

**Name of Work:** Construction of new Seafarer's building at Kandla – Electrical Part

## **TECHNICAL SPECIFICATIONS**

### **Part A - Electrical Work**

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

This includes Point wiring for Light / Bell with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires up to 10 Mtr length , in below type of pipe erected with 6A Modular type switch / bell push & accessories and earth continuity of following type, erected on PVC / Metallic/Wooden box, single mounting base frame covered with textured/metallic/white front plate modules erected on / in wall / ceiling as per pipe erected, with necessary Lamp holder/ceiling rose / H.D. Connector as directed.

(a) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete and as directed by Engineer-in-charge

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

This includes Point wiring for Tissino / Modular secondary light point with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires, in below type of pipe to be erected complete with earth continuity and necessary connection with primary light with accessories erected on Metal / PVC / wooden box covered with 3 mm thick PC(Polycarbonate) / Acrylic sheet for open / concealed wiring. with necessary Lamp holder / ceiling rose / H.D. Connector as directed.

Note:- Maximum up to 6 mtrs length, excess will be considered as Mains for Secondary Point.

(a) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete and as directed by Engineer-in-charge.

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

This includes Point wiring for FAN with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (Green) both are of .ISI marked 1.1 KV Grade FRLS PVC insulated multi strand copper wires up to 10 mtr length, in below type of pipe erected with 6A Modular type switch and hum free EME step type electronic fan regulator mounted and accessories with earth continuity of following type erected on PVC / Metallic/Wooden box, single mounting base frame covered with textured/metallic/white front plate modules erected on / in wall /

ceiling as per pipe erected. with necessary ceiling rose / H.D. Connector as directed.

(a) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete and as directed by Engineer-in-charge.

**4. Technical Specification for Item No. 4:**

This includes Point wiring for Two Way Controlled Light Point with 2-1.5 sq.mm & earth wire of 1.5 sq.mm (green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires erected in below type of pipe with 6A Modular type switches and following type of accessories erected on PVC / Metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate modules erected on / in wall / ceiling as per pipe erected. with necessary batten/angle holder or ceiling rose or H.D. Connector as directed.

(a) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete and as directed by Engineer-in-charge.

**5. Technical Specification for Item No. 5:**

This includes Point wiring for Individual Plug with & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires up to 10 mtr length, in below type of pipe erected complete with Modular type switch & 5 pin Plug erected on PVC / Metallic/Wooden box covered with appropriate front plate modules erected on / in wall / ceiling as per pipe erected with following type of accessories [II] For 16A Plug and 16 amp switch with 2-2.5 sq.mm Cu. Wire from mcb db board.

(a) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete and as directed by Engineer-in-charge.

**6. Technical Specification for Item No. 6:**

This includes Point wiring for Individual Plug with & earth wire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multi strand copper wires up to 10 mtr length, in below type of pipe erected complete with Modular type switch & 5 pin Plug erected on PVC / Metallic/Wooden box covered with appropriate front plate modules erected on / in wall / ceiling as per pipe erected with following type of accessories. [I] For 6A Plug and 6 a switch with 2-1.5 sq.mm Cu. Wire from nearby switchboard/mcb db board.

(a) with medium class Rigid PVC pipe and accessories erected concealed in wall/ceiling complete.

**7. Technical Specification for Item No. 7:**

This includes Point wiring for on board Looped Plug with 6A Modular type switch & 5 pin socket erected on PVC / Metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate modules erected on / in wall / ceiling with following type accessories and as directed by Engineer-in-charge.

**8. Technical Specification for Item No. 8:**

This includes Providing & erecting Switch board for Computer or electric apparatus consisting of following modular type accessories mounted with PVC / Metallic concealed/open box with single mounting base frame covered with textured/metallic /white front plate, modules erected with necessary connections as directed.

(a) 1 no. 6A/16A universal plug-switch combined.

(b) 3 nos. 6A Switch

(c) 3 nos. 6A 5 pin Plug

For Modular Type Accessories and as directed by Engineer-in-charge.

**9. Technical Specification for Item No. 9:**

This includes Providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate , modules erected with necessary connections as per site situation and as directed by Engineer In charge.

(a) Computer RJ-45 socket

**10. Technical Specification for Item No. 10:**

This includes Supplying & erecting approved make LAN cable of following size in existing pipe and as directed by Engineer-in-charge.

**11. Technical Specification for Item No. 11:**

This includes Providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate , modules erected with necessary connections as per site situation directed by Engineer In charge.

(a) Two Pin/RJ-11 Telephone Socket

(b) For One Gang

**12. Technical Specification for Item No. 12:**

This includes Supplying & erecting approved make Telephone Cable electrolytic copper conductor PE insulation twisted in two pairs, & wrapped with FRLS PVC tape & sheathed with FRLS PVC or HFFR outer Jacket suitable for telephone wiring & conforming to C-DOT erected in existing pipe. of following size of conductors & nos.of pairs. With necessary connections.

(a) Conductor Size 0.5 mm Unarmoured Two Pairs

**13. Technical Specification for Item No. 13:**

This includes Providing & erecting main Distribution (MDF) indoor type, back mounted frame as per DoT standard approved with krone strips.

(a) Suitable for 20 pair

**14. Technical Specification for Item No. 14:**

This includes Providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate , modules erected with necessary connections as per site situation and as directed by Engineer In charge.

(a) TV Co-axial Socket outlet

**15. Technical Specification for Item No. 15:**

This includes Providing & Erecting approved make following size of TV Co-axial flexible cable comprising inner conductor of solid bare copper insulated with Foam PE & Secondary conductor made of poly - Aluminium film bonded Al. Braids @ suitable coverage overall sheathed with black PVC insulation.

(b) RG-6

**16. Technical Specification for Item No. 16:**

This includes providing and erecting Mains with ISI marked, 1.5KV grade electrolyte multi stranded, annealed copper conductor with heat resistant PVC insulated conforms to IS 694, IEC - 227 erected in existing pipe of following size (Specifically for control panel, relays, power switchgears, motor starters & control wiring) with required size of copper lugs, nuts and bolts if required.

(a) One wire 10.00 sq. mm

(b) One wire 16.00 sq. mm

(c) One wire 25.00 sq. mm

(d) One wire 35.00 sq mm

**17. Technical Specification for Item No. 17:**

This includes Providing and erecting Mains with 1.1 KV grade FRLS PVC insulated ISI marked stranded Copper conductor wire in following type of pipe to be erected concealed in /flushed on wall/ceiling, with 1.5 sq. mm copper conductor FRLS PVC insulated stranded wire of green colour for earth continuity of following size.

(A) With medium class Rigid PVC pipe and accessories

(a) 2 wire 1.5 sq. mm

**18. Technical Specification for Item No. 18:**

This includes Providing and erecting Mains with 1.1 KV grade FRLS PVC insulated ISI marked stranded Copper conductor wire in following type of pipe to be erected concealed in /flushed on wall/ceiling, with 1.5 sq. mm copper conductor FRLS PVC insulated stranded wire of green colour for earth continuity of following size.

(A) With medium class Rigid PVC pipe and accessories

(b) 2 wire 2.5 sq. mm

**19. Technical Specification for Item No. 19:**

This includes Providing and erecting ISI mark Medium class RIGID PVC PIPES of following size complete to be erected on/in wall or ceiling erected with necessary PVC fittings & Junction boxes fixed with adhesive solution & Clamps with following dia of pipes, in approved manner as directed.

(a) 25 mm

**20. Technical Specification for Item No. 20:**

This includes Providing & erecting PVC Corrugated Flexible Conduit with required nos. of coupling, PVC bushes, Check-nuts etc. complete of following sizes.

(a) 25 mm

**21. Technical Specification for Item No. 21:**

This includes Providing and erecting Sheet Steel powder coated MCB distribution board - flush / surface mounted fitted with busbar, neutral link, earth bar and DIN rail, Conforms to IS 8623-1 & 3, IEC 61439-1 & 3 without MCB to house appropriate nos. of MCBs. (The DBs should be used of same company of MCB to be used) suitable for

(A) single phase incoming and horizontal single phase outgoing

(b) sheet steel double door (IP-43)

(ii) 6 way

**22. Technical Specification for Item No. 22:**

This includes Providing and erecting Sheet Steel powder coated MCB distribution board - flush / surface mounted fitted with busbar, neutral link, earth bar and DIN rail, Conforms to IS 8623-1 & 3, IEC 61439-1 & 3 without MCB to house appropriate nos. of MCBs.(The DBs should be used of same company of MCB to be used) suitable for

(B) three phase incoming and single phase horizontal type outgoing Per phase isolation type (PPI)

(b) sheet steel double door

(iv)12 way

**23. Technical Specification for Item No. 23:**

This includes providing and erecting of following accessories with ISI Mark in existing box for various applications & protection and as directed by Engineer-In-charge.

(i) 6 to 25A SP MCB

(ii) 6 to 25A DP MCB, 10KA, B curve

(iii) 63A FP MCB, 10KA, C curve

(iv) 25A DP RCCB, 30mA. 10 KA

(v) 63A DP ELCB, 30mA. 10 KA

**24. Technical Specification for Item No. 24:**

This includes supplying and erecting triple pole & neutral 440V / 500V panel mounting Copper Busbars with four equal Nos. of electrolyte bus having current density not more than 1.6 Amp. / sq.mm (Rated current / cross section area) duly wrapped with colour insulating tape for phase sequence of following current carrying capacity, erected with necessary bus bar supports /insulators, main cable socket to each bar, erected in existing cubical panel with necessary connections.

(a) Suitable for 200 Amp. capacity

**25. Technical Specification for Item No. 25:**

This includes providing and erecting following approved make moulded case circuit breaker, 415 V, having normal current rating up to 25 A to 100A with Fixed thermal & magnetic release suitable to work on A.C. supply 50 c/s with all internal connections, spreader tinned copper & complete erected in existing 16 G.M.S. housing.

(i) 25 to 100A, 4P MCCB, 25 KA with fixed Thermal & magnetic release

(ii) 200A, 4P MCCB, 35 KA with variable Thermal & magnetic release

(iii)

**26. Technical Specification for Item No. 26:**

This includes supplying & erecting approved make Four Pole 415V change over switch interior for panel mounting with operating mechanism A.C.23 duty confirming to IS for following.

(a) 200A

**27. Technical Specification for Item No. 27:**

Providing & erecting weather proof, dust & vermin proof, floor mounted front operated indoor type cubical panel board necessary IP- 42 and above protection as per approval from engineer-in-charge made from 14 SWG thick CRC M.S. sheet for outer body & doors, 16 SWG thick CRC M.S. sheet for internal partitions with necessary accessories, supporting angles/ flats channel including cutting, bending, drilling, welding, riveting with internal partitions & cable alley as per requirements & instruction of engineer-in-charge with erection of supplied switch gears, BUSBARS, suitable size of inter connecting PVC copper wire / copper-aluminium strips, rubber grommets, rib, bakelite control fuses/MCB for measuring instruments, earth bus & earth bolts, foundation flange - bolts-base Plates, sufficient nos. of hinged doors, handles with locking arrangement and rubber gasket, heavy duty end terminal connection, danger notice board, necessary ventilation, earthing strip complete. The Panel shall be painted with epoxy powder coating (The rates excludes the cost of switchgears, bus bars, inter connecting mains & Copper Aluminium strips, meters, Fuses etc. The dimension shall be measured excluding base beams) The panel shall be supplied with following approved manufacturers with following size.

(a) The standard companies switch gear shall be used and only manufacturers at CPRI approved factory.

(I) with 350mm depth board

**28. Technical Specification for Item No. 38:**

This includes providing, erecting, fabricating the M.S. structure for indoor type cubical panel board as per requirement on site incorporating proper size of M.S. angles, square, round, flats, bars, channels, sections complete with cutting, welding, grinding & finishing duly painted with one coat of red oxide with erection on site as per direction of engineer in charge with necessary grouting, cementing, plastering & finishing complete.

**29. Technical Specification for Item No. 29:**

This includes providing and erecting multifunctional meter suitable for application of Power monitoring and showing measurement of following Voltage, Frequency, Apparent energy, Apparent power, Active and reactive energy, Active and reactive power, Average voltage  $V_{avg}$ , Peak demand power PM, QM, SM, Demand power P, Q, S, Apparent power S, S1, S2, S3, Unbalance current, Power factor and displacement PF (signed, four quadrant), Calculated neutral current, Active, reactive, apparent energy (signed, four quadrant), Active power P, P1, P2, P3, Voltage U21, U32, U13, V1, V2, V3, Phase currents, Average current lag, Peak demand currents, Reactive power Q, Q1, Q2, Q3, Demand current I1, I2, I3, [Us] rated supply voltage 40...300 V AC 45...65 Hz, 40...300 V DC, Network frequency 50 Hz, Type of network 3P, Display type 7 segments LED, Display colour Red, Messages display capacity 3 fields of 4 characters, Display digits 12 digit(s) - 14.2 mm in height.

**30. Technical Specification for Item No. 30:**

This includes supplying and erecting approved make suitable panel indicator LED type lamp, lens cover, complete erected with necessary connections.

**31. Technical Specification for Item No. 31:**

This includes providing & erecting L.T. Current Transformer with bar primary 50/5 to 1000/5 ratio 15 VA burden erected in existing CRCA box duly secured with insulating materials connected to the meter.

**32. Technical Specification for Item No. 32:**

This includes supplying and erecting, commissioning and testing of Diesel Generating set confirming to IS: 4722:1968 & BS:5514 having continuous rating, 3 phase, 415 volts, 50 cycles A.C. supply comprising of a totally enclosed air/water cooled diesel engine with multi- cylinders developing suitable BHP not less than following capacity at 1500 RPM with 10% overload for one hour in 24 hours with standard accessories like fly wheel, lubricating oil cooler, "A" class governor, heavy duty fuel wheel and lubricating oil filter, oil bath air filler, lubricating oil pressure gauge, end exhaust manifold, standard set of tools with adjustable spanners, screw drivers, cylinder head to cover, joint cylinder head to exhaust, element lube oil filter, 12/24 volts electric starting equipment complete with standard heavy duty battery, dynamo, cut-outs, ammeter, necessary wiring, pressure gauge, starter etc and heavy duty Residential type exhaust silencer and vertical hot air duct both logged with asbestos rope, save oil trays, exhaust piping of



required length, standard wall/floor mounted fuel with level indicator and piping and drip proof alternator, self excited, self regulated, screen protected, with excitation system, capable of delivering the rated system output at 415 volts, 3 phase, 0.8 PF, 50 Hz, 4 wire, running at 1500 RPM, conforming to IS- 4722- 1968 with voltage regulation  $\pm 5\%$  of rated voltage from no load to full load. Both the engine and alternator fitted on a common fabricated steel base plate with antivibration mounting engine and alternator both connected to each other by flexible flange coupling and with floor/wall mounted control panel box comprising of voltmeter ammeter, selector switches, ACB / MCCB / MCB of adequate capacity, indicator lamps duly wired with HRC fuses. The alternator & control panel shall be connected with provided suitable capacity armoured cable and complete with Acoustic enclosure (canopy) made out of 16 SWG CRCA Sheet, sound absorbing material Rockwool of 64 density & 100 mm thick conforming to IS:8183 / PU Foam of 40 Density - at least 40 mm. The resin bonded rockwool covered from inside the canopy by perforated sheet with 3/4 mm holes, sound level not more than 75 dB at a distance of 1 mtr, as per PVCT norms. Erection, commissioning and satisfactory testing as per requirement with first filling of fuel, oil, etc. with guarantee / Warrantee of complete system for Two years & with obom Electrical Inspector. The Capacity and Ratings of DG sets are as below.

(a) Continuous rating of 100 KVA ,BHP not less than 126 BHP

### **33. Technical Specification for Item No. 33:**

This includes providing & erecting approved make AMF control panel suitable for following size of 3 phase, 415 V, 50 cycles, A.C. diesel generating set complete of scope as detailed below and as directed by Engineer-in-charge:

- 1) Power module: A pair of electromechanically interlocked contactors (for mains & generator) Overload relay for generator contactor Neutral contactor for mains and generator Power socket for connections.
- 2) Control and metering module: Line voltage monitor. Generator voltage monitor Ammeter 3 items attempt start facility. Air circuit breakers/MCB/MCCB of suitable rating for auto/manual operation. Auto/manual switch. Emergency stop push buttons. Manual start push button frequency meter. Engine hour meter. Two earthing studs.
- 3) Protection module: The engine shutdown in the unlikely event of Low lube oil pressure High cylinder head temperature. V belt failure.
- 4) Indicators with alarm Load on generator.

- 5) Indicators Load on mains Engine fails to start  
Emergency stop battery charger.  
The AMF Panel of following capacity
- (a) AMF Control Panel for 100 KVA/125 KVA 3 phase DG Set

**34. Technical Specification for Item No. 34:**

This includes providing and erecting metallic vitrified danger notice board as per language suggested by engineer-in-charge for MEDIUM VOLTAGE installation to be erected as per IS-2551.

**35. Technical Specification for Item No. 35:**

This includes providing following type of Modular Type Accessories mounted with PVC / metallic/Wooden box, single mounting base frame covered with textured / metallic/white front plate, modules erected with necessary connections as per site situation directed by Engineer In charge.

- (a) Blank Plate Single

**36. Technical Specification for Item No. 36:**

This includes providing and erecting approved make Earth fault Relay suitable to mount with inter connection suitable to following size of moulded case circuit breaker having CT ratio & MCCB rating as following along with shunt trip 220V AC with all internal connections & complete erected in existing M.S. housing.

- (a) 125 A -200 A , CT Ratio 1/200

**37. Technical Specification for Item No. 37:**

This includes providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables.

- (a) 4 core X 4 Sq. mm
- (b) 4 core X 6 Sq. mm
- (c) 4 core 16 Sq. mm
- (d) 4 core X 35 Sq. mm
- (e) 4 core X 120 Sq. mm

**38. Technical Specification for Item No. 38:**

This includes Providing and, fixing heavy duty flange type brass cable gland with rubber ring for PVC insulated armoured cable complete with out going tails, insulating tape etc for following size of cables.

- (a) 4 core X 4 Sq. mm

- (b) 4 core X 6 Sq. mm
- (c) 4 core X 16 Sq. mm
- (d) 4 core X 35 Sq. mm
- (e) 4 core X 120 Sq. mm

**39. Technical Specification for Item No. 39:**

This includes solderless crimping type Aluminium lugs conforming to IS suitable for cable of following size evenly crimped with high pressure tool & connected to switchgear terminals with brass/cadmium plated nut bolts in an approved manner.

- (a) 1.5/ 2.5/4/6 Sq.mm
- (b) 16/25 Sq.mm.
- (c) 35/50 Sq.mm.
- (d) 120 Sq.mm.

**40. Technical Specification for Item No. 40:**

This includes Supplying & erecting earth pit of minimum bore dia.150mm size approved make Earthing Electrode consisting Pipe-in-Pipe Technology as per IS 3043-1987 made of corrosion free hot dipped G.I. Pipes having Outer pipe dia of 50mm having 80-200 Micron galvanising, Inner pipe dia of 25 mm having 200-250 Micron galvanising, connection terminal dia of 12mm with constant ohmic value surrounded by highly conductive compound with high charge dissipation suitable for following type of applications with chamber and heavy duty cover.

- (a) Approved make OEM has to submit test certificate including value of earth resistance of installation duly stamped and signed by agency and officer Incharge has to ensure the value of earthing resistance mentioned in test Certificate & having back filling compound of
- (b) Inner chemical (CCM Compound)- Resistivity:- 0.2 ohm / meter testing as per IEC 62561-2017, Voltage drop:< 1 volt at no load & dry form, Sulphur content: <2%
- (c) Back fill Compound :- Earthing compound should be capable to retain moisture for long time Necessary test report must be submitted by Agency.
- (d) For Electrical Installation covering Transformer Neutrals, Lightning arrester Earthing, A.C.Plant & Sensitive Computer System (like Automation, SCADA) i.e independent Earthing in normal soil. Length of Pipe : 3.00 mtrs Back filling Compound :2 nos Bags of 25 Kg.

**41. Technical Specification for Item No. 41:**

This includes providing and erecting required size Copper strip for earthing of H.T. OCB / ACB/ Transformer, LT panel board, Motors etc. Using copper clamp.

**42. Technical Specification for Item No. 42:**

This includes providing and erecting Annealed bare Copper wire 8 to 16 SWG.

**43. Technical Specification for Item No. 43:**

This includes providing & erecting Approved make Power Saving 50 Watt Ceiling Fan with double ball bearing ISI mark with Condenser 230 volt A.C. 50 Hz 1200 mm sweep complete having 3 blades with aluminium blades with , canopy & 30 cm. down rod erected with earthing. (Make shall be approved by Engineer in charge).

**44. Technical Specification for Item No. 44:**

This includes supplying and erecting 19 / 20 mm. nominal bore Medium Class M.S. Pipe down rod erected duly painted for fan complete with proper insulation without leakage and earthing.

**45. Technical Specification for Item No. 45:**

This includes supplying & erecting fan hook box of 10 mm M.S. round bar bounded to the RCC bars up to 50mm length each side and pierced through a 16 Gauge M.S. box / Heavy Duty PVC box complete erected concealed in Ceiling with necessary finishing.

**46. Technical Specification for Item No. 46:**

This includes Providing 2.5mm.thick laminated acrylic sheet to cover the fan hook or Fan box.

**47. Technical Specification for Item No. 47:**

This includes supplying and erecting approved make oscillating type bracket fan A.C. 230V. 50cy/s 400/450 mm sweep wall mounted with height adjustment and rotary tilting device complete with guard, flexible Core plug top complete erected with lead wires and as directed.

**48. Technical Specification for Item No. 48:**

This includes supplying & erecting approved make low noise decorative exhaust fan having square frame ABS body with inbuilt lowers & square frame 200mm with 1350RPM and as directed by Engineer-in-charge.

**49. Technical Specification for Item No. 49:**

This includes providing recess in wall or window frame suitable for erection of Exhaust fan complete with plastering and colour washing to match the colour of the wall or window complete with expanded metal in order to render the fitting in accessible and the room water-proof.

**50. Technical Specification for Item No. 50:**

This includes supplying & erecting Stylish Exhaust fan for ceiling/ Roof Mounting with Automatic shutter to prevent foreign objects from entering High Suction: Powerful 100% copper motor ensures robust performance; Corrosion protection with rust proof body and blades Technical Specifications- Duct Size- 4 inch (100MM) / Cutout Size 8 Inch. (204MM X 204MM). 2000 RPM, 49 Watts Suitable for Kitchen, Bathroom. Office, Shop, Living Room 2 Year Limited Warranty You can easily get rid of bad odors, smokes, and fumes with the HEWA Exhaust Fan. It is made with a rust-proof body and blades to ensure durability and longevity. Made with top quality materials, craftsmanship and engineering, the HEWA Ventilation Fan is designed to offer superior ventilation in any space you choose to install to keep your living space cooler and more comfortable year-round while reducing expensive cooling bills.

**51. Technical Specification for Item No. 51:**

This includes supplying and erecting LED indoor fittings with LEDs of wattage 0.2 Watt to 0.5 Watt assembled on single MCPCB, with housing used as a heat sink shall be made of thick sheet Steel conforming to IS: 513/CRCA/aluminium pressure die cast powder coated and high U.V. & corrosion resistance with diffuser housed in aluminium casted body with company mark/name 160V to 270V, Power Factor more than 0.95, THD < 15 %, CCT 3000 K to 6500K, Luminaire efficacy > 85 lumens/watt , LED driver efficiency > 85 % (fitting required LM-79 & LM-80 Certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer-in-charge may select any wattage capacity between the ranges shown.) and as directed by Engineer-in-charge.

- (a) Square/ Circular shaped Surface/Recessed Mount Downlight with provision for spring loaded mounting clips complete IP20
- (i) 16-20 watts, Surge-2 KV

**52. Technical Specification for Item No. 52:**

This includes supply & erecting Profile Light 5 Meter is a flexible and adaptable lighting system that offers a wide range of lighting possibilities for various settings High-Quality Illumination: With its advanced LED technology, the Profile

Light delivers bright and uniform lighting (900 lumens/meter), ensuring excellent visibility and enhancing the overall atmosphere Easy Installation: The Profile Light features a user-friendly design that facilitates quick and hassle-free installation. It comes with super adhesive for easy and worry free installation Flexible Length: With a length of 5 meters, this lighting system can be easily adjusted and cut to fit different spaces, making it suitable for a variety of applications Wide Applications: The versatile nature of the Philips Profile Light makes it suitable for numerous applications, including residential spaces, commercial establishments, hospitality venues, and more.

**53. Technical Specification for Item No. 53:**

This includes Supplying & erecting Light Chandelier for Double Height area can be Customized as per Requirement.

**54. Technical Specification for Item No. 54:**

This includes supplying & erecting Approved make call bell indicator with buzzing sound and Red light indicating lamp with Red light button to attend the call suitable for 240 v 50 c/s supply to be erected.

**55. Technical Specification for Item No. 55:**

This includes providing & erecting water cooler having storage capacity 150 Ltr. & cooling capacity 150 Ltr. per hour @ an ambient temp of 45° C. The outlet temp. of the water should drop by 15°C within a hour, The water cooler should be comprising of hermetically sealed compressor, fan motor, condensing unit, water tank surrounded by evaporating, coil, thermostats, relay etc. complete with necessary inlet & outlet connection. The body of water cooler will be made from Stainless Steel.

**56. Technical Specification for Item No. 56:**

This includes Supplying submersible pump set suitable for bore of 100 mm. dia. or more having three phase motor capacity not more than 5 H.P. with following capacity and as directed by Engineer-in-charge.

(A) (16 stage) 140 to 180 LPM discharge at 96 to 69 mtrs. head respectively suitable for 50mm dia. delivery pipe and as directed by Engineer-in-charge.

**57. Technical Specification for Item No. 57:**

This includes providing and erecting ISI marked PVC insulated PVC Sheathed Flat flexible Submersible copper cable approved make of following Size.

(a) 3 Core x 4 Sq. mm

**58. Technical Specification for Item No. 58:**

This includes providing & erecting open well horizontal mono block pump set with cast iron body, complete for three phase submersible motor having

- (a) 1 H.P. single phase open well motor pump set suitable for 185 LPM discharge @ 25 mtr. head, suitable for 32 mm dia. Delivery pipe with control panel and as directed by Engineer-in-charge.

**59. Technical Specification for Item No. 59:**

This includes providing & erecting open well horizontal mono block pump set with cast iron body, complete for three phase submersible motor having

- (a) For 3 HP 3 phase open well horizontal mono block pump set suitable for 85 LPM to 270 LPM @ 11 mtr to 33 mtr head suitable for 50/65 mm dia delivery pipe and as directed by Engineer-in-charge.

**60. Technical Specification for Item No. 60:**

This includes supplying & erecting approved make Automatic liquid level controller 6A. with sensor testing as per instruction of Engineer in charge on site complete with wiring connection with existing wires, with copper conductor from pump to upper and lower tank.

**61. Technical Specification for Item No. 61:**

This includes supplying & erecting approved make motor control cubical panel [Star delta] made from 16G CRCA sheet duly epoxy powder painted inside and outside with hinged doors and locking with suitable size of ON - OFF isolator (AC 3 / 23 duty) main fuses. Digital volt and current meter (in a single unit) with micro controller based control unit and current sensing single phasing preventer electronic overload protection, over voltage (Programmable) protection and under voltage (Programmable) protection, prod less dry run protection programming facility for setting of all parameter like overload current, high voltage limit, low voltage limit, dry run limit with digital indication on seven segment LED display for any fault like over load, high voltage, low voltage, dry running single crimped, electronic star delta timer, feather touch start / stop push buttons to be erected on angle iron frame. Grouted on wall the contactors will be of L& T, Siemens, BCH make only)

- (a) DOL up to 5.0 H.P.

**62. Technical Specification for Item No. 62:**

This includes supplying and erecting approved make Conical Pole (Medium Duty) Made from HR sheet steel. The pole should be made as per IS. and shall be coated with hot dip galvanizing as per IS 2629/2633/4759, with required base

plate and integral Junction box consist of terminal plate of min 6mm Hylam sheet, standard profile 35mmX7.5mm Din-Rail for MCB Mounting, stud type terminal and arrangement for cable terminations as erected on suitable foundation (included) with necessary GI nut-bolts/J-Bolts. as per details given by manufacturer considering site requirement. The length of poles are as below.

(a) 5 Mtr. Long 70 mm Top X 145 mm bottom dia, 3 mm thickness.

**63. Technical Specification for Item No. 63:**

This includes providing 1:2:4 cement concrete foundation & 70 % PCC from bottom including excavation for the pole of size 45 x 45 x 100 cm. Deep in below ground level with plinth of 45 cm x 45 cm (or 45 cm dia x 45 cm) high upper ground level with necessary curing and finishing in approved manner.  
(for 4 & 6 mtr pole)

**64. Technical Specification for Item No. 64:**

This includes providing and erecting street light pole bracket comprising main B Class MS pipe of 4.2 cm/require outside dia. complete with suitable B Class M.S. sleeve tubing of approx. 45cms.length and suitable for 76.5 mm / 80mm. / require size pole top having sufficient fasteners for fixing the brackets and having spread of 1 mtr. length with suitable rise as per site condition & suitable welded stiffener reducer and nipple with check nut complete painted with one coat of Red oxide / PU base primer and two coats of Aluminium / PU paint. paint with following nos of arms.

(a) Single Arm bracket 1 Mtr

**65. Technical Specification for Item No. 65:**

This includes supplying & erecting approved make SMC press moulded composite FRP. loop-in, loop- out approx. 2mm thick box complete with Bakelite connector strip 5way(3P+N+E), DIN rail for mounting mob & hinged doors as per requirement having locking arrangements with mounting clamp with nuts, bolts & washers suitable for erection on pole with cable clamps& earth bolt of following size of box.

(a) 300mm x 200mm x 100mm [deep]

**66. Technical Specification for Item No. 66:**

This includes supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 3 Watt and above assembled on single MCPCB, efficiency more than 130 lm/w and corrosion free High pressure die cast aluminium housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses, with



toughened glass with company mark/name engraved or embossed 160 to 270 V, Power Factor more than 0.95, THD < 10 %, CCT 3000 K to 5700K, Uniformity ratio >0.45, Luminaire efficacy > 100 lumens/watt LED driver efficiency > 85 %.(fittings required LM-79 & LM-80 certificates).

(NOTE: Below description have shown ranges of Wattage capacity of LED fittings. The Engineer incharge may select any wattage capacity between the ranges shown.)

(a) Street Light (IP-65), Surge protection -4KV integral and ,Light must have 440VAC linesupply with over-voltage protection.

(i) above 36 to 48 watts and as directed by Engineer-in-charge

**67. Technical Specification for Item No. 67:**

This includes providing and fixing Terminal board of size 5.0 x 127 x 152.4 mm bakelite sheet with suitable brass studs with nuts, washers and clamps of size 25mm x 3mm suitable for pole painted with one coat of red lead paint.

**68. Technical Specification for Item No. 68:**

This includes supplying & erecting approved make Digital time switch having lithium cell 6 years operative and operate battery backup 1 channel day clock with 14 memory programme, suitable to operate on 240V + 5%, 16A with, floating contacts Minimum switching setup time 1 minimum & LCD display. Also comprised permanent ON/OFF switching. Programming switches & housed in fire proof thermoplastic enclosure & transparent cover erected as required with necessary connection erected as directed.

**69. Technical Specification for Item No. 69:**

This includes supplying & erecting power contactor AC3 duty for time switch complete erected and as directed by Engineer-in-charge.

**(a) 2 pole 250V 32 Amp.**

**70. Technical Specification for Item No. 70:**

This includes supplying and erecting Flexible PVC insulated multi strand multi core 1.1 kv grade ISI marked copper wires of following size to be erected and as directed.

(a) 1.50 Sq.mm 3 core round PVC sheathed

**71. Technical Specification for Item No. 71:**

Supplying and erecting B class Galvanized iron pipe having smooth finished bore of the pipe on both ends erected nuts and bolts along the pole / wall shaping the pipe as per site requirement. Pipe dia as following.

(a) 40 mm dia.

**72. Technical Specification for Item No. 72:**

This includes providing and erecting Pipe type earthing with 40 mm dia 2.5 mtr long 'B' grade G.I. pipe with necessary coupling buch buried in specially prepared earth pit & G.I. earth wire of 8 SWG erected & connected as directed (For panel)

For using salt and charcoal / coke as required for pipe type earthing.

**73. Technical Specification for Item No. 73:**

This includes providing & laying approved make Double walled corrugated pipes (DWC) of polyethylene(conforming to IS 14930 II )with necessary connecting accessories of same material at required depth in existing trench for laying of cable below ground / road surface for enclosing cable.

(a) 50 mm outer dia

**74. Technical Specification for Item No. 74:**

This includes providing & erecting 240 V MCB double pole switch for lighting Load (B Curve) having 10 KA breaking capacity & confirms to IS : 8828 in existing box having following capacity and as directed by Engineer-in-charge.

(a) 6 to 32 Amp

**75. Technical Specification for Item No. 75:**

This includes making trench in Hard Murrum / Tar Road of suitable width of 90cm or required depth for laying any size of cable or locating the fault all over the run and back filling the same and making the surface as normal ground.

**76. Technical Specification for Item No. 76:**

This includes making trench in soft soil of suitable width of 90 cm deep for laying cable or locating the fault all over the run and back filling the same and making the surface as normal ground.

**Executive Engineer (Elect.)  
Deendayal Port Authority**