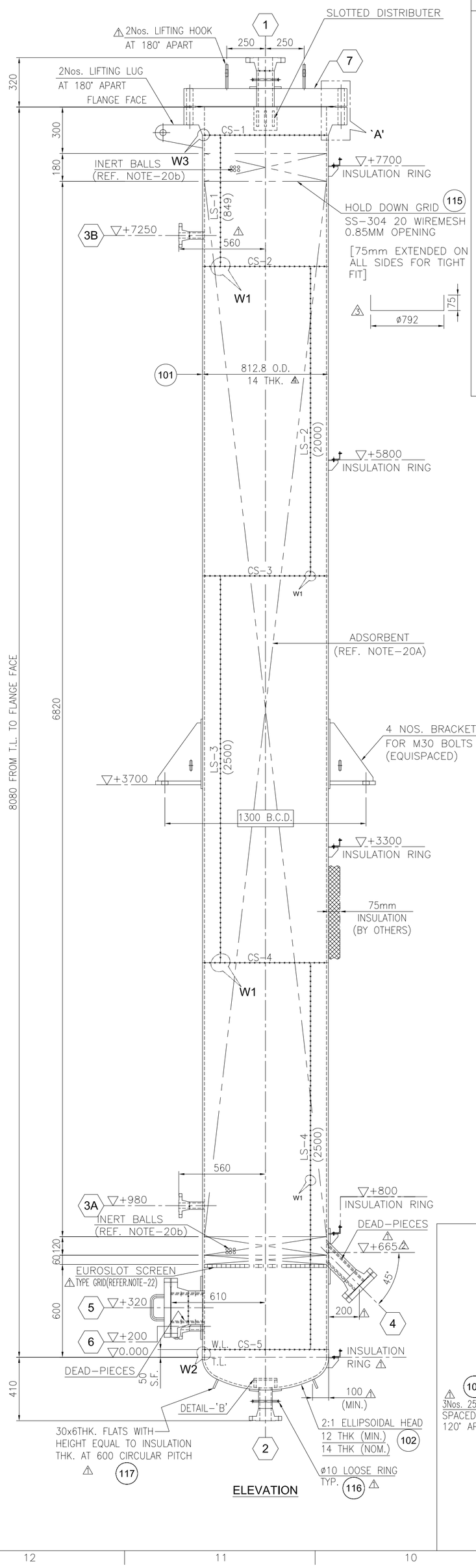
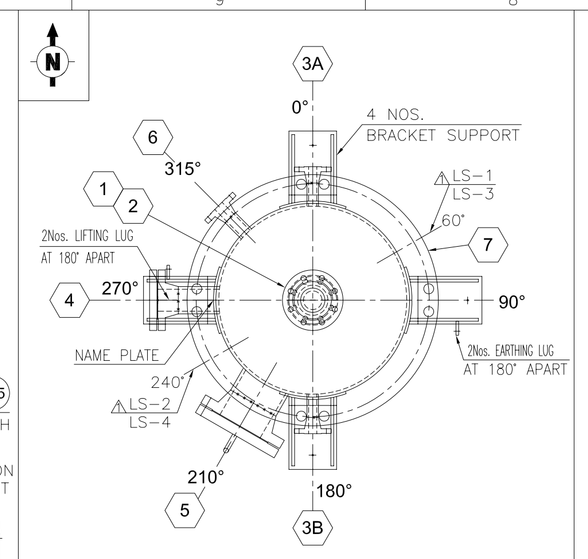
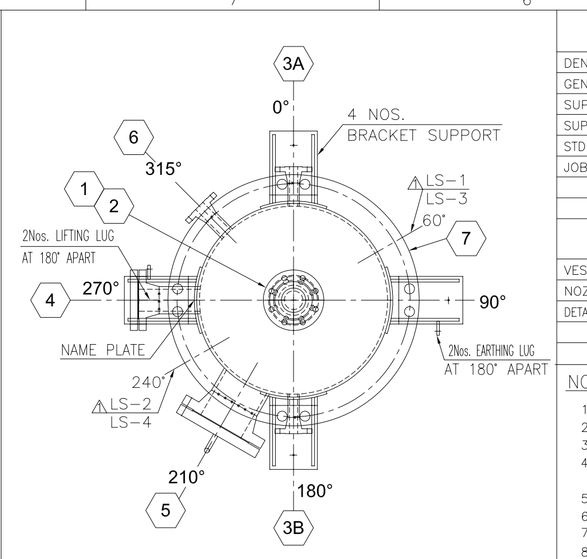
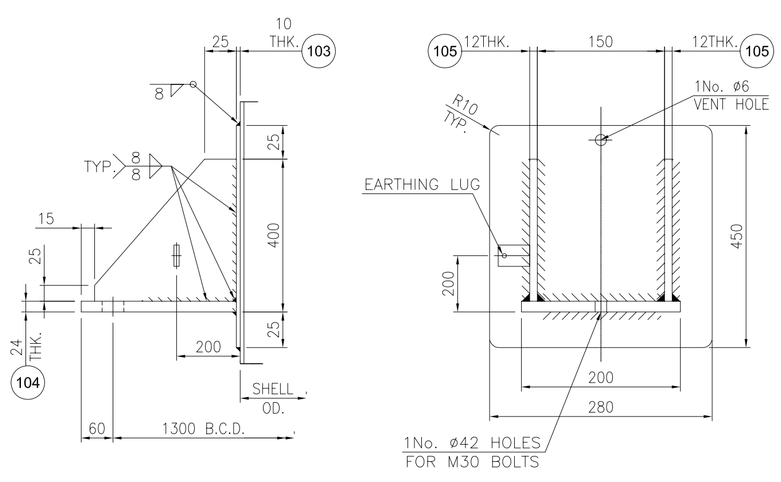




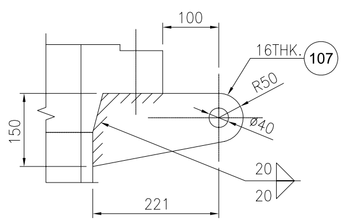
NOZZLE ORIENTATION
(LOOKING FROM TOP)
(117-W-941A)



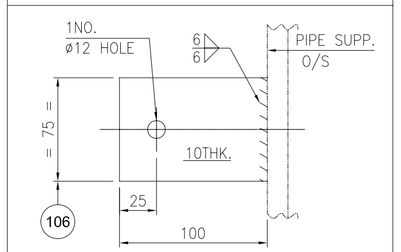
NOZZLE ORIENTATION
(LOOKING FROM TOP)
(117-W-941B)



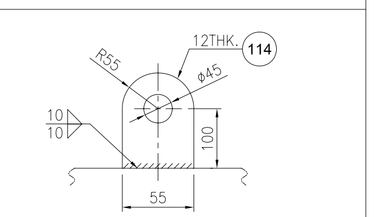
DETAIL OF BRACKET SUPPORT



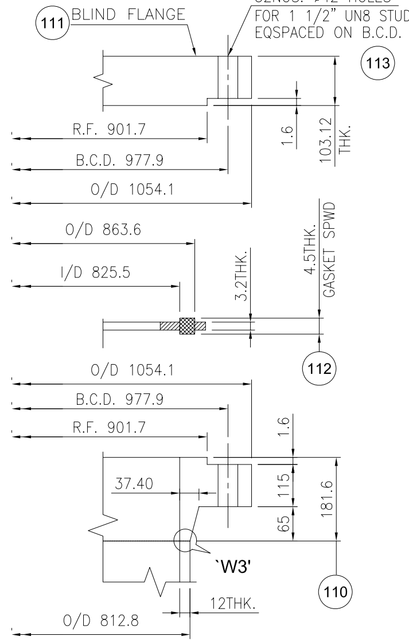
DETAIL OF LIFTING LUG



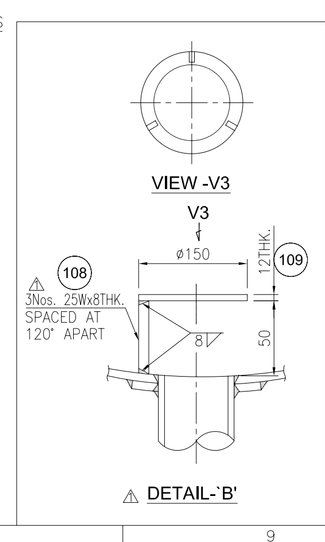
DETAIL OF EARTHING LUG



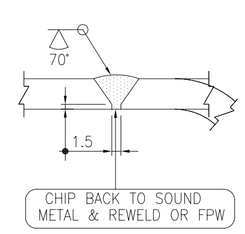
DETAIL OF LIFTING HOOK



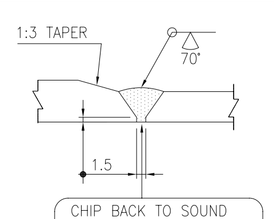
DETAIL-'A'
DETAIL OF BODY FLANGE



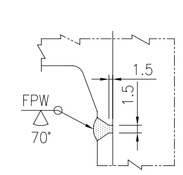
DETAIL-'B'



TYP. LONGL. WELD
TYP. CIRCL. WELD
DETAIL - W1



WELD DETAILS OF DISH. HEAD TO SHELL JOINT
DETAIL - W2



DETAIL - W3

EIL SPECIFICATIONS		EIL STANDARDS	
DENOTES APPLICABILITY		VESSEL TOLERANCES	7-12-0001
GENERAL SPEC. FOR PRESSURE VESSELS	6-12-0001	BRACKET SUPPORT FOR VERTICAL VESSEL	7-12-0008
SUPP. SPEC. FOR C.S. VESSELS	6-12-0002	NOZZLE REINFORCEMENT AND PROJECTION	7-12-0013
SUPP. SPEC. FOR BQCS PLATE	6-12-0011	STANDARD BOLT HOLE ORIENTATION	7-12-0015
STD. SPEC. FOR STRUCTURAL QUALITY PLATES	6-12-0014	SUPPORT RING SIZES FOR PACKED TOWERS	7-12-0022
JOB SPEC. FOR SHOP & FIELD PAINTING	6907-0642-PT-L07	FIRE PROOFING AND INSULATION SUPPORT	7-12-0025
		EARTHING LUG	7-12-0026
		NAME PLATE FOR SMALL EQUIPMENT	7-12-0030
REFERENCE DRAWINGS		ALLOWABLE NOZZLE LOADS	6907-117-16-46-ST-0038
VESSEL DESIGN DATA	6907-117-16-46-DS-3416-REV.0		
NOZZLE ORIENTATION	6907-117-16-43-NO-4941A/4941B-REV.0		
DETAIL OF PLUG INSERT & DEAD PIECE	100		

NOTES :-

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
2. ALL ANCHOR BOLT HOLES TO STRADDLE N/S CENTRE LINE.
3. NORTH DIRECTION WHEREVER SHOWN, IS WITH RESPECT TO PLAN VIEW.
4. a) FOR NOZZLE ON SHELL, PROJECTIONS ARE REFERRED TO FROM VESSEL CENTER LINE TO FLANGE CONTACT FACE.
   b) FOR NOZZLES ON HEAD, PROJECTIONS ARE REFERRED TO FROM HEAD T.L. TO FLANGE CONTACT FACE.
5. THE INDICATED THICKNESS IS THE MINIMUM ACCEPTABLE AFTER CONSTRUCTION.
6. FLANGE GASKET FACE SHALL HAVE 125 AARH FINISH
7. TOLERANCES AS PER EIL STANDARD 7-12-0001.
8. ID OF WELD NECK FLANGES SHALL MATCH WITH CORRESPONDING ID OF NOZZLE PIPE.
9. NOZZLES 50NB AND BELOW SHALL BE STIFFENED WITH 2NOS. 40x6THK FLATS 90° APART.
10. DIMENSIONS OF FLANGES UPTO 10"NB 600 NB SHALL BE AS PER ANSI B16.5 UNLESS OTHERWISE STATED.
11. ALL SHARP CORNERS TO BE ROUNDED OFF.
12. NOZZLE NECK/PIPE MADE OUT OF PLATE SHALL BE FULLY RADIOGRAPHED.
13. DP TEST SHALL BE CARRIED OUT ON INSIDE & OUTSIDE OF SURFACES OF DISHED END KNUCKLE ZONE.
14. ALL NOZZLE ATTACHMENT SHALL HAVE FULL PENETRATION WELD.
15. ALL BUTT WELDS SHALL HAVE FULL PENETRATION WELD.
16. AFTER HYDROTEST VESSEL WELDS SHALL BE CHECKED BY DP EXAMINATION ON BOTH INSIDE & OUTSIDE OF VESSEL.
17. REINFORCEMENT PADS UPTO 10"NB NOZZLE SHALL HAVE 1NO. 1/4" NPT TELL TALE HOLE AND NOZZLE ABOVE 10" NB SHALL HAVE 2 NOS. 1/4" NPT TELL TALE HOLES 180° APART & SHALL BE TESTED WITH AIR AT MIN. 1.05 Kg/cm2g BY APPLYING A SOAP SOLUTION.
18. TEST HOLES TO BE CLOSED WITH HARD GREASE AFTER TESTING.
19. PAINTING : SURFACE FINISH : SA 2 1/2
    PRIMER : ONE COAT OF 65-75 MICRON DFT INORGANIC ZINC SILICATE.
20. ADSORBENT SUPPLY: (BY OTHERS)
    (a) ABOVE ADSORBENT: 0.09 M3 OF INERT BALLS (DENSTONE D-57 1/2").
    (DENSITY = 1400 Kg/m3)
    ADSORBENT: 3.24 M3, AZ-300 MOLECULAR SIEVE. (DENSITY=673 Kg/m3)
    BELOW ABSORBENT: 0.09 M3 OF INERT BALLS (0.06 M3 OF DENSTONE D-57 1/8" ABOVE 0.03 M3 OF DENSTONE D-57 1/4")
    b) INERT BALLS (DENSTONE D-57) (DENSITY=1400 Kg/m3). BALL SIZE TO BE GIVEN BY ADSORBENT VENDOR.
21. NOZZLE MARK 3A-B: TEMPERATURE INDICATORS ARE SPACED 180° IN PLAN VIEW AROUND CIRCUMFERENCE.
22. (A) EUROSLOT SCREEN TYPE GRID OR EQUIVALENT (BY INDCON) AS MENTIONED IN "INSTRUCTIONS TO VENDOR" DOC. #6907-16-46-TR-6030. DETAIL ENGINEERING TO ENSURE THAT TOTAL △P FROM FLANGE TO FLANGE IS LOWER THAN 0.1 Kg/cm3(G). EUROSLOT SCREEN DETAILS SHALL BE AS FOLLOWS:-
    SLOT SIZE : 0.80MM
    EUROSLOT WIRE: # 93
    OPEN AREA OF THE SCREEN : 26.10%
    DESIGN TEMPERATURE : 325°C
    MATERIAL : SS 316
    DESIGN LOAD : 1.40KG/CM2⚠
    DESIGNED IN 2 SECTIONS TO PASS THROUGH. 500 MM ID MAN-WAY
    DESIGN WITH BOLTING BARS (NO SUPPORT BEAMS REQUIRED)
22. (B) GLASS OR CERAMIC HIGH TEMPERATURE ROPE OF SUITABLE DIAMETER WILL BE USED TO FILL THE GAP BETWEEN VESSEL INSIDE DIAMETER & EUROSLOT SCREEN TO ACCOUNT FOR THERMAL EXPANSION, THERMAL DIFFERENCES & VESSEL OUT-OF-ROUNDNESS. REMAINING GAP BETWEEN EUROSLOT SCREEN AND VESSEL INSIDE DIAMETER SHALL NOT EXCEED THE EUROSLOT GRID SLOT WIDTH.
22. (C) THE MECHANICAL DESIGN OF EUROSLOT SCREEN SHALL BE REVIEWED BY INDCON AND SHALL BE SUBMITTED TO EIL FOR APPROVAL.
23. I.D. OF NOZZLE 4 TO BE FLUSHED WITH TOP OF SUPPORT GRID TO ALLOW EASY EMPTYING OF ASORBENT FROM BOTTOM WITH DRAWAL NOZZLE.
24. ALL PRESSURE RETAINING MATERIALS, WELD & HAZ SHALL BE CHARPY V-NOTCH IMPACT TESTED, IN ACCORDANCE WITH DESIGN CODE/MATERIAL SPECIFICATION AS PER ASME SEC-II, PART-A.
25. PIPE TO PIPE, PIPE TO FLANGE, PIPE TO FITTING & FITTING TO FLANGE JOINT SHALL BE WELDED WITH THE SAME TECHNIQUE USED FOR MAIN EQUIPMENT WELDING.
26. LONG. & CIRC. SEAMS OF FLANGE TO NECK, PIPE TO PIPE & PIPE TO FITTING SHALL BE 100% RADIOGRAPHED.
27. SR. CYCLE

RATE OF HEATING	80° TO 100°C/HR(MAX.)
SOCKING TEMP.	600°C±20°C
SOCKING TIME	30MIN.
RATE OF COOLING	80°C TO 100°C/HR.

28. NOZZLE MARK 3A-B: TEMPERATURE INDICATORS ARE SPACED 180° IN PLAN VIEW AROUND
29. SLOTTED DISTRIBUTOR :
    DISTRIBUTOR SS 304L ø150 MM WITH 10 SLOTS (6.5 MM WIDTH & 100 MM HEIGHT) LATERLLY AND 5 HOLES (ø3MM) ON BOTTOM (ARRANGED CROSSWISE).
30. PROVIDE TWO NOS. LIFTING HOOKS ON BLIND FLANGE OF NOZZLE MARK-7.
31. EQUIPMENT SHALL BE TRANSPORTED WITH ALL INTERNALS IN INSTALLED POSITION. ⚠

SR.NO	DESCRIPTION	DRG NO./DOC. NO.	NO.OF SHEETS
2	NOZZLES, & NAME PLATE DETAIL DRAWING	IPE-852-02	2 OF 2
1	GENERAL ARRANGEMENT & DETAIL DRAWING	IPE-852-02	1 OF 2

LIST OF APPLICABLE DRAWINGS

** SPRIAL WOUND GASKET WITH SS 316 METAL WINDINGS WITH SS INNER RING & CS OUTER RING AS PER ASME B16.20
* REF. NOTE : 24
⚠WT.=3615KGS.

IT.No.	DESCRIPTION	QTY.	SIZE	MATERIAL	WEIGHT(KGS) ⚠	REMARKS
117	FLATS	03	6THK. x 30W x 75 LG.	SA 516 GR.60+SA 20 SS*	0.4	
116	LOOSE RING	02	ø10 x 550 LG	IS 2062 GR.B	0.7	
115	WIREMESH	–	0.85 WIRE MESH	SS 304	–	
114	LIFTING HOOK	02	12THK. x 55 x 155 LG.	SA 516 GR.60+SA 20 SS*	1.6	
113	STUD WITH BOLTS	32	1 1/2" UN8 x 315 LG.	SA 320 GR. L7*/SA 194 GR.4	⚠260	
112	GASKET	01	4.5THK. x AS PER DETAIL	**	⚠32	
111	BLIND FLANGE	01	AS PER DETAIL	SA 350 GR. LF2 CL.1*	⚠710	
110	BODY FLANGE	01	AS PER DETAIL	SA 350 GR. LF2 CL.1*	⚠330	
109	IMP. PLATE	01	12THK. x 150 OD.	SA 516 GR.60+SA 20 SS*	1.7	
108	FLAT	03	8THK. x 25 x 50	SA 516 GR.60+SA 20 SS*	0.3	
107	LIFTING LUG	02	16THK. x 150 x 275 LG.	SA 516 GR.60+SA 20 SS*	10.4	
106	EARTHING LUG	02	10THK. x 75 x 100	SS 304	1.2	
105	GUSSET PLATE	08	12THK. x 376 x ~280 LG.	SA 516 GR.60+SA 20 SS*	⚠120	
104	BASE PLATE	04	24THK. x 200 x ~300 LG.	SA 516 GR.60+SA 20 SS*	45.2	
103	PAD LUG SUPPORT	04	10THK. x 280 x 450 LG.	SA 516 GR.60+SA 20 SS*	40.0	
102	DISH END	02	14THK.(NOM.) x ~1075 B.D.	SA 516 GR.60+SA 20 SS*	⚠200	
101	SHELL	01	14THK. x ~2516 CIR. x 7849 LG.	SA 516 GR.60+SA 20 SS*	1860.3	

BILL OF MATERIAL FOR ONE UNIT ONLY (QTY. = 1NO.) (TOTAL-2 Nos.) ⚠

DESIGN DATA						
DESIGN/CONSTRUCTION CODE		ASME SEC.-VIII DIV.1, 2007 + ADDENDA 2008				
WORKING PRESSURE	(Kg/cm2g)	NORMAL OP.	5.0/2.0	REGENERATION (N2)	4	
DESIGN PRESSURE (INT./EXT.)	(Kg/cm2g)	NORMAL OP.	17.2/FV	REGENERATION (N2)	10.5	
WORKING TEMPERATURE	°C	NORMAL OP.	1 TO 40	REGENERATION (N2)	270	
DESIGN TEMPERATURE	°C	NORMAL OP.	80@17.2/FV	REGENERATION (N2)	(-)45/325@10.5	
MDMT	°C	(-)45				
CORROSION ALLOWANCE	mm	3				
TYPE OF HEADS		2:1 ELLIPSODIAL				
JOINT EFFICIENCY		SHELL : 0.85		HEAD : 1.0		
RADIOGRAPHY		SHELL : SPOT		HEAD : FULL		
POST WELD HEAT TREATMENT		NIL				
HEAT TREATMENT		HEAD -REFER - NOTE - 27				
OPERATING MEDIUM		BUTENE-1 / HEXENE-1				
DENSITY	Kg/m3	567-690 ⚠				
WIND SPECIFICATION		IS : 875 (47m/Sec.)				
SEISMIC		IS 1893/SITE SPECTRA				
CAPACITY	M^3	3.92				
PAINTING / CLEANING		AS - REFER - NOTE - 19.				
INSULATION THICKNESS	mm	75 (HOT)				
FIRE PROOFING	(BY OTHERS)	NO ⚠				
HYDROSTATIC TEST PRESSURE (NEW & COLD)	(Kg/cm2g)	22.36 VERTICAL (AT TOP)				
INSPECTION BY		EIL				
EMPTY WEIGHT	Kg. ⚠	3935 ⚠				
OPERATING WEIGHT	Kg.	6000				
HYDROTEST WEIGHT (SHOP/FIELD)	Kg. ⚠	7855/7690 ⚠				

NOZZLE SCHEDULE

NOZZLE MARK	SERVICE	QTY.	SIZE NB	SCH./THK	FLANGES RATING	FLANGES TYPE/FACE	PROJ. REF.NOTE.4	PAD WxT	REMARKS
1	OUTLET	1	100	160 ⚠	300#	WNRF	SEE DRG.	45x12	–
2	INLET	1	80	160 ⚠	300#	WNRF	SEE DRG.	60x12	–
3A-B	TEMPERATURE INDICATOR	2	40	160	300#	WNRF	560	–	
4	ADSORBENT DRAW OFF+BL. FLG.+DEAD PIECE	1	100	160 ⚠	300#	WNRF	SEE DEATL	70x12	–
5	HANDHOLE+BL. FLG.+DEAD PIECE	1	200	80	300#	WNRF	610	95x12	–
6	SPARE + BL. FLG.	1	50	160	300#	WNRF	560	–	–
7	BODY FLANGE + BL. FLG.	1	800	12 THK.	300#	WNRF	SEE DRG.	–	–

MATERIAL SPECIFICATION

PARTS	MATERIAL	PARTS	MATERIAL
SHELL	SA 516 Gr.60 + SA 20 SS *	INTERNAL STUDS/BOLTS/NUTS	SS 316
R.F. PAD/INSERT PLATE	SA 516 Gr.60 + SA 20 SS *	SUPPORT BRACKET	SA 516 Gr.60 + SA 20 SS *
HEADS	SA 516 Gr.60 + SA 20 SS *	SUPPORT BASE	–
SHELL FLANGES/BLIND FLANGES	SA 350 GR.LF2 CL1 *	INTERNAL PART-(WELDED)	SA 516 Gr.60 + SA 20 SS */ SA 333 Gr.6*
NOZZLE FLANGES	SA 350 GR.LF2 CL1 *	INTERNAL PART-(BOLTED)	SA 516 Gr.60 + SA 20 SS */ SA 333 Gr.6*
NOZZLE NECK UPTO 250NB	SA 333 GR.6 *	CLIPS & ATTACHMENTS (EXTERNAL)	SA 516 Gr.60 + SA 20 SS *
NOZZLE NECK ABOVE 250NB	SA 516 Gr.60 + SA 20 SS *	WRAPPER PLATE	–
PIPE FITTINGS	SA 420 GR. WPL6 *	DEMISTER / GRID	–
GASKETS EXTERNAL	SPRIAL WOUND GASKET WITH SS 316 METAL WINDING AND GRAFOIL FILLER MATERIAL WITH CS OUTER RING AS PER ASME B16.20	PAD FOR EXTERNAL ATTCHMENTS	SA 516 Gr.60 + SA 20 SS *
		JOHNSON SCREEN TYPE GRID	SA 316
		SUPPORT (JOHNSON SCREEN)	SA 516 Gr.60 + SA 20 SS *
GASKETS INTERNAL	–	IMPINGEMENT PLATE	SA 516 Gr.60 + SA 20 SS *
EXTERNAL STUDS/BOLTS/NUTS	SA 320 GR.L7*/SA 194 GR.4		

* IMPACT TESTED (REF NOTE :- 24)

FOUNDATION LOADING DATA
(OPERATING CONDITION)

TYPE	MAX. MOMENT AT BASE (M) (Kgm)	MAX. SHEAR FORCE AT BASE (H) (Kg)
SEISMIC (DBE)	4800	2100
(MCE)	7800	3200
WIND	3100	1500

AS BUILT

REV.NO.	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
4	AS BUILT	15.02.2012	PANKAJ	ANIL	SS
3	REVISED AS PER CLIENT'S COMMENT	28.04.2011	MANISH	MKM	MKM
2	REVISED AS PER CLIENT'S COMMENT	25.02.2011	AKP	PSC	ABH
1	REVISED AS PER CLIENT'S COMMENT	22.12.2010	AKP	PSC	ABH
0	ISSUED FOR APPROVAL	23.10.2010	AKP	PSC	ABH

REVISION

NO. OF ITEM. 2 NOS.

DRG. CATEGORY (USE TICK MARK) [A] [R] [1]

SCH. DATE OF SUBMISSION

DOCUMENT STATUS

STATEMENT OF SUB: [1st.] [2nd.] [3rd.]

☐ FINAL FOR CODE-1 ☐ AS BUILT

ISSUED FOR

☐ INFORMATION ☐ APPROVAL
☐ ENQUIRY ☐ ORDER
☐ CONSTRUCTION ☐ REVIEW

SIGN: DATE:

SPACE FOR PMC STAMPING

INDCON Indcon Projects & Equipment Limited
G-1,B-1, Mohan Co-operative Indl. Estate, Mathura Road, New Delhi-44

NAME OF PROJECT : LLDPE/HDPE SWING UNIT, LEPETKATA

CONSULTANT : M/S ENGINEERS INDIA LIMITED

CLIENT : M/s BCPL, ASSAM

TITLE
GENERAL ARRANGEMENT & DETAIL DRAWING FOR BUTENE-1/HEXENE-1 TREATER (ITEM NO. : 117-VV-941A/B)

SCALE: 1:10	DSN.	EIL		DATE	PURCHASE REQUISITION : 6907-117-VV-PR-6030/0243
Proj.	DRN.	AKP		23.10.2010	F.O.A.NO : 6907-117-VV-PO-6030-0093-0243
	CHD.	PSC		23.10.2010	REF.DRG.NO. 6907-117-16-46-DS-3416 REV.0
	APD.	ABH		23.10.2010	DRG.NO. IPE-852-02 EIL JOB NO.6907
					REV.NO. 0 1 2 3 4 SHEET - 1 OF 2

CAD FILE REF: