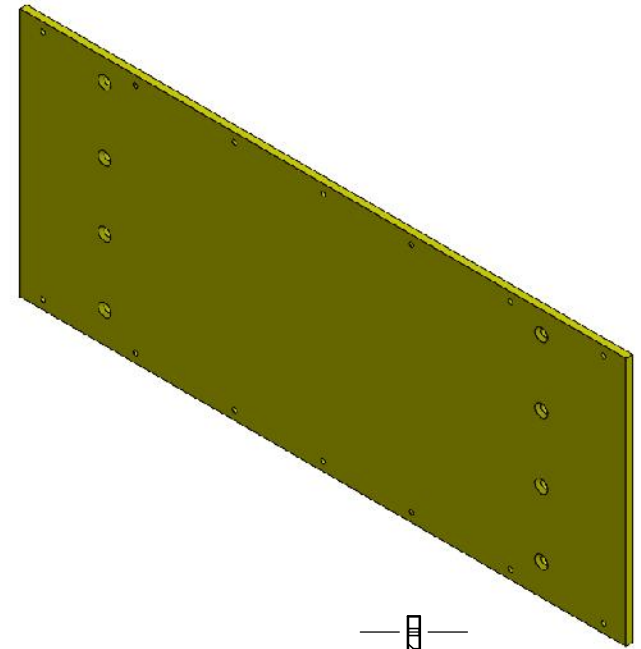
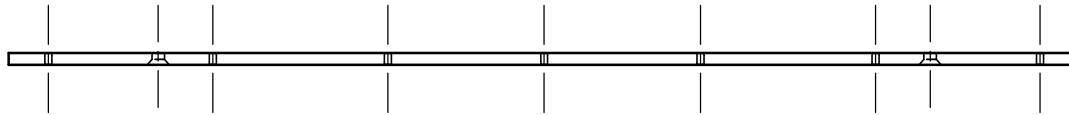
**DRAWING NOT
FOR PRODUCTION USE**

A4 <small>THIRD ANGLE PROJECTION</small>  <small>DIMENSIONS: INCHES [MILLIMETERS]</small>	UNLESS OTHERWISE SPECIFIED:		NAME	DATE
	MATERIAL		DESIGN/ENGR	C. O'BRIEN 2/2020
	N/A		DRAWN	W. SPIVEY 9/2020
			CHECKED	R. JONES 9/2020
			COMMENTS:	
	DO NOT SCALE DRAWING			

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600

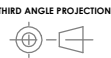
BARRIER MOUNTING PLATE RIB PLACEMENT

SCALE: 1:12 WEIGHT: N/A SHEET 40 of 63



**DRAWING NOT
FOR PRODUCTION USE**

A4



DIMENSIONS:
INCHES [MILLIMETERS]

UNLESS OTHERWISE SPECIFIED:

MATERIAL

ASTM A36

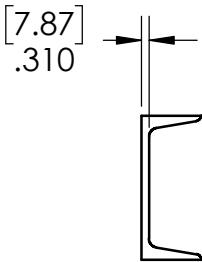
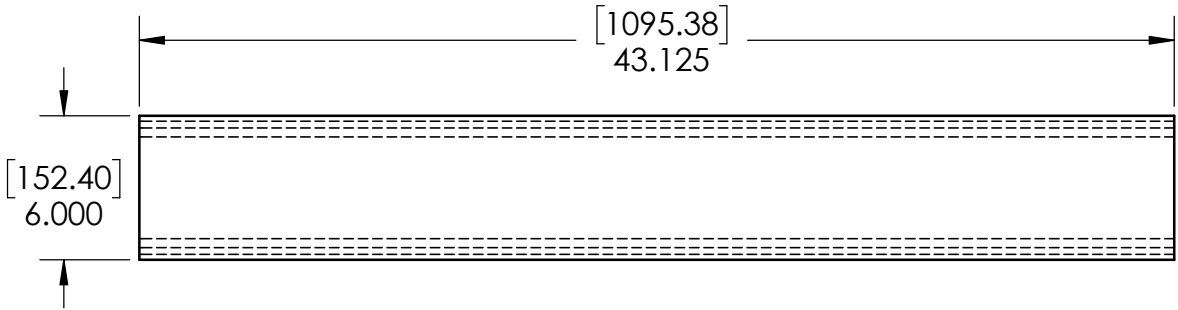
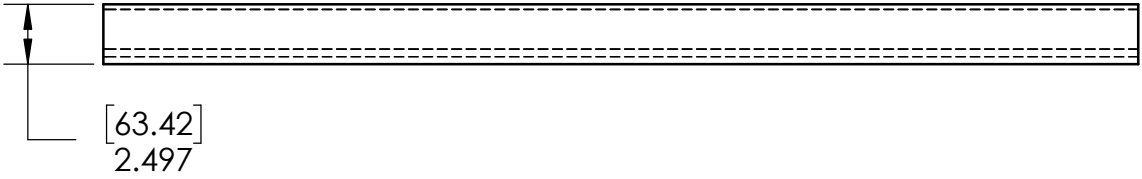
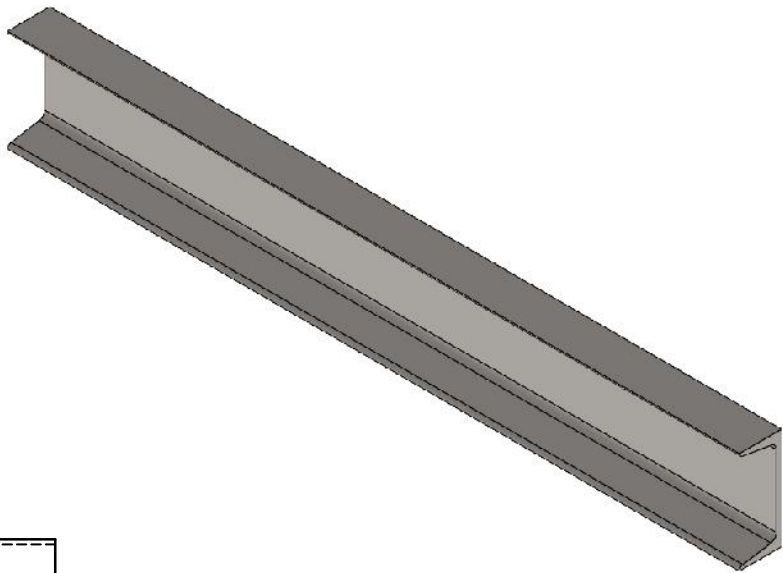
DO NOT SCALE DRAWING

	NAME	DATE
DESIGN/ENGR	C. O'BRIEN	2/2020
DRAWN	W. SPIVEY	9/2020
CHECKED	R. JONES	9/2020
COMMENTS:		


Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600

BARRIER MOUNTING PLATE

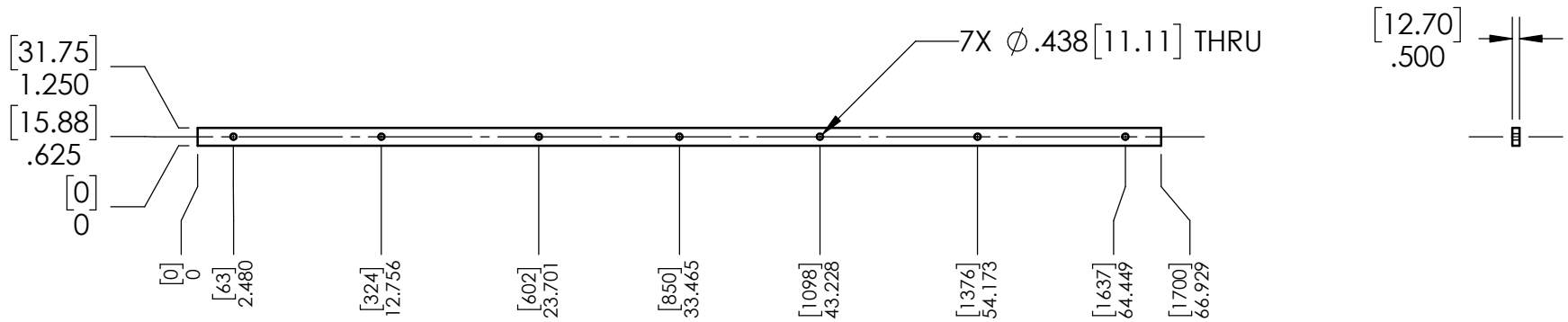
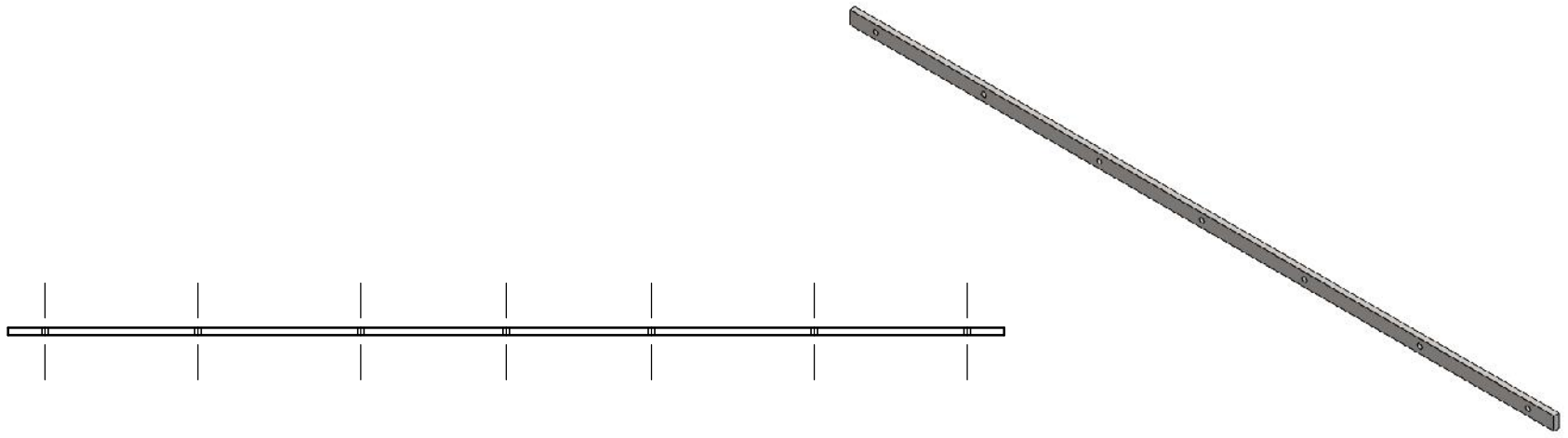
SCALE: 1:12 WEIGHT: 176 KG SHEET 41 of 63




**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:			NAME	DATE
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020	
		ASTM A36 MC6X12	DRAWN	W. SPIVEY	9/2020	
			CHECKED	R. JONES	9/2020	
		COMMENTS:				
DIMENSIONS: INCHES [MILLIMETERS]		DO NOT SCALE DRAWING				

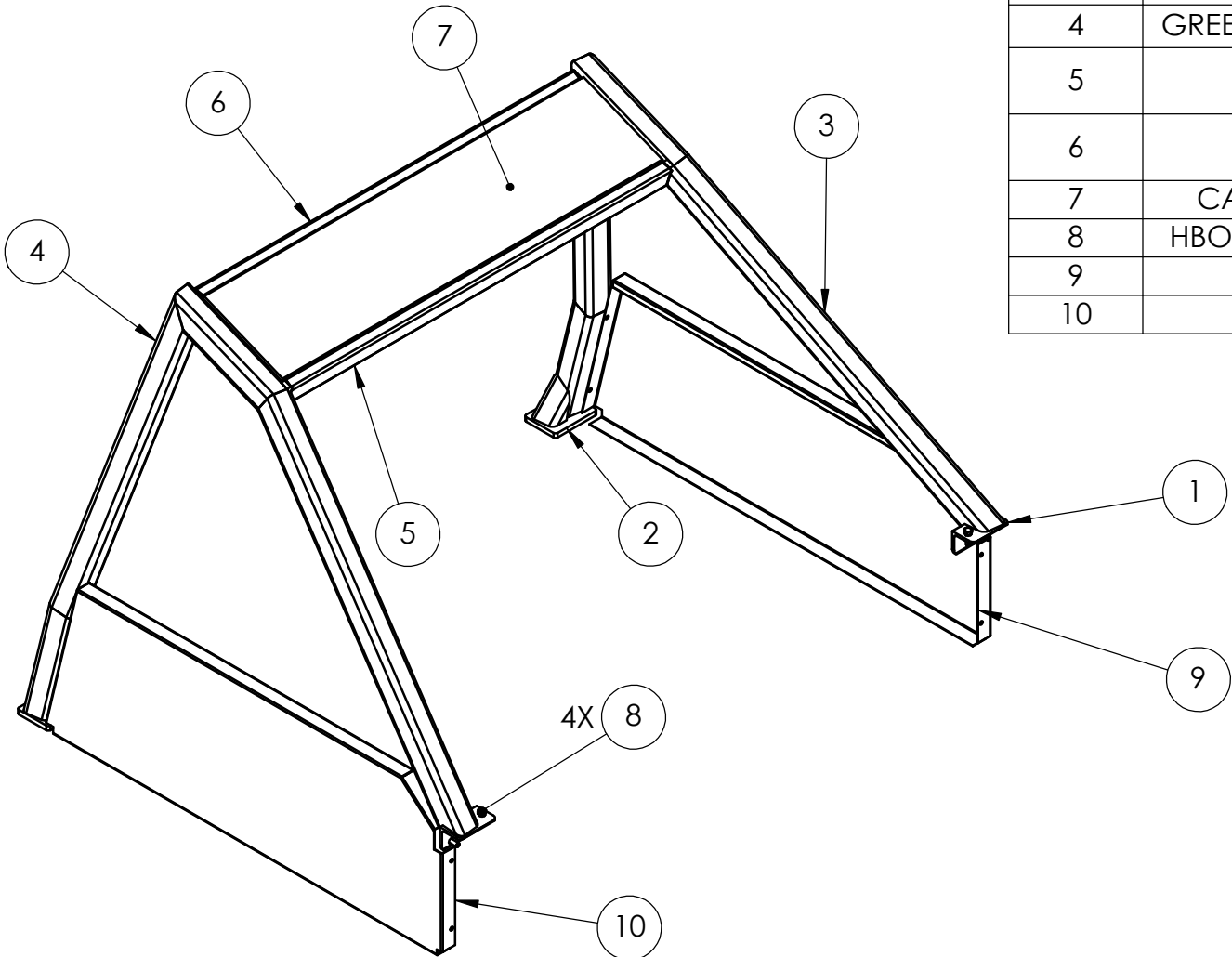
Insurance Institute for Highway Safety		
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
BARRIER MOUNTING PLATE RIB		
SCALE: 1:8	WEIGHT: 19 KG	SHEET 42 of 63



**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]	ASTM A36		DRAWN	W. SPIVEY	9/2020		
				CHECKED	R. JONES	9/2020		
				COMMENTS:				
						BARRIER CLAMP BAR		
		DO NOT SCALE DRAWING				SCALE: 1:12	WEIGHT: 5.3 KG	SHEET 43 of 63

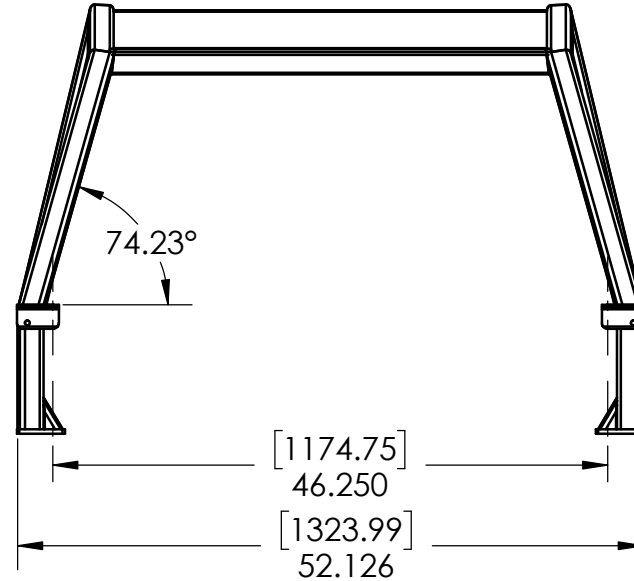
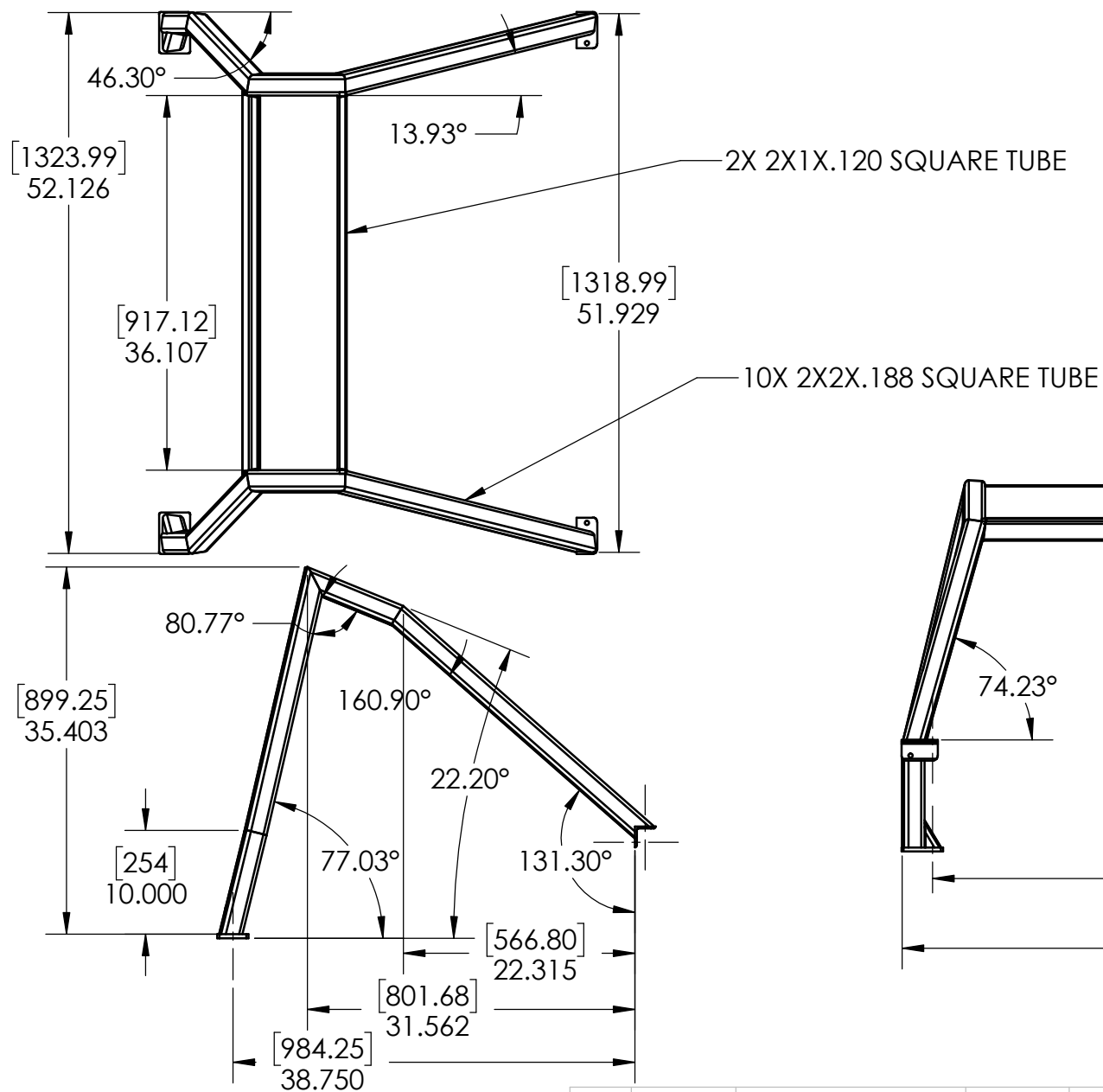
ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	GREENHOUSE FRONT TAB, LEFT AND RIGHT	46	1
2	GREENHOUSE REAR TAB	47	1
3	GREENHOUSE TUBING LEFT	45	1
4	GREENHOUSE TUBING, RIGHT	45	1
5	FRT CAM PLATE CROSSMEMBER	45	1
6	REAR CAM PLATE CROSSMEMBER	45	1
7	CAMERA MOUNT PLATE	48	1
8	HBOLT 0.3125-18X1X0.875-N		4
9	LEFT SIGN PLATE	49	1
10	RIGHT SIGN PLATE	49	1



DRAWING NOT
FOR PRODUCTION USE

<div>A4</div> <div>THIRD ANGLE PROJECTION</div> <div> </div> <div>DIMENSIONS: INCHES [MILLIMETERS]</div>	UNLESS OTHERWISE SPECIFIED:		NAME	DATE
	MATERIAL		DESIGN/ENGR	C. O'BRIEN 2/2020
	N/A		DRAWN	W. SPIVEY 9/2020
			CHECKED	R. JONES 9/2020
			COMMENTS:	
		DO NOT SCALE DRAWING		

Insurance Institute for Highway Safety		
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
GREENHOUSE ASSEMBLY		
SCALE: 1:12	WEIGHT: 42 KG	SHEET 44 of 63



**DRAWING NOT
FOR PRODUCTION USE**

A4 THIRD ANGLE PROJECTION

DIMENSIONS:
INCHES [MILLIMETERS]

UNLESS OTHERWISE SPECIFIED:

MATERIAL

ASTM A500 & A36

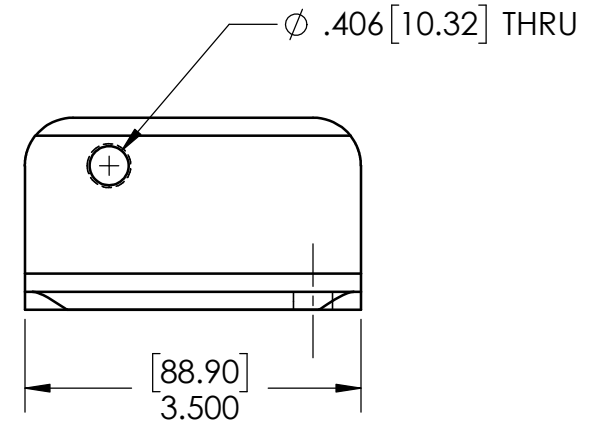
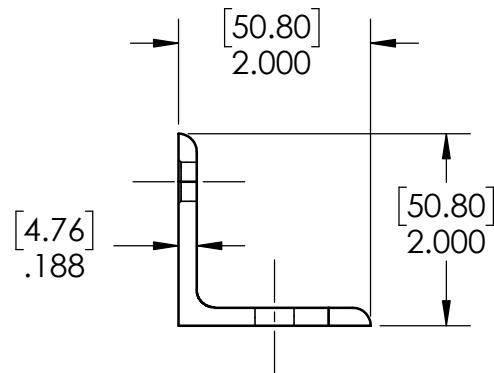
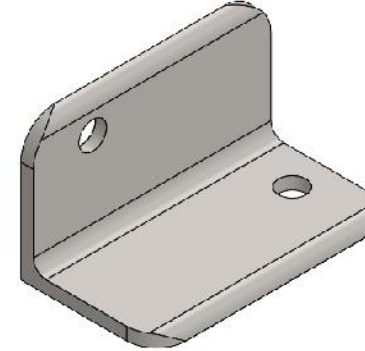
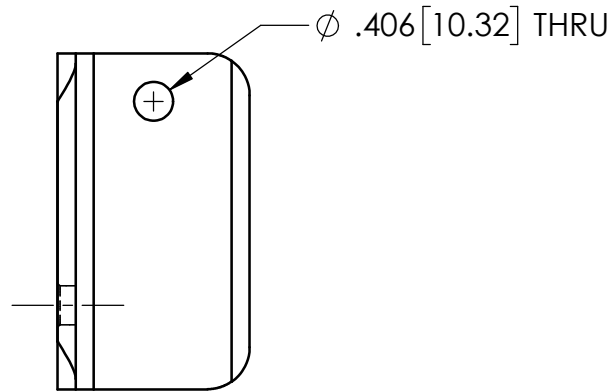
DO NOT SCALE DRAWING

DESIGN/ENGR	NAME	DATE
C. O'BRIEN		2/2020
W. SPIVEY		9/2020
R. JONES		9/2020
COMMENTS:		

Insurance Institute for Highway Safety
988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600


**GREENHOUSE
DIMENSIONS**

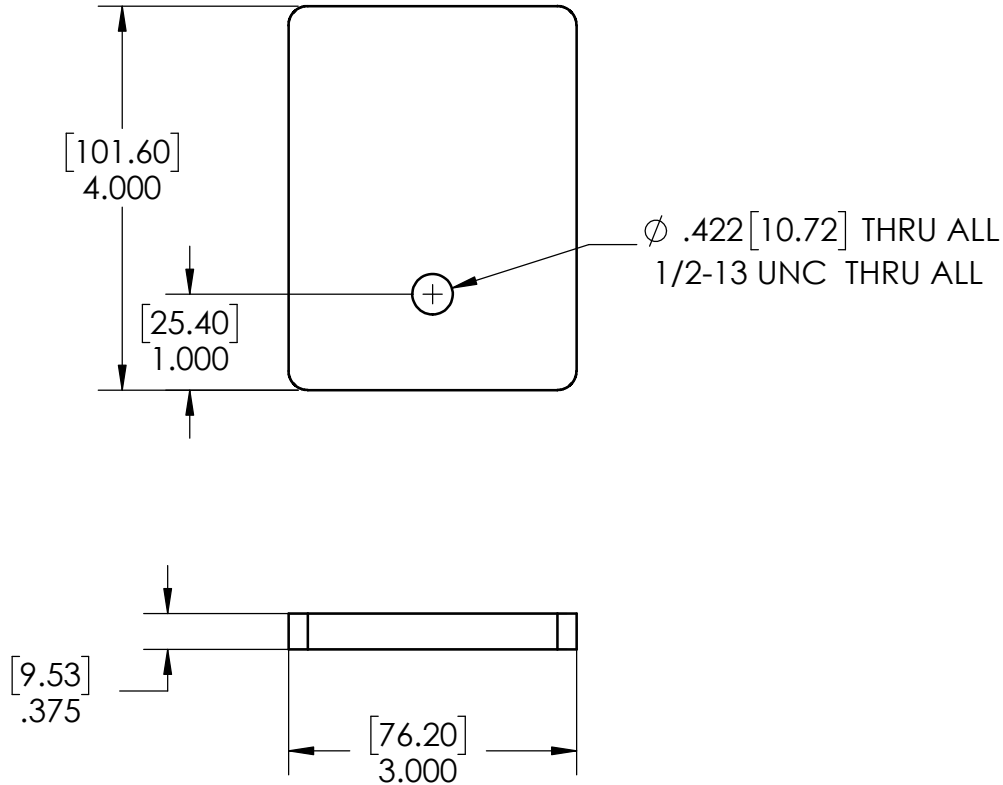
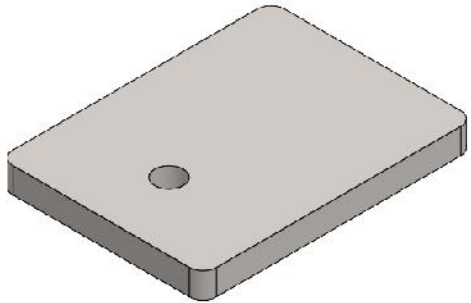
SCALE: 1:16 WEIGHT: 42 KG SHEET 45 of 63




LEFT SHOWN RIGHT SIMILAR
FROM 2x2x.188 ANGLE
ROUND CORNERS

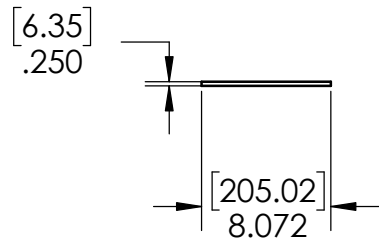
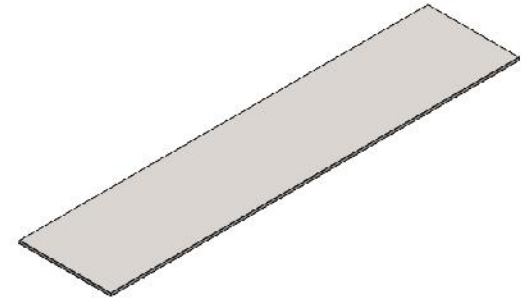
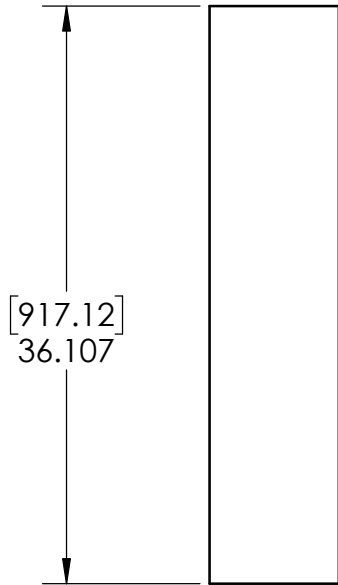
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020	988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		ASTM A36		DRAWN	W. SPIVEY	9/2020	GREENHOUSE FRONT TAB	
				CHECKED	R. JONES	9/2020		
			COMMENTS:					
DIMENSIONS: INCHES [MILLIMETERS]						SCALE: 1:2		
						WEIGHT: 0.3 KG		
		DO NOT SCALE DRAWING				SHEET 46 of 63		




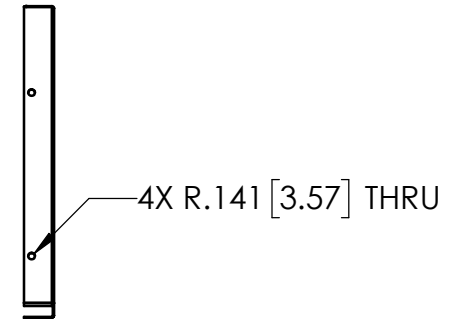
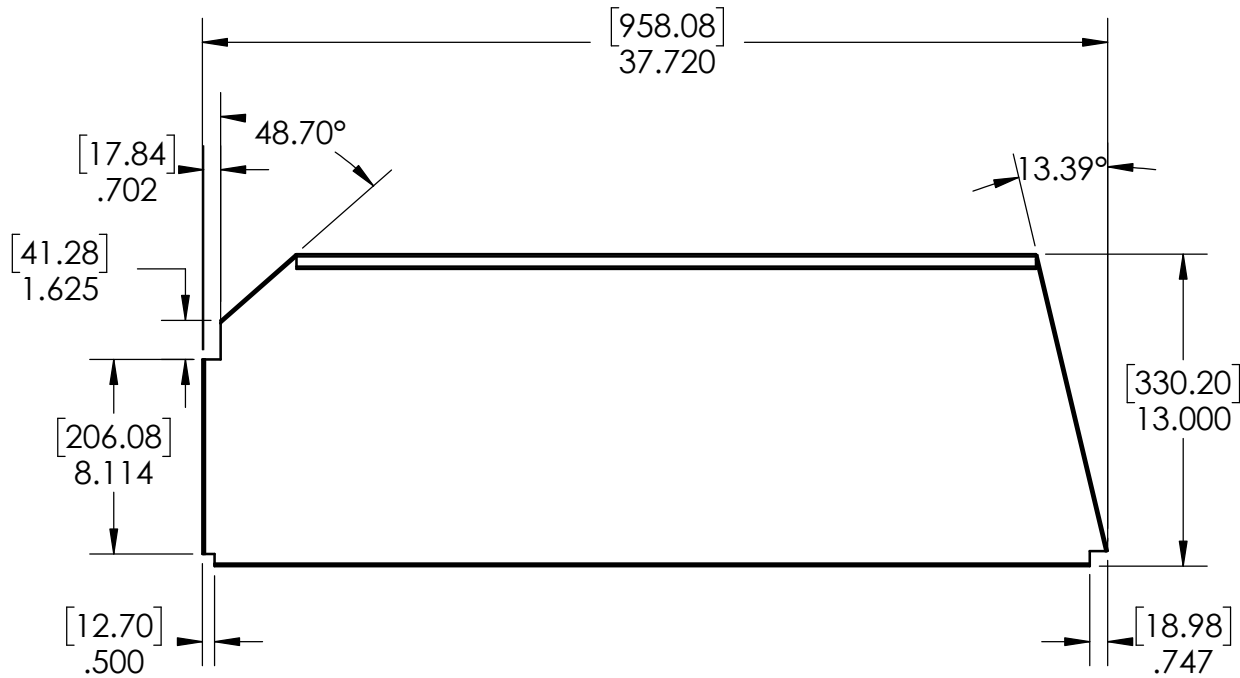
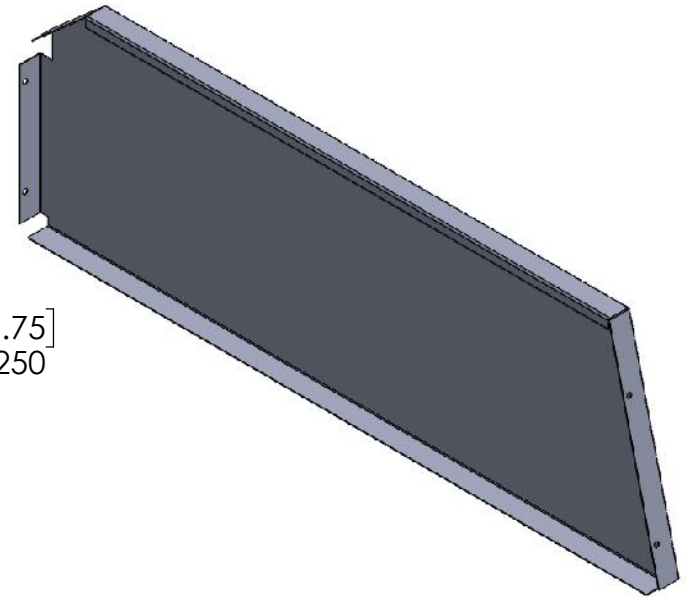
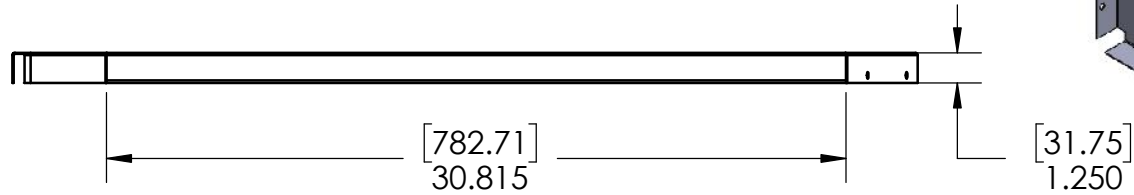
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
		AISI 1018	DRAWN	W. SPIVEY	9/2020	GREENHOUSE REAR TAB		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
DIMENSIONS: INCHES [MILLIMETERS]						SCALE: 1:2 WEIGHT: 0.6 KG SHEET 47 of 63		
		DO NOT SCALE DRAWING						



**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:	NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
		MATERIAL	DESIGN/ENGR	C. O'BRIEN				2/2020
	DIMENSIONS: INCHES [MILLIMETERS]	ASTM A36	DRAWN	W. SPIVEY	9/2020	CAMERA MOUNT PLATE		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
		DO NOT SCALE DRAWING			SCALE: 1:12	WEIGHT: 9.3 KG	SHEET 48 of 63	

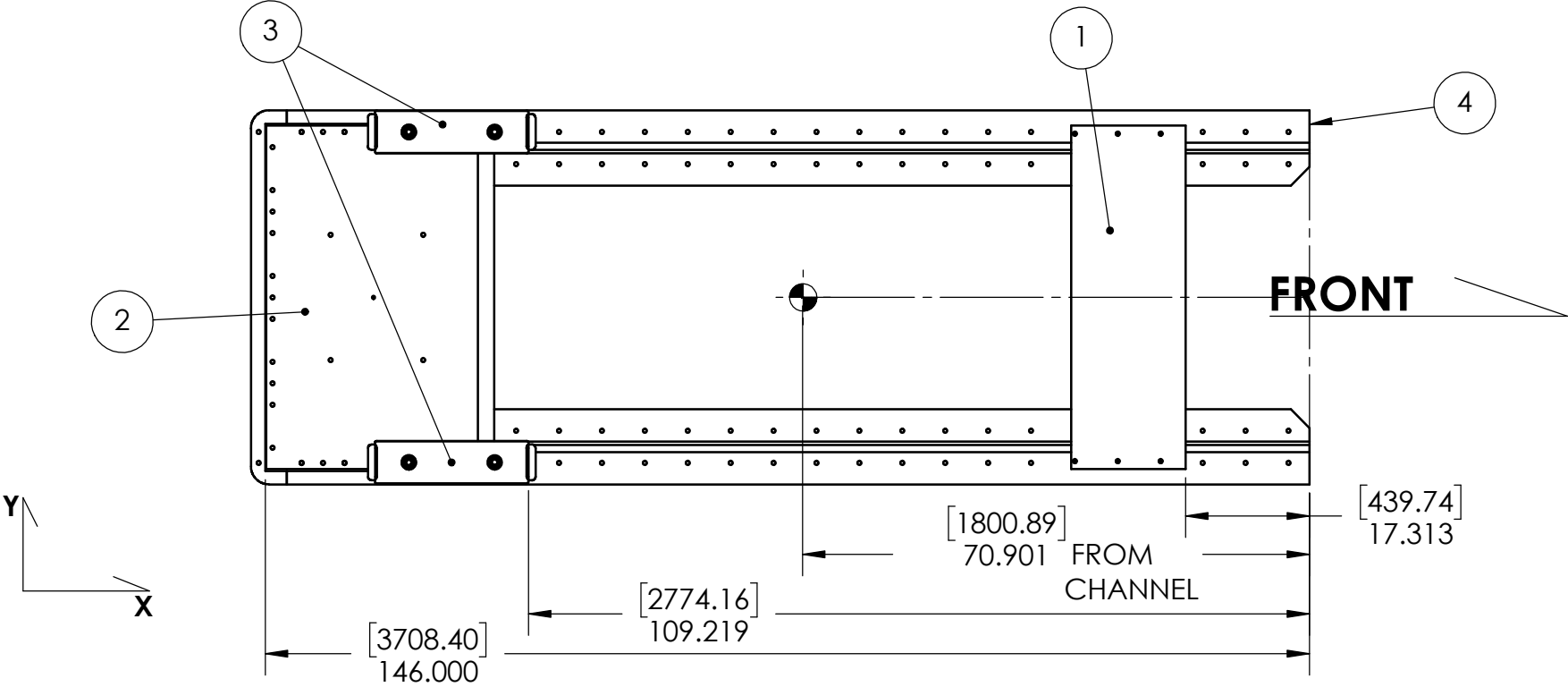


RIGHT SIDE SHOWN
LEFT SIDE SIMILAR

**DRAWING NOT
FOR PRODUCTION USE**


A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020	988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		16 GA ASTM A653	DRAWN	W. SPIVEY	9/2020	SIGN PLATE		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
DIMENSIONS: INCHES [MILLIMETERS]						SCALE: 1:8 WEIGHT: 0.1 KG SHEET 49 of 63		
DO NOT SCALE DRAWING								

ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	BALLAST PLATE FRONT	58	2
2	BALLAST PLATE REAR	59	1
3	BALLAST WEIGHT STACK	51	2
4	Z CHANNEL	5, 6	2

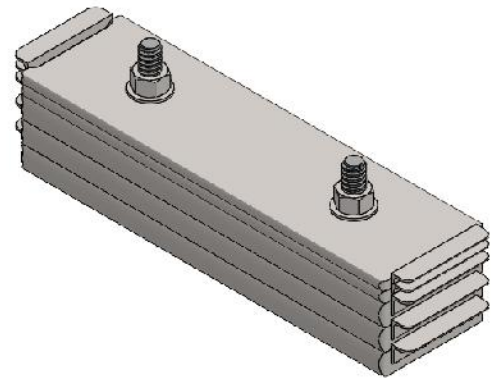
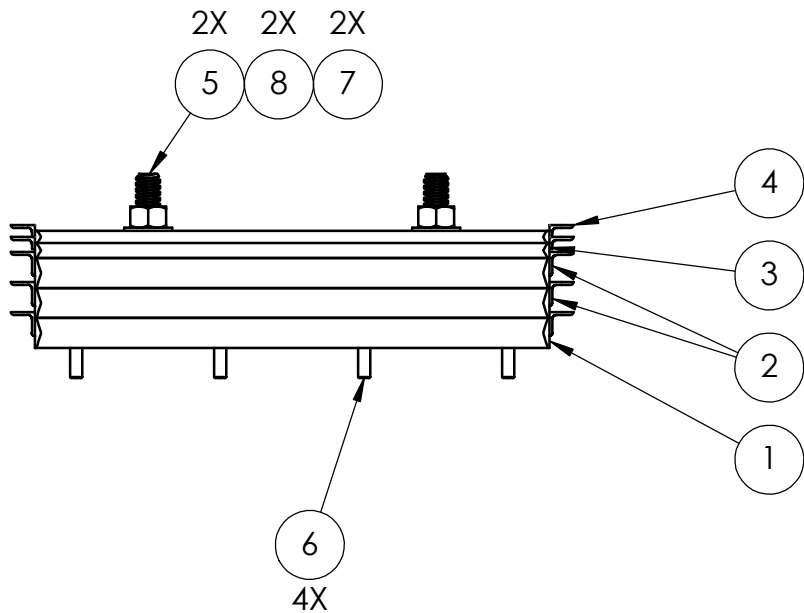


ENTIRE CART CG AND MOMENTS AS MEASURED BEHIND AND ABOVE FRONT AXLE AT TIRE CONTACT POINT WITH GROUND	CGX (MM)	CGY (MM)	CGZ (MM)	IXX (KG/M2)	IYY (KG/M2)	IZZ (KG/M2)
	1236.4	2.0	650.7	581	3688	4049


**DRAWING NOT
FOR PRODUCTION USE**

A4  THIRD ANGLE PROJECTION DIMENSIONS: INCHES (MILLIMETERS)	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600
	MATERIAL		DESIGN/ENGR	C. O'BRIEN	
	N/A		DRAWN	W. SPIVEY	
			CHECKED	R. JONES	9/2020
	DO NOT SCALE DRAWING		COMMENTS:		BALLAST WEIGHT PLACEMENT SCALE: 1:24 WEIGHT: N/A SHEET 50 of 63

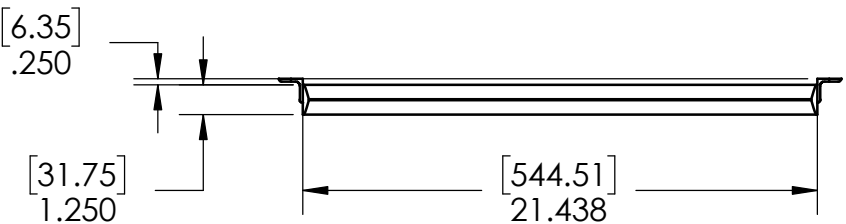
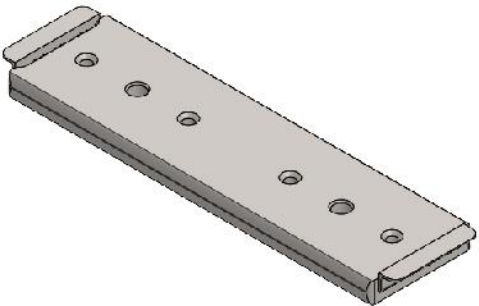
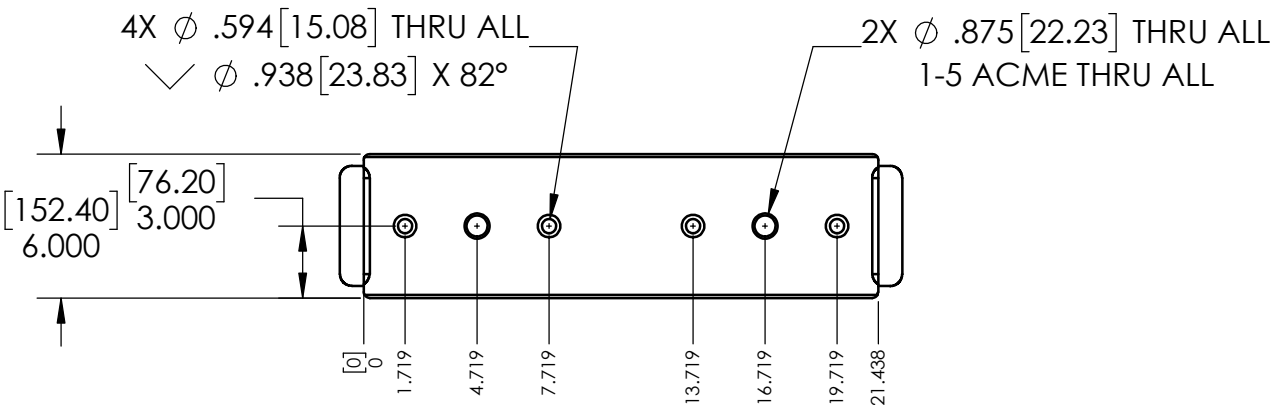
ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
1	BASE PLATE	51	1
2	20 KG PLATE	52	2
3	10.1 KG PLATE	53	1
4	8.1 KG PLATE	54	1
5	1"-5 X 7.25" ACME THREADED ROD		2
7	FLAT WASHER 1"		2
8	HNUT 1.0000-5 ACME		2
6	SCHCSCREW 0.5-13X2.5X1.5-HX-N		4




**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600			
		MATERIAL		DESIGN/ENGR	C. O'BRIEN				2/2020
	DIMENSIONS: INCHES [MILLIMETERS]	N/A		DRAWN	W. SPIVEY	9/2020	BALLAST WEIGHT STACK		
				CHECKED	R. JONES	9/2020			
				COMMENTS:					
						SCALE: 1:8 WEIGHT: 79 KG SHEET 51 of 63			
		DO NOT SCALE DRAWING							

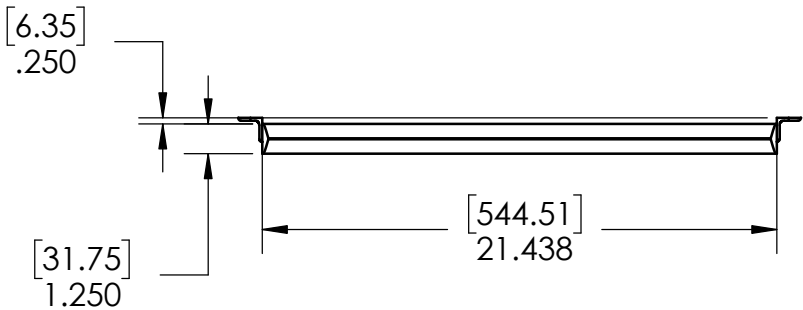
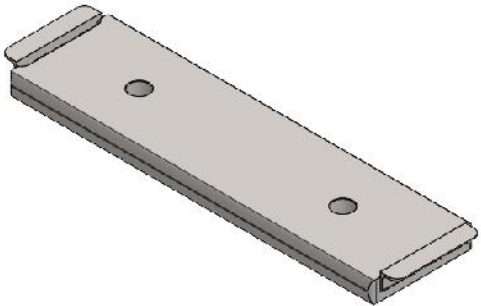
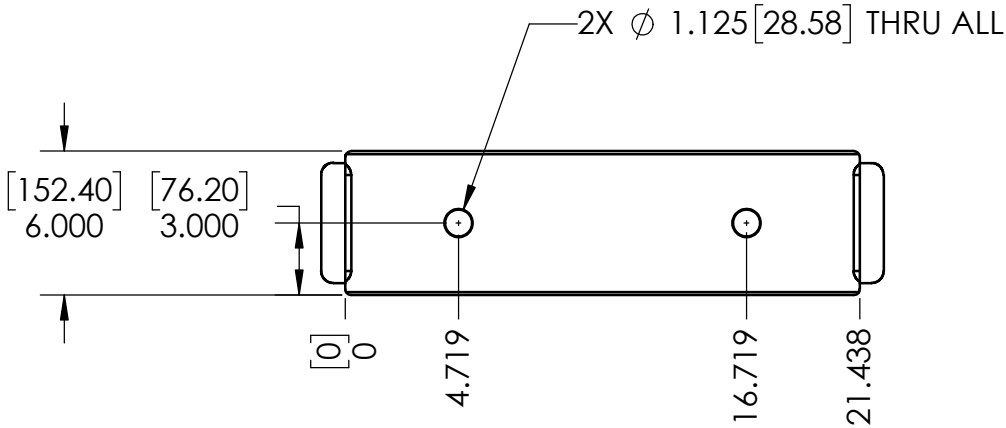
ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
2	BALLAST PLATE HANDLES LONG	56	2



**DRAWING NOT
FOR PRODUCTION USE**


A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:			NAME	DATE	Insurance Institute for Highway Safety	
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020	988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		HR A36	DRAWN	W. SPIVEY	9/2020	BALLAST PLATE BASE		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
DIMENSIONS: INCHES [MILLIMETERS]								
		DO NOT SCALE DRAWING					SCALE: 1:8	WEIGHT: 20 KG
							SHEET 52 of 63	

ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
2	BALLAST PLATE HANDLES LONG	56	2

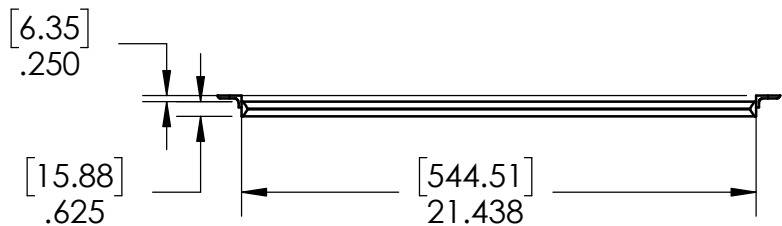
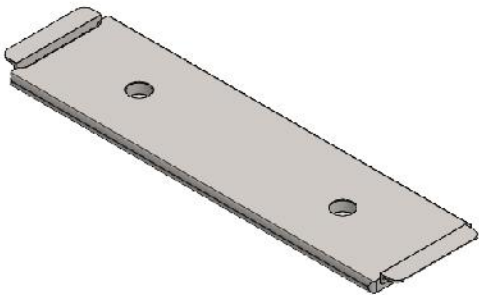
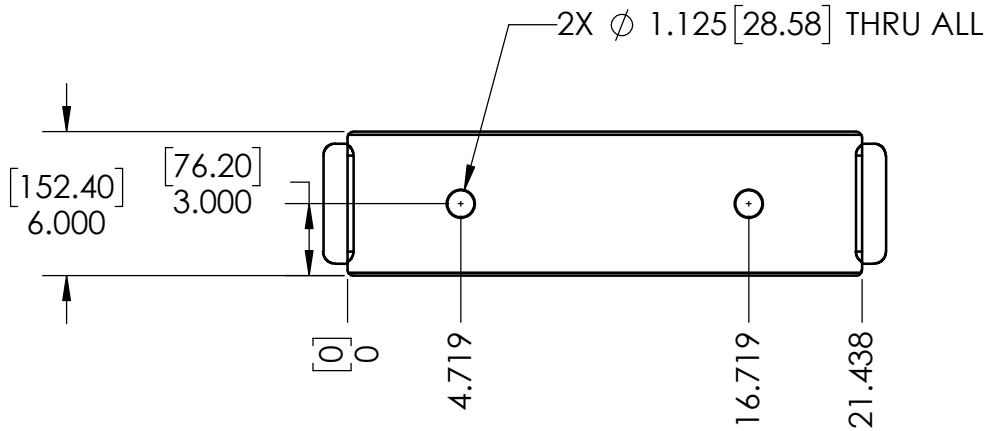


BEVEL TOP EDGE OF PLATE, WELD
PLATE HANDLES TOP AND BOTTOM

**DRAWING NOT
FOR PRODUCTION USE**


A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]	HR A36	DRAWN	W. SPIVEY	9/2020	BALLAST PLATE 20KG		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
	DO NOT SCALE DRAWING				SCALE: 1:8	WEIGHT: 20 KG	SHEET 53 of 63	

ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
2	BALLAST PLATE HANDLE SHORT	57	2

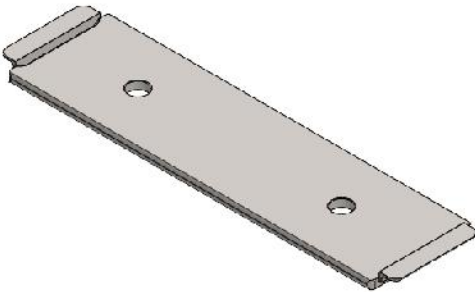
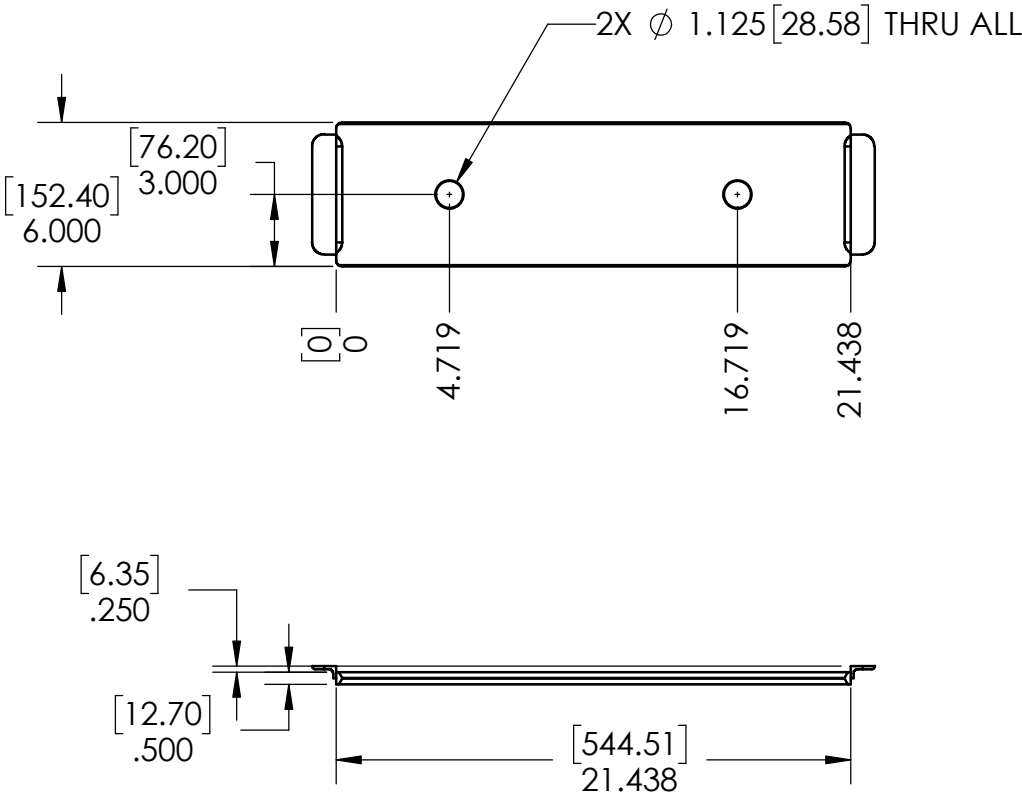


BEVEL TOP EDGE OF PLATE, WELD
PLATE HANDLES TOP AND BOTTOM

**DRAWING NOT
FOR PRODUCTION USE**


A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]	HR A36		DRAWN	W. SPIVEY	9/2020		
				CHECKED	R. JONES	9/2020		
			COMMENTS:					
						BALLAST PLATE 10.1KG		
		DO NOT SCALE DRAWING				SCALE: 1:8	WEIGHT: 10.1 KG	SHEET 54 of 63

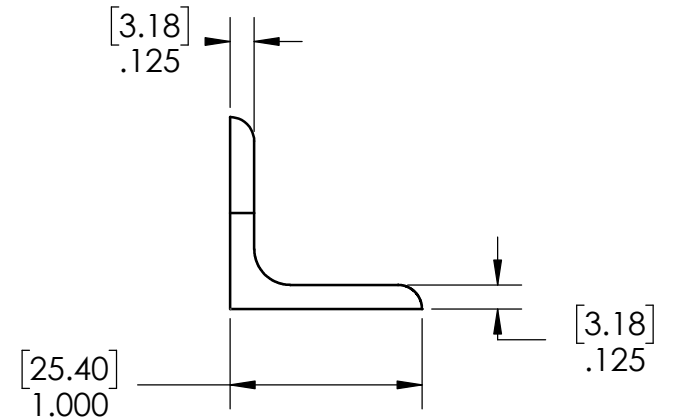
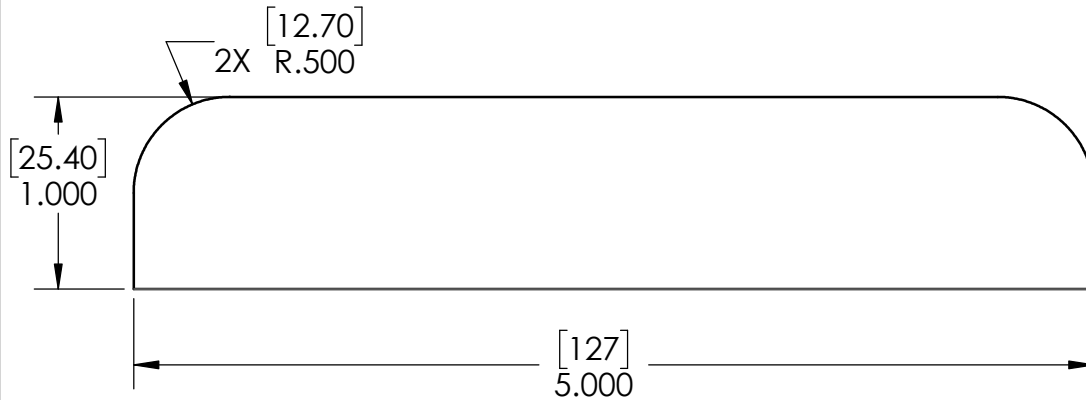
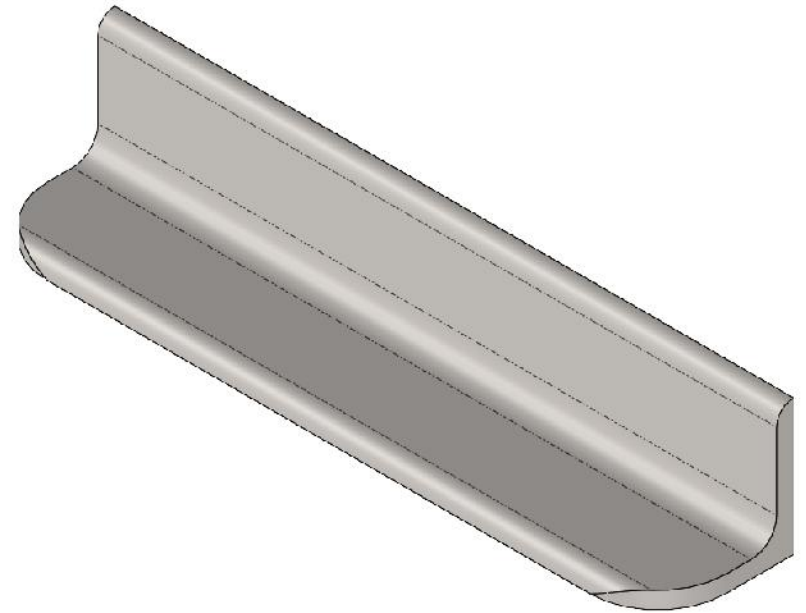
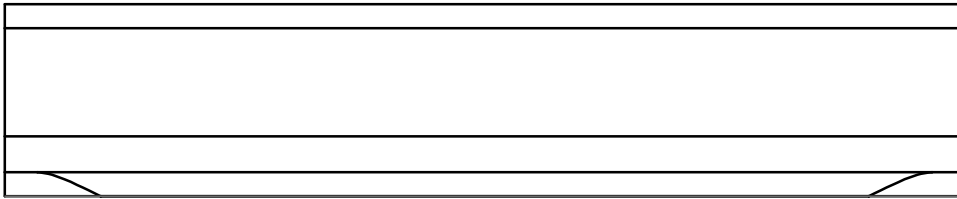
ITEM NO.	PART NUMBER	PAGE NUMBER	QTY.
2	BALLAST PLATE HANDLE SHORT	57	2




BEVEL TOP EDGE OF PLATE, WELD
 PLATE HANDLES TOP AND BOTTOM

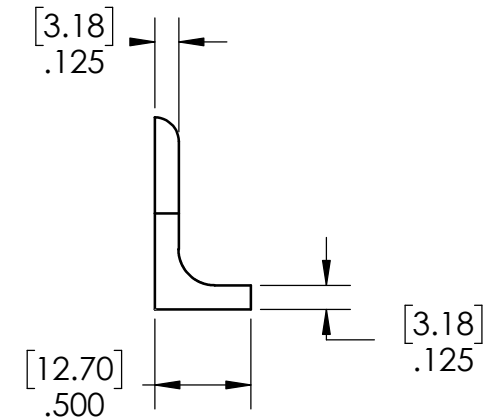
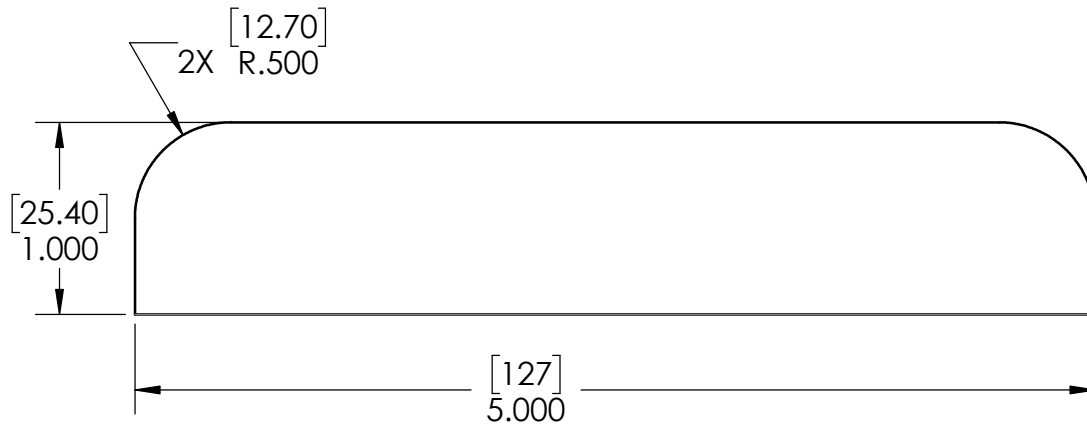
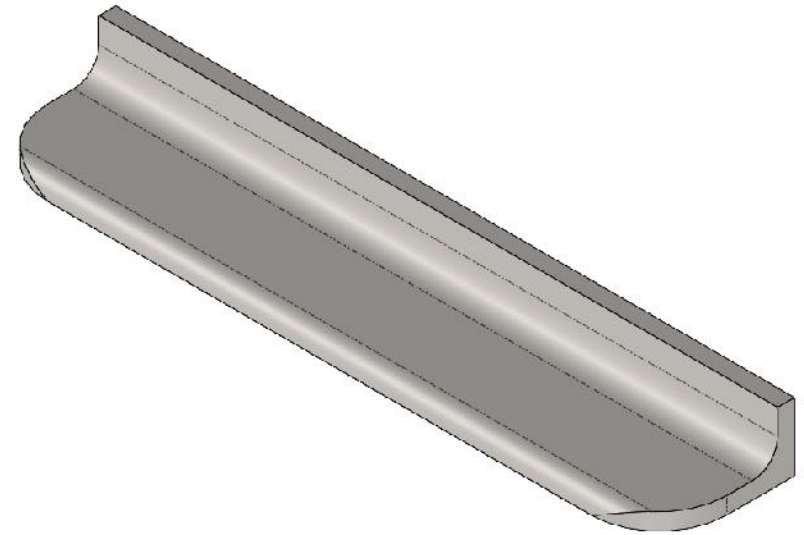
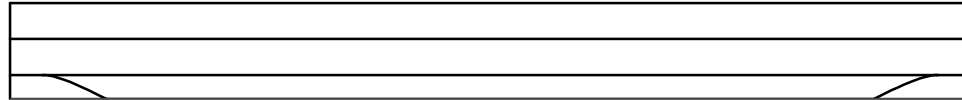
**DRAWING NOT
 FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:			NAME	DATE	Insurance Institute for Highway Safety		
		MATERIAL	HR A36	DESIGN/ENGR	C. O'BRIEN	2/2020	988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
				DRAWN	W. SPIVEY	9/2020	BALLAST PLATE 8.1KG		
				CHECKED	R. JONES	9/2020			
				COMMENTS:					
DIMENSIONS: INCHES [MILLIMETERS]		DO NOT SCALE DRAWING			SCALE: 1:8			WEIGHT: 8.1 KG	SHEET 55 of 63



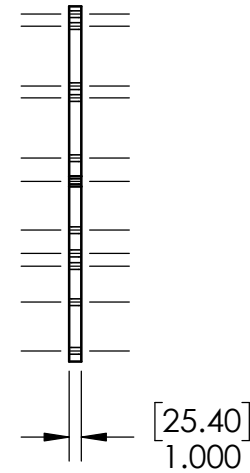
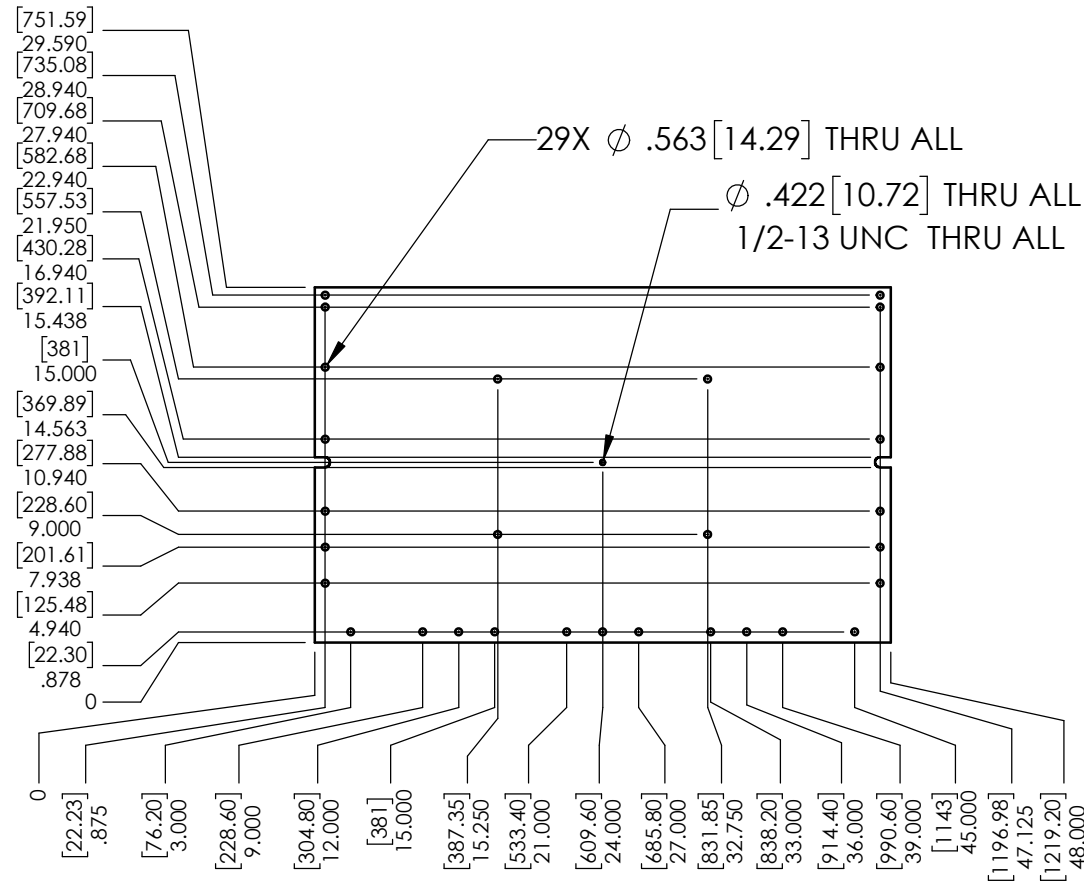
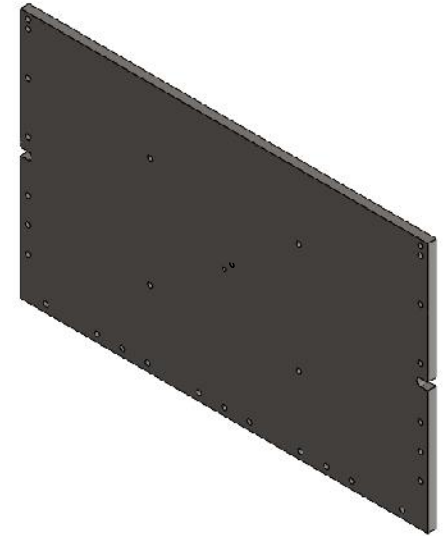
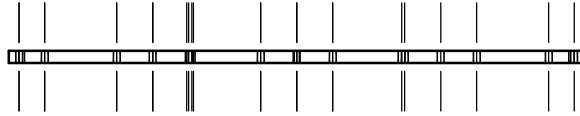
**DRAWING NOT
FOR PRODUCTION USE**

A4 THIRD ANGLE PROJECTION  DIMENSIONS: INCHES [MILLIMETERS]	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600
	MATERIAL		DESIGN/ENGR	C. O'BRIEN	
	ASTM A36		DRAWN	W. SPIVEY	
			CHECKED	R. JONES	9/2020
	DO NOT SCALE DRAWING		COMMENTS:		BALLAST PLATE HANDLES LONG SCALE: 1:1 WEIGHT: 0.15 KG SHEET 56 of 63




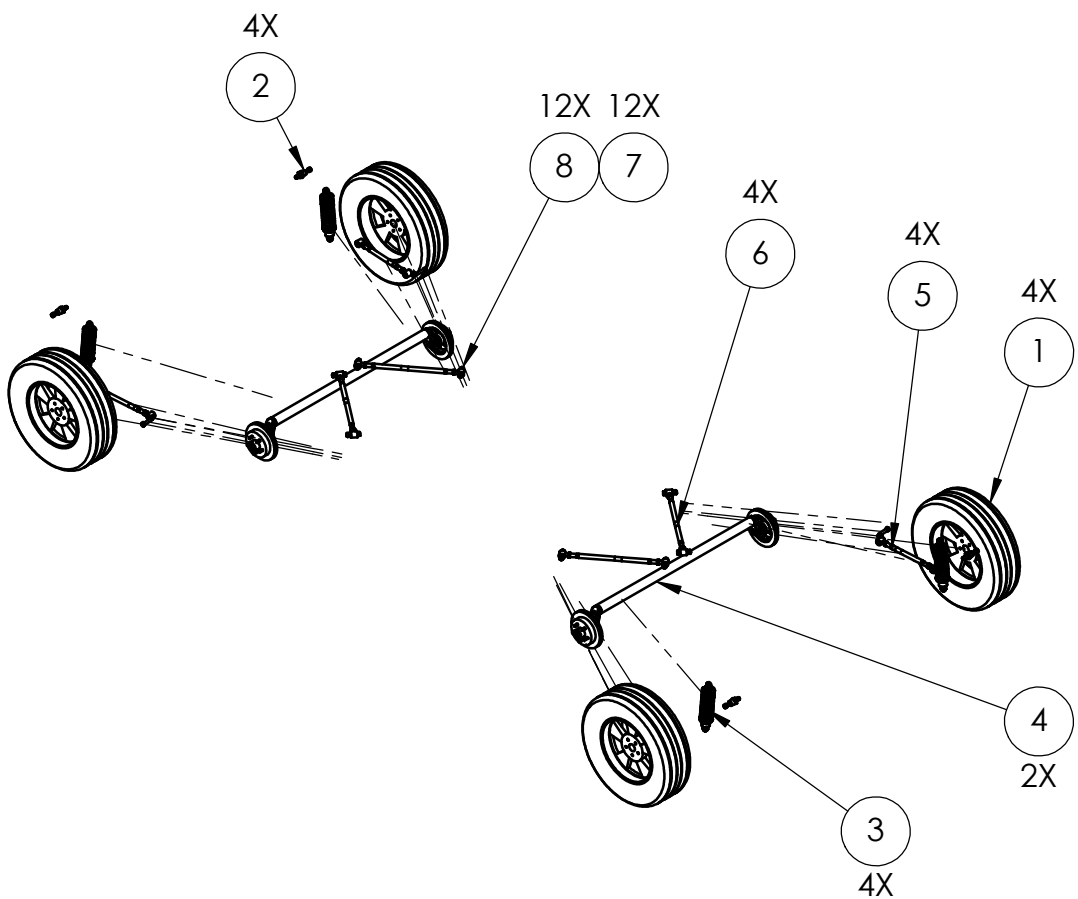
**DRAWING NOT
FOR PRODUCTION USE**

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:	NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN			
		ASTM A36	DRAWN	W. SPIVEY	9/2020		
			CHECKED	R. JONES	9/2020		
				COMMENTS:			
DIMENSIONS: INCHES [MILLIMETERS]					BALLAST PLATE HANDLES SHORT		
		DO NOT SCALE DRAWING			SCALE: 1:1	WEIGHT: 0.11 KG	SHEET 57 of 63



**DRAWING NOT
FOR PRODUCTION USE**


A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED: MATERIAL ASTM A36		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
			DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]		DRAWN	W. SPIVEY	9/2020			
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
						BALLAST PLATE REAR		
		DO NOT SCALE DRAWING				SCALE: 1:16	WEIGHT: 181.5 KG	SHEET 59 of 63



	PART NUMBER	QTY.
1	245/70R-17 TIRE AND WHEEL	4
2	SHOCK UPPER SPACER MOUNT	4
3	3500# 4" DROP 66" HUB-HUB AXLE W/ 10" DISC BRAKES	2
4	24139901 SHOCK 59080550 550 LBS/IN SPRING FRONT 59080450 450 LBS/IN SPRING REAR	4
5	14" CONTROL ARM	4
6	22" CONTROL ARM	4
7	HBOLT 0.6250-11X3X1.5-N	12
8	HNUT 0.6250-11-D-N	12

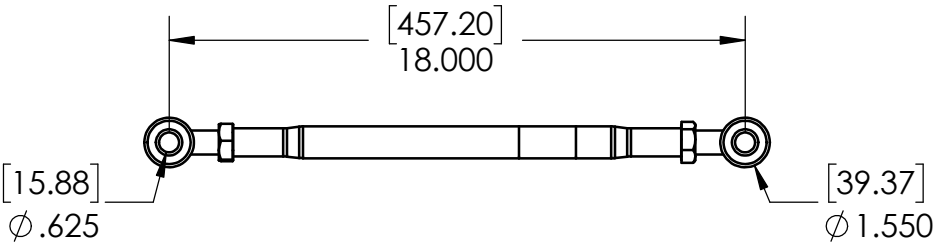
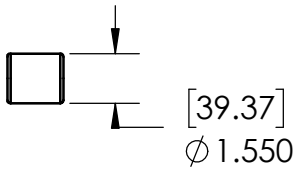
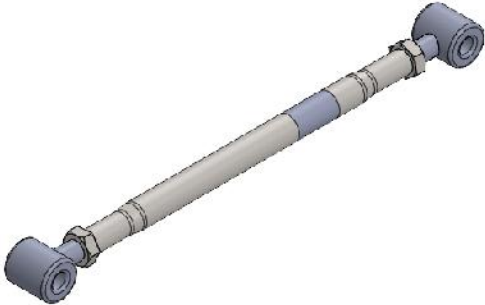
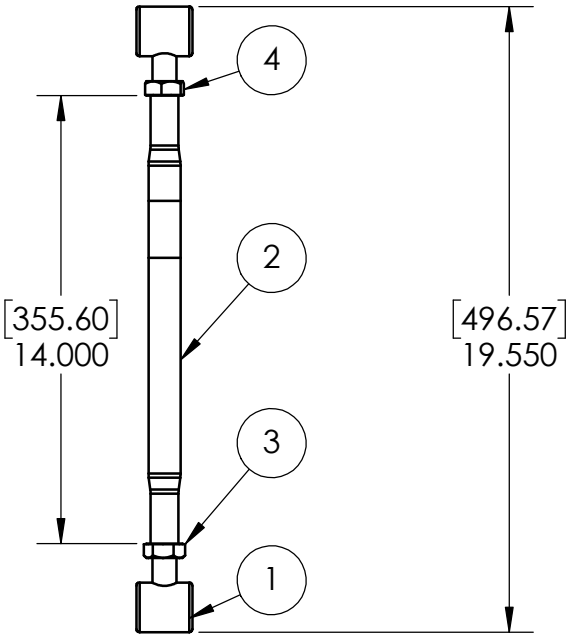
SEE SHEET 63 FOR PARTS LISTINGS

DRAWING NOT
FOR PRODUCTION USE


A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
		N/A	DRAWN	W. SPIVEY	9/2020			
			CHECKED	R. JONES	9/2020			
				COMMENTS:				
DIMENSIONS: INCHES [MILLIMETERS]						ADD-IN PARTS		
		DO NOT SCALE DRAWING				SCALE: 1:48	WEIGHT: N/A	SHEET 60 of 63

ITEM NO.	PART NUMBER	QTY.
1	THREE QUARTER X FIVE EIGHTHS ROD END	2
2	14" TUBE	1
3	0.75-16 LH JAM NUT	1
4	0.75-16 RH JAM NUT	1

SEE SHEET 63 FOR PARTS LISTINGS

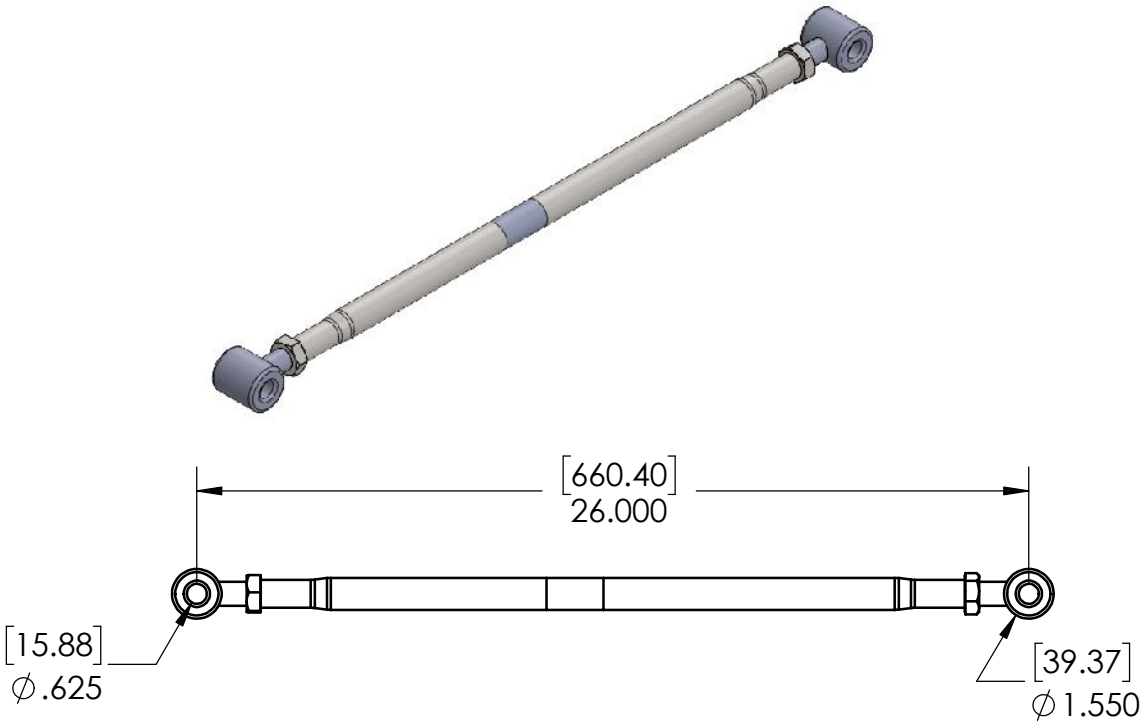
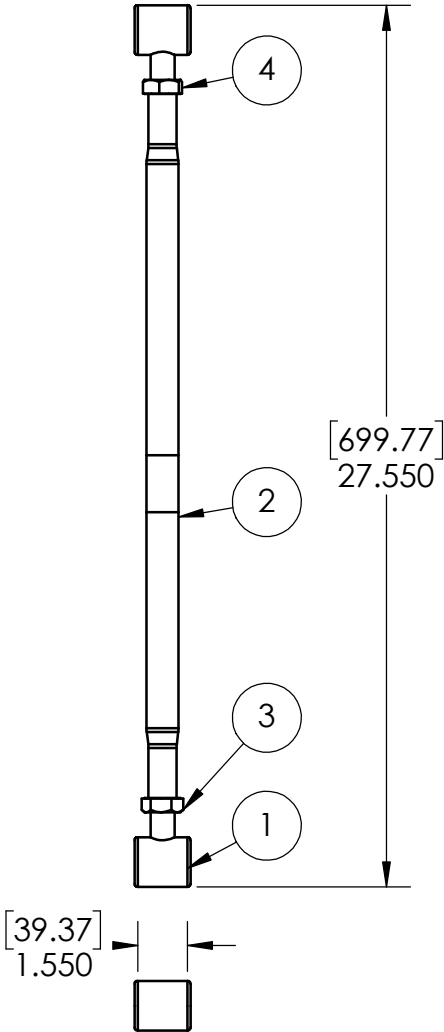


DRAWING NOT
FOR PRODUCTION USE


A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]	N/A	DRAWN	W. SPIVEY	9/2020	14" CONTROL ARM		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
		DO NOT SCALE DRAWING				SCALE: 1:6	WEIGHT: 1.2 KG	SHEET 61 of 63

ITEM NO.	PART NUMBER	QTY.
1	THREE QUARTER X FIVE EIGHTHS ROD END	2
2	22" TUBE	1
3	0.75-16 LH JAM NUT	1
4	0.75-16 RH JAM NUT	1

SEE SHEET 63 FOR PARTS LISTINGS



DRAWING NOT
FOR PRODUCTION USE

A4	THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600		
		MATERIAL	DESIGN/ENGR	C. O'BRIEN	2/2020			
	DIMENSIONS: INCHES [MILLIMETERS]	N/A	DRAWN	W. SPIVEY	9/2020	22" CONTROL ARM		
			CHECKED	R. JONES	9/2020			
			COMMENTS:					
						SCALE: 1:6 WEIGHT: 1.5 KG SHEET 62 of 63		
	DO NOT SCALE DRAWING							

SCALE: 1:6 WEIGHT: 1.5 KG SHEET 62 of 63

IIHS Side Impact Cart with Suspension Purchased Parts List

Qty	Vendor Part Number	Manufacturer	Description	Dimensions/Options	Vendor	Vendor Address	Vendor Phone	Vendor Website
2		Dexter Axle	3,500 lb. Kodiak Hydraulic Disk 4" Drop Standard Spring Dexter Trailer Axle	66 in. Hub Face - Hub Face	Southwest Wheel	4809 S. Westmoreland Rd, Dallas, Tx 75237	214-631-0200	trailerpart.com
	2/H-10-DDD		Included Kodiak Brake Kit	10" Rotors				
4		Various	Radial Tire	245/70R-17				
4	VN2157765	American Racing	VN215 Classic Torq Thrust II 1 Piece	17x7, 5x4.5 bolt pattern, 4 in. backspace	Summit Racing	P.O. Box 909, Akron, OH 44309-0909	800-230-3030	summitracing.com
20	611-292	Dorman Products	Wheel Nut, Dometop	1/2-20, 13/16 Hex, 1.5 in length				
2			Triangulated 4 Link Rear Suspension Weld On Bracket Kit	Detailed in sheets 28-30, 32	Typically available from eBay vendors, Helix Suspension Steering Brakes, Ridetech, Airmaxxx, Speedway Motors, Summit Racing. Some offer brackets separately.			
4	24139901	Ridetech	Universal HQ Series Coilover Single Adjustable	11.5" Ride Height, 3.6" Stroke, 1.7" Eye Mount	Ridetech	350 S. St. Charles St, Jasper, IN 47546	812-481-4787	ridetech.com
2	59080550	Ridetech	8" Coilover Spring	2.5" ID, 550 lb/in rate				
2	59080450	Ridetech	8" Coilover Spring	2.5" ID, 450 lb/in rate				
8	91008036	Speedway	Forged Rod End	3/4-16 RH Thread	Speedway Motors, Inc.	340 Victory Ln, Lincoln, NE 68528	402-323-3200	speedwaymotors.com
8	91008037	Speedway	Forged Rod End	3/4-16 LH Thread	Speedway Motors, Inc.	340 Victory Ln, Lincoln, NE 68528	402-323-3200	speedwaymotors.com
4	1063414	AFCO	Swedged Steel Tube	14" long, 3/4-16 thread, black	Speedway Motors, Inc.	340 Victory Ln, Lincoln, NE 68528	402-323-3200	speedwaymotors.com
4	1063422	AFCO	Swedged Steel Tube	22" long, 3/4-16 thread, black	Speedway Motors, Inc.	340 Victory Ln, Lincoln, NE 68528	402-323-3200	speedwaymotors.com
8		Various	Jam Nut	3/4-16 RH Thread				
8		Various	Jam Nut	3/4-16 LH Thread				
4	91636010	Speedway	Coilover Shock Mount Bolt w/ Support Collar	4.5" long, 5/8-18 thread, 5/8 stud diameter	Speedway Motors, Inc.	340 Victory Ln, Lincoln, NE 68528	402-323-3200	speedwaymotors.com
2	H381272	Dorman Products	Frame to Axle Brake Hose w/ Tee					
4	J0937884	Crown Automotive	Axle to Caliper Brake Hose	16", 3/8-24 Inv. Flare male-female	Summit Racing	P.O. Box 909, Akron, OH 44309-0909	800-230-3030	summitracing.com
6			Brake Hose Retaining Clip		The Stop Shop	5775 Zarley St. Suite B, New Albany, OH 43054	614-557-3442	thestopshop.com
1			3/16" Copper Nickel Brake Line Kit w/ Fittings	25 ft	The Stop Shop	5775 Zarley St. Suite B, New Albany, OH 43054	614-557-3442	thestopshop.com
1			3/16" Stainless Brake Line Protector	16 ft	The Stop Shop	5775 Zarley St. Suite B, New Albany, OH 43054	614-557-3442	thestopshop.com
			3/16" Brake Line Clip		The Stop Shop	5775 Zarley St. Suite B, New Albany, OH 43054	614-557-3442	thestopshop.com
16		Various	Hex Bolt	0.625-11 X 3 X 1.5 - N				
4		Various	Hex Bolt	0.5-20 C2.5 X 1.25 - N				
14		Various	Hex Bolt	0.375-16 X 2 X 1 - N				
4		Various	Hex Bolt	0.3125-18 X 1 X 0.875 - N				
16		Various	Hex Nut	0.625-11 - D - N				
4		Various	Hex Nut	0.5-20 - D - N				
8		Various	Screw	0.75-16 X 1.5 X 1.5 -HX - N				
28		Various	Flat Washer	0.375				
4		Various	Flat Washer	0.3125				
14		Various	Hex Nut	0.375-16 - D - N				
4		Various	Split Washer	0.3125				

	NAME	DATE	Insurance Institute for Highway Safety 988 Dairy Rd, Ruckersville, VA 22968 (434) 985-4600 <h1 style="margin: 0;">VENDOR & SUPPLY LIST</h1>
DESIGN/ENGR			
DRAWN	R JONES	9/2020	
CHECKED			
COMMENTS:			
			SHEET 63 of 63