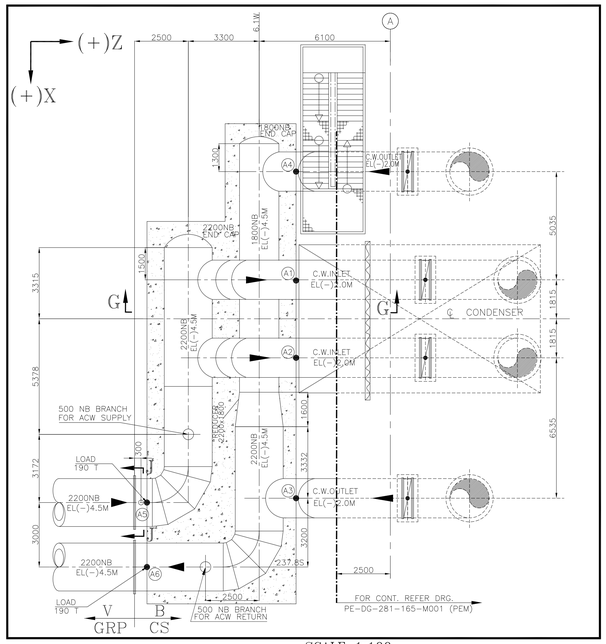
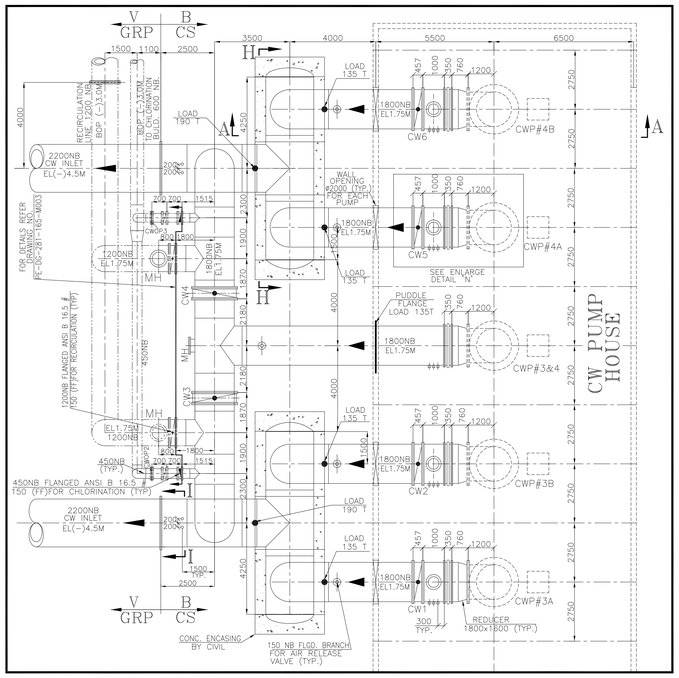
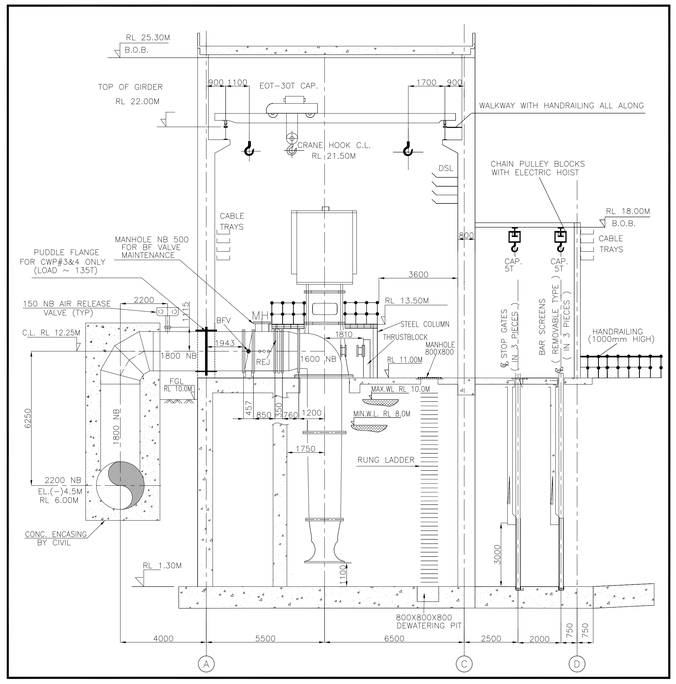
NORTH



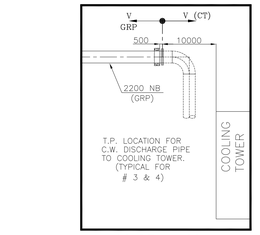
SCALE 1:100
DETAIL 'K'



SCALE 1:100
DETAIL 'L'



SCALE 1:100
SECTION − AA



SCALE 1:400
DETAIL − 'M'

SCALE 1:100
SECTION − HH

SCALE 1:80
SECTION − DD

SCALE 1:200
SECTION − EE

SCALE 1:100
SECTION − GG

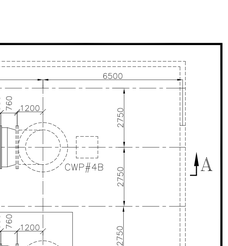
SCALE 1:80
SECTION − II

SCALE 1:80
SECTION − JJ

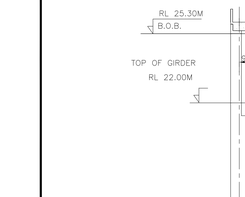
SCALE 1:40
DETAIL 'O' FOR ANUBAR (PLAN)

SCALE 1:80
SECTION − BB
(TYP. MAN HOLE DETAIL)

SCALE 1:50
DETAIL 'N' (PLAN)

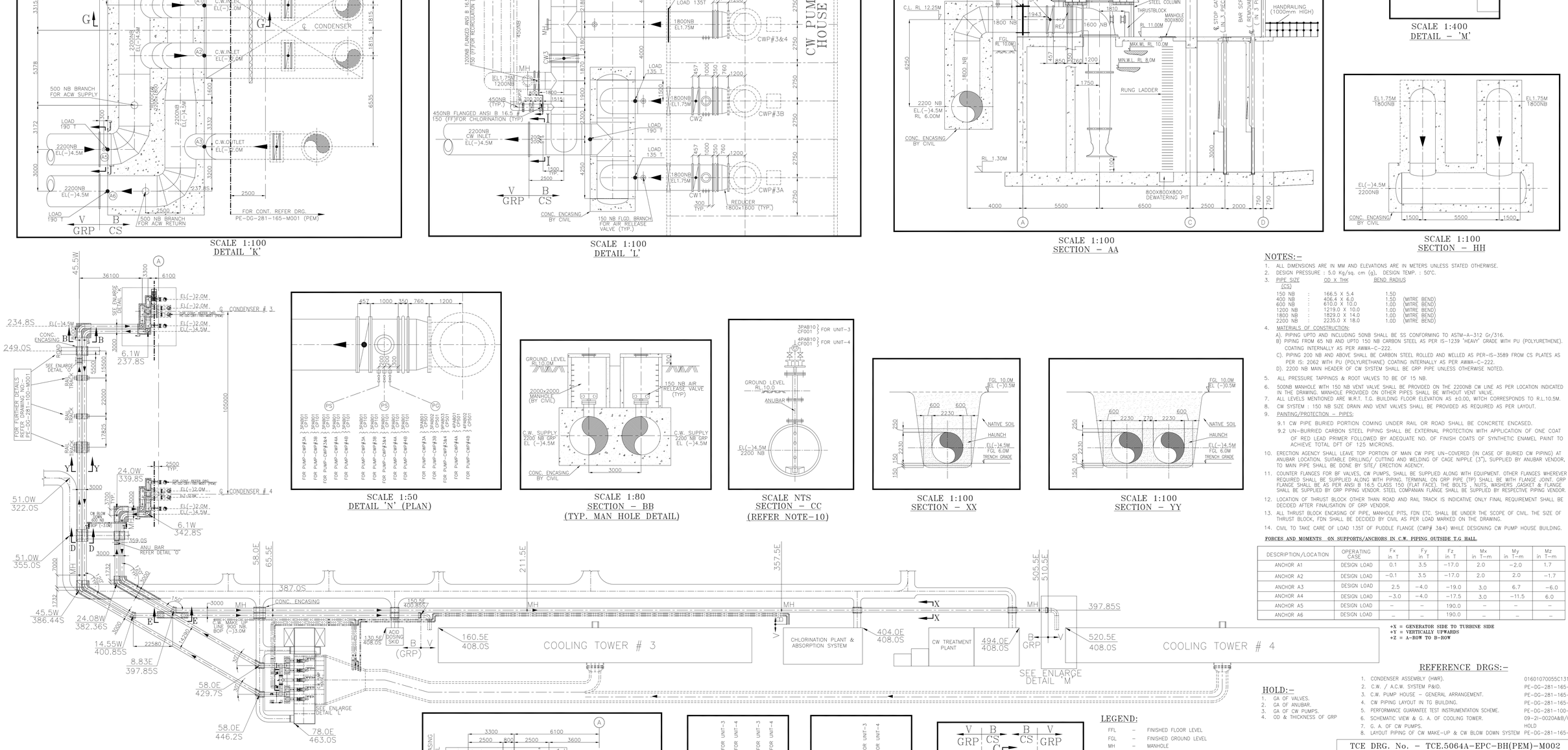


SCALE NTS
SECTION − CC
(REFER NOTE−10)



SCALE 1:100
SECTION − XX

SCALE 1:100
SECTION − YY



NOTES:−

1. ALL DIMENSIONS ARE IN MM AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
2. DESIGN PRESSURE : 5.0 Kg/sq. cm (g), DESIGN TEMP. : 50°C.
3. PIPE SIZE (CS) — OD X THK — BEND RADIUS

150 NB	:	166.5 X 5.4	1.5D	
400 NB	:	406.4 X 6.0	1.5D	(MITRE BEND)
600 NB	:	610.0 X 10.0	1.0D	(MITRE BEND)
1200 NB	:	1219.0 X 10.0	1.0D	(MITRE BEND)
1800 NB	:	1829.0 X 14.0	1.0D	(MITRE BEND)
2200 NB	:	2235.0 X 18.0	1.0D	(MITRE BEND)

4. MATERIALS OF CONSTRUCTION:
   A). PIPING UPTO AND INCLUDING 50NB SHALL BE SS CONFORMING TO ASTM−A−312 Gr/316.
   B) PIPING FROM 65 NB AND UPTO 150 NB CARBON STEEL AS PER IS−1239 'HEAVY' GRADE WITH PU (POLYURETHENE). COATING INTERNALLY AS PER AWWA−C−222.
   C). PIPING 200 NB AND ABOVE SHALL BE CARBON STEEL ROLLED AND WELLED AS PER−IS−3589 FROM CS PLATES AS PER IS: 2062 WITH PU (POLYURETHANE) COATING INTERNALLY AS PER AWWA−C−222.
   D). 2200 NB MAIN HEADER OF CW SYSTEM SHALL BE GRP PIPE UNLESS OTHERWISE NOTED.
5. ALL PRESSURE TAPPINGS & ROOT VALVES TO BE OF 15 NB.
6. 500NB MANHOLE WITH 150 NB VENT VALVE SHALL BE PROVIDED ON THE 2200NB CW LINE AS PER LOCATION INDICATED IN THE DRAWING. MANHOLE PROVIDED ON OTHER PIPES SHALL BE WITHOUT VENT VALVE.
7. ALL LEVELS MENTIONED ARE W.R.T. T.G. BUILDING FLOOR ELEVATION AS ±0.00, WITCH CORRESPONDS TO R.L.10.5M.
8. CW SYSTEM : 150 NB SIZE DRAIN AND VENT VALVES SHALL BE PROVIDED AS REQUIRED AS PER LAYOUT.
9. PAINTING/PROTECTION − PIPES:
   9.1 CW PIPE BURIED PORTION COMING UNDER RAIL OR ROAD SHALL BE CONCRETE ENCASED.
   9.2 UN−BURRIED CARBON STEEL PIPING SHALL BE EXTERNAL PROTECTION WITH APPLICATION OF ONE COAT OF RED LEAD PRIMER FOLLOWED BY ADEQUATE NO. OF FINISH COATS OF SYNTHETIC ENAMEL PAINT TO ACHIEVE TOTAL DFT OF 125 MICRONS.
10. ERECTION AGENCY SHALL LEAVE TOP PORTION OF MAIN CW PIPE UN−COVERED (IN CASE OF BURIED CW PIPING) AT ANUBAR LOCATION, SUITABLE DRILLING/ CUTTING AND WELDING OF CAGE NIPPLE (3"), SUPPLIED BY ANUBAR VENDOR, TO MAIN PIPE SHALL BE DONE BY SITE/ ERECTION AGENCY.
11. COUNTER FLANGES FOR BF VALVES, CW PUMPS, SHALL BE SUPPLIED ALONG WITH EQUIPMENT. OTHER FLANGES WHEREVER REQUIRED SHALL BE SUPPLIED ALONG WITH PIPING. TERMINAL ON GRP PIPE (TP) SHALL BE WITH FLANGE JOINT. GRP FLANGE SHALL BE AS PER ANSI B 16.5 CLASS 150 (FLAT FACE) THE BOLTS , NUTS, WASHERS ,GASKET & FLANGE SHALL BE SUPPLIED BY GRP PIPING VENDOR. STEEL COMPANIAN FLANGE SHALL BE SUPPLIED BY RESPECTIVE PIPING VENDOR.
12. LOCATION OF THRUST BLOCK OTHER THAN ROAD AND RAIL TRACK IS INDICATIVE ONLY FINAL REQUIREMENT SHALL BE DECIDED AFTER FINALISATION OF GRP VENDOR.
13. ALL THRUST BLOCK ENCASING OF PIPE, MANHOLE PITS, FDN ETC. SHALL BE UNDER THE SCOPE OF CIVIL. THE SIZE OF THRUST BLOCK, FDN SHALL BE DECIDED BY CIVIL AS PER LOAD MARKED ON THE DRAWING.
14. CIVIL TO TAKE CARE OF LOAD 135T OF PUDDLE FLANGE (CWP# 3&4) WHILE DESIGNING CW PUMP HOUSE BUILDING.

FORCES AND MOMENTS ON SUPPORTS/ANCHORS IN C.W. PIPING OUTSIDE T.G HALL

DESCRIPTION/LOCATION	OPERATING CASE	Fx in T	Fy in T	Fz in T	Mx in T−m	My in T−m	Mz in T−m
ANCHOR A1	DESIGN LOAD	0.1	3.5	−17.0	2.0	−2.0	1.7
ANCHOR A2	DESIGN LOAD	−0.1	3.5	−17.0	2.0	2.0	−1.7
ANCHOR A3	DESIGN LOAD	2.5	−4.0	−19.0	3.0	6.7	−6.0
ANCHOR A4	DESIGN LOAD	−3.0	−4.0	−17.5	3.0	−11.5	6.0
ANCHOR A5	DESIGN LOAD	−	−	190.0	−	−	−
ANCHOR A6	DESIGN LOAD	−	−	190.0	−	−	−

+X = GENERATOR SIDE TO TURBINE SIDE
+Y = VERTICALLY UPWARDS
+Z = A−ROW TO B−ROW

HOLD:−

1. GA OF VALVES.
2. GA OF ANUBAR.
3. GA OF CW PUMPS.
4. OD & THICKNESS OF GRP

LEGEND:

FFL	−	FINISHED FLOOR LEVEL
FGL	−	FINISHED GROUND LEVEL
MH	−	MANHOLE
GRP	−	GLASSFIBER REINFORCED PLASTIC PIPE
CS	−	CARBON STEEL
CT	−	COOLING TOWER
BFV	−	BUTTER FLY VALVE
REJ	−	RE JOINT
B	−	BHEL
V	−	VENDOR
V (CT)	−	VENDOR (COOLING TOWER)
[ ]	−	CONCRETE ENCASEMENT

REFERENCE DRGS:−

1.	CONDENSER ASSEMBLY (HWR).	01601070055C131
2.	C.W. / A.C.W. SYSTEM P&ID.	PE−DG−281−165−N001
3.	C.W. PUMP HOUSE − GENERAL ARRANGEMENT.	PE−DG−281−165−N003
4.	CW PIPING LAYOUT IN TG BUILDING.	PE−DG−281−165−M001
5.	PERFORMANCE GUARANTEE TEST INSTRUMENTATION SCHEME.	PE−DG−281−10D−N198
6.	SCHEMATIC VIEW & G. A. OF COOLING TOWER.	09−2I−0020A&B/G/01
7.	G. A. OF CW PUMPS.	HOLD
8.	LAYOUT PIPING OF CW MAKE−UP & CW BLOW DOWN SYSTEM	PE−DG−281−165−M004

REV	DATE	ALTD	CHD	APPD

REV	DATE	ALTD	CHD	APPD
01	11.09.09	ARUN	HRD/BKA	AJ

1. REVISED AS PER TCE LTR DATED 29/09/08.
2. OTHERS GENERALLY REVISED.

TCE DRG. No. − TCE.5064A−EPC−BH(PEM)−M002

CUSTOMER	GSECL GUJARAT STATE ELECTRICITY CORPORATION LTD.
CUSTOMER'S CONSULTANT	TCE CONSULTING ENGINEERS LIMITED
JOB No.	281
STATUS	CONTRACT
DISTRIBUTION	
TO	
No.OF	

2 X 250 MW SIKKA THERMAL POWER PROJECT (EXTENSION UNITS 3 & 4) DIST. JAMNAGAR

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI

DEPT CODE		NAME	SIGN	DATE
M	DRN	SATENDRA		24.07.08
	DESN	ARUN		24.07.08
	CHD	ARUN/BKA		24.07.08
	APPD	LPS/AJ		24.07.08

TITLE: LAYOUT OF C.W. PIPING FROM 'A' ROW TO C.T.

MPL	C	MSE	I	MAX	E	DEPT.	SCALE 1:800	DRAWING No.
						SIGN		PE−DG−281−165−M002
						DATE		SHEET 1 OF 1 REV 01

SIZE−A0