

**Annexure-IV.**

**Recommended make for DG Set**

| <b>S.No.</b> | <b>Item Description</b> | <b>Recommended make</b>   | <b>Remarks</b> |
|--------------|-------------------------|---|----------------|
| 1            | Engine                  | Cummins/KOEL/Cater-pillar/Greaves                                 |                |
| 2            | Alternator              | Stampford/Kirloskar-Green/CG                                      |                |
| 3            | Battery                 | Exide/Amraraaja   |                |
| 4            | Canopy                  | Sudheer/Kirloskar-Green(Bhaskar,IEC)                              |                |
| 5            | Axial Flow Fan          | Alstom/CG/Almonard  |                |
| 6            | C-Channel               | TATA/SAIL   |                |
| 7            | Other accessories       | Should be approved from the Consultant /Client Before assembling. |                |

**Signature of RDPL Authority.**

**TECHNICAL SPECIFICATION & SCOPE OF WORK FOR DG SET**

| S.No. | Item Description  | Unit  | Quantity |
|-------|---|-------|----------|
|       | <b>Scope of Work:</b>   |       |          |
| 2.1   | Installation, testing & commissioning of 1 No., 250 KVA D.G. Set, with accoustic canopy Complete.   | Job   | 1        |
| 2.2   | Unloading shifting, placing, grouting with foundation bolts and leveling of pre -aligned 1 No., 250 kVA D.G. Set on the existing foundation and anti-vibration pad complete as required.  | Job   | 1        |
| 2.3   | Supply, installation, testing and commissioning of Exhaust pipe class B suitable to carry exhaust of 250 KVA DG set with necessary flanges gaskets nut bolts etc. including silencers. Exhaust pipes heights to be taken as per RPCB/CPCB rules, exhaust pipe to be painted with Heat resistant paint.  | Job   | 1        |
| 2.4   | Supply and fixing of rock wool / Mineral wool to the exhaust gas pipe line binding with chicken mesh and cladding with 24 guage Al. sheet etc up to required and safe working height of personnel.  | Job   | 1        |
| 2.5   | Supply and installation of structural support for exhaust piping, and 990 Ltrs diesel tank, fuel pipe line etc fabricated from M.S. section etc complete including painting with red oxide and black enamel paint and heat resistant paint wherever required in the room and duct.  | Job   | 1        |
| 2.6   | Fuel piping for the D.G. sets from day tank using 1" MS Black class B pipe & flexible hose connection complete with necessary valves, filters, etc. and drain lines to the tank I.  | Job   | 1        |
| 2.7   | Installation of fuel tank 990 liter capacity tank on existing structure.  | Job   | 1        |
| 2.8   | Supply and installation of alternator termination adaptor box including necessary bus-bar extension.  | Set   | 1        |
| 2.9   | First charging of dry batteries.  | Job   | 1        |
| 3     | Plate Earthing as per IS:3043 with Copper Earth plate of size 600mm x 600mm x 6.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer ,nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required. | Each  | 2        |
| 3.1   | S & Laying following size earth strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.  |       |          |
|       | 25mm x 5mm copper strip   | R.Mtr | 20       |

|     |  |         |   |
|-----|--|---------|---|
| 3.2 | S & Laying following size 'A' class G.I. Pipe with accessories for laying earth conductor/strip in ground/surface/recess as required |         |   |
|     | 32mm dia   | Per Mtr | 6 |
| 4   | Liasioning for statuary approval if any.   | Job     | 1 |

**Signature of RDPL Authority.**

## TECHNICAL SPECIFICATION

| S.NO. | EQUIPMENT   | SPECIFICATION |     |
|-------|---|---------------|-----|
| 1     | <b>TRANSFORMER</b>  |               |     |
|       | Rated Capacity  | 1000 KVA      |     |
|       | HT Voltage  | 11KV          |     |
|       | LT Voltage  | 433V(P-P)     |     |
|       | Frequency   | 50 Hz+3%      |     |
|       | No of Phase   | 3             |     |
|       | Primary Connection  | Delta         |     |
|       | Secondary Connection  | Star          |     |
|       | Type Of Cooling   | ONAN          |     |
|       | HV Amp  | 52.5 A        |     |
|       | LV Amp  | 1333A         |     |
|       | Max.Permissible Temp. Rise above ambient:                                 |               |     |
|       | winding :   | 50 C          |     |
|       | Top Oil :   | 40 C          |     |
|       | Thickness of TR. Tank(rolling tolerance as per IS)                        |               |     |
|       | Top & Bottom:   | 5.0 mm        |     |
|       | Side :  | 4.0 mm        |     |
|       | Basic Electrical parameters :   |               |     |
|       | Max.No Load Losses(watts):  | 1400          |     |
|       | Max.Full Load copper Losses at 75 C(watts):                               | 10400         |     |
|       | % Impedance at 75 C(tolerance+/-10 %) :                                   | 5             |     |
|       | Magnetising current as % of full load current :                           |               |     |
|       | At 100 % rated voltage :  | 2             |     |
|       | At 110 % rated voltage :  | 4             |     |
|       |   |               |     |
| 2     | <b>VACUUM CIRCUIT BREAKER</b>   |               |     |
|       |   | I/C           | O/G |
|       | Vacuum Circuit Breaker  | 1             | 2   |
|       | Copper Bus Bar 630 A, With PVC Sleeve                                     | 1             | 1   |
|       | 230V AC Motorised Mechanism   | 1             | 1   |
|       | Control Wiring Colour Black, 2.5 Sq.mm for CT Ckt. & 1.5 Sq.mm for other  | 1             | 1   |
|       | Degree of Protection - IP4X   | 1             | 1   |
|       | Paint Shade- RAL 7032   | 1             | 1   |
|       | Shunt coils first – 24VDC AND second 110VAC                               | 1             | 1   |
|       | Closing coil – 24VDC  | 1             | 1   |
|       | EPOXY RESIN CAST,1-Ph CT (21 KA/1sec)                                     |               |     |
|       | MAKE : CGL,AREVA,SIEMENS  |               |     |
|       | 400/5-5 Amp , CL-1.0/5P10, Burden-15VA                                    | 3             | 0   |
|       | 100/5-5 Amp for O/G No1 & 100/5-5 Amp for O/G No2,CL-1.0/5P10,Burden-15VA | 0             | 3   |
|       | EPOXY RESIN CAST V.T.:  |               |     |
|       | MAKE : CGL  |               |     |

|  |   |   |
|--|---|---|
| 3Ph, 3-Limb, D/O TYPE, 1 No., 11KV/110V  | 1 | 0 |
| Class-1, Burden-100 VA   |   |   |
| METERS   |   |   |
| Digital Ammeter with S/S   | 1 | 1 |
| Digital Voltmeter with S/S   | 1 | 0 |
| Three Phase Three wire Digital TVM CL1.0 Of L&T make Quasar intelligent  | 1 | 0 |
| INDICATING LAMPS   |   |   |
| (TEKNIK/L&T-ESBEE/BINAY)   |   |   |
| Red Phase - Red  | 1 | 0 |
| Yellow Phase - Yellow  | 1 | 0 |
| Blue Phase - Blue  | 1 | 0 |
| BREAKER ON - Red   | 1 | 1 |
| BREAKER OFF - GREEN  | 1 | 1 |
| TRIP CIRCUIT Healthy - White   | 1 | 1 |
| Spring Charged -Blue   | 1 | 1 |
| ACCESSORIES  |   |   |
| Push Button for trip circuit healthy check   | 1 | 1 |
| Panel Space Heater with Thermostat & switch  | 1 | 1 |
| Panel Illumination Lamp with Switch  | 1 | 1 |
| TNC Switch Non Lockable  | 1 | 1 |
| Local Remote Switch Non -Lockable  | 1 | 1 |
| 6 Window Annunciator with hotter/bell  | 0 | 1 |
| RELAYS   |   |   |
| Numerical IDMTL 3O/c+1E/f relay of L&T make MC31 OR equivalent   | 1 | 0 |
| Numerical IDMTL+INST , 3O/c+1E/f relay of L&T make MC61 OR equivalent  | 0 | 1 |
| Auxiliary Relay for WTI/OTI/Bucz Alarm & Trip  | 0 | 3 |
| Master Trip Relay 24 V DC  | 1 | 1 |
| Power pack with battery back up input 110VAC, output 30VDC 100 Watt continuously,450 momentary Only Alan make Mumbai(Only) | 1 | 0 |

**NAME OF WORK : Supply & Installation Work of Following Equipment for Augmentation of 11/0.433 KV Sub-Station at RDPL, Jaipur as per Technical Specifications and make Enclosed at Annexure**

**G-SCHEDULE**

| S. No.  | QTY. | ITEM  | RATE          |          | UNIT         | AMOUNT RS. |
|---|------|---|---------------|----------|--------------|------------|
|   |      |   | IN FIGURE RS. | IN WORDS |              |            |
| 1   | 2    | 3   | 4             | 5        | 6            | 7          |
| <b>Part - A 11Kv Side Equipments (Tech. Ann. 1 A &amp; B)</b> |      |   |               |          |              |            |
| 1   | 1    | Supply,Installation,Testing & Commissioning of Copper wound Transformer conforming to IS: 2026 & IS:335 for Tr. Insulating Oil of rating 11/0.433KV,1000 KVA Delta-Star Connected, Vector Group Dyn 11, standard accessories like conservator, silica gel breather,Dial Type Temperature Gauges,Magnetic Oil level Gauge ( MOG), Winding & Oil Indicator cum controller,Buccolz Protection,radiator, fins, HT BUSHING & LT cableboxes, OFF-LTC (+/- 5% in steps of 2.5%) , ISI marked drain valve, first fill of oil, Epoxy based paint, including carrying of pre-commission Testing & Charging of Transformer. In-door Type |               |          | Each         |            |
| 2   | 3    | Construction of foundation for Transformer in CC in the ratio 1:2:6 of size 2500mm X 2500mmX 1200mm (h) along with booting channels for transformer placing etc properly finished/white washed.   |               |          | Each         |            |
| 3   | 1    | Supply,Installation,Testing & Commissioning of 11KV,630 A,21KA Horizontal Drawout,Horizontal Isolation Vacuum Circuit Breaker 1 Incomer,2 Outgoing Unit as per enclosed specifications Annexure-I.  |               |          | Complete Set |            |
| 4   | 60   | P & Laying XLPE insulated IS:7098/II/85 of Group1 and approved make H.T.cable for working voltage 11 K.V.Earthed direct in ground including excavation of 30cmx100cm size trench, 25cm layer of river sand, IInd class bricks covering, refilling earth, compaction of earth, making necessary connection testing etc.as required of size. 3 core 120.0 Sq.mm   |               |          | R.Mtr        |            |
| 5   | 6    | Providing & making heat shrinkable type indoor terminations/joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, preperation of cable ends,testing etc. as required of following sizes. 3 core 120 Sq mm   |               |          | Each         |            |

| S. No.   | QTY. | ITEM  | RATE             |          | UNIT  | AMOUNT<br>RS. |
|--|------|---|------------------|----------|-------|---------------|
|  |      |   | IN FIGURE<br>RS. | IN WORDS |       |               |
| 1  | 2    | 3   | 4                | 5        | 6     | 7             |
| 6  | 6    | Plate Earthing as per IS:3043 with G.I. Earth plate of size 600mm x 600mm x 6.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer ,nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required.   |                  |          | Each  |               |
| 7  | 6    | Plate Earthing as per IS:3043 with copper Earth plate of size 600mm x 600mm x 3.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer, nipple ,wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required. |                  |          | Each  |               |
| 8  |      | Supply & Laying following size earth strip in horizontal or vertical run in ground / surface/ recess including riveting, soldering, saddles, making connection etc. as required.  |                  |          |       |               |
| a  | 60   | 25mm x 5mm copper strip   |                  |          | R.Mtr |               |
| b  | 30   | 25mm x 6mm G.I. Strip   |                  |          | R.Mtr |               |
| 9  | 20   | S & Laying following size' A' class G.I. Pipe with accessories for laying earth conductor/strip in ground/surface/recess as required 32mm dia   |                  |          | R.Mtr |               |
| <b>Total Part A</b>  |      |   |                  |          |       |               |
| <b>Part - B L.T. Panel, on load Change Over Switch, MCCB, ACB of Generator (Tech. Ann. II)</b> |      |   |                  |          |       |               |

| S. No. | QTY. | ITEM  | RATE             |          | UNIT          | AMOUNT<br>RS. |
|--------|------|---|------------------|----------|---------------|---------------|
|        |      |   | IN FIGURE<br>RS. | IN WORDS |               |               |
| 1      | 2    | 3   | 4                | 5        | 6             | 7             |
| 1      | 45   | SITC of wall/ free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet , required hardware ,duly painted by either two coats of zinc/ red oxide primer followed by two coats of synthetic enamel paint or powder coating in Simens grey or required shade after rinsing . The panel having PU/ Neoprene rubber gasket of not less than 3mm thickness , separate detachable gland plate M.S. base channel ,hinged door with locking arrangement for equipment / switchgear. Thickness of sheet shall not be less than 1.6 mm up to 600 mm length / width of any compartment and be of 2.0 mm above 600 mm. Load bearing structure shall be of 2.0 mm thick sheet supported by base M.S. channel if required . Side walls and cable alley compartments having bolted type doors with detachable extension type structure. (only outer area on all sides shall be measured ) |                  |          | Per Sq. Meter |               |
| 2      | 2    | SITC of Draw out type Air Circuit Breaker of Group2 conforming to IS 13947 in existing LT panel suitable for LT installation 440 V, 50 Hz and having adjustable short-circuit, earth fault and over load MICRO-PROCESSOR release with LCD display, bargraph and separate LED indication for each type of fault , at least 4NO & 4NC auxiliary contacts safety shutter and fault position acknowledgement mechanism . type ACB shall have separate indication for service, test, isolation, maintenance position Electrically Drow Out(EDO) type 1600 A Rating , 50 / 65kA   |                  |          | Each          |               |
| 3      | 380  | Supplying and fixing of Aluminium bus bar 2000 Amp capacity by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.   |                  |          | Per Kg        |               |
| 4      | 2    | SF of (0-500) V range Volt meter on existing panel , making connection by PVC insulated copper conductor with PVC sleeves / channel etc. as required. Digital type ( 96 mm x 96 mm )  |                  |          | Each          |               |
| 5      | 2    | SF of selector switch for voltmeter (4 position ) including making connection etc. as required .  |                  |          | Each          |               |
| 6      | 2    | SF of CT operated direct reading type Ampere meter on existing panel , making connection by PVC insulated copper conductor with PVC sleeves / channel etc. as required. Digital type ( 96 mm x 96 mm ) , above1500 A  |                  |          | Each          |               |



| S. No. | QTY. | ITEM  | RATE          |          | UNIT  | AMOUNT RS. |
|--------|------|---|---------------|----------|-------|------------|
|        |      |   | IN FIGURE RS. | IN WORDS |       |            |
| 1      | 2    | 3   | 4             | 5        | 6     | 7          |
| 7      | 6    | Supply & Fixing (SF) of Current Transformer , with all necessary support in existing panel including connection etc. as required. 1500 / 5 A Ratio, 15 VA , class 1 accuracy  |               |          | Each  |            |
| 8      | 2    | SF of CT linked selector switch of 10 A for Ampere meter (4 position ) including making connection etc. as required .   |               |          | Each  |            |
| 9      | 72   | SF of 240/220 V, LED (22.5 mm dia ) Pilot lamp with integral circuit, terminal block, including connection etc. as required. Red/yellow/Green/Blue colour and On/Off trip   |               |          | Each  |            |
| 10     |      | SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947-2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, including making connections with lugs / spreaders etc. as required With Microprocessor based Release |               |          |       |            |
| a      | 5    | 160 Amp , 16/25 kA, adjustable O/L & adjustable S/C setting   |               |          | Each  |            |
| b      | 2    | 200 Amp , 25/35kA, adjustable O/L & adjustable S/C setting  |               |          | Each  |            |
| c      | 2    | 250 Amp , 35/50 kA, adjustable O/L & adjustable S/C setting   |               |          | Each  |            |
| d      | 3    | 400 Amp , 35/50 kA, adjustable O/L & adjustable S/C setting   |               |          | Each  |            |
| e      | 2    | 630 Amp , 35/50 kA, adjustable O/L & adjustable S/C setting   |               |          | Each  |            |
| 11     |      | P&F 240/415 V AC MCB with positive isolation of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections, testing etc. as required.   |               |          |       |            |
| a      | 2    | 80 A rating Triple pole & neutral MCB   |               |          | Metre |            |
| b      | 1    | 63 A rating Triple pole & neutral MCB   |               |          | Metre |            |
| 12     | 450  | P/Laying P.V.C. insulated & P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor of IS:1554 P-I of Group2 of approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, 11nd class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size. 630.0 Sq.mm 1 core   |               |          | Metre |            |

| S. No. | QTY. | ITEM  | RATE             |          | UNIT        | AMOUNT<br>RS. |
|--------|------|---|------------------|----------|-------------|---------------|
|        |      |   | IN FIGURE<br>RS. | IN WORDS |             |               |
| 1      | 2    | 3   | 4                | 5        | 6           | 7             |
| 13     | 45   | Supplying and making one end termination with heavy duty single compression brass gland SIBG type, aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size. 1C x 630.0 sq.mm  |                  |          | Each<br>Set |               |
| 14     |      | P/Laying P.V.C. / XLPE insulated & P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor of IS:1554 P-I / IS :7098 P - I of Group 1 of approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, IInd class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size.   |                  |          |             |               |
| a      | 300  | 95 Sq.mm 3.5 Core   |                  |          | Mtr.        |               |
| b      | 80   | 120 Sq.mm 3.5 Core  |                  |          | Mtr.        |               |
| c      | 80   | 150 Sq.mm 3.5 Core  |                  |          | Mtr.        |               |
| 15     |      | Supplying and making one end termination with heavy duty single compression brass gland SIBG type, heavy duty aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.  |                  |          |             |               |
| a      | 10   | 3.5 x 95.0 sq.mm  |                  |          | Set         |               |
| b      | 4    | 3.5 x 120.0 sq.mm   |                  |          | Set         |               |
| c      | 12   | 3.5 x 150.0 sq.mm   |                  |          | Set         |               |
| a      | 16   | 3.5 x 300.0 sq.mm   |                  |          | Set         |               |
| 16     | 4    | Plate Earthing as per IS:3043 with Copper Earth plate of size 600mm x 600mm x 6.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer ,nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required. |                  |          | Each        |               |

| S. No.   | QTY. | ITEM  | RATE             |          | UNIT    | AMOUNT<br>RS. |
|--|------|---|------------------|----------|---------|---------------|
|  |      |   | IN FIGURE<br>RS. | IN WORDS |         |               |
| 1  | 2    | 3   | 4                | 5        | 6       | 7             |
| 17   | 40   | S & Laying following size earth strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required. 25mm x 5mm copper strip  |                  |          | R.Mtr   |               |
| 18   | 15   | S & Laying following size' A' class G.I. Pipe with accessories for laying earth conductor/strip in ground/surface/recess as required 32mm dia   |                  |          | Per Mtr |               |
| <b>Total Part B</b>  |      |   |                  |          |         |               |
| <b>Part - C Supply &amp; Installation Work of 1 No. 250 KVA D.G. Set with AMF(Tech. Ann. III &amp; IV)</b>   |      |   |                  |          |         |               |
| 1  | 1    | <b>Supply of 1 No. 250 kVA D.G.</b><br>250 KVA with acoustic canopy, water Cooled D.G. Set with battery starting, AVM, Electronic control panel providing Engine / DG set protection complete and with ant vibration pad etc as required with 1No 990 liter Capacity HSD tank, with supporting structure, & hand charging pump and flexible hose and hose clamp etc. complete as required |                  |          | Set     |               |
| 2  | 1    | <b>Installation of 1 No. 250 kVA D.G. Set</b><br>Installation, testing & commissioning of following DG sets as per detail scope of work and specifications including supply of all necessary material for installation like tools tackels etc. and equipment required for proper operation of D.G. Set complete.  |                  |          | Set     |               |
| <b>Total Part - C</b>  |      |   |                  |          |         |               |
| <b>Part-D Supply &amp; Installation Work of 660 KVA (1No. 330KVA Inbuilt with LT Panel + 1No. 330KVA will be Separate) APFC Panel as per enclosed Make Annexure-V.</b> |      |   |                  |          |         |               |

| S. No. | QTY. | ITEM  | RATE             |          | UNIT          | AMOUNT<br>RS. |
|--------|------|---|------------------|----------|---------------|---------------|
|        |      |   | IN FIGURE<br>RS. | IN WORDS |               |               |
| 1      | 2    | 3   | 4                | 5        | 6             | 7             |
| 1      | 30   | SITC of wall/ free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet , required hardware ,duly painted by either two coats of zinc/ red oxide primer followed by two coats of synthetic enamel paint or powder coating in Simensgrey or required shade after rinsing . The panel having PU/ Neoprene rubber gasket of not less than 3mm thickness , separate detachable gland plate M.S. base channel ,hinged door with locking arrangement for equipment/switchgear . Thickness of sheet shall not be less than 1.6 mm up to 600 mm length / width of any compartment and be of 2.0 mm above 600 mm. Load bearing structure shall be of 2.0 mm thick sheet supported by base M.S. channel if required . Side walls and cable alley compartments having bolted type doors with detachable extension type structure. (only outer area on all sides shall be measured ) |                  |          | Per Sq. Meter |               |
| 2      |      | SITC of quick make and quick break Four Pole current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947-2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, including making connections with lugs / spreaders etc. as required  |                  |          | Each          |               |
| a      | 1    | 630 Amp , 35/50 kA, adjustable O/L & adjustable S/C setting, lcs = 100 % Icu  |                  |          | Each          |               |
| 3      | 50   | Supplying and fixing of <b>Aluminium</b> 800 Amp bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.  |                  |          | Per Kg        |               |

| S. No. | QTY. | ITEM  | RATE             |          | UNIT        | AMOUNT<br>RS. |
|--------|------|---|------------------|----------|-------------|---------------|
|        |      |   | IN FIGURE<br>RS. | IN WORDS |             |               |
| 1      | 2    | 3   | 4                | 5        | 6           | 7             |
| 4      |      | SF of (0-500) V range Volt meter on existing panel , making connection by PVC insulated copper conductor with PVC sleeves / channel etc. as required.   |                  |          |             |               |
| a      | 0    | Digital type ( 96 mm x 96 mm )  |                  |          | Each        |               |
| 5      |      | SF of CT operated direct reading type Ampere meter on existing panel , making connection by PVC insulated copper conductor with PVC sleeves / channel etc. as required.   |                  |          | Each        |               |
| a      | 0    | Digital type ( 96 mm x 96 mm ),above 1000A  |                  |          | Each        |               |
| 6      |      | Supply &Fixing (SF) of Current Transformer , with all necessary support in existing panel including connection etc. as required .   |                  |          | Each        |               |
| a      | 0    | from 1500 / 5 Ratio , 15 VA , class 1 accuracy  |                  |          | Each        |               |
| 7      | 0    | SF of selector switch for voltmeter (4 position ) including making connection etc. as required .  |                  |          | Each        |               |
| 8      | 0    | SF of CT linked selector switch of 10 A for Ampere meter (4 position ) including making connection etc. as required .   |                  |          | Each        |               |
| 9      |      | SF of 240/220 V, LED (22.5 mm dia ) Pilot lamp with integral circuit, terminal block, including connection etc. as required.  |                  |          |             |               |
| a      | 30   | Red/yellow/Green colour   |                  |          | Each        |               |
| 10     |      | SITC of self healing MPP/MP type shunt capacitor (banks) conforming to IS:13340-41 / IEC :831-1&2 in existing panel or parallel with load terminals , the capacitor shall be fitted with discharge resistors, pressure sensitive disconnecter ( PSD ) and shall have dissipation factor less than 0.0025 at 50 Hz and total wattage loss less than 0.5 Watt per KVAR . including making connections with suitable capacity conductors/cables testing as required. |                  |          |             |               |
| a      | 660  | Heavy duty Three phase 440 V , 50 Hz capacitor (Bank)   |                  |          | Per<br>KVAR |               |
| 11     |      | SITC of microprocessor based intelligent power factor correction relay having following sensing capacity secondary current , self analysing auto c/k setting according to targeted power factor setting, the relay shall have minimum three digit display unit  |                  |          |             |               |

| S. No. | QTY. | ITEM   | RATE             |          | UNIT | AMOUNT<br>RS. |
|--------|------|--|------------------|----------|------|---------------|
|        |      |  | IN FIGURE<br>RS. | IN WORDS |      |               |
| 1      | 2    | 3  | 4                | 5        | 6    | 7             |
| a      | 2    | Sensitivity up to 50 milli Amp   |                  |          | Each |               |
| 12     |      | P & F Cam operated rotary switches on existing panel with 2 way and off position   |                  |          |      |               |
| a      | 24   | 6A   |                  |          | Each |               |
| 13     |      | P & F of 440 Volt 3 pole capacitor (AC 6 B ) <b>duty contactor</b> with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/ reactors to limit the inrush current , conforming to IS:13947-4-1   |                  |          |      |               |
| a      | 8    | 50 KVAR  |                  |          | Each |               |
| b      | 8    | 25 KVAR  |                  |          | Each |               |
| c      | 0    | 15 KVAR  |                  |          | Each |               |
| d      | 4    | 10 KVAR  |                  |          | Each |               |
| e      | 4    | 5 KVAR   |                  |          | Each |               |
| 14     |      | P&F 240/415 V AC MCB with positive isolation or breaking capacity not less than 10 KA (B/ C/ D tripping characteristic ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as req   |                  |          |      |               |
|        |      | Triple pole MCB  |                  |          |      |               |
| a      | 0    | 50 A rating  |                  |          | Each |               |
| b      | 8    | 32 A rating  |                  |          | Each |               |
| c      | 0    | 16 A rating  |                  |          | Each |               |
| 15     |      | SITC of quick make and quick break 3 POLE current limiting <b>MCCB</b> having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947-2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, including making connections with lugs / spreaders etc. as required |                  |          |      |               |
| a      | 0    | 200 Amp , 25/35kA, adjustable O/L & adjustable S/C setting   |                  |          | Each |               |

| S. No. | QTY. | ITEM  | RATE             |          | UNIT | AMOUNT<br>RS. |
|--------|------|---|------------------|----------|------|---------------|
|        |      |   | IN FIGURE<br>RS. | IN WORDS |      |               |
| 1      | 2    | 3   | 4                | 5        | 6    | 7             |
| b      | 16   | 160 Amp , 16/25 kA, adjustable O/L & adjustable S/C setting |                  |          | Each |               |

| S. No.                             | QTY. | ITEM   | RATE             |          | UNIT     | AMOUNT<br>RS. |
|------------------------------------|------|--|------------------|----------|----------|---------------|
|                                    |      |  | IN FIGURE<br>RS. | IN WORDS |          |               |
| 1                                  | 2    | 3  | 4                | 5        | 6        | 7             |
| 16                                 |      | Supplying and drawing PVC insulated & sheathed solid/ stranded copper conductor multi core control cable ISI marked (IS:1554) of 1.1 kV grade of approved make of Group2 as per chapter E11,in existing surface or recessed conduit/ casing capping  |                  |          | R. Metre |               |
| a                                  | 30   | 2.5 sq. mm. armoured,2 core  |                  |          |          |               |
| <b>Total Part - D</b>              |      |  |                  |          |          |               |
| <b>Part -E</b>                     |      |  |                  |          |          |               |
|                                    | 1    | Labour charges for shifting of old transformer from existing foudation to new foundation including connection etc.   |                  |          |          |               |
| <b>Part -F Miscellaneous Items</b> |      |  |                  |          |          |               |
| 1                                  |      | S & F of Electrical insulating rubber matts confirming to IS: 15652 / 2006 with one side anti skid abberation marks and pasting the mat with synthetic rubber adhesive as required.  |                  |          |          |               |
| a                                  | 200  | 11 KV, 2.5 mm thick with proof voltage 22 KV / 3 min. and Break Down Voltage 45 KV   |                  |          | Sq. mtr. |               |
| 2                                  | 2    | Supply and fixing of 1.6 mm thick MS 11 kV Danger plates as per specification of Discom on the existing poles complete in all respect as per Discom specification.   |                  |          | Each     |               |
| 3                                  | 20   | Providing and erecting iron clad cable route marker duly marked with ELE CABLE of size 23 cms. X 12 cms. Flushed with ground in cement foundation as directed by Engineer incharge.  |                  |          | Each     |               |
| 4                                  | 30   | Supplying & fixing Steel Chequered Plate having 10 mm thickness, duly painted with two coats of black Japan colour (Average Wt.61.1 Kg. / Sq. mm.)   |                  |          | Sq mtr.  |               |
| 5                                  |      | Supplying and fixing of chain link fencing with angle iron posts 50x50x6mm placed at every 3 Mtr. apart 30cm in ground embedded in cement concrete 1:3:6 (30x30x45cm) corner and every tenth post to be strutted with (50 x 50 x 6cm) angle iron provided and fixed and fitted with posts including earth work in excavation etc. complete with chain link size. |                  |          |          |               |
| a                                  | 100  | 50mm x 50mm x 3.15mm   |                  |          | Sqm.     |               |



| S. No. | QTY. | ITEM  | RATE             |          | UNIT     | AMOUNT<br>RS. |
|--------|------|---|------------------|----------|----------|---------------|
|        |      |   | IN FIGURE<br>RS. | IN WORDS |          |               |
| 1      | 2    | 3   | 4                | 5        | 6        | 7             |
| 6      |      | Supply and making of the following sizes of Brick masonry Manholes & Cable trench from class-A brick complete with 40 mm thick PCC (1:4:8) base, plastering with 8 mm thick (1:6) cement mortar with cement coat of inside of the trench, including providing of prefabricated 75 mm thick RCC cover with corner of the cover protected with ISA 35.  |                  |          |          |               |
| a      | 2    | 1200mm (W) x 1200mm (D) trench  |                  |          | RM       |               |
| b      | 30   | 1000mm (W) x 600mm (D) trench   |                  |          | RM       |               |
| c      | 5    | 750mm x 750mm x 600mm deep Manhole  |                  |          | Each     |               |
| 7      |      | Wiring of light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq. mm nominal size FR PVC insulated unsheathed flexible copper conductor 1.1 kV grade and 1.5 sq. mm nominal size FR PVC insulated unsheathed flexible copper earth conductor 1.1 kV grade (IS:694) of approved make in surface / recessed ISI marked medium duty PVC conduit & it's accessories, round tiles, Hot Dipped Galvanized Modular Box with earth terminal, 6 A Modular switch, Modular plate with grid plate, screws, making connections, testing etc. as required. |                  |          |          |               |
| a      | 8    | Medium point (up to 6 mtr.)   |                  |          | P. Point |               |
| b      | 12   | Long point (up to 10 mtr..)   |                  |          | P. Point |               |
| 8      |      | P & F Mirror optics type fluorescent tube fitting fabricated from CRCA sheet and finished with powder coating, high efficiency aluminium mirror reflector standard cross louvers complete with accessories like (Low Loss Copper Choke, starter, starter seat) / Electronic Choke with terminal block duly prewired with copper conductor including making connection, testing etc. as required( without tube).   |                  |          |          |               |
| a      | 12   | 2 X 36 Watts with EB  |                  |          |          |               |
| b      | 4    | 1 X 28 Watts with EB  |                  |          |          |               |
| 9      |      | P & F Fluorscent tube rod in existing fixtures as required,   |                  |          |          |               |
|        |      | Flourscent powder coated (minimum 3 star rating)  |                  |          |          |               |
| a      | 24   | 36/40 Watts   |                  |          |          |               |
|        |      | <b>T5 lamps</b>   |                  |          |          |               |
| b      | 4    | 28 Watts  |                  |          |          |               |

| S. No. | QTY. | ITEM   | RATE          |          | UNIT     | AMOUNT RS. |
|--------|------|--|---------------|----------|----------|------------|
|        |      |  | IN FIGURE RS. | IN WORDS |          |            |
| 1      | 2    | 3  | 4             | 5        | 6        | 7          |
| 10     | 2    | Supplying and fixing of power plug point Modular accessories on hot dipped galvanized modular on surface or in recessed with suitable size of grid plate with cover plate including cost of modular 16 amp. Switch and socket outlet , making connection , testing , etc. as required.   |               |          | Each     |            |
| 11     |      | P&F Recessed/ Surface mounting heavy duty horizontal type prewired sheet steel Distribution board phophatised / powder painted complete with suitable rating insulated copper bus bar, shorting link , neutral link, earth link and din bar,masking sheet, loose wire box, terminal block , duly prewired with suitable size FR PVC insulated copper conductor up to terminal blocks conforming to IS:13032 & IS:8623 including making internal DB terminations with copper lugs , testing etc. as required. |               |          |          |            |
| a      | 1    | Double door (single phase) 8 Way   |               |          |          |            |
| 12     |      | P&F 240/415 V AC MCB with positive isolation of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections, testing etc. as required.  |               |          |          |            |
|        |      | Double pole MCB  |               |          |          |            |
| a      | 1    | 40 A 63 A rating   |               |          | Each     |            |
|        |      | Single pole & neutral MCB  |               |          |          |            |
| b      | 8    | 6 A to 32 A rating   |               |          | Each     |            |
| 13     | 1    | Dismantling of Existing HT Breker Switch   |               |          |          |            |
| 14     | 1    | Dismantling of Existing HT Cable   |               |          |          |            |
| 15     | 1000 | Supply & fabrication steel structure with MS channel / angle / joist / ISMB / sheet etc. including welding, rivetting, cutting, nut & bolt , Painting etc. as required.  |               |          | Kg       |            |
| 16     | 600  | Providing and fixing corrugated asbestos cement sheet 6 mm thick roofing and side cladding fixed with polymer coated J or L hooks bolts and nuts 8mm diameter with bitumen and GI limpet washer complete (upto a pitch of 60 degrees) including steel primer and 2 coats of approved paint at overlaps. as per tech. specification.  |               |          | Sq. Mtr. |            |

| S. No. | QTY. | ITEM  | RATE             |          | UNIT | AMOUNT<br>RS. |
|--------|------|---|------------------|----------|------|---------------|
|        |      |   | IN FIGURE<br>RS. | IN WORDS |      |               |
| 1      | 2    | 3   | 4                | 5        | 6    | 7             |
| 17     | 10   | Earth work in excavation by mechanical means (Hydraulic excavator )/ manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and all lift , disposed earth to be levelled and neatly dressed:<br>All kinds of soil  |                  |          | Cum  |               |
| 18     | 4    | Providing and laying in position specified grade of cement concrete for all RCC structural elements upto plinth level including curing, compaction, finishing with rendering in cement sand mortar 1:3 (1 cement: 3 coarse sand) and making good the joints and cost of plastizers( if required) excluding the cost of centering, shuttering and reinforcement.<br>M20 grade Nominal Mix / Design Mix |                  |          | Cum  |               |
| 19     |      | Providing and fabricating reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding (including cost of binding wire) all complete up to floor five level.  |                  |          |      |               |
| a      | 104  | Cold twisted deformed bars (IS : 1786).   |                  |          | Kg.  |               |
| 20     | 8    | Providing & doing 150mm thick stone soling ,under the floors with 150 mm nominal size crushed stone having average size of 150 mm   |                  |          | Cum  |               |
| 21     |      | Providing and laying in position cement concrete including curing, compaction etc. complete in specified grade excluding the cost of centering and shuttering - All work up to plinth level.  |                  |          |      |               |
| a      | 4    | 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size)   |                  |          | Cum  |               |
|        |      | <b>Labour Charges for erection,commissioning,testing of all equipment(including Earthing,foundation,cablling etc.)</b>  |                  |          |      |               |
|        |      | <b>Grand Total =A+B+C+D+E+F+Labour Charges</b>  |                  |          |      |               |

I/We hereby tender for the execution of the above work within the time specified and with terms and condition enclosed in the tender document.

| S. No. | QTY. | ITEM | RATE             |          | UNIT | AMOUNT<br>RS. |
|--------|------|------|------------------|----------|------|---------------|
|        |      |      | IN FIGURE<br>RS. | IN WORDS |      |               |
| 1      | 2    | 3    | 4                | 5        | 6    | 7             |
|        |      |      |                  |          |      |               |

**Signature of Contractor**

**Signature of RDPL Authority.**

## LIST OF APPROVED MAKES FOR EQUIPMENT

| S.NO. | EQUIPMENT       | MAKE  |
|-------|-----------------|---|
| 1     | ACB             | Siemens,Merlin Gerin,ABB,GE                 |
| 2     | MCCB            | Siemens,Merlin Gerin,ABB,GE                 |
| 3     | MCB             | Legrand(Lexic),Hager,ABB,Siemens            |
| 4     | CAPACITORS      | EPCOS,L&T,NEPTUNE-DUCATI                    |
| 5     | VOLTMETER       | MECO,ESSVEE,RISHAB,MOELLER(HPL),            |
| 6     | AMMETER         | MECO,ESSVEE,RISHAB,MOELLER(HPL),            |
| 7     | C.T.            | C&S,L&T,Schneider                           |
| 8     | SELECTOR SWITCH | C&S,L&T(selzer),Schneider,Siemens           |
| 9     | LED Pilot Lamp  | C&S,GE,Siemens,L&T(ESBEE)                   |
| 10    | RELAY           | NEPTUNE(Phase Track),ENERCON,Beluk,GE,EPCOS |
| 11    | CONTACTOR       | Telemecanique,Siemens,C&S,GE                |
| 12    | ROTARY SWITCH   | C&S,L&T(selzer),HPL,Siemens,GE              |
| 13    | LT CABLE        | PolyCab,Gloster,ICL,Havells,KEI             |

Signature of RDPL Authority.

## LIST OF APPROVED MAKES FOR EQUIPMENT

| S.NO. | EQUIPMENT                 | MAKE                              |
|-------|---------------------------|-----------------------------------|
| 1     | ACB                       | Siemens,Merlin Gerin,ABB,GE       |
| 2     | MCCB                      | Siemens,Merlin Gerin,ABB,GE       |
| 3     | MCB                       | Legrand(Lexic),Hager,ABB,Siemens  |
| 4     | ON LOAD TAPCHANGER SWITCH | HPL(Socomac),C&S,GE,L&T           |
| 5     | CAPACITORS                | EPCOS,L&T,NEPTUNE-DUCATI          |
| 6     | VOLTMETER                 | MECO,ESSVEE,RISHAB,MOELLER(HPL),  |
| 7     | AMMETER                   | MECO,ESSVEE,RISHAB,MOELLER(HPL),  |
| 8     | C.T.                      | C&S,L&T,Schneider                 |
| 9     | SELECTOR SWITCH           | C&S,L&T(selzer),Schneider,Siemens |
| 10    | LED Pilot Lamp            | C&S,GE,Siemens,L&T(ESBEE)         |

Signature of RDPL Authority.

**LIST OF APPROVED MAKES FOR EQUIPMENT**

| <b>S.NO.</b> | <b>EQUIPMENT</b> | <b>MAKE</b>  |
|--------------|------------------|--|
| 1            | Transformer      | Uttam Bharat,Rajasthan Transformer & Switchgear,Indian Transformer |
| 2            | VCB              | CGL,AREVA,SIEMENS  |
| 3            | 11 KV XLPE Cable | PolyCab,Gloster,Havells  |

**Signature of RDPL Authority.**