

## ODISHA POWER TRANSMISSION CORPORATION LIMITED

**NAME OF THE WORK:-** Design, Supply and Installation of Sub-Station & Transmission Lines for Procurement of 2X20 MVA, 220/33 KV Sub-station at GOBINDPALLI & associated 220KV LILO line on 220KV BALIMELA - MALKANGIRI Second CKT Line (Approx. Line length-37.600 Kms.) and stringing of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI and associated 220KV bay extension at Balimela & Malkangiri S/S in Odisha State of India under PACKAGE-5A Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-T245] - TB No: [CFC/JICA/ICD/OSA/10-177]- Reference Identification No: [OFTCL/JICA/TKG-5A1]

### Schedule No. 1. Plant and Mandatory Spare Parts Supplied from Abroad (Sub-station & Bay extension)

#### NAME OF THE BIDDER

SL NO	SUPPLY OF FOLLOWING EQUIPMENTS (As per Technical Specification)	Code <sup>1</sup>	Units	Quantity for: Construction of 2x20 MVA, 220/33 KV Sub-Station at Gobindapalli 220 KV BAY 05 NOS (FDR:02,TFR:02 & B/C:01) & 33 KV BAY 07 NOS (FDR:04,TFR:02 & B/C:01)	Quantity for: 01 No. Feeder Bay Extension at 220/33 kV Grid S/s Balimela	Quantity for: 01 No. Feeder Bay Extension at 220/33 kV Grid S/s Malkangiri	Total Quantity	Unit Price <sup>2</sup>		Total Price <sup>2</sup>
								In Foreign Currency	CIP	
							(1)	(2)	(3)	(1) x (3)
1	245 KV,1200-600-300A,40KA,5CORE SINGLE PHASE CURRENT TRANSFORMER(4 PS CI & 1 0.2s CI)		NOS	18	3	3	24			
2	<b>245 KV,2000A,40KA,ISOLATORS</b>									
2.1	S/I WITH OUT EARTH SWITCH		NOS	18	3	3	24			
2.2	S/I WITH SINGLE EARTH SWITCH		NOS	4	1	1	6			
2.3	BEAM MOUNTED S/I WITHOUT EARTH SWITCH		NOS	4	1	1	6			
3	245 KV,4400pF,3CORE,SINGLE PHASE CAPACITOR VOLTAGE TRANSFORMER		NOS	6	3	3	12			
4	245KV,3150A,50KA,SF6,CIRCUIT BREAKER WITH SUPPORTING STRUCTURE		NOS	5	1	1	7			
5	216 KV, METAL OXIDE SURGE ARRESTOR,10 KA, class III		NOS	12	3	3	18			
6	245 KV ,2 CORE,SINGLE PHASE,IVT		NOS	6	0	0	6			
7	220 KV Bus Post Insulators		NOS	54	12	12	78			
8	36 KV,800-400-200,25KA,4CORE SINGLE PHASE CURRENT TRANSFORMER(3 PS CI & 1 0.2s CI)		NOS	6	0	0	6			

9	36 KV,800-400-200,25KA,3CORE SINGLE PHASE CURRENT TRANSFORMER (2 PS CI & 1 0.2s CI)		NOS	15	0	0	15			
10	<b>36 KV,1250A,25KA,ISOLATORS</b>									
10.1	S/I WITH OUT EARTH SWITCH		NOS	8	0	0	8			
10.2	D/I WITH SINGLE EARTH SWITCH		NOS	4	0	0	4			
10.3	D/I WITHOUT EARTH SWITCH		NOS	2	0	0	2			
10.4	S/I WITH BEAM MOUNTED		NOS	2	0	0	2			
11	30 KV, METAL OXIDE SURGE ARRESTOR, 10KA, class II(Beam Mounted)		NOS	24	0	0	24			
12	36 KV ,2 CORE,SINGLE PHASE,IVT		NOS	3	0	0	3			
13	36KV,1250A,25KA,VACUUM CIRCUIT BREAKER WITH SUPPORTING STRUCTURE		NOS	7	0	0	7			
14	33 KV Bus Post Insulators		NOS	20	0	0	20			
15	<b>BUS BAR &amp; CIRCUIT MATERIALS</b>									
15.1	ANTI FOG TYPE INSULATOR									
15.1.1	220 KV LONG ROD 160 KN PORCILAIN INSULATOR(220KV Side)		NOS	96	30	30	156			
15.1.2	220 KV LONG ROD 120 KN PORCILAIN INSULATOR(220KV Side)		NOS	12	9	9	30			
15.1.2	120 KNLong Rod Porcelain INSULATOR(33KV Side)		NOS	66	0	0	66			
15.1.3	90 KNLong Rod Porcelain INSULATOR(33KV Side)		NOS	33	0	0	33			
15.2	ACSR MOOSE CONDUCTOR		KMS	5.00	0.50	0.50	6			
15.3	IPS 4" ALUMINIUM TUBES(114.2 mm OD, & 8.51mm Thickness) for equipment to equipment connection in 220 KV side.		MTRS	370	80	80	530			
15.4	<b>HARDWARES &amp; FITTINGS/SPACERS/CLAMP &amp; CONNECTORS</b>									
15.4.1	220 KV Double Tension H/W fitting for twin moose ACSR (Single Anchoring		NOS	24	12	12	48			
15.4.2	220 KV Single Tension H/W fitting for single moose ACSR		NOS	24	12	12	48			
15.4.3	220 KV Single Suspension H/W fitting for single mose ACSR		NOS	6	6	6	18			
15.4.4	220 KV Double Suspension H/W fitting for twin mose ACSR (Single Anchoring Point)		NOS	18	6	6	30			
15.4.5	33 KV Single Tension H/W fitting for single moose ACSR		NOS	30	0	0	30			
15.4.6	33 KV Double Tension H/W fitting for twin moose ACSR (Single Anchoring Point)		NOS	24	0	0	24			
15.4.7	33 KV Single Suspension H/W fitting for single mose ACSR		NOS	12	0	0	12			
15.4.8	220kv T- clamp for ACSR ZEBRA run to ACSR MOOSE drop		NOS	18	9	9	36			
15.4.9	T-Clamp for single Moose -Single Moose ACSR		NOS	42	3	3	48			
15.4.10	T-Clamp for twin Moose run -Single Moose drop ACSR		NOS	36	3	3	42			
15.4.11	220 KV PI clamp		NOS	54	12	12	78			
15.4.12	33KV PI Clamp		NOS	20	0	0	20			
15.4.13	Spacer for Moose ACSR		NOS	120	18	18	156			
15.4.14	220 KV Isolator pad clamp		NOS	132	30	30	192			
15.4.15	220 KV LA Clamp		NOS	12	3	3	18			
15.4.16	220 KV CVT Clamp		NOS	6	3	3	12			
15.4.17	220 KV CT Clamp		NOS	36	6	6	48			
15.4.18	220 KV IVT Clamp		NOS	6	0	0	6			
15.4.19	220 KV CB Clamp		NOS	30	6	6	42			
15.4.20	33 KV Isolator pad clamp		NOS	114	0	0	114			

15.4.21	33 KV LA Clamp		NOS	24	0	0	24			
15.4.22	33 KV CT Clamp		NOS	42	0	0	42			
15.4.23	33 KV IVT Clamp		NOS	3	0	0	3			
15.4.24	33 KV CB Clamp		NOS	42	0	0	42			
15.4.25	PG Clamp for ACSR Moose		NOS	48	18	18	84			
15.5	<b>EARTH WIRES &amp; IT'S HARDWARES &amp; FITTING</b>									
15.5.1	Earthing Spikes and Its Fittings in all respect.									
15.5.1.1	Earthing Spikes of 9 mtr long each and Its Fittings in all respect. (220 kv side)		NOS	37	3	3	43			
15.5.1.2	Earthing Spikes of 5 mtr long each and Its Fittings in all respect. (33 KV side)		NOS	25	0	0	25			
16	<b>SUBSTATION EARTHING SYSTEMS</b>									
16.1	EARTHING CONDUCTOR FOR BURRIAL : 75X10 mm GI Flat for laying (spacing maximum 5m both way)		MT	31	4	4	39			
16.2	EARTHING CONDUCTOR: 50X6 mm GI Flat for Raiser from the burial earth mat to equipment,structure etc)		MT	10.41	1.25	1.25	12.91			
16.3	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit)		Nos.	180	25	25	230			
16.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3 mtrs long for non treated earth pit)		Nos.	120	15	15	150			
16.5	Pipe-in-Pipe earthing electrode		Nos.	4	0	0	4			
17	G.I Cable Trays including support GI angle suitable for different sections i.e. Section:1-1,2-2,3-3 & 4-4 along with its accessories as per TS.									
17.1	G.I Cable Trays(size: 450x75x2500mm)		MTRS	1200	125	125	1450			
17.2	G.I Cable Trays(size: 300x75x2500mm)		MTRS	2000	100	100	2200			
17.3	G.I Cable Trays(size: 150x75x2500mm)		MTRS	1500	50	50	1600			
17.4	Support G. I angle 50x50x6 mm for cable tray		MT	2.5	0.25	0.25	3			
18	<b>SUB STATION SWITCHYARD BMK,AC CONSOLE &amp; OTHER MARSHALLING BOXES</b>									
18.1	BAY MARSHALLING KIOSK (03 nos on 220 kV bay & 04Nos 33 KV bay )		NOS	7	1	1	9			
18.2	SWITCH YARD AC CONSOLE FOR LIGHTING (01 nos on 220 kV bay & 01 No in 33KV bay )		NOS	2	0	0	2			
18.3	SWITCH YARD RECEPTACLE BOARD FOR TFR OIL FILTERATION (01 no. near 220/33 KV power Transformer)		NOS	1	0	0	1			
18.4	SWITCH YARD RECEPTACLE BOARD FOR WELDING & OTHER EMERGENCY (01 nos on 220 & 33 kV bay )		NOS	2	0	0	2			
19	<b>SWITCH YARD STRUCTURES (LATTICE TYPE FOR TOWER COLUMN &amp; BEAMS &amp; PIPE TYPE FOR ALL EQUIPMENT COLUMN) FOR 220/132/33 KV CLASS INCLUDING FOUNDATION BOLTS &amp; NUTS.</b>									
19.1	<b>DIFFERENT TYPES OF COLUMNS WITH DETAILS</b>									
19.1.1	RP1S-220 KV (NOMINAL UNIT WT- 4.5 MT) (24 NOS.+4NOS.+4NOS.)		MT	108	18	18	144			
19.1.2	RP2S-220 KV (NOMINAL UNIT WT- 1.5 MT) (6NOS.)		MT	9	0	0	9			

19.1.3	T1S - 132 KV(NOMINAL UNIT WT- 1.2 MT) (4 NOS.)		MT	0	0	0	0			
19.1.4	T8S - 33KV(NOMINAL UNIT WT- 0.8 MT) (11 NOS.)		MT	0	0	0	0			
19.1.5	T9S - 33KV(NOMINAL UNIT WT- 0.6 MT) (14 NOS.)		MT	8.4	0	0	8.4			
19.2	<b>DIFFERENT TYPE OF BEAMS WITH DETAILS</b>									
19.2.1	RQ1-220KV (NOMINAL UNIT WT- 1.5 MT) (22NOS.+4NOS.+4NOS.))		MT	33	6	6	45			
19.2.2	RQ2-220KV (NOMINAL UNIT WT-2.5 MT) (8 NOS.+2NOS.+2NOS.)		MT	20	5	5	30			
19.2.3	Q4-220KV (NOMINAL UNIT WT- 0.9 MT) (4 NOS.)		MT	0	0	0	0			
19.2.4	G1 - 132KV (NOMINAL UNIT WT- 0.62 MT) (4 NOS.)		MT	0	0	0	0			
19.2.5	G6 - 33KV (NOMINAL UNIT WT- 0.53 MT) (4 NOS.)		MT	2.12	0	0	2.12			
19.2.6	G4 - 33KV(NOMINAL UNIT WT- 0.4 MT) (12 NOS.)		MT	4.8	0	0	4.8			
19.2.7	G4X - 33KV (NOMINAL UNIT WT- 0.4 MT) (2 NOS.)		MT	0.8	0	0	0.8			
19.3	<b>TOTAL WEIGHT OF COLUMN &amp; BEAM</b>		<b>MT</b>	<b>186.12</b>	<b>29</b>	<b>29</b>	<b>244.12</b>			
19.4	<b>EQUIPMENT SUPPORT STRUCTURES (PIPE TYPE) FOR ALL 220KV, 132 KV &amp; 33KV EQUIPMENTS INCLUDING FOUNDATION BOLTS &amp; NUTS</b>									
19.4.1	ISOLATORS-220KV ( SI with E/S-4 No.+01 No.+01No.)		MT	5.084	1.271	1.271	7.626			
19.4.2	ISOLATORS-220KV (SI without E/S:18Nos.+03 nos.+03 nos.)		MT	22.878	3.813	3.813	30.504			
19.4.3	BEAM ISOLATORS-220KV ( SI with E/S: 4Nos.+01 No.+01No.)		MT	5.084	1.271	1.271	7.626			
19.4.4	ISOLATORS-33 KV ( SI-8 Nos.)		MT	2.0664	0	0	2.0664			
19.4.5	ISOLATORS-33 KV ( DI with E/S -4 Nos.)		MT	2.5776	0	0	2.5776			
19.4.6	ISOLATORS-33 KV ( DI without E/S-2 Nos.)		MT	1.234	0	0	1.234			
19.4.7	CTS-220 KV (15 nos.+03 nos.+03 nos.)		MT	3.375	0.675	0.675	4.725			
19.4.8	CTS-33 KV (15 nos.)		MT	1.74	0	0	1.74			
19.4.9	CVTS-220 KV (6 nos.+03 nos.+03 nos.)		MT	1.326	0.663	0.663	2.652			
19.4.10	IVTS-220 KV (3 nos.)		MT	1.7232	0	0	1.7232			
19.4.11	IVTS-33 KV (3 nos.)		MT	0.3546	0	0	0.3546			
19.4.12	Surge Arrester-220 Kv( 12 nos.+03 nos.+03 nos.)		MT	3.5052	0.8763	0.8763	5.2578			
19.4.13	BPI-220 KV (38nos.+12 Nos.+12Nos.)		MT	15.8112	3.5136	3.5136	22.8384			
19.4.14	BPI-33 KV (20 nos.)		MT	4.126	0	0	4.126			
19.4.15	NCTs(4 nos)		MT	0.464	0	0	0.464			
19.5	<b>TOTAL WEIGHT OF EQUIPMENT STRUCTURE</b>		<b>MT</b>	<b>71.3492</b>	<b>12.0829</b>	<b>12.0829</b>	<b>95.515</b>			
19.6	<b>TOTAL WEIGHT OF EQUIPMENT &amp; Column GI Foundation Bolts &amp; Nuts</b>		<b>MT</b>	<b>12</b>	<b>2.412</b>	<b>2.412</b>	<b>16.824</b>			
19.7	<b>Total weight of GI Nuts and bolts for Columns, Beams &amp; Equipment Structures</b>		<b>MT</b>	<b>12</b>	<b>2.5</b>	<b>2.5</b>	<b>17</b>			
20	<b>GENERAL EQUIPMENT &amp; SUBSTATION ACCESSORIES</b>									
20.1	<b>POWER CABLES,1.1KV,XLPE &amp; PVC ARMoured, ALUMINIUM CONDUCTOR (As per Specification)</b>									
20.1.1	XLPE 3.5 CX300 mm <sup>2</sup>		MTR	500	0	0	500			
20.1.2	XLPE 3.5 CX185 mm <sup>2</sup>		MTR	300	0	0	300			
20.1.3	XLPE 3.5 CX120 mm <sup>2</sup>		MTR	200	0	0	200			
20.1.4	PVC 3.5 CX70 mm <sup>2</sup>		MTR	600	0	0	600			
20.1.5	PVC 3.5 CX35 mm <sup>2</sup>		MTR	1500	500	500	2500			
20.1.6	PVC 4 CX 16 mm <sup>2</sup>		MTR	1000	0	0	1000			
20.1.7	PVC 4CX 6 sqmm		MTR	3500	0	0	3500			
20.1.9	PVC 2CX 6 sqmm		MTR	2000	0	0	2000			

<b>20.2</b>	<b>CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per</b>									
<b>20.2.1</b>	2 CX 2.5 mm <sup>2</sup>		MTR	5000	2500	2500	10000			
<b>20.2.3</b>	4 CX 2.5 mm <sup>2</sup>		MTR	12000	5000	5000	22000			
<b>20.2.4</b>	5 CX 2.5 mm <sup>2</sup>		MTR	4000	0	0	4000			
<b>20.2.5</b>	7CX 2.5 mm <sup>2</sup>		MTR	5000	0	0	5000			
<b>20.2.6</b>	10 CX 2.5 mm <sup>2</sup>		MTR	2000	0	0	2000			
<b>20.2.7</b>	12 CX 2.5 mm <sup>2</sup>		MTR	2000	1500	1500	5000			
<b>20.2.8</b>	16 CX 2.5 mm <sup>2</sup>		MTR	1000	0	0	1000			
<b>20.2.9</b>	19 CX 2.5 mm <sup>2</sup>		MTR	2000	0	0	2000			
<b>20.2.11</b>	1CX 120 mm <sup>2</sup> BAT TO BAT CHARGER & CHARGER TO DCDB		MTR	600	0	0	600			
<b>21</b>	<b>ACCESSORIES FOR PLCC SYSTEM With OPGW cable</b>									
<b>21.1</b>	48 Fibre Optic Approach cable along with HDPE Pipes		Kmtr	1.00	0.00	0.00	1			
<b>21.2</b>	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	0	0	1			
<b>21.3</b>	Digital Teleprotection Equipment and accessories to be suitable for interfacing with SDH		No	2	0	0	2			
<b>21.4</b>	Supply of FODP(Fibre Optic Distribution Panel)48 F: Indoor type,rack mounted with FCPC coupling and pig tails(DWSm Fibre)		No	1	0	0	1			
<b>21.5</b>	Remote Terminal Unit (RTU) with MFT/MFM module designed for Power Utility SCADA operation. RTU should report in IEC 870-5-104 protocols to both main & backup control centre. RTU should have ports for interfacing with relay control panels,MFT/MFMs and port for LDMS facility. Laptop should be part of the supply contract of RTU for monitoring, local data aquisition & configuration of RTU.		No	1	0	0	1			
<b>21.6</b>	48 V, 300 AH, maintenance free VRLA Battery set.		Set	1	0	0	1			
<b>21.7</b>	SMPS based battery charger of 75A suitable for 48V VRLA battery.		No	1	0	0	1			
<b>21.8</b>	2.5 sq. mm 2 core control cable(power supply,Transducer/MFT PT supply)		Metre	500	0	0	500			
<b>21.9</b>	2.5 sq. mm multi strand 4 core control cable(Transducer/MFT CT , supply)		Metre	500	0	0	500			
<b>21.10</b>	1.5 sq. mm 10 core control cable(Digital Input)		Metre	200	0	0	200			
<b>21.11</b>	10 sq. mm 2 core multi strand control cable(Battery)		Metre	100	0	0	100			
<b>21.12</b>	48 V DCDB		Set	1	0	0	1			
<b>21.13</b>	Earth Flat, Cable Tray, Telephone cable, Foundation rail, Junction Box,.		Set	1	0	0	1			
<b>22</b>	<b>SUPPLY OF POWER TRANSFORMER,STATION TRANSFORMER &amp; OTHER MATERIALS FOR MEETING THE AUXILIARY SUPPLY OF THE SUB-STATION AS PER TECHNICAL SPECIFICATION</b>									
<b>22.1</b>	<b>POWER TRANSFORMER 220/33 KV, 20 MVA(AS PER SPECIFICATION)</b>		NOS	2	0	0	2			

22.2	STATION TRANSFORMER 33KV/433V,250 KVA (AS PER SPECIFICATION)		NOS	2	0	0	2			
22.3	<b>Supply of materials for erection of station transformers</b>									
22.3.1	HDG <b>DP STRUCTURE</b> : each set shall comprise of [ 2X <b>9.0 Mtrs</b> (ISBM:200X100 mm(min) RS Joist(beam) with bracings of suitable channels(ISMC 75X40) & angles (L50X50X6) & different size Steel plate of 10 mm thick etc].		SET	2	0	0	2			
22.3.2	33 KV AB SWITCH IN 33 KV SIDE(600AMP) including required GI pipe(horizontal & vertically down) & handle for operation of AB switch		SET	2	0	0	2			
22.3.3	HG fuse set for 33 KV side of the Station transformer including base(each set comprises three single HG fuse)		SET	2	0	0	2			
22.3.4	OUT DOOR KIOSK MADE OUT OF 3mm thick CRCA steel duly galvanised having gland plates OR BETTER quality WITH 3 NOS. OF CUT-OUTS(1000 AMPS) AT THE INCOMING SIDE , 1No. OF 3 PHASE SFU (500AMPS) AT THE OUTGOING SIDE AND SUITABLE BUS BAR ARRANGEMENT FOR TERMINATION of incoming cable from transformer & outgoing cable to Main ACDB.		SET	2	0	0	2			
23.0	<b>Switch yard lighting</b> : Design, engineering, procurement of labour, material including all associated works for construction of switch yard lightings as per technical specification and approved drawings. The fixture shall be of reputed make (Philips/CGL/Bajaj) and fixtures shall be LED and proper cabling from the lighting outdoor distribution boards to the junction boxes and from junction boxes to the fixtures. The lighting fixtures are to be installed on the switch yard structures. The quantity of such fixtures are to be designed and to be ascertained.									
23.1	SUB-STATION SWITCH YARD LIGHTING,IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj) 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	80	8	8	96			
23.2	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), COLONY QUARTERS AND OTHER ROADS. ALL MATERIALS AS PER APPROVED DRAWING AND SPECIFICATION TO COMPLETE THE STREET LIGHTING SYSTEM. PROPER EARTHING AS PER STANDARD PRACTICE									
23.2.1	LED LIGHTING FIXTURES including LAMPS of reputed make (Philips/CGL/Bajaj).(100 watt each) for Street Light.		SET	30	0	0	30			

23.2.2	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	30	0	0	30			
23.2.3	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. XLPE CABLES(3.5 CORE 120 SQMM) FROM MAIN ACDB FROM CONTROL ROOM TO THE OUT DOOR KIOSK. XLPE CABLE OF 4C X 16 SQMM FROM OUTDOOR KIOSK TO THE STREET LIGHT POLES AND 4CX6 SQMM FROM POLE TO POLE AND 2CX6 SQMM FROM POLE TO LIGHTING FIXTURES.		NO	1	0	0	1			
23.2.4	OUTDOOR KIOSK of 3 mm thick CRCA sheet duly hot dip galvanised FOR COLONY SUPPLY PURPOSE HAVING 2 NOS. 200 A SWITCH FUSE UNITS, 6 NOS.OUT LETS OF 32 AMP MCB FOR COLONY QUARTES. XLPE CABLES(3.5 CORE 120 SQM) FROM MAIN ACDB FROM CONTROL ROOM TO THE OUT DOOR KIOSK. 4CX16 SQMM FROM KIOSK TO EACH QUARTER.		NO	1	0	0	1			
24	2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF AIR CONDITIONERS,VOLTAGE STABILISER,CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION ) FOR CONTROL ROOM, CARRIER ROOM & CONFERENCE ROOM.(* <b>SUPPLY OF CABLES ARE COVERED IN CABLE ITEMS AS INDICATED ABOVE</b> )		SET	20	0	0	20			
25	<b>FIRE FIGHTING SYSTEM(PORTABLE AND WHEEL MOUNTED SETS FOR CONTROL ROOM,EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC(REFER TS-INST TO BIDDER BEFORE DESIGN-SL NO 16-ANNEXURE - I)</b>									
25.1	FOAM TYPE-9 LTRS		NOS	4	1	1	6			
25.2	DRY CHEMICAL POWDER(TROLLEY MOUNTED)- 22.5 KGS		NOS	4	1	1	6			
25.3	DRY POWDER TYPE - 5 KGS		NOS	4	1	1	6			
25.4	CO <sub>2</sub> - 4.5 KGS		NOS	10	0	0	10			
25.5	CO <sub>2</sub> - 9 KGS		NOS	10	0	0	10			
25.6	CO <sub>2</sub> (TROLLY MOUNTED)- 22.5 KGS		NOS	4	0	0	4			
25.7	9 litre water type		Nos.	4	0	0	4			
25.8	50 Litres Mechanical Foam type		Nos.	2	0	0	2			
25.9	FIRE BUCKET (6 NOS IN EACH STAND) WITH STAND		SET	5	0	0	5			

26	<b>SUBSTATION AUTOMATION SYSTEM: Supply of the following 220 and 33 kV level consisting of Panels, Bay control Units, DP Relays, Numerical O/C &amp; E/F Relays, DC Supervision relays, Trip Circuit Supervision, Trip Relay ,Test Block, Differential with REF, Overflux, High impednce REF, Numerical O/C &amp; E/F relay,Transformer trouble relay etc. Station level consisting of Industrial Computer with accessories, PC with accessories, laser printer, UPS, GPS System &amp; Numerical bay control unit etc.</b>								
26.1	<b>220KV Level</b>								
26.1.1	Yard AC Kiosk :5000 mm (L)x4000mm (W)x 3300mm (H) with AC, as per the Specification;	Nos.	2	0	0	2			
26.1.2	Numerical Bay control unit :32 Digital input & 24Nos digital out put with CT / PT Input cards.IEC 61850 protocol. (The BCU for transformer panels should have provision to accommodate required Analogue Inputs).	Nos.	5	0	0	5			
26.1.3	Numerical distance protection with the following functions: IEC 61850	Nos.	4	0	0	4			
26.1.4	Numerical Transformer Differential/REF protection with the following functions: Over flux ,Over volt etc. IEC 61850 protocol	Nos.	2	0	0	2			
26.1.5	Numerical over current , earth fault relays: IEC 61850 protocol	Nos.	5	0	0	5			
26.1.6	High Impedance REF Relay	Nos.	2	0	0	2			
26.1.7	Numerical Centralised Bus bar protection.	Nos.	1	0	0	1			
26.1.8	AUXILIARY RELAY FOR DC SUPERVISION	Nos.	10	0	0	10			
26.1.9	AUXILIARY RELAY FOR TRANSFORMER TROUBLES 4	Nos.	4	0	0	4			
26.1.10	MPG - TEST BLOCK 2	Nos.	22	0	0	22			
26.1.11	HIGH SPEED TRIP RELAY(HAND RESET)	Nos.	9	0	0	9			
26.1.12	TRIP CIRCUIT SUPERVISION RELAY 4	Nos.	10	0	0	10			
26.1.13	Line interface unit;	sets.	3	0	0	3			
26.1.14	Ethernet switch IEC 61850-3,IEEE1588v2	set	4	0	0	4			
26.1.15	Multimode glass fibre Optical cord Double jacket armoured ,rodent resilient..	Mtr.	1000	0	0	1000			
26.1.16	Simplex Cubicle type for process bus equipment , Swing frame front access (VSG), Dimension 2300mm (H) X 900mm (D) X 1000mm (W), earth bar 25x6 Sq. mm. Copper	Set	5	0	0	5			
26.1.17	DCDB panel; With Bus bar Switches,600(L)X 400(W)X 500(H)	NOS	2	0	0	2			
26.1.18	TIME SYNCH EQUIPMENT	NOS	1	0	0	1			
26.2	<b>33KV Level</b>								
26.2.1	Yard AC Kiosk :4500 mm (L)x3500mm (W)x 3300mm (H) with Air conditioning as per the Specification;	Nos.	1	0	0	1			
26.2.2	Integrated Numerical Bay control unit with protection function :24 Digital input & 20Nos digital out put with CT / PT Input cards	Nos.	8	0	0	8			
26.2.3	DC Supervision Relay	Nos.	16	0	0	16			
26.2.4	TRIP Relay	Nos.	8	0	0	8			



26.2.5	Test Block		Nos.	16	0	0	16			
26.2.6	Line interface unit;		sets.	2	0	0	2			
26.2.7	Ethernet switch IEC 61850-3,IEEE1588v2		set	3	0	0	3			
26.2.8	Multimode glass fibre Optical cord Double jacket armoured ,rodent resilient..		Mtr.	500	0	0	500			
26.2.9	Simplex Cubicle type for process bus equipment , Swing frame front access (VSG), Dimension 2300mm (H) X 900mm (D) X 900mm (W), earth bar 25x6 Sq. mm. Copper with the following components		Set	4	0	0	4			
26.2.10	DCDB panel; With Bus bar Switches,600(L)X 400(W)X 500(H)		No.	1	0	0	1			
26.3	<b>STATION LEVEL</b>									
26.3.1	Windows based Industrial computer with standard accessories – Keyboard, mouse, monitor with operating software window 10 or 8, IED configuration, substation automation, . Main & Back up. With automation softwares. Main		set	2	0	0	2			
26.3.2	Windows based PC with standard accessories – Keyboard, mouse, monitor with operating software window 10 or 8, IED configuration, substation automation, Disturbance recorder software. DR & work Station PC.Client		set	1	0	0	1			
26.3.3	Color Laser jet Printer		No.	1	0	0	1			
26.3.4	UPS , 3KVA		No.	2	0	0	2			
26.3.5	GPS System with PTP		set	1	0	0	1			
26.3.6	Gateway for SCADA		set	1	0	0	1			
26.4	<b>220 KV CR Panel</b>									
26.4.1	220 KV Feeder Control & Relay Panel (duplex type)		No.	0	1	0	1			
26.4.2	220 KV Protection Panel with BCU (The panel should integrate with existing SAS system at Malkangiri S/S- SIEMENS MAKE)		No.	0	0	1	1			
27	<b>AC &amp; DC SYSTEM</b>									
27.1	<b>AC SYSTEM</b>									
27.1.1	MAIN AC DB,(HAVING 800 A,50KA,DRAWOUT TYPE ACB WITH 3 O/C,E/F,U/V RELAYING FACILITY INDOOR TYPE AS PER SPECIFICATION.(MAIN DB-1,MAIN DB-2 WITH B/C)		SET	1	0	0	1			
27.1.2	ACDB (HAVING 400A MCCB) AS PER SPECIFICATION (AC DB-1,AC DB-2 WITH B/C)		SET	1	0	0	1			
27.1.3	MAIN LIGHTING DISTRIBUTION BOARD (HAVING 250A MCCB AS INCOMER)AS PER SPECIFICATION (WITH DB-1,DB-2 & B/C)		SET	1	0	0	1			
27.1.4	INDOOR LIGHTING DISTRIBUTION BOARD AS PER SPECIFICATION. (WITH DB-1,DB-2 & B/C)		SET	1	0	0	1			
27.1.5	EMERGENCY LIGHTING DISTRIBUTION BOARD		SET	1	0	0	1			
27.1.6	INDOOR RECEPTACLE BOARD		SET	1	0	0	1			
27.2	<b>DC SYSTEM</b>									
27.2.1	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)		SET	1	0	0	1			
27.2.2	220 V DC EMERGENCY DISTRIBUTION BOARD		SET	1	0	0	1			
28	BATTERY (350 AH PLANTE TYPE) FOR 220 V DC		SET	2	0	0	2			
29	BATTERY CHARGER FOR 220 V, 350 AH BATTERY (FLOAT AND FLOAT CUM BOOST)		SET	1	0	0	1			

30	DISTILLED WATER PLANT OF 10 LTR/HR FOR BATTERY BANKS		SET	1	0	0	1			
31	WALKIE TALKIE SET		SET /PAIR	2	0	0	2			
32	PORTABLE ALUMINIUM LADDER EXTENDABLE TYPE OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT INSIDE SWITCH YARD.		NOS	2	0	0	2			
33	PEDESTAL MOUNTED WHEEL FITTED DERRICK FOR LIFTING/ LOWERING OF MATERIALS UP TO 1.5 TON CAPACITY.		SET	1	0	0	1			
34	POWER WINCH NEAR STORE SHED FOR HANDLING MATERIALS UPTO 5 TON CAPACITY.		SET	1	0	0	1			
35	WATER COOLER WITH WATER PURIFIER SYSTEM		NOS	2	0	0	2			
36	MAINTENANCE TESTING EQUIPMENT (AS PER ANNEXURE - I ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OF MAINTENANCE EQUIPMENT)		LOT	1	0	0	1			
37	OTHER TOOLS AND PLANTS (T&P's) REQUIREMENT (AS PER ANNEXURE - II ,INDICATED IN TS-TIMK-SCHEDULE OF REQUI-REMENTS OTHER T&P's)		LOT	1	0	0	1			
38	OFFICE FURNITURE (AS PER ANNEXURE - III ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OFFICE FURNITURE)>PLACING IN CONTROL ROOM,CONFERENCE ROOM,OFFICE ROOMS,LIBRARY,TESTING LAB,etc.		LOT	1	0	0	1			
39	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size		NO	35	2	2	39			
	<b>TOTAL OF SUBSTATION(Plant)</b>									

### Mandatory Spare Parts

Item	DESCRIPTION OF ITEMS SUPPLY OF MANDATORY SPARES FOR THE FOLLOWING EQUIPMENTS. (As per Technical Specification)	Code <sup>1</sup>	UNITS	Quantity	Unit Price <sup>2</sup>		Total Price <sup>2</sup>
					In Foreign Currency	CIP	
				(1)	(2)	(3)	(1) x (3)
1	245 KV,1200-600-300A,40KA,5CORE SINGLE PHASE CURRENT TRANSFORMER(4 PS CI & 1 0.2s CI) Including terminal Connector		NOS	2			
2	245 KV,2000A,40KA,ISOLATORS						
2.1	MALE & FEMALE CONTACTS		SET	1			

2.1.1	POWER CONTACTOR,RELAYS,MCBs, SWITCHES,FUSES,PUSH BUTTONS,RESISTORS ETC AS PER APPROVED SCHEMATIC.		SET	1						
2.1.2	LIMIT SWITCH		SET	2						
2.1.3	MOTOR WITH GEAR ASSEMBLY & BEVEL GEAR ASSEMBLY COMPLETE.		SET	1						
2.1.4	AUXILIARY SWITCH CONTACTS ASSEMBLY		SET	1						
2.1.5	EARTHING ROD & BLADE CONTACT SIDE		SET	1						
2.1.6	HINGE PINS,TERMINAL CONNECTOR,TERMINAL PAD		SET	1						
<b>3</b>	<b>245KV,3150A,40KA,SF6,CIRCUIT BREAKER</b>									
3.1	COMPLETE ONE POLE ASSEMBLY OF BREAKER		NOS	1						
3.2	SPRING CHARGING MOTOR		NOS	1						
3.3	BREAKER AUXILIARY CONTACTS		SET	1						
3.4	POWER CONTACTORS,RELAYS,MCBs, SWITCHES,FUSES,PUSH BUTTONS,RESISTORS,PRESSURE SWITCHES,LIMIT SWITCHES, ETC AS PER APPROVED SCHEMATIC.		SET	1						
3.5	DENSITY MONITORING SYSTEM		SET	1						
3.6	CLOSING COIL		NOS	4						
3.7	TRIPPING COIL		NOS	4						
3.8	SF6 GAS FILLING DEVICE		NOS	1						
3.9	SET OF GASKETS ,"O" RINGS,SEALS PER CIRCUIT BREAKER		SET	1						
4	36 KV,(800-400-200 A),25KA,3CORE SINGLE PHASE CURRENT TRANSFORMER		NOS	1						
5	36 KV,(800-400-200 A),25KA,4 CORE SINGLE PHASE CURRENT TRANSFORMER		NOS	1						
<b>6</b>	<b>36 KV,1250A,25KA,ISOLATORS</b>									
6.1	MALE & FEMALE CONTACTS		SET	1						
6.2	POWER CONTACTOR,RELAYS,MCBs, SWITCHES,FUSES,PUSH BUTTONS,RESISTORS ETC AS PER APPROVED SCHEMATIC.		SET	1						
6.3	LIMIT SWITCH		SET	2						
6.4	MOTOR WITH GEAR ASSEMBLY & BEVEL GEAR ASSEMBLY COMPLETE.		SET	1						
6.5	AUXILIARY SWITCH CONTACTS ASSEMBLY		SET	1						
6.6	EARTHING ROD & BLADE CONTACT SIDE		SET	1						
6.7	HINGE PINS,TERMINAL CONNECTOR,TERMINAL PAD		SET	1						
7	POST INSULATOR		SET	1						
10	30 KV,METAL OXIDE, 10 KA, CLASS II SURGE ARRESTOR COMPLETE WITH INSULATOR BASE AND SURGE MONITOR		NOS	3						
11	245 KV ,2 CORE,SINGLE PHASE,IVT		NOS	1						
12	36 KV ,2 CORE,SINGLE PHASE,IVT INCLUDING TERMINAL CONNECTOR		NOS	1						

<b>13</b>	<b>36KV, 1250A,25KA,VACUUM CIRCUIT BREAKER</b>								
13.1	ONE COMPLETE POLE ASSEMBLY OF CIRCUIT BREAKER		SET	1					
13.1	TRIPPING COILS		NOS	4					
13.1	CLOSING COIL		NOS	4					
13.1	SPRING CHARGING MOTOR		NOS	1					
13.1	AUXILIARY SWITCH CONTACTS ASSEMBLY		SET	1					
13.1	SET OF GASKET,"O" RINGS,SEALING PER CIRCUIT BREAKER		SET	1					
13.1	POWER CONTACTORS,RELAYS,MCBs, SWITCHES,FUSES,PUSH BUTTONS,RESISTORS,PRESSURE SWITCHES,LIMIT SWITCHES, ETC AS PER APPROVED SCHEMATIC.		SET	1					
14	33 KV Bus Post Insulators		NOS	3					
<b>15</b>	<b>BUS BAR &amp; CIRCUIT MATERIALS</b>								
15.1	220 KV LONG ROD 160 KN PORCILAIN INSULATOR along with hardware fittings <b>for Double Moose ACSR cond</b> (TENSION)		SET	2					
15.1.1	220 KV LONG ROD 160 KN PORCILAIN INSULATOR along with hardware fittings <b>for Single Moose cond</b> ( TENSION)		SET	2					
15.1.2	120 kN LONG ROD INSULATOR STRINGS <b>for Double Moose cond</b> ( TENSION)-33 KV		SET	2					
15.1.3	120kN LONG ROD INSULATOR STRINGS <b>for Single Moose cond</b> (TENSION)-33 KV		SET	2					
15.1.4	90kN LONG ROD INSULATOR STRINGS <b>for Double/ Single Moose cond</b> ( SUSPENSION)-220KV		SET	2					
15.1.5	90kN LONG ROD INSULATOR STRINGS <b>for Double/ Single Moose cond</b> (SUSPENSION)-33 KV		SET	2					
16	ACSR MOOSE CONDUCTOR		MTRS	250					
17	HARDWARES & FITTINGS/SPACERS/CLAMP & CONNECTORS ETC. FOR 220 KV & 33 KV		SET (EACH TYPE THREE NOS.)	1					
<b>18</b>	<b>GENERAL EQUIPMENT &amp; SUBSTATION ACCESSORIES</b>								
<b>18.1</b>	<b>POWER CABLES,1.1KV,XLPE &amp; PVC,ARMoured, ALUMINIUM CONDUCTOR(As per Specification)</b>								
18.1.1	3.5 CX300 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-XLPE		PCS.	1					
18.1.2	3.5 CX185 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-XLPE		PCS.	1					
18.1.3	3.5 CX120 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-XLPE		PCS.	1					

18.1.4	3.5 CX70 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-PVC		PCS.	1						
18.1.5	3.5 CX35 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-PVC		PCS.	1						
18.1.6	4 CX 16 mm <sup>2</sup> -PVC		MTRS	250						
18.1.7	4 CX 6 mm <sup>2</sup> -PVC		MTRS	250						
18.1.8	2CX 6 mm <sup>2</sup> -PVC		MTRS	250						
<b>18.2</b>	<b>CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)</b>									
18.2.1	4 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 500 MTRS)		Mtrs	500						
18.2.2	5 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 500 MTRS)		Mtrs	500						
18.2.3	7 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 500 MTRS)		Mtrs	500						
18.2.4	10 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 500 MTRS)		Mtrs	500						
18.2.5	12 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 250 MTRS)		Mtrs	250						
18.2.6	16 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 250 MTRS)		Mtrs	250						
18.2.7	19 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 250 MTRS)		Mtrs	250						
18.2.8	1CX 120 mm <sup>2</sup> BAT TO BAT CHARGER & CHARGER TO DCDB		MTRS	50						
<b>19</b>	<b>TELECOMMUNICATION &amp; OTHER MATERIALS</b>									
19.1	ONE COMPLETE CELL ASSEMBLY OF BATTERY(FOR 48 V VRLA TYPE BATTERY 300 AH)		NOS	1						
19.2	ONE COMPLETE CELL ASSEMBLY OF BATTERY(FOR 220 V PLANTE TYPE BATTERY 350 AH,)		NOS	1						
19.3	BATTERY CHARGER FOR 300 AH (48V) ONE COMPLETE SET OF ELECTRONIC CARDS		SET	1						
19.4	BATTERY CHARGER FOR 350 AH (220V) ONE COMPLETE SET OF ELECTRONIC CARDS		SET	1						
	<b>TOTAL OF MANDATORY SPARE PARTS</b>									
<b>TOTAL OF SUBSTATION-SCHEDULE-1 -Plant and Mandatory Spare Parts(to Schedule No. 6 Grand Summary)</b>										

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

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

<sup>1</sup> Bidders shall enter a code representing the country of origin of all imported plant and equipment.

<sup>2</sup> 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. Create and use as

Item	Description	Code	Country

## ODISHA POWER TRANSMISSION CORPORATION LIMITED

NAME OF THE WORK:- Design, Supply and Installation of Sub-Stations & Transmission Lines for Procurement of 2X20 MVA, 220/33 KV Sub-station at GOBINDPALLI & associated 220KV LILO line on 220KV BALIMELA - MALKANGIRI Second CKT Line (Approx. Line length-37.600 Kms.) and stringing of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI and associated 220KV bay extension at Balimela & Malkangiri S/S in Odisha State of India under PACKAGE-5A Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/05A/16-17/-] Reference Identification No: [OPTCL/JICA/PKG-5A]

### Schedule No. 1. Plant and Mandatory Spare Parts Supplied from Abroad (Transmission Line)

NAME OF THE BIDDER									
	SUPPLY OF FOLLOWING EQUIPMENT, STRUCTURES & MATERIALS (As per Technical Specification)	Code <sup>1</sup>	UNITS	CONSTRUCTION OF 220 KV LILO LINE ON Malkangiri-Balimela--37.6 KM	Construction of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI S/s (21.37 KM)	Total Quantity	Unit Price <sup>2</sup>		Total Price <sup>2</sup>
							In Foreign Currency	CIP	
						(1)	(2)	(3)	(1) x (3)
1	SUPPLY of Following type tested Lattice type Galvanized steel tangent / Angle tower with stubs and cleats , different type of G.I HT Nuts & Bolts, washer, spring washer for the towers ,hanger and all accessories, tower super structure complete including step bolts. Supply of black bituminous paint for three coats up to a height of 500mm above the cooping(legs & bracing members). All Supply should confirm to the Technical Specification.								
1.1	OA TYPE TOWER (Nominal unit weight 4.244 MT) ( 100 NOS.)		MT	424.400	0	424.400			
1.2	+3 EXTENSION (Nominal unit weight 0.748 MT) (19 Nos)		MT	14.212	0	14.212			
1.3	+6 EXTENSION (Nominal unit weight 1.495 MT) (7 NOS.)		MT	10.465	0	10.465			
1.4	OB TYPE TOWER (Nominal unit weight 6.347 MT) (20NOS.)		MT	128.740	0	128.740			
1.5	+3 EXTENSION (Nominal unit weight 1.334 MT) (3NO.)		MT	4.002	0	4.002			
1.6	+6 EXTENSION (Nominal unit weight 2.308 MT) (1NO.)		MT	2.403	0	2.403			
1.7	OC TYPE TOWER (Nominal unit weight 8.749 MT) (22 nos.)		MT	192.478	0	192.478			
1.8	+3 EXTENSION (Nominal unit weight 1.436 MT) (4NOS.)		MT	5.74	0	5.744			

1.9	+6 EXTENSION (Nominal unit weight 2.6 MT) (1 NOS.)		MT	2.600	0	2.600			
1.10	+15 EXTENSION (Nominal unit weight 8.555 MT) (4 NOS.)		MT	34.220	0	34.220			
1.11	<b>UR TYPE TOWER (Nominal unit weight 12.474 MT) (2 nos.)</b>		MT	24.948	0	24.948			
1.12	+6 EXTENSION (Nominal unit weight 4.148 MT) (2 NOS.)		MT	8.296	0	8.296			
1.13	TEMPLATES								
1.13.1	OA (NOMINAL UNIT WEIGHT 0.579 MT)(3 NOS)		MT	1.737	0	1.737			
1.13.2	OB (NOMINAL UNIT WEIGHT 0.794 MT) (1 NOS)		MT	0.794	0	0.794			
1.13.3	OC (NOMINAL UNIT WEIGHT 0.962 MT) (1 NOS)		MT	0.962	0	0.962			
1.13.4	OC+15 (NOMINAL UNIT WEIGHT 2.107 MT) (1 NOS)		MT	2.107	0	2.107			
1.13.5	UR (NOMINAL UNIT WEIGHT 1.476 MT) (1 NOS)		MT	1.476	0	1.476			
1.14	WEIGHT OF THE STRUCTURES (including Tower stubs, & Nut and Bolts)		MT	<b>859.584</b>	<b>0</b>	<b>859.584</b>			
1.15	Weight of different type G.I Nuts and Bolts		MT	<b>37.731</b>	<b>0</b>	<b>37.731</b>			
2.0	<b>Supply of the following tower accessories as per technical specification and as directed by the engineer in charge.</b>								
2.1	EARTHING DEVICE		Nos.	144	0	144			
2.2	DANGER BOARD		Nos.	144	0	144			
2.3	NUMBER PLATE		Nos.	144	0	144			
2.4	PHASE PLATE		Sets	864	234	1098			
2.5	BIRD GUARD		Nos.	732	0	732			
2.6	ANTICLIMBING DEVICE		Nos.	144	0	144			
2.7	CIRCUIT PLATE		Nos.	288	0	288			
3.0	<b>Supply of following POWER CONDUCTORS in the proposed 220kV lines with provision for sag and wastage as per the technical specification and as per the instruction of the engineer in charge.</b>								
3.1	ACSR Zebra (54/7/3.18mm)		Kms.	229.000	65.000	294.000			
4.0	<b>POWER CONDUCTOR ACESSORIES</b>								
4.1	<b>For ACSR ZEBRA</b>								
4.1.1	VIBRATION DAMPER		Nos.	1728	468	2196			
4.1.2	MID SPAN JOINT		Nos.	229	65	294			
4.1.3	Repair Sleeve		Nos.	60	20	80			
5.0	<b>OPGW Cable and Accessries</b>								
5.1	48Fibre(DWSM)OPGW fibre Optic Cable		Kmtr	40	0	40			
5.2	48Fibre(DWSM)OPGW fibre Optic Cable hardware set like suspension Asembly,Tensin Assembly(Dead end assembly, Pass through assembly) ,Vibration Damper,Down Lead Clamp Assemblies for 24/48 Fibre(DWSM) OPGW,Joint Box		Kmtr	40	0	40			
6.0	<b>EARTH CONDUCTOR ACESSORIES</b>								
6.2	FLEXIBLE COPPER EARTH BOND		Nos.	188	0	188			
7.0	<b>Supply of the following Anti Fog Type LR Porcelain insulators as per the technical specification</b>								
7.1	220 KV LONG ROD 120 KN PORCILAIN INSULATOR		SET	813	217	1030			
7.2	220 KV LONG ROD 160 KN PORCILAIN INSULATOR		SET	670	180	850			



<b>8.0</b>	<b>Supply of the following hard ware fittings suitable for following conductors as per the technical specification.</b>							
<b>8.1</b>	<b>For ACSR ZEBRA</b>							
8.1.1	Single suspension Hard wares fittings.(AGS type) suitable for 120 KN insulator.	Set	690	195	885			
8.1.2	Single tension Hard wares fittings, suitable for 160 KN insulator.	Set	426	117	543			
8.1.3	Double suspension Hard wares fittings.(AGS type) suitable for 120 KN insulator.	Set	42	6	48			
8.1.4	Double tension Hard wares fittings, suitable for 160 KN insulator.	Set	108	27	135			
	<b>TOTAL OF Schedule-1 Line To Schedule-6 Grand Summary</b>							
		Name of Bidder:_____						
		Signature of Bidder:_____						
	<sup>1</sup> Bidders shall enter a code representing <i>the country of origin of all</i> imported plant and equipment.							
	<sup>2</sup> 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. Create and use as many columns for							

Country of Origin Declaration Form			
Item	Description	Code	Country

## ODISHA POWER TRANSMISSION CORPORATION LIMITED

**NAME OF THE WORK:- Design, Supply and Installation of Sub-Stations & Transmission Lines for Procurement of 2X20 MVA, 220/33 KV Sub-station at GOBINDPALLI & associated 220KV LILO line on 220KV BALIMELA - MALKANGIRI Second CKT Line (Approx. Line length-37.600 Kms.) and stringing of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI and associated 220KV bay extension at Balimela & Malkangiri S/S in Odisha State of India under PACKAGE-5A Under Japan International**

**Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/05A/16-17]/- Reference Identification No: [OPTCL/JICA/PKG-5A]**

### Schedule No. 2. Plant and Mandatory Spare Parts Supplied from Within the Employer's Country (Sub-station & Bay extension)

#### NAME OF THE BIDDER

SL NO	SUPPLY OF FOLLOWING EQUIPMENTS (As per Technical Specification)	Unit	Quantity for: Construction of 2x20 MVA, 220/33 KV Sub-Station at Gobindapalli 220 KV BAY 05 NOS (FDR:02,TFR:02 & B/C:01) & 33 KV BAY 07 NOS (FDR:04,TFR:02 & B/C:01)	Quantity for: 01 No. Feeder Bay Extension at 220/33 KV Grid S/s Balimela	Quantity for: 01 No. Feeder Bay Extension at 220/33 KV Grid S/s Malkangiri	Total Quantity	Unit Price <sup>2</sup>	Total Price <sup>2</sup>
						(1)	(2)	(1) x (2)
1	245 KV,1200-600-300A,40KA,5CORE SINGLE PHASE CURRENT TRANSFORMER(4 PS Cl & 1 0.2s Cl)	NOS	18	3	3	24		
2	<b>245 KV,2000A,40KA,ISOLATORS</b>							
2.1	S/I WITH OUT EARTH SWITCH	NOS	18	3	3	24		
2.2	S/I WITH SINGLE EARTH SWITCH	NOS	4	1	1	6		
2.3	BEAM MOUNTED S/I WITHOUT EARTH SWITCH	NOS	4	1	1	6		
3	245 KV,4400pF,3CORE,SINGLE PHASE CAPACITOR VOLTAGE TRANSFORMER	NOS	6	3	3	12		
4	245KV,3150A,50KA,SF6,CIRCUIT BREAKER WITH SUPPORTING STRUCTURE	NOS	5	1	1	7		
5	216 KV, METAL OXIDE SURGE ARRESTOR,10 KA, class III	NOS	12	3	3	18		
6	245 KV ,2 CORE,SINGLE PHASE,IVT	NOS	6	0	0	6		
7	220 KV Bus Post Insulators	NOS	54	12	12	78		
8	36 KV,800-400-200,25KA,4CORE SINGLE PHASE CURRENT TRANSFORMER(3 PS Cl & 1 0.2s Cl)	NOS	6	0	0	6		
9	36 KV,800-400-200,25KA,3CORE SINGLE PHASE CURRENT TRANSFORMER (2 PS Cl & 1 0.2s Cl)	NOS	15	0	0	15		
10	<b>36 KV,1250A,25KA,ISOLATORS</b>							
10.1	S/I WITH OUT EARTH SWITCH	NOS	8	0	0	8		
10.2	D/I WITH SINGLE EARTH SWITCH	NOS	4	0	0	4		
10.3	D/I WITHOUT EARTH SWITCH	NOS	2	0	0	2		
10.4	S/I WITH BEAM MOUNTED	NOS	2	0	0	2		
11	30 KV, METAL OXIDE SURGE ARRESTOR, 10KA, class II(Beam Mounted)	NOS	24	0	0	24		
12	36 KV ,2 CORE,SINGLE PHASE,IVT	NOS	3	0	0	3		
13	36KV,1250A,25KA,VACUUM CIRCUIT BREAKER WITH SUPPORTING STRUCTURE	NOS	7	0	0	7		
14	33 KV Bus Post Insulators	NOS	20	0	0	20		
15	<b>BUS BAR &amp; CIRCUIT MATERIALS</b>							
15.1	<b>ANTI FOG TYPE INSULATOR</b>							
15.1.1	220 KV LONG ROD 160 KN PORCELAIN INSULATOR(220KV Side)	NOS	96	30	30	156		
15.1.2	220 KV LONG ROD 120 KN PORCELAIN INSULATOR(220KV Side)	NOS	12	9	9	30		
15.1.2	120 KNLong Rod Porcelain INSULATOR(33KV Side)	NOS	66	0	0	66		
15.1.3	90 KNLong Rod Porcelain INSULATOR(33KV Side)	NOS	33	0	0	33		
15.2	ACSR MOOSE CONDUCTOR	KMS	5	0.50	0.50	6		

15.3	IPS 4" ALUMINIUM TUBES(114.2 mm OD, & 8.51mm Thickness) for equipment to equipment connection in 220 KV side.	MTRS	370	80	80	530		
15.4	<b>HARDWARES &amp; FITTINGS/SPACERS/CLAMP &amp; CONNECTORS</b>							
15.4.1	220 KV Double Tension H/W fitting for twin moose ACSR (Single Anchoring Point)	NOS	24	12	12	48		
15.4.2	220 KV Single Tension H/W fitting for single moose ACSR	NOS	24	12	12	48		
15.4.3	220 KV Single Suspension H/W fitting for single mose ACSR	NOS	6	6	6	18		
15.4.4	220 KV Double Suspension H/W fitting for twin mose ACSR (Single Anchoring Point)	NOS	18	6	6	30		
15.4.5	33 KV Single Tension H/W fitting for single moose ACSR	NOS	30	0	0	30		
15.4.6	33 KV Double Tension H/W fitting for twin moose ACSR (Single Anchoring Point)	NOS	24	0	0	24		
15.4.7	33 KV Single Suspension H/W fitting for single mose ACSR	NOS	12	0	0	12		
15.4.8	220kv T- clamp for ACSR ZEBRA run to ACSR MOOSE drop	NOS	18	9	9	36		
15.4.9	T-Clamp for single Moose -Single Moose ACSR	NOS	42	3	3	48		
15.4.10	T-Clamp for twin Moose run -Single Moose drop ACSR	NOS	36	3	3	42		
15.4.11	220 KV PI clamp	NOS	54	12	12	78		
15.4.12	33KV PI Clamp	NOS	20	0	0	20		
15.4.13	Spacer for Moose ACSR	NOS	120	18	18	156		
15.4.14	220 KV Isolator pad clamp	NOS	132	30	30	192		
15.4.15	220 KV LA Clamp	NOS	12	3	3	18		
15.4.16	220 KV CVT Clamp	NOS	6	3	3	12		
15.4.17	220 KV CT Clamp	NOS	36	6	6	48		
15.4.18	220 KV IVT Clamp	NOS	6	0	0	6		
15.4.19	220 KV CB Clamp	NOS	30	6	6	42		
15.4.20	33 KV Isolator pad clamp	NOS	114	0	0	114		
15.4.21	33 KV LA Clamp	NOS	24	0	0	24		
15.4.22	33 KV CT Clamp	NOS	42	0	0	42		
15.4.23	33 KV IVT Clamp	NOS	3	0	0	3		
15.4.24	33 KV CB Clamp	NOS	42	0	0	42		
15.4.25	PG Clamp for ACSR Moose	NOS	48	18	18	84		
15.5	<b>EARTH WIRES &amp; IT'S HARDWARES &amp; FITTING</b>							
15.5.1	Earthing Spikes and Its Fittings in all respect.							
15.5.1.1	Earthing Spikes of 9 mtr long each and Its Fittings in all respect. (220 kv side)	NOS	37	3	3	43		
15.5.1.2	Earthing Spikes of 5 mtr long each and Its Fittings in all respect. (33 KV side)	NOS	25	0	0	25		
16	<b>SUBSTATION EARTHING SYSTEMS</b>							
16.1	EARTHING CONDUCTOR FOR BURRIAL : 75X10 mm GI Flat for laying ( <i>spacing maximum 5m both way</i> )	MT	31	4	4	39		
16.2	EARTHING CONDUCTOR: 50X6 mm GI Flat for Raiser from the burial earth mat to equipment,structure etc)	MT	10.41	1.25	1.25	12.91		
16.3	EARTHING DEVICE & ASSOCIATED ACCESSORIES (50 mm heavy duty GI PERFORATED PIPE 3 mtrs long for treated earth pit)	Nos.	180	25	25	230		
16.4	EARTHING DEVICE & ASSOCIATED ACCESSORIES 40mm MS rod 3 mtrs long for non treated earth pit)	Nos.	120	15	15	150		
16.5	Pipe-in-Pipe earthing electrode	Nos.	4	0	0	4		
17	G.I Cable Trays including support GI angle suitable for different sections i.e. Section:1-1,2-2,3-3 & 4-4 along with its accessories as per TS.							
17.1	G.I Cable Trays(size: 450x75x2500mm)	MTRS	1200	125	125	1450		
17.2	G.I Cable Trays(size: 300x75x2500mm)	MTRS	2000	100	100	2200		
17.3	G.I Cable Trays(size: 150x75x2500mm)	MTRS	1500	50	50	1600		
17.4	Support G. I angle 50x50x6 mm for cable tray	MT	2.5	0.25	0.25	3		
18	<b>SUB STATION SWITCHYARD BMK,AC CONSOLE &amp; OTHER MARSHALLING BOXES</b>							
18.1	BAY MARSHALLING KIOSK (03 nos on 220 kV bay & 04Nos 33 KV bay )	NOS	7	1	1	9		
18.2	SWITCH YARD AC CONSOLE FOR LIGHTING (01 nos on 220 kV bay & 01 No in 33KV bay )	NOS	2	0	0	2		
18.3	SWITCH YARD RECEPTACLE BOARD FOR TFR OIL FILTERATION (01 no. near 220/33 KV power Transformer)	NOS	1	0	0	1		
18.4	SWITCH YARD RECEPTACLE BOARD FOR WELDING & OTHER EMERGENCY (01 nos on 220 & 33 kV bay )	NOS	2	0	0	2		

19	<b>SWITCH YARD STRUCTURES (LATTICE TYPE FOR TOWER COLUMN &amp; BEAMS &amp; PIPE TYPE FOR ALL EQUIPMENT COLUMN) FOR 220/132/33 KV CLASS INCLUDING FOUNDATION BOLTS &amp; NUTS.</b>						
19.1	<b>DIFFERENT TYPES OF COLUMNS WITH DETAILS</b>						
19.1.1	P1S-220 KV (NOMINAL UNIT WT- 4.5 MT) (21 NOS.+4NOS.+4NOS.)	MT	108	18	18	144	
19.1.2	P2A-220 KV (NOMINAL UNIT WT- 1..5 MT) (8NOS.)	MT	9	0	0	9	
19.1.3	T1S - 132 KV(NOMINAL UNIT WT- 1.2 MT) (4 NOS.)	MT	0	0	0	0	
19.1.4	T8S - 33KV(NOMINAL UNIT WT- 0.8 MT) (11 NOS.)	MT	0	0	0	0	
19.1.5	T9S - 33KV(NOMINAL UNIT WT- 0.6 MT) (14 NOS.)	MT	8.4	0	0	8.4	
19.2	<b>DIFFERENT TYPE OF BEAMS WITH DETAILS</b>						
19.2.1	Q1-220KV (NOMINAL UNIT WT- 1.5 MT) (15NOS.+4NOS.+4NOS.))	MT	33	6	6	45	
19.2.2	Q3-220KV (NOMINAL UNIT WT-2.5 MT) (4 NOS.+2NOS.+2NOS.)	MT	20	5	5	30	
19.2.3	Q4-220KV (NOMINAL UNIT WT- 0.9 MT) (4 NOS.)	MT	0	0	0	0	
19.2.4	G1 - 132KV (NOMINAL UNIT WT- 0.62 MT) (4 NOS.)	MT	0	0	0	0	
19.2.5	G6 - 33KV (NOMINAL UNIT WT- 0.53 MT) (4 NOS.)	MT	2.12	0	0	2.12	
19.2.6	G4 - 33KV(NOMINAL UNIT WT- 0.4 MT) (12 NOS.)	MT	4.8	0	0	4.8	
19.2.7	G4X - 33KV (NOMINAL UNIT WT- 0.4 MT) (2 NOS.)	MT	0.8	0	0	0.8	
19.3	<b>TOTAL WEIGHT OF COLUMN &amp; BEAM</b>	<b>MT</b>	<b>186.12</b>	<b>29</b>	<b>29</b>	<b>244.12</b>	
19.4	<b>EQUIPMENT SUPPORT STRUCTURES (PIPE TYPE) FOR ALL 220KV, 132 KV &amp; 33KV EQUIPMENTS INCLUDING FOUNDATION BOLTS &amp; NUTS</b>						
19.4.1	ISOLATORS-220KV ( SI with E/S-4 No.+01 No.+01No.)	MT	5.084	1.271	1.271	7.626	
19.4.2	ISOLATORS-220KV (SI without E/S:14Nos.+03 nos.+03 nos.)	MT	22.878	3.813	3.813	30.504	
19.4.3	BEAM ISOLATORS-220KV ( SI with E/S: 6Nos.+01 No.+01No.)	MT	5.084	1.271	1.271	7.626	
19.4.4	ISOLATORS-33 KV ( SI-8 Nos.)	MT	2.0664	0	0	2.0664	
19.4.5	ISOLATORS-33 KV ( DI with E/S -4 Nos.)	MT	2.5776	0	0	2.5776	
19.4.6	ISOLATORS-33 KV ( DI without E/S-2 Nos.)	MT	1.234	0	0	1.234	
19.4.7	CTS-220 KV (15 nos.+03 nos.+03 nos.)	MT	3.375	0.675	0.675	4.725	
19.4.8	CTS-33 KV (15 nos.)	MT	1.74	0	0	1.74	
19.4.9	CVTS-220 KV (6 nos.+03 nos.+03 nos.)	MT	1.326	0.663	0.663	2.652	
19.4.10	IVTS-220 KV (3 nos.)	MT	1.7232	0	0	1.7232	
19.4.11	IVTS-33 KV (3 nos.)	MT	0.3546	0	0	0.3546	
19.4.12	Surge Arrester-220 Kv( 12 nos.+03 nos.+03 nos.)	MT	3.5052	0.8763	0.8763	5.2578	
19.4.13	BPI-220 KV (38nos.+12 Nos.+12Nos.)	MT	15.8112	3.5136	3.5136	22.8384	
19.4.14	BPI-33 KV (20 nos.)	MT	4.126	0	0	4.126	
19.4.15	NCTs(4 nos)	MT	0.464	0	0	0.464	
19.5	<b>TOTAL WEIGHT OF EQUIPMENT STRUCTURE</b>	<b>MT</b>	<b>71.3492</b>	<b>12.0829</b>	<b>12.0829</b>	<b>95.515</b>	
19.6	<b>TOTAL WEIGHT OF EQUIPMENT &amp; Column GI Foundation Bolts &amp; Nuts</b>	<b>MT</b>	<b>12</b>	<b>2.412</b>	<b>2.412</b>	<b>16.824</b>	
19.7	<b>Total weight of GI Nuts and bolts for Columns, Beams &amp; Equipment Structures</b>	<b>MT</b>	<b>12</b>	<b>2.5</b>	<b>2.5</b>	<b>17</b>	
20	<b>GENERAL EQUIPMENT &amp; SUBSTATION ACCESSORIES</b>						
20.1	<b>POWER CABLES,1.1KV,XLPE &amp; PVC ARMoured, ALUMINIUM CONDUCTOR (As per Specification)</b>						
20.1.1	XLPE 3.5 CX300 mm <sup>2</sup>	MTR	500	0	0	500	
20.1.2	XLPE 3.5 CX185 mm <sup>2</sup>	MTR	300	0	0	300	
20.1.3	XLPE 3.5 CX120 mm <sup>2</sup>	MTR	200	0	0	200	
20.1.4	PVC 3.5 CX70 mm <sup>2</sup>	MTR	600	0	0	600	
20.1.5	PVC 3.5 CX35 mm <sup>2</sup>	MTR	1500	500	500	2500	
20.1.6	PVC 4 CX 16 mm <sup>2</sup>	MTR	1000	0	0	1000	
20.1.7	PVC 4CX 6 sqmm	MTR	3500	0	0	3500	
20.1.9	PVC 2CX 6 sqmm	MTR	2000	0	0	2000	
20.2	<b>CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)</b>						
20.2.1	2 CX 2.5 mm <sup>2</sup>	MTR	5000	2500	2500	10000	
20.2.3	4 CX 2.5 mm <sup>2</sup>	MTR	12000	5000	5000	22000	
20.2.4	5 CX 2.5 mm <sup>2</sup>	MTR	4000	0	0	4000	
20.2.5	7CX 2.5 mm <sup>2</sup>	MTR	5000	0	0	5000	
20.2.6	10 CX 2.5 mm <sup>2</sup>	MTR	2000	0	0	2000	
20.2.7	12 CX 2.5 mm <sup>2</sup>	MTR	2000	1500	1500	5000	
20.2.8	16 CX 2.5 mm <sup>2</sup>	MTR	1000	0	0	1000	
20.2.9	19 CX 2.5 mm <sup>2</sup>	MTR	2000	0	0	2000	

20.2.11	1CX 120 mm <sup>2</sup> BAT TO BAT CHARGER & CHARGER TO DCDB	MTR	600	0	0	600		
21	<b>ACCESSORIES FOR PLCC SYSTEM With OPGW cable</b>							
21.1	48 Fibre Optic Approach cable along with HDPE Pipes	Kmtr	1	0	0	1		
21.2	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	0	0	1		
21.3	Digital Teleprotection Equipment and accessories to be suitable for interfacing with SDH	No	2	0	0	2		
21.4	Supply of FODP(Fibre Optic Distribution Panel)48 F: Indoor type,rack mounted with FCPC coupling and pig tails(DWSm Fibre)	No	1	0	0	1		
21.5	Remote Terminal Unit (RTU) with MFT/MFM module designed for Power Utility SCADA operation. RTU should report in IEC 870-5-104 protocols to both main & backup control centre. RTU should have ports for interfacing with relay control panels,MFT/MFMs and port for LDMS facility. Laptop should be part of the supply contract of RTU for monitoring, local data aquisition & configuration of RTU.	No	1	0	0	1		
21.6	48 V, 300 AH, maintenance free VRLA Battery set.	Set	1	0	0	1		
21.7	SMPS based battery charger of 75A suitable for 48V VRLA battery.	No	1	0	0	1		
21.8	2.5 sq. mm 2 core control cable(power supply,Transducer/MFT PT supply)	Metre	500	0	0	500		
21.9	2.5 sq. mm multi strand 4 core control cable(Transducer/MFT CT , supply)	Metre	500	0	0	500		
21.10	1.5 sq. mm 10 core control cable(Digital Input)	Metre	200	0	0	200		
21.11	10 sq. mm 2 core multi strand control cable(Battery)	Metre	100	0	0	100		
21.12	48 V DCDB	Set	1	0	0	1		
21.13	Earth Flat, Cable Tray, Telephone cable, Foundation rail, Junction Box.,	Set	1	0	0	1		
22	<b>SUPPLY OF POWER TRANSFORMER,STATION TRANSFORMER &amp; OTHER MATERIALS FOR MEETING THE AUXILIARY SUPPLY OF THE SUB-STATION AS PER TECHNICAL SPECIFICATION</b>							
22.1	<b>POWER TRANSFORMER 220/33 KV, 20 MVA(AS PER SPECIFICATION)</b>	NOS	2	0	0	2		
22.2	<b>STATION TRANSFORMER 33KV/433V,250 KVA (AS PER SPECIFICATION)</b>	NOS	2	0	0	2		
22.3	<b>Supply of materials for erection of station transformers</b>							
22.3.1	HDG DP STRUCTURE: each set shall comprise of [ 2X 9.0 Mtrs (ISBM:200X100 mm(min) RS Joist(beam) with bracings of suitable channels(ISMC 75X40) & angles (L50X50X6) & different size Steel plate of 10 mm thick etc].	SET	2	0	0	2		
22.3.2	33 KV AB SWITCH IN 33 KV SIDE(600AMP) including required GI pipe(horizontal & vertically down) & handle for operation of AB switch	SET	2	0	0	2		
22.3.3	HG fuse set for 33 KV side of the Station transformer including base(each set comprises three single HG fuse)	SET	2	0	0	2		
22.3.4	OUT DOOR KIOSK MADE OUT OF 3mm thick CRCA steel duly galvanised having gland plates OR BETTER quality WITH 3 NOS. OF CUT-OUTS(1000 AMPS) AT THE INCOMING SIDE , 1No. OF 3 PHASE SFU (500AMPS) AT THE OUTGOING SIDE AND SUITABLE BUS BAR ARRANGEMENT FOR TERMINATION of incoming cable from transformer & outgoing cable to Main ACDB.	SET	2	0	0	2		
23.0	<b>Switch yard lighting:</b> Design, engineering, procurement of labour, material including all associated works for construction of switch yard lightings as per technical specification and approved drawings. The fixture shall be of reputed make (Philips/CGL/Bajaj) and fixtures shall be LED and proper cabling from the lighting outdoor distribution boards to the junction boxes and from junction boxes to the fixtures. The lighting fixtures are to be installed on the switch yard structures. The quantity of such fixtures are to be designed and to be ascertained.							
23.1	SUB-STATION SWITCH YARD LIGHTING,IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj) 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	80	8	8	96		

23.2	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), COLONY QUARTERS AND OTHER ROADS. ALL MATERIALS AS PER APPROVED DRAWING AND SPECIFICATION TO COMPLETE THE STREET LIGHTING SYSTEM. PROPER EARTHING AS PER STANDARD PRACTICE						
23.2.1	LED LIGHTING FIXTURES including LAMPS of reputed make (Philips/CGL/Bajaj).(100 watt each) for Street Light.	SET	30	0	0	30	
23.2.2	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	30	0	0	30	
23.2.3	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. XLPE CABLES(3.5 CORE 120 SQMM) FROM MAIN ACDB FROM CONTROL ROOM TO THE OUT DOOR KIOSK. XLPE CABLE OF 4C X 16 SQMM FROM OUTDOOR KIOSK TO THE STREET LIGHT POLES AND 4CX6 SQMM FROM POLE TO POLE AND 2CX6 SQMM FROM POLE TO LIGHTING FIXTURES.	NO	1	0	0	1	
23.2.4	OUTDOOR KIOSK of 3 mm thick CRCA sheet duly hot dip galvanised FOR COLONY SUPPLY PURPOSE HAVING 2 NOS. 200 A SWITCH FUSE UNITS, 6 NOS.OUT LETS OF 32 AMP MCB FOR COLONY QUARTES. XLPE CABLES(3.5 CORE 120 SQM) FROM MAIN ACDB FROM CONTROL ROOM TO THE OUT DOOR KIOSK. 4CX16 SQMM FROM KIOSK TO EACH QUARTER.	NO	1	0	0	1	
24	2 TR CAPACITY SPLIT AIR CONDITIONING UNITS WITH REMOTE CONTROL FACILITY: INCLUDING SUPPLY OF AIR CONDITIONERS,VOLTAGE STABILISER,CONTROL BOXES ETC FOR COMPLETING THE A.C SCHEME.(AS PER SPECIFICATION ) FOR CONTROL ROOM, CARRIER ROOM & CONFERENCE ROOM.(*SUPPLY OF CABLES ARE COVERED IN CABLE ITEMS AS INDICATED ABOVE)	SET	20	0	0	20	
25	<b>FIRE FIGHTING SYSTEM(PORTABLE AND WHEEL MOUNTED SETS FOR CONTROL ROOM,EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC(REFER TS-INST TO BIDDER BEFORE DESIGN-SL NO 16-ANNEXURE - I)</b>						
25.1	FOAM TYPE-9 LTRS	NOS	4	1	1	6	
25.2	DRY CHEMICAL POWDER(TROLLEY MOUNTED)- 22.5 KGS	NOS	4	1	1	6	
25.3	DRY POWDER TYPE - 5 KGS	NOS	4	1	1	6	
25.4	CO <sub>2</sub> - 4.5 KGS	NOS	10	0	0	10	
25.5	CO <sub>2</sub> - 9 KGS	NOS	10	0	0	10	
25.6	CO <sub>2</sub> (TROLLY MOUNTED)- 22.5 KGS	NOS	4	0	0	4	
25.7	9 litre water type	Nos.	4	0	0	4	
25.8	50 Litres Mechanical Foam type	Nos.	2	0	0	2	
25.9	FIRE BUCKET (6 NOS IN EACH STAND) WITH STAND	SET	5	0	0	5	
26	<b>SUBSTATION AUTOMATION SYSTEM: Supply of the following 220 and 33 kV level consisting of Panels, Bay control Units, DP Relays, Numerical O/C &amp; E/F Relays, DC Supervision relays, Trip Circuit Supervision, Trip Relay ,Test Block, Differential with REF, Overflux, High impednce REF, Numerical O/C &amp; E/F relay,Transformer trouble relay etc. Station level consisting of Industrial Computer with accessories, PC with accessories, laser printer, UPS, GPS System &amp; Numerical bay control unit etc.</b>						
26.1	<b>220KV Level</b>						
26.1.1	Yard AC Kiosk :5000 mm (L)x4000mm (W)x 3300mm (H) with AC, as per the Specification;	Nos.	2	0	0	2	

26.1.2	Numerical Bay control unit :32 Digital input & 24Nos digital out put with CT / PT Input cards.IEC 61850 protocol. (The BCU for transformer panels should have provision to accommodate required Analogue Inputs).	Nos.	5	0	0	5		
26.1.3	Numerical distance protection with the following functions: IEC 61850 protocol.	Nos.	4	0	0	4		
26.1.4	Numerical Transformer Differential/REF protection with the following functions: Over flux ,Over volt etc. IEC 61850 protocol	Nos.	2	0	0	2		
26.1.5	Numerical over current , earth fault relays: IEC 61850 protocol	Nos.	5	0	0	5		
26.1.6	High Impedance REF Relay	Nos.	2	0	0	2		
26.1.7	Numerical Centralised Bus bar protection.	Nos.	1	0	0	1		
26.1.8	AUXILIARY RELAY FOR DC SUPERVISION	Nos.	10	0	0	10		
26.1.9	AUXILIARY RELAY FOR TRANSFORMER TROUBLES 4	Nos.	4	0	0	4		
26.1.10	MPG - TEST BLOCK 2	Nos.	22	0	0	22		
26.1.11	HIGH SPEED TRIP RELAY(HAND RESET)	Nos.	9	0	0	9		
26.1.12	TRIP CIRCUIT SUPERVISION RELAY 4	Nos.	10	0	0	10		
26.1.13	Line interface unit;	sets.	3	0	0	3		
26.1.14	Ethernet switch IEC 61850-3,IEEE1588v2	set	4	0	0	4		
26.1.15	Multimode glass fibre Optical cord Double jacket armoured ,rodent resilient..	Mtr.	1000	0	0	1000		
26.1.16	Simplex Cubicle type for process bus equipment , Swing frame front access (VSG), Dimension 2300mm (H) X 900mm (D) X 1000mm (W), earth bar 25x6 Sq. mm. Copper	Set	5	0	0	5		
26.1.17	DCDB panel; With Bus bar Switches,600(L)X 400(W)X 500(H)	NOS	2	0	0	2		
26.1.18	TIME SYNCH EQUIPMENT	NOS	1	0	0	1		
26.2	<b>33KV Level</b>							
26.2.1	Yard AC Kiosk :4500 mm (L)x3500mm (W)x 3300mm (H) with Air conditioning as per the Specification;	Nos.	1	0	0	1		
26.2.2	Integrated Numerical Bay control unit with protection function :24 Digital input & 20Nos digital out put with CT / PT Input cards	Nos.	8	0	0	8		
26.2.3	DC Supervision Relay	Nos.	16	0	0	16		
26.2.4	TRIP Relay	Nos.	8	0	0	8		
26.2.5	Test Block	Nos.	16	0	0	16		
26.2.6	Line interface unit;	sets.	2	0	0	2		
26.2.7	Ethernet switch IEC 61850-3,IEEE1588v2	set	3	0	0	3		
26.2.8	Multimode glass fibre Optical cord Double jacket armoured ,rodent resilient..	Mtr.	500	0	0	500		
26.2.9	Simplex Cubicle type for process bus equipment , Swing frame front access (VSG), Dimension 2300mm (H) X 900mm (D) X 900mm (W), earth bar 25x6 Sq. mm. Copper with the following components	Set	4	0	0	4		
26.2.10	DCDB panel; With Bus bar Switches,600(L)X 400(W)X 500(H)	No.	1	0	0	1		
26.3	<b>STATION LEVEL</b>							
26.3.1	Windows based Industrial computer with standard accessories – Keyboard, mouse, monitor with operating software window 10 or 8, IED configuration, substation automation, . Main & Back up. With automation softwares. Main	set	2	0	0	2		
26.3.2	Windows based PC with standard accessories – Keyboard, mouse, monitor with operating software window 10 or 8, IED configuration, substation automation, Disturbance recorder software. DR & work Station PC.Client	set	1	0	0	1		
26.3.3	Color Laser jet Printer	No.	1	0	0	1		
26.3.4	UPS , 3KVA	No.	2	0	0	2		
26.3.5	GPS System with PTP	set	1	0	0	1		
26.3.6	Gateway for SCADA	set	1	0	0	1		
26.4	<b>220 KV CR Panel</b>							
26.4.1	220 KV Feeder Control & Relay Panel (duplex type)	No.	0	1	0	1		
26.4.2	220 KV Protection Panel with BCU (The panel should integrate with existing SAS system at Malkangiri S/S- SIEMENS MAKE)	No.	0	0	1	1		
27	<b>AC &amp; DC SYSTEM</b>							
27.1	<b>AC SYSTEM</b>							
27.1.1	MAIN AC DB,(HAVING 800 A,50KA,DRAWOUT TYPE ACB WITH 3 O/C,E/F,U/V RELAYING FACILITY INDOOR TYPE AS PER SPECIFICATION.(MAIN DB-1,MAIN DB-2 WITH B/C)	SET	1	0	0	1		
27.1.2	ACDB (HAVING 400A MCCB) AS PER SPECIFICATION (AC DB-1,AC DB-2 WITH B/C)	SET	1	0	0	1		

27.1.3	MAIN LIGHTING DISTRIBUTION BOARD (HAVING 250A MCCB AS INCOMER)AS PER SPECIFICATION (WITH DB-1,DB-2 & B/C)	SET	1	0	0	1		
27.1.4	INDOOR LIGHTING DISTRIBUTION BOARD AS PER SPECIFICATION. (WITH DB-1,DB-2 & B/C)	SET	1	0	0	1		
27.1.5	EMERGENCY LIGHTING DISTRIBUTION BOARD	SET	1	0	0	1		
27.1.6	INDOOR RECEPTACLE BOARD	SET	1	0	0	1		
27.2	<b>DC SYSTEM</b>							
27.2.1	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)	SET	1	0	0	1		
27.2.2	220 V DC EMERGENCY DISTRIBUTION BOARD	SET	1	0	0	1		
28	BATTERY (350 AH PLANTE TYPE) FOR 220 V DC	SET	2	0	0	2		
29	BATTERY CHARGER FOR 220 V, 350 AH BATTERY (FLOAT AND FLOAT CUM BOOST)	SET	1	0	0	1		
30	DISTILLED WATER PLANT OF 10 LTR/HR FOR BATTERY BANKS	SET	1	0	0	1		
31	WALKIE TALKIE SET	SET /PAIR	2	0	0	2		
32	PORTABLE ALUMINIUM LADDER EXTENDABLE TYPE OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT INSIDE SWITCH YARD.	NOS	2	0	0	2		
33	PEDESTAL MOUNTED WHEEL FITTED DERRICK FOR LIFTING/ LOWERING OF MATERIALS UP TO 1.5 TON CAPACITY.	SET	1	0	0	1		
34	POWER WINCH NEAR STORE SHED FOR HANDLING MATERIALS UPTO 5 TON CAPACITY.	SET	1	0	0	1		
35	WATER COOLER WITH WATER PURIFIER SYSTEM	NOS	2	0	0	2		
36	MAINTENANCE TESTING EQUIPMENT (AS PER ANNEXURE - I ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OF MAINTENANCE EQUIPMENT)	LOT	1	0	0	1		
37	OTHER TOOLS AND PLANTS (T&P's) REQUIREMENT (AS PER ANNEXURE - II ,INDICATED IN TS-TIMK-SCHEDULE OF REQUI-REMENTS OTHER T&P's)	LOT	1	0	0	1		
38	OFFICE FURNITURE (AS PER ANNEXURE - III ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OFFICE FURNITURE)>PLACING IN CONTROL ROOM,CONFERENCE ROOM,OFFICE ROOMS,LIBRARY,TESTING LAB,etc.	LOT	1	0	0	1		
39	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size	NO	35	2	2	39		
<b>TOTAL OF SUBSTATION(Plant)</b>								

### Mandatory Spare Parts

Item	DESCRIPTION OF ITEMS SUPPLY OF MANDATORY SPARES FOR THE FOLLOWING EQUIPMENTS. (As per Technical Specification)	UNITS	Quantity	Unit Price <sup>2</sup>	
				In Foreign Currency	CIP
			(1)	2	3
1	245 KV,1200-600-300A,40KA,5CORE SINGLE PHASE CURRENT TRANSFORMER(4 PS Cl & 1 0.2s Cl) Including terminal Connector	NOS	2		
2	245 KV,2000A,40KA,ISOLATORS				
2.1	MALE & FEMALE CONTACTS	SET	1		
2.1.1	POWER CONTACTOR,RELAYS,MCBs, SWITCHES,FUSES,PUSH BUTTONS,RESISTORS ETC AS PER APPROVED SCHEMATIC.	SET	1		
2.1.2	LIMIT SWITCH	SET	2		



2.1.3	MOTOR WITH GEAR ASSEMBLY & BEVEL GEAR ASSEMBLY COMPLETE.	SET	1		
2.1.4	AUXILIARY SWITCH CONTACTS ASSEMBLY	SET	1		
2.1.5	EARTHING ROD & BLADE CONTACT SIDE	SET	1		
2.1.6	HINGE PINS,TERMINAL CONNECTOR,TERMINAL PAD	SET	1		
<b>3</b>	<b>245KV,3150A,40KA,SF6,CIRCUIT BREAKER</b>				
3.1	COMPLETE ONE POLE ASSEMBLY OF BREAKER	NOS	1		
3.2	SPRING CHARGING MOTOR	NOS	1		
3.3	BREAKER AUXILIARY CONTACTS	SET	1		
3.4	POWER CONTACTORS,RELAYS,MCBs, SWITCHES,FUSES,PUSH BUTTONS,RESISTORS,PRESSURE SWITCHES,LIMIT SWITCHES, ETC AS PER APPROVED SCHEMATIC.	SET	1		
3.5	DENSITY MONITORING SYSTEM	SET	1		
3.6	CLOSING COIL	NOS	4		
3.7	TRIPPING COIL	NOS	4		
3.8	SF6 GAS FILLING DEVICE	NOS	1		
3.9	SET OF GASKETS , "O" RINGS,SEALS PER CIRCUIT BREAKER	SET	1		
4	36 KV, (800-400-200 A),25KA,3CORE SINGLE PHASE CURRENT TRANSFORMER	NOS	1		
5	36 KV, (800-400-200 A),25KA,4 CORE SINGLE PHASE CURRENT TRANSFORMER	NOS	1		
<b>6</b>	<b>36 KV,1250A,25KA,ISOLATORS</b>				
6.1	MALE & FEMALE CONTACTS	SET	1		
6.2	POWER CONTACTOR,RELAYS,MCBs, SWITCHES,FUSES,PUSH BUTTONS,RESISTORS ETC AS PER APPROVED SCHEMATIC.	SET	1		
6.3	LIMIT SWITCH	SET	2		
6.4	MOTOR WITH GEAR ASSEMBLY & BEVEL GEAR ASSEMBLY COMPLETE.	SET	1		
6.5	AUXILIARY SWITCH CONTACTS ASSEMBLY	SET	1		
6.6	EARTHING ROD & BLADE CONTACT SIDE	SET	1		
6.7	HINGE PINS,TERMINAL CONNECTOR,TERMINAL PAD	SET	1		
7	POST INSULATOR	SET	1		
10	30 KV,METAL OXIDE, 10 KA, CLASS II SURGE ARRESTOR COMPLETE WITH INSULATOR BASE AND SURGE MONITOR	NOS	3		
11	245 KV ,2 CORE,SINGLE PHASE,IVT	NOS	1		
12	36 KV ,2 CORE,SINGLE PHASE,IVT INCLUDING TERMINAL CONNECTOR	NOS	1		
<b>13</b>	<b>36KV, 1250A,25KA,VACUUM CIRCUIT BREAKER</b>				
13.1	ONE COMPLETE POLE ASSEMBLY OF CIRCUIT BREAKER	SET	1		
13.1	TRIPPING COILS	NOS	4		
13.1	CLOSING COIL	NOS	4		
13.1	SPRING CHARGING MOTOR	NOS	1		
13.1	AUXILIARY SWITCH CONTACTS ASSEMBLY	SET	1		
13.1	SET OF GASKET,"O" RINGS,SEALING PER CIRCUIT BREAKER	SET	1		
13.1	POWER CONTACTORS,RELAYS,MCBs, SWITCHES,FUSES,PUSH BUTTONS,RESISTORS,PRESSURE SWITCHES,LIMIT SWITCHES, ETC AS PER APPROVED SCHEMATIC.	SET	1		
14	33 KV Bus Post Insulators	NOS	3		
<b>15</b>	<b>BUS BAR &amp; CIRCUIT MATERIALS</b>				
15.1	220 KV LONG ROD 160 KN PORCILAIN INSULATOR along with hardware fittings <i>for Double Moose ACSR cond</i> (TENSION)	SET	2		
15.1.1	220 KV LONG ROD 160 KN PORCILAIN INSULATOR along with hardware	SET	2		
15.1.2	120 KN LONG ROD INSULATOR STRINGS <i>for Double Moose cond</i> (	SET	2		
15.1.3	120kN LONG ROD INSULATOR STRINGS <i>for Single Moose cond</i> (TENSION)-33 KV	SET	2		

15.1.4	90kN LONG ROD INSULATOR STRINGS <i>for Double/ Single Moose cond</i> (SUSPENSION)-220KV	SET	2		
15.1.5	90kN LONG ROD INSULATOR STRINGS <i>for Double/ Single Moose cond</i> (SUSPENSION)-33 KV	SET	2		
16	ACSR MOOSE CONDUCTOR	MTRS	250		
17	HARDWARES & FITTINGS/SPACERS/CLAMP & CONNECTORS ETC. FOR 220 KV & 33 KV	SET (EACH TYPE THREE NOS.)	1		
18	<b>GENERAL EQUIPMENT &amp; SUBSTATION ACCESSORIES</b>				
18.1	<b>POWER CABLES,1.1KV,XLPE &amp; PVC,ARMOURED, ALUMINIUM CONDUCTOR(As per Specification)</b>				
18.1.1	3.5 CX300 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-XLPE	PCS.	1		
18.1.2	3.5 CX185 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-XLPE	PCS.	1		
18.1.3	3.5 CX120 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-XLPE	PCS.	1		
18.1.4	3.5 CX70 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-PVC	PCS.	1		
18.1.5	3.5 CX35 mm <sup>2</sup> (ONE PIECE OF MAXM. LENGTH OF CABLE USED)-PVC	PCS.	1		
18.1.6	4 CX 16 mm <sup>2</sup> -PVC	MTRS	250		
18.1.7	4 CX 6 mm <sup>2</sup> -PVC	MTRS	250		
18.1.8	2CX 6 mm <sup>2</sup> -PVC	MTRS	250		
18.2	<b>CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)</b>				
18.2.1	4 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 500 MTRS)	Mtrs	500		
18.2.2	5 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 500 MTRS)	Mtrs	500		
18.2.3	7 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 500 MTRS)	Mtrs	500		
18.2.4	10 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 500 MTRS)	Mtrs	500		
18.2.5	12 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 250 MTRS)	Mtrs	250		
18.2.6	16 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 250 MTRS)	Mtrs	250		
18.2.7	19 CX 2.5 mm <sup>2</sup> (ONE DRUM HAVING LENGTH OF 250 MTRS)	Mtrs	250		
18.2.8	1CX 120 mm <sup>2</sup> BAT TO BAT CHARGER & CHARGER TO DCDB	MTRS	50		
19	<b>TELECOMMUNICATION &amp; OTHER MATERIALS</b>				
19.1	ONE COMPLETE CELL ASSEMBLY OF BATTERY(FOR 48 V VRLA TYPE BATTERY 300 AH)	NOS	1		
19.2	ONE COMPLETE CELL ASSEMBLY OF BATTERY(FOR 220 V PLANTE TYPE BATTERY 350 AH.)	NOS	1		
19.3	BATTERY CHARGER FOR 300 AH (48V) ONE COMPLETE SET OF ELECTRONIC CARDS	SET	1		
19.4	BATTERY CHARGER FOR 350 AH (220V) ONE COMPLETE SET OF ELECTRONIC CARDS	SET	1		
	<b>TOTAL OF MANDATORY SPARE PARTS</b>				

**TOTAL OF SUBSTATION-SCHEDULE-2 -Plant and Mandatory Spare Parts(To Schedule 6 Grand Summary)**

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

<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 Sub-Stations & Transmission Lines for Procurement of 2X20 MVA, 220/33 KV Sub-station at GOBINDPALLI & associated 220KV LILO line on 220KV BALIMELA - MALKANGIRI Second CKT Line (Approx. Line length-37.600 Kms.) and stringing of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI and associated 220KV bay extension at Balimela & Malkangiri S/S in Odisha State of India under PACKAGE-5A Under Japan International Cooperation Agency (JICA)'s

Loan Agreement No: [ID-P245] -

FB No: [CPC/JICA/ICB/05A/16-17/-]

Reference Identification No: [OPTCL/JICA/PKG-5A]

### Schedule No. 2. Plant and Mandatory Spare Parts Supplied from Within the Employer's Country (Transmission Line)

#### NAME OF THE BIDDER

SL NO	SUPPLY OF FOLLOWING EQUIPMENTS (As per Technical Specification)	Unit	CONSTRUCTION OF 220 KV LILO LINE ON Malkangiri-Balimela--37.6 KM	Construction of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI S/s (21.37 KM)	Total Quantity	Unit Price <sup>2</sup>	Total Price <sup>2</sup>
					(1)	(2)	(1) x (2)
1	SUPPLY of Following type tested Lattice type Galvanized steel tangent / Angle tower with stubs and cleats , different type of G.I HT Nuts & Bolts, washer, spring washer for the towers ,hanger and all accessories, tower super structure complete including step bolts. Supply of black bituminous paint for three coats up to a height of 500mm above the cooping(legs & bracing members). All Supply should confirm to the <u>Technical Specification</u>						
1.1	<b>OA TYPE TOWER (Nominal unit weight 4.244 MT) ( 100 NOS.)</b>	MT	424.400	0	424.400		
1.2	+3 EXTENSION (Nominal unit weight 0.748 MT) (19 Nos)	MT	14.212	0	14.212		
1.3	+6 EXTENSION (Nominal unit weight 1.495 MT) (7 NOS.)	MT	10.465	0	10.465		
1.4	<b>OB TYPE TOWER (Nominal unit weight 6.347 MT) (20NOS.)</b>	MT	128.740	0	128.740		
1.5	+3 EXTENSION (Nominal unit weight 1.334 MT) (3NO.)	MT	4.002	0	4.002		
1.6	+6 EXTENSION (Nominal unit weight 2.308 MT) (1NO.)	MT	2.403	0	2.403		
1.7	<b>OC TYPE TOWER (Nominal unit weight 8.749 MT) (22 nos.)</b>	MT	192.478	0	192.478		

1.8	+3 EXTENSION (Nominal unit weight 1.436 MT) (4NOS.)	MT	5.74	0	5.744		
1.9	+6 EXTENSION (Nominal unit weight 2.6 MT) (1 NOS.)	MT	2.600	0	2.600		
1.10	+15 EXTENSION (Nominal unit weight 8.555 MT) (4 NOS.)	MT	34.220	0	34.220		
1.11	<b>UR TYPE TOWER (Nominal unit weight 12.474 MT) (2 nos.)</b>	MT	24.948	0	24.948		
1.12	+6 EXTENSION (Nominal unit weight 4.148 MT) (2 NOS.)	MT	8.296	0	8.296		
1.13	TEMPLATES						
1.13.1	OA (NOMINAL UNIT WEIGHT 0.579 MT)(3 NOS)	MT	1.737	0	1.737		
1.13.2	OB (NOMINAL UNIT WEIGHT 0.794 MT) (1 NOS)	MT	0.794	0	0.794		
1.13.3	OC (NOMINAL UNIT WEIGHT 0.962 MT) (1 NOS)	MT	0.962	0	0.962		
1.13.4	OC+15 (NOMINAL UNIT WEIGHT 2.107 MT) (1 NOS)	MT	2.107	0	2.107		
1.13.5	UR (NOMINAL UNIT WEIGHT 1.476 MT) (1 NOS)	MT	1.476	0	1.476		
1.14	WEIGHT OF THE STRUCTURES (including Tower stubs, & Nut and Bolts)	<b>MT</b>	<b>859.584</b>	0	<b>859.584</b>		
1.15	Weight of different type G.I Nuts and Bolts	<b>MT</b>	<b>37.731</b>	0	<b>37.731</b>		
2.0	<b>Supply of the following tower accessories as per technical specification and as directed by the engineer in charge.</b>						
2.1	EARTHING DEVICE	Nos.	144	0	144		
2.2	DANGER BOARD	Nos.	144	0	144		
2.3	NUMBER PLATE	Nos.	144	0	144		
2.4	PHASE PLATE	Sets	864	234	1098		
2.5	BIRD GUARD	Nos.	732	0	732		
2.6	ANTICLIMBING DEVICE	Nos.	144	0	144		
2.7	CIRCUIT PLATE	Nos.	288	0	288		
3.0	<b>Supply of following POWER CONDUCTORS in the proposed 220kV lines with provision for sag and wastage as per the technical specification and as per the instruction of the engineer in charge.</b>						
3.1	ACSR Zebra (54/7/3.18mm)	Kms.	229.000	65.000	294.000		
4.0	<b>POWER CONDUCTOR ACESSORIES</b>						
4.1	<b>For ACSR ZEBRA</b>						
4.1.1	VIBRATION DAMPER	Nos.	1728	468	2196		
4.1.2	MID SPAN JOINT	Nos.	229	65	294		
4.1.3	Repair Sleeve	Nos.	60	20	80		
5.0	<b>OPGW Cable and Accessries</b>						
5.1	48Fibre(DWSM)OPGW fibre Optic Cable	Kmtr	40	0	40		
5.2	48Fibre(DWSM)OPGW fibre Optic Cable hardware set like suspension Assembly,Tensin Assembly(Dead end assembly, Pass through assembly) ,Vibration Damper,Down Lead Clamp Assemblies for 24/48 Fibre(DWSM) OPGW,Joint Box	Kmtr	40	0	40		
6.0	<b>EARTH CONDUCTOR ACESSORIES</b>						
6.2	FLEXIBLE COPPER EARTH BOND	Nos.	188	0	188		
7.0	<b>Supply of the following Anti Fog Type LR Porcelain insulators as per the technical specification</b>						

7.1	220 KV LONG ROD 120 KN PORCILAIN INSULATOR	SET	813	217	1030		
7.2	220 KV LONG ROD 160 KN PORCILAIN INSULATOR	SET	670	180	850		
<b>8.0</b>	<b>Supply of the following hard ware fittings suitable for following conductors as per the technical specification.</b>						
<b>8.1</b>	<b>For ACSR ZEBRA</b>						
8.1.1	Single suspension Hard wares fittings.(AGS type) suitable for 120 KN insulator.	Set	690	195	885		
8.1.2	Single tension Hard wares fittings, suitable for 160 KN insulator.	Set	426	117	543		
8.1.3	Double suspension Hard wares fittings.(AGS type) suitable for 120 KN	Set	42	6	48		
8.1.4	Double tension Hard wares fittings, suitable for 160 KN insulator.	Set	108	27	135		

**TOTAL OF Schedule-2 Line To Schedule-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 Sub-Stations & Transmission Lines for Procurement of 2X20 MVA, 220/33 KV Sub-station at GOBINDPALLI & associated 220KV LILO line on 220KV BALIMELA - MALKANGIRI Second CKT Line (Approx. Line length-37.600 Kms.) and stringing of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI and associated 220KV bay extension at Balimela & Malkangiri S/S in Odisha State of India under PACKAGE-5A Under Japan International Cooperation Agency (JICA)'s ODA Loan.

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/05A/16-17/-] - Reference Identification No: [OPTCL/JICA/PKG-5A]

### Schedule No. 4. Installation and Other Services (Sub-station & Bay extension)

NAME OF THE BIDDER											
SL NO	ERECTION, TESTING & COMMISSIONING OF FOLLOWING EQUIPMENTS ALONG WITH CIVIL WORKS (As per Technical Specification)	UNITS	Quantity for: Construction of 2x20 MVA, 220/33 KV Sub-Station at Govindpalli 220 KV BAY 05 NOS (FDR:02, TFR:02 & B/C:01) & 33 KV BAY 08 NOS (FDR:05, TFR:02 & B/C:01)	Quantity for: 01 No. Feeder Bay Extension at 220/33 KV Grid S/s Balimela	Quantity for: 01 No. Feeder Bay Extension at 220/33 KV Grid S/s Malkangiri	Total Quantity	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)	(1) x (2)	(1) x (3)
<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.	60000	1500	1500	63000					
1.2	Soil investigation : Supply of labour, T&P and 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	1	1	7					
2	Cutting, Filling and Leveling of Sub-station area including supply of labour and T&P										
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	CUTTING & Filling of substation area										
2.1.1.1	[ii] Dense/ Compact soil	CUM	10000	550	550	11100					
2.1.2	FILLING of substation area with borrowed earth with supply of all labour, T & P.										
2.1.2.1	Beyond 30 mtr lead	CUM	25000	100	200	25300					
3	Anti-Weed Treatment										
3.1	Supply of labour, T&P, Chemicals and other necessary arrangements for anti-weed treatment of the switch-yard areas, control room etc. as per the instruction of Engineer-in-Charge.	Sq.Mtrs	6000	1700	1700	9400					
4	<b>Boundary wall :</b> Soil investigation, Design, engineering, procurement of material, labour including all associated works for construction of boundary-wall along the property line of the sub-station as per technical specification and instruction of the Engineer in Charge. (the size of the Fly ash Bricks shall be 250mm using fly ash Fly ash Brick & having compressive strength with 75kg/cm <sup>2</sup> ). 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. (**APPROXIMATE LENGTH OF THE BOUNDARY WALL) and approved drawing. Appox.										
4.1	Appox length of the boundary walls (Brick works rested on RCC Beam and RCC Column & footings as per TS ) in mtrs	Mtrs.	1050	0	0	1050					

4.2	<b>RCC Retaining (2 mtr, 3 mtr, 4 mtr height) cum boundary wall</b> : Design, engineering, supply of all labour, material (Supply of Cement, MS Rod Cutting, Bending, Binding (including supply of binding wire), coarse and fine aggregates and construction of PCC (1:3:6) & RCC RATIO 1:1.5:3 as per requirement including excavation, concreting, shuttering, grouting, underpinning and back filling of open cast grade beam concreting etc complete for the boundary walls, as per the technical specification and approved drawings. 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.								
4.2.1	Excavation								
4.2.1.1	Normal soil	Cum	668.81	0	0	668.81			
4.2.1.2	Hard soil	Cum	891.75	0	0	891.75			
4.2.1.3	Dis-integrated rock (not required blasting)	Cum	445.87	0	0	445.87			
4.2.1.4	Hard rock (required blasting)	Cum	222.94	0	0	222.94			
4.2.2	RCC - M20 (1:1.5:3) with cost of cemet, shuttering & without steel.	Cum	1064.35	0	0	1064.35			
4.2.3	PCC - M10 (1:3:6) with cost of cemet, shuttering & without steel.	Cum	120.53	0	0	120.53			
4.2.4	PCC - M15 (1:2:4) with cost of cemet, shuttering & without steel.	Cum	52.25	0	0	52.25			
4.2.5	Cutting, Bending, Binding Placing in position of steel rod for foundation including cost of binding wire with supply all size of rod (TATA/ RAIL/ Sail Make)	MT	61.093	0	0	61.0929			
4.2.6	Fabrication (Cutting and different sizes angles/ flats, drilling of holes) including cost of GI angle, consumable, labour, T&P and other anccillary item.	MT	1.89	0	0	1.89			
4.2.7	Cost of good quality Grill Gate	LS	1	0	0	1			
4.2.8	Cost of Barbed wire with 5% wastage	Kg	942	0	0	942			
4.2.9	Making charges of Barbed wire fencing	per mtr	5358	0	0	5358			
4.2.10	Brick masonry in ratio 1:5 with supply of first class Bricks, good quality river sand, labour and T&P.	Cum	416.38	0	0	416.38			
4.2.11	Cement Plastering with mortar of 1:6 ratio with supply of all aggregates (good quality river sand) all labour and T&P.	Sq. mtr	3277.1	0	0	3277.1			
4.2.12	Panting of Wall - applying three coats of paint, materils, consumables, labour and T&P.	Sq. mtr	3572	0	0	3572			
5	<b>Excavation for OPEN CAST foundation and back filling of columns,Equipments foundations,including supply of all labours,T&amp;P,and materials and as per the direction of the Engineer-in-Charge.</b>								
5.1.1	Soft Soil/Loose Soil.	CUM	2000	300	400	2700			
5.1.2	Hard Soil.	CUM	3000	500	350	3850			
5.1.3	Soft/Disintegrated Rock( not Requiring Blasting)	CUM	1500	150	100	1750			
5.1.4	Hard Rock (Requiring Blasting/Using Rock Breaker Machinery)	CUM	2012	0	50	2062			
6	<b>OPEN CAST/SHALLOW FOUNDATION CONCRETE WORKS</b>								
6.1	Foundations : Design, engineering, supply of all labour, material and construction(open cast foundation) of PCC, RCC footings of any depth, pedestal including the cost of soil investigation, concreting, cement, reinforcement steel, shuttering, grouting, underpinning and back filling of foundations etc complete for the switchyard gantry/ portal /column structures and equipment support as per the technical specification and approved drawings & disposal of excess earth as per the direction of Engineer In charge.								
6.1.1	PCC(1:3:6)	CUM	160	24	24	208			
6.1.2	(RCC) MIX 1:1.5:3 (of grade M20)	CUM	1450	225	225	1900			
7	<b>FOUNDATIONS FOR TRANSFORMERS:</b>								
7.1	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 and this foundation should be connected with Main concrete road of the switch-yard . (Rate shall be inclusive of cement, reinforcement steel, angles,RS joists,Channels ,Rails ,flats and form work etc.)(all cement concrete shall have RCC 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.								
7.1.1	Suitable for 40 MVA, 220/ 33kV transformers- Overall dimension of transformer(appox) Length:7200 mmX Width 6000 mmX Height 6200 mm) Total weight with oil and tank: 97.5 MT (appox)	Nos	2	0	0	2			

8	<b>OIL SUMP PIT:</b> 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. Oil capacity of each Transformer in ltrs approx. a) 40 MVA,220/33 KV : 36000 ltrs.	Nos	1	0	0	1			
9	<b>Fire wall:</b> 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 bricks).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 drawing and specification. Painting of the walls as per direction of the Site In charge	Nos	1	0	0	1			
10	<b>NCT FOUNDATION:</b> Design, engineering, procurement of labour, material including all associated works for construction of foundation NCT(also refer clause 1,1.1,&1.2) near Transformers and as per approved drawing and requirement and also as per the instruction of Engineer in charge. 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.	Nos	4	0	0	4			
11	<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,250 KVA STN TRANSFORMER as per approved drawing and specification.33 KV AB Switch(600A),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	0	0	2			
12	<b>Cable Trenches:</b> 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 including supply of all labour, T&P, materials. (1) This also includes excavation in all types of soil or rocks,back filling,and disposal of excess earth as per the direction of Engineer In charge. (2) Design, Engineering, Providing and laying of plain cement concrete (PCC 1:3:6) of grade M10 with approved quality coarse aggregates (Nominal size 12mm to 20mm) , fine aggregates, cement in 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. (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(FE 500),Cement, coarse and fine aggregates,shuttering,cutting,bending,binding of M.S.Rod including supply of binding wire proper curing of the foundations/concrete and T&P in line with the Specification and as per direction of Engineer in Charge. (4) Fly ash brickwork with Fly ash brick ,plastering (1:6 Ratio) & curing, wherever required including the supply of labour,material, cement, etc. (5)Erection,fabrication & 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. (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. (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 JOIST ,CHANNEL,ANGLE)).								
12.1	Cable trench with covers								
12.1.1	Section 1-1	Mtrs	600	0	0	600			
12.1.2	Section 2- 2	Mtrs	400	35	35	470			
12.1.3	Section 3-3	Mtrs	200	30	30	260			
12.1.4	Section 4-4	Mtrs	200	20	20	240			
12.2	<b>Cable trench crossing:</b> Design,engineering,construction including supply of labour, materials, cement, reinforcement steel, form box etc,and all associated works for construction of trench crossing as per technical specification and approved drawing.								
12.2.1	Road crossing for								
12.2.2	Section 1-1	Nos	1	0	0	1			
12.2.3	Section 2- 2	Nos	1	0	0	1			
12.2.4	Section 3-3	Nos	1	0	0	1			



13	<b>PCC before site surfacing</b> :Providing and supplying all labour, material, equipments etc. required for proper levelling 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 levelling of the switch yard area (after anti-weed treatment), spreading of plain cement concert 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 . As per technical specification and approved drawing, and as per the instruction of the Engg-in-Charge.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 and approved drawing.	CUM	580	130	130	840			
14	<b>METAL SPREADING IN THE SWITCH-YARD</b>								
14.1	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	774	170	170	1114			
15	<b>Roads and Bridges:</b>								
15.1	<b>Roads:</b> Design, construction of roads and walkways/ shoulders within sub-station as per specification, layout and approved drawings complete. 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. Provision of drains on both the side of the roads for easy discharge of rain water.								
15.1.1	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	400	0	0	400			
15.1.2	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 all internal roads of the switch yard).Shall have drain on both side of the road.	MTRS	400	100	100	600			
15.1.3	7 mtrs wide Concrete roads with shoulder as per specification indicated in the civil section.( for main and approach roads).Shall have drain on both side of the road.	MTRS	900	0	0	900			
15.1.4	<b>1 no Culvert for approach road</b>	Lot	1	0	0	1			
16	<b>Drainage system:Collection of rainfall data</b> , Design, construction of storm water drainage scheme, road-culverts, and drains crossing cable trenches 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 direction of Engineer In charge. All the switchyard bays , roads water drainage shall be connected to the main surface drain. As per approved drawing and specification.								
16.1	Storm water drain								
16.1.1	Outer peripheral drain(RCC)(1500x1500)	MTRS	700	100	100	900			
16.1.2	Inner Peripheral & Switchyard inside(RCC)(1000x600)	MTRS	450	50	50	550			
16.1.3	Switchyard inside(1000x300)	MTRS	300	25	25	350			
16.2	Road-culverts, drain crossings	Lots	1	0	0	1			
16.3	Cable trench crossing	Lots	1	0	0	1			
17	<b>Rain water harvesting</b> system as per Technical specification and approval of drawing and as per the direction of the Engineer in charge.	Nos	4	0	0	4			
18	<b>Switchyard fencing:</b> Providing and fixing of G.I chain link(2.5mm dia) fencing( the posts and links shall be of HD Galvanised ) 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 RR masonry work with ratio 1:5 and cement pointing of the joints, for the fencing upto a height of 350mm from the finished ground level) .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. The earthing of the fencing as per specification.	MTRS	450	80	80	610			
19	<b>MAIN &amp; SWITCH YARD GATES:</b> Design, engineering, procurement of labour, material including all associated works for construction and fixing 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,backfilling,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 lamp, LV XLPE cables, switchgear etc required to complete works as per specification and approved drawings								
19.1	<b>MAIN GATE</b>	NOS	1	0	0	1			
19.2	<b>WICKET GATE NEAR MAIN GATE</b>	NOS	1	0	0	1			

19.3	SWITCH YARD GATE(ON BOTH SIDES OF 7MTRS. CONCRETE ROAD OF SWITCHYARD)	NOS	2	0	0	2			
19.4	WICKET GATE NEAR SWITCHYARD	NOS	1		0	1			
20	<b>SECURITY SHED &amp; CUM VISITOR ROOM:</b> 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))								
20.1	<b>SECURITY SHED:</b> The size of the security shed shall be 3.5 mtrsX5mtrs and height of 3.5mtrs 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 with lamps(LED Type) & 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	0	0	1			
21	<b>BORE WELL &amp; PUMP HOUSE:</b> 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 with MS door having locking arrangement & Internal concealed wiring and lighting (including supply of flexible copper FRP 1.1 KV PVC wire,conduits & its accessories,modular type switches & switch board, fixing of lighting fixtures with lamps(LED Type) ). 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&P & excavation of all type of soils including rock and disposal of excess materials as per instruction of Engineer In charge Supply & laying of LV XLPE 3.5CX 35 sq mm cable from ACDB to pump house, control gear & earthing of the system etc to complete the scheme as per approved drawing & instruction of Engineer-in charge.	NOS	2	0	0	2			
22	<b>PLATFORM FOR STORING EQUIMENTS:</b> 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	0	0	1			
23	<b>PROVISION OF RAMP:</b> Design, engineering, procurement of labour, material including all associated works for construction and fixing of Ramp 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 direction of Engineer In charge. Provision of a ramp of adequate size and capable of for loading and unloading of the materials of 5 Ton capacity from the lorry or to the lorry near the store shed. Adequate size of MS frames and RCC (1:1.5:3) based ramps to be used for the said purpose.	NOS	1	0	0	1			
24	<b>PROVISION OF PLANTATIONS:</b> Provision of plantation of 100 nos fruit bearing plants and 100 nos decorative plants at different locations, a garden in front of the control room including supply of plants,soil treatment and its plantation including materials,labour and T&P. As per the instruction of Engineer in Charge and specification.	LOT	1	0	0	1			
25	<b>Any other civil work</b> to be included in the schedule by the Bidder if required essential for successful completion of project, including supply of labour, material, cement reinforcement steel, form work etc. Bidder shall also quote the unit rate for the following items of works.(Rate shall be inclusive of supply of labour, material, cement, reinforcement steel, form work etc. )								
25.1	PCC 1: 4 : 8	CUM	1	0	0	1			
25.2	RCC M 15	CUM	1	0	0	1			
25.3	Brick masonry work in cement sand mortar 1: 6 with bricks of class designation 150KG/SQ.MTR.	CUM	1	0	0	1			
25.4	12 mm thick plaster in cement sand mortar ( 1: 6 ).	SQ. MTRS.	1	0	0	1			

25.5	Cutting,bending and fixing of reinforcement.	MT	1	0	0	1			
26	<b>STONE PITCHING &amp; TOE WALL:</b> 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 & T&P as per the direction of Engineer In charge and as per approved drawing and specification.								
26.1	Excavation in Soft & Loose Soil	Cum	375	0	0	375			
26.2	P.C.C (1:3:6): Lean Concrete Grade M-10	Cum	90	0	0	90			
26.3	RR Masonry (1:5)	Cum	585	0	0	585			
26.4	P.C.C (1:2:4): Lean Concrete Grade M-15	Cum	20	0	0	20			
27	<b>STORE SHED:</b> 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 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))	Lot	1	0	0	1			
28	<b>RETAINING WALL:</b> Design, engineering, supply of labour, material, equipments and construction of retaining wall of height upto 3.5 meter. This includes all RCC, PCC, brick masonry work, miscellaneous structural steel and other items etc. not mentioned herein, but specifically required for the completion of the work as per technical specification and approved drawing. (all cement concrete shall have RCC 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.								
28.1	EXCAVATION: Dense and Compact Soil	Cum	370	0	0	370			
28.2	PCC (1:3:6) : (With cost of Cement,other consumable materials & Without Steel)	Cum	20	0	0	20			
28.3	RCC: (1:1.5:3): (With Cost of Cement,other consumable materials & Without Steel )	Cum	200	0	0	200			
28.4	Brick masonry (1: 6)(With Supply of Cement &other Consumable Materials)	Cum	35	0	0	35			
28.5	Cement Plastering (1:6)	Sqm	340	0	0	340			
28.6	Supply of MS TOR including cutting binding, Placing in position of steel rods for fondation concreting including cost of binding wire.	MT	4	0	0	4			
29	<b>CONTROL ROOM BUILDING:</b> Design, engineering and construction of switch yard buildings including the piling where required, the cost of material, supply of all labour, T&P, 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,back filling,and disposal of excess earth as per the direction of Engineer In charge. As per approved drawings and specification. CONTROL ROOM BUILDING:(one building): A) Area of the Ground floor with portico at front side, stair case to first floor and top of the building. The details of rooms to be provided are as per the Tech spec. B) Area of the first floor. The details of rooms to be provided are as per the Tech spec. Size of Ground floor. Nos./ area of ground floor/area of first floor . 01 No/ Area of <b>Ground Floor : 42 mtrsX13 mtrs (546 sq mtrs) &amp; Area of first floor 21 mtrsX13mtrs (273 sq mtrs)</b> . Only Fly ash brick is to used for brick work. One no. room shall be used for ladies rest room & should have attached toilet facility meant for ladies staff is to be included in ground floor of the Control room building.								
29.1	RCC volume including MS rods(including column ,Beams and roofs etc) as per technical spec & approved drawings.	Lot	1	0	0	1			
29.2	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	0	0	1			
29.3	Flooring with <b>double charged</b> 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	0	0	1			
29.4	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 left over portion of walls and ceiling of Battery room shall be acid proof paints as per specification & approved drawings.	Lot	1	0	0	1			

29.5	Provision of ceiling in the control room area as per specification mentioned in the civil section & approved drawings.	Lot	1	0	0	1			
29.6	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	0	0	1			
29.7	Provision of PHD and other fittings(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.	Lot	1	0	0	1			
29.8	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),supply & 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 technical specification and approved drawing and direction of Engineer In charge.	Lot	1	0	0	1			
29.9	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	0	0	1			
29.10	Provision of smoke and fire detection system of the building.	Lot	1	0	0	1			
30	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&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 & panels shall be aluminium with adequate size as indicated in the TS and also as per the National Building Code adopted.								
30.1	"D" type Quarter As per technical specification(01 Nos Quarter, each of size 120 SQ Mtrs)(D1 )								
30.1.1	"D" type Quarter As per technical specification: 1 no quarter on ground floor & the size of quarter plinth area shall be 120 Sq Mtrs(appox)	SQ.MTRS	120	0	0	120			
30.2	"E" type Quarter As per technical specification (one no. two storied flat. Each flat shall be with 2 nos quarters on ground floor & 2 Nos quarters on 1st floor).(There shall be 4 Nos quarters to be accommodated in one flat as E1,E2,E3 & E4)								
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	0	0	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	0	0	146			
	<b>TOTAL OF ERECTION SUBSTATION (Civil Work)</b>								
<b>PART B ELECTRICAL WORKS</b>									
30.0	<b>ERECTION OF SUPERSTRUCTURE :</b>								
30.1	Supply of labour,T&P and other necessary arrangements for erection of Columns,Beams,Equipments supporting structures & Nuts and Bolts	MT	269.4692	43.5829	43.5829	356.635			
31	<b>ERECTION OF EQUIPMENTS</b>								
31.1	<b>Supply of all labour ,T&amp;P and Transportation from the site store,erections as per specification and testing commissioning etc as per the instruction of the Engineer-in-charge.</b>								
31.1.1	245 KV,1200-600-300A,40KA,5CORE SINGLE PHASE CURRENT TRANSFORMER(4 PS CI & 1 0.2s CI)	NOS	18	3	3	24			

31.2	<b>245 KV,2000A,40KA,ISOLATORS</b>								
31.2.1	S/I WITH OUT EARTH SWITCH	NOS	18	3	3	24			
31.2.2	S/I WITH SINGLE EARTH SWITCH	NOS	4	1	1	6			
31.2.3	BEAM MOUNTED S/I WITHOUT EARTH SWITCH	NOS	4	1	1	6			
31.3	245 KV,4400pF,3CORE,SINGLE PHASE CAPACITOR VOLTAGE TRANSFORMER	NOS	6	3	3	12			
31.4	245KV,3150A,50KA,SF6,CIRCUIT BREAKER WITH SUPPORTING STRUCTURE	NOS	5	1	1	7			
31.5	216 KV, METAL OXIDE SURGE ARRESTOR,10 KA, class III	NOS	12	3	3	18			
31.6	245 KV ,2 CORE,SINGLE PHASE,IVT	NOS	6	0	0	6			
31.7	220 KV Bus Post Insulators	NOS	54	12	12	78			
31.8	36 KV,800-400-200,25KA,4CORE SINGLE PHASE CURRENT TRANSFORMER(3 PS Cl & 1 0.2s Cl)	NOS	6	0	0	6			
31.8.1	36 KV,800-400-200,25KA,3 CORE SINGLE PHASE CURRENT TRANSFORMER(2 NOS PS CLASS & 1 NO. 0.2s CLASS)	NOS	15	0	0	15			
31.9	36 KV CLASS NCT FOR POWER TRANSFORMER REF PROTECTION (RATIO 800-400-200 A) & HAVING TWO CORE (PS CLASS) (IN EACH POWER TRANSFORMER 220 KV SIDE: 1 NO. & 33 KV SIDE:1 NO)	NOS	4	0	0	4			
31.10	<b>36 KV,800A,25KA,ISOLATORS</b>								
31.10.1	S/I WITH OUT EARTH SWITCH	NOS	8	0	0	8			
31.10.2	D/I WITH SINGLE EARTH SWITCH	NOS	4	0	0	4			
31.10.3	D/I WITHOUT EARTH SWITCH	NOS	2	0	0	2			
31.10.4	S/I WITH BEAM MOUNTED	NOS	2	0	0	2			
31.11	30 KV METAL OXIDE SURGE ARRESTOR, 10 KA, Class II	NOS	24	0	0	24			
31.12	36 KV ,2 CORE,SINGLE PHASE,IVT	NOS	3	0	0	3			
31.13	36KV,1250A,25KA,VACUUM CIRCUIT BREAKER WITH SUPPORTING STRUCTURE.	NOS	7	0	0	7			
31.14	33 KV Bus Post Insulators	NOS	20	0	0	20			
32	<b>BUS-BAR STRINGING</b>								
32.1	Supply of labour,T&P and other necessary arrangements for stringing of bus bar conductors,hoisting of single or double insulator strings,Single or Double Hard-wares Fittings, Clamp & connectors, as per requirements, Jumpers, connections to Equipments,testing,commissioning etc. as per the instruction of Engineer-in charge.								
33.1.1	Single conductor/Phase/Mtr.	KM	3	0.3	0.2	3.5			
33.1.2	Twin Conductor /Phase/Mtr.	KM	2	0.3	0.2	2.5			
33.1.3	IPS 4" ALUMINIUM TUBES(114.2 mm OD, & 8.51mm Thickness) for equipment to equipment connection in 220 KV side.	MTRS	370	80	80	530			
33.2	<b>EARTHING SPIKES &amp; ITS HARDWARES &amp; FITTING( 220 KV SIDE @ 9 MTRS LENGTH EACH &amp; 33KV SIDE: @ 5 MTRS EACH)</b>								
33.2.1	Earthing Spikes of 9 mtr long each and Its Fittings in all respect. (220 kv side)	NOS	37	3	3	43			
33.2.2	Earthing Spikes of 5 mtr long each and Its Fittings in all respect. (33 KV side)	NOS	25	0	0	25			
34	<b>SUB-STATION EARTH-MAT</b>								
34.1	Substation earth-mat Design, engineering, supply inclusive of corrosion protection measures if any,laying of earth-mat conductors of Hot dip galvanized flats of size 75X10mm to the approval of Project Manager, excavation, welding/jointing ,application of two coats of bituminous Paint,wrapping of HT Tape etc of ground conductors along with risers (of size 50X6 mm GI flats) etc back filling and good compaction,grounding driven rods(40 mm MS solid rod),perforated 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.								
34.1.1	(i)75x10 MM GI FLAT	MTRS	5167	800	800	6767			
34.1.2	(ii)50x6 MM GI FLAT	MTRS	4165	525	525	5215			
34.1.3	(iii)40 MM MS ROD FOR NON-TREATED EARTH PIT ELECTORDE	NOS	120	15	15	150			
34.1.4	50MM GI PIPE FOR TREATED EARTH PIT ELECTORDE WITH CHAMBER AND COVER	NOS	180	25	25	230			
34.1.5	Providing and supplying all labour, material, equipments etc. required for making of Special Bore well type earthing by using <b>Pipe-in-Pipe</b> earthing electrode in order to minimize the earth resistance OF THE SWITCH-YARD below 0.5 OHM.	NOS	4	0	0	4			
34.2	<b>G.I Cable Trays including support GI angle suitable for different sections i.e. Section:1-1,2-2,3 3 &amp; 4-4 along with its accessories as per TS.</b>								
34.2.1	G.I Cable Trays(size: 450x75x2500mm)	MTRS	1200	125	125	1450			
34.2.2	G.I Cable Trays(size: 300x75x2500mm)	MTRS	2000	100	100	2200			
34.2.3	G.I Cable Trays(size: 150x75x2500mm)	MTRS	1500	50	50	1600			
34.2.4	Support G. I angle 50x50x6 mm for cable tray	MT	2.5	0.25	0.25	3			

34.3	<b>SUB STATION SWITCHYARD BMK,AC CONSOLE &amp; OTHER MARSHALLING BOXES</b>								
34.5	BAY MARSHALLING KIOSK (03 nos on 220 kV bay & 04Nos 33 KV bay )	NOS	7	1	1	9			
34.6	SWITCH YARD AC CONSOLE FOR LIGHTING (01 nos on 220 kV bay & 01 No in 33KV bay )	NOS	2	0	0	2			
34.7	SWITCH YARD RECEPTACLE BOARD FOR TFR OIL FILTERATION (01 no. near 220/33 KV power Transformer)	NOS	1	0	0	1			
34.8	SWITCH YARD RECEPTACLE BOARD FOR WELDING & OTHER EMERGENCY (01 nos on 220 & 33 kV bay )	NOS	2	0	0	2			
35	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,PVC pipes Bends,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								
35.1	<b>POWER CABLES,1.1KV,XLPE &amp; PVC ARMoured, ALUMINIUM CONDUCTOR (As per Specification)</b>								
35.1.1	XLPE 3.5 CX300 mm <sup>2</sup>	MTR	500	0	0	500			
35.1.2	XLPE 3.5 CX185 mm <sup>2</sup>	MTR	300	0	0	300			
35.1.3	XLPE 3.5 CX120 mm <sup>2</sup>	MTR	200	0	0	200			
35.1.4	PVC 3.5 CX70 mm <sup>2</sup>	MTR	600	0	0	600			
35.1.5	PVC 3.5 CX35 mm <sup>2</sup>	MTR	1500	500	500	2500			
35.1.6	PVC 4 CX 16 mm <sup>2</sup>	MTR	1000	0	0	1000			
35.1.7	PVC 4CX 6 sqmm	MTR	3500	0	0	3500			
35.1.8	PVC 2CX 6 sqmm	MTR	2000	0	0	2000			
35.2	<b>CONTROL CABLES,1.1 KV, PVC,STRANDED COPPER(As per specification)</b>								
35.2.1	2 CX 2.5 mm <sup>2</sup>	MTR	5000	2500	2500	10000			
35.2.2	4 CX 2.5 mm <sup>2</sup>	MTR	12000	5000	5000	22000			
35.2.3	5 CX 2.5 mm <sup>2</sup>	MTR	4000	0	0	4000			
35.2.4	7CX 2.5 mm <sup>2</sup>	MTR	5000	0	0	5000			
35.2.5	10 CX 2.5 mm <sup>2</sup>	MTR	2000	0	0	2000			
35.2.6	12 CX 2.5 mm <sup>2</sup>	MTR	2000	1500	1500	5000			
35.2.7	16 CX 2.5 mm <sup>2</sup>	MTR	1000	0	0	1000			
35.2.8	19 CX 2.5 mm <sup>2</sup>	MTR	2000	0	0	2000			
35.2.9	1CX 120 mm <sup>2</sup> BAT TO BAT CHARGER & CHARGER TO DCDB	MTR	600	0	0	600			
36.0	<b>ERECTION FOR OPGW System</b>								
36.1	Erection of 48 Fibre Optic Approach cable along with Hardware fittings	KMTR	1						
36.2	Erection/commissioning of SDH/MUX along with termination with FODP	No	1	0	0	1			
36.3	Erection/commissioning of RTU along with fixing,cablng of MFMs	No	1	0	0	1			
36.4	Erection/commissioning of FODP	No	1	0	0	1			
36.5	48 V, 300 AH, maintenance free VRLA Battery set.	Set	1	0	0	1			
36.6	SMPS based battery charger of 75A suitable for 48V VRLA battery.	No	1	0	0	1			
36.7	48 V DCDB	Set	1	0	0	1			
37.0	<b>ERECTION,FILTERATION,TESTING &amp; COMMISSIONING OF POWER TRANSFORMER &amp; ITS OTHER RELATED ACCESSORIES</b>								
37.1	ERECTION OF TRANSFORMER & ACCESSORIES OF THE TRANSFORMERS, EARTHING 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 T&P's.	Nos	2	0	0	2			
38	<b>ERECTION,TESTING &amp; COMMISSIONING OF STATION TRANSFORMER &amp; OTHER MATERIALS FOR MEETING THE AUXILIARY SUPPLY OF THE SUB-STATION</b>								
38.1	STATION TRANSFORMER 33KV/433V,250 KVA (AS PER SPECIFICATION)	NOS	2	0	0	2			
38.2	Erection of other materials for commissioning of station transformers								

38.2.1	<b>HDG DP STRUCTURE:</b> each set shall comprise of [ 2X 9.0 Mtrs (ISBM:200X100 mm(min) RS Joist(beam) with bracings of suitable channels(ISMC 75X40) & angles (L50X50X6) & different size Steel plate of 10 mm thick etc].	SET	2	0	0	2			
38.2.2	33 KV AB SWITCH IN 33 KV SIDE(600AMP) including required GI pipe(horizontal & vertically down) & handle for operation of AB switch	SET	2	0	0	2			
38.2.3	HG fuse set for 33 KV side of the Station transformer including base(each set comprises three single HG fuse)	SET	2	0	0	2			
39.0	<b>Switch yard lighting:</b> Design, engineering, procurement of labour, material including all associated works for construction of switch yard lightings as per technical specification and approved drawings. The fixture shall be of reputed make (Philips/CGL/Bajaj) and fixtures shall be LED and proper cabling from the lighting outdoor distribution boards to the junction boxes and from junction boxes to the fixtures. The lighting fixtures are to be installed on the switch yard structures. The quantity of such fixtures are to be designed and to be ascertained.								
39.1	SUB-STATION SWITCH YARD LIGHTING,IT INCLUDES SUPPLY OF FIXTURES & LAMPS (LED) of reputed make (Philips/CGL/Bajaj) 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	80	8	8	96			
39.2	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), COLONY QUARTERS AND OTHER ROADS. ALL MATERIALS AS PER APPROVED DRAWING AND SPECIFICATION TO COMPLETE THE STREET LIGHTING SYSTEM. PROPER EARTHING AS PER STANDARD PRACTICE								
39.2.1	LED LIGHTING FIXTURES including LAMPS of reputed make (Philips/CGL/Bajaj).(100 watt each) for Street Light.	SET	30	0	0	30			
39.2.2	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	30	0	0	30			
39.2.3	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. XLPE CABLES(3.5 CORE 120 SQMM) FROM MAIN ACDB FROM CONTROL ROOM TO THE OUT DOOR KIOSK. XLPE CABLE OF 4C X 16 SQMM FROM OUTDOOR KIOSK TO THE STREET LIGHT POLES AND 4CX6 SQMM FROM POLE TO POLE AND 2CX6 SQMM FROM POLE TO LIGHTING FIXTURES.	NO	1	0	0	1			
39.2.4	OUTDOOR KIOSK of 3 mm thick CRCA sheet duly hot dip galvanised FOR COLONY SUPPLY PURPOSE HAVING 2 NOS. 200 A SWITCH FUSE UNITS, 6 NOS.OUT LETS OF 32 AMP MCB FOR COLONY QUARTES. XLPE CABLES(3.5 CORE 120 SQM) FROM MAIN ACDB FROM CONTROL ROOM TO THE OUT DOOR KIOSK. 4CX16 SQMM FROM KIOSK TO EACH QUARTER.	NO	1	0	0	1			
39.3	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 (*SUPPLY OF CABLES ARE COVERED IN CABLE ITEMS AS INDICATED ABOVE)	SET	20	0	0	20			
40.0	<b>FIRE FIGHTING SYSTEM(PORTABLE AND WHEEL MOUNTED SETS FOR CONTROL ROOM,EQUIPMENT LIKE TRANSFORMER AND OTHER AREAS AS PER TECH SPEC(REFER TS-INST TO BIDDER BEFORE DESIGN-SL NO 16-ANNEXURE - I)</b>								
40.1	FOAM TYPE-9 LTRS	NOS	4	1	1	6			
40.2	DRY CHEMICAL POWDER(TROLLEY MOUNTED)- 22.5 KGS	NOS	4	1	1	6			
40.3	DRY POWDER TYPE - 5 KGS	NOS	4	1	1	6			
40.4	CO2 - 4.5 KGS	NOS	10	0	0	10			
40.5	CO2 - 9 KGS	NOS	10	0	0	10			
40.6	CO2 (TROLLY MOUNTED)- 22.5 KGS	NOS	4	0	0	4			
40.7	9 litre water type	Nos.	4	0	0	4			
40.8	50 Litres Mechanical Foam type	Nos.	2	0	0	2			
40.9	FIRE BUCKET (6 NOS IN EACH STAND) WITH STAND	SET	5	0	0	5			

41	SUBSTATION AUTOMATION SYSTEM: Erection of the following equipments in 220 and 33 kV level consisting of Panels, Bay control Units, DP Relays, Numerical O/C & E/F Relays, DC Supervision relays, Trip Circuit Supervision, Trip Relay ,Test Block, Differential with REF, Overflux, High impedance REF, Numerical O/C & E/F relay,Transformer trouble relay etc. & Station level consisting of Industrial Computer with accessories, PC with accessories, laser printer, UPS, GPS System & Numerical bay control unit etc. Civil works & weilding works, supply and installation of HDPE pipe for Optical fibre cable routing, and all other equipments as listed below as per the direction of the engineer in charge. This includes design ,drawing, supervision, installation , testing & commissioning. Supply of documentation, manuals, drawing, software & training.									
41.1	<b>220KV Level</b>									
41.1.1	Yard AC Kiosk :5000 mm (L)x4000mm (W)x 3300mm (H) with AC, as per the Specification;	Nos.	2	0	0	2				
41.1.2	Numerical Bay control unit :32 Digital input & 24Nos digital out put with CT / PT Input cards.IEC 61850 protocol. (The BCU for transformer panels should have provision to accommodate required Analogue Inputs).	Nos.	5	0	0	5				
41.1.3	Numerical distance protection with the following functions: IEC 61850 protocol.	Nos.	4	0	0	4				
41.1.4	Numerical Transformer Differential/REF protection with the following functions: Over flux ,Over volt etc. IEC 61850 protocol	Nos.	2	0	0	2				
41.1.5	Numerical over current , earth fault relays: IEC 61850 protocol	Nos.	5	0	0	5				
41.1.6	High Impedance REF Relay	Nos.	2	0	0	2				
41.1.7	Numerical Centralised Bus bar protection.	Nos.	1	0	0	1				
41.1.8	AUXILIARY RELAY FOR DC SUPERVISION	Nos.	10	0	0	10				
41.1.9	AUXILIARY RELAY FOR TRANSFORMER TROUBLES 4	Nos.	4	0	0	4				
41.1.10	MPG - TEST BLOCK 2	Nos.	22	0	0	22				
41.1.11	HIGH SPEED TRIP RELAY(HAND RESET)	Nos.	9	0	0	9				
41.1.12	TRIP CIRCUIT SUPERVISION RELAY 4	Nos.	10	0	0	10				
41.1.13	Line interface unit;	sets.	3	0	0	3				
41.1.14	Ethernet switch IEC 61850-3,IEEE1588v2	set	4	0	0	4				
41.1.15	Multimode glass fibre Optical cord Double jacket armoured ,rodent resilient..	Mtr.	1000	0	0	1000				
41.1.16	Simplex Cubicle type for process bus equipment , Swing frame front access (VSG), Dimension 2300mm (H) X 900mm (D) X 1000mm (W), earth bar 25x6 Sq. mm. Copper	Set	5	0	0	5				
41.1.17	DCDB panel; With Bus bar Switches,600(L)X 400(W)X 500(H)	NOS	2	0	0	2				
41.1.18	TIME SYNCH EQUIPMENT	NOS	1	0	0	1				
41.2	<b>33KV Level</b>									
41.2.1	Yard AC Kiosk :4500 mm (L)x3500mm (W)x 3300mm (H) with Air conditioning as per the	Nos.	1	0	0	1				
41.2.2	Integrated Numerical Bay control unit with protection function :24Digital input & 20Nos digital out put with CT / PT Input cards	Nos.	8	0	0	8				
41.2.3	DC Supervision Relay	Nos.	16	0	0	16				
41.2.4	TRIP Relay	Nos.	8	0	0	8				
41.2.5	Test Block	Nos.	16	0	0	16				
41.2.6	Line interface unit;	sets.	2	0	0	2				
41.2.7	Ethernet switch IEC 61850-3,IEEE1588v2	set	3	0	0	3				
41.2.8	Multimode glass fibre Optical cord Double jacket armoured ,rodent resilient..	Mtr.	500	0	0	500				
41.2.9	Simplex Cubicle type for process bus equipment , Swing frame front access (VSG), Dimension 2300mm (H) X 900mm (D) X 900mm (W), earth bar 25x6 Sq. mm. Copper with the following components	Set	4	0	0	4				
41.2.10	DCDB panel; With Bus bar Switches,600(L)X 400(W)X 500(H)	No.	1	0	0	1				
41.3	<b>STATION LEVEL</b>									
41.3.1	Windows based Industrial computer with standard accessories – Keyboard, mouse, monitor with operating software window 10 or 8, IED configuration, substation automation, . Main & Back up. With automation softwares. Main	set	2	0	0	2				
41.3.2	Windows based PC with standard accessories – Keyboard, mouse, monitor with operating software window 10 or 8, IED configuration, substation automation, Disturbance recorder software. DR & work Station PC.Client	set	1	0	0	1				
41.3.3	Color Laser jet Printer	No.	1	0	0	1				
41.3.4	UPS , 3KVA	No.	2	0	0	2				
41.3.5	GPS System with PTP	set	1	0	0	1				
41.3.6	Gateway for SCADA	set	1	0	0	1				
41.3.7	220 KV Feeder Control & Relay Panel (duplex type)	No.	0	1	0	1				
41.3.8	220 KV Protection Panel with BCU (The panel should integrate with existing SAS system at Malkangiri S/S- SIEMENS MAKE)	No.	0	0	1	1				
42	<b>AC &amp; DC SYSTEM</b>									
42.1	<b>AC SYSTEM</b>									
42.1.1	MAIN AC DB,(HAVING 800 A,50KA,DRAWOUT TYPE ACB WITH 3 O/C,E/F,U/V RELAYING FACILITY INDOOR TYPE AS PER SPECIFICATION.(MAIN DB-1,MAIN DB-2 WITH B/C)	SET	1	0	0	1				
42.1.2	ACDB (HAVING 400A MCCB) AS PER SPECIFICATION (AC DB-1,AC DB-2 WITH B/C)	SET	1	0	0	1				



42.1.3	MAIN LIGHTING DISTRIBUTION BOARD (HAVING 250A MCCB AS INCOMER)AS PER SPECIFICATION (WITH DB-1,DB-2 & B/C)	SET	1	0	0	1			
42.1.4	INDOOR LIGHTING DISTRIBUTION BOARD AS PER SPECIFICATION. (WITH DB-1,DB-2 & B/C)	SET	1	0	0	1			
42.1.5	EMERGENCY LIGHTING DISTRIBUTION BOARD	SET	1	0	0	1			
42.1.6	INDOOR RECEPTACLE BOARD	SET	1	0	0	1			
<b>43</b>	<b>DC SYSTEM</b>								
43.1	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)	SET	1	0	0	1			
43.2	220 V DC EMERGENCY DISTRIBUTION BOARD	SET	1	0	0	1			
<b>43.3</b>	<b>BATTERY (350 AH PLANTE TYPE) for 220 V DC</b>	SET	2	0	0	2			
43.4	BATTERY CHARGER FOR 220 V, 350 AH (Float and Float cum Boost)	SET	1	0	0	1			
43.5	DISTILLED WATER PLANT of 10 L/Hr FOR BATTERY BANKS	NOS	1	0	0	1			
<b>44</b>	<b>COLOUR CODING, BAY MARKING Etc:</b> Design, engineering, procurement of labour, material including all associated works for the followings. This should be as per direction of site In charge. a)Color coding (red,Yellow & Blue) for equipments.Bus gantry &column of entire switch yard. Good quality weather proof sticker 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.	LOT	1	0.2	0.2	1.4			
45	PEDESTAL MOUNTED WHEEL FITTED DERRICK FOR LIFTING/ LOWERING OF MATERIALS UP TO 1.5 TON CAPACITY.	NOS	1	0	0	1			
46	AC & DC SYSTEM	NOS	1	0	0	1			
47	WATER COOLER WITH WATER PURIFIER SYSTEM	NOS	2	0	0	2			
48	MAINTENANCE TESTING EQUIPMENT (AS PER ANNEXURE - I ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OF MAINTENANCE EQUIPMENT)	SET	1	0	0	1			
49	OTHER TOOLS AND PLANTS (T&P's) REQUIREMENT (AS PER ANNEXURE - II ,INDICATED IN TS-TIMK-SCHEDULE OF REQUI-REMENTS OTHER T&P's)	SET	1	0	0	1			
50	OFFICE FURNITURE (AS PER ANNEXURE - III ,INDICATED IN TS-TIMK-SCHEDULE OF REQUIREMENTS OFFICE FURNITURE)>PLACING IN CONTROL ROOM,CONFERENCE ROOM,OFFICE ROOMS,LIBRARY,TESTING LAB,etc.	SET	1	0	0	1			
51	BEST QUALITY &APPROVED MAKE INSULATING MAT (Confirming to IS:15652:2006) TO BE KEPT INFRONT OF ALL PANELS,BOARDS ETC.(2000X1000X3)mm Size	NOS	35	2	2	39			
52	WALKIE TALKIE SET	SET/PAIR	2	0	0	2			
53	PORTABLE ALUMINIUM LADDER EXTENDABLE TYPE OF ADEQUATE HEIGHT TO BE USED FOR MAINTENANCE OF EQUIPMENT INSIDE SWITCH YARD.	NOS	2	0	0	2			
54	<b>TOTAL OF ERECTION SUBSTATION (PART-B-Electrical Work)</b>								
	<b>TOTAL OF ERECTION OF SUBSTATION (Electrical Work) &amp; (Civil Work) -Schedule-4-ss (to Schedule No. 6 Grand Summary)</b>								

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

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

I 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.

## ORISSA POWER TRANSMISSION CORPORATION LIMITED

**NAME OF THE WORK:- Design, Supply and Installation of Sub-Stations & Transmission Lines for Procurement of 2X20 MVA, 220/33 KV Sub-station at GOBINDPALLI & associated 220KV LILO line on 220KV BALIMELA - MALKANGIRI Second CKT Line (Approx. Line length-37.600 Kms.) and stringing of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI and associated 220KV bay extension at Balimela & Malkangiri S/S in Odisha State of India under PACKAGE-5A Under Japan International Cooperation Agency (JICA)'s ODA Loan.**

Loan Agreement No: [ID-P245] -      FB No: [CPC/JICA/ICB/05A/16-17/]-      Reference Identification No: [OPTCL/JICA/PKG-5A]

### Schedule No. 4. Installation and Other Services (Transmission Line)

NAME OF THE BIDDER									
SL NO	ERECTION, TESTING & COMMISSIONING OF FOLLOWING EQUIPMENTS ALONG WITH CIVIL WORKS (As per Technical Specification)	UNITS	CONSTRUCTION OF 220 KV LILO LINE ON Malkangiri-Balimela--37.6 KM	Construction of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI S/s (21.37 KM)	Total Quantity	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)	(1) x (2)	(1) x (3)
<b>PART A CIVIL WORKS</b>									
1	<b>SURVEY OF LINE &amp; PREPARATION LAND SCHEDULE: Supply of required T&amp;P's, Technical personnel's, labours for conducting</b>								
1.1	Preliminary survey, Detail survey and resurvey (required for avoiding ROW problem) including but not limited to taking of levels, profile plotting, tower spotting ,marking of towers locations at site including showing P&T line, power line, Railway line, river crossing, roads and submission of route map and survey report etc. The P&T lines and railway lines for a minimum distance of 8 kms on either side of alignment shall be clearly indicated.(This item is applicable for revised portion of the line only if the survey work was done by OPTCL previously)	KM.	37.6	0	37.60				

1.2	Preparation of land schedule on revenue (if required) maps indicating alignment therein duly authenticated by Revenue Inspector & Tahasildar, enumeration of trees with the help of Forest officer and other prominent features required for alignment of the proposed 132 KV line. Final route to be plotted on 1:50000 topo sheet for approval.(This item is applicable for revised portion of the line only if the survey work was done by OPTCL previously).Detail GIS (Geographical Information System) of towers to be included.	KM.	37.6	0	37.60				
1.3	Check survey including supply of all labour, T&P as per instruction of Engineer in Charge and as per the approved profile.	KM.	37.6	0	37.60				
1.4	Soil Testing in complete shape along with submission of report etc.	Per Loc.	10	0	10				
2	<b>EXCAVATION WORKS FOR OPEN CAST/SHALLOW TYPE FOUNDATIONS</b>								
2.1	<b>Excavation in all type soil and rocks and back filling (back filling shall be done in layers of 500mm sprinkling of water and compaction thereafter and disposed of excess quantity of excavated soil at suitable place after back filling), &amp; if required for filling the foundation, borrowed earth/morrum/sand shall be brought for filling and compaction, including supply of sand, all T&amp;P, labour as required</b>								
2.1.1	Soft/Loose soil	CUM	2706	0	2,706				
2.1.2	Dense/Compact soil	CUM	1083	0	1,083				
2.1.3	Wet soil	CUM	7213	0	7,213				
2.1.4	Partial Submerged soil	CUM	1695	0	1,695				
2.1.5	Fully submerged soil	CUM	889	0	889				
2.1.6	Soft/Disintegrated rock(Not requiring Blasting)	CUM	956	0	956				
2.1.7	Hard Rock(Requiring Blasting/Using breaker machinery)	CUM	855	0	855				
3.0	<b>Fixing of Templates for setting of stubs</b>								
3.1	A Type (0.579 MT X 100 Nos)	MT	57.900	0	57.90				
3.2	B Type (0.794 MT X 20Nos)	MT	15.880	0	15.88				
3.3	C Type ( .962 MT X 22 Nos)	MT	21.164	0	21.16				
3.4	C +15 Type (2.107 MT X 4 Nos)	MT	8.428	0	8.43				
3.5	UR Type (1.476 MT X 2 Nos)	MT	2.952	0	2.95				

4.0	<b>FOUNDATION MATERIALS: Supply of all materials like cement, steel, all coarse aggregates, fine aggregates and making foundations of the required above mentioned type towers as per the direction laid down in the technical specification and the direction of the site- in charge</b>								
4.1	PCC(Lean Concrete) in the ratio 1:3:6(Grade M-10)	CUM	270.5	0	270.50				
4.1.1	(i) <b>FOR OPENCAST FOUNDATION:</b> Providing & laying of <b>RCC</b> work of ratio <b>1:1.5:3 (Grade M-20)</b> with approved quality stone chips of nominal size 12mm to 20mm in tower foundation and cooping inclusive of cost of mixing, supply of form boxes Chimney & fixing, curing, testing of sample cement concrete cubes & cost of all materials including cement excluding steel as per IS.456 (ii) The cooping height shall be 350mm above the ground level. The surrounding area shall be clear from materials and damage of land if any shall be repaired before measurement and as per requirement, including labours and T&P as per specification in the concrete ratio 1:1.5:3 (Grade M-20.)	CUM	2668.57	0	2,668.57				
4.1.2	Steel of different size (as per design ) with cutting,bending ,binding in position of M.S.Rod for reinforcement of foundation concret of towers (open cast ) including supply of binding wire (With supply of steel rod (TATA/RINL/SAIL make )	MT	224.16	0	224.16				
4.6	<b>DE-WATERING(FOR OPEN CAST LOCATION)</b>								
4.6.1	With Supply of all T&P, Fuel, Lubricant & electricity on HP Hour basis.	HP Hour	1500	0	1500				
4.7	<b>Supply of borrowed earth/morrum for back filling for foundation/revertment works</b>								
4.7.1	beyond 100 mtr lead	CUM	1800	0	1800				
4.8	<b>SHORING &amp; SHUTTERING-Required in wet/submerged or special locations of open cast/shallow type foundations with supply of all materials,T&amp;P and Labour.</b>	SQ.MTR.	12000	0	12000				
4.9	Head-Loading of all types of foundation-materials,towers,structures, conductors,Insulators,Hard-wares & Emergency Restoration System towers required for special inaccessible Locations beyond 400 mtrs from the nearest approach road as per the recommendation of site Engineer-In-Charge and approval of GM of Concerned circle.	<b>Per MT/Per Mtr</b>	1000	200	1200				
5	<b>REVTMENT / STONE PITCHING FOR PROTECTION OF TOWER BASE.</b>								

5.1	Excavation in all type of soil including rock & back filling including supply of sand with back filling.	CUM	2977	0	2977				
5.2	Lean Concrete in the ratio1:3:6(Grade M-10) including supply of sand chips etc.	CUM	127	0	127				
5.3	PCC in the ratio 1:2:4(Grade M-15) as above.	CUM	48	0	48				
5.4	RR Massonary work in the ratio 1:5.	CUM	4795	0	4795				
5.5	Plastering and punning etc.	SQ.MTR.	300	0	300				
5.6	Stone Pitching	CUM	300	0	300				
6	Benching in all type of soil including all required accessories, labour & T&P etc.								
6.1	Hard soil	CUM	3208	0	3208				
6.2	Soft Rock (not required blasting)	CUM	1611	0	1611				
6.3	Hard Rock (requiring blasting)	CUM	681	0	681				
	<b>TOTAL of CIVIL WORKS Part-A</b>								
<b>PART B</b>	<b>ELECTRICAL WORKS</b>								
6.0	<b>ERECTION, TESTING &amp; COMMISSIONING</b> of tested Lattice type Galvanized steel tangent / Angle tower super structures without stubs and cleats , different type of G.I HT Nuts & Bolts, washer, spring washer for the above type towers ,hanger and all accessories, tower super structure complete with tightening, punching of bolts including step bolts. All other left out portion of the bolts above bottom cross arm shall be riveted by using suitable hammer. Painting of black bituminous paints three coats shall be provided up to a height of 500mm above the cooping(legs & bracing members. All Erection should confirm to the Technical Specification laid there in the Tender Specification.	MT	897.32	0	897.315				
6.1	<b>Hoisting and fixing of insulators with required accessories, paying out of conductor ,jointing, stringing, sagging &amp; Jumpering etc. of power conductor in the proposed lines and without earth wire with all required accessories including scaffolding for 33 KV,11 KV, LT , P&amp;T lines, roads and using own required T&amp;P and compression jointing machines etc.with 1.5% provision for Sag &amp; Wastage and as per the direction of Engineer in charge.</b>								
6.1.1	DOUBLE CIRCUIT(ACSR/AAAC, SIX POWER CONDUCTOR )	RKM	37.6	0.00	37.60				
6.1.2	SINGLE CIRCUIT(ACSR/AAAC, THREE POWER CONDUCTOR ) <b>(Hot Line)</b>	RKM	0	21.37	21.37				

6.1.3	Charges for stringing EHT line crossing/ Railway/ National highway crossing/ special tower beyond +6 mtr extension.	RKM	1.13	0.00	1.13				
7	<b>WELDING OF TOWER MEMBERS</b>								
7.1	Supply of all materials for continuous welding of bolts & nuts (around the bolts) up to top of tower without cross arm, including welding rods, welding generator machine (diesel engine operator.), application of required zinc rich paints around the welding portion after welding (two coats),fuel,lubricants,T&P and labours and other arrangements etc.	Nos.	108108	0	108108				
8	<b>EARTHING OF TOWER</b>								
8.1	Pipe Type earthing including cost of charcoal,salt/coke and good borrowed earth and Bentonite where necessary in accordance with IS:3043 and with supply of all T&P and Labour.	Nos.	144	0	144				
9	<b>Erection, Testing and Commissioning of the following tower accessories as per technical specification and as directed by the engineer in charge.</b>								
9.1	DANGER BOARD	Nos.	144	0	144				
9.2	NUMBER PLATE	Nos.	144	0	144				
9.3	PHASE PLATE(R,Y,B)	Sets.	864	234	1,098				
9.4	BIRD GUARD	Nos.	732	0	732				
9.5	ANTICLIMBING DEVICE	Nos.	144	0	144				
9.6	CIRCUIT PLATE	Nos.	288	78	366				
10	<b>Erection of OPGW and its Accessories</b>								
10.1	Erection of 24Fibre/48(DWSM)OPGW fibre Optic along with hardwares and approach cables	Kmtr	40	0	40.00				
11	PTCC approval, railway crossing has to be obtained by submitting the required documents to the concerned department through OPTCL. The documents for PTCC clearance & Railway clearance including required drawings etc has to be submitted by the contractor within 5 months of award of contract. Beyond the above period L.D as applicable & the amount shall be deducted as specified in the specification.	LS	1	0	1				
	<b>TOTAL of ELECTRICAL WORKS Part-B</b>								
	<b>TOTAL OF ERECTION LINE-220KV (Electrical Work) &amp; (Civil Work) -To Schedule-6 Grand Summary</b>								

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


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 Sub-Stations & Transmission Lines for Procurement of 2X20 MVA, 220/33 KV Sub-station at GOBINDPALLI & associated 220KV LILO line on 220KV BALIMELA - MALKANGIRI Second CKT Line (Approx. Line length-37.600 Kms.) and stringing of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI and associated 220KV bay extension at Balimela & Malkangiri S/S in Odisha State of India under PACKAGE-5A Under Japan International Cooperation Agency (JICA)'s ODA Loan.**

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/05A/16-17/]- Reference Identification No: [OPTCL/JICA/PKG-5A]

### Schedule No. 6. Grand Summary

#### NAME OF THE BIDDER

Item	Description	Total Price <sup>1</sup>	
		Foreign	Local
1	Total Schedule No. 1. Plant, and Mandatory Spare Parts Supplied from Abroad (Substation+Line)		
2	Total Schedule No. 2. Plant, and Mandatory Spare, Parts Supplied from Within the Employer's Country (substation+Line)		
3	Total Schedule No. 3. Design Services (Not Applicable)		
4	Total Schedule No. 4. Installation and Other Services (substation+Line)		
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 Currency requirement as there are foreign currencies.



## ODISHA POWER TRANSMISSION CORPORATION LIMITED

**NAME OF THE WORK:- Design, Supply and Installation of Sub-Stations & Transmission Lines for Procurement of 2X20 MVA, 220/33 KV Sub-station at GOBINDPALLI & associated 220KV LILO line on 220KV BALIMELA - MALKANGIRI Second CKT Line (Approx. Line length-37.600 Kms.) and stringing of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI and associated 220KV bay extension at Balimela & Malkangiri S/S in Odisha State of India under PACKAGE-5A Under Japan International Cooperation Agency (JICA)'s ODA Loan.**

Loan Agreement No: [ID-P245] - FB No: [CPC/JICA/ICB/05A/16-17]- Reference Identification No: [OPTCL/JICA/PKG-5A]

### Schedule No. 7. Recommended Spare Parts

#### NAME OF THE BIDDER

Sl. No.	DESCRIPTION OF ITEMS SUPPLY OF SPARES FOR THE FOLLOWING EQUIPMENTS. (As per Technical Specification)	Unit	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.

## ODISHA POWER TRANSMISSION CORPORATION LIMITED

**NAME OF THE WORK:- Design, Supply and Installation of Sub-Stations & Transmission Lines for Procurement of 2X20 MVA, 220/33 KV Sub-station at GOBINDPALLI & associated 220KV LILO line on 220KV BALIMELA - MALKANGIRI Second CKT Line (Approx. Line length-37.600 Kms.) and stringing of 220 KV Second CKT line on existing DC Tower from BALIMELA to MALKANGIRI and associated 220KV bay extension at Balimela & Malkangiri S/S in Odisha State of India under PACKAGE-5A Under Japan International Cooperation Agency (JICA)'s ODA Loan.**

**Loan Agreement No: [ID-P245] -      FB No: [CPC/JICA/ICB/05A/16-17]/-      Reference Identification No:  
[OPTCL/JICA/PKG-5A]**

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

	NAME OF THE BIDDER			
Sl No	Description of Applicable Tax/Levy	Item /Component Sl. No. of Bid price on which Applicable	Tax @ __%	Total Amount of Taxes /Duty/ Levies
<b>1</b>	Details of Taxes and levies on the direct 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			
(i)	Excise Duty [as per Schedule-2]			
(ii)	CST [as per Schedule-2]			
(III)	VAT/Sales Tax [as per Schedule-2]			
(iv)	Entry Tax [as per Schedule-2]			
(v)	Any other Levies: [as per Schedule-2] (please specify): Central :-			
(a)				
(b)				
	<b>TOTAL OF TAXES AND DUTIES [Sum (i) to (v)]</b>			<b>0</b>
<b>2</b>	Details of Taxes and levies on the 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			
(i)	Excise Duty [as per Schedule-2]			
(ii)	CST [as per Schedule-2]			
(III)	VAT/Sales Tax [as per Schedule-2]			
(iv)	Entry Tax [as per Schedule-2]			
(v)	Any other Levies: [as per Schedule-2] (please specify): Central :-			

(a)				
(b)				
	TOTAL OF TAXES AND DUTIES [Sum (i) to (v)]			
3	Service Tax [as per Schedule-4]			
4	F. Total Bid Price: (including Taxes & Duties and other levies, if the contract is awarded to us)			

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

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

NOTE:- Lumpsum prices quoted by the Bidder shall include cost of total scope of work and any other supplies/work(s) not specifically mentioned in the Bidding Document but necessary for the efficient, trouble free operation of the system and to make this package work complete in all respects.

i) Excise Duty/VAT/Sales Tax/Service Tax/ Entry Tax/ any other taxes shall be inclusive in the bid price and shall not be paid/reimbursed separately.