AC DISTRIBUTION BOARD

1.0 AC DISTRIBUTION BOARD

1.1 INTRODUCTION

This chapter covers specification of indoor AC Distribution board for catering power supply to 33kV and 11kV equipment, illumination, battery charger and other auxiliary loads of the sub-station. Incoming power supply to the board will be provided from outdoor station transformer.

1.2 STANDARDS

The equipment shall be manufactured as per following standards:

IS:8623/1933 – Low voltage Switchgear and controlgear assemblies.

IS:13947 Part 2 – Low voltage circuit breakers.

1.3 CONSTRUCTIONAL FEATURE

Panels shall be completely metal enclosed and shall be dust, moisture and vermin proof and fully compartmentalized. The enclosure shall provide a degree of protection not less than IP-52 (for indoor) in accordance with IS: 13947 and the necessary gasket shall be provided as per section-I (Introduction and general technical requirements). It should be free standing, floor mounting type and smooth finished, made of cold rolled sheet steel of thickness not less than 3 mm for weight bearing members of the panels such as base frame, front sheet and door frames, and 2.0 mm for sides, door, top and bottom portions. There shall be sufficient reinforcement to provide level transportation and installation. Design, materials selection and workmanship shall be such as to result in neat appearance, inside and outside with no welds rivets or bolt head apparent from outside, with all exterior surfaces tune and smooth. The colour of the finishing paint shall be Smoke grey in accordance with shade no.692 of IS: 5 or in matching colour of other existing Panels. There shall be space heater with thermostat, illumination lamp and one 3-pin, 15 Amp. power point with socket in the panel.

The cable entries shall be from bottom. Gland Plates and electroplated brass cable glands shall be provided. Cable clamping arrangements shall be provided.

The board shall be mounted on a base frame made of 75x50x6 mm ISMC painted black. It shall be grouted to the floor. The board can also be wall mounted with suitable mounting arrangements.

1.4 PAINTING

1.4.1 All sheet steel work shall be phosphated in accordance with the IS:6005 "Code of Practice for Phosphating Iron and Steel".

Rust, scale, oil, grease**, dirt and swarf shall be removed by 7 tank process.**

1.4.2 After phosphating, thorough rinsing shall be carried out with clean water followed by final rinsing with dilute dichromate solution and oven drying.

1.4.3 The phosphate coating shall be sealed with application of two coats of ready mixed, stoved type zinc chromate primer. The first coat may be "flash dried" while the second coat shall be stoved**.**

1.4.4 After application of the primer, two coats of finishing synthetic enamel paint shall be applied, each coat followed by stoving. The second finishing coat shall be applied after inspection of first coat of painting. The exterior colour of paint shall be of a slightly different shade to enable inspection of the painting. The final coat should present a hard glass finish.

1.4.5 A small quantity of finished paint shall be supplied for minor touching up required at site after installation of the panels.

1.4.6 In case the bidder proposes to follow any other established painting procedure like electrostatic painting or powder coating, the procedure shall be submitted for POWERGRID's review and approval.

1.5 TECHNICAL DETAIL

Incomer will be from 415 volt 3-phase, 4 wire, 200A MCCB of 10kA interrupting capacity and 10 kA short time rating for 1 sec. The board shall have isolated bus bar chamber for main bus bar at top, running throughout the length of the board and TPN vertical busbar chambers for power supply to outgoing feeders. The bus bar and connecting links etc. shall be of electrolytic aluminum. All nuts and bolts shall be electro galvanized.

General feeder arrangement will be as follows but actual number of incomer and outgoing feeder will be mentioned in BPS.

Incomer: 1no. 200 Amp TPN MCCB with Over Current and Short Circuit protection.

Outgoing: 4No. 63 Amp. TPN MCCB and 2 Nos. 32Amp TPN MCCB of 10 kA interrupting capacity and 10 kA short time rating for 1 sec. These will be provided with Over Current and Short Circuit protection.

Metering module:

i) **Incomer Panel:** 1 no. Metering module shall consist of voltmeter with selector switch (1 no.), Ammeter with selector switch(1no), indication lamps(3 nos) for phase health indication.

CT operated 3 phase 4 wire energymeter along with CTs.

ii) **Outgoing Feeder Panel:** 1 no. Ammeter with selector switch for each outgoing feeder..

1.6 EARTHING

One Earth bars of Aluminium shall be provided near the base. The earth bar shall be connected to two earth terminals. The earth terminals shall be connected to station earth.

2.0 DC DISTRIBUTION BOARD

2.1 INTRODUCTION

This chapter covers the specification of indoor DC Distribution board for catering power supply to control & protection system and emergency illumination of the sub-station. Incoming power supply to the board will be provided from Battery Set / Battery charger which shall be of suitable DC Voltage, as applicable as per actual site requirement (eg. 24V/30V / 50V / 110V / 250V / etc).

2.2 CONSTRUCTIONAL FEATURE

Panels shall be completely metal enclosed and shall be dust, moisture and vermin proof and fully compartmentalized. The enclosure shall provide a degree of protection not less than IP-52 (for indoor) in accordance with IS: 13947 and the necessary gasket shall be provided as per section-I (Introduction and general technical requirements). It should be free standing, floor mounting type and smooth finished, made of cold rolled sheet steel of thickness not less than 3 mm for weight bearing members of the panels such as base frame, front sheet and door frames, and 2.0mm for sides, door, top and bottom portions. There shall be sufficient reinforcement to provide level transportation and installation. Design, materials selection and workmanship shall be such as to result in neat appearance, inside and outside with no welds rivets or bolt head apparent from outside, with all exterior surfaces tune and smooth. The colour of the finishing paint shall be smoke grey in accordance with shade no.692 of IS: 5 or in matching colour of other existing Panels. There shall be space heater with thermostat, illumination lamp in the panel.

2.3 TECHNICAL DETAIL

Incomer will be from DC Battery set / Battery Charger. It shall have isolated bus bar chamber for main bus bar at top, running throughout the length of the board and DP vertical busbar chambers for power supply to outgoing feeders. DP should withstand the short circuit current envisaged for the applicable DC Voltage system.

General feeder arrangement will be as follows.

DC Bus: Copper bus shall be provided of suitable size.

Incomer: 1 no. DP air break switch with HRC cartridge Fuse/MCCB of suitable rating

Outgoing: 6 no. outgoing feeders points with HRC Cartridge Fuse of suitable rating

Metering module: The Metering module shall consist of voltmeter (1 no.), Ammeter (1 no), indication lamps (1no) for supply indication. They are to be mounted in incomer panel.

The size of the bus and rating of fuses/MCCB shall be proposed by the contractor for owner's approval during detailed engineering.