

BILL OF QUANTITY CUM PRICE SCHEDULE

Name of Project : 400 KV Substation at Sagardighi
Name of Work : Civil Work of Switchyard & LT Switchgear Room

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.	8462	cum	101.85	861854.70
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.	1643	cum	103.40	169886.20
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.	6190	cum	45.70	282883.00
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.	3310	cum	49.45	163679.50
(b)	Lead upto 3 km.	100	cum	63.32	6332.00
5	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level.				
(a)	1:2:4 (1 cement : 2coarse sand : 4 graded stone aggregate 20mm nominal size)	10	cum	3257.45	32574.50
(b)	1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size)	2200	cum	2713.05	5968710.00

(c)	1:4:8(1 cement : 4 coarse sand : 8 graded stone aggregate 40mm nominal size)	380	cum	2449.00	930620.00
6	Providing and laying cement concrete in screed at terrace for water proofing treatment upto floor five level excluding the cost of centring, shuttering and finishing:				
	1:2:4 (1 cement : 2 coarse sand : 4 downgraded stone aggregate 12.5mm nominal size)	17	cum	3257.45	55376.65
7	Extra for providing and mixing water proofing material 'Impermo' or equivalent in cement concrete work in the proportion recommended by the manufacturer.	200	kg	27.45	5490.00
8	Supplying and filling in plinth with Jamuna/local sand under floors including watering, ramming, consolidating and dressing complete.	30	cum	301.50	9045.00
9	Supplying chemical emulsion in sealed containers including delivery as specified.				
	Chloropyriphos emulsifiable concentrate of 20%	50	litre	174.30	8715.00
10	Diluting & injecting chemical emulsion for PRE-CONSTRUCTIONAL ANTI-TERMITE treatment and creating a continuous chemical barrier under and all around the column pits, wall trenches, basement excavation, top surface of plinth filling, junction of wall & floor, along the external perimeter of building, expansion joints, over the top surface of consolidated earth on which apron is to be laid , surroundings of pipes and conduits, etc complete as per specifications (Plinth area of the building at ground floor only shall be measured for payment).	326	sqm	50.00	16300.00
11	Providing and laying damp proof course 50mm thick cement concrete 1:1.5:3 (1 Cement:1.5 coarse sand : 3 graded stone aggregate 12.5 mm nominal size) .	39	sqm	178.05	6943.95
12	Applying a coat of residual petroleum bitumen of penetration 80/100 of approved quality using 1.7 kg per sqm on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	39	sqm	58.60	2285.40

13	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, retard setting of concrete, improve workability without impairing strength and durability. - M25 grade reinforced cement concrete by using minimum 410kg of cement per cum of concrete.				
(a)	All works upto floor V level.	2325	cum	4147.40	9642705.00
14	Add or deduct for providing richer or leaner mixes respectively at all floor levels				
(a)	Providing M-30 grade concrete by using minimum 420kg of cement per cun of concrete instead of M-25 grade B.M.C./R.M.C.	2325	cum	54.55	126828.75
15	Centering and shuttering including strutting, propping, etc., and removal of form for:				
(a)	Foundations, footings, bases of columns, etc., for mass concrete.	1445	sqm	119.25	172316.25
(b)	RCC walls at all levels (any thickness).	4980	sqm	180.40	898392.00
(c)	Suspended floors, roofs, landings, balconies, chajjas and access platforms at all levels.	400	sqm	187.35	74940.00
(d)	Lintels, beams, plinth beams and cantilevers.	267	sqm	162.65	43427.55
(e)	Columns, Pillars, Piers, Posts and Struts .	2080	sqm	238.40	495872.00
16	Extra for additional height in centring ,shuttering wherever required with adequate bracing ,propping etc. including cost of deshuttering and decentering at all levels over a height of 3.5 meter for every additional height of 1 meter or part thereof (Plan area to be measured).				
	Suspended floors, roofs, landing, beams and balconies .	335	sqm	106.20	35577.00
17	Steel reinforcement -Cold twisted bars /TMT- Fe 500 (To be procured from SAIL, TISCO, IISCO and RINL only)				
(a)	Including supply and straightening, cutting, bending, binding, (i/c cost of binding wire), placing in position, etc., all labour & material, complete.	185800	kg	42.70	7933660.00
18	Brickwork with F.P.S.bricks of class designation 75 in foundation and plinth in:				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	6	cum	2121.75	12730.50
19	Brickwork with F.P.S.bricks of class designation 75 in superstructure above plinth level to floor V level in all shapes and sizes in:				
	Cement mortar 1:6 (1 cement : 6 coarse sand)	99	cum	2357.40	233382.60

20	Providing and fixing aluminium sliding door bolts anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade with nuts and screws etc., complete.				
	300 X 16mm	8	each	158.50	1268.00
21	Providing and fixing aluminium tower bolts anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade with necessary screws etc., complete.				
	300 X 10mm	16	each	71.45	1143.20
22	Providing and fixing aluminium handles anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade with necessary screws etc., complete.				
	125mm	16	each	48.80	780.80
23	Providing and fixing IS:3564 marked aluminium die cast body tubular type universal door closer of approved quality and make with accessories and screws complete.	2	each	610.60	1221.20
24	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.	31408	kg	42.15	1323847.20
25	Cement concrete flooring 1:2:4 (1cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps, etc., complete.				
	50mm thick with 12.5mm nominal size stone aggregate.	285	sqm	192.95	54990.75
26	50mm thick CC flooring with " Hardcrete" concrete hardner topping under layer 38mm thick CC M25 and top layer 12 mm thick Hardcrete cement hardner consisting of mix 1:2 (1 cement hardner mix: 2 stone aggregate 6mm nominal size) by volume with which Hardcrete hardening compound of approved quality is mixed @ 2 liter Hardcrete per 50 Kg of cement including cement slurry, but excluding the cost of nosing of steps etc., complete.	180	sqm	294.18	52952.40
27	Cement plaster skirting (upto 30cm height) with cement mortar 1:3 (1cement: 3 coarse sand) finished with a floating coat of neat cement.				

	18mm thick	18	sqm	168.50	3033.00
28	Providing and laying of 10 mm minimum thick pre-polished vitrified tiles 600X600 mm of approved make and colours laid over 40 mm thick bed of Cement mortar 1:3 (1 Cement:3 coarse sand) including pointing in white cement mixed with pigment of matching shade complete as per direction of Engineer-in charge.	105	sqm	1448.55	152097.75
29	Providing and fixing approved quality pre polished vitrified tiles minimum thickness 10 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.	24	sqm	1354.97	32519.28
30	Making khurras 45X45cm with average minimum thickness of 5cm cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate of 20mm nominal size) over PVC sheet 1mX1mX400micron, finished with 12mm cement plaster 1:3 (1 cement: 3 coarse sand) and a coat of neat cement rounding the edges and making and finishing the outlet complete.	20	Each	108.00	2160.00
31	18mm cement plaster in cement plaster 1:6 (1 cement :6 coarse sand) on uneven sides of internal walls and surfaces of roof as required.	754	sqm	84.55	63750.70
32	12mm cement plaster on even side of the walls in the mix:				
	1:6 (1cement :6coarse sand)	573	sqm	72.70	41657.10
33	2mm thick plaster of paris punning over the plastered surfaces on wall surfaces as directed by engineer-in-charge.	908	sqm	47.20	42857.60
34	6mm cement plaster to ceiling of mix				
	1:3 (1 cement : 3 fine sand)	335	sqm	62.15	20820.25
35	Applying priming coat				
(a)	Applying one coat of cement primer of approved brand and manufacture on wall surface:	1450	sqm	17.20	24940.00
36	White washing with lime to give an even shade new work(three or more coats)	335	sqm	26.30	8810.50

37	Distempering with oil bound washable distemper of approved brand and manufacture two or more coats over and including priming coat with cement primer.(Work to be carried as per relevant IS codes.)	575	sqm	41.55	23891.25
38	Finishing walls with water proofing cement paint " Snowcem-Plus" of M/s Snowcem India Ltd. or equivalent of required shade :				
	New work : Two or more coat.	790	sqm	30.80	24332.00
39	Forming groove of uniform size from 12X12mm and upto 25X15mm in plastered surface and joints of ceiling and wall as per approved pattern using wooden battens, nailed to the underlayer including removal of wooden battens, repairs to the edges of plaster panel and finishing the groove complete as per specifications and directions of the Engineer-in-charge.	145.00	RM	13.30	1928.50
40	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement: 3 coarse sand : 6 graded sgggregate 20mm nominal size) over 75mm bed by dry brick ballast 40mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth.	130.00	sqm	222.65	28944.50
41	Providing and fixing anodised aluminium work for doors, windows, ventilators and partitions with extruded builtup standard tubular and other sections of approved make conforming to IS: 733 and IS:1285, anodised transparent or dyed to required shade according to IS: 1868. (Minimum anodic coating of grade AC 15), fixed with rawl plugs and screws or with fixing clips or with expansion fasteners including necessary filling up of gaps at junctions at top , bottom and sides with required PVC/neoprene felt, etc. Aluminium sections shall be smooth , rust free, straight, mitred and jointed mechanically wherever required including cleat angle, aluminium snap beading for glazing/panelling, CP brass/stainless steel screws, all complete as per architectural drawings and direction of Engineer-in-charge. (Glazing and panelling to be paid for separately).				
(a)	For fixed portion	100	kg	290.45	29045.00
(b)	For shutters of doors, windows & ventilators including providing and fixing hinges/pivots and fittings wherever required including the cost of PVC/neoprene gasket required .	800	kg	310.45	248360.00

42	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions, etc., with PVC/neoprene gasket, etc., complete as per the architectural drawings and directions of Engineer-in-charge. (Cost of aluminium snap beading shall be paid in basic item).				
	With glass panes of 5.5mm thickness (weight not less than 13.75kg/sqm)	90	sqm	673.55	60619.50
43	Providing and fixing double action hydraulic floor spring of approved brand and manufacture (conforming to IS:6315) for aluminium door including cost of cutting floors as required, embedding in floors and cover plates with brass pivot and single piece MS sheet outer box with slide plate etc., complete as per the directions of Engineer-in-charge. (SS cover plate.)	2	each	1733.50	3467.00
44	Providing, laying and fixing roof water proofing treatment using two successive liquid coatings of high solid content urethane pre-polymers to form elastomeric membrane having overall dry film thickness of minimum 1.5mm subject to minimum 750gm/sqm/coat application rate including primer coat consisting of polyurethane or any other equivalent material , finishing coats and surface finish complete laid over cement plaster (1:6) grading. Screed concrete over finished layer of elastomeric membrane cast in panels of 1.2 x 1.2m and reinforced with 0.56mm dia galvanised chicken wire mesh and joints sealed using sealing compound all complete (cement plaster and screed paid seperatly) including all labour, material, equipment, handling, scaffolding, transporting, testing etc. complete as per drawing, specification and instructions of the engineer.	335	sqm	800.00	268000.00
45	Providing and fixing on wall face unplasticised - Rigid PVC rain water pipes conforming to IS : 13592 Type A including jointing with seal ring conforming to IS : 5382 leaving 10 mm gap for thermal expansion. (i) Single socketed pipes of 75mm dia.	140	meter	95.00	13300.00
46	Providing & fixing 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, setting in position with cement and sand mortar, grouting 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	80	cum	4560.00	364800.00
47	Add or deduct plaster drip course /groove in plastered surface or moulding to RCC projections:	100	meter	11.95	1195.00
48	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	22700	kg	62.75	1424425.00
49	Extra over Item above for providing galvanised bolts (Mass of zinc coating = 610gms/sqm), nuts & washer .	22700	kg	5.00	113500.00
50	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.	200	kg	7.00	1400.00
51	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.	2444	sqm	33.90	82851.60
52	Suppling and stacking at site				
(a)	90 mm to 45 mm size stone aggregate	430	cum	742.30	319189.00
(b)	63 mm to 45 mm size stone aggregate	323	cum	768.45	248209.35
(c)	53 mm to 22.5 mm size stone aggregate	333	cum	810.55	269913.15
(d)	Stone screening 13.2 mm nominal size (type A)	151	cum	892.25	134729.75
(e)	Stone screening 11.2 mm nominal size (type B)	67	cum	979.40	65619.80
(f)	moorum	78	cum	421.85	32904.30
53	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.	319	cum	192.55	61423.45
(b)	Base course with stone aggregate 63mm to 45mm including stone screening 13.2mm sizeand moorum/blinding material.	239	cum	192.55	46019.45
(c)	Base course with stone aggregate 53mm to 22.4 mm including stone screening 11.2mm size and	292	cum	192.55	56224.60

54	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:				
(a)	For 50mm compacted thickness using coarse aggregate of size 50-20mm graded @ 0.60 cum per 10 sqm key aggregate of size 12.5mm graded @ 0.15 cum per 10sqm. With paving asphalt 80/100 @ 50 kg/10sqm	1594	sqm	219.75	350281.50
55	Providing and laying 2 cm thick premix carpet surfacing with 2.4 cum of stone chippings 11.2mm nominal size per 100sqm and bitumen emulsion (medium setting min. 65% bitumen content) complying with IS: 8887-1995 using 96 kg per cum of chipping including consolidation with road roller of 6 to 9 tonne capacity etc. complete (tack coat to be paid for separately)	1594	sqm	86.45	137801.30
56	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.	1594	sqm	36.85	58738.90
57	Providing and fixing at or near ground or alongsides of road etc. precast cement concrete in kerb stone, edging etc. as per approved pattern and setting in position with with cement mortar 1 : 3 (1 Cement : 3 coarse sand) including the cost of required centring, shuttering and finishing smooth with 6mm thick cement plaster 1:3(1 cement:3 fine sand) on exposed surface complete.				
	1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20mm nominal size)	35	cum	4115.15	144030.25
58	Providing and laying compacted 100mm thick layer of moorum shoulder on both sides of road as per direction of Engineer-in-charge.	850	sqm	55.00	46750.00

59	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(225mm wide,8-11mm thick)	200	meter	386.75	77350.00
60	Providing and laying stone aggregate in switch yard areas by using 20 - 40 mm aggregates size 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 specification 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)	27500	sqm	133.70	3676750.00
61	Providing & fixing chain link fencing, all as per specifications, dwg no. TB-3-348-607-613 & directions of Engr-in-Charge. (The cost shall include all labour material like GI chain link fencing, fence post and angles, barbed wire,flats, tension wire, RCC,PCC etc.)	260	RM	1800.00	468000.00
62	Dismantling and stacking within 50 metres lead,fencing posts or struts including all earth work and dismantling of concrete etc in base of:				
	T' or 'L' iron or pipe	130	each	44.85	5830.50
63	Dismantling barbed wire or flexible wire rope in fencing including making rolls and stacking within 50 metres lead.	100	kg	5.55	555.00
64	Dismantling fencing with necessary flats, angles including making rolls and stacking within 50 metres lead as per direction of engineer-in-charge	800	Sqm	11.55	9240.00
65	Grouting of block outs, pockets, foundations, bolts holes and underside of base plates with cement, sand aggregate (of size 6 mm and down) grout 1:1:2 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.	10	cum	10000.00	100000.00
				Total Amount (Rs.)	39018996.93