

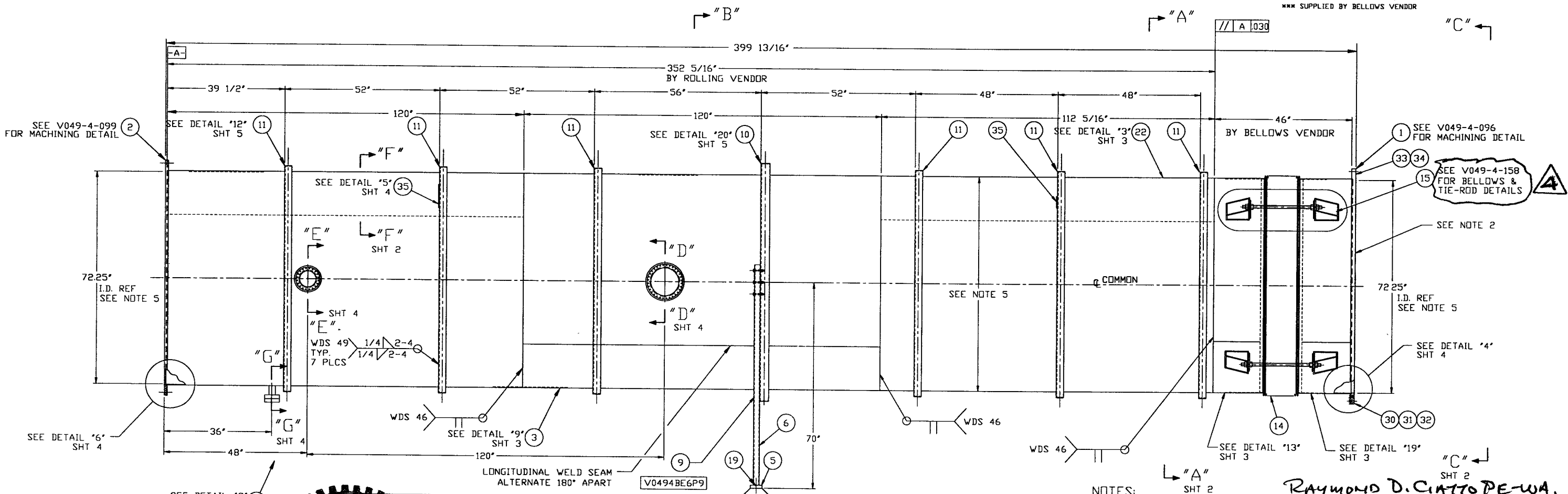
ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION
37	V049M314	3	1	EA	HALF NIPPLE, SST 304L, CONFLAT 4 1/2" OD
38	202557	3	1	EA	BLANK, CONFLAT, 304L SST, 4 1/2" OD
39	202558	3	1	EA	GASKET, COP COFH, CONFLAT, 4 1/2" OD
40	V049M776		8	EA	BOLT, 18-8 SST, HEX HD 5/16"-18x2 1/4" LG
41	V049M782		60	EA	NUT, SILICON BRZ, HEX 5/16"-18
	V049M785		120	EA	WASHER, 18-8 SST, FLAT 5/16"

ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION
25	202549	3	1	EA	FLANGE, CONFLAT, BLANK, 12" OD, 304L SST
26	V049M777		20	EA	BOLT, 18-8 SST, HEX HD 5/16"-18x2 1/2" LG
27	V049M779		32	EA	BOLT, 18-8 SST, HEX HD 5/16"-18x3" LG
28	V049M263	3	1	EA	GASKET, COFH, CONFLAT, 8" OD
29	202552	3	1	EA	GASKET, COFH, CONFLAT, 12" OD
30	202678	3	36	EA	BOLT, SA193 B7, HEX, 7/8"-9 UNC X 4" LG.
31	202679	3	36	EA	NUT, SA193 B7, HEX, 7/8"-9 UNC
32	202581	3	72	EA	WASHER, STL, 1 3/4" OD X 15/16" ID X 1/4" THK.
33	V049M020		1	EA	O-RING, VITON, (PER SPEC V049-2-045)
34	V049M021		1	EA	O-RING, VITON, (PER SPEC V049-2-045)
35	V049M852	3	3	FT	BAR, 4" X 3/8" THK, 304 SST
36					

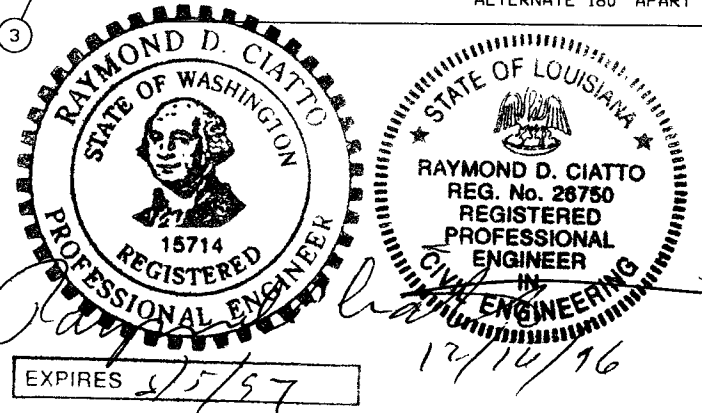
ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION
13	V049M313	3	1	EA	HALF NIPPLE, SST 304L, CONFLAT 8" OD
14	V0494BE6P1		1	EA	BELLOWS ASSY (PER SPEC V049-2-017)
15	***		4	EA	TIE-ROD ASSY (PER DWG. V049-4-158)
16					
17	V049M753	3	6	EA	BOLT, 5/8-11 UNC X 3 1/2" LG, A325
18	V049M755	3	6	EA	NUT, 5/8-11 UNC, A325
19		3	4	EA	ANCHOR HILTI HVA 1"x8 1/4" EMBEDMENT
20	V049M773	3	6	EA	WASHER, LOCK, 5/8, A325
21					
22	V0494BE6P22		1	EA	SHELL, 304/304L SST, 1/4" THK.
23	V0494061		1	EA	3/4" O.D. ELBOW X 2 3/4" O.D. CONFLAT FLANGE
24	V049M262	3	1	EA	FLANGE, CONFLAT, BLANK, 8" OD, 304L SST

ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION
1	V0494096		1	EA	FLANGE, GROOVED, 72 1/4" ID X 80" OD
2	V0494099		1	EA	FLANGE, FLAT FACED, 72 1/4" ID X 80" OD
3	V0494BE6P3		1	EA	SHELL, 304/304L SST, 1/4" THK.
4	V049M921		1	EA	RING, SST 304, 11" ID X 16" OD X 1/2" THK
5			1	FT	BAR, A36, 6" X 1 3/8" THK
6			1	FT	TUBE STEEL (TS) 4" X 2" X 3/16" A500 GR B
7	V049M985		1	EA	RING, SST 304, 7" ID X 11" OD X 1/2" THK
8					
9	V0494BE6P9		2	EA	SUPPORT ASSY.
10	V049M814		1	EA	SUPPORT RING, 4" X 4" X 1/4" 304 SST
11	V049M813		1	EA	SUPPORT RING, 2 1/2" X 2 1/2" X 1/4" 304 SST
12	V049M310		3	EA	HALF NIPPLE, SST 304L, CONFLAT 12" OD

\* ELECTROLESS NICKEL PLATE  
 \*\*\* SUPPLIED BY BELLOWS VENDOR



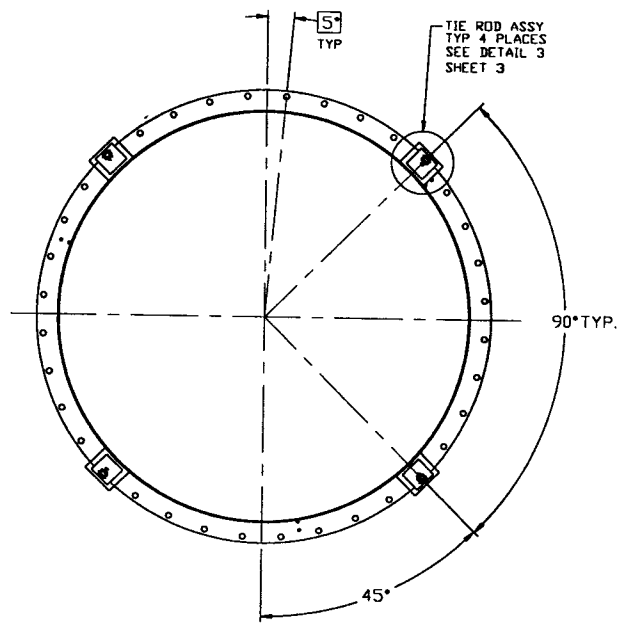
- NOTES:
1. THE ROLLING VENDOR IS RESPONSIBLE FOR PRODUCING SHELL ASSEMBLY SETS WHICH STACK UP TO THE OVERALL DIMENSIONS NOTED AS "BY ROLLING VENDOR".
  2. THIS FLANGE INCLUDES AN ANNUAL CHANNEL BETWEEN O-RINGS, MANIFOLD TO A SINGLE PUMP/OUT PORT ON EACH CHAMBER, SEE DWG V049-4-061.
  3. FOR FLANGE DETAILS SEE DWGS. V040-4-096 & V049-4-099
  4. SPOOL FABRICATION TO BE IN ACCORDANCE WITH SPEC. V049-2-097.
  5. THE CENTERLINES OF ALL SHELLS & FLANGES ARE TO LIE ON THE COMMON CENTERLINE WITHIN ±1/16"
  6. DO NOT USE CARBON STEEL BRUSHES OR BRUSHES CONTAMINATED WITH CARBON STEEL ON STAINLESS OR ALUMINUM MATERIAL.
  7. CLEAN PER SPEC. V049-2-015
  8. BOLT HOLES OF ALL FLANGES TO STRADDLE VERTICAL CENTERLINE ±.015
  9. CERTIFIED MANUFACTURER'S MATERIAL TEST REPORTS REQUIRED AS NOTED.
  10. LEAK TEST & METHOD PER PSI SPEC. V049-2-014
  11. TIGHTEN TIE-ROD NUTS WITH BELLOWS IN "FREE" POSITION TO 100 FT-LBS PRIOR TO LEAK TEST.
  12. EACH SHELL ASSEMBLY SET IS TO HAVE EACH OF THE PIECES MARKED WITH THE SAME SET NUMBER. THE NUMBER IS TO BE MADE FROM THE DRAWING NO. PLUS THE SEQUENTIAL NUMBER. V0494BE6-A, -B ETC.



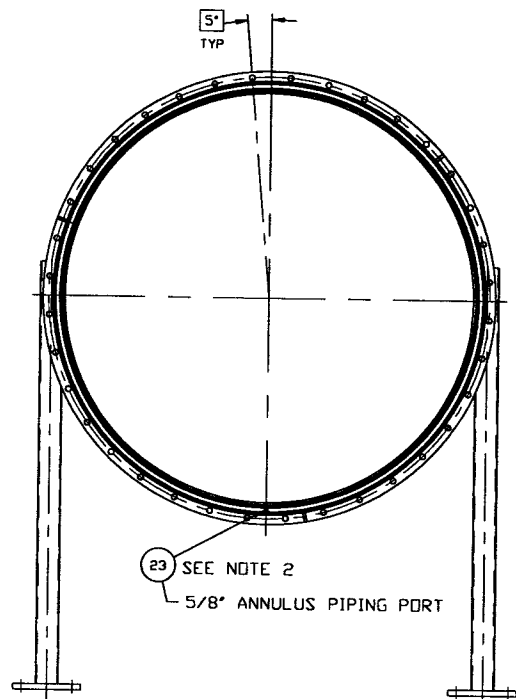
APPROX. WEIGHT: 8247#

13. MACHINING & ROLLING PER SPEC V049-2-136.
14. PLATES PRIOR TO ROLLING MUST HAVE DIAGONAL CORNER TO CORNER DIMENSIONS WITHIN 1/16" OF EACH OTHER.
15. STRUCTURAL STEEL TO BE IN ACCORDANCE WITH SPEC. V049-2-039.
16. CONFLAT FLANGES TO HAVE PROTECTIVE COVERS AT ALL TIMES DURING & AFTER MANUFACTURING.
17. CONFLAT LEAK CHECK SLOT ARE TO BE POSITIONED ON VERTICAL CENTERLINE.
18. WDS NO.'S REFER TO WELD DATA SPEC V049-2-084.

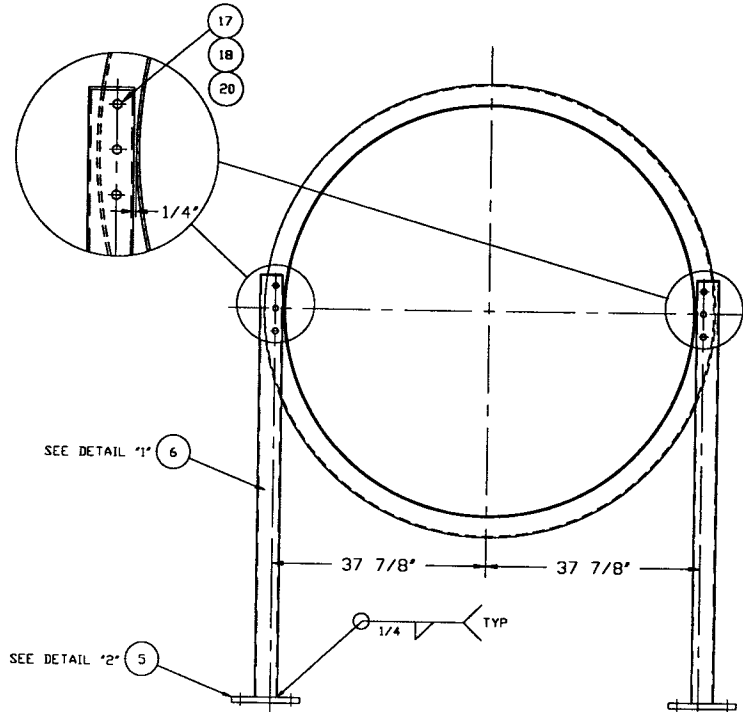
PROPRIETARY AND CONFIDENTIAL				SYMBOL CHARACTERISTIC		UNLESS OTHERWISE SPECIFIED		TOLERANCES		DATE		PROCESS SYSTEMS INTERNATIONAL INC.		
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO PROCESS SYSTEMS INTERNATIONAL, INC. OR ITS AFFILIATES AND SHALL BE LOANED TO YOU FOR THE PURPOSE OF SUPPLYING IT. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED IN WHOLE OR IN PART TO OTHERS EXCEPT IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT UNDER WHICH IT WAS SUPPLIED OR WITH THE PRIOR WRITTEN CONSENT OF PROCESS SYSTEMS INTERNATIONAL, INC. AND SHALL BE RETURNED UPON REQUEST.				□	FLATNESS	DIMENSIONS ARE IN INCHES		4	ISSUED FOR FABRICATION	DA	11/22/96	0180	20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA	
				○	CYLINDRICITY	FRACTIONAL ± .1		3	DESIGN UPDATE /SHELL ONLY	DA	10/23/96	0328	SPPOOL BE-6	
				//	PARALLELISM	ANGULAR ± 1°		2	FABRICATION (SHELL ONLY)	PV	9/11/96	0283	72.25" ID x 72.25" ID	
				⊥	PERPENDICULARITY	THREE PLACE DECIMAL ± .015		1	DESIGN UPDATE/FABRICATION (BELLOWS ASSY ONLY)	CHKD	04/29/96	0146	LIGO VACUUM EQUIPMENT	
				⊕	ANGULARITY	FINISHED SURFACE RMS		0	ISSUED FOR FDR	DRWN			SCALE 3/4" = 1'-0"	
				⊙	TRUE POSITION	BREAK CORNERS IN		REV	DESCRIPTION	DATE	DECR	SHEET 1 OF 5		
				○	CONCENTRICITY	REMOVE ALL BURRS		ISSUE DESCRIPTION						
DWG NO. DESCRIPTION DWG NO. DESCRIPTION				DO NOT SCALE THIS DRAWING		NEXT ASS'Y:								
REFERENCE DRAWINGS				USED ON:										



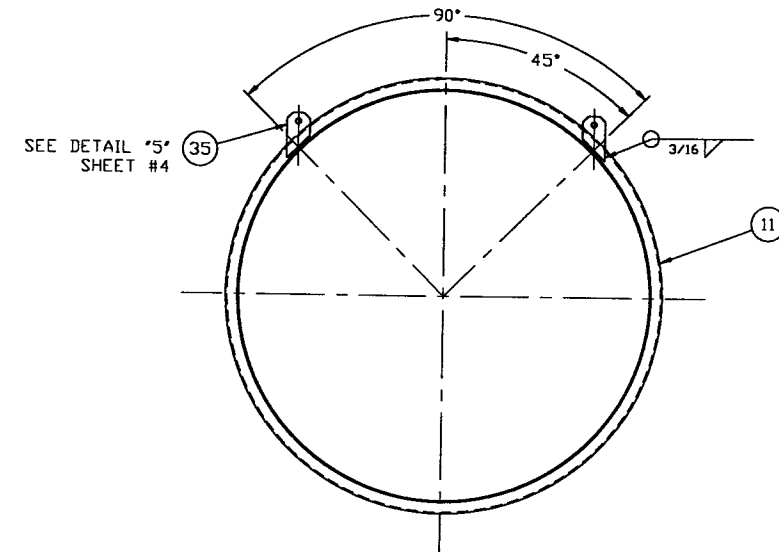
SECTION "A"-"A"



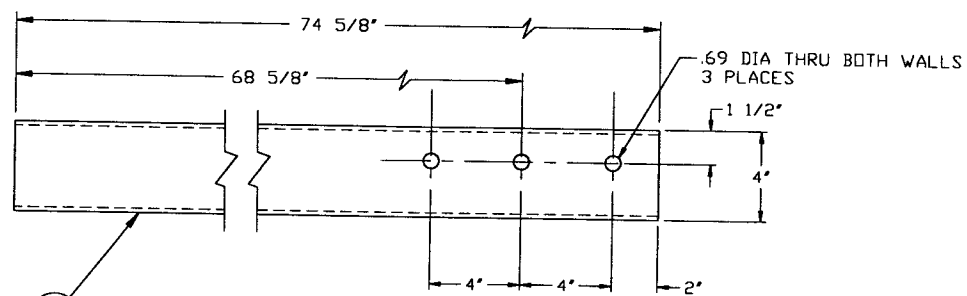
VIEW "C"-"C"



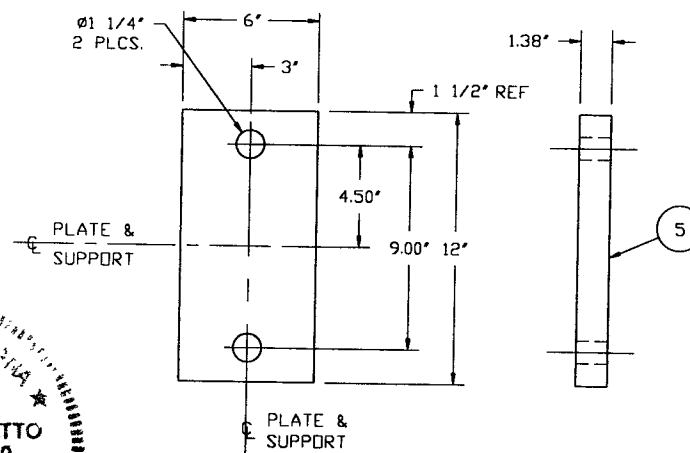
SECTION "B"-"B"



SECTION "F"-"F"  
TYP. 2 PLCS.



DETAIL "1"  
QTY: 2



DETAIL "2"  
QTY: 2

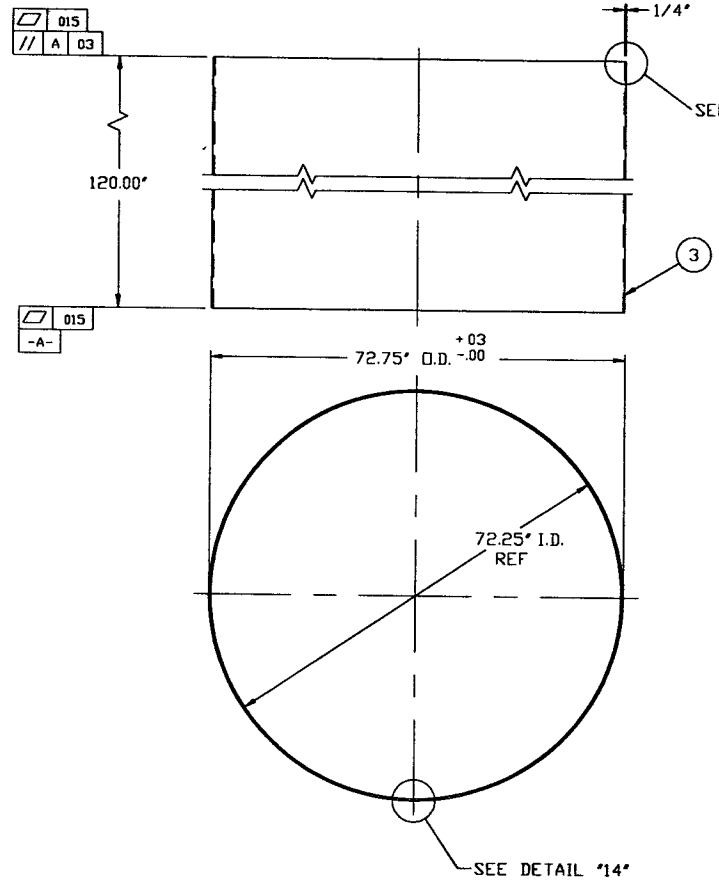
RAYMOND D. CIATTO  
STATE OF WASHINGTON  
REGISTERED PROFESSIONAL ENGINEER  
15714

RAYMOND D. CIATTO  
REG. No. 26750  
REGISTERED PROFESSIONAL ENGINEER  
IN  
CIVIL ENGINEERING

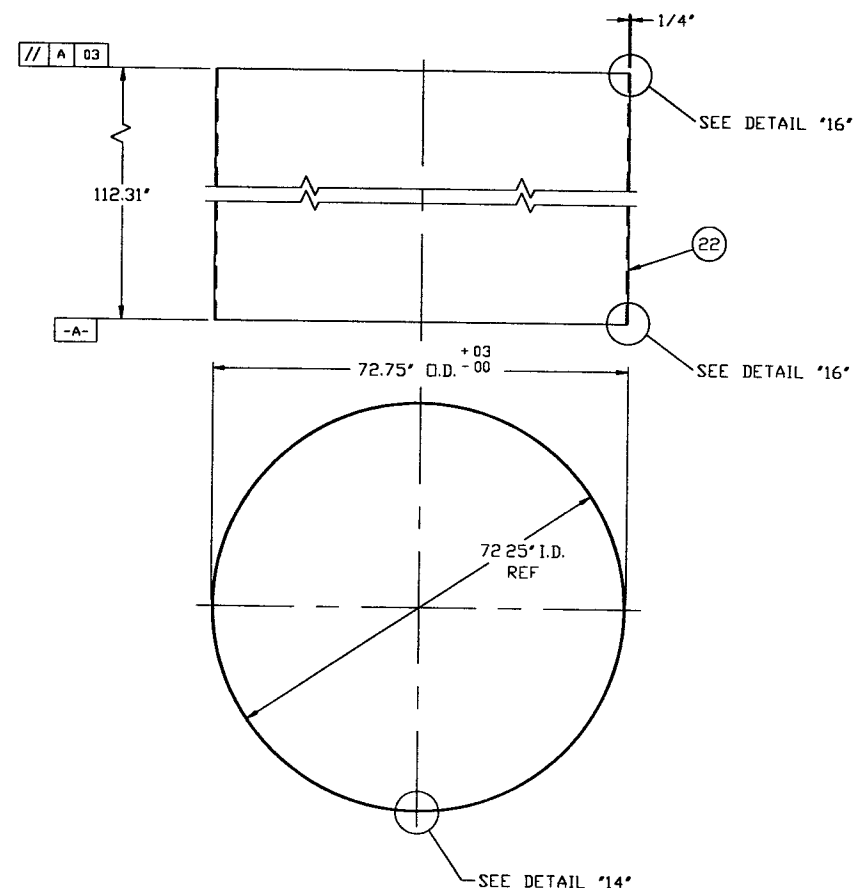
EXPIRES 8/5/97

12/14/96

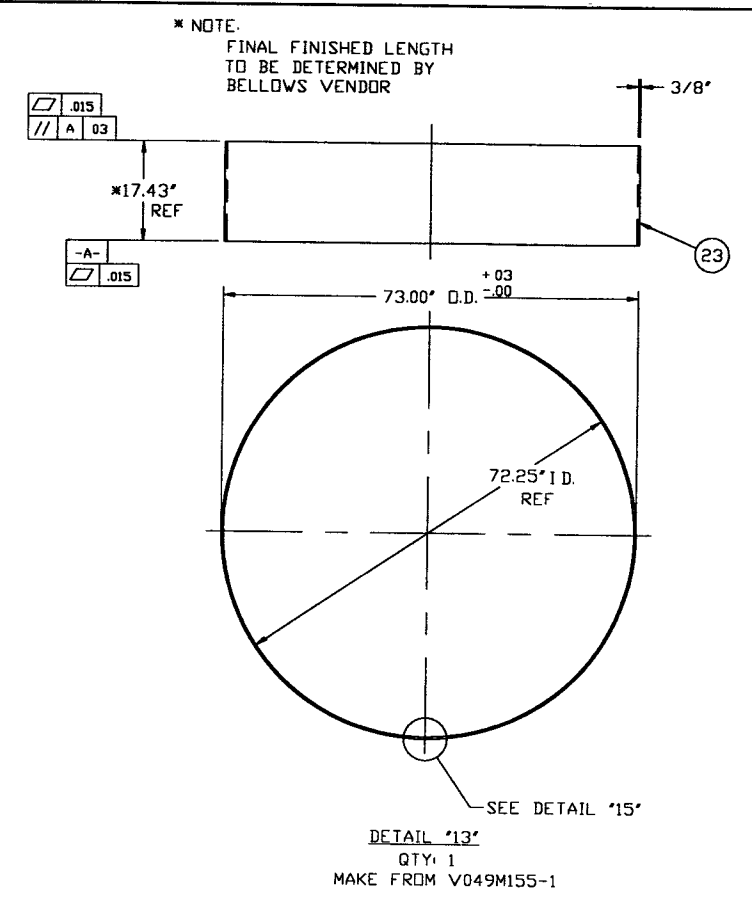
<b>PROCESS SYSTEMS INTERNATIONAL, INC.</b> 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL BE-6 72.25"ID x 72.25"ID LIGO VACUUM EQUIPMENT			
CAD FILE V0494BE6/4BE6S2	SIZE D	DWG. NO. V049-4-BE6	REV 4
SCALE 1/16 & 1/4	SHEET 2 OF 5		



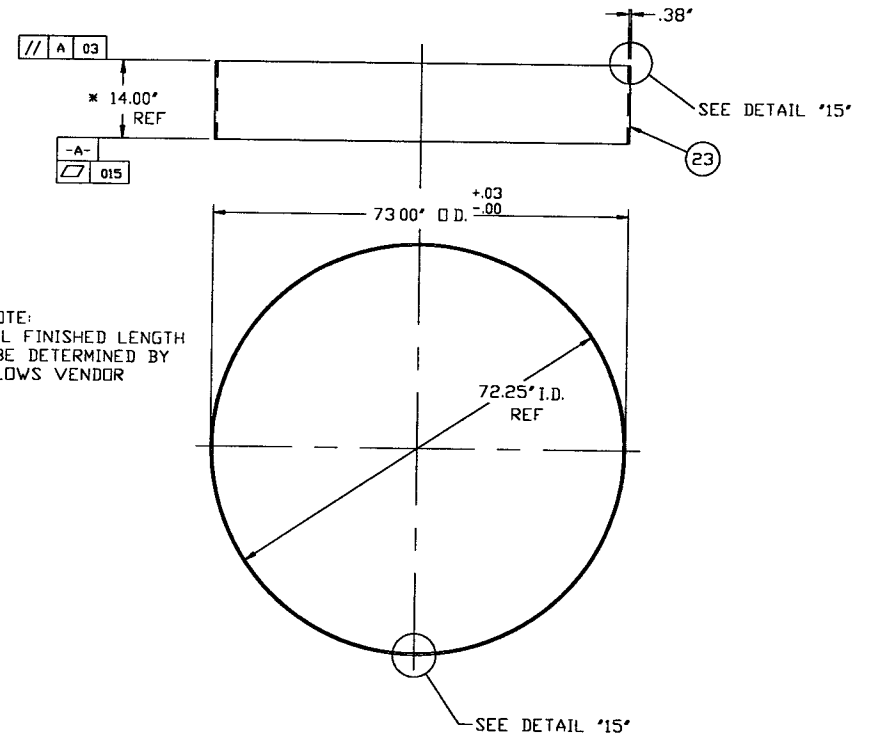
DETAIL '9'  
QTY: 2  
MAKE FROM V049M174-1



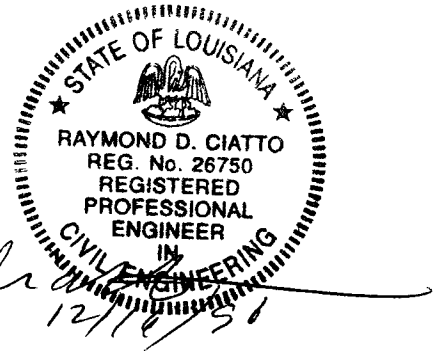
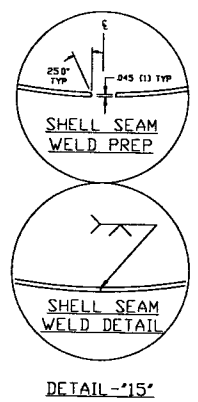
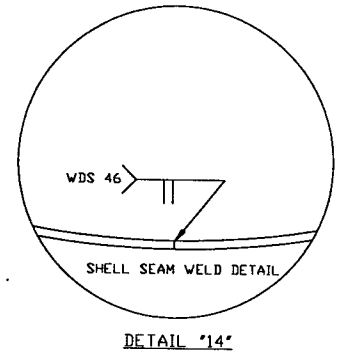
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QTY: 1  
MAKE FROM V049M174-1



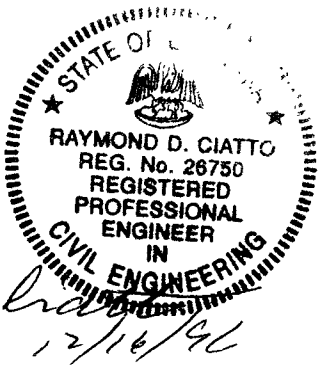
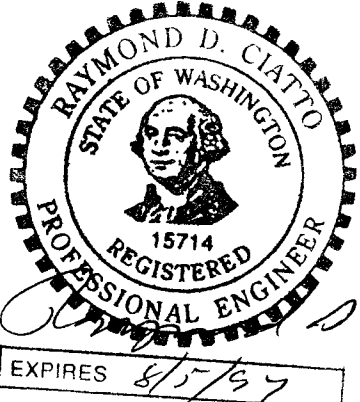
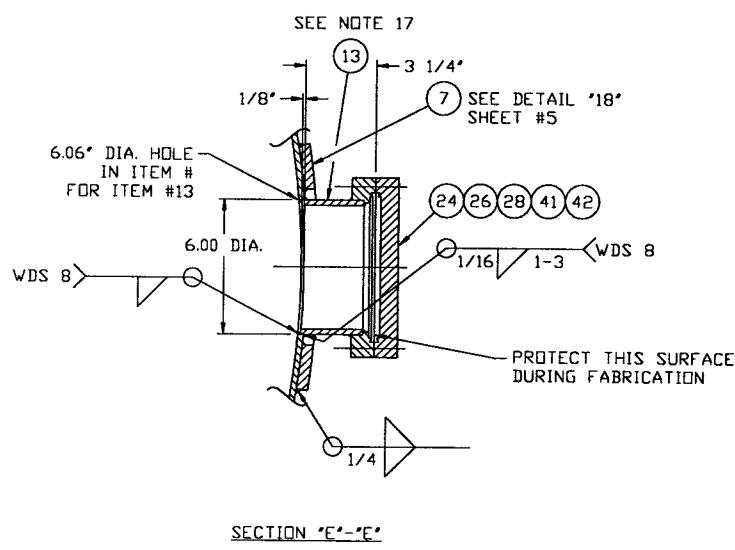
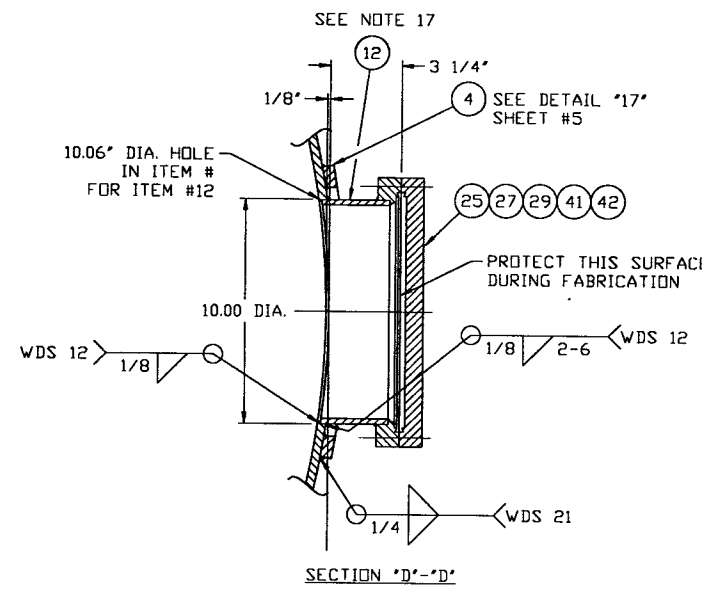
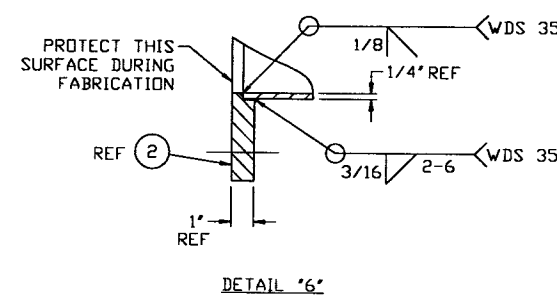
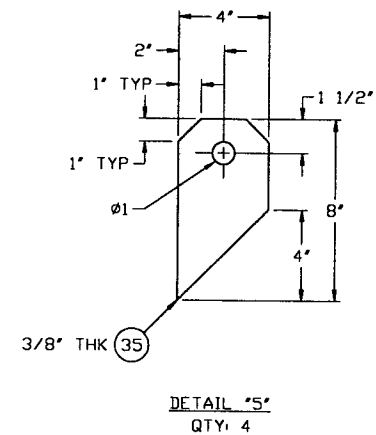
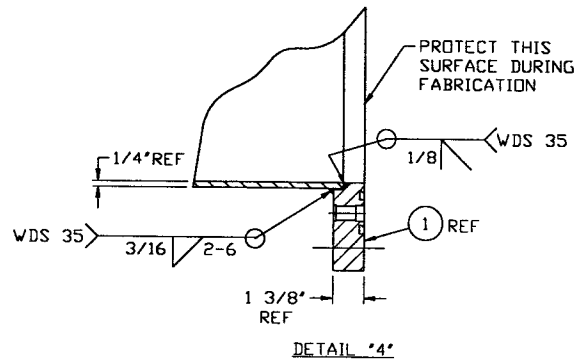
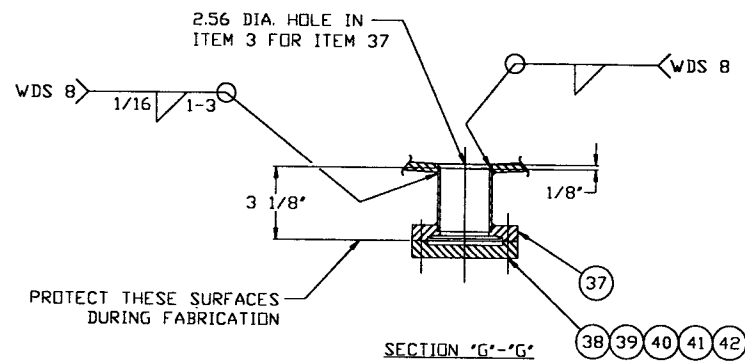
DETAIL '13'  
QTY: 1  
MAKE FROM V049M155-1



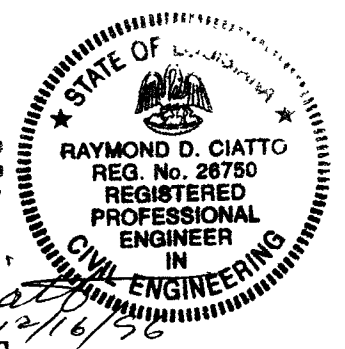
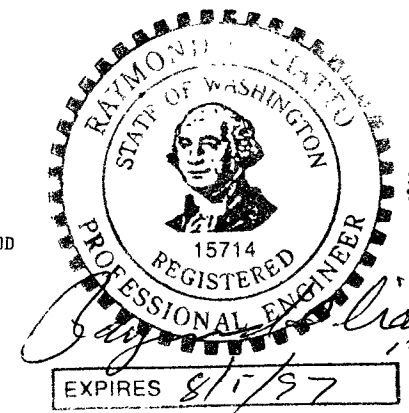
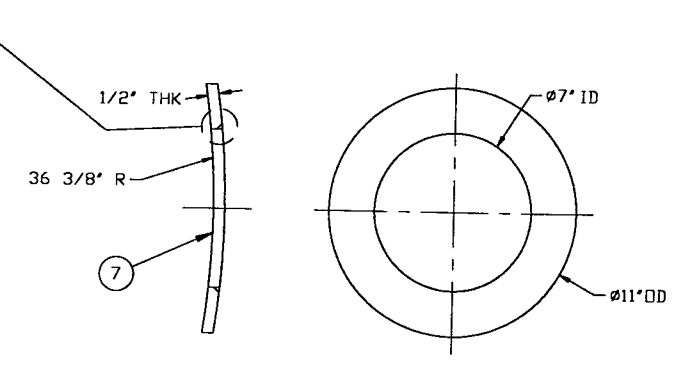
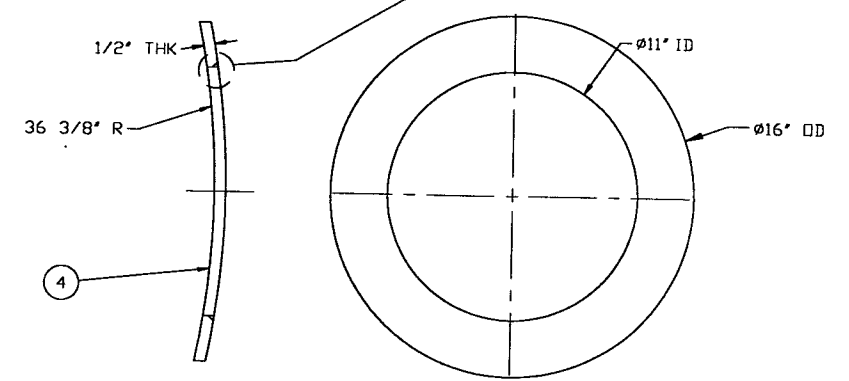
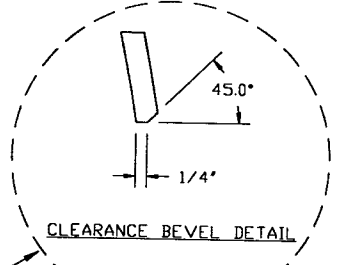
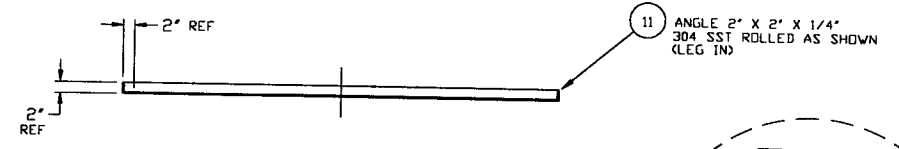
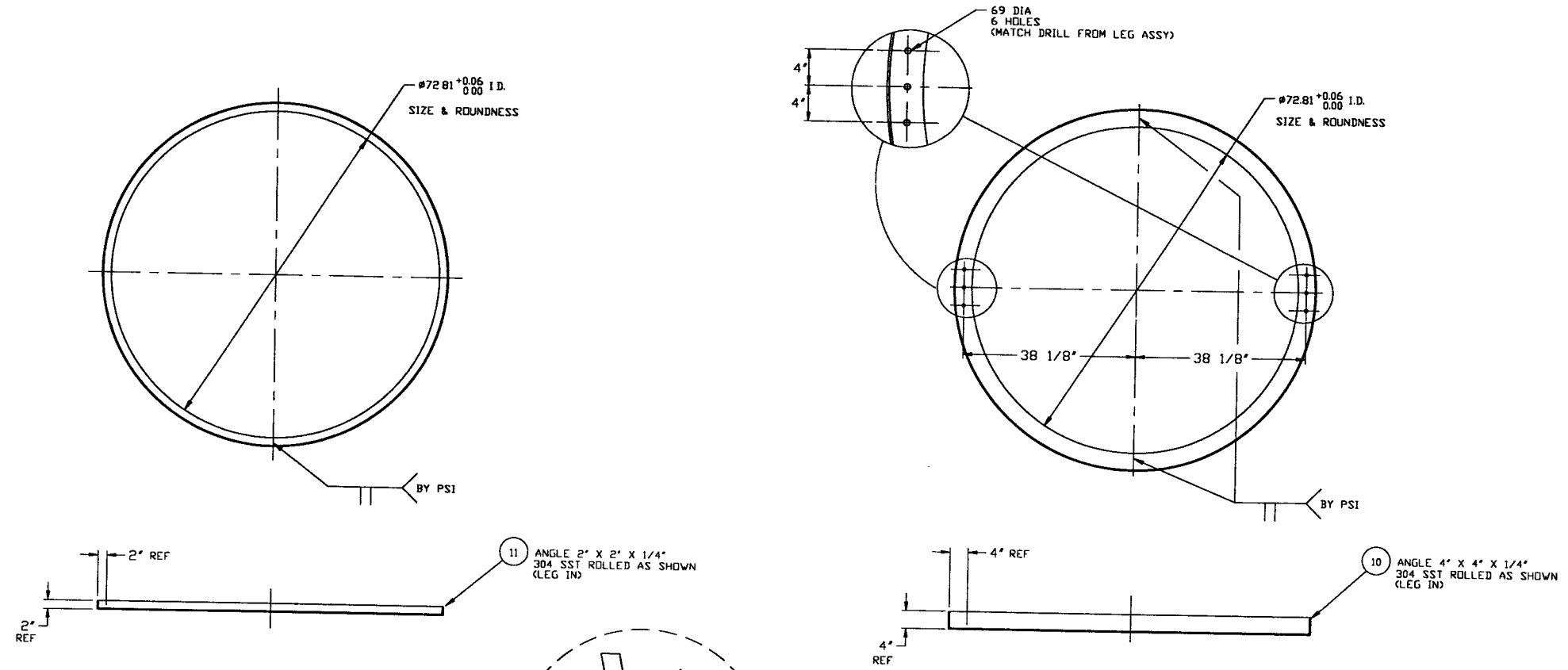
DETAIL '19'  
QTY: 1  
MAKE FROM V049M155-1



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SPOOL BE-6 72.25"ID x 72.25"ID LIGO VACUUM EQUIPMENT			
CAD FILE V0494BE6/4BE6S3	SIZE D	DWG. NO. V049-4-BE6	REV. 4
SCALE 1/16	SHEET 3 OF 3		



<b>PROCESS SYSTEMS INTERNATIONAL INC.</b> 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL BE-6 72.25"ID x 72.25"ID LIGO VACUUM EQUIPMENT			
CAD FILE V0494BE6/4BE6S4	SIZE D	DWG. NO. V049-4-BE6	REV 4
SCALE 1/4	SHEET 4 OF 5		



<b>PROCESS SYSTEMS INTERNATIONAL INC.</b> 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
<b>SPOOL BE-6</b> 72.25" ID x 72.25" ID LIGD VACUUM EQUIPMENT			
CAD FILE V0494BE6/4BE6S5	SIZE D	DWG. NO. V049-4-BE6	REV. 4
SCALE 1/16 & 1/4	SHEET 5 OF 5		