

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
1	A1 - Fully equipped 400kV, 63kA for 1 second, SF6 GIS GT bay Module (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	3	Set	1,41,777.68	4,25,333.04
2	A2 - Fully equipped 400kV, 63kA for 1 second, SF6 GIS STATION TRANSFORMER bay Module (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	3	Set	1,41,777.68	4,25,333.04
3	A3 - Fully equipped 400kV, 63kA for 1 second, SF6 GIS LINE bay Module (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	6	Set	1,63,930.44	9,83,582.64
4	A4 - Fully equipped 400kV, 63kA for 1 second, SF6 GIS BUS REACTOR bay Module (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	2	Set	1,41,777.68	2,83,555.36
5	A5 - Fully equipped 400kV, 63kA for 1 second, SF6 GIS TIE bay Module - With CSD (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	4	Set	1,63,930.44	6,55,721.76
6	A6 - Fully equipped 400kV, 63kA for 1 second, SF6 GIS TIE bay Module (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	3	Set	1,63,930.44	4,91,791.32

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SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
7	A7 - Bus VT Modules for Main Buses (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	2	Set	68,673.56	1,37,347.13
8	A8 - LA/ Surge arrester Module (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	2	Set	30,000.00	60,000.00
9	A9 - BusBar Modules - Set of Three Single Phase(isolated), SF6 gas-insulated metal enclosed bus bars (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	2	Set	2,10,567.83	4,21,135.66
10	A10 - Single Phase Isolated, 400kV, SF6 Gas-Insulated Metal enclosed Bus Bars for Tie Bay Interconnection (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	14	Set	12,083.32	1,69,166.52
11	A11 - Gas Insulated Bus Duct (GIB) - 400kV Single phase (isolated) SF6 gas-insulated metal enclosed GIS duct from GIS GT/ST/Bus Reactor/Outgoing Lines Modules to SF6 to Air bushing. Work includes complete installation of GIB. (excluding support structure & earthing) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	2292.5	Meter	805.55	18,46,734.56

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SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
12	A12 - SF6 to Air Bushing - Polymer type (including terminal connector) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	42	Nos.	8,861.10	3,72,166.35
13	A13 - Local Control Panel (LCC) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	22	Nos.	8,055.55	1,77,222.07
14	A14 - 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 shall be in the scope of BHEL/manufacturer. 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	1	Lot	4,38,624.70	4,38,624.70
15	A15 - 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, welding works, which are required for installation of GIS system as per the specification. 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	50	MT	15,521.88	7,76,093.84
16	A16 - 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, brazing, welding ,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. 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	1	Lot	2,94,827.39	2,94,827.39

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SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
17	A17 - 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, support for complete HV Test, dismantling & loading on carrier. Complete in all respect. 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	1	Lot	1,24,175.04	1,24,175.04
18	A18 - Cabling between LCC and GIS including termination, ferruling , laying, dressing, tagging etc. including arrangement of consumables etc. Cable shall be provided by GIS supplier / BHEL. 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	22	Set	17,722.21	3,89,888.56
19	A19 - Laying of Special cable (for Control Switching Device) between LCC and Relay Panel (in Panel/Control Room) 400kV GIS - as per enclosed single line diagram. Work shall include Erection / Installation, Testing and commissioning of 400kV GIS including LCC Panels. The supervision shall be provided by GIS manufacturer. Arrangement of tool & tackles, testing instruments shall be part of bidder's scope such as and not limited to Annexure-B. The scope includes complete installation of GIS, GIB and SF6 to air bushing including all the work / services required for ETC of complete GIS , support structure, earthing / grounding, Internal cabling between GIS to LCC, SF6 Gas treatment, handling / filling / top-up e.t.c. complete in all respect.	3000	Meter	20.00	60,000.00
20	420kV 125 MVAR, 3-Ph, Bus Reactor : 420kV 125 MVAR, 3-Ph, Reactor complete in all respect alongwith its MB Box, 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 to MK, Oil filtration, filling of oil, hot oil circulation, Oil testing etc as required to complete the installation of Reactor (Supervision of unloading, Erection, Testing and commissioning will be done by OEM). Note:- 1) Charges for Oil filtration, filling of oil, hot oil circulation etc for first time commissioning of Transformer are deemed to be covered in this line item. 2) Charges for testing of oil supplied in drums are covered separately under item no. 2.7 below. Unloading of Reactor tank main body is excluded in this scope, the same is covered under a seperate line item below.	2	Set	6,43,597.50	12,87,195.00
21	420kV 125 MVAR, 3-Ph, Bus Reactor : Unloading of Reactor Tank (main body) (1 No.)	2	Nos.	1,15,847.55	2,31,695.10
22	420kV 125 MVAR, 3-Ph, Bus Reactor : Dragging/shifting charges of above mentioned Reactor (1 No.) on ground, upto rail cum road / jacking pad	100	Meter	1,544.63	1,54,463.40
23	420kV 125 MVAR, 3-Ph, Bus Reactor : Dragging / shifting charges of above mentioned Reactor (1 No.) on rail cum road	40	Meter	1,544.63	61,785.36
24	420kV 125 MVAR, 3-Ph, Bus Reactor : Complete dryout of 400kV Bus Reactor by N2 filling/ vaccuming/ purging and heating (if required) as per BHEL Bhopal procedure (Annexure-F). Complete in all respect excluding supply N2 gas.	2	Lot	40,294.80	80,589.60
25	420kV 125 MVAR, 3-Ph, Bus Reactor: Supply of N2 gas as per instruction of BHEL Site. Mode of measurement shall be number of gas cyliner (returnable) having 50kg N2 gas	80	Nos.	2,238.60	1,79,088.00
26	420kV 125 MVAR, 3-Ph, Bus Reactor : Oil Testing (BDV, ppm, Resistivity & Tan delta etc for oil supplied in drums (if required). 1 set equals all the tests on 1 sample.	25	Set	2,238.60	55,965.00

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Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
27	336kV Surge Arrester: Surge Arrester: 336 kV, 1 Phase, Gapless type Metal Oxide Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable and terminal connector, without support structure.	42	Set	3,309.00	1,38,978.11
28	420kV Bus Post Insulator complete with corona ring & terminal connectors without support structure	84	Set	1,134.51	95,298.99
29	420kV Bus Post Insulator complete without corona ring & terminal connectors (For WaveTrap Mounting) without support structure	36	Set	1,134.51	40,842.43
30	400 kV Wave Trap: Wave Trap (WT): 400 kV, 3150A, 0.5mH, 1 phase with terminal connector, without support structure.	12	Set	10,000.00	1,20,000.00
31	400kV Capacitive Voltage Transformer (CVT): Capacitive Voltage Transformer (CVT): 400 kV, 8800pF, 1 Phase, 3 secondary with terminal connector, without support structure.	18	Set	8,830.33	1,58,945.91
32	400kV Capacitive Voltage Transformer (CVT): Capacitive Voltage Transformer (CVT): 400 kV, 4400pF, 1 Phase, 3 secondary with terminal connector, without support structure.	9	Set	8,830.33	79,472.96
33	400kV String Insulators and Hardware: 400 kV Double Tension Polymer long rod Hardware with Turnbuckle suitable for Twin ACSR Moose Conductor, Subconductor Spacing 450mm - In 400kV Switchyard Tower/Beams	18	Nos.	2,416.66	43,499.96
34	400kV String Insulators and Hardware: 400 kV Double Tension Polymer long rod Hardware with Turnbuckle suitable for Twin ACSR Moose Conductor, Subconductor Spacing 450mm - On Beams Fixed on ACC Concrete Columns: For GT/ST connection through ACC	54	Nos.	2,416.66	1,30,499.89
35	400kV String Insulators and Hardware: 400 kV Double Tension Polymer long rod Hardware without Turnbuckle suitable for Twin ACSR Moose Conductor, Subconductor Spacing 450mm - In 400kV Switchyard Tower/Beams	36	Nos.	2,416.66	86,999.93
36	400kV String Insulators and Hardware: 400 kV Double Tension Polymer long rod Hardware with Turnbuckle suitable for Twin ACSR Moose Conductor, Subconductor Spacing 450mm - On Beams Fixed on ACC Concrete Columns - For GT/ST connection through ACC	36	Nos.	2,416.66	86,999.93
37	400kV String Insulators and Hardware: 400 kV Single Suspension Polymer long rod Hardware with Drop Clamp suitable for Quad ACSR Moose Conductor, Subconductor Spacing 450mm	6	Nos.	1,611.11	9,666.66
38	400kV String Insulators and Hardware: 400 kV Single Suspension Polymer long rod Hardware with Straight Clamp suitable for Twin ACSR Moose Conductor, Subconductor Spacing 450mm - In 400kV Switchyard Tower/Beams	18	Nos.	1,611.11	28,999.98
39	400kV String Insulators and Hardware: 400 kV Single Suspension Polymer long rod Hardware with Straight Clamp suitable for Twin ACSR Moose Conductor, Subconductor Spacing 450mm - On Beams Fixed on ACC Concrete Columns - For GT/ST connection through ACC	36	Nos.	1,611.11	57,999.95
40	400kV String Insulators and Hardware: 400 kV Single Suspension Polymer long rod Hardware with Drop Clamp suitable for Twin ACSR Moose Conductor, Subconductor Spacing 450mm	18	Nos.	1,611.11	28,999.98
41	7/9 SWG GI Shield Wire: GI Shield wire including tension clamp, PG clamp and clamping on structure for down conductor, fixing/bolting with earth strip etc to complete . - In 400kV Switchyard	3.1	km	29,308.26	90,855.61
42	7/9 SWG GI Shield Wire: GI Shield wire including tension clamp, PG clamp and clamping on structure/ACC Concrete Column for down conductor, fixing/bolting with earth strip etc to complete . - GT/ST Through ACC	1.2	km	29,308.26	35,169.92
43	ACSR Moose Conductor: Conductor complete with Tee connectors for droppers to equipment connections, PG clamps for busbar jumpering, Twin/Quad bundle spacers etc to complete.	18	km	57,671.10	10,38,079.82
44	4"(EH) IPS Aluminium Tube: Al Tube (ETC of Al.Tube includes Aluminium welding and bending to be included. Welding sleeve and Al tube will be supplied by BHEL. Including Corona Bell Fixing, Tee Connector Fixing, and other clamps and connectors etc. Connectors shall be provided by BHEL.)	615	Meter	326.17	2,00,597.43
45	Auxiliary - LT Distribution Boards: 415V AC DISTRIBUTION BOARD (ACDB)	1	Set	40,000.00	40,000.00
46	Auxiliary - LT Distribution Boards: 415V AC Emergency Power Distribution Board	1	Set	15,000.00	15,000.00
47	Auxiliary - LT Distribution Boards: 415V AC Outdoor Board For Oil Filtration Sockets	1	Set	5,000.00	5,000.00
48	Auxiliary - LT Distribution Boards: 415V AC MAIN LIGHTING DISTRIBUTION BOARD (MLDB) with Lighting Transformer.	2	Set	73,370.12	1,46,740.23
49	Auxiliary - LT Distribution Boards: 415V AC Emergency Lighting Distribution board (AC ELDB) with Lighting Transformer	1	Set	34,754.27	34,754.27

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50	Auxiliary - LT Distribution Boards: 220V DC Emergency Lighting Board (DC ELDB)	1	Set	22,386.00	22,386.00
51	Auxiliary - LT Distribution Boards: 220V DC distribution board	1	Set	15,446.34	15,446.34
52	Auxiliary - LT Distribution Boards: 48 V DC Distribution board	1	Set	15,446.34	15,446.34
53	Auxiliary - Battery Bank and Charger: 220 V, 645 AH Battery Bank (NiCd / Lead Acid Plante Battery) along with all accessories such as racks, interconnecting cables, connectors etc.	2	Set	83,667.68	1,67,335.35
54	Auxiliary - Battery Bank and Charger: 48 V, 535 AH Battery Bank (NiCd / Lead Acid Plante Battery) along with all accessories such as racks, interconnecting cables, connectors etc.	2	Set	57,923.78	1,15,847.55
55	Auxiliary - Battery Bank and Charger: 220V 150A Float Cum Boost Battery Charger	2	Set	15,446.34	30,892.68
56	Auxiliary - Battery Bank and Charger: 48 V, 125A Float Cum Boost Battery Charger	2	Set	15,446.34	30,892.68
57	Auxiliary - Battery Bank and Charger: Battery discharge Load bank (Resistive/ reactive type)	2	Set	5,596.50	11,193.00
58	Auxiliary - Battery Bank and Charger: Battery Health Monitoring System	4	Set	5,000.00	20,000.00
59	CVT Junction Box- Outdoor: CVT Junction Box VT JB-N75- Outdoor, Structure Mounted	9	Nos.	1,939.14	17,452.26
60	Oil filled LT Transformer - 1000 kVA : Transformer 11/ 0.433 kV, 1000 kVA, 3-Phase, DYN1, ONAN, Oil type LT Outdoor Auxiliary Transformer with all fittings & accessories	2	Set	17,266.00	34,531.99
61	Bay 401-GTRP GT-1 Breaker Relay panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
62	Bay 402-TRP Tie Breaker Relay Panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
63	Bay 401-02 BCP-1 GT-1 CB & TIE CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
64	Bay 403 BCP-2 Line CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
65	Bay 403-LRPA Line-1 Relay Panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00

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Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
66	Bay 403-LRPB Line-1 Relay Panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
67	Bay 404-STRPA ST-1 Relay panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
68	Bay 404-STRPB ST-1 Relay panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
69	Bay 405-TRP Tie Breaker Relay Panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
70	Bay 404-05 BCP-3 ST-1 CB & TIE CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
71	Bay 406 BCP-4 Line CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
72	Bay 406-LRPA Line-2 Relay Panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
73	Bay 406-LRPB Line-2 Relay Panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
74	Bay 407-GTRP GT-2 Breaker Relay panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
75	Bay 408-TRP Tie Breaker Relay Panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
76	Bay 407-08 BCP-5 GT-2 CB & TIE CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
77	Bay 409 BCP-6 Line-3 CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
78	Bay 409-LRPA Line-3 Relay Panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
79	Bay 409-LRPB Line-3 Relay Panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
80	Bay 410-STRPA ST-2 Relay panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
81	Bay 410-STRPB ST-2 Relay panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
82	Bay 411-TRP Tie Breaker Relay Panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
83	Bay 410-11 BCP-7 ST-2 CB & TIE CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
84	Bay 412 BCP-8 Line CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
85	Bay 412-LRPA Line-4 Relay Panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
86	Bay 412-LRPB Line-4 Relay Panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
87	Bay 413-BRRPA BR-1 Relay panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
88	Bay 413-BRRPB BR-1 Relay panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
89	Bay 414-TRP Tie Breaker Relay Panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
90	Bay 413-14 BCP-9 BR-1 CB & TIE CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
91	Bay 415 BCP-10 BR-2 CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
92	Bay 415-BRRPA BR-2 Relay panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
93	Bay 415-BRRPB BR-2 Relay panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
94	Bay 416-STRPA ST-3 Relay panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
95	Bay 416-STRPB ST-3 Relay panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
96	Bay 417-TRP Tie Breaker Relay Panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
97	Bay 416-17 BCP-11 ST-3 CB & TIE CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
98	Bay 418 BCP-12 Line CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
99	Bay 418-LRPA Line-5 Relay Panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
100	Bay 418-LRPB Line-5 Relay Panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00

Annexure-I

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
101	Bay 419-GTRP GT-3 Breaker Relay panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
102	Bay 420-TRP Tie Breaker Relay Panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
103	Bay 419-20 BCP-13 GT-3 CB & TIE CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
104	Bay 420 BCP-14 Line-6 CB BCU panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
105	Bay 420-LRPA Line-6 Relay Panel (Group-1) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
106	Bay 420-LRPB Line-6 Relay Panel (Group-2) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
107	BBRP BUSBAR PROTECTION PANEL (MAIN) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00

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Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
108	BBRP1 BUSBAR PROTECTION PANEL (FUTURE) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
109	BBRP2 BUSBAR PROTECTION PANEL (FUTURE) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
110	BBRP3 BUSBAR PROTECTION PANEL (FUTURE) (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
111	ISRP1 ISLANDING PANEL 1 (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
112	ISRP2 ISLANDING PANEL 2 (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
113	EMPD1 Dummy Energymetering panel -1 Comprising of main and check meters (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
114	EMPD2 Dummy Energymetering panel -2 Comprising of main and check meters (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
115	EMPD3 Dummy Energymetering panel -3 Comprising of main and check meters (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
116	NWP1 Networking Panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
117	SAS1 SAS panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
118	Synchronizing Trolley (Approx. 600mm wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
119	Station Aux Panel (Approx 800mm Wide) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	1	Set	5,400.00	5,400.00
120	Phaser Measurement Unit Panel (Approx. width 800 MM) 400kV Control and Relay Panels along with Substation Automation System - (Including Mounting & Internal wiring of loose-supplied CSD/PMU Units, As Applicable) (Testing and commissioning of numerical relays/BCU/Energy Meters/ SAS equipment's in scope of respective equipment's supplier. Necessary manpower support for wiring, BUS wiring, numerical device testing, arranging tools, tackles and testing equipment's including 3-ph numerical relay test kit is in scope of ETC contractor)	6	Set	5,400.00	32,400.00
121	400kV Control and Relay Panels along with Substation Automation System: Operator Work Station/ Engineering Work Station PC at Control room	3	Nos.	646.38	1,939.14
122	400kV Control and Relay Panels along with Substation Automation System: Engineering Work Station PC/ DFR at Unit Control Room	3	Nos.	646.38	1,939.14
123	400kV Control and Relay Panels along with Substation Automation System: Energy Metering Master Station	1	Nos.	646.38	646.38
124	400kV Control and Relay Panels along with Substation Automation System: A3/A4 Colour Printer	1	Nos.	323.19	323.19
125	400kV Control and Relay Panels along with Substation Automation System: Dot Matrix printer	1	Nos.	323.19	323.19
126	400kV Control and Relay Panels along with Substation Automation System: A3/A4 High Speed printer	1	Nos.	323.19	323.19
127	400kV Control and Relay Panels along with Substation Automation System: UPS/ Inverter with Battery Backup	2	Nos.	3,231.90	6,463.80

Annexure-I

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
128	400kV Control and Relay Panels along with Substation Automation System: Large Video Screen	1	Nos.	4,140.00	4,140.00
129	400kV Control and Relay Panels along with Substation Automation System: Laptop with relay parameterisation software	2	Nos.	1,000.00	2,000.00
130	400kV Control and Relay Panels along with Substation Automation System: Time Synchronizing equipment (GPS receiver with 100mm TDU complete in all respects including antenna, all cables, processing equipment etc.)	1	Nos.	1,939.14	1,939.14
131	400kV Control and Relay Panels along with Substation Automation System: Common equipment's: Relay Test Kit (Only Handling and storage)	1	Nos.	283.50	283.50
132	400kV Control and Relay Panels along with Substation Automation System: Handling & installation of furniture required in switchyard control room & Power house control room for OWS, printer, servers etc.	1	Lot	1,939.14	1,939.14
133	400kV Control and Relay Panels along with Substation Automation System: Armoured/ Unarmoured FO cable/ Network Cable along with connectors for SAS/ Busbar Protection/ PLCC/ OLTE Communication. The laying of all network/optical cables shall be in the contractor scope. However, Optical cable will be laid under SAS supplier's supervision. Splicing and Termination shall be in SAS supplier's scope.). FO cable shall be laid in HDPE pipe/ GI Pipe and the same is covered in separte BOQ item.	3000	Meter	19.39	58,174.20
134	400kV Control and Relay Panels along with Substation Automation System: Splicing of Armoured FO Cable (1 No. = Splicing of 1 No. Fibre)	100	Nos.	400.00	40,000.00
135	HDPE Pipes: Laying of 25 / 32 / 40 mm (Nominal Dia) HDPE pipes	500	Meter	111.93	55,965.00
136	HDPE Pipes: Laying of 100 mm (Nominal Dia) HDPE pipes	50	Meter	223.86	11,193.00
137	25 mm (Nominal Dia) HDPE pipe Supply of High Density PE pipe including tee / elbow as per relevant IS code. The quantity mentioned are provisional and may vary upto any extend during detailed engineering. Mode of measurement shall be running length of HDPE Pipe only. Tee & Bend as per requirements are deemed included.	100	Meter	62.68	6,268.08
138	32 mm (Nominal Dia) HDPE pipe Supply of High Density PE pipe including tee / elbow as per relevant IS code. The quantity mentioned are provisional and may vary upto any extend during detailed engineering. Mode of measurement shall be running length of HDPE Pipe only. Tee & Bend as per requirements are deemed included.	100	Meter	111.93	11,193.00
139	40 mm (Nominal Dia) HDPE pipe Supply of High Density PE pipe including tee / elbow as per relevant IS code. The quantity mentioned are provisional and may vary upto any extend during detailed engineering. Mode of measurement shall be running length of HDPE Pipe only. Tee & Bend as per requirements are deemed included.	100	Meter	179.09	17,908.80
140	100 mm (Nominal Dia) HDPE pipe Supply of High Density PE pipe including tee / elbow as per relevant IS code. The quantity mentioned are provisional and may vary upto any extend during detailed engineering. Mode of measurement shall be running length of HDPE Pipe only. Tee & Bend as per requirements are deemed included.	100	Meter	805.90	80,589.60
141	PVC Pipe: Laying of 63mm Dia PVC pipes at a depth of 300mm including excavation, backfilling, making and repairing of walls in trenches, cutting, threading, fixing of sockets/ bends where required etc. complete. Both ends of PVC conduits shall be plugged with suitable weatherproof plastic compound/ 'PUTTI' for sealing purpose. (Payment will be made for the as erected pipe length)	500	Meter	69.50	34,749.00
142	PVC Pipe: Laying of 110mm Dia PVC pipes at a depth of 300mm including excavation, backfilling, making and repairing of walls in trenches, cutting, threading, fixing of sockets/ bends where required etc. complete. Both ends of PVC conduits shall be plugged with suitable weatherproof plastic compound/ 'PUTTI' for sealing purpose. (Payment will be made for the as erected pipe length)	50	Meter	83.03	4,151.52
143	Supply of 63mm Dia PVC pipe (class 4 as per IS 4985, Customer accepted) alongwith accessories like sockets, bends, tees etc.	100	Meter	107.90	10,790.00
144	Supply of 110mm Dia PVC pipe (class 4 as per IS 4985, Customer accepted) alongwith accessories like sockets, bends, tees etc.	100	Meter	221.00	22,100.00
145	GI pipe, 50 NB Supply of medium duty GI Pipe / conduit / long radius elbow / tee as per International standards.	1000	Meter	377.77	3,77,769.08
146	GI Pipe, 100 NB Supply of medium duty GI Pipe / conduit / long radius elbow / tee as per International standards.	1000	Meter	889.29	8,89,289.18

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Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
147	90 degree long radius elbow, suitable for 50 NB GI pipe Supply of medium duty GI Pipe / conduit / long radius elbow / tee as per International standards.	50	Nos.	383.92	19,196.00
148	90 degree long radius elbow, suitable for 100 NB GI pipe Supply of medium duty GI Pipe / conduit / long radius elbow / tee as per International standards.	50	Nos.	943.57	47,178.50
149	Tee Bend suitable for 50 NB GI pipe Supply of medium duty GI Pipe / conduit / long radius elbow / tee as per International standards.	25	Nos.	327.95	8,198.87
150	Tee Bend suitable for 100 NB GI pipe Supply of medium duty GI Pipe / conduit / long radius elbow / tee as per International standards.	25	Nos.	831.64	20,791.00
151	GI pipe, 50 NB Laying of GI conduits at minimum depth of 300mm including excavation, backfilling, making and repairing of walls in trenches, cutting, threading, fixing of sockets/ bends , tees, elbows, bends, check nuts, bushings, educers, enlargers, coupling caps, nipples where required etc. complete. Both ends of GI conduits shall be closed by plastering. (Payment will be made for the as erected pipe length including elbow length)	600	Meter	69.50	41,698.80
152	GI Pipe, 100 NB Laying of GI conduits at minimum depth of 300mm including excavation, backfilling, making and repairing of walls in trenches, cutting, threading, fixing of sockets/ bends , tees, elbows, bends, check nuts, bushings, educers, enlargers, coupling caps, nipples where required etc. complete. Both ends of GI conduits shall be closed by plastering. (Payment will be made for the as erected pipe length including elbow length)	600	Meter	83.03	49,818.24
153	GI pipe, 50 NB Fixing of GI Pipes on Lattice/ Pipe Stucture/ Vertical wall / Structure/Trenches/Underhung including clamping, fixing of sockets/ bends as required etc. complete. Both ends of GI Pipes shall be closed by plastering. (Payment will be made for the as erected pipe length).	100	Meter	69.50	6,949.80
154	GI Pipe, 100 NB Fixing of GI Pipes on Lattice/ Pipe Stucture/ Vertical wall / Structure/Trenches/Underhung including clamping, fixing of sockets/ bends as required etc. complete. Both ends of GI Pipes shall be closed by plastering. (Payment will be made for the as erected pipe length).	100	Meter	83.03	8,303.04
155	Base Equipment - Equipment Cabinet For SDH: (Including interface cards and Tributary cards, Common Cards, Cross Connect/Control Cards, Optical Base Cards, Power Supply Cards, Sub-Rack, DDF, MDF(as applicable), patch cord, Termination Equipment Drop Insert Mux fully equipped, Subscriber line interface cards, Joint Boxes, PVC/Hume ducts, telephone receiver, Other Hardware and accessories required for installation of equipment FOTE and PLCC Equipment - (Testing and commissioning of FOTE/PLCC equipment in scope of FOTE/PLCC supplier; Necessary manpower support for FOTE/PLCC testing, arranging tools and tackles is in scope of ETC contractor)	1	Set	6,113.45	6,113.45
156	Network Manager System - Craft Terminal FOTE and PLCC Equipment - (Testing and commissioning of FOTE/PLCC equipment in scope of FOTE/PLCC supplier; Necessary manpower support for FOTE/PLCC testing, arranging tools and tackles is in scope of ETC contractor)	1	Set	5,094.55	5,094.55
157	VOIP Telephone FOTE and PLCC Equipment - (Testing and commissioning of FOTE/PLCC equipment in scope of FOTE/PLCC supplier; Necessary manpower support for FOTE/PLCC testing, arranging tools and tackles is in scope of ETC contractor)	1	Nos.	528.72	528.72

Annexure-I

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
158	Approach Cable (DWSM) - Laying of Armoured Fibre Optic cable (supply, splicing and termination shall be in scope of OEM, however the Optical cable shall be laid by ETC contractor.) FOTE and PLCC Equipment - (Testing and commissioning of FOTE/PLCC equipment in scope of FOTE/PLCC supplier; Necessary manpower support for FOTE/PLCC testing, arranging tools and tackles is in scope of ETC contractor)	1000	Meter	18.08	18,078.36
159	FODP, Indoor Type FOTE and PLCC Equipment - (Testing and commissioning of FOTE/PLCC equipment in scope of FOTE/PLCC supplier; Necessary manpower support for FOTE/PLCC testing, arranging tools and tackles is in scope of ETC contractor)	1	Nos.	3,383.76	3,383.76
160	Owner Supplied Digital Protection Coupler Panel (Approx 800mm Wide) {1 Set = 1 No. Panel} FOTE and PLCC Equipment - (Testing and commissioning of FOTE/PLCC equipment in scope of FOTE/PLCC supplier; Necessary manpower support for FOTE/PLCC testing, arranging tools and tackles is in scope of ETC contractor)	6	Set	5,909.49	35,456.93
161	Owner Supplied PLCC Cabinets (Approx 600mm Wide) {1 Set = 1 No. Panel} FOTE and PLCC Equipment - (Testing and commissioning of FOTE/PLCC equipment in scope of FOTE/PLCC supplier; Necessary manpower support for FOTE/PLCC testing, arranging tools and tackles is in scope of ETC contractor)	6	Set	10,531.76	63,190.59
162	Coupling Device/ LMU (to be mounted on CVT structure) FOTE and PLCC Equipment - (Testing and commissioning of FOTE/PLCC equipment in scope of FOTE/PLCC supplier; Necessary manpower support for FOTE/PLCC testing, arranging tools and tackles is in scope of ETC contractor)	6	Set	10,531.76	63,190.59
163	19 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed. Glands shall be quoted separately.	21000	Meter	20.80	4,36,750.86
164	14 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed. Glands shall be quoted separately.	26000	Meter	18.91	4,91,681.84

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
165	<p>10 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	41000	Meter	14.18	5,81,289.80
166	<p>5 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	35000	Meter	13.24	4,63,390.20
167	<p>2 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	5000	Meter	13.24	66,198.60
168	<p>4 C X 10 sq mm PVC/Copper, FRLS, Armoured Control Cables</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	5000	Meter	13.24	66,198.60
169	<p>1C X 630 sq mm XLPE/Aluminium, FRLS, Armoured Auxiliary Power Cable</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	5000	Meter	167.90	8,39,475.00

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Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
170	<p>3.5C X 300 sq mm XLPE/Aluminium, FRLS, Armoured Auxiliary Power Cable</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	2000	Meter	61.79	1,23,570.72
171	<p>3.5C X 150 sq mm XLPE/Aluminium, FRLS, Armoured Auxiliary Power Cable</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	1000	Meter	50.00	50,000.00
172	<p>1C X 150 sq mm XLPE/Aluminium, FRLS, Armoured Auxiliary Power Cable</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	1000	Meter	47.63	47,628.88
173	<p>3.5 C X 70 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	3000	Meter	27.42	82,252.56
174	<p>3.5 C X 35 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	1000	Meter	18.91	18,910.84

Annexure-I

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
175	<p>4 C X 16 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	5000	Meter	13.24	66,198.60
176	<p>4 C X 6 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	1000	Meter	13.24	13,240.00
177	<p>2 C X 6 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	3000	Meter	13.24	39,720.00
178	<p>4Px0.5 sqmm Cu screened control cables</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	1000	Meter	12.00	12,000.00
179	<p>8Px1 sqmm Cu screened control cables</p> <p>Cabling including laying, tagging, dressing, ferruling, glanding, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates - laying can be either on trays, supports, underground, buried in ground or through GI/PVC pipe over/under ground, through wall etc. All erection materials viz. ferrules, copper lugs, cable ties / straps, Al. tags, markers, GI / PVC wall sleeves with rubber / nylon bushes and flexible steel conduits shall be supplied by bidder. Extra holes closing in glands plates with GI sheet shall be in ETC contractor scope. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed.</p> <p>Glands shall be quoted separately.</p>	1000	Meter	15.00	15,000.00
180	<p>Cables over 40mm OD</p> <p>Laying of buried cables as per IS along with supply of trefoil clamps</p>	50	Meter	200.00	10,000.00

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
181	19 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	410	Nos.	307.26	1,25,978.17
182	14 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	490	Nos.	283.63	1,38,979.00
183	10 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	710	Nos.	255.26	1,81,237.70
184	5 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	470	Nos.	189.09	88,870.93
185	2 C X 2.5 sq mm PVC/Copper, FRLS, Armoured Control Cables SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	100	Nos.	189.09	18,908.71
186	4 C X 10 sq mm PVC/Copper, FRLS, Armoured Control Cables SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	100	Nos.	189.09	18,908.71
187	1C X 630 sq mm XLPE/Aluminium, FRLS, Armoured Auxiliary Power Cable SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	45	Nos.	1,930.79	86,885.66
188	3.5C X 300 sq mm XLPE/Aluminium, FRLS, Armoured Auxiliary Power Cable SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	45	Nos.	707.96	31,858.32

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Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
189	3.5C X 150 sq mm XLPE/Aluminium, FRLS, Armoured Auxiliary Power Cable SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	25	Nos.	600.00	15,000.00
190	1C X 150 sq mm XLPE/Aluminium, FRLS, Armoured Auxiliary Power Cable SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	6	Nos.	579.24	3,475.46
191	3.5 C X 70 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	12	Nos.	378.16	4,537.96
192	3.5 C X 35 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	12	Nos.	330.90	3,970.76
193	4 C X 16 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	100	Nos.	283.63	28,363.06
194	4 C X 6 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	18	Nos.	225.00	4,050.00
195	2 C X 6 sq mm PVC/Aluminium, FRLS, Armoured Auxiliary Power Cable SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	30	Nos.	220.00	6,600.00
196	4Px0.5 sqmm Cu screened control cables SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	20	Nos.	239.85	4,797.00

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Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
197	8Px1 sqmm Cu screened control cables SUPPLY OF CABLE GLANDS: Nickel Chrome - Plated brass cable glands, double compression heavy-duty type complete with necessary armour clamp & tapered washer etc for the following cables (Bidder's Scope is to supply only & ETC is covered under cabling items) Individual quantity may vary up to any extent. Technical specifications of Cable glands to be supplied by bidder shall be as per Annexure-E1.	20	Nos.	266.50	5,330.00
198	Cable Rack work includes welding of GI racks on inserts of trench walls in trenches in switchyard and control room. Cable rack assembly will be of 1/2/3/4 tier. Welds area of 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 aluminium paint. The red oxide and zinc chromate shall conform to IS 2074. Note - GI cable rack shall be supplied by BHEL. Cable Trench Material Scope as per Annexure_CTM.	30	MT	25,855.20	7,75,656.00
199	Vertical support of Single Channel (C1) of standard supply length 6.0 m – Bolted Type Cable Trench Material Scope as per Annexure_CTM.	7	Nos.	1,343.16	9,402.12
200	Vertical support of Double Channel (C2) of standard supply 6.0 m - Bolted Type Cable Trench Material Scope as per Annexure_CTM.	12	Nos.	2,014.74	24,176.88
201	Horizontal support of cantilever arm CA1 each with 2 nos. 12 mm dia (M12) bolts with spring nuts and washers as well as 2 nos. 6 mm dia (M6) pan head screws with long spring nuts and washers for fixing on vertical support single/double (C1/C2) suitable for ladder type cable tray 600 mm wide – Bolted Type. Cable Trench Material Scope as per Annexure_CTM.	220	Nos.	223.86	49,249.20
202	Ladder type cable tray 600 mm wide, 100 mm high, 2 mm thick (min.) galvanised iron slotted rung 2.5 m long each with 2 Nos. coupler plate, 3 mm thick (min.) along with 8 mm dia (M8) bolts with nuts and washers for coupling two trays – Bolted Type Cable Trench Material Scope as per Annexure_CTM.	546	Nos.	100.47	54,856.89
203	Ladder type cable tray 150 mm wide, 100 mm high, 2 mm thick (min.) galvanised iron slotted rung 2.5 m long each with 2 Nos. coupler plate, 3 mm thick (min.) along with 8 mm dia (M8) bolts with nuts and washers for coupling two trays – Bolted Type Cable Trench Material Scope as per Annexure_CTM.	60	Nos.	75.40	4,524.00
204	Horizontal TEE For Ladder type cable tray 2.5 m long, 600 mm wide, 100 mm high, 2 mm thick, having slotted rung - Bolted Type Cable Trench Material Scope as per Annexure_CTM.	32	Nos.	100.00	3,200.00
205	Horizontal TEE For Ladder type cable tray 2.5 m long, 150 mm wide, 100 mm high, 2 mm thick, having slotted rung - Bolted Type Cable Trench Material Scope as per Annexure_CTM.	22	Nos.	75.00	1,650.00
206	Horizontal Elbow(90 deg Bend) for Ladder type cable tray 2.5 m long, 600 mm wide, 100 mm high, 2 mm thick, having slotted rung – Bolted Type Cable Trench Material Scope as per Annexure_CTM.	24	Nos.	100.00	2,400.00
207	Vertical Elbow(90 deg Bend) for Ladder type cable tray 2.5 m long, 600 mm wide, 100 mm high, 2 mm thick, having slotted rung - Bolted Type Cable Trench Material Scope as per Annexure_CTM.	40	Nos.	100.00	4,000.00
208	Left Hand Reducer for Ladder type cable tray 600 mm wide To 150 mm Wide, 100 mm high, 2 mm thick, having slotted rung - Bolted Type Cable Trench Material Scope as per Annexure_CTM.	22	Nos.	100.00	2,200.00

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Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
209	Right Hand Reducer for Ladder type cable tray 600 mm wide To 150 mm Wide, 100 mm high, 2 mm thick, having slotted rung - Bolted Type Cable Trench Material Scope as per Annexure_CTM.	22	Nos.	100.00	2,200.00
210	Supply and Installation of Fire & Water proof sealing / fire stop system / fire protection coating system required to prevent spreading of fire from one place to other place (or one zone to other zone) through the openings in wall / floor, cables laid in trays /racks and openings below Electrical Switchgear / MCC / Distribution boards /Cabinets / Panels, etc. using suitable block system using individual blocks with suitable framework or by silicon RTV foaming system.	250	Sq.m	2,416.66	6,04,166.16
211	Galvanised steel Lattice Structures including hardwares for Towers, beams & equipment support - In Switchyard Area	250	MT	4,254.43	10,63,606.83
212	Galvanised steel Lattice Structures including hardwares for beams - On Air Cooled Condenser Columns (ACC) (Insert Plates Provision in Concrete Columns Shall Be Provided For Installation of Beam on ACC concrete column) at 25.0 m Height.	250	MT	4,467.15	11,16,787.17
213	Galvanised steel Pipe Structures including hardwares for equipment support	100	MT	3,592.63	3,59,263.32
214	Supply and Installation of Panel Supporting Angles / Channel / Chequered Plates etc. Structural Steel Work welded in built up sections like angles, channels & framed work etc including providing cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete	5	MT	68,070.82	3,40,354.08
215	75 x 12 mm GI Flat Earthing material- The earthing includes earthing (as per approved earthing drgs and customer specification) of all switchyard equipment, towers, pipe structure, cable trenches, fence, pipe electrode , Control room equipments using necessary connectors for earthing flats. Earthing clamping shall be carried out by ETC contractor. GS strip including cutting, bending, welding with 40 mm dia MS rod riser/earth strip, applying zinc rich paint, clamping to structure/building wall etc. to complete. Hardware required for connecting flat on pads of structure & equipment included in scope. The Earthing of equipments, Auxiliary Earthmats under Iso/ ES/ CB MOM boxes shall be carried out as per equipment earthing drg	9000	m	67.13	6,04,128.42
216	50 x 6 mm GI Flat Earthing material- The earthing includes earthing (as per approved earthing drgs and customer specification) of all switchyard equipment, towers, pipe structure, cable trenches, fence, pipe electrode , Control room equipments using necessary connectors for earthing flats. Earthing clamping shall be carried out by ETC contractor. GS strip including cutting, bending, welding with 40 mm dia MS rod riser/earth strip, applying zinc rich paint, clamping to structure/building wall etc. to complete. Hardware required for connecting flat on pads of structure & equipment included in scope. The Earthing of equipments, Auxiliary Earthmats under Iso/ ES/ CB MOM boxes shall be carried out as per equipment earthing drg	3500	m	52.94	1,85,303.88
217	40 mm Dia MS Rod Earthing material- The earthing includes earthing (as per approved earthing drgs and customer specification) of all switchyard equipment, towers, pipe structure, cable trenches, fence, pipe electrode , Control room equipments using necessary connectors for earthing flats. Earthing clamping shall be carried out by ETC contractor. GS strip including cutting, bending, welding with 40 mm dia MS rod riser/earth strip, applying zinc rich paint, clamping to structure/building wall etc. to complete. Hardware required for connecting flat on pads of structure & equipment included in scope. The Earthing of equipments, Auxiliary Earthmats under Iso/ ES/ CB MOM boxes shall be carried out as per equipment earthing drg	1	MT	11,628.77	11,628.77

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Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
218	Pipe Electrode - 3 m long Earthing material- The earthing includes earthing (as per approved earthing drgs and customer specification) of all switchyard equipment, towers, pipe structure, cable trenches, fence, pipe electrode , Control room equipments using necessary connectors for earthing flats. Earthing clamping shall be carried out by ETC contractor. GS strip including cutting, bending, welding with 40 mm dia MS rod riser/earth strip, applying zinc rich paint, clamping to structure/building wall etc. to complete. Hardware required for connecting flat on pads of structure & equipment included in scope. The Earthing of equipments, Auxiliary Earthmats under Iso/ ES/ CB MOM boxes shall be carried out as per equipment earthing drg	10	Nos.	7,657.97	76,579.73
219	420 KV GIS Mandatory Spares (ref. S1) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	34,362.51	34,362.51
220	420 KV GIS Mandatory Maintenance Equipment (ref. S2) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	11,193.00	11,193.00
221	420 KV GIS Mandatory Monitoring Equipments (ref. S3) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	10,500.00	10,500.00
222	420 KV GIS Tools and Tackles (ref. S4) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	10,500.00	10,500.00
223	420kV, 125MVar , 3-Ph, Bus Reactor (ref. S5) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	10,000.00	10,000.00
224	LT SWITCHGEAR/MCCs/DISTRIBUTION BOARDS (ref. S6) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	5,596.50	5,596.50
225	LT TRANSFORMERS (ref. S7) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	5,596.50	5,596.50
226	Clamps and Connectors & String Insulators and Hardware (ref. S8) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	5,000.00	5,000.00
227	BATTERY (ref. S9) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	2,350.53	2,350.53
228	BATTERY CHARGERS (ref. S10) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	3,357.90	3,357.90
229	TEST EQUIPMENTS (ref. S11) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	8,954.40	8,954.40

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Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
230	336 kV, 1 Phase Surge Arrester (ref. S12) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	1,119.30	1,119.30
231	420kV, 1 Phase CVT (ref. S13) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	2,000.00	2,000.00
232	Lighting(Illumination) System Spares (ref. S14) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	10,000.00	10,000.00
233	FOTE Equipment (ref. S15) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	5,000.00	5,000.00
234	Control / Relay / SAS Panel Spare including relays (ref. S16) Unloading, storage & handing over of Essential/ Mandatory spares to Customer as per ANNEXURE: SPARE_LIST. The spare list is provisional and minor changes may occur during detailed engineering stage.	1	Lot	5,596.50	5,596.50
235	400 KV GT Installing terminal connector wherever equipment installation is not in scope of contractor. Connectors shall be provided by BHEL. Any other ETC work related to items below is not in the scope of this BOQ.	9	Nos.	1,737.00	15,633.00
236	400 KV ST Installing terminal connector wherever equipment installation is not in scope of contractor. Connectors shall be provided by BHEL. Any other ETC work related to items below is not in the scope of this BOQ.	9	Nos.	1,737.00	15,633.00
237	Supply & ETC of NTPC/BHEL approved make 2.0 HP Automatic Start/ Stop type Centrifugal pump and accessories for sump pit	1	Nos.	12,083.32	12,083.32
238	Supply & ETC of NTPC/BHEL approved make 1.0 HP Automatic Start/ Stop type Centrifugal pump and accessories for sump pit	1	Nos.	11,193.00	11,193.00
239	Supply & ETC of NTPC/BHEL approved make 0.5 HP Automatic Start/ Stop type Centrifugal pump and accessories for sump pit	1	Nos.	7,249.99	7,249.99
240	Supply & Mounting of Phase Color Discs, Danger Plate and Identification Plates for bays & Equipments as per IS:2551; 1982 & IS:5; 1978.	1	Lot	1,20,833.25	1,20,833.25
241	Equipment Fixing Hardware - Full Threaded bolts with nut and two Plane Washer and one Spring Washer (Supply of equipment fixing hardware as per specification TB-XXX-618-002a).	150	kg	89.54	13,431.60

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Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
242	INSULATION MAT: The scope covers supply and laying of insulating mats conforming to International standards. These insulating mats shall be laid in front of all floor mounted AC and DC switchboards and control & relay panels located in control room building/ Switchyard panel room / GIS LCC Panel e.t.c.refer scope note for details	100	Sq.m	1,454.39	1,45,438.64
243	Making Cut out in the floor of control room, work includes cutting RCC & finishing	10	Sq.m	607.60	6,075.97
244	Supply of required size (M12/M16/M20 upto 150mm long) of Anchor Fastener /Bolts and fixing in Concrete/wall/ceiling wherever required.	25	kg	129.28	3,231.90
245	Watch & ward of stored / erected / commissioned material at storage area, project site, erection area or any other locations as per material safety requirement and instruction of site in-charge complete in all aspect. (round the clock security by authorized service agency consisting of armed guard).	18	Month	50,368.50	9,06,633.00
246	10 Ton Double Girder EOT Crane (Girder, motor assembly, panel, cable, square bar rail, etc.) - Receipt of material, unloading, safe storage of all material/components of EOT crane and handling from storage point to GIS Hall	1	Set	15,000.00	15,000.00
247	Lighting Panels (NLP/ELP/DCLP) - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	8	Nos.	4,280.00	34,240.00
248	Lighting Fixtures: Recessed mounted LED type fixture (2" x 2") - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	120	Nos.	374.50	44,940.00
249	Lighting Fixtures: Industrial type LED type lighting fixture with 2x22W LED tube Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	54	Nos.	374.50	20,223.00
250	Lighting Fixtures: Corrosion proof LED type lighting fixtures - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	6	Nos.	374.50	2,247.00
251	Lighting Fixtures: LED type High Bay light fixtures - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	20	Nos.	500.00	10,000.00
252	Lighting Fixtures: LED type flood light fixture - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	125	Nos.	1,284.00	1,60,500.00
253	Lighting Fixtures: LED type street light fixture - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	40	Nos.	535.00	21,400.00
254	Lighting Fixtures: DC type Lighting Fixtures - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	40	Nos.	375.00	15,000.00

Annexure-I

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
255	Lighting Fixtures: Portable type lighting fixtures - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	4	Nos.	375.00	1,500.00
256	Fans - All Types - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	25	Nos.	374.50	9,362.50
257	Receptacles: Decorative type, Single phase - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	12	Nos.	481.50	5,778.00
258	Receptacles: Single phase Industrial type - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	20	Nos.	802.50	16,050.00
259	Receptacles: Three phase Industrial type - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	4	Nos.	4,280.00	17,120.00
260	Switchboards All Types - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	100	Nos.	1,000.00	1,00,000.00
261	ExitSign/ OccupancySensor - Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	10	Nos.	500.00	5,000.00
262	ETC of Lighting Pole (Hot dip galvanized) - including street light junction box, including Point Wiring (included conduits, wires, accessories etc.)complete in all respect excluding civil foundation. Illumination System as per Annexure_Illumination.	40	Nos.	1,000.00	40,000.00
263	Earthing Materials: GI Earthing Flat sizes from sizes less 50X6mm as per technical requirement. Illumination System as per Annexure_Illumination.	50	kg	80.00	4,000.00
264	Earthing Materials: GI wire for Earthing of size 8 SWG to 16 SWG as per technical requirement. Illumination System as per Annexure_Illumination.	200	kg	80.00	16,000.00
265	Earthing Materials: Copper braided wire for Earthing (if required, size to be derived during engineering) Illumination System as per Annexure_Illumination.	50	kg	80.00	4,000.00
266	Earthing Materials: Aluminum Flat - Aluminum flat (If required size to be derived during engineering) Illumination System as per Annexure_Illumination.	50	kg	80.00	4,000.00
267	ETC of LIGHTING MAST (Hot dip galvanized) - 30m high mast with lantern carriage (double drum winch type) including junction box. Including Junction Box complete in all respect, excluding civil foundation. Including Point Wiring (included conduits, wires, accessories etc.) Illumination System as per Annexure_Illumination.	6	Nos.	40,000.00	2,40,000.00
268	Construction Civil Foundation for Illumination system i.e. Lighting Panels / Pole etc, M25 Cement Concrete, ratio (NTPC approved) complete in all respect including excavation / backfilling / compaction / Supply of construction material etc. complete. Civil foundation for high mast is not in bidders scope. Illumination System as per Annexure_Illumination.	50	Cum	8,000.00	4,00,000.00
269	Cutting and Modification - Structural Plates Structure Modification - All tools and tackles required for GI structure, any other steel structure modification, Aluminium Items etc. shall be in the scope of bidder. Cutting , drilling, punching, minor civil works also included in the scope. Minor welding and application of protective / zinc rich paint on welded surface is also included in the scope.	50	kg	20.69	1,034.30

Annexure-I

Bill Of Quantity Cum Price Schedule

Name of Project:- 400kV GIS Switchyard at 3 X 800 MW Patratu TPP in Jharkhand

Name of work:- Erection, testing, commissioning and handing over of 400kV GIS Switchyard

SR NO	Description of Item	Quantity	UOM	Unit Rate (Rs.)	Amount (Rs.)
270	Modification of Hole Sizes in Structures Structure Modification - All tools and tackles required for GI structure, any other steel structure modification, Aluminium Items etc. shall be in the scope of bidder. Cutting , drilling, punching, minor civil works also included in the scope. Minor welding and application of protective / zinc rich paint on welded surface is also included in the scope.	20	Nos.	49.66	993.20
271	Drilling of Additional Holes in Structures Structure Modification - All tools and tackles required for GI structure, any other steel structure modification, Aluminium Items etc. shall be in the scope of bidder. Cutting , drilling, punching, minor civil works also included in the scope. Minor welding and application of protective / zinc rich paint on welded surface is also included in the scope.	20	Nos.	49.66	993.20
Total Amount in Rs. - (excluding GST)					282,33,414.45

Note:- The following scopes are the part of this BOQ**For Standard scope note :- Refer the attachement "ETC-BOQ/GIS/NOTE-1" alongwith tender document.****For Project Specific Scope Note :- Refer the attachment "ETC-BOQ/GIS/NOTE-2" alongwith tender Documents**

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 SWITCHYARD AT 3 X 800 MW PATRATU TPP IN JHARKHAND

TENDER SPEC. NO.:- TBSM/PATRATU /ETC/TENDER /19-20

DATE 14.01.2020

(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 SWITCHYARD AT 3 X 800 MW PATRATU TPP IN JHARKHAND.

SI No.	Description	Amount (Rs.)
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 Switchyard at 3 X 800 MW Patratu TPP in Jharkhand" (Annexure-I)	282,33,414.45
2	Value of percentage above/below/at par (As indicated in Price Schedule Format, Annexure-II) applicable to the total amount of ETC work (at Sl. no. 1 above)% above/below/ at par
3	Total amount after consideration of percentage above/below/ at par.	