

SCHEDULE OF WORK (ELECTRICAL WORK) (MAJOR COMPONENT)

Name of work :- C/o 33 kV Sub-station for dedicated line from 132kV GSS Jakhrana to CISF, MPRTC, Behror (Raj.).

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
	SH-I : EI Work					
1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS/HFFR PVC insulated copper conductor single core cable etc. as required.					
1.1	Group C	27.00	Point	1704.00	Point	46008.00
2	Wiring for light/ power plug with 2X4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit along with 1 No. 4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable for loop earthing as required.	100.00	Metre	373.00	Metre	37300.00
3	Wiring for light/ power plug with 4X4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit along with 2 Nos. 4 sq. mm FRLS/HFFR PVC insulated copper conductor single core cable for loop earthing as required.	50.00	Metre	587.00	Metre	29350.00
4	Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS/HFFR PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.					
4.1	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	60.00	Metre	267.00	Metre	16020.00
5	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	3.00	Nos.	402.00	Each	1206.00
6	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 amps modular socket outlet and 15/16 amps modular switch, connection etc. as required.	10.00	Nos.	659.00	Each	6590.00
7	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 volts, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)					
7.1	2 + 12 way, Double door	1.00	Nos	3367.00	Each	3367.00

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
8	Supplying and fixing 5 amps to 32 amps rating, 240/415 volts, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.					
8.1	Single pole	12.00	Nos	285.00	Each	3420.00
8.2	Single pole and neutral	1.00	Nos	643.00	Each	643.00
9	LED Batten light (System lumen efficacy $\geq 120 < 135$ lm/Watt) Supplying, installation, Testing & Commissioning of LED surface mounted Batten light of following body material and construction as per IS : 10322 with driver (Replaceable) as per the requirement with Driver efficiency $> 85\%$, Operating voltage AC 140-270 Volt, frequency 50/60 hz, Operating temp range -5°C to 40°C , internal surge protection of 2.5 KV with Short & Open circuit protection, THD $< 10\%$, P. F. ≥ 0.95 , IP20, CRI > 80 , Flicker free (flicker should be below 5 %), life time (LED, Driver & electrical circuitry), of minimum 50000 Burning Hours with 70% of initial Lumen maintained till life ends, CCT 3000°K / 4000°K / 5700°K / 6500°K (As per ANSI Bin), SDCM (Standard Deviation Colour Matching) < 3 , Maximum power consumption should not more than the specified rating and Fixture shall be of relevant BIS standard. Manufactures Word Mark/ Name Engraved/ Embossing/ Screen printing on housing. complete in all respect i/c external connections with 1.5 sq.mm FRLS/HFFR, PVC insulated copper conductor single core cable and earthing etc. as required with Minimum 5 year OEM warranty. System lumen efficacy $\geq 120 < 135$ lm/Watt output . LM79 & LM80 Test report and all testing required for LED fixtures as per BIS shall be submitted. Shape size and CCT shall be as approved by Engineer-in-Charge as per requirement. (Thermal management: heat sink of aluminium housing such that LED junction temperature shall not rise above 90°C).. Powder coated die cast /Extruded aluminium Body (Thickness > 1.20 mm)					
9.1	36 watt	6.00	Nos	760.00	Each	4560.00

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
10	Supply, Installation, Testing and Commissioning of Surface mounting LED Bulkhead fitting having system output ≥ 700 lm, Luminaire efficacy ≥ 90 lm/W, Colour temperature = (Range 3000K to 6500K (as required and Approved by E-in-C)), die cast aluminium housing with high efficiency diffuser, CRI (Ra) > 80 , luminaire life ≥ 25000 hrs@L70, IP 65, IK 08 or better protection complete in all respect i/c inbuilt BIS approved Electronic driver suitable for operation on 230V, single phase AC supply, having THD $< 10\%$, PF > 0.9 , surge protection level ≥ 2 kV, complete suitable for operation on 230 V, 50 Hz, 1-ph. AC supply directly i/c connections with 1.5 sqmm., PVC insulated, FRLS copper conductor, single core cable etc. as required.	6.00	Nos	793.00	Each	4758.00

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
11	Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal(Aluminium alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, suitable for operation with regulator for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req.					
11.1	1200mm, service value ≥ 6.0 CM/Min/Watt, air delivery 210 CM/Min (Minimum)	3.00	Nos	2695.00	Each	8085.00
12	Supplying, Installation, Testing & Commissioning of 450 mm sweep 1400 RPM (ISI marked) ,Air Delivery 6000 CMH (+/- 5%) and max. power consumption 420 Watt, heavy duty exhaust fan with Copper wound motor with die cast Aluminium body rotor mounted on shaft with double ball bearing and with louver & shutter, suitable for operation on single phase 230 volts 50 Hz AC supply , IP-55 rated including making the hole to suit the size of the above fan, making good the damage i/c earthing & connection etc. as required.	6.00	Nos	6924.00	Each	41544.00
13	Supplying of following size one number XLPE insulated PVC sheathed armoured Power cable of 1.1 KV grade conforming to IS:1554 (Part 1)/ IS:7098 (Part 1) of 1.1 KV with electrolytic Grade aluminium (conforming to IS:8130)/ copper (conforming to IS:613) conductor, round / flat strip armouring of cables, Inner/ outer sheath conforming to IS:5831 and tesing etc. as required.					
13.1	2 X 16 Sq. mm Aluminium Conductor	100.00	Metre	243.00	Metre	24300.00
14	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.					
14.1	2 X 16 sq. mm (22mm)	2.00	Nos	311.00	Each	622.00
15	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.					
15.1	Upto 35 sq. mm	80.00	Metre	47.00	Metre	3760.00
16	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing masonry open duct as required.					
16.1	Upto 35 sq. mm	20.00	Metre	36.00	Metre	720.00

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
17	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.					
17.1	63 mm dia. (OD-63 mm & ID-51 mm nominal)	80.00	Metre	289.00	Metre	23120.00
18	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required.	80.00	Metre	50.00	Metre	4000.00
	Sub Total					259373.00
	SH-II : Sub Station Work					
1	Supplying, Installation, Testing & Commissioning of following ways and type of 33kV 630 Amps Gas Insulated Switchgear (GMA), outdoor duty (IP55) , Extensible / Non extensible type Ring main unit (RMU) manually operated in combination of VCB modules and Load Break switch consisting of Copper busbar in SF6 insulated 304 (Non-Ferrite Non-Magnetic Grade) stainless steel enclosure of thickness 2 mm with manometer. The HV switchgear and control gear should be confirming to IEC-60298, IEC-62271-100, IEC-62271-200-2003 & IEC-60694-1996 or equivalent IS Certification. The RMU should be STC 25KA for 3 Sec. ,internal arc tested for 25KA for 1 Sec. with IAC-AFL classification for gas tank. Vacuum Interrupter of VCB should be RMU Manufacturer's own make. Each feeder of RMU should have voltage presence indicator and comprising of followings:- 1 no. microprocessor based Self powered numerical relay with over Current/ earth fault & short circuit protection with each VCB feeder. - 3 Nos. Protection CT shall be of Burden 2.5VA, ratio 500/5A, Class of Accuracy class 5P10 for O/C and E/F protection for each VCB.- 1 No. Manometer for each tank,- 1 nos. Fault Passage indicator,-Right angle boots for all the feeder Modules. All as per pre approved by Engineer in charge.					
1.1	Extensible 3 way RMU with 2 no. VCB & 1 No. Load Break Switch	1.00	Nos.	5185168.00	Each	5185168.00
2	Supplying of following size one number XLPE insulated, Insulation Screening with extruded Semi Conducting Compound in combination with Copper Tape PVC sheated armoured Power cable of 33 KV grade conforming to IS:7098 (Part II) with electrolytic Grade aluminium conductor conforming to IS:8130, round / flat strip armouring of cables, Inner/ outer sheath conforming to IS:5831 complete tesing etc. as required.					
2.1	3 X 300 Sq. mm Aluminium Conductor	100.00	Metre	5899.00	Metre	589900.00
3	Laying of one number XLPE power cable of 33 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.					

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
3.1	Above 120 sq. mm and upto 400 sq. mm	15.00	Metre	177.00	Metre	2655.00

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
4	Laying of one number XLPE power cable of 33 KV grade of following size in the existing masonry open duct as required.					
4.1	Above 120 sq. mm and upto 400 sq. mm	85.00	Metre	153.00	Metre	13005.00
5	Supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 33 KV grade as required :					
5.1	300 sq. mm	3.00	Nos.	34459.00	Each	103377.00
6	Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 33 KV grade as required :					
6.1	300 sq. mm	5.00	Nos.	43032.00	Each	215160.00
7	Supplying and making straight through cable jointing with heat shrinkable jointing kit complete with all accessories including ferrules suitable for following size of 3 core, XLPE aluminium conductor cable of 33 KV grade as required :					
7.1	300 sq. mm	1.00	Nos.	105826.00	Each	105826.00
8	SITC of 33 KV, 10 kA, gapless metal oxide surge arrester suitable for outdoor use, complete with polymer housing, line discharge class-2 or Higher, rated in accordance with IEC 60099-4, Short Circuit Withstand Capacity Minimum 25 kA, High Current Impulse Withstand Capacity 100 kA, 4/10 μ s or better, Lightning Impulse Residual Voltage @10 kA $\leq$ 110 kV peak, Switching Impulse Residual Voltage $\leq$ 90 kV peak, Power Frequency Voltage Withstand capacity as per IEC, Creepage Distance Minimum 900 mm, Pollution Class Heavy duty, Leakage Current as per IEC limits suitable for 36 kV highest system voltage and 50 Hz operation complete as required.	6.00	Nos.	39795.00	Each	238770.00

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
9	Supply, installation, testing and commissioning of following capacity (continuous loading) Level -1 as per BIS amended upto date of receipt of tender, 33/11 KV step down, 3 Phase, 50 Hz, Dyn 11 vector group, ONAN (Oil Natural Air Natural) copper wound transformer (Electrolytic grade 99.9% pure copper, Core made of first grade Cold Rolled Grain Oriented (CRGO) Core grade MOH or better, suitable for out door/indoor applications with Off Circuit Tap Changer (OCTC) on HV side in range of +10% to -10% in steps of 2.5%, having cable end boxes on HV and LV side suitable for 3x400 sqmm XLPE cable of 33 KV & 11 KV grade respectively, including supplying and laying of copper conductor multicore control cable from transformer to HT breaker/panel for safety tripping, complete with all accessories and safety provisions as per relevant IS Code including first filling of filtered dehydrated oil, i/c supplying and grouting of suitable M.S. Channel with all accessories and transformer shall be confirming to IS : 2026, IS:335, IS : 1180 and duly ISI Marked and as per CPWD specifications complete in all respects etc. as required at site. The permissible temperature-rise shall not exceed 45 dg. C for oil and 50 dg. C for winding. Inside of tank shall be painted with varnish or liquid resistant paint. For external surfaces one coat of thermo setting powder paint or one coat of epoxy primer followed by two coats of polyurethane base paint shall be used. IS: 1180 shall be referred to for paint thickness for normal to medium corrosive atmosphere. For highly polluted atmosphere and special application external paint work shall be as per direction of Engineer-in-Charge.					

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
	Design ambient condition : a) air temperature 50 deg C, b) Relative Humidity 90 % Max, c) Seismic Zone as per location of site, d) Altitude as per location/site. Noise level Shall not exceed limits as per NEMA TR-1 with all accessories running measured as per IEC 551 / NEMA standard. The transformer should have QR code which should contain drawing, test report OEM manual, Geo-tag of manufacturing location etc. Marking Each transformer shall be provided with rating plate made of anodized aluminium/ stainless steel material securely fixed on the outer body, easily accessible, as per IS: 1180 Part-3. The entries on the rating plate shall be indelibly marked. Fitting and Accessories : The following fittings shall be provided:- a) Two earthing terminals with the earthing symbol) Oil level gauge indicating oil level at minimum, 30°C and maximum operating temperature; c) Air release device (for non-sealed type transformers) d) Rating and terminal marking plates; e) Silica gel breather f) Drain-cum-sampling valve (¾"nominal size thread, IS 554) preferably steel with plug for three phase transformers; g) Thermometer pocket with cap; h) Lifting lugs for the complete transformer as well as for core and winding assembly; i) Pressure relief device or explosion vent; j) One filter valve on the upper side of the tank; k) Unidirectional flat rollers; l) Inspection hole; m) HV side neutral grounding strip (where one of the HV bushing terminal is connected to earth); n) Buchholz relay; o) Arcing horns or suitable rating lightning arrestors; p) Bird guard; q) Oil temperature indicator and winding temperature indicators with suitable tripping mechanism above permissible limit r) Jacking pads; s) Additional Neutral separately brought out on bushing for earthing. t) Magnetic oil level gauge with low oil level alarm contact; u) Non return valve (for conducting pressure test); v) Pressure relief device or explosion vent w). Monogram Plate x) Inspection cover y). Detachable type radiators with top and bottom shutoff valve. z) Oil Conservator with Oil level indicator, minimum level marking and drain plug, aa) Necessary hardware, clamps, lugs etc. for termination on HV/MV etc.					
9.1	1600 KVA	2.00	Nos.	3150667.00	Each	6301334.00
10	Supplying of following size one number XLPE insulated, Insulation Screening with extruded Semi Conducting Compound in combination with Copper Tape PVC sheated armoured Power cable of 11 KV grade conforming to IS:7098 (Part II) with electrolytic Grade aluminium conductor conforming to IS:8130, round / flat strip armouring of cables, Inner/ outer sheath conforming to IS:5831 complete tesing etc. as required.					
10.1	3 X 400 Sq. mm Aluminium Conductor	400.00	Metre	5607.00	Metre	2242800.00

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
11	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc..direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.					
11.1	200 mm dia (OD-200 mm & ID-175 mm nominal)	185.00	Metre	733.00	Metre	135605.00
12	Providing, laying and fixing following dia G.I. pipe (medium class) in ground complete with G.I. fittings including trenching (75 cm deep)and re-filling etc as required					
12.1	150 mm dia	15.00	Metre	2894.00	Metre	43410.00
13	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.					
13.1	Above 120 sq. mm and upto 400 sq. mm	370.00	Metre	170.00	Metre	62900.00
14	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 11 KV grade of following size in the existing masonry open duct as required.					
14.1	Above 120 sq. mm and upto 400 sq. mm	30.00	Metre	146.00	Metre	4380.00
15	supplying and making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :					
15.1	400 sq. mm	2.00	Nos.	21686.00	Each	43372.00
16	Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :					
16.1	400 sq. mm	2.00	Nos.	29426.00	Each	58852.00
17	Supplying and making straight through cable jointing with heat shrinkable jointing kit complete with all accessories including ferrules suitable for following size of 3 core, XLPE aluminium conductor cable of 11 KV grade as required :					
17.1	400 sq. mm	2.00	Nos.	58443.00	Each	116886.00

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
18	Supplying, Installation, Testing & Commissioning including design, manufacture and testing at works of indoor type floor mounted metal clad, 11 KV VCB panel board totally enclosed & fully interlocked, Horizontal drawout, Horizontal isolation type breaker as per IEC-62271-100/2001 and as amended up to date and additional specifications, stainless steel enclosure of thickness 2 mm ,having capacities as mentioned below, single break, trip free mechanism, motor charged and manually/electrically closing breaker suitable for use on 11 KV,3 Phase, 50Hz A.C. supply with STC 25 KA for 3 Sec. ,Internal Arc for AFLR 25kA at rated voltage for 1 Sec. at individual compartments i.e. Busbar, VCB and cable compartment complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated and encapsulated copper bus bars of 800 Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip device, spring release coil, shunt trip coil and auxiliary switch of 4 NO + 4 NC and equipped with following switch gears and accessories.					
	The panel shall be complete with following switchgear and accessories. All major sub-components (switchgear, relays & vacuum interrupters) shall be of same make. Separate earthing truck shall be required for each bus earthing & cable earthing. Earthing truck shall be so designed that it is impossible to earth a live. It shall be provided with capacitive voltage divider and complete with audio visual annunciation, one for each panel.					
a)	INCOMER PANEL (2 Set) - Each Comprising of					
i	1-Metal clad housing with truck having 800 A TP integral VCB with electrically operated mechanism (spring charging motor-230 V AC)					
ii	1 set of air insulated bus bar of 800 A					
iii	1 set of isolating plug and receptacle					
iv	1 set of automatic safety shutter					
v	1- set of breaker control switch, lockable type Trip /Neutral /Closed (TNC)					
vi	1 set of dual core CT's					
	Core I : 200/100/1/1A (10 VA 0.5)					
	Core II : 200/100/1/1A (10 VA 5P20)					
vii	1 set of Shunt trip closing coil 24 V DC					
viii	1 set of 11 KV end termination kit for 3x400 sq.mm Al.XLPE 11 KV armoured cable					
ix	1 Set of P.T'S 11KV/Root 3 /110V Root 3 - 110V Root 3 - cast resin type					
x	1-set ON/OFF /Trip & Circuit healthy and phase indicating LED lamps.					

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
xi	1 No of Micoprocessor based Numerical relay with O/C EF &SC Protection. Relay should be communicate over Modbus.					

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
xii	1 No of Multifunction Digital meter displaying Voltage, Amps, kWh, kW, P.F., Active, reactive, apparent energy, disturbance direction detection, Individual harmonic up to the 63rd harmonic. at least 1024 samples/cycle with Modbus Port complying to IEC certified by third party laboratory.					
xiii	1Set of 8 No's annunciation window with relays and push buttons					
xiv	1 Set of Power pack per panel					
b)	OUTGOING PANEL (2 Set): Each Comprising of :					
i	1-Metal clad housing with truck having 800 A ,500 MVA TP integral VCB manually/ electrically operated mechanism (spring charged motor 230 V A.C.)					
ii	1- Set of air insulated bus bar					
iii	1- Set of isolating plug and receptacle					
iv	1- Set of automatic safety shutters					
v	1- Set of breaker control switches (TNC)					
vi	1-Set of dual core CT'S					
	Core I - 100 /50/ 1 /1A (10 VA 0.5)					
	Core II - 100 / 50/ 1/1 (10 VA 5P20)					
vii	1- Set Shunt trip closing coil 24 V DC / 110 V A.C					
viii	1- Set 11 KV end termination for 3 x 300 sq.mm Al.XLPE 11 KV cable					
ix	1-set ON/OFF /Trip & Circuit healthy Indicating LED lamps.					
x	1- No Micoprocessor based Numerical relay with O/C EF &SC Protection. Relay should be communicate over Modbus.					
xi	1-No Multifunction Digital meter displaying Voltage, Amps, kWh, kW, P.F., Active, reactive, apparent energy, disturbance direction detection, Individual harmonic up to the 63rd harmonic. at least 1024 samples/cycle with Modbus Port complying to IEC certified by third party laboratory.					
xii	1-8 No's annunciation window with relays and push buttons					
xiii	1-No 2 elements auxiliary relay for transformer (WTI with alarm & trip)					
xiv	1-set of terminal block with 20% extra terminal for connection with 2.5 sq.mm 4 core copper conductor pvc insulated pvc sheathed copper cable from panel to transformer					
xv	1- No Power pack per panel					
c)	BusCoupler Panel (1 Set) : Each Comprising of:					
i	1-Metal clad housing with truck having 800 A ,500 MVA TP integral VCB manually/ electrically operated mechanism (spring charged motor 230 V A.C.)					
ii	1- Set of air insulated bus bar					
iii	1- Set of isolating plug and receptacle					

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
iv	1- Set of automatic safety shutters					
v	1- Set of breaker control switches (TNC)					

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
vi	1-Set of dual core CT'S					
	Core I - 200/100/1/1A (10 VA 0.5)					
	Core II - 200/100/1/1A (10 VA 5P20)					
vii	1- Shunt trip closing coil 24 V DC / 110 V A.C					
viii	1-set ON/OFF /Trip & Circuit healthy Indicating LED lamps.					
ix	1- No Micoprocessor based Numerical relay with O/C EF &SC Protection. Relay should be communicate over Modbus.					
x	1-No Multifunction Digital meter displaying Voltage, Amps, kWh, kW, P.F., Active, reactive, apparent energy, disturbance direction detection, Individual harmonic up to the 63rd harmonic. at least 1024 samples/cycle with Modbus Port complying to IEC certified by third party laboratory.					
xi	1-8 No's annunciation window with relays and push buttons					
xii	1-set of terminal block with 20% extra terminal for connection with 2.5sq.mm 4 core copper conductor pvc insulated pvc sheathed copper cable from panel to transformer					
xiii	1- No Power pack per panel					
d)	Bus Riser Panel (1 Set) : Each Comprising of					
i	1-Metal clad housing with Copper busbar of 800 A. capacity	1.00	Set	8008775.00	Set	8008775.00
19	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	10.00	Set	8351.00	Set	83510.00
20	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	4.00	Set	15004.00	Set	60016.00
21	Supplying and laying 75 mm X 15 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	30.00	Metre	363.00	Metre	10890.00
22	Supplying and laying 50 mm X 10 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	30.00	Metre	228.00	Metre	6840.00

Item No.	Description of Sub-Head and Item of Work	Quantity		Rate (Rs.)	Unit	Amount (Rs.)
23	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required.	40.00	Metre	1638.00	Metre	65520.00
24	Providing and fixing 50 mm X 10 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	40.00	Metre	833.00	Metre	33320.00
25	Providing and fixing 75 mm X 15 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	40.00	Metre	971.00	Metre	38840.00
26	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	40.00	Metre	755.00	Metre	30200.00
27	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	40.00	Metre	1246.00	Metre	49840.00
28	Providing and fixing 50 mm X 10 mm G.I. strip on surface or in recess for connections etc. as required.	80.00	Metre	345.00	Metre	27600.00
29	Providing and fixing 75 mm X 15 mm G.I. strip on surface or in recess for connections etc. as required.	200.00	Metre	484.00	Metre	96800.00
30	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	40.00	Metre	287.00	Metre	11480.00
	Sub Total					23987031.00
	Total					24246404.00