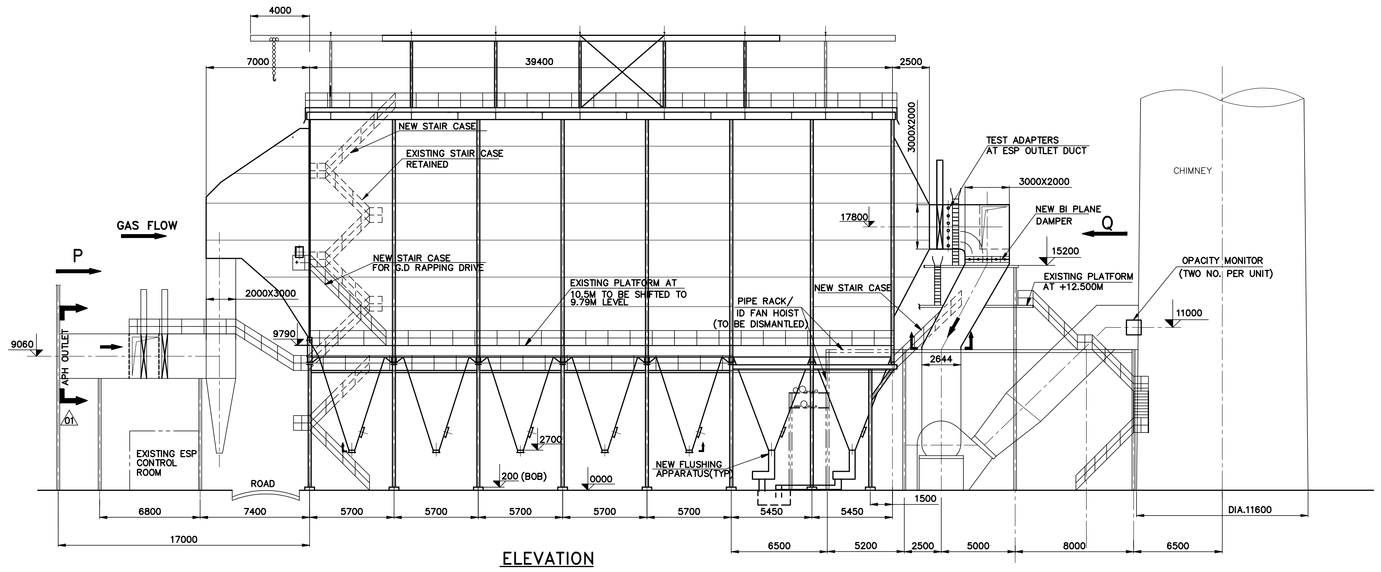
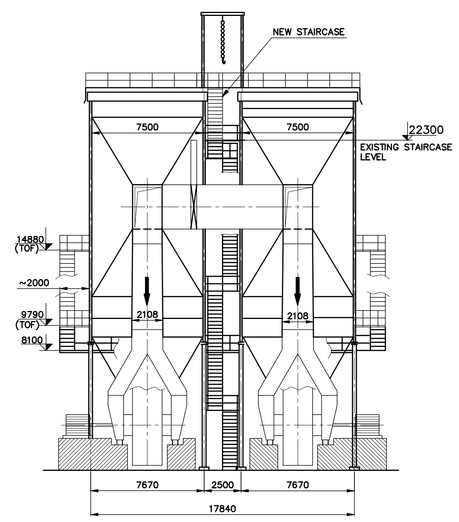
DRAWING NO. 0-00-111-27412/01

ALL DIMENSIONS ARE IN MILLIMETRES

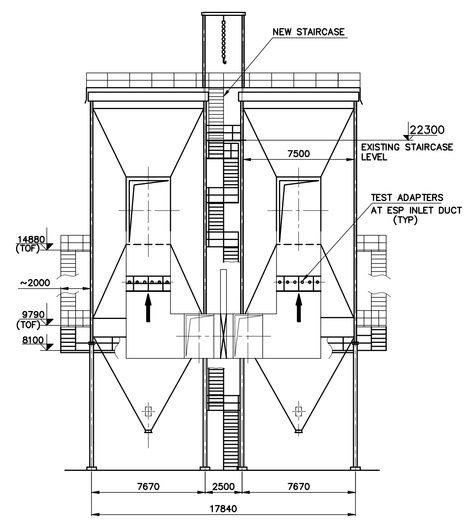
4220-104-PVG-F-001Rev 1



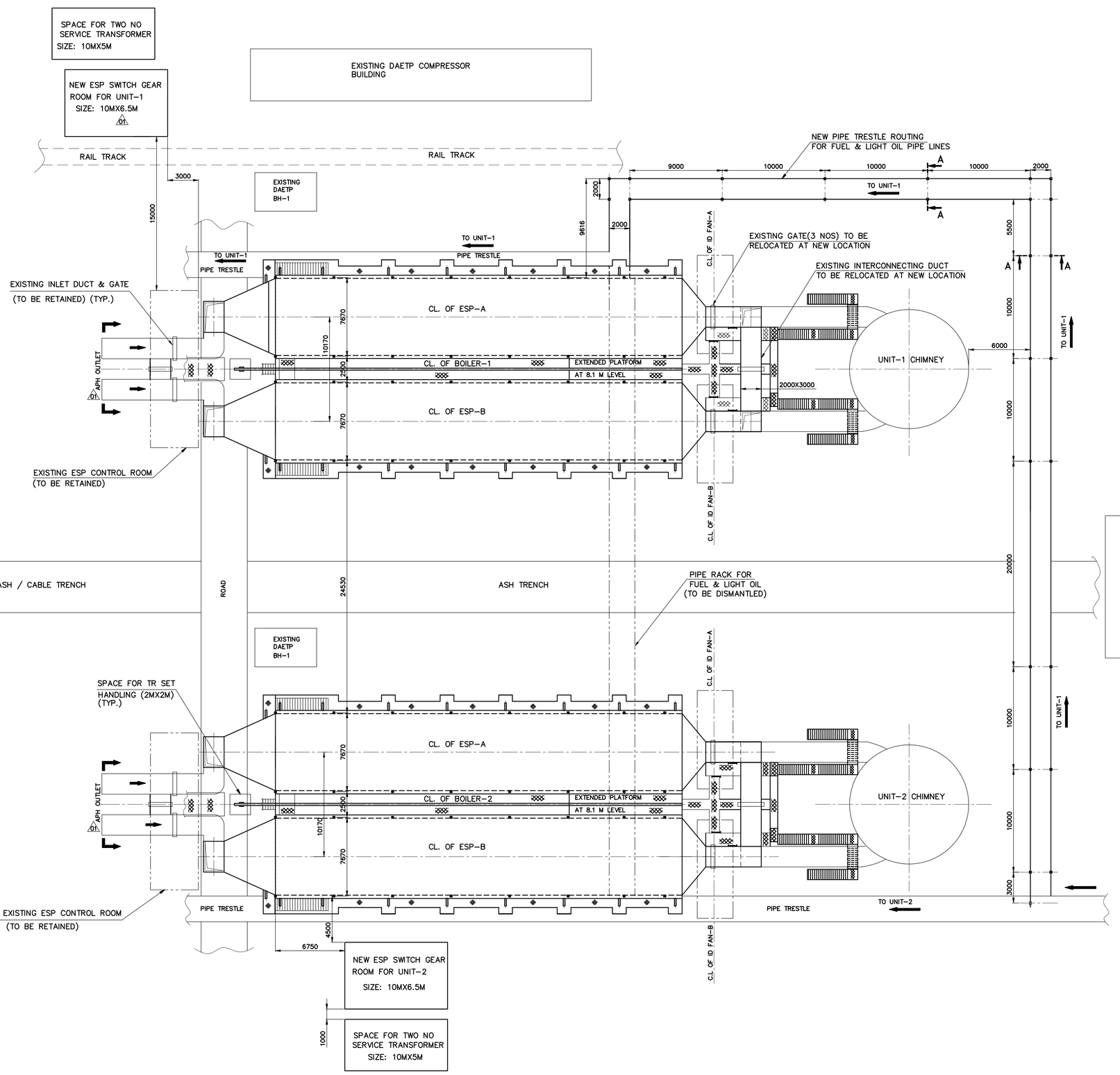
ELEVATION



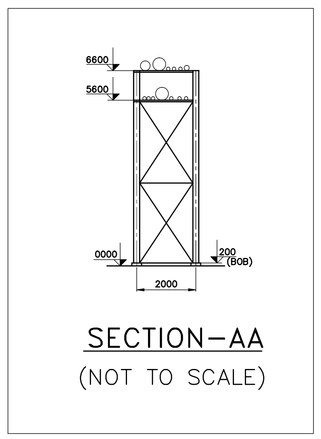
VIEW–Q



VIEW–P



PLAN



SECTION–AA
(NOT TO SCALE)

NOTES:

[ ] INDICATES BHEL/RANIPET SCOPE OF SUPPLY.

ESP SIZE: FAA–7X37.5M–72150–2; NO OF ESP PER BOILER: 2.
BOB – BOTTOM OF BASE PLATE.
TOF – TOP OF FLOOR GRILL.

01. 0000 LEVEL REFERS TO THE FINISHED FLOOR LEVEL (FFL) OF ESP AREA. +200 MM REFERS TO BOB LEVEL OF ESP SUPPORT COLUMN.

02. METHOD OF ESP UPGRADATION IS AS DETAILED BELOW;

A. EXISTING ESP INTERNALS ARE TO BE REPLACED WITH NEW DESIGN INTERNALS OF 15 M TALL FIELD. TWO NEW FIELDS ARE TO BE INSTALLED IN SERIES AT ESP OUTLET BY EXTENDING THE ESP CASING.

B. EXISTING ESP INLET DUCT ALONG WITH GATES ARE RETAINED. GATES & INTERCONNECTING DUCT AT ESP OUTLET ARE TO BE RELOCATED AS SHOWN IN THE DRAWING. DUCTING FROM ID FAN INLET TO CHIMNEY ARE RETAINED.

C. EXISTING PIPE RACK ALONG WITH PIPE LINES, ID FAN HANDLING, HOIST BETWEEN ESP OUTLET AND ID FAN ARE TO BE DISMANTLED TO FACILITATE ERECTION OF TWO NEW FIELDS.

D. EXISTING PLATFORM FOR COLLECTING ELECTRODE RAPPING IS TO BE RELOCATED AT +9790 LEVEL FROM ITS EXISTING LEVEL +10500 MM. PLATFORM WIDTH TO BE ENLARGED TO SUIT COLL. RAPPING DRIVE AND TO BE EXTENDED FOR LAST TWO NEW FIELDS.

E. EXISTING PLATFORM AT 8.1 M LEVEL BETWEEN ESP PASSES TO BE EXTENDED UPTO LAST TWO NEW FIELDS TO APPROACH PLATFORM AT 12.5M LEVEL TOWARDS ESP OUTLET SID.E

F. NEW ROUTING FOR DISMANTLED PIPE RACK MEANT FOR UNIT–1 IS SHOWN BEHIND THE CHIMNEY AND PROPOSED COLUMN LOCATIONS ARE ALSO INDICATED.

03. NEW ESP SWITCH GEAR ROOM LOCATION FOR UNIT–1 IS SHOWN AT 15 M DISTANCE FROM EXISTING ESP CONTROL ROOM.

04. NEW ESP SWITCH GEAR ROOM LOCATION FOR UNIT–2 IS SHOWN ADJACENT TO UNIT–2 ESP–B PASS AT 4.5 M DISTANCE.

05. EXISTING ESP CONTROL ROOM IS RETAINED FOR BOTH UNIT–1 AND UNIT–2 TO HOUSE EC PANELS OF TRANSFORMER RECTIFIERS.

06. A SEPARATE DRAWING WILL BE FURNISHED FOR MODIFIED MATERIAL HANDLING FACILITY FOR ID FAN CASING, ROTOR, MOTOR HANDLING.

01 07. EXISTING MATERIALS WHEREVER REQUIRED WILL BE USED COMPLYING THE REQUIREMENTS OF TENDER SPECIFICATION.

08. FOR ESP GENEARAL ARRANGEMENT DRAWING, REFER SEPARATE DRAWING NO.0–00–111–28717.

CUST. NO. R4B3, R4B4

REV	DATE	ALTERED	M.RAVICHANDRAN
01	25.09.12	CHECKED	G.GUNASEKAR

ZONE: C3,C2 C4,L3 L13

HSPCL COMMENTS VIDE EMAIL DT.19.09.12 AND 24.09.12 ARE INCORPORATED.

DRAWING UPDATED.

NAME OF CUSTOMER/ PROJECT: NTPC–SAIL POWER COMPANY PRIVATE LTD. 2X60 MW CAPTIVE POWER PLANT, ROURKELA R&M WORK FOR UPGRADATION OF ESP

BHARAT HEAVY ELECTRICALS LTD. UNIT: BOILER AUXILIARIES PLANT. RANIPET – 632 406.

	NAME	SIGN	DATE	NO.OF VAR.
DRN	T.AMBALAGAN	--SD--	29-08-12	--
CHD	M.RAVICHANDRAN		29-08-12	--
APPD	G.GUNASEKAR		29-08-12	

DEPT	GRADE OF UNTOL.DIM	SCALE	WEIGHT (KG).	REF. TO ASSY/OLD DRG.	ITEM NO.	NO. OF ITEMS
AQCS		N.T.S	---	-----	--	--
CODE 862	PR:QA:500					

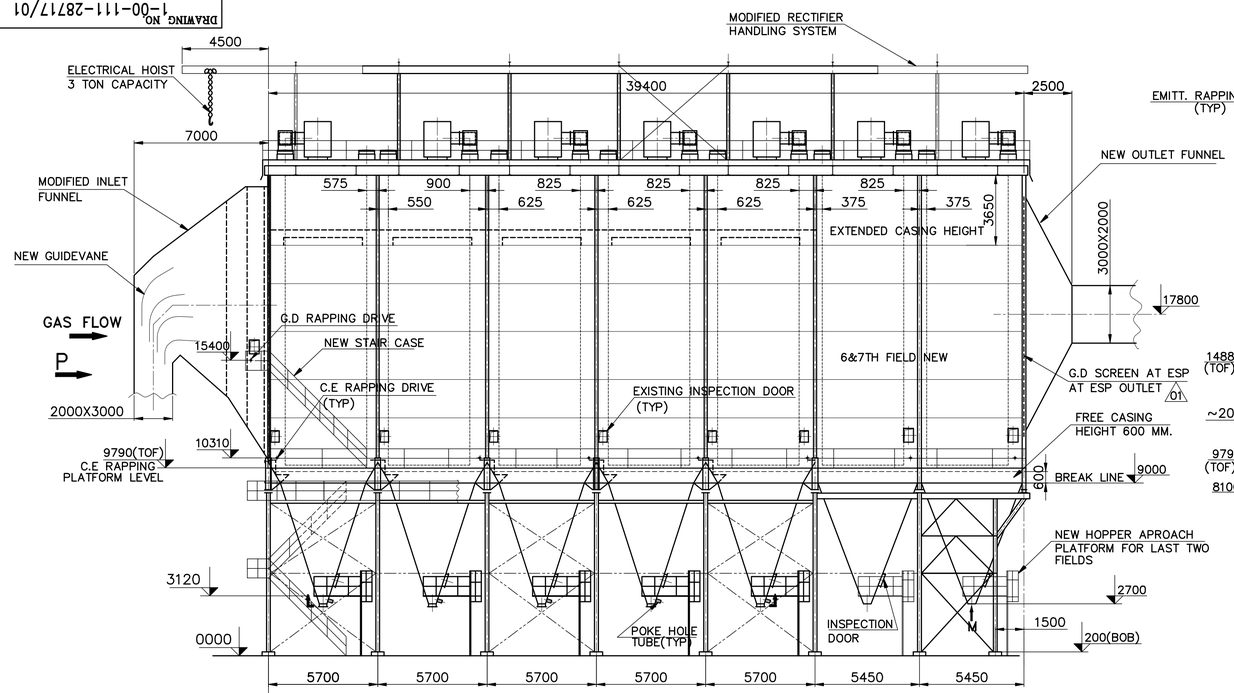
TITLE	CARD CODE	DRAWING NO.	REV
LAYOUT OF ESP & DUCTING DRAWING	U 01	0-00-111-27412	01

Size A0

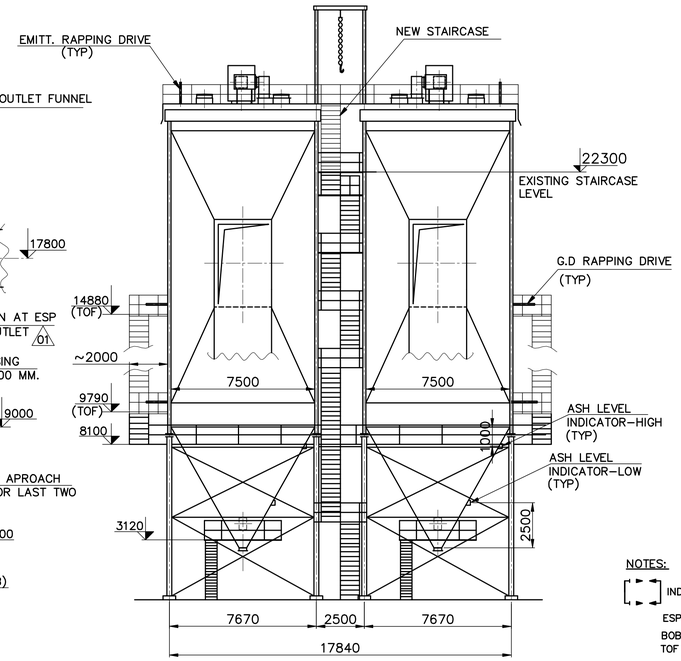
4220-104-PVG-B-001 Rev 1

DRAWING NO. 1-00-111-28717/01

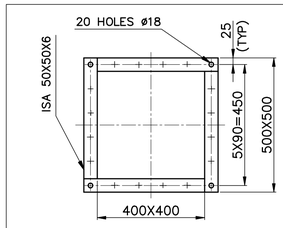
ALL DIMENSIONS ARE IN MILLIMETRES



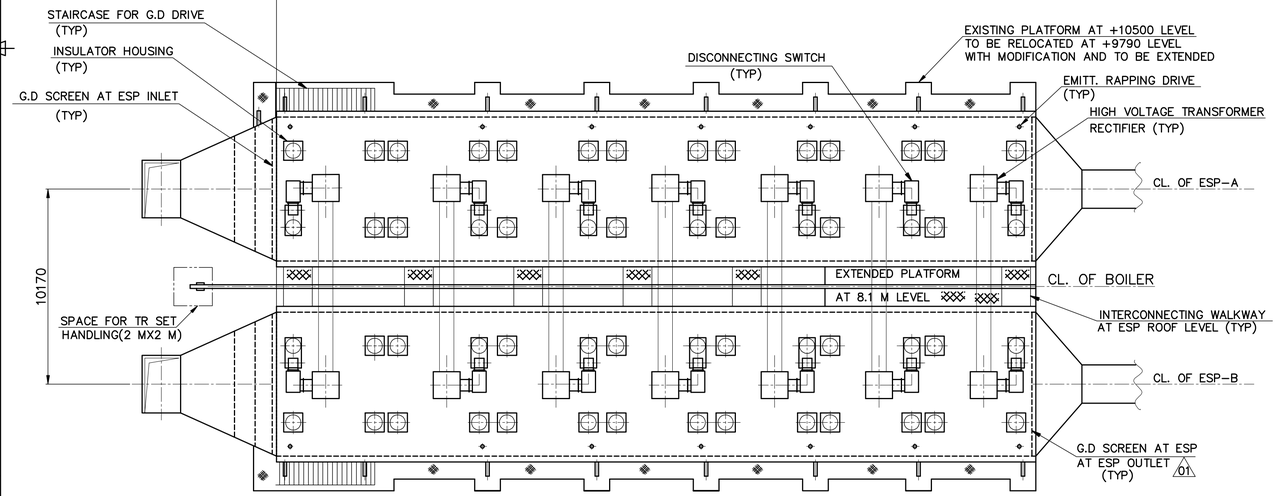
ELEVATION



VIEW-P



HOPPER BOTTOM FLANGE
(FOR NEW HOPPER)
VIEW-M



PLAN

SALIENT ESP DATA:

SL. NO.	DESCRIPTION	DETAILS
01	NO .OF TRANSFORMER RECTIFIER (TR) SET & RATING	14 Nos, 95 kV(P)/600mA (MEAN) WITH SILICON OIL
02	MATERIAL AND THICKNESS FOR NEW EXTENDED CASING, FUNNEL, HOPPER	5 mm THICK MILD STEEL PLATE CONFORMING TO IS 2062
03	MATERIAL AND THICKNESS OF NEW DUCT	6 mm THICK MILD STEEL PLATE CONFORMING TO IS 2062
04	MATERIAL AND THICKNESS OF ESP HOPPER LINING (FOR NEW HOPPERS)	16 SWG (1.6mm) THICK, SS 304 STAINLESS STEEL
05	MATERIAL AND THICK. OF COLLECTING ELECTRODES	18 BWG THICK MILD STEEL CONFORMING TO IS 513.
06	MATERIAL AND THICK. OF EMITTING ELECTRODES	2.7 mm DIA. STAINLESS STEEL WIRE CONFORMING TO 2RK66 (EQUIVALENT TO UHB 904 L) 01
07	ESP THERMAL INSULATION	LRB MINERAL WOOL, 100MM THICK DENSITY=100 KG/CU.M.
08	INSULATION CLADDING SHEET	PLAIN ALUMINIUM SHEET WITH THICKNESS OF 20 SWG (0.91mm)
09	CASING DESIGN PRESSURE	±650 mmWC
10	CASING DESIGN TEMPERATURE	200 DEG.C
11	SPECIFIC WEIGHT OF ASH FOR STORAGE CAPCITY	750 KG/M3
12	SPECIFIC WEIGHT OF ASH FOR STRUCTURAL STRENGTH	1350 KG/M3

NOTES:

[ ] INDICATES BHEL/RANIPET SCOPE OF SUPPLY.

ESP SIZE: FAA-7X37.5M-72150-2; NO OF ESP PER BOILER: 2.

BOB - BOTTOM OF BASE PLATE.
TOF - TOP OF FLOOR GRILL.

01. 0000 LEVEL REFERS TO THE FINISHED FLOOR LEVEL (FFL) OF ESP AREA. +200 MM REFERS TO BOB LEVEL OF ESP SUPPORT COLUMN.

02. METHOD OF ESP UPGRADATION IS AS DETAILED BELOW;

A. EXISTING ESP INTERNALS, ROOF ARE TO BE DISMANTLED TO INSTALL NEW DESIGN INTERNALS, WITH TALLER FIELD OF 15 M HEIGHT, 3.75 M LENGTH AND 7.2 M WIDTH AND CASING HEIGHT TO BE EXTENDED VERTICALLY TO SUIT 15 M TALL FIELD.

B. NEW INTERNALS TO BE LOCATED INSIDE THE CASING AS PER THE DIMENSIONS INDICATED FROM CASING COLUMN.

C. EXISTING ESP CASING TO BE EXTENDED HORIZONTALLY TO ACCOMMODATE TWO NEW FILEDS IN SERIES AT OUTLET SIDE.

D. LAST ROW OF ESP SUPPORT COLUMN IS LOCATED AT 1500 MM OFFSET FROM CASING COLUMN TO HAVE CLEAR SPACE FOR CIVIL WORKS.

E. EXISTING PIPE RACK, ID FAN HANDLING HOIST BETWEEN ESP OUTLETLET AND ID FAN ARE TO RELOCATED TO ACCOMMODATE LAST TWO NEW FIELDS.

F. PLATFORM FOR COLLECTING ELECTRODE RAPPING IS TO BE RELOCATED AT +9790 LEVEL FROM ITS EXISTING LEVEL +10500 MM. PLATFORM WIDTH TO BE ENLARGED TO SUIT COLL. RAPPING DRIVE AND TO BE EXTENDED FOR LAST TWO NEW FIELDS.

G. EXISTING INLET FUNNEL TO BE MODIFIED TO SUIT 15 M HEIGHT FIELDS. GAS DISTRIBUTION SCREENS, RAPPING SYSTEM FOR G.D SCREEN AND GUIDE VANES, APPROACH TO G.D DRIVE ARE TO SUPPLIED NEW.

H EXISTING RECTIFIER HANDLING SYSTEM TO BE EXTENDED AT FRONT SIDE AND REAR SIDE AS SHOWN IN THE DRAWING.

03. SIX HOUR ASH STORAGE IS PROVIDED IN 6.3 M HEIGHT HOPPER AND 600 MM HEIGHT FREE CASING AS SHOWN IN THE DRAWING.

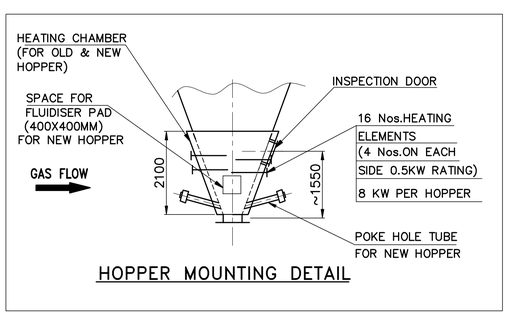
04. FOR EXISTING & NEW HOPPER, 2.1 M HEIGHT HEATING CHAMBER TO BE PROVIDED TO INSTALL 16 NOS HOPPER HEATERS (8 KW PER HOPPER) AS SHOWN THE DRAWING.

05. STAINLESS STEEL LINING 1.6 MM THICK AND SPACE PROVISION FOR FLUIDISING PAD ARE TO PROVIDED FOR NEW HOPPERS ONLY AS SHOWN IN THE DRAWING SECTION-QQ.

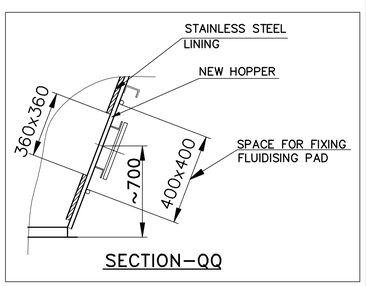
06. EXISTING MATERIALS WHEREVER REQUIRED WILL BE USED COMPLYING THE REQUIREMENT OF TENDER SPECIFICATION. 01

07. MOBILE ALUMINIUM LADDER, LIGHT WEIGHT, ONE NO PER UNIT WILL BE SUPPLIED TO APPROACH ASH LEVEL INDICATOR.

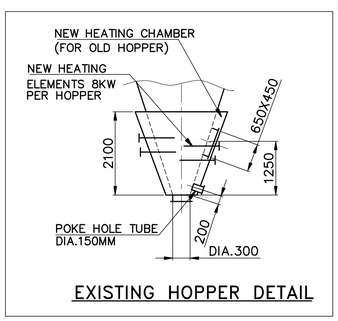
08. FOR ESP LAYOUT & DUCTING DRAWING, REFER SEPARATE DRAWING NO.0-00-111-27412.



HOPPER MOUNTING DETAIL



SECTION-QQ



EXISTING HOPPER DETAIL

REV	DATE	ALTERED M.RAVICHANDRAN
01	25.09.12	CHECKED G.GUNASEKAR
ZONE C7,F7 F9	NSPCL COMMENTS VIDE EMAIL DT.19.09.12 AND 24.09.12 ARE INCORPORATED. DRAWING UPDATED.	

CUST. NO. R4B3, R4B4

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: NTPC-SAIL POWER COMPANY PRIVATE LTD. 2X60 MW CAPTIVE POWER PLANT, ROURKELA R&M WORK FOR UPGRADATION OF ESP

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

	NAME	SIGN	DATE	NO.OF VAR.
DRN	T.ANBALAGAN	-30-	29-08-12	
CHD	M.RAVICHANDRAN		29-08-12	-
APPD	G.GUNASEKAR		29-08-12	

DEPT	GRADE OF UNTOL DIM	SCALE	WEIGHT (KG).	REF. TO ASSY/OLD DRG.	ITEM NO.	NO. OF ITEMS
AQCS		N.T.S	----		-	-
CODE 862	PR:QA:500					

TITLE: GENERAL ARRANGEMENT OF ESP WITH ADDITIONAL FIELD

CARD CODE: U 01

DRAWING NO.: 1-00-111-28717

REV: 01

Size A1

THIS DRAWING IS FOR TENDER PURPOSE ONLY

REV.NO.	DATE	DESCRIPTION	DESIGNED	DRAWN	CHECKED	APPROVED

REVISIONS

ENGINEERING PROJECT MANAGEMENT CONSULTANCY AND RESEARCH
AN IIT-MADRAS INCUBATED FIRM

CLIENT : BHEL Ranipet

CONSULTANT : IC & SR, IIT MADRAS

PROJECT : RETROFITTING OF ESP IN UNIT 1 & 2, CPP-II, NSPCL ROURKELA STEEL PLANT

SUPPLIER / CONTRACTOR :

JOB No. :

	NAME	SIGN	DATE
DSGN			
DRWN			
CHKD			
APPD			

TITLE : TENTATIVE/PREFERABLE
TOWER CRANE POSITION FOR ESP RETROFIT

DATE: 22.10.2012

PROJECTION

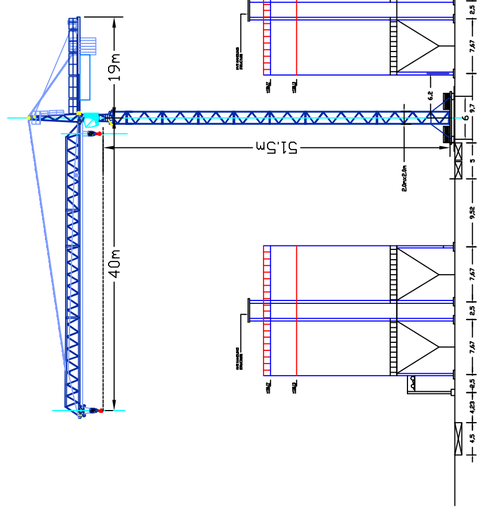
DRG. No. E P M C R / 2 0 1 2 / B H E L / R S P 0 2

SIZE **A1** REV.

SHEET OF

RELEASED FOR ☐ PRELIMINARY ☐ TENDER ☑ INFORMATION ☐ APPROVAL ☐ CONSTRUCTION

TOWER CRANE LOCATION - ELEVATION VIEW



NOTES:

1. ALL DIMENSIONS ARE IN METRES.
2. ACCESS WAY FOR TRAILER AND CRANE MOVEMENT TO BE PLANNED/ARRANGED.
3. THE DISMANTLING AND ERECTION OF ESP COMPONENTS EXCEPT GUILLOTINE GATE AT UNIT-II, PASS B COULD BE DONE WITH THE TOWER CRANE.
4. THE TOWER CRANE SHALL PREFERABLY BE WITH BASE BALLAST.

SCALE 1 : 1000

N E W S

LEGENT
PIPE LINE
ROAD
COVERED TRENCH
OPEN TRENCH
BUILDING OUT LINE
FENCE LINE
COLUMNS
FIRE HYDRANT
TREE
LAMP POST
SURVEY POINT
EXISTING ESP
PROPOSED ESP EXTENSION
EXISTING ESP COLUMN PEDESTAL
PROPOSED ESP COLUMN PEDESTAL
PIPE RACK (ELEVATED)

CULVERT
COAL HANDLING PLANT
HI:16.90m
BT ROAD
CONVEYOR LINE
DUST BIN
WEIGH BRIDGE
OFFICE
SHOP
CANTEEN (G+0)
CENTRAL STORE
HYDROGEN EMPTY CYLINDER YARD
SHED
CAR PARKING
CONVEYOR
HI:32.044m
7,26
MECHANICAL STORE
4,23
3,38
20,59
UNDER CONSTRUCTION
10,96
5,05
CULVERT
(G+0) RCC
HI:10.354m
power line crossing
PROPOSED MATERIAL STORAGE AREA FOR ESP
9,08
TBM-1 RL:100.00
SERVICE BUILDING
SERVICE WATER TANK CAPACITY-125M3
TOILET
TWO WHEELER PARKING
CAR PARKING
LAWN
TURBINE HALL
CYLINDER
TRANSFORMER
STEPS
3,06
DRY ASH EWACULATION SYSTEM
CYLINDER
SHED
4,58
TRACK LINE
CAPACITY-250M3
ASH HANDLING SILO
SH101
PIPE STOCK
3,27
Ø4,24
6,07
TOWER CRANE 12 Ton Capacity
BOILER NO:-1
HOT WATER TANK
ESP-1
R40
7,5
9,54
1,38
CHIMNEY-1 HI-130.90m
SH99
2,39
ID FAN 1B
STAGE
PEEPAL TREE
SHED BMD SITE STORE
ASH WATER AND SLURRY PUMP HOUSE
DUCT
DUCT
ASH HANDLING SILO
HI:14.150m
HI:8.866m
ID FAN 2A
HI:12.55m
2,14
1,32
CHIMNEY-2
SH98
HOPPER
5,7
ID FAN 2B
3,95
ESP-2
5,45
SH95
SH96
SH97
pipe line crossing
HI:6m
FUEL OIL PUMP HOUSE (G+0)
BOILER NO-2
132KV TRANSFORMER YARD
CONDONSATE STRORAGE TANK-2
13,77
51,81
CONCRETE PAVEMENT
4,49
4,41
3,63
6,43
TEMPORARY TEMPLE
RS POWER BUILDERS (SITE OFFICE) TEMPORARY SHED
BSES SITE OFFICE
SHED
FERROUS MATERIALS
DRUM YARD
COAL MILL REJECTS
5S ZONE-IV SUB ZONE-BMD COMMON AREA
OPEN DRAIN
FENCE LINE
102,53
100,61
31,68
53,79
115,97
58,05
TREES PLANTATION
TRANSFORMER
EMERGENCY COOLING WATER
SERVICE WATER TANK (OHT)
DM STORAGE
ADMIN BUILDING
CONDENSATE COOLING TOWER