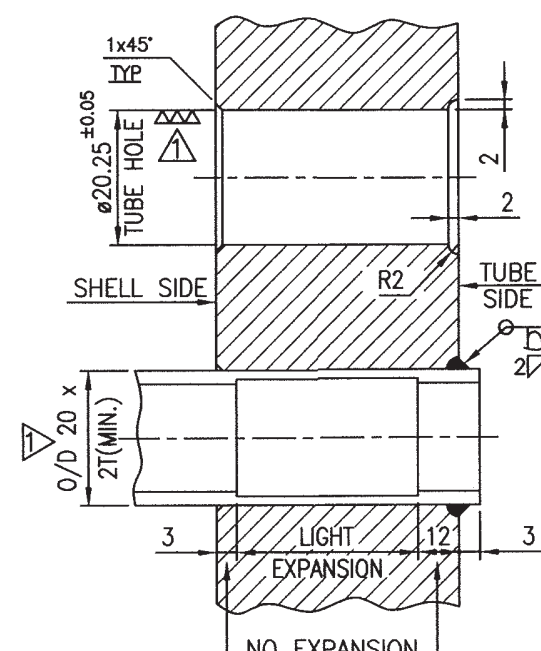
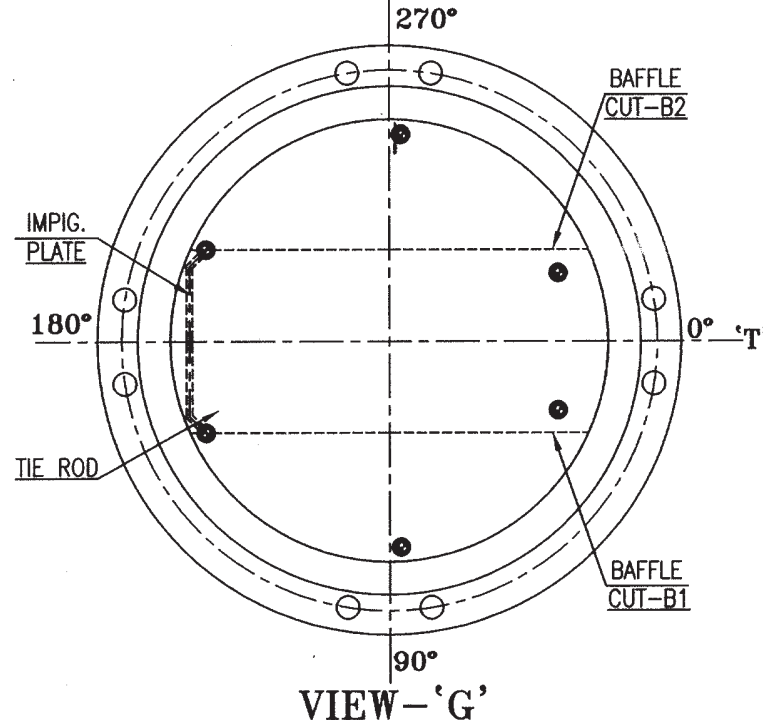
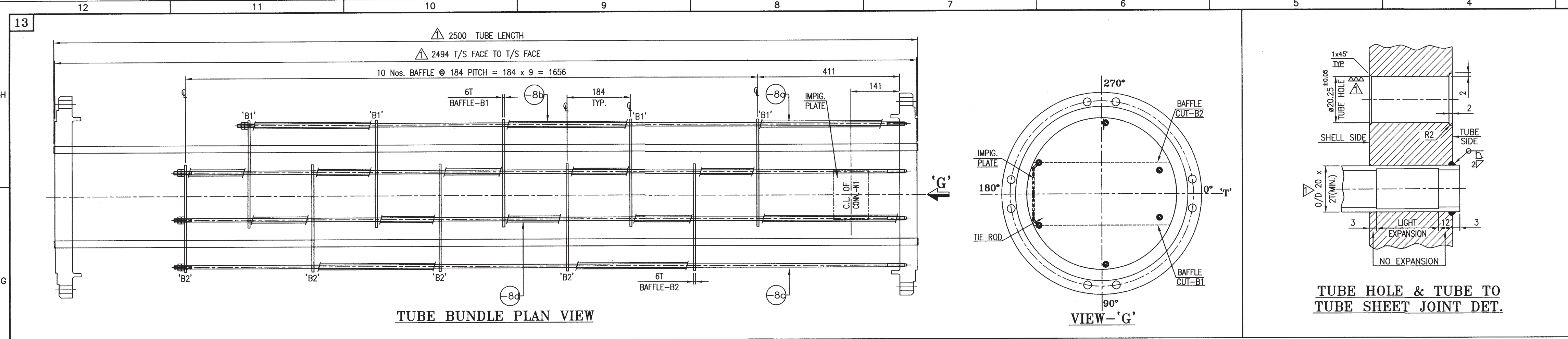




EXAMINATION

- Q1) NDE REQUIREMENT.
- a) L/S & C/S OF SHELL SIDE & TUBE SIDE SHELL BE 100% RADIOGRAPHED.
 - b) ALL PIPE TO FLANGES/FITTINGS JOINTS SHALL BE 100% RADIOGRAPHED.
- Q2) D.P. TEST SHALL BE CARRIED OUT ON
- a) KNUCKLE PORTION OF DISCHD END—BOTH INSIDE & OUTSIDE AND WELD EDGES AFTER FORMING.
 - b) ALL NOZZLE TO SHELL WELDS.
 - c) ALL ATTACHMENT FINAL WELD.
- Q3) IF RADIOGRAPHY IS BEING SUBSTITUTED BY UST FOR FINAL CLOSING SEAM AS PERMITTED BY CODE MP TEST SHALL BE CARRIED OUT IN ADDITION TO UST.

TUBE BUNDLE:-

- 1) TUBE TO TUBESHEET JOINT SHALL BE COMPLIED WITH REQUIREMENTS OF 6-15-003-R3.
- 2) TUBE HOLE IN TUBE SHEET SHALL HAVE SMOOTH FINISH TO 63 AARH.
- 3) AFTER HYDROTEST EQUIP. SHALL BE COMPLETELY DRIED BY PASSING HOT AIR ON BOTH SHELL & TUBE SIDE
- 4) AFTER DRYING, THE EQUIPMENT SHALL BE PURGED AND FILLED WITH DRY N₂ AT 0.25 kg/cm2 THE EQUIPMENT SHALL BE PROVIDED WITH PRESSURE GAUGE TO MONITOR NITROGEN PRESSURE AND 1/4" NO. RETURN VALVE.
- 5) THREADS ON EXTERNAL BOLTING NUTS ETC SHALL BE LUBRICATED WITH GRAPHITE GREASE.
- 6) TUBE TO TUBE SHEET WELDED JOINT SHALL BE HELIUM TESTED.
- 7) TUBE TO TUBESHEET JOINT SHALL BE SUBJECTED TO AIR SOAP SOLUTION TEST AFTER FIRST WELD PASS WITH AIR AT 1.25 kg/cm2(g)

1 OTHERS

- 1) ALL REQUIREMENTS OF THIS SHALL BE COMPLIED WITH, UNLESS OTHERWISE AGREED BETWEEN THE EIL AND HDQ, WITHOUT ANY COST AND DELIVERY IMPLICATIONS.
 - 2) THE EXCHANGER IS ALSO DESIGNED FOR FOLLOWING AVERAGE SHELL & TUBE METAL TEMP.
 - a) -21.2°C & -13°C RESPECTIVELY FOR NORMAL OPERATION.
 - b) -37.4°C & -37.4°C RESPECTIVELY FOR SHELL SIDE START UP OPERATION.
 - c) -35°C & 35° C RESPECTIVELY FOR LOSS OF COOLING.
 - d) 20°C & 38° C RESPECTIVELY FOR TUBE SIDE STARTUP.
 - 3) CLEAN POTABLE WATER SHALL BE USED FOR HYDROTEST. MINIMUM METAL TEMPERATURE DURING HYDROTEST SHALL BE 20°C. TEST PRESSURE SHALL BE MAINTAIN FOR AT LEAST ONE HOUR AND WATER CONTAIN CHLORIDE MORE THAN 25 PPM
 - 4) FINAL HYDROTEST SHALL BE DONE WITH SERVICE GASKET.
 - 5) FOR SEAT EXCHANGER TOLERANCE REF. EIL STD. 1-15-0109 REV.03 OR TEMA STRINGENT OF BOTH SHALL GOVERN.
- 4.5T SS316 SPWD GASKET WITH GRAFIL FILLER AND 3.2T CS OUTER RING. (DIMENSIONS AS PER B16.20)

						Total Weight	1415
						Sheet 1 of 3 Weight	540.00
						Sheet 2 of 3 Weight	874
-3	RIVET	8	ALLUMINIUM		5# x 20 Lg.		0.2
-2	NAME PLATE	1	SS 304		3T X 110W X 150 L.		0.4
-1	NAME PLATE BRACKET	1	SA 516 GR 60		6T x 170W x 300 Dev.Lg		2.4
14	NAME PLATE ASSEMBLY						
▶ -9	IMPINGEMENT PLATE	1	SA 516 GR. 60		6T x 100W x 200 Dev. Lg.		1.2
▶ -8	SPACERS	SEE TABLE	IS 1239 GR. C		17.5 0.0 D x 2.35T x AS PER TABLE		11.37
▶ -7	HEX NUT	12	IS 1367 CL. 4		M10 STD.		1.56
▶ -6b	TIE ROD	01	IS 2062 GR. C		#10 x 1931 Lg.		1.19
▶ -6a	TIE ROD	5	IS 2062 GR. C		#10 x 2115 Lg.		6.5
▶ -5	TUBES	215	SA 334 GR. 6		20 0.0 D x 2.0T(MIN) x 2500 Lg		477.3
▶ -4	BAFFLE PLATE	01	REQ. IS 2062 GR C (USED SA 516 GR. 60)		6T x AS PER DRG.		26.7
▶ -3	BAFFLE PLATE	05	REQ. IS 2062 GR C (USED SA 516 GR. 60)		6T x AS PER DRG.		26.7
-2	LH SIDE TUBE SHEET	01	SA 350 LF2 CL.1		AS PER DRG.		90
-1	R.H SIDE TUBE SHEET	01	SA 350 LF2 CL.1		AS PER DRG.		90
13	TUBE BUNDLE ASS'Y						
-4	STUD WITH 2HYV HEX NUT	04	SA 320 L7/SA 194 GR 4		1/2" UNC x 85 Lg		0.6
-3	GASKET	01	●●		NPS 1.5 x 150 CL ASME B16.20		
-2	BLIND FLANGE	01	SA 350 LF2 CL.1		NPS 1.5 x 150 CL BLRF		3.6
-1	FLANGE	01	SA 350 LF2 CL.1		NPS 1.5 x 150 CL. x LWNRF x 200 Lg.		6.4
12	CONN-N11 ASSEMBLY						
-4	STUD WITH 2HYV HEX NUT	08	SA 320 L7/SA 194 GR 4		1/2" UNC x 85 Lg		1.2
-3	GASKET	02	●●		NPS 1.5 x 150 CL ASME B16.20		
-2	BLIND FLANGE	02	SA 350 LF2 CL.1		NPS 1.5 x 150 CL BLRF		3.6
-1	FLANGE	02	SA 350 LF2 CL.1		NPS 1.5 x 150 CL. x LWNRF x 210 Lg.		6.5
11	CONN-N9/N10 ASSEMBLY						
-6	STIFFENERS	04	SA 516 GR 60		6T x 30W x 100 Lg (CUT TO SUIT)		0.5
-5	STUD WITH 2HYV HEX NUT	08	SA 320 L7/SA 194 GR 4		1/2" UNC x 85 Lg		1.2
-4	GASKET	02	●●		NPS 1.5 x 150 CL ASME B16.20		
-3	BLIND FLANGE	02	SA 350 LF2 CL.1		NPS 1.5 x 150 CL BLRF		3.6
-2	NOZZ. PIPE	02	SA 333 GR. 6		NPS 1.5 x SCH XXS x 215 Lg		4.1
-1	FLANGE	02	SA 350 LF2 CL.1		NPS 1.5 x SCH XXS x 150 CL WNRF		3.6
10	CONN-N7/N8 ASSEMBLY						
-4	STUD WITH 2HYV HEX NUT	08	SA 320 L7/SA 194 GR 4		1/2" UNC x 85 Lg		1.2
-3	GASKET	02	●●		NPS 1.5 x 150 CL ASME B16.20		
-2	BLIND FLANGE	02	SA 350 LF2 CL.1		NPS 1.5 x 150 CL BLRF		3.6
-1	FLANGE	02	SA 350 LF2 CL.1		NPS 1.5 x 150 CL. x LWNRF x 200 Lg.		6.4
09	CONN-N6/N6 ASSEMBLY						
-1	FLANGE	02	SA 350 LF2 CL.1		NPS 10 x 150 CL. x LWNRF x 385 Lg.		84.0
08	CONN-N3/N4 ASSEMBLY						
-1	FLANGE	02	SA 350 LF2 CL.1		NPS 2 x 150 CL. x LWNRF x 285 Lg.		8.2
07	CONN-N1/N2 ASSEMBLY						

BILL OF MATERIAL

2.	PART No. 13(-3,-4) MOC REVISED, HYDRO TEST DATE ADDED & AS BUILT DONE.	SUMIT	V.V.S.	B.P.P.	15.11.10
1.	TUBE LENGTH REVISED & REVISED AS PER MARKED. 	S.K.P.	V.V.S.	S.R.P.	06.12.10
NO.	DESCRIPTION	BY	CHD.	APPD.	DATE

REVISIONS

AS BUILT


HDO


EIL

P.R. NO:- 6907-117-EE-PR-6055/0176-R0, DATED : 23/07/2010 

P.O. NO:- 6907-117-EE-PO-6055/0081/0176

MF'G SERIAL NO:- 8239	EIL JOB NO:- 6907
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CLIENT 	PROJECT	UNIT
▷BRAHMAPUTRA CRACKER & POLYMER LTD.	BPCP, LEPETKATA, ASSAM	LLDPE/HDPE

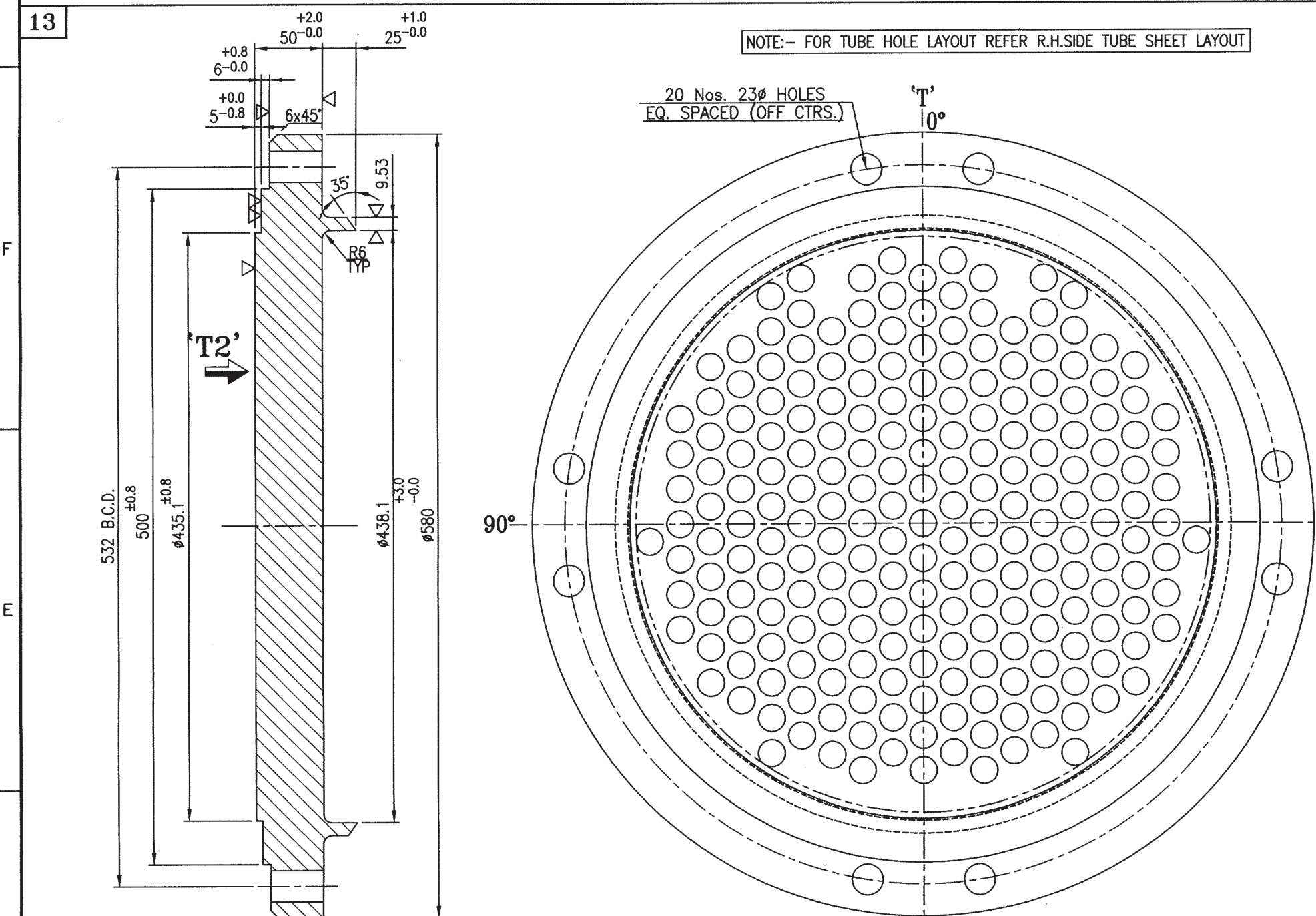
PROJECT MANAGEMENT CONSULTANT: **इंजिनियर्स इंडिया लिमिटेड**  **ENGINEERS INDIA LIMITED**
(A Govt. of India Undertaking)

TITLE :- TUBE BUNDLE & OTHER DETAIL DRAWING FOR
VRU INTERCHANGER (TYPE: BEM-H)
(ITEM No. 117-EE-481) (QTY-1 No.)

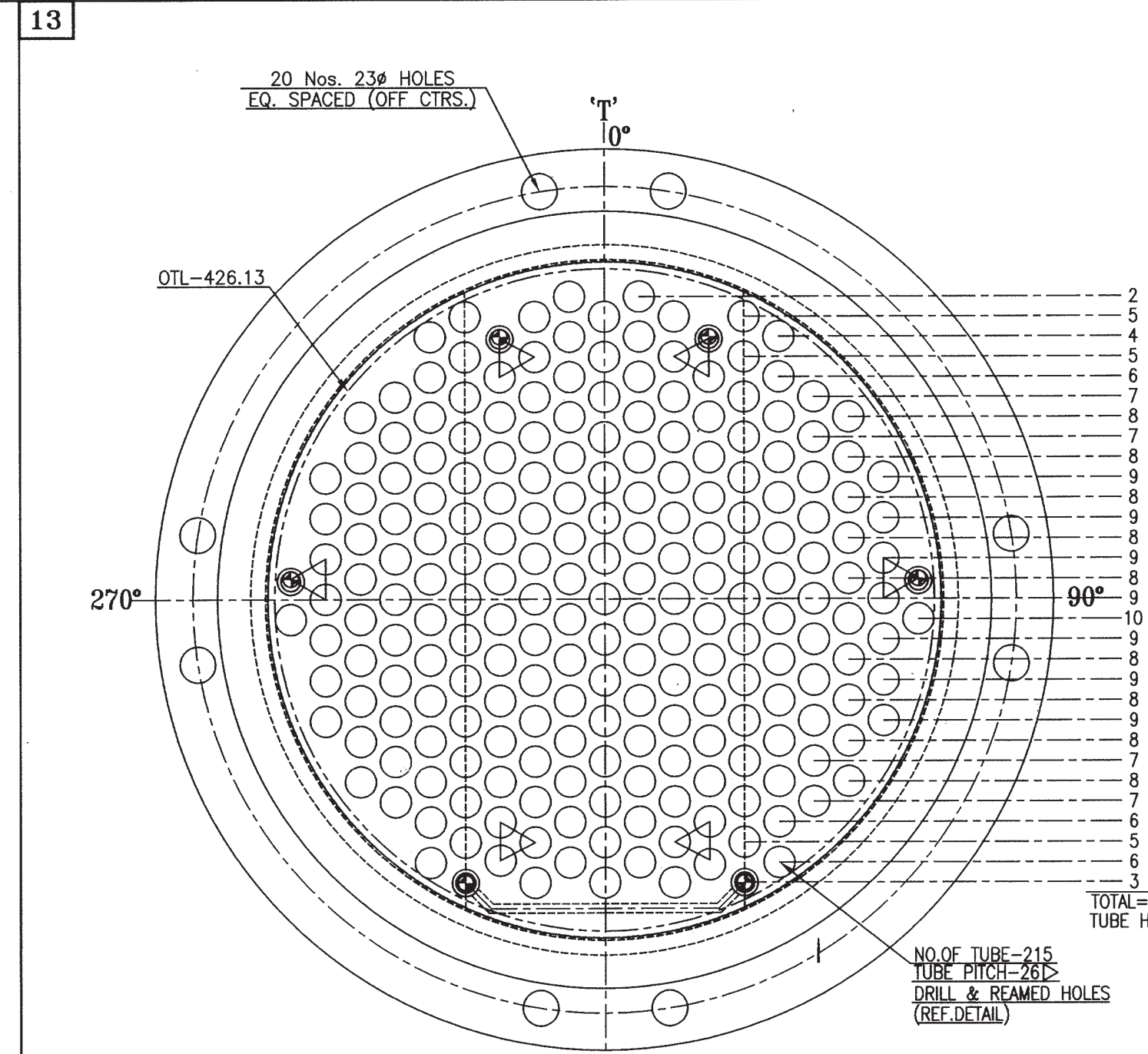

DORR-OLIVER
HINDUSTAN DORR-OLIVER LTD.
ENGINEERING DIVISION
MUMBAI • CHENNAI • AHMEDABAD

ORDER NO. BYC-210983	DWG. NO.	AE-1-8239	SHT. NO. 2 OF 3	REV. 2
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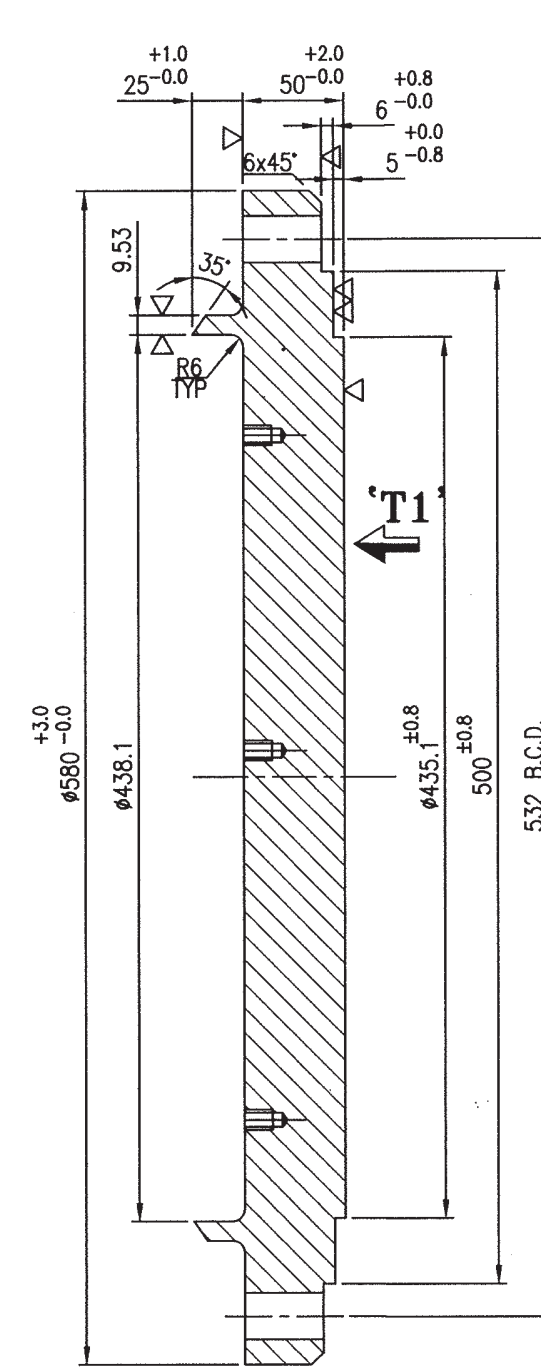
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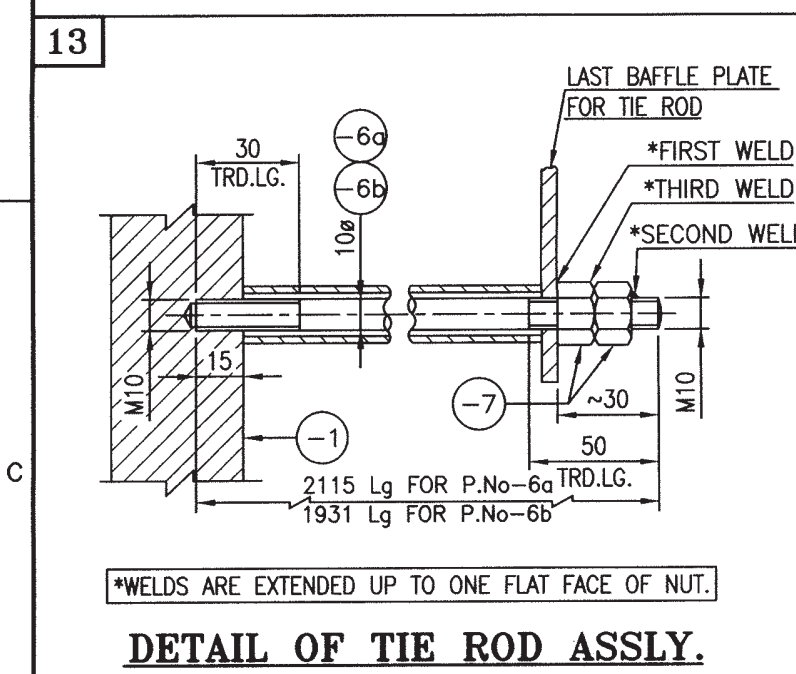
①② VIEW-'T2'



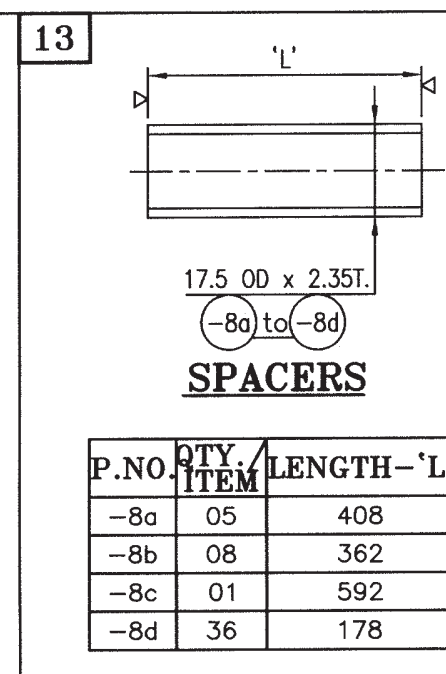
▷ VIEW-‘T1’ (−1)



DETAIL OF R.H. SIDE
TUBE SHEET

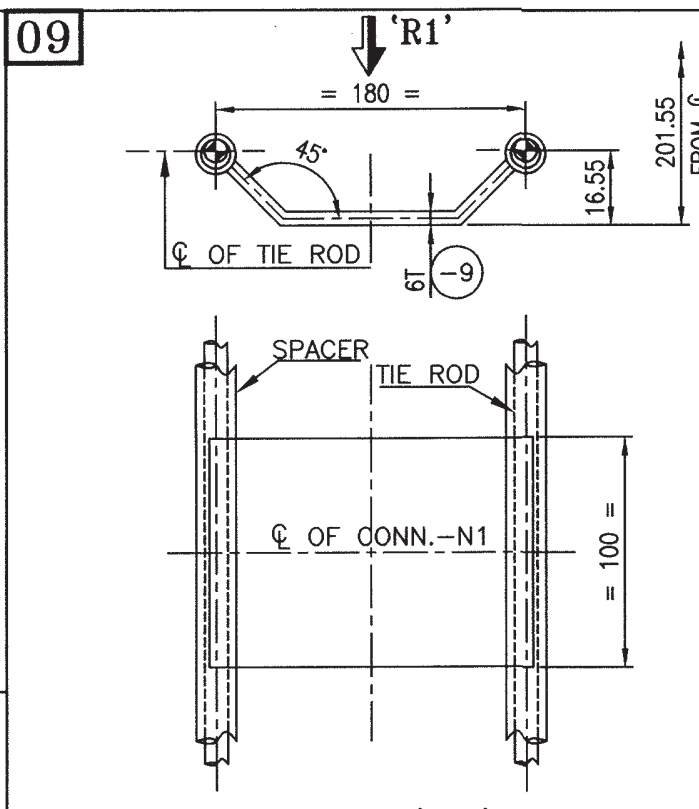


DETAIL OF TIE ROD ASSLY.



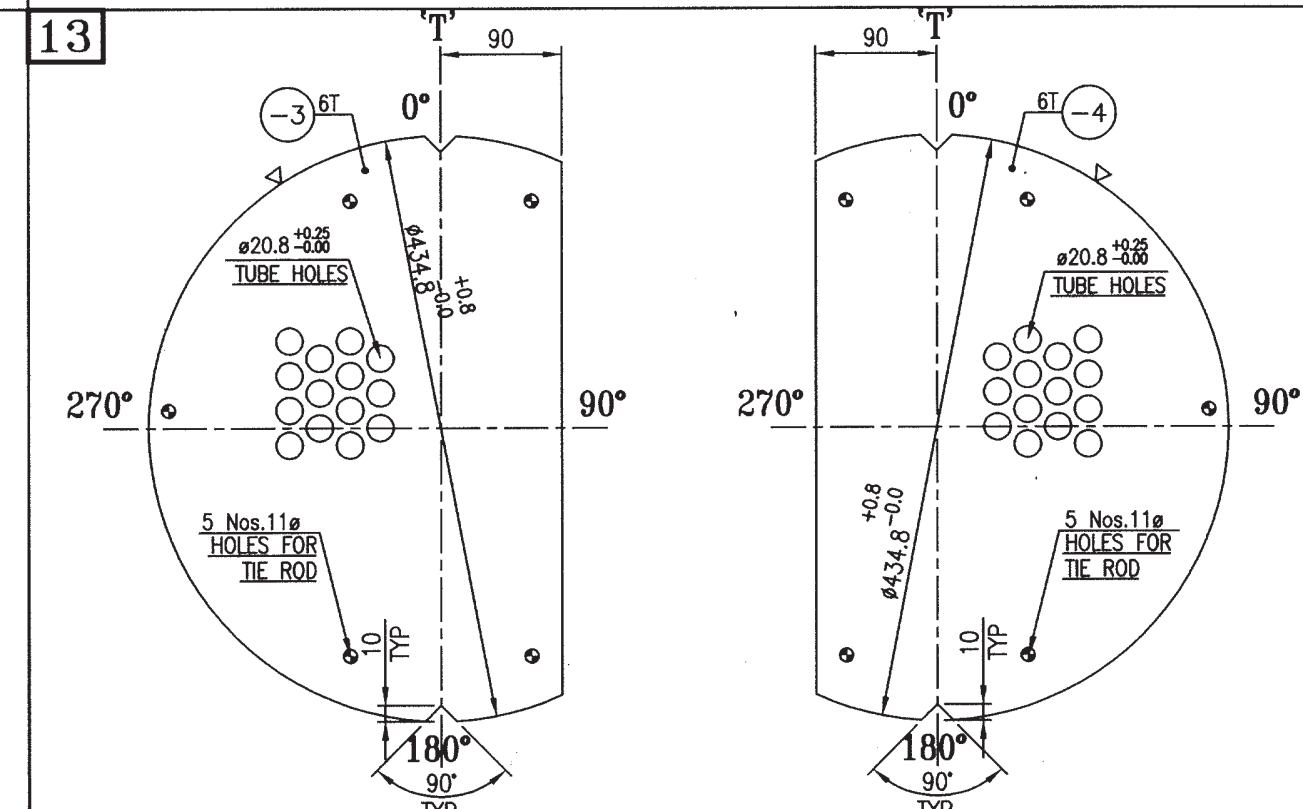
SPACERS

P.NO.	QTY./ITEM	LENGTH-'L
-8a	05	408
-8b	08	362
-8c	01	592
-8d	36	178



VIEW-'R1'

▶ DET.OF IMPG. PLATE

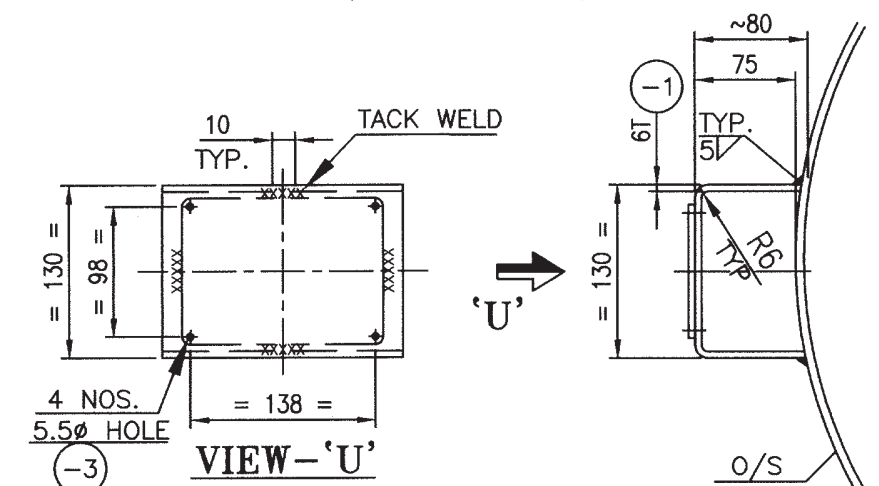


DETAIL OF
BAFFLE PLATE-B1

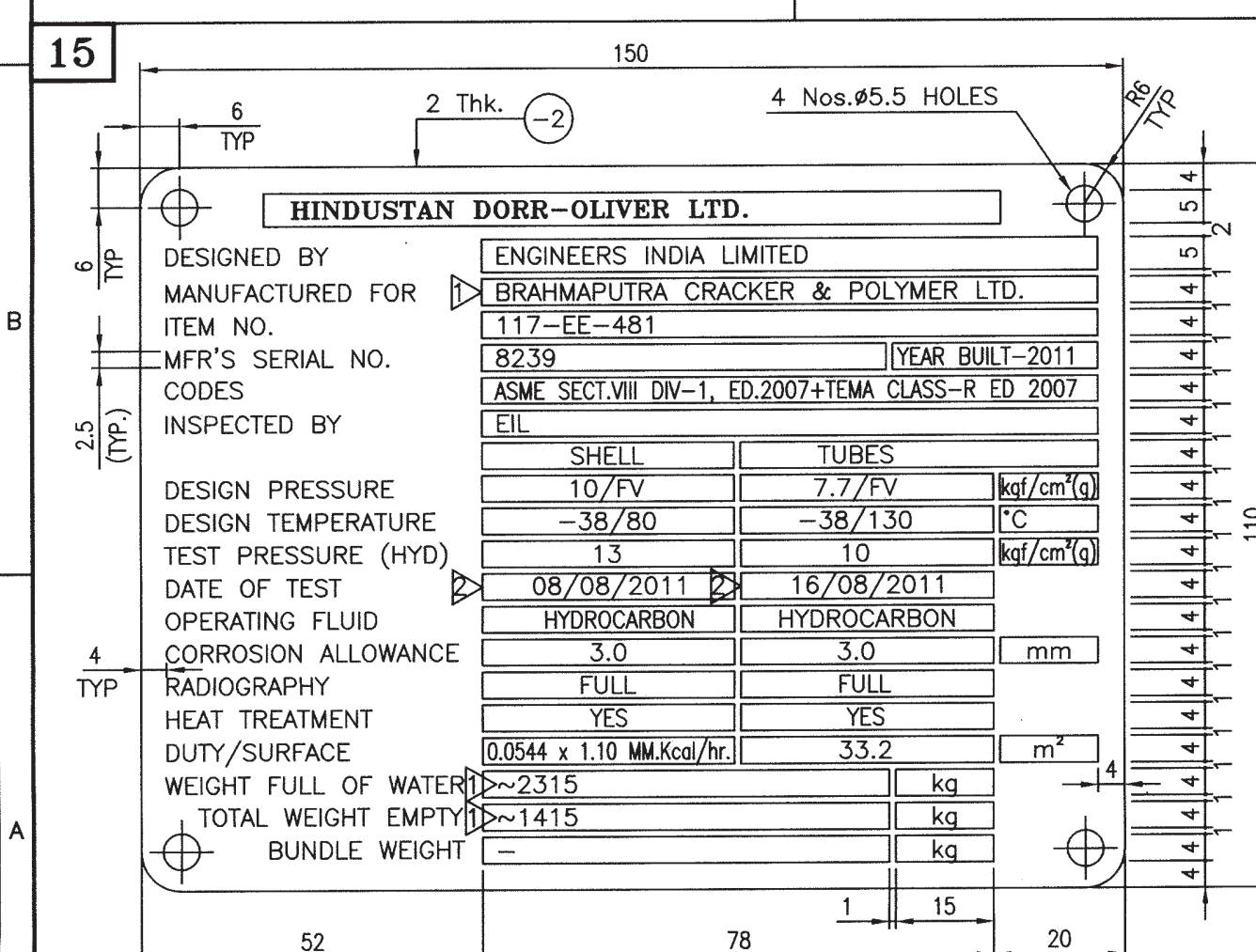
DETAIL OF
BAFFLE PLATE-B2

NOTES:-

- ① DELETED.
② ALL LETTERS & LETTER BLOCKS SHALL BE ENGRAVED IN BLACK.
③ NAME PL. SHALL BE RIVETED & TACK WELDED WITH BRACKET ON ALL FOUR SIDES (10MM LONG WELD)



DET. OF NAME PL.
BRACKET



NAME PLATE

		DATE	BY	SIGN
AE-8-8239 (SHT-3)	SPARE DETAIL	DRAWN CHECKED	08.10.10 09.10.10	DRAFTSMAN DESIGN ENGINEER
AE-1-8239 (SHT-2)	TUBE BUNDLE & OTHER DETAIL DRAWING	APPROVED	12.10.10	MANAGER-ENG.
AE-1-8239 (SHT-1)	G.A.DRAWING	SCALE	N.T.S.	PROJECTION
DWG.NO	REFE.	DRAWINGS	MADE FROM 6907-117-16-46-DS-4481	DWG. SIZE A1