

BILL OF QUANTITY (Annexure-I)

Name of Project : 400/220 KV Switchyard at North Karanpura- ICT2 ADDITIONAL SCOPE					
Name of Work : Civil Work of 400/220kV Switchyard works for Additional Bay ICT#2					
Tender Specification No. : TBSM/ NTPC/NORTH KARANPURA/CIVIL/TENDER/22-23 , DATE: 06.07.2022					
S.No.	Description of Item	Quantity	Unit	Unit Rate (Rs)	Total Amount (Rs)
A1	Earthwork in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30cm in depth 1.5m in width as well as 10sqm on plan) including dewatering as necessary of rain water/subsoil seepage water and disposal of excavated earth upto 100m and lift upto 3.5m, disposed earth to be levelled and neatly dressed. All kinds of soil.	5900	cum	125.95	743105.00
A2	Earthwork in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30cm in depth 1.5m in width as well as 10sqm on plan) including dewatering as necessary of rain water/subsoil seepage water and disposal of excavated earth upto 100m and lift upto 3.5m, disposed earth to be levelled and neatly dressed. Ordinary rock	500	cum	221.05	110525.00
A3	Extra for every additional lift of 1.5 m or part thereof in excavation and banking excavated or stacked materials. All kinds of soil	2350	cum	51.75	121612.50
A4	Extra for every additional lift of 1.5 m or part thereof in excavation and banking excavated or stacked materials. Ordinary rock	270	cum	92.80	25056.00
A5	Earthwork in excavation by mechanical means (Hydraulic excavator)/manual means in foundation trenches or drains (not exceeding 1.5m in width as well as 10sqm on plan) including dewatering as necessary of rain water/subsoil seepage water and dressing of sides and ramming of bottoms, lift upto 3.5m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 100m. All kinds of soil.	950	cum	166.40	158080.00
A6	Filling available excavated earth (including rock) in trenches, plinth, sides of foundations, etc., in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead upto 100m and lift upto 3.5m.	4250	cum	125.75	534437.50
A7	Carriage & disposal of surplus excavated earth/rock beyond initial lead by mechanical means not necessarily all the times on pucca roads, including loading, unloading, dressing of excavated material, etc., complete as per specifications -. Lead upto 1 km.	1820	cum	98.34	178978.80
A8	Carriage & disposal of surplus excavated earth/rock beyond initial lead by mechanical means not necessarily all the times on pucca roads, including loading, unloading, dressing of excavated material, etc., complete as per specifications -. Lead upto 3 km.	520	cum	124.51	64745.20
A9	Carriage & disposal of surplus excavated earth/rock beyond initial lead by mechanical means not necessarily all the times on pucca roads, including loading, unloading, dressing of excavated material, etc., complete as per specifications -. Lead upto 5 km.	260	cum	149.17	38784.20
A10	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level M15	5	cum	4943.80	24719.00
A11	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level M10	5	cum	4415.45	22077.25
A12	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level M7.5	210	cum	4148.54	871193.40
A13	Extra for providing and mixing water proofing material 'Impermo' or equivalent in cement concrete work in the proportion recommended by the manufacturer.	10	kg	41.73	417.30
A14	Supplying and filling in plinth with Jamuna/local sand under floors, cable trenches, interlocking paver blocks, including watering, ramming, consolidating and dressing complete.	20	cum	810.82	16216.40
A15	Providing, laying and compacting boulder soiling of required thickness in foundations of equipment and under the floors as per direction of Engineer-in-Charge.	10	cum	797.16	7971.60
A16	Supplying chemical emulsion in sealed containers including delivery as specified. Chloropyrphos emulsifiable concentrate of 20%	30	litre	157.45	4723.50

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S.No.	Description of Item	Quantity	Unit	Unit Rate (Rs)	Total Amount (Rs)
A17	Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. (Note :- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately). All works	1900	cum	5887.43	11186117.00
A18	Add for using extra cement in the items of design mix over and above the specified cement content therein.	950	quintal	533.82	507129.00
A19	Centering and shuttering including strutting, propping, etc., and removal of form for: Foundations, footings, bases of columns, etc., for mass concrete.	750	sqm	184.42	138315.00
A20	Centering and shuttering including strutting, propping, etc., and removal of form for: RCC walls at all levels (any thickness).	3450	sqm	369.24	1273878.00
A21	Centering and shuttering including strutting, propping, etc., and removal of form for: Columns, Pillars, Piers, Posts and Struts .	2000	sqm	454.41	908820.00
A22	Steel reinforcement -Cold twisted bars /TMT- Fe 500 (To be procured from SAIL,TISCO,IISCO, JINDAL STEEL and RINL only) Including supply, straightening, cutting and bending, binding (i/c cost of binding wire), placing in position, etc., all labour & material, complete.	160000	kg	56.60	9056000.00
A23	Brickwork with F.P.S.bricks of class designation 75 in foundation and plinth in: Cement mortar 1:6 (1 cement : 6 coarse sand)	10	cum	4524.10	45241.00
A24	18mm cement plaster in two coats under layer 12mm thick cement plaster 1:5 (1 cement :5 coarse sand) finished with a top layer of 6mm thick 1:6 (1cement:6 fine sand)	10	sqm	245.49	2454.90
A25	2mm thick plaster of paris punning over the plastered surfaces on wall surfaces as directed by engineer-in-charge.	10	sqm	117.08	1170.80
A26	12mm cement plaster on even side of the walls in the mix: 1:6 (1cement :6 coarse sand)	10	sqm	162.22	1622.20
A27	Distempering with 1st quality acrylic distemper of approved manufacturer, of required shade and colour complete, as per manufacturer's specification .	10	sqm	51.95	519.50
A28	Wall painting with acrylic emulsion paint of approved brand and manufacture to give an even shade. Two or more coats on new work.	10	sqm	80.15	801.50
A29	Structural steelwork welded in built up sections like edge protection angles, pipes, insert plates with lugs & framed work including providing, cutting, hoisting, fixing in position/ embedding in concrete and applying a priming coat of approved steel primer all complete.	12000	kg	51.36	616320.00
A30	Steelwork welded in built up sections/framed work including providing, cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc., as required: In frames, rails, ISMB, ISMC, gratings and similar works.	10000	kg	78.07	780700.00
A31	Providing & placing in position precast cement concrete trench covers or perforated covers wherever necessary at various elevations in all kinds of work including moulding, formwork, mixing, laying out, compacting and curing, storing, transportation, erection without damage etc all as per specs, drawings and directions of Engr-in-Charge but excluding the cost of reinforcement, inserts, edge angles, etc. Grade of concrete shall be M30	70	cum	6256.17	437931.90
A32	Providing and fixing (all dia & length) foundation bolts in position with help of proper templates including supply of templates, nuts and washers all complete as per specs, drawings & directions of Engr-in-Charge. (Note: For payment purpose the weight of Template will not be considered)	5900	kg	87.19	514421.00
A33	Extra over item above for providing galvanised bolts (Mass of zinc coating = 800gms/sqm), nuts & washer .	5900	kg	7.71	45489.00
A34	Fixing (all dia & length) foundation bolts in position with help of proper templates(template to be supplied by contractor) all complete as per specs, drawings & directions of Engr-in-Charge.Bolts to be provided by BHEL free of cost. (Notes: 1) For payment purpose the weight of Template will not be considered 2) Rates are also includes Unloading, storage, watch and ward etc for BHEL Supplied Foundation Bolts)	100	kg	9.20	920.00
A35	Providing and laying non-pressure NP2 class (light duty) RCC pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement: 2 fine sand) including testing of joints etc., complete. 250mm dia. RCC pipe	5	RM	429.98	2149.90

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S.No.	Description of Item	Quantity	Unit	Unit Rate (Rs)	Total Amount (Rs)
A36	Providing and laying non-pressure NP2 class (light duty) RCC pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement: 2 fine sand) including testing of joints etc., complete. 300mm dia. RCC pipe	5	RM	459.59	2297.95
A37	Providing and laying non-pressure NP2 class (light duty) RCC pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement: 2 fine sand) including testing of joints etc., complete. 450mm dia. RCC pipe	5	RM	639.06	3195.30
A38	Providing and laying non-pressure NP3 class (medium duty) RCC pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement: 2 fine sand) including testing of joints etc., complete. 250mm dia. RCC pipe	5	RM	994.28	4971.42
A39	Providing and laying non-pressure NP3 class (medium duty) RCC pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement: 2 fine sand) including testing of joints etc., complete. 300mm dia. RCC pipe	5	RM	1193.14	5965.70
A40	Providing and laying non-pressure NP3 class (medium duty) RCC pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement: 2 fine sand) including testing of joints etc., complete. 450mm dia. RCC pipe	5	RM	1660.11	8300.54
A41	Providing and placing in position suitable PVC water stops conforming to IS 12200 or equivalent for construction/expansion joints between two RCC members and fixed to the reinforcement with binding wire before pouring concrete etc. complete. Serrated with central bulb(230mm wide,8-11mm thick)	100	meter	216.54	21654.00
A42	Grouting of block outs, pockets, foundations, bolts holes and underside of base plates with cement, sand aggregate (of size 6 mm and down) grout M-30 with non-shrink additive and shall be of strength not less than M30 including placing, curing, cleaning, surface preparation, testing, etc. complete with labour, materials, equipment, handling, testing, etc. all complete as per specifications, drawings and instructions of the Engineer.	3	cum	7320.65	21961.95
A43	Providing and supplying grating of 40mm thickness and opening size 30mmx100mm, with minimum thickness of main bearing bar 5mm including shot blasting, priming, finish painting and galvanising of minimum weight 610gms/Sqm etc.all complete.	200	kg	78.07	15614.00
A44	Antiweed Treatment in switchyard area including micro levelling, dressing etc as per Technical Specification	3000	sqm	12.51	37530.00
A45	Filling of approved materials i/c cost of materials, labour and equipment for handling, transportation, placing and compacting as required to the required density and to the required elevations as per specification, drawings and directions of Engineer-in-Charge. Broken/crushed/non crushed stone of size 40 to 60mm for placing over transformer grating.	20	cum	1389.23	27784.60
A46	Providing and laying stone aggregate in switch yard areas in 75mm thick layer using 20 mm aggregates size in first layer and 75mm thick layer using 40mm size aggregate in second layer making overall thickness of stone aggregate as 150mm. Before laying the stone aggregates , the yard surface shall be treated with antiweed treatment all complete as per Customer specification (Clause no. 1.01.22 & 5.05.07) and direction of Engineer in Charge.(Aggregate shall be crushed stones chemically inert, hard, strong, durable against weathering of limited porosity and free from deleterious materials. It shall meet the requirements of IS: 383.) (The rate shall be inclusive of all materials ,labour, levelling, dressing, compaction, etc. required for aggregate laying and antiweed treatment with performance guarantee of three years.)	1100	sqm	237.71	261475.50
A47	Same as above Item no A46 excluding supply of stone aggregate & Antiweed treatment, but including Removing,cleaning and washing of existing laid gravel, stacking and respreading of stones in switchyard.	3000	sqm	79.17	237510.00
A48	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth,dressing to camber and consolidating with road roller including making good the undulations etc and re-rolling the sub grade and disposal of surplus earth lead upto 50 metres.	300	sqm	90.10	27030.00
A49	Suppling and stacking at site 90 mm to 45 mm size stone aggregate	50	cum	1278.69	63934.50
A50	Suppling and stacking at site 63 mm to 45 mm size stone aggregate	50	cum	1386.53	69326.50
A51	Suppling and stacking at site 53mm to 22.4 mm	75	cum	1475.02	110626.50
A52	Suppling and stacking at site Stone screening 13.2 mm nominal size (type A)	10	cum	1439.66	14396.60
A53	Suppling and stacking at site 11.2 mm nominal size (Type B)	10	cum	1398.19	13981.90
A54	Suppling and stacking at site moorum	10	cum	563.01	5630.10

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S.No.	Description of Item	Quantity	Unit	Unit Rate (Rs)	Total Amount (Rs)
A55	Laying WBM with specified size of stone aggregates, screening and moorum/ blinding materials including screening, sorting, spreading to template and consolidation with power road roller of 8 to 10 tonne capacity etc., complete. (Payment will be made for compacted layers only). Subbase with stone aggregate 90mm to 45mm including stone screening 13.2mm size and moorum/blinding material.	50	cum	449.09	22454.50
A56	Laying WBM with specified size of stone aggregates, screening and moorum/ blinding materials including screening, sorting, spreading to template and consolidation with power road roller of 8 to 10 tonne capacity etc., complete. (Payment will be made for compacted layers only). Base course with stone aggregate 63mm to 45mm including stone screening 13.2mm size and moorum/blinding material.	50	cum	449.09	22454.50
A57	Laying WBM with specified size of stone aggregates, screening and moorum/ blinding materials including screening, sorting, spreading to template and consolidation with power road roller of 8 to 10 tonne capacity etc., complete. (Payment will be made for compacted layers only). Base course with stone aggregate 53mm to 22.4 mm including stone screening 11.2mm size and moorum/binding material.	50	cum	449.09	22454.50
A58	Providing and fixing at or near ground level factory made kerb stone of M-25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1 : 3 (1 Cement : 3 coarse sand) including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete tec. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured for calculation of qty. for payment).	50	cum	4335.95	216797.50
A59	Providing and laying 75mm thick factory made cement concrete interlocking paver block of M-35 grade of approved size, design & shape, laid in required colour and pattern all complete as per the specification, recommendation of manufacturer and Engineer In charge.	200	sqm	549.38	109876.00
A60	Providing and fixing in position 12mm thick bitumen impregnated fibre board conforming to IS: 1838, including the cost of primer, sealing compound in expansion joints.	50	per cm depth per 100 m	397.12	19856.00
A61	Providing and laying polythene sheet of 125 microns between the PCC and RCC slab all complete as per direction of Engineer-in-Charge)	250	sqm	12.70	3175.00
A62	Providing and fixing in position pre moulded joint filler in expansion joints	50	per cm depth per cm width per m length	1.89	94.50
A63	Providing and laying in position bitumen hot sealing compound for expansion joints etc. Using grade A ceiling compound	50	per cm depth per cm width per m length	2.16	108.00
A64	Providing and laying cement concrete of grade M35 using 20mm nominal size stone aggregate with approved admixture(if required), in road pavement using fully mechanized paver fitted with electronic sensors, providing dowel bars with sleeve/ tie bars wherever required, laying at site, provision of necessary joints including compaction, finishing to lines and grades, curing and providing and fixing framework etc. all complete. (Excluding the cost of Reinforcement)	40	cum	6048.00	241920.00
A65	Providing and laying Dry lean cement concrete (DLC) of grade M10 (In pavements/shoulders) with 20mm nominal size graded stone aggregate with mechanical paver over granular sub-base including compaction by vibratory roller, finishing, curing etc all complete as per the direction of Engineer In Charge.(excluding cost of cement)	42	cum	4415.45	185448.90
A66	Demolishing brick work manually/by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in- charge. In cement mortar	5	cum	842.73	4213.65
A67	Demolishing RCC work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge.	8	cum	1454.54	11636.32
A68	Dismantling manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge : Water bound macadam road	160	sqm	90.50	14480.00
A69	Disposal of building rubbish / malba / similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all leads including all lifts involved.	10	cum	120.53	1205.30
A70	Providing and fixing approved quality pre polished vitrified tiles minimum thickness 9.5 mm of approved make and colours in skirting, risers of steps and dados over 12 mm thick bed of Cement mortar 1:3 (1 Cement:3 coarse sand) and jointing with grey cement slurry @3.3 kg/sqm including pointing in white cement mixed with pigment of matching shade complete.	10	sqm	1010.07	10100.70

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Name of Project : 400/220 KV Switchyard at North Karanpura- ICT2 ADDITIONAL SCOPE					
Name of Work : Civil Work of 400/220kV Switchyard works for Additonal Bay ICT#2					
Tender Specification No. :TBSM/ NTPC/NORTH KARANPURA/CIVIL/TENDER/22-23 , DATE: 06.07.2022					
S.No.	Description of Item	Quantity	Unit	Unit Rate (Rs)	Total Amount (Rs)
Total Amount (Rs.) - Excluding GST					30282106

BILL OF QUANTITIES FOR UNDER GROUND EARTHING AND ELECTRODES (Annexure-II)					
Name of Project - North Karanpura Super Thermal Power Project (3x660MW)					
Tender Specification No. :TBSM/ NTPC/NORTH KARANPURA/CIVIL/TENDER/22-23 , DATE: 06.07.2022					
S. No	Description	Unit	Quantity	Unit Rate (Rs.)	Total Amount (Rs.)
1	Handling, Fabrication, Modification, rerouting of existing Earthmat & laying of 40mm (min) dia MS rod at depth of 600mm (min) measured from the top of Finished Ground Level (FGL) and bringing out risers upto gravel level near the equipment/ building foundation in line with technical specification, including following activities but not limited to, - Excavation as per requirements - Laying of MS rod - Welding of rods in line with earthing philosophy and/ or technical spcification attached. - Backfilling of soil and compaction for bringing out risers of 40 dia MS rod for equipments. Risers shall be raised from the earthmat, positioned at 600mm (min) depth to gravel level and nearest point of the equipment. This shall include all activities such as cutting, bending, welding, fixing, application of paints on cutting & welding surface etc. to the main earthmat. - Any cutting of existing earthmat for construction of foundations is also included in the scope of bidder. - Any other work necessary to complete the below earthing work related to main earth mat and risers in all respect. MS rod for main earth mat and risers shall be provided by BHEL as a free issue material (FIM).	MT	34	13,590	4,62,060
2	Fabrication & laying of Auxiliary Mat of 40 mm Dia MS Rods at a depth of 300 mm from top of FGL including excavation & backfilling as per Drg No. '4410-001-572-PVE-F-0038' & connection with existing earthmat - any other work necessary to complete the laying of earthmat	Nos.	25	5,436	1,35,900
3	Installing of 40 mm dia GS pipe Electrode (length - 3.0 Mtr) as per dr. no.4410-001-572-PVE-F-0038 with test links and treated earth pit with CI frame and hinged cover alongwith all associated civil works i.e - excavation - installing the pipe electrode with alternate layers of Coke & charcoal, salt - backfilling and compaction - Casting the Test Pit with Cast Iron covers - any other work necessary to complete the work (Only GI Pipe, Nuts, Bolts & Washers test links will be supplied by BHEL. Other items like CI frame, CI	Nos.	2	10,872	21,744
4	Installing of 40 mm diameter Rod Electrode with test pit/link as per Drg. No. 4410-001-572-PVE-F-0038 including following works : - excavation - installing the rod electrode - backfilling and compaction - Casting the Test Pit with Cast Iron covers - any other work necessary to complete the work	Nos.	6	8,834	53,004
5	Installing of 40 mm diameter Rod Electrode without test pit/link as per Drg. No. 4410-001-572-PVE-F-0038 including following works including following works: - excavation/hammering of rod in earth - installing the rod electrode - backfilling and compaction - any other work necessary to complete the work	Nos.	15	4,757	71,355
Total Amount Rs: (Excluding GST)					7,44,063

Note-

- Quantity may vary by +/- 30% at contract stage.

Annexure-III BOQ for Covered Store for ADDITIONAL BAY IN 400/220 KV SWITCHYARD AT NORTHKARANPURA STPP		
Sl. No.	Description	Amount (Rs.)
1	1 No. covered store of 150 Sqm size as per standard specification of NIT.	10,15,010.00
	Total Amount (Rs.) Excluding GST	10,15,010.00

ANNEXURE-IV		
EXECUTION & HANDING OVER OF CIVIL WORKS FOR ADDITIONAL BAY IN 400/220 KV SWITCHYARD AT NORTHKARANPURA STPP IN CHATRA DISTRICT IN JHARKHAND		
Tender Spec. no.:- TBSM/ NTPC/NORTH KARANPURA/CIVIL/TENDER/22-23, DATE: 06.07.2022		
SI No.	Description	Amount (Rs.)
1	Total amount as per the rates in BOQ for " Execution & handing over of civil works for additional bay in 400/220 kV Switchyard at North Karanpura STPP" (Annexure-I)	302,82,106.00
2	Total amount as per the rates in BOQ for Execution & handing over of Earthing works for additional bay in 400/220 kV Switchyard at North Karanpura STPP (Annexure II)	7,44,063.00
3	Total Amount for 1 No. Covered Store of 150 Sqm size for Switchyard at 400/220 kV Switchyard at North Karanpura STPP (Annexure-III)	10,15,010.00
4	Total Amount Rs. for SI No. 1,2 & 3 (Excluding GST)	320,41,179.00