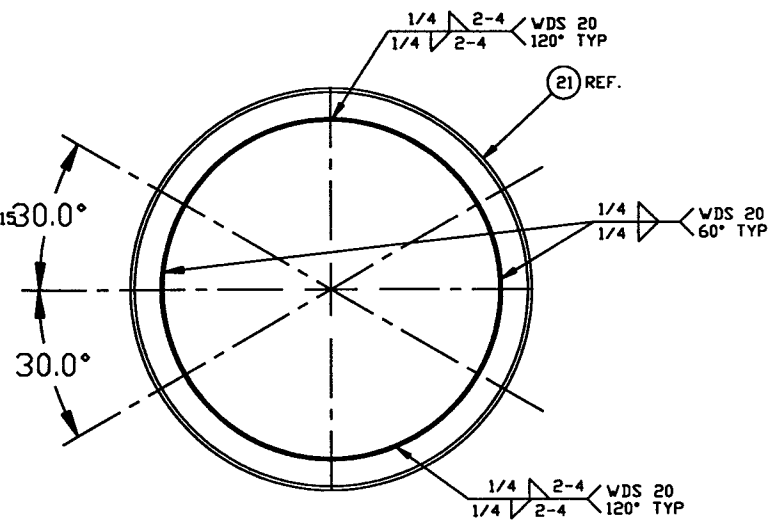


**NOTES:**

1. WDS NO'S. REFER TO WELD DATA SPEC. V049-2-084.
2. FLANGE INCLUDES AN ANNULAR CHANNEL BETWEEN D-RINGS.
3. FOR FLANGE DETAILS SEE DVGS. V049-4-056 & 057.
4. SPOOL FABRICATION TO BE IN ACCORDANCE WITH SPEC. V049-2-097.
5. DO NOT USE CARBON STEEL BRUSHES OR BRUSHES CONTAMINATED WITH CARBON STEEL ON STAINLESS OR ALUMINUM MATERIAL.
6. CLEAN PER SPEC. V049-2-015
7. BOLT HOLES FOR ALL FLANGES TO STRADDLE VERTICAL CENTERLINE +/- .015 30.0°
8. CERTIFIED MANUFACTURER'S MATERIAL TEST REPORTS REQUIRED AS NOTED.
9. LEAK TEST & METHOD PER PSI SPEC. V049-2-014
10. THE CENTERLINES OF ALL SHELLS AND FLANGES ARE TO LIE ON THE COMMON CENTERLINE WITHIN ± 1/16.
11. TIGHTEN TIE-ROD NUTS WITH BELLOWS IN "FREE" POSITION TO 100 FT-LB PRIOR TO LEAK TEST
12. MACHINING & ROLLING PER SPEC V049-2-136.
13. PLATES PRIOR TO ROLLING MUST HAVE DIAGONAL CORNER TO CORNER DIMENSIONS WITHIN 1/16" OF EACH OTHER.
14. EACH FINISHED SHELL ASSY. SET IS TO HAVE EACH OF THE PIECES MARKED WITH THE SAME SET NO. AND SHIPPED TOGETHER. THE NUMBER IS TO BE MADE FROM THE DRAWING NO. PLUS SEQUENTIAL LETTER. V0494B5A-A, B ETC.
15. STRUCTURAL STEEL FABRICATION TO BE IN ACCORDANCE WITH SPED. V049-2-039.
16. CONFLAT FLANGES TO HAVE PROTECTIVE COVERS AT ALL TIMES DURING & AFTER MANUFACTURING.
17. CONFLAT LEAK CHECK SLOTS ARE TO BE POSITIONED ON A VERTICAL CENTERLINE.

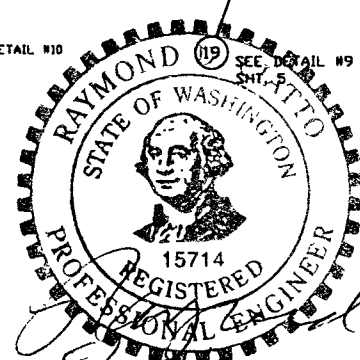
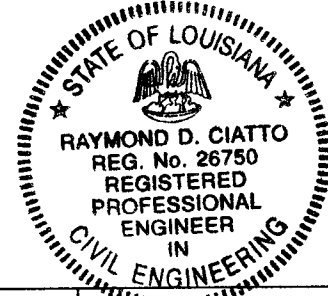
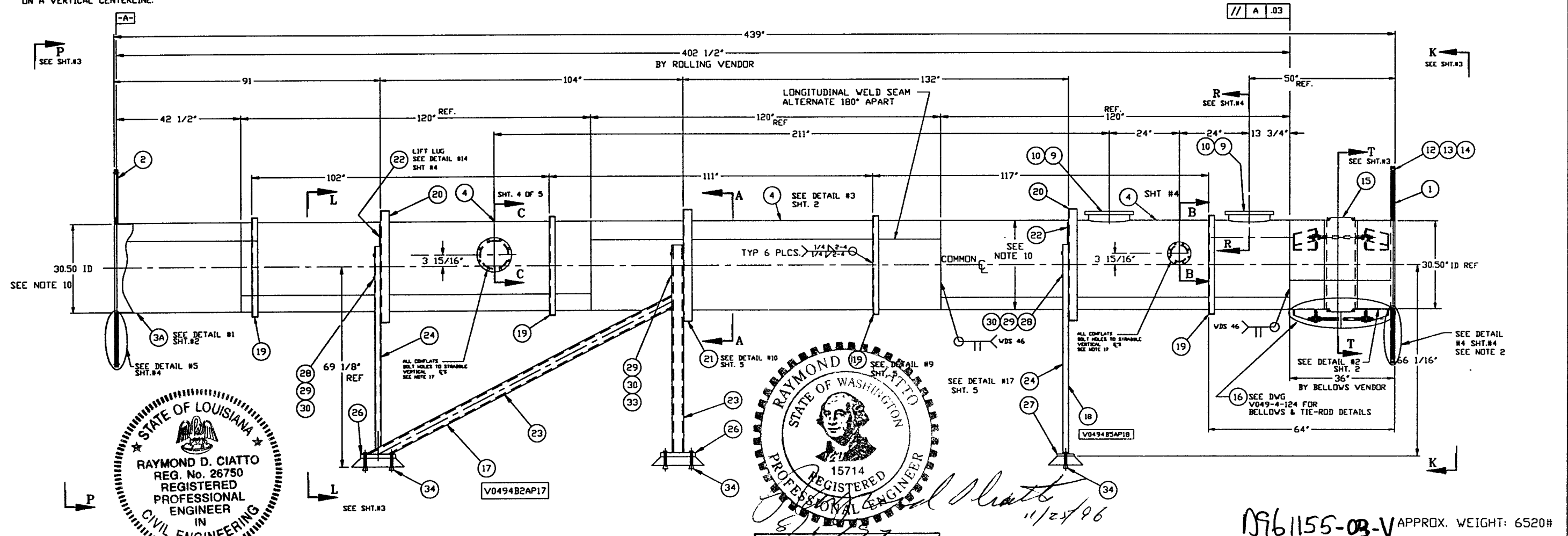


SECTION "A-A"

ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION
21	V049M821	1	1	EA	SUPPORT RING, 3"x3"x3/8" THK ANGLE 304 SST
22	V049M852	3	3	FT	FLAT BAR, 4" X .38" THK SST 304
23		1	35	FT	4"x4"x1/2" TS A500 GR-B
24		1	25	FT	TUBE, RECT, 3"x 2"x 3/16" THK A500 GR-B
25					
26		3	4	FT	FLAT BAR, 12"x 1 3/8" A36
27		3	2	FT	FLAT BAR, 6"x 1 3/8" A36
28	V049M763	3	12	EA	BOLT, HEX, 5/8-11UNC x 3 1/2 LG, A325
29	V049M755	3	18	EA	NUT, HEX, 5/8-11UNC, A325
30	V049M773	3	18	EA	WASHER, LOCK, 5/8 A325
31	202670	3	2	EA	GASKET, DFHC, CONFLAT 16 1/2" OD
32	V049M780		72	EA	BOLT, 18-8 SST, HEX HD, 3/8"-16x3" LG.
33	V049M759	3	3	EA	BOLT, HEX, 5/8-11UNC x 5 1/2 LG, A325
34			20	EA	BOLT, ANCHOR, HILT, HVA 1"x8 1/4" EMBEDM.
35					
36	V049M319	3	1	EA	HALF NIPPLE, SST 304L, CONFLAT 12" O.D.
37	V049M313	3	1	EA	HALF NIPPLE, SST, 304L, CONFLAT 8" O.D.
38	202549	3	1	EA	BLANK FLNG, CONFLAT, 12" OD, 304L SST
39	V049M262	3	1	EA	BLANK FLNG, CONFLAT, 8" OD, 304L SST
40	202552	3	1	EA	GASKET, DFHC, CONFLAT, 12" OD
41	V049M263	3	1	EA	GASKET, DFHC, CONFLAT, 8" OD
42	V049M779		32	EA	BOLT, 18-8 SST, HEX HD, 5/16"-18x3" LG.
43	V049M777		20	EA	BOLT, 18-8 SST, HEX HD, 5/16"-18x2 1/2" LG.
44					
45					
46	V049M783		72	EA	NUT, SILICON BRZ, HEX 3/8"-16
47	V049M786		144	EA	WASHER, 18-8 SST, FLAT 3/8"
48	V049M782		52	EA	NUT, SILICON BRZ, HEX 5/16"-18
49	V049M785		104	EA	WASHER, 18-8 SST, FLAT 3/8"

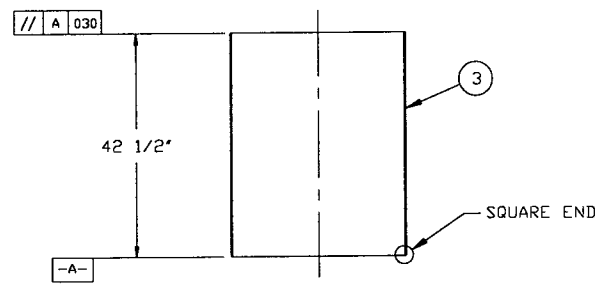
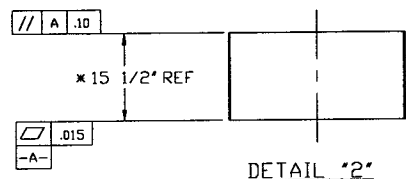
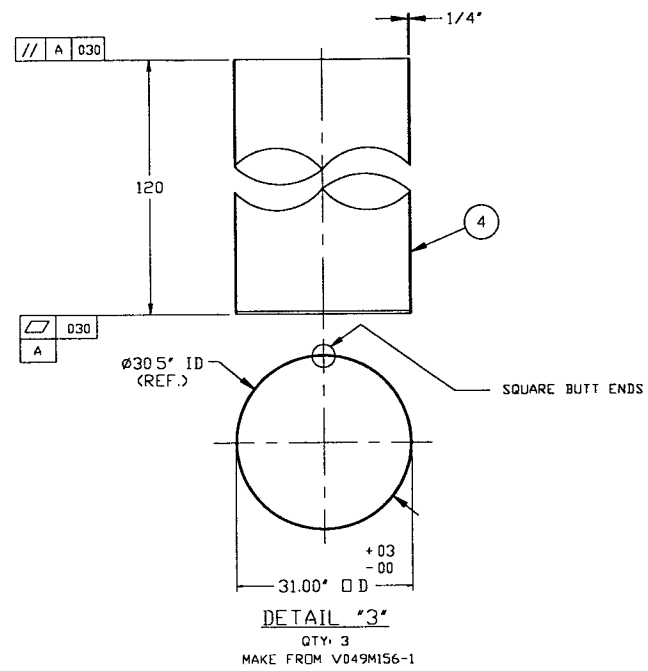
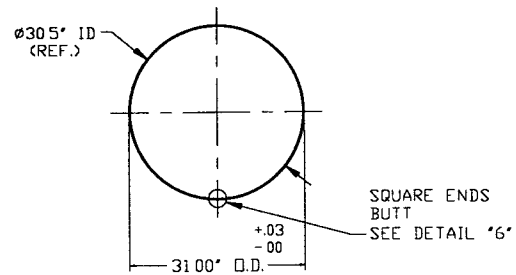
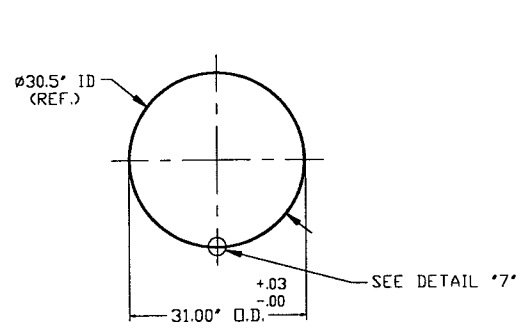
ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION	
1	V0494057		1	EA	30.5 ID x 60.5 ID FLANGE (GROOVED)	
2	V0494056		1	EA	30.5 ID x 60.5 ID FLANGE (FLAT)	
3	V0494B5AP3A		1	EA	SHELL 1/4" THK 304/304L SST	
4	V0494B5AP4		3	EA	SHELL 1/4" THK 304/304L SST	
5						
6						
7	V049M022		1	EA	'O'-RING, VITON (PER SPEC. V049-2-045)	
8	V049M023		1	EA	'O'-RING, VITON (PER SPEC. V049-2-045)	
9	V049M308		3	2	EA	HALF NIPPLE, SST, 304L, CONFLAT 16 1/2" O.D.
10	202666		3	2	EA	BLANK, CONFLAT 16.5" O.D. SST 304L
11						
12	202678		3	30	EA	BOLT, SAI93 B7, HEX HD 7/8-9UNCx4 1/2 LG
13	202679		3	30	EA	NUT, SAI94 2H, HEX HD 7/8-9UNC
14	202581		3	60	EA	WASHER, STL, 1 3/4" OD x 15/16" ID x 1/4" THK
15	V0494B5AP1		1	EA	BELLOWS ASSY, PER SPEC V049-2-017	
16	***		3	EA	TIE-ROD ASSY, (PER SPEC V049-4-124)	
17	V0494B5AP17		2	EA	SUPPORT ASSEMBLY	
18	V0494B5AP18		2	EA	SUPPORT ASSEMBLY	
19	V049M815		1	4	EA	SUPPORT RING 2" X 2" X 1/4" THK ANGLE 304 SST.
20	V049M820		1	2	EA	SUPPORT RING 3" X 3" X 1/4" THK ANGLE 304 SST

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



<p>PROPERTY AND CONFIDENTIAL</p> <p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION BELONGING TO 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 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.</p>		<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES</p> <p>TOLERANCES:            FRACTIONAL &amp; J ANGULAR DIMENSIONS ±.005            TWO PLACE DECIMAL ±.005            THREE PLACE DECIMAL ±.003            FINISHED SURFACE TO BE BREAK CORNERS IN OUT.</p> <p>DO NOT SCALE THIS DRAWING</p> <p>USED ON: _____</p> <p>NEXT ASSY: _____</p>		<p>3 DESIGN UPDATE/ISSUED FOR FABRICATION</p> <p>2 FABRICATION (SHELL ONLY)</p> <p>1 DESIGN UPDATE / FABRICATION (BELLOWS ASSY. ONLY)</p> <p>0 ISSUED FOR FDR</p>		<p>GS RDC REC PV 11/22/96 0180</p> <p>DMV RDC REC PV 10/1/96 0283</p> <p>DMV RDC REC PV 9/11/96 0191</p> <p>DMV RDC REC TOV 4/27/96 0145</p>		<p>PROCESS SYSTEMS INTERNATIONAL, INC.</p> <p>20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA</p> <p>SPOOL B-SA            30.50" ID x 60.50" ID            MODE CLEANER TUBE            LIGO VACUUM EQUIPMENT</p> <p>DWG NO. V049-4-B5A</p> <p>SCALE 1/16</p> <p>SHEET 1 OF 5</p>	
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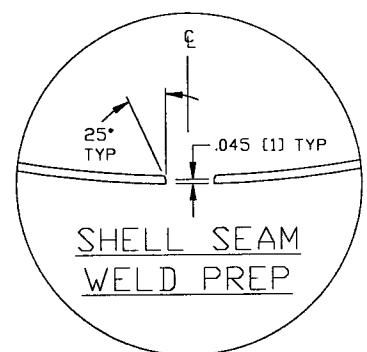
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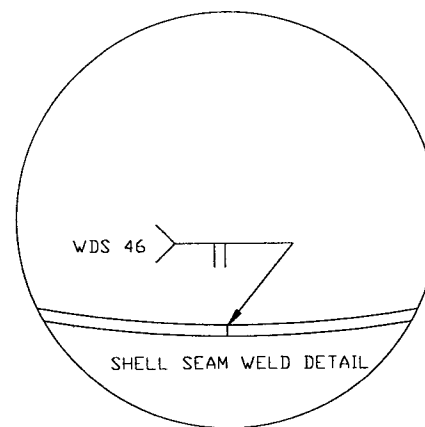
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DETAIL "2"  
QTY. 2  
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\* FINAL FINISH LGTH. TO BE DETERMINED BY BELLOWS VENDOR

DETAIL "1"  
QTY. 1  
MAKE FROM V049M157-1



DETAIL-"7"

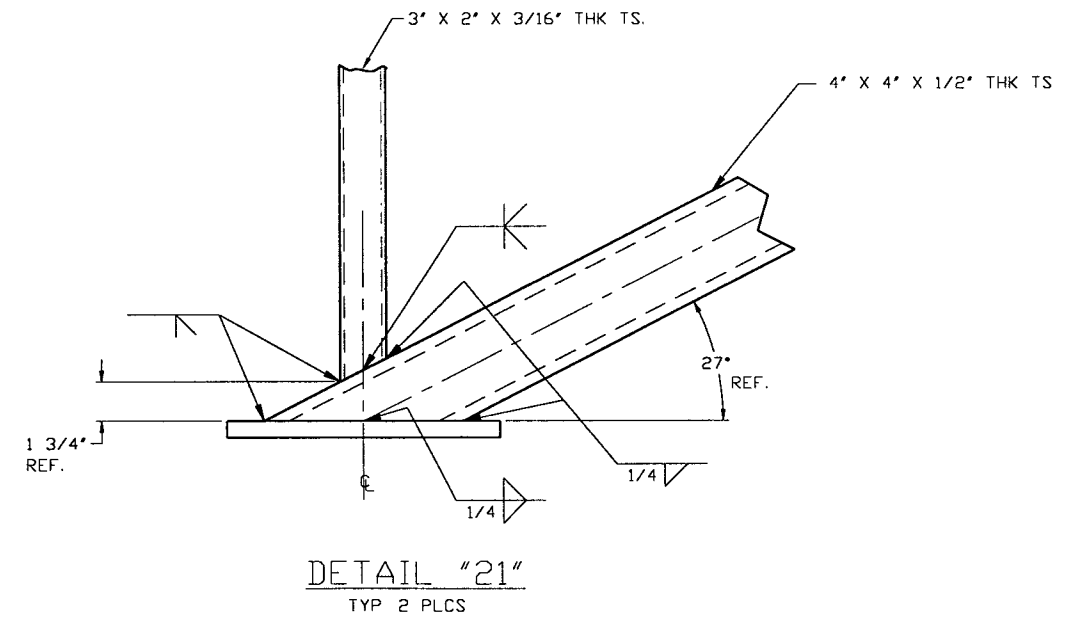
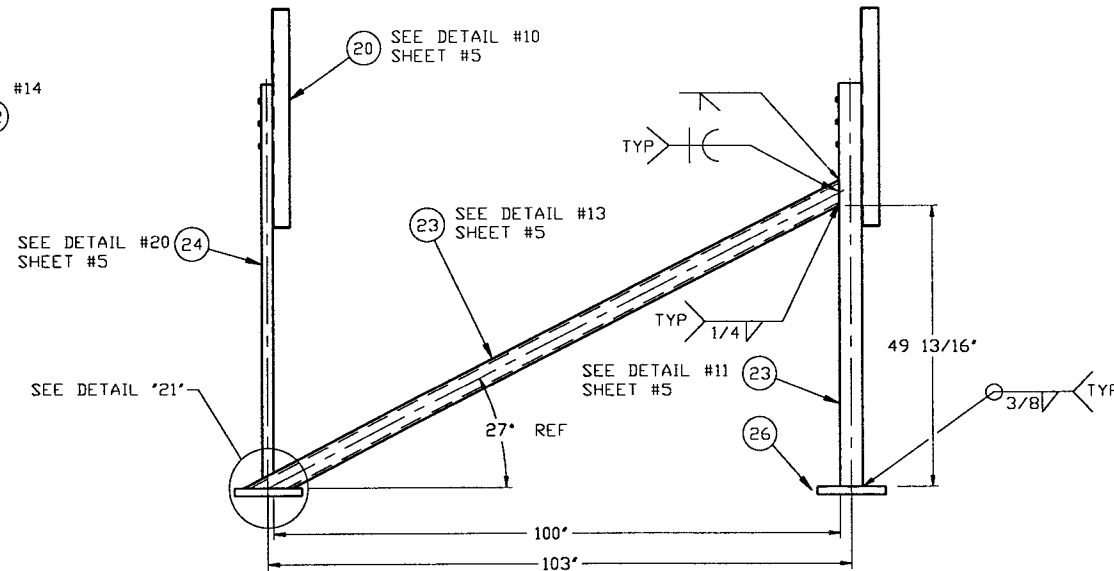
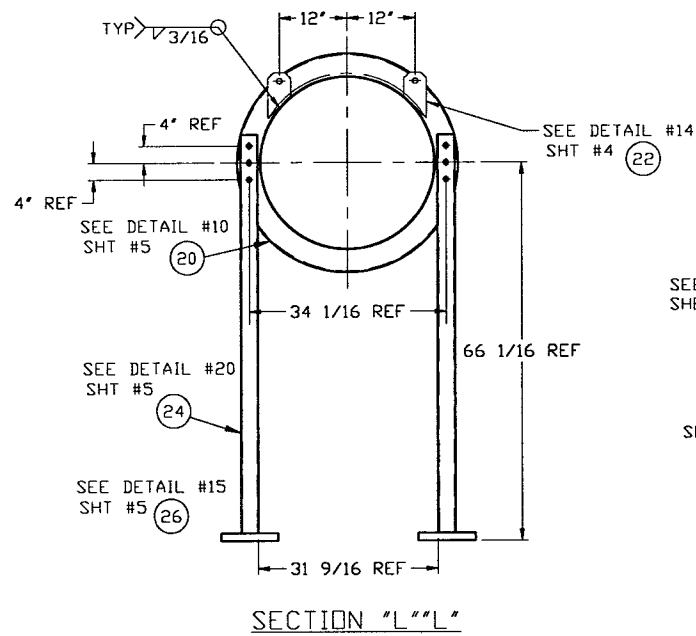
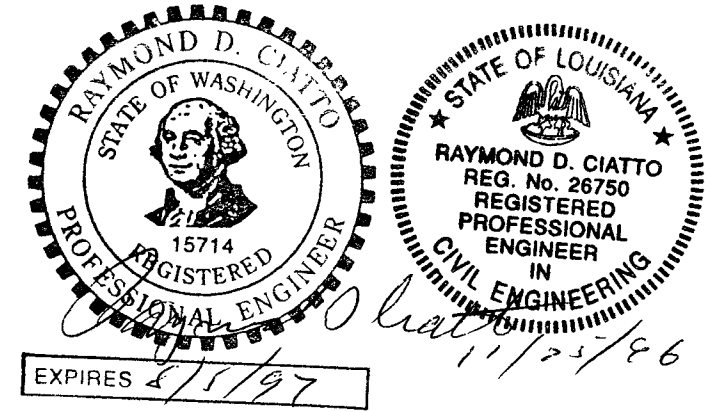
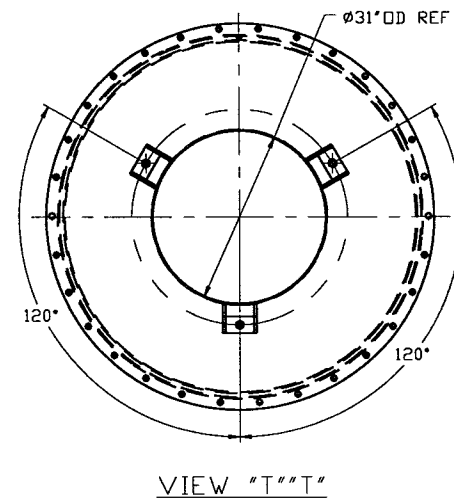
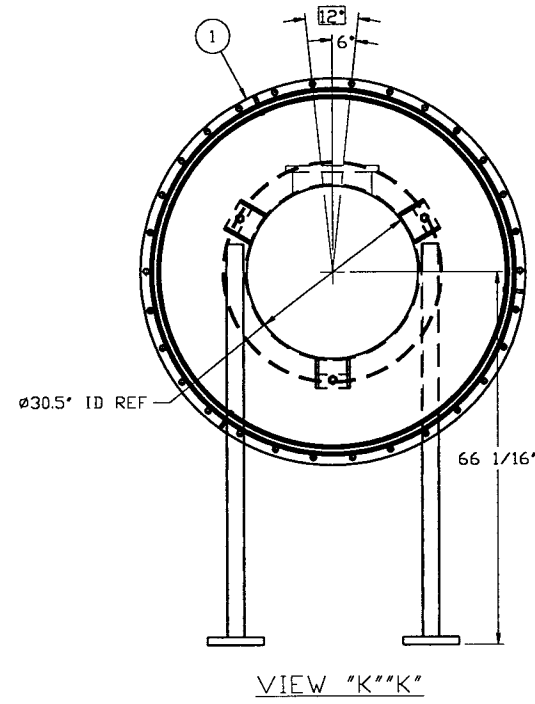
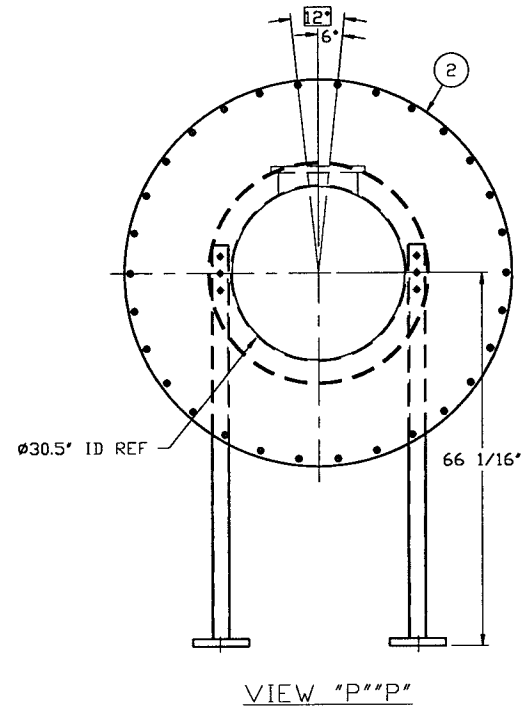


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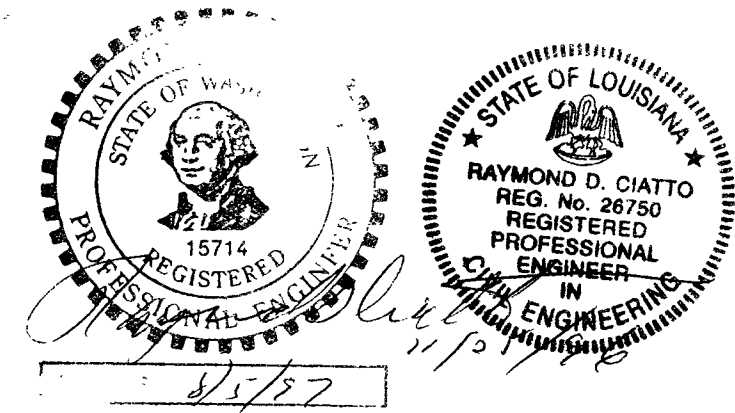
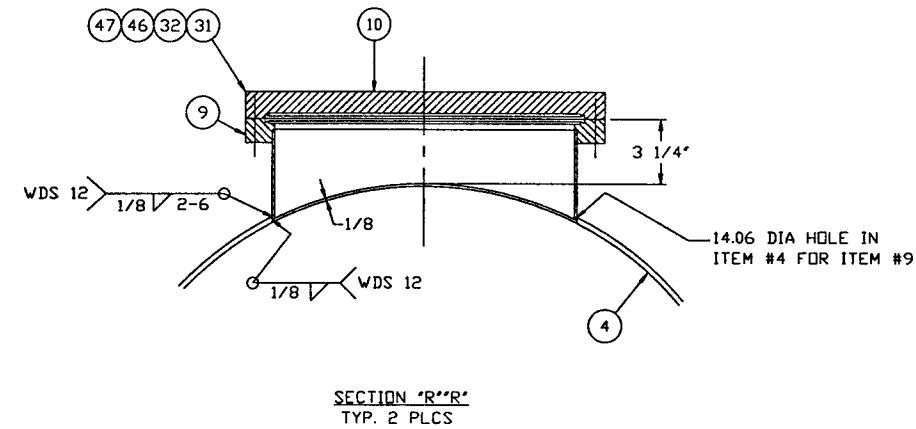
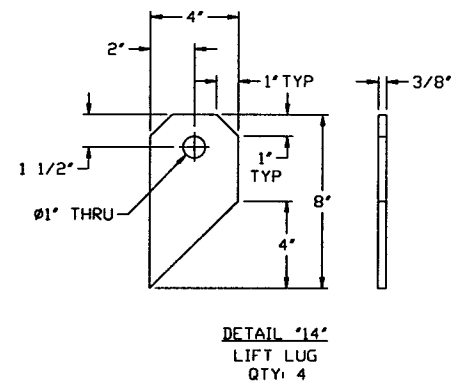
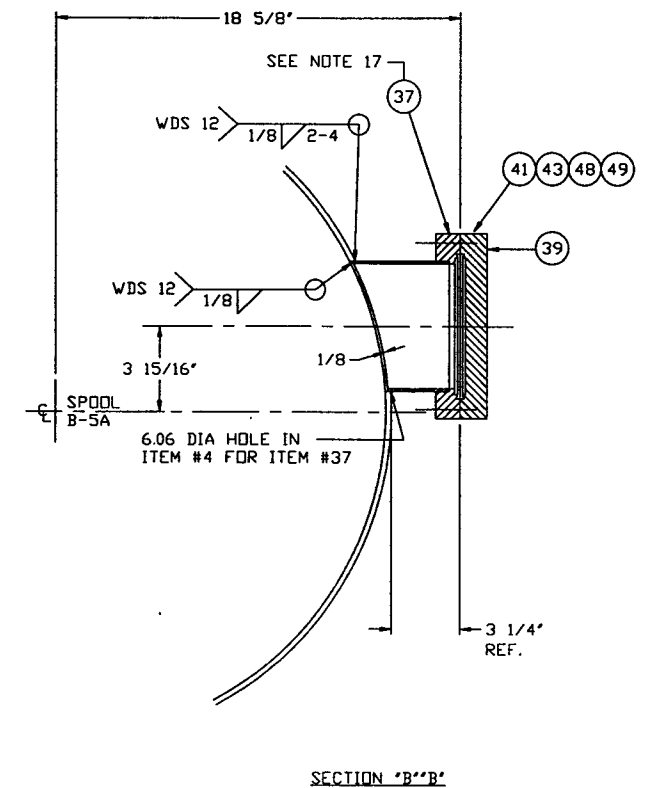
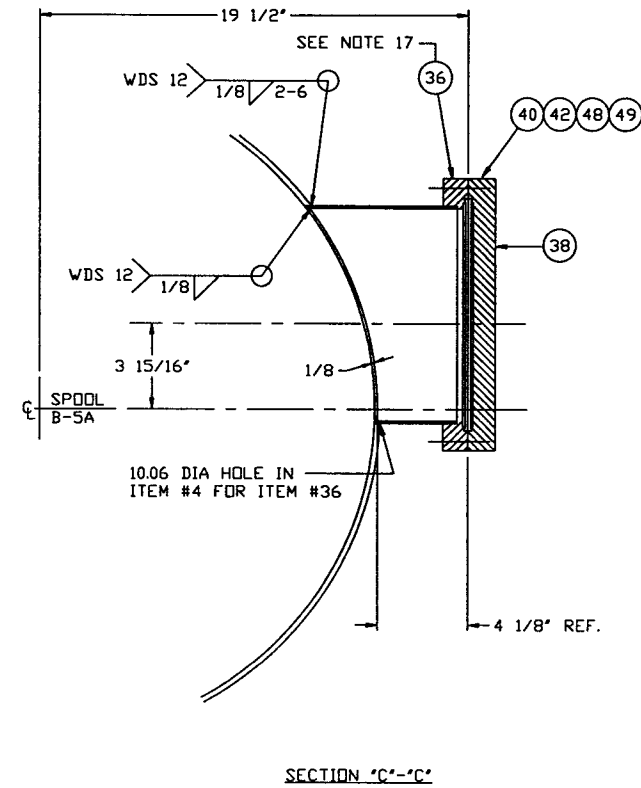
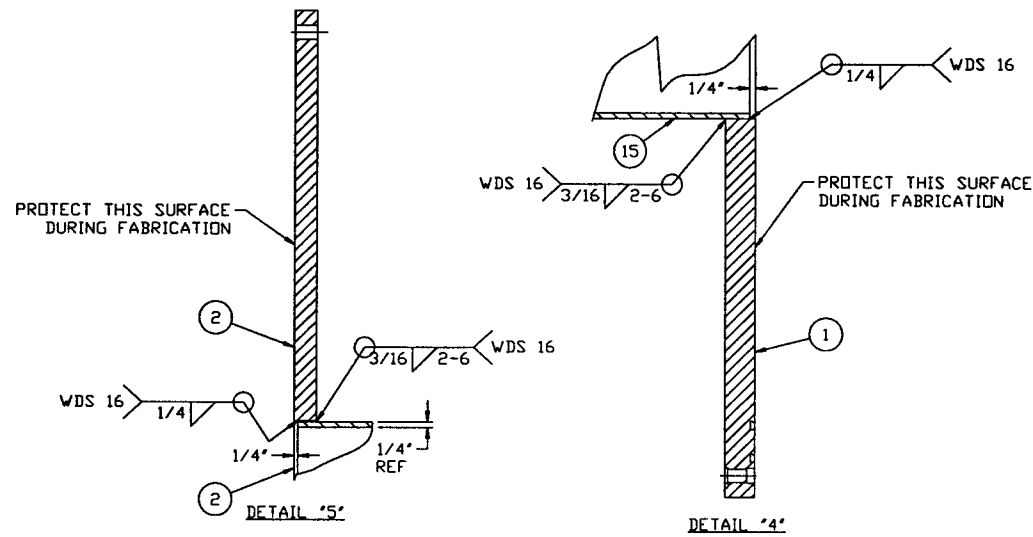


<b>PROCESS SYSTEMS INTERNATIONAL INC.</b> 20 WALKUP DR WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL B-5A 30.50"ID x 60.50"ID MODE CLEANER TUBE LIGO VACUUM EQUIPMENT			
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SCALE	NDNE	SHEET	2 OF 5

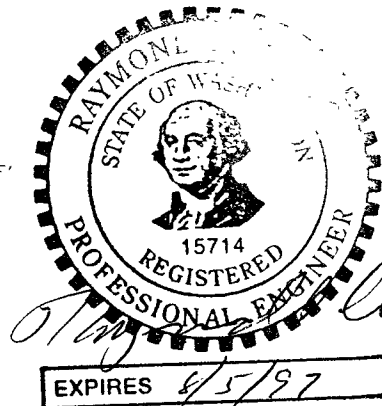
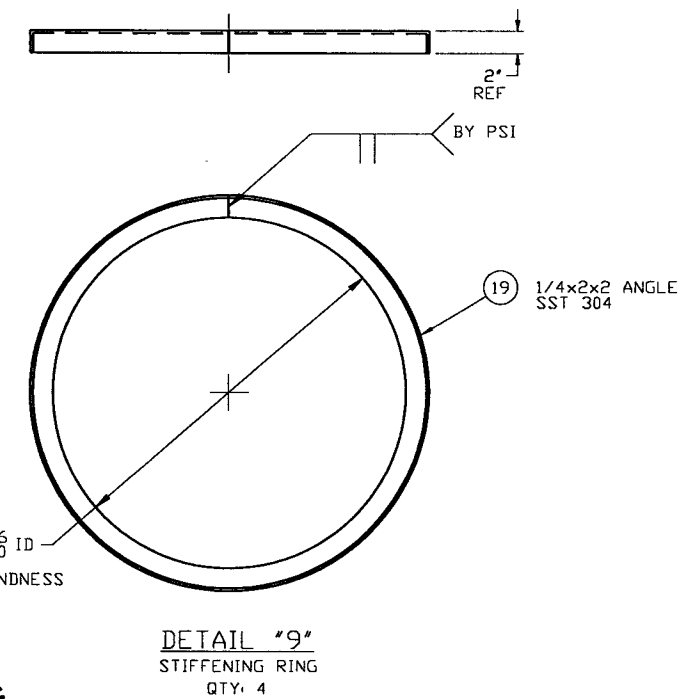
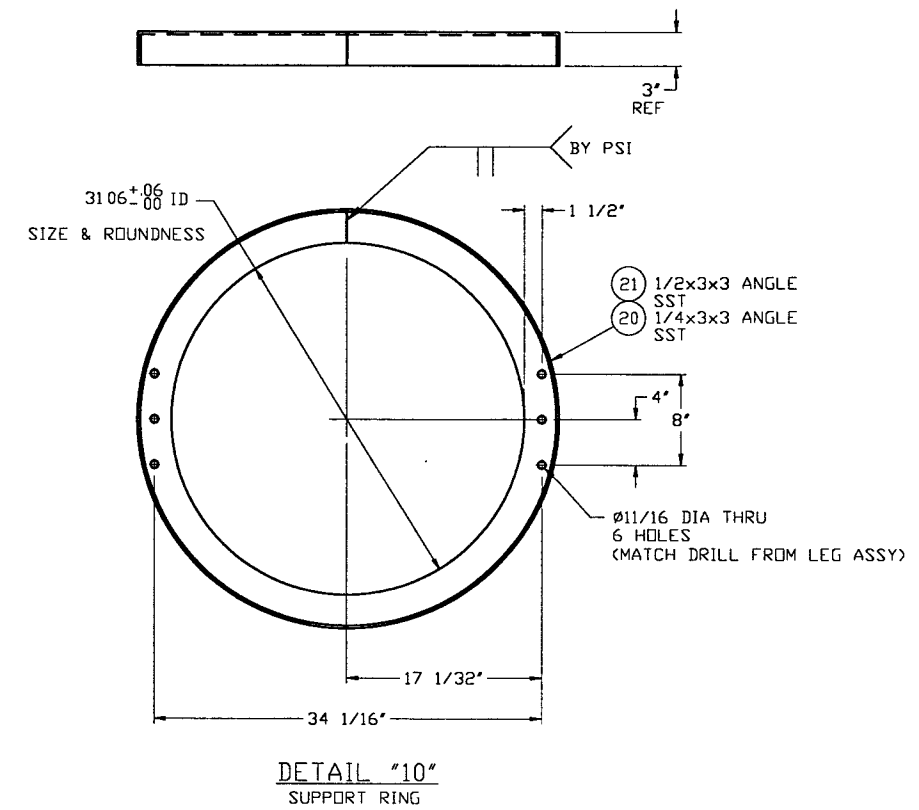
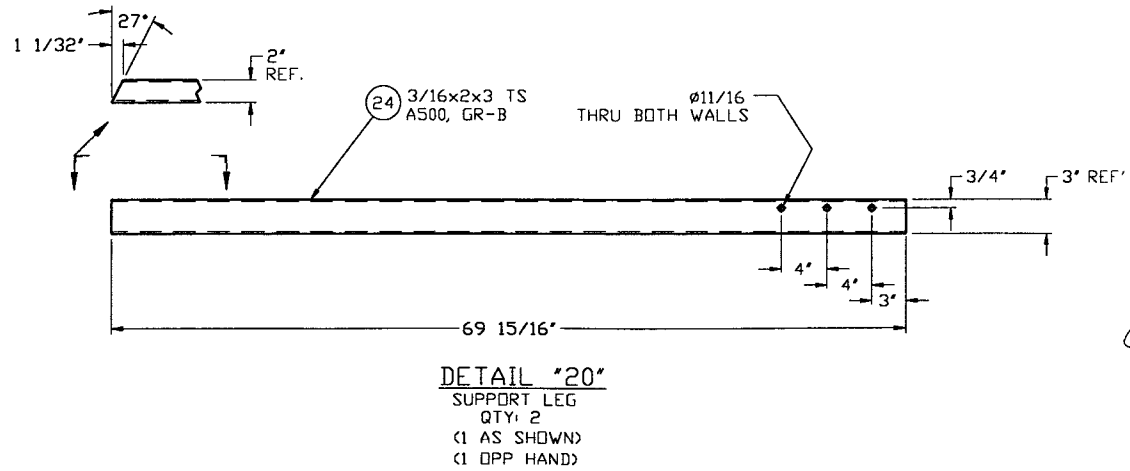
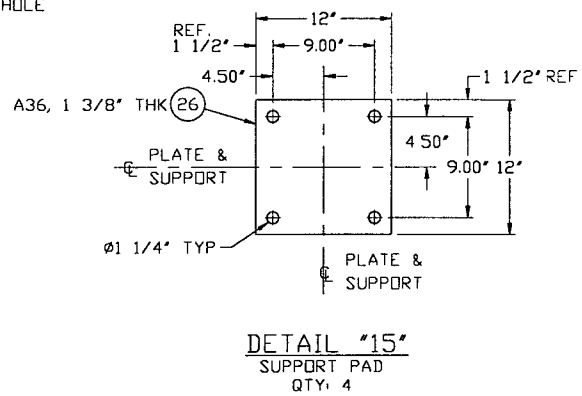
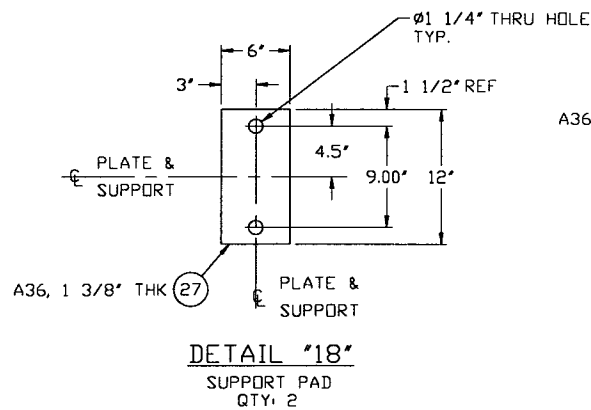
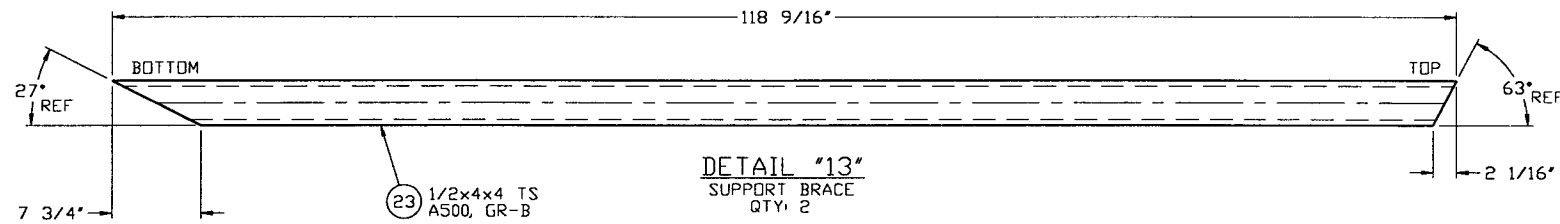
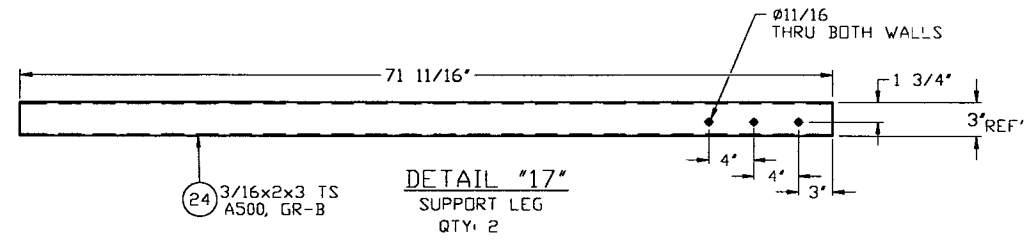
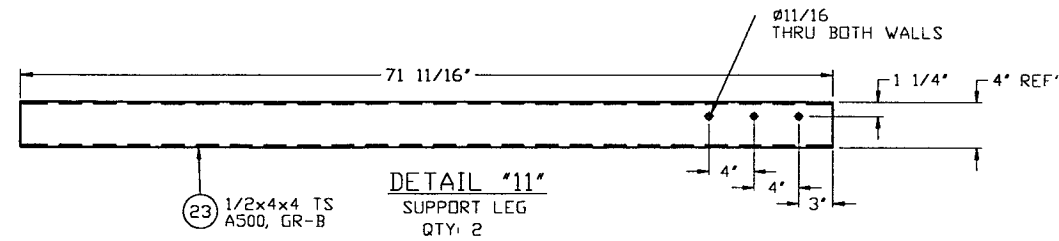
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<b>PROCESS SYSTEMS INTERNATIONAL INC.</b> 20 WALKUP DR WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL B-5A 30.50"ID x 60.50"ID MODE CLEANER TUBE LIGD VACUUM EQUIPMENT			
CAD FILE	SIZE	DWG. NO.	REV
V0494BSA/494BSAS3	D	V049-4-B5A	3
SCALE	1/16	SHEET	3 OF 5



<b>PROCESS SYSTEMS INTERNATIONAL, INC.</b> 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL B-5A 30.50"ID x 60.50"ID MODE CLEANER TUBE LIGO VACUUM EQUIPMENT			
CAD FILE	SIZE	DWG. NO.	REV.
V0494BSA/494BSAS4	D	V049-4-B5A	3
SCALE	1/4"	SHEET	4 OF 5



SEE SHEET 1 FOR REVISIONS

<b>PROCESS SYSTEMS INTERNATIONAL INC.</b> 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL B-5A 30.50" ID x 60.50" ID MODE CLEANER TUBE LIGO VACUUM EQUIPMENT			
CAD FILE V0494B5A/494B5A55	SIZE D	DWG. NO. V049-4-B5A	REV 3
SCALE NONE	SHEET 5 OF 5		