Schedule of Quantity

Supply & Execution of Associated AIS Nature of Works towards Construction of 02 nos of 33 kV GIS feeder bays at 220/33 kV GIS Grid Sub-station Infocity-II on Turnkey basis under EHT(O&M) Division, Bhubaneswar, OPTCL

List of material/Equipment to be supplied

SL. No.	SUPPLY OF FOLLOWING EQUIPMENT & MATERIALS (As per Technical Specification)	UNITS	Quantity
ELECTRICAL WORKS (PART-A)			
1	**33 kV AIS Switchyard**		
1.1	Metal oxide polymer housed surge arrrestor for 33 kV system. Station Class Low Duty (SL) type In, Ur, Uc, Wth & Qrs as per technical specification/Latest IEC complete with insulating base and Surge monitor - As per TS	Nos	6
1.2	36 KV solid core Bus Post Insulators (AIS)	Nos	6
2	36 kV Outdoor type termination Kits (33 KV outgoing DP structure side) suitable for 1CX630 **Sq. mm**	NOS	6
3	**G.I Cable Trays including support GI angle suitable for different sections along with its accessories as per TS.**		
3.1	G.I Cable Trays(size: 450x75x2500mm)	Mtrs	800
3.2	G.I Cable Trays(size: 300x75x2500mm)	Mtrs	300
3.3	Support G. I angle 50x50x6 mm for cable tray	MT	3
4	**DP STRUCTURE FOR 33 KV OUTGOING FEEDER SUITABLE FOR TERMINATION OF 33 KV CABLE FROM GIS:** each set shall comprise of [2X 9.0 Mtrs (ISBM:200X100 mm(min size), RS Joist(beam), suitable channels (at least ISMC 100X50) for Bracing & base for fixing 33 KV Isolator and SA & suitable angles (atleast L50X50X6) & different size Steel plate of 10 mm thick & suitable GI pipe for the isolator from the operating arm to operating mechanism box, support arrangement for installation of Isolator mechanism box etc. provision for support to the 33 KV cable for termination at the isolator.	Set	**2**
5	**AC System : Outdoor Type, Sub Station Swithyard Console Boxes, HDG type (86 micron), 3 mm thick CRCA, (BMK,AC CONSOLE & OTHER MB) as per TS.**		
5.1	Bay Marshalling Kiosk	SET	2

Quantity for Errection of materials to be carried out(Comprises both Material supplied by Bidder and OPTCL Supplied Material)			
SL. No.	**Description of work (Errection)**	**UOM**	**Qty**
1	Metal oxide polymer housed surge arrrestor for 33 kV system. Station Class Low Duty (SL) type In, Ur, Uc, Wth & Qrs as per technical specification/Latest IEC complete with insulating base and Surge monitor - As per TS	Nos	6
2	**36 KV, 1250A, 31.5KA for 1 sec, AIS ISOLATORS with post insulators as per TS.**		
2.1	S/I WITHOUT EARTH SWITCH as per existing bay structure	Set	**2**
3	36 KV solid core Bus Post Insulators (AIS)	Nos	6
4	**Laying of XLPE Power Copper conductor cable for the GIS system (36 KV class) and installation of cable termination kit for Indoor & outdoor**		
4.1	36 KV XLPE copper Cable 630 **sq. mm** Single Core (from 33 KV GIS line feeder panel to the outgoing DP structure)	KMS	2
4.2	36 kV Outdoor type termination Kits (33 KV outgoing DP structure side) suitable for 1CX630 **Sq. mm**	NOS	6
4.3	ACSR MOOSE CONDUCTOR	Mtrs	40
5	**G.I Cable Trays including support GI angle** suitable for different sections along with its accessories as per TS. Details of No. of tiers are indicated in the TS-Civil Section accordingly the requirement can be ascertained & High Quality ISI mark PVC-U selfit Pipe, PVC elbow bend,PVC Tee etc suitable for underground burrial (HARD CONDUIT INCLUDING of adequate tensile strength minimum 7kg/sqmm or better) as per TS.		
5.1	G.I Cable Trays(size: 450x75x2500mm)	MTRS	400
5.2	G.I Cable Trays(size: 300x75x2500mm)	MTRS	150
5.3	G. I angle 50x50x6 mm for cable tray Support	MT	1.5
6	**DP STRUCTURE FOR 33 KV OUTGOING FEEDER SUITABLE FOR TERMINATION OF 33 KV CABLE FROM GIS:** each set shall comprise of [2X 9.0 Mtrs (ISBM:200X100 mm(min size), RS Joist(beam), suitable channels (at least ISMC 100X50) for Bracing & base for fixing 33 KV Isolator and SA & suitable angles (atleast L50X50X6) & different size Steel plate of 10 mm thick & suitable GI pipe for the isolator from the operating arm to operating mechanism box, support arrangement for installation of Isolator mechanism box etc. provision for support to the 33 KV cable for termination at the isolator.	Set	**2**
7.1	**Laying of supplied Power Cable including fixing of cable** with terminal connections both at equipments and control panels with supply of and fixing of lugs, Ferrules, clamps, connectors, glands, fixing of cable trays, including supply of N&B, Link plates, Cable Markers, Plaster of Paris, M-Seal compounds etc for sealing purpose and all necessary arrangements, laying of Earthing Flats, earthing ,laying of Cable trench slabs and chequered plate etc for the cable trench,Cable scheduled and cable diagram to be prepared by the contractor.		
7.1.1	3.5 CX70 mm^2 XLPE	Mtrs	400

7.2	**Laying of supplied Control Cable including fixing of cable with terminal** connections both at equipments and control panels with supply of and fixing of lugs, Ferrules, clamps, connectors, glands, fixing of cable trays, including supply of N&B, Link plates, Cable Markers, Plaster of Paris, M-Seal compounds etc for sealing purpose and all necessary arrangements, laying of Earthing Flats, earthing ,laying of Cable trench slabs and chequered plate etc for the cable trench,Cable scheduled and cable diagram to be prepared by the contractor.		
7.2.1	4 CX 2.5 mm^2	Mtrs	220
7.2.2	5 CX 2.5 mm^2	Mtrs	100
7.2.3	7CX 2.5 mm^2	Mtrs	100
7.2.4	10 CX 2.5 mm^2	Mtrs	450
7.2.5	16 CX 2.5 mm^2	Mtrs	100
7.2.6	19 CX 2.5 mm^2	Mtrs	100
8	**33 KV SIDE PROTECTION PANELS**		
8.1	**33KV FEEDER PROTECTION panel for the above 33KV GIS Line feeder equipment, with Bay Control Protection Unit (BCPU) with all other relays & component required for complete protection, control etc as per TS & also suitable for substation automation system as per existing SAS system.. The protection panel shall be suitably integrated with the existing SAS (protocol IEC 61580). The existing system of protection is of SIEMENS make suitable for double bus arrangement.**	NOS	2
9	**AC System : Outdoor Type, Sub Station Swithyard Console Boxes, HDG type (86 micron), 3 mm thick CRCA, (BMK,AC CONSOLE & OTHER MB) as per TS.**		
9.1	Bay Marshalling Kiosk	SET	2

Quantity for composite Nature(Supply and errection /installation both)			
SL. No.	**DESCRIPTION OF ITEMS Composite Nature of work (Supply and Errection / installation)**	**UOM**	**Qty**
1	**HARDWARES & FITTINGS/SPACERS/CLAMP & CONNECTORS FOR FOLLOWING ARRANGEMENT:** 1. 33KV connections shall be with single ACSR Moose. 2. Single Isolators without ES shall be installed on the DP structure with its Mechanism box DP mounted near the ground and Cables from GIS shall be terminated at the Isolators with suitable connectors. 3. Cable from the 33KV GIS shall be terminated at the isolators mounted on DP structures for Feeders. 4. The harware fittings shall be according the existing Bay structures. 5. The clamps & connectors shall be as per the existing Bay structures. 6. **The qty of hardware fittings, clamps & connectors, Conductors and Insulators shall be as per the approved drawing.**		
1.1	Clamps & Connectors, Spacers etc Supply and fixing as requirement	Lot	2
2	**SUBSTATION EARTHING SYSTEMS**: Substation earth mat Design, engineering, supply(except the GI Flats, only erection) inclusive of corrosion protection measures,laying of earth mat conductors of Hot dip galvanised flats of size 75X10 mm to the approval of Engineer in charge, excavation, welding/jointing of ground conductors along with risers (a) upto Finished level from the mat size 75X10 mm & b) from the finished ground level to the top of the structure and equipment shall be with 75X10 or 50X6 mm GI Flats as per the standard practice, with back filling and good compaction,perforated 50 mm Heavy duty GI pipes for treated earth pits (with details of treatment as per IS). The spacing between the earth conductor not more than 5 mtrs(both way) and to be buried at depth of 700mm from the finished ground level. For provision of treated earth pit and refer the specification for designing(only bentonite soil shall be used for the treatment). Provision of water taps inside the switch yard areas and peripheral treated earth pit are required to be provided for watering the treated earth pits. The no. of treated are to be done as per the practice and as indicated in the drawing for different equipments. This is as per approved drawing and specification.Provision water taps to each pit (supply ,laying of different size PVC water pipe of ISI mark,other materials like bends,T joints,elbow,taps for control,Valves and main water pipe line from the water overhead tank etc		
2.1	EARTHING CONDUCTOR FOR BURRIAL : 75X10 mm GI Flat for laying with supply of GI Flat	Mtrs	100
2.2	EARTHING CONDUCTOR; 50X6 mm Gl Flat for Raiser from the burial earth mat to equipment, structure, building lightning protection etc) with supply of GI Flat	Mtrs	500

2.3	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty Gl PERFORATED PIPE 3 mtrs long for treated earth pit) with supply of GI Pipe as well as earthpit chamber with cover slab	NOS	12
3	Supply and errection of UPVC Pipes (2", 1.5", 1" & 1/2" etc), Joints, bends, Valves and all accessories for spreading the water network to each treated earth pit as per approved drawing.	LS	2
4.1	250mm dia PVC Pipe Supply and fitting with bends and other acessories	MTRS	40
4.2	110mm dia PVCPipe and fitting with bends and other acessories	MTRS	130
4.3	50mm dia PVC Pipe and fitting with bends and other acessories	Mtrs	50
5	**AIRCONDITIONING:** Supply and Installation of 2T capacity Split Air Conditioning as per Technical specification Also includes supply of all other additional accessories such as copper tubes, copper cable, steel brackets for holding outdoor units and other accessories necessary for completion of the AC system.		
5.1	AC for CRB cum GIS & Relay Panel room of GIS Hall	Nos	4
6	**FIRE FIGHTING SYSTEM(PORTABLE /TROLLEY/ WHEEL MOUNTED FIRE EXTINGUSHERS SETS FOR CONTROL ROOM, EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC (Supply and Fixing)**		
6.1	FOAM TYPE-9 LTRS	NOS	2
6.2	Co_2- 4.5 KGS	NOS	2
6.3	CO_2 - 9 KGS	NOS	2
7.	4.5KG DCP TYPE	NOS	2
8	BEST QUALITY & APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size(Supply and Fixing)	NOS	10

Quantity of Civil work			
SL. No.	**Civil Works(Description)**	**UOM**	**Qty**
1	**Excavation for following type of soil and rocks (including shoring where required) and back filling (back filling shall be done in layers of 500mm sprinkling of water and compaction thereafter and disposed of excess quantity of excavated soil at suitable place after back filling), including supply of sand, all T&P, labour as required as per instruction of Engineer Incharge.**		
1.1	Dence Compact- Soil	Cum	4.1
2	Open cast foundation for the above column/equipment/marshalling box foundations with **RCC: 1:1.5:3 (Grade M-20)**, including supply of Labour all materials like cement, coarse and fine aggregates, shuttering, proper curing of the foundations/concrete and T&P in line with the Techinical Specification and as per direction of Engineer in Charge. (without cost of steel)	Cum	4.1
2.1	Breaking of existing concrete road/foundation for replacement/ renovation work, clearing of debris from switch yard as per the instruction of Engineer in-charge (including supply of T & P, Labour etc. necessary for the work)	cum	25.45
3	**Cable Trenches: Design, engineering, and construction of RCC cable trenches** engineering, and construction of RCC cable trenches and all associated works for cable trench and cable trench crossings as per technical specifications and approved drawings and as per direction of the Engineer in Charge. (1) This also includes excavation in all types of soil or rocks,back filling and disposal of excess earth as per the direction of Engineer In charge. (2) Design, Engineering, Providing and laying of plain cement concrete (PCC 1:3:6) of grade M10 with approved quality coarse aggregates (Nominal size 12mm to 20mm) , fine aggregates, cement in cable trench as blind layer inclusive of labour charges for concrete mixing & curing. This includes supply of all labourers, T&P and dewatering wherever required as per Technical specification and instruction of Engineer In charge. (3) Open cast foundation for the cable trench with RCC: 1:1.5:3 (Grade M-20 Nominal mixing), including supply of Labour all materials like MS Rod, Cement, coarse and fine aggregates, shuttering, cutting, bending, binding of M.S.Rod including supply of binding wire proper curing of the foundations/concrete and T&P in line with the Specification and as per direction of Engineer in Charge.(4) Fly ash Brickwork with fly ash Brick, plastering (1:6 Ratio) & curing, wherever required including the supply of labour, material, cement, etc. (5) Precast of RCC covers (1:1.5:3) with MS sheet(2mm) frame and its fixing on the cable trench as per spec and instruction of Engg. In Charge.(6) All the RCC cover slabs shall have the lifting hooks. The slabs without the MS sheet frame and Lifting hooks shall not be accepted.	Mtr	124

3.1	**Metal Spreading**: Providing supplying and laying two layers of machine crushed metals (gravel) fill, the first layer after compaction shall make minimum 50 mm thickness coarse/ layer of **20 mm nominal size** metals consolidated/ compacted and (by using roller as specified in the specification).A final layer of 50 mm thickness of machine crushed 20 mm nominal size of metals(gravel) above the first layer of 50 mm thickness and as per the technical specification and instruction of Engineer in charge above the PCC(1:3:6). The total compacted thickness of the metals(20 mm Nominal) 100mm above the PCC.	CUM	4.42
3.2	**COLOUR CODING, BAY MARKING Etc**: Design, engineering, procurement of labour, material including all associated works for the followings. This should be as per direction of site In charge. a)Color coding (Red,Yellow & Blue) for equipments,Bus gantry &column of entire switch yard. Good quality weather proof sticker (fluorescent type) may be used for identification. b)Each bay should be identified with the help of bay marker sign board, suitably grouted. Stainless Steel sign board with stand to be installed. Proper painting and lettering to be done of the entire switch yard area as per the instruction of the Engineer-in-Charge.	Lot	2