

## Bill Of Quantities

### Construction of Substations

Sr.	Description	UOM	Quantity	Rate (Rs.)	Amount (Rs.)
1	<p>Construction of Sub station 7.5 X 4.5 M</p> <p>Construction of complete substation including Excavation, Foundation super structure, finishing door&amp; windows etc complete with all respect to operation work as per given drawing</p> <ol style="list-style-type: none"> <li>1. Depth of Excavation - 1.0 m below ground level for trenches.</li> <li>2. Depth of Column footing - 1.50 m below G.L.</li> <li>3. Height of Plinth - 0.6m above G.L.</li> <li>4. Height of Slab above Plinth - 11.25ft. at center.</li> <li>5. Plum concrete for transformer area in plinth.</li> <li>6. Internal cable trenches to be covered by Openable R.C.C. Covers/R.C.C. Slab with chamber</li> <li>7. Wiring either concealed or with G.I.Pipe to be provided inside s/stn with sufficient light points</li> </ol>	SQM	303.75		
2	<p>Construction of Sub station 8.5 X 5.5 M</p> <p>Construction of complete substation including Excavation, Foundation super structure, finishing door&amp; windows etc complete with all respect to operation work as per given drawing</p> <ol style="list-style-type: none"> <li>1. Depth of Excavation - 1.0 m below ground level for trenches.</li> <li>2. Depth of Column footing - 1.50m below G.L.</li> <li>3. Height of Plinth - 0.6m above G.L.</li> <li>4. Height of Slab above Plinth - 11.25ft. at center.</li> <li>5. Plum concrete for transformer area in plinth.</li> <li>6. Internal cable trenches to be covered by Openable R.C.C. Covers/R.C.C. Slab with chamber</li> <li>7. Wiring either concealed or with G.I.Pipe to be provided inside s/stn with sufficient light points</li> </ol>	SQM	374.00		
3	<p>Construction of Sub station 12.5 X 6 M</p> <p>Construction of complete substation including Excavation, Foundation super structure, finishing door&amp; windows etc complete with all respect to operation work as per given drawing</p> <ol style="list-style-type: none"> <li>1. Depth of Excavation - 1.0 m below ground level for trenches.</li> <li>2. Depth of Column footing - 1.50m below G.L.</li> <li>3. Height of Plinth - 0.6m above G.L.</li> <li>4. Height of Slab above Plinth - 11.25ft. at center.</li> <li>5. Plum concrete for transformer area in plinth.</li> <li>6. Internal cable trenches to be covered by Openable R.C.C. Covers/R.C.C. Slab with chamber</li> <li>7. Wiring either concealed or with G.I.Pipe to be provided inside s/stn with sufficient light points</li> </ol>	SQM	450.00		
4	<p>Construction of Sub station 6.1 X 4.55 M</p> <p>Construction of complete substation including Excavation, Foundation super structure, finishing door&amp; windows etc complete with all respect to operation work as per given drawing</p> <ol style="list-style-type: none"> <li>1. Depth of Excavation - 1.0 m below ground level for trenches.</li> <li>2. Depth of Column footing - 1.50m below G.L.</li> <li>3. Height of Plinth - 0.6m above G.L.</li> <li>4. Height of Slab above Plinth - 11.25ft. at center.</li> <li>5. Plum concrete for transformer area in plinth.</li> <li>6. Internal cable trenches to be covered by Openable R.C.C. Covers/R.C.C. Slab with chamber</li> <li>7. Wiring either concealed or with G.I.Pipe to be provided inside s/stn with sufficient light points</li> <li>8. Earthing pits</li> </ol>	SQM	777.14		
5	<p>Construction of Sub station 4.5 X 4.5 M</p> <p>Construction of complete substation including Excavation, Foundation super structure, finishing door&amp; windows etc complete with all respect to operation work as per given drawing</p> <ol style="list-style-type: none"> <li>1. Depth of Excavation - 1.0 m below ground level for trenches.</li> <li>2. Depth of Column footing - 1.50m below G.L.</li> <li>3. Height of Plinth - 0.6m above G.L.</li> <li>4. Height of Slab above Plinth - 11.25ft. at center.</li> <li>5. Plum concrete for transformer area in plinth.</li> <li>6. Internal cable trenches to be covered by Openable R.C.C. Covers/R.C.C. Slab with chamber</li> <li>7. Wiring either concealed or with G.I.Pipe to be provided inside s/stn with sufficient light points</li> </ol> <p>Ground + 1 Floor built up area will be  Ground Floor = 4.5x4.5 Sqm  1st Floor = 4.5x4.5 Sqm</p>	SQM	40.50		
6	<p>Construction of Unitised plinth Construction of complete substation including Excavation, Foundation plinth, finishing work etc complete with all respect including earthing pits as per given drawing</p>	SQM	93.62		

7	Extra for Raft work Raft work with the use of M20 grade concrete and including steel as per drawing,	SQM	300.00		
8	Construction of Cable Trench with slab as per attached drawing	RMT	40.00		
9	Construction of Cable Trench with RCC pipe	RMT	20.00		
10	Extra for construction of Chambers of size( 0.75 m X 1.2 m internal)including excavation, soling 230 mm thk, PCC 1:2:4 150 mm thk with removable RCC M 20 covers of 0.15 m thick	Nos	5.00		
11	Construction of Cable Trench with removable RCC covers as per attached drawing	RMT	5.00		
12	Earthwork in excavation in following types of soil in foundation trenches, basements, water tanks, drains or trenches of required width for pipes, cables, etc in all kinds of soil including all labour and equipment, dewatering, shoring, strutting, excavating, lifting, dressing of sides and ramming of bottom including loading and transport to stock area of the excavated materials within the plant boundary. Only PCC area shall be considered for payment.				
a	In ordinary soil/ murrum	Cu.m.	88.00		
b	In soft rock	Cu.m.	50.00		
c	In hard rock	Cu.m.	1.00		
13	Plinth filling/ foundation trench filling with approved quality of murrum brought from outside in layers not exceeding 150mm including watering, consolidating each layer adequately to achieve 90% compactness including finishing to line required and level etc. complete.	Cum	1.00		
14	Plinth filling/ foundation trench filling with available / excavated earth/ murrum in layers not exceeding 150mm including watering, consolidating each layer adequately to achieve 90% compactness including finishing to line required and level etc. complete including removing/ carting away all balance excavated earth/ materials from the site as per the instructions of the EIC.	Cum	26.00		
15	Providing and laying cast-in-situ plain cement concrete using graded stone aggregate including consolidation, finishing, curing, Complete all as per specification:				
a	1:3:6 (1 cement:3 coarse sand:6 graded stone aggregate 40mm nominal size)	Cum	18.00		
b	1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20mm nominal size)/ Coping	Cum	29.00		
16	Providing and laying cast-in-situ reinforced cement concrete (up to plinth level in any type of structure) using graded stone aggregate including consolidation, finishing, curing, Complete all as per specification 1:1.5:3 (1 cement: 1.5 coarse sand: 3 graded stone aggregate 20mm nominal size) for foundations, plinth beams, stubs, etc.	Cum	11.00		
17	Providing and laying cast-in-situ reinforced cement concrete above plinth level (in retaining walls of any thickness, walls, pillars, columns, pillars, posts, struts, beams, lintels, staircase, window sills, roofs/ floors with slopes, etc.) using graded stone aggregate including consolidation, finishing, curing, complete as per the specification upto floor level 5:1:1.5:3 (1 cement: 1.5 coarse sand: 3 graded stone aggregate 20mm nominal size)	Cum	24.00		
18	Random rubble masonry with approved quality of stone in foundation and superstructure at all levels with cement mortar 1:6 (1 cement:6 coarse sand) including levelling up with cement concrete 1:6:12 (1 cement:6 coarse sand: 12 graded stone aggregate 20mm nominal size), all complete as directed by the Engineer-in-Charge.	Cum	1.00		
19	Providing and laying rubble stone soling vertically hand shaken interstices packed with small stone chips ramming and consolidating complete.				
a	150mm. thk.	Sqm	29.00		
b	230mm. thk.	Sqm	117.00		
20	Providing & Laying 40 mm thk IPS flooring with CC1:2:4, to the required slope or level and as per the pattern given including, surface preparation, compaction, smooth finishing with float, curing, cleaning etc complete as per the instructions of the EIC.	Sqm	60.00		
21	Brick work having thickness 230mm or more with class designation 35 bricks in foundation, plinth and steps including racking out joints and simultaneously pointing below ground level where surfaces shall not be plastered in: Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	54.00		
22	Cement plaster 12 mm thick for internal walls and trenches with c.m. 1:4 finished smooth over brick wall or concrete surface including hacking, scaffolding, curing, complete.	Sqm	226.00		
23	Cement plaster 6 mm thick for ceiling with c.m. 1:3 finished smooth over brick wall or concrete surface including hacking, scaffolding, curing, complete.	Sqm	101.00		
24	Sandfaced cement plaster 20mm thick in two coat over exterior masonry and concrete surface with base coat in c.m.1:4, 12 mm thick and finishing coat should be 8 mm thk in cement mortar 1:3 final rendering at all floors and level in quantities as required at site including scaffolding, hacking of concrete surface, curing etc. complete.	Sqm	241.00		

25	Reinforcement for RCC at all levels including supplying cutting, bending, placing and tying in position with 1.6 mm dia soft drawn annealed binding wire etc. Complete as per specification With rebars	MT	3.00		
26	Centering and shuttering including strutting, propping etc. and removal of form work for:				
a	Foundations, footings, bases of columns, walls up to plinth, etc.	Sqm	1.00		
b	Retaining walls, walls, (any thickness) including attached pilasters, buttresses, plinth and string courses, fillets, beams, floors, arches, chajjas, balconies, lintels, bands, window sills, staircase, shelves, columns, beams, etc. (up to floor level V)	Sqm	355.00		
27	Providing and fixing RCC louvers including dressing remarkng edges where necessary.	Sqm	1.00		
28	Only Fixing charges of RCC louvers including dressing remarkng edges where necessary (RCC louvers to be supplied free of cost to the contractors by the company at the company's stores at Santacruz)	Sqm	1.00		
29	Providing and fixing RCC Grill (2' X 2'6" SIZE) 40/ 50mm thick	Sqm	15.00		
30	Providing and making water drip mould to slab or chhaja or any other projection complete	Rm	63.00		
31	<b>P&amp;A Jadoo Acrylic Distemper</b> confirming to ISI/IGBC and GRIHA specifications with dilution of 65-70% (v/w) depending on surface conditions. Filling the gaps, holes etc with putty and then Apply one coat of primer and 2 coats of paint of overall thickness of 100 micron DFT to the plastered surface including scaffolding, cleaning and preparing the surface such that it is free from chalking, dust, nails, wooden battons, cement splatters, loose dead hanging wires, grease, loose paint, fungus and algae and any foreign material,etc. All Equipments, switch boards, bulbs, tubelights to be covered by tarpolin/plastic/newspaper or suitable material to ensure that they are not damaged. After completion of painting, premises to be cleaned and any left over materials shall be removed/disposed as per EMS and MCGM norms.	Sqm	327.00		
32	Providing and applying two coats of futura with approved make and shade over one coat of cement primer for external surface of the structure.	Sqm	241.00		
33	2 coats of Enamel paint wth 2 coat primer Providing and applying two coat of red oxide zinc chromate / zinc silicate primer and two (2) finishing coats of Synthetic Enamel paint (Apolite of Asian Paints, or equivalent brand and quality of Nerolac, Berger or ICI Dulux) over the structural and miscellaneous Steel work including the cleaning and surface preparation by mechanical means & pre-treatment as per IS: 1477 Part 1 & 2 , labour, materials, equipment and scaffolding etc. complete as per specifications and directions of Engineer-in-chagre at all elevations. Final DFT of paints and primer shall be as mentioned in technical specification.	MT	1.00		
34	P & F steel louvered (partly) MS sheet doors as per secifications and drawing consisting of ISMC75x40, ISA50x50x6, 16SWG MS sheet, 5mm thick MS Strip, GI wire mesh, fixtures, fastening etc., including painting with 2 coats of synthetic enamel paint over one coat of red oxide primer, etc. complete	Sqm	24.00		
35	P&F GI Strip of 50x6mm size inside plinth beams and columns during construction work for providing earthing to the equipments as shown in the drawings, complete.	Rm	1.00		
36	P & F light points with angle holder and switches on board with 1 sqmm copper wire with PVC coating drawn in PVC pipe/ casing and capping.	Nos	12.00		
37	P & F 15 Amps 3 pin plug points with copper wire with PVC coating drawn in PVC pipe/ casing and capping.	Nos	2.00		
38	P & F 30 Amps Main Switch or 15 Amps iron clad DP switch and cable of 3/20 5m long	Nos	2.00		
39	Laying of bentonite paste (bentonite 1:6 Water) in earthing pits. Bentonite will be supplied by REL.	Nos	8.00		
40	Fixing GI spikes. ( Spikes will be supplied by AEML Ltd.)	Rmt	24.00		
41	Providing & Fixing light duty CI covers (450mm x 450mm) on earthing pits.	Sqm	2.00		
42	Providing and fixing in position M.S.gate 75 x 40 channel, with 50 x 50 x 6 angle 12 mm solid square bar wt should not be less than 3 kg./ Sq.ft. (as per drawing.) including pivots , 10" aldrop with one coat of red oxide, two coats of oil paint of approved make & shade etc. complete.	Sqm	1.00		

43	<p>Chain Pulley Block of make 'Hercules' or approved equivalent, Capacity- Upto 10 Tons, Lift - 0.5 meter to 15 meter, as per the work requirement :</p> <ul style="list-style-type: none"> <li>• Designed and Manufactured as per IS 3832.</li> <li>• Load Chain Wheels are of S.G. Iron / Malleable casting with accurate chain sprockets for smooth running and mounted on two nos. ball bearing.</li> <li>• Steel forged hooks are confirming to IS 8610 and fitted in upper arm. Bottom block made out of heavy duty S.G. iron / malleable casting.</li> <li>• Gears are made from alloy steel material, precise machined, gear hobbed &amp; case hardened – duly annealed.</li> <li>• Hand Chain Wheel is manufactured from graded casting as per IS-210.</li> <li>• Load Chain is of grade 80 confirming IS 6216 alloy steel material uniformly electrically welded from alloy steel duly heat treated for ductility, toughness &amp; wear resistance and accurately calibrated for smooth running in wheels.</li> <li>• Screw and Friction type positively self actuating load pressure brake ensures safety at all positions.</li> </ul>	Nos	1.00		
44	<p>Structural Steel work Supply and Fabrication of structural steel members fabricated from rolled steel sections only for columns, beams, bracing, trusses, monorail, purlins, side girts, pipe racks, trestles, lattice girders, crane rail, ladder etc (including pack/spaces plates, splice plates, connecting plates, end plates, gusset plates etc.) the rate to be quoted shall include the cost of supply of Raw structural steel and cutting/bending/shearing of un-sheared plates where required in fabrication work, surface preparation by mechanical means &amp; pre-treatment as per IS: 1477 Part 1&amp; 2 including painting with one shop coat of red-oxide zinc chromate primer, after finishing the exposed surface with wire brush all complete, and also including despatch &amp; transportation of the fabricated materials to site (Incase fabrication is carried outside plant premises). ( Fabrication drawings to be prepared by the contractor ) Note : All material required for this work shall be in the scope of the contractor Finish painting shall be as per final painting requirement as per specification and paid separately.</p>	MT	1.00		
45	Providing and constructing solid concrete block masonry	CUM	1.00		
46	Detachable chainlink fencing - Providing and fixing 10 gauge chainlink fencing of 25mm square with PVC Coating and Chanel of 75 X 40 mm vertical post and frame size will be 50 X 50 X 6mm mm angles framework 2.4 mtr. X 1.8 mtr. with black paint coat as per drawing or as directed by the site engineer. Diagonally crossed by 25 mm x 5mm MS flat with wicket gate 1.2 m x 1.8 m. as per drawings attached herewith and as directed by Engineer in charge including excavation, soling and PCC as per drawing attached.	RMT	1.00		
47	P & F Motion sensor of make Sensinova of Code SN-MW701D (Or any approved make) and HF Microwave Sensor having detection Range 360 degree and detection distance of 1-8m (radius), adjustable, (Temperature resistance > 40-70 degrees) and as directed by Engineer-in-charge.	Nos	2.00		
48	Light point wiring with 6A switch for Substation wiring in M.S. Conduit or concealed including fixing of 2 Nos. of LED bulbs of 9W for each substation (LED bulbs to be given by Reliance) and removal of broken holders, pvc conduits, unwanted wiring and safe disposal at Zonal store locations specified by Engineer-in-charge. and as per EMS norms.	Nos	2.00		
49	S&I 6/16A Switched Socket for Substation wiring in M.S. Conduit or concealed including removal of broken holders, pvc conduits unwanted wiring and safe disposal at Zonal store locations specified by Engineer-in-charge. and as per EMS norms.	Nos	2.00		
50	S&I 30 amps Main switch for substation wiring in M.S. Conduit or concealed including removal of broken holders, pvc conduits unwanted wiring and safe disposal at Zonal store locations specified by Engineer-in-charge. and as per EMS norms.	Nos	2.00		
51	Supplying and fixing (3 and half point board) sunmica switch board 12x10 inch with old black round 3 no. of switches, 1 no of socket and batton holder. With one no of fuse. including 2 X 2.5 sqmm pvc copper armoured cable to give supply to board including removal of broken holders, pvc conduits unwanted wiring and safe disposal as per EMS	Nos	2.00		
52	<p>P&amp;F Substation Name plate and Safety Boards For substation Name plate - 1) Providing and fixing 2' x 1' vitrified tile flushed and levelled with the external portion of substation wall as per location approved by Engineer in charge. 2) Supplying and sticking of sunboard of 3mm thickness and size 2' x 1' with printing of substation name of size as per Engineer in charge &amp; RELIANCE monogram by 3M two way tape on that vitrified tile. For Safety Boards - 1) Supplying and fixing of Polycarbonate sheet of thickness 3mm with 3M paper with both way tape for sticking of First aid chart (2' x 2'), Fire extinguisher (10" x 3") and Fire bucket board (10" x 3") as per location approved by Engineer in charge 2) Supplying and sticking of 3 Nos. of sunboard with printing of Fire extinguisher, Fire bucket and First aid chart of 3mm thickness and of size as per Engineer in charge by two way tape on that polycarbonate sheet.</p>	NOS.	2.00		

53	P&F Galvanised precoated roofing Providing and fixing 0.8 mm thick (TCT) galvanised ,precoated trapezoidal,Jindal make Roofing Sheet profiled sheet with high durable polyester coated (H.D.P)which is ultraviolet rays resistant, corrosion resistant& weather resistant of approved make.Coating should be of average 20 micron thick of H.D.P and Epoxy coating of 5 micron thick avg. at top & bottom avg. 5 micron thick of epoxy coating of approved shade on hot dip galvanised profile sheet with 220GSM substrate steel as per IS-277 & IS-513 made to long lengths with adequate lap fixed with self taping G.I screw of HILT make or equivalent with anti cyclone special device of EPDM lining under screws/or J/L or ""U"" hooks bolt and nuts of 8mm dia with neopasine and bitumen washer one GI screw to be fixed at intermediate support and every alternate pitch with S/S & S/T screws for side stitching at 300mm to 400mm center on every side top of sheet including necessary ridges etc.complete as per the direction of Engineer-in-charge . (Note: only effective length & width excluding over lapping (plan area) will be measured for payment & nothing extra will be paid for over-lapping).	Sqm	60.00		
54	Carting away debris Disposal of excavated earth/murum / ashphalt / soft rock/hard rock etc. from the excavated trench in the AEML Distribution areas and transported to the approved / permitted designated places of BMC/MMRDA/PWD/MBMC or private property owner. No bulkgage will be considered.	Cum	60.00		
<b>Amount (Rs.)</b>					-
<b>Taxes</b>					-
<b>Gross Total (Rs.)</b>					-