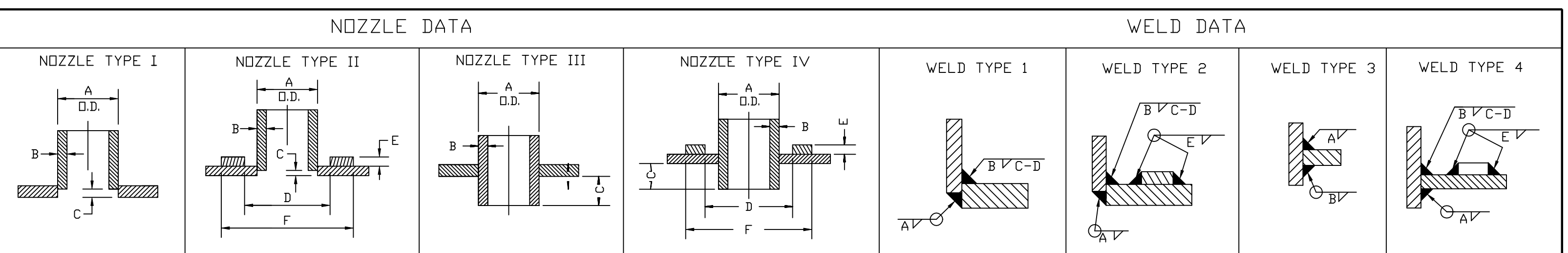
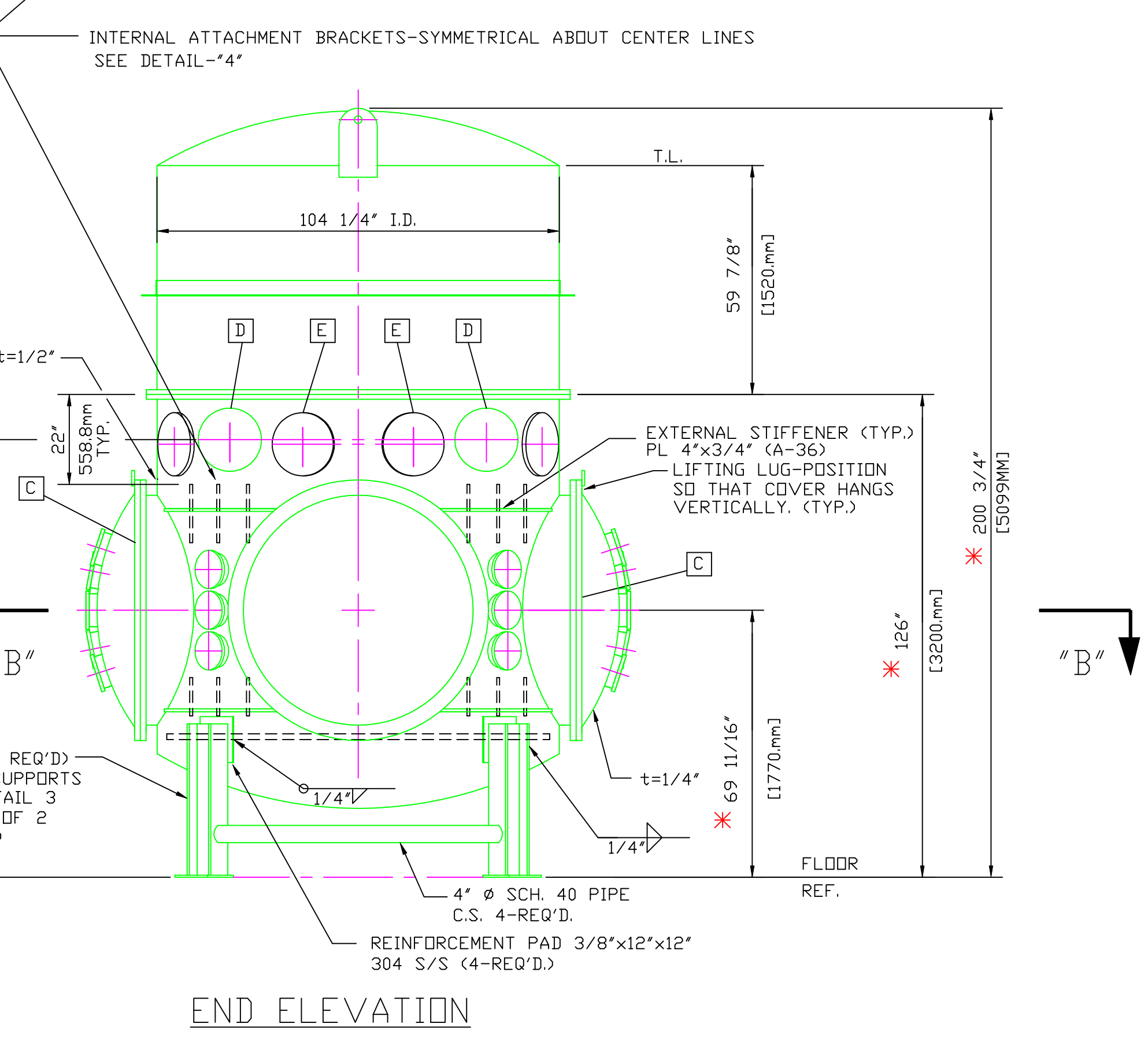
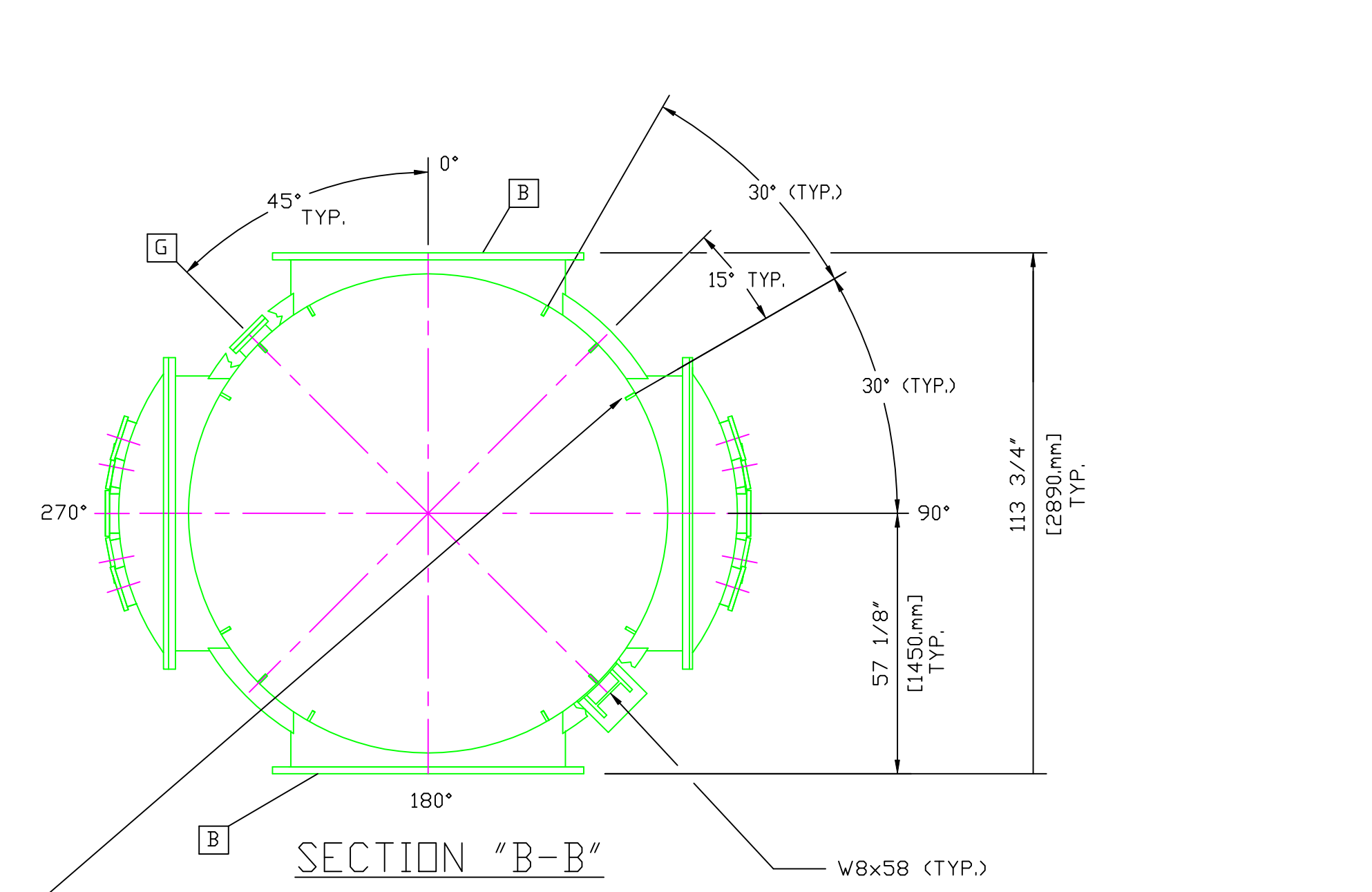
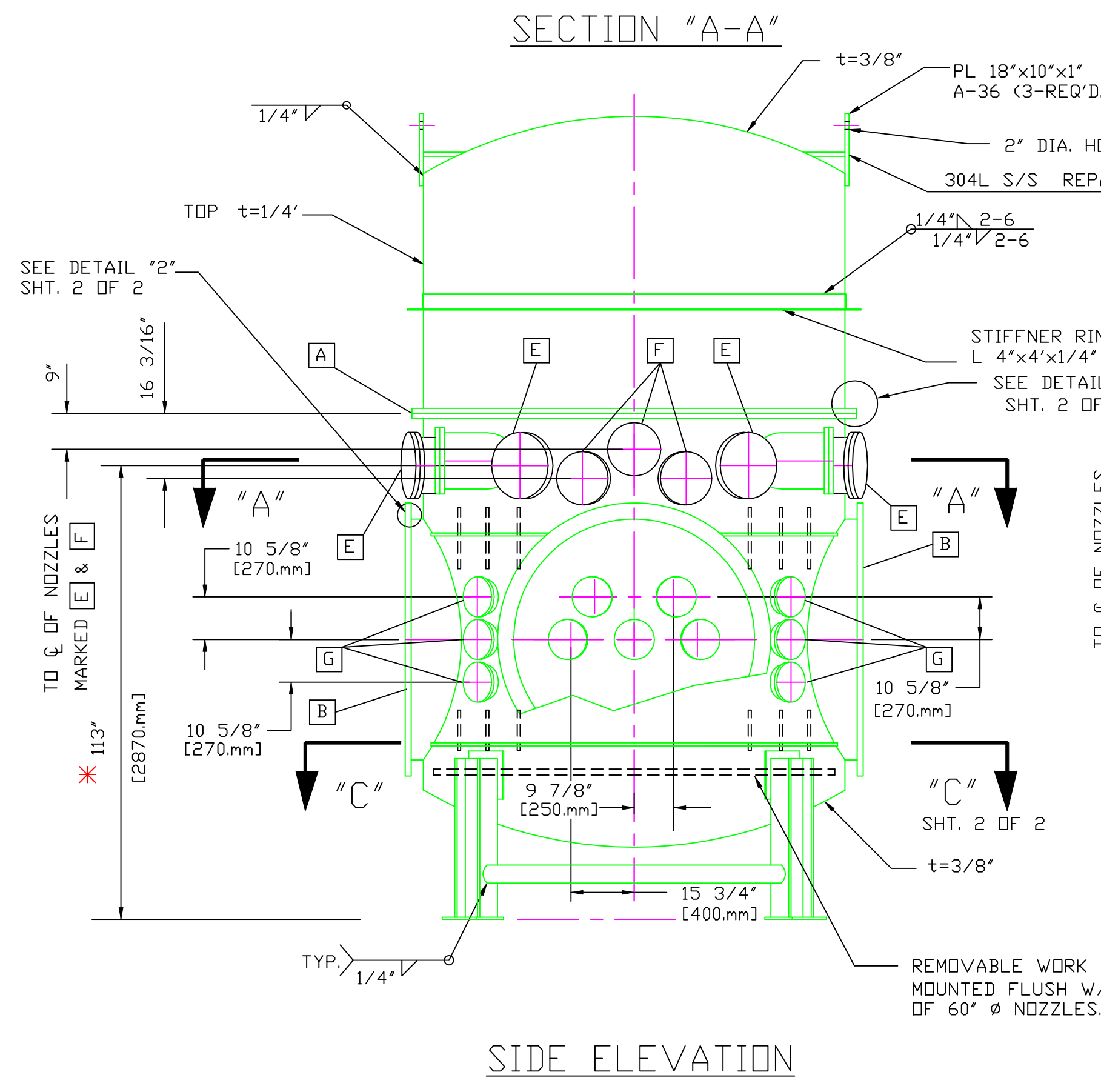
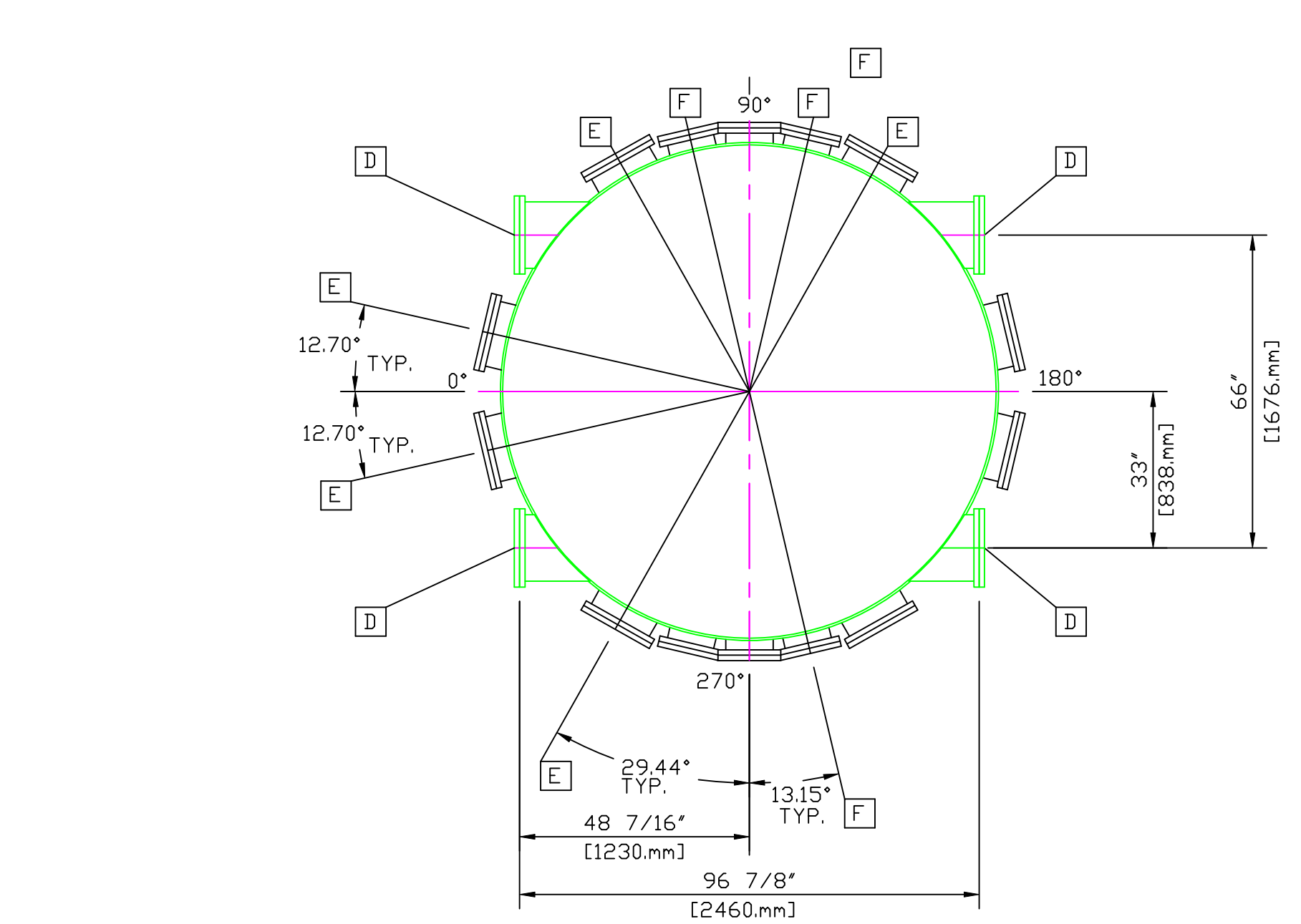
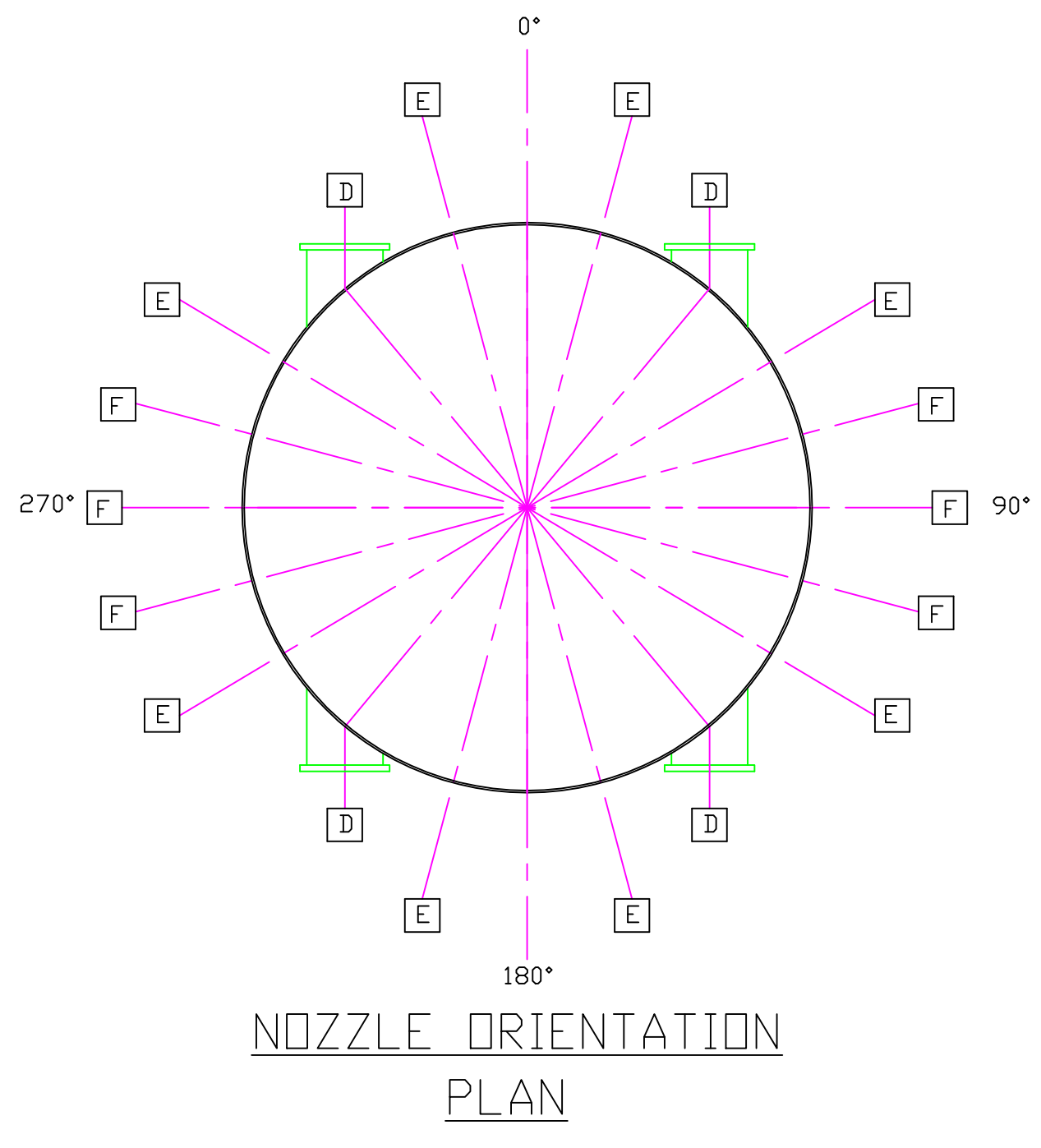
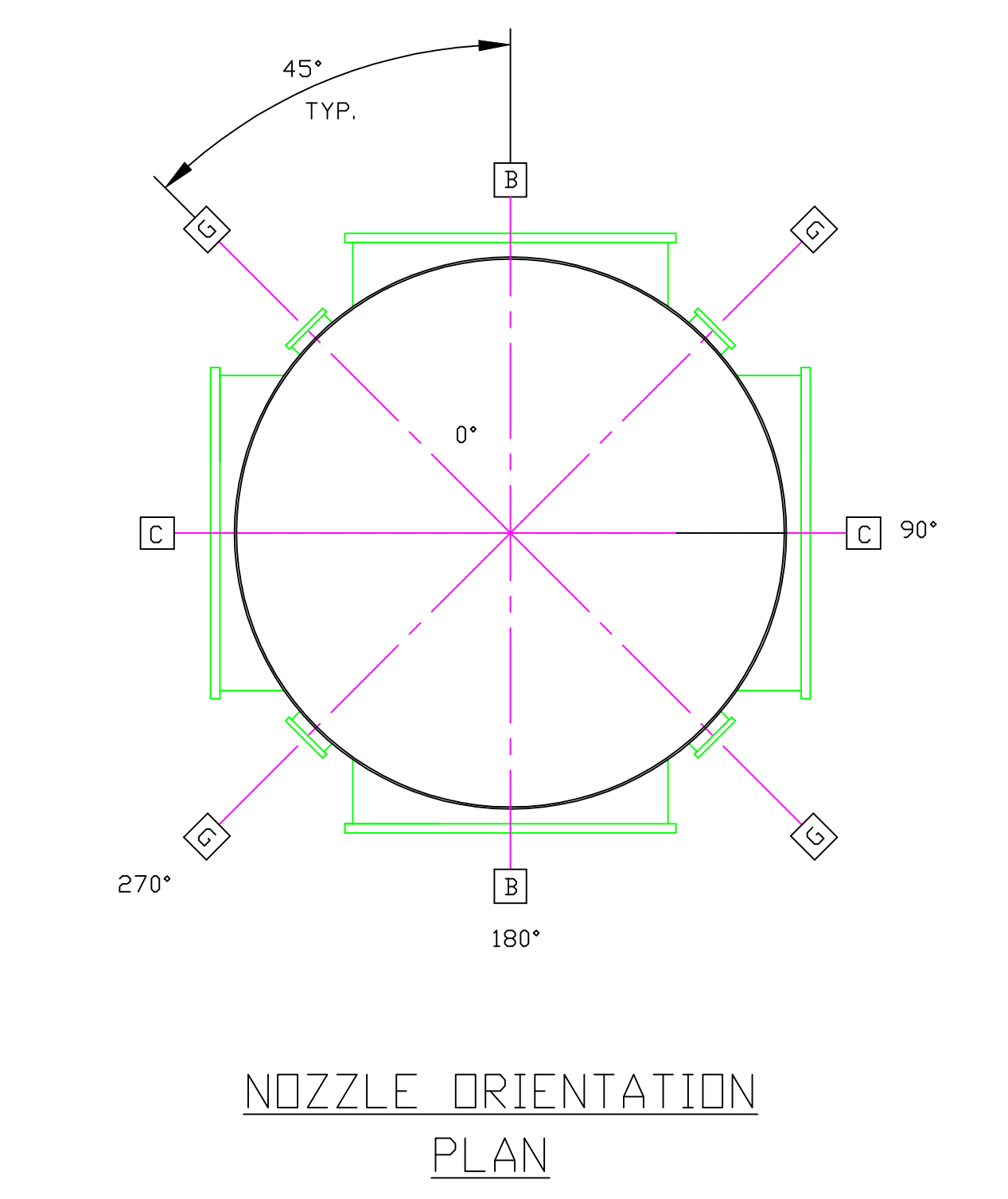


NOZZLE SCHEDULE					NOZZLE TYPE						WELD TYPE							
MARK	QTY	SIZE	RATING	TYPE	DESCRIPTION	TYPE	A	B	C	D	E	F	TYPE	A	B	C	D	E
A	1	104 1/4" I.D.		SEE NOTES 2,3,4&5	MAJOR ACCESS	I							I	-	-	-	-	-
B	2	60 1/4" I.D.		SEE NOTES 2,3,4&5	LASER BEAM, ACCESS (MINIMIZE NECK LENGTH)	I	61	.50	SEE DWG. V049-4-022				I	3/16"			2	6
C	2	60 1/4" I.D.		SEE NOTES 2,3,4&5	ACCESS (MINIMIZE NECK LENGTH)	I	61	.50	SEE DWG. V049-4-019				I	3/16"			2	6
D	4	14" O.D. TUBE		CONFLAT ** W/ BLIND FLANGE	SUPPORT BEAMS, REFERENCE 1 CD #1BD	I	13						I	3/16"			2	6
E	8	14" O.D. TUBE ***		CONFLAT ** W/ BLIND FLANGE	AIR SHWR. BACK-TO-AIR PURGE. ROUGHING & IDN PUMPS, UTILITY	I	13				0		I	3/16"			2	6
F	6	10" O.D. TUBE ***		CONFLAT ** W/ BLIND FLANGE	ELECTRICAL FEEDTHROUGHS	I	9.75				0		I	3/16"			2	6
G	22	8" O.D. TUBE ***		CONFLAT ** W/ BLIND FLANGE	OBSERVATION, BEAM PICK-OFFS	I	8.33	.148			0		I	3/16"			1	4
H	1	1 1/2" O.D. TUBE		CONFLAT ** W/ BLIND FLANGE	ANNULUS PUMPOUT (NOT SHOWN)	I	1.66	.191			0		I	-	-	-	-	-



WELDING PROCEDURES					
WPS No.	PROCESS	MATERIAL	WPS No.	PROCESS	MATERIAL

DESIGN DATA		CODE: ASME SEC. VIII 1992 W/ DEC. 1993 ADDENDA	
TORR @ TEMP.			
SPECIFICATION:			
CORROSION ALLOWANCE:	0		
POSTWELD HEAT TREATMENT:	YES		
INSULATION:	(SEE NOTES)		
FIREPROOFING:	N.A.		
RADIOGRAPHING:			
NOZZLES:			
HEAD/SHELL:			
SHELL:			
MATERIALS:			
HEADS:	SA 240-304L		
SHELL:	SA 240-304L		
FLANGES:	SA 479-304L		
PIPE NECKS:	SA 312-304L; SA 240-304L		
REINFORCING:			
BOLTS & NUTS:	SA 193-B7		
GASKETS:	(SEE NOTES)		
WEIGHTS:			
FABRICATED:			
EMPTY:	10,000 LBS		
OPERATING:			
TEST:			



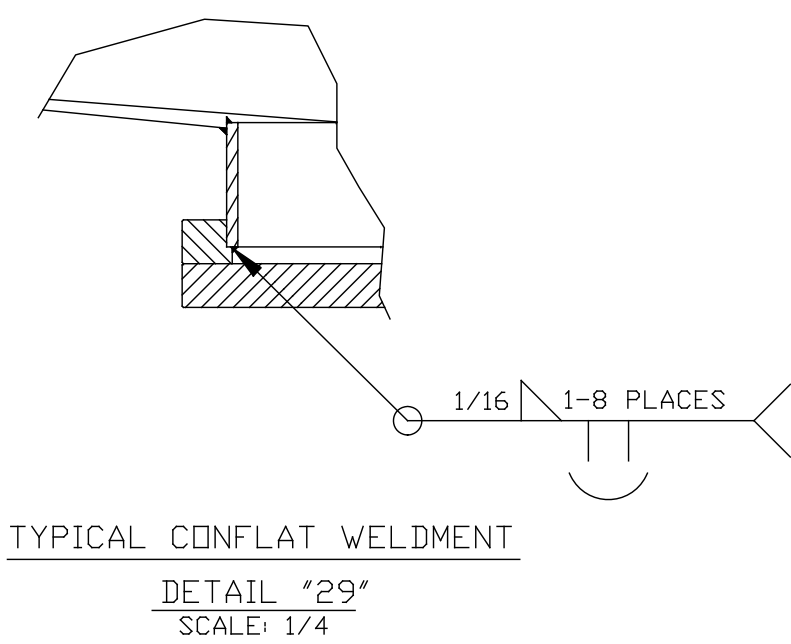
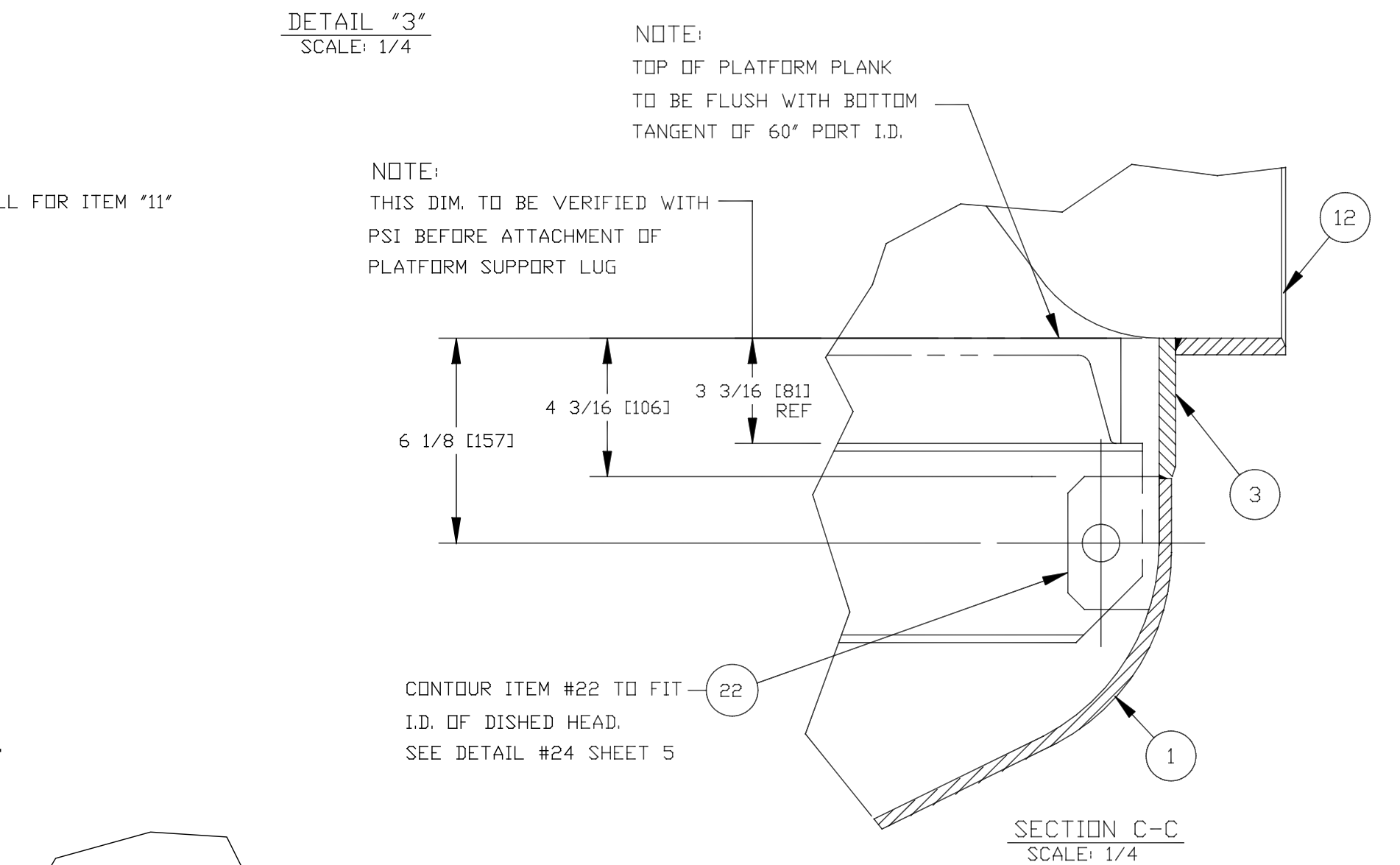
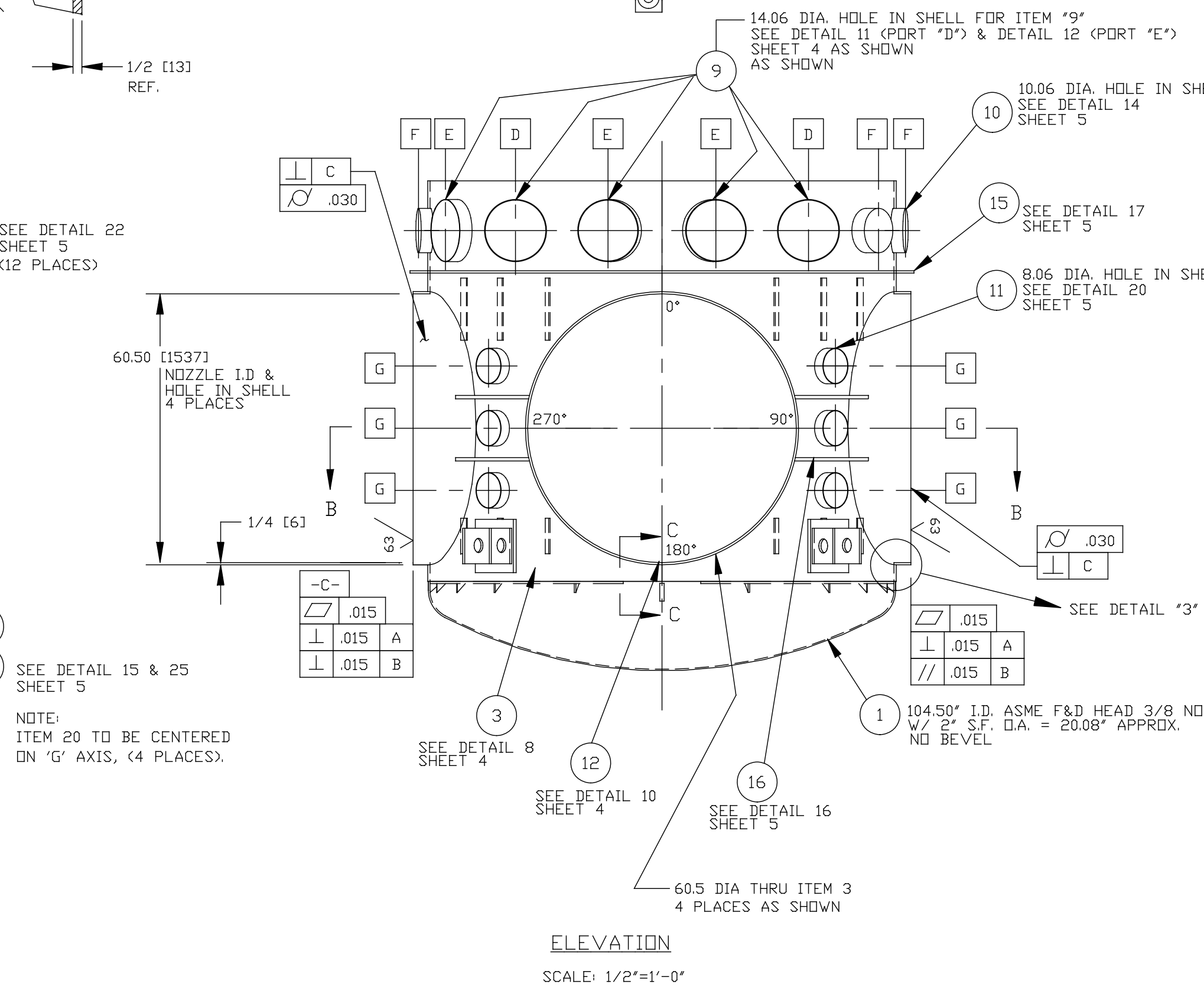
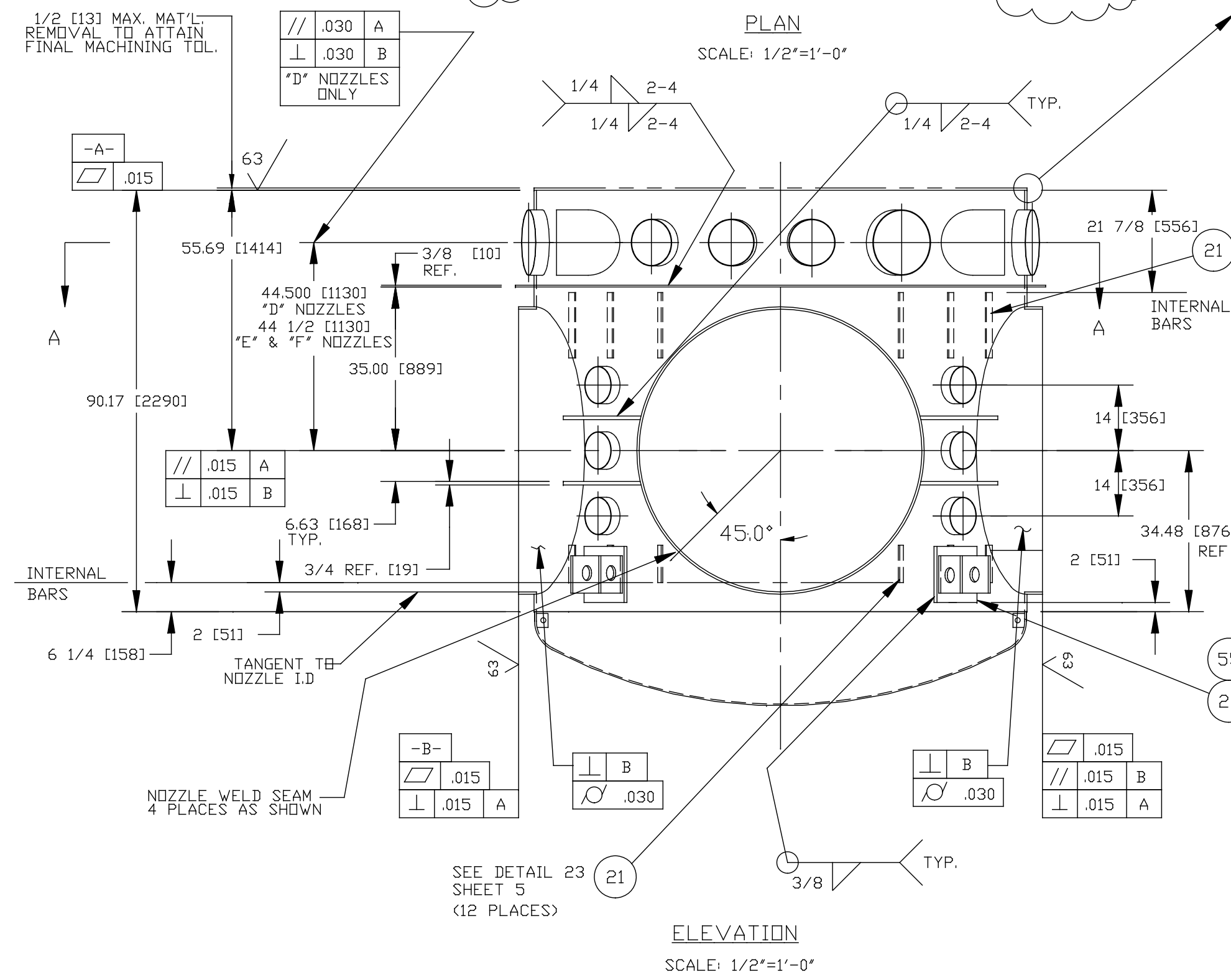
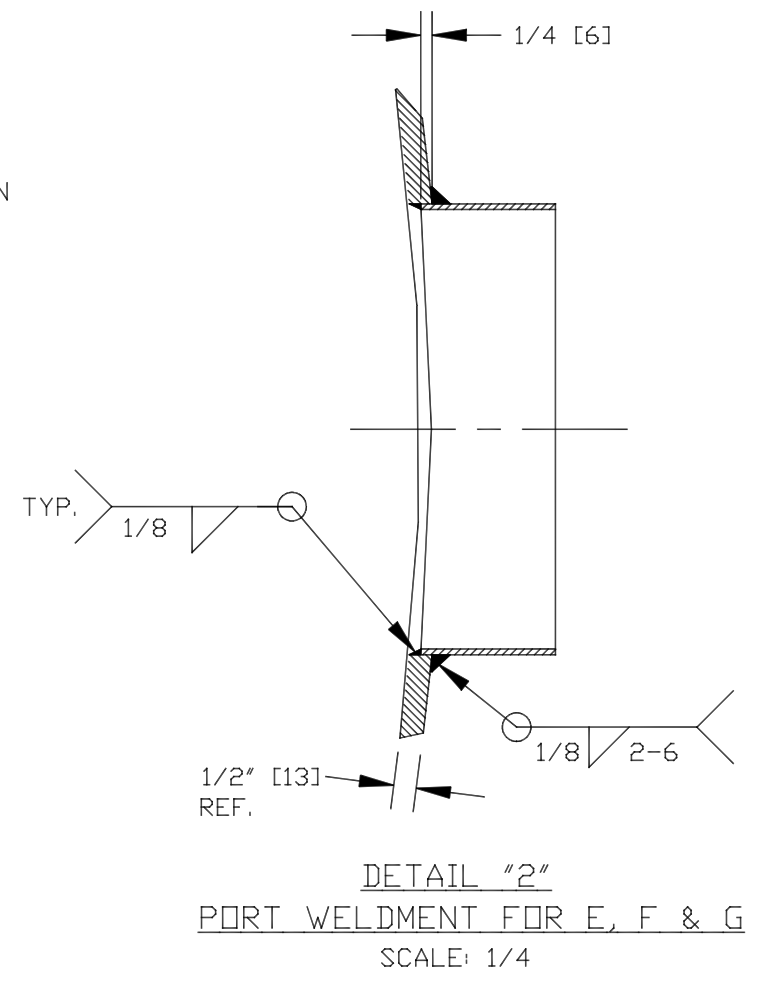
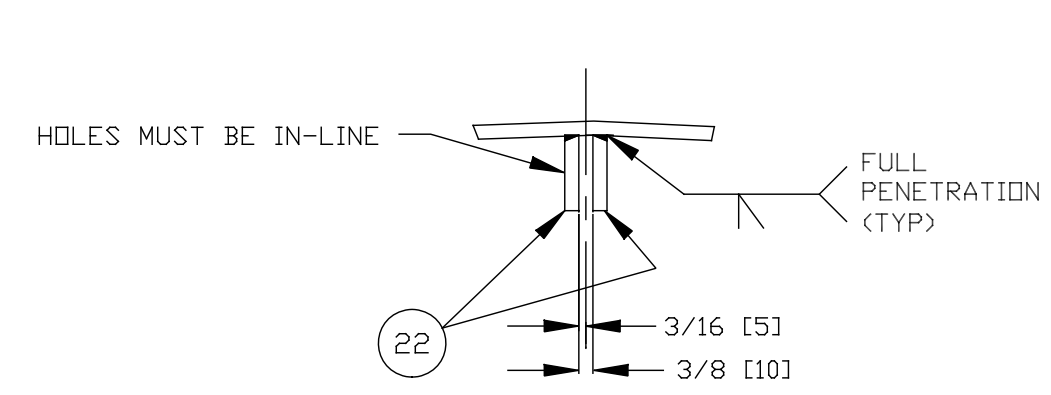
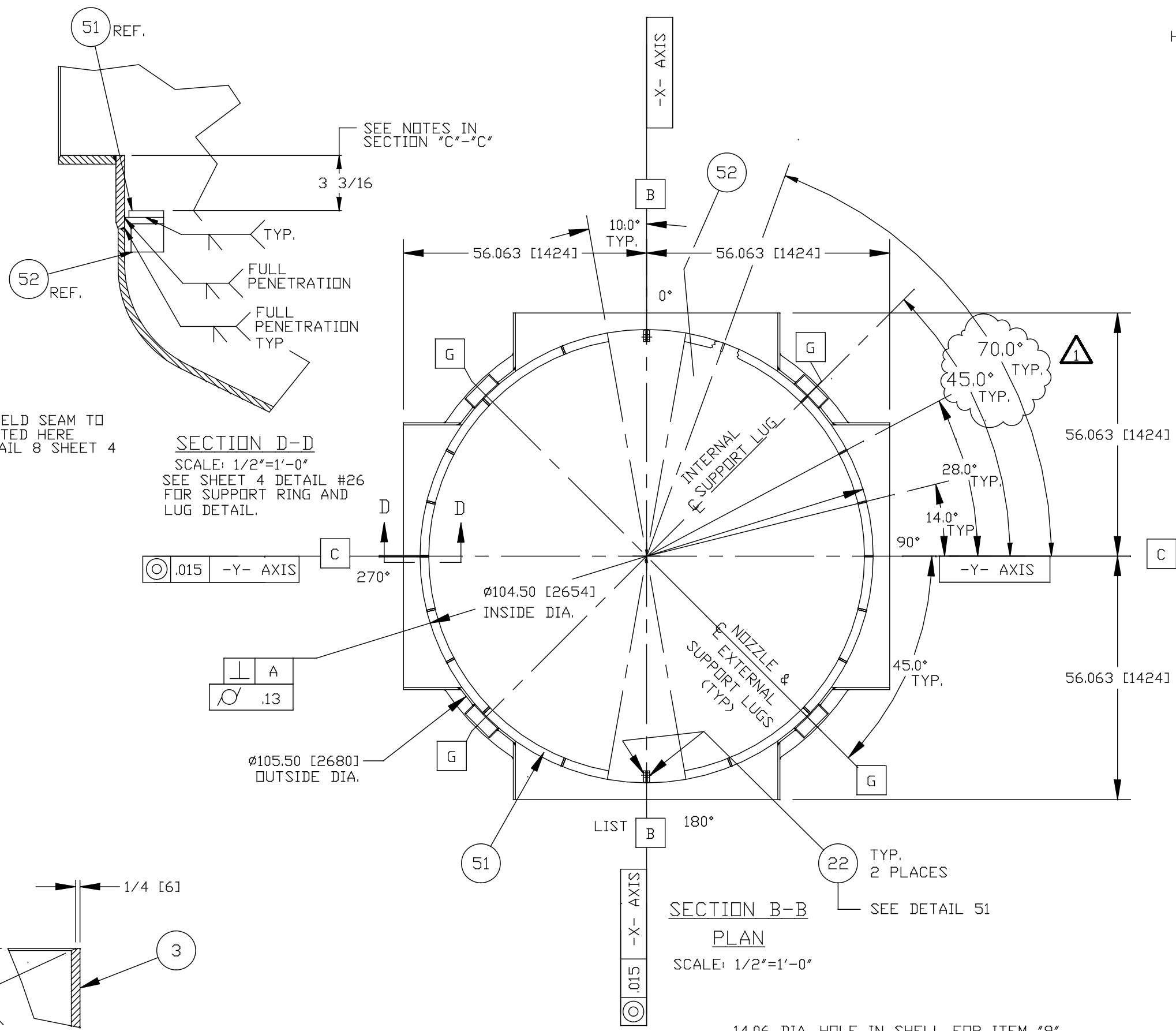
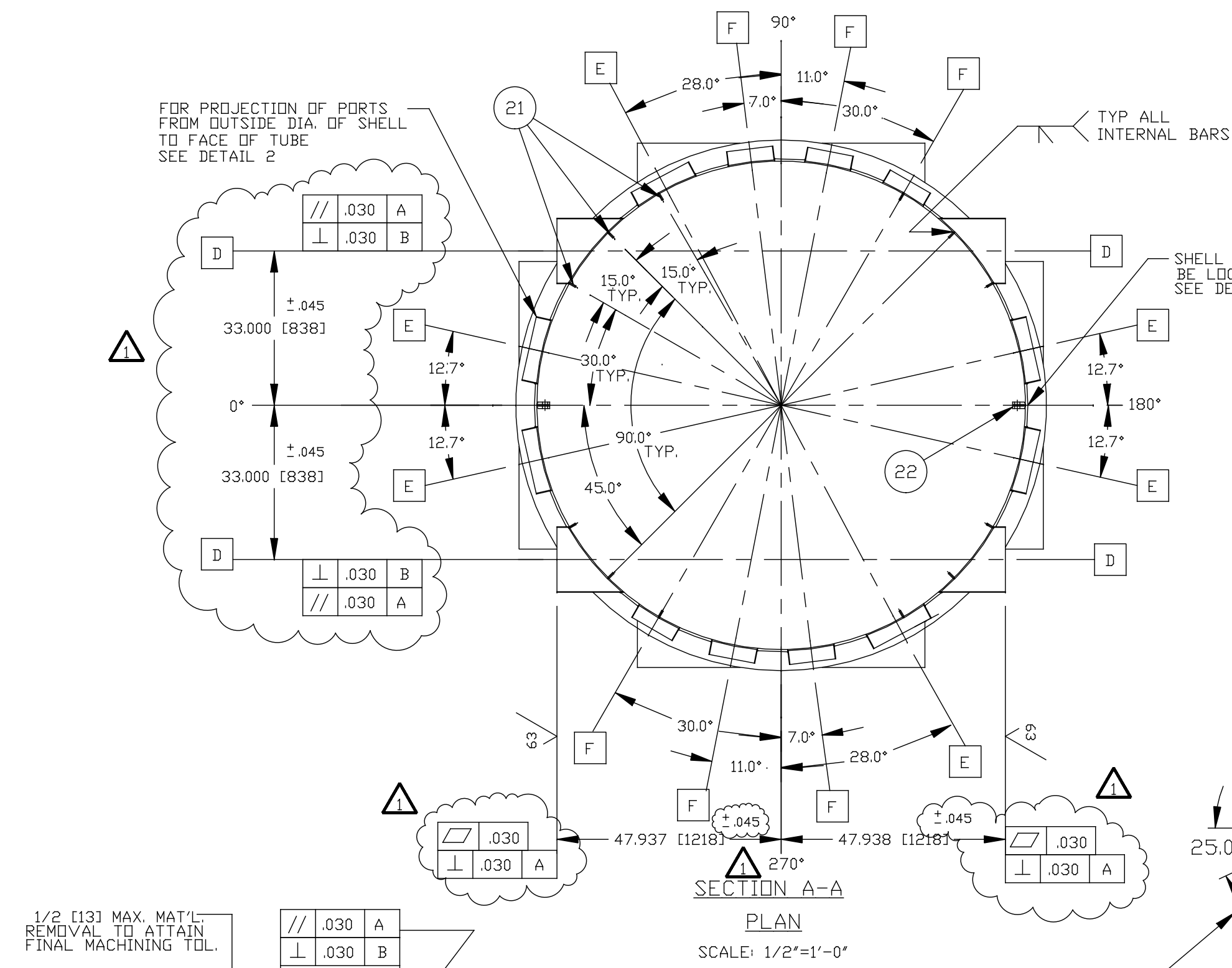
- NOTES
18. THESE FLANGES ARE TO BE TANGENT TO THE SHELL I.D.
  17. LEAK TEST & METHOD PER PSI SPEC: V049-2-014
  16. REFERENCE CODE CALCULATIONS PER SPEC:
  15. MATERIALS TO BE LEGIBLY STAMPED OR STENCILED PER SPEC:
  14. CERTIFIED MANUFACTURER'S MATERIAL TEST REPORTS REQUIRED.
  13. FLANGE BOLT HOLES TO STRADDLE NATURAL CENTERLINES OF VESSEL UNLESS NOTED.
  12. CLEAN PER SPEC: V049-2-015
  11. ALL NOZZLES TO BE CONTOURED TO INSIDE DIAMETER OF SHELL OR TO CURVATURE OF HEAD, UNLESS OTHERWISE NOTED.
  10. DO NOT USE CARBON STEEL BRUSHES OR BRUSHES CONTAMINATED WITH CARBON STEEL ON STAINLESS OR ALUMINUM MATERIAL.
  9. VISUAL INSPECTION PER SPEC:
  8. WELD EFFICIENCY FACTOR: SHELL, LONG & CIRC. SEAMS HEAD & SHELL SEAM
  7. ALL NOZZLES LOCATED FROM DATUM UNLESS OTHERWISE NOTED.
  6. HEADS ARE ASME F&D.
  5. INCLUDE CENTERING PINS ON 'A' & 'B' NOZZLE FLANGES.
  4. TOLERANCES, UNLESS OTHERWISE SPECIFIED: LINEAR, ± 0.095" (2.5mm) ANGULAR, ± 1 DEGREE
  3. FOR FLANGE DETAILS SEE DWG. V049-4-019 & V049-4-022.
  2. THESE FLANGES EACH INCLUDE AN ANNULAR CHANNEL BETWEEN O-RINGS, MANIFOLD TO A SINGLE PUMPOUT PORT IN EACH CHAMBER, WITH CONFLAT\*\* SEAL.
  1. REGISTERED TRADEMARK, VARIAN VACUUM PRODUCTS; COMPATIBLE ALTERNATIVES ARE ACCEPTABLE.

\* FINAL DIMENSION TO BE DETERMINED

<b>PROPRIETARY AND CONFIDENTIAL</b> 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.		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR/RADIUS ±0°-30° BEND ±2° TWO PLACE DECIMAL ± .01 THREE PLACE DECIMAL ± .005 FINISHED SURFACE RMS BREAK CORNERS IN BUT REMOVE ALL BURRS		DO NOT SCALE THIS DRAWING USED ON: NEXT ASS'Y:		P1 PRELIMINARY DESIGN UPDATE REV DESCRIPTION CHKD DRWN DATE DEB#		RRM 9/22/95 SCALE: 3/8"-1"-0" SHEET 1 OF 1		<b>PROCESS SYSTEMS INTERNATIONAL INC.</b> 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA <b>BEAM SPLITTER CHAMBER (BSC) LIGO VACUUM EQUIPMENT</b> CAD FILE 4001S1 SIZE D DWG. NO. V049-4-001 REV. P1	
DWG. NO.	DESCRIPTION	DWG. NO.	DESCRIPTION	ISSUE DESCRIPTION	CHKD	DRWN	DATE	DEB#	1101009 LIGO BEAM SPLITTER CHAMBER REFERENCE DRAWINGS: 6, 5, 4, 3, 2, 1		

EDUCATION VERSION - NOT FOR COMMERCIAL USE

Sept 27, 1995 - 094507

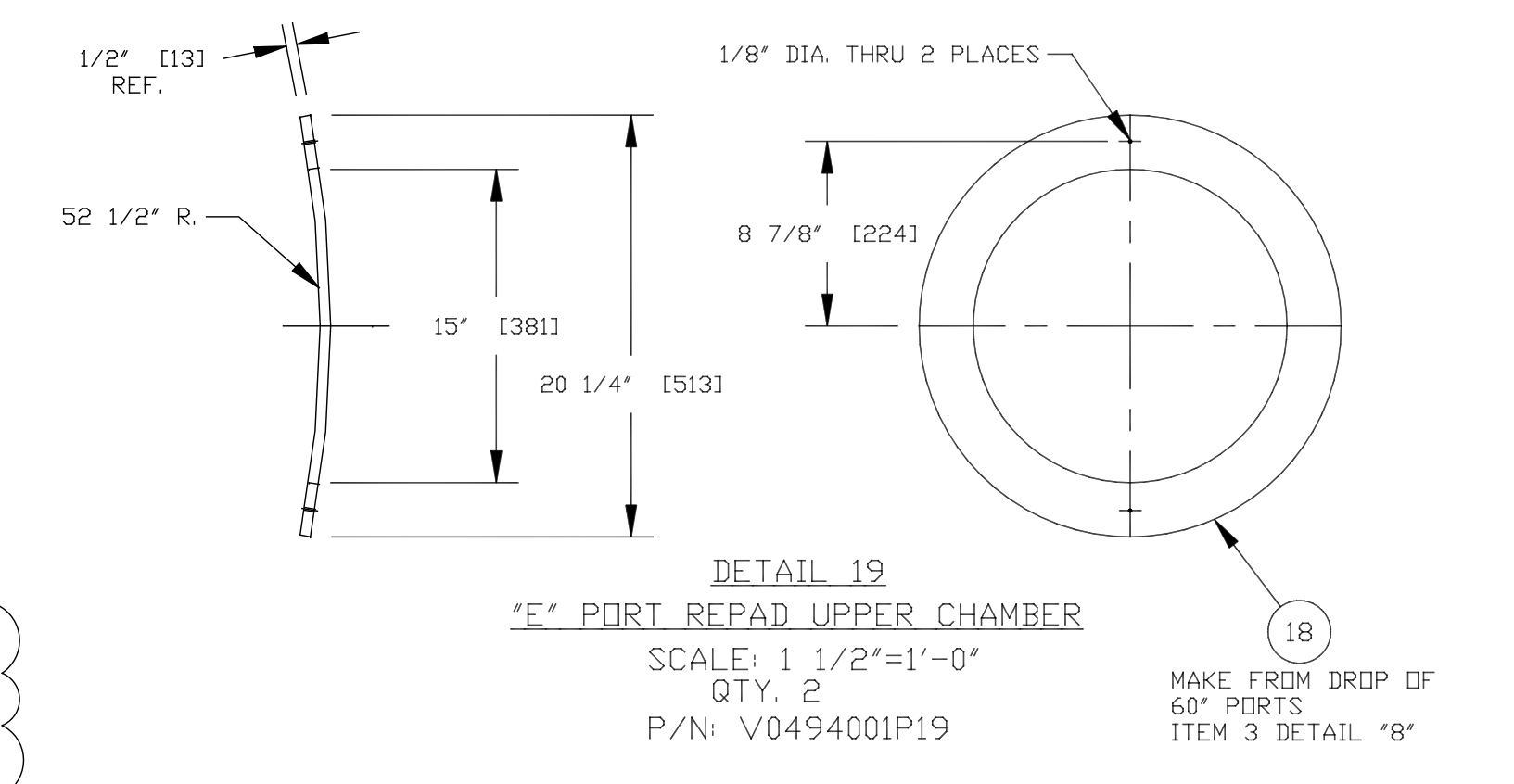
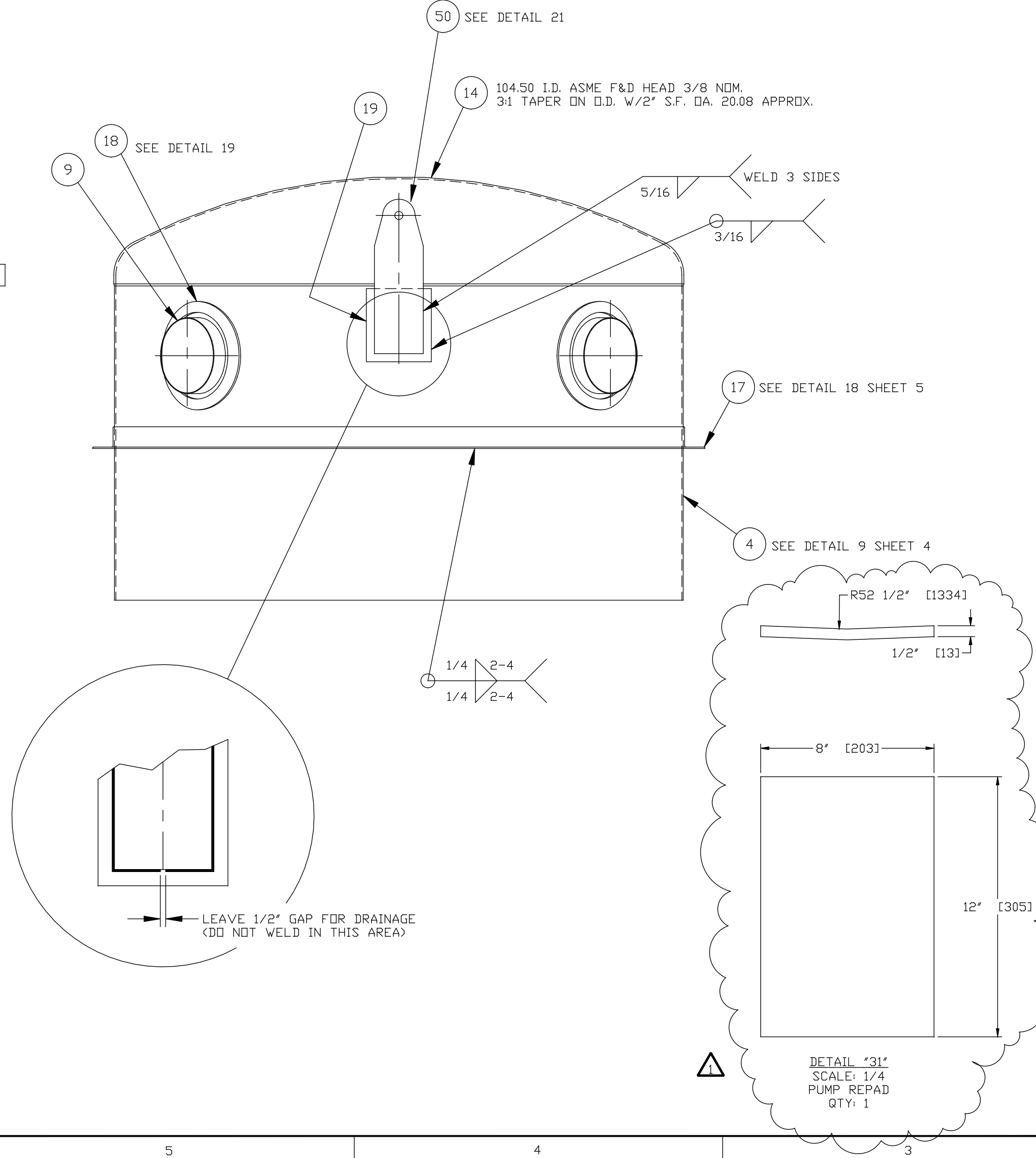
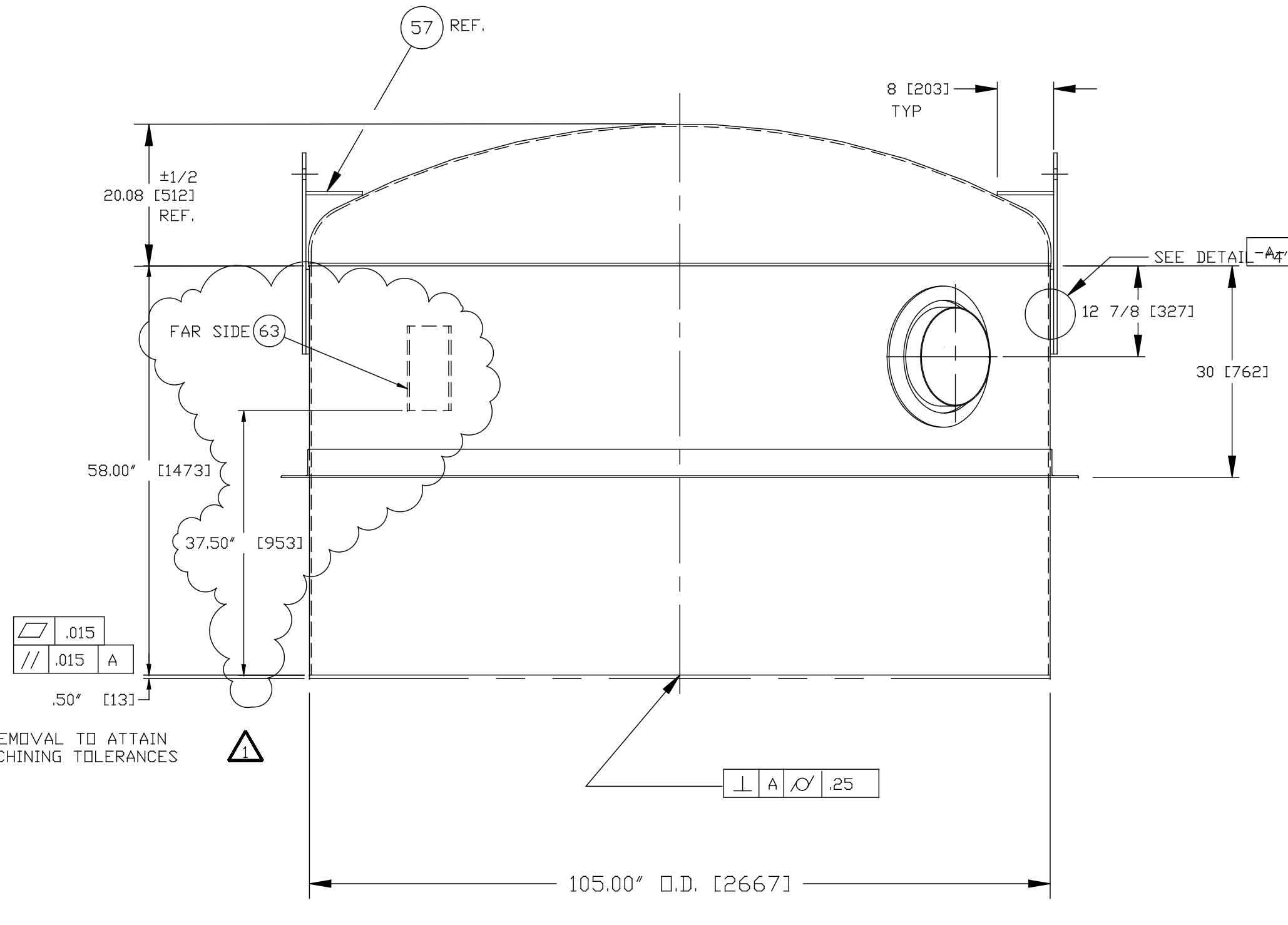
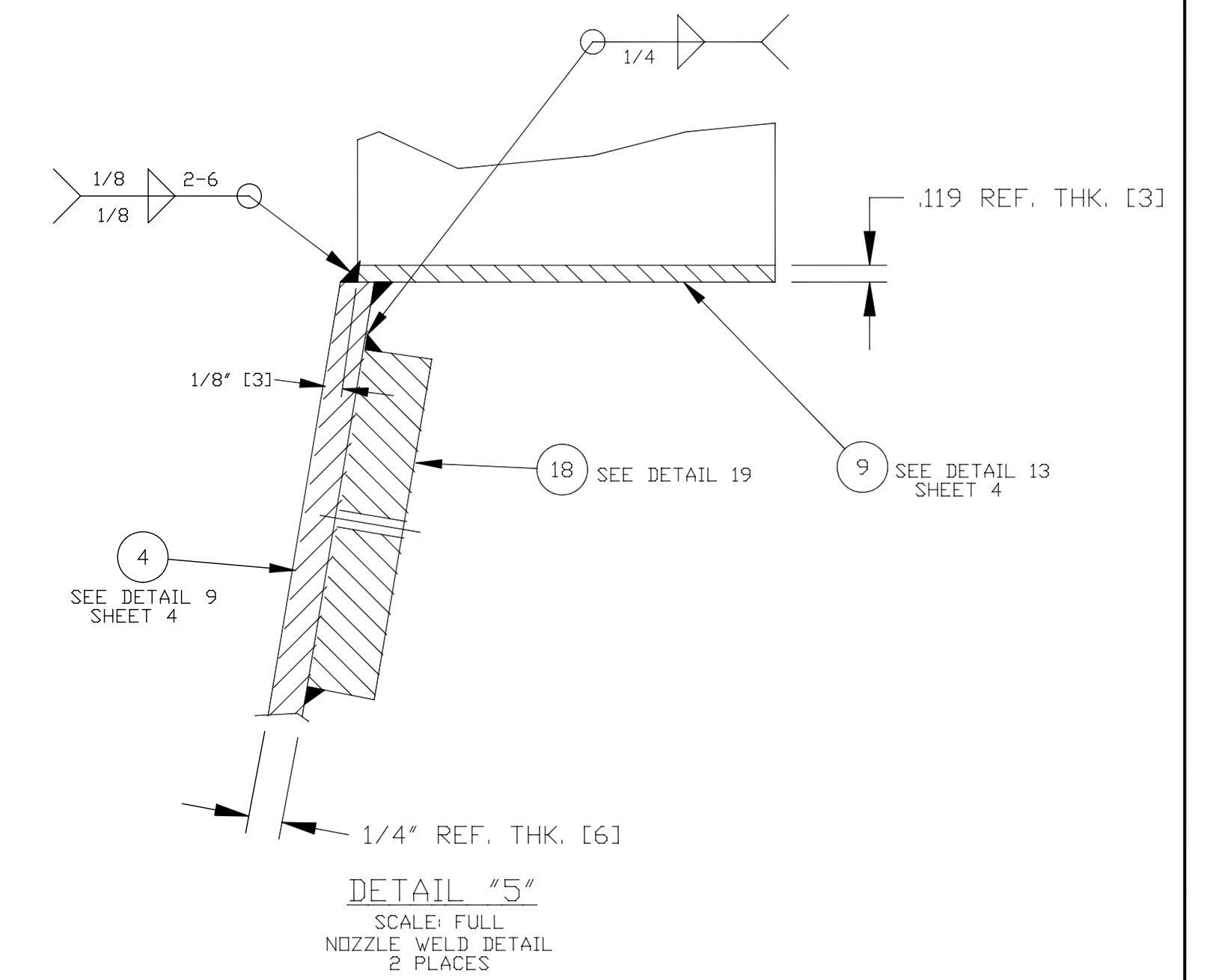
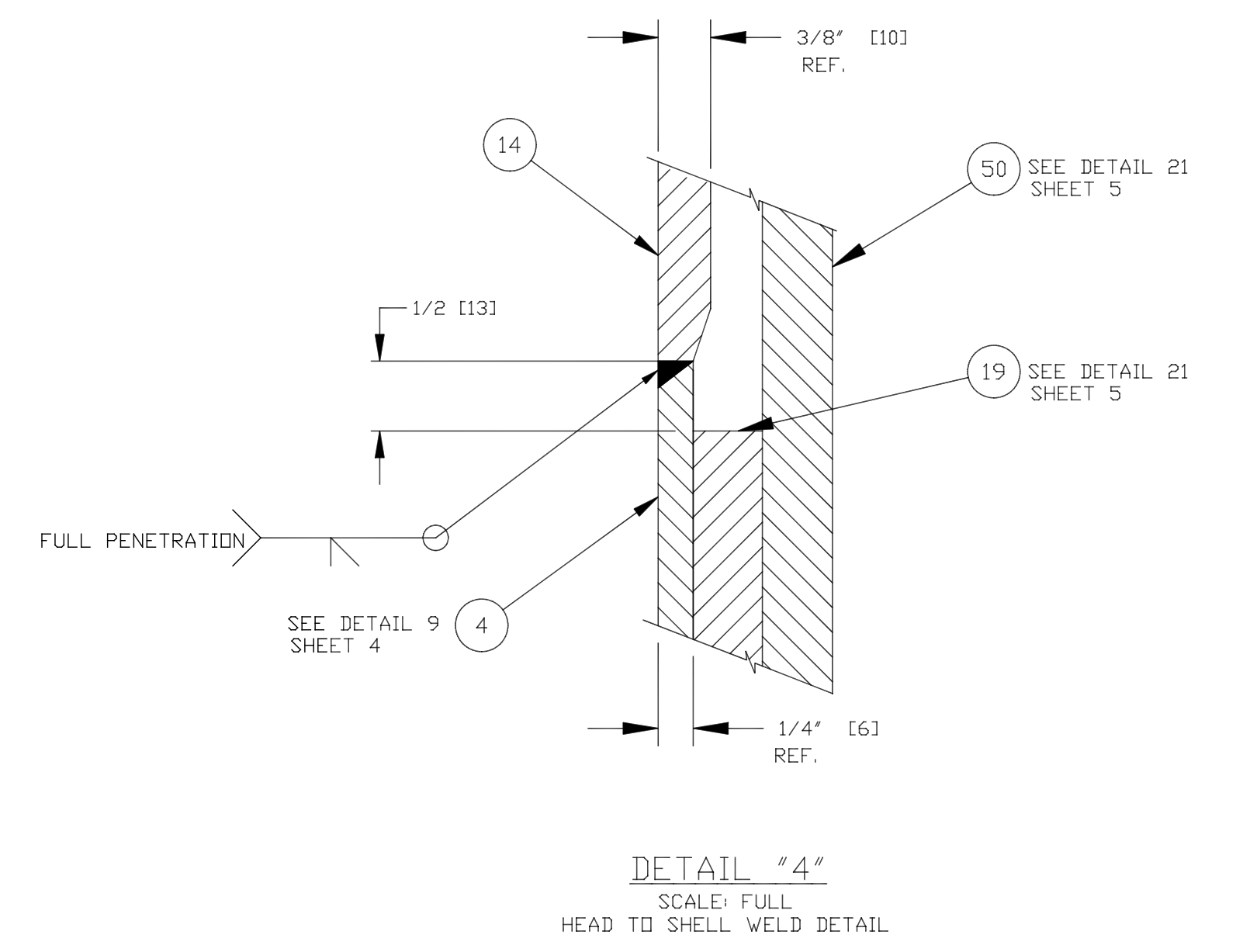
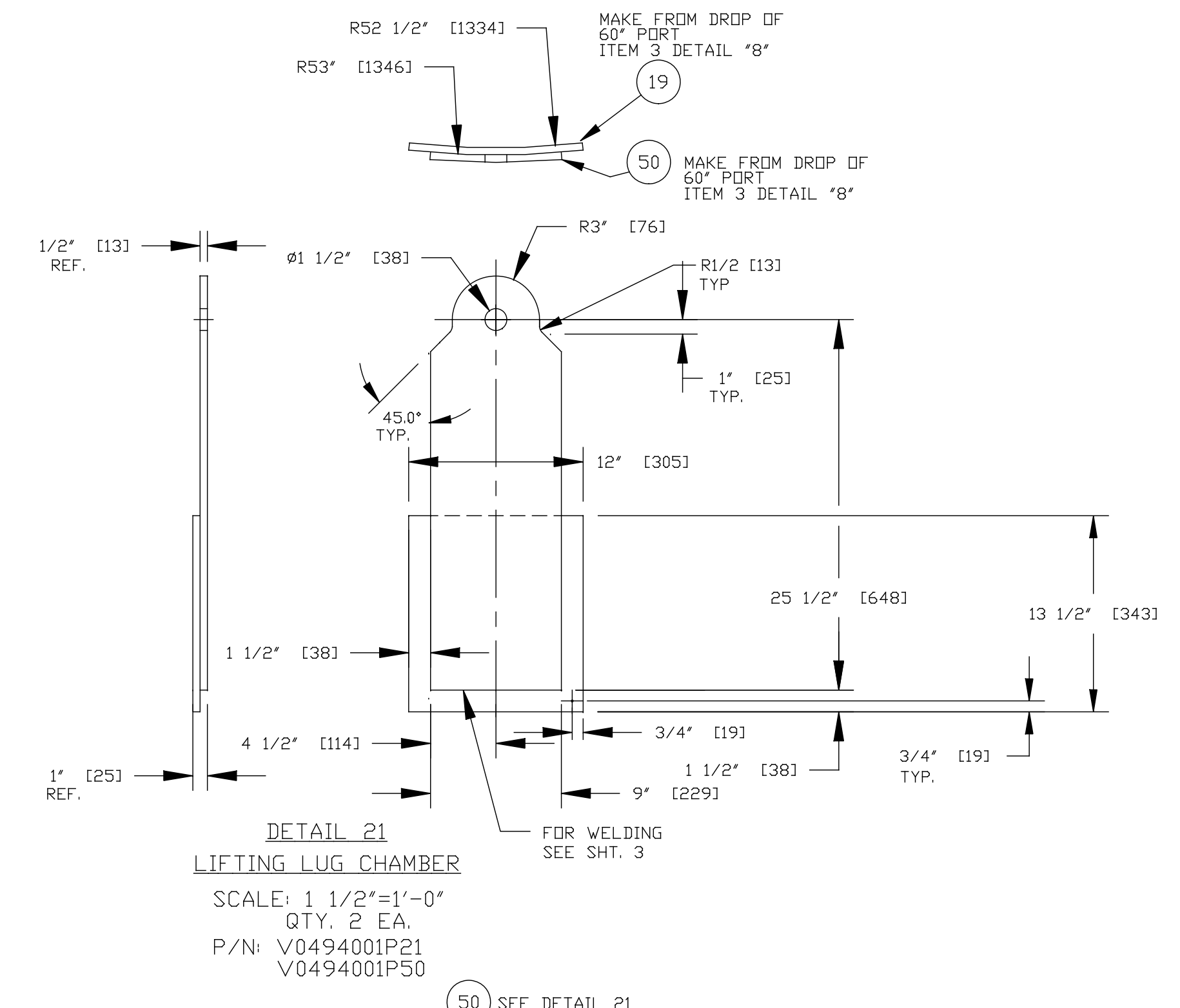
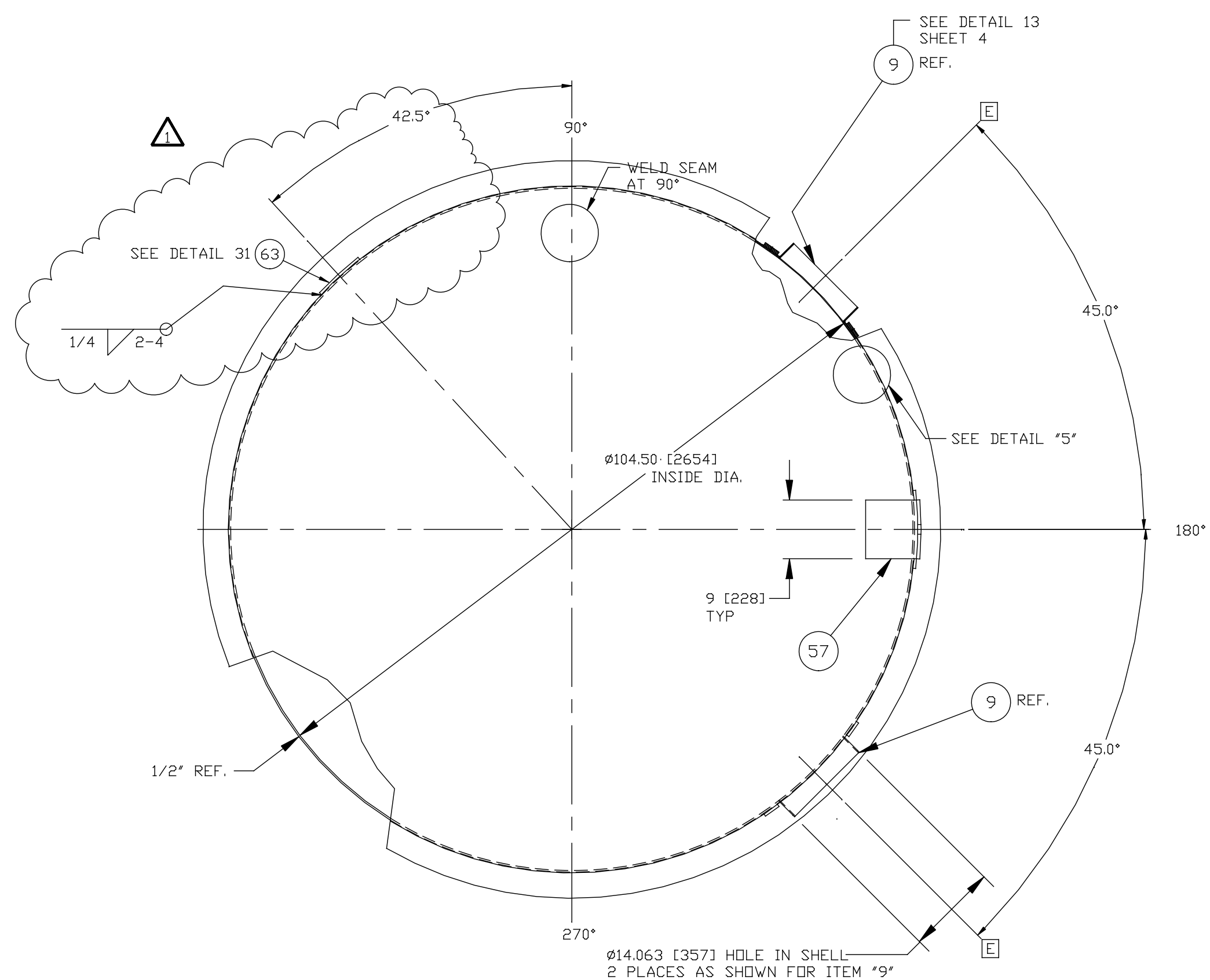


**PROCESS SYSTEMS INTERNATIONAL INC.**  
20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

**BASIC PROTOTYPE**

LOWER SHELL WELDMENT MACHINING LUG VACUUM EQUIPMENT

CAD FILE 4001S2	SIZE D	DWG. NO. V049-4-001	REV. 1
SCALE AS NOTED	SHEET 2 OF 5		



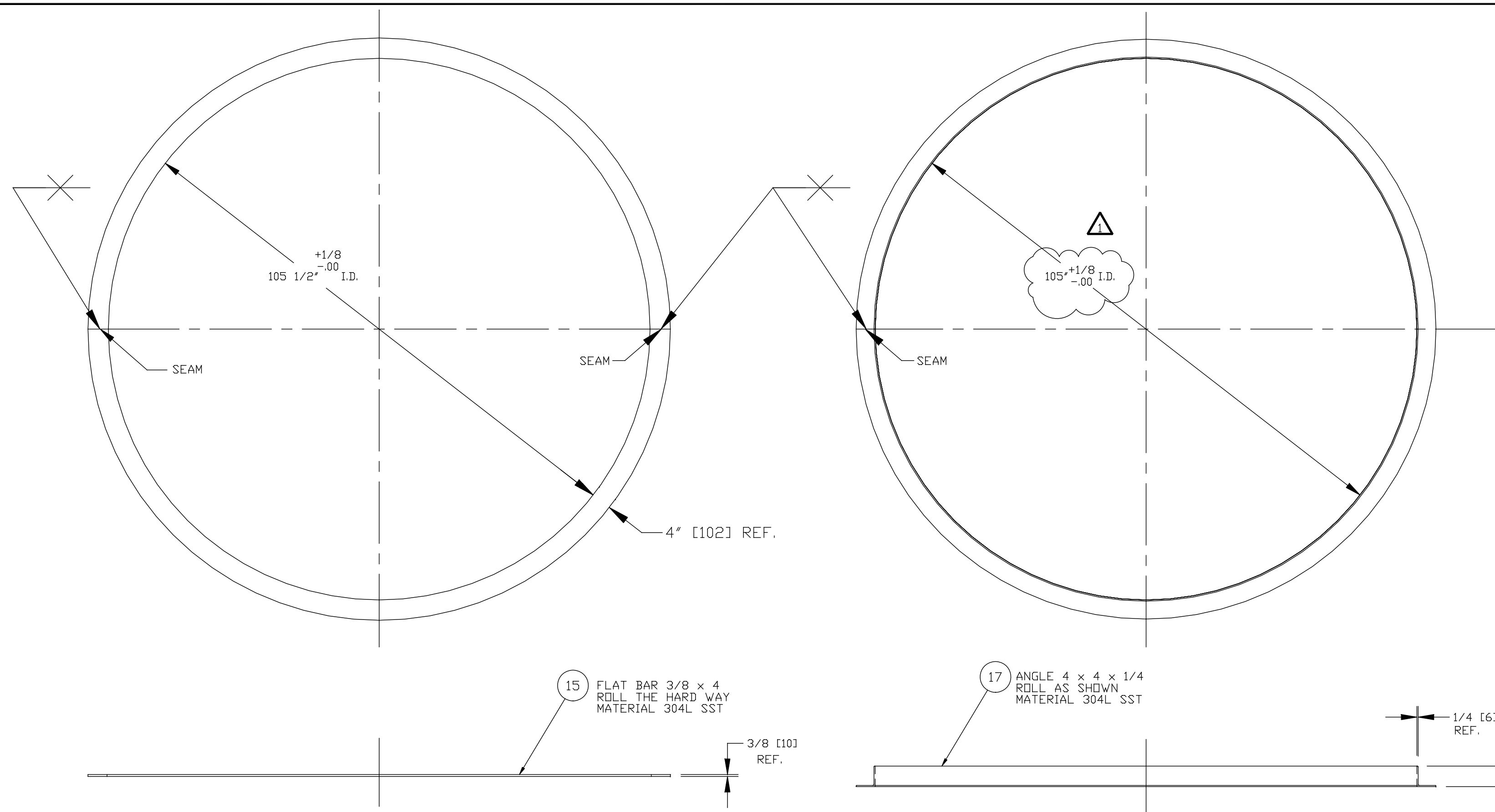
**PROCESS SYSTEMS INTERNATIONAL INC.**  
20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA

PROTOTYPE BSC

UPPER SHELL WELDMENT MACHINING LUGO VACUUM EQUIPMENT

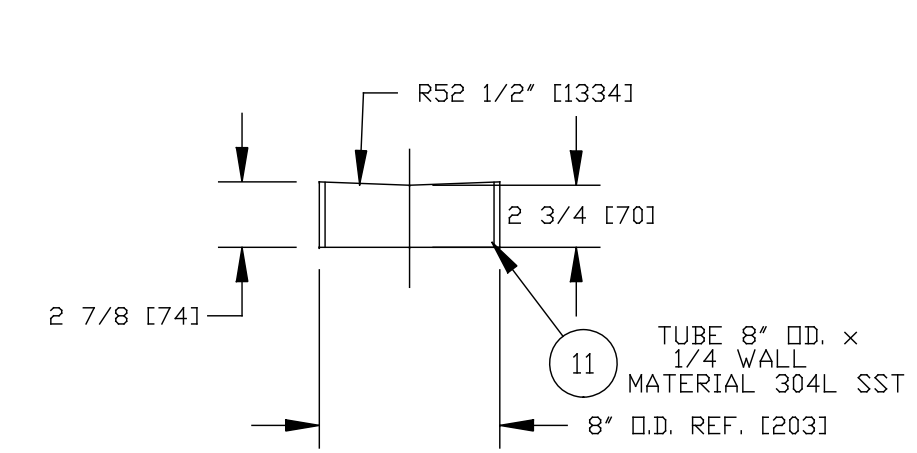
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SCALE 1/16	SHEET 3 OF 5		



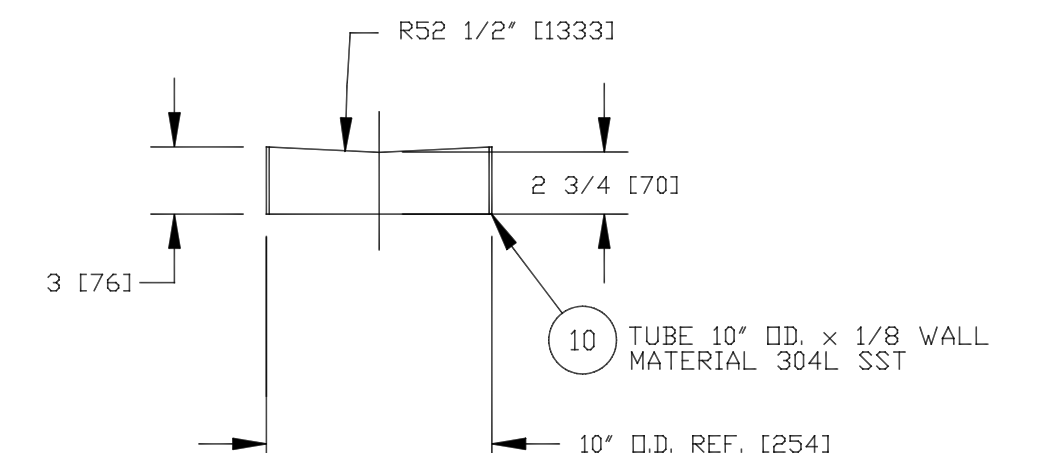


**DETAIL 17**  
 SHELL STIFFENERS LOWER CHAMBER  
 SCALE: 3/4"=1'-0"  
 QTY. 1  
 P/N: V0494001P17

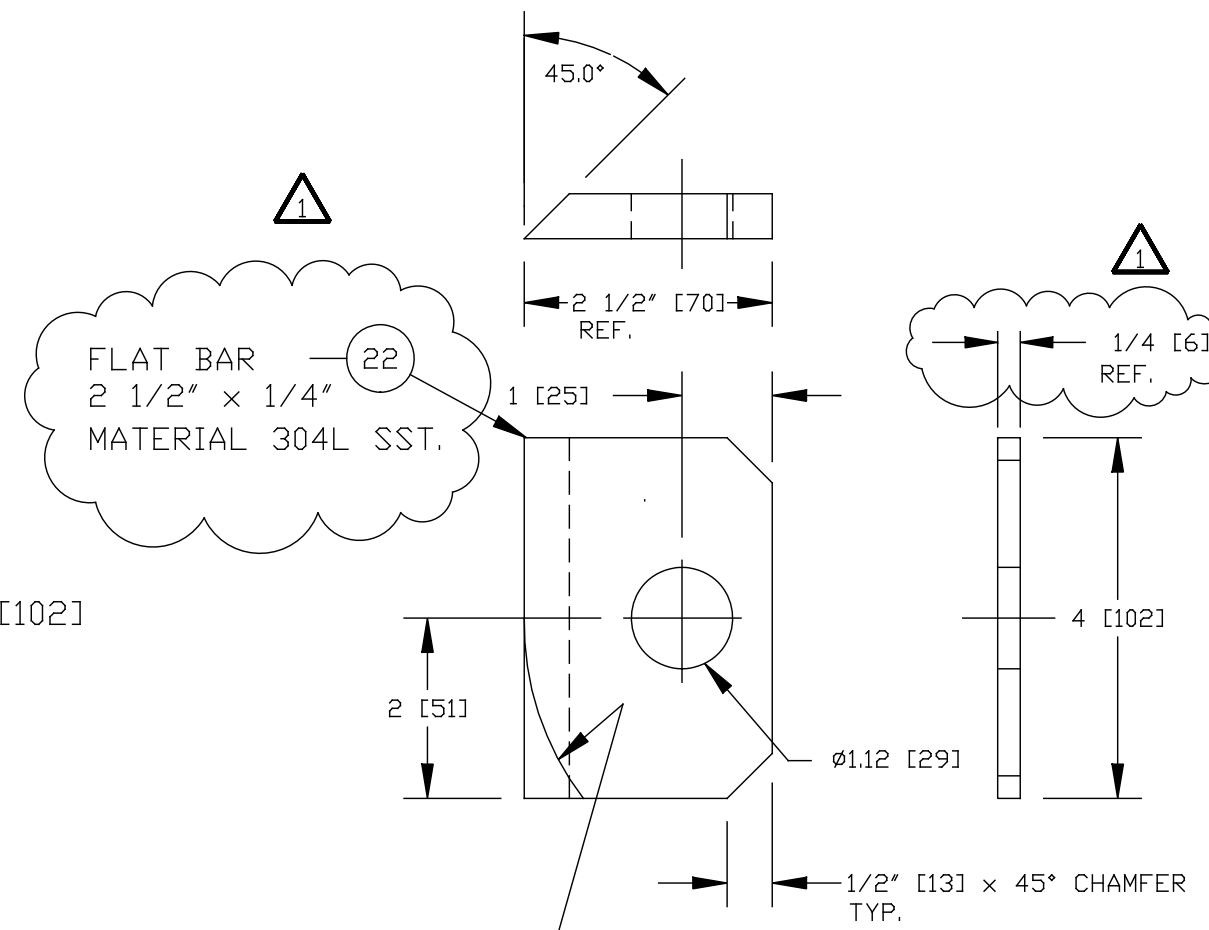
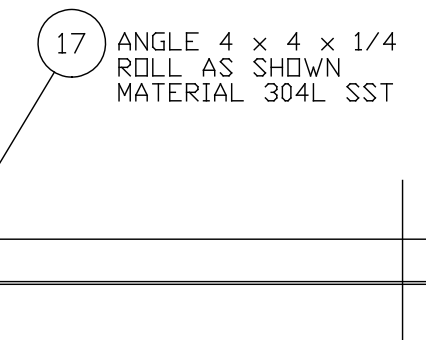
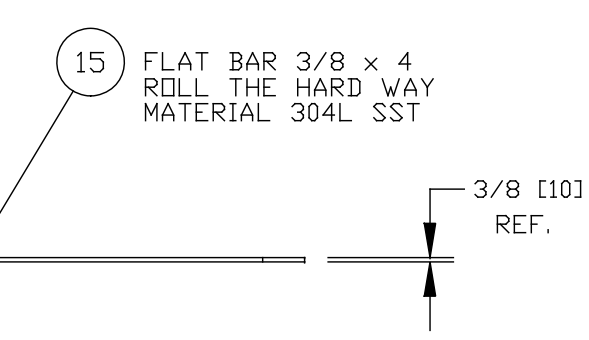
**DETAIL 18**  
 SHELL STIFFENERS UPPER CHAMBER  
 SCALE: 3/4"=1'-0"  
 QTY. 1  
 P/N: V0494001P18



**DETAIL 20**  
 "G" PORT DETAIL LOWER CHAMBER  
 SCALE: 1 1/2"=1'-0"  
 QTY. 12

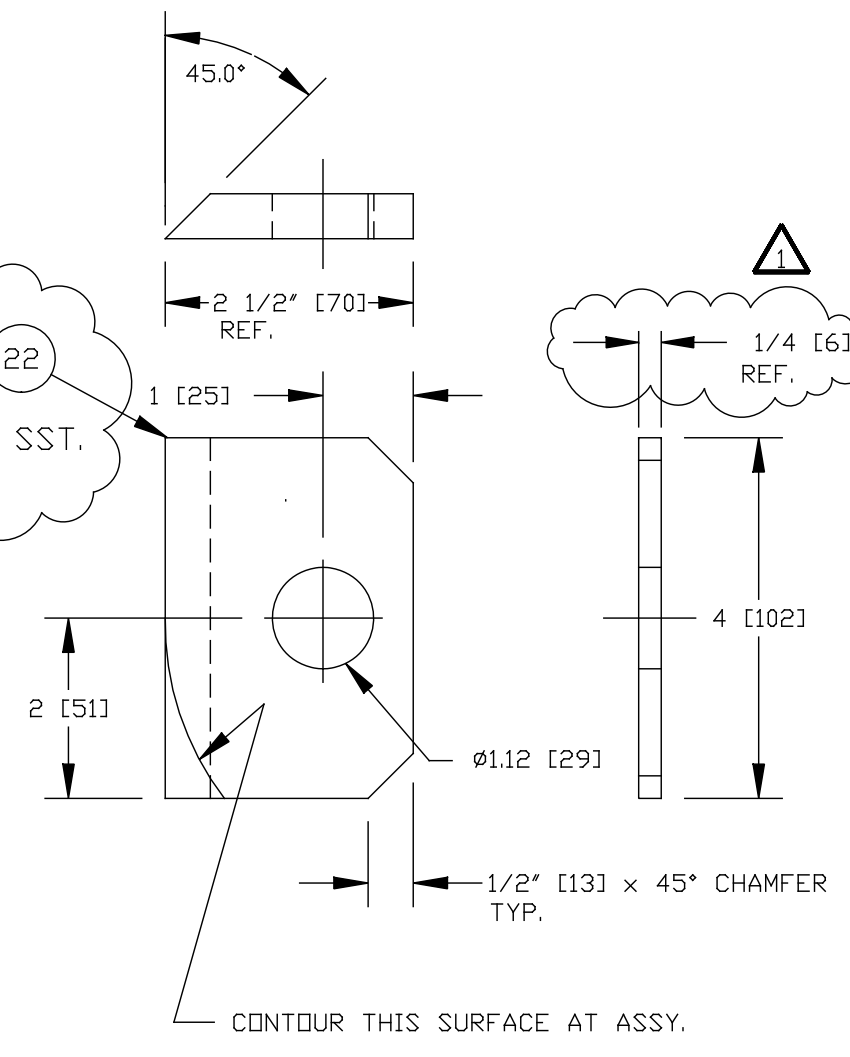


**DETAIL 14**  
 "F" PORT DETAIL LOWER CHAMBER  
 SCALE: 1 1/2"=1'-0"  
 QTY. 6  
 P/N: V0494001P14

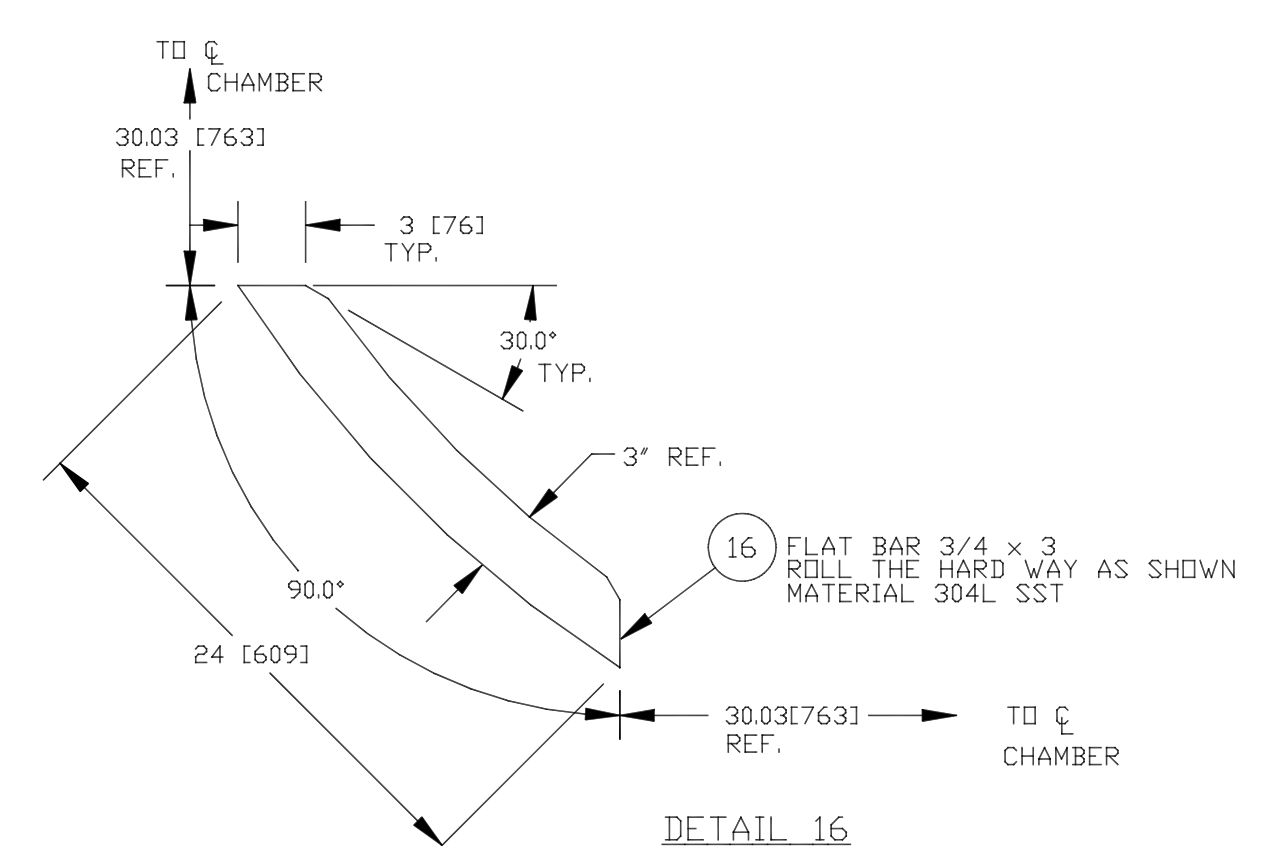


**DETAIL 22**  
 INTERNAL ATTACHMENT BRKT. UPPER  
 SCALE: HALF  
 QTY. 12  
 P/N: V0494001P22

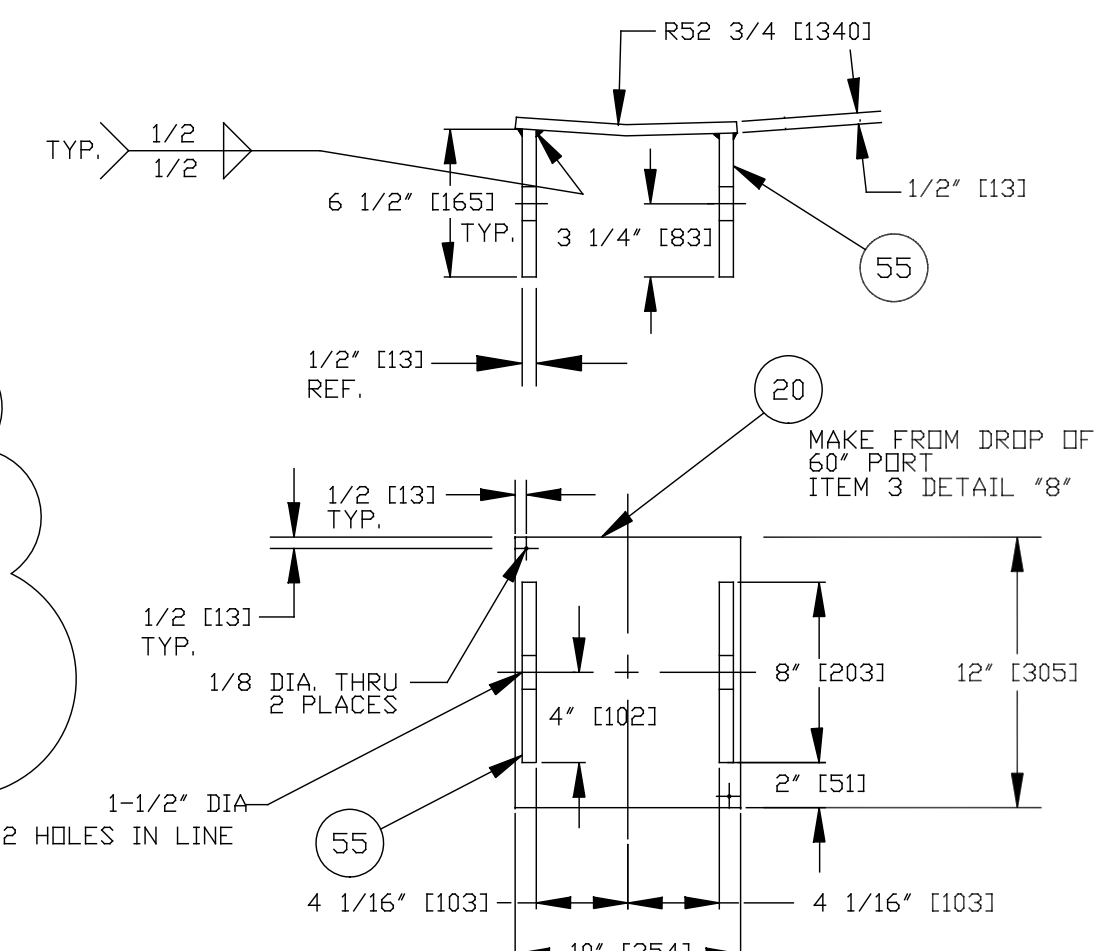
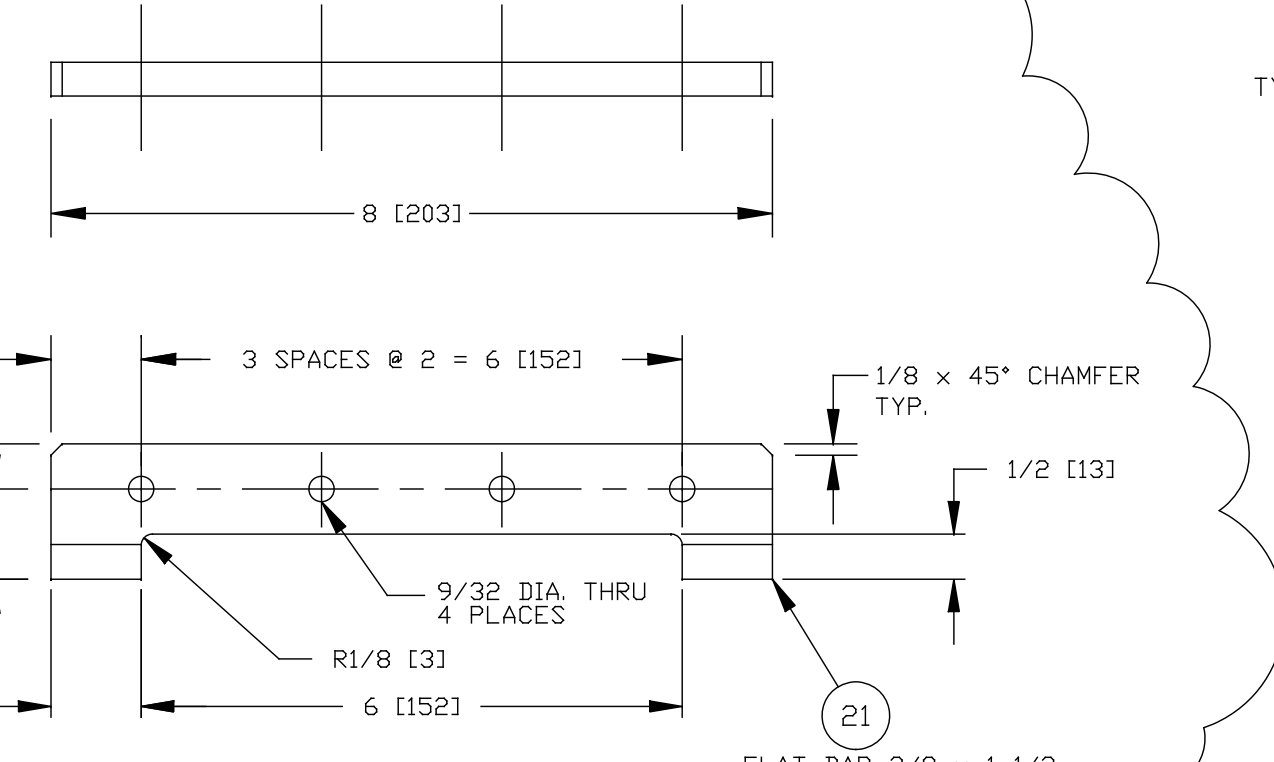
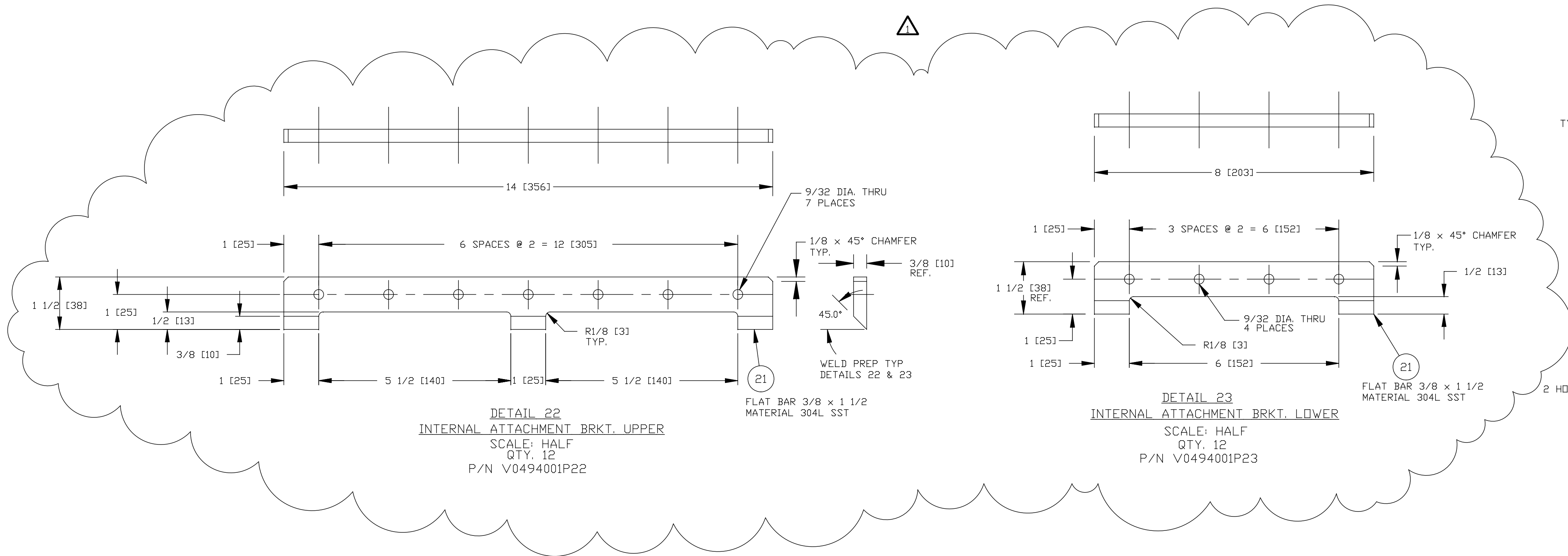
**DETAIL 23**  
 INTERNAL ATTACHMENT BRKT. LOWER  
 SCALE: HALF  
 QTY. 12  
 P/N: V0494001P23



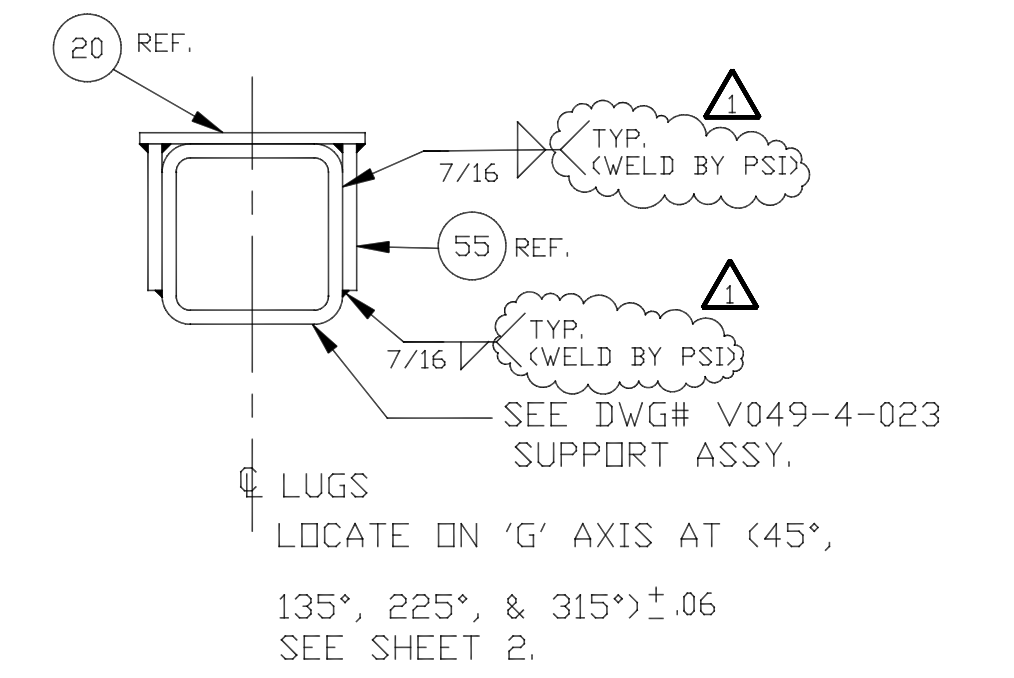
**DETAIL 24**  
 PLATFORM ATTACHMENT BRKT.  
 SCALE: HALF  
 QTY. 4  
 P/N: V0494001P24



**DETAIL 16**  
 STIFFENER 60° PORT  
 SCALE: 1 1/2"=1'-0"  
 QTY. 8  
 P/N: V0494001P16



**DETAIL 15**  
 SUPPORT PAD CHAMBER  
 SCALE: 1 1/2"=1'-0"  
 QTY. 4  
 P/N: V0494001P15



**DETAIL 25**  
 LUGS  
 SCALE: 1 1/2"=1'-0"  
 QTY. 4

**PROCESS SYSTEMS INTERNATIONAL INC.**  
 20 WALKUP DR. WESTBOROUGH, MASSACHUSETTS 01581 USA  
 (PROTOTYPE BSC)  
 STIFFENER & MISC. DETAILS  
 LIGO VACUUM EQUIPMENT

CAD FILE 4001S5	SIZE D	DWG. NO. V049-4-001	REV. 1
SCALE AS NOTED	SHEET 5 OF 5		