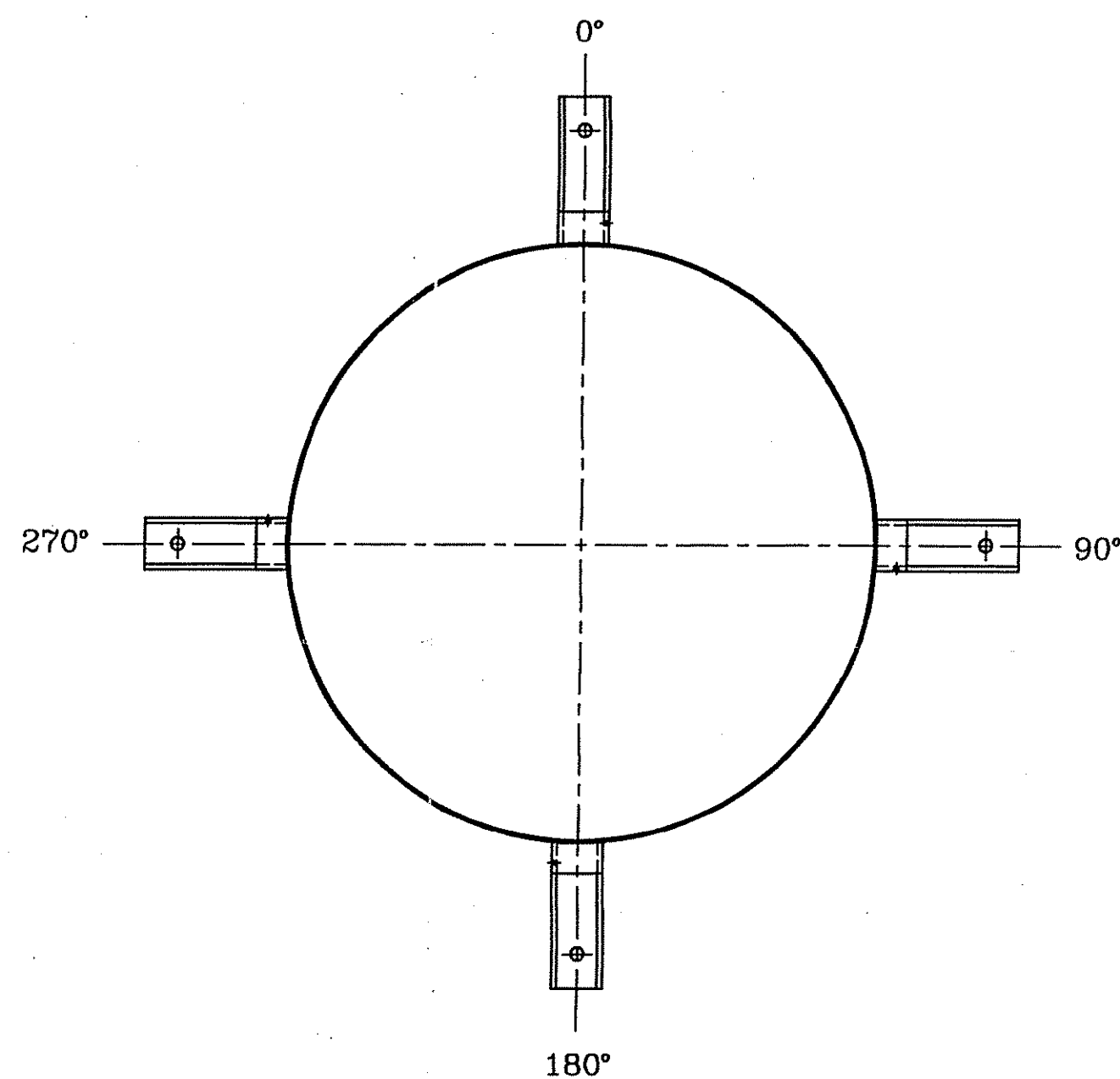


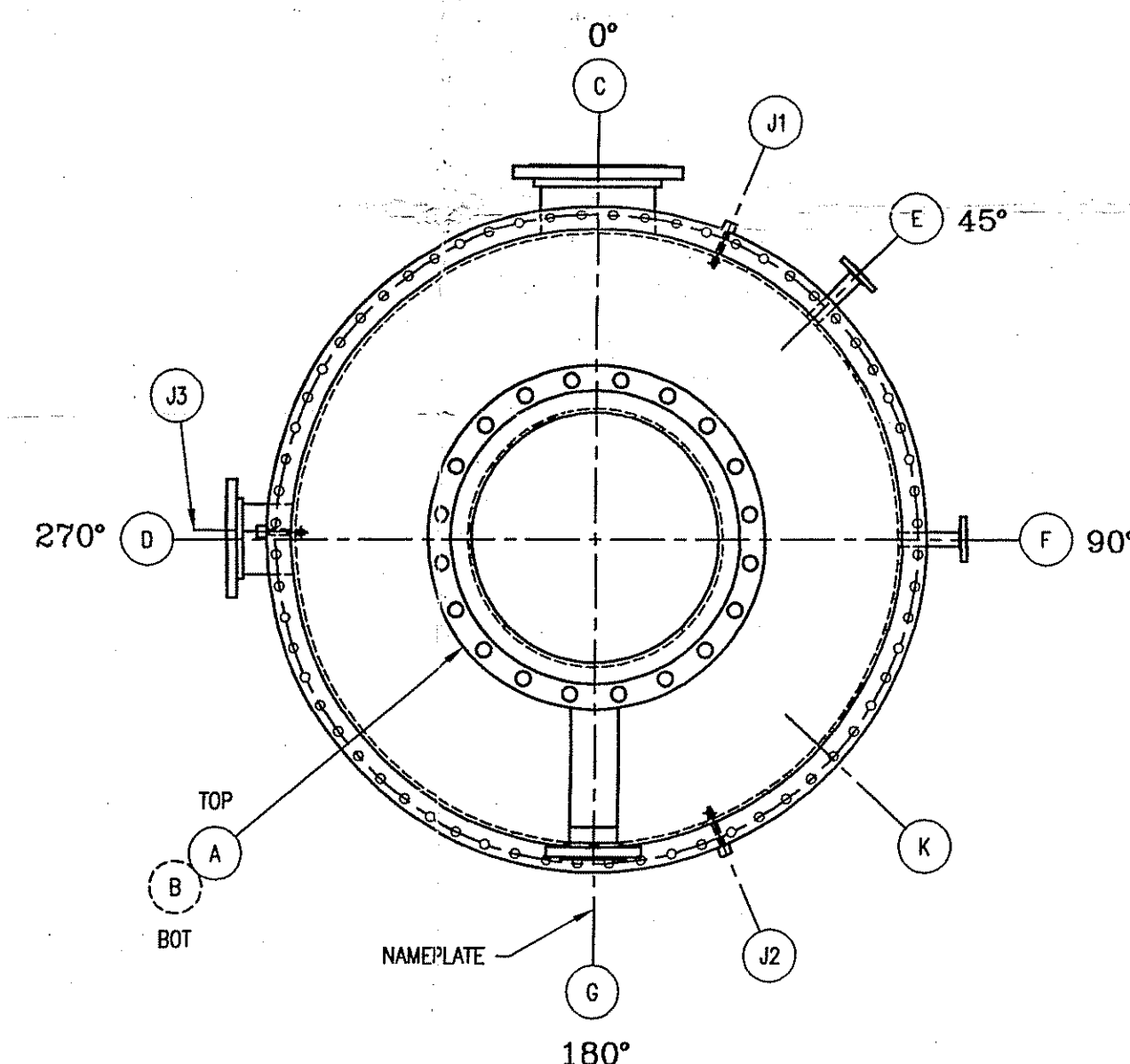
NOTES:

- PROJECTION MEASURED FROM OUTSIDE OF VESSEL TO EXTREME FACE OF FLANGE.
- NOZZLE BOLT HOLES TO STRADDLE 0°-180° CENTERLINE OR ITS PARALLEL UNLESS NOTED OTHERWISE.
- GASKET FINISH: 125 to 250 Ra PER ASME B16.5-1996, PARA. 6.4.4.3
- HYDRO-TEST SHALL BE PERFORMED WITH WATER CONTAINING NO MORE THAN 50 PPM CHLORIDE AND HELD FOR 1 HOUR MINIMUM. VESSEL SHALL BE DRAINED AND ALL RESIDUAL WATER MUST BE REMOVED IMMEDIATELY FOLLOWING TEST.
- WELDING PROCEDURES:

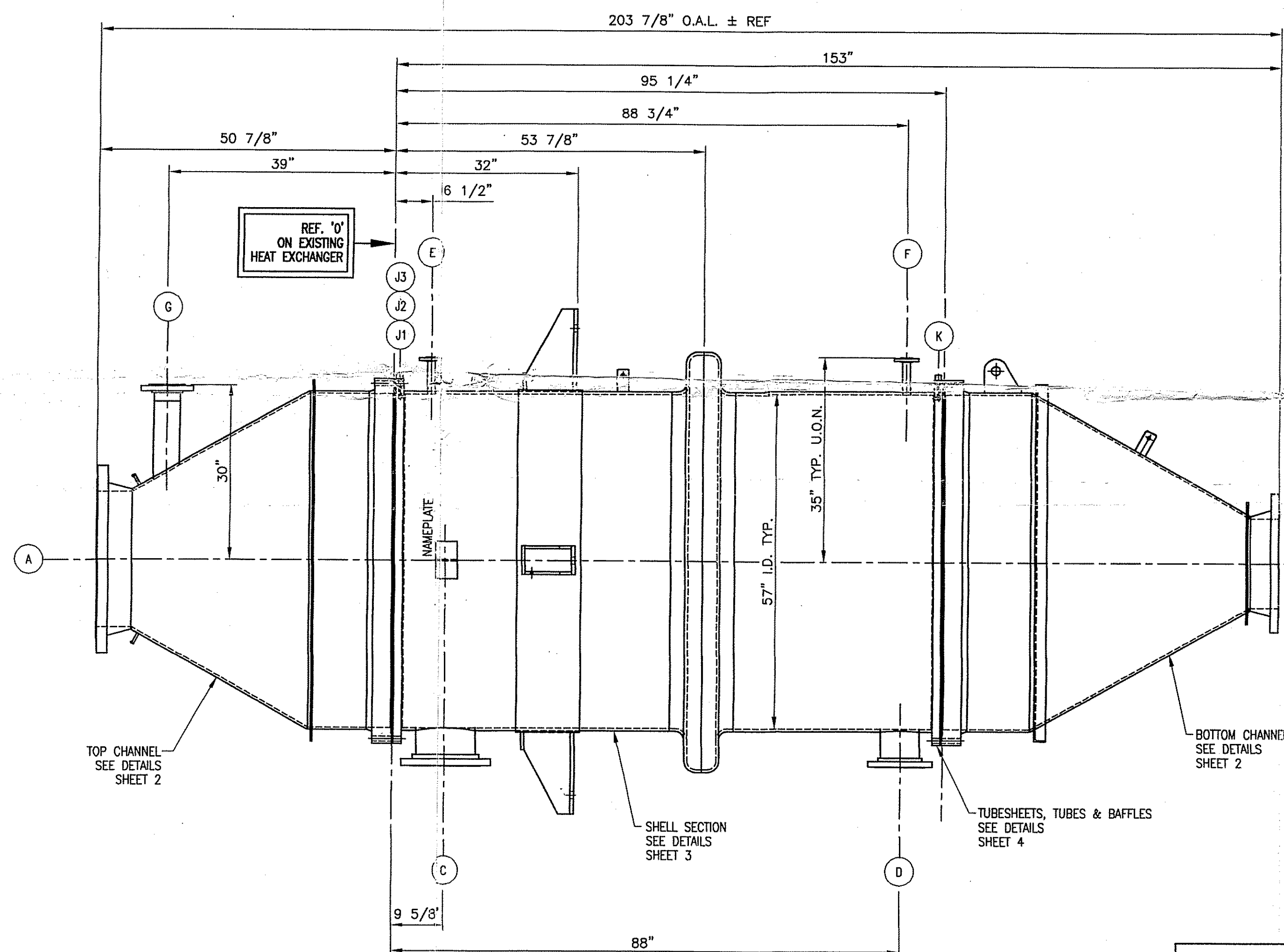
# 1 SMAW C.S. TO C.S.	# 21 GTAW C.S. TO C.S.
# 5 GTAW S.S. TO S.S.	# 36 FCAW S.S. TO S.S.
# 8 SMAW S.S. TO S.S.	# 37 FCAW S.S. TO C.S.
# 9 SMAW S.S. TO C.S.	# 43 GTAW S.S. TO C.S.
# 18 FCAW C.S. TO C.S.	
- NAMEPLATE BRACKET IS SA-240 304 "T" SHAPE, 4 1/4" HIGH x 6 1/2" LONG ON 4" STAND-OFF (WELDED TO VESSEL).
- TOLERANCES:
PER WTC STANDARD, CUSTOMER STANDARD (WHEN APPLICABLE) & TEMA. MORE STRINGENT TOLERANCES WILL CONTROL.



SUPPORT PLAN VIEW
TRUE ORIENTATION
SCALE: 3/4"=12"



PLAN VIEW
TRUE ORIENTATION
SCALE: 3/4"=12"



ELEVATION VIEW
SEE PLAN VIEW FOR TRUE ORIENTATION
SCALE: 3/4"=12"

DESIGN DATA

CODE: ASME SECTION VIII DIV.1 2001 ED. TEMA EIGHTH EDITION 1999
 DESIGN CONDITIONS: CLASS: B
 SHELL SIDE: FV/150 PSIG AT 375 °F
 TUBE SIDE: FV/100 PSIG AT 400 °F
 SHELL SIDE MAWP: FV/150 PSIG, LIMITED BY: TUBESHEET
 TUBE SIDE MAWP: FV/100 PSIG, LIMITED BY: TUBESHEET
 SHELL SIDE RADIOGRAPHY: SPOT STRESS RELIEF: N/A
 TUBE SIDE RADIOGRAPHY: SPOT STRESS RELIEF: N/A
 SHELL SIDE JOINT EFFICIENCY: 85%
 TUBE SIDE JOINT EFFICIENCY: 85%
 SHELL SIDE CORROSION ALLOWANCE: 1/16"
 TUBE SIDE CORROSION ALLOWANCE: NONE
 HYDROSTATIC TEST:
 SHELL SIDE: 195 PSIG
 TUBE SIDE: 130 PSIG
 SHIPPING WEIGHT: 20675 LBS. BUNDLE WEIGHT: 15195 LBS.
 TEST WEIGHT: 33975 LBS. SPECIFIC GRAVITY: ---
 NUMBER OF PASSES, SHELL SIDE: 1
 NUMBER OF PASSES, TUBE SIDE: 1
 HEAT TRANSFER AREA: 3757 FT²

CONSTRUCTION DATA

TYPE OF HEADS:
 SHELL SIDE: ---
 TUBE SIDE: CONICAL
 HEAD MATERIALS:
 SHELL SIDE: ---
 TUBE SIDE: SA-240 316/316L
 SHELL MATERIALS:
 SHELL SIDE: SA-516 70
 TUBE SIDE: SA-240 316/316L
 TUBES: SA-240 S31803
 TUBESHEETS: SA-240 S31803
 BAFFLES: SA-516 70
 TIE RODS: SA-36
 GIRTH FLANGES: SA-182 F316/316L
 EXPANSION JOINT: SA-516 70
 EXPANSION JOINT TYPE: FLANGE AND FLUED (TEMA)
 NOZZLE FLANGES, SHELL SIDE: SEE NOZZLE SCHEDULE
 RATING: 150#
 FACING: SEE NOTE 3
 NOZZLE FLANGES, TUBE SIDE: SEE NOZZLE SCHEDULE
 RATING: 150#
 FACING: SEE NOTE 3
 EXTERNAL PIPE SPEC. SHELL SIDE: SEE NOZZLE SCHEDULE
 EXTERNAL PIPE SPEC. TUBE SIDE: SEE NOZZLE SCHEDULE
 COUPLINGS, SHELL SIDE: SEE NOZZLE SCHEDULE
 COUPLINGS, TUBE SIDE: ---
 IMPINGEMENT PLATE: ---
 CLADDING: ---
 BOLTING: SA-193 B7 / SA-194 2H
 GIRTH FLANGE GASKETS: 1/8" THK. TEFLON
 NOZZLE GASKETS: ---
 SUPPORTS: SA-516 70
 INSULATION: 2 1/2" THK. BY OTHERS
 PAINT: C.S. ONLY: BLAST & PRIME (1) SHOP COAT RED OXIDE PRIMER

Vendor	Print File: 371510W	Date: 4/3/03
Sheet(s): 4 of 7	Equipment Number: E-4220-7R	
Project Number: 147-2512	Number: 4025	
Purchase Order No.: 4800105039		
Plant: 0147		
Reviewed		
Drafting Design:		
Approved		
Project Engineer:		
Approved		
Reliability Engineer:		

NAT'L BD. SERIAL NO. 3019	
WARD TANK AND HEAT EXCHANGER CORP. N.C.	
RT-3	W
SHELL	MAWP: FV/150 PSI @ 375 °F
JKT./TUBE SIDE	MAWP: FV/100 PSI @ 400 °F
SHELL	MDMT: -20 °F @ 150 PSI
JKT./TUBE SIDE	MDMT: -20 °F @ 100 PSI
TEST PRESS.	SHELL: 195 PSI JKT./TUBE SIDE: 130 PSI
MFG. S. N.	HC-4981 YR. BUILT: 2003
CUSTOMER	KOSA - WILMINGTON PLANT
P.O. NO.	4800105039 DATE: 9/6/02
NOMENCLATURE	#57-96 BEM HEAT EXCHANGER
EQUIP. NO.	E-4220-7R

AS-BUILT PRINT

WARD TANK AND
HEAT EXCHANGER CORP
By: T.J. Whalen
Date: 3/25/2003

NAMEPLATE STAMPING DETAIL

MARK	QTY	SIZE	SERIES	TYPE	MAT'L	BORE	SERVICE	ITEM NO.	WALL THK.	SCH.	MAT'L	INT. RAD.	THK.	WIDTH	PROJ.	NECK	PAD	ATTACHMENT NO.	REMARKS
SCHEDULE OF OPENINGS																			
K	1	0.5"	3000#	HLF CPLG	SA-105		THD. DRAIN	40, 41	-	-	-	-	-	-	-	3/16	-	lb	w/PLUG SEE DETAIL
J1-3	3	0.5"	3000#	HLF CPLG	SA-105		THD. VENT	38, 39	-	-	-	-	-	-	-	3/16	-	lb	w/PLUG SEE DETAIL
G	1	4"	150#	LJ	SA-105		- SPRAY	35-37	0.237	40S	PIPE: SA-312 TP316/316L STUB: SA-403 WP316/316L	1/8"	-	-	-	**	1/4"	-	III, VI
F	1	1"	150#	RFSO	SA-105		- OUTLET, SHELL	33, 34	0.250	160	SA-106 B	1/8"	-	-	-	**	1/4"	-	III, VI
E	1	1"	150#	RFSO	SA-105		- OUTLET, SHELL	31, 32	0.250	160	SA-106 B	1/8"	-	-	-	**	1/4"	-	III, VI
D	1	6"	150#	RFSO	SA-105		- INLET, SHELL	29, 30	0.432	XH	SA-106 B	1/8"	-	-	-	**	7/16"	-	III, VI
C	1	10"	150#	RFSO	SA-105		- OUTLET, SHELL	27, 28	0.365	STD	SA-106 B	1/8"	-	-	-	**	3/8"	-	III, VI
B	1	16"	150#	RFWN	SA-182 F316/316L	40S	OUTLET	26	0.375"	-	-	1/8"	-	-	-	**	-	-	-
A	1	24"	150#	RFWN	SA-182 F316/316L	40S	INLET	25	0.375"	-	-	1/8"	-	-	-	**	-	-	-
FLANGE																			
NOZZLE																			
REIN. PAD																			
Fillet Weld Size																			

REV NO.	DATE	DESCRIPTION	BY
2	3/25/2003	AS-BUILT	DMB
1	11/7/2002	REVISED PER CUSTOMERS COMMENTS/RELEASED FOR FABRICATION	DMB
0	9/30/2002	FOR CUSTOMER APPROVAL	DMB
THIS DRAWING IS THE PROPERTY OF WARD TANK AND HEAT EXCHANGER CORP AND IS ONLY TO BE USED IN REFERENCE TO WORK PROPOSED OR CONTRACTED BY THIS COMPANY. IT MUST NOT BE REPRODUCED OR SUBMITTED TO OUTSIDE PARTIES WITHOUT THE WRITTEN PERMISSION OF WARD TANK AND HEAT EXCHANGER CORP.			

WARD TANK AND HEAT EXCHANGER CORP	
8670 E. HARRIS BLVD. CHARLOTTE, NC 28215	
CUSTOMER	PURCHASE ORDER NUMBER
KOSA - WILMINGTON PLANT WILMINGTON, NC	4800105039
TITLE	
#57-96 BEM HEAT EXCHANGER	
EQUIPMENT NO.	SCALE
E-4220-7R	AS NOTED
NO REQ'D	1
APPROVED BY	DATE
TJ Whalen	3/25/03
DRAWN BY	DATE
BRADSHAW	9/20/2002
DRAWING NUMBER	2002-HC-4981
REV. NO.	2
SHEET 1 OF 4	

#104210