

## Annexure-I

## BILL OF QUANTITY CUM PRICE SCHEDULE

Name of Project:- 400KV GIS S/s and 220 KV AIS S/S at Itarsi in Madhya Pradesh

Name of work:- ETC Work for 400 KV &amp; 220 KV Substation bay extension including 400KV GIS &amp; 400/220KV Transformer at Itarsi

SR_NO	Description_of_Item	Quantity	UOM	Unit_Rate (Rs.)	AMOUNT (Rs.)
1	500MVA, 400kV/220kV/33kV, 3-Phase Auto Transformer complete in all respect along with OLTC, Radiator Bank and its cooling arrangement, Conservator, Cooler Control Cabinet/Marshalling Kiosk, accessories and insulating oil. Work includes erection of all auxiliaries viz turrets, bushings, terminal connectors, associated earthing works (excluding riser connections to main earthmat), laying of cable from Transformer auxiliaries / OLTC to MK, complete transformer oil filtration, filling of oil, hot oil circulation, continues DRY AIR purging, Oil testing etc as required to complete the installation of Transformer (Supervision of Erection, Testing and commissioning will be done by OEM) Note:- (1) Charges for Oil filtration, filling of oil, hot oil circulation, oil sample testing at Powergrid Itarsi Lab etc for first time commissioning of Transformer are deemed to be covered under this cope. (2) Charges for testing of oil supplied in drums are covered separately under different BOQ item.	1	Nos.	13,35,675.60	13,35,675.60
2	Dragging/ shifting of main tank of above mentioned Transformer (1 No.) upto it's plinth.	20	Meter	2,520.00	50,400.00
3	On line Dissolved Gas (Multigas) & Moisture analyzer for Transformer	1	Nos.	1,259.25	1,259.25
4	On line insulating oil drying system (Cartridge type) for Transformer	1	Nos.	1,259.25	1,259.25
5	Oil Testing (BDV, PPM, Resistivity & Tan delta etc as per Powergrid specification) for transformer insulating oil (as if supplied in drums, if applicable) at Powergrid Laboratory at Itarsi. arrangement of sampling bottle, sampling syringe etc for OIL TESTING is in the scope of the bidder. Bidder's scope covers all supports for sampling, safely delivery and submission of test sample to Powergrid Itarsi laboratory, getting it tested and submission of test report to BHEL. Powergrid laboratory charges shall in the scope of bidder. 1 set equals to one number of successful oil sample test.	20	Set	2,116.80	42,336.00
6	Charges for repetition of oil filtration - (if required due to reasons not attributed to the bidder) This item is executed only if repetition of transformer oil filtration is required by BHEL. Scope includes successful repetition of oil filtration complete in all respect excluding oil testing at Powergrid Itarsi Laboratory. Laboratory test shall executed under BOQ item Sr. No. 5.	47	KL	2,034.30	95,612.17
7	Dry out of wet winding of transformer/reactor by application of vacuum, N2 filling and heating - N2 gas Cylinders for complete dry out of Transformer by vacuuming/ N2 filling/ purging and heating. Mode of measurement shall be number of gas cylinder of 50 kg N2 gas, on pro-rata basis. (Empty gas cylinder shall be returned back) (if required due to reasons not attributed to the bidder)	10	Nos.	2,116.80	21,168.00
8	400kV, SF6 GAS INSULATED SWITCHGEAR (GIS) Transformer feeder Bay Module (excluding support structure & earthing) Fully equipped, complete in all respect.	1	Set	1,34,063.70	1,34,063.70
9	400kV, SF6 GAS INSULATED SWITCHGEAR (GIS) Tie Bay Module (excluding support structure & earthing) Fully equipped, complete in all respect.	1	Set	1,34,063.70	1,34,063.70
10	Gas Insulated Bus Duct (GIB) - 400kV Phase Isolated, SF6 gas-insulated metal enclosed single phase bus duct from GIS Bay module take-off to SF6 to Air Bushing. Work includes complete installation of GIB. (excluding support structure & earthing)	200	Meter	761.72	1,52,344.32
11	SAB - SF6 to Air Bushing, 400kV (including terminal connector)	9	Nos.	8,378.98	75,410.78
12	LCC - Local Control Panel	2	Nos.	7,617.25	15,234.51
13	Structure Work for Installation of GIS including Support Structure for GIS, GIB (bus duct), SF6 to Air Bushings, Supports, Platforms, Ladders, Foundation Bolts, Embedded Parts in floors etc. complete in all respect, which are required for installation of GIS system as per the specification	5	MT	15,871.34	79,356.69
14	SF6 Gas Filling/Recovery/Re-filling Cycle. The cycle of the gas filling/recovery/re-filling will be followed multiple time till the Completion of the HV test. Gas processing and filling unit ( DILLO machine) shall be in the scope of BHEL/manufacturer.	0.5	Lot	39,500.88	19,750.44
15	HV Test for GIS - HV test kit shall be arranged by GIS Supplier. Test shall also be conducted by GIS supplier. All necessary support i.e. unloading, shifting, minor assembling of HV test kit, cabling, support for complete HV Test, dismantling & loading on carrier. Complete in all respect.	1	Lot	29,354.70	29,354.70
16	Grounding/ Earthing for GIS complete including Gas Insulated Bus duct, LCC, SF6 to air bushing, using braided Cu wire (insulated/ non-insulated)/ earth strip (Cu/Al/GI flat). Work includes cutting, lug crimping , bolting , fixing etc. and connecting with riser/earth strip (GI/AL /Cu flat) complete in all respect. Grounding Material will be supplied by GIS Supplier /BHEL.	1	Lot	26,551.07	26,551.07

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## BILL OF QUANTITY CUM PRICE SCHEDULE

Name of Project:- 400KV GIS S/s and 220 KV AIS S/S at Itarsi in Madhya Pradesh

Name of work:- ETC Work for 400 KV &amp; 220 KV Substation bay extension including 400KV GIS &amp; 400/220KV Transformer at Itarsi

SR_NO	Description_of_Item	Quantity	UOM	Unit_Rate (Rs.)	AMOUNT (Rs.)
17	CSD (Control switching device) for 400kV 3 Phase, Circuit Breaker). (Supervision of Erection, Testing and commissioning will be done by supplier. Necessary manpower support, tools, tackles and testing kits is in the scope of ETC contractor). Work includes installation of CSD in Relay Panel & minor modification / panel wiring in circuit breaker and relay panel.	2	Nos.	5,040.00	10,080.00
18	400kV, 3-Phase, HDB Isolator with two earth switch (motor operated) electrically ganged, complete with 9 nos. of support insulators & terminal connectors (without support structure).	1	Nos.	30,149.29	30,149.29
19	336kV, 1 Phase, Gapless type Metal Oxide Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable/strip and terminal connectors. without support structure.	3	Nos.	2,942.13	8,826.39
20	400kV, 1 Ph., 8kN, BPI (Solid core Bus Post insulator) with corona ring complete with terminal connectors without support structure.	50	Nos.	1,512.00	75,600.00
21	220kV, 3-Phase SF6 Circuit Breaker along with lattice type GI supporting structure, platform with ladder, terminal connectors, Breaker Control Cabinets, and interpole cabling, SF6 Gas cylinders. (Supervision of Erection, Testing and commissioning will be done by supplier. Supplier will bring Breaker timing kit and Gas leak detector only. Necessary manpower support, tools, tackles and testing kits is in the scope of ETC contractor).	1	Nos.	30,745.09	30,745.09
22	220kV, 3-Phase Isolator without earth switch (motor operated) complete with 9 nos. of support insulators & terminal connectors (without support structure).	2	Nos.	19,514.13	39,028.26
23	220kV, 3-Phase Isolator with one earth switch (motor operated) complete with 9 nos. of support insulators & terminal connectors (without support structure).	1	Nos.	20,815.07	20,815.07
24	220kV, 3-Phase Isolator with two earth switch (motor operated) complete with 9 nos. of support insulators & terminal connectors (without support structure).	1	Nos.	22,116.01	22,116.01
25	220kV, 1 Ph., Current Transformer complete with terminal connectors without support structure.	3	Nos.	6,149.51	18,448.54
26	216kV, 1 Phase, Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable/strip and terminal connectors. without support structure.	3	Nos.	2,520.00	7,560.00
27	220kV, 1 Ph., BPI (Solid core Bus Post insulator) complete with terminal connectors without support structure.	17	Nos.	1,209.60	20,563.20
28	DGA Test for CT Oil – Scope includes sampling of oil from Current Transformer (sample bottle, syringe etc for DGA test is NOT in the scope of bidder) under supervision of OEM / BHEL. Bidder's scope covers all supports for sampling, safely delivery and submission of test sample to Powergrid Itarsi laboratory, getting it tested and submission of test report to BHEL. Powergrid laboratory charges shall in the scope of bidder.	3	Nos.	2,116.80	6,350.40
29	GI Lattice Structures including hardware for Towers, beams, LM & equipments support	44	MT	3,782.61	1,66,434.89
30	GI Pipe Structures including hardware for equipments support	26	MT	3,194.21	83,049.41
31	Supply of Equipment fixing hardware (hot dip galvanized) including nut, bolt and plain /spring washer as per Site requirement (Erection shall be covered with respective equipment support structure) 1. Bolts - Class 5.6 of IS:1367 (part 3) - 1991 (M12-M33, 30-145mm lg. & fully threaded). 2. Nuts - Class 5 of IS:1367 (part 6) - 1980. 3. Plain Washers - A type conforming to IS: 2016-1967. 4. Spring Washer - Type B of IS: 3063-1972 Note - Size of hardware shall be suitable for equipments /box/JB, and same shall be decided at site.	150	kg	89.00	13,350.00
32	220kV Double Tension Stringing Hardware - with/ without Turn Buckle, with 2 numbers Polymer Long Rod Insulator, suitable for quad conductor.	12	Set	2,224.80	26,697.60
33	220kV Double Tension Stringing Hardware - with/ without Turn Buckle, with 2 numbers Polymer Long Rod Insulator, suitable for twin conductor.	18	Set	2,031.50	36,567.00
34	220kV Single Suspension Stringing Hardware - with through / drop type clamp, 1 number Polymer Long Rod Insulator, suitable for quad conductor.	6	Set	2,002.32	12,013.92
35	220kV Single Suspension Stringing Hardware - with through / drop type clamp, 1 number Polymer Long Rod Insulator, suitable for twin conductor.	9	Set	1,792.50	16,132.50
36	ACSR Moose Conductor complete with Tee connectors for droppers to equipment connections, PG clamps for Busbar jumpering, Twin/Quad bundle rigid/flexible spacers etc to complete	5	kM	51,275.40	2,56,376.98

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Name of Project:- 400KV GIS S/s and 220 KV AIS S/S at Itarsi in Madhya Pradesh

Name of work:- ETC Work for 400 KV &amp; 220 KV Substation bay extension including 400KV GIS &amp; 400/220KV Transformer at Itarsi

SR_NO	Description_of_Item	Quantity	UOM	Unit_Rate (Rs.)	AMOUNT (Rs.)
37	4" Al Tube (ETC of Al.Tube includes cutting, Aluminum welding, testing, bending & installation of Al. Tube). Welding sleeve and Al. tube will be supplied by BHEL)	990	Meter	298.60	2,95,612.42
38	SUPPLY: Supply of Galvanized Steel Earth Wire - 7/9 SWG Stranded Shield Wire (overall dia 10.98mm) as per clause 4.0 of "Section : SE". ETC is covered under a separate BOQ line item)	530	Meter	63.50	33,655.00
39	Installation of 7/9 SWG GI Stranded Shield wire including tension clamp, PG clamp and clamping on structure for down conductor, fixing/bolting with earth strip etc to complete.	530	Meter	26.06	13,810.73
40	400kV / 220kV Terminal Connector. - Dismantling of terminal connectors at customer supplied/ erected items whereas erection of equipments are not in scope of contractor.	3	Nos.	111.07	333.20
41	400kV / 220kV Terminal Connector. - Installation of terminal connectors at customer supplied/ erected items whereas erection of equipments are not in scope of contractor. Terminal connectors shall be provided by BHEL.	6	Nos.	206.27	1,237.60
42	BMK - Bay Marshalling Kiosks (Outdoor type, Floor / Trench mounted)	2	Nos.	3,613.86	7,227.72
43	CTJB - Junction Box (on CT structure)	1	Nos.	2,131.20	2,131.20
44	400kV Circuit Breaker Relay Panel without Auto reclose ( With Automation)	2	Nos.	2,131.20	4,262.40
45	400kV Transformer Protection Panel (For Both HV & MV side) 1 Set equals 3 Panels	1	Set	10,080.00	10,080.00
46	220kV Circuit breaker relay panel without Auto reclose.	1	Nos.	10,080.00	10,080.00
47	Digital RTCC Panel for 500MVA, 400kV/220kV/33kV, 3-Phase Auto Transformer	1	Set	5,040.00	5,040.00
48	Augmentation of existing 400KV Bus Bar protection scheme	1	Set	19,523.01	19,523.01
49	Augmentation of existing 220KV Bus Bar protection scheme.	1	Set	19,523.01	19,523.01
50	Augmentation of Substation Automation system for 400kV Bays	1	Set	19,523.01	19,523.01
51	Augmentation of Substation Automation system for 220kV Bay	1	Set	19,523.01	19,523.01
52	Supply and installation: Extension/Modification in existing 415V ACDB / MLDB Panel with 63A, 4 Pole MCCB (FB MCCB with thermal magnetic release for O/L (80-100%) & Fixed S/C with rotary handle and 4 number 63A rating terminal block, mounting channel, internal wiring, door cutting etc complete. MCCB & TB are to be Powergrid approved make.	1	Set	10,580.00	10,580.00
53	Supply and installation: Extension/Modification in existing 220V DCDB Panels with 32A, DP, MCCB with thermal magnetic release SE for O/L (80-100%) & fixed S/C and 2 number 32A terminal block, mounting channel, internal wiring etc complete. MCCB & TB are to be Powergrid approved make.	1	Set	10,580.00	10,580.00
54	Lighting Panel ACP-2 (Outdoor type, Foundation Mounted) including installation of mounting hardwares / anchor fastener / foundation bolt etc complete in all respect.	2	Nos.	4,032.00	8,064.00
55	Sub Lighting panel SLP (Outdoor type, Foundation / structure Mounted) including installation of structure, mounting hardwares / anchor fastener etc complete in all respect.	3	Nos.	1,008.00	3,024.00
56	Outdoor Junction Box for loop in loop out of Lighting Cables (Outdoor type, Foundation / structure Mounted) including installation of support structure, mounting hardwares / anchor fastener etc complete in all respect.	3	Nos.	1,512.00	4,536.00
57	LED Flood Light Luminaries Type FL-1 (150W) including installation of mounting hardwares, brackets, fastener, screw, nut bolt etc complete.	4	Nos.	1,209.60	4,838.40
58	LED Flood Light Luminaries Type FL-2 (250W) including installation of mounting hardwares, brackets, fastener, screw, nut bolt etc complete.	4	Nos.	1,209.60	4,838.40
59	Receptacle 415V, 63A, 3 Phase outdoor type. (Outdoor type, Foundation / structure Mounted) including installation of structure, mounting hardwares / anchor fastener etc complete in all respect.	1	Nos.	4,032.00	4,032.00
60	Receptacle 415V, 250A, 3 Phase outdoor type. (Outdoor type, Foundation / structure Mounted) including installation of structure, mounting hardwares / anchor fastener etc complete in all respect.	1	Nos.	4,032.00	4,032.00
61	Receptacle 415V, 32A, 3 Phase outdoor type. (Outdoor type, Foundation / structure Mounted) including installation of structure, mounting hardwares / anchor fastener etc complete in all respect.	2	Nos.	504.00	1,008.00
62	Supply of 32A, 415V, 3 Phase, 4 Pole Receptacle, outdoor type (Industrial grade) with 4 Pole MCCB & Terminal Blocks. The Junction box of receptacles should conform IP 55 protection and made of Stainless steel of thickness 1.5 mm. Suitable for termination of incoming cable of size 4C & 16 Sqmm. Scope including supply of mounting hardwares / anchor fastener etc complete in all respect.	2	Nos.	3,500.00	7,000.00
63	PTZ camera (dome type) with it's housing, power supply unit & mounting hardware	1	Set	400.00	400.00
64	Junction Box including mounting of 600VA UPS, media converter, LIU & power switch etc for PTZ camera	1	Set	400.00	400.00

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Name of Project:- 400KV GIS S/s and 220 KV AIS S/S at Itarsi in Madhya Pradesh

Name of work:- ETC Work for 400 KV &amp; 220 KV Substation bay extension including 400KV GIS &amp; 400/220KV Transformer at Itarsi

SR_NO	Description_of_Item	Quantity	UOM	Unit_Rate (Rs.)	AMOUNT (Rs.)
65	Cabling between PTZ camera and Junction Box. (set of cat-6 cable, flexible 25mm GI conduit, power cable 3cx2.5 sq.mm & mounting hardwares)	20	Meter	20.16	403.20
66	Earthing work with 75X12 GI Flat - Installation of GI Flat including cutting, bending, welding with GI Flat / MS Rod, supply and application of paint, clamping to structure/building wall etc. to complete in all respect. All arc welding shall be done with low hydrogen content electrodes. the welds should be treated with two coats of metal primer (comprising of red oxide and zinc chromate in a synthetic medium) followed by two finishing coats of aluminum paint. The red oxide and zinc chromate shall conform to IS:2074.	13	MT	9,373.34	1,21,853.41
67	Earthing work with 50X6 GI Flat / MS Flat - Installation of Flat including cutting, bending, welding with Flat / MS Rod, supply and application of paint, clamping to structure/building wall etc. to complete in all respect. All arc welding shall be done with low hydrogen content electrodes. the welds should be treated with two coats of metal primer (comprising of red oxide and zinc chromate in a synthetic medium) followed by two finishing coats of aluminum paint. The red oxide and zinc chromate shall conform to IS:2074.	6	MT	9,373.34	56,240.03
68	Laying of 100 to 150 mm wide, 2.5 M long, 2mm thick (minimum) G.S. steel Perforated type cable trays with cover, coupler plates, hardware, fixing and clamping arrangement with lattice type support equipment's structure etc to complete including cutting & jointing to suitable length. Fixing and clamping hardware required for fixing of perforated tray with lattice / pipe structure shall be in ETC contractor scope.	50	Meter	48.64	2,432.16
69	Supply of 50x50x6 mm MS Angle - Powergrid approved make	4.5	MT	36,695.00	1,65,127.50
70	Supply of 50x6 mm MS Flat - Powergrid approved make	1.5	MT	50,200.00	75,300.00
71	Installation of Cable Rack - work includes cutting, welding and fabrication of cable racks with MS angles & MS Flat (for continues earthing run) on inserts of cable trench walls. Cable rack assembly shall be of 1/2/3/4 tier as applicable. Cable racks and supports shall be painted after installation with two coats of metal primer (comprising of red oxide and zinc chromate in a synthetic medium) followed by two finishing coats of aluminum paint. (supply of paint is in scope of bidder)	5	MT	23,887.80	1,19,438.98
72	Supply and installation of Panel Supporting Angles / Channel etc on cable trench in CRB / SPR, Vertical support for cables etc (Including Supply). Supports shall be painted after installation with two coats of metal primer (comprising of red oxide and zinc chromate in a synthetic medium) followed by two finishing coats of aluminum paint. (supply of paint is in scope of bidder)	0.2	MT	60,652.32	12,130.46
73	Supply of 110 mm nominal outside dia. PVC PIPES CLASS-IV as per IS 4985	500	Meter	164.00	82,000.00
74	Supply of 50 mm nominal outside dia. PVC PIPES CLASS-IV as per IS 4985	500	Meter	68.10	34,050.00
75	Supply of 90° PVC long bend for 110 mm dia PVC Pipes class-IV pipes, conforming to IS 10124, IS 10124 (Part 9) & IS 10124 (Part 10).	85	Nos.	190.00	16,150.00
76	Supply of 90° PVC long bend for 50 mm dia PVC Pipes class-IV pipes, conforming to IS 10124, IS 10124 (Part 9) & IS 10124 (Part 10).	85	Nos.	85.00	7,225.00
77	Supply of PVC sockets for 110 mm dia PVC Pipes class-IV pipes, conforming to IS 7834 (Part-6)-1977.	80	Nos.	350.00	28,000.00
78	Supply of PVC sockets for 50 mm dia PVC Pipes class-IV pipes, conforming to IS 7834 (Part-6)-1977	80	Nos.	330.00	26,400.00
79	Supply of PVC tee bend for 110 mm dia PVC Pipes class-IV pipes, conforming to IS 10124, IS 10124 (Part 9) & IS 10124 (Part 10).	30	Nos.	490.00	14,700.00
80	Supply of PVC tee bend for 50 mm dia PVC Pipes class-IV pipes, conforming to IS 10124, IS 10124 (Part 9) & IS 10124 (Part 10).	30	Nos.	250.00	7,500.00
81	Supply of 32 mm (Nominal Dia) HDPE - High Density PE pipe including tee / elbow as per relevant IS code. Mode of measurement shall be running length of HDPE Pipe only. Tee & Bend as per requirements are deemed included.	100	Meter	114.45	11,445.00
82	Supply of 25 NB GI pipes (light grade) conduits along with socket, bend and joint on trench rack support etc complete. Supply of required clamp for fixing GI conduits on Cable rack shall be in ETC contractor scope. Mode of measurement shall be running length of pipe conduit.	30	Meter	159.45	4,783.56
83	INSTALLATION OF 110 mm dia PVC Pipe. Which shall be buried in the ground at a depth of 300 mm below FGL. Work includes excavation, backfilling, making trench holes and repairing of cable trench walls, cutting, fixing of sockets/ bends where required etc. complete. Both ends of PVC conduits shall be closed by plastering. (Payment will be made for the as erected pipe length)	500	Meter	93.28	46,641.30
84	INSTALLATION OF 50 mm dia PVC Pipe. Which shall be buried in the ground at a depth of 300 mm below FGL. Work includes excavation, backfilling, making trench holes and repairing of cable trench walls, cutting, fixing of sockets/ bends where required etc. complete. Both ends of PVC conduits shall be closed by plastering. (Payment will be made for the as erected pipe length)	500	Meter	78.08	39,038.95

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Name of work:- ETC Work for 400 KV &amp; 220 KV Substation bay extension including 400KV GIS &amp; 400/220KV Transformer at Itarsi

SR_NO	Description_of_Item	Quantity	UOM	Unit_Rate (Rs.)	AMOUNT (Rs.)
85	INSTALLATION OF 25 NB GI pipes (light grade) conduits along with socket, bend and joint on trench rack support . Cutting, threading, fixing of clamps sockets/ bends/joints where required etc. complete. Mode of measurement shall be running length of pipe conduit. GI conduits shall be used for INSTALLATION OF fiber optic cables /sensor cables.	30	Meter	39.86	1,195.89
86	INSTALLATION OF 25/32 MM DIA. HDPE PIPE in cable trench, trays, hanger, supports, STRUCTURE, through wall etc	450	Meter	114.45	51,502.50
87	INSTALLATION OF 25/32 MM DIA. HDPE PIPE buried in the ground at a depth of 300 mm below FGL. Work includes excavation, backfilling, making trench holes and repairing of cable trench walls cutting, fixing of sockets/ bends where required etc. complete. (Payment will be made for the as erected pipe length)	50	Meter	114.45	5,722.50
88	INSTALLATION of FIBER OPTIC CABLE in GI Pipe / HDPE Pipe along with connectors for SAS & Busbar Protection / VMS. Splicing and Termination shall be in supplier's scope.). Installation of GI / HDPE Pipe is covered in separate BOQ line item.	450	Meter	15.54	6,991.43
89	INSTALLATION of CO-AXIAL CABLE, CAT 6 CABLE, SHIELDED TWISTED PAIR - STP, UTP CABLE, SPECIAL purpose CABLES IN GI Pipe / HDPE Pipe along with connectors / TERMINATION. Installation of GI / HDPE Pipe is covered in separate BOQ line item.	100	Meter	15.54	1,553.65
90	ETC of LT control cable - 5C X 2.5 Cu	4500	Meter	11.77	52,963.20
91	ETC of LT control cable - 7C X 2.5 Cu	300	Meter	12.60	3,781.44
92	ETC of LT control cable - 10C X 2.5 Cu	2700	Meter	12.60	34,032.96
93	ETC of LT control cable - 14C X 2.5 Cu	2100	Meter	16.81	35,300.16
94	ETC of LT control cable - 19C X 2.5 Cu	3500	Meter	19.45	68,057.99
95	ETC of LT control cable - 27C X 2.5 Cu	300	Meter	29.71	8,914.45
96	ETC of LT Power / control cable - 2C X 2.5 Cu or 3C X 2.5 Cu	2000	Meter	11.77	23,539.20
97	ETC of LT XLPE Power cable - 3.5C X 300 Al	400	Meter	57.77	23,106.93
98	ETC of LT Power cable in directly Buried Cable trench (including sand bed & brick cover) - 3.5C X 300 Al	50	Meter	54.93	2,746.56
99	ETC of LT Power cable - 3.5C X 70 Al	2600	Meter	24.37	63,373.44
100	ETC of LT Power cable - 3.5C X 35 Al	200	Meter	16.81	3,361.92
101	ETC of LT Power cable - 4C X 16 Al	4500	Meter	12.98	58,406.40
102	ETC of LT Power cable - 4C X 6 Al	2000	Meter	12.98	25,958.40
103	ETC of LT Power cable - 2C X 6 Al	1000	Meter	12.98	12,979.20
104	Supply of CABLE GLAND suitable for 2C X 2.5 or 3CX2.5 PVC/Cu Power / CONTROL Cable	50	Nos.	168.12	8,405.76
105	Supply of CABLE GLAND suitable for 5C X 2.5 PVC/Cu Control Cable	100	Nos.	168.12	16,811.52
106	Supply of CABLE GLAND suitable for 7C X 2.5 PVC/Cu Control Cable	10	Nos.	201.74	2,017.44
107	Supply of CABLE GLAND suitable for 10C X 2.5 PVC/ Cu Control Cable	66	Nos.	201.74	13,315.10
108	Supply of CABLE GLAND suitable for 14C X 2.5 Cu PVC/ Control Cable	60	Nos.	252.17	15,130.37
109	Supply of CABLE GLAND suitable for 19C X 2.5 Cu PVC/ Control Cable	100	Nos.	287.28	28,728.18
110	Supply of CABLE GLAND suitable for 27C X 2.5 Cu Control Cable	10	Nos.	591.21	5,912.05
111	Supply of CABLE GLAND suitable for 3.5C X 300 Al C XLPE Power Cable	2	Nos.	604.80	1,209.60
112	Supply of CABLE GLAND suitable for 3.5C X 70 Al Power Cable	10	Nos.	336.22	3,362.21
113	Supply of CABLE GLAND suitable for 3.5C X 35 Al Power Cable	10	Nos.	294.20	2,942.02
114	Supply of CABLE GLAND suitable for 4C X 16 Al Power Cable	30	Nos.	252.17	7,565.18
115	Supply of CABLE GLAND suitable for 4C X 6 Al Power Cable	50	Nos.	252.17	12,608.64
116	Supply of CABLE GLAND suitable for 2C X 6 Al Power Cable	50	Nos.	185.33	9,266.40
117	Supply of Rubber mats (Class-A suitable for 1.1 kV as per IS: 15652)	16	Sq.m	1,237.73	19,803.71
118	Installation of Rubber mats (Class-A suitable for 1.1 kV as per IS: 15652) in front of Panels	16	Sq.m	137.53	2,200.41
119	Supply & Mounting of Phase Color Discs, Danger Plate and Identification Plates for bays & Equipments as per IS:2551; 1982 & IS:5; 1978.	1	Lot	88,147.50	88,147.50
120	PHASE IDENTIFICATION - Painting the structures in Red, Yellow and Blue by reflecting Colour is to be provided around the top of the structure with Colour band of 100 mm width.	1	Lot	2,000.00	2,000.00
121	Supply & Installation of BAY IDENTIFICATION - Bay Name Plate as per drawing no. C/ENG/STD/BAY NAME PLATE	3	Nos.	971.36	2,914.08
122	Supply & Installation of Cable Tag - The tag shall be of aluminum with the number punched on it and securely attached to the cable conduit by not less than two turns of 20 SWG GI wire conforming to IS:280. Cable tags shall be of rectangular shape for power cables and of circular shape for control cables.	1	Lot	2,000.00	2,000.00

## Annexure-I

## BILL OF QUANTITY CUM PRICE SCHEDULE

Name of Project:- 400KV GIS S/s and 220 KV AIS S/S at Itarsi in Madhya Pradesh

Name of work:- ETC Work for 400 KV &amp; 220 KV Substation bay extension including 400KV GIS &amp; 400/220KV Transformer at Itarsi

SR_NO	Description_of_Item	Quantity	UOM	Unit_Rate (Rs.)	AMOUNT (Rs.)
123	Supply of Cable Sealing System / cable transit system - Modular multi-diameter (type peel-able or adjustable blocks) cable sealing system consisting of frames, blocks, stay plate and accessories. The shall be installed where the cables enter CRB, SPR in the substations. (Approved make M/s Roxtec India Pvt. Ltd / M/s MCT Brattberg India Pvt. Ltd. / any other Powergrid approved make) Mode of measurement shall be in square centimeter of inner dimension of frame of cable sealing system. Bidder to submit drawing, document & type test report for approval during contract stage.	994	sq. cm.	11.80	11,729.20
124	Installation of Cable Sealing System - Modular multi-diameter (type peel-able or adjustable blocks) cable sealing system consisting of frames, blocks, stay plate and accessories. The shall be installed where the cables enter CRB, SPR in the substations. Mode of measurement shall be in square centimeter of inner dimension of frame of cable sealing system. Minor civil works required for installation of cable sealing system is in the scope of bidder.	994	sq. cm.	1.18	1,172.92
125	SUPPLY & INSTALLATION OF TEMPERATURE TRANSDUCER - temperature transducer to monitor the temperature of the panel room. The Temperature transducer shall have the following specification: Sensor : Air temperature sensor (indoor use) Output : 4 to 20mA Temperature range : -5oC to 60oC Resolution : 0.1oC Accuracy : 0.5oC or better. Powergrid approved reputed make i.e. Honeywell, Rishabh e.t.c. (Conforming to specification Rishabh RISH Ducer PT 602, 2 channels)	1	Nos.	6,250.00	6,250.00
126	Repair/Modification work in Control room for fixing of panels under present scope including covering of gap and floor finishing to meet the aesthetic.	1	Lot	32,390.45	32,390.45
127	SAND FILLED CABLE TRENCH - Removal of sand from existing sand-filled cable trench, placement of the same in a suitable position near trench, refilling of the same sand after successful completion of cabling works, dressing/ spreading of sand in trench. (mode of measurement shall be cubic meter of refilled sand)	2	cu.m	2,000.00	4,000.00
128	SUPPLY OF SAND: if required to top-up "sand filled cable trench" as per site requirement. works includes supply, placement and dressing of sand in cable trench. (mode of measurement shall be cubic meter of sand)	1	cu.m	1,000.00	1,000.00
129	Dismantling of existing lattice / pipe structure and its disposal as per site requirement.	1	MT	726.75	726.75
130	Dismantling of existing earthing material i.e. 40MM MS Rod / 75X12 Iron Flat / 50X6 Iron Flat etc - Work includes excavation, cutting & shifting of scrap to store. Re-erection of earthing works shall be payable in respective BOQ line item.	0.5	MT	2,812.00	1,406.00
131	FIRE PROTECTION SYSTEM (material handling) - Receipt of material, unloading, proper storage, material reconciliation, safe keeping, handing over to BHEL / Fire Fighting contractor, proper record keeping etc to complete. please refer annexure_fire-protection. mode of payment shall be equipment / item weight excluding packing weight.	8.2	MT	500.00	4,100.00
132	AIR CONDITIONING SYSTEM (material handling) - Receipt of material, unloading, proper storage, material reconciliation, safe keeping, handing over to BHEL / ACVS contractor, proper record keeping etc to complete. Mode of payment shall be equipment / item weight excluding packing weight.	0.2	MT	500.00	100.00
133	SF6 GAS LEAKAGE DETECTOR (material handling) - Receipt of material, unloading, proper storage, material reconciliation, safe keeping, handing over to BHEL / customer, proper record keeping etc to complete.	1	Nos.	1,000.00	1,000.00
134	SF6 GAS PLANT (DILO) (material handling) - Receipt of material, unloading, proper storage, material reconciliation, safe keeping, handing over to BHEL / customer, proper record keeping etc to complete.	1	Set	2,000.00	2,000.00
135	SF6 GAS ANALYZER (material handling) - Receipt of material, unloading, proper storage, material reconciliation, safe keeping, handing over to BHEL / customer, proper record keeping etc to complete.	1	Nos.	1,000.00	1,000.00

## Annexure-I

## BILL OF QUANTITY CUM PRICE SCHEDULE

Name of Project:- 400KV GIS S/s and 220 KV AIS S/S at Itarsi in Madhya Pradesh

Name of work:- ETC Work for 400 KV & 220 KV Substation bay extension including 400KV GIS & 400/220KV Transformer at Itarsi

SR_NO	Description_of_Item	Quantity	UOM	Unit_Rate (Rs.)	AMOUNT (Rs.)
136	MANDATORY SPARES - F: 420 kV Isolator Spare material handling	1	Lot	3,594.03	3,594.03
137	MANDATORY SPARES - H: 336kV Surge Arrester Spare material handling	1	Lot	2,645.00	2,645.00
138	MANDATORY SPARES - I: 220kV SF6 Circuit Breaker Spare material handling	1	Lot	11,170.63	11,170.63
139	MANDATORY SPARES - J.1: 220KV, 1600A, Isolator with E/S Spare material handling	1	Lot	3,594.03	3,594.03
140	MANDATORY SPARES - J.2: 220KV, 1600A, Isolator without E/S Spare material handling	1	Lot	3,594.03	3,594.03
141	MANDATORY SPARES - G: 220kV Current Transformer Spare material handling	1	Lot	1,942.72	1,942.72
142	MANDATORY SPARES - K: 216kV Surge Arrester Spare material handling	1	Lot	3,399.76	3,399.76
143	MANDATORY SPARES - L.1: Relay and Protection system - Transformer Protection panel Spare material handling	1	Lot	500.00	500.00
144	MANDATORY SPARES - N: Fire Protection System Spare material handling	1	Lot	100.00	100.00
145	MANDATORY SPARES - O: 400KV GIS SPARES (REFER ANNEXURE_GIS_SPARE)	1	Lot	35,136.15	35,136.15
146	MANDATORY SPARES - P: 500MVA Transformer Spare material handling	1	Lot	24,283.98	24,283.98
147	Watch and ward of stored / erected material at project site and storage area or any other locations as per instruction of site in charge. (round the clock security by authorized service agency)	10	Months	44,782.65	4,47,826.46
148	Dismantling of existing street light pole, including light fitting, junction box, cable, breaking of pole foundation to safely dismantle pole assembly etc to complete, including dismantling of directly buried inter-poles cables. Shifting of material to store.	15	Nos.	3,780.00	56,700.00
149	Re-erection of street light pole, including light fitting, junction box, pole mounted cable etc to complete the pole assembly. Civil foundation for street light pole is covered in a separate BOQ line item.	15	Nos.	7,560.00	1,13,400.00
150	Civil Foundation of street lighting pole complete in all respect including supply of sand, aggregate, cement etc to complete	8	Cu.Meter	8,000.00	64,000.00
Total Amount in Rs.- (Excluding GST)					60,77,090

Notes:- Following Annexures are the part of this BOQ. Bidders may please refer the below mentioned Annexures which are attached alongwith the Tender documents.

- 1) BOQ\_ANNEXURE\_1: STANDARD TECHNICAL NOTES & BIDDER SCOPE
- 2) BOQ\_ANNEXURE\_2: PROJECT SPECIFIC DRAWING & DOCUMENT LIST

**ANNEXURE-II**

**TRANSMISSION BUSINESS GROUP  
(SUB- CONTRACTS MANAGEMENT)  
TBG - NOIDA**

**PRICE SCHEDULE FORMAT**

**SUB: TENDER FOR "RECEIPT OF EQUIPMENT/ MATERIAL AT SITE, UNLOADING, RECONCILIATION, INSPECTION, VERIFICATION, STORAGE, UP-KEEPING DURING STORAGE, ERECTION, TESTING, COMMISSIONING AND HANDING OVER OF 400KV GIS S/S AND 220 KV AIS S/S AT ITARSI IN MADHYA PRADESH".**

**TENDER SPEC. NO.:- TBSM/ITARSI/ SS-19 /ETC/TENDER /20-21**

**DATE 09.06.2020**

(a) I/ We hereby agree to execute the above work at ----- % (in figure).....  
----- (in words) Above / Below/ At Par the rates of items given in BOQ  
(Annexure-I) of subject tender.

**NOTE:**

1. In this annexure the tenderer shall quote a percentage above/ below/At Par the rates shown in the Bill of Quantities (Annexure-I) of subject tender. The percentage quoted shall be clearly written both in words and figures. In case of discrepancy in rates in figure and words, the minimum will be taken into account by BHEL.
2. The quoted percentage will apply to the individual items uniformly.

Date:  
Place

Signature of tenderer  
Name & Designation of authorized person(s) with seal



**ANNEXURE-III**  
**( Summary Of Prices)**

**NAME OF WORK :- RECEIPT OF EQUIPMENT/ MATERIAL AT SITE, UNLOADING, RECONCILIATION, INSPECTION, VERIFICATION, STORAGE, UP-KEEPING DURING STORAGE, ERECTION, TESTING, COMMISSIONING AND HANDING OVER OF 400KV GIS S/S AND 220 KV AIS S/S AT ITARSI IN MADHYA PRADESH".**

**TENDER SPECIFICATION NO.:-TBSM/ITARSI/ SS-19 /ETC/TENDER /20-21 DATE 09.06.2020**

<b>Sl No.</b>	<b>Description</b>	<b>Amount (Rs.)</b>
1	Total Amount as per rates in BOQ for "Receipt of equipment/ material at site, unloading, reconciliation, inspection, verification, storage, up-keeping during storage, erection, testing, commissioning and handing over of 400KV GIS S/S and 220 KV AIS S/S at Itarsi in Madhya Pradesh.." <b>(Annexure-I)</b>	60,77,090.00
2	Value of percentage above/below/at par (As indicated in Price Schedule Format, <b>Annexure-II</b> ) applicable to the total amount of ETC work ( at Sl. no. 1 above)	.....% above/below/ at par
3	<b>Total amount after consideration of percentage above/below/ at par.</b>	