**Scope of work & Technical Specifications**

The scope of work includes Design, Supply, Installation, Testing & Commissioning of 6.6 KWp ± 10% Solar Rooftop Power Plant at Jeev Seva Samiti, Gandhidham & Maitri School.

**The General Scope of work includes:**

1. Designing of 6.6 KWp ± 10% Solar Rooftop Power Plant at Jeev Seva Samiti, Gandhidham & Maitri School along with the work of taking approvals from concern Government Departments and relevant Liaoning works.
2. The work also includes Supply, Installation, Testing & Commissioning of 6.6 KWp ± 10% Solar Rooftop Power Plant at Jeev Seva Samiti, Gandhidham & Maitri School after designing and approval of the same.
3. Arrange appropriate incentives or subsidies from the concern authorities as per the latest schemes for Sola Power Plant, if applicable.
4. **Technical Specification for Item No. 1.**

The complete designing of 6.6 KWp ± 10% Solar Rooftop Power Plant would be in the scope of the contractor and has to be finalized in consultation of the Engineer-In-Charge of Deendayal Port Authority and all the relevant documentation, drawing, Liaoning work and all the necessary approvals from various Government Departments, Co-ordination and Approval work shall be completely in the scope of the contractor.

The designing of the Solar Power Plant should that the minimum height of lower side of the inclined Solar Power Panel shall be 5 feet over the RCC Roof. The GI framing of the Solar Panel has to be done with GI pipes of minimum 2mm thickness and minimum 40mm X 60mm size and minimum 80 microns of galvanization with excellent workmanship of GI structure fabrication. The designing should also include appropriately selected Mono Perc solar panels, sizes and types of cabling, earthing, lightning arrestor, switchgears, AC Distribution box, DC Distribution box, Inverter(s) and other relevant accessories / devices / equipments. The design should also include base support civil work, if necessary and as directed by Engineer-In-Charge.

1. **Technical Specification for Item No. 2.**

This includes Supply, Installation, Testing & Commissioning of 6.6 KWp ± 10% Solar Rooftop Power Plant at Jeev Seva Samiti, Gandhidham & Maitri School. The complete work will include supply of items at Jeev Seva Samiti, Gandhidham & Maitri School. This includes installation, testing & commissioning for successful operation of 6.6 KWp ± 10% Solar Rooftop Power Plant, along with Civil Work, if any, treating it as a comprehensive work including manpower & materials along with other liasoning work.

Jeev Seva Samiti, Gandhidham already has a PGVCL Electrical connection and the 6.6 KWp ± 10% Solar Rooftop Power Plant would be Grod Connected. Complete liasoning / coordination / approvals/ testing and Solar Power Plant related correspondence and/or approval related works with PGVCL / GETCO / Any other Government body/unit would be in the scope of the contractor.

Below are the basic details of some major items of the 6.6 KWp ± 10% Solar Rooftop Power Plant:

* **Solar Panels:**

Technology : MONO PERC

Each of Minimum : 450 KWp

Quantity : As per design.

* **Inverter(s):**

Output : 6.6 KWp ± 10% kva AC

* **Cables:**
* DC Cables shall be of minimum 4 sq.mm size or higher as per design
* AC Armoured Cables shall be of minimum 25 sq.mm or higher as per design
* **Earthing:**

3 Sets or more as per standard practice in Solar Power Plant Installation.

* **Lightning Arrester:**

As per standard practice in Solar Panel Installation.

* **Switchgears:**
* ACDB, DCDB, relevant accessories, MCBs, Surge Protection Devices, etc. as per standard practice in Solar Power Plant Installation.

The Solar Power Plant should have complete system warranty if minimum 7 Years and individual Sola Panel warranty of minimum 25 Years. The Contractor is bond to provide onsite maintenance support on call/need within 10 days of any complaint during warranty period.

1. **Technical Specification for Item No. 3.**

**Comprehensive Operation & Maintenance Contract**

**SCOPE OF WORK**

1. The Comprehensive operation and maintenance contract for 03 years shall be come in to force from expiry of guarantee period of one year.
2. The Contactor shall carry out the maintenance work with trained and appropriately skilled personnel i.e. cleaning of solar panel every fortnight. This also includes checking of connectors, lugs, wires, inverter, DBs etc. so that maximum benefit can be achived from solar panel.
3. **REPAIR OR REPLACE PARTS:** The Contractor shall be responsible for replace any part such as contactor, MCBs, Relay, inverter, DBs etc.
4. **SAFETY TESTS:** The Contractor shall periodically examine all the fuses, ELCBs. LAs, earth pit values & its connectivity.
5. The Contractor is responsible for all the items of materials/ spares including consumable items.
6. CAMC shall be completely comprehensive including all spares and labour charges.
7. PENALTY CLAUSE: In case of failure of Solar Rooftop Power Plant, same to be attended within 48 Hours after intimation. If not done so penalty will be imposed Rs. 5000/- per day.
8. Liaoning work with various Government Departments, Co-ordination and approval work (if required) during CAMC period shall be completely in the scope of the contractor.

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**Commercial Condition**

1. The completion period is 80 days from the date of issue of work order.
2. The 70% of total quoted amount will be released based on the invoice after deduction of taxes at the applicable rates after commissioning and acceptance of work by DPT. Remaining 30% of total quoted amount will be released after completion of formalities with the appropriate authorities for arranging appropriate incentives or subsidies from the concerned authorities as per the latest schemes for Solar Power Plant. The payment shall be released, subject to the condition that the documentary evidence (copy of paid challan in government treasury) of the welfare cess @ 1% of work done or as amended by statutory authority from time to time, paid to concerned authority is submitted.
3. GST will be reimbursed as per actual.

(4) The contractor/service provider/supplier etc. has to ensure timely and proper filling of GSTR1so that Deendayal Port Trust can avail input tax credit in timely manner. In case DPT not allowed input tax credit due to failure on part of the contractor/service provider/supplier etc., it will be a financial loss to the DPT and therefore same shall be recovered from the payment/deposit of the contractor/service provider/supplier.

(5) For any delay in completion of work, penalty at the rate of 0.05% per week or part thereof of the contract value subject to maximum of 10% of contract value will be imposed.

(6) Taxes:

**GST Clause:**

The contractor shall quote the price exclusive of GST. The contractor shall quote prevailing GST rate separately, which shall be reimbursed by DPT after ascertaining necessary compliance as per Goods & Service Tax, 2017. All other duties, taxes, cesses applicable if any, shall be borne by the contractor.

**Deduction of Income-Tax and GST:**

Income-Tax deductions and surcharge and GST+TDS under GST Act as applicable thereon shall be made good while making payments due to the contractor for carrying out the work and only net amount shall be paid as directed by the Central Board of Direct Taxes, Ministry of Finance, Government of India.

**Tax:**

The rates quoted (except GST) by the contractor shall be deemed to be inclusive of the taxes, duties etc. which the contractor will have to pay for the performance of this contract. The employer will perform such duties in regard to the deduction of such taxes at sources as per applicable law.

(7) Deduction:

Deduction of taxes/income tax at source, TDS on GST etc. shall be made from the any bill of the Contractor in accordance with the

prevailing rules of Govt. While performing under the contract, the damages caused by the Contractor or his workers to any of the Port Trust property shall be promptly made good by the Contractor at his own cost. In case the Contractor fails to repair/replace the damage, DEENDAYAL PORT TRUST shall have the right to take steps to make good the damages and all the cost on this account shall be recovered from the bills of the Contractor or any money due to the Contractor from this contract or any other contract or any other transaction. In determination of the damage, the opinion of the Engineer-In-charge (EIC) shall be conclusive.

Any dues arising out of failure on the part of the Contractor to carry out any obligation under the contract shall be deducted from the bills of the Contractor or from any money due to the Contractor from this contract or any other contract.

(8) Security deposit shall consist of performance guarantee to be submitted at award of work. Performance guarantee should be 3% of the contract price which should be submitted in form of Bank Guarantee or Demand draft (21 days in case of domestic bids and within 28 days in case of global bid) of receipt of letter of acceptance/Intent which will be refunded immediately not later than 14 days from completion of defect liability period of six months. Failure of the successful bidder to comply with the requirements as mentioned above shall constitute sufficient grounds for cancellation of the award of work and the bidder can be disqualified from bidding for any contract with DPT for a period of three years from the date of notification. The security deposit will be released after warranty period of 12 months from the date of issue of acceptance of solar power plant by DPT

(9) Insurance:

The contract shall provide in the joint names of the employer and the contractor, insurance cover from the start date to the end of guarantee period for the following events which are due to the contractor risk:

a) loss of or damage to the works, plan and materials

b) loss of or damage to equipment

c) loss of or damage of property (except the works, plant, materials equipment) in connection with contract, and

d) personal injury or death

Policies and certificates for insurance shall be delivered by the contractor to the engineer in charge or his nominee before the commencement of work. All such insurances shall provide for compensation to be payable to the types and and proportions of currencies required to be rectify the loss or damage incurred.

Alterations to the terms of insurance shall not be made without the approval of the engineer in charge or his nominee,

All the materials shall stand insured from the time of arrival at site till commencement of erection against fire, pilferage, damage and against natural calamities for the value of 90% of each item.

During erection and till the work is completed and satisfactory taken over by the D.P.T after testing the materials shall stand covered by suitable erection insurance also for the value of 110% of the item. The charges for the insurance shall be borne by the Contractor.

(10) The contractor shall be registered under the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.

(11) The contractor shall supply the materials of only the particular bands/Make specified in the tender. If none of the make/brands are available in the market then the department will accept the equivalent make/brand subject to the contractor producing a letter of non-availability from the manufacturer only. The EIC will ascertain the veracity of that letter directly from the manufacture. Such material will be accepted after obtaining the approval of the authority who approved the tender.

(12)The entire work will be under guarantee for a period of 12 months from the date of completion of work. The Solar Power Plant should have complete system warranty of minimum 7 years and individual Solar Panel Warranty of minimum 25 years.

(13) All the statutory payment shall be made by the contractor for clearance/approval from various authorities for putting the system into operation.

(14) The contractor shall not deposit any materials at such a place that may cause inconvenience to the public or staff or nearby offices.

(15) The Contractor shall execute the work in such a way that not to cause inconveniences to the public or staff or nearby offices and not to cause hindrance to traffic. Necessary barricading shall be done by the contractor at his own cost if required.

(16) All tools, plants, scaffolding ladder etc. and other machinery etc. required temporary for the purpose of execution of work will have to be arranged by the contractor at his own cost and storing of such tools, plants etc, will have to be made by him.

(17) All the materials should be got approved from Engineer-in-Charge before use.

(18) All the rules and regulations governing DPT will be applicable.

(19) After completion of the work, the site should be neatly cleaned by the contractor.

(20) The contractor shall ensure not to cause any damages to the properties in the vicinity of work site during execution of work. If any damage occurs due to workmen/ machinery of the contractor, the contractor has to make good the loss/ damage at his cost.

(21) All the works shall be carried out to the entire satisfaction of Engineer-in- Charge.

**Signature & Seal Executive Engineer (E)**

**of Contractor Deendayal Port Authority**

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**Approved Make List for Electrical Items**

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| --- | --- | --- |
| **Sr. No.** | **Description** | **Recommended Makes** |
| 1 | HT VCB | SIEMENS / CROMPTON GREAVES/ABB/Schneider |
| 1(a) | HV Gas Insulated Breakers | SIEMENS /Schneider/ABB |
| 2 | POWER TRANSFORMERS | VOLTAMP/CROMPTON GREAVES /BHARAT BIJLEE/ BHEL/ SIEMENS/ ABB/ Schneider/T&R |
| 3 | DISTRIBUTION TRANSFORMERS | EMCO/KIRLOSKAR/PATSON/VOLTAMP/ ABB / Schneider / T&R |
| 4 | RESIN CAST TRANSFORMERS |  |
| A)    RESIN CAST IMPREGNATED | VOLTAMP / KIRLOSKAR / EMCO |
| B)    DRY CAST | VOLTAMP/KIRLOSKAR/EMCO |
| 5 | HT XLPE CABLES | POLYCAB/TORRENT/RPG ASIAN/ /GLOSTER/ UNISTAR/ UNISTAR/KEI/FINOLEX/HAVELS |
| 6 | LT XLPE CABLES | POLYCAB/TORRENT/RPG ASIAN/ / RALLISON/PRIMECAB/ HAVELLS/ UNISTAR/AVOCAB / ADCAB |
| 7 | LT ACB | SIEMENS/L&T/SCHNEIDER/C&S |
| 8 | PROTECTION RELAYS | AREVA/L&T/SIEMENS/ABB/C&S |
| 9 | LT PANEL | CPRI APPROVED |
| 10 | CHANGE OVER SWITCH | SIEMENS/L&T/ABB/C&S/SCHNIDER/ LEGRAND / INDOASIAN |
| 11 | SFU FOR MAIN LT DISTRIBUTION PANELS | SIEMENS/L&T/ABB/C&S |
| 12 | SFU FOR DISTRIBUTION PANELS & FEEDER PILLERS | SIEMENS/L&T/ABB/C&S/ SCHNEIDER/ LEGRAND/ INDOASIAN/HAVELLS |
| 13 | MCCB FOR MAIN LT DISTRIBUTION PANELS | SIEMENS/L&T/ABB |
| 14 | MCCB FOR DISTRIBUTION PANELS AND FEEDER PILLERS | SIEMENS/L&T/ABB/C&S/ SCHNIDER/ LEGRAND/ INDOASIAN/HAVELLS |
| 15 | MCB/ELCB/RCCB/ RCCBO FOR MAIN LT DISTRIBUTION PANELS | SIEMENS/HAGER L&T/ABB |
| 16 | MCB FOR DISTRIBUTION PANELS AND FEEDER PILLERS | SIEMENS/L&T/ABB/C&S/ SCHNEIDER/ LEGRAND/ INDOASIAN/ HAVELLS/ STANDARD |
| 17 | MCB DISTRIBUTION BOARD | STANDARD / HENSEL/LEGRAND / INDOASIAN / HAVELLS |
| 18 | MULTI FUNCTION DIGITAL METER FOR MAIN LT DISTRIBUTION PANELS/DIGITAL KWH METERS | L&T/ENERCON/SECURE/L&G/ RISHABH |
| 19 | ANALOG VOLT/AMPARE METER FOR DISTRIBUTION PANELS AND FEEDER PILLERS | RISHABH/AE/ENERCON/L&T |
| 20 | SLECTOR SWITCH FOR VOLTMETER/AMPARE METER | L&T/SIEMENS/C&S |
| 21 | POWER CONTACTOR & OVER LOAD RELAYS | L&T/SIEMENS/ABB |
| 22 | QUARTZ TIME CLOCK SWITCH | L&T/INDOASIAN/SIEMENS |
| 23 | PVC WIRE WITH COPPER CONDUCTOR | RR KABEL / KEI / POLYCAB/MILEX/GUJCAB/ STANDARD / FINOLEX / ANCHOR |
| 24 | FLUSH TYPE SWITCHES, SOCKETS, HOLDERS AND CEILING ROSES & ELECTRONIC REGULATORS | ANCHOR/MK/NORTHWEST/VINAY /PANAMA / HAVELLS |
| 25 | DOOR BELLS/CALL BELLS | ANCHOR/LEGEND/MK/NORTHWEST |
| 26 | MODULAR SWITCHES, SOCKETS, PLATES & BOXES | ANCHOR / MK / NORTHWEST / LEGRAND /HAVELLs / INDOASIAN / SIMENS. |
| 27 | PVC CONDUIT/OVAL CONDUIT & CASSING CAPPING AND ACCESSORIES | PRECISION/VULCAN/FINOLEX/ GARWARE/ RESTOPLAST/ SWASTIK / BPI |
| 28 | GLS LAMPS & FLUORESCENT LAMPS | PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI / GE |
| 29 | HPSV, HPMV & METAL HELIDE LAMPS | PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI / GE |
| 30 | IGNITORS FOR HPSV, METAL HELIDE LAMPS | PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI / GE |
| 31 | LUMINARIES | PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI / GE/C&S |
| 31a | LED LUMINARIES | Philips/Bajaj/Wipro/CG/Surya/Pyrotech/Syska/Nessa/C&S  having surge Protection ≥10KV for fittings & internal Surge  Protection for Driver of≥4KV, LED Chip only  OSRAM/CREE/Philips Lumileds/Citizen/ with LM-79,80  CERTIFICATION |
| 32 | CEILING FANS | BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC |
| 33 | WALL MOUNTING FANS | BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC |
| 34 | EXHUAST FANS | BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC |
| 35 | HEAVY DUTY INDUSTRIAL WALL MOUNTING FANS | BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC or its equivalent |
| 36 | WATER COOLER | VOLTAS/SHRIRAM USHA/BLUE STAR |
| 37 | AIR CONDITIONERS | VOLTAS/CARRIER/BLUESTAR/USHA/ HITACHI/LG/ SAMSUNG/ONIDA |
| 38 | REFRIGERATORS | VOLTAS / CARRIER / BLUESTAR / USHA / HITACHI / LG / SAMSUNG / WHIRLPOOL |
| 39 | VOLTAGE STABILIZER | VEELINE / CAPRI |
| 40 | INVERTERS for General Purpose | LUMINOUS / MICROTEK /SUKAM |
| 41 | D.G. SETS |  |
| A)    ENGINE | CUMMINS/GREAVES/KIRLOSKAR/ CATERPILLAR /ASHOK LEYLAND /VOLVO |
| B)    ALTERNATOR | STAMFORD/CROMPTON GREAVES /JYOTI/ KIRLOSKAR ELECTRIC |
| 42 | ELECTRIC MOTOR | ALSTOM/CROMPTON GREAVES /SIEMENS/ KIRLOSKAR/ABB |
| 43 | WATER PUMPS | SWASTIK / KSB |
| 44 | WATER GEYSER | BAJAJ/USHA / CROMPTON GREAVES / SPHEREHOT / RACOLD |
| 45 | LUGS & CABLE GLANDS | DOWELLS / JAINSON / BRACO |
| 46 | Solar Panels | LONGI / TRINA / GOLDI / VIKRAM / REWNYSIS / RAYZON / WAAREE or equivalent subject to submission of relevant documents of successful operation in various Government Organisations. |
| 47 | INVERTERS for Solar Power Plant | LUMINOUS / MICROTEK /EVVO /LENTO/DELTA/ABB / HITACHI /HUAWEI / SUNGROW or equivalent subject to submission of relevant documents of successful operation in various Government Organisations. |

**Executive Engineer (Electrical)**

**Deendayal Port Authority**