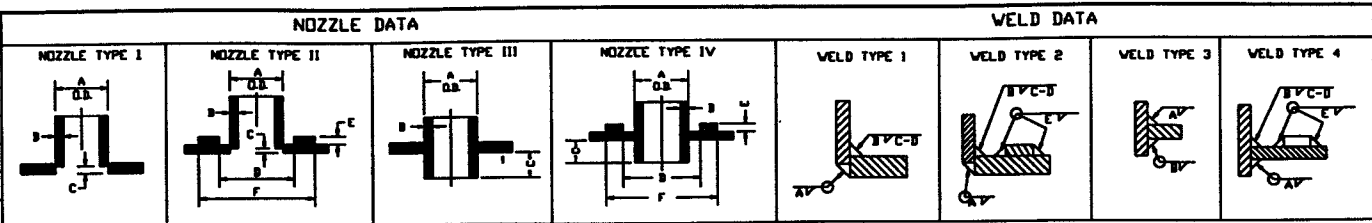


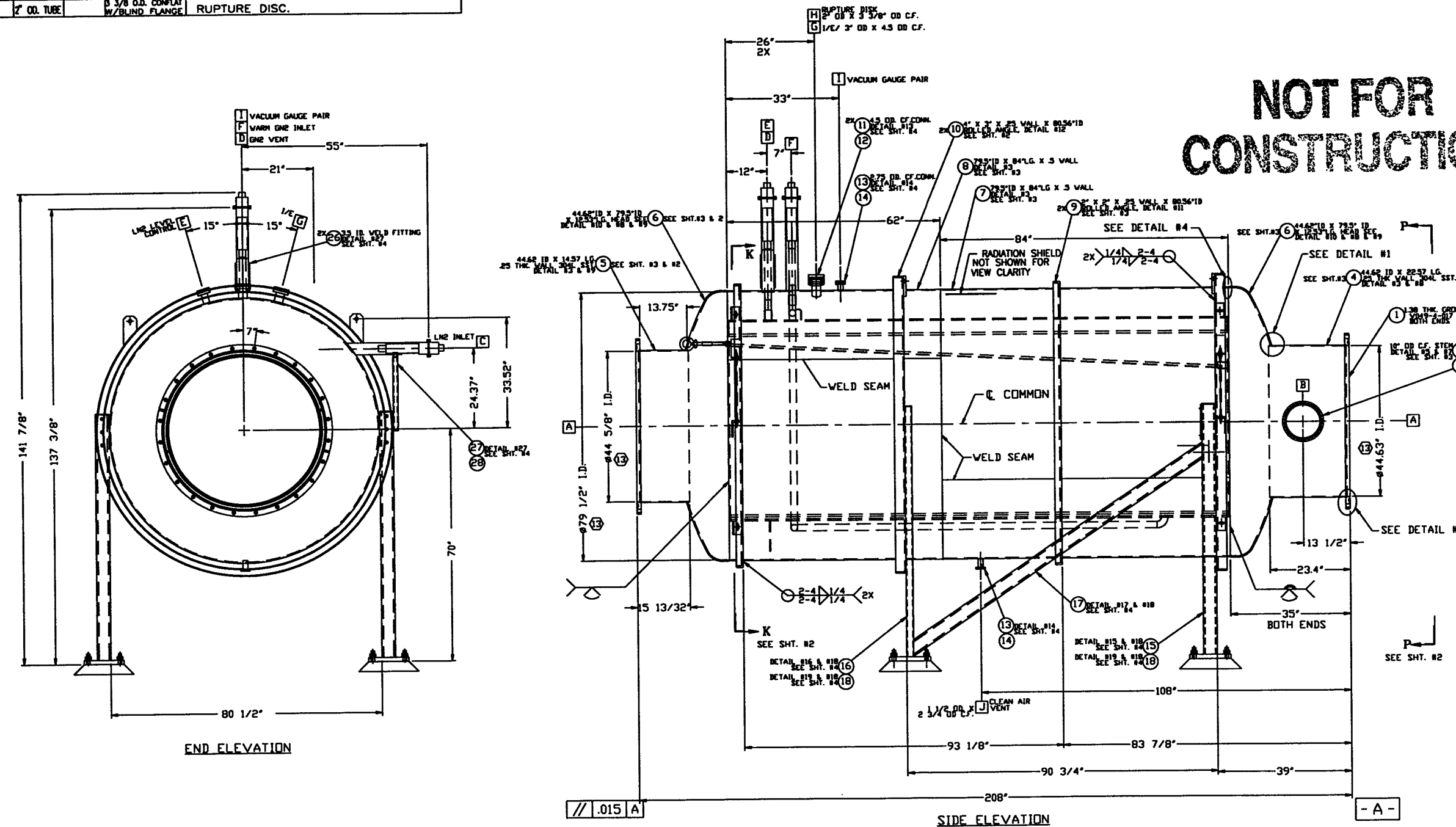
NOZZLE SCHEDULE				NOZZLE TYPE						WELD TYPE								
MARK	QTY	SIZE	RATING	TYPE	DESCRIPTION	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E
A	2	44.63" I.D.		SEE NOTE #1 & #2	LASER BEAM / ACCESS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B	1	10" OD TUBE		12" OD. CONFLAT W/BLIND FLANGE	PUMPOUT PORT													
C	1	1/2" X 2"		VAC. JACKET W/ BAYONET BLIND	LN2 INLET													
		1 1/2" I.D.		VAC. JACKET W/ BAYONET BLIND	GN2 VENT													
	1	2" O.D. TUBE		PANT LEG	LN2 LEVEL CONTROL													
F	1	1 1/2" X 3" PFE		VAC. JACKET W/ BAYONET BLIND	WARM GN2 INLET													
G	1	1/2" OD TUBE		1/2" OD CONFLAT	1/2" FEED THRU													
I	1	1 1/2" OD TUBE		2 3/4" OD. CONFLAT W/BLIND FLANGE	VACUUM GAUGE PAIR													
J	1	1 1/2" O.D. TUBE		2 3/4" OD. CONFLAT W/BLIND FLANGE	PURGE AIR													
H	1	2" OD. TUBE		3 3/8" OD. CONFLAT W/BLIND FLANGE	RUPTURE DISC.													



WELDING PROCEDURES					
VPS No.	PROCESS	MATERIAL	VPS No.	PROCESS	MATERIAL

DESIGN DATA	
CORROSION ALLOWANCE:	0
POSTWELD HEAT TREATMENT:	MBS
FIREPROOFING:	NA
RADIOGRAPHING:	NONE
MATERIALS	
HEADS:	SA 240-304L
SHELL:	SA 240-304, 304L
FLANGES:	SA 182 GRADE F, 304L
PIPE NECKS:	SA 312-304L; SA 240-304L
REINFORCING:	SA 240-304L
BOLTS & NUTS:	SA 193-B7
WEIGHTS:	
ASSEMBLED WT:	13000 LB.

NOT FOR CONSTRUCTION



13. I.D.'S ARE TO BE ALIGNED ALONG THERE COMMON C.
 12. LEAK TEST & METHOD PER PSI SPEC: V049-2-014, BY PSI.
 11. CERTIFIED MANUFACTURER'S MATERIAL TEST REPORTS REQUIRED.
 10. FLANGE BOLT HOLES TO STRADDLE NATURAL CENTERLINES OF VESSEL UNLESS NOTED.
 9. CLEAN PER SPEC: V049-2-015
 8. ALL NOZZLES TO BE CONTOURED TO INSIDE DIAMETER OF SHELL OR TO CURVATURE OF HEAD UNLESS OTHERWISE NOTED.
 7. DO NOT USE CARBON STEEL BRUSHES OR BRUSHES CONTAMINATED WITH CARBON STEEL OR STAINLESS OR ALUMINUM MATERIAL. GRINDING TO INTERNAL VACUUM BOUNDARY SURFACES IS NOT ALLOWED.
 6. DIMENSIONS SHOWN IN PARENTHESES ARE IN MILLIMETERS.
 5. HEADS ARE ASME F&D.
 4. CHAMBER FABRICATION TO BE IN ACCORDANCE WITH SPEC. V049-2-096
 3. FOR FLANGE DETAILS SEE DWG V049-4-017
 2. THESE FLANGES EACH INCLUDE AN ANNULAR CHANNEL BETWEEN O-RINGS. HANDLED TO A SINGLE PUMPOUT PORT ON EACH CHAMBER.
- ** 1. REGISTERED TRADEMARK, VARIAN VACUUM PRODUCTS; COMPATIBLE ALTERNATIVES ARE ACCEPTABLE.

Blaynwood S. Uatto, PE
 5/7/96
 (11010)
 LIGO 0961095-00-V

SYMBOL	CHARACTERISTIC	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES FRACTIONAL & 3 SHELL FINISH 120-30" BEING 12" TWO PLACE DECIMAL & 30 THREE PLACE DECIMAL & 60 FINISHED SURFACE RING 60 BROAD CORNERS BY OUT. REMOVE ALL BURRS
	FLATNESS	
	CYLINDRICITY	
	PARALLELISM	
	PERPENDICULARITY	
	ANGULARITY	
	TRUE POSITION	
	CONCENTRICITY	

DO NOT SCALE THIS DRAWING	0	ISSUED FOR FDR																	
USED ON	REV	DESCRIPTION	CHKD	DRWN	DATE	DCDR													

DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION

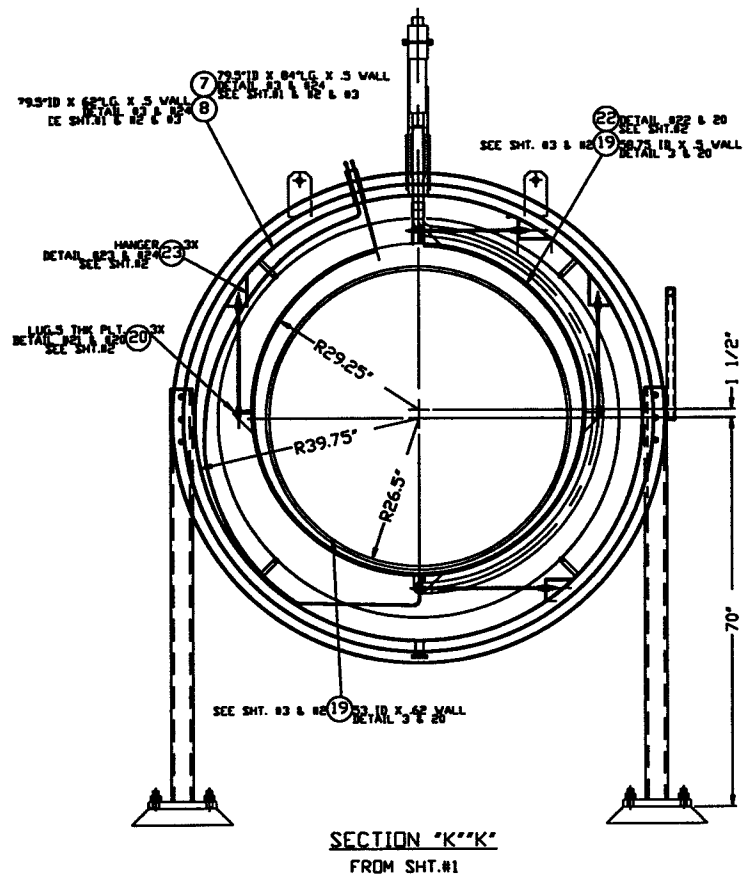
PROCESS SYSTEMS INTERNATIONAL, INC.
 30 WALNUT DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

80K CRYO PUMP, LONG GENERAL ARRANGEMENT LIGO VACUUM EQUIPMENT

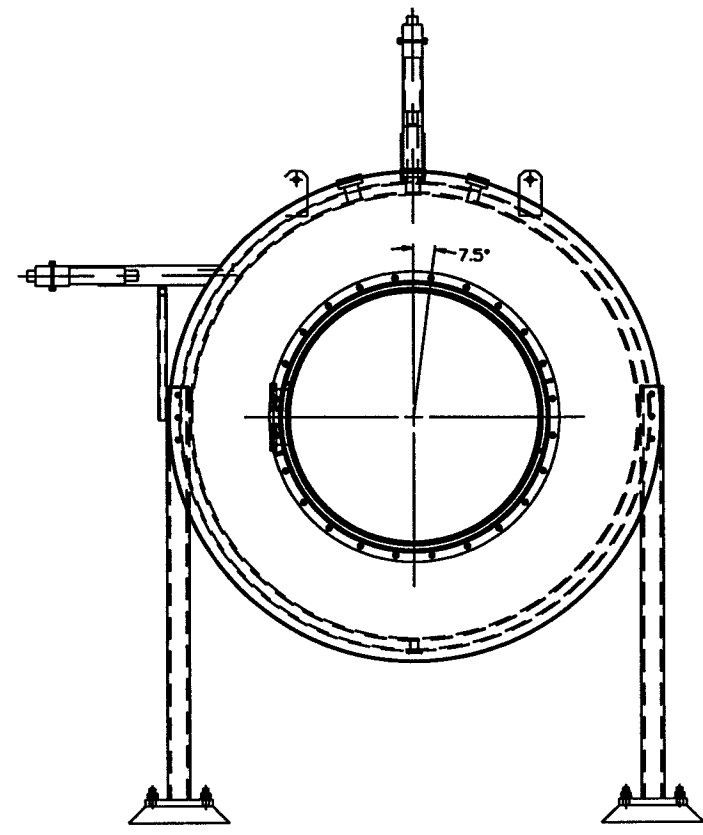
CAR FILE 494004SI
 SIZE D
 DWG NO. V049-4-004
 REV. 0

SCALE NONE
 SHEET 1 OF 5

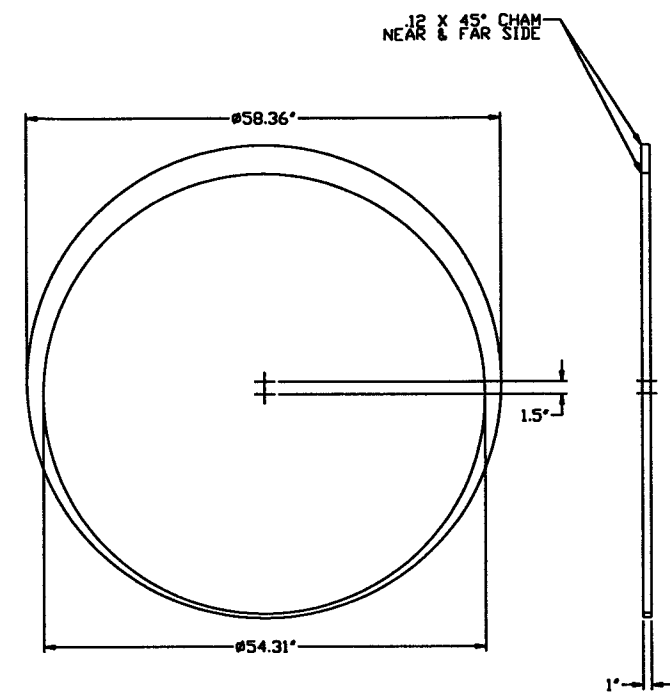
DATE 5/6/96
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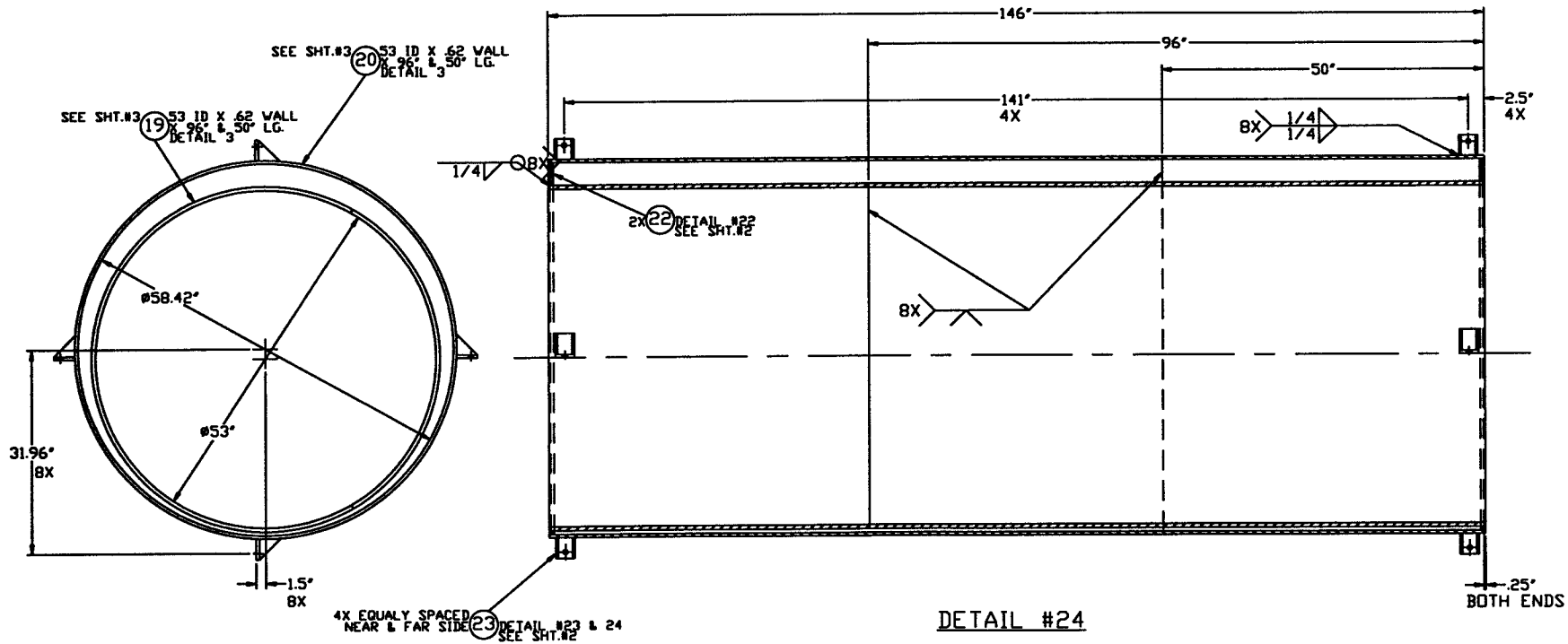
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FROM SHT.#1



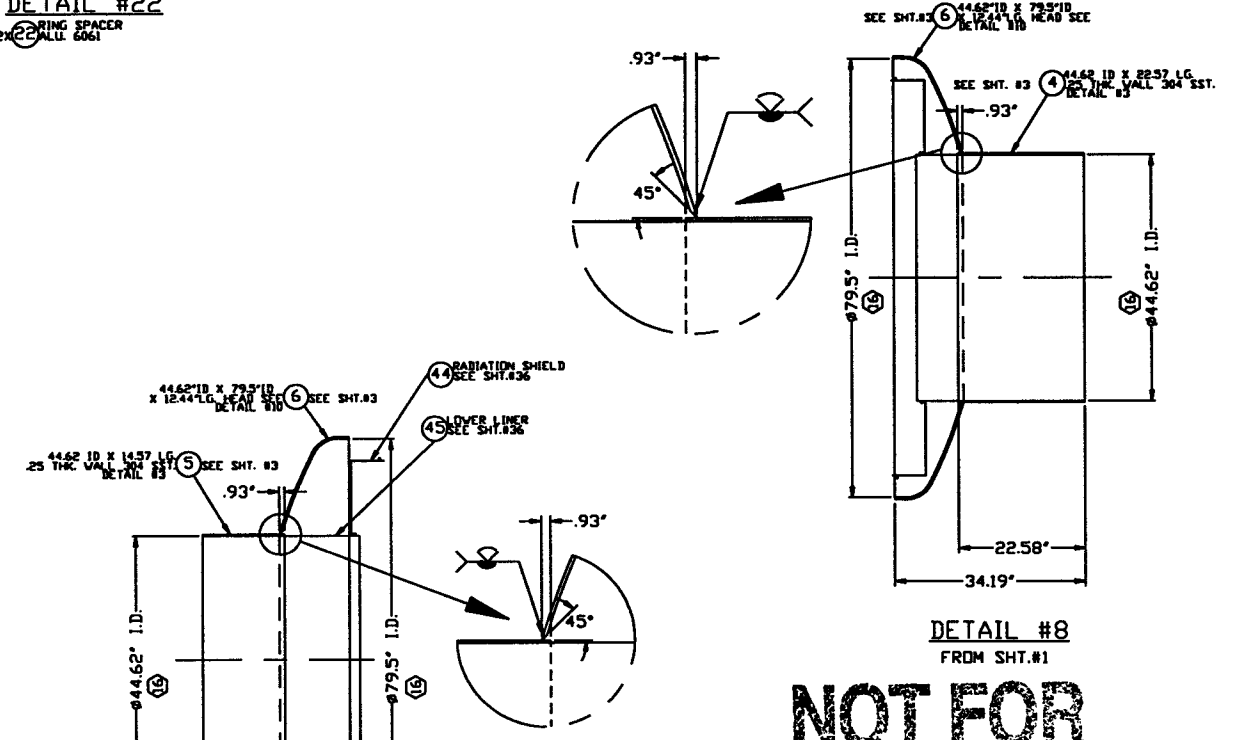
VIEW "P-P"
FROM SHT.#1



DETAIL #22
RING SPACER
25 THK WALL 6061



DETAIL #24



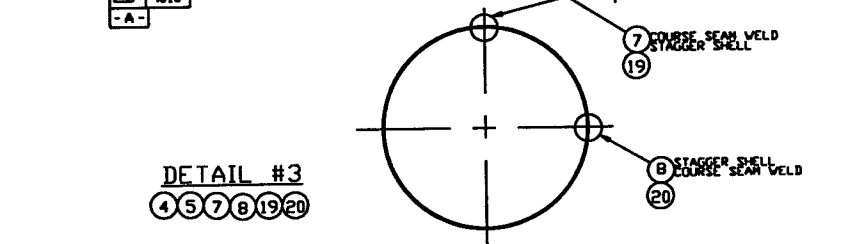
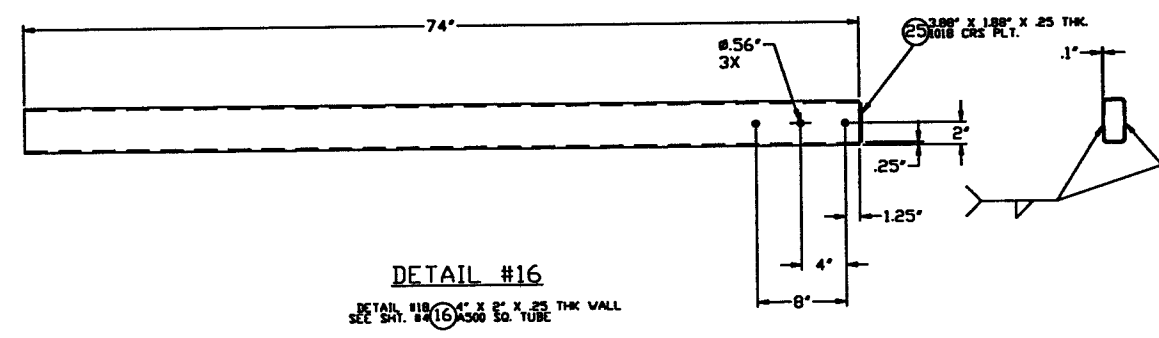
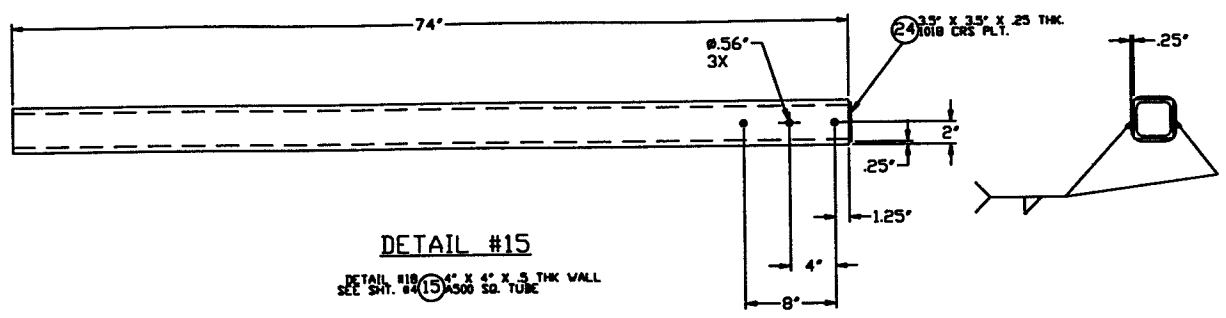
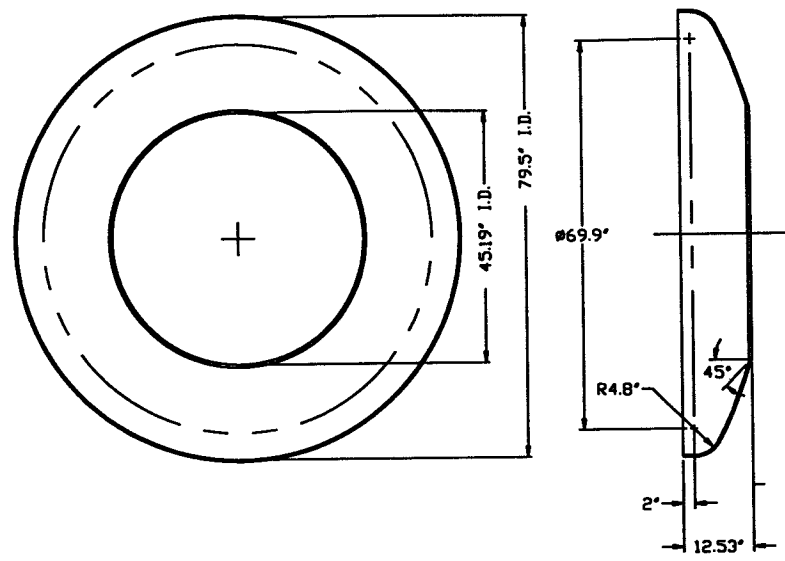
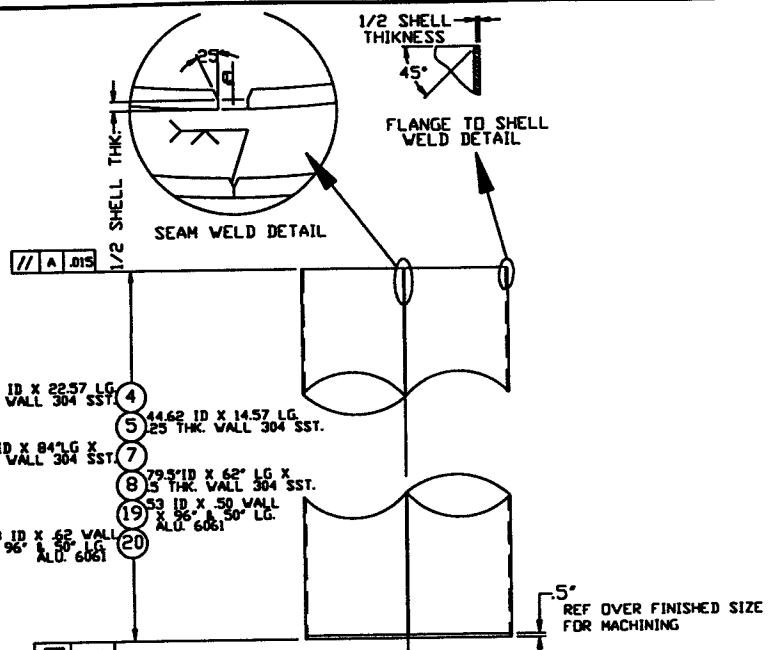
DETAIL #8
FROM SHT.#1

NOT FOR CONSTRUCTION

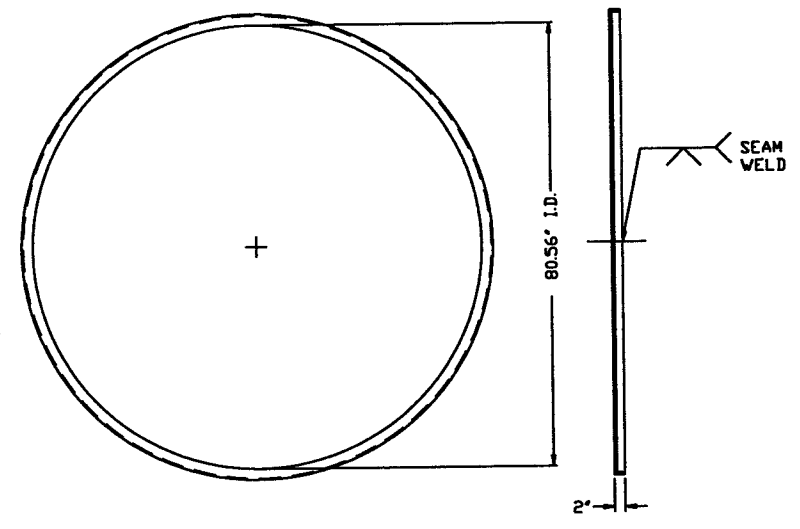
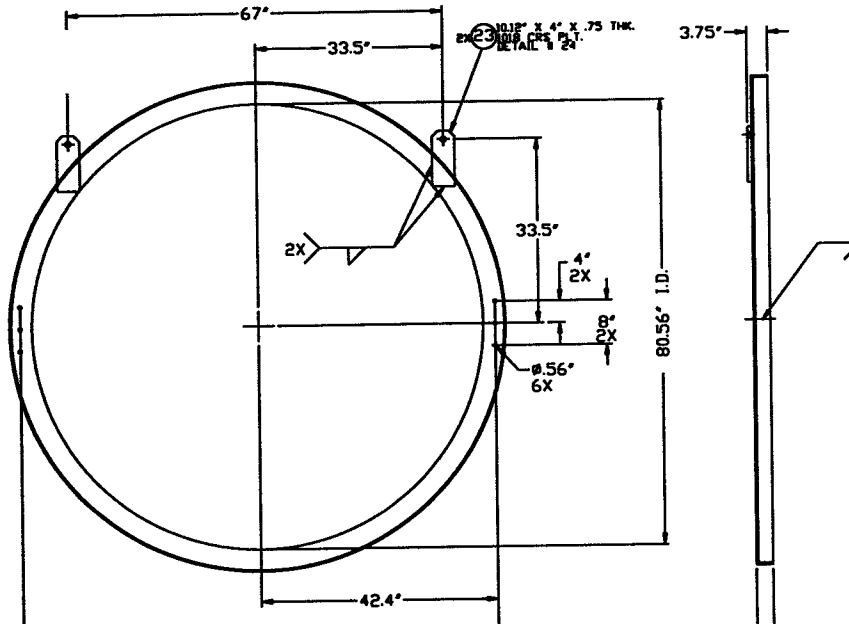
Blaynwood O. Co. to, ps
5/17/96
14 OLD 6160 D961095-00-V
SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALCUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
80K CRYO PUMP, LONG GENERAL ARRANGEMENT LIGO VACUUM EQUIPMENT			
CAD FILE 494004S2	SIZE D	DWG. NO. V049-4-004	REV. 0
SCALE NONE	SHEET 2 OF 5		

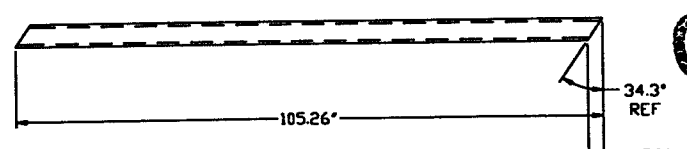
DEC 07, 1994 - 110804



DETAIL #10
FROM SH. #1
44.62 ID X 79.5 ID
25 THK WALL 304 SST

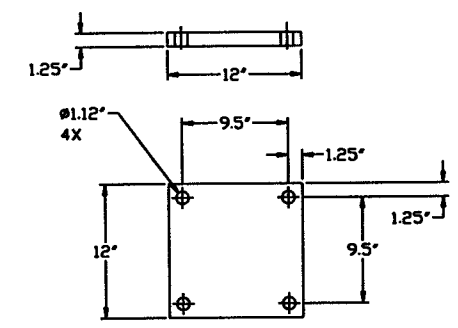
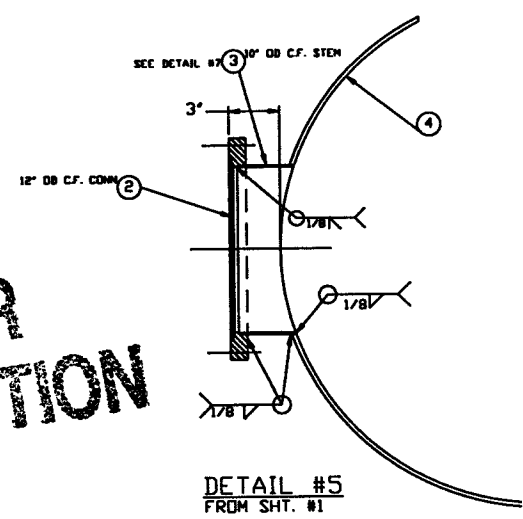


DETAIL #11
FROM SH. #1
4" X 4" X .25 WALL X 80.56 ID
24" ROLLED ANGLE

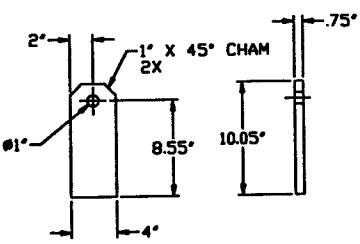


DETAIL #17
4" X 4" X .5 THK WALL
18" SQ. TUBE 7 2X

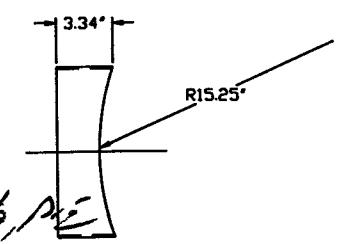
NOT FOR CONSTRUCTION



DETAIL #19
DETAIL #19 12" X 12" X .75 THK
SEE SH. #4 18" 1018 CRS PLT.



DETAIL #24
4X 23 1018 CRS PLT.



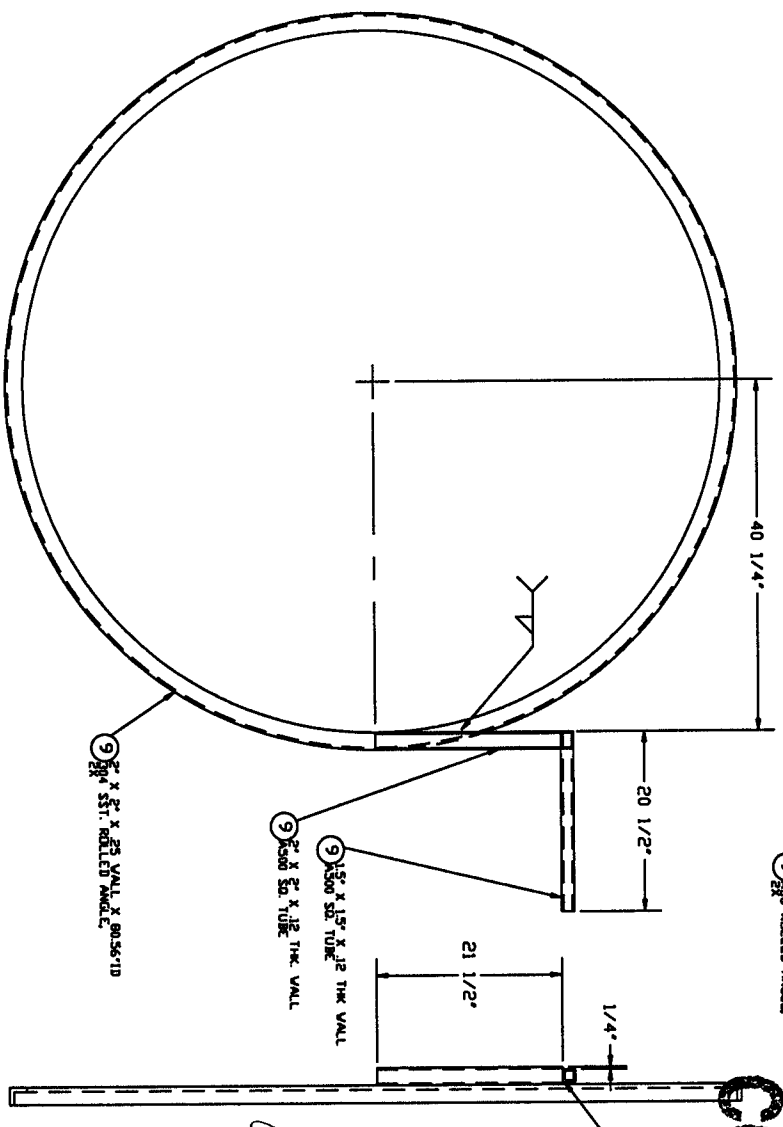
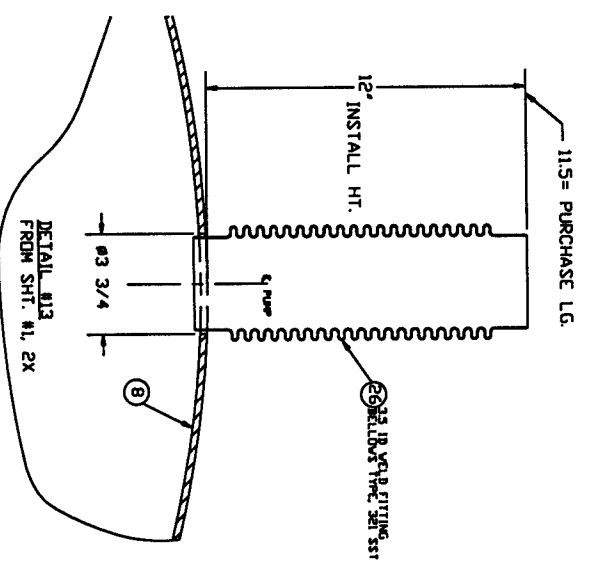
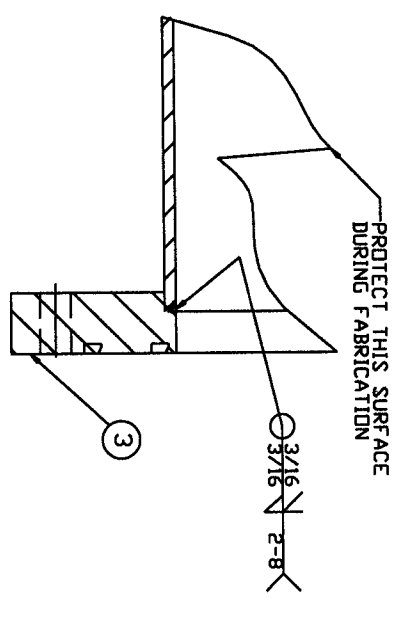
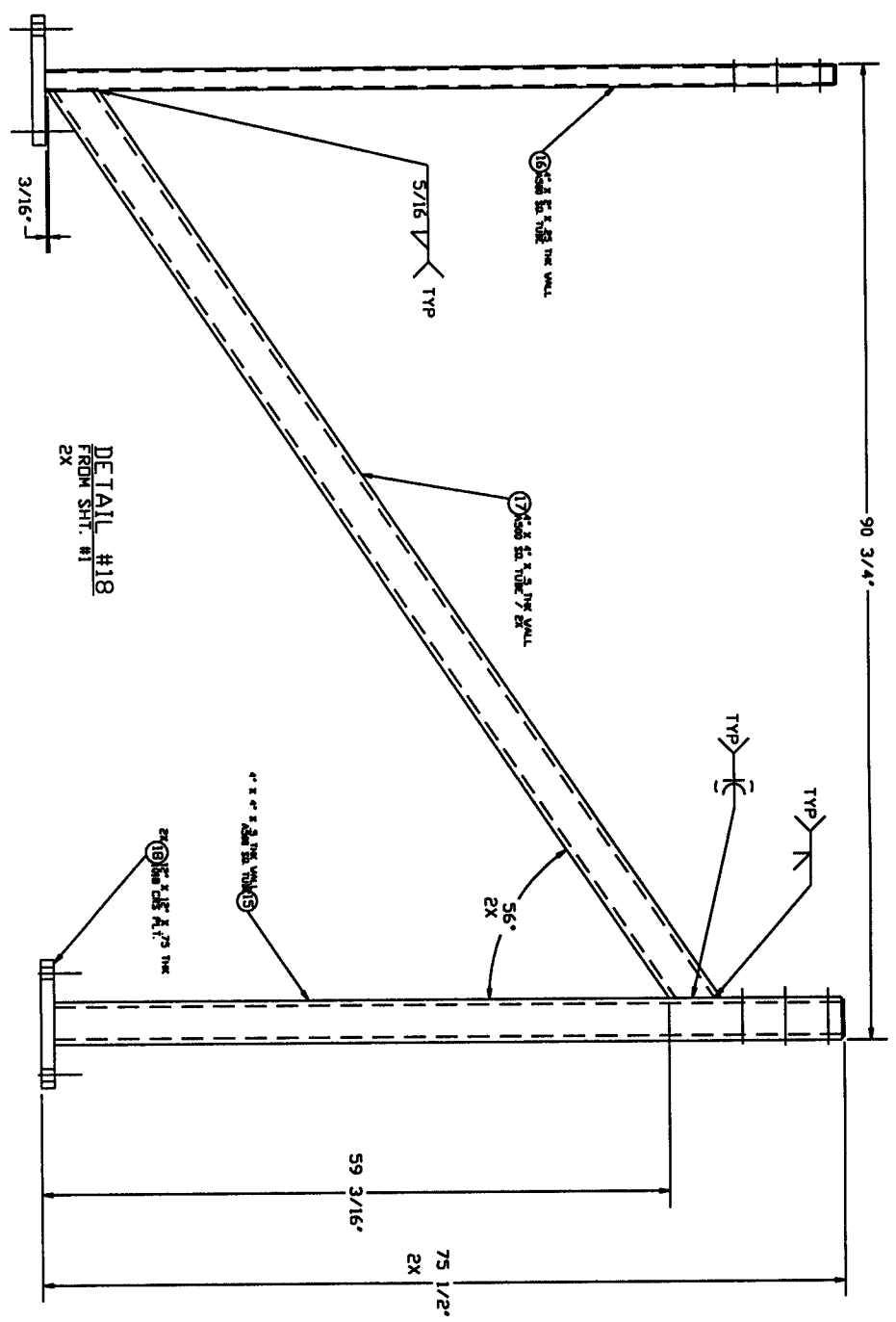
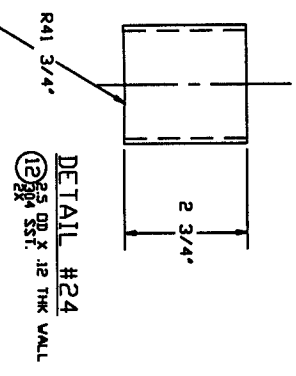
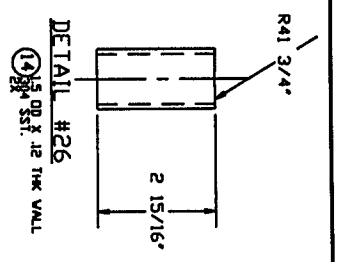
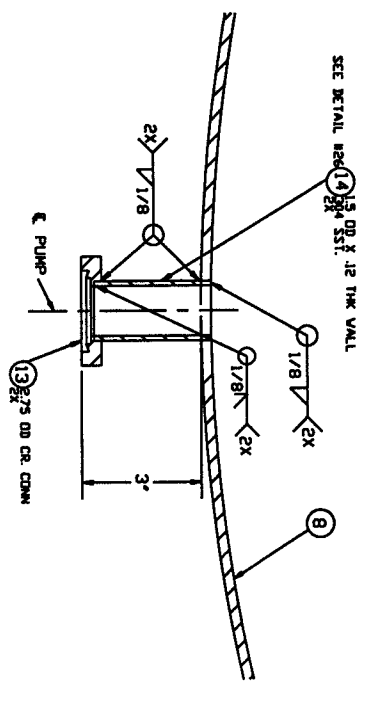
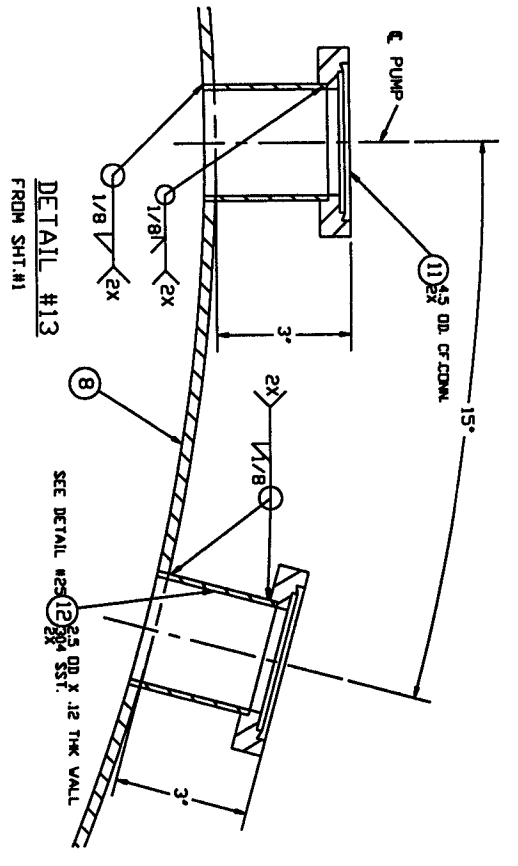
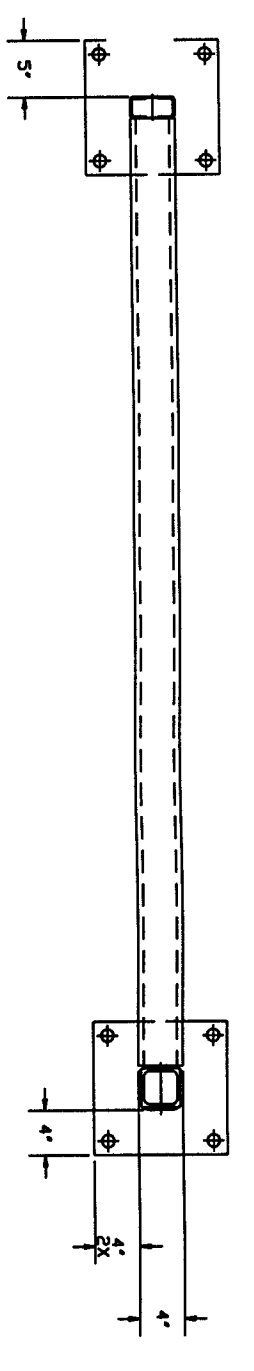
DETAIL #7
6" O.D. X .25 THK WALL

Raymond N. Lantz, P.E.
5/7/96

L160 D961095-00-V
SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL INC. 20 WALSH DR. WESTBOROUGH, MASSACHUSETTS 01581 USA			
80K CRYD PUMP, LONG GENERAL ARRANGEMENT LIGO VACUUM EQUIPMENT			
CAD FILE 494004S3	SIZE D	ENG. NO. V049-4-004	REV. 0
SCALE NONE	SHEET 3 OF 5		

DEC 07, 1994 - 1109304



DETAIL #2
FROM SHT. #1
2X

DETAIL #13
FROM SHT. #1, 2X

DETAIL #27
FROM SHT. #1

DETAIL #14
FROM SHT. #1, 2X

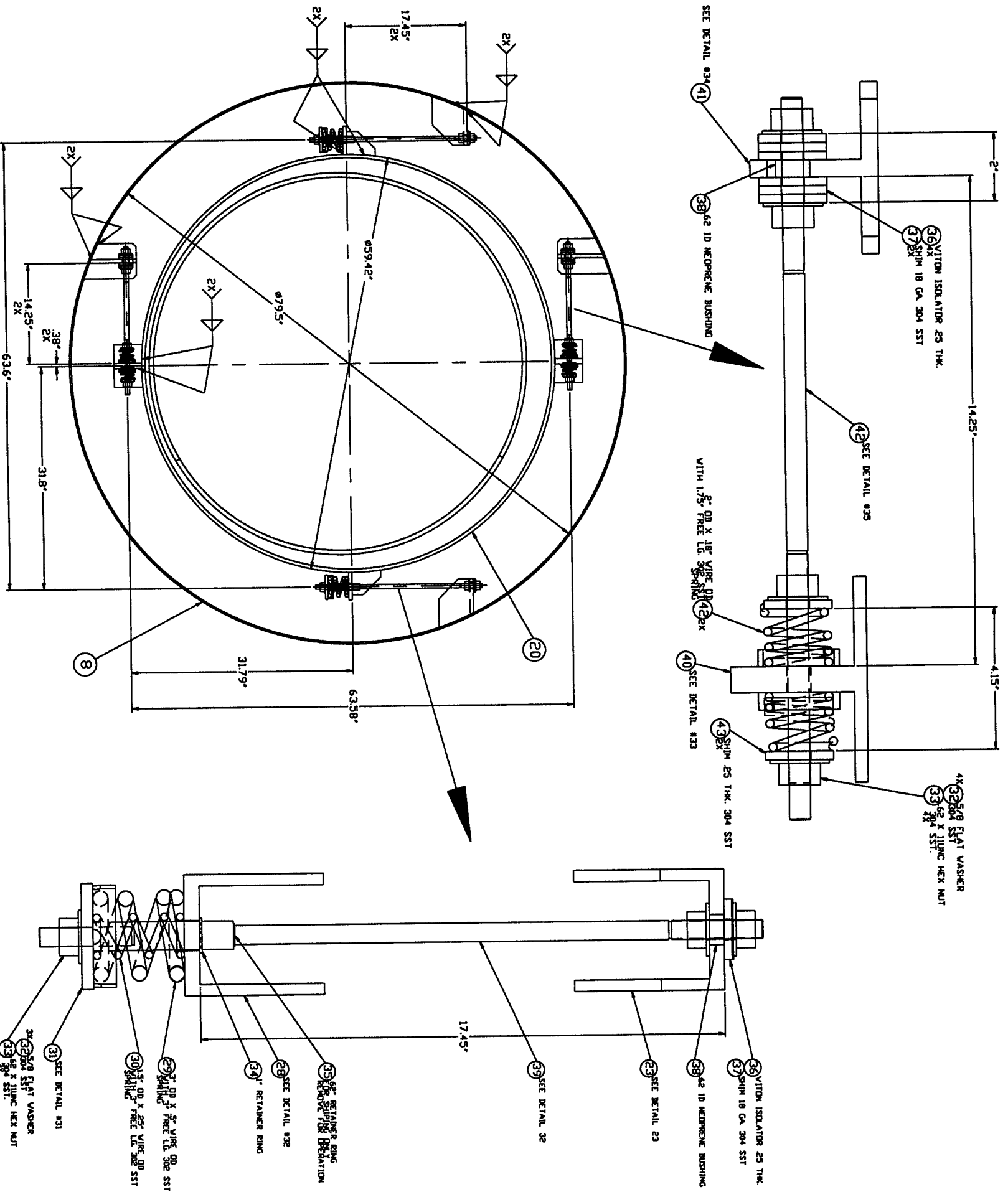
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13 5/8\"/>

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Blaymard, D. Carter, Inc.
5/12/96

14020
L1600961095-001V
SEE SHEET 1 FOR REVISIONS

		PROCESS SYSTEMS INTERNATIONAL, INC. 20 WILSON DR. WESTBOROUGH, MASSACHUSETTS 01581 USA	
80K CRYO PUMP LONG GENERAL ARRANGEMENT LIQD VACUUM EQUIPMENT			
DWG FILE 49400454	SIZE D	PAK. NO. V049-4-004	REV. 0
SCALE NONE	SHEET 4	DATE 4-8-95	



DETAIL #30
FROM SHT.#2 2X

NOT FOR CONSTRUCTION

Handwritten signature: Raymond D. Catlett, PE
Handwritten date: 1/7/96

Handwritten notes:
 11010
 LIGD 0961095-00-V
 SEE SHEET 1 FOR REVISIONS

PROCESS SYSTEMS INTERNATIONAL, INC. 20 WINDUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA	
BOX CRYO PUMP LONG GENERAL ARRANGEMENT LIGD VACUUM EQUIPMENT	
CAD FILE 49400455	SIZE D
PNC NO. V049-4-004	REV. 0
SCALE NONE	SHEET 5 OF 5