DEENDAYAL PORT AUTHORITY

An ISO 9001:2008 & ISO 14001:2004 Certified Port

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Office of the Executive Engineer

Ground Floor, Nirman Building
New Kandla – Kachchh,
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No.: EL/AC/ Date: 16/01/2025

EXPRESSION OF INTEREST

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

To,

_____
_____
_____.

Sub: "EOI Construction of New Building for Workshop, Time Office & Storage of Machinery near SNA Building.- Electrical Part"

Sir,

You are requested to submit Expression of Interest for "Construction of New Building for Workshop, Time Office & Storage of Machinery near SNA Building.- Electrical Part." as per schedule-B, Scope of Work and Terms & Conditions.

The Expression of Interest should reach to this office on or before 23/01/2025.

Yours faithfully

Sd/-
Executive Engineer (E)
Deendayal Port Authority

Name of Work: Construction of New Building for Workshop, Time Office & Storage of Machineary near SNA Building.

Electrical Part

Sr. No.	Description	Qty	Unit	Rate	Amount
1	Providing & fixing following concealed/surface wiring for single phase sub-circuit from the main switch /meter/DBs /MCBs to the switch board with 2 x 2.5 Sq.mm. copper conductor to be used as phase & neutral and bare copper wire as earthing as per Technical Specification No. 1	3850	Mtr.		
2	Providing and Fixing concealed/surface wiring for modular light/tube/bell point with PVC insulated single core standard 1.5 Sq.mm. copper conductor wire as per Technical Specification No.2	425	Ea.		
3	Providing and Fixing concealed/Surface wiring for modular Fan point with PVC insulated single core standard 1.5 Sq.mm. copper conductor wire & single/twin module step cut electronic fan regulator as case may be as per Technical Specification No. 03	145	Ea.		
4	Providing and fixing concealed/surface wiring for 3 x 5/6A X250 Volt Modular Half point as per Technical Specification No. 04	55	Ea.		
5	Providing and fixing concealed/surface wiring for 15/16A X250 Volt Modular power point as per Technical Specification No. 5	25	Ea.		
6	Providing and fixing concealed/surface wiring for 20A, Modular A.C point as per Technical Specification no. 6	30	Ea.		
7	Providing and fixing concealed/surface wiring for 3 x 5/6A X250 Volt modular plug point with 3nos. SP switches for computer as per Technical Specification No. 7	60	Ea.		
8	Providing & fixing following concealed/surface wiring for single phase sub-circuit from the main switch /meter/DBs /MCBs to the switch board with 2 x 4 Sq.mm. copper conductor to be used as phase & neutral and bare copper wire as earthing as per Technical Specification no. 8	710	Mtr.		

9	Supply, Installation of following Load Point Panel as per Technical specification No:- 09	2	Ea.		
10	Supply of 4 Way TPN (8 + 12 Module) Double Door Distribution Board as per Technical specification No:- 10	25	Ea.		
11	Installation of 4 Way TPN (8 + 12 Module) Double Door Distribution Board as per Technical specification No:- 11	25	Ea.		
12	Supply of 6-32 A SP MCB with 10kA Breaking Capacity in 'C' Series as per Technical Specification No. 12	300	Ea.		
13	Supply of 4 Pole, 100 Amp. RCCB as per Technical Specification No. 13	25	Ea.		
14	Supply of 100 A 4-Pole MCB with 10kA Breaking Capacity in 'C'	25	Ea.		
15	Fixing of 6-32 A SP MCBs as per Technical Specification no. 15	300	Ea.		
16	Fixing of 4 Pole, 100 Amp. RCCB as per Technical Specification no. 16	25	Ea.		
17	Fixing of 100 A 4-Pole MCB as per Technical Specification no. 17	25	Ea.		
18	Supply of GI Perforated Cable tray as per technical specification no. 18	225	Mtr.		
19	Fixing of GI Perforated Cable tray as per technical specification no. 19	225	Mtr.		
20	Supply of 18 Watt Sleek LED Down Light as per Technical Specification No:- 20	210	Ea.		
21	Fixing of 18 Watt Sleek LED Down Light as per Technical Specification No:- 21	210	Ea.		
22	Supply of 1200 mm Sweep BLDC fan as per technical specification no. 22	100	Ea.		
23	Installation of 1200 mm Sweep BLDC fan as per technical specification no. 23	100	Ea.		
24	Supply of 400 mm Sweep wall mounting fan as per technical specification no. 24	20	Ea.		
25	Installation of 400 mm Sweep wall mounting fan as per technical specification no. 25	20	Ea.		

26	Supply of 300 mm Sweep exhaust fan as per technical specification no. 26	25	Ea.		
27	Installation of 300 mm Sweep exhaust fan as per technical specification no. 27	25	Ea.		
28	Supply of 4C x 185 Sq. mm. Aluminium armoured LT XLPE Cable as per Technical Specification no.28	150	Mtr.		
29	Laying, Testing and Commissioning of L.T XLPE insulated, armored aluminium conductor cable up to size 4C x 185 to 300 sq. mm. through following and as per Technical Specification no. 29 a) Through Hard & soft soil	150	Mtr.		
30	Supply of 4C x 35 Sq. mm. Aluminium armoured LT XLPE Cable as per Technical Specification no.30	500	Mtr.		
31	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. 31	225	Mtr.		
32	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. 32	275	Mtr.		
33	Supply at site LED High Bay fitting as per Technical Specification No. 33	15	Ea.		
34	Installation, Testing & Commissioning of LED High Bay fitting as per Technical Specification No. 34	15	Ea.		
35	Supply at site FRP Junction Box as per Technical Specification No. 35	15	Ea.		
36	Fixing of FRP Junction Box as per Technical Specification No. 36	15	Ea.		
37 (a) (b)	Supply & Fixing of 4ft, LED Tube white Light Fixture of 20-22 Watt with complete accessories as per Technical Specification No. 37 Supply Fixing	110 110	Ea. Ea.		

38	Preparation earthing station, chemical treated back filled compound earthing system with Pipe-In-Pipe 50 mm Dia. GI type 3 Mtr. Depth , Maintenance free as per Technical Specification No. 33.	2	Ea.		
39	Providing & connecting 12 SWG GI earthing wire for earth station to equipment's as per Technical specification No:- 34.	200	Mtrs.		
40	Providing & connecting 25x 3 GI earthing strip for earth station to equipment as per Technical specification No:- 35.	100	Mtrs.		
				Total Amount in INR	

Signature & Seal
Contractor

Executive Engineer (E)of
Deendayal Port Authority

SCOPE OF WORK

The Deendayal Port Authority is the one of the Major Port in India, under administrative control of Shipping Ministry, Govt. Of India. The Specification is intended to cover the Electrification work for newly construction of New Building for Workshop, Time Office & Storage of Machinery near SNA building. The works will be carried out simultaneously with Civil work , which includes electrical part i.e. Supply & laying of power cables from the different sources, Supply, Installation and Commissioning of Load point panel, Supply & fixing of LED fittings/ internal conceale wiring. The work shall be executed as per IER & to the satisfaction of the Engineer-in -Charge. For installation of equipment's, the contractor shall arrange all types of tool & tackles.

TECHNICAL SPECIFICATIONS

Technical Specification No. 1

The item includes providing & fixing concealed/surface wiring for single phase sub-circuit from the main switch /meter /DBs / MCBs to the switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 2.5 sq. mm. for phase & neutral wire and 1.5 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of suitable of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grew shall be prepared by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared grove and incase of new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. Complete work consists of necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 2

The item includes providing & fixing concealed/surface wiring for Modular light/tube/bell point from switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS: 694/1990 of size 1.5 sq. mm. for phase & neutral wire and 1.0 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of size 20 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared in old construction by contractor on wall/ floor and the conduit pipe shall be laid through prepared grove in such case on the ceiling portion the pipe is to be laid on the false ceiling by clamping properly. But for new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling/ floor also in case of false ceiling the pipe shall be properly clamped over the ceiling. The work consists providing & fixing of one Module Bell Push/SP switch 6A x 250V with spark shield ISI mark and to meet specifications of IS & 3 plate Ceiling Rose/Angle Holder made from polycarbonate on suitable size of PVC box with cover. The PVC unbreakable concealed box for required modules shall be embedded properly in the wall and the switches shall be fixed on Modular Plates for required Modules on the embedded box. The complete work consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 3

The item includes providing & fixing concealed/surface wiring for Modular fan point from switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 1.5 sq. mm. for phase & neutral wire and 1.0 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of size 20 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared in old construction by contractor on wall/ floor and the conduit pipe shall be laid through prepared grove in such case on the ceiling portion the pipe is to be laid on the false ceiling by clamping properly. But for new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. The work consists providing & fixing of one module SP switch 6A x 250V with spark shield with ISI mark and to meet specifications of IS, 2 module Step cut electronic fan regulator with rotary steps & 3 plate Ceiling Rose made from polycarbonate on suitable size of PVC box with cover. The PVC unbreakable concealed box for required modules shall be embedded properly in the wall and the switches shall be fixed on Modular Plates for required Modules on the embedded box. The complete work consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 4

The item includes providing & fixing half Modular point in existing switch board with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS of size 1.5 sq. mm. for phase, neutral & earth. The work consists providing & fixing of one module SP switch 6A x 250V with spark shield with ISI mark and to meet specifications of IS, and 2 Module Modular 2 in 1 socket 6A x 250V with shutter made from polycarbonate on existing modular plate (by considering 3 extra modules for half point in point wiring for light/fan/tube/bell point). The complete work consists necessary wiring connections and earth linking with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 5

The item includes providing & fixing concealed/surface wiring for Modular Power point with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS of size 4.0 sq. mm. for phase & neutral wire and 2.5 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe with IS of size 25 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared in old construction by contractor on wall/ floor and the conduit pipe shall be laid through prepared grove in such case on the ceiling portion the pipe is to be laid on the false ceiling by clamping properly. But for new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. The work consists providing & fixing of 2 module 16A x 250V socket with shutter with ISI mark and to meet specifications of IS, 1 module SP switch 16A x 250V with spark shield with ISI mark and to meet specifications of IS & 1 module 10/16A fuse unit on suitable size of PVC unbreakable concealed box with 4 module modular plate. The PVC unbreakable concealed box shall be embedded properly in the wall and the fuse, switch & Socket shall be fixed on 4-module modular plate and modular plate shall be fixed on the embedded box. The complete work

consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 6

This includes providing & fixing concealed/surface wiring for A.C point with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS: of size 4.0 sq. mm. for phase & neutral wire and 2.5 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe with IS: of size 25 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared in old construction by contractor on wall/ floor and the conduit pipe shall be laid through prepared grove in such case on the ceiling portion the pipe is to be laid on the false ceiling by clamping properly. But for new construction the pipes shall be laid during reinforcement work.. After laying of pipe the grew shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. The work consists providing & fixing of 2 module 25A x 250V socket with ISI mark and to meet specifications of IS & 2 module SP switch 25A x 250V with spark shield with ISI mark and to meet specifications of IS, on suitable size of PVC unbreakable concealed box with 4 module modular plate. The PVC unbreakable concealed box shall be embedded properly in the wall and the fuse, switch & Socket shall be fixed on 4-module modular plate and modular plate shall be fixed on the embedded box. The above switch is to be fitted on the outside of the room to control the lighting ckt of individual switchboard from outside, the work also consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No. 7

The item includes providing & fixing concealed/surface wiring for Modular plug point for computers (With 2 module, 4 nos. 2 in 1 socket 6A x 250V & 4 nos. 1 module SP switch 6A x 250V with spark shield) with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire with IS of size 2.5 sq. mm. for phase & neutral wire and 1.5 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of size 20 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared in old construction by contractor on wall/ floor and the conduit pipe shall be laid through prepared grove in such case on the ceiling portion the pipe is to be laid on the false ceiling by clamping properly. But for new construction the pipes shall be laid during reinforcement work. After laying of pipe the grew shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. The work consists providing & fixing of 2 module, 4nos. 2 in 1 socket 6A x 250V & 4 nos. 1 module SP switch 6A x 250V with spark shield with ISI mark and to meet specifications of IS on suitable size of PVC unbreakable concealed box with 12 module modular plate. The PVC unbreakable concealed box shall be embedded properly in the wall / wooden table and the switches & Sockets shall be fixed on 12-module modular plate and modular plated shall be fixed on the embedded box. The complete work consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No.8

The item includes providing & fixing concealed/surface wiring for single phase sub-circuit from the main switch /meter /DBs / MCBs to the switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 4 sq. mm. for phase & neutral wire and 2.5 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of suitable size of Medium Mechanical Strength (MMS) type and other accessories such as

Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared grove and incase of new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. Complete work consists of necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Technical Specification No.9

This includes design, supply, Installation, Testing and commissioning of outdoor type Panel with double door, top canopy and handle with locking arrangement. Sub Load Point Panel board frame shall be fabricated from Heavy Duty CRCA sheet steel minimum 2.5 mm thick, pressed & shaped.

The Board shall be enclosed by sheet steel of minimum 2 mm thickness smoothly finished & level, door & covers shall be made 1.6 mm thick sheet steel. Adequate stiffeners shall be provided wherever necessary.

Dust & vermin proof Protection Class: IP 52.

Bottom Cable entry.

All panel 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.

The Panel shall be painted with two coats of zink rich primer paint and two coats of colour pigmented epoxy paint.

Finished painted appearance of equipment shall present an aesthetically, pleasing appearance, free from dents and uneven surfaces.
The Sub Load Point Panel shall be specious for easy maintenance and shall be provided with following electrical items:

1) 400 Amp, 4P MCCB (Microprocessor based), 50kA: 1 No. for Incomer
2) 400 Amp, 4 P Change Over Switch
3) A set of TPN Copper bus bar for (after considering all necessary ratings) 3 phase 4wire, 50Hz.
4) (All Internal Wiring With copper Wire)

5) 250 Amp, 4P MCCB, 36 kA: 2 No. (Outgoing)
6) 125 Amp, 4P MCCB, 25 kA: 2 Nos. (Outgoing)
7) 100 Amp. 4 P MCCB: 25 kA: 2 Nos. (Outgoing)
8) Digital Multi-Function Energy Meter (Accuracy Class 0.5): 1 No.
9) 400/5 Amp CT (Class 1): 3 Nos.
10) Phase R, Y & B Indication Lamp: 3 Nos.

Technical Specification No.10

This includes supply of 4 way Double Dorr TPN DB as per following specification & make.
- No. of Ways: 4 (8 Incomer + 12 Outgoing)
Protection device type: Main incomer: Molded case circuit breaker (MCB) - 3P or 4P
Outgoing: Miniature circuit breaker (MCB) - 1P or 3P
Enclosure/Cubicle description: Double door enclosure
Enclosure material: CRCA
Colour: White (RAL 9003)
Total number of 18 mm modules: 20

Environment

- IP degree of protection IP43
- IK degree of protection IK09
Standards IS 8623-1 IS 8623-3 IEC 61439-3
Product certifications: NABL
The DB shall be fitted with Busbar, DIN Rail and neutral link. The rates shall be excluding the cost of MCB as directed by Engineer-in-Charge.

Technical Specification No. 11

This includes fixing & commissioning of supplied double door 4 Way TPN DB on wall / structure 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 tools & tackles as directed by Engineer-In-charge.

Technical Specification No. 12

a) This includes supply of DIN Rail mounted 'C' Series 6-32 Amps. X 240 Volts 50 Hz. Single Pole MCB with 10kA Breaking Capacity. The terminals of MCB shall be serrated type. The impulse withstand voltage and impulse power frequency voltage shall be 4KV (1.2/50 μs & 2KV (50Hz.).

Technical Specification No. 13

This includes supply of 100 Amp., 4 Pole RCCB as per following technical specifications.
1) Poles description: 4P
2) [In] rated current: 100 Amp.
3) Network type: AC
4) Earth-leakage sensitivity: 40 Ma
5) Earth-leakage protection time delay: Instantaneous
6) Earth-leakage protection class : Type AC
7) Network frequency: 50 Hz
8) Rated operational voltage : 380...415 V AC, 50 Hz
9) Residual current tripping technology: Voltage independent
10) Rated breaking and making capacity: Idm 1500 A, Im 1500 A
11) Rated conditional short-circuit current: 10 kA
12) Rated insulation voltage: 500 V
13) Rated impulse withstand voltage: 6 kV
14) Surge current: 250 A
15) Contact position indicator: Yes
16) Control type: Toggle
17) Mounting mode: Clip-on
18) Mounting support: DIN Rail

Environment Standards : EN/IEC 61008-1
Product certifications: ISI SNI
IP degree of protection: IP20 conforming to IEC 60529
Electromagnetic compatibility: 8/20 μs impulse withstand, 250 A conforming to EN/IEC 61008-1.

Technical Specification No. 14:

This includes supply of 100 Amp., 4 Pole TPN MCB as per following technical specifications.
1) Poles description/ Number of protected poles: 4P/4
2) Rated current: 100 Amp. At 30 C
3) Network type: AC
4) Trip unit technology: Thermal-magnetic
5) Curve code: C
6) Breaking capacity: 10000 A Icn at 230...400 V AC 50/60 Hz conforming to EN/IEC 60898-1
7) Suitability for isolation: Yes conforming to IEC 60947-2
8) Rated operational voltage : 380...415 V AC, 50 Hz/440 V 50 Hz
9) Magnetic tripping limit: 5...10 x In
10) Rated insulation voltage: 500 V AC 50 Hz conforming to EN/IEC 60947-2
11) Rated impulse withstand voltage: 6 kV conforming to EN/IEC 60947-2
12) Contact position indicator: Yes
13) Control type: Toggle
14) Mounting mode: Clip-on
15) Mounting support: DIN Rail

Environment Standards : EN/IEC 60947-2 EN/IEC 60898-1
Product certifications: EAC/ ISI SNI
IP degree of protection: IP20 conforming to IEC 60529
Pollution degree: 3 conforming to IEC 60947-2
Overvoltage category: IV
Tropicalisation: 2 conforming to IEC 60068-1

Technical Specification No. 15:

This includes fixing & commissioning of supplied 6-32 Amp SP MCB in above supplied double door DB on wall / structure. The MCB shall be fixed on DIN Rail provided in existing DB. This includes necessary 1ϕ wiring, connections, distribution & earth linking of DB with all material, labour tools & tackles as directed by Engineer-In-charge.

Technical Specification No. 16:

This includes fixing & commissioning of supplied 4 Pole 100 Amp RCCB/100 Amp TPN MCB in supplied double door DB on wall / structure. The MCB shall be fixed on DIN Rail provided in existing DB. This includes necessary 3ϕ wiring, connections, distribution & earth linking of DB with all material, labour tools & tackles as directed by Engineer-In-charge.

Technical Specification No. 17:

This includes fixing & commissioning of supplied 4 Pole MCB in supplied double door DB on wall / structure. The MCCB shall be fixed on DIN Rail provided in existing DB. This includes necessary 3ϕ wiring, connections, distribution & earth linking of DB with all material, labour tools & tackles as directed by Engineer-In-charge.

Technical Specification No. 18:

This includes supply of 50 mm (W) x 25 mm (h) heavy duty 14 SWG Perforated type Galvanized steel cable trays with cable tray covers, clamping bolts and other cable tray accessories such as coupler plates, bends, tees, reducers, vertical elbows etc.

Technical Specification No. 19:

This include fabrication & Installation of perforated type cable trays including horizontal, vertical bends, reducers, tees, cross members & other accessories as required and duly suspended from the ceiling and /or fix to steel/RCC columns, beams or any other structure members with MS suspenders, angles, channels with all required material, accessories and labors as directed by Engineer-In-charge.

Technical Specification No. 20:

This includes supply of 18 Watt Round Sleek LED Down Light having Robust Design with Pressure Die-Cast Alu. Housing, ensuring long life as per following technical specification.

1) Lumen: 2000 Lm
2) System Power : 18 Watt
3) CCT: 6500 K
4) CRI >80
5) Efficacy of >110 lm/w
6) Surge Protection: 2.5 kV
7) Input Voltage Range: 130-320 V AC
8) Beam Angle 120°
9) Optical Cover/Lens Type: Polycarbonate
10) Material : Housing: Pressure Die Cast Aluminum
Diffuser: Polycarbonate
Clip : Steel Clip (Spring)
11) Driver: Yes Included
12) Power Factor (Min): 0.95
13) Ingress Protection Code: IP 20
14) Mech. Impact Protection Code: IK02
15) Cut Out Dia. : 150 mm Maximum
16) Lamp Shaper: Round
17) Median Useful life L70B50 : 50,000 hour(s)
15) Warrantee: 2 Year

Technical Specification No. 21:

This includes fixing & commissioning of supplied 18 Watt Round Sleek LED Down Light Luminaries on existing false ceiling by making & providing necessary cutout of fitting dimensions and required supporting material, facilitate mounting in false ceilings as directed. The fitting shall be fixed rigidly nearby fitting through suitable size of screws/nut bolts/anchor fasteners and connections with 3 core flexible copper cable from nearest source of supply/ceiling rose & necessary connections with all material and labour and as directed by Engineer-In-charge.

Technical Specification No. 22:

This includes supply of 1200 mm sweep ceiling as per following technical specification

Size/Type/Performance as per IS 374 Latest		
1	Fan Size	1200 millimeter
2	Type of Fan/Type of the Motor	DC/Brushless DC (BLDC)

3	Minimum Air Delivery and service value	As per clause 8.1 of IS: 374 latest
Energy Efficiency		
1	BEE Star Rating (Central Ministries/Departments while procuring shall ensure that the items carry 5 star or higher Star Rating of BEE	5 Star
1	Air delivery at test voltage (m^3/min)	220/230
2	Power Consumption	26 Watt to 35 Watt
3	Service Value at rated voltage (m^3/min/w)	6.2 to 8.4
4	Power Factor	0.98/0.99
5	Rated Speed (rev/min)	350 to 380
6	Number of Blades	3
7	Type of Regulator	Electronic Regulator
8	Number of Running Position	5
9	Class of Insulation	Basic Insulation
Material/Construction		
1	Blade Material	Aluminium
2	Blade Thickness	1.1 millimetre
3	Total Harmonic Distortion (%)	4 to 5
4	Standard Colour	White
5	Number of Canopy	2
6	Length of Down Rod (without Shackle)	400 millimetre
7	Shank Thickness - Minimum	2 millimetre
8	Overall weight of the ceiling fan	3 to 5 Kg
Salient Features		
1	Salient Features	Resistant to abrasion, Hassle-free operations, Trendy design, Decorative Design, Remote Control
2	Compliance to governing specification (IS: 374 latest)	Finish As per clause 7.7,Marking As per clause 9
Accessories		
1	Accessories in the scope of supply	Nut, Bolt, Clamp, Remote
Warranty		
	Warranty (in year) Min	5

Technical Specification No. 23:

This includes fixing & commissioning of supplied ceiling fan with all accessories in existing hook including necessary wiring and connection from nearest point / Ceiling rose through PVC flexible copper conductor wire and earth linking etc. The rotary step cut electronic regulator shall be

fixed and screwed rigidly on switch board including wiring and connection etc. with all material and labour as directed by Engineer-in-charge.

Technical Specification No. 24:

This includes supply of 400 mm sweep wall mounting fan as per following technical specification
Sweep: 400 mm
Speed: 1300 rpm miniumum
Power Cosumption: 60 Watt Maximum
No. of Blades: 3800 M^3/Hour Minimum

Technical Specification No. 25:

This includes fixing & commissioning of supplied wall mounted fan 2.5 meter from floor or at suitable height so that breeze air can spread over the area of floor. The fan is to fixed on suitable size of anchor fastener bolts or cemented wooden gutties as directed, and connections with 3 core flexible copper cable from nearest source of supply with all material and labour and as directed by Engineer-In-charge.

Technical Specification No. 26:

This includes supply of exhaust fan of size 300 mm with capacitor start and run type motor, continuously rated, totally enclosed fitted with heavy duty grease filled double ball bearing that ensures noiseless performance and long lasting smoother life of fan suitable for single phase 220/250 Volts A.C. 50HZ. The impeller shall be used in an Exhaust Fan is of the propeller type & both hub and impeller shall be dynamically balanced, frames and arms mounted on rubber bushings, to avoid vibrations.

Technical Specification No. 27:

This includes fixing & commissioning of supplied exhaust fan as per direction of EIC on exhaust hole so that discharge of exhaust air can be done easily. However, if exhaust hole is not provided, it is to be done by contractor. The grouting of the fan is to be done by suitable size of anchor fastener bolts, and by providing metallic mesh/louvers as directed to other side so that birds can be restricted in the passage. This includes connections with 3 core flexible copper cable from nearest source of supply & necessary connections & earth linking with all material and labour and as directed by Engineer-In-Charge.

Technical Specification No. 28:

Supply at site 4C X 185 Sq.mm XLPE Insulated 1.1 KV grade, Aluminum conductor, XLPE insulated armored cable confirming to IS: 7098 (Part-I) 1988 with up to date amendments and of approved make with ISI mark. The manufacturer shall produce TYPE TEST certificate with similar size of cable, which shall not be more than 5 years old. The cable shall have marking/embossing at the interval of every meter showing its progressive length. During the cable inspection, the manufacturer shall show the relevant ROUTINE TESTS to inspecting authority or otherwise the manufacturer shall produce the routine test certificate during supply of cable at site.

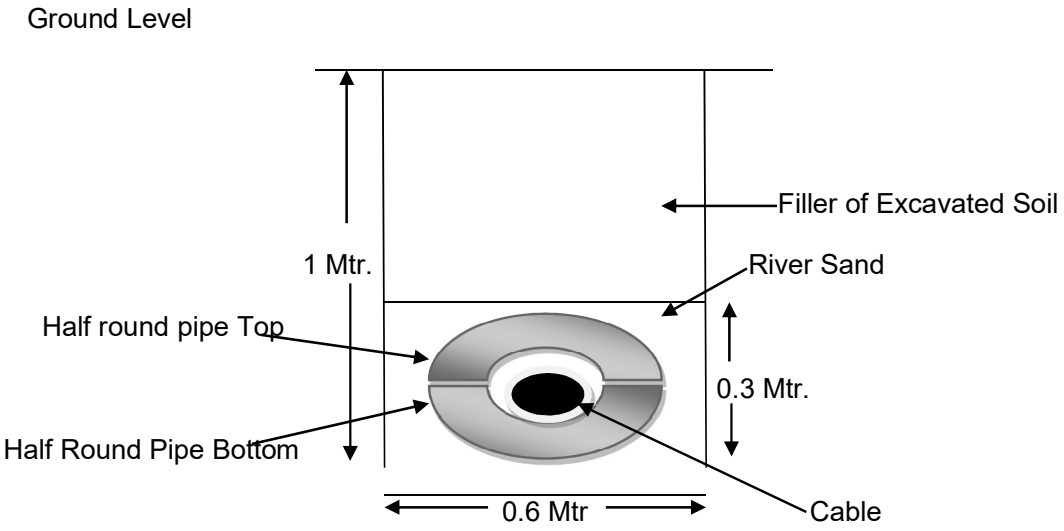
Technical Specification No. 29:

This includes laying of cable up to 4 C x 185 to 300 Sq.mm LT armored aluminum Conductor XLPE Cable of 1.1KV Grade (excluding supply of cable) through excavation of trench 0.6 meter wide and 1 meter deep in soft/hard soil. The cable should be placed inside heavy duty RCC Half Round Pipe of 6' to 8" inner Dia (Depend on Size of Cable) and 1 Meter length and such RCC Half

Round Pipes must be placed in such a fashion so as to provide support under the cable with one half and covering over the cable with the other half.

The bed of 50mm of river sand shall be provided in the bottom of the excavated trench. The RCC Pipe shall be laid over the bed of river sand. This includes filling of gaps by fresh river sand and filling the trench upto at least 300mm height from bottom by fresh river sand. The remaining filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the site of work and spread in low lying areas as directed by Engineer in Charge or his nominee. The contractor shall provide heat shrinkable straight through joints of relevant size of approved make if the laying of cable shall be more than standard drum length. This includes all labour and material as directed by Engineer-in-Charge. Such cable joints shall be under the scope of work of the contractor at no extra cost or obligation from DPA. Such cable joining work is completely to be done by the contractor at his own cost.

The below figure indicates the expected arrangement of laying of cables:



<u>Technical Specification No. 30</u>:

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.

<u>Technical Specification No. 31</u>:

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. 32:

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. 33:

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

SR.NO.	DESCRIPTION	SPECIFICATION
1	Input Power of High Bay fitting	150 Watt
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	5 Years from the date of successful commissioning. 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. The contractor shall have final & total single point responsibility for performance of the LED light fittings supplied.
15	Construction	The housing should be of single piece non-corrosive powder coated pressure die-cast alluminium 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	The Drivers should be a potted driver not a printed circuit board without casing, mounted inside the luminaire. The Driver shall be of constant current type and shall have Over voltage, Over current, Over temperature & Short circuit Protection. The driver efficiency shall be more than 85%. List of make of Driver: PHILLIPS Xitanium/ MEANWELL/ OSRAM/ BAG/ SOSEN/ INVENTRONICS. 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).
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	(1) Type test reports for LED fittings & LED Driver. (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. (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. (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). (5) The LEDs shall comply with photo biological safety norms as per IEC 62471/EN 62471/IS:16108 under Risk Group 1 (Low Risk). (6) BIS Certificate for LED Driver. (7) BIS Certificate for LED Luminaire. 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.

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/ WIPRO/ Pyrotech/ Surya/ Nessa/ Panasonic/ Havells/ Halonix/ Orient Electric/ WMEL.

Technical Specification No. 34:

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. 35:

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. 36:

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. 37:

(a) **Supply:** This includes supply at site 4ft LED tube light fixture of 20-22 Watt. The tube light shall be operating on single phase 230 V, 50 Hz supply. It shall be with white light and shall be have the facility of clamping the tube rod on fixed clip (on the wall) The LED rod shall be fluctuation proof and shall provide with in-built driver.

(b) **Fixing:** This includes fixing and commissioning of supplied 4ft LED 20-22 Watt tube light fixture on wall/ceiling at suitable height on cemented wooden gutties as directed and connection with 3 core flexible copper cable from nearest source of supply/ceiling rose & necessary connection with all material and labour as directed by Engineer-in-Charge.

Technical Specification No. 38:

This includes preparation of earth station with chemical treated back filled compound 50 mm dia. Pipe In Pipe GI Type 2 Mtr Depth , Maintenance free including all accessories & Masonry work Enclosure with cover plate.
A cement concrete (ratio 1:4:8) chamber of at least 30 Cm. x 30 Cm. shall be provided just below the surface of ground over the funnel for watering and having RCC/CI cover of suitable size as directed. This also includes removal of extra-excavated earth from the site. The work shall be carried out to entire satisfaction of Engineer-in-charge. This work includes all labour and material as directed by Engineer-in-Charge. The works also include earthing value marking & painting on earth strips & earthing station by suitable paints (Green Color on Strips) and also mentioned the earth value on earth pits.

Technical Specification No. 39:

The works include providing & fixing the 12 SWG GI wire, from earth station to equipment / Main DB or as per site requirement by providing & fixing suitable Dia Medium duty PVC conduit pipe in concealed/surface manner. The complete work consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge

Technical Specification No. 40:

This includes supply, Laying & connecting of 25 x 3 GI Strip, from DB/Meter /Switch to earth station. The complete work consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

Note: 1) Any ancillary work arises during the execution of work, which is required to complete the work, the Contractor shall complete the item/items by carrying out such ancillary work without any extra payment.

2) The work shall be carried out with entire satisfaction of Engineer-in-Charge.

Signature & Seal of Contractor

Executive Engineer (E)
Deendayal Port Authority

SPECIAL CONDITIONS FOR ELECTRICAL PART IN CIVIL WORK

1. In the event of dimension figures upon a drawing differing from those obtained by measuring drawings shall be referred to the Chief Engineer, whose decision shall be final and binding upon the Contractor.
2. The contractor shall have valid Electrical Contractor license issued by IMP Department, Govt. of Gujarat for carrying out electrical part of work.
3. For successfully Execute the work, the firm shall depute or nominate their Engineer or project-In-Charge or competent person, who deal the Electrical Part of the project to Engineer-In-Charge.

4. While carrying out the work of electrical nature, the Contractor shall adhere to the provisions of the Indian Electricity Rules, 1956 and as amended from time to time and shall not violate any regulations which he will be solely responsible.

5. The work shall be programmed in such a way that the electric supply to the existing installations is not disturbed to the extent possible keeping in view of the work of cutting existing cables, making straight joints and terminating cable ends in the feeder pillar, switchgear etc. shall be carried out within the shortest possible shut down periods to instruction.

6. The cable to be supplied by the Contractor shall be in standard drum length and straight joint shall be avoided as far as possible. Incase same cannot be avoided the Contractor shall supply the requisite number of straight joints complete with jointing materials and accessories shall carry out the jointing work at their cost.

7. Caution board vitreous enameled written in three languages, one being the regional language, shall be fixed or displayed to indicate danger and supply pressure according to the Indian Electricity Rules 1956 wherever the supply is at 440 Volts and above.

8. Necessary cable route indicators and cable joint indicators shall provide at an interval of 50 Meters approximately.

9. The work shall be carried out in accordance with the best standards of workmanship and to the entire satisfaction of the Engineer-in-Charge.
10. The electrical installation shall conform to all latest applicable IS standard.

11. Necessary earthing of wiring, Load Panel, etc. set will be carried as per the IE rule & Act.
12. The Tenderers shall quote the rate for cable lying, which shall include the, cable tagging, dressing, end termination, appropriate size of glands & ferrule work as per requirement etc.
13. 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

14. Necessary civil foundation work shall be carried out by the contractor before installation of Load point panel. The bottom of the shall be installed at minimum 600 mm height above the

ground level. Also necessary provision for cable gland and other required material shall be arranged by the contractor during the cable termination without any additional charges to DPA.

15. Queries about the Technical Data

The Engineer-in-Charge will clarify queries on the Technical Data.

16. Instructions

The contractor shall follow all instructions of the Engineer in Charge or his nominee which comply with applicable laws where the site is located.

17. Safety

The Contractor shall be responsible for the safety of all activities on the Site.

18. Quality Control

Identification of Defects

The Engineer-in-Charge or his nominee shall check the work carried out by Contractor and notify the Defects found if any. The Engineer-in-Charge or his nominee may instruct the Contractor to rectify the Defect.

Approvals:

The Engineer-in-Charge shall give specific approval in writing within 7 Days to Contractor after written submission regarding Makes of Material to be used for the Contract and Drawings, if any to be furnished by the Contractor to Engineer-in-Charge for approval. Any corrections to be suggested by Engineer-in-Charge in drawings, the days taken for rectification in drawings shall be in account of the Contractor.

19. Payments Terms:

All payments shall be made in Indian rupees unless specifically mentioned.

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 & acceptance of the same by DPA .

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. and after inspection & certification of the same by DPA .

iii) 10% will be released after successful completion of whole work and handing over to DPA.

20. The payments toward laying of cables, Sub Circuit wiring/Point wiring, installation of Load Point Panel/DBs, LED Street Light will be released only after successfully Testing, Commissioning/Charging.

21. For Erection of Load point Panel necessary civil work shall be carry out by the contractor as per direction of Engineer In charge or his nominee.

22. In case of manufacturer/ Authorized dealer/ civil contractor who do not have valid electrical contractor license, they have to provide, their employee having electrical supervisory certificate while carrying out electrical works or The whole electric work carried out by the Sub Contractor should have electric license & having experience of the work carried out in Government / PSU or any industries, in this case firm shall take prior approval from Chief Mechanical Engineer, Deendayal Port Trust

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

24. 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.

25. For the purpose of measurements, the method prescribed in standard code of measurements of the concern work shall be applicable.

26. 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 et will have to be made by him.

27. 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

Approved Make List of 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/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
6	LT XLPE CABLES	POLYCAB/TORRENT/RPG ASIAN/ RALLISON/PRIMECAB/ HAVELLS/ UNISTAR/AVOCAB/ALLCAB/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	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 /Nessa having surge Protection ≥10KV for fittings & internal Surge protection for Driver of≥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	EXHUAST 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 EYLAND/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

Signature & Seal
of Contractor

Executive Engineer (E)
Deendayal Port Authority