

| ITEM | PART NUMBER | SUFFIX | QTY | UM | DESCRIPTION                                 |
|------|-------------|--------|-----|----|---|
| 1    | V0494032    |        | 1   | EA | FLANGE, FLAT FACED, 60 1/2" ID X 68 1/4" OD |
| 2    | V0494020    |        | 1   | EA | FLANGE, GROOVED, 72 1/4" ID X 80" OD        |
| 3    | V0494055    |        | 1   | EA | FLANGE, REDUCING, 60 1/2" ID X 73" OD       |
| 4    | XX          |        | XX  | SF | PLATE, 304L SST, 1/4" THK                   |
| 5    | XX          |        | XX  | SF | PLATE, 304L SST, 1/4" THK                   |
| 6    | XX          |        | 2   | SF | PLATE, 304L SST, 1" THK                     |
| 7    | XX          |        | XX  | SF | PLATE, 025 THK 304L SST                     |
| 8    | XX          |        | XX  | FT | TUBING, 10" OD X .25 WALL 304L SST          |
| 9    | XX          |        | XX  | FT | TUBING 3" X 2" X 3/16" A500 GR B            |
| 10   | XX          |        | XX  | FT | ANGLE, 2 1/2" X 2 1/2" X 1/4"-304 SST       |
| 11   | XX          |        | XX  | FT | ANGLE, 4" X 3" X 1/4"-304 SST               |
| 12   | XX          |        | 1   | EA | FLANGE, CONFLAT™, 16 1/2" OD X 14" TUBE OD  |
| 13   | XX          |        | 1   | EA | FLANGE, CONFLAT™, 12" OD X 10" TUBE OD      |
| 14   | XX          |        | 6   | EA | BOLT, 1/2-13 UNC X 1 3/4" LG. (A307)        |
| 15   | XX          |        | 6   | EA | NUT, 1/2-13 UNC                             |
| 16   | XX          |        | 4   | EA | ANCHOR 1" DIA, HILTI HVA, 8-1/2" EMBEDMENT  |
| 17   | XX          |        | 1   | EA | PLATE, 15" ID X 20" OD X 1/2" THK-304 SST   |
| 18   | XX          |        | 1   | EA | PLATE, 11" ID X 16" OD X 1/2" THK-304 SST   |
| 19   | XX          |        | 4   | EA | PLATE, 8" X 4" X 3/8" (LUGS) A36            |

**NOT FOR CONSTRUCTION**  
*Raymond D. Corbett, PE*  
 5/7/96

- NOTES:
- THE CENTER LINES OF ALL SHELLS AND END FLANGES, ARE TO LIE ON THE COMMON CENTER LINE WITHIN +/- 1/16
  - 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, 032, & 055
  - THESE FLANGES EACH INCLUDE AN ANNUAL CHANNEL BETWEEN O-RINGS, MANIFOLD TO A SINGLE PUMPOUT PORT ON EACH CHAMBER, SEE DWG V049-4-
  - REGISTERED TRADEMARK, VARIAN VACUUM PRODUCTS; COMPATIBLE ALTERNATIVES ARE ACCEPTABLE.

LIG00961144-00-V

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| DWG. NO. | DESCRIPTION | DWG. NO. | DESCRIPTION |
|----------|-------------|----------|-------------|
|          |             |          |             |
|          |             |          |             |
|          |             |          |             |

| SYMBOL | CHARACTERISTIC   | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES |
|--------|------------------|---|
| □      | FLATNESS         | FRACTIONAL ± .1                                     |
| ○      | CYLINDRICITY     | ANGULAR/CHAMF 40°-90° BEND 40°                      |
| ∥      | PARALLELISM      | TWO PLACE DECIMAL ± .01                             |
| ⊥      | PERPENDICULARITY | THREE PLACE DECIMAL ± .005                          |
| ∠      | ANGULARITY       | FINISHED SURFACE RMS                                |
| ⊕      | TRUE POSITION    | BREAK CORNERS IN OUT-REMOVE ALL BURRS               |
| ⊙      | CONCENTRICITY    | DO NOT SCALE THIS DRAWING                           |
|        |                  | USED ON: NEXT ASS'Y.                                |

| REV | DESCRIPTION    | CHKD | DRWN | DATE    | DESN |
|-----|----------------|------|------|---------|------|
| 0   | ISSUED FOR FDR |      |      | 4/27/96 | 0145 |
| PI  | PRELIMINARY    |      |      | 3/19/96 |      |
|     |                |      |      |         |      |
|     |                |      |      |         |      |

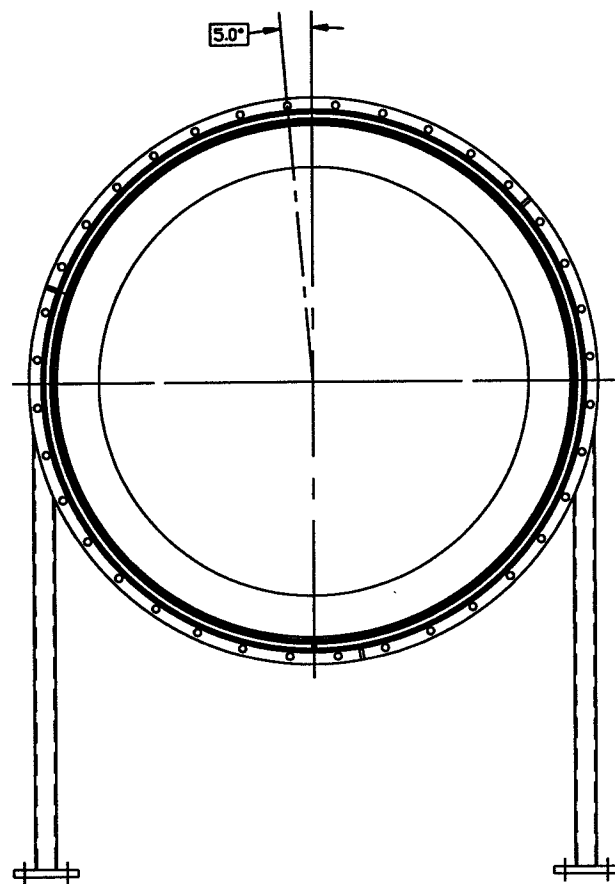
PROCESS SYSTEMS INTERNATIONAL, INC.  
 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

ADAPTER A-7  
 60.50" ID X 72.25" ID  
 LIGO VACUUM EQUIPMENT

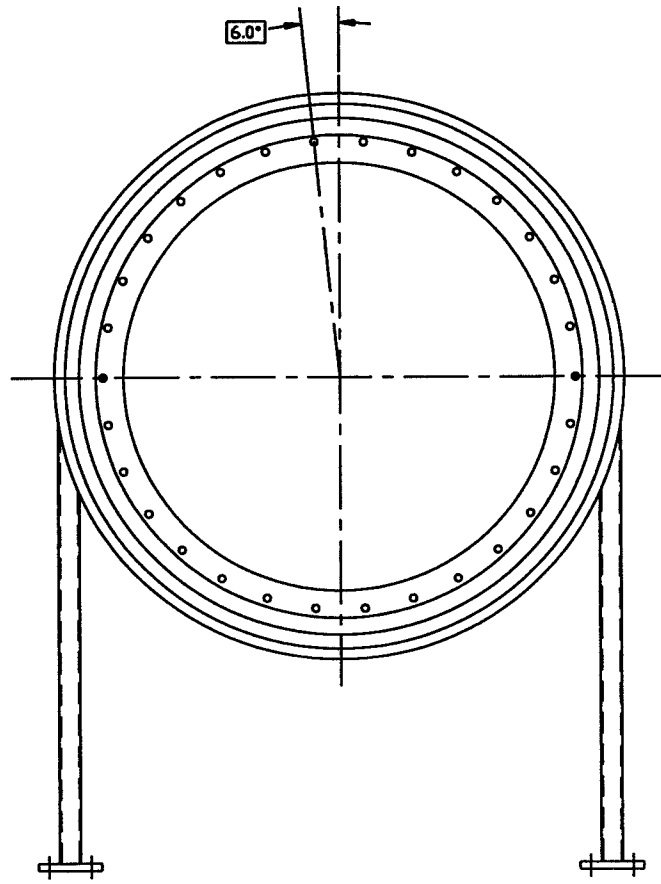
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 SIZE: D  
 DWG. NO.: V049-4-A7  
 REV: 0

SCALE: 1-1/2" = 1"  
 SHEET: 1 OF 5

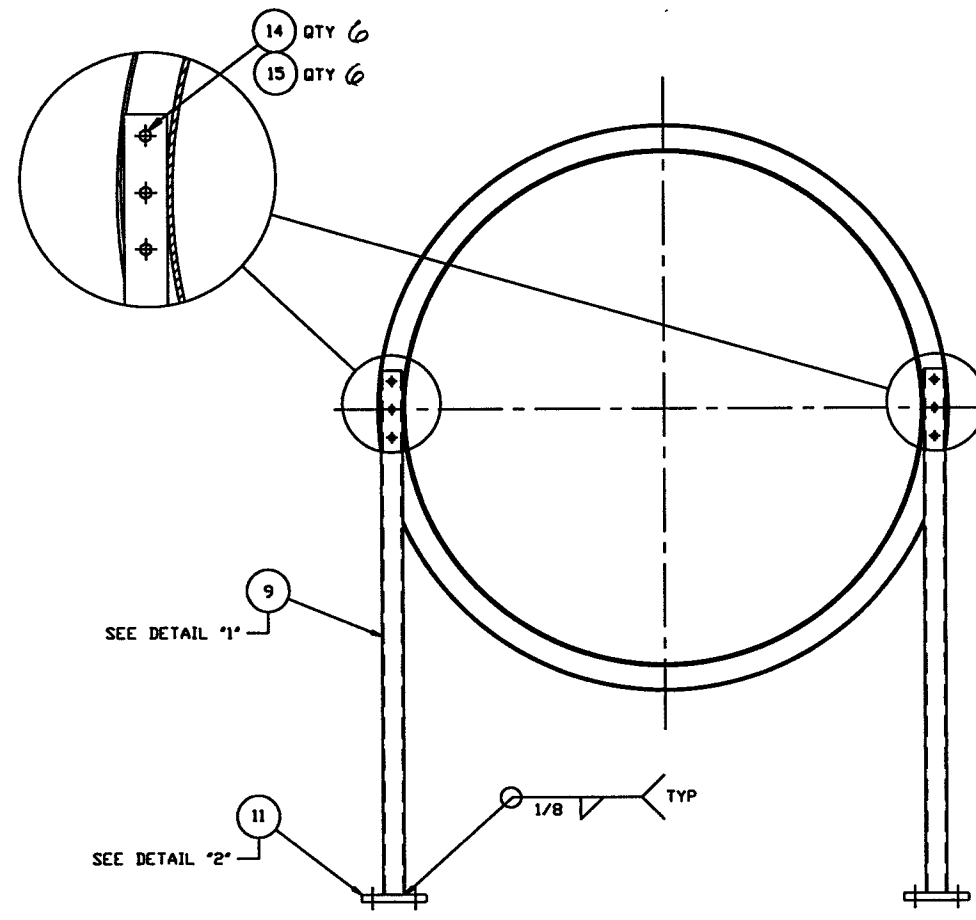
REV. 11, 1996 - 1608049



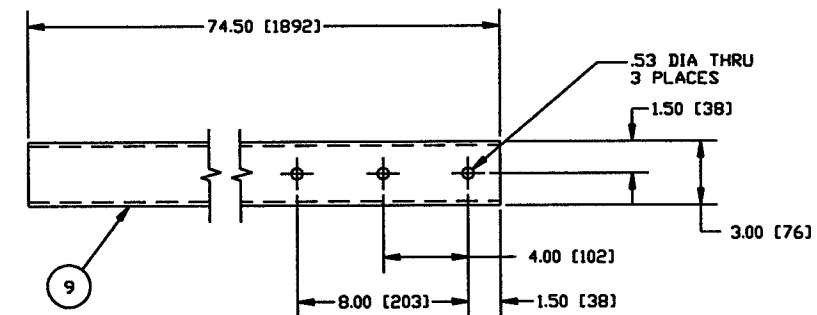
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SCALE: 1"=1'0"



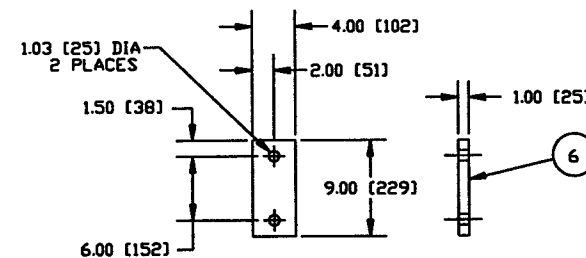
VIEW "B"-"B"  
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SECTION "C"-"C"  
SCALE: 1"=1'0"



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



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

*Raymond P. Crath*  
5/6/96

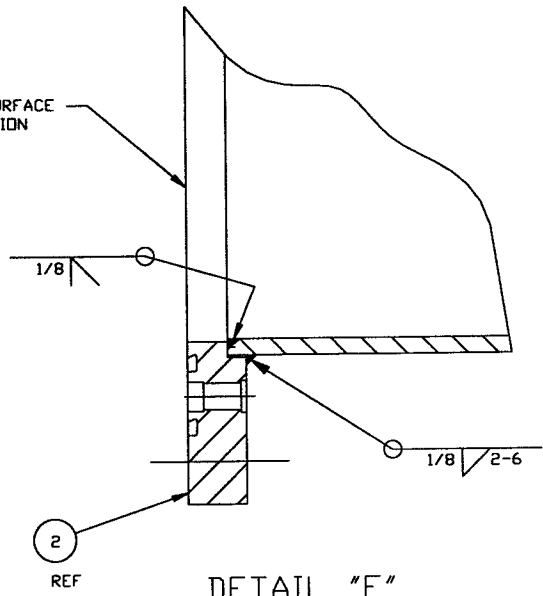
**NOT FOR  
CONSTRUCTION**

LIGO 0961144-00-V

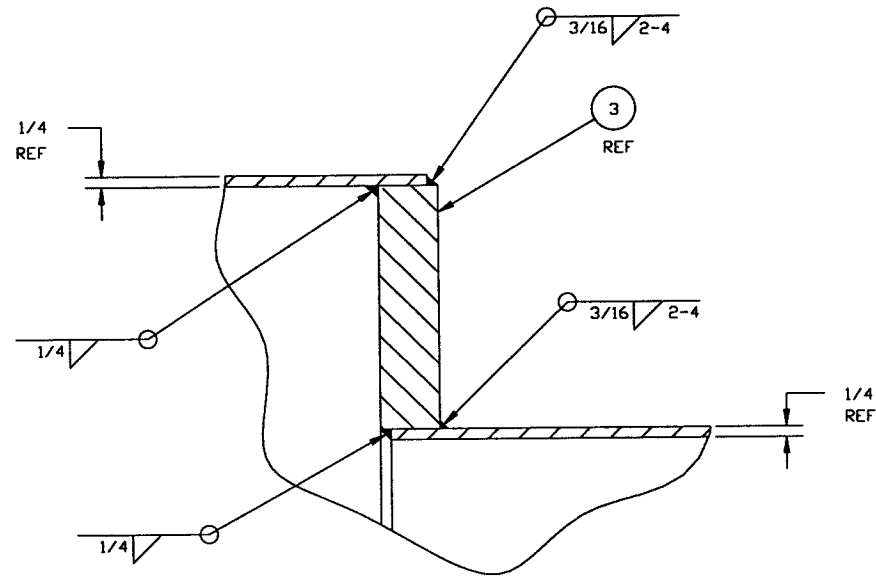
|   |                 |                       |           |
|---|-----------------|-----------------------|-----------|
| PROCESS SYSTEMS INTERNATIONAL INC.<br>20 WALSH DR. WESTBOROUGH, MASSACHUSETTS 01581 USA |                 |                       |           |
| ADAPTER A-7<br>60.50"ID x 72.25"ID<br>LIGO VACUUM EQUIPMENT                             |                 |                       |           |
| CAD FILE<br>V0494A7/4A7S2   | SIZE<br>D       | ENG. NO.<br>V049-4-A7 | REV.<br>0 |
| SCALE<br>AS NOTED   | SHEET<br>2 OF 5 |                       |           |

REV. 05/1996 - 133030

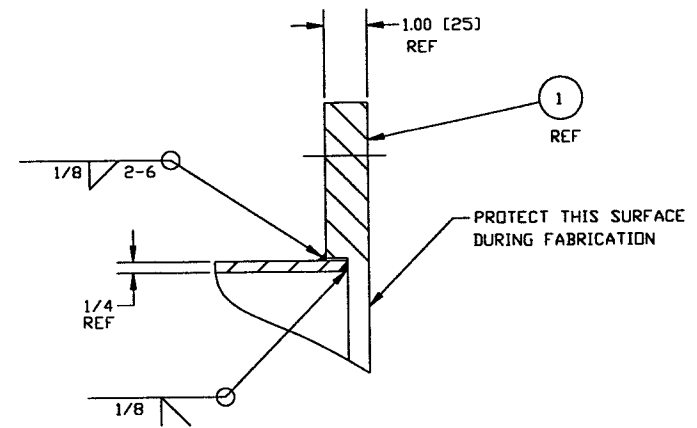
PROTECT THIS SURFACE DURING FABRICATION



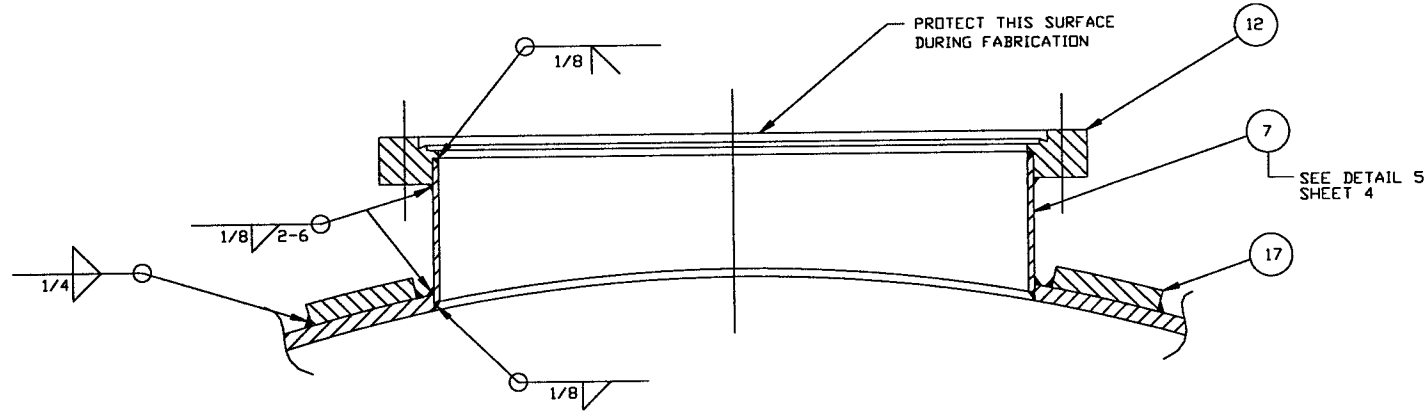
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SCALE: HALF



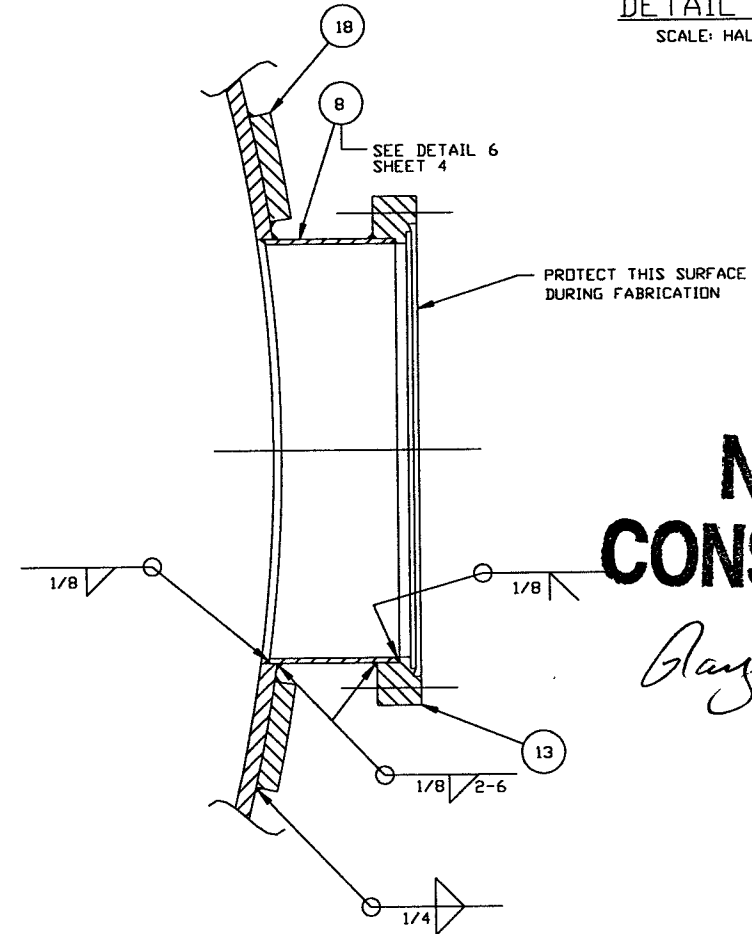
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SCALE: HALF



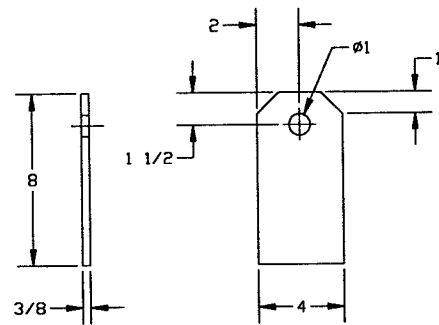
DETAIL "J"  
SCALE: HALF



SECTION "E"- "E"  
SCALE: HALF



SECTION "D"- "D"  
SCALE: HALF




DETAIL OF ITEM 17  
QTY: 2

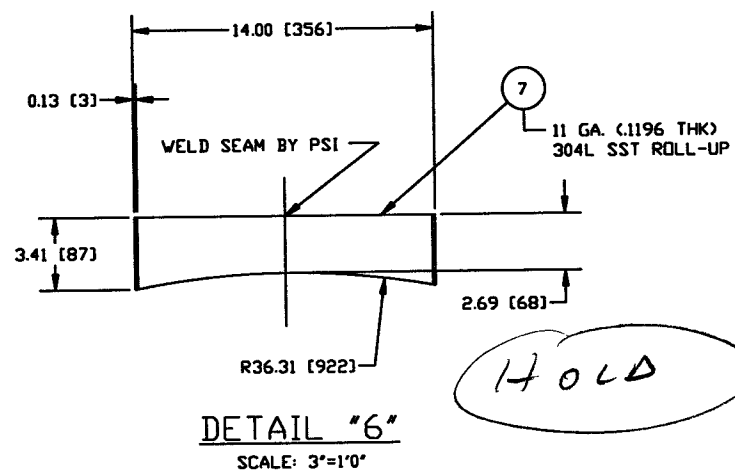
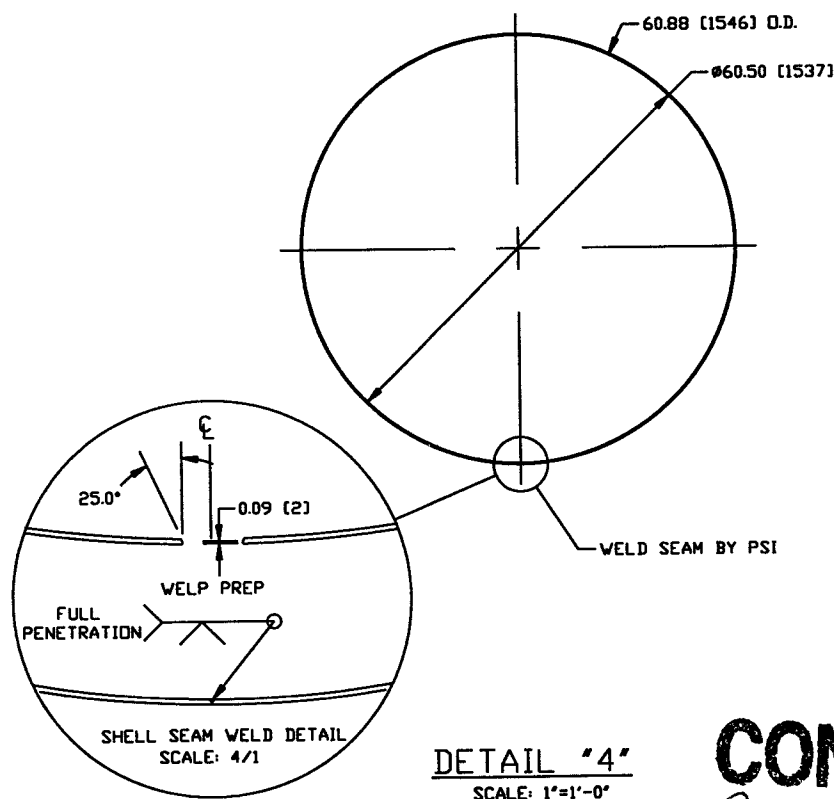
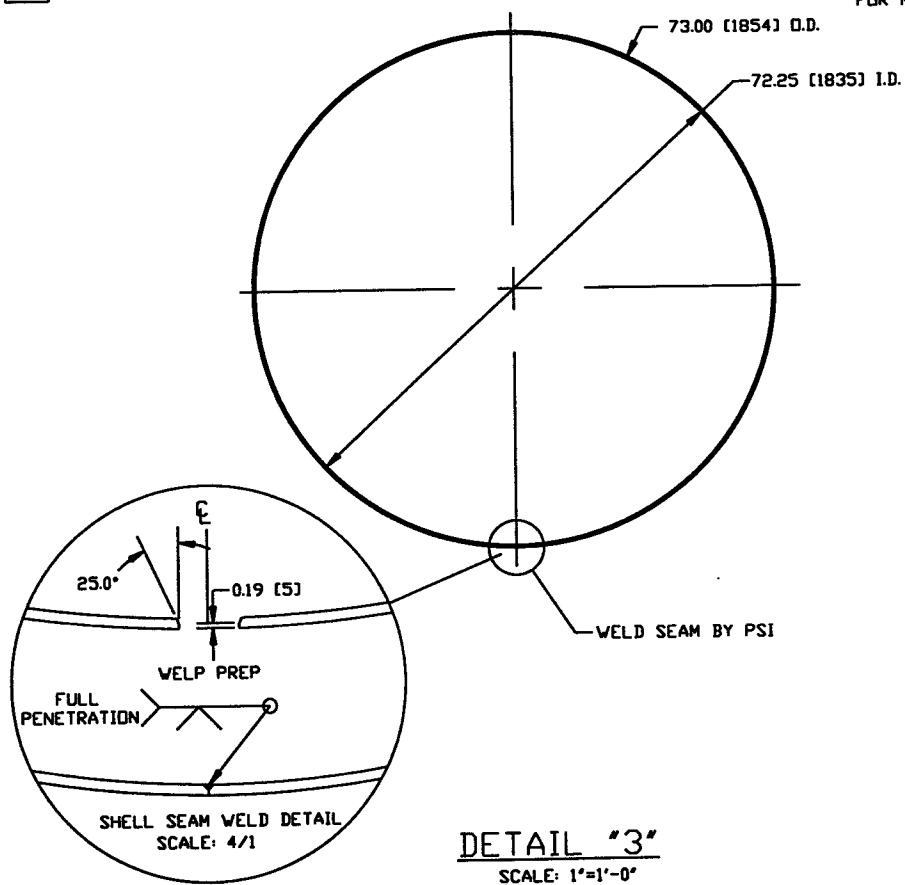
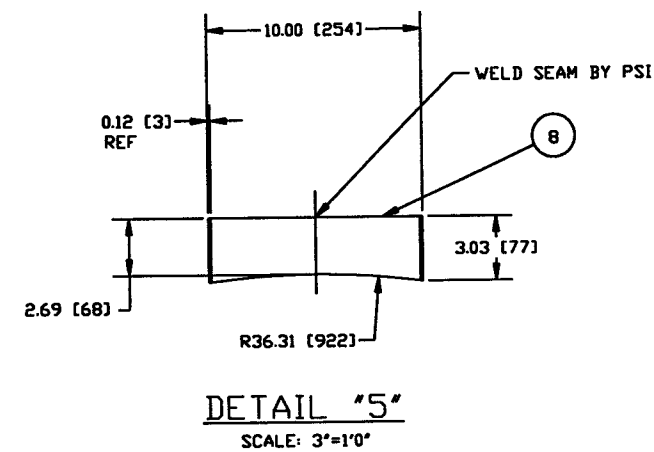
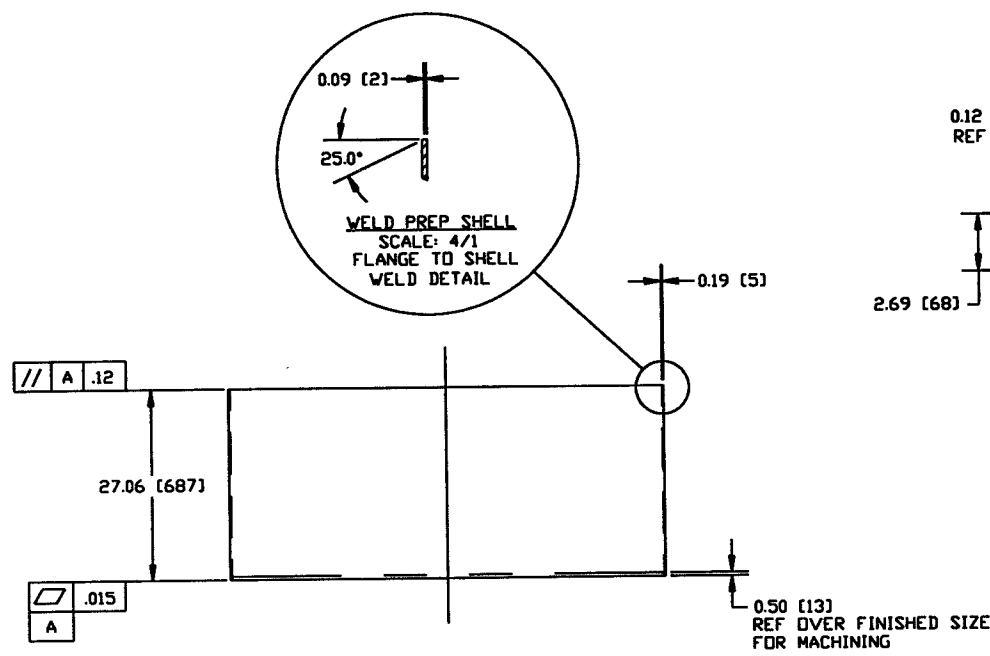
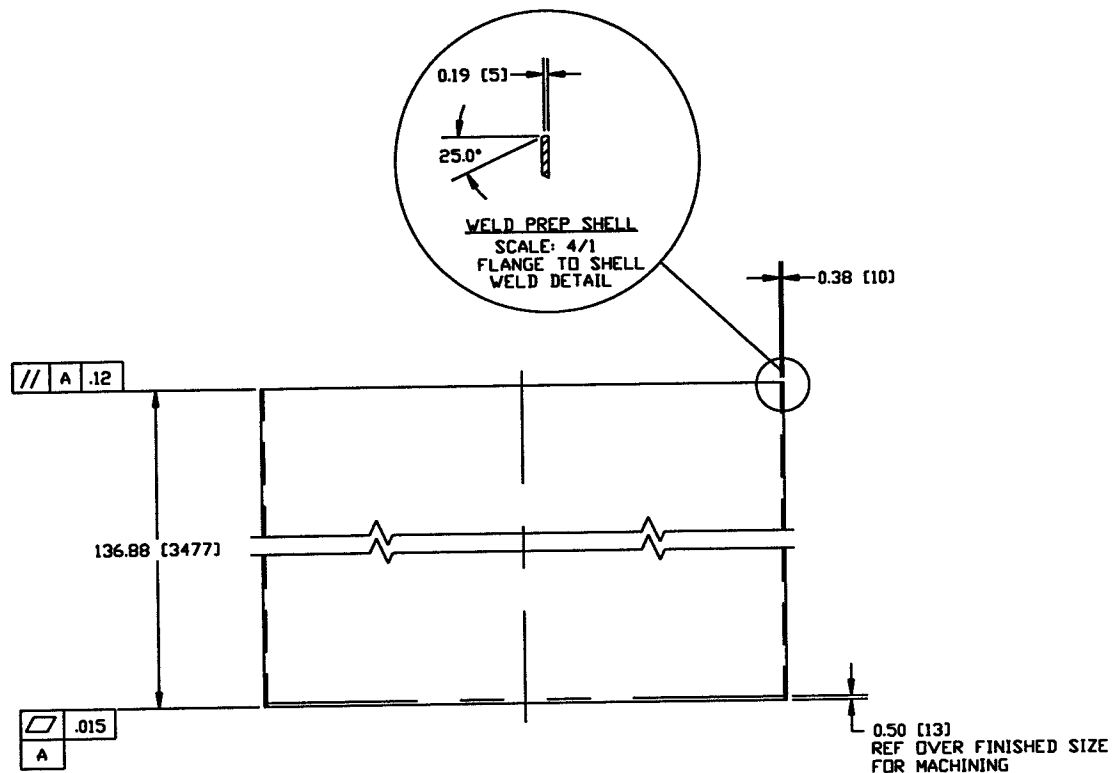
**NOT FOR CONSTRUCTION**

*Raymond S. Leath, PE*  
5/7/96

LIGO D961144-00-V  
SEE SHEET 1 FOR REVISIONS

|  |       |           |      |
|--|-------|-----------|------|
|  <b>PROCESS SYSTEMS INTERNATIONAL INC.</b><br>20 WALKUP DR., WESTBOROUGH, MASSACHUSETTS 01581 USA |       |           |      |
| ADAPTER A-7<br>72 1/4" X 60 1/2"<br>LIGO VACUUM EQUIPMENT  |       |           |      |
| CAD FILE   | SIZE  | DWG. NO.  | REV. |
| V049A47/4A7S3  | D     | V049-4-A7 | P1   |
| SCALE  | SHEET | 3 OF 5    |      |
| AS NOTED   |       |           |      |

DEC 07, 1994 - 1152-34



**NOT FOR CONSTRUCTION**

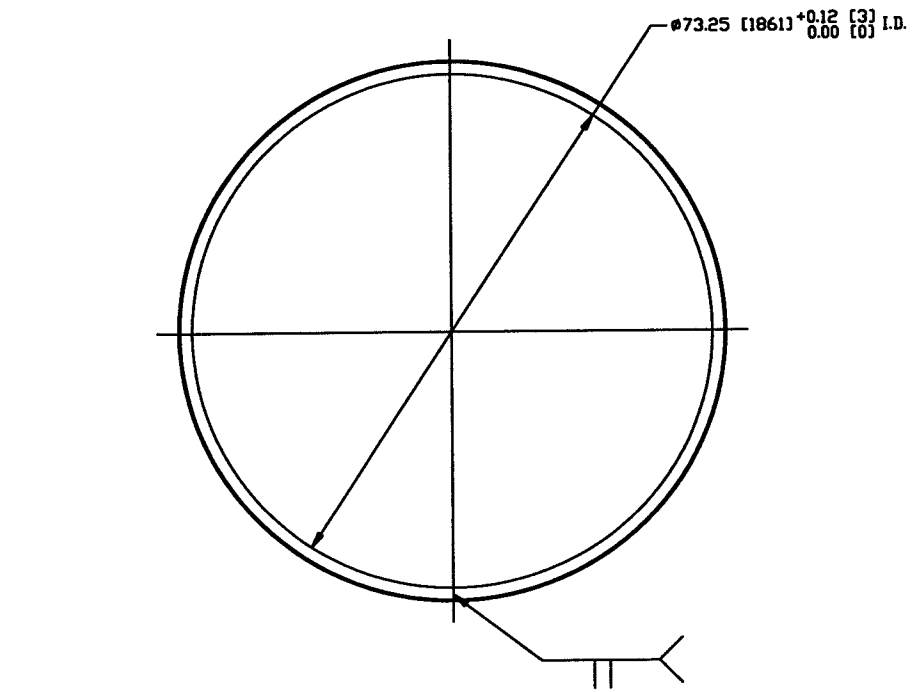
*Raymond D. Curtis, P.E.*

5/6/96

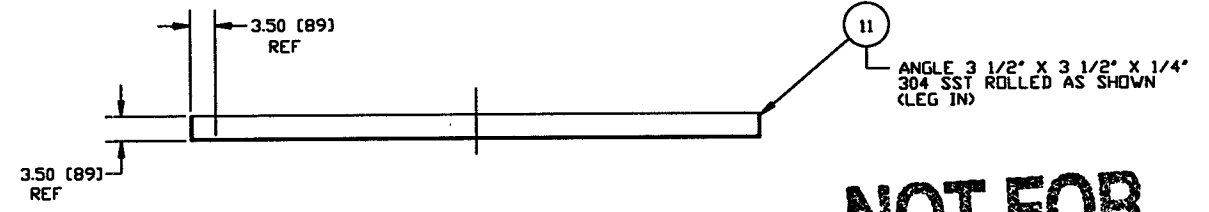
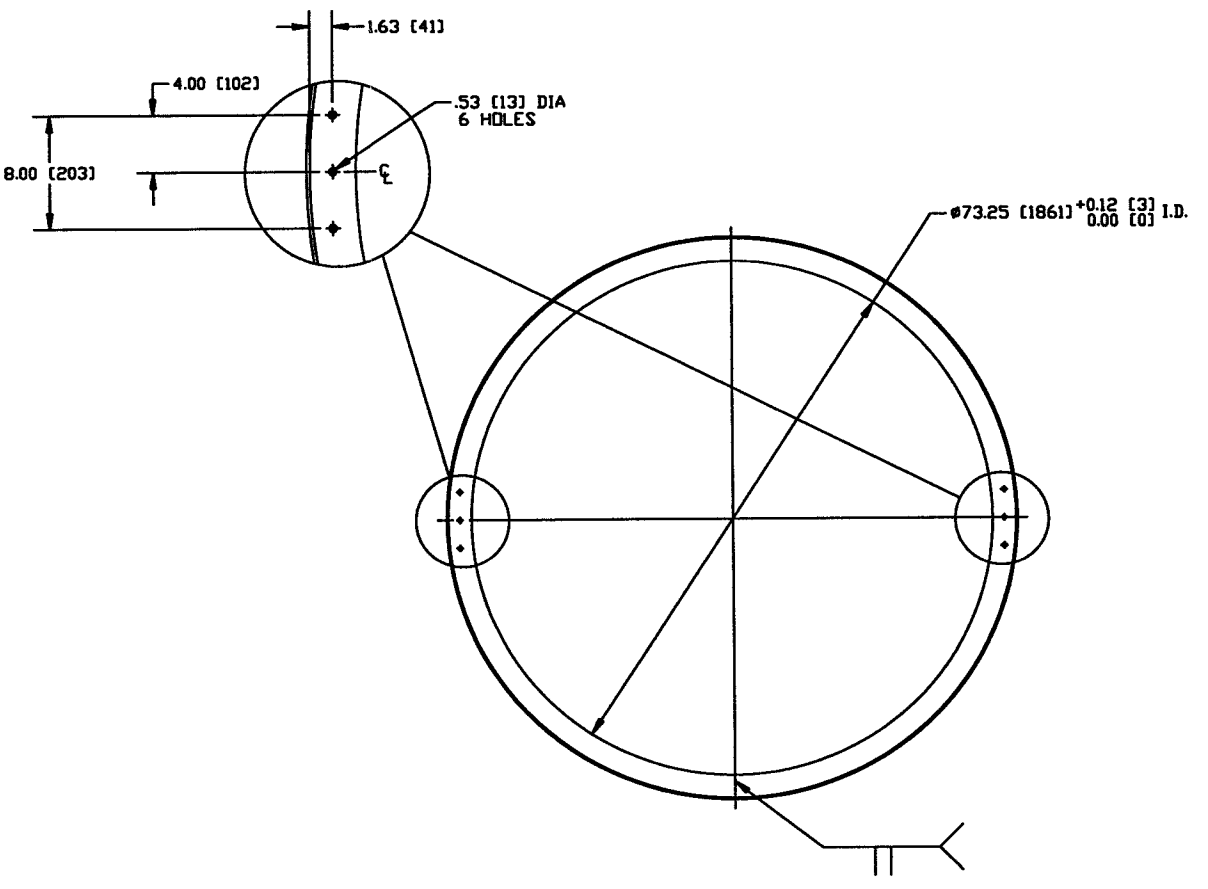
LIGD V96 1144-00-V

|  |                 |                       |           |
|--|-----------------|-----------------------|-----------|
| PROCESS SYSTEMS INTERNATIONAL INC.<br>20 WILKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA |                 |                       |           |
| ADAPTER A-7<br>60.50"ID x 72.25"ID<br>LIGD VACUUM EQUIPMENT                              |                 |                       |           |
| CAD FILE<br>V049A47/4A754  | SIZE<br>D       | REV. NO.<br>V049-4-A7 | REV.<br>0 |
| SCALE<br>AS NOTED  | SHEET<br>4 OF 5 |                       |           |

INC 07, 1994 - 11/28/94



**DETAIL "7"**  
SCALE: 1"=1'-0"



**DETAIL "8"**  
SCALE: 1"=1'-0"

**NOT FOR  
CONSTRUCTION**

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

LIGO D961144-00-V

|   |                                |                                      |                          |
|---|--------------------------------|--------------------------------------|--------------------------|
| PROCESS SYSTEMS INTERNATIONAL INC.<br><small>20 BURLINGTON DR. WESTBOROUGH, MASSACHUSETTS 01581 USA</small> |                                |                                      |                          |
| <b>ADAPTER A-7</b><br>60.50"ID x 72.25"ID<br>LIGO VACUUM EQUIPMENT  |                                |                                      |                          |
| <small>CAD FILE</small><br>V049A7/4A7SS   | <small>SIZE</small><br>D       | <small>REV. NO.</small><br>V049-4-A7 | <small>REV.</small><br>0 |
| <small>SCALE</small><br>AS NOTED  | <small>SHEET</small><br>5 OF 5 |                                      |                          |

Dec 07, 1994 - 105234