

BILL OF QUANTITY CUM PRICE SCHEDULE**Name of Project****: 400/220 KV Substation at Unchahar****Name of Work****: Civil Work of Switchyard (Excluding building works)**

S.No.	Description of Item	Quantity	Unit	Unit Rate(Rs)	Amount(Rs)
1	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.				
(a)	All kinds of soil.	15100	cum	129.35	1953185.00
2	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.				
(a)	All kinds of soil.	1800	cum	130.80	235440.00
3	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.	11000	cum	83.80	921800.00
4	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 -.				
(a)	Lead upto 1 km.	3500	cum	82.78	289730.00
(b)	Lead upto 3 km.	800	cum	104.98	83984.00
	Lead upto 5 km.	500	cum	125.92	62960.00
5	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level.				
(a)	M15	80	cum	4514.05	361124.00
(b)	M10	670	cum	3888.20	2605094.00
(c)	M7.5	20	cum	3593.30	71866.00

6	Extra for providing and mixing water proofing material 'Impermo' or equivalent in cement concrete work in the proportion recommended by the manufacturer.	500	kg	35.35	17675.00
7	Supplying and filling in plinth with Jamuna/local sand under floors,cable trenches including watering, ramming, consolidating and dressing complete.	800	cum	749.30	599440.00
8	Providing, laying and compacting boulder soiling of required thickness in foundations of equipment and under the floors as per direction of Engineer-in-Charge.	50	CUM	1000.00	50000.00
9	Supplying chemical emulsion in sealed containers including delivery as specified.				
	Chloropyriphos emulsifiable concentrate of 20%	400	litre	185.95	74380.00
10	Applying two coat of residual petroleum bitumen of penetration 85/25 grade as per IS:702 of approved quality using 1.7 kg per sqm on the surface of foundation after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	200	sqm	193.00	38600.00
11	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.	100	per cm depth per 100 m	167.35	16735.00
12	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for RCC structural elements including roads excluding the cost of centering, shuttering, finishing and reinforcement including admixtures in recommended proportions (as per IS 9103) to accelerate, retrard setting of concrete, improve workability without impairing strength and durability. - M25 grade reinforced cement concrete by using minimum 330kg of cement per cum of concrete.				
(a)	All works upto plinth level	3250	cum	5242.15	17036987.50
(b)	All works above plinth level upto floor V level	250	cum	5781.50	1445375.00
13	Extra for providing richer mixes at all floor levels.				
(a)	Providing M-30 grade concrete instead of M-25 grade BMC/RMC.(Cement content in M-30 shall be @340kd/cum)	3500	cum	63.20	221200.00
14	Centering and shuttering including strutting, propping, etc., and removal of form for:				
(a)	Foundations, footings, bases of columns, etc., for mass concrete.	1900	sqm	166.90	317110.00
(b)	RCC walls at all levels (any thickness).	8450	sqm	285.15	2409517.50

(c)	Suspended floors, roofs, landings, balconies, chajjas and access platforms at all levels.	10	sqm	311.20	3112.00
(e)	Columns, Pillars, Piers, Posts and Struts .	4000	sqm	365.60	1462400.00
15	Steel reinforcement -Cold twisted bars /TMT- Fe 500 (To be procured from SAIL, TISCO, IISCO, JINDAL STEEL and RINL only)				
(a)	Including supply, straightening, cutting and bending, binding (i/c cost of binding wire), placing in position, etc., all labour & material, complete.	15000	kg	62.25	933750.00
(b)	Excluding supply but including straightening, cutting, bending, binding, (i/c cost of binding wire), placing in position, etc., all labour & material, complete. (See Note 1)	275000	kg	10.00	2750000.00
16	Brickwork with F.P.S. bricks of class designation 75 in foundation and plinth in:				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	160	cum	3316.55	530648.00
17	12mm cement plaster of mix:				
	1:4 (1 cement: 4 coarse sand)	875	sqm	132.10	115587.50
18(a)	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.	68000	kg	59.90	4073200.00
18(b)	Extra over item above for providing galvanising of minimum 610gm/sqm	2000	kg	10.00	20000.00
19	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.				
(a)	In frames, rails, ISMB, ISMC, gratings and similar works.	28000	kg	77.90	2181200.00
20	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	100	cum	6000.00	600000.00
21	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	18000	kg	86.55	1557900.00

22	Extra over Item above for providing galvanised bolts (Mass of zinc coating = 800gms/sqm), nuts & washer .	18000	kg	10.00	180000.00
23	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.	700	kg	10.00	7000.00
24	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.	3400	sqm	61.25	208250.00
25	Suppling and stacking at site				
(a)	90 mm to 45 mm size stone aggregate	950	cum	1010.75	960212.50
(b)	63 mm to 45 mm size stone aggregate	835	cum	1100.80	919168.00
(c)	53mm to 22.4 mm	345	cum	1190.80	410826.00
(d)	Stone screening 13.2 mm nominal size (type A)	320	cum	1338.75	428400.00
(e)	11.2 mm nominal size (Type B)	70	cum	1425.85	99809.50
(f)	moorum	140	cum	624.45	87423.00
26	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).				
(a)	Subbase with stone aggregate 90mm to 45mm including stone screening 13.2mm size and moorum/blinding material.	680	cum	330.15	224502.00
(b)	Base course with stone aggregate 63mm to 45mm including stone screening 13.2mm size and moorum/blinding material.	510	cum	330.15	168376.50
©	Base course with stone aggregate 53mm to 22.4 mm including stone screening 11.2mm size and moorum/binding material.	250	cum	330.15	82537.50

27	Providing and laying Bitumen Penetration Macadam with hard stone aggregate of quality, size and grading as specified, with bitumen of suitable penetration grade including required key aggregate as specified, spreading coarse aggregate with the help of self propelled/ tipper tail mounted aggregate spreader and applying bitumen by a pressure distributor and then spreading key aggregate with the help of aggregate spreader complete including consolidation with road roller of minimum 8 to 10 tonne capacity to achieve specified values of compaction and surface accuracy:				
	For 75mm compacted thickness using coarse aggregate of size 63-41mm graded @ 0.90 cum per 10 sqm key aggregate of size 20.0mm graded @ 0.18 cum per 10sqm. With paving asphalt grade VG-10 @ 68 kg/10sqm	250	sqm	505.60	126400.00
28	Providing and laying 2.5 cm thick premix carpet surfacing with 3 cum of stone chippings 10mm nominal size per 100sqm and bitumen emulsion (medium setting min. 65% bitumen content) complying with IS: 8887 using 96 kg per cum of chipping of road surface, including consolidation with road roller etc. complete .	3400	sqm	150.90	513060.00
29	Providing and laying seal coat of premixed fine aggregate (passing 2.36 mm and retained on 180 micron sieve) with bitumen using 128 kg of bitumen of grade 80/100 bitumen per cum of fine aggregate and 0.60 cum of fine aggregate per 100 sqm of road surface including rolling and finishing with road roller all complete.	3400	sqm	61.30	208420.00
30	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	5046.80	252340.00

31	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.				
(a)	250mm dia. RCC pipe	10	RM	342.45	3424.50
(b)	300mm dia. RCC pipe	10	RM	422.90	4229.00
(c)	450mm dia. RCC pipe	5	RM	620.85	3104.25
32	Providing and laying non-pressure NP3 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	360.00	1800.00
	300mm dia. RCC pipe	5	RM	450.00	2250.00
	450mm dia. RCC pipe	5	RM	675.00	3375.00
33	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)	125	meter	459.15	57393.75
34	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.	15	cum	10000.00	150000.00
35	Providing and supplying grating of 40mm thickness and opening size 30mmx100mm, with minimum thickness of main bearing bar 3mm including sand blasting, priming, finish painting and galvanising of minimum weight 610gms/Sqm etc.all complete .	8000	kg	70.00	560000.00
36	Providing and laying stone aggregate in switch yard areas in 100mm thick layer using 40 mm aggregates size .Before laying the stone aggregates , the yard surface shall be treated with antiweed treatment and direction of Engineer in Charge. (The rate shall be inclusive of all materials ,labour,loading,unloading and surface preparation etc. required for aggregate laying and antiweed treatment)	33000	sqm	130.00	4290000.00

37	Supplying, fabricating and fixing angle iron posts, struts, flats of required size including bottom of post to be split and bent and top to be made Y shaped by cutting, bending and welding including drilling holes and finishing by blast cleaning of steel surface to near white metal surface (Sa 2-1/2 swedish standard) and applying inorganic zinc silicate primer of minimum 75micron (DFT), followed by an intermediate coat of 75micron (DFT) epoxy based titanium dioxide/micaceous iron oxide, followed by finish painting with Epoxy based colour pigmented finish poly amide cured paint etc. all complete. (Cost of excavation, shuttering, concrete work, toe wall to be paid separately)	18000	kg	68.00	1224000.00
38	Providing and fixing PVC coated G.I chain link fence of 8 gauge with mesh size 75x75 mm and of required ht. above the toe wall including stretching and attaching by clips at 0.5m interval or as per drg. to 3 strands of HTSS wire of 4mm dia interwoven in chain link wire mesh and attaching to the fence post with nuts and bolts all complete as per approved drawing and direction of Engineer-in-Charge. (The rate quoted against this item shall be inclusive of all items like chain link fence, clips, HTSS wire, nuts and bolts etc. all complete as per drawing).	2000	sqm	519.15	1038300.00
39	Providing and fixing above the chain link fence a 600mm High Tensile Serrated Wire (HTSW) galvanised Concertina at a maximum spiral pitch of 300mm and attached to 3 strands of HTSS wire by means of 'C' clips including attaching the 3 HTSS wire strands to iron posts with 1/2" security fasteners all complete as per direction of Engineer-in-Charge. (Running length of fence shall be measured for payment)	950	m	269.20	255740.00
40	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	1100.00	22000.00

41	Structural steel work for gate including providing, cutting, hoisting, fixing in position and applying a coat of approved steel primer. All MS angle used in gate shall be finished by blast cleaning of steel surface to near white metal surface (Sa 2-1/2 swedish standard) and applying inorganic zinc silicate primer of minimum 75micron (DFT), followed by an intermediate coat of 75micron (DFT) epoxy based titanium dioxide/micaceous iron oxide, followed by finish painting with Epoxy based colour pigmented finish poly amide cured paint etc.all complete as per direction of Engineer-in-charge.	1500	kg	84.00	126000.00
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Note:

- 1 For Item No : 15(b) reinforcement steel shall be supplied by BHEL **free of cost** as per norms indicated in conditions of contract. The rate quoted against Item No: 15 (b) above shall be deemed to be inclusive of cost against all activities required including transportation of material from (SAIL, TISCO, IISCO, RINL, Jindal Steel or rerollers approved by main producers) stockyard.