

3-81-440-02324

DRAWING No.

LIST OF DRAWINGS

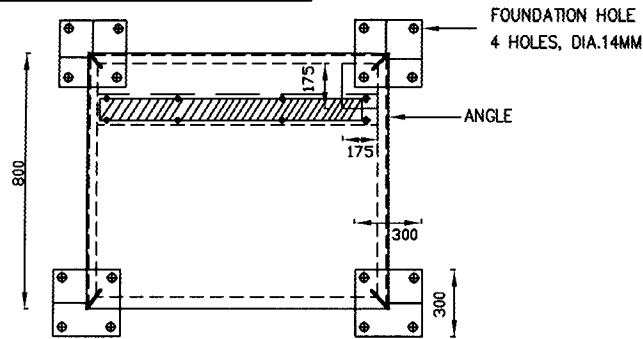
S.NO	DESCRIPTION	DRAWING NO.	SHEET NO.	REVISION STATUS				
				00	01	02	03	04
01	GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK – LIST OF DRAWINGS	3-81-440-02324	01	✓				
02	GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK(LIR)	3-81-440-02324	02	✓				
03	DETAILS OF LOCAL INSTRUMENT RACK(LIR)	3-81-440-02324	03	✓				
04	DETAIL OF DRAIN PIPE,CLEAT DETAIL AND BULK HEAD PLATE	3-81-440-02324	04	✓				

NTPC DOC.NO:		9560-102-01-PC-PVI-C-057		CUST. NO: 7003 & 7004		
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NTPC LTD BARH STPP,STAGE-II,UNIT 4&5 - 2x660 MW				
 BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017			NAME	SIGN	DATE	NO OF ITEMS
		DRN	KATARAJAN.S	<i>[Signature]</i>	08.03.11	
		CHD	LOGANATHAN.S	<i>[Signature]</i>	08.03.11	
		APPD	PRABHAKAR	<i>[Signature]</i>	08.03.11	
DEPT.	GRADE OF UN TOL DIM		SCALE	WEIGHT (Kg).	REF TO ASSY / OLD DRG	ITEM No.
CODE	C/M/F					
TITLE			CARD CODE	DRAWING No.		REV
GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK LIST OF DRAWINGS			U 01	3-81-440-02324 SHEET 01 OF 04		00

REV 02	DATE	ALTERED APPROVED	REV 01	DATE	ALTERED APPROVED
ZONE			ZONE		

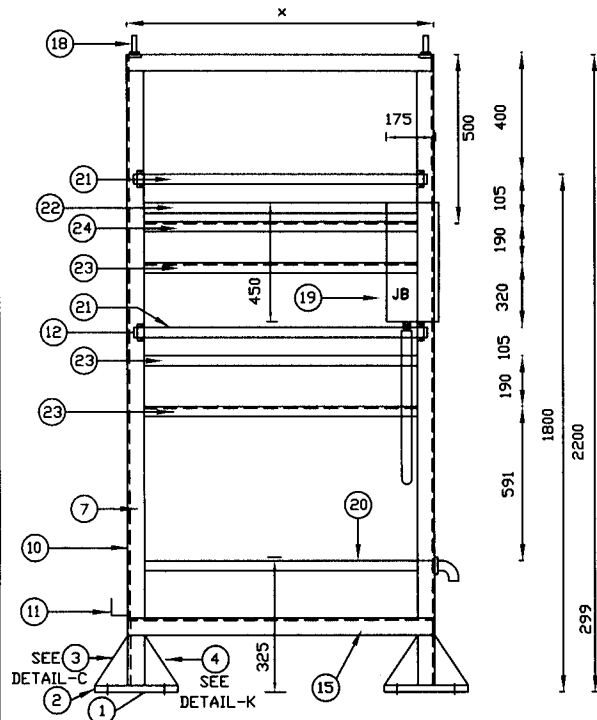
3-81-440-02324

DRAWING No.

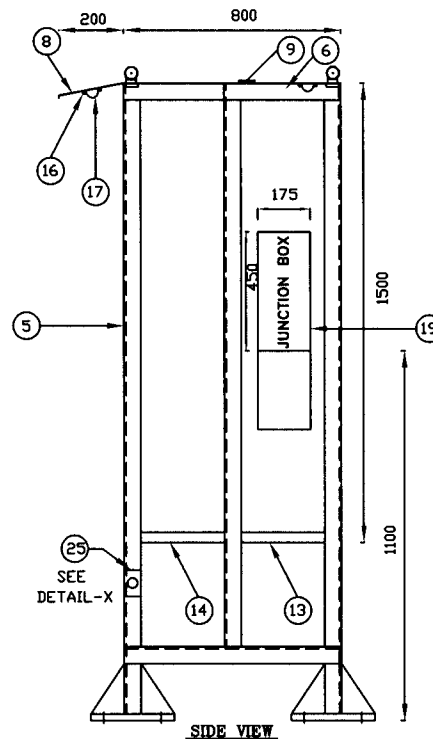


TOP VIEW WITHOUT CANOPY

LIR TYPE	MAX. NO. OF INSTRUMENTS	WIDTH OF LIR (X)
A	8	1650
B	6	1330
C	4	1010
D	2	710



INTERNAL FRONT VIEW



SIDE VIEW

BILL OF MATERIAL

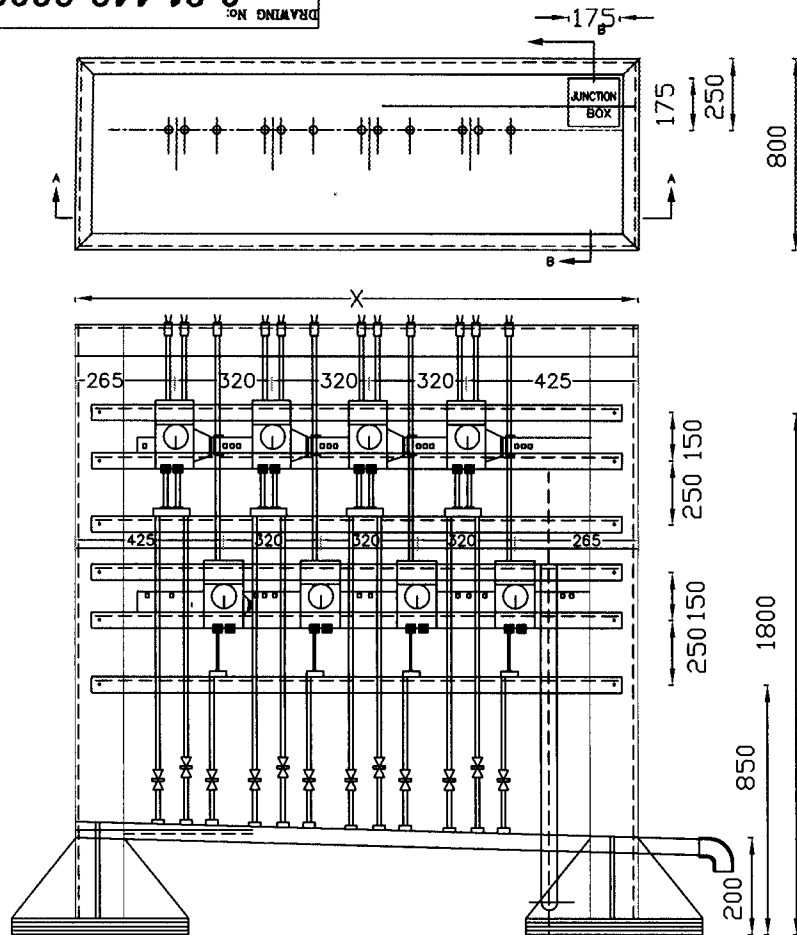
SL.NO.	DESCRIPTION
1	GROUNDING PLATE 300 X 300 X 5MM THICK
2	RUBBER PAD 50X 15MM
3	CLEAT AT FRONT, BACK & SIDE 5MM THICK
4	CLEAT FOR CORNER 5MM THICK
5	ANGLE 50 X 50 X 6
6	ANGLE FRAME 50 X 50 X 6
7	MOUNTING ANGLE 50 X 50 X 6
8	CANOPY FOR INSTRUMENT RACK
9	BULK HEAD PLATE 5 MM THICK
10	BRACKET FOR DRAIN HEADER
11	BRACKET FOR PANEL EARTH
12	SIDE SHEET - LHS & RHS
13	STRIP 50 X 6MM
14	STRIP 50 X 6MM
15	ANGLE FOR FRAME 50 X 50 X6
16	C CHANNEL FOR TUBE LIGHT
17	FLOURSCENT TUBE WITH FIXTURE 240AC, 11W
18	EYE BOLT
19	JUNCTION BOX, (700H X 200 W X 200 D)
20	DIA. 2" NB PIPE
21	MS FLAT FOR CABLE TRAY FIXING
22	MS ANGLE FOR MAINFOLD SUPPORT
23 & 24	MS ANGLE FOR PIPE SUPPORT
25	COVER PLATE 5mm THICK

NTPC DOC.NO: 9560-102-01-PC-PVI-C-057		CUST. NO: 7003 & 7004			
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT NTPC LTD BARH STPP,STAGE-II,UNIT 4&5 - 2x660 MW					
BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017	NAME	SIGN	DATE	NO OF ITEMS	
	DRN	NATARAJAN.S	<i>[Signature]</i>		08.03.11
	CHD	LOGANATHAN.E	<i>[Signature]</i>		08.03.11
	APPD	FRANHA.R	<i>[Signature]</i>	08.03.11	
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD Dwg	ITEM No.
CODE	C/M/F				
TITLE GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK(LIR)			CARD CODE U 01	DRAWING No. 3-81-440-02324 SHEET 02 OF 04	

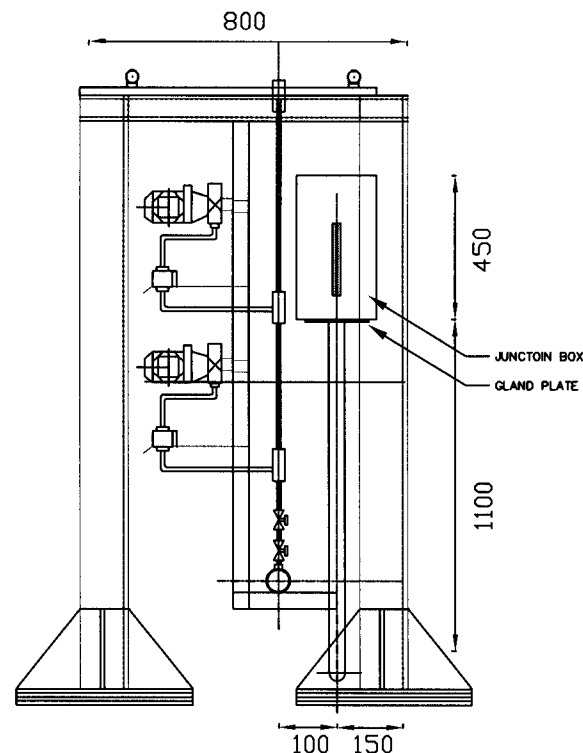
REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

3-81-440-02324

DRAWING No.

LIR WITH 4 LEGS
SECTION-AA

LIR TYPE	MAX. NO. OF INSTRUMENTS	DIMENSION 'X' (mm)	SIZE OF BULK HEAD PLATE
A	8	1650	1250 X 200
B	6	1330	1000 X 200
C	4	1010	700 X 200
D	2	710	500 X 200



SECTION-BB

NOTES :-

01. ALL DIMENSIONS ARE IN MM
02. FOR TYPE-B-RACKS THE DIMENSIONS W1&W WILL BE 1300MM AND 1700MM RESPECTIVELY.(6 INSTRUMENT RACK)
03. FOR TYPE-C-RACKS THE DIMENSIONS W1&W WILL BE 1000MM AND 1400MM RESPECTIVELY.(4 INSTRUMENT RACK)
04. FOR TYPE-D-RACKS THE DIMENSIONS W1&W WILL BE 700MM AND 1100MM RESPECTIVELY.(2 INSTRUMENT RACK)
05. ALL RACKS SHALL COMPLY WITH THE REQUIREMENT OF TECH.SPECIFICATION
06. GAUGES AND SWITCHES TO BE GROUNDED AND MOUNTED WITH PROPER ACCESS, INTER-CROSS CHANNEL FOR MOUNTING SHALL CORROBORATE WITH INSTRUMENT MOUNTING DETAILS.
07. SWITCH CONTACTS TERMINAL TO BE BROUGHT TO JUNCTION BOXES.
08. PROVISION OF JUNCTION BOX SHALL BE AS PER ENCLOSED LOCAL INSTRUMENT RACK SCHEDULE.
09. SUFFICIENT SPACE BETWEEN CANOPY AND INSTRUMENT SHALL BE PROVIDED SO THAT THE INSTRUMENT SHOULD NOT FOUL WITH CANOPY
10. DRAIN PIPE UPTO TRENCH ARE IN BHEL SCOPE.
11. JB FOR LIGHTING SUPPLY.
12. SEAWATER RESISTANT PAINT SHALL BE USED.
13. BULK HEAD PLATE SHALL BE ISOLATED FROM PROCESS LINE VIBRATION USING SYNTHETIC MATERIAL.
14. FLOURESCENT TUBE FITTING WITH FUSE, SWITCH (2A FUSE, 5A SWITCH) WILL BE PROVIDED FOR EACH LIR.
15. 12 WAY JUNCTION BOX OF DIMENSION 450(H)x175(W)x175(D) WITH IP-55 PROTECTION CLASS. VIBRATION DAMPENERS SHALL BE INSTALLED IN TBS WHICH ARE OF CAGE CLAMP TYPE TO SECURE THE TERMINAL LEADS FIRMLY.
16. DETAILS OF C, X, K PROVIDED IN THE SHEET-04 OF 04
17. DETAIL OF DRAIN PIPE & BULK HEAD PROVIDED IN SHEET-04 OF 04
18. POWER SOCKET & TBs SHALL BE PROVIDED IN JUNCTION BOX
19. DETAILS WIRING DIAGRAM & LAYOUT DRAWING WILL BE SUBMITTED FOR EACH RACK
20. COLOR : SHADE RAL 9002 OVERALL THICKNESS (INCLUDING PRIMER)>100 MICRONS
21. NAME PLATES SHALL BE PROVIDED FOR ALL INSTRUMENT AND ALSO IN THE JUNCTION BOXES INDICATING TAG & TB NO .
22. BILL OF MATERIALS FOR LIR SHALL BE FINALISED WHILE SUBMITTING VENDER GA, LIR AS FITTING DRAWINGS.
23. LIR SPECIFICATION DOCUMENT CONTAINS OTHER RELEVANT DETAILS FOR FABRICATION.

NTPC DOC.NO:

9560-102-01-PC-PVI-C-057

CUST. NO:

7003 & 7004

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECTNTPC LTD
BARH STPP,STAGE-II,UNIT 4&5 - 2x660 MWBHARAT HEAVY ELECTRICALS LTD.
PIPING CENTRE,
CHENNAI 600 017

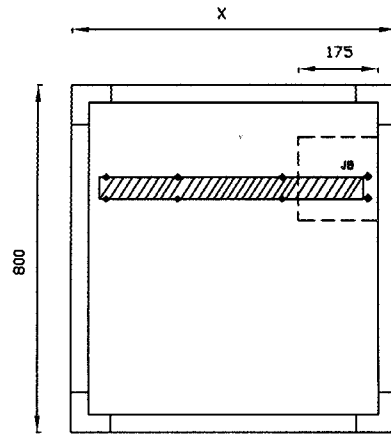
	NAME	SIGN	DATE	NO OF ITEMS
DRN	KATARAJAN.S	<i>[Signature]</i>	08.03.11	
CHD	LOGANATHAN.S	<i>[Signature]</i>	08.03.11	
APPD	PRABHAR	<i>[Signature]</i>	08.03.11	

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG	ITEM No.
CODE	C/M/F				
TITLE	DETAILS OF LOCAL INSTRUMENT RACK(LIR)			CARD CODE U 01	DRAWING No. 3-81-440-02324 SHEET 03 OF 04
					REV 00

3-81-440-02324

DRAWING No.

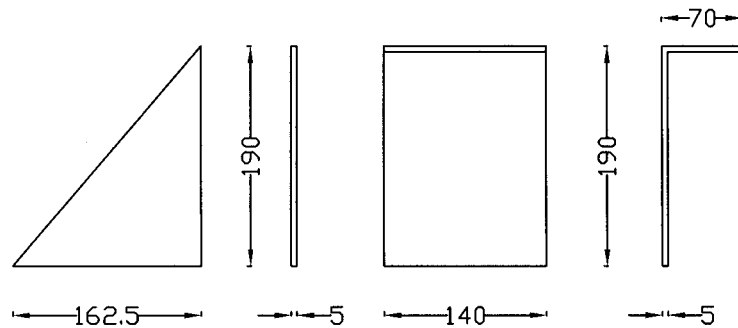


TOP VIEW WITHOUT CANOPY



BULK HEAD PLATE

ITEM	DESCRIPTION	QTY.
1.	2" NB ASTM A-106' SCH80 / GR.-C	A/R
2.	2" NBSM X 1" NPT(F) COUPLING CS ASTM A105	1NO.
3.	2" S.W. CAP, CS ASTM A105	1NO.
4.	1"NPT (M) X 1" BSP(M) HEX. COUPLING,CS ASTM105	1NO.
5.	1"BSF (F) ELBOW, CS ASTM A105	1NO.
6.	HALF COUPLING 1/2" NB SW CS / AS	A/R

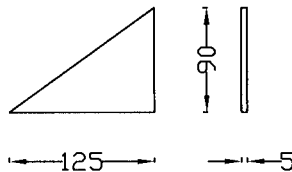


DETAIL-C

(CLEAT AT FRONT,BACK&SIDE)

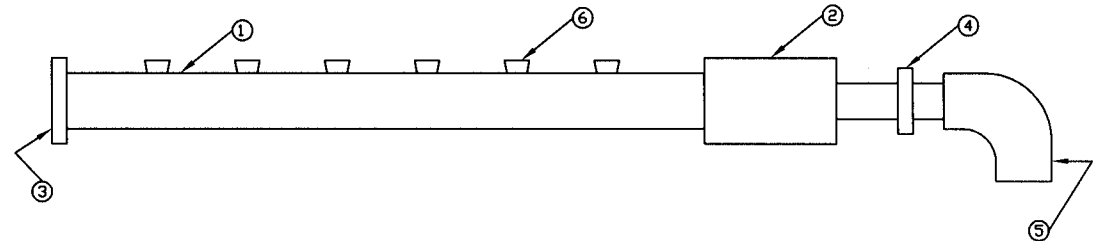
DETAIL-X

(COVER PLATE)



DETAIL-K

(CLEAT AT CORNER)



DRAIN PIPE

NTPC DOC.NO:		9560-102-01-PC-PVI-C-057		CUST. NO: 7003 & 7004	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NTPC LTD BARH STPP,STAGE-II,UNIT 4&5 - 2x660 MW			
BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017		NAME	SIGN	DATE	NO OF ITEMS
		DRN	NATARAJAN.S	08-03.11	
		CHD	LOGANATHAN.E	08-03.11	
		APPD	PRASAD.R	08-03.11	
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG	
CODE	C/M/F				
TITLE			CARD CODE	DRAWING No.	REV
DETAIL OF DRAIN PIPE,CLEAT DETAIL AND BULK HEAD PLATE			U 01	3-81-440-02324 SHEET 04 OF 04	00

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

3-81-440-02149

DRAWING No

LIST OF MATERIAL

ITEM NO.	1	2	3	4
VARIANT				
01.	1/2" NIPPLE/PIPE MATL: SAME AS PARENT PIPE	1" NIPPLE/PIPE MATL: SAME AS PARENT PIPE	1" NIPPLE MATL: SAME AS PARENT PIPE	1/2"NIPPLE/PIPE MATL: SAME AS PARENT PIPE
02.	1/2" GLOBE VALVE	1" GLOBE VALVE	1" GLOBE VALVE	1/2" GLOBE VALVE
03.	NAPL	1"/1/2" SW REDUCER	1"/1/2" SW REDUCER	NAPL
04.	1/2" SS316-PIPE	1/2" PIPE	1/2"PIPE	1/2" PIPE
05.	1/2" EQ. TEE	1/2" EQ. TEE	1/2"EQ. TEE	NAPL
06.	1/2" GLOBE VALVE	1/2" GLOBE VALVE	1/2" GLOBE VALVE	NAPL
07.	1/2" NIPPLE	1/2" NIPPLE	1/2" NIPPLE	NAPL
08.	1/2" NPT CAP	1/2" NPT CAP	1/2" NPT CAP	NAPL
09.	1/2"/1/2" UNION	1/2" UNION	1/2" UNION	NAPL
10.	NAPL	SYPHON	NAPL	NAPL
11.	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER
12.	NAPL	NAPL	NAPL	3 WAY VALVE/ 2 WAY ROOT - VALVE

APPLICATION:-

VARIANT 2&3 ——— MS.HRS.CR.H.BFD.AUX.PRDS SPRAY TO PRDS,
SPRAY TO HPBP

VARIANT 1&4 ——— INST. AIR, SER. AIR & ALL OTHER SYSTEM

NOTES:-

- THE MATERIAL SPECIFICATION AND SCHEDULE NO. OF IMPULSE PIPE & NIPPLE SHALL MEET PROCESS PARAMETER
- THE MATERIAL SPECIFICATION AND RATING OF FITTINGS WELDED/THREADED FITTINGS SHALL CONFIRM TO ANSI B 16.9
- INSTRUMENTS VALVES BODY STEM MATERIAL AND PRESSURE CLASS SHALL BE AS PER PROCESS REQ.
- THE LENGTH OF IMPULSE PIPE CONSIDERED FOR EACH SHALL BE SUCH THAT MAXIMUM DISTANCE BETWEEN RACK & INSTRUMENT IS < 10M.
- GAUGES AS INDICATED IN THE INSTRUMENT SCHEDULE SHALL BE MOUNTED IN LOCAL INSTRUMENT RACK AS PER DRG. NO. 3-81-440-02324
- NO. OF ROOT VALVES = 2 IF PRESSURE $\Rightarrow$ 40kg/sqcm AND/OR AND DRAIN VALVES } TEMPERATURE $\Rightarrow$ 420°C
= 1 (OTHER WISE)
- SLOPE APPROX 50MM/METER.
- BEYOND BULK HEAD, INCLUDING BULK HEAD SHALL BE INSIDE RACK & SAME TO BE COVERED BY INSTRUMENT RACK VENDOR.

NTPC DOC. NO.

9560-102-01-PC-PVI-E-055

CUST. NO:

7003 & 7004

PROJECT:

BARH STPP,STAGE-II,UNIT 4&5 - 2x660 MW

CUSTOMER:

NTPC LTD.



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

	NAME	SIGN	DATE	NO OF ITEMS
DRN	S.NATARAJAN	<i>S. Natarajan</i>	05.03.11	
CHD	E.LOGANATHAN	<i>E. Loganathan</i>	05.03.11	
APPD	R.PRABHA	<i>R. Prabha</i>	05.03.11	

DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG	ITEM No.
CODE	C/M/F	N.T.S.			
TITLE	INSTALLATION DRAWING (FOR PR. GAUGES & PR. SWITCHES) (INSIDE LIR)				REV
CARD CODE	U 01				3-81-440-02149 00

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

BULK HEAD OF
LOCAL INSTRUMENT
ENCLOSURE/RACK

•SLOPE

VAR-1

AIR/GAS SERVICE

(PR. INDICATORS MOUNTED REMOTE FROM INSTRUMENT SOURCE POINT)

STEAM SERVICE

VAR-2

09. INSTRUMENTS/GAUGES ARE TO BE MOUNTED BELOW INSTRUMENT
SOURCE POINT.

10. ALL THE IMPULSE PIPES (ITEM 04) SHALL BE OF SS 316 - INSIDE LIR

WATER SERVICE
(DIRECT MOUNTING)

VAR-4

CAUTION
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY
ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN
ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE

CHENNAI 600 017

BARH STPP, Stage-II, Unit 4 & 5 - 2 x 660 MW (PCP)

CUST. NO: 7003 & 7004

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION /COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN / COVERED			
	01	LBA 11 CP 502	Main Steam SH outlet (Left)	68200	COVERED	1 LIR 01	Z [S8L] → 3000 [S9L]	67250
	02	LBA 11 CT 501	-do-	-do-	-do-		-do-	
	03	LBA 12 CP 502	Main Steam SH outlet (Right)	68200	COVERED	1 LIR 02	Z [S8R] → 3000 [S9R]	67250
	04	LBA 12 CT 501	-do-	-do-	-do-		-do-	
	05	LBA 11 CP 503	Main Steam Turbine End	5500	COVERED	1 LIR 03	X [B3] → 5000 [B4] Z [Af] → 5000 [B]	GROUND
	06	LBA 11 CT 502	-do-	-do-	-do-		Z [Af] → 750 [B]	
	07	LBC 10 CP 501	CRH Turbine End	4000	COVERED	1 LIR 04	X [Ae3] → 7000 [Ae4] Z [Ae] → 2000 [Af]	GROUND
	08	LBC 10 CT 501	-do-	-do-	-do-		-do-	
	09	LBC 11 CP 501	CRH Reheater inlet Header (Left)	74830	COVERED	1 LIR 05	X [S2L] → 1400 [S8L] Z [S1L] → 7000 [S2L]	73530
	10	LBC 11 CT 501	-do-	-do-	-do-		-do-	
	11	LBC 12 CP 501	CRH Reheater inlet Header (Right)	74830	COVERED	1 LIR 06	X [S2R] → 1400 [S8R] Z [S1R] → 7000 [S2R]	73530
	12	LBC 12 CT 501	-do-	-do-	-do-		-do-	
	13	LBB 11 CP 501	HRH Reheater outlet Header (Left)	77650	COVERED	1 LIR 07	[S7L] → 8500 [S8L] [S1L] → 1400 [S7L]	76750
	14	LBB 11 CT 501	-do-	-do-	-do-		-do-	
	15	LBB 12 CP 501	HRH Reheater outlet Header (Right)	77650	COVERED	1 LIR 08	[S7R] → 8500 [S8R] [S1R] → 1400 [S7R]	76750
	16	LBB 12 CT 501	-do-	-do-	-do-		-do-	
				NTPC DRG. No.				REV.00
				9560-102-01-PC-PVI-H-124				
REV.04		REV.05		REV.06		DRG. NO.		
REV.01		REV.02		REV.03		4-81-440-04813		
						REV.00		
PREPARED: SN		CHECKED: EL		APPROVED: RP		DATE: 04.03.11 SHT.NO: 01 OF 03		



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE

CHENNAI 600 017

BARH STPP, Stage-II, Unit 4 & 5 - 2 x 660 MW (PCP)

CUST. NO: 7003 & 7004

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN/COVERED			
	17	LBG 10 CP 301	Main Steam at HC PRDS inlet	42800	COVERED	1 LIR 09	X B4 → 5000 B5 Z B → 1750 C	31250
	18	LBG 20 CP 301	LC PRV inlet	34900	-do-		-do-	
	19	LBG 20 CP 302	LC PRV outlet	33000	-do-		-do-	
	20	LBG 30 CP 301	Aux. Steam at DESH inlet	32000	COVERED	1 LIR 10	X B5 → 8000 B6 Z B → 1750 C	31250
	21	LBG 30 CT 301	-do-	-do-	-do-		-do-	
	22	LBG 40 CP 301	LT unit aux. Steam Header unit-5	-do-	-do-		X B5 → 6000 B6 Z B → 8500 C	
	23	LBG 40 CT 301	-do-	-do-	-do-		-do-	
	24	LBG 90 CP 301	LT station aux. Steam Header	32000	COVERED	1 LIR 11	X B5 → 1000 B6 Z B → 8000 C	31250
	25	LBG 90 CT 301	-do-	-do-	-do-		-do-	
	26	LAF 10 CP 301	Spray water to HC PRV	-do-	-do-		X B5 → 5000 B6 Z B → 4000 C	
	27	LAF 10 CT 301	-do-	-do-	-do-		-do-	
	28	LAF 10 CP 302	-do-	-do-	-do-		-do-	
	29	LBG 91 CP 301	AUX. STEAM TO AC PLANT	-do-	-do-		-do-	
	30	LAF 20 CP 301	HC spray water PCV (main) inlet	32000	COVERED	1 LIR 12	X B5 → 5000 B6 Z B → 4000 C	31250
	31	LAF 20 CP 302	HC spray water PCV (main) outlet	-do-	-do-		-do-	
	32	LAF 20 CP 303	HC spray water TCV (main) outlet	-do-	-do-		-do-	
	33	LAF 20 CP 304	spray water to HC Steam PCV	-do-	-do-		-do-	
	34	LAF 21 CP 301	HC spray water PCV (Bypass) inlet	32000	COVERED	1 LIR 13	X B5 → 5000 B6 Z B → 4000 C	31250
	35	LAF 21 CP 302	HC spray water PCV (Bypass) outlet	-do-	-do-		-do-	
	36	LAF 21 CP 303	HC spray water TCV (Bypass) outlet	-do-	-do-		-do-	

NTPC DRG. No.

9560-102-01-PC-PVI-H-124

REV.04	REV.05	REV.06	DRG. NO. 4-81-440-04813
REV.01	REV.02	REV.03	
PREPARED: SN <i>2-00</i>	CHECKED: EL <i>2-00</i>	APPROVED: RP <i>2-00</i>	DATE: 04.03.11 SHT.NO: 02 OF 03



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE
CHENNAI 600 017

BARH STPP, Stage-II, Unit 4 & 5 - 2 x 660 MW (PCP)

CUST. NO: 7003 & 7004

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN/COVERED			
	37	LAF 31 CP 301	LC spray water PCV (main) inlet	32000	COVERED	1 LIR 14	X B5 → 5000 B6 Z B → 4000 C	31250
	38	LAF 31 CP 302	LC spray water PCV (main) outlet	-do-	-do-		-do-	
	39	LAF 31 CP 303	LC spray water TCV (main) outlet	-do-	-do-		-do-	
	40	LAF 31 CP 304	LC DESH spray water inlet	-do-	-do-		-do-	
	41	LAF 32 CP 301	LC spray water PCV (Bypass) inlet	32000	COVERED	1 LIR 15	X B5 → 5000 B6 Z B → 4000 C	31250
	42	LAF 32 CP 302	LC spray water PCV (Bypass) outlet	-do-	-do-		-do-	
	43	LAF 32 CP 303	LC spray water TCV (Bypass) outlet	-do-	-do-		-do-	
	44	LBF 10 CT 301	HPBP valve (BP-1) inlet	14400	COVERED	1 LIR 16	X Af3 → 500 Af4 Z Ae → 3000 Af	8500
	45	LBF 20 CT 301	HPBP valve (BP-2) inlet	-do-	-do-		-do-	
	46	LBF 11 CT 301	HPBP valve (BP-1) outlet	12000	COVERED	1 LIR 17	X Ae3 → 9000 Ae4 Z Ae → 3000 Af	8500
	47	LBF 21 CT 301	HPBP valve (BP-2) outlet	-do-	-do-		-do-	

NOTE:-

* 1. NEAREST FLOOR SUGESSTED FOR ERECTING THE RACK

2. No.1 IN RACK NO WILL BE REPLACED WITH 2 FOR UNIT 2

Ref PID:-

a)Drg No. 0-00-301-31089/04

b)Drg No. 1-00-301-32027/03

c)Drg No. 1-00-301-32028/03

			NTPC DRG. No.		REV.00
			9560-102-01-PC-PVI-H-124		
REV.04	REV.05	REV.06	DRG. NO.		
REV.01	REV.02	REV.03	4-81-440-04813		
			REV.00		
PREPARED: SN	CHECKED: EL	APPROVED: RP	DATE: 04.03.11	SHT.NO: 03 OF 03	



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE
CHENNAI 600 017

BARH STPP, Stage-II, Unit 4 & 5 - 2 x 660 MW (SGP)

CUST. NO: 7003 & 7004

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN / COVERED			
	01	LBG 80 CP 301	Aux.Stm.piping to Mill Inerting	11500	COVERED	1SG LIR 01	X N → 2000 M Z D → 2000 E	4240
	02	SGA 51 CP 301	Service water to Mills Terminal Point	-do-	-do-		-do-	
	03	LBG 80 CP 302	Aux. Steam to Mill inerting TP	11500	COVERED	1SG LIR 02	X N → 1000 M Z D → 2000 E	4240
	04	SGA 51 CP 302	Service water to Mills Terminal Point	-do-	-do-		-do-	
	05	LBG 71 CP 301	Aux. Steam for Primary SCAPH-A	15500	COVERED	1SG LIR 03	X S22L 1000 → S23L Z EX2L → 3000 EX3L	14500
	06	LBG 71 CP 302	-do-	-do-	-do-		-do-	
	07	LBG 71 CP 303	-do-	-do-	-do-		-do-	
	08	LBG 72 CP 301	Aux. Steam for Primary SCAPH-B	15500	COVERED	1SG LIR 04	X S22R 1000 → S23R Z EX2R → 3000 EX3R	14500
	09	LBG 72 CP 302	-do-	-do-	-do-		-do-	
	10	LBG 72 CP 303	-do-	-do-	-do-		-do-	
	11	LBG 73 CP 301	Aux. Steam for Secondary SCAPH-A	16500	COVERED	1SG LIR 05	X S11L → 2000 S12L Z S11L → 2500 S17L	14500
	12	LBG 73 CP 302	-do-	-do-	-do-		-do-	
	13	LBG 73 CP 303	-do-	-do-	-do-		-do-	
			NTPC DOC. No.					REV.00
			9560-102-01-PC-PVI-H-059					
REV.04		REV.05		REV.06		DRG. NO.		
REV.01		REV.02		REV.03		4-81-440-04812		
						REV.00		
PREPARED: SN		CHECKED: E.L.		APPROVED: R.P.		DATE: 04.03.11		SHT.NO: 01 OF 02



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE
CHENNAI 600 017

BARH STPP, Stage-II, Unit 4 & 5 - 2 x 660 MW (SGP)

CUST. NO: 7003 & 7004

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN/ COVERED			
	14	LBG 74 CP 301	Aux. Steam for Secondary SCAPH-B	16500	COVERED	1SG LIR 06	X S11R → 2000 S12R Z S11R → 2500 S17R	14500
	15	LBG 74 CP 302	-do-	-do-	-do-		-do-	
	16	LBG 74 CP 303	-do-	-do-	-do-		-do-	
	17	LBG 75 CP 301	Primary SCAPH Drains To Flash Tank	10500	COVERED	1SG LIR 07	X Near S19 Z S18 3000 → S19	9350
	18	LBG 77 CP 301	SY. SCAPH Drains To Flash Tank	-do-	-do-		-do-	
	19	QFA 10 CP 501	Instrument Air Terminal Point	9000	COVERED	1SG LIR 08	Near D Boiler Center Line	9350
	20	QFA 10 CP 201	-do-	-do-	-do-		-do-	
	21	QFB 10 CP 201	Service Air Terminal Point	-do-	-do-		-do-	
	22	QFB 10 CP 202	-do-	-do-	-do-		-do-	

NOTE:-

*** 1. NEAREST FLOOR SUGGESTED FOR ERECTING THE RACK**

2. No.1 IN RACK NO WILL BE REPLACED WITH 2 FOR UNIT 2

Ref PID:

A) 2-00-305-31481/01, B) 1-00-301-32141/01, C) 1-00-301-32050/01

D) 2-00-305-31480/00, E) 1-00-305-32048/00

		NTPC DOC. No.		9560-102-01-PC-PVI-H-059		REV.00	
REV.04		REV.05		REV.06		DRG. NO.	
REV.01		REV.02		REV.03		4-81-440-04812	
PREPARED: SN <i>b.221</i>		CHECKED: E.L. <i>A.2.10/2011</i>		APPROVED: R.P. <i>RP</i>		REV.00	
				DATE: 04.0311		SHT.NO: 02 OF 02	

ALLOCATION OF LOCAL INSTRUMENT RACKS
Project : BARH STPP,STAGE-II,UNIT 4 - 2x660 MW(PCP)
Cust.No: 7003 7004

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF TG	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
1	1 LIR 01	2 INST. RACK	1	1	2	2	#3000 SPL	404	269	573	
2	1 LIR 02	2 INST. RACK	1	1	2	2	#3000 SPL	404	269	573	
3	1 LIR 03	2 INST. RACK	1	1	2	2	#3000 SPL	404	269	573	
4	1 LIR 04	2 INST. RACK	1	1	2	2	#1500	110	73.1	510	
5	1 LIR 05	2 INST. RACK	1	1	2	2	#800	110	73.1	360	
6	1 LIR 06	2 INST. RACK	1	1	2	2	#800	110	73.1	360	
7	1 LIR 07	2 INST. RACK	1	1	2	2	#1500	102	68	601	
8	1 LIR 08	2 INST. RACK	1	1	2	2	#1500	102	68	601	
9	1 LIR 09	4 INST. RACK	1	-	3	2	#3000 SPL	404	269	573	
			2				#800	110	73.1	360	
10	1 LIR 10	4 INST. RACK	2	2	4	2	#800	30	20	360	

ALLOCATION OF LOCAL INSTRUMENT RACKS
Project : BARH STPP,STAGE-II,UNIT 4 - 2x660 MW(PCP)
Cust.No: 7003 7004

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF TG	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
11	1 LIR 11	6 INST. RACK	2	2	6	2	#800	30	20	240	
			2			3	#2500	480	320	200	
12	1 LIR 12	4 INST. RACK	4	-	4	3	#2500	480	320	200	
13	1 LIR 13	4 INST. RACK	3	-	3	3	#2500	480	320	200	
14	1 LIR 14	4 INST. RACK	4	-	4	3	#2500	480	320	200	
15	1 LIR 15	4 INST. RACK	3	-	3	3	#2500	480	320	200	
16	1 LIR 16	2 INST. RACK	-	2	2	-	#3000 SPL	-	269	573	
17	1 LIR 17	2 INST. RACK	-	2	2	-	#1500	-	73.1	510	
18	1 LIR 18	2 INST. RACK	2	-	2	2	#3000 SPL	404	269	573	SPARE
19	1 LIR 19	4 INST. RACK	2	2	4	2	#2500	480	320	200	SPARE

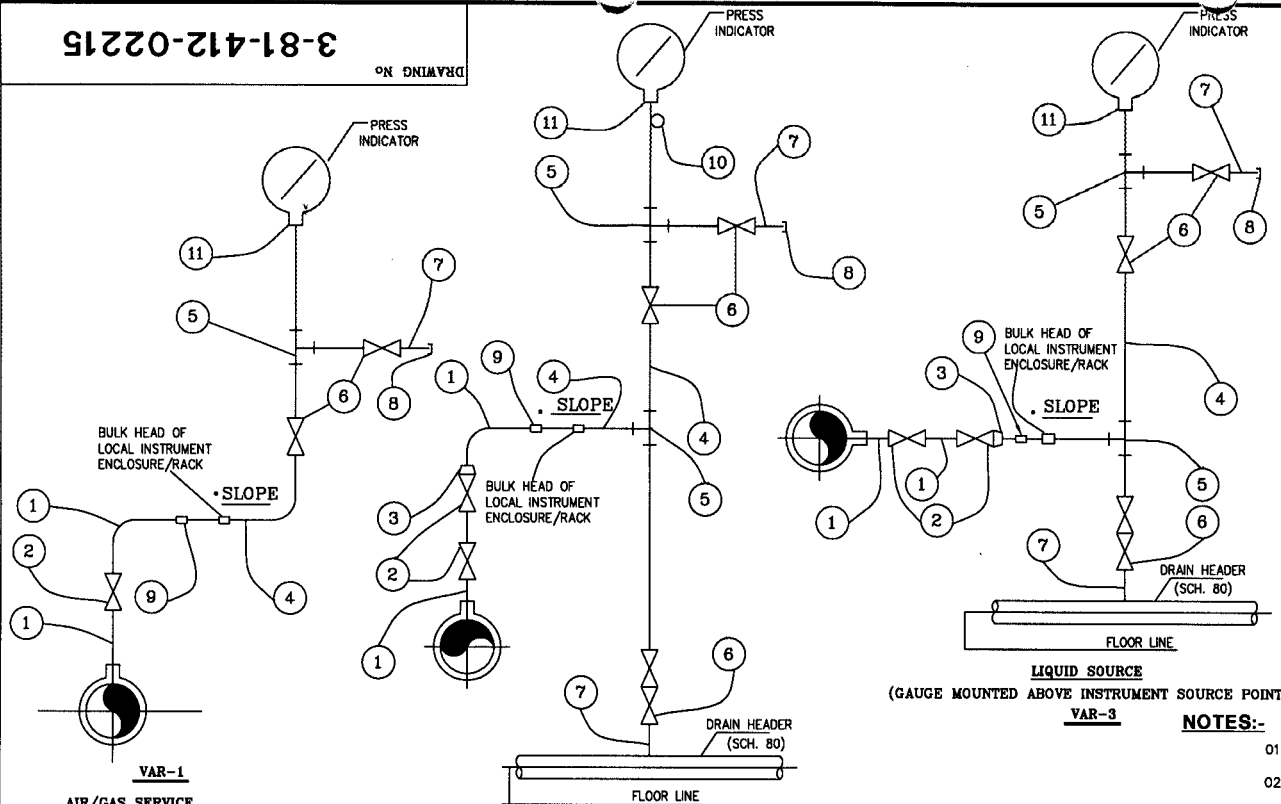
ALLOCATION OF LOCAL INSTRUMENT RACKS
 Project : **BARH STPP,STAGE-II,UNIT 4 - 2 x 660 MW (SGP)**
 Cust.No: **7003 7004**

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF TG	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
1	1 SG LIR 01	4 INST. RACK	1	-	2	2	#300	40	20	350	
			1	-		3	#150	15	10	50	
2	1 SG LIR 02	4 INST. RACK	1	-	2	2	#300	40	20	350	
			1	-		3	#150	15	10	50	
3	1 SG LIR 03	4 INST. RACK	3	-	3	2	#300	40	20	240	
4	1 SG LIR 04	4 INST. RACK	3	-	3	2	#300	40	20	240	
5	1 SG LIR 05	4 INST. RACK	3	-	3	2	#300	40	20	240	
6	1 SG LIR 06	4 INST. RACK	3	-	3	2	#300	40	20	240	
7	1 SG LIR 07	4 INST. RACK	2	-	2	3	#300	15	20	240	
8	1 SG LIR 08	6 INST. RACK	4	-	4	3	#150	15	10	50	WITH JUNCTION BOX
9	1 SG LIR 09	4 INST. RACK	3	-	3	3	#300	40	20	240	SPARE

3-81-412-02215

DRAWING NO.

CAUTION
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY



ITEM NO.	1	2	3	4
VARIANT				
01.	1/2" NIPPLE/PIPE MATL: SAME AS PARENT PIPE	1" NIPPLE/PIPE MATL: SAME AS PARENT PIPE	1" NIPPLE MATL: SAME AS PARENT PIPE	1/2" NIPPLE/PIPE MATL: SAME AS PARENT PIPE
02.	1/2" GLOBE VALVE	1" GLOBE VALVE	1" GLOBE VALVE	1/2" GLOBE VALVE
03.	NAPL	1"/1/2" SW REDUCER	1"/1/2" SW REDUCER	NAPL
04.	1/2" SS316-PIPE	1/2" PIPE	1/2" PIPE	1/2" PIPE
05.	1/2" EQ. TEE	1/2" EQ. TEE	1/2" EQ. TEE	NAPL
06.	1/2" GLOBE VALVE	1/2" GLOBE VALVE	1/2" GLOBE VALVE	NAPL
07.	1/2" NIPPLE	1/2" NIPPLE	1/2" NIPPLE	NAPL
08.	1/2" NPT CAP	1/2" NPT CAP	1/2" NPT CAP	NAPL
09.	1/2"/1/2" UNION	1/2" UNION	1/2" UNION	NAPL
10.	NAPL	SYPHON	NAPL	NAPL
11.	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER
12.	NAPL	NAPL	NAPL	3 WAY VALVE/ 2 WAY ROOT - VALVE

APPLICATION:-

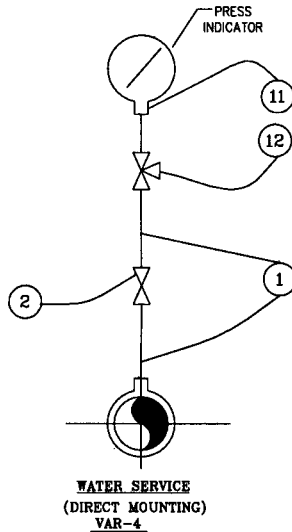
VARIANT 2&3 — MS, HRS, CRH, BFD, AUX. PRDS SPRAY TO PRDS, SPRAY TO HPBP

VARIANT 1&4 — INST. AIR, SER. AIR & ALL OTHER SYSTEM

NOTES:-

- THE MATERIAL SPECIFICATION AND SCHEDULE NO. OF IMPULSE PIPE & NIPPLE SHALL MEET PROCESS PARAMETER
- THE MATERIAL SPECIFICATION AND RATING OF FITTINGS WELDED/THREADED FITTINGS SHALL CONFORM TO ANSI B 16.9
- INSTRUMENTS VALVES BODY STEM MATERIAL AND PRESSURE CLASS SHALL BE AS PER PROCESS REQ.
- THE LENGTH OF IMPULSE PIPE CONSIDERED FOR EACH SHALL BE SUCH THAT MAXIMUM DISTANCE BETWEEN RACK & INSTRUMENT IS < 10M.
- GAUGES AS INDICATED IN THE INSTRUMENT SCHEDULE SHALL BE MOUNTED IN LOCAL INSTRUMENT RACK
- NO. OF ROOT VALVES = 2 IF PRESSURE $\Rightarrow$ 40kg/sqcm AND/OR AND DRAIN VALVES } TEMPERATURE $\Rightarrow$ 420°C
= 1 (OTHER WISE)
- SLOPE APPROX 50MM/METER.
- BEYOND BULK HEAD, INCLUDING BULK HEAD SHALL BE INSIDE RACK & SAME TO BE COVERED BY INSTRUMENT RACK VENDOR.

- INSTRUMENTS/GAUGES ARE TO BE MOUNTED BELOW INSTRUMENT SOURCE POINT.
- ALL THE IMPULSE PIPES (ITEM 04) SHALL BE OF SS 316 - INSIDE LIR



REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

NTPC DOC. NO.		9561-101-PC-PVI-B-049		CUST. NO:		6975 & 6976	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		MAUDA SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP					
Bharat Heavy Electricals Ltd. PIPING CENTRE, CHENNAI 600 017		NAME		SIGN		DATE	
		DRN		S.NATARAJAN		03.12.10	
		CHD		E.LOGANATHAN		03.12.10	
		APPD		R.PRABHA		03.12.10	
DEPT.		GRADE OF UN TOL. DIM		SCALE		WEIGHT (Kg)	
CODE		C/M/F		N.T.S.		REF TO ASSY / OLD DRG	
TITLE		CARD CODE		DRAWING No.		REV	
INSTALLATION DRAWING (FOR PR. GAUGES & PR. SWITCHES) (INSIDE LIR)		U 01		3-81-412-02215		00	

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF TG	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
1	1 LIR 01	2 INST. RACK	1	1	2	2	#3000 SPL	283	188.5	540	
2	1 LIR 02	2 INST. RACK	1	1	2	2	#3000 SPL	283	188.5	540	
3	1 LIR 03	2 INST. RACK	1	1	2	2	#3000 SPL	283	188.5	540	
4	1 LIR 04	2 INST. RACK	1	1	2	2	#1500	81	54	500	
5	1 LIR 05	2 INST. RACK	1	1	2	2	#800	81	54	500	
6	1 LIR 06	2 INST. RACK	1	1	2	2	#800	81	54	500	
7	1 LIR 07	2 INST. RACK	1	1	2	2	#1500	73	48.4	573	
8	1 LIR 08	2 INST. RACK	1	1	2	2	#1500	73	48.4	573	
9	1 LIR 09	4 INST. RACK	1	-	3	2	#3000 SPL	283	188.5	540	
			2				#800	81	54	360	
10	1 LIR 10	4 INST. RACK	2	2	4	2	#800	30	20	350	

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF TG	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
11	1 LIR 11	6 INST. RACK	1	2	5	2	#800	30	20	240	
			2			3	#2500	480	320	185	
12	1 LIR 12	4 INST. RACK	4	-	4	3	#2500	480	320	185	
13	1 LIR 13	4 INST. RACK	3	-	3	3	#2500	480	320	185	
14	1 LIR 14	4 INST. RACK	4	-	4	3	#2500	480	320	185	
15	1 LIR 15	4 INST. RACK	3	-	3	3	#2500	480	320	185	
16	1 LIR 16	2 INST. RACK	-	2	2	-	#3000SPL	-	188.5	540	
17	1 LIR 17	2 INST. RACK	-	2	2	-	#1500	-	54	500	
18	1 LIR 18	2 INST. RACK	2	-	2	2	#3000 SPL	283	188.5	540	SPARE
19	1 LIR 19	4 INST. RACK	2	2	4	2	#2500	480	320	185	SPARE
20	1 LIR 20	6 INST. RACK	2	2	6	2	#1500	81	54	500	SPARE
			2			3	#2500	480	320	185	

ALLOCATION OF LOCAL INSTRUMENT RACKS

Project : **MAUDA - 2 x 500 MW (SGP)**Cust.No: **6975 & 6976**

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF PS	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
1	1 SG LIR 01	4 INST. RACK	1	-	2	2	#300	30	20	350	
			1	-		3	#150	15	10	50	
2	1 SG LIR 02	4 INST. RACK	1	-	2	2	#300	30	20	350	
			1	-		3	#150	15	10	50	
3	1 SG LIR 03	4 INST. RACK	3	-	3	2	#300	30	20	250	
4	1 SG LIR 04	4 INST. RACK	3	-	3	2	#300	30	20	250	
5	1 SG LIR 05	4 INST. RACK	3	-	3	2	#300	30	20	250	
6	1 SG LIR 06	4 INST. RACK	3	-	3	2	#300	30	20	250	
7	1 SG LIR 07	6 INST. RACK	6	-	6	3	#300	15	20	250	
8	1 SG LIR 08	4 INST. RACK	2	-	2	3	#300	15	10	180	
9	1 SG LIR 09	4 INST. RACK	1	3	4	3	#150	15	10	50	WITH JUNCTION BOX
10	1 SG LIR 10	6 INST. RACK	4	2	6	2	#300	30	20	250	WITH JUNCTION BOX SPARE
11	1 SG LIR 11	4 INST. RACK	3	-	3	3	#300	30	20	250	SPARE

3-81-440-02316

DRAWING No.

LIST OF DRAWINGS

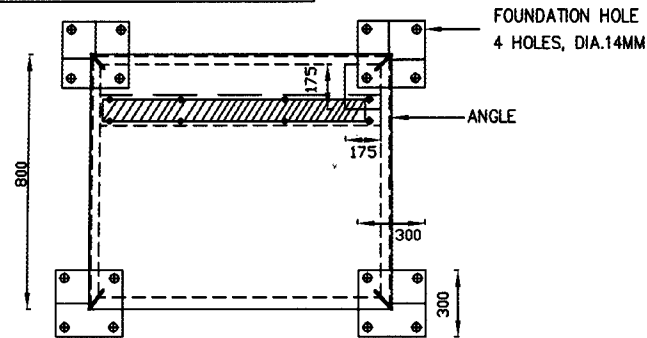
S.NO	DESCRIPTION	DRAWING NO.	SHEET NO.	REVISION STATUS				
				00	01	02	03	04
01	GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK - LIST OF DRAWINGS	3-81-440-02316	01	✓				
02	GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK(LIR)	3-81-440-02316	02	✓				
03	DETAILS OF LOCAL INSTRUMENT RACK(LIR)	3-81-440-02316	03	✓				
04	DETAIL OF DRAIN PIPE,CLEAT DETAIL AND BULK HEAD PLATE	3-81-440-02316	04	✓				

NTPC DOC.NO:		9561-101-PC-PVI-B-053		CUST. NO:		6975 & 6976	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		MAUDA SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP					
 BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017		NAME		SIGN	DATE	NO OF ITEMS	
		DRN	KATARAJAN.S	<i>B. Kat</i>	03.12.10		
		CHD	LOGANATHAN.S	<i>Loganathan</i>	03.12.10		
		APPD	PRABHA.S	<i>P. Pr</i>	03.12.10		
DEPT.	GRADE OF UN TOL DIM			SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG	ITEM No.
CODE	C/M/F						
TITLE				CARD CODE	DRAWING No.		REV
GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK LIST OF DRAWINGS				U 01	3-81-440-02316 SHEET 01 OF 04		00

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

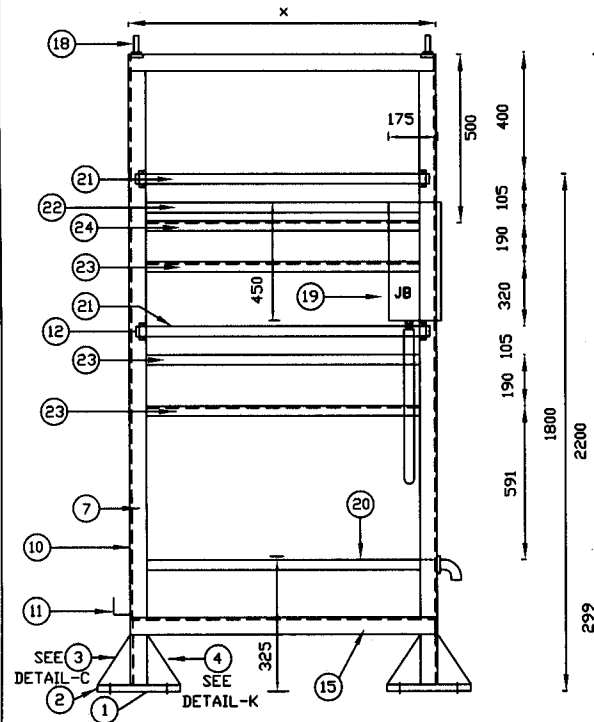
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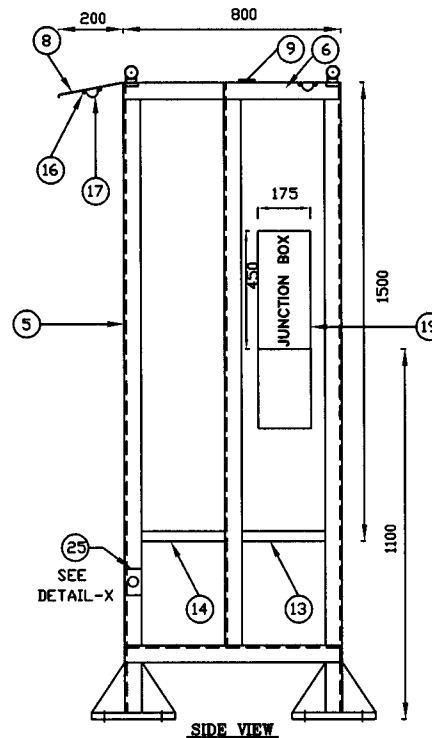
CAUTION
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TOP VIEW WITHOUT CANOPY

LIR TYPE	MAX. NO. OF INSTRUMENTS	WIDTH OF LIR (X)
A	8	1650
B	6	1330
C	4	1010
D	2	710



INTERNAL FRONT VIEW



SIDE VIEW

BILL OF MATERIAL

SL.NO.	DESCRIPTION
1	GROUNDING PLATE 300 X 300 X 5MM THICK
2	RUBBER PAD 50X 15MM
3	CLEAT AT FRONT, BACK & SIDE 5MM THICK
4	CLEAT FOR CORNER 5MM THICK
5	ANGLE 50 X 50 X 6
6	ANGLE FRAME 50 X 50 X 6
7	MOUNTING ANGLE 50 X 50 X 6
8	CANOPY FOR INSTRUMENT RACK
9	BULK HEAD PLATE 5 MM THICK
10	BRACKET FOR DRAIN HEADER
11	BRACKET FOR PANEL EARTH
12	SIDE SHEET - LHS & RHS
13	STRIP 50 X 6MM
14	STRIP 50 X 6MM
15	ANGLE FOR FRAME 50 X 50 X6
16	C CHANNEL FOR TUBE LIGHT
17	FLOURSCENT TUBE WITH FIXTURE 240AC, 11W
18	EYE BOLT
19	JUNCTION BOX, (700H X 200 W X 200 D)
20	DIA. 2" NB PIPE
21	MS FLAT FOR CABLE TRAY FIXING
22	MS ANGLE FOR MAINFOLD SUPPORT
23 & 24	MS ANGLE FOR PIPE SUPPORT
25	COVER PLATE 5mm THICK

NTPC DOC.NO:

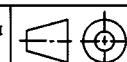
9561-101-PC-PVI-B-053

CUST. NO:

6975 & 6976

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECTMAUDA SUPER THERMAL POWER PROJECT
2 x 500 MW, SGP & PCPBHARAT HEAVY ELECTRICALS LTD.
PIPING CENTRE,
CHENNAI 600 017

	NAME	SIGN	DATE	NO OF ITEMS
DRN	NATARAJAN.S	<i>S. Nar</i>	03.12.10	
CHD	LOGANATHAN.E	<i>Loganathan</i>	03.12.10	
APPD	PRABHA.R	<i>Prabha</i>	03.12.10	

DEPT.
CODEGRADE OF
UN TOL DIM
C/M/F

SCALE

WEIGHT (Kg)

REF TO ASSY / OLD Dwg

ITEM
No.TITLE
GENERAL ARRANGEMENT DRAWINGS
OF LOCAL INSTRUMENT RACK(LIR)CARD
CODE
U 01

DRAWING No.

3-81-440-02316

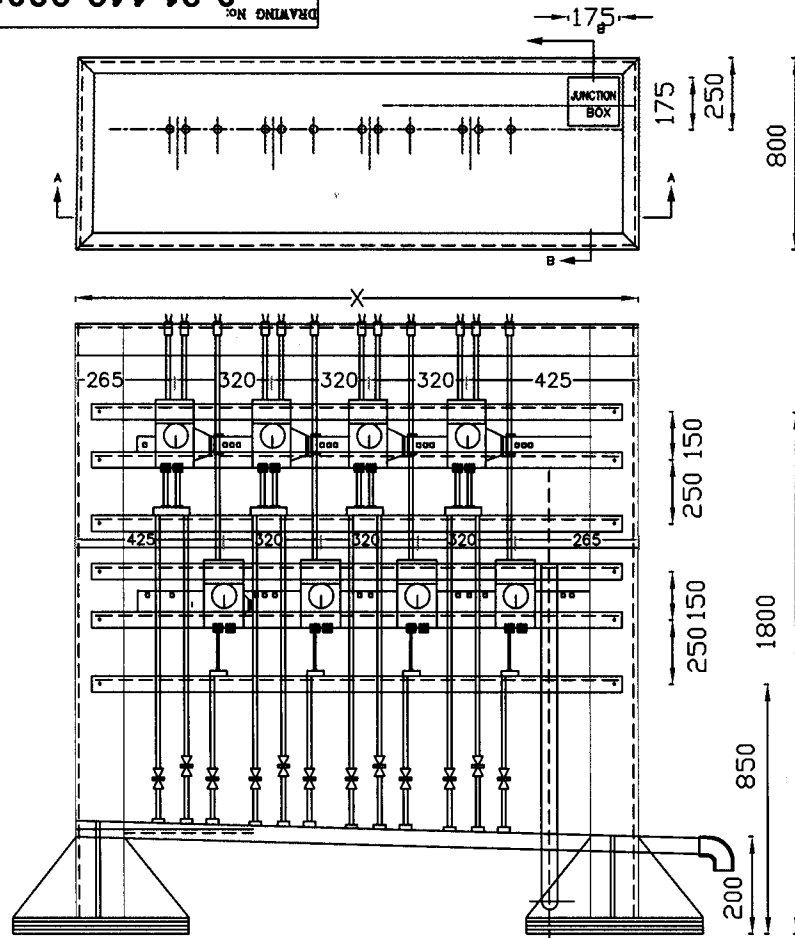
SHEET 02 OF 04

REV
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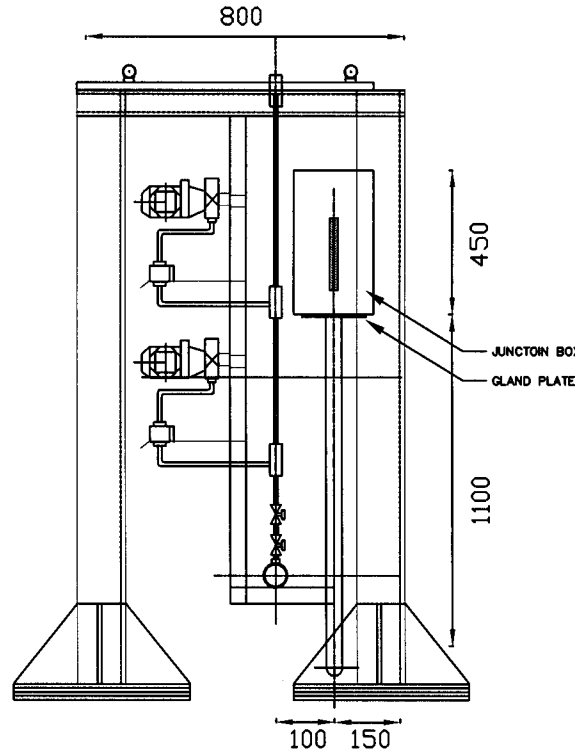
SIZE A3

3-81-440-02316

DRAWING No.

LIR WITH 4 LEGS
SECTION-AA

LIR TYPE	MAX. NO. OF INSTRUMENTS	DIMENSION 'X' (mm)	SIZE OF BULK HEAD PLATE
A	8	1650	1250 X 200
B	6	1330	1000 X 200
C	4	1010	700 X 200
D	2	710	500 X 200



SECTION-BB

- NOTES :-
01. ALL DIMENSIONS ARE IN MM
 02. FOR TYPE-B-RACKS THE DIMENSIONS W1&W2 WILL BE 1300MM AND 1700MM RESPECTIVELY.(6 INSTRUMENT RACK)
 03. FOR TYPE-C-RACKS THE DIMENSIONS W1&W2 WILL BE 1000MM AND 1400MM RESPECTIVELY.(4 INSTRUMENT RACK)
 04. FOR TYPE-D-RACKS THE DIMENSIONS W1&W2 WILL BE 700MM AND 1100MM RESPECTIVELY.(2 INSTRUMENT RACK)
 05. ALL RACKS SHALL COMPLY WITH THE REQUIREMENT OF TECH.SPECIFICATION
 06. GAUGES AND SWITCHES TO BE GROUNDED AND MOUNTED WITH PROPER ACCESS, INTER-CROSS CHANNEL FOR MOUNTING SHALL CORROBORATE WITH INSTRUMENT MOUNTING DETAILS.
 07. SWITCH CONTACTS TERMINAL TO BE BROUGHT TO JUNCTION BOXES.
 08. PROVISION OF JUNCTION BOX SHALL BE AS PER ENCLOSED LOCAL INSTRUMENT RACK SCHEDULE.
 09. SUFFICIENT SPACE BETWEEN CANOPY AND INSTRUMENT SHALL BE PROVIDED SO THAT THE INSTRUMENT SHOULD NOT FOUL WITH CANOPY
 10. DRAIN PIPE UP TO TRENCH ARE IN BHEL SCOPE.
 11. JB FOR LIGHTING SUPPLY.
 12. SEAWATER RESISTANT PAINT SHALL BE USED.
 13. BULK HEAD PLATE SHALL BE ISOLATED FROM PROCESS LINE VIBRATION USING SYNTHETIC MATERIAL.
 14. FLOURESCENT TUBE FITTING WITH FUSE, SWITCH (2A FUSE, 5A SWITCH) WILL BE PROVIDED FOR EACH LIR.
 15. 12 WAY JUNCTION BOX OF DIMENSION 450(H)x175(W)x175(D) WITH IP-55 PROTECTION CLASS. VIBRATION DAMPENERS SHALL BE INSTALLED IN TBS WHICH ARE OF CAGE CLAMP TYPE TO SECURE THE TERMINAL LEADS FIRMLY.
 16. DETAILS OF C, X, K PROVIDED IN THE SHEET-04 OF 04
 17. DETAIL OF DRAIN PIPE & BULK HEAD PROVIDED IN SHEET-04 OF 04
 18. POWER SOCKET & TBS SHALL BE PROVIDED IN JUNCTION BOX
 19. DETAILS WIRING DIAGRAM & LAYOUT DRAWING WILL BE SUBMITTED FOR EACH RACK
 20. COLOR : SHADE RAL 9002 OVERALL THICKNESS (INCLUDING PRIMER) >100 MICRONS
 21. NAME PLATES SHALL BE PROVIDED FOR ALL INSTRUMENT AND ALSO IN THE JUNCTION BOXES INDICATING TAG & TB NO .
 22. BILL OF MATERIALS FOR LIR SHALL BE FINALISED WHILE SUBMITTING VENDER GA, LIR AS FITTING DRAWINGS.
 23. LIR SPECIFICATION DOCUMENT CONTAINS OTHER RELEVANT DETAILS FOR FABRICATION.

NTPC DOC.NO:

9561-101-PC-PVI-B-053

CUST. NO:

6975 & 6976

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECTMAUDA SUPER THERMAL POWER PROJECT
2 x 500 MW, SGP & PCPBHARAT HEAVY ELECTRICALS LTD.
PIPING CENTRE,
CHENNAI 600 017

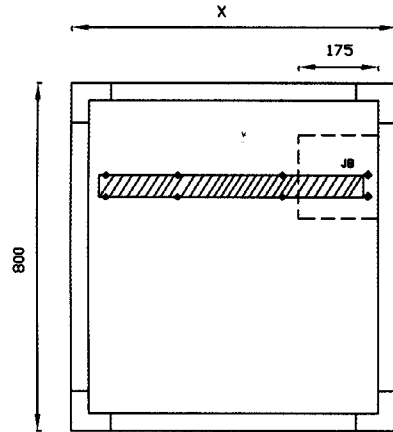
	NAME	SIGN	DATE	NO OF ITEMS
DRN	KATARAJAN.S	<i>[Signature]</i>	03.12.10	
CHD	LOGANATHAN.S	<i>[Signature]</i>	03.12.10	
APPD	PRABHA.S	<i>[Signature]</i>	03.12.10	

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASST / OLD DRG	ITEM No.
CODE	C/M/F				
TITLE	DETAILS OF LOCAL INSTRUMENT RACK(LIR)		CARD CODE	DRAWING No.	REV
			U 01	3-81-440-02316 SHEET 03 OF 04	00

3-81-440-02316

DRAWING No.

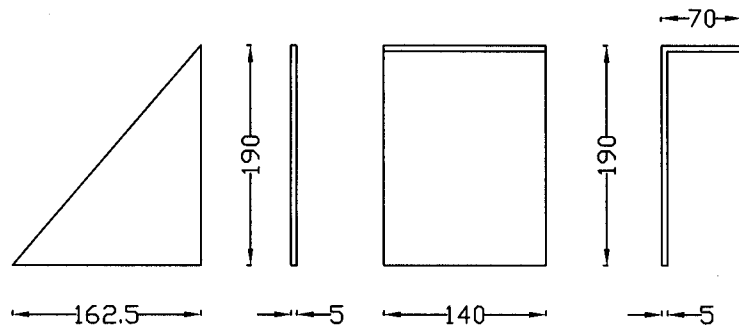


TOP VIEW WITHOUT CANOPY



BULK HEAD PLATE

ITEM	DESCRIPTION	QTY.
1.	2" NB ASTM A-106 SCH80 / GR.-C	A/R
2.	2" NBSW X 1" NPT(F) COUPLING CS ASTM A105	1NO.
3.	2" S.W. CAP, CS ASTM A105	1NO.
4.	1"NPT (M) X 1" BSP(M) HEX. COUPLING,CS ASTM105	1NO.
5.	1"BSF (F) ELBOW, CS ASTM A105	1NO.
6.	HALF COUPLING 1/2" NB SW CS / AS	A/R

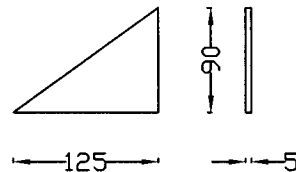


DETAIL-C

(CLEAT AT FRONT,BACK&SIDE)

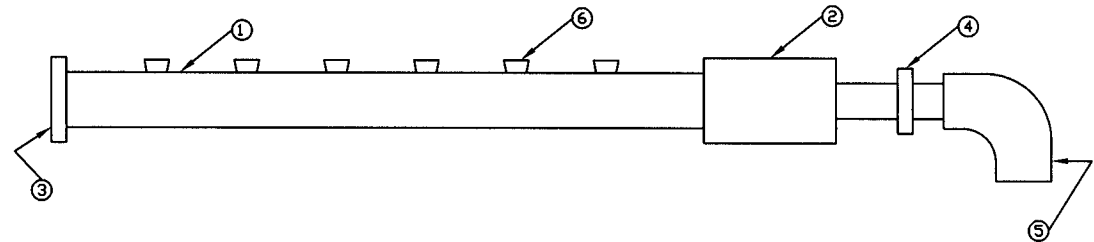
DETAIL-X

(COVER PLATE)



DETAIL-K

(CLEAT AT CORNER)



DRAIN PIPE

NTPC DOC.NO:		9561-101-PC-PVI-B-053		CUST. NO: 6975 & 6976	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		MAUDA SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP			
Bharat Heavy Electricals Ltd. PIPING CENTRE, CHENNAI 600 017		NAME	SIGN	DATE	NO OF ITEMS
DRN		NATARAJAN.S	[Signature]	03.12.10	
CHD		LOGANATHAN.S	[Signature]	03.12.10	
APPD		PRASAD.R	[Signature]	03.12.10	
DEPT.	GRADE OF UN TOL DIM	SCALE		WEIGHT (Kg)	REF TO ASST / OLD DRG
CODE	C/M/F	[Symbol]			
TITLE		CARD CODE	DRAWING No.		REV
DETAIL OF DRAIN PIPE,CLEAT DETAIL AND BULK HEAD PLATE		U 01	3-81-440-02316 SHEET 04 OF 04		00



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE
CHENNAI 600 017

MAUDA SUPER THERMAL POWER PROJECT (PCP) - 2x500 MW

CUST. NO: 6975 & 6976

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN/ COVERED			
01	01	LBA 01 CP 301	Main Steam SH outlet (Left)	69775	COVERED	1 LIR 01	Z S8L → 3000 S9L	65125
01	02	LBA 01 CT 301	-do-	-do-	-do-		-do-	
01	03	LBA 02 CP 301	Main Steam SH outlet (Right)	69775	COVERED	1 LIR 02	Z S8R → 3000 S9R	65125
01	04	LBA 02 CT 301	-do-	-do-	-do-		-do-	
01	05	LBA 01 CP 302	Main Steam Turbine End	5000	COVERED	1 LIR 03	Z Af → 5000 B	GROUND
01	06	LBA 01 CT 302	-do-	-do-	-do-		Z Af → 750 B	
01	07	LBC 10 CP 301	CRH Turbine End	3500	COVERED	1 LIR 04	Between Ac & Ae	GROUND
01	08	LBC 10 CT 301	-do-	-do-	-do-		Between 03 & 04	
01	09	LBC 11 CP 301	CRH Reheater inlet Header (Left)	76405	COVERED	1 LIR 05	X S2L → 1400 S8L Z S1L → 7000 S2L	75105
01	10	LBC 11 CT 301	-do-	-do-	-do-		-do-	
01	11	LBC 12 CP 301	CRH Reheater inlet Header (Right)	76405	COVERED	1 LIR 06	X S2R → 1400 S8R Z S1R → 7000 S2R	75105
01	12	LBC 12 CT 301	-do-	-do-	-do-		-do-	
01	13	LBB 01 CP 301	HRH Reheater outlet Header (Left)	79225	COVERED	1 LIR 07	S8L → 8500 S9L S1L → 1400 S7L	78325
01	14	LBB 01 CT 301	-do-	-do-	-do-		-do-	
01	15	LBB 02 CP 301	HRH Reheater outlet Header (Right)	79225	COVERED	1 LIR 08	S8R → 8500 S9R S1R → 1400 S7R	78325
01	16	LBB 02 CT 301	-do-	-do-	-do-		-do-	

NTPC DRG. No.

9561-101-PC-PVI-H-137

REV.00

REV.01	NTPC TRANSMITTAL REF: CC; PE:	REV.02		REV.03		DRG. NO.
DATE: 02.12.10	9561:101:18605 DATE: 29.09.10	DATE:		DATE:		4-81-440-04570
PREPARED: BS -Sd-			CHECKED: EL -Sd-	APPROVED: RP -Sd-	DATE: 05.07.10	SHT.NO: 01 OF 03

**BHARAT HEAVY ELECTRICALS LIMITED**PIPING CENTRE
CHENNAI 600 017

MAUDA SUPER THERMAL POWER PROJECT (PCP) – 2x500 MW

CUST. NO: 6975 & 6976

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN/ COVERED			
01	17	LBG 10 CP 301	Main Steam at HC PRDS inlet	41800	COVERED	1 LIR 09	Near [B] Row Between Column 04 & 05	35.500
01	18	LBG 20 CP 301	LC PRV inlet	34400	—do—			
01	19	LBG 20 CP 302	LC PRV outlet	32000	—do—			
01	20	LBG 30 CP 301	Aux. Steam at DESH inlet	32000	COVERED	1 LIR 10	Near [B] Row Between Column 05 & 06	31250
01	21	LBG 30 CT 301	—do—	—do—	—do—			
01	22	LBG 40 CP 301	LT unit aux. Steam Header unit-1	—do—	—do—			
01	23	LBG 40 CT 301	—do—	—do—	—do—			
01	24	LBG 90 CP 301	LT station aux. Steam Header	32000	COVERED	1 LIR 11	Near [B] Row Between Column 05 & 06	31250
01	25	LBG 90 CT 301	—do—	—do—	—do—			
01	26	LAF 10 CP 301	Spray water to HC PRV	—do—	—do—			
01	27	LAF 10 CT 301	—do—	—do—	—do—			
01	28	LAF 10 CP 302	—do—	—do—	—do—			
01	29	LAF 20 CP 301	HC spray water PCV (main) inlet	32000	COVERED	1 LIR 12	Near [B] Row Between Column 05 & 06	31250
01	30	LAF 20 CP 302	HC spray water PCV (main) outlet	—do—	—do—			
01	31	LAF 20 CP 303	HC spray water TCV (main) outlet	—do—	—do—			
01	32	LAF 20 CP 304	spray water to HC Steam PCV	—do—	—do—			
01	33	LAF 21 CP 301	HC spray water PCV (Bypass) inlet	32000	COVERED	1 LIR 13	Near [B] Row Between Column 05 & 06	31250
01	34	LAF 21 CP 302	HC spray water PCV (Bypass) outlet	—do—	—do—			
01	35	LAF 21 CP 303	HC spray water TCV (Bypass) outlet	—do—	—do—			

NTPC DRG. No.

9561-101-PC-PVI-H-137

REV.01	NTPC TRANSMITTAL REF: CC; PE: 9561:101:18605 DATE: 29.09.10	REV.02		REV.03		DRG. NO. 4-81-440-04570 REV.01
DATE: 02.12.10		DATE:		DATE:		
PREPARED: BS	—Sd—	CHECKED: EL	—Sd—	APPROVED: RP	—Sd—	DATE: 05.07.10 SHT.NO: 02 OF 03



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE
CHENNAI 600 017

MAUDA SUPER THERMAL POWER PROJECT (PCP) – 2x500 MW

CUST. NO: 6975 & 6976

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN/COVERED			
01	36	LAF 31 CP 301	LC spray water PCV (main) inlet	32000	COVERED	1 LIR 14	Near B Row Between Column 05 & 06	31250
01	37	LAF 31 CP 302	LC spray water PCV (main) outlet	-do-	-do-			
01	38	LAF 31 CP 303	LC spray water TCV (main) outlet	-do-	-do-			
01	39	LAF 31 CP 304	LC DESH spray water inlet	-do-	-do-			
01	40	LAF 32 CP 301	LC spray water PCV (Bypass) inlet	32000	COVERED	1 LIR 15	Near B Row Between Column 05 & 06	31250
01	41	LAF 32 CP 302	LC spray water PCV (Bypass) outlet	-do-	-do-			
01	42	LAF 32 CP 303	LC spray water TCV (Bypass) outlet	-do-	-do-			
01	43	LBF 10 CT 301	HPBP valve (BP-1) inlet	14416	COVERED	1 LIR 16	Between Ae & Af Between 04 & 03	8500
01	44	LBF 20 CT 301	HPBP valve (BP-2) inlet	-do-	-do-			
01	45	LBF 11 CT 301	HPBP valve (BP-1) outlet	12000	COVERED	1 LIR 17	Between Ae & Af Between 04 & 03	8500
01	46	LBF 21 CT 301	HPBP valve (BP-2) outlet	-do-	-do-			

NOTE:-

- * 1. NEAREST FLOOR SUGGESTED FOR ERECTING THE RACK
- 2. No.1 IN RACK NO WILL BE REPLACED WITH 2 FOR UNIT 2

		NTPC DRG. No.		9561-101-PC-PVI-H-137		REV.00
REV.01	NTPC TRANSMITTAL REF: CC; PE: 9561: 101: 18605 DATE: 02.12.10	REV.02		REV.03		DRG. NO. 4-81-440-04570 REV.01
PREPARED: BS -Sd-		CHECKED: EL -Sd-		APPROVED: RP -Sd-		DATE: 05.07.10 SHT.NO: 03 OF 03

**BHARAT HEAVY ELECTRICALS LIMITED**PIPING CENTRE
CHENNAI 600 017

MAUDA SUPER THERMAL POWER PROJECT - (SGP)

CUST. NO: 6975 & 6976

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR)
				ELEVATION (M)	OPEN/ COVERED			
01	01	LBG 80 CP 301	Aux.Stm.piping to Mill Inerting	10500	COVERED	1SG LIR 01	X ☐ N' → 2000 ☐ M' Z ☐ D → 2000 ☐ E	4240
01	02	SGA 51 CP 301	Service water to Mills Terminal Point	-do-	-do-		-do-	
01	03	LBG 80 CP 302	Aux. Steam to Mill inerting TP	10500	COVERED	1SG LIR 02	X ☐ N → 1000 ☐ M Z ☐ D → 2000 ☐ E	4240
01	04	SGA 51 CP 302	Service water to Mills Terminal Point	-do-	-do-		-do-	
	05	LBG 71 CP 301	Aux. Steam for Primary SCAPH-A	15500	COVERED	1SG LIR 03	X ☐ S22L 1000 → ☐ S23L Z ☐ EX2L → 3000 ☐ EX3L	14500
01	06	LBG 71 CP 302	-do-	17000	-do-		-do-	
01	07	LBG 71 CP 303	-do-	18500	-do-		-do-	
	08	LBG 72 CP 301	Aux. Steam for Primary SCAPH-B	15500	COVERED	1SG LIR 04	X ☐ S22R 1000 → ☐ S23R Z ☐ EX2R → 3000 ☐ EX3R	14000
01	09	LBG 72 CP 302	-do-	17000	-do-		-do-	
01	10	LBG 72 CP 303	-do-	12500	-do-		-do-	
01	11	LBG 73 CP 301	Aux. Steam for Secondary SCAPH-A	17000	COVERED	1SG LIR 05	X ☐ S11L → 2000 ☐ S12L Z ☐ S11L → 2500 ☐ S17L	14000
01	12	LBG 73 CP 302	-do-	-do-	-do-		-do-	
01	13	LBG 73 CP 303	-do-	12000	-do-		-do-	

NTPC
DOC. No. **9561-101-PC-PVI-H-040**

REV.00

REV.01	NTPC TRANSMITTAL REF: CC;PE: 9561:101:15037 DATE: 30.07.10	REV.02		REV.03		DRG. NO.	
DATE: 02.12.10		DATE:		DATE:		4-81-440-04569	
							REV.01
PREPARED: BS -Sd-		CHECKED: E.L -Sd-		APPROVED: R.P -Sd-		DATE: 05.07.10	SHT.NO: 01 OF 02

**BHARAT HEAVY ELECTRICALS LIMITED**PIPING CENTRE
CHENNAI 600 017

MAUDA SUPER THERMAL POWER PROJECT - (SGP)

CUST. NO: 6975 & 6976

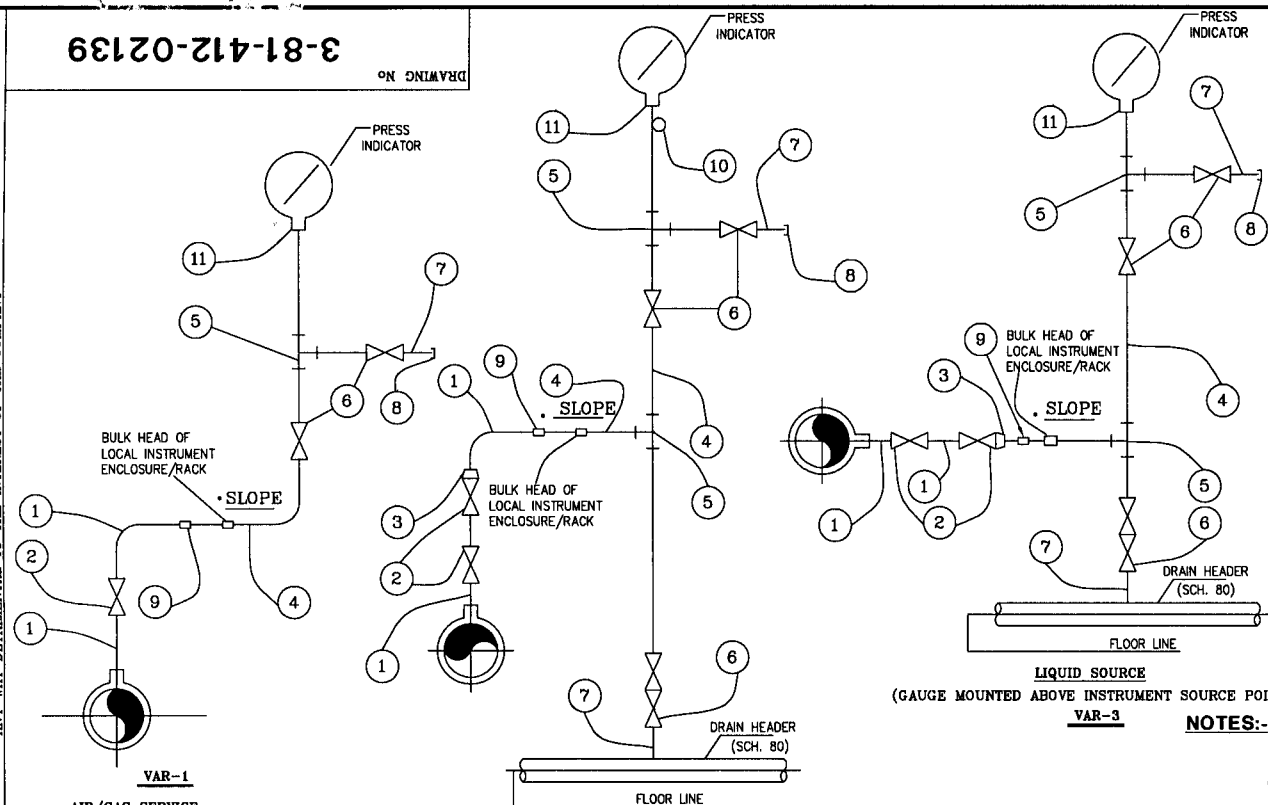
SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR)
				ELEVATION (M)	OPEN/ COVERED			
01	14	LBG 74 CP 301	Aux. Steam for Secondary SCAPH-B	17000	COVERED	1SG LIR 06	X S11R → 2000 S12R Z S11R → 2500 S17R	14000
01	15	LBG 74 CP 302	-do-	-do-	-do-		-do-	
01	16	LBG 74 CP 303	-do-	12500	-do-		-do-	
	17	LBG 75 CP 301	Primary SCAPH Drain Tank - Inlet	10500	COVERED	1SG LIR 07	X Near S19 Z S18 3000 → S19	9350
	18	LBG 76 CP 302	Primary SCAPH Drain Level cont. station	-do-	-do-		-do-	
	19	LBG 76 CP 303	-do-	-do-	-do-		-do-	
	20	LBG 77 CP 301	SY. SCAPH Drain Tank - Inlet	-do-	-do-		-do-	
	21	LBG 78 CP 302	SY. SCAPH Drain Level Cont. Station	-do-	-do-		-do-	
	22	LBG 78 CP 303	-do-	-do-	-do-		-do-	
01	23	HAN 31 CP 301	Cond. Pr. before CBD tank LC station	36400	COVERED	1SG LIR 08	Between 05 & 06	36000
01	24	HAN 31 CP 302	Cond. Pr. after CBD tank LC station	36380	-do-			
	25	QFA 10 CP 301	Instrument Air Terminal Point	9000	COVERED	1SG LIR 09	Near D Boiler Center Line	9350
	26	QFA 10 CP 201	-do-	-do-	-do-		-do-	
	27	QFB 10 CP 201	Service Air Terminal Point	-do-	-do-		-do-	
	28	QFB 10 CP 202	-do-	-do-	-do-		-do-	
				NTPC DOC. No. 9561-101-PC-PVI-H-040				REV.00
REV.01	NTPC TRANSMITTAL REF: CC; PE:		REV.02			REV.03	DRG. NO.	
DATE:	9561:101:15037		DATE:			DATE:	4-81-440-04569	
02.12.10	DATE: 30.07.10						REV.00	
PREPARED: BS -Sd-			CHECKED: E.L -Sd-		APPROVED: R.P -Sd-		DATE: 05.07.10 SHT.NO: 02 OF 02	

3-81-412-02139

DRAWING NO.

CAUTION THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.



ITEM NO.	LIST OF MATERIAL			
VARIANT	1	2	3	4
01.	1/2" NIPPLE/PIPE MATL: SAME AS PARENT PIPE	1" NIPPLE/PIPE MATL: SAME AS PARENT PIPE	1" NIPPLE MATL: SAME AS PARENT PIPE	1/2" NIPPLE/PIPE MATL: SAME AS PARENT PIPE
02.	1/2" GLOBE VALVE	1" GLOBE VALVE	1" GLOBE VALVE	1/2" GLOBE VALVE
03.	NAPL	1" 1/2" SW REDUCER	1" 1/2" SW REDUCER	NAPL
04.	1/2" SS316-PIPE	1/2" PIPE	1/2" PIPE	1/2" PIPE
05.	1/2" EQ. TEE	1/2" EQ. TEE	1/2" EQ. TEE	NAPL
06.	1/2" GLOBE VALVE	1/2" GLOBE VALVE	1/2" GLOBE VALVE	NAPL
07.	1/2" NIPPLE	1/2" NIPPLE	1/2" NIPPLE	NAPL
08.	1/2" NPT CAP	1/2" NPT CAP	1/2" NPT CAP	NAPL
09.	1/2" 1/2" UNION	1/2" UNION	1/2" UNION	NAPL
10.	NAPL	SYPHON	NAPL	NAPL
11.	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER
12.	NAPL	NAPL	NAPL	3 WAY VALVE/ 2 WAY ROOT - VALVE

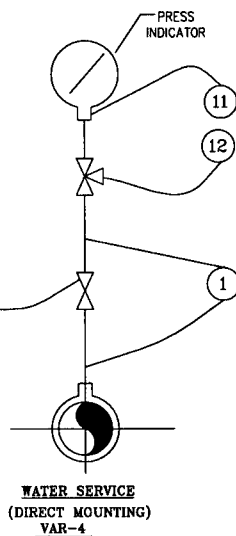
APPLICATION:-

VARIANT 2&3 — MS, HRS, CRH, BFD, AUX, PRDS SPRAY TO PRDS,
SPRAY TO HPBP

VARIANT 1&4 — INST. AIR, SER. AIR & ALL OTHER SYSTEM

NOTES:-

- THE MATERIAL SPECIFICATION AND SCHEDULE NO. OF IMPULSE PIPE & NIPPLE SHALL MEET PROCESS PARAMETER
- THE MATERIAL SPECIFICATION AND RATING OF FITTINGS WELDED/THREADED FITTINGS SHALL CONFIRM TO ANSI B 16.9
- INSTRUMENTS VALVES BODY STEM MATERIAL AND PRESSURE CLASS SHALL BE AS PER PROCESS REQ.
- THE LENGTH OF IMPULSE PIPE CONSIDERED FOR EACH SHALL BE SUCH THAT MAXIMUM DISTANCE BETWEEN RACK & INSTRUMENT IS < 10M.
- GAUGES AS INDICATED IN THE INSTRUMENT SCHEDULE SHALL BE MOUNTED IN LOCAL INSTRUMENT RACK
- NO. OF ROOT VALVES = 2 IF PRESSURE $\Rightarrow$ 40kg/sqcm AND/OR AND DRAIN VALVES } TEMPERATURE $\Rightarrow$ 420°C
= 1 (OTHER WISE)
- SLOPE APPROX 50MM/METER.
- BEYOND BULK HEAD, INCLUDING BULK HEAD SHALL BE INSIDE RACK & SAME TO BE COVERED BY INSTRUMENT RACK VENDOR.



REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

NTPC DOC. NO.		1240-101-PVI-E-055		CUST. NO.		7047 & 7048	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		RIHAND SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP					
BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017		DRN	S.NATARAJAN	SIGN	DATE	NO OF ITEMS	
		CHD	E.LOGANATHAN		03.12.10		
		APPD	R.PRABHA		03.12.10		
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG		ITEM No.	
CODE	C/M/F	N.T.S.					
TITLE		CARD CODE	DRAWING No.		REV		
INSTALLATION DRAWING (FOR PR. GAUGES & PR. SWITCHES) "INSIDE LIR"		U 01	3-81-412-02139		00		

SIZE A3

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF TG	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
1	1 LIR 01	2 INST. RACK	1	1	2	2	#3000 SPL	283	188.5	540	
2	1 LIR 02	2 INST. RACK	1	1	2	2	#3000 SPL	283	188.5	540	
3	1 LIR 03	2 INST. RACK	1	1	2	2	#3000 SPL	283	188.5	540	
4	1 LIR 04	2 INST. RACK	1	1	2	2	#1500	81	54	500	
5	1 LIR 05	2 INST. RACK	1	1	2	2	#800	81	54	500	
6	1 LIR 06	2 INST. RACK	1	1	2	2	#800	81	54	500	
7	1 LIR 07	2 INST. RACK	1	1	2	2	#1500	73	48.4	573	
8	1 LIR 08	2 INST. RACK	1	1	2	2	#1500	73	48.4	573	
9	1 LIR 09	4 INST. RACK	1	-	3	2	#3000 SPL	283	188.5	540	
			2				#800	81	54	360	
10	1 LIR 10	4 INST. RACK	2	2	4	2	#800	30	20	350	

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF TG	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
11	1 LIR 11	6 INST. RACK	1	2	5	2	#800	30	20	240	
			2			3	#2500	480	320	185	
12	1 LIR 12	4 INST. RACK	4	-	4	3	#2500	480	320	185	
13	1 LIR 13	4 INST. RACK	3	-	3	3	#2500	480	320	185	
14	1 LIR 14	4 INST. RACK	4	-	4	3	#2500	480	320	185	
15	1 LIR 15	4 INST. RACK	3	-	3	3	#2500	480	320	185	
16	1 LIR 16	2 INST. RACK	-	2	2	-	#3000SPL	-	188.5	540	
17	1 LIR 17	2 INST. RACK	-	2	2	-	#1500	-	54	500	
18	1 LIR 18	2 INST. RACK	2	-	2	2	#3000 SPL	283	188.5	540	SPARE
19	1 LIR 19	4 INST. RACK	2	2	4	2	#2500	480	320	185	SPARE
20	1 LIR 20	6 INST. RACK	2	2	6	2	#1500	81	54	500	SPARE
			2			3	#2500	480	320	185	

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF PS	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
1	1 SG LIR 01	4 INST. RACK	1	-	2	2	#300	30	20	350	
			1	-		3	#150	15	10	50	
2	1 SG LIR 02	4 INST. RACK	1	-	2	2	#300	30	20	350	
			1	-		3	#150	15	10	50	
3	1 SG LIR 03	4 INST. RACK	3	-	3	2	#300	30	20	250	
4	1 SG LIR 04	4 INST. RACK	3	-	3	2	#300	30	20	250	
5	1 SG LIR 05	4 INST. RACK	3	-	3	2	#300	30	20	250	
6	1 SG LIR 06	4 INST. RACK	3	-	3	2	#300	30	20	250	
7	1 SG LIR 07	6 INST. RACK	6	-	6	3	#300	15	20	250	
8	1 SG LIR 08	4 INST. RACK	2	-	2	3	#300	15	10	180	
9	1 SG LIR 09	4 INST. RACK	1	3	4	3	#150	15	10	50	WITH JUNCTION BOX
10	1 SG LIR 10	6 INST. RACK	4	2	6	2	#300	30	20	250	WITH JUNCTION BOX SPARE
11	1 SG LIR 11	4 INST. RACK	3	-	3	3	#300	30	20	250	SPARE

3-81-440-02317

DRAWING No.

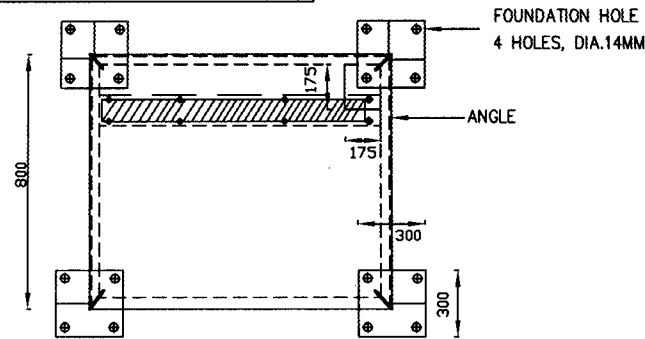
LIST OF DRAWINGS

S.NO	DESCRIPTION	DRAWING NO.	SHEET NO.	REVISION STATUS				
				00	01	02	03	04
01	GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK – LIST OF DRAWINGS	3-81-440-02317	01	✓				
02	GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK(LIR)	3-81-440-02317	02	✓				
03	DETAILS OF LOCAL INSTRUMENT RACK(LIR)	3-81-440-02317	03	✓				
04	DETAIL OF DRAIN PIPE,CLEAT DETAIL AND BULK HEAD PLATE	3-81-440-02317	04	✓				

NTPC DOC.NO:		1240-101-PC-PVI-C-057		CUST. NO: 7047 & 7048	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		RIHAND SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP			
	BHARAT HEAVY ELECTRICALS LTD.		NAME	SIGN	DATE
	PIPING CENTRE,		DEN	NATARAJAN.S	03.12.10
	CHENNAI 600 017		CHD	LOGANATHAN.S	03.12.10
			APPD	PRANNA.R	03.12.10
DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG	
CODE	C/M/F				
TITLE			CARD CODE	DRAWING No.	REV
GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK LIST OF DRAWINGS			U 01	3-81-440-02317 SHEET 01 OF 04	00

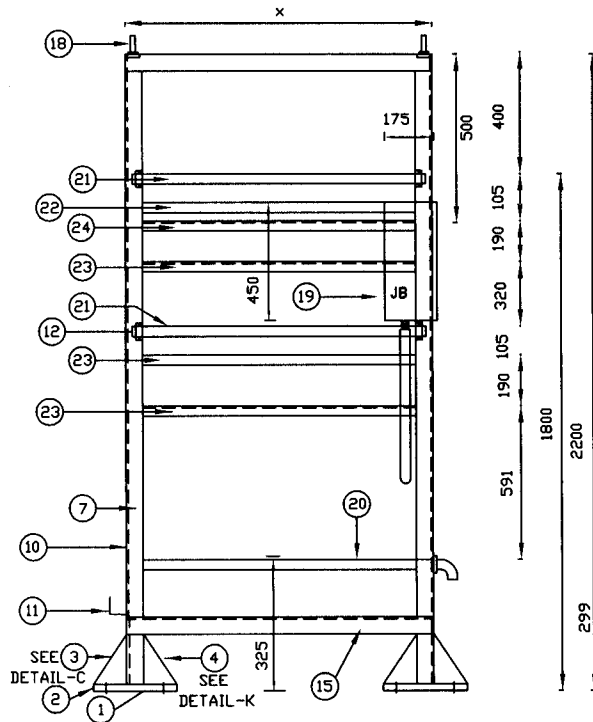
3-81-440-02317

DRAWING No.

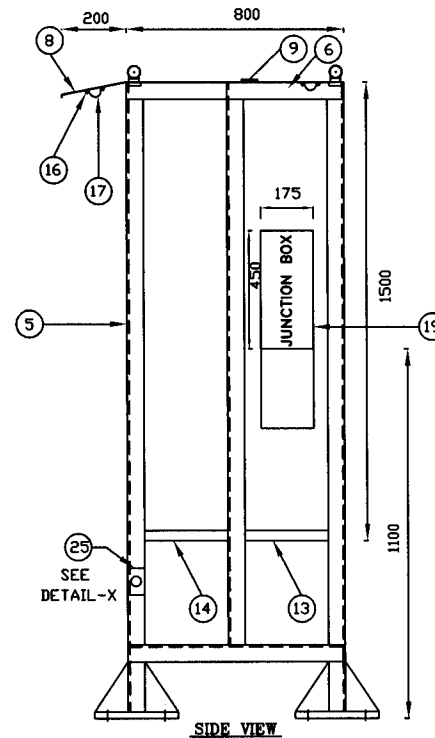


TOP VIEW WITHOUT CANOPY

LIR TYPE	MAX. NO. OF INSTRUMENTS	WIDTH OF LIR (X)
A	8	1650
B	6	1330
C	4	1010
D	2	710



INTERNAL FRONT VIEW



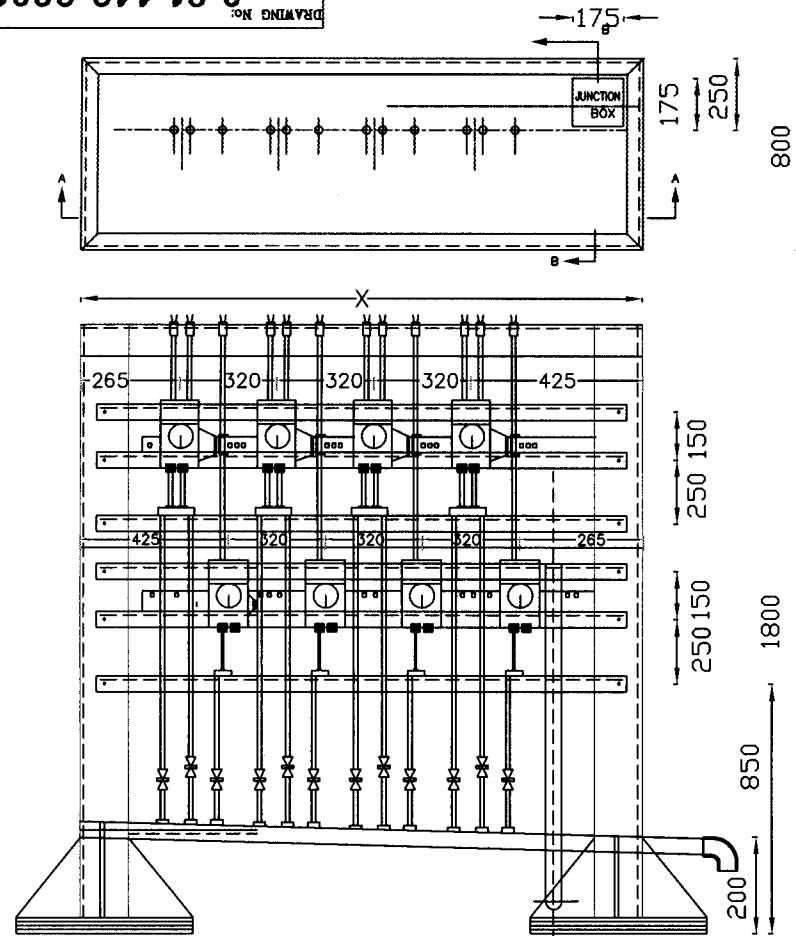
BILL OF MATERIAL	
SL.NO.	DESCRIPTION
1	GROUNDING PLATE 300 X 300 X 5MM THICK
2	RUBBER PAD 50X 15MM
3	CLEAT AT FRONT, BACK & SIDE 5MM THICK
4	CLEAT FOR CORNER 5MM THICK
5	ANGLE 50 X 50 X 6
6	ANGLE FRAME 50 X 50 X 6
7	MOUNTING ANGLE 50 X 50 X 6
8	CANOPY FOR INSTRUMENT RACK
9	BULK HEAD PLATE 5 MM THICK
10	BRACKET FOR DRAIN HEADER
11	BRACKET FOR PANEL EARTH
12	SIDE SHEET - LHS & RHS
13	STRIP 50 X 6MM
14	STRIP 50 X 6MM
15	ANGLE FOR FRAME 50 X 50 X 6
16	C CHANNEL FOR TUBE LIGHT
17	FLOURESCENT TUBE WITH FIXTRURE 240AC, 11W
18	EYE BOLT
19	JUNCTION BOX, (700H X 200 W X 200 D)
20	DIA. 2" NB PIPE
21	MS FLAT FOR CABLE TRAY FIXING
22	MS ANGLE FOR MAINFOLD SUPPORT
23 & 24	MS ANGLE FOR PIPE SUPPORT
25	COVER PLATE 5mm THICK

NTPC DOC.NO:		1240-101-PC-PVI-C-057		CUST. NO: 7047 & 7048	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		RIHAND SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP			
	BHARAT HEAVY ELECTRICALS LTD.		NAME	SIGN	DATE
	PIPING CENTRE,		DRN	NATARAJAN.S	03.12.10
	CHENNAI 600 017		CHD	LOGANATHAN.S	03.12.10
		APPD	PRASHNA.R	03.12.10	
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG	ITEM No.
CODE	C/M/F				
TITLE			CARD CODE	DRAWING No.	REV
GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK(LIR)			U 01	3-81-440-02317 SHEET 02 OF 04	00

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

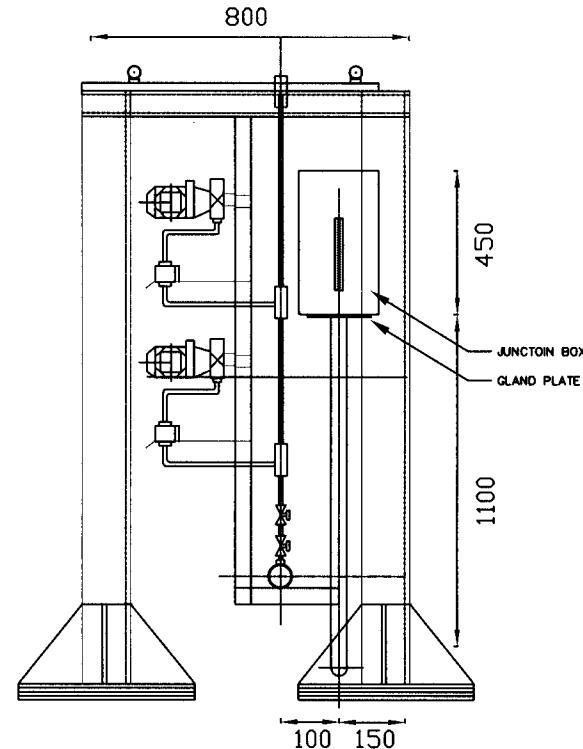
3-81-440-02317

DRAWING No.



LIR WITH 4 LEGS
SECTION-AA

LIR TYPE	MAX. NO. OF INSTRUMENTS	DIMENSION 'X' (mm)	SIZE OF BULK HEAD PLATE
A	8	1650	1250 X 200
B	6	1330	1000 X 200
C	4	1010	700 X 200
D	2	710	500 X 200



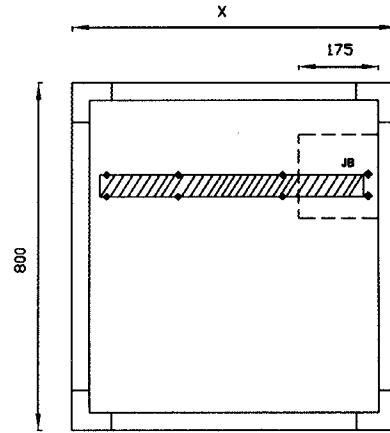
SECTION-BB

- NOTES :-
- ALL DIMENSIONS ARE IN MM
 - FOR TYPE-B-RACKS THE DIMENSIONS W1&W WILL BE 1300MM AND 1700MM RESPECTIVELY.(6 INSTRUMENT RACK)
 - FOR TYPE-C-RACKS THE DIMENSIONS W1&W WILL BE 1000MM AND 1400MM RESPECTIVELY.(4 INSTRUMENT RACK)
 - FOR TYPE-D-RACKS THE DIMENSIONS W1&W WILL BE 700MM AND 1100MM RESPECTIVELY.(2 INSTRUMENT RACK)
 - ALL RACKS SHALL COMPLY WITH THE REQUIREMENT OF TECH.SPECIFICATION
 - GAUGES AND SWITCHES TO BE GROUNDED AND MOUNTED WITH PROPER ACCESS, INTER-CROSS CHANNEL FOR MOUNTING SHALL CORROBORATE WITH INSTRUMENT MOUNTING DETAILS.
 - SWITCH CONTACTS TERMINAL TO BE BROUGHT TO JUNCTION BOXES.
 - PROVISION OF JUNCTION BOX SHALL BE AS PER ENCLOSED LOCAL INSTRUMENT RACK SCHEDULE.
 - SUFFICIENT SPACE BETWEEN CANOPY AND INSTRUMENT SHALL BE PROVIDED SO THAT THE INSTRUMENT SHOULD NOT FOUL WITH CANOPY
 - DRAIN PIPE UPTO TRENCH ARE IN BHEL SCOPE.
 - JB FOR LIGHTING SUPPLY.
 - SEAWATER RESISTANT PAINT SHALL BE USED.
 - BULK HEAD PLATE SHALL BE ISOLATED FROM PROCESS LINE VIBRATION USING SYNTHETIC MATERIAL.
 - FLOURESCENT TUBE FITTING WITH FUSE, SWITCH (2A FUSE, 5A SWITCH) WILL BE PROVIDED FOR EACH LIR.
 - 12 WAY JUNCTION BOX OF DIMENSION 450(H)x175(W)x175(D) WITH IP-55 PROTECTION CLASS. VIBRATION DAMPENERS SHALL BE INSTALLED IN TBS WHICH ARE OF CAGE CLAMP TYPE TO SECURE THE TERMINAL LEADS FIRMLY.
 - DETAILS OF C, X, K PROVIDED IN THE SHEET-04 OF 04
 - DETAIL OF DRAIN PIPE & BULK HEAD PROVIDED IN SHEET-04 OF 04
 - POWER SOCKET & TBs SHALL BE PROVIDED IN JUNCTION BOX
 - DETAILS WIRING DIAGRAM & LAYOUT DRAWING WILL BE SUBMITTED FOR EACH RACK
 - COLOR : SHADE RAL 9002 OVERALL THICKNESS (INCLUDING PRIMER)>100 MICRONS
 - NAME PLATES SHALL BE PROVIDED FOR ALL INSTRUMENT AND ALSO IN THE JUNCTION BOXES INDICATING TAG & TB NO .
 - BILL OF MATERIALS FOR LIR SHALL BE FINALISED WHILE SUBMITTING VENDER GA, LIR AS FITTING DRAWINGS.
 - LIR SPECIFICATION DOCUMENT CONTAINS OTHER RELAVENT DETAILS FOR FABRICATION.

NTPC DOC.NO:		1240-101-PC-PVI-C-057		CUST. NO: 7047 & 7048	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		RIHAND SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP			
BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017		NAME	SIGN	DATE	NO OF ITEMS
		DRN	NATARAJAN.S	03.12.10	
		CHD	LOGANATHAN.S	03.12.10	
		APPD	PRABHAR	03.12.10	
REV 02	DATE	ALTERED	APPROVED	REV 01	DATE
ZONE				ZONE	
DEPT.		GRADE OF UN TOL DIM		SCALE	
CODE		C/M/F		WEIGHT (Kg)	
TITLE		DETAILS OF LOCAL INSTRUMENT RACK(LIR)		CARD CODE	
				DRAWING No.	
				3-81-440-02317	
				SHEET 03 OF 04	
				REV	
				00	

3-81-440-02317

DRAWING No.

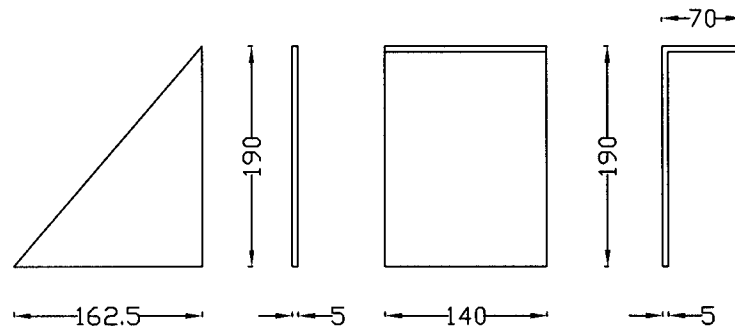


TOP VIEW WITHOUT CANOPY



BULK HEAD PLATE

ITEM	DESCRIPTION	QTY.
1.	2" NB ASTM A-106 SCH80 / GR.-C	A/R
2.	2" NBSM X 1" NPT(F) COUPLING CS ASTM A105	1NO.
3.	2" S.W. CAP, CS ASTM A105	1NO.
4.	1"NPT (M) X 1" BSP(M) HEX. COUPLING,CS ASTM105	1NO.
5.	1"BSF (F) ELBOW, CS ASTM A105	1NO.
6.	HALF COUPLING 1/2" NB SW CS / AS	A/R

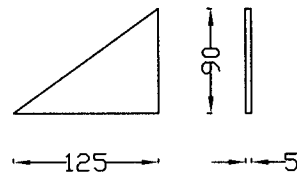


DETAIL-C

(CLEAT AT FRONT,BACK&SIDE)

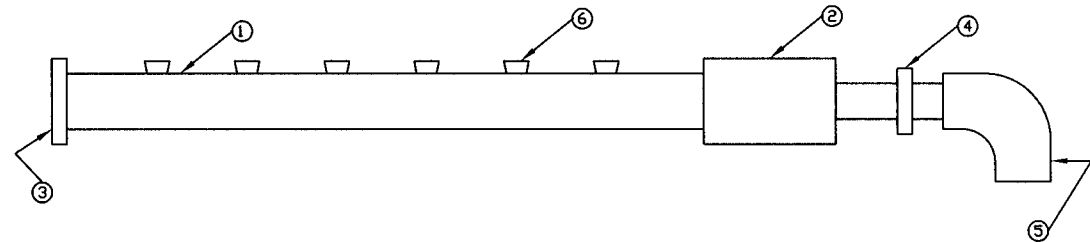
DETAIL-X

(COVER PLATE)



DETAIL-K

(CLEAT AT CORNER)



DRAIN PIPE

NTPC DOC.NO:		1240-101-PC-PVI-C-057		CUST. NO: 7047 & 7048		
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		RIHAND SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP				
BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017		NAME	SIGN	DATE	NO OF ITEMS	
		DERN	NATARAJAN.S	<i>[Signature]</i>	03.12.10	
		CHD	LOGANATHAN.E	<i>[Signature]</i>	03.12.10	
APPD	PRABHU.R	<i>[Signature]</i>	03.12.10			
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG		
CODE	C/M/F					
TITLE			CARD CODE	DRAWING No.		
DETAIL OF DRAIN PIPE,CLEAT DETAIL AND BULK HEAD PLATE			U 01	3-81-440-02317 SHEET 04 OF 04		
REV 02	DATE	ALTERED APPROVED	REV 01	DATE	ALTERED APPROVED	
ZONE			ZONE			



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE
CHENNAI 600 017

RIHAND SUPER THERMAL POWER PROJECT (SGP) - 2x500 MW

CUST. NO: 7047 & 7048

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR)
				ELEVATION (Y)	OPEN/COVERED			
	01	LBG 80 CP 301	Aux.Stm.piping to Mill Inerting	10500	COVERED	1SG LIR 01	X N → 2000 M Z D → 2000 E	GROUND
	02	SGA 51 CP 301	Service water to Mills Terminal Point	-do-	-do-		-do-	
	03	LBG 80 CP 302	Aux. Steam to Mill inerting TP	10500	COVERED	1SG LIR 02	X N → 1000 M Z D → 2000 E	GROUND
	04	SGA 51 CP 302	Service water to Mills Terminal Point	-do-	-do-		-do-	
	05	LBG 71 CP 301	Aux. Steam for Primary SCAPH-A	15500	COVERED	1SG LIR 03	X S22L 1000 → S23L Z EX2L → 3000 EX3L	9.35 m
	06	LBG 71 CP 302	-do-	17000	-do-		-do-	
	07	LBG 71 CP 303	-do-	12500	-do-		-do-	
	08	LBG 72 CP 301	Aux. Steam for Primary SCAPH-B	15500	COVERED	1SG LIR 04	X S22R 1000 → S23R Z EX2R → 3000 EX3R	9.35 m
	09	LBG 72 CP 302	-do-	17000	-do-		-do-	
	10	LBG 72 CP 303	-do-	12500	-do-		-do-	
	11	LBG 73 CP 301	Aux. Steam for Secondary SCAPH-A	17000	COVERED	1SG LIR 05	X S11L → 2000 S12L Z S11L → 2500 S17L	9.35 m
	12	LBG 73 CP 302	-do-	17000	-do-		-do-	
	13	LBG 73 CP 303	-do-	-do-	-do-		-do-	
	14	LBG 74 CP 301	Aux. Steam for Secondary SCAPH-B	17000	COVERED	1SG LIR 06	X S11R → 2000 S12R Z S11R → 2500 S17R	9.35 m
	15	LBG 74 CP 302	-do-	17000	-do-		-do-	
	16	LBG 74 CP 303	-do-	12500	-do-		-do-	

NTPC
DOC. No.

1240-101-PVI-H-059

REV.00

REV.04	REV.05	REV.06	DRG. NO. 4-81-440-04795
REV.01	REV.02	REV.03	
PREPARED: SN <i>for</i>	CHECKED: E.L. <i>[Signature]</i>	APPROVED: R.P. <i>[Signature]</i>	DATE: 02.12.10 SHT.NO: 01 OF 02



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE

CHENNAI 600 017

RIHAND SUPER THERMAL POWER PROJECT (SGP) - 2x500 MW

CUST. NO: 7047 & 7048

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR)
				ELEVATION (Y)	OPEN/COVERED			
	17	LBG 75 CP 301	Primary SCAPH Drain Tank - Inlet	11500	COVERED	1SG LIR 07	X Near S19 Z S18 3000 - S19	9.35 m
	18	LBG 76 CP 302	Primary SCAPH Drain Level cont. station	-do-	-do-		-do-	
	19	LBG 76 CP 303	-do-	-do-	-do-		-do-	
	20	LBG 77 CP 301	SY. SCAPH Drain Tank - Inlet	-do-	-do-		-do-	
	21	LBG 78 CP 302	SY. SCAPH Drain Level Cont. Station	-do-	-do-		-do-	
	22	LBG 78 CP 303	-do-	-do-	-do-		-do-	
	23	HAN 31 CP 301	Cond. Pr. before CBD tank LC station	36400	COVERED	1SG LIR 08	Between 05 & 06	9.35 m
	24	HAN 31 CP 302	Cond. Pr. after CBD tank LC station	36380	-do-			
	25	QFA 10 CP 301	Instrument Air Terminal Point	9000	COVERED	1SG LIR 09	Near D Boiler Center Line	GROUND
	26	QFA 10 CP 201	-do-	-do-	-do-		-do-	
	27	QFB 10 CP 201	Service Air Terminal Point	-do-	-do-		-do-	
	28	QFB 10 CP 202	-do-	-do-	-do-		-do-	

NOTE:-

- * 1. NEAREST FLOOR SUGESSTED FOR ERECTING THE RACK
- 2. No.1 IN RACK NO WILL BE REPLACED WITH 2 FOR UNIT 2

			NTPC DOC. No.	1240-101-PVI-H-059	REV.00
REV.04	REV.05	REV.06	DRG. NO.		
REV.01	REV.02	REV.03	4-81-440-04795		
PREPARED: SN for [Signature]			CHECKED: E. [Signature]	APPROVED: R.P. [Signature]	DATE: 02.12.10 SHT.NO: 02 OF 02

**BHARAT HEAVY ELECTRICALS LIMITED**PIPING CENTRE
CHENNAI 600 017

RIHAND SUPER THERMAL POWER PROJECT (PCP) – 2x500 MW

CUST. NO: 7047 & 7048

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR)
				ELEVATION (Y)	OPEN/ COVERED			
	01	LBA 01 CP 301	Main Steam SH outlet (Left)	68200	COVERED	1 LIR 01	Between Column S2L & S8L	67250
	02	LBA 01 CT 301	—do—	—do—	—do—			
	03	LBA 02 CP 301	Main Steam SH outlet (Right)	68200	COVERED	1 LIR 02	Between Column S2L & S8L	67250
	04	LBA 02 CT 301	—do—	—do—	—do—			
	05	LBA 01 CP 302	Main Steam Turbine End	5000	COVERED	1 LIR 03	Near Row Af & Between Column (10) & (11)	GROUND
	06	LBA 01 CT 302	—do—	—do—	—do—			
	07	LBC 10 CP 301	CRH Turbine End	3500	COVERED	1 LIR 04	Near Row Af & Between Column (10) & (11)	GROUND
	08	LBC 10 CT 301	—do—	—do—	—do—			
	09	LBC 11 CP 301	CRH Reheater inlet Header (Left)	74830	COVERED	1 LIR 05	Between Column S2L & S8L	73530
	10	LBC 11 CT 301	—do—	—do—	—do—			
	11	LBC 12 CP 301	CRH Reheater inlet Header (Right)	74830	COVERED	1 LIR 06	Between Column S2L & S8L	73530
	12	LBC 12 CT 301	—do—	—do—	—do—			
	13	LBB 01 CP 301	HRH Reheater outlet Header (Left)	77650	COVERED	1 LIR 07	Between Column S2L & S8L	76750
	14	LBB 01 CT 301	—do—	—do—	—do—			
	15	LBB 02 CP 301	HRH Reheater outlet Header (Right)	77650	COVERED	1 LIR 08	Between Column S2L & S8L	76750
	16	LBB 02 CT 301	—do—	—do—	—do—			

NTPC
DOC. No.**1240-101-PVI-H-124**

REV.00

REV.01	NO. OFF RACKS INCREASED TO 17 FROM 16 <i>L. K. S.</i>	REV.02		REV.03		DRG. NO.	
DATE: 07.12.10		DATE:		DATE:		4-81-440-04793	
				REV.01			
PREPARED: SN -Sd-		CHECKED: EL -Sd-		APPROVED: RP -Sd-		DATE: 02.12.10	SHT.NO: 01 OF 03

**BHARAT HEAVY ELECTRICALS LIMITED**PIPING CENTRE
CHENNAI 600 017

RIHAND SUPER THERMAL POWER PROJECT (PCP) - 2x500 MW

CUST. NO: 7047 & 7048

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR)
				ELEVATION (Y)	OPEN/ COVERED			
	17	LBG 10 CP 301	Main Steam at HC PRDS inlet	41800	COVERED	1 LIR 09	Between Row B & C and Between Column 09 & 10	31250
	18	LBG 20 CP 301	LC PRV inlet	34400	-do-			
	19	LBG 20 CP 302	LC PRV outlet	32000	-do-			
	20	LBG 30 CP 301	Aux. Steam at DESH inlet	32000	COVERED	1 LIR 10	Near Row B and Between Column 09 & 10	31250
	21	LBG 30 CT 301	-do-	-do-	-do-			
	22	LBG 40 CP 301	LT unit aux. Steam Header unit-5	-do-	-do-			
	23	LBG 40 CT 301	-do-	-do-	-do-			
	24	LBG 90 CP 301	LT station aux. Steam Header	32000	COVERED	1 LIR 11	Near Row B and Between Column 09 & 10	31250
	25	LBG 90 CT 301	-do-	-do-	-do-			
	26	LAF 10 CP 301	Spray water to HC PRV	-do-	-do-			
	27	LAF 10 CT 301	-do-	-do-	-do-			
	28	LAF 10 CP 302	-do-	-do-	-do-			
	29	LAF 20 CP 301	HC spray water PCV (main) inlet	32000	COVERED	1 LIR 12	Near Row B and Between Column 09 & 10	31250
	30	LAF 20 CP 302	HC spray water PCV (main) outlet	-do-	-do-			
	31	LAF 20 CP 303	HC spray water TCV (main) outlet	-do-	-do-			
	32	LAF 20 CP 304	spray water to HC Steam PCV	-do-	-do-			
	33	LAF 21 CP 301	HC spray water PCV (Bypass) inlet	32000	COVERED	1 LIR 13	Near Row B and Between Column 09 & 10	31250
	34	LAF 21 CP 302	HC spray water PCV (Bypass) outlet	-do-	-do-			
	35	LAF 21 CP 303	HC spray water TCV (Bypass) outlet	-do-	-do-			

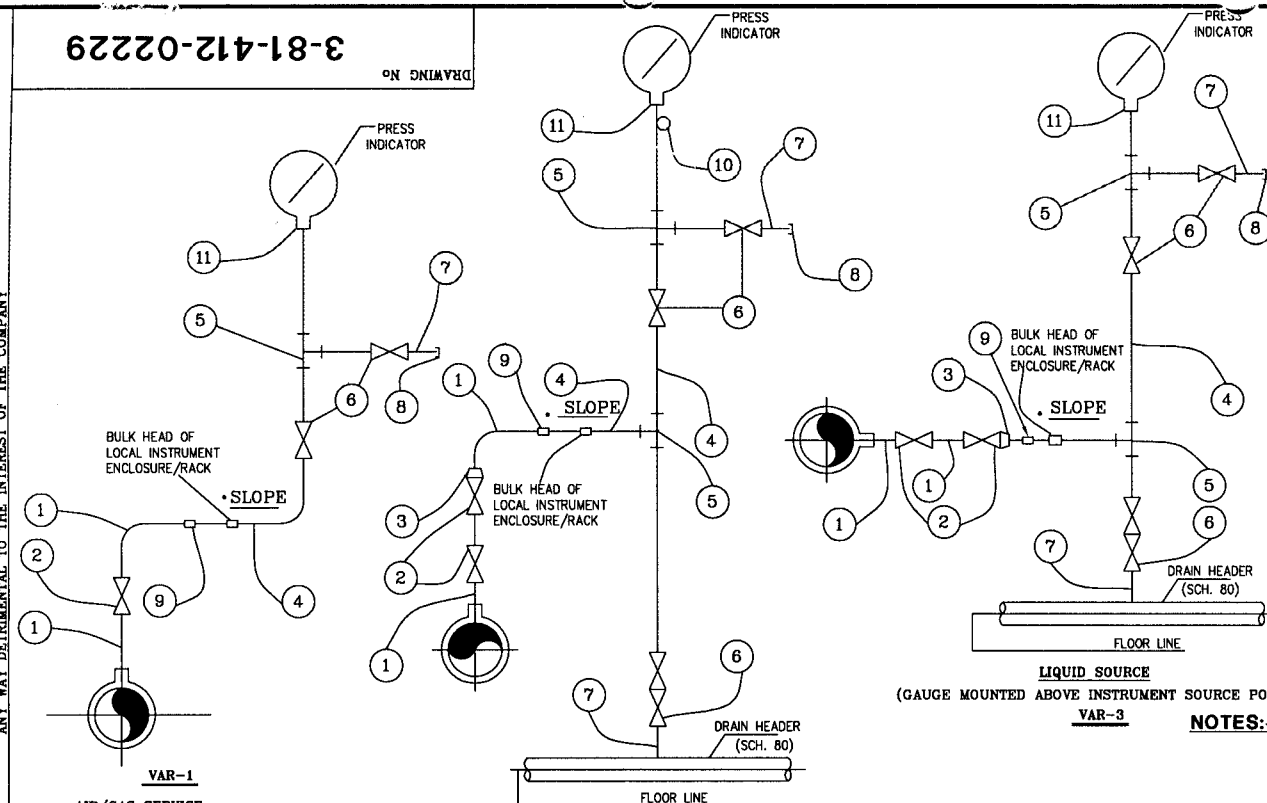
NTPC
DOC. No.**1240-101-PVI-H-124**

REV.00

REV.01	NO. OFF RACKS INCREASED TO 17 FROM 16 <i>A.K.L.</i>	REV.02		REV.03		DRG. NO.	
DATE: 07.12.10		DATE:		DATE:		4-81-440-04793	
				REV.01			
PREPARED: SN -Sd-		CHECKED: EL -Sd-		APPROVED: RP -Sd-		DATE: 02.12.10	SHT.NO: 02 OF 03

3-81-412-02229

DRAWING NO

CAUTION
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

LIST OF MATERIAL

ITEM NO.	1	2	3	4
01.	1/2" NIPPLE/PIPE MATL: SAME AS PARENT PIPE	1" NIPPLE/PIPE MATL: SAME AS PARENT PIPE	1" NIPPLE MATL: SAME AS PARENT PIPE	1/2" NIPPLE/PIPE MATL: SAME AS PARENT PIPE
02.	1/2" GLOBE VALVE	1" GLOBE VALVE	1" GLOBE VALVE	1/2" GLOBE VALVE
03.	NAPL	1" 1/2" SW REDUCER	1" 1/2" SW REDUCER	NAPL
04.	1/2" SS316-PIPE	1/2" PIPE	1/2" PIPE	1/2" PIPE
05.	1/2" EQ. TEE	1/2" EQ. TEE	1/2" EQ. TEE	NAPL
06.	1/2" GLOBE VALVE	1/2" GLOBE VALVE	1/2" GLOBE VALVE	NAPL
07.	1/2" NIPPLE	1/2" NIPPLE	1/2" NIPPLE	NAPL
08.	1/2" NPT CAP	1/2" NPT CAP	1/2" NPT CAP	NAPL
09.	1/2" 1/2" UNION	1/2" UNION	1/2" UNION	NAPL
10.	NAPL	SYPHON	NAPL	NAPL
11.	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER	1/2" NPT (M) ADAPTER
12.	NAPL	NAPL	NAPL	3 WAY VALVE/ 2 WAY ROOT - VALVE

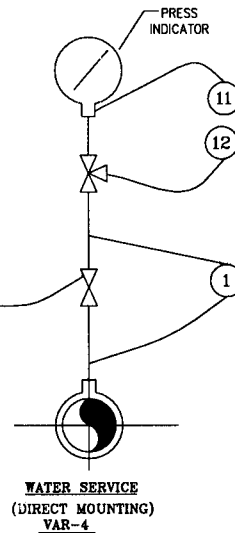
APPLICATION:-

VARIANT 2&3 — MS,HRS,CRH,BFD,AUX.PRDS SPRAY TO PRDS, SPRAY TO HPBP

VARIANT 1&4 — INST. AIR, SER. AIR & ALL OTHER SYSTEM

NOTES:-

- THE MATERIAL SPECIFICATION AND SCHEDULE NO. OF IMPULSE PIPE & NIPPLE SHALL MEET PROCESS PARAMETER
- THE MATERIAL SPECIFICATION AND RATING OF FITTINGS WELDED/THREADED FITTINGS SHALL CONFORM TO ANSI B 16.9
- INSTRUMENTS VALVES BODY STEM MATERIAL AND PRESSURE CLASS SHALL BE AS PER PROCESS REQ.
- THE LENGTH OF IMPULSE PIPE CONSIDERED FOR EACH SHALL BE SUCH THAT MAXIMUM DISTANCE BETWEEN RACK & INSTRUMENT IS < 10M.
- GAUGES AS INDICATED IN THE INSTRUMENT SCHEDULE SHALL BE MOUNTED IN LOCAL INSTRUMENT RACK
- NO. OF ROOT VALVES = 2 IF PRESSURE $\Rightarrow$ 40kg/sqcm AND/OR AND DRAIN VALVES } TEMPERATURE $\Rightarrow$ 420°C
= 1 (OTHER WISE)
- SLOPE APPROX 50MM/METER.
- Beyond BULK HEAD, INCLUDING BULK HEAD SHALL BE INSIDE RACK & SAME TO BE COVERED BY INSTRUMENT RACK VENDOR.



NTPC DOC. NO.		2250-101-PVI-E-055		CUST. NO:		7049 & 7050	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		VINDHYACHAL SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP					
BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017		NAME	SIGN	DATE	NO OF ITEMS		
		DRN	S.NATARAJAN	<i>[Signature]</i>	03.12.10		
		CHD	E.LOGANATHAN	<i>[Signature]</i>	03.12.10		
		APPD	R.PRABHA	<i>[Signature]</i>	03.12.10		
DEPT.	GRADE OF UN TOL. DIM	SCALE		WEIGHT (Kg)		REF TO ASSY / OLD DRG	
CODE	C/M/F	N.T.S.					
TITLE		CARD CODE		DRAWING No.		REV	
INSTALLATION DRAWING (FOR PR. GAUGES & PR. SWITCHES) (INSIDE LIR)		U 01		3-81-412-02229		00	

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

Project : **VINDHYACHAL - 2 x 500 MW (PCP)**, Cust.No: **7049 & 7050**

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF TG	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
1	1 LIR 01	2 INST. RACK	1	1	2	2	#3000 SPL	283	188.5	540	
2	1 LIR 02	2 INST. RACK	1	1	2	2	#3000 SPL	283	188.5	540	
3	1 LIR 03	2 INST. RACK	1	1	2	2	#3000 SPL	283	188.5	540	
4	1 LIR 04	2 INST. RACK	1	1	2	2	#1500	81	54	500	
5	1 LIR 05	2 INST. RACK	1	1	2	2	#800	81	54	500	
6	1 LIR 06	2 INST. RACK	1	1	2	2	#800	81	54	500	
7	1 LIR 07	2 INST. RACK	1	1	2	2	#1500	73	48.4	573	
8	1 LIR 08	2 INST. RACK	1	1	2	2	#1500	73	48.4	573	
9	1 LIR 09	4 INST. RACK	2	-	3	2	#3000 SPL	283	188.5	540	
			2				#800	81	54	360	
10	1 LIR 10	4 INST. RACK	2	2	4	2	#800	30	20	350	

Project : **VINDHYACHAL - 2 x 500 MW (PCP)**, Cust.No: **7049 & 7050**

SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF TG	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm ²	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
11	1 LIR 11	6 INST. RACK	1	2	5	2	#800	30	20	240	
			2			3	#2500	480	320	185	
12	1 LIR 12	4 INST. RACK	4	-	4	3	#2500	480	320	185	
13	1 LIR 13	4 INST. RACK	3	-	3	3	#2500	480	320	185	
14	1 LIR 14	4 INST. RACK	4	-	4	3	#2500	480	320	185	
15	1 LIR 15	4 INST. RACK	3	-	3	3	#2500	480	320	185	
16	1 LIR 16	2 INST. RACK	-	2	2	-	#3000 SPL	-	188.5	540	
17	1 LIR 17	2 INST. RACK	-	2	2	-	#1500	-	54	500	
18	1 LIR 18	2 INST. RACK	2	-	2	2	#3000 SPL	283	188.5	540	SPARE
19	1 LIR 19	4 INST. RACK	2	2	4	2	#2500	480	320	185	SPARE
20	1 LIR 20	6 INST. RACK	2	2	6	2	#1500	81	54	500	SPARE
			2			3	#2500	480	320	185	

ALLOCATION OF LOCAL INSTRUMENT RACKS
 Project : **VINDHYACHAL - 2 x 500 MW (SGP)**
 Cust.No: **7049 & 7050**

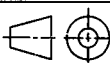
SL. NO.	RACK TAG.NO.	TYPE OF RACK	NO. OF PG	NO. OF PS	TOTAL NO. OF INST.	VAR. NO. *	CLASS RATING FOR PG/PS	HTP VALUE Kg/cm2	DESIGN PRESSURE	DESIGN TEMPERATURE	REMRKS
1	1 SG LIR 01	4 INST. RACK	1	-	2	2	#300	30	20	350	
			1	-		3	#150	15	10	50	
2	1 SG LIR 02	4 INST. RACK	1	-	2	2	#300	30	20	350	
			1	-		3	#150	15	10	50	
3	1 SG LIR 03	4 INST. RACK	3	-	3	2	#300	30	20	250	
4	1 SG LIR 04	4 INST. RACK	3	-	3	2	#300	30	20	250	
5	1 SG LIR 05	4 INST. RACK	3	-	3	2	#300	30	20	250	
6	1 SG LIR 06	4 INST. RACK	3	-	3	2	#300	30	20	250	
7	1 SG LIR 07	6 INST. RACK	6	-	6	3	#300	30	20	250	
8	1 SG LIR 08	4 INST. RACK	2	-	2	3	#300	15	10	180	
9	1 SG LIR 09	4 INST. RACK	1	3	4	3	#150	15	10	50	WITH JUNCTION BOX
10	1 SG LIR 10	6 INST. RACK	4	2	6	2	#300	30	20	250	WITH JUNCTION BOX SPARE
11	1 SG LIR 11	4 INST. RACK	3	-	3	3	#300	30	20	250	SPARE

3-81-440-02235

DRAWING No.

LIST OF DRAWINGS

S.NO	DESCRIPTION	DRAWING NO.	SHEET NO.	REVISION STATUS				
				00	01	02	03	04
01	GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK - LIST OF DRAWINGS	3-81-440-02235	01	✓				
02	GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK(LIR)	3-81-440-02235	02	✓				
03	DETAILS OF LOCAL INSTRUMENT RACK(LIR)	3-81-440-02235	03	✓				
04	DETAIL OF DRAIN PIPE,CLEAT DETAIL AND BULK HEAD PLATE	3-81-440-02235	04	✓				

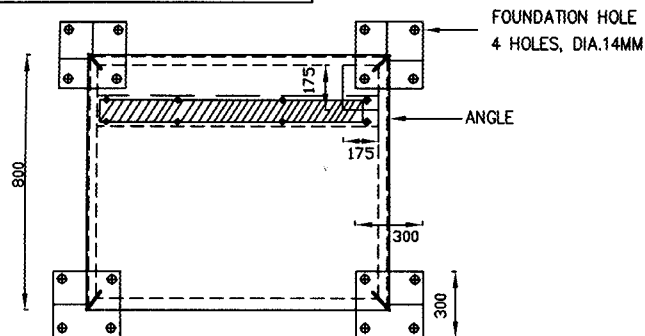
NTPC DOC.NO:		2250-101-PVI-C-057		CUST. NO: 7049 & 7050		
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		VINDHYACHAL SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP				
 BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017		NAME	SIGN	DATE	NO OF ITEMS	
		DRN	NATARAJAN.S	<i>[Signature]</i>	03.12.10	
		CHD	LOGANATHAN.R	<i>[Signature]</i>	03.12.10	
		APPD	PRABHA.R	<i>[Signature]</i>	03.12.10	
DEPT.	GRADE OF UN TOL DIM	SCALE		WEIGHT (Kg)	REF TO ASSY / OLD DRG	
CODE	C/M/F					
TITLE		CARD CODE	DRAWING No.		REV	
GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK LIST OF DRAWINGS		U 01	3-81-440-02235 SHEET 01 OF 04		00	

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

CAUTION

3-81-440-02235

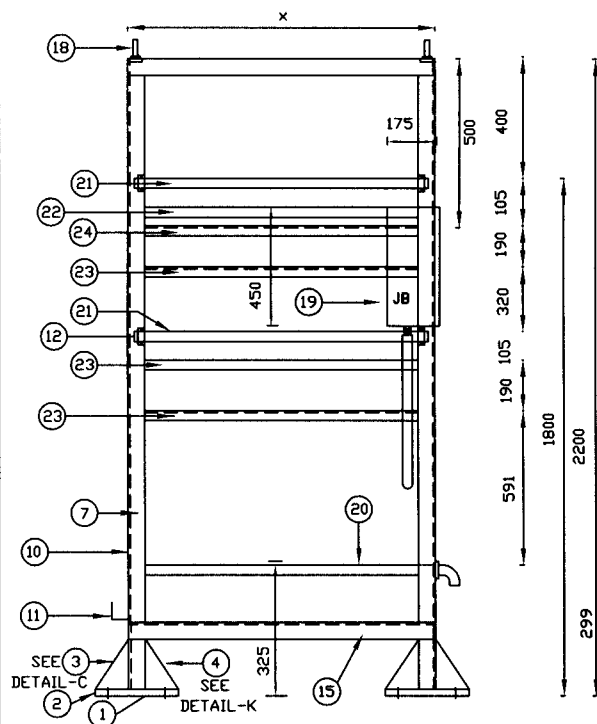
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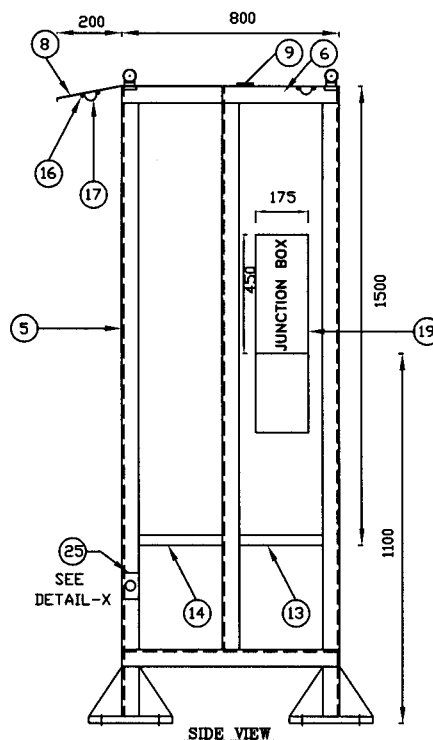
TOP VIEW WITHOUT CANOPY

LIR TYPE	MAX. NO. OF INSTRUMENTS	WIDTH OF LIR (X)
A	8	1650
B	6	1330
C	4	1010
D	2	710

BILL OF MATERIAL	
SL.NO.	DESCRIPTION
1	GROUNDING PLATE 300 X 300 X 5MM THICK
2	RUBBER PAD 50X 15MM
3	CLEAT AT FRONT, BACK & SIDE 5MM THICK
4	CLEAT FOR CORNER 5MM THICK
5	ANGLE 50 X 50 X 6
6	ANGLE FRAME 50 X 50 X 6
7	MOUNTING ANGLE 50 X 50 X 6
8	CANOPY FOR INSTRUMENT RACK
9	BULK HEAD PLATE 5 MM THICK
10	BRACKET FOR DRAIN HEADER
11	BRACKET FOR PANEL EARTH
12	SIDE SHEET – LHS & RHS
13	STRIP 50 X 6MM
14	STRIP 50 X 6MM
15	ANGLE FOR FRAME 50 X 50 X6
16	C CHANNEL FOR TUBE LIGHT
17	FLUORESCENT TUBE WITH FIXTURE 240AC, 11W
18	EYE BOLT
19	JUNCTION BOX, (700H X 200 W X 200 D)
20	DIA. 2" NB PIPE
21	MS FLAT FOR CABLE TRAY FIXING
22	MS ANGLE FOR MAINFOLD SUPPORT
23 & 24	MS ANGLE FOR PIPE SUPPORT
25	COVER PLATE 5mm THICK

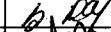
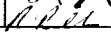


INTERNAL FRONT VIEW



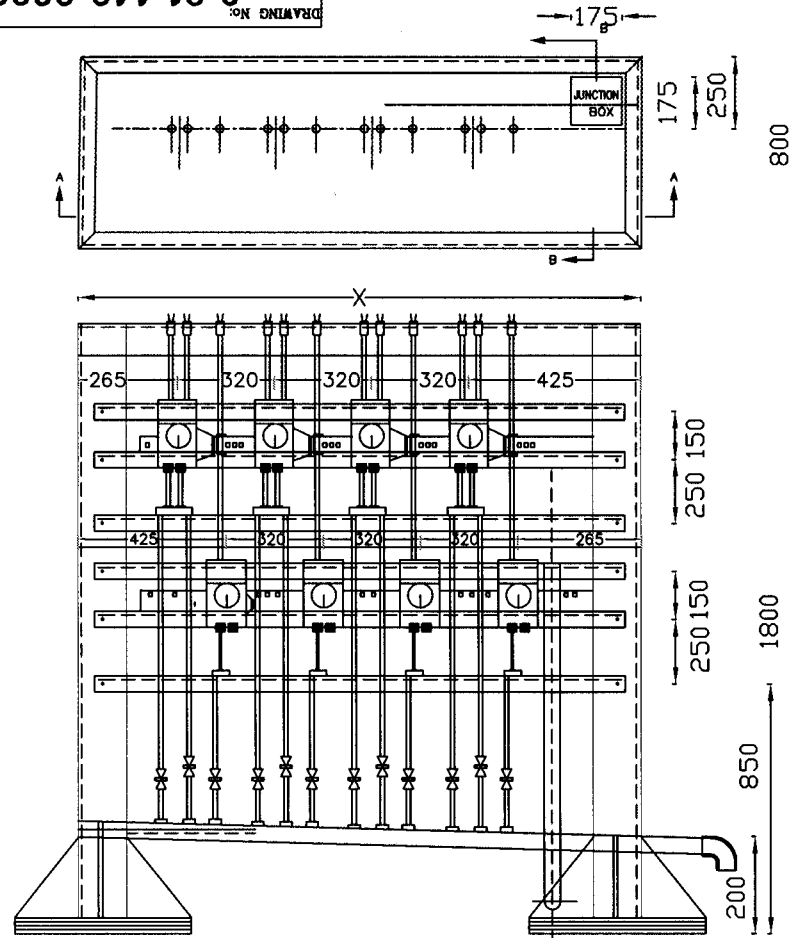
SIDE VIEW

REV 02	DATE	ALTERED	REV 01	DATE	ALTERED
		APPROVED			APPROVED
ZONE			ZONE		

NTPC DOC.NO:		2250-101-PVI-C-057		CUST. NO: 7049 & 7050			
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		VINDHYACHAL SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP					
	BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017			NAME	SIGN	DATE	NO OF ITEMS
			DRN	NATARAJAN.S		03.12.10	
			CHD	LOGANATHAN.S		03.12.10	
			APPD	PRABHAR		03.12.10	
DEPT.	GRADE OF UN TOL DIM	 	SCALE	WEIGHT (Kg.)	REF TO ASBY / OLD DRG		ITEM No.
CODE	C/M/F						
TITLE				CARD CODE	DRAWING No.		REV
GENERAL ARRANGEMENT DRAWINGS OF LOCAL INSTRUMENT RACK(LIR)				U 01	3-81-440-02235 SHEET 02 OF 04		00

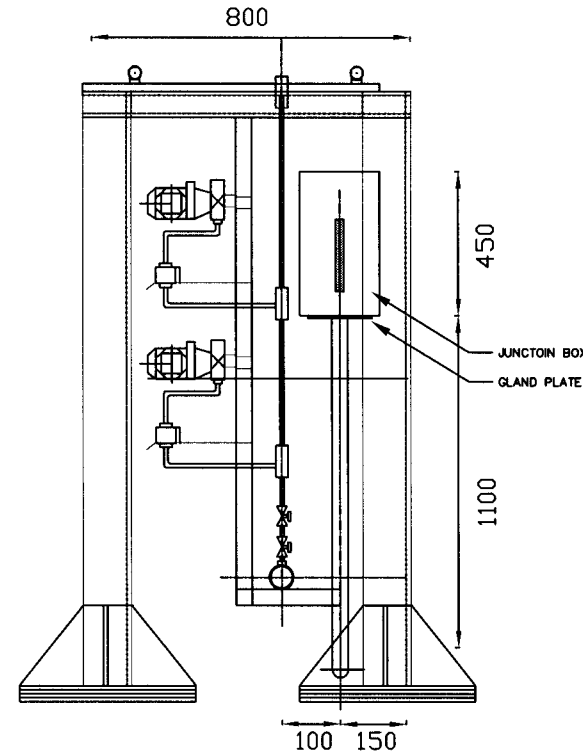
3-81-440-02235

DRAWING No.



LIR WITH 4 LEGS
SECTION-AA

LIR TYPE	MAX. NO. OF INSTRUMENTS	DIMENSION 'X' (mm)	SIZE OF BULK HEAD PLATE
A	8	1650	1250 X 200
B	6	1330	1000 X 200
C	4	1010	700 X 200
D	2	710	500 X 200



SECTION-BB

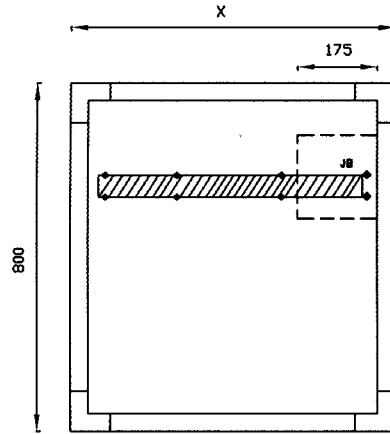
- NOTES :-
- ALL DIMENSIONS ARE IN MM
 - FOR TYPE-B-RACKS THE DIMENSIONS W1&W WILL BE 1300MM AND 1700MM RESPECTIVELY.(6 INSTRUMENT RACK)
 - FOR TYPE-C-RACKS THE DIMENSIONS W1&W WILL BE 1000MM AND 1400MM RESPECTIVELY.(4 INSTRUMENT RACK)
 - FOR TYPE-D-RACKS THE DIMENSIONS W1&W WILL BE 700MM AND 1100MM RESPECTIVELY.(2 INSTRUMENT RACK)
 - ALL RACKS SHALL COMPLY WITH THE REQUIREMENT OF TECH.SPECIFICATION
 - GAUGES AND SWITCHES TO BE GROUNDED AND MOUNTED WITH PROPER ACCESS, INTER-CROSS CHANNEL FOR MOUNTING SHALL CORROBORATE WITH INSTRUMENT MOUNTING DETAILS.
 - SWITCH CONTACTS TERMINAL TO BE BROUGHT TO JUNCTION BOXES.
 - PROVISION OF JUNCTION BOX SHALL BE AS PER ENCLOSED LOCAL INSTRUMENT RACK SCHEDULE.
 - SUFFICIENT SPACE BETWEEN CANOPY AND INSTRUMENT SHALL BE PROVIDED SO THAT THE INSTRUMENT SHOULD NOT FOUL WITH CANOPY
 - DRAIN PIPE UPTO TRENCH ARE IN BHEL SCOPE.
 - JB FOR LIGHTING SUPPLY.
 - SEAWATER RESISTANT PAINT SHALL BE USED.
 - BULK HEAD PLATE SHALL BE ISOLATED FROM PROCESS LINE VIBRATION USING SYNTHETIC MATERIAL.
 - FLOURESCENT TUBE FITTING WITH FUSE, SWITCH (2A FUSE, 5A SWITCH) WILL BE PROVIDED FOR EACH LIR.
 - 12 WAY JUNCTION BOX OF DIMENSION 450(H)x175(W)x175(D) WITH IP-55 PROTECTION CLASS. VIBRATION DAMPENERS SHALL BE INSTALLED IN TBS WHICH ARE OF CAGE CLAMP TYPE TO SECURE THE TERMINAL LEADS FIRMLY.
 - DETAILS OF C, X, K PROVIDED IN THE SHEET-04 OF 04
 - DETAIL OF DRAIN PIPE & BULK HEAD PROVIDED IN SHEET-04 OF 04
 - POWER SOCKET & TBs SHALL BE PROVIDED IN JUNCTION BOX
 - DETAILS WIRING DIAGRAM & LAYOUT DRAWING WILL BE SUBMITTED FOR EACH RACK
 - COLOR : SHADE RAL 9002 OVERALL THICKNESS (INCLUDING PRIMER)>100 MICRONS
 - NAME PLATES SHALL BE PROVIDED FOR ALL INSTRUMENT AND ALSO IN THE JUNCTION BOXES INDICATING TAG & TB NO .
 - BILL OF MATERIALS FOR LIR SHALL BE FINALISED WHILE SUBMITTING VENDER GA, LIR AS FITTING DRAWINGS.
 - LIR SPECIFICATION DOCUMENT CONTAINS OTHER RELEVANT DETAILS FOR FABRICATION.

NTPC DOC.NO:		2250-101-PVI-C-057		CUST. NO: 7049 & 7050		
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		VINDHYACHAL SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP				
BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017		NAME	SIGN	DATE	NO OF ITEMS	
		DRN	NATARAJAN.S	<i>[Signature]</i>	03.12.10	
		CHD	LOGANATHAN.S	<i>[Signature]</i>	03.12.10	
		APPD	PRABHAR	<i>[Signature]</i>	03.12.10	
DEPT.	GRADE OF UN TOL DIM	SCALE		WEIGHT (Kg)	REV TO ASST / OLD DRG	
CODE	C/M/F				ITEM No.	
TITLE				CARD CODE	REV	
DETAILS OF LOCAL INSTRUMENT RACK(LIR)				U 01	00	
				DRAWING No. 3-81-440-02235 SHEET 03 OF 04		

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

3-81-440-02235

DRAWING No.

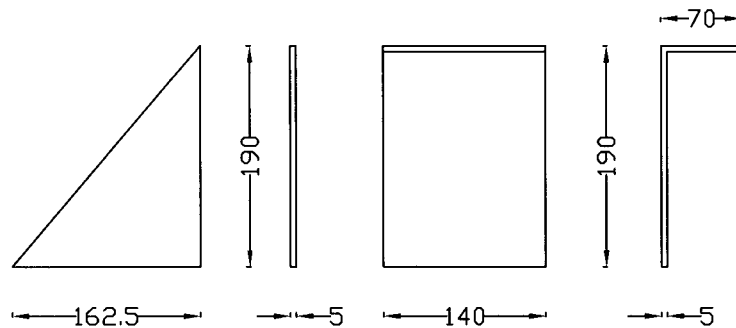


TOP VIEW WITHOUT CANOPY

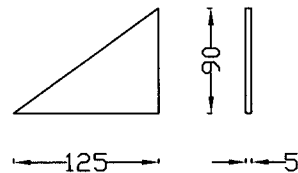


BULK HEAD PLATE

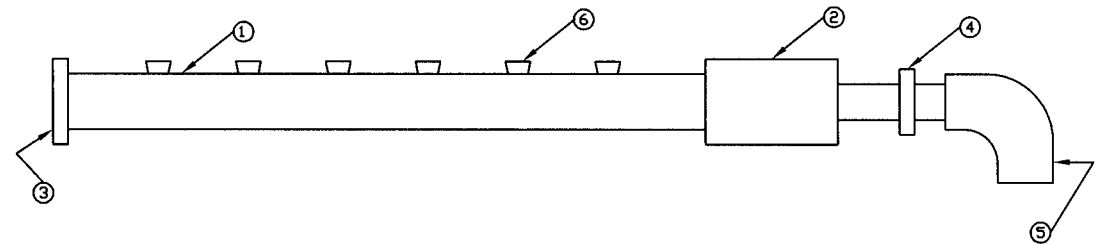
ITEM	DESCRIPTION	QTY.
1.	2" NB ASTM A-106 SCH80 / GR.-C	A/R
2.	2" NBSM X 1" NPT(F) COUPLING CS ASTM A105	1NO.
3.	2" S.W. CAP, CS ASTM A105	1NO.
4.	1"NPT (M) X 1" BSP(M) HEX. COUPLING,CS ASTM105	1NO.
5.	1"BSF (F) ELBOW, CS ASTM A105	1NO.
6.	HALF COUPLING 1/2" NB SW CS / AS	A/R



DETAIL-C (CLEAT AT FRONT,BACK&SIDE) DETAIL-X (COVER PLATE)



DETAIL-K (CLEAT AT CORNER)



DRAIN PIPE

NTPC DOC.NO:		2250-101-PVI-C-057		CUST. NO: 7049 & 7050	
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		VINDHYACHAL SUPER THERMAL POWER PROJECT 2 x 500 MW, SGP & PCP			
BHARAT HEAVY ELECTRICALS LTD. PIPING CENTRE, CHENNAI 600 017		NAME	SIGN	DATE	NO OF ITEMS
		DRN	NATARAJAN.S	03.12.10	
		CHD	LOGANATHAN.E	03.12.10	
		APPD	PRABHAR	03.12.10	
DEPT.	GRADE OF UN TOL. DIM	SCALE		WEIGHT (Kg)	REF TO ASST / OLD DRG
CODE	C/M/F				
TITLE		CARD CODE	DRAWING No.		REV
DETAIL OF DRAIN PIPE,CLEAT DETAIL AND BULK HEAD PLATE		U 01	3-81-440-02235		00
				SHEET 04 OF 04	

REV	DATE	ALTERED	REV	DATE	ALTERED
02		APPROVED	01		APPROVED
ZONE			ZONE		

**BHARAT HEAVY ELECTRICALS LIMITED**

PIPING CENTRE

CHENNAI 600 017

VINDHYACHAL SUPER THERMAL POWER PROJECT (SGP) - 2x500 MW

CUST. NO: 7049 & 7050

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR)						
				ELEVATION (Y)	OPEN/ COVERED									
01	01	LBG 80 CP 301	Aux.Stm.piping to Mill Inerting	10500	COVERED	1SG LIR 01	X <table><tr><td>N</td><td>→ 2000</td><td>M</td></tr><tr><td>D</td><td>→ 2000</td><td>E</td></tr></table>	N	→ 2000	M	D	→ 2000	E	4240
N	→ 2000	M												
D	→ 2000	E												
01	02	SGA 51 CP 301	Service water to Mills Terminal Point	-do-	-do-	-do-								
01	03	LBG 80 CP 302	Aux. Steam to Mill inerting TP	10500	COVERED	1SG LIR 02	X <table><tr><td>N</td><td>→ 1000</td><td>M</td></tr><tr><td>D</td><td>→ 2000</td><td>E</td></tr></table>	N	→ 1000	M	D	→ 2000	E	4240
N	→ 1000	M												
D	→ 2000	E												
01	04	SGA 51 CP 302	Service water to Mills Terminal Point	-do-	-do-	-do-								
	05	LBG 71 CP 301	Aux. Steam for Primary SCAPH-A	15500	COVERED	1SG LIR 03	X <table><tr><td>S22L</td><td>1000 →</td><td>S23L</td></tr><tr><td>Z</td><td>EX2L → 3000</td><td>EX3L</td></tr></table>	S22L	1000 →	S23L	Z	EX2L → 3000	EX3L	14500
S22L	1000 →	S23L												
Z	EX2L → 3000	EX3L												
01	06	LBG 71 CP 302	-do-	17000	-do-	-do-								
01	07	LBG 71 CP 303	-do-	18500	-do-	-do-								
	08	LBG 72 CP 301	Aux. Steam for Primary SCAPH-B	15500	COVERED	1SG LIR 04	X <table><tr><td>S22R</td><td>1000 →</td><td>S23R</td></tr><tr><td>Z</td><td>EX2R → 3000</td><td>EX3R</td></tr></table>	S22R	1000 →	S23R	Z	EX2R → 3000	EX3R	14000
S22R	1000 →	S23R												
Z	EX2R → 3000	EX3R												
01	09	LBG 72 CP 302	-do-	17000	-do-	-do-								
01	10	LBG 72 CP 303	-do-	12500	-do-	-do-								
01	11	LBG 73 CP 301	Aux. Steam for Secondary SCAPH-A	17000	COVERED	1SG LIR 05	X <table><tr><td>S11L</td><td>→ 2000</td><td>S12L</td></tr><tr><td>Z</td><td>S11L → 2500</td><td>S17L</td></tr></table>	S11L	→ 2000	S12L	Z	S11L → 2500	S17L	14000
S11L	→ 2000	S12L												
Z	S11L → 2500	S17L												
01	12	LBG 73 CP 302	-do-	-do-	-do-	-do-								
01	13	LBG 73 CP 303	-do-	12000	-do-	-do-								

NTPC
DOC. No.**2250-101-PVI-H-059**

REV.00

REV.01

REV.02

REV.03

DRG. NO.

4-81-435-04591

REV.00

PREPARED: BS

CHECKED: E.I.

APPROVED: R.P.

DATE: 02.12.10

SHT.NO: 01 OF 02

**BHARAT HEAVY ELECTRICALS LIMITED**PIPING CENTRE
CHENNAI 600 017

VINDHYACHAL SUPER THERMAL POWER PROJECT (SGP) - 2x500 MW

CUST. NO: 7049 & 7050

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR)
				ELEVATION (Y)	OPEN/ COVERED			
01	14	LBG 74 CP 301	Aux. Steam for Secondary SCAPH-B	17000	COVERED	1SG LIR 06	X S11R → 2000 S12R Z S11R → 2500 S17R	14000
01	15	LBG 74 CP 302	-do-	-do-	-do-		-do-	
01	16	LBG 74 CP 303	-do-	12500	-do-		-do-	
	17	LBG 75 CP 301	Primary SCAPH Drain Tank - Inlet	10500	COVERED	1SG LIR 07	X Near S19 Z S18 3000 → S19	9350
	18	LBG 76 CP 302	Primary SCAPH Drain Level cont. station	-do-	-do-		-do-	
	19	LBG 76 CP 303	-do-	-do-	-do-		-do-	
	20	LBG 77 CP 301	SY. SCAPH Drain Tank - Inlet	-do-	-do-		-do-	
	21	LBG 78 CP 302	SY. SCAPH Drain Level Cont. Station	-do-	-do-		-do-	
	22	LBG 78 CP 303	-do-	-do-	-do-		-do-	
01	23	HAN 31 CP 301	Cond. Pr. before CBD tank LC station	36400	COVERED	1SG LIR 08	Between 05 & 06	36000
01	24	HAN 31 CP 302	Cond. Pr. after CBD tank LC station	36380	-do-			
	25	QFA 10 CP 301	Instrument Air Terminal Point	9000	COVERED	1SG LIR 09	Near D Boiler Center Line	9350
	26	QFA 10 CP 201	-do-	-do-	-do-		-do-	
	27	QFB 10 CP 201	Service Air Terminal Point	-do-	-do-		-do-	
	28	QFB 10 CP 202	-do-	-do-	-do-		-do-	
			NTPC DOC. No. 2250-101-PVI-H-059					REV.00
REV.01		REV.02		REV.03		DRG. NO. 4-81-435-04591		
DATE:		DATE:		DATE:		REV.00		
PREPARED: BS		CHECKED: E.L.		APPROVED: R.P.		DATE: 02.12.10	SHT.NO: 02 OF 02	



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE
CHENNAI 600 017

VINDHYACHAL SUPER THERMAL POWER PROJECT (PCP) - 2x500 MW

CUST. NO: 7049 & 7050

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN / COVERED			
	01	LBA 01 CP 301	Main Steam SH outlet (Left)	69775	COVERED	1 LIR 01	Z [S8L] → 3000 [S9L]	65125
	02	LBA 01 CT 301	-do-	-do-	-do-		-do-	
	03	LBA 02 CP 301	Main Steam SH outlet (Right)	69775	COVERED	1 LIR 02	Z [S8R] → 3000 [S9R]	65125
	04	LBA 02 CT 301	-do-	-do-	-do-		-do-	
	05	LBA 01 CP 302	Main Steam Turbine End	5000	COVERED	1 LIR 03	Z [Af] → 5000 [B]	GROUND
	06	LBA 01 CT 302	-do-	-do-	-do-		Z [Af] → 750 [B]	
	07	LBC 10 CP 301	CRH Turbine End	3500	COVERED	1 LIR 04	Between [Ac] & [Ac]	GROUND
	08	LBC 10 CT 301	-do-	-do-	-do-		Between (03) & (04)	
	09	LBC 11 CP 301	CRH Reheater inlet Header (Left)	76405	COVERED	1 LIR 05	X [S2L] → 1400 [S8L] Z [S1L] → 7000 [S2L]	75105
	10	LBC 11 CT 301	-do-	-do-	-do-		-do-	
	11	LBC 12 CP 301	CRH Reheater inlet Header (Right)	76405	COVERED	1 LIR 06	X [S2R] → 1400 [S8R] Z [S1R] → 7000 [S2R]	75105
	12	LBC 12 CT 301	-do-	-do-	-do-		-do-	
	13	LBB 01 CP 301	HRH Reheater outlet Header (Left)	79225	COVERED	1 LIR 07	[S8L] → 8500 [S9L] [S1L] → 1400 [S7L]	78325
	14	LBB 01 CT 301	-do-	-do-	-do-		-do-	
	15	LBB 02 CP 301	HRH Reheater outlet Header (Right)	79225	COVERED	1 LIR 08	[S8R] → 8500 [S9R] [S1R] → 1400 [S7R]	78325
	16	LBB 02 CT 301	-do-	-do-	-do-		-do-	

NTPC DRG. No.

2250-101-PVI-H-124

REV.00

REV.01	REV.02	REV.03	DRG. NO. 4-81-435-04592
DATE:	DATE:	DATE:	
PREPARED: BS	CHECKED: EL	APPROVED: RP	DATE: 02.12.10 SHT.NO: 01 OF 03



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE
CHENNAI 600 017

VINDHYACHAL SUPER THERMAL POWER PROJECT (PCP) - 2x500 MW

CUST. NO: 7049 & 7050

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN/COVERED			
	17	LBG 10 CP 301	Main Steam at HC PRDS inlet	41800	COVERED	1 LIR 09	Near B Row Between Column (04) & (05)	35500
	18	LBG 10 CP 302	Main Steam at HC PRDS outlet	36935	-do-			
	19	LBG 20 CP 301	LC PRV inlet	34400	-do-			
	20	LBG 20 CP 302	LC PRV outlet	32000	-do-			
	21	LBG 30 CP 301	Aux. Steam at DESH inlet	32000	COVERED	1 LIR 10	Near B Row Between Column (05) & (06)	31250
	22	LBG 30 CT 301	-do-	-do-	-do-			
	23	LBG 40 CP 301	LT unit aux. Steam Header unit-1	-do-	-do-			
	24	LBG 40 CT 301	-do-	-do-	-do-			
	25	LBG 90 CP 301	LT station aux. Steam Header	32000	COVERED	1 LIR 11	Near B Row Between Column (05) & (06)	31250
	26	LBG 90 CT 301	-do-	-do-	-do-			
	27	LAF 10 CP 301	Spray water to HC PRV	-do-	-do-			
	28	LAF 10 CT 301	-do-	-do-	-do-			
	29	LAF 10 CP 302	-do-	-do-	-do-			
	30	LAF 20 CP 301	HC spray water PCV (main) inlet	32000	COVERED	1 LIR 12	Near B Row Between Column (05) & (06)	31250
	31	LAF 20 CP 302	HC spray water PCV (main) outlet	-do-	-do-			
	32	LAF 20 CP 303	HC spray water TCV (main) outlet	-do-	-do-			
	33	LAF 20 CP 304	spray water to HC Steam PCV	-do-	-do-			
	34	LAF 21 CP 301	HC spray water PCV (Bypass) inlet	32000	COVERED	1 LIR 13	Near B Row Between Column (05) & (06)	31250
	35	LAF 21 CP 302	HC spray water PCV (Bypass) outlet	-do-	-do-			
	36	LAF 21 CP 303	HC spray water TCV (Bypass) outlet	-do-	-do-			

NTPC DRG. No.

2250-101-PVI-H-124

REV.00

REV.01

REV.02

REV.03

DRG. NO.

4-81-435-04592

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DATE: 02.12.10

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**BHARAT HEAVY ELECTRICALS LIMITED**

PIPING CENTRE

CHENNAI 600 017

VINDHYACHAL SUPER THERMAL POWER PROJECT (PCP) - 2x500 MW

CUST. NO: 7049 & 7050

SCHEDULE OF LOCAL INSTRUMENT RACKS

REV.	SL.NO	INSTRUMENT TAG. NO.	SERVICE	INSTRUMENT TAPPING		RACK NO.	INSTRUMENT TAPPING LOCATION/COL.REF.	REMARKS (NEAREST FLOOR) *
				ELEVATION (Y)	OPEN/ COVERED			
	37	LAF 31 CP 301	LC spray water PCV (main) inlet	32000	COVERED	1 LIR 14	Near B Row Between Column (05) & (06)	31250
	38	LAF 31 CP 302	LC spray water PCV (main) outlet	-do-	-do-			
	39	LAF 31 CP 303	LC spray water TCV (main) outlet	-do-	-do-			
	40	LAF 31 CP 304	LC DESH spray water inlet	-do-	-do-			
	41	LAF 32 CP 301	LC spray water PCV (Bypass) inlet	32000	COVERED	1 LIR 15	Near B Row Between Column (05) & (06)	31250
	42	LAF 32 CP 302	LC spray water PCV (Bypass) outlet	-do-	-do-			
	43	LAF 32 CP 303	LC spray water TCV (Bypass) outlet	-do-	-do-			
	44	LBF 10 CT 301	HPBP valve (BP-1) inlet	14416	COVERED	1 LIR 16	Between Ae & Af Between (04) & (03)	8500
	45	LBF 20 CT 301	HPBP valve (BP-2) inlet	-do-	-do-			
	46	LBF 11 CT 301	HPBP valve (BP-1) outlet	12000	COVERED	1 LIR 17	Between Ae & Af Between (04) & (03)	8500
	47	LBF 21 CT 301	HPBP valve (BP-2) outlet	-do-	-do-			

NOTE:-

- * 1. NEAREST FLOOR SUGGESTED FOR ERECTING THE RACK
2. No.1 IN RACK NO WILL BE REPLACED WITH 2 FOR UNIT 2

			NTPC DRG. No.			2250-101-PVI-H-124		REV.00
REV.01		REV.02		REV.03		DRG. NO.		
DATE:		DATE:		DATE:		4-81-435-04592		
						REV.00		
PREPARED: BS		CHECKED: EL		APPROVED: RP		DATE: 02.12.10		SHT.NO: 03 OF 03