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**E-QUOTATION DOCUMENT FOR  
"PROVIDING LED FLOOD LIGHTS IN THE EXISTING TOWER/  
POLES AFTER REPLACING THE OLD SON LAMPS AT THE Q9  
BERTH AND Q9 BACK UP AREA OF ERNAKULAM WHARF AT  
COCHIN PORT TRUST"**

Website: [www.tenderwizard.com/CPT](http://www.tenderwizard.com/CPT); [www.cochinport.gov.in](http://www.cochinport.gov.in)

CHIEF MECHANICAL ENGINEER'S OFFICE  
ELECTRICAL DIVISION, FIRST FLOOR,  
NEW ADMINISTRATIVE BUILDING,  
COCHIN PORT TRUST  
WILLINGDON ISLAND, COCHIN-682009

Due Date & Time for submission : **14.30 hrs. on 03/01/2022**

Date & Time of Opening : **15.00 hrs. on 03/01/2022**

**E-QUOTATION No. F2/LED Repl. Lattice Tower-Q9/2021-M DT.17/12/2021**



## COCHIN PORT TRUST

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No. F2/LED Repl. Lattice Tower-Q9/2021-M

DT.17/12/2021

### 1. e-QUOTATION NOTICE

1. Electronic Quotations (e-Quotations) **on percentage basis** are invited by the Dy. Chief Mechanical Engineer (Ele.) for carrying out the work of "**Providing LED Flood lights in the existing tower/ poles after replacing the old SON lamps, at the Q9 berth and Q9 back up area of Ernakulam Wharf at Cochin Port Trust**".
2. The bidder should have experience in carrying out similar outdoor illumination works and **shall submit scanned copy of Purchase Order/ Work order and Completion Certificate** issued by the Client for those previous experiences.

Sl. No.	Item Description	Details
1.	Quotation e-publication no.& date	<b>No. F2/LED Repl. Lattice Tower-Q9/ 2021-M dt:17/12/2021</b>
2.	Download period of quotation documents	<b>15.00hrs. on 17/12/2021 to 14.00hrs.on 03/01/2022</b>
3.	Last date and time of submission of bid	<b>03/01/2022 at 14.30hrs.</b>
4.	Date and time of opening the bid	<b>03/01/2022 at 15.00hrs.</b>
5.	Estimated Amount	<b>Rs.4,98,768/-</b> excluding GST (Rupees Four lakh ninety eight thousand seven hundred and sixty eight only)
6.	EMD/ Cost of document	Nil
7.	Validity period of quotation	90 days from the last date for receipt of quotation
8.	Period of Contract	<b>120 days from the date of LOA</b>

3. The bidders are to obtain the one time User ID & password for log-in to the e-tendering Portal [www.tenderwizard.com/CoPT](http://www.tenderwizard.com/CoPT) from the service provider M/s.KEONICS by paying registration amount of Rs.1124/- through online Payment using Credit/Debit Card/Net banking or DD in favour of “KSEDCL, Bangalore”.
4. The intending bidder must have valid Class-II or III digital signature certificate to submit the bid. For further details, please contact e-Tender Help Desk No. 080-40482000/ 080-49352000/ 9746118529/ 9605557738.
5. Quotation documents including General Conditions, Scope of Work & Technical Specifications for carrying out the work, as well as Bill of Quantities can be downloaded from the e-Tendering portal [www.tenderwizard.com/COPT](http://www.tenderwizard.com/COPT) from 17/12/2021 to 03/01/2022 by making online requisition. Quotation document will also be available in the Cochin Port website ([www.cochinport.gov.in](http://www.cochinport.gov.in)) which can be downloaded for submission.
6. The Quotation document will be available as two separate files in the e-tendering Portal; containing the following:
  - a. Quotation Notice with General Conditions, Scope of Work and Technical Specifications.
  - b. Bill of Quantities.
7. The estimated amount in the BoQ is excluding GST. The Bidders shall quote percentage above or below the Departmental estimate in the Bill of Quantities (BoQ) and submit the same ONLINE in the e-tender portal [www.tenderwizard.com/CPT](http://www.tenderwizard.com/CPT). The name and address of the Bidder shall necessarily be entered in the space provided in the Bill of Quantities.
8. **Quotations shall be submitted before 2.30 pm on 03/01/2022 and will be opened at 3.00 pm on the same day.**
9. The Bidder shall inspect the site before submitting the quotation in order to make them fully aware of the Scope of Work, Site and its conditions.
10. The undersigned reserves the right to reject/cancel/postpone any one or all tenders at any stage of the tender, which will be binding on all bidders.

**DY. CHIEF MECHANICAL ENGINEER (ELE)**

## **2. GENERAL CONDITIONS**

1. **Validity of Quotation:** The Quotations shall be valid for a period of 90 days from the due date of submission of quotation.
2. **Completion Period:** The whole work shall be completed within 120 days from the date of receipt of work order. **The Light fittings shall be installed within 60 days.** In case the Bidder is not permitted to carry out the work due to some problem from Employer's side, he should maintain a record of such time lost, duly counter signed by the Engineer-in-Charge and this period will not be included while determining the delay in completion period. In case the works are not completed within the specified completion periods due to any fault of the Bidder, liquidated damages (L.D.) may be levied as per Clause 4 below.
3. **Payment Terms :** Payments will be made online after completing the work to the entire satisfaction of the Engineer-in-Charge and also after deducting the taxes prevailing in force at the time of payment of bills. Payment will be made as per actual measurements, according to the percentage quoted.
4. **Liquidated Damages:** In case of delay in completion of the contract, liquidated damages (L.D.) may be levied at the rate of half percent (½%) of the Contract Price per week of delay, subject to a maximum of 10% of the Contract Price. The amount of Liquidated Damages can be adjusted or set-off against any sum payable to the Bidder.
5. **Defects Liability Period:** The defects liability period for the entire work shall be 12 months from the date of commissioning of the installations. In the event of any defect/deficiency being noticed during the period, which is attributable to the defective materials/design/ workmanship, the Bidder shall make good the same at his cost. **Warranty for the light fittings shall be 5 years and certificate shall be produced.**
6. **Security Deposit:** Security deposit @ 10% of Contract Price shall be recovered from the Bidder's bill. The amount towards Security Deposit so deducted will be released only after successful completion of the defect liability period, subject to certification from the Engineer-in-Charge.
7. **Execution of Agreement:** The successful Bidder will be required to execute, within 14 days from the date of receipt of work order, an agreement at his expense on proper value Kerala State Stamp Paper in the prescribed departmental form, consisting of the work order issued to the Bidder, together with the Quotation submitted by him including General Conditions, Scope of Work and Technical Specifications, for the due and proper fulfillment of the contract. Till signing of agreement, the Quotation together with the acceptance letter shall constitute a binding contract between the Bidder and Cochin Port.
8. **Engineer-in-Charge:** The Engineer-in-Charge of the work is the Superintending Engineer (Ele), CoPT. Clarifications if any required can be obtained by contacting the Superintending Engineer (Ele) / Executive Engineer(Ele-P) of the Electrical Division of CoPT. Ph: (0484-2582351 OR 0484-2582320).
9. **Water & Electricity:**  
**Water:** Water, if required for the work, shall be arranged by the Bidder at his own cost.  
**Electricity:** The Bidder shall make his own arrangements for the temporary connection for electricity required, if any, and make necessary payment for it direct to the Department concerned.
10. The Bidder shall have valid GST Registration number. GST as applicable for the work will be paid extra by the Port. The GST applicable as per law can be billed on the Port Trust,

which will be paid to the Bidder by the Board along with the bills, for which the Bidder shall hold valid GST Registration number.

11. The Bidder shall comply with all the provisions of the Indian Workmen's Compensations Act, Public Liability Policy, Provident Fund Regulations, Employees Provident Fund and ESI Act etc. amended from time to time and rules framed there under and other laws affecting the Contract labour that may be brought in to force from time to time.
12. The Bidder shall be registered under EPF and ESI act and the employees employed under them shall be covered in the EPF and ESI Scheme, if required as per applicable rules. The Bidders shall regularly remit, the Employer & Employee contribution to the authorities in such cases. If not, the Dept. would be required to remit the same and the amount so remitted shall be deducted from the part/ final bill of Contractors.

### **13. INSURANCE**

- 13.1 The Contractor shall provide in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles as per LoA for the following events which are due to the Contractor's risks.
  - a) loss of or damage to the Works, Plant and Materials
  - b) loss of or damage to Equipment;
  - c) loss of or damage of property (except the Works, Plant, Materials and Equipment) in connection with the Contract; and
  - d) personal injury or death.
- 13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Engineer or his nominee for approval before the start date. All such insurances shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.
14. All materials, tools, plants and equipments required for completing the work shall be provided by the Contractor at his own cost. All materials required for the work shall be got approved by the Engineer-in-Charge before using in the work. Any fittings or accessories which may not be specifically mentioned in the specification but are usual or necessary as per good industry practice shall be provided by the Bidder without extra cost to the Port. All works shall be carried out as per relevant ISS.
15. All labour, skilled or unskilled for the work shall be provided by the Contractor at his own cost and settling any disputes with the labour shall be the Contractor's responsibility.
16. All care and precautionary measures for avoiding any kind of damage/ accidents in the work site shall be taken by the Contractor. All safety precautions shall be taken while carrying out the work. The Contractor shall supply the necessary safety equipments to the workers employed by him and also ensure that they use it, while carrying out the work. The Contractor shall be solely liable and responsible for accidents if any, occurring during the period of Contract.
17. The work shall be completed without causing any damage to the existing structures/cables etc. In case any damage is caused, the same has to be rectified at Bidder's risk and cost.
18. The Port will in no way be responsible for any loss/damages caused in connection with the work.

**SIGNATURE OF THE BIDDER**

### **3. TECHNICAL SPECIFICATIONS**

#### **1. SCOPE OF WORK**

This specification covers Supply, erection/installation, testing of items, laying of cables and commissioning of equipment/items and its associated works. The work includes providing new LED Flood Lights in the existing lattice tower/ poles near to Q9 berth and Q9 back up area of Ernakulam Wharf at Cochin Port Trust by replacing the existing old and damaged SON fittings.

1. Dismantling the old/damaged SON fittings, control gears and accessories from the top of the old lattice tower and poles and handing over to Port's Electrical T&R section.
2. Supply, fixing and commissioning of 200W LED flood lights in the existing Lattice towers/ poles near Q9 berth and Q9 back up area in Ernakulam Wharf.
3. Supply and laying of LT UG cables through open trench, surface clamping etc. for giving supply to light tower and fittings, as per requirements.
4. Supply and fixing of Poly carbonate Feeder Panels and Junction Boxes for taking power supply for the light fittings.
5. Supply of materials and providing end termination of the UG cables etc.
6. Providing earthing of the items.
7. Commissioning the entire system

**The bidder shall visit the site, ascertain the site conditions and scope before bidding.**

An estimate for **Rs.4,98,768/-** (Rupees Four Lakh Ninety Eight Thousand Seven Hundred Sixty eight Only) excluding GST has been prepared for the work. The bidders are required to quote percentage above or below the Departmental estimate.

#### **1.1 TECHNICAL SPECIFICATIONS OF ELECTRICAL WORKS**

In addition to the above, the scope intends to cover but not restrict to the following activities, services and works.

- (i) Complete design and engineering of all the systems, sub-systems, equipment, material and services.
- (ii) Supply, testing, packing transportation and insurance of the equipments from manufacturer's work to the site.
- (iii) Receipt, storage, insurance, preservation and conservation of equipment at the site.
- (iv) In addition to the requirements indicated in Technical Specifications, all the requirements as stated in relevant regulations stipulated for successful commissioning of the installation also be considered as part of this specification and Contractor is bound to compliance of the same.
- (v) The Contractor shall be responsible for the overall management and supervision of works. He shall provide experienced, skilled, knowledgeable and competent personnel for all phases of the project, so as to provide the Employer with a high quality system.
- (vi) The contractor shall be responsible for providing all material, equipment and services specified or otherwise which are required to fulfill the intent of ensuring operability, maintainability and the reliability of the complete work covered under this specification.

## **1.2 TESTING AND COMMISSIONING**

- (i) The scope includes testing and commissioning of all equipment, sub-systems and systems of the project and putting them into successful commercial operation.
- (ii) The scope shall include but not limited to the requirements given elsewhere in the specification. The Contractor shall be responsible for providing all necessary testing and commissioning personal, tools and plant, test equipment, etc.
- (iii) The Contractor shall identify all interface issues with Employer and other agencies, and shall be responsible for each interfacing, coordination and exchange of all necessary information.

## **1.3 COMPLIANCE OF ELECTRICITY ACT, REGULATIONS, ETC.**

- (i) Contractor is required to follow statutory regulations stipulated in Electricity Act 2003, Indian telegraph act 1889, Electricity (Supply) Act 1948, Indian Electricity Rules 1956, CEA (Regulation relating to safety of electrical installation) Regulation 2010, with all amendments till date and other local rules and regulation referred in this specifications.
- (ii) The Contractor shall comply with all the statutory rules and regulations prevailing in the state of Kerala including those related to safety of equipment and human beings.
- (iii) The Bidder (individual) or any of the partner of joint venture who has qualified, should obtain at least “B” class electrical license from Electrical inspectorate of Govt. of Kerala/GoI/ any other state/ Union territory etc, before award of contract and to be kept valid till such time all the erected work as per scope of the award is taken over by the Employer.
- (iv) The Contractor shall be responsible for transportation to site all the materials to be provided by the Contractor as well as proper storage and preservation of the same at his own cost, till such time the erected installation is taken over by the Employer.

## **1.4 TYPE OF SOIL ALONG THE CABLE ROUTE**

General condition of the earth is soft marshy. Some portions are tarred with rubble soling. However Contractor shall conduct route survey before submitting their quotes.

## **2. METHODOLOGY OF PROCUREMENT**

All equipments/material shall be sourced from reputed manufacturers only. All equipment/material offered shall be of reputed manufacturers only as per the list of approved make mentioned in the tender document and who have designed, manufactured, completely tested for relevant Indian Standards and supplied the equipment/ material to various State Electricity Boards or other reputed utilities, which are in trouble free service at least at two different locations for a period of more than two (2) years as on the date of bid opening.

## **3. QUALITY ASSURANCE, INSPECTION AND TESTS**

- 3.1 The Contractor shall offer proven and type tested equipment for the project. The type test Certificates shall be complete as per the relevant I.S., carried out by NABL, CPRI or any other statutory bodies responsible for testing of equipment and it shall not be older than 5 years.

- 3.2 If required, Sub-vender's credentials, copies of valid BIS license, past supply & performance certificates as per requirement will also be required for sub-vender's approval, if not already approved for a specific item.
- 3.3 In case during post award detailed engineering stage, if any equipment is found to be not type tested or partially type tested, as per I.S., the Contractor shall carry out complete type test for the items at his own cost.
- 3.4 The Contractor shall provide one set of tests reports to Employer on successful completion of the tests.
- 3.5 Failure of any equipment to meet the specified requirements of tests carried out at works or at site shall be sufficient cause for rejection of the equipment. Rejection of any equipment will not be held as a valid reason for delay in the completion of the works as per schedule. Contractor shall be responsible for removing all deficiencies and supplying the equipment that meet the requirement, after furnishing of necessary fresh type test report as per relevant ISS Standard from NABL Accredited Laboratory.
- 3.6 All interconnected wiring shall be checked thoroughly for correct connections with the wiring and schematic drawings of the manufacturer before energizing. All power and bus bar connections shall also be thoroughly inspected and checked for correctness, foreign materials, tightness, etc. before energizing the equipment.

#### **4. STANDARDS**

Erection, testing and commissioning of the equipments covered shall be done as per standard codes of practice and shall comply with requirements of following Indian Standards and other relevant standards, Indian Electricity Rules and acts and also to the regulations that are in force at the place of installation.

- IS: 1255 : Code of practice for installation and maintenance of power cables Up to and including 33 kV rating.
- IS: 5216 : Guide for safety procedures and practices in Electrical work
- IS: 100118 : Code of practice for selection, installation and maintenance for Switchgear and control gear-Part-III Installation.
- IS: 13408 : Code of practice for the selection, installation and maintenance of electrical apparatus for use in potentially explosive atmospheres (other than mining application of explosives processing and manufacture).
- IS: 3043/87 : Code of practice for installation & maintenance of earthing of installation.

#### **5 GENERAL CONDITIONS FOR SUPPLY OF MATERIALS**

All materials required to complete the work as per given specifications & drawings etc, must be manufactured and supplied using fresh raw materials. Re-moulded, re-circulated materials are not acceptable. The procurement of materials must be made directly from manufacturer or through authorized dealer/distributors. Documentary evidences to this effect are to be made available to the engineer-in-charge for necessary checks / verification of source of supply of materials. Second hand materials/ partial used materials/ used materials would not be acceptable. The offer should be as per Technical Specification without any deviation. But any deviation felt necessary to improve performance, efficiency and utility of equipment must be mentioned in the Deviation Schedule with reasons duly supported by documentary evidences during pre bid meeting. Such deviations suggested may or may not be accepted by the employer. Any deviations projected after the pre bid meeting shall not be entertained at any cost.



## **6. GENERAL CONDITIONS FOR INSTALLATION OF EQUIPMENTS**

- a)** The erection/installation, testing and commissioning shall be carried out in accordance with specification, data sheets, drawings, manufacturer's recommendations, and relevant standards or as directed by owner/engineer-in-charge. requirements regarding erection/installation, testing and commissioning of switchboards, cables, etc. are generally explained here in. it is the responsibility of the contractor to supply all equipment, items, accessories, materials, tools, tackles, transporting, and lifting vehicles, consumables etc. required for unpacking, checking, transportation, storage, safe custody, installation, erection, testing, commissioning, return of unused equipment/items which are supplied from owner's stores and handing over of the installation to the entire satisfaction of owner.
- b)** The erection scope shall include supply of all hardware and accessories such as bolts, nuts, washers, gaskets, cable termination accessories, lugs, paint, primer, sand, etc. required for completeness of the work. all consumable materials such as insulation, tape, cleaning and paint brushes, welding electrodes, rust preventive materials, jute, cotton waste, hack saw blades, bolts, nuts, inhibitive grease, fuel, lubricants, etc. and any other material required in carrying out the work, but not for incorporation in to the permanent work, shall also be included in the scope of contractor.
- c)** The equipment/items to be erected shall be handled with care by experienced workers under the guidance of the competent supervisor. Proper handling and transporting equipments are to be used and dragging is to be avoided.
- d)** The equipment/items supplied by the owner, shall normally be kept at their stores. The contractor shall inspect these items at the stores by unpacking the containers, if necessary. Responsibility of safe custody of materials after delivery and till handing over shall rest with the contractor. Unused materials and containers shall be returned to the stores. The items supplied by the owner shall be transported from the point of storage to the point of erection/ installation using proper capacity transporting vehicles. the scope shall include unpacking the containers, assembling parts, fixing loose items, components, etc. materials supplied by the contractor or issued by the owner shall be given suitable protection against weather, dust and vermin. In storage places, equipments shall be placed over wooden sleepers to keep them above ground. Before carrying out erection/installation works of any item, proper care regarding leveling, alignment, access to working parts, facilities for removing the items for repair, statutory clearance, etc. shall be taken.
- e)** Foundation bolts, nuts, lock nuts, washers, etc. will normally be supplied by the equipment supplier. any further requirement of these items shall be under the scope of contractor. The equipment shall be installed on the foundation bolts firmly such that there will not be any vibration during operations. for mounting of equipment/items on the walls/ columns / supports, suitable ms/gi brackets shall be fixed/ grouted.
- f)** Electrical connections shall be done with great care using spring washers, bimetallic strips, conducting grease, etc. wherever required, to ensure good contact without creating undue stresses. Copper bus bar joints shall be made after tinning the contact area. supply of all required accessories or electrical connections shall be included in the contractor's scope. Discrepancies if any found between drawings/ statutory requirements and actual conditions at the site, shall be immediately brought to the attention of owner's representative. if any modification is found required in the writing or to suit site condition the same shall be carried out as per the instruction of the engineer-in-charge without any extra cost.

- g) All equipments under erection shall be kept properly cleaned and free of dust, vermin, moisture, etc. after erection; it shall be ensure that non-foreign materials, tools or tackles are left in the equipment. all unused cable entries, cutouts, etc. shall be sealed properly. For hazardous area, blanking plugs suitable for the area classification applicable shall be used.
- h) All tests shall be carried out in the presence of owner's representative and test shall be recorded on an approved proforma duly certified. The records of all tests shall be submitted to the purchaser's representatives. All interconnected wiring shall be checked thoroughly for correct connection with the wiring and schematic drawings of the manufacturer and the drawings supplied by owner before energizing.
- i) All power and bus bar connection shall also be thoroughly inspected and checked for connections, foreign materials, tightness, etc. before energizing the equipment all components within the main equipment shall be tested for proper performance and correct operation before commissioning the equipment.
- j) All labeling shall be checked for correctness. all nuts, bolts, clamps, joints, connections, etc. shall be checked for tightness and tightened wherever required. All moving parts shall be checked for its correct movement and proper lubrication. Apply lubrication wherever required. All equipment containing liquid shall be checked for correct quantity filling and all gaskets, walls, etc, shall be checked for leak proof. Oil filling, if found required, shall be done with dry and clean oil. Gaskets shall be replaced if found required. It shall be ensured that all ct leads are loaded or shorted prior to testing and commissioning. Insulation tests shall be carried on all electrical devices, whether specifically mentioned or not, as per this work after properly cleaning these devices.
- k) All the relays and its settings after commissioning shall be furnished to the owner detailing relay type number, panel number etc. in case of any component of an equipment supplied by the owner is found to faulty/unsuitable, the same shall be replaced by the new one issued by owner. For all relays before installation, the rating, range and auxiliary supply voltages for the relay should be checked against drawings/ schematic/ schedule.

**7. Civil and structural works**

- a) Miscellaneous civil works associated with the erection/installation such as excavation, dewatering and refilling of earth work for earth pits and cable trench, chipping, grouting, small cutting, etc, on floors/walls/columns/structures and bringing back the same to original finish, grouting of supports, providing suitable fixing arrangements for cables, push button stations, dbs etc. shall be included in the rates quoted for erection of the respective items, unless specifically excluded in the "schedule of items of work".
- b) All structural works associated with cabling, earthing, equipment erection and supporting arrangements shall be included in the scope of the contractor.
- c) All the welding and cutting works shall be carried out by certified welders. painting shall be done on all ms materials provided, by the contractor.
- d) Cement concrete footing shall be provided for cable trays/racks/risers, pedestals, supports, etc. footing shall be provided using 1:2:4 pcc with 20mm broken stone. it is responsibility of the contractor to supply and install all materials such as river sand, reinforcement rods, 20mm broken stone, etc. without any extra cost to owner. All concrete works and grouting shall be cured for a minimum period of 48 hours.

- e) Chipping, grouting, etc as recommended shall be done for completion and installation work on the finished floor, wall, roof, etc. and the surfaces has to made good after the work. it is the responsibility of the contractor to supply all necessary materials and to bring the disturbed surface to the original finish. Touch painting of scratches found on equipment, other painted metallic surfaces, galvanized, etc. associated with this work is also included in the scope of contractor without any extra cost. Base steel structures shall be painted with 2 coats of epoxy primer and 2 coats of epoxy paint.

## 8. TECHNICAL SPECIFICATION

### 8.1 200W LED Flood Light Fittings

The new LED flood lights (Item no.1) shall be of 200W, minimum 120 Lux/W, black textured powder coated pressure die cast aluminium LED housing designed to act as heat sink for efficient dissipation of heat, with White powder coated aluminium reflector. LEDs shall be provided with secondary lens optics to get optimum optical performance. The drivers used shall be specially designed to have built-in surge voltage, open/short circuit protections. Internal surge of 4KV and External surge protection of 10 KV shall be provided for additional safety. Luminaire should have CCT of 5700, CRI >70, IP 66 protection, IK 08, PF>.95, THD, @50000 burning hrs., Bracket for fixing and positioning the same in the tower top etc. for outdoor and other parameter as per latest IS standards and LM certificate be produced. **Warranty for the fittings shall be 5 years and certificate shall be produced.** These LED Flood lights have to be fixed (Item 2) on the existing lattice tower/ poles near Q9 berth and Q9 back up area including flexible cables, glands, terminals etc. as per requirements. The contractor shall ensure that the fittings shall be fitted on the existing towers with suitable safety gears etc. considering the present condition of the structure and this installation work shall be completed within 60days from the date of receipt of LoA.

The existing old/ damaged SON light fittings and accessories shall be dismantled by gas cutting etc. and handed over to the Electrical Testing and Repair section. (Item 3). Necessary hot work permission shall be obtained before starting the work.

### 8.2 **125 A OUTDOOR FEEDER PILLAR** (Item No 9) ( IP 65 protection)

- 8.2.1 The 125 A outdoor type Feeder Panel shall be made of polycarbonate (thermoplastic) material with the following:

Sl. no.	Item	Description	QTY
1	Incomer	125 A, 4P MCCB, 25 KA with fixed magnetic and thermal tripping with spreader links etc.	1no.
2.	Outgoing		
	1.	63 A, 25 KA, 3 P MCCB with fixed magnetic and thermal tripping spreader links.	2nos.
	2.	Light Timer with MCB , contactor , A/M switch etc.	1 no.
	3.	63 A, 3 P MCB with channel.	1 no.

## **8.2.2 Moulded case Circuit Breakers (MCCBs) / MCB**

Moulded case circuit breaker shall be of current limiting type and preferably double break. MCCB shall conform to IS 13947-1/IEC 947-1 for general rules and IS 13947-2/IEC 947-2 for circuit breakers in all respects. The MCCB case & cover shall be made of high strength heat resistant and flame retardant thermosetting insulating material” suitable for using in distribution of supply purpose.

The operating handle shall be quick make, quick break trip free type. The operating handle shall have suitable 'ON', 'OFF' indicators. In order to ensure suitability for isolation complying with IS13947-2/IEC947-2, the operating mechanism shall be designed such that the toggle or handle can only be in 'OFF' position The MCCB unless otherwise specified shall have thermal-magnetic trip unit with adjustable overload protection from 70% to 100% of nominal current (In) and fixed magnetic protection. The MCCB shall be possible to fully co-ordinate the over-load & short-circuit tripping of the circuit breakers with the upstream and downstream circuit breakers to provide Total Discrimination.

MCB's shall be of “C curve” suitable for using in distribution of supply purpose.

## **8.2.3 INSTALLATION OF FEEDER PANEL**

The equipment shall be erected at convenient location, including supply of required materials for earthing and providing the same, as per the instruction from the engineer in charge. All civil works, cement foundation including supply and laying of MS angles, channels and grouting fasteners for erection shall be the responsibility of the contractor. After installation of the equipment the same shall be tested and commissioned in the presence of engineer- in- charge in accordance with I.E. rules, relevant standards and as per requirements. All backfill of the site must be completed before final site finish.

## **9. SUPPLY & INSTALLATION OF CABLE JUNCTION BOXES (item nos.15&16)**

The outdoor type cable junction boxes shall be of sizes mentioned in the Schedule, made of polycarbonate material (IP65) with metric knockouts for cable entry, terminal connector for taking power connection with MCBs, mounting channels etc. The junction boxes shall be erected /fixed using necessary supports, clamps / cement concrete etc., for providing power supply to LED lamps.

## **10. SPECIFICATION FOR SUPPLY, LAYING AND TERMINATION OF LT ARMoured XLPE UG CABLE**

10.1 This specification provides for manufacture, testing at works before dispatch and delivery of 1.1 KV grade Armoured XLPE Aluminium/ Copper UG cables as per schedule.

### **10.1.1 Application**

The 1.1 KV cable is intended for use on Distribution net work, lightings purpose etc. for outdoor application.

### **10.1.2 Codes & standards**

All standards, specifications and codes of practice referred to herein shall be the latest editions, including all applicable official amendments and revisions as on date of opening of bid. In case of conflict between this specification and those (IS: codes, standards, etc.) referred to herein, the former shall prevail. All the cables shall conform to the latest edition of the IS standards.

## 10.2 TECHNICAL PARTICULARS OF LT CABLES

The cable shall be manufactured as per latest IS applicable

- (i) Size of cable : (a) 3.5C x 50 sqmm, Aluminium conductor  
(b) 3.5Cx25sqmm, Aluminium conductor  
(c) 4CX4 Sqmm Copper conductor
- (ii) Voltage rating : 1100V
- (iii) Insulation
  - type XLPE
  - tolerance 0.1 mm + 0.1 nominal thickness of insulation
- (iv) Inner sheath thickness : as per latest IS
- (v) Outer sheath
  - process of application extrusion
  - thickness as per IS

## 10.3 LAYING OF LT UG CABLE

Power supply to the electrical installations shall be taken from the cubicle of the Feeder pillar/ MV panels located near the berth, the termination of the cable in the terminal box shall be done with brass single compression cable gland with suitable socket/ lugs of proper size and material.

The cable shall be laid through the ground at a depth of approximately 60 cm from the ground level and filled with loose excavated good soil/earth without brick protection after cable laying. In case laying of cables through ground is not possible, the cable shall be clamped along the wall. The cable shall be laid nearer to the cable trenches for LT power cables wherever possible. For drain / road crossing, the cable shall be laid through HDPE/GI pipe wherever possible, in open area and trench at depth of 60CM. The pavement tiles etc. removed for laying the cables shall be replaced properly to the original condition.

Cable laying for taking supply to the lattice tower flood light shall be taken through the gap of the concrete slab after removing materials in between and providing sufficient gap after chipping etc.

## 10.4 PROVIDING END TERMINATION OF LT CABLES

Supply and making of end terminations with brass/ PVC glands, lugs etc complete suitable for cables as per schedule of work. The item shall be (IS make) Single compression type tinned/Nickel plated (coating thickness not less than 20 microns in case of Tin and 10 to 15 Microns in case of Nickel) brass cable/PVC glands shall be provided by the Contractor for all power and control cables to provide dust and weather proof terminations. They shall comprise of heavy duty brass casting, machine finished and tinned to avoid corrosion and oxidation. Rubber components used in cable gland shall be neoprene and of tested quality. Required number of packing glands to close unused openings in gland plates shall also be provided. For copper cable the termination materials shall be copper materials.

## 11 LAYING OF HDPE/GI PIPES AND LAYING LT CABLES

HDPE / GI pipe shall be laid at a depth of approximately 40 cm from the ground level for laying the LT/ signal cables at road crossing/hard surfaces/along the bridge etc as per schedule after taking the trench and laying the pipe in loose/ hard surface, the trench area shall be filled with excavated loose soil and top surface shall be neatly cleared. The HDPE pipe shall be made from high-density polyethylene (HDPE) resins (ISI) meeting the following requirements:

The HDPE material supplied under this specification shall be high density, high molecular weight conforming to relevant IEC/BIS. The HDPE material shall conform to ASTM D 3350/ IS 14930. Suitable size PVC flexible pipe with collar shall be provided for the end portion of HDPE pipe.

## 12. APPROVED MAKES

	Item	Makes
1	POLYCARBONATE FEEDER PILLAR / DB/ JB	HENSEL / CAPE/ ABB OR ANY REPUTED MAKE WITH CPRI / IEC APPROVAL WITH ISO CERTIFICATION
2	MCCB / MCB CONTACTOR / TIMER	LEGRAND / MERLIN GERIN / MK / ABB/ INDOASIAN / L &T / SIEMENS /SCHNEIDER / HPL
3	HDPE PIPE	KONDUR OR ANY OTHER MAKE WITH BIS SPEC
4	1.1 KV XLPE UG CABLE	CCI / INCAB/ UNIVERSAL/ RPG/ NICCO/ TORRENT / POLYCAB / PARAMOUNT/ KEI / HAVELLS / FINOLEX / V-GUARD/ L&T / PRIMECAB / RR KABEL / GLOSTER/ APAR
5	CABLE TERMINATION KIT	RAYCHEM /MAHINDRA / DENSON/ 3M/ CCI / CABSEAL
6	LED street / flood light fittings	OSRAM / BAJAJ/ CG/ PHILIPS / WIPRO/ GE

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