



DEENDAYAL PORT AUTHORITY

ISO 9001:2008 | ISO 14001 | ISPS Compliant Port



Office of Executive Engineer (Electrical), Ground
Floor, Nirman Building, New Kandla, Kutch,

Pin Code 370210.

No.: EL/AC/EOI/A type Qtr./

Date: 19/12/2024

EXPRESSION OF INTEREST [EOI]

“Construction of new ‘A’ type Quarters in Gopalpuri – Electrical Part”

(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 new ‘A’ type Quarters in Gopalpuri – Electrical Part” 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 Technical Specifications & Approved Make List 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 26/12/2024. A soft copy of EOI is also acceptable through e-mail Id xenedpa@gmail.com & deepak.hazra@deendayalport.gov.in

Sd/-

Executive Engineer (E)
Deendayal Port Authority

ELECTRICAL DIVISION

Name of Work: Construction of New 'A' type Quarters in Gopalpuri - Electrical Part

Schedule-B

S/N	Description	Qty	Unit	Rate	Amount
1	Providing and fixing concealed wiring for modular light /tube /bell/exhaust fan point with PVC insulated single core standard copper conductor wire, as per the Tech. Spec. No:-01	440.00	NOS		
2	Providing & fixing following concealed wiring for single phase sub-circuit from the main switch /meter/DBs /MCBs to the switch board as per the Tech. Spec. No:-02				
(a)	with 3 X 2.5 sq.mm. copper conductor (single phase, neutral & earth)	1500.00	Mtr.		
(b)	3 X 4 sq.mm. copper conductor (single phase, neutral & earth neutral)	800.00	Mtr.		
3	Providing and fixing concealed wiring for modular FAN point with PVC insulated single core stranded copper conductor wire as per Tech. Spec. No:-03	44.00	NOS		
4	Providing and fixing 40 watt or above 2X2 feet LED light complete with labour and material and as per the technical specification no. 4	60.00	Nos.		
5	Providing and fixing 5 pin 5/6 A X 220 Volt modular full/half plug point as per Tech. Spec. No:-05				
(a)	Full Plug Point	40.00	Nos.		
(b)	Hall Plug Point	172.00	Nos.		
6	Providing and fixing concealed wiring for 20 A X 220 Volt Modular Power point as per Tech. Spec. No:-06	88.00	NOS		
7	Providing and fixing concealed wiring for modular AC point 25 A X 220 V with individual modular switch as per the tech. spec. no. 7	24.00	Nos.		
7 (i)	Supply and fixing of 2 modular 22-25 Amp. 2 module modular switch as per the technical specification no. 7 (i)	4.00	Nos.		
8	Supply at site following type of decorative ceiling fan with all accessories , as per Approved Make list as per the Tech. Spec. No:- 8 a) 1200 mm sweep ceiling fan with electronics regulator.	44.00	NOS		
9	Fixing of following type of decorative ceiling fan with all accessories as per the Tech. Spec. No:-9 a) 1200mm sweep ceiling fan with electronics regulator.	44.00	NOS		
10	Supply and fixing of 20 Watt Gate light fixture with all accessories as per the technical specification no. 10.	16.00	Nos.		

S/N	Description	Qty	Unit	Rate	Amount
11	Supply & fixing of bollard light of 9 watt with 1 Mtr. GI Pipe and flanges (Flourish/Philips/Syska make or its equivalent) as per the technical specification no. 11.	84.00	Nos.		
12	Supply & fixing of gardens spike light of 6 to 12 Watt 230 V, 50 Hz AC as per the technical specification no. 12.	120.00	Nos.		
13	Supply & fixing of Rope lights as per site requirement colours and as per the technical specification no. 13	600.00	Mtrs.		
14	Supply & fixing of LED Foot light 3 W as per the technical specification no. 14	120.00	Nos.		
15	Supply of Recessed downlight for false ceiling with all material and accessories as per Tech. Spec. No:-15. a)19 Watt LED Recessed Down light for false ceiling.	168.00	Nos.		
16	Fixing of supplied Recessed downlight for false ceiling with all material, labour and accessories. as per Tech. Spec. No:-16 a)19 Watt LED Recessed Downlight for false ceiling	168.00	Nos.		
17	Supply & installation of following type distribution board complete with nos TP, DP,SP MCCB's & ELCB , TPN DB, IP42 degree of protection The DB shall be made from special grade of CRCA sheet and powder coated. The DB shall be fitted with Bus bar, DIN Rail and neutral link as per Tech. Spec. No:- 17.				
(a)	16 Way Double Door Distribution Box with providing, 01 No. MCB 63 amp. TPN, 02 Nos. 32 Amps DP, 10 nos. SP up to 6-10 amps, 01 Nos. ELCB.	4.00	Nos.		
18	Supply and Preparation earthing station, chemical treated back filled compound earthing system with Pipe-In-Pipe 30-40 mm Dia GI type 3 Mtr Depth, Maintenance free as per Tech. Spec. No. 18.	8.00	Nos.		
19	Providing & connecting following type earth flat for earth station to equipments as per requirement as per Tech. Spec. No:-19.				
	a) 8 SWG GI earthing wire	200.00	Mtrs.		
	b) 25X6 Hot Dip GI Strips.	80.00	Mtrs.		
20	Supply at site 4 Core, LT armoured aluminium conductor XLPE cable of 1.1KV grade of the following type & size as per Tech. Spec. No:- 20				
(a)	4 Core, 35 sq.mm.	400.00	Mtrs.		
(b)	4 Core, 50 Sq.mm	400.00	Mtrs.		

S/N	Description	Qty	Unit	Rate	Amount
21	Laying of cable at site, through various route up to 50 sq.mm, LT armoured aluminium conductor XLPE cable of 1.1KV grade of the following type & size as per Tech. Spec. No:-21 (a), (b) & (c).				
a)	Hard/soft soil by providing & putting Brick & Sand, by excavating the 800 Mtr Depth, 600 mm width, after laid cable redone the surface area	400.00	Mtrs.		
b)	Through RCC/CC/Paver by Cutting/Breaking by putting suitable diameter HPDE / DWC Pipe, after laid cable redone the surface area.	200.00	Mtrs.		
c)	Cable laid, by providing & erection Box type FRP Tray 150 mm width.	200.00	Mtrs.		
22	Providing and fixing concealed wiring for 4 x 5/6A X250 Volt modular plug point with 4 Nos. SP switches for computer as per the Technical Specification No. 22.	12.00	Nos.		
23	Supply, Installation, Testing & Commissioning of concealed/surface wiring as per site situation for inverter connecting all the main rooms light & fans, complete with labour and material and as per the technical specification no. 23.	4.00	Nos.		
24	Supply, Installation, Testing & Commissioning of 10 KVA 3 phase inverter including heavy duty tubular type batteries with 10 hours back up. As per the technical specification no. 24.	6.00	No.		
25	Supply, Installation, Testing & Commissioning of 500 litre solar water heater including its inlet connections and outlet connections upto bathroom, kitchen, toilet, etc. as per the technical specification no. 25	12.00	No.		
26	Supply, Installation, Testing and Commissioning of 5 litre storage type Geyser with 5 star rating as per the technical specification no. 26.	4.00	Nos.		
27	Supply at site 200 ±5% Watt LED Flood Light fitting as per the Technical Specification No. 27	16.00	Nos.		
28	Fixing of 200 ±5% Watt LED Flood Light fitting as per the technical specification no. 28.	16.00	Nos.		
				Total Amount: Rs.	

(In Words _____)

(NOTE: The rates should be inclusive of all taxes, duties, fees, cess etc and all incidental charges; but exclusive of Goods & Service Tax).

Sd/-

Seal & Signature
of Contractor

Executive Engineer (E)
Deendayal Port Authority

Technical specification

(1) **Technical Specification for Item No. {1} :**

The item includes providing & fixing **concealed wiring for Modular light/tube/exhaust fan/bell point** from switchboard with Flame Retardant FRLS, 1100 Voltage grade, single core stranded copper conductor wire with IS: 694/1990 of size 1.5 sq. mm. for phase (red colour) & neutral wire (black colour) and 1.5 Sq.mm continuous stranded copper conductor (green 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. After laying of pipe the groove 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 Modular switch 6A x 220V with spark shield ISI mark and to meet specifications of IS & 2-way connector at the end side. 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.

(2) **Technical Specification for Item No. {2} :**

The item includes providing & fixing concealed wiring for single phase/three phase sub-circuit from the main switch /meter /DBs / MCBs to the switchboard with Flame Retardant, FRLS 1100 Voltage grade, single core stranded copper conductor wire of size 2.5 / 4.0 / 6.0 sq. mm. as desired by EIC 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 groove shall be prepared

by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared groove and after laying of pipe the groove 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.

(3) Technical Specification for Item No. {3} :

The item includes providing & fixing concealed 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 groove shall be prepared by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared groove and after laying of pipe the groove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. The work consists providing & fixing of one modular SP switch 6A x 220 V 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.

(4) Technical Specification for Item No. {4} :

Supply at site slim compact 40-watt ceiling mounted 2X2 feet LED light, 4000 k edge lit down lighter having housing of aluminium channel & aluminum sheet back cover with white powder coated after phosphochromate treatment or Extruded aluminium frame easy detachable clips & separate drivers for easy installation along with milky or polycarbonate diffuser in opal finish for glare free light distribution. The LED of the luminary should be low heat generating mid power LED of latest generation SMD technology, built by high heat diffusivity MPCB as per technical description given below. The luminary should be short circuit and surge protection and should be provided with suitable connecting terminal for electrical connection. The rate shall be firm and inclusive of all taxes, excise duty, octroi, packing and forwarding, insurance, loading at supplier's depot, transportation and unloading at site of work.

Technical Requirement for slim compact 40 watt LED.

Sr no	PARAMETER	VALUE
1	Input Voltage	100-250V However, condition for voltage fluctuation should be considered and the system should be robust enough to withstand such variation in supply source.
2	Total Harmonics Distortion	Should be less than 15%
3	Lamp efficiency	$\geq 70/w$
4	Power consumption	Minimum 40 W
5	Power Factor	≥ 0.90
6	Life Expectancy	About 50,000 burning hours at a ambient temp 45degree centigrade de
7	LED Driver	Constant Voltage and current
8	Control Circuit	Compatible to LED
9	Input Frequency	50+/-1Hz
10	Colour Rendering Index	Minimum CRI of 70

11	Colour Temperature	Minimum 4000K
12	Make LED	CREE / PHILIPS LUMILED / NICHIA / OSRAM / SEOUL SEMICONDUCTOR / EPISTAR
13	Input Protection requirement.	Over current, Over Voltage.
14	Certification preferred/ essential	CE/ROHS/ERTL /UL & ERDI

This includes fixing & commissioning of supplied 40W LED LIGHT 4000 K ceiling mounted fixture complete with batten or clip on false ceiling/ceiling at suitable height on cemented wooden gutties as directed, 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.

(5) Technical Specification for Item No. {5} :

(a) Full Point:

The item includes providing & fixing concealed wiring for Modular plug point 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 conduit pipe shall be laid during reinforcement work and after laying of pipe the groove 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 220 V with spark shield with ISI mark and 2 Module Modular 2 in 1 socket 6A x 220V with shutter 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 switch & Socket shall be fixed on modular plate of 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.

(b) Half Point:

The item includes providing & fixing half Modular point in switch board with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 1.5 sq. mm. for phase, neutral & earth. The work consists providing & fixing of one module SP switch 6A x 220V with spark shield with ISI mark and 2 Module Modular 2 in 1 socket 6A x 220V 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.

(6) Technical Specification for Item No. {6} :

The item includes providing & fixing concealed wiring for Modular Power point with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire 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 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 groove shall be prepared by contractor on wall/ceiling as case may be & the pipes shall be laid during reinforcement work. After laying of pipe the groove 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 20 A x 220V socket with shutter with ISI mark, 1 module SP switch 20 A x 220V

with spark shield with ISI mark & 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.

(7) Technical Specification for Item No. {7} :

This includes providing & fixing concealed wiring for A.C point with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire 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 groove shall be prepared and the conduit pipe 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 & 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 2 Nos 2 modular boxes. One box to be fixed on top of dealing for socket and one box to be fixed at 1.5 meter height with switch. 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.

(7.1) Technical Specification for Item No. {7.1} :

2 Modular switches to be fitted on the outside of the room to control the lighting circuit 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.

(8) Technical Specification for Item No. {8} :

This includes supply of 1200 mm sweep decorative ceiling fan (5 star) fitted with heavy duty grease filled double ball bearing that ensures noiseless performance and long lasting smoother life of fan suitable up to 220 V AC supply. The Fan blades aerodynamically balanced to ensure maximum air delivery at lower power consumption & the blades shall be made of 'heavy gauge' aluminum sheet so as to retain the blade's angel over a longer period. The Fan motor made of superior grade copper wire and impregnated in special varnish for long life operation. The motor shall be totally enclosed and low-loss-silicon steel stampings ensure minimum power consumption with high optimum output. The Fan coated with a special anticorrosive enamel paint that makes them rust free and ensures a classic appearance and longer life. The supplied fan conforming to ISI specifications. The fan shall be supplied all accessories such as down rod 30/60/120cm long, PVC Bobbin, Stainless Steel Nut Bolt with cotter pin, capacitor etc. of approved make and as per IS specification as directed by Engineer-in-charge.

(9) Technical Specification for Item No. {9} :

This includes fixing & commissioning of supplied ceiling fan with all accessories in existing hook or by fixing of heavy duty round base hook of with pull out load 75 Kg & Jurk /vibration Load 40 Kg. This also including necessary wiring and connection from nearest point / Ceiling rose through PVC flexible copper conductor wire and earth linking etc. with all material and labour as directed by Engineer-in-charge.

(10) Technical Specification for Item No. {10} :

This items includes supply and fixing of 20 watt LED gate light complete with all accessories/fixtures with operating on 180 to 220 V single phase 50 HZ supply. The model will be decided by EIC before procurement.

(11) Technical Specification for Item No. {11} :

This items includes supply and fixing of 9 watt bollard light with 1 Mtr. GI Pipe and flanges complete with all accessories/fixtures with operating on 180-220 V single phase 50 HZ supply. The model will be decided by EIC before procurement.

(12) Technical Specification for Item No. {12} :

This items includes supply and fixing of spike light of 6 to 12 watt complete with all accessories/fixtures with operating on 180-220 V single phase 50 HZ supply. The model will be decided by EIC before procurement.

(13) Technical Specification for Item No. {13} :

This items includes supply and fixing of rope lights as per site requirement complete with all accessories/fixtures. The colour will be decided by EIC before procurement.

(14) Technical Specification for Item No. {14} :

This items includes supply and fixing of LED foot light 3 W complete with all accessories/fixture. The model will be decided by EIC before procurement.

(15) Technical Specification for Item No. {15} :

Supply of 19 Watt LED Recessed Down light for false ceiling Supply at site Round shaped, having housing of powder coated white PDC aluminium or powder coated die cast aluminium, easy detachable clips & separate drivers for easy installation. The LED of the luminary should be low heat generating mid power LED of latest generation SMD technology, built by high heat diffusivity MPCB as per technical description given below as per make approved. The luminary should be short circuit and surge protection and should be provided with suitable connecting terminal for electrical connection. The rate shall be firm and inclusive of all taxes, excise duty, octroi, packing and forwarding, insurance, loading at supplier's depot, transportation and unloading at site of work.

Technical Requirement for 19 Watt LED Round recess mounted down lighter

S/N	PARAMETER	VALUE
1	Input Voltage	100-250V However, condition for voltage fluctuation should be considered and the system should be robust enough to withstand such variation in supply source.
2	Total Harmonics Distortion	Should be less than 15%
3	Lamp efficiency	$\geq 70/w$
4	Power consumption	Minimum 19 W
5	Power Factor	≥ 0.90
6	Life Expectancy	About 50,000 burning hours at a ambient temp 45degree centigrade
7	LED Driver	Constant Voltage and current

8	Control Circuit	Compatible to LED
9	Input Frequency	50+/-1Hz
10	Colour Rendering Index	Minimum CRI of 70
11	Colour Temperature	Minimum 4000K
12	Make LED	CREE / PHILIPS LUMILED / NICHIA / OSRAM /SEOUL SEMICONDUCTOR /EPISTAR
13	Input Protection requirement	Over current, Over Voltage.
14	Certification preferred/ essential	CE/ROHS/ERTL /UL & ERDI

(16) Technical Specification for Item No. {16} :

Fixing of supplied 19 Watt LED Recessed down light round shaped for false ceiling with all material & accessories commercial Luminaries on existing false ceiling or new false ceiling by making & providing necessary cutout of fitting dimensions and supporting material like M.S. rods etc. as directed, 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

(17) Technical Specification for Item No. {17} :

Supply & installation of following type distribution board complete with TP, DP, SP, MCCB's & ELCB , TPN DB, IP42 degree of protection The DB shall be made from special grade of CRCA sheet and powder coated. The DB shall be fitted with Bus bar, DIN Rail and neutral link. The rates shall be excluding the cost of MCB as directed by Engineer-in-charge.

a) 16 Way Double Door Distribution Box with providing, 01 Nos MCB 63 amp, TPN 02 Nos., 32 Amps DP 10 nos., SP up to 6-10 amps 12 nos, 01 Nos. ELCB.

This includes fixing & commissioning of supplied double door TPN DB on wall / structure as directed. The DB shall be fixed rigidly on wall through suitable size of nut bolt / anchor fastener / cemented wooden gutties as directed. This includes necessary wiring, connections, and earth linking with all material, labour tools & tackles as directed by Engineer-In-Charge.

This includes supply of DIN Rail mounted 'C' Series 63 Amps. X 415 Volts 50 Hz. Triple Pole Neutral (TPN) MCB with 10KA Breaking Capacity. The supply MCB shall be conform to IS:8828:1996, IEC:60898-1:1995. The terminals of MCB shall be serrated type. The impulse withstand voltage and impulse power frequency voltage shall be 4KV (1.2/50 μ s & 2KV (50Hz). The hosing shall be made from Polybutylene Teraphtalate and the degree of protection IP20.

This includes supply of DIN Rail mounted 'C' Series 6-32 Amps. X 240 Volts 50 Hz. Double Pole Neutral MCB with 10KA Breaking Capacity. The supply MCB shall be conform to IS:8828:1996, IEC:60898-1:1995. The terminals of MCB shall be serrated type. The impulse withstand voltage and impulse power frequency voltage shall be 4KV (1.2/50 μ s & 2KV (50Hz). The hosing shall be made from Polybutylene Teraphtalate and the degree of protection IP20.

(18) Technical Specification for Item No. {18} :

This includes Supply and preparation of earth station with chemical treated back filled compound Corrosion protection by hot dip 30-40 mm dia Pipe-in-Pipe GI Type 3 Mtr Depth, Maintenance free including all accessories & Masonry work Enclosure with cover plate.

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.

(19) Technical Specification for Item No. {19} :

The works include providing & fixing the following size earth strip and wire from earth station to equipment / Main DB or as per requirement. 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.

- a) 8 SWG Hot DIP GI wire,
- b) 25X 6 Hot DIP GI strips, having minimum 80 Micron galvanized coating.

(20) Technical Specification for Item No. {20} :

Supply at site 4 Core, LT armoured aluminium conductor XLPE cable of 1.1KV grade of the following type & size

- a) 4 Core, 35 Sq.mm
 - b) 4 Core, 50 Sq.mm
- a) This includes supply at site 1.1 KV grade, 4 Core, 35 Sq. mm Aluminum conductor, XLPE insulated armoured cable confirming to IS : 7098 (Part-I) 1985 with up to date amendments and of approved make with ISI mark. The cable shall have marking/embossing at the interval of every meter showing its progressive length. The contractor shall produce the routine test certificate during supply of cable at site. The rate shall inclusive of all taxes, duties, packing, forwarding, insurance, transportation and unloading at site of work etc.

- b) This includes supply at site 1.1 KV grade, 4 Core, 50 Sq. mm Aluminum conductor, XLPE insulated armoured cable conforming to IS : 7098 (Part-I) 1985 with up to date amendments and of approved make with ISI mark. The cable shall have marking/embossing at the interval of every meter showing its progressive length. The contractor shall produce the routine test certificate during supply of cable at site. The rate shall inclusive of all taxes, duties, packing, forwarding, insurance, transportation and unloading at site of work etc.

(21) Technical Specification for Item No. {21} :

Laying of single length of cable at site, through various route up to 50 sq.mm , LT armoured aluminium conductor XLPE cable of 1.1KV grade of the following type & size.

a) In Hard / soft Soil

The cable shall be laid through excavation in soft/hard soil. The trench to be excavated 0.6 Mtr. Wide and 0.8 Mtr. deep. The bed of 50mm of river sand shall be provided in the bottom of the excavated trench. The cable shall be laid over the bed of river sand. This includes providing & laying of Bricks and sand i.e. parallel to the cable and the gaps shall be filled by fresh river sand. The cable shall be covered by keeping half round heavy duty RCC NP 2 Pipe. The filling of the trench shall be done with by provided Sand cover (at least 50mm from cable surface) completely & followed by 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 spreaded in low laying area as directed. The contractor shall provide heat shrinkable straight through joint 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.

b). In RCC /CC/ paver block / interlocking block

Cable shall be laid Through RCC/CC and Payvot/interlocking block by cutting /Breaking and removing by through suitable tools & plants, after that trench 600mm depth & 300 mm width trench shall be prepare, and by providing & laying HDPE/DWC pipe. Cable shall be laid through suitable diameter HPDE / DWC Pipe, after laid cable redone the surface area as per its original positions. This includes all labour and material as directed by Engineer-in-Charge.

c) In box type FRP tray 150mm Width

This providing and fixing of 150 mm FRP Perforated cable tray (thickness 2 mm or above) on wall, structure with suitable support / clamp, hardwares, nut bolt, coupler plate, tee, bend, elbow and other require tools & tackles with erection of site requirement as directed by Electrical-In-Charge. Wall and ceiling area cable tray laid maintain proper level to the end. The rate shall be firm and inclusive of all taxes, excise duty, octroi, packing and forwarding, insurance, loading at supplier's depot, transportation and unloading at site of work. All materials and labour as directed by Engineer-in-charge.

(22) Technical Specification for Item No. {22} :

The item includes providing & fixing concealed wiring for Modular plug point for computers (With 2 module, 4nos. 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 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 grew shall be prepared by contractor on wall/ceiling as case may be & the

conduit pipe shall be laid through prepared grew and incase of 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 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 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.

(23) Technical Specification for Item No. {23}

This includes Supply, Installation, Testing & Commissioning of concealed wiring as per site situation for 3 phase inverter of 10 KVA provision and same shall be run for tube light and fans only of all the rooms with 1.5 sq.mm. copper conductor wire in grey colour for ease of identification in the wiring. The above work also includes providing switch socket at its main switch board so that the occupant can installed their inverter with batteries easily near the main board with all safety norms and with labour and material.

(24) Technical Specification for Item No. {24}

Supply, Installation, Testing & Commissioning of 10 KVA, 3 phase inverter including heavy duty tubular type batteries with 10 hours back up which include complete labour and material. The inverter shall be DSP controlled: IGBT based System and charger blocks.

(25) Technical Specification for Item No. {25}

Supply, Installation, Testing & Commissioning of 500 litre solar water heater including its inlet connections and outlet connections with 50 mm heavy duty C-PVC pipe of suitable size and accessories upto bathroom, kitchen, toilet, etc. with labour and material.

(26) Technical Specification for Item No. {26}

Supply, Installation, Testing & Commissioning of 5 litre storage type Geyser (5 star rating), which will operate on 230 V 50 Hz. AC supply.

(27) Technical Specification for Item No. {27}

The contractor shall supply at site 200 \pm 5% Watt energy efficient LED Flood Light fitting. The Technical Specification of 200 \pm 5% Watt LED Flood Light fitting is as below:

SN	DESCRIPTION	SPECIFICATION
1	Input Power	200 \pm 5% 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	Suitable for wall mounting with bracket. The thickness of bracket of fitting shall be minimum 4mm with 360 degree rotatable.
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	Efficacy	\geq 110 Lumen/Watt
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 & total single point responsibility for performance of the LED light fittings supplied.</p>
15	Construction	<p>The housing should be of non-corrosive powder coated pressure die-cast aluminium frame with heat resistant toughened clear glass fixed with SS screw.</p> <p>The LED flood light fitting shall not be of modular type.</p> <p>The LED Flood Light shall have its make embossed/engraved on the Fitting.</p>
16	Surge Protection	<p>The Luminaire should have a 10kV SPD duly bolted inside the Luminaire. 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.</p>
17	Electrical Protection	<p>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.</p>
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 & 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	LED Flood Light fitting: Asymmetric wide or Wide beam Angle
23	Material of optics	<p>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.</p> <p>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.</p>
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>Type test reports for LED fittings & LED Driver.</p> <p>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>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>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>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>BIS Certificate for LED Driver.</p> <p>BIS Certificate for LED Luminaire.</p> <p>Contractor shall submit all the above certificate/report including BIS certificate at the time of supply of fittings.</p>
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The rate shall be inclusive of all taxes (excluding GST), insurance, transportation, unloading at site as directed by Engineer in charge.

(28) Technical Specification for Item No. {28}

This item includes fixing of supplied 200 ±5% Watt LED Flood Light fitting on rooftop/wall/structure of the Bungalows at the locations as directed. The mounting of the fitting shall be done with the fasteners as per the details given in instruction sheet of the fitting and as directed by Engineer in Charge. This includes necessary wiring & connections by providing 3 core, 1.5 Sq.mm flexible copper cable from the junction

box to luminaire & necessary earth linking connections with all material, labour, tools & tackles as directed by Engineer in Charge.

Note :- All the materials shall be as per approved make list of DPA but before procurement approval from the Engineer Incharge shall be obtained. However, wherever the items are not available in the approved make list then the approval of the same shall be obtained from the Engineer-in-Charge.

Seal & Signature of
Contractor



Executive Engineer (Elect.)
Deendayal Port Authority

Approved Make List for Electrical Items

Sr. No.	Description	Recommended Makes
1	HT VCB	SIEMENS / CROMPTON GREAVES/ABB/Schneider
1(a)	HV Gas Insulated Breakers	SIEMENS /Schneider/ABB
2	POWER TRANSFORMERS	VOLTAMP/CROMPTON GREAVES /BHARAT BIJLEE/ BHEL/ SIEMENS/ ABB/ Schneider/T&R
3	DISTRIBUTION TRANSFORMERS	EMCO/KIRLOSKAR/PATSON/VOLTAMP/ ABB / Schneider / T&R
4	RESIN CAST TRANSFORMERS	
	A) RESIN CAST IMPREGNATED	VOLTAMP / KIRLOSKAR / EMCO
	B) DRY CAST	VOLTAMP/KIRLOSKAR/EMCO
5	HT XLPE CABLES	POLYCAB/TORRENT/RPG ASIAN/ /GLOSTER/ UNISTAR/ UNISTAR/KEI/FINOLEX/HAVELS
6	LT XLPE CABLES	POLYCAB/TORRENT/RPG ASIAN/ / RALLISON/PRIMECAB/ HAVELLS/ UNISTAR/AVOCAB / ADCAB
7	LT ACB	SIEMENS/L&T/SCHNEIDER/C&S
8	PROTECTION RELAYS	AREVA/L&T/SIEMENS/ABB/C&S
9	LT PANEL	CPRI APPROVED
10	CHANGE OVER SWITCH	SIEMENS/L&T/ABB/C&S/SCHNIDER/ LEGRAND / INDOASIAN
11	SFU FOR MAIN LT DISTRIBUTION PANELS	SIEMENS/L&T/ABB/C&S
12	SFU FOR DISTRIBUTION PANELS & FEEDER PILLERS	SIEMENS/L&T/ABB/C&S/ SCHNEIDER/ LEGRAND/ INDOASIAN/HAVELLS
13	MCCB FOR MAIN LT DISTRIBUTION PANELS	SIEMENS/L&T/ABB
14	MCCB FOR DISTRIBUTION PANELS AND FEEDER PILLERS	SIEMENS/L&T/ABB/C&S/ SCHNIDER/ LEGRAND/ INDOASIAN/HAVELLS
15	MCB/ELCB/RCCB/ RCCBO FOR MAIN	SIEMENS/HAGER L&T/ABB
	LT DISTRIBUTION PANELS	
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/AMPA RE METER	L&T/SIEMENS/C&S
21	POWER CONTACTOR & OVER LOAD RELAYS	L&T/SIEMENS/ABB
22	QUARTZ TIME CLOCK SWITCH	L&T/INDOASIAN/SIEMENS
23	PVC WIRE WITH COPPER CONDUCTOR	RR KABEL / KEI / POLYCAB/MILEX/GUJCAB/ STANDARD / FINOLEX / ANCHOR
24	FLUSH TYPE SWITCHES, SOCKETS, HOLDERS AND CEILING ROSES & ELECTRONIC REGULATORS	ANCHOR/MK/NORTHWEST/VINAY /PANAMA / HAVELLS
25	DOOR BELLS/CALL BELLS	ANCHOR/LEGEND/MK/NORTHWEST
26	MODULAR SWITCHES, SOCKETS, PLATES & BOXES	ANCHOR / MK / NORTHWEST / LEGRAND /HAVELLS / INDOASIAN / SIMENS.
27	PVC CONDUIT / OVAL CONDUIT & CASSING CAPPING AND ACCESSORIES	PRECISION/VULCAN/FINOLEX/ GARWARE/ PRESTOPLAST/ SWASTIK / BPI
28	GLS LAMPS & FLUORESCENT LAMPS	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI / GE
29	HPSV, HPMV & METAL HELIDE LAMPS	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI / GE

30	IGNITORS FOR HPSV, METAL HELIDE LAMPS	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI / GE
31	LUMINARIES	PHILIPS / BAJAJ / WIPRO / CROMPTON GREAVES / OSRAM / SURYA ROSHNI / GE/C&S
31a	LED LUMINARIES	Philips// Bajaj/Wipro/CG/Surya/Pyrotech/Syska/Nessa/C&S having surge Protection $\geq 10KV$ for fittings & internal Surge Protection for Driver of $\geq 4KV$, LED Chip only OSRAM/CREE/Philips Lumileds/Citizen/with LM- 79,80 CERTIFICATION
32	CEILING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
33	WALL MOUNTING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
34	EXHUAST FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC
35	HEAVY DUTY INDUSTRIAL WALL MOUNTING FANS	BAJAJ/ORIENT/USHA/CROMPTON GREAVES / ALMONARD/GEC or its equivalent
36	WATER COOLER	VOLTAS/SHRIRAM USHA/BLUE STAR
37	AIR CONDITIONERS	VOLTAS/CARRIER/BLUESTAR/USHA/ HITACHI/LG/ SAMSUNG/ONIDA
38	REFRIGERATORS	VOLTAS / CARRIER / BLUESTAR / USHA / HITACHI / LG / SAMSUNG / WHIRLPOOL
39	VOLTAGE STABILIZER	VEELINE / CAPRI
40	INVERTERS	SUKAM / MICROTEK
41	D.G. SETS	
	A) ENGINE	CUMMINS/GREAVES/KIRLOSKAR/ CATERPILLAR /ASHOK LEYLAND /VOLVO
	B) ALTERNATOR	STAMFORD/CROMPTON GREAVES /JYOTI/ KIRLOSKAR ELECTRIC
42	ELECTRIC MOTOR	ALSTOM/CROMPTON GREAVES /SIEMENS/ KIRLOSKAR/ABB
43	WATER PUMPS	SWASTIK / KSB
44	WATER GEYSER	BAJAJ/USHA / CROMPTON GREAVES / SPHEREHOT / RACOLD
45	LUGS & CABLE GLANDS	DOWELLS / JAINSON / BRACO
<p>Note: In case of supply of Make of material which is neither available in the DPA approved, the said material should be supplied as per the Make decided by EIC for which written intimation will be given to the contractor.</p> <p>Before procurement of material, the Make of the material should be approved by EIC in writing.</p>		

Sd/-
Executive Engineer (E)
Deendayal Port Authority

Seal & Signature of Contractor