



**DEENDAYAL PORT AUTHORITY**

ISO 9001:2008 | ISO 14001 | ISPS Compliant Port



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No.: EL/AC/2775

Date: 23/06/2023

**EXPRESSION OF INTEREST [EOI] for “Construction of Storage Shed over existing floor of Godown No. 3 & 4 inside Cargo Jetty Area – Electrification Work.”**

(This EOI is issued to elicit Expression of Interest from the parties interested in the work and does not constitute any binding commitment from the Deendayal Port Authority to proceed with the work or invite any or all the parties in the subsequent bidding process. The Open Tenders will be issued subsequently.)

Executive Engineer (Electrical), DPA invites Expression of Interest for the work of “Construction of Storage Shed over existing floor of Godown No. 3 & 4 inside Cargo Jetty Area – Electrification Work” from the reputed firms from those who have executed similar work in Government/public sectors and other leading private organizations. The Expression of Interest (EOI) documents containing details of Scope of Work and Technical Specifications are enclosed herewith.

The interested firms are requested to submit their expression of interest for the said work in BOQ format as enclosed at Annexure I. The completed EOI (Expression of Interest) shall be submitted to the office of the undersigned on or before 07/07/2023. A soft copy of EOI is also acceptable through e-mail Ids. [xenedpt@gmail.com](mailto:xenedpt@gmail.com) & [lightingkandla@gmail.com](mailto:lightingkandla@gmail.com)

Executive Engineer (E)  
Deendayal Port Authority

ANNEXURE – I

Sr. No.	Description	Qty.	Unit	Rate	Amount
1	Supply at site 4 Core, 70 Sq.mm LT armoured aluminium conductor XLPE cable of 1.1kV grade as per Technical Specification No. 1	800	m		
2	Supply at site 4 Core, 35 Sq.mm LT armoured aluminium conductor XLPE cable of 1.1kV grade as per Technical Specification No. 2	250	m		
3	Supply at site 4 Core, 6 Sq.mm LT armoured aluminium conductor XLPE cable of 1.1kV grade as per Technical Specification No. 3	1000	m		
4	Supply at site 3 core, 1.5 Sq.mm, copper braided PVC sheathed flexible unarmoured cable as per Technical Specification No. 4	2800	m		
5	Supply at site 200mm width FRP Ladder type Cable Tray along with its accessories as per Technical Specification No. 5	265	m		
6	Providing & fixing Cable Tray Support as per Technical Specification No. 6	265	No.		
7	Fixing of 200mm width FRP Ladder type Cable Tray along with its accessories as per Technical Specification No. 7	265	m		
8	Laying of double run of LT armoured aluminium conductor XLPE cable of 1.1kV grade 4 core, 70 Sq.mm in existing substation trench as per Technical Specification No. 8	60	m		
9	Laying of double run of LT armoured aluminium conductor XLPE cable of 1.1kV grade 4 core, 70 Sq.mm through HDD method as per Technical Specification No. 9	100	m		
10	Laying of LT armoured aluminium conductor XLPE cable of 1.1kV grade 4 core, 70 Sq.mm through HDD method as per Technical Specification No. 10	75	m		

11	Laying of double run of LT armoured aluminium conductor XLPE cable of 1.1kV grade 4 core, 70 Sq.mm in cable tray installation as per Technical Specification No. 11	75	m		
12	Laying of LT armoured aluminium conductor XLPE cable of 1.1kV grade 4 core, 70 Sq.mm in cable tray installation as per Technical Specification No. 12	150	m		
13	Laying of LT armoured aluminium conductor XLPE cable of 1.1kV grade 4 core, 35 Sq.mm in cable tray installation as per Technical Specification No. 13	150	m		
14	Laying of 4 Core, 70 Sq.mm size LT armoured alluminium conductor XLPE cable of 1.1kV grade on wall through clamps as per Technical Specification No. 14	40	m		
15	Laying of 4 Core, 35 Sq.mm size LT armoured alluminium conductor XLPE cable of 1.1kV grade on wall through clamps as per Technical Specification No. 15	40	m		
16	Laying of 4 Core, 6 Sq.mm size LT armoured alluminium conductor XLPE cable of 1.1kV grade on wall through clamps as per Technical Specification No. 16	920	m		
17	Laying of 4 Core, 1.5 Sq.mm size LT armoured alluminium conductor XLPE cable of 1.1kV grade on wall/structure through clamps as per Technical Specification No. 17	300	m		
18	Laying of 3 core, 1.5 Sq.mm, copper braided PVC sheathed flexible cable through existing hangers provided in dome shaped roof structure as per Technical Specification No. 18	2460	m		
19	Supply at site FRP Power Distribution Board as per Technical Specification No. 19	2	No.		
20	Supply at site 8-Way Vertical TPN Distribution Board as per Technical Specification No. 20	4	No.		

21	Installation, Testing & Commissioning of FRP Power Distribution Board as per Technical Specification No. 21	2	No.		
22	Installation, Testing & Commissioning of 8-Way Vertical TPN Distribution Board as per Technical Specification No. 22	4	No.		
23	Supply at site FRP Junction Box as per Technical Specification No. 23	30	No.		
24	Fixing of FRP Junction Box as per Technical Specification No. 24	30	No.		
25	Supply at site LED High Bay fitting as per Technical Specification No. 25	90	No.		
26	Installation, Testing & Commissioning of LED High Bay fitting as per Technical Specification No. 26	90	No.		
27	Preparation of earthing system with 60mm diameter, 3m GI chemical electrode and back fill compound as per Technical Specification No. 27	12	No.		
28	Supply, Laying, connecting of GI Strip of 25×6 mm size between earth station to the equipment as per Technical Specification No. 28	150	m		
<b>Total</b>					
(In words Rupees _____ only) (NOTE: The rates should be inclusive of all taxes, duties, fees, cess etc. and all incidental charges; but exclusive of GST).  <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div>Signature &amp; Seal of Contractor</div> <div>Executive Engineer (E) Deendayal Port Authority</div> </div>					

## **SCOPE OF WORK**

Deendayal Port Authority (DPA) is one of the Major Port in India. The Specification is intended to cover the Electrification work for Dome Shaped Godowns (Drawing is attached herewith) inside Cargo jetty area at Deendayal Port. The work will be carried out simultaneously with Civil work which includes Electrical part i.e. Supply, installation, testing & commissioning of LT Power Distribution Boards, Vertical TPN Distribution Boards, LED High Bay fittings, Supply & laying of LT armoured XLPE Cables and LT flexible Cable. The work shall be executed to the satisfaction of the Engineer in-charge. The contractor shall arrange all types of tools, tackles, scaffoldings, temporary power supply at his own cost for installation, testing & commissioning of the work.

## **TECHNICAL SPECIFICATION**

### **Technical Specification No. 1:**

This item includes supply at site 1.1 kV grade, 4 core, 70 Sq.mm aluminium conductor XLPE insulated armoured cable confirming to IS 7098 (Part-I): 1985 with up to date amendments, having ISI mark and of approved make. The cable shall have marking/embossing at the interval of every meter showing its progressive length. The contractor shall submit type test certificate at the time of supply of Cable at site. The type test certificate shall not be more than 3 years old. The rate shall be inclusive of all taxes (excluding GST), packing, forwarding, insurance, transportation, and unloading at site of work.

### **Technical Specification No. 2:**

This item includes supply at site 1.1 kV grade, 4 core, 35 Sq.mm aluminium conductor XLPE insulated armoured cable confirming to IS 7098 (Part-I): 1985 with up to date amendments, having ISI mark and of approved make. The cable shall have marking/embossing at the interval of every meter showing its progressive length. The contractor shall submit type test certificate at the time of supply of Cable at site. The type test certificate shall not be more than 3 years old. The rate shall be inclusive of all taxes (excluding GST), packing, forwarding, insurance, transportation, and unloading at site of work.

### **Technical Specification No. 3:**

This item includes supply at site 1.1 kV grade, 4 core, 6 Sq.mm aluminium conductor XLPE insulated armoured cable confirming to IS 7098 (Part-I): 1985 with up to date amendments, having ISI mark and of approved make. The cable shall have marking/embossing at the interval of every meter showing its progressive length. The contractor shall submit type test certificate at the time of supply of Cable at site. The type test certificate shall not be more than 3 years old. The rate shall be inclusive of all taxes (excluding GST), packing, forwarding, insurance, transportation, and unloading at site of work.

### **Technical Specification No. 4:**

This item includes supply at site 1.1kV grade, 3 core, 1.5 Sq.mm, overall tinned copper braided PVC sheathed flexible unarmoured cable confirming to IS 694: 2010 with up to date amendments, having ISI mark and of approved make. The cable shall have

marking/embossing at the interval of every meter showing its progressive length. The contractor shall submit type test certificate at the time of supply of Cable at site. The type test certificate shall not be more than 3 years old. The rate shall be inclusive of all taxes (excluding GST), packing, forwarding, insurance, transportation, and unloading at site of work.

**Technical Specification No. 5:**

This item includes supply at site FRP ladder type cable tray of following size along with its accessories:

- Width (W): 200 mm
- Side Channel Height (H): 50 mm
- Rung Width:  $\geq 25$  mm
- Rung Height:  $\geq 15$  mm
- Rung C to C:  $\leq 300$  mm
- Thickness (T): 3 mm
- Length (L): 2500mm

All accessories viz., Coupler Plates, Nuts, bolts & washers shall be of stainless steel SS304 material. The Cable Tray manufacturing shall be preferably ISO 9001: 2000. The contractor shall take prior approval of drawing from Engineer in-Charge before supply of cable tray. The rate shall be inclusive of all the taxes (excluding GST), insurance, packing, forwarding, transportation, unloading at site as directed by Engineer-in-Charge.

**Technical Specification No. 6:**

This item includes providing & fixing cable tray support for 200mm width cable tray on the wall/column structure of Shed. The cable tray support shall be horizontal strut channel bracket type. The dimension of base plate shall be 120mm (H)  $\times$  40mm (W)  $\times$  2mm (T). The dimension of the channel bracket shall be 40mm  $\times$  40mm  $\times$  2mm. The length of the channel bracket shall be 300mm. The material of cable tray support shall be SS304. The contractor shall supply the cable tray support at site after approval of drawing from Engineer in-Charge. The cable tray support shall be rigidly fixed on wall/column structure of Shed with two nos. of SS304 anchor fasteners of minimum size: M10, 10mm  $\times$  100mm at the height as directed by Engineer in-Charge. This item includes all material, labour, scaffolding, tools & tackles as directed by Engineer in-Charge.

**Technical Specification No. 7:**

This item includes fixing of supplied 200mm width FRP ladder type cable tray along with accessories on cable tray support mounted on wall/structure of Shed. The installation shall be in accordance with equipment manufacturer's instructions, and with best workmanship & best industrial practice to the satisfaction of Engineer in-Charge. This item includes all material, labour, scaffolding, tools & tackles as directed by Engineer in-Charge.

**Technical Specification No. 8:**

This item includes laying of two run cable of size 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable trench of existing Substation. The cable shall be laid after opening of trench by removing the MS chequered plates. After laying of the cable, cable trench shall be properly covered with existing chequered plates as per its original condition. The work includes required material and labour as directed by Engineer in-Charge.

**Technical Specification No. 9:**

This item includes laying of double length cable of size 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through Road Crossing by using Horizontal Directional Drilling (HDD) method by providing two suitable diameter of HDPE pipes having strength of 10kg/sq.cm. The contractor shall arrange machine for excavation, water for drilling, dewatering pump, HDD equipment at his own cost. The heavy duty HDPE pipes shall be buried at nominal minimum depth of 1.5m. Two run of LT cable shall be passed through separately buried HDPE pipes. Backfilling & dressing of excavated trenches shall be done as per its original condition. The work includes all material, labour, HDD equipment, tools & tackles as directed by Engineer in-Charge.

**Technical Specification No. 10:**

This item includes laying of 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable through Road Crossing by using Horizontal Directional Drilling (HDD) method by providing suitable diameter of HDPE pipe having strength of 10kg/sq.cm. The contractor shall arrange machine for excavation, water for drilling, dewatering pump, HDD equipment at his own cost. The heavy duty HDPE pipe shall be buried at nominal minimum depth of 1.5m. The LT cable shall be passed through buried HDPE pipe. Backfilling & dressing of excavated trenches shall be done as per its original condition. The work includes all material, labour, HDD equipment, tools & tackles as directed by Engineer in-Charge.

**Technical Specification No. 11:**

This item includes laying of two run cable of size 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable tray installation. The cable shall be properly dressed in such a manner that crossing of cables shall be minimized. The cable shall be clamped with suitable clamps/thick PVC straps at every 1 m distance in cable tray. All cables shall be laid in parallel in side-by-side as directed by Engineer in-Charge. The work includes all material, labour, scaffolding, tools & tackles as directed by Engineer in Charge.

**Technical Specification No. 12:**

This item includes laying of 4 core, 70 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable tray installation. The cable shall be properly dressed in such a manner that crossing of cables shall be minimized. The cable shall be clamped with suitable clamps/thick PVC straps at every 1 m distance in cable tray. All cables shall be laid in parallel in side-by-side as directed by Engineer in-Charge. The work includes all material, labour, scaffolding, tools & tackles as directed by Engineer in Charge.

**Technical Specification No. 13:**

This item includes laying of 4 core, 35 Sq. mm, 1.1kV grade, LT armoured aluminum Conductor XLPE Cable in the cable tray installation. The cable shall be properly dressed in such a manner that crossing of cables shall be minimized. The cable shall be clamped with suitable clamps/thick PVC straps at every 1 m distance in cable tray. All cables shall be laid in parallel in side-by-side as directed by Engineer in-Charge. The work includes all material, labour, scaffolding, tools & tackles as directed by Engineer in Charge.

**Technical Specification No. 14:**

This includes laying of 4 core, 70 Sq.mm aluminum conductor XLPE Cable of 1.1KV Grade on wall/column structure. The G.I. Saddle clamps shall be provided of size 20mm×1mm (size suitable with respect to cable outer diameter) with suitable size of anchor fastener/heavy duty screws for clamping as directed. The cable shall be laid on wall/column structure with clamps at the height as directed by Engineer in-Charge. The clamp shall be fixed rigidly on wall/column structure at 0.3m intervals. The work includes all material, labour, scaffolding, tools & tackles as directed by Engineer in Charge.

**Technical Specification No. 15:**

This includes laying of 4 core, 35 Sq.mm aluminum conductor XLPE Cable of 1.1KV Grade on wall/column structure. The G.I. Saddle clamps shall be provided of size 20mm×1mm (size suitable with respect to cable outer diameter) with suitable size of heavy duty screws for clamping as directed. The cable shall be laid on wall/column structure with clamps at the height as directed by Engineer in-Charge. The clamp shall be fixed rigidly on wall/column structure at 0.3m intervals. The work includes all material, labour, scaffolding, tools & tackles as directed by Engineer in Charge.

**Technical Specification No. 16:**

This includes laying of 4 core, 6 Sq.mm aluminum conductor XLPE Cable of 1.1KV Grade on wall/column structure. The G.I. Saddle clamps shall be provided of size 20mm×1mm (size suitable with respect to cable outer diameter) with suitable size of heavy duty screws for clamping as directed. The cable shall be laid on wall/column structure with clamps at the height as directed by Engineer in-Charge. The clamp shall be fixed rigidly on wall/column structure at 0.3m intervals. The work includes all material, labour, scaffolding, tools & tackles as directed by Engineer in Charge.

**Technical Specification No. 17:**

This includes laying of 3 core, 1.5 Sq.mm, copper braided PVC sheathed flexible unarmoured cable on wall/column structure. The G.I. Saddle clamps shall be provided of size 20mm×1mm (size suitable with respect to cable outer diameter) with suitable size of heavy duty screws for clamping as directed. The cable shall be laid on wall/column structure with clamps at the height as directed by Engineer in-Charge. The clamp shall be fixed rigidly on wall/column structure at 0.3m intervals. The work includes all material, labour, scaffolding, tools & tackles as directed by Engineer in Charge.

**Technical Specification No. 18:**



This item includes laying of 3 core, 1.5 Sq.mm, copper braided PVC sheathed flexible unarmoured cable through clamp provided on existing hangers in the dome shaped roof structure of the Shed. A distance between two existing hangers will be approximately 1m. The cable shall be passed & tied/fixed in the clamp provided on existing hanger in the Shed structure as directed by Engineer in-Charge. Contractor shall arrange necessary scaffolding/any other equipment of required height for laying of the cable through existing hangers in the roof structure of the Shed. The work includes all material, labour, scaffolding, tools & tackles as directed by Engineer in-Charge.

**Technical Specification No. 19:**

This item includes supply at site FRP Power Distribution Board. The Power Distribution Board shall be of suitable size; however, it shall be specious for easy maintenance and also, the minimum depth of the Power Distribution Board shall be 300mm. The Power Distribution Board shall be suitable for surface mounting.

The FRP Power Distribution Board shall have following features:

- The material for the enclosure shall be Fiber Reinforced Polyester (FRP) with F1 grade raw material of ultra guard.
- Protection Class: IP 65.
- Impact Resistance: IK 10
- Distribution Board sheet thickness shall be minimum 4 mm.
- Distribution Board's gasket shall be of properly greased with proper compression to maintain the ingress protection.
- Distribution Board enclosure shall comply with the requirement of dielectric strength as per IEC62208 standard, ultraviolet resistance test as per UL746C standard and glow wire test with flammability of 5VA as per UL94 standard.
- Distribution Board shall have continuous hinges. All the accessories like hinges, locking arrangement, screws & mounting brackets shall be of SS304 or higher grade SS.
- Distribution Board shall have backside mounting arrangement.
- All Distribution Board edges and door edges shall be reinforced against distortion. Cut outs shall be true in shape and devoid of sharp edges.
- The complete structure shall be rigid, self-supporting free from vibration, twists & bends.
- Finished painted appearance of equipment shall present an aesthetically, pleasing appearance, free from dents and uneven surfaces.

The FRP Power Distribution Board shall be provided with following electrical items:

- 1) Incomer – 4 Pole, 125 Amp, 25kA, MCCB: 1 No.
- 2) Outgoing – 4 Pole, 63 Amp, 25kA, MCCB: 2 Nos.

- 3) 100A, 415V, 3 phase power contactor: 1 No.
- 4) Digital Timer switch: 1 No.
- 5) Digital Multi-Function Energy Meter (Class 1): 1 No.
- 6) 125/5 Amp CT (Class 1): 3 Nos.
- 7) Phase R, Y & B Indication Lamps: 3 Nos.

The Distribution Board shall be complete in all respects having interconnection with PVC insulated cable single core, standard copper conductor of 650/1100V grade. The cable entry and exit shall be from bottom of the Power Distribution Board.

The Distribution Board shall be provided with 2 Nos. GI terminals for earthing. Before placing the order for manufacturing the Distribution Board drawing should be approved by Engineer in-Charge showing the arrangement of the electrical components and should fulfil the needs of IE rules. The Distribution Board shall be manufactured from type test certificate holder for LT Panel of similar or above rating.

The rate shall be inclusive of all taxes (excluding GST), packing, forwarding, insurance, transportation, and unloading at site of work.

**Technical Specification No. 20:**

This item includes supply at site 8 Way double door Vertical TPN Distribution Board with IP54 degree of protection. The VTPN DB shall be suitable for surface mounting. The VTPN DB shall be made from special grade of CRCA sheet and powder coated. The DB shall be fitted with 100A copper bus-bar insulated for each phase, 2 nos. shrouded neutral bar and 2 earth bar. The VTPN DB shall be supplied with pre-wired 1 No. 63A, 25kA, 4P MCCB as incomer and 8 nos. 16A, 10kA, TP MCBs as outgoing. The rates shall be inclusive of all the taxes (excluding GST), insurance, transportation, unloading as directed by Engineer in-Charge.

**Technical Specification No. 21:**

This item includes fixing & commissioning of supplied Power Distribution Board on wall /structure as directed by Engineer in-Charge. The DB shall be fixed rigidly on wall through suitable size of anchor fasteners as directed. This includes necessary wiring, connections & earth linking with all material, labour, tools & tackles as directed by Engineer in-Charge.

**Technical Specification No. 22:**

This item includes fixing & commissioning of supplied Vertical TPN Distribution Board on wall /structure as directed by Engineer in-Charge. The DB shall be fixed rigidly on wall through suitable size of anchor fasteners as directed. This includes necessary wiring, connections & earth linking with all material, labour, tools & tackles as directed by Engineer in-Charge.

**Technical Specification No. 23:**

This item includes supply at site FRP Junction Box of size 160 mm × 160 mm × 90 mm (W×H×D) along with 9 nos. of 32A capacity Connector duly mounted on DIN rail channel with suitable size of SS gland for incomer 4 core 6 Sq.mm XLPE aluminum conductor Cable and PG glands

for three outgoing 3 core 1.5 Sq.mm braided copper flexible cable. The Junction Box shall have ingress protection of IP65. The Junction Box shall be provided with suitable wall mounting bracket. The size of the Junction Box is tentative and minimum. The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in-Charge.

**Technical Specification No. 24:**

This item includes fixing of supplied FRP Junction Box on wall/structure of the Shed at the location as directed. The DB shall be fixed rigidly on wall through suitable size of nut bolts/anchor fasteners/cemented wooden gutties as directed. This includes necessary wiring, connections & earth linking with all material, labour, scaffolding, tools & tackles as directed by Engineer in-Charge.

**Technical Specification No. 25:**

The contractor shall supply at site LED High Bay fittings to achieve average illumination level of not less than 150 Lux on ground level in a grid of 5m × 5m with uniformity ratio (Emin/Eavg) of 0.40 and maintenance factor of 0.80 inside Storage Shed No. 3 & 4. A common drawing of Storage Shed No. 3 & 4 is enclosed at Annexure – II for reference. The lighting design of inside Sheds shall comply with IS 3646: (Part II) – 1966 with latest amendments.

The bidder shall design the illumination with following details:

- (1) Width of inside Storage Shed is 36.55m (Width – Y axis)
- (2) Length of inside Storage Shed is 151.80m (Length – X axis)
- (3) Position of LED high bay fittings in width – Y axis of the Shed: first fitting at 5.7m, second fitting at 18.275m & third fitting at 30.85m.
- (4) Position of LED high bay fittings in length – X axis of the Shed: first group of three fitting at 5.5m and thereafter subsequent group of three fittings at an equal distance of 10.080m up to fifteenth group of three fittings.
- (5) Mounting height of LED high bay fittings (between Ground level of Shed and surface of the LED high bay fitting's glass) shall not be less than 12.50 m for the middle row of LED high bay fittings and not less than 9.00 m each for side rows of high bay fittings inside both Sheds.

The bidder shall submit their detailed design report showing the illumination level with total quantity of fittings, maintenance factor & uniformity ratio in a grid of 5m×5m along with their bid document.

The bidder shall submit LM79 test reports of the offered LED High Bay fitting issued by any NABL accredited laboratory only for calculation of power consumption of the design along with the bid document.

**Note:** The locations of hangers provided in the roof structure of Storage Sheds by DPA for fixing of LED high bay fittings by the contractor will be as per the details provided at sr. no. 3 & 4 above. However, the exact locations of the hangers are subject to minor change

depending on the actual site condition only at Storage Sheds and the same will be decided by the Engineer in-Charge, DPA and decision of the Engineer in-Charge shall be final & binding on the contractor.

The Technical Specifications of LED High Bay fitting is as below:

SR.NO.	DESCRIPTION	SPECIFICATION
1	Input Power of High Bay fitting	<b>To be offered by bidder</b>
2	Input voltage AC	120-270 V AC
3	Input Frequency	50 Hz +/-1 Hz
4	Life	50,000 burning hours @ L70B50, Ta 35°C Outdoor
5	Mounting type for High Bay fitting	Eye bolt/Bracket for suspension mounting
6	Total Harmonic Distortion	<10% maximum
7	Working Temperature	0°C to +45°C
8	Working Humidity	10% to 90% RH
9	Temperature	5700K to 6500K
10	Colour rendering index	>70
11	Lumens / Watt	≥ 120 Lumen/Watt at System Level
12	Finishing	Corrosion resistant powder coating
13	Power factor	Not less than 0.95
14	Warranty	<p>5 Years from the date of successful commissioning.</p> <p>It is clarified that during Warranty Period, if the material is found to be defective or has poor performance or has lumen depreciation beyond permissible limit as per LM80 report, the Contractor shall promptly, Replace the material against manufacturing defects /Rectify the material, on receiving the instruction from Engineer-in-Charge at contractor's cost.</p> <p>The contractor shall have final &amp; total single point responsibility for performance of the LED light fittings supplied.</p>
15	Construction	The housing should be of single piece non-corrosive powder coated pressure die-cast aluminium frame.

		The weight of the High Bay fitting shall not be more than 8.0 kg.
16	Surge Protection	The Luminaire should have a 10kV SPD. The SPD should be able to sustain a minimum 15 hits of 5kA rating i.e. Total of 45 hits across all the three modes as per IEC 61000.
17	Electrical Protection	The Luminaire should be capable of withstanding voltage stress of 440V phase to phase for 8 hrs at 50 degree Celsius and should have low voltage protection as 100V for 48 hours & high voltage cut-off above 325 VAC and should have an auto restart feature.
18	Impact Resistance	IK08
19	Driver Construction	<p>The Drivers should be a potted driver not a printed circuit board without casing, mounted inside the luminaire.</p> <p>The Driver shall be of constant current type and shall have Over voltage, Over current, Over temperature &amp; Short circuit Protection.</p> <p>The driver efficiency shall be more than 85%.</p> <p>List of make of Driver: PHILLIPS Xitanium/ MEANWELL/ OSRAM/ BAG/ SOSEN/ INVENTRONICS.</p> <p>Manufacturers can use their own make LED driver and the LED Driver shall be BIS certified and shall meet the specifications and comply with Safety requirements (IEC 61347-1, IEC 61347-2-13), EMC requirements (CISPR 15/ EN 55015, IEC/EN 61547, IEC/EN 61000-3-2, IEC/EN 61000-3-3).</p>
20	Driver shall safety compliance	As per IEC 61347-1/ IS 15885 (Part2/ SEC13)/BIS certified
21	Ingress Protection Level of LED Light Fitting	IP 65 or more
22	Optics	As per Design
23	Material of optics	PC lens with toughened glass cover. The LEDs should be provided with UV resistant lens/glass cover for avoiding yellowing of the lense/glass cover.

		Or Exposed lensed PC Lens plate, the LEDs should be provided with anti-dust, UV resistant exposed lens for avoiding any dust & dirt accumulation on the fixtures and yellowing of the lenses.
24	Makes of LEDs	Osram, Cree, Lumileds, Nichia, Seoul.
25	Specification of LED	SMD type with wattage of each LED should be > 1 Watt and ≤ 3 Watt.
26	Certificate/Report	<p>(1) Type test reports for LED fittings &amp; LED Driver.</p> <p>(2) The luminaire should be tested as per IEC 60598 standards and following test reports should be submitted: Thermal Test, Ingress Protection Test, Electrical / Insulation Resistance Test, Endurance Test, Humidity Test. The luminaire should be tested for 'Drop test' as per IEC 60068-2-31/IS9000 Part 7 / Sec 3 standards. The luminaire should be tested for 'Vibration test' as per ANSI/IEC 68-2-6 standards.</p> <p>(3) Should comply to IESNA LM-79 (Approved method for the Electrical and Photometric Measurements of Solid-State Lighting Products). LM79 report from NABL accredited laboratory.</p> <p>(4) The LEDs used should comply to LM-80 standards (IESNA: Approved Method for Measuring Lumen Maintenance of LED Light Sources and LED lumen depreciation time to L70 based on LM-80 data).</p> <p>(5) The LEDs shall comply with photo biological safety norms as per IEC 62471/EN 62471/IS:16108 under Risk Group 1 (Low Risk).</p> <p>(6) BIS Certificate for LED Driver.</p> <p>(7) BIS Certificate for LED Luminaire.</p> <p>Contractor shall submit all the above certificate/report including BIS certificate (excluding LM79 report) for all LED light fitting at the time of supply of fittings.</p>

The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in-Charge.

List of make of LED luminaire: Bajaj/ Philips/ CG/ C&S/ SYSKA/ WIPRO/ Pyrotech/ Surya/ Nessa/ Panasonic/ Havells/ Halonix/ Orient Electric/ WMEL.

**Field Test for LED High Bay fittings:**

The Contractor shall carry out field test for the illumination level provided for Storage Sheds in the presence of Engineer-in-Charge & TPIA. The lux level measurement shall be done by Third Party Inspection Agency (TPIA) (to be engaged & payment shall be made by DPA). The contractor shall prepare grid of 5m × 5m and mark the measuring points for measurement of lux level by the TPIA as directed by Engineer in-Charge.

The contractor shall demonstrate in the Field Test that their design achieves the average illumination level as below:

**Illumination Level at inside Storage Shed Nos. 3 & 4:**

An average illumination level shall not be less than 150 Lux on ground level in grid of 5m × 5m with uniformity ratio ( $E_{min}/E_{avg}$ ) of 0.40 and maintenance factor of 0.80 inside Storage Shed Nos. 3 & 4. It is clarified that the measured average lux level at the time of Field Test shall not be less than 187.5 lux.

The illumination level shall be measured inside Storage Shed No. 3 or Shed No. 4 in a size of 50m × 36.55m by making a grid of a 5m x 5m covering the entire area at ground level. The location of 50m × 36.55m inside Storage Shed for the field test will be randomly selected by Engineer in-Charge.

In the event of illumination levels not found as per the requirement, the contractor shall have to carry out the work by replacing the LED fittings installed with other wattage and/or make of LED fittings, at the same locations where hangers are fixed/provided for the LED high bay fittings, at his own cost to complete the work within the stipulated time and as per the requirement. Also, the contractor shall pay compensation to the Deendayal Port Authority for the assessed additional power consumption at the tariff @ ₹5.55 per Unit. Deendayal Port Authority shall not pay anything extra to contractor to achieve the required illumination level. The compensation on account of extra energy consumption shall be calculated as below:

**Compensation on account of extra energy consumption** = Additional Power of LED High bay (kW) × 12 hours × 365 days × 10 years × ₹5.55 (Prevailing tariff at DPA).

**Technical Specification No. 26:**

This item includes fixing & commissioning of supplied LED high bay fitting at Storage Shed. The LED high bay fitting shall be fixed on existing hanger by providing required length of SS 304 eye bolt & required accessories complete in all respect as directed by Engineer in-Charge. DPA will provide Hanger duly fixed in the Shed structure for mounting of the LED high bay fitting only. The work includes necessary wiring & connections of LED high bay fitting and 3 core, 1.5 Sq.mm braided copper flexible cable with all required material, scaffolding, labour, tools & tackles as directed by Engineer in-Charge.

**Technical Specification No. 27:**

This item includes preparation of maintenance free earth station by providing 60mm diameter, 3 meter, 100 micron hot dipped GI chemical electrode with back fill compound including accessories & masonry work. A cement concrete (ratio 1:4:8) chamber of at least 300 mm × 300 mm shall be prepared and a CI cover of suitable size shall be provided for the chamber. The work shall be carried out to entire satisfaction of Engineer in charge. This work includes all material, labour, tools & tackles as directed by Engineer-in-Charge.

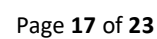
**Technical Specification No. 28:**

This item includes supply at site, laying, fixing and connection of GI strip of size 25x6 mm from earth station to electrical equipment as directed. The GI strip shall be laid and clamped suitably on wall/floor/structure or buried in the ground as directed. This work includes all material, labour, tools & tackles as directed by Engineer in-Charge.

Signature & Seal of Contractor

Executive Engineer (E)  
Deendayal Port Authority





Make List for Electrical Items		
Sr. No.	Description	Recommended Makes
1	HV 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/S chneider/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
6	LT XLPE CABLES	POLYCAB/TORRENT/RPG ASIAN/ RALLISON/PRIMECAB/ HAVELLS/ UNISTAR/AVOCAB/ALLCAB/AD CAB
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	RRKABEL/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/ SIEMENS
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
31a	LED Luminaries	Philips /Bajaj/Wipro/CG/Surya/Pyrotech/Syska/Ness a having surge Protection $\geq 10KV$ for fittings & internal Surge protection for Driver of $\geq 4KV$ , LED Chip only OSRAM/CREE/Philips Lumileds/Citizen/Nicia 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	EXHUAUST FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
35	HEAVY DUTY INDUSTRIAL WALL MOUNTING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
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	SUKAM / MICROTEK
41	D.G. SETS (a) ENGINE (b) ALTERNATOR	CUMMINS/GREAVES/KIRLOSKAR/ CATERPILLAR/ ASHOK LEYLAND/VOLVO  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

## **TERMS AND CONDITIONS**

1. **Time Schedule:** The work shall be completed within 3 months from the date of issue of Work Order.
2. The employer will award the work to the bidder whose bid has been evaluated to be techno – commercially responsive and the lowest evaluated amount bid as per the following Power Loading Criteria subject to submission of agreement and performance security.

### **Evaluation of Price Bid:**

The DPA do not bind itself to accept the lowest or any tender and reserve the right to accept any tender in part or to reject any tender without assigning any reason thereof. However, DPA reserves the right to reject any or all bids without assigning any reason thereof. Decision of DPA in deciding total amount of financial loading shall be final and binding upon the bidder and DPA will under no obligation to disclose or share working with the bidder.

(1) Financial evaluation of technically qualified bids shall be done as per the following:

- (a) The Power Consumption of the LED High Bay fittings offered by each of the technically qualified bids, as measured & certified in the LM79 test reports submitted in the bid issued by any NABL accredited laboratory only will be considered for calculating the Input power for that Bid.

Input Power for a Bid = {Power consumption of LED High bay fitting × Total Quantity of High bay fitting in the design for Storage Shed No. 3 & 4}

- (b) Input Power of the Bid having the lowest Input Power value shall form the “Base” of the power loading calculations.
- (c) The difference in Input Power for a Bid with respect to the “Base” shall be calculated for each technically qualified Bid. The expenditure cost on account of extra energy consumption due to difference in Input Power shall be loaded for each technically qualified bid as below:

**Extra Energy Expenditure Cost = Difference in Input Power with respect to Base (kW) X 12 hours X 365 days X 5 years X ₹5.55 (Prevailing tariff at DPA)**

(For example, if there are 3 technically qualified bids having input power of 25kW, 30kW and 35kW respectively then 25kW shall become the Base. The prices of the bids having input powers 30kW and 35kW shall be loaded considering a difference in Input Power of 5kW and 10kW respectively).

- (d) This extra energy expenditure cost due to difference in Input Power for each Bid shall be added to the price bid of that Bid to arrive at Final Evaluated Price.  
**Final evaluated price of the Bid = Amount quoted in the Price Bid + Extra Energy Expenditure cost.**
- (e) This Final Evaluated Price bid by each Bidder shall be considered for evaluating the Lowest Offer.

3. The bidder should have legally enforceable undertaking jointly executed by himself and the Manufacturer/Authorized Channel Partner of LED High Bay fitting for

satisfactory design, manufacture, supply, installation, testing, commissioning and performance including all warranty obligations as per Technical Specification, General & Special conditions of Contract.

4. The contractor shall install display board at site of work indicating the details of the work such as name of the work, name of contractor, scheduled date of start & completion of work, value of work etc. at his own cost.
5. The bidder, at his own responsibility and risk is encouraged to visit and examine the site of work and its surroundings and obtain all information that may be necessary for preparing the Bid. The costs of visiting the site shall be at the Bidders' own expense.
6. DPA will award the work to the bidder whose bid has been evaluated to be techno – commercially responsive and the lowest evaluated amount bid.
7. Work shall be guaranteed for 12 months from the date of completion of the work.
8. The rates should be quoted in figures and words both. In case of difference in figure & words, the rate mentioned in words will be considered.
9. The contractor shall affix SEAL along with SIGNATURE in the Offer.
10. The work shall be carried out in accordance with the best standards of workmanship and to the entire satisfaction of the Engineer in-Charge.
11. Security Deposit @ 5% recovered from the bill and the SD can be released only after successful completion of guarantee period.
12. Payments Terms:
  - i) 70% payment will be released after receipt of material at site in good condition, after obtaining insurance cover as per tender condition and after inspection & certification of the same by Third Party Inspection Agency appointed by DPT and after inspection & acceptance of material by DPT.
  - ii) 20% of item rate after completion of erection, installation, testing and commissioning etc. and 90% of item rate for item covers only laying/fixing etc. (TPI appointed then after inspection & certification of the same by Third Party Inspection Agency).
  - iii) 10% will be released after successful completion of whole work (TPI appointed then after inspection & certification of the same by Third Party Inspection Agency) and handing over to DPT.

All payments shall be made in Indian rupees unless specifically mentioned

13. Payment will be made by RTGS only after satisfactory completion of work and submission of duly signed bill.
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 inconvenience 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. Income-tax and surcharge as applicable will be deducted from the bill while making payment to the contractor for carrying out the work and only net amount shall be paid to the contractor.
17. 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.
18. All the materials should be got approved from Engineer-in-Charge before put into use.
19. Correction if any should be signed / initialed by the contractor. White ink correction will not be allowed and lead to rejection of quotation.
20. All the rules and regulations governing DPA will be applicable.
21. After completion of the work, the site should be neatly cleaned by the contractor.
22. The contractor shall ensure not to cause any damages to the port 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.
23. For Entry & exist of material and contractor personnel, pass shall be arranged by contractor.
24. The contractor shall quote the price exclusive of GST. The contractor shall quote prevailing GST rate separately, which shall be reimbursed by DPA after ascertaining necessary compliance as per Goods & Service Tax, 2017. All other duties, taxes, cesses applicable if any, shall be borne by the contractor.

Income-Tax deductions and surcharge 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.

The rates quoted 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, except GST. The employer will perform such duties in regard to the deduction of such taxes at sources as per applicable law.
25. All the work shall be carried out to the entire satisfaction of Engineer in Charge.

Signature & Seal of Contractor

Executive Engineer (E)  
Deendayal Port Authority