

**ODISHA POWER TRANSMISSION CORPORATION LIMITED**

**NAME OF THE WORK:-Design, Supply and Installation of 2X500 MVA ICT for Out Door Type,400/220 KV GIS Grid Sub-station at (Ramkrushnapur),Bhadrak.in Odisha State of India under PACKAGE-3 Under Japan International Cooperation Agency (JICA)'s ODA Loan.**

**Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/03 /18-19]- Reference Identification No: [OPTCL/JICA/PKG-3]**

**Schedule No. 1. Plant Supplied from Abroad (Sub-station )**

**NAME OF THE BIDDER**

SL. NO.	SUPPLY OF FOLLOWING EQUIPMENTS (As per Technical Specification)	Code <sup>1</sup>	UNIT	Quantity for: Construction of 2x500 MVA 400/220/33 GIS S/S at Ramkrushnapur Out Door type GIS S/S (New)	Unit Price <sup>2</sup>		Total Price <sup>2</sup>
					In Foreign Currency	CIP	
				(1)	(2)	(3)	(1) x (3)
1	3150A, 63kA for 3s, one and half Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement. 420kV OUTDOOR GIS EQUIPMENT as per latest IEC standard & type tested equipment as per technical specification, with open future proof & flexible system in line with IEC 61850 & IEC 62271-203.						

1.1	420kV,3150A, 63KA for 3 sec (Busbar, CB, Disconnecter, Grounding switch, CT & PT), SF6 gas insulated Complete Diameter module (2 Nos Feeder) each comprising of SF6 gas insulated Single Pole Circuit Breaker (3 Sets) with CSD (Control Switching Device), Single Phase Current Transformer (18 Nos), Single Phase Potential Transformer (4 Winding) (6 Nos), Motorised 3 Phase Disconnecter (6 Sets), Motorised safety Grounding switch (8 Nos), Motorised 3 Phase Disconnecter with high speed fault making Motorised Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system for complete diameter, SF6 bus duct termination arrangement, online PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent,Limit Switch, SF6 Gas, etc. to complete diameter module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	3			
1.2	420kV,3150A, 63KA for 3 sec (Busbar, Disconnecter, Grounding Switch & Bus PT), 3 Phase Isolated, SF6 gas insulated, metal enclosed busbars Complete Diameter module (2 Nos BUS-PT) in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker diameter module. Each busbar set shall be complete with Potential Transformer (4 Winding), Motorised 3 Phase Disconnecter (1 No), Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system online PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete diameter module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	1			
1.3	420kV, 3150A, 63kA, 3 Sec, Single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints, accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) etc. as per the technical specification.		RM	900			

1.4	420kV, 3150A, 63kA, SF6/Air BUSHING (Bushing shall be of Polymer / composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure.		No	18			
1.5	Online continuous Partial Discharge Monitoring System (PDM): 420kV GIS equipment system shall have Online continuous Partial Discharge Monitoring System (PDM) system to provide an automatic facility for the simultaneous collection of PD data at multiple points on the GIS & its associated GIB ducts and Voltage Transformers adopting UHF technique & the data stored shall provide a historical record of the progress of PD sources and shall identify the areas of maximum activity. PDM system shall be interfacing with UHF PD couplers provided. The PD Monitoring PC Work Station along with all accessories shall be considered. Power supply to PDM PC shall have protection against surges, overload and short circuit. A dedicated on-line UPS system shall also be provided as a backup during supply interruption, to ensure trouble-free & reliable running of the PDM System for a minimum of 15 minutes duration.		Set	1			
2	<b>3150A, 50kA for 3s, Double Busbar Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement. 245kV OUTDOOR GIS EQUIPMENT as per latest IEC standard &amp; type tested equipment as per technical specification, with open future proof &amp; flexible system in line with IEC 61850 &amp; IEC 62271-203.</b>						
2.1	245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnecter, Grounding Switch & CT), SF6 gas insulated ICT Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised Busbar 3 Phase Disconnecter (2 Nos), Motorised Disconnecter (1 No), Motorised safety Grounding switch (3 Nos), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete ICT Feeder Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	3			

2.2	<p>245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnecter, Grounding switch, CT &amp; PT), SF6 gas insulated Line Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Single phase Line Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Busbar Disconnecter (2 Nos), Motorised safety Grounding switch (2 Nos), Motorised 3 Phase Disconnecter with high speed fault making Motorised Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring &amp; gaskets, Nuts, Bolts &amp; Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Line Feeder Bay Module &amp; its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.</p>		Set	4			
2.3	<p>245kV, 3150A, 50kA for 3 sec (Busbars, Disconnecter, Grounding switch &amp; bus PT), 1 Phase Isolated Bus-PT Bay Module comprising of SF6 gas insulated metal enclosed busbars each enclosed in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker bay module. Each busbar set shall be complete with Single phase bus Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Disconnecter (1 No), Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring &amp; gaskets, Nuts, Bolts &amp; Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete the bus &amp; its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.</p>		Set	1			

2.4	245kV, 3150A, 50kA for 3 sec (CB, Disconnecter, Grounding switch & CT), SF6 gas insulated Bus Coupler Bay Module comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised 3 Phase Disconnecter (2 Nos), Motorised safety Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system, PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Bus Coupler Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		Set	1			
2.5	245kV, 3150A, 50 kA, 3 sec, single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints, accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.		RM	1000			
2.6	245kV, 3150A, 50kA SF6/Air BUSHING (Bushing shall be of Polymer / composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure.		No	21			
2.7	Portable Partial Discharge Monitoring System (PDM): 245kV system shall have Portable Partial Discharge Monitoring System (PDM) & shall be capable for measuring PD in charged GIS environment, bandwidth in order of 100MHz–2GHz & provision to select a wide range of intermediate bandwidths and the principle of operation shall be based on UHF principle of detection. The Detection and measurement of PD and bouncing particles having in built large coloured LCD for displaying and storing facility in the instrument for further analysis to locate actual source of PD such as free conducting particles, floating components, voids in spacers, particle on spacer surfaces etc.		Set	1			
3.1	420 KV, 3150 A, 63 KA, Center break ISOLATORS WITH EARTH SWITCH		Nos	4			
3.2	420KV 1 phase Solid core bus post insulator (AIS) as per technical specification.		NOS	6			
3.3	245 KV, 2000A, 40KA, Center break ISOLATORS WITH EARTH SWITCH		NOS	4			

3.4	245KV 1 phase Solid core bus post insulator (AIS) as per technical specification.		NOS	6			
3.5	400KV metal oxide surge arrester, 20 KA , Long duration discharge class IV , 12KJ/KV at 336KV as per technical specification.		NOS	18			
3.6	216KV metal oxide surge arrester, 10KA Long duration discharge class III , 10 KJ/KV at 216KV as per technical specification.		NOS	21			
3.7	30 KV, METAL OXIDE SURGE ARRESTOR, 10kA, Long duration discharge class III (AIS) as per technical specification.		NOS	9			
3.8	36 KV ,1250A, 31.5 KA for 1 sec, isolator (single isolator with earth switch) including post insulators as per technical specification		SET	2			
4	<b>36KV GIS equipment</b>						
4.1	36KV, 1250A, <b>31.5kA</b> for 3 sec, SF6 gas insulated <b>transformer</b> bay module each comprising of SF6 gas insulated <b>Vacuum</b> circuit breaker , current transformer , bus-bar disconnectors with common grounding switch , SF6 gas monitoring system for complete bay (having 33 KV Bus Bar of 2000 Amp) to complete transformer bay module suitable for cable connection to transformer.		SET	3			
4.2	36KV, 1250A , <b>31.5kA</b> for 3 sec, (33 KV Bus Bar 2000 Amp) SF6 gas insulated bus-coupler bay module comprising of SF6 gas insulated <b>vacuum</b> circuit breaker , current transformer , disconnector switches & bus bars each enclosed in bus enclosures running along the length of the switch gear to inter-connect each of circuit breaker bay module. Each busbar set shall be complete with potential transformer , disconnectors, SF6 gas monitoring system for the complete bus etc		Nos	1			
4.3	<b>XLPE Power Copper conductor cable for the GIS system (36 KV class) and cable termination kit for Indoor &amp; outdoor</b>						
4.3.1	36 KV XLPE 630 SQ. MM single core copper Cable as per tech spec (for connectivity from 33 KV side of 220/33 KV Transformer to 33 KV GIS panel)		Mtr	600			
4.3.2	33KV CABLE 300 SQ. MM single core copper as per tech spec (for 33 KV connectivity from GIS equipment to Station Transformer (two nos station trafo) & outgoing feeders upto DP structure end)		Mtr	1500			
4.3.3	36KV Indoor type termination kits (GIS side) suitable for 1CX <b>630 sq. mm</b>		NOS	3			
4.3.4	36 kV Outdoor type termination Kits (33 KV Transformer side) suitable for 1CX <b>630 sq. mm</b>		NOS	3			
4.3.5	36 kV Indoor type termination Kits (GIS side) suitable for 1CX <b>300 Sq.mm</b>		NOS	6			
4.3.6	36 kV Outdoor type termination Kits (33 KV Station Transformer side) suitable for 1CX <b>300 Sq.mm</b>		NOS	6			
4.4	36 KV Bus Post Insulator as per technical specification		Nos	9			

4.5	All type of Terminal clamp & connectors suitable for 36 KV, 1250 A for station transformers.		LOT	1			
4.6	All types of HARDWARES & FITTINGS/SPACERS/CLAMPS & CONNECTORS FOR 400KV SIDE OF THE GIS S/S.		Lot	1			
4.7	400 KV LA Clamp as per TS		Set	18			
4.8	400 KV SI Clamp as per TS		Set	4			
4.9	All types of HARDWARES & FITTINGS/SPACERS/CLAMPS & CONNECTORS FOR 220 KV SIDE OF THE GIS S/S.		Lot	1			
4.10	220 KV LA Clamp as per TS		Set	18			
4.11	220 KV SI Clamp as per TS		Set	4			
4.12	<b>SUBSTATION EARTHING SYSTEMS</b>						
4.12.1	EARTHING CONDUCTOR FOR BURRIAL :75x12mm for laying as main earth mat (spacing maximum 5m both way)		MT	120			
4.12.2	EARTHING CONDUCTOR: 75X 10 mm GI (HDG) Flat for Raiser from the burial earth mat to equipment,structure etc)		MT	20			
4.12.3	EARTHING CONDUCTOR: 50X6mm GI (HDG) Flat for Raiser for console box,LT panels,DC panels,Marshalling boxes etc)		MT	10			
4.12.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit)		Nos	180			
4.12.5	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3		Nos	170			
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.						
5.1	G.I Cable Trays(size: 450x75x2500mm)		MTRS	4500			
5.2	G.I Cable Trays(size: 300x75x2500mm)		MTRS	4500			
5.3	G.I Cable Trays(size: 150x75x2500mm)		MTRS	1800			
5.4	Support G. I angle 50x50x6 mm for cable tray		MT	6			
6	SWITCH YARD AC CONSOLE FOR LIGHTING (01 nos each on 400KV side & 220 kv side and other area ) as per Technical Specification.		NOS	3			
7	SWITCH YARD RECEPTACLE BOARD FOR TFR OIL FILTERATION (01 no. near 400/220KV ICT) as per Technical Specification.		NOS	1			
8	SWITCH YARD RECEPTACLE BOARD FOR WELDING & OTHER EMERGENCY as per Technical Specification.		NOS	2			
9	HDG SWITCH YARD STRUCTURES (INCLUDING FOUNDATION BOLTS) FOR 400Kv & 220KV CLASS						
9.1	DIFFERENT TYPES OF LATTICE TYPE COLUMNS & DIFFERENT TYPE OF BEAMS AND LIGHTING CUM LIGHTNING MAST						
9.1.1	TOTAL WEIGHT OF COLUMN & BEAM		MT	157			

9.2	DIFFERENT TYPE OF SUPPORT STRUCTURES (HDG) OF PIPE TYPE FOR ALL 400KV, 220KV & 33 KV EQUIPMENT INCLUDING HIGH LEVEL SA NEAR TRANSFORMER.						
9.2.1	TOTAL WEIGHT OF PIPE TYPE SUPPORT STRUCTURE FOR ABOVE EQUIPMENT		MT	75			
9.2.2	40 Mtrs heigh Monopole (HDG) Lighting cum Lightning Mast including LED lighting fixtures ( <b>240 watts each minimum 8 Nos.</b> ) with control gear panel etc suitable for wind zone-V , with all other accessories like motor for hoisting/lowering the lighting platform & other switchgear and lighting control panel including required cable(copper) & other accessories etc.		Nos	3			
10	Total weight of different type of GI Nuts and bolts for the above structures		MT	11.60			
11	<b>GENERAL EQUIPMENT &amp; SUBSTATION ACCESSORIES</b>						
11.1	<b>POWER CABLES,1.1KV,XLPE &amp; PVC FRLS ,FLAT STRIP ARMOURED, ALUMINIUM CONDUCTOR (As per Specification)</b>						
11.1.1	XLPE-3.5 CX185 mm2		Mtrs	500			
11.1.2	XLPE-3.5 CX120 mm2		Mtrs	500			
11.1.3	PVC-3.5 CX70 mm2		Mtrs	250			
11.1.4	PVC-3.5 CX35 mm2		Mtrs	500			
11.1.5	PVC-4 CX 16 mm2		Mtrs	1000			
11.1.6	PVC-4 CX 6 mm2		Mtrs	1000			
11.1.7	PVC-2CX 6 mm2		Mtrs	2000			
11.2	<b>CONTROL CABLES,1.1 KV,PVC FRLS , COPPER STRANDED ARMOURED STRANDED(As per specification).</b>						
11.2.1	4 CX 2.5 mm2		Mtrs	6000			
11.2.2	5 CX 2.5 mm2		Mtrs	4000			
11.2.3	7CX 2.5 mm2		Mtrs	5000			
11.2.4	10 CX 2.5 mm2		Mtrs	10000			
11.2.5	12 CX 2.5 mm2		Mtrs	5000			
11.2.6	16 CX 2.5 mm2		Mtrs	5000			
11.2.7	19 CX 2.5 mm2		Mtrs	3000			
11.2.8	1CX 120 mm2 BAT TO BAT CHARGER & CHARGER TO DCDB		Mtrs	300			
12	HARD CONDUIT INCLUDING of adequate tensile strength minimum 7kg/sqmm or better & ITS ACCESSORIES LIKE ALL TYPE OF SOCKETS & BENDS FOR TAKING CABLE FROM TRENCH TO EQUIPMENT MB etc		LOT	1			
13	<b>ACCESSORIES FOR PLCC SYSTEM With OPGW cable</b>						
13.1	48 Fibre Optic Approach cable along with HDPE Pipes		KM	1.00			
13.2	Optical line Terminal Equipment(OLTE) -STM4 type SDH equipment with integrated MUX & tributary cards for speech & data ports for interfacing of Speech & data which should be compatible with existing OPTCL system		No	1			



13.3	Digital Teleprotection Equipment and accessories to be suitable for interfacing with SDH MUX		No	1			
13.4	Supply of FODP(Fibre Optic Distribution Panel)48 F: Indoor type,rack mounted with FCPC coupling and pig tails(DW Sm Fibre)		No	2			
13.5	48 V, 300 AH, maintenance free VRLA Battery set.		Set	1			
13.6	SMPS based Battery Charger of 75A suitable for 48V VRLA Battery set		No	1			
13.7	2.5 sq. mm muti strand 2 core control cable(power supply,Transducer/MFT PT supply)		Metre	600			
13.8	2.5 sq. mm multi strand 4 core control cable(Transducer/MFT CT supply)		Metre	600			
13.9	1.5 sq. mm multi strand 10 core control cable(Digital Input)		Metre	500			
13.10	10 sq. mm 2 core multi strand control cable(Battery)		Metre	300			
13.11	48V DCDB		Set	1			
13.12	Earth Flat, Cable Tray, Telephone cable,Foundation rail, Junction Box,.		Set	1			
14	<b>SUPPLY OF STATION TRANSFORMER &amp; OTHER MATERIALS FOR MEETING THE AUXILIARY SUPPLY OF THE SUB-STATION AS PER TECHNICAL SPECIFICATION</b>						
14.1	STATION TRANSFORMER 33KV/0.43 V,500 KVA (Confirming to Energy Efficiency Level 2 -AS PER SPECIFICATION & relevant IS)		NOS	2			

14.2	<p><b>One no. 4 pole structure (HDG Type) alongwith other equipment &amp; materials for two nos station transformers:</b></p> <p>1.4 Pole structure (using 200X100 mm RS Joist)</p> <p>2. Channel &amp; Angle FOR BRACING OF, CHANNEL for the SA &amp; Isolator &amp; HG fuse etc.</p> <p>3. 90 KN Disc/composite long rod Insulators for 33 KV (48 nos./12 sets) for bus, Bus stringing using ACSR moose conductor &amp; tension hardwares,other clamps &amp; connectors etc as per requirement.</p> <p>4. 2sets of 33 KV Isolator (800 AMP) for 33 KV side of station trafo.</p> <p>5. 2sets of 33 KV HG FUSE.</p> <p>6. 125 Sq mm AAAC conductor suitable for connection between HG fuse &amp; station transformer bushing.</p> <p>7. 2 sets of LT OUT DOOR KIOSK MADE OUT OF 3mm CRCA sheet GI MARSHALLING BOX suitable for outdoor mounting. The bus bar suitable for 1000 AMP shall be arranged in the out door kiosk and other Facility like two sets of 400 Amps MCCB for incoming &amp; outgoing with required sizes of terminal studs for power cable termination &amp; any other accessories required.</p> <p>All materials shall be As per relevant latest IS &amp; as per the direction of Engg. in charge</p>		SET	2			
15	<b>SUB STATION LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS )(Switch yard and other street area)(Including provision of the fittings on the LM)</b>						
15.1	SUB-STATION SWITCH YARD LIGHTING,IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/ any other approved make of OPTCL) with switch gear,GI Conduit etc.(Lighting fixtures are to be fixed rigidly on the Column at a suitable height so that the required lux can be achieved).(150 watt each)		SET	60			
16	<b>STREET LIGHTING: IT INCLUDES SUPPLY OF GI TUBULAR POLE AS PER TECHNICAL SPECIFICATION, LED LIGHTING FIXTURES including LAMPS of reputed make (Philips/CGL/Bajaj).(100 watt each) for Street Light. (TO BE PROVIDED IN THE SWITCH YARD, ALONG THE ROADS (APPROACH INSIDE YARD AND OTHER ROADS).</b>						
16.1	LED LIGHTING FIXTURES including LAMPS of reputed make (Philips/CGL/Bajaj/ any other approved make of OPTCL).(100 watt each) for Street Light.		SET	60			

16.2	GI Tubular Pole: (410-SP-24: IS 2713-Part-II-1980 or latest) Length of pole 8.5 mtrs(minimum weight 158 Kgs). (ALL THE STREET LIGHT POLE SHALL BE OF GI TUBULAR POLE AND PROVISION OF A GI JUNCTION BOX WITH SUITABLE COVERS AT A HEIGHT OF 1 METRE FROM THE GROUND. THE JUNCTION BOX SHALL HAVE PROVISION OF FUSES, BUSES, CONNECTORS FOR CABLE IN AND OUT.		SET	60			
16.3	OUTDOOR KIOSK of 3 mm thick CRCA sheet duly hot dip galvanised FOR STREET LIGHT HAVING 2 NOS 200 AMP SWITCH FUSE UNITS AND 10 NOS. OUT LETS OF 32 AMP MCB.		NO	2			
17	<b>INDOOR LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS ) (GIS, Control room building,Store shed,store room,Security room cum Visitors room and other area)</b>						
17.1	CONTROL ROOM BUILDING INDOOR LIGHTING, IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/ other approved make of OPTCL) with switch gear,Conduit & other required materials for succesful illumination of the area/rooms.( No. of LED Lighting fixtures are to be calculated based on the illumination design considering the required lux level indicated in the technical spec & fixing of the same rigidly on the suitable height either ceiling & wall as required.)		LOT	1			
17.2	INDOOR LIGHTING OF SECURITY SHED CUM VISITORS ROOM,PUMP HOUSE,STORE SHED,STORE ROOM, FFPH BUILDING: IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/ other approved make of OPTCL) with switch gear,Conduit & other required materials for succesful illumination of the area/rooms.( No. of LED Lighting fixtures are to be calculated based on the illumination design considering the required lux level indicated in the technical spec & fixing of the same rigidly on the suitable height either ceiling & wall as required.)		LOT	1			
17.3	2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF 5 star rated AIR CONDITIONERS, Automatic Voltage Stabiliser,CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION ) FOR CONTROL ROOM, CARRIER ROOM & CONFERENCE ROOM.,OFFICE ROOM etc which includes all type of cables & wires and a main control switch gear kiosk having sufficient outlet for each air conditioner unit.		Nos.	20			

17.4	<p><b>Supply of Smoke &amp; Heat detection system:</b> Addressable optical Smoke &amp; Heat Multi detector (adequate Nos) for <b>33KV GIS cum control room building</b> including all accessories, the Main control panel (Microprocessor based 2 loop fire alarm control panel expandable upto 18 loops fully networkable with each loop capable of taking 99 devices, 8 line x 40 character alpha- numeric liquid crystal display .The panel shall be soft addressable type . The panel shall be able to give pin point location of all fire/fault conditions. Further, the panel must be able to automatically switch off respective control switches when ever any alarm is triggered. The panel shall have in built rectifier, Loop cards,provision for external &amp; internal printer(if required), L C D unit to indicate Fire/Fault Signal with address and analog output, built in printer to log all fire or fault events complete in all respects, integral SMF lead acid batteries with sealed cells of 24 V capable of running for a minimum of 8 hours with integral battery charger complete as required and as per specification. The fire alarm panel shall be suitable for software integration with BMS &amp; PA system ,wall mounting loop powered addressable type hooter with all accessories , addressable manual call box made of polycarbonate with plastic break glass front and complete with monitor module MCB, addressable isolator module with required PVC box, fittings and fixtures, wiring with PVC FRLS wire to cover the required for fire &amp; smoke detection etc. (One control room building is to be provided with Heat &amp; smoke detection). Should have facility for integration with SAS.</p>		SET	1			
18	FIRE FIGHTING SYSTEM(PORTABLE /TROLLEY/ WHEEL MOUNTED FIRE EXTINGUISHERS SETS FOR CONTROL ROOM,EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC(REFER TS-VOL-IIA-SCOPE OF WORK AT SL NO. 15- ANNEXURE - I)						
18.1	FOAM TYPE-9 LTRS		NOS	4			
18.2	DRY CHEMICAL POWDER(TROLLEY MOUNTED)- 22.5 KGS		NOS	6			
18.3	DRY POWDER TYPE - 5 KGS		NOS	6			
18.4	CO2 - 4.5 KGS		NOS	10			
18.5	CO2 - 9 KGS		NOS	10			
18.6	CO2 (TROLLY MOUNTED)- 22.5 KGS		NOS	4			
18.7	9 litre water type		Nos.	4			
18.8	4.5 kg DCP type		Nos.	4			
18.9	50 Litres Mechanical Foam type		Nos.	2			
18.10	FIRE BUCKET (6 NOS IN EACH STAND) WITH STAND		SET	5			

19	<b>SUBSTATION AUTOMATION SYSTEM FOR 400/220 KV SUBSTATION ON PRP MODE:</b> Design , engineering , drawing, supervision, installation , testing & commissioning of Substation Automation system alongwith Supply of the following 400,220,and 33 kV level of protection panels consisting of Bay control Units & numerical protection relays and other auxilliary relays suitable for SAS as per technical specification. NOTE: All protective relays & BCU shall be numerical type.						
19.1	Yard AC Kiosk :5000 mm (L)x4000mm (W)x 3300mm (H) with AC, <b>as per the Specification;</b>		Nos.	4			
19.2	Gate way panel for Sub-Station Automation (in PRP as per the specification & indicative drg ) system (for All 400 , 220 & 33 KV side bays including the future bays),other accessories (comprising servers, engg. Station, works station (Main & standby), Remote station control, Colour Laser jet Printers & dot matrix printer for local station as per requirement and also for remote station, Ethernet Switches , LIU, Red Box, Multimode glass fibre Double jacket armoured optical cables, special cables like F.O patch cord & armoured FO cables of adequate length etc required for the system in all respect as per latest IEC 61850 standard, Inverters of required capacity & rating (3KVA-Input shall be both A.C & D.C and output shall be A.C) etc as per TS. A Full HD LED screen of 70 inches for display including all type of accessories & as per technical specification.		SET	1			
19.3	BCU for Substation Auxilliary System (Datas for monitoring of Station AC, Station DC, Lighting, Fire fighting, Air conditioning, Diesel generator etc. as per the site requirement)		SET	1			
19.4	GPS System with PTP, IRIG-B, SNTP		SET	1			
19.5	<b>400 KV SIDE PROTECTION &amp; OTHER PANELS as per Technical specification.</b>						
19.5.1	FEEDER PROTECTION PANEL (MAIN-I , MAIN-II & BACK-UP PROTECTION WITH AUTO RECLOSURE DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system.		NOS	4			
19.5.2	TRANSFORMER PROTECTION PANEL (DIFFERENTIAL I & II , REF I & II & BACK-UP PROTECTION for HV & IV side CONSIDERING HV ,IV & LV side for 500 MVA 400/220/33 KV ICT) with Bay control units (BCU) for substation automation system.		SET	2			
19.5.3	TIE BREAKER PROTECTION PANEL with Bay control unit (BCU) for substation automation system.		NOS	3			
19.5.4	BUS-BAR PROTECTION PANEL ( Including Provision of bus bar modules for the future bays and to be integrated with the Automation system)		NOS	1			
19.6	<b>220 KV SIDE PROTECTION &amp; OTHER PANELS</b>						
19.6.1	FEEDER PROTECTION PANEL (MAIN-I , MAIN-II & BACK-UP PROTECTION WITH AUTO RECLOSURE DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system.		NOS	4			

19.6.2	TRANSFORMER PROTECTION PANEL (DIFFERENTIAL I & II , REF I & II & BACK-UP PROTECTION for HV & LV side CONSIDERING HV & LV side for 40 MVA220/33 KV Power Trnsformer) with Bay control units		NOS	1			
19.6.3	BUS COUPLER PROTECTION PANEL with Bay control unit (BCU) for substation automation system.		NOS	1			
19.6.4	BUS-BAR PROTECTION PANEL ( Provision of bus bar modules for the future bays and to be integrated with the Automation system)		NOS	1			
19.7	<b>33 KV SIDE PROTECTION PANELS</b>						
19.7.1	33 KV BUS COUPLER PROTECTION Panel with Bay control protection unit (BCPU) with with all other relays & component required for complete protection,control etc as per TS and also suitable for substation automation system.		No	1			
19.7.2	STATION TRANSFORMER PROTECTION PANEL (BACK-UP PROTECTION CONSIDERING 2X500 KVA 33/0.43 KV ) with Bay control protection units (BCPU) with with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system. [2nos. Feeder bays in one panel]		SET	1			
20	<b>AC &amp; DC SYSTEM</b>						
20.1	<b>AC SYSTEM</b>						
20.1.1	MAIN AC DB,(HAVING A 1600 A,50KA,DRAWOUT TYPE ACB WITH 3 O/C,E/F,U/V RELAYING FACILITY and MECH& ELECT INTERLOCK FACILITY CONSIDERING Main-1,2 & DG INDOOR TYPE AS PER SPECIFICATION.(MAIN DB-1,MAIN DB-2 WITH B/C & PROVISION FOR D.G INCOMING)		SET	1			
20.1.2	ACDB (HAVING 800A MCCB) AS PER SPECIFICATION (AC DB-1,AC DB-2 WITH B/C)		SET	1			
20.1.3	MAIN LIGHTING DISTRIBUTION BOARD (HAVING 250A MCCB AS INCOMER)AS PER SPECIFICATION (WITH DB-1,DB-2 & B/C)		SET	1			
20.1.4	INDOOR LIGHTING DISTRIBUTION BOARD AS PER SPECIFICATION. (WITH DB-1,DB-2 & B/C)		SET	1			
20.1.5	EMERGENCY LIGHTING DISTRIBUTION BOARD		SET	1			
20.1.6	INDOOR RECEPTACLE BOARD		SET	2			
20.2	<b>DC SYSTEM</b>						
20.2.1	220 V DC BOARD (HAVING 100A DC MCCB AS INCOMER, E/F (EARTH LEAKAGE), UNDER & OVER VOLTAGE AS PER SPECIFICATION (DC DB-1,DC DB-2 & B/C). Consider separate source(DC1 & DC 2) to each panels & accordingly sufficient nos. of DC output from DB-1 & 2 to be considered.		SET	1			
20.2.2	220 V DC EMERGENCY DISTRIBUTION BOARD		SET	1			
20.2.3	BATTERY (645 AH PLANTE TYPE) for 220 V DC		SET	2			

20.2.4	BATTERY CHARGER FOR 645 AH, 220 V DC (FLOAT & FLOAT CUM BOOST) (including provision of series dropper diodes with heat sinks & other protection facility at the DC Load terminal end in order to feed 220 V to the load).		SET	2			
21	DE MINERALISED PLANT of 30 L/Hr FOR MAKING DISTILLED WATER FOR BATTERY BANKS		SET	1			
22	PORTABLE ALUMINIUM LADDER EXTENDABLE TYPE OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT INSIDE SWITCH YARD.(REFER TS-VOL-IIA-SCOPE OF WORK AT SL NO. 19)		NOS	2			
23	CARTWHEEL MOUNTED ALUMINIUM LADDER OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT .		NOS	1			
24	WATER COOLER WITH WATER PURIFIER (with R.O & ultra violet purification system of ISI mark) SYSTEM		NOS	1			
25	MAINTENANCE & TESTING EQUIPMENT (REFER TS-VOL-III of III-E25-TESTING INSTRUMENTS- Maintenance & Testing Equipment ANNEXURE-I & OTHER TOOLS AND PLANTS -ANNEXURE-II for 220/132/33KV S/S) INDICATED IN -SCHEDULE OF REQUIREMENTS OF MAINTENANCE EQUIPMENT).		LOT	1			
26	WALKIE TALKIE SET		SET /PAIR	2			
27	OFFICE FURNITURE (REFER TS-VOL-III of III-E25-TESTING INSTRUMENTS- SL NO. 16 - ANNEXURE - IIII for 220/132/33KV S/S) & PLACING IN CONTROL ROOM,CONFERENCE ROOM,OFFICE ROOMS,LIBRARY,TESTING LAB,etc.		LOT	1			
28	FIRE FIGHTING EQUIPMENT: (Main Pump, Jockey Pump, DG Set cum Pump, Control Panel for Fire Fighting System, switcyard equipment and buildings. HVW system & hydrant sytsem, complete with all piping, valves, fittings etc inside pump house for Fire protection sytem of substation) as per the technical spec.		LOT	1			
28.1	Hydrant sytsem, complete U/G piping of different sizes,vaves and accessories etc outside the Pump House for Fire protection sytem of 2 Nos 500 MVA ICT, switcyard equipment and buildings as per the technical spec.		LOT	1			
28.2	HVW Spray sytsem, Hydrant System and complete U/G and O/G piping,different type of valves,Fire sensor etc and accessories etc near the Transformer for Fire protection of 500 MVA, 400/220/33 KV ICT as per the technical spec.		LOT	1			
29	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size		Nos	45			
30	250 KVA outdoor type silent Generator with contro panel having adequate mechanical & electrical protection as per latest IS with Automatic Mains Failure feature as per Technical spec.		NOS	1			

31	220/33 KV 40 MVA Transformer as per Technical specification (inclusive of all costs towards type test charges, Mandatory spares, Spanners & Special tools, accessories, etc as specified in the Technical specification)		NOS	1			
32	400/220 KV 500 MVA ICT (inclusive of all costs towards type test charges, Mandatory spares, Spanners & Special tools, Oil storage tank, Nitrogen Injection system for protection against Fire & Explosion, On line insulating oil drying system , On line Dissolved Gas (Multi-gas) and Moisture Analyser, accessories, etc as specified in the Technical specification)		NOS	2			
33	<b>EQUIPMENT and MATERIALS for GIS</b>						
33.1	<b>ACCESSORIES</b>						
33.1.1	SF6 Gas handling plant of adequate capacity as per the Technical specification.		SET	1			
33.1.2	SF6 gas service cart with all accessories as per the Technical specification.		SET	1			
33.2	<b>TESTING EQUIPMENT</b>						
33.2.1	GIS testing equipment as per the Technical specification. (ANY SPECIAL TOOLS & TACKLES REQUIRED (except mentioned under item No. 34.3 below) FOR COMPLETE INSTALLATION OF THE 400 & 220 KV GAS INSULATED SWITCHGEAR (To be supplied on Non Returnable basis and shall not be taken back by the bidder)		SET	1			
34	<b>ESSENTIAL TOOLS and SPARES for GIS</b>						
34.1	<b>SPARES for 420KV GIS</b>						
34.1.1	Single phase voltage transformer		SET	1			
34.1.2	Single phase set of 5 cores current transformer including enclosure		SET	1			
34.1.3	Enclosure insulators and main circuit of busbar		SET	1			
34.1.4	Tripping and closing coils		SET	3			
34.1.5	SF6 Pressure gauges		SET	2			
34.1.6	SF6 Pressure relief devices		SET	2			
34.1.7	Auxiliary contacts for circuit breaker		SET	1			
34.1.8	Auxiliary contacts for DS and ES		SET	1			
34.1.9	SF6 gas in steel bottle 52 kg / bottle		NOS	2			
34.1.10	Spring charge motor for circuit breakers		UNIT	1			
34.1.11	Complete drive mechanism for disconnect switches and grounding switches		UNIT	1			
34.1.12	Motor for disconnect switches and grounding switches		UNIT	1			
34.1.13	Complete drive mechanism for fast acting grounding switches		UNIT	1			
34.1.14	Motor for fast acting grounding switches		UNIT	1			
34.1.15	Rupture disc for circuit breakers / potential transformer		NOS	1			
34.1.16	Set of spares for local control cabinet including M.C.B., fuses, time relays, auxiliary relays and terminals		SET	1			
34.1.17	Rupture disc for other compartments		NOS	2			
34.2	<b>SPARES for 245KV GIS</b>						
34.2.1	Single phase voltage transformer		SET	1			





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## ODISHA POWER TRANSMISSION CORPORATION LIMITED

**NAME OF THE WORK:-Design, Supply and Installation of 2X500 MVA ICT for Out Door Type,400/220 KV GIS Grid Sub-station at (Ramkrushnapur),Bhadrak.in Odisha State of India under PACKAGE-3 Under Japan International Cooperation Agency (JICA)'s ODA Loan.**

**Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/03 /18-19]- Reference Identification No: [OPTCL/JICA/PKG-3]**

**Schedule No. 2. Plant Supplied from Within the Employer's Country (Sub-station )**

### NAME OF THE BIDDER

SL. NO.	SUPPLY OF FOLLOWING EQUIPMENTS (As per Technical Specification)	UNIT	Quantity for: Construction of 2x500 MVA 400/220/33 GIS S/S at Ramkrushnapur Out Door type GIS S/S (New)	Unit Price <sup>1</sup>	Total Price <sup>1</sup>
			(1)	(2)	(1) x (3)
1	3150A, 63kA for 3s, one and half Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement. 420kV OUTDOOR GIS EQUIPMENT as per latest IEC standard & type tested equipment as per technical specification, with open future proof & flexible system in line with IEC 61850 & IEC 62271-203.				

1.1	<p>420kV,3150A, 63KA for 3 sec (Busbar, CB, Disconnecter, Grounding switch, CT &amp; PT), SF6 gas insulated Complete Diameter module (2 Nos Feeder) each comprising of SF6 gas insulated Single Pole Circuit Breaker (3 Sets) with CSD (Control Switching Device), Single Phase Current Transformer (18 Nos), Single Phase Potential Transformer (4 Winding) (6 Nos), Motorised 3 Phase Disconnecter (6 Sets), Motorised safety Grounding switch (8 Nos), Motorised 3 Phase Disconnecter with high speed fault making Motorised Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system for complete diameter, SF6 bus duct termination arrangement, online PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring &amp; gaskets, Nuts, Bolts &amp; Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete diameter module &amp; its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.</p>	Set	3		
1.2	<p>420kV,3150A, 63KA for 3 sec (Busbar, Disconnecter, Grounding Switch &amp; Bus PT), 3 Phase Isolated, SF6 gas insulated, metal enclosed busbars Complete Diameter module (2 Nos BUS-PT) in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker diameter module. Each busbar set shall be complete with Potential Transformer (4 Winding), Motorised 3 Phase Disconnecter (1 No), Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system online PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring &amp; gaskets, Nuts, Bolts &amp; Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete diameter module &amp; its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.</p>	Set	1		

1.3	420kV, 3150A, 63kA, 3 Sec, Single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints, accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) etc. as per the technical specification.	RM	900		
1.4	420kV, 3150A, 63kA, SF6/Air BUSHING (Bushing shall be of Polymer / composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure.	No	18		
1.5	Online continuous Partial Discharge Monitoring System (PDM): 420kV GIS equipment system shall have Online continuous Partial Discharge Monitoring System (PDM) system to provide an automatic facility for the simultaneous collection of PD data at multiple points on the GIS & its associated GIB ducts and Voltage Transformers adopting UHF technique & the data stored shall provide a historical record of the progress of PD sources and shall identify the areas of maximum activity. PDM system shall be interfacing with UHF PD couplers provided. The PD Monitoring PC Work Station along with all accessories shall be considered. Power supply to PDM PC shall have protection against surges, overload and short circuit. A dedicated on-line UPS system shall also be provided as a backup during supply interruption, to ensure trouble-free & reliable running of the PDM System for a minimum of 15 minutes duration.	Set	1		
2	<b>3150A, 50kA for 3s, Double Busbar Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement. 245kV OUTDOOR GIS EQUIPMENT as per latest IEC standard &amp; type tested equipment as per technical specification, with open future proof &amp; flexible system in line with IEC 61850 &amp; IEC 62271-203.</b>				

2.1	<p>245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnecter, Grounding Switch &amp; CT), SF6 gas insulated ICT Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised Busbar 3 Phase Disconnecter (2 Nos), Motorised Disconnecter (1 No), Motorised safety Grounding switch (3 Nos), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring &amp; gaskets, Nuts, Bolts &amp; Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete ICT Feeder Bay Module &amp; its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.</p>	Set	3		
2.2	<p>245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnecter, Grounding switch, CT &amp; PT), SF6 gas insulated Line Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Single phase Line Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Busbar Disconnecter (2 Nos), Motorised safety Grounding switch (2 Nos), Motorised 3 Phase Disconnecter with high speed fault making Motorised Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring &amp; gaskets, Nuts, Bolts &amp; Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Line Feeder Bay Module &amp; its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.</p>	Set	4		

2.3	245kV, 3150A, 50kA for 3 sec (Busbars, Disconnecter, Grounding switch & bus PT), 1 Phase Isolated Bus-PT Bay Module comprising of SF6 gas insulated metal enclosed busbars each enclosed in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker bay module. Each busbar set shall be complete with Single phase bus Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Disconnecter (1 No) , Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete the bus & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	1		
2.4	245kV, 3150A, 50kA for 3 sec (CB, Disconnecter, Grounding switch & CT), SF6 gas insulated Bus Coupler Bay Module comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised 3 Phase Disconnecter (2 Nos), Motorised safety Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system, PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Bus Coupler Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	1		
2.5	245kV, 3150A, 50 kA, 3 sec, single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints, accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	RM	1000		

2.6	245kV,3150A, 50kA SF6/Air BUSHING (Bushing shall be of Polymer / composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure.	No	21		
2.7	Portable Partial Discharge Monitoring System (PDM): 245kV system shall have Portable Partial Discharge Monitoring System (PDM) & shall be capable for measuring PD in charged GIS environment, bandwidth in order of 100MHz–2GHz & provision to select a wide range of intermediate bandwidths and the principle of operation shall be based on UHF principle of detection. The Detection and measurement of PD and bouncing particles having in built large coloured LCD for displaying and storing facility in the instrument for further analysis to locate actual source of PD such as free conducting particles, floating components, voids in spacers, particle on spacer surfaces etc.	Set	1		
3.1	420 KV, 3150 A, 63 KA, Center break ISOLATORS WITH EARTH SWITCH	Nos	4		
3.2	420KV 1 phase Solid core bus post insulator (AIS) as per technical specification.	NOS	6		
3.3	245 KV, 2000A, 40KA, Center break ISOLATORS WITH EARTH SWITCH	NOS	4		
3.4	245KV 1 phase Solid core bus post insulator (AIS) as per technical specification.	NOS	6		
3.5	400KV metal oxide surge arrester, 20 KA , Long duration discharge class IV , 12KJ/KV at 336KV as per technical specification.	NOS	18		
3.6	216KV metal oxide surge arrester, 10KA Long duration discharge class III , 10 KJ/KV at 216KV as per technical specification.	NOS	21		
3.7	30 KV, METAL OXIDE SURGE ARRESTOR, 10kA, Long duration discharge class III (AIS) as per technical specification.	NOS	9		
3.8	36 KV ,1250A, 31.5 KA for 1 sec, isolator (single isolator with earth switch) including post insulators as per technical specification	SET	2		
4	<b>36KV GIS equipment</b>				
4.1	36KV, 1250A, <b>31.5kA</b> for 3 sec, SF6 gas insulated <b>transformer</b> bay module each comprising of SF6 gas insulated <b>Vacuum</b> circuit breaker , current transformer , bus-bar disconnectors with common grounding switch , SF6 gas monitoring system for complete bay (having 33 KV Bus Bar of 2000 Amp) to complete transformer bay module suitable for cable connection to transformer.	SET	3		



4.2	36KV, 1250A , <b>31.5kA</b> for 3 sec, (33 KV Bus Bar 2000 Amp) SF6 gas insulated bus-coupler bay module comprising of SF6 gas insulated <b>vacuum</b> circuit breaker , current transformer , disconnector switches & bus bars each enclosed in bus enclosures running along the length of the switch gear to inter-connect each of circuit breaker bay module. Each busbar set shall be complete with potential transformer , disconnectors, SF6 gas monitoring system for the complete bus etc.	Nos	1		
4.3	<b>XLPE Power Copper conductor cable for the GIS system (36 KV class) and cable termination kit for Indoor &amp; outdoor</b>				
4.3.1	36 KV XLPE 630 SQ. MM single core copper Cable as per tech spec (for connectivity from 33 KV side of 220/33 KV Transformer to 33 KV GIS panel)	Mtr	600		
4.3.2	33KV CABLE 300 SQ. MM single core copper as per tech spec (for 33 KV connectivity from GIS equipment to Station Transformer (two nos station trafo) & outgoing feeders upto DP structure end)	Mtr	1500		
4.3.3	36KV Indoor type termination kits (GIS side) suitable for 1CX <b>630 sq. mm</b>	NOS	3		
4.3.4	36 KV Cable termination kit <b>including Cable to Air Bushing suitable for outdoor for 33 KV side of Transformer suitable for 1CX630 Sqmm copper cable.</b>	NOS	3		
4.3.5	36 kV Indoor type termination Kits (GIS side) suitable for 1CX <b>300 Sq.mm</b>	NOS	6		
4.3.6	33 KV Cable termination kit <b>including Cable to Air Bushing suitable for outdoor for 33 KV suitable for 1CX300 Sqmm copper cable.</b>	NOS	6		
4.4	36 KV Bus Post Insulator as per technical specification	Nos	9		
4.5	All type of Terminal clamp & connectors suitable for 36 KV, 1250 A for station transformers.	LOT	1		
4.6	All types of HARDWARES & FITTINGS/SPACERS/CLAMPS & CONNECTORS FOR 400KV SIDE OF THE GIS S/S.	Lot	1		
4.7	400 KV LA Clamp as per TS	Set	18		
4.8	400 KV SI Clamp as per TS	Set	4		
4.9	All types of HARDWARES & FITTINGS/SPACERS/CLAMPS & CONNECTORS FOR 220 KV SIDE OF THE GIS S/S.	Lot	1		
4.10	220 KV LA Clamp as per TS	Set	18		
4.11	220 KV SI Clamp as per TS	Set	4		
4.12	<b>SUBSTATION EARTHING SYSTEMS</b>				

4.12.1	EARTHING CONDUCTOR FOR BURRIAL :75x12mm for laying as main earth mat (spacing maximum 5m both way)	MT	120		
4.12.2	EARTHING CONDUCTOR: 75X 10 mm GI (HDG) Flat for Raiser from the burial earth mat to equipment,structure etc)	MT	20		
4.12.3	EARTHING CONDUCTOR: 50X6mm GI (HDG) Flat for Raiser for console box,LT panels,DC panels,Marshalling boxes etc)	MT	10		
4.12.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit)	Nos	180		
4.12.5	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3 mtrs long for non treated earth pit)	Nos	170		
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.				
5.1	G.I Cable Trays(size: 450x75x2500mm)	MTRS	4500		
5.2	G.I Cable Trays(size: 300x75x2500mm)	MTRS	4500		
5.3	G.I Cable Trays(size: 150x75x2500mm)	MTRS	1800		
5.4	Support G. I angle 50x50x6 mm for cable tray	MT	6		
6	SWITCH YARD AC CONSOLE FOR LIGHTING (01 nos each on 400KV side & 220 kv side and other area ) as per Technical Specification.	NOS	3		
7	SWITCH YARD RECEPTACLE BOARD FOR TFR OIL FILTERATION (01 no. near 400/220KV ICT) as per Technical Specification.	NOS	1		
8	SWITCH YARD RECEPTACLE BOARD FOR WELDING & OTHER EMERGENCY as per Technical Specification.	NOS	2		
9	HDG SWITCH YARD STRUCTURES (INCLUDING FOUNDATION BOLTS) FOR 400Kv & 220KV CLASS				
9.1	DIFFERENT TYPES OF LATICE TYPE COLUMNS & DIFFERENT TYPE OF BEAMS AND LIGHTING CUM LIGHTNING MAST				
9.1.1	TOTAL WEIGHT OF COLUMN & BEAM	MT	157		
9.2	DIFFERENT TYPE OF SUPPORT STRUCTURES (HDG) OF PIPE TYPE FOR ALL 400KV, 220KV & 33 KV EQUIPMENT INCLUDING HIGH LEVEL SA NEAR TRANSFORMER.				
9.2.1	TOTAL WEIGHT OF PIPE TYPE SUPPORT STRUCTURE FOR ABOVE EQUIPMENT	MT	75		

9.2.2	40 Mtrs heigh Monopole (HDG) Lighting cum Lightning Mast including LED lighting fixtures ( <b>240 watts each minimum 8 Nos.</b> ) with control gear panel etc suitable for wind zone-V , with all other accessories like motor for hoisting/lowering the lighting platform & other switchgear and lighting control panel including required cable(copper) & other accessories etc.	Nos	3		
10	Total weight of different type of GI Nuts and bolts for the above structures	MT	11.60		
11	<b>GENERAL EQUIPMENT &amp; SUBSTATION ACCESSORIES</b>				
11.1	<b>POWER CABLES,1.1KV,XLPE &amp; PVC FRLS ,FLAT STRIP ARMOURED, ALUMINIUM CONDUCTOR (As per Specification)</b>				
11.1.1	XLPE-3.5 CX185 mm2	Mtrs	500		
11.1.2	XLPE-3.5 CX120 mm2	Mtrs	500		
11.1.3	PVC-3.5 CX70 mm2	Mtrs	250		
11.1.4	PVC-3.5 CX35 mm2	Mtrs	500		
11.1.5	PVC-4 CX 16 mm2	Mtrs	1000		
11.1.6	PVC-4 CX 6 mm2	Mtrs	1000		
11.1.7	PVC-2CX 6 mm2	Mtrs	2000		
11.2	<b>CONTROL CABLES,1.1 KV,PVC FRLS , COPPER STRANDED ARMOURED STRANDED(As per specification). [The cable quatities are tentative. The same shall be supplied as per Cable schedule quantity]</b>				
11.2.1	4 CX 2.5 mm2	Mtrs	6000		
11.2.2	5 CX 2.5 mm2	Mtrs	4000		
11.2.3	7CX 2.5 mm2	Mtrs	5000		
11.2.4	10 CX 2.5 mm2	Mtrs	10000		
11.2.5	12 CX 2.5 mm2	Mtrs	5000		
11.2.6	16 CX 2.5 mm2	Mtrs	5000		
11.2.7	19 CX 2.5 mm2	Mtrs	1000		
11.2.8	1CX 120 mm2 BAT TO BAT CHARGER & CHARGER TO DCDB	Mtrs	300		
12	<b>HARD CONDUIT INCLUDING of adequate tensile strength minimum 7kg/sqmm or better &amp; ITS ACCESSORIES LIKE ALL TYPE OF SOCKETS &amp; BENDS FOR TAKING CABLE FROM TRENCH TO EQUIPMENT MB etc</b>	LOT	1		
<b>13</b>	<b>ACCESSORIES FOR PLCC SYSTEM With OPGW cable</b>				
13.1	48 Fibre Optic Approach cable along with HDPE Pipes	KM	1.00		
13.2	Optical line Terminal Equipment(OLTE) -STM4 type SDH equipment with integrated MUX & tributary cards for speech & data ports for interfacing of Speech & data which should be compatible with existing OPTCL system	No	1		

13.3	Digital Teleprotection Equipment and accessories to be suitable for interfacing with SDHMUX	No	1		
13.4	Supply of FODP(Fibre Optic Distribution Panel)48 F: Indoor type,rack mounted with FCPC coupling and pig tails(DWSm Fibre)	No	2		
13.5	48 V, 300 AH, maintenance free VRLA Battery set.	Set	1		
13.6	SMPS based Battery Charger of 75A suitable for 48V VRLA Battery set	No	1		
13.7	2.5 sq. mm muti strand 2 core control cable(power supply,Transducer/MFT PT supply)	Metre	600		
13.8	2.5 sq. mm multi strand 4 core control cable(Transducer/MFT CT supply)	Metre	600		
13.9	1.5 sq. mm multi strand 10 core control cable(Digital Input)	Metre	500		
13.10	10 sq. mm 2 core multi strand control cable(Battery)	Metre	300		
13.11	48V DCDB	Set	1		
13.12	Earth Flat, Cable Tray, Telephone cable,Foundation rail, Junction Box,.	Set	1		
14	<b>SUPPLY OF STATION TRANSFORMER &amp; OTHER MATERIALS FOR MEETING THE AUXILIARY SUPPLY OF THE SUB-STATION AS PER TECHNICAL SPECIFICATION</b>				
14.1	STATION TRANSFORMER 33KV/0.43 V,500 KVA (Confirming to Energy Efficiency Level 2 -AS PER SPECIFICATION & relevant IS)	NOS	2		

14.2	<p><b>One no. 4 pole structure (HDG Type) alongwith other equipment &amp; materials for two nos station transformers:</b></p> <p>1.4 Pole structure (using 200X100 mm RS Joist)</p> <p>2. Channel &amp; Angle FOR BRACING OF, CHANNEL for the SA &amp; Isolator &amp; HG fuse etc.</p> <p>3. 90 KN Disc/composite long rod Insulators for 33 KV (48 nos./12 sets) for bus, Bus stringing using ACSR moose conductor &amp; tension hardwares,other clamps &amp; connectors etc as per requirement.</p> <p>4. 2sets of 33 KV Isolator (800 AMP) for 33 KV side of station trafo.</p> <p>5. 2sets of 33 KV HG FUSE.</p> <p>6. 125 Sq mm AAAC conductor suitable for connection between HG fuse &amp; station transformer bushing.</p> <p>7. 2 sets of LT OUT DOOR KIOSK MADE OUT OF 3mm CRCA sheet GI MARSHALLING BOX suitable for outdoor mounting. The bus bar suitable for 1000 AMP shall be arranged in the out door kiosk and other Facility like two sets of 400 Amps MCCB for incoming &amp; outgoing with required sizes of terminal studs for power cable termination &amp; any other accessories required.</p> <p>All materials shall be As per relevant latest IS &amp; as per the direction of Engg. in charge</p>	SET	2		
15	<p><b>SUB STATION LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS )(Switch yard and other street area)(Including provision of the fittings on the LM)</b></p>				
15.1	<p>SUB-STATION SWITCH YARD LIGHTING,IT INCLUDES SUPPLY OF FIXTURES &amp; LAMPS (LED) of reputed make (Philips/CGL/Bajaj/ any other approved make of OPTCL) with switch gear,GI Conduit etc.(Lighting fixtures are to be fixed rigidly on the Column at a suitable height so that the required lux can be achieved).(150 watt each)</p>	SET	60		
16	<p>STREET LIGHTING: IT INCLUDES SUPPLY OF GI TUBULAR POLE AS PER TECHNICAL SPECIFICATION, LED LIGHTING FIXTURES including LAMPS of reputed make (Philips/CGL/Bajaj).(100 watt each) for Street Light. (TO BE PROVIDED IN THE SWITCH YARD, ALONG THE ROADS (APPROACH INSIDE YARD AND OTHER ROADS).</p>				

16.1	LED LIGHTING FIXTURES including LAMPS of reputed make (Philips/CGL/Bajaj/ any other approved make of OPTCL).(100 watt each) for Street Light.	SET	60		
16.2	GI Tubular Pole: (410-SP-24: IS 2713-Part-II-1980 or latest) Length of pole 8.5 mtrs(minimum weight 158 Kgs). (ALL THE STREET LIGHT POLE SHALL BE OF GI TUBULAR POLE AND PROVISION OF A GI JUNCTION BOX WITH SUITABLE COVERS AT A HEIGHT OF 1 METRE FROM THE GROUND. THE JUNCTION BOX SHALL HAVE PROVISION OF FUSES, BUSES, CONNECTORS FOR CABLE IN AND OUT.	SET	60		
16.3	OUTDOOR KIOSK of 3 mm thick CRCA sheet duly hot dip galvanised FOR STREET LIGHT HAVING 2 NOS 200 AMP SWITCH FUSE UNITS AND 10 NOS. OUT LETS OF 32 AMP MCB.	NO	2		
17	<b>INDOOR LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS ) (GIS, Control room building,Store shed,store room,Security room cum Visitors room and other area)</b>				
17.1	CONTROL ROOM BUILDING INDOOR LIGHTING, IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj) with switch gear,Conduit & other required materials for succesful illumination of the area/rooms.( No. of LED Lighting fixtures are to be calculated based on the illumination design considering the required lux level indicated in the technical spec & fixing of the same rigidly on the suitable height either ceiling & wall as required.)	LOT	1		
17.2	INDOOR LIGHTING OF SECURITY SHED CUM VISITORS ROOM,PUMP HOUSE,STORE SHED,STORE ROOM, FFPH BUILDING: IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj) with switch gear,Conduit & other required materials for succesful illumination of the area/rooms.( No. of LED Lighting fixtures are to be calculated based on the illumination design considering the required lux level indicated in the technical spec & fixing of the same rigidly on the suitable height either ceiling & wall as required.)	LOT	1		

17.3	<p>2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF 5 star rated AIR CONDITIONERS, Automatic Voltage Stabiliser, CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION ) FOR CONTROL ROOM, CARRIER ROOM &amp; CONFERENCE ROOM.,OFFICE ROOM etc which includes all type of cables &amp; wires and a main control switch gear kiosk having sufficient outlet for each air conditioner unit.</p>	Nos.	20		
17.4	<p><b>Supply of Smoke &amp; Heat detection system:</b> Addressable optical Smoke &amp; Heat Multi detector (adequate Nos) for <b>33KV GIS cum control room building</b> including all accessories, the Main control panel (Microprocessor based 2 loop fire alarm control panel expandable upto 18 loops fully networkable with each loop capable of taking 99 devices, 8 line x 40 character alpha- numeric liquid crystal display .The panel shall be soft addressable type . The panel shall be able to give pin point location of all fire/fault conditions. Further, the panel must be able to automatically switch off respective control switches when ever any alarm is triggered. The panel shall have in built rectifier, Loop cards,provision for external &amp; internal printer(if required), L C D unit to indicate Fire/Fault Signal with address and analog output, built in printer to log all fire or fault events complete in all respects, integral SMF lead acid batteries with sealed cells of 24 V capable of running for a minimum of 8 hours with integral battery charger complete as required and as per specification. The fire alarm panel shall be suitable for software integration with BMS &amp; PA system ,wall mounting loop powered addressable type hooter with all accessories , addressable manual call box made of polycarbonate with plastic break glass front and complete with monitor module MCB, addressable isolator module with required PVC box, fittings and fixtures, wiring with PVC FRLS wire to cover the required for fire &amp; smoke detection etc. (One control room building is to be provided with Heat &amp; smoke detection). Should have facility for integration with SAS.</p>	SET	1		

18	FIRE FIGHTING SYSTEM(PORTABLE /TROLLEY/ WHEEL MOUNTED FIRE EXTINGUISHERS SETS FOR CONTROL ROOM,EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC(REFER TS-VOL-IIA-SCOPE OF WORK AT SL NO. 15-ANNEXURE - I)				
18.1	FOAM TYPE-9 LTRS	NOS	4		
18.2	DRY CHEMICAL POWDER(TROLLEY MOUNTED)- 22.5 KGS	NOS	6		
18.3	DRY POWDER TYPE - 5 KGS	NOS	6		
18.4	CO2 - 4.5 KGS	NOS	10		
18.5	CO2 - 9 KGS	NOS	10		
18.6	CO2 (TROLLY MOUNTED)- 22.5 KGS	NOS	4		
18.7	9 litre water type	Nos.	4		
18.8	4.5 kg DCP type	Nos.	4		
18.9	50 Litres Mechanical Foam type	Nos.	2		
18.10	FIRE BUCKET (6 NOS IN EACH STAND) WITH STAND	SET	5		
19	<b>SUBSTATION AUTOMATION SYSTEM FOR 400/220 KV SUBSTATION ON PRP MODE:</b> Design , engineering , drawing, supervision, installation , testing & commissioning of Substation Automation system alongwith Supply of the following 400,220,and 33 kV level of protection panels consisting of Bay control Units & numerical protection relays and other auxiliary relays suitable for SAS as per technical specification. NOTE: All protective relays & BCU shall be numerical type.				
19.1	Yard AC Kiosk :5000 mm (L)x4000mm (W)x 3300mm (H) with AC, <b>as per the Specification;</b>	Nos.	4		
19.2	Gate way panel for Sub-Station Automation (in PRP as per the specification & indicative drg ) system (for All 400 , 220 & 33 KV side bays including the future bays),other accessories (comprising servers, engg. Station, works station (Main & standby), Remote station control, Colour Laser jet Printers & dot matrix printer for local station as per requirement and also for remote station, Ethernet Switches , LIU, Red Box, Multimode glass fibre Double jacket armoured optical cables, special cables like F.O patch cord & armoured FO cables of adequate length etc required for the system in all respect as per latest IEC 61850 standard, Inverters of required capacity & rating (3KVA-Input shall be both A.C & D.C and output shall be A.C) etc as per TS. A Full HD LED screen of 70 inches for display including all type of accessories & as per technical specification.	SET	1		



19.3	BCU for Substation Auxilliary System (Dadas for monitoring of Station AC, Station DC, Lighting, Fire fighting, Air conditioning, Diesel generator etc. as per the site requirement)	SET	1		
19.4	GPS System with PTP, IRIG-B, SNTP	SET	1		
19.5	<b>400 KV SIDE PROTECTION &amp; OTHER PANELS as per Technical specification.</b>				
19.5.1	FEEDER PROTECTION PANEL (MAIN-I , MAIN-II & BACK-UP PROTECTION WITH AUTO RECLOSURE DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system.	NOS	4		
19.5.2	TRANSFORMER PROTECTION PANEL (DIFFERENTIAL I & II , REF I & II & BACK-UP PROTECTION for HV & IV side CONSIDERING HV ,IV & LV side for 500 MVA 400/220/33 KV ICT) with Bay control units (BCU) for substation automation system.	SET	2		
19.5.3	TIE BREAKER PROTECTION PANEL with Bay control unit (BCU) for substation automation system.	NOS	3		
19.5.4	BUS-BAR PROTECTION PANEL ( Including Provision of bus bar modules for the future bays and to be integrated with the Automation system)	NOS	1		
19.6	<b>220 KV SIDE PROTECTION &amp; OTHER PANELS</b>				
19.6.1	FEEDER PROTECTION PANEL (MAIN-I , MAIN-II & BACK-UP PROTECTION WITH AUTO RECLOSURE DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system.	NOS	4		
19.6.2	TRANSFORMER PROTECTION PANEL (DIFFERENTIAL I & II , REF I & II & BACK-UP PROTECTION for HV & LV side CONSIDERING HV & LV side for 40 MVA220/33 KV Power Trnsformer) with Bay control units (BCU) for substation automation system.	NOS	1		
19.6.3	BUS COUPLER PROTECTION PANEL with Bay control unit (BCU) for substation automation system.	NOS	1		
19.6.4	BUS-BAR PROTECTION PANEL ( Provision of bus bar modules for the future bays and to be integrated with the Automation system)	NOS	1		
19.7	<b>33 KV SIDE PROTECTION PANELS</b>				
19.7.1	33 KV BUS COUPLER PROTECTION Panel with Bay control protection unit (BCPU) with with all other relays & component required for complete prtection,control etc as per TS and also suitable for substation automation system.	No	1		

19.7.2	STATION TRANSFORMER PROTECTION PANEL (BACK-UP PROTECTION CONSIDERING 2X500 KVA 33/0.43 KV ) with Bay control protection units (BCPU) with with all other relays & component required for complete prtecton,control etc as per TS and also suitable for substation automation system. [2nos. Feeder bays in one panel]	SET	1		
20	<b>AC &amp; DC SYSTEM</b>				
20.1	<b>AC SYSTEM</b>				
20.1.1	MAIN AC DB,(HAVING A 1600 A,50KA,DRAWOUT TYPE ACB WITH 3 O/C,E/F,U/V RELAYING FACILITY and MECH& ELECT INTERLOCK FACILITY CONSIDERING Main-1,2 & DG INDOOR TYPE AS PER SPECIFICATION.(MAIN DB-1,MAIN DB-2 WITH B/C & PROVISION FOR D.G INCOMING)	SET	1		
20.1.2	ACDB (HAVING 800A MCCB) AS PER SPECIFICATION (AC DB-1,AC DB-2 WITH B/C)	SET	1		
20.1.3	MAIN LIGHTING DISTRIBUTION BOARD (HAVING 250A MCCB AS INCOMER)AS PER SPECIFICATION (WITH DB-1,DB-2 & B/C)	SET	1		
20.1.4	INDOOR LIGHTING DISTRIBUTION BOARD AS PER SPECIFICATION. (WITH DB-1,DB-2 & B/C)	SET	1		
20.1.5	EMERGENCY LIGHTING DISTRIBUTION BOARD	SET	1		
20.1.6	INDOOR RECEPTACLE BOARD	SET	2		
20.2	<b>DC SYSTEM</b>				
20.2.1	220 V DC BOARD (HAVING 100A DC MCCB AS INCOMER, E/F (EARTH LEAKAGE), UNDER & OVER VOLTAGE AS PER SPECIFICATION (DC DB-1,DC DB-2 & B/C). Consider separate source(DC1 & DC 2) to each panels & accordingly sufficient nos. of DC output from DB-1 & 2 to be considered.	SET	1		
20.2.2	220 V DC EMERGENCY DISTRIBUTION BOARD	SET	1		
20.2.3	BATTERY (645 AH PLANTE TYPE) for 220 V DC	SET	2		
20.2.4	BATTERY CHARGER FOR 645 AH, 220 V DC (FLOAT & FLOAT CUM BOOST) (including provision of series dropper diodes with heat sinks & other protection facility at the DC Load terminal end in order to feed 220 V to the load).	SET	2		
21	DE MINERALISED PLANT of 30 L/Hr FOR MAKING DISTLED WATER FOR BATTERY BANKS	SET	1		
22	PORTABLE ALUMINIUM LADDER EXTENDABLE TYPE OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT INSIDE SWITCH YARD.(REFER TS-VOL-IIA-SCOPE OF WORKAT SL NO. 19)	NOS	2		

23	CARTWHEEL MOUNTED ALUMINIUM LADDER OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT .	NOS	1		
24	WATER COOLER WITH WATER PURIFIER (with R.O & ultra violet purification system of ISI mark) SYSTEM	NOS	1		
25	MAINTENANCE & TESTING EQUIPMENT (REFER TS-VOL-III of III-E25-TESTING INSTRUMENTS- Maintenance & Testing Equipment ANNEXURE-I & OTHER TOOLS AND PLANTS -ANNEXURE-II for 220/132/33KV S/S) INDICATED IN -SCHEDULE OF REQUIREMENTS OF MAINTENANCE EQUIPMENT).	LOT	1		
26	WALKIE TALKIE SET	SET /PAIR	2		
27	OFFICE FURNITURE (REFER TS-VOL-III of III-E25-TESTING INSTRUMENTS- SL NO. 16 - ANNEXURE - III for 220/132/33KV S/S) & PLACING IN CONTROL ROOM,CONFERENCE ROOM,OFFICE ROOMS,LIBRARY,TESTING LAB,etc.	LOT	1		
28	FIRE FIGHTING EQIPMENT: (Main Pump, Jockey Pump, DG Set cum Pump, Control Panel for Fire Fighting System, switchyard equipment and buildings. HVW system & hydrant sytsem, complete with all piping, valves, fittings etc inside pump house for Fire protection sytem of substation) as per the technical spec.	LOT	1		
28.1	Hydrant sytsem, complete U/G piping of different sizes,vaves and accessories etc outside the Pump House for Fire protection sytem of 2 Nos 500 MVA ICT, switchyard equipment and buildings as per the technical spec.	LOT	1		
28.2	HVW Spray sytsem, Hydrant System and complete U/G and O/G piping,different type of valves,Fire sensor etc and accessories etc near the Transformer for Fire protection of 500 MVA, 400/220/33 KV ICT as per the technical spec.	LOT	1		
29	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size	Nos	45		
30	250 KVA outdoor type silent Generator with contro panel having adequate mechanical & electrical protection as per latest IS with Automatic Mains Failure feature as per Technical spec.	NOS	1		
31	220/33 KV 40 MVA Transformer as per Technical specification (inclusive of all costs towards type test charges, Mandatory spares, Spanners & Special tools, accessories, etc as specified in the Technical specification)	NOS	1		

32	400/220 KV 500 MVA ICT (inclusive of all costs towards type test charges, Mandatory spares, Spanners & Special tools, Oil storage tank, Nitrogen Injection system for protection against Fire & Explosion, On line insulating oil drying system , On line Dissolved Gas (Multi-gas) and Moisture Analyser, accessories, etc as specified in the Technical specification)	NOS	2		
33	<b>EQUIPMENT and MATERIALS for GIS</b>				
33.1	<b>ACCESSORIES</b>				
33.1.1	SF6 Gas handling plant of adequate capacity as per the Technical specification.	SET	1		
33.1.2	SF6 gas service cart with all accessories as per the Technical specification.	SET	1		
33.2	<b>TESTING EQUIPMENT</b>				
33.2.1	GIS testing equipment as per the Technical specification. (ANY SPECIAL TOOLS & TACKLES REQUIRED (except mentioned under item No. 34.3 below) FOR COMPLETE INSTALLATION OF THE 400KV, 220 KV & 33KV GAS INSULATED SWITCHGEAR (To be supplied on Non Returnable basis and shall not be taken back by the bidder)	SET	1		
34	<b>ESSENTIAL TOOLS and SPARES for GIS</b>				
34.1	<b>SPARES for 420KV GIS</b>				
34.1.1	Single phase voltage transformer	SET	1		
34.1.2	Single phase set of 5 cores current transformer including enclosure	SET	1		
34.1.3	Enclosure insulators and main circuit of busbar	SET	1		
34.1.4	Tripping and closing coils	SET	3		
34.1.5	SF6 Pressure gauges	SET	2		
34.1.6	SF6 Pressure relief devices	SET	2		
34.1.7	Auxiliary contacts for circuit breaker	SET	1		
34.1.8	Auxiliary contacts for DS and ES	SET	1		
34.1.9	SF6 gas in steel bottle 52 kg / bottle	NOS	2		
34.1.10	Spring charge motor for circuit breakers	UNIT	1		
34.1.11	Complete drive mechanism for disconnect switches and grounding switches	UNIT	1		
34.1.12	Motor for disconnect switches and grounding switches	UNIT	1		
34.1.13	Complete drive mechanism for fast acting grounding switches	UNIT	1		
34.1.14	Motor for fast acting grounding switches	UNIT	1		
34.1.15	Rupture disc for circuit breakers / potential transformer	NOS	1		
34.1.16	Set of spares for local control cabinet including M.C.B., fuses, time relays, auxiliary relays and terminals	SET	1		
34.1.17	Rupture disc for other compartments	NOS	2		

34.2	<b>SPARES for 245KV GIS</b>				
34.2.1	Single phase voltage transformer	SET	1		
34.2.2	Single phase set of 5 cores current transformer including enclosure	SET	1		
34.2.3	Enclosure insulators and main circuit of busbar	SET	1		
34.2.4	Tripping and closing coils	SET	3		
34.2.5	SF6 Pressure gauges	SET	2		
34.2.6	SF6 Pressure relief devices	SET	2		
34.2.7	Auxiliary contacts for circuit breaker	SET	1		
34.2.8	Auxiliary contacts for DS and ES	SET	1		
34.2.9	Spring charge motor for circuit breakers	UNIT	1		
34.2.10	Complete drive mechanism for disconnect switches and grounding switches	UNIT	1		
34.2.11	Motor for disconnect switches and grounding switches	UNIT	1		
34.2.12	Complete drive mechanism for fast acting grounding switches	UNIT	1		
34.2.13	Motor for fast acting grounding switches	UNIT	1		
34.2.14	Rupture disc for circuit breakers / potential transformer	NOS	1		
34.2.15	Set of spares for local control cabinet including M.C.B., fuses, time relays, auxiliary relays and terminals	SET	1		
34.2.16	Rupture disc for other compartments	NOS	2		
34.3	<b>SPECIAL TOOLS</b>				
34.3.1	SF6 gas leak detector as per the Technical specification.	SET	1		
34.3.2	SF6 gas analyzer as per the Technical specification.	SET	1		
34.3.3	Milli volt drop measurement appliance	SET	1		
34.3.4	One set of Box Spanner	SET	1		
34.3.5	One set of adjustable Spanner	SET	1		
34.3.6	SF6 gas bottle locking, measuring and filling assembly with all hose	SET	2		
34.3.7	One set of pipe grooving tools for the hydraulic operating mechanism	SET	1		
34.3.8	Infrared camera as per the Technical specification.	SET	1		

**TOTAL OF SUBSTATION-SCHEDULE-2 -Plant (to Schedule No. 6 Grand Summary)**

	Name of Bidder: _____  Signature of Bidder: _____
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<sup>1</sup> Prices of Items quoted in Schedule No.1 shall not be quoted again in Schedule No. 2 and shall have a remark against the said row "Quoted in Schedule No.-1".

**ODISHA POWER TRANSMISSION CORPORATION LIMITED**

**NAME OF THE WORK:-Design, Supply and Installation of 2X500 MVA ICT for Out Door Type,400/220 KV GIS Grid Sub-station at (Ramkrushnapur),Bhadrak.in Odisha State of India under PACKAGE-3 Under Japan International Cooperation Agency (JICA)'s ODA Loan.**

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/03/18-19]- Reference Identification No: [OPTCL/JICA/PKG-3]

**Schedule No. 4. Installation and Other Services (Sub-station )**

**NAME OF THE BIDDER**

SL. NO.	ERECTION,TESTING & COMMISSIONING OF FOLLOWING EQUIPMENT/MATERIALS ALONG WITH CIVIL WORKS (As per Technical Specification)	UNIT	Quantity for: Construction of 2x500 MVA 400/220/33 GIS S/S at Ramkrushnapur Out Door type GIS S/S (New)	Unit Price <sup>1</sup>		Total Price <sup>1</sup>	
				Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion
			1	2	3	(1x2)	(1x3)
<b>PART A</b>	<b>CIVIL WORKS</b>						
<b>1</b>	<b>CONTOUR SURVEY,AND LEVELING, BACK FILLING</b>						
1.1	Contour survey and furnishing contour map including supply of all materials, Labour and T&P	SQ.MTRS.	55000				
1.2	Soil investigation : Supply of labour,T&Pand other necessary arrangements for Soil investigation/testing of the Switchyard,control Room, Quarters area etc.as per the site requirement,Technical specification & instruction of Engineer-in-Charge.	PER POINT	5				
<b>2</b>	<b>Cutting, Filling and Levelling of Sub-station area including supply of labour and T&amp;P</b>						

2.1	<b>LEVELLING OF S/S AREA:</b> Providing, neatly dressing up and levelling of substation area including switchyard area to a required level as decided by the Engineer in Charge, the work includes removal, clearing of the entire area from vegetation, trees, bushes, uprooting of plants and disposal of surplus earth and unusable material from the site by means of any mechanical transport, if required as per direction of the Project In charge, with all labours, tools, tackles and plants complete as per approved drawing and specification. This also includes excavation in all type of soils or rocks, back filling and disposal of excess earth or rocks to make the area to a level for construction as per scope and as per approved drawing and specification.						
2.1.1	<b>CUTTING</b> of substation area						
2.1.1.1	[i]Soft/loose soil	CUM	10000				
2.2	<b>FILLING</b> of substation area with borrowed earth with supply of all labour,T & P.						
2.2.1	(i) Beyond 30 mtr & up to 100mtr lead	CUM	3000				
2.2.2	(ii) Beyond 100mtr lead	CUM	70000				
3	<b>Foundations : Design, engineering, supply of all labour, material (Cement-OPC-43 Grade, MS Rod, coarse and fine aggregates(Sand and Metal Chips) etc.) for construction of RCC ( 1:1.5:3) &amp; PCC (1:3:6), RCC footings of any depth, pedestal and piling as per requirement including soil investigation, excavation, concreting, shuttering, grouting, underpinning and back filling of foundations etc. complete for the following switch yard gantry/ portal structures and equipment support &amp; others as per the technical specification and approved drawings.(RCC RATIO 1:1.5:3). 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.</b>						
3.1	EXCAVATION FOR PREPARATION OF FOUNDATION WORK FOR THE SWITCHYARD COLUMN,EQUIPMENT etc.: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.						
3.1.1	Normal Soil(SOFT/LOOSE)	Cum	7000				
3.1.2	Hard Soil	Cum	3000				



3.1.3	Soft Rock	Cum	700				
3.1.4	Hard Rock required blasting	Cum	300				
3.2	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 column and equipment foundation 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.	Cum	500				
3.3	Open cast foundation for the above column/equipment/marshalling box foundations with RCC: 1:1.5:3 (Grade M-20), in the foundation pit as required for the above foundations) and 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 Specification and as per direction of Engineer in Charge.	Cum	5000				
3.4	Supply of Steel (FE 500 grade or above) of different size (as per design) with cutting, bending, binding in position of M.S.Rod for reinforcement of foundation concrete of Piles(Under reem Pile) including supply of binding wire (With supply of steel rod ( TATA/RINL/SAIL make)	MT.	280				

4	<p>Cable Trenches: Design, 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.</p> <p>(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.</p> <p>(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 &amp; curing. This includes supply of all labourers, T&amp;P and dewatering wherever required as per Technical specification and instruction of Engineer In charge.</p> <p>(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&amp;P in line with the Specification and as per direction of Engineer in Charge.</p> <p>(4) Fly ash Brickwork with fly ash Fly ash Brick, plastering (1:6 Ratio) &amp; curing, wherever required including the supply of labour, material, cement, etc.</p> <p>(5) Fabrication &amp; Fixing of MS Angle (G.I) for cable tray support (as per specification). The cable tray support frame shall be pre fabricated GI angle as per requirement and to be welded with the plate fixed on the trench wall for better rigidity. The plate (6mm) fixed on the wall are also to be welded with the MS rods provided for the trench wall before concreting.</p> <p>(6) Precast of RCC covers (1:1.5:3) and its fixing on the cable trench as per spec and instruction of Engg. In Charge.</p> <p>(7) CABLE TRENCHES INSIDE THE CONTROL ROOM SHALL BE COVERED WITH M.S CHEQUERED PLATE (Duly painted as per instruction of Engg in charge) INCLUDING STANDARD SUPPORT STAND (HD Galvanised (M.S</p>						
4.1	Cable trench with covers						
4.1.1	Section 1-1	Mtrs	450				
4.1.2	Section 2- 2	Mtrs	600				
4.1.3	Section 3-3	Mtrs	600				
4.1.4	Section 4-4	Mtrs	300				
5	Rain water harvesting system as per Technical specification and approval of drawing and as per the direction of the Engineer in charge.	LOT	1				

6	Cable trench crossing:Design,engineering,construction including supply of labour,materials,cement,reinforcement steel,formwork etc,and all associated works for construction of trench crossing as per technical specification and approved drawing.						
6.1	Road crossing for						
6.1.1	Section 1-1	Lot	1				
6.1.2	Section 2- 2	Lot	1				
6.1.3	Section 3-3	Lot	1				
7	<p><b>CONTROL ROOM BUILDING WITH RAMP:</b> Design, engineering and construction of switch yard buildings including the cost of all type of materials, supply of labour, cement, reinforcement- steel, form work and excavation as per the approved drawing and technical specification. <b>The column foundations shall be either shallow/open cast type or pile type foundation as per the site requirement</b> (The RCC structure frame should be in the ratio 1:1.5:3).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. As per approved drawings and specification. This work including anti-termite treatment, plinth protection, DPC, peripheral drains, water supply, plumbing, sanitation, fire-fighting, electrification etc (one Double storied building having the GF: <b>33KV GIS Room with HT cable vault room</b>, Store room,Bat room,Maint room, ACDB &amp; DCDB Room, Toilets &amp; stair case &amp; etc, FF : SAS room, conference room,Office room,Transit rest room,toilets,pantry etc).</p> <p>Control Room Building Size: <b>25 mtrs X 15 Mtrs</b></p> <p>The contractor shall finalize the dimensions of the hall &amp; rooms according to the equipment offered by them providing enough space &amp; access for erection, operation and maintenance &amp; future expansion.</p>						
7.1	RCC work including MS rods(FE500 and above grade) (including excavation, PCC, Shuttering, etc. for column ,Beams and roofs etc) as per technical spec & approved drawings.	Lot	1				
7.2	Fly ash brick masonry work in cement sand mortar 1: 6 with Fly ash bricks of class designation 75 as per technical spec & approved drawings.	Lot	1				
7.3	Flooring with double charged vitrified tiles with dado in all the rooms,Bath and toilets shall be provided with anti skid ceramic tiles(wall of the same also to be provided with ceramic tiles),Acid proof industrial tiles to be provided on the floor and wall of the battery room as per technical spec & approved drawings.	Lot	1				

7.4	External and internal wall painting with primer coat as per technical spec mentioned in the civil section. External: One coat weather coat primer + two coats of weather coat colour paint. Internal: Two coats wall putty+solvent thinable white primer of one coat+two coats colour paint. Battery Room:The left over portion of walls and ceiling of Battery room shall be acid proof paints as per specification & approved drawings.	Lot	1				
7.5	External and internal wall (External (18mm thk ) and internal (12 mm thk) wall and ceiling plastering as per technical spec mentioned in the civil section) and Building internal & external & ceiling paintings as per technical spec mentioned in the civil section. The ceiling of Battery room shall be acid proof paints as per specification & approved drawings.	Lot					
7.6	Provision of ceiling in the control room area as per specification mentioned in the civil section & approved drawings.	Lot	1				
7.7	Doors and windows shall be of sliding type with locking facility and shall be of aluminium with glaze of 6mm & windows shall have aluminium grills. Windows shall be provided with vertical window blinder to protect from the sun ray. As per technical spec & approved drawing.	Lot	1				
7.8	Provision of PHD and other fittings of reputed make for the control room building (in Toilets, wash room, overhead water tank of adequate capacity etc) of reputed make, provision of rain water discharge pipes at different locations and etc as per requirement and approved drawing. There shall be septic tank and soak pit of required capacity including complete sewage system as per approved drawing & technical specification & as per instruction of Engg- in-Charge. It includes supply of all types of materials of reputed make, labour etc to complete the work. Toilets for Gents & Ladies to be provided including all good quality reputed fittings as per technical specification. The toilets & wash room shall have antiskid floor tiles & wall tiles of ceramic upto height of 8 feet. Provision of rain water discharge pipes at different locations and two nos of over head water tank of 2000 ltrs capacity etc as per requirement and approved drawing. All bath room & toilet shall have water & termite proof doors and provision of sliding louvers with exhaust fan.	Lot	1				
7.9	Internal concealed wiring (including supply of flexible copper FRP 1.1 KV PVC wire, conduits & its accessories, modular type switches & switch board, Junction boxes with required MCB & Earth leakage detector switchgear etc), fixing of lighting fixtures & switchgear , ceiling fans of 1400 sweep and regulators( including supply) ,exhaust fan (including supply), Erection of all Lighting FIXTURES & LAMPS (LED), D.C emergency lighting (including supply), as per approved drawing and direction of Engineer In charge.	Lot	1				

7.10	Supply, fitting and fixing of stainless steel pf 304 grade in hand railing using 50mm dia of 2mm thick circular pipe with balustrade of size 32mmx32mmx32mm @0.90mtr C/C and stainless square pipe bracing of size 32mmx32mmx32mm in three rows in staircase as per approved design and specification, buffing,polishing etc with cost, conveyance, taxes of all materials, labour, T&P etc required for the complete in all respect	Lot	1				
7.11	Installation of smoke and heat detection system of the building.	Lot	1				
8	<b>Roads:</b> Design, construction of roads and walkways/ shoulders within sub-station(Switch yard area,colony area,approach road,control room building area, main gate to the switch yard gate etc) as per specification, layout and approved drawings complete. 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. Provision of drains on both the side of the roads for easy discharge of rain water.						
8.1	3.75 mtrs concrete road with shoulder at both the side & shall have drain on both side of the road as per technical specification indicated in the civil section( Periphery roads outside switch yard fencing and colony roads)	Mtrs	600				
8.2	7 mtrs concrete road with shoulder at both the side as per technical specification indicated in the civil section(from the switch yard main gate to power transformer,approach road & infront of GIS cum control room building & Shall have drain on both side of the road.	Mtrs	1100				
9	Drainage system:Collection of rainfall data, Design, construction of storm water drainage scheme (RCC type), road-culverts,Shall have drain on both side of the road and drains crossing cable trenches etc. as per specification and approved drawing. 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. All the switch yard bays , roads water drainage shall be connected to the main surface drain. As per approved drawing and specification.						
9.1	Storm water drain	Mtrs.	700				
9.2	Road-culverts, drain crossings	Lots	1				
9.3	Cable trench crossing	Lots	1				

10	Foundations for transformers :Design, engineering, supply of labour, material, equipments and construction of Auto-transformer/Transformer foundation including piling if any, all associated works, rail tracks, jacking pads,anchor block RCC and PCC, miscellaneous structural steel including oil collection pits, MS grating(if required), gravel filling, and other items etc. not mentioned herein, but specifically required for the completion of the work as per technical specification and approved drawing. (Rate shall be inclusive of cement, reinforcement steel, angles,flats and form work etc.)(all cement concrete shall have RCC ratio 1:1.5:3). Transformer RCC foundation and Rail Track should be extended upto the approaching road (However,the height of RCC foundation beyond transformer main plinth area should be same as height of concrete road as per item under 4.2). 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.						
10.1	500 MVA, 400/220KV ICT Total weight with oil and tank: 450 MT (approx)	Nos	2				
10.2	40 MVA, 220/33kV Power Transformer (Overall dimension of transformer(appox) Length:7200 mm X Width 6000 mm X Height 6200 mm) Total weight with oil and tank: 97.5 MT (approx) <b>As Per Technical Specification</b>	Nos	1				
10.3	<b>STATION TRANSFORMER:</b> Design, engineering, procurement of labour,material including all associated works for construction of foundation and DP structure for station transformers 33/0.415 KV,1000 KVA STN TRANSFORMER as per approved drawing and specification.33 KV AB Switch,HG Fuse, DP Structure & Angles (duly painted),Chanel, Plinth for erection of the transformer, including fixing and laying of (insulators,surge arresters,XLPE armoured power cables3.5 core 300 sq mm, LT out door kiosk near transformers and other accessories for complete installation of transformer as per standard) and instruction of Engineer In charge. As per the specification and approved drawing.	Nos	2				
11	OIL SUMP PIT:Oil collection (from transformers)sump pit with provision of pump(5 HP, with auto level control , including cabling, fixing of control gear )as per CIGRE. As per spec and approved drawing.						
11.1	500 MVA, 400/220 KV ICT >Oil capacity of each ICT in ltrs approx. : 110000 ltrs.	Nos	1				

11.2	40 MVA,220/33 KV Transformer >Oil capacity of each ICT in ltrs approx. : 50000 ltrs.						
12	PCC before site surfacing :Providing and supplying all labour, material, equipments etc. required for proper leveling of earth after erection of structures and equipments and proper compaction by using roller of adequate capacity(minimum 3 Ton capacity) with water sprinkling of switch yard area. After proper leveling of the switch yard area (after anti-weed treatment), spreading of plain cement concrete with mixing ratio 1:3:6 (M10) and maintaining proper sloping for easy discharge of storm water having concrete thickness of 75 mm. including rolling , dressing, compacting,the area. This also includes excavation in all types of soil or rocks,back-filling,and disposal of excess earth as per the direction of <u>Engineer in charge and approved drawing. (Switch yard area)</u>	CUM	2640				
13	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 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(1:4:8). The total compacted thickness of the metals(20 mm Nominal) 100mm above the PCC.	CUM	2640				
14	PROVISION OF PLANTATION & GARDENING:Provision of gardens in front of the control room building & other areas where can be provided as per the site Engineer's instruction, including supply of atleast 100 nos. fruit bearing trees, 100 nos. of decorative plants,garden grass,flowering plants,soil treatment and its plantation including materials,labour and T&P. As per the instruction of Engineer in Charge . Provision of water tap with water sprinkler arrangement including water pipe laying with control at different location. Supply of All materials. Both side of the RCC roads shall be provided with decorative plants as per the instruction of the Site Engineer.	LOT	1				
15	STONE PITCHING & TOE WALL:Stone pitching including making of toe walls both at top and bottom, including surface drain both at top and bottom and partition wall in every 10 mtrs by using boulders and RR masonry walls respectively. This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth and supply of materials and labour as per the direction of Engineer In charge and as per approved drawing and specification.						
15.1	Excavation in Soft & Loose Soil	Cum	200				

15.2	P.C.C (1:3:6): Lean Concrete Grade M-10	Cum	22				
15.3	RR Masonry (1:5)	Cum	225				
15.4	P.C.C (1:2:4): Lean Concrete Grade M-15	Cum	2				
16	SWITCH YARD FENCING: Providing and fixing of G.I Goat mesh (2.5 mm dia)( in a GI angle 50X50X6 mm frame having 50X6 mm GI flat bracing corner to corner) fencing( the posts and links shall be of HD Galvanized ) in switch yard and other areas of the substation with a total fence height complete as per specification and approved drawings, and as required under the safety regulation of local, state and central government bodies and as per instruction of the Engineer-in-Charge.(The PCC work for grouting the post shall be 1:2:4 and a continuous Fly ash Brick masonry work with ratio 1:5 and cement pointing of the joints, for the fencing up to a height from the finished ground level) .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. The earthing of the fencing as per specification.	Mtr	900				
17	Fire wall: Design, engineering, procurement of labour, material including all associated works for construction of fire-walls as per technical specification and approved drawings(column shall be RCC ratio1:1.5:3 and the walls are of fire resistant Fly ash Bricks).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. As per approved drawing and specification. Painting of the walls as per direction of the Engineer in charge.	Nos	1				
18	MAIN GATE & SWITCH YARD GATES:Design, engineering, procurement of labour, material including all associated works for construction and fixing of of a main gate and one no. switch yard gates with men gates as per specification and approved drawing. 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. Provision of gate lights (Post top lantern type) on each pillar of the gate. It includes supply & fixing of light fixtures including LED Gate lamp, LV XLPE cables, switchgear etc required to complete works as per specification and approved drawings.(* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE supply)}						
18.1	MAIN GATE	NOS	1				
18.2	WICKET GATE NEAR MAIN GATE	NOS	1				
18.3	SWITCH YARD GATE(ON BOTH SIDES OF 7MTRS. CONCRETE ROAD OF SWITCHYARD)	NOS	2				



18.4	WICKET GATE NEAR SWITCHYARD	NOS	1				
19	<p><b>FIRE FIGHTING &amp; DG BUILDING:</b>(one building).Design, engineering and construction of switchyard buildings including the piling where required, the cost of material, supply of labour, cement, reinforcement- steel, form work and excavation as per the approved drawing and technical specification ( The RCC structure frame should be in the ratio 1:1.5:3).This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the direction of Engineer In charge.As per approved drawings and specification.</p> <p>Area of the Fire Fighting &amp; DG Room with portico at front side, stair case to the top of the building ,.The details of of building construction shall be as per the Tech spec.</p> <p>A) Area of the D.G Room Building: 10mtrsX7 mtrs (70sq mtrs), B) Area of the fire fighting Room Building: 10mtrX10 Mtrs(100 sq mtr).</p>						
19.1	RCC work including MS rods(FE500 and above grade) (including excavation, PCC, Shuttering, etc. for column ,Beams and roofs etc) as per technical spec & approved drawings.	Lot	1				
19.2	Brick masonry work in cement sand mortar 1: 6 with bricks of class designation 75kg/mm2 as per technical spec & approved drawings.	Lot	1				
19.3	Concrete Flooring to be provided on the floor I of the DG cum Fire Fighting room as per technical spec & approved drawings.	Lot	1				
19.4	<p>External and internal wall painting with primer coat as per technical spec mentioned in the civil section. External: One coat weather coat primer + two coats of weather coat colour paint.</p> <p>Internal: Two coats wall putty+solvent thinable white primer of one coat+two coats colour paint. Refer the specification.</p>	Lot	1				
19.5	Doors and windows shall be of sliding type with locking facility and shall be of aluminium with glaze of 6mm & windows shall have aluminium grills. As per technical spec & approved drawing.	Lot	1				
19.6	Provision of PHD and other fittings of reputed make having ISI mark ,provision of rain water discharge pipes at different locations and etc as per requirement and approved drawing & technical specification & as per instruction of Engg- in-Charge. It includes supply of all types of materials of reputed make, labour etc to complete the work.	Lot	1				
19.7	Internal concealed wiring,fixing of lighting fixtures(LED) ,fans and regulators(Electronic regulator) ,exhaust fan,D.C emergency lighting INCLUDING SUPPLY OF ALL ITEMS as per spec & approved drawing.	Lot	1				
19.8	Provision of smoke and heat detection system of the building.						

19.9	Provision of Water Tank for fire fighting below ground.	Lot	1				
23	SECURITY SHED & CUM VISITOR ROOM: Design, engineering, procurement of labour, material including all associated works for construction of Security shed near main gate, watch tower shed at the corners of switch yard as per the approved drawing and instruction of Engineer in charge. 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. Internal electrification including supply of lighting fixtures, fan with regulators and provision of incoming AC supply from the main ACDB/outdoor kiosks installed for street light or colony quarters. Also includes painting of the building (in side and out side) as per recommended for colony building in the specification. (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE supply}}						
23.1	SECURITY SHED: The size of the security shed shall be 3.5 mtrs X 5 mtrs and height of 3.5 mtrs RCC roof, Fly ash Brick masonry works, plastering and painting and fixing of MS doors and windows. Internal concealed wiring (including supply of flexible copper FRP 1.1 KV PVC wire, conduits & its accessories, modular type switches & switch board, Junction boxes with required MCB & Earth leakage detector switchgear etc), fixing of lighting fixtures & switchgear, ceiling fans of 1400 sweep and regulators (including supply) and provision of incoming AC supply from the main ACDB/outdoor kiosks installed for street light or colony quarters. Also includes painting of the building (in side and out side) as per recommended for colony building in the specification. (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE supply}}	Nos	1				

24	<p>BORE WELL &amp; PUMP HOUSE:Design, engineering, procurement of labour, material including all associated works for construction of two nos. bore wells for control room building including switch yard and colony quarters as per specification and approved drawing and instruction of Engineer in charge. This includes supply and fixing and commissioning of two nos 5 HP submersible water pump with starter and other protection. Construction of two nos pump house at ideal location for fixing of the electrical starter units. The pump house be of RCC roof and having walls of Fly ash Brick masonry and plastering and painting of external &amp; internal walls with MS door having locking arrangement &amp; window. Internal concealed wiring (including supply of flexible copper FRP 1.1 KV PVC wire,conduits &amp; its accessories,modular type switches &amp; switch board. The size of the room shall be 2.5mtrsX2.5 mtrs having height of 3 mtrs. as per approved drawing and specification. There shall be approach road to the pump house. This includes supply of materials,labours and T&amp;P &amp; excavation of all type of soils including rock and disposal of excess materials as per instruction of Engineer In charge Supply &amp; laying of LV XLPE 3.5CX 35 sq mm cable from ACDB to pump house, control gear &amp; earthing of the system etc to complete the scheme as per approved drawing &amp; instruction of Engineer-in charge.</p>	LOT	1				
25	<p>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 &amp; Blue) for equipments,Bus gantry &amp;column of entire switch yard. Good quality weather proof sticker may be used for identification. b)Each bay should be identified with the help of bay marker sign board, suitably grouted. MS sign board with stand to be installed. Proper painting and lettering to be done of the entire switch yard area.</p>	Lot	1				

26	STORE SHED:Design, engineering, procurement of labour, material including all associated works for construction of store shed as per specification and approved drawing. This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth as per the specification,approved drawing and direction of Engineer In charge. One no store shed of floor size 10X10 mtr having Fly ash Brick walls and plastering with RCC roof. The flooring shall be of 75 mm thickness PCC (mix ratio1:2:4) over RR masonry works (as per standard practice of flooring). Provision of adequate nos of MS racks (proper paintings also to be done as per the direction of site in charge) for keeping the spare materials. The height of the shed shall be 4mtrs above the plinth. Internal concealed wiring (including supply of flexible copper FRP 1.1 KV PVC wire,conduits & its accessories,modular type switches & switch board,Junction boxes with required MCB & Earth leakage detector switcghear etc),fixing of lighting fixtures & switchgear ,ceiling fans of 1400 sweep and regulators( including supply) and provision of incoming AC supply from the main ACDB/outdoor kiosks installed for street light or colony quarters. Also includes painting of the building (in side and out side) as per recommended for colony building in the specification. (* REMARKS : FOR SUPPLY OF ALL THE CABLES AS INDICATED ARE COVERED IN THE supply)	Lot	1				
27	PLATFORM FOR STORING EQUIMENTS:Design, engineering, procurement of labour, material including all associated works for construction of a platform for storing of bushings,Instrument transformers etc, as per specification and approved drawing.This also includes excavation in all types of soil or rocks,backfilling,and disposal of excess earth as per the specification,approved drawing and direction of Engineer In charge. One no platform outside the store shed RR masonry (compacted) with PCC at the top for storing the transformer bushings, Instrument transformers, transformer oil drums etc. The floor size of the platform shall be 15mtrX10 mtr with Galvanised Corrugated Sheet (Tata Make) top cover and associated MS supporting structure duly painted.	NOS	1				
28	<b>Anti-Weed Treatment</b>						
28.1	Supply of labour,T&P,Chemicals and other necessary arrangements for anti-weed treat of the switch-yard areas,controlroom etc. as per the instruction of Engineer-in-Charge.The chemical to be sprayed as per the standard practice adopted for antiweed treatment of sub-station area & as per the technical specification.	Sq Mtrs	24000				

29	<p>VEHICLE PARKING SHED: The size of the parking area shall be 15mtrs X 15 mtrs, out of the entire area there shall be provision of shed for 5 mtrs X 15 mtrs and rest of the area shall be without shed. 100 mm thick PCC(1:2:4) flooring after the preparing the foundation base &amp; Roof of the parking place shall be RCC &amp; Parking shed shall be as per TS-E6-Civil &amp; as per the direction of Engineer in Charge.</p>	Lot	1				
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30	<p>Construction of township/colony (residential quarters) for staff and employees of the employer. Layout, design, survey, levelling, site dressing and clearing of the area, soil investigation, excavation, PCC, RCC, Fly ash Brick work, plastering ,flooring(flooring shall be with vitrified tiles of reputed make with a dado of minimum 6 inches),fixing of doors windows and window grills, including all labour, T&amp;P, material like cement ,sand aggregate, Fly ash Bricks, reinforcements etc with all bought items required for completion of the quarters as per approved construction drawings with all facilities for supply of drinking water. The outer paint shall be applied with weather coat synthetic enamel paint as per the standard practice of application and the inner paint shall be applied with distemper of approved quality as per the instruction and approval of the same by OPTCL. 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. Internal electrical wiring with fixing of light fixtures and fans with electronic regulators and exhaust fans as per technical specification and approved drawing. Construction of over head RCC tank(1000 ltrs capacity one for each quarters), sewerage disposal and connection with main sewerage/ septic tank and soak pit, storm water and surface drainage, culverts, roads, with suitable radius on the curves and its connection with main road the substation, street lighting, internal lighting, internal plumbing and sanitation including internal/external finishing of quarters etc. required for completion of the town ship. (RCC column structure frame and the Fly ash Bricks to be used shall be fly ash Fly ash Brick, all the door and window frame &amp; panels shall be aluminium with adequate size as indicated in the TS and also as per the National Building Code adopted.</p>						
30.1	<p><b>"D" type Quarter As per technical specification: 1 no quarter on ground floor &amp; 1 no quarter on First floor ,the size of each quarter plinth area shall be 120 Sq Mtrs(appox)</b></p>						
30.1.1	<p><b>"D" type Quarter As per technical specification: 1 no quarter on ground floor &amp; the size of quarter plinth area shall be 120 Sq Mtrs(appox)</b></p>	SQ.MTRS	120				
30.1.2	<p><b>"D" type Quarter As per technical specification: 1 no quarter on First floor &amp; the size of quarter plinth area shall be 120 Sq Mtrs(appox)</b></p>	SQ.MTRS	120				
30.2	<p><b>"E" type Quarter As per technical specification (one no. two storied flat. Each flat shall be with 2 nos quarters on ground floor &amp; 2 Nos quarters on 1st floor).(There shall be 4 Nos quarters to be accommodated in one flat as E1,E2,E3 &amp; E4)</b></p>						

30.2.1	"E" type Quarter As per technical specification: 2 nos quarters on ground floor (Each quarter size plinth area shall be 73 Sq Mtrs(appox))	SQ.MTRS	146				
30.2.2	"E" type Quarter As per technical specification: 2 nos quarters on first floor(Each quarter size plinth area shall be 73 Sq Mtrs(appox))	SQ.MTRS	146				
A	<b>TOTAL CIVIL WORK (PART-A)</b>						
PART B	<b>ELECTRICAL WORK</b>						
1	3150A, 63kA for 3s, one and half Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement. 420kV OUTDOOR GIS EQUIPMENT as per latest IEC standard & type tested equipment as per technical specification, with open future proof & flexible system in line with IEC 61850 & IEC 62271-203.						
1.1	420kV,3150A, 63KA for 3 sec (Busbar, CB, Disconnecter, Grounding switch, CT & PT), SF6 gas insulated Complete Diameter module (2 Nos Feeder) each comprising of SF6 gas insulated Single Pole Circuit Breaker (3 Sets) with CSD (Control Switching Device), Single Phase Current Transformer (18 Nos), Single Phase Potential Transformer (4 Winding) (6 Nos), Motorised 3 Phase Disconnecter (6 Sets), Motorised safety Grounding switch (8 Nos), Motorised 3 Phase Disconnecter with high speed fault making Motorised Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system for complete diameter, SF6 bus duct termination arrangement, online PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent,Limit Switch, SF6 Gas, etc. to complete diameter module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	3				

1.2	420kV,3150A, 63KA for 3 sec (Busbar, Disconnector, Grounding Switch & Bus PT), 3 Phase Isolated, SF6 gas insulated, metal enclosed busbars Complete Diameter module (2 Nos BUS-PT) in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker diameter module. Each busbar set shall be complete with Potential Transformer (4 Winding), Motorised 3 Phase Disconnector (1 No), Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system online PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete diameter module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	1				
1.3	420kV, 3150A, 63kA, 3 Sec, Single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints, accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) etc. as per the technical specification.	RM	900				
1.4	420kV, 3150A, 63kA, SF6/Air BUSHING (Bushing shall be of Polymer / composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure.	No	18				
1.5	Online continuous Partial Discharge Monitoring System (PDM): 420kV GIS equipment system shall have Online continuous Partial Discharge Monitoring System (PDM) system to provide an automatic facility for the simultaneous collection of PD data at multiple points on the GIS & its associated GIB ducts and Voltage Transformers adopting UHF technique & the data stored shall provide a historical record of the progress of PD sources and shall identify the areas of maximum activity. PDM system shall be interfacing with UHF PD couplers provided. The PD Monitoring PC Work Station along with all accessories shall be considered. Power supply to PDM PC shall have protection against surges, overload and short circuit. A dedicated on-line UPS system shall also be provided as a backup during supply interruption, to ensure trouble-free & reliable running of the PDM System for a minimum of 15 minutes duration.	Set	1				
2	<b>3150A, 50kA for 3s, Double Busbar Circuit Breaker (Circuit breaker shall be E2-C2-M2 class as per IEC 62271-100) arrangement.</b> <b>245kV OUTDOOR GIS EQUIPMENT as per latest IEC standard &amp; type tested equipment as per technical specification, with open future proof &amp; flexible system in line with IEC 61850 &amp; IEC 62271-203.</b>						



2.1	<p>245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnecter, Grounding Switch &amp; CT), SF6 gas insulated ICT Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised Busbar 3 Phase Disconnecter (2 Nos), Motorised Disconnecter (1 No), Motorised safety Grounding switch (3 Nos), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring &amp; gaskets, Nuts, Bolts &amp; Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete ICT Feeder Bay Module &amp; its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.</p>	Set	3				
2.2	<p>245kV, 3150A, 50kA for 3 sec (Busbar, CB, Disconnecter, Grounding switch, CT &amp; PT), SF6 gas insulated Line Feeder Bay Module each comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Single phase Line Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Busbar Disconnecter (2 Nos), Motorised safety Grounding switch (2 Nos), Motorised 3 Phase Disconnecter with high speed fault making Motorised Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system for complete bay, SF6 bus duct termination arrangement (3 Nos), PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring &amp; gaskets, Nuts, Bolts &amp; Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Line Feeder Bay Module &amp; its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.</p>	Set	4				
2.3	<p>245kV, 3150A, 50kA for 3 sec (Busbars, Disconnecter, Grounding switch &amp; bus PT), 1 Phase Isolated Bus-PT Bay Module comprising of SF6 gas insulated metal enclosed busbars each enclosed in bus enclosures running along the length of the switchgear to interconnect each of circuit breaker bay module. Each busbar set shall be complete with Single phase bus Potential Transformer (4 winding) (3 Nos), Motorised 3 Phase Disconnecter (1 No) , Motorised Busbar safety Grounding switch (1 No), Local Control Cubicle, SF6 gas monitoring system PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring &amp; gaskets, Nuts, Bolts &amp; Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete the bus &amp; its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.</p>	Set	1				

2.4	245kV, 3150A, 50kA for 3 sec (CB, Disconnecter, Grounding switch & CT), SF6 gas insulated Bus Coupler Bay Module comprising of SF6 gas insulated Single Pole Circuit Breaker (1 Set), Single Phase Current Transformer (6 Nos), Motorised 3 Phase Disconnecter (2 Nos), Motorised safety Grounding switch (2 Nos), Local Control Cubicle, SF6 gas monitoring system, PD sensor (adequate number of UHF sensors in the offered GIS equipment for detection of Partial discharge (of 5 pC and above) as per IEC 60270 through Partial Discharge (PD) monitoring system), different gas compartment, O-ring & gaskets, Nuts, Bolts & Washers for Outdoor use, Absorbent, Limit Switch, SF6 Gas, etc. to complete Bus Coupler Bay Module & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	Set	1				
2.5	245kV, 3150A, 50 kA, 3 sec, single phase, SF6 gas Insulated Bus Duct outside GIS Bay along with associated Support structure arrangement bends, joints, accessories, & its earthing arrangement with earthing strips of adequate size (as per IEEE Std 80-2013 to protect operating staff against any hazardous touch voltages and electro-magnetic interferences) as per the technical specification.	RM	1000				
2.6	245kV,3150A, 50kA SF6/Air BUSHING (Bushing shall be of Polymer / composite insulator type and shall be seamless sheath of a silicone rubber compound. The hollow silicone composite insulators shall comply as per IEC 61462 and IEC 62217. The design of the composite insulators shall be tested and verified according to IEC 61462) FOR CONNECTING GIS TO AIS along with support structure.	No	21				
2.7	Portable Partial Discharge Monitoring System (PDM): 245kV system shall have Portable Partial Discharge Monitoring System (PDM) & shall be capable for measuring PD in charged GIS environment, bandwidth in order of 100MHz–2GHz & provision to select a wide range of intermediate bandwidths and the principle of operation shall be based on UHF principle of detection. The Detection and measurement of PD and bouncing particles having in built large coloured LCD for displaying and storing facility in the instrument for further analysis to locate actual source of PD such as free conducting particles, floating components, voids in spacers, particle on spacer surfaces etc.	Set	1				
3.1	420 KV, 3150 A, 63 KA, Center break ISOLATORS WITH EARTH SWITCH	Nos	4				
3.2	420KV 1 phase Solid core bus post insulator (AIS) as per technical specification.	NOS	6				
3.3	245 KV, 2000A, 40KA, Center break ISOLATORS WITH EARTH SWITCH	NOS	4				
3.4	245KV 1 phase Solid core bus post insulator (AIS) as per technical specification.	NOS	6				
3.5	400KV metal oxide surge arrester, 20 KA , Long duration discharge class IV , 12KJ/KV at 336KV as per technical specification.	NOS	18				
3.6	216KV metal oxide surge arrester, 10KA Long duration discharge class III , 10 KJ/KV at 216KV as per technical specification.	NOS	21				
3.7	30 KV, METAL OXIDE SURGE ARRESTOR, 10kA, Long duration discharge class III (AIS) as per technical specification.	NOS	9				
3.8	36 KV ,1250A, 31.5 KA for 1 sec, isolator (single isolator with earth switch) including post insulators as per technical specification	SET	2				
4	<b>36KV GIS equipment</b>						

4.1	36KV, 1250A, <b>31.5kA</b> for 3 sec, SF6 gas insulated <b>transformer</b> bay module each comprising of SF6 gas insulated <b>Vacuum</b> circuit breaker , current transformer , bus-bar disconnectors with common grounding switch , SF6 gas monitoring system for complete bay (having 33 KV Bus Bar of 2000 Amp) to complete transformer bay module suitable for cable connection to transformer.	SET	3				
4.2	36KV, 1250A , <b>31.5kA</b> for 3 sec, (33 KV Bus Bar 2000 Amp) SF6 gas insulated bus-coupler bay module comprising of SF6 gas insulated <b>vacuum</b> circuit breaker , current transformer , disconnect switches & bus bars each enclosed in bus enclosures running along the length of the switch gear to inter-connect each of circuit breaker bay module. Each busbar set shall be complete with potential transformer , disconnectors, SF6 gas monitoring system for the complete bus etc.	Nos	1				
4.3	Laying and termination of EHV/ <b>HV</b> XLPE Power copper conductor cable for the GIS system as per IS7098 & IEC60840 including installation of indoor & outdoor cable termination kit and associated cable accessories & clamps as per technical specification and direction of Engineer-in -charge.						
4.3.1	36 KV XLPE 630 SQ. MM single core copper Cable as per tech spec (for connectivity from 33 KV side of 220/33 KV Transformer to 33 KV GIS panel) including installation of indoor & outdoor cable termination kit	Mtr	600				
4.3.2	33KV CABLE 300 SQ. MM single core copper as per tech spec (for 33 KV connectivity from GIS equipment to Station Transformer (two nos station trafo) & outgoing feeders upto DP structure end) including installation of indoor & outdoor cable termination kit .	Mtr	1500				
4.4	HV Test Charges for 33 KV GIS	LOT	1				
4.5	36 KV Bus Post Insulator as per technical specification	NOS	9				
5	<b>BUS BAR &amp; CIRCUIT MATERIALS</b>						
5.1	All types of <b>HARDWARES &amp; FITTINGS/SPACERS/CLAMPS &amp; CONNECTORS</b> FOR 400KV SIDE OF THE GIS S/S.	Lot	1				
5.2	All types of <b>HARDWARES &amp; FITTINGS/SPACERS/CLAMPS &amp; CONNECTORS</b> FOR 220 KV SIDE OF THE GIS S/S.	Lot	1				

6	SUBSTATION EARTHING SYSTEMS: Substation earth mat Design, engineering, supply(except the GI Flats, only erection) inclusive of corrosion protection measures if any,laying of earth mat conductors of Hot dip galvanised flats of size 75X12 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 75X12 mm & b) from the finished ground level to the top of the structure and equipment shall be with 75x10 and 50X6 mm GI Flats, with back filling and good compaction,grounding driven rods(40 mm MS solid rod for untreated earth pit ,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 untreated earth pit, refer the specification for designing. Provision of water taps inside the switch yard areas and peripheral treated and un-treated earth pit are required to be provided for watering the treated earth pits. The no. of treated and un treated earth pits 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						
6.1	EARTHING CONDUCTOR FOR BURRIAL :75x12mm for laying as main earth mat (spacing maximum 5m both way)	Mtrs	17000				
6.2	EARTHING CONDUCTOR: 75X 10 mm GI (HDG) Flat for Raiser from the burial earth mat to equipment,structure etc)	Mtrs	7000				
6.3	EARTHING CONDUCTOR: 50X6mm GI (HDG) Flat for Raiser for console box,LT panels,DC panels,Marshalling boxes etc)	Mtrs	3000				
6.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit)	Nos	180				
6.5	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3 mtrs long for non treated earth pit)	Nos	170				
7	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.						
7.1	G.I Cable Trays(size: 450x75x2500mm)	MTRS	4500				
7.2	G.I Cable Trays(size: 300x75x2500mm)	MTRS	4500				
7.3	G.I Cable Trays(size: 150x75x2500mm)	MTRS	1800				
7.4	Support G. I angle 50x50x6 mm for cable tray	MT	6				

8	SWITCH YARD AC CONSOLE FOR LIGHTING (01 nos each on 400KV side & 220 kv side and other area ) as per Technical Specification.	NOS	3				
9	SWITCH YARD RECEPTACLE BOARD FOR TFR OIL FILTERATION (01 no. near 400/220KV ICT) as per Technical Specification.	NOS	1				
10	SWITCH YARD RECEPTACLE BOARD FOR WELDING & OTHER EMERGENCY as per Technical Specification.	NOS	2				
11	HDG SWITCH YARD STRUCTURES (INCLUDING FOUNDATION BOLTS) FOR 400Kv & 220KV CLASS						
11.1	DIFFERENT TYPES OF LATICE TYPE COLUMNS & DIFFERENT TYPE OF BEAMS AND LIGHTING CUM LIGHTNING MAST						
11.1.1	TOTAL WEIGHT OF COLUMN & BEAM	MT	157				
11.2	DIFFERENT TYPE OF SUPPORT STRUCTURES (HDG) OF PIPE TYPE FOR ALL 400KV, 220KV & 33 KV EQUIPMENT INCLUDING HIGH LEVEL SA NEAR TRANSFORMER.						
11.2.1	TOTAL WEIGHT OF PIPE TYPE SUPPORT STRUCTURE FOR ABOVE EQUIPMENT	MT	75				
11.2.2	40 Mtrs heigh Monopole Lighting cum Lightning Mast including LED lighting fixtures with control gear panel etc suitable for wind zone-V.	MT	21				
11.3	Total weight of different type of GI Nuts and bolts for the above structures	MT	11.6				
12	Laying of Power and 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						
12.1	POWER CABLES,1.1KV,XLPE & PVC FRLS ,FLAT STRIP ARMoured, ALUMINIUM CONDUCTOR (As per Specification)						
12.1.1	XLPE-3.5 CX185 mm2	Mtrs	500				
12.1.2	XLPE-3.5 CX120 mm2	Mtrs	500				
12.1.3	PVC-3.5 CX70 mm2	Mtrs	250				
12.1.4	PVC-3.5 CX35 mm2	Mtrs	500				
12.1.5	PVC-4 CX 16 mm2	Mtrs	1000				
12.1.6	PVC-4 CX 6 mm2	Mtrs	1000				

12.1.7	PVC-2CX 6 mm2	Mtrs	2000				
12.2	CONTROL CABLES,1.1 KV,PVC FRLS , COPPER STRANDED ARMOURED STRANDED(As per specification).						
12.2.1	4 CX 2.5 mm2	Mtrs	6000				
12.2.2	5 CX 2.5 mm2	Mtrs	4000				
12.2.3	7CX 2.5 mm2	Mtrs	5000				
12.2.4	10 CX 2.5 mm2	Mtrs	10000				
12.2.5	12 CX 2.5 mm2	Mtrs	5000				
12.2.6	16 CX 2.5 mm2	Mtrs	5000				
12.2.7	19 CX 2.5 mm2	Mtrs	3000				
12.2.8	1CX 120 mm2 BAT TO BAT CHARGER & CHARGER TO DCDB	Mtrs	300				
13	HARD CONDUIT INCLUDING of adequate tensile strength minimum 7kg/sqmm or better & ITS ACCESSORIES LIKE ALL TYPE OF SOCKETS & BENDS FOR TAKING CABLE FROM TRENCH TO EQUIPMENT MB etc	LOT	1				
14	<b>ACCESSORIES FOR PLCC SYSTEM With OPGW cable</b>						
14.1	48 Fibre Optic Approach cable along with HDPE Pipes(As per the erection charges mentioned in the Price Bid of Chandaka-B)	KM	1				
14.2	Erection/comissioning of SDH/MUX along with termination with FODP	No	2				
14.3	Erection/commissioning of digital tele-protection coupler	No	1				
14.4	48 V, 300 AH, maintenance free VRLA Battery set.	Set	1				
14.5	SMPS based Battery Charger of 75A suitable for 48V VRLA Battery set	No	1				
14.6	2.5 sq. mm muti strand 2 core control cable(power supply,Transducer/MFT PT supply)	Metre	600				
14.7	2.5 sq. mm multi strand 4 core control cable(Transducer/MFT CT supply)	Metre	600				
14.8	1.5 sq. mm multi strand 10 core control cable(Digital Input)	Metre	500				
14.9	10 sq. mm 2 core multi strand control cable(Battery)	Metre	300				
14.10	48V DCDB	No	1				
14.11	Earth Flat, Cable Tray, Telephone cable, Foundation rail, Junction Box,.	Lot	1				
15	SUPPLY OF STATION TRANSFORMER & OTHER MATERIALS FOR MEETING THE AUXILIARY SUPPLY OF THE SUB-STATION AS PER TECHNICAL SPECIFICATION						

15.1	STATION TRANSFORMER 33KV/0.43 V,500 KVA (Confirming to Energy Efficiency Level 2 -AS PER SPECIFICATION & relevant IS)	NOS	2				
15.2	<p><b>One no. 4 pole structure (HDG Type) alongwith other equipment &amp; materials for two nos station transformers:</b></p> <p>1.4 Pole structure (using 200X100 mm RS Joist)</p> <p>2. Channel &amp; Angle FOR BRACING OF, CHANNEL for the SA &amp; Isolator &amp; HG fuse etc.</p> <p>3. 90 KN Disc/composite long rod Insulators for 33 KV (48 nos./12 sets) for bus, Bus stringing using ACSR moose conductor &amp; tension hardwares,other clamps &amp; connectors etc as per requirement.</p> <p>4. 2sets of 33 KV Isolator (800 AMP) for 33 KV side of station trafo.</p> <p>5. 2sets of 33 KV HG FUSE.</p> <p>6. 125 Sq mm AAAC conductor suitable for connection between HG fuse &amp; station transformer bushing.</p> <p>7. 2 sets of LT OUT DOOR KIOSK MADE OUT OF 3mm CRCA sheet GI MARSHALLING BOX suitable for outdoor mounting. The bus bar suitable for 1000 AMP shall be arranged in the out door kiosk and other Facility like two sets of 400 Amps MCCB for incoming &amp; outgoing with required sizes of terminal studs for power cable termination &amp; any other accessories required.</p> <p>All materials shall be As per relevant latest IS &amp; as per the direction of Engg. in charge</p>	SET	2				
16	SUB STATION LIGHTING (AS PER SPECIFICATION AND APPROVED DRAWINGS )(Switch yard and other street area)(Including provision of the fittings on the LM)						
16.1	SUB-STATION SWITCH YARD LIGHTING,IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj/ any other approved make of OPTCL) with switch gear,GI Conduit etc.(Lighting fixtures are to be fixed rigidly on the Column at a suitable height so that the required lux can be achieved).(150 watt each)	SET	60				
17	STREET LIGHTING: IT INCLUDES SUPPLY OF GI TUBULAR POLE AS PER TECHNICAL SPECIFICATION, LED LIGHTING FIXTURES including LAMPS of reputed make (Philips/CGL/Bajaj).(100 watt each) for Street Light. (TO BE PROVIDED IN THE SWITCH YARD, ALONG THE ROADS (APPROACH INSIDE YARD AND OTHER ROADS).						
17.1	LED LIGHTING FIXTURES including LAMPS of reputed make (Philips/CGL/Bajaj/ any other approved make of OPTCL).(100 watt each) for Street Light.	SET	60				
17.2	GI Tubular Pole: (410-SP-24: IS 2713-Part-II-1980 or latest) Length of pole 8.5 mtrs(minimum weight 158 Kgs). (ALL THE STREET LIGHT POLE SHALL BE OF GI TUBULAR POLE AND PROVISION OF A GI JUNCTION BOX WITH SUITABLE COVERS AT A HEIGHT OF 1 METRE FROM THE GROUND. THE JUNCTION BOX SHALL HAVE PROVISION OF FUSES, BUSES, CONNECTORS FOR CABLE IN AND OUT.	SET	60				

17.3	OUTDOOR KIOSK of 3 mm thick CRCA sheet duly hot dip galvanised FOR STREET LIGHT HAVING 2 NOS 200 AMP SWITCH FUSE UNITS AND 10 NOS. OUT LETS OF 32 AMP MCB.	NO	2				
18	2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF 5 star rated AIR CONDITIONERS, Automatic Voltage Stabiliser,CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION ) FOR CONTROL ROOM, CARRIER ROOM & CONFERENCE ROOM.,OFFICE ROOM etc which includes all type of cables & wires and a main control switch gear kiosk having sufficient outlet for each air conditioner unit.	NOS.	20				
19	FIRE FIGHTING SYSTEM(PORTABLE /TROLLEY/ WHEEL MOUNTEDFIRE EXTINGUISHERS SETS FOR CONTROL ROOM,EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC(REFER TS-VOL-IIA-SCOPE OF WORKAT SL NO. 15-ANNEXURE - I)						
19.1	FOAM TYPE-9 LTRS	NOS	4				
19.2	DRY CHEMICAL POWDER(TROLLEY MOUNTED)- 22.5 KGS	NOS	6				
19.3	DRY POWDER TYPE - 5 KGS	NOS	6				
19.4	CO2 - 4.5 KGS	NOS	10				
19.5	CO2 - 9 KGS	NOS	10				
19.6	CO2 (TROLLY MOUNTED)- 22.5 KGS	NOS	4				
19.7	9 litre water type	Nos.	4				
19.8	4.5 kg DCP type	Nos.	4				
19.9	50 Litres Mechanical Foam type	Nos.	2				
19.10	FIRE BUCKET (6 NOS IN EACH STAND) WITH STAND	SET	5				
20	<b>SUBSTATION AUTOMATION SYSTEM FOR 400/220 KV SUBSTATION ON PRP MODE:</b> Design , engineering , drawing, supervision, installation , testing & commissioning of Substation Automation system alongwith Supply of the following 400,220,and 33 kV level of protection panels consisting of Bay control Units & numerical protection relays and other auxiliary relays suitable for SAS as per technical specification. NOTE: All protective relays & BCU shall be numerical type.						
20.1	Yard AC Kiosk :5000 mm (L)x4000mm (W)x 3300mm (H) with AC, <b>as per the Specification;</b>	Nos.	4				



20.2	Gate way panel for Sub-Station Automation (in PRP as per the specification & indicative drg ) system (for All 400 , 220 & 33 KV side bays including the future bays),other accessories (comprising servers, engg. Station, works station (Main & standby), Remote station control, Colour Laser jet Printers & dot matrix printer for local station as per requirement and also for remote station, Ethernet Switches , LIU, Red Box, Multimode glass fibre Double jacket armoured optical cables, special cables like F.O patch cord & armoured FO cables of adequate length etc required for the system in all respect as per latest IEC 61850 standard, Inverters of required capacity & rating (3KVA-Input shall be both A.C & D.C and output shall be A.C) etc as per TS. A Full HD LED screen of 70 inches for display including all type of accessories & as per technical specification.	SET	1				
20.3	BCU for Substation Auxilliary System (Dadas for monitoring of Station AC, Station DC, Lighting, Fire fighting, Air conditioning, Diesel generator etc. as per the site requirement)	SET	1				
20.4	GPS System with PTP, IRIG-B, SNTP	SET	1				
20.5	<b>400 KV SIDE PROTECTION &amp; OTHER PANELS as per Technical specification.</b>						
20.5.1	FEEDER PROTECTION PANEL (MAIN-I , MAIN-II & BACK-UP PROTECTION WITH AUTO RECLOSURE DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system.	NOS	4				
20.5.2	TRANSFORMER PROTECTION PANEL (DIFFERENTIAL I & II , REF I & II & BACK-UP PROTECTION for HV & IV side CONSIDERING HV ,IV & LV side for 500 MVA 400/220/33 KV ICT) with Bay control units (BCU) for substation automation system.	SET	2				
20.5.3	TIE BREAKER PROTECTION PANEL with Bay control unit (BCU) for substation automation system.	NOS	3				
20.5.4	BUS-BAR PROTECTION PANEL ( Including Provision of bus bar modules for the future bays and to be integrated with the Automation system)	NOS	1				
20.6	<b>220 KV SIDE PROTECTION &amp; OTHER PANELS</b>						
20.6.1	FEEDER PROTECTION PANEL (MAIN-I , MAIN-II & BACK-UP PROTECTION WITH AUTO RECLOSURE DISTANCE PROTECTION with Bay control unit (BCU) for substation automation system.	NOS	4				
20.6.2	TRANSFORMER PROTECTION PANEL (DIFFERENTIAL I & II , REF I & II & BACK-UP PROTECTION for HV & LV side CONSIDERING HV & LV side for 40 MVA220/33 KV Power Trnsformer) with Bay control units (BCU) for substation automation system.	SET	1				
20.6.3	BUS COUPLER PROTECTION PANEL with Bay control unit (BCU) for substation automation system.	NOS	1				
20.6.4	BUS-BAR PROTECTION PANEL ( Provision of bus bar modules for the future bays and to be integrated with the Automation system)	NOS	1				
20.7	<b>33 KV SIDE PROTECTION PANELS</b>						
20.7.1	33 KV BUS COUPLER PROTECTION Panel with Bay control protection unit (BCPU) with with all other relays & component required for complete prtction,control etc as per TS and also suitable for substation automation system.	No	1				

20.7.2	STATION TRANSFORMER PROTECTION PANEL (BACK-UP PROTECTION CONSIDERING 2X500 KVA 33/0.43 KV ) with Bay control protection units (BCPU) with with all other relays & component required for complete prtecton,control etc as per TS and also suitable for substation automation system. [2nos. Feeeder bays in one panel]	SET	1				
21	<b>AC &amp; DC SYSTEM</b>						
21.1	<b>AC SYSTEM</b>						
21.1.1	MAIN AC DB,(HAVING A 1600 A,50KA,DRAWOUT TYPE ACB WITH 3 O/C,E/F,U/V RELAYING FACILITY and MECH& ELECT INTERLOCK FACILITY CONSIDERING Main-1,2 & DG INDOOR TYPE AS PER SPECIFICATION.(MAIN DB-1,MAIN DB-2 WITH B/C & PROVISION FOR D.G INCOMING)	SET	1				
21.1.2	ACDB (HAVING 800A MCCB) AS PER SPECIFICATION (AC DB-1,AC DB-2 WITH B/C)	SET	1				
21.1.3	MAIN LIGHTING DISTRIBUTION BOARD (HAVING 250A MCCB AS INCOMER)AS PER SPECIFICATION (WITH DB-1,DB-2 & B/C)	SET	1				
21.1.4	INDOOR LIGHTING DISTRIBUTION BOARD AS PER SPECIFICATION. (WITH DB-1,DB-2 & B/C)	SET	1				
21.1.5	EMERGENCY LIGHTING DISTRIBUTION BOARD	SET	1				
21.1.6	INDOOR RECEPTACLE BOARD	SET	2				
21.2	<b>DC SYSTEM</b>						
21.2.1	220 V DC BOARD (HAVING 100A DC MCCB AS INCOMER, E/F (EARTH LEAKAGE), UNDER & OVER VOLTAGE AS PER SPECIFICATION (DC DB-1,DC DB-2 & B/C). Consider separate source(DC1 & DC 2) to each panels & accordingly sufficient nos. of DC output from DB-1 & 2 to be considered.	SET	1				
21.2.2	220 V DC EMERGENCY DISTRIBUTION BOARD	SET	1				
21.2.3	BATTERY (645 AH PLANTE TYPE) for 220 V DC	SET	2				
21.2.4	BATTERY CHARGER FOR 645 AH, 220 V DC (FLOAT & FLOAT CUM BOOST) (including provision of series dropper diodes with heat sinks & other protection facility at the DC Load terminal end in order to feed 220 V to the load).	SET	2				
22	DE MINERALISED PLANT of 30 L/Hr FOR MAKING DISTLED WATER FOR BATTERY BANKS	SET	1				
23	PORTABLE ALUMINIUM LADDER EXTENDABLE TYPE OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT INSIDE SWITCH YARD.(REFER TS-VOL-IIA-SCOPE OF WORKAT SL NO. 19)	NOS	2				

24	CARTWHEEL MOUNTED ALUMINIUM LADDER OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT .	NOS	2				
25	WATER COOLER WITH WATER PURIFIER (with R.O & ultra violet purification system of ISI mark) SYSTEM	NOS	2				
26	MAINTENANCE & TESTING EQUIPMENT (REFER TS-VOL-III of III-E25-TESTING INSTRUMENTS- Maintenance & Testing Equipment ANNEXURE-I & OTHER TOOLS AND PLANTS -ANNEXURE-II for 220/132/33KV S/S) INDICATED IN -SCHEDULE OF REQUIREMENTS OF MAINTENANCE EQUIPMENT).	LOT	1				
27	OFFICE FURNITURE (REFER TS-VOL-III of III-E25-TESTING INSTRUMENTS- SL NO. 16 - ANNEXURE - III for 220/132/33KV S/S) & PLACING IN CONTROL ROOM,CONFERENCE ROOM,OFFICE ROOMS,LIBRARY,TESTING LAB,etc.	LOT	1				
28	Erection of FIRE FIGHTING EQUIPMENT: (Main Pump, Jockey Pump, DG Set cum Pump, Control Panel for Fire Fighting System (HIGH PRESSURE : Hydrant and Mulsifire system) to take care of 2 Nos 500 MVA ICT, switchyard equipment and buildings. HVW system & hydrant sytsem, complete with all piping, valves, fittings etc inside pump house for Fire protection sytem of substation) as per the technical spec.	LOT	1				
28.1	Hydrant sytsem, complete U/G piping of different sizes,vaves and accessories etc outside the Pump House for Fire protection sytem of of 2 Nos 500 MVA ICT, switchyard equipment and buildings as per the technical spec.	LOT	1				
28.2	HVW Spray sytsem, Hydrant System and complete U/G and O/G piping,different type of valves,Fire sensor etc and accessories etc near the Transformer for Fire protection of 500 MVA, 400/220/33 KV ICT as per the technical spec.	LOT	1				
29	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size	Nos	45				
30	250 KVA outdoor type silent Generator with contro panel having adequate mechanical & electrical protection as per latest IS with Automatic Mains Failure feature as per Technical spec.	NOS	1				

31	ERECTION OF THE TRANSFORMERS AND ITS ACCESSORIES ON THE PLINTH AND PLACING IN POSITION, ERECTION OF ACCESSORIES OF THE TRANSFORMERS, EART-HING AS PER STANDARD(INCLUDING SUPPLY OF MATERIALS),VACUUM TREATMENT OF THE TANK AND WINDING,OIL FILTRATION(INCLUDING SUPPLY OF VACUUM CUM OIL FILTER MACHINE),SUPPLY & LAYING OF ALL TYPES OF CONTROL & POWER CABLES PERTAINING TO TRANSFORMERS , TESTING AND COMMISSIONING INCLUDING ALL TESTS OF THE OILS AS PER STIPULATION IN THE STANDARD APPROVED TESTING LABORATORY AND AS PER THE INSTRUCTION OF THE ENGINEER IN CHARGE.THIS INCLUDE ALL RELATED WORKS FOR ERECTION,TESTING AND COMMISSIONING OF THE POWER TRANSFORMERS.(CONTRACTOR TO ARRANGE POWER SUPPLY FOR FILTRATION AND VACUUM TREATMENT WORKS).IT ALSO INCLUDES SUPPLY OF ALL MATERIALS FOR ERECTION INCLUDING						
31.1	400/220KV, 500 MVA ICT	Nos	2				
31.2	40 MVA, 220/33kV Power Transformer	Nos	1				
<b>TOTAL OF ELECTRICAL WORKS (PART-B)</b>							
<b>TOTAL OF ERECTION OF SUBSTATION (Electrical Work) &amp; (Civil Work) -Schedule-4-ss (to Schedule No. 6 Grand Summary)</b>							
1 Specify currency in accordance with specifications in Bid Data Sheet under ITB 19.1 in Single-Stage Bid, or ITB 34.1 in Two-Stage Bid.							

**ODISHA POWER TRANSMISSION CORPORATION LIMITED**

**NAME OF THE WORK:-Design, Supply and Installation of 2X500 MVA ICT for Out Door Type,400/220 KV GIS Grid Sub-station at (Ramkrushnapur),Bhadrak.in Odisha State of India under PACKAGE-3 Under Japan International Cooperation Agency (JICA)'s ODA Loan.**

**Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/03 /18-19]- Reference Identification No: [OPTCL/JICA/PKG-3]**

**Schedule No. 6. Grand Summary**

NAME OF THE BIDDER		Total Price <sup>1</sup>	
		Foreign	Local
Item	Description		
1	Total Schedule No. 1. Plant, Supplied from Abroad (Substation)		
2	Total Schedule No. 2. Plant, Supplied from Within the Employer's Country (substation)		
3	Total Schedule No. 3. Design Services (Not Applicable)		
4	Total Schedule No. 4. Installation and Other Services (substation)		
5	Total Schedule No. 5. Provisional Sums (Not to be considered for Evaluation)		
Total( to Bid Form)			

Name of Bidder: \_\_\_\_\_

Signature of Bidder: \_\_\_\_\_

<sup>1</sup> Specify currency in accordance with specifications in Bid Data Sheet under ITB 19.1 in Single-Stage Bidding, or ITB 34.1 in Two-Stage Bidding. Create and use as many columns for Foreign

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**Schedule No. 7. Recommended Spare Parts**

**NAME OF THE BIDDER**

SI. No.	DESCRIPTION OF ITEMS SUPPLY OF SPARES FOR THE FOLLOWING EQUIPMENTS. (As per Technical Specification)	Unit	Quantity	Unit Price		Total Price in INR
				CIP (foreign parts)	Ex-Works Price Local Parts	
			(1)	(2)	(3)	(1) x (2) or (3)
<b>TOTAL</b>						

Name of Bidder:\_\_\_\_\_

Signature of Bidder:\_\_\_\_\_

Note: Recommended Spares shall not be taken in to consideration for evaluation purpose.

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**FB No: [CPC/JICA/ICB/03 /18-19]-**

**Reference Identification No: [OPTCL/JICA/PKG-3]**

**Schedule No. 8. Details of Taxes & Duties**

**NAME OF THE BIDDER**

Sl No	Description of Applicable Tax/Levy		Tax @ __%	Total Amount of Taxes /Duty/ Levies
<b>1</b>	Details of Taxes and levies on the direct / bought out transactions between Bidder and ODISHA POWER TRANSMISSION CORPORATION LTD included in the Bid			
(i)	TOTAL IGST			
(ii)	TOTAL CGST			
(III)	TOTAL OGST			
(iv)	TOTAL Any other tax			
	TOTAL OF TAXES AND DUTIES [Sum (i) to (iv)]			
<b>2</b>	Details of Taxes and levies on the direct / bought out transactions between Bidder and ODISHA POWER TRANSMISSION CORPORATION LTD included in the Bid Price above but as may be payable by ODISHA POWER TRANSMISSION CORPORATION LTD (Schedule- 4)			
(i)	TOTAL IGST			
(ii)	TOTAL CGST			
(III)	TOTAL OGST			
(iv)	TOTAL Any other tax			
	TOTAL OF TAXES AND DUTIES [Sum (i) to (iv)]			
<b>4</b>	<b>F. Total Bid Price: (including Taxes &amp; Duties and other</b>			

Name of Bidder: \_\_\_\_\_

Signature of Bidder: \_\_\_\_\_