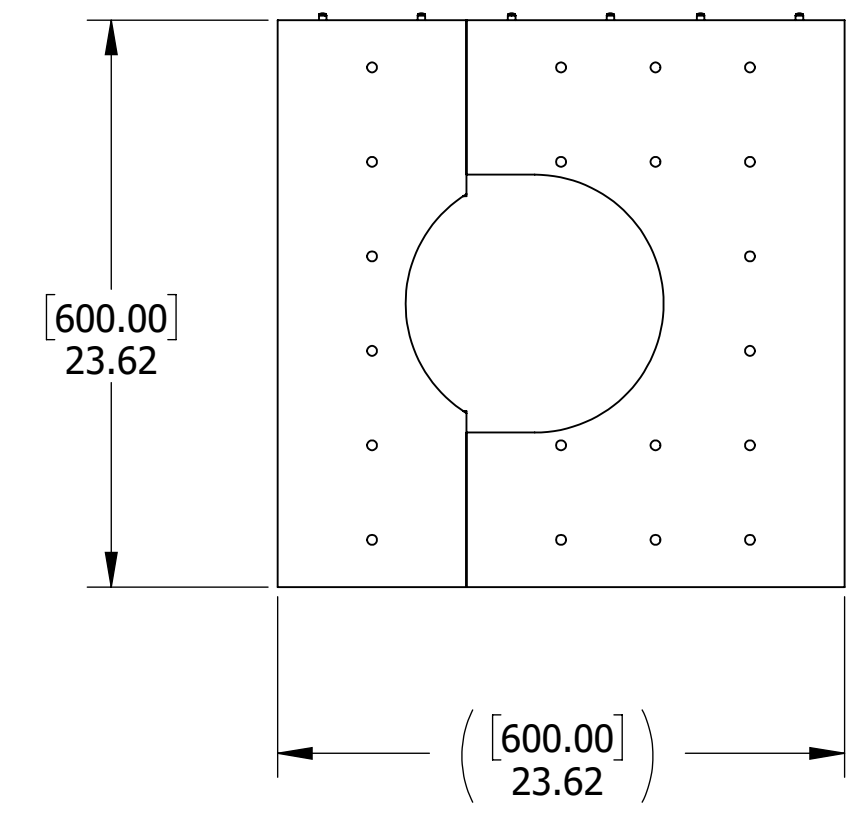
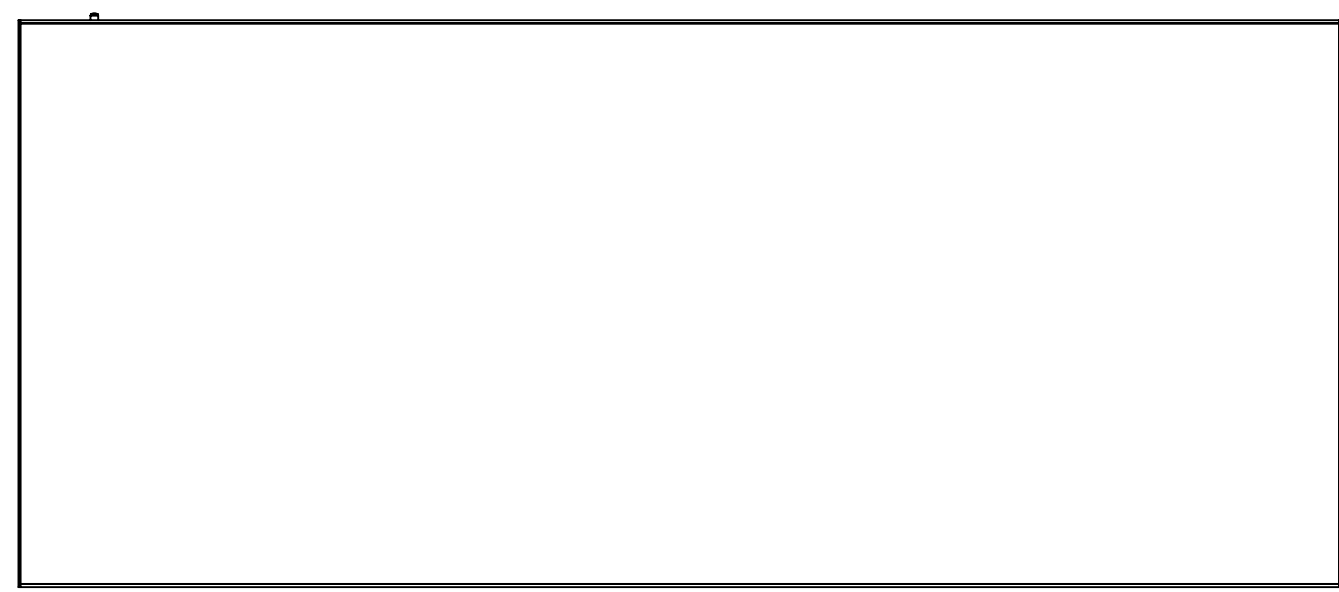
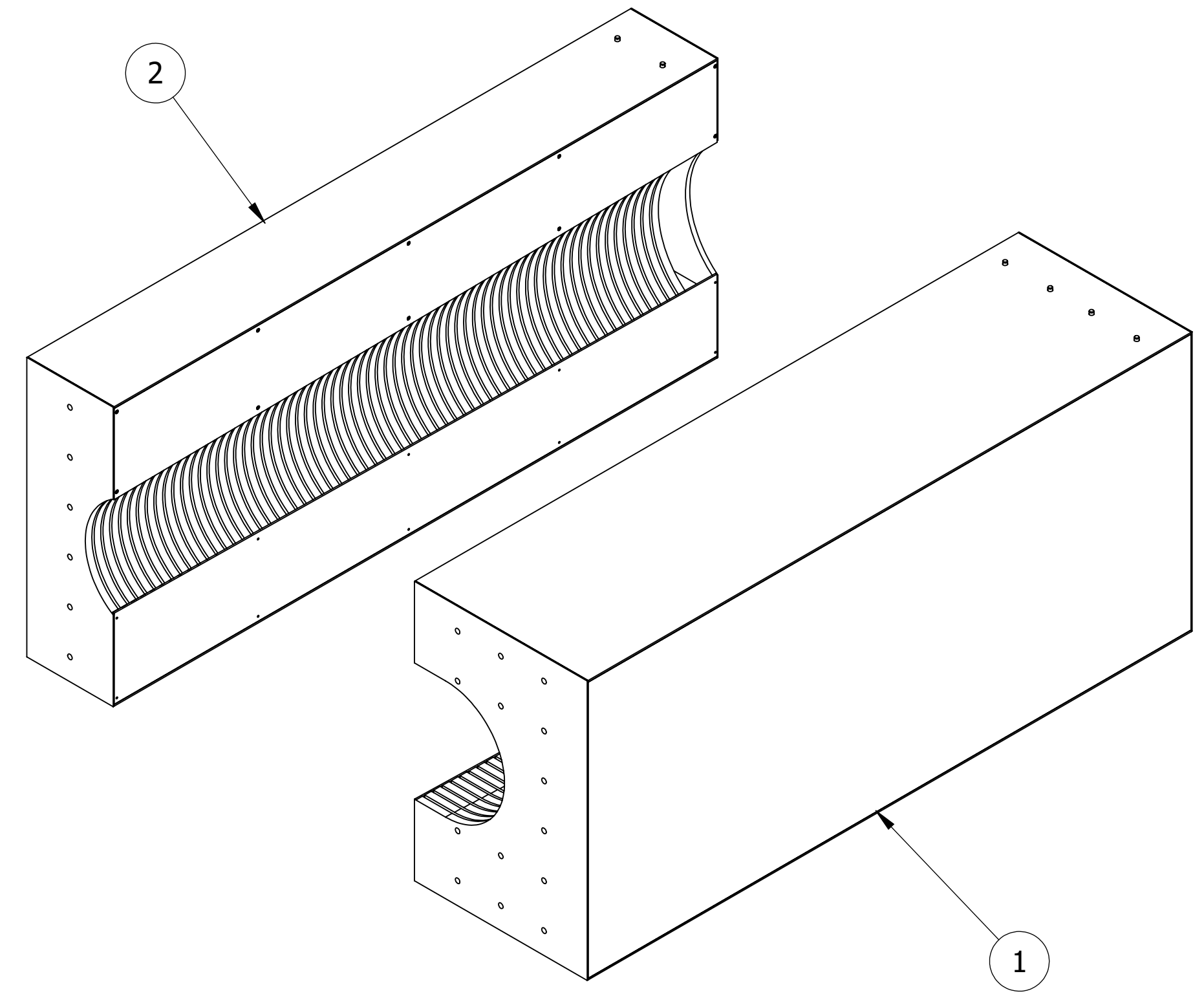
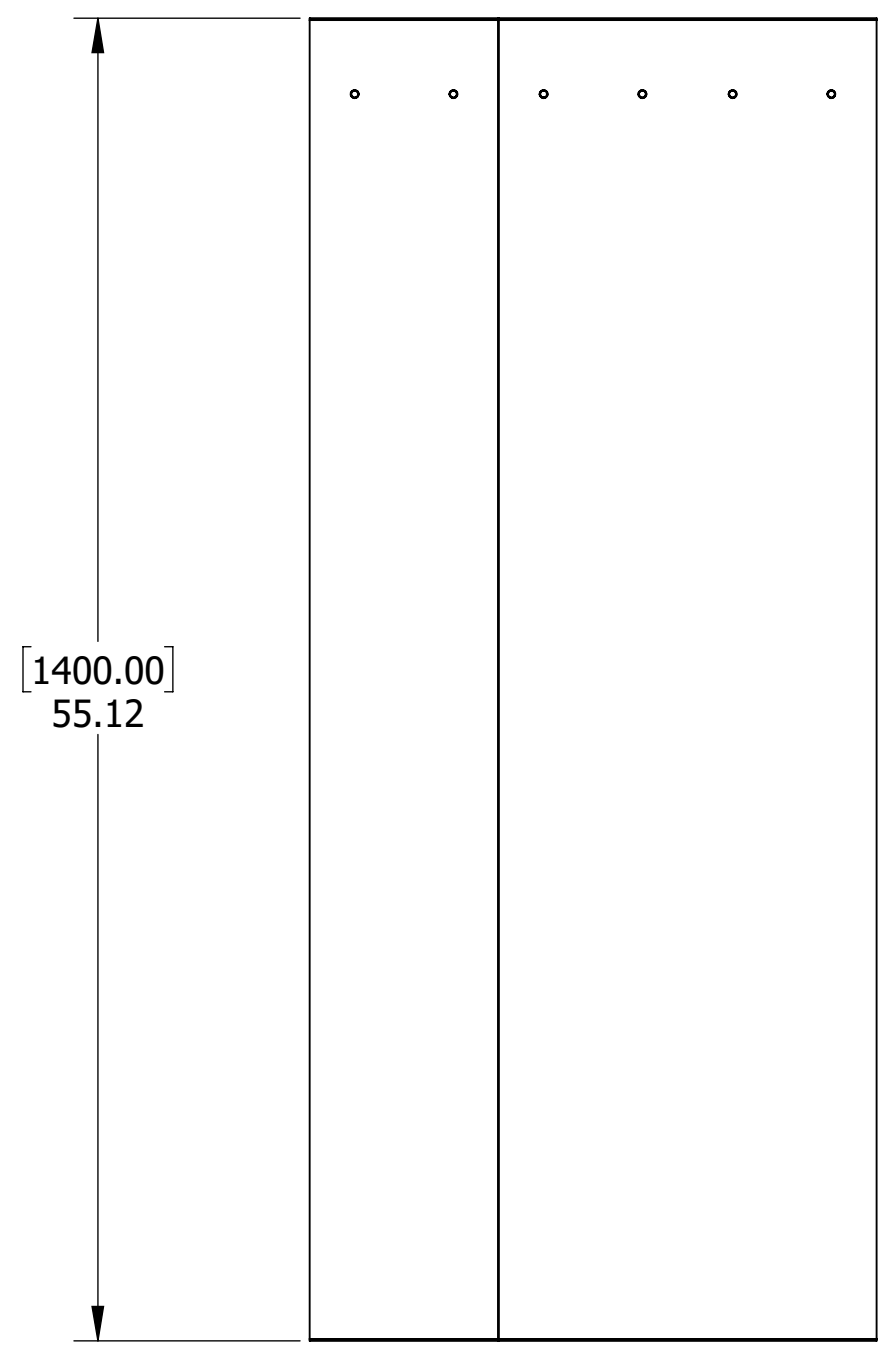


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**NOTES**

- 1. MATERIAL CERTIFICATIONS REQUIRED.



ITEM	QTY.	NAME/PART NO	MATERIAL	DESCRIPTION	DWG
2	1	INSERT WELDMENT_LEFT	---	WELDMENT	EPIC-420
1	1	INSERT WELDMENT_RIGHT	---	WELDMENT	EPIC-410

**QUALITY VERIFICATION REQUIREMENTS DOCUMENTS**

MATERIAL MILL TEST REPORT	
LEAK TEST REPORT	
CLEANING CERT	
WELD / BRAZE INSPECTION REPORT	
HEAT TREAT REPORT	
DIMENSIONAL REPORT	
MATERIAL SELLER CERT	
FUNCTIONAL TEST REPORT	
DEVIATION REQUEST	<b>x</b>
NONCONFORMANCE REPORT	<b>x</b>

**THIRD-ANGLE PROJECTION**

DES	EJ FOUNTAIN	07/03/2023
DRW	EJ FOUNTAIN	07/03/2023
CHK	CD OTTINGER	07/03/2023
ENG	EJ FOUNTAIN	07/03/2023
QA		

**APPROVALS**

DES	EJ FOUNTAIN	07/03/2023
DRW	EJ FOUNTAIN	07/03/2023
CHK	CD OTTINGER	07/03/2023
ENG	EJ FOUNTAIN	07/03/2023
QA		

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**OAK RIDGE NATIONAL LABORATORY**  
OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER  
CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN

**REMOTE SYSTEMS GROUP**

**EPIC LFHICAL ASSEMBLY INSERT ASSEMBLY**

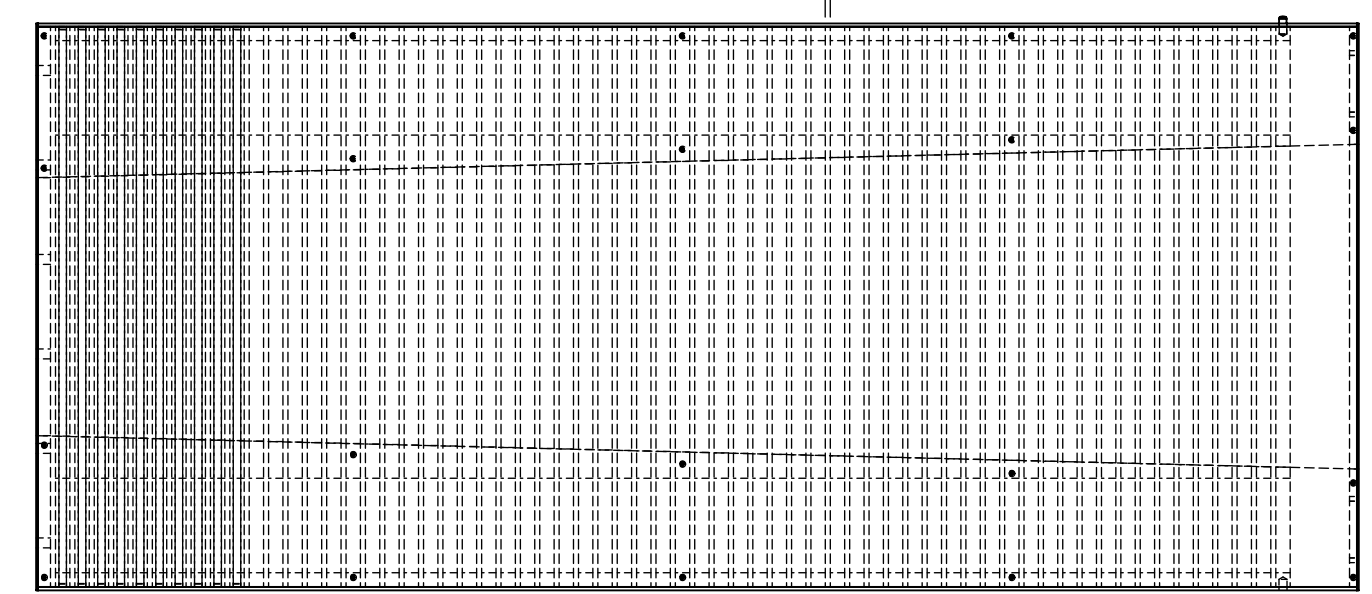
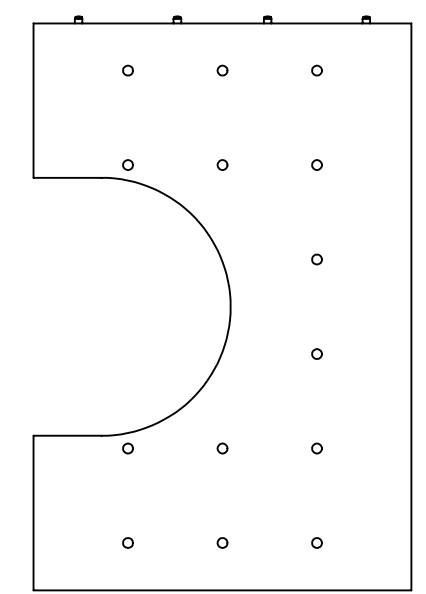
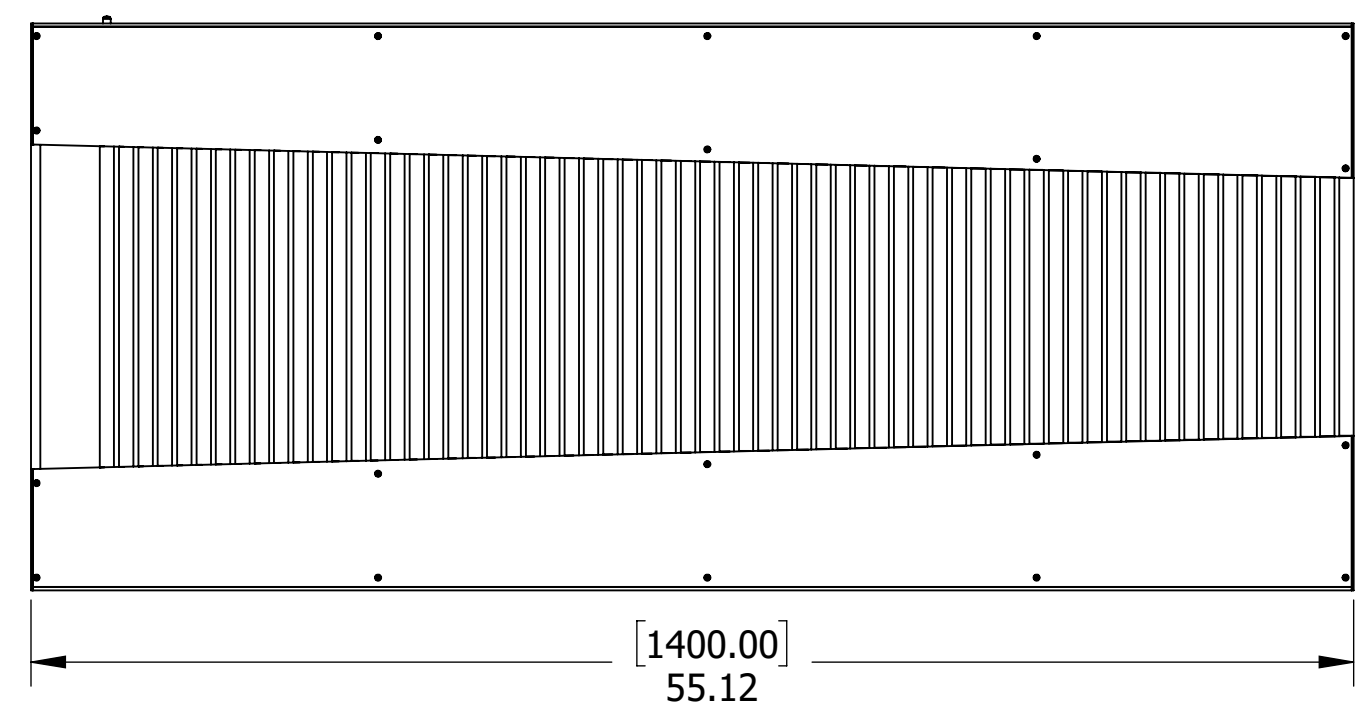
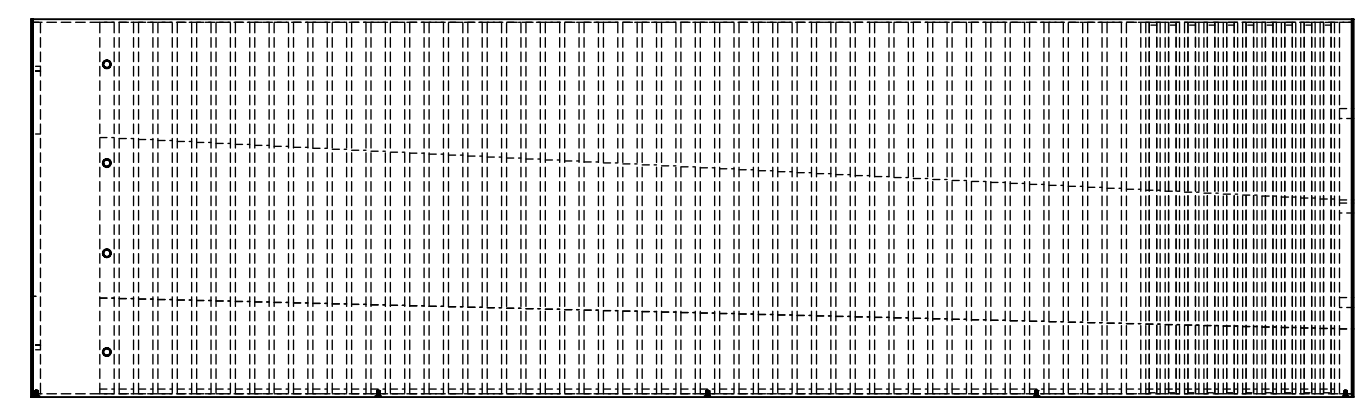
TOTAL WEIGHT	LBS	SIZE	NEXT ASSY	DWG NO.	REV
		<b>D</b>	N/A	<b>EPIC-400</b>	<b>0</b>
THIS DRAWING PRODUCED USING <b>SolidWorks</b>			SCALE	NAME	SHEET
			1:8	INSERT ASSEMBLY	1 of 1

DWG NO. EPIC-400  
CAD FILE: fhCAL\_Insert\_Assembly\_Full

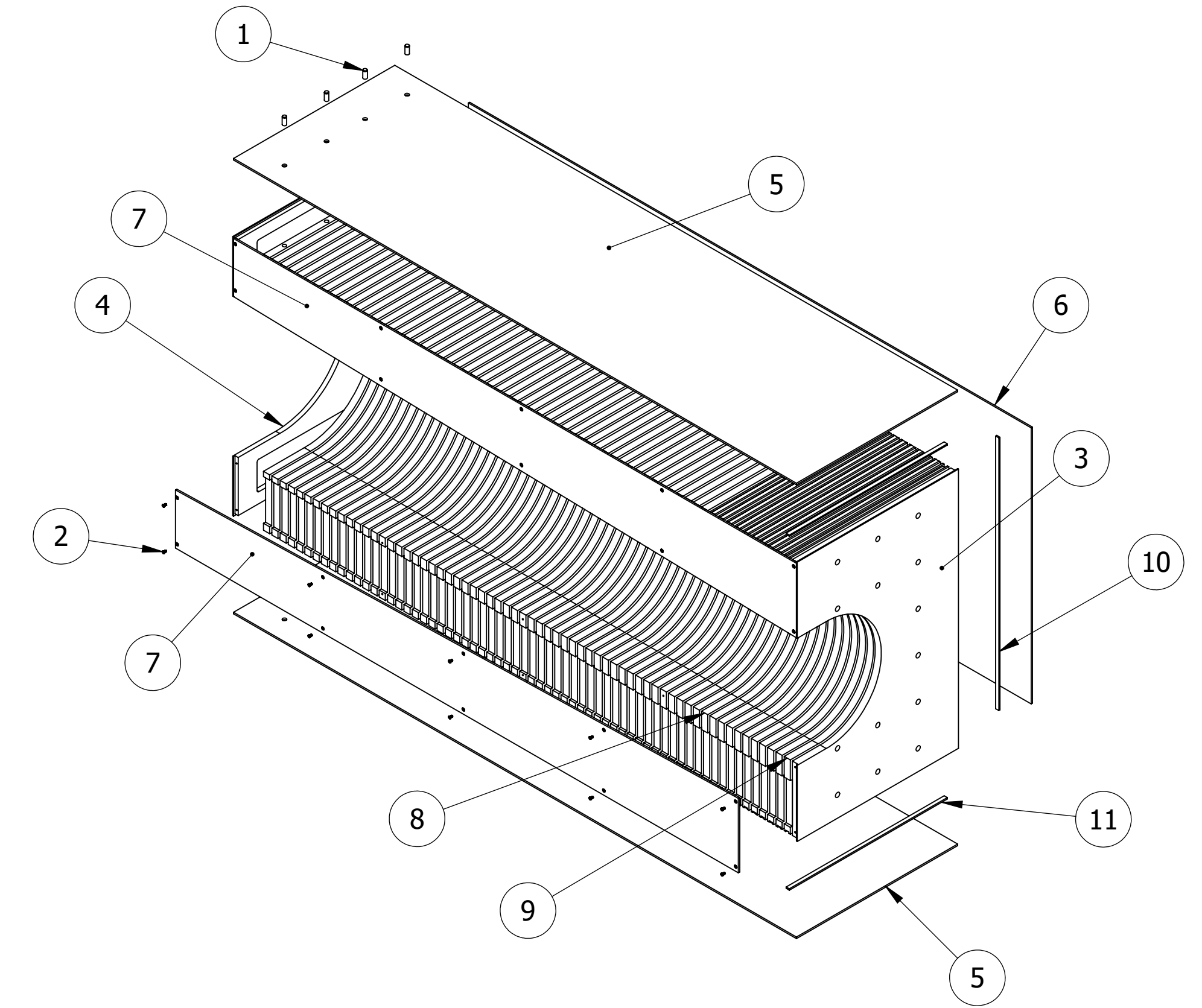
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**NOTES**

- MATERIAL CERTIFICATIONS REQUIRED.
- P/N# 8 & 9 ARE TO BE INSTALLED NUMERICALLY BASED ON THE LAYER IDENTIFICATION ON THE CORRESPONDING DRAWINGS STARTING AT THE FRONT PLATE OF THE ASSEMBLY. P/N #9 WILL BE INSTALLED 1, 2, 3, ...10. P/N #8 WILL BE INSTALLED 1, 2, 3, ... 54.



[5.30]  
.209 TYP  
PLATE SPACING



ITEM	QTY.	NAME/PART NO	MATERIAL	DESCRIPTION	DWG
11	20	SHORT SHIM	1045 CARBON STEEL	11 GA SHEET METAL	EPIC-419
10	10	LONG SHIM	1045 CARBON STEEL	11 GA SHEET METAL	EPIC-418
9	10	TUNGSTEN ABSORBER PLATE	TUNGSTEN [W 6Ni-4Cu]	PLATE	EPIC-417
8	54	STEEL ABSORBER PLATE	1045 CARBON STEEL	PLATE	EPIC-416
7	2	PCB COVER	1045 CARBON STEEL	10 GA SHEET METAL	EPIC-415
6	1	SIDE PLATE	1045 CARBON STEEL	10 GA SHEET METAL	EPIC-414
5	2	TOP / BOTTOM PLATE	1045 CARBON STEEL	10 GA SHEET METAL	EPIC-413
4	1	BACK PLATE	1045 CARBON STEEL	PLATE	EPIC-412
3	1	FRONT PLATE	1045 CARBON STEEL	PLATE	EPIC-411
2	20	MCMMASTER_90358A001	ALLOY STEEL	M3-0.5 X 6MM LG LOW SHCS	N/A
1	4	MCMMASTER_91595A558	STEEL	8MM X 20MM DOWEL PIN	N/A

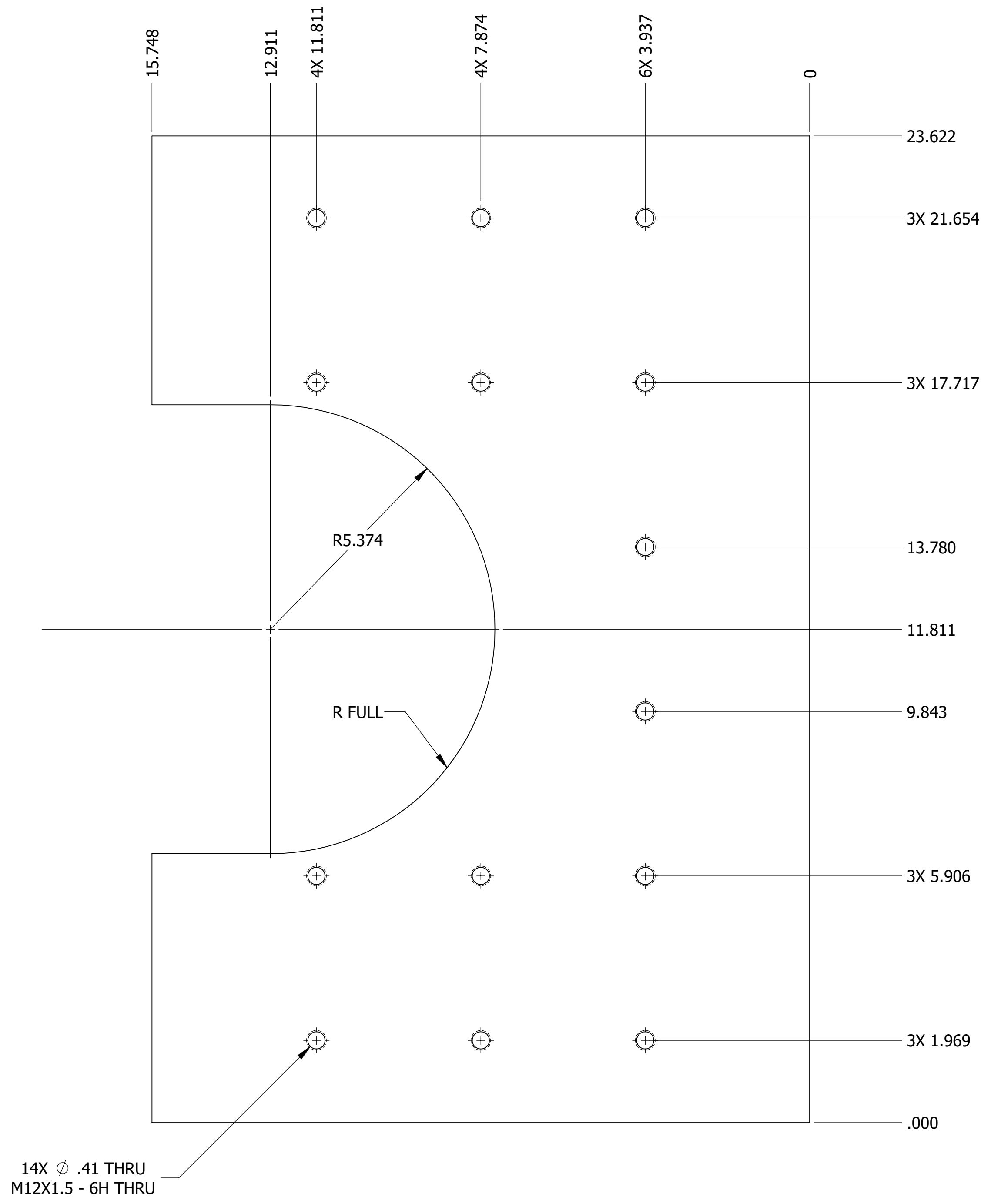
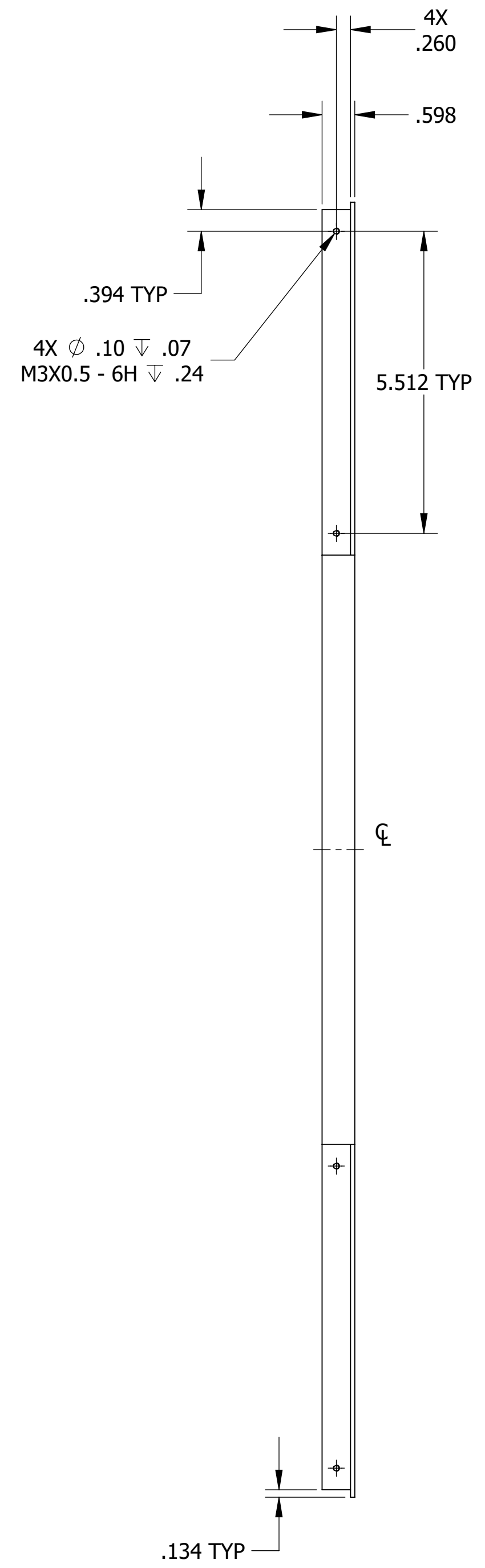
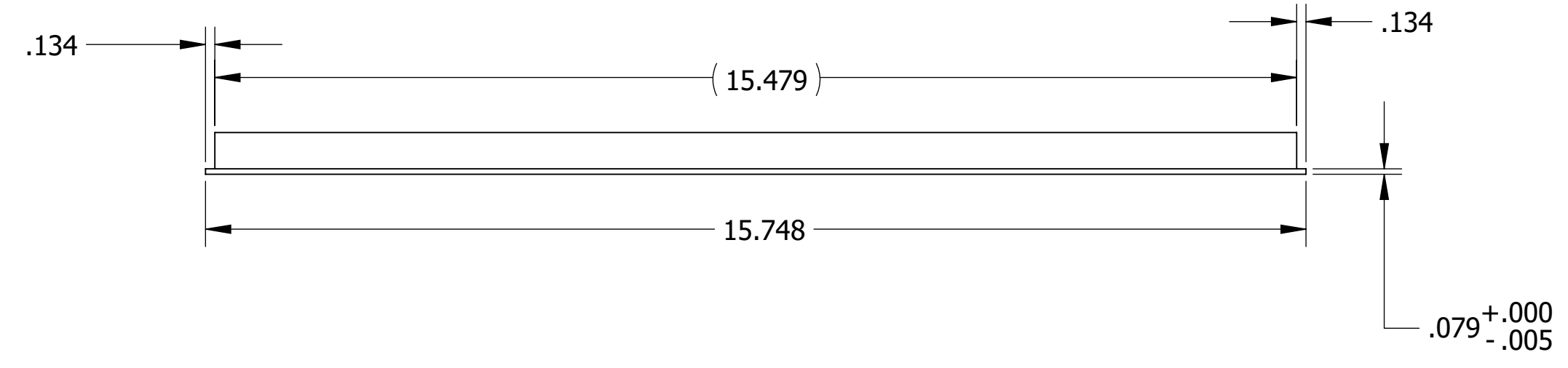
QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		<small>THIS DRAWING IS THE PROPERTY OF OAK RIDGE NATIONAL LABORATORY OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN</small> <b>REMOTE SYSTEMS GROUP</b>							
REPORT TYPE	STATUS		DES	EJ	DATE		<b>EPIC INSERT ASSEMBLY RIGHT SIDE WELDMENT</b>							
MATERIAL MILL TEST REPORT		<small>UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100 ANGULAR .X/2 X.XX = ±.010 X.XXX = ±.005</small> <b>DO NOT SCALE DRAWING</b>	DRW	EJ	07/03/2023	<table border="1"> <tr> <th>SIZE</th> <th>NEXT ASSY</th> <th>DWG NO.</th> <th>REV</th> </tr> <tr> <td><b>D</b></td> <td>EPIC-400</td> <td><b>EPIC-410</b></td> <td><b>0</b></td> </tr> </table>	SIZE	NEXT ASSY	DWG NO.	REV	<b>D</b>	EPIC-400	<b>EPIC-410</b>	<b>0</b>
SIZE	NEXT ASSY		DWG NO.	REV										
<b>D</b>	EPIC-400		<b>EPIC-410</b>	<b>0</b>										
LEAK TEST REPORT			CHK	CD	07/03/2023									
CLEANING CERT			ENG	EJ	07/03/2023									
WELD / BRAZE INSPECTION REPORT	<b>X</b>		QA											
HEAT TREAT REPORT														
DIMENSIONAL REPORT		TOTAL WEIGHT		<b>LBS</b>	SCALE 1:8	NAME INSERT WELDMENT_RIGHT	SHEET 1 of 1							
MATERIAL SELLER CERT		THIS DRAWING PRODUCED USING <b>SolidWorks</b>												
FUNCTIONAL TEST REPORT														
DEVIATION REQUEST	<b>X</b>													
NONCONFORMANCE REPORT	<b>X</b>													

DWG NO. EPIC-410  
CAD FILE: fHCAL\_Insert\_Assembly\_Right

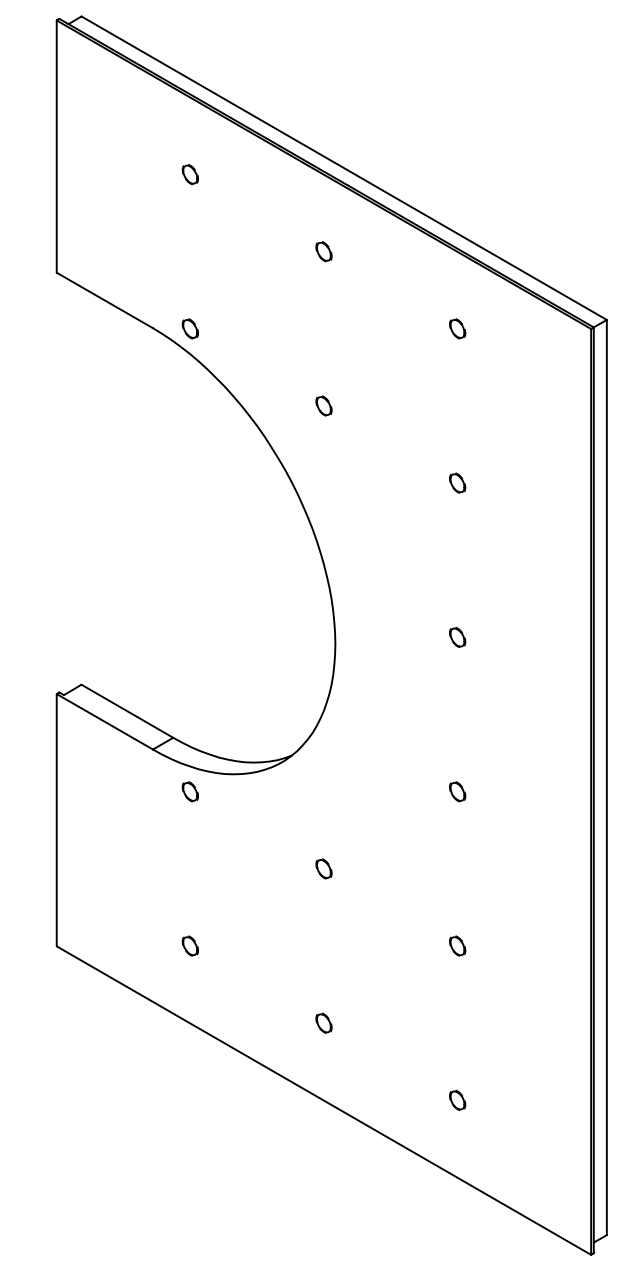
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**NOTES**

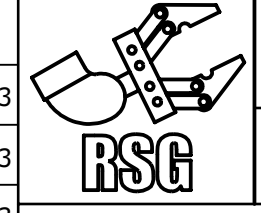
1. MATERIAL CERTIFICATIONS REQUIRED.
2. PART IS SYMMETRIC ACROSS  $\phi$  AS SHOWN.



14X Ø .41 THRU  
M12X1.5 - 6H THRU



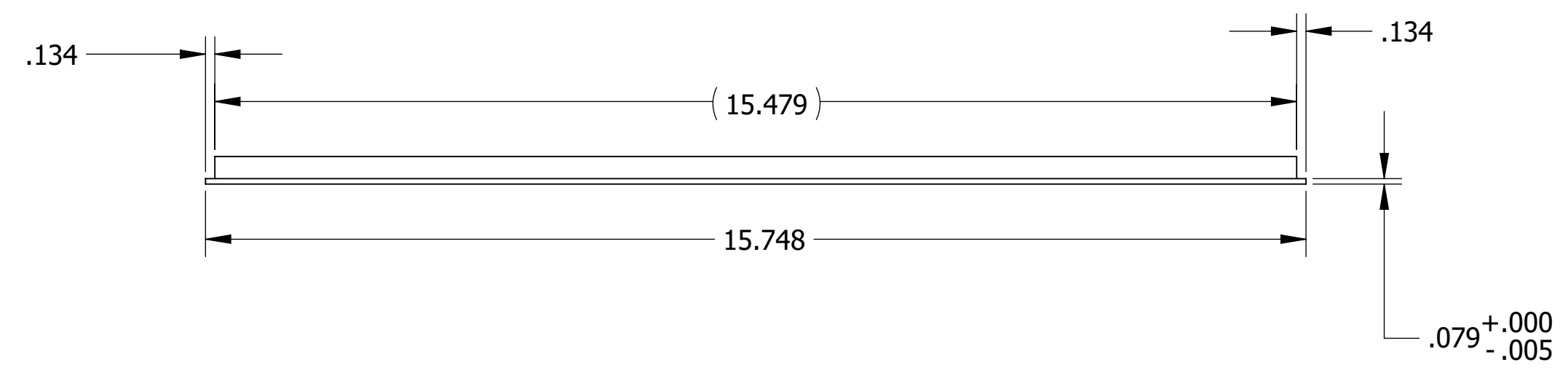
**MATERIAL: 1045 CARBON STEEL**

QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF <b>OAK RIDGE NATIONAL LABORATORY</b> OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN				
DESCRIPTION	STATUS		DESIGNER	DATE	DATE		SIZE	NEXT ASSY	DWG NO.	REV	
MATERIAL MILL TEST REPORT	x	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100 ANGULAR .XX = ±.1/2 .XXX = ±.010 .XXX = ±.005 <b>DO NOT SCALE DRAWING</b>	DES	EJ FOUNTAIN	07/05/2023	<b>D</b>	EPIC-410	<b>EPIC-411</b>	<b>0</b>		
LEAK TEST REPORT			DRW	EJ FOUNTAIN	07/05/2023						
CLEANING CERT			CHK	CD OTTINGER	07/05/2023						
WELD / BRAZE INSPECTION REPORT			ENG	EJ FOUNTAIN	07/05/2023						
HEAT TREAT REPORT			QA								
DIMENSIONAL REPORT			TOTAL WEIGHT		<b>48.9116 LBS</b>	SCALE	1:2	NAME	FRONT PLATE	SHEET	1 of 1
MATERIAL SELLER CERT			THIS DRAWING PRODUCED USING		<b>SolidWorks</b>						
FUNCTIONAL TEST REPORT											
DEVIATION REQUEST	x										
NONCONFORMANCE REPORT	x										

**EPIC  
INSERT ASSEMBLY\_RIGHT  
FRONT PLATE**

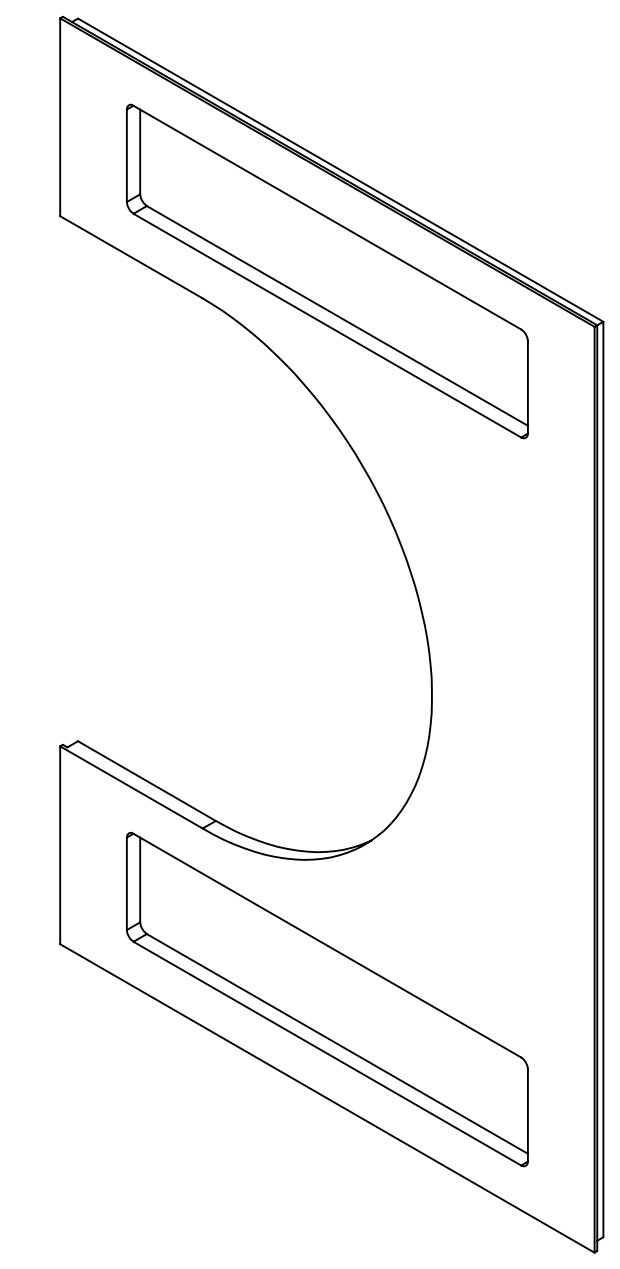
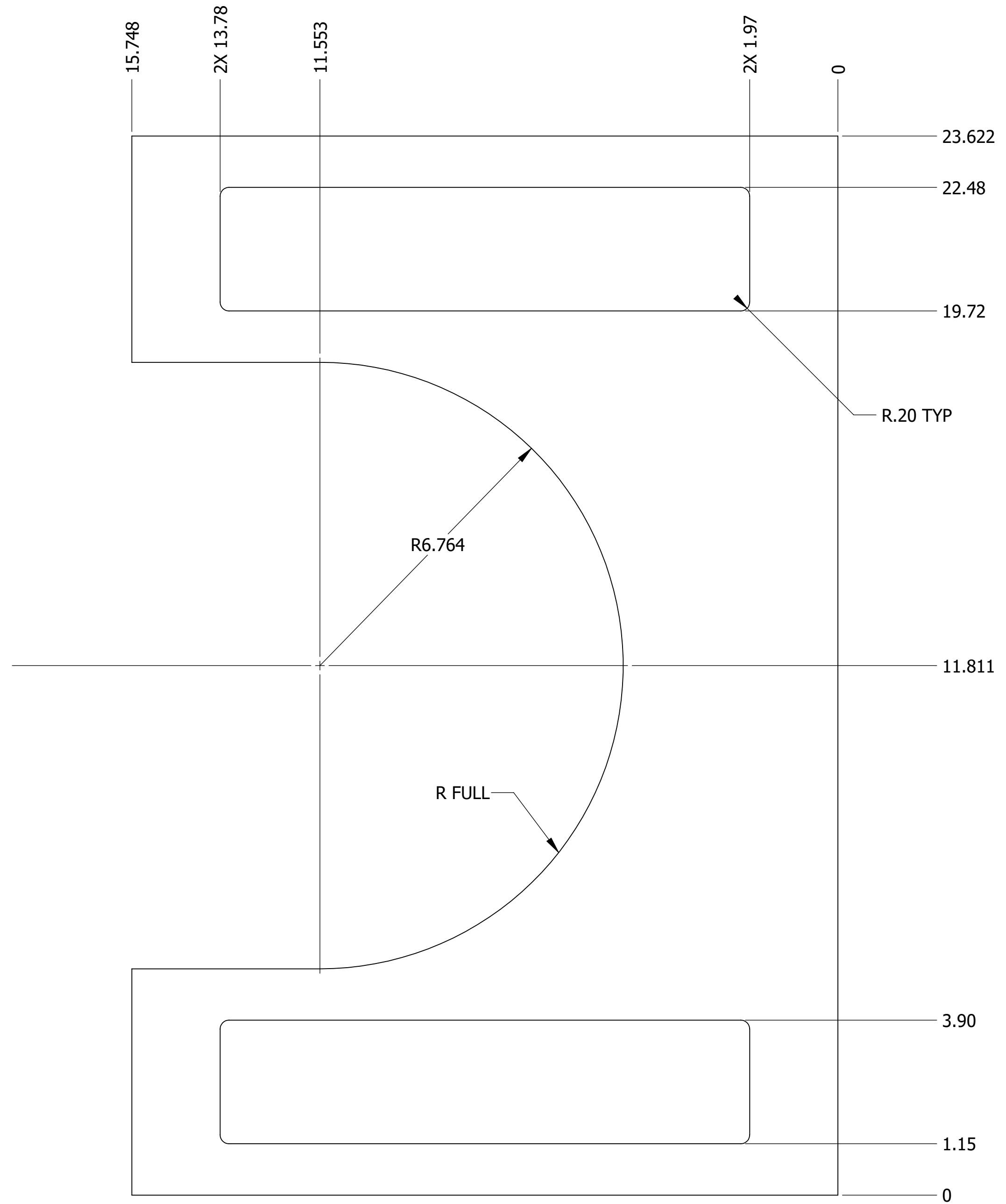
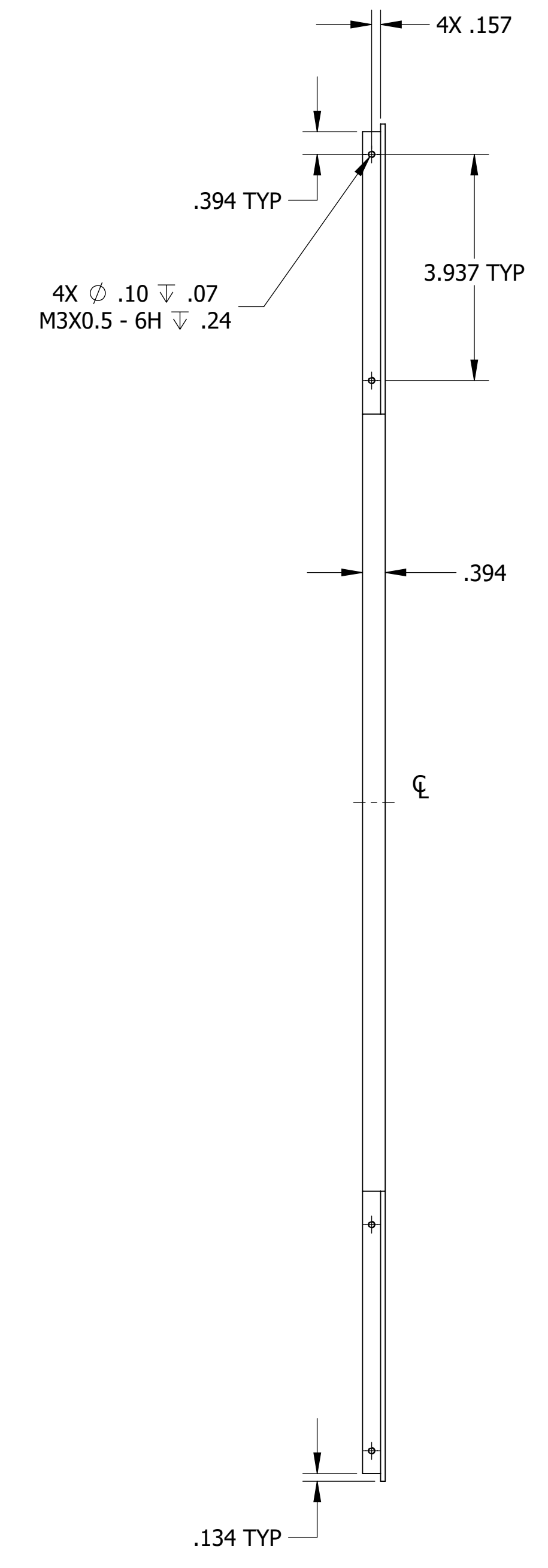
DWG NO. EPIC-411  
CAD FILE: f:\CAL Insert Front\_Plate\_Right

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**NOTES**

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2. PART IS SYMMETRIC ACROSS  $\phi$  AS SHOWN.



**MATERIAL: 1045 CARBON STEEL**

QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF OAK RIDGE NATIONAL LABORATORY OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN				
DESCRIPTION	STATUS		DESIGNER	DATE	DATE		SIZE	NEXT ASSY	DWG NO.	REV	
MATERIAL MILL TEST REPORT	x	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100 ANGULAR .XX = ±.1/2 X.XX = ±.010 X.XXX = ±.005 <b>DO NOT SCALE DRAWING</b>	DES	EJ FOUNTAIN	07/05/2023	<b>D</b>	EPIC-410	<b>EPIC-412</b>	<b>0</b>		
LEAK TEST REPORT			DRW	EJ FOUNTAIN	07/05/2023						
CLEANING CERT			CHK	CD OTTINGER	07/05/2023						
WELD / BRAZE INSPECTION REPORT			ENG	EJ FOUNTAIN	07/05/2023						
HEAT TREAT REPORT			QA								
DIMENSIONAL REPORT			TOTAL WEIGHT		<b>19.2585 LBS</b>	SCALE	1:2	NAME	BACK PLATE	SHEET	1 of 1
MATERIAL SELLER CERT			THIS DRAWING PRODUCED USING		<b>SolidWorks</b>						
FUNCTIONAL TEST REPORT											
DEVIATION REQUEST	x										
NONCONFORMANCE REPORT	x										

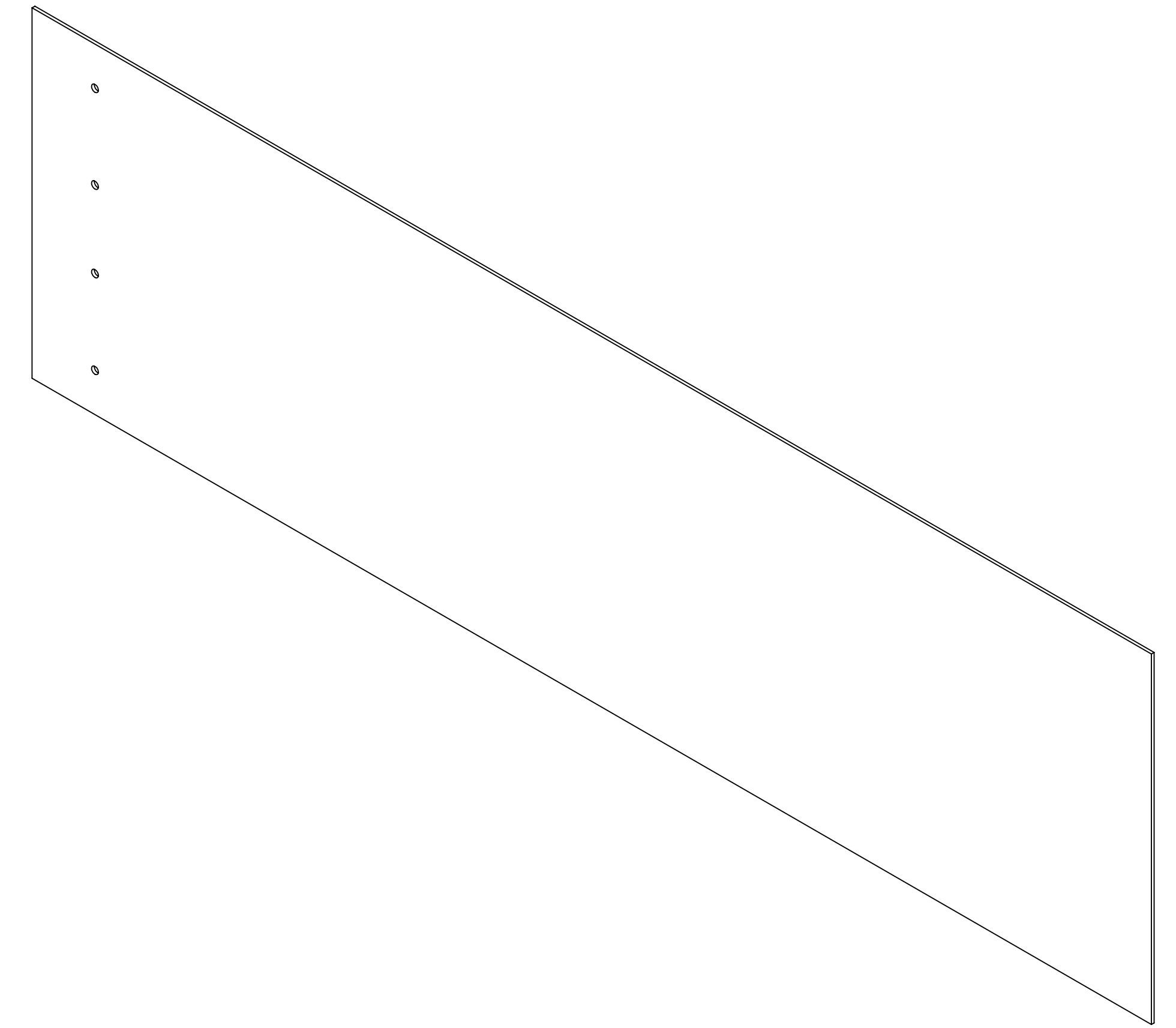
**EPIC INSERT ASSEMBLY\_RIGHT BACK PLATE**

DWG NO. EPIC-412  
CAD FILE: fHCAL\_Insert Back Plate\_Right

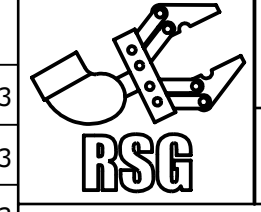
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**NOTES**

- 1. MATERIAL CERTIFICATIONS REQUIRED.



**MATERIAL: 1045 CARBON STEEL**

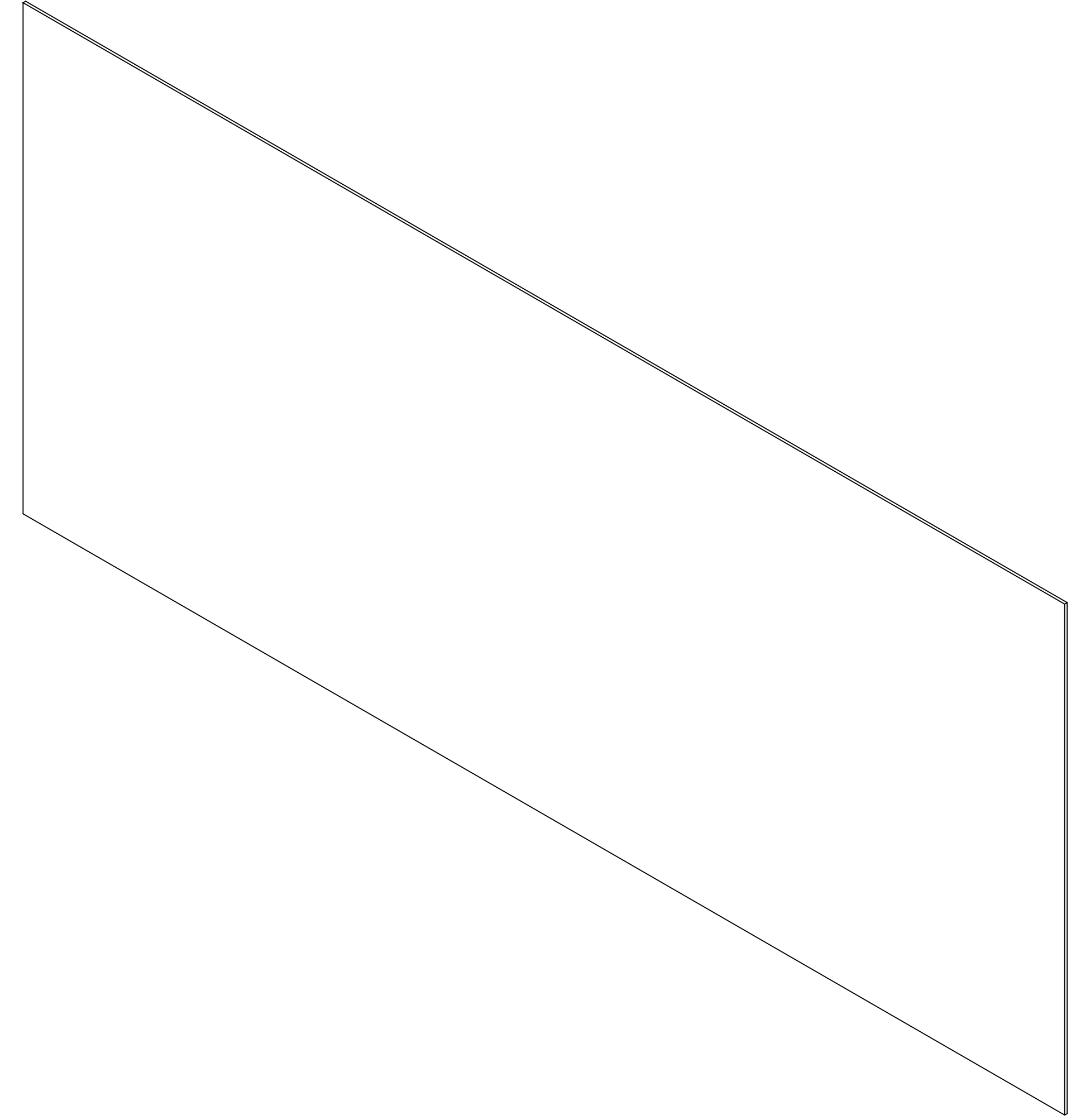
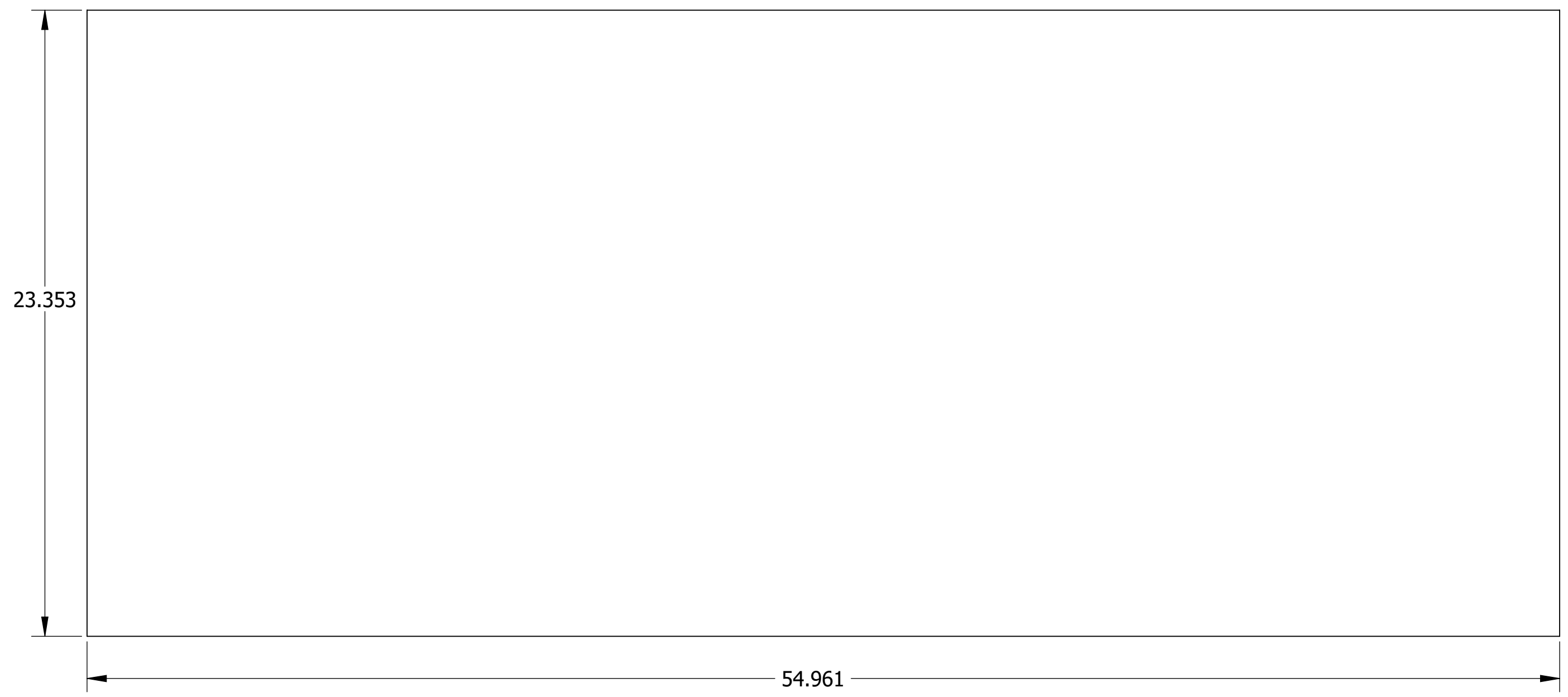
QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF <b>OAK RIDGE NATIONAL LABORATORY</b> OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN			
			DES	EJ FOUNTAIN	07/10/2023		<b>REMOTE SYSTEMS GROUP</b>			
MATERIAL MILL TEST REPORT	<b>x</b>	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100    ANGULAR .X/XX = ±.1/2 X.XX = ±.010 X.XXX = ±.005 <b>DO NOT SCALE DRAWING</b>	DRW	EJ FOUNTAIN	07/10/2023	<b>EPIC INSERT ASSEMBLY_RIGHT TOP PLATE</b>	<b>SIZE</b> D <b>SCALE</b> 1:4	<b>NEXT ASSY</b> EPIC-410	<b>DWG NO.</b> EPIC-413	<b>REV</b> 0
LEAK TEST REPORT			CHK	CD OTTINGER	07/10/2023					
CLEANING CERT			ENG	EJ FOUNTAIN	07/10/2023					
WELD / BRAZE INSPECTION REPORT			QA			<b>THIS DRAWING PRODUCED USING</b> SolidWorks	<b>NAME</b> TOP / BOTTOM PLATE	<b>SHEET</b> 1 of 1		
HEAT TREAT REPORT			<b>TOTAL WEIGHT</b> 33.2084 LBS							
DIMENSIONAL REPORT										
MATERIAL SELLER CERT										
FUNCTIONAL TEST REPORT										
DEVIATION REQUEST	<b>x</b>									
NONCONFORMANCE REPORT	<b>x</b>									

DWG NO. EPIC-413  
CAD FILE: fHCAL\_Insert\_Top\_Plate\_Right

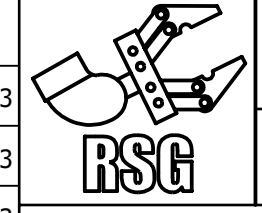
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**NOTES**

- 1. MATERIAL CERTIFICATIONS REQUIRED.



**MATERIAL: 1045 CARBON STEEL**

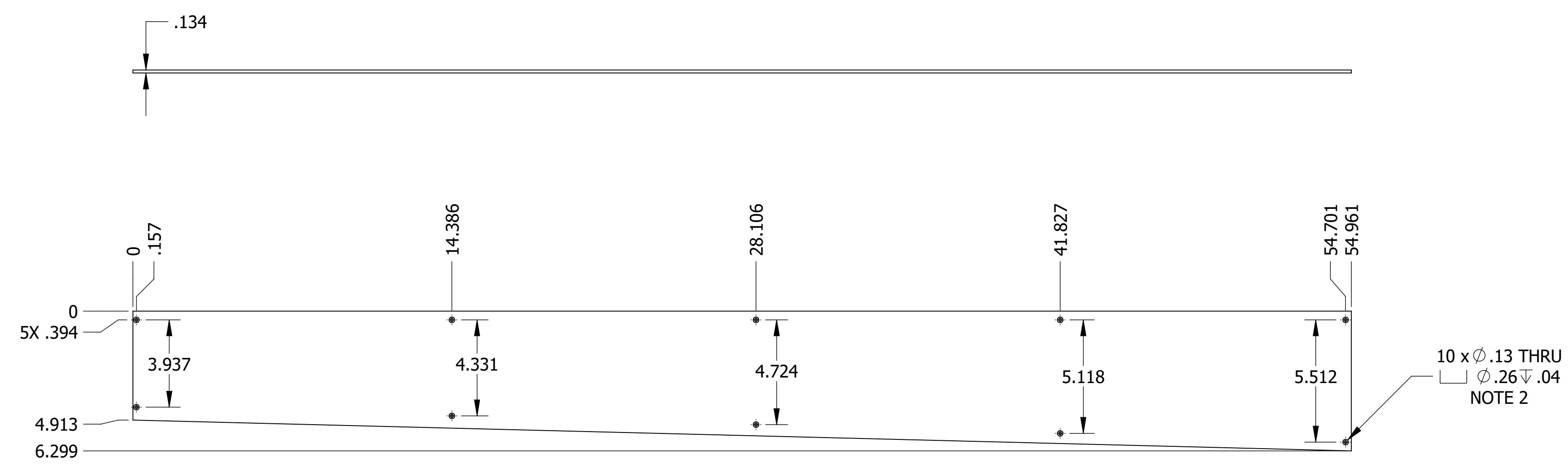
QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF <b>OAK RIDGE NATIONAL LABORATORY</b> OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN				
			DES	EJ FOUNTAIN	07/10/2023		<b>REMOTE SYSTEMS GROUP</b>				
MATERIAL MILL TEST REPORT	<b>x</b>	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100    ANGULAR .X/XX = ±.1/2 X.XX = ±.010 X.XXX = ±.005 <b>DO NOT SCALE DRAWING</b>	DRW	EJ FOUNTAIN	07/10/2023	<b>EPIC</b> <b>INSERT ASSEMBLY_RIGHT</b> <b>SIDE PLATE</b>	SIZE	NEXT ASSY	DWG NO.	REV	
LEAK TEST REPORT			CHK	CD OTTINGER	07/10/2023		<b>D</b>	EPIC-410	<b>EPIC-414</b>	<b>0</b>	
CLEANING CERT			ENG	EJ FOUNTAIN	07/10/2023		SCALE	1:4	NAME	SIDE PLATE	SHEET
WELD / BRAZE INSPECTION REPORT			QA			THIS DRAWING PRODUCED USING					
HEAT TREAT REPORT			TOTAL WEIGHT		<b>49.2656 LBS</b>						
DIMENSIONAL REPORT			THIS DRAWING PRODUCED USING		<b>SolidWorks</b>						
MATERIAL SELLER CERT											
FUNCTIONAL TEST REPORT											
DEVIATION REQUEST	<b>x</b>										
NONCONFORMANCE REPORT	<b>x</b>										

DWG NO. EPIC-414  
CAD FILE: fHCAL\_Insert\_Side\_Plate

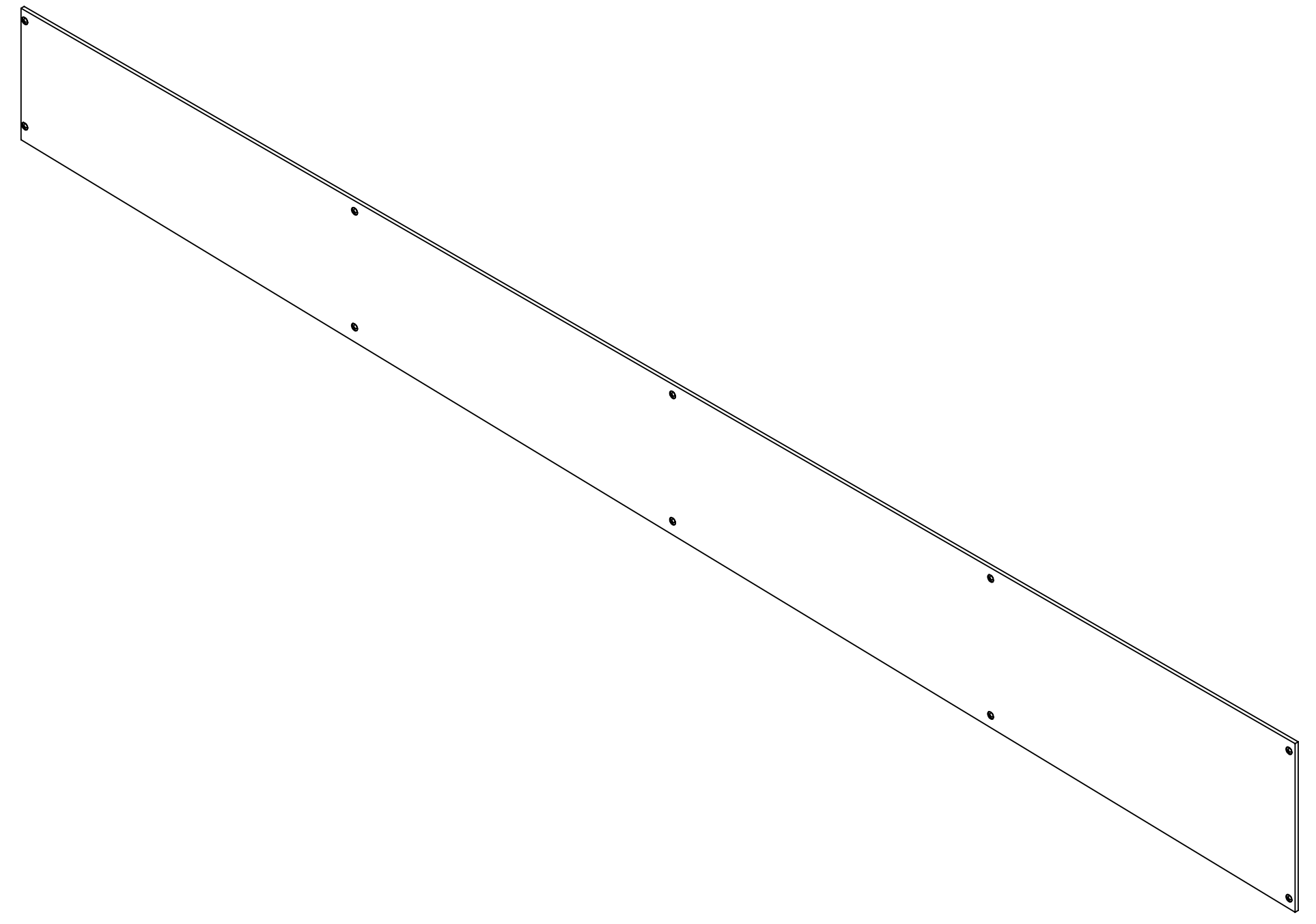
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**NOTES**

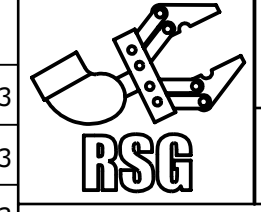
1. MATERIAL CERTIFICATIONS REQUIRED.
2. QUANTITY 2: COUNTERBORE AS SHOWN FOR 1X, COUNTERBORE OPPOSITE SIDE OF HOLES FOR 1X.



10 x  $\phi$ .13 THRU  
 $\square$   $\phi$ .26  $\nabla$ .04  
 NOTE 2



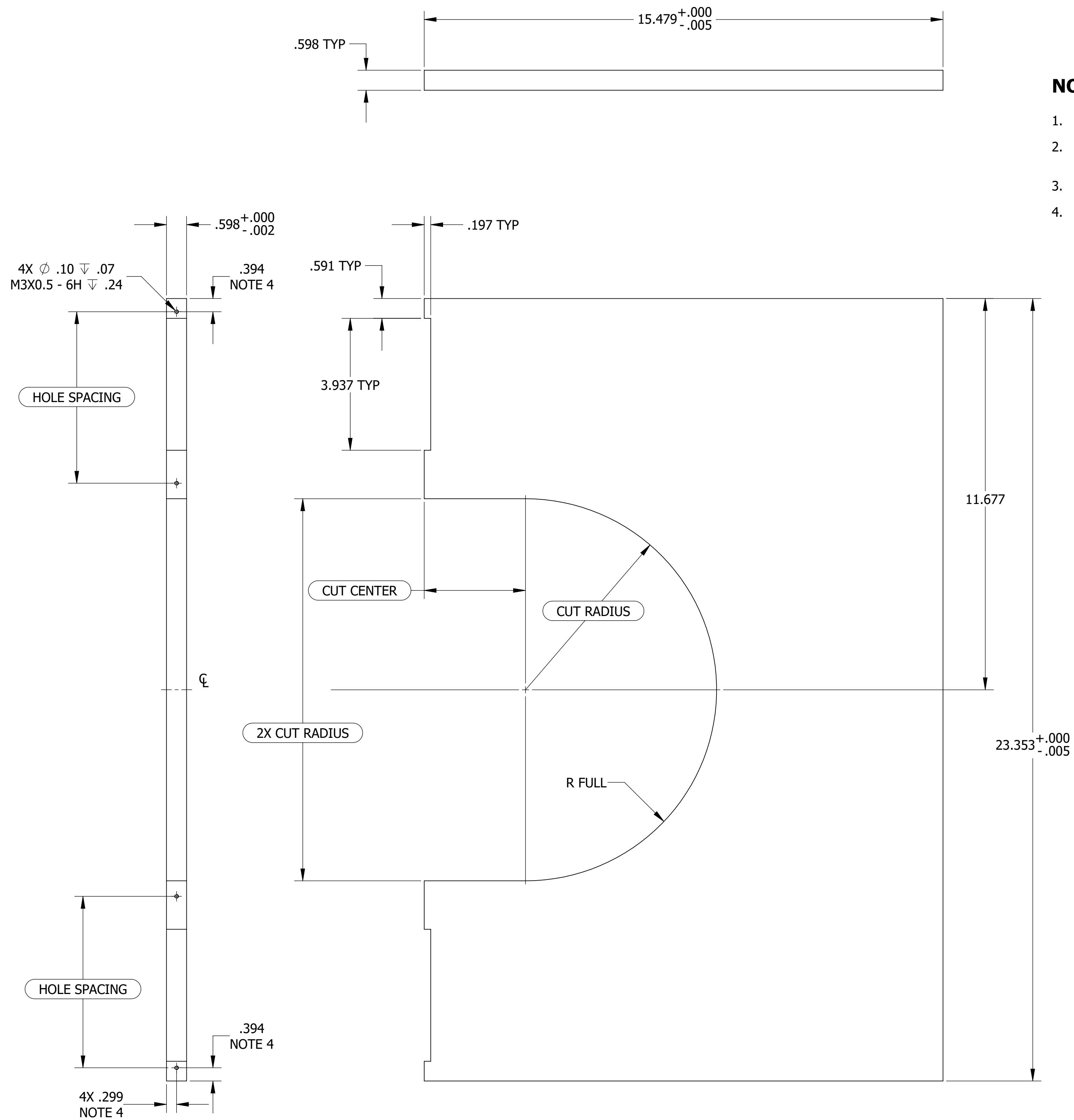
**MATERIAL: 1045 CARBON STEEL**

QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF <b>OAK RIDGE NATIONAL LABORATORY</b> <small>OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER                  CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN</small>					
DOCUMENT	STATUS		DES	CHK	DATE		<b>REMOTE SYSTEMS GROUP</b>					
MATERIAL MILL TEST REPORT	X	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100    ANGULAR .X/XX = ±.1/2 .XXX = ±.010 .XXX = ±.005 <b>DO NOT SCALE DRAWING</b>	DES	EJ FOUNTAIN	07/10/2023	<b>EPIC                      INSERT ASSEMBLY_RIGHT                      COVER PLATE</b>	SIZE	NEXT ASSY	DWG NO.	REV		
LEAK TEST REPORT			DRW	EJ FOUNTAIN	07/10/2023		D	EPIC-410	<b>EPIC-415</b>	0		
CLEANING CERT			CHK	CD OTTINGER	07/10/2023		SCALE	1:4	NAME	PCB COVER	SHEET	1 of 1
WELD / BRAZE INSPECTION REPORT			ENG	EJ FOUNTAIN	07/10/2023		THIS DRAWING PRODUCED USING <b>SolidWorks</b>					
HEAT TREAT REPORT			QA									
DIMENSIONAL REPORT												
MATERIAL SELLER CERT												
FUNCTIONAL TEST REPORT												
DEVIATION REQUEST	X											
NONCONFORMANCE REPORT	X											

DWG NO. EPIC-415  
 CAD FILE: fHCAL\_Insert\_Cover\_Plate\_Right

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LAYER #	CUT CENTER (IN)	CUT RADIUS (IN)	HOLE SPACING (IN)
1	2.923	5.599	N/A
2	2.943	5.620	N/A
3	2.963	5.640	N/A
4	2.983	5.661	N/A
5	3.003	5.681	N/A
6	3.023	5.702	5.118
7	3.043	5.723	N/A
8	3.063	5.743	N/A
9	3.083	5.764	N/A
10	3.103	5.784	N/A
11	3.123	5.805	N/A
12	3.143	5.825	N/A
13	3.164	5.846	N/A
14	3.184	5.867	N/A
15	3.204	5.887	N/A
16	3.224	5.908	N/A
17	3.244	5.928	N/A
18	3.264	5.949	N/A
19	3.284	5.969	N/A
20	3.304	5.990	N/A
21	3.324	6.010	N/A
22	3.344	6.031	N/A
23	3.364	6.052	4.724
24	3.384	6.072	N/A
25	3.404	6.093	N/A
26	3.425	6.113	N/A
27	3.445	6.134	N/A
28	3.465	6.154	N/A
29	3.485	6.175	N/A
30	3.505	6.195	N/A
31	3.525	6.216	N/A
32	3.545	6.237	N/A
33	3.565	6.257	N/A
34	3.585	6.278	N/A
35	3.605	6.298	N/A
36	3.625	6.319	N/A
37	3.645	6.339	N/A
38	3.666	6.360	N/A
39	3.686	6.380	N/A
40	3.706	6.401	4.331
41	3.726	6.422	N/A
42	3.746	6.442	N/A
43	3.766	6.463	N/A
44	3.786	6.483	N/A
45	3.806	6.504	N/A
46	3.826	6.524	N/A
47	3.846	6.545	N/A
48	3.866	6.565	N/A
49	3.886	6.586	N/A
50	3.906	6.607	N/A
51	3.927	6.627	N/A
52	3.947	6.648	N/A
53	3.967	6.668	N/A
54	3.987	6.689	N/A



**NOTES**

1. MATERIAL CERTIFICATIONS REQUIRED.
2. QUANTITY: 54X, 1X OF EACH LAYER. FOR CIRCLED DIMENSIONS, REFER TO DESIGN TABLE FOR DIMENSIONS TO BE USED. ALL OTHER DIMENSIONS ARE COMMON FOR ALL LAYERS.
3. PART IS SYMMETRIC ACROSS  $\phi$  AS SHOWN.
4. TAPPED HOLES ONLY FOR LAYER # 6, 23, & 40 AS DETAILED IN THE DESIGN TABLE.

**MATERIAL: 1045 CARBON STEEL**

QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF OAK RIDGE NATIONAL LABORATORY OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN	
MATERIAL MILL TEST REPORT	x		DES	EJ FOUNTAIN	07/05/2023		REMOTE SYSTEMS GROUP	
LEAK TEST REPORT		DRW	EJ FOUNTAIN	07/05/2023	<b>EPIC</b> <b>INSERT ASSEMBLY_RIGHT</b> <b>STEEL ABSORBER PLATE</b>			
CLEANING CERT		CHK	CD OTTINGER	07/05/2023				
WELD / BRAZE INSPECTION REPORT		ENG	EJ FOUNTAIN	07/05/2023	QA			
HEAT TREAT REPORT		BREAK SHARP CORNERS AND REMOVE ALL BURRS						
DIMENSIONAL REPORT		DEFAULT TOLERANCES						
MATERIAL SELLER CERT		LINEAR .XX = ±.100 ANGULAR .XXX = ±.010						
FUNCTIONAL TEST REPORT		X.XXX = ±.010						
DEVIATION REQUEST	x	X.XXX = ±.005						
NONCONFORMANCE REPORT	x	DO NOT SCALE DRAWING						
TOTAL WEIGHT			<b>46.2698 LBS</b>		SIZE	NEXT ASSY	DWG NO.	REV
THIS DRAWING PRODUCED USING			<b>SolidWorks</b>		<b>D</b>	EPIC-410	<b>EPIC-416</b>	<b>0</b>
SCALE	1:2	NAME	STEEL ABSORBER PLATE		SHEET	1 of 1		

DWG NO. EPIC-416  
CAD FILE: fHCal\_Insert\_Steel\_Tile\_Right

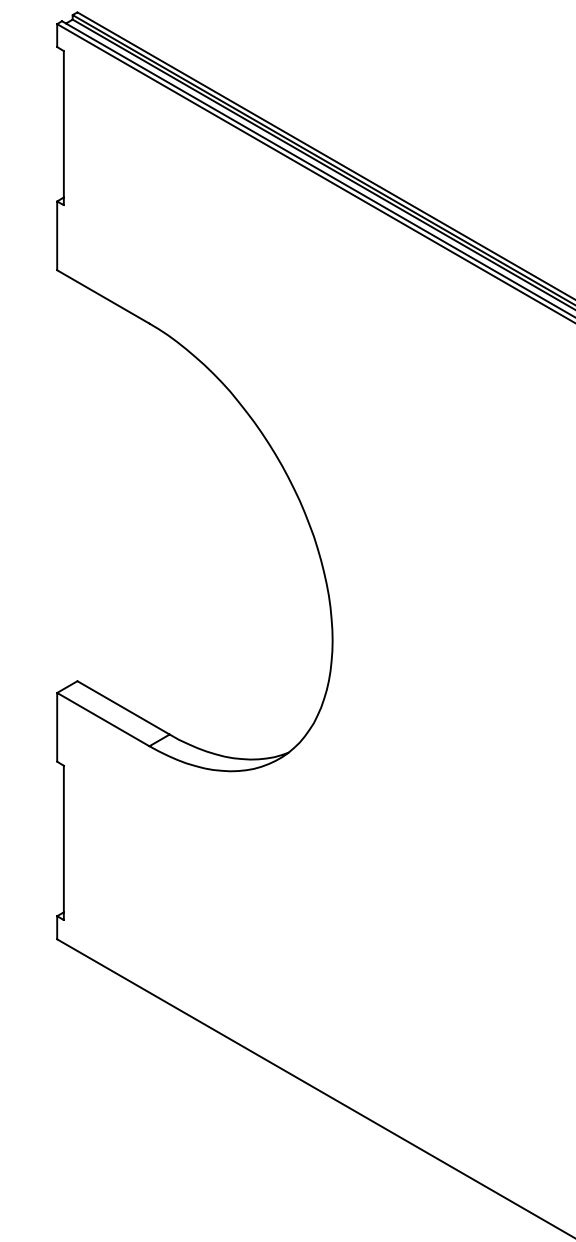
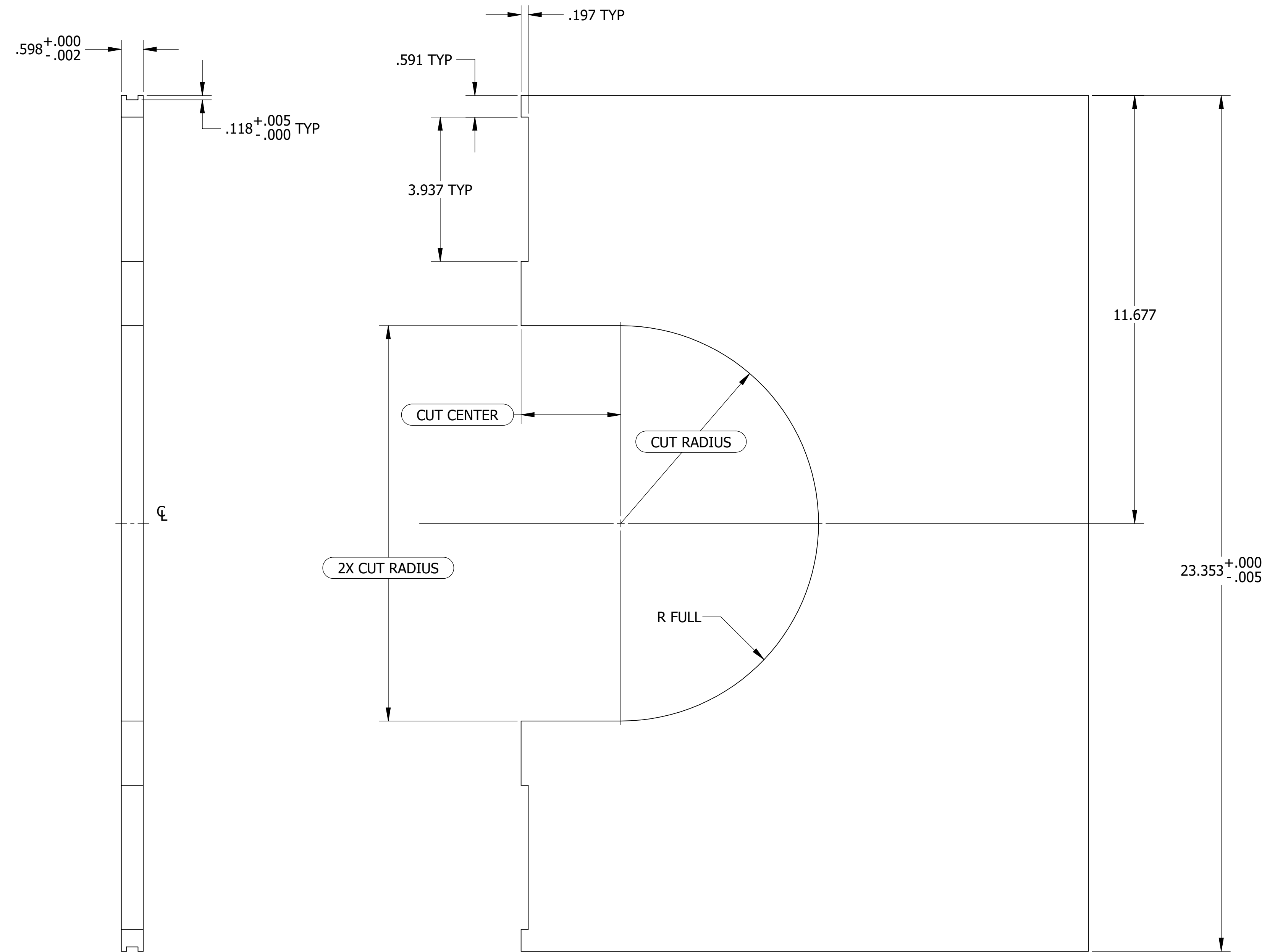
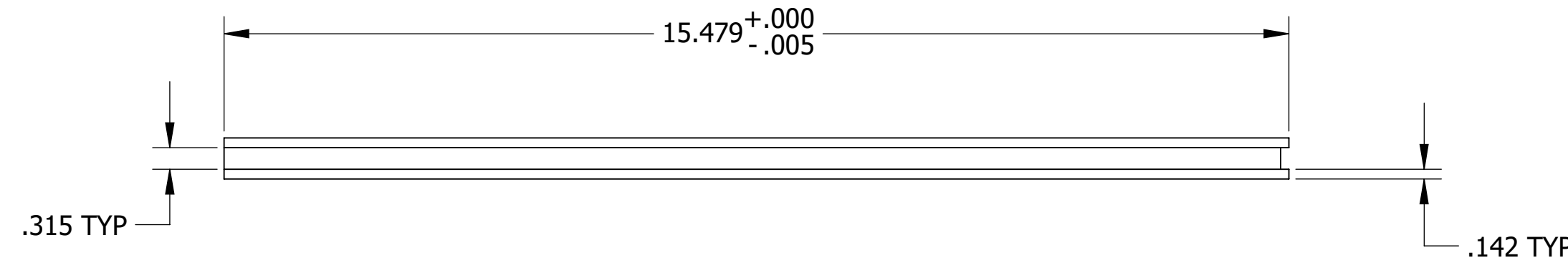


LAYER #	CUT CENTER (IN)	CUT RADIUS (IN)
1	2.722	5.394
2	2.742	5.414
3	2.762	5.435
4	2.782	5.455
5	2.802	5.476
6	2.822	5.496
7	2.842	5.517
8	2.862	5.538
9	2.882	5.558
10	2.903	5.579

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**NOTES**

1. MATERIAL CERTIFICATIONS REQUIRED.
2. QUANTITY: 10X, 1X OF EACH LAYER. FOR CIRCLED DIMENSIONS, REFER TO DESIGN TABLE FOR DIMENSIONS TO BE USED. ALL OTHER DIMENSIONS ARE COMMON FOR ALL LAYERS.
3. PART IS SYMMETRIC ACROSS  $\phi$  AS SHOWN.



**MATERIAL: TUNGSTEN (W 6Ni-4Cu)**

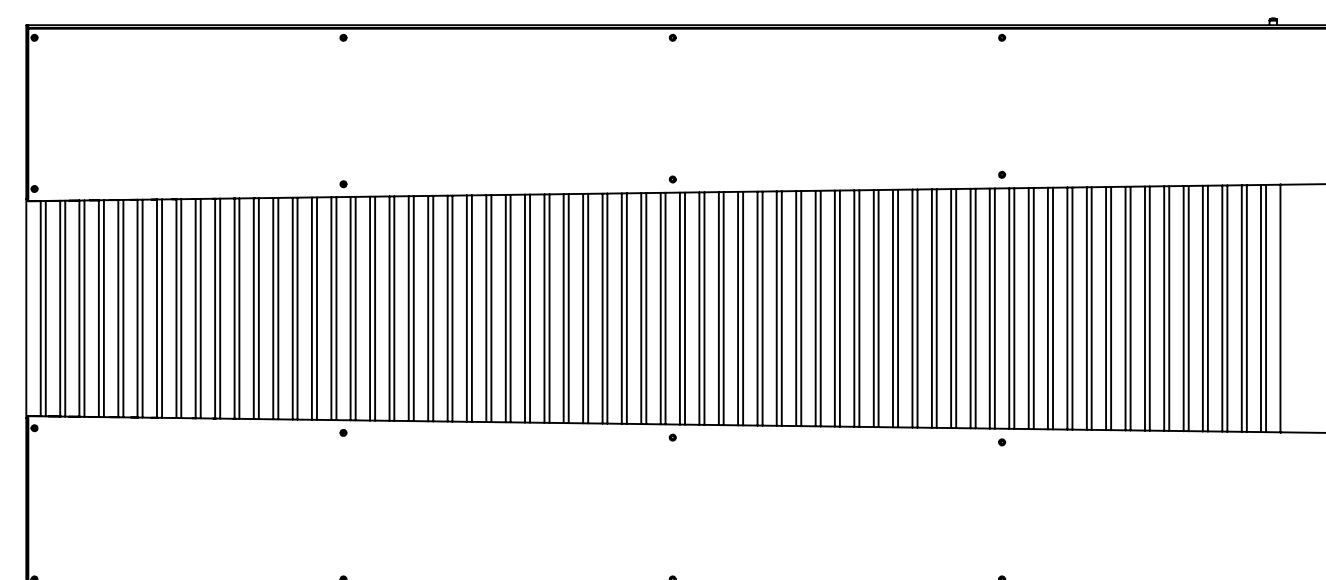
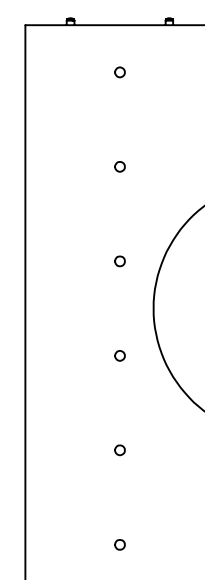
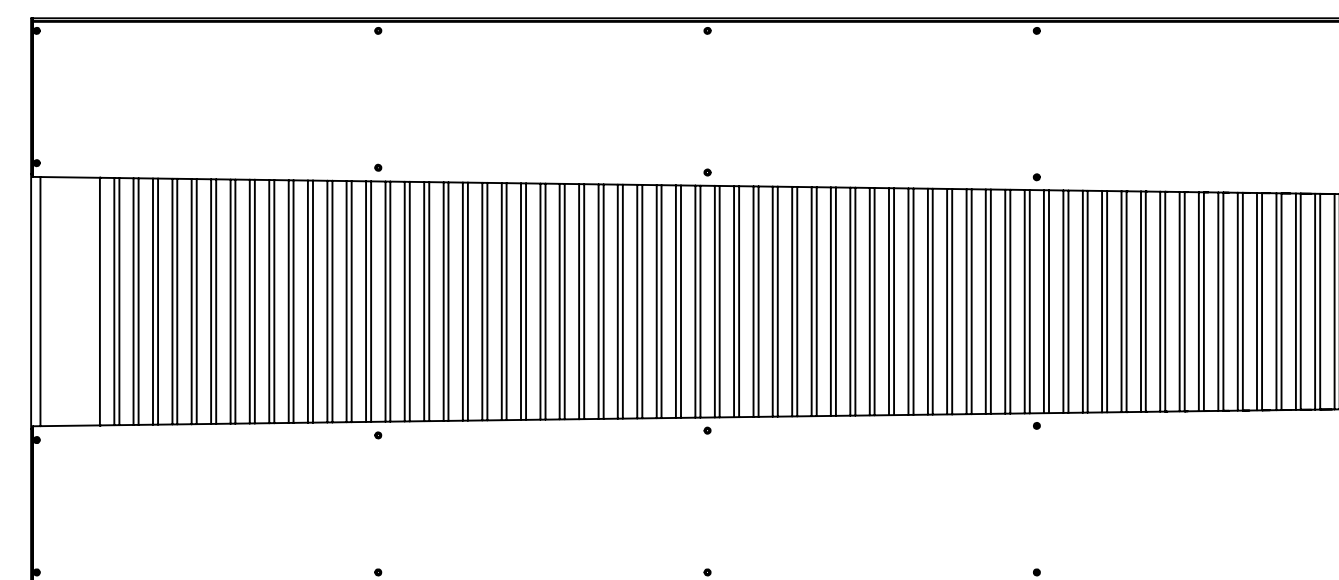
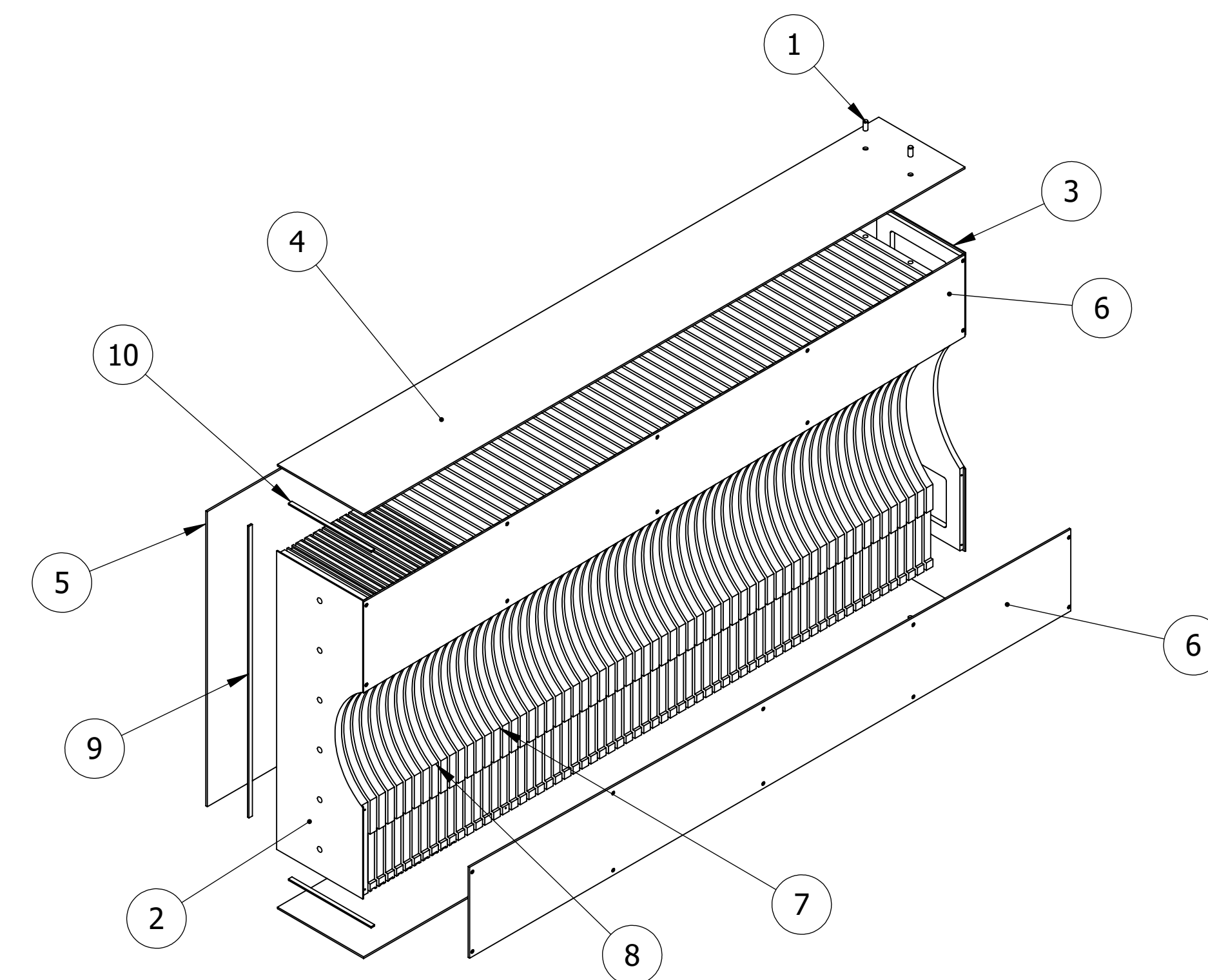
QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF OAK RIDGE NATIONAL LABORATORY OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN			
DESCRIPTION	STATUS		DESIGNER	DATE	DATE		GROUP	SIZE	DWG NO.	REV
MATERIAL MILL TEST REPORT	x	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100    ANGULAR .XX = ±1/2 X.XX = ±.010 X.XXX = ±.005 <b>DO NOT SCALE DRAWING</b>	DES	EJ FOUNTAIN	07/05/2023	<b>EPIC</b> <b>INSERT ASSEMBLY_RIGHT</b> <b>TUNGSTEN ABSORBER PLATE</b>	<b>D</b>	NEXT ASSY EPIC-410	<b>EPIC-417</b>	<b>0</b>
LEAK TEST REPORT			DRW	EJ FOUNTAIN	07/05/2023					
CLEANING CERT			CHK	CD OTTINGER	07/05/2023					
WELD / BRAZE INSPECTION REPORT			ENG	EJ FOUNTAIN	07/05/2023					
HEAT TREAT REPORT			QA							
DIMENSIONAL REPORT			TOTAL WEIGHT: <b>115.6373 LBS</b>			SCALE: 1:2	NAME: TUNGSTEN ABSORBER PLATE	SHEET: 1 of 1		
MATERIAL SELLER CERT			THIS DRAWING PRODUCED USING <b>SolidWorks</b>							
FUNCTIONAL TEST REPORT										
DEVIATION REQUEST	x									
NONCONFORMANCE REPORT	x									

DWG NO. EPIC-417  
CAD FILE: fHCAL Insert Tungsten Tile\_Right

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**NOTES**

1. MATERIAL CERTIFICATIONS REQUIRED.
2. P/N# 7 & \* ARE TO BE INSTALLED NUMERICALLY BASED ON THE LAYER IDENTIFICATION ON THE CORRESPONDING DRAWINGS STARTING AT THE FRONT PLATE OF THE ASSEMBLY. P/N #8 WILL BE INSTALLED 1, 2, 3, ...10. P/N #7 WILL BE INSTALLED 1, 2, 3,... 54.



ITEM	QTY.	NAME/PART NO	MATERIAL	DESCRIPTION	DWG
10	20	SHORT SHIM	1045 CARBON STEEL	11 GA SHEET METAL	EPIC-427
9	10	LONG SHIM	1045 CARBON STEEL	11 GA SHEET METAL	EPIC-418
8	10	TUNGSTEN ABSORBER PLATE	TUNGSTEN (W 6Ni-4Cu)	PLATE	EPIC-426
7	54	STEEL ABSORBER PLATE	1045 CARBON STEEL	PLATE	EPIC-425
6	2	PCB COVER	1045 CARBON STEEL	10 GA CARBON STEEL	EPIC-424
5	1	SIDE PLATE	1045 CARBON STEEL	10 GA SHEET METAL	EPIC-414
4	2	TOP / BOTTOM PLATE	1045 CARBON STEEL	10 GA SHEET METAL	EPIC-423
3	1	BACK PLATE	1045 CARBON STEEL	PLATE	EPIC-422
2	1	FRONT PLATE	1045 CARBON STEEL	PLATE	EPIC-421
1	2	MCMaster_91595A558	STEEL	8MM X 20MM DOWEL PIN	N/A

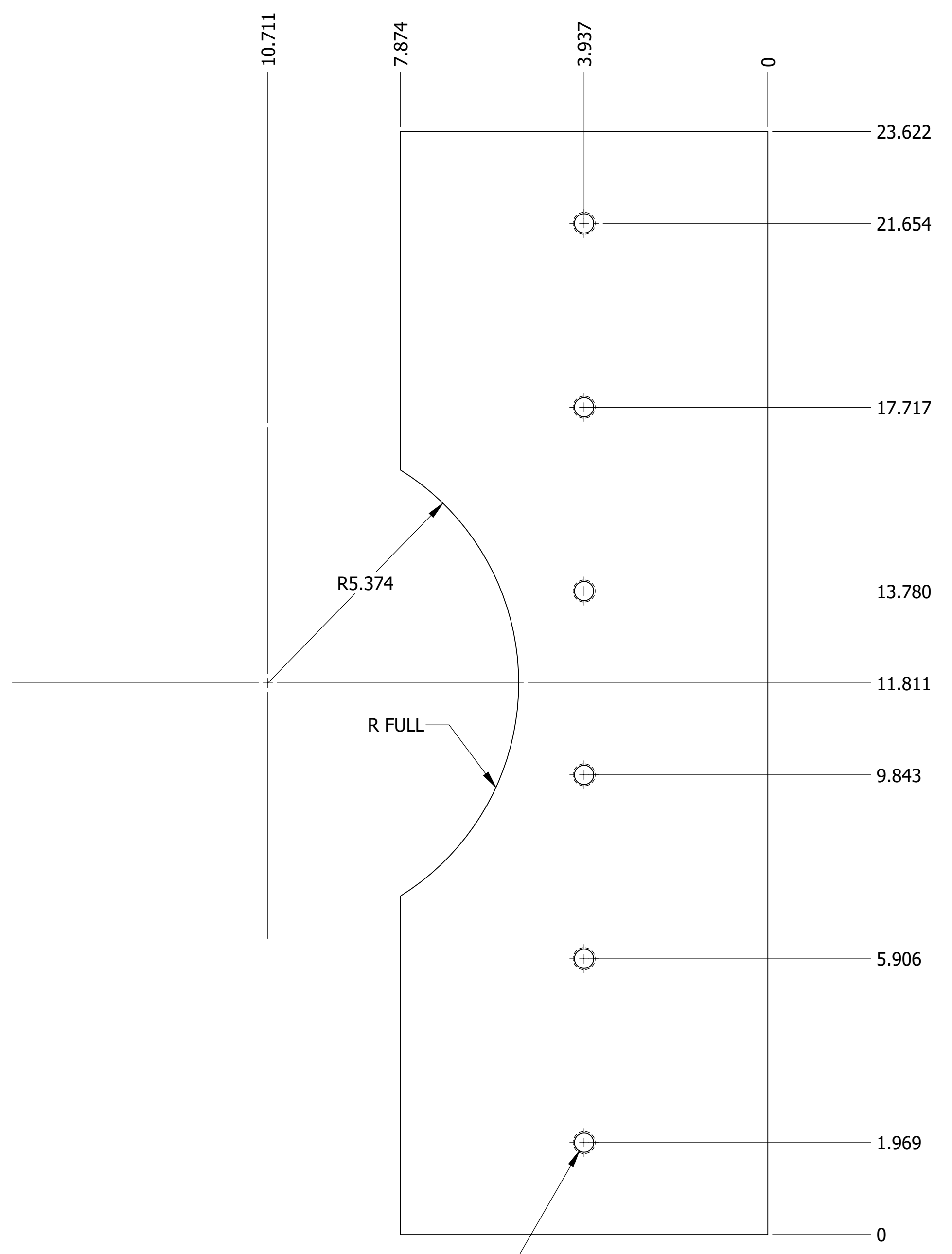
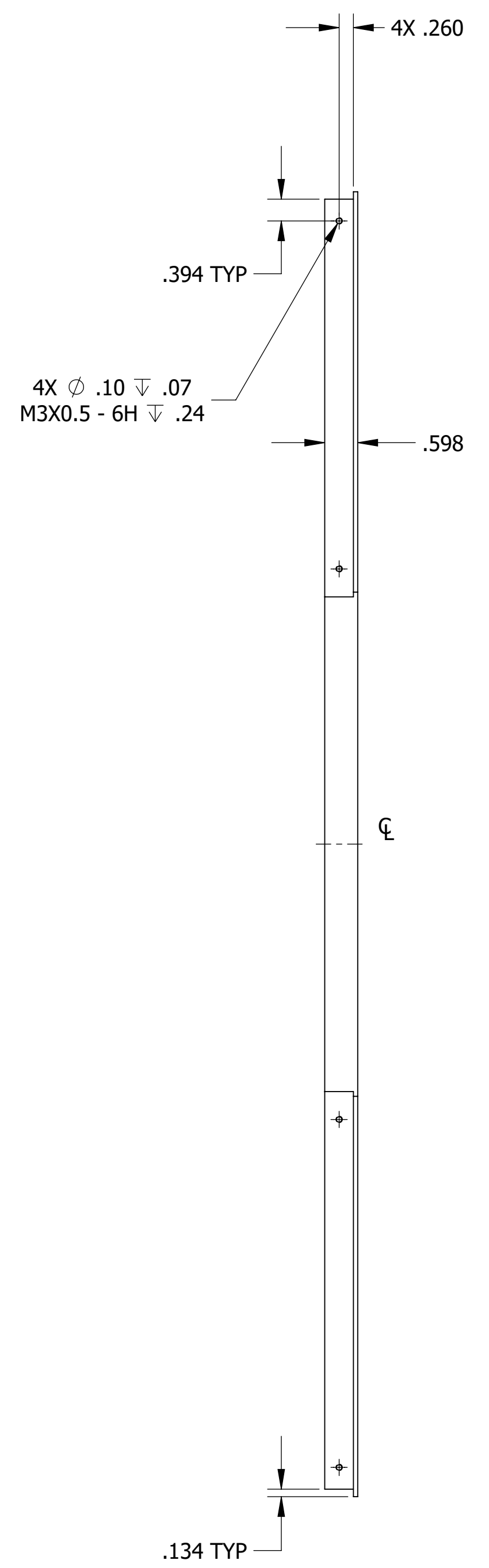
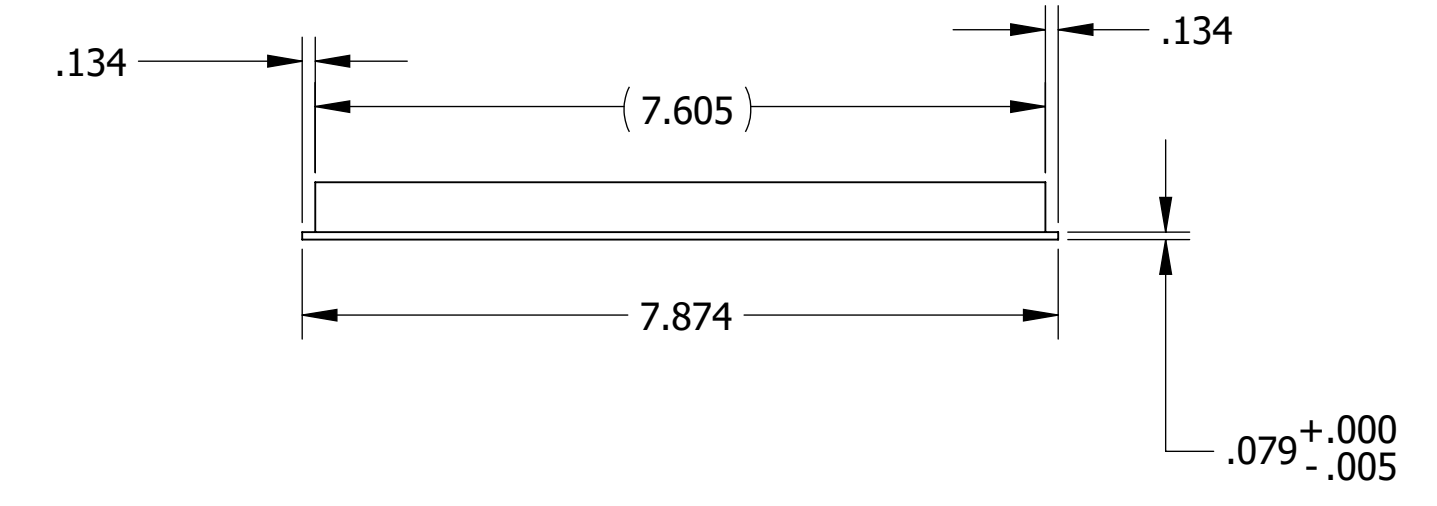
<b>QUALITY VERIFICATION REQUIREMENTS DOCUMENTS</b> MATERIAL MILL TEST REPORT LEAK TEST REPORT CLEANING CERT WELD / BRAZE INSPECTION REPORT <b>x</b> HEAT TREAT REPORT DIMENSIONAL REPORT MATERIAL SELLER CERT FUNCTIONAL TEST REPORT DEVIATION REQUEST <b>x</b> NONCONFORMANCE REPORT <b>x</b>		 THIRD-ANGLE PROJECTION  UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100    ANGULAR .X/XX = ±1/2 .XXX = ±.010 .XXX = ±.005 <b>DO NOT SCALE DRAWING</b>	<table border="1"> <tr> <th colspan="2">APPROVALS</th> <th>DATE</th> </tr> <tr> <td>DES</td> <td>EJ FOUNTAIN</td> <td>07/03/2023</td> </tr> <tr> <td>DRW</td> <td>EJ FOUNTAIN</td> <td>07/03/2023</td> </tr> <tr> <td>CHK</td> <td>CD OTTINGER</td> <td>07/03/2023</td> </tr> <tr> <td>ENG</td> <td>EJ FOUNTAIN</td> <td>07/03/2023</td> </tr> <tr> <td>QA</td> <td></td> <td></td> </tr> </table>	APPROVALS		DATE	DES	EJ FOUNTAIN	07/03/2023	DRW	EJ FOUNTAIN	07/03/2023	CHK	CD OTTINGER	07/03/2023	ENG	EJ FOUNTAIN	07/03/2023	QA			 THIS DRAWING IS THE PROPERTY OF <b>OAK RIDGE NATIONAL LABORATORY</b> OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN  <b>REMOTE SYSTEMS GROUP</b>  <b>EPIC</b> <b>INSERT ASSEMBLY</b> <b>LEFT SIDE WELDMENT</b>	<table border="1"> <tr> <td>TOTAL WEIGHT</td> <td>LBS</td> <td>SIZE</td> <td>NEXT ASSY</td> <td>DWG NO.</td> <td>REV</td> </tr> <tr> <td></td> <td></td> <td><b>D</b></td> <td>EPIC-400</td> <td><b>EPIC-420</b></td> <td><b>0</b></td> </tr> <tr> <td colspan="2">THIS DRAWING PRODUCED USING</td> <td>SCALE</td> <td>NAME</td> <td>SHEET</td> <td>1 of 1</td> </tr> <tr> <td colspan="2"><b>SolidWorks</b></td> <td>1:8</td> <td>INSERT WELDMENT_LEFT</td> <td></td> <td></td> </tr> </table>	TOTAL WEIGHT	LBS	SIZE	NEXT ASSY	DWG NO.	REV			<b>D</b>	EPIC-400	<b>EPIC-420</b>	<b>0</b>	THIS DRAWING PRODUCED USING		SCALE	NAME	SHEET	1 of 1	<b>SolidWorks</b>		1:8	INSERT WELDMENT_LEFT		
APPROVALS		DATE																																													
DES	EJ FOUNTAIN	07/03/2023																																													
DRW	EJ FOUNTAIN	07/03/2023																																													
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TOTAL WEIGHT	LBS	SIZE	NEXT ASSY	DWG NO.	REV																																										
		<b>D</b>	EPIC-400	<b>EPIC-420</b>	<b>0</b>																																										
THIS DRAWING PRODUCED USING		SCALE	NAME	SHEET	1 of 1																																										
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DWG NO. EPIC-420  
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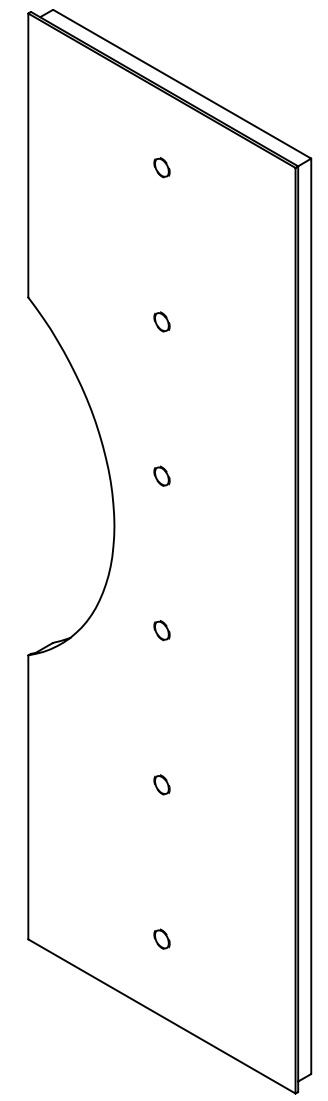
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**NOTES**

1. MATERIAL CERTIFICATIONS REQUIRED.
2. PART IS SYMMETRIC ACROSS  $\phi$  AS SHOWN.



6X Ø .41 THRU  
M12X1.5 - 6H THRU

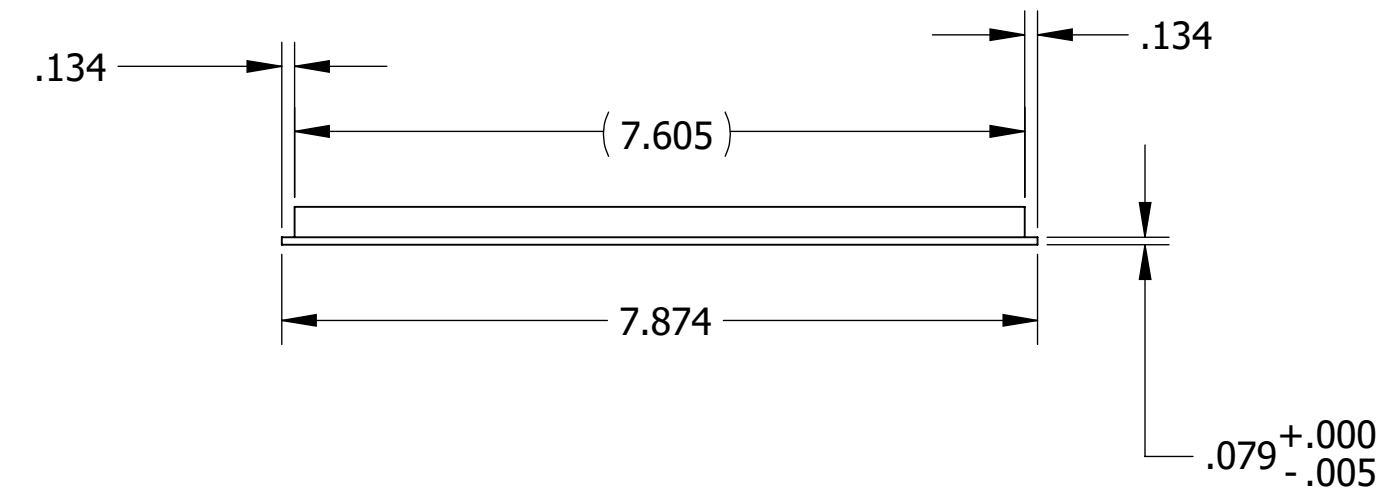


**MATERIAL: 1045 CARBON STEEL**

QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF <b>OAK RIDGE NATIONAL LABORATORY</b> OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN							
DESCRIPTION	STATUS		DESIGNER	DATE	DATE		SIZE	NEXT ASSY	DWG NO.	REV				
MATERIAL MILL TEST REPORT	x	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100    ANGULAR .X/XX = ±.1/2 .XXX = ±.010 .XXX = ±.005 <b>DO NOT SCALE DRAWING</b>	DES	EJ FOUNTAIN	07/05/2023		<b>EPIC INSERT ASSEMBLY_LEFT FRONT PLATE</b>							
LEAK TEST REPORT			DRW	EJ FOUNTAIN	07/05/2023									
CLEANING CERT			CHK	CD OTTINGER	07/05/2023									
WELD / BRAZE INSPECTION REPORT			ENG	EJ FOUNTAIN	07/05/2023	QA	TOTAL WEIGHT: <b>27.7708 LBS</b> THIS DRAWING PRODUCED USING <b>SolidWorks</b>							
HEAT TREAT REPORT						SCALE				1:2	NAME	FRONT PLATE	SHEET	1 of 1
DIMENSIONAL REPORT														
MATERIAL SELLER CERT														
FUNCTIONAL TEST REPORT														
DEVIATION REQUEST	x													
NONCONFORMANCE REPORT	x													

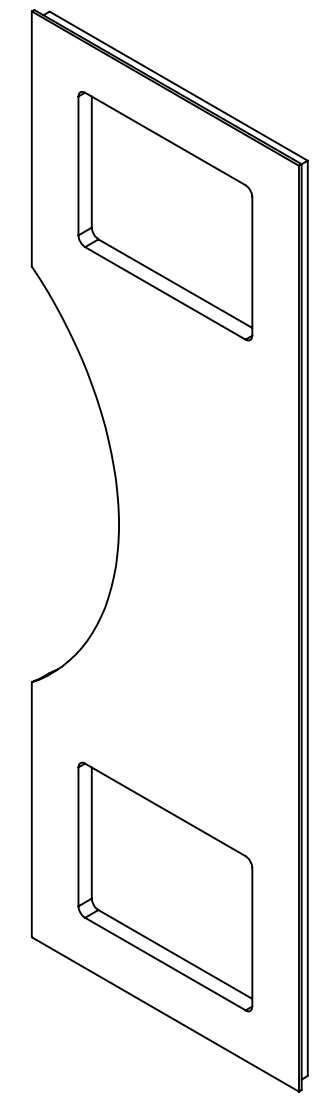
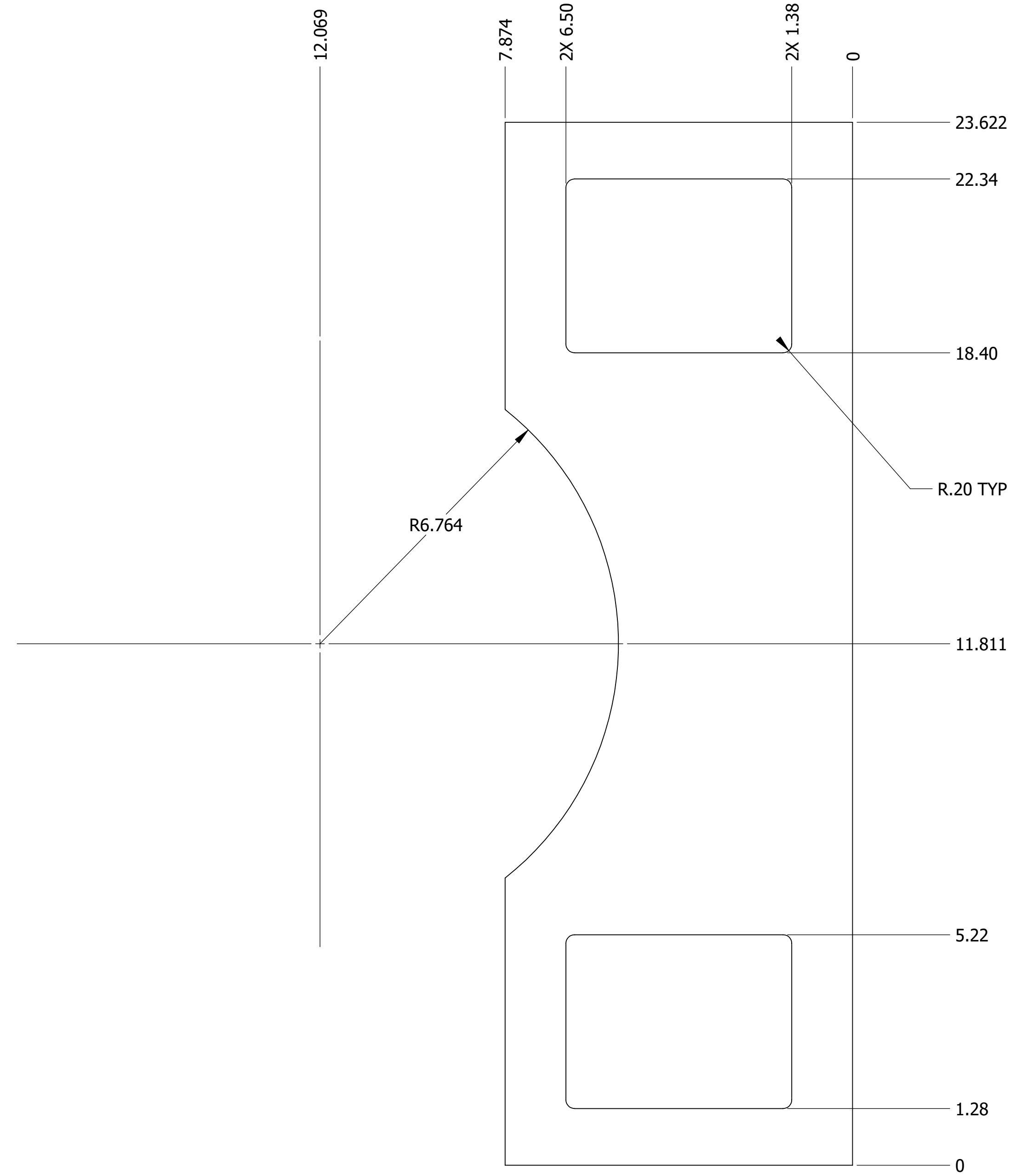
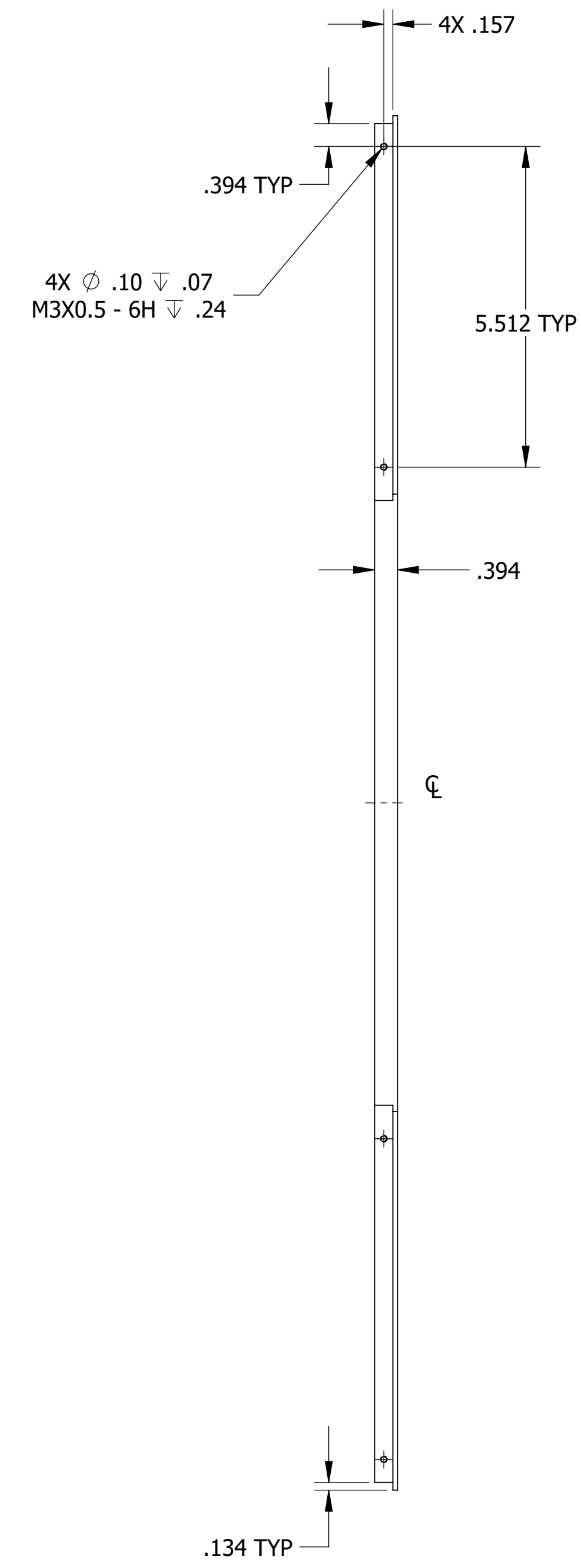
DWG NO. EPIC-421  
CAD FILE: fHCAL\_Insert\_Front\_Plate\_Left

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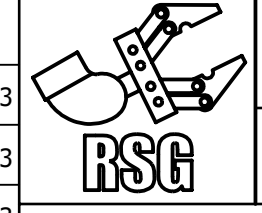


**NOTES**

1. MATERIAL CERTIFICATIONS REQUIRED.
2. PART IS SYMMETRIC ACROSS  $\phi$  AS SHOWN.



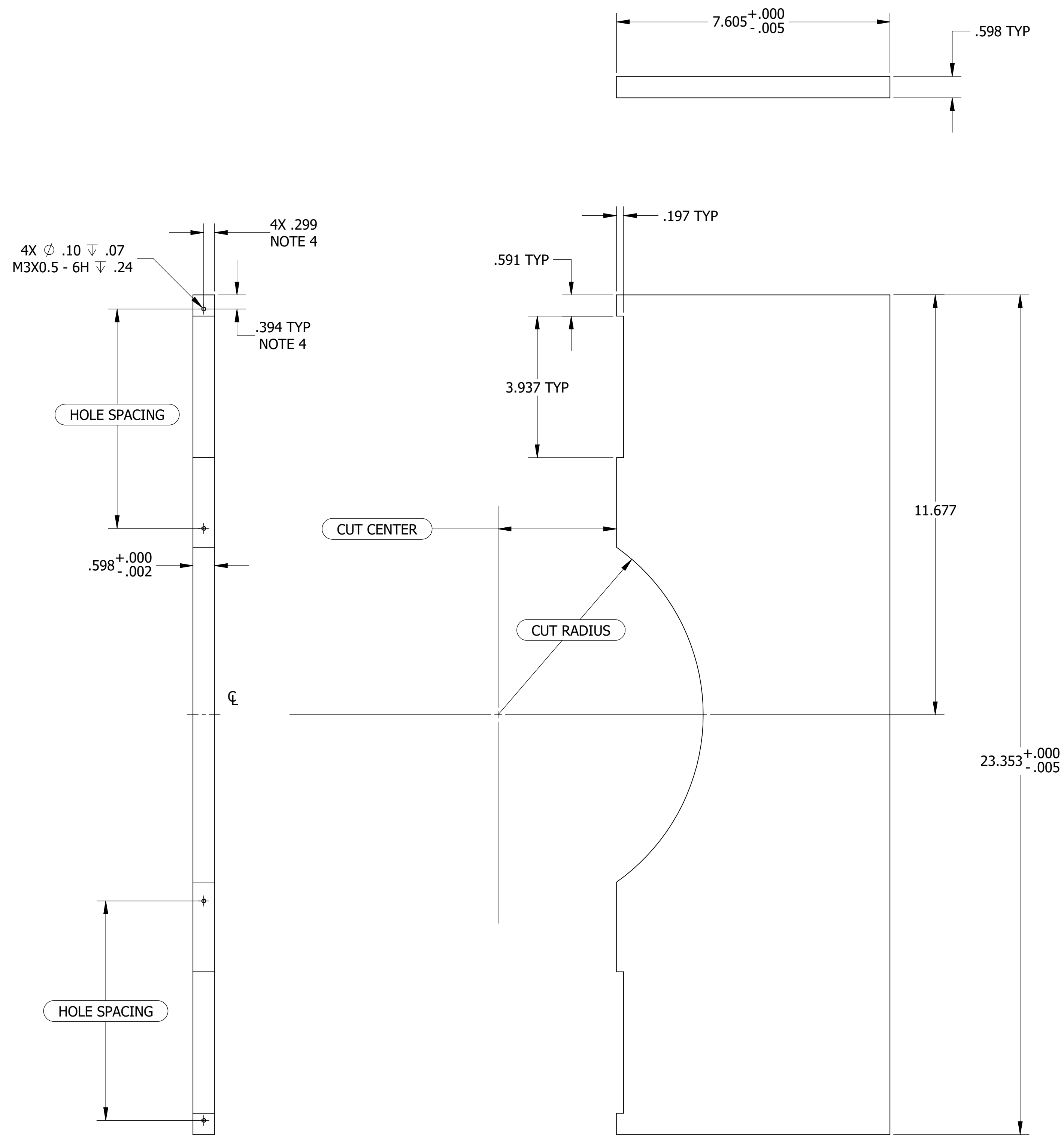
**MATERIAL: 1045 CARBON STEEL**

QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF	
			DES	EJ FOUNTAIN	07/05/2023		OAK RIDGE NATIONAL LABORATORY	
MATERIAL MILL TEST REPORT	x	UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M BREAK SHARP CORNERS AND REMOVE ALL BURRS DEFAULT TOLERANCES LINEAR .XX = ±.100 ANGULAR .XX = ±.100 .XXX = ±.010 .XXX = ±.005 <b>DO NOT SCALE DRAWING</b>	DRW	EJ FOUNTAIN	07/05/2023	OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN		
LEAK TEST REPORT			CHK	CD OTTINGER	07/05/2023	<b>REMOTE SYSTEMS GROUP</b>  <b>EPIC</b> <b>INSERT ASSEMBLY_LEFT</b> <b>BACK PLATE</b>		
CLEANING CERT			QA					
WELD / BRAZE INSPECTION REPORT			TOTAL WEIGHT		13.6150 LBS		SIZE	NEXT ASSY
HEAT TREAT REPORT			THIS DRAWING PRODUCED USING		SolidWorks		D	EPIC-420
DIMENSIONAL REPORT			SCALE		1:2		NAME	BACK PLATE
MATERIAL SELLER CERT			SHEET		1 of 1		DWG NO.	EPIC-422
FUNCTIONAL TEST REPORT			REV		0			
DEVIATION REQUEST	x		SHEET		1 of 1			
NONCONFORMANCE REPORT	x		SHEET		1 of 1			

DWG NO. EPIC-422  
CAD FILE: fHCAL\_Insert Back Plate\_Left

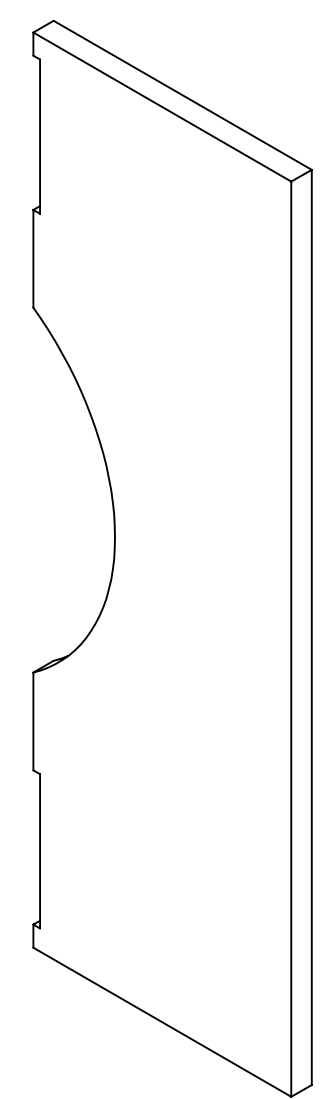
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LAYER #	CUT CENTER (IN)	CUT RADIUS (IN)	HOLE SPACING (IN)
1	3.192	5.599	N/A
2	3.212	5.620	N/A
3	3.232	5.640	N/A
4	3.252	5.661	N/A
5	3.272	5.681	N/A
6	3.292	5.702	6.102
7	3.312	5.723	N/A
8	3.332	5.743	N/A
9	3.352	5.764	N/A
10	3.372	5.784	N/A
11	3.392	5.805	N/A
12	3.412	5.825	N/A
13	3.433	5.846	N/A
14	3.453	5.867	N/A
15	3.473	5.887	N/A
16	3.493	5.908	N/A
17	3.513	5.928	N/A
18	3.533	5.949	N/A
19	3.553	5.969	N/A
20	3.573	5.990	N/A
21	3.593	6.010	N/A
22	3.613	6.031	N/A
23	3.633	6.052	5.906
24	3.653	6.072	N/A
25	3.673	6.093	N/A
26	3.694	6.113	N/A
27	3.714	6.134	N/A
28	3.734	6.154	N/A
29	3.754	6.175	N/A
30	3.774	6.195	N/A
31	3.794	6.216	N/A
32	3.814	6.237	N/A
33	3.834	6.257	N/A
34	3.854	6.278	N/A
35	3.874	6.298	N/A
36	3.894	6.319	N/A
37	3.914	6.339	N/A
38	3.934	6.360	N/A
39	3.955	6.380	N/A
40	3.975	6.401	5.709
41	3.995	6.422	N/A
42	4.015	6.442	N/A
43	4.035	6.463	N/A
44	4.055	6.483	N/A
45	4.075	6.504	N/A
46	4.095	6.524	N/A
47	4.115	6.545	N/A
48	4.135	6.565	N/A
49	4.155	6.586	N/A
50	4.175	6.607	N/A
51	4.196	6.627	N/A
52	4.216	6.648	N/A
53	4.236	6.668	N/A
54	4.256	6.689	N/A



**NOTES**

1. MATERIAL CERTIFICATIONS REQUIRED.
2. QUANTITY: 54X, 1X OF EACH LAYER. FOR CIRCLED DIMENSIONS, REFER TO DESIGN TABLE FOR DIMENSIONS TO BE USED. ALL OTHER DIMENSIONS ARE COMMON FOR ALL LAYERS.
3. PART IS SYMMETRIC ACROSS  $\phi$  AS SHOWN.
4. TAPPED HOLES ONLY FOR LAYER # 6, 23, & 40 AS DETAILED IN THE DESIGN TABLE.



**MATERIAL: 1045 CARBON STEEL**

QUALITY VERIFICATION REQUIREMENTS DOCUMENTS		THIRD-ANGLE PROJECTION	APPROVALS		DATE		THIS DRAWING IS THE PROPERTY OF OAK RIDGE NATIONAL LABORATORY OPERATED FOR THE U.S. DEPARTMENT OF ENERGY UNDER CONTRACT DE-AC05-00OR22725 OAK RIDGE, TN	
MATERIAL MILL TEST REPORT	x		DES	EJ FOUNTAIN	07/05/2023		REMOTE SYSTEMS GROUP	
LEAK TEST REPORT		DRW	EJ FOUNTAIN	07/05/2023	<b>EPIC</b> <b>INSERT ASSEMBLY_LEFT</b> <b>STEEL ABSORBER PLATE</b>			
CLEANING CERT		CHK	CD OTTINGER	07/05/2023				
WELD / BRAZE INSPECTION REPORT		ENG	EJ FOUNTAIN	07/05/2023	QA			
HEAT TREAT REPORT		UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES						
DIMENSIONAL REPORT		INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M						
MATERIAL SELLER CERT		BREAK SHARP CORNERS AND REMOVE ALL BURRS						
FUNCTIONAL TEST REPORT		DEFAULT TOLERANCES						
DEVIATION REQUEST	x	LINEAR .XX = ±.100	ANGULAR .XXX = ±.010		TOTAL WEIGHT	<b>27.0338 LBS</b>	SIZE <b>D</b>	
NONCONFORMANCE REPORT	x	DO NOT SCALE DRAWING			THIS DRAWING PRODUCED USING <b>SolidWorks</b>		SCALE 1:2	
					NEXT ASSY <b>EPIC-420</b>		DWG NO. <b>EPIC-425</b>	
					NAME <b>STEEL ABSORBER PLATE</b>		REV <b>0</b>	
					SHEET <b>1 of 1</b>			

DWG NO. EPIC-425  
CAD FILE: fHCAL\_Insert\_Steel\_Tile\_Left