

MORMUGAO PORT TRUST
ENGINEERING (MECHANICAL) DEPARTMENT

Ref. No.

/03/2016

To,
The Dy. Director (IT),
HL/MPT.

Kindly arrange to display the following Request for Budgetary Quotation on our official web site.

BUDGETARY QUOTATION

Sr. No.	Item Description
1.	Supply, Installation, Testing and Commissioning of equipments for providing 11kV/415V Power Supply to Baina Workshop at Mormugao Port Trust as per Technical Specifications.

Chief Mechanical Engineer

Encl: 1.) Notice Inviting Budgetary Offers
2.) Schedule of Rates/Prices
3.) Technical Specifications

MORMUGAO PORT TRUST
ENGINEERING MECHANICAL DEPARTMENT

NOTICE INVITING BUDGETORY OFFERS

Name of Work	Supply, Installation, Testing and Commissioning of equipments for providing 11kV/415V Power Supply to Baina Workshop at Mormugao Port Trust .
Date of submission of offers	on or before 12/04/2016 at 1430 Hrs.
Address for communication:	Superintending Engineer (W – Baina) Engineering Mechanical Dept., Mormugao Port Trust, Power House, Baina Workshop, Mormugao, Goa – 403802.
Contact Details	Phone :0832-2594225; Email : cme.mgpt@gmail.com
Website	www.mptgoa.com

CHIEF MECHANICAL ENGINEER
MORMUGAO PORT TRUST

SCHEDULE OF RATE/PRICES

PART 'A'

Sr No	Description of Work	Unit	Qty	Unit Rate (Rs)		Amount (Rs.)
				In Figure	In words	
1	Supply of 11KV rail pole DP structure as per the detail given in the Technical specification.	Set	1			
2	Installation of 11KV rail pole DP structure as per Technical Specifications.	Set	1			
3	Supply of 11 KV / 415V, 200 KVA, 25 Amps, and DYN1 Oil cooled copper winding Transformers as per Technical Specifications.	Nos.	2			
4	Installation of the Transformers as per Technical Specifications.	Nos.	2			
5	Supply of 11KV, 3 core x 95 sq.mm XLPE aluminium conductor armoured cable, conforming to IS: 7098 as per Technical Specifications.	Mtrs.	60			
6	Laying of 11KV, 3 core x 95 sq.mm XLPE aluminium conductor armoured cable as per Technical Specifications.	Mtrs.	60			
7	Supply of Energy meter with CT's and PT's on the HT side, enclosed in a sheet metal cubicle as per Technical Specifications.	No.	1			

8	Installation of the Energy Meter, CT and PT as per Technical Specifications.	No.	1			
9	Supply of Cast iron pipe for earthing with Copper plate in accordance with IS 3043 or latest as per IE standard as per Technical Specifications.	No.	6			
10	Supply of 50mm x 6 mm G.I. flat for earthing connectivity as per Technical Specifications.	Mtrs	100			
11	Installation, testing and commissioning of the earthing system as per Technical Specifications.	LS	LS			
12	Testing and Commissioning of the Installation/System, which also includes charges towards liaisoning with the State Govt. Electricity Board.	LS	LS			
Total Amount 'PART A'						

(Rupees _____ only inclusive of all taxes and duties)

PART- B

Sr. No.	Description of work	Unit	Qty.	Unit rate (Rs.)		Amount (Rs.)
				In figure	In words	
1.	Buy back of 2 nos. 3.3KV/415V, 315 KVA, existing Pactil make oil cooled Transformers as per Technical Specification.	Nos.	2			
TOTAL AMOUNT 'PART B'						
NET TOTAL = TOTAL OF [(PART A) – (PART B)]						

(In Words Rupees _____
_____ only inclusive of all taxes and duties)

OFFERER'S SIGN

Place :

Date:

Note: The offered rates shall be inclusive of all taxes and duties, Service Tax shall be extra as applicable.

TECHNICAL SPECIFICATIONS

1.0 GENERAL

Mormugao Port Trust, Mormugao Goa, proposes to avail 11kV, 200kVA power supply from Electricity Department, Govt. of Goa, for their Workshop situated in Baina, Vasco Goa, situated approx. 400 meters away from seashore.

2.0 SCOPE OF WORK

The 11kV power supply is being availed at the existing Substation at the Workshop having 2 nos., 3.3kV/415V, 315kVA Oil cooled Indoor Transformers. The subject work is to be carried out without disrupting the existing 3.3kV/415V supply and later a smooth changeover to 11kV/415V supply.

2.01 11KV Rail pole DP Structure

- 11KV DP structure shall be comprising of 90 lb/yd rails of 9 mt. in length above ground and shall be grouted 2 mt. deep with the help of cement concrete at the ratio 1:2:4 . DP structure shall be painted with one coat of primer and two coats of silver (aluminum) paint.
- Chain link fencing of 2 mts. height shall be provided around the DP structure made out of 45mmx8mm thick 'L' angle maintaining one mt. distance between DP structure and fencing. Fencing shall be painted with one coat of primer and two coats of silver(aluminum) paint.
- Fencing area shall be made level and provided with one layer of loose black metal of 10 cm. thick.
- Fencing shall be provided with Lockable door.
- DP Structure shall be provided HDGI Stay rod with plate for rail pole 90lb/yd
- 11KV DP structure shall be provided with 274 Kg HDGI material, 2 Kg. anticlimbing device,& two nos.enameled danger board.
- 11KV DP structure shall be provided with 10 pairs of stay clamps for rail pole 90lb/yd.
- 11KV DP structure shall be provided with two nos. SA X arm clamps, 12 nos. LA X clamps, 12 nos. packing pieces for rail pole 90lb/yd.
- 11KV DP structure shall be provided with one set 11 KV GOAB switch with 200 A. and one set of 11KV HG fuses.

- 11KV DP structure shall be provided with three nos. pole mounted 9KV, 5A lightning arrestors.
- 11KV DP structure shall be provided with M.S. distribution board along with Distribution transformer metering unit. The DB shall have a double door arrangement.
- Liaisoning for obtaining 11KV/415V, 200KVA power supply from Govt. of Goa shall be done by contractor.

2.02 11KV /415 V, 200 KVA Transformer

- The transformer shall be oil cooled copper winding only and of latest design.
- The transformer shall be suitable for operation at full rated power on all tapings without exceeding the applicable temperature rise.
- It shall be possible to operate the transformer satisfactorily, with the loading guide specified in IS-6600. There shall be no limitations imposed by bushings, tap changers, auxiliary equipment to meet this requirement.
- The transformer shall be designed to be capable of with-standing, without injury, the thermal and mechanical effects of short-circuits between phases or between phase and earth at the terminals of any winding with full voltage applied across the other winding for periods given in relevant standards. There shall be no limitations imposed by any part/component of the transformer/off load tap links to meet the short circuit level Specified.
- The transformer shall be designed for minimum no-load and load losses within the economic limit and shall be able to have minimum loss at the rated load condition
- All electrical connections and contacts shall be of ample cross sections for carrying the rated current without excessive heating.
- The transformer shall be capable of continuous operation at full load rating.
- The core-clamping frame shall be provided with lifting eyes having ample strength to lift the complete core and winding assembly.
- Off circuit tapings shall be provided on the HV windings. Tap changing is done by means of off-circuit links accessible through openings provided.
- The lifting lugs and rollers shall be provided. A winding temperature scanner shall be provided and shall be actuated by means of resistance temperature detectors embedded in LV windings of all three phases. It shall have alarm and trip contacts at a specified temperature.
- Windings shall be of electrolytic copper conductors (circular in shape) of high conductivity and 99.9% purity.

- Windings shall be designed to withstand the specified thermal and dynamic short circuit stresses. The windings shall be duly sectionalized. Accessible joints brazed or welded and finished smooth shall connect similar sections. No corona discharge shall result on the winding upon testing the transformer for induced voltage test as specified in IS.
- The end turns of the high voltage windings shall have reinforced insulation to take care of the voltage surges likely to occur during switching or any other abnormal condition.
- The high voltage and low voltage winding are shall be made of copper Conductors.

Output in KVA : 200 KVA double copper wound.

Rated No load voltage ratio : 11KV/433 Volts

No. of phase : 03

Rated frequency : 50 Hz

Connections : Primary – Delta

Secondary : Star with Neutral

Vector Group : DYn11

Tapings on HV Side : $\pm 5\%$ in steps of 2.5%

Type of Tap changer : Off circuit tap links on HV side

Cooling : ONAN

HT. Side : Suitable for cable

LT Side : Suitable for Bus bar

Fittings : 2 Nos. earthing terminals, rating & diagram plate, bidirectional rollers, lifting lugs, winding temperature scanner.

Temp. Rise winding over ambient temp : 90°C

Insulation Class : F

Percentage Impedance : < 5%

Paint : Enamel (Siemens Grey)

Losses : Minimal Losses as per IS

- Transformer shall be installed in the same place of existing 3.3 KV/415 volt transformers providing/fabricating proper foundation on the cable trench of 650 cm wide.
- The foundation shall be 200mm x 8 mm C-channel of length 1 mtr is to be provided and properly grouted with the help of grouting bolts and provided with bi-directional rollers.
- Transformer foundation shall be fixed rightly with the foundation.
- The existing 11kV HT isolator having 3.3kV accessories have to be converted to 11kV rating accessories.
- The existing LT panel and LT terminal connections shall be restore with the help of aluminum bus bars without interruption.

2.03 Supply & laying of 11KV, 3 corex95 sq.mm XLPE aluminum conductor armored cable

- The cable length is approximately 60 mtrs. This includes supply and laying of 11KV, 3 core x 95 sq.mm XLPE aluminum conductor armored overall PVC sheathed cable confirming to IS:7098 with ISI mark including end terminations with accessories.
- The cable shall be laid in the existing trench by opening the covers and reclosing the same without damaging the trench/covers after laying the cable.
- The cable shall be laid in cable trench after excavating the cable trench of size 0.5 mtr width x 1.0 mtr deep in hard/murum soil providing kaddappa slab on cable and back filling.
- The end termination for 11kV grade underground cables shall be of crimping type lugs shall be supplied by the contractor. The crimping type lugs shall be installed by highly skilled personnel.
- This includes providing and fixing end termination to HT 11 KV 3 C x 95 sq. mm. XLPE (E) aluminum conductor armored cable with heat shrink type termination kit with all accessories and other material confirming to relevant IS specification the additional length of cable shall be provided for loop of sufficient length (3 to 5 mtrs.) for future requirement before commencing and termination work. The work includes all labour and material required and shall be done as directed by E.I.C.

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

2.04 Earth pits & Earthings

- The earth system shall be designed and installed so as to meet the requirement of CEA. The value of resistance of earth system should not exceed value acceptable to the Central Electricity Authority.
- The earth value shall be obtained accordance with relevant standards and the earth values shall be measured after installation in the presence of Port Engineer.
- All non current carrying parts with conducting surface such as power transformer, frame works of circuit breakers and medium / low voltage switch gears, instrument transformer cases, cable glands, cable supports, any steel works of the substation buildings should be efficiently grounded for the protection of equipments and operating personnel by connecting to the earth ring bus with two distinct and separate earth leads.
- The earth connection shall be made of copper of adequate size and section of the conductor conforming to IS 3043 to safety carry the maximum fault current for a short period without burning the conductor and pass on the fault current is in excess of this, additional earth connections under fault condition and 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. The G.I. flats of size 50x 6mm shall be interconnected of earth pits.
- Interconnections and joints for earth conductors shall be riveted and soldered for retaining 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 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 in accordance with IS 3043.
- 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 overlapping 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.

2.05 Energy meter (Check Meter)

- Trivector meter- Digital 11KV/110V, 5A, 50Hz. shall be provided at HT side with CT and PT ,ratio shall be 50/5 in the sheet metal cubicle for accounting.
- CT's and PT'S accuracy class should be 0.1.
- Suitable cable shall be provided to connect the CT,PT & Trivector meter.
- The meter shall be in accordance with the JERC regulations.

2.06 Buy back of 3.3 KV/415V. 315 KVA, Transformer

- The existing PACTIL make copper winding oil cooled 3.3 KV/415V, 315 KVA, Transformers shall be taken by the contractor at quoted price and new 11KV/415 volt, 200 KVA transformers are to be installed on existing cable trench after making necessary foundation.

2.07 LIST OF APPROVED MAKES

S.No.	ITEM	Name of Manufacturers
1	HRC Fuses	L & T / GE / SIEMENS / ABB / INDO KOPP
2	Transformer	KIRLOSKAR/ CROMPTON/ VOLTAMP/ BHARAT BIJLEE/ MEI.
3	Indicating light	AE / KAYCEE / VAISHNAV / L & T /SIEMENS
4	MCB	L & T / LEGRAND / SIEMENS / ABB / SCHNEIDER
5	Sub Distribution Board	L & T / LEGRAND / SIEMENS / SCHNEIDER / HENSEL

S.No.	ITEM	Name of Manufacturers
6	EL MCB	L & T / SCHNEIDER / LEGRAND / SIEMENS / ABB
7	Contactors	L&T / SCHNEIDER / SIEMENS/ABB / BCH
8	MCCB	L&T / SIEMENS / SCHNEIDER / ABB
9	VCB / SF6/ Isolator	SIEMENS / AREVA / ABB / SCHNEIDER
10	Push Buttons	SIEMENS / ABB / TELEMECANIQUE / L&T / SCHNEIDER
11	Indicating Instruments	AE / MECO / CONZERVE / L&T
12	XLPE cable	UNISTAR / FINOLEX / NICCO / HAVELLS / RPG / UNIFLEX
13	Termination Kit	BIRLA 3M / RAYCHEM /DENSON
14	CTs	L&T / AREVA / JYOTI / KAPPA / PRAGATHI
15	PTs	AREVA / KAPPA / PRAGATHI
16	Cable Trays (FRP)	LEGRAND / ERCON / NEEDO / SUMMIP
17	Items not covered above	As per samples approved