



Bharat Heavy Electricals Limited

(A Government of India Undertaking)

Power Sector – Eastern Region

Plot No. 9/1, Block-DJ, Salt Lake City,
Kolkata – 700 091 (INDIA)

Phone no. 033 - 2321 1690 / 1691

Fax : 033 - 2321 1960

Web : www.jantermanter.com / www.bhel.com

REF : PSER: PUR: PMX: 178: 006:01:

DATE : 29-04-2008

M/s _____

TCN (Tender Change Note) – 01

Dear Sir,

**SUB : Manufacturing & Supply Of Foundation Bolt Assembly At 1x 37.2 MW
APGCL-Lakwa Waste Heat Recovery Project (Phase-I), Lakwa, Assam.**

Ref: Tender specification no. PSER: PUR: PMX: 178: 006

With reference to above, it may please be noted that the due date of offer submission of above mentioned tender is extended up to **05-05-2008 (15-00 Hrs)**. Please find further enclosed as Annexure to TCN-01 –Addition/ Clarification on techno-commercial points, payment terms and also scanned copy of relevant drawings (with additional notes) which are to be considered for submission of offer. All other terms & conditions of the tender shall remain unchanged.

Thanking you

Yours faithfully,
For & on behalf of BHEL,

Encl: Annexure to TCN-01

(Sr. Manager – PUR)

Contact Details : Tel. No. : 033-2321-6130
(extn.-3228)
033-2321-1690
Fax No. : 033-2321-1960
E-mail : ppd@bhelsr.co.in

Annexure to
TCN-01

AA) Following addition/ clarification on technical issues, price offer and commercial terms may please be considered while quoting against Tender no **PSER: PUR: PMX: 178:006** dated 16.04.2008:

- **Road Permit for delivery at Lakwa site from vendor's works (if located outside Assam) shall be provided by BHEL.**
- **Delivery Time for Foundation Bolt assembly of Power house and De-aerator to be considered as 45 days from date of LOI and that of balance shall be 60 days from date of LOI.**
- **Rates to be quoted on weight (Kg) basis in PRICE SCHEDULE. Payment shall be made based on actual weight of the bolt assembly, to be mentioned in the challan and to be verified by BHEL at site. Weights mentioned in "LIST OF FOUNDATION BOLTS WITH WT & SIZES" (Drg. No. Annexure-I) are approximate only.**
- **Raw material (MS Rod for bolt) shall be as per IS:2062 and material test certificate for MS rod to be furnished as evidence. MS-plate shall be as per IS:2062. Pipe sleeves shall be as per IS:1161. Washers shall be as per IS:2016. Nuts shall be as per IS:1363 (Part-3), Grade-C.**
- **Drawings shall be as per copy attached (FOUNDATION BOLT).**

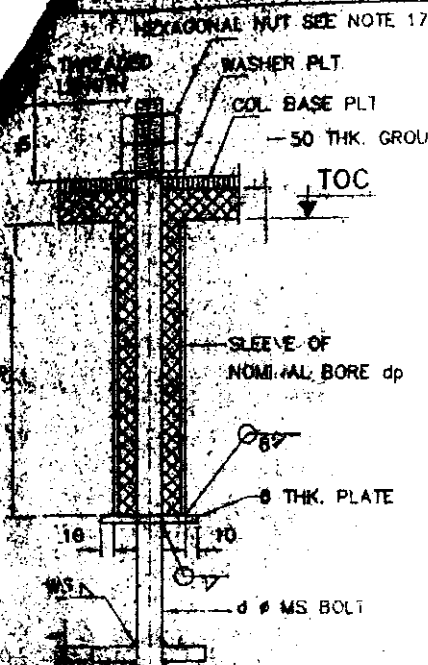
ANNEXURE-I (INDENT FOR FOUNDATION BOLT)

SI No	Dia of Bolt	Length(mm)	Wt (in Kg per unit)	Aprox nos required	Total wt (in Kg)
1	20 mm	685	4.50	272	1224.00
2	25 mm	860	7.62	348	2651.76
3	30 mm	1100	12.65	8	101.20
4	32 mm	1105	13.39	20	267.80
5	36 mm	1285	18.21	184	3350.64
6	40 mm		23.12		0.00
7	48 mm	1600	28.99	88	2551.12
8	60 mm	1775	55.15	56	3088.40
9	76 mm	2290	108.91	48	5227.68
10	80 mm	2405	115.17	24	2764.08
11	85 mm	2565	143.28	72	10316.16
12	90 mm	2575	166.69	16	2667.04
	TOTAL			1136	35000(approx)

NOTE - LENGTH OF BOLTS MENTIONED AGAINST EACH CATEGORY (DIA) OF BOLT WILL SUPERSEDE THE RESPECTIVE LENGTH OF BOLT, MENTIONED IN THE DRAWINGS ATTACHED HERE WITH. HOWEVER ALL OTHER DIMENSIONS OF THOSE DRAWINGS WILL BE APPLICABLE FOR THE SAID BOLT ASSEMBLY.

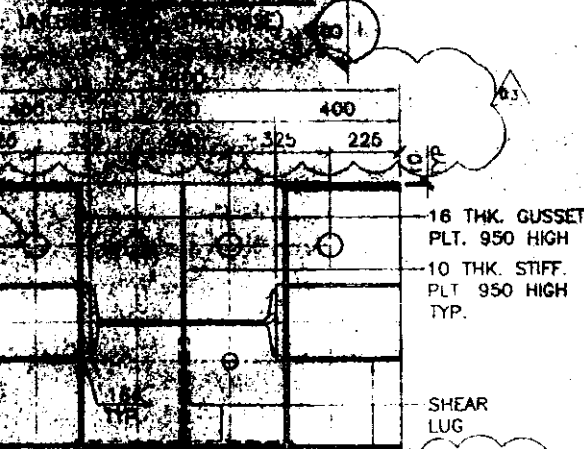
BOLT SCHEDULE - FOR POWER HOUSE

BOLT DESIGNATION	25 #	36 #	60 #	75 #	80 #	85 #	90 #
d-	25	36	60	75	80	85	90
l	700	1100	1525	2000	2100	2250	2350
p	180	185	250	290	305	315	325
th	85	110	160	190	200	210	220
s	550	600	600	800	800	800	800
dp	65	90	110	120	120	125	130
b	75	110	150	185	200	215	230
t	16	16	28	32	32	32	30
Weld Size-WS	8	8	10	12	12	15	15
HEXAGONAL NUT	41.2 # x 25 THK.	59.5 # x 36 THK.	99 # x 60 THK.	125.4 # x 75 THK.	182.4 # x 80 THK.	190.2 # x 85 THK.	148.8 # x 90 THK.
WASHER PLATE #	53 # x 4 THK.	74 # x 5 THK.	28 # x 6 THK.	163.4 # x 10 THK.	172 # x 10 THK.	185.8 # x 12 THK.	183.5 # x 12 THK.
TENSION CAPACITY IN TONS	5.40 T	12.30 T	33.0 T	54.4 MT	60.3 MT	65.1 MT	70.3 MT
TOTAL LENGTH BOLT	860	1285	1775	2280	2405	2565	2675
TOTAL NOS. REQUIRED	75	55	24	48	24	75	55



03

DETAIL OF BOLT



PLAN (DETAIL OF BASE PLATE BP1) (SCALE 1:20) (2 NOS)

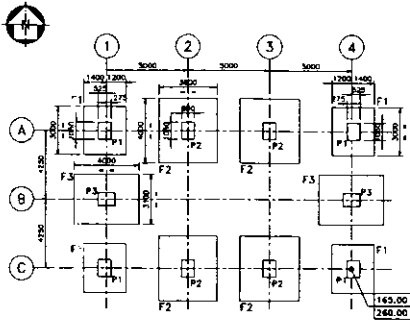
LEGEND

1	16 THK. GUSSET PLT. 950 HIGH
2	10 THK. STIFF. PLT. 950 HIGH TYP.
3	SHEAR LUG
4	10 THK. STIFF. PLT. 300 HIGH OPTICAL
5	16 THK. GP 950 (1550)
6	2 NOS. 40 # SHEAR LUG GROUT HOLES
7	8 NOS. 30 # HOLES FOR M25 # BOLTS

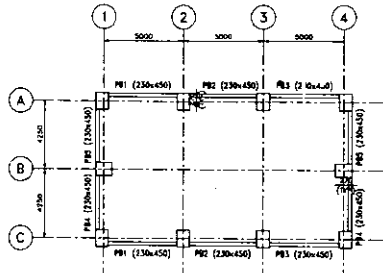
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

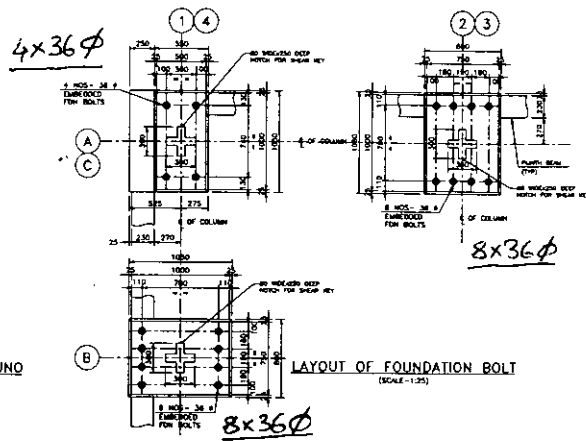
1-38142-04641-00
Dwg. No. OF SHIT



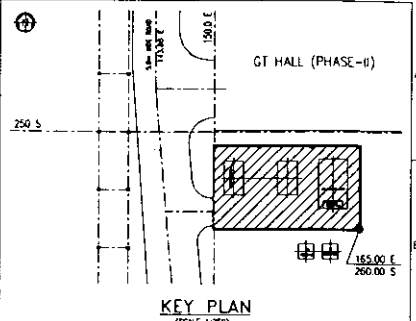
LAYOUT OF PEDESTAL & FOUNDATION (SCALE-1:150)



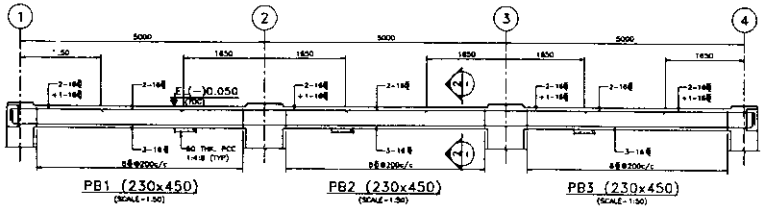
LAYOUT OF PLINTH BEAMS AT EL(-)0.50 (TOC) UNO (SCALE-1:150)



LAYOUT OF FOUNDATION BOLT (SCALE-1:35)



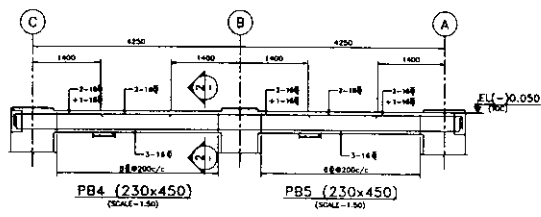
KEY PLAN (SCALE 1:250)



PB1 (230x450) (SCALE-1:50)

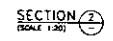
PB2 (230x450) (SCALE-1:50)

PB3 (230x450) (SCALE-1:50)

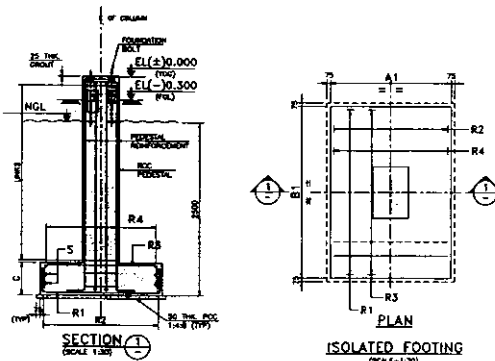


PB4 (230x450) (SCALE-1:50)

PB5 (230x450) (SCALE-1:50)



SECTION 1-1 (SCALE 1:20)



SECTION 1-2 (SCALE 1:20)

ISOLATED FOOTING (SCALE-1:30)

SCHEDULE OF PEDESTALS (SCALE 1:40)

PEDESTAL MKD.	PEDESTAL SIZE		REINF. DETAIL UP TO PLINTH LEVEL
	N-S	E-W	
P1 & P2	800	1050	
P3	800	1050	

SCHEDULE OF REINFORCEMENT FOR ISOLATED FOOTINGS

FOUNDATION MARKED	NOS. OF FOUNDATION	DIMENSIONS				REINFORCEMENT				REMARKS
		A1	B1	C	R1	R2	R3	R4		
F1	4	2600	3000	500	12# @ 200c/c	12# @ 200c/c	10# @ 200c/c	10# @ 200c/c	2-10#	
F2	4	3600	4000	600	12# @ 200c/c	12# @ 200c/c	10# @ 200c/c	10# @ 200c/c	2-10#	
F3	2	3100	4000	600	12# @ 200c/c	12# @ 200c/c	10# @ 200c/c	10# @ 200c/c	2-10#	

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HYD-203261

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LEGEND

- FGL ----- FINISHED GROUND LEVEL
- FFL ----- FINISHED FLOOR LEVEL
- TOP ----- TOP OF PAVING
- TOC ----- TOP OF CONCRETE
- EL ----- ELEVATION
- CL ----- CENTRE LINE
- UNO ----- UNLESS NOTED OTHERWISE
- BOF ----- BOTTOM OF FOOTING

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES. LEVELS & CO-ORDINATES ARE IN METRES.
2. EL(+0.050) REFERS TO FINISHED FLOOR LEVEL OF PROPOSED SITE AND CONTROL BUILDING WHICH CORRESPONDS TO EL(+01.500) AT SITE.
3. CONCRETE GRADE USED SHALL BE M25. THE CONCRETE MIX SHALL BE AS PER DESIGN OR CORRECTIVE TO IS : 456-2000.
4. REINFORCEMENT USED SHALL BE HYSD BARS CORRESPONDING TO IS : 1786-1985.
5. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE AS FOLLOWS U.N.O.
6. ALL FOUNDATION BOLTS TO BE EMBEDDED IN THE PEDESTAL WALL BEFORE CONCRETING.

REFERENCE DRAWINGS (LATEST REVISIONS)

- CONSTRUCTION**
- 1. 0-381-01-00071 ----- PLOT PLAN
 - 2. 2-38142-0706 ----- GENERAL NOTES ON ARCHITECTURAL WORKS
- ENGINEERING**
- 1. 2-38101-00721 ----- EQUIPMENT LAYOUT COMPRESSOR BUILDING
 - 2. 1-38142-04640 ----- COMPRESSOR BUILDING ARCHITECTURAL PLAN, SECTIONS, ELEVATIONS & FINISH SCHEDULE

REVISION '00' OF THIS DRAWING IS APPROVED UNDER ACTION CODE-3 BY DCL(REF.88211/G/680 DT-30/08/07)

PROJECT : 1x37.2MW WASTE HEAT RECOVERY PROJECT (PHASE-I) AT LAKWA THERMAL POWER STATION

CUSTOMER : ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT : DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

DEPT. : CIVIL, DIV. : PWT, SCALE : 1:150, HEIGHT (M) REF. TO ARBY. MAR. FROM B.M. / FROM F.F.M.

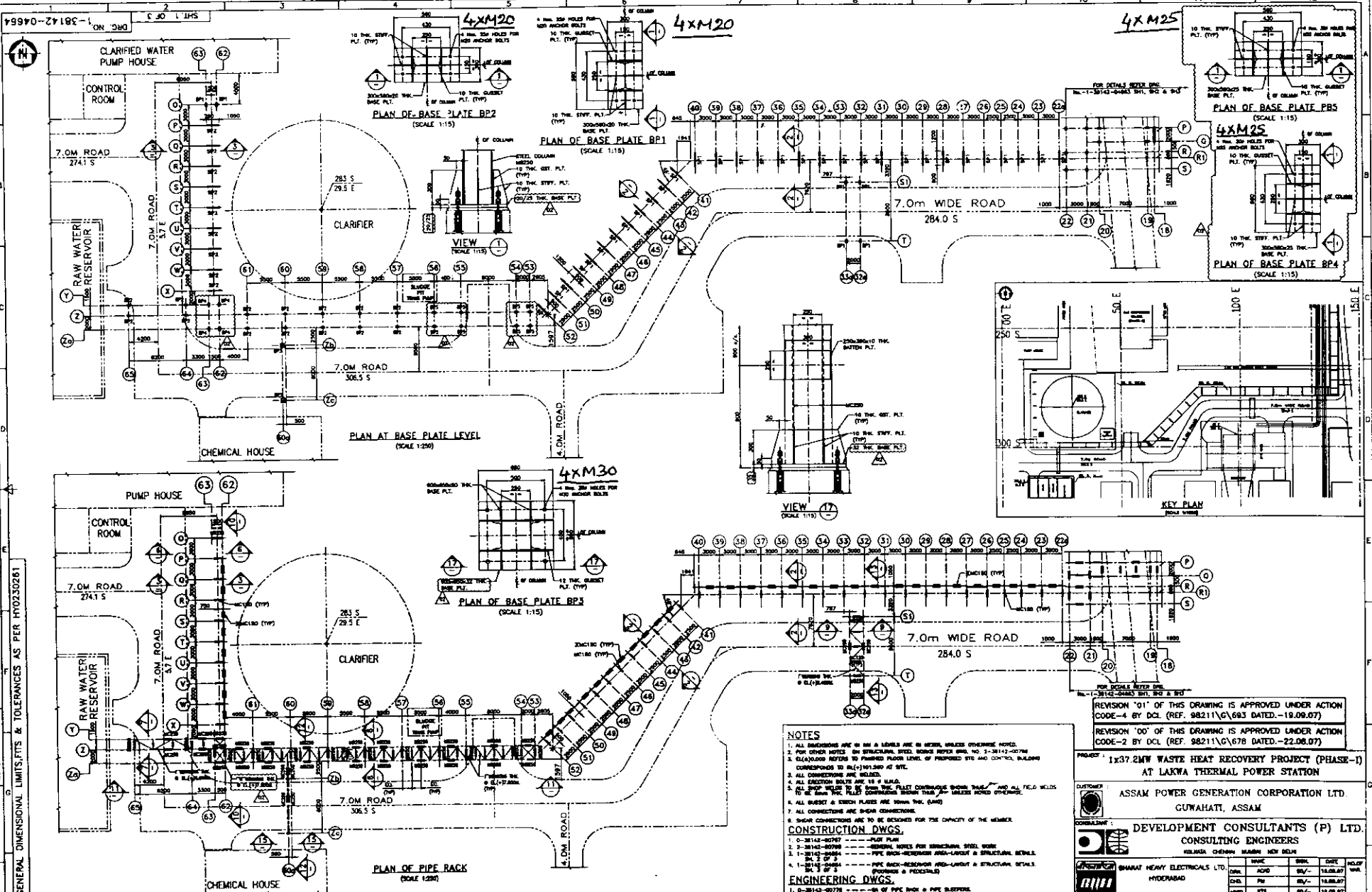
PROJECT : COMPRESSOR BUILDING LAYOUT & R.C.C. DETAILS OF FOOTINGS, PEDESTALS AND PLINTH BEAMS. Dwg. No. : 1-38142-04641-00

FICTNER Consulting Engineers (India) Private Limited

Part - II

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)



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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER IS:2023:2021

- NOTES**
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS UNLESS OTHERWISE NOTED.
 2. FOR OTHER NOTES ON STRUCTURAL STEEL WORK REFER DWG. NO. 2-38142-00786
 3. ELEVATIONS REFER TO FINISHED FLOOR LEVEL OF PROPOSED SITE AND CONTROL BUILDING CORRESPONDING TO RELIEF/TOPOGRAPHY AT SITE.
 4. ALL CONNECTIONS ARE WELDED.
 5. ALL EJECTION BOLTS ARE 18 x 160.
 6. ALL ROOF WELLS TO BE WITH THE FLAT CONTIGUOUS DOWN SLOPE AND ALL FIELD WELLS TO BE WITH THE FLAT CONTIGUOUS WITH THE SLOPE UNLESS NOTED OTHERWISE.
 7. ALL GROUND & BURIAL PIPES ARE WITH TRIP (LAMP).
 8. ALL CONNECTIONS ARE SLEAVE CONNECTIONS.
 9. SLEAVE CONNECTIONS ARE TO BE CHECKED FOR THE CAPACITY OF THE MEMBER.

- CONSTRUCTION DWGS.**
1. 0-38142-00787 --- PLAN PLAN
 2. 2-38142-00786 --- GENERAL NOTES FOR STRUCTURAL STEEL WORK
 3. 1-38142-00804 --- PIPE BRACK-RESERVOIR AND LAYOUT & STRUCTURAL DETAILS
 4. 1-38142-00805 --- PIPE BRACK-RESERVOIR AND LAYOUT & STRUCTURAL DETAILS (PROGRESS & PIEDESTALS)
 5. 2-38142-00778 --- PLAN OF PIPE BRACK & PIPE SLEEVES.

- ENGINEERING DWGS.**
1. 0-38142-00778 --- PLAN OF PIPE BRACK & PIPE SLEEVES.

REVISION '01' OF THIS DRAWING IS APPROVED UNDER ACTION CODE-4 BY DCL (REF. 98211\G\683 DATED.-19.09.07)

REVISION '00' OF THIS DRAWING IS APPROVED UNDER ACTION CODE-2 BY DCL (REF. 98211\G\678 DATED.-22.08.07)

PROJECT: 1x37.2MW WASTE HEAT RECOVERY PROJECT (PHASE-1) AT LAKWA THERMAL POWER STATION

CUSTOMER: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT: DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

DATE	BY	CHKD	DATE	NO.
19.09.07	SV	SV	19.09.07	01
19.09.07	SV	SV	19.09.07	02
19.09.07	SV	SV	19.09.07	03

SCALE: 1:250

PIPE RACK - RESERVOIR AREA LAYOUT AND STRUCTURAL DETAILS

FICHTNER
Consulting Engineers
(India) Private Limited

REV.	DATE	ALIGNED	CHKD/APPD	REV.	DATE	ALIGNED	CHKD/APPD	REV.	DATE	ALIGNED	CHKD/APPD	REV.	DATE	ALIGNED	CHKD/APPD
01	28.08.07	CHK/APPD		02	28.08.07	CHK/APPD		03	28.08.07	CHK/APPD		04	28.08.07	CHK/APPD	
05	28.08.07	CHK/APPD		06	28.08.07	CHK/APPD		07	28.08.07	CHK/APPD		08	28.08.07	CHK/APPD	

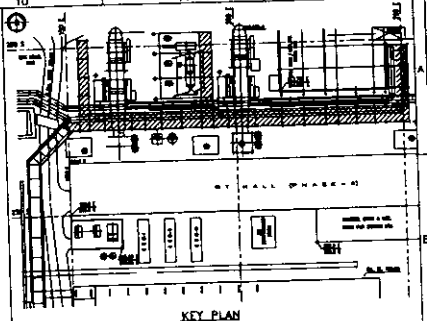
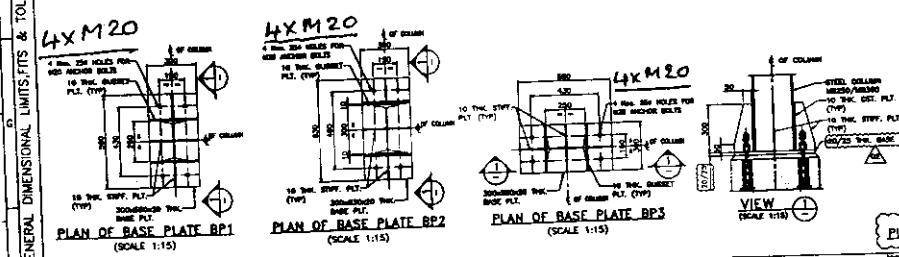
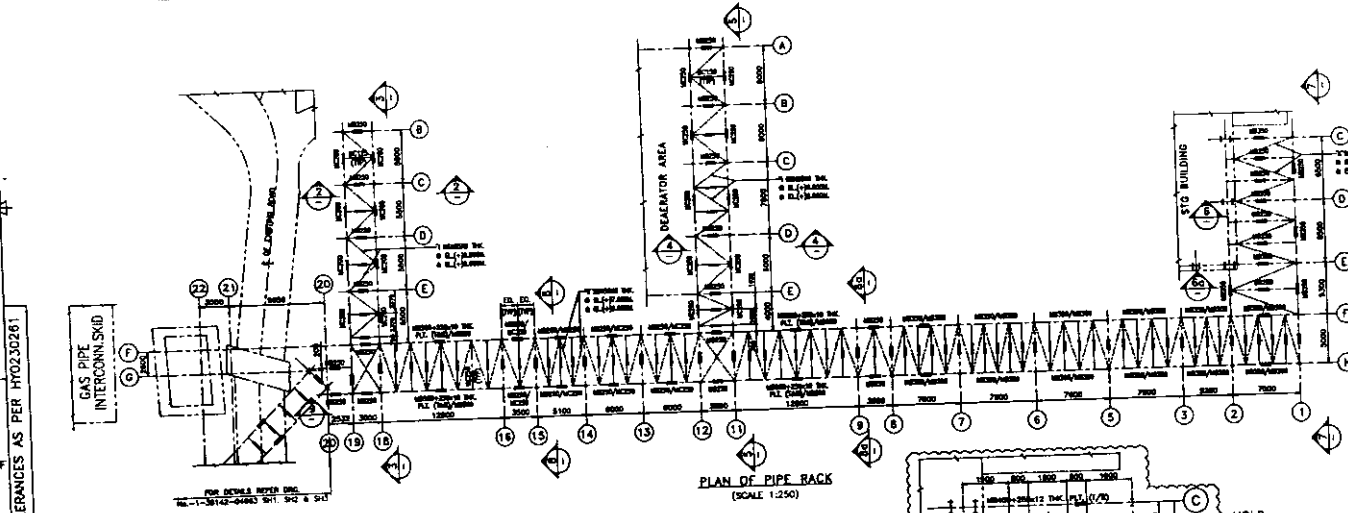
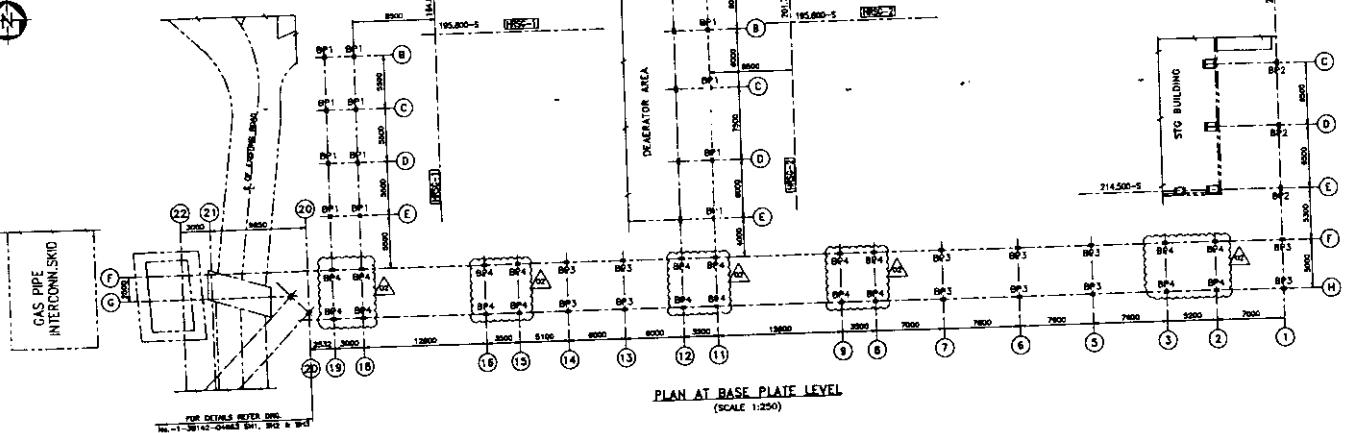
02

1-38142-04664

(ALL DIMENSIONS ARE IN mm)

FIRST ANGLE PROJECTION

DWG. NO. 1-38142-04662
SHT. 1 OF 3



REVISION '01' OF THIS DRAWING IS APPROVED UNDER ACTION CODE-3 BY DCL (REF. 98211\G\693 DATED.-19.09.07)
REVISION '00' OF THIS DRAWING IS APPROVED UNDER ACTION CODE-3 BY DCL (REF. 98211\G\678 DATED.-22.08.07)

NOTES
1. ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS, UNLESS OTHERWISE NOTED.
2. FOR OTHER NOTES ON STRUCTURAL, STEEL, MISC. REFER Dwg. NO. 1-38142-0278A
3. ALL DIMS. REFER TO FINISHED FLOOR LEVEL OF PROPOSED SIG AND CONTROL BUILDING CORRESPONDS TO RL(+141.500) AT SITE.
CONSTRUCTION DWGS.
1. 0-38142-0278F --- PLOT PLAN
2. 1-38142-0278A --- GENERAL NOTES FOR STRUCTURAL, STEEL WORK
3. 1-38142-0278B --- PIPE RACK-HRSG AREA-LAYOUT & STRUCTURAL DETAILS (SHEET 1 OF 3)
4. 1-38142-0278C --- PIPE RACK-HRSG AREA-LAYOUT & STRUCTURAL DETAILS (FOOTINGS & PILEDRILLS) (SHEET 2 OF 3)
ENGINEERING DWGS.
1. 0-38142-0277B --- 04 OF PIPE RACK & PIPE SLEEVES

PROJECT: 1x37.2MW WASTE HEAT RECOVERY PROJECT (PHASE-I) AT LAKWA THERMAL POWER STATION

CUSTOMER: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT: DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

NO.	DATE	BY	CHKD.	APPD.	SCALE	REVISION	DATE	BY	CHKD.	APPD.
01	18.08.07	SHR	SHR	SHR	1:250	1	18.08.07	SHR	SHR	SHR
02	18.08.07	SHR	SHR	SHR	1:250	2	18.08.07	SHR	SHR	SHR
03	18.08.07	SHR	SHR	SHR	1:250	3	18.08.07	SHR	SHR	SHR
04	18.08.07	SHR	SHR	SHR	1:250	4	18.08.07	SHR	SHR	SHR

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(India) Private Limited
Member

PIPE RACK - HRSG AREA LAYOUT AND STRUCTURAL DETAILS

1-38142-04662-02
SHEET No. 1 OF SHEET 3

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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230281

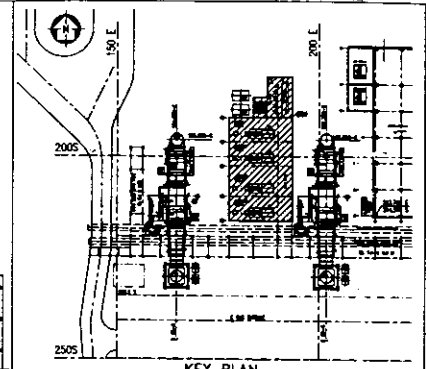
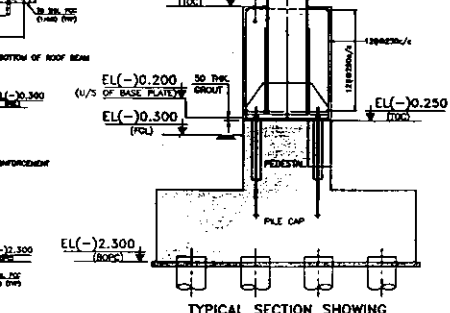
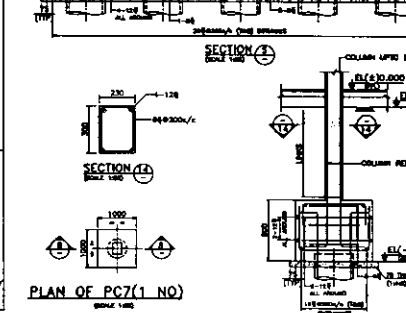
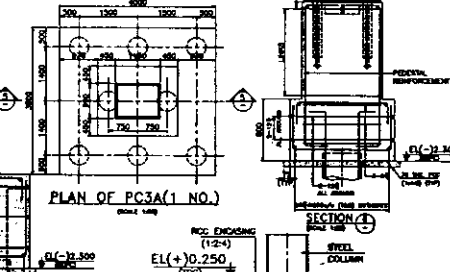
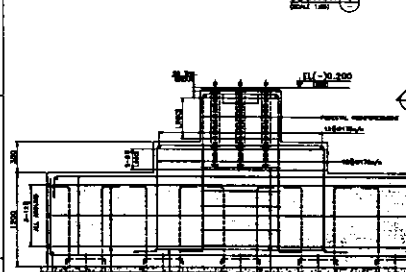
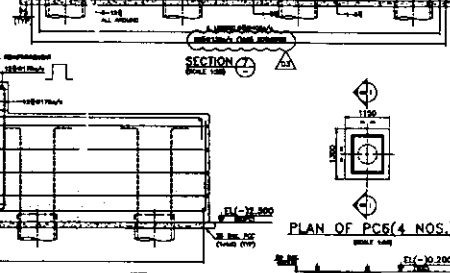
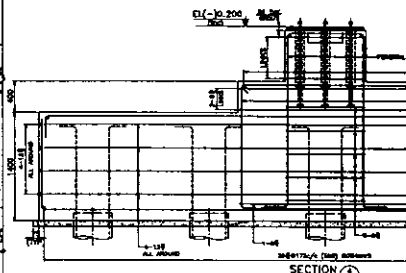
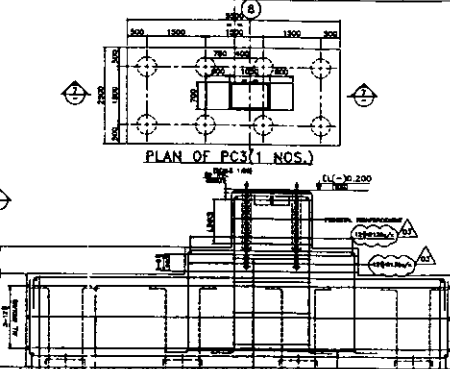
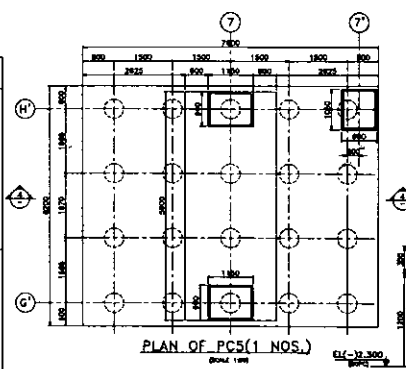
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN MM)

PS990-27182-1 ON SHC

SCHEDULE OF PEDESTALS

COLUMN GRID MKD.	H-S	C-W	COLUMN REINF. DETAIL	PEDESTAL PLAN
C7,C8	1050	700		 6x32φ
C7,C8	700	1050		 6x25φ
D7,D8	800	1100		 8x48φ
D7,D8,E7,E8	900	1150		 8x48φ
F7	900	1150		 8x60φ
H7	1850	900		 8x32φ
H7,H8,J7,J8	1000	850		 6x25φ



SCHEDULE OF QUANTITY (APPROXIMATE)

SL. NO.	ITEM	UNIT	QTY.	REMARKS
1	CONCRETE NOS	m ³	500	
2	REINFORCEMENT	MT	3.00	
	20#	MT	30.0	
	16#	MT	4.00	
	12#	MT	15.0	
	8#	MT	8.00	

LEGEND
 FFL — FINISHED FLOOR LEVEL
 TOP — TOP
 E — ELEVATION
 C — CENTER LINE
 BOPC — BOTTOM OF PILE CAP
 TOC — TOP OF CONCRETE
 TOB — TOP OF BOLT
 BOF — BOTTOM OF FOUNDATION

NOTES
 1. ALL DIMENSIONS ARE IN MILLIMETERS LEVELS & CO-ORDINATES ARE IN METERS.
 2. ELEVATION REFERS TO FINISHED FLOOR LEVEL OF PROPOSED STC AND CONTROL BUILDING WHICH CORRESPONDS TO RL+101.500 AT SITE.
 3. GRADE OF CONCRETE USED SHALL BE AS PER CONCRETE GRAD SHALL BE DESIGN TO BE DONE BY CONTRACTOR TO BE DONE.
 4. REINFORCEMENT USED SHALL BE HYSD BARS CONFORMING TO IS: 1786-1985.
 5. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE AS FOLLOWS I.S.I.
 a) PILECAP — 75mm TOP 100mm BOTTOM
 b) PEDESTAL — 50mm TOP 50mm BOTTOM
 c) COLUMN — 50mm TOP 50mm BOTTOM
 6. ALL BARS ARE CENTRE LINE OF COLUMN I.S.I.
 7. FOR BOLTS SEE DRAWING NO. 1-38142-0481
 BOLTS SHALL BE PLACED IN POSITION BEFORE CONCRETING PEDESTAL/PILECAP

REFERENCE DRAWINGS

- CONSTRUCTION
 1. 1-38142-0277 — GENERAL NOTES ON CONCRETE WORK
 2. 1-38142-0480 — DEAEATOR & BFP AREA—S.A. & PLANS
 3. 1-38142-0485 — DEAEATOR & BFP AREA—L.A. OF ELEVATION & DETAILS
 4. 1-38142-0486 — DEAEATOR & BFP AREA—LAYOUT & R.C.C. DETAILS OF PILECAPS, PLINTH BEAMS & PEDESTALS
- ENGINEERING
 1. 0-381-01-0206 — PLOT PLAN
 2. 0-381-01-0206 — EQUIPMENT LAYOUT—DEAEATOR & BFP AREA (INT. D)
 3. 0-381-01-0207 — EQUIPMENT LAYOUT—DEAEATOR & BFP AREA (INT. D)
 4. 0-381-01-0207A — EQUIPMENT ROOM LAYOUT FOR POWER CYCLE

REVISIONS: ALL OF THESE DRAWINGS IS APPROVED UNDER ACTION-3 BY DCPL (REF: MEMO DATED 22.08.07)

PROJECT: 1x37.2MW WASTE HEAT RECOVERY PROJECT (PHASE-1) AT LAKWA THERMAL POWER STATION

CLIENT: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT: DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

DESIGNED BY: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

SCALE: 1/125
 DATE: 15/08/07
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

DEAEATOR & BFP AREA LAYOUT & R.C.C. DETAILS OF PILECAPS, PLINTH BEAMS & PEDESTALS
 SHEET NO. 2 OF 2

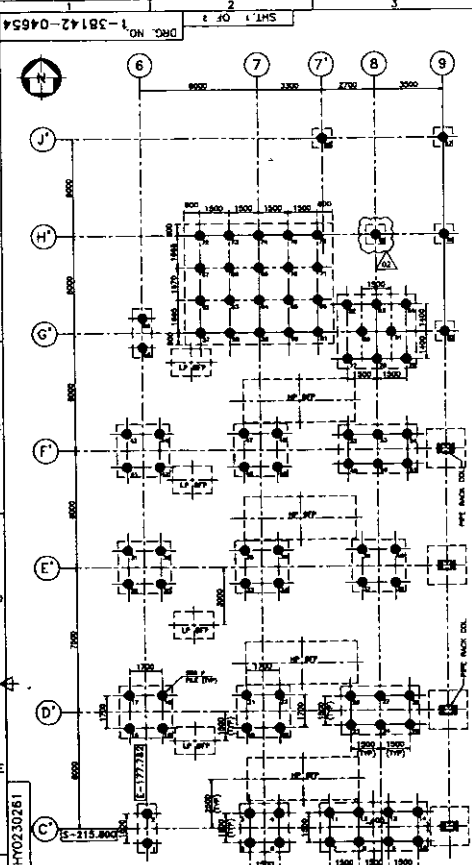
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY MANNER DETRIMENTAL TO THE INTEREST OF THE COMPANY.
 GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER IS:2025:2025

REV.	DATE	ALTERNATIVE	CHKD/APPD	REV.	DATE	ALTERNATIVE	CHKD/APPD	REV.	DATE	ALTERNATIVE	CHKD/APPD	REV.	DATE	ALTERNATIVE	CHKD/APPD	REV.	DATE	ALTERNATIVE	CHKD/APPD
01	15/08/07	01	CHD/APPD	01	15/08/07	01	CHD/APPD	01	15/08/07	01	CHD/APPD	01	15/08/07	01	CHD/APPD	01	15/08/07	01	CHD/APPD

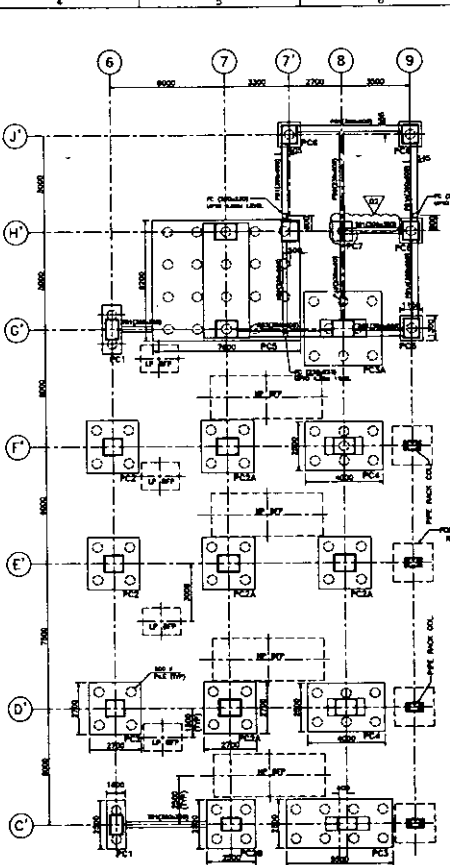
FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

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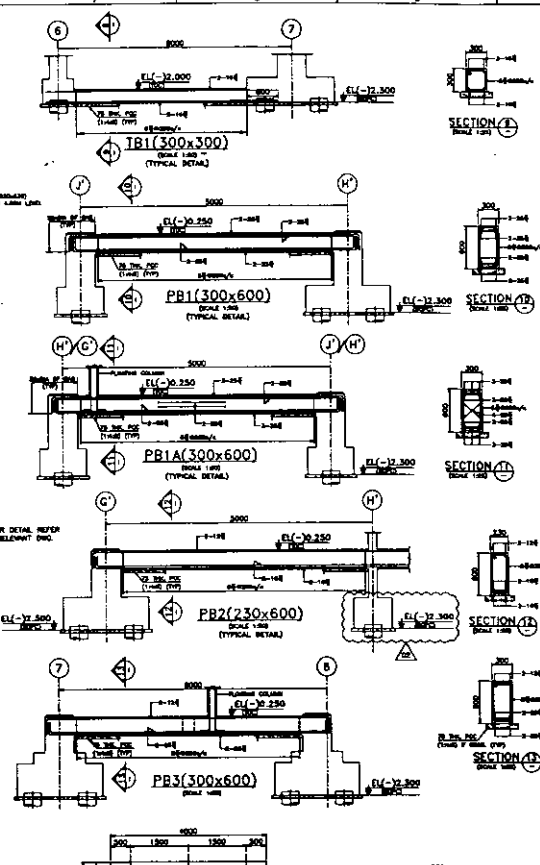
LAYOUT OF PILES
(TOTAL NO. OF PILES = 60)
SCALE 1:50



LAYOUT OF PILE CAPS, TIE BEAMS & PLINTH BEAMS
(SCALE 1:50)
(NOTE: ALL COLUMN CENTRE LINES ARE SHOWN)

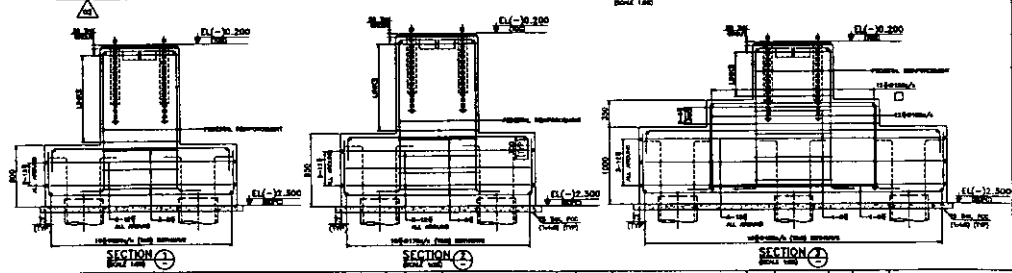
PILE DETAILS

PILE NO.	PILE DESIGNATION	PILE DIA.	PCL.	PILE LENGTH	PILE CAPACITY
				VERTICAL	LATERAL
1 TO 60	WPI	300	EL.-12.250	22.00	96.80T 30.80R

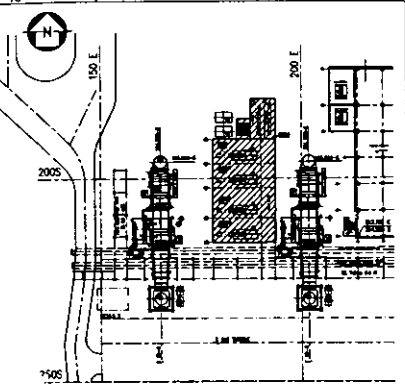


PLAN OF PC4 (2 NOS.)
SCALE 1:50

DETAIL OF FC (3 NOS.)
SCALE 1:50



SECTION 2A, 2B, 2C, 2D



KEY PLAN
SCALE 1:500

BOLTS SHALL BE PLACED IN POSITION BEFORE CONCRETING PEDESTAL/PILECAP

LEGEND

- FF — FINISHED FLOOR LEVEL
- TRP — TYPICAL
- EL — ELEVATION
- CL — COVERED LINE
- BOPC — BOTTOM OF PILE CAP
- TOC — TOP OF CONCRETE
- TOG — TOP OF GROUT
- FC — FLOATING COLUMN (WALL STIFFNESS)

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES. LEVELS & CO-ORDINATES ARE IN METRES.
2. EL (ELEVATION) REFERS TO FINISHED FLOOR LEVEL OF PROPOSED STEAM AND CONDENSER BUILDING WHICH CORRESPONDS TO RL(+101.350) AT SITE.
3. GRADE OF CONCRETE LINES SHALL BE USED CONCRETE ARE SHALL BE SHOWN AS CONFORMING TO IS: 456.
4. REINFORCEMENT LISTS SHALL BE HYDRO BARS CONFORMING TO IS: 1786-1986.
5. FOR SCALE OF WPI PILE REFER Dwg. NO. 1-38142-00007
6. CLEAR COVER TO MAIN REINFORCEMENT SHALL BE AS FOLLOWS UNLESS OTHERWISE SPECIFIED:

	TOP	BOTTOM	SIDE
(A) PILECAP	75mm	80mm	75mm
(B) PEDESTAL	DOWN	80mm	80mm
(C) COLUMN	DOWN	80mm	80mm
(D) BEAM	DOWN	80mm	80mm
7. ALL WELDS ARE COVERED LINE OF COLUMN & B.S. & FOR BOLT DETAILS REFER Dwg. NO. 1-38142-00011

REFERENCE DRAWINGS

- CONSTRUCTION**
1. 1-38142-00007 — GENERAL NOTES ON CONCRETE WORKS
 2. 1-38142-00000 — GENERATOR & BFP AREA-C.A. & PLANS
 3. 1-38142-00008 — GENERATOR & BFP AREA-E.A. OF ELEVATION & DETAILS
 4. 1-38142-00009 — GENERATOR & BFP AREA-LAYOUT & R.C.C. DETAILS OF PILECAPS, PLINTH BEAMS & PEDESTALS (SHEET 2 OF 2)
- ENGINEERING**
1. 0-281-01-00007 — PLANT PLAN
 2. 0-281-01-00008 — EQUIPMENT LAYOUT-GENERATOR & BFP AREA (PVT. 01)
 3. 0-281-01-00009 — EQUIPMENT LAYOUT-GENERATOR & BFP AREA (PVT. 02)
 4. 3-381-21-00074 — ANALYSER ROOM LAYOUT FOR POWER CYCLE

REVISION 04 OF THIS DRAWING IS APPROVED UNDER ACTION-2 BY DCP, KEY 18/11/02/SAT-DATED 18/11/02

PROJECT: 1x37.2MW WASTE HEAT RECOVERY PROJECT (PHASE-1) AT LAKWA THERMAL POWER STATION

CLIENT: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT: DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS BONGA CHERRAN, MASHAN, NEW DELHI

DESIGNER: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

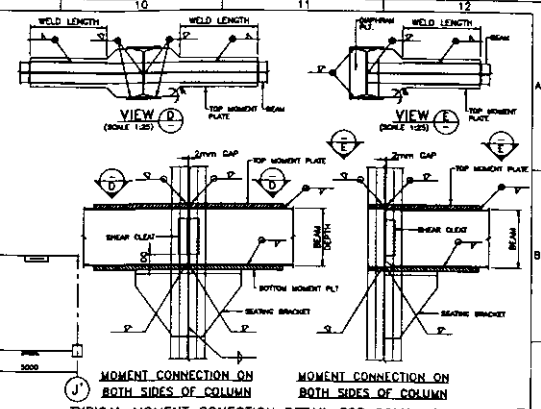
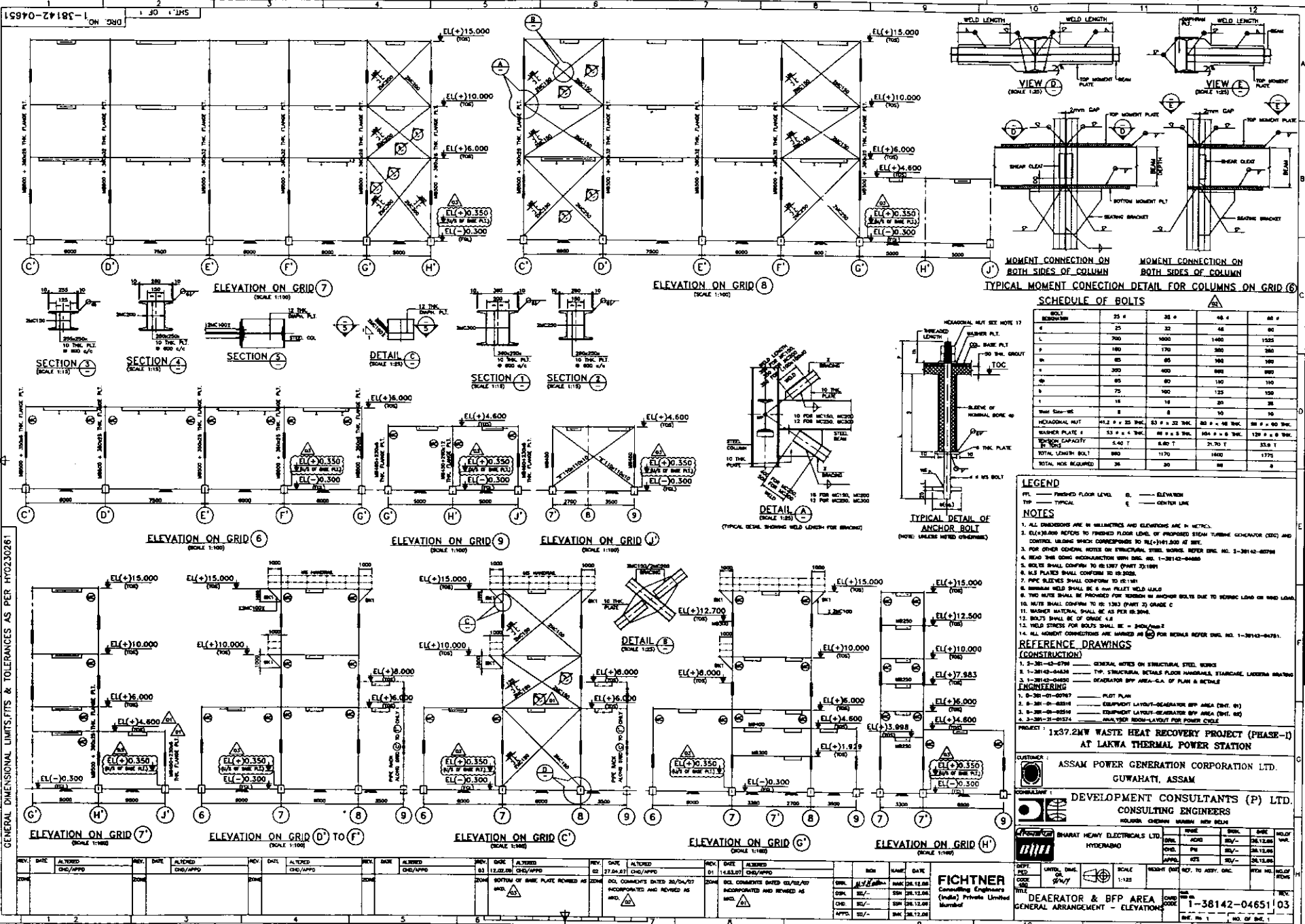
REV.	DATE	BY	CHKD.	APPD.	SCALE	WARRANTY	NO. OF SHEETS	TOTAL NO. OF SHEETS
01	18/11/02	SK	SK	SK	1:100	1	1	1
02	18/11/02	SK	SK	SK	1:100	1	1	1
03	18/11/02	SK	SK	SK	1:100	1	1	1
04	18/11/02	SK	SK	SK	1:100	1	1	1

FICHTNER
Consulting Engineers
(India) Private Limited
Mumbai

DEARATOR & BFP AREA LAYOUT & R.C.C. DETAILS OF PILECAPS, PLINTH BEAMS & PEDESTALS
Dwg. No. 1-38142-04654/02
SHEET NO. 1 OF 2

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)



TYPICAL MOMENT CONNECTION DETAIL FOR COLUMNS ON GRID 6

SCHEDULE OF BOLTS

BOLT DESCRIPTION	25 #	28 #	48 #	60 #
L	25	32	48	60
L	700	1000	1400	1550
F	140	170	300	360
M	800	85	100	100
T	60	400	800	800
B	75	100	150	150
D	15	15	15	150
T	15	15	30	70
Weld Size-MS	8	8	10	10
HEXAGONAL NUT SEE NOTE 17				
WASHER PLATE	11.2 # x 25 THK.	13 # x 32 THK.	20 # x 40 THK.	25 # x 50 THK.
WASHER PLATE #	53 # x 4 THK.	60 # x 5 THK.	104 # x 6 THK.	129 # x 8 THK.
TENSILE CAPACITY	5.40 T	8.60 T	21.70 T	33.8 T
TOTAL LENGTH BOLT	800	1170	1600	1775
TOTAL NUTS REQUIRED	38	30	60	0

LEGEND
 FFL - FINISHED FLOOR LEVEL
 TYP - TYPICAL
 EL - ELEVATION
 C/L - CENTER LINE

- NOTES**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS ARE IN METERS.
 2. ELEVATION REFERS TO FINISHED FLOOR LEVEL OF PREHEATED STEAM TURBINE GENERATOR (STG) AND CONTROL BUILDING WHICH CORRESPONDS TO RL(+15.000) AS SHOWN.
 3. FOR OTHER GENERAL NOTES ON STRUCTURAL STEEL WORKS REFER ISRI NO. 1-38142-00789.
 4. READ THE ISRI HANDBOOK WITH ISRI NO. 1-38142-00880.
 5. BOLTS SHALL CONFORM TO IS 1907 (PART 2) 1999.
 6. NUTS SHALL CONFORM TO IS 1902.
 7. PIPE RIVETS SHALL CONFORM TO IS 1911.
 8. MINIMUM WELD SHALL BE 6 mm PILET WELD UNLESS OTHERWISE SPECIFIED.
 9. TWO NUTS SHALL BE PROVIDED FOR BOLTS IN BRACKET BOLTS DUE TO WORKING LOAD OR WIND LOAD.
 10. NUTS SHALL CONFORM TO IS 1903 (PART 2) GRADE C.
 11. WASHER MATERIAL SHALL BE AS PER IS 2046.
 12. BOLTS SHALL BE OF GRADE 4.8.
 13. WELD STRESS FOR BOLTS SHALL BE = 240N/mm².
 14. ALL MOMENT CONNECTIONS ARE MARKED IN (M) FOR NORMAL REFER ISRI NO. 1-38142-01291.

- REFERENCE DRAWINGS (CONSTRUCTION)**
1. IS 2046-1979 - GENERAL NOTES ON STRUCTURAL STEEL WORKS
 2. IS 2046-1979 - TYP. STRUCTURAL STEEL WORKS, STAIRCASE, LADDERS, BRACKETS
 3. IS 2046-1979 - DEAEATOR BY AREA-G.A. OF PLAIN & BENT
 4. IS 2046-1979 - PLOT PLAN
 5. IS 2046-1979 - EQUIPMENT LAYOUT-DEAEATOR BY AREA (ENT. 01)
 6. IS 2046-1979 - EQUIPMENT LAYOUT-DEAEATOR BY AREA (ENT. 02)
 7. IS 2046-1979 - ANALYSIS ROOM-LAYOUT FOR POWER CYCLE

PROJECT
 1x37.2MW WASTE HEAT RECOVERY PROJECT (PHASE-I)
 AT LAKWA THERMAL POWER STATION

CUSTOMER
 ASSAM POWER GENERATION CORPORATION LTD.
 GUWAHATI, ASSAM

CONSULTANT
 DEVELOPMENT CONSULTANTS (P) LTD.
 CONSULTING ENGINEERS
 HOLLAND CHERRY GARDEN NEW DELHI

REVISION

NO.	DATE	DESCRIPTION	BY	CHECKED	DATE	REVISION
01	14.07.07	ISSUED FOR APPROVAL	CH/APPD			
02	27.08.07	ISSUED FOR APPROVAL	CH/APPD			
03	08.09.07	ISSUED FOR APPROVAL	CH/APPD			
04	08.09.07	ISSUED FOR APPROVAL	CH/APPD			
05	08.09.07	ISSUED FOR APPROVAL	CH/APPD			
06	08.09.07	ISSUED FOR APPROVAL	CH/APPD			
07	08.09.07	ISSUED FOR APPROVAL	CH/APPD			
08	08.09.07	ISSUED FOR APPROVAL	CH/APPD			
09	08.09.07	ISSUED FOR APPROVAL	CH/APPD			
10	08.09.07	ISSUED FOR APPROVAL	CH/APPD			
11	08.09.07	ISSUED FOR APPROVAL	CH/APPD			
12	08.09.07	ISSUED FOR APPROVAL	CH/APPD			

DEPARTMENT
 DEAEATOR & BFP AREA
 GENERAL ARRANGEMENT - ELEVATIONS

SCALE
 1:125

DATE
 08/09/07

PROJECT NO.
 1-38142-04651/03

NO. OF SHEET
 12

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 GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER IS 2025:2001
 CONVERTER FILE NAME: 1-38142-04651-11-10-07
 DRAWING NO. 1-38142-04651

REVISION '02' OF THIS DRAWING IS APPROVED UNDER ACTION CODE-2 BY DOL (REF 84211/0/896 DT-15.05.07)