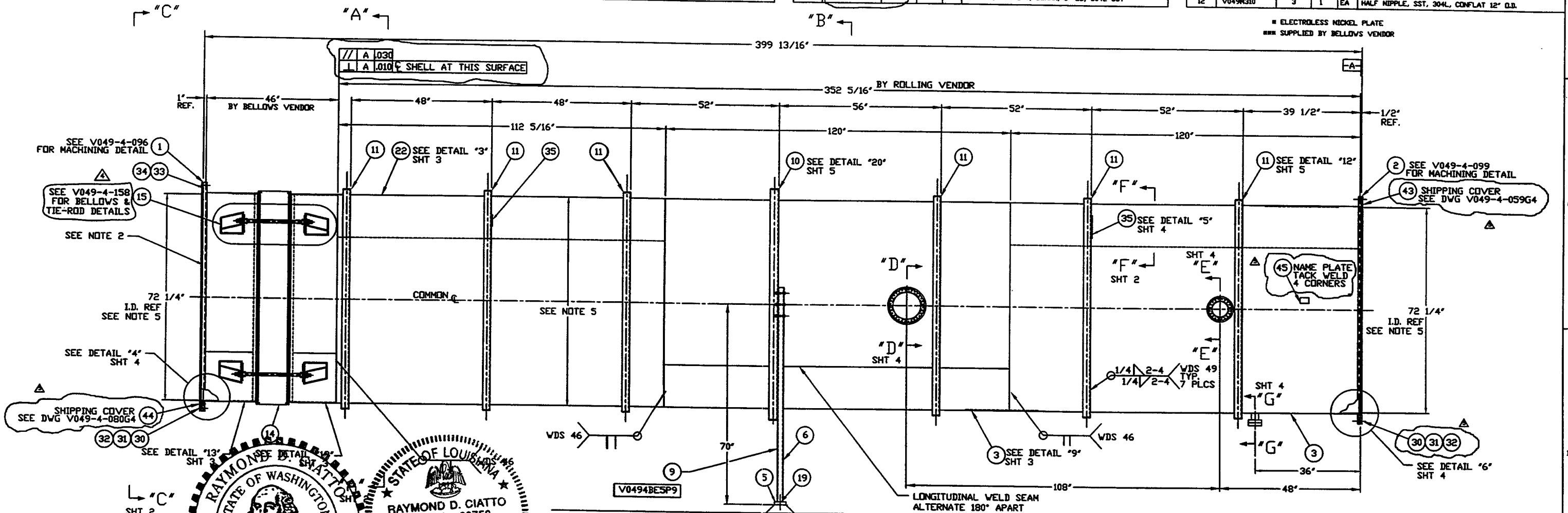


ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION
37	V049H314		3	EA	HALF NIPPLE, SST, 304L, CONFLAT, 4 1/2" O.D.
38	202557		3	EA	FLANGE, CONFLAT, BLANK, 4 1/2" O.D.
39	202558		3	EA	GASKET, COP COFH, CONFLAT, 4 1/2" O.D.
40	V049H776		8	EA	BOLT, 18-8 SST, HEX HD, 5/16-18 x 2 1/4 LG.
41	V049H782		60	EA	NUT, SILICON BRZ, HEX 5/16-18
42	V049H785		120	EA	WASHER, FLAT, 5/16, 18-8 SST.
43	V0494059G5		1	EA	SHIPPING COVER ASSY
44	V0494080G5		1	EA	SHIPPING COVER ASSY
45	V049H740		1	EA	PSI NAME PLATE, 2" X 3"

ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION
25	V0494195		1	EA	FLANGE, CONFLAT, BLANK, 12" O.D., 304L SST
26	V049H777		32	EA	BOLT, HEX HD, 5/16-18 x 2 1/2 LG, 18-8 SST
27					
28	V049H263		3	EA	GASKET, COPFH, CONFLAT, 8" O.D.
29	202552		3	EA	GASKET, COPFH, CONFLAT, 12" O.D.
30	202678		3	EA	BOLT, SA193 B7, HEX, 7/8"-9 UNC X 4" LG.
31	202679		3	EA	NUT, SA193 2H, HEX, 7/8"-9 UNC
32	202581		3	EA	WASHER, STL, 1 3/4" O.D. X 15/16" ID X 1/4" THK.
33	V049H020		1	EA	O-RING, VITON, PER SPEC V049-2-045
34	V049H021		1	EA	O-RING, VITON, PER SPEC V049-2-045
35	V049H852		3	EA	BAR, 4" X 3/8" THK, 304 SST
36					

ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION
13	V049H313		3	EA	HALF NIPPLE, SST, 304L, CONFLAT 8" O.D.
14	V0494BESPI		1	EA	BELLOWS ASSY PER SPEC V049-2-017
15	###		4	EA	TIE-ROD ASSY PER DWG V049-4-158
16					
17	V049H753		3	EA	BOLT, 5/8-11 UNC X 3 1/2" LG, A325
18	V049H755		3	EA	NUT, 5/8-11 UNC, A325
19			3	EA	ANCHOR HILTI HVA 1"x8 1/4" EMBEDMENT
20	V049H773		3	EA	WASHER, LOCK, 5/8 A325
21					
22	V0494BESPP2		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	V0494196		1	EA	FLANGE, CONFLAT, BLANK, 8" O.D., 304L SST

ITEM	PART NUMBER	SUFFIX	QTY	UM	DESCRIPTION
1	V0494096		1	EA	FLANGE, GROOVED, 72 1/4" ID X 80" O.D.
2	V0494099		1	EA	FLANGE, FLAT FACED, 72 1/4" ID X 80" O.D.
3	V0494BESPP3		2	EA	SHELL, 304/304L SST, 1/4" THK.
4	V049H921		1	EA	RING, SST 304, 11" I.D. x 16" O.D. x 1/2" THK.
5			1	EA	BAR, A36, 6" X 1 3/8" THK
6			1	EA	TUBE STEEL (TSD) 4" X 2" X 3/16" A500 GR B
7	V049H985		1	EA	RING, SST 304, 7" I.D. x 11" O.D. x 1/2" THK.
8					
9	V0494BESPP9		2	EA	SUPPORT ASSY.
10	V049H814		1	EA	SUPPORT RING, ANGLE, 4" X 4" X 1/4" 304 SST
11	V049H813		1	EA	SUPPORT RING, ANGLE, 2 1/2" X 2 1/2" X 1/4" 304 SST
12	V049H310		3	EA	HALF NIPPLE, SST, 304L, CONFLAT 12" O.D.



RAYMOND D. CIATTO
 STATE OF WASHINGTON
 REGISTERED PROFESSIONAL ENGINEER
 15714
 EXPIRES 8/31/99

RAYMOND D. CIATTO
 REG. No. 26750
 REGISTERED PROFESSIONAL ENGINEER
 IN
 CIVIL ENGINEERING
 STATE OF LOUISIANA
 6/26/97

TAG NO'S: WBE-5, LBE-5

- NOTES:
11. TIGHTEN TIE-ROD NUTS WITH BELLOWS IN "FREE" POSITION TO 100 FT-LBS PRIOR TO LEAK TEST.
 10. LEAK TEST & METHOD PER PSI SPEC: V049-2-014
 9. CERTIFIED MANUFACTURER'S MATERIAL TEST REPORTS REQUIRED, AS NOTED.
 8. BOLT HOLES OF ALL FLANGES TO STRADDLE VERTICAL CENTERLINE ±.015.
 7. CLEAN PER SPEC: V049-2-015
 6. DO NOT USE CARBON STEEL BRUSHES OR BRUSHES CONTAMINATED WITH CARBON STEEL ON STAINLESS OR ALUMINUM MATERIAL.
 5. THE CENTERLINES OF ALL SHELLS & FLANGES ARE TO LIE ON THE COMMON CENTERLINE WITHIN ±1/16"
 4. SPOOL FABRICATION TO BE IN ACCORDANCE WITH SPEC. V049-2-097.
 3. FOR FLANGE DETAILS SEE DWGS. V040-4-096 & V049-4-099
 2. THIS FLANGE INCLUDES AN ANNUAL CHANNEL BETWEEN O-RINGS, MANIFOLD TO A SINGLE PUMPOUT PORT ON EACH CHAMBER, SEE DWG V049-4-061.
 1. THE ROLLING VENDOR IS RESPONSIBLE FOR PRODUCING SHELL ASSEMBLY SETS WHICH STACK UP TO THE OVERALL DIMENSIONS NOTED AS "BY ROLLING VENDOR". APPROX. WEIGHT: 8247#
16. CONFLAT FLANGES ARE TO HAVE PROTECTIVE COVERS AT ALL TIMES DURING & AFTER MANUFACTURING.
 15. STRUCTURAL STEEL FABRICATION TO BE IN ACCORDANCE WITH SPEC. V049-2-039.
 14. EACH SHELL ASSEMBLY SET IS TO HAVE EACH OF THE PIECES MARKED WITH THE SAME SET NO. THE NUMBER IS TO BE MADE FROM THE DRAWING NO. PLUS A SEQUENTIAL NO, V0494BES-A,-B ETC.
 13. PLATES PRIOR TO ROLLING MUST HAVE DIAGONAL CORNER TO CORNER DIMENSIONS WITHIN 1/16" OF EACH OTHER.
 12. MACHINING & ROLLING PER SPEC V049-2-136.

SYMBOL	CHARACTERISTIC	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	REV	DESCRIPTION
□	FLATNESS		5	ISSUED FOR FAB/SHIPPING AS NOTED
○	CYLINDRICITY		4	ISSUED FOR FABRICATION
∥	PARALLELISM		3	DESIGN UPDATE/SHELL ONLY
⊥	PERPENDICULARITY		2	FABRICATION (SHELL ONLY)
∠	ANGULARITY		1	DESIGN UPDATE/FABRICATION (BELLOWS ASSY. ONLY)
⊕	TRUE POSITION	DO NOT SCALE THIS DRAWING	0	ISSUED FOR FAB
⊙	CONCENTRICITY	USED ON NEXT ASSY.		

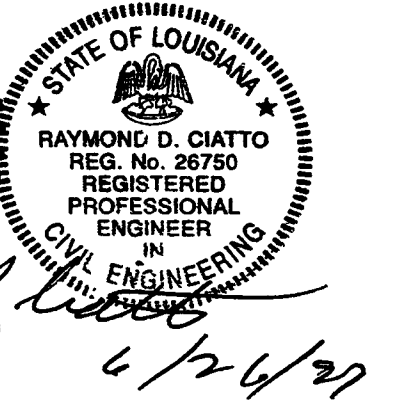
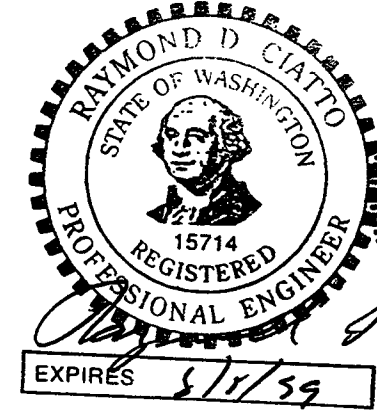
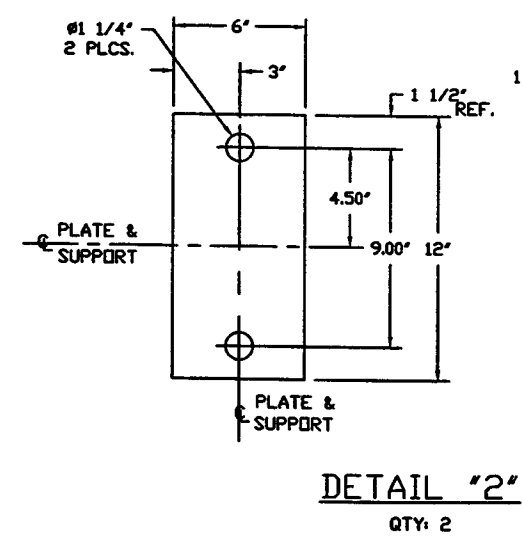
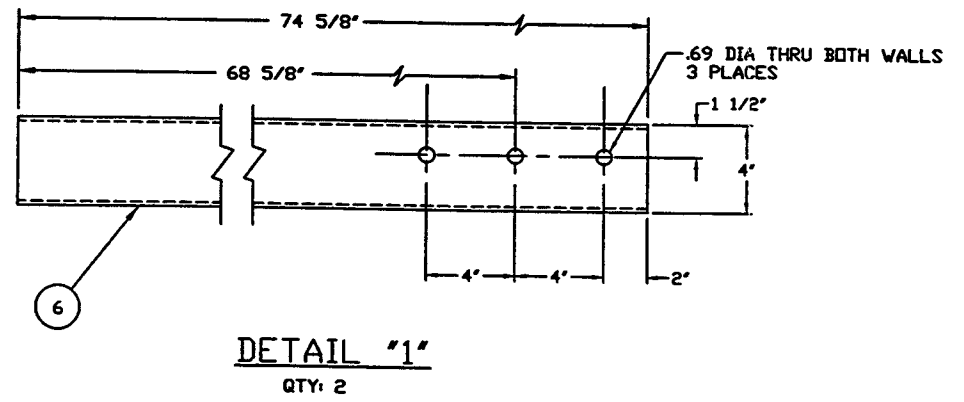
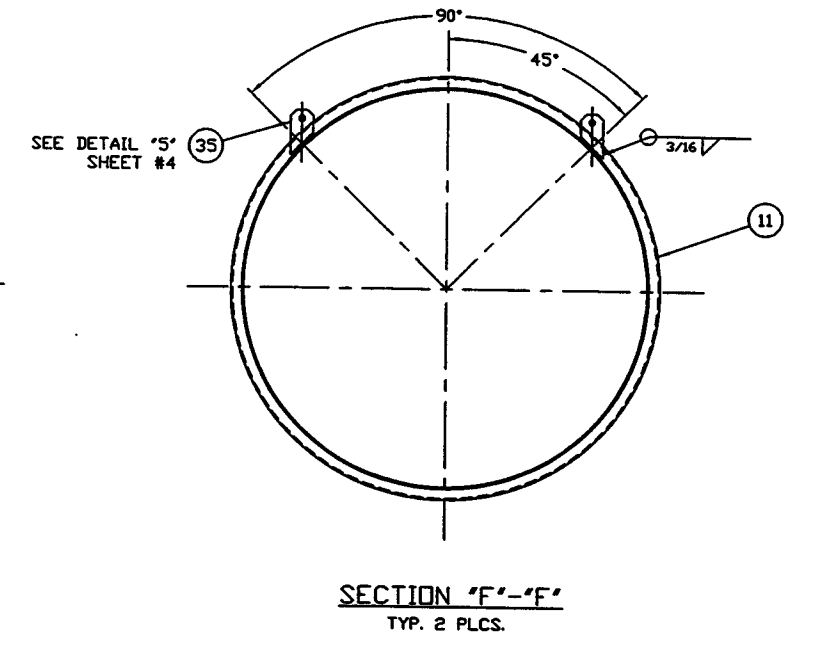
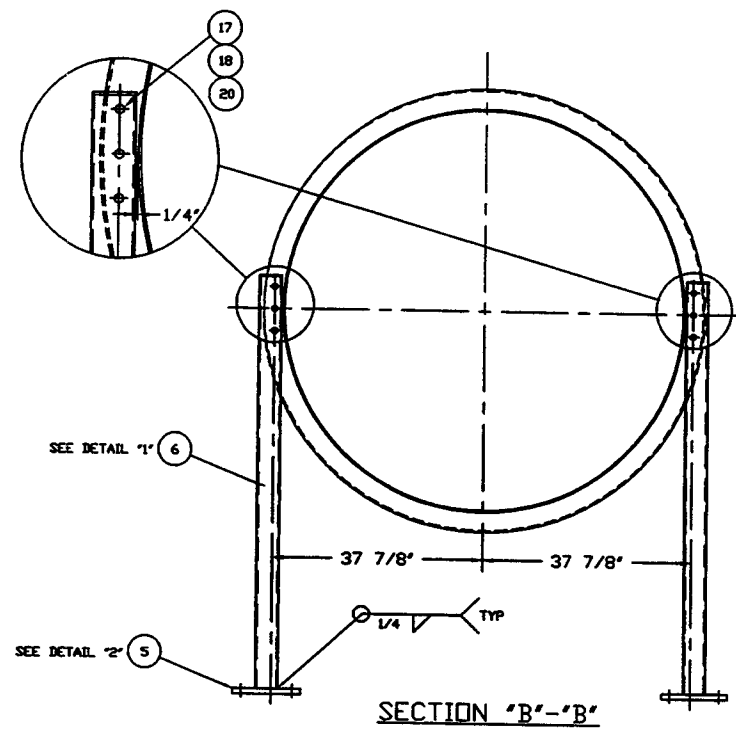
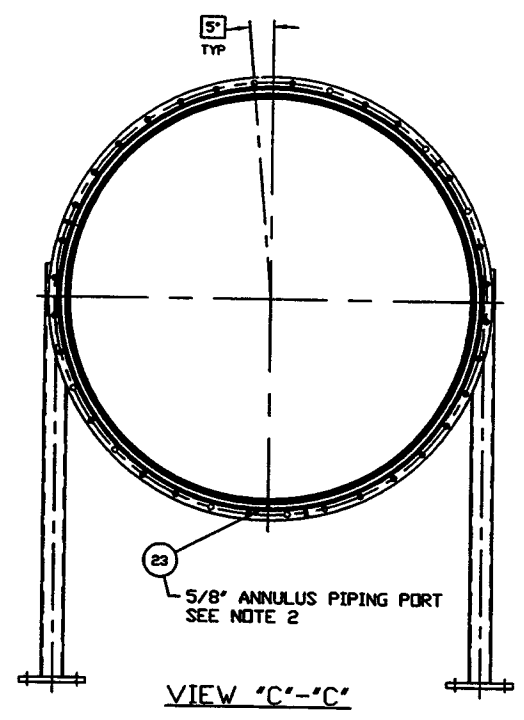
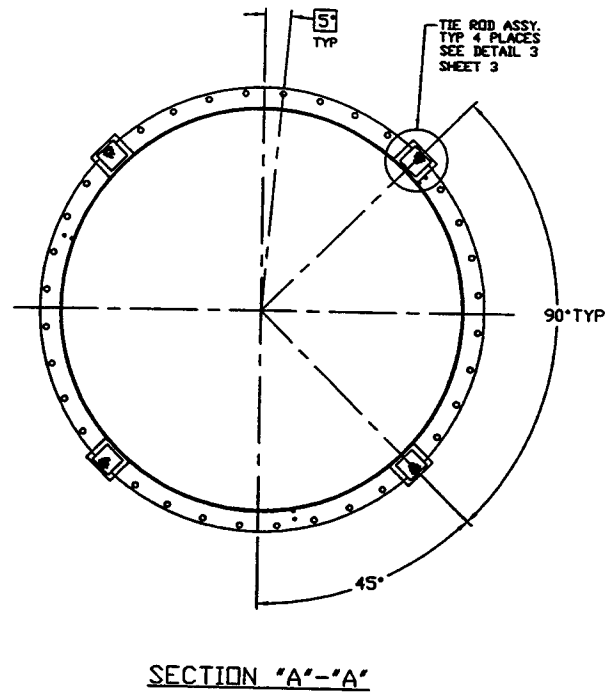
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5/20/97	SPIDER			
11/22/96	PV			
10/23/96	REC			
10/1/96	BA			
9/11/96	BAR			
04/29/96	MA			

FILE NO.	REV	DATE	BY
V0494BESPI	D		
V0494-BE5	5		

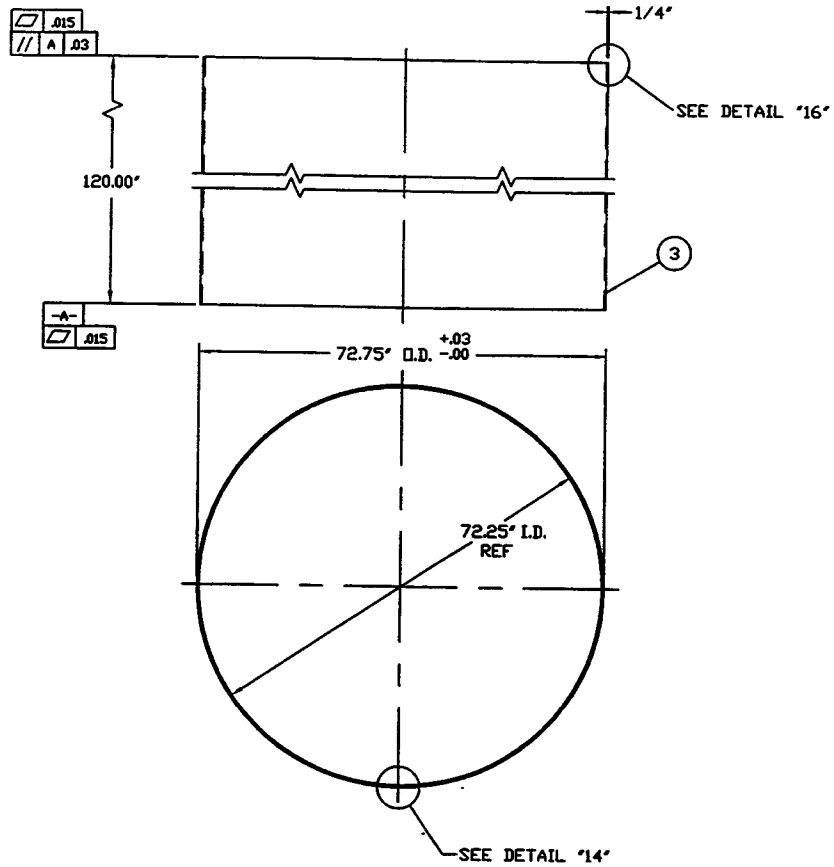
PROCESS SYSTEMS INTERNATIONAL INC.
 20 WILKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

SPOOL BE-5
 72.25" ID x 72.25" ID
 LIGO VACUUM EQUIPMENT

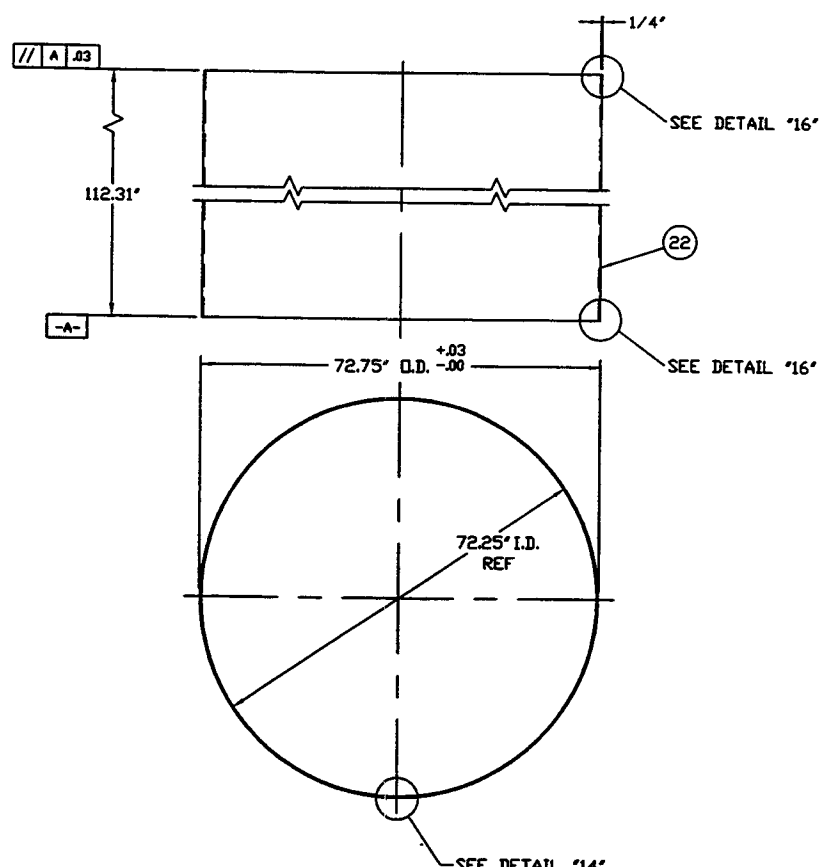
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 SHEET: 1 OF 5



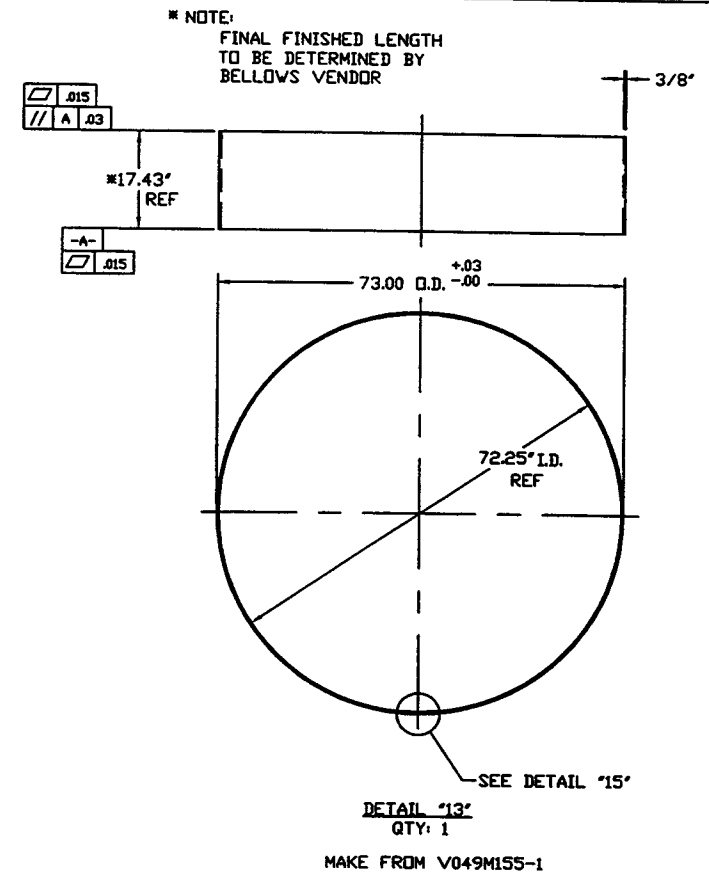
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SPOOL BE-5 72.25"ID x 72.25"ID LIGD VACUUM EQUIPMENT			
<small>ORD. FILE</small> V0494BES/4BES2	<small>REV.</small> D	<small>DWG. NO.</small> V049-4-BE5	<small>REV.</small> 5
<small>SCALE</small> 1/16 & 1/4	<small>SHEET</small> 2	<small>OF</small> 5	<small>DATE</small> May 26, 1958



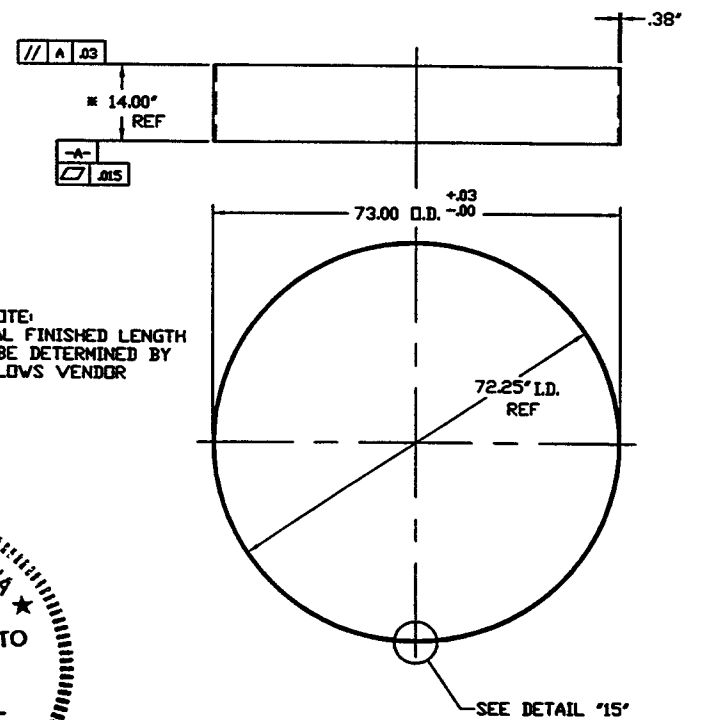
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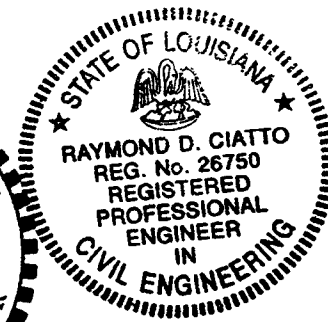
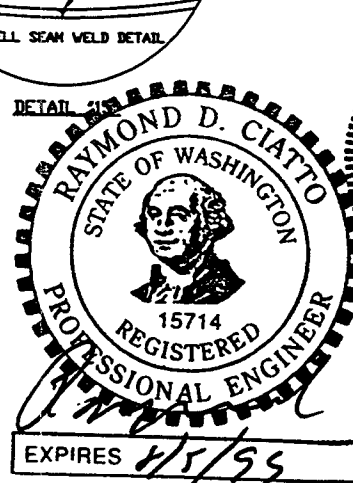
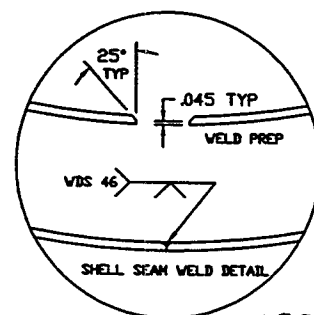
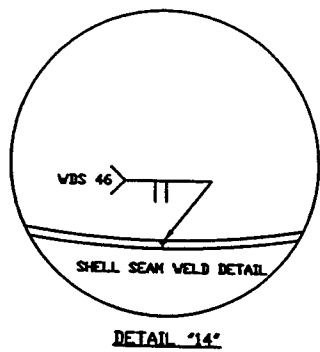
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MAKE FROM V049M154-1



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



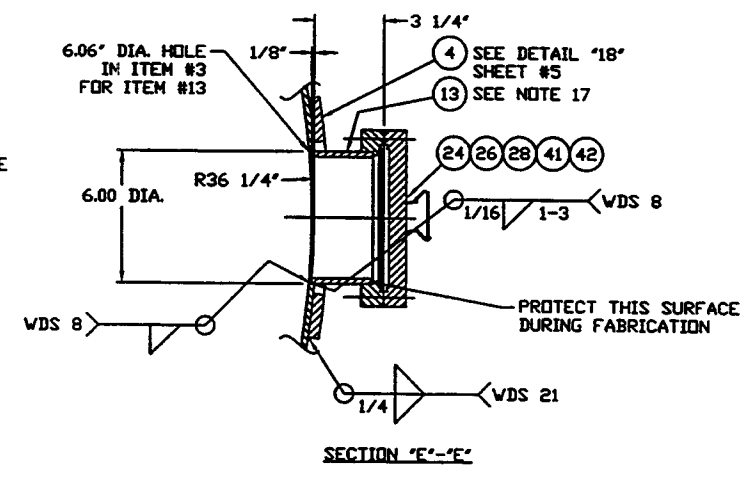
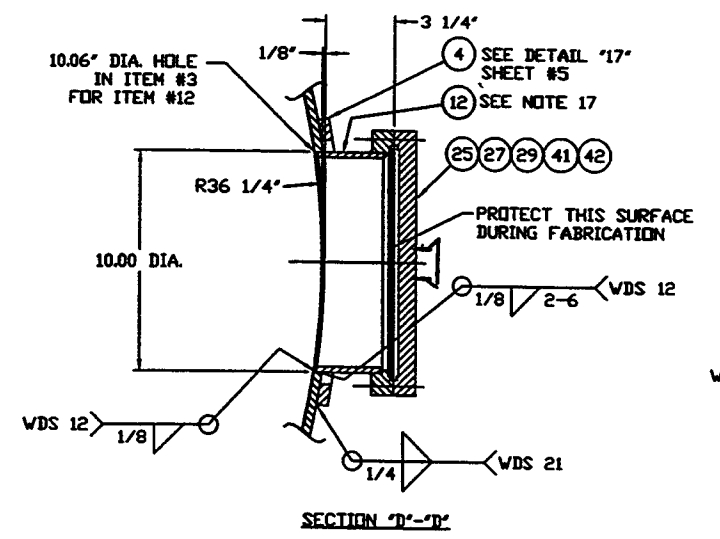
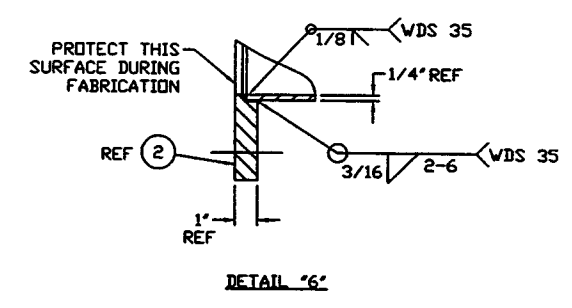
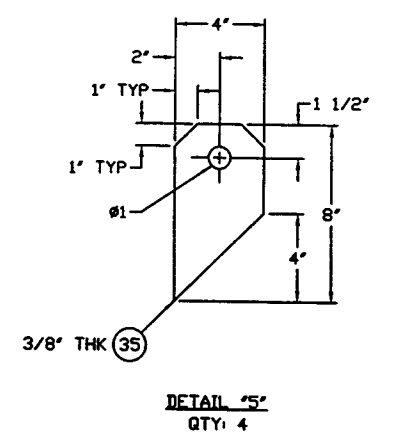
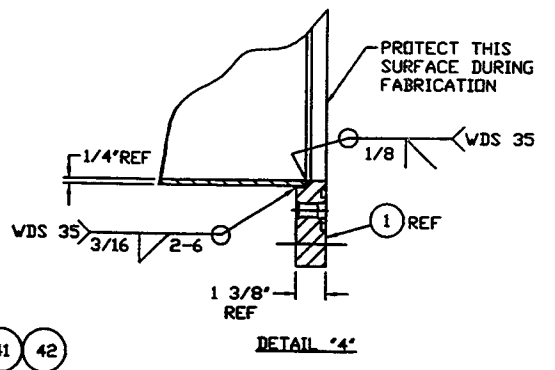
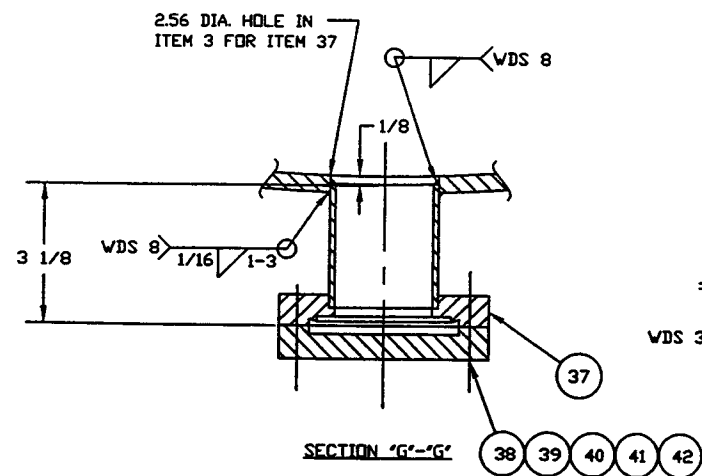
DETAIL "19"
QTY: 1
MAKE FROM V049M155-1



Raymond D. Ciatto
6/26/97

PROCESS SYSTEMS INTERNATIONAL INC. 30 WILKIP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL BE-5 72.25" ID x 72.25" ID LIGD VACUUM EQUIPMENT			
CDR FILE V0494BES/4BES34	SIZE D	PNL. NO. V049-4-BE5	REV. 5
SCALE 1/16	SHEET 3 OF 5		

REV. 26, 1996 - 1102026

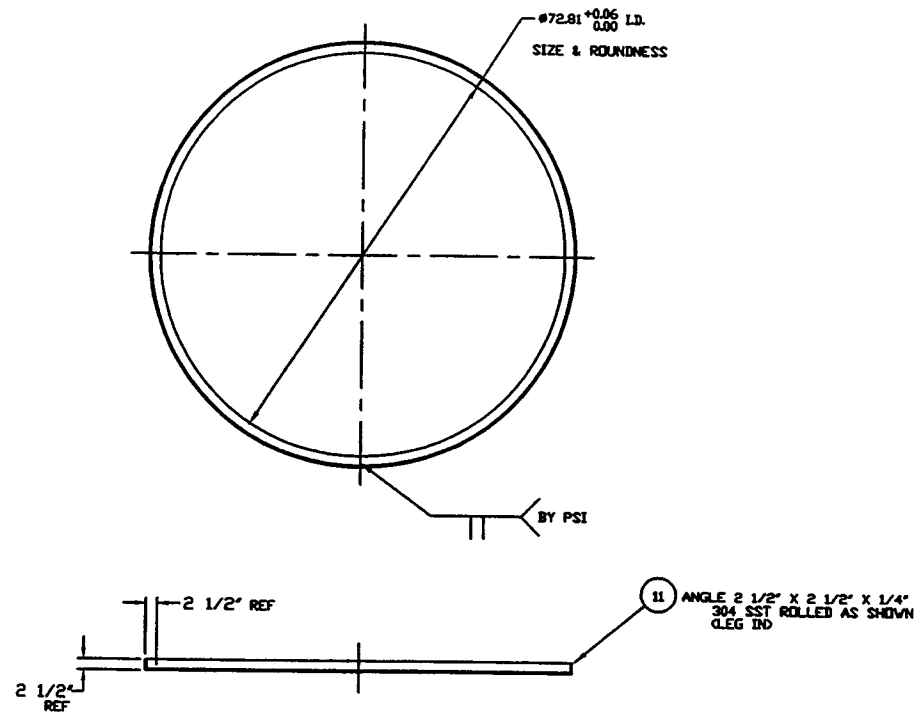


STATE OF WASHINGTON
 RAYMOND D. CIATTO
 REGISTERED PROFESSIONAL ENGINEER
 15714

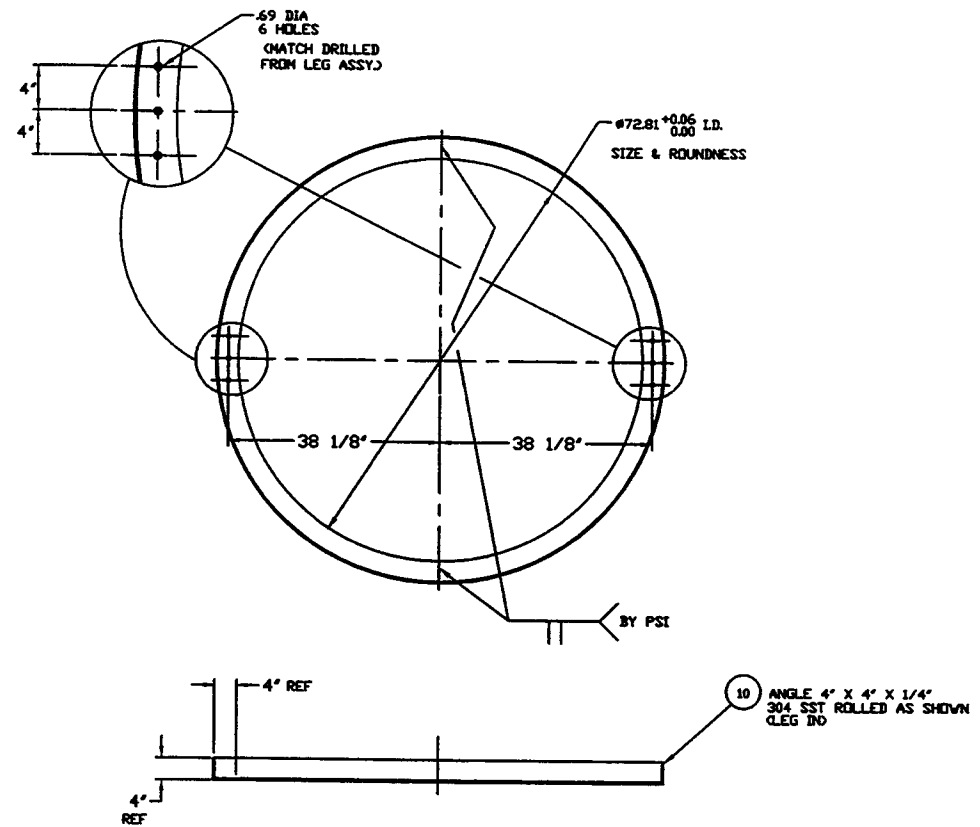
STATE OF LOUISIANA
 RAYMOND D. CIATTO
 REG. No. 26750
 REGISTERED PROFESSIONAL ENGINEER
 IN CIVIL ENGINEERING

EXPIRES 1/1/59 6/26/97

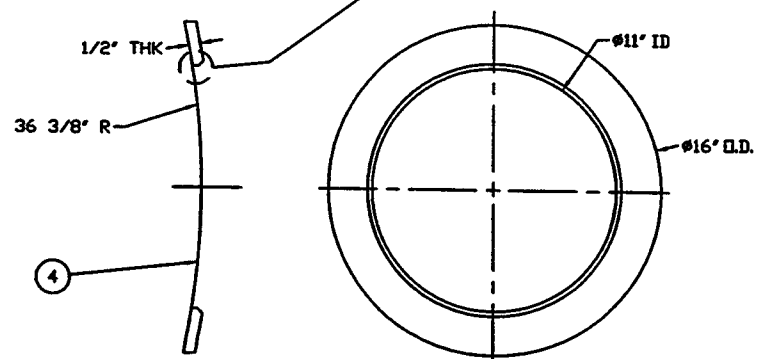
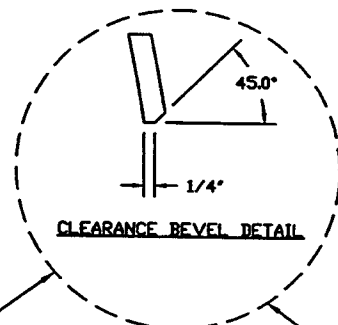
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SCALE 1/4	SHEET 4 OF 5	Nov 26, 1996 - 112319	



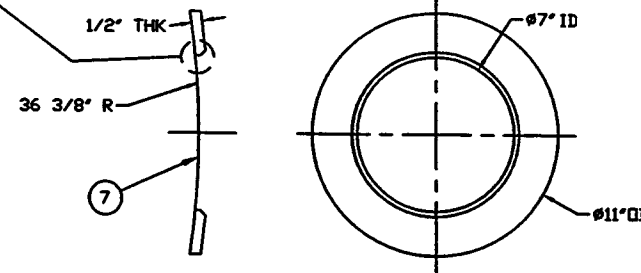
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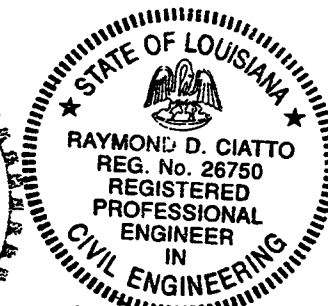
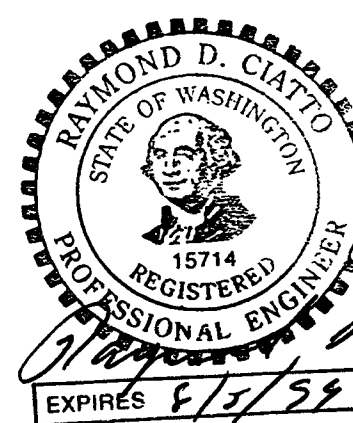
DETAIL '20'
QTY. 1



DETAIL '17'
QTY. 1



DETAIL '18'
QTY. 1



Raymond D. Ciatto
 6/26/97

PROCESS SYSTEMS INTERNATIONAL INC. 30 BALDWIN DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
SPOOL BE-5 72.25" ID x 72.25" ID LIGO VACUUM EQUIPMENT			
CIB FILE V0494BES/4BES35	SIZE D	DWG. NO. V049-4-BES	REV. 5
SCALE 1/16 & 1/4	SHEET 5 OF 5		

DEC 06, 1996 - 094130