NOTICE INVITING BUDGETORY OFFERS

Name of Work	**"Shifting of 150KW solar plant from Hospital roof to the ground, within Hospital premises, including Installation, Testing and Commissioning along with CMC of 200KW solar plant for the period of five years"**
Date of submission of budgetary quotation	On or Before 24/04/2026 **at 15.00 Hrs.**
Address for communication:	Executive Engineer (E-HL), 1st floor, Electrical Maintenance Cell, Mormugao Port Authority, Admin. Building, Headland sada Vasco-de-Gama Goa - 403804
Contact Details	Phone : (0832), 2594241, 2594271 Email : xene.mpa@mptgoa.gov.in
Website	**www.mptgoa.gov.in**

EXECUTIVE ENGINEER (E-HL)
MORMUGAO PORT AUTHORITY

Sub: "Shifting of 150KW solar plant from Hospital roof to the ground, within Hospital premises, including Installation, Testing and Commissioning along with CMC of 200KW solar plant for the period of five years"

Ref: Budgetary Quotation No. CME/XEN (E-HR)/HL03/2026/03

Mormugao Port Authority intends to carryout work of **"Shifting of 150KW solar plant from Hospital roof to the ground, within Hospital premises, including Installation, Testing and Commissioning along with CMC of 200KW solar plant for the period of five years"**

As such, it is requested to kindly furnish budgetary quotation for the same (Scope of work, technical specifications are enclosed at Annexure-I and Price Schedule enclosed at Annexure- II.

Your budgetary quotation should reach to this office on or before 24/04/2026 at **1500** Hrs.

Thanking you,

Yours sincerely,

EXECUTIVE ENGINEER (E-HL)

Annexure-I

TECHNICAL SPECIFICATIONS

1. GENERAL:

The 150KW Solar Plant installed on the roof top of Port Hospital. Due to Civil works of the providing roofing sheets, the solar plant panels are presently removed and shifted to the Ground floor along with the Module mounting structure (MMS).

The Port now intends to install and re-commission the Solar Plant on the Ground in Hospital premise. The work involves commissioning back 150 KW solar Plant along with CMC for 5 years for the 150KW Plant and 50KW rooftop solar plant of AO bldg.

2. SCOPE OF WORK:

The Scope of Work broadly consists of Installation, testing and commissioning of 150 KW roof top Solar plant on ground at Port Hospital and Comprehensive Maintenance Contract for the period of Five years of 200KW (150KW at Hospital and 50KW at A.O. Bldg.) Solar Power Plant at MPA.

A. Reinstallation, testing and commissioning of 150 KW Solar plant.

- **a)** Preparation of earmarked area / plot by removing shrubs/ bushes and other material for installation of Module mounting structure (MMS) and panels. The plot should be properly levelled. The bidder shall aesthetically design the layout of the plant in the earmarked area so that all panels are accommodated.
- **b)** Supply and Installation of C type Hot Dip Galvanized Steel Column (Main column) as per technical specifications.
- **c)** Installation of balance MMS and installation of dismantled panels on the MMS after testing.
- **d)** Carrying out necessary balance civil works like internal & external plastering, curing etc. of already constructed Inverter Room of size 3mtrs X 3mtrs with Concrete slab and Masonry walls. Water proofing of the concrete slab shall be done. Providing necessary door with lockable latch, Aluminum sliding window, Electrical wiring etc complete. The external walls of inverter room shall be painted with 1 coat of primer, 1 coat of damp-proof paint and 2 coats of Apex exterior paint. Internal walls shall be painted with 1 coat of lambi/ putti, 1 coat of primer paint and 2 coats of internal paint. Power supply to this room shall be tapped from the nearest available source. Suitable size cable for the same is in the scope of the bidder. The Inverter room shall be provided with following,
  - **i)** Main Distribution board with MCB's of suitable rating.
  - **ii)** Main switch board.
  - **iii)** AC point with metal clad box and MCB.
  - **iv)** 03 Nos 18/ 20W LED tube lights
  - **v)** 01 No ceiling fan of sweep 1200mm.
  - **vi)** 03 Nos wall mounted fans of size 300 MM Sweep.

e) Disconnection and removing existing 3 inverters, DC DB's, AC DB's, Delremo (for online data transmission) along with associated wiring/ cabling. Shifting, installation and connection of these items in the new inverter room.

f) Supply, laying and connection of 4 sq.mm DC cables as per technical specifications. Joints in DC cabling are not permitted. All DC cabling is to be laid underground / on the wall through PVC pipes/casing caping of suitable size.

g) Supply, laying and termination of 4 core x 150sq.mm, 1.1KV, XLPE alluminium armoured cable by excavation of depth 1 meter. Also part of the cable length is required to be laid on wall by saddling.

h) Supply and installation of Lightning Arrestor to cover the entire area of the relocated solar plant. The lightning arrester shall be connected to earth pit using 50x 6mm GI Flat.

i) Supply, installation testing, connection of 7 nos. Earthing as per technical specifications provided below for body/structure earthing and for Lightning Arrestor.

j) Supply, installation, connection and testing of 250A, 4Pole MCCB along with enclosure in the main panel room. The AC cables coming from Inverter room is to be connected to this MCCB.

k) The Solar Panels which are stored in the Parking are needs to be checked and tested in presence of EIC before installation.

l) **The supply solar panels shall be of Ministry of New and Renewable Energy (MNRE) Approved and BIS Certified, Documents of the same shall be submitted along with the Tender**. The replacement of the Panels during currency of the CMC shall also be of MNRE approved makes.

m) Providing chain link fencing along the periphery of the solar plant and one entrance gate for the solar plant.

n) The existing water pipe line along with the tank, water pump used for cleaning of modules from hospital roof is to be dismantled, shifted and installed at the new location. Any additional items such as pipes, joints etc., necessary for complete installation of cleaning system is in the scope of the bidder. Bidder will have to make arrangements to tap the water supply from the nearest tapping point.

o) Testing and commissioning of the shifted 150KW plant.

p) The balance material removed from the 150Kw plant is to be shifted to MPA scrap yard at Baina.

Note:

1. The bidder shall carry out the above complete work as per IER and other relevant standards. The scope of work is not restricted, if any additional material/ accessories, works are felt necessary, for completion of the work, the contractor shall execute the same as per IER and relevant standard on the offered rate without any additional cost to the Port.
2. In case of any damages to the materials, inverters, MMS, solar panels etc. While dismantling, shifting, installation process, the same has to be made

good by the bidder at his own cost and Port will not be responsible for any payment against the damages.

3. The details of the Solar Panels and Inverters is as follows

a) Solar PV Module
PV Module PSS 250, Cell Type: Crystalline Si, Glass Type: AFG Solar, Laminate: EVA Tediar
Peak Power: 250 Wpeak, Peak Voltage: 30 Volts, Peak Current: 8.33 Amps
Short Circuit Current: 8.86 Amps, Open circuit Voltage: 37 Volt, Max System Voltage: 1000V
Tolerance: -0W +5W, Make Premier Solar Systems (P) Ltd.

b) Inverter Details 1& 3:
Make : Delta, Model: RPI M50A _120, DC Input: 200-1000 Vdc,
MPP 520-800 Vdc 1000Vdc max, 50A*2 max, Isc:60A82 max
AC Output:220/380, 230/400Vac, 3P3W or 3P4W, 50/60 Hz, 50KW/50Kva nom, 55 kw/55kva max, 80A max.

c) Invert 2 Details:
Make: Solis, Model:S5-GC50K, Test item Description: on Grid,
Rated Voltage dc: 1100V/600V
MPPT Voltage Range dc:180-1000V
Max Inpt current dc: 5x 32A
Rated Grid Frequency: 50/60 Hz , Rated Output Power: 50KW,
Max AC Output active Power: 55KW, MAX AC Output apparent Power:55KVA
Max continuous output current ac: 83.6Amps

d) Details of inverter in AO Bldg.
Make : Delta, Model: RPI M50A _120, DC Input: 200-1000 Vdc,
MPP 520-800 Vdc 1000Vdc max, 50A*2 max, Isc:60A82 max
AC Output:220/380, 230/400Vac, 3P3W or 3P4W, 50/60 Hz, 50KW/50Kva nom, 55 kw/55kva max, 80A max.

B. Illumination of the Solar Plant

a) The road towards the solar plant and area has to be illuminated by providing 07 nos dual arm 8 meter height street light Poles. The road towards the substation shall be illuminated using 3 nos dual arm 8 meter height street light Poles and 02 nos single arm street light Poles

b) The Poles shall be GI Galvanized, the main supply of the Poles shall be drawn from Substation e-House Panel room to the Outdoor Feeder Pillar Panel fixed on the concrete pedestal of 40 cm height behind the Hospital using 50 Sqmm 3.5 Core Aluminum Armoured cable.

c) The Power supply to the street light Poles shall be fed through 4C X 16 sqmm Aluminium armoured cable in two separate loops(one each side).

d) The wattage of each LED street light fittings shall be 70 watts.

e) Two nos chemical earthing shall be provided to the Outdoor feeder Pillar panel using 25mm x 5 mm GI strip and same shall be extended to each street light Pole by looping.

f) The wattage of the LED Light fittings shall be 70 watts and IP 66 rated.

C. CMC of the 200KW plant

a) After commissioning of the plant, the contractor shall carry out Comprehensive Maintenance contract (CMC) of the 200KW plant (150KW at Hospital and 50KW at "SAARASI" A. O. building) for the period of five years. This includes entire solar plant, Inverters, DC DB's, module cleaning system, earthing system, Lightening arrestors, AC cable and MCCB at the interconnection point in the Main panel room

b) Although the offers are obtained for CMC of 200KW plant, MPA reserves right to issue the work order towards CMC.

c) All spares, material required for maintenance of the plant till the interconnection point in the Main panel room are to be arranged by the contractor at his own cost. The Contractor shall deploy minimum one technician for carrying out CMC of the 200KW plant. The contractor shall clean all the modules once in 15 days during the currency of CMC and reports of the same are required to be submitted to XEN (E-HL). Also periodic preventive maintenance checks such as checking of string voltages, Currents etc., shall be carried out by the Contractor and reports of the same are required to be submitted to XEN (E-HL). Water required for cleaning of modules shall be provided free of cost by MPA. During the CMC period, the contractor shall give year wise assured generation from the 200KW plant as indicated below

1st year of CMC------ 2, 46,650 Kwh
2nd year of CMC----- 2, 44,183 Kwh
3rd year CMC -------- 2, 41,741 Kwh
4th year CMC----------2, 39,324 Kwh
5th year CMC--------- 2, 36,931 Kwh

d) Generation achieved from the 200KW Solar Plant for previous 5 years is indicated below for reference.

Sr. No.	Period	Units Generation		Total Units
		Hospital 150KW Plant	Admin Bldg 50KW plant	
1	Oct 19 to Sept 20	235881	88788	324669
2	Oct 20 to Sept 21	242961	88169	331130
3	Oct 21 to Sep 22	213125	85174	298299
4	Oct 22 to Sep 23	237229	87456	324685
5	Oct 23 to Sep 24	210845	80857	291702

e) If the above indicated desired generation is not achieved in the year, then it will be considered as under generation and damage charges on under generated units will be applied which is equivalent to Rs. [as per Solar Hour Tariff defined by JERC and GED for MPA hospital or

Headland connection, whichever is higher, prevailing in the last month of that particular year x 1.50] per kWh of under- generation. All penalties shall be recovered from payments yet to be made by MPA to the Contractor and/ or from the performance Security/ Security Deposit available with MPA.

f) The Contractor shall be liable for Damage Charges due to loss of generation on account of Breakdown/ faults during CMC period, as per reference to the generation parameters accumulated in similar/ associated equipment of the plant (for e.g. if a block consists of 3 inverters and one inverter is down, then the generation for faulty inverter shall be calculated during the breakdown period as the average of accumulated generation for the other 2 inverters as the deemed generation) and the damage charges shall be levied at the rate of Rs. (as per Solar Hour Tariff defined by JERC and GED for the MPA Hospital or Headland connection, whichever is higher, prevailing at that time including duties and other levies) per kWh for the loss of generation due to breakdown as calculated vide above methodology. For calculation of penalty on account of breakdown for 50KW plant, highest generation obtained amongst the three inverters at Port hospital shall be taken as a reference.

g) The Contractor shall also maintain the illumination system provided during the CMC of the Solar Plant. The rate offered under the CMC is construed to include the maintenance of illumination system installed under this contract.

3. TECHNICAL SPECIFICATIONS:

i) L.T. 4 Core, 150 sq.mm Aluminium Armoured Cable.

a. Supply and laying 1 run of L.T. 4 core, 150 sq. mm Aluminium XLPE cable of 1.1KV 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. The cable quantity shown in BOQ is tentative. The cable measurements are tentative and may vary as per site condition. 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.

b. Laying of LT, 4 core, 150 sq. mm Aluminium Armoured cable
Laying underground 1 run of L.T. 4 core, 150 sq. mm Aluminium Armoured cable from Inverter room to the panel room by excavating trench of depth 100 cms, including supply and laying of Bricks. After laying, the cable trench should be back filled with soil and route markers to be provided after every 10metres. Cable is also to be laid underground after road cutting. For crossing the road, cable has to be laid through class B GI pipe at depth of 100 cms and then the road has to be made good with concrete.

c. Laying the cable on wall by saddling.
Laying the LT 4 C x150 sq mm armoured cable on wall by saddling. The saddles should be made from GI strip of thickness 3 MM. The saddles

should be provided at the distance of 1 meter spacing. Cable should be laid properly and neatly on the wall.

d. The end termination for 1100V grade cables shall be of crimping type lugs and 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 end termination work. The work includes all labour and material as directed by E.I.C.

ii) 4C X 16 sqmm & 3.5 C X 50 Sqmm Al armoured XLPE underground cable

a. Voltage Rating: 1.1KV grade
b. Working Voltage: 415V TPN system
c. Frequency: 50Hz
d. No. of Cores / Size Required: 4C x 16 Sq.mm & 3.5 C X 50 Sqmm
e. Core Colours: Red-Yellow-Blue for Phase and Black for Neutral
f. Conductor Material: Stranded Aluminum, IS 8130/1984 with latest amendments
g. Type of Insulation: XLPE
h. Embosing of cable make, Size of cables, Running length in meters: Required as per relevant IS
i. Note: The cable to be embossed the length on every running meter and on each meter length on the outer sheath, year of Manufacture conforming to IS: 7098 part-I for XLPE cable.
j. Manufacturer's Identification:
k. The manufacturer shall be identified throughout the length of cable by manufacturers name or trade-mark and the voltage grade and year of manufacture indented, printed or embossed or by means of a tape bearing this information. The indentation, printing or embossing shall be done only on the outer sheath.

iii) DC cable

a. Solar DC cables shall be 4 sq. mm, single core, tinned copper, Flame Retardant Low smoke (FRLS). DC cable with positive polarity shall have marking of red line on black outer sheath and the negative polarity cable shall be with black colour PVC outer sheath conforming to EN 50618. In addition to manufacturer's identification on cables as per relevant standard, following marking shall also be provided over outer sheath.
    i. Cable size and voltage grade
    ii. Word 'FRNC/ FRLS' (as applicable) at every meter
    iii. Sequential marking of length of the cable in meters at every meter.
b. DC cables wherever required shall be laid underground through PVC pipes after excavation of minimum 0.2 meter depth. DC cables in the inverter room shall be laid through PVC pipes on wall. The pipes shall be neatly fixed on wall with the help of saddles.

c. The DC cables shall be connected using proper connectors/ lugs as necessary.

iv) Module Mounting structure (MMS)

a. The main column or leg of the Module Mounting Structures (MMS) shall be MS Hot Dip galvanized C channel of size 80CSx 50x20x3.15 mm as per IS 2062 (grade E350 or higher) and IS 4759:1996. The length of the column shall be 1.6 mtrs. Minimum thickness of galvanization shall be at least 80 microns. Carrying out excavation/ boring of size not less than 0.6 meter × 0.2meter and Casting of foundation for the main column with M30 concrete. Muffing of height 150 mm above ground level shall be provided for the column of MMS. Minimum clearance between finished ground level and lowest edge of module shall be 450 mm.

b. Balance MMS which is removed and shifted from the existing plant is to be installed on the columns after completion of curing period of the concrete.

c. The panels removed from the existing rooftop plant are to be shifted and installed on the erected MMS.

d. All fasteners, Nut & bolts used shall be of Stainless steel - SS 304 or higher grade.

v) Lightning Arrestor

a. Lightning Protection System (LPS) for entire plant against direct and indirect lighting strokes shall be provided as per IS/IEC 62305:2010.

b. Protection level for the entire plant shall be Level-III.

c. Air terminals, down conductors and earth termination system shall be designed as per relevant parts of IS/IEC 62305:2010.

d. Necessary foundation/anchoring for holding the air terminal in position to be made after giving due consideration to shadow on PV array, maximum wind speed and maintenance requirement at site in future.

e. Lightning arresters shall be equipped with lightning counters.

f. The lightning conductor shall be earthed through flats and connected to the earth mats as per applicable Indian Standards with earth pits. Minimum two earth pits shall be provided for each lightening arrestor. Each lightning conductor shall be fitted with individual earth pit as per required Standards.

vi) Earthing for Solar Plant

a. The Earthing shall be carried out by using 40 mm dia. 3 mm thick, 3 meter long GI pipe with GI funnel, mesh and suitable size reducer fixed on the top of the earth electrode. The funnel should be enclosed in a CC chamber of size 400 x 400 x 400 mm above the ground, with Kadappa stone cover.

b. The electrode shall have staggered holes of 12-mm dia. and the electrode should be covered 150 mm around with alternate layers of salt and charcoal from the bottom of the pipe to the bottom of the CC chamber.

c. The earthing connection from the electrode is to be carried out using single core, tinned copper wire of size 10 Sq MM. The earthing cables wherever required shall be laid underground through PVC pipes after excavation of minimum 200 mm depth.

d. Module Mounting Structures (MMS), String Combiner Box (SCB) structures in the PV array field and structures of equipment's in the inverter room shall be grounded properly as per IS:3043-1987.

e. All the nut bolts, washers used for connection of earthing system shall be stainless steel (SS)

f. Each earth pit resistance shall be less than 2 Ohms. Earth Resistance should be tested in presence of the representative of MPA by calibrated earth tester. Proper marking is to be provided on each earth pit.

vii) MCCB

a. MCCB shall be rated for 250A with 4 pole with suitable extension of terminal to terminate 150sq. mm cable.

b. The MCCBs shall be designed in accordance with the IEC Publications 60947.1 and 60947.2.

c. The MCCB shall be manually operated and shunt trip type.

d. MCCB shall have current limiting feature. The MCCB contacts shall be of the self-cleaning type, made from an approved arc resisting material. All contacts shall be self-aligning, and shall be readily replaceable.

e. Suitable enclosure shall be provided to house the MCCB. The enclosure shall be double door type made of Mild Steel of thickness not less than 1.6 mm and shall be properly pretreated and stove enameled/Powder Coated.

viii) Octagonal Pole:

a. Design, Fabrication, supplying and erection of 8 Mtrs long height hot dip Galvanized Octagonal pole made up of 3mm thick HT steel of grade S 355 JO confirm to BSEN 10025 of size 135 mm dia. at bottom tapered gradually to 70mm at top suitable for withstanding maximum speed of 47 m/s having suitable base plate (250X250X16mm) with 4 Nos. of Ø24x750mm long galvanized "J" type foundation bolts along with templates, nuts required for holding down the pole. The entire fabricated pole shall be single section and single joint welded as per IS 9595/IS10178 AWS and hot dipped galvanized in single dipping to not less than 65 microns externally & internally as per ASTM-A123 and 153 etc./BS EN ISO 1461. The pole shall have cable entry and exit with a provision for mounting cable connector fitted with suitable capacity MCB (One No. 6A DP MCB) including 5 Nos. Elmex KBT M6 connector on hylum sheet complete at a height of 0.75mtr inside pole with hinged front door. (There should not be "circumferential weld joint" to the pole)

b. Foundation For Octagonal Pole

Foundation for 8Mtrs Octagonal GI Pole shall be carried out as per the manufacturer's recommendation and approval of Department.

* DRAWINGS FOR CEMENT CONCRETE FOUNDATION As per manufacturer design.

c. Bracket of Octagonal Pole

i. Supplying and fixing hot dip galvanized Single arm & Double arm bracket 1000mm to 1500mm long, 40mm dia made up of MS along with suitable bolts, nuts etc. complete to 8 mtr Octagonal pole. All the hardware shall be GI/stainless steel only.

ii. Supplying and fixing of hot dip Galvanized MS circular bracket of ID 750mm, fabricated with 40mm dia pipe, head frame & supports,

mounting plates suitable for mounting 4 Nos. outdoor LED flood light luminaries on 8 mtr Octagonal pole using necessary bolts, nuts etc. complete. All the hardware shall be GI/stainless steel only.

ix) Feeder Pillar:

Stainless steel outdoor type feeder pillar shall be suitable for 125A capacity, 440volts 50Hz, three phase neutral having copper bus bars with proper insulation sleeves. Feeder pillar shall be made of SS 304 grade enclosure with rain canopy, double door at front and rear sides, having locking arrangements, door sealing gaskets, gland plates, with holes suitable for cables up to 3.5Cx50 sq.mm as i/c & 4Cx16 sq.mm as o/g, mounting plate, provision for 2 nos. earthing connections, A continuous earth bus shall be provided for the entire length of the feeder pillar, cable entry from bottom etc. complete. (Approximate Size: 600mm (W) x 700mm (H) x 300mm (D))

Feeder pillar shall comprise of following components.

i) Class of protection IP: 54
ii) Material enclosure and door : 2mm thick
iii) Base plate: 2.5mm thick
iv) Base Channel: 75x75x6mm thick
v) Bus bars: Copper
vi) Main bus bars – Phase & Neutral - 25 x 6 mm
vii) Earth bus bars - 25 x 3 mm
viii) Wiring - 10 sq.mm Copper wire
ix) Incoming: 1 Nos, 63 A, 4P, 415V MCCB
x) Outgoings: 3 Nos, 40A, 4P, 25kA, MCCB, 1 No. 20A, DP, 10kA, C Type, MCB
xi) 1 No., 70A, 4 pole, Contactor
xii) 1 No, Timer
xiii) 1 No, Auto-Manual Selector switch

Any other material required for Auto On/Off operation shall be provided.

x) Chemical Earthing for feeder pillar and Street light Poles

a. Maintenance-free chemical earthing system complete with earth electrode, earth enhancement compound, earth lead connection, chamber, testing and commissioning as required for Feeder Pillar Panel and Street Light Poles shall be provided.
b. The earthing system shall conform to the requirements of IS 3043 and latest amendments.
c. Chemical Earthing Electrode: The electrode shall be maintenance-free chemical earthing type suitable for achieving low earth resistance in all soil conditions.
d. Electrode Specifications
  i. Type : Chemical Earthing Electrode
  ii. Length : Minimum 3 meters
  iii. Diameter : 50–80 mm
  iv. Material : Copper bonded steel / GI pipe electrode
  v. GI Electrode coating : Hot dip galvanized (minimum 80 micron)
  vi. Inner core : Copper conductor integrated with electrode

vii. Electrode shall be corrosion resistant and designed for long service life.

e. The electrode system must be **CPRI (Central Power Research Institute)** tested and approved. The document of the Proof for the same should be provided.

f. Earth Enhancement Compound:

g. The electrode shall be surrounded by highly conductive backfill compound. The compound shall be:
   i. Non-corrosive
   ii. Hygroscopic (moisture retaining)
   iii. Eco-friendly
   iv. Insoluble in water

   Minimum 25–50 kg earth enhancement compound shall be used around each electrode to improve conductivity and maintain stable earth resistance.

h. The earthing should be enclosed in a CC chamber of size 400 x 400 x 400 mm above the ground, with Kadappa stone cover and tested values to be displayed on each earth Pit. The earthing shall be extended to Feeder pillar panel and street light Poles using 50x 6mm GI earth strip from earth Pits.

xi)Chain link fencing

a. The plant shall be protected by providing chain link along the periphery. The minimum height of the fencing shall be 2.0 m from the ground level. The chain link of 50mm x 50mm diamond mesh of PVC coated 10 gauge galvanized steel wire with 12 gauge barbed wires at top (3numbers) is to be provided. Main vertical post for the fencing shall be ISA 75mm x75mm x 6mm and shall be provided with cross bracing on both side of ISA 45mm x 45mm x 5mm.The distance between each post shall be maximum of 3 mtrs. Also, line wire at top, middle and bottom of chain link mesh of 8 gauges is to be provided. Chain link fencing shall be fixed in ground by sufficient concrete foundation up to depth of 200mm.

b. All-weather main gate of at least 3 meters width has to be provided at the entrance of the plant.

4. OTHER TERMS AND CONDITIONS:

a. The Bidders are advised to visit the site and get acquainted regarding the nature of the work involved at site conditions before quoting the rates.

b. Any other work/ item necessary for the shifting and commissioning of 150KW solar plant has to be taken care of by the bidder without any additional cost to the Port, although it is not mentioned in the BoQ / scope of work

c. All the tools/ tackles, logistics for to & fro transportation of equipment's, necessary material required for execution of the work has to be arranged by contractor at his own cost.

d. Power supply shall be provided to contractor free of cost from the nearest available point for execution of the work however the supply cable has to be arranged by the contractor.

e. After completion of the subject work, the contractor shall clear the area of any unwanted scrap while handing over.

f. Work shall be carried out following all environmental norms, all safety regulations as per relevant and prevailing standards.

g. The contractor shall adhere to all electrical/electronic regulations, safety regulations & all other statutory regulations as applicable.

Annexure- II

PRICE SCHEDULE (BILL OF QUANTITIES – BOQ)

PART A: for Dismantling, Shifting, Installation and commission of 150KW Plant

Sr. no.	Particular	Qty.	Unit	Rate (Rs)	Amount (RS)
1	Disconnecting of existing 50KW inverter alongwith ACDB, DCDB, DC AND AC Cables as per scope of work and Technical specifications.	3	set		
2	Clearing of plot area for panel installation as per scope of work and Technical Specifications.	1	LS		
3	Supply and installation of C type Hot Dip Galvanized Steel Column as per scope of work and Technical specifications.				
	a)Supply	432	No		
	b) Installation	432	No		
4	Installation of balance module mounting structures, mounting of Solar panels, DC cabling, mounting of Inverters, DCDB's, ACDB's etc. complete as per scope of work and Technical Specifications.	1	LS		
5	Supply Laying and termination of DC cables				
	a) Supply of DC cables as per scope of work and Technical Specifications.	5000	Mtr		
	b) Laying and termination of DC cables as per scope of Work and Technical specifications.	5000	Mtr		
6	Supply and installation of 250A 4 Pole MCCB as per scope of work and Technical specifications.				
	a)Supply	1	No		
	b) Installation	1	No		
7	Balance Civil works of room for housing Inverters, Electrical panels etc as per scope of work and Technical specifications.	1	LS		
8	Supply, Laying, of 4 corex150sq.mm, 1.1KV, XLPE aluminium armoured cable				
	a) Supply of 4 corex150sq.mm, 1.1KV, XLPE aluminium armoured cable as per scope of work and Technical specifications.	200	Mtr		
	b) Laying, of 4 corex150sq.mm, 1.1KV, XLPE aluminium armoured underground cable as per scope of work and Technical specifications.	70	Mtr		

	c) Laying 4C x 150 sq MM Aluminium cable on wall as per scope of work and technical specifications	130	Mtr		
9	Supply and installation of lightning arrestor as per technical specifications.				
	a)Supply	2	No		
	b) Installation	2	No		
	c) Supply and installation of GI Flat 50x 6mm for lightning arrestor	60	mtrs		
10	a) Supply Installation testing, connection of pipe Earthing as per scope of work and Technical specifications.	7	No		
11	Supply, Laying and termination of copper cable for earthing				
	a) Supply of copper cable for earthing as per the technical specifications.	1500	Mtr		
	b) Laying and termination of copper cable for earthing as per scope of work and Technical specifications.	1500	Mtr		
12	Supply and installation of Chain link fencing as per the technical specifications.		Mtr		
	a)Supply	300			
	b) Installation	300	Mtr		
13	Dismantling, Shifting, installation and commissioning of water tank with pump and pipe line as per scope and technical specifications	1	LS		
14	Testing and commissioning of system as per scope of work and Technical specifications.	1	LS		
15	Supply of 250Wp Solar Panels as per existing Solar Plant	10	Nos		
PART A TOTAL Rs					

Sub Total PART A (In Words)

Rupees_____only
exclusive of GST.

PART B: Illumination of 150 KW Solar Plant

Sr. No	Description	Qty	Unit	Rate (Rs)	Amount (Rs)
1.	Design, Fabrication, supplying and erection of 8 Mtrs long height hot dip Galvanized Octagonal pole as per Technical Specifications suitable for Dual Arm				
a.	Supply	10	nos		
b.	Installation	10	nos		
2.	Design, Fabrication, supplying and erection of 8 Mtrs long height hot dip Galvanized Octagonal pole as per Technical Specifications suitable for Single Arm				
a.	Supply	2	nos		
b.	Installation	2	nos		
3.	Supply and Installation of 70 Watts LED Street Light Fittings as per Technical specifications				
a.	Supply	22	nos		
b.	Installation	22	nos		
4.	Supply, laying, testing and commissioning of 3.5 C X 50 sqmm AL armoured XLPE cable				
a.	Supply	200	mts		
b.	Laying, testing of cable as per technical specifications in hard rock soil	200	mts		
5	Supply, laying, testing and commissioning of 4 C X 16 sqmm AL armoured XLPE cable in hard rock soil				
a.	Supply	400	mts		
b.	Laying, testing of cable as per technical specifications	400	mts		
6	Supply and Laying of Hume Pipe of Diameter 100 mm for cable road crossing	30	mts		
7	Supply, installation of Feeder Pillar Panel as per technical specifications				
a.	Supply	01	nos		
b.	Installation	01	nos		
8	Providing, and fixing Chemical Earthing System (As per technical specifications)	02	nos		
9	Supply and Installation of 25 x 5 mm GI Earth strip as per technical specifications				
a.	Supply	380	mts		
b.	Installation	380	mts		
PART B TOTAL Rs.					

Sub Total PART B (In Words)

Rupees_____

only exclusive of GST.

PART C: Comprehensive Maintenance Contract of 200KW for the period of 5 years

Sr. No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
1.	CMC for the 1st year for 200KW solar power plant	Month	12		
2.	CMC for the 2nd year for 200KW solar power plant	Month	12		
3.	CMC for the 3rd year for 200KW solar power plant	Month	12		
4.	CMC for the 4^{th} year for 200KW solar power plant	Month	12		
5.	CMC for the 5^{th} year for 200KW solar power plant	Month	12		
Total					

Sub Total PART C (In Words)

Rupees_____
only exclusive of GST.

TOTAL (PART A + PART B + PART C)
Rupees_____
only exclusive of GST.

Date: **Signature:**

Place: **Name:**

Address:

Office Seal of firm:

Note: The offered rates shall be exclusive of GST.