

FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS

as required by the provisions of the ASME Code rules, Section VIII, Division 1

1. Manufactured and certified by OHMSTEDE INC. - LAPORTE PLANT 12415 LAPORTE RD. LAPORTE, TX 77571
(name and address of manufacturer)
2. Manufactured for KELLOGG / TENNECO OIL CO., INC. P.O. BOX 1307 LAPORTE, TX 77571
(name and address of purchaser)
3. Location of installation TENNECO OIL CO., INC. 1200 N. BROADWAY LAPORTE, TX 77571
(name and address)
4. Type: HORIZ. HT. EXCH. 28384 N/A 28384 148 1991
(horiz. or vert., tank) (mfr's. serial no.) (CRN) (drawing no.) (Nat'l. Bd. no.) (year built)
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction and workmanship conform to ASME Code, Section VIII, Division 1: 1989
(year)
- 1989 A N/A N/A
(addenda (Date)) (Code Case no.) (special service per UG-120(d))

Items 6-11 inclusive to be completed for single wall vessels, jackets of jacketed vessels, or shells of heat exchangers.

6. Shell: SA106B .500" .125" 1' - 11" 22' - 5 11/16"
(mat'l. (spec. no., grade)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
7. Seams: N/A (SMLS) N/A 100% N/A* N/A DBL - BUTT FULL 1
(long. (dbl., sngl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., sngl.)) (RT (spot, partial, or full)) (no. of courses)
8. Heads: (a) SHELL COVER: CYLINDER: SA516-70 (b) SHELL COVER: ELLIP. HEAD: SA516-70
(mat'l. (spec. no., grade)) (mat'l. (spec. no., grade))

	Location (top, bottom, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (convex or concave)
(a)	N/A									
(b)	END	.500"	.125"			2:1				CONCAVE

If removable, bolts used (describe other fastenings): (40) 3/4" SA193-B7 STUDS WITH (2) SA194-2H NUTS EACH.
(mat'l., spec. no., gr., size, no.)

9. Type of jacket: N/A Proof test: _____
10. Jacket closure: N/A If bar, give dimensions: _____ If bolted, describe or sketch.
(describe as ogee & weld, bar, etc.)
11. MAWP: 393 at max. temp. 650° Min design metal temp.: 10° at 393 Hydro., XXXXXXX test pressure 590
(psi) (°F) (°F) (psi) (psi)

Items 12 and 13 to be completed for tube sections.

12. Tubesheets: SA350-LF2 22 7/8" 2 1/4" .125" BOLTED
(stationary mat'l. (spec. no., gr.)) (dia. (in.) (subject to pressure)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment (welded, bolted))
- SA350-LF2 22 3/4" 2 1/4" .125" ROLLED TO TUBES
(floating mat'l. (spec. no., gr.)) (dia. (in.)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment)
13. Tubes: SA214 3/4" .083" (MW) 405 STRAIGHT
(mat'l. (spec. no., gr.)) (OD (in.)) (nom. thickness (in. or gauge)) (no.) (type (straight or U))

Items 14-17 inclusive to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell: SA106B .500" .125" 1' - 11" 1' - 7 11/16"
(mat'l. (spec. no., gr.)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
15. Seams: N/A (SMLS) N/A 100% N/A N/A DBL - BUTT SPOT 1
(long. (dbl., sngl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., sngl.)) (RT (spot, partial, or full)) (no. of courses)
16. Heads: (a) CHANNEL COVER: SA350-LF2 (b) N/A
(mat'l. (spec. no., grade)) (mat'l. (spec. no., grade))

	Location (top, bottom, ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (convex or concave)
(a)	END	2 1/4"	.125"						28 1/4"	FLAT
(b)	N/A									

If removable, bolts used (describe other fastenings): (24) 3/4" SA103-B7 STUDS WITH (2) SA194-2H NUTS EACH.
(mat'l., spec. no., gr., size, no.)

17. MAWP: 260 at max. temp. 200° Min design metal temp.: 10° at 260 Hydro., XXXXXXX test pressure 390
(psi) (°F) (°F) (psi) (psi)

103347

18. Nozzles, inspection and safety valve openings: PER UG 125 NOTE 39

Purpose (inlet, outlet, drain, etc.)	Number	Dia. or Size	Type	Mat'l.	Nom. Thickness	Reinforcement Material	How Attached	Location
INLET	1	8" 150LB	RFWN	SA106B	.500"	INTEGRAL	WELDED	CHANNEL
OUTLET	1	8" 150LB	RFWN	SA106B	.500"	INTEGRAL	WELDED	CHANNEL
INLET	1	8" 300LB	RFLWN	SA350-LF2	1.125"	INTEGRAL	WELDED	SHELL
OUTLET	1	8" 300LB	RFLWN	SA350-LF2	1.125"	INTEGRAL	WELDED	SHELL
VENT, DRAIN	1 EA.	1"6000LB	CPLG	SA105	----	INTEGRAL	WELDED	SHELL

19. Supports: Skirt NO Lugs 6 Legs N/A Other (2) HORIZ. SUPPORTS Attached WELDED TO SHELL
(yes or no) (no.) (no.) (describe) (where and how)20. Remarks: Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: MINIMUM DESIGN METAL TEMPERATURE PER UG-20.
(name of part, item number, mfr's. name and identifying stamp)* PWHT PER UCS-56 ON F.H.C. ROLLED AND WELDED CYLINDER MANUFACTURED BY OHMSTEDE,
LAKE CHARLES PLANT UNDER AUTHORIZATION # 17397 AND SERIAL # 28384-1.
CUSTOMER ITEM # 06E-103.

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

"U" Certificate of Authorization no. 18673 expires JUNE 27, 1992Date 9-5-91 Name OHMSTEDE, INC. - LAPORTE PLANT
(manufacturer)

Signed

(representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by OHMSTEDE, INC. at LAPORTE, TXI, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the state or province of TEXAS and employed by H.S.B.I. & I. CO.of HARTFORD, CT have inspected the pressure vessel described in this Manufacturers' Data Report on 9-5, 19 91, and state that, to the best of my knowledge and belief, the manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1.

By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 9-5-91 Signed [Signature]
(Authorized Inspector)Commissions NB 9263
(Nat'l. Bd. (incl. endorsements) state, prov. and no.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this vessel conforms with the requirements of Section VIII, Division 1 of the ASME BOILER AND PRESSURE VESSEL CODE.

"U" Certificate of Authorization no. _____ expires _____, 19 _____

Date _____ Name _____
(assembler that certified and constructed field assembly)

Signed

(representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the state or province of _____ and employed by _____

of _____ have compared the statements in this Manufacturers' Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that to the best of my knowledge and belief, the manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi.

By signing this certificate neither the inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____
(Authorized Inspector)Commissions _____
(Nat'l. Bd. (incl. endorsements) state, prov. and no.)

NATL BD NO 148



WV

RT-1
SS

RT-3
TS

HT

FLIGHT

DESIGN

TEMP/PRESS

NO

SIZE

P.O. NO.

* TUBESIDE

EXT PRESS

15 PSI

AT 200 °F

MAX

ALLOW PRESS

NEW & COLO

SHELLSIDE

TUBESIDE

SHOP TEST PRESS

NEW & COLO

SHELLSIDE

TUBESIDE

SERVICE

REACTOR

FEED COOLER

#2

2

2

2

2

2

2

2

2

2

2

2

2

2

CERTIFIED AND MANUFACTURED

BY THE U.S. NUCLEAR REGULATORY COMMISSION

FOR THE U.S. DEPARTMENT OF ENERGY

U.S. NUCLEAR REGULATORY COMMISSION

U.S. DEPARTMENT OF ENERGY

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XLA PORT TX

SHELL

MAWP 393

PSI

MAX DESIGN TEMP 650

°F

TEST PRESS 590

PSI

DESIGN TEMP/PRESS 10 °F @ 393 PSI

10 °F @ 260 PSI

NO 06E-103

SERIAL NO 28384

SIZE 23X 288

TYPE A E S

YEAR BUILT 1991

P.O. NO. 6636-99DL-C210-01

* TUBESIDE EXT PRESS

15 PSI AT 200 °F

MAX ALLOW PRESS

NEW & COLO

SHELLSIDE

TUBESIDE

SHOP TEST PRESS

NEW & COLO

SHELLSIDE

TUBESIDE

SERVICE

REACTOR

FEED COOLER

#2

2

2

2

2

2

2

2

2

260 *

200

390

PSI

10

10

260

PSI

10

10

260

PSI

10

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PSI

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PSI

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PSI

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PSI

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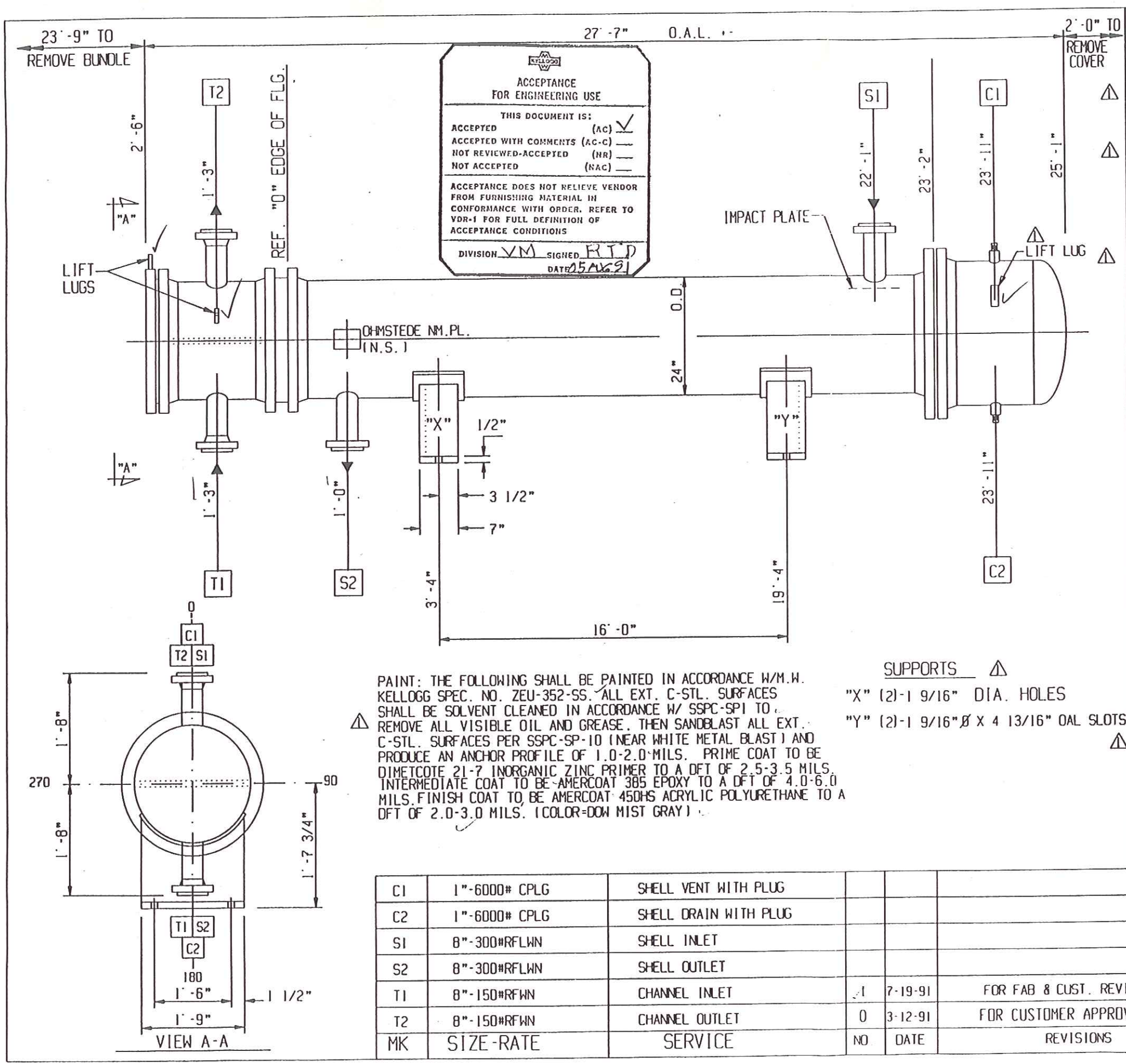
PSI

10

10

260

PSI



PAINT: THE FOLLOWING SHALL BE PAINTED IN ACCORDANCE W/M.W. KELLOGG SPEC. NO. ZEU-352-SS. ALL EXT. C-STL. SURFACES SHALL BE SOLVENT CLEANED IN ACCORDANCE W/ SSPC-SPI TO REMOVE ALL VISIBLE OIL AND GREASE. THEN SANDBLAST ALL EXT. C-STL. SURFACES PER SSPC-SP-10 (NEAR WHITE METAL BLAST) AND PRODUCE AN ANCHOR PROFILE OF 1.0-2.0 MILS. PRIME COAT TO BE DIMETCOTE 21-7 INORGANIC ZINC PRIMER TO A DFT OF 2.5-3.5 MILS. INTERMEDIATE COAT TO BE AMERCOAT 385 EPOXY TO A DFT OF 4.0-6.0 MILS. FINISH COAT TO BE AMERCOAT 450HS ACRYLIC POLYURETHANE TO A DFT OF 2.0-3.0 MILS. (COLOR=DOW MIST GRAY)

SUPPORTS
"X" (2)-1 9/16" DIA. HOLES
"Y" (2)-1 9/16" X 4 13/16" OAL SLOTS

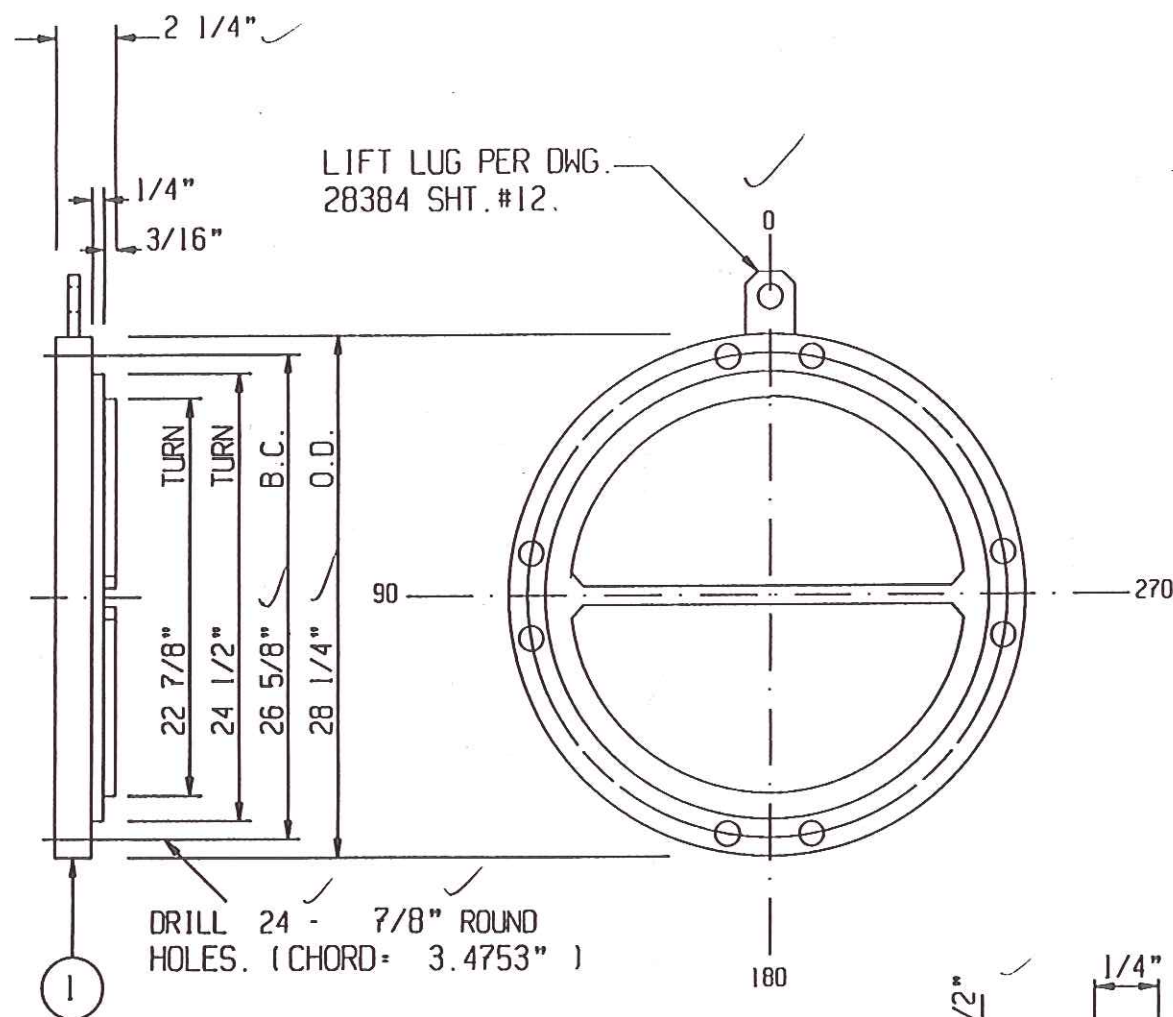
C1	1"-6000# CPLG	SHELL VENT WITH PLUG			
C2	1"-6000# CPLG	SHELL DRAIN WITH PLUG			
S1	8"-300#RFLWN	SHELL INLET			
S2	8"-300#RFLWN	SHELL OUTLET			
T1	8"-150#RFLWN	CHANNEL INLET	1	7-19-91	FOR FAB & CUST. REVIEW
T2	8"-150#RFLWN	CHANNEL OUTLET	0	3-12-91	FOR CUSTOMER APPROVAL
MK	SIZE-RATE	SERVICE	NO	DATE	REVISIONS

DESIGN DATA		SHELL	TUBE
DESIGN PRESSURE P.S.I.G.		390	260/FV
TEST PRESSURE P.S.I.G. SHOP/FIELD		606/590	428/390
DESIGN TEMPERATURE DEG. F./MDMT(MAX/MIN)		650/ 10	200/ 10
CORROSION ALLOWANCE		.1250"	.1250"
NUMBER OF PASSES		1	2
RADIOGRAPHIC EXAMINATION		FULL (RT-1)	SPOT (RT-3)
HEAT TREAT REQUIRED		NO	*
ESTIMATED WEIGHTS, LBS.			
DRY: 14500	BUNDLE: 8000	WET: 19000	
SPECIFICATIONS			
ASME CODE SECTION VIII DIV.1 STAMP YES		M.W. KELLOGG SPECS	
TEMA CLASS R		063-103-IFCDS.P42-ITS-6636	
NATIONAL BOARD REGISTRATION REQUIRED		C41-1E-6636.4-7TS-6636	
* HEAT TREATMENT - FLOATING HEAD ONLY		M17-25-89, 9-45-6636	
MATERIAL			
CHANNEL: SA-106-B	△ FLOATING HEAD:SA-516-70		
SHELL: SA-106-B/SA-516-70			
TUBESHEETS: SA-350-LF2			
BAFFLES: SA36			
TUBES: SA-214			
(405) 3/4"	O.D.X .083" MIN.	X 24'-0"	LG.
TUBE PITCH 15/16"	△	SURFACE 1882	SQ.FT.
GENERAL NOTES			
ALL BOLT HOLES TO STRADDLE NATURAL CENTER LINES.			
<u>MAX. ALLOWABLE PRESSURE</u>			
SHELLSIDE:			
MAWP (HOT & CORR.) = 393 PSIG LIM. BY SHELL FLANGE			
MAP (N & C) = 404 PSIG LIM. BY SHELL FLANGE			
TUBESIDE:			
MAWP (HOT & CORR.) = 260 PSIG LIM. BY NOZZLE RATING			
MAP (N & C) = 285 PSIG LIM. BY NOZZLE RATING			
△ MINIMUM DESIGN METAL TEMP. = +10°F			
GASKETS: .1250" THK. AIDJNAF			
FLTG. HEAD GASKET: .0625" THK. SOFT IRON (120 MAX. BRINELL HARDNESS)			
2 SETS OF SPARE GASKETS REQUIRED.			
CUST: M.W.KELLOGG/TENNECO		CERTIFIED-MH	
P.O. NO.: 6636-9901-C210-01		DATE 7/19/91	
ITEM NO.: 06E-103			
SERVICE: MTBE REACTOR #2 FEED COOLER			
SHIP TO: LAPORTE, TX.			
OHMSTEDE JOB NO.:28384			
ASSEMBLY AND SPECIFICATIONS FOR			
ONE 23-288 A E S			
OWN. BY GEO		OHMSTEDE	
NEW	CC	DATE 3- 4-91	
VAL		CKD. BY DC	DRAWING NO. 28384
		SHEET NO. 1	REV. 1

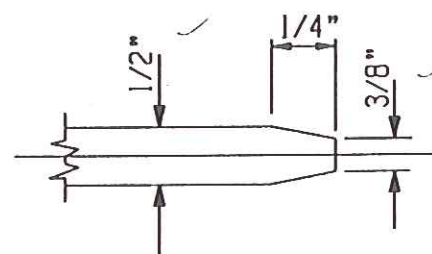
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COVER NOTES:

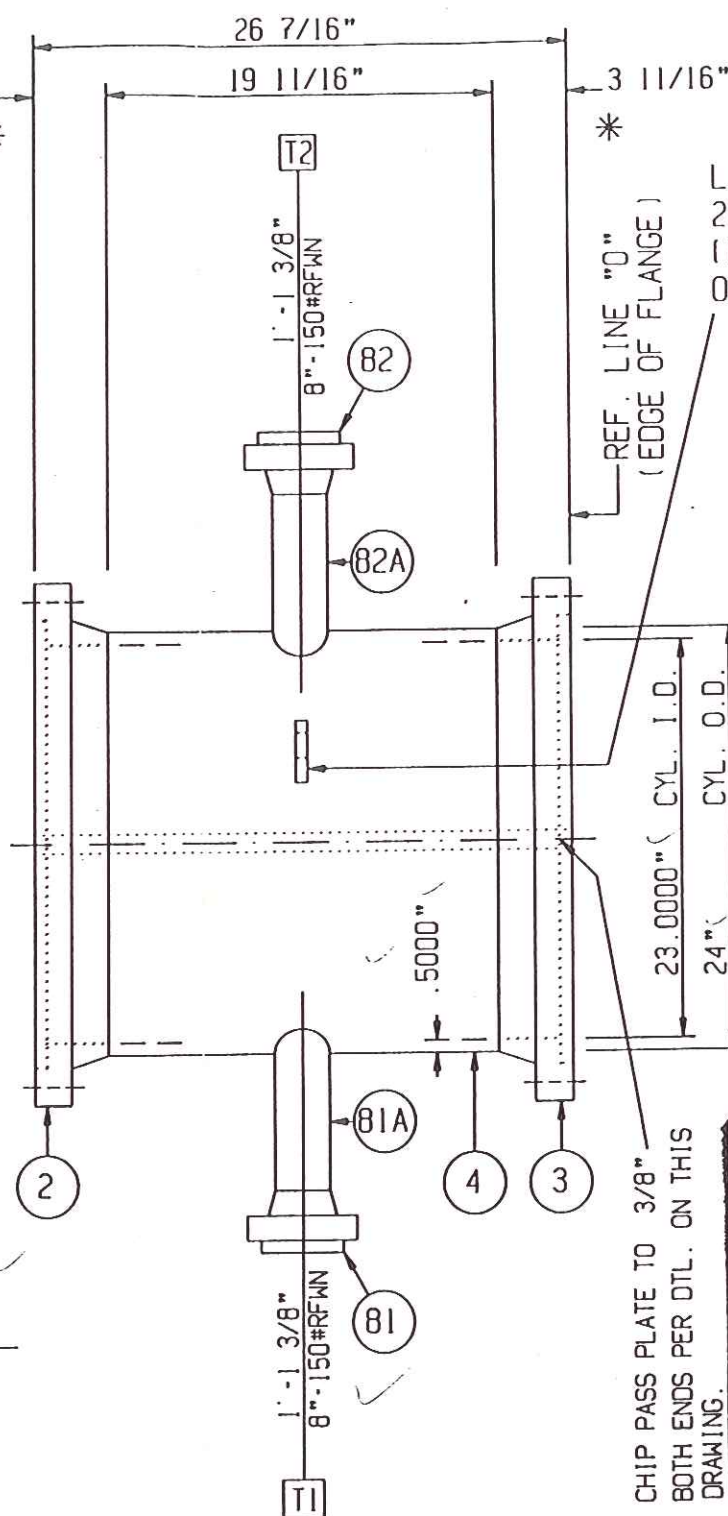
- 1) MACHINE ALL COVER GASKET SURFACES TO 125 RMS
- 2) ALL COVER PASS PLATE GROOVE WIDTHS TO BE 1/2" WIDE.
- 3) ALL COVER PASS PLATE GROOVE JUNCTIONS TO BE NOTCHED 3/8" AT 45 Deg.



CHANNEL-COVER DETAIL



PASS PL. TAPER DETAIL
(TYPICAL BOTH ENDS)

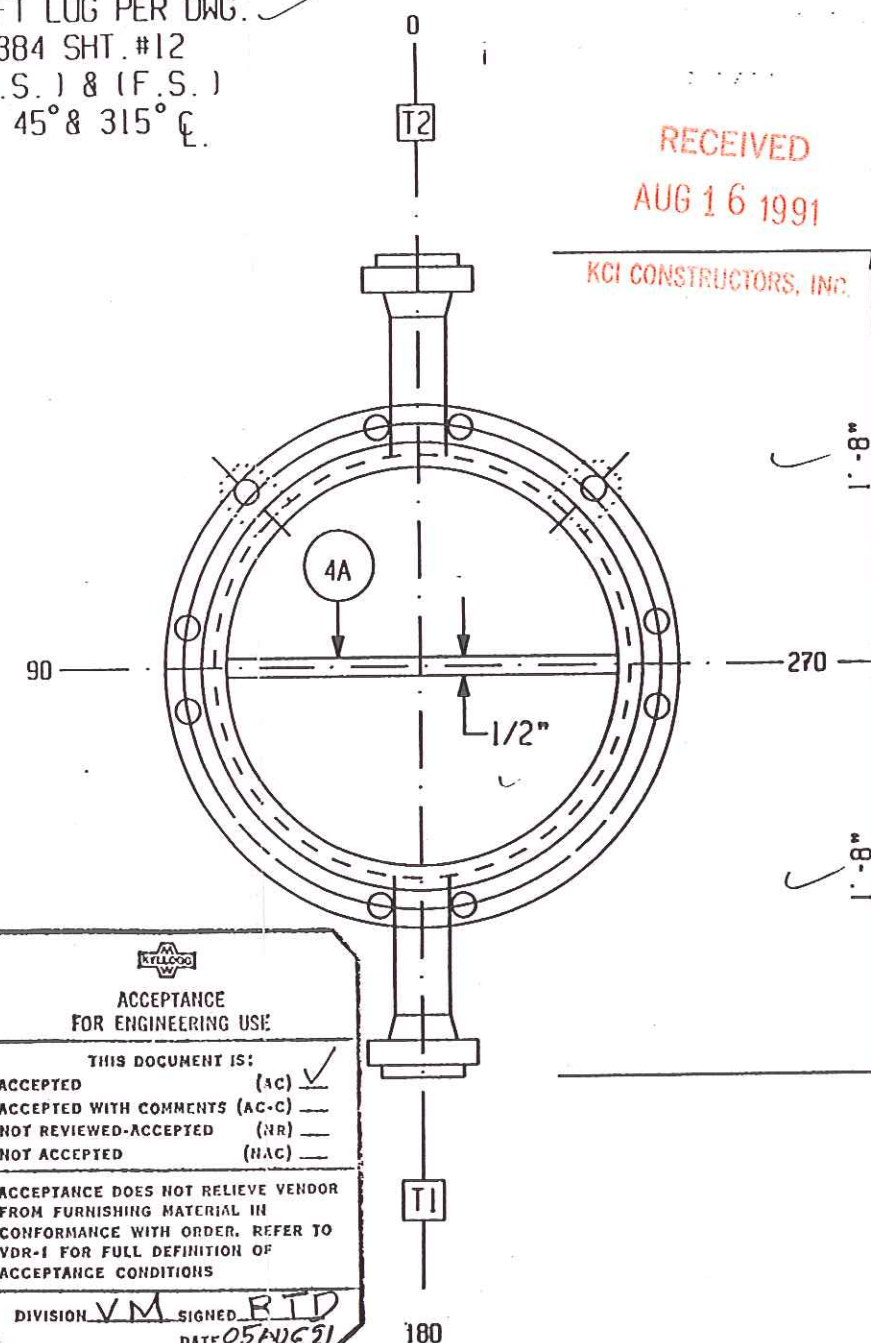


CHANNEL SIDE VIEW

* MACHINE GASKET FACING AFTER ALL WELDING.
FOR FLANGE DETAILS SEE DWG. 28384 SHT. #14

LIFT LUG PER DWG. 28384 SHT. #12
(N.S.) & (F.S.)
ON 45° & 315°

ACCEPTANCE FOR ENGINEERING USE	
THIS DOCUMENT IS:	
ACCEPTED (AC)	☒
ACCEPTED WITH COMMENTS (AC-C)	☐
NOT REVIEWED-ACCEPTED (NR)	☐
NOT ACCEPTED (NAC)	☐
ACCEPTANCE DOES NOT RELIEVE VENDOR FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO VDR-1 FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS	
DIVISION <u>VM</u>	SIGNED <u>RTD</u>
DATE <u>05 AUG 91</u>	



CHANNEL END VIEW

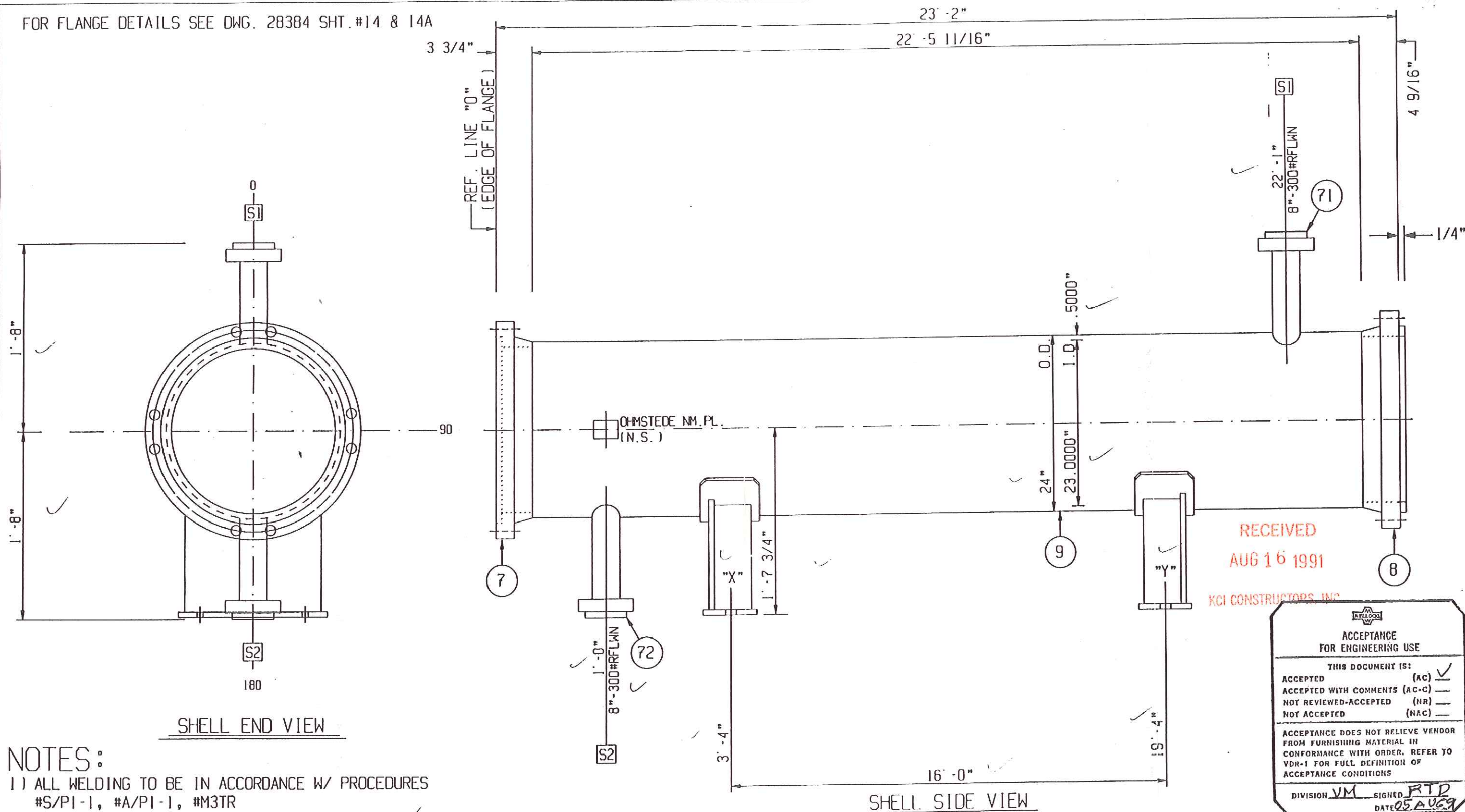
NOTES:

- 1) ALL WELDING TO BE IN ACCORDANCE W/ PROCEDURES #S/PI-1, #A/PI-1, M3TR
- 2) ALL BOLT HOLES TO STRADDLE CENTER LINES.
- 3) SEE DWG. 28384 SHT. #15 FOR WELD & BEVEL DETAILS.
- 4) SPOT RADIOGRAPHY. (RT-3)

CUST.: M.W. KELLOGG/TENNECO
P.O. NO.: 6636-99DI-C210-01
ITEM NO.: 06E-103
SERVICE: MTBE REACTOR #2 FEED COOLER
PLANT LOC.: LAPORTE, TX.
OHMSTEDE JOB NO.: 28384

			FRONT CHANNEL DETAILS			
			OWN. BY ERIC	OHMSTEDE		
			DATE 6-10-91			
0	7-19-91	FOR FAB. & CUST. REVIEW	CKD. BY DC	DRAWING NO. 28384	SHEET NO. 3	REV 0
NO.	DATE	REVISIONS				

FOR FLANGE DETAILS SEE DWG. 28384 SHT. #14 & 14A



RECEIVED
AUG 16 1991

KCI CONSTRUCTORS, INC.

ACCEPTANCE FOR ENGINEERING USE	
THIS DOCUMENT IS:	
ACCEPTED (AC)	☒
ACCEPTED WITH COMMENTS (AC-C)	☐
NOT REVIEWED-ACCEPTED (NR)	☐
NOT ACCEPTED (NAC)	☐
ACCEPTANCE DOES NOT RELIEVE VENDOR FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO VDR-1 FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS	
DIVISION VM	SIGNED RTD
DATE 25 AUG 91	

NOTES:

- 1) ALL WELDING TO BE IN ACCORDANCE W/ PROCEDURES #S/PI-1, #A/PI-1, #M3TR
- 2) ALL BOLT HOLES TO STRADDLE CENTER LINES.
- 3) SEE DWG. 28384 SHT. #15 FOR WELD & BEVEL DETAILS.
- 4) GRIND ALL INSIDE WELDS FLUSH.
- 5) FULL RADIOGRAPHY. (RT-1)

CUST.: M.W. KELLOGG/TENNECO
P.O. NO.: 6636-9901-C210-01
ITEM NO.: 06E-103
SERVICE: MTBE REACTOR #2 FEED COOLER
PLANT LOC.: LAPORTE, TX.
OHMSTEDE JOB NO.: 28384

SHELL SIDE VIEW

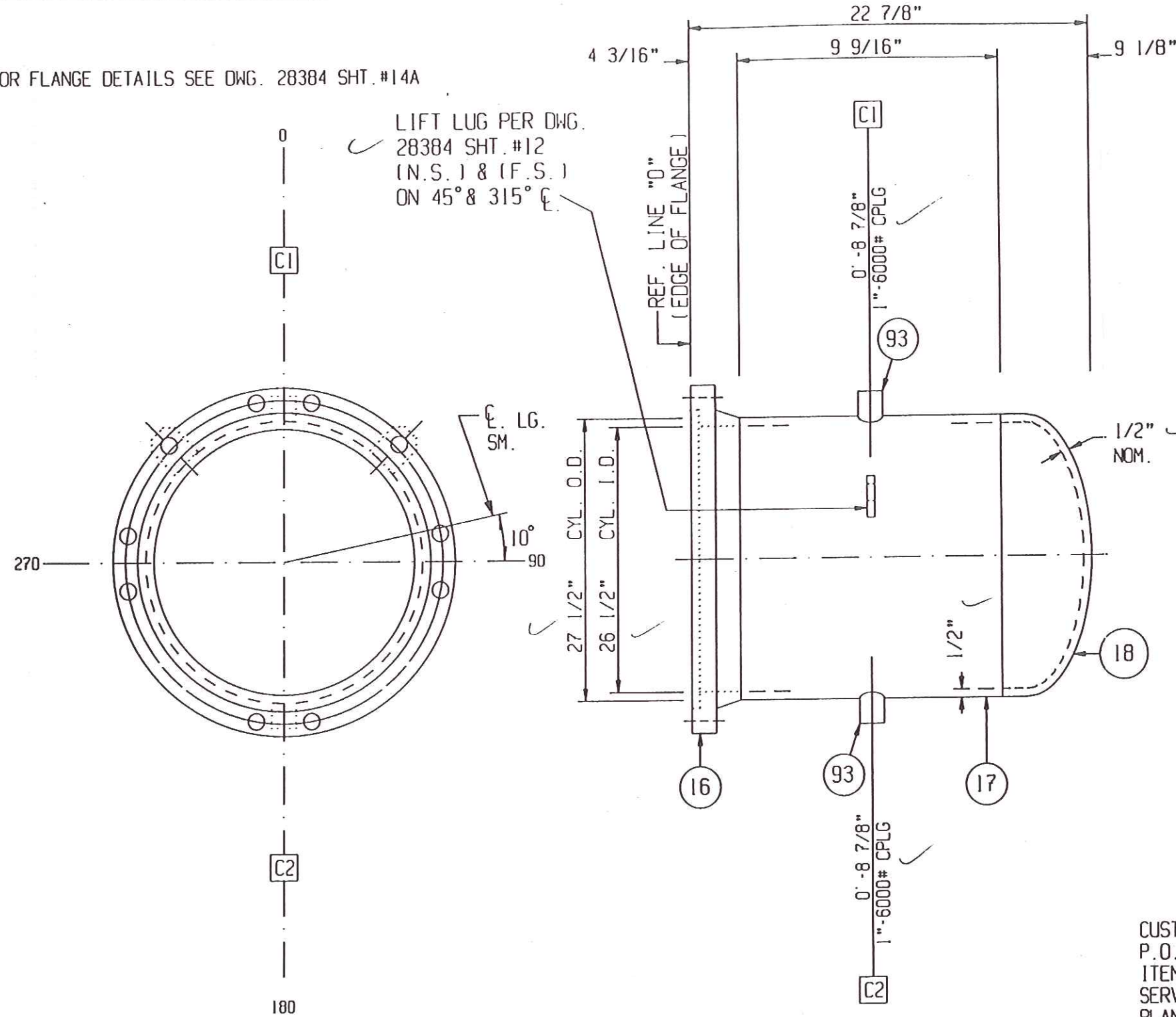
SHELL DETAILS

OHMSTEDE

SHELL DETAILS			OHMSTEDE		
NO.	DATE	REVISIONS	OWN. BY ERIC	DRAWING NO. 28384	SHEET NO. 4
			DATE 6-10-91		
0	7-19-91	FOR FAB. & CUST. REVIEW	CKD. BY DC		REV 0

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FOR FLANGE DETAILS SEE DWG. 28384 SHT. #14A



RECEIVED
AUG 16 1991

KCI CONSTRUCTORS, INC.

ACCEPTANCE FOR ENGINEERING USE	
THIS DOCUMENT IS:	
ACCEPTED	(AC) ☒
ACCEPTED WITH COMMENTS	(AC-C) ☐
NOT REVIEWED-ACCEPTED	(NR) ☐
NOT ACCEPTED	(NAC) ☐
ACCEPTANCE DOES NOT RELIEVE VENDOR FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO VDR-1 FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS	
DIVISION VM	SIGNED RTD DATE 05 AUG 91

NOTES:

- 1) ALL WELDING TO BE IN ACCORDANCE W/ PROCEDURES #S/PI-1, #A/PI-1, M3TR
- 2) ALL BOLT HOLES TO STRADDLE CENTER LINES.
- 3) SEE DWG. 28384-15 FOR WELD & BEVEL DETAILS.
- 4) GRIND ALL INSIDE WELDS FLUSH.
- 5) FULL RADIOGRAPHY. (RT-1)

SHELL CVR. END VIEW

SHELL CVR. SIDE VIEW

CUST.: M.W. KELLOGG/TENNECO
P.O. NO.: 6636-99D1-C210-01
ITEM NO.: 06E-103
SERVICE: MTBE REACTOR #2 FEED COOLER
PLANT LOC.: LAPORTE, TX.
OHMSTEDE JOB NO.: 28384

				SHELL COVER DETAILS✓				
				OWN. BY ERIC	OHMSTEDE			
				DATE 6-10-91				
0	7-19-91	FOR FAB. & CUST. REVIEW		CC	CKD. BY DC	DRAWING NO. 28384 ✓	SHEET NO. ✓ 5	REV ✓ 0
NO.	DATE	REVISIONS						

RECEIVED
AUG 16 1991
KCI CONSTRUCTORS INC.

DRILL 21/32" DIA. X
1 9/16" DP. TO POINT OF
DRILL, THEN TAP 3/4"-
10UNC-2B FOR PLUG. (101)

STARTING POINT FOR (3) HOLES:
DRILL 5/16" DIA. X 1" DP. TO
POINT OF DRILL & TAP 3/8"-16NC
EQ. SPACED 120 DEG. APART ON
22 9/16" DIA. CIRCLE (SHELLSIDE
ONLY) SEE DETAIL GUIDE PIN.
DO NOT DRILL THRU!!

DRILL & TAP 3/4" DEEP FOR 10 - 1/2" DIA.
TIE RODS ON SHELL SIDE OF
19 TUBESHEET. DO NOT DRILL THRU!!
(SEE TUBE LAYOUT FOR LOCATIONS.)

CHANNEL SIDE

SHELL SIDE

SHOP NOTE:
D & T GUIDE PIN HOLES
BEFORE MACHINING 22 7/8"
DIA. SHELLSIDE TURN.

DETAIL GUIDE PIN

121 REQ'D.

ACCEPTANCE
FOR ENGINEERING USE

THIS DOCUMENT IS:

ACCEPTED	(AC)	☒
ACCEPTED WITH COMMENTS	(AC-C)	☐
NOT REVIEWED-ACCEPTED	(NR)	☐
NOT ACCEPTED	(NAC)	☐

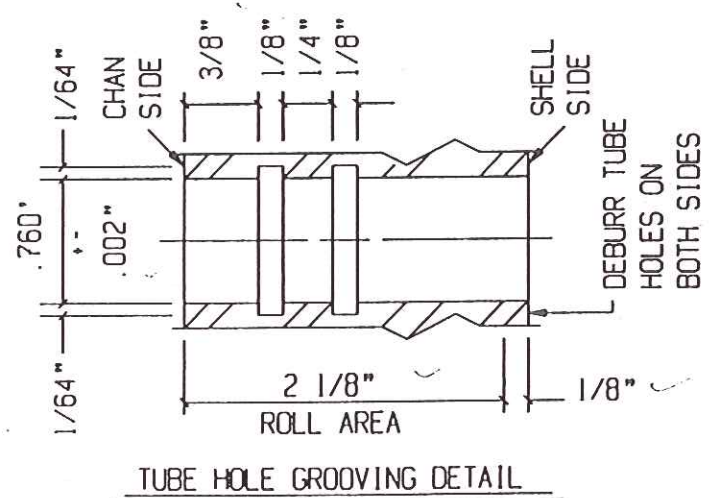
ACCEPTANCE DOES NOT RELIEVE VENDOR
FROM FURNISHING MATERIAL IN
CONFORMANCE WITH ORDER. REFER TO
VDR-1 FOR FULL DEFINITION OF
ACCEPTANCE CONDITIONS

DIVISION VM SIGNED PM
DATE 05 AUG 91

NOTES:

- 1) MACHINE ALL GASKET SURFACES
TO 125 RMS.
- 2) ALL PASS PLATE GROOVE WIDTHS TO
BE 1/2" WIDE.
- 3) ALL PASS PLATE GROOVE JUNCTIONS
TO BE NOTCHED 3/8" AT 45 Deg.

CUST.: M.W. KELLOGG/TENNECO
P.O. NO.: 6636-99D1-C210-01
ITEM NO.: 06E-103
SERVICE: MTBE REACTOR #2 FEED COOLER
PLANT LOC.: LAPORTE, TX.
OHMSTEDE JOB NO.: 28384



TUBE HOLE GROOVING DETAIL

FLOATING TUBESHEET DETAIL

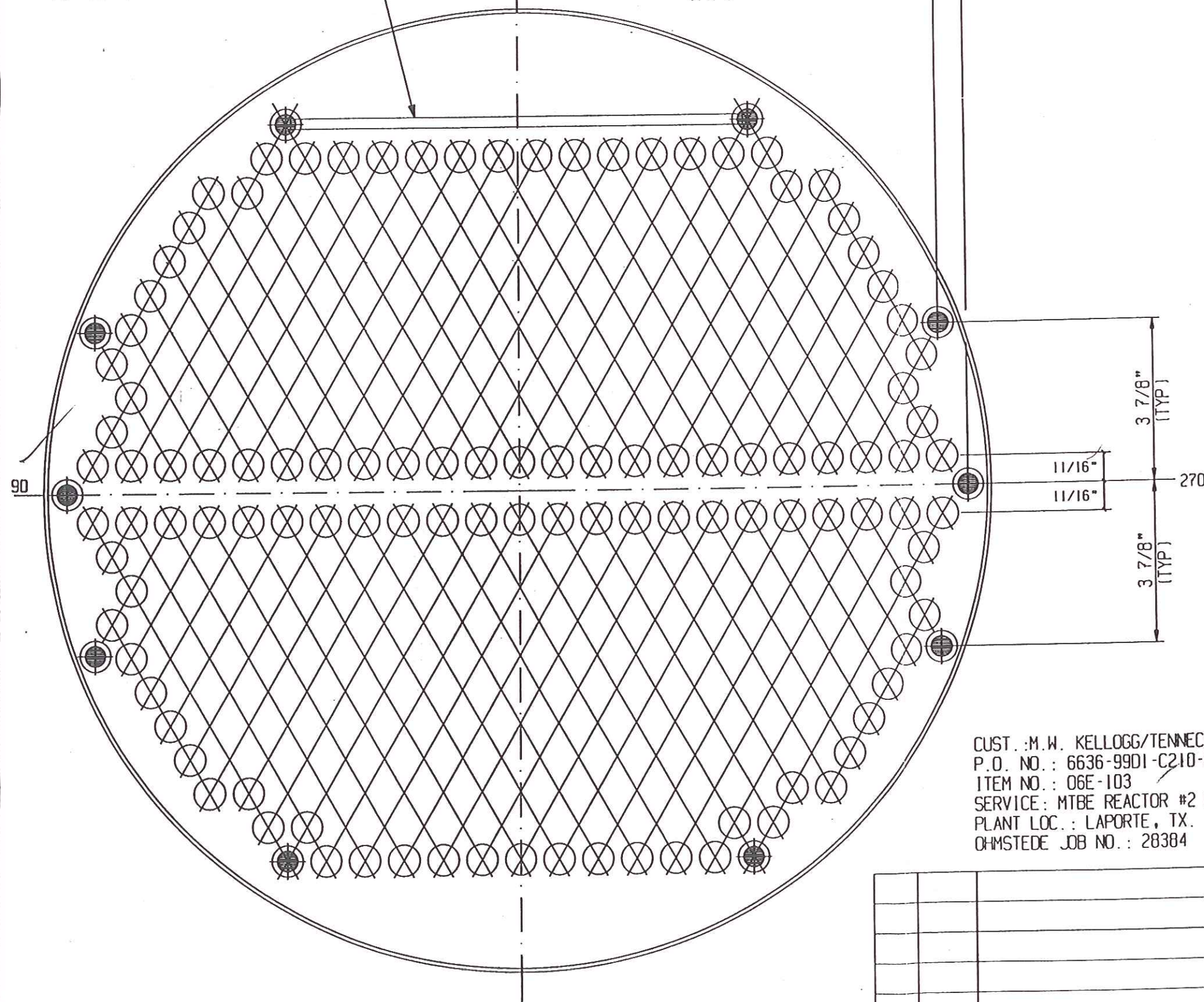
TUBESHEET DETAILS				
OWN. BY ERIC	OHMSTEDE			
DATE 6-10-91				
CKD. BY DC				
0 7-19-91	FOR FAB. & CUST. REVIEW	CC	DRAWING NO. 28384	SHEET NO. 6
NO.	DATE	REVISIONS		REV. 0

TIE RODS.
1/2" O.D. ✓
10 REOD. TOTAL

23C

10 13/16" (TYP)

10 1/4" (TYP)



90

3 7/8" (TYP)

11/16"

11/16"

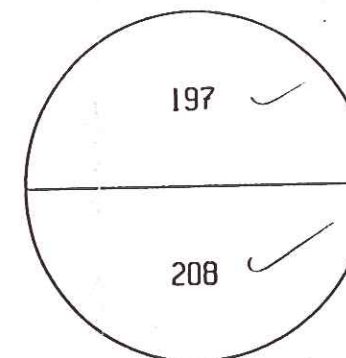
270

3 7/8" (TYP)

180 ✓

VIEW LOOKING AT SHELL SIDE OF NO. 19 TUBESHEET

CUST.: M.W. KELLOGG/TENNECO
P.O. NO.: 6636-9901-C210-01
ITEM NO.: 06E-103
SERVICE: MTBE REACTOR #2 FEED COOLER
PLANT LOC.: LAPORTE, TX.
OHMSTEDE JOB NO.: 28384



TUBE DISTRIBUTION

RECEIVED
AUG 16 1991
KCI CONSTRUCTORS, INC.

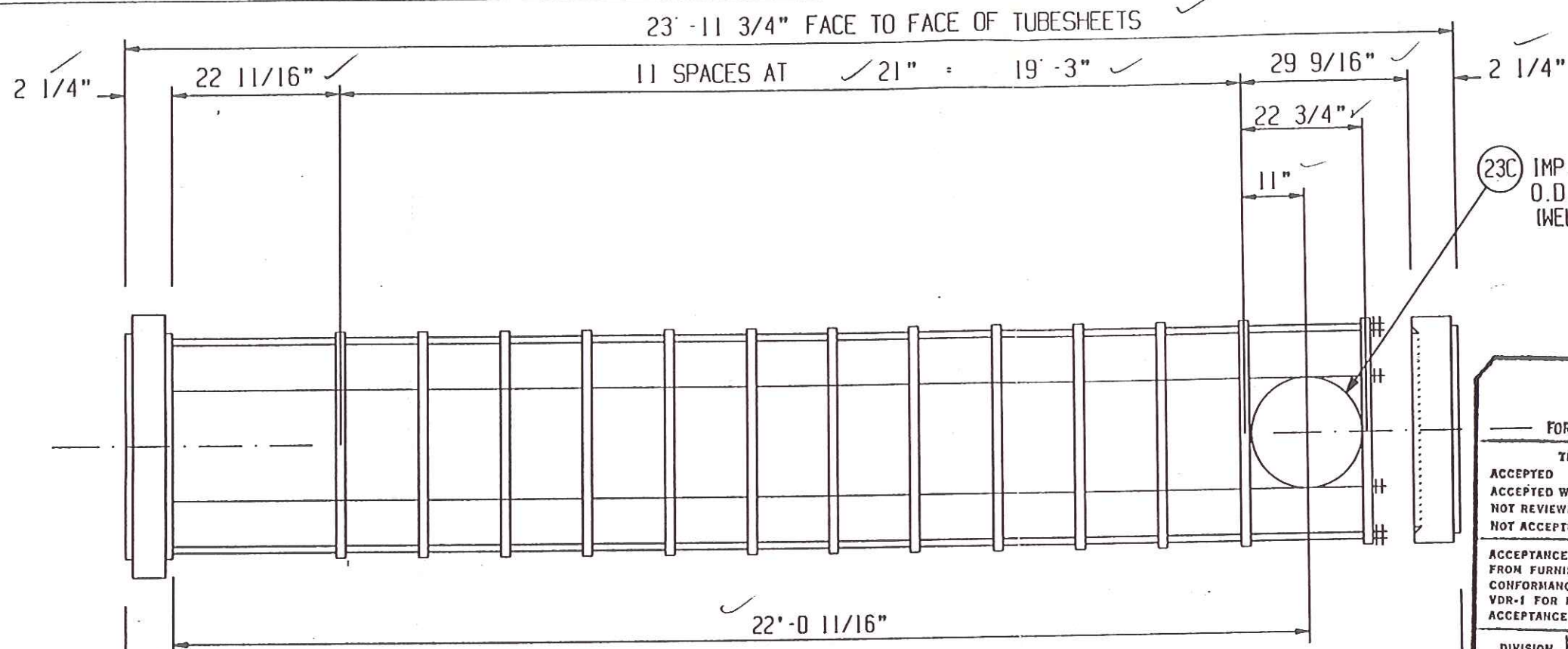
ACCEPTANCE FOR ENGINEERING USE	
THIS DOCUMENT IS:	
ACCEPTED (AC)	☒
ACCEPTED WITH COMMENTS (AC-C)	☐
NOT REVIEWED-ACCEPTED (NR)	☐
NOT ACCEPTED (NAC)	☐
ACCEPTANCE DOES NOT RELIEVE VENDOR FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO VDR-1 FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS	
DIVISION <u>YM</u>	SIGNED <u>RTD</u>
DATE <u>05 AUG 91</u>	

NOTES:

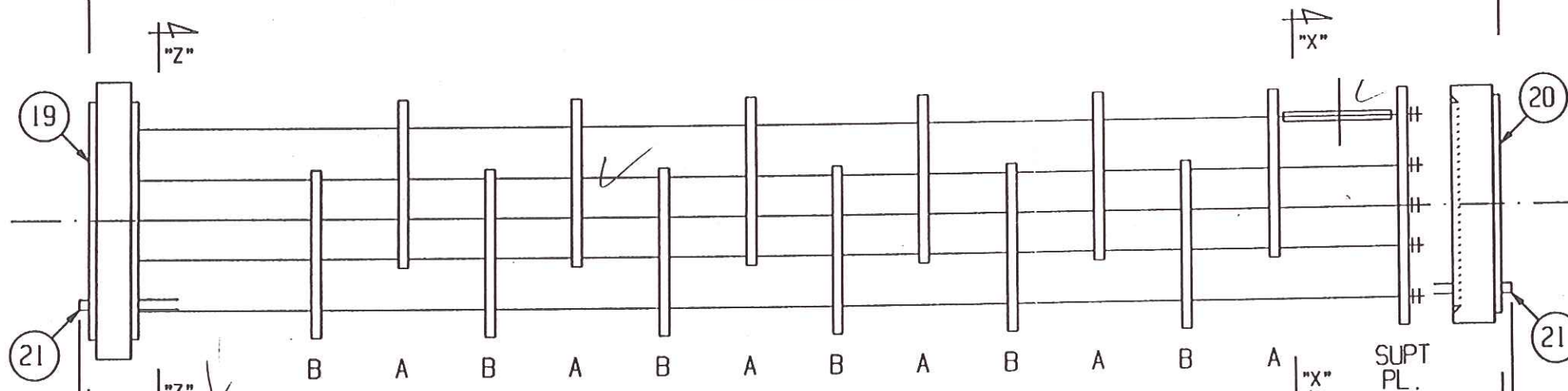
- 1) DRILL AND REAM TUBE HOLES IN TUBESHEETS TO .7600" +/- .002" DIA. FOR 405 3/4" O.D. TUBES.
- 2) TUBE PITCH = 15/16" TRIANGLE.
- 3) NUMBER OF PASSES = 2
- 4) SEE DRAWING 28384 SHT.#6 FOR TUBE HOLE GROOVING DETAILS.
- 5) BAFFLE O.D. = 22 13/16"
- 6) O.T.L. = 21 9/16"

			TUBE LAYOUT ✓				
			OWN. BY ERIC		OHMSTEDE		
			DATE 6-10-91				
0	7-19-91	FOR FAB. & CUST. REVIEW	CC.	DRAWING NO.		SHEET NO.	REV
NO.	DATE	REVISIONS		CKD. BY DC	28384 ✓	7	0

B18



PLAN VIEW



ELEVATION VIEW

CUST.: M.W. KELLOGG/TENNECO
P.O. NO.: 6636-99D1-C210-01
ITEM NO.: 06E-103
SERVICE: MTBE REACTOR #2 FEED COOLER
PLANT LOC.: LAPORTE, TX.
OHMSTEDE JOB NO.: 28384

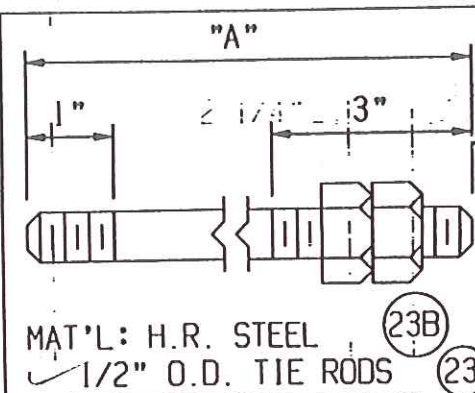
ACCEPTANCE FOR ENGINEERING USE

THIS DOCUMENT IS:

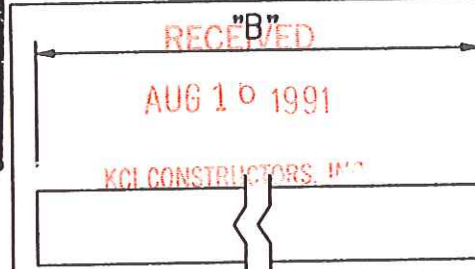
ACCEPTED (AC) ☒
ACCEPTED WITH COMMENTS (AC-C) ☐
NOT REVIEWED-ACCEPTED (NR) ☐
NOT ACCEPTED (NAC) ☐

ACCEPTANCE DOES NOT RELIEVE VENDOR FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO VDR-1 FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS

DIVISION VM SIGNED RM DATE 05 AUG 91



REQ'D.	"A"
10	23'-3"



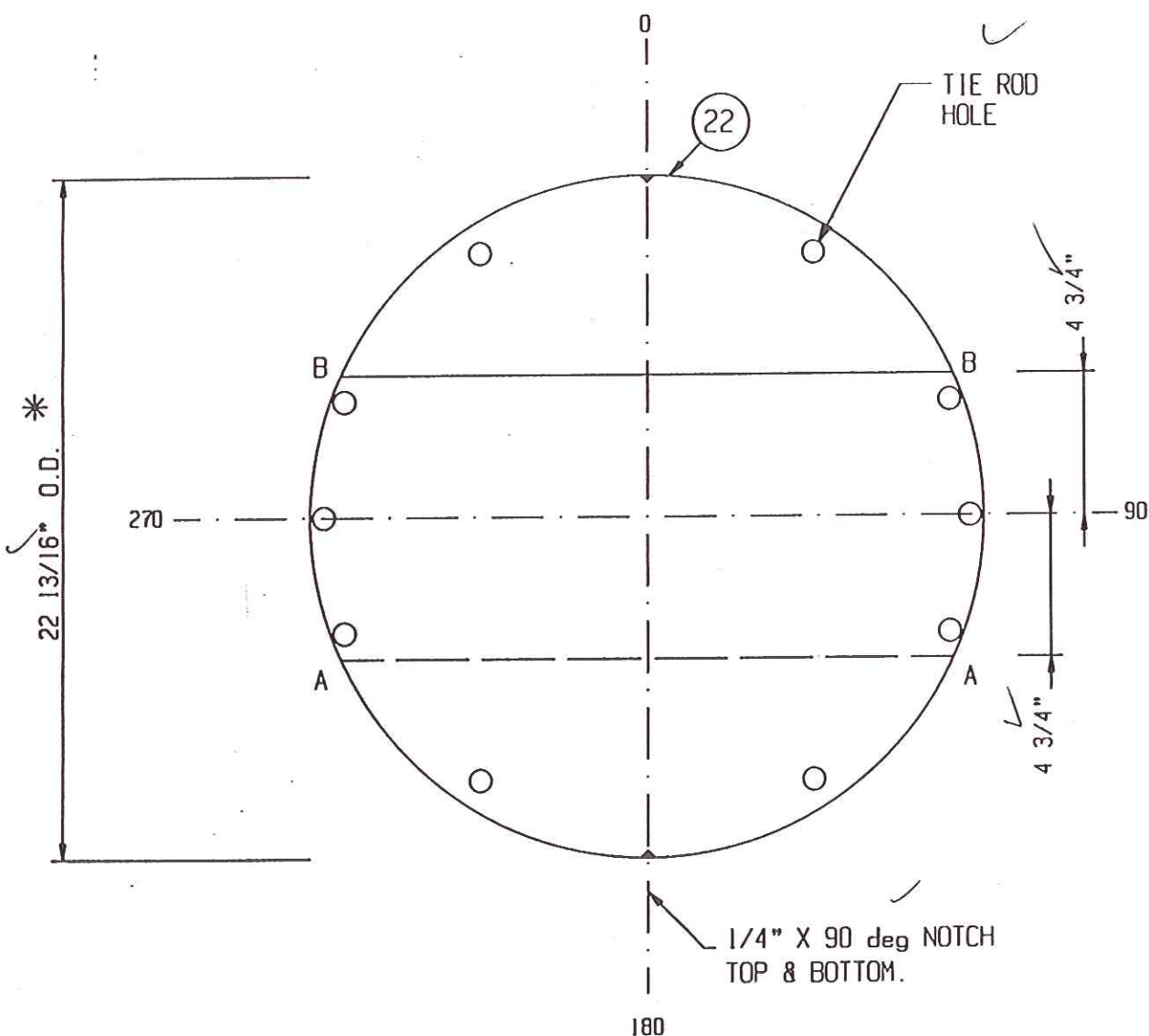
REQ'D.	"B"
8	22 1/2"
2	43 1/2"
66	20 5/8"
20	41 5/8"
8	22 5/16"
2	43 5/16"

NOTES:

1) SEE DWG. NO. 28384 SHT. #9 FOR SECTION AND VIEW DETAILS.

			BUNDLE DETAILS				
			OWN. BY ERIC	OHMSTEDE			
			DATE 6-10-91				
0	7-19-91	FOR FAB. & CUST. REVIEW	CC.	CKD. BY DC	DRAWING NO. 28384	SHEET NO. 8	REV. 0
NO.	DATE	REVISIONS					

BI 9



VIEW ZZ OF BAFFLES

3/8" THK.

6 -REQ'D. CUTBB

6 -REQ'D. CUTAA

NOTES:

1) DRILL TUBE HOLES IN BAFFLES 49/64" DIA. & DEBURR.

2) DRILL TIE ROD HOLES 9/16" DIA.

SEE TUBE LAYOUT FOR LOCATION.

3) RADIUS ALL CORNERS ON BAFFLE CUTS.

* 4) CHECK SHELL I.D. BEFORE MACHINING BAFFLE O.D.

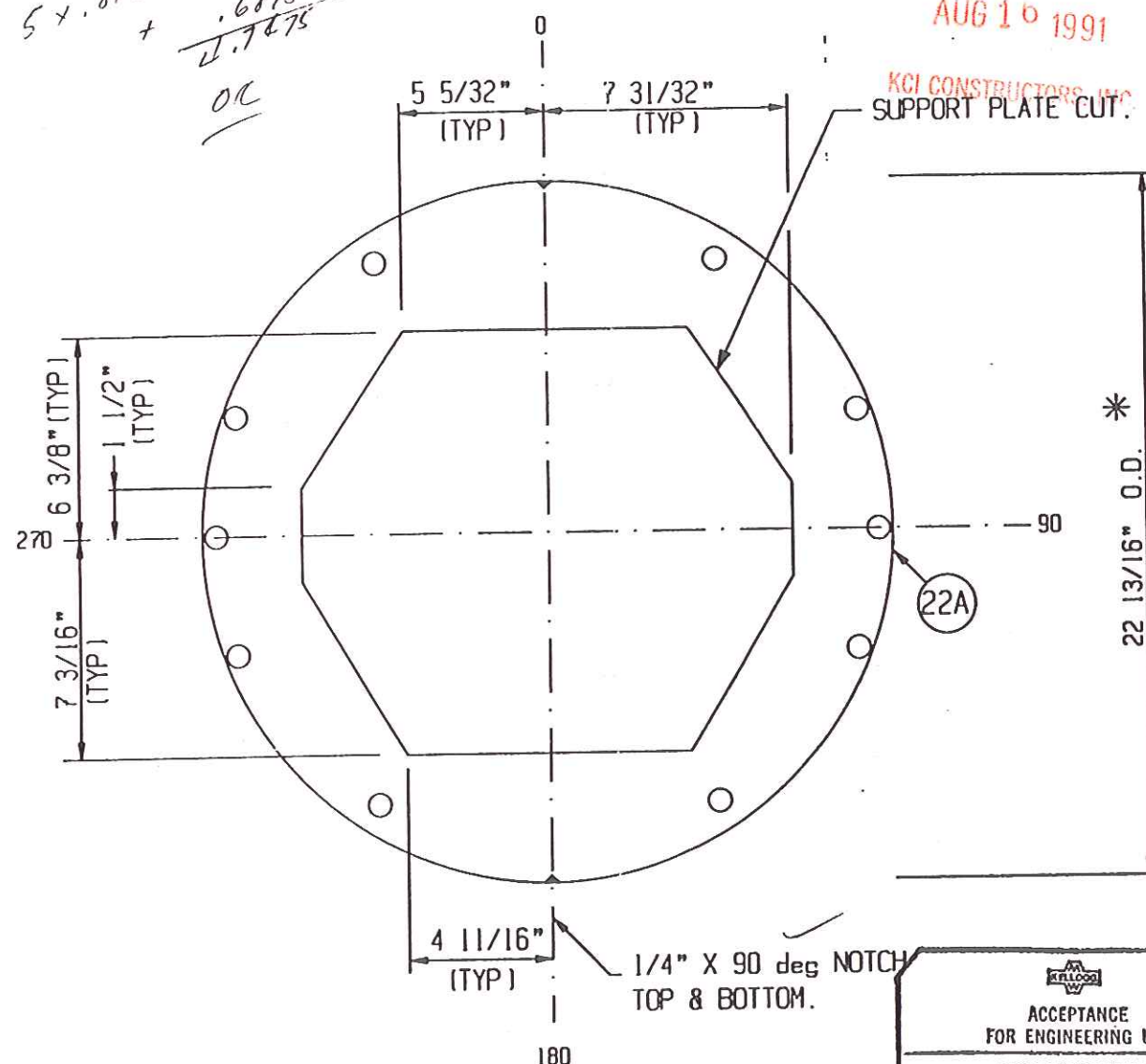
5) MACHINE O.D. OF BAFFLES TO 250 RMS.

$$5 \times .812 = 4.06$$

$$+ .6875$$

$$\hline 4.7475$$

OK



VIEW XX OF SUPT. PL.

1/2" THK.

1-REQ'D.

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KCI CONSTRUCTORS, INC.

ACCEPTANCE FOR ENGINEERING USE	
THIS DOCUMENT IS:	
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ACCEPTED WITH COMMENTS	(AC-C) ☐
NOT REVIEWED-ACCEPTED	(NR) ☐
NOT ACCEPTED	(NAC) ☐
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DIVISION ☒ M	SIGNED ☒ RM
DATE 05 AUG 91	

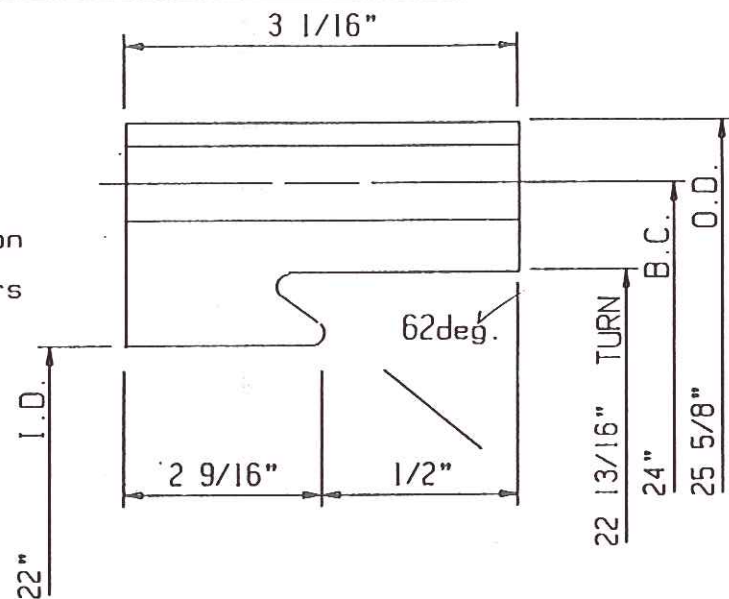
CUST.: M.W. KELLOGG/TENNECO
P.O. NO.: 6636-9901-C210-01
ITEM NO.: 06E-103
SERVICE: MTBE REACTOR #2 FEED COOLER
PLANT LOC.: LAPORTE, TX.
OHMSTEDE JOB NO.: 28384

BAFFLE DETAILS			
OWN. BY ERIC	DATE 6-10-91	OHMSTEDE	
CKD. BY DC	DRAWING NO. 28384	SHEET NO. 9	REV. 0
NO.	DATE	REVISIONS	
0	7-17-91	FOR FAB. & CUST. REVIEW	

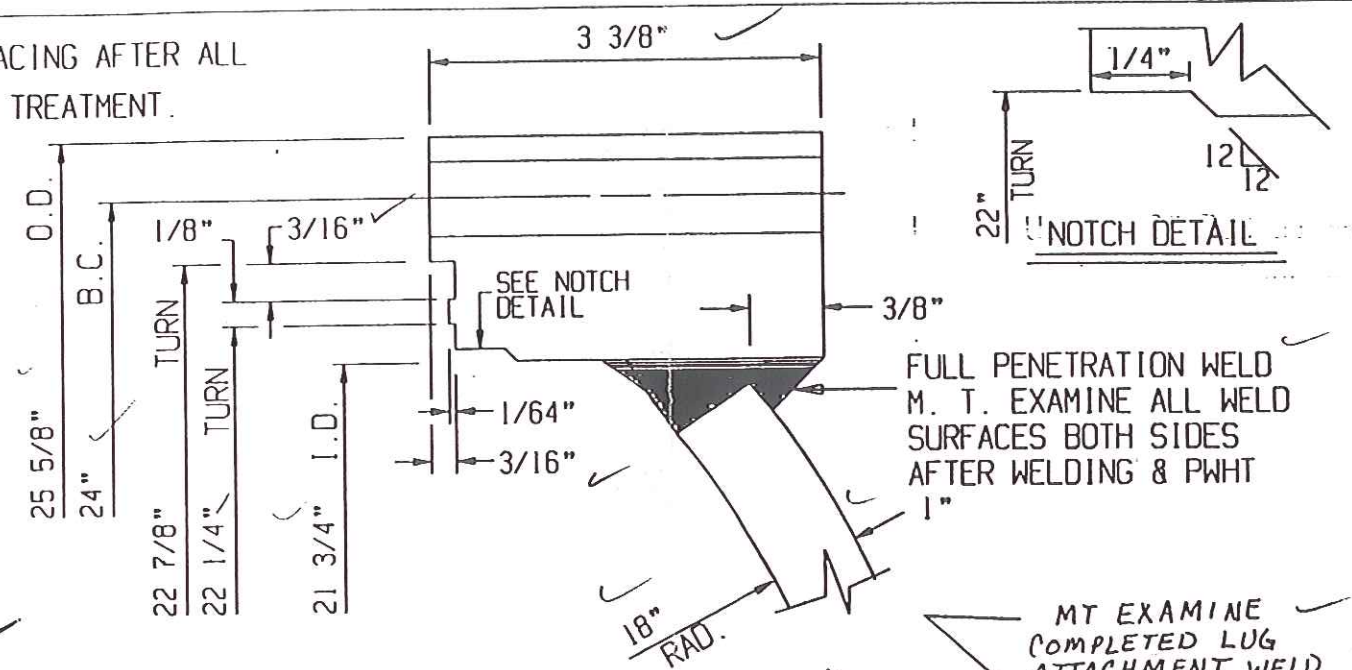
8110

ACCEPTANCE FOR ENGINEERING USE	
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ACCEPTED WITH COMMENTS	(AC-C) ☐
NOT REVIEWED-ACCEPTED	(NR) ☐
NOT ACCEPTED	(NAC) ☐
ACCEPTANCE DOES NOT RELIEVE VENDOR FROM FURNISHING MATERIAL IN CONFORMANCE WITH ORDER. REFER TO VDR-1 FOR FULL DEFINITION OF ACCEPTANCE CONDITIONS	
DIVISION VM	SIGNED R.M.
DATE 05 AUG 91	

Use 1/16" Radius on BOTH 62deg Corners



MACHINE GASKET FACING AFTER ALL WELDING AND HEAT TREATMENT.



MT EXAMINE COMPLETED LUG ATTACHMENT WELD SURFACES AFTER PWHT

LIFT LUG PER DWG.

28384 SHT. #12

5 7/16"

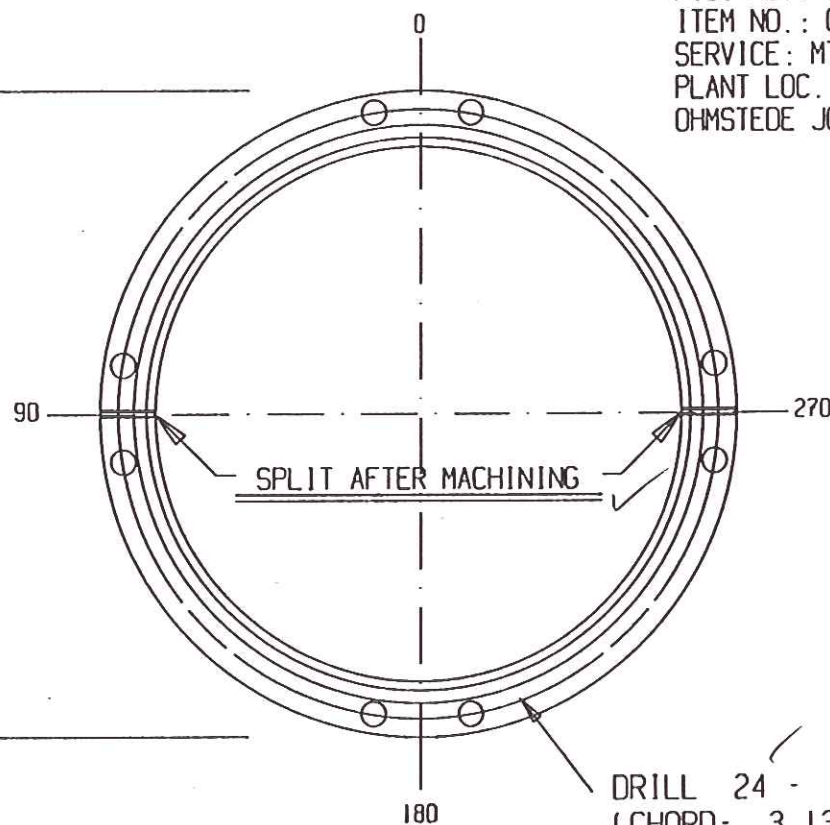
26

25

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CONSTRUCTORS, INC.

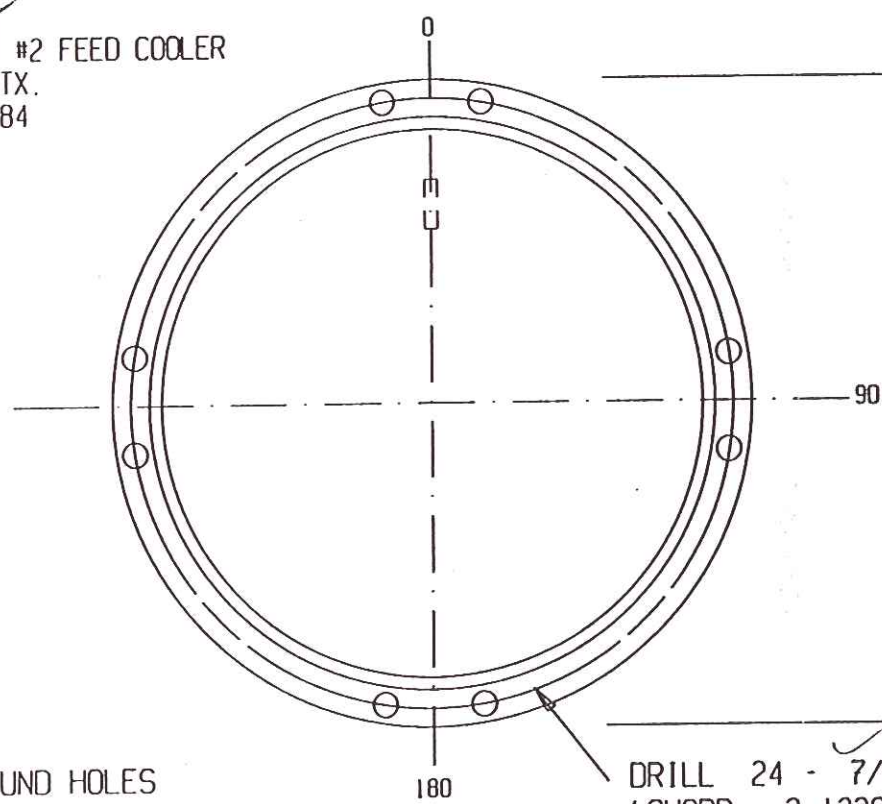
CUST.: M.W. KELLOGG/TENNECO
P.O. NO.: 6636-99D1-C210-01
ITEM NO.: 06E-103
SERVICE: MTBE REACTOR #2 FEED COOLER
PLANT LOC.: LAPORTE, TX.
OHMSTEDE JOB NO.: 28384



DRILL 24 - 7/8" ROUND HOLES
(CHORD = 3.13263)

ROUND HOLES

47 48 BOLTING



DRILL 24 - 7/8" ROUND HOLES
(CHORD = 3.13263)

FLOATING HEAD COVER

47 48 BOLTING

NOTES:

BACK - UP RING

- 1) ALL WELDING TO BE IN ACCORDANCE W/ PROCEDURES #PI-1HT, #SUB-16HT
- 2) ALL BOLT HOLES TO STRADDLE CENTER LINES.
- 3) SEE DWG. 28384 SHT. #15 FOR WELD & BEVEL DETAILS.
- 4) MACHINE ALL GASKET SURFACES TO 125 RMS
- 5) POST-WELD HEAT TREAT FLTG. HEAD COVER:

- A) HEAT FROM 800 deg.F TO 1100 deg.F AT 400 deg.F PER HOUR
- B) HOLD AT 1100 deg.F FOR 1.00 HOUR (MIN).
- C) COOL FROM 1100 deg.F TO 800 deg.F AT 500 deg.F PER HOUR
- D) FURTHER COOLING MAY BE IN STILL AIR.
- E) AN OVEN RECORDING CHART IS REQUIRED.

FLOATING HEAD COVER & BACK UP RING DETAILS

OHMSTEDE

			FLOATING HEAD COVER & BACK UP RING DETAILS				
			OWN. BY ERIC	OHMSTEDE			
			DATE 6-10-91				
0	7-19-91	FOR FAB. & CUST. REVIEW	cc	CKD. BY	DRAWING NO.	SHEET NO.	REV
NO.	DATE	REVISIONS		DC	28384	10	0

B1