

**MORMUGAO PORT TRUST**  
**ENGINEERING MECHANICAL DEPARTMENT**

**NOTICE INVITING BUDGETORY OFFERS**

Name of Work	<b>“Maintenance and Painting of Double Pole Structure at MPT Hospital”</b>
Date of submission of budgetary quotation	On or Before <b>14/10/2016 at 1500 Hrs.</b>
Address for communication:	<b>Executive Engineer(E-HL),</b> Mechanical Engineering Department, Mormugao Port Trust, Electrical Section, 1st Floor, Admin. Building, Headland Sada Vasco-da-Gama Goa - 403804
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**CHIEF MECHANICAL ENGINEER**  
**MORMUGAO PORT TRUST**

## 1. SCOPE OF WORK:-

- 1.1 Supply installation, testing and commissioning of 11KV, 200 A, triple pole Gang operated Air break switch (GOAB).
- 1.2 Supply installation, testing and commissioning of 11KV, 200A Horn Gap Fuse unit (set of three).
- 1.3 Supply installation, testing and commissioning of 9KV, 5KA Lighting arrestors (set of three) suitable for 11KV, 50 Hz effectively earthed neutral system.
- 1.4 Supply and erection of 11KV, 45KN disc insulator with metal parts including fixing conductor and holding clamp.
- 1.5 Supply and laying/stringing of ACSR "WEASEL" conductor (6+1/2.59mm).
- 1.6 Providing, testing and commissioning cast iron pipe earthing with copper Plate in accordance with IS and as per Technical specification
- 1.7 Supply and spreading of trap metal of 50mm aggregate.
- 1.8 Dismantling of existing 200A GOAB switch, HG Fuse unit, Weasel conductor of line & earthing and handing over the same to MPT.
- 1.9 Painting the members of Double pole structure (Excluding poles). ISMC of size 75 x 40 x 6 mm- 08 nos.

## **1. Technical Specifications:**

### **2.1 GANG OPERATED AIR BREAK (GOAB) SWITCH:**

The isolator shall be of three poles, 200A rating and shall be horizontally mounted single break, gang-operated outdoor type. The blades shall move in vertical plane. The live parts shall be so designed that so far as possible sharp points, edges and other corona producing surfaces are eliminated. Live metal parts shall be of non-rusting and non-corroding metal. Current carrying parts shall be non-ferrous. Gang operated links shall be so designed that all phases shall make and break simultaneously.

Operating Mechanism: The isolators shall be arranged for manual (by hand) operation. The isolators shall be provided with 5 mts. Long operating G.I pipe of suitable diameter so that it can be operated from ground level and should have pole coupler GI Rod. The operating handle shall move in a vertical plane (without any cross arm). Provision shall be made for pad locking the mechanism of isolators in both the closed and open position.

The AB switches shall be erected and aligned at the 11 KV, Double pole structure. The switch shall be aligned in such a way that operation of the switch shall be smooth without any tension of the moving parts. The operating handle will be located 1000mm – 1100mm above ground level. The earthing connections are to be made as per relevant IS standard.

MAKE: GR SWITCH GEAR LTD./ ULTIMA SWITCH GEAR/ S&S SWITCH GEAR

### **2.2 HORN GAP FUSE UNIT:**

The Horn Gap fuse unit of continuous current rating of 200 Amps shall comprise of the following fittings:

- a. Six arcing horns made of copper and coated with tin.
- b. Six Post type insulators having creepage of 320mm.

Aluminium connector with bimetallic strip suitable to clamp ACSR conductor upto 12.27 mm overall diameter shall be provided. Pad of the H.G. fuse shall be of copper and coated with tin, provided with required number of nuts, bolts, spring washers, plain washers for clamping and shall be suitable to carry the rated current.

The earthing terminal should be provided with necessary spring washers, plain washers, nut and bolts. All bolts, nuts and washers should be hot dip galvanized (HDGI).

Horn gap shall be suitably mounted on the insulators and across the fuse units. The six Post type insulators shall be fitted on base channel (ISMC) hot dipped galvanized iron of size 75x40mm for mounting the horn gap and other connecting parts and complete with clamps and all hardware which shall be HDG.

Fuse Arrangement shall be made across the narrowest portion of the Horn Gap by suitable terminal clamps/fly nut and bolts for connecting fuse wire. The arrangement of connecting shall be suitable for easy replacement of the fuse wire. The size of the fuse wire shall be chosen depending upon the capacity of the transformer and other equipment to be connected.

MAKE: HINDUSTAN CHEMICALS

### **2.3 LIGHTNING ARRESTOR:**

9KV, 5 KA nominal discharge current, Metal Oxide, gapless, distribution class lightning arrester conforming to IS 3070 Part 3 1993 as amended upto date suitable for 11 KV, 50 HZ effectively earthed neutral system with necessary mounting arrangements and connector suitable to connect ACSR conductor upto 12.27 mm overall diameter.

The earth wire of appropriate size to take care of designed fault currents and lightning shall be used as per relevant IS amended upto date and conforming with CEA guidelines. The earth wire shall be of galvanized stranded steel or alternatively ACSR/ AACSR conductor. The earthing lead shall not pass through any iron or steel pipe but shall be taken directly to the separate earthing pit.

MAKE : ELPRO INTERNATIONAL / OBLUM /SHREEM ELECTRICALS / CROMPTON GREAVES/ ABB/LAMCO

### **2.4 DISC INSULATOR:**

11 KV disc insulator ball and socket type, Type „A“, brown glazed porcelain duly cemented at factory with MCI socket cap, forged steel ball pin and supplied with phosphor bronze „W“ split pin with minimum failing load of 45KN, pin ball diameter 16mm, and min creepage distance of 320mm. The metal parts and hardware shall be hot dip galvanized as per relevant IS amended upto date and conforming to CEA guidelines.

MAKE: BHEL / WSI / ADITYA/BIRLA/MODERN INSULATORS / HINDUSTAN CHEMICALS.

### **2.5 ACSR CONDUCTOR :**

The ACSR cable shall be of hard drawn stranded Aluminium conductor with galvanized steel wire reinforcement, conforming to relevant IS standard. The size of conductor shall be 6+1/2.59 mm i.e. ACSR “Weasel” conductors.

MAKE: TRACO CABLE CO LTD / GUPTA POWER INDS LTD./ MAHAVIR TRANSMISSION UDYOG PVT. LTD. / BHARAT CONDUCTORS / APAR CONDUCTORS / TUMKUR CONDUCTORS

## **2.6 EARTH PITS AND EARTHING:**

The earthing system shall be designed and installed so as to meet the requirement of CEA for the entire Substation installation, which include HT and LT installations.

The value of resistance of earth system should not exceed value acceptable to the Central Electricity Authority. The earth value shall be obtained in accordance with relevant standards and the earth values shall be measured after installation, in the presence of Engineer-in-charge.

The earth connection shall be made of GI strip of adequate size conforming to IS 3043 to safely carry the maximum fault current for a short period without burning the conductor. At no time the potential shall exceed 10 volts between the equipment and earth. The earth system shall be mechanically robust and joints shall be capable of retaining low resistance even after many passages of fault current.

Interconnections and joints for earth conductors shall be riveted and soldered for maintaining low resistance. Each earth bar should be connected to the main earth through a bolted removable link. All ground connections shall be compounded and braided.

The earthing with copper plate shall be carried out in accordance with IS 3043 and IER amended upto date. The earth electrodes shall be driven to a depth of not less than 2.7 meters below the ground level and at least 3 meters away from the building and any other earth electrodes treating the soil surrounding the electrodes with the salt, coke and charcoal.

The internal diameter of the cast iron earth electrode shall not be less than 100mm. The thickness of the cast iron pipe shall not be less than 13mm. The electrode shall as far as practicable be embedded below permanent moisture level and placed without over lapping the resistance area of earth electrodes. Suitable size flange shall be provided to the cast iron pipe for connecting the earth leads.

A suitable brick cemented enclosure for neutral and body earth will be as per IE Rule (i.e.) 450mm x 450mm with 125mm wall thickness. The depth of the masonry work will be not less than 600mm below the ground level and with suitable cover provided by the contractor enclosing the earth electrodes and shall be able to take up the load of lorries, etc., operating in that area. The top surface of the earth pit shall be in level with the finished surface level of the surrounding area.

## **2.7 PAINTING :**

Painting including scrapping all the cross members of the old paint/rust and painting the structure using one coat of red oxide coating (primer) of 60 micron thickness and two coats of anti corrosive silver aluminium paint of 50 micron thickness..

## PRICE SCHEDULE (BILL OF QUANTITIES)

NAME OF WORK: Maintenance and Painting of 11 KV DP Structure at MPT

Hospital

Sr. No.	Description	Unit	Qty	Rate / Unit in (Rs.)		Amount (Rs)
				In figure	In words	
1	Supply and installation of 11KV GOAB switch, 11KV, 200Amps as detailed at Technical specification.					
	a) Supply	No	01			
	b) Installation Testing & Commissioning	No	01			
2	Supply and installation of 11KV HG Fuse unit, 200Amps as detailed at Technical specification.					
	a) Supply	No	01			
	b) Installation Testing & Commissioning	No	01			
3	Supply and installation of 11KV lightning arrester as detailed at Technical specification.					
	a) Supply	No	03			
	b) Installation Testing & Commissioning	No	03			
4	Supply and installation of 11KV disc insulator as detailed at Technical specification.					
	a) Supply	No	03			
	b) Installation testing and commissioning	No	03			
5	Supply & Installation of ACSR weasel conductor for line jumper & earthing as per technical specifications.					
	a) Supply	Mtr	75			
	b) Installation testing and commissioning	Mtr	75			

Sr. No.	Description	Unit	Qty	Rate / Unit in (Rs.)		Amount (Rs)
				In figure	In words	
6	Providing of Cast iron pipe earthing with Copper plate in accordance with IS and as per Technical specification					
	a) Supply	No	06			
	b) Installation Testing & Commissioning	No	06			
7	Supply and spreading of trap metal of 50mm aggregate					
	a) Supply	Cu.mm	04			
	b) Installation Testing & Commissioning	Cu.mm	04			
8	Dismantling/Removal of following deteriorated items and handing over to MPT					
	a) 11KV, 200A GOAB switch	No	01			
	b) 11 KV HG Fuse unit	No	01			
	c) ACSR Weasel conductor	Mtr	50			
9	Painting the members of Double pole structure (Excluding poles). ISMC of size 75 x 40 x 6 mm- 08 nos. as per Technical specification	No	01			

(Rupees \_\_\_\_\_ only)

Note: The rates shall be inclusive of all taxes and duties except service tax which will be paid extra as applicable. However, if new tax is imposed by Central/State Government, the same will be reimbursed on submission of documentary evidence.