

**Eastern Railway  
Elect. Genl. Branch, Asansol**

**EXPLANATORY NOTE**

**Name of the Work : Asansol Division - Provision of 750 V power supply for maintenance of HOG coaches through 2000 KVA CSS at New coaching complex , Asansol for testing LHB coaches during primary and secondary maintenance with other electrical ancillary work.**

Sl. No.	Description of works
1	<p>Work involve for design, supply, erection, installation, electric connection, testing, commissioning, transportation, loading , un-loading of Indoor Type 11KV, 8 Panel Switch Board with standard suitable busbar comprising of Incomer: 2 Nos:11kV 1250A 25kAVacuum Circuit Breaker Panel (with Bus Coupler), Outgoing: 6 Nos: 11kV1250A 25kA Vacuum Circuit Breaker Panel with all accessories like CT, PT, protective relay, copper busbar, wiring, instrumentation, indication lamp, energy meter, MF meter etc. complete in all respect including power pack of suitable rating for control circuit should confirm to relevant IS/IEC or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) <b>as per Annexure- HT panel</b> and preliminary condition as provided in tender document. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final. Drawing must be approved by competent authority before supply of material.</p> <p>Work involves for erection, installation, connection, testing &amp; commissioning of 11KV HT VCB panel set complete including all accessories with necessary masonry work of cement concert of ratio 1:2:4 (cement :sand: stone chips ) and necessary nuts &amp; bolts. Necessary connection to be done by suitable size flexible copper cable with socket and using copper bus bar of suitable size. Marking of all in-coming and out-going of VCB to be done by white paint and date of commissioning to be marked by fixing of suitable plate at top of the panel with well surface finish as per site requirement. Suitable size cable duct should be made behind VCB panel for cable entry by earth excavation &amp; PCC work with net cement polish finishing. Duct should be filled up with sand after cable entry &amp; connection. The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final.</p>
2	<p>Work involve for supply of 11KV, 800A, 26.3KA VCB 1incoming + 2 outgoing unit indoor type VCB Panel with CU busbar, current carrying capacity 800A with power pack should confirm to relevant IS/IEC or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) <b>as per Annexure- HT panel</b> and preliminary condition as provided in tender document. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final. Drawing must be approved by competent authority before supply of material.</p>
3	<p>Work involves for erection, installation, connection, testing &amp; commissioning of 11KV HT VCB panel set complete including all accessories with necessary masonry work of cement concert of ratio 1:2:4 (cement :sand: stone chips ) and necessary nuts &amp; bolts. Necessary connection to be done by suitable size flexible copper cable with socket and using copper bus bar of suitable size. Marking of all in-coming and out-going of VCB to be done by white paint and date of commissioning to be marked by fixing of suitable plate at top of the panel with well surface finish as per site requirement. Suitable size cable duct should be made behind VCB panel for cable entry by earth excavation &amp; PCC work with net cement polish finishing. Duct should be filled up with sand after cable entry &amp; connection. The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final.</p>
4	<p>Work involve for supply, installation, testing and commissioning of 110 V DC, 100 Ah Battery Bank, Suitable number of cells/monoblocks to achieve 110 V DC nominal output comprising</p>

	<p>maintenance-free Sealed Maintenance Free (SMF) Valve Regulated Lead Acid (VRLA) batteries, complete with factory-filled electrolyte, immobilized electrolyte; no topping-up required, Inter-cell/inter-tier connectors, Mild steel powder-coated battery rack/stand, Terminal covers and insulating shrouds, Nuts, bolts, washers and hardware, insulation accessories, Battery identification tags/label, Earthing provisions , All cables and all necessary hardware required for satisfactory operation, Design Life: Minimum 10 years at 27°C (or as per manufacturer's standard), Container Material: High-impact, flame-retardant ABS plastic, Terminal Type: Corrosion-resistant copper alloy terminals, Self-Discharge Rate: Less than 3% per month at 25°C, Operating Temperature: 0°C to 50°C minimum, Maintenance-free during normal service life, IEC 60896-21/22, IS/IEC applicable standards, CE certification (If applicable), warranty- 30 months from date of supply and 24 month from date of installation whichever is earlier followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) and preliminary condition as provided in tender document. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final. Drawing must be approved by competent authority before supply of material.</p>
5	<p>Work involve for Supply, installation, testing and commissioning of Float Cum Boost Battery Charger, loading , Un-loading and suitable for charging and maintaining a 110 V DC, 100 Ah SMF VRLA battery bank, complete with input/output protection, control circuitry, metering, alarms, enclosure, accessories, interconnections and all materials required for satisfactory operation should be reputed make and should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition followed by <b>Annexure B1</b> of tender documents. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job &amp; make of the material will be final. Drawing must be approved by competent authority before supply of material.</p>
6	<p>Work involve for design, supply, erection, installation, electric connection, testing, commissioning, transportation, loading , un-loading including civil foundation work of 11kV/750V Package Substation consisting 1No. 2000 KVA Dry Type Transformer with RMU consisting of 2 nos. Motorized LBS &amp; 3 Nos. motorized operated VCB 630A &amp; LT side incoming of 1x3200A ACB 4P 50KA, Bus coupler 1x3200A ACB 4P 50KA &amp; outgoing 3x1600A ACB 4P manual draw out suitable for 750V complete with indication lamps &amp; digital multifunction meter complete (suitable for SCADA operation on LT/HT side) with accessories with relevant IS/IE Rules and site requirement and approved by Railway or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) <b>as per General Technical Spec of Outdoor type CSS 2000KVA</b> and preliminary condition as provided in tender document. <b>Decision of Railway administration over the standardisation of the job &amp; make of the material will be final. Drawing must be approved by competent authority before supply of material.</b></p> <p>Work involve for construction of iron shed structure with angle iron frame of size 40 mm × 40 mm × 5 mm (or as per site requirement), having transparent sheet top cover and MS grill enclosure duly painted on all four sides of the Compact Substation, maintaining all statutory safety norms as per relevant IS/RDSO specifications for commissioning of electrical equipment, tools, plants and electrical connections.</p> <p>The work shall include construction of M20 grade RCC foundation and concrete masonry plinth below ground level, complete with provision for HT and LT cable incoming/outgoing trenches, cable entry sleeves, earthing strip sleeves and all associated civil works required for installation of the Compact Substation.</p> <p>The foundation shall be of suitable size as per approved manufacturer's drawings and shall extend minimum 500 mm all around the outdoor enclosure with a minimum plinth height of 1000 mm above finished ground level. The foundation shall be provided with suitable diameter GI pipes/HDPE sleeves</p>

	<p>for HT/LT incoming and outgoing cables, earthing strips, control cables and other services as required.</p> <p>The work shall further include all civil works such as PCC, RCC foundation, reinforcement, formwork/shuttering, concrete placing, vibration, curing, masonry, plastering, cable trenches, platform, pedestal, earth filling, compaction, finishing and all other incidental works, strictly as per the recommendations of the Compact Substation manufacturer, approved structural drawings and Railway specifications.</p> <p>The scope of work shall include loading, unloading, shifting, positioning, erection, alignment, interconnection, testing and commissioning of 2000 kVA, 11 kV/750 V Compact Substation complete in all respects, including supply and installation of all consumables, fasteners, glands, lugs, ferrules, cable termination accessories, earthing materials, danger boards, name plates and other miscellaneous materials required for successful completion of the work.</p> <p>The contractor shall prepare and submit detailed Engineering, Structural and Electrical drawings/designs for installation and commissioning of the Compact Substation. The drawings, structural design calculations and all related technical details shall be got approved from the competent Railway authority before commencement of fabrication, supply, erection and commissioning under this work.</p> <p>Work involves for erection, installation, connection, testing &amp; commissioning of 11KV HT VCB panel set complete including all accessories with necessary masonry work of cement concert of ratio 1:2:4 (cement :sand: stone chips ) and necessary nuts &amp; bolts. Necessary connection to be done by suitable size flexible copper cable with socket and using copper bus bar of suitable size. Marking of all in-coming and out-going of VCB to be done by white paint and date of commissioning to be marked by fixing of suitable plate at top of the panel with well surface finish as per site requirement. Suitable size cable duct should be made behind VCB panel for cable entry by earth excavation &amp; PCC work with net cement polish finishing. Duct should be filled up with sand after cable entry &amp; connection.</p> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. Foundation drawings, structural calculations and reinforcement details shall be submitted by the contractor and approved by the competent Railway authority before commencement of work.</li> <li>2. Necessary formwork, centering, shuttering, reinforcement fixing, concreting, vibration, curing, finishing and dismantling of shuttering are deemed to be included in the quoted rate.</li> <li>3. The contractor shall make all necessary arrangements for inspection by the Electrical Inspector to Government (EIG) and obtain all statutory clearances required for energisation and commissioning of the installation.</li> <li>4. All materials required during execution of the work shall be supplied by the contractor.</li> <li>5. All materials shall be of reputed make and shall conform to the latest relevant Indian Standards (IS) or equivalent International Standards and shall comply with the Public Procurement (Preference to Make in India) Policy as stipulated in the Preliminary Conditions of Contract.</li> <li>6. Procurement and supply of materials shall be undertaken only after approval of drawings by the competent Railway authority.</li> <li>7. The decision of the Railway Administration regarding standardization of the work, foundation dimensions, design, make of materials and execution methodology shall be final and binding on the contractor.</li> </ol> <p>The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. <b>Decision of Railway administration over the standardisation of the job &amp; make of the material will be final.</b></p>
7	<p>Work involve for manufacturing, design, supply, fixing, testing and commissioning, loading , Un-loading of outdoor Feeding Pillar Panel fabricated from SS304L/SS304 stainless steel, IP65</p>

	protection class, suitable for 750V AC, 3 Phase, 50Hz system, comprising 1 No. 630A, ACB incomer with LSIG protection, TP contactor, copper busbars, protection devices, digital multifunction meter, energy meter, indication lamps, control wiring, 1 No. 500A ZS female socket outlet, SCADA-compatible monitoring interface, complete earthing, RCC foundation, accessories, testing and commissioning as per applicable IS/IEC standards, Railway requirements and approved drawings of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition <b>as per Annexure FP</b> of tender documents. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final. Drawing must be approved by competent authority before supply of material.
8	Work involve for Supply , Installation Testing and commissioning of All in one Industrial PC / Work Station for Data Acquisition System ( DAS) , Continuous monitoring and fault analysis as per <b>GENERAL TECHNICAL SPECIFICATION SHEET Annexure COM 1</b> . The material supplied should confirm to relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
9	Work involve for Supply, fixing, testing and commissioning of electronic beam irradiated copper cable size 300 sq mm grade voltage 1.8/3.0 KV and confirming to RDSO spec no ELRS/SPEC/ELC/0019 rev-3, Feb 2017 or latest and relevant IS/IE Rules or equivalent international standard and site requirement of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
10	Work involve for Supply, fixing, testing and commissioning of electronic beam irradiated copper cable size 95 sq mm grade voltage 1.8/3.0 KV and confirming to RDSO spec no ELRS/SPEC/ELC/0019 rev-3, Feb 2017 or latest and relevant IS/IE Rules or equivalent international standard and site requirement of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
11	Work involve for Supply, fixing, testing and commissioning of ZS coupling 500A, 750V, 3Phase, 50Hz complete 1 set for LHB coaches confirming to RDSO spec. No. RDSO/PE/Spec./AC/0177(Rev.0) 2013 or latest and relevant IS/IE Rules or equivalent international standard and site requirement of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
12	Work involve for End termination of 3 core 120 to 185 sq.mm XLPE insulated 11 KV(E) aluminium conductor cable with heat shrinkable indoor/outdoor type cable jointing box conforming to relevant IS (latest version) or equivalent international standard with jointing charges and necessary connection with all accessories including supply of material including testing and commissioning Indoor/outdoor type of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
13	Work involve for Supply, Installation, Testing & Commissioning of straight outdoor cable jointing kit Heat shrinkable type of reputed make complete suitable for XLPE, 11 KV HT upto 3 crore 185 Sq mm cables conforming to relevant IS (latest version) or equivalent international standard with jointing charges and necessary connection with all accessories including supply of material including testing and commissioning of reputed make followed by PUBLIC

	PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
14	Work involve for erection of the Rail pole 2no for 'H' pole structure of suitable length (Approx. 13 Meters long) complete with foundation of size 6 ft x 2.5 ft x 2.5 ft depth including transportation of rail pole from different location to proposed site as per IS 1239(Part-1):1990 including supply, fixing, testing and commissioning of following items as follows. 1) 11 KV, 400 A., 50 Hz 3-phase vertically mounted Gang Operated Switch complete with down rod, isolator & other accessory with proper earthing as per site requirements 01 set 2) Supply, fixing, testing and commissioning of lighting arrester (9KV-5KV) (A set of 3 pcs) with all other accessories suitable for 11 KV HT feeder-1set conforming to relevant IS (latest version) or equivalent international standard of reputed make with necessary connection along with all accessories including testing and commissioning of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
15	Work involve for Scraping, Cleaning & painting of Rail/tubular pole along with cross arm bracket by anti-corrosive red oxide & double coat of aluminum paint & finally black paints up to 1.5 Meter above ground level as per site requirement. The material supplied should confirm to relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
16	Work involve for Supply, fixing & testing of Guy rod assembly of size 5/8 inch X 6' ft. long complete with anchor plate and guy rod of suitable length of size 7/10 SWG stranded GI wire straining insulator etc. including foundation of anchor plate as per IE standard or relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
17	Work involve for Supply & fixing of cross arm bracket made of M.S. angle of size 65 mm x 65 mm x 6 mm of length 6.5 ft long with 3 Nos. of 11 KV pin insulator including supply of all necessary clamps, nuts & bolts etc. & painting as per IE standard or relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
18	Work involve for Supply & fixing of ISI branded M.S. channel of size 75 mm x 40 mm x 6 mm of length 3.5 Meters long including fabrication and binding for Double pole structure & allied accessories as per site requirement as per IE standard or relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
19	Work involve for Supply & fixing of ISI branded M.S. angle of size 65 mm x 65 mm x 6 mm of length 3.5 Meters long including fabrication and binding for Double pole structure & allied accessories as per site requirement as per IE standard or relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
20	Work involves for supply, fixing, testing and commissioning of new 11KV HT Disc insulators

	(including required Hardwires), of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per preliminary condition with replacement of old/damage HT Disc insulators. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job & make of the material will be final. All released materials should be submitted to concern consignee store with firms own cost.
21	Work involve for Providing and making of pucca trench of size 75 cm width and 100 cm depth from ground level with supply and fixing of 03 nos. GI angle bracket vertically at a space of 25 cm on trench wall per mtr run for holding cable size of GI angle 50X50 X6 mm of length 50 cm, 70 cm and 80 cm respectively out of which some part upward bend for protection of cable at other end of brackets including provision and making of GI frame covering made of 40 X40X6 mm GI angle of rectangular shape of size 0.85 X 1 Mtr & 19 nos. 16mm dia GI rod of length 25cm each are welded to frame in complete etc as required and as per direction of site engineer for control cable as per IE standard or relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
22	Work involve for providing, supplying, transporting and fixing precast RCC cable trench covers of size 0.85 m × 1.00 m suitable for covering pucca cable trench of 75 cm width and 100 cm depth from ground level, made of M25 grade RCC reinforced with Fe-500 TMT steel including lifting hooks, curing, handling, transportation, placement and fixing complete in all respects, suitable for normal industrial pedestrian and maintenance traffic load as per site requirement and approved by Railway. The material supplied should confirm to relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
23	Work involve for Supply of ISI Marked Electrical Insulating Rubber Mat conforming to IS 15652:2006, suitable for use on 33 kV / 11 kV switchgear and substation applications, size 6 ft × 3 ft, with anti-skid surface, high dielectric strength, oil and moisture resistance, complete with manufacturer's test certificates and BIS/ISI approval, delivered at site/store complete in all respects. Manufacturer's name, ISI mark, voltage class, batch number, and year of manufacture permanently marked. The material supplied should confirm to relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final.
24	Work involve for providing, supplying and laying HDPE Pipe of 140 mm Inner Diameter and 160 mm Outer Diameter conforming to latest IS 4984 through trenchless method (HDD/boring/jacking) under railway tracks, roads, platforms, drains, culverts and other crossings including supply of pipe, excavation of pits, boring, pulling, jointing, testing, backfilling, restoration and all labour, materials, machinery, tools, tackles and incidental works complete as per site requirement and approved by Railway. Note: The cable shall be laid inside the HDPE pipe by the contractor after completion of pipe laying. No separate or extra payment shall be made for cable pulling/laying through the HDPE pipe and the cost shall be deemed to be included in the quoted rate. The material supplied should confirm to relevant IS/IE or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
25	Work involve for Supply and erection of 103 mm Inner Diameter Double Walled Corrugated (DWC) HDPE pipe complete with couplers, accessories, excavation, laying, jointing, testing,

	backfilling, compaction, and restoration for underground installation under railway track/road crossing, including all labour, materials, tools, tackles, and incidental works required for complete installation as per site requirement and approved by Railway. The material supplied should confirm to relevant IS/IE or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
26	Work involve for Supply, erection/fixing of safety items complete with :-a). Fire extinguisher, dry chemical powder type (ISI marked) suitable for electric fire 10Kgs. capacity -2 Nos.(b). GI Fire buckets, 24 gauge fitted on steel stand as per approved drawing, each 10 Ltr. Capacity filled with clean dry ordinary sand - 6 Nos. (c). First aid box complete with medicines of approved make-1 No. (d). Electric shock treatment chart (larger size) with aluminium frame and glass on front or laminated as approved. -2 Nos. (e) 11/33 KV danger plate conforming to relevant IS - 8 Nos. (f). Schematic diagram of HT/LT installation screen printed on Hylum sheet with aluminium frame. Approx size 1200x600mm-1 No. (g). Data's of transformer screen printed on white Hylum sheet with aluminium frame as approved. Approx size 900x600 mm. - 2 Nos. The material supplied should confirm to relevant IS/IE or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
27	Work involve for Supply & erection (installation) of DCP Fire Extinguisher (4 Liter) for B Class Fire in sub-stations as per IE Rules and conformity to Fire regulations as requirement. The material supplied should confirm to relevant IS/IE or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.

- 28 Work involve for providing and installation of Maintenance Free Earthing comprising primary MS conductor electrode 40 mm dia × 3000 mm long and secondary MS electrode 80 mm dia × 3000 mm long, including excavation of earth pit of size 5 ft × 5 ft × 10 ft, filling with minimum 75 kg earth enhancement compound, construction of inspection chamber, testing and commissioning, complete with all accessories and connections, suitable for 40 kA fault current capacity and conforming to RDSO Specification No. RDSO/PE/SPEC/PS/0109 (Rev.0)-2008, complete in all respects.

## **Technical Specifications**

### **Earth Electrode**

#### **Primary Electrode**

- Material: Mild Steel (MS)
- Diameter: 40 mm
- Length: 3000 mm
- Hot dip galvanized as per relevant IS standards.

#### **Secondary Electrode**

- Material: Mild Steel (MS)
- Diameter: 80 mm
- Length: 3000 mm
- Hot dip galvanized as per relevant IS standards.

### **Earth Pit**

- Pit Size: 5 ft × 5 ft × 10 ft deep (minimum)
- Pit shall be excavated in suitable soil strata as directed by Engineer-in-Charge.
- Earth pit shall be constructed and finished with proper inspection chamber arrangement.

### **Earth Enhancement Compound**

- Maintenance-free conductive earth enhancement compound.
- Quantity: Minimum 75 kg per earth pit.
- Non-corrosive, non-toxic and environment-friendly.
- Hygroscopic and capable of maintaining low earth resistance throughout service life.
- Shall not dissolve, leach out or require periodic watering.

### **Earthing Performance**

- Suitable for fault current discharge capacity of **40 kA**.
- Earth resistance value shall be achieved as specified by RDSO/Railway as per site and maintained after installation.
- Earthing system shall be maintenance free and suitable for long-term operation.

### **Scope Includes**

1. Excavation of earth pit of size 5 ft × 5 ft × 10 ft.
2. Supply and installation of primary and secondary MS electrodes.
3. Supply and filling of minimum 75 kg earth enhancement compound.
4. Supply and installation of earthing lead connections, clamps, nuts, bolts and accessories.
5. Backfilling, compaction and finishing of earth pit.



6. Construction of inspection chamber with removable cover.
7. Testing of earth resistance and submission of test reports.
8. All labour, tools, tackles, transportation and consumables required for complete installation.

### Testing

- Earth resistance measurement after installation.
- Continuity testing of earthing connections.
- Compliance with RDSO Specification No. RDSO/PE/SPEC/PS/0109 (Rev.0)-2008.
- Submission of manufacturer's test certificates and installation reports as on demand of Railway.

**Inspection chamber:** A concrete box of 300X300X300 mm (inside dimension) & 50mm thickness of wall, with smooth cement plaster finish shall be provided on the top of the pit. A concrete lid, painted black, approx. 50 mm. thick with pulling hooks, shall be provided to cover the earth pit. PVC sleeve shall be provided in concrete wall to take out earthing connections.

On backside of the cover, date of the testing and average resistance value shall be written with yellow paint on black background.

A copper main busbar of size 300mm x 25mm x 6mm to be installed on nearby wall etc. and must be connected with two copper strips of 25mm x 3mm size each, up to a distance of 05 mtrs from earth busbar.

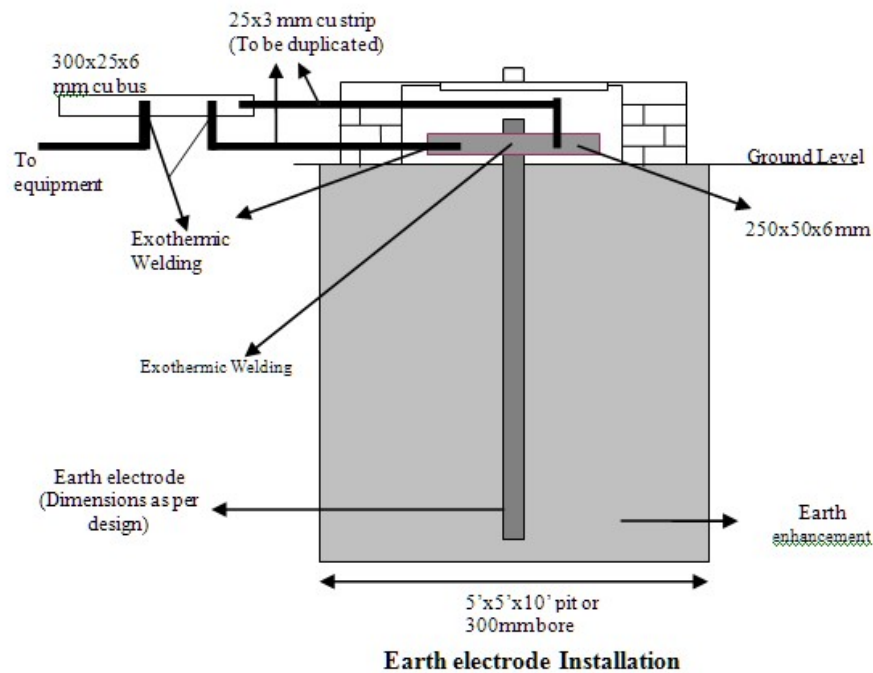
Earthing shall generally be carried out in accordance with the requirement of I.E. rules, 1956, as amended from time to time and shall confirm to IS: 3043 of 1987 with latest amendment.

The earth value shall be measured & recorded at the site by painting on earth pit or nearest wall, along with date of testing. It shall be less than 2 ohms and neutral to earth voltage shall be less than 3 volts.

Earthing performance after a year of installation shall be jointly checked & measured. It should be less than 2 Ohm.

12. General arrangement of the earth system shall be as per following sketch.

## General Arrangements for Earth System



All materials required during execution of work to be supplied by the firm. **Decision of Railway administration over the standardization of the job & make of the material will be final.**

- 29 Work involve for providing, supplying, laying and connecting 40 mm × 5 mm GI strip at 300 mm depth below ground level/recessed in floor/laid in cable trenches of substation, including fabrication and grouting of clamps made from 14 SWG MS sheet, jointing, welding, corrosion protection, and connection from earth electrode to HT Panel, LT Panel, AMF Panel, Transformer, DG Set and other electrical equipment as per approved drawings and technical specifications, complete in all respects by competent authority.

### **Technical Specifications**

#### **Earth Conductor**

- Material: Hot Dip Galvanized Iron (GI) Strip
- Size: 40 mm × 5 mm
- Conforming to relevant IS standards.
- Uniform galvanization free from cracks, scales and defects.

#### **Installation**

- GI strip shall be laid at a minimum depth of 300 mm below ground level where laid underground.
- In buildings and substations, strip shall be recessed in floor/wall or laid in cable trenches as per approved drawings.
- Strip routing shall be neat, straight and properly aligned.

	<ul style="list-style-type: none"> <li>Necessary bends shall be made without damaging galvanization.</li> </ul> <p><b>Clamping Arrangement</b></p> <ul style="list-style-type: none"> <li>GI strip shall be fixed with MS Clamps fabricated from 14 SWG MS Sheet.</li> <li>Clamps shall be securely grouted/fixed in walls, floors, trenches or structures.</li> <li>Spacing between clamps shall not exceed 1.0 metre or as specified.</li> <li>Nuts, bolts, washers and fixing accessories shall be galvanized.</li> </ul> <p><b>Jointing</b></p> <ul style="list-style-type: none"> <li>Joints shall be made by overlap welding of adequate length or by approved connectors.</li> <li>Welded portions shall be properly cleaned and treated with zinc-rich paint/cold galvanizing compound.</li> <li>All joints shall ensure low resistance and permanent electrical continuity.</li> </ul> <p><b>Scope Includes</b></p> <ol style="list-style-type: none"> <li>Supply of 40 mm × 5 mm GI strip.</li> <li>Excavation of trenches wherever required.</li> <li>Laying at 300 mm depth below ground level.</li> <li>Recessing in floors/walls and laying in trenches.</li> <li>Fabrication and fixing of 14 SWG MS clamps.</li> <li>Grouting and fastening of clamps.</li> <li>Jointing, welding and corrosion protection treatment.</li> <li>Connections from earth electrode to HT Panel, LT Panel, AMF Panel, Transformer, DG Set and other equipment.</li> <li>Testing for continuity and earthing integrity.</li> <li>Restoration of disturbed surfaces and finishing work.</li> <li>All labour, materials, tools, tackles and consumables required for complete installation.</li> </ol> <p><b>Testing</b></p> <ul style="list-style-type: none"> <li>Continuity test of earthing conductor.</li> <li>Verification of mechanical strength of joints and clamps.</li> <li>Earth continuity and resistance measurements as per specification.</li> </ul> <p>All materials required during execution of work to be supplied by the firm. <b>Decision of Railway administration over the standardization of the job &amp; make of the material will be final.</b></p>
30	<p>Work involve for providing and installing earthing with 600 mm × 600 mm × 6 mm thick GI plate earth electrode as per IS 3043 (Latest Version), including excavation, earth pit construction, alternate layers of charcoal and salt/approved earthing compound, 40 mm × 10 mm GI strip connection, 50 mm dia Class 'B' GI protection pipe, watering pipe arrangement, masonry enclosure with approximately 600 mm × 600 mm hinged cast iron cover with locking arrangement, testing and commissioning, complete in all respects to achieve earth resistance less than 1 Ohm as per approved drawings and technical specifications by competent authority.</p> <p><b>Technical Specifications</b></p> <p><b>Earth Electrode</b></p> <ul style="list-style-type: none"> <li>Material: Hot Dip Galvanized Iron (GI)</li> <li>Size: 600 mm × 600 mm × 6 mm thick</li> </ul>

- Galvanization: As per relevant IS standards
- Installation Depth: As per IS 3043 and approved drawing

### **Earth Lead Connection**

- Earth Conductor: GI Strip
- Size: 40 mm × 10 mm
- Connection to GI Plate through nuts, bolts and washers or welded arrangement as approved.
- Strip shall be brought up to ground level through protective GI pipe.

### **Protective Pipe**

- Material: Galvanized Iron Pipe
- Diameter: 50 mm
- Class: Class 'B'
- Suitable for protection of GI earth strip from earth plate to top level.

### **Watering Arrangement**

- GI watering pipe complete with funnel and wire mesh.
- Provision for periodic watering of earth pit.
- Arrangement shall conform to IS 3043 recommendations.

### **Earth Pit Chamber**

- Masonry enclosure complete with brick masonry and cement mortar.
- Internal size approximately 600 mm × 600 mm.
- RCC/Concrete base as required.

### **Cover Plate**

- Material: Cast Iron (CI)
- Approximate Size: 600 mm × 600 mm
- Heavy-duty hinged type.
- Locking arrangement provided.
- Suitable for outdoor installation and maintenance access.

### **Backfilling Material**

- Alternate layers of charcoal/coke and common salt or approved earthing compound as per IS 3043 and project specifications.
- Proper compaction and watering to achieve desired earth resistance.

### **Performance Requirements**

- Earth resistance after installation shall be **less than 1 Ohm**.
- Complete earthing installation shall comply with IS 3043 (Latest Version).
- Suitable for electrical substations, transformer yards, HT/LT panels, DG sets and allied electrical installations.

### **Scope Includes**

1. Excavation of earth pit.

	<ol style="list-style-type: none"> <li>2. Supply and installation of 600 × 600 × 6 mm GI earth plate.</li> <li>3. Supply and laying of 40 × 10 mm GI strip.</li> <li>4. Supply and installation of 50 mm dia Class 'B' GI protection pipe.</li> <li>5. Provision of watering pipe with funnel and mesh.</li> <li>6. Filling with charcoal, salt or approved earth enhancement material.</li> <li>7. Construction of masonry inspection chamber.</li> <li>8. Supply and fixing of hinged CI cover with locking arrangement.</li> <li>9. Testing of earth resistance and submission of test reports.</li> <li>10. Backfilling, compaction and restoration of site.</li> <li>11. All labour, materials, tools, tackles and consumables required for complete installation.</li> </ol> <p><b>Testing</b></p> <ul style="list-style-type: none"> <li>• Earth resistance measurement using approved earth tester.</li> <li>• Continuity test of earth conductor.</li> <li>• Visual inspection and verification as per IS 3043.</li> </ul> <p>All materials required during execution of work to be supplied by the firm. <b>Decision of Railway administration over the standardization of the job &amp; make of the material will be final.</b></p>
31	<p>Work involve for providing, supplying, laying and connecting 40 mm × 6 mm copper strip in 50 mm dia Class-B GI pipe, laid 300 mm below ground level or recessed in floor/trench, from earth electrode/earth strip to neutral point of transformer, alternator, DG set or other equipment, including excavation, GI pipe protection, clamps, supports, terminations, jointing, testing and commissioning, complete in all respects as per approved drawings and technical specifications by competent authority.</p> <p><b>Technical Specifications</b></p> <p><b>Earth Conductor</b></p> <ul style="list-style-type: none"> <li>• Material: High Conductivity Electrolytic Grade Copper Strip</li> <li>• Size: 40 mm × 6 mm</li> <li>• Purity: Minimum 99.9% Copper</li> <li>• Conductivity: As per relevant IS standards</li> <li>• Strip shall be free from defects, cracks and surface imperfections.</li> </ul> <p><b>Protective Pipe</b></p> <ul style="list-style-type: none"> <li>• Material: Galvanized Iron (GI) Pipe</li> <li>• Diameter: 50 mm</li> <li>• Class: Class-B</li> <li>• Pipe shall provide complete mechanical protection to copper strip.</li> </ul> <p><b>Installation</b></p> <ul style="list-style-type: none"> <li>• Copper strip shall be laid at a minimum depth of <b>300 mm below finished ground level</b> where laid underground.</li> <li>• In buildings, strip shall be recessed in floor, wall or cable trench as per approved drawings.</li> <li>• Copper strip shall be routed through 50 mm dia GI pipe for mechanical protection.</li> <li>• Proper bends shall be provided without damaging the conductor.</li> </ul>

	<p><b>Connection Arrangement</b></p> <ul style="list-style-type: none"> <li>• One end connected to earth electrode/earth strip.</li> <li>• Other end connected to transformer neutral, alternator neutral or DG neutral terminal.</li> <li>• Connections shall be made using tinned copper lugs, brass hardware, clamps, nuts, bolts and washers.</li> <li>• All exposed joints shall be protected against corrosion.</li> </ul> <p><b>Scope Includes</b></p> <ol style="list-style-type: none"> <li>1. Supply of 40 mm × 6 mm copper strip.</li> <li>2. Supply of 50 mm dia Class-B GI pipe.</li> <li>3. Excavation and laying at 300 mm depth.</li> <li>4. Recessing in floor/wall wherever required.</li> <li>5. Cutting, bending and fixing of copper strip.</li> <li>6. Supply and fixing of clamps, saddles and supports.</li> <li>7. Termination and connection to earth electrode and transformer/alternator neutral.</li> <li>8. Jointing and corrosion protection treatment.</li> <li>9. Testing for continuity and earthing integrity.</li> <li>10. Backfilling and restoration of disturbed surfaces.</li> <li>11. All labour, tools, tackles and consumables required for complete installation.</li> </ol> <p><b>Testing</b></p> <ul style="list-style-type: none"> <li>• Earth continuity test.</li> <li>• Verification of neutral earthing connection.</li> <li>• Mechanical inspection of supports, clamps and joints.</li> <li>• Measurement of earth resistance where applicable.</li> </ul> <p>All materials required during execution of work to be supplied by the firm. <b>Decision of Railway administration over the standardization of the job &amp; make of the material will be final.</b></p>
32	<p>Work involve for supply of distribution transformer outdoor type with copper wound 500 KVA, 11/0.433KV, 3 phase, 50 Hz, complete with all accessories and all standard fitting and accessories <b>as per CEE's Specification or latest followed by implementation of mandatory BEE Certification for Distribution Transformer (DT) as per Circular No.- RITES/QA/NRIO/TR/01, Dt.- 06.02.2026</b> . The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Drawing must be approved by competent authority before supply of material. Decision of Railway administration over the standardization of the job &amp; make of the material will be final.</p>
33	<p>Work involves for transportation, loading , un-loading, erection, installation, connection, testing &amp; commissioning of outdoor type copper wound transformer of capacity 500 KVA, 11/0.433KV, 3 phase, 50 Hz, complete with all accessories and all standard fitting on necessary masonry platform with suitable size of base foundation as per site requirement. The wall thickness should be 10" &amp; should be sand packed between the walls. The mortar ratio should be 1:4 (cement: sand).The height of the platform from ground level should be 4' at the top of brick wall there should be PCC floor (8" x 6' x 5') Cement-concrete ratio 1: 2 : 4 (cement : sand : 15mm stone chips). 2 Nos. Rail of 5' each should be grouted with concrete horizontally such that wheels of transformer may rest on the rail ends of rail should be supported on wall. The platform should be covered by fencing of height 4'.Three sides of the platform should be covered by barbed wire through MS angle (65x65x8) mm grouted on the platform covered &amp; one side should be covered by gate made of expanded metal &amp; MS angle of (50x50x6) mm x that should be bolted with grouted angle of suitable size nut &amp; bolts. Total fencing should be painted by one coat of red oxide &amp; 2 coats of aluminum paint. 2Nos danger plate (trilingual) for 11KV should be fixed at</p>

	<p>suitable place by MS clamp made of MS flat (40x6)mm. The neutral of transformer should be earthed by 2Nos 80mm dia. heavy gauge GI pipe of 2.5mts.long each in parallel connection with GI strip of (25x6)mm complete with pocketing both end. The earth pit should be encased with charcoal &amp; salt along with necessary brick work. The earthing should be done as per Sr. DEE/G's Drg.No.1237/98.A or latest separate parallel earthing should be done for transformer body. The earthing arrangement by 2Nos 50mm dia 3mt.long GI medium gauge in parallel connection (25x6)mm GI strip with earth connection lead of 4SWG GI wire complete with socketing at both end. The earth pit should be encased with charcoal, salt along with necessary brick work. At the earth valve should be marked on MS plate with date by painting work and the MS plate should be hold with earth properly by MS flat(50x6)mm and suitable size nut &amp; bolts. The MS plate, flat etc. should be painted by one coat of red oxide &amp; 2 coats of black paint before erection. The marking should be done by white paint. All materials required for execution of work to be supplied by the firm. Firm shall have related equipment / instrument. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final. Drawing must be approved by competent authority before execution of work</p>
34	<p>Work involve for cable trenching laying &amp; filling with bricks &amp; sand. As per Sr. DEE(G)'s Drg. No. 777/87 or latest, with necessary connections using thimble / PG clamp / nuts &amp; bolts / metallic gland of suitable size should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job &amp; make of the material will be final. All materials required during execution of work to be supplied by the firm. Cable laying as per latest IS standard</p>
35	<p>Work involves for supply, erection, commissioning, testing, electric connection, transportation, loading &amp; un-loading of 3Ph. outdoor type junction box made of SS sheet of suitable standard size 04 nos 100A AL Busbar with 06 nos (min.) cable entry arrangement. Cable connection with busbar should be done by suitable size standard Al lugs. The Junction box should be of (450x300x150)mm&amp; provided with hinge type door and locking arrangement. The Junction box should be fixed with wall / pole/ structure by clamp made of MS flat (40x6)mm&amp; nuts &amp; bolts. The MS flat should be painted by one coat of red oxide and 2 coats of aluminium paint or as per site requirement. Outdoor type Junction Box as per Sr. DEE (G) Drg. no 02/2011 or as per consignee approved. The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job &amp; make of the material will be final. All materials required during execution of work to be supplied by the firm. Drawing must be approved by competent authority before supply of material.</p>
36	<p>Work involves for supply, erection, testing &amp; commissioning of manually gang operated triple pole GOS 11 KV 400A outdoor pattern. Vertically structure mounted single brake rocking type off load isolator complete with GI channel base, copper fixed contact with phosphor bronze leaf spring, copper moving contact, GI pantograph assembly with flexible copper braided tape, GI square phase coupling shaft ,GI operating pipe ,GI operating handle. The GOS should be equipped with separate Horn gap fuse unit. GOS should be mounted on MS galvanized channel iron base suitable for pole mounting with necessary nut &amp; bolts along with complete manual operating mechanism, handle &amp; arrangement of 'ON' &amp; 'OFF' indication with pad lock provision and nine numbers 11 KV post type insulator. GOS should be as per IS 9921 (Pt 1-VI) of 1985.The GOS set should be provided with 'H' pole by 3 Nos MS channel (100x50x8)mm with MS clamp made of MS flat (50x6)mm with suitable size nuts &amp; bolts.(Pole to pole approximate distance 7', i.e length of each channel should be approx 7'6" length.) The channel, clamp should be painted by one coat of red oxide before execution &amp; 2 coats of Aluminum paint. Test certificate of OEM to be supplied along with the material as per demand of Railway. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final.</p>
37	<p>Work involves for fixing, electrical connection, testing and commissioning of Four Pole (FP) Molded Case Circuit Breaker (MCCB) of rating 500A to 1250A, 415V, 50Hz, 50kA breaking capacity, with microprocessor-based electronic trip unit, complete with enclosure, including mounting on wall/panel/frame, alignment, tightening of all hardware, termination of incoming and outgoing power cables/busbars, earthing connections, insulation resistance testing, functional checking of trip unit settings, continuity tests, operational tests, commissioning and labour, consumables, hardware, ferrules, lugs (if specified), nuts, bolts and sundry materials required for completion of work as per relevant specifications and safety guidelines and site requirements.. The material supplied of reputed make should confirm to relevant IS or equivalent</p>

	international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job & make of the material will be final.
38	<p>Work involves for Supply of Four Pole (FP) MCCB, 415V AC, 50Hz, rated current-500A to 1250A, minimum 50kA breaking capacity at 415V AC, complete with microprocessor/electronic trip release, Adjustable Long Time Protection , Adjustable Short Time Protection , Instantaneous Protection, Ground Fault Protection , LCD/LED indication, Trip status indication, Adjustable current settings, Adjustable time delay settings, Self-powered operation preferred, Test facility for trip unit with suitable floor/wall-mounted CRCA sheet steel enclosure, Minimum 2.0 mm thick sheet steel construction, Powder-coated finish, IP54 minimum protection, Front-operable handle mechanism, Cable entry from top/ bottom as required, Suitable gland plates, Earthing studs provided, Adequate ventilation arrangement with Electrolytic copper busbars/tinned copper terminals, Suitable for rated current without exceeding permissible temperature rise, Color coding as per applicable standards, Terminals suitable for copper cable termination with terminal covers. Hardware and manufacturer's test certificates, conforming to IS/IEC 60947-2 and tested and certified by NABL accredited or equivalent laboratories with approved technical specifications, complete in all respects of Warranty as Minimum warranty of 24 months from commissioning or 30 months from supply, whichever is earlier. The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final.</p>
39	<p>Work involves for Supply, fixing, electrical connection, testing and commissioning of 1250A, 415V, 50Hz, 4-way Bus Bar Chamber complete with high conductivity electrolytic copper bus bars suitable for carrying rated current of 1250A continuously, housed in a robust CRCA sheet steel enclosure of minimum 2.0 mm thickness, double door type with locking arrangement, suitable for indoor installation.</p> <p>The enclosure shall be fabricated from CRCA sheet steel and powder coated for corrosion resistance. The bus bar chamber shall be provided with superior grade electrolytic copper strips of suitable cross-section for 1250A current rating, mounted on heavy-duty porcelain insulated supports having high mechanical and dielectric strength. The copper bus bars shall be colour coded and adequately spaced to withstand thermal and electrodynamic stresses under fault conditions.</p> <p>The chamber shall be provided with:</p> <ul style="list-style-type: none"> <li>• Four-way copper bus bar arrangement.</li> <li>• Double door with heavy-duty locking arrangement.</li> <li>• Removable top and bottom gland plates.</li> <li>• Weather proof neoprene gasket.</li> <li>• Embossed earthing identification on both sides.</li> <li>• Thick Hylam/FRP insulation sheet at bottom.</li> <li>• Suitable cable alley with sufficient space for termination.</li> <li>• Foot stand arrangement for wall/surface mounting.</li> <li>• Heavy-duty hinges and smooth door operation.</li> <li>• Earthing studs on enclosure.</li> <li>• IP54 minimum degree of protection.</li> </ul> <p>The work shall include supply and installation of suitable MS support frame fabricated from 40 mm × 6 mm MS flat or approved equivalent, complete with drilling, welding, cutting and erection. The support frame shall be painted with one coat of red oxide primer followed by two coats of aluminium paint and fixed to wall/structure using cement concrete grouting in the ratio</p>



	<p>of 1:2:4 (cement:sand chips) wherever required.</p> <p>The item shall also include supply and fixing of suitable cable glands, copper/aluminium lugs, thimbles, PG clamps, nuts, bolts, washers, ferrules and all accessories required for termination of incoming and outgoing LT power cables, complete electrical connections, earthing, continuity testing, insulation resistance testing, functional testing and commissioning.</p> <p>The supplied materials of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per preliminary condition. Drawing must be approved by competent authority before supplied of material. All materials, labour, tools, testing instruments and consumables required for successful completion of the work shall be included in the item rate. Decision of Railway administration over the standardisation &amp; make of the material will be final. All materials required during execution of work to be supplied by the firm.</p>
40	<p>Work involves for Supply of outdoor type Inter Vehicular (IV) Coupler Box fabricated from Stainless Steel Grade SS-304, 18 SWG sheet, suitable for railway traction/power supply applications, complete with three LED indication lamps, internal wiring, terminal blocks, mounting hardware and all accessories required for installation and operation. The enclosure shall be of approximate size (2 ft × 2 ft × 2 ft) and shall be weatherproof, dustproof and suitable for outdoor service conditions. The enclosure shall be provided with hinged lockable door, neoprene gasket, stainless steel hardware, cable entry arrangement, gland plate and earthing provision. The IV Coupler Box shall be mounted on a 3 ft high SS-304 stand fabricated from suitable stainless steel sections and provided with heavy-duty roller wheels for easy movement and positioning. The stand shall have adequate mechanical strength to withstand outdoor service conditions and operational stresses. SS-304 enclosure fabricated from 18 SWG sheet, Three nos. LED indication lamps (R/Y/B or as specified), Suitable terminal blocks and internal wiring, Stainless steel door lock arrangement, Neoprene rubber gasket for weatherproofing, Stainless steel stand of 3 ft height, Heavy-duty roller wheels/castors, GI angle, GI flat, nuts, bolts, washers and mounting accessories, Earthing stud and identification labels, Surface preparation and finishing complete, The enclosure shall provide minimum IP54 protection for outdoor use. The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final.</p>
41	<p>Work involves for fixing, erection, testing and commissioning of outdoor type Inter Vehicular (IV) Coupler Box complete with suitable size MS angle support structure, including cutting, drilling, welding, fabrication, alignment and mounting of the IV Coupler Box at the designated location and site requirement. The work shall include supply and fixing of suitable MS angle/MS flat support frame, nuts, bolts, washers, clamps and other mounting hardware required for proper installation. The support structure shall be cleaned and painted with one coat of red oxide primer followed by two coats of aluminium paint before erection. The item shall also include fixing of the coupler box, termination of internal and external wiring, electrical connections of indication lamps and associated circuits, earthing connections, continuity testing, insulation resistance testing, operational checking, testing and commissioning complete in all respects. Where required, the support frame shall be securely fixed to wall, floor or structure using anchor fasteners and/or cement concrete grouting in the ratio 1:2:4 (cement: sand: chips). The scope shall include all labour, tools, tackles, consumables, hardware, welding electrodes, drilling work, painting, earthing accessories and other materials required for satisfactory completion of the work. The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job &amp; make of the material will be final.</p>
42	<p>Work involves for supply of all wiring materials and concealed / PVC conduit wiring of sub main wiring by HTR FR PVC insulated Heavy Duty Industrial PVC single core 2 x 4 mm<sup>2</sup> multistrand copper wire (1100V grade) with multi strand S/C 1 mm<sup>2</sup> PVC insulated copper wire (1100V grade) for earthing conforming to latest relevant IS standard. PVC pipe should be of medium gauge and reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC</p>

	PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. (Measuring should be done point to point basis).
43	Work involves for supply of wiring materials and concealed / PVC conduit wiring of light point /Fan point/Ex. Fan point with modular switch (should be made of NylonePA6 material along with glass fibres, Non-Flammable insulating parts & very high Insulating resistance after Humidity test) through PVC conduit by HTR FR PVC insulated Heavy Duty Industrial PVC single core 2 X 1.5mm <sup>2</sup> multi strand copper wire (1100V)grade with multi strand 1mm <sup>2</sup> copper wire (1100V grade) for earthing conforming to latest relevant IS standard. PVC pipe should be of medium gauge and reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization & make of the material will be final. (Length of wiring as desired by Rly.)
44	Work involve for supply of all wiring materials and concealed / PVC conduit wiring of 5A Plug point with modular switch (should be made of NylonePA6 material along with glass fibres, Non-Flammable insulating parts & very high Insulating resistance after Humidity test) by HTR FR PVC insulated Heavy Duty Industrial PVC 2 x 2.5 mm <sup>2</sup> multistrand copper wire (1100V Grade) with multistrand copper wire 1 mm <sup>2</sup> for earthing conforming to latest relevant IS standard (1100V Grade ). PVC pipe should be of med. gauge and reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. (Length of wiring as desired by Rly.)
45	Work involves for supply, of all wiring materials and concealed / PVC conduit wiring of 5/15A-20A Power plug point (5 in one) with modular switch (should be made of NylonePA6 material along with glass fibres, Non-Flammable insulating parts & very high Insulating resistance after Humidity test) by HTR FR PVC insulated Heavy Duty Industrial PVC single core 2 x 4 mm <sup>2</sup> multistrand copper wire(1100V)grade with multi strand 1 mm <sup>2</sup> copper wire (1100V grade) for earthing conforming to latest relevant IS standard. PVC pipe should be of medium gauge and reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. (Length of wiring as desired by Rly.)
46	Work involves for supply of 1 Phase, (4+2) = 6 Way Distribution Board, Single Door, Prewired Type, complete with all accessories, internal wiring, incoming and outgoing connections, suitable for operation on 240/415 V, 50 Hz AC supply, conforming to IS/IEC 60947-3, comprising: 1 No. SPN MCB, Rating 32 A, Breaking Capacity 10 kA (Incomer) and 5 Nos. SP MCBs, Rating 6 A / 10 A / 20 A as required, Breaking Capacity 10 kA (Outgoing circuits) , Copper busbar, neutral link, earth bar, DIN rail, interconnections, glands, hardware and all necessary accessories for complete installation. The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job & make of the material will be final.
47	Work involves for fixing/installation of 1 Phase, 6 Way (4+2) Distribution Board, Single Door, Prewired Type, on wall/surface including alignment, drilling, mounting with suitable fasteners, connection of incoming and outgoing cables/wires, dressing of conductors, earthing connection, testing, commissioning and making the distribution board operational, complete in all respects as per site requirement. The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. All materials required for execution of work to be supplied by the firm. Decision of Railway administration over the standardisation of the job & make of the material will be final.
48	Work involve for supply of indoor T8 ( 1 X 18W) LED tube light fitting including build- in- driver and LED batten and all accessories <b>as per General Specification “Annexure M”</b> and preliminary condition as provided in tender document and relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization & make of the material will be final. All materials required during execution of work to be supplied by the firm. (LED luminaires should conform to

	min.IP:20)
49	Work involves for erection, testing, electrical connection and commissioning of indoor T8 LED (18 W) fitting complete with lamp. Fittings should be fixed on wall/structure by 2 Nos of MS Clamp / round / square / rectangular block of wood ( as desired by Railway). The MS Clamp block should be fixed with wall / structure separately by 1 ½" MS screw/nut bolts with the help of wooden chips and detofix. The fitting should be fixed with round block by suitable size MS screw. Connection to be done with flexible wire 2 core through flexible PVC pipe. All released materials to be submitted to concern consignee store with own cost. All materials required during execution of work to be supplied by the firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
50	Work involve for supply of High efficiency BLDC fan with Modular BLDC Regulator (without remote), having sweep size 1200MM, operating voltage 140V-270V maximum power consumption 26 watt(+/-10%) with double ball bearing and airflow CMM210, white colour with 5-years warranty. The material supplied should be of reputed make and relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization & make of the material will be final. All materials required during execution of work to be supplied by the Firm.
51	Work involves for fixing of BLDC Fan & Regulator with suitable clamping arrangement & 'S' hook etc and electrical connection through PVC flexible pipe of suitable size and length by HTR FR PVC insulated Heavy Duty Industrial PVC single core 2 X 1.5mm <sup>2</sup> multi strand copper wire(1100V)grade with multi strand 1mm <sup>2</sup> copper wire (1100V grade) for earthing conforming to latest relevant IS standard. . PVC flexible pipe should be medium gauge. The material supplied should be of reputed make and relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. All materials required during execution of work to be supplied by the Firm.
52	Work involves for supply of single phase propeller type ISI marked ventilating fans (Exhaust Fans) number of pole :4, 230V, 50 c/s , sweep size (mm) : 300 complete with louver and shutter and all accessories. The material supplied should be of reputed make and relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization & make of the material will be final.
53	Work involves for fixing and commissioning of exhaust fan by cutting on wall at suitable place with G. I. clamps made of G. I. flat of suitable size & G. I. Nut, Bolts and cutting portion should be plaster properly by cement and sand including necessary Massonary works. Louver should be fixed outside the wall to protect the exhaust fan and electrical connection through PVC flexible pipe of suitable size and length by HTR FR PVC insulated Heavy Duty Industrial PVC single core 2 X 2.5mm <sup>2</sup> multi strand copper wire(1100V)grade with multi strand 1mm <sup>2</sup> copper wire (1100V grade) for earthing conforming to latest relevant IS standard. PVC flexible pipe should be reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. All materials required during execution of work to be supplied by the firm.
54	Work involves for supply of 72W LED Street Light Luminaries with lamp <b>with lens</b> and all accessories, pressure die-cast housing and min. IP 66 protection , energy saving, environmental friendly, long life, exclusive innovative with high power LEDs as light source <b>as per General Specification “Annexure M”</b> and preliminary condition as provided in tender document of reputed make with relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization & make of the material will be final.
55	Work involves for erection, testing, electrical connection and commissioning of LED outdoor type light fitting along with lamp. Erection of light fitting should be done by 25mm dia medium gauge 1.0mt long GI pipe. The GI pipe should be bend properly as per requirement. The GI pipe should be fixed with Rail pole / Wall / Structure with GI clamp made of GI flat and GI nuts & bolts of suitable size. Supply of all wiring materials & wiring of street light point by HTR FR PVC insulated Heavy Duty Industrial PVC

	S/C 2 x 2.5 mm <sup>2</sup> multi strand copper wire (1100V grade) with multi strand S/C 1 mm <sup>2</sup> PVC insulated copper wire (1100V grade) for earthing conforming to IS: 694 or latest as per requirement. The supply materials of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job will be final. All released materials to be submitted to concern store-in-charge with firms own cost. All materials required during execution of work to be supplied by the firm.
56	Work involves for supply, erection, testing, electrical connection & commissioning of three phase MCB type distribution board 4 way. The MCB type distribution board should be sheet steel. Outgoing should consist of 4 nos SP MCB( 6-32)A as per requirement & 1 no 100A isolator. The distribution box should be grouted on wall by cement concrete ratio 1:2:4 (cement: sand: stone chips) with necessary wall cutting or as per site requirement should confirm to relevant IS or equivalent international standard of reputed make switchgears followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. All materials required during execution of work to be supplied by the firm.
57	Work involves for cable laying on wall / structure with suitable size MS clamp made of MS flat (40x6)mm and nuts & bolts. The nuts should be grouted on wall by cement; sand, stone chip Necessary connections should be done using thimble / PG clamp / nuts & bolts / metallic gland of suitable size. The material supplied of reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. All materials required during execution of work to be supplied by the firm. Cable laying as per latest IS standard.
58	Work involves for supply of all wiring materials and concealed / PVC conduit wiring of main wiring by HTR FR PVC insulated Heavy Duty Industrial PVC single core 2 x 6 mm <sup>2</sup> multistrand copper wire (1100V grade) with multi strand S/C 1.5 mm <sup>2</sup> PVC insulated copper wire(1100V grade) for earthing conforming to latest relevant IS standard. PVC pipe should be of medium gauge and reputed make should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. (Measuring should be done point to point basis).
59	Work involves for supply, laying and fixing of 110 mm dia HDPE Pipe (PE-100 grade) conforming to IS 4984 (latest revision) for protection and routing of LT power cables, including excavation and laying underground at a minimum depth of 1.5 feet (450 mm) or fixing on wall/pole as required at site. The work shall include supply of HDPE pipe, couplers, bends, sockets, clamps, saddles, excavation, backfilling, jointing, fixing accessories, pulling wire, making good damaged surfaces and all labour, tools, tackles and consumables required for complete installation, cable protection and route continuity as per site requirements. The material supplied should be of reputed make and relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. All materials required during execution of work to be supplied by the Firm.
60	Work involves for supply of GI pipe, medium gauge 50 mm dia ,3 m long & cable laying with necessary connections using thimble / PG clamp / nuts & bolts metallic gland of suitable size on Rail pole / wall with necessary clamp made of MS flat of (40x6)mm -5Nos, 3Nos. clamps on pipe & 2 Nos. on cable with suitable size nuts & bolts. 3m long GI pipe medium gauge 50 mm dia should be provided for cable protection should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. All materials required during execution of work to be supplied by the firm. Cable laying as per latest IS standard.
61	Work involves supply of GI pipe 100 mm dia. medium gauge & cable trenching laying through the pipe for track / road / drain crossing. As per Sr. DEE(G)'s Drg. No. 777/87, with necessary connections using thimble / PG clamp / nuts & bolts / metallic gland of suitable size should

	confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. All materials required during execution of work to be supplied by the firm.
62	<p>Work involves fabrication, supply, erection, commissioning &amp; electrical connection of LT outdoor type location box made of 2mm CRCA sheet. Location box should consist of busbar 4 bar type made of electrolytic copper flat 200A of suitable length. Bus to bus clearance approx 50mm with suitable size bus insulator. The location box should be double door consisting with locking arrangement (pipe lock) &amp; a separate locking arrangement, with a provision of handle for operation of door. 4 pole HRC Fuse unit of 200A capacity of reputed IS standard make should be provided on incoming side. Internal connection should be done by suitable size cable lead of copper with suitable thimble. The approx size of the LB should be 950mm(H), 500mm(W), 400mm (D). The LB should be erected on masonry work &amp; should be painted by one coat of red oxide &amp; 2 coats of smoke grey paint before erection. Masonry work consists of 10" brick wall &amp; height should be 18" above ground level should be 12" (ie. total wall height above &amp; below ground should be 30") with necessary excavation work. Cement mortar should be 1:4 (Cement: Sand). The out side wall of LB should be well finished by cement. The location box should be earthed with separate earth pit having earth pipe of 50mm dia. 3mm long GI pipe medium gauge 2 nos. with earth connection lead of 4 SWG GI wire complete with socketing at both ends. The earth pit should be encased with charcoal salt along with necessary brick work. The earthing should be done as per as per Sr. DEE(G)'s Drg. No.1240/98 &amp; confirming to latest IS standard. The earth value should be marked on MS plate with date by painting work &amp; the MS plate should be hold with earth pipe properly by MS flat (50x6)mm&amp; suitable size MS nuts &amp; bolts. The MS plate &amp; MS flat should be painted by one coat of red oxide &amp; 2 coats of red paint before execution should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job &amp; make of the material will be final. Drawing must be approved by competent authority before supply of material</p>
63	<p>Work involves for fabrication, supply, erection, commissioning &amp; electrical connection of LT outdoor type location box made of 2mm CRCA sheet. Location box should consist of busbar 4 bar type made of electrolytic copper flat 400A of suitable length. Bus to bus clearance approx..50mm with suitable size bus insulator. The location box should be double door consisting with locking arrangement (pipe lock) &amp; a separate locking arrangement, with a provision of handle for operation of door. 4 pole HRC Fuse Unit of 400A capacity of reputed IS standard make should be provided on incoming side. Internal connection should be done by suitable size cable lead of copper with suitable thimble. The approx size of the LB should be 1100mm(H), 600mm(W), 450mm (D). The LB should be erected on masonry work &amp; should be painted by one coat of red oxide &amp; 2 coats of smoke grey paint before erection. Masonry work consists of 10" brick wall &amp; height should be 18" above ground level should be 12" (i.e. total wall height above &amp; below ground should be 30") with necessary excavation work. Cement mortar should be 1:4 (Cement: Sand). The out side wall of LB should be well finished by cement. The location box should be earthed with separate earth pit having earth pipe of 50mm dia. 3mm long GI pipe medium gauge 2 nos. with earth connection lead of 4 SWG GI wire complete with socketing at both ends. The earth pit should be encased with charcoal salt along with necessary brick work. The earthing should be done as per Sr. DEE(G)'s Drg. No.1240/98&amp;confirming to latest IS standard. The earth value should be marked on MS plate with date by painting work &amp; the MS plate should be hold with earth pipe properly by MS flat (50x6)mm&amp; suitable size MS nuts &amp; bolts. The MS plate &amp; MS flat should be painted by one coat of red oxide &amp; 2 coats of red paint before execution should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job &amp; make of the material will be final. Drawing must be approved by competent authority before supply of material.</p>
64	<p>Work involves for supply, fabrication, installation, commissioning, loading, unloading, testing, electrical connection with suitable concrete foundation of cubical type LT panel board of size per site requirement, made of 2.0/1.6mm (min.) CRCA sheet with powder coated paint, floor mounted IEC 61439-1&amp;2 latest standard compliant fully type tested panel with production of type test and design verification certificate from OEM both side Bus alley and back side cable alley, Electrograde type copper busbar 800A, 4 Bar,</p>

	<p>double door including fixing of following switchgear of microprocessor release based and complying IS/IEC 60947-2 standard having double break mechanism for achieving isolation and lower let through energy, consisting of 630A ACB, 4P, 50kA, MDO as a incomer - 2 nos.( with interlocking system between two incoming feeder) ; 320A MCCB, 4P, 50kA as a outgoing - 2 nos; 200A MCCB, 4P, 36kA as a outgoing - 4 nos; 100A MCCB, 4P, 36kA as a outgoing - 2 nos; 63A MCCB, 4P, 36kA as a outgoing - 2 nos with all outgoing MCCB's microprocessor based with additional protection of adjustable earth leakage protection with suitable Spreader Terminals of both side for MCCB and including internal electrical connection with suitable size of copper wire and with provision of suitable cable alley, extended rotary handle, Supply Auxiliary + trip alarm contact for ON/OFF/TRIP indication, Digital Amp meter, voltmeter, Amp selector switch, Volt selector switch, Supply CT coil 630/5. Supply LED indicator Red, Yellow, Blue. Supply LED indicator for ON/OFF/TRIP, Supply control MCB of suitable rating , digital multimeter module and modular LED indicators and all other accessories with provision of Over-current protection, Short-circuit protection, Ground Fault protection, Instantaneous protection, Over voltage protection, Under Voltage protection etc. <b>as per LT Panel General Specification in "Annexure-A"</b> and preliminary condition as provided in tender document. Erection, installation, testing, electrical connection, commissioning, loading &amp; unloading of LT panel board complete including all accessories with necessary masonry work for construction of suitable size concrete foundation and necessary nuts &amp; bolts including all incoming and outgoing cable glanding, termination, socketing, connection etc. Necessary connection to be done by suitable size flexible copper cable with socket and using copper bus bar of suitable size. Marking of all in-coming and out-going of LT Panel to be done by white paint and date of commissioning to be marked by fixing of suitable plate at top of the panel with well surface finish as per site requirement. Suitable size cable duct should be made behind panel for cable entry by earth excavation &amp; PCC work with net cement polish finishing. Duct should be filled up with sand after cable entry &amp; connection. The installation work shall cover assembly of various sections of the panels lining up, grouting the units etc. In the case of multiple panel switch boards after connecting up the bus bars etc., all joints shall be insulated with necessary insulation tape or approved insulation compound. A common earth bar shall be run inside at the back of switch panel connecting all the sections for connection to frame earth system. All protection and other small wirings for indication etc. shall be completed before calibration and commissioning checks are commenced. All relays, meters etc. shall be mounted and connected with appropriate wiring. All materials required during execution of work to be supplied by firm. The material supplied of reputed make panel builder should confirm to relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. <b>The LT panel shall be designed, manufactured in switchgear OEM factory or switchgear OEM Licensee Partner factory and all type tested in accordance with the latest relevant IEC (viz. IEC 61439- 1&amp;2: 2020) latest standards.</b> Drawing signed and stamped from OEM must be approved by competent Railway authority before supply of material. <b>Decision of Railway administration over the standardization of the job &amp; make of the material will be final.</b></p>
65	<p>Work involves for supply, testing and commissioning of 11 kV Grade HT Aerial Bunched Cable (ABC) comprising 3 Core × 120 sq.mm phase conductors + 1 Core × 125 sq.mm messenger/bearing conductor, manufactured and tested as per relevant IS specifications and latest amendments, complete with all standard factory tests, inspection certificates, test reports and documentation. The cable shall be suitable for 11 kV overhead power distribution systems and capable of withstanding normal operating and environmental conditions. The rate shall include packing, transportation, loading, unloading, handling, testing and all incidental charges required for delivery at site, complete in all respects. The material supplied should be of reputed make and relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job &amp; make of the material will be final. All materials required during execution of work to be supplied by the Firm.</p>
66	<p>Work involves for Erection, stringing, fixing, testing and commissioning of 11 kV Grade HT Aerial Bunched Cable (ABC) on existing/new poles, including supply of all required accessories and hardware such as suspension clamps, dead-end clamps, anchoring assemblies, piercing connectors, line taps, brackets, messenger supports, binding materials, jointing boxes (JBs), nuts, bolts, danger plates and all other accessories necessary for complete installation. The work shall also include stringing of the cable, sagging, tensioning, fixing arrangements, making terminations and joints wherever required, testing and commissioning of the line, complete in all respects as per site requirement. The rate shall also include dismantling of the existing HT line/cable and associated accessories, lowering, handling, transportation</p>

	and deposition of released materials at the designated Electrical (General) Store with firm's pwn cost, including all labour, tools, tackles, equipment and incidental works required to complete the work satisfactorily. The material supplied should be of reputed make and relevant IS or equivalent international standard followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization of the job & make of the material will be final. All materials required during execution of work to be supplied by the Firm.
67	Work involves for cutting (if required), sizing, foundation, erection and alignment of rail poles with 2.0 m underground portion and 3.5 m to 13.5 m above ground portion (as per site requirement of Railway), including excavation of foundation pit of size 2.2 m × 1.0 m × 1.0 m in all types of soil/earth, dressing and ramming of pit bottom, placing and erecting the pole in true vertical position, and providing cement concrete foundation in 1:2:4 mix (1 Cement : 2 Sand : 4 Stone Chips) using 30–40 mm graded stone aggregate. The work shall also include muffling of the pole above ground level with cement concrete block of size 0.30 m × 0.30 m × 0.30 m, curing, backfilling, compaction, disposal of surplus excavated earth, and providing 15 mm thick fine cement plaster finish on the exposed concrete surface. The item includes all labour, materials, tools, tackles, transportation, handling and incidental works required for complete erection of the pole in all respects as per site requirement. All materials required during execution of work to be supplied by the Firm. Decision of Railway administration over the standardization of the job & make of the material will be final.
68	Work involve for supply of Digital AC Clamp meter 400A, 600V as per <b>GENERAL TECHNICAL SPECIFICATION SHEET Annexure CM 2</b> . The material supplied should confirm to relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization & make of the material will be final.
69	Work involve for supply of Analog Earth Tester 0-100 Ohm hand driven with all accessories. as per <b>GENERAL TECHNICAL SPECIFICATION SHEET Annexure ET3</b> . The material supplied should confirm to relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization & make of the material will be final.
70	Work involve for Supply of Colour LCD Thermal Imager having thermal detector resolution of 160 × 120 pixels (19,200 pixels) or higher, colour LCD display, temperature measurement range of at least - 20°C to +550°C, thermal sensitivity ≤60 mK, rechargeable battery, image storage facility, USB data transfer, complete with carrying case, charger, software, calibration certificate and all standard accessories, suitable for electrical maintenance and thermographic inspection, complete in all respects as per <b>GENERAL TECHNICAL SPECIFICATION SHEET Annexure TI</b> . The material supplied should confirm to relevant IS or equivalent international standard of reputed make followed by PUBLIC PROCUREMENT POLICY (MAKE IN INDIA) as per Preliminary condition. Decision of Railway administration over the standardization & make of the material will be final.

The above schedule is indicative in nature. However, entire work may be in line of relevant RDSO's or IS or PCEE/ER's specification & design, **Electrical General Service Manual ,Volume-I (Power Supply) & latest** or OEM Standardisation or equivalent international standard for detail technical specification and all other clauses, terms & conditions for design, manufacture, testing, supply, installation and commissioning followed by statutory rules and common prudence and shall confirm to the rules & regulations of Railways. **Electrical equipments must have provision of Over-current protection, Short-circuit protection, Ground Fault protection, Instantaneous protection, Over voltage protection, Under Voltage protection and all additional protection as per site requirement for smooth running of electrical equipment. The decision of Railway Administration over the standardisation & make for execution of the work will be final.**

The eligible contractor must furnish the detail of material which is proposed to be supplied or used inevitably got approved from Sr.DEE(G)/ASN or Sr.SE/Elect/G- the Supervision-in-charge of the work or authorized representative of Sr. SE/Elect/G before commencement of work. Decision of Railway administration over the standardisation& make of all the material for the items of work schedule will be final.

**PUBLIC PROCUREMENT POLICY (MAKE IN INDIA):** Bidder must follow Public Procurement Policy (Make in India) Order 2017, dated 15/06/2017, issued by Department of Industrial Promotion and Policy, Ministry of Commerce, circulated vide Railway Board letter no. 2015/RS(G)/779/5 dated 03/08/2017 and 27/12/2017. The definition and calculation of local content in accordance with the Make in India policy as approved by PCEE/ER is 50% of Minimum Local Content (MLC).

**INSPECTION OF SITE:** The tenderer is advised to examine the areas to be covered under the scope of the work, so that the tenderer can have a clear concept of sites for meeting the requirements. Place, time, and quantity may be changed at the time of execution of the work as per prevailing site condition. Tenderer shall contact **Sr. SE/Elect/G/ASN & UDL** for visiting the site.

**GUARANTEE / WARRANTY:**

All equipments supplied should have the Guarantee / Warranty as per the concerned Specification / Modification Sheet or as per concerned Manufacturer's Guarantee / Warranty clause or one year from the date of fitment whichever is more. The equipment shall be warranted for satisfactory performance for a period as mentioned in Tender documents or as per Railway. The equipment found defective/failed within the above warranty period shall be replaced or repaired by the firm free of cost within stipulated time specified by higher authority from Railway. **The decision of Railway Administration over the matter will be final.**

**DRAWINGS, DATA AND MANUALS:**

General Arrangement Drawing, Foundation Drawing, Structural Drawing or any other required drawing (if any) must be got approved by Sr. DEE/G/ASN or AEE/G/ASN before inspection & supply of items. These Drawings should have proper spaces for signature of checking authority & approval authority.

**INSPECTION:-**

1. Supply items ( likes P&M items, Luminaries and any special items included in LOA having bid value more than Rs. 5,00,000/- should be inspected / tested by RITES (as per Railway Board's Circular) with firm cost at manufacturer's premises / site as decided by Railway.
2. Material supplied should be as per the description, scope and specification in the tender document. Contractor will intimate in advance for readiness of materials for inspection.
3. Manufacturers test certificates for the different test carried out should be submitted by the tenderer.

**The decision of Railway Administration for inspection of supply items by RITES / Consignee by firm own cost over the matter will be final.**

These technical details / general specifications are indicative only. In case of any ambiguity in the General specification or Technical Details it may be collected from Sr. DEE (G)/Asansol's office if required. All items pertaining to Electrical should confirm to relevant IS or equivalent international standard. Any deviation must be got approved by Sr.DEE/G/ASN.

Any typographical error shall not be construed to be benefit of the Contractor. In all cases the interpretation and decision of Sr.DEE/G/ASN shall be final and binding upon the contractor.

The issues not covered under these tender documents shall be governed by General Conditions of Contract April-2022, or its time to time latest amendments if any, Railway Board Circular or its latest amendments & Letters issued in Zonal PHOD.



**Sr. Divisional Electrical Engineer(Gen.)  
Eastern Railway/ Asansol Division**