

BILL OF QUANTITY AND PRICE SCHEDULE**Name of Project : EXTN OF 765KV AURANGABAD S/S****Name of Work : CIVIL WORKS OF SWITCHYARD**

S.No.	Description of Item	Unit	QUANTITY	UNIT RATE (Rs.)	AMOUNT (Rs.)
1(a)	Earthwork in excavation by mechanical means (Hydraulic excavator) / manual means 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.	cum	4000	125.95	503800.00
1(b)	Earthwork in excavation by mechanical means (Hydraulic excavator) / manual means 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	cum	400	221.05	88420.00
1(c)	Earthwork in excavation by mechanical means (Hydraulic excavator) / manual means 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. Hard rock (blasting prohibited)	cum	400	619.03	247612.00
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.	cum	2300	125.75	289225.00
4	Supplying and filling in plinth with local sand under floors/foundations including watering, ramming, consolidating and dressing complete.	cum	120	810.82	97298.40
5	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.	cum	1700	98.34	167178.00
6(a)	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level. 1:2:4 (1 cement : 2coarse sand : 4 graded stone aggregate 20mm nominal size)	cum	60	4943.80	296628.00
6(b)	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level. 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size)	cum	10	4415.45	44154.50
6(c)	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40mm nominal size)	cum	270	4148.54	1120105.80
6(d)	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level. 1:5:10 (1 cement : 5 coarse sand : 10 brick aggregate) with a layer of cement slurry of mix 1:6 (1 cement : 6 Fine Sand) over PCC layer as per Technical Specification. Note : The contractor has option to use stone aggregate in place of brick aggregate without any financial implication on BHEL)	cum	170	3577.55	608183.50
7	Extra for providing and mixing water proofing material 'Impermo' or equivalent in cement concrete work in the proportion recommended by the manufacturer.	per 50 kg cement	30	41.73	1251.90

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8(a)	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 330kg of cement per cum of concrete.All works upto plinth level	cum	1060	5887.43	6240675.80
8(b)	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 330kg of cement per cum of concrete.All works above plinth level upto floor V level	cum	380	6691.00	2542580.00
9	Extra for finishing of concrete (in road pavement) with screed board vibrator, vacuum dewatering process and finally finished by floating, brooming with wire brush etc complete.	cum	170	194.57	33076.90
10(a)	Centering and shuttering including strutting, propping, etc., and removal of form for: Foundations, footings, bases of columns, etc., for mass concrete.	sqm	760	184.42	140159.20
10(b)	Centering and shuttering including strutting, propping, etc., and removal of form for: RCC walls at all levels (any thickness).	sqm	1520	369.24	561244.80
10(c)	Centering and shuttering including strutting, propping, etc., and removal of form for: Lintels, beams, plinth beams and cantilevers.	sqm	300	333.23	99969.00
10(d)	Centering and shuttering including strutting, propping, etc., and removal of form for: Columns, Pillars, Piers, Posts and Struts.	sqm	2480	454.41	1126936.80
11(a)	Steel reinforcement -Cold twisted bars /TMT- Fe 500- Excluding supply but including straightening, cutting, bending, binding, (i/c cost of binding wire), placing in position, etc., all labour & material, complete. (Note: Reinf, steel shall be supplied by BHEL. Unloading, storing, watch & ward, handling and Testing of material as per PGCIL BOQ shall be in bidders scope)	kg	129100	10.77	1390407.00
11(b)	Steel reinforcement -Cold twisted bars /TMT- Fe 500 (To be procured from SAIL, TISCO, IISCO and RINL only) Including supply, straightening, cutting, bending, binding, (i/c cost of binding wire), placing in position, etc., all labour & material, complete.	kg	13000	49.62	645060.00
12	Brickwork with F.P.S.bricks of class designation 75 in foundation and plinth in: Cement mortar 1:6 (1 cement : 6 coarse sand)	cum	60	4524.10	271446.00
13	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)	cum	10	5355.29	53552.90
14	Half brick masonry with bricks of class designation 75 in foundation and plinth in: Cement mortar 1:4 (1 cement : 4 coarse sand)	sqm	10	562.70	5627.00
15	Half brick masonry with bricks of class designation 75 in superstructure above plinth level to floor V level. Cement mortar 1:4 (1 cement : 4 coarse sand)	sqm	10	653.36	6533.60
16	Extra for providing and placing in position 2 Nos 8mm dia bars at every third course of half brick masonry (with FPS bricks)	sqm	10	48.21	482.10

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17	12 mm cement plaster of mix: 1:6 (1 cement : 6 coarse sand)	sqm	270	154.72	41774.40
18	18 mm cement plaster in 02 coats on external surface of brick wall of mix : Under layer of 12mm thick with 1:5 (1 cement : 5 coarse sand) and finished with 6mm thick with 1:6 (1 cement : 6 Fine sand)	sqm	60	245.49	14729.40
19	6 mm cement plaster to all ceilings of mix: 1:3 (1 cement : 3 Fine sand)	sqm	20	138.39	2767.80
20	Neat cement punning	sqm	270	39.55	10678.50
21	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade: Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture.	sqm	20	74.91	1498.20
22	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.	kg	7500	51.36	385200.00
23(a)	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 covering of floors/trenches of control room building with chequered plates, stringers, treads, landings, etc., of staircases involving use of chequered plates, wherever required, all complete.	kg	3900	56.66	220974.00
23(b)	Steelwork welded in built up sections/framed work including providing, cutting, hoisting, fixing in position and applying approved primer etc., as required. In gratings, frames, ladders, stair railings, gates (including pipes), rails, ISMB, ISMC and similar works.	kg	40500	78.07	3161835.00
24	Applying priming coat - With ready mixed red oxide zinc chromate primer of approved brand and manufacture on steel galvanised iron/ steel works.	sqm	20	28.47	569.40
25(a)	Providing and laying Medium duty hume pipe (NP3) as per drawing and specification all complete excluding concrete and reinforcement. 100mm dia	RM	20	361.53	7230.60
25(b)	Providing and laying Medium duty hume pipe (NP3) as per drawing and specification all complete excluding concrete and reinforcement. 250mm dia	RM	10	903.83	9038.30
25(c)	Providing and laying Medium duty hume pipe (NP3) as per drawing and specification all complete excluding concrete and reinforcement. 300mm dia	RM	10	1084.61	10846.10
25(d)	Providing and laying Medium duty hume pipe (NP3) as per drawing and specification all complete excluding concrete and reinforcement. 450mm dia	RM	10	1660.11	16601.07
26	Providing and fixing in culvert/road crossing/building PVC pipes conforming to IS : 12818 including jointing with seal in complete 150mm diameter	RM	10	283.20	2832.00
27	Supplying and erection of approved make dewatering pumps including all cable and pipe connections alongwith auto starter and necessary shed all complete as per customer's specification and instruction of engineer in charge 0.5 HP	Nos	3	9280.60	27841.80

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S.No.	Description of Item	Unit	QUANTITY	UNIT RATE (Rs.)	AMOUNT (Rs.)
28	Supplying & fixing (all dia & length) foundation bolts in position with help of proper templates (to be supplied by contractor) including nuts, washers and template all complete as per drawings & directions of Engr-in-Charge. Weight of the template shall not be measured for payment purpose.	Kg	920	55.86	51391.20
29	Extra over Item above for providing galvanised bolts (Mass of zinc coating = 610gms/sqm), nuts & washer .	kg	920	5.88	5409.60
30	Fixing (all dia & length) foundation bolts in position with help of proper templates including nuts, washers and template (to be supplied by contractor) all complete as per drawings & directions of Engr-in-Charge. Weight of the template shall not be measured for payment purpose.	Kg	9150	7.35	67252.50
31	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 M25	Cum	5	6186.67	30933.35
32	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.	cum	11	12179.63	133975.93
33	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.	sqm	880	88.30	77702.24
34 (a)	Suppling and stacking at site 90 mm to 45 mm size stone aggregate	cum	100	1278.69	127869.00
34 (b)	Suppling and stacking at site 63 mm to 45 mm size stone aggregate	cum	80	1386.53	110922.40
34 (c)	Suppling and stacking at site 53 mm to 22.5 mm size stone aggregate	cum	80	1475.02	118001.60
34 (d)	Suppling and stacking at site Stone screening 13.2 mm nominal size (type A)	cum	40	1439.66	57586.40
34 (e)	Suppling and stacking at site Stone screening 11.2 mm nominal size (type B)	cum	20	1398.19	27963.80
34 (f)	Suppling and stacking at site moorum	cum	30	563.01	16890.30
35	Laying spreading and compacting stone aggregate of specified sizes to WBM specifications incuding spreading in uniform thickness, hand picking, rolling with 3 wheeled road/vibratory roller 8-10tonne in stages to proper grade and camber, applying and brooming requisite type of screening/binding material to fill up interstices of coarse aggregate water and compacting to the required density (payment for stone aggregate, screenings, kankar, moorum and red bajri etc., to be made separately)	cum	240	449.10	107784.00
36	Providing and laying polythene sheet of 125 microns between the PCC and RCC slab all complete as per direction of Engineer in charge.	sqm	880	15.72	13830.47

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S.No.	Description of Item	Unit	QUANTITY	UNIT RATE (Rs.)	AMOUNT (Rs.)
37	Supplying & installation of bitumen impregnated fibre board confirming to IS 1838 as joint filler including nailing, coating of both faces with coal tar pitch/bitumin etc. all complete as per specification, drawing and as directed by engineer. (20 mm wide joints)	Sqm	40	884.96	35398.21
38	Supplying and filling in position hot applied bitumen sealing compound (Grade A) of specified thick confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints, sealant primer etc all complete as per specification, drawing and as directed by Engineer.	RM	110	11.50	1264.98
39	Supplying and filling stone (40mm size) over grating for transformer/reactor foundation.	cum	80	1584.89	126791.20
40	Finishing walls with water proofing cement paint of required shade : New work (Two or more coats applied @ 3.84 kg/10 sqm)	sqm	1170	56.21	65765.70
41	Demolishing cement concrete Nominal mix 1:4:8 or leaner mix (i/c equivalent design mix) manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer - in - charge.	cum	10	615.15	6151.50
42	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars, foundation bolts and disposal of unserviceable material within the substation boundary as per direction of site-in-charge.	cum	10	1454.55	14545.50
43	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 : Bitumenous road	sqm	375	177.00	66375.00
44	Providing and laying 20mm thk cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate).	sqm	45	146.68	6600.38
45	Antiweed treatment in switchyard area including micro leveling, dressing etc as per Technical Specification.	Sqm	2500	12.54	31350.00
46	Supplying and spreading stone aggregate in switchyard as per drawing and specification all complete but excluding micro leveling, dressing & antiweed treatment as per Technical Specification C/ENGG/SPEC/CIVIL/REV -11A	Sqm	2500	158.47	396175.00
47	Removal, cleaning & washing of existing stone and relaying of stone in switchyard including supply of extra matching gravel but excluding micro leveling, dressing & antiweed treatment as per Technical Specification.	Sqm	2500	79.17	197925.00
TOTAL					22391880

The above amount is excluding GST

Annexure-II

BILL OF QUANTITY AND PRICE SCHEDULE for Underground Earthing & Electrode and Dismantling Works

Project:- SWITCHYARD AT EXTENSION OF 765 KV AURANGABAD S/S IN MAHARASHTRA UNDER PGCIL SUBSTATION PACKAGE SS-19

Customer : POWERGRID Corporation of India Limited

Name of work:- Bill of Quantity for Underground Earthing & Electrode and Dismantling Works

S.No.	Description	Unit	QTY.	UNIT Rate (Rs.)	Amount (Rs.)
1	Unloading and proper storage of 40 mm dia MS Rod including safety & security of material.	MT	72	606.69	43668.16
2	Dismantling of existing earthmat i.e. 40mm MS ROD / Earthing material/ riser / GI Flat with approximate depth of 600 mm measured from the top of FGL as per site requirement complete in all respect including the following works: - excavation - Cutting of existing earthing material - MS rod / GI Flat / TMT Bar etc - Shifting of dismantled items to store and safekeeping	MT	1	2730.09	2730.09
3	Material handling and laying of 40 mm dia MS Rod at a minimum depth of 600 mm measured from the top of Finished Ground Level and bringing out risers just below gravel level near the equipment foundations as per requirement including following works: - excavation - laying of MS rod - welding of rods (refer Drg No. C/ENG./STD/EARTHINGS/09 SHEET # 1, Sheet # 2 , SHEET # 3 for Welding details of rods) - backfilling of soil and compaction for bringing out pig tail risers of 40 dia MS rod for equipments. Risers shall be raised from the earthmat (at 600 mm depth) to approx. 150 mm below finished ground level to the nearest point of the equipment. This shall include all cutting, bending, welding, fixing, application of paints on cutting & welding surface, etc to the main earthmesh. - any other work necessary to complete the laying of earthmat (40 mm dia MS rod will be supplied by BHEL).	MT	1	5460.19	5460.19
4	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. C/ENG/STD/EARTHINGS/09 SHEET # 4 - any other work necessary to complete the laying of earthmat. - welding of rods (refer Drg No. C/ENG/STD/EARTHINGS/09 SHEET # 1, Sheet # 2 , SHEET # 3 for Welding details of rods. (40 Diameter MS rod will be supplied by BHEL)	Nos.	18	2189.41	39409.41
5	Installation of Pipe Electrode(to be driven - 3.0 Mtr) as per Drg. No. C/ENG/STD/EARTHINGS/09 SHEET # 5 including following works: - excavation - installing the pipe electrode. - pipe electrodes in treated earth pit (as per IS) such as alternate layers of coke/ charcoal and salt or bentonite clay. - Backfilling and compaction - Cement Concrete pit with a ISI marked cast iron cover hinged to a cast iron frame to have an access to the joints. - any other work necessary to complete the work Remark :- Pipe Electrode assembly i.e. GI Pipe, Nuts, Bolts & Washers and funnel with wire mesh will be supplied by BHEL.	nos.	6	8007.18	48043.10

Annexure-II

BILL OF QUANTITY AND PRICE SCHEDULE for Underground Earthing & Electrode and Dismantling Works

Project:- SWITCHYARD AT EXTENSION OF 765 KV AURANGABAD S/S IN MAHARASHTRA UNDER PGCIL SUBSTATION PACKAGE SS-19

Customer : POWERGRID Corporation of India Limited

Name of work:- Bill of Quantity for Underground Earthing & Electrode and Dismantling Works

S.No.	Description	Unit	QTY.	UNIT Rate (Rs.)	Amount (Rs.)
6	Installing of 40 mm diameter Rod Electrode with test pit as per Drg. No. Drg. No. C/ENG./STD/EARTHINGS/09 SHEET # 6 including following works: - excavation - installing the rod electrode - backfilling and compaction - Cement Concrete pit with a ISI marked cast iron cover hinged to a cast iron frame to have an access to the joints. - any other work necessary to complete the work Remark:- 40 mm dia MS rod, GI Flat, Nut Bolt washers will be supplied by BHEL.	Nos.	10	3728.68	37286.82
7	Installing of 40 mm diameter Rod Electrode without test pit including following works: - excavation/hammering of rod in earth - installing the rode electrode - backfilling and compaction - any other work necessary to complete the work (40 mm dia MS rod will be supplied by BHEL).	Nos.	2	3331.54	6663.08
8	Dismantling of existing lattice / pipe structure such as Lightning Mast/ Tower structure/ equipment structure including the following works: 1. Arrangement of skilled manpower for structure works, hydra / crane etc as per requirement. 2. Proper Listing and stacking of material, individual item wise. 3. Storage of material in store and safekeeping. 4. Mode of measurement shall be on weight basis including weight of hardwares.	MT	2	3091.41	6182.82
9	Erection of lattice / pipe structure such as Lightning Mast/ Tower structure/ equipment structure. including the following works: 1. Arrangement of skilled manpower for structure works, hydra / crane etc as per requirement. 2. Material handling, shifting from store to erection site 3. Erection of material in complete respect 4. Mode of measurement shall be on weight basis including weight of hardwares.	MT	2	4052.80	8105.59
Total Amount (Rs.)-Excluding GST					197549
Enclosed: Drawing C/ENG/STD/EARTHINGS/09					

ANNEXURE-III

BILL OF QUANTITIES CUM PRICE SCHEDULE

Name of Project : Civil works of switchyard at extension of 765 kV Aurangabad s/s in Maharashtra under PGCIL Substation under subsation Package SS-19					
Name of Work: Construction of Stores					
SI No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
1	Open stores of size 500 Sqm (as per specification enclosed).	Sqm	500	488	2,44,000
Total Amount (Rs.)-Excluding GST					2,44,000
Notes:					
1	The quoted rate is inclusive of all materials, tools & plants etc. required for above works.				
2	Decision regarding store location and execution of above items shall be taken by site in charge as per site requirement.				
3	Size of open store may vary as per site requirement and the same shall be measured on prorated basis				

ANNEXURE-IV

**TRANSMISSION BUSINESS GROUP
(SUB- CONTRACTS MANAGEMENT)
TBG - NOIDA**

PRICE SCHEDULE FORMAT

**SUB: TENDER FOR "EXECUTION AND HANDING OVER OF CIVIL WORKS OF SWITCHYARD AT
EXTENSION OF 765 KV AURANGABAD S/S IN MAHARASHTRA".**

TENDER NO.:- TBSM/AURANGABAD/ PKG-SS19/ CIVIL/TENDER

DATE: 20.09.2019

(a) I/ We hereby agree to execute the above work at ----- % (in figure).....
----- (in words) Above / Below/ At Par the rates of items given in BOQ
(Annexure-I, II & III) of subject tender.

NOTE:

1. In this annexure the tenderer shall quote a percentage above/ below/At Par the rates shown in the Bill of Quantities (Annexure-I, II & III) of subject tender. The percentage quoted shall be clearly written both in words and figures In case of discrepancy in rates in figure and words, the minimum will be taken into account by BHEL.
2. The quoted percentage will apply to the individual items uniformly.

Date:

Place

Signature of tenderer
Name & Designation of authorized person(s) with seal

ANNEXURE-V**(Summary of Prices)****EXECUTION AND HANDING OVER OF CIVIL WORKS OF SWITCHYARD AT EXTENSION OF 765 KV
AURANGABAD S/S IN MAHARASHTRA**

Sl No.	Description	Amount (Rs.)
1.a	Total amount as per the rates in BOQ for "Execution and handing over of civil works of switchyard at extension of 765 kV Aurangabad s/s in Maharashtra" (Annexure-I)	223,91,880
1.b	Total amount as per the rates in BOQ for "Underground Earthing & Electrode and Dismantling Works" (Annexure-II)	1,97,549
1.c	Total amount as per the rates in BOQ for construction of stores (Annexure-III)	2,44,000
1	Total Amount - Excluding GST (Annexure-I + Annexure-II + Annexure-III)	228,33,429
2	Value of percentage above/below/at par (As indicated in Price Schedule Format, Annexure-IV) applicable to the total amount of subject work (Sl. no. 1 above)% above/below/ at par
3	Total amount after consideration of percentage above/below/ at par.	