

CAUTION

THE PRESSURE AND TEMPERATURES SHOWN ON THE S.H.E. NAMEPLATE RELATE ONLY TO THE PRESSURE RETENTION CAPABILITY OF THIS HEAT EXCHANGER. COMPONENTS OF THIS HEAT EXCHANGER HAVE BEEN DESIGNED FOR SPECIFIC OPERATING CONDITIONS. A CHANGE IN SERVICE OR DEVIATION FROM THE SPECIFIED OPERATING CONDITIONS REQUIRES THAT A MECHANICAL DESIGN CHECK BE MADE IN ORDER TO AVOID POSSIBLE DAMAGE TO THE HEAT EXCHANGER.

NOTES

- 1 EST WT EMPTY 27,900# FULL (TEST) 40,900# OPER 33,690#
- 2 ALL BOLT HOLES STRADDLE NORMAL CENTERLINES
- 3 SEAL ALL OPEN NOZZLES WITH BLIND FLANGES PROVIDE EACH WITH A FULL FACE RED RUBBER GASKET AND A FULL ACCOMPANY OF STUDS AND NUTS
- 4 ~~125-250~~ MAIN GASKET SURFACES
- 5 PAINT C STL SHELL ONLY SANDBLAST O.S. PER SSPC-SP-10 TO A UNIFORM PROFILE OF 1 TO 2 MILS. APPLY (1) PRIME COAT OF CARBOZINC 859 2-3 MILS DFT. APPLY (1) INTERMEDIATE COAT OF CARBOGUARD 890 4-6 MILS DFT. APPLY (1) FINISH COAT OF CARBOTHANE 134 HG 2-3 MILS DFT. TOTAL DFT IS 8-12 MILS. (FINISH COLOR LIGHT GREY) SUPPORTS ONLY SANDBLAST O.S. PER SSPC-SP-10 TO A UNIFORM PROFILE OF 1 TO 2 MILS. APPLY (2) COATS OF THERMALINE 450 NOVALAC 4-5 MILS. DFT. EACH TOTAL DFT IS 8-10 MILS. (FINISH COLOR GREY) TUBE SIDE. NO PAINT SHELL AND SUPPORTS APPLY COATING SYSTEM 1 Δ
- 6 ALL 316/316L S STL MATERIAL SHALL BE DUAL CERTIFIED
- 7 THE FLATNESS TOLERANCE (MAX. DEVIATION FROM A PLANE) ON PERIPHERAL GASKET CONTACT SURFACES SHALL BE 1/32" THE USE OF A STRAIGHT EDGE TO DETERMINE FLATNESS IS ACCEPTABLE
- 8 THE TUBE & SHELL SIDE MAIN BODY SEAMS AND NOZZLE TO SHELL WELDS SHALL BE FULL PENETRATION DOUBLE-WELDED JOINTS WHEN SOUND BACK WELDING IS NOT FEASIBLE DUE TO INACCESSIBILITY, SINGLE WELDED JOINTS WHICH UTILIZE A GTAW OR GMAW ROOT PASS SHALL BE USED. PERMANENT BACKING STRIPS ARE NOT PERMITTED. TEMPORARY BACKING STRIPS MAY BE USED AFTER WELDING THEY SHALL BE REMOVED AND THE SURFACE SHALL BE PT EXAMINED
- 9 HYDRO TEST WITH POTABLE WATER WATER SHOULD CONTAIN LESS THAN 50 PPM CHLORIDE AND THE PH SHOULD BE BETWEEN 6 AND 9 MIN. METAL TEMPERATURE DURING TEST IS 40 F
- 10 PMI OF ALL 316 S STL MATERIAL SHALL BE PERFORMED PER SPEC 2-1TS-US-B0-M & U
- 11 ALL BODY FLANGES AND TUBESHEETS ARE TO BE MATCH MARKED TO PREVENT MISASSEMBLY
- 12 PRIOR TO WELDING, ALL SURFACES SHALL BE CLEANED OF PAINT, OIL, GREASE, AND OTHER FOREIGN MATTER
- 13 AFTER HYDRO TEST, THE INTERIOR SHALL BE DRAINED, HOT AIR DRIED AT 120°F MAXIMUM, AND CLEANED OF SLAG, SPATTER, AND FOREIGN MATERIAL
- 14 PACKAGE AND LABEL ALL SPARE PARTS AND GASKETS WITH THE CUSTOMERS PURCHASE ORDER NUMBER AND EQUIPMENT NUMBER
- 15 MARKING INKS, CRAYONS, PAINTS, TAPE, OR OTHER SUBSTANCES THAT CONTAIN CHLORINE, CARBON, OR HARMFUL METALS OR METAL SALTS SUCH AS ZINC, LEAD, OR COPPER WHICH MAY CAUSE CORROSIVE ATTACK WHEN THE PART IS HEATED, SHALL NOT BE USED. WAX CRAYON OR VEGETABLE DYE MARKERS ARE ACCEPTABLE
- 16 S STL METAL SHALL NOT BE CONTAMINATED WITH C STL TOOLS, BRUSHES, OR GRINDING DISCS DURING WELDING OR CLEANING
- 17 PROVIDE A NITROGEN CHARGE OF 10 PSIG FOR BOTH SIDES. PROVIDE A GAUGE AND DRAIN VALVE ON EACH SIDE. ALL COVERS SHALL BE PAINTED ORANGE AND CLEARLY MARKED WITH A REMOVABLE TAG INDICATING THE VESSEL IS UNDER PRESSURE
- 18 SHELL ROUNDNESS SHALL BE CHECKED WITH A SWEEP AFTER FABRICATION SWEEP SHALL CONSIST OF 2 CIRCLES THE SAME DIAMETERS AS BAFFLES & SPACED 18" APART
- 19 PAINT CUSTOMER PURCHASE ORDER NUMBER AND EQUIPMENT NUMBER ON THE SHELL IN 3" HIGH LETTERS AND WITH HIGHLY VISIBLE PAINT
- 20 WHENEVER POSSIBLE MATERIAL SHALL BE MANUFACTURED IN THE U.S. FOREIGN MATERIAL MAY BE USED WITH PERMISSION FROM CUSTOMER UNDER NO CIRCUMSTANCES SHALL MATERIAL FROM CHINA OR NORTH KOREA BE USED
- 21 PROVIDE CUSTOMER WITH ALL MTR'S
- 22 ATTACH S STL TAG TO NAME PLATE BRACKET WITH "KBR DESIGN AREA 110" ON IT
- 23 ALL REINFORCING PADS SHALL BE AIR AND SOAP TESTED AT 15 PSIG PRIOR TO HYDRO TEST
- 24 PLUG ALL WEEP HOLES WITH GREASE
- 25 FORGINGS 4" AND GREATER REQUIRE UT TESTING PER SA-508 INCLUDING SUPPLEMENT 2



NATIONAL BOARD NO. REQ'D

CERTIFIED BY

SOUTHERN HEAT EXCHANGER CORP.

TUSCALOOSA, ALABAMA

SHELL	MAWP	150	PSI	145	F
	MAEWP	XXXX	PSI	XXXX	F
	MDMT	10	F	150	PSI
TUBE	MAWP	355	PSI	210	F
	MAEWP	XXXX	PSI	XXXX	F
	MDMT	10	F	355	PSI

SHECO SER NO.	10-0246 A/B	YEAR	2011
CUST ORDER	MPC10012375		
CUST ITEM	HX1019/HX2019	AREA	110/110
EXTRACTION AIR TRIM COOLER			
TEST PRESSURE SS 195, TS 465 PSIG			

ANSI NOZZLE SCHEDULE

	SIZE	RATE	FACE	NOZZLE NECK	SERVICE
				TUBE SIDE	
T1	20"	300#	RFWN	3/8" THK R	EXTRACTION AIR INLET
T2	20"	300#	RFWN	3/8" THK R	EXTRACTION AIR OUTLET
● D	2"	300#	RFWN	STD WT	DRAIN
● V	2"	300#	RFWN	STD WT	VENT
				SHELL SIDE	
S1	10"	150#	FFWN	X-STG	COOLING WATER INLET
S2	10"	150#	FFWN	X-STG	COOLING WATER OUTLET

● PROVIDE WITH BLIND FLANGE, STUDS, NUTS, & SERVICE GASKETS

- 26 TUBES SHALL BE EDDY CURRENT TESTED PER SA-450
- 27 ADD S STL PLATE TO NAME PLATE BRACKET WITH "FIXED TUBESHEET HEAT EXCHANGER-INTRODUCE SHELL SIDE FIRST BEFORE INTRODUCING THE TUBE SIDE" STAMPED ON IT
- 28 WIND LOAD ASCE 7-05, 100 MPH, EXPOSURE CAT "C", OCCUPANCY CAT III, IMPORTANCE FACTOR I=1.15 SEISMIC LOAD ASCE 7-05, SITE CLASS "C", I=1.25, OCCUPANCY CAT III, DESIGN CAT "B", FA=1.20, Fv=1.70, SDS=0.163G, SD1=0.099G
- 29 PWHT WELD OVERLAY COVERS $\bullet$ 1100 $\pm$ 25F FOR 1 HR MIN

NON-PRESSURE PARTS (20)

SUPPORTS	SA-36	LIFT LUG	SA-36
BAFFLES / SUPPORTS	SA-36	IMP PLATE / RODS	SA-36
TIE RODS / SPACERS	C STL/S STL	NAMEPLATE BRACKET	SA-240 304
ANCHOR BOLTS (BY OTHERS)	A-325		
WPS P1-P1	W-42(SMAW) W-72(FCAW) W-89(NEUTRAL(SAW) W-96(GTAW)		
WPS P1-P8	W-2(SMAW) W-112(FCAW) W-172(GTAW)		
WPS P8-P8	W-3(SMAW) W-81(FCAW) W-90(SAW) W-97B(GTAW) Δ		
WPS CLAD	W-376 W-377 W-378 W-379		

ASME CODE REQUIREMENTS

	PSIG	SHELL SIDE	TUBE SIDE
DESIGN PRESSURE		150	355
DESIGN TEMPERATURE (MAX/MIN)	F	145/10	210/10
HYDRO TEST PRESSURE (1 HOLD HOUR)	PSIG	(9)195	(9)465
CORROSION ALLOWANCE (C STL ONLY)		1/8"	NONE
POSTWELD HEAT TREATMENT (29)		NONE	NONE
RADIOGRAPHIC EXAMINATION		SPOT	SPOT
METAL TEMP	F	104	112

ASME CODE STAMP / NAT'L BD REG IS REQUIRED	
CUSTOMER INSPECTION IS REQUIRED	
SPECIFICATIONS 2007 ASME CODE SECT VIII DIV 1, ADDENDA A09 (TEMA 9th ED)	
SPECIAL SERVICE NONE CODE CASE NONE PARTIAL DATA REPORTS NONE	
TEMA (R) EXEMPT FROM IMPACT TESTING PER UCS-66, UHA-51	
TUBES SA-249 316L (WLD)(6)(20)(26) WALL MIN	
NO 1342 OD 3/4" BWG 16 LENGTH 20'-0"	
TUBESHEETS SA-240 316L (6)(20)	

PART	SHELL SIDE (20)	TUBE SIDE (6)(20)
VESSEL	SA-516 GR 70	SA-240 316L
COVERS		SA-516 GR 70 OVERLAY WITH SA-240 316L
FORMED HEADS		
FITTINGS		
BODY FLANGES		SA-965 F 316L(25)
NOZZLE FLANGES	SA-105	SA-182 F 316L
COUPLINGS/COUPLERS		
NOZZLE PIPE	SA-106 GR B	SA-240 316L/SA-312 316L
NOZZLE REIN PADS		SA-240 316L
STUDS/NUTS	SA-193-B7/SA-194-2H	SA-193-B7/SA-194-2H
GASKETS		SEE SHEET 5 FOR DETAIL
INSULATION (BY OTHERS)	NONE	3" MESH GUARD AT INLET

REVISIONS

Δ 05/09/13	REVISED PAINT NOTE, WPS, NAMEPLATE DETAIL, & ADDED WARNING NOTE TO PAGE 5
Δ 07/06/11	ADDED REQ NO & NOTE 29
Δ 02/23/11	GENERAL REVISIONS
CERTIFIED	ENG <i>5/9/13</i>
CUSTOMER	SOUTHERN COMPANY SERVICES
CUSTOMER P.O. NO	MPC10012375
REQ NO	MC-212
ITEM NO	HX1019/HX2019
PROJ	KEMPER COUNTY IGCC
PLANT	KEMPER COUNTY
UNIT	UNIT 1 PROJECT
LOCATION	KEMPER COUNTY, MS

TEMA SIZE AND TYPE

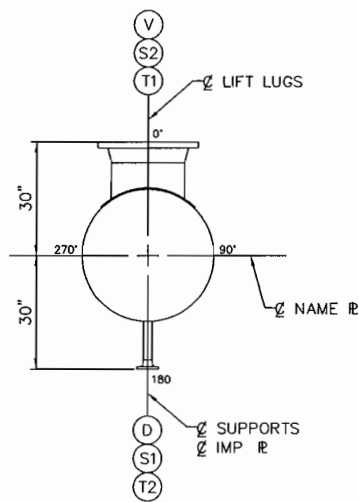
(2) 38-240 NEN EXTRACTION AIR TRIM COOLER

SOUTHERN HEAT EXCHANGER CORP.

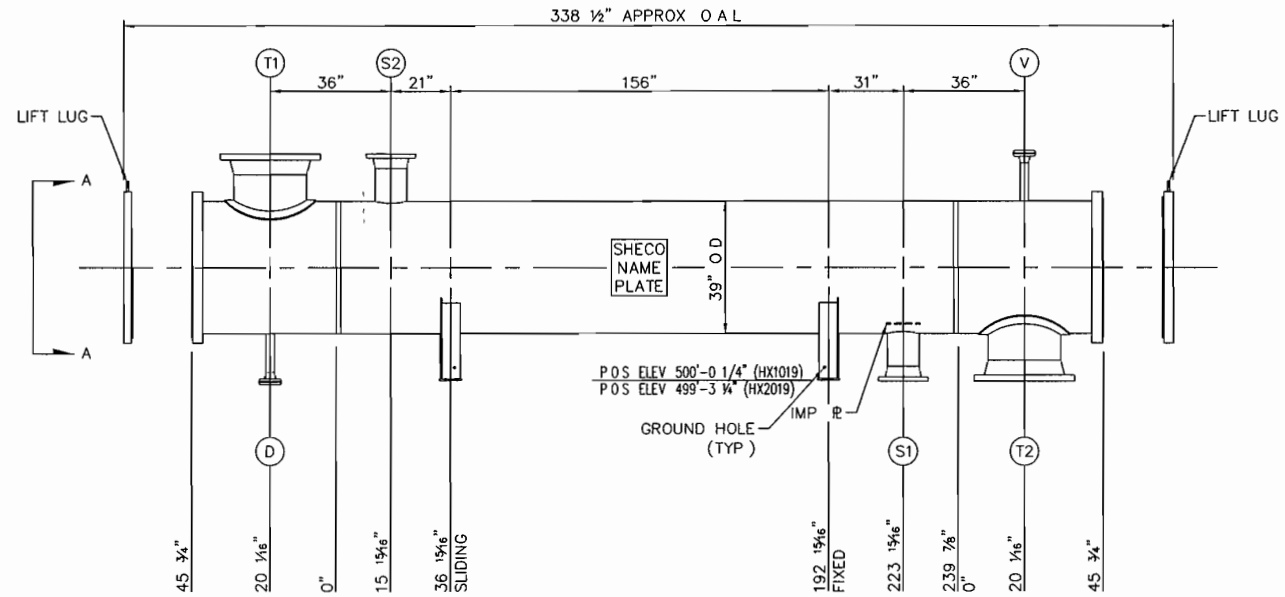
P.O. BOX 1850 TUSCALOOSA, AL 35403

DATE 01/18/11	ORDER NO	DWG NO SB-7331-3
BY H WINSTEAD	10-0246 A/B	SHEET 1 OF 5

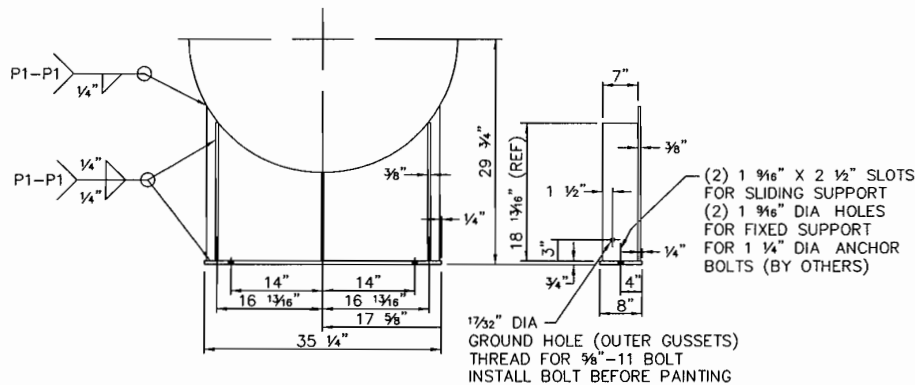
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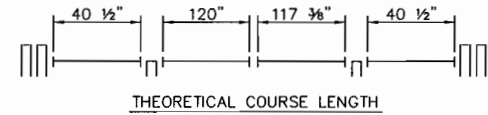
ORIENTATION
(VIEW A-A)



ELEVATION



SUPPORT DETAIL

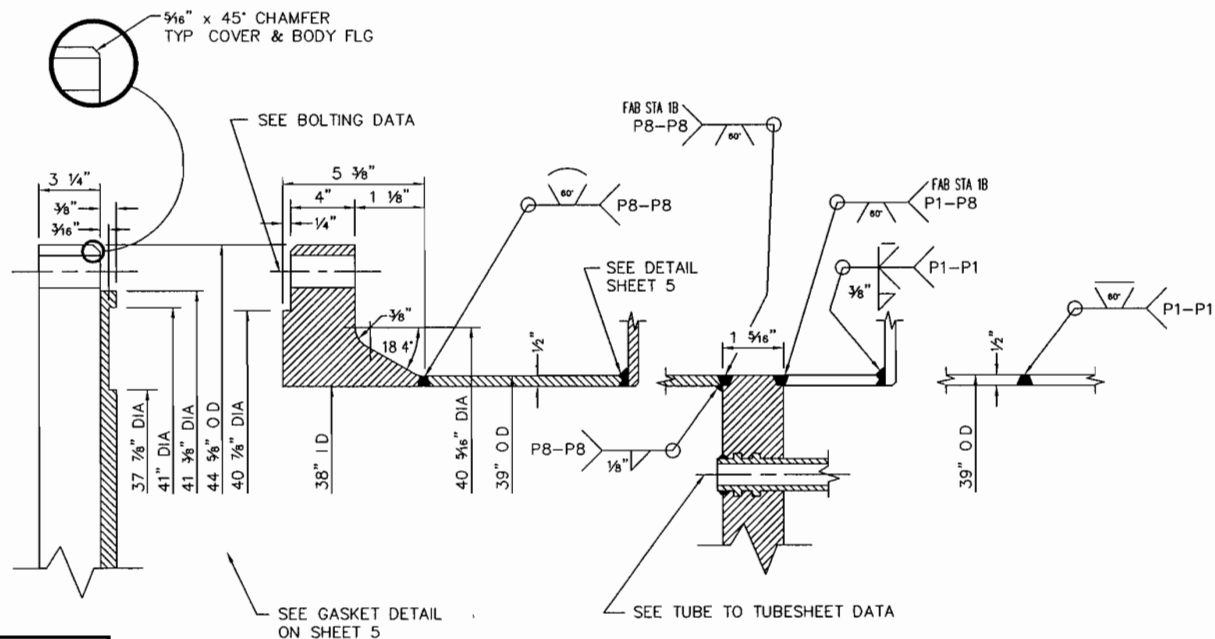


THEORETICAL COURSE LENGTH

- C ST'L
- 316/316L S ST'L
- 304 S ST'L

CERTIFIED	ENG	5/9/13
CUSTOMER SOUTHERN COMPANY SERVICES		
CUSTOMER P.O. NO	MPC10012375	REQ NO MC-212
ITEM NO	HX1019/HX2019	PROJ KEMPER COUNTY IGCC
PLANT	KEMPER COUNTY	UNIT 1 PROJECT
LOCATION	KEMPER COUNTY, MS	
TEMA SIZE AND TYPE		
(2) 38-240 NEN EXTRACTION AIR TRIM COOLER		
SOUTHERN HEAT EXCHANGER CORP		
P O BOX 1850 TUSCALOOSA, AL 35403		
DATE	01/18/11	ORDER NO
BY	H WINSTEAD	10-0246 A/B
DWG NO	SB-7331-3	SHEET 2 OF 5



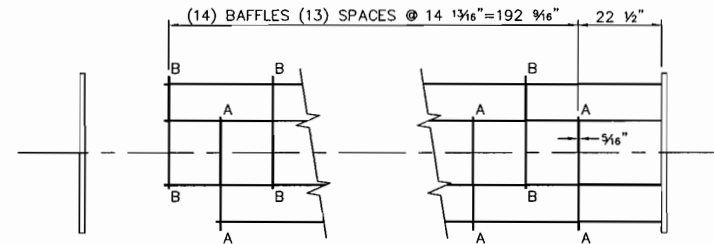
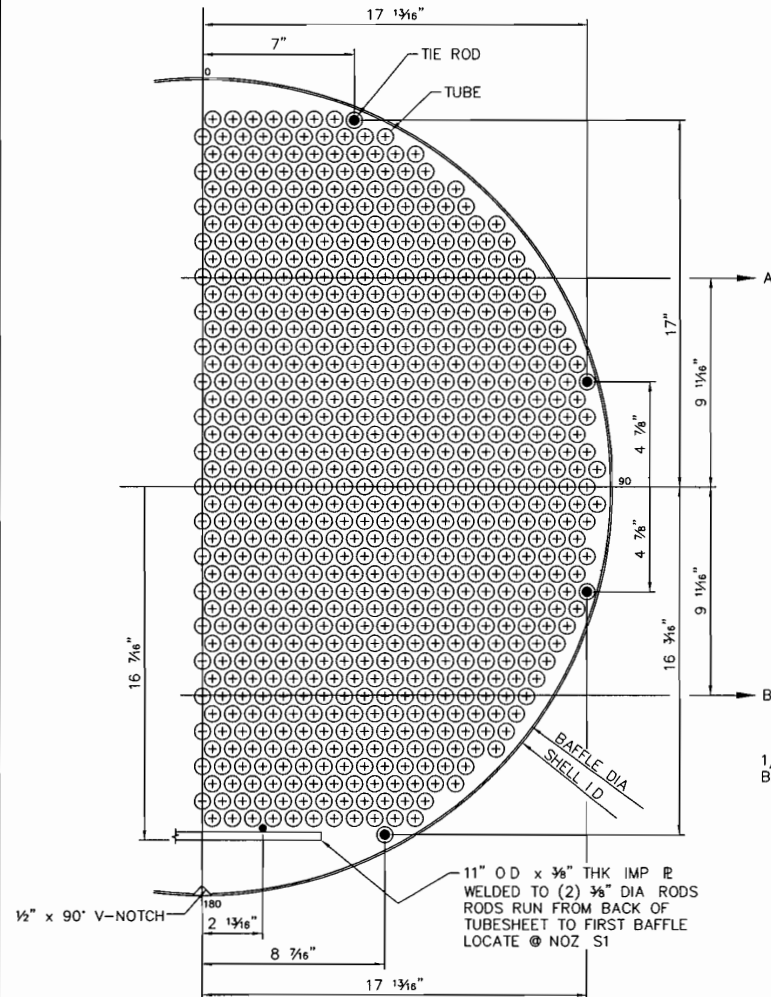


FINAL BOLT TORQUE FOR COVER
& FLANGE 480 FT-LBS

	C ST'L
	316/316L S ST'L
	304 S ST'L

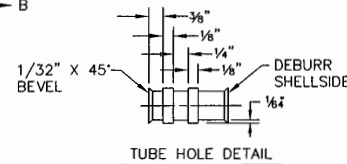
BOLTING DATA			TUBE TO TUBESHEET DATA		CERTIFIED		
BOLT CIRCLE DIA	42 1/2"	NO OF JACKSCREWS (FLG ONLY)	TUBE PROJ (LEFT TS)	1/16"	ENG	5/9/17	
NO OF HOLES	40	JACKSCREW HOLE DIA	TUBE PROJ (RIGHT TS)	1/16"	CUSTOMER SOUTHERN COMPANY SERVICES		
HOLE DIA	1 1/8"	JACKSCREW TAP SIZE	WELD	SEAL	CUSTOMER P O NO	MPC10012375	REQ NO MC-212
STUD SIZE	1"-8	JACKSCREW LOCATION	FILLER METAL	ER316L	ITEM NO	HX1019/HX2019	PROJ KEMPER COUNTY IGCC
STUD LENGTH	10 1/2"	NO OF DOWELS	SERRATED	YES	PLANT	KEMPER COUNTY	UNIT 1 PROJECT
NO OF TAPPED HOLES	-	DOWEL HOLE DIA (FLG)	AIR TEST (15 PSIG)	YES	LOCATION	KEMPER COUNTY, MS	
TAPPED HOLE DIA	-	DOWEL PIN DIA	ROLL DEPTH	1/8" OF B F	TEMA SIZE AND TYPE		
TAP SIZE	-	DOWEL PIN HOLE SIZE (TS)	WALL REDUCTION	5-6%	(2) 38-240 NEN EXTRACTION AIR TRIM COOLER		
NO TO COUNTERBORE	-	DOWEL LOCATION	DYE CHECK	YES	SOUTHERN HEAT EXCHANGER CORP.		
COUNTERBORE DIA x DEPTH	-		HYDRO TEST	YES	P.O BOX 1850 TUSCALOOSA, AL 35403		
NO OF PULLING EYES					DATE	01/18/11	ORDER NO
PULLING EYE HOLE DIA					BY	H WINSTEAD	10-0246 A/B
PULLING EYE TAP SIZE					DWG. NO	SB-7331-3	SHEET 3 OF 5
PULLING EYE LOCATION (TS ONLY)							





BUNDLE DETAIL

TUBE O D	3/4"
NO OF TUBE HOLES	1342
SIZE OF TUBE HOLE IN TUBESHEET	0.758" ± 0.002"
SIZE OF TUBE HOLE IN BAFFLE	25/32"
PITCH	1 1/16" 30
TIE ROD O D	1/2"
NO OF TIE RODS	8
TIE ROD HOLE SIZE IN TUBESHEET	9/16" x 1/2" DP (SEAL WELD)
TIE ROD HOLE SIZE IN BAFFLE	9/16"
SPACER O D	3/4"
O T L	37.3486"
BAFFLE DIA	37.8125"
BAFFLE CUT ALTERNATES	(7) A-A, (7) B-B

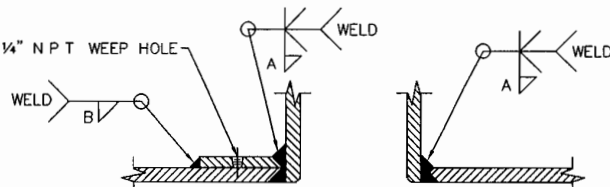
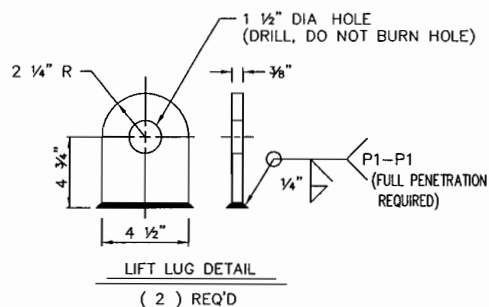


TUBE HOLE DETAIL

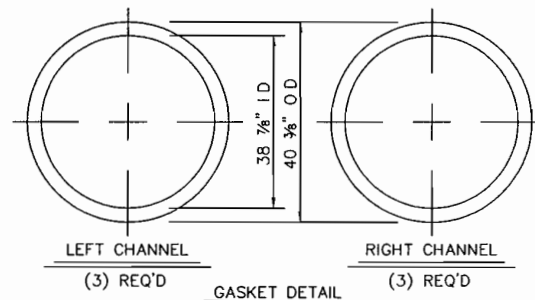
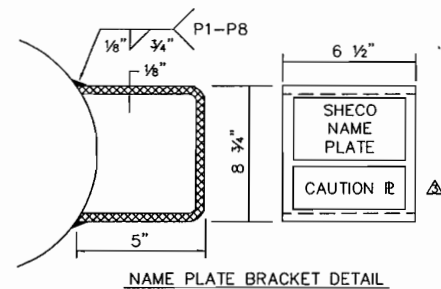
- C ST'L
- 316/316L S ST'L
- 304 S ST'L

CERTIFIED	ENG. <i>[Signature]</i> 5/9/13	
CUSTOMER	SOUTHERN COMPANY SERVICES	
CUSTOMER P O NO	MPC10012375	RED NO MC-212
ITEM NO	HX1019/HX2019	PROJ KEMPER COUNTY IGCC
PLANT	KEMPER COUNTY	UNIT 1 PROJECT
LOCATION	KEMPER COUNTY, MS	
TEMA SIZE AND TYPE		
(2) 38-240 NEN EXTRACTION AIR TRIM COOLER		
SOUTHERN HEAT EXCHANGER CORP.		
P O BOX 1850 TUSCALOOSA, AL 35403		
DATE 01/18/11	ORDER NO	DWG NO SB-7331-3
BY H WINSTEAD	10-0246 A/B	SHEET 4 OF 5





NOZ	SIZE	PAD THK	PAD DIAMETER	WELD	A	B
T1	20"	1/2"	27" DIA CIRCULAR REPAD	P8-P8	3/8"	3/8"
T2	20"	1/2"	27" DIA CIRCULAR REPAD	P8-P8	3/8"	3/8"
D	2"	PAD NOT REQUIRED		P8-P8	3/8"	-
V	2"	PAD NOT REQUIRED		P8-P8	3/8"	-



(INCLUDES TWO SPARE SETS)
1/8" THK 316 S ST'L DOUBLE JACKETED
GRAPHITE FILLED GASKET

BOTH SIDES OF GASKET TO BE FURNISHED WITH ONE LAYER OF 0.015" THK UCAR GRAFOIL® GRADE GT™ H (OR EQUAL) ADHESIVE-BACKED TAPE TAPE SHALL PROVIDE COMPLETE COVERAGE OF THE CONTACT AREA OF THE INSTALLED GASKET WITH A MINIMUM NUMBER OF JOINTS HAVING AN OVERLAP NOT EXCEEDING 1/8"

JOINT CATEGORY PER UW-3	WELD PROCEDURE	
	ROOT PASS	FILL PASS
A	W-3,W-81,W-97	W-3,W-81,W-90,W-97
B	W-3,W-81,W-97	W-3,W-81,W-90,W-97
C	W-3,W-81,W-97	W-3,W-81
D	W-3,W-81,W-97	W-3,W-81,W-97
TUBE TO TUBESHEET	W-97	
TUBESHEET TO CHANNEL	W-3,W-81,W-97	W-3,W-81,W-97
NON-PRESSURE ATTACHMENTS	W-72,W-96	W-72,W-96
CLAD RESTORATION	W-376,W-377,W-378,W-379	

WELD MAP FOR TUBE SIDE

JOINT CATEGORY PER UW-3	WELD PROCEDURE	
	ROOT PASS	FILL PASS
A	W-42,W-72,W-96	W-42,W-72,W-83,NEUTRAL,W-96
B	W-42,W-72,W-96	W-42,W-72,W-83,NEUTRAL,W-96
C	W-42,W-72,W-96	W-42,W-72
D	W-42,W-72,W-96	W-42,W-72,W-96
TUBESHEET TO SHELL	W-2,W-112,W-172	W-2,W-112,W-172
NON-PRESSURE ATTACHMENTS	W-112,W-172	W-112,W-172

WELD MAP FOR SHELL SIDE

WARNING
FIXED TUBESHEET EXCHANGER
INTRODUCE SHELL SIDE FLUID
BEFORE INTRODUCING TUBE SIDE

□ C ST'L
▨ 316/316L S ST'L
▩ 304 S ST'L

CERTIFIED	ENG. 5/9/17
CUSTOMER SOUTHERN COMPANY SERVICES	
CUSTOMER P.O. NO. MPC10012375	REQ. NO. MC-212
ITEM NO. HX1019/HX2019	PROJ. KEMPER COUNTY IGCC
PLANT KEMPER COUNTY	UNIT 1 PROJECT
LOCATION KEMPER COUNTY, MS	
TEMA SIZE AND TYPE (2) 38-240 NEN EXTRACTION AIR TRIM COOLER	
SOUTHERN HEAT EXCHANGER CORP. P O BOX 1850 TUSCALOOSA, AL 35403	
DATE 01/18/11	ORDER NO DWG NO SB-7331-3
BY H WINSTEAD	10-0246 A/B SHEET 5 OF 5

