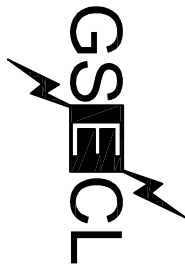


1	2	3	4	5	6	7	8
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FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM.

CUSTOMER:



GUJARATH ELECTRICITY CORPORATION LIMITED
VADODARA, GUJARAT

PROJECT:

1X800 MW WANAKBORI THERMAL POWER STATION
EXTENSION UNIT-8

CUSTOMER CONSULTANT:



DEVELOPMENT CONSULTANT PVT LTD
DEVELOPMENT CONSULTANT PVT LTD
KOLKATA

INVENTOR	
REV. NO.	1
DATE	
<p>Reviewed only for general conformance with contract drawings and specifications. Contractor to be responsible for any errors and for fulfillment of detailed requirements of contract documents.</p>	
ACTION : 6	DATE : 13.03.17
DISTRIBUTED BY : BR	
1 Distributed	4 Approved except as noted. Resubmission required.
2 Approved	5 Disapproved. See accompanying letter.
3 Approved except as noted. Forward final drawing.	6 For information and record only.
SEE COVERING LETTER	
Letter Ref. No.	Date :

DESCRIPTION	BY	APPD.	APPROVED	NAME	SIGN.	DATE	SCALE	JOB NO.	DRG. NO.	NO. OF SHEETS	REV.
DESIGNED				TRINATH		04.03.17		CR-14-047	EP-3-GN-047-001	04	01
DRAWN											
CHECKED				TRINATH		04.03.17					
				KSB							

BHARAT HEAVY ELECTRICALS LIMITED
ELECTROPOWERCELLS DIVISION BANGALORE

TITLE : GENERAL NOTES FOR LV SWITCHGEAR
PMCC/PCC/MCC/ACDB/DCDB



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A. Power Supply System

Voltage: 3ph 4 Wire, 415V±10% for AC , 50Hz±5% and 220V +10% and -15% for DC.

B. Panel Design

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- Installation of the Panels is indoor.
- Operating height: 300mm to 1800mm from floor level.
- Gasket will be provided around doors, covers and other cutout edges.
- Louvers will be provided for Panels rated above 1600A. Up to and including 1600A louvers are not required. These louvers are backed with fine wire mesh provided at front & rear of horizontal bus bar chamber, rear covers of incomer and bus-coupler panels. Degree of Protection will be IP 54 for including and up to 1600A. Degree of Protection will be IP 42 for above 1600A since louvers will be provided.
- Panel will be single front for ACB and double front for the O/G feeders. D/O for incoming and outgoing feeders except for CST & Marshalling feeders.
- Incoming & outgoing feeder cable entry is bottom for MCC/DBs and Bus duct entry as per approved GA/Layout drawing for Incomers of PMCC/PCC.
- Base-frame of the panel will be Min. 75mm
- Main Earth Bus bar will be brought throughout the length of the panel and extended at both the ends in order to facilitate customer earth connection with two no.s of Nuts & Bolts.
- Each control module will be housed in a separate compartment.
- A full height vertical chamber (cable alley) with cable supports will be provided in each section to facilitate wiring except for ACB feeders. Width of the cable alley will be minimum 250mm.
- A horizontal wire way, extending the entire length will be provided at the top of each PMCC/MCC/DB for inter panel wiring.

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C. Bus bar

- Bus bars are made up of high conductivity Aluminium (Grade E91E).
- All bus bar sleeves are of 1100V grade, colour coded and heat shrinkable type.
- All Accessible bus bar joints will be provided with removable shrouds of SMC/DMC/Polyamide.
- All live connections from bus bar up to switches will be shrouded in order to avoid accidental touch.
- Vertical bus bar rating will be minimum 200A.
- Maximum temperature limited to 90oc (i.e., 40oc rise over 50oc ambient) for plain joint and 105oc (i.e., 55oc rise over 50oc ambient) for silver plated joint.
- Separate Vertical bus bar will be provided for each vertical panel.
- All air circuit breaker end connections will be silver plated.
- All bus connections shall be provided with anti-oxide grease.
- Bimetallic connector will be used for connection between two dissimilar metals.
- Hardware for bus bar joints will be HT 8.8 Grade nuts and bolts and others will be 4.6 Grade.

- Busbars shall be colour coded for easy identification and so located that the sequence R-Y-B shall be from left to right, top to bottom or front to rear when viewed from the front of the assembly. Adequate contact pressure shall be ensured by means of two-bolt connection with plain and spring washers and locknuts.

D. Control Bus bar

- All control bus bars will be made up of copper.
- AC Control Bus & Space Heater Bus size : Min. 6mm x 3mm for Ph. & N
- DC Control Bus size: Min. 6mm x 3mm for Ph. & N

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E. Module

- All incomer, bus-coupler & outgoing feeders rated up to 630A will be MCCB controlled.
- 630A and above, all feeders will be ACB controlled.
- All motor rated above 110kW, up to & including 160kW shall be ACB controlled.
- All motors below and including 110KW will be protected by Fuse-less Type-II Coordination equipment.
- All indicating instruments will be flush/semi-flush mounted on the module compartment door.
- All indicating instruments (96X96mm) shall be digital type with LED Display & flush mounted with accuracy class 0.5 suitable for DCS /PLC hook-up.
- Draw-out modules of same size will be electrically and physically interchangeable.
- Draw-out mechanism will be rack-in/out.
- At least 20% of spare module will be provide.
- Module main switch ON/OFF indication tag will be provided.
- Module position (i.e service /test / isolate) indication tag will be provided.
- Incomers, Bus-couplers & outgoing feeders rated up to & including 400A shall be MCCB controlled. Above 400A all incomers, Bus-couplers & outgoing Feeders shall be ACB controlled.

F. Caution / Safety plates

- "Live terminals" caution inscription plate are provided on the top of all the panels where the terminals are likely to remain live.
- "Live Cable" inscription plate are provided on all the cable alley chamber doors.
- "Danger" inscription plate will be provided at Incomers and bus-coupler in English.

G. Painting

- Thickness of the finished coat will be minimum 95-100microns with 2no. Of finished coats.
- Shade: RAL 7032.

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H. Others

- All SCPD except ACB will have defeat interlock.
- Mechanical safety interlock will be provided to prevent ACB from being racked in or out of the service position when ACB is closed.
- All glands will be double compression type and made up of brass.



DOCUMENT TITLE:

**1x800MW SUPERCRITICAL THERMAL POWER PLANT
GUJARAT STATE ELECTRICITY CORPORATION LIMITED
GENERAL NOTES FOR LV SWITCHGEAR/PMCC/PCC
ACDB/DCDB**

DOCUMENT NO. EP-3-GN-047-001

CUSTOMER : GSECL

REV NO. :01; DATE: 26/02/2017

Page 4 of 4

- All terminal lugs will be made up of annealed tinned copper.
- Wiring shall be done with flexible, 1100V grade, fire resistance PVC insulated switchboard wires with stranded Copper conductors of 2.5 mm² for control, current and voltage circuits. For marshalling suitable core cable will be used.
- Each wire shall be identified, at both ends, with permanent markers bearing wire numbers as per approved wiring diagrams
- All spare contacts in breaker feeders are wired up to terminal block.
- Rating of the components shall be suitably Up-rated in order to meet type 2 coordination as per 13947.
- Terminal blocks shall be 660V grade box-clamp type with marking strips similar to ELMEX 10 mm² or equal. Terminals for C.T. secondary leads shall have provision for shorting.
- All incomers and circuit breakers operated motor feeders will be provided with 3-phase multifunction digital energy meter with pulse output and communication port for interfacing with Plant DCS / PLC.
- Material used for construction of panel is CRCA sheet metal. Thickness for load bearing members is 2mm and non-load bearing members is 1.6mm.
- Gland plate material will be of 3mm CRCA sheet metal for 3core cables and 4mm thick Aluminium sheet metal for 1C core cables.
- Ant-Vibration pad will be provided.
- All power, control switches and reset push buttons shall be mounted on module doors.
- All meter reading instruments shall be flush mounting type.
- Door interlock will be provided such that door cannot be open when breaker/MCCB is in 'ON' position.
- Indicating lamps are of clustered LED type.
- MCC/ACDBs are extendable on both sides with outgoing feeders.
- Terminal blocks shall be mounted vertically in panels and cubicles with clearance for at least 100 mm between two sets and between wall and terminal block.
- Terminal blocks shall be provided with white marking strips / self-adhesive marker cards. Power terminals shall have protection covers Bottom of the terminal block shall be at least 200 mm above the cable gland plate for bottom entry type panels.
- The last block in a rail-mounted assembly shall be closed with an end plate and end bracket.
- Maximum two connects only are allowed at any point if more than two connections Terminal block duplication will be done.
- Terminal blocks shall be of different colours depending on voltage levels
- Voltage Transducer shall have an accuracy class of 0.5.
- Drawing pocket shall be provided in the panel/ cabinets.
- To achieve module positive earthing suitable mechanism will be provided.