General Explanatory Note

Name of the work: **Electrical work for development of new passenger halt station named Nilkunthia between RGX-RGA in PKU-HLZ section.**

Srl. No.	Item	Description and Explanatory Note
1	**Concealed Wiring of light and fan point by 1.5 Sq. mm, Single Core, Copper wire each for phase & neutral with 1.5 Sq. mm, Single Core, Copper wire for Earthing** through PVC Conduit Pipe of Nominal Size 20mm/25mm (as per site requirement) including supply and fixing of all required materials like modular switch, socket, lamp holder, ceiling rose with suitable flush metal boxes, front plate etc. as per specifications mentioned in explanatory note.	Concealed wiring of light and fan point by 1.5 Sq. mm, Single Core, Copper wire each for phase & neutral with 1.5 Sq. mm, Single Core, Copper wire for Earthing through PVC Conduit Pipe of Nominal Size 20mm/25mm (as per site requirement). The system should provide ease of access to fittings for maintenance and repair and for any possible modification to the system. Electrical wiring to be concealed in wall structure, the necessary fan hooks, conduits should be positioned during the shuttering is in place and before the concrete is poured, provision being made to protect conduits from damage. Each point circuit must include separate phase, neutral & protective earth conductor from respective junction box. Proper earthing of all apparatus and appliances in accordance with all relevant IS standards/specifications is to be maintained. The cost includes necessary masonry work including supply and fixing of all required materials like copper wire, conduit pipe, modular switch, socket, lamp holder, ceiling rose with suitable flush metal boxes, front plate etc. as per below mentioned specifications and to be provided as and where required as per direction of consignee. **1.5 Sq. mm, Single Core, Copper wire spec:** It shall be Multistrand (22/0.3mm or suitable), Copper Conductor (flexible), Unsheathed, Flame Retardant Low Smoke and Halogen (FR-LSH), PVC insulated Cable of 1100V grade, Type-C PVC Compound as per IS 5831, Conforming to IS :694 - 2010 (Reaffirmed 2020), ISI marked. **PVC Conduit Pipe of Nominal Size 20mm/25mm spec:** It shall be Socket ended (at one end), medium mechanical stress, White Color, Resistant to Flame Propagation to grade UL-94 V0, Conforming to IS 9537 (Part 3) 1983 (Reaffirmed Year : 2017) with amendment no. 2 or latest with ISI mark. **Modular Electrical Switch spec:** It shall be 6A, 230 V, SP, 1 Way, 1 Module, Unenclosed type as per Clause no.7.1.3, Method of Activation of switch shall be of Rocker type as per Clause no. 7.1.5, Switch shall be Flush type as per Clause no.7.1.6 and shall be installed as per Design A mentioned in the Clause no.7.1.7, Current carrying material as per Clause no. 22.5, with cover made of tough non-ignitable insulating material and bare of tough non-ignitable insulating material or of vitrified ceramic material, Conforming to IS:3854/1997 (reaffirmed 2017) with latest amendments and ISI mark. **Modular 3-pin Socket spec:** It shall be 6A, 230V, 2 Module, Shuttered (Operation of Shutter should be independent of Earthing Point), Cover made of tough Non-Ignitable insulating material, material of base -vitrified ceramic, Conforming to IS : 1293-2019, Amendment no. 1 or latest with ISI mark.

		Lamp Holder spec: It shall be Aluminium, batten type, with shade carrier ring, ISI marked, Base: B-22 suitable for use at 250V, Conforming to IS: 1258 (Rev.-3)-2005) with amdt-3, with BACK plate of 53 MM Dia. & 45 MM PCD. **Ceiling Rose spec:** It shall be surface type ceiling rose (ISI marked), with three terminals, made of tough non ignitable insulating material ' urea formaldehyde moulding, volt-250V AC, Amp-6Amp, conforming to IS: 371-1999(reaffirmed 2020). **Metal Box and PVC Cover Plate spec:** All JB & Switch Board box shall be modular type and made of GI. PVC cover plates shall be modular type and covers or cover parts or parts of them, which are intended to ensure protection against electric shock, shall be held in place at two or more points by effective fixings. **Following points to be noted:** *Two 5-ampere socket point shall be treated as one point. The plate should include 2 blank spaces for further installation of switches. *Wherever length of necessary connection wire for any point exceeds 30cm, separate flexible conduit pipe is to be provided and the same shall be duly saddled in wall structure. *All accessories shall be fixed in wall using stainless steel fastener only where required. ***All wiring connections shall be made duly providing Pin Type Cu Terminal End Lugs as per specification mentioned in <u>Annexure-A</u> of this document.** *Provision of moduler fan regulator should be kept on switch board. The cost also includes fixing of fan regulator on the switch board and connection of existing light fittings/ceiling fans if any. ***Note:** Colour code is to be maintained (i.e. for Phase-red, for Neutral-black and for Earth- green). ***Make of Cable:** Havells/Polycab/RR Kabel/Finolex/KEI, ***Make of Conduit:** Polycab/AKG/Finolex/Astral/Kalinga, ***Make of Switch/Sockets/Lamp Holder/Ceiling Rose/Plate/Box:** Havells/Legrand/Schneider/ABB/Wipro/ GM Modular.

2	**Concealed Sub Circuit wiring by 2.5 sq. mm, Single Core, Copper wire each for phase & neutral with 2.5 Sq. mm, Single Core, Copper wire for Earthing** through PVC Conduit Pipe of Nominal Size 25mm including supply and fixing of all required materials like ceiling rose, suitable flush metal boxes, front plate etc. as per specifications mentioned in explanatory note.	Concealed Sub circuit wiring by 2.5 sq. mm, Single Core, Copper wire each for phase & neutral with 2.5 Sq. mm, Single Core, Copper wire for Earthing through PVC Conduit Pipe of Nominal Size 25mm. The system should provide ease of access for maintenance and repair and for any possible modification to the system. Electrical wiring to be concealed in wall structure, conduits should be positioned during the shuttering is in place and before the concrete is poured, provision being made to protect conduits from damage. Each sub circuit must include separate phase, neutral & protective earth conductor throughout the circuit length. Proper earthing of all apparatus and appliances in accordance with all relevant IS standards/specifications is to be maintained. The cost includes necessary masonry work including supply and fixing of all required materials like copper wire, conduit pipe, ceiling rose with suitable flush metal boxes, front plate etc. as per below mentioned specifications and to be provided as and where required as per direction of consignee. **2.5 Sq. mm, Single Core, Copper wire spec:** It shall be Multistrand (36/0.3mm or suitable), Copper Conductor (flexible), Unsheathed, Flame Retardant Low Smoke and Halogen (FR-LSH), PVC insulated Cable of 1100V grade, Type-C PVC Compound as per IS 5831, Conforming to IS :694 - 2010 (Reaffirmed 2020), ISI marked. **PVC Conduit Pipe of Nominal Size 25mm spec:** It shall be Socket ended (at one end), medium mechanical stress, White Color, Resistant to Flame Propagation to grade UL-94 V0, Conforming to IS 9537 (Part 3) 1983 (Reaffirmed Year : 2017) with amendment no. 2 or latest with ISI mark. **Ceiling Rose spec:** It shall be surface type ceiling rose (ISI marked), with three terminals, made of tough non ignitable insulating material ' urea formaldehyde moulding, volt-250V AC, Amp-6Amp, conforming to IS: 371-1999(reaffirmed 2020). **Metal Box and PVC Cover Plate spec:** All JB box shall be modular type and made of GI. PVC cover plates shall be modular type and covers or cover parts or parts of them, which are intended to ensure protection against electric shock, shall be held in place at two or more points by effective fixings. **Following points to be noted:** *Quantity per meter means- 01 (One) meter Conduit Pipe with 3 (Three) meters multi-strand Cu. cable of 2.5 Sq.mm [01 (One) meter each for phase, neutral & protective earth conductor] as per direction of Consignee. *All accessories shall be fixed in wall using stainless steel fastener only where required. ***All wiring connections shall be made duly providing Pin Type Cu Terminal End Lugs as per specification mentioned in <u>Annexure-A</u> of this document.** ***Note:** Colour code is to be maintained (i.e. for Phase-red, for Neutral-black and for Earth- green). ***Make of Cable:** Havells/Polycab/RR Kabel/Finolex/KEI, ***Make of Conduit:** Polycab/AKG/Finolex/Astral/Kalinga, ***Make of Ceiling Rose/Plate/Box:** Havells/Legrand/Schneider/ABB/Wipro/GM Modular.

3	**Concealed Sub Circuit wiring by 4 sq. mm, Single Core, Copper wire each for phase & neutral with 4 Sq. mm, Single Core, Copper wire for Earthing** through PVC Conduit Pipe of Nominal Size 25mm including supply and fixing of all required materials like ceiling rose, suitable flush metal boxes, front plate etc. as per specifications mentioned in explanatory note.	Concealed Sub circuit wiring by 4 sq. mm, Single Core, Copper wire each for phase & neutral with 4 Sq. mm, Single Core, Copper wire for Earthing through PVC Conduit Pipe of Nominal Size 25mm. The system should provide ease of access for maintenance and repair and for any possible modification to the system. Electrical wiring to be concealed in wall structure, conduits should be positioned during the shuttering is in place and before the concrete is poured, provision being made to protect conduits from damage. Each sub circuit must include separate phase, neutral & protective earth conductor throughout the circuit length. Proper earthing of all apparatus and appliances in accordance with all relevant IS standards/specifications is to be maintained. The cost includes necessary masonry work including supply and fixing of all required materials like copper wire, conduit pipe, ceiling rose with suitable flush metal boxes, front plate etc. as per below mentioned specifications and to be provided as and where required as per direction of consignee. **4 Sq. mm, Single Core, Copper wire spec:** It shall be Multistrand (56/0.3mm or suitable), Copper Conductor (flexible), Unsheathed, Flame Retardant Low Smoke and Halogen (FR-LSH), PVC insulated Cable of 1100V grade, Type-C PVC Compound as per IS 5831, Conforming to IS :694 - 2010 (Reaffirmed 2020), ISI marked. **PVC Conduit Pipe of Nominal Size 25mm spec:** It shall be Socket ended (at one end), medium mechanical stress, White Color, Resistant to Flame Propagation to grade UL-94 V0, Conforming to IS 9537 (Part 3) 1983 (Reaffirmed Year : 2017) with amendment no. 2 or latest with ISI mark. **Ceiling Rose spec:** It shall be surface type ceiling rose (ISI marked), with three terminals, made of tough non ignitable insulating material ' urea formaldehyde moulding, volt-250V AC, Amp-6Amp, conforming to IS: 371-1999(reaffirmed 2020). **Metal Box and PVC Cover Plate spec:** All JB box shall be modular type and made of GI. PVC cover plates shall be modular type and covers or cover parts or parts of them, which are intended to ensure protection against electric shock, shall be held in place at two or more points by effective fixings. **Following points to be noted:** *Quantity per meter means- 01 (One) meter Conduit Pipe with 3 (Three) meters multi-strand Cu. cable of 4 Sq.mm [01 (One) meter each for phase, neutral & protective earth conductor] as per direction of Consignee. *All accessories shall be fixed in wall using stainless steel fastener only where required. ***All wiring connections shall be made duly providing Pin Type Cu Terminal End Lugs as per specification mentioned in <u>Annexure-A</u> of this document.** ***Note:** Colour code is to be maintained (i.e. for Phase-red, for Neutral-black and for Earth- green). ***Make of Cable:** Havells/Polycab/RR Kabel/Finolex/KEI, ***Make of Conduit:** Polycab/AKG/Finolex/Astral/Kalinga, ***Make of Ceiling Rose/Plate/Box:** Havells/Legrand/Schneider/ABB/Wipro/GM Modular.

4	**Circuit/Sub-circuit wiring by PVC conduit/PVC casing capping wiring by 2.5 sq. mm, Single Core, Copper wire each for phase & neutral with 2.5 Sq. mm, Single Core, Copper wire for Earthing** including supply and fixing of all required materials like ceiling rose, suitable flush metal boxes, front plate etc. as per specifications mentioned in explanatory note.	Circuit/Sub-circuit wiring by PVC conduit/PVC casing capping wiring by 2.5 sq. mm, Single Core, Copper wire each for phase & neutral with 2.5 Sq. mm, Single Core, Copper wire for Earthing through PVC Conduit Pipe of Nominal Size 25mm or PVC Casing & Capping of Standard Size: 25x16mm. The system should provide ease of access for maintenance and repair and for any possible modification to the system. Electrical wiring to be rigidly fixed in wall surface / shed structure with the help of fasteners / aluminium clamp as per site requirement. Each sub circuit must include separate phase, neutral & protective earth conductor throughout the circuit length. Proper earthing of all apparatus and appliances in accordance with all relevant IS standards/specifications is to be maintained. The cost includes necessary masonry work including supply and fixing of all required materials like copper wire, conduit pipe, ceiling rose with suitable modular boxes, front plate etc. as per below mentioned specifications and to be provided as and where required as per direction of consignee. **2.5 Sq. mm, Single Core, Copper wire spec:** It shall be Multistrand (36/0.3mm or suitable), Copper Conductor (flexible), Unsheathed, Flame Retardant Low Smoke and Halogen (FR-LSH), PVC insulated Cable of 1100V grade, Type-C PVC Compound as per IS 5831, Conforming to IS :694 - 2010 (Reaffirmed 2020), ISI marked. **PVC Conduit Pipe of Nominal Size 25mm spec:** It shall be Socket ended (at one end), medium mechanical stress, White Color, Resistant to Flame Propagation to grade UL-94 V0, Conforming to IS 9537 (Part 3) 1983 (Reaffirmed Year : 2017) with amendment no. 2 or latest with ISI mark. **PVC Casing & Capping of Standard Size: 25x16mm spec:** It shall be ISI marked, white colour, double locking, Resistant to Flame Propagation to grade UL-94 V0, as per IS: 14927 Part 2: 2001 (Reaffirmed Year: 2017) or latest, Standard Length: 2 meter, Size: 25x16mm. **Ceiling Rose spec:** It shall be surface type ceiling rose (ISI marked), with three terminals, made of tough non ignitable insulating material ' urea formaldehyde moulding, volt-250V AC, Amp-6Amp, conforming to IS: 371-1999(reaffirmed 2020). **Modular Box and PVC Cover Plate spec:** All JB box, Cover Plates shall be modular type and covers or cover parts or parts of them, which are intended to ensure protection against electric shock, shall be held in place at two or more points by effective fixings. **Following points to be noted:** *Quantity per meter means- 01 (One) meter Conduit Pipe with 3 (Three) meters multi-strand Cu. cable of 2.5 Sq.mm [01 (One) meter each for phase, neutral & protective earth conductor] as per direction of Consignee. *All accessories shall be fixed in wall using stainless steel fastener only where required. ***All wiring connections shall be made duly providing Pin Type Cu Terminal End Lugs as per specification mentioned in <u>Annexure-A</u> of this document.** ***Note:** Colour code is to be maintained (i.e. for Phase-red, for Neutral-black and for Earth- green). ***Make of Cable:** Havells/Polycab/RR Kabel/Finolex/KEI, ***Make of Conduit/Casing Capping:** Polycab/AKG/ Finolex/Astral/Kalinga, ***Make of Ceiling Rose/Plate/Box:** Havells/Legrand/Schneider/ABB/Wipro/GM Modular.

5	**Supply and fixing of Circular Box and Ceiling Rose including connection with 1.5 sq.mm PVC insulated Cu Cable of FR-LSH grade** as per specifications mentioned in explanatory note.	Cost is included for Supply and fixing of Circular Box and Ceiling Rose including connection with 1.5 sq.mm PVC insulated Cu Cable of FR-LSH grade. Circular Box and Ceiling Rose set is to be provided when required extra in surface sub-circuit wiring as per direction of Consignee. **Circular Box spec:** It shall be made of Polycarbonate Electrical grade tough non ignitable insulating material suitable for fixing surface type ceiling rose. **Ceiling Rose spec:** It shall be surface type ceiling rose (ISI marked), with three terminals, made of tough non ignitable insulating material ' urea formaldehyde moulding, volt-250V AC, Amp-6Amp, conforming to IS: 371-1999(reaffirmed 2020). ***Make of Circular Box/Ceiling Rose:** Polycab/AKG/ Finolex/Astral/Kalinga.
6	Supply of **Modular PC Board consisting of 03 nos. Modular Switches with inbuilt LED indication feature, 03 nos. sockets and modular SP MCB 10-16A** (as per consignee requirement)**, 10kA, Type B- 01 No. with Stainless Steel 12M Box, PVC Cover Plate etc.** and all other accessories to complete job for concealed wiring or as per requirement and specifications mentioned in explanatory note.	Cost includes supply, fixing and commissioning of Modular PC Board consisting of 03 nos. Modular Switches with inbuilt LED indication feature, 03 nos. sockets and modular SP MCB 10-16A (as per consignee requirement), 10kA, Type B- 01 No. with Stainless Steel 12M Box, PVC Cover Plate etc. as per below mentioned specifications and to be provided as and where required as per direction of consignee. Blank spaces (if any) shall be covered by blank plates. **Modular Electrical Switch spec:** It shall be 6A, 230 V, SP, 1 Way, 1 Module, Unenclosed type as per Clause no.7.1.3, Method of Activation of switch shall be of Rocker type as per Clause no. 7.1.5, Switch shall be Flush type as per Clause no.7.1.6 and shall be installed as per Design A mentioned in the Clause no.7.1.7, Current carrying material as per Clause no. 22.5, with cover made of tough non-ignitable insulating material and bare of tough non-ignitable insulating material or of vitrified ceramic material, Conforming to IS:3854/1997 (reaffirmed 2017) with latest amendments and ISI mark. **Modular 3-pin Socket spec:** It shall be 6A, 230V, 2 Module, Shuttered (Operation of Shutter should be independent of Earthing Point), Cover made of tough Non-Ignitable insulating material, material of base -vitrified ceramic, Conforming to IS : 1293-2019, Amendment no. 1 or latest with ISI mark. **Modular SP MCB 10-16A spec:** It shall be Miniature Circuit Breaker, 10-16 Amps, ISI marked, Instantaneous tripping range: B, No. of poles: single pole with 1PP (PP=Protected pole), rated voltage: 240V AC, rated current: 10 Amps, conforming to IS/IEC 60898-1:2015 (Reaffirmed Year:2024) or latest, with rated short circuit current capacity 10KA, fixed un-adjustable time current characteristics and suitable for use in protection of industrial, commercial and domestic electrical installations. MCBs shall be suitable for 50 Hz AC main supplies. MCBs shall have fixing arrangement suitable for mounting on modular switch board. **12M Box and PVC Cover Plate spec:** All flush metal box shall be modular type and made of GI. PVC cover plates shall be modular type and covers or cover parts or parts of them, which are intended to ensure protection against electric shock, shall be held in place at two or more points by effective fixings.
7	Fixing and commissioning of **Modular PC Board consisting of 03 nos. Modular Switches with inbuilt LED indication feature, 03 nos. sockets and modular SP MCB 10-16A, 10kA, Type B- 01 No. with Stainless Steel 12M Box, PVC Cover Plate etc.** and all other accessories to complete job duly concealed in wall structure or as per requirement.	The cost includes necessary masonry work for concealing the accessories in wall structure including supply and fixing of all required materials to complete the job. Proper earthing connection in accordance with all relevant IS standards/specifications is to be maintained. **Following points to be noted:** *Wiring will be covered under Schedule item No. 2 as per site requirement. *All accessories shall be fixed in wall using stainless steel fastener only where required. ***All wiring connections shall be made duly providing Pin Type Cu Terminal End Lugs as per specification mentioned in <u>Annexure-A</u> of this document.** ***Make of Switch/Sockets/Plate/Box:** Havells/Legrand/Schneider/ABB/Wipro/GM Modular.

8	**Supply of Batten with 20 W LED tube light with Colour Rendering Index (CRI) >=80, confirming IP20** (with integrated electronic driver) as per specifications mentioned in explanatory note.	The cost includes supply of Batten with 20W LED tube light (with constant current driver having short circuit and overload protection) with Length of LED Batten (Nominal)- 1150 mm (±5%), Operating Voltage range 140-270V, Rated Voltage 220-240 V, Input Frequency- 50Hz, Lamp efficacy ≥110 lm/Watt, LED chip efficacy ≥130 lm/Watt, Color temperature- 6500K (Cool White), Housing & Diffuser material made of polycarbonate with Inbuilt Driver having efficiency ≥85%, Color Rendering Index (CRI) ≥80, confirming ingress protection level of IP20, SMD based LED chip, Lumen Maintenance should be ≥80% after 6000 burning Hrs. as per LM 80, Power factor≥0.9, Surge voltage withstand capacity- 2.5KV, Life of LED should be minimum 50000 Hrs. and 02 nos. of stainless steel mounting clamp and screws for surface mounting of batten with following certification on demand: 1) Availability of BIS CRS compliance as per IS 10322 (Part 5, sec-1 2012: latest. 2) Availability of Photo Biological Safety of LED as per IS: 16108 /2012/IEC: 62471:2006. 3) ISO certification: 9001:2015. 4) LM79/80 report. ***Warranty for free replacement- 5 years.** ***Make:** Havells/Bajaj/Philips/Orient/Crompton/Surya.
9	**Fixing and Commissioning of any kind of Batten with 18W or higher wattage LED tube light** with necessary accessories.	Cost includes fixing and Commissioning of any kind of Batten with 18W or higher wattage LED tube light with suitable fixing accessories like 02 nos. of stainless-steel mounting clamp and screws for surface mounting of batten in wall or aluminum clamp in case of structure as per direction of Rly. Engineer and supply of flexible wire with suitable PVC flexible conduit for connection of fitting to power supply from nearest point. Earth connection is to be ensured if fitting having such provision.
10	Supply of **BEE: 5 Star rated High Speed BLDC Ceiling Fan, 1200 mm Sweep, Material of Blade- Aluminium, Motor winding material: Copper**, Rated Voltage: 230V, 50Hz, Single phase AC with step type electronic fan regulator and necessary accessories as per specifications mentioned in explanatory note.	Cost includes supply, fixing and commissioning of BEE: 5 Star rated High Speed Brushless DC (BLDC) Motor Ceiling Fan, ISI marked, Sweep size: 1200 mm, Minimum Air delivery-210 Cubic Meter/Min, total harmonic distortion- 8% [max], Rated Voltage: 230 V, 50 Hz, Single phase AC, Winding Material: Copper having purity of minimum 99.90 %, Class of Insulation- Class B or higher, Blade thickness (Min): 1.1 mm, Blade material : Aluminium, Bearing : Double ball bearings, Down rod size (without shackle) : 300 mm, Shank & Shackle thickness (Min) : 2 mm, canopy : 2 nos., The PCB shall be installed either inside the motor housing or externally in an enclosure with a degree of protection not less than IP55. If mounted externally, the enclosure shall be fully covered by the canopy. Colour standard: White, BEE rating: 5 star (as per Ministry of Power Notification Number: S.O. 2210 (E) and S.O. 2211 (E) dated. 12th May 2022, S.O. 246(E) dated 17.01.2024, S.O. 3471(E) dated 14.08.2024 or latest), Rated power-28 watt [max], conforming to- (i)IS:374/2019 with Amendment No. 1/2022 or latest (ii)IS:302 (Part 2/Sec 80) - For safety requirement (iii)IS:14700 (Part 3/Sec 2) for THD (iv)IS 191:2007 with amendment no. 2 or latest for Copper purity. Speed control with electronic regulator (step type with minimum 5 running positions) and Regulators shall be provided with radio and television interference suppressing devices as per clause 10.7 of Amendment No. 1/2022 to IS 374/2019 or latest.

11	Fixing and commissioning of **Ceiling Fan with 1200 mm Sweep**, step type electronic fan regulator with necessary accessories to complete job.	The following certification shall be provided on demand: (i) Type test report along with Offer for the offered model & make of the BLDC fan with Electronic Regulator step type with minimum 5 running positions. Test report shall be from the NABL accredited Test lab. (ii) Routine test Certificates has to be submitted along with supply of materials. (iii) Test report along with Offer for the purity of the copper used in the winding of the Offered model & make fan. Test report shall be from the NABL accredited Test lab. (iv Technical Data Sheet (TDS) in the prescribed format. Acceptance test shall be carried out by Inspection Agency as per IS 374/2019 with Amendment No. 1/2022 or latest. ***The product shall carry standard free replacement warranty – 30 months (min).** Fixing of the fan shall be done with suitable stainless steel clamp, hook, nut/bolts etc. with installation of step type electronic regulator including flexible multi-strand Copper wire as per site requirement with suitable PVC flexible conduit for connection of fitting to power supply from nearest point. Earth connection is to be ensured. ***Make:** Crompton/Havells/Bajaj/Usha/Orient/Atomberg.
12	Supply of **Propeller type AC Ventilating Fan (Exhaust Fan) of size 300mm, Capacitor type, Material of Blade-Aluminum Die-cast, Motor winding material: Copper** with necessary accessories as per specifications mentioned in explanatory note.	Supply of Propeller type AC Ventilating Fan (Exhaust Fan) of size 300mm, Capacitor type, Material of Blade-Aluminum Die-cast, Motor winding material: Copper, Rated Voltage-230-240V, Frequency 50Hz, Insulation material Class B or better, Motor Enclosure-Totally Enclosed Type, along with Guard and other Accessories such as Frame, Legs Set, Rubber Clamps & Other Hardware etc. Conforming to IS 2312- 1967 with all amendments (Reaffirmed 2020) and ISI mark. Cost includes Suitable size of Stainless-steel fastener, screw, nuts, bolts, washer etc. as per site requirement. ***Warranty – 2 years (min).** ***Make:** Crompton/Havells/Bajaj/Usha/Orient/Atomberg.
13	**Fixing and commissioning of Heavy-Duty Exhaust Fans** as per consignee requirement with necessary accessories to complete job.	Cost includes fixing and commissioning of Heavy-Duty Exhaust Fans. Fixation will be made as per the direction of consignee. Fixing of the fan shall be done with suitable stainless-steel clamp, hook, nut/bolts, fastener & fixing accessories including necessary masonry work with suitable PVC flexible conduit for connection of fitting to power supply from nearest point. Earth connection is to be ensured.
14	Supply of **5M HDG (Hot Dip Galvanized) Octagonal Pole** with cable junction compartment, **Pole top dia. 70mm, bottom dia. 130mm, sheet thickness 3mm, base plate dimensions (L X B X T)-200mm X 200mm X 12mm** with 500 mm long single/double arm and foundation bolts etc. as per specifications mentioned in explanatory note.	Cost included for supply, fixing and commissioning of 5M HDG (Hot Dip Galvanized) Octagonal Pole with cable junction compartment consisting of Insulated Cable Connector 4-way and SP 6A MCB, Type B- 01 No. along with Bakelite sheet for cable termination, Pole top dia. 70mm, bottom dia. 130mm, sheet thickness 3mm, base plate dimensions (L X B X T)-200mm X 200mm X 12mm or higher with foundation bolts and Hot Dip Galvanized single or double arm (as per consignee requirement), each arm Length: 500mm, Dia.: 42.4mm ± 5%, Thickness: 3mm ± 5% (arm specs. may change as per site requirements). Complete pole along with arm brackets will be Hot Dip Galvanized as per IS: 4759 Latest. The cost also included for RCC foundation of size 750mm x 750mm at bottom and 500mm X 500mm at top with height 1500mm in the ratio 1:3:6 (cement: sand: aggregates).
15	Supply of **Insulated Cable Connector 4-way and SP 6A MCB, Type B- 01 No. along with Bakelite sheet for Octagonal Pole**.	

16	Fixing and Commissioning of **5M HDG (Hot Dip Galvanized) Octagonal Pole, top dia. 70mm, bottom dia. 130mm, sheet thickness 3mm, base plate dimensions (L X B X T)- 200mm X 200mm X 12mm** with 500 mm long single/double arm and foundation bolts etc. with RCC foundation works to complete the job as per specifications mentioned in explanatory note.	The rate shall be inclusive of all materials including stainless steel fastener, nut and bolt as per latest SER specification as per site requirements and all necessary masonry work required to complete the work with necessary cable arrangement for lighting fixture including transportation of pole to site location. ***Drawing of HDG pole and foundation is to be approved by Sr.DEE(G)/KGP or authorized representative.** ***Make of Octagonal pole:** Bajaj/Utkarsh/Crompton/Surya. ***Make of MCB:** LK/Legrand/ABB/Schneider/Hager.
17	**Supply of LED 45 watt or higher wattage street light with Colour Rendering Index (CRI) >=70, confirming IP66** as per specifications mentioned in explanatory note.	The cost includes supply of street light LED 45 watt or higher wattage street light suitable for fixing in arm of 42.4mm dia., including system lumen efficiency ≥110 lm/Watt (±5%), Power factor ≥0.90 at full load, normal voltage of luminary: 230V AC ±5%, 50HZ, Operating Voltage range: 140-270V AC, working temperature should be -10°C to 55°C, The complete unit cubicle together with its mounting arrangement shall be subjected to shock testing as per latest IEC 61373, LED life expectancy ≥50000 burning hrs., Colour temperature range 5500-6500K, Colour Rendering Index (CRI) ≥70 with driver featuring (Constant current driver with open & short circuit protection), THD<10%, efficiency ≥85%, SPD for External surge protection-of minimum 10KV to be separately installed with the each fixture (As per ANSI C 136'2- 2014), Lamp shall be Distortion free, clear, heat resistance toughened glass of thickness 4.00 mm, polycarbonate lens Fire retardant FR grade, Ingress Protection of IP-66, The housing shall be single housing, side entry high pressure aluminium die cast/extruded aluminium, grey colour corrosion-resistant polyester powder coated with separate optical and control gear compartments, high conductivity (LM/6/ADC12/LM24) with integral heat sink and heat proof silicon rubber, silicon gasket between housing & cover, Impact Resistance of IK-07. Cover to be fixed to the housing by mean of stainless-steel screws and stainless-steel fastener. ***Warranty for free replacement- 5 years.** Cost also included for fixing and commissioning of the same in suitable fixing arm with suitable stainless steel clamp, nut/bolts, fastener & fixing accessories to fix the fitting on pole/wall or as per direction of Rly including necessary masonry work with suitable PVC flexible conduit for connection of fitting to power supply from nearest point. Earth connection is to be ensured. ***Make:** Havells/Bajaj/Philips/Orient/Crompton/Surya.
18	**Fixing and commissioning of LED 45 watt or higher wattage street light** including wiring of light from loop box.	

19	Supply of **4 x 16 sq. mm, XLPE Insulated, 1100 Volts Grade, LT Cable with improved fire performance category C2-FRLS** and Stranded Aluminum Conductor as per specifications mentioned in explanatory note.	Supply of 4 x 16 sq. mm, XLPE Insulated, 1100 Volts Grade, LT Cable with improved fire performance category C2-FRLS, Stranded Aluminum Conductor complying with Class 2 of IS 8130, Cores Laid up, Inner sheath of PVC applied by extrusion, Galvanized round steel wire or Galvanized steel formed wire (strip) Armored, Cores' identification by Colored strip applied on the cores or by Coloring of XLPE Insulation, Outer Sheath of PVC Compound applied by extrusion conforming to the requirement of type ST2 as per IS 5831 & also meet the requirement of C2 Category tests under clause 15.1.1 & 15.2.1, Conforming To IS: 7098 Part-1 with amendment no. 1,2,3,4,5 or latest & ISI Marked. (i) Type Test Certificate Conforming to IS: 7098 Part-1 from NABL Accredited lab has to be submitted along with the offer and along with the supply of material for similar type of cable having conductor cross-sectional area not less than the mentioned size in description. (ii) Routine test Certificate has to be Submitted along with Supply of materials. (iii) Acceptance test as per IS: 7098 Part-1 has to be conducted by Inspection Agency. ***Make:** Havells/Polycab/RR Kabel/Finolex/KEI.
20	Supply of **4 x 50 sq. mm, XLPE Insulated, 1100 Volts Grade, LT Cable with improved fire performance category C2-FRLS** and Stranded Aluminum Conductor as per specifications mentioned in explanatory note.	Supply of 4 x 50 sq. mm, XLPE Insulated, 1100 Volts Grade, LT Cable with improved fire performance category C2-FRLS, Stranded Aluminum Conductor complying with Class 2 of IS 8130, Cores Laid up, Inner sheath of PVC applied by extrusion, Galvanized round steel wire or Galvanized steel formed wire (strip) Armored, Cores' identification by Colored strip applied on the cores or by Coloring of XLPE Insulation, Outer Sheath of PVC Compound applied by extrusion conforming to the requirement of type ST2 as per IS 5831 & also meet the requirement of C2 Category tests under clause 15.1.1 & 15.2.1, Conforming To IS: 7098 Part-1 with amendment no. 1,2,3,4,5 or latest & ISI Marked. (i) Type Test Certificate Conforming to IS: 7098 Part-1 from NABL Accredited lab has to be submitted along with the offer and along with the supply of material for similar type of cable having conductor cross-sectional area not less than the mentioned size in description. (ii) Routine test Certificate has to be Submitted along with Supply of materials. (iii) Acceptance test as per IS: 7098 Part-1 has to be conducted by Inspection Agency. ***Make:** Havells/Polycab/RR Kabel/Finolex/KEI.
21	**Laying of LT cable/cables in underground along the road through cable trench etc**. as mentioned in explanatory note.	The cost includes for laying of LT cable/cables along the road to be made according to drawing No. KGP/EL(G)/V. Trenching and laying of U/G cables in any kind of soil trench of size minimum 0.40 mtr wide and 1 mtr deep covered with necessary bricks for protection of the cables including filling of space between brick and cable/cables with sand and refilling the trench with excavated soil, leveling up, and restoring the surface duly rammed. Coil of cable/cables to be made and grounded at both end of trench /at bend of trench/way of trench (if required) as per instruction of consignee. The cost also includes termination, connection, testing and commissioning of cable with proper socketing of cables. Cost also includes collection of cable/cables from Railway store if required. **Cable may be supplied by Railway if required as per site.**

22	**Laying of LT cable/cables across the road, track, drain through RCC/GI pipe** as mentioned in explanatory note.	The cost includes laying of LT cable/cables across the road, track, drain etc. through RCC/GI pipe according to drawing No. KGP/EL(G)/V. The cable/cables to be mechanically protected by RCC/GI pipe of size 100 mm/150 mm confirming to IS standard. Crossing shall be done through hand boring method also. The cost also includes Termination, connection, testing and commissioning of suitable size Cable/cables including supply and fixing of cable glands as per site requirement. Cost also includes collection of cable/cables from Railway store if required. Required RCC/GI pipes to be supplied by contractor. **Cable may be supplied by Railway if required as per site.**
23	**Laying of LT cable/cables on wall/structure through PVC casing pipe of size 4inches or 3inches** with accessories as mentioned in explanatory note.	The cost includes Laying of LT cable/ cables on wall / structure through PVC casing pipe of size 4 inches or 3 inches or as per site requirement with all accessories as per site requirement with suitable clamp / saddle/ fixtures etc. with necessary termination, connection and testing as per standard drawing including supply and fixing of lugs of suitable size. Cost also includes collection of cable/cables from Railway store if required. ***Make of PVC casing pipe:** Any Indian make conforming to relevant IS as approved by Sr.DEE(G)/KGP or authorized representative. **Cable may be supplied by Railway if required as per site.**
24	**Laying of extra cables in the excavated same trench.**	The cost includes laying of extra cables in the excavated same trench as per the direction of consignee and termination, connection, testing and commissioning of cable with proper socketing of cables. Cost also includes collection of cable/cables from Railway store if required. **Cable may be supplied by Railway if required as per site.**
25	**Transportation of cables in drum/rolls** with or without wooden drums/roll from the store of concerned SSEE or any store of Kharagpur Division to the site of works.	Transportation of cables in drum/rolls with or without wooden drums/roll from the store of concerned SSEE or any store of Kharagpur Division to the site of works.
26	**Supply, transportation and fixing of RCC Cable Route Marker** of size L-12", B-6" and H-2.6" or as per site requirement with all accessories.	Supply, transportation and fixing of RCC Cable Route Marker of size L-12", B-6" and H-2.6" or as per site requirement with all accessories.
27	Supply, erection, testing and commissioning of **LT XLPE cable gland made of Brass with aluminum lugs/sockets (4 Nos.) suitable for termination work of LT 4 Core X 16-25 sq. mm XLPE aluminum conductor armored cable.**	The cost is included for supply, erection, testing and commissioning of LT XLPE cable gland made of Brass with aluminum lugs/sockets (4 Nos.) suitable for termination work of LT 4 Core X 16-25 sq. mm XLPE aluminum conductor armored cable as per site requirement. ***Make:** Any Indian make conforming to relevant IS as approved by Sr.DEE(G)/KGP or authorized representative.
28	Supply, erection, testing and commissioning of **LT XLPE cable gland made of Brass with aluminum lugs/sockets (4 Nos.) suitable for termination work of LT 4 Core X 35-50 sq. mm XLPE aluminum conductor armored cable.**	The cost is included for supply, erection, testing and commissioning of LT XLPE cable gland made of Brass with aluminum lugs/sockets (4 Nos.) suitable for termination work of LT 4 Core X 35-50 sq. mm XLPE aluminum conductor armored cable as per site requirement. ***Make:** Any Indian make conforming to relevant IS as approved by Sr.DEE(G)/KGP or authorized representative.

29	Supply with testing of **Outdoor Type LT Panel made of Powder Coated CRCA Sheet Steel of thickness (minimum): 2mm with Double Door arrangement** (Front side openable & operatable compartmental doors and front side outer door is to be provided) **to meet Ingress Protection of IP 65 or higher,** a canopy at the top made of minimum 2.0mm thick CRCA Sheet Steel to protect panel from rainwater **consisting with Two Separate Chambers** [Chamber-1 for 3-Ph Local Power Distribution, Chamber-2 for 1-Ph Traction / Emergency Power Distribution]. **Chamber-1 consisting of FP 63A, 36kA MCCB- 01 No. as incoming and FP 32A, 10kA MCB with 4PP, Type B- 03 Nos., DP 20A, 10kA MCB with 2PP, Type C- 06 Nos. as outgoing, Chamber-2 consisting of DP 32A, 10kA MCB with 2PP, Type B- 01 No. as incoming and DP 20A, 10kA MCB with 2PP, Type-B- 03 Nos. as outgoing** with Separate Cu. Bus bar arrangement of suitable size for each chamber, Digital Multifunctional Meter in each Incoming side, Capable to measure and display Voltage, Current, Frequency, Power factor, kW, kVAR, kWh, kVAh, kVARh etc., appropriate spreader link for MCCB and with necessary item for seal the cable entry and outgoing point duly conforming PCEE/SER/GRC Specification of LT Distribution Panel as applicable with Description No. SER/ELEC/GS/DESCRIPTION/LT PANEL/1/REV-2/JUNE 2025, Dtd.16/06/2025.	The cost includes supply, fixing, commissioning and testing of Outdoor Type LT Panel made of Powder Coated CRCA Sheet Steel of thickness (minimum): 2mm with Double Door arrangement (Front side openable & operatable compartmental doors and front side outer door is to be provided) to meet Ingress Protection of IP 65 or higher, a canopy at the top made of minimum 2.0mm thick CRCA Sheet Steel to protect panel from rainwater consisting with Two Separate Chambers [Chamber-1 for 3-Ph Local Power Distribution, Chamber-2 for 1-Ph Traction / Emergency Power Distribution]. Chamber-1 consisting of FP 63A, 36kA MCCB- 01 No. as incoming and FP 32A, 10kA MCB with 4PP, Type B- 03 Nos., DP 20A, 10kA MCB with 2PP, Type C- 06 Nos. as outgoing, Chamber-2 consisting of DP 32A, 10kA MCB with 2PP, Type B- 01 No. as incoming and DP 20A, 10kA MCB with 2PP, Type-B- 03 Nos. as outgoing with Separate Cu. Bus bar arrangement of suitable size for each chamber, Digital Multifunctional Meter in each Incoming side, Capable to measure and display Voltage, Current, Frequency, Power factor, kW, kVAR, kWh, kVAh, kVARh etc., including internal connection with suitable size Flexible, Multistrand Cu wire of FR-LSH grade, appropriate spreader link for MCCB, Automatic Fire Ball, Insulating Mats, Stud Terminals suitable for termination of incoming/outgoing cables, 3-phase LED Indication lamp for incoming and outgoing points, lock arrangement for each compartmental doors, necessary item for seal the cable entry points and necessary accessories to complete job with all other Civil work as per site requirement and direction of Consignee. Incoming and outgoing cable entry point shall be on bottom side. Only Stainless Steel (SS) clamps, fasteners, nut-bolts to be used for fixing purpose. ***The Outdoor LT Panel shall be wall mounted or plinth mounted depending on consignee requirement. In case of plinth mounted arrangement cost is inclusive for making concrete plinth of suitable size and height as per direction of the consignee.** *All MCCBs have to be provided with adjustable short circuit and overload setting Conforming to IS/IEC 60947-1&2 or latest. MCBs should be confirming to IS/IEC 60898: PART 1:2015 latest. ***The scope of work is inclusive of all the items of PCEE/SER/GRC Specification of LT Distribution Panel as applicable with Description No. SER/ELEC/GS/ DESCRIPTION/LT PANEL/1/REV-2/JUNE 2025, Dtd.16/06/2025.** ***Internal Connection Diagram, Build of Materials & Drawing of Panel to be approved by Sr.DEE(G)/KGP or authorized representative.** ***Make of MCCB/MCB:** Legrand/ABB/Schneider/Havells/Hager/C&S. ***Make of Panel:** Any CPRI approved Panel Builder.
30	Fixing and commissioning of **Outdoor Type LT Panel made of Powder Coated CRCA Sheet Steel of thickness (minimum): 2mm with Double Door arrangement** (Front side openable & operatable compartmental doors and front side outer door is to be provided) **to meet Ingress Protection of IP 65 or higher,** a canopy at the top made of minimum 2.0mm thick CRCA Sheet Steel to protect panel from rainwater **consisting with Two Separate Chambers** [Chamber-1 for 3-Ph Local Power Distribution, Chamber-2 for 1-Ph Traction / Emergency Power Distribution]. **Chamber-1 consisting of FP 63A, 36kA MCCB- 01 No. as incoming and FP 32A, 10kA MCB with 4PP, Type B- 03 Nos., DP 20A, 10kA MCB with 2PP, Type C- 06 Nos. as outgoing, Chamber-2 consisting of DP 32A, 10kA MCB with 2PP, Type B- 01 No. as incoming and DP 20A, 10kA MCB with 2PP, Type-B- 03 Nos. as outgoing** with Separate Cu. Bus bar arrangement of suitable size for each chamber, Digital Multifunctional Meter in each Incoming side, Capable to measure and display Voltage, Current, Frequency, Power factor, kW, kVAR, kWh, kVAh, kVARh etc., appropriate spreader link for MCCB and with necessary item for seal the cable entry and outgoing point and all other Civil work and accessories to complete job.	

31	**Supply of Floor/Panel/Tower/Wall mounted 1-Phase Timer Panel**, consisting of auto/manual switch, Digital Time Switch- 01no, Contactor Rating (A): 18A FP- 01 No. (with required number of NO and NC Contacts as per panel design), MCB Rating: FP 20A, 10kA MCB with 4PP (Protected Pole) as incoming, SP 16A, 10kA MCB with 1PP (Protected Pole) -03 Nos. as outgoing and SP 6A, 10kA MCB with 1PP (Protected Pole) -01 No. for control circuit protection with provision of pad lock, cable gland etc.	The cost includes supply, fixing and commissioning of Floor/Panel/Tower/Wall mounted 1-Phase Timer Panel made of powder coated sheet steel of thickness (minimum): 1.6mm with ingress protection of IP54, consisting of auto/manual switch, Digital Time Switch- 01no, Contactor Rating (A): 18A FP- 01 No. (with required number of NO and NC Contacts as per panel design), MCB Rating: FP 20A, 10kA MCB with 4PP (Protected Pole) as incoming, SP 16A, 10kA MCB with 1PP (Protected Pole) -03 Nos. as outgoing and SP 6A, 10kA MCB with 1PP (Protected Pole) -01 No. for control circuit protection with provision of pad lock, cable gland etc. This cost also includes mounting of the panel on 0.5mtr civil foundation along with 0.5mtr iron frame body to support the panel for water protection in case if it is floor mounted. Fixing and commissioning shall be done with suitable Stainless Steel (SS) fasteners, nut-bolts etc. ***Drawing to be approved by Sr.DEE(G)/KGP or authorized representative.** ***Make of Contactor/MCB:** Legrand/ABB/Schneider/Havells/Hager/C&S. ***Make of Panel:** Any CPRI approved Panel Builder.
32	**Fixing and commissioning of Timer Panel** with all accessories. The panel should be mounted on 0.5mtr civil foundation along with 0.5mtr iron frame body to support the panel for water protection in case if it is floor mounted.	
33	**Supply of 50mm Outer Dia. HDPE pipe of Grade PE-100** with all accessories like suitable couplers, plugs, end caps, spacer, T band etc. as mentioned in explanatory note.	Supply of 50mm Outer Dia. HDPE pipe for cable supporting of Grade PE-100, PN 10 (Working Pressure Kg/Cm2 Capacity) as specified and conforming to IS No. 4984: latest and ISI marked with all accessories like suitable couplers, plugs, end caps, spacer, T band etc. The thickness of pipe shall be minimum 3.6mm. ***Make:** Supreme/Skipper/Karan Polymers/Ori-plast/Flextrace.
34	**Erection and commissioning of HDPE pipe of any size** with all accessories to complete job.	Cost is included for erection and commissioning of HDPE pipe of any size duly undertaking jointing with required suitable size couplers, plugs, end caps, spacer, T band etc. as per the site conditions with proper tools, for cable running applications. The ends of the pipes to be closed with caps. Cost also includes collection of pipe from Railway store if required.
35	**Supply of AUTOMATIC CHANGEOVER including suitable Enclosure made of CRCA Sheet Steel with current limiter** WITHOUT GEN START/STOP, SPN 30 modular (6000 W) or higher size as per Explanatory Note.	Cost is included for supply, fixing and commissioning of AUTOMATIC CHANGEOVER including suitable Enclosure made of CRCA Sheet Steel with current limiter WITHOUT GEN START/STOP, SPN 30 modular (6000 W) or higher size as per IEC 60947-3, IEC 60947-6 or latest, Voltage: 150VAC to 300VAC, LED for overload Trip, Different LED colors for clear differentiation between functions with all other accessories to complete job. ***Make:** Hager/Havells/ABB/LK/Legrand/Schneider or Similar conforming to relevant IS as approved by Sr.DEE(G)/KGP or authorized representative.
36	**Fixing and commissioning of AUTOMATIC CHANGEOVER including suitable Enclosure made of CRCA Sheet Steel with current limiter** WITHOUT GEN START/STOP, SPN 30 modular (6000 W) or higher size with all other accessories to complete job.	

37	**For Local Power: Supply of SPN 6-way DB (Double Door), sheet thickness (minimum): 1.6mm** consisting with **DP 20A, 10kA MCB with 2PP, Type B -01 no. as incoming and SP 10 A, 10kA MCB, Type B -04 nos. as outgoing** with Cu. bus-bar, Neutral links, Earth bar, cable gland etc.	The cost includes supply, fixing and commissioning of SPN DB (Double Door) of size- 6-Way, sheet thickness (minimum): 1.6mm (Powder Painted CRCA Sheet Steel), Ingress Protection: IP43 or better, Impact Protection: IK09 or better consisting with DP 20A, 10kA MCB with 2PP, Type B -01 no. as incoming and SP 10 A, 10kA MCB, Type B -04 nos. as outgoing with Cu. bus-bar, Neutral links, Earth bar, cable gland etc. with wiring and accessories to complete the job. **Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per specification mentioned in <u>Annexure-A</u> of this document**. During commissioning any blank space of DB is to be covered by MCB dummy plate. DB should be confirming to IS: 13032:1991 latest or IEC: 61439 Part-3 latest and MCBs should be confirming to IS/IEC 60898: PART 1:2015 latest. ***Make:** Legrand/ABB/Schneider/Havells/Hager/C&S.
38	**Fixing and commissioning of SPN 6-way DB (Double Door)** consisting with **DP 20A, 10kA MCB with 2PP, Type B -01 no. as incoming and SP 10 A, 10kA MCB, Type B -04 nos. as outgoing** with Cu. bus-bar, Neutral links, Earth bar, cable gland etc. with wiring and accessories to complete the job.	
39	**For Traction Power: Supply of SPN 4-way DB (Double Door), sheet thickness (minimum): 1.6mm** consisting with **DP 16A, 10kA MCB with 2PP, Type B -01 no. as incoming and SP 10 A, 10kA MCB, Type B -02 nos. as outgoing** with Cu. bus-bar, Neutral links, Earth bar, cable gland etc.	The cost includes supply, fixing and commissioning of SPN DB (Double Door) of size- 4-Way, sheet thickness (minimum): 1.6mm (Powder Painted CRCA Sheet Steel), Ingress Protection: IP43 or better, Impact Protection: IK09 or better consisting with DP 16A, 10kA MCB with 2PP, Type B -01 no. as incoming and SP 10 A, 10kA MCB, Type B -02 nos. as outgoing with Cu. bus-bar, Neutral links, Earth bar, cable gland etc. with wiring and accessories to complete the job. **Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per specification mentioned in <u>Annexure-A</u> of this document**. During commissioning any blank space of DB is to be covered by MCB dummy plate. DB should be confirming to IS: 13032:1991 latest or IEC: 61439 Part-3 latest and MCBs should be confirming to IS/IEC 60898: PART 1:2015 latest. ***Make:** Legrand/ABB/Schneider/Havells/Hager/C&S.
40	**Fixing and commissioning of SPN 4-way DB (Double Door)** consisting with **DP 16A, 10kA MCB with 2PP, Type B -01 no. as incoming and SP 10 A, 10kA MCB, Type B -02 nos. as outgoing** with Cu. bus-bar, Neutral links, Earth bar, cable gland etc. with wiring and accessories to complete the job.	
41	**Supply of Cable loop box** (of fibre body) for 3-Phase incoming and outgoing connection consists of 3-Phase and neutral terminal and 15/16 Amps K-fuse as per relevant ISS, with suitable bridge arrangement of size: 240mm x 140mm x 100mm and all other accessories.	The cost includes Supply, fixing and commissioning of Cable loop box (of fibre body) for 3-Phase incoming and outgoing connection consists of 3-Phase and neutral terminal and 15/16 Amps K-fuse as per relevant IS, with suitable bridge arrangement of size: 240mm x 140mm x 100mm, as per relevant specification/drawing. Fixing shall be made with necessary arrangements like stainless steel clamp. fastener etc. as per site requirement, cables are to be terminated with proper Lug/socketing arrangement to complete job. [1. Strip conductor to insertion depth (add 10% because of length changing of crimp sleeve), 2. Conductor ends must be cleaned before termination, 3. Insert conductor fully into cable lug, 4. Using the appropriate crimping tool crimp lug onto conductor] to complete job. ***Make:** Cape/Hensel/Grasp/Sintex/National.
42	**Fixing and commissioning of Cable loop box** (of fibre body) for 3-Phase incoming and outgoing connection consists of 3-Phase and neutral terminal and 15/16 Amps K-fuse as per relevant ISS, with suitable bridge arrangement of size: 240mm x 140mm x 100mm and all other accessories.	
43	Supply of **Hot-dip Galvanized (HDG) Perforated type Cable Tray of Sheet Thickness (minimum): 2.5mm, Length (minimum): 2500mm, Width (minimum): 150mm, Height (minimum): 75mm, Having Slotted Rung Spacing,** with suitable accessories required to complete job as mentioned in explanatory note.	The cost includes supply, laying and fixing of Hot-dip Galvanized (HDG) Perforated type Cable Tray of Sheet Thickness (minimum): 2.5mm, Length (minimum): 2500mm [tolerance: (-5mm) to (+10mm)], Width (minimum): 150mm, Height (minimum): 75mm [width & height tolerance: (-3mm) to (+5mm)], with clamp, cover and accessories as and where required as per consignee to complete the job. Only stainless-steel clamp, nut/bolts etc. to be used. ***Make:** OBO/Legrand/Schneider/ABB.
44	Laying and fixing of **Hot-dip Galvanized (HDG) Perforated type Cable Tray** with all accessories to complete job.	

45	**Supply, laying, fixing and commissioning of 25 x 5mm GI strip** as and where required extra for earth connection between earth electrode and main switch/ DB/ Electric pole etc. as per site supervisor's instruction, including connection & termination with stainless steel nut, bolt, spring, washer etc. as required.	The cost includes supply, laying, fixing and commissioning of 25 x 5mm GI strip as and where required extra for earth connection between earth electrode and main switch / DB / Electric pole etc. as per site supervisor's instruction, including connection & termination with stainless steel nut, bolt, spring, washer etc. as required. Joining shall be done by overlapping and with 2 sets of stainless steel nut bolt & spring kit complete as per IS, IE rules and site requirement. GI Strip shall be laid at 0.5 Meter below ground in case of laying in ground.
46	**Supply of Earthing arrangement with supply of Hot Dip Galvanized (HDG) earth cone** and all other requisite materials as per **CEE/GRC's Drg. No.CEE/G/A3/P-150, Alt.1** including sump box, cover with salt and charcoal etc. as per site supervisor's instruction. Cost includes supply of all materials mentioned in the Drawing **including 02 meters 25 x 5mm GI strip** for connection from earth electrode pipe to light pole /Rail pole etc.	The cost includes supply and erection of Earthing arrangement with supply of **Hot Dip Galvanized (HDG) earth cone** and all other requisite materials as per **CEE/GRC's Drg. No.CEE/G/A3/P-150, Alt.1** including sump box, cover with salt and charcoal etc. as per site supervisor's instruction. Cost includes supply and erection of all materials mentioned in the Drawing **including 02 meters 25 x 5mm GI strip** for connection from earth electrode pipe to light pole /Rail pole etc. **Sump Box Dimention:** L-425mm X W-425mm X H-250mm, Made of Concrete of minimum Thickness- 25mm. **Cover Dimension:** L-425mm X W-425mm, Made of Concrete of minimum Thickness- 25mm. ***Make:** Tata/Jindal/Utkarsh/Bansal.
47	**Erection of Earthing arrangement with erection of Hot Dip Galvanized (HDG) earth cone** and all other requisite materials as per **CEE/GRC's Drg. No.CEE/G/A3/P-150, Alt.1** including sump box, cover with salt and charcoal etc. as per site supervisor's instruction. Cost includes erection of all materials mentioned in the Drawing **including 02 meters 25 x 5mm GI strip** for connection from earth electrode pipe to light pole /Rail pole etc.	

NOTE:

(i) All the necessary drawings are to be got approved before supply by Sr.DEE(G)/KGP.

(ii) In cases where, no specific make is mentioned against any schedule item or in exceptional circumstances, if the Firm is unable to supply material of any of the specified makes, the Firm shall take prior approval of Sr.DEE(G)/KGP.

(iii) In case of any dispute over technical specification of any material mentioned in above schedules, final decision will be of Sr.DEE/G/KGP and the same shall be binding on the contractor.

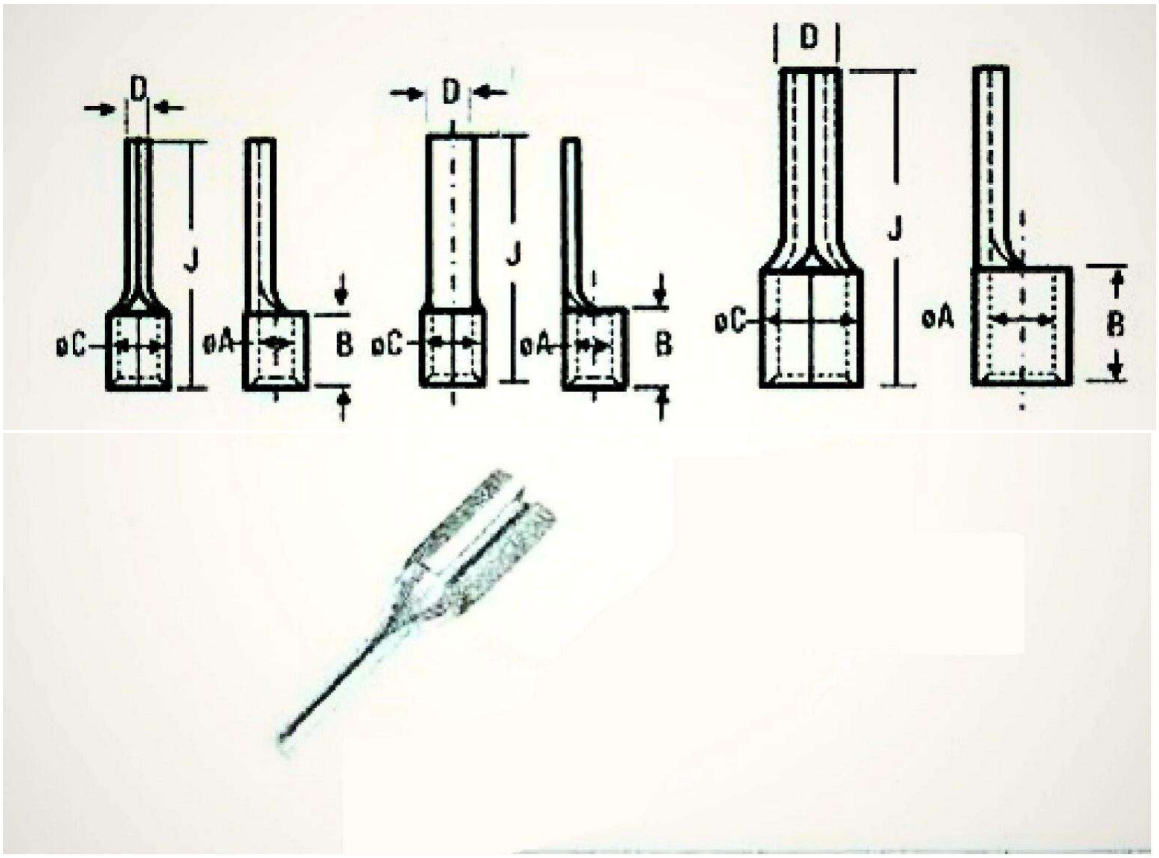
(iv) If there is any varying of conflicting provisions in the documents forming part of the contract, Sr.DEE/G/KGP shall be the deciding authority with regards to the intensions of the provisions and decision shall be final and binding on the contractor.

ANNEXURE-A

❖ **TECHNICAL SPECIFICATION FOR PIN TYPE CU TERMINAL END LUGS:**

Pin Type Terminal End Lug with dimensions as per attached drawing SN 1, Non-insulated type, manufactured from "tough pitched electrolytic copper of 99.9% purity as per IS 191:2007 with amendment no. 2 or latest", electro tinned finish, for solderless crimping to 1.5 Sq. mm Cable, suitable for cable termination in Switches, Sockets, MCBs, MCCBs, RCCBs and Terminal Blocks.
Pin Type Terminal End Lug with dimensions as per attached drawing SN 2, Non-insulated type, manufactured from "tough pitched electrolytic copper of 99.9% purity as per IS 191:2007 with amendment no. 2 or latest", electro tinned finish, for solderless crimping to 2.5 Sq. mm Cable, suitable for cable termination in Switches, Sockets, MCBs, MCCBs, RCCBs and Terminal Blocks.
Pin Type Terminal End Lug with dimensions as per attached drawing SN 3, Non-insulated type, manufactured from "tough pitched electrolytic copper of 99.9% purity as per IS 191:2007 with amendment no. 2 or latest", electro tinned finish, for solderless crimping to 4 Sq. mm Cable, suitable for cable termination in Switches, Sockets, MCBs, MCCBs, RCCBs and Terminal Blocks.
Pin Type Terminal End Lug with dimensions as per attached drawing SN 4, Non-insulated type, manufactured from "tough pitched electrolytic copper of 99.9% purity as per IS 191:2007 with amendment no. 2 or latest", electro tinned finish, for solderless crimping to 6 Sq. mm Cable, suitable for cable termination in Switches, Sockets, MCBs, MCCBs, RCCBs and Terminal Blocks.

Drawing: Copper Pin Type Terminal End Lug



Dimension (Tolerance ±5%)

SN	Cable size (Sq. mm)	ØA (sq. mm)	ØC(sq. mm)	D (mm)	B (mm)	J (mm)
1	1.5	1.6	3.2	1.9	5	17
2	2.5	2.3	3.9	1.9	5	17
3	4	2.9	4.9	2.7	6	20
4	6	3.6	5.6	2.7	6	20