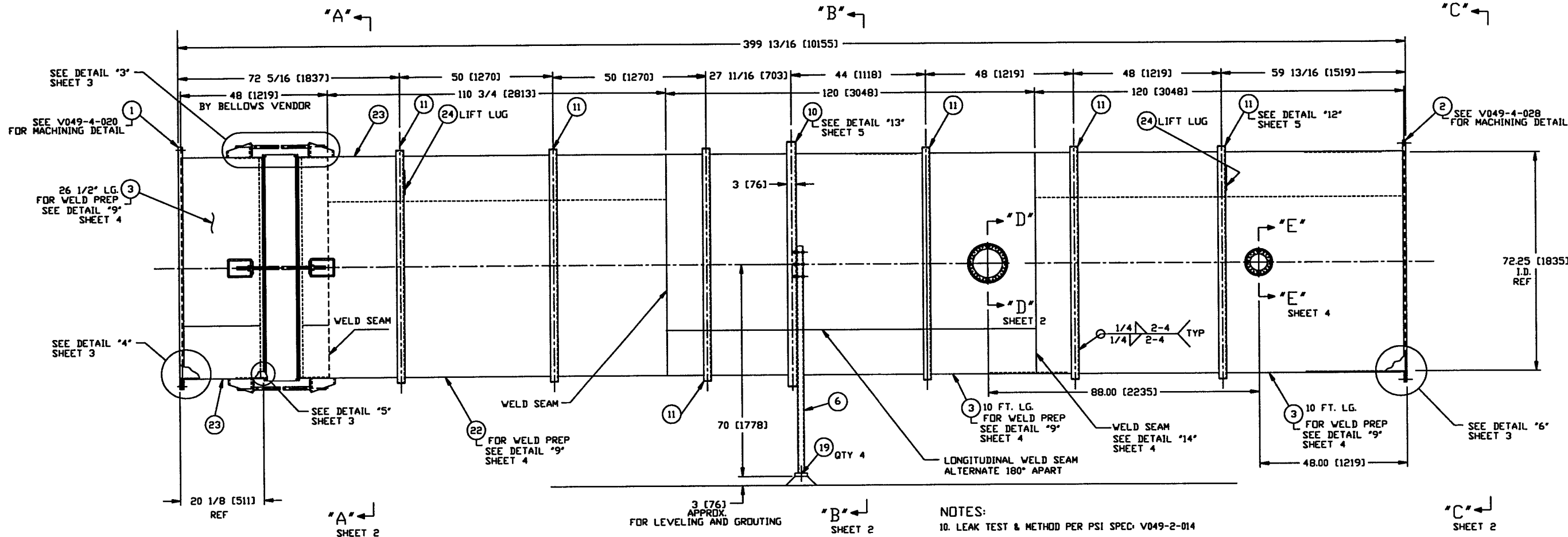


ITEM	PART NUMBER	SUFFIX	QTY	UN	DESCRIPTION
13	XX		1	EA	FLANGE, CONFLAT <sup>TM</sup> , 8" OD X 6" TUBE OD.
14	XX		1	EA	BELLOWS
15	XX		8	EA	NUT, HEX, 1"-8 UNC-2B A563 GR-A
16	XX		4	EA	ROD, THREADED, 1"-8 UNC-2A X 29" LG. A36
17	XX		6	EA	BOLT, 5/8-11 UNC X 3 1/2" LG. A307
18	XX		6	EA	NUT, 5/8-11 UNC
19	XX		4	EA	ANCHOR 1" DIA, HILTI HVA 8 1/2" EMBEDMENT
20	XX		6	EA	LOCK WASHER, 5/8"
21	XX		8	EA	WASHER 1" TYPE A SSSL
22	XX		X	EA	PLATE, 304, .75" THK
23	XX		X	EA	PLATE, 304, .75" THK

ITEM	PART NUMBER	SUFFIX	QTY	UN	DESCRIPTION
1	V0494020		1	EA	FLANGE, GROOVED, 72 1/4" ID X 80" OD
2	V0494028		1	EA	FLANGE, FLAT FACED, 72 1/4" ID X 80" OD
3	XX		XX	SF	PLATE, 304/304L SST, 1/4" THK
4	XX		XX	SF	PLATE, 304/304L SST, 1/2" THK
5	XX		XX	SF	PLATE, 1" THK A36
6	XX		XX	FT	TUBE STEEL (TS) 4" X 2" X 3/16" A500 GR B
7	XX		XX	FT	TUBE STEEL (TS) 6" X 8" X 1/2" 304 SST
8	XX		XX	FT	TUBING 10" O.D. 1/4" WALL 304L SSSL
9	XX		XX	FT	TUBING 6" O.D. 1/8" WALL 304L SSSL
10	XX		XX	FT	ANGLE, 4" X 3" X 1/4" 304 SST
11	XX		XX	FT	ANGLE, 2" X 2" X 1/4" 304 SST
12	XX		1	EA	FLANGE, CONFLAT <sup>TM</sup> , 10" OD X 8" TUBE OD.



- NOTES:
- LEAK TEST & METHOD PER PSI SPEC: V049-2-014
  - CERTIFIED MANUFACTURER'S MATERIAL TEST REPORTS REQUIRED.
  - BOLT HOLES TO STRADDLE CENTERLINES AS SHOWN, +/- .015
  - CLEAN PER SPEC: V049-2-015
  - DO NOT USE CARBON STEEL BRUSHES OR BRUSHES CONTAMINATED WITH CARBON STEEL ON STAINLESS OR ALUMINUM MATERIAL.
  - DIMENSIONS SHOWN IN PARENTHESES ARE IN MILLIMETERS.
  - SPOOL FABRICATION TO BE IN ACCORDANCE WITH SPEC. V049-2-097.
  - FOR FLANGE DETAILS SEE DWGS. V049-4-020 & V049-4-028
  - THESE FLANGES EACH INCLUDE AN ANNULAR CHANNEL BETWEEN O-RINGS, MANIFOLD TO A SINGLE PUMPOUT PORT ON EACH CHAMBER, SEE DWG V049-4-XXX
  - REGISTERED TRADEMARK, VARIAN VACUUM PRODUCTS; COMPATIBLE ALTERNATIVES ARE ACCEPTABLE.

**NOT FOR CONSTRUCTION**

*Raymond D. Gatto, PE*  
5/6/96  
LIGO D961164-00-V

DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION	SYMBOL	CHARACTERISTIC	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ± .015 DECIMAL: ± .005 ANGULAR: ± .01° BEND: ± .01° THREE PLACE DECIMAL: ± .005 FINISHED SURFACE: ± .005 BREAK: CORNERS TO BE SHOWN WITH DASHED LINES REMOVE ALL BURRS	DO NOT SCALE THIS DRAWING	0	ISSUED FOR FDR	CHKD	DRWN	DATE	DCDR	REV	DESCRIPTION	ISSUE DESCRIPTION	SCALE	SHEET	1 OF 5	
																				REV

**PROCESS SYSTEMS INTERNATIONAL, INC.**  
30 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

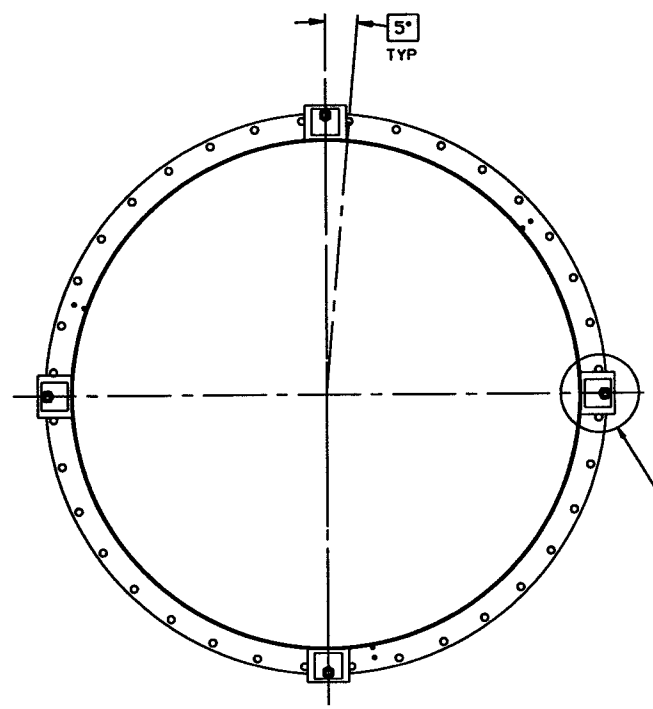
SPOOL BE-5  
72.25" ID  
LIGO VACUUM EQUIPMENT

CAD FILE: V0494BES/4BESS1  
DWG NO: V049-4-BES  
SCALE: 3/4" = 1'-0"  
SHEET: 1 OF 5

**CONFIDENTIAL**

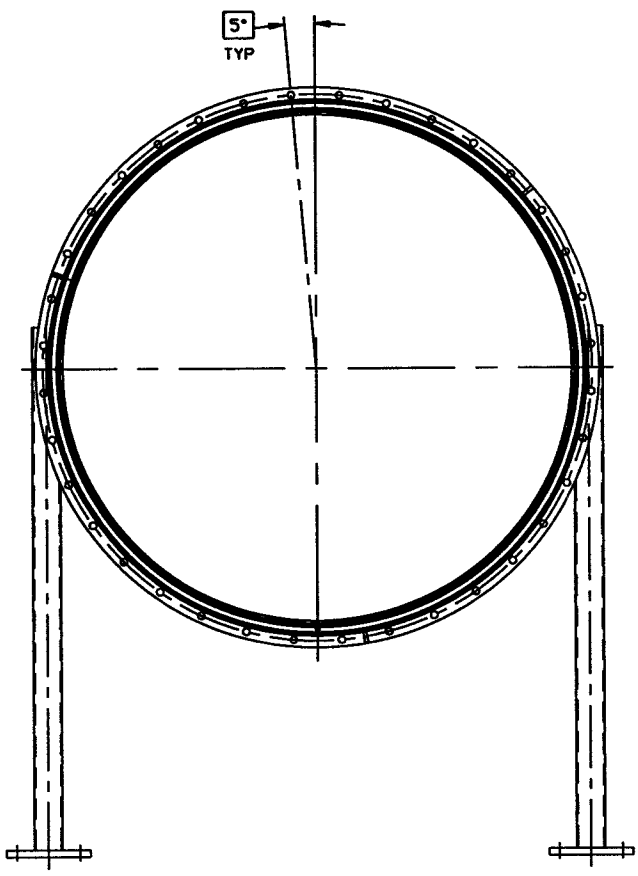
THIS DRAWING IS THE PROPERTY OF PROCESS SYSTEMS INTERNATIONAL, INC. OR ITS AFFILIATED COMPANIES AND SHALL BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED. IT SHALL NOT BE COPIED, REPRODUCED OR OTHERWISE USED, NOR SHALL SUCH INFORMATION BE FURNISHED BY WHOMEVER OR BY WHATEVER MEANS WITHOUT THE PRIOR WRITTEN CONSENT OF PROCESS SYSTEMS INTERNATIONAL, INC. AND SHALL BE RETURNED UPON REQUEST.

REV 06/1996 - 1B1519

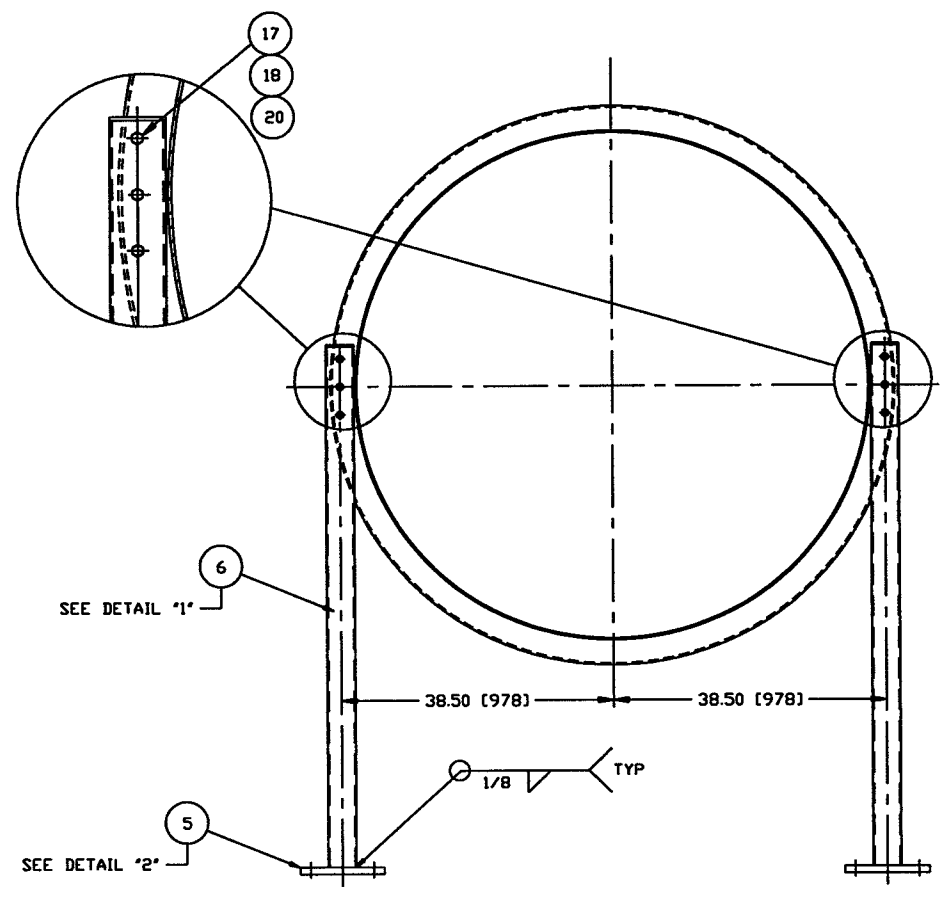


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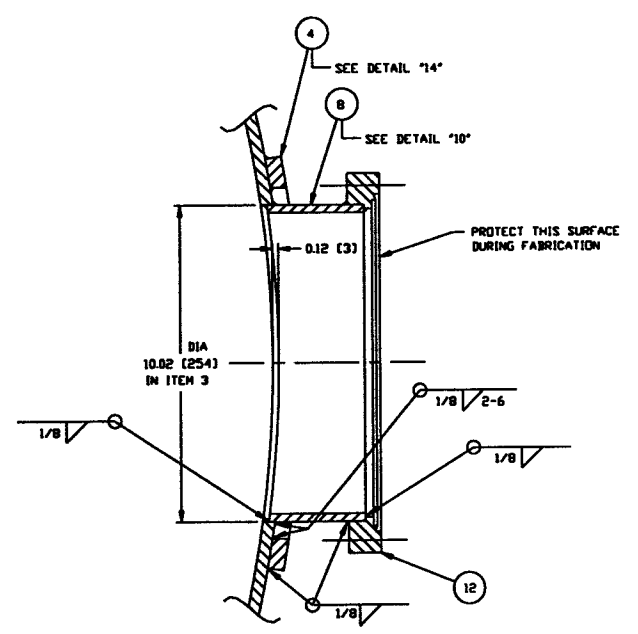
TIE ROD ASSY.  
TYP 4 PLACES  
SEE DETAIL 3  
SHEET 3



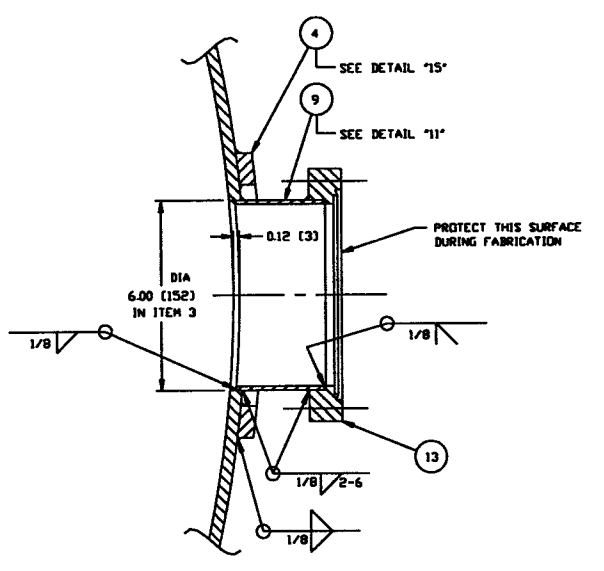
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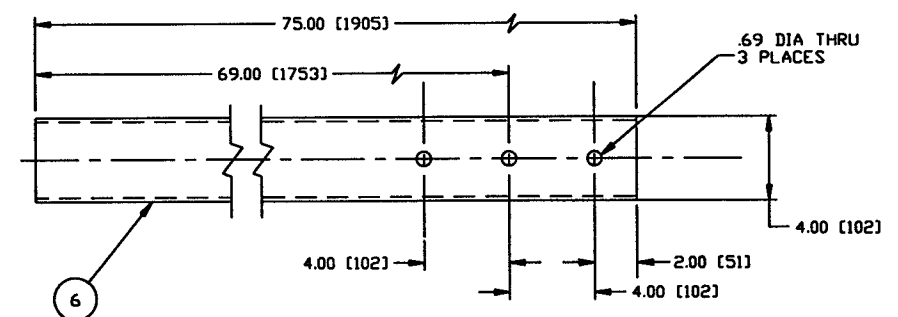
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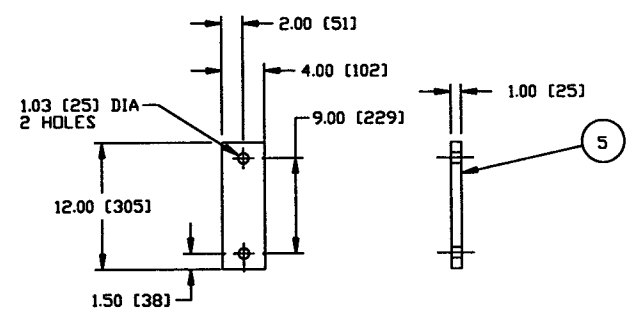
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SECTION "E"-"E"  
SCALE: 3/8"=1"



DETAIL 1  
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QTY: 4



DETAIL 2  
SCALE: 1 1/2"=1'-0"  
QTY: 4

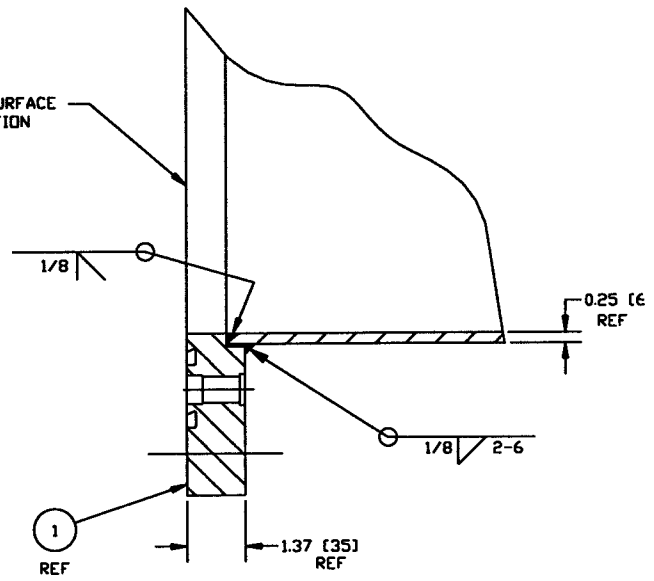
**NOT FOR CONSTRUCTION**  
*Raymond D. Latta, PE*  
**HOLD**

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR., WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL BE-5 72.25" ID LIGD VACUUM EQUIPMENT			
CAD FILE V0494BES/4BCSS2	SIZE D	DWG. NO. V049-4-BES	REV. 0
SCALE AS NOTED	SHEET 2 OF 3		REV. 04, 1996 - 07/26/00

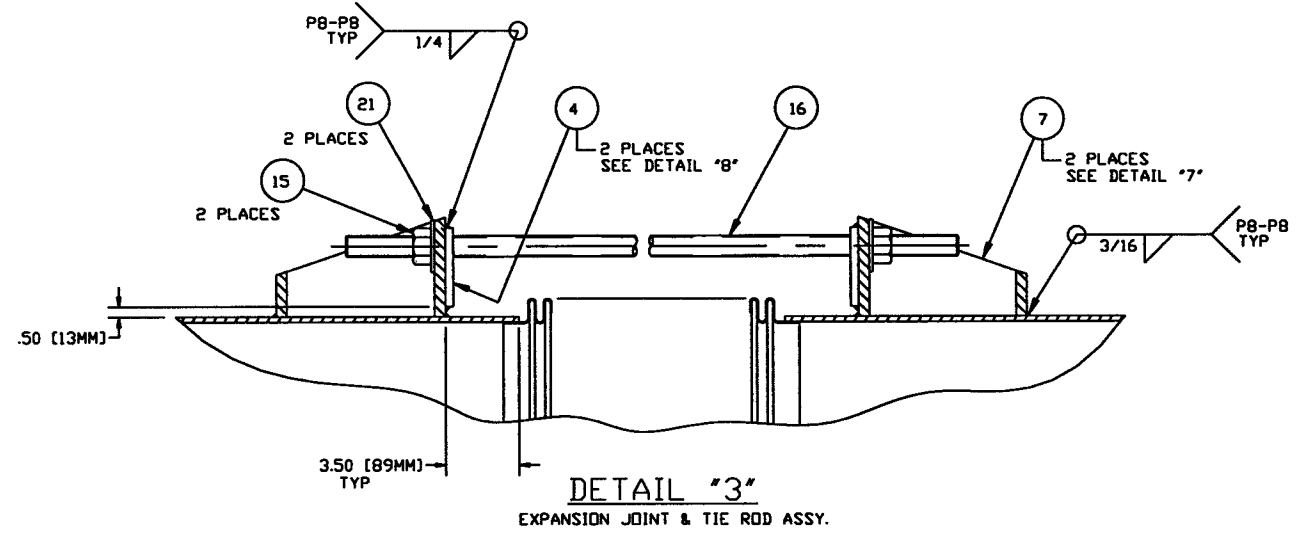
LIG01D961104-00-V

QTY: 8

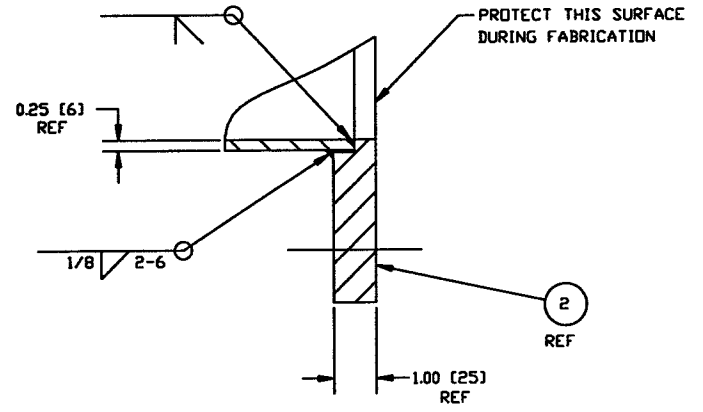
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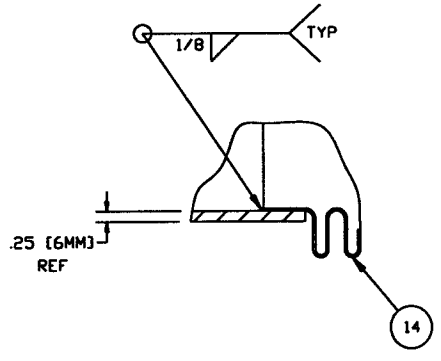
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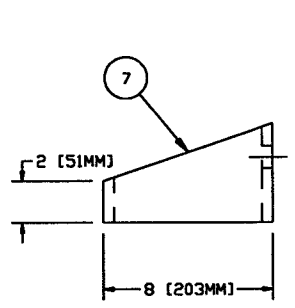
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EXPANSION JOINT & TIE ROD ASSY.



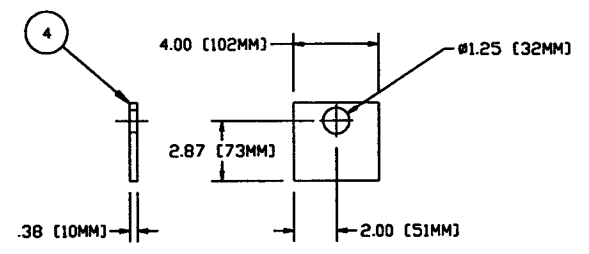
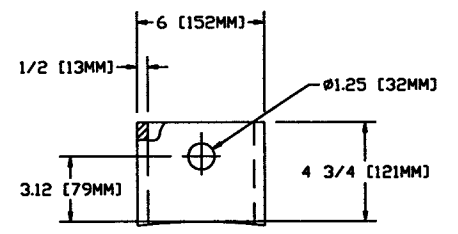
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SCALE: HALF



DETAIL "5"  
SCALE: HALF



DETAIL "7"  
SCALE: QUARTER  
QTY: 8



DETAIL "8"  
SCALE: QUARTER  
QTY: 8

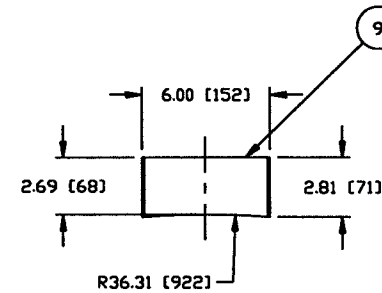
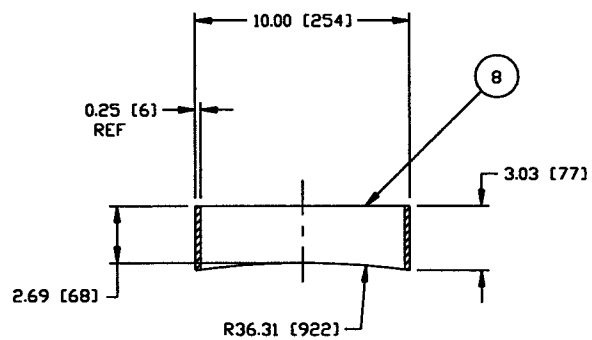
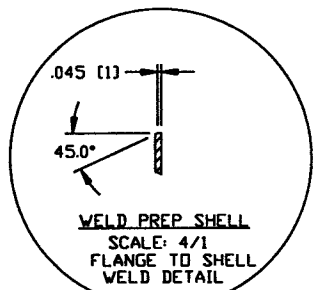
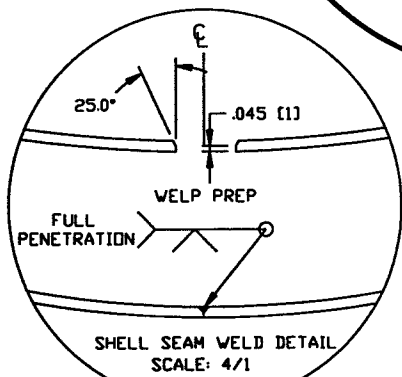
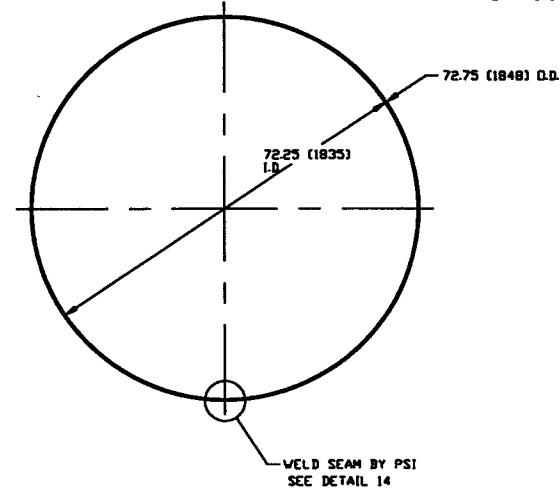
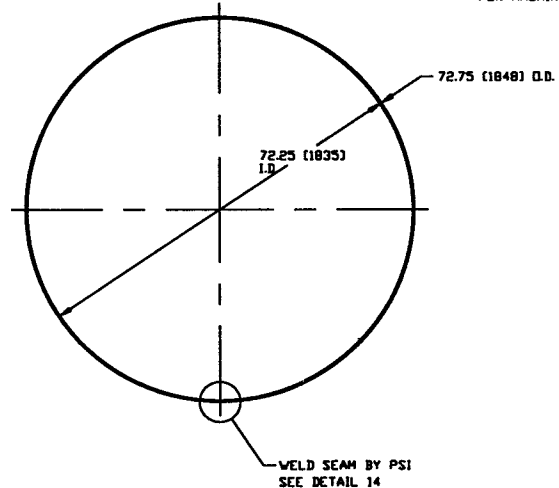
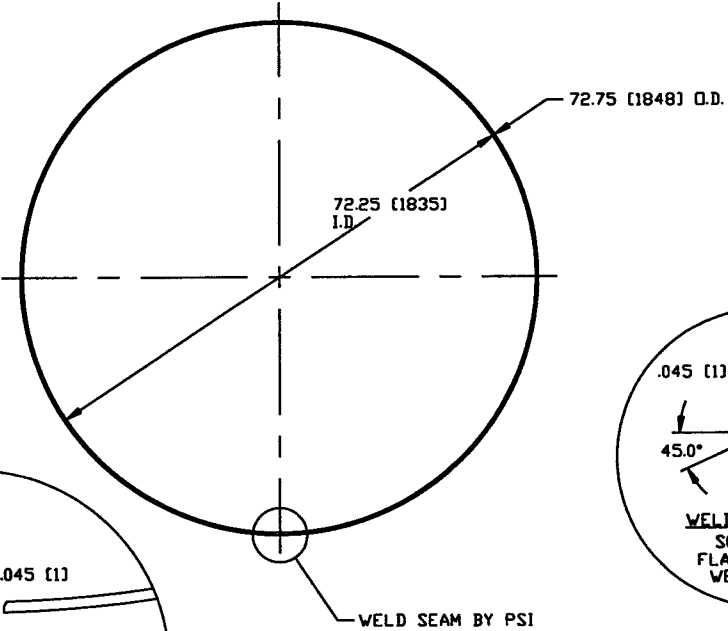
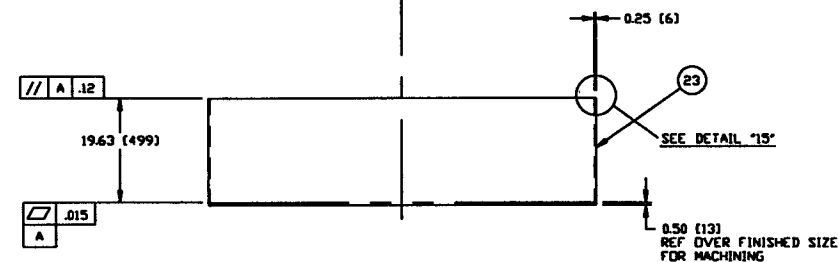
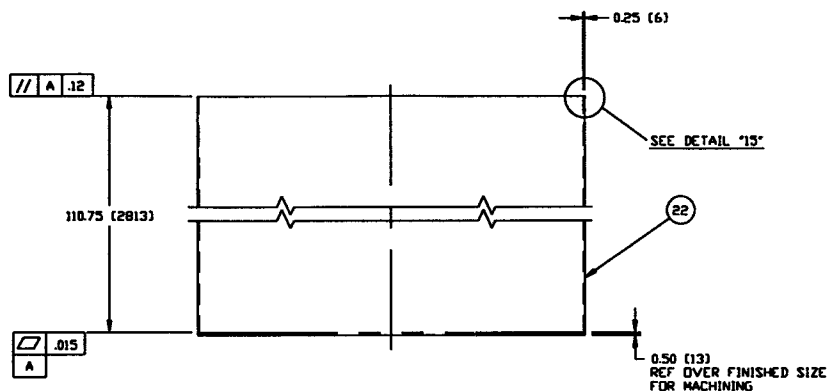
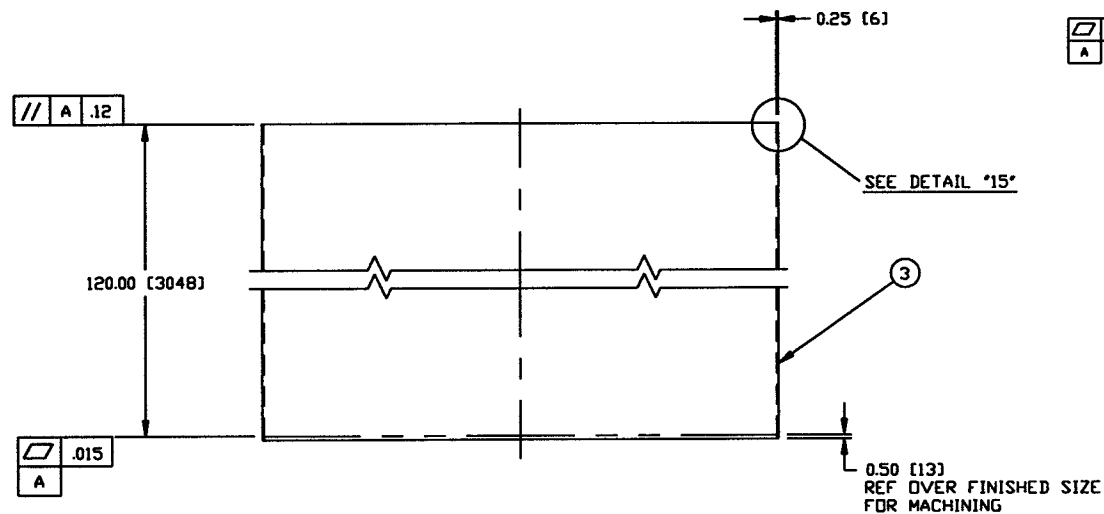
**NOT FOR CONSTRUCTION**

*Raymond D. Catto, PE*  
5/6/96

HOLD  
LIGO D961164-00-V

PROCESS SYSTEMS INTERNATIONAL, INC. 30 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL BE-5 72.25" ID LIGO VACUUM EQUIPMENT			
CAD FILE 48553	SIZE D	ING. NO. V049-4-BE5	REV. 0
SCALE AS NOTED	SHEET 3 OF 5		

MAY 04, 1996 - 07:01ER



**DETAIL "9"**  
SCALE: 1"=1'-0"  
QTY: 2

**DETAIL "15"**

**DETAIL "12"**  
SCALE: 1"=1'-0"  
QTY: 1

**DETAIL "13"**  
SCALE: 1"=1'-0"  
QTY: 2

**DETAIL 10**  
SCALE: 3"=1'-0"  
QTY: 1

**DETAIL 11**  
SCALE: 3"=1'-0"  
QTY: 1

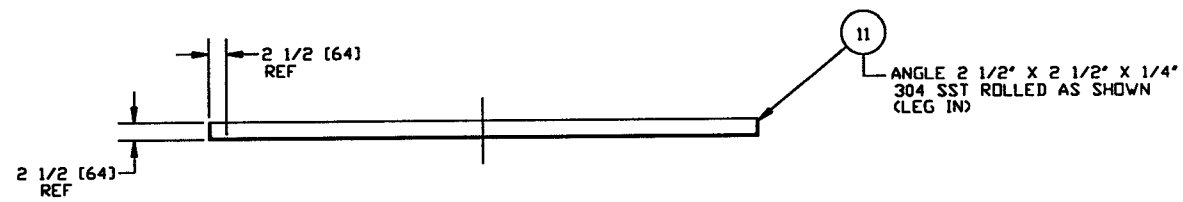
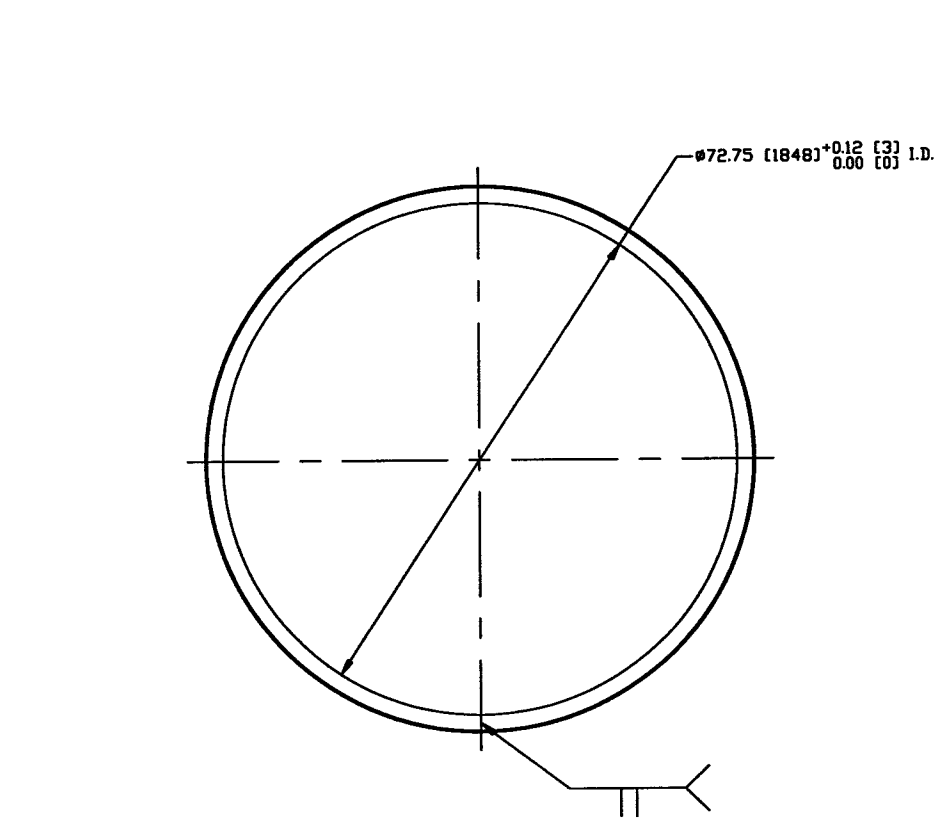
**NOT FOR CONSTRUCTION**

*Raymond D. Gatto, PE*  
5/6/96

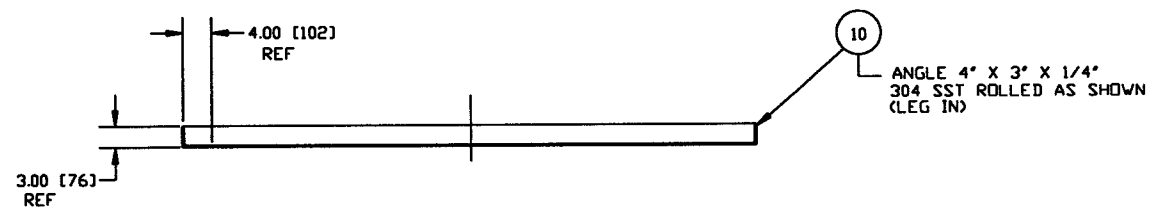
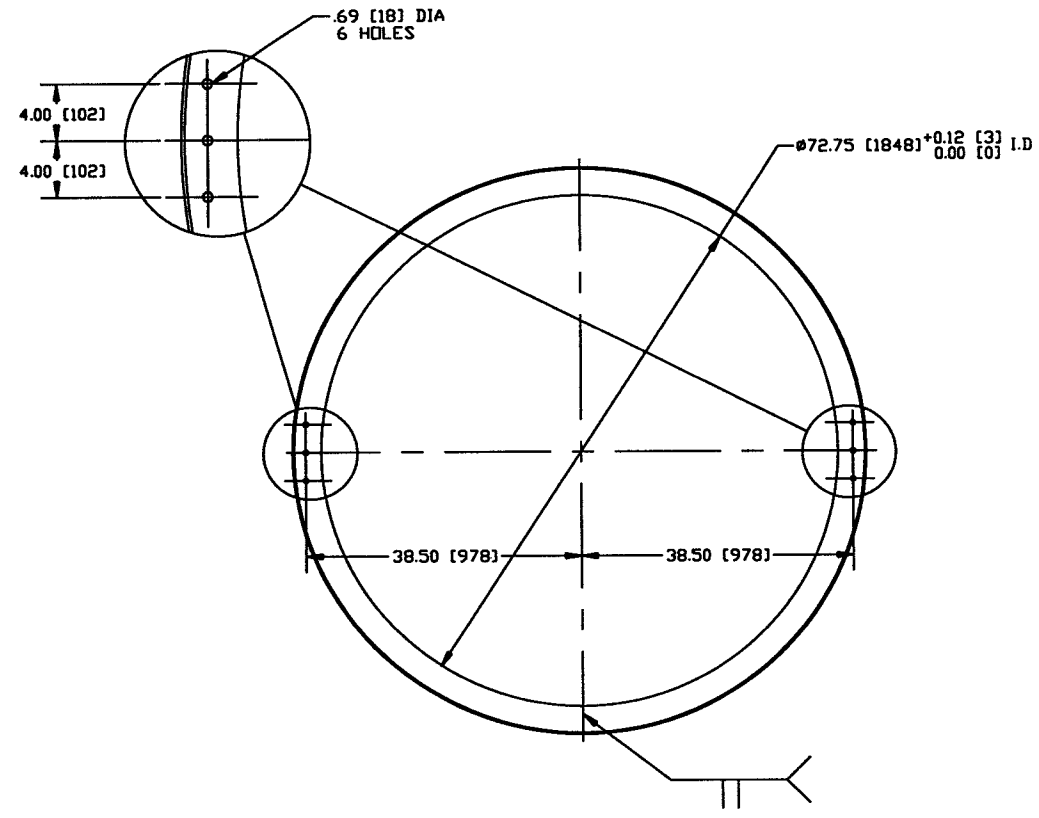
LIGO D961164-00-V

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
SP00L BE-5 72.25" ID LIGO VACUUM EQUIPMENT			
CAD FILE	SIZE	ENG. NO.	REV.
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SCALE	AS NOTED	SHEET	4 OF 5

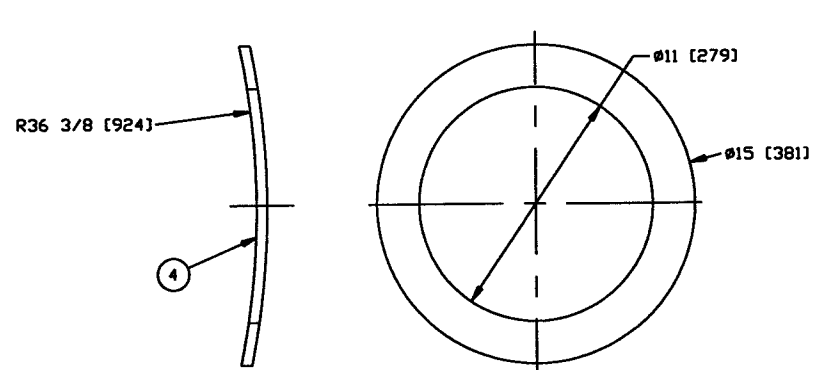
May 04, 1996 - 07:55:31



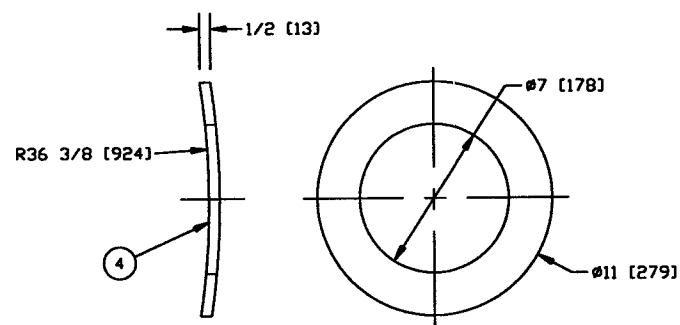
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DETAIL 13  
SCALE: 1"=1'-0"



DETAIL "14"  
SCALE: QUARTER



DETAIL "15"  
SCALE: QUARTER

**NOT FOR  
CONSTRUCTION**

*Raymond D. Ciatto, P.E.*  
5/6/96

LIGO D961164-00-V

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL BE-5 72.25" ID LIGO VACUUM EQUIPMENT			
CAD FILE	SIZE	REV. NO.	REV.
V0494BES/4BESS	D	V049-4-BES	0
SCALE	AS NOTED	SHEET	5 OF 5

REV. 04. 1996 - 07/03/96