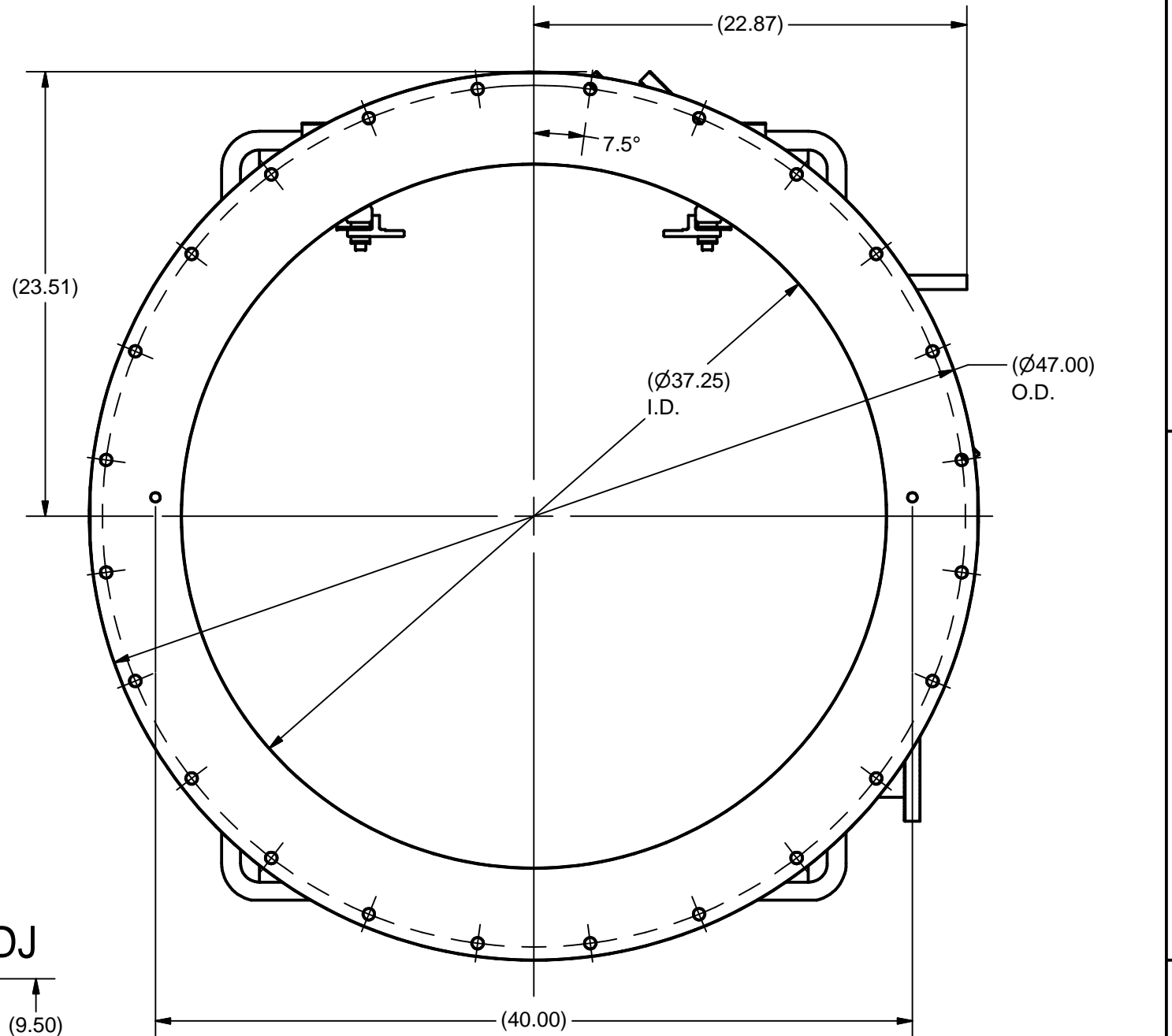


SYM.		ZONE		REVISIONS		
				DESCRIPTION	DATE	APP.



VIEW DG-DG  
SCALE 1:8

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	QUANTITY	REMARKS	REV.
32	PURCHASE	CF FLANGE, 4 5/8" NON ROTATABLE, 3" BORE, REF # F485300, 304 SS				4	MDC # 110024	
31	SHEET 7	RAILSUPPORT				2		
30	PURCHASE	PLAIN WASHER, 3/8", WIDE				35	McMASTER # 98025A031	
29	PURCHASE	HEX SOCKET CAP SCREW, FLAT POINT, 3/8-16 UNC x 1 1/2" L				35	McMASTER # 90128A628	
28	PURCHASE	HEX SOCKET SET SCREW, FLAT POINT, 3/8-16 UNC x 1				34	McMASTER # 94105A615	
27	SHEET 6	SHIM BLOCK						
26	SHEET 6	STOCK SHIMS						
25	SHEET 6	T RAIL				2		
24	SHEET 6	RAIL SUBASSEMBLY				2		
23	SHEET 5	CYLINDER PATCH				10		
22	SHEET 5	WAVE GUIDE SUPPORT PLATE 2				12		
21	SHEET 5	WAVE GUIDE SUPPORT PLATE 1				24		
20	SHEET 5	STIFFENING RING				12		
19	SHEET 5	FOOT BOSS				10		
18	SHEET 5	OUTRIGGER PLATE				3		
17								
16	SHEET 5	U FOOT				5		
15	SHEET 4	COUPLER/TUNER SIDE PORT FLANGE				11		
14	SHEET 4	COUPLER/TUNER SIDE PORT TUBE				11		
13	SHEET 4	TOP FLANGE				3		
12	SHEET 3	CRYOGENIC PORT TUBE 3				1		
11	SHEET 3	CRYOGENIC PORT TUBE 2				2		
10	SHEET 3	CRYOGENIC PORT TUBE 1				1		
9	SHEET 3	GATE VALVE FLANGE				4		
8	SHEET 3	SAFETY / PUMPOUT PORT TUBE				2		
7	SHEET 3	SC MAGNETS PORT TUBE				1		
6	SHEET 3	GATE VALVE PORT TUBE				2		
5	SHEET 3	SLIP FLANGE				1		
4	SHEET 2	VACUUM VESSEL END FLANGE 2				1		
3	SHEET 2	VACUUM VESSEL END FLANGE 1				1		
2	SHEET 2	VACUUM VESSEL CYLINDER				1		
1	SHEET 1	VACUUM VESSEL ASSEMBLY				1		

SECTION DJ-DJ  
SCALE 1:15

1 VACUUM VESSEL ASSEMBLY  
 FILE NAME: 7103-153  
 SHEET NO.: 1  
 DFT. SCALE: 1:12  
 MATERIAL: VARIES  
 QTY: 1  
 NOTES:

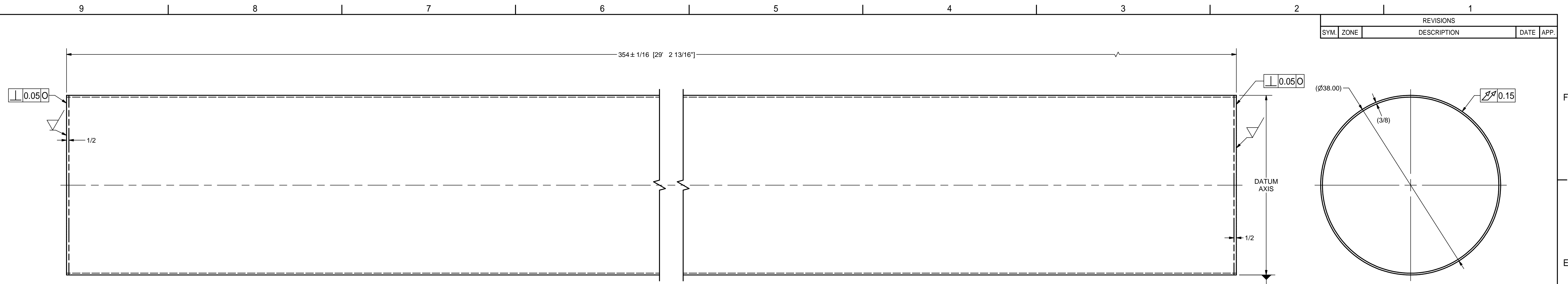
- WELDMENT MUST BE FREE OF DIRT, GREASE, OIL AND CHIPS;
- THE INTERIOR OF THE VESSEL SHALL BE BEAD OR SAND BLASTED TO REMOVE ALL RUST AND FOREIGN MATERIAL;
- ALL PARTS MUST BE DEGREASED WITH SOAP AND WATER, FOLLOWED BY DI WATER RINSE, BEFORE ANY WELDING;
- SEALING SURFACES MUST BE FREE OF SCRATCHES AND NICKS WITH NO RADIAL SCORING;
- WELDING FILLER MATERIAL:
  - A. CARBON STEEL TO CARBON STEEL: E70XX
  - B. STAINLESS STEEL TO STAINLESS STEEL: ER308
  - C. CARBON STEEL TO STAINLESS STEEL: ER309
- ALL VACUUM WELDS SHALL BE LEAK CHECKED WITH A CALIBRATED HELIUM LEAK DETECTOR. NO LEAK SHALL BE DETECTABLE AT THE SENSITIVITY OF 1x10<sup>-8</sup> MBAR-LITER/SEC;
- THE VESSEL INTERIOR WILL BE PAINTED WITH LOW VAPOR PRESSURE VACUUM COMPATIBLE EPOXY;
- THE VESSEL EXTERIOR WILL BE PAINTED WITH MARINE PAINTS;
- BOTH INTERIOR AND EXTERIOR PAINTS MUST HAVE GOOD ADHESION TO THE METAL SURFACES AND MUST BE SOLVENT RESISTANT;
- ALL PAINTING MUST BE APPLIED AFTER THE ASSEMBLY PASSED FINAL LEAK CHECKING.

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 T. O'Connell - 1/11/2013

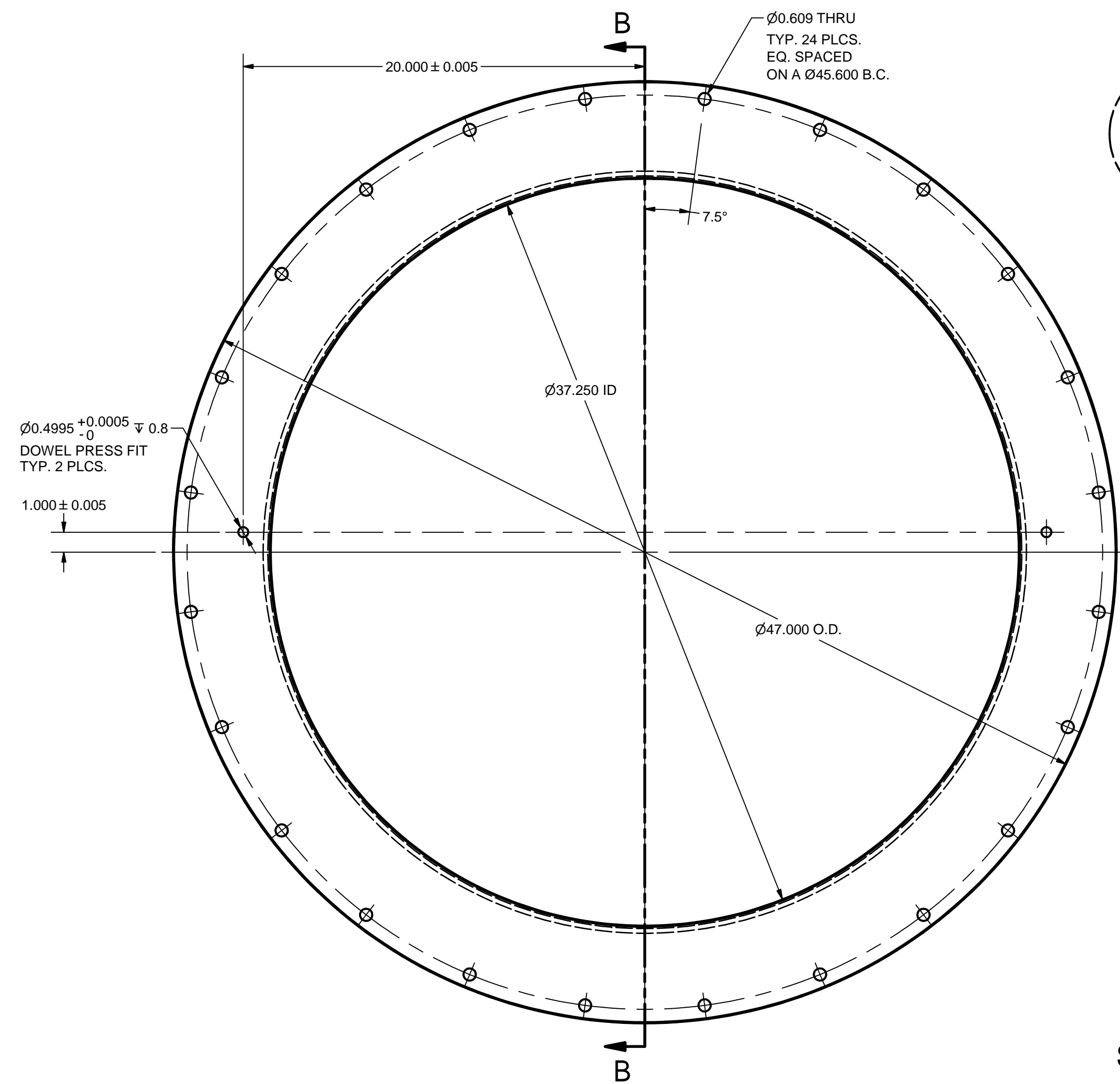
FOR MACHINING LUBRICANT USE ONLY  
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
 OR EQUIVALENT APPROVED BY CORNELL LEPP

D	PRINT	PLOT DATE: 2/5/2013	CORNELL UNIVERSITY <b>LEPP</b> LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS	CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853
	DISTR.	CAD FILE NAME: 7103-153.idw		
7103-153	CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON: 0 ± 0.02 .00 ± 0.010 .000 ± 0.005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES	ERL LINAC CRYOMODULE VACUUM VESSEL VACUUM VESSEL ASSEMBLY	
REV.	CHECKED BY: YHM/RTIO	DRAWN BY: YH	DATE: 5/31/2012	SCALE: D
	APPROVED BY: TIO	DRAWN FOR: M. Liepe	DATE: 5/31/2012	7103-153 SH. NO. 1 OF 15

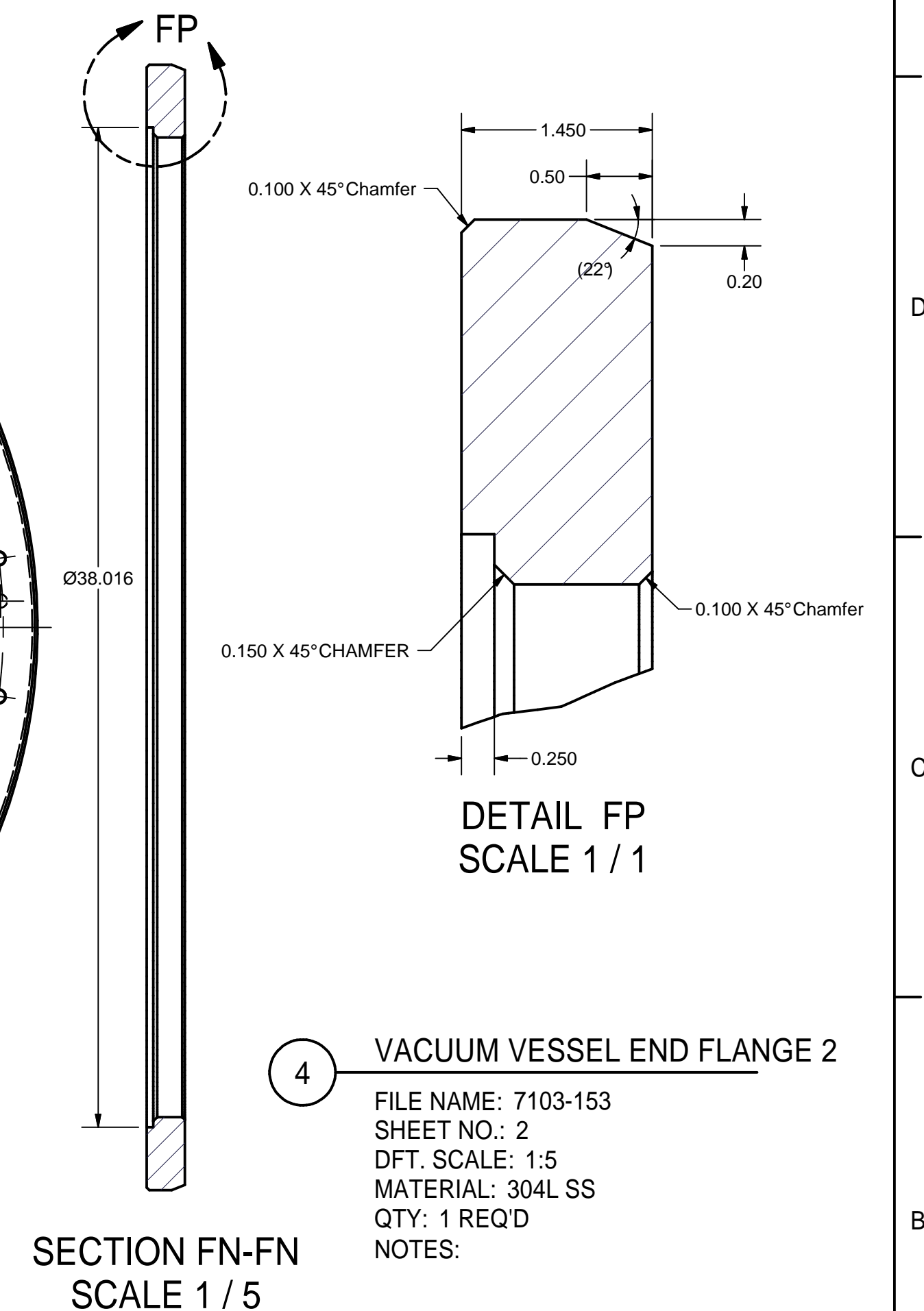
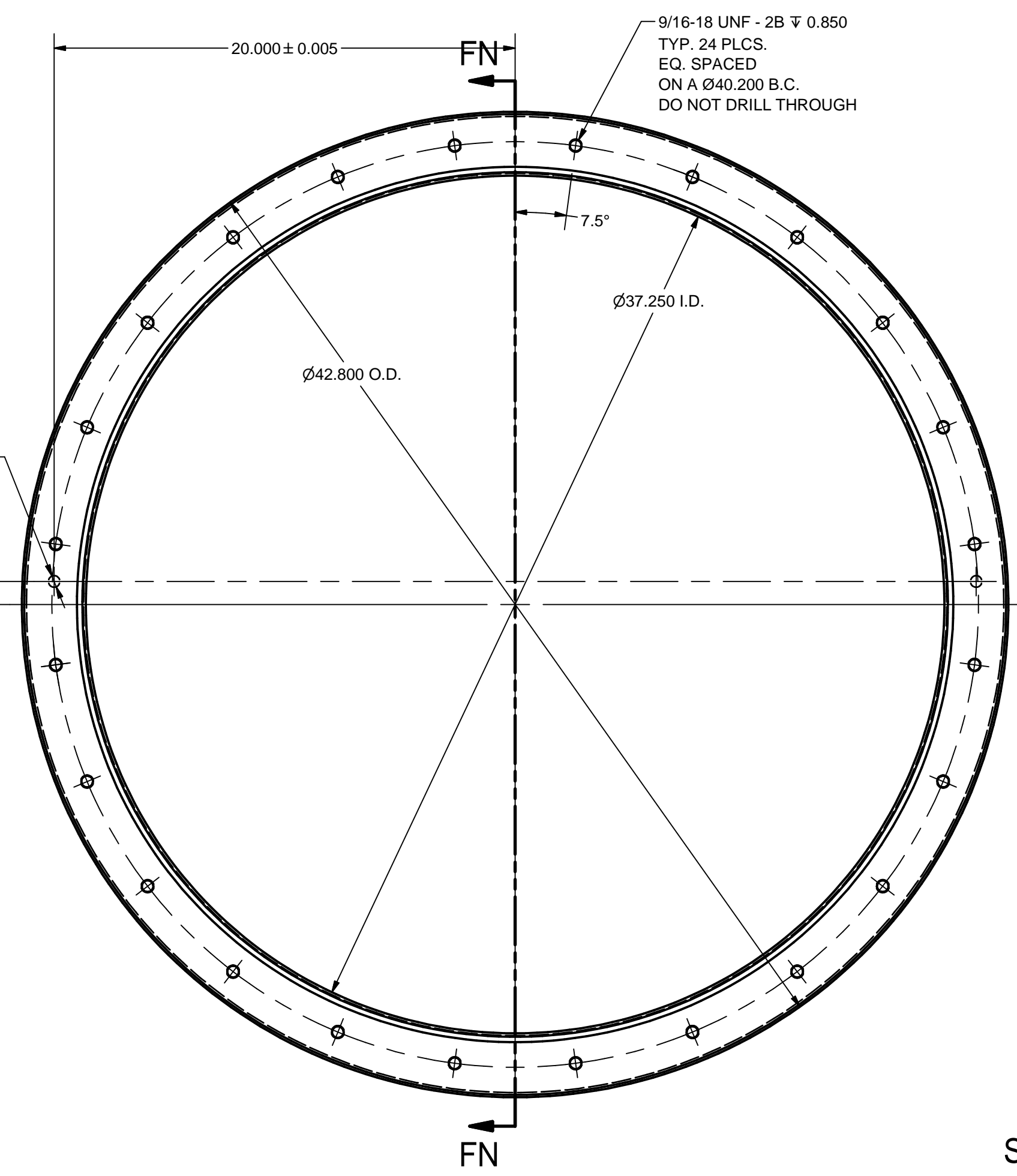
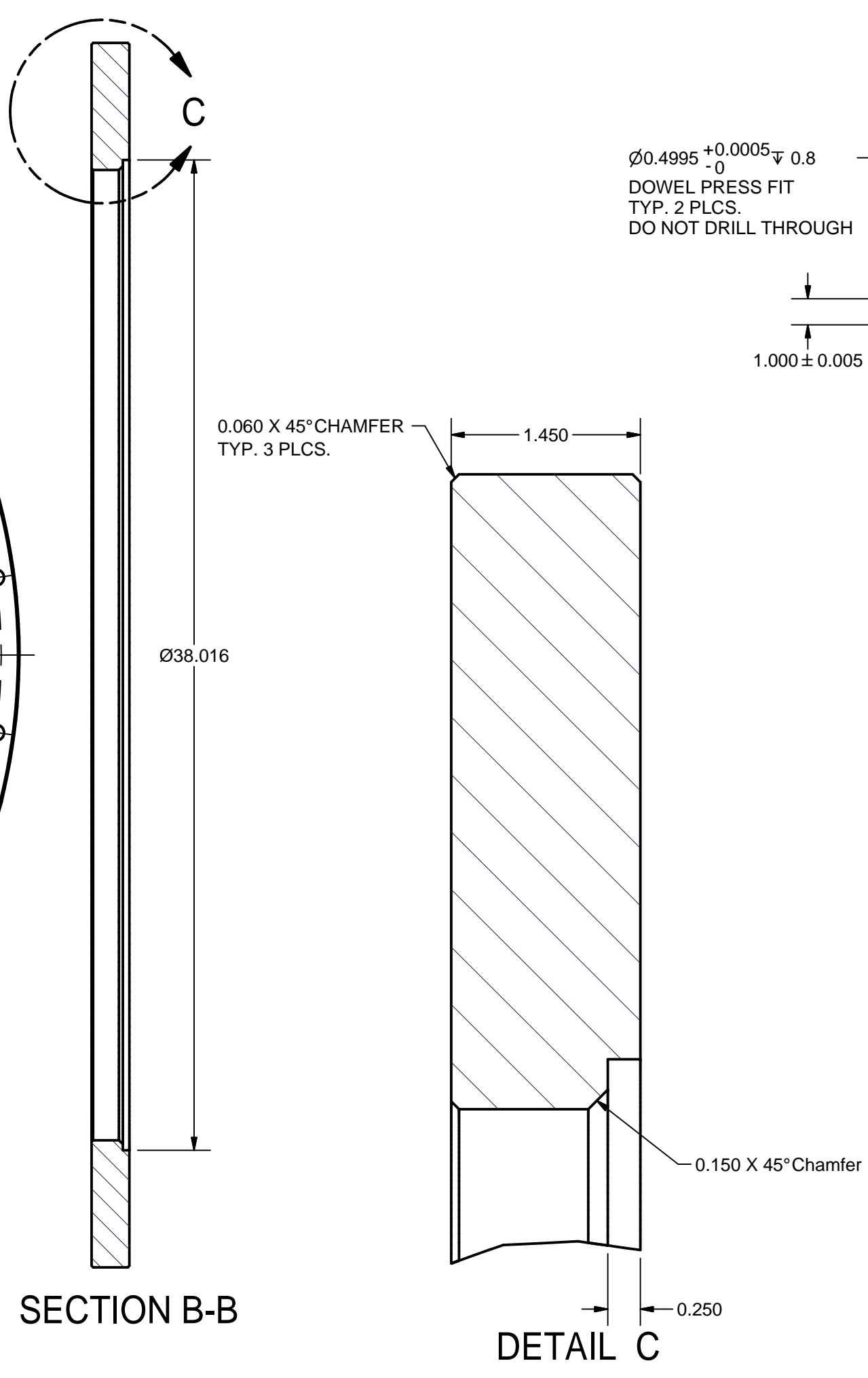
REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



**2 VACUUM VESSEL CYLINDER**  
 FILE NAME: 7103-153  
 SHEET NO.: 2  
 DFT. SCALE: 1:10  
 MATERIAL: 38" OD X 0.375 WALL CARBON STEEL PIPE (A516 GR70)  
 QTY: 1  
 NOTES: 1. SQUARE THE END FACES  
 2. MACHINE BOTH ENDS TO FIT TO END FLANGES



**3 VACUUM VESSEL END FLANGE 1**  
 FILE NAME: 7103-153  
 SHEET NO.: 2  
 DFT. SCALE: 1:5  
 MATERIAL: 304L SS  
 QTY: 1 REQ'D  
 NOTES:



**4 VACUUM VESSEL END FLANGE 2**  
 FILE NAME: 7103-153  
 SHEET NO.: 2  
 DFT. SCALE: 1:5  
 MATERIAL: 304L SS  
 QTY: 1 REQ'D  
 NOTES:

**RELEASED FOR VENDOR BID.  
 NOT FOR MANUFACTURE.  
 T. O'Connell - 1/11/2013**

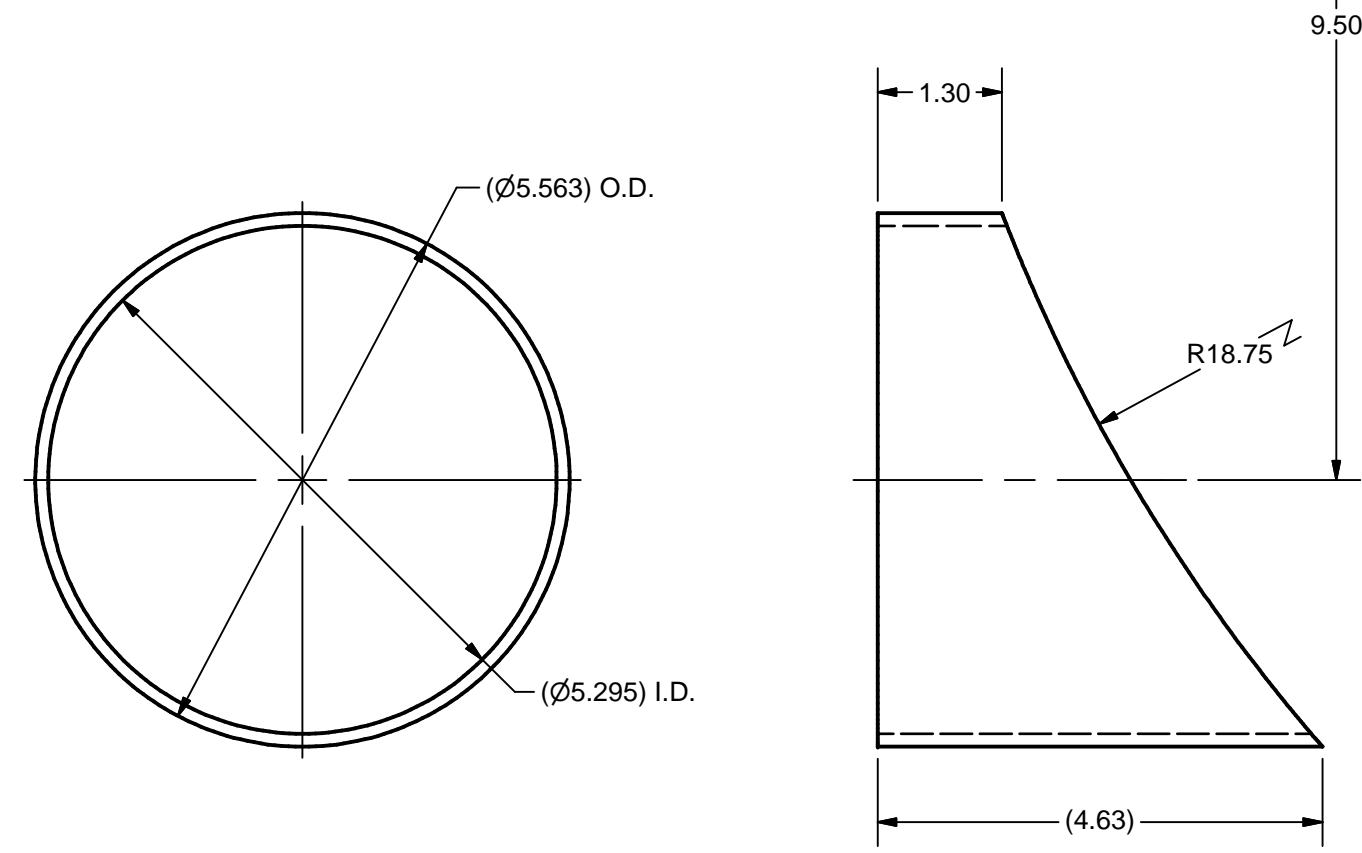
FOR MACHINING LUBRICANT USE ONLY  
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 OR EQUIVALENT APPROVED BY CORNELL LEPP

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.

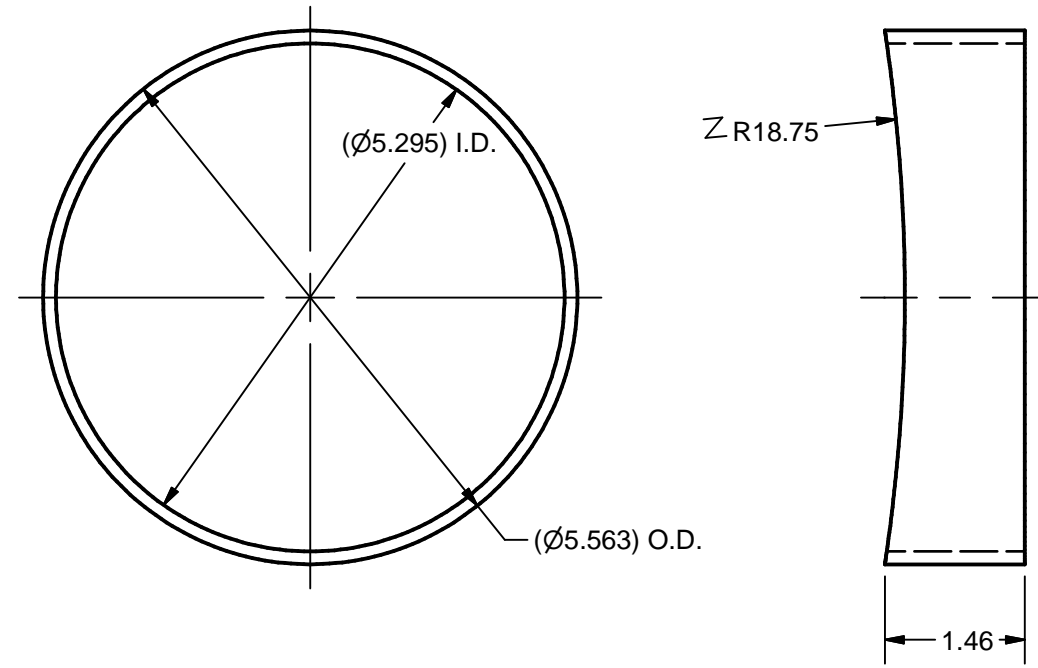
  

PRINT DISTR.	PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw			CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853	
CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: 0 ± 0.02 .00 ± 0.010 .000 ± 0.005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES	<b>ERL LINAC CRYOMODULE</b> <b>VACUUM VESSEL</b> <b>VACUUM VESSEL CYLINDER; END FLANGES; STIFFENING RINGS</b>			
CHECKED BY: YHMER/TIO	DRAWN BY: YH	DRAWN FOR: M. Liepe	DATE: 5/31/2012	SCALE: D	7103-153 SH. NO. 2 OF 15
APPROVED BY: TIO					

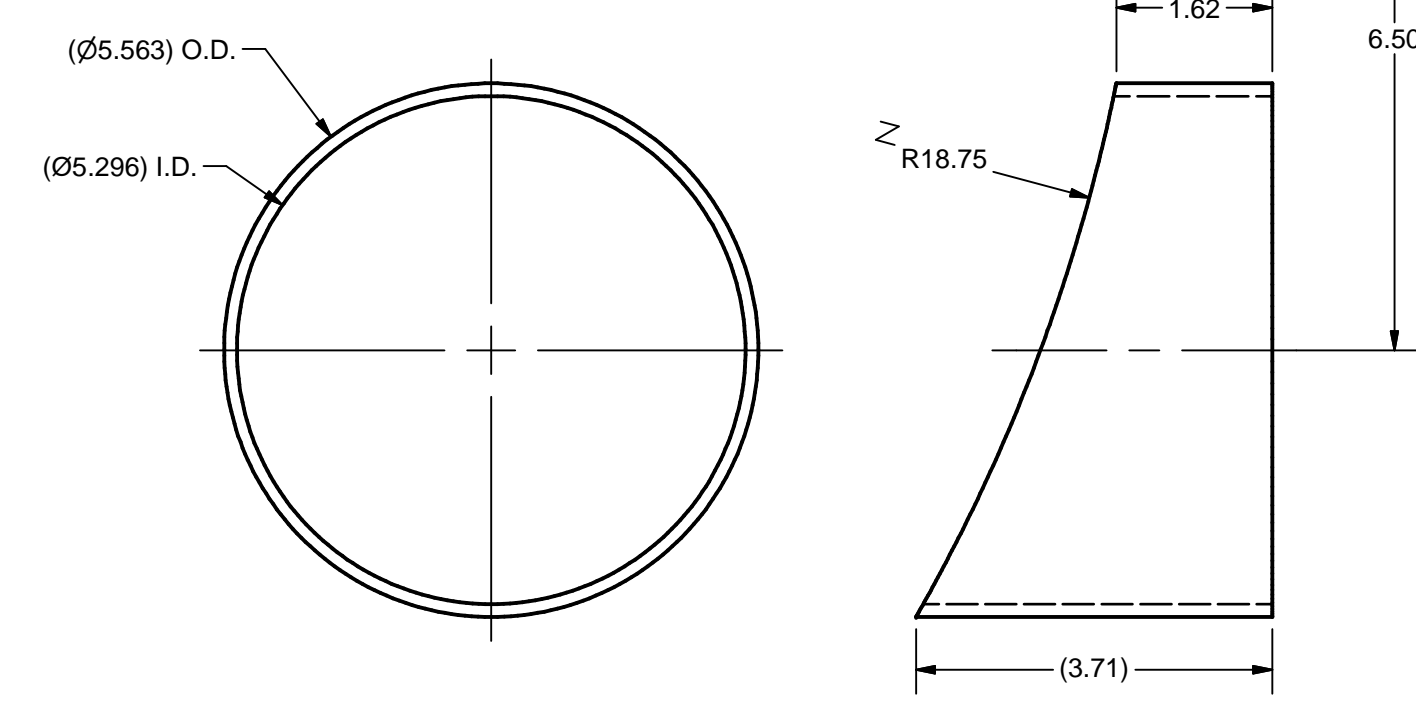
REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



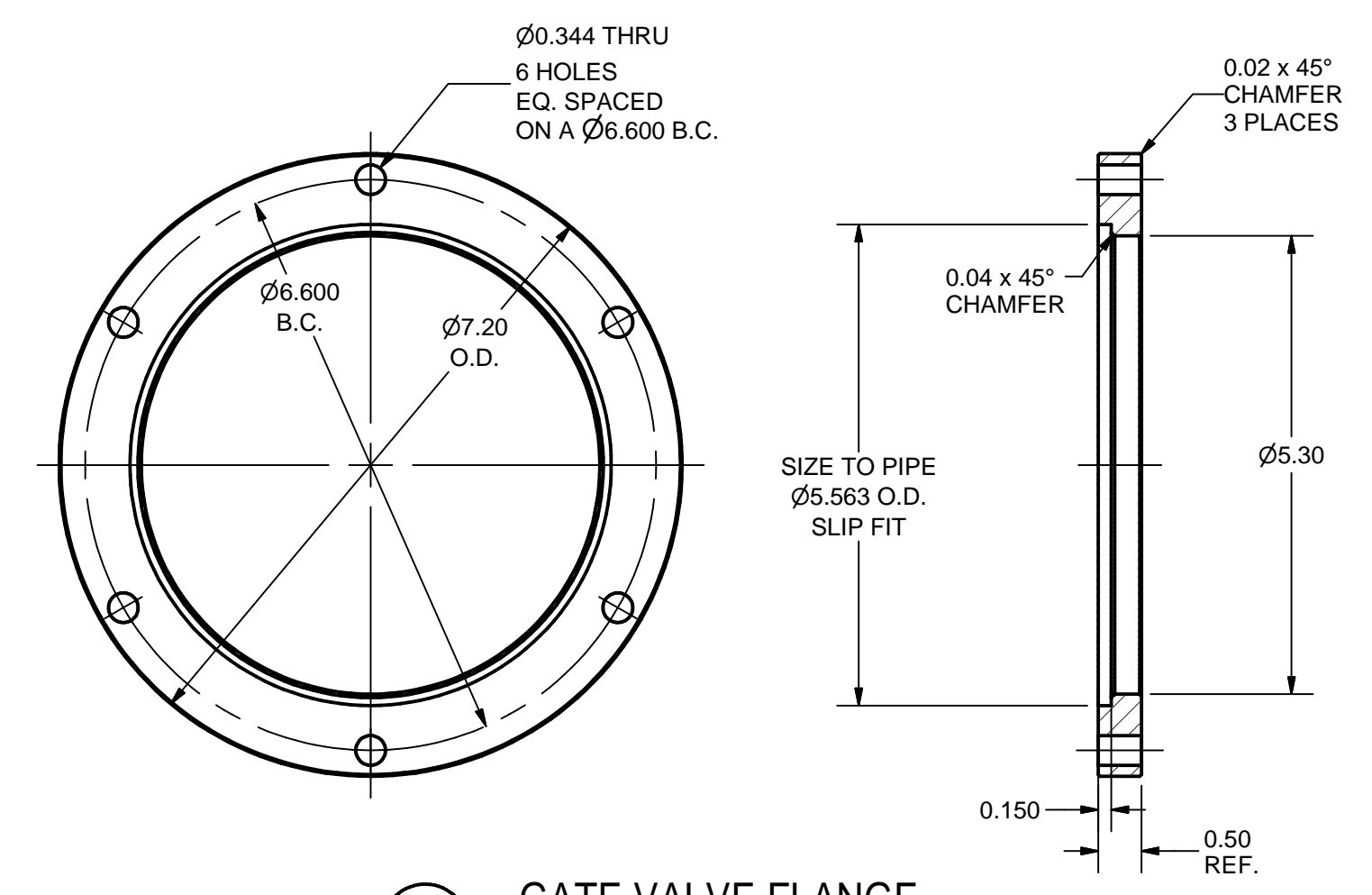
**6 GATE VALVE PORT TUBE**  
 FILE NAME: 7103-153  
 SHEET NO.: 3  
 DFT. SCALE: 1:2  
 MATERIAL: 5.563"OD x 0.134"WALL 304L ST. STEEL TUBE  
 QTY: 1 PER ASSEMBLY  
 NOTES:



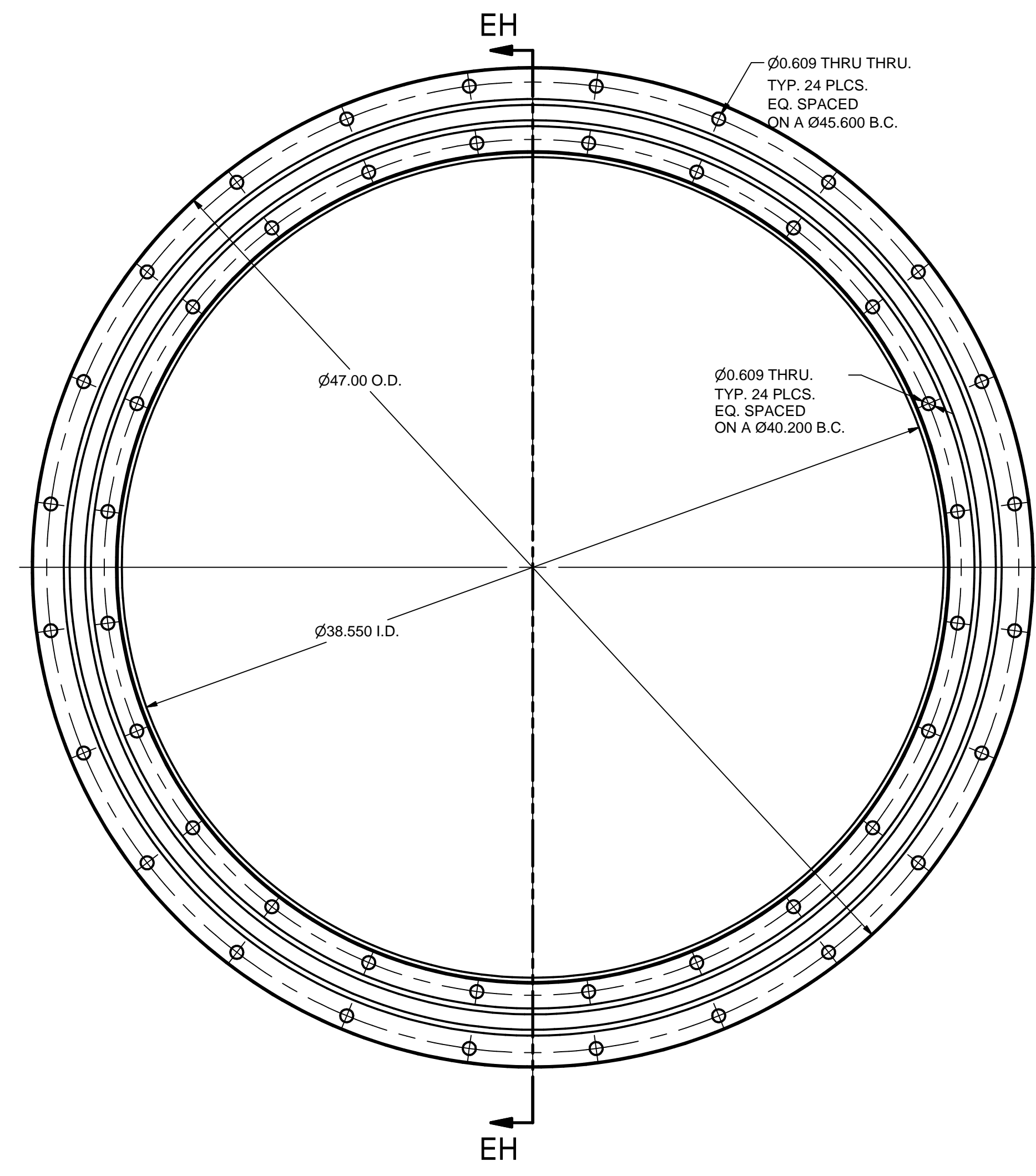
**8 SAFETY/PUMPOUT PORT TUBE**  
 FILE NAME: 7103-153  
 SHEET NO.: 3  
 DFT. SCALE: 1:2  
 MATERIAL: 5.563"OD x 0.134"WALL 304L ST. STEEL TUBE  
 QTY: 2 PER ASSEMBLY  
 NOTES:



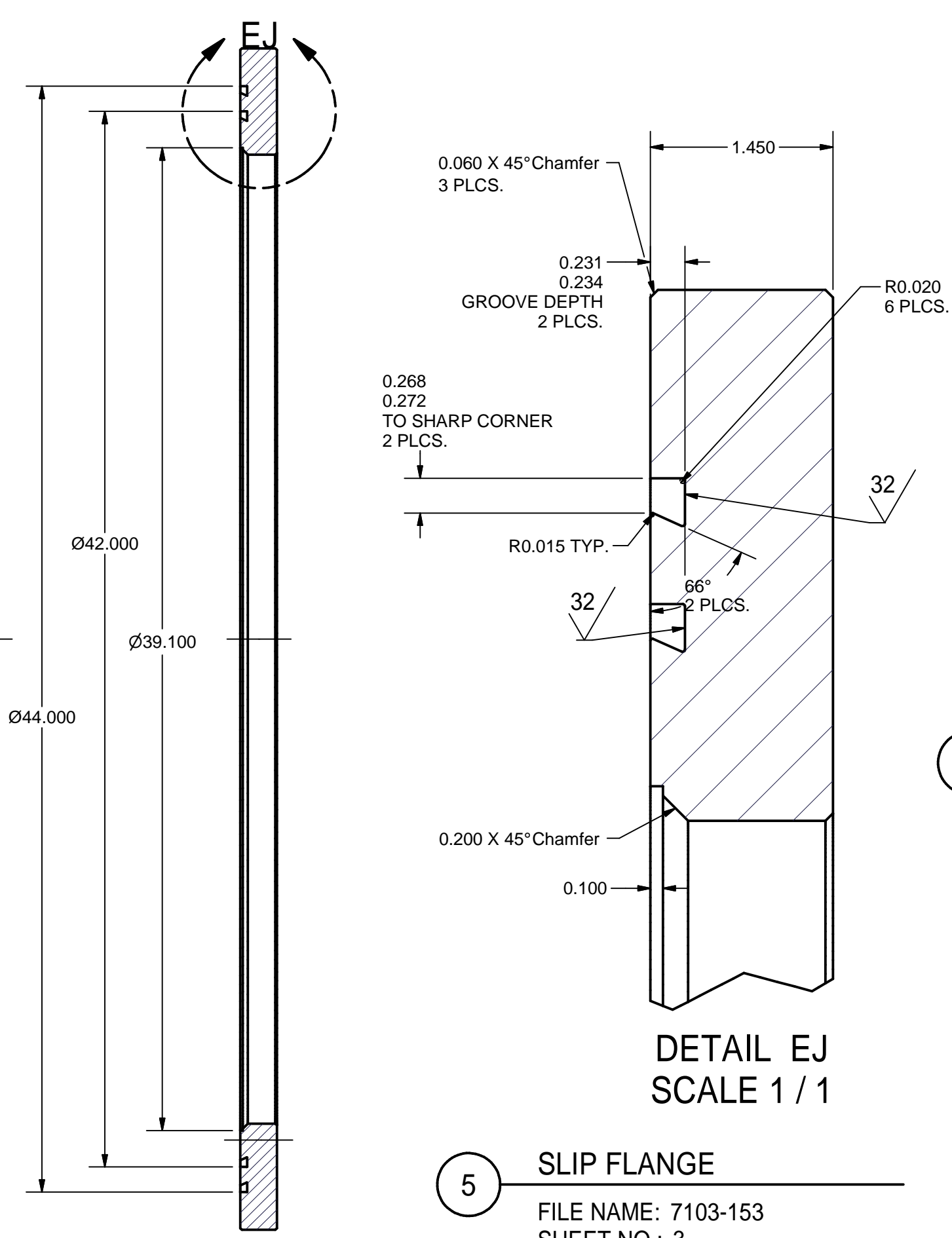
**7 SC MAGNETS PORT TUBE**  
 FILE NAME: 7103-153  
 SHEET NO.: 3  
 DFT. SCALE: 1:2  
 MATERIAL: 304 SS TUBE  
 QTY: 1 REQ'D  
 NOTES:



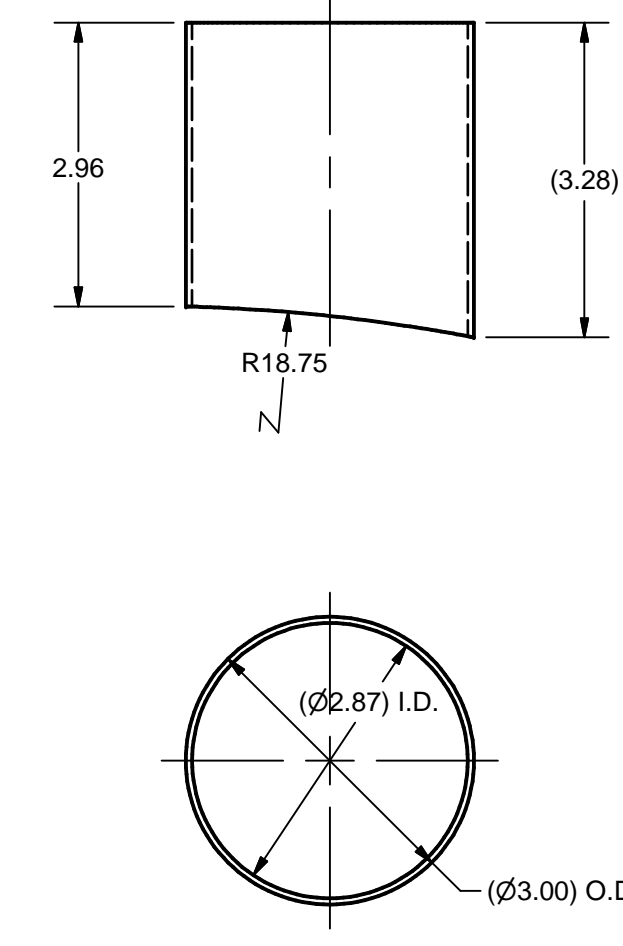
**9 GATE VALVE FLANGE**  
 FILE NAME: 7103-153  
 SHEET NO.: 3  
 DFT. SCALE: 1:2  
 MATERIAL: 1/2" 304L STN STL SHEET  
 QTY: 4 PER SUB-ASM  
 NOTES:



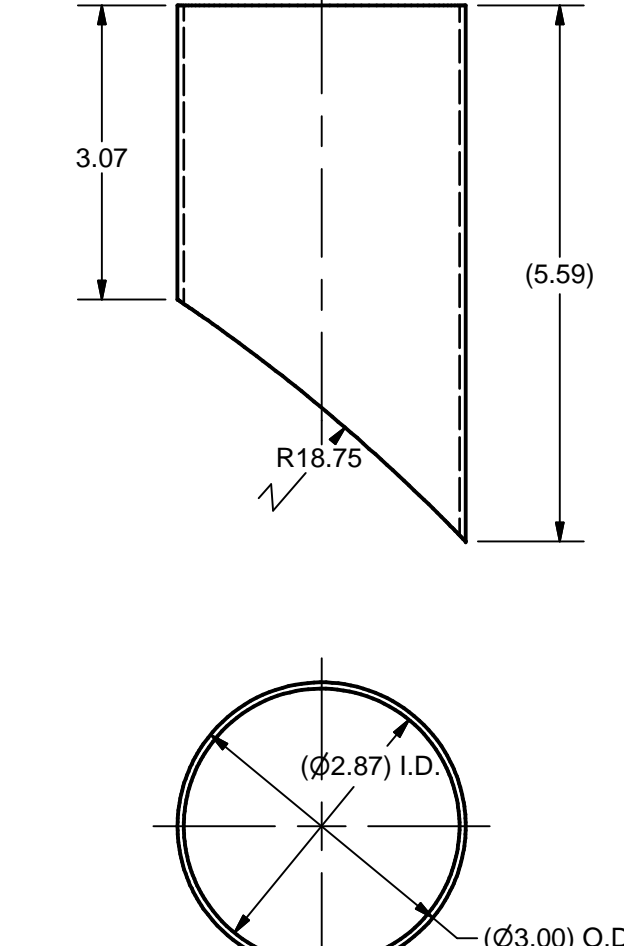
**5 SLIP FLANGE**  
 FILE NAME: 7103-153  
 SHEET NO.: 3  
 DFT. SCALE: 1:5  
 MATERIAL: 304L STN STL SHEET  
 QTY: 1 PER SUB-ASM  
 NOTES:



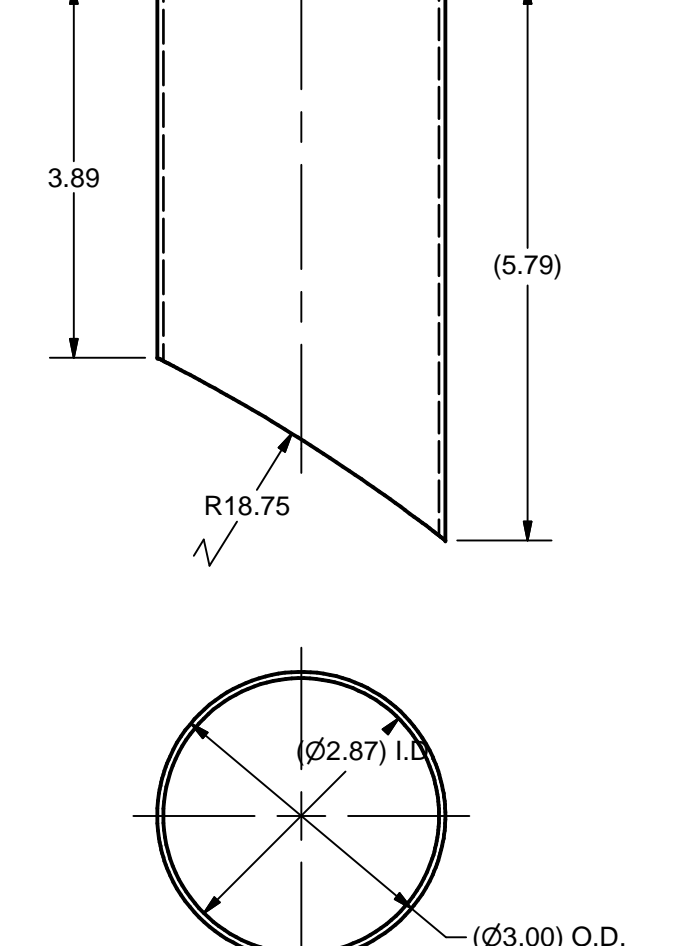
**DETAIL EJ**  
 SCALE 1 / 1



**10 CRYOGENIC VALVE PORT TUBE (I)**  
 FILE NAME: 7103-153  
 SHEET NO.: 3  
 DFT. SCALE: 1:2  
 MATERIAL: 3.00"OD x 0.065"WALL 304L SS TUBE  
 QTY: 1 PER ASSEMBLY  
 NOTES:



**11 CRYOGENIC VALVE PORT TUBE (II)**  
 FILE NAME: 7103-153  
 SHEET NO.: 3  
 DFT. SCALE: 1:2  
 MATERIAL: 3.00"OD x 0.065"WALL 304L SS TUBE  
 QTY: 2 PER ASSEMBLY  
 NOTES:



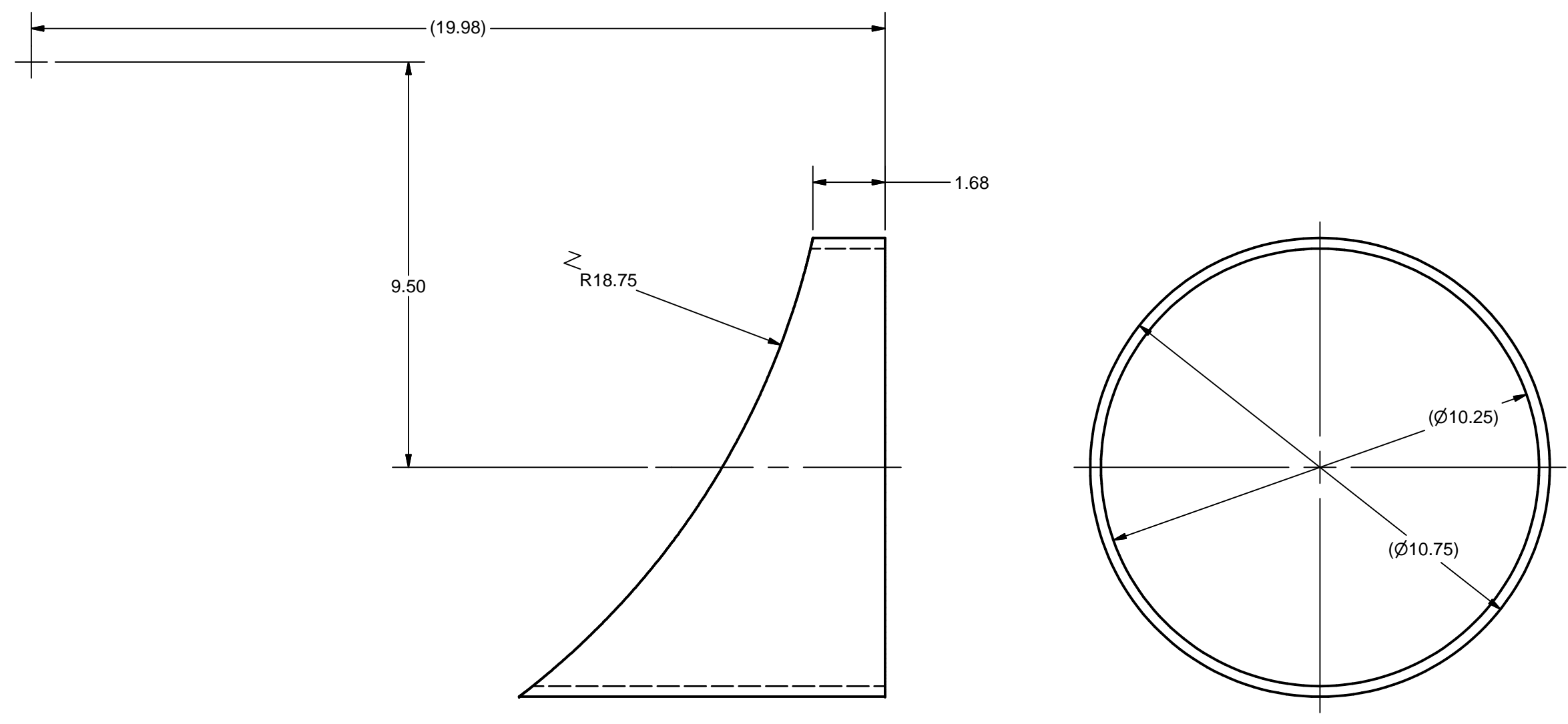
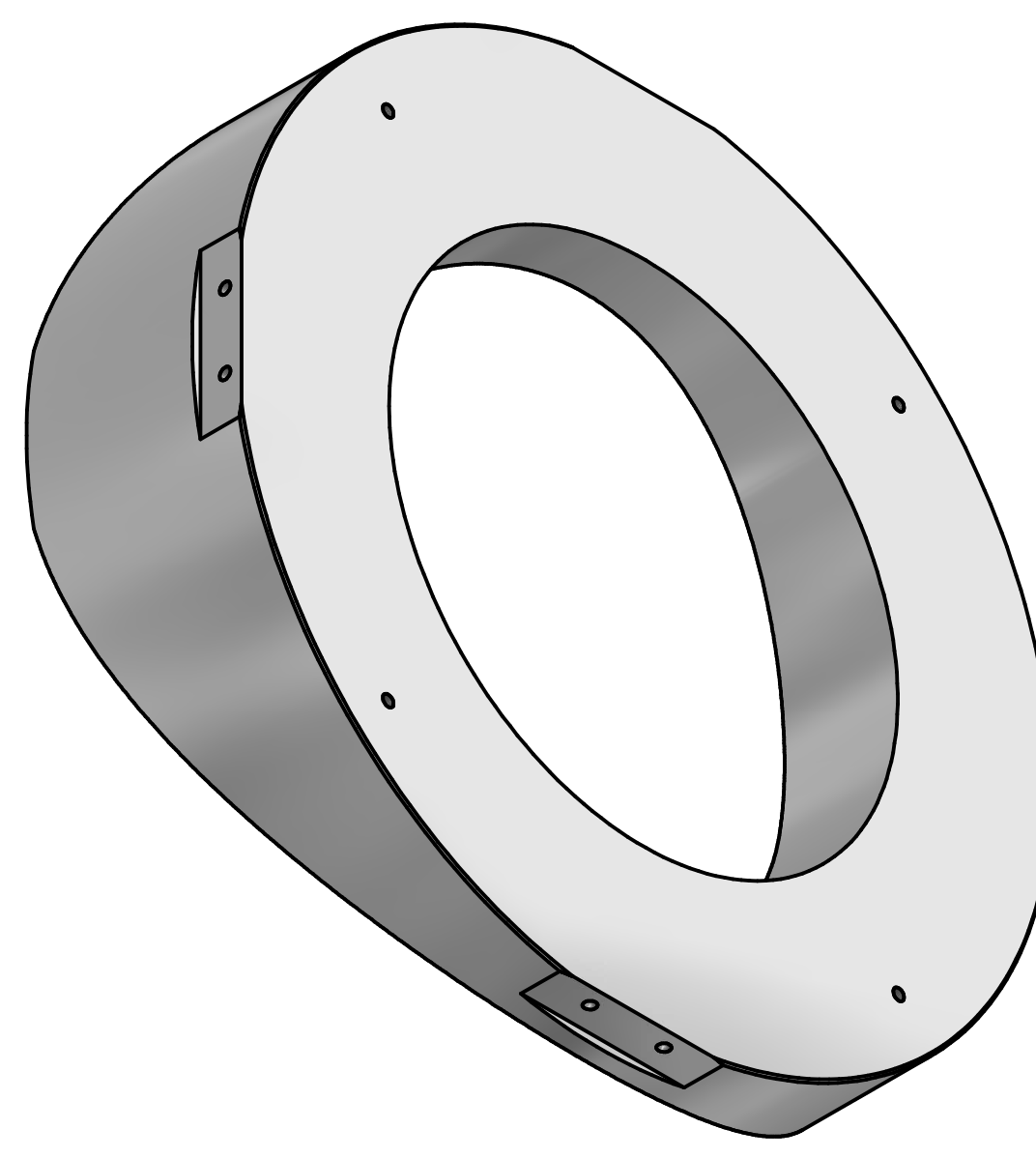
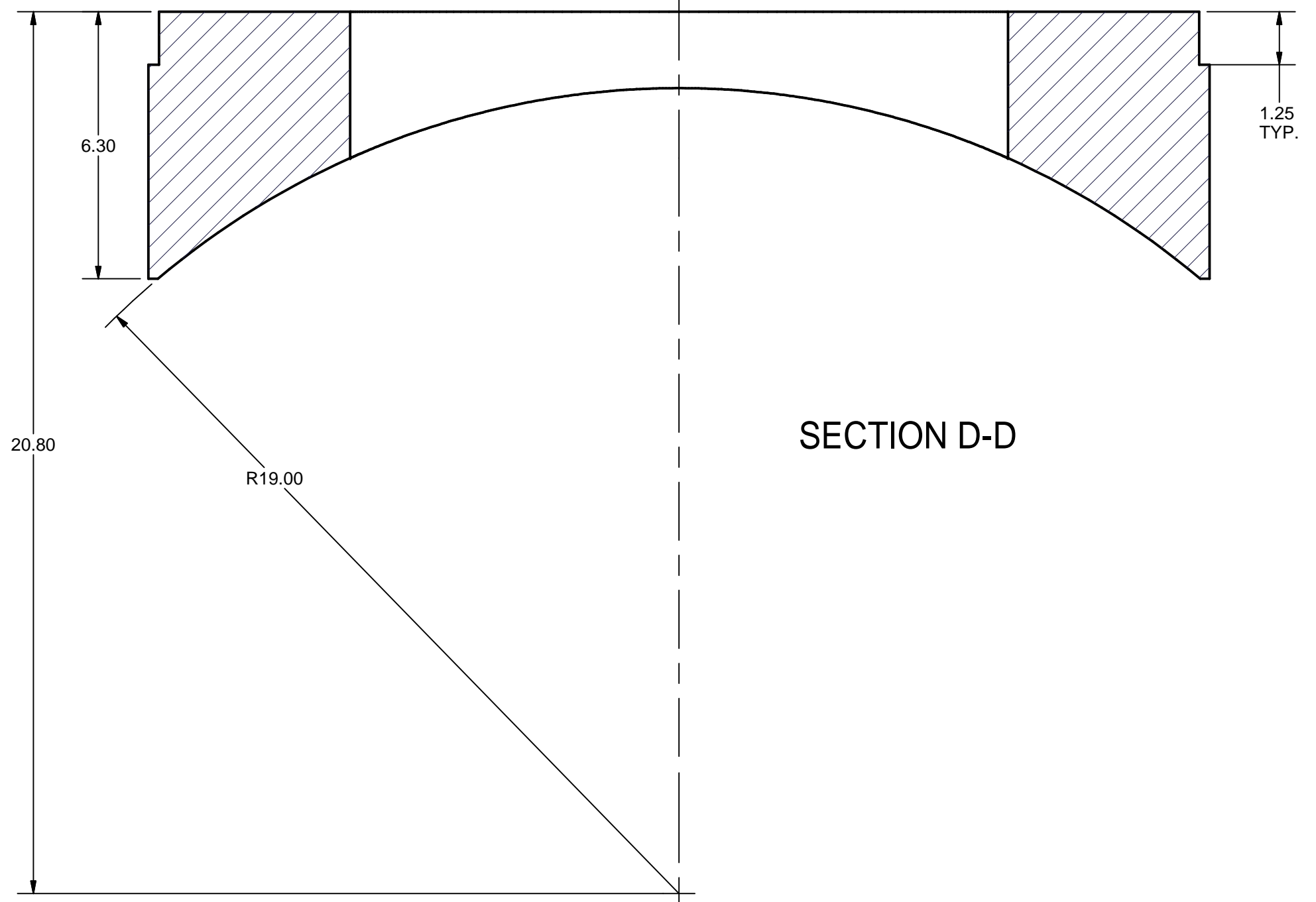
**12 CRYOGENIC VALVE PORT TUBE (III)**  
 FILE NAME: 7103-153  
 SHEET NO.: 3  
 DFT. SCALE: 1:2  
 MATERIAL: 3.00"OD x 0.065"WALL 304L SS TUBE  
 QTY: 1 PER ASSEMBLY  
 NOTES:

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**NOT FOR MANUFACTURE.**  
**T. O'Connell - 1/11/2013**

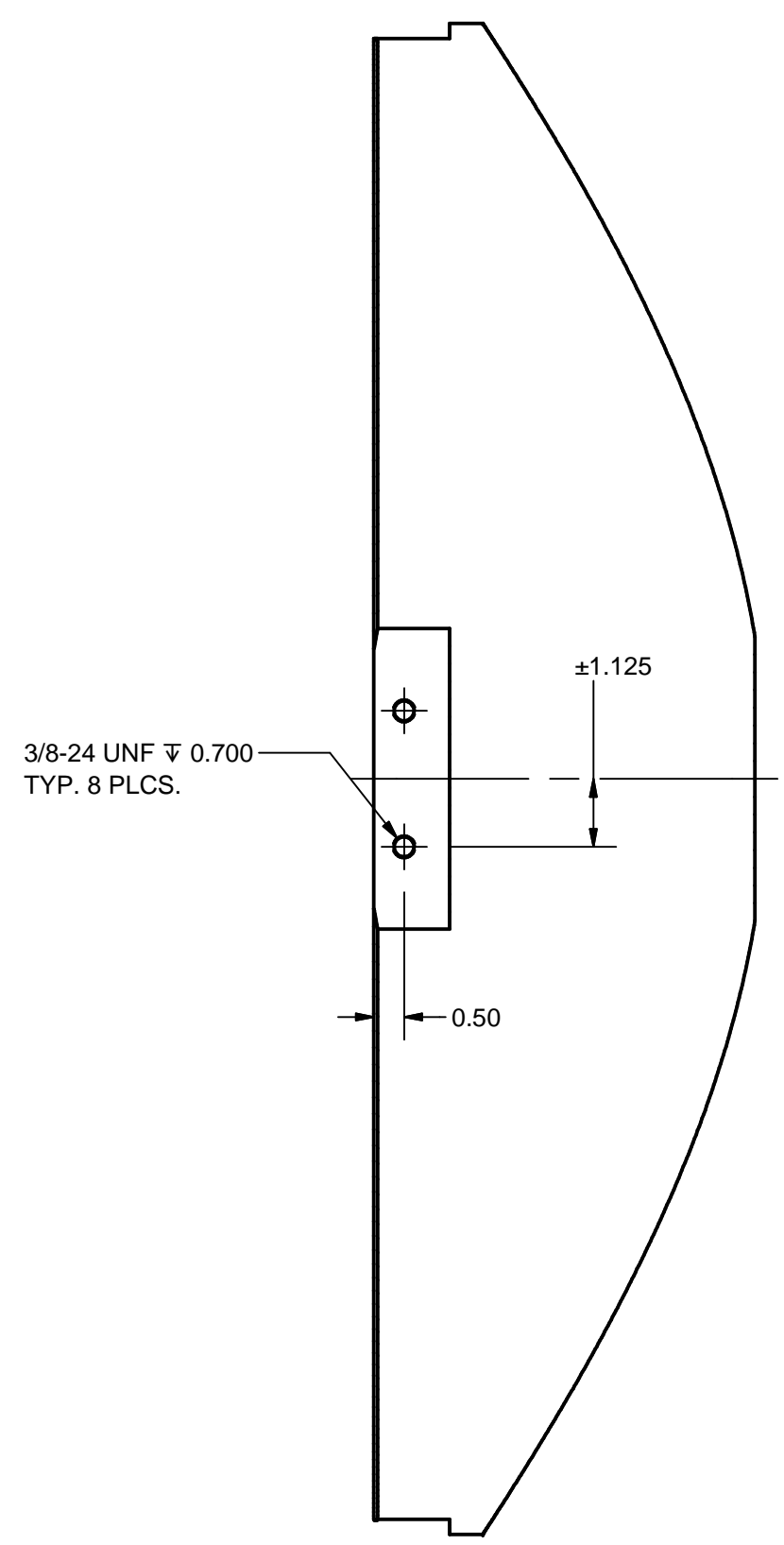
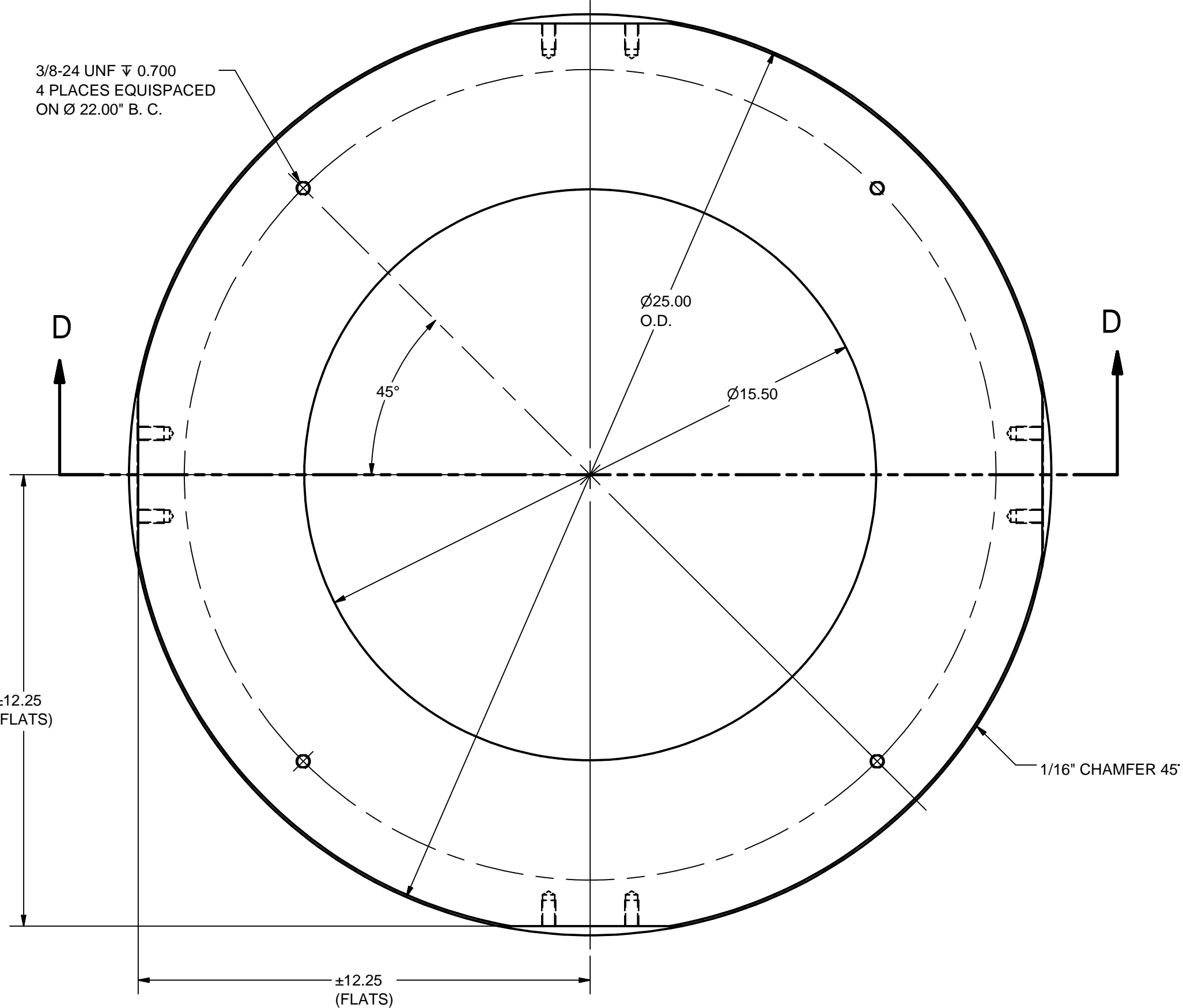
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ITEM	DWG. NO.	DESCRIPTION	QUANTITY			REMARKS	REV.
			G1	G2	G3		
PRINT	PLOT DATE: 2/5/2013						
DISTR.	CAD FILE NAME: 7103-153.idw						
CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: 0 ± 0.02 .00 ± 0.010 .000 ± 0.005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓	<b>CORNELL UNIVERSITY</b> LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS	CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853				
		<b>ERL LINAC CRYOMODULE</b> <b>VACUUM VESSEL</b> <b>SLIP FLANGE; PORT PARTS</b>					
CHECKED BY: YHMER/TIO	DRAWN BY: YH	DATE: 5/31/2012	SCALE: D	7103-153	REV. 3	OF 15	
APPROVED BY: TIO	DRAWN FOR: M. Liepe						

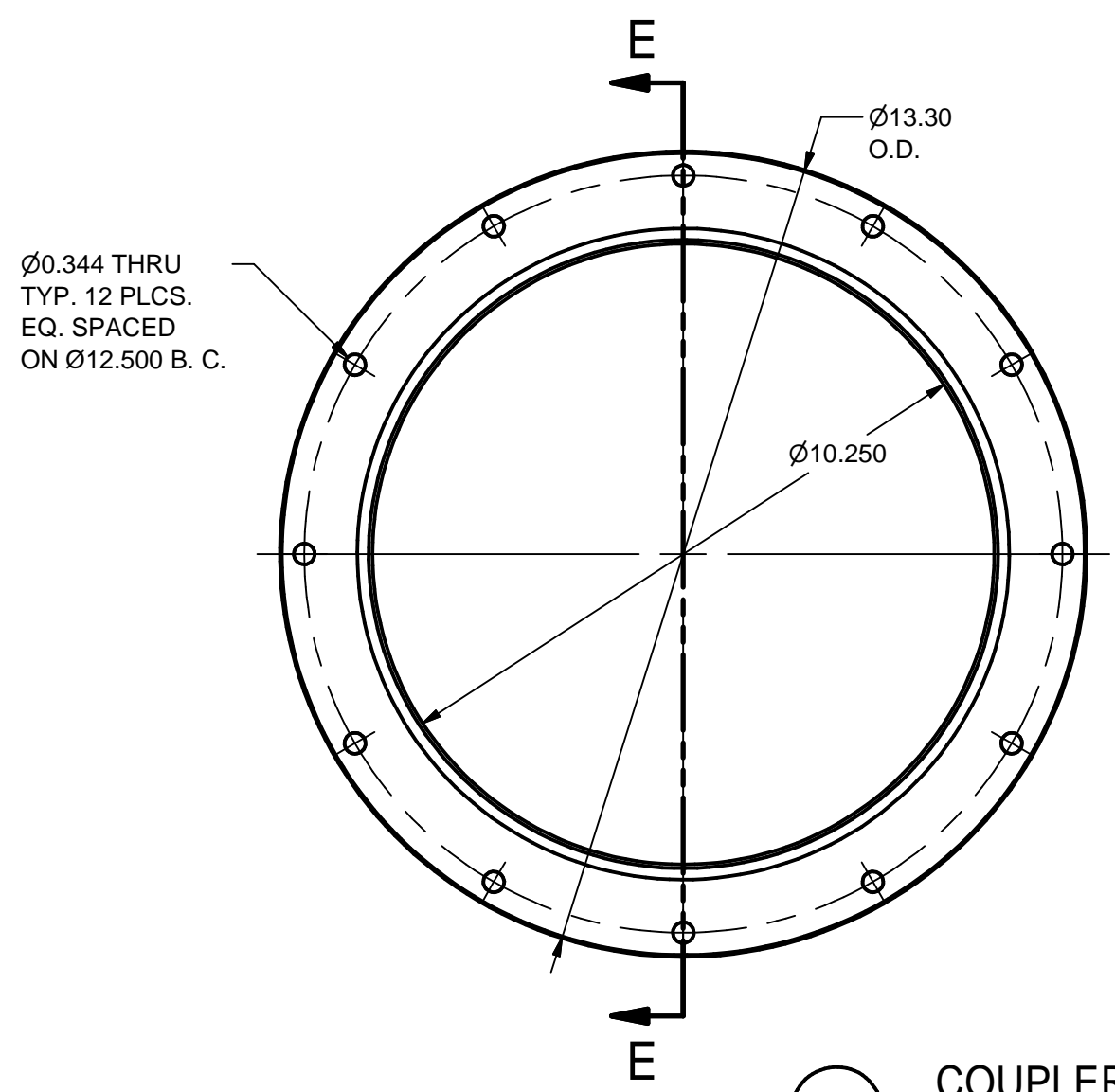
REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



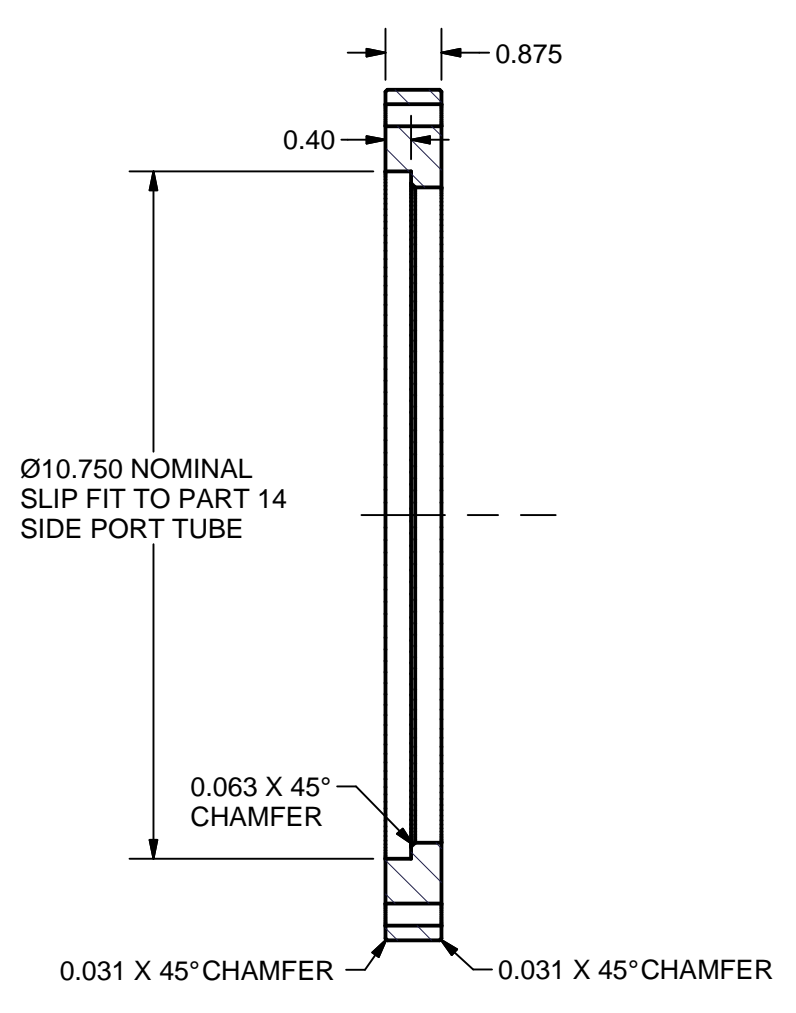
**14** COUPLER/TUNER SIDE PORT TUBE  
 FILE NAME: 7103-153  
 SHEET NO.: 4  
 DFT. SCALE: 1:3  
 MATERIAL: 10.75" OD X 0.25" WALL 304L SS TUBE  
 QTY: 11 REQ'D  
 NOTES:



**13** TOP FLANGE  
 FILE NAME: 7103-153  
 SHEET NO.: 4  
 DFT. SCALE: 1:3  
 MATERIAL: 304L SS  
 QTY: 3 REQ'D  
 NOTES:



**15** COUPLER/TUNER SIDE PORT FLANGE  
 FILE NAME: 7103-153  
 SHEET NO.: 4  
 DFT. SCALE: 1:3  
 MATERIAL: 304L SS  
 QTY: 11 REQ'D  
 NOTES:

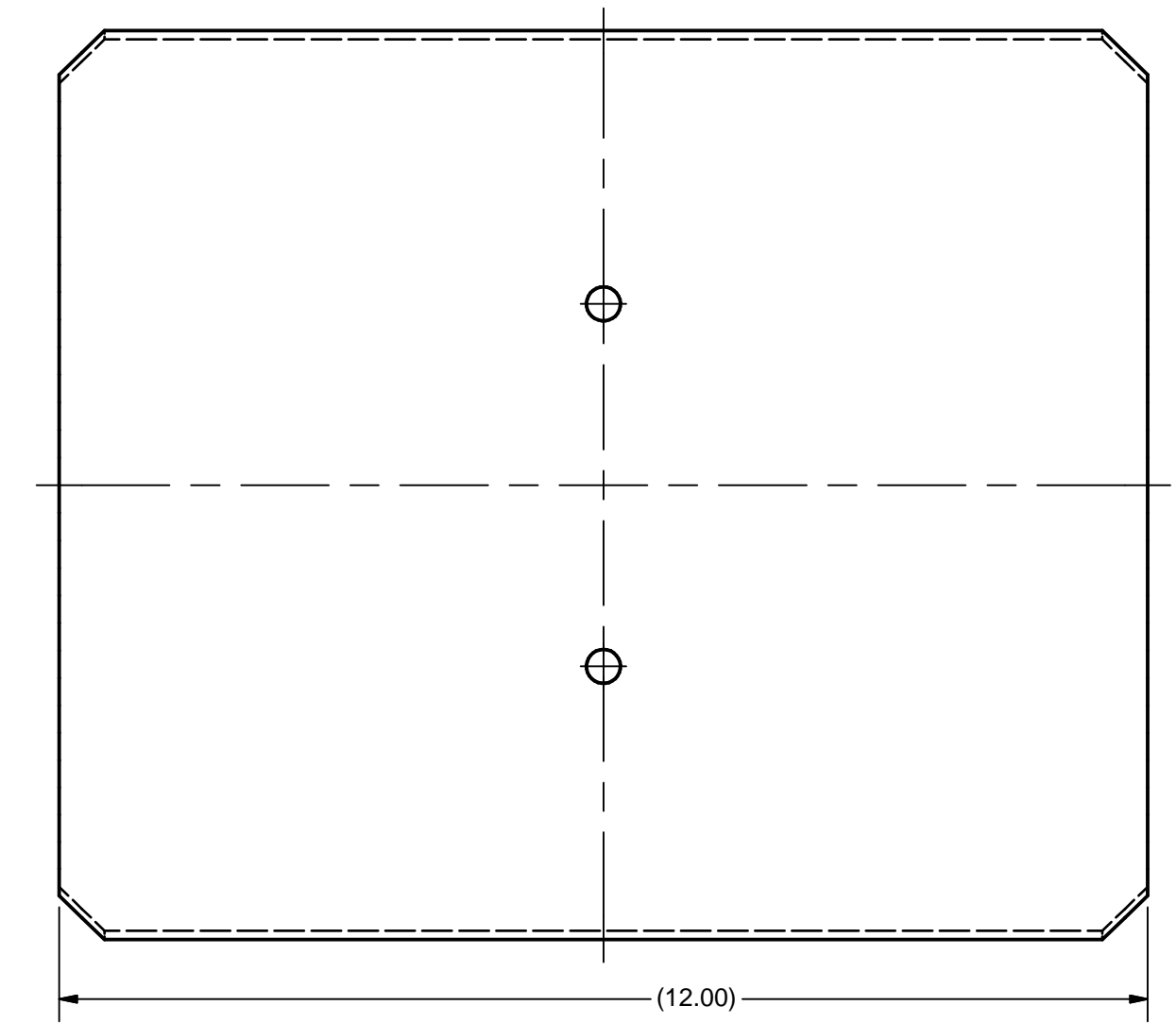
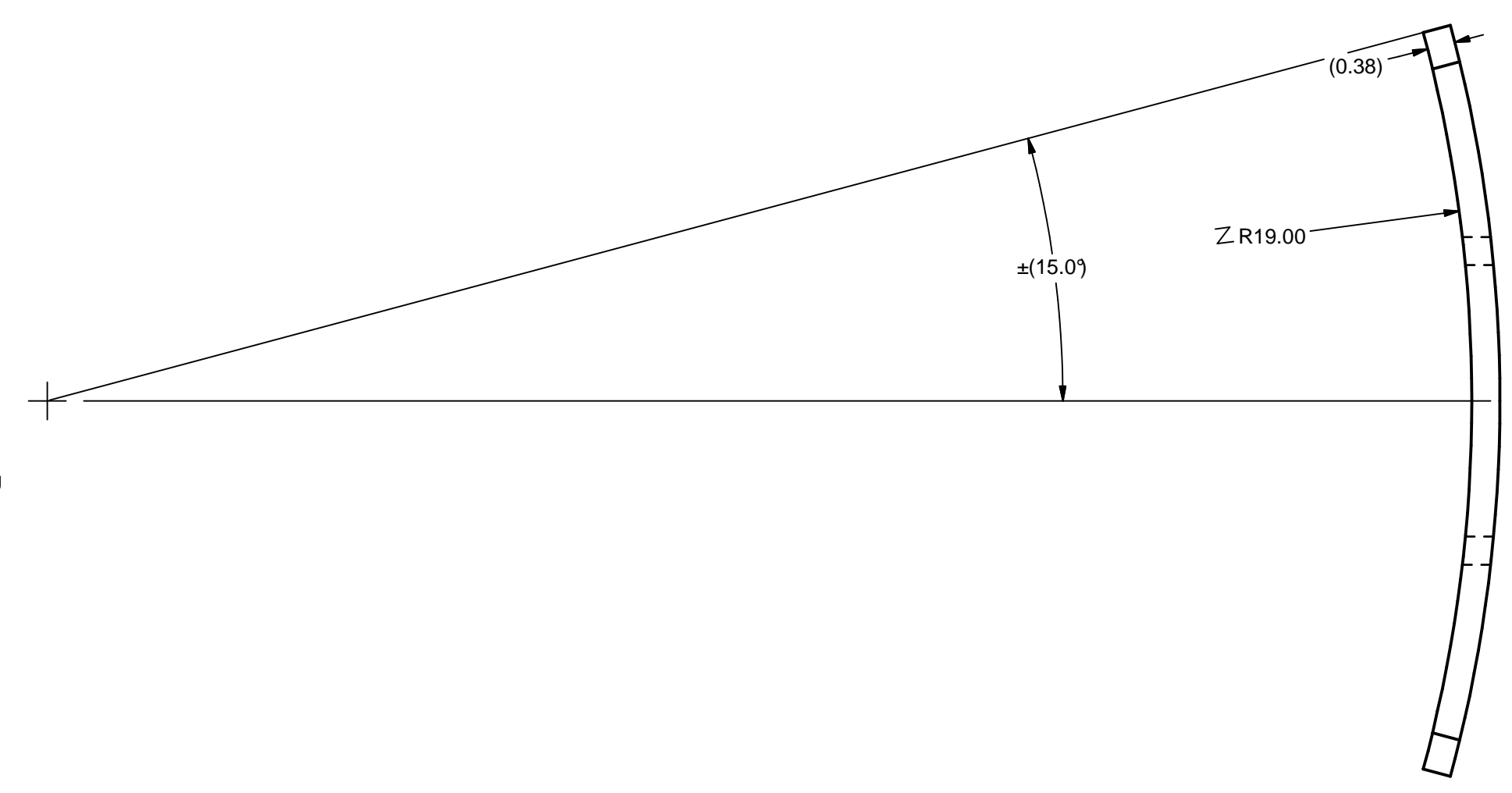
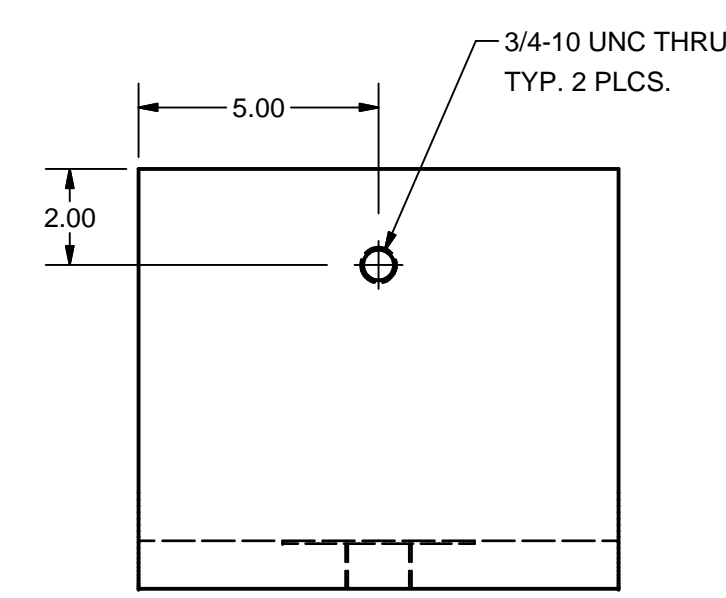
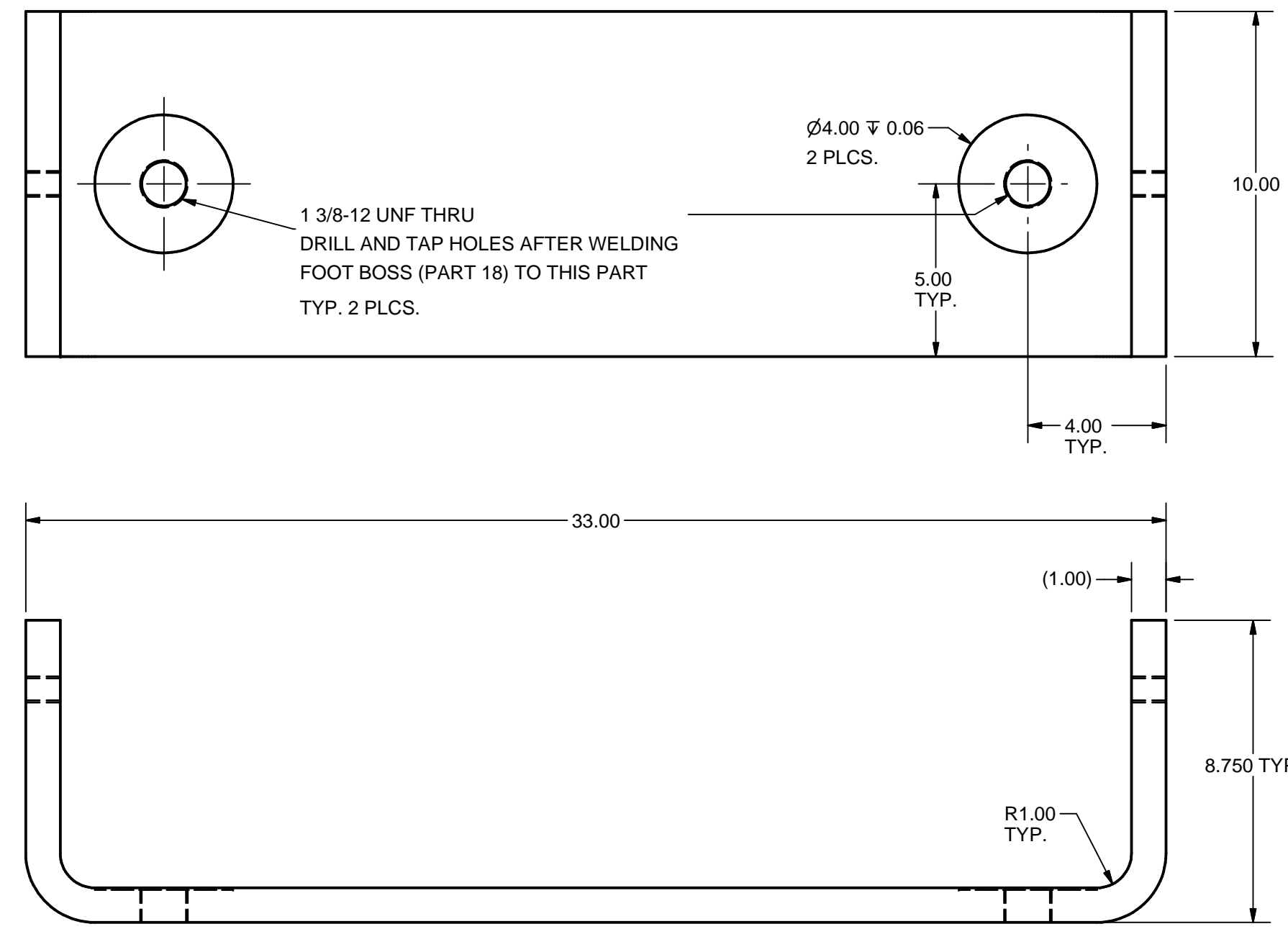


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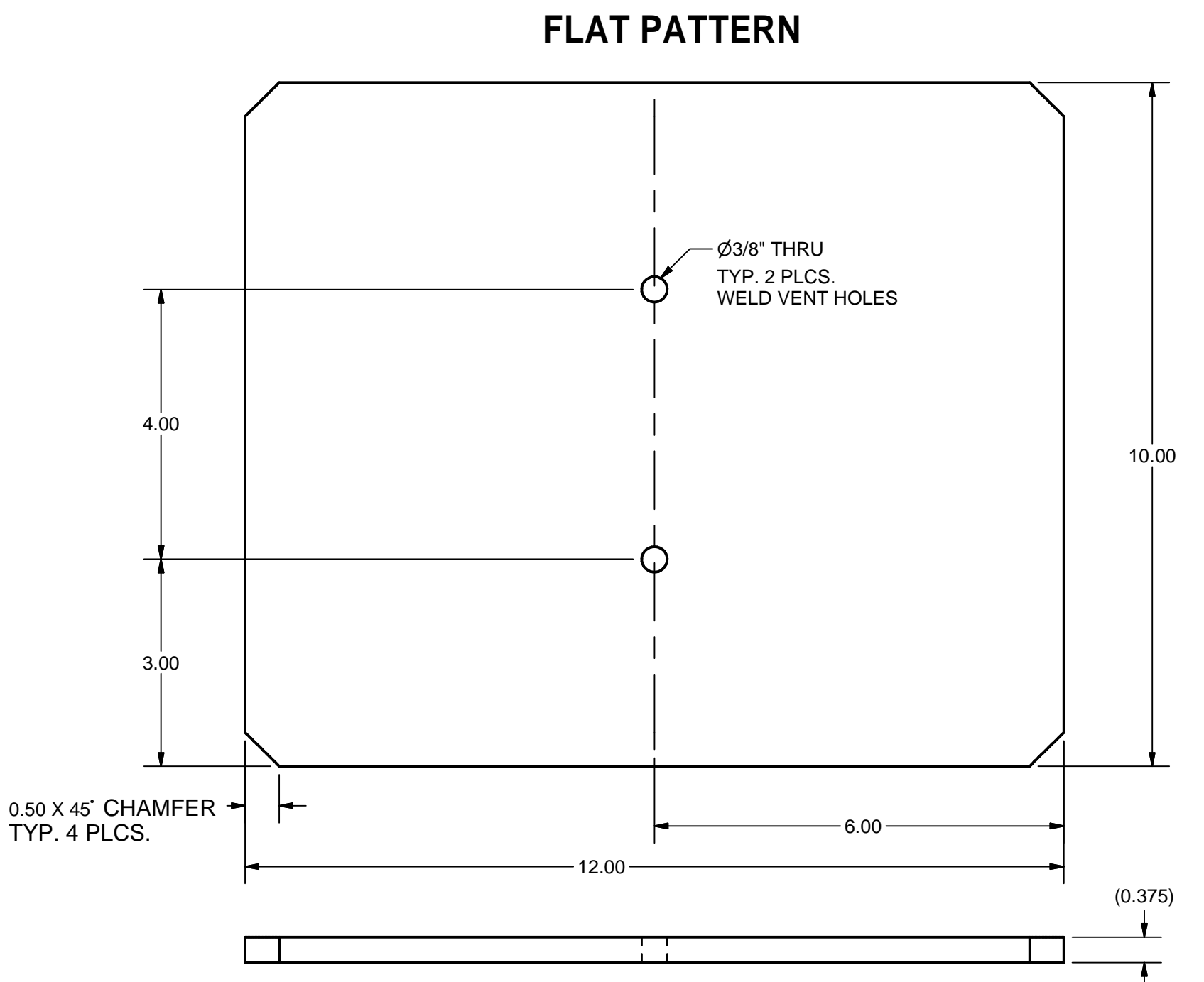
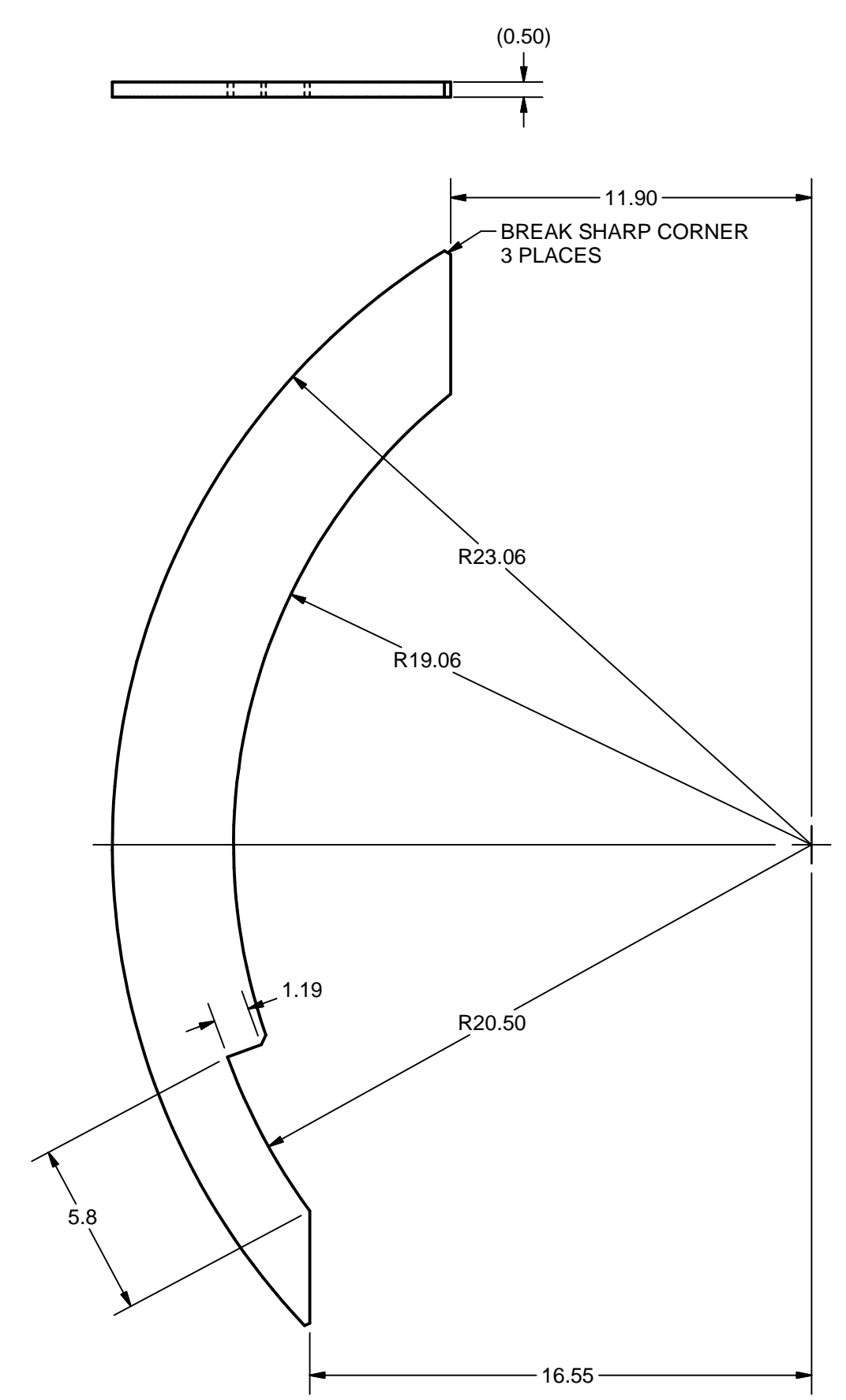
ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
			QUANTITY				
CR-1	7103-153	ERL LINAC CRYOMODULE VACUUM VESSEL PORT PARTS					
PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw		CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853					
CHECKED BY: YHMER/TIO APPROVED BY: TIO		DRAWN BY: YH	DRAWN FOR: M. Liepe	DATE: 5/31/2012	SCALE: D	7103-153 SH. NO. 4 OF 15	REV.

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.

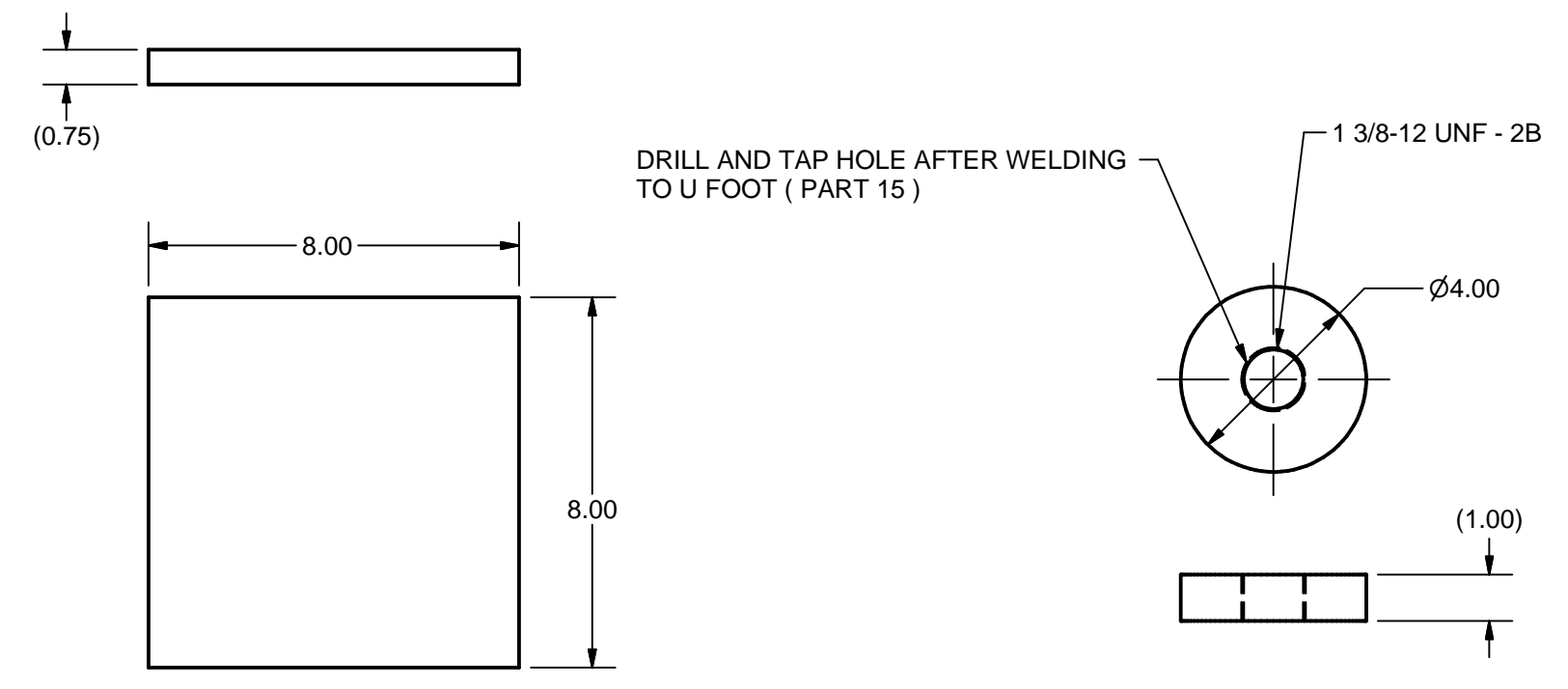


**16 U-FOOT**  
 FILE NAME: 7103-153  
 SHEET NO.: 5  
 DFT. SCALE: 1:4  
 MATERIAL: CARBON STEEL 1" PLATE  
 QTY: 5 REQ'D  
 NOTES:

**22 WAVEGUIDE SUPPORT PLATE 2**  
 FILE NAME: 7103-153  
 SHEET NO.: 5  
 DFT. SCALE: 1:2  
 MATERIAL: CARBON STEEL 1/2" PLATE  
 QTY: 12 REQ'D  
 NOTES:

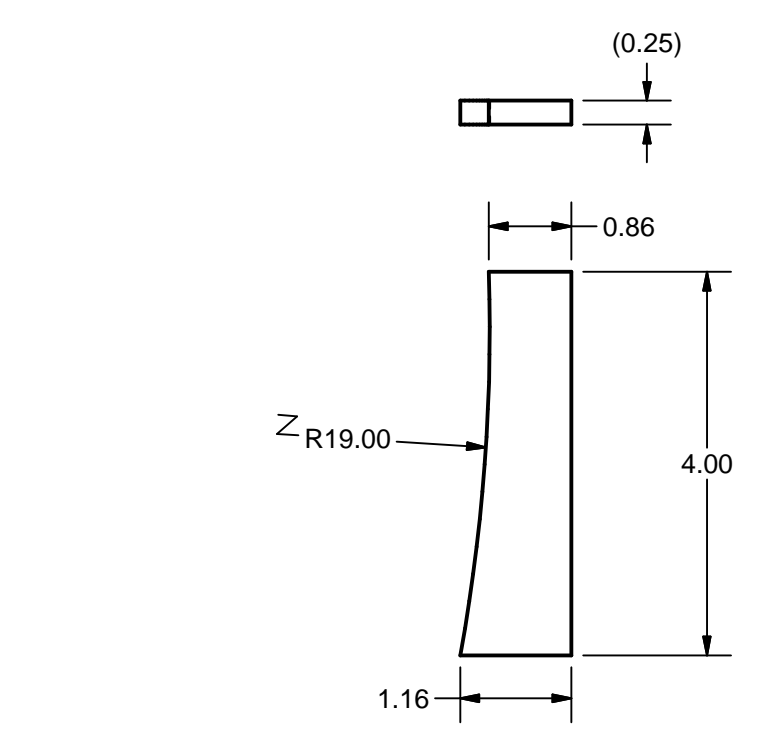


**23 CYLINDER PATCH**  
 FILE NAME: 7103-153  
 SHEET NO.: 5  
 DFT. SCALE: 1:2  
 MATERIAL: CARBON STEEL 3/8" PLATE  
 QTY: 10 REQ'D  
 NOTES:



**18 OUTRIGGER PLATE**  
 FILE NAME: 7103-153  
 SHEET NO.: 5  
 DFT. SCALE: 1:4  
 MATERIAL: SS304L 3/4" PLATE  
 QTY: 3 REQ'D  
 NOTES:

**19 FOOT BOSS**  
 FILE NAME: 7103-153  
 SHEET NO.: 5  
 DFT. SCALE: 1:4  
 MATERIAL: CARBON STEEL 1" THK. PLATE  
 QTY: 10 REQ'D  
 NOTES:



**21 WAVEGUIDE SUPPORT PLATE 1**  
 FILE NAME: 7103-153  
 SHEET NO.: 5  
 DFT. SCALE: 1:2  
 MATERIAL: CARBON STEEL 1/4" PLATE  
 QTY: 24 REQ'D  
 NOTES:

**20 STIFFENING RING**  
 FILE NAME: 7103-153  
 SHEET NO.: 5  
 DFT. SCALE: 1:5  
 MATERIAL: CARBON STEEL 1/2" PLATE  
 QTY: 12 REQ'D  
 NOTES:

**RELEASED FOR VENDOR BID.  
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 T. O'Connell - 1/11/2013**

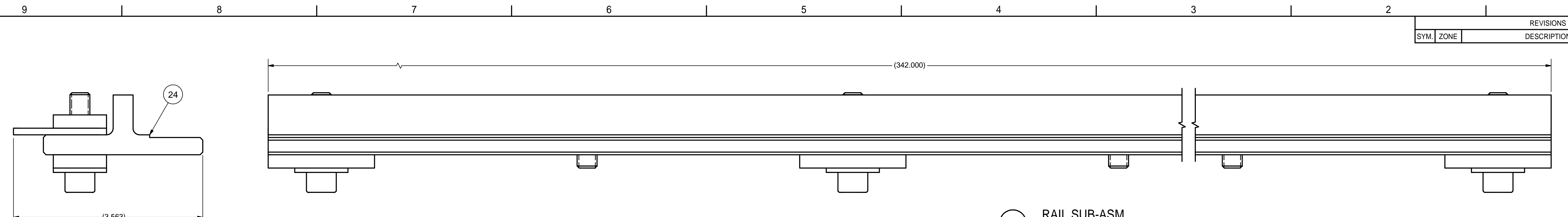
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 OR EQUIVALENT APPROVED BY CORNELL LEPP

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
			QUANTITY				

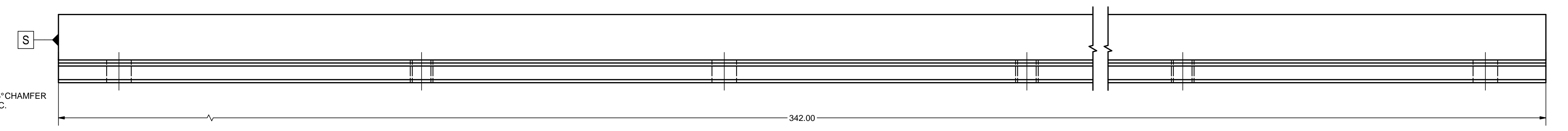
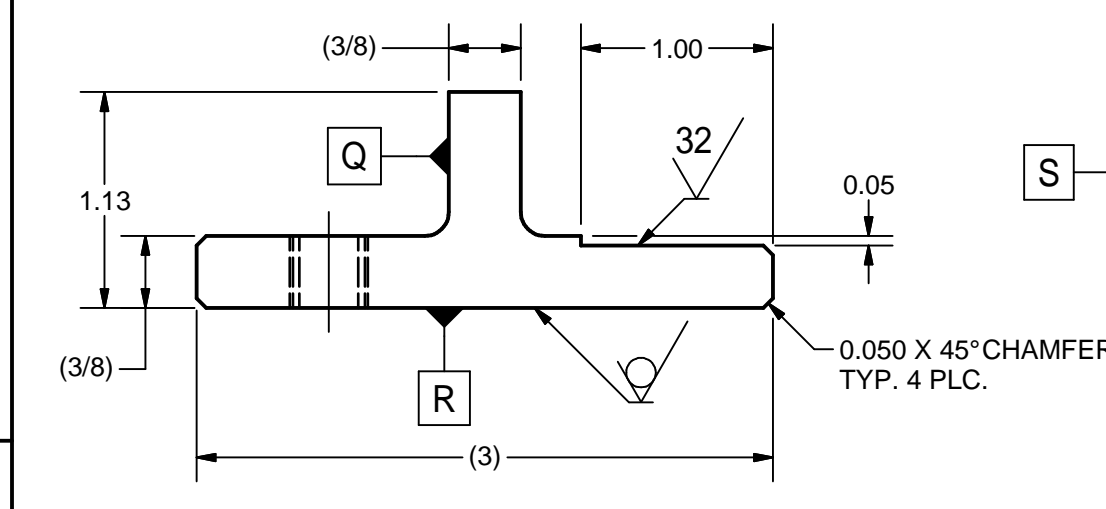
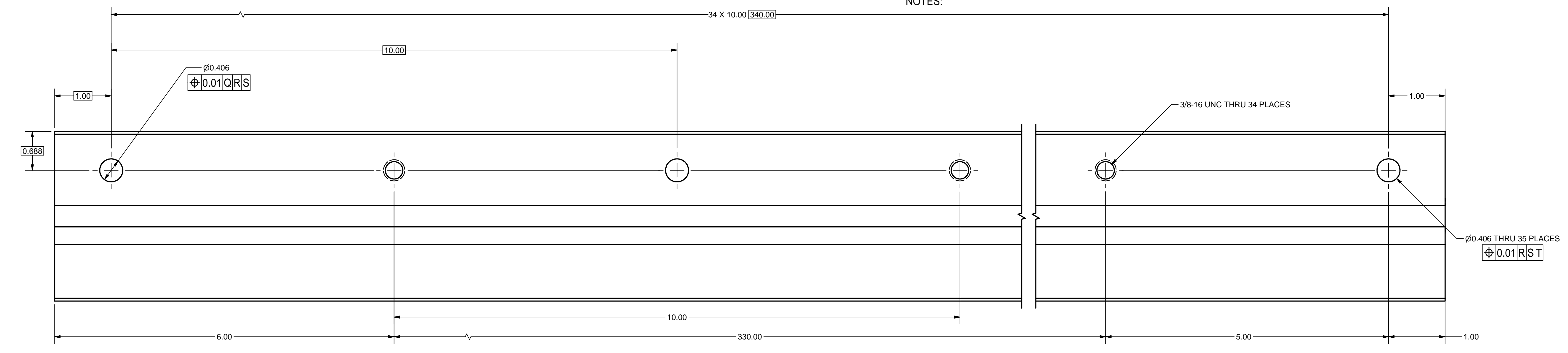
  

PRINT DISTR.	PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw
CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: 0 ± 0.02 .00 ± 0.010 .000 ± 0.005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓
7103-153	CORNELL UNIVERSITY LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS <b>LEPP</b> CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853
	ERL LINAC CRYOMODULE VACUUM VESSEL SUPPORT PARTS
CHECKED BY: YHMER/TIO	DRAWN BY: YH
APPROVED BY: TIO	DRAWN FOR: M. Liepe
	DATE: 5/31/2012
	SCALE: D
	7103-153
	SH. NO. 5 OF 15

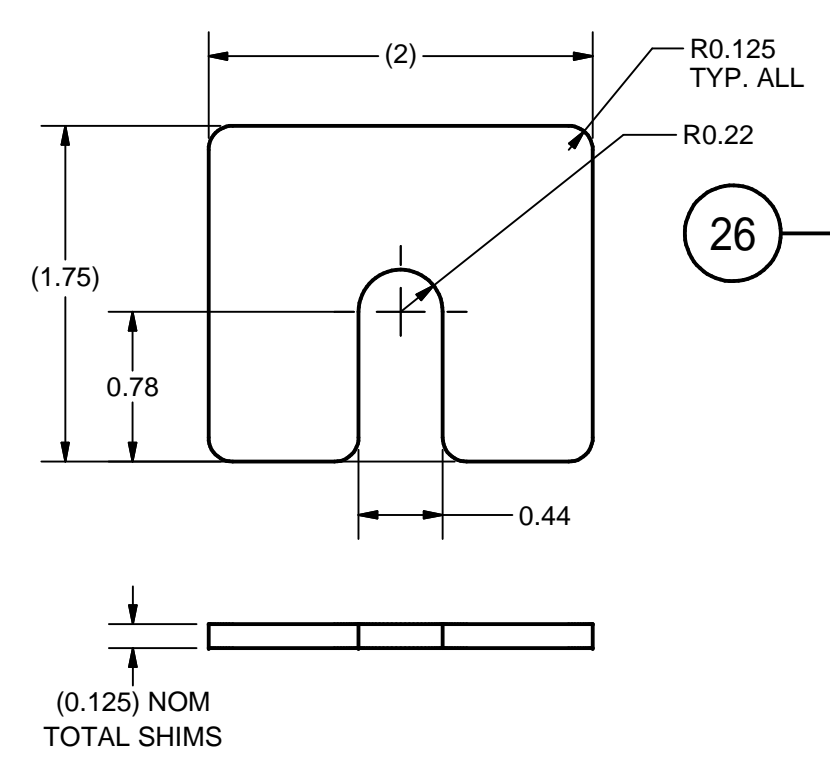
REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



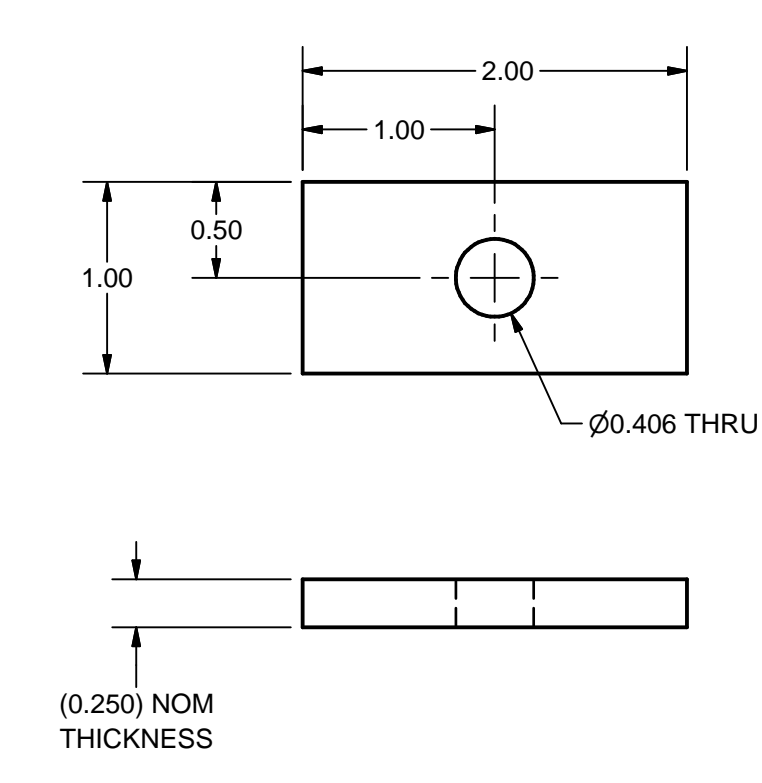
**24 RAIL SUB-ASM**  
 FILE NAME: 7103-153  
 SHEET NO.: 6  
 DFT. SCALE: 1:1  
 MATERIAL: VARIES  
 QTY: 2  
 NOTES:



**25 T-RAIL**  
 FILE NAME: 7103-153  
 SHEET NO.: 6  
 DFT. SCALE: 1:1  
 MATERIAL: 3" X 3" X 3/8" EXTRUDED 304 STAINLESS STEEL  
 QTY: 2  
 NOTES:



**26 STOCK SHIMS**  
 FILE NAME: 7103-153  
 SHEET NO.: 6  
 DFT. SCALE: 1:1  
 MATERIAL: STOCK PRECISION ALUM SHIMS  
 QTY: AS NEEDED  
 NOTES: Stock shim part



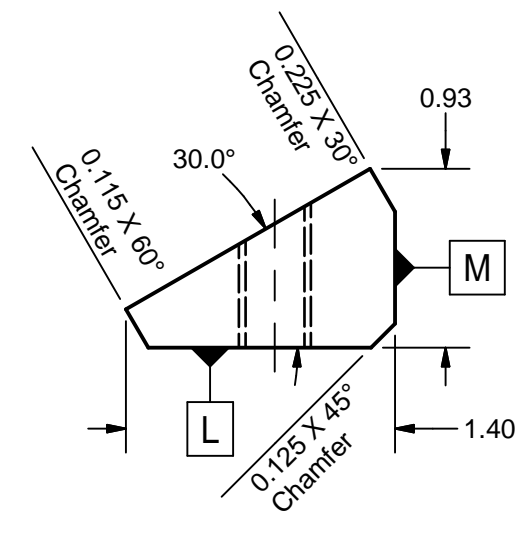
**27 SHIM BLOCK**  
 FILE NAME: 7103-153  
 SHEET NO.: 6  
 DFT. SCALE: 1:1  
 MATERIAL: 304 SS  
 QTY: 148  
 NOTES: ADJUST THICKNESS AS NEEDED IN COMBINATION WITH SHIM STOCK FOR RAIL TOLERANCE

**RELEASED FOR VENDOR BID.  
 NOT FOR MANUFACTURE.  
 T. O'Connell - 1/11/2013**

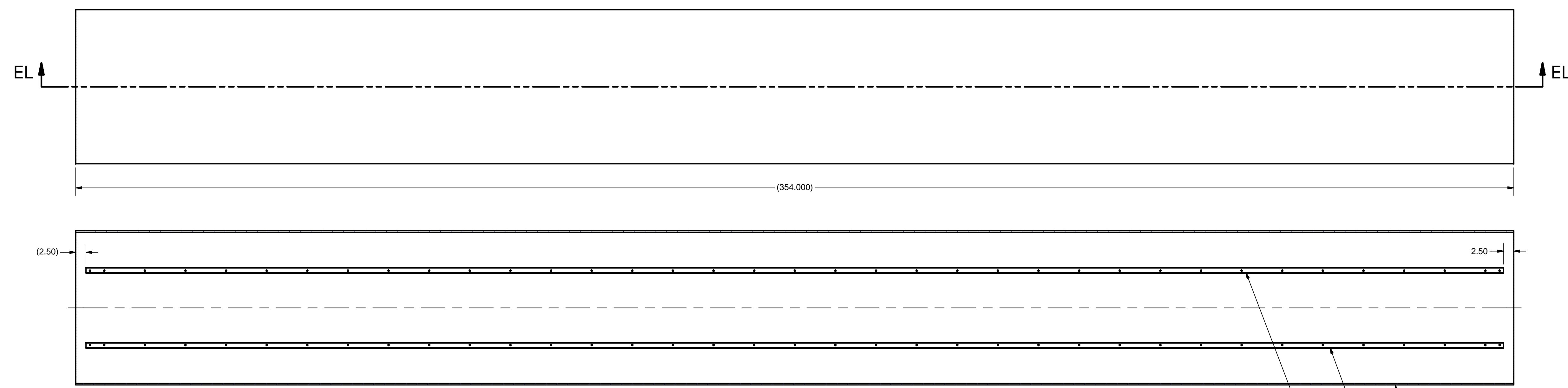
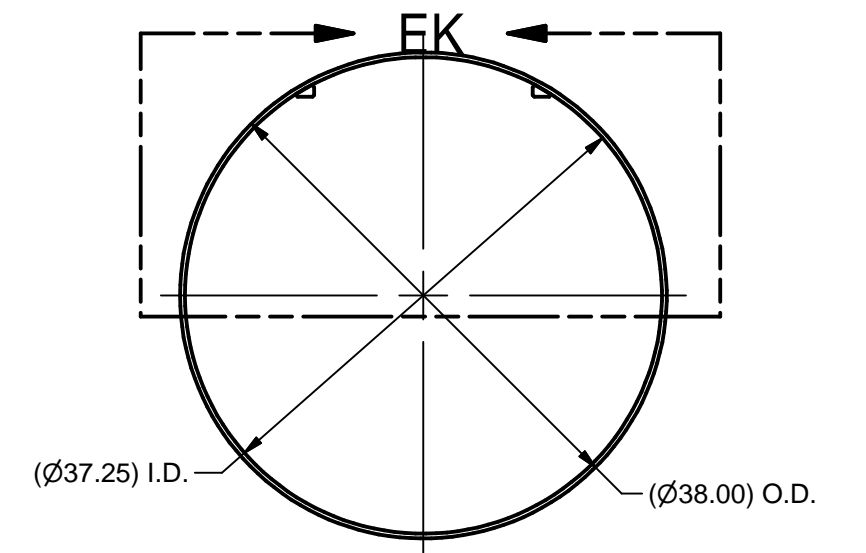
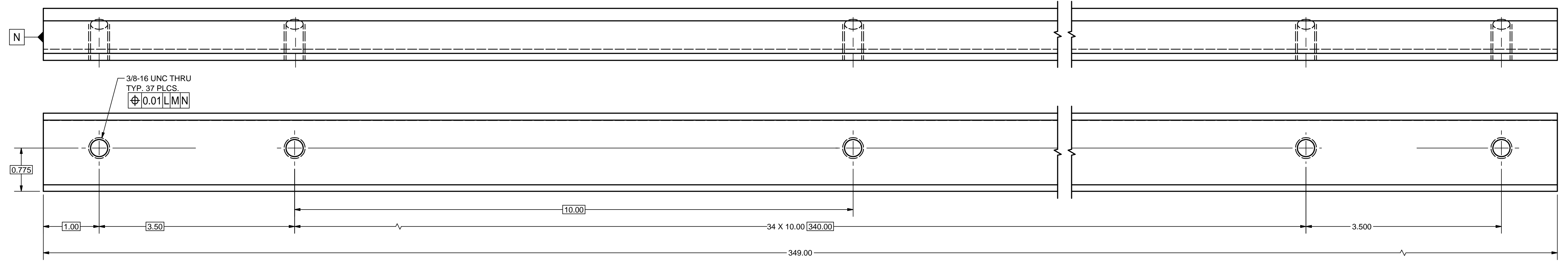
FOR MACHINING LUBRICANT USE ONLY  
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
 OR EQUIVALENT APPROVED BY CORNELL LEPP

REV.	ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
				QUANTITY				
7103-153	CR-1		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: 0 ± 0.02 .00 ± 0.010 .000 ± 0.005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES					
	PRINT DISTR.		PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw					
	ERL LINAC CRYOMODULE VACUUM VESSEL RAIL SUPPORT PARTS							
	CHECKED BY: YHMER/TIO	DRAWN BY: YH	DRAWN FOR: M. Liepe	DATE: 5/31/2012	SCALE: D			
	APPROVED BY: TIO						7103-153	REV.
							SH NO. 6 OF 15	

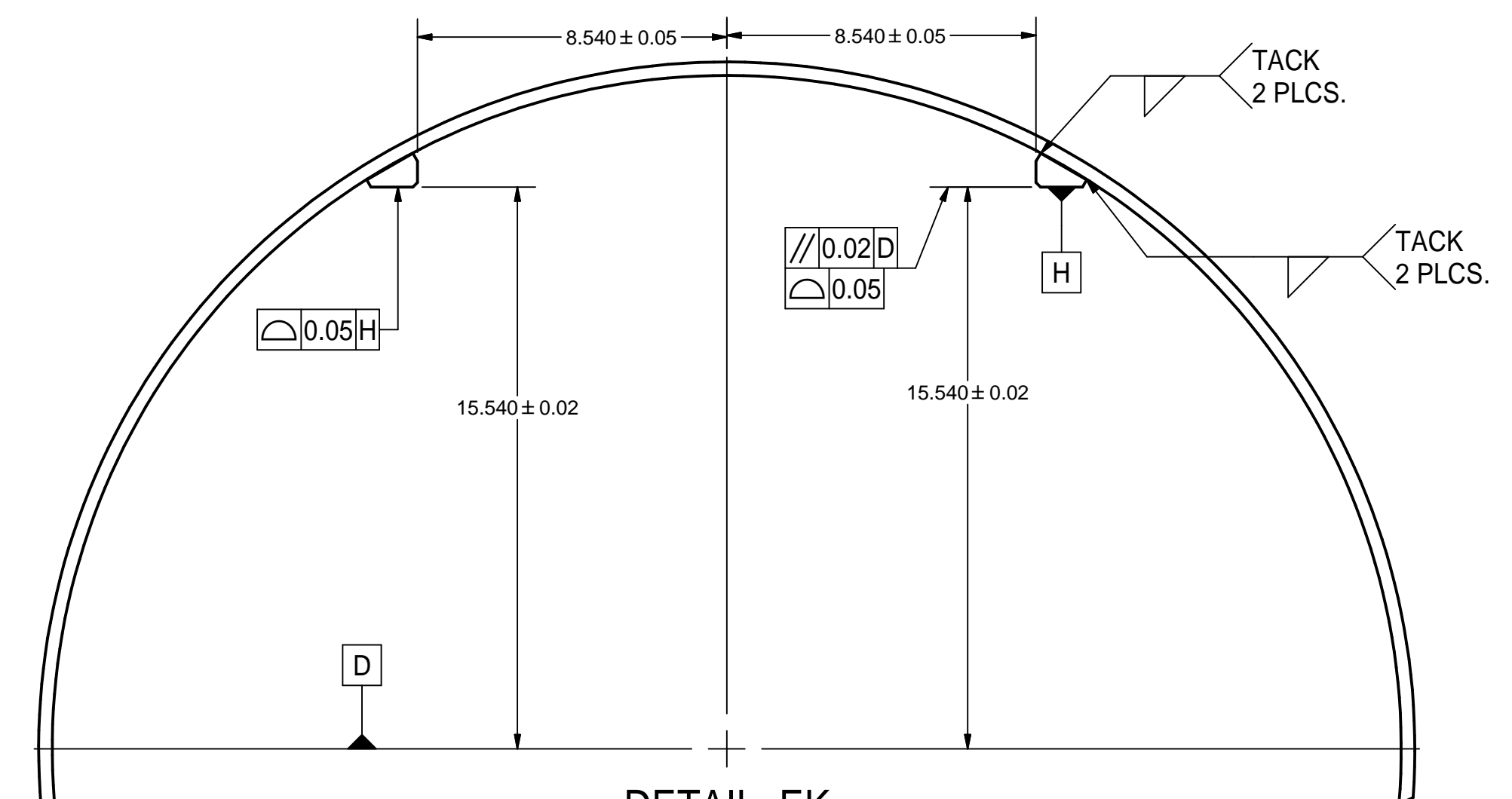
REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



31 Rail Support  
 FILE NAME: 7103-153  
 SHEET NO.: 7  
 DFT. SCALE: 1:1  
 MATERIAL: 304L SS  
 QTY: 2 REQ'D  
 NOTES:



SECTION EL-EL  
 SCALE 1/15



DETAIL EK  
 SCALE 1/4

X WELDMENT I, RAIL SUPPORTS

FILE NAME: 7103-153  
 SHEET NO.: 7  
 DFT. SCALE: 1:15  
 MATERIAL: SEE PART LIST  
 QTY: 1  
 NOTES: MAY FASTEN THE RAIL SUPPORTS TO VESSEL CYLINDER BEFORE WELDING  
 THEN REMOVE THE FASTENERS AND PLUG THE HOLES WITH VACUUM TIGHT

**RELEASED FOR VENDOR BID.  
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 T. O'Connell - 1/11/2013**

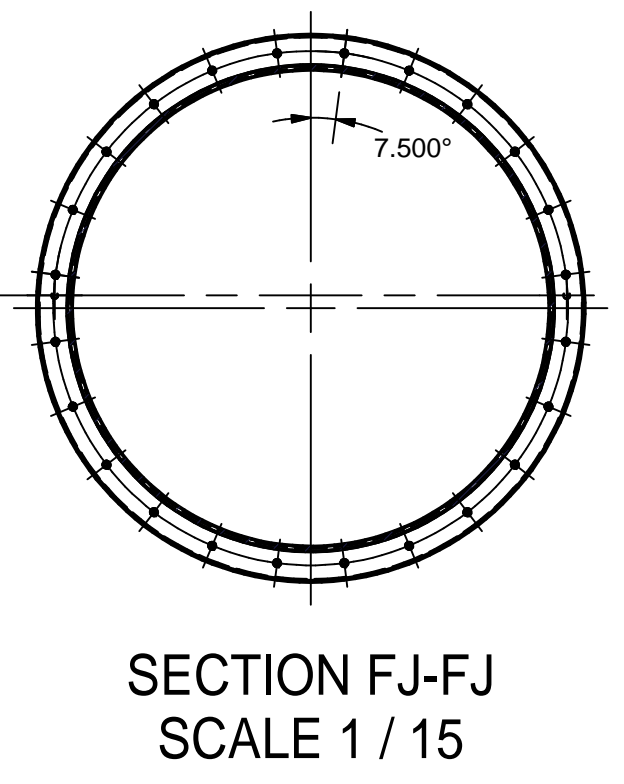
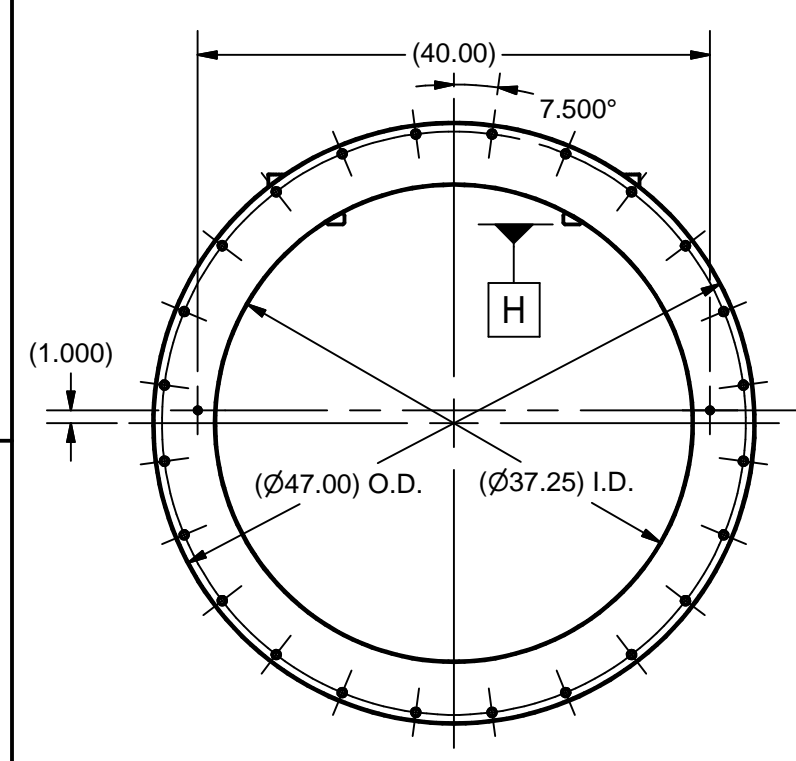
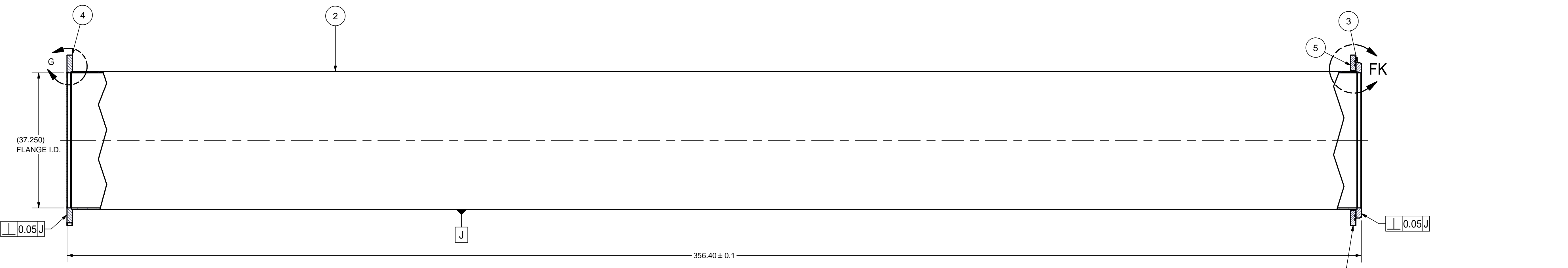
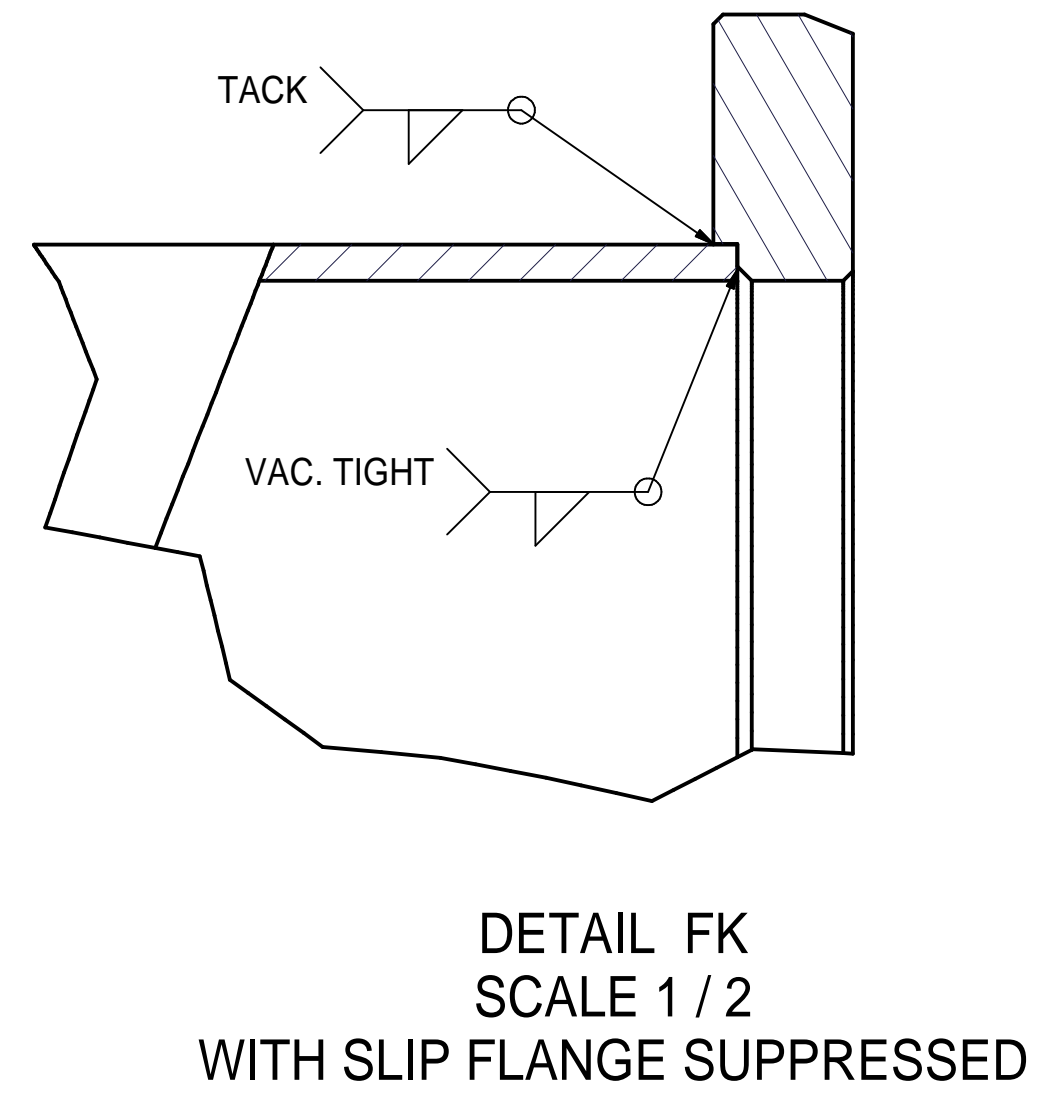
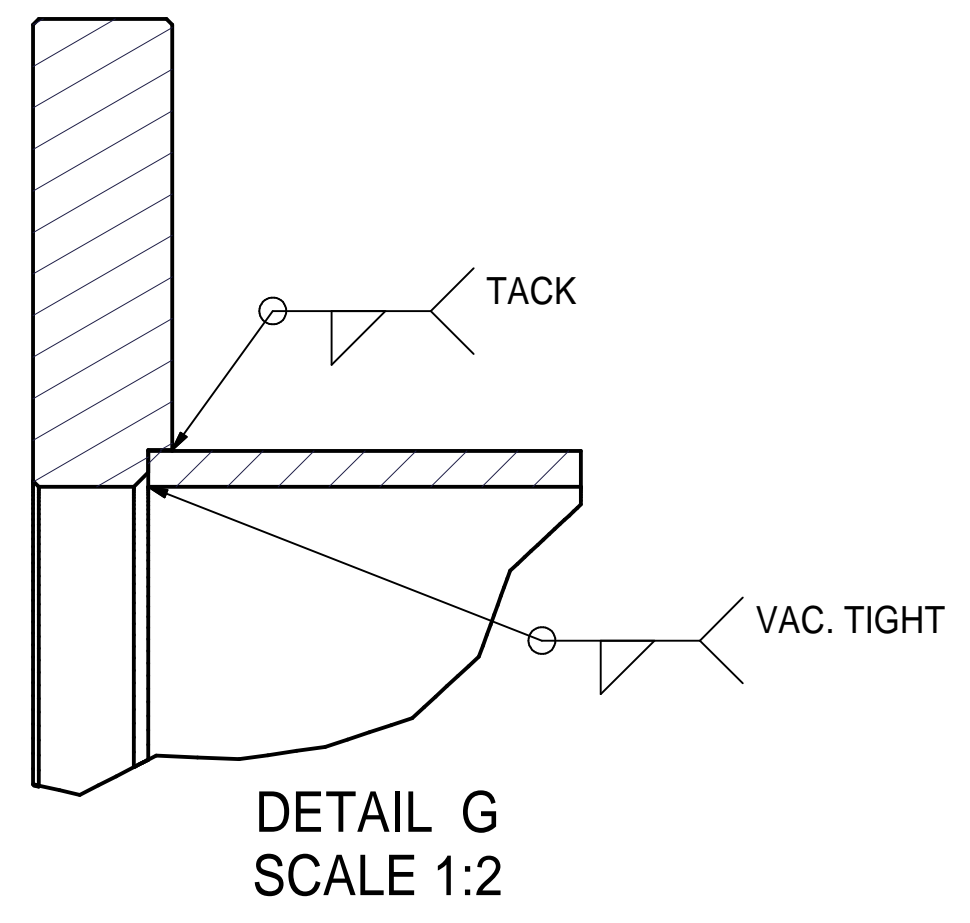
FOR MACHINING LUBRICANT USE ONLY  
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
 OR EQUIVALENT APPROVED BY CORNELL LEPP

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
			QUANTITY				
PRINT DISTR.	7103-153	PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw					
CR-1	7103-153	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: 0 ± 0.02 .00 ± 0.010 .000 ± 0.005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓					
		CHECKED BY: YHMER/TIO APPROVED BY: TIO					
		DRAWN BY: YH					
		DRAWN FOR: M. Liepe					
		DATE: 5/31/2012					
		SCALE: D					
		7103-153					
		SH. NO. 7 OF 15					

**CORNELL UNIVERSITY LEPP**  
 LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS  
 CORNELL UNIVERSITY  
 Floyd R. Newman Laboratory  
 Ithaca, NY 14853

ERL LINAC CRYOMODULE  
 VACUUM VESSEL  
 WELDING OF RAIL SUPPORTS

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



**(X) WELDMENT II-A, END FLANGES**

FILE NAME: 7103-153  
 SHEET NO.: 8  
 DFT. SCALE: 1:15  
 MATERIAL: SEE PART LIST  
 QTY: 1  
 NOTES: 1. INSTALL SLIP FLANGE WITH O-RING GROOVES FACING RIGHT SIDE END FLANGE BEFORE WELDING END FLANGE.  
 2. DOWEL HOLES IN BOTH END FLANGES MUST BE ALIGNED WITHIN 0.1 DEG OF EACH OTHER AND POSITIONED AS SHOWN.

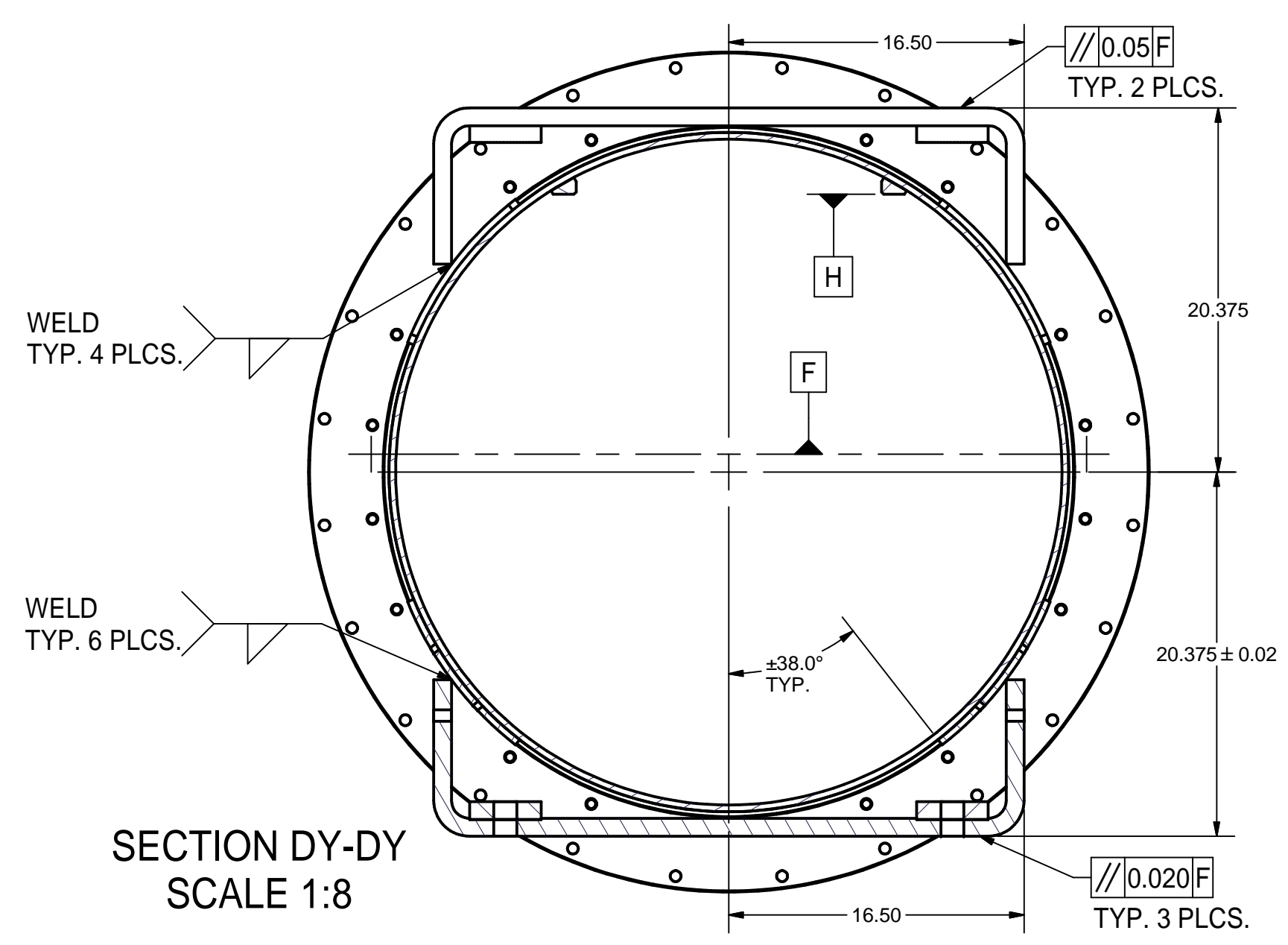
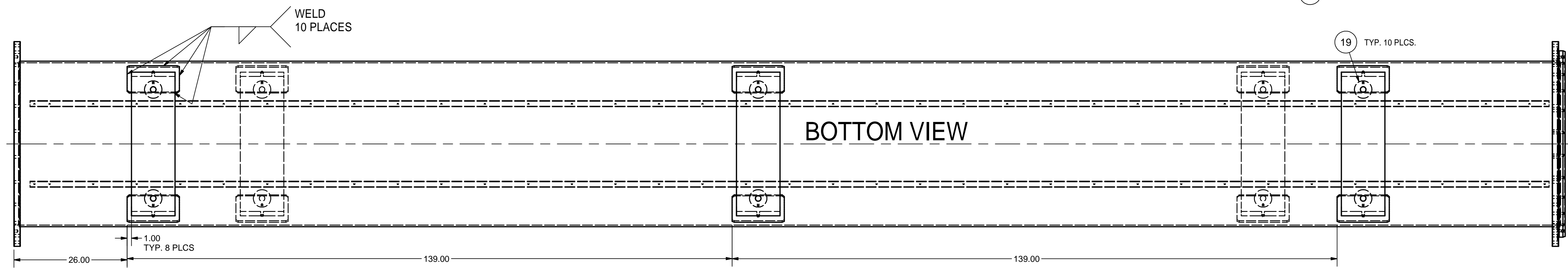
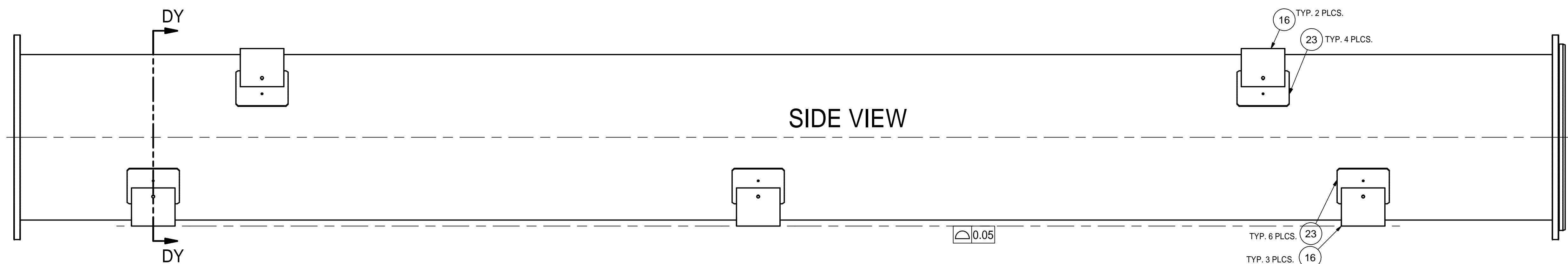
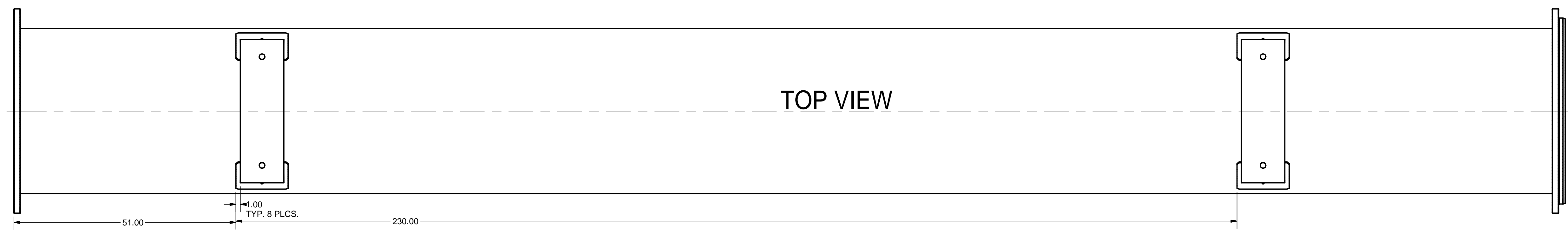
**RELEASED FOR VENDOR BID.  
 NOT FOR MANUFACTURE.  
 T. O'Connell - 1/11/2013**

FOR MACHINING LUBRICANT USE ONLY  
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
 OR EQUIVALENT APPROVED BY CORNELL LEPP

REV.	PRINT DISTR.	ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
					QUANTITY				
7103-153	SH. NO. 8 OF 15	CR-1	7103-153	PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓	<b>CORNELL UNIVERSITY</b> <b>LEPP</b> <small>LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS</small>			CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853	
				ERL LINAC CRYOMODULE VACUUM VESSEL WELDING OF END FLANGES					
				CHECKED BY: YHMER/TIO APPROVED BY: TIO	DRAWN BY: YH	DRAWN FOR: M. Liepe	DATE: 5/31/2012	SCALE: D	7103-153 SH. NO. 8 OF 15



REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



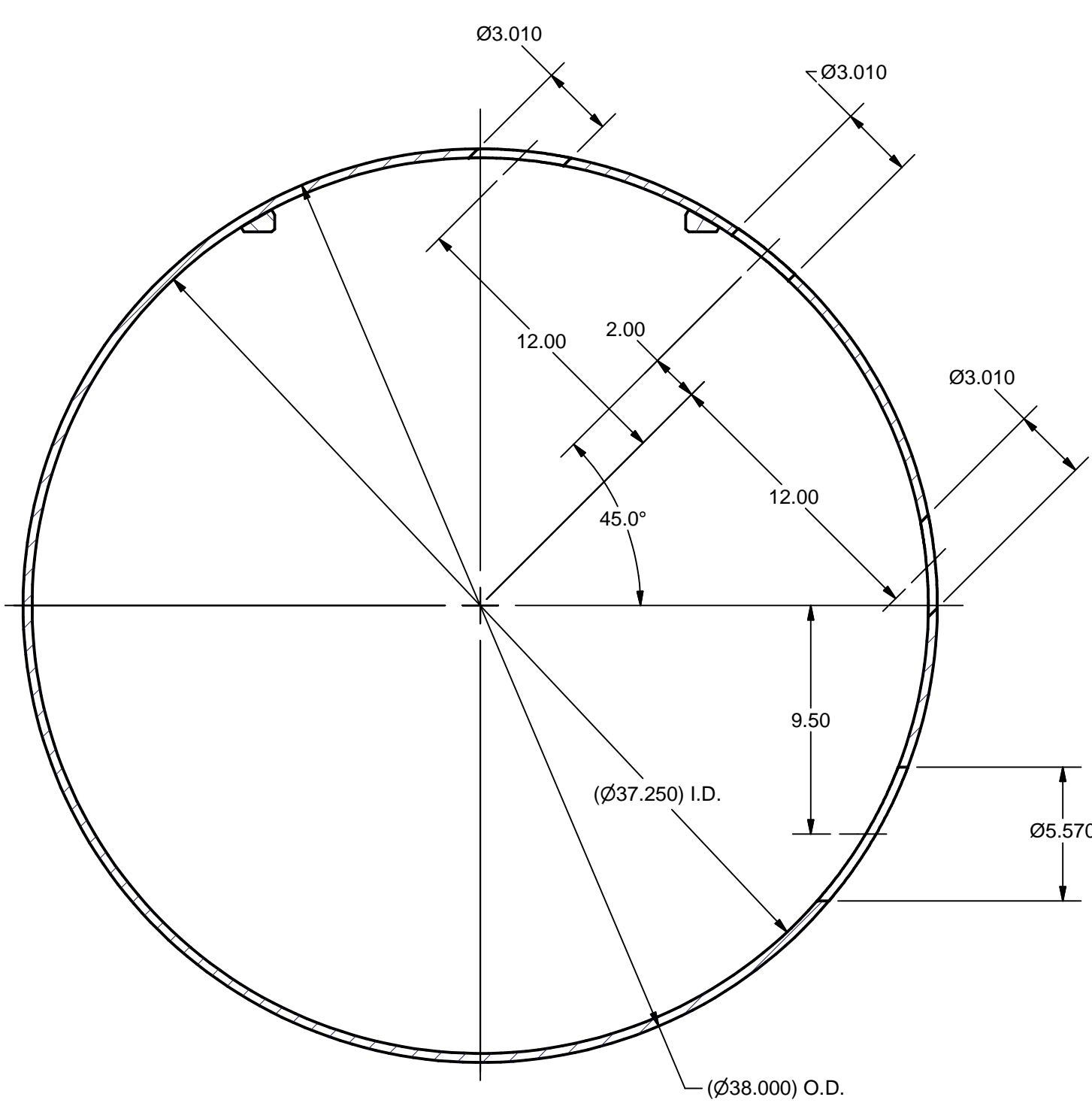
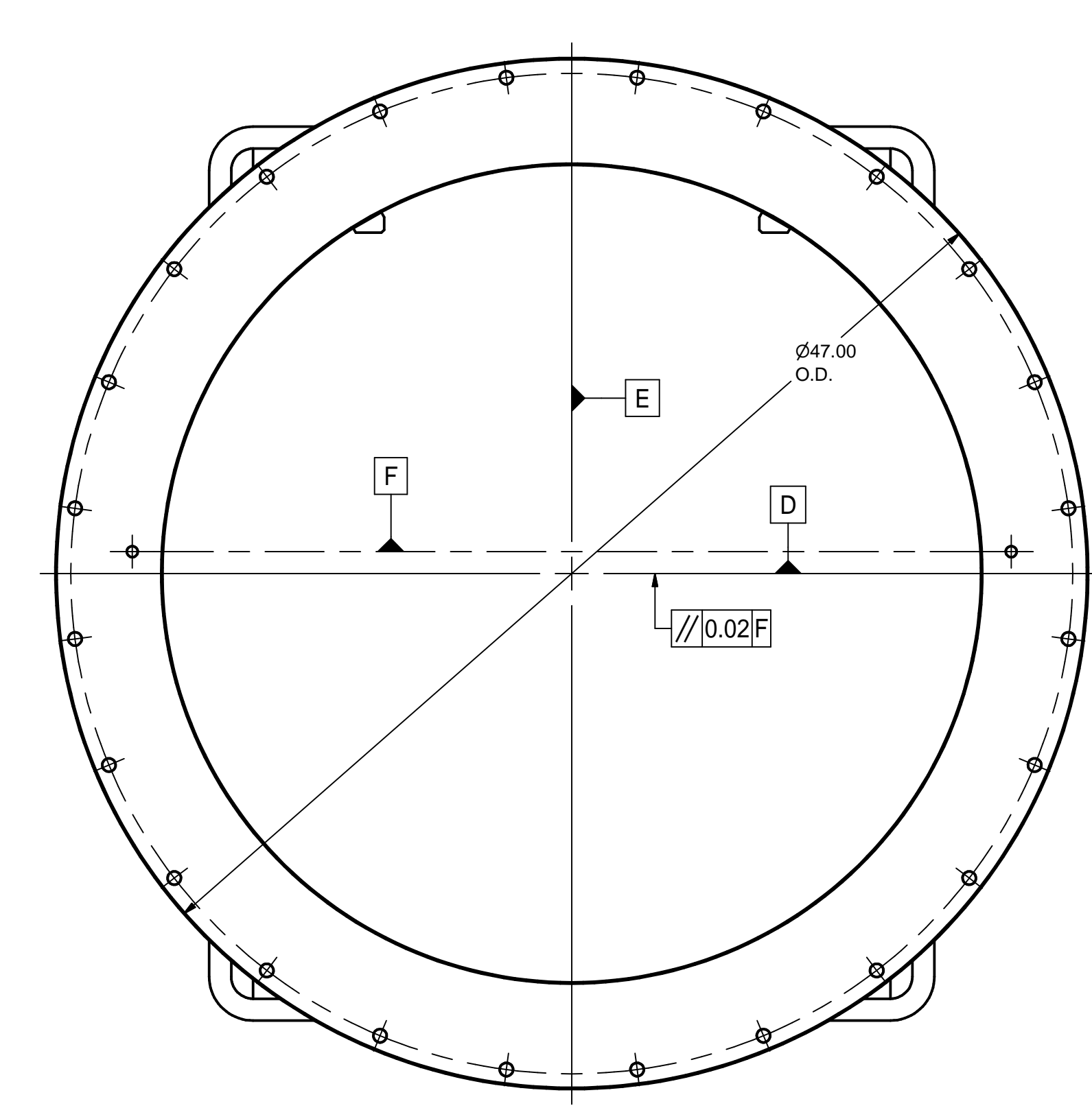
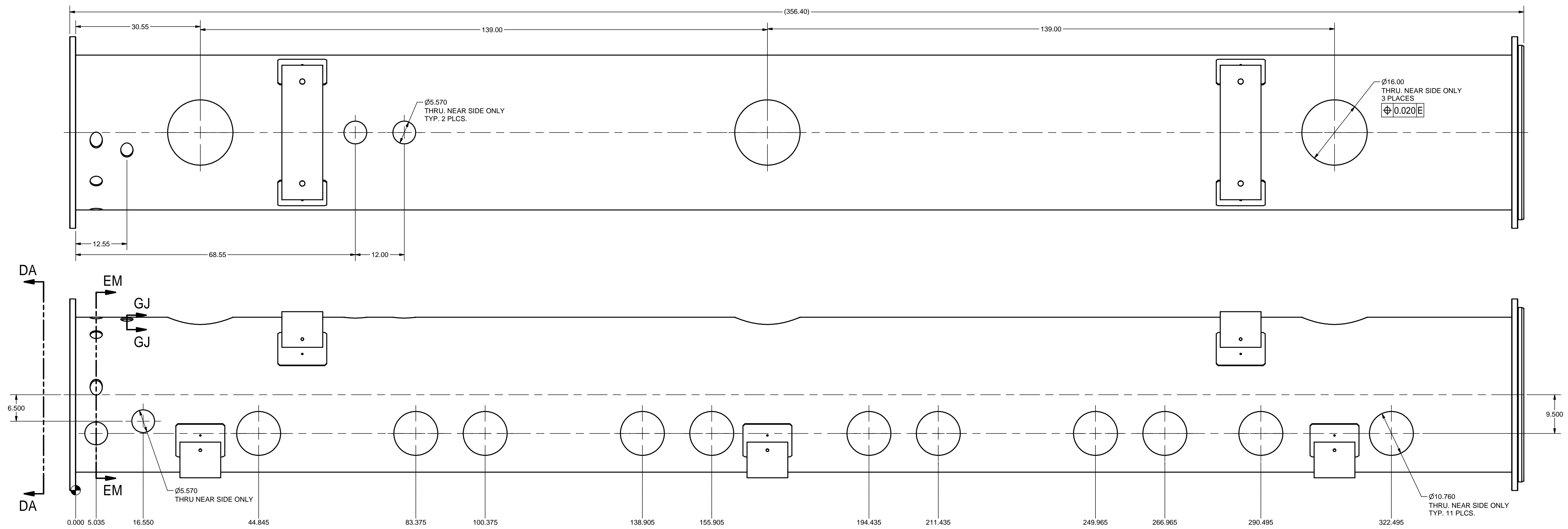
(X) WELDMENT II-B, PATCHES & U-FEET  
 FILE NAME: 7103-153  
 SHEET NO.: 9  
 DFT. SCALE: 1:12  
 MATERIAL: SEE PART LIST  
 QTY: 1  
 NOTES: 1. ALIGN U-FEET TO RAIL SUPPORTS OR DOWEL PINS ON END FLANGES

**RELEASED FOR VENDOR BID.  
 NOT FOR MANUFACTURE.  
 T. O'Connell - 1/11/2013**

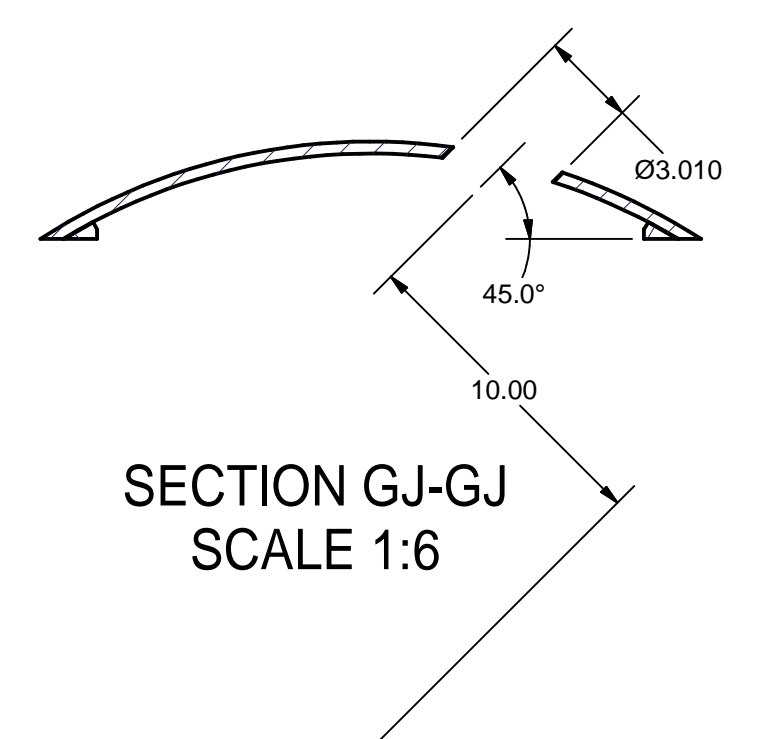
FOR MACHINING LUBRICANT USE ONLY  
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
 OR EQUIVALENT APPROVED BY CORNELL LEPP

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
			QUANTITY				
PRINT DISTR.	7103-153	PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw					
CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓	<b>CORNELL UNIVERSITY</b> LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS	CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853				
		ERL LINAC CRYOMODULE VACUUM VESSEL WELDING OF SUPPORT PATCHES & FEET					
CHECKED BY: YHMER/TIO	DRAWN BY: YH	DRAWN FOR: M. Liepe	DATE: 5/31/2012	SCALE: D	7103-153		
APPROVED BY: TIO					SH. NO. 9 OF 15		

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



SECTION EM-EM  
SCALE 1:6



SECTION GJ-GJ  
SCALE 1:6

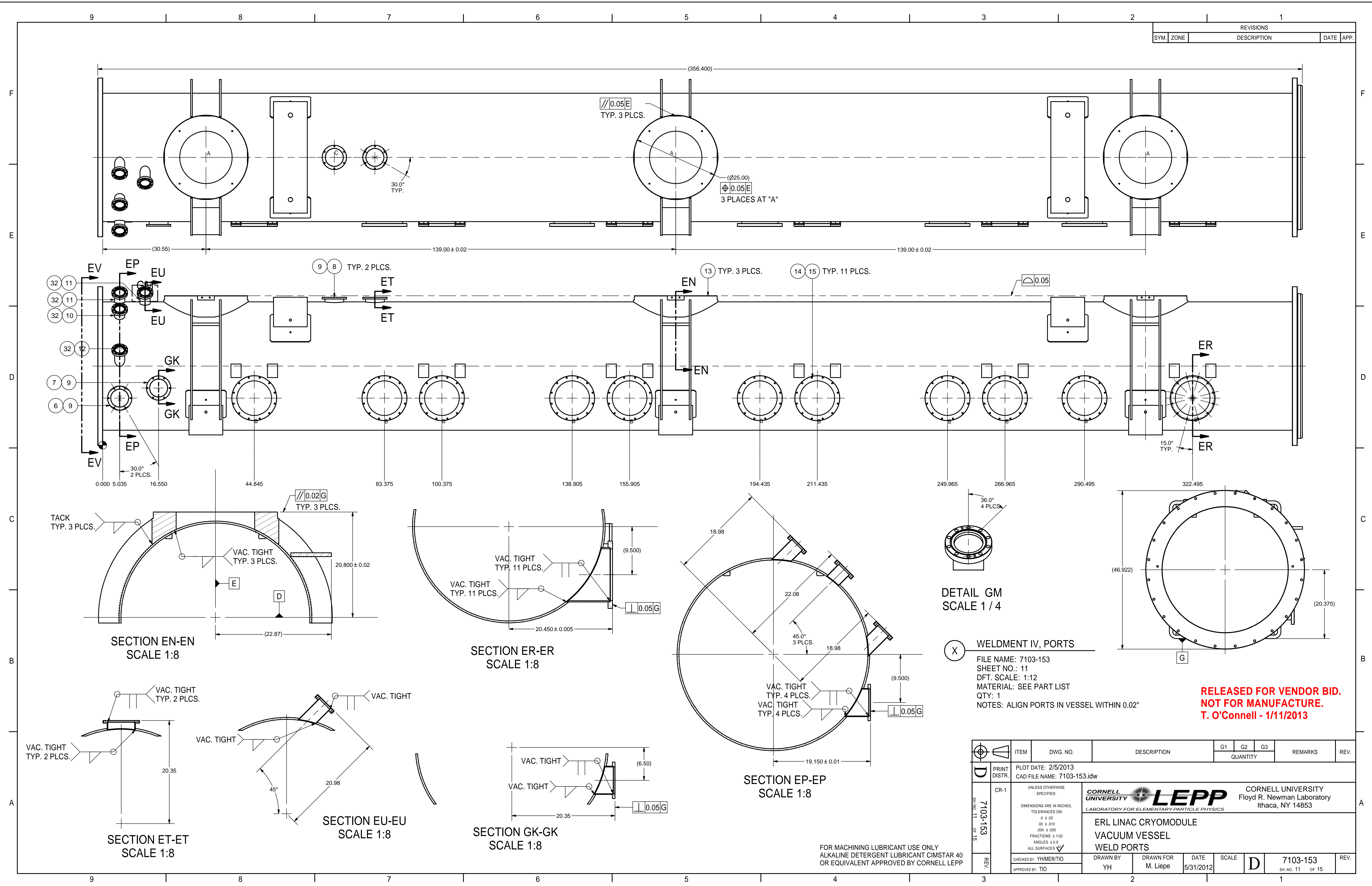
(X) WELDMENT III, MACHINING  
 FILE NAME: 7103-153  
 SHEET NO.: 10  
 DFT. SCALE: 1:12  
 MATERIAL: SEE PART LIST  
 QTY: 1  
 NOTES: 1) DEFINE NEW REF SURFACES D AND E WITH REGARD TO AXIS THROUGH THE CENTERS OF THE END FLANGE OD'S AND HORIZONTAL POSITION OF DOWEL PIN HOLES;  
 2) ALL HOLES DRILLED THRU NEAR SIDE ONLY.

RELEASED FOR VENDOR BID.  
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 ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
 OR EQUIVALENT APPROVED BY CORNELL LEPP

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
			QUANTITY				
PRINT DISTR.	PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw						
CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓	 CORNELL UNIVERSITY FLOYD R. NEWMAN LABORATORY ITHACA, NY 14853		ERL LINAC CRYOMODULE VACUUM VESSEL DRILLING PORT HOLES			
CHECKED BY: YHMER/TIO	DRAWN BY: YH	DRAWN FOR: M. Liepe	DATE: 5/31/2012	SCALE: D	7103-153	REV.	SH. NO. 10 OF 15

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



DETAIL GM  
SCALE 1 / 4

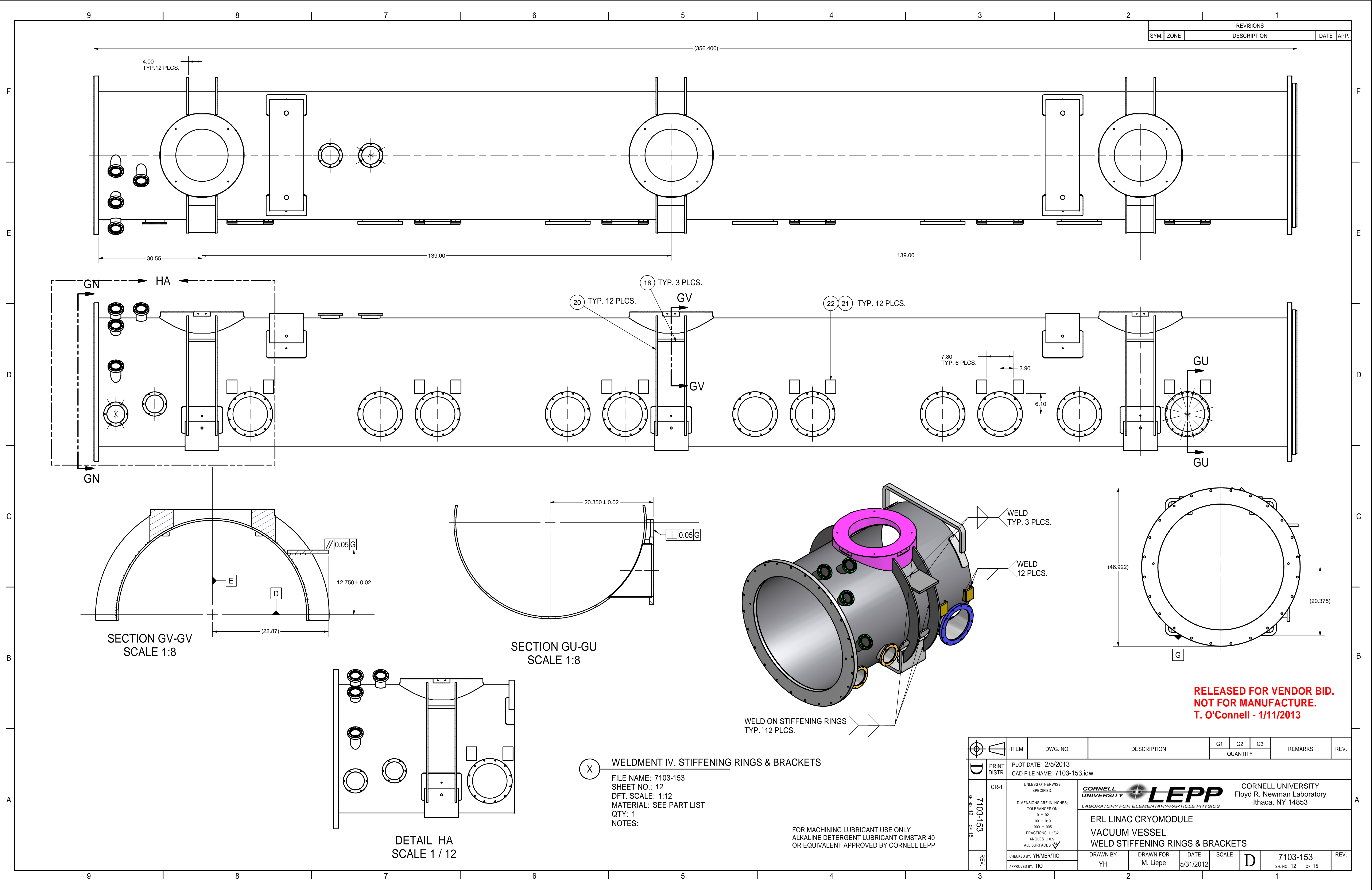
(X) WELDMENT IV, PORTS  
 FILE NAME: 7103-153  
 SHEET NO.: 11  
 DFT. SCALE: 1:12  
 MATERIAL: SEE PART LIST  
 QTY: 1  
 NOTES: ALIGN PORTS IN VESSEL WITHIN 0.02"

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 OR EQUIVALENT APPROVED BY CORNELL LEPP

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
			QUANTITY				
PRINT DISTR.	7103-153	PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw					
CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .0 ± .02 .00 ± .010 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES	CORNELL UNIVERSITY LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS				CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853	
		ERL LINAC CRYOMODULE VACUUM VESSEL WELD PORTS					
CHECKED BY: YHMER/TIO APPROVED BY: TIO	DRAWN BY: YH	DRAWN FOR: M. Liepe	DATE: 5/31/2012	SCALE: D	7103-153 SH. NO. 11 OF 15		

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



SECTION GV-GV  
SCALE 1:8

SECTION GU-GU  
SCALE 1:8

DETAIL HA  
SCALE 1 / 12

(X) WELDMENT IV, STIFFENING RINGS & BRACKETS

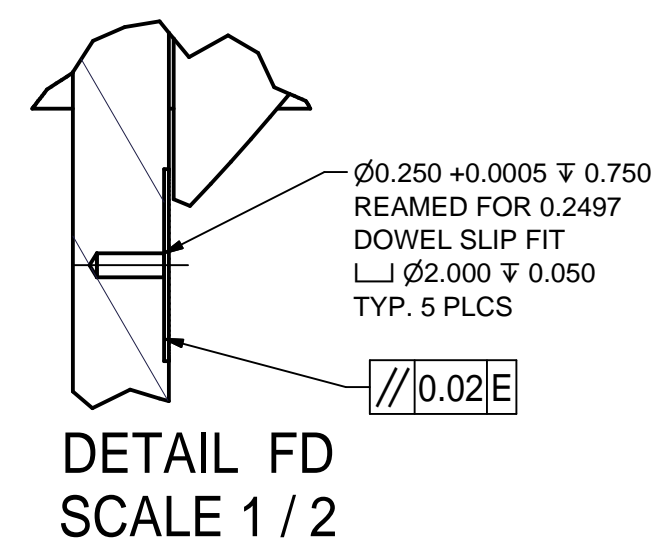
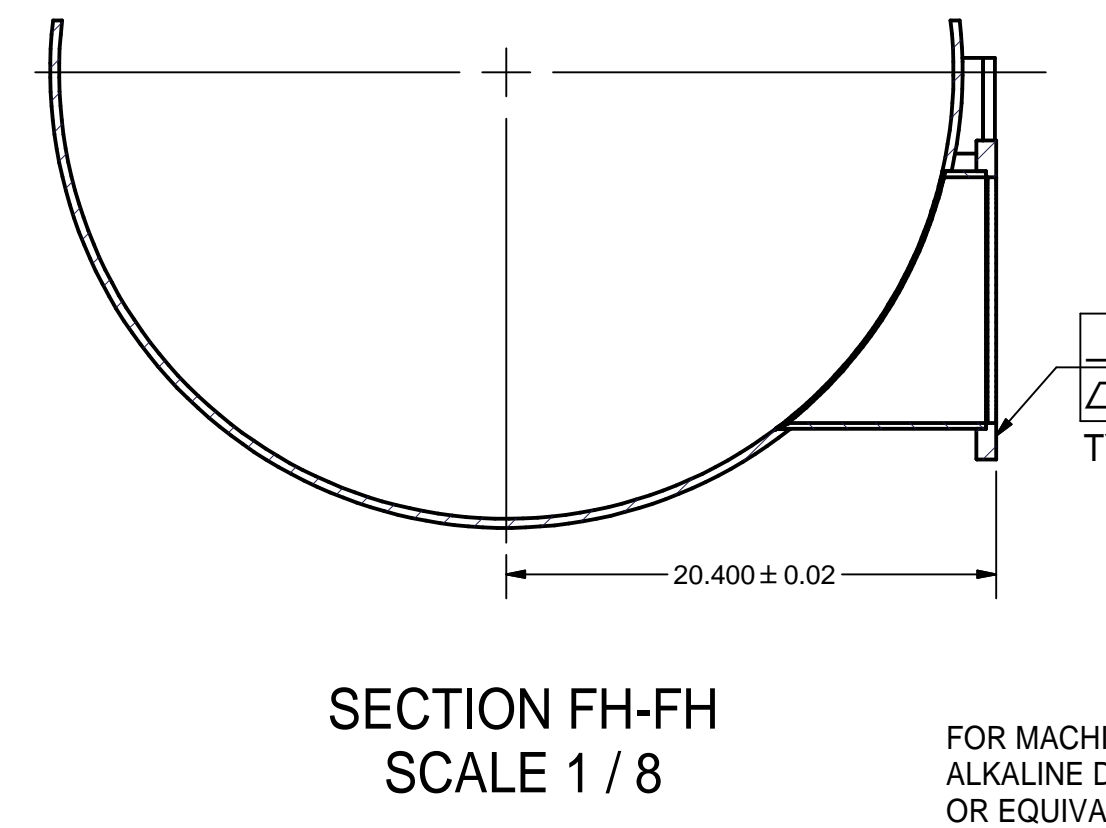
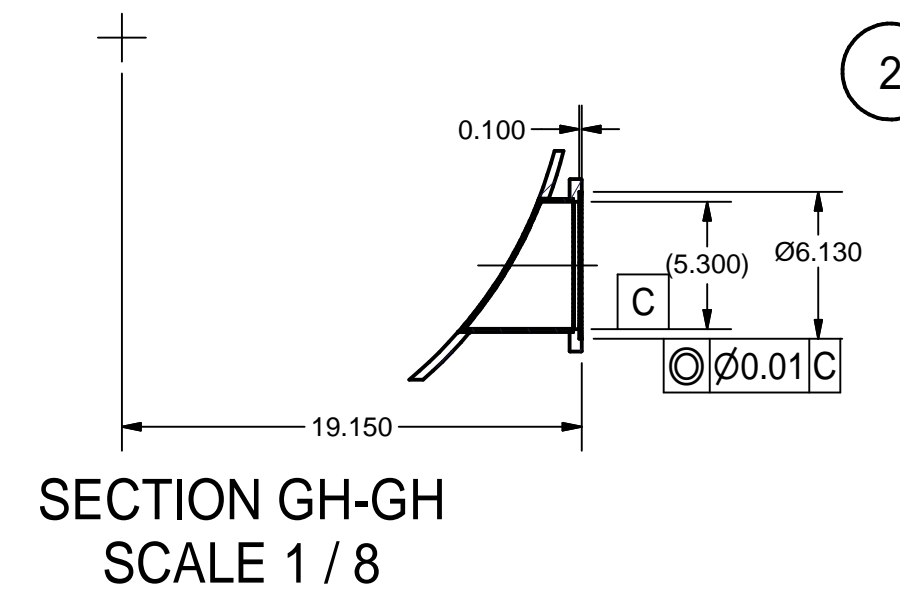
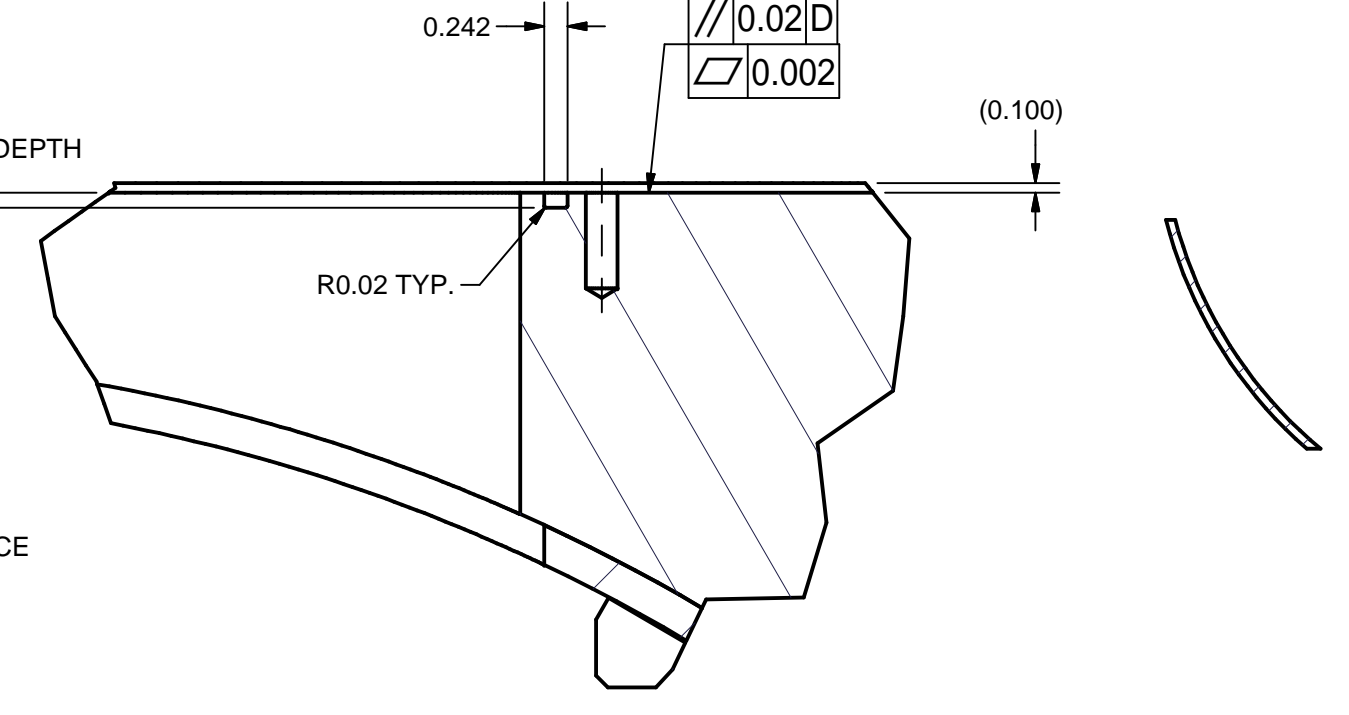
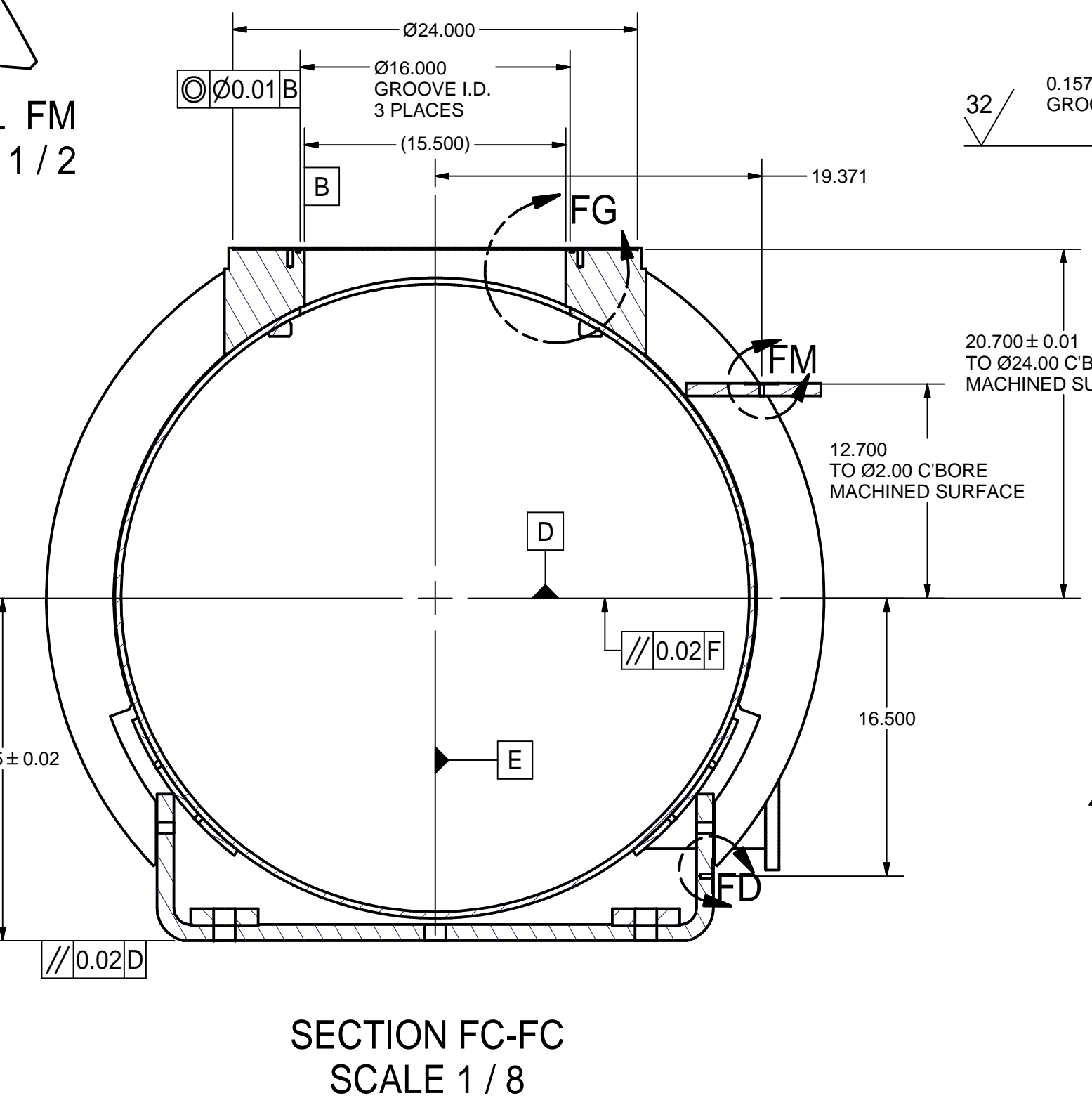
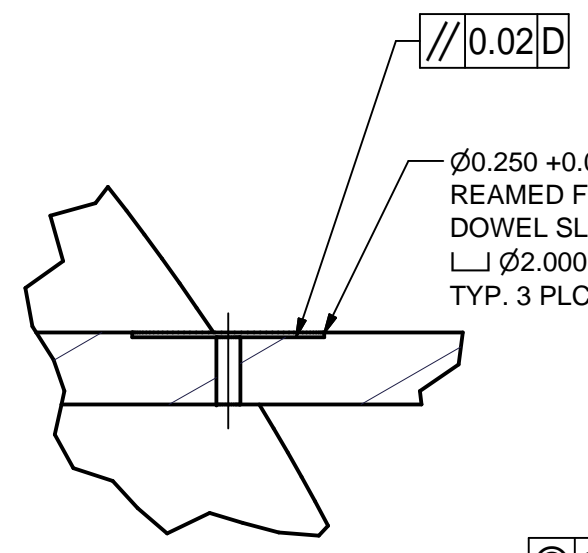
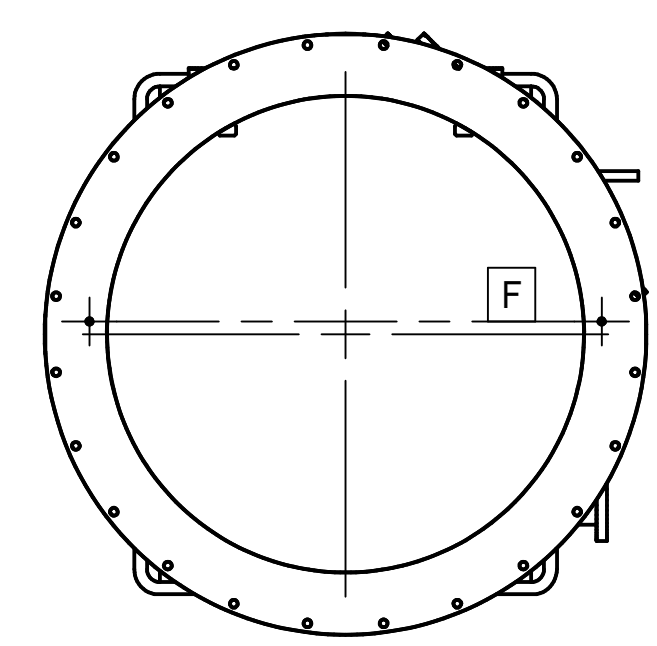
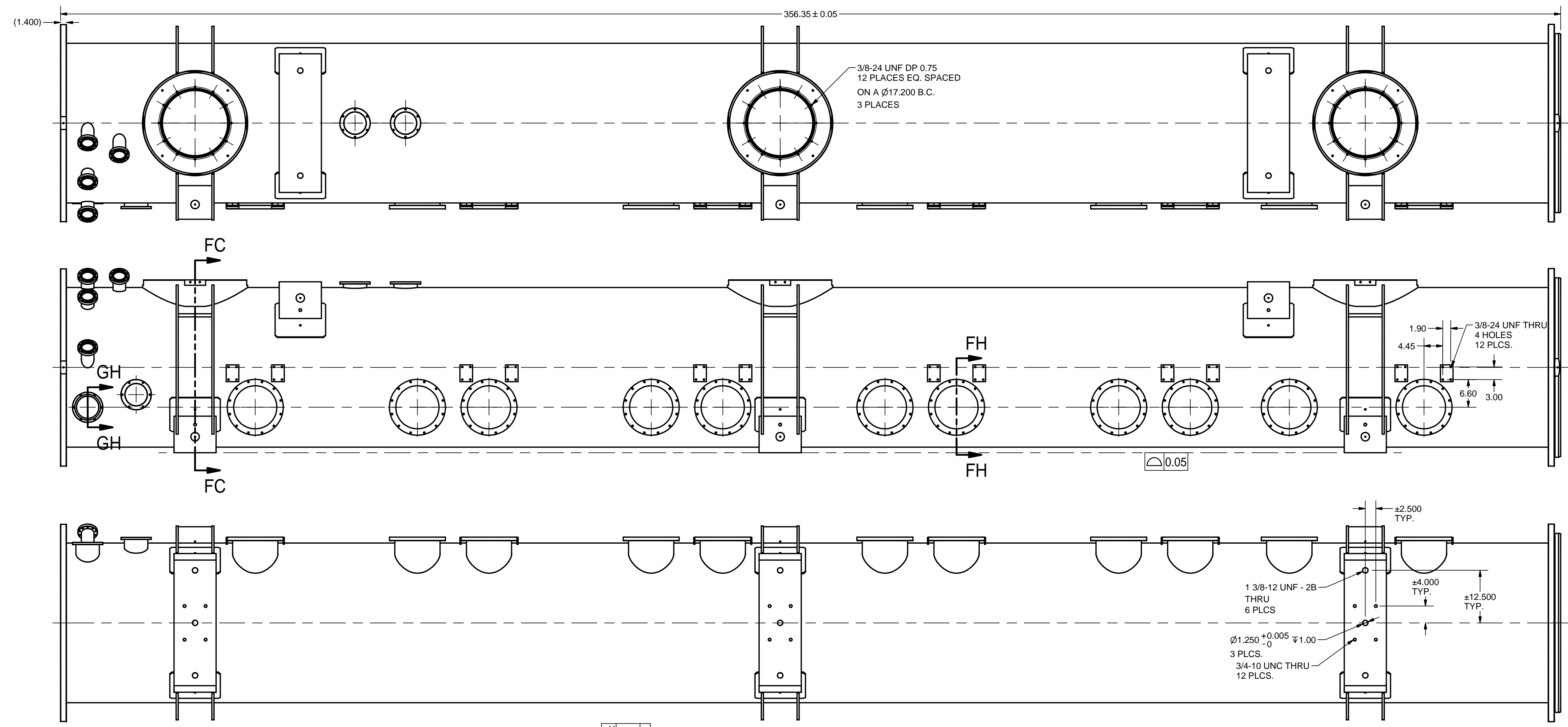
FILE NAME: 7103-153  
SHEET NO.: 12  
DFT. SCALE: 1:12  
MATERIAL: SEE PART LIST  
QTY: 1  
NOTES:

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OR EQUIVALENT APPROVED BY CORNELL LEPP

RELEASED FOR VENDOR BID.  
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T. O'Connell - 1/11/2013

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.	
			QUANTITY					
PRINT DISTR.	PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw							
CR-1	7103-153	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: .0 ± .02 .00 ± .010 .000 ± .005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓				CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853		ERL LINAC CRYOMODULE VACUUM VESSEL WELD STIFFENING RINGS & BRACKETS
CHECKED BY: YHMER/TIO	DRAWN BY: YH	DRAWN FOR: M. Liepe	DATE: 5/31/2012	SCALE: D	7103-153		REV.	
APPROVED BY: TIO	SH. NO. 12 OF 15						REV.	

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.



**2 WELDMENT V, FINISH MACHINING-A**

FILE NAME: 7103-153  
 SHEET NO.: 13  
 DFT. SCALE: 1:15  
 MATERIAL: SEE PART LIST  
 QTY: 1  
 NOTES: SEE SHHET NO. 14 FOR ADDITIONAL MACHINING ON END FLANGES  
 The specific sequence of finish machining steps is TBD.

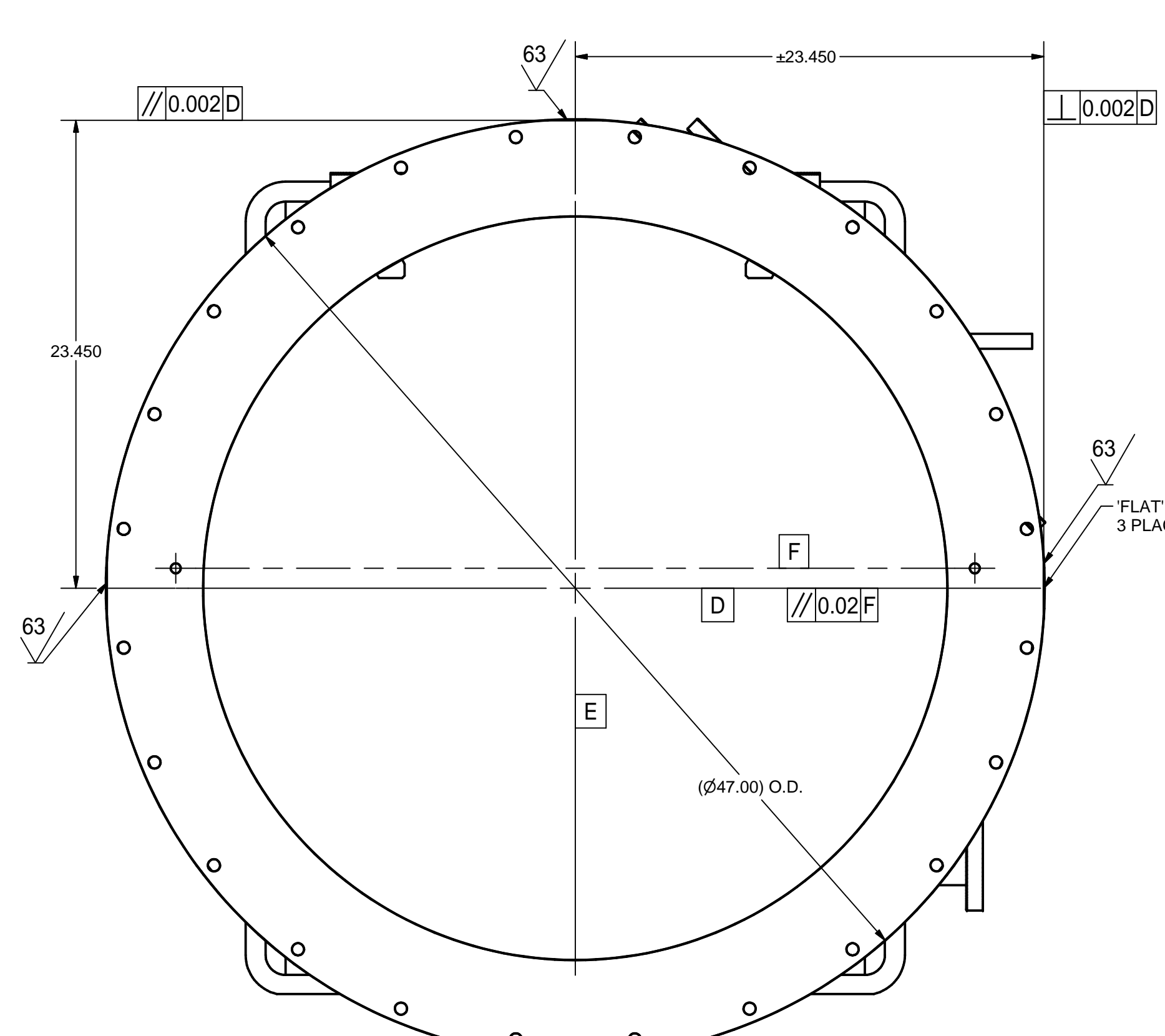
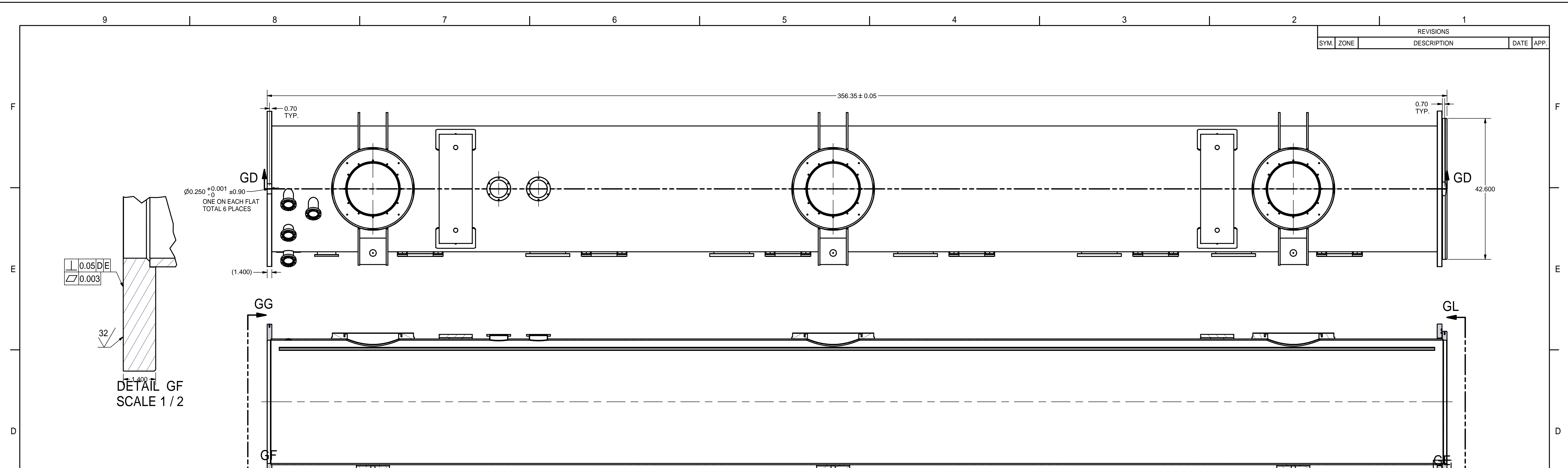
**RELEASED FOR VENDOR BID.  
 NOT FOR MANUFACTURE.  
 T. O'Connell - 1/11/2013**

- 1) DEFINE NEW REF SURFACES D AND E WITH REGARD TO AXIS THROUGH THE CENTERS OF THE END FLANGE OD'S AND HORIZONTAL POSITION OF DOWEL PIN HOLES;
- 2) FACE BOTTOM SURFACES OF 3 SUPPORT FOOTERS;
- 3) MACHINE BOLT HOLES ON U FOOT BOTTOM FACE;
- 4) MACHINE TOP PORT C-BORE, O-RING GROOVE AND BOLT TAPPED HOLES;
- 5) FACE SIDE PORTS;
- 6) MACHINE BOLT HOLES ON WAVEGUIDE SIPPOR BRACKETS;
- 7) MACHINE 3 ALIGNMENT FEATURES ON SURVEY ARMS;
- 8) MACHINE 5 ALIGNMENT FEATURES ON SIDE OF U-BRACES.
- 9) MACHINE ON END FLANGES: DETAILS SEE SHEET NO. 14

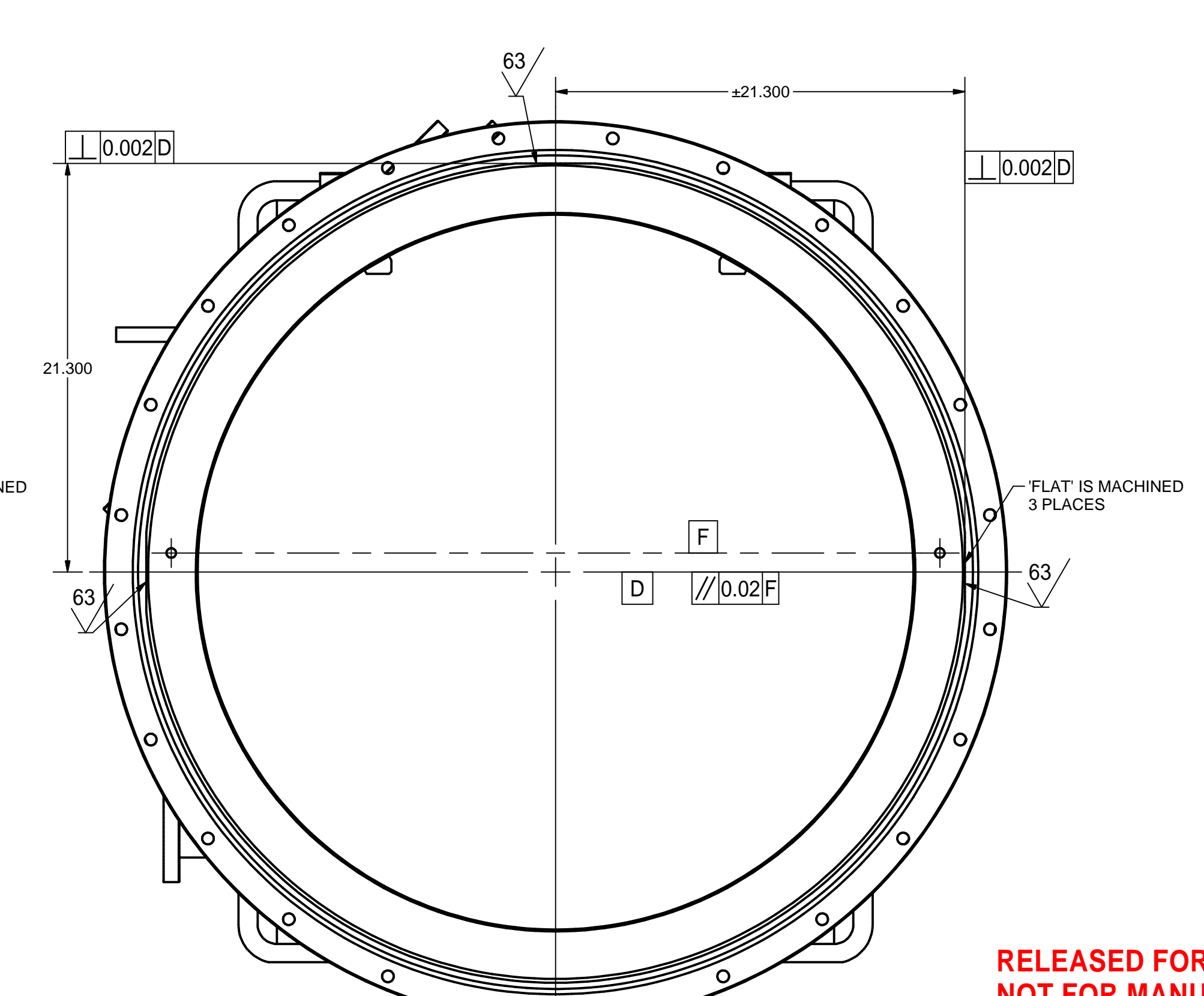
ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
			QUANTITY				
PRINT DISTR.	7103-153	PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw					
CR-1	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: TOLERANCES ON: 0 ± 0.02 .00 ± 0.010 .000 ± 0.005 FRACTIONS ± 1/32 ANGLES ± 0.5° ALL SURFACES ✓	<b>CORNELL UNIVERSITY</b> <b>LEPP</b> LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS	CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853				
		<b>ERL LINAC CRYOMODULE</b> <b>VACUUM VESSEL</b> <b>FINISH MACHINING</b>					
CHECKED BY: YHMERTIO	DRAWN BY: YH	DRAWN FOR: M. Liepe	DATE: 5/31/2012	SCALE: D	7103-153	REV.:	SH. NO. 13 OF 15

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 ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
 OR EQUIVALENT APPROVED BY CORNELL LEPP

REVISIONS			
SYM.	ZONE	DESCRIPTION	DATE APP.

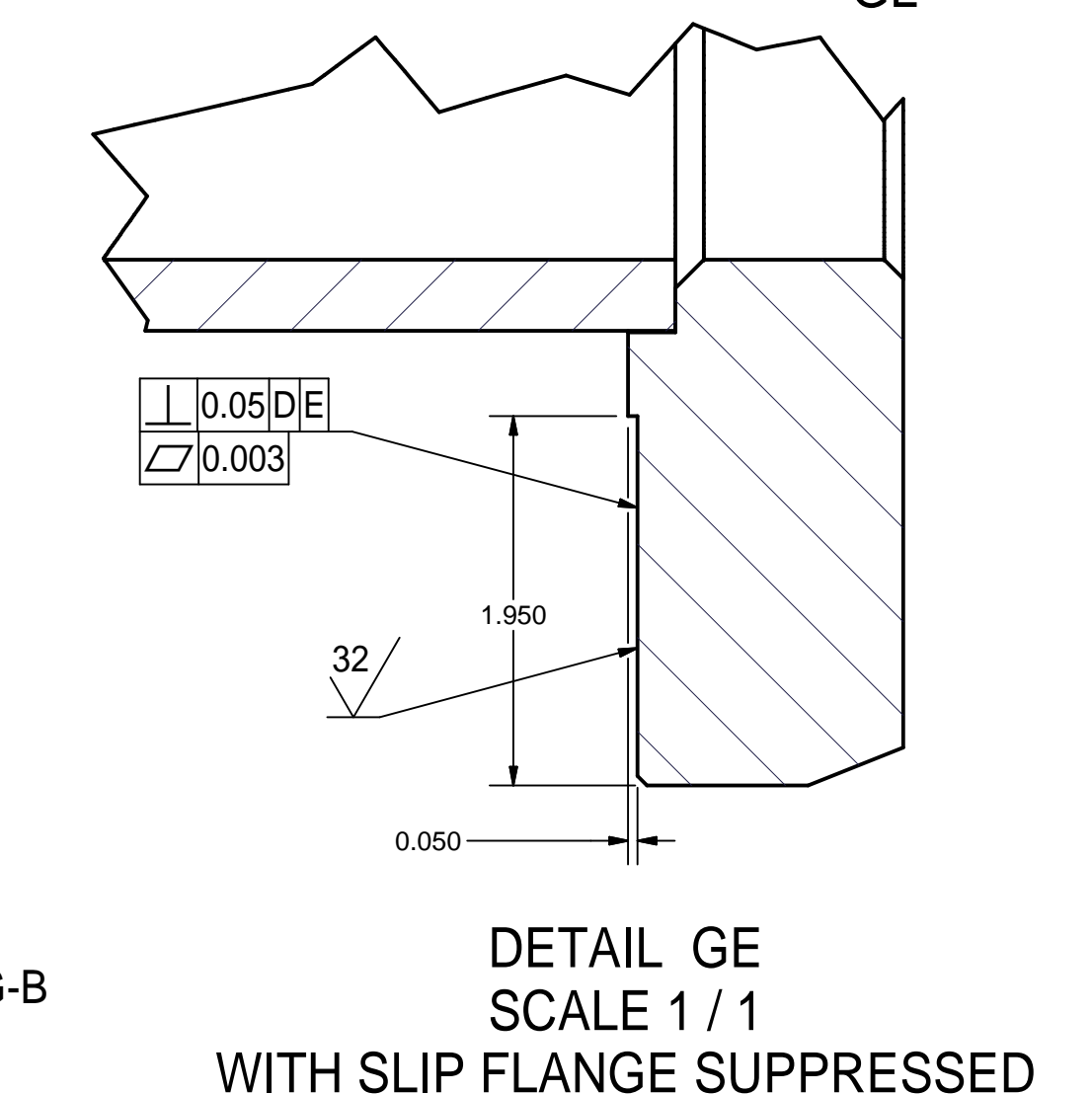


VIEW GG-GG  
SCALE 1 / 6




VIEW GL-GL  
SCALE 1 / 6

2 WELDMNT V, FINISH MACHINING-B  
 FILE NAME: 7103-153  
 SHEET NO.: 14  
 DFT. SCALE: 1:14  
 MATERIAL: SEE PART LIST  
 QTY: 1  
 NOTES: SEE SHHET NO. 13 FOR ADDITIONAL MACHINING ON PORT FLANGES AND SUPPORTS

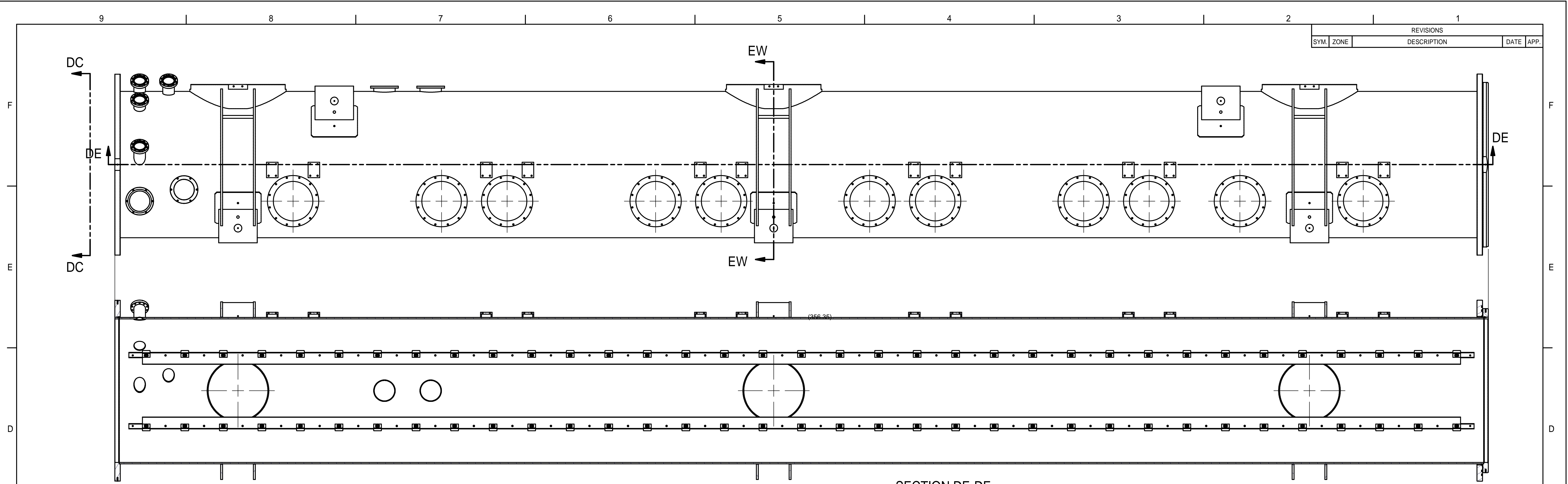


RELEASED FOR VENDOR BID.  
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 T. O'Connell - 1/11/2013

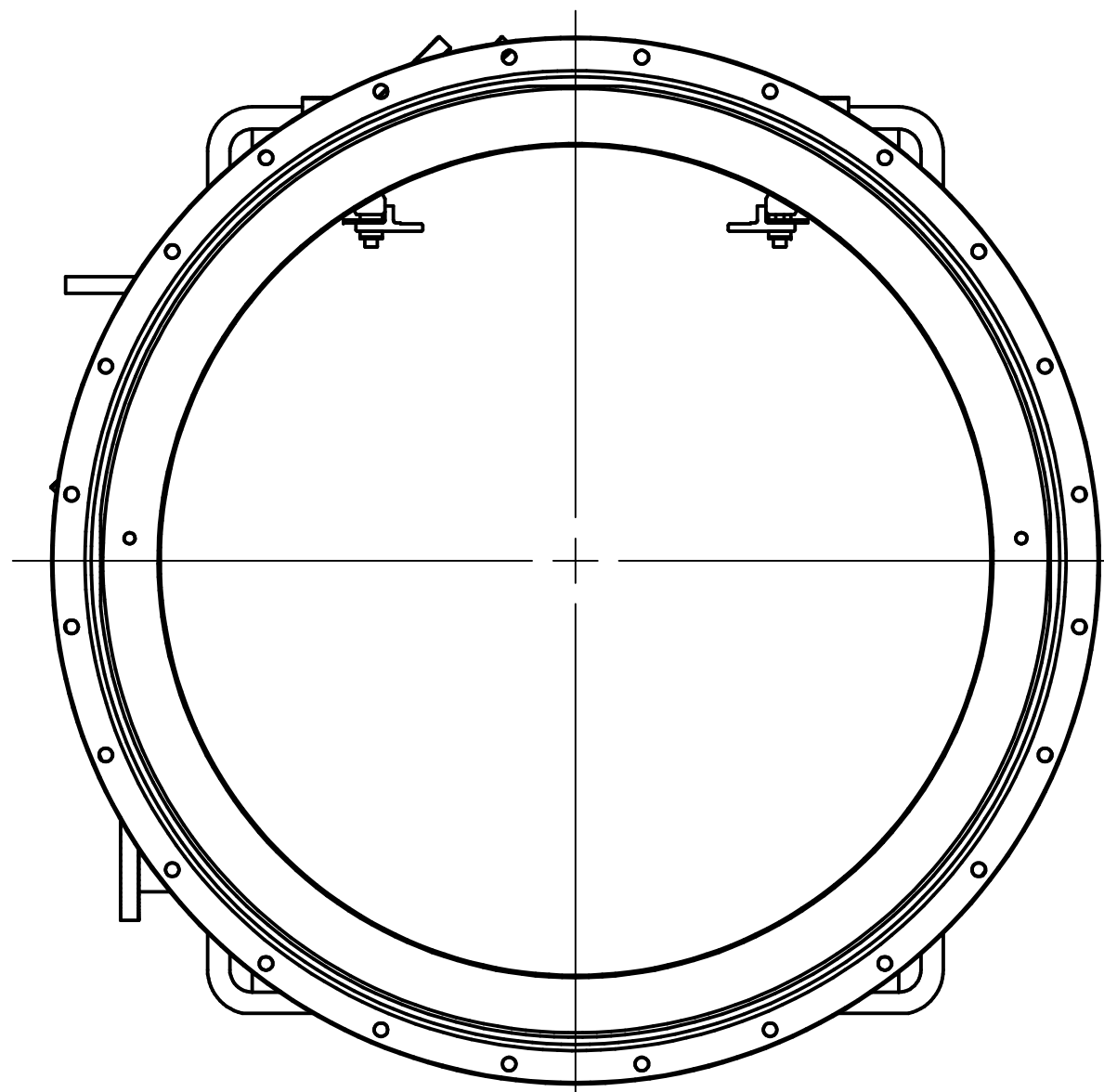
FOR MACHINING LUBRICANT USE ONLY  
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
 OR EQUIVALENT APPROVED BY CORNELL LEPP

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
							QUANTITY
CR-1	7103-153	ERL LINAC CRYOMODULE VACUUM VESSEL FINISH MACHINING					
PRINT DISTR. PLOT DATE: 2/5/2013 CAD FILE NAME: 7103-153.idw		 CORNELL UNIVERSITY Floyd R. Newman Laboratory Ithaca, NY 14853					
CHECKED BY: YHMER/TIO APPROVED BY: TIO		DRAWN FOR YH	DRAWN FOR M. Liepe	DATE 5/31/2012	SCALE D	7103-153 SH. NO. 14 OF 15	REV.

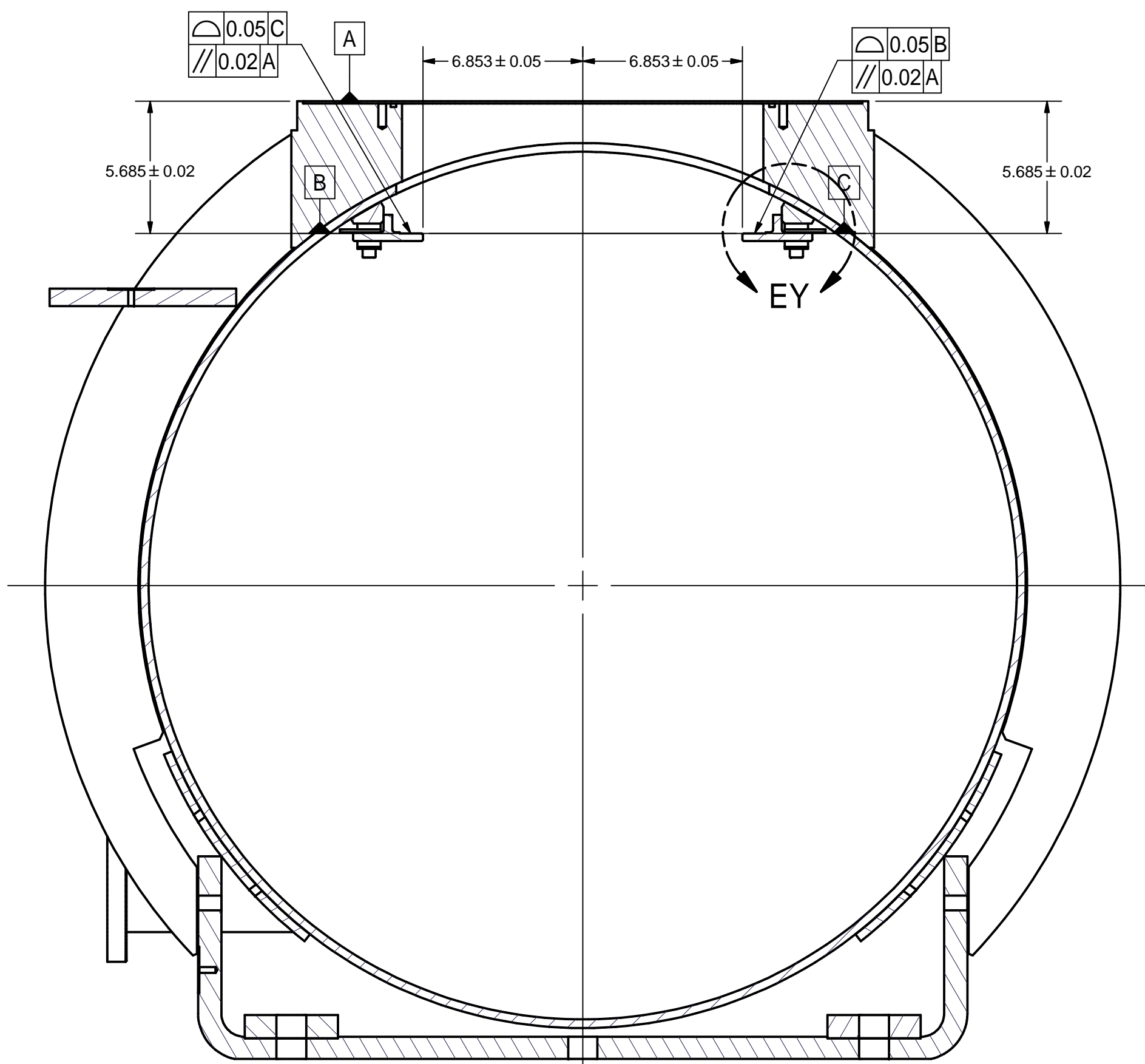
REVISIONS			
SYM. ZONE	DESCRIPTION	DATE	APP.



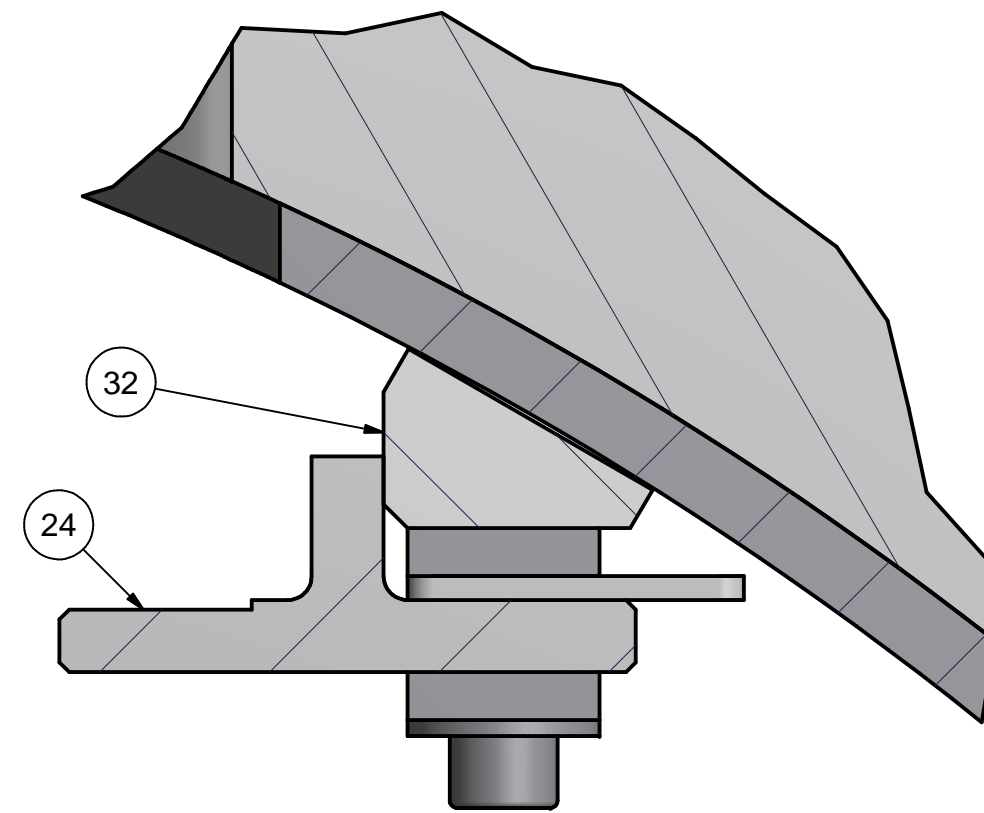
SECTION DE-DE  
SCALE 1:12



VIEW DC-DC  
SCALE 1:8



SECTION EW-EW  
SCALE 1:5



DETAIL EY  
SCALE 1:1

(X)

RAIL INSTALLATION

FILE NAME: 7103-153  
SHEET NO.: 15  
DFT. SCALE: 1:12  
MATERIAL: SEE PART LIST  
QTY: 1

NOTES: 1. SHIMS ARE USED TO ADJUST THE VERTICAL POSITION OF THE RAIL T'S TO MEET TIGHT VERTICAL TOLERANCE

RELEASED FOR VENDOR BID.  
NOT FOR MANUFACTURE.  
T. O'Connell - 1/7/2013

FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	REMARKS	REV.
CR-1	7103-153	ERL LINAC CRYOMODULE VACUUM VESSEL RAIL INSTALLATION					

CORNELL UNIVERSITY  
FLOYD R. NEWMAN LABORATORY  
ITHACA, NY 14853

CORNELL UNIVERSITY  
**LEPP**  
LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS

CHECKED BY: YHMERT/IO  
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DATE: 5/31/2012  
SCALE: D  
7103-153  
SH. NO. 15 OF 15

FOR MACHINING LUBRICANT USE ONLY  
ALKALINE DETERGENT LUBRICANT CIMSTAR 40  
OR EQUIVALENT APPROVED BY CORNELL LEPP