

**Name of the Work:** Receipt of equipment/ material at site, unloading, reconciliation, inspection, verification, storage, up-keeping during storage, erection, testing, commissioning and handing over of additional scope of ICT#2 and associated 400 KV & 220 KV bays at existing 400/220 KV Switchyard at North Karanpura STPP in Chatra District in Jharkhand

**Tender Spec. No.:** TBSM/NTPC/NORTH KARANPURA/ETC/TENDER/22-23, Date: 14.07.2022

**Customer :** M/s NTPC Limited -

SR_NO	Description_of_Item	Quantity	UOM	Unit Rate (Rs.)	Total Amount (Rs.)
1	<p><b>315 MVA, 400/220/33 KV, 3-phase Auto Transformer (ICT)</b> complete in all respect alongwith its MB Box, Radiator Bank and its cooling arrangement, Conservator, Cooler Control Cabinet/Marshalling Kiosk, accessories and insulating oil. Installation of CMS &amp; online DGA (if applicable) is also included in scope of work. 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 Transformer (Supervision of unloading, Erection, Testing and commissioning will be done by OEM).</p> <p>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. 7 below. Unloading of Transformer tank main body is excluded in this scope, the same is covered under a sepearte line item below.</p>	1	Nos	8,70,469.74	8,70,469.74
2	315 MVA, 400/220/33 KV, 3-phase Auto Transformer (ICT) - Unloading of Transformer Tank (main body)	1	Nos	1,31,250.00	1,31,250.00
3	315 MVA, 400/220/33 KV, 3-phase Auto Transformer (ICT) - Dragging/shifting charges of above mentioned transformer (1 No.) on ground, upto rail cum road / jacking pad	15	m	3,404.72	51,070.80
4	315 MVA, 400/220/33 KV, 3-phase Auto Transformer (ICT) - Dragging / shifting charges of above mentioned transformer (1 No.) on rail cum road upto plinth	45	m	3,404.72	1,53,212.40
5	315 MVA, 400/220/33 KV, 3-phase Auto Transformer (ICT) - Complete dryout of Transformer by N2 filling/ vaccuming/ purging and heating (if required) as per BHEL procedure (Annexure-F). Complete in all respect excluding supply N2 gas.	1	Lot	92,670.38	92,670.38
6	315 MVA, 400/220/33 KV, 3-phase Auto Transformer (ICT) - 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.	2,934.84	2,34,787.20
7	Oil Testing (BDV, PPM, Resistivity & Tan delta etc for transformer insulating oil supplied in drums (as applicable) . 1 set equals to one number of successful oil sample test.	10	No. of Samples	9,430.34	94,303.40
8	Charges for repetition of oil filtration - (if required due to reasons not attributed to the bidder) This item is executed only if repetition of transformer oil filtration is required by BHEL. Scope includes successful repetition of oil filtration complete in all respect excluding oil testing ( oil testing is covered in BOQ item Sr. No. 7).	1	kl	2,239.71	2,239.71
9	<b>400kV, 3-Phase SF6 Circuit Breaker without PIR and without CSD</b> alongwith lattice type GS supporting structure, terminal connectors, Breaker Control Cabinets, ladder and interpole cabling. (Supervision of Erection, Testing and commissioning will be done by supplier. Supplier will bring Timing kit and Gas leak detector only. Necessary manpower support, tools, tackles and testing kit to be in scope of ETC contractor).	2	Nos	62,805.32	1,25,610.64
10	<b>220kV, 3-Phase SF6 Circuit Breaker without PIR and without CSD</b> alongwith lattice type GS supporting structure, terminal connectors, Breaker Control Cabinets, ladder and interpole cabling. (Supervision of Erection, Testing and commissioning will be done by supplier. Supplier will bring Timing kit and Gas leak detector only. Necessary manpower support, tools, tackles and testing kit to be in scope of ETC contractor).	1	Nos	33,849.45	33,849.45
11	<b>400kV, 3-Phase, Horizontal Centre Break Isolator (motor/ manual operated) with one earth switch</b> (motor/ manual operated) complete with 6 nos. of support insulators & terminal connectors without support structure	6	Nos	31,402.66	1,88,415.96
12	<b>220kV, 3-Phase, Horizontal Centre Break Isolator (motor/ manual operated) with one earth switch</b> (motor/ manual operated) complete with 6 nos. of support insulators & terminal connectors without support structure	1	Nos	22,916.79	22,916.79
13	<b>220kV, 3-Phase, Horizontal Centre Break Isolator(motor/ manual operated) with two earth switch</b> (motor/ manual operated) complete with 6 nos. of support insulators & terminal connectors without support structure	1	Nos	22,916.79	22,916.79
14	<b>220kV, 3-Phase, TANDEM TYPE Horizontal Centre Break Isolator (motor/ manual operated) without earth switch</b> (motor/ manual operated) complete with 6 nos. of support insulators & terminal connectors without support structure	2	Nos	22,916.79	45,833.58



SR_NO	Description_of_Item	Quantity	UOM	Unit Rate (Rs.)	Total Amount (Rs.)
15	400kV, 1 Ph, 3000A, Oil-filled Current Transformer, live/dead tank complete with terminal connectors without support structure	6	Nos	10,990.91	65,945.46
16	220kV, 1 Ph, 1600A, Oil-filled Current Transformer, live/dead tank complete with terminal connectors without support structure	3	Nos	8,228.01	24,684.03
17	400kV, 1 Ph, Voltage Transformer (Capacitive) complete with terminal connectors without support structure	3	Nos	10,990.91	32,972.73
18	220kV, 1 Ph, Voltage Transformer (Capacitive) complete with terminal connectors without support structure	6	Nos	7,669.86	46,019.16
19	336kV, 1 Phase, Gapless type Metal Oxide Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable and terminal connectors without support structure	3	Nos	3,923.44	11,770.32
20	216kV, 1 Phase, Gapless type Metal Oxide Surge Arrester complete with surge counter, leakage current meter, insulating base, connecting cable and terminal connectors without support structure	3	Nos	3,217.17	9,651.51
21	400kV, 1 Ph, Post insulators with corona ring complete with terminal connectors without support structure	12	Nos	2,016.38	24,196.56
22	220kV, 1 Ph, Post insulators with corona ring (if applicable) complete with terminal connectors without support structure - Low level (upto 6m high from plinth)	23	Nos	1,544.24	35,517.52
23	220kV, 1 Ph, Post insulators with corona ring (if applicable) complete with terminal connectors without support structure - High level (above 6m & upto 8m high from plinth)	3	Nos	2,316.37	6,949.11
24	400kV Double Tension insulator string with double/single anchoring point, long rod polymer type insulator string with hardware set with all accessories including tension clamp with/ without Turn Buckle set suitable for twin/ quad moose conductor	18	Nos	2,771.20	49,881.60
25	400kV Single Suspension long rod polymer type insulator string with hardware set with all accessories including drop/through type suspension clamp suitable for twin/ quad moose conductor	6	Nos	2,494.08	14,964.48
26	220kV Double Tension insulator string with double/single anchoring point, long rod polymer type insulator string with hardware set with all accessories including tension clamp with/ without Turn Buckle set suitable for twin/ quad moose conductor	6	Nos	2,355.52	14,133.12
27	220kV Single Suspension long rod polymer type insulator string with hardware set with all accessories including drop/through type suspension clamp suitable for single/ twin/ quad moose conductor	6	Nos	2,078.40	12,470.40
28	Conductor complete with Tee/ PG connectors for droppers to equipment connections, PG clamps for busbar jumpering, Twin/Quad bundle rigid/flexible spacers etc to complete	3.6	kM	72,408.17	2,60,669.41
29	4.0" Al Tube (ETC of Al.Tube includes Aluminium welding and bending to be included. Welding sleeve and tube will be supplied by BHEL)	500	m	366.50	1,83,250.00
30	7/9 SWG GI Stranded Shield wire including tension clamp, PG clamp and clamping on structure for down conductor, fixing/bolting with earth strip etc to complete	1000	m	56.31	56,310.00
31	Cabling of 19C x 2.5 sq mm Copper cable including laying, tagging, dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer /field approval shall be followed. Supply rates of Glands shall be quoted separately.	1.2	kM	22,833.95	27,400.74
32	Cabling of 14C x 2.5 sq mm Copper cable including laying, tagging, dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer /field approval shall be followed. Supply rates of Glands shall be quoted separately.	1.5	kM	20,762.39	31,143.59



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33	Cabling of 10C x 2.5 sq mm Copper cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-D for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer /field approval shall be followed. Supply rates of Glands shall be quoted separately.	4.8	kM	15,565.94	74,716.51
34	Cabling of 5C x 2.5 sq mm Copper cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-D for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer /field approval shall be followed. Supply rates of Glands shall be quoted separately.	6.5	kM	14,536.01	94,484.07
35	Cabling of 4C x 10 sq mm Copper cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-D for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer /field approval shall be followed. Supply rates of Glands shall be quoted separately.	0.8	kM	16,180.82	12,944.66
36	Cabling of 2C x 2.5 sq mm Copper cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable details and its laying. Technical specification of cable tagging intervals, and lugs as per Customer /field approval shall be followed. Supply rates of Glands shall be quoted separately.	0.2	kM	14,536.01	2,907.20
37	Cabling of 2C x 6 sq mm Aluminium cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer /field approval shall be follow. Supply rates of Glands shall be quoted separately.	0.5	kM	14,936.14	7,468.07
38	Cabling of 4C x 6 sq mm Aluminium cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed. Supply rates of Glands shall be quoted separately.	1	kM	16,180.82	16,180.82
39	Cabling of 4C x 16 sq mm Aluminium cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed. Supply rates of Glands shall be quoted separately.	0.5	kM	17,425.50	8,712.75



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40	Cabling of 3.5C x 70 sq mm Aluminium cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable details and its laying. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed Supply rates of Glands shall be quoted separately.	2.5	kM	30,101.94	75,254.85
41	Cabling of 3.5C x 150 sq mm Aluminium cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable details and its laying. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed Supply rates of Glands shall be quoted separately.	0.1	kM	58,659.44	5,865.94
42	Cabling of 3.5C x 300 sq mm Aluminium cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable details and its laying. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed Supply rates of Glands shall be quoted separately.	0.5	kM	67,834.71	33,917.36
43	Cabling of 1C x 630 sq mm Aluminium cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer/ field approval shall be followed Supply rates of Glands shall be quoted separately.	0.1	kM	1,84,333.45	18,433.35
44	Cabling of 4P x 0.5 sq mm Copper Screened cable including laying, tagging , dressing, ferruling, lugging, soldering, tapping, jointing, crimping, termination, and drilling/ cutting holes in cable gland plates, ETC of glands - laying can be either on trays, supports, underground (buried in ground or through GI/PVC pipe), over 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. Refer Annexure-B for cable laying details. Technical specification of cable tagging intervals, and lugs as per Customer /field approval shall be followed. Supply rates of Glands shall be quoted separately under item no. 58.	0.5	kM	15,732.18	7,866.09
45	Supply of Cable Gland for 19C x 2.5 sq mm Copper cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from customer approved Vendors)	50	Nos	337.07	16,853.50
46	Supply of Cable Gland for 14C x 2.5 sq mm Copper cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	20	Nos	311.32	6,226.40



SR_NO	Description_of_Item	Quantity	UOM	Unit Rate (Rs.)	Total Amount (Rs.)
47	Supply of Cable Gland for 10C x 2.5 sq mm Copper cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	130	Nos	280.25	36,432.50
48	Supply of Cable Gland for 5C x 2.5 sq mm Copper cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	100	Nos	207.60	20,760.00
49	Supply of Cable Gland for 4C x 10 sq mm Copper cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	20	Nos	248.94	4,978.80
50	Supply of Cable Gland for 2C x 2.5 sq mm Copper cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	16	Nos	207.60	3,321.60
51	Supply of Cable Gland for 2C x 6 sq mm Aluminium cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	36	Nos	228.85	8,238.60
52	Supply of Cable Gland for 4C x 6 sq mm Aluminium cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	80	Nos	314.67	25,173.60
53	Supply of Cable Gland for 4C x 16 sq mm Aluminium cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	20	Nos	314.67	6,293.40



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54	Supply of Cable Gland for 3.5C x 70 sq mm Aluminium cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	20	Nos	415.19	8,303.80
55	Supply of Cable Gland for 3.5C x 150 sq mm Aluminium cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	4	Nos	703.87	2,815.48
56	Supply of Cable Gland for 3.5C x 300 sq mm Aluminium cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	6	Nos	826.63	4,959.78
57	Supply of Cable Gland for 1C x 630 sq mm Aluminium cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	4	Nos	2,254.42	9,017.68
58	Supply of Cable Gland for 4P x 0.5 sq mm Copper Screened cable: The cable glands shall conform to BIS 6121. They shall comprise of heavy duty brass casting, machine finished, double compression type and Nickel plated (coating thickness not less than 10 microns) to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and of tested quality. The cable gland shall be complete with necessary armour clamp & tapered washer etc. Cable glands are required for the following cables for dust and weather proof terminations. (Bidder's Scope is to supply only & ETC is covered under respective cable ETC ). The quantity shown herewith is indicative only and shall change to any extend as per Site requirement. (Cable glands to be procured from Customer approved Vendors)	12	Nos	314.45	3,773.40
59	Laying of 150-750 mm wide, 2.5 M long , 2 mm thick GI Ladder type Cable trays: including bends, tees, elbow, reducers, stiffeners coupler plates, bolting to racks, structure etc. to complete. Minor modification work by cutting welding wherever required shall also be part of work.	10	Nos	102.34	1,023.40
60	Laying of 100-750 mm wide, 2.5 M long , 2 mm thick GI Perforated type Cable trays: including bends, tees, elbow, reducers, stiffeners coupler plates, bolting to racks, structure etc. to complete. Minor modification work by cutting welding wherever required shall also be part of work.	5	Nos	126.41	632.05
61	<b>Cable Rack</b> work for BOLTED TYPE steel racks for trenches in switchyard and control room as per Cable Trench Layout drgs. nos. 4410-001-572-PVC-F-0045A & ICT-2 scope Trench layout drawing. Cable rack assembly will be of 3 tier. (Bolted type Cable Rack/Tray material shall be free issued by BHEL)	800	Nos	186.70	1,49,360.00
62	<b>Cable Rack</b> work for BOLTED TYPE steel racks for trenches in switchyard and control room as per Cable Trench Layout drgs. nos. 4410-001-572-PVC-F-0045A & ICT-2 scope Trench layout drawing. Cable rack assembly will be of 1/2 tier. (Bolted type Cable Rack/Tray material shall be free issued by BHEL)	300	Nos	186.70	56,010.00
63	Supply of 50 NB GI pipes (Medium grade as per IS 1239, Customer accepted) alongwith accessories like sockets, bends, tees etc.	400	m	507.83	2,03,132.00
64	Supply of 100 NB GI pipes (Medium grade as per IS 1239, Customer accepted) alongwith accessories like sockets, bends, tees etc.	550	m	1,241.19	6,82,654.50
65	Laying of 50 NB GI 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)	400	m	86.50	34,600.00



SR_NO	Description_of_Item	Quantity	UOM	Unit Rate (Rs.)	Total Amount (Rs.)
66	Laying of 100 NB NB GI 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)	550	m	103.34	56,837.00
67	Laying of 50 NB GI pipes alongwith all accessories like socket, bend and joint on trench rack support, cutting, threading, fixing of clamps sockets/ bends/joints etc as required. Supply of required clamp for fixing GI pipe conduits on Cable rack/tray/trench wall shall be in ETC contractor scope. (Payment will be made for the as erected pipe length)	100	m	86.50	8,650.00
68	Laying of 100 NB GI pipes alongwith all accessories like socket, bend and joint on trench rack support, cutting, threading, fixing of clamps sockets/ bends/joints etc as required. Supply of required clamp for fixing GI pipe conduits on Cable rack/tray/trench wall shall be in ETC contractor scope. (Payment will be made for the as erected pipe length)	50	m	103.34	5,167.00
69	Fixing of 100NB GI Pipes on Lattice/ Pipe Stucture 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)	50	m	103.34	5,167.00
70	Fixing of 50NB GI Pipes on Lattice/ Pipe Stucture 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)	50	m	86.50	4,325.00
71	Earthing works with 75 X 12 mm GI FLAT- works earthing of all switchyard equipments, towers, lattice/pipe structure, cable trenches, fence, electrodes for neutral of LT transformer/ Reactor & at interconnections of other grid, Control Room equipment using necessary Connectors for earthing flats. 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 4410-001-572-PVE-F-0038 and Customer Specification for Earthing	2.2	km	1,68,952.40	3,71,695.28
72	Earthing works with 50 X 6 mm GI FLAT- works earthing of all switchyard equipments, towers, lattice/pipe structure, cable trenches, fence, electrodes for neutral of LT transformer/ Reactor & at interconnections of other grid, Control Room equipment using necessary Connectors for earthing flats. 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 4410-001-572-PVE-F-0038 and Customer Specification for Earthing	0.8	km	1,44,816.34	1,15,853.07
73	Earthing works with 40mm dia MS Rod (for equipment risers,if required)- works including cutting, bending, welding with 40 mm dia MS rod riser, bolting/ clamping to structure, <b>Painting</b> etc to complete. Equipment's to be earthed includes all switchyard equipments, towers, lattice/pipe structure, cable trenches, fence, electrodes for neutral of LT transformer/Reactor, Control Room equipments using necessary Connectors for earthing flats. Earthing work to be done as per Doc no. 4410-001-572-PVE-F-0038 for equipments earthing and Customer Specification for Earthing. (Scope of work also includes cutting of Existing Main mat (already laid at 600mm below ground level), welding/ connecting to new risers. Digging of trenches for accessing the existing Earth Mat & relavelling with soil is also included in scope of bidder.) Supply of MS rod is not in bidder's scope.	0.5	MT	22,385.84	11,192.92
74	Galvanised steel Lattice Structures including hardware for Towers, beams, LM & equipments support	55	MT	5,044.43	2,77,443.65
75	Galvanised steel Pipe Structures including hardware for equipments support	32	MT	4,259.75	1,36,312.00
76	<b>Supply</b> of Equipment fixing hardware including nut, bolt and plain /spring washer as per Site requirement ( <b>Bidder's scope is to supply only. Erection is covered under erection of individual equipment</b> ) Technical specifications of Hardware to be supplied by bidder shall be as per Annexure-E2. Note - Size of hardware shall be suitable for equipments /box/JB, and same shall be decided at site.	50	kg	101.12	5,056.00
77	<b>400kV side ICT-2 Protection Panel ( 1 set = 2 Panel)</b> . The scope of work includes erection, testing & commissioning of Control Relay Panel/ SAS Panel, however, supervision of testing and commissioning of relays is in scope of OEM/ BHEL. Arranging necessary manpower support, tools, tackles and testing equipment required shall be in scope of ETC contractor. Please refer notes and relevant technical specification for additional details. Numerical relay test kit shall be in scope of OEM/BHEL.	1	Set	13,442.53	13,442.53
78	<b>400kV Tie Protection Panel ( 1 set = 1 Panel)</b> . The scope of work includes erection, testing & commissioning of Control Relay Panel/ SAS Panel, however, supervision of testing and commissioning of relays is in scope of OEM/ BHEL. Arranging necessary manpower support, tools, tackles and testing equipment required shall be in scope of ETC contractor. Please refer notes and relevant technical specification for additional details. Numerical relay test kit shall be in scope of OEM/BHEL.	1	Set	6,721.26	6,721.26



SR_NO	Description_of_Item	Quantity	UOM	Unit Rate (Rs.)	Total Amount (Rs.)
79	<b>400kV ICT-2 Tie Control (BCP) Panel ( 1 set = 1 Panel).</b> The scope of work includes erection, testing & commissioning of Control Relay Panels & SAS Panels, however, supervision of testing and commissioning of relays is in scope of OEM/ BHEL. Arranging necessary manpower support, tools, tackles and testing equipment required shall be in scope of ETC contractor. Please refer notes and relevant technical specification for additional details. Numerical relay test kit shall be in scope of OEM/BHEL.	1	Set	6,721.26	6,721.26
80	<b>220kV side ICT-2 Protection Panel ( 1 set =1 Panel).</b> The scope of work includes erection, testing & commissioning of Control Relay Panel/ SAS Panel, however, supervision of testing and commissioning of relays is in scope of OEM/ BHEL. Arranging necessary manpower support, tools, tackles and testing equipment required shall be in scope of ETC contractor. Please refer notes and relevant technical specification for additional details. Numerical relay test kit shall be in scope of OEM/BHEL.	1	Set	6,721.26	6,721.26
81	<b>220kV side ICT-2 Control (BCP) Panel ( 1 set = 1 Panel).</b> The scope of work includes erection, testing & commissioning of Control Relay Panels & SAS Panels, however, supervision of testing and commissioning of relays is in scope of OEM/ BHEL. Arranging necessary manpower support, tools, tackles and testing equipment required shall be in scope of ETC contractor. Please refer notes and relevant technical specification for additional details. Numerical relay test kit shall be in scope of OEM/BHEL.	1	Set	6,721.26	6,721.26
82	CT Junction Box (outdoor, floor mounted on cable trench)	3	Nos	2,412.93	7,238.79
83	CVT Junction Box (outdoor, floor mounted on cable trench)	3	Nos	2,412.93	7,238.79
84	Marshalling Kiosk (outdoor, floor mounted on cable trench)	1	Nos	3,734.04	3,734.04
85	Fire cum water barrier for cable penetration in walls as per as per NTPC specification (Annexure-D)/ BS – 476 part – 20, type A sealing system which would be either silicone foam or equivalent foam system or using individual blocks for each cable along with individual blocks for each cable along with suitable frame work rated for one hour. The work includes supply & ETC of the material.	15	Sq.m	2,418.41	36,276.15
86	Fire cum water barrier for cable penetration in floors as per as per NTPC Specification (Annexure-D)/ BS – 476 part – 20, type A sealing system which would be either silicone foam or equivalent foam system or using individual blocks for each cable along with individual blocks for each cable along with suitable frame work rated for one hour. The work includes supply & ETC of the material.	10	Sq.m	2,418.41	24,184.10
87	<b>Making Cut out in the floor</b> of control room, work includes cutting RCC & finishing	10	Sq.m	756.27	7,562.70
88	<b>Supplying &amp; laying</b> of insulating Rubber mats (Class-A suitable for 1.1 kV as per IS: 15652) in front of Panels	50	Sq.m	1,938.83	96,941.50
89	Panel Supporting MS Angles /Chequered Plates/ Channel etc on cable trench in Control Room/ Bay Control Room/ Kiosks, Vertical support for cables etc <b>(Including Supply, cutting welding, fabrication work and Painting)</b>	1	MT	1,20,680.28	1,20,680.28
90	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	0.5	MT	1,20,680.28	60,340.14
91	<b>Supply of required size (M12/M16/M20 upto 150mm long) of Anchor Fastner /Bolts</b> and fixing in Concrete/wall/ceiling wherever required.	5	kg	160.91	804.55
92	Watch and ward of stored / erected material at project site and storage area or any other locations as per instruction of site in charge (round the clock security by authorised service agency consisting of armed guard)	12	Months	63,515.94	7,62,191.28
93	Installing terminal connectors on already erected equipment/ stringing in switchyard (Any ETC work other than installation of connector is not in scope of contractor). Connectors shall be provided by BHEL.	3	Nos	1,867.02	5,601.06
94	Supply & ETC of customer approved make 2 HP Automatic Start/ Stop type Centrifugal, Self Priming pump and accessories for sump pit	1	Nos	10,593.04	10,593.04
95	Supply & ETC of customer approved make 0.5 HP Automatic Start/ Stop type Centrifugal, Self Priming pump and accessories for sump pit	1	Nos	6,690.34	6,690.34
96	Supply & ETC of customer approved make 5 HP Automatic Start/ Stop type Centrifugal, Self Priming pump and accessories for sump pit	1	Nos	34,936.43	34,936.43
97	Dismantling of existing 30m Lighting High Mast along with Lantern Carriage, light fittings, motor, ropes, pulleys, wiring upto light fixtures etc. complete in all respects. (Dismantling of Existing Civil foundation is not in bidder's scope) For complete set of High Mast Annexure-H is to be referred.	1	Set	27,729.45	27,729.45
98	Dismantling of existing ground mounted Feeder Pillar/ Panel/ Junction Box of 30m high Lighting High Mast along with its mounting structure. Work includes disconnection of all wiring and cabling from this Feeder Pillar to HM & its motor. Refer Annexure-H for details.	1	Set	2,613.82	2,613.82
99	Dismantling of existing Cables in trenches or in GI pipe buried at a depth of 300mm including excavation, backfilling, making and repairing of walls in trenches where required or as per instruction of site in-charge. (Payment shall be done in actual running meter of cable dismantled.)	50	m	103.34	5,167.00



SR_NO	Description_of_Item	Quantity	UOM	Unit Rate (Rs.)	Total Amount (Rs.)
100	<p>Re-erection of 30m High Mast (mentioned above in Sl. No. 97) along with its feeder pillar/ panel, Lantern Carriage, light fittings, motor, ropes, pulleys, wiring upto light fixtures etc. complete in all respects at a new location as decided by BHEL/ NTPC site in-charge. Annexure-H is to be referred for High Mast. Work also includes complete wiring/ cabling from the feeder pillar of High Mast till the light fittings and motor. Necessary earthing of high mast as done previously or as per the instruction of site in-charge is also included in the scope of this item.</p> <p>NOTES:  a) Civil work of construction of foundation of High Mast is not included in the item.  b) Cabling at incomer side of feeder pillar/ panel from nearby JB is not included in this item. Same shall be done through trenches/ buried GI pipes &amp; shall be covered in respective items mentioned in this BOQ.</p>	1	Set	60,686.53	60,686.53
101	<p>Supply of foundation bolts with nut &amp; washer for above mentioned High Mast as per drawing provided in Annexure-H.  (Supply of Foundation Bolts includes supply of Anchor Plate as per the details provided in Annexure-H).</p>	1	Set	12,740.53	12,740.53
<b>Total Amount Rs. (Excluding GST)</b>					<b>69,52,766</b>