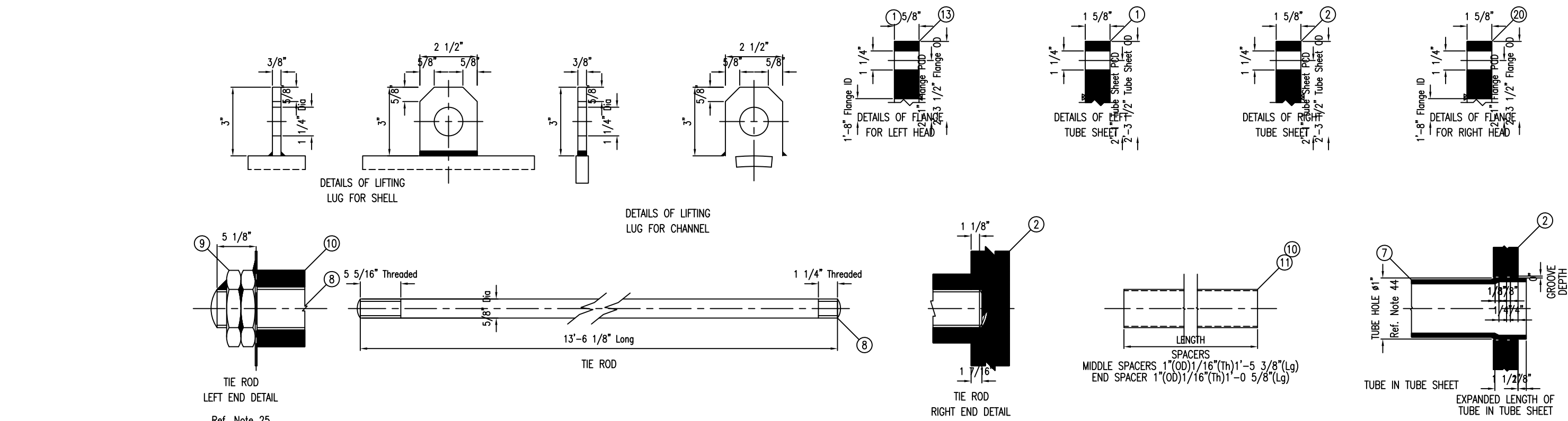
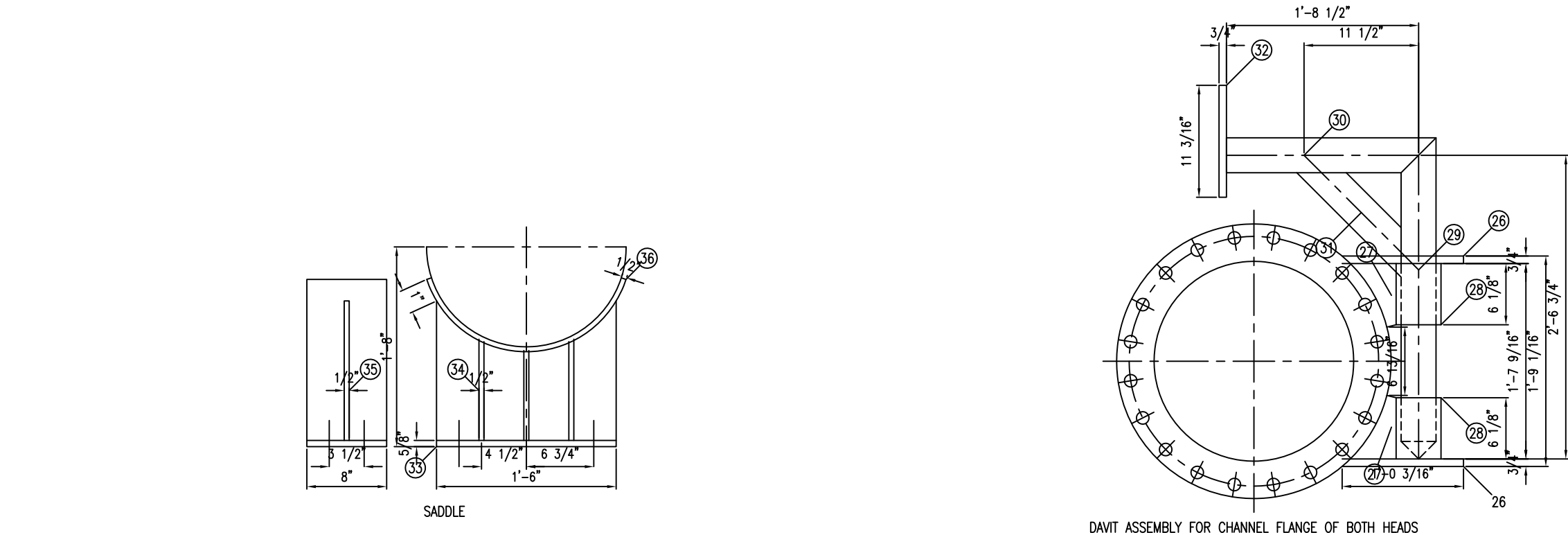
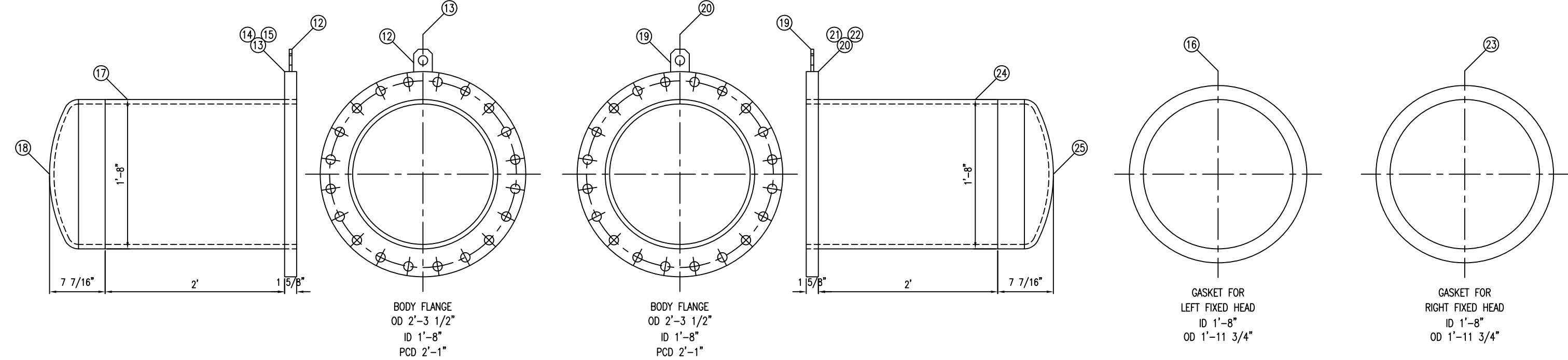
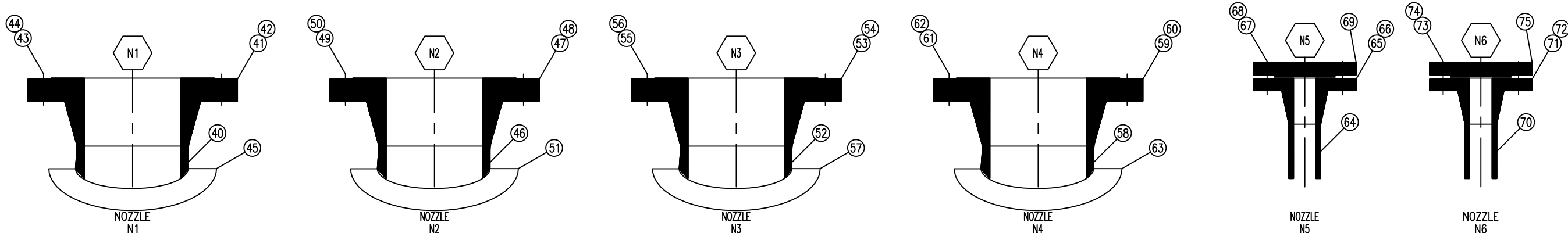




- NOTES :
1. ALL DIMENSIONS ARE IN FOOT-INCHES.
 2. ALL BOLT HOLES TO STRADDLE BOTH NATURAL CENTER LINES.
 3. FOR TOLERANCES REFER SHEET & TUBE EXCHANGER STD-7-15-0019 REV-3.
 4. HYDRO TEST SHALL BE DONE IN HORIZONTAL POSITION.
 5. UNIT TO BE MOUNTED IN HORIZONTAL POSITION.
 6. INDICATED THICKNESSES ARE MINIMUM AFTER CONSTRUCTION.
 7. FLANGES UP TO 24" SHALL CONFORM TO ASME B16.5.
 8. FLANGES ABOVE 24" SHALL CONFORM TO ASME B16.47.
 9. ALL NOZZLES 2" AND BELOW SHALL BE PROVIDED WITH STIFFENER.
 10. STIFFENER SIZE 1 1/4" X 1/4" AT RIGHT ANGLES.
 11. AFTER HYDROTEST, EQUIPMENT SHALL BE COMPLETELY DRIED OUT WITH HOT AIR.
 12. BLIND FLANGES SHALL BE PROVIDED WHERE MENTIONED.
 13. OTHER FLANGES SHALL BE COVERED WITH STEEL COVERS.
 14. FINISH OF GASKET SEATING FACE OF NOZZLE FLANGES SHALL BE 125-150 ARH FOR SPIRAL WOUND GASKETS.
 15. ALL SHARP CORNERS SHALL BE ROUNDED OFF WITH SMOOTH RADIUS UNLESS SPECIFIED OTHERWISE.
 16. ALL PRESSURE BEARING PLATES SHALL BE SUPPLIED IN NORMALIZED CONDITION.
 17. THESE PLATES SHALL CONFORM TO SA-20.
 18. TOLERANCE ON PLATE THICKNESS SHALL BE ON POSITIVE SIDE ONLY.
 19. FINAL ROLLING OF THE PLATES SHALL BE LENGTHWISE.
 20. ALL FLANGES SHALL BE 100% UT EXAMINED IN ACCORDANCE WITH SA368, SEC 8 & 8, BEFORE ANY DRILLING OPERATION.
 21. ALL WELDS SHALL BE PENETRATION WELDS, AFTER BACK CHIPPED TO SOUND METAL.
 22. IT SHALL BE REWELDED FROM OTHER SIDE, UNLESS OTHERWISE SHOWN.
 23. THOSE JOINTS THAT ARE NOT ACCESSIBLE FOR BACK CHIPPING, ROOT RUN SHALL BE CARRIED OUT WITH GTAW PROCESS.
 24. NON DESTRUCTIVE EXAMINATION :
 - 24.a. ALL BUTT WELD EDGES SHALL BE UT EXAMINED FOR A DISTANCE OF 2 TIMES MATERIAL THICKNESS.
 - 24.b. KNUCKLE REGION AND STRAIGHT FACE OF DISHD HEADS SHALL BE 100% PT EXAMINED, AFTER FORMING.
 - 24.c. 100% EXAMINATION OF DISHD HEADS SHALL BE DONE AFTER HEAT TREATMENT.
 - 24.d. ALL NOZZLE WELDS SHALL BE 100% EXAMINED AFTER ROOT RUN AND FINAL PASS.
 - 24.e. EXTERNAL SURFACES OF WELDS WITH THICKNESS MORE THAN 2" SHALL BE 100% PT EXAMINATION AFTER HYDROTEST.
 - 24.f. ALL WELDING EDGES SHALL BE CHECKED FOR CRACKS, LAMINATION OR SEGREGATIONS.
 - 24.g. MP/DP TEST SHALL BE CARRIED OUT ON INSIDE/OUTSIDE SURFACES OF DISHD HEADS.
 - 24.h. MACHINED SURFACES OF ALL FORNINGS SHALL BE EXAMINED FOR SURFACE DEFECTS BY MP/DP TEST.
 - 24.i. METHODS FOR FASTENING NUTS TO THE RODS :
 25. METHODS FOR FASTENING NUTS TO THE RODS :
 - 25.a. WELD SECOND NUT TO THE ROD.
 - 25.b. WELD BOTH NUTS.
 - 25.c. ALL WELDS TO EXTEND THE LENGTH OF ONE PLAT OF LENGTH.
 - 25.d. TOLERANCE FOR ALL NOZZLES ON TRUE VERTICAL LINE FROM ACTUAL NOZZLE CENTER LINE IS +/-1/8".
 26. TOLERANCE FOR ALL NOZZLES ON TRUE VERTICAL LINE FROM ACTUAL NOZZLE CENTER LINE IS +/-1/8".
 27. HEAT EXCHANGER SHALL BE HYDRO TESTED WITH CLEAN POTABLE WATER, SEA WATER SHALL NOT BE USED.
 28. AFTER HYDROTEST, EQUIPMENT SHALL BE DRAINED AND DRIED WITH DRY AIR.
 29. EQUIPMENT SHALL BE PERFECTLY CLEANED, AND FREED FROM ALL FOREIGN MATERIAL.
 30. ALL NOZZLES SHALL BE COVERED WITH TEMPORARY CLOSURES, TO AVOID DAMAGE IN TRANSPORT.
 31. PAINTING :
 - 31.a. ALL EXTERNAL UNMACHINED CS SURFACES SHALL BE PAINTED WITH ONE COAT OF INORGANIC ZINC SILICATE.
 - 31.b. PRIMER OF-75 MICRON DFT SHALL BE APPLIED AFTER SHOT BLASTING THE SURFACE TO SA 2 1/2 FINISH.
 - 31.c. EARTHING LUGS SHALL NOT BE PAINTED OR GALVANIZED.
 - 31.d. CLIENT'S NAME, ADDRESS, EIGHT NO., P.O.NO. SHALL BE PAINTED ON SHELL WITH WHITE PAINT.
 - 31.e. ALL FLANGE FACES AND OTHER MACHINED SURFACES SHALL BE GREASED AND PROTECTED FROM RUST.
 - 31.f. BOLT THREADS SHALL BE LUBRICATED.
 32. GASKETS :
 - 32.a. SERVICE GASKETS SHALL NOT BE USED FOR HYDROTEST.
 - 32.b. GASKET MATERIAL FOR HYDROTEST SHALL BE SAME AS SERVICE GASKET.
 - 32.c. EQUIPMENT SHALL BE SHIPPED IN AS HYDROTESTED CONDITION, WITHOUT REMOVING GASKETS USED FOR HYDROTEST.
 - 32.d. SERVICE GASKETS SHALL BE SENT LOOSE, AND ASSEMBLED AT SITE BY OTHERS.
 - 32.e. GASKET MATERIAL FOR NOZZLE FLANGES SHALL BE SS 316 SPIRAL WOUND WITH GRAFL FILLER AND CS OUTER RING.
 - 32.f. GASKETS SHALL BE IN ACCORDANCE WITH ASME 16.29.
 - 32.g. THE m AND y VALUES OF SPIRAL WOUND GASKET SHALL BE GUARANTEED AS PER ASME SEC VII, DIV I.
 - 32.h. GASKET CERTIFICATES SHALL INDICATE THE SAME AND SHALL BE PART OF FINAL DOCUMENTATION.
 - 32.i. VENT NOZZLES TO BE KEPT OPEN DURING FILLING OF WATER FOR HYDROTEST AND DURING DRAINING.
 - 32.j. DISH TOLERANCES SPECIFIED ARE MINIMUM AFTER FORMING.
 - 32.k. LIFTING LUGS ARE DESIGNED FOR LIFTING IN EMPTY CONDITION.
 - 32.l. HARDNESS OF METAL IN GASKET SHALL BE MINIMUM 15 BHN LOWER THAN FLANGE GASKET SEATING SURFACE METAL.
 - 32.m. HARDNESS IN NO CASE SHALL EXCEED 160 BHN.
 - 32.n. FILLER IN METAL JACKETED GASKETS SHALL NOT BE OF COMPRESSED TYPE.
 - 32.o. ALL GASKETS SHALL BE MADE IN ONE CONTINUOUS PIECE ALL AROUND.
 - 32.p. PASS PARTITION RIBS MUST BE CUT FROM SAME SHEET.
 - 32.q. PLAT JACKETED FACE OF THE GASKET SHALL BE ON PASS PARTITION PLATE SIDE.
 - 32.r. GASKET FOR GIRTH FLANGES SHALL BE METAL JACKETED ARAMIDE FIBER.
 33. ALL RF PADS SHALL BE PROVIDED 2 NOS. OF 1/4" NPT TELL TALE HOLES FOR AIR/SOAP SOLUTION TEST.
 34. HOLES TO BE PLUGGED WITH HARD GREASE AFTER TESTING.
 35. APPROPRIATE CODES FOR PIPES AND FITTINGS.
 36. ASME B16.9M FOR FACTORY MADE WROUGHT BUTT WELD FITTINGS.
 37. ASME B16.11 FOR FORGED FITTINGS, SOCKET WELDING AND THREADED JOINTS.
 38. HEAT TREATMENT CYCLE FOR DISHD END :
 - 38.a. LOADING TEMPERATURE : 540 DEG F
 - 38.b. RATE OF HEATING : 100 TO 400 DEG F PER HOUR
 - 38.c. SOAKING TEMPERATURE : 1100 +/- 18 DEG F
 - 38.d. SOAKING TIME : 30 TO 50 MINUTES
 - 38.e. RATE OF COOLING (UP TO 540 DEG F) : 100 TO 500 DEG F PER HOUR
 - 38.f. MEDIUM OF COOLING (<540 DEG F) : AIR
 39. NAME PLATE SHALL BE TACK WELDED TO BRACKET ON ALL FOUR SIDES IN ADDITION TO RIVETS.
 40. SEALING STRIPS SHALL BE CONTINUOUS.
 41. BROKEN EDGES OF BAFFLE PLATES, SHALL BE WELDED BACK AFTER WELDING SEALING STRIPS.
 42. TOP PORTION OF BAFFLE TO BE CUT TO ACCOMMODATE IMPINGEMENT PLATE.
 43. TUBE HOLE EDGES IN TUBE SHEET AND BAFFLES SHALL BE CHAMFERED TO 1X45 DEG ON BOTH SIDES.
 44. FOLLOWING PARTS SHALL BE SUPPLIED AS SPARES :
 - 44.a. 400K GASKETS FOR GIRTH JOINTS AND NOZZLES WITH BLIND FLANGES.
 - 44.b. 20% (MINIMUM 4 SETS) OF STUDS AND NUTS FOR GIRTH JOINTS AND NOZZLES WITH BLIND FLANGES.
 - 44.c. BOTTOM SEALING STRIP SHALL BE CONTINUOUS, AND SHALL EXTEND BETWEEN END BAFFLES.
 - 44.d. FOR BILL OF MATERIAL REFER SHEET 3 OF 3.
 - 44.e. STEAMING OUT SHALL BE REQUIRED ON SHELL/TUBE SIDE AT 75 LB/50 INCH AND AT 300 DEG F.
 - 44.f. SLIDING END SHALL BE PAINTED WITH " CAUTION : SLIDING END".
 - 44.g. ALL TUBES SHALL BE COLD DRAWN, SEAMLESS, SINGLE PIECE AND IN ANNEALED CONDITION.
 - 44.h. ALL TUBE HOLES SHALL HAVE CLOSE FIT AS PER TEMA.
 - 45.

REV	DATE	DESCRIPTION	DRN	CHKD	APPD
0	06-27-2025				
REVISION LIST					
COMPANY NAME					
CITY					
DRN GSD					
DATE: 06-27-2025					
Client: ABC ENGINEERS					
CHD AX					
DATE: 06-27-2025					
Consultant: ABC CONSULTANTS					
APP MR					
DATE: 06-27-2025					
End User: ABC ENGINEERS					
SCALE: 1:10.0					
SHEET: B					
Title :					
PART DETAILS					
This drawing is the property of Co. Name.					
No. of copies without written permission is forbidden.					
DWG. No.: hdt123_3RD		SHEET 2 OF 3		REV. No. 0	
PROJECT No.: PROJECT 123		EQUIP. No.: EQUIP 123			
TAG No.:		Company JOB No.:		XYZ 001	
HE-123		CLIENT'S PO No.:			



1. Client Name	ABC ENGINEERS
2. Consultant	ABC CONSULTANTS
3. Drawn by	SSD
4. Checked by	ABC
5. Approved by	SMR
6. Date	26-07-2025
7. Drawing Number	-Welle
8. Drawing Path	S:
9. Project No	PRO-JECT 123
10. Equipment No	EQUIP 123
11. Tag No	HE-123
12. Company Job No	J07 001
13. Est User	ABC ENGINEERS
14. Revision No	0
15. System of Drawing Units : Imperial (Foot Inch)	
1. Tube Diameter	1"
2. Number of Tubes	100
3. Length of Tube	15'
4. Tube Thickness SWS	1/16"
5. Tube Thickness	1/16"
6. Distance of Tube Pitch	1 1/4"
7. Number of passes	1/2"
8. Tube extension :	1/8"
9. Type of Pitch	Square
Gasket Width for Fixed Tube Sheet	1/2"
Gasket Width for Floating Tube Sheet	1/2"
Fixed Tube Sheet Data	
1. Tube Sheet Type	With Flange
2. Outer Tube Limit	1'-3"
3. PCD of Outer Sheet Flanges	2'-1"
4. OD of Left Tube Sheet	2'-3 1/2"
5. Thickness of Left Tube Sheet	1"
6. OD of Right Tube Sheet	2'-3 1/2"
7. Thickness of Right Tube Sheet	1 5/8"
Flanges Data	
1. Head Type	Fixed Head
2. OD of Flange	2'-3 1/2"
3. PCD of Flange	2'-1"
4. Type of Left Flange	Slip On
5. Number of Bolt holes	20
6. Diameter of bolt holes	1 1/4"
7. Length of Stud Bolt	4 1/4"
8. Diameter of stud bolts	1 1/8"
9. Type of Right Flange	Slip On

Shell Data	
1. Main Shell OD	-1'-8"
2. Main Shell Thickness	5/8"
3. Gap in Baffle OD & Shell ID	2' - Shell ID
4. Right Channel OD	-1'-8"
5. Right Channel Thickness	5/8"
6. Length of Right Channel	2'
7. Left Channel OD	-1'-8"
8. Left Channel Thickness	5/8"
9. Length of Left Channel	2'
Baffle Data	
1. Total Number of Baffles	:12
2. Gap of End Baffles	-1'-5 1/2"
3. OD of Baffles	-1'-5 5/8"
Map cut Baffle Data	
1. Number of Baffles	:5
2. Baffle Size % of Diameter	:75.00
3. Thickness of Baffles	:1/4"
Bottom cut Baffle Data	
1. Number of Baffles	:5
2. Baffle Size % of Diameter	:75.00
3. Thickness of Baffles	:1/4"
Map / Bottom cut Baffle Data	
1. Number of Baffle	:1
2. % Top cut	:10.00
3. % Bottom Cut	:10.00
4. Thickness of Baffles	:1/4"
Map / Bottom / Center cut Baffle Data	
1. Number of Baffle	:1
2. % Top cut	:5.00
3. % Bottom Cut	:5.00
4. Horizontal % of Middle portion Vertical	:50.00
5. Vertical % of Middle portion Vertical	:50.00
6. Thickness of Baffles	:1/4"
Tie Rod Data	
1. Number of Tie Rods	:4
2. Diameter of Tie Rods	:5/8"
3. Length of Tie Rods	:13'-6 1/8"

[illegible]

MARK	QTY	NOZZLE			FLANGE		RF PAD		NOZZLE	WELD SET		SHAFT	
No		SERVICE	SIZE	SCH	TYPE	CLASS	FACE	OD	THK	LENGTH	TYPE	A	B
W1	1	CONCRETE INLET	6"	40	ANSI B16.5	300	W8F5	10"	5/8"	6"	W2	5/8"	5/8"
W2	1	SWELL OUTLET	6"	40	ANSI B16.5	300	W8F5	10"	5/8"	6"	W2	5/8"	5/8"
W3	1	CONCRETE INLET	6"	40	ANSI B16.5	300	W8F5	10"	5/8"	6"	W2	5/8"	5/8"
W4	1	CONCRETE OUTLET	6"	40	ANSI B16.5	300	W8F5	10"	5/8"	6"	W2	5/8"	5/8"
W5	1	SWELL INLET	6"	40	ANSI B16.5	300	W8F5	10"	5/8"	6"	W2	5/8"	5/8"
W6	1	SWELL PAD ON A	1 1/2"		ANSI B16.5	300	W8F5	1 1/2"	1/2"	6"	W2	5/8"	5/8"

0	06-27-2025			CSD	AKK	HWR
REV	DATE		DESCRIPTION	DRN	CHKD	APPD
			REVISION LIST			
			COMPANY NAME			
			CITY			
DRN	CSD	Client:	ABC CONSULTANTS			
DATE	06-27-2025	Consultant:	ABC CONSULTANTS			
CHRD	AKK	End User:	ABC ENGINEERS			
DATE	06-27-2025	Title :				
APPD	HWR					
DATE	06-27-2025					
SCALE	1/10.0	GENERAL ARRANGEMENT				
SHEET	C					
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DATE	06-27-2025	DWG. No.:	hdc16-000	SHEET 3 OF 3	REV. No. 0	
TAG	No.:	COMPANY JOB No.:	XYZ 001	EXPT No.:	EQDPT 123	
HE-123	No.:	CLIENT'S PO No.:				