



आईएसओ 9001-2015 पल्लन  
AN ISO 9001-2015 PORT

**MORMUGAO PORT AUTHORITY**  
**ENGINEERING MECHANICAL DEPARTMENT**

**ELECTRICAL HEADLAND SECTION**

**NOTICE INVITING BUDGETORY OFFERS**

Name of Work	<b>NAME OF WORK</b> "Design, supply, erection, testing and commissioning of LT distribution panel along with supply and laying of LT 4 core 70 sq mm 1.1 KV underground XLPE cable at HoD Enclave, MPA".
Date of submission of budgetary quotation	on or Before <b>10/08/2022 at 11.00 Hrs.</b>
Address for communication:	Executive Engineer (E-HL), Mechanical Engineering Department, Mormugao Port Authority, Electrical Section, 1st Floor, Admin. Building, Headland sada Vasco-de-Gama Goa - 403804
Contact Details	Phone : (0832) 2594241/15/42 Email : <a href="mailto:xene.mgpt@gmail.com">xene.mgpt@gmail.com</a>
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**EXECUTIVE ENGINEER (E-HL)**  
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CME/XEN(E-HL)/M-22/2022/

.07.2022

**Sub:** “Design, supply, erection, testing and commissioning of  
LT distribution panel along with supply and laying of LT 4 core  
70 Sq.mm 1.1 KV underground XLPE cable at HoD Enclave,MPA”

**Ref:** Budgetary Quotation No. CME/XEN(E-HL)/T30/01

Mormugao Port Authority intends to carry out the work of Design, supply, erection, testing and commission of LT distribution panel with supply and laying of LT 4 core 70 sq mm 1.1 KV underground XLPE cable”. As such, kindly furnish the budgetary quotation for the same. Scope of work enclosed as Schedule - 'A' and Price Schedule enclosed as Schedule - 'A1'.

Your budgetary quotation should reach to this office on or before 10.08.2022.

Thanking you,

Yours sincerely,

**EXECUTIVE ENGINEER (E-HL)**

**TECHNICAL SPECIFICATIONS**

**1. GENERAL**

Port intends to provide power supply to HoD enclave from signal station through 4C x 70 sq.mm LT underground (armoured XLPE 1.1 KV as per IS 7098 standard) cable along with design, supply, installation, testing and commissioning of Stainless steel outdoor type LT distribution panel at HOD enclave.

**2. SCOPE OF WORK**

- i. Supply, laying and end termination of LT 1.1 KV, 4C x 70 sq.mm underground armoured Aluminium cable from Signal station to HoD enclave and making end terminations for LT cables.
- ii. The contractor shall Design, Supply, install, test and commission one no of LT distribution Panel (IP66, Double door, outdoor type, SS304) with two nos of 200 Amps,415v, 4 Pole Main MCCBs as incomer for both source of supply, one no of 200A, 4P,415v, on load change over switch, 10 Nos 4 pole 63 Amps,415v MCB for distribution of LT supply to individual bungalows with suitable size copper bus bars for neutral and 3 phases, Digital multifunction meter and LED indication lamps for 3 phases (RYB).
- iii. End termination of existing 4 core 25 Sq. mm LT Cables (8 Nos.) to individual 4 pole 63 Amps MCB, End termination of existing 3.5 core 70 sq.mm LT cable and spare 4 core 70 sq.mm to the new panel after excavation of cables from the ground and refilling the earth after installation of new panel.
- iv. Earthing to be carried out as per latest IS: 3043 and IER amended up to date, for the panel.
- v. All labours, materials, tools plants, machinery, equipment and any other things required for execution for work shall be arranged by the contractor at his own cost.
- vi. Replaced panels/materials shall be shifted to Electrical Section/HL or MM Depot as instructed by E.I.C

**Note:** The bidder shall carry out the above complete work as per IER and other relevant standard. The scope of work is not restricted, If, any additional material or accessories is felt necessary, the contractor full fills the complete system as per IER and relevant standard on the offered rate



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### 3. DETAILED TECHNICAL SPECIFICATION

#### **3.1. SUPPLY AND LAYING of 1.1 KV, 4C x 70 sq.mm LT underground armoured Aluminium cable**

##### **a) Supply of LT 1.1 KV, 4C x 70 sq.mm underground armoured Aluminium XLPE Cable**

The cable measurements are tentative and may vary as per site condition. Supply and laying of Aluminium XLPE L.T. underground cable of 1.1KV voltage grade, extruded PVC inner sheathed, single layer of galvanized steel wire / strip armoured, over all PVC sheathed conforming to IS 7098 Part I 1985 with latest amendments with ISI mark of approved make. The cable quantity shown in BOQ is tentative. The Contractor shall measure the actual quantity as per the site requirement and confirm the same from E.I.C before taking for procurement action.

Note: i) Test certificates from the manufacturers for the cable shall be submitted along with the supply of cable.

##### **b) Laying of LT 1.1 KV, 4C x 70 sq.mm underground armoured Aluminium XLPE cable.**

The laying of cable in the excavated trench / road crossing / Hume Pipe / concrete cutting, etc. from Signal station to HOD Enclave new panel.

The cables are to be laid as per IS: 1255 and as detailed under: The cable quantity shown in the price schedule is tentative. The Contractor shall measure the quantity and supply the same. However, the payment will be made by actual length.

- (i) The cable shall be laid in the excavated trench of size 40cm width x 80 cm depth on sand bedding with brick protection. The cable shall be laid in RCC Hume pipe in case of road crossing and re-closing with excavated soil and make it original condition with cement concrete for road crossing. Required RCC Hume Pipe shall be supplied by MPA. The pipe shall be laid at an angle to avoid sharp cable bends at the point of entry and exit. A spare pipe of the same size shall simultaneously be laid for future augmentation / requirement.
- (ii) The end termination for 1.1 KV grade underground cables shall be of crimping type lugs which shall be supplied by the contractor. The crimping type lugs shall be installed by highly skilled personnel with all accessories and other material confirming to relevant IS specification the additional length of cable shall be provided for loop of sufficient length for future requirement before commencing and termination work. The work includes all labour and material as directed by E.I.C.

All the tests shall be carried out as per relevant IS specifications and IER 1956 before charging the panel.

**3.2. a) Design and Supply LT Distribution Panel**

- i. The panel offered shall be of stainless Steel, double door type having uniform depth and height and width depending on the current rating of MCCB it houses. The panel shall be designed such that it shall have IP 66 degree of protection. The Design/drawing of the panel shall require approval of the E.I.C before commencement of fabrication.
- ii. All instruments and protective/auxiliary relays shall be mounted on the inside hinged door while current transformers shall be mounted on the bus links on the incoming or outgoing side as the case may be. The panel shall have digital multifunction meter, Phase indication lamps, two nos of 200 Amps 36KA 4 Pole MCCB with O/L and S/C release, one no of 200A, 4 Pole on load manual Change over switch, ten nos of 4 pole 63 A MCBs. All the control and measurement circuits shall be protected with suitable size MCBs.
- iii. Removable 2mm thick SS gland plates shall be provided at the bottom for bringing in the external cables. The gland plate shall have provision for terminating 2 runs of 4 C x 70 sq mm Aluminium armoured cable and 10 runs of 25 sq mm outgoing cables.
- iv. The main horizontal and vertical busbars shall be of electric grade Copper. The main horizontal busbar compartment shall be located at the top.
- v. The panel should be manufactured with SS 304 steel. Minimum thickness of SS sheet used for the panels shall be not less than 3 mm for load bearing members, and not less than 2.0 mm for non-load bearing members as per the relevant standards. All sheet metal work shall be pre-treated adequately for the removal of oil, grease, dirt and rust by cleaning and pickling method and then two coats of primer/zinc chromate shall be given after phosphating. The earthing strip shall run through the length of the panel and nut bolt arrangement shall be made to connect the earth pits.
- vi. The base frame of panel shall also be made up of stainless steel SS 304. The size of angle shall not be less than 35mmx35mmx5mm.
- vii. The panel shall comply with all the latest IS standards for LT panel and in general and for all the components used within it.
- viii. The technical features specified are indicative. However, the contractor shall provide any other feature/accessories as found necessary for proper functioning of panel.



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**b) Installation, Testing and commissioning of LT Panel**

The contractor shall install LT panel on a raised concrete platform as approved by EIC. LT panel shall be installed at 60 cms height from the ground and completed in all respects with all Civil Works as per the approved drawing and as directed by E.I.C.

**3.3 Earthing**

**3.3.1 GENERAL**

The earth system shall conform to IS: 3043 and as per approved drawing.

**Types of earth systems:**

a) Pipe Earth Electrode

**3.3.2 Pipe Electrode Earth System**

a. The earth electrode shall be made of G.I. pipe of 50 mm dia, medium class (class B) conforming to relevant IS. It shall be 2.0 meter long and tapered at the lower end. The pipe shall be drilled with 12 mm dia. holes at intervals of 75 mm from each other, up to 1.7 meter from the bottom end tip.

b. The pipe electrode shall be buried in the ground vertically with its top nearly 100 mm below the top of the chamber.

c. A G.I funnel with G.I mesh shall be provided on top of this pipe for watering. Funnel attachment shall be housed in the masonry chamber.

d. The top of pipe electrode shall be housed in a masonry chamber (finished) of not less than 400mm x 400 mmx400mm (internal size). The covers of the masonry chamber shall be of R.C.C with handle for lifting.

e. Normally an earth electrode shall not be situated less than 1.5m from any building. Care shall be taken that the excavation for the earth electrode may not affect the column footings or foundations of the building. In such cases, the electrode may be located further away from building. The location of earth shall be such that the soil has reasonable chances of remaining moist. Building entrances, pavements, roads etc. shall be avoided for location of earth electrodes.(I.S 3043)

f. Earth resistance shall be reduced by artificial chemical treatment of the soil with sodium chloride (common salt) mixed with soft coke or charcoal in suitable proportion in layers of 150mm. When this treatment is resorted to, the electrode shall be surrounded by the mixture of charcoal/coke and salt.

g. The earth lead from earth electrode to equipment/Location Box/Junction Box/Point Machine etc. shall be of GI wire of size (8 SWG or 25mm X 5mm GI strip).



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- h.** Earth lead shall be connected to pipe earth electrode by means of galvanized bolts, nuts, washers & cable sockets.
- i.** All materials used for connecting the earth lead with electrode shall be of GI.
- j.** The earth lead shall be securely connected at the other end i.e. main board/pole/structure/equipment/Location Box etc. with GI nuts, bolts, washers etc.
- k.** The earth lead from electrode shall be suitably protected from mechanical injury and shall be buried in ground at minimum 300mm depth when located outdoors. The portion within the building shall be recessed in walls/floors at adequate depth.
- l.** No earth electrode shall have resistance greater than 5 ohms. In rocky soil, the resistance may be up to 8 ohms.
- n.** In locations where the full length of pipe electrode is not possible to be installed due to meeting a water table, hard soil or rock, the electrode may be of reduced length, provided the required earth resistance result is achieved with or without additional electrodes, or any alternative method of earthing may be adopted, with the prior approval of the Engineer-in charge
- o.** The following information shall be displayed with white or yellow paint on the RCC cover.
- i) Earth Pit No.....
- ii) Earth resistance.....ohms.
- iv) Date of testing.....

**4.0 OTHER TERMS AND CONDITIONS**

The firm is advised to visit the site and get acquainted regarding the nature of the work involved at site conditions before quoting the offer.

- i. The Technical Specification "Schedule-A" and Schedule of Prices & Quantities "Schedule-A1" to be read in conjunction to ensure the actual works involved.
- ii. The firm should engage skilled service personal with the relevant required tools and instruments for commissioning the same.
- iii. The Contractor personnel engaged in the work shall follow all safety, security and General Rules enforced by Mormugao Port Authority (MPA) and the firm will only be responsible for the same.
- iv. MPA will not be responsible for any loss or damage of the men / materials / tools / plants engaged by the firm during the work at site / transportation.
- v. The firm should indicate the GST No.
- vi. No advance payment will be made.



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- vii. Final payment will be made only after handing over the entire system with good working condition.
- viii. Necessary entry passes shall be obtained by the firm at their own cost with the approval of Port Officials.
- ix. Power Supply will be provided on chargeable basis by the Port. However, the firm should make his own arrangements to take power supply from the nearest source of supply.
- x. For any clarifications, the firm may contact the 'Executive Engineer at 1st floor of the Administrative Office, Ph.0832-2594241/4231





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Schedule - 'A1'

**PRICE SCHEDULE (BILL OF QUANTITIES)**

Sr. No.	Description of work	Qty	Unit	Rate Per Unit (Rs.)	Amount (Rs)
1	Supply, laying and termination of 4C x 70 sq. mm LT cable from signal station panel to HOD enclave panel as per technical specifications at Schedule-A.				
	a) Supply	200	Meter		
	b) Laying	200	Meter		
	c) Termination	2	Nos		
2	Excavation of cable trench in hard rock/ cement flooring/ Bituminous road for laying of 4C x 70 sq. mm LT cable 0.8 meter deep and 0.4 meter wide Sand bedding and providing protection tiles over the cable and backfilling the trench as per technical specifications at Schedule-A.	200	Meters		
3	Design, Supply, Installation, testing and commissioning of LT distribution Panel (IP66, Double door SS304) with two nos of 200 Amps 4 Pole Main MCCB, one no of 200A, 4P on load manual change over, 10 Nos of 4 pole 63 Amps MCB for distribution of LT supply, digital multifunction meter for measurement of voltage, current etc and LED indication lamps for 3 phases (RYB) as per technical specifications at Schedule-A.				
	a) Supply	1	No		
	b) Installation, Testing and Commissioning	1	No		
4	Providing earth pit with 50mm GI pipe as per IS 3043 and connecting the same with 25 X 5 mm GI strip/8SWG GI wire to the panel	1	No.		
5	Termination of existing 4Cx25 Sq mm LT Cables to individual 4 pole 63 Amps MCB	10	Nos.		
6	Termination of existing 3.5Cx70 Sq mm LT Cable to new panel.	1	No.		
<b>TOTAL (Rs)</b>					

(In Words Rupees \_\_\_\_\_ only).

**Note:**

1. The rates quoted shall be inclusive of transportation, lodging and boarding, but exclusive of GST. Applicable GST shall be paid extra as applicable.



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