ORISSA POWER TRANSMISSION CORPORATION LIMITED
REGD. OFFICE, JANAPATH, BHUBANESWAR –751022
ORISSA.

TENDER NOTICE NO. 38/2011

CORRIGENDUM-II

Some corrections / modifications has been made to the Bidding proposal sheet against T.O. Tender Notice No 38 / 2011 & TENDER SPECIFICATION NO. Sr.G.M.CPC-TENDER-R/C-EMERGENCY/NORMAL WORK-47/2011 . Also the last date & time of receipt and opening of tender is hereby extended up to 5.7.2011 at 11.00AM and 03.30PM respectively.

For details of Corrigendum No- II, Interested firms may also visit OPTCL's official website http://www.OPTCL.co.in.

SR. GENERAL MANAGER [C.P.C.]

CORRIGENDUM- II
to
Tender Notice No 38 /2011

I . ADDITION/ DELETION/ALTERATION TO BIDDING PROPOSAL SHEET(PACKAGE-I)		
ANNEXURE – I (TRANSMISSION LINE)		
Clause No	Description of work(Existing)	Correction / Modification made
1.2	Detailed survey including taking of levels, profile plotting, tower spotting ,marking of tower location at site including showing P&T, Power lines, Railway line , river crossing ,Roads and submission of profile and survey report. The P&T lines and Railway lines for a minimum distance of 8 KMs. on either side of alignment shall be clearly indicated.	Detailed survey including taking of levels, profile plotting, tower spotting ,showing P&T, Power lines, Railway line , river crossing ,Roads and submission of profile and survey report. The P&T lines and Railway lines for a minimum distance of 8 KMs. on either side of alignment shall be clearly indicated.
1.4	Check survey- rough check on detailed survey, locate and peg mark the tower positions on ground confirming to survey chart, marking of pit centers according to excavation marking chart, preparation of tower schedule, line schedule.	Check survey- rough check on detailed survey, marking of tower location, locate and peg mark the tower positions on ground confirming to survey chart, marking of pit centers according to excavation marking chart, preparation of tower schedule, line schedule.
1.2,1.3 & 1.4	Detailed survey , Preparation of land schedule & Check survey. (i) 400Kv line – RKM (ii) 220kv line- RKM (iii) 132kv line- RKM (iv) 33kv line - RKM	Detailed survey , Preparation of land schedule & Check survey. 400kv/220KV/132KV - RKM
6.1	Fixing of templates and setting of stubs.	Fixing of templates and setting of stubs(including weight of stub)
12(k)	400KV single tension – Per string	Item deleted
13	Jumpering in existing line with fixing of clamps at tension location and as per the instruction of engineer in charge (a) AAAC/ACSR Panther (single) (b) AAAC/ACSR Panther(twin) (c) AAAC/ACSR Zebra(single) (d) AAAC/ACSR Zebra(Twin) (e) AAAC/ACSR Moose(single) (f) AAAC/ACSR moose(Twin)	Jumpering in existing line with fixing of clamps at tension location and as per the instruction of engineer in charge (a) 400KV line- per Jumper (b) 220KV line- Per Jumper (c) 132KV line- Per jumper (including providing support PG clamp wherever required)
19	Breaking o Breaking of existing foundation/ concrete for renovation /reinforcement work, clearing	item 19 as 19.1 – (Repair of couping)

	debris from switch yard as per the Instruction of Engineer In-charge (including supply of T&P, Laobur etc whatever necessary for the work)	breaking of couping concrete,clearing of debris around tower legs and recouping of tower legs – Per leg
New items		
Item No	Description of work	Remarks
3(iv)	**Disposal of Surplus excavated earth** (after back filing) at site- Per cum / Mtr	
10.7	**Charges for Detention of staff-** for non availability of shut down and required materials at site. (i) below 10 persons - per day (ii) Above 10 persons – per day	
19.2	**Repair of damaged Stub** - Excavation around tower legs, Breaking of damaged concrete, cutting of angle/clits ,making of hole/ welding / nut bolting with leg, concreting, backfilling(Complete repair of damaged stub) as per the instruction of the EIC – Per stub	
10.6	**Rewinding of conductors-** in new drums from damaged conductors drums (where ever required) at central /site stores for transportation and stringing in line- Per Km	
ANNEXURE – II (SUBSTATION)		
New items		
Item No	Description of work	Remarks
2.3	**Disposal of Surplus excavated earth-** (after back filing) in switch yard- Per cum / Mtr	
5.6	**Removal of unusable sand-** below spread ed metal and stacking out side switch yard – Per Cum	
34.3	**Charges for Detention of staff-** for non availability of shut down and required materials at site. (i) below 10 persons - per day (ii) Above 10 persons – per day	

II. ADDITION TO TECHNICAL SPECIFICATION		
1	Qty of cement in concrete work of grade m 200(1:1.5:3) for both Transmission line(Annexure-I) and Substation work(Annexure-II) is not mentioned.	Qty of cement in concrete work of grade M200(1:1.5:3) is 8.0 bags (400.0Kg)
2	Grade of cement to be used for all concrete work not mentioned.	The grade of cement to be used in all concrete work should be OPC- 43

II. AMENDMENT TO CONTRACT PERFORMANCE GUARANTEE
Exiting clause - As a Contract Performance Security, the successful Bidder, to whom the work is awarded, shall be required to furnish a Performance Guarantee from (a) a Public Sector Bank or b) a Scheduled Indian Bank. The guarantee amount shall be equal to the EMD amount notified in Notice Inviting Tender and it shall guarantee the faithful performance of the Contract in accordance with the terms and conditions specified in these documents and specifications. The guarantee shall be valid up to 90 days after the end of Warranty Period. As a Work Performance Security ,the successful Bidder, to whom the work is awarded, shall be required to furnish a Performance Guarantee to the owner amounting to Five percent (5%) of the work order value. **Revised** – For the successful bidders, EMD BG amount shall be accepted as contract performance guarantee and work performance guarantee. In case of award of work, furnishing of Performance Guarantee to the owner amounting to Five percent (5%) of the work order value is waived out. All other conditions of the existing clause remains unaltered.

IV . Extension of last date of receipt of Tender documents: -

Last of receipt of Tender documents – up to 11.00AM on 5.7.2011.
Time of opening of Tender documents – at 03.30PM on 5.7.2011

Sr. GENERAL MANAGER, CPC

BIDDING PROPOSAL SHEET FOR PACKAGE- I
(REVISED ON 21.06.2011)

RATE CONTRACT YEAR 2011-12
FOR EMERGENCY / NORMAL WORKS OF OPTCL IN 400KV,220KV,132KV & 33KV SUBSTATION AND ASSOCIATED LINES

ANNEXURE – I (TRANSMISSION LINE)

ITEM NO	DESCRIPTION	UNIT	RATE TO BE QUOTED IN INDIAN RUPEES	
			FOR EXECUTION OF EMERGENCY RESTORATION WORK	FOR EXECUTION OF NORMAL WORK
1	**SURVEY**			
1.1	**Preliminary survey**- Making walk over survey ascertaining feasible route and marking on Toposheet, preparation of route alignment map,	RKM		
1.2	**Detailed survey** including taking of levels, profile plotting, tower spotting , showing P&T, Power lines, Railway line , river crossing ,Roads and submission of profile and survey report. The P&T lines and Railway lines for a minimum distance of 8 KMs. on either side of alignment shall be clearly indicated.			
	400 KV/220KV/132KV/33KV DC Line	RKM		
1.3	**Preparation of land schedule-** with plot No, khata No, Mouza on revenue maps indicating alignment therein duly authenticated by Revenue Inspector and Tahasildar, enumeration of trees with the help of Forest Officers and other prominent features required for alignment of line			
	400 KV/220KV/132KV/33KV DC Line	RKM		
1.4	**Check survey-** rough check on detailed survey,marking of tower location , locate and peg mark the tower positions on ground confirming to survey chart, marking of pit centers according to excavation marking chart, preparation of tower schedule, line schedule.			
	400 KV/220KV/132KV/33KV DC Line	RKM		
1.5	**Soil investigation** per location			
	Normal foundation(boring up to 3.0m, 5.0m, 7.0m depth)	Per Loc.		
	under ream plie foundation(boring to 15.0m depth)	Per Loc.		
	river bed pile foundation(boring to 30.0m depth)	Per Loc.		
2	**EXCAVATION AND BACK FILLING** (As per approved drawing)**.**			
	(i) Soft/Loose Soil.	Cum.		
	(ii)Dense/Compact soil.	Cum.		

	(iii) Soft/Dis intigrated rock(not requiring blasting).	Cum.		
	(iv) Hard rock (requiring blasting).	Cum.		
	(v) Fully Submerged soil.	Cum.		
	(vi) Partially submerged soil	Cum.		
3	Supply of borrowed earth/morrum for back filling for foundation works.			
	(i) Up to 30 mtr lead	Cum.		
	(ii) Beyond 30 mtr & up to 100mtr lead	Cum.		
	(iii) Beyond 100mtr lead	Cum.		
	(iv) Disposal of surplus excavated earth(after back filling) at site	Per Cum / Mtr		
4	**SHORING & SHUTTERING-** required in wet or special locations with supply of all materials,T&P and Labour.	Sq. m		
5	**DE-WATERING**			
	(i) With Supply of all T&P on Man Hr basis.	Man hour.		
	(ii) With Supply of all T&P, Fuel, Lubricant &electricity on HP Hr basis	HP hour.		
6	**FOUNDATION**			
6.1	Fixing of templates and setting of stubs(Including weight of stubs)	MT		
6.2	Providing mud-matting before concreting of stubs with lean concrete including cost of agree gates,mixing, layig, curring etc(Form Boxes and other consumables to be supplied by the contractor)			
	(i) 1:4:8 mix with cement	Cum		
	(ii) 1:4:8 mix without cement	Cum		
	(iii) 1:3:6 mix with cement	Cum.		
	(iv) 1:3:6 mix without cement	Cum		
6.3	Providing and laying ordinary plain/reinforced concrete work of Grade M-150(1:2:4)with approved quality stone chips of nominal size 20mm in tower foundation and coping inclusive of cost of mixing,laying curing etc.and cost of all materials (Form Boxes and other consumables to be supplied by the contractor) conforming to relevant IS.			
	(i) With cement and without rod	Cum		
	(ii) Without cement and without rod	Cum		
6.4	Providing and laying ordinary plain/reinforced concrete work of grade m 200(1:1.5:3)with approved quality stone chips of normal size up to 20 mm in tower foundation and couping inclusive of cost of cement mixing by curring etc. and cost of all materials(Form Boxes and other consumables to be supplied by the contractor) conforming to relevant IS.			
	(i) Without cement and without rod	Cum.		

	(ii) With cement and without rod.	Cum.		
6.5	Cutting bending hooking, fixing and binding in position of MS bars for reinforcement of foundation concrete of towers including supply of wire for binding.			
	(i) With supply of steel rod (TATA / RINL / SAIL make)	MT		
	(ii) Without supply of steel rod.	MT		
7	PILE FOUNDATION (UNDER REEMED/WITHOUT UNDER REEMED)Boring for under reemed cast in situ piling with betonite showing for stabilisation of bore.			
7.1	In Soft/Loose/Muddy soil with under reemed.			
	(i) 250 mm	Mtr.length		
	(ii) 300 mm	Mtr.length		
	(iii) 375 mm	Mtr.length		
	(iv) 400 mm	Mtr.length		
	(v) 450 mm	Mtr.length		
	(vi) 500 mm	Mtr.length		
	(vii) 1000mm	Mtr.length		
7.2	In Soft/Loose/Muddy soil without under reemed			
	(i) 250 mm	Mtr.length		
	(ii) 300 mm	Mtr.length		
	(iii) 375 mm	Mtr.length		
	(iv) 400 mm	Mtr.length		
	(v) 450 mm	Mtr.length		
	(vi) 500 mm	Mtr.length		
	(vii) 1000mm	Mtr.length		
7.3	In Submerged Soil with under reemed			
	(i) 250 mm	Mtr.length		
	(ii) 300 mm	Mtr.length		
	(iii) 375 mm	Mtr.length		
	(iv) 400 mm	Mtr.length		
	(v) 450 mm	Mtr.length		
	(vi) 500 mm	Mtr.length		
	(vii) 1000mm	Mtr.length		
7.4	In Submerged Soil without under reemed			
	(i) 250 mm	Mtr.length		
	(ii) 300 mm	Mtr.length		
	(iii) 375 mm	Mtr.length		
	(iv) 400 mm	Mtr.length		
	(v) 450 mm	Mtr.length		
	(vi) 500 mm	Mtr.length		
	(vii) 1000mm	Mtr.length		
7.5	Boring by DMC method			
	(i) 500 mm dia	Mtr.length		

7.5				
	(ii) 1000 mm dia	Mtr.length		
8	**EARTHING OF TOWER**			
8.1	Pipe type earthing including cost of bentonate compound and good borrowed earth where necessary in accordance with IS:3043-1966 and with supply of all T&P and Laobur.			
	i)With cost of earthing pipe (50 mm dia 3050 mm length medium gauge) and (50x6 mm) G.I.Flat	No		
	ii)Without cost of earthing pipe & G.I. flat	No.		
8.2	Same as above 8.1 , but with excavation of Morrum and laterite layer and back filling with good borrowed earth.			
	i)With cost of earthing pipe 50 mm dia 3050 mm length medium gauge and 50x6 mm GI Flat	No		
	ii)Without cost of earthing pipe and G.I. flat	No.		
8.3	COUNTER POISE EARTHING			
	i)With cost of counter poise earthing wire	Mtr.length		
	ii)Without cost of counter poise earthing wire	Mtr.length		
9	**ERECTION OF TOWER**			
	(i) Erection of tower super -structure complete with tightening,checking and punching of bolts including step-bolts (Including transportation from nearest store of OPTCL)	MT		
	(ii) Dismantling of tower super structure, delivery with stacking at nearest OPTCL store as per Instruction of Engineer in charge, as a percentage of Erection charges.	% age		
10	**STRINGING**			
10.1	Hoisting and fixing of insulators with required accessories, paying out of conductor ,jointing, stringing, sagging & Jumpering etc. of power conductor and earth wire with all required accessories including scaffolding for 33 KV,11 KV, LT , P&T lines, roads and railway lines and using own required T&P and compression jointing machines etc.			
(I)	**Double circuit on DC tower**			
	(a) AAAC/ACSR Panther(with one earth wire)	Route(km)		
	(b) AAAC/ACSR Zebra(with one earth wire)	Route(km)		
	(c) AAAC/ACSR Double Moose for 400 KV Lines(with two earth wire)	Route(Km)		
	(d) AAAC/ACSR Moose	Route(Km)		
(II)	**Single circuit on a SC / DC tower**			
	(a) AAAC/ACSR Panther(with one earth wire)	Route(Km)		
	(b) AAAC/ACSR Zebra(with one earth wire)	Route(Km)		
	(c) AAAC/ACSR Double Moose for 400 KV Lines(with two earth wire)	Route(Km)		
	(d) AAAC/ACSR Moose	Route(Km)		
iii	Three phase conductor without earth wire			

iii				
	(a) AAAC/ACSR Panther	Route(Km)		
	(b) AAAC/ACSR Zebra	Route(Km)		
	(c) AAAC/ACSR Double Moose for 400 KV Lines	Route(Km)		
	(d) AAAC/ACSR Moose	Route(Km)		
(IV)	**Two phase (Single circuit)**			
	(a) AAAC/ACSR Panther	Route(Km)		
	(b) AAAC/ACSR Zebra	Route(Km)		
	(c) AAAC/ACSR Moose	Route(Km)		
(V)	**Stringing of one single conductor/ earth wire**			
	(a) AAAC/ACSR Panther	Route(Km)		
	(b) AAAC/ACSR Zebra/Moose	Route(Km)		
	(c)AAAC/ACSR Double Moose for 400 KV Lines	Route(Km)		
	(d) Stringing of earth -wire	Route(Km)		
	(e) AAAC/ACSR Moose	Route(Km)		
10.2	**Additional Charges for Stringing same as above(9.1) with supply of all labour, materials and T&P as per the following site conditions**			
	(i) EHV line crossing / Railway/National Highway crossing.	Additional charges in %age		
	(ii) In River crossing towers.	Additional charges in %age		
	(iii) In special towers beyond +6 mtr extension	Additional charges in %age		
	(iv) River crossing with special towers beyond +6 mtr extension	Additional charges in %age		
	(v)Tower placed in Hilly terrain	Additional charges in %age		
	(vi) Hot line Stringing (With other circuit in DC tower in charged condition)	Additional charges in %age		
10.3	Additional Charges for Stringing each section beyond 1:6 ratio of angle to normal tower with supply of all labour, materials and T&P as required	Additional charges in %age		
10.4	Shut down / restoration incentive as a percentage of stringing charges	Additional charges in %age		
10.5	Dismantling , delivery and stacking of stung conductor at nearest OPTCL store as per the instruction of Engineer In charge, as a percentage of stringing charges	% age		

10.6	Rewinding of conductors- in new drums from damaged conductor drums (wherever required) at central store/site stores for transportation / stringing in line	Per KM		
10.7	Charges for detention of staff – for non availability of shut down and required materials at site			
	(i) Below 10 persons	Per day		
	(ii) Above 10 persons	Per day		
11	**FIXING OF ACCESSORIES IN EHT LINE**			
	(i) Number plate	per No		
	(ii) Danger board	per No		
	(iii) Phase plate	per No		
	(iv) Bird guard	per No		
	(v) Anti climbing device	per No		
12	**REPLACEMENT OF INSULATOR STRINGS**-Receiving from the nearest store, Transportation to site and replacement of the following insulator strings with supply of all Labour and T&P except insulators.			
	(a) 132 KV Single Suspension	Per String		
	(b) 132 KV Double Suspension	Per String		
	(c) 132 KV Single Tension	Per String		
	(d) 132 KV Double Tension	Per String		
	(e) 220 KV Single Suspension	Per String		
	(f) 220 KV Double Suspension	Per String		
	(g) 220 KV Single Tension	Per String		
	(h) 220 KV Double Tension	Per String		
	(i) 400 KV Single Suspension	Per String		
	(j) 400 KV Double Suspension	Per String		
	(l) 400 KV Double Tension	Per String		
13	Jumpering in existing line with fixing of clamps at tension location and as per the instruction of engineer in charge (including providing support PG clamp wherever required)			
	(a) 400KV line	Per Jumper		
	(b) 220KV line	Per Jumper		
	(c) 132kv line	Per Jumper		
14	Checking of jumpers,insulators, hardwares and accessories and tightening/replacement of clamps, nut & bolts wherever necessary at tension location and as per the instruction of engineer in charge			
	(i) 400KV Tower	Per Jumper		
	(ii) 220KV Tower	Per Jumper		
	(iii) 132kv Tower	Per Jumper		
15	(i) Additional Charges for Jumpering of Jumpers in Hot Line Condition(working in DC tower where one of the circuit is in energized condition)	addl charges in %age		

	(ii) Additional Charges for Checking of Jumpers in Hot Line Condition(working in DC tower where one of the circuit is in energized condition)	addl charges in %age		
16	**REVETMENT/STONE PITCHING-** for providing additional protection of tower base whereever .			
16.1	Random rubble masonary(with cement mortar of 1:5 ratio) with supply of boulder,cement, river sand , T& P and Labour.			
	(i) With cement	Cum.		
	(ii) Without cement	Cum.		
16.2	Brick masonary(with cement mortar of 1:5 ratio) with supply of First class Bricks,cement, river sand , T& P and Labour.	Cum.		
16.3	Stone pitching with supply of boulder, T& P and Labour.	Cum		
17	FABRICATION & WELDING OF TOWER MEMBER, BREAKING OF CONCRETE AND PAINTING OF TOWER LEGES			
17.1	Fabrication(cutting of different size angles/Flats,drilling of holes) including cost of consumable, Labour , T&P and other ancillary item.			
	(i) With cost of steel	Per MT		
	(ii) Without cost of steel	Per MT		
17.2	Welding((including supply of electrods and zinc rich paints with application after welding)			
	(i) Bolt and nut welding (continuous welding) around the bolts	Per bolt		
	(ii) Bracing member welding	Per cm.		
17.3	Replacement of missing / theft tower members at different locations in EHT lines(Including transportation, fabrication, welding/nut bolting of members)	Per MT		
18	Painting over Tower structure by applying one coat of zinc phosphate primer of ASIAN/BERGER make , 2 coats of Aluminum paint of ASIAN / BERGER make and applying one coat of black enamel paint over tower legs up to a height of 1mtr. including cost of material,consumables, T& P and as per the instruction of the Engineer in charge.(Scrapping and washing of structures are to be done prior to painting of towers)	Per Sqm		
19.1	Repair of couping- breaking of couping concrete, clearing of debris around tower legs and recouping of tower legs as per the Instruction of Engineer In-charge (including supply of materials, T&P, Laobur etc)	Per Leg		

19.2	Repair of damaged stub- Excavation around tower legs,breaking of damaged concrete,cutting of angles/clits, making of holes, welding/nut bolting with leg, concreting, backfilling(complete repair of damaged stub(as per the Instruction of Engineer in charge)	Per stub		
20	Head loading of all types of foundation materials,tower structures, conductors, insulators hardwares etc. from nearest approach point by road to work site	Per Ton/Per Mtr.		
21	EMERGENCY RESTORATION SYSTEM			
21.1	Erection of Emergency Restoration Towers including supply of all labour and T&P	Per No		
21.2	Transportation of Emergency Restoration towers from OPTCL Store(where ERS towers available) to the site as per the instruction of the engineer in charge including supply of all labour and T&P	Per No / Per Km		
21.3	Head loading of the ERS towers to the work site from the nearest approach point by road	Per Set per KM		
22	**MOBILISATION CHARGES**			
22.1	Mobilisation Cost of 10 persons to site.			
	(i) Movement beyond 30.0km up to 100.0 km	Lots		
	(ii) Movement beyond 100.0km up to 200.0 Km	Lots		
	(iii) Movement beyond 200.0km up to 300.0Km	Lots		
	(iv) Movement beyond 300.0Km up to 400.0Km	Lots		
	(v) Movement beyond 400.0Km up to 500.0Km	Lots		
22.2	Mobilisation cost of above10 persons to site.			
	(i) Movement beyond 30.0km up to 100.0 km	Lots		
	(ii) Movement beyond 100.0km up to 200.0 Km	Lots		
	(iii) Movement beyond 200.0km up to 300.0Km	Lots		
	(iv) Movement beyond 300.0Km up to 400.0Km	Lots		
	(v) Movement beyond 400.0Km up to 500.0Km	Lots		
ANNEXURE-II(SUBSTATION)				
1	**SURVEY, LAND SCHEDULING AND LEVELING, BACK FILLING**			
1.1	**Contour survey** and furnishing contour map including supply of all materials, Labour and T&P	Sqm		
1.2	**Cutting, Filling and Leveling** of Sub-station area including supply of labour and T&P			
	[i]Soft/loose soil	Cum		
	[ii]Dense/ Compact soil	Cum		
	[iii]Soft/Disintegrated rock[not requiring blasting]	Cum		
	[iv]Hard rock[requiring blasting]	Cum		
	[v] Partially Submerged Soil	Cum		
	[vi] Fully Submerged soil	Cum		

1.3	**FILLING** of substation area with borrowed earth with supply of all labour, T & P.			
	(i) Up to 30 mtr lead	Cum		
	(ii) Beyond 30 mtr & up to 100mtr lead	Cum		
	(iii) Beyond 100mtr lead	Cum		
2	**EXCAVATION & BACK FILLING** for foundation of equipment and column including supply of all materials, Labour and T& P and as per the instruction of Engineer In charge.			
2.1	In first depth[up to 1.5 mtr]			
	[i]Soft /loose soil	Cum		
	[ii] Hard / Dense soil	Cum		
	[iii]Muddy soil	cum		
	[iv] Soft/Disintegrated rock[not requiring blasting]	Cum		
	(v) Hard rock[requiring blasting]	Cum		
2.2	In second depth[up to 1.5 mtr. To 3 mtr.]			
	[i] Soft / loose soil	Cum		
	[ii]Hard /Dense soil	Cum		
	[iii]Muddy soil	Cum		
	[iv] Soft/Disintegrated rock[not requiring blasting]	Cum		
	[v] Hard rock[requiring blasting]	Cum		
2.3	Disposal of surplus excavated earth(after back filling) at site	Per Cum / Mtr		
3	**FOUNDATION AND REINFORCEMENT:-** Supply of all materials, good quality planks, ballas, shuttering plates for centering,shuttering , supply of good quality 20 mm machine broken granite chips,good quality river sand and concreting, curing for foundation of columns,equipment structure, transformer and cable trench slab etc. as per is:4156 including cost of taxes,royalties ,lead lift, Labour and T&P.			
3.1	As per above specification(3) With M-150 grade concrete in ratio [1:2:4)			
	(i) With cost of cement and without steel	Cum		
	(ii) Without cost of cement and without steel	Cum		
3.2	As per above specification(3)With M-100 grade concrete in ratio [1:3:6)			
	(i) With cost of cement and without steel	Cum		
	(ii) Without cost of cement and without steel	Cum		
3.3	As per above specification (3) With ratio of concrete [1:4:8)			
	(i) With cost of cement and without steel	Cum		
	(ii) Without cost of cement and without steel	Cum		

3.4	As per above specification (3) With ratio of concrete [1:1.5:3)			
	(i) With cost of cement and without steel	Cum		
	(ii) Without cost of cement and without steel	Cum		
3.5	Cutting,bending, binding,placing in position of steel rods for foundation concreting including cost of binding wire			
	[I]With supply all size of rod(TATA / RINL / SAIL MAKE)	MT		
	[II] Without supply rod	MT		
3.6	Breaking of existing concrete foundation for replacement / renovation work, clearing of debris from switch yard as per the Instruction of Engineer In-charge (including supply of T&P, Laobur etc. necessary for the work)	Cum		
4	**PILE FOUNDATION (UNDER REEMED/WITHOUT UNDER REEMED)-**Boring for under reemed cast in situ piling with betonite showing for stabilisation of .bore.			
4.1	In Soft/Loose/Muddy soil with under reemed.			
	(i) 250 mm	Mtr.length		
	(ii) 300 mm	Mtr.length		
	(iii) 375 mm	Mtr.length		
	(iv) 400 mm	Mtr.length		
	(v) 450 mm	Mtr.length		
	(vi) 500 mm	Mtr.length		
4.2	In Soft/Loose/Muddy soil without under reemed			
	(i) 250 mm	Mtr.length		
	(ii) 300 mm	Mtr.length		
	(iii) 375 mm	Mtr.length		
	(iv) 400 mm	Mtr.length		
	(v) 450 mm	Mtr.length		
	(vi) 500 mm	Mtr.length		
4.3	In Submerged Soiol with under reemed			
	(i) 250 mm	Mtr.length		
	(ii) 300 mm	Mtr.length		
	(iii) 375 mm	Mtr.length		
	(iv) 400 mm	Mtr.length		
	(v) 450 mm	Mtr.length		
	(vi) 500 mm	Mtr.length		
4.4	In Submerged Soil without under reemed			
	(i) 250 mm	Mtr.length		
	(ii) 300 mm	Mtr.length		
	(iii) 375 mm	Mtr.length		
	(iv) 400 mm	Mtr.length		
	(v) 450 mm	Mtr.length		
	(vi) 500 mm	Mtr.length		

4.5	Boring by DMC method			
	(i) 500 mm dia	Mtr.length		
	(ii) 1000 mm dia	Mtr.length		
4.6	(i) Supply and putting of MS Liner	Per MT		
	(ii) Only putting Ms liner without supply	Per MT		
4.7	Boring 500 mm dia pile by DMC method	Mtr.length		
4.8	Boring 1000 mm dia pile by DMC method	Mtr.length		
5	**SPREADING OF METAL/SAND iN SWITCH YARD**			
5.1	Supply and spreading of 20mm size hard granite machine broken metal in switch yard, including stacking for measurement] with supply of all labour and T&P.	Cum		
5.2	Supply and spreading of loose fine, clear good quality river sand / crusher dust in switch yard, including stacking for measurement with supply of all labour and T&P.	Cum		
5.3	Supply and Spreading of Boulder including rolling with sand / morum filling with supply of all labour and T&P	Cum		
5.4	Picking of 20/40mm hard granite metals from switch yard area and stacking of the same as per instruction of Engineer In charge	Sq. m		
5.5	Spreading of 20mm hard granite metals in switch yard as per the Instruction of Engineer In charge with supply of all Labour and T&P(without supply of metal)	Cum		
5.6	Removal un usable sand – below spread ed metal and stacking outside switchyard	Cum		
6	**MASONARY WORKS**			
6.1	Masonary work in ratio1:5 in making of drain/cable trench and fixing of bracket including supply of good quality river sand, Labour , T&P and without supply of brackets.			
	[i]With supply of cement	Cum		
	[ii]Without supply of cement	Cum		
6.2	Brick Masonary in ratio 1:5 with supply of First class K.B.Bricks, good quality river sand, Labour & T&P.			
	[i]With supply of cement	Cum		
	[ii]Without supply of cement	Cum		
6.3	Random Rubble Masonary in ratio 1:5 with supply of rubble, good quality river sand, Labour and T&P.	Cum		
6.4	Laterite stone Masonary in ratio 1:5 with supply of Laterite stone, good quality river sand, Labour and T&P.	Cum		
6.5	Cement Plastering with Mortar of 1:6 ratio with supply of all fine aggregates(good quality river sand), all labour and T&P.			
	[i]With supply of cement	Sqm		
	[ii]Without supply of cement	Sqm		
6.6	Cement punning.			

6.6				
	[i]With supply of cement	Sqm.		
	[ii]Without supply of cement	Sqm.		
6.7	Cement pointing.			
	[i]With supply of cement	Sqm.		
	[ii]Without supply of cement	Sqm.		
7	**STONE PITCHING**			
7.1	Rubble stone pitching with supply of rubble stone,Labour and T&P.	Cum.		
7.2	Late rite stone pitching with supply of Late rite stone, all Labour and T&P.	Cum.		
8	**FABRICATION & WELDING.**			
8.1	Fabrication(cutting of different size angles/Flats,drilling of holes) including cost of consumable, Labour , T&P and other ancillary item.			
	(i) With cost of steel	MT		
	(ii) Without cost of steel	MT		
8.2	Welding((including supply of electrodes and zinc rich paints with application after welding)			
	(i) Bolt and nut welding (continuous welding) around the bolts	Per bolt		
	(ii) Bracing member welding	Per cm.		
9	Painting of substation structure by applying one coat of zinc phosphate primer of ASIAN/BERGER make , 2 coats of Aluminum paint of ASIAN / BERGER make including cost of material,consumables, T& P and as per the instruction of the Engineer in charge	Per Sqm		
	ELECTRICAL WORKS			
10	**ERECTION OF EQUIPMENT**- Transportation of equipment from site store, erection as per the specification and instruction of the Engineer in charge with supply of all Labour, T&P.			
10.1	**For 220 KV Equipments.**			
	(i) 220 KV Circuit Breaker.	3 ph unit		
	(ii) 220 KV Single Isolator without E.S.[structure mounted]	3 ph unit		
	(iii) 220 KV Single Isolator without E.S.[beam mounted]	3 ph unit		
	(iv) 220 KV Single Isolator with E.S[structure mounted]	3 ph unit		
	(v) 220 KV Double Isolator without E.S[structure mounted]	3 ph unit		
	(vi) 220 KV Double Isolator with E.S[structure mounted]	3 ph unit		
	(vii) 220 KV Tandem isolator.[structure mounted]	3 ph unit		
	(viii) 220 KV CT/PT/CVT/WT/CC	No		
	(ix) 220 KV L.A.	No		
	(x) 220 KV Post Insulator	No		
10.2	**For132 KV Equipments.**			
	(i) 132 KV Circuit Breaker.	3 ph unit		

10.2

	(ii) 132 KV Single Isolator without E.S.[structure mounted]	3 ph unit		
	(iii) 132 KV Single Isolator without E.S.[beam mounted]	3 ph unit		
	(iv) 132 KV Double isolator without E.S[structure mounted]	3 ph unit		
	(v) 132 KV Double isolator with E.S.[structure mounted]	3 ph unit		
	(vi) 132 KV CT/PT/CVT/WT/CC	No		
	(vii) 132 KV L.A.	No		
	(viii) 132 KV Post Insulator	No		
10.3	**For 400 KV Equipments.**	3 ph unit		
	(i) 400 KV Circuit Breaker.	3 ph unit		
	(ii) 400 KV isolator without E.S.	3 ph unit		
	(iii) 400 KV isolator with E.S	3 ph unit		
	(iv) 400 KV CT/PT/CVT/WT/Reactor	No		
	(v) 400 KV L.A.	No		
	(vi) 400 KV Post Insulator	No		
10.4	**For 33 KV Equipments.**			
	(i) 33 KV Circuit Breaker.	3 ph unit		
	(ii) 33 KV Single isolator [structure mounted]	3 ph unit		
	(iii) 33 KV Single isolator [beam mounted]	3 ph unit		
	(iv) 33 KV Double isolator without E.S.[structure mounted]	3 ph unit		
	(v) 33 KV Double isolator with E.S.[structure mounted]	3 ph unit		
	(vi) 33 KV CT [structure mounted]	No		
	(vii) 33 KV CT [beam mounted]	No		
	(viii) 33 KV PT	No		
	(ix) 33 KV L.A. [structure mounted]	No		
	(x) 33 KV L.A. [beam mounted]	No		
	(xi) 33 KV Post Insulator	No		
11	PAINTING OF EQUIPMENT MARSHALING BOX,SWITCHYARD PANELS-applying one coat bison zone phosphate primer and two coats of painting with BERGER/ASIAN make (high glossy luxol) or equivalent enamel paint of BS Grey over the Primer with supply of all materials, consumables , T&P and as per the instruction of the Engineer In charge	Sq. m		
12	TRANSPORTATION/DRAGGING OF DISMANTLED EQUIPMENT- from erection site in switch yard to the stacking place as per the instruction of the engineer in charge with supply of all Labour, T&P.			
12.1	SERVICEABLE EQUIPMENTS			
12.1.1	For 220 KV Equipments.			
	(i) 220 KV Circuit Breaker.	3 ph unit / Mtr		
	(ii) 220 KV Single Isolator without E.S.	3 ph unit / Mtr		
	(iii) 220 KV Single Isolator with E.S	3 ph unit / Mtr		
	(iv) 220 KV Double Isolator without E.S	3 ph unit / Mtr		

	(v) 220 KV Double Isolator with E.S	3 ph unit / Mtr		
	(vi) 220 KV Tandem isolator	3 ph unit / Mtr		
	(vii) 220 KV CT/PT/CVT/WT/CC	No /Mtr		
	(viii) 220 KV L.A.	No /Mtr		
	(ix) 220 KV Post Insulator	No /Mtr		
12.1.2	For132 KV Equipments.			
	(i) 132 KV Circuit Breaker.	3 ph unit / Mtr		
	(ii) 132 KV Single Isolator without E.S.	3 ph unit / Mtr		
	(iii) 132 KV Double isolator without E.S	3 ph unit / Mtr		
	(iv) 132 KV Double isolator with E.S	3 ph unit / Mtr		
	(v) 132 KV CT/PT/CVT/WT/CC	No /Mtr		
	(vi) 132 KV L.A.	No /Mtr		
	(vii) 132 KV Post Insulator	No /Mtr		
12.1.3	For 400 KV Equipments.	3 ph unit / Mtr		
	(i) 400 KV Circuit Breaker.	3 ph unit / Mtr		
	(ii) 400 KV isolator without E.S.	3 ph unit / Mtr		
	(iii) 400 KV isolator with E.S	3 ph unit / Mtr		
	(iv) 400 KV CT/PT/CVT/WT/Reactor	No /Mtr		
	(v) 400 KV L.A.	No /Mtr		
	(vi) 400 KV Post Insulator	No /Mtr		
12.1.4	For 33 KV Equipments.			
	(i) 33 KV Circuit Breaker.	3 ph unit / Mtr		
	(ii) 33 KV Single isolator	3 ph unit / Mtr		
	(iii) 33 KV Double isolator without E.S.	3 ph unit / Mtr		
	(iv) 33 KV Double isolator with E.S.	3 ph unit / Mtr		
	(v) 33 KV CT /PT	No /Mtr		
	(vi) 33 KV L.A.	No /Mtr		
	(vii) 33 KV Post Insulator	No /Mtr		
12.2	UN-SERVICEABLE EQUIPMENTS	MT/Mtr		
12.2.1	For 220 KV Equipments.			
	(i) 220 KV Circuit Breaker.	3 ph unit / Mtr		
	(ii) 220 KV Single Isolator without E.S.	3 ph unit / Mtr		
	(iii) 220 KV Single Isolator with E.S	3 ph unit / Mtr		
	(iv) 220 KV Double Isolator without E.S	3 ph unit / Mtr		
	(v) 220 KV Double Isolator with E.S	3 ph unit / Mtr		
	(vi) 220 KV Tandem isolator	3 ph unit / Mtr		
	(vii) 220 KV CT/PT/CVT/WT/CC	No /Mtr		
	(viii) 220 KV L.A.	No /Mtr		
	(ix) 220 KV Post Insulator	No /Mtr		
12.2.2	For132 KV Equipments.			
	(i) 132 KV Circuit Breaker.	3 ph unit / Mtr		
	(ii) 132 KV Single Isolator without E.S.	3 ph unit / Mtr		
	(iii) 132 KV Double isolator without E.S	3 ph unit / Mtr		

	(iv) 132 KV Double isolator with E.S	3 ph unit / Mtr		
	(v) 132 KV CT/PT/CVT/WT/CC	No /Mtr		
	(vi) 132 KV L.A.	No /Mtr		
	(vii) 132 KV Post Insulator	No /Mtr		
12.2.3	For 400 KV Equipments.	3 ph unit / Mtr		
	(i) 400 KV Circuit Breaker.	3 ph unit / Mtr		
	(ii) 400 KV isolator without E.S.	3 ph unit / Mtr		
	(iii) 400 KV isolator with E.S	3 ph unit / Mtr		
	(iv) 400 KV CT/PT/CVT/WT/Reactor	No /Mtr		
	(v) 400 KV L.A.	No /Mtr		
	(vi) 400 KV Post Insulator	No /Mtr		
12.2.4	For 33 KV Equipments.			
	(i) 33 KV Circuit Breaker.	3 ph unit / Mtr		
	(ii) 33 KV Single isolator	3 ph unit / Mtr		
	(iii) 33 KV Double isolator without E.S.	3 ph unit / Mtr		
	(iv) 33 KV Double isolator with E.S.	3 ph unit / Mtr		
	(v) 33 KV CT /PT	No /Mtr		
	(vi) 33 KV L.A.	No /Mtr		
	(vii) 33 KV Post Insulator	No /Mtr		
13	Loading, Unloading & Transportation of Equipment / Structures / Materials from EHT Stores to Site Stores			
	(i) Loading / Unloading of Equipment	Per MT		
	(ii) Loading / Unloading of Structures / Materials	Per MT		
	(iii) Transportation of Equipment / Structures / Materials			
	(a) 0.0Km to 20.0Km	Per KM		
	(b) 20.0Km to 50.0Km	Per KM		
	(c) 50.0Km to 100.0Km	Per KM		
	(d) 100.0Km to 200.0Km	Per KM		
	(e) More than 200.0Km	Per KM		
14	BUS BAR STRINGING with fixing of Insulator String [with supply of Labour and T&P and excluding supply of conductor, Insulators,hardwares, Clamps & Connectors]			
	(i) AAAC/ACSR Panther [Single]	Per Mtr.		
	(ii) AAAC/ACSR Panther [Twin]	Per Mtr.		
	(iii) AAAC/ACSR Zebra [Single]	Per Mtr.		
	(iv) AAAC/ACSR Zebra [Twin]	Per Mtr.		
	(v) AAAC/ACSR Moose [Single]	Per Mtr.		
	(vi) AAAC/ACSR Moose [Twin]	Per Mtr.		
	(vii) Dismantling of bus bar as a percentage of stringing	% age		
15	Jumpering to Equipments with supply of Labour and T & P, excluding supply of clamps, conductor & pipe etc.			
	(i) AAAC/ACSR Panther [Single]	Per Mtr.		
	(ii) AAAC/ACSR Panther [Twin]	Per Mtr.		

	(iii) AAAC/ACSR Zebra [Single]	Per Mtr.		
	(iv) AAAC/ACSR Zebra [Twin]	Per Mtr.		
	(v) AAAC/ACSR Moose [Single]	Per Mtr.		
	(vi) AAAC/ACSR Moose [Twin]	Per Mtr.		
16	ERECTION /DIMANTLING OF SUPERSTRUCTURE :			
16.1	Supply of all labour, T&P and Erection of Columns, beam and equipment supporting structure	Per MT.		
16.2	Dismantling charges as a percentage of erection charges	% age		
16.3	Shifting / stacking of dismantled structure materials from erection site in switch yard to the stacking place as per the instruction of the engineer in charge with supply of all Labour, T&P.	MT/Mtr		
17	LAYING AND TERMINATION OF CABLE:			
17.1	Laying of control cables (both armoured and unarmoured) including fixing of cable trays with terminal connections both at equipment and control panels with supply and fixing of lugs, ferrules with crimping and clamps made of copper for fixing of cables on the tray including bolts and nuts with supply and fixing of PVC bend and pipes (where required)			
	(I) 2CX2.5 Sqmm			
	(ii) 3CX2.5 Sqmm			
	(iii) 4CX2.5 Sqmm			
	(iv) 7CX2.5 Sqmm			
	(v) 8CX2.5 Sqmm			
	(vi) 10CX2.5 Sqmm			
	(vii) 12CX2.5 Sqmm			
	(viii)16CX2.5 Sqmm			
	(ix)19CX2.5 Sqmm			
	(x)24CX2.5 Sqmm			
	(xi) 30CX2.5 Sqmm			
17.2	Laying of LT Aluminium Power Armoured/Unarmoured cable including fixing of cable trays with terminal connections both at equipment and panels with supply and fixing of lugs, Glands with crimpping and clamps made of aluminium, fixing of cables on the trays with bolts and nuts, supply and fixing of PVC bend and pipes (where required) / Excavation and laying Under ground where required.			
	(i) 4CX4 Sqmm	Per mtr run.		
	(ii)4CX6 Sqmm	Per mtr run.		
	(iii) 4CX10 Sqmm	Per mtr run.		
	(iv)4CX16 Sqmm	Per mtr run.		
	(v) 4CX25 Sqmm	Per mtr run.		

	(vi) 3.5X35 Sqmm	Per mtr run.		
	(vii) 3.5X50 Sqmm	Per mtr run.		
	(viii) 3.5X70 Sqmm	Per mtr run.		
	(ix) 3.5X95 Sqmm	Per mtr run.		
	(x) 3.5X120 Sqmm	Per mtr run.		
	(xi) 3.5X150 Sqmm	Per mtr run.		
	(xii) 3.5X185 Sqmm	Per mtr run.		
	(xiii) 3.5X240 Sqmm	Per mtr run.		
	(xiv) 3.5X300 Sqmm	Per mtr run.		
18	INSTALLATION OF CONTROL RELAY PANELS,RTCC PANELS, ACDB / DCDB, MARSHALING BOXES, CONSOLE BOXES ETC. INCLUDING TRANSPORTATION FROM SITE STORE.			
18.1	Control & Relay panels			
	(i) 400 KV CR Panel Simplex	Per panel		
	(ii) 400 KV CR Panel Duplex	Per panel		
	(iii) 220 KV CR panel Simplex	Per panel		
	(iv) 220 KV CR panel Duplex	Per panel		
	(v) 132KV CR panel Simplex	Per panel		
	(vi) 132 KV CR panel Duplex	Per panel		
	(vii) 33 KV CR panel Simplex	Per panel		
18.2	RTCC Panel	Per panel		
18.3	AC/DC Distribution Board (Control Room)	Per panel		
18.4	AC/DC Distribution Board (Switchyard)	Per panel		
18.5	Battery Charger	Per Set		
18.6	Console Box for CT,PT	Per set		
19	PAINTING OF PANELS IN CONTROL ROOM- applying two coats of painting with BERGER/ASIAN make (high glossy luxol) or equivalent enamel paint of BS Grey with supply of all materials, consumables , T&P and as per the instruction of the Engineer In charge	Sq. m		
20	**ERECTION OF BATTERY SET INCLUDING TRANSPORTATION FROM SITE STORE**			
	(i) Battery Bank (110 Cells)	Per set		
	(ii) Battery Bank (24 Cells)	Per set		
	(ii) Battery Cells	Per Cell		
21	**EARTHING IN SUBSTATION**			
21.1	Laying of earth mat- excavation of earth,welding of diff size flats, application of two coats of bituminous Paint, wrapping of HT Tapes over it and back filling of earths [including supply of Welding machine, welding generator, welding rods and all materials, T&P, Labour]			
	(i) As per above specification using GI Flat of size 25x3 mm			

	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(il) As per above specification using GI Flat of size 25x5 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(iii) As per above specification using GI Flat of size 40x5 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(iv) As per above specification using GI Flat of size 50x5 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(v) As per above specification using GI Flat of size 50x6 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(vi) As per above specification using GI Flat of size 75x10 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
21.2	Earthing riser- Connection of diff size GI Flats from earth mat to equipment ,welding of diff size flats, application of two coats of bituminous Paint, wrapping of HT Tapes over it (With supply of Labour and T&P)			
	(i) As per above specification using GI Flat of size 25x3 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(il) As per above specification using GI Flat of size 25x5 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(iii) As per above specification using GI Flat of size 40x5 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(iv) As per above specification using GI Flat of size 50x5 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(v) As per above specification using GI Flat of size 50x6 mm			

	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
	(vi) As per above specification using GI Flat of size 75x10 mm			
	(a) With supply of GI Flat	Per Mtr		
	(b) Without supply of GI Flat	Per Mtr		
21.3	Pipe earthing including excavation of earth , treatment of bentonate compound, ,back filling with borrowed earth, termination to earth mat riser by nut bolting , apply of paint where necessary with supply of all Labour and T&P as per ISS-3043.			
	i)With cost of earthing pipe (50 mm dia 3050 mm length medium gauge) and (50x6 mm) G.I.Flat	Per set.		
	ii)Without cost of earthing pipe & G.I. flat	Per set.		
21.4	Same as above 21.3 , but with excavation of Morrum and laterite layer.			
	i)With cost of earthing pipe (50 mm dia 3050 mm length medium gauge) and (50x6 mm) G.I.Flat	Per set		
	ii)Without cost of earthing pipe & G.I. flat	Per set		
21.5	Rod earthing as per the specification in			
	i)With cost of M.S. earthing rod, size 40mm	Per set		
	ii)Without cost of earthing rod.	Per set		
22	**ERECTION OF TRANSFORMERS.**			
22.1	Transportation from site stores to the plinth and vice-versa with supply of all labour, T&P.			
	(i) With oil	Per Ton/Mtr		
	(ii)Without oil	Per Ton/Mtr		
22.2	Erection and assembly at plinth in all respect			
22.2.1	**400/220 KV**			
	[a] 315 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
22.2.2	**220/132 KV**			
	[a] 160 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[b] 100 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[c] 50 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
22.2.3	**220/33 KV**			

22.2.3				
	[a] 40 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[b] 20 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
22.2.4	**132/33 KV**			
	(a) 63 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[b] 40 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[c] 35 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[d] 31.5 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	(e) 20 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[f] 12.5 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[g] 7.5 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[h] 5 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
22.2.5	**132/11KV**			
	(a) 20 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[b] 10 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
	[c] 5 MVA			
	(i) With testing & commissioning	Per Trf.		
	(ii) Without testing & commissioning	Per Trf.		
22.2.6	ERECTION OF STATION TRANSFORMER – 33/0.4 kV			
	(i) 1000kVA	Per Trf.		

	(i) 500kVA	Per Trf.		
	(i) 315kVA	Per Trf.		
	(i) 250kVA	Per Trf.		
	(i) 100kVA	Per Trf.		
23	Oil filtrations of the transformers including supply of Filter machine, pipes, T&P, consumables and Labour as required.			
	[i] 315 MVA	Per Trf.		
	[ii] 160 MVA	Per Trf.		
	[iii] 100 MVA	Per Trf.		
	(iv) 63 MVA	Per Trf.		
	[v] 50 MVA	Per Trf.		
	{vi] 40 MVA	Per Trf.		
	[vii] 35 MVA	Per Trf.		
	[viii] 31.5 MVA	Per Trf.		
	[ix] 20 MVA	Per Trf.		
	[x] 12.5 MVA	Per Trf.		
	[xi] 7.5 MVA	Per Trf.		
	[xii] 5 MVA	Per Trf.		
	[xiii] 1000kVA	Per Trf.		
	[xiv] 500kVA	Per Trf.		
	[xv] 315kVA	Per Trf.		
	[xvi] 250kVA	Per Trf.		
	[xvii] 100kVA	Per Trf.		
24	Vacuum Treatment to dry out the winding of transformer winding with supply of Vacuum pump, T&P, Consumables and Labour as required.			
	[i] 315 MVA	Per Trf.		
	[ii] 160 MVA	Per Trf.		
	[iii] 100 MVA	Per Trf.		
	(iv) 63 MVA	Per Trf.		
	[v] 50 MVA	Per Trf.		
	{vi] 40 MVA	Per Trf.		
	[vii] 35 MVA	Per Trf.		
	[viii] 31.5 MVA	Per Trf.		
	[ix] 20 MVA	Per Trf.		
	[x] 12.5 MVA	Per Trf.		
	[xi] 7.5 MVA	Per Trf.		
	[xii] 5 MVA	Per Trf.		
25	Supply of all T&P, Filter machine,Arranging Power Supply and filtration of transformer Oil for all Type of transformers	Per Ltr		

	[Filter machine, vacuum pumps set and necessary equipments required is to be arranaged and supplied by the contractor at their own cost for this purpose. Hire charges would be paid by the Contractor if machine supplied by the Department.]			
26	Laying of rail track (two nos.) for Power transformers, including fabrication welding, placing in position and grouting in concrete.(without supply of rails).	Per Mtr.		
27	Painting of Power Transformer and accessories- Scrapping ,washing and painting by applying one coat bison zone phosphate primer of ASIAN / BERGER make , 2nd coat of primer to be applied with high build M10 (sand witch coat) over the primer coat and final two coats of painting with BERGER/ASIAN make (high glossy luxol) or equivalent enamel paint of BS Grey over the sand witch coat with supply of all materials,consumables and T&P and as per the Instruction of Engineer In charge	Sq. m		
28	Dismantling of existing transformer including disconnecting from the bus, dismantling of all radiators,drainage of oil and dismantling of all other fittings			
	(i) Station Transformer (up to 1000kVA)	Per Trf.		
	(ii) Power Transformer (up to 20MVA)	Per Trf.		
	(ii) Power Transformer (above 20MVA up to 63MVA)	Per Trf.		
	(ii) Power Transformer (above 63MVA up to 160MVA)	Per Trf.		
	(iii) Inter connecting Transformer(ICT, 315 MVA)	Per Trf.		
29	Transportation of old dismantled transformer to other Sub-station including supply of all T&P and labour.			
	(i) By road.	Per Ton/ Km.		
	(ii) By rail.	Per Ton/ Km.		
30	Replacement of Transformer bushing with supply of all labours, T&P as per the Instruction of Engineer In charge			
	(i) Inter connecting Transformer(ICT, 315 MVA)	Per no		
	(ii) 220/132/33kV AUTO Transformers (160MVA/100MVA/50MVA)	Per no		
	(iii) 132/33kv & 132/11kV Power Transformers (12.5MVA/20MVA/40MVA/63MVA)	Per no		
31	PREPARATION OF CABLE SCHEDULE COMPLETE IN ALL RESPECTS.(for one bay only)			
	(a) 400kV	Per bay		
	(b) 220KV	Per bay		
	(c) 132kV	Per bay		
	(d) 33KV	Per bay		
	(e) 11kV	Per bay		

32	SWITCH-YARD ILLUMINATIONS CONFORMING TO RELEVANT ISS AS PER INSTRUCTION OF ENGINEER-IN-CHARGE			
32.1	Fixing of flood lights and control box	Per Set		
32.2	Wiring with associated cabling including supply of PVC pipes, bend and clamps, 3X4 Sq. mm PVC wires, 6 Amp MCB etc. with termination at both ends	Per Mtr		
33	Shut down / restoration incentive as a percentage of erection charges(Shut down /restoration incentive will be allowed if the gang become idle due to non issuance of clearance by OPTCL to take up the work)	% age		
34	MOBILISATION CHARGES			
34.1	Mobilisation Cost of 10 persons to site.			
	(i) Movement beyond 30.0km up to 100.0 km	Lots		
	(ii) Movement beyond 100.0km up to 200.0 Km	Lots		
	(iii) Movement beyond 200.0km up to 300.0Km	Lots		
	(iv) Movement beyond 300.0Km up to 400.0Km	Lots		
	(v) Movement beyond 400.0Km up to 500.0Km	Lots		
34.2	Mobilisation cost of above10 persons to site.			
	(i) Movement beyond 30.0km up to 100.0 km	Lots		
	(ii) Movement beyond 100.0km up to 200.0 Km	Lots		
	(iii) Movement beyond 200.0km up to 300.0Km	Lots		
	(iv) Movement beyond 300.0Km up to 400.0Km	Lots		
	(v) Movement beyond 400.0Km up to 500.0Km	Lots		
34.3	Charges for detention of staff – for non availability of shut down and required materials at site			
	(i) Below 10 persons	Per day		
	(ii) Above 10 persons	Per day		
TELECOM WORKS				
35	TRANSPORATION FROM SITE STORE, ERECTION as per specification and as per the instruction of Engineer In charge			
	(a) 400kV CC/CVT/WT			
	(i) With testing & commissioning	Per No		
	(ii) Without testing & commissioning	Per No		
	(b) 220KV CC/CVT/WT			
	(i) With testing & commissioning	Per No		
	(ii) Without testing & commissioning	Per No		
	(c) 132kV CC/CVT/WT			
	(i) With testing & commissioning	Per No		
	(ii) Without testing & commissioning	Per No		
36	LAYING OF CABLE & TERMINATION- Laying of coaxial cable including fixing in cable tray with socket,connection at both ends(at equipment & switchyard)			

	(i) 125Ohms / 75 ohms coaxial cable	Per Mtr		
	(ii) Telephone cable	Per Mtr		
	(iii) Armoured (20Pair/50Pair/100pair) cable	Per Mtr		
	(iv) Un armoured cable	Per Mtr		
37	LOADING/UNLOADING of PLCC,SCADA equipment with necessary precaution from different stores to site			
	(a) CC/CVT			
	(i) 400kV	Per No		
	(ii) 220kV	Per No		
	(iii) 132kV	Per No		
	(b) Wave trap Including accessories			
	(i) 400kV	Per No		
	(ii) 220kV	Per No		
	(iii) 132kV	Per No		
	(c) PLCC/RTU/SIC Panel	Per Set		
	(d) 48V Battery charger	Per Set		
	(e) 48V Battery set	Per Set		
38	INSTALLATION OF indoor PLCC equipment, including fabrication of base frame and grouting as required .			
	(a) PLCC/RTU/SIC/AC-DC Distribution panel			
	(i) With fabrication of base frame and grouting	Per Set		
	(ii) without fabrication of base frame and grouting	Per Set		
	(b) PABX			
	(i) With fabrication of base frame and grouting	Per Set		
	(ii) without fabrication of base frame and grouting	Per Set		
39	ERECTION, TESTING & COMMISSIONG OF BATTERY CHARGER			
	(I) PLANTEE Type	Per Set		
	(ii) VRLA Type	Per Set		