

NOTES

1. EST. WT. EMPTY: 5,000#EST. FULL: 7,500#BDL: 2,100#

CALCULATED SUPPORT LOADS TABLE		
LOAD TYPE	FIXED SUPPORT	SLIDING SUPPORT
EMPTY WEIGHT	6,189 LB	6,107 LB
FULL WEIGHT	7,243 LB	7,304 LB
LONGITUDINAL WIND	24 LB	15 LB
TRANSVERSE WIND	332 LB	361 LB
LONGITUDINAL SEISMIC	5,660 LB	2,425 LB
TRANSVERSE SEISMIC	2,422 LB	2,422 LB
LONGITUDINAL WIND MOMENT	1,152 IN-LB	720 IN-LB
TRANSVERSE WIND MOMENT	15,888 IN-LB	17,328 IN-LB
LONGITUDINAL SEISMIC MOMENT	271,680 IN-LB	116,400 IN-LB
TRANSVERSE SEISMIC MOMENT	116,256 IN-LB	116,256 IN-LB

NON-PRESSURE PARTS

SUPPORTS / PADS	SA-516 GR. 70
BAFFLES / SUPPORTS	SA-240 304L
TIE RODS / SPACERS	304L S.ST'L
PASS PARTITIONS	SA-240 316L
GROUND LUGS	SA-240 304L
LIFT LUG A	SA-240 304L
LIFT LUG B	SA-36
IMP. PLATE	SA-240 304L
SEAL STRIPS	SA-240 304L
SHIM PLATE	SA-36
NAMEPLATE BRACKET	SA-240 304
SEAL RODS	304L S.ST'L

CERTIFIED BY SOUTHERN HEAT EXCHANGER CORPORATION

REQ'D

ASME

U

RT3

SOUTHERN

HEAT EXCHANGER

A DIVISION OF SHECO INDUSTRIES

SHELL: MAWP (INT)150PSIG @ 375°F

MAWP (EXT)15PSIG @ 300°F

MDMT20°F @ 150PSIG

TUBE: MAWP (INT)161PSIG @ 375°F

MAWP (EXT)15PSIG @ 300°F

MDMT20°F @ 161PSIG

SERIAL NUMBER22-0249/250YEAR2023

SOUTHERN

HEAT EXCHANGER

SERIAL NUMBER22-0249/250

P.O. NUMBER4500027311AIR PRODUCTS P.O.: 4505452541 EN207125

ITEM19-X-051A/BSIZE/TYPE20-180 AES

NOTES

SHELLSIDE: C.ST'L TUBESIDE: 316L S.ST'L

HEAT CAP.: 1,130,414 BTU/HR. WORLD ENERGY RENEWABLES

ANSI NOZZLE SCHEDULE

	SIZE	RATE	FACE	NOZZLE NECK	SERVICE
				TUBE SIDE	
● T1/3	3"	300#	RFWN	STD. WT.	BIOSOLIDS INLET
● T2/4	3"	300#	RFWN	STD. WT.	BIOSOLIDS OUTLET
				SHELL SIDE	
■ S1/3	3"	300#	RFWN	X-STG.	TOWER WATER INLET
■ S2/4	3"	300#	RFWN	X-STG.	TOWER WATER OUTLET
V1/D1	¾"	6000#	THD.	FULL CPLG. PLUGGED	VENT/DRAIN
V2/D2	¾"	6000#	THD.	FULL CPLG. PLUGGED	VENT/DRAIN

● EXTENDED WITH 3" STD. WT. L.R. ELBOW.

■ EXTENDED WITH 3" X-STG. L.R. ELBOW.

WELD PROCEDURES/WELD MAP PER DOCUMENT 22-0249/250WM

ASME CODE REQUIREMENTS

	SHELL SIDE	TUBE SIDE
DESIGN PRESSURE (INT/EXT) PSIG	150/15	150/15
DESIGN TEMPERATURE (MAX/MIN) °F	375/300/20	375/300/20
HYDRO. TEST PRESSURE (1 HOUR HOLD) PSIG	200	220
MAWP/LIMITING COMPONENT PSIG	150/BODY FLG.	161/BODY FLG.
CORROSION ALLOWANCE (C.ST'L ONLY)	⅛"	NONE
POSTWELD HEAT TREATMENT	NONE	NONE
RADIOGRAPHIC EXAMINATION	SPOT	SPOT
METAL TEMP. °F	—	—
NUMBER OF PASSES	1	6

ASME CODE STAMP / NAT'L BD. REG IS REQUIRED.

CUSTOMER INSPECTION REQUIRED

SPECIFICATIONS: 2021 ASME CODE SECT. VIII DIV. 1 (TEMA 10TH ED.)

SPECIAL SERVICE: NONECODE CASE: NONEPARTIAL DATA REPORTS: NONE

TEMA (R) EXEMPT FROM IMPACT TESTING PER: UG-20(f), UCS-66, UHA-51

TUBES: SA-213 TP 316L (SMLS)WALL: AVG.

NO. 222O.D. ¾"BWG. 16LENGTH: 15'-0"

TUBESHEETS: SA-240 316L

PART	SHELL SIDE	TUBE SIDE
VESSEL	SA-516 GR. 70	SA-240 316L
COVERS		SA-240 316L
FORMED HEADS	SA-516 GR. 70	
FITTINGS	SA-234 WPB	SA-403 WP 316L
BODY FLANGES	SA-105 (N)	SA-182 F 316L
NOZZLE FLANGES	SA-105	SA-182 F 316L
COUPLINGS/COUPLETS	SA-105	
NOZZLE PIPE	SA-106 GR. B	SA-312 316L
SPLIT BACKING RING		SA-182 F 316L
NOZZLE REINF. PADS	SA-516 GR. 70	SA-240 316L
EXT. STUDS/NUTS	SA-193-B7/SA-194-2H	SA-193-B7/SA-194-2H
INT. STUDS/NUTS	SA-193-B8 CL.1/SA-194-8	SA-193-B8 CL.1/SA-194-8
GASKETS	SEE SHEET 8 FOR DETAIL	SEE SHEET 8 FOR DETAIL
INSULATION (BY OTHERS)	NONE	NONE

REVISIONS

△	08/24/23	REVISED SLOT ON SUPPORT DETAIL.
△	06/29/23	REVISED SUPPORT LOADS TABLE & SLOT ON SUPPORT DETAIL.
△	05/17/23	REVISED ANCHOR BOLTS.
△	03/23/23	REVISED NAMEPLATE, SPT. LOADS TABLE, NON-PRESS. PARTS, ORIENTATIONS, ELEVATIONS, & TUBE LAYOUT FOR IMP. PLATE.

CERTIFIEDENG. J.D.D.8/24/2023

CUSTOMER EVOQUA/WORLD ENERGY PARAMOUNT (AIR PRODUCTS)

CUSTOMER P.O. NO. 4500027311(4505452541)

ITEM NO. 19-X-051A/BSAP NO. 10016158

PLANT PARAMOUNT, CA

PROJ. NO. EN207125

TEMA SIZE AND TYPE

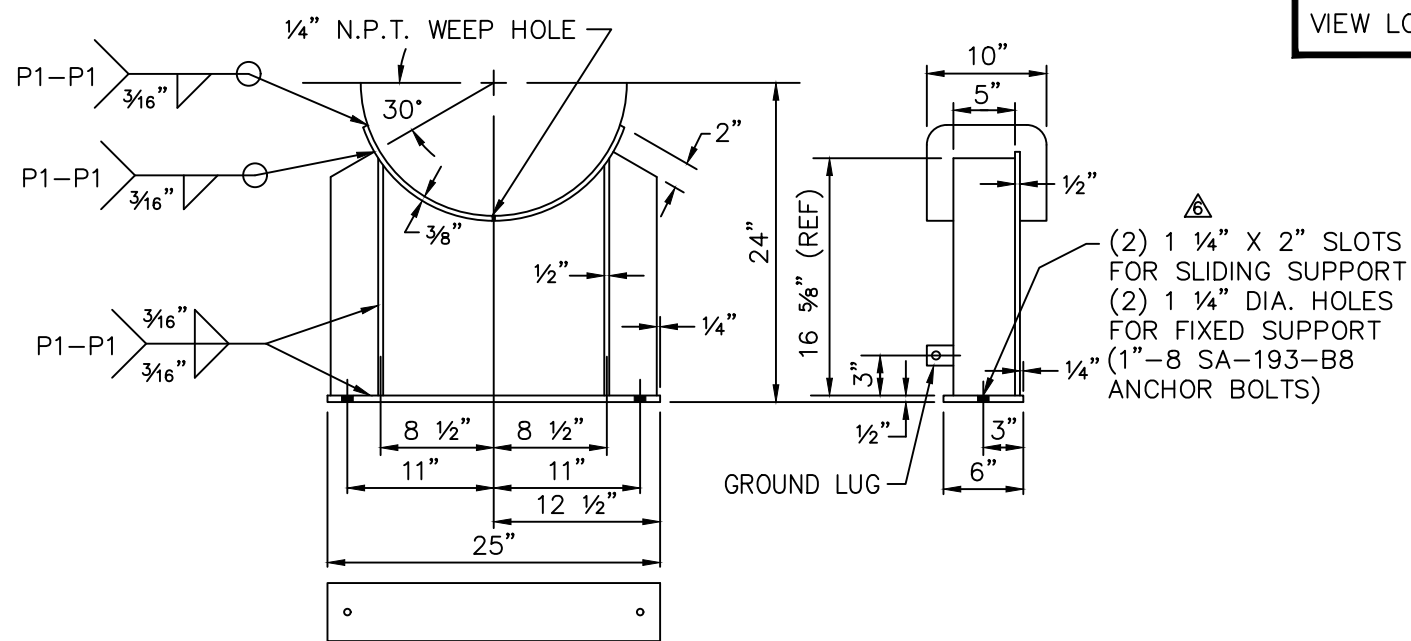
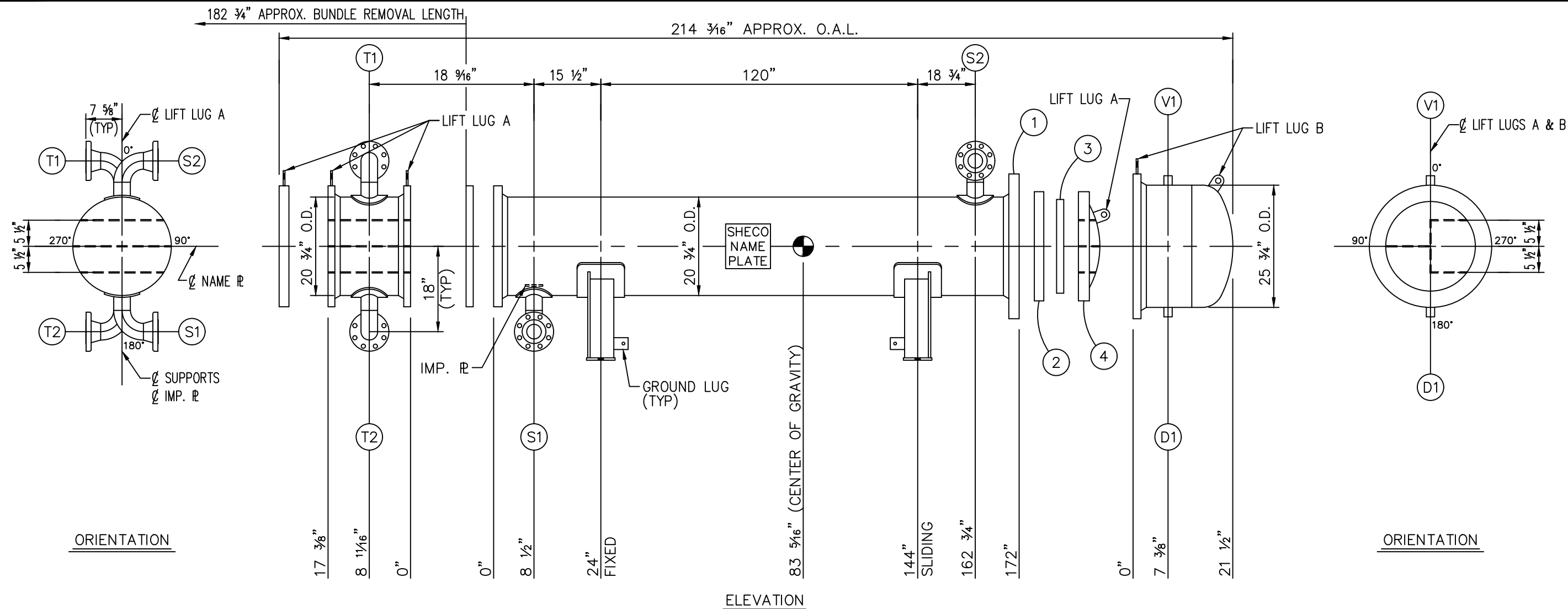
(2) 20-180 AES FEED TANK #2 WATER COOLER

SOUTHERN HEAT EXCHANGER CORP.

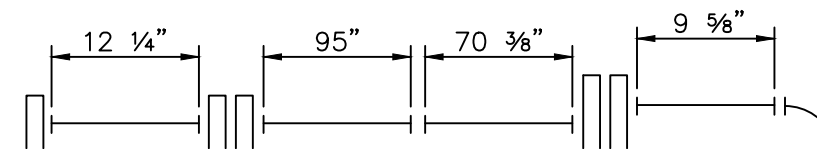
P.O. BOX 1850 TUSCALOOSA, AL. 35403

DATE 09/29/22	ORDER NO.	DWG. NO. SB220250
BY S.A.H.	22-0249/250	SHEET 1 OF 10REV. 6

CERTIFIED



VIEW LOOKING NORTH



THEORETICAL COURSE LENGTH

- 1 SHELL FLANGE
- 2 SPLIT BACKING RING
- 3 FLOATING TUBESHEET
- 4 FLOATING HEAD

- C.ST'L
- ▨ 316/316L S.ST'L
- ▩ 304/304L S.ST'L (FOR CUT VIEWS ONLY)

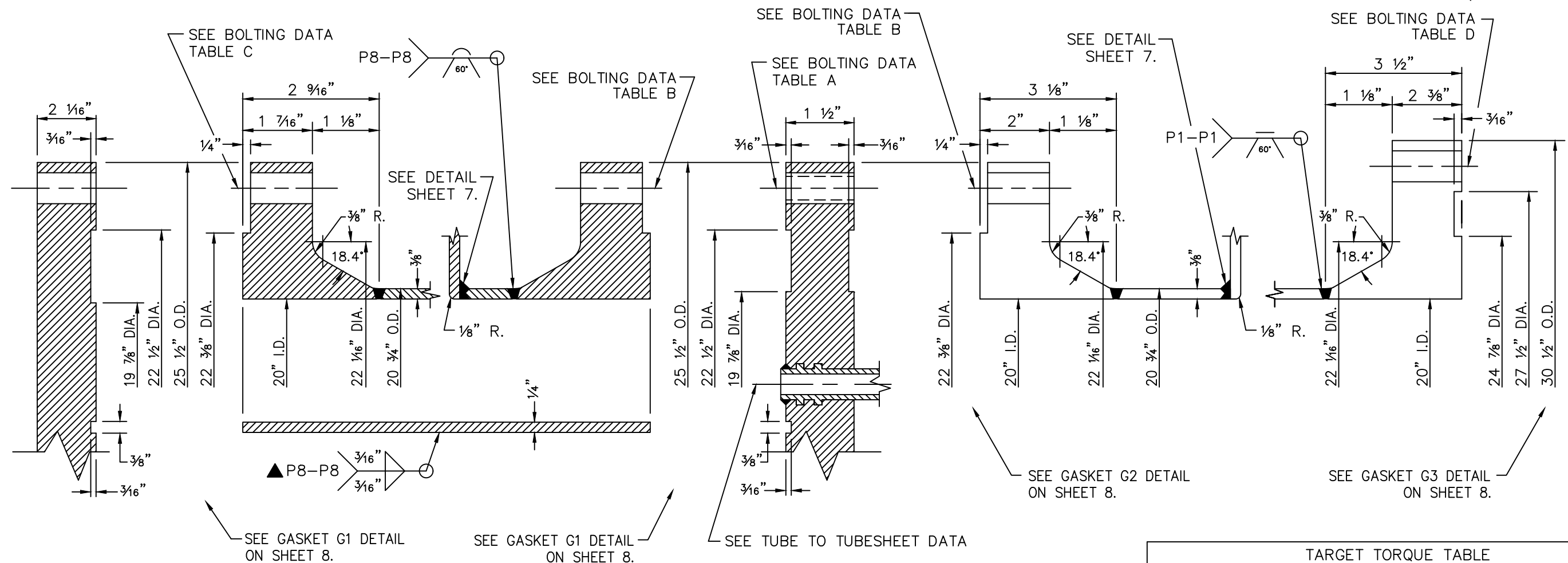
CERTIFIED	ENG. J.D.D.	8/24/2023	
CUSTOMER EVOQUA/WORLD ENERGY PARAMOUNT (AIR PRODUCTS)			
CUSTOMER P.O. NO. 4500027311(4505452541)			
ITEM NO. 19-X-051A		SAP NO. 10016158	
PLANT PARAMOUNT, CA		PROJ. NO. EN207125	
TEMA SIZE AND TYPE			
(1) 20-180 AES FEED TANK #2 WATER COOLER			
SOUTHERN HEAT EXCHANGER CORP.			
P.O. BOX 1850 TUSCALOOSA, AL. 35403			
DATE 09/29/22	ORDER NO.	DWG. NO.	SB220250
BY S.A.H.	22-0249	SHEET 2 OF 10	REV. 6

SUPPORT DETAIL

▲ SHOP NOTE: THE PASS PARTITION SHALL BE FULL PENETRATION WELDED 2" AT THE GASKET SURFACE.

USE HARDENED S.ST'L FLAT WASHER AT EACH BODY FLANGE NUT.

C.ST'L
316/316L S.ST'L
304/304L S.ST'L
(FOR CUT VIEWS ONLY)



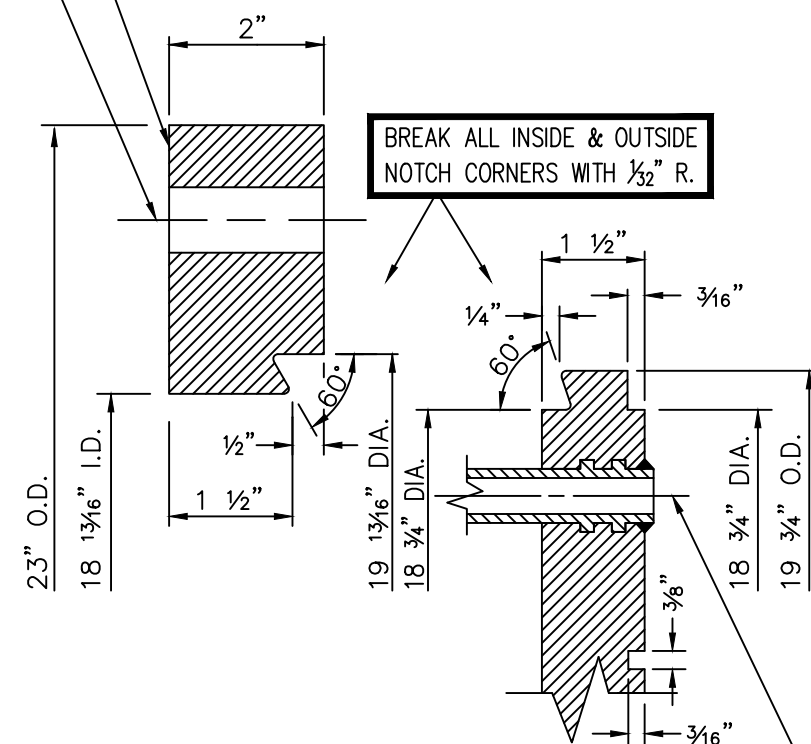
TARGET TORQUE TABLE					
	TABLE A	TABLE B	TABLE C	TABLE D	TABLE E
SIZE	¾"-10	¾"-10	¾"-10	¾"-10	¾"-10
CONDITION	PTFE COATED	PTFE COATED	PTFE COATED	PTFE COATED	WELL LUBRICATED
TARGET TORQUE	160 FT-LBS	160 FT-LBS	160 FT-LBS	200 FT-LBS	70 FT-LBS

BOLTING DATA	TABLE A	TABLE B	TABLE C	TABLE D	TABLE E	TUBE TO TUBESHEET DATA	
BOLT CIRCLE DIA.	23 ¾"	23 ¾"	23 ¾"	28 ¾"	21 ⅛"	TUBE PROJ. (LEFT T.S.)	⅛"
NO. OF HOLES	18 OF 24	24	24	24	24	TUBE PROJ. (RIGHT T.S.)	⅛"
HOLE DIA.	⅞"	⅞"	⅞"	⅞"	⅞"	WELD	SEAL
STUD SIZE	¾"-10	¾"-10	¾"-10	¾"-10	¾"-10	FILLER METAL	SEE WELD MAP
STUD LENGTH	7 ½"	—	6"	7"	7 ¼"	DYE CHECK	YES
NO. OF TAPPED HOLES	6 OF 24	—	—	—	—	SERRATED	YES
TAPPED HOLE DIA.	21/32"	—	—	—	—	AIR TEST	YES
TAP SIZE	¾"-10	—	—	—	—	ROLL DEPTH	⅛" OF B.F.
NO. TO COUNTERBORE	—	—	—	—	—	WALL REDUCTION	5-6%
COUNTERBORE DIA. x DEPTH	—	—	—	—	—	DYE CHECK	YES
NO. OF PULLING EYES	2	—	—	—	—	HYDRO TEST	YES
PULLING EYE HOLE DIA.	21/32"	—	—	—	—		
PULLING EYE TAP SIZE	¾"-10	—	—	—	—		
PULLING EYE LOCATION (T.S. ONLY)	90° & 270°	—	—	—	—		

CERTIFIED	ENG. J.D.D.	8/24/2023	
CUSTOMER EVOQUA/WORLD ENERGY PARAMOUNT (AIR PRODUCTS)			
CUSTOMER P.O. NO. 4500027311(4505452541)			
ITEM NO. 19-X-051A/B	SAP NO. 10016158		
PLANT PARAMOUNT, CA	PROJ. NO. EN207125		
TEMA SIZE AND TYPE			
(2) 20-180 AES FEED TANK #2 WATER COOLER			
SOUTHERN HEAT EXCHANGER CORP.			
P.O. BOX 1850 TUSCALOOSA, AL. 35403			
DATE 09/29/22	ORDER NO.	DWG. NO.	SB220250
BY S.A.H.	22-0249/250	SHEET 4 OF 10	REV. 6



✓ SPLIT BACKING RING

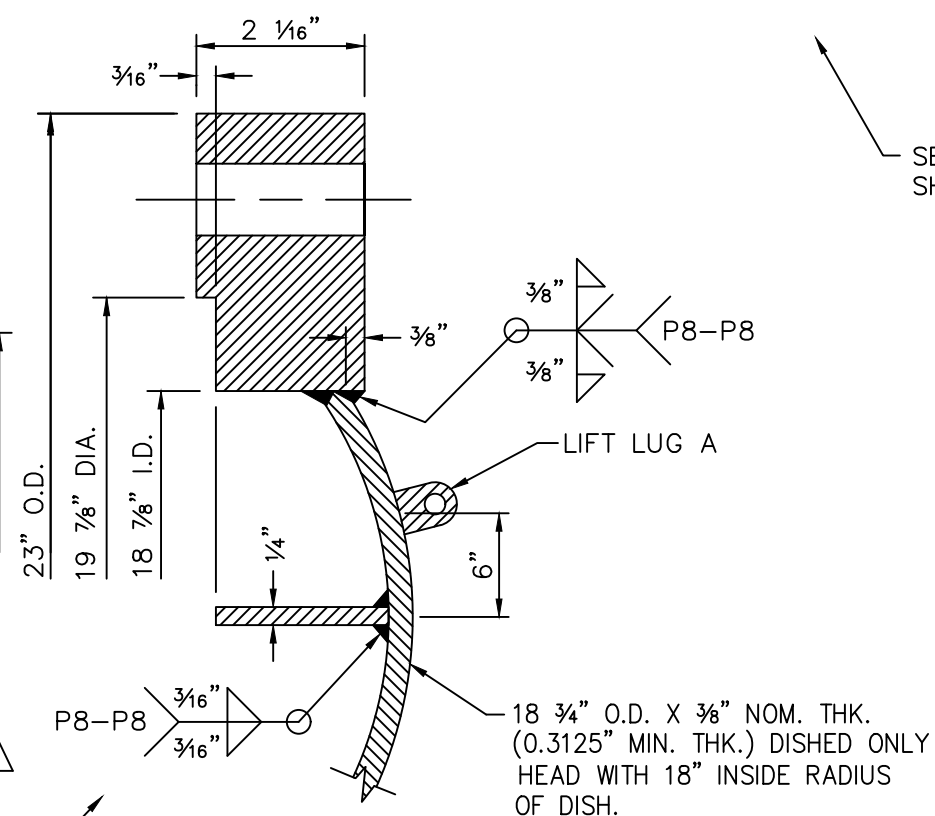


SEE TUBE TO TUBESHEET DATA SHEET 4

SEE GASKET G4 DETAIL-
SHEET 8.

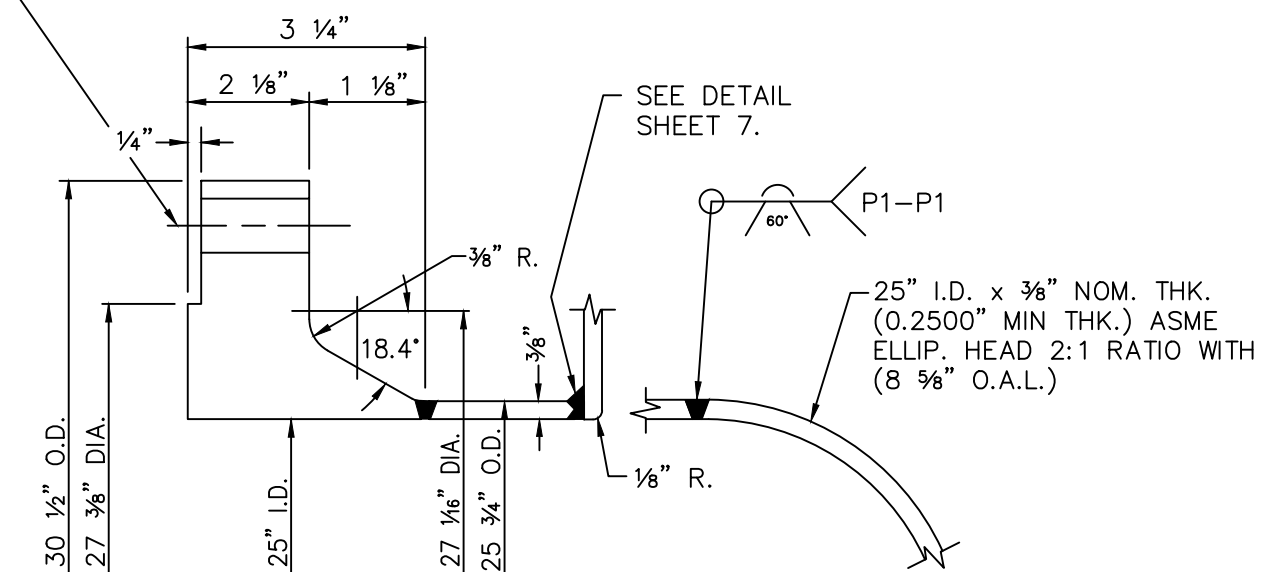
FLOATING TUBESHEET & HEAD

★ SHOP NOTE: THE PASS PARTITION SHALL BE FULL PENETRATION WELDED 2" AT THE GASKET SURFACE.



 C.ST'L
 316/316L S.ST'L
 304/304L S.ST'L
 (FOR CUT VIEWS ONLY)

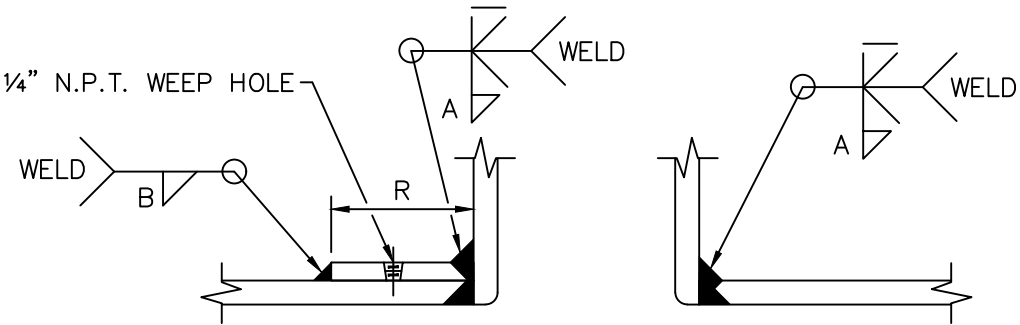
— SEE BOLTING DATA TABLE D
SHEET 3.



— SEE GASKET G3 DETAIL
SHEET 8.

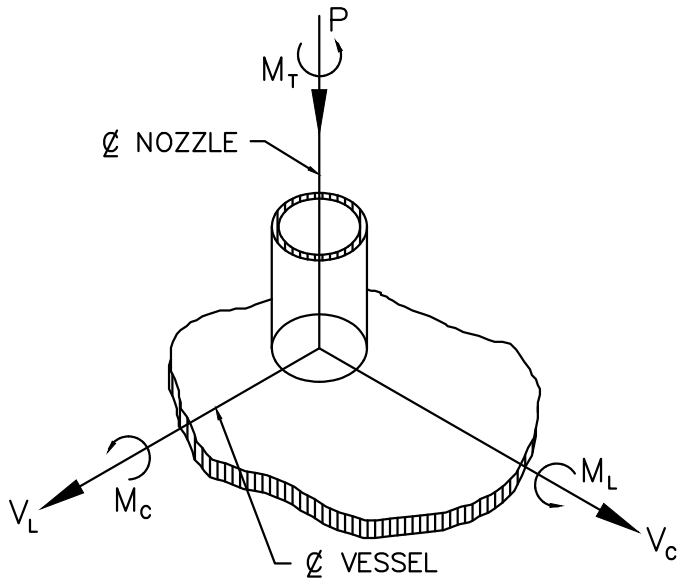
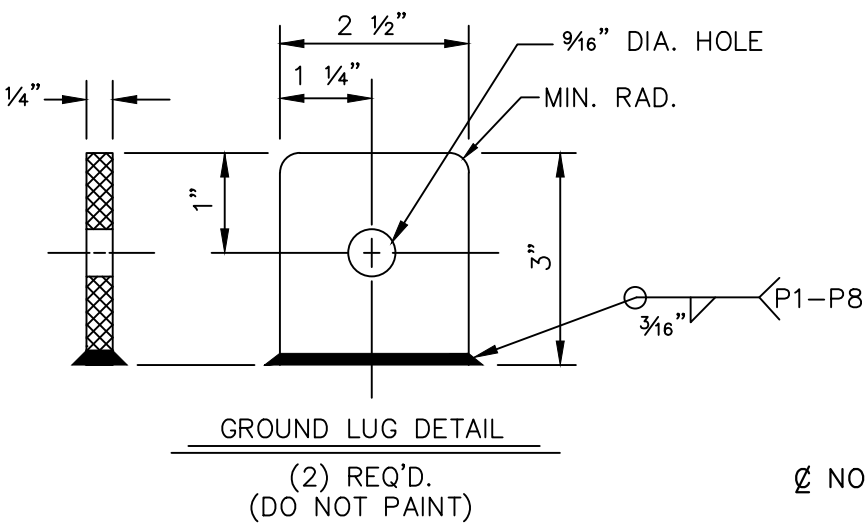
FLOATING HEAD COVER

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ITEM NO.	19-X-051A/B	SAP NO.	10016158
PLANT	PARAMOUNT, CA	PROJ. NO.	EN207125
TEMA SIZE AND TYPE			
(2) 20-180 AES FEED TANK #2 WATER COOLER			
SOUTHERN HEAT EXCHANGER CORP.			
P.O. BOX 1850 TUSCALOOSA, AL. 35403			
DATE 09/29/22	ORDER NO.	DWG. NO.	SB220250
BY S.A.H.	22-0249/250	SHEET 5 OF 10	REV. 6



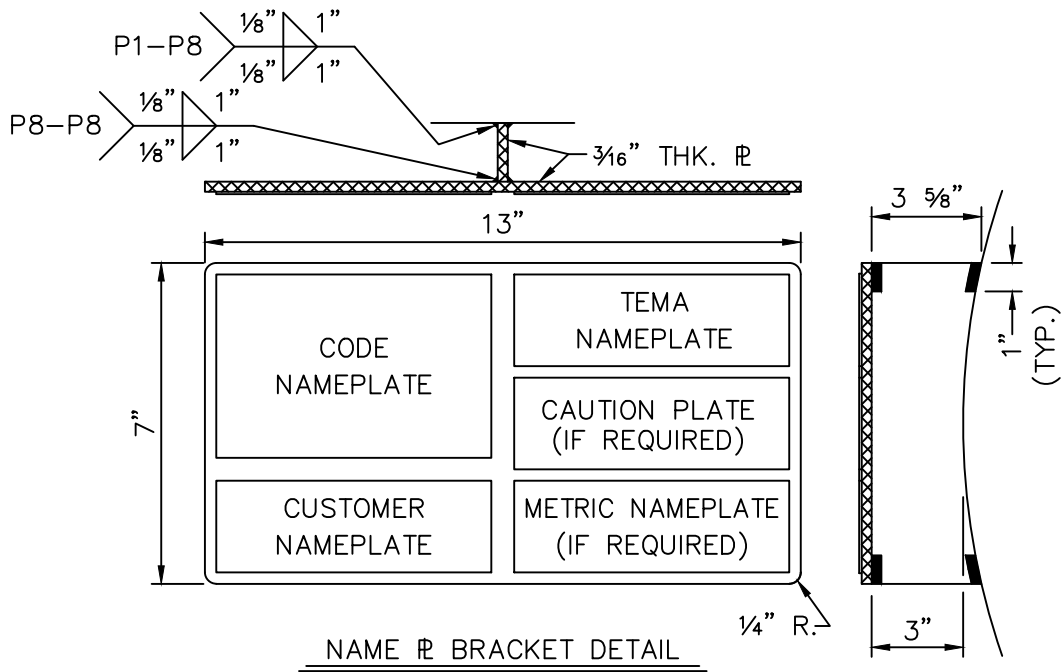
NOZ.	SIZE	PAD THK.	R	PAD SIZE	WELD	A	B
T1-4	3"	3/8"	2" MIN.	7 5/8" DIA.	P8-P8	1/4"	5/16"
S1-4	3"	3/8"	2" MIN.	7 5/8" DIA.	P1-P1	1/4"	5/16"
V1/D1	3/4"	PAD NOT REQ'D			P1-P1	3/16"	-
V2/D2	3/4"	PAD NOT REQ'D			P1-P1	3/16"	-

NOZZLE WELD DETAIL
(HATCH NOT SHOWN ON THIS DETAIL)



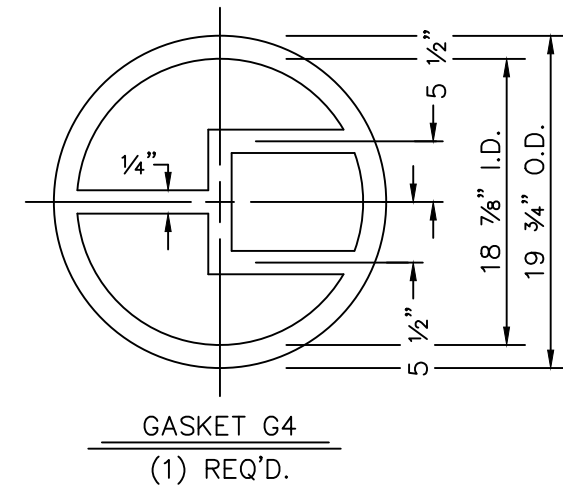
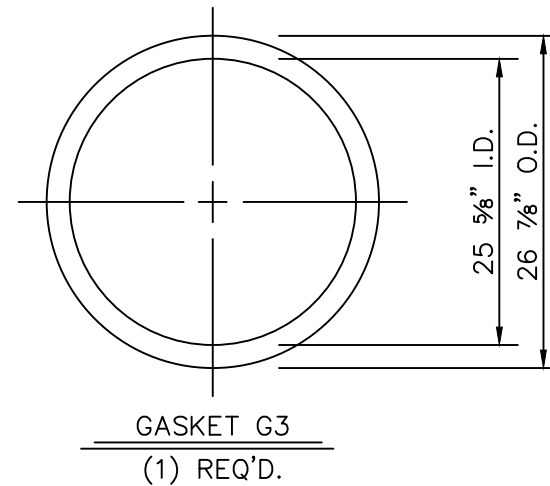
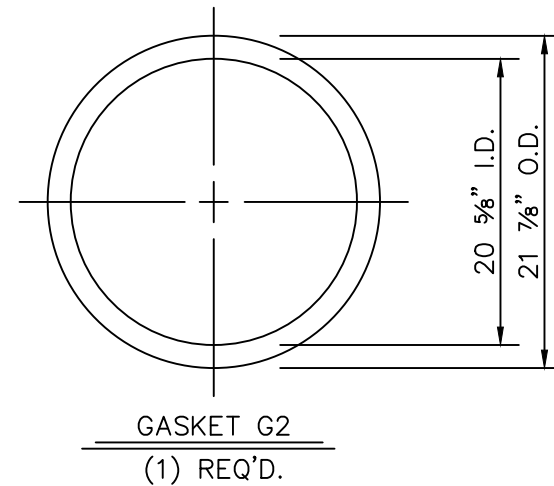
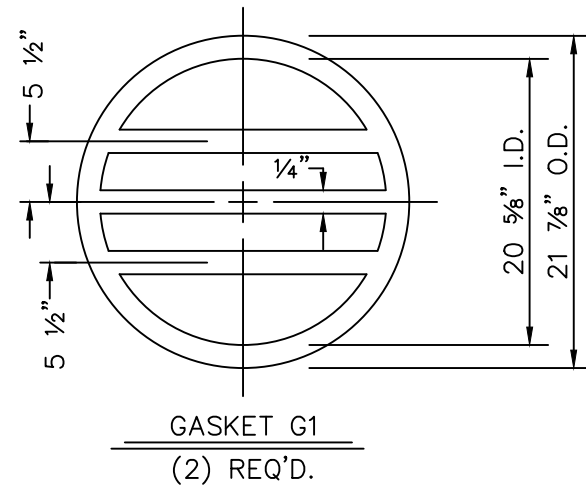
ALLOWABLE EXTERNAL LOADS ON NOZZLES
(TWO TIMES API 660 LOADS FOR 150# FLANGES)

Noz.	P (lbs.)	V _L (lbs.)	V _C (lbs.)	M _L (ft.-lbs.)	M _C (ft.-lbs.)	M _T (ft.-lbs.)
T1/2	840	1060	1060	1080	860	1380
T3/4	840	1060	1060	1080	860	1380
S1/2	840	1060	1060	1080	860	1380
S3/4	840	1060	1060	1080	860	1380



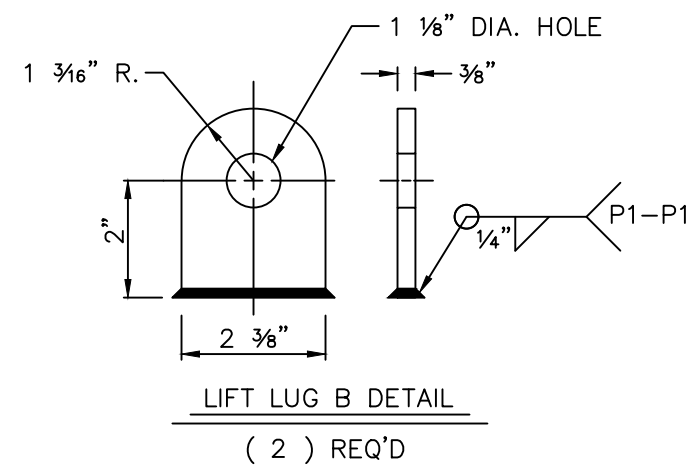
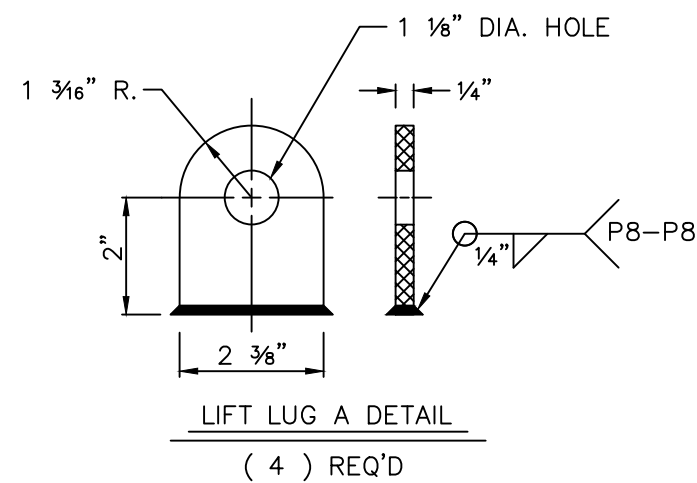
- C.ST'L
- 316/316L S.ST'L
- 304/304L S.ST'L (FOR CUT VIEWS ONLY)

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BY S.A.H.	22-0249/250	SHEET 7 OF 10	REV. 6



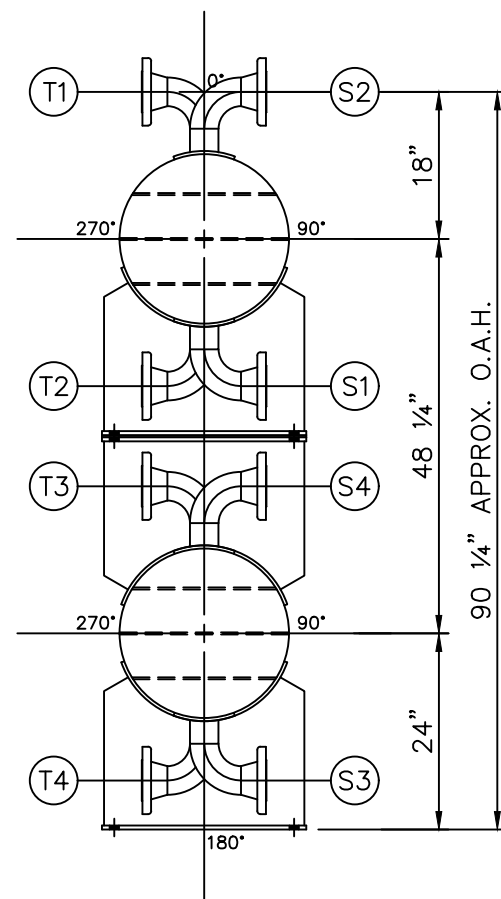
GASKET DETAIL

1/8" THK. 316L S.ST'L KAMMPROFILE GASKET WITH GRAPHITE FACE

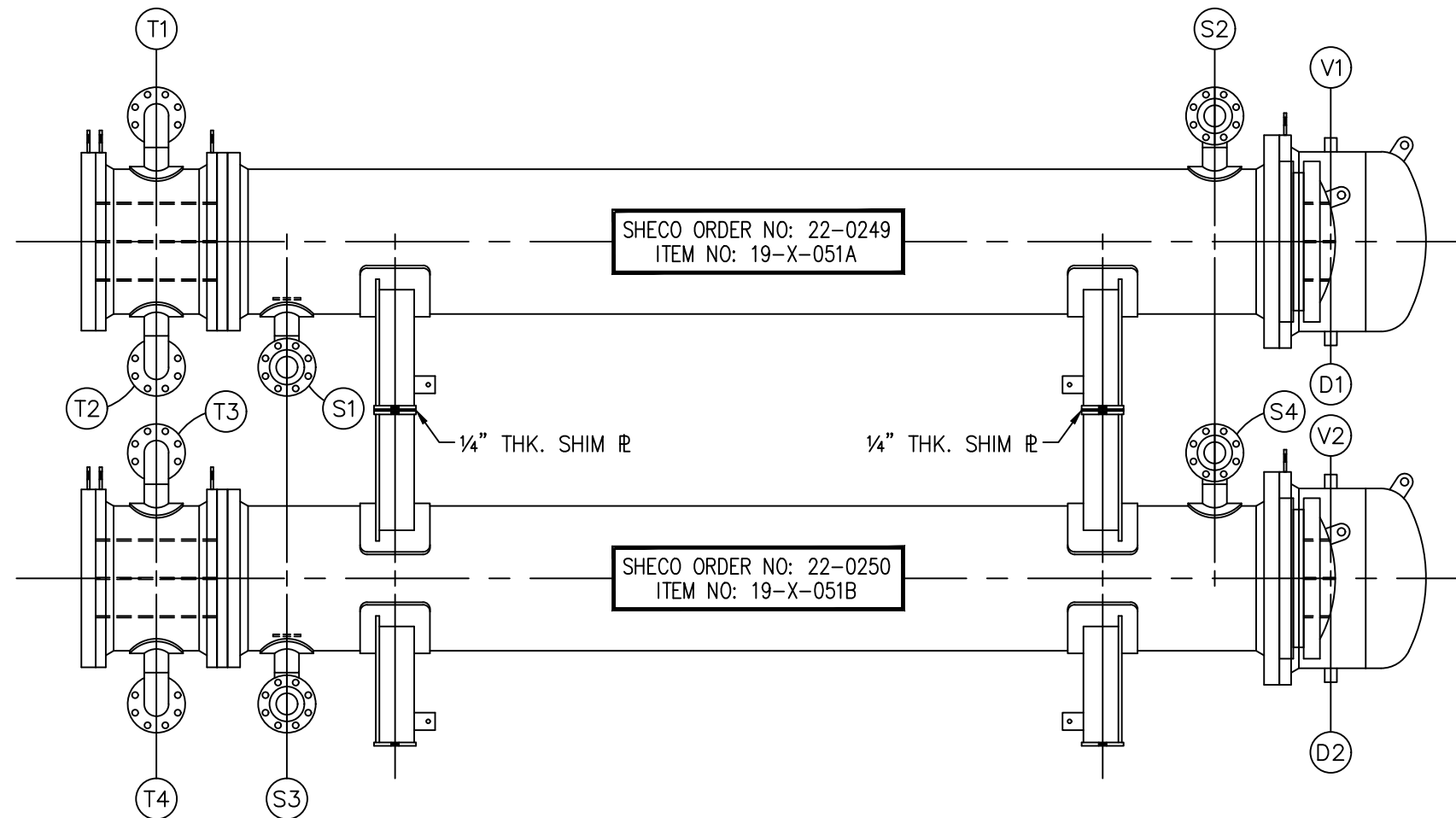


	C.ST'L
	316/316L S.ST'L
	304/304L S.ST'L
(FOR CUT VIEWS ONLY)	

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ORIENTATION



ELEVATION

STACKING DETAIL

-  C.ST'L
-  316/316L S.ST'L
-  304/304L S.ST'L
(FOR CUT VIEWS ONLY)

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BY S.A.H.	22-0249/250	SHEET 9 OF 10	REV. 6