भारत हेवी इलेक्ट्रिकल्स लिमिटेड
(भारत सरकार का उपक्रम)
Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)
Power Sector - Southern Region
New No.690 (Old No.474), Anna Salai,
Nandanam, Chennai–600 035.
Phone : 2433 0015 (10 Lines)
Grams : BHELPOWER

BHEL: PSSR: SCT: 1331 DT.09.03.09

CORRIGENDUM TO TENDER NOTICE SCT 1331

Sub : **SCT 1331** –Tender Notice for Handling at site stores / storage yard, transportation to site of work, Pre Assembly, Erection, Testing and Commissioning of **Boiler Structures, Pressure Parts, Non Pressure Parts, Rotating Equipments and Boiler Auxiliaries, ESP , Cooling water piping including Supply & Application of Final Painting for 2x600 MW units at North Chennai Thermal Power Station**, Stage-II, Atthipattu, Chennai, TamilNadu

Further to our Tender Notice No NIT 6085 dated 23.02.2009 ,
find below further Information /Clarifications on the Tender documents for reference ..

Kindly note that the due date of submission of tender remains the same as per Tender Notice viz. **17.03.09**.

Addl General Manager/ Contracts

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Weight of a single piece to be handled during transportation:

Maximum Weight of Single Column - 27 T
Ceiling Girder 70 T

CW Piping

The Approximate quantity of 85% is buried pipe.

The type of joining between pipes:

All joints between steel and GRP are mechanical type.
GRP to GRP joining may be lamination /coupling /mechanical type.

Shot Blasting quantum is Approx: 550 MT

De-watering in CW piping erection

Cl 6.3.30.

The de-watering after Hydro test is included in this scope of work where as the civil work of encasing is excluded from the scope of this tender

ORC Payment

No grace period provided. ORC is applicable beyond the contract period, as per applicable clauses.

ESP Casing, outlet funnels ducting walls, etc- Supply

Supply of Upper and Middle hoppers, will be made as loose walls with stiffeners and lower hoppers as assembled condition.

Boiler Integral piping will be supplied as loose pipes of standard length and will not be supplied as fabricated items.

6.4.12 .Raw material supply

Roof purlin member,hand rails Duct stiffner channels and other few items are supplied in standard length.

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Project Milestone Schedule

Boiler Erection start (Column Erection start)	18-Jan-09
Boiler steam drum lifting	20-Jun-09
ESP Erection start	18-Jan-09
Boiler Hydrostatic test(final)	20-Nov-10
ESP Erection Finish	
Boiler Initial firing	30-Nov-10
Boiler Coal Firing	20-Feb-11

BOILER & ESP FOUNDATION DIMENSIONS (approx)

BHEL : PSSR : NORTH CHENNAI TPS STAGE- II

ESP-FOUNDATION per Pass / No. of Passes = 4			
		B	W
Group of	Pedestal Mark		
	A1	1150	1150
	A3	1150	1150
	A5	1150	1150
	B1	1150	1150
	B3	1150	1150
	B5	1150	1150
	C1	1150	1150
	C3	1150	1150
	C5	1150	1150
	E1	1150	1150
	E3	1150	1150
	E5	1150	1150
	G1	1150	1150
	G3	1150	1150
	G5	1150	1150
	H1	1150	1150
	H3	1150	1150
	H5	1150	1150
	J1	1150	1150

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	J3	1150	1150
	J5	1150	1150
	K1	1150	1150
	K3	1150	1150
	K5	1150	1150
	L1	1150	1150
	L3	1150	1150
	L5	1150	1150
II	E2	1200	1200
	E4	1200	1200
	G2	1200	1200
	G4	1200	1200
	H2	1200	1200
	H4	1200	1200
	J2	1200	1200
	J4	1200	1200
	K2	1200	1200
	K4	1200	1200
III	B2	1200	1200
	B4	1200	1200
	C2	1200	1200
	C4	1200	1200
IV	A2	1200	1200
	A4	1250	1250
	D1	1250	1250
	D2	1550	1550
	D3	1450	1450
	D4	1550	1550
	D5	1250	1250
	F1	1250	1250
	F2	1550	1550
	F3	1450	1450
	F4	1550	1550
	F5	1250	1250
	L2	1250	1250
	L4	1250	1250

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BOILER FOUNDATION : Unit - 1			
No. of pedestals = 47			
	Col Pedestal	**Pedestal Sizes**	
		B	**W**
1	LC1L+LC1R LC2L+LC2R	1400	1400
2	S1L, S1R	1200	1200
3	S2L, S2R, S3L, S3R	1400	1400
4	S4L, S4R, S6L, S6R	2400	2400
		2400	2400
5	S5L, S5R	1400	1400
6	S7L, S7R	2400	2400
		2400	2400
7	S9L, S9R, S11L, S11R	2400	2400
		2400	2400
8	S8L, S8R	2600	2600
		2600	2600
9	S10L, S10R	2600	2600
		2600	2600
10	S12L, S12R	3300	2600
		3300	2600
11	S13L, S13R	2000	2400
		2000	2400
12	S14L, S14R	1400	1400
13	S15L, S15R	900	900
14	S16L, S16R	1600	1600
15	S17	1400	1400
16	S18	2000	2000
17	S19	2000	2000
		2000	2000
18	S20L, S20R	2000	2000
		2000	2000
19	S21L, S21R	1300	1300
20	S22L, S22R	1300	1300
21	S23L, S23R	1000	1000

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6.4.54 Roof Top Insulation of ESP

Quantity of Insulation involved in ESP erection:

The Approximate weight of insulation is 30MT released in PGMA 79 067 and the fixing components around 3MT is released in 79068 .However the actual erected weight will be paid as per the agreed rate of ESP.

P91 Welding in Boiler:

P91 welding is not applicable to this contract and induction heating machine is not required for T91 welding.

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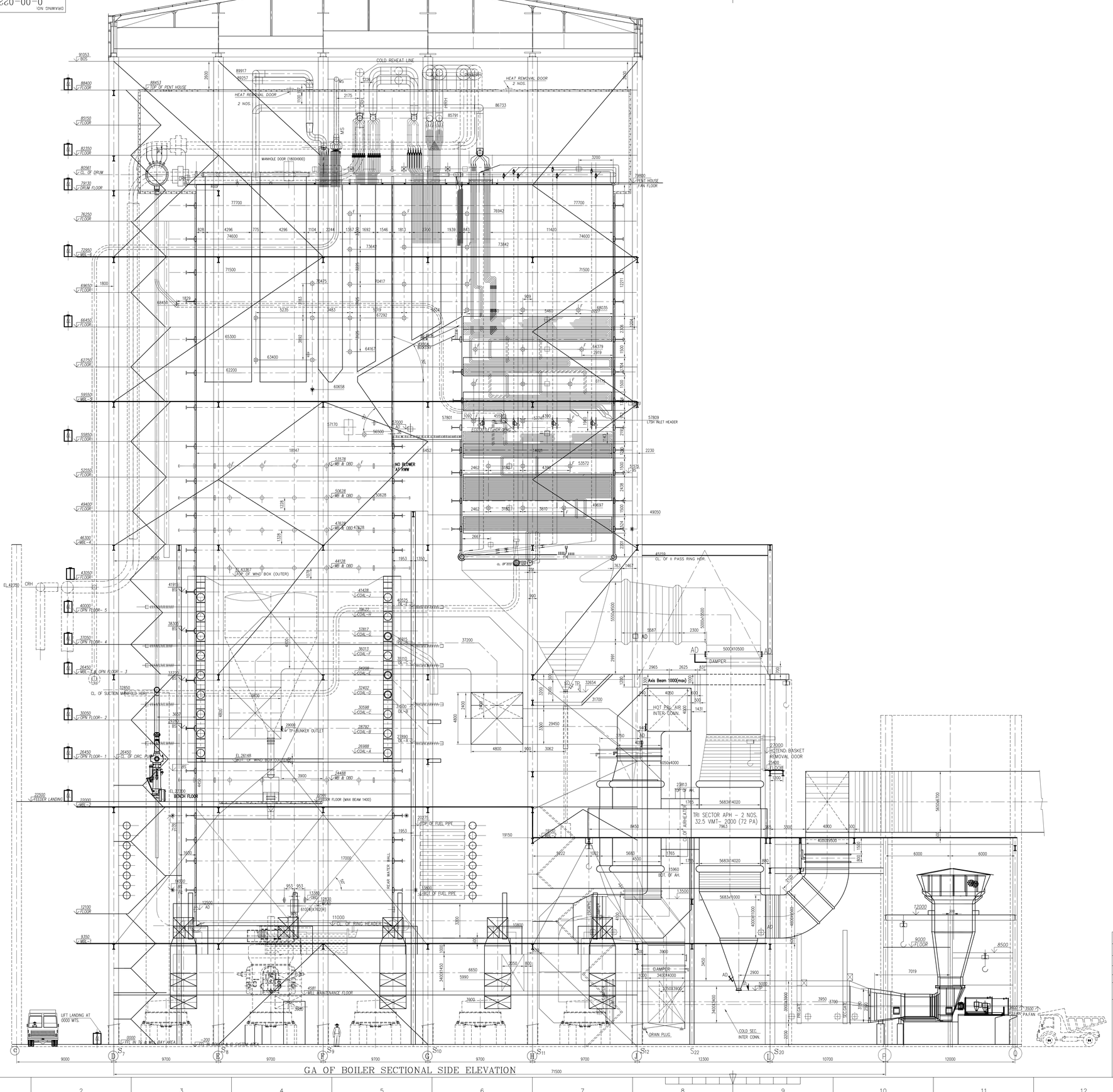
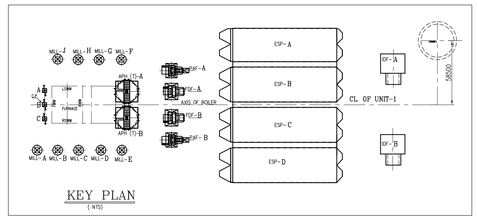
Additional General Manager/Contracts

DRAWING NO. 0-00-022-74593



GA OF BOILER SECTIONAL SIDE ELEVATION



KEY PLAN
(NTS)

BOILER PARAMETERS (BMCR)

MAXIMUM CONTINUOUS RATING	– 2000.0 t/h
PRESSURE OF SUPER HEATED STEAM	– 178 kg./SQ.cm(G)
TEMPERATURE OF SUPERHEATED STEAM	– 540°C
STEAM FLOW AT REHEATER OUTLET	– 1612.4t/h
ENTRY PRESSURE OF REHEATED STEAM	– 42.85 kg./SQ.cm(G).
ENTRY TEMPERATURE OF REHEATED STEAM	– 331.8°C
EXIT PRESSURE OF REHEATED STEAM	– 40.25 kg./SQ.cm(G)
EXIT TEMPERATURE OF REHEATED STEAM	– 568°C
FEED WATER INLET TEMPERATURE	– 280.3°C

DESCRIPTION OF UNIT: –

CONTROLLED CIRCULATION, SINGLE DRUM, RADIANT, DRY BOTTOM, DOUBLE REHEAT, PULVERIZED COAL FIRED SEMI OUTDOOR, UTILITY UNIT, BALANCED DRAUGHT, CUT CORNER, 51 mm O.D.TUBES AT 63.5 mm CENTERS, WRAP AROUND BUCKSTAY SYSTEM. ONE NO. OF EACH 600 MW CAPACITY.

NOTES: –

1. ALL FURNACE OPENINGS ARE TO BE PROVIDED ON BOTH SIDES, OTHERWISE STATED.
2. ALL DUCT DIMENSIONS ARE INSIDE SIZES ONLY.
3. ALL INNER CORNERS OF DUCT TURNING ARE 300 RADIUS ONLY, UNLESS OTHERWISE SPECIFIED.
4. ALL ELEVATIONS ARE WITH RESPECT TO EL.0.00m

REFERENCE DRAWING NUMBERS: –

1. GA OF BOILER SEC. PLAN (SECTION – AA) – 0-00-022-74594

LEGEND : –

ALL THE OPENINGS SHOWN ARE APPLICABLE FOR BOTH THE SIDES UNLESS IT IS SPECIFICALLY WRITTEN.

LRSB	LRSB	LONG RETRACTABLE SOOT BLOWER
WB.	WB.	WALL BLOWER
F	F	FUTURE WALL BLOWER
TP	TP	TEMPERATURE PROBE
AD.	AD.	ACCESS DOOR
OBD.	OBD.	OBSERVATION DOOR
TP		TERMINAL POINT
MBL	MBL	MAIN BRACE LEVEL
WP.	WP.	WORK POINT
BS	BS	BUCK STAY
FG.	FG.	FURNACE GUIDE AT AXIS OF BOILER
FG.	FG.	FURNACE GUIDE
F	F	FUTURE LRSB
WCAD	WCAD	WATER COOLED ACCESS DOOR
LL	LL	LIFT LANDING

CUSTOMER NO.: 1600

JOB NO:

STATUS: CONTRACT

DISTRIBUTION

TO

No.OF

REV	DATE	ALTD	CHD	APPD
01				

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CONSULTANT : DEVELOPMENT CONSULTANT PVT. LTD., CHENNAI

TAMIL NADU ELECTRICITY BOARD

NORTH CHENNAI THERMAL POWER STATION

STAGE – II 1 X 600 MW

BHARAT HEAVY ELECTRICALS LTD

BOILER PLANT UNIT

TIRUCHIRAPALLI -- 620 014

DEPT CODE		NAME	SIGN	DATE
M	DRN	ARUL PRABHU		11-06-2008
	CHD	ARUL PRABHU		11-06-2008
	APPD	N.MURUGAN		11-06-2008

TITLE

GENERAL ARRANGEMENT OF BOILER SECTIONAL SIDE ELEVATION

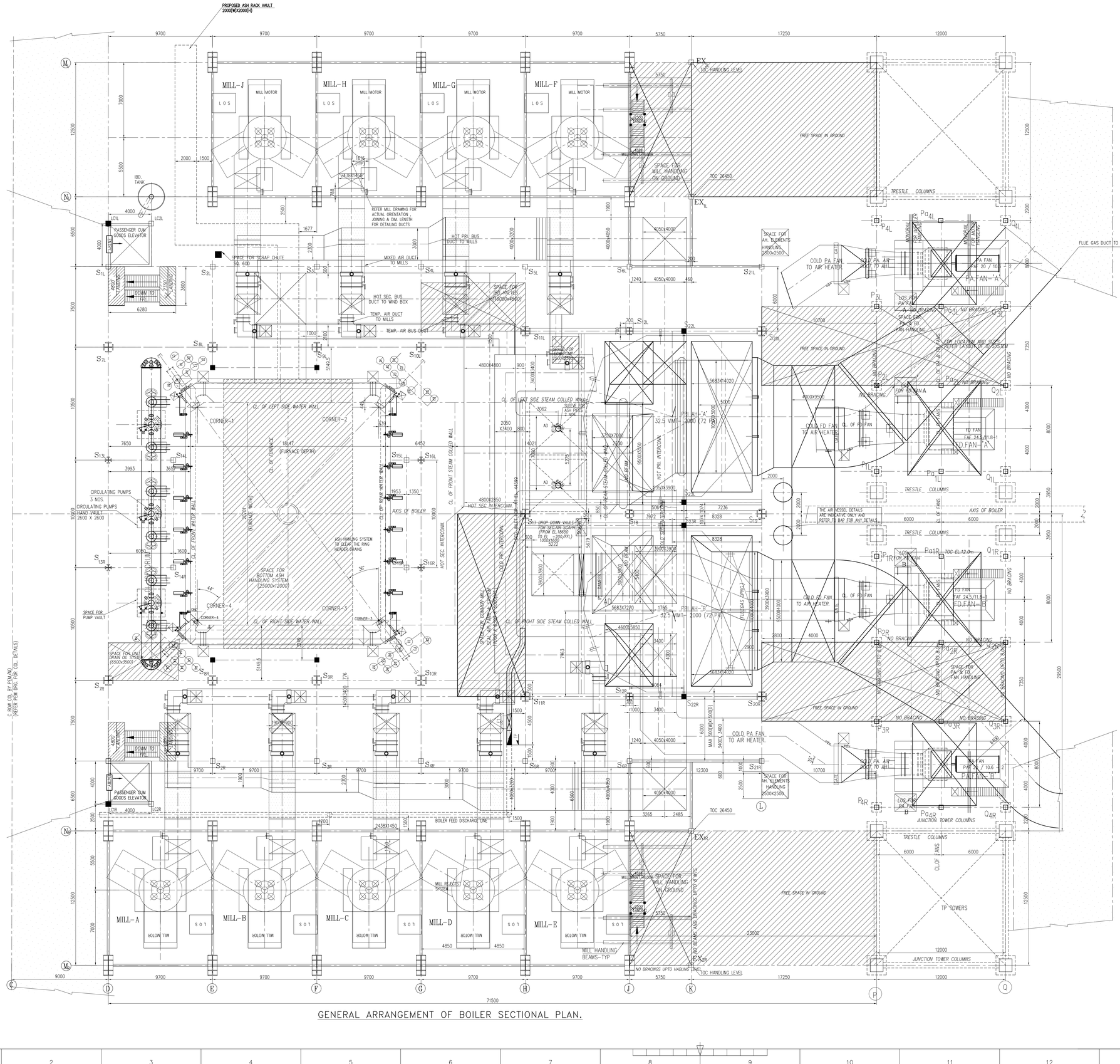
DRAWING NO.

SCALE 1:125

DRG No. 0-00-022-74593

SHEET 1 OF 1 REV 00

DRAWING NO. 0-00-022-74594



GENERAL ARRANGEMENT OF BOILER SECTIONAL PLAN.

BOILER PARAMETERS (BMCR)

MAXIMUN CONTINUOUS RATING	– 2000.0 t/h
PRESSURE OF SUPER HEATED STEAM	– 178 kg./SQ.cm(G)
TEMPERATURE OF SUPERHEATED STEAM	– 540°C
STEAM FLOW AT REHEATER OUTLET	– 1612.4t/h
ENTRY PRESSURE OF REHEATED STEAM	– 42.85 kg./SQ.cm(G).
ENTRY TEMPERATURE OF REHEATED STEAM	– 331.8°C
EXIT PRESSURE OF REHEATED STEAM	– 40.25 kg./SQ.cm(G)
EXIT TEMPERATURE OF REHEATED STEAM	– 568°C
FEED WATER INLET TEMPERATURE	– 280.3°C

DESCRIPTION OF UNIT: –

CONTROLLED CIRCULATION, SINGLE DRUM, RADIANT, DRY BOTTOM, DOUBLE REHEAT, PULVERIZED COAL FIRED SEMI OUTDOOR, UTILITY UNIT, BALANCED DRAUGHT, CUT CORNER, 51 mm O.D.TUBES AT 63.5 mm CENTERS, WRAP AROUND BUCKSTAY SYSTEM. ONE NO. OF EACH 600 MW CAPACITY.

NOTES: –

1. THE CABLE RECK, PIPE RACKS AND ASH PIPES SHOULD NOT ENCROACH IN TO THE HANDLING AREAS. THIS IS VALID FOR BOTH HORIZONTAL & VERTICAL HANDLING VAULTS. SITE ERECTION AGENCY SHOULD INFORM THEIR SUB ERECTOR AND ALL OTHER ALLIED BODIES NOT TO ERECT ANY OTHER ELEMENTS IN HANDLING VAULTS OF FD,PA,ID FAN HANDLING, AH ELEMENTS HANDLING, MILL HANDLING AND ALL OTHER HANDLING SHOWN IN BOILER AREA. EVEN UNKNOWINGLY ERECTED, THEN THOSE DEBRIS SHOULD BE REMOVED AT THEIR OWN COST AFTERWARDS.
2. THE FAN FOUNDATION AND CONFIGURATIONS ARE ONLY INDICATIVE & REFER FAN FOUNDATION DRAWINGS FOR EXACT SHAPE & SIZE.
3. ALL FAN ACTUATORS AND FOUNDATION SIZES SHALL BE TAKEN FROM CONSERNED FAN DRAWINGS AND SIDE OF LOCATION SHALL BE AS SHOWN IN THIS DRAWING.
4. THE SPACE FOR ASH HANDLING SYSTEM HAVE BEEN SHOWN. THE ACTUAL SYSTEM SHOULD NOT EXEED THE VALUES INDICATED.
5. FOR THE DETAILS BEYOND LAST ROW OF COLUMNS, THE INDUCED DRAFT SYSTEM DRAWING MAY BE REFERRED. THIS IS VALID FOR ALL UNITS & INBETWEEN CHIMNEY & BOILER.

REFERENCE DRAWING NUMBERS: –

1. GA OF BOILER SEC. SIDE ELEVATION – 0-00-022-74593

CUSTOMER NO.: 1600

CONSULTANT : DEVELOPMENT CONSULTANT PVT. LTD., CHENNAI

TAMIL NADU ELECTRICITY BOARD
NORTH CHENNAI THERMAL POWER STATION
STAGE – II 1 X 600 MW

BHARAT HEAVY ELECTRICALS LTD
BOILER PLANT UNIT
TIRUCHIRAPALLI -- 620 014

DEPT CODE		NAME	SIGN	DATE
M	DRN	ARUL PRABHU		11-06-2008
	CHD	ARUL PRABHU		11-06-2008
	APPD	N.MURUGAN		11-06-2008

TITLE: GENERAL ARRANGEMENT OF BOILER SEC. PLAN – (SEC – AA)

DRAWING NO.

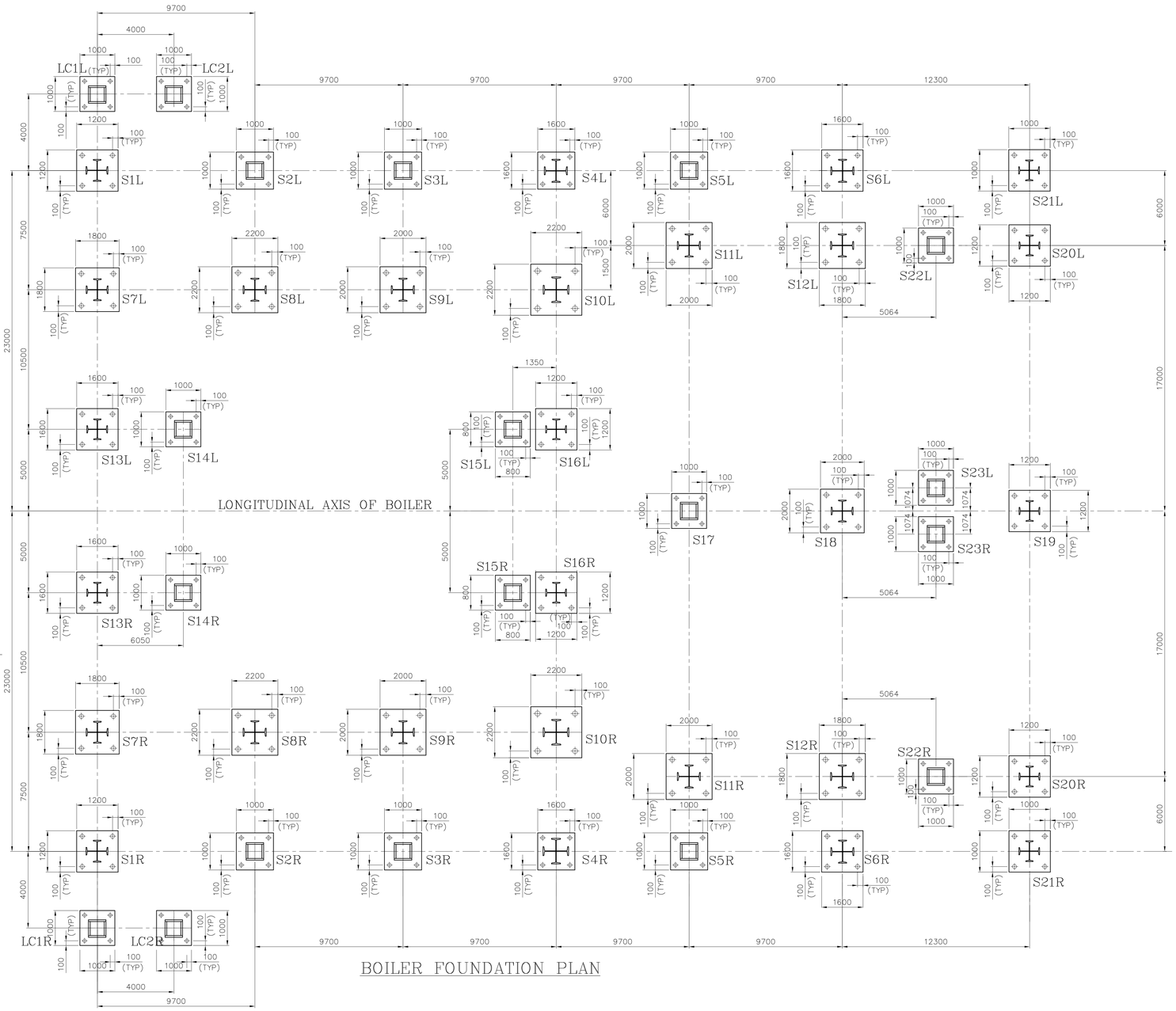
SCALE 1:125

DRG No. 0-00-022-74594

SHEET 1 OF 1 REV 00

DRAWING NO. 0-00-281-03319

FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



BOILER FOUNDATION PLAN

NOTES:

01. FINISHED FLOOR LEVEL OF BOILER AREA IS −0.200M

02. ALL LOADS ARE IN TONNES.

03. THE SURCHARGE UNDER DYNAMIC LOADING CONDITION IS BASED ON AVERAGE ACCELERATION SPECTRA FOR ZONE−III TYPE OF SOIL IS SOFT AS PER IS:1893−2002(PART−I)AND IS:1893−2005(PART−IV) AND USING MODEL COMBINATION OF PEAK RESPONSE QUANTITES AS PER COMPLETE QUADRATIC COMBINATION(CQC) METHOD.

04. WIND LOAD IS AS PER IS 875 (PART−3) − 1987 WITH BASIC WIND SPEED Vb = 50 M/SEC, RISK COEFFICENT K1=1.08 AND TERRAIN CATEGORY−1 CLASS C STRUCTURE AS PER SPECIFICATIONS.

05. THE EFFECT OF LIFT STRUCTURE LOADS INCLUDING WIND LOAD ON BOILER COLUMNS HAS BEEN ACCOUNTED IN THE LOAD TABLE.

06. IT IS PROPOSED TO MAINTAIN THE BOTTOM OF BASE PLATE AS FOLLOWS:
    a) FOR COLUMNS S1L&R, LC1L&R,LC2L&R @ −2.300M TO CLEAR LIFT PIT.
    b) FOR COLUMNS S14L&R, S15L&R, S16L&R, S17, S18, S19, AND S23L&R @ −1.300 m. TO FACILITATE MANOEUVRE OF CRANE ON THESE BASES WITHOUT DAMAGING FOUNDATION BOLTS DURING ERECTION.
    c) FOR ALL OTHER COLUMNS AT −0.800m. TO AVOID PROTRUSION OF COLUMN BASE STIFFENERS AND FOUNDATION BOLTS ABOVE FINISHED FLOOR LEVEL.

07. ALLOWABLE BEARING PRESSURE UNDER COLUMN BASE PLATE IS CONSIDERED AS 50 Kg/Sq.Cm.

08. TRANSVERSE AXIS IS PERPENDICULAR TO LONGITUDINAL AXIS OF BOILER.

09. THE EMBEDDED PORTIONS OF THE COLUMN BETWEEN COLUMN BASE PLATE AND FINISHED FLOOR ARE TO BE PROPERLY ENCASED WITH PCC / RCC FOR ALL COLUMNS.

10. AFTER INSERTING FOUNDATION BOLT IN THE GAP OF PAIR OF ANCHOR CHANNELS, THE FOUNDATION BOLTS ARE TO BE SUITABLY TURNED SO AS TO BUTT AGAINST STOPPER PLATE (WELDED WITH ANCHOR CHANNEL) BEFORE CONCRETING.

11. FAN FOUNDATIONS ARE TO BE ISOLATED FROM BOILER COLUMN FOUNDATIONS.

12. TEMPLATES MUST BE USED (ISSUED IN PGMA 35−010) FOR MAINTAINING EXACT LOCATION AND VERTICAL ALIGNMENT OF FOUNDATION BOLTS.

13. POCKETS FOR GROUTING ARE CIRCULAR AS SHOWN IN DETAILS (SLEEVE PIPES ARE ISSUED IN PGMA 35−010).

14. PROVIDE POCKETS IN RCC COLUMN FOUNDATION TO ACCOMMODATE THE SHEAR LUGS FOR COLUMNS AS SHOWN IN DRG NO.0−00−281−03320. GROUT THESE POCKETS USING GROUT HOLES IN THE BASE PLATES.

15. GROUTING CONCRETE ARE IN BHEL ERECTION GROUP SCOPE.

16. GROUTING BELOW COLUMN BASES :− MANUAL GROUTING; COMPOSITION OF GROUT MIX :− ONE GRADE HIGHER THAN THE FOUNDATION CONCRETE.

17. ENSURE PROPER COMPACTION AND CURING OF GROUT ; FREE FLOW NON SHRINK CEMENT OR ADMIXTURE CAN BE USED FOR GROUTING.

18. ENSURE PROPER CONTACT BETWEEN GROUT MIX AND BOTTOM OF BASE PLATES.

19. COLUMN FOUNDATION SHALL BE DESIGNED FOR THE FOLLOWING CONDITION: −
    A) THE FOUNDATION LOAD DATA CALCULATION AND THE DESIGN OF BOILER SUPPORTING STRUCTURES DO NOT TAKE INTO ACCOUNT ANY DIFFERENTIAL FOUNDATION SETTLEMENT CRITERIA.
    B) HOWEVER, A DIFFERENTIAL SETTLEMENT WHICH SHALL BE RESTRICTED TO 1 IN 1000 OF SPAN OR 8 mm WHICHEVER IS LESS CAN BE TOLERATED BY STRUCTURE UNDER WORKING LOAD CONDITION.

20. SHIM PLATES ISSUED IN PGMA 35−010 ARE TO BE PLACED BELOW COLUMN FLANGE AS MUCH AS POSSIBLE AND ARE TO BE ADJUSTED FOR SHEAR LUGS.

21. FOR G.A PLAN & ELEVATION REFER LAYOUT DRG.No: 0−00−022−74593/00 & 0−00−022−74594/00.

22. CLEAR OR REMOVE THE RUST AND DUST OF THE FOUNDATION MATERIALS (FOR FOUNDATION BOLTS) BEFORE EMBEDMENT, IF ANY.

23. FOR FOUNDATION ANCHORING DETAILS REFER DRG.No: 0−00−281−03320.

CUSTOMER No. : 1600

CONSULTANT DEVELOPMENT CONSULTANT PVT LTD., CHENNAI

CUSTOMER TAMIL NADU ELECTRICITY BOARD

PROJECT
NORTH CHENNAI THERMAL POWER STATION
STAGE−II, 1X600MW

BHARAT HEAVY ELECTRICALS LTD
UNIT:HIGH PRESSURE BOILER PLANT
TIRUCHIRAPPALLI−620 014

DEPT CODE	NAME	SIGN	DATE
DRN	K.SIVA.		17.06.08
DESN	M.PENCHAL		17.06.08
CHD	M.PENCHAL		17.06.08
APPD	R.JEYAKUMAR		17.06.08

TITLE
BOILER FOUNDATION PLAN

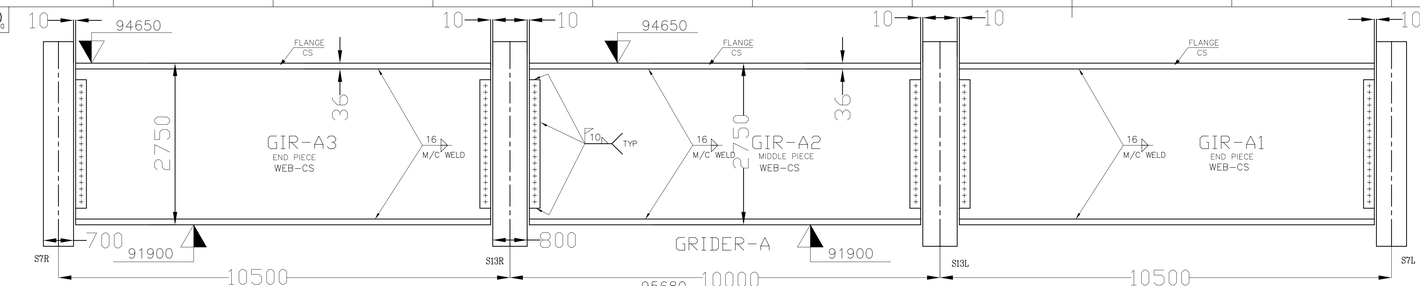
BHEL DRAWING NO. 0−00−281−03319

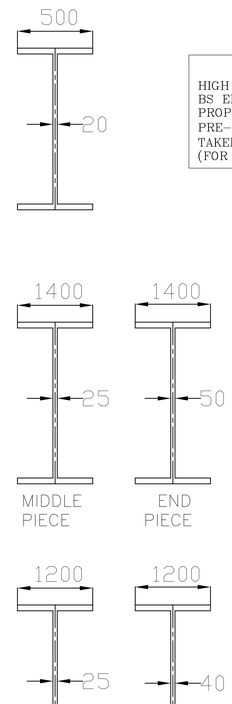
SCALE NTS

SHEET 01 OF 00 REV 00

DRAWING NO. 0-35-211-08430

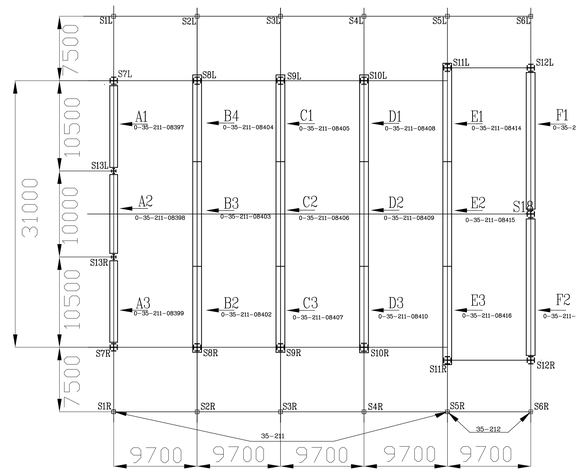
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299



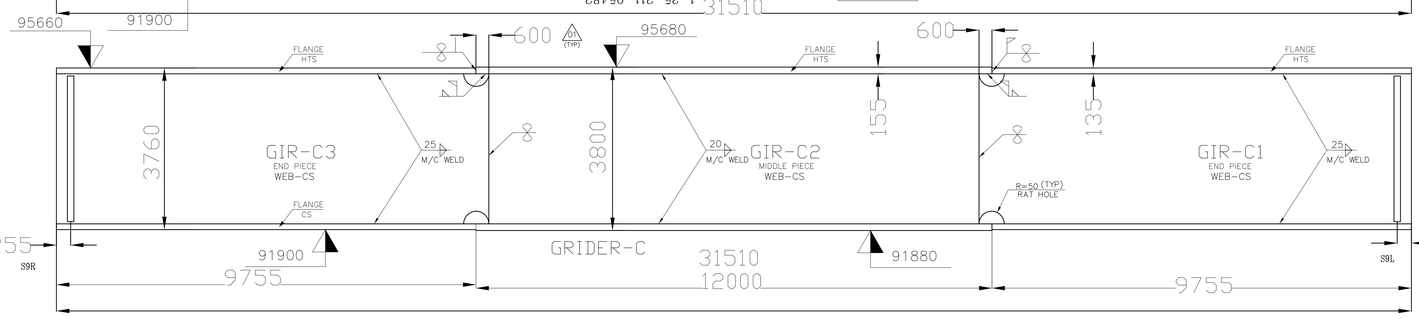


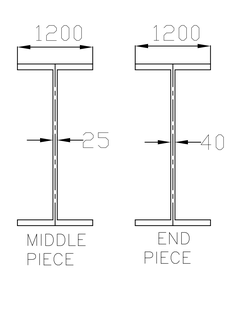
ATTENTION

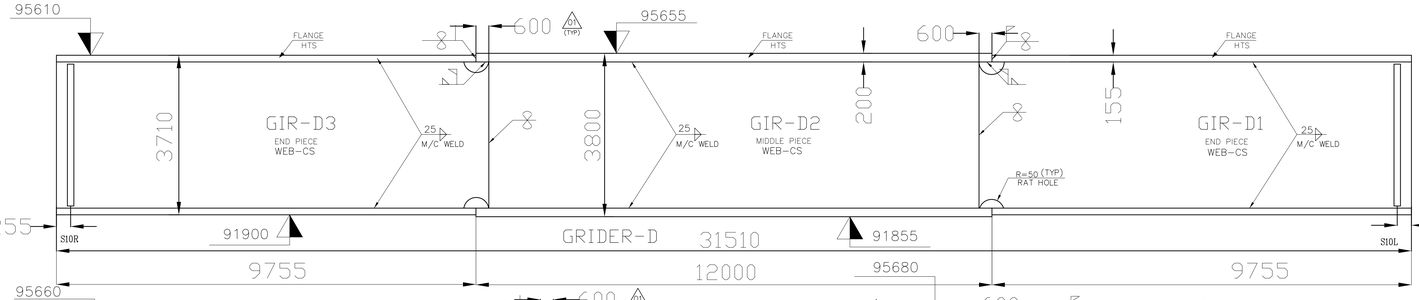
HIGH STRENGTH STEEL OF IS:8500-Fe540 OR EQUIVALENT
BS EN10025-3 Gr.S420N USED FOR FLANGES OF THIS CEILING GIRDER
PROPER PRECAUTION WITH RESPECT TO
PRE-HEATING, WELDING ETC., IS TO BE
TAKEN CARE AS PER RELEVANT Q.C.P.
(FOR ITEM NoS. 01&18)

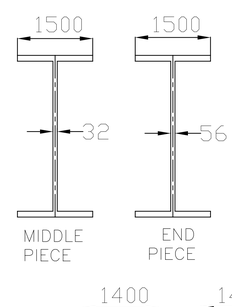


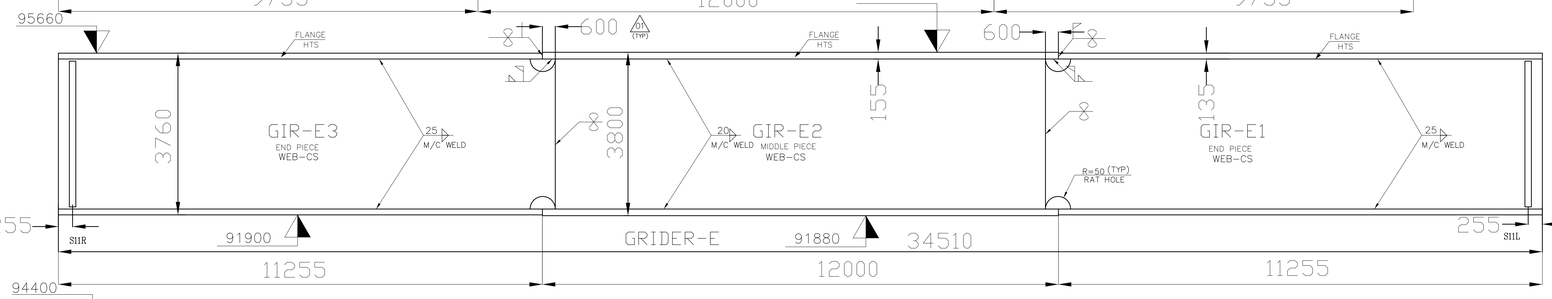
KEY PLAN

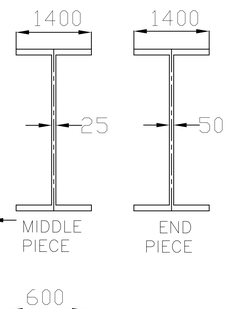






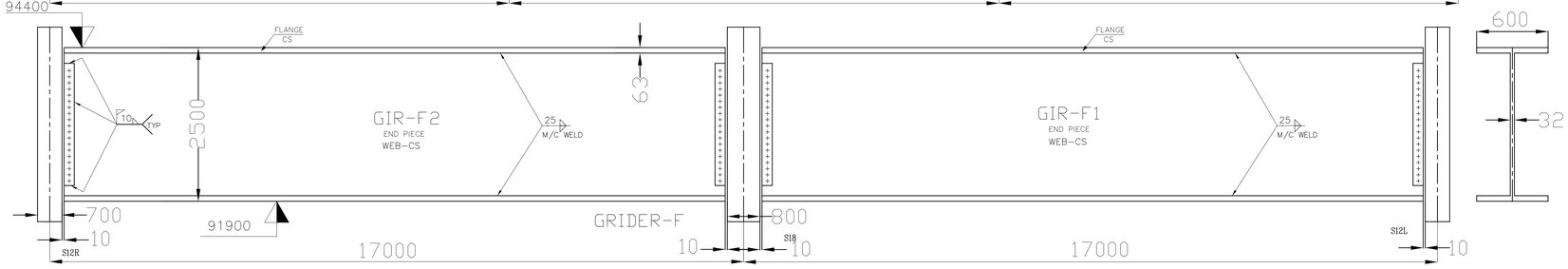






NOTES: –

1. BUTT WELDS OF FLANGE & WEB ARE FULL PENETRATION WELD.
2. NO SHOP PAINT ON WEB OF GIRDERS FOR DISTANCE OF 75MM FROM A GROUP OF OPEN HOLES FOR FRICTION TYPE.
3. TRANSPORTATION BOLTS ARE TO BE PROVIDED BY FABRICATOR.
4. SURFACE NEAR ENDS OF HOLES ON THE WEBS OF BEAMS SHALL BE FREE OF LOOSE SCALE,EXCEPT TIGHT MILL SCALE AND SHALL BE FREE OF DIRT LOOSE SCALE,OIL PAINT ETC,
5. PAINTING AREA:– 2360 Sq. M. FOR ALL GIRDERS
6. ALL BOTTOM FLANGES ARE TENSION FLANGES. DO NOT STRIKE BY ELECTRODES.
7. FOR ASSY. OF CEILING STRUCTURE REFER DRG. No. 0-35-211-08395 AND 0-35-212-08396
8. ALL HOLES IN WEB WHERE WBS OF DRG. ARE CONNECTED BY HSFG BOLTS ARE TO BE MATCH AND DRILLED W.R.T CLEAT ANGLE THE HOLE SIZE IS 25.5MM.
9. MATERIALS AND OTHER REQUIREMENTS ARE GIVEN PER BOILER
10. MANUFATURING REQUIREMENT SHALL BE AS PER RELEVANT Q.C.P. & QP.,WPS.
11. THIS DRG. IS TO BE READ ALONG WITH DRG. No. 1-35-211-06266.
12. * R=ROOT OPENING IS TO BE 0 TO 3 mm. DURING TRIAL ASSY., SITE TO KEEP SUITABLE GAP AS PER F.Q.P. FOR WELD SHRINKAGE.
13. LIFTING EYE LOCATION INDICATED ARE TO BE VERIFIED FOR CLEARING ALL STIFFENERS AND CROSS GIRDERS PRIOR TO FIXING AND IF REQUIRED ARE TO BE SUITABLY SHIFTED TO CLEAR THEM.
14. BEAM OVER STIFFNER CAN BE TRIMMED BY 25 mm. ON BOTTEM SIDE IF REQD. AT SHOP TO FECILITATE EASY ASSEMBLY OF CROSS GIRDER.



WELD TABLES

GIRDER-A,F

TYPE & SIZE OF WELD	TYPE OF ELECTRODE	LENGTH OF WELD IN 'M'
16 M/C WELD	WIRE AP PER WPS	120
10	E-7018	15.00
16	E-7018	6.00

GIRDER B,C,D,E

TYPE & SIZE OF WELD	TYPE OF ELECTRODE	LENGTH OF WELD IN 'M'
20 M/C WELD	WIRE AP PER WPS	124.0
X WELD	E-8018	20.00
10	E-7018	15.00
16	E-7018	6.00

REV	DATE	ALTERED : G.PARANI
01	18.02.09	CHD & APPD : J.SOMU
ZONE	WEB OFFSET DIMENSION CHANGED. RAT HOLE INCLUDED. GIRDER WELD SIZE CORRECTED.	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI – 620014

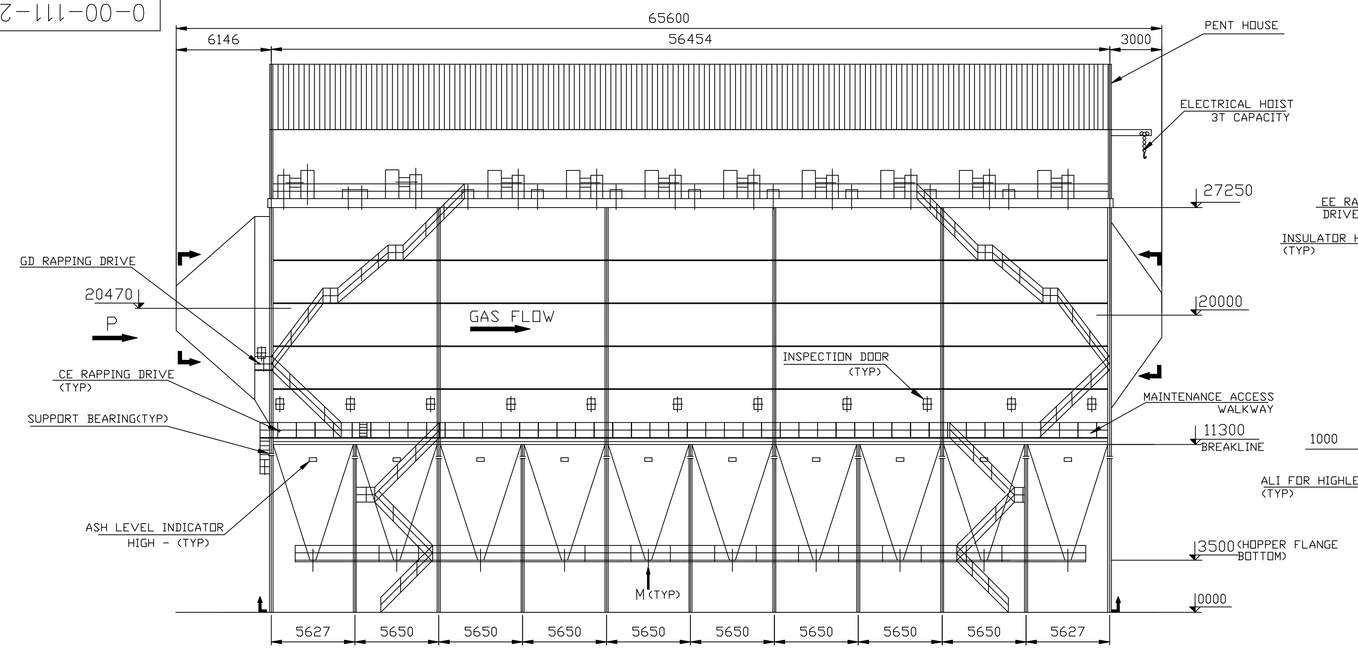
	NAME	SIGNATURE	DATE
DRN	M.VINOTH		26-12-08
CHD	H.A.JAFFAR		26-12-08
APPD	J.SOMU		26-12-08

DEPT ST | CODE 122 | ALL DIMENSIONS ARE IN MM | PROJECTION | SCALE N.T.S | WEIGHT (Kg) | REF TO ASSY / OLD DWG

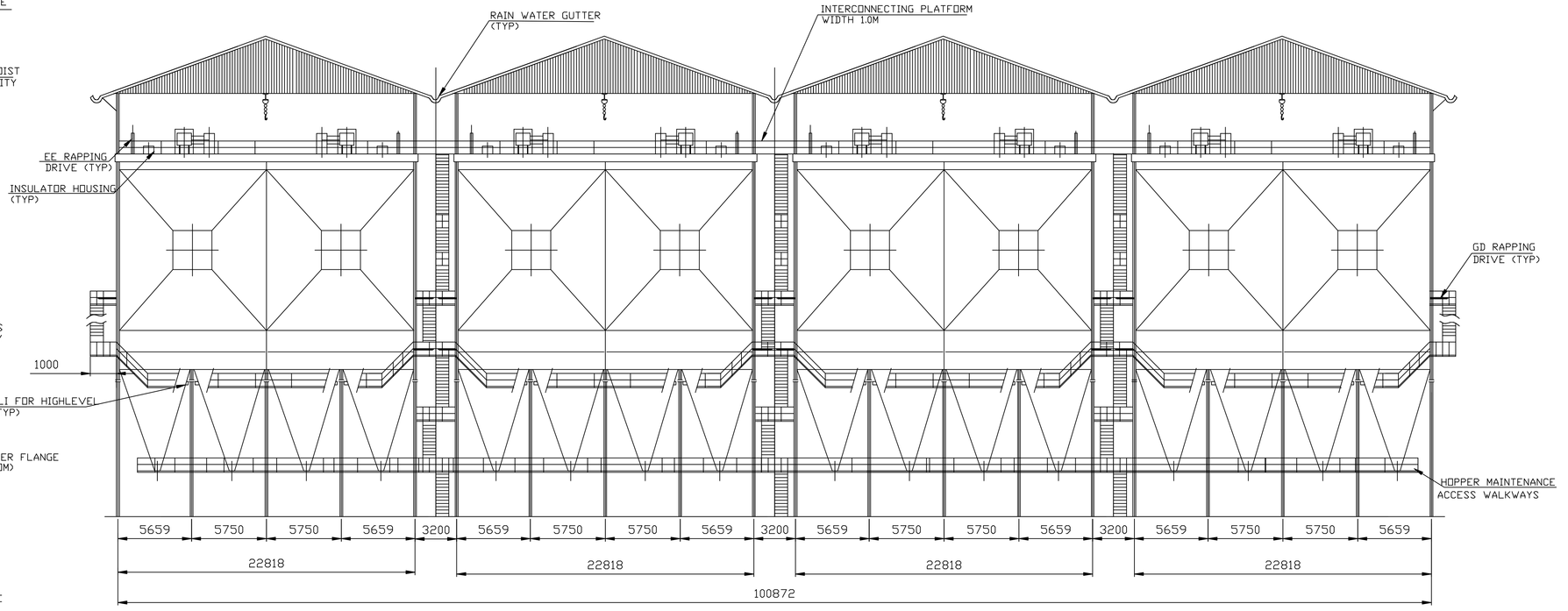
TITLE: GIRDER ASSEMBLY AND WELDING DETAILS

DRAWING NO : 0-35-211-08430 | REV 01

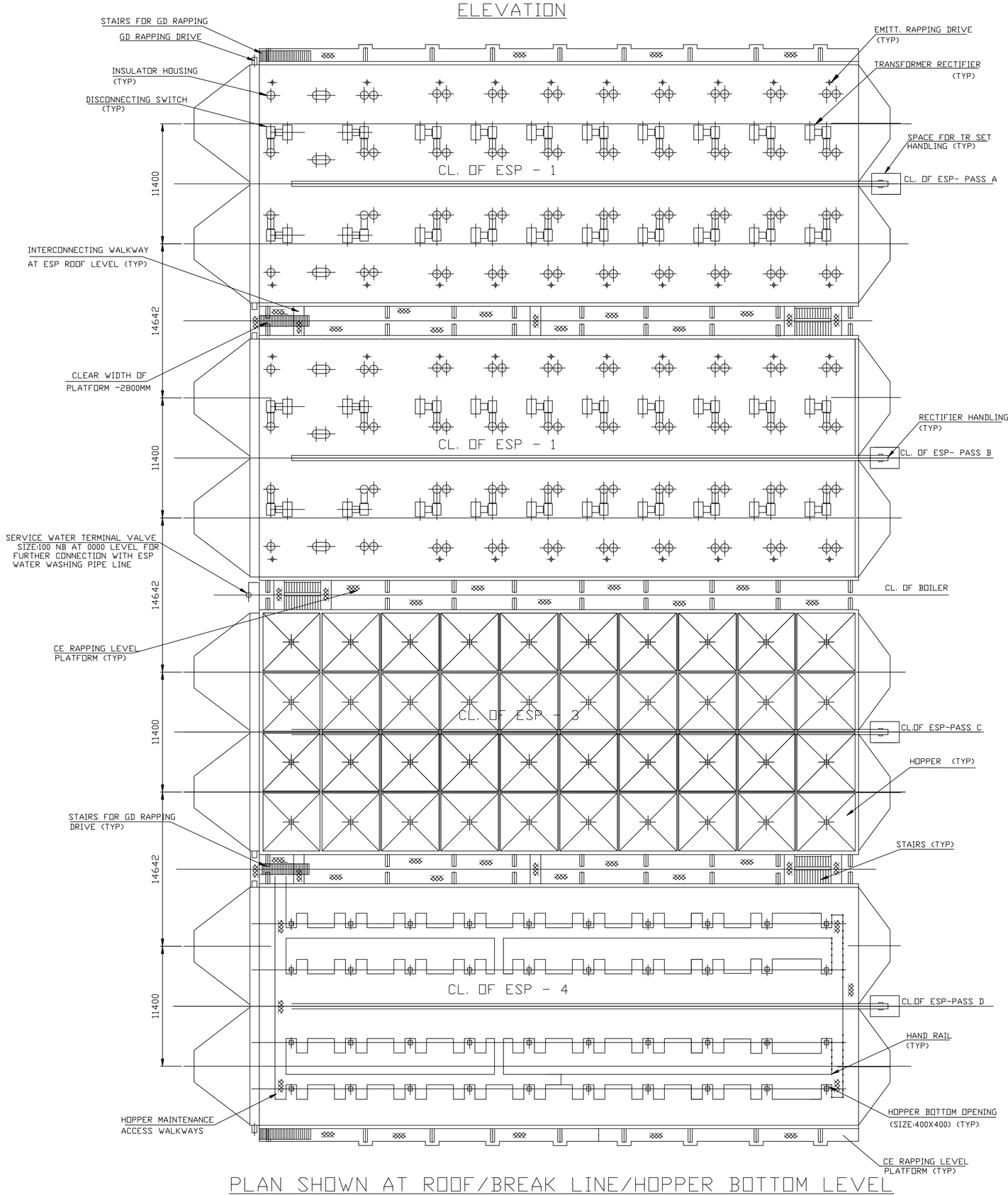
0-00-111-27289/00



ELEVATION

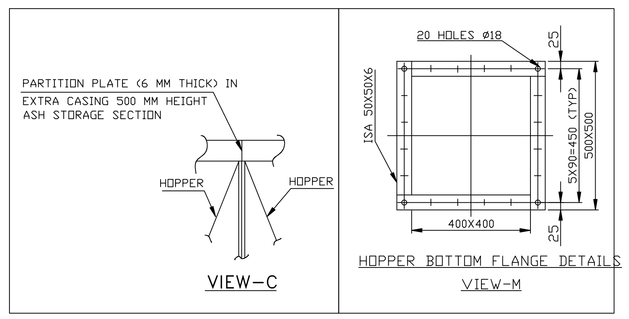


VIEW-P



PLAN SHOWN AT ROOF/BREAK LINE/HOPPER BOTTOM LEVEL

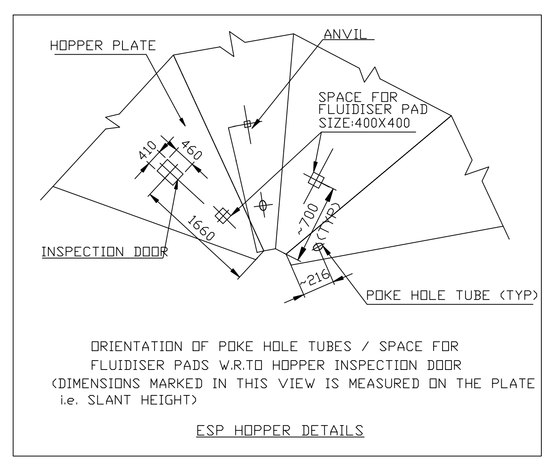
SL.NO	DESCRIPTION	DETAILS
01	NO.OF TRANSFORMER RECTIFIER (TR) SET	80
02	WEIGHT OF EACH TR SET	1500 Kg approx
03	WEIGHT OF EACH CE RAPPING MOTOR	155 Kg approx
04	WEIGHT OF EACH EE RAPPING MOTOR	145 Kg approx
05	MATERIAL AND THICKNESS OF ESP CASING	6 mm THICK MILD STEEL PLATE CONFORMING TO IS 2062
06	MATERIAL AND THICKNESS OF ESP HOPPER	6 mm THICK MILD STEEL PLATE CONFORMING TO IS 2062
07	MATERIAL AND THICKNESS OF ESP HOPPER LINING	16 SWG THICK STAINLESS STEEL FOR A HEIGHT OF 1500 MM FROM HOPPER BOTTOM.
09	MATERIAL AND THICK. OF COLLECTING ELECTRODES	1.25MM MILD STEEL CONFORMING TO IS 513.
10	MATERIAL AND THICK. OF EMITTING ELECTRODES	2.7 mm DIA STAINLESS STEEL WIRE CONFORMING TO GARBA 904L (DR) 2 RK 66 (DR) UNS N 08904 (EQ. TO UHB 904L)
11	INSULATION	WOOL THICKNESS = 50 MM DENSITY=100 KG/CUM.
12	CLADDING SHEET	PLAIN GI SHEET OF 0.63 MM THICK



VIEW-C

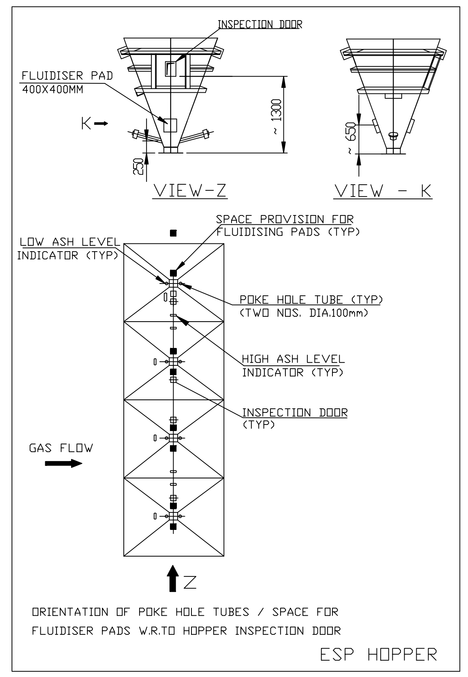
HOPPER BOTTOM FLANGE DETAILS

VIEW-M



ORIENTATION OF POKE HOLE TUBES / SPACE FOR FLUIDISER PADS W.R.TO HOPPER INSPECTION DOOR (DIMENSIONS MARKED IN THIS VIEW IS MEASURED ON THE PLATE i.e. SLANT HEIGHT)

ESP HOPPER DETAILS



ORIENTATION OF POKE HOLE TUBES / SPACE FOR FLUIDISER PADS W.R.TO HOPPER INSPECTION DOOR

ESP HOPPER

NOTES:

1. [ ] INDICATES BHEL/RANIPET SCOPE OF SUPPLY.
2. ESP SIZE: FAA-10X37.5M-2X112150-2 (400 mm PITCH). NO. OF ESP/BOILER = 4
3. ALL ELEVATIONS ARE MARKED W.R.T REFERENCE ELEVATION OF +0.000M.
4. FOR ESP FOUNDATION PLAN & LOADING DATA, REFER BHEL DRAWING NO. 0-00-112-27290 WHICH WILL BE FURNISHED SEPARATELY.
5. THE STAIRS,GALLERIES AND PLATFORMS ARE PROVIDED IN THE FOLLOWING MANNER :
   (A) ONE NUMBER STAIRCASE FROM THE BOTTOM UPTO ROOF TOP BETWEEN ESP PASS-B AND PASS-C (BOILER SIDE).
   (B) TWO NUMBERS STAIRCASE FROM THE BOTTOM UPTO ROOF TOP BETWEEN ESP PASSES A & B AND PASSES C & D (CHIMNEY SIDE) AT THE OUTLET SIDE OF ESPs.
   (C) THE ESPs AT ROOF TOP WILL BE INTERCONNECTED AT REQUIRED LOCATIONS.
   (D) PLATFORM BETWEEN TWO CASINGS WILL BE 3200 MM WIDE.
   (E) 1.0M (MINIMUM) WIDE PLATFORM SHALL BE PROVIDED ALL AROUND ALL ESP PASSES AT THREE LEVELS i.e (HOPPER BOTTOM,INTERMEDIATE AND AT TR SET ELEVATION).
   (F) 1.0M WIDE MAINTENANCE ACCESS WALK WAY AT THE REAR SIDE OF ESP IS PROVIDED.
   (G). ALL STAIRS SHALL BE OF 1.0 M CLEAR WIDTH.
6. 1.0M WIDE HOPPER APPROACH PLATFORM IS PROVIDED FOR MAINTENANCE/ACCESS TO HOPPER INSPECTION DOOR, POKE HOLES.
7. PENT HOUSE OVER ESP ROOF IS PROVIDED WITH COLOR COATED ROOFING SHEET.
8. SUITABLE WATER WASHING SYSTEM WILL BE PROVIDED.
9. OIL DRAIN PIPES (ERW PIPE) SHALL BE PROVIDED UPTO GROUND LEVEL AND TERMINATED AT THE NEAREST TRENCH.
10. RAIN WATER GUTTERS WILL BE PROVIDED AND RAIN WATER DRAIN PIPE (ERW PIPE) WILL BE TERMINATED INTO THE NEAREST DRAIN.
11. THE PERFORMANCE TEST POCKET ADAPTERS WILL BE SUPPLIED IN ESP SCOPE UNDER PGMA 79-061 WHICH ARE TO BE SUITABLY LOCATED IN THE STRAIGHT PORTIONS OF ESP INLET AND OUTLET DUCTS. THE REQUIRED APPROACH PLATFORM FOR THESE TEST POCKETS WILL BE PROVIDED IN THE DUCTING SYSTEM OF BHEL / TRICHY.
12. FOUR OPACITY MONITORS PER BOILER WILL BE SUPPLIED IN ESP SCOPE UNDER PGMA 79-074 ARE TO BE LOCATED IN THE COMMON OUTLET DUCT OF ESP (CONNECTING TWO OUTLET FUNNELS). THE REQUIRED APPROACH PLATFORM ON BOTH SIDE OF DUCT WILL BE PROVIDED IN THE DUCTING SYSTEM OF BHEL/TRICHY.
13. THE LOWER 1.5 METER OF EACH HOPPER IS LINED WITH 16 GAUGE (1.6 MM) THICK TYPE 304 STAINLESS STEEL.
14. REQUIRED ASH STORAGE CAPACITY IS PROVIDED IN VOLUME OF HOPPERS AND 500MM HEIGHT OF EXTRA CASING ABOVE HOPPER LEVEL.
15. EACH HOPPER WILL BE PROVIDED WITH TWO NUMBERS OF ASH LEVEL INDICATORS FOR LOW LEVEL INDICATION AND ONE NO. FOR HIGH LEVEL INDICATION. LOW LEVEL INDICATOR WILL BE PROVIDED BY ISG/BHEL/BANGALORE). HIGH LEVEL ALI WHICH IS MOUNTED ON HOPPER WILL EFFECT THE ALARM FOR HOPPER HIGH LEVEL AND TRIP THE RESPECTIVE TR SET WITH TIME LAG FOR REACHING THE MAXIMUM STORAGE VOLUME CORRESPONDING TO 8.8 HOURS. THIS TIME LAG CAN BE SET AT ESP AUXILIARY CONTROL PANEL AT SITE DURING ESP COMMISSIONING.
16. SPACE OF 400X400MM IS PROVIDED FOR FIXING FLUIDISING PADS AT THE BOTTOM OF EACH HOPPER LUIDIZING PAD IS SUPPLIED AS PART OF ASH HANDLING SYSTEM SCOPE, THE SAME SHALL HAVE TO BE INSTALLED BY THE ASH HANDLING SYSTEM SUPPLIER. SPACE FOR FIXING 2 NOS. OF FLUIDISING PADS PER HOPPER IS ENVISAGED.
17. FOR FIXING THE PADS, ASH HANDLING SYSTEM VENDOR HAS TO CUT OPEN THE HOPPER WALL AT SITE. HOWEVER SS LINING TO THE EXTENT OF 360X360MM WILL BE CUT BY BHEL/R AT WORK BEFORE DESPATCH OF THE HOPPERS.
18. THERMAL INSULATION SHALL BE APPLIED IN THE AREA OF FLUIDIZING PADS AFTER THE SAME IS INSTALLED BY THE ASH HANDLING SUPPLIER. IN CASE FLUIDIZING PADS, ARE NOT APPLICATION FOR THIS CONTRACT OR THE FLUIDIZING PADS ARE ENVISAGED TO BE INSTALLED IN FUTURE, THERMAL INSULATION SHALL BE APPLIED IN THE SPACE EARMARKED FOR FLUIDIZING PADS AREA ALSO.
19. IN CASE, ANY OF THE COMPONENTS OF ASH HANDLING SYSTEM HAS TO BE SUPPORTED OVER NEIGHBORING COLUMN OR ON THE GROUND, THE ASH HANDLING SUPPLIER SHALL HAVE TO PROVIDE AN EXPANSION JOINT AFTER THE HOPPER OUTLET FLANGE. THIS IS TO TAKE CARE OF THE MOVEMENT DUE TO THERMAL EXPANSION DURING THE OPERATION.
20. THE HOPPER WALLS SHALL NOT BE WELDED WITH STEEL MEMBERS FOR SUPPORTING ANY PIPELINES,TRAYS ETC.,

STATUS	CONTRACT				
REV	DATE		ALTD	CHD	APPD

CUSTOMER NO: R600

TYPE OF PRODUCT

TAMIL NADU ELECTRICITY BOARD
NORTH CHENNAI THERMAL POWER PLANT PROJECT
STAGE-II 1X600MW

BHARAT HEAVY ELECTRICALS LIMITED,
UNIT: BOILER AUXILIARIES PLANT,
RANIPET:632 406.

DEPT CODE		NAME	SIGN	DATE
M	DRN.	Z.TAJUMUL		22.05.08
	DESN.	K.MANI		22.05.08
	CHD	D.VISUVASAM		23.05.08
	APPD	P.SELVARAJ		23.05.08

TITLE

GENERAL ARRANGEMENT OF ESP

BHEL DRAWING NO.

0-00-111-27289

SCALE : N.T.S

SHEET 1 OF 1

REV 00

Size A0