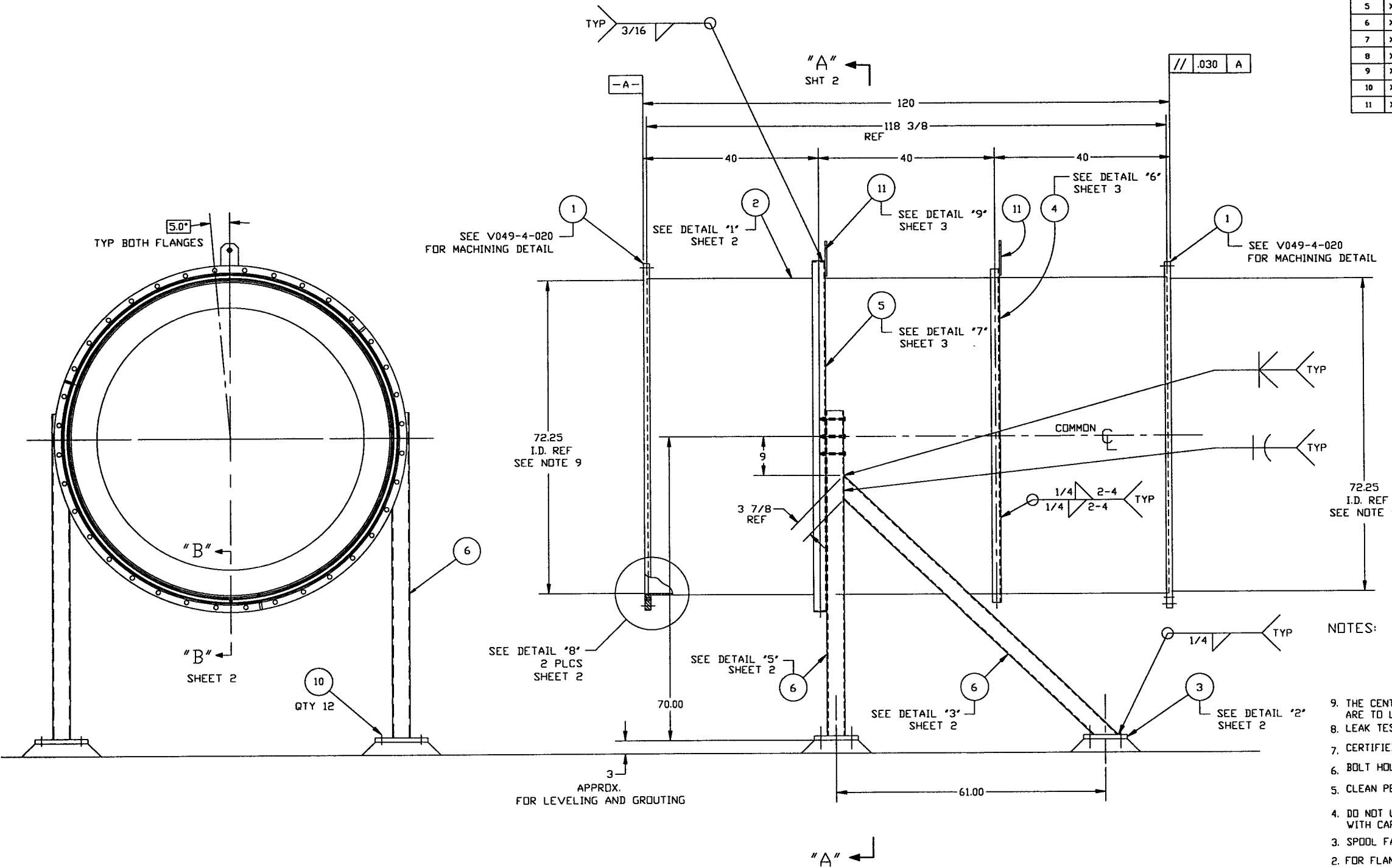


| ITEM | PART NUMBER | SUFFIX | QTY | UM | DESCRIPTION |
|------|-------------|--------|-----|----|---|
| 1 | V0494020 | | 2 | EA | FLANGE, GROOVED, 72 1/4" ID X 80" OD |
| 2 | XX | | XX | SF | PLATE, 304L SST, 1/4" THK |
| 3 | XX | | XX | SF | PLATE, A36, 1" THK |
| 4 | XX | | XX | FT | ANGLE, 304 SST 4" X 3" X 1/4" |
| 5 | XX | | XX | FT | ANGLE, 304 SST 4" X 3" X 1/2" |
| 6 | XX | | XX | FT | TUBING, RECT. 4" X 4" X 1/2" A500 GRB |
| 7 | XX | | 6 | EA | BOLT, 5/8-11 UNC X 3 1/2" LG A325 |
| 8 | XX | | 6 | EA | NUT, 5/8-11 UNC, A325 |
| 9 | XX | | 6 | EA | LOCK WASHER, 5/8" |
| 10 | XX | | 12 | EA | ANCHOR HILTI HVA 1" DIA B 1/2" MIN EMBED W/VASHER |
| 11 | XX | | 2 | EA | PLATE, 8"x4"x3/8" (LUGS) A-36 |



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 5/6/96

- NOTES:
- THESE FLANGES EACH INCLUDE AN ANNULAR CHANNEL BETWEEN O-RINGS, MANIFOLD TO A SINGLE PUMPOUT PORT ON EACH CHAMBER, SEE DWG V049-4-
 - FOR FLANGE DETAILS SEE DWG V049-4-020.
 - SPOOL FABRICATION TO BE IN ACCORDANCE WITH SPEC V049-2-097.
 - DO NOT USE CARBON STEEL BRUSHES OR BRUSHES CONTAMINATED WITH CARBON STEEL ON STAINLESS OR ALUMINUM MATERIAL.
 - CLEAN PER SPEC V049-2-015
 - BOLT HOLES TO STRADDLE CENTERLINES AS SHOWN, +/--.015
 - CERTIFIED MANUFACTURER'S MATERIAL TEST REPORTS REQUIRED
 - LEAK TEST & METHOD PER PSI SPEC: V049-2-014
 - THE CENTER LINES OF ALL SHELLS AND FLANGES ARE TO LIE ON THE COMMON CENTER LINE WITHIN +/- 1/16.

LIGO D961150-00-V

| PROPERTY | | | | SYMBOL | | | | UNLESS OTHERWISE SPECIFIED | | | | TOLERANCES | | | |
|----------|-------------|----------|-------------|--------|------------------|----------------------------|--------|----------------------------|----------------------------|--------|------------------|----------------------------|--------|------------------|--|
| DWG. NO. | DESCRIPTION | DWG. NO. | DESCRIPTION | SYMBOL | CHARACTERISTIC | UNLESS OTHERWISE SPECIFIED | SYMBOL | CHARACTERISTIC | UNLESS OTHERWISE SPECIFIED | SYMBOL | CHARACTERISTIC | UNLESS OTHERWISE SPECIFIED | SYMBOL | CHARACTERISTIC | |
| | | | | ∥ | PARALLELISM | 0.030 | ∥ | PARALLELISM | 0.030 | ∥ | PARALLELISM | 0.030 | ∥ | PARALLELISM | |
| | | | | ⊥ | PERPENDICULARITY | 0.030 | ⊥ | PERPENDICULARITY | 0.030 | ⊥ | PERPENDICULARITY | 0.030 | ⊥ | PERPENDICULARITY | |
| | | | | ∠ | ANGULARITY | 0.030 | ∠ | ANGULARITY | 0.030 | ∠ | ANGULARITY | 0.030 | ∠ | ANGULARITY | |
| | | | | ⊕ | TRUE POSITION | 0.030 | ⊕ | TRUE POSITION | 0.030 | ⊕ | TRUE POSITION | 0.030 | ⊕ | TRUE POSITION | |
| | | | | ⊙ | CONCENTRICITY | 0.030 | ⊙ | CONCENTRICITY | 0.030 | ⊙ | CONCENTRICITY | 0.030 | ⊙ | CONCENTRICITY | |

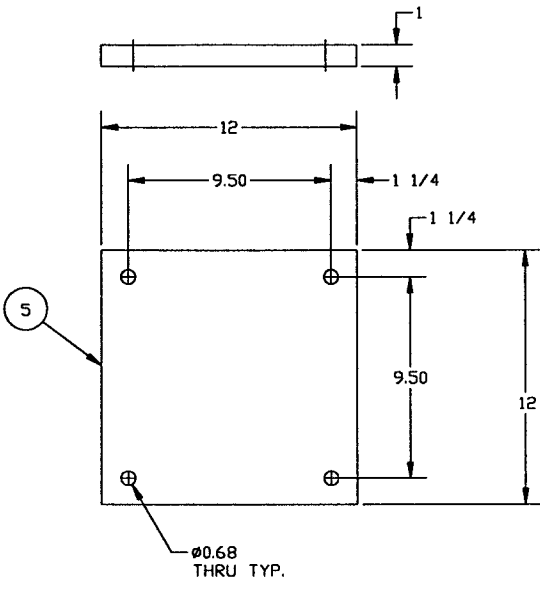
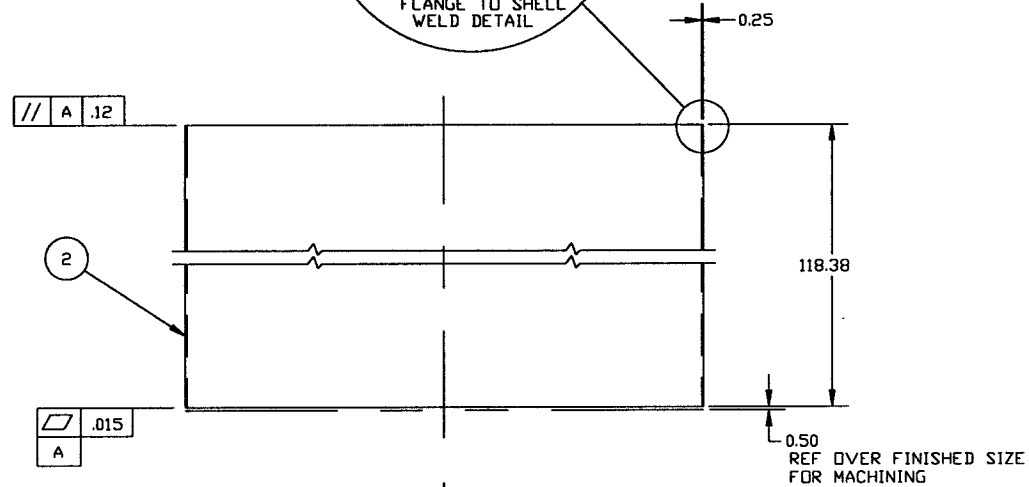
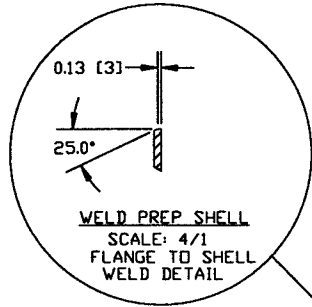
PROCESS SYSTEMS INTERNATIONAL INC.
 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

SPOOL B-1
 72.25" ID
 LIGO VACUUM EQUIPMENT

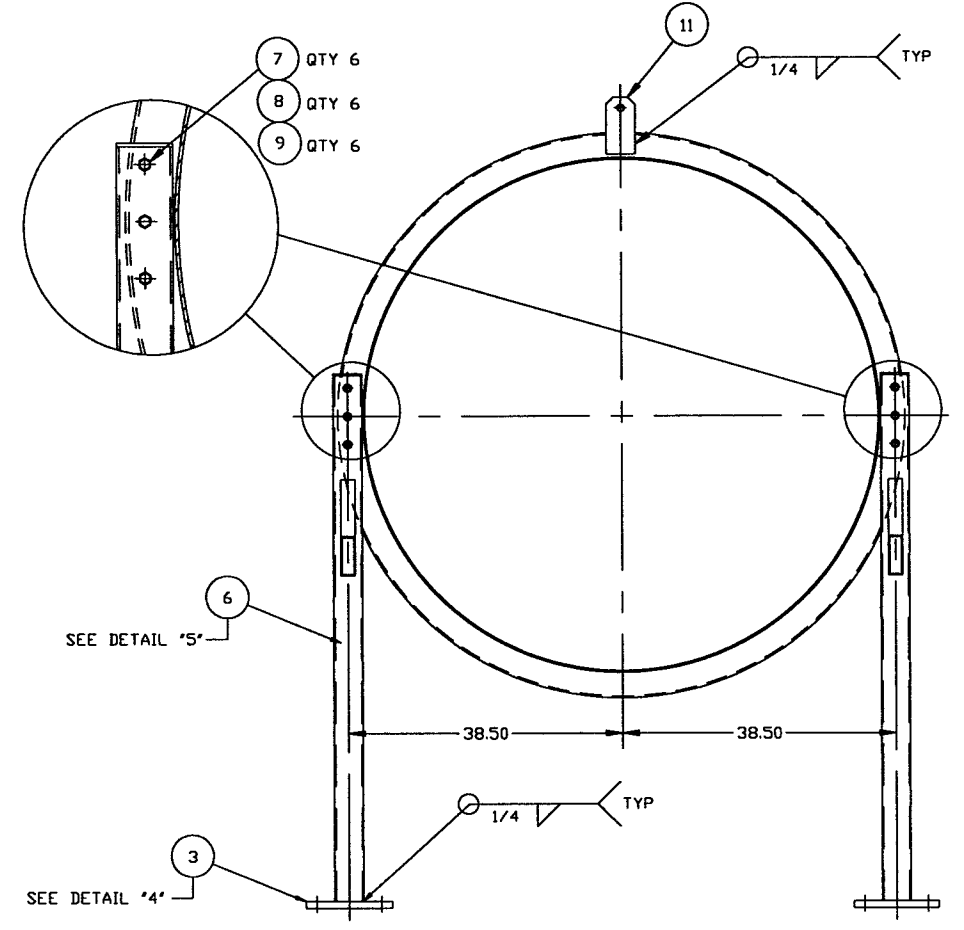
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 REV: 0

SCALE: 1-1/2" = 1"

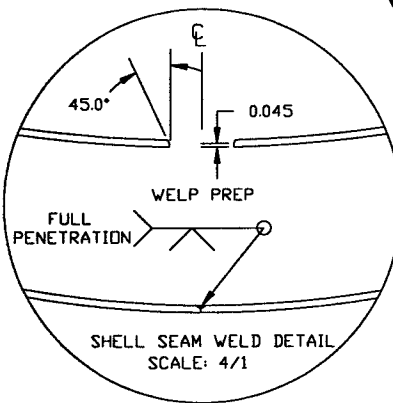
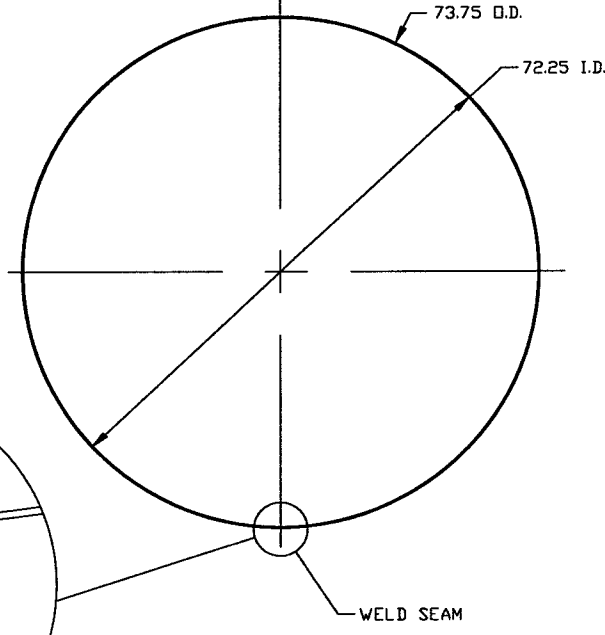
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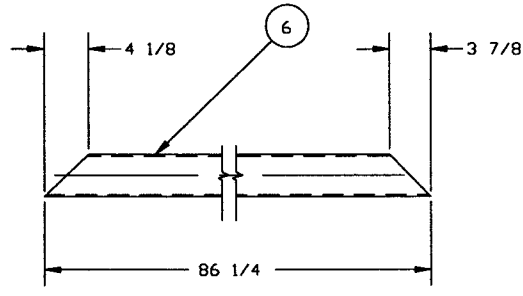
DETAIL 2
SCALE: 3"=1'-0"



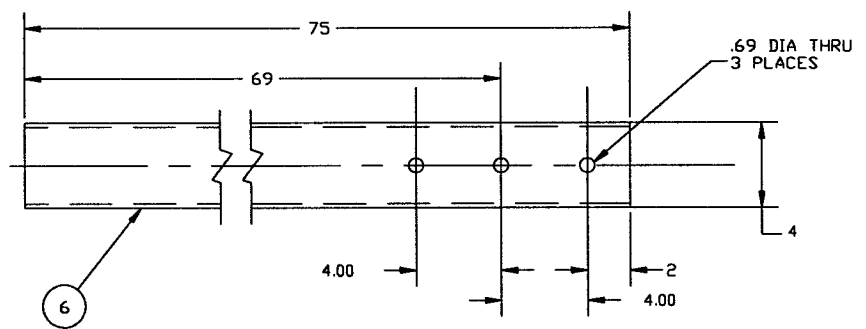
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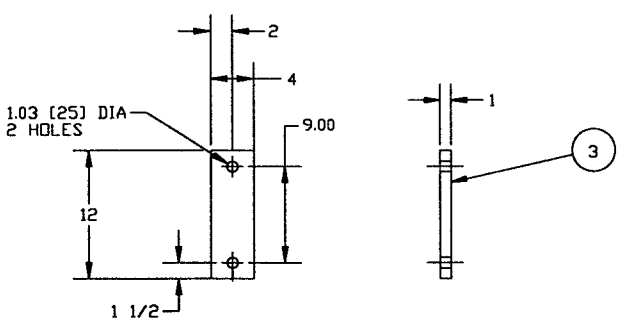
DETAIL "1"
SCALE: 1"=1'-0"



DETAIL 3
SCALE: 1 1/2" = 1'-0"
QTY: 4



DETAIL 5
SCALE: 3" = 1'-0"
QTY: 4



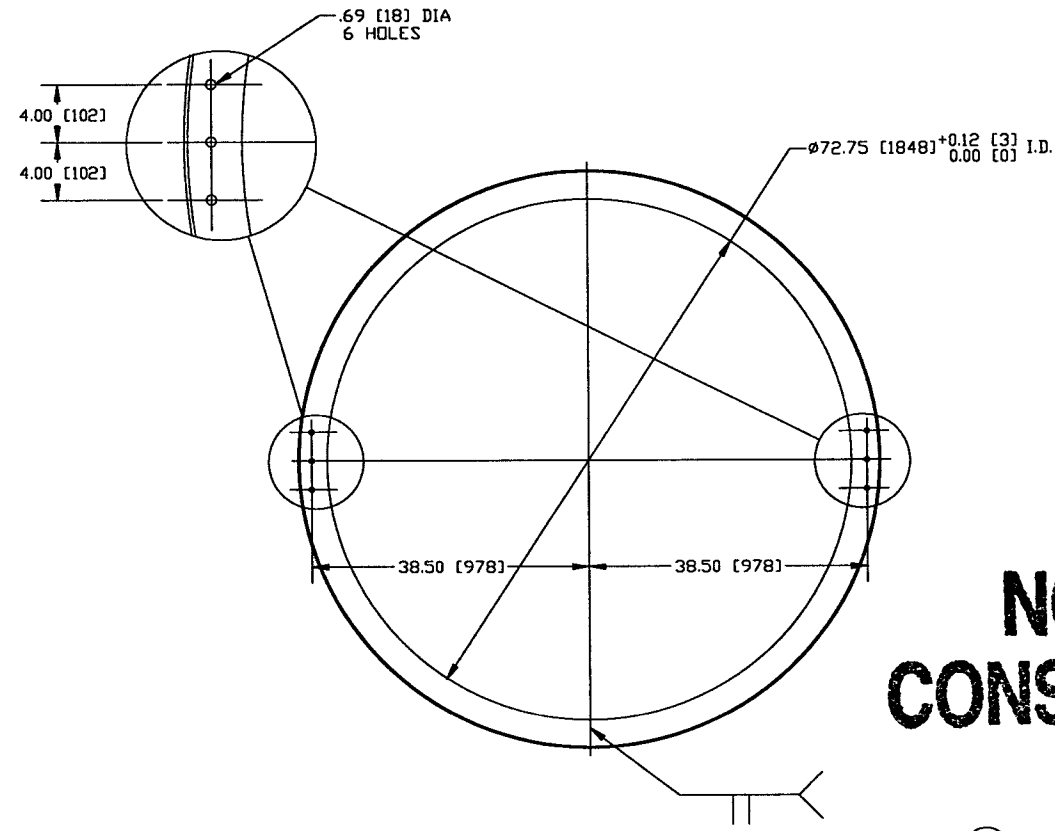
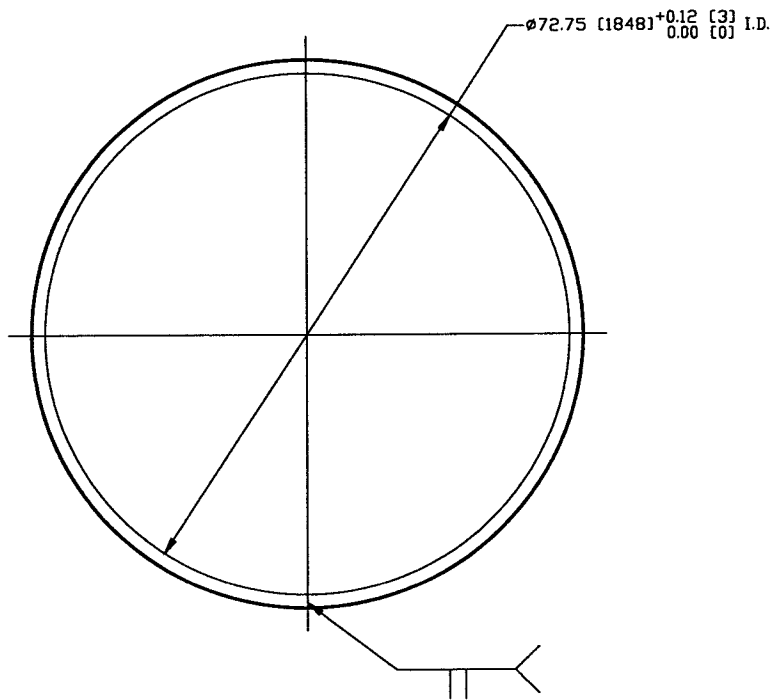
DETAIL 4
SCALE: 1 1/2" = 1'-0"
QTY: 4

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5/6/96

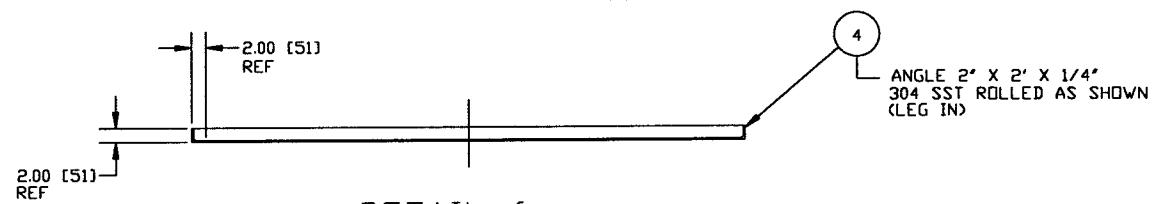
LIGO D961150700-V

| | | | |
|---|-----------------|-----------------------|----------|
| PROCESS SYSTEMS INTERNATIONAL, INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA | | | |
| SPOOL B-1 72.25" ID LIGO VACUUM EQUIPMENT | | | |
| CAD FILE V0494B1/4B1S2 | SIZE D | ENG. NO. V049-4-B1 | REV 0 |
| SCALE AS NOTED | SHEET 2 OF 3 | | |

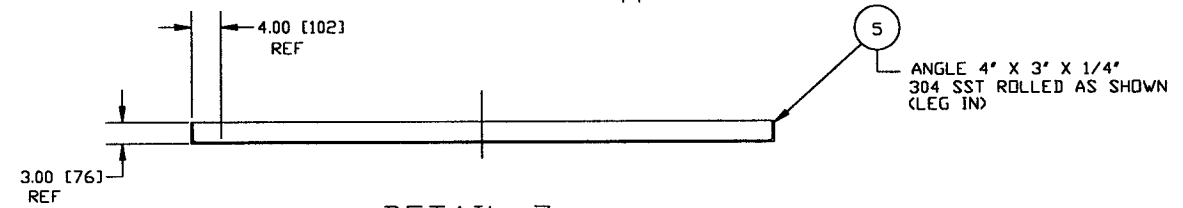
INC 07, 1994 - 115234



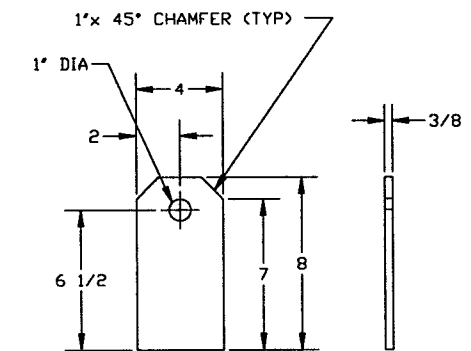
**NOT FOR
CONSTRUCTION**



DETAIL 6
SCALE: 1"=1'-0"

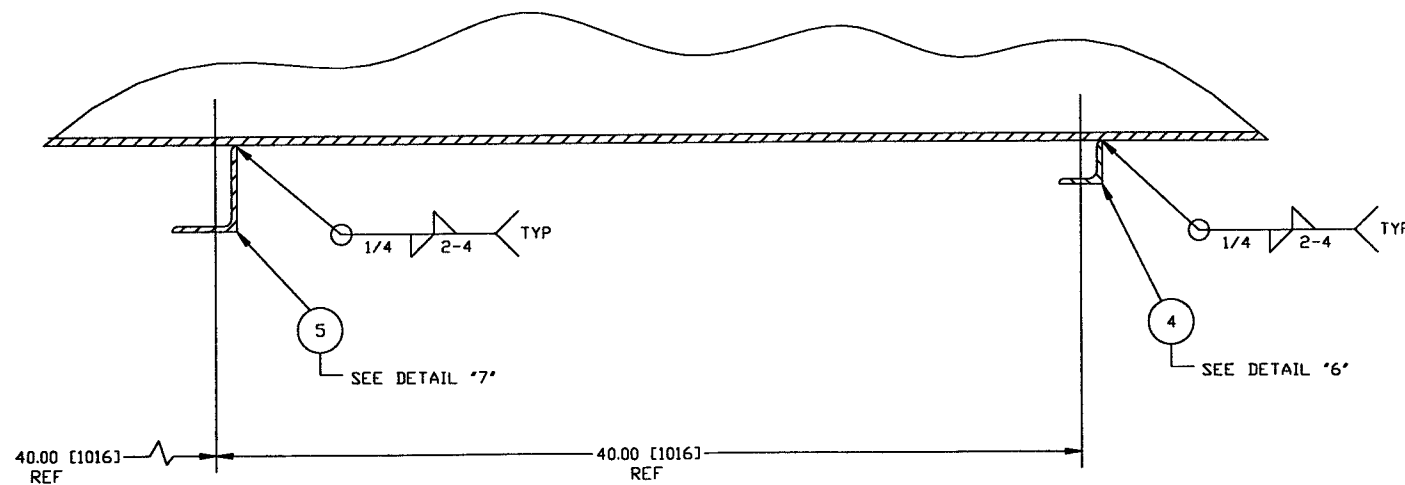


DETAIL 7
SCALE: 1"=1'-0"

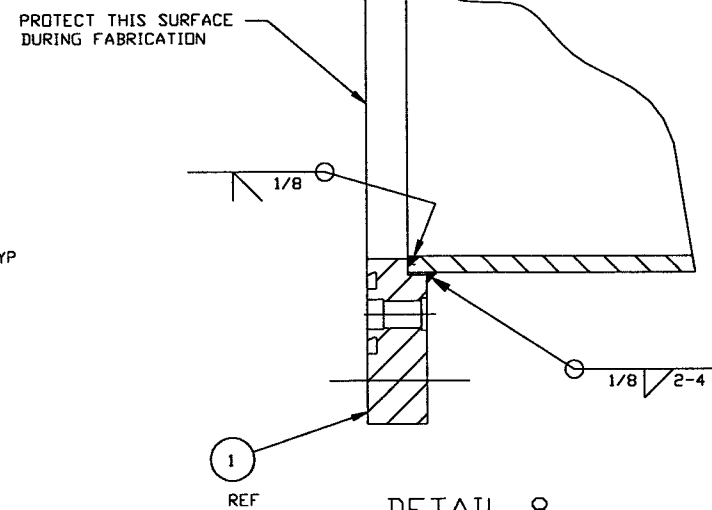


DETAIL 9

Raymond D. Arto, PE
5/6/96
LIGO D961150-00-V



SECTION "B"- "B"
SCALE: 3" = 1'0"



DETAIL 8
SCALE: HALF
TYP BOTH ENDS

| | | | |
|---|-----------------|-----------------------|----------|
| PROCESS SYSTEMS INTERNATIONAL, INC. 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA | | | |
| SPOOL B-1 72.25" ID LIGO VACUUM EQUIPMENT | | | |
| CAD FILE V0494B1/4B1S3 | SIZE D | DWG. NO. V049-4-B1 | REV 0 |
| SCALE AS NOTED | SHEET 3 OF 3 | | |