

S.E.C.Railway					
SCOPE OF WORK AND EXPLANATORY NOTES OF ITEMS					
Tender no.EL-G-E-OT-26-27-14				Date : 15.06.2026	
Name of work- " Strengthening and improvement of power supply system including enhancement of electrical safety features over Nagpur Division ".					
Sl.No.	Description of work	Qty	Unit	Rate in Rs	Total in Rs
	Schedule A: DRM substation				
1	Supply of 2000 KVA, 11/0.433KV, Cu Wound, OCTC, ONAN Hermetically Sealed Type Distribution Transformer as per IS: 1180 Level 2 (as per latest amendments) as per annexure 1 of this scope.	2	Nos	3835000.000000	7670000.00
	The cost covers Supply of 2000 KVA, 11/0.433KV, Cu Wound, OCTC, ONAN Hermetically Sealed Type Distribution Transformer as per IS: 1180 Level 2 (as per latest amendments) as per annexure 1 of this scope. Inspection of material will be done by RITES. Fees of inspection will be borne by Railway. Tenderer to take approval of material . OEM authorization particularly for this tender to be submitted along with approval letter. (Make: Areva, Schneider, Siemens, ABB, EMCO, Crompton, BHEL, Kirloskar, GEC, CG, PVJ or Tesla)				
2	Erection, testing and commissioning of 2000 KVA Transformer.	2	Nos	115050.000000	230100.00
	The cost covers Transportation, unloading, Installation, Testing & Commissioning of 2000kVA transformer at DRM substation at Nagpur as per the instruction of site engineer. Materials, T &P, Labour required for erection, testing and commissioning of the transformer shall be supplied by the contractor. Testing shall be done in presence of Railway Engineers at the site as per Railway standard and I. E. rules. After completion of installation work, the transformer shall be put to continuous testing on no load & on load and a joint report regarding performance of the transformer shall be prepared by the contractor and the authorized representative of Sr.DEE(RS&G)/NAG. All required material will be arranged and supplied by the contractor for completion of this work. This includes removal of existing 750 kVA transformer.				
3	Supply of OEM Manufactured, OEM Designed , OEM Tested IEC 61439-1-2 LT switchboard for 2 incomer and 16 outgoing as per annexure 2 attached in scope of work. IEC standard and switchgear mentioned in srno 4 to 6 for this schedule	1	Nos	786647.000000	786647.00
4	Air circuit breaker MDO ,Microprocessor based, 3200 Amps , Icu=Ics=Icw (1sec) , 65 kA . LSIG Protection, True RMS Sensing ,Fault Indication, Event record , SCADA compatible with RS 485 , ZSI, and measurement of power and current complying to IEC 60947-2 .	2	Nos	458685.500000	917371.00
5	Supply of microprocessor based MCCB with release range 160-400 Amps , 36 kA, with in-built Earth fault Protection, Adjustable Overload 40-100% .	10	Nos	41418.000000	414180.00
6	Supply of microprocessor based MCCB release range 50-125 Amps , 36 kA, with in-built Earth fault Protection, Adjustable Overload 40-100% .	6	Nos	20143.500000	120861.00
	The cost covers Supply of OEM Manufactured, OEM Designed , OEM Tested IEC 61439-1-2 LT LT switchboard for 2 incomer and 16 outgoing as per annexure 2 attached in scope of work for items A-3 to A-6.Inspection of material will be done by RITES. Fees of inspection will be borne by Railway. Railway deserves the right to conduct stage inspection. Warranty 12 months from date of commissioning. (Make : Hager, Schneider, Siemens, BCH, Lauritz Knudsen, C&S)				
7	Supply of 3200A TPN Al. Busduct made out of 14/16 swg with powder coating with proper surface. Busduct size- 900x350 mm. busbar size- 4x100x10 mm aluminium busbar with proper busbar supporting arrangement.	80	Mtr	51212.000000	4096960.00
	The cost covers Supply of 3200A TPN aluminium busduct, enclosure fabricated from 14/16 SWG sheet steel, properly surface-cleaned/treated and finished with powder coating, overall size approximately 900 mm x 350 mm, complete with aluminium busbars of size 4 × 100 mm × 10 mm, duly supported on suitable insulated busbar supporting arrangement, all complete as required. The busduct shall conform to IEC 61349-1 & IEC 61349-6 standards and shall be fabricated by an IEC-certified panel builder. Inspection of material will be done by RITES. Fees of inspection will be borne by Railway. Railway deserves the right to conduct stage inspection.				
8	Supply of COPPER FLEXIBLE FOR TRANSFORMER END Of Size - 100 X 10 MM (4NOS) 450 MM LONG.	2	set	84960.000000	169920.00

	Supply of copper flexible connectors for transformer end, size 100 × 10 mm, 4 nos., each 450 mm long. The copper strips shall be of high-conductivity grade, electrolytic copper, duly annealed for flexibility, with smooth edges and burr-free finish. Each piece shall be supplied complete, suitable for bolted termination at transformer ends, conforming to relevant IS/IEC standards.				
9	Fixing of bus duct and copper flexible with all materials	2	Nos	13617.200000	27234.40
	The quoted rate shall be inclusive of all costs associated with the fixing of bus duct and copper flexible connections, complete with all materials required as per site conditions. The rate shall cover: -Supply of all necessary materials, equipment, manpower, tools, and tackles. -Execution of the complete job including erection, testing, and commissioning. -Provision of all resources required to ensure proper completion of the work. No additional payment shall be made on any account beyond the quoted rate.				
10	SITC of APFC Panel 500 KVAR , 3 CT 4 Quadrant , 14% detuned reactor and 525 V rating Capacitors.	1	Nos	545600.000000	545600.00
	The cost covers supply, installation , testing and commissioning of APFC Panel 500 KVAR , 3 CT 4 Quadrant , 14% detuned aluminium reactor and 525 V rating Capacitors, with CRCA 1.6 mm enclosure and all materials. Contractor to submit design , drawing , BOQ , capacitor configuration before supply of material and take approval of Sr.DEE(RS&G)/NAG . Capacitors : 10 + 10 + 20 + 20 + 40 + 50 + 50 + 100 + 100 + 150 kVAR rated at 525 Volts Detuned reactors : 14% APFC Relay - 3CT 4 Quadrant . Inspection of material will be done by RITES. Fees of inspection will be borne by Railway. Railway deserves the right to conduct stage inspection. (Make : Lauritz Knudsen, ABB, Siemens, Schneider)				
11	Transportation, installation, testing & commissioning of LT cubical panel	1	Nos	12520.000000	12520.00
	The cost covers transportation, installation, testing & commissioning of LT cubical type panel. The LT panel shall be installed properly with construction of suitable size foundation/floor (if required) including internal wiring, transportation of material at site also as per directive of Sr. DEE / RS&G /NAG representative. The connections & looping inside the panel shall be done as per the directive of the representative of Sr.DEE(RS&G)/NAG at site. All materials required for installation & connection of panel shall be supplied by the contractor.				
12	Concealed wiring with PVC conduit pipe with modular switch & 1.5 sq.mm FRLS copper wire.	20	Pts	630.000000	12600.00
	The cost covers PVC concealed conduit pipe wiring for light, fan with switches & PVC conduit pipe. The wiring shall be with PVC insulated stranded copper wire 1.5 sq. mm 1100 volt grade FRLS. The wiring shall be terminated into ceiling rose for light & fan points inclusive of supply of all materials. The switches for lights and fans shall be fixed on to a board. The board shall be earthed using 2.5 sq. mm FRLS (green colour) copper wire. The fan regulators shall be fitted into the switch board & connected. An earth continuity conductor of 2.5 sq. mm FRLS (green colour) copper wire shall run all along the casing capping & shall be connected to the fan regulator. After proper fixing of PVC conduit pipe, if required finishing of cement plastering & touching up of distempering in proper manner shall be done so as to keep the aesthetic look of the building intact. Note- The tube lights & fans shall be connected to the ceiling rose with 1.5 sq.mm flexible copper wire (FRLS) approximately 1 (one) Mtrs. for each fitting. (A) Switch Board-The switch modular board shall be of suitable size. The size of the board shall be so as it should accommodate controlling switches & regulator of the same room in close vicinity. (B) Switches and ceiling rose – A PVC white switch of 6A for controlling the supply & PVC white ceiling rose for wiring terminals. (C) Marking on the switch - The switches should be marked properly with stickers as F, L & Exh on it for fan, lights and Exhaust fan respectively. All materials required for wiring shall be supplied by the contractor. (FRLS copper wire Make: Finolex, Polycab, Rotoplast,CCI) (PVC conduit - Presstech, superplast, AKG, Maruti, Sarswati, Polycab, Modi) (Switch Socket :Make : C&S, Lauritz Knudsen , Hager , Legrand, Scheider Electric)				
13	Sub circuit wiring with 2.5 sq.mm copper wire FRLS.	60	Mtr	72.000000	4320.00

	<p>The cost covers sub-circuit wiring with 2.5 sq. mm FRLS wire .Wiring from main switch boards to switch boards & from one room to another room is referred as sub-circuit. The sub circuits shall run through PVC conduits and having PVC insulated FRLS copper wire 2.5 sq. mm size, 1100 V grade. A number of sub- circuits may run through one PVC conduit for convenience of wiring. One sub circuit shall consist of three wires one phase & one neutral and an earth continuity conductor of 2.5 sq. mm FRLS (green colour) copper wire shall be run all along the piping in the sub circuit. All material required for wiring shall be supplied by the contractor.</p> <p>(FRLS copper wire Make: Finolex, Polycab, Rotoplast,CCI)</p> <p>(PVC conduit - Presstech, superplast, AKG, Maruti, Sarswati, Polycab, Modi)</p>				
14	Supply of double acrylic door distribution board , 1 phase 6 way with 40 Amps DP isolator, earthing arrangement, neutral link & SPMCB 20/32 Amps outgoing,	1	no's	2861.000000	2861.00
	<p>The cost covers supply of double door distribution board of CRCA steel sheet, 1 phase 6 way with 40 Amps DP isolator and 4 no's SPMCB 20/32 Amps outgoing, complete with base and metallic enclosure.</p> <p>(Make : Hager, , C&S, Lauritz Knudsen , Legarnd,BCH , Schneider)</p>				
15	Installation & commissioning of 1&3 phase DB with all accessories.	1	no's	58.000000	58.00
	<p>The cost covers fixing, testing & commissioning of distribution board 1 and 3 phase with MCBs, complete with base and enclosure. The DBs shall be fixed at a suitable height with proper fixture with nuts and bolts. An earth continuity copper wire of 2.5 sq. mm FRLS (green colour) shall run from the main board to the DB and connected to the earth terminal for earthing of DB. All materials for fixing and commissioning of DB's shall be supplied by the contractor.</p>				
16	Concealed wiring point for AC with 4 Sq. mm FRLS copper wire, fixing & connection DB with socket and MCB	20	Mtr	973.000000	19460.00
	<p>The cost covers concealed wiring point for AC with 4 Sq. mm FRLS copper wire, fixing and connecting with metal clad socket and MCB. The wiring shall be with supply of PVC conduit pipe and FRLS PVC insulated stranded copper conductor 4 sq. mm 1100 volt grade. An earth continuity copper wire of 4 sq.mm FRLS (green colour) shall run all along the casing capping, after proper fixing of PVC conduit pipe, finishing of cement plastering & touching up of distempering in proper manner should be done so as to keep the aesthetic look of the building intact. All required material will be supplied by the contractor.</p> <p>(FRLS copper wire Make : Finolex, Polycab, Rotoplast, CCI)</p> <p>(PVC conduit - Presstech, superplast, AKG, Maruti, Sarswati, Polycab, Modi)</p>				
17	Supply 2 T split AC, Inverter type, 5 star rated	1	Nos	72345.000000	72345.00
	<p>The cost cover supply of split inverter type air conditioner of 2 ton nominal cooling capacity, 5-star BEE rated , ISEER 5.6 or above , Standard Capacity 7033 Watts (+-10%) operating on 230V single phase 50Hz supply, featuring rotary inverter compressor tropicalized for ambient up to 50°C, copper condenser/evaporator coils with anti-corrosive coating, eco-friendly R-32/R410 refrigerant, microprocessor controls with wireless remote complete with 3m copper piping, insulation, drain pipe, 3m cable and standard installation accessories; comprehensive 5-year warranty on machine and 10 years on compressor and 5 year PCB warranty.</p> <p>(Make : Mitsubishi , Panasonic, Daikin , O General)</p>				
18	Installation & commissioning of 2 T split AC	1	Nos	2540.000000	2540.00
	<p>The cost covers installation, wiring, testing & commissioning of 2 T split AC indoor unit and out door units, their electrical and air pipe inter connection. All materials required for installation testing and commissioning of split AC shall be supplied by the contractor.Earthing of AC to be ensured. All materials required for fixing, wiring, installation and commissioning of shall be supplied by the contractor.</p>				
19	Supply and fixing of BLDC ceiling fan 5 star rated 1200 mm sweep with remote.	1	Nos	3409.000000	3409.00
	<p>The cost covers supply, fixing and wiring from ceiling rose to BLDC ceiling fan 5 star rated 1200 mm sweep with remote. The item should contain 1 no. copper winding Fan motor with PCB controller, 1 no canopy set, 3 no. fan blades, 1 no. down rod, 1 no. Remote Control, 2 no. batteries (1.5 V), Safety Wire, Instruction manual, Guarantee Card & Shackle assembly. The fan should have 3 years warranty against any defects. This includes transportation of material at site.</p> <p>(Make: Stomberg , Arline, Bajaj, Crompton, Usha, Havells, Orient, Odin , Luker, AVM)</p>				
20	Supply of Recess mounted square model 2' X 2', 36 W LED fitting, 230 V AC supply.	4	Nos	3014.000000	12056.00

	The cost covers supply of LED Panel Light 2' X 2' (600mm X 600mm) Max. 36W having CRCA powder coated housing, polystyrene diffuser having system lumens output of Min 4200 Lumens, min. efficacy of 120 lumen/W, CRI>80, CCT up to 6500K, pp.. >0.95, operating range of 120-270V, surge protection of 2.5 kV, Life class of 50,000 Hrs. at L70B50 including driver, having mounting arrangement with board for surface type or spring loaded mounting clips. (Make : Jaquar , Phillips, Wipro, Orient)				
21	Fixing & wiring of LED light fitting.	4	Nos	17.000000	68.00
	The cost covers fixing & connecting of LED tube light, down light, square light fitting with all accessories. Fitting should be properly fixed on the wall/ceiling/surface/recess with the help of PVC blocks/clamps etc, with sufficient strength to hold the fitting. Connection to the fitting should be done with 1.5 sq.mm flexible FRLS stranded copper wire from the ceiling rose. All materials for fixing of LED light fitting shall be supplied by the contractor.				
22	Supply of TABLE WITH INTEGRATED HDU (1800W X 750D X 750H).	1	Nos	29809.160000	29809.16
	Supply, delivery, installation, and commissioning of office desk, equivalent to GODREJ UNITIZED T-25 TABLE WITH INTEGRATED HDU (Size: 1800 mm (W) × 750 mm (D) × 750 mm (H)), suitable for office use, complete in all respects, conforming to the following specifications: Main Worktop: Made of 25 mm thick pre-laminated particle board (PLB) of E1-P2 grade conforming to IS:12823:1990, in approved shade. Edges shall be sealed with 2 mm thick matching PVC edge banding. Provision of access flap on the work surface for cable management. Return Worktop: Made of 25 mm thick pre-laminated particle board (PLB) of E1-P2 grade conforming to IS:12823:1990, in approved shade, with 2 mm thick matching PVC edge banding. Modesty Panel: Made of 18 mm thick pre-laminated twin board (PLT) of E1-P2 grade conforming to IS:12823:1990, in approved shade, with 2 mm thick PVC edge banding. Legs: Cube-shaped legs fabricated from MS ERW tubes of sizes 50 mm × 25 mm × 1.2 mm thick and 40 mm × 40 mm × 1.2 mm thick, conforming to IS:7138. Top support brackets of 3 mm thick HR steel conforming to IS:2062 shall be welded to the leg structure using argon shielded welding. The entire assembly shall be powder coated with a minimum 50-micron thick epoxy polyester coating. Base shall be fitted with plastic caps having M8 threaded inserts with adjustable M8 levellers providing height adjustment up to 50 mm. Cross Members: Made from 50 mm × 25 mm × 1.2 mm thick ERW tubes conforming to IS:7138, powder coated with minimum 50-micron epoxy polyester coating. Assembly shall be through friction-fit PDC joinery with grub screws. Two cross members shall be provided per table. Access Flap: Soft-closing type made from aluminium extrusion. PDC components shall be made of aluminium alloy and plastic components from Nylon-6. Provision for standard 8-module electrical fittings (Anchor Roma or equivalent) shall be included. Wire brush with nylon bristles shall be provided. Power Box: Fabricated from 0.8 mm thick CRCA sheet conforming to IS:513, with provision for 8-module switch plate (Anchor Roma or equivalent). The power box shall be integrated with the worktop along the depth at the access flap location. Integrated Storage Unit: Hinged door storage with drawer, made from 18 mm thick pre-laminated twin board (PLT) of E1-P2 grade conforming to IS:12823:1990, in approved shade with 2 mm PVC edge banding. Doors shall be mounted on slide-on hinges with suitable handles. Drawer shall be provided with Ebco Metabox slides and locking arrangement for security. The complete unit shall be supplied, installed, and commissioned as per approved design and specifications, ensuring proper alignment, finish, and functionality. (Makes : Godrej , Eros , Pepperfry , Durian , Nilkamal)				
23	Supply of revolving office bravo chair with arm & cushion. The seat & back are high density foam cushion fitted with PVC arm-rest.	10	Nos	13413.000000	134130.00
	The cost covers Supply, delivery, installation and commissioning of revolving office chair with arm & cushion with synchronic tilt mechanism model equivalent to GODREJ BRAVO HIGH BACK CHAIR . The seat pressed and moulded with PU foam & back one piece hot pressed plywood with PU high density foam cushion fitted with PVC arm-rest. (Makes : Godrej , Eros , Pepperfry , Durian , Nilkamal)				
24	Supply of Steel almira plain 78"x36"x19".	1	Nos	22540.000000	22540.00

	The cost covers supply of steel almirah large plain of size approx 78"H x 36"W x 19"D with 4 adjustable shelves making 5 compartment. Doors having 3 point locking system. Doors in 20 SWG & other parts in 22 SWG steel sheets. (Make Godrej, Nilkmal, Durin , Pepperfry, Urban Ladder, Eros)				
25	Supply of GODREJ EARL MID BACK CHAIR VURV Revolving office chair with arm & cushion	14	Nos	13175.000000	184450.00
	The cost covers Supply, delivery, installation and commissioning of revolving office chair with arm & cushion with synchronic tilt mechanism model equivalent to GODREJ EARL MID BACK CHAIR VURV . The seat pressed and moulded with PU foam & back one piece hot pressed plywood with PU high density foam cushion fitted with PVC arm-rest. (Makes : Godrej , Eros , Pepperfry , Durian , Nilkamal)				
	Total of Schedule DRM substation				15492039.56

	Schedule B : Nainpur	Qty	Unit	Rate in Rs	Total in Rs
1	Supply, Erection, testing, connecting and commissioning of outdoor type 500KVA, 11KV/433Vdistribution transformer with double Copper winding, three phase, 50c/s, step down. For NIR loco substation.	1	Nos	1345208.430000	1345208.43
	The cost covers supply of 11/0.433 KV, 500 KVA rating, 3 phase, 50 HZ, Energy efficiency level 3 as per IS 1180 part 1 amendment 4, copper conductor wound distribution transformer, outdoor type with all its standard accessories, fixings, transformer oil and other allied items required for functioning of transformer as per IS. Off load tap changer Vector group - Dyn11 Rated HV voltage - 11 KV , Delta connected Rated LV voltage- 433V-250V(PP-PN) , Star connected and neutral brought out . Type of cooling - ONAN Rated insulation level - Primary circuit: 12 kV, Secondary circuit: 1.1 kV Impedance - 4.5% Losses : 50% load 1354 W , 100% load 3909 W as per IS 1180 part 1 amendment 4 HV Termination- Bare Bushing LV Termination - Cable Box with all other accessories and allied fittings . Contractor to take approval of technical specification of competent authority before delivery of material. Transformer type test report of same voltage level and same/higher KVA capacity is mandatory . The date of type test report should not be before 4 March 2021.OEM Authorization is to be submitted by the tenderer particularly for this tender along with approval letter. Inspection of material will be done by RITES. Firm to call for inspection and fees of inspection will be borne by Railway. (Make: Areva, Schneider, Siemens, ABB, EMCO, Crompton, BHEL, Kirloskar, GEC, CG, PVJ or Tesla)				
2	Supply of Lightning arrester suitable for 11 KV with accessories.	6	Nos	3185.000000	19110.00
	The cost covers supply of 11 KV Lightning Arrester. The lightning arrester shall be Expulsion type. The Lightning arrester shall be suitable for repeated operations and tropical working conditions. The unit shall be housed in a dry vacuum filled, aluminium or porcelain container and shall be effectively sealed to prevent ingress of moisture. The unit shall be complete with its standard accessories such as mounting, terminal connections, earth disconnecting device, conductor clamp, earthing copper strips etc. The spark gaps shall be made of brass electrodes with suitable dielectric spacers. The arrestors shall be a self-contained unit of spark gap and arc control chamber. This includes transportation of materials at site also. (Make: Lamco, Oblum, BHEL, Elpro , Maruti, Ruma Isolator, RR industries or approved by state electricity Boards)				
3	Installation, testing & commissioning of lightning arrester (LA) suitable for 11 KV with accessories.	6	Nos	384.000000	2304.00
	The cost covers installation, testing & commissioning of Lightning arrester. The work shall be carried out in close co-ordination with Sr.DEE(RS&G)/Nagpur's authorized representative at site. All materials required for commissioning of LA shall be supplied by the contractor. After charging the LA, it shall be put to continuous testing & a joint report regarding performance of the LA shall be prepared by the contractor & the authorized representative of Sr. DEE(RS&G)/Nagpur. All required material will be arranged and supplied by the contractor for completion of this work.				
4	Rate for construction of transformer plinth	30	cum	3397.320000	101919.60
	The cost covers construction of transformer plinth with minimum M20 cement concrete ratio as per the site decided by site engineer. All required material will be arranged and supplied by the contractor for completion of this work.				

5	Supply of XLPE aluminum cable 1x630 Sqmm	1120	mtr	849.500000	951440.00
	<p>The cost covers supply of Aluminum LT XLPE Cable for Working Voltages up to and Including 1.1 KV with Number of core and Nominal Area of Conductor as above.</p> <p>Specification :</p> <p>STANDARD Classification of cables for improved fire performace category : 01 Conformity of the specification for XLPE cable : as per IS:7098 (Part 1): 1988 latest ISI Marked : Mandatory . BIS License number must be delcared by OEM.</p> <p>CONSTRUCTION: Material of conductor : Aluminium Conductor material standard :as per IS:8130:2013 latest Construction of the conductor : Stranded Insulation : XLPE Properties of XLPE insulation : as per Table 1 of IS:7098 (Part 1):1988 latest as per Table 1 of IS:7098 (Part 1):1988 latest. Colour of XLPE insulation : Red,Yellow,Blue,Black Type of inner sheath : Thermoplastic</p> <p>OUTER SHEATH Outer sheath standard : Conforming to IS:5831:1984 latest Type of outer sheath : PVC-ST2 Colour of outer sheath : Black</p> <p>MARKING ON CABLE Manufacturer's identification on cable: As per Cl.17.1 of IS:7098 Part 1: latest Type of sequential marking on cable : Screen printing on cable Cable identification : As per Cl.17.2 of IS:7098 Part 1: latest</p> <p>PACKING AND MARKING Packing and marking :As per Cl.18.1 and 18.2 of IS:7098 Part 1: latest Cable wound on : ISI Marked Wooden drum Drum standard : As per IS:10418 latest Standard length of cable on drum (in m) : 500 Marking on the drum : As per Cl.18.2 of IS:7098 Part 1: latest</p> <p>ARMOURING Type : Armoured cable Material of armouring : Galvanized steel formed wire Type of armouring : strip Availability of type test report from NABL accredited LAB / ILAC accredited LAB : Yes Inspection : Material inspection will be done by RITES at manufacturer premises. Fees of inspection will be borne by Railway. (Make of cable : Finolex, Polycab, Rotoplast, CCI)</p>				
6	Digging of cable trench 1mtr. deep in all sorts of soil	560	mtr	89.000000	49840.00
	<p>The cost covers excavation of suitable width & depth 1 meter along the road and across the road in all sorts of soil . Where any obstruction for trenching the depth of trenching shall be dealt as per Railway Borad letter 2012/Elect (G)/180/2/Pt. Dt. 11.07.2013. All required materials shall be supplied by the contractor.</p>				
7	Laying of LT cable in the cable trench inside DWC pipe along	1120	mtr	18.000000	20160.00
	<p>The cost covers laying of cable supplied by Indian Railway in the double wall corrugated pipes (DWC) on the trench along the track/road with spreading of river sand at the bottom of cable trench. After laying of the cable refilling of trench with excavated earth, ramming, compacting & leveling to original shape should be done. The path & type of cable to be laid on that path shall be decided by the railway supervisor at site. All required materials shall be supplied by the contractor.</p>				
8	Supply, errection & commissioning of maintenace friendly chemical Transformer earthing as per annexure 3 of this scope of work.	2	Nos	21367.000000	42734.00
9	Supply, erection & commissioning of maintenance friendly chemical earthing as per annexure 3 of this scope of work.	2	Nos	18004.000000	36008.00
	<p>The cost covers supply, erection & commissioning of maintenance friendly earthing as per annexure 3 of this scope of work.</p>				

10	Supply, laying, connecting & commissioning of 25 mm X 6mm/ 40mm X 5mm/50mm X 6mm thick GI Strip for earth pit as per the directions of engineer at site (per kg)	100	Kg	82.000000	8200.00
	The cost covers supply, laying, connecting & commissioning 25mm x 6mm/40mm x 5mm/50mm x 6mm thick GI strip for earthing. All materials & labour required for supply, laying, connecting & commissioning shall be supplied by the contractor.				
11	Supplying and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) of size 60 cm X 60 cm	10	Nos	449.400000	4494.00
	The cost covers Supplying and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) of size 60 cm X 60 cm at the bottom and 50cm X 50 cm at the top with a thickness of 10 cm including inscription duly engraved as required.				
12	Supply, erecting & terminating 3x 120 sqmm aluminium 11KV(UE), XLPE armoured cable on wall/ceiling or laid in provided trench/pipe in an approved manner.	100	mtr	1290.000000	129000.00
	The cost covers Supply, erecting & terminating 3x 120 sqmm aluminium 11KV(UE), XLPE armoured cable on wall/ceiling or laid in provided trench/pipe in an approved manner. The cable shall have Standard compacted circular Aluminium (H4 Grade) Conductor, shielded with black extruded semi-conducting compound XLPE insulated, core shielded with black extruded semi-conducting compound, black semiconducting tape and a copper tape, coloured strips having Red, Yellow & Blue for core identification, shielded cores laid up with fillers, binder taped and Black extruded PVC (Type ST-2) inner sheath, single layer of round galvanised steel wire/ strip armoured and black extruded PVC (Type ST-2), overall sheathed, conforming generally to IS:7098(Part-II). Service voltage : 11kV Maximum Voltage : 12 kV. (Make: Polycab, CCI , Finolex)				
13	Supply and fixing of 11 KV x 3C x 120 sq.mm Indoor End Termination	3	No's	3813.000000	11439.00
	The cost covers supply and fixing of 11 kV x 3C x 120 sq.mm Indoor End Termination kit. All required accessories required for the job shall be supplied by the contractor. (Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)				
14	Supply and fixing of Outdoor HT termination kit. 3x120/150 sq.mm cable	3	Nos	6892.000000	20676.00
	The cost covers supply and fixing of 11kV x 3C x 120 sq.mm Outdoor End Termination kit. All required accessories required for the job shall be supplied by the contractor. (Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)				
15	SITC of 11 Kv disc insulator.	6	Nos	690.000000	4140.00
	The cost covers Supply of 11 KV 70 KN Disc Insulator with GI bolts, spindles, nut washer etc. along with all accessories conforming to respective IS. This includes transportation of materials at site also. (Make: State electricity boards approved)				
16	Supply of Anticlimbing Device	2	Nos	151.000000	302.00
	The cost covers supply of Anticlimbing Device. The device consisting of Barbed wire Hot Dip Galvanized Medium Coating on suitable size MS angle . This includes transportation of materials at site also.				
17	Fixing of Anticlimbing Device	2	Nos	33.000000	66.00
	The cost covers fixing of Anti climbing Device complete with other accessories of standard quality, on pole structure. The work shall be carried out in close co-ordination with Sr. DEE(RS&G)/Nagpur's authorized representative at site. All materials & labour required for fixing of Anti climbing Device shall be supplied by the contractor.				
18	Supply of DangerBoard 11 KV HV supply.	2	Nos	81.000000	162.00
	The cost covers supply of Danger Board 11 KV HV supply. The board made up of Mild Steel with Red & White colour, pre printed of size 30 x 30 x 0.03 Cm, of reputed make conforming to IS. This includes transportation of materials at site also.				
19	Fixing of DangerBoard 11 KV HV supply.	2	Nos	5.000000	10.00
	The cost covers fixing of danger Board 11,33kV HV supply complete with other accessories of standard quality, on pole structure. The work shall be carried out in close co-ordination with Sr. DEE(RS&G)/Nagpur's authorized representative at site. All materials & labour required for fixing of Danger Board shall be supplied by the contractor.				

20	Supply of Rubbermatt-(4 Nos.),Fire extinguisher-(4 Nos.), Handgloves-(2 Nos),Crimping tools-(2Sets), Firebuckets-(4 Nos.)with stand,Earthing shortingrod with earthlead 15 mtrs 6sq. mm copperwire-(3 Nos.),sub station nameboard-(2 Nos),shock treatmentchart-(1 No),Danger board ofsize 10"x12"	2	set	59747.000000	119494.00
	<p>The cost covers supply of</p> <ul style="list-style-type: none"> • Electrical safety rubber mats-(4 Nos. 200x100 cm) for use upto 33kV confirming to IS:15652 latest. • Fire extinguisher-(4 Nos.)(DCP 5 KG), • Hand gloves 11 KV working -(2 Nos), • Crimping tools Hydraulic type 16 ton l with 11set of changeable hexagonal crimping dies of 16-300 sq.mm. Dies should be made of chrome-plated hardened steel -(2 Sets). • Fire buckets of volume min 9 ltrs-(4 Nos.) with stand and shed, • FRP Earthing shorting bamboo with earth lead with 6 sq. mm flexible copper wire of min length 15 feet-(3 Nos). • Electric Shock Treatment (50 x 70 cm) Wall Chart, Single line Diagram of sub station, Danger board of size 10"x12" and • 2 no's 6x2x0.5 feet bilingual substation LED glow name board of Flex of Min 440 GSM of colour and content as desired by SrDEE(RS&G) site incharge • Danger board of size 10"x12" 				
21	Supply and fixing of 1x630 sqmm aluminum cable indoor termination kit	8	Nos	6280.800000	50246.40
	<p>The cost covers Supply and fixing of of 1.1 kV x 1C x 630 sq.mm Indoor End Termination kit. All required accessories required for the job shall be supplied by the contractor. (Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)</p>				
22	Supply and fixing of 1x630 sqmm aluminum cable outdoor termination kit	8	Nos	8006.400000	64051.20
	<p>The cost covers supply and fixing of of 1.1 kV x 1C x 630 sq.mm outdoor End Termination kit. All required accessories required for the job shall be supplied by the contractor. (Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)</p>				
23	Supply of11KV AB switch, 3 pole air break gang operated, O/D type, 200A capacity with all accessories	2	Nos	12825.000000	25650.00
	<p>The cost covers supply of 11 KV AB switch, triple pole, air break, gang operated, outdoor type 200 Amps with insulators, mounted on suitable base complete with operating rod and locking arrangement and all other accessories required for fixing of switch unit. This includes transportation of materials at site also. Contractor will submit details before supply of material and take approval of SrDEE(RS&G)/ADEE(G). (Make Trans Electra, Maruti , Atlas, Kiran Lamco, Simplex, Ruma Isolator or approved by state electricity Boards).</p>				
24	Installation, testing & commissioning of 11KV AB switch with all accessories.	2	Nos	1557.000000	3114.00
	<p>The cost covers installation, testing & commissioning of 11 KV AB switch. The isolator shall be mounted on a four pole structure. The work shall be carried out in close co-ordination with Sr. DEE(RS&G)/Nagpur's authorized representative at site. All materials required for commissioning of AB switch shall be supplied by the contractor. After charging the AB switch, it shall be put to continuous testing & a joint report regarding performance of the AB switch shall be prepared by the contractor & the authorized representative of Sr. DEE(RS&G)/Nagpur. All required material will be arranged and supplied by the contractor for completion of this work.</p>				
	Total of Schedule Nainpur				3009768.63

	Schedule C : Gondia	Qty	Unit	Rate in Rs	Total in Rs
1	Supply, Erection, testing, connecting and commissioning of outdoor type 100KVA, 11KV/433V distribution transformer with double Copper winding, three phase, 50c/s, step down at Birsola Pump House.	1	Nos	472002.960000	472002.96

	<p>The cost covers supply of 11/0.433 KV, 500 KVA rating, 3 phase, 50 HZ, Energy efficiency level 3 as per IS 1180 part 1 amendment 4, copper conductor wound distribution transformer, outdoor type with all its standard accessories, fixings, transformer oil and other allied items required for functioning of transformer as per IS.</p> <p>Off load tap changer</p> <p>Vector group - Dyn11</p> <p>Rated HV voltage - 11 KV, Delta connected</p> <p>Rated LV voltage- 433V-250V(PP-PN), Star connected and neutral brought out.</p> <p>Type of cooling - ONAN</p> <p>Rated insulation level - Primary circuit: 12 kV, Secondary circuit: 1.1 kV</p> <p>Impedance - 4.5%</p> <p>Losses : 50% load 392 W, 100% load 1365 W as per IS 1180 part 1 amendment 4</p> <p>HV Termination- Bare Bushing</p> <p>LV Termination - Cable Box</p> <p>with all other accessories and allied fittings.</p> <p>Contractor to take approval of technical specification of competent authority before delivery of material. Transformer type test report of same voltage level and same/higher KVA capacity is mandatory. The date of type test report should not be before 4 March 2021.OEM Authorization is to be submitted by the tenderer particularly for this tender along with approval letter.</p> <p>Inspection of material will be done by RITES. Firm to call for inspection and fees of inspection will be borne by Railway. (Make: Areva, Schneider, Siemens, ABB, EMCO, Crompton, BHEL, Kirloskar, GEC, CG, PVJ or Tesla)</p>				
2	Supply of Lightning arrestor suitable for 11 KV with accessories.	6	Nos	3185.000000	19110.00
	<p>The cost covers supply of 11 KV Lightning Arrestor. The lightning arrestor shall be Expulsion type. The Lightning arrestor shall be suitable for repeated operations and tropical working conditions. The unit shall be housed in a dry vacuum filled, aluminium or porcelain container and shall be effectively sealed to prevent ingress of moisture. The unit shall be complete with its standard accessories such as mounting, terminal connections, earth disconnecting device, conductor clamp, earthing copper strips etc. The spark gaps shall be made of brass electrodes with suitable dielectric spacers. The arrestors shall be a self-contained unit of spark gap and arc control chamber. This includes transportation of materials at site also.</p> <p>(Make: Lamco, Oblum, BHEL, Elpro, Maruti, Ruma Isolator, RR industries or approved by state electricity Boards)</p>				
3	Installation, testing & commissioning of lightning arrestor (LA) suitable for 11 KV with accessories.	6	Nos	384.000000	2304.00
	<p>The cost covers installation, testing & commissioning of Lightning arrestor. The work shall be carried out in close co-ordination with Sr.DEE(RS&G)/Nagpur's authorized representative at site. All materials required for commissioning of LA shall be supplied by the contractor. After charging the LA, it shall be put to continuous testing & a joint report regarding performance of the LA shall be prepared by the contractor & the authorized representative of Sr. DEE(RS&G)/Nagpur. All required material will be arranged and supplied by the contractor for completion of this work.</p>				
4	Supply, erection & commissioning of maintenance friendly chemical Transformer earthing as per annexure 3 of this scope of work.	2	Nos	21367.000000	42734.00
	The cost covers supply, erection & commissioning of maintenance friendly earthing as per annexure 3 of this scope of work.				
5	Supply, laying, connecting & commissioning of 25 mm X 6mm/ 40mm X 5mm/50mm X 6mm thick GI Strip for earth pit as per the directions of engineer at site (per kg)	50	Kg	82.000000	4100.00
	The cost covers supply, laying, connecting & commissioning 25mm x 6mm/40mm x 5mm/50mm x 6mm thick GI strip for earthing. All materials & labour required for supply, laying, connecting & commissioning shall be supplied by the contractor.				
6	SITC of 11 Kv disc insulator.	6	Nos	690.000000	4140.00
	<p>The cost covers Supply, installation & commissioning of 11 KV 70 KN Disc Insulator with GI bolts, spindles, nut washer etc. along with all accessories conforming to respective IS. This includes transportation of materials at site also. The rate quoted shall include the cost of all materials, equipment, manpower, tools and tackles, and all other resources required for complete job, including erection, testing, and commissioning, with nothing extra payable on this account.</p> <p>(Make: State electricity boards approved)</p>				
7	Supply of Anticlimbing Device	2	Nos	151.000000	302.00
	The cost covers supply of Anticlimbing Device. The device consisting of Barbed wire Hot Dip Galvanized Medium Coating on suitable size MS angle. This includes transportation of materials at site also.				

8	Fixing of Anticlimbing Device	2	Nos	33.000000	66.00
	The cost covers fixing of Anti climbing Device complete with other accessories of standard quality, on pole structure. The work shall be carried out in close co-ordination with Sr. DEE(RS&G)/Nagpur's authorized representative at site. All materials & labour required for fixing of Anti climbing Device shall be supplied by the contractor.				
9	Supply of DangerBoard 11 KV HVsupply.	2	Nos	81.000000	162.00
	The cost covers supply of Danger Board 11 KV HV supply.The board made up of Mild Steel with Red & White colour, pre printed of size 30 x 30 x 0.03 Cm, of reputed make conforming to IS. This includes transportation of materials at site also.				
10	Fixing of DangerBoard 11 KV HVsupply.	2	Nos	5.000000	10.00
	The cost covers fixing of danger Board 11,33kV HV supply complete with other accessories of standard quality, on pole structure. The work shall be carried out in close co-ordination with Sr. DEE(RS&G)/Nagpur's authorized representative at site. All materials & labour required for fixing of Danger Board shall be supplied by the contractor.				
11	Supply of Rubberrmatt-(4 Nos.),Fire extinguisher-(4 Nos.), Handgloves-(2 Nos),Crimping tools- (2Sets), Firebuckets- (4 Nos.) with stand, Earthing shorting rod with earthlead 15 mtrs 6sq. mm copperwire-(3 Nos.),sub station nameboard-(2 Nos),shock treatementchart-(1 No), Danger board ofsize 10"x12"	2	set	59747.000000	119494.00
	The cost covers supply of • Electrical safety rubber mats-(4 Nos. 200x100 cm) for use upto 33kV confirming to IS:15652 latest. • Fire extinguisher-(4 Nos.)(DCP 5 KG), • Hand gloves 11 KV working -(2 Nos), • Crimping tools Hydraulic type 16 ton l with 11set of changeable hexagonal crimping dies of 16-300 sq.mm. Dies should be made of chrome-plated hardened steel -(2 Sets). • Fire buckets of volume min 9 ltrs-(4 Nos.) with stand and shed, • FRP Earthing shorting bamboo with earth lead with 6 sq. mm flexible copper wire of min length 15 feet-(3 Nos). • Electric Shock Treatment (50 x 70 cm) Wall Chart, Single line Diagram of sub station, Danger board of size 10"x12" and • 2 no's 6x2x0.5 feet bilingual substation LED glow name board of Flex of Min 440 GSM of colour and content as desired by SrDEE(RS&G) site incharge • Danger board of size 10"x12"				
	Total of Schedule Gondia				664424.96

	Schedule D : Dongargarh	Qty	Unit	Rate in Rs	Total in Rs
1	Supply, Erection, testing, connecting and commissioning of outdoor type 100KVA, 11KV/433V distribution transformer with double Copper winding, three phase, 50c/s, step down at Sukha Nala Pump house.	1	Nos	472002.960000	472002.96

	<p>The cost covers supply of 11/0.433 KV, 100 KVA rating, 3 phase, 50 HZ, Energy efficiency level 3 as per IS 1180 part 1 amendment 4, copper conductor wound distribution transformer, outdoor type with all its standard accessories, fixings, transformer oil and other allied items required for functioning of transformer as per IS.</p> <p>Off load tap changer</p> <p>Vector group - Dyn11</p> <p>Rated HV volatge - 11 KV , Delta connected</p> <p>Rated LV volatge- 433V-250V(PP-PN) , Star connected and neutral brought out .</p> <p>Type of cooling - ONAN</p> <p>Rated insulation level - Primary circuit: 12 kV, Secondary circuit: 1.1 kV</p> <p>Impedance - 4.5%</p> <p>Losses : 50% load 392 W , 100% load 1365 W as per IS 1180 part 1 amendment 4</p> <p>HV Termination- Bare Bushing</p> <p>LV Termination - Cable Box</p> <p>with all other accessories and allied fittings .</p> <p>Contractor to take approval of technical specification of competant authority before delivery of material. Transformer type test report of same voltage level and same/higher KVA capacity is mandatory . The date of type test report should not be before 4 March 2021.OEM Authorization is to be submitted by the tenderer particularly for this tender along with approval letter.</p> <p>Inspection of material will be done by RITES. Firm to call for inspection and fees of inspection will be borne by Railway. (Make: Areva, Schneider, Siemens, ABB, EMCO, Crompton, BHEL, Kirloskar, GEC, CG, PVJ or Tesla)</p>				
2	Supply of Lightning arrestor suitable for 11 KV with accessories.	6	Nos	3185.000000	19110.00
	<p>The cost covers supply of 11 KV Lightning Arrestor. The lightning arrestor shall be Expulsion type. The Lightning arrestor shall be suitable for repeated operations and tropical working conditions. The unit shall be housed in a dry vacuum filled, aluminium or porcelain container and shall be effectively sealed to prevent ingress of moisture. The unit shall be complete with its standard accessories such as mounting, terminal connections, earth disconnecting device, conductor clamp,earthing copper strips etc. The spark gaps shall be made of brass electrodes with suitable dielectric spacers. The arrestors shall be a self-contained unit of spark gap and arc control chamber. This includes transportation of materials at site also.</p> <p>(Make: Lamco, Oblum, BHEL, Elpro , Maruti, Ruma Isolator,RR industries or approved by state electricity Boards)</p>				
3	Installation, testing & commissioning of lightening arrestor (LA) suitable for 11 KVwith accessories.	6	Nos	384.000000	2304.00
	<p>The cost covers installation, testing & commissioning of Lightning arrestor. The work shall be carried out in close co-ordination with Sr.DEE(RS&G)/Nagpur's authorized representative at site. All materials required for commissioning of LA shall be supplied by the contractor. After charging the LA, it shall be put to continuous testing & a joint report regarding performance of the LA shall be prepared by the contractor & the authorized representative of Sr. DEE(RS&G)/Nagpur. All required material will be arranged and supplied by the contractor for completion of this work.</p>				
4	Supply, errection & commissioning of maintenace friendly chemical Transformer earthing as per annexure 3 of this scope of work.	2	Nos	21367.000000	42734.00
	<p>The cost covers supply, erection & commissioning of maintenance friendly earthing as per annexure 3 of this scope of work.</p>				
5	Supply, laying, connecting & commissioning of 25 mm X 6mm/ 40mm X 5mm/50mm X 6mm thick GI Strip for earth pit as per the directions of engineer at site (per kg)	50	Kg	82.000000	4100.00
	<p>The cost covers supply, laying, connecting & commissioning 25mm x 6mm/40mm x 5mm/50mm x 6mm thick GI strip for earthing. All materials & labour required for supply, laying, connecting & commissioning shall be supplied by the contractor.</p>				
6	Supply and fixing of 11 KV x 3C x 120 sq.mm Indoor End Termination	1	No's	3813.000000	3813.00
	<p>The cost covers supply and fixing of 11 kV x 3C x 120 sq.mm Indoor End Termination kit. All required accessories required for the job shall be supplied by the contractor.</p> <p>(Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)</p>				
7	Supply and fixing of Outdoor HT termination kit.3x120/150 sq.mm cable	1	Nos	6892.000000	6892.00
	<p>The cost covers supply and fixing of 11 kV x 3C x 120 sq.mm Outdoor End Termination kit. All required accessories required for the job shall be supplied by the contractor.</p> <p>(Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)</p>				
8	SITC of 11 Kv disc insulator.	6	Nos	690.000000	4140.00

	The cost covers Supply, installation & commissioning of 11 KV 70 KN Disc Insulator with GI bolts, spindles, nut washer etc. along with all accessories conforming to respective IS. This includes transportation of materials at site also. The rate quoted shall include the cost of all materials, equipment, manpower, tools and tackles, and all other resources required for complete job , including erection, testing, and commissioning, with nothing extra payable on this account. (Make: State electricity boards approved)				
9	Supply of Anticlimbing Device	2	Nos	151.000000	302.00
	The cost covers supply of Anticlimbing Device.The device consisting of Barbed wire Hot Dip Galvanized Medium Coating on suitable size MS angle . This includes transportation of materials at site also.				
10	Fixing of Anticlimbing Device	2	Nos	33.000000	66.00
	The cost covers fixing of Anti climbing Device complete with other accessories of standard quality, on pole structure. The work shall be carried out in close co-ordination with Sr. DEE(RS&G)/Nagpur's authorized representative at site. All materials & labour required for fixing of Anti climbing Device shall be supplied by the contractor.				
11	Supply of DangerBoard 11 KV HV supply.	2	Nos	81.000000	162.00
	The cost covers supply of Danger Board 11 KV HV supply.The board made up of Mild Steel with Red & White colour, pre printed of size 30 x 30 x 0.03 Cm, of reputed make conforming to IS. This includes transportation of materials at site also.				
12	Fixing of DangerBoard 11 KV HVsupply.	2	Nos	5.000000	10.00
	The cost covers fixing of danger Board 11,33kV HV supply complete with other accessories of standard quality, on pole structure. The work shall be carried out in close co-ordination with Sr. DEE(RS&G)/Nagpur's authorized representative at site. All materials & labour required for fixing of Danger Board shall be supplied by the contractor.				
13	Supply of Rubberrmatt-(4 Nos.),Fire extinguisher-(4 Nos.), Handgloves-(2 Nos),Crimping tools-(2Sets), Firebuckets-(4 Nos.) with stand, Earthing shorting rod with earthlead 15 mtrs 6sq. mm copperwire-(3 Nos.), sub station nameboard-(2 Nos), shock treatement chart-(1 No), Danger board of size 10"x12"	2	set	59747.000000	119494.00
	The cost covers supply of <ul style="list-style-type: none"> Electrical safety rubber mats-(4 Nos. 200x100 cm) for use upto 33kV confirming to IS:15652 latest. Fire extinguisher-(4 Nos.)(DCP 5 KG), Hand gloves 11 KV working -(2 Nos), Crimping tools Hydraulic type 16 ton l with 11set of changeable hexagonal crimping dies of 16-300 sq.mm. Dies should be made of chrome-plated hardened steel -(2 Sets). Fire buckets of volume min 9 ltrs-(4 Nos.) with stand and shed, FRP Earthing shorting bamboo with earth lead with 6 sq. mm flexible copper wire of min length 15 feet-(3 Nos). Electric Shock Treatment (50 x 70 cm) Wall Chart, Single line Diagram of sub station, Danger board of size 10"x12" and 2 no's 6x2x0.5 feets bilingual substation LED glow name board of Flex of Min 440 GSM of colour and content as desired by SrDEE(RS&G) site incharge Danger board of size 10"x12" 				
	Total of Schedule DGG				675129.96

	Schedule E : NAB substation				
1	Supply, Erection, testing, connecting and commissioning of outdoor type 500KVA, 11KV/433Vdistribution transformer with double Copper winding, three phase, 50c/s, step down	2	Nos	1345208.430000	2690416.86

	<p>The cost covers supply of 11/0.433 KV, 500 KVA rating, 3 phase, 50 HZ, Energy efficiency level 3 as per IS 1180 part 1 amendment 4, copper conductor wound distribution transformer, outdoor type with all its standard accessories, fixings, transformer oil and other allied items required for functioning of transformer as per IS.</p> <p>Off load tap changer</p> <p>Vector group - Dyn11</p> <p>Rated HV volatge - 11 KV , Delta connected</p> <p>Rated LV volatge- 433V-250V(PP-PN) , Star connected and neutral brought out .</p> <p>Type of cooling - ONAN</p> <p>Rated insulation level - Primary circuit: 12 kV, Secondary circuit: 1.1 kV</p> <p>Impedance - 4.5%</p> <p>Losses : 50% load 1354 W , 100% load 3909 W as per IS 1180 part 1 amendment 4</p> <p>HV Termination- Bare Bushing</p> <p>LV Termination - Cable Box</p> <p>with all other accessories and allied fittings .</p> <p>Contractor to take approval of technical specification of competant authority before delivery of material. Transformer type test report of same voltage level and same/higher KVA capacity is mandatory . The date of type test report should not be before 4 March 2021.OEM Authorization is to be submitted by the tenderer particularly for this tender along with approval letter.</p> <p>Inspection of material will be done by RITES. Firm to call for inspection and fees of inspection will be borne by Railway. (Make: Areva, Schneider, Siemens, ABB, EMCO, Crompton, BHEL, Kirloskar, GEC, CG, PVJ or Tesla)</p>				
2	Rate for construction of transformer plinth	30	cum	3397.320000	101919.60
	The cost covers construction of transformer plinth with minimum M20 cement concrete ratio as per the site decided by site engineer.All required material will be arranged and supplied by the contractor for completion of this work.				
3	Supply OEM Manufactured, OEM Designed , OEM Tested IEC 61439-1-2 LT LT switchboard for 2 incomer of 800 Amps 10 outgoing as per annexure 4 of the scope of work.	1	Nos	1288324.000000	1288324.00
	The cost covers supply of OEM Manufactured, OEM Designed , OEM Tested IEC 61439-1-2 LT switchboard for 2 incomer of 800 Amps 10 outgoing as per annexure 4 of the scope of work. Inspection of material will be done by RITES. Fees of inspection will be borne by Railway. Railway deserves the right to conduct stage inspection.Warranty 12 months from date of commissioning.				
	(Make : Hager, Schneider, Siemens, BCH, Lauritz Knudsen, C&S)				
4	Supply of 3 phase, 100 KVAR capacity, Automatic Power Factor Correction (APFC) panels.	1	Nos	159185.520000	159185.52
	The cost covers supply of APFC Panel 100 KVAr , 3 CT 4 Quadarant , 14% detuned reactor and 525 V rating Capacitors, with CRCA 1.6 mm enclosure and all materials. Contractor to submit design , drawing , BOQ , capacitor configuration before supply of material and take approval of SrDEE(RS&G)/NAG .				
	Capacitors : 2 + 3 + 10 + 20 + 20 + 40 kVAr rated at 525 Volts				
	Detuned rectors : 14%				
	APFC Relay - 3CT 4 Quadrant				
	(Make : Lauritz Knudsen, ABB, Siemens, Schneider)				
5	Installation, testing & commissioning of APFC panels.	1	Nos	10552.970000	10552.97
	The cost covers Installation, testing & commissioning of APFC panels. The APFC panel shall be installed properly with construction of suitable size foundation/floor (if required) including internal wiring, transportation of material at site also as per directive of Sr. DEE / RS&G /NAG representative. The connections & looping inside the panel shall be done as per the directive of the representative of Sr.DEE(RS&G)/NAG at site. All materials required for installation & connection of panel shall be supplied by the contractor.				
6	Transportation, installation, testing & commissioning of LT cubical panel	1	Nos	12520.000000	12520.00
	The cost covers transportation, installation, testing & commissioning of LT cubical type panel. The LT panel shall be installed properly with construction of suitable size foundation/floor (if required) including internal wiring, transportation of material at site also as per directive of Sr. DEE / RS&G /NAG representative. The connections & looping inside the panel shall be done as per the directive of the representative of Sr.DEE(RS&G)/NAG at site. All materials required for installation & connection of panel shall be supplied by the contractor.				
7	SITC of 3 phase 250 KVA , POLLUTION FREE CPCB IV+ , with AMF panel as per annexure 5 of the scope of work.	1	Nos	2646369.000000	2646369.00

	The cost covers supply, installation , testing and commissioning of 3 phase 250 KVA , POLLUTION FREE CPCB IV+ , with AMF panel as per annexure 5 of the scope of work. Tenderer to submit Technical particulars for approval of SrDEE(RS&G)/NAG before supply. OEM authorization particularly for this tender to be submitted with approval letter. Material inspection will be done by RITES. Fees of inspection will be borne by Railway. (Make : Cummins, kirloskar , Mahindra Powerol and Greeves Cotton)				
8	Supply, erecting & terminating 3x 120 sqmm aluminium 11KV(UE), XLPE armoured cable on wall/ceiling or laid in provided trench/pipe in an approved manner.	150	mtr	1290.000000	193500.00
	The cost covers Supply, erecting & terminating 3x 120 sqmm aluminium 11KV(UE), XLPE armoured cable on wall/ceiling or laid in provided trench/pipe in an approved manner. The cable shall have Standard compacted circular Aluminium (H4 Grade) Conductor, shielded with black extruded semi-conducting compound XLPE insulated, core shielded with black extruded semi-conducting compound, black semiconducting tape and a copper tape, coloured strips having Red, Yellow & Blue for core identification, shielded cores laid up with fillers, binder taped and Black extruded PVC (Type ST-2) inner sheath, single layer of round galvanised steel wire/ strip armoured and black extruded PVC (Type ST-2), overall sheathed, conforming generally to IS:7098(Part-II). Service voltage : 11kV Maximum Voltage : 12 kV. (Make: Polycab, CCI , Finolex)				
9	Supply and erection of 11 KV x 3C x 120 sq.mm Indoor End Termination	6	No's	3813.000000	22878.00
	The cost covers supply of 11 kV x 3C x 120 sq.mm Indoor End Termination kit. All required accessories required for the job shall be supplied by the contractor. (Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)				
10	Supply and erection of Outdoor HT termination kit.3x120/150 sq.mm cable	6	Nos	6892.000000	41352.00
	The cost covers supply of 11 kV x 3C x 120/150 sq.mm outdoor End Termination kit. All required accessories required for the job shall be supplied by the contractor. (Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)				
11	Supply of 11 Kv disc insulator.	10	Nos	690.000000	6900.00
	The cost covers Supply of 11 KV 70 KN Disc Insulator with GI bolts, spindles, nut washer etc. along with all accessories conforming to respective IS. This includes transportation of materials at site also. (Make: State electricity boards approved)				
12	Supply of Anticlimbing Device	2	Nos	151.000000	302.00
	The cost covers supply of Anticlimbing Device.The device consisting of Barbed wire Hot Dip Galvanized Medium Coating on suitable size MS angle . This includes transportation of materials at site also.				
13	Fixing of Anticlimbing Device	2	Nos	33.000000	66.00
	The cost covers fixing of Anti climbing Device complete with other accessories of standard quality, on pole structure. The work shall be carried out in close co-ordination with Sr. DEE(RS&G)/Nagpur's authorized representative at site. All materials & labour required for fixing of Anti climbing Device shall be supplied by the contractor.				
14	Supply of DangerBoard 11 KV HVsupply.	5	Nos	81.000000	405.00
	The cost covers supply of Danger Board 11 KV HV supply.The board made up of Mild Steel with Red & White colour, pre printed of size 30 x 30 x 0.03 Cm, of reputed make conforming to IS. This includes transportation of materials at site also.				
15	Fixing of DangerBoard 11 KV HVsupply.	5	Nos	5.000000	25.00
	The cost covers fixing of danger Board 11,33kV HV supply complete with other accessories of standard quality, on pole structure. The work shall be carried out in close co-ordination with Sr. DEE(RS&G)/Nagpur's authorized representative at site. All materials & labour required for fixing of Danger Board shall be supplied by the contractor.				
16	Supply of Rubberrmatt-(4 Nos.),Fire extinguisher-(4 Nos.), Handgloves-(2 Nos),Crimping tools-(2Sets), Firebuckets-(4 Nos.) with stand, Earthing shorting rod with earthlead 15 mtrs 6sq. mm copperwire-(3 Nos.), sub station nameboard-(2 Nos), shock treatement chart-(1 No), Danger board ofsize 10"x12"	2	set	59747.000000	119494.00

	<p>The cost covers supply of</p> <ul style="list-style-type: none"> • Electrical safety rubber mats-(4 Nos. 200x100 cm) for use upto 33kV confirming to IS:15652 latest. • Fire extinguisher-(4 Nos.)(DCP 5 KG), • Hand gloves 11 KV working -(2 Nos), • Crimping tools Hydraulic type 16 ton l with 11set of changeable hexagonal crimping dies of 16-300 sq.mm. Dies should be made of chrome-plated hardened steel -(2 Sets). • Fire buckets of volume min 9 ltrs-(4 Nos.) with stand and shed, • FRP Earthing shorting bamboo with earth lead with 6 sq. mm flexible copper wire of min length 15 feet-(3 Nos). • Electric Shock Treatment (50 x 70 cm) Wall Chart, Single line Diagram of sub station, Danger board of size 10"x12" and • 2 no's 6x2x0.5 feet bilingual substation LED glow name board of Flex of Min 440 GSM of colour and content as desired by SrDEE(RS&G) site incharge • Danger board of size 10"x12" 				
17	Supply and spreading of 40 mm size ballast inside the substation	40	Cum	1300.000000	52000.00
	The cost covers supply of 40 mm size ballast inside the substation as per the location or locations decided by site engineer. and spreading 40 mm size stone aggregate/ballast uniformly inside the substation switchyard to the specified thickness, including surface preparation, dressing, and compaction, complete.				
18	Supply of XLPE aluminum cable 1x630 Sqmm	550	mtr	849.500000	467225.00
	<p>The cost covers supply of Aluminum LT XLPE Cable for Working Voltages up to and Including 1.1 KV with Number of core and Nominal Area of Conductor as above.</p> <p>Specification :</p> <p>STANDARD</p> <p>Classification of cables for improved fire performace category : 01</p> <p>Conformity of the specification for XLPE cable : as per IS:7098 (Part 1): 1988 latest</p> <p>ISI Marked : Mandatory . BIS License number must be delcared by OEM.</p> <p>CONSTRUCTION:</p> <p>Material of conductor : Aluminium</p> <p>Conductor material standard :as per IS:8130:2013 latest</p> <p>Construction of the conductor : Stranded</p> <p>Insulation : XLPE</p> <p>Properties of XLPE insulation : as per Table 1 of IS:7098 (Part 1):1988 latest as per Table 1 of IS:7098 (Part 1):1988 latest.</p> <p>Colour of XLPE insulation : Red,Yellow,Blue,Black</p> <p>Type of inner sheath : Thermoplastic</p> <p>OUTER SHEATH</p> <p>Outer sheath standard : Conforming to IS:5831:1984 latest</p> <p>Type of outer sheath : PVC-ST2</p> <p>Colour of outer sheath : Black</p> <p>MARKING ON CABLE</p> <p>Manufacturer's identification on cable: As per Cl.17.1 of IS:7098 Part 1: latest</p> <p>Type of sequential marking on cable : Screen printing on cable</p> <p>Cable identification : As per Cl.17.2 of IS:7098 Part 1: latest</p> <p>PACKING AND MARKING</p> <p>Packing and marking :As per Cl.18.1 and 18.2 of IS:7098 Part 1: latest</p> <p>Cable wound on : ISI Marked Wooden drum</p> <p>Drum standard : As per IS:10418 latest</p> <p>Standard length of cable on drum (in m) : 500</p> <p>Marking on the drum : As per Cl.18.2 of IS:7098 Part 1: latest</p> <p>ARMOURING</p> <p>Type : Armoured cable</p> <p>Material of armouring : Galvanized steel formed wire</p> <p>Type of armouring : strip</p> <p>Availability of type test report from NABL accredited LAB / ILAC accredited LAB : Yes</p> <p>Inspection : Material inspection will be done by RITES at manufacturer premises. Fees of inspection will be borne by Railway.</p> <p>(Make of cable : Finolex, Polycab, Rotoplast, CCI)</p>				
19	Supply and fixing of 1x630 sqmm aluminum cable indoor termination kit	10	Nos	6280.800000	62808.00

	The cost covers Supply and fixing of 1.1 kV x 1C x 630 sq.mm Indoor End Termination kit. All required accessories required for the job shall be supplied by the contractor. (Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)				
20	Supply and fixing of 1x630 sqmm aluminum cable outdoor termination kit	10	Nos	8006.400000	80064.00
	The cost covers Supply and fixing of 1.1 kV x 1C x 630 sq.mm outdoor End Termination kit. All required accessories required for the job shall be supplied by the contractor. (Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)				
21	Supplying and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) of size 60 cm X 60 cm at	26	Nos	449.400000	11684.40
	The cost covers Supplying and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) of size 60 cm X 60 cm at the bottom and 50cm X 50 cm at the top with a thickness of 10 cm including inscription duly engraved as required.				
22	Digging of cable trench 1mtr. deep in all sorts of soil	275	mtr	89.000000	24475.00
	The cost covers excavation of suitable width & depth 1 meter along the road and across the road in all sorts of soil . Where any obstruction for trenching the depth of trenching shall be dealt as per Railway Borad letter 2012/Elect (G)/180/2/Pt. Dt. 11.07.2013. All required materials shall be supplied by the contractor.				
23	Laying of LT cable in the cable trench inside DWC pipe along	550	mtr	18.000000	9900.00
	The cost covers laying of cable supplied by Indian Railway in the double wall corrugated pipes (DWC) on the trench along the track/road with spreading of river sand at the bottom of cable trench. After laying of the cable refilling of trench with excavated earth, ramming, compacting & leveling to original shape should be done. The path & type of cable to be laid on that path shall be decided by the railway supervisor at site. All required materials shall be supplied by the contractor.				
24	Supply, erection & commissioning of maintenance friendly chemical Transformer earthing as per annexure 3 of this scope of work.	4	Nos	21367.000000	85468.00
25	Supply, erection & commissioning of maintenance friendly chemical earthing as per annexure 3 of this scope of work.	4	Nos	18004.000000	72016.00
	The cost covers supply, erection & commissioning of maintenance friendly earthing as per annexure 3 of this scope of work.				
26	Supply, laying, connecting & commissioning of 25 mm X 6mm/ 40mm X 5mm/50mm X 6mm thick GI Strip for earth pit as per the directions of engineer at site (per kg)	100	Kg	82.000000	8200.00
	The cost covers supply, laying, connecting & commissioning 25mm x 6mm/40mm x 5mm/50mm x 6mm thick GI strip for earthing. All materials & labour required for supply, laying, connecting & commissioning shall be supplied by the contractor.				
Total of Schedule					8168050.35

	Schedule F : Office TMR	Qty	Unit	Rate in Rs	Total in Rs
1	Supply of Double door TPN with Acrylic door 3 phase, MDB with 63 A capacity FP isolator, 8 way with neutral link with SP MCB 6/10/16/32 amp (as per requirement).	1	Nos	9900.000000	9900.00
	The cost covers supply of Double door TPN with Acrylic door/metallic door 3 phase, MDB with 63 A FP isolator, 8 way with neutral link and with 28 SP MCB 6/10/16/32 amp as per requirement, pre wired in metallic enclosure. (Make : Hager, Havells, C&S, Lauritz Knudsen , Legrand ,BCH , Schneider)				
2	Supply of Recess mounted square model 2' X 2', 36 W LED fitting, 230 V AC supply	45	Nos	3014.000000	135630.00
	The cost covers supply of LED Panel Light 2' X 2' (600mm X 600mm) Max. 36W having CRCA powder coated housing, polystyrene diffuser having system lumens output of Min 4200 Lumens, min. efficacy of 120 lumen/W, CRI>80, CCT upto 6500K, p.f. >0.95, operating range of 120-270V, surge protection of 2.5 kV, Life class of 50,000 Hrs. at L70B50 including driver, having mounting arrangement with board for surface type or spring loaded mounting clips. (Make : Jaquar , Phillips, Wipro, Orient)				
3	Supply of surface mounting LED 20 W tube light fitting	25	Nos	194.000000	4850.00

	The cost covers supply surface mounting LED 20 W tube light fitting, powder coated CRCA/PVC housing. (Make : Jaquar , Phillips, Wipro, Orient)				
4	Fixing & wiring of LED light fitting	70	Nos	17.000000	1190.00
	The cost covers fixing & connecting of LED tube light, down light, square light fitting with all accessories. Fitting should be properly fixed on the wall/ceiling/surface/recess with the help of PVC blocks/clamps etc, with sufficient strength to hold the fitting. Connection to the fitting should be done with 1.5 sq.mm flexible FRLS stranded copper wire from the ceiling rose. All materials for fixing of LED light fitting shall be supplied by the contractor.				
5	Supply and fixing of BLDC ceiling fan 5 star rated 1200 mm sweep with remote.	10	Nos	3409.000000	34090.00
	The cost covers supply, fixing and wiring from ceiling rose to BLDC ceiling fan 5 star rated 1200 mm sweep with remote. The item should contain 1 no. copper winding Fan motor with PCB controller, 1 no canopy set, 3 no. fan blades, 1 no. down rod, 1 no. Remote Control, 2 no. batteries (1.5 V), Safety Wire, Instruction manual, Guarantee Card & Shackle assembly. The fan should have 3 years warranty against any defects. This includes transportation of material at site. (Make: Atomberg , Arcline, Bajaj, Crompton, Usha, Havells, Orient, Odin , Luker, AVM)				
6	Concealed wiring with PVC conduite pipe with modular switch & 1.5 sq.mm FRLS copper wire.	200	Pts	630.000000	126000.00
	The cost covers PVC concealed conduit pipe wiring for light, fan with switches & PVC conduit pipe. The wiring shall be with PVC insulated stranded copper wire 1.5 sq. mm 1100 volt grade FRLS. The wiring shall be terminated into ceiling rose for light & fan points inclusive of supply of all materials. The switches for lights and fans shall be fixed on to a board. The board shall be earthed using 2.5 sq mm FRLS (green colour) copper wire. The fan regulators shall be fitted into the switch board & connected. An earth continuity conductor of 2.5 sq mm FRLS (green colour) copper wire shall run all along the casing capping & shall be connected to the fan regulator. After proper fixing of PVC conduit pipe, if required finishing of cement plastering & touching up of distempering in proper manner shall be done so as to keep the aesthetic look of the building intact. Note- The tube lights & fans shall be connected to the ceiling rose with 1.5 sq.mm flexible copper wire (FRLS) approximately 1 (one) Mtrs. for each fitting. (A) Switch Board-The switch modular board shall be of suitable size. The size of the board shall be so as it should accommodate controlling switches & regulator of the same room in close vicinity. (B) Switches and ceiling rose – A PVC white switch of 6A for controlling the supply & PVC white ceiling rose for wiring terminals. (C) Marking on the switch - The switches should be marked properly with stickers as F, L & Exh on it for fan, lights and Exhaust fan respectively. All materials required for wiring shall be supplied by the contractor. (FRLS copper wire Make: Finolex, Polycab, Rotoplast,CCI) (PVC conduit - Presstech, superplast, AKG, Maruti, Sarswati, Polycab, Modi) (Switch Socket :Make : C&S, Lauritz Knudsen , Hager , Legrand, Scheider Electric)				
7	Sub circuit wiring with 2.5 sq.mm copper wire FRLS.	600	Mtr	72.000000	43200.00
	The cost covers sub-circuit wiring with 2.5 sq. mm FRLS wire .Wiring from main switch boards to switch boards & from one room to another room is referred as sub-circuit. The sub circuits shall run through PVC conduits and having PVC insulated FRLS copper wire 2.5 sq. mm size, 1100 V grade. A number of sub- circuits may run through one PVC conduit for convenience of wiring. One sub circuit shall consist of three wires one phase & one neutral and an earth continuity conductor of 2.5 sq mm FRLS (green colour) copper wire shall be run all along the piping in the sub circuit. All material required for wiring shall be supplied by the contractor. (FRLS copper wire Make: Finolex, Polycab, Rotoplast,CCI) (PVC conduit - Presstech, superplast, AKG, Maruti, Sarswati, Polycab, Modi)				
8	Supply of Angular batten holder with necessary accessories.	20	Nos	55.000000	1100.00
	The cost covers supply of Angular batten holder with PVC block suitable to work on 230 Volts AC supply. (Make : Havells, C&S, Lauritz Knudsen , Legrand)				
9	Fixing of angular batten holder.	20	Nos	22.000000	440.00
	The cost covers fixing & wiring of Angular batten holder. Holder should be properly fixed on the wall with the help of PVC blocks with sufficient strength to hold the holder. All materials for fixing shall be supplied by the contractor.				
10	Supply of Modular Surface Type Ceiling Rose with Terminal	10	Nos	53.000000	530.00
	The cost covers supply of 3 pin PVC modular type ceiling rose for 240 V AC. (Make : Make : C&S, Lauritz Knudsen , Legrand, Scheider Electric, Hager)				
11	Fixing of Surface Type Ceiling Rose with three Terminal	10	Nos	5.000000	50.00

	The cost covers fixing and wiring of Modular Surface Type Ceiling Rose in close co-ordination with Sr. DEE(RS&G)/Nagpur's representative at site. All material required for fixing and wiring shall be supplied by the contractor.				
12	Provision of earthing arrangement	4	Nos	2427.000000	9708.00
	The cost covers supply & erection of earth cone. Earth cone to be laid down shall be fabricated from Class 'B' G. I. Pipe conforming to relevant IS and as per drawing No:CEE/G/A 4/P-105. Erection of earth cones so fabricated shall be done as per drawing No: CEE/G/A1/P-124 including supply of all materials. The location of the earth cones will be decided by the site representative of Sr.DEE(RS&G)/NAG's. The Earth pipe to be fitted with clamp for proper connection of 8 SWG GI wire through nuts, bolts and lugs along with supply of suitable length of 8 SWG, GI wire to connect nearby electrical asset. Earth pit will be painted with yellow oil paint and earth value to be written with black oil paint. All materials required shall be supplied by the contractor				
13	Supply of 3 pin modular socket outlet with switch of 6 Amps capacity & 230V grade complete with accessories	20	Nos	214.000000	4280.00
	The cost covers supply of 3 pin socket outlet with switch of 6 Amps capacity & 230-250V grade complete with accessories. (Make : C&S, Lauritz Knudsen , Legrand, Scheider Electric, Hager)				
14	Supply of 3 pin modular socket outlet with switch of 6/16 Amps capacity & 230V grade complete with accessories	10	Nos	277.000000	2770.00
	The cost covers supply of 3 pin socket outlet with switch of 16/6 Amps capacity & 230-250V grade complete with accessories. (Make : C&S, Lauritz Knudsen , Legrand, Scheider Electric, Hager)				
15	Supply of powder-coated galvanized steel Rack for storage (254x40x190 cm)	8	Nos	28170.000000	225360.00
	The cost covers supply, delivery, installation and commissioning of shelving unit, black, size 2540 mm (W) x 400 mm (D) x 1900 mm (H), complete with 2 adjustable shelves making it 4 storage shelves , made of galvanized steel with epoxy/polyester powder coating, heavy-duty capability of holding upto 90 Kg and flexible modular storage system, suitable for office/store use, complete in all respects.Materials to be approved prior to supply by authorised representative of Sr.DEE(RS&G). Inspection of material will be done by RITES , Fees of inspection will be borne by Railway.				
16	Supply of TABLE WITH INTEGRATED HDU (1800W X 750D X 750H)	1	Nos	29809.160000	29809.16
	Supply, delivery, installation, and commissioning of office desk, equivalent to GODREJ UNITIZED T-25 TABLE WITH INTEGRATED HDU (Size: 1800 mm (W) × 750 mm (D) × 750 mm (H)), suitable for office use, complete in all respects, conforming to the following specifications: Main Worktop: Made of 25 mm thick pre-laminated particle board (PLB) of E1-P2 grade conforming to IS:12823:1990, in approved shade. Edges shall be sealed with 2 mm thick matching PVC edge banding. Provision of access flap on the work surface for cable management. Return Worktop: Made of 25 mm thick pre-laminated particle board (PLB) of E1-P2 grade conforming to IS:12823:1990, in approved shade, with 2 mm thick matching PVC edge banding. Modesty Panel: Made of 18 mm thick pre-laminated twin board (PLT) of E1-P2 grade conforming to IS:12823:1990, in approved shade, with 2 mm thick PVC edge banding. Legs: Cube-shaped legs fabricated from MS ERW tubes of sizes 50 mm × 25 mm × 1.2 mm thick and 40 mm × 40 mm × 1.2 mm thick, conforming to IS:7138. Top support brackets of 3 mm thick HR steel conforming to IS:2062 shall be welded to the leg structure using argon shielded welding. The entire assembly shall be powder coated with a minimum 50-micron thick epoxy polyester coating. Base shall be fitted with plastic caps having M8 threaded inserts with adjustable M8 levellers providing height adjustment up to 50 mm. Cross Members: Made from 50 mm × 25 mm × 1.2 mm thick ERW tubes conforming to IS:7138, powder coated with minimum 50-micron epoxy polyester coating. Assembly shall be through friction-fit PDC joinery with grub screws. Two cross members shall be provided per table. Access Flap: Soft-closing type made from aluminum extrusion. PDC components shall be made of aluminum alloy and plastic components from Nylon-6. Provision for standard 8-module electrical fittings (Anchor Roma or equivalent) shall be included. Wire brush with nylon bristles shall be provided.				

	<p>Power Box: Fabricated from 0.8 mm thick CRCA sheet conforming to IS:513, with provision for 8-module switch plate (Anchor Roma or equivalent). The power box shall be integrated with the worktop along the depth at the access flap location.</p> <p>Integrated Storage Unit: Hinged door storage with drawer, made from 18 mm thick pre-laminated twin board (PLT) of E1-P2 grade conforming to IS:12823:1990, in approved shade with 2 mm PVC edge banding. Doors shall be mounted on slide-on hinges with suitable handles. Drawer shall be provided with Ebco Metabox slides and locking arrangement for security.</p> <p>The complete unit shall be supplied, installed, and commissioned as per approved design and specifications, ensuring proper alignment, finish, and functionality. (Makes : Godrej , Eros , Pepperfry , Durian , Nilkamal)</p>					
17	Supply of revolving office bravo chair with arm & cushion. The seat & back are high density foam cushion fitted with PVC arm-rest.	4	Nos	13413.000000	53652.00	
	The cost covers Supply, delivery, installation and commissioning of revolving office chair with arm & cushion with synchronic tilt mechanism model equivalent to GODREJ BRAVO HIGH BACK CHAIR . The seat pressed and moulded with PU foam & back one piece hot pressed plywood with PU high density foam cushion fitted with PVC arm-rest. Materials to be approved prior to supply by authorised representative of Sr.DEE(RS&G). (Makes : Godrej , Eros , Pepperfry , Durian , Nilkamal)					
18	Supply of Revolving office chair with arm & cushion	6	Nos	6773.000000	40638.00	
	The cost covers Supply, delivery, installation and commissioning of revolving office mid back chair with arm & cushion with synchronic tilt mechanism . The seat pressed and moulded with PU foam & back one piece hot pressed plywood with PU high density foam cushion fitted with PVC arm-rest. Materials to be approved prior to supply by authorised representative of Sr.DEE(RS&G). (Makes : Godrej , Eros , Pepperfry , Durian , Nilkamal)					
19	Supply of Steel almirah plain78"x36"x19"	3	Nos	22540.000000	67620.00	
	The cost covers supply of steel almirah large plain of size approx 78"H x 36"W x 19"D with 4 adjustable shelves making 5 compartment. Doors having 3 point locking system. Doors in 20 SWG & other parts in 22 SWG steel sheets. (Make Godrej, Nilkamal, Durin , Pepperfry, Urban Ladder, Eros)					
20	Supply and installation of TABLE (1200 W X 750 D X 750 H)	3	Nos	20060.000000	60180.00	
	The table shall be of size 1200 mm (W) × 750 mm (D) × 750 mm (H) similar to Godrej Upbeat Table, constructed from engineered wood with a minimum 18 mm thick laminated top, supported on powder-coated steel frame with PVC edge banding. It shall be ergonomically designed, free-standing, with provision for cable management and levelling glides. The table must withstand a uniformly distributed load and be supplied with a minimum one-year warranty against manufacturing defects. (Make Godrej, Nilkamal, Durin , Pepperfry, Urban Ladder, Eros)					
	Total of Schedule TMR					850997.16

	Schedule G : Store NITR	Qty	Unit	Rate in Rs	Total in Rs	
1	Supply of Double door TPN with Acrylic door 3 phase, MDB with 63 A capacity FP isolator, 8 way with neutral link with SP MCB 6/10/16/32 amp (as per requirement).	1	Nos	9900.000000	9900.00	
	The cost covers supply of Double door TPN with Acrylic door/metallic door 3 phase, MDB with 63 A FP isolator, 8 way with neutral link and with 28 SP MCB 6/10/16/32 amp as per requirement, pre wired in metallic enclosure. (Make : Hager, Havells, C&S, Lauritz Knudsen , Legrand ,BCH , Schneider)					
2	Supply of Recess mounted square model 2' X 2', 36 W LED fitting, 230 V AC supply	65	Nos	3014.000000	195910.00	
	The cost covers supply of LED Panel Light 2' X 2' (600mm X 600mm) Max. 36W having CRCA powder coated housing, polystyrene diffuser having system lumens output of Min 4200 Lumens, min. efficacy of 120 lumen/W, CRI>80, CCT upto 6500K, p.f. >0.95, operating range of 120-270V, surge protection of 2.5 kV, Life class of 50,000 Hrs. at L70B50 including driver, having mounting arrangement with board for surface type or spring loaded mounting clips. (Make : Jaquar , Phillips, Wipro, Orient)					
3	Supply of surface mounting LED 20 W tube light fitting	40	Nos	194.000000	7760.00	
	The cost covers supply surface mounting LED 20 W tube light fitting, powder coated CRCA/PVC housing. (Make : Jaquar , Phillips, Wipro, Orient)					
4	Fixing & wiring of LED light fitting	105	Nos	17.000000	1785.00	

	he cost covers fixing & connecting of LED tube light, down light, square light fitting with all accessories. Fitting should be properly fixed on the wall/ceiling/surface/recess with the help of PVC blocks/clamps etc, with sufficient strength to hold the fitting. Connection to the fitting should be done with 1.5 sq.mm flexible FRLS stranded copper wire from the ceiling rose. All materials for fixing of LED light fitting shall be supplied by the contractor.				
5	Supply and fixing of BLDC ceiling fan 5 star rated 1200 mm sweep with remote.	15	Nos	3409.000000	51135.00
	The cost covers supply, fixing and wiring from ceiling rose to BLDC ceiling fan 5 star rated 1200 mm sweep with remote. The item should contain 1 no. copper winding Fan motor with PCB controller, 1 no canopy set, 3 no. fan blades, 1 no. down rod, 1 no. Remote Control, 2 no. batteries (1.5 V), Safety Wire, Instruction manual, Guarantee Card & Shackle assembly. The fan should have 3 years warranty against any defects. This includes transportation of material at site. (Make: Atomberg , Arcline, Bajaj, Crompton, Usha, Havells, Orient, Odin , Luker, AVM)				
6	Concealed wiring with PVC conduite pipe with modular switch & 1.5 sq.mm FRLS copper wire.	150	Pts	630.000000	94500.00
	The cost covers PVC concealed conduit pipe wiring for light, fan with switches & PVC conduit pipe. The wiring shall be with PVC insulated stranded copper wire 1.5 sq. mm 1100 volt grade FRLS. The wiring shall be terminated into ceiling rose for light & fan points inclusive of supply of all materials. The switches for lights and fans shall be fixed on to a board. The board shall be earthed using 2.5 sq mm FRLS (green colour) copper wire. The fan regulators shall be fitted into the switch board & connected. An earth continuity conductor of 2.5 sq mm FRLS (green colour) copper wire shall run all along the casing capping & shall be connected to the fan regulator. After proper fixing of PVC conduit pipe, if required finishing of cement plastering & touching up of distempering in proper manner shall be done so as to keep the aesthetic look of the building intact. Note- The tube lights & fans shall be connected to the ceiling rose with 1.5 sq.mm flexible copper wire (FRLS) approximately 1 (one) Mtrs. for each fitting. (A) Switch Board-The switch modular board shall be of suitable size. The size of the board shall be so as it should accommodate controlling switches & regulator of the same room in close vicinity. (B) Switches and ceiling rose – A PVC white switch of 6A for controlling the supply & PVC white ceiling rose for wiring terminals. (C) Marking on the switch - The switches should be marked properly with stickers as F, L & Exh on it for fan, lights and Exhaust fan respectively. All materials required for wiring shall be supplied by the contractor. (FRLS copper wire Make: Finolex, Polycab, Rotoplast,CCI) (PVC conduit - Presstech, superplast, AKG, Maruti, Sarswati, Polycab, Modi) (Switch Socket :Make : C&S, Lauritz Knudsen , Hager , Legrand, Scheider Electric)				
7	Sub circuit wiring with 2.5 sq.mm copper wire FRLS.	400	Mtr	72.000000	28800.00
	The cost covers sub-circuit wiring with 2.5 sq. mm FRLS wire .Wiring from main switch boards to switch boards & from one room to another room is referred as sub-circuit. The sub circuits shall run through PVC conduits and having PVC insulated FRLS copper wire 2.5 sq. mm size, 1100 V grade. A number of sub- circuits may run through one PVC conduit for convenience of wiring. One sub circuit shall consist of three wires one phase & one neutral and an earth continuity conductor of 2.5 sq mm FRLS green colour) copper wire shall be run all along the piping in the sub circuit. All material required for wiring shall be supplied by the contractor. (FRLS copper wire Make: Finolex, Polycab, Rotoplast,CCI) (PVC conduit - Presstech, superplast, AKG, Maruti, Sarswati, Polycab, Modi)				
8	Supply of Angular batten holder with necessary accessories.	20	Nos	55.000000	1100.00
	The cost covers supply of Angular batten holder with PVC block suitable to work on 230 Volts AC supply. (Make : Havells, C&S, Lauritz Knudsen , Legrand)				
9	Fixing of angular batten holder.	20	Nos	22.000000	440.00
	The cost covers fixing & wiring of Angular batten holder. Holder should be properly fixed on the wall with the help of PVC blocks with sufficient strength to hold the holder. All materials for fixing shall be supplied by the contractor.				
10	Supply of Modular Surface Type Ceiling Rose with Terminal	10	Nos	53.000000	530.00
	The cost covers supply of 3 pin PVC modular type ceiling rose for 240 V AC. (Make : Make : C&S, Lauritz Knudsen , Legrand, Scheider Electric, Hager)				
11	Fixing of Surface Type Ceiling Rose with three Terminal	10	Nos	5.000000	50.00
	The cost covers fixing and wiring of Modular Surface Type Ceiling Rose in close co-ordination with Sr. DEE(RS&G)/Nagpur's representative at site. All material required for fixing and wiring shall be supplied by the contractor.				
12	Provision of earthing arrangement	4	Nos	2427.000000	9708.00

	The cost covers supply & erection of earth cone. Earth cone to be laid down shall be fabricated from Class 'B' G. I. Pipe conforming to relevant IS and as per drawing No:CEE/G/A 4/P-105. Erection of earth cones so fabricated shall be done as per drawing No: CEE/G/A1/P-124 including supply of all materials. The location of the earth cones will be decided by the site representative of Sr.DEE(RS&G)/NAG's. The Earth pipe to be fitted with clamp for proper connection of 8 SWG GI wire through nuts, bolts and lugs along with supply of suitable length of 8 SWG, GI wire to connect nearby electrical asset. Earth pit will be painted with yellow oil paint and earth value to be written with black oil paint. All materials required shall be supplied by the contractor				
13	Supply of 3 pin modular socket outlet with switch of 6 Amps capacity & 230V grade complete with accessories	20	Nos	214.000000	4280.00
	The cost covers supply of 3 pin socket outlet with switch of 6 Amps capacity & 230-250V grade complete with accessories. (Make : C&S, Lauritz Knudsen , Legrand, Scheider Electric, Hager)				
14	Supply of 3 pin modular socket outlet with switch of 6/16 Amps capacity & 230V grade complete with accessories	10	Nos	277.000000	2770.00
	The cost covers supply of 3 pin socket outlet with switch of 16/6 Amps capacity & 230-250V grade complete with accessories. (Make : C&S, Lauritz Knudsen , Legrand, Scheider Electric, Hager)				
15	Supply of powder-coated galvanized steel Rack for storage (254x40x190 cm)	36	Nos	28170.000000	1014120.00
	The cost covers supply, delivery, installation and commissioning of shelving unit, black, size 2540 mm (W) x 400 mm (D) x 1900 mm (H), complete with 2 adjustable shelves making it 4 storage shelves , made of galvanized steel with epoxy/polyester powder coating, heavy-duty capability of holding upto 90 Kg and flexible modular storage system, suitable for office/store use, complete in all respects. Materials to be approved prior to supply by authorised representative of Sr.DEE(RS&G). Inspection of material will be done by RITES , Fees of inspection will be borne by Railway.				
	Total of Schedule Store NITR				1422788.00

	Schedule H : Office BTC	Qty	Unit	Rate in Rs	Total in Rs
1	Supply of XLPE 4x50 Aluminium cable	140	Mtr	525.000000	73500.00
	<p>The cost covers supply of Aluminum LT XLPE Cable for Working Voltages up to and Including 1.1 KV with Number of core and Nominal Area of Conductor as above.</p> <p>Specification :</p> <p>STANDARD</p> <p>Classification of cables for improved fire performance category : 01</p> <p>Conformity of the specification for XLPE cable : as per IS:7098 (Part 1): 1988 latest</p> <p>ISI Marked : Mandatory . BIS License number must be declared by OEM.</p> <p>CONSTRUCTION:</p> <p>Material of conductor : Aluminium</p> <p>Conductor material standard :as per IS:8130:2013 latest</p> <p>Construction of the conductor : Stranded</p> <p>Insulation : XLPE</p> <p>Properties of XLPE insulation : as per Table 1 of IS:7098 (Part 1):1988 latest as per Table 1 of IS:7098 (Part 1):1988 latest.</p> <p>Colour of XLPE insulation : Red,Yellow,Blue,Black</p> <p>Type of inner sheath : Thermoplastic</p> <p>OUTER SHEATH</p> <p>Outer sheath standard : Conforming to IS:5831:1984 latest</p> <p>Type of outer sheath : PVC-ST2</p> <p>Colour of outer sheath : Black</p>				

	<p>MARKING ON CABLE Manufacturer's identification on cable: As per Cl.17.1 of IS:7098 Part 1: latest Type of sequential marking on cable : Screen printing on cable Cable identification : As per Cl.17.2 of IS:7098 Part 1: latest</p> <p>PACKING AND MARKING Packing and marking :As per Cl.18.1 and 18.2 of IS:7098 Part 1: latest Cable wound on : ISI Marked Wooden drum Drum standard : As per IS:10418 latest Standard length of cable on drum (in m) : 500 Marking on the drum : As per Cl.18.2 of IS:7098 Part 1: latest</p> <p>ARMOURING Type : Armoured cable Material of armouring : Galvanized steel formed wire Type of armouring : strip Availability of type test report from NABL accredited LAB / ILAC accredited LAB : Yes (Make of cable : Finolex, Polycab, Rotoplast, CCI)</p>				
2	Supply of DWC pipe 75 mm	70	Mtr	146.000000	10220.00
	The cost covers supply of DWC pipe 75 mm size confirming to IS 16205 part 24. (Make : Dutron, Jindal Plast ,Ketron, Astral , Sai Plasto, Keshav Kripa)				
3	Supply of end temination kit 4x50	4	Nos	1707.200000	6828.80
	The cost covers supply of 1.2 kV x 4C x 50 sq.mm Outdoor End Termination kit. All required accessories required for the job shall be supplied by the contractor. (Make : Denson, M Seal, Cab seal, Raychem, Thomas and Betts, 3M, Compaq)				
4	Digging of cable trench 1mtr. deep in all sorts of soil along the Track/road/platform.	70	Mtr	89.000000	6230.00
	The cost covers excavation of suitable width & depth 1 meter along the road and across the road in all sorts of soil . Where any obstruction for trenching the depth of trenching shall be dealt as per Railway Borad letter 2012/Elect (G)/180/2/Pt. Dt. 11.07.2013. All required materials shall be supplied by the contractor.				
5	Laying of LT cable in the cable trench inside DWC pipe along the track/road.	140	Mtr	18.000000	2520.00
	The cost covers laying of cable supplied by Indian Railway in the double wall corrugated pipes (DWC) on the trench along the track/road with spreading of river sand at the bottom of cable trench. After laying of the cable refilling of trench with excavated earth, ramming, compacting & leveling to original shape should be done. The path & type of cable to be laid on that path shall be decided by the railway supervisor at site. All required materials shall be supplied by the contractor.				
6	Supply of 18 SWG MS location box of 1250x1100x600 mm size with 4 Nos suitable size aluminium busbar arrangement of 300 A capacity, with locking arrangement to mount on foundation.	1	Nos	13824.000000	13824.00
	The cost covers supply of 18 SWG MS location box of size 1250 x 1100 x 600 mm size with 4 Nos. suitable size aluminum bus bar arrangement of 300 Amps capacity, comprising of following switchgears(item 7-9 below) with locking arrangement and with Main earth terminal .The box should be powder painted to shade RAL7032, having front hinged doors, dust & vermin proof by providing gaskets. Approval of drawing and switchgears to be taken before delivery of materials.				
7	Supply of 4 poles MCCB 100 Amps BC 25 KA ,Adjustable Overload 80-100% , Adjustable Short Circuit 5-10 In, Ics= Icu =100%	1	Nos	8105.500000	8105.50
	The cost covers Supply of 4 poles MCCB 100 Amps BC 25 KA ,Adjustable Overload 80-100% , Adjustable Short Circuit 5-10 In, Ics= Icu =100% along with Spreader Terminal Kit & suitable for use in 415 Volt, 3 phase, 50 Hz. AC supply. (Make : Hager, Schneider, Siemens, BCH, Lauritz Knudsen, C&S)				
8	Porcelain Kit kat fuse grip 100 Amps, 415 volts grade	4	Nos	1086.000000	4344.00
	The cost covers supply of ISI marked porcelain Kit kat fuse grip 100 Amps, 415 volts grade, 50 Hz. AC supply.				
9	Metering & wiring inside the box Voltmeter, Ammeter, RYB indication light with mcb & CT coils	1	Nos	1370.000000	1370.00
	The cost covers supply of Meters such as ammeter, voltmeter with selector switch, R, Y, B phase indicator lamps with mcb & CT coils for main incomer, internal wiring with FRLS flexible wire & cable connection for all incoming & outgoing feeders.				

10	Transportation, Installation & commissioning of 18 SWG MS location box with switchgears	1	Nos	6504.000000	6504.00
	The cost covers transportation, Installation & commissioning of 18 SWG MS location box with switchgears. The location be installed properly with construction of suitable size foundation/floor including internal wiring. The connections & looping inside the panel shall be done as per the directive of the representative of Sr.DEE(RS&G)/NAG at site. All materials required for installation & connection of location box shall be supplied by the contractor.				
11	Supplying and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) of size 60 cm X 60 cm	10	Nos	449.400000	4494.00
	The cost covers Supplying and making cable route marker with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) of size 60 cm X 60 cm at the bottom and 50cmX50 cm at the top with a thickness of 10 cm including inscription duly engraved as required.				
12	Fixing of cable in open air and wall support.	50	Mtr	26.000000	1300.00
	The cost covers of fixing of cable, in open air on pole/along the wall/support. The cable shall be fixed with suitable size fixture to provide sufficient grip for holding the cable. All materials & labours required shall be supplied by the contractor.				
13	Supply of Double door TPN with Acrylic door 3 phase, MDB with 63 A capacity FP isolator, 8 way with neutral link with SP MCB 6/10/16/32 amp (as per requirement).	1	Nos	9900.000000	9900.00
	The cost covers supply of Double door TPN with Acrylic door/metallic door 3 phase, MDB with 63 A FP isolator, 8 way with neutral link and with 28 SP MCB 6/10/16/32 amp as per requirement, pre wired in metallic enclosure. (Make : Hager, Havells, C&S, Lauritz Knudsen , Legrand ,BCH , Schneider)				
14	Installation & commissioning of 1&3 phase DB with all accessories.	1	Nos	58.000000	58.00
	The cost covers fixing, testing & commissioning of distribution board 1 and 3 phase with MCBs, complete with base and enclosure. The DBs shall be fixed at a suitable height with proper fixture with nuts and bolts. An earth continuity copper wire of 2.5 sq mm FRLS (green color) shall run from the main board to the DB and connected to the earth terminal for earthing of DB. All materials for fixing and commissioning of DB's shall be supplied by the contractor.				
15	Supply of Recess mounted square model 2' X 2', 36 W LED fitting, 230 V AC supply	15	Nos	3014.000000	45210.00
	The cost covers supply of LED Panel Light 2' X 2' (600mm X 600mm) Max. 36W having CRCA powder coated housing, polystyrene diffuser having system lumens output of Min 4200 Lumens, min. efficacy of 120 lumen/W, CRI>80, CCT upto 6500K, p.f. >0.95, operating range of 120-270V, surge protection of 2.5 kV, Life class of 50,000 Hrs. at L70B50 including driver, having mounting arrangement with board for surface type or spring loaded mounting clips. (Make : Jaquar , Phillips, Wipro, Orient)				
16	Supply of surface mounting LED 20 W tube light fitting	30	Nos	194.000000	5820.00
	The cost covers supply surface mounting LED 20 W tube light fitting, powder coated CRCA/PVC housing. (Make : Jaquar , Phillips, Wipro, Orient)				
17	Fixing & wiring of LED light fitting	45	Nos	17.000000	765.00
	The cost covers fixing & connecting of LED tube light, down light, square light fitting with all accessories. Fitting should be properly fixed on the wall/ceiling/surface/recess with the help of PVC blocks/clamps etc, with sufficient strength to hold the fitting. Connection to the fitting should be done with 1.5 sq.mm flexible FRLS stranded copper wire from the ceiling rose. All materials for fixing of LED light fitting shall be supplied by the contractor.				
18	Supply and fixing of BLDC ceiling fan 5 star rated 1200 mm sweep with remote.	8	Nos	3409.000000	27272.00
	The cost covers supply, fixing and wiring from ceiling rose to BLDC ceiling fan 5 star rated 1200 mm sweep with remote. The item should contain 1 no. copper winding Fan motor with PCB controller, 1 no canopy set, 3 no. fan blades, 1 no. down rod, 1 no. Remote Control, 2 no. batteries (1.5 V), Safety Wire, Instruction manual, Guarantee Card & Shackle assembly. The fan should have 3 years warranty against any defects. This includes transportation of material at site. (Make: Atomberg , Arcline, Bajaj, Crompton, Usha, Havells, Orient, Odin , Luker, AVM)				
19	Concealed wiring with PVC conduite pipe with modular switch & 1.5 sq.mm FRLS copper wire.	80	Pts	630.000000	50400.00

	<p>The cost covers PVC concealed conduit pipe wiring for light, fan with switches & PVC conduit pipe. The wiring shall be with PVC insulated stranded copper wire 1.5 sq. mm 1100 volt grade FRLS. The wiring shall be terminated into ceiling rose for light & fan points inclusive of supply of all materials. The switches for lights and fans shall be fixed on to a board. The board shall be earthed using 2.5 sq mm FRLS (green colour) copper wire. The fan regulators shall be fitted into the switch board & connected. An earth continuity conductor of 2.5 sq mm FRLS (green colour) copper wire shall run all along the casing capping & shall be connected to the fan regulator. After proper fixing of PVC conduit pipe, if required finishing of cement plastering & touching up of distempering in proper manner shall be done so as to keep the aesthetic look of the building intact.</p> <p>Note- The tube lights & fans shall be connected to the ceiling rose with 1.5 sq.mm flexible copper wire (FRLS) approximately 1 (one) Mtrs. for each fitting.</p> <p>(A) Switch Board-The switch modular board shall be of suitable size. The size of the board shall be so as it should accommodate controlling switches & regulator of the same room in close vicinity.</p> <p>(B) Switches and ceiling rose – A PVC white switch of 6A for controlling the supply & PVC white ceiling rose for wiring terminals.</p> <p>(C) Marking on the switch - The switches should be marked properly with stickers as F, L & Exh on it for fan, lights and Exhaust fan respectively.</p> <p>All materials required for wiring shall be supplied by the contractor.</p> <p>(FRLS copper wire Make: Finolex, Polycab, Rotoplast,CCI)</p> <p>(PVC conduit - Presstech, superplast, AKG, Maruti, Sarswati, Polycab, Modi)</p> <p>(Switch Socket :Make : C&S, Lauritz Knudsen , Hager , Legrand, Scheider Electric)</p>				
20	Sub circuit wiring with 2.5 sq.mm copper wire FRLS.	250	Mtr	72.000000	18000.00
	<p>The cost covers sub-circuit wiring with 2.5 sq. mm FRLS wire .Wiring from main switch boards to switch boards & from one room to another room is referred as sub-circuit. The sub circuits shall run through PVC conduits and having PVC insulated FRLS copper wire 2.5 sq. mm size, 1100 V grade. A number of sub- circuits may run through one PVC conduit for convenience of wiring. One sub circuit shall consist of three wires one phase & one neutral and an earth continuity conductor of 2.5 sq mm FRLS green colour) copper wire shall be run all along the piping in the sub circuit. All material required for wiring shall be supplied by the contractor.</p> <p>(FRLS copper wire Make: Finolex, Polycab, Rotoplast,CCI)</p> <p>(PVC conduit - Presstech, superplast, AKG, Maruti, Sarswati, Polycab, Modi)</p>				
21	Angular batten holder with necessary accessories.	15	Nos	55.000000	825.00
	<p>The cost covers supply of Angular batten holder with PVC block suitable to work on 230 Volts AC supply.</p> <p>(Make : Havells, C&S, Lauritz Knudsen , Legrand)</p>				
22	Fixing of angular batten holder.	15	Nos	22.000000	330.00
	<p>The cost covers fixing & wiring of Angular batten holder. Holder should be properly fixed on the wall with the help of PVC blocks with sufficient strength to hold the holder. All materials for fixing shall be supplied by the contractor.</p>				
23	Supply of Modular Surface Type Ceiling Rose with Terminal	10	Nos	53.000000	530.00
	<p>The cost covers supply of 3 pin PVC modular type ceiling rose for 240 V AC.</p> <p>(Make : Make : C&S, Lauritz Knudsen , Legrand, Scheider Electric, Hager)</p>				
24	Fixing of Surface Type Ceiling Rose with three Terminal	10	Nos	5.000000	50.00
	<p>The cost covers fixing and wiring of Modular Surface Type Ceiling Rose in close co-ordination with Sr. DEE(RS&G)/Nagpur's representative at site. All material required for fixing and wiring shall be supplied by the contractor.</p>				
25	Provision of earthing arrangement	4	Nos	2427.000000	9708.00
	<p>The cost covers supply & erection of earth cone. Earth cone to be laid down shall be fabricated from Class 'B' G. I. Pipe conforming to relevant IS and as per drawing No:CEE/G/A 4/P-105. Erection of earth cones so fabricated shall be done as per drawing No: CEE/G/A1/P-124 including supply of all materials. The location of the earth cones will be decided by the site representative of Sr.DEE(RS&G)/NAG's. The Earth pipe to be fitted with clamp for proper connection of 8 SWG GI wire through nuts, bolts and lugs along with supply of suitable length of 8 SWG, GI wire to connect nearby electrical asset. Earth pit will be painted with yellow oil paint and earth value to be written with black oil paint. All materials required shall be supplied by the contractor</p>				
26	Supply of 3 pin modular socket outlet with switch of 6 Amps capacity & 230V grade complete with accessories	20	Nos	214.000000	4280.00
	<p>The cost covers supply of 3 pin socket outlet with switch of 6 Amps capacity & 230-250V grade complete with accessories.</p> <p>(Make : C&S, Lauritz Knudsen , Legrand, Scheider Electric, Hager)</p>				

27	Supply of 3 pin modular socket outlet with switch of 6/16 Amps capacity & 230V grade complete with accessories	10	Nos	277.000000	2770.00
	The cost covers supply of 3 pin socket outlet with switch of 16/6 Amps capacity & 230-250V grade complete with accessories. (Make : C&S, Lauritz Knudsen , Legrand, Scheider Electric, Hager)				
28	Supply of powder-coated galvanized steel Rack for storage (254x40x190 cm)	9	Nos	28170.000000	253530.00
	The cost covers supply, delivery, installation and commissioning of shelving unit, black, size 2540 mm (W) x 400 mm (D) x 1900 mm (H), complete with 2 adjustable shelves making it 4 storage shelves , made of galvanized steel with epoxy/polyester powder coating, heavy-duty capability of holding upto 90 Kg and flexible modular storage system, suitable for office/store use, complete in all respects. Materials to be approved prior to supply by authorised representative of Sr.DEE(RS&G). Inspection of material will be done by RITES , Fees of inspection will be borne by Railway.				
29	Supply of TABLE WITH INTEGRATED HDU (1800W X 750D X 750H)	1	Nos	29809.160000	29809.16
	<p>Supply, delivery, installation, and commissioning of office desk, equivalent to GODREJ UNITIZED T-25 TABLE WITH INTEGRATED HDU (Size: 1800 mm (W) × 750 mm (D) × 750 mm (H)), suitable for office use, complete in all respects, conforming to the following specifications:</p> <p>Main Worktop: Made of 25 mm thick pre-laminated particle board (PLB) of E1-P2 grade conforming to IS:12823:1990, in approved shade. Edges shall be sealed with 2 mm thick matching PVC edge banding. Provision of access flap on the work surface for cable management.</p> <p>Return Worktop: Made of 25 mm thick pre-laminated particle board (PLB) of E1-P2 grade conforming to IS:12823:1990, in approved shade, with 2 mm thick matching PVC edge banding.</p> <p>Modesty Panel: Made of 18 mm thick pre-laminated twin board (PLT) of E1-P2 grade conforming to IS:12823:1990, in approved shade, with 2 mm thick PVC edge banding.</p> <p>Legs: Cube-shaped legs fabricated from MS ERW tubes of sizes 50 mm × 25 mm × 1.2 mm thick and 40 mm × 40 mm × 1.2 mm thick, conforming to IS:7138. Top support brackets of 3 mm thick HR steel conforming to IS:2062 shall be welded to the leg structure using argon shielded welding. The entire assembly shall be powder coated with a minimum 50-micron thick epoxy polyester coating. Base shall be fitted with plastic caps having M8 threaded inserts with adjustable M8 levellers providing height adjustment up to 50 mm.</p> <p>Cross Members: Made from 50 mm × 25 mm × 1.2 mm thick ERW tubes conforming to IS:7138, powder coated with minimum 50-micron epoxy polyester coating. Assembly shall be through friction-fit PDC joinery with grub screws. Two cross members shall be provided per table.</p> <p>Access Flap: Soft-closing type made from aluminum extrusion. PDC components shall be made of aluminum alloy and plastic components from Nylon-6. Provision for standard 8-module electrical fittings (Anchor Roma or equivalent) shall be included. Wire brush with nylon bristles shall be provided.</p> <p>Power Box: Fabricated from 0.8 mm thick CRCA sheet conforming to IS:513, with provision for 8-module switch plate (Anchor Roma or equivalent). The power box shall be integrated with the worktop along the depth at the access flap location.</p> <p>Integrated Storage Unit: Hinged door storage with drawer, made from 18 mm thick pre-laminated twin board (PLT) of E1-P2 grade conforming to IS:12823:1990, in approved shade with 2 mm PVC edge banding. Doors shall be mounted on slide-on hinges with suitable handles. Drawer shall be provided with Ebco Metabox slides and locking arrangement for security.</p> <p>The complete unit shall be supplied, installed, and commissioned as per approved design and specifications, ensuring proper alignment, finish, and functionality. (Makes : Godrej , Eros , Pepperfry , Durian , Nilkamal)</p>				
30	Supply of revolving office bravo chair with arm & cushion. The seat & back are high density foam cushion fitted with PVC arm-rest.	4	Nos	13413.000000	53652.00
	The cost covers Supply, delivery, installation and commissioning of revolving office chair with arm & cushion with synchronic tilt mechanism model equivalent to GODREJ BRAVO HIGH BACK CHAIR . The seat pressed and moulded with PU foam & back one piece hot pressed plywood with PU high density foam cushion fitted with PVC arm-rest. Materials to be approved prior to supply by authorised representative of Sr.DEE(RS&G). (Makes : Godrej , Eros , Pepperfry , Durian , Nilkamal)				

31	Supply of Revolving office chair with arm & cushion.	6	Nos	6773.000000	40638.00
	The cost covers Supply, delivery, installation and commissioning of revolving office mid back chair with arm & cushion with synchronic tilt mechanism . The seat pressed and moulded with PU foam & back one piece hot pressed plywood with PU high density foam cushion fitted with PVC arm-rest. Materials to be approved prior to supply by authorised representative of Sr.DEE(RS&G). (Makes : Godrej , Eros , Pepperfry , Durian , Nilkamal)				
32	Supply of Steel almirah plain78"x36"x19"	3	Nos	22540.000000	67620.00
	The cost covers supply of steel almirah large plain of size approx 78"H x 36"W x 19"D with 4 adjustable shelves making 5 compartment. Doors having 3 point locking system. Doors in 20 SWG & other parts in 22 SWG steel sheets. (Make Godrej, Nilkamal, Durin , Pepperfry, Urban Ladder, Eros)				
33	Supply and installation of TABLE (1200 W X 750 D X 750 H).	3	Nos	20060.000000	60180.00
	The table shall be of size 1200 mm (W) × 750 mm (D) × 750 mm (H) similar to Godrej Upbeat Table, constructed from engineered wood with a minimum 18 mm thick laminated top, supported on powder-coated steel frame with PVC edge banding. It shall be ergonomically designed, free-standing, with provision for cable management and levelling glides. The table must withstand a uniformly distributed load and be supplied with a minimum one-year warranty against manufacturing defects. (Make Godrej, Nilkamal, Durin , Pepperfry, Urban Ladder, Eros)				
	Total of Schedule Office BTC				820587.46

	Schedule I : DG Sets	Qty	Unit	Rate in Rs	Total in Rs
	Supply MIB				
1	SETC of 3 phase 250 KVA , POLLUTION FREE CPCB IV+ , with AMF panel as per annexure 5 of scope of work under SSEE Supply .	2	Nos	2646369.000000	5292738.00
	The cost covers Supply , Erection , testing and commissioning of 250 KVA CPCB4+ DG Set with AMF panel as per annexure 5 of scope of work.Tenderer to submit Technical particulars for approval of SrDEE(RS&G)/NAG before supply. OEM authorization particularly for this tender to be submitted with approval letter. Material inspection will be done by RITES. Fees of inspection will be borne by Railway. (Make : Cummins, kirloskar , Mahindra Powerol and Greeves Cotton)				
2	SETC of 3 phase 58.5 - 63 KVA , POLLUTION FREE CPCB IV+ , with AMF panel as per annexure 6 of scope of work under SSEE Supply .	2	Nos	827369.000000	1654738.00
	The cost covers Supply , Erection , testing and commissioning of 58.5 KVA CPCB4+ DG Set with AMF panel as per annexure 6 of scope of work.Tenderer to submit Technical particulars for approval of SrDEE(RS&G)/NAG before supply. OEM authorization particularly for this tender to be submitted with approval letter. Material inspection will be done by RITES. Fees of inspection will be borne by Railway. (Make : Cummins, kirloskar , Mahindra Powerol and Greeves Cotton)				
3	SETC of 3 phase 30 KVA , POLLUTION FREE CPCB IV+ , with AMF panel as per annexure 7 of scope of work under SSEE Supply .	1	Nos	641369.000000	641369.00
	The cost covers Supply , Erection , testing and commissioning of 30 KVA CPCB4+ DG Set with AMF panel as per annexure 7 of scope of work.Tenderer to submit Technical particulars for approval of SrDEE(RS&G)/NAG before supply. OEM authorization particularly for this tender to be submitted with approval letter. Material inspection will be done by RITES. Fees of inspection will be borne by Railway. (Make : Cummins, kirloskar , Mahindra Powerol and Greeves Cotton)				
4	Hire charges of lifting and transportation vehicle for shifting of DG Sets :	5	Day	7000.000000	35000.00
4a	NG Rail Museum to Ajni School				
4b	Polyclinic to SECRSA Ground				
4c	SECRSA Ground to Sattelite DLS Shed				
4d	DRM office Mt Road				
4e	Lobby Santra Market to PRS				
5	Fuel charges per Km				
5(1)	NG Rail Museum to Ajni School	7	Km	25.000000	175.00
5(2)	Polyclinic to SECRSA Ground	2	Km	25.000000	50.00
5(3)	SECRSA Ground Sattelite DLS Shed	2	Km	25.000000	50.00
5(4)	DRM office to Mt Road	3	Km	25.000000	75.00
5(5)	Lobby Santra to Market to PRS	4	Km	25.000000	100.00
	CWA				

6	Hire charges of lifting and transportation vehicle for shifting of DG Sets under SSEE/CWA:	1	Day	7000.000000	7000.00
7	Fuel charges per Km Santra Market to Seoni and back	270	Km	25.000000	6750.00
	NITR				
8	SETC of 3 phase 250 KVA , POLLUTION FREE CPCB IV+ , with AMF panel for KAV station and new Substation pit line as per annexure 5 of scope of work.	2	nos	2624369.000000	5248738.00
	The cost covers Supply , Ertection , testing and commissioning of 250 KVA CPCB4+ DG Set with AMF panel as per annexure 5 of scope of work.Tenderer to submit Technical particulars for approval of SrDEE(RS&G)/NAG before supply. OEM authorization particularly for this tender to be submitted with approval letter. Material inspection will be done by RITES. Fees of inspection will be borne by Railway. (Make : Cummins, kirloskar , Mahindra Powerol and Greeves Cotton)				
9	SETC of 3 phase 30 KVA , POLLUTION FREE CPCB IV+ , with AMF panel as per annexure 7 of scope of work.	1	nos	641359.000000	641359.00
	The cost covers Supply , Ertection , testing and commissioning of 30 KVA CPCB4+ DG Set with AMF panel as per annexure 7 of scope of work.Tenderer to submit Technical particulars for approval of SrDEE(RS&G)/NAG before supply. OEM authorization particularly for this tender to be submitted with approval letter. Material inspection will be done by RITES. Fees of inspection will be borne by Railway. (Make : Cummins, kirloskar , Mahindra Powerol and Greeves Cotton)				
10	Hire charges of lifting and transportation vehicle for shifting of DG Sets under SSEE/NITR:	1	Day	3500.000000	3500.00
11	Fuel charges per Km NGRM to NITR and back	5	Km	25.000000	125.00
	NAB				
12	SETC of 3 phase 58.5 - 63 KVA , POLLUTION FREE CPCB IV+ , with AMF panel at WSA station as per annexure 6 of scope of work under SSEE/NAB.	1	No	827369.000000	827369.00
	The cost covers Supply , Ertection , testing and commissioning of 58.5 KVA CPCB4+ DG Set with AMF panel as per annexure 6 of scope of work.Tenderer to submit Technical particulars for approval of SrDEE(RS&G)/NAG before supply. OEM authorization particularly for this tender to be submitted with approval letter. Material inspection will be done by RITES. Fees of inspection will be borne by Railway. (Make : Cummins, kirloskar , Mahindra Powerol and Greeves Cotton)				
13	Hire charges of lifting and transportation vehicle for shifting of DG Sets under SSEE/NAB:	1	Day	7000.000000	7000.00
14	Fuel charges per Km NG diesel shed to CAF and Back	316	Km	25.000000	7900.00
	NIR				
15	SETC of 3 phase 58.5 - 63 KVA , POLLUTION FREE CPCB IV+ , with AMF panel at ORH khatia, RR jabalpur , New Running room NIR , MFR station as per annexure 6 of scope of work under SSEE/NIR.	4	nos	827369.000000	3309476.00
	The cost covers Supply , Ertection , testing and commissioning of 58.5 KVA CPCB4+ DG Set with AMF panel as per annexure 6 of scope of work.Tenderer to submit Technical particulars for approval of SrDEE(RS&G)/NAG before supply. OEM authorization particularly for this tender to be submitted with approval letter. Material inspection will be done by RITES. Fees of inspection will be borne by Railway. (Make : Cummins, kirloskar , Mahindra Powerol and Greeves Cotton)				
16	SETC of 3 phase 100 KVA , POLLUTION FREE CPCB IV+ , with AMF panel at Pump House NIR. as per annexure 8 of scope of work under SSEE/NIR.	1	nos	1351376.000000	1351376.00
	The cost covers Supply , Ertection , testing and commissioning of 100 KVA CPCB4+ DG Set with AMF panel as per annexure 8 of scope of work.Tenderer to submit Technical particulars for approval of SrDEE(RS&G)/NAG before supply. OEM authorization particularly for this tender to be submitted with approval letter. Material inspection will be done by RITES. Fees of inspection will be borne by Railway. (Make : Cummins, kirloskar , Mahindra Powerol and Greeves Cotton)				
17	Hire charges of lifting and transportation vehicle for shifting of DG Sets under SSEE/NIR :	1	day	3500.000000	3500.00

18	Fuel charges per Km from Nainpur to ORH khatia and back	101	Km	25.000000	2525.00
	DGG				
19	Supply of Petrol Start, Petrol run Power Portable Generator 1.8 KVA, 230V AC for tool van under SSEE/DGG	2	Nos	47777.000000	95554.00
	The cost covers supply of Petrol Start, Petrol run Power Portable Generator 1.8 KVA, 230V AC for tool van . Rated Output at unity pf : 1.8 kVA Starting type : Electric self start Output voltage : 24 VAC Efficiency of alternator : 82% Battery : 9Ah Fuel Tank capacity : 20.5 litres Warranty : 2 years (Make : Honda , Yamaha , Himalyanpower, EENOUR, Westinghouse)				
	Total of Schedule DG Sets				19136467.00

	Schedule J : Tunnel Lighting at Railway Track tunnels of Nagpur Division				
1	Supply,Testing & erection of lighting luminaires for normal and emergency tunnel light system with LED light 45W with specification as per scope of work.	100	Nos	10966.000000	1096600.00
	Supply,Testing & erection of lighting luminaires for normal and emergency tunnel light system of Sepcification as follows: <input type="checkbox"/> Wattage - 45- 50W <input type="checkbox"/> System efficacy of 120 lumen/W <input type="checkbox"/> THD<10% <input type="checkbox"/> P.F >0.95 <input type="checkbox"/> Operating range - 140-270VAC <input type="checkbox"/> Impact protection - IK10 class <input type="checkbox"/> Housing - Pressure die-cast aluminium housing fixture, MCPCB & Driver Housing Compartment should be separate for better heat dissipation in a single Luminaire. <input type="checkbox"/> Colour Rendering Index (CRI) - greater than 70, <input type="checkbox"/> Correlated Colour Temperature (CCT) - 5500K-6000K, providing a cool white light. <input type="checkbox"/> Lens- Polycarbonate (PC) integrated lens, <input type="checkbox"/> Ingress Protection - IP66 rating <input type="checkbox"/> Surge protection - 4kV internal surge protection and a 10kV Surge Protective Device (SPD). <input type="checkbox"/> Lifespan - 50,000 hours. <input type="checkbox"/> Mounting - Metallic U shaped bracket provision for better placement at site, <input type="checkbox"/> Warranty- 5 Years warranty . Prior approval of material to be taken before supply of material. Material inspection will be done by RITES. Tenderer to submit documents mentioned below with approval letter: i) Technical data sheet of tunnel light. ii) LM-79 report issued by a laboratory accredited under ISO/IEC 17025 by NABL or by an accreditation body that is a signatory to ILAC or a recognized regional MLA such as IAS, IAF, IAAC, APLAC, or PAC. iii) LM-80 report issued by a laboratory accredited under ISO/IEC 17025 by an accreditation body that is a signatory to ILAC or a recognized regional MLA such as IAS, IAF, IAAC, APLAC, or PAC. iv) IP-66 report issued by a laboratory accredited under ISO/IEC 17025 by NABL or by an accreditation body that is a signatory to ILAC or a recognized regional MLA such as IAS, IAF, IAAC, APLAC, or PAC v) IK10 report issued by a laboratory accredited under ISO/IEC 17025 by NABL or by an accreditation body that is a signatory to ILAC or a recognized regional MLA such as IAS, IAF, IAAC, APLAC, or PAC vi) Pre delivery warranty certificate from OEM . (Make : Wipro, Jaquar, Orient, Phillips)				
	Schedule K : Drawings				
1	Submission of 03 set of drawings (hard copy for Drg section, SSE/E/works & Substation in charge 01 set for each) of Substation layout, earthing arrangements, location layout of substation, SLD of substation, HT/LT cable layout of substation etc for obtaining of EIG sanction. One copy of the drawing in AUTO CAD format (Soft Copy) should be submitted to Drawing section through SSE In Charge of the work	38	Nos	3675.000000	139650.00

	The cost covers submission of 03 set of drawings (hard copy for Drg section, SSE/E/works & Substation in charge 01 set for each) of Substation layout, earthing arrangements, location layout of substation, SLD of substation, HT/LT cable layout of substation etc for obtaining of EIG sanction/ record keeping . One copy of the drawing in AUTO CAD format (Soft Copy) should be submitted to Drawing section through SSE In Charge of the work. List of substaion will be given by SrDEE(RS&G)/NAG office and includes substations over nagpur division.				
2	Design and supply of substation arrangement SLD Drawing in A2 Size duly laminated and suitable frame for hanging on the wall and as instructed by Engineer in charge of the work.	38	Nos	1500.000000	57000.00
	The cost covers Design and supply of substation arrangement SLD Drawing in A2 Size duly laminated and suitable frame for hanging on the wall and as instructed by Engineer in charge of the work.				
	Total of Schedule Drawings				196650.00
	Total Tender Value :				51533503.08

- 1 The work to be carried out as per IE rules and code of practice.
- 2 If any minor item left in the scope of work & schedule, the contractor shall provide himself for completing the job.
- 3 All electrical items should be ISI marked wherever applicable.
- 4 The location of the work can be changed within the Nagpur division as per the requirement of Railway.
- 5 Any contradiction in schedule of rate and specification; final decision of Railway authority will be final as per railway requirement.
- 6.In case of change in BEE star rating of material, the star rating of the item at the time of delivery should remain same as mentioned in scope.

Annexure :1

Item no.1 of schedule DRM building –

Supply of 2000 KVA, 11/0.433KV, Cu Wound, OCTC, ONAN Hermetically Sealed Type Distribution Transformer as per IS: 1180 Level 2 (as per latest amendments).

Specs:

Capacity in kVA	2000 kVA (Hermetically Sealed Type)
Winding material	Electrolytic Copper
Efficiency Level	IS 1180 -Level-2 (New)
No. of Phases	3 Phase
HV Voltage	11,000 V
LV Voltage	433 V
Cooling	ONAN (Oil Natural Air Natural)
Reference Standards	IS:1180 with Reference to IS: 2026
Frequency	50 Hz
Vector Group	Dyn 11
Method of Connection: HV/LV	Delta/ Star
Tapping	Off Load Tap Changer
Tap Changer Range	+5% to -10%
Steps/Positions/ Step Range	6 Steps/ 7 Positions / @2.5%
Type of HV Conductor	TPC Insulated Round Wire
Type of LV Conductor	TPC Insulated Rectangular Strip
Max. Ambient temperature	50° C
Temperature Rise Oil	40° C
Temperature Rise Winding	50° C
Transformer Oil Specification	As per IS: 335-1983
Transformer Oil and Buchholz Relay	Included
Impedance	6.25%subject to tolerance as per ISS
Stationing Type	Outdoor
Max total Losses @ 50% Load	4790 Watts
Max Total Losses @ 100% Load	14100 Watts
Class of Insulation	Class A
Power Frequency/ Lighting Impulse	28kV/ 75kV

STANDARD ACCESSORIES & FITTINGS to be included:

- ❖ Rating & diagram plate along with labels wherever necessary.
- ❖ Earthing terminals - 2 nos.
- ❖ Lifting lugs for complete transformer.
- ❖ Thermometer pocket.
- ❖ Oil Temperature Thermometer.
- ❖ Oil level indicator .
- ❖ Drain cum sampling valve - 1 no.
- ❖ Filter Valve with plug - 1 no.
- ❖ H.V. Bare Bushing
- ❖ L.V. Bare Bushing
- ❖ OTI with A&T Contacts
- ❖ WTI with A&T Contacts
- ❖ Marshalling Box
- ❖ PRV INCLUDED
- ❖ Off Load Tap Changer
- ❖ Corrugated Radiators
- ❖ Bidirectional Rollers

QUALITY & TESTING:

The transformer shall be designed, manufactured, tested, and supplied in accordance with the latest editions and amendments of relevant Indian Standards and Railway specifications.

- The core shall be constructed from prime grade imported Cold Rolled Grain Oriented (CRGO) silicon steel lamination, with low specific losses and high permeability, conforming to relevant IS/IEC standards.
- The winding conductor shall be of electrolytic grade copper of high conductivity and purity, adequately insulated.
- Transformer oil shall conform to IS:335 (latest revision), free from moisture, sludge, and other impurities.
- Insulation system shall be Class “A” or better, suitable for specified temperature rise limits as per IS:1180 (Part-1).
- All fittings and accessories shall be of robust design and proven quality suitable for outdoor operation under Indian Railway service conditions.

- Transformers to be designed to provide maximum flux density, minimum Losses & requisite impedance.
 - Designing, Manufacturing & Testing of the transformer to be done as per International Recognized Standards IS:1180 (Part 1) 2014, IS 2026, BS-171, IEC-76 or BIS-2026, SANS-780.
 - Routine Tests shall be conducted in house before dispatch of transformer as per IS 2026 & IS 1180 and the same shall be mentioned in the Test Certificate provided with the Transformer
- Physical Examination.
 - Voltage ratio & Polarity Test
 - Insulation Resistance
 - Voltage impedance and full load loss
 - Losses & Current Testing
 - Dielectric tests
 - Winding Resistance
 - DVDF test
 - Low & High Voltage Test

WARRANTY: 60 MONTHS against any manufacturing defect from the date of supply under normal operating conditions and proper use as per Warranty Terms & Conditions. The warranty on OLTC, RTCC Panel and AVR shall be 12 months.

Contractor to take approval of technical specification of competent authority before delivery of material. Transformer type test report of same voltage level and same/higher KVA capacity is mandatory. The date of type test report should not be before 4 March 2021. OEM authorization particularly for this tender to be submitted by the tenderer with approval letter.

Annexure 2 :

Item no. A-3 to A-6 of Schedule DRM Building

Supply of OEM Manufactured, OEM Designed , OEM Tested IEC 61439-1-2 LT switchboard for 2 incomer of 1000 Amps 16 outgoing .

The Panel should be as per IEC 61439-1 & 2 LT panel suitable for LT Panel specification. Test must be conducted in Indian/Independent International Test House Lab only.

LT Panel Sheet thickness should not be less than 2.00 mm for load bearing members and 1.6 mm for doors and LT panel cubicle/vertical should be with multi fold design structure for more strength, with detachable gland plates of 3mm thick for entry of cables from the bottom as required

The Bus Bars shall be aluminium (100% for phases & 50% Neutral & 50% for earth), free standing, totally enclosed, suitable for 3 phase and neutral.

Panel Ingress protection is IP54.

The switchboard shall be of Form-3B segregation design & internal separation sheet shall be with CRCA sheet. The panel should be modular in design with ZERO welding and suitable for 415 V, 3 phase, 50 Hz, 4 wire system IP 54 & IK10.

The Panel should be suitable for minimum Zone 4 Seismic Withstand ability with 0.7g.

The LT panel should be tested for 50kA for 0.5sec for internal arc containment test as per IEC 61641. All bus bars shall be supported with the Sheet moulding compound (SMC) type bus bar support, as used during the Type Testing of the Panel by the OEM.

LT Panel and main incoming & outgoing switchgear/circuit breakers should be of same manufacturer and switchgear should be of same series/model of the OEM.

No live part should be accessible from the front, while operating the door .

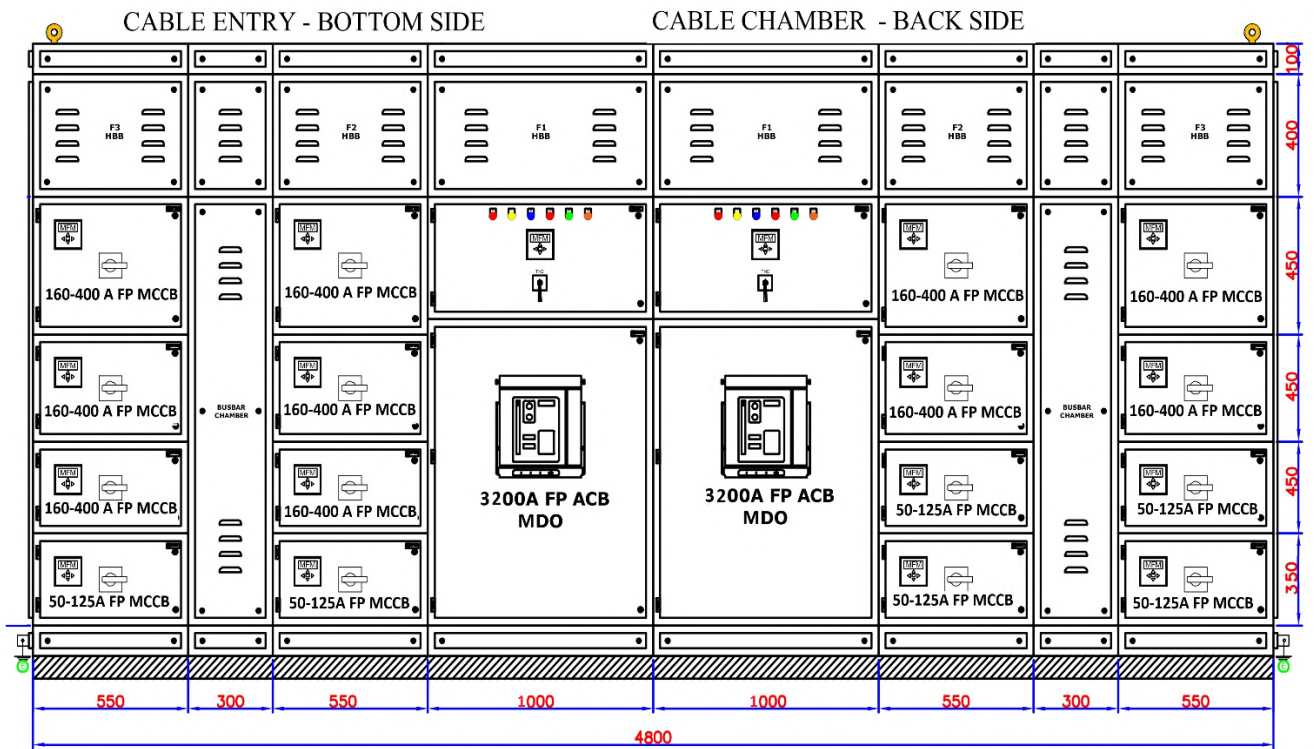
Design of the panel shall be as per the OEM's design & has to be verified by the OEM before supply and approved by SrDEE(RS&G)/NAG before manufacture. Railway deserves the right to conduct stage inspection at any time.

BOQ:

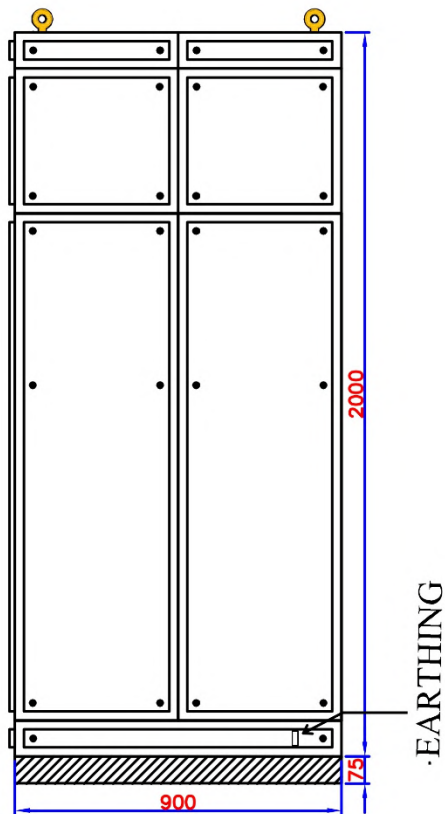
LV SWITCHBOARD IEC61439			
Section	S.No.	Parameter	Value
TECHNICAL SPECIFICATION	1	OPERATION VOLTAGE	440V AC
	2	INSULATION VOLTAGE	690V
	3	RATED FREQUENCY	50Hz
	4	SHORT TIME WITHSTAND	65KA FOR 1 SEC
	5	PEAK WITHSTAND	105KA

	6	IMPULSE WITHSTAND VOLTAGE	12KV FOR MAINS & 2.5KV FOR CONTROL
	7	RATED CURRENT	1000A
	8	INTERNAL ARC STATE	65KA FOR 0.3 SEC
	9	AMBIENT TEMPERATURE	40 DEGREE CENTIGRATE
	10	TEMPERATURE RISE TEST	AS PER IEC 61439-2
	11	INTERNAL SEPARATION TEST	FRP-FR GRADE
	12	POLLUTION DEGREE	3
	13	CONFORMING STANDARD	IEC 61439
	14	FORM OF SEPARATION	FORM 3B
	15	DEGREE OF PROTECTION	IP 54
CONSTRUCTIONAL FEATURES	1	PANEL HEIGHT	2075MM
	2	PANEL WEIDTH	4800MM
	3	PANEL DEPTH	900MM
	4	PANEL TYPE	SINGLE FRONT FIXED TYPE
	5	BUS BAR MATERIAL	ELECTROLYTIC GRADE ALUMINIUM
	6	SHEET THICKNESS	CRCA SHEET-FRAME -2MM, DOOR COVER -1.6MM, GLAND PLATE-3MM, BASE FRAME- 3MM
	7	HORIZONTAL BUS BAR LOCATION	TOP
	8	CABLE ENTRY	BOTTOM
	9	SWITCHGEARS	ACB-02 MCCB-16
Section	Parameter		Value
CONSTRUCTIONS DETAILS	CONSTRUCTION		OUTDOOR TYPE
	SHEET MATERIAL		CRCA SHEET
	SHEET THICKNESS LOAD BEARING		14SWG (2.0mm)
	SHEET THICKNESS NON LOAD BEARING		18SWG (1.6mm)
	GLAND PLATE		10SWG (3mm)
	BASE CHANNEL		75MM

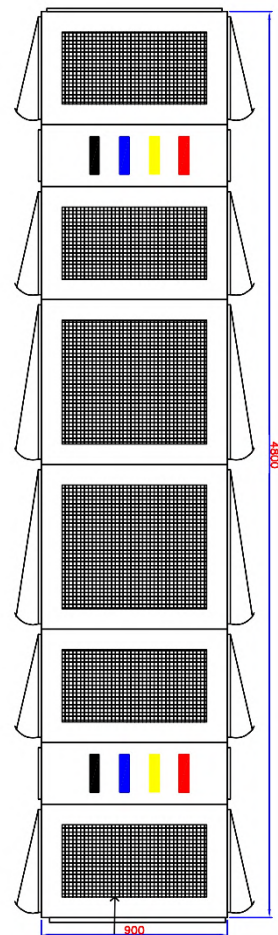
	PANEL PAINT SHADE	RAL-7032/7035
BUS BAR DETAILS	BUS BAR MATERIAL	ELECTROLYTIC GRADE ALUMINIUM
	HBB BUS BAR SIZE	175x10x3
	VBB BUS BAR SIZE	100x10x3
	3200A ACB B/B SIZE (INCOMER)	100x12x4
	160-400A MCCB B/B SIZE	40x12
	50-125A MCCB B/B SIZE	20x10
	NEUTRAL B/B SIZE	50% OF PHASE
	PHASE IDENTIFICATION	RED, YELLOW, BLUE
	SLEEVE ON SURFACE	PVC SLEEVE
	SUPPORT INSULATOR	SMC
EARTH BUS BAR DETAILS	BUS BAR MATERIAL	ALUMINIUM/GI
	SIZE	40x5x1 MM
	IDENTIFICATION	EARTH SYMBOL
	EXTENTION OUTSIDE SWITCHBOARD	75MM
CONTROL WIRING DETAILS	CONTROL WIRING	1.0 MM ² CU. FLEX.
	CT WIRING	2.5 MM ² CU. FLEX.
	EARTH WIRE	1.0 MM ² CU. FLEX.
POWER WIRING DETAILS	UP TO 20A	2.5 MM ² CU. FLEX.
	25A	4.0 MM ² CU. FLEX.
	32A & 40A	6.0 MM ² CU. FLEX.
	63A	16.0 MM ² CU. FLEX.



FRONT VIEW



SIDE VIEW



GLAND PLATE

BOTTOM VIEW

Switchgears:

1. Air Circuit Breaker : Incomer 2 Quantity, EDO type .

The air circuit breaker will be 4 pole , 3200 Amps having Microprocessor release with Fault Annunciation LEDs with LSIG Protection, Icu=Ics=65kA.

Parameter	Requirement
Applicable standard	IEC 60947-2
Protection release type	Intelligent microprocessor-based protection release
Metering function	Power and current measurement
Fault indication	Individual fault annunciation
Selectivity	ZSI
Event storage	Minimum 100 event records
Communication	RS485 port for SCADA compatibility
Data interface	USB port for data uploading to PC/laptop.

BOQ

S.No.	Description	Qty-1
1	1000A 4P 65kA EDO ACB, Microprocessor Release	2
2	Castle Key Lock-4P for ACB	2
3	Under Voltage Release -220-250V AC for ACB.	2
4	25A Spring Return TNC Switch with Pistol grip handle, Aux. Contact: 1 Trip + 1 Close	2
5	Red (Red Lens) 22.5mm Indicating Lamp with Integral LED, Voltage: 230V AC	2
6	Yellow (Yellow Lens) 22.5mm Indicating Lamp with Integral LED, Voltage: 230V AC	2
7	Blue (Blue Lens) 22.5mm Indicating Lamp with Integral LED, Voltage: 230V AC	2
8	6A 1P 10kA, C-Curve MCB	6
9	MFM METER with RS 485 communication	2
10	3200/5A Acc.Cl: 0.5 5VA Tape Wound Ring Type Current Transformer,	6
11	10A Auxiliary Contactor, Aux. Contacts: 2NO+2NC, Coil Voltage: 240V AC,	2

2. MCCB :

- 4 pole Microprocessor Release.
- With in-built Earth fault Protection Inbuilt ground fault protection available 20% to 100% of In
- Adjustable Overload 40 - 100% Conforms to IS/IEC 60947-2
- Adjustable short circuit 2~12 Ir
- Provision of thermal memory: ON/OFF
- Trip History provision-

BOQ:

Item No	Description	Qty
1	Adjustable release 160-400A 4P 36kA MCCB (Ics=100% Icu), Microprocessor Release with in built E/F Protection (Adjustable O/L 40-100% & Adjustable S/C 2-12 Ir).	10
2	Extended Rotary Handle Suitable for MCCB	10
3	Spreader Terminals-4P(Set of 4) Suitable for 320A, 350A, 400A	16
4	Adjustable release 50-125A 4P 36kA (Ics= Icu=100%) MCCB, Microprocessor Release with in built E/F Protection (Adjustable O/L 40-100% & Adjustable S/C 2-12 Ir).	6
5	Extended Rotary Handle Suitable for MCCB	6
6	Spreader Terminals-4P(Set of 4) Suitable for 250A MCCB	12

Make of OEM : Hager, Schneider, Siemens, BCH Lauritz Knudsen, C&S

Inspection: Item inspection will be done by RITES. Tenderer to take prior approval of Sr.DEE (RS&G)/NAG and call RITES inspection. Fees of inspection will be paid by Railway. Railway may conduct stage inspection any time during manufacture / assembly of panels.

Communication cables: The cost is inclusive of supplying and laying of communication cable for all incoming and outgoing feeders. The cables will be terminated at terminal blocks at communication cable compartment of Switchboard.

Design of the panel shall be as per the OEM's design & has to be verified by the OEM before supply and approved by SrDEE(RS&G)/NAG before manufacture. Railway deserves the right to conduct stage inspection at any time. Approval to be taken by SrDEE(RS&G)/NAG in case of any deviation. The vendor must ensure all technical specifications strictly adhere to the established standards, maintaining full compliance with safety protocols. Any proposed modifications during the production cycle require formal documentation and prior written authorization from the designated authority.

Prior Approval before supply of material:

Tenderer to submit following documents for approval of competent authority before supply of material: -

- a) Guaranteed Technical Particular of Panel
- b) OEM authorization certificate.
- c) Pre Delivery Warranty Certificate from OEM.
- d) Any other document desired by the competent authority.

Annexure 3

The scope of work shall include carrying out of any and all works and providing any and all facilities, as required for completing the works. All tools, tackles, hardware and any equipment required to carry out the job at site shall be under contractor scope.

1. Design Basis

- i) All items and accessories shall be designed to perform successfully in corrosive atmosphere / sandy soil/normal/ rocky soil. Earth pit rod needs to be minimum 3 meter long.
- ii) There shall be provision for safe access of personnel for testing & maintenance of earth pits.
- iii) It will be bidder's responsibility to design and construct the earth pit as suitable to the exact site location where the earth pit needs to be constructed in line with the applicable standards as mentioned and the tender specifications.
- iv) Measured earth resistance (isolated) of earth pits shall be as per table 1 of this annexure.

2. Technical Specifications

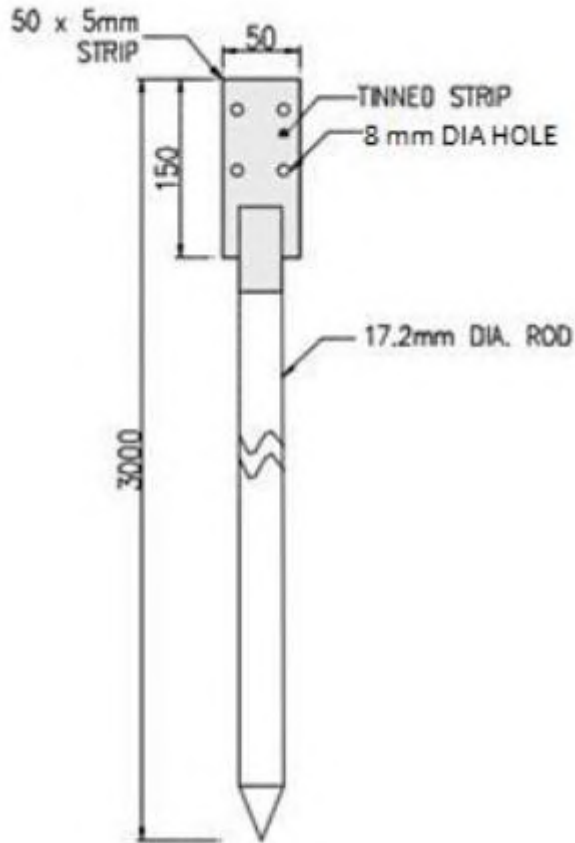
A. Earth Electrode –Nickel Sealed Low Carbon Steel Copper Bonded Rod with copper tinned N strip 50mm x 5mm, 150 mm long.

- i. Earth electrode shall be ISI certified confirming to 1772:1973 (or latest) approved for electrolytic coating of copper, tested according to IEC 62561-2, UL 467.
- ii. Earth electrode shall have a length of 3m, minimum diameter of 17 mm. Earth electrode shall be made of **low carbon steel** and shall be **molecularly bonded with copper** to a thickness of minimum **250 micron with nickel coating between copper coating and rod.**
- iii. Copper coating shall be with 99.9% purity. **Copper test certificate by NABL accredited lab or any international lab of repute to be submitted for copper testing.**
- iv. **Galvanized Iron (GI) earth electrode are not acceptable.**
- v. Each earth electrode shall have individual identification number and manufacturer's name along with manufacturer's certificate number for copper coating on steel.
- vi. Vendor to submit environmental test for corrosion of supplied earth electrodes.
- vii. Electrodes shall have bend & adhesion test report for coated conductors as per IEC 62561-2.
- viii. Vendor shall carry out third party inspection of earth electrodes at manufacturing works through Railway inspection agency i.e **RITES and submit certificate for the same.** Vendor to ensure that all earth electrodes are distinctly embossed with serial numbers clearly visible to the eyes. Fees of inspection will be borne by Railway.
- ix. The electrodes shall have a clean surface, not covered by paint, enamel, grease or other materials of poor conductivity. All paint, scale and enamel shall be removed from the contact surface before the earthing connections are made.

B. Earth Electrode Strip

Tinned coated copper terminal strip to be provided with 4 numbers of approx. 8mm diameter holes. The strip size shall be 50mm x 5 mm and 150 mm long and shall be welded to the rod

Nut, bolt and washer shall be of stainless steel.



C. Earth Enhancement Material: 50 kg per Earthing

- i. Graphite based earth enhancement material with very low resistivity shall be placed around the rod in an augured hole in a slurry state.
- ii. The material shall be of high conductivity with humid retention capability, non-corrosive, low water solubility and highly hygroscopic type in nature.
- iii. Resistivity shall be of less than $0.12 \Omega m$ and shall be suitable for installation in either dry form or in slurry form.
- iv. Marking - The earth enhancement compound shall be supplied in sealed, moisture proof bags. These bags shall be marked with manufacturer's name/trade mark, quantity etc.
- v. **The compound shall be graphite based and should not have any bentonite.**
- vi. The material shall have following properties:
 - Thermal stability up to 60 Degree C.
 - Corrosive resistivity $> 4.0 \Omega m^2$ as per IEC 62561-7:2018.

- pH value shall be between 6.0 to 8.0 as per BS7430:2011.
- Water solubility low, highly hygroscopic.
- Sulphur content less than 2% as per IEC 62561-7:2018.

vii. Earth enhancement material shall have third party test reports from NABL labs and shall meet following requirements:

- Chemical composition test.
- Resistivity test as per IEC 62561.
- Sulphur test as per ISO 14869-1.
- Corrosion test which is performed according to ASTM G59-97 and G102-89.
- Leaching test which is performed according to EN 12457-2.
- RoHS-10

D. Poly Plast Pit Cover

i. Earth pit chamber rectangular 300x300 mm (PVC/HDPE), height of 10-12 inch and shall be made of heavy-duty plastic along with suitable cover.

ii. Load bearing capacity of chamber shall be minimum 5000 kg with test certificate from NABL Accredited Lab.

3. Scope of Work for Installation of Earth Pit

- a) New earth electrode of 3m length shall be inserted. Earth pit shall be prepared in line with the drawing attached in the end of this annexure.
- b) After positioning of entire assembly as per the drawing, earth pit has to be filled with earth enhancing compound (conforming to IEC 62561-7:2018) up to 3m height. Contractor to take prior approval from Engineer for offered make of earth enhancing compound/material. Contractor to submit testing certificate from NABL accredited lab for approval of the material.
- c) The electrodes shall have a clean surface, not covered by paint, enamel, grease or other materials of poor conductivity. All paint, scale and enamel shall be removed from the contact surface before the earthing connections are made.
- d) Contractor has to measure earth resistance of each electrode after installation and submit the record/report to EIC at site.
- e) Earth resistance meter shall have valid calibration on the date of testing. Contractor to ensure that individual earth pit (isolated from grid) shall have resistance value less than limit defined as per table 1 .
- f) Earth pit shall be accepted only if the measured earth resistance (isolated) is less than value mentioned in table no.1 of this Annexure.

h) All tools, tackles, hardware and any other equipment required for carrying out the job is in the scope of contractor. Transportation at site for movement of the staff, material and machine shall be in the scope of the contractor.

j) The contractor shall be wholly and solely responsible for his tools & tackles, equipment, instruments, office furniture etc. belonging to him brought to premises for carrying out the work during the period of contract. The contractor has to make his own arrangement to ensure the safety & security of the same as part of the job.

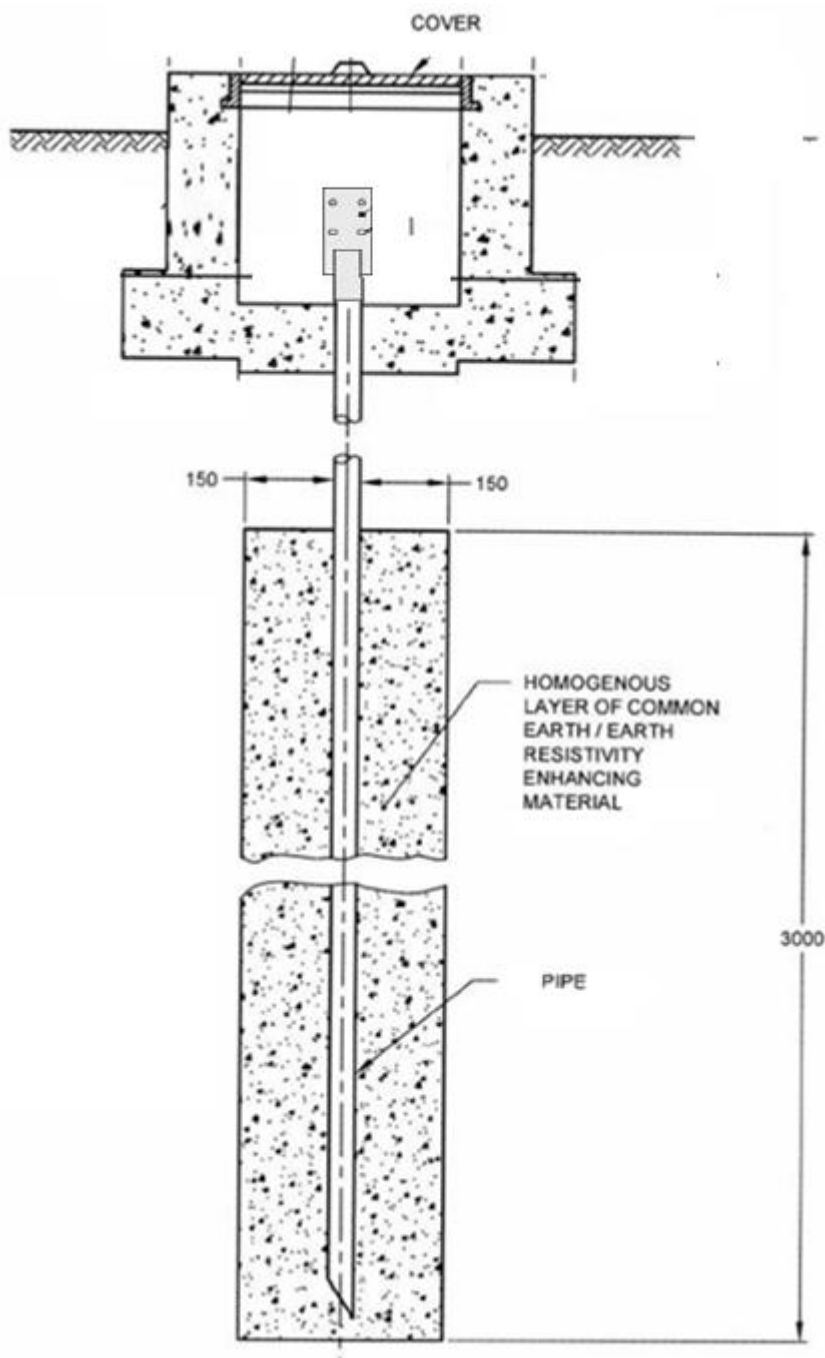


Table :1

S.N.	Installations	IR Value Required	Soil Type/ Resistivity	Earth System
1	House hold earthing	8 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ between 50 to 2000 ohm-mtr	Single Electrode
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
2	Commercial premises/ Office buildings	2 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
3	Transformers, substation earthing, LT line equipment	1 - 2 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
4	Transformers, substation earthing, HT line equipment	less than 1 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
5	Lightning arresters, extra high current applications etc.		Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes
6	PRS, UTS, RTUs, FOIS, COIS, ATMs and data processing centre etc.	less than 0.5 ohm	Normal Soil/ upto 50 ohm-mtr	Single Electrode
			Sandy Soil/ upto 2000 ohm-mtr	Multiple Electrodes
			Rocky Soil/ More than 2000 ohm-mtr	Multiple Electrodes

Material must be approved by SrDEE(RS&G)/NAG before supply at site:

List of certificates to be submitted with approval is furnished below:

➤ **Copper bonded Earth Electrode:**

- 1) UL 467 certification of Earth Rod.
- 2) Copper test certificate by NABL accredited lab or any international lab of repute to be submitted for copper testing.
- 3) Bend , adhesion and Thickness Coating on Conductors test report for coated conductors as per IEC 62561-2 for copper coated steel earth rods issued by NABL accredited lab or any ISO/IEC 17025 accredited intentional lab.
- 4) IS 1772:1973 (or latest) approved for electrolytic coating of copper.

➤ **Earth Enhancement Material:**

- 1) Chemical composition test.
- 2) Resistivity determination test as per IEC 62561.
- 3) Sulphur test as per IEC 62561.
- 4) Corrosion test which is performed according to ASTM G59-97 and G102-89.
- 5) Leaching test which is performed according to EN 12457-2.
- 6) RoHS -10.

➤ **Cover:**

- 1) Load Proof Test of 5000 Kg

Above test should be issued from NABL lab or ISO/IEC 17025 accredited intentional lab.

Item inspection will be done by RITES. Fees of inspection will be borne by Railway.

Annexure 4 :

Supply of OEM Manufactured, OEM Designed , OEM Tested IEC 61439-1-2 LT switchboard for 2 incomer of 800 Amps 10 outgoing .

The Panel should be as per IEC 61439-1 & 2 LT panel suitable for LT Panel specification. Test must be conducted in Indian/Independent International Test House Lab only.

LT Panel Sheet thickness should not be less than 2.00 mm for load bearing members and 1.6 mm for doors and LT panel cubicle/vertical should be with multi fold design structure for more strength, with detachable gland plates of 3mm thick for entry of cables from the bottom as required

The Bus Bars shall be aluminium (100% for phases & 50% Neutral & 50% for earth), free standing, totally enclosed, suitable for 3 phase and neutral.

Panel Ingress protection is IP54.

The switchboard shall be of Form-3B segregation design & internal separation sheet shall be with CRCA sheet. The panel should be modular in design with ZERO welding and suitable for 415 V, 3 phase, 50 Hz, 4 wire system IP 54 & IK10.

The Panel should be suitable for minimum Zone 4 Seismic Withstand ability with 0.7g.

The LT panel should be tested for 50kA for 0.5sec for internal arc containment test as per IEC 61641. All bus bars shall be supported with the Sheet moulding compound (SMC) type bus bar support, as used during the Type Testing of the Panel by the OEM.

LT Panel and main incoming & outgoing switchgear/circuit breakers should be of same manufacturer and switchgear should be of same series/model of the OEM.

No live part should be accessible from the front, while operating the door .

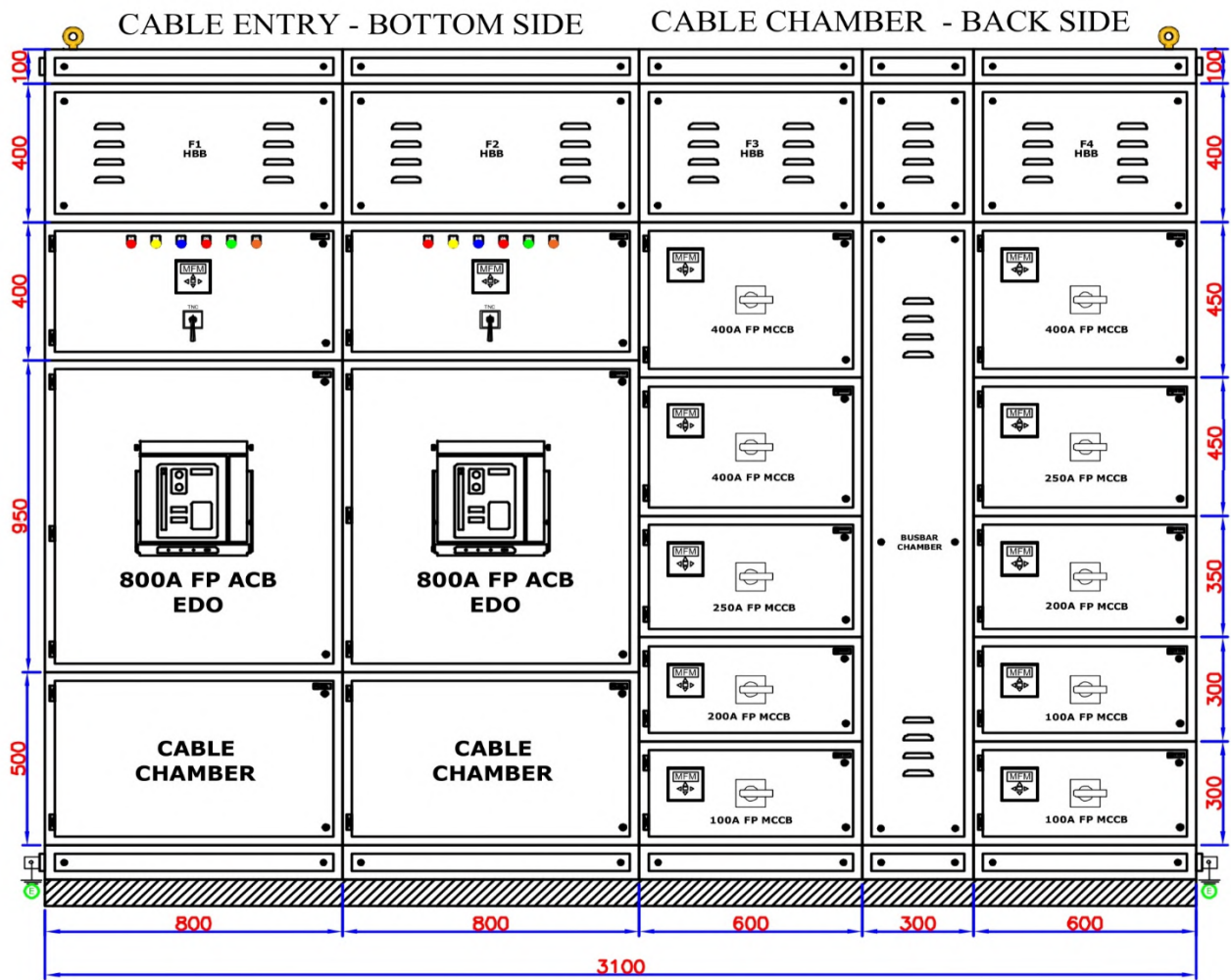
Design of the panel shall be as per the OEM's design & has to be verified by the OEM before supply and approved by SrDEE(RS&G)/NAG before manufacture. Railway deserves the right to conduct stage inspection at any time.

BOQ:

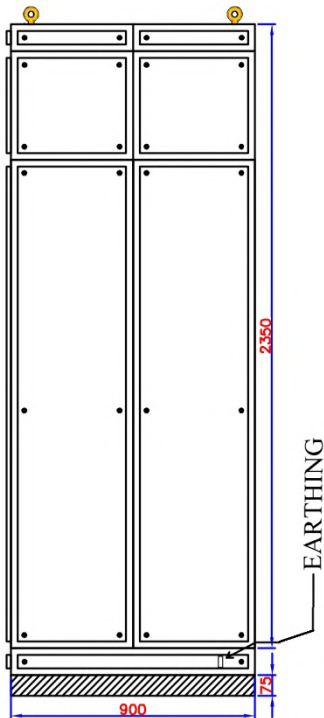
LV SWITCHBOARD IEC61439			
Section	S.No.	Parameter	Value
TECHNICAL SPECIFICATION	1	OPERATION VOLTAGE	440V AC
	2	INSULATION VOLTAGE	690V
	3	RATED FREQUENCY	50Hz
	4	SHORT TIME WITHSTAND	65KA FOR 1 SEC
	5	PEAK WITHSTAND	105KA
	6	IMPULSE WITHSTAND VOLTAGE	12KV FOR MAINS & 2.5KV FOR CONTROL

	7	RATED CURRENT	800A
	8	INTERNAL ARC STATE	65KA FOR 0.3 SEC
	9	AMBIENT TEMPERATURE	40 DEGREE CENTIGRATE
	10	TEMPERATURE RISE TEST	AS PER IEC 61439-2
	11	INTERNAL SEPARATION TEST	FRP-FR GRADE
	12	POLLUTION DEGREE	3
	13	CONFORMING STANDARD	IEC 61439
	14	FORM OF SEPARATION	FORM 3B
	15	DEGREE OF PROTECTION	IP 54
CONSTRUCTIONAL FEATURES	1	PANEL HEIGHT	2525MM
	2	PANEL WEIDTH	3100MM
	3	PANEL DEPTH	900MM
	4	PANEL TYPE	SINGLE FRONT FIXED TYPE
	5	BUS BAR MATERIAL	ELECTROLYTIC GRADE ALUMINIUM
	6	SHEET THICKNESS	CRCA SHEET-FRAME -2MM, DOOR COVER -1.6MM, GLAND PLATE-3MM, BASE FRAME- 3MM
	7	HORIZONTAL BUS BAR LOCATION	TOP
	8	CABLE ENTRY	BOTTOM
	9	SWITCHGEARS	ACB-02 MCCB-10
Section	Parameter		Value
CONSTRUCTIONS DETAILS	CONSTRUCTION		OUTDOOR TYPE
	SHEET MATERIAL		CRCA SHEET
	SHEET THICKNESS LOAD BEARING		14SWG (2.0mm)
	SHEET THICKNESS NON LOAD BEARING		18SWG (1.6mm)
	GLAND PLATE		10SWG (3mm)
	BASE CHANNEL		75MM
	PANEL PAINT SHADE		RAL-7032/7035

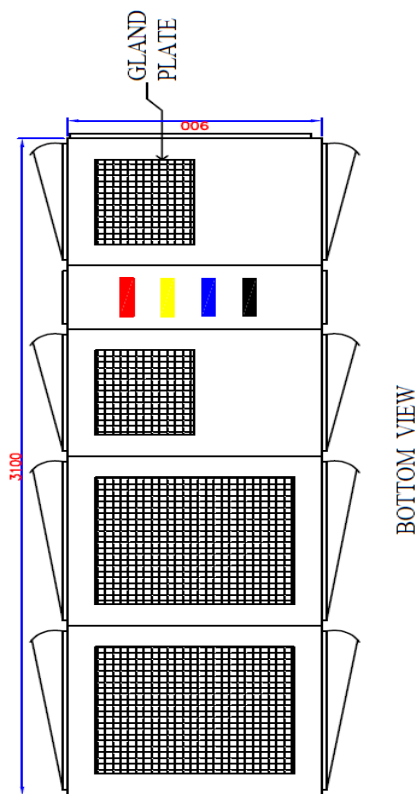
BUS BAR DETAILS	BUS BAR MATERIAL	ELECTROLYTIC GRADE ALUMINIUM
	HBB BUS BAR SIZE	75x6x2 MM
	VBB BUS BAR SIZE	75x6x2 MM
	800A ACB B/B SIZE (INCOMER)	80x8x2 MM
	400A MCCB B/B SIZE	40x12x1 MM
	250A and 200 A MCCB B/B SIZE	30x10x1 MM
	100A MCCB B/B SIZE	25x5x1 MM
	NEUTRAL B/B SIZE	50% OF PHASE
	PHASE IDENTIFICATION	RED, YELLOW, BLUE
	SLEEVE ON SURFACE	PVC SLEEVE
	SUPPORT INSULATOR	SMC
EARTH BUS BAR DETAILS	BUS BAR MATERIAL	ALUMINIUM/GI
	SIZE	40x5x1 MM
	IDENTIFICATION	EARTH SYMBOL
	EXTENTION OUTSIDE SWITCHBOARD	75MM
CONTROL WIRING DETAILS	CONTROL WIRING	1.0 MM ² CU. FLEX.
	CT WIRING	2.5 MM ² CU. FLEX.
	EARTH WIRE	1.0 MM ² CU. FLEX.
POWER WIRING DETAILS	UP TO 20A	2.5 MM ² CU. FLEX.
	25A	4.0 MM ² CU. FLEX.
	32A & 40A	6.0 MM ² CU. FLEX.
	63A	16.0 MM ² CU. FLEX.



FRONT VIEW



SIDE VIEW



BOTTOM VIEW

Switchgears:

1. Air Circuit Breaker : Incomer 2 Quantity, EDO type .

The air circuit breaker will be 4 pole , 800 Amps having Microprocessor release with Fault Annunciation LEDs with LSIG Protection, Icu=Ics=50kA.

Parameter	Requirement
Applicable standard	IEC 60947-2
Protection release type	Intelligent microprocessor-based protection release
Metering function	Power and current measurement
Fault indication	Individual fault annunciation
Selectivity	ZSI
Event storage	Minimum 100 event records
Communication	RS485 port for SCADA compatibility
Data interface	USB port for data uploading to PC/laptop.

BOQ

S.No.	Description	Qty-1
1	800A 4P 50kA EDO ACB, Microprocessor Release	2
2	Castle Key Lock-4P for ACB	2
3	Under Voltage Release -220-250V AC for ACB.	2
4	25A Spring Return TNC Switch with Pistol grip handle, Aux. Contact: 1 Trip + 1 Close	2
5	Red (Red Lens) 22.5mm Indicating Lamp with Integral LED, Voltage: 230V AC	2
6	Yellow (Yellow Lens) 22.5mm Indicating Lamp with Integral LED, Voltage: 230V AC	2
7	Blue (Blue Lens) 22.5mm Indicating Lamp with Integral LED, Voltage: 230V AC	2
8	6A 1P 10kA, C-Curve MCB	6
9	MFM METER with RS 485 communication	2
10	800/5A Acc.Cl: 0.5 5VA Tape Wound Ring Type Current Transformer,	6
11	10A Auxiliary Contactor, Aux. Contacts: 2NO+2NC, Coil Voltage: 240V AC,	2

2. MCCB :

- 4 pole Microprocessor Release.
- With in-built Earth fault Protection Inbuilt ground fault protection available 20% to 100% of In
- Adjustable Overload 40 - 100% Conforms to IS/IEC 60947-2
- Adjustable short circuit 2~12 Ir

- Provision of thermal memory: ON/OFF
- Trip History provision-

BOQ:

Item No	Description	Qty
1	400A 4P 36kA MCCB (Ics=100% Icu), Microprocessor Release with in built E/F Protection (Adjustable O/L 40-100% & Adjustable S/C 2-12 Ir).	3
2	Extended Rotary Handle Suitable for MCCB	3
3	Spreader Terminals-4P(Set of 4) Suitable for 320A, 350A, 400A	6
4	250A 4P 50kA (Ics=75% Icu) MCCB, Microprocessor Release with in built E/F Protection (Adjustable O/L 40-100% & Adjustable S/C 2-12 Ir).	2
5	Extended Rotary Handle Suitable for MCCB	2
6	Spreader Terminals-4P(Set of 4) Suitable for 250A MCCB	4
7	200A 4P 36kA MCCB, Microprocessor Release with in built E/F Protection (Adjustable O/L 40-100% & Adjustable S/C 2-12 Ir).	2
8	Extended Rotary Handle Suitable for MCCB	2
9	Spreader Terminals-4P(Set of 4) Suitable for 160A, 200A MCCB :	4
10	100A 4P 36kA MCCB, Release Microprocessor Release with in built E/F Protection (Adjustable O/L 40-100% & Adjustable S/C 2-12 Ir).	3
11	Extended Rotary Handle Suitable for MCCB	3
12	Spreader Terminals-4P(Set of 4) Suitable for 80A, 100A, 125A MCCB	6

Make of OEM : Hager, Schneider, Siemens, BCH Lauritz Knudsen, C&S

Inspection: Item inspection will be done by RITES. Tenderer to take prior approval of SrDEE(RS&G)/NAG and call RITES inspection. Fees of inspection will be paid by Railway. Railway may conduct stage inspection any time during manufacture / assembly of panels.

Communication cables: The cost is inclusive of supplying and laying of communication cable for all incoming and outgoing feeders. The cables will be terminated at terminal blocks at communication cable compartment of Switchboard.

MFM meter of outgoing: MFM meters for outgoing feeders will be supplied vide item no. A-49 and installed in the outgoing of each switchboard.

Design of the panel shall be as per the OEM's design & has to be verified by the OEM before supply and approved by SrDEE(RS&G)/NAG before manufacture. Railway deserves the right to conduct stage inspection at any time. Approval to be taken by SrDEE(RS&G)/NAG in case of any deviation. The vendor must ensure all technical specifications strictly adhere to the established standards, maintaining full compliance with safety protocols. Any proposed modifications during the production cycle require formal documentation and prior written authorization from the designated authority.

Prior Approval before supply of material:

Tenderer to submit following documents for approval of competent authority before supply of material:-

- a) Guaranteed Technical Particular of Panel
- b) OEM authorization certificate.
- c) Pre Delivery Warranty Certificate from OEM.
- d) Any other document desired by the competent authority.

Annexure: 5
Specification and Scope of SETC of 250 kVA DG set as per CPCB IV+ norms

1	Nominal Rated Capacity	250 kVA , pf 0.8 lag , 50 Hz
2	Type Of Engine Cooling	Liquid
3	Type Of Governor	Electronic with $\pm 1\%$ speed regulation
4	Number Of Cylinders (Nos)	6
5	Rated RPM Of Engine (RPM)	1500
6	Fuel	HSD
7	Starting Voltage (Volt)	24
8	Salient Features of Engine	"Turbo Charged Engine Direct injection Fuel System or above"
9	Alternator Voltage Rating (V)	415
10	Efficiency At Rated Power Factor At 100% Load (%)	90% or above
11	Conformity To Indian Standard (For Alternator)	"Generally conforming to IS:13364 (Part 2)
12	Voltage Regulation Grade	VG3 or better
13	Alternator IP Rating	IP23
14	Control Panel	AMF Control Panel
15	Control Panel Location	Inside the canopy
16	IP Rating Of Control Panel	IP53 or above
17	Display Meters In The Control Panel	"Multifunctional Digital display meter (Voltage Current Frequency Power factor
18	Other Devices In The Control Panel	"Inclusive in scope Required switches and cutout"
19	Displayed Parameters	"Engine Speed Lube oil pressure Coolant Temp Running hours Battery voltage Generator Voltage Current kVA kW PF Frequency Fuel level Event log Control supply Voltage Temperature scanner"
20	Indicators	"Low Lube oil pressure High coolant temperature Low fuel level Over speed"
21	Acoustic Enclosure	Yes supplied with Acoustic Enclosure
22	Noise Level At 1 Meter (dB)	75
23	Fuel Tank Capacity (L)	400 or above
24	Fuel Tank Features	"Sufficient for 8 hrs running at full load"
25	Battery Type & Specification	"Low Maintenance free to IS:14257"
26	Battery Capacity (Ah)	180
27	No Of Batteries	2
28	Battery charger	Yes automatic float and boost
29	Salient Features Of Power Generator	"Glass window on enclosure Emergency Stop outside"
30	Engine Emission Control	DOC + DPF + SCR with DEF dosing
31	Installation	Inclusive in scope of supply

The item also includes:

- 1) AMF control panel
- 2) Fuel tank
- 3) Battery & leads
- 4) Silencer – Residential

Annexure: 5
Specification and Scope of SETC of 250 kVA DG set as per CPCB IV+ norms

- 5) Anti-Vibration Mountings(AVM) pads
- 6) First Fill of lube oil
- 7) Acoustic enclosure
- 8) Transportation up to Site
- 9) Commissioning

Installation:

- a) Installation of Power Generator when offered by the vendor is inclusive in the scope of supply and shall be done by the tenderer. The installation work of Power Generator and its constituent parts shall be generally conforming to CPWD General Specification for Electrical Works, Part-VII-latest.
- b) Foundation shall be constructed by the tenderer. Foundation shall be of PCC type with the ratio of 4:2:1. The length and breadth of the foundation shall be 300mm more from the respective length and breadth of the Power Generator. The height of the foundation shall be 400mm, i.e., 200mm below and 200mm above the ground level. All the materials / labour required for foundation work shall be supplied by the tenderer.
- c) Supply, laying and termination of interconnecting power and control cable shall be done by the tenderer. The cable supplied shall be ISI marked heavy duty PVC insulated, armoured cable, with PVC outer sheath of Type ST-2 (FR Grade, Category C1), with aluminium conductor having insulation of PVC compound type-C, suitable for rated voltage up to and including 1100 volts and conforming to IS:1554 (Part-1) latest.

For 3-Phase Power Generators, 3.5 core or higher core cables shall be used. The total length of the cables supplied by the tenderer shall be within 30 meters for each Power Generator with manual control panel and within 60 metres for each Power Generator with AMF control panel.

The current rating of the cables shall be as indicated below:

- 250KVA → 3.5C, 3 Run of 185 Sqmm for Three Phase

- e) Construction of suitable earthing station and necessary connections shall be done by the tenderer. All the materials / labour required for construction of earthing station shall be supplied by the tenderer. The total number of earthing pits/stations shall be 4, i.e., 2 for neutral and 2 for body-earthing. Neutral earthing shall be done with copper plate and body earthing shall be done with copper. The consignee should choose installation site in such a way that the earthing stations can be made within 10 metres of the Power Generator. Earthing station shall be typically constructed as per prevalent standard practices and shall generally conform to CPWD General Specification for Electrical Works, Part-VII & Part-I-latest.
- e) Installation of Fuel Tank including foundation/stand shall be done by the tenderer.
- f) The warranty is applicable up to specified value of month/hours whichever occurs first.

Annexure: 5
Specification and Scope of SETC of 250 kVA DG set as per CPCB IV+ norms

Test Report :

- Type Approval Certificate for the specified rating of the Power Generator from any of the designated agency authorized by CPCB
- Valid COP Certificate for engine
- Type test report for Alternator as per IS:13364 (Part-1) latest / IS:13364 (Part-2) latest to prove conformity to the specifications by NABL accredited lab, CPCB authorized agency
- Valid CPCB IV+ certificate for this DG set rating.
- **Engine emission test report** (DOC + DPF + SCR with DEF dosing compliance) from CPCB-authorized lab.
- **Noise level test report** for acoustic enclosure (≤ 75 dB at 1 m).

Alternator The alternator shall be of self-excited, self-regulated type, screen protected, having compact design with sealed bearings for longer life and lesser maintenance.

Acoustic Enclosure Integral acoustic enclosure shall be provided to reduce noise level of DG set. At one meter horizontal distance, the noise level should not exceed 75 dB(A) when the DG set is operating at full load. The enclosure shall comply with the rules and regulations stipulated by the Environment Ministry.

Emission of exhaust gases should be in accordance with CPCB IV+ norms i.e Emission control DOC + DPF + SCR with DEF

Warranty 24 months on complete DG set from date of commissioning, with additional 3 years warranty on critical engine parts: Cylinder Head, Camshaft, Crankshaft, Cylinder Block, and Connecting Rod.

Additional Documents Technical leaflet, catalogue etc. in support of their offer, containing weight of components, physical dimensions and rating chart etc. b. The schedule of guaranteed particulars with the specification should be submitted along with the offer. C. Instruction Manuals and catalogues: Copies of operator's guides, manuals, maintenance schedules, and repair/overhaul instructions for the complete equipment shall be supplied by the supplier along with the supply to the consignee. D. Bidder will be required to submit detailed drawing/circuit diagram of AMF Panel indicating therein the size of cubicle.

Authorization

The authorization from Original Equipment Manufacturer only shall be considered.

Annexure: 6
Specification and Scope of SETC of 58.5 kVA DG set as per CPCB IV+ norms

1	Nominal Rated Capacity (kVA)	58.5 kVA
2	Type Of Engine Cooling	Liquid
3	Type Of Governor	Electronic with $\pm 1\%$ speed regulation
4	Number Of Cylinders (Nos)	4
5	Rated RPM Of Engine (RPM)	1500
6	Fuel	HSD
7	Starting Voltage (Volt)	12/24
8	Salient Features of Engine	"Turbo Charged Engine Direct injection Fuel System or above"
9	Alternator Voltage Rating (V)	415
10	Efficiency At Rated Power Factor At 75% Of Full Load (%)	90% or above
11	Conformity To Indian Standard (For Alternator)	"Generally conforming to IS:13364 (Part 2)
12	Voltage Regulation Grade	VG1
13	Alternator IP Rating/insulation class	IP23 / class H insulation
14	Control Panel	AMF Control Panel
15	Control Panel Location	Inside the canopy
16	IP Rating Of Control Panel	IP53 or above
17	Display Meters In The Control Panel	"Multifunctional Digital display meter (Voltage Current Frequency Power factor
18	Other Devices In The Control Panel	"Inclusive in scope Required switches and cutout"
19	Displayed Parameters	"Engine Speed Lube oil pressure Coolant Temp Running hours Battery voltage Generator Voltage Current kVA kW PF Frequency Fuel level Event log Control supply Voltage Temperature scanner"
20	Indicators	"Low Lube oil pressure High coolant temperature Low fuel level Over speed"
21	Acoustic Enclosure	Yes supplied with Acoustic Enclosure
22	Noise Level At 1 Meter (dB)	75
23	Fuel Tank Capacity (L)	150 or above
24	Fuel Tank Features	"Sufficient for 8 hrs running at full load"
25	Battery Type & Specification	"Low Maintenance free to IS:14257"
26	Battery Capacity (Ah)	100
27	No Of Batteries	2
28	Battery charger	Yes with float and boost automatic
29	Salient Features Of Power Generator	"Glass window on enclosure Emergency Stop outside"
30	Engine Emission Control	DOC + DPF + SCR with DEF dosing
31	Installation	Inclusive in scope of supply

The item also includes:

- 1) AMF control panel
- 2) Fuel tank

Annexure: 6

Specification and Scope of SETC of 58.5 kVA DG set as per CPCB IV+ norms

- 3) Battery & leads
- 4) Silencer – Residential
- 5) Anti-Vibration Mountings(AVM) pads
- 6) First Fill of lube oil
- 7) Acoustic enclosure
- 8) Transportation up to Site
- 9) Commissioning

Installation:

- a) Installation of Power Generator when offered by the vendor is inclusive in the scope of supply and shall be done by the tenderer. The installation work of Power Generator and its constituent parts shall be generally conforming to CPWD General Specification for Electrical Works, Part-VII-latest.
- b) Foundation shall be constructed by the tenderer. Foundation shall be of PCC type with the ratio of 4:2:1. The length and breadth of the foundation shall be 300mm more from the respective length and breadth of the Power Generator. The height of the foundation shall be 400mm, i.e., 200mm below and 200mm above the ground level. All the materials / labour required for foundation work shall be supplied by the tenderer.
- c) Supply, laying and termination of interconnecting power and control cable shall be done by the tenderer. The cable supplied shall be ISI marked heavy duty PVC insulated, armoured cable, with PVC outer sheath of Type ST-2 (FR Grade, Category C1), with aluminium conductor having insulation of PVC compound type-C, suitable for rated voltage up to and including 1100 volts and conforming to IS:1554 (Part-1) latest.

For 3-Phase Power Generators, 3.5 core or higher core cables shall be used. The total length of the cables supplied by the tenderer shall be within 30 meters for each Power Generator with manual control panel and within 60 metres for each Power Generator with AMF control panel.

The current rating of the cables shall be as indicated below:

- 58.5 KVA → 3.5C, 95 Sqmm for Three Phase

e) Construction of suitable earthing station and necessary connections shall be done by the tenderer. All the materials / labour required for construction of earthing station shall be supplied by the tenderer. The total number of earthing pits/stations shall be 4, i.e., 2 for neutral and 2 for body-earthing. Neutral earthing shall be done with copper plate and body earthing shall be done with copper. The consignee should choose installation site in such a way that the earthing stations can be made within 10 metres of the Power Generator. Earthing station shall be typically constructed as per prevalent standard practices and shall generally conform to CPWD General Specification for Electrical Works, Part-VII & Part-I-latest.

e) Installation of Fuel Tank including foundation/stand shall be done by the tenderer.

f) The warranty is applicable up to specified value of month/hours whichever occurs first.

Test Report :

- Type Approval Certificate for the specified rating of the Power Generator from any of the designated agency authorized by CPCB

Annexure: 6

Specification and Scope of SETC of 58.5 kVA DG set as per CPCB IV+ norms

- Valid COP Certificate for engine
- Type test report for Alternator as per IS:13364 (Part-1) latest / IS:13364 (Part-2) latest to prove conformity to the specifications by NABL accredited lab, CPCB authorized agency
- Valid CPCB IV+ certificate for this DG set rating.
- **Engine emission test report** (DOC + DPF + SCR with DEF dosing compliance) from CPCB-authorized lab.
- **Noise level test report** for acoustic enclosure (≤ 75 dB at 1 m).

Alternator The alternator shall be of self-excited, self-regulated type, screen protected, having compact design with sealed bearings for longer life and lesser maintenance.

Acoustic Enclosure Integral acoustic enclosure shall be provided to reduce noise level of DG set. At one meter horizontal distance, the noise level should not exceed 75 dB(A) when the DG set is operating at full load. The enclosure shall comply with the rules and regulations stipulated by the Environment Ministry.

Emission of exhaust gases should be in accordance with CPCB IV+ norms i.e Emission control DOC + DPF + SCR with DEF

Warranty 24 months on complete DG set from date of commissioning, with additional 3 years warranty on critical engine parts: Cylinder Head, Camshaft, Crankshaft, Cylinder Block, and Connecting Rod.

Additional Documents Technical leaflet, catalogue etc. in support of their offer, containing weight of components, physical dimensions and rating chart etc. b. The schedule of guaranteed particulars with the specification should be submitted along with the offer. C. Instruction Manuals and catalogues: Copies of operator's guides, manuals, maintenance schedules, and repair/overhaul instructions for the complete equipment shall be supplied by the supplier along with the supply to the consignee. D. Bidder will be required to submit detailed drawing/circuit diagram of AMF Panel indicating therein the size of cubicle.

Authorization

The authorization from Original Equipment Manufacturer only shall be considered.

Annexure: 7
Specification and Scope of SETC of 30 kVA DG set as per CPCB IV+ norms

1	Nominal Rated Capacity	30 kVA , pf 0.8 lag , 50 Hz
2	Type Of Engine Cooling	Liquid
3	Type Of Governor	Electronic with $\pm 1\%$ speed regulation
4	Number Of Cylinders (Nos)	3
5	Rated RPM Of Engine (RPM)	1500
6	Fuel	HSD
7	Starting Voltage (Volt)	12
8	Salient Features of Engine	"Turbo Charged Engine Direct injection Fuel System or above"
9	Alternator Voltage Rating (V)	415
10	Efficiency At Rated Power Factor At 100 % Load (%)	90% or above
11	Conformity To Indian Standard (For Alternator)	"Generally conforming to IS:13364 (Part 2)
12	Voltage Regulation Grade	VG3 or better
13	Alternator IP Rating	IP23
14	Control Panel	AMF Control Panel
15	Control Panel Location	Inside the canopy
16	IP Rating Of Control Panel	IP53 or above
17	Display Meters In The Control Panel	"Multifunctional Digital display meter (Voltage Current Frequency Power factor
18	Other Devices In The Control Panel	"Inclusive in scope Required switches and cutout"
19	Displayed Parameters	"Engine Speed Lube oil pressure Coolant Temp Running hours Battery voltage Generator Voltage Current kVA kW PF Frequency Fuel level Event log Control supply Voltage Temperature scanner"
20	Indicators	"Low Lube oil pressure High coolant temperature Low fuel level Over speed"
21	Acoustic Enclosure	Yes supplied with Acoustic Enclosure
22	Noise Level At 1 Meter (dB)	Less than or equal to 75
23	Fuel Tank Capacity (L)	72 or above
24	Fuel Tank Features	"Sufficient for 8 hrs running at full load"
25	Battery Type & Specification	"Low Maintenance free to IS:14257"
26	Battery Capacity (Ah)	75
27	No Of Batteries	1
28	Battery charger	Yes automatic float and boost
29	Salient Features Of Power Generator	"Glass window on enclosure Emergency Stop outside"
30	Engine Emission Control	DOC + DPF + SCR with DEF dosing
31	Installation	Inclusive in scope of supply

The item also includes:

- 1) AMF control panel
- 2) Fuel tank
- 3) Battery & leads
- 4) Silencer – Residential

Annexure: 7

Specification and Scope of SETC of 30 kVA DG set as per CPCB IV+ norms

- 5) Anti-Vibration Mountings(AVM) pads
- 6) First Fill of lube oil
- 7) Acoustic enclosure
- 8) Transportation up to Site
- 9) Commissioning

Installation:

- a) Installation of Power Generator when offered by the vendor is inclusive in the scope of supply and shall be done by the tenderer. The installation work of Power Generator and its constituent parts shall be generally conforming to CPWD General Specification for Electrical Works, Part-VII-latest.
- b) Foundation shall be constructed by the tenderer. Foundation shall be of PCC type with the ratio of 4:2:1. The length and breadth of the foundation shall be 300mm more from the respective length and breadth of the Power Generator. The height of the foundation shall be 400mm, i.e., 200mm below and 200mm above the ground level. All the materials / labour required for foundation work shall be supplied by the tenderer.
- c) Supply, laying and termination of interconnecting power and control cable shall be done by the tenderer. The cable supplied shall be ISI marked heavy duty PVC insulated, armoured cable, with PVC outer sheath of Type ST-2 (FR Grade, Category C1), with aluminium conductor having insulation of PVC compound type-C, suitable for rated voltage up to and including 1100 volts and conforming to IS:1554 (Part-1) latest.

For 3-Phase Power Generators, 3.5 core or higher core cables shall be used. The total length of the cables supplied by the tenderer shall be within 30 meters for each Power Generator with manual control panel and within 60 metres for each Power Generator with AMF control panel.

The current rating of the cables shall be as indicated below:

- 30 KVA → 3.5C, 25 Sqmm for Three Phase

- e) Construction of suitable earthing station and necessary connections shall be done by the tenderer. All the materials / labour required for construction of earthing station shall be supplied by the tenderer. The total number of earthing pits/stations shall be 4, i.e., 2 for neutral and 2 for body-earthing. Neutral earthing shall be done with copper plate and body earthing shall be done with copper. The consignee should choose installation site in such a way that the earthing stations can be made within 10 metres of the Power Generator. Earthing station shall be typically constructed as per prevalent standard practices and shall generally conform to CPWD General Specification for Electrical Works, Part-VII & Part-I-latest.
- e) Installation of Fuel Tank including foundation/stand shall be done by the tenderer.
- f) The warranty is applicable up to specified value of month/hours whichever occurs first.

Annexure: 7

Specification and Scope of SETC of 30 kVA DG set as per CPCB IV+ norms

Test Report :

- Type Approval Certificate for the specified rating of the Power Generator from any of the designated agency authorized by CPCB
- Valid COP Certificate for engine
- Type test report for Alternator as per IS:13364 (Part-1) latest / IS:13364 (Part-2) latest to prove conformity to the specifications by NABL accredited lab, CPCB authorized agency
- Valid CPCB IV+ certificate for this DG set rating.
- **Engine emission test report** (DOC + DPF + SCR with DEF dosing compliance) from CPCB-authorized lab.
- **Noise level test report** for acoustic enclosure (≤ 75 dB at 1 m).

Alternator The alternator shall be of self-excited, self-regulated type, screen protected, having compact design with sealed bearings for longer life and lesser maintenance.

Acoustic Enclosure Integral acoustic enclosure shall be provided to reduce noise level of DG set. At one meter horizontal distance, the noise level should not exceed 75 dB(A) when the DG set is operating at full load. The enclosure shall comply with the rules and regulations stipulated by the Environment Ministry.

Emission of exhaust gases should be in accordance with CPCB IV+ norms i.e Emission control DOC + DPF + SCR with DEF

Warranty 24 months on complete DG set from date of commissioning, with additional 3 years warranty on critical engine parts: Cylinder Head, Camshaft, Crankshaft, Cylinder Block, and Connecting Rod.

Additional Documents Technical leaflet, catalogue etc. in support of their offer, containing weight of components, physical dimensions and rating chart etc. b. The schedule of guaranteed particulars with the specification should be submitted along with the offer. C. Instruction Manuals and catalogues: Copies of operator's guides, manuals, maintenance schedules, and repair/overhaul instructions for the complete equipment shall be supplied by the supplier along with the supply to the consignee. D. Bidder will be required to submit detailed drawing/circuit diagram of AMF Panel indicating therein the size of cubicle.

Authorization

The authorization from Original Equipment Manufacturer only shall be considered.

Annexure: 8
Specification and Scope of SETC of 100 kVA DG set as per CPCB IV+ norms

1	Nominal Rated Capacity	100 kVA , pf 0.8 lag , 50 Hz
2	Type Of Engine Cooling	Liquid
3	Type Of Governor	Electronic with $\pm 1\%$ speed regulation
4	Number Of Cylinders (Nos)	4
5	Rated RPM Of Engine (RPM)	1500
6	Fuel	HSD
7	Starting Voltage (Volt)	12
8	Salient Features of Engine	"Turbo Charged Engine Direct injection Fuel System or above"
9	Alternator Voltage Rating (V)	415
10	Efficiency At Rated Power Factor At 100% Load (%)	90% or above
11	Conformity To Indian Standard (For Alternator)	"Generally conforming to IS:13364 (Part 2)
12	Voltage Regulation Grade	VG3 or better
13	Alternator IP Rating	IP23
14	Control Panel	AMF Control Panel
15	Control Panel Location	Inside the canopy
16	IP Rating Of Control Panel	IP53 or above
17	Display Meters In The Control Panel	"Multifunctional Digital display meter (Voltage Current Frequency Power factor
18	Other Devices In The Control Panel	"Inclusive in scope Required switches and cutout"
19	Displayed Parameters	"Engine Speed Lube oil pressure Coolant Temp Running hours Battery voltage Generator Voltage Current kVA kW PF Frequency Fuel level Event log Control supply Voltage Temperature scanner"
20	Indicators	"Low Lube oil pressure High coolant temperature Low fuel level Over speed"
21	Acoustic Enclosure	Yes supplied with Acoustic Enclosure
22	Noise Level At 1 Meter (dB)	75
23	Fuel Tank Capacity (L)	230 or above
24	Fuel Tank Features	"Sufficient for 8 hrs running at full load"
25	Battery Type & Specification	"Low Maintenance free to IS:14257"
26	Battery Capacity (Ah)	150
27	No Of Batteries	2
28	Battery charger	Yes automatic float and boost
29	Salient Features Of Power Generator	"Glass window on enclosure Emergency Stop outside"
30	Engine Emission Control	DOC + DPF + SCR with DEF dosing
31	Installation	Inclusive in scope of supply

The item also includes:

- 1) AMF control panel
- 2) Fuel tank
- 3) Battery & leads
- 4) Silencer – Residential

Annexure: 8
Specification and Scope of SETC of 100 kVA DG set as per CPCB IV+ norms

- 5) Anti-Vibration Mountings(AVM) pads
- 6) First Fill of lube oil
- 7) Acoustic enclosure
- 8) Transportation up to Site
- 9) Commissioning

Installation:

- a) Installation of Power Generator when offered by the vendor is inclusive in the scope of supply and shall be done by the tenderer. The installation work of Power Generator and its constituent parts shall be generally conforming to CPWD General Specification for Electrical Works, Part-VII-latest.
- b) Foundation shall be constructed by the tenderer. Foundation shall be of PCC type with the ratio of 4:2:1. The length and breadth of the foundation shall be 300mm more from the respective length and breadth of the Power Generator. The height of the foundation shall be 400mm, i.e., 200mm below and 200mm above the ground level. All the materials / labour required for foundation work shall be supplied by the tenderer.
- c) Supply, laying and termination of interconnecting power and control cable shall be done by the tenderer. The cable supplied shall be ISI marked heavy duty PVC insulated, armoured cable, with PVC outer sheath of Type ST-2 (FR Grade, Category C1), with aluminium conductor having insulation of PVC compound type-C, suitable for rated voltage up to and including 1100 volts and conforming to IS:1554 (Part-1) latest.

For 3-Phase Power Generators, 3.5 core or higher core cables shall be used. The total length of the cables supplied by the tenderer shall be within 30 meters for each Power Generator with manual control panel and within 60 metres for each Power Generator with AMF control panel.

The current rating of the cables shall be as indicated below:

- 100 KVA → 3.5C, 185 Sqmm for Three Phase

- e) Construction of suitable earthing station and necessary connections shall be done by the tenderer. All the materials / labour required for construction of earthing station shall be supplied by the tenderer. The total number of earthing pits/stations shall be 4, i.e., 2 for neutral and 2 for body-earthing. Neutral earthing shall be done with copper plate and body earthing shall be done with copper. The consignee should choose installation site in such a way that the earthing stations can be made within 10 metres of the Power Generator. Earthing station shall be typically constructed as per prevalent standard practices and shall generally conform to CPWD General Specification for Electrical Works, Part-VII & Part-I-latest.
- e) Installation of Fuel Tank including foundation/stand shall be done by the tenderer.
- f) The warranty is applicable up to specified value of month/hours whichever occurs first.

Annexure: 8
Specification and Scope of SETC of 100 kVA DG set as per CPCB IV+ norms

Test Report :

- Type Approval Certificate for the specified rating of the Power Generator from any of the designated agency authorized by CPCB
- Valid COP Certificate for engine
- Type test report for Alternator as per IS:13364 (Part-1) latest / IS:13364 (Part-2) latest to prove conformity to the specifications by NABL accredited lab, CPCB authorized agency
- Valid CPCB IV+ certificate for this DG set rating.
- **Engine emission test report** (DOC + DPF + SCR with DEF dosing compliance) from CPCB-authorized lab.
- **Noise level test report** for acoustic enclosure (≤ 75 dB at 1 m).

Alternator The alternator shall be of self-excited, self-regulated type, screen protected, having compact design with sealed bearings for longer life and lesser maintenance.

Acoustic Enclosure Integral acoustic enclosure shall be provided to reduce noise level of DG set. At one meter horizontal distance, the noise level should not exceed 75 dB(A) when the DG set is operating at full load. The enclosure shall comply with the rules and regulations stipulated by the Environment Ministry.

Emission of exhaust gases should be in accordance with CPCB IV+ norms i.e Emission control DOC + DPF + SCR with DEF

Warranty 24 months on complete DG set from date of commissioning, with additional 3 years warranty on critical engine parts: Cylinder Head, Camshaft, Crankshaft, Cylinder Block, and Connecting Rod.

Additional Documents Technical leaflet, catalogue etc. in support of their offer, containing weight of components, physical dimensions and rating chart etc. b. The schedule of guaranteed particulars with the specification should be submitted along with the offer. C. Instruction Manuals and catalogues: Copies of operator's guides, manuals, maintenance schedules, and repair/overhaul instructions for the complete equipment shall be supplied by the supplier along with the supply to the consignee. D. Bidder will be required to submit detailed drawing/circuit diagram of AMF Panel indicating therein the size of cubicle.

Authorization

The authorization from Generator Original Equipment Manufacturer only shall be considered.