



POWERING TAMILNADU'S PROGRESS....

TAMILNADU TRANSMISSION CORPORATION LTD

COST DATA
2021-22

VISION STATEMENT

**To make
TANTRANSCO synonymous with
availability of quality and reliable power
at competitive rates**

BY EMAIL

:TAMIL NADU TRANSMISSION CORPORATION LTD:

From Er.G.Jayanthi, B.E.,
Chief Engineer/ Transmission (i/c),
TANTRANSCO HQ,
144, Anna Salai,
Chennai – 600 002.

To
1.The Chief Engineer/ Transmission
Project I, Chennai
2.The Chief Engineer/ Transmission
Project II, Trichy
3. The Chief Engineer/ Civil/
Transmission
4. The Chief Engineer/ Planning & RC,
Chennai
5. The Chief Engineer/ P&C, Chennai
6. The CE/ System Operation & Grid
Operation
7. The Chief Engineer/ NCES, Chennai
8. The Chief Engineer/ Distribution
Regions
9. CFC/TANTRANSCO

Lr. No.67/ CE/TR/SE/TR-V/EE3/AEE1/F. Cost Data 21-22/21- 2, dt.03.07.2021

Sir,

Sub: TANTRANSCO – Cost Data for the year 2021-22 – Copy
Communicated – Reg.

TANTRANSCO's Cost Data for the financial year 2021-22 is enclosed for
reference.

Sd/-

Chief Engineer/ Transmission (i/c)

Encl: As above

Copy submitted to the Managing Director/ TANTRANSCO
Copy submitted to the Director/ Transmission Projects/ TANTRANSCO
Copy submitted to the Director/ Finance/ TANTRANSCO
Copy submitted to the Director/ Operation/ TANTRANSCO
Copy submitted to the Director/ Distribution/ TANGEDCO
Copy submitted to the Director/ Generation/ TANGEDCO
Copy submitted to the Director/ Projects/ TANGEDCO
Copy submitted to the Director/ Finance/ TANGEDCO
Copy to the Superintending Engineer/ Transmission I, II, III, IV & V
Copy to the Superintending Engineer/ Civil- I & II/ Transmission
Copy to the Superintending Engineer/ Design/ P&C/ Chennai
Copy to the Superintending Engineer/ Design/ Communication/ P&C/ Chennai
Copy to the Superintending Engineer/ GCC/ Chennai I & II, Coimbatore, Madurai,
Salem, Trichy and CDC I & II/ Chennai
Copy to the Superintending Engineer/ P&C/ Chennai, Madurai, Trichy & Coimbatore
Copy to the Superintending Engineer/ Operation Circle/ Chennai I, Chennai II,
Chennai III, Thiruvallur, Trichy, Villupuram, Salem, Tirunelveli, Madurai &
Coimbatore
Copy to the Superintending Engineer/ Planning, System Studies & RE&I(D)/ Chennai
Copy to the Superintending Engineer/ Wind Energy Development Circle/ Udumalpet
& Tirunelveli.

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**A.COST OF EQUIPMENTS
AND MATERIALS**

TANTRANSCO-COST DATA 2021-22

Excluding GST		
1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
1	Auto Transformers & Power Transformers	
	765/420 kV, 500MVA, single phase Interconnection Transformer with OLTC, with Nitrogen injection system for fire protection and line materials required for formation of tertiary delta and neutral bus.	136062500.00
	400/230/33 kV 500 MVA, 3 Phase 50 C/S, YNaod11, Auto Transformer with OLTC and NFIPS	123209145.00
	400/230 kV, 315 MVA Auto (3 phase unit) transformer with OLTC and NFIPS	84314380.00
	400/110 kV, 200 MVA Auto(3 phase unit) transformer with OLTC and NFIPS	77120975.00
	230/110 kV, 160 MVA Auto Transformer with OLTC and NFIPS	46183100.00
	230/110 kV, 100 MVA Auto Transformer with OLTC and NFIPS	37789494.87
	230/110 kV, 33.33 MVA ,1Ø Auto Transformer with OLTC and NFIPS	15312165.00
	230/33kV, 160 MVA Power Transformer with OLTC and NFIPS	68906250.00
	230/33kV, 50 MVA Power Transformer with OLTC	25720110.00
	110/33 kV, 50 MVA Power Transformer with OLTC and NFIPS	18032760.00
	110/33-22 kV, 25 MVA Power Transformer with OLTC	12413439.00
	110/33-11 kV, 16 MVA Power Transformer with OLTC	10131793.00
	110/33-11 kV, 10 MVA Power Transformer with OLTC	8708262.24
	110/22-11 kV, 16 MVA Power Transformer with OLTC	10131793.00
	110/22-11 kV, 10 MVA Power Transformer with OLTC	8708262.24
	33/11 kV 16 MVA Pr.Tr. with OLTC (Indoor)	8477390.00
	33/11 kV, 8 MVA Power Transformer with OLTC	4488880.00
	33 kV/433 V, 1000kVA, Station Transformer with all accessories	1638660.00
	33 kV/433 V, 500kVA, Station Transformer with scada compatible RMU Panel provision	3629500.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	11 kV/433 V,1000kVA, Station Transformer (including structure) with suitably rated scada Ready RMU (RRL Configuration) with FRTU including suitably rated HT cables between RMU to Station Transformer and termination kits and LT supply cable, accessories & arrangements. FO communication cables with necessary media converters for integrity FRTU in RMU with SAS	1537500.00
	22 kV/433 V Station Transformer, 250 kVA, with HG Fuse set, 22 kV LAS, and structure materials complete set and 4 way FRP pillar box, 22 kV, (1250 A) Isolator (5 no's) with Insulator for station Transformer, all consumables and all accessories	813690.00
	11 kV/433 V, 500kVA, Station Transformer with HG Fuse set, 11 kV LAS and structure materials complete set and 4 way FRP pillar box, 11 kV, (1250 A) Isolator (5 nos) with Insulator for station Transformer, all consumables and all accessories	1516190.00
2	Reactors	
	765 kV,110 MVAR, Single phase Bus Reactor with Nitrogen injection fire protection system and line materials for connectivity.	57812500.00
	765kV 110 MVAR single phase Line reactor with NGR with NFIPS and line materials for connectivity	57812500.00
	765kV 80 MVAR single phase Bus reactor with NFIPS	47056805.00
	765kV 80 MVAR single phase Line reactor with NGR with NFIPS	49409645.00
	400 kV, 125 MVAR, Bus Reactor, with NFIPS three phase	49554110.00
	400 kV, 80 MVAR, Line Reactor, with NGR with NFIPS	44526325.00
	400kV, 80 MVAR Bus Reactor with NFIPS	40748950.00
3	Breakers	
	765 kV, 3150A,50 KA, 3PH Outdoor SF6 Breaker with support structure, pre-insertion resistor and CSD (Control Switching Device)	12417680.00
	765 kV, 3150A, 50 KA, 3PH Outdoor SF6 Breaker with support structure and CSD and without pre-insertion resistor	9468100.00
	765 kV, 3150A, 50 KA, 3PH Outdoor SF6 Breaker with support structure with pre-insertion resistor without CSD	11871460.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	420 kV, 3150A, 63KA, 3PH Outdoor SF6 Breaker with support structure with pre-insertion resistor with CSD.	3894110.00
	420 kV, 3150A, 63KA, 3PH Outdoor SF6 Breaker with support structure with pre-insertion resistor without CSD.	4500000.00
	420 kV, 3150A, 63KA,3PH Outdoor SF6 Breaker with support structure without pre-insertion resistor with CSD.	3621960.00
	420 kV, 3150A, 63KA,3PH Outdoor SF6 Breaker with support structure without pre-insertion resistor without CSD.	4492641.00
	245 kV, 2000A, 50 KA/3 sec outdoor SF6 Breaker with support structure	1037400.00
	230 kV SF6, 40KA Outdoor Breaker with support structure	1230820.00
	110 kV SF6 (outdoor) 40 KA Breaker with support structure.	445010.00
	33 kV VCB (outdoor) 1250A, 40KA with TC	191730.00
	11 kV VCB (outdoor),1250A ,25KA	110750.00
4	Current Transformers	
	765 kV single phase 6 core current Transformer, 3000A, 50 KA, 1 Sec. with support structure and accessories and junction box	1628475.00
	420 kV, 3000A, 63 KA, 6 core single phase current Transformer with support structure, accessories	606420.00
	420 kV, 3000A, 63 KA, 5 core single phase current Transformer with support structure, accessories	640050.00
	420 kV, 3000A, 63 KA, 5 core single phase current Transformer without support structure, accessories	598068.00
	Junction box	4720.00
	245 kV, 2000A, 63 KA, 5 core single phase current Transformer with structure and Junction box	245564.00
	230 kV (2000-1200-800-400/1A) Outdoor CT with TC (5Core)	239925.00
	230 kV (2000-1600-1200-600/1A) Outdoor CT with TC (5Core)	226394.00
	Junction box	8000.00
	230 kV (2000-1200-800/1A)	235000.00
	Junction box	10000.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	230 kV (1600-800/1A) Outdoor CT with TC (5Core)	226394.00
	Junction box	8000.00
	230 kV (1600-1200-600-300/1A) Outdoor CT with TC (5Core)	230000.00
	Junction Box	10000.00
	110 kV (2000-1200-800/1A) Outdoor CT with TC & junction box with support structure.	132964.00
	110 kV (1200-600-300/1A) Outdoor CT with TC 5 core	125833.33
	Junction box	7500.00
	110 kV outdoor, Live tank, CT of ratio 1200-600 / 1A, 5 core and with accessories without support structure	127400.00
	Junction box	7500.00
	110 kV (600-300-150/1A) 5 core outdoor CT	113333.33
	Junction box	7500.00
	33 kV (1200-600-300 /1A) Out door type CT with TC without support structure	20620.00
	33 kV outdoor type(600-300-150/1A) CT with TC without support structure	18140.00
	11 kV (1200-600/1A) Oil filled (out door) CT without support structure	16000.00
	11 kV (400-200/1A) Oil filled (Out Door) CT without support structure	13830.00
	11 kV (400-200/1A) Oil filled (In Door) CT	15540.00
	110 kV, 300/200/150/100/1A Metering (0.2 s class accuracy)	83940.00
	110 kV 100/5A Metering (0.2 s class accuracy)	106955.00
5	CVT	
	765 kV single phase CVT with support structure and 1 no junction box	773314.00
	420 kV single phase CVT with support structure	222800.00
	230 kV single phase CVT with structure	177210.00
	110 kV single phase CVT with structure	165900.00
6	Potential Transformers	
	230 kV Outdoor PT with Terminal Connectors with support structure and Junction box	236260.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	230 kV Outdoor PT with Terminal Connectors without support structure	1,90,000.00
	Junction box	8000.00
	110 kV Outdoor PT with T.C, with support structure	81500.00
	Junction box	7069.00
	110 kV Outdoor PT with T.C, without support structure	93000.00
	Junction box	9000.00
	33 kV Outdoor PTs with T.C without support structure	18600.00
	22 kV Outdoor PT with T.C without support structure	15510.00
	11 kV Outdoor PT with T.C without support structure	26515.00
7	LAS	
	624 kV Lightning arrester with support structure	555620.00
	400 kV Lightning arrester without support structure	106575.00
	230 kV Lightning arrester with support structure	51780.00
	230 kV Lightning arrester without support structure	36850.00
	110 kV Lightning arrester with support structure	41785.00
	110 kV Lightning arrester without support structure	22900.00
	33 kV Lightning arrester without support structure	2880.00
	22 kV Lightning arrester without support structure	2285.00
	11 kV Lightning arrester without support structure	1490.00
8	AB Switches	
	765kV 3150 A 50KA isolator with double earth with insulator with support structure	2498340.00
	765kV 3150 A 50KA isolator with single earth with insulator with support structure	2137835.00
	765 kV, 3150Amps, 50 KA, Isolator (single phase) with double earth with Insulator with support structure.	1824860.00
	765 kV,3150 Amps,50 KA, Isolator (single phase)with single earth with Insulator with support structure.	1709545.00
	765 kV,3150 Amps,50 KA, Isolator (single phase) without earth with Insulator with support structure.	1571170.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	420kV bus earth switch (single phase) with structure and insulator	326300.00
	420 kV, 3150 A, 63KA Isolator with double earth with Insulator with support structure.	840425.00
	420 kV, 3150 A, 63 KA Isolator with single earth with Insulator with support structure.	730930.00
	420 kV, 3150 Amps.63KA, Isolator (single phase) with double earth with Insulator with support structure.	659495.00
	420 kV, 3150 Amps, 63KA, Isolator (single phase) with single earth with Insulator with support structure.	575315.00
	420kV, 3150 Amps, 63KA, Isolator (single phase) without earth with Insulator with support structure.	491140.00
	245 kV AB Switch WOE 2000A with Insulator with support structure	399365.00
	245 kV AB Switch WE 2000A with Insulator with support structure	441150.00
	230 kV AB Switch WOE 2000A without support structure	162000.00
	230 kV AB Switch WE 2000A without support structure	186020.00
	230kV bus earth switch (single phase) with structure and insulator	147050.00
	110 kV AB Switch WE 2000A with Insulator with support structure with motor operated	296680.00
	110 kV AB Switch WOE 2000A with Insulator with support structure with motor operated	262950.00
	110 kV AB Switch WE 2000A without support structure	124890.00
	110 kV AB Switch WOE 2000A without support structure	87188.00
	110 kV AB switch with earthing blades (1250A)	78900.00
	110 kV AB switch without earthing blades (1250A)	72075.00
	110kV bus earth switch (single phase) with structure and insulator	98893.00
	22/33kV Centre rotating AB Switch without support structure	21400.00
	11 kV AB switch (centre rotating) without support structure	28100.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	Bottom Operated Mechanism for 110kV AB Switch with Earth	12800.00
	Motor Operated Mechanism for 110kV AB Switch	38250.00
	MOM box 220 V DC	38815.00
9	Batteries	
	220V, 535 Ampere Hour (AH) battery complete set with stand, insulators and terminal connectors Electrolyte, Hydrometer Room Thermometer and Multimeter	1022973.00
	220V, 400 Ampere Hour (AH) battery complete set with stand, insulators and terminal connectors Electrolyte, Hydrometer Room Thermometer and Multimeter	1006015.00
	220V, 300 Ampere Hour battery complete set with wooden stand	756680.00
	110V, 300AH with stand	346500.00
	110V, 300AH without stand	337356.60
	110V, 120AH With stand	224400.00
	110V, 120AH Without stand	220980.00
	48 V 1250 AH Battery complete Set with stand, insulators and terminal connectors, electrolyte, hydrometer, room thermometer and multi meter	785530.00
	48V/600AH Battery with stand	198965.00
	48V/400AH Batteries (SAN Container)	171696.00
	48V/250AH Batteries (SAN Container)	130830.00
	48V/200 AH batteries	71330.00
	48V/120 AH batteries (SAN Container)	95961.60
10	Battery Chargers	
	220V, 100 Amps Battery charger with potential free contacts for all indications for SAS interface.	358315.00
	220V, 80 Amps Battery charger with potential free contacts for all indications for SAS interface.	323175.00
	220V, 60 Amps Battery charger with potential free contacts for all indications for SAS interface.	127500.00
	220V, 60 Amps Automatic Thyristor controlled Battery Charger	356410.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	110 V, 60 Amps Battery charger with potential free contacts for all indications for SAS interface (without SAS).	105000.00
	110V, 24 Amps Battery charger with potential free contacts for all indications for SAS interface (without SAS).	43555.00
	110 V, 60 Amps Battery charger	100000.00
	110 V, 60 Amps Automatic Thyristor controlled Battery Charger	259830.00
	110 V, 24 Amps Battery charger	36000.00
	48 V, 120 Amps Battery charger with potential free contacts for all indications for SAS interface.	246500.00
	Thyristor version battery chargers (for communication applications)	
	48 V, 80 Amps chargers	1,04,500.00
	48 V, 40 Amps chargers	50310.00
	48 V, 20 Amps chargers	37800.00
11	Cables - Control Cables per Km Armoured (Copper, Multi stranded)	
	2 x 2.5 Sq.mm	52000.00
	4 x 2.5 Sq.mm	77000.00
	8 x 2.5 Sq.mm	149000.00
	14 x 2.5 Sq.mm	235000.00
	20 X 2.5 sq.mm	339000.00
	28 X 2.5 sq.mm	456910.00
	14 X 4 sq.mm	512720.00
	8 X 4 sq.mm	270170.00
	4 X 4 sq.mm	123350.00
	2 x 35 Sq.mm	480862.00
	2 X 16 sq.mm	298595.00
12	Aluminium cable Armoured (per/kM.)	
	4 X 120 sq.mm	389798.00
	4 X 25 sq.mm	117135.00
	2 x 16 sq.mm	61216.00
13	Extra High Tension Cable and accessories	

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	400 kV 1CX2500 Sq.mm XLPE copper cable (Km)	34593646.00
	230 kV 1x1200 Sq.mm Aluminium XLPE cable (Km)	6688148.25
	110 kV 1x1000 Sq.mm Aluminium XLPE cable (Km)	6560795.00
	110 kV 1x630 Sq.mm Aluminium XLPE cable (Km)	5112947.00
	110 kV 400 Sq. mm Copper XLPE cable (Km)	5240010.00
	110 kV 1x240 Sq.mm Copper XLPE cable (Km)	5000610.00
	400 kV normal straight joint for 400 kV 1CX2500 Sq.mm XLPE copper cable (Km)	2106000.00
	400 kV Insulated straight joint for 400 kV 1CX2500 Sq.mm XLPE copper cable (Km)	2106000.00
	400 kV outdoor cable termination for 400 kV 1CX2500 Sq.mm XLPE copper cable (Km)	3149030.00
	400 kV indoor GIS termination for 400 kV 1CX2500 Sq.mm XLPE copper cable (Km)	2121663.00
	230 kV straight through joint for 230 kV 1C X 1200 Sq.mm XLPE Alu cable	336010.50
	230 kV insulated joint for 230 kV 1CX1200 Sq.mm XLPE Alu cable	380814.00
	230 kV indoor termination kit for 230 kV 1CX1200 Sq.mm XLPE Alu cable	604954.00
	230 kV outdoor termination kit for 230 kV 1CX1200 Sq.mm XLPE Alu cable	725786.25
	230 kV outdoor termination structure	34067.25
	11KV, 3 X 300 sq mm outdoor termination kit suitable for XLPE cable (HS type)	2900.00
	33KV, 1 X 630 sq mm outdoor termination kit suitable for XLPE cable (HS type)	5885.00
	400 kV 3 ph link box with CCPU	157000.00
	400 kV 3 ph link box without CCPU	157000.00
	400 kV 1 ph link box with CCPU	37000.00
	400 kV 1 ph link box without CCPU	23000.00
	230 kV 1 phase link box with CCPU	35060.00
	230 kV 3 phase link box with CCPU	45396.75
	230 kV 3 phase link box without CCPU	33222.00
	230 kV 1 phase link box without CCPU	21215.00
	11 kV, 500 sq.mm sheath bounding cable	3645567.00
	6.35/11 kV, 400 sq.mm sheath bounding cable	2398251.00
	6.35/11 kV, 240 sq.mm sheath bounding cable	1504235.25
	110 kV straight through joint for 630 sq.mm	160562.00
	110 kV insulated joint for 630 sq.mm	163825.00
	110 kV outdoor termination kit	224665.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	110 kV outdoor termination kit for 1x630 sq.mm	194502.00
	110 kV indoor termination kit	194502.00
	110 kV outdoor termination structure	23194.50
	110 kV 3 ph link box with CCPU	45669.75
	110 kV 3 ph link box without CCPU	31895.00
	110 kV 1 ph link box without CCPU	21215.00
	110 kV 1 ph link box with CCPU	31164.00
	240 sq.mm co-axial cable	2858530.00
14	Fire Fighting Equipments	
	Fire extinguisher foam type trolley mounted 60 Ltr capacity with accessories.	8710.00
	Fire extinguisher foam type trolley mounted 50 Ltr capacity with accessories.	6425.00
	Fire extinguisher foam type trolley mounted 10 Ltr capacity with accessories	4660.00
	Fire extinguisher foam type trolley mounted 9 Ltr capacity with accessories	4150.00
	Fire extinguisher DCP type trolley mounted 25 KG capacity with accessories.	8200.00
	Fire extinguisher DCP type Portable 10 KG capacity	3280.00
	Fire extinguisher DCP type portable 9 Kg capacity.	2800.00
	Fire extinguisher DCP type portable 6 Kg capacity.	1800.00
15	DG Set	
	100 kVA DG Set complete set with all accessories including AMF panel	608030.00
	125 kVA DG Set complete	847120.00
	250 kVA DG set complete set	1286670.00
16	GIS Equipments (Breakers, Bus PT, Earth Switch)	
	Full Diameter: 800 kV GIS SF6 indoor Transformer bay provision with double bus, one and half breaker along with all equipments and online PD Monitoring.(ICT Bays 3nos and spare feeder bay 1no) (3150 A, 50 KA, SF6 transformer bay modules with CSD-2)- 1 set	285896635.00
	800 kV GIS SF6 indoor feeder bay provision with double bus, one and half breaker along with all equipments and online PD Monitoring.(3150 A, 50 KA, SF6 feeder line bay module-1 set) (3150 A, 50 KA, SF6 feeder line bay module with PIR-1)	250471450.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	500 kV SF6 GIS Indoor Transformer bay provision with double bus, One & half breaker along with all the equipments and online PD monitoring with CSD	125650135.00
	500 kV SF6 GIS indoor feeder bay provision with double bus, one and half breaker along with all equipments inclusive of three numbers of single phase VTs with disconnector switch and online PD Monitoring with test bushing arrangement (2 F)	130873280.00
	500 kV SF6 GIS Indoor Reactor bay provision with double bus, One & half breaker along with all the equipments and online PD monitoring with CSD for Reactor bay and Tie breaker. 3Nos single phase line VT for spare feeder bay. (1 Reactor and 1 Spare Feeder)	130964100.00
	765kV, VTs with dis-connector Assembly in separate chamber for bus section -Single phase.	16027820.00
	420kV, SF6 GIS Indoor Feeder bay with double bus, one and half breaker along with all equipments, with on line PD Monitoring system.	61452195.00
	420kV, SF6 GIS transformer bay with double bus, one and half breaker along with all equipments	127115220.00
	420kV, SF6 GIS Indoor bay Provision with single bus with all the equipments for bus section	24425845.00
	420kV, SF6 GIS auxiliary bus arrangement with Disconnector, one number single phase PT and earth switch for the single phase spare ICT.	10976710.00
	230 kV isolated phase GIS feeder bays having double bus arrangement containing Surge arresters, High speed earth switch, 3 phase PT, CT's, Disconnectors, Maintenance Earth switches,Circuit breaker,Busbar disconnectors, LCC, Fixed part for the cable connection, rupture disc and Density monitor in each compartment per phase with buffer compartment and provision for off-line PD measurement.	15833980.00
	230kV, SF6 GIS Indoor Transformer bay double bus arrangement with all equipments	13146610.00
	230kV, SF6 GIS Indoor Feeder bay with double bus, with two nos. disconnectors along with all equipments	20294820.00
	230kV, SF6 GIS Indoor Bus coupler bay with disconnectors	13146610.00
	110kV, SF6 GIS Indoor Feeder bay with all equipments	6503085.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	110kV, SF6 GIS Indoor Transformer bay with all equipments	5939890.00
	110kV, SF6 GIS bus coupler bay with all accessories	4695440.00
	400kV voltage transformer (single phase) with Disconnecter assembly in separate chamber.	1573725.00
	400kV voltage transformer (single phase) with Disconnecter assembly in separate chamber with earth switch.	1764610.00
	230 kV Bus PT	5271355.00
	110 kV Bus PT	689755.00
	420 kV Earth Switch for bus	4762100.00
	230 kV Earth Switch for bus	798965.00
	110 kV Earth Switch for bus	369135.00
	33 kV VCB Indoor	629545.00
	33 kV VCB Indoor for feeder	581895.00
	33 kV VCB Indoor (Bus coupler)	732040.00
	11 kV VCB Indoor	375000.00
	11 kV VCB Indoor for feeder	323060.00
	11 kV VCB Indoor (Bus coupler)	335800.00
17	Capacitor Bank with Associated Equipments	
a.	110 kV / 24 MVAR	12017790.00
b.	22 kV / 2.4 MVAR	
	22kV capacitor bank	1578970.00
	Erection of 22kV capacitor bank	264030.00
c.	11 kV /2.4 MVAR	
	11 kV capacitor bank	1586130.00
	Erection of 11 kV capacitor bank	253700.00
	11kV / 2 MVAR auto switched shunt capacitor bank	2963010.00
18	Panels	
a.	AC Panels (Each)	

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	400 kV SS	287040.00
	230 kV SS (Under Voltage , Over Voltage Static relays included)	139900.00
	110 kV SS (Under Voltage , Over Voltage Static relays included)	97212.00
	33 kV SS	64470.00
	AC Distribution for Kiosk	12810.00
b.	DC Panels (each)	
	220V DC Distribution Panel for 400 kV SS	159465.00
	220V DC Distribution Panel for 230 kV OR 110kV SS (DC Under Voltage, Over voltage Static relays included)	82356.00
	110V DC Distribution Panel for 110kV OR 230kV SS	71195.00
	110V DC indoor Control & Relay Panel for GC Breaker (Static Relay Version)	38010.00
	110V DC indoor Control & Relay Panel for GC Breaker (Numeric Relay Version)	106000.00
	110V DC indoor Control & Relay Panel for LV Breaker (Static relay version)	73535.00
	110V DC indoor Control & Relay Panel for LV Breaker (Numeric relay version)	204000.00
	110V DC indoor Control & Relay Panel for Twin feeder (Static relay version)	57330.00
	110V DC indoor Control & Relay Panel for Twin feeder (Numeric relay version)	203739.00
	110V DC outdoor Control & Relay Panel	39695.00
	110V DC annunciator Type A including Static Relays	83603.00
	110V DC annunciator Type B including Static Relays	79691.00
	48 V DC Distribution panel	120445.00
19	Bay Marshalling Box	
	AC Junction Box (FRP)	28030.00
	DC Interlock Box (FRP)	28030.00
20	Control & Relay (C&R) Panel (With SAS)	
	765 kV Relay panel for Transformer/ Reactor	1700125.00
	765 kV Relay panel for Feeder	1756125.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	765 kV Bus bar protection panel	2889395.00
	765 kV Relay panel for Tie Breaker	396695.00
	Islanding panel for 765 kV Feeder Transformer/Reactor	1586780.00
	Control & protection Panel for 765kV Line /Feeder	1388670.00
	Control & protection Panel for 765kV /400 kV ICT	1047960.00
	Control & protection Panel for 765kV Bus reactor	2216705.00
	Control & protection Panel for 765kV Line reactor	2216705.00
	Control & protection Panel for 400kV Line / Feeder	1296420.00
	Control & protection Panel for 400kV Tie breaker bay	481000.00
	Control & protection panel for 400 kV Line for remote end station	3858920.00
	Control & protection panel for 400 kV Tie breaker for lines / Transformer	1576000.00
	Control & protection panel for 400/230 kV ICT	1326000.00
	Control & protection panel for 400/110 kV ICT	1256000.00
	Control & protection panel for 230 kV Feeder	633000.00
	Control & protection panel for 230/110 kV Auto Transformer	1051000.00
	Control & protection panel for 230 kV Bus coupler	391000.00
	Control & protection panel for 110kV Feeder	434000.00
	Control & protection panel for 110 kV Bus coupler panel	351000.00
	Control & protection panel for 110kV Transfer Bus Coupler	351000.00
	Relay Panel for 400 kV Feeder / Line	885430.00
	Relay panel for 400/230 kV ICT	762075.00
	Relay panel for 400/110 kV ICT	762075.00
	Relay panel for 400 kV Tie breaker for lines / Transformer	316245.00
	Relay panel for 400 kV Bus bar protection	1576000.00
	Relay panel for 400 kV Bus reactor	838780.00
	Relay panel for 400 kV Line reactor with NGR protection	838780.00
	Relay panel for 230 kV Feeder	763660.00

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Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	Relay panel for 230 kV Feeder with UF Protection	772550.00
	Relay panel for 230/110 kV Auto Transformer	617880.00
	Relay panel for 230 kV Bus coupler	227440.00
	Relay panel for 230 kV Bus bar protection (23 bays)	1128500.00
	Relay panel for 230 kV Bus bar protection (12 bays)	1018500.00
	230 KV Annunciator Panel (200 Windows)	201000.00
	Relay panel for 110kV Feeder	371460.00
	Relay panel for 110kV Feeder with UF protection	378925.00
	Control & protection panel for 110 kV Bus bar protection Relay Panel (up to 23 bays)	1128500.00
	110 kV Bus coupler panel	221040.00
	Relay panel for 110kV Transfer Bus Coupler	322445.00
	110 kV Bus bar protection Relay Panel	1258585.00
	Synchronising cum Islanding Panel for 765kV Bays	1030000.00
	Synchronising cum Islanding Panel for 400kV Bays	307750.00
	Synchronizing cum islanding panel for 230 kV bays (SAS)	307750.00
	Synchronizing cum islanding panel for 110 kV bays (SAS)	307750.00
	110 kV Capacitor bank C&R panels	604000.00
21	Control & Relay (C&R) Panel (Without SAS)	
	400 kV Feeder Control Panel	139070.00
	400 kV Feeder Relay Panel	642775.00
	400/230 kV Auto Transformer Control Panel	226605.00
	400/230 kV Auto Transformer Relay Panel	910850.00
	400/110 kV Auto Transformer Control Panel	226605.00
	400/110 kV Auto Tr. Relay Panel	903610.00
	400 kV Tie breaker control panel for lines / transformer	238555.00
	400 kV Bus Bar Protection Panel	1589950.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	230 kV Feeder control and relay panel	663300.00
	230 kV Feeder Control panel	158790.00
	230 kV Feeder Relay panel (With U/F protection)	654025.00
	230 kV Feeder Relay panel (Without U/F protection)	537375.00
	230 kV Feeder C & R Panel with BCU	876000.00
	230 kV Auto Tr. C & R Panel with BCU	1276000.00
	230/110 kV Auto Tr. Control and Relay Panel	841500.00
	230/110 kV Auto Tr. Control Panel	216985.00
	230/110 kV Auto Tr. Relay Panel	498945.00
	230 kV Bus bar protection panels (Equipped upto 12 circuits)	1112555.00
	230 kV Bus Coupler C&R panel with BCU	426000.00
	230kV Bus coupler Panel	178465.00
	110 kV Single feeder Control & relay panel	493390.00
	110 kV Single Feeder Control Panel	141110.00
	110 kV Double Feeder Control Panel	192620.00
	110 kV Feeder Relay panel (without UF protection)	369500.00
	110 kV Feeder Relay panel (with UF protection)	374430.00
	110 kV Bus Bar Protection Panels (Equipped upto 18 circuits)	1112555.00
	110 kV Bus Coupler Panel with BCU	346500.00
	110 kV Capacitor bank C&R panels	451000.00
	Synchronizing panel	188000.00
22	Carrier Communication (CC) Equipments	
a.	400 kV Outdoor	
	Coupling Device	55470.00
	Wave Trap (1.0mH/2000 A)	340190.00
	Solid core supporting Insulator	146820.00
	Galvanized steel structure	89910.00
b.	230 kV Outdoor	
	Coupling Device	64350.00

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Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	Wave Trap (0.5mH/1250 A)	117050.00
	Co-Axial cable	78065.00
c.	110 kV Outdoor	
	Coupling Device	71940.00
	Wave Trap (0.5mH/630 A)	190095.00
d.	Others	
	Bay control unit (BCU)	233580.00
	Sub station Automation System for 765/400 kV SS for 23 bays (11nos 765kV Bays, 12nos 400kV Bays)	11828755.00
	Sub-station Automation System for 400kV/230kV/110kV SS (Up to 33 Electrical bays)	5626000.00
	Numerical Distance Protection Relay	100580.00
	Numerical Directional O/C, E/F Relay	78300.00
	Numerical U/F Relay	108775.00
	SIEMENS make Numerical Transformer Differential Relay Model; 7SR242	90000.00
	GE make Alstom brand Numeric Feeder Protection Relay. Type : P14NB, CTR : 1/5A, Aux. Volt 24-250V AC/DC with RS485 communication rear port for MODBUS protocol and front USB port DI-8, DO-8 with 10 fault records.	49000.00
	OPGW - 48 Fibre with accessories per KM	179724.00
	Erection of OPGW - 48 Fibre with accessories per KM	100104.00
	OPGW - 24 Fibre DWSM cable, accessories per KM supply, erection, testing and commissioning	253255.00
	ADSS - 24 Fibre OPTIC Cable, with Accessories	164045.00
	OLTE with ADM configuration and STM -4 in four directions	1574510.00
	OLTE with ADM configuration and STM-4 in two direction and STM-1 in two direction	1549345.00
	OLTE with ADM configuration and STM-4 in two directions & STM – 1 in four directions	1607860.00
	OLTE with ADM configuration and STM-1 in both directions	423755.00

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Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	OLTE STM-1 Terminal configuration	359385.00
	Optical Amplifiers 10 dB output	134510.00
	Optical Amplifiers 15 dB output	241570.00
	Optical Amplifiers 20 dB output	325260.00
	Bit Error Rate Meter of reputed make	118450.00
	Optical Power Meter for 1300 nm and 1550 nm, handheld: OLP-6 or similar	11124.00
	Optical Source	241525.00
	Optical Time Domain reflectometer ODR (+5 to -45dB range sensitivity)	149350.00
	Master clock for the synchronization of MPLS equipment: Type M3000 or similar	267903.00
	Digital Communication Analyzer: PFA-35 or similar for signal analysis on 64kbit/s/2Mbit/s level	118450.00
	Optical Splicing Kit	640625.00
	Optical Splicing Machine and optical time domain reflectometer	908365.00
	40W PLCC Carrier set with 4 command PC	242500.00
	Multi Core cable 0.6mm 1 pair/km	82725.00
	Multi Core cable 0.6mm 4 pair/km	23450.00
	OLTC Transducers	2925.00
	Multi function Transducers	7600.00
	Selective Level Meter and Level Oscillator	950000.00
	Protection Coupler(Analog) 8 command	118355.00
	Protection Coupler(Analog) 4 command	121795.00
	8 command stand alone Digital Tele Protection Coupler	282998.84
	Visual Monitoring System (VMS) for switchyard and premises for 400kV SS	4077431.00
	RTU for TANTRANSCO Substation	10000000.00
	Fibre Optic test Equipment (FOTE) hybrid equipment (Synchronous Digital Hierarchy-MPLS-TP) with six directions	1308679.02
	Fibre Optic test Equipment (FOTE) hybrid equipment (Synchronous Digital Hierarchy-MPLS-TP) with four directions	1186951.80
	Fibre Optic test Equipment (FOTE) hybrid equipment (Synchronous Digital Hierarchy-MPLS-TP) with eight directions	2383592.16

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Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	Integrated 12 port 100 Mbps/1G base Optical/ Electrical Open shortest Path First protocol (OSPF) Routing Interface card with minimum 256 nos. Virtual LAN (VLAN) router instance/port. The routing capacity shall be 20 Gbits/s.	78361.68
	4 ch. Diff. Protn interface cad-(C37.94 compatible)	169679.35
	Hybrid Communication exchange (VOIP+Analog+Digital)	694220.00
	SIP Gateway card for VOIP (500 Subs)	104959.81
	Utility grade MSA 2000 compliant Synchronous Transport Module (STM) 16 SFPs suitable for all vendor SDH ports	
	(a) To drive upto 30 km optical distance	9697.79
	(b) To drive upto 80 km optical distance	9697.79
	(c) To drive upto 120 km optical distance	19492.07
	(d) To drive upto 160 km optical distance	279836.58
	Utility grade MSA 2000 compliant Synchronous Transport Module (STM) 4 SFPs suitable for all vendor SDH ports	
	(a) To drive upto 30 km optical distance	3811.57
	(b) To drive upto 80 km optical distance	3811.57
	(c) To drive upto 120 km optical distance	12544.40
	(d) To drive upto 160 km optical distance	250887.97
	Utility grade Multi Source Agreements (MSA) 2000 compliant 10 Gbe ethernet Small Form factor Pluggable (SFP) + suitable for all vendor ethernet optical ports for MPLS-TP traffic	
	(a) To drive upto 40 km optical distance	14860.29
	(b) To drive upto 80 km optical distance	33387.40
	(c) To drive upto 120 km optical distance	507565.66
	(d) To drive upto 160 km optical distance	977498.13
	Utility grade Multi Source Agreements (MSA) 2000 compliant 1 Gbe ethernet Small Form factor Pluggable (SFP) + suitable for all vendor ethernet optical ports for MPLS-TP traffic	

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Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	(a) To drive upto 40 km optical distance	2508.88
	(b) To drive upto 80 km optical distance	5210.75
	(c) To drive upto 120 km optical distance	13991.83
	Network Management System (NMS) main server, client server peripherals & other accessories with necessary soft copy of software & furniture	5256254.55
	Network Management System (NMS) client server, peripherals & other accessories with necessary soft copy of software & furniture	212226.15
	Fibre Optic test Equipment (FOTE) equipment with Multi Protocol Label Switching (MPLS) - Transport Path (TP) technology withh redundant supply cards	172124.78
	Smart SFP to drive upto 100 km optical distance (To interface MPLS-TP port with SDH port	214921.91
	4 port VOIP gateway with 4 FXO & 4 FXS channels/ ports	8584.02
	Ethernet test equipment: CMA-3000 or similar	339900.00
23	Other SS Materials	
a.	Aluminium Bus Bar	
	4.5" Aluminium Bus Bar	311500.00
	4.0" / 100 mm Aluminium Bus Bar	311500.00
	3.0" / 75 mm	311500.00
	2.0" / 50 mm	311500.00
b.	Conductor	
	AAC Bull conductor (765kV Side)	538430.00
	Bersimis conductor (400kV side)	438185.00
	Zebra ACSR 54/3.18mm+7/3.18mm (per/Km)	263852.65
	Panther ACSR	128430.00
	Moose ACSR	309475.00
c.	Insulators	
	765 kV Solid core Insulator with corona ring	126845.00
	400 kV Solid core insulator with structure (each)	62300.00
	400 kV Solid core insulator (each)	42605.00
	245 kV Solid core insulator with structure (each)	33447.00
	230 kV Solid core insulator (each)	13900.00
	145 kV Solid core insulator with structure (each)	21030.00
	110 kV Solid core insulator (each)	6450.00
	400 kV, 120 KN polymer Insulators (each)	5305.00

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Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	400 kV, 160 KN polymer Insulators (each)	5525.00
	230 kV, 120 KN polymer Insulators (each)	2838.14
	230 kV, 90 KN polymer Insulators (each)	2785.00
	110 kV, 120 KN polymer Insulators (each)	1677.97
	110 kV, 90 KN polymer Insulators (each)	1502.54
	11 kV 120 KN ordinary disc insulators (each)	481.00
	11 kV, 120 KN Antifog Disc Insulators (each)	694.00
	11 kV, 90 KN Ordinary Disc Insulators (each)	392.00
	11 kV, 90 KN Antifog Disc Insulators (each)	605.00
	11 kV 210 KN Anti fog Disc insulator	1218.00
	11 kV 160 KN Anti fog Disc insulator	810.00
	11 kV, 160 KN Ordinary Disc Insulators (each)	662.00
	11 kV PT insulator	244.07
	22 kV PT insulator	327.96
d.	Earth Wire	
	HTGS Earth wire 7/3.55 mm (per KM)	37034.15
	HTGS Earth wire 7/3.66 mm (per KM)	67675.00
e.	Towers	
	MS Tower (per MT)	63499.00
	HTS Tower (per MT)	65999.00
f.	Paints	
	Aluminum paint (per/lt.)	103.00
g.	Gasket	
	Gasket 900×900×16 mm	2772.00
	Gasket 900×900×12 mm	2078.00
	Gasket 900×900×10 mm	1935.00
	Gasket 900×900×8 mm	1550.00
	Gasket 900×900×6 mm	1160.00
	Gasket 900×900×3 mm	516.00
	Gasket 900x600x3mm	325.00
	Gasket 900x600x6mm	650.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	Gasket 900x600x8mm	868.00
h.	Others	
	Transformer Oil with 210 Litres Barrel per kL	60198.00
	Silica gel per kg	164.00
	Rubber mat of size 2000×1000×10 mm	1619.00
	150 Watts LED lights with accessories and fitting	2845.00
	72 Watts LED lamp with fitting	1384.00
	GI Ladder type Cable tray 2.5 m L, 0.6 m W thickness 2mm with coupling plate and bolt nuts	1538.00
	GI Ladder type Cable tray 2.5 m L, 0.45 m W thickness 2mm with coupling plate and bolt nuts	1281.00
	GI Ladder type Cable tray 2.5 m L, 0.3 m W thickness 2 mm with coupling plate and bolt nuts	1281.00
i.	Connectors	
	Free end Clamp for 4.5" Bus Bar	1679.00
	Free end clamp for 4" / 100 mm Bus bar	1679.00
	Free end clamp for 75 mm Al. Bus bar	223.00
	Free end clamp for 50 mm Al. Bus bar	118.00
	T Clamp for Twin Bull AAC to Twin Bull AAC	5253.00
	T Clamp for Twin Bersimis to twin Bersimis	3203.00
	T Clamp for Quad Bersimis to Quad Bersimis	6663.00
	T Clamp for 4.5" Bus To Quad/Twin Bull AAC	3844.00
	T Clamp for 4.5" Bus To Quad/Twin Bersimis	4484.00
	T Clamp for 3" / 75mm Bus bar To Zebra	630.00
	T Clamp for 3" / 75 mm Bus bar To Double Zebra	1260.00
	T Clamp for 50mm Bus bar to Zebra	801.00
	T Clamp for Twin Zebra to Twin Zebra	997.00
	T - Clamp for Quad moose to 4" Alu. Bus	4737.00
	T - Clamp for double moose to 4" Alu. Bus	4211.00
	T - Clamp for Quad moose to 3" Alu. Bus	4211.00
	T - Clamp for Double moose to 3" Alu. bus with 225	3686.00
	T - Clamp for single moose to 3" Alu. Bus	3161.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	T Clamp for Twin Zebra to Single Zebra	1491.00
	T Clamp for Zebra to Zebra	425.00
	T clamp for Panther to Zebra	605.00
	T clamp for Panther to Panther (each)	537.00
	T clamp for single moose to single moose for 230 kV	761.00
	T clamp for single moose to single moose for 110 kV	668.00
	T clamp double moose to double moose with 225 mm centre	1984.00
	Switch end clamp for double moose extension type	1010.00
	Switch End clamp for single zebra	290.00
	Switch End clamp for dog per unit	318.00
	Switch end clamp for Mink ACSR (each)	274.00
	Switch end clamp for double Zebra	525.00
	Switch end clamp for 4" / 100 mm Bus Bar	641.00
	Switch end clamp for 3" / 75 mm Bus Bar	445.00
	Switch end clamp for 2" / 50 mm Bus Bar	355.00
	Switch end clamp for Panther	320.00
	Switch end clamp for Kundah	367.00
	PG Clamp for Zebra	273.00
	PG Clamp for moose	525.00
	PG Clamp for kunda	394.00
	PG Clamp for Panther	356.00
	Reducer Clamp for 50 mm bus to Zebra (each)	761.00
	Reducer Clamp for 75 mm bus to Zebra (each)	640.00
	765 kV Spacer Clamp for Quad AAC Bull 450 mm Spacing	2806.00
	400 kV Spacer Clamp for Quad Bersimis 450 mm Spacing	2166.00
	Spacer Clamp for Zebra (each) 225mm spacing	258.00
	Spacer for 225 mm double moose conductor	1103.00
	Corona Bell for 4.0 " / 100 mm Bus Bar	1118.00
	Corona Bell for 3.0" / 75 mm Bus Bar	116.00
	Corona Bell for 2.0" / 50 mm Bus Bar	80.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	Aluminium C -Type wedge connector -Zebra to Zebra	2209.00
	Aluminium C -Type wedge connector -Panther to Panther	1130.00
	C' type fired bolters wedge connector with 1400 Amps paddle suitable for zebra to zebra conductor	4021.00
	C' type hammered wedge connector (without paddle) suitable for zebra conductor	1600.00
	Hammer driven C' type wedge connector suitable for Panther to Panther conductor	1115.00
	C' type hammered driven wedge connector (without paddle) suitable for kundha conductor	1730.00
	Hammer driven 'C' type wedge connector suitable for Moose conductor	2400.00
	Kundha boltless wedge connectors	2021.00
	Moose fired boltless wedge connector	4733.00
	Joint Clamp for 75mm Bus Bar	728.00
	Joint Clamp for 100 mm Alu.Bus Bar welding sleeves	641.00
	Reducer clamp for twin moose to 3" bus	1202.00
	Seating block for 50 mm bus bar	331.00
	Seating block for 75 mm bus bar	436.00
	SIS clamp for Twin Moose	19271.00
	SI Pilot with CW for Twin Moose	40988.00
	Double Tension fittings for Twin Moose	22332.00
	Twin I S clamp for Quad Moose	16788.00
	SI Pilot with CW for Quad Moose	28984.00
	Quad T fittings for Quad Moose	54248.79
	Single Tension Fittings for Quad Moose	23202.00
	Suspension clamp for EW 7/3.55mm	486.00
	Tension clamp for EW 7/3.55mm	480.00
	Suspension clamp for EW 7/3.66mm	719.00
	Tension clamp for EW 7/3.66mm	726.00
j.	Tension Fitting	
	Double tension Fittings for Panther	4264.00
	Double tension Fittings for Zebra	4919.00
	SS Fittings for Zebra (free centre type w/o P.A.Rod)	2140.00
	Single suspension fitting for Zebra	2100.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	Single Tension Fittings for Panther	1875.00
	Single Tension Fittings for Zebra	2390.00
	Single tension fitting for Kundah	2100.00
	Single tension fitting for Moose	3150.00
	Single suspension fitting for Moose	2075.00
	Single suspension fitting for panther	1245.00
	Single suspension fitting for kunda	2000.00
	Single tension fitting for 7/3.55 mm steel earth wire	471.00
	Bolted type suspension fitting for 230 kV Quad moose	3675.00
	Bolted type suspension fitting for 230 kV Twin moose	2527.00
	Bolted type suspension fitting for 110 kV Quad moose	3497.00
	Bolted type suspension fitting for 110 kV Twin moose	2286.00
	Tension fittings for single disc set with single moose conductor for 230 kV (6 Bolted Gripper set)	1653.00
	Tension fittings for Twin disc set with twin moose conductor for 230 kV (6 Bolted Gripper set)	6175.00
	6 bolt Tension fitting for Zebra (each)	1395.00
	4 bolt Tension fitting for Zebra (each)	1273.00
	6 Bolted tension fitting for zebra conductor space 225 mm with single anchoring point	3552.00
	Seating clamp for 3" bus bar support on solid core insulators	545.00
	Electrical connection with bus bar support in switch end with double zebra conductor	2950.00
	Under hang insulator seating clamp for double zebra with conductor space 225m	648.00
	Electrical connection with double zebra conductor at 75mm bus bar joint	3425.00
k.	Pole	
	4.7 mtr long Tubular yard light pole (each)	2304.00
	5.5 mtr long stepped tubular pole for yard light	3274.00
	6 mtr long tubular yard light pole (each)	3690.00
	8.0 mtr long stepped tubular pole for yard light (each)	4458.00
l.	Instruments	
	Oil breakdown voltage test kits (BDV Kit)	132424.00
m.	Rates of Transmission Line Materials	
	Bay marshelling kiosk	25423.00
	Pipe type earthing	2176.94

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	Counter-poise earthing	8166.00
	Flexible Copper bond	935.00
	Aluminium Earth Bond	194.00
	Vibration Damper for Panther	725.00
	Vibration damper for Zebra	1075.00
	Vibration damper for Moose	1318.00
	Bundle Spacer for Twin Moose	1484.00
	Spacer damper for Quad Moose	2019.00
	Rigid spacer for Twin Moose	892.00
	Rigid spacer for Quad Moose	2219.00
	Midspan comp joint for Moose	1000.00
	Repair sleeve for Moose	423.00
	Midspan comp joint for Panther	485.00
	Midspan comp joint for Zebra	700.00
	Midspan joint for Kunda	780.00
	Mid span comp Joint for EW 7/3.55mm	200.00
	Midspan comp joint for EW 7/3.66mm	353.00
	Vibration damper for EW 7/3.66mm	635.33
	PA Rod for Panther	730.00
	PA Rod for Zebra	1400.00
	PA Rod for Kundah	1375.00
	PA Rod for Moose	2100.00
	Repair sleeve for Panther	365.00
	Repair sleeve for Zebra	445.00
	Repair sleeve for kundah	470.00
	HD GI Eye bolt 16 mm dia with 3 nuts (each)	149.00
	HD GI Hanger Rod 20 mm (each)	256.00
	HD GI 'D' shackle (each)	127.00
	24" Eye bolt with 2 nuts per unit	149.00
	18" Eye bolt with 2 nuts per unit	131.00
	Anti climbing Device	10791.00
	Number plate	270.00
	Phase Plate	303.03
	Circuit plate	303.03
	Name Board	379.00
	Danger Board	362.00
24	Earthing and Painting	
	765 kV SS AIS	
	400 kV SS AIS	20555085.00

1	2	3
Sl. No.	Description	Cost Data 21-22 Rate in Rs.
	230 kV SS AIS	7474575.00
	110 kV SS AIS	840890.00
25	Outdoor Illumination	
	Illumination of Switch Yard Light Mast Tower and Tubular pole as per specification and design including all materials and consumables using LED technology for arriving lux 30 for 400 kV SS AIS	1868645.00
	Illumination of Switch Yard Light Mast Tower and Tubular pole as per specification and design including all materials and consumables using LED technology for arriving lux 30 for 230 kV SS AIS	840890.00
	Illumination of Switch Yard Light Mast Tower and Tubular pole as per specification and design including all materials and consumables using LED technology for arriving lux 30 for 110 kV SS AIS	373725.00
26	Supply & Erection	
	Substation Structures	
	400 kV SS	48754204
	230 kV side	23009045
	110 kV side	6532532
	66 kV side	1124752
	33kV side	1073823
	22 kV side	587497.1
	11 kV side	295073.1
27	Substation	
a.	Control Room (only Building)	
	400 kV SS AIS	44714400.00
	230 kV SS GIS	35463700.00
	230 kV SS AIS	32625996.00
	110 kV SS GIS	35463700.00
	110 kV SS AIS	6915142.00
b.	Quarters	
	2P Type	2574600.00
	2Q Type	3021439.00
	2R Type	3283900.00
	2S Type	4117348.00

**B.ESTIMATES FOR ESTABLISHMENT OF
SUB STATION**

NOTE

Illustrations/Working sheets given in the Cost Data are only guidelines to prepare estimate in the field.

The model estimates shown are only indicative. However depending upon the site conditions & field requirements estimates shall be modified with justification. The percentage rates for Storage, EPF, ESI, LWF and GST etc., may be adopted as per the Statutory provisions.

**DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/11 KV SS WITH 2x16 MVA,
KV POWER TRANSFORMERS 2 NOS. 110 KV FEEDER AND 4 NOS. 11 KV FEEDER**

110/11

Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs	Total in Lakhs
I	CIVIL WORKS					
1	Land Cost (actuals)				As applicable	
2	Control room building with internal electrification, bore well with septic tank			LS	69.151	
3	Plinths,Fencing, Road and cable duct etc.,			LS	92.198	
4	Filling the yard with Gravel			LS	17.728	
5	Filling the yard with crusher dust (100 mm depth) and 20 mm HBG metal (200 mm depth)			LS	5.818	
	Total				184.895	184.90
II	ELECTRICAL WORKS					
1	110 kV AB Switch 2000 A with earth blade	2 Nos	1.249	Each	2.498	
2	110 kV AB Switch 2000 A w/o earth blade	6 Nos	0.872	Each	5.231	
3	110 kV SF6 Breaker	4 Nos	4.450	Each	17.800	
4	110 kV CTs(Single Phase) with JB	12 Nos	1.158	Each	13.900	
5	110 kV PTs(Single Phase) with JB	3 Nos	0.960	Each	2.880	
6	110 kV LAS (Single Phase)	6 Nos	0.229	Each	1.374	
7	11 kV AB Switch	12 Nos	0.281	Each	3.372	
8	11 kV VCB (LV breaker)	2 Nos	1.108	Each	2.215	
9	11 kV VCB (Feeder)	4 Nos	1.108	Each	4.430	
10	11 kV CTs - 1200-6001A	6 Nos	0.160	Each	0.960	
11	11 kV CTs - 400-200/1A	12 Nos	0.138	Each	1.656	
12	11 KV PTs	2 Nos	0.265	Each	0.530	
13	11 kV LAS - Station type	6 Nos	0.015	Each	0.089	
14	11 kV LAS - Disn. Type *	12 Nos	0.004	Each	0.048	
15	11 kV HG Fuse Set	1 Set	0.017	Each	0.017	
16	16 MVA, 110/33-11 kV Power Transformer with OLTC	2 Nos	101.318	Each	202.636	
17	Earthing and painting		8.409	LS	8.409	

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/22 KV SS WITH 2x16 MVA, 110/22 KV POWER TRANSFORMERS 2NOS. 110 KV FEEDER AND 4 NOS. 22 KV FEEDER

Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs	Total in Lakhs
I	CIVIL WORKS					
1	Land Cost (actuals)			As applicable		
2	Control room building with internal electrification, bore well with septic tank				69.151	
3	Plinths, Fencing, Road and cable duct etc.,				92.198	
4	Filling the yard with Gravel				17.728	
5	Filling the yard with crusher dust (100 mm depth) and 20 mm HBG metal (200 mm depth)				5.818	
	Total				184.895	184.90
II	ELECTRICAL WORKS					
1	110 kV AB Switch 2000 A with earth blade	2 Nos	1.249	Each	2.498	
2	110 kV AB Switch 2000 A w/o earth blade	6 Nos	0.872	Each	5.231	
3	110 kV SF6 Breaker	4 No	4.450	Each	17.800	
4	110 kV CTs (Single Phase) with JB	12 Nos	1.158	Each	13.900	
5	110 kV PTs (Single Phase) with JB	3 Nos	0.960	Each	2.880	
6	110 kV LAS (Single Phase)	6 Nos	0.229	Each	1.374	
7	22 kV AB Switch	12 Nos	0.214	Each	2.568	
8	22 kV VCB (2 LV Breaker)	2 Nos	1.917	Each	3.835	
9	22 kV VCB (4 feeder)	4 Nos	1.917	Each	7.669	
10	22 kV CTs for Pr.Tr.LV	6 Nos	0.206	Each	1.237	
11	22 kV CTs for Feeders	12 Nos	0.181	Each	2.172	
12	22 KV PTs	3 Nos	0.155	Each	0.465	
13	22 kV LAS - Stn type	6 Nos	0.023	Each	0.137	
14	22 kV LAS - Disn. Type *	12 Nos	0.005	Each	0.060	
15	22 kV HG Fuse Set	1 Set	0.018	Each	0.018	
16	16 MVA, 110/22-11 kV Power Transformer with OLTC	2 No	101.318	Each	202.636	
17	Earthing and Painting		8.409	LS	8.409	
18	Outdoor illumination		3.374	LS	3.374	
19	Busbar System with ACSR Conductor, Aluminium Tube, Insulators, Power Connectors	1 Loc	15.000	LS	15.000	
20	110V DC indoor C&R panel for 110kv Feeder	2 Nos	4.340	Each	4.340	
21	110V DC indoor C&R panel for GC breaker	2 No	1.060	Each	2.120	
22	110V DC indoor C&R panel for LV breaker	2 Nos	2.040	Each	4.080	
23	110V DC indoor C & R (2 feeder) panel	2 Nos	2.037	Each	4.075	
24	110V DC Annunciator Panel Type B	1 No	0.797	Each	0.797	
25	Control cable		5.000	LS	5.000	
26	110 V DC, 300 AH Battery set with charger	2 Set	3.465	Set	6.930	
27	110 V, 60A charger	3 set	1.000	Set	3.000	
28	Fire Fighting equipments		2.000	LS	2.000	
29	110 V D.C Distribution Panel	1 set	0.712	Set	0.712	
30	A.C Panel	1 set	0.972	Set	0.972	
31	100 KVA, 22 kV / 433 V Distn.Tr (Energy Efficient) *	1 No	2.534	Each	2.534	

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/22 KV SS WITH 2x16 MVA, 110/22 KV POWER TRANSFORMERS 2NOS. 110 KV FEEDER AND 4 NOS. 22 KV FEEDER

Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs	Total in Lakhs
32	P&T Phone	1 No	0.100	Each	0.100	
33	T&P materials			LS	1.000	
34	T&P furnitures			LS	1.000	
35	Scientific Instruments			LS	2.000	
36	SCADA Equipments			LS	40.000	
37	Sub total				371.922	
38	Contingencies 1% for Sl.no.33				3.719	
39	Cost of materials				375.641	
40	Labour & Transport @ 15% for Sl.No.35				56.346	
41	Sub total for Materials and Labour				431.988	
42	Establishment and Supervision charges @ 15% for Sl.No.37				64.798	
III	Total				496.786	496.79
1	110 KV Structure	1 set	65.325	Each	65.325	65.325
2	22 KV Structure	1 set	5.875	Each	5.875	5.875
3	Total for works					752.881
IV	Total for both electrical and civil works (G&N)					752.88

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/33 KV SS WITH 2x16 MVA, 110/33 KV POWER TRANSFORMERS 2Nos. 110 KV FEEDER AND 4 NOS. 33 KV FEEDER

Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs	Total in Lakhs
I	CIVIL WORKS					
1	Land Cost (actuals)			As applicable		
2	Control room building with internal electrification, bore well with septic				69.151	
3	Plinths,Fencing, Road and cable duct etc.,				92.198	
4	Filling the yard with Gravel				17.728	
5	Filling the yard with crusher dust (100 mm depth) and 20 mm HBG metal (100 mm depth)				5.818	
	Total				184.895	184.90
II	ELECTRICAL WORKS					
1	110 kV AB Switch 2000 A with earth blade	2 Nos	1.249	Each	2.498	
2	110 kV AB Switch 2000 A w/o earth blade	6 Nos	0.872	Each	5.231	
3	110 kV SF6 Breaker	4 No	4.450	Each	17.800	
4	110 kV CTs(Single Phase) with JB	12 Nos	1.158	Each	13.900	
5	110 kV PTs(Single Phase) with JB	3 Nos	0.960	Each	2.880	
6	110 kV LAS (Single Phase)	6 Nos	0.229	Each	1.374	
7	33 kV AB Switch	12 Nos	0.214	Each	2.568	
8	33 kV VCB (2 LV Bkr) outdoor	2 Nos	1.917	Each	3.835	
9	33 kV VCB (4 feeder)	4 Nos	1.917	Each	7.669	
10	33 kV CTs(1200-600-300/1A)	6 Nos	0.206	Each	1.237	
11	33 kV CTs(600-300-150/1A)	12 Nos	0.181	Each	2.172	
12	33 KV PTs(outdoor)	3 Nos	0.186	Each	0.558	
13	33 kV LAS - Stn type	6 Nos	0.029	Each	0.173	
14	33 kV LAS - Disn. Type *	12 Nos	0.005	Each	0.060	
15	33 kV HG Fuse Set	1 Set	0.018	Each	0.018	
16	16 MVA, 110/33-11 kV Power Transformer with OLTC	2 No	101.318	Each	202.636	
17	Earthing and Painting		8.409	LS	8.409	
18	Outdoor illumination		3.737	LS	3.737	
19	Busbar System with ACSR Conductor,Aluminium Tube, Insulators,Power Connectors	1 Loc	15.000	LS	15.000	
20	110V DC C&P panel for 110kv Feeder	2 Nos	4.340	Each	4.340	
21	110V DC indoor C&R panel for GC breaker	2 No	1.060	Each	2.120	
22	110V DC indoor C&R panel for LV breaker	2 Nos	2.040	Each	4.080	
23	110V DC indoor C & R (2 feeder) panel	2 Nos	2.037	Each	4.074	

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/33 KV SS WITH 2x16 MVA, 110/33 KV POWER TRANSFORMERS 2NOS. 110 KV FEEDER AND 4 NOS. 33 KV FEEDER

Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs	Total in Lakhs
24	110V DC Annunciator Panel Type B	1 No	0.797	Each	0.797	
25	Control cable		5.000	LS	5.000	
26	110 V DC, 300 AH Battery set with	2 Set	3.465	Set	6.930	
27	110 V , 60A charger	3 set	1.000	Set	3.000	
28	Fire Fighting equipments		2.000	LS	2.000	
29	110 V D.C Distribution Panel	1 set	0.712	Set	0.712	
30	A.C Panel	1 set	0.972	Set	0.972	
31	100 KVA, 33 KV /433 V Distn.Tr Energy efficient	1 No	2.534	Each	2.686	
32	P&T Phone	1 No	0.100	Each	0.100	
33	T&P materials			LS	1.000	
34	T&P furnitures			LS	1.000	
35	Scientific Instruments			LS	2.000	
36	SCADA Equipments			LS	40.000	
37	Sub total				372.566	
38	Contingencies 1% for Sl.no.33				3.726	
39	Cost of materials				376.291	
40	Labour & Transport @ 15% for Sl.No.35				56.444	
41	Sub total for Materials and Labour				432.735	
42	Establishment and Supervision charges @ 15% for Sl.No.37				64.910	
III	Total				497.645	497.65
1	110 KV Structure	1 set	65.325	Each	65.325	65.325
2	33 KV Structure	1 set	10.738	Each	10.738	10.738
3	Total for works					758.604
IV	Total for both electrical and civil works (G&N)					758.60

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/11 KV GIS SS, 2 NOS.16 MVA, 110/11 KV POWER TRANSFORMER, 3 NOS. 110 KV FEEDERS , AND 6 NOS. 11 KV FEEDERS

						RUPEES IN LAKHS	
Sl.No.	Description	Quantity		Rate	Per	Total Amount	
I	CIVIL WORKS						
1	Land cost				As applicable		
2	Control room including electrification				LS	354.64	
3	Climatisation				LS	17.74	
4	Generator room and burnt oil sump				LS	8.88	
5	Cable duct				LS	8.88	
6	Station yard filling and levelling				LS	8.88	
7	Compound Wall and fencing				LS	17.74	
8	Lead road formation				LS	8.88	
9	Water supply and drainage system				LS	5.32	
10	Pllinth for 110KV Cable Terminal Insulatos structre and LA Structure	18	Loc			2.00	
11	Plinth for Transformers	2	Loc			5.00	
12	Fire Protection wall for Pr.Tr.	1	Loc			3.50	
13	Total for civil works					441.45	
II	ELECTRICAL WORKS						
A	110 KV GIS SWITCH GEAR ERECTION						
	110 kV SF6 Indoor GIS with 3 feeders, 2 transformers and nos. disconnector switch with following components	2					
1	110 KV Indoor GIS line bay with all equipments.	3	Nos	65.0	E	195.1	
2	110 KV Indoor GIS transformer bay with all equipments.	2	Nos	59.4	E	118.8	
3	110 KV Indoor Bus PT	2	Nos	6.9	E	13.8	
4	Off load Disconnector Switch	1	Nos	19.8	E	19.8	
5	Earthing switch	2	Nos	3.7	E	7.4	
6	Earthing arrangements				LS	20.0	
B	STATION AUXILIARIES						
1	110 V, 300 AH Battery set with stand	2	Set	3.47	E	6.930	
2	110 V, DC, 60 A battery charger	3	Nos	1.05	E	3.150	
3	250 KVA, 11 KV/433 V Distribution Transformer (Energy efficient) *	1	No.	3.947	E	3.947	
4	Control & Relay panel				LS	35.000	
5	110 V D.C Distribution Panel	2	No	0.712	E	1.424	
6	AC Panel	1	No	0.972	E	0.972	

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/11 KV GIS SS, 2 NOS.16 MVA, 110/11 KV POWER TRANSFORMER, 3 NOS. 110 KV FEEDERS , AND 6 NOS. 11 KV FEEDERS

RUPEES IN LAKHS						
Sl.No.	Description	Quantity		Rate	Per	Total Amount
7	11 KV Indoor VCB (Transformer LV)	2	Nos.	3.75	E	7.50
8	11 KV Indoor VCB for feeder	6	Nos.	3.23	E	19.38
9	11 KV VCB Indoor (Bus coupler)	1	No.	3.36	E	3.36
10	Control cable				LS	1.58
11	Fire fighting equipment				LS	1.00
12	SCADA and Substation automatiopn system				LS	56.26
13	P &T Phone				LS	0.10
14	Scientific Intruments				LS	1.25
15	T & P and Furniture				LS	1.00
16	Earthing, painting & Yard lighting				LS	3.465
17	110 KV, 1 x 630 sq.mm XLPE cable	0.3	Km	51.13	Km	15.339
18	110 KV cable terminations outdoor GIS	9	nos	2.25	E	20.220
19	110 KV cable terminations indoor GIS	15	nos	1.95	E	29.175
20	11 KV, 1 x 630 sq.mm. XLPE cable with accessories with termination kit				LS	3.50
21	EOT Crane Arrangments 10T	1	No	16.268	E	16.268
22	Illumination and ventilation				LS	5.000
23	Sub total					610.73
C	Total cost of materials					610.73
1	Contigencies 1% of Materials cost (C)					6.11
2	Sub total					616.84
3	Labour and transport charges @ 15 % (C 2)					92.53
4	Sub total					709.36
D	110 KV POWER TRANSFORMERS ERECTION					
1	16 MVA, 110/11 KV Pr Tr with OLTC	2	Nos	101.318	E	202.64
2	Labour & transport for Trs	2	Loc	3.456	Loc	6.912
3	Earthing	2	Loc	0.550	Loc	1.100
4	Control Cable				LS	1.00
5	Sub total					211.65
E	Total cost of materials and equipments (C4+D5)					921.01
1	Establishment and Supervision Charges @15% (E)					138.15
	Total (Gross & Nett) (E+E1)					1059.16
F	Total for Civil & Ele. works (G&N) (I 10 + E 2)					1500.61

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/33 KV GIS SS, 2 NOS. 25						
MVA, 110/33 KV POWER TRANSFORMER, 3 NOS. 110 KV FEEDERS and 6						
NOS. 33 KV FEEDERS						
RUPEES IN LAKHS						
Sl.No	Description	Quantity		Rate	Per	Total Amount
I	CIVIL WORKS					
1	Land cost					As applicable
2	Control room including electrification				LS	354.64
3	Climatisation				LS	17.74
4	Generator room and burnt oil sump				LS	8.88
5	Cable duct				LS	8.88
6	Station yard filling and levelling				LS	8.88
7	Compoud Wall and fencing				LS	17.74
8	Lead road formation				LS	8.88
9	Water supply and drainage system				LS	5.32
10	Pllinth for 110KV Cable Terminal Insulatos structre and LA Structure	18	Loc			2.00
11	Plinth for Transformers	2	Loc			5.00
12	Fire Protection wall for Pr.Tr.	1	Loc			3.50
13	Total for civil works					441.45
II	ELECTRICAL WORKS					
A	110 KV GIS SWITCH GEAR ERECTION					
	110 KV SF6 Indoor GIS with 3 feeders, 2 transformers and 1 no. disconnector switch with following components					
1	110 KV Indoor GIS line bay with all equipments.	3	Nos	65.03	E	195.1
2	110 KV Indoor GIS transformer bay with all equipments.	2	Nos	59.40	E	118.8
3	110 KV Indoor Bus PT	2	Nos	6.90	E	13.8
4	Off load Disconnector Switch	1	Nos	19.8	E	19.8
5	busbar Earth switch	2	Nos	3.69	E	7.4
6	Earthing arrangements				LS	20.0
B	STATION AUXILIARIES					
1	110 V, 300 AH Battery set with stand	2	Nos	3.47	E	6.930

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/33 KV GIS SS, 2 NOS. 25						
MVA, 110/33 KV POWER TRANSFORMER, 3 NOS. 110 KV FEEDERS and 6						
NOS. 33 KV FEEDERS						
RUPEES IN LAKHS						
Sl.No	Description	Quantity		Rate	Per	Total Amount
2	110 V, DC, 60 A battery charger	3	Nos	1.05	E	3.150
3	250 KVA, 11 KV/433 V Distribution Transformer (energy efficient) *	1	No.	3.947	E	3.947
4	Control & Relay panel				LS	35.000
5	110 V D.C Distribution Panel	2	No	0.712	E	1.424
6	AC panel	1	No	0.972	E	0.972
7	33 KV VCB Indoor (LV-2)	2	Nos.	6.30	E	12.591
8	33 KV VCB Indoor for feeder	6	Nos.	5.82	E	34.914
9	33 KV VCB Indoor (Bus coupler)	1	No.	7.32	E	7.320
10	Control cable				LS	1.58
11	Fire fighting equipment				LS	1.00
12	SCADA and Substation automation system				LS	56.26
13	P &T Phone				LS	0.10
14	Scientific Instruments				LS	1.25
15	T & P and Furniture				LS	1.00
16	Earthing, painting & Yard lighting				LS	3.638
17	110 KV, 1 x 630 sq.mm XLPE cable with accessories	0.3	Km	51.13	Km	15.339
18	110 KV cable terminations outdoor GIS	9	nos	2.25	E	20.220
19	110 KV cable terminations indoor GIS	15	nos	1.95	E	29.175
20	33 KV, 1 x 630 sq.mm. XLPE cable with termination kit				LS	2.50
21	EOT Crane Arrangments 10T	1	No	16.268		16.268
22	Illumination and ventilation				LS	4.000
23	Sub total					633.44
C	Total cost of materials					633.44
1	Contingencies 1% of Materials cost (C)					6.33
2	Sub total					639.78
3	Labour and transport charges @ 15 % (C 2)					95.97
4	Sub total					735.74

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/33 KV GIS SS, 2 NOS. 25 MVA, 110/33 KV POWER TRANSFORMER, 3 NOS. 110 KV FEEDERS and NOS. 33 KV FEEDERS						25 6
						RUPEES IN LAKHS
Sl.No	Description	Quantity		Rate	Per	Total Amount
D	110 KV POWER TRANSFORMERS ERECTION					
1	25 MVA, 110/33 KV Pr Tr with OLTC	2	Nos	124.13	E	248.27
2	Labour & transport for Trs	2	Loc	3.456	Loc	6.912
3	Earthing	2	Loc	0.550	Loc	1.100
4	Control Cable				LS	1.00
5	Sub total					257.28
E	Total cost of materials and equipments (C4+D5)					993.02
1	Establishment and Supervision Charges @15% (E)					148.95
2	Total (Gross & Nett) (E+E1)					1141.98
F	Total for Civil & Ele. works (G&N) (I 10 + E 2)					1583.43

DETAILED ESTIMATE FOR ESTABLISHMENT OF 230/110 KV SS WITH 2x100 MVA, 230/110 kV AUTO TRANSFORMERS, 2 NOS. 230 KV FEEDERS AND 6 NOS. 110 KV FEEDERS

SL NO	DESCRIPTION	QTY	RATE RS IN LAKHS	PER	AMOUNT RS IN LAKHS	TOTAL RS IN LAKHS
I	CIVIL WORKS					
1	Land cost				As applicable	
2	Control room building with internal electrification, bore well with septic tank			LS	326.260	
3	Diesel Gen set room			LS	10.191	
4	Compound wall			LS	122.345	
5	Plinths for Breaker and Transformer, RCC retaining wall, Cable duct, filling the yard with gravel and allied civil works.			LS	855.763	
6	Road ,Drain and sump			LS	131.630	
7	Filling the yard with crusher dust (100 mm depth) and 20 mm HBG metal (100 mm depth)			LS	21.800	
8	Fire Protection wall				12.000	
9	NIFPS Sump Pit for 2 Auto Transformers				7.500	
	Total (inclusive of all charges)				1487.489	1487.489
II	ELECTRICAL WORKS					
1	230 kV SF6 Breakers 50 KA with Support Struture	5 Nos	12.308	E	61.540	
2	230 kV Isolator 2000 A with earth	2 Nos	1.860	E	3.720	
3	230 kV Isolator 2000 A w/o earth	20 Nos	1.620	E	32.400	
4	230 kV PT (single phase) with Jn Box	6 Nos	1.927	E	11.560	
5	230 KV Bus Earth switch (1 phase)	3 Nos	0.620	E	1.860	
6	230 KV CVT(Single Phase) with Jn Box	6 Nos	1.772	E	10.633	
7	230 kV CT(single phase) with Jn Box	15 Nos	2.333	E	35.000	
8	230 kV Lightning Arresters	12 Nos	0.369	E	4.422	
9	110 kV SF6 Circuit Breakers	9 Nos	4.450	E	40.051	
10	110 kV Isolator 2000 A with earth	6 Nos	1.249	E	7.493	
11	110 kV Isolator 2000 A w/o earth	12 Nos	0.872	E	10.463	
12	110 KV Bus Earth switch	6 Nos	0.416		2.498	
13	110 kV CT(single phase) with Jn Box	30 Nos	1.158	E	34.750	
14	110 KV PT with Jn Box	6 Nos	0.960	E	5.760	
15	110 KV CVT/PT (single phase)	6 Nos	1.659	E	9.954	
16	110 kV Lightning Arresters	6 Nos	0.229	E	1.374	
17	220 V, 300 AH Battery sets with stand	2 Set	7.567	Set	15.134	
18	220V, 60A Battery chargers	3 Set	1.275	Set	3.825	
19	100 MVA,230/110 kV Auto Transformer with OLTC & NIFPS	2 Nos	377.895	E	755.790	
20	Control & Relay Panel					
21	Control & Protection panel for 230/110KV Auto.Tr	2 Nos.	10.510	E	21.020	
22	Control & Protection panel for 230 kV Feeder	2 Nos.	6.330	E	12.660	
23	230 kV Bus Bar protection relay panel (23 bays)	1 No.	11.285	E	11.285	
24	Control & Protection panel for 230 kV Bus coupler	1 No.	3.910	E	3.910	
25	Synchronising cum Islanding Panel for 230 kV Bays (SAS)	1 set	3.078	set	3.078	

DETAILED ESTIMATE FOR ESTABLISHMENT OF 230/110 KV SS WITH 2x100 MVA, 230/110 kV AUTO TRANSFORMERS, 2 NOS. 230 KV FEEDERS AND 6 NOS. 110 KV FEEDERS

SL NO	DESCRIPTION	QTY	RATE RS IN LAKHS	PER	AMOUNT RS IN LAKHS	TOTAL RS IN LAKHS
26	Control & Protection panel for 110 kV Feeder	6 Nos.	4.340	E	26.040	
27	Control & Protection panel for 110 kV Bus coupler	1 No	3.510	E	3.510	
28	Control & Protection panel for 110 kV Bus Bar protection relay panel (upto 23 bays)	1 No	11.285	E	11.285	
29	Marshalling Box	14 Nos	0.280	E	3.924	
30	Synchronising cum Islanding Panel for 110 kV Bays (SAS)	1 set	3.078	set	3.078	
31	AC panel 230 kV SS	2 Nos	1.399	set	2.798	
32	220 V DC panel	2 Nos	0.824	set	1.647	
33	48 V DC panel	2 Nos	1.204	E	2.409	
34	Substation Automation System	1 No	56.260	E	56.260	
35	Sub Total				1211.129	
36	Accessories at 3% on Sl. No.35				36.33	
37	Control cables of assorted size			LS	15.00	
38	Auxiliary panel & Interconnecting cables			LS	10.00	
39	230 kV structure	1 No	230.090	E	230.090	
40	110 kV structure	2 Nos	65.325	E	130.651	
41	Earthing and Paintining		74.746	LS	74.746	
42	Outdoor illumination		8.409	LS	8.409	
43	250 kVA, 11 kV/433V(Copper winding) Distribution transformer (Energy efficient) *	2 Nos	3.947	E	7.894	
44	DG set 250 kVA with accessories including AMF panel	1 No	12.867	E	12.867	
45	Fire fighting equipments			LS	5.000	
46	Scientific instruments			LS	2.500	
47	P&T Phone			LS	0.200	
48	Cost of materials				1744.819	
49	Contingencies 1% on sl.no.48				17.448	
50	Sub total				1762.267	
51	Labour and transport charges @ 15 % on sl.no.50				264.340	
52	Sub total				2026.607	
53	Estt. & supervision charges @ 15% on sl.no.66				303.991	
54	Sub total				2330.598	2330.598
III Provision of PLCC equipment						
55	Digital Protection coupler including remote end SS	4 Nos	2.83	E	11.32	
56	EPAX for Analog/Digital/VOIP system	1 No	6.94	E	6.94	
56	48 V/400 AH Battery Set	2 Nos	1.717	No	3.434	
57	48 V /80 A Battery Chargers	3 Nos	1.045	No	3.135	
57	Optic line terminal equipments (OLTES) with Multiplexer with cross connectivity	1 Nos	23.836	No	23.84	
58	Commissioning of SAS	14 bays	0.200	bay	2.800	
59	Subtotal				51.467	51.467
60	Total for both electrical and civil works (G&N) (I 13 + II 54 + III 59)					3869.554

**DETAILED ESTIMATE FOR ESTABLISHMENT OF A 230/110 KV GIS SS WITH
2X100 MVA. 230/110 KV AUTO TRANSFORMERS , 3 NOS. 230 KV FEEDERS and
6 NOS. 110 KV FEEDERS**

Rs in lakhs						
SI. No	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT	
I	Civil Works					
1	Land Cost					As applicable
2	Control Room			LS		354.64
3	Climatisation			LS		53.20
4	Generator room and burnt oil sump			LS		27.83
5	RCC cable ducts			LS		79.81
6	Filling and Levelling of site			LS		26.61
7	Compound wall/Fencing			LS		53.20
8	Road formation with block topping			LS		26.61
9	Water supply and Drainage system			LS		13.31
10	230KV Plinth arrangements			LS		25.000
11	110KV Plinth Plinth arrangements			LS		15.000
12	Plinth for 230/110 KV auto transformer	2 Nos	4.840	E		9.680
13	Fire Protection wall for 2 Nos Autos			Loc		12.000
14	NIFPS Sump Pit for 2 Autos					15.000
	Sub total					711.897
II	Electrical Works					
A	230 KV GIS Switch Gear Erection					
1	230 KV line bay with all equipments with double bus arrangement	3 Nos	202.95	E		608.845
2	230 KV transformer bay with all equipments with double bus arrangement	2 Nos	131.47	E		262.932
3	230 KV bus bar PT	6 nos.	52.71	E		316.281
4	Bus bar Earthing switch	2 No	47.62	E		95.242
5	Earthing arrangements			LS		20.000
	Subtotal					1303.300
B	Auto Transformer Erection					
1	100 MVA, 230/110 KV auto transformer with OLTC	2 Nos	377.89	E		755.790
2						
3	Earthing	2 loc	0.550	loc		1.100
5	230 kV, 1x1200 sq.mm Aluminium XLPE cable	0.6 Kms	66.881	Km		40.129
6	230 KV GIS terminations	15 Nos	6.05	E		90.743
7	230 KV out door terminations	15 Nos	7.258	E		108.868
8	230 KV out door terminations structure	15 Nos	0.341	E		5.110
9	230 KV Single phase link box with CCPU	15 Nos	0.351	E		5.259
10	230 KV Single phase link box without CCPU	15 Nos	0.21	E		3.182
11	Sheath bonding cable -240 sq.mm	0.5 Km	15.042	Km		7.521
12	Sheath link box	5 Nos	1.332	E		6.660
13	110 KV, 1x630 Sq.mm, XLPE cable between LV of auto tr and 110 KV GIS breaker	0.6 Kms	51.13	Km		30.678

**DETAILED ESTIMATE FOR ESTABLISHMENT OF A 230/110 KV GIS SS WITH
2X100 MVA. 230/110 KV AUTO TRANSFORMERS , 3 NOS. 230 KV FEEDERS and
6 NOS. 110 KV FEEDERS**

Rs in lakhs						
SI. No	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT	
16	110 KV out door terminations structure	24 Nos	0.232	E	5.567	
17	110 KV Single phase link box with CCPU	24 Nos	0.312	E	7.479	
18	110 KV Single phase link box without CCPU	24 Nos	0.212	E	5.092	
	Subtotal				1166.538	
C	110 KV GIS Switch Gear Erection					
1	110 kV GIS Breaker Package comprising of 6 feeders, 2 nos 110 kV LV breakers and bus sectionaliser isolator switch and 1 no. spare	1 Set	600.00	Set	600.00	
2	110 KV bus bar PT (Single phase)	6 Nos	6.90	E	41.385	
3	110 KV off load disconnecter switch	1 No	14.01	E	14.010	
4	Earthing switch	2 Nos	3.69	E	7.383	
5	Earthing arrangements			LS	15.000	

	Sub total				677.778	
D	Station Auxiliaries					
1	Control & Protection panel for 230 kV Feeder	3 Nos	6.330	E	18.990	
2	Control & Protection panel for 230/110KV Auto.Tr	2 Nos	10.510	E	21.020	
3	230 kV Bus Bar protection relay panel (23 bays)	1 No	11.285	E	11.285	
	Synchronising cum Islanding Panel for 230 kV Bays	1 Set	3.078		3.078	
4	Control & Protection panel for 110 kV Feeder	6 Nos	4.340	E	26.040	
5	Control & Protection panel for 110 kV Bus Bar protection relay (upto 23 bays)	1 No	11.285	E	11.285	
6	LT 415V ACDB with LT Circuit Breaker Control, MCBs including change over switch arrangements for 400KV SS	3 Nos	4.523	E	13.569	
7	DC Panel	2 No	0.824	E	1.647	
8	Synchronising cum Islanding Panel for 110 kV Bays	1 Set	3.078		3.078	
9	Substation Automation System	1 Set	56.26	E	56.260	
10	Earthing, Painting and Station yard lighting			LS	13.979	
11	DG set 250 kVA with accessories including AMF panel	1 No.	12.87	E	12.867	
12	220 V, 300 AH Battery set with stand	2 Set	7.57	E	15.134	
13	220 V DC, 60 A battery charger	3 Nos	1.28	E	3.825	
14	Control cables of assorted size with tray			LS	20.000	

**DETAILED ESTIMATE FOR ESTABLISHMENT OF A 230/110 KV GIS SS WITH
2X100 MVA. 230/110 KV AUTO TRANSFORMERS , 3 NOS. 230 KV FEEDERS and
6 NOS. 110 KV FEEDERS**

Rs in lakhs						
SI. No	DESCRIPTION	QUANTITY	RATE	PER	AMOUNT	
16	P&T Phone			LS	0.200	
17	Scientific Instruments			LS	2.000	
18	T&P and Furniture			LS	2.000	
19	EOT crane arrangements			LS	16.268	
20	Cable testing equipments & accessories			LS	100.000	
21	Illumination and ventilation			LS	7.000	
	Subtotal				363.523	
E	Communication Equipments					
1	Optic line terminal equipments (OLTE) with Multiplexer with cross connectivity	1 No	23.836	No	23.836	
2	Digital Protection coupler including remote end SS	6 Nos	2.830		16.980	
3	EPAX for Analog/Digital/VOIP system	1 No	6.942	E	6.942	
5	48 V / 400 AH battery (SAN Container)	2 Set	1.717	No	3.434	
6	48 V/ 80 A battery charger	3 Nos	1.045	No	3.135	
9	Sub total				54.327	
F	Total for equipments				3565.467	
1	Contigencies @ 1%				35.655	
2	Sub Total				3601.122	
3	Labour and Transport @15%				540.168	
4	Total cost of Materials, Labour & Transport				4141.290	
5	Establishment and Supervision Charges @15%				621.193	
	Total (Gross & Nett)				4762.483	
	Total for both electrical and civil works (G&N)				5474.380	

DETAILED ESTIMATE FOR AN ESTABLISHMENT OF 400/230-110KV AIS, 2 NOS. 500 MVA 400/230 KV AUTO TRANSFORMER, 2 NOS. 200 MVA 400/110 KV AUTO TRANSFORMER, 400 KV SYSTEM (4 DIA) WITH BUS & LINE REACTORS , 6 NOS. 230 KV FEEDERS, 4 NOS. 110 KV FEEDERS - BUS-I AND BUS II SCHEME						
SL NO	DESCRIPTION	QTY		RATE in Lakhs	PER	AMOUNT in Lakhs
I	CIVIL WORKS					
1	Cost of land					As applicable
2	Control room Building,Internal electrification, water supply arrangements and Switch yard Panel Room					447.144
3	Gravel filling ,metal spreading and yard leveling					630.66
4	Approach Road					375.55
5	Cable duct and Retaining wall					736.94
6	Compound wall					260.77
7	Structure Foundation ,Plinths ,supply of towers & Foundation for Towers in yard and allied civil works					3310.55
8	Fire Protection wall					35.000
9	NIFPS Sump Pit for 4 Autos					15.000
10	Sub-Total					5811.60
II	ELECTRICAL WORKS					
A	Equipments					
1	22kV/433 V, 500kVA, Distribution Transformer (Energy Efficient Level II)	2	No	5.851	set	11.701
2	400/230/33 kV 500 MVA, 3 Phase 50 C/S, YNaod11, Auto Transformer with OLTC and NIFPS	2	Set	1232.09	No	2464.183
3	400/110 kV, 200 MVA Auto(3 phase unit) transformer with OLTC and NIFPS	2	Set	771.21	Set	1542.420
4	400kV, 80 MVAR Bus Reactor with NIFPS	1	No	407.490	no	407.490
5	400 kV, 80 MVAR, Line Reactor, with NGR with NIFPS	1	No	445.26	no	445.263
6	420KV,3150A, 63KA 3 phase outdoor SF6 Breaker with pre insertion resistor & without CSD all accessories	4	Nos	38.941	E	155.764
7	420KV,3150A, 63KA 3 phase outdoor SF6 Breaker with pre insertion resistor & with CSD all accessories	4	Nos	45.000	E	180.000
8	420KV,3150A, 63KA SF6 Breaker with out pre insertion resistor & with CSD all accessories	7	Nos	36.220	E	253.537
9	420KV, 3000A, 63KA - 5 Core Single Phase Current Transformers with support structure, accessories and junction box	54	Nos	6.401	E	345.627

SL NO	DESCRIPTION	QTY		RATE in Lakhs	PER	AMOUNT in Lakhs
10	420KV single phase Capacitive Voltage Transformer with support structure	18	Nos	2.228	E	40.104
11	400KV ,10KA,Station Type LAS	30	Nos	1.066	E	31.973
12	400KV,3150A, 63KA Horizontal Center Break Disconnecter with Single Earth blades.	33	set	7.309	set	241.207
13	400KV,3150A, 63KA Horizontal Center Break Disconnecter with double Earth blades.	9	set	8.404	set	75.638
14	400KV Bus Earth switch (single phase)	6	Nos	3.263	E	19.578
15	400KV Busbars, All Types of Power connectors, Tension Fitting Clamps, Insulators and hardwares	1	Lot	142.00	Lot	142.000
16	400 kV Solid core insulator with structure (each)	30	Nos	0.623	set	18.690
17	230KV, 2000A, 50KA SF6 Breaker	9	Nos	10.374	E	93.366
18	230KV,2000A,40KA - 5 Core Single Phase Current Transformers with TC & JB (Ratio 2000-1200- 800-400 / 1A)	27	Nos	2.383	E	64.350
19	230KV outdoor Potential Transformers with TC & JB	6	Nos	1.927	E	11.560
20	230 KV- 10 KA Station Type LAS	30	Nos	0.518	E	15.534
21	230 KV Capacitive Voltage Transformer with Structures	18	Nos	1.772	E	31.898
22	230 KV - 2000 A, 40 KA Isolator with Earthblades	6	Set	1.860	set	11.161
23	230 KV - 2000 A, 40KA Isolator without Earthblades	36	set	1.620	set	58.320
24	230KV All Types of Power Connectors, Tension Fitting Clamps, Insulators and for 230KV Yard	1	Lot	37.0	Lot	37.000
25	110KV,2000A,40KA SF6 Breakers with all accessories	8	Nos	4.450	E	35.601
26	110KV,1200A,40KA - 1 Phase CTs (Ratio - 1200-600-300/1A) with TC &JB	21	Nos	1.283	E	26.950
27	110KV,1200A,40KA - 1 Phase CTs (Ratio - 600-300-150/1A) with TC &JB	3	Nos	1.158		3.475
28	110 KV PT with Jn Box	6	Nos	0.960	E	5.760
29	110 KV- 10 KA Station Type LAS	21	nos	0.229	E	4.809
30	110 KV CVT/PT	4	Nos	1.659	E	6.636
31	110 KV - 2000A,40KA Isolator with Earthblades	4	Nos	1.249	E	4.996
32	110 KV - 2000A,40KA Isolator without Earth blades	29	Nos	0.872	E	25.285
33	110KV All Types of Power Connectors, Tension Fitting Clamps, Insulators and hardwares	1	Lot	16.000	Lot	16.000
34	ACSR Moose Conductor ,Aluminium Tubes and GI wire for 400KV, 230KV and 110KV Yards	1	Lot	100.000	Lot	100.000

SL NO	DESCRIPTION	QTY		RATE in Lakhs	PER	AMOUNT in Lakhs
35	22 kV LAS - Stn type	9	Nos	0.023	Each	0.206
36	22KV AB Switch	2	Nos	0.214	E	0.428
37	22KV HG Fuse Set	2	Set	0.018	Set	0.035
38	22KV VCB-220V DC	1	No	1.917	E	1.917
39	22 kV CTs for Pr.Tr.LV	3	Nos	0.206	E	0.619
40	22 KV PTs	3	Nos	0.155	Each	0.465
41	220V DC Indoor C &R Panel for GC Breaker	1	No	1.060	E	1.060
42	220V DC Indoor C &R Panel for LV Breaker	1	No	2.040	E	2.040
43	33KV, 3CX400smm Aluminium XLPE UG cable	0.4	km	19.646	km	7.858
44	Straight Joint Kits(HS Type) for XLPE Aluminium Cable	3	Nos	0.185	E	0.556
45	Outdoor Termination Kit (HS Type)	6	Nos	0.067	E	0.399
46	5MVA, 110/22KV Power Transformer	1	No	6.000	E	6.000
47	220V, 400 AH Battery Set with Stand	2	Sets	10.06	set	20.120
48	220V, 300 AH Battery Set with Stand	2	Sets	7.57	set	15.134
49	220V 80 Amps Battery charger with potential free contacts for all indications for SAS interface.	3	nos	3.23	E	
50	220VDC, 60 Amps Battery charger with potential free contacts for all indications for SAS interface.	3	nos	1.275	E	3.825
51	Control Cables, LT Power Cables and Cable Trays			LS		530.000
52	Earthing and Painting					205.551
53	Outdoor Illumination					18.686
54	250 KVA DG Set with accessories	1	set	12.867	set	12.8667
55	Sub-Total					7755.641
III	CONTROL AND RELAY PANEL					
56	220 V DC Distribution Panel for 400kV SS	2	Nos	1.595	E	3.189
57	48 V DC Distribution Panel for 400kV SS	2	Nos	1.204	E	2.409
58	LT 415V ACDB with LT Circuit Breaker Control, MCBs including change over switch arrangements for 400KV SS	3	Nos	4.523	E	13.569
59	AC Junction Box for Kiosk	9	Nos	0.280	E	2.523
60	Control & Protection panel for 400/230 KV ICT	2	Nos	13.260	E	26.520
61	Control & Protection panel for 400/110 KV ICT	2	Nos	1.256		2.512

SL NO	DESCRIPTION	QTY		RATE in Lakhs	PER	AMOUNT in Lakhs
62	Control & Protection panel for 400 kV Feeder	4	Nos	12.964	E	51.857
63	Control & Protection panel for 400 kV Bus Reactor /Line Reactor	2	Nos	8.388		16.776
64	Control & Protection panel for 400 kV Tie Breaker bay	5	Nos	4.810	E	24.050
65	400KV Busbar Protection Relay Panel	1	No	15.9	E	15.900
66	Synchronising cum Islanding Panel for 400 kV Bays	1	No	3.078	E	3.078
67	Control & Protection panel for 230 kV Feeder	6	Nos	6.33	E	37.980
68	Control & Protection panel for 230 kV Bus coupler bay	1	No	3.91	E	3.910
69	Synchronising cum Islanding Panel for 230 kV Bays	1	No	3.078	E	3.078
70	Control & Protection panel for 110 kV Bus Bar protection relay panel (upto 23 bays)	1	No	12.59	E	12.586
71	Control & Protection panel for 110 kV Feeder	4	Nos	4.340	E	17.360
72	Control & Protection panel for 110 kV Bus coupler	1	No	3.510	E	3.510
73	Synchronising cum Islanding Panel for 110 kV Bays	1	No	3.078	E	3.078
74	Sub-Station Automation System	1	lot	56.26	E	56.260
75	OPGW cable (24 fibre) DWSM cable and accessories for KIOSK system	1.7	km	1.64	km	2.789
76	Sub-Total					302.931
IV	PLCC EQUIPMENTS					
77	Optic line terminal equipments (OLTE) with Multiplexer with cross connectivity	2	Nos	23.836	E	47.672
78	Digital Protection coupler including remote end SS	28	Nos	2.830	E	79.240
79	EPAX for Analog/Digital/VOIP system	1	No	6.942	E	6.942
80	48V, 400 AH Battery Set with Stand	2	sets	1.717	set	3.434
81	48V/ 80 A Battery Chargers	3	Nos	1.045	E	3.135
82	Sub-Total					140.423
83	Cost of materials and equipments (II+III+IV)					8198.994
84	Accessories at 3%					245.970
85	Sub-Total					8444.964
86	Contingencies 1%					84.450
87	Sub-Total					8529.414
88	Labour and Transport 15%					1279.412
89	Cost of Material and Labour					9808.826
90	Estt & Supervision Charges 15%					1471.324
91	SUB-TOTAL					11280.150
VI	OTHERS					
92	Fire Fighting Equipments				LS	8.000
93	Scientific Instruments like Megger 5KV (Battery operated), Multimeter etc.,				LS	2.000
94	Circuit Breaker analysing kit (multi break)	1	No	12.000	E	12.000

SL NO	DESCRIPTION	QTY		RATE in Lakhs	PER	AMOUNT in Lakhs
95	CT/PT Analyser kit	1	No	15.000	E	15.000
96	Primary Injection Kit (2000 Amps))	1	No	15.000	E	15.000
97	Transformer winding resistance test Kit	1	No	6.642	E	6.642
98	Tandelta Testing kit with variable frequency	1	Set	38.000	Set	38.000
99	T & P Furnitures				LS	2.000
100	PC & Software	1	No	1.000	E	1.000
101	Optical Power Meter Hand held OLP-6 or similar	1	No	0.111	E	0.111
102	Optical Source	1	No	2.415	E	2.415
103	Optical Splicing Machine and optical time domain reflectometer	1	No	9.084	E	9.084
104	Commissioning of SAS	33	bays	0.200	E	6.600
105	Sub-Total					117.852
	VII STRUCTURES					
1	400KV Structures	1	Loc	487.54	Loc	487.542
2	230KV Structures	1	Loc	230.09	Loc	230.090
3	110KV Structures	1	Loc	65.325	Loc	65.325
4	Sub-Total					782.958
5	Total for Works					17992.560
6	Total for both electrical and civil works (G&N)					17992.56

C.ESTIMATES FOR BAY EXTENSION

DETAILED ESTIMATE FOR 11KV BAY EXTENSION

Rs. In lakhs

SI No	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	11kV AB switch	Nos.	2	0.281	0.562
2	11 kV VCB Breaker	Nos	1	1.108	1.108
3	11 kV (1200-600/1A) Oil filled (outdoor) CT	Nos	3	0.160	0.480
4	11 kV LAS	Nos	3	0.015	0.045
5	Relay & control panel for LV breaker	Nos	1	2.040	2.040
6	Structure		LS	2.150	2.150
7	Control cables		LS	0.500	0.500
8	Busbar arrangement,		LS	0.312	0.312
9	conductor,Insulator,Hardware fitting		LS		0.500
10	Foundation Materials		LS	0.352	0.352
11	Sub total				8.048
	Contingencies 1 %				0.080
	Cost of materials and equipments				8.129
	Labour and transport 15%				1.219
	Cost of materials and labour				9.348
	Establishment and Supervision Charges @15%				1.402
	Total				10.750

Say Rs. 10.75 Lakhs

DETAILED ESTIMATE FOR 22KV BAY EXTENSION

Rs. In lakhs

SI No	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	22kV AB switch	Nos.	2	0.214	0.428
2	22 kV VCB Breaker	Nos	1	1.917	1.917
3	22 kV CTs	Nos	3	0.206	0.619
4	22 kV LAS	Nos	3	0.023	0.069
5	Relay & control panel for LV breaker	Nos	1	2.040	2.040
6	Structure		LS	4.280	4.280
7	Control cables		LS	0.500	0.500
8	Busbar arrangement conductor, Insulator, Hardware fitting		LS	0.312	0.312
9	Foundation Materials		LS	0.352	0.352
10	Sub total				11.016
	Contingencies 1 %				0.110
	Cost of materials and equipments				11.127
	Labour and transport 15%				1.669
	Cost of materials and labour				12.796
	Establishment and Supervision Charges @15%				1.919
	Total				14.715

Say Rs. 14.71 Lakhs

DETAILED ESTIMATE FOR 33KV BAY EXTENSION

Rs. In lakhs

SI No	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	33kV AB switch	Nos.	2	0.214	0.428
2	33 kV VCB Breaker	Nos	1	1.917	1.917
3	33 kV (1200-600-300/1 A) out door CT	Nos	3	0.206	0.619
4	33 kV LAS	Nos	3	0.029	0.086
5	Relay & control panel for LV breaker	Nos	1	2.040	2.040
6	Structure		LS	7.810	7.810
7	Control cables		LS	0.500	0.500
8	Busbar arrangement conductor, Insulator, Hardware fitting		LS	0.312	0.312
9	Foundation Materials		LS	0.352	0.352
10	Sub total				14.564
	Contingencies 1 %				0.146
	Cost of materials and equipments				14.710
	Labour and transport 15%				2.206
	Cost of materials and labour				16.916
	Establishment and Supervision Charges @15%				2.537
	Total				19.454

Say Rs. 19.45 Lakhs

DETAILED ESTIMATE FOR 110KV BAY EXTENSION

Rs. In lakhs

SI No	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	110 kV AB switch 2000 A without earth	Nos.	1	0.872	0.872
2	110 kV AB switch 2000 A with earth	Nos	1	1.249	1.249
3	110 kV SF6 Breaker 40 kA	Nos	1	4.450	4.450
4	110 kV CTs (Single Phase)	Nos	3	1.283	3.850
5	Control & protection panel for 110kV Feeder	Nos	1	4.340	4.340
6	Structure		LS	13.100	13.100
7	Control cables		LS	1.691	1.691
8	Busbar arrangement		LS	1.691	1.691
9	conductor,Insulator,Hardware fitting		LS	3.000	3.000
10	Earthing		LS	1.000	1.000
11	Foundation Materials		LS	2.217	2.217
12	SAS Configuration Charges		LS		5.000
13	Sub total				42.459
	Contingencies 1 %				0.425
	Cost of materials and equipments				42.883
	Labour and transport 15%				6.433
	Cost of materials and labour				49.316
	Establishment and Supervision Charges @15%				7.397
	Total				56.713

Say Rs. 56.71 Lakhs

DETAILED ESTIMATE FOR 230 KV BAY EXTENSION

Rs. In lakhs

SI No	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	Civil works including foundation		LS	81.229	81.229
2	230 kV, SF6 50 KA out door Breaker	Nos	1	9.950	9.950
3	230 kV, (1600-1200-600-300/1 A) out door CT with TC (5core) with JB	Nos	3	2.333	7.000
4	230 kV Isolator 2000 A with earth blades	Nos	1	1.860	1.860
5	230 kV Isolator 2000 A without earth blades	Nos	4	1.620	6.480
6	Control & protection panel for 230 kV Feeder	Nos	1	6.330	6.330
7	Structure		LS	35.640	35.640
8	Control cables		LS	7.768	7.768
9	Busbars, insulators, hardwares		LS	5.865	5.865
10	Shielding & Earthing		LS	2.933	2.933
11	SAS Configuration Charges		LS		5.000
	Sub total				170.055
	Contingencies 1 %				1.701
	Cost of materials and equipments				171.756
	Labour and transport 15%				25.763
	Cost of materials and labour				197.519
	Establishment and Supervision Charges @15%				29.628
	Total				227.147

Say Rs. 227.15 Lakhs

**DETAILED ESTIMATE FOR 400 KV BAY EXTENSION AT 400 KV SS
(With One and Half Breaker scheme) - For Two Bays**

Rs. In lakhs

SI No	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	420 kV, SF6 Breaker with pre insertion resistor	Nos	3	38.941	116.823
2	420 kV, CT	Nos	12	6.401	76.806
3	400 kV Isolator with double earth	Nos	10	8.404	84.043
4	400 kV Lightning Arrester	Nos	6	1.066	6.395
5	400kV Single phase CVT	Nos	6	2.228	13.368
6	400 kV double tension fitting with disc insulator for twin moose	Nos	24	0.230	5.519
7	400 kV single suspension string Insulator	Nos	18	0.106	1.908
8	400 kV support Insulator	Nos	27	0.426	11.503
9	4" Alu. Tube bus clamp for support Insulator	Nos	27	0.034	0.918
10	Clamps, Spacers and others for 400 kV Yard		LS	5.250	5.250
11	Alu. Tube, Moose conductor for 400 kV yard		LS	10.500	10.500
12	Control & protection Panel for 400kV Line / Feeder	Nos	2	12.964	25.928
13	Control & protection Panel for 400kV Tie breaker bay	No	1	4.810	4.810
14	Marshalling box	Nos	3	0.280	0.841
15	400 kV Structure		LS	91.770	91.770
16	Control cables & LT power cables		LS	28.941	28.941
17	Yard lighting		LS	3.473	3.473
18	Shielding & Earthing		LS	0.281	0.281
19	Civil works for foundation, cable duct, Yard levelling, filling, lead road and foot path and fencing.		LS	233.678	233.678
20	400KV Wave Traps	E	4	3.402	13.608
21	Line Matching coupling Device for 400KV	E	2	0.555	1.109
22	PLCC carrier set	E	6	2.425	14.550
23	Protection coupler for 400KV	E	4	2.830	11.320
	Configuration with SAS Charges	LS			5.000
24	Subtotal				768.342
25	Spares 3%				23.050
26	Cost of Equipment & material				791.392
27	Erection charges at 10%				79.139
28	Transportation 5%, Insurance 1%, Total 6%				47.484
29	Contingencies 1 %				7.914
30	Total				925.928
31	Cost of material & Labour				925.928
32	Establishment (7.5%), T&P (1%), Loss on stock (0.25%), Audit & Accounts (1%), Maintenance during construction (1%). Total 10.75%				99.537
Overall Cost					1025.466

Say Rs. **1025.47 Lakhs**

D.CIVIL ESTIMATES

TAMILNADU TRANSMISSION CORPORATION LIMITED

110 KV SC line on SC towers with Panther conductor.

Sl. No.	QTY	UNIT	DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nut setc.,			
a	114.72	MT	a. MS 100%	63499.00	MT	7284605.28
b	7.58	MT	b. Ordinary Bolts & nuts	90000.00	MT	682200.00
2	600	No.	90 KN Disc Insulators	392.00	No.	235200.00
3	1029	No.	120 KN Disc Insulators	481.00	No.	494949.00
			Conductor & Earth wire accessories			
4	60	Set	Single Suspension fittings for ACSR Panther	1245.00	Set	74700.00
5	12	Set	Sus.fittings for Jumper	1245.00	Set	14940.00
6	120	Set	Single Tension fittings for ACSR Panther	1875.00	Set	225000.00
7	6	Set	Double Tension Fittings for Panther	4264.00	Set	25584.00
8	120	Set	Vibration Damper for Panther	725.00	Set	87000.00
9	15	Set	Mid span comp.joint for ACSR Panther	485.00	Set	7275.00
10	10	Set	Repair sleeve for ACSR Panther	365.00	Set	3650.00
11	60	Set	PA rod for Panther	730.00	Set	43800.00
16	30.3	KM	ACSR PANTHER conductors 1.0% sag	128430.00	KM	3891429.00
17	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing materials			
18	40	No.	Pipe type earthing	2176.94	No.	87077.60
19	2	No.	Counter poise earthing (120m length)	8166.00	No.	16332.00
			Tower Accessories			
20	40	No.	Number plate	270.00	No.	10800.00
21	40	No.	Danger Board	362.00	No.	14480.00
22	20	No.	Phase plate(Set of three)	303.03	No.	6060.60
23	20	No.	Circuit plate	303.03	No.	6060.60
24			TOTAL COST OF MATERIALS			15098245.08
			TOWER FOUNDATIONS			
25	20	No.	PA type tower	53618.00	No.	1072360.00
			0° to 2° Suspension tower			
26	8	No.	PB type tower	74807.00	No.	598456.00
			2° to 30° Medium angle tower			
27	12	No.	PC type tower	123533.00	No.	1482396.00
			30° to 60° High angle & Dead end tower			
28			Tower protection works			500000.00
29			TOTAL COST OF FOUNDATION WORKS			3653212.00
30			Erection charges(10% on cost of materials)			1509824.51
			Transportation & Insurance charges (5% on cost of materials)			754912.25
31			Total amount			21016193.84
32			Labour Welfare Fund 1.0% on Foundation & Erection Charges			51630.37
			EPF at 13% on labour portion			386244.21
33			ESI at 3.25 % on labour portion			96561.05

		Total			21550629.47
34		GST @ 18%			3879113.30
		Total			25429742.77
35		Establishment & Supervision Charges at 15.0%			3814461.42
		TOTAL			29244204.19
41		Contingencies 1%			292442.04
42		Land compensation			9607600.00
43	10 KM	Tree/Crop compensation	1000000	KM	10000000.00
44		TOTAL COST PER		10 KM	49144246.23
45		TOTAL COST PER 1 KM			4914424.62
		(Rounding to nearest 1000)	SAY		4915000
		TOTAL COST PER 1 KM IN LAKHS			49.15

TAMILNADU TRANSMISSION CORPORATION LIMITED

110 KV SC line on DC towers with Panther conductor.

Sl. No.	QTY	Unit	DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nuts etc..			
a	244.95	MT	b) MS 100%	63499.00	MT	15554080.05
b	15.17	MT	c) Ordinary Bolts & nuts	90000.00	MT	1365300.00
2	686	No.	90 KN Disc Insulators	392.00	No.	268912.00
3	1029	No.	120 KN Disc Insulators	481.00	No.	494949.00
			Conductor & Earth wire accessories			
4	60	Set	Single Suspension fittings for ACSR Panther	1245.00	Set	74700.00
5	36	Set	Suspension fitting for jumper	1245.00	Set	44820.00
6	120	Set	Single Tension fittings for ACSR Panther	1875.00	Set	225000.00
7	6	Set	Double Tension Fittings for Panther	4264.00	Set	25584.00
8	120	Set	Vibration Damper for Panther	725.00	Set	87000.00
9	15	Set	Mid span comp.joint for ACSR Panther	485.00	Set	7275.00
10	10	Set	Repair sleeve for ACSR Panther	365.00	Set	3650.00
11	60	Set	PA rod for Panther	730.00	Set	43800.00
16	30.3	KM	ACSR PANTHER conductors 1.0% sag	128430.00	KM	3891429.00
17	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing materials			
18	40	No.	Pipe type earthing	2176.94	No.	87077.60
19	2	No.	Counter poise earthing (120m length)	8166.00	No.	16332.00
			Tower Accessories			
20	40	No.	Number plate	270.00	No.	10800.00
21	40	No.	Danger Board	362.00	No.	14480.00
22	20	No.	Phase plate(Set of three)	303.03	No.	6060.60
23	20	No.	Circuit plate	303.03	No.	6060.60
24			TOTAL COST OF MATERIALS			24114411.85
			TOWER FOUNDATIONS			
25	20	No.	GC type tower	79086.00	No.	1581720.00
			0° to 2° Suspension tower			
26	8	No.	HC type tower	193610.00	No.	1548880.00
			2° to 30° Medium angle tower			
27	12	No.	KC type tower	254879.00	No.	3058548.00
			30° to 60° High angle & Dead end tower			
28			Tower protection works			500000.00
29			COST OF FOUNDATION			6689148.00
30			Erection charges(10% on cost of materials)			2411441.19

		Transportation & Insurance charges (5% on cost of materials)			1205720.59
31		Total amount			34420721.63
32		Labour Welfare Fund 1.0% on Foundation & Erection Charges			91005.89
		EPF at13% on labour portion			661323.05
33		ESI at 3.25 % on labour portion			165330.76
		Total			35338381.33
		GST @ 18%			6360908.64
34		Total			41699289.97
		Establishment & Supervision Charges at 15.0%			6254893.50
1		Total			47954183.47
39		Contingencies at 1%			479541.83
		Land compensation			9607600.00
43	10 KM	Tree/Crop compensation	1000000	KM	10000000.00
44		TOTAL COST PER		10 KM	68041325.30
45		TOTAL COST PER 1 KM			6804132.53
		(Rounding to nearest 1000)	SAY		6805000.00
		TOTAL COST PER 1 KM IN LAKHS			68.05

TAMILNADU TRANSMISSION CORPORATION LIMITED

110 KV DC line on DC Towers with Panther conductor

Sl. No.	Quantity		DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nuts etc.,			
a	244.95	MT	a) MS 100%	63499.00	MT	15554080.05
b	15.47	MT	b) Ordinary Bolts & nuts	90000.00	MT	1392300.00
2	1111.00	No.	90 KN Disc Insulators	392.00	No.	435512.00
3	2057.00	No.	120 KN Disc Insulators	481.00	No.	989417.00
			Conductor & Earth wire accessories			
4	120	Set	Single Suspension fittings for ACSR Panther	1245.00	Set	149400.00
5	36	Set	Sus.fittings for Jumper	1245.00	Set	44820.00
6	240	Set	Single Tension fittings for ACSR Panther	1875.00	Set	450000.00
7	12	Set	Double Tension Fittings for Panther	4264.00	Set	51168.00
8	240	Set	Vibration Damper for Panther	725.00	Set	174000.00
9	30	Set	Mid span comp.joint for ACSR Panther	485.00	Set	14550.00
10	10	Set	Repair sleeve for ACSR Panther	365.00	Set	3650.00
11	120	Set	PA Rod for Panther	730.00	Set	87600.00
16	60.6	KM	ACSR PANTHER conductors 1.0% sag	128430.00	KM	7782858.00
	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing materials			
18	40	No.	Pipe type earthing	2176.94	No.	87077.60
19	2	No.	Counter poise earthing (120m length)	8166.00	No.	16332.00
			Tower Accessories			
20	40	No.	Number plate	270.00	No.	10800.00
21	40	No.	Danger Board	362.00	No.	14480.00
22	40	No.	Phase plate(Set of three)	303.03	No.	12121.20
23	40	No.	Circuit plate	303.03	No.	12121.20
24			Total Cost of materials			29169389.05
			TOWER FOUNDATIONS			
25	20	No.	GC type tower	79086.00	No.	1581720.00
			0° to 2° Suspension tower			
26	8	No.	HC type tower	193610.00	No.	1548880.00
			2° to 30° Medium angle tower			
27	12	No.	KC type tower	254879.00	No.	3058548.00

			30° to 60° High angle & Dead end tower			
28			Tower protection works			500000.00
29			Total Cost of Foundations			6689148.00
30			Erection charges(10% on cost of materials)			2916938.91
			Transportation & Insurance charges (5% on cost of materials)			1458469.45
31			Total amount			40233945.41
32			Labour Welfare Fund 1.0% on Foundation & Erection Charges			96061.00
33			EPF at 13.00% on labour portion			727037.75
			ESI at 3.25 % on labour portion			181759.44
			Total			41238803.60
34			GST @ 18%			7422984.65
35			Total			48661788.25
			Establishment & Supervision Charges at 15.0%			7299268.00
1			Total			55961056.25
41			Contingencies 1%			559610.56
42			Land compensation			9607600.00
43	10	KM	Tree/Crop compensation	1000000.00	KM	10000000.00
44			TOTAL COST PER		10 KM	76128266.81
45			TOTAL COST PER 1 KM			7612826.68
			(Rounding to nearest 1000)	SAY		7613000.00
			TOTAL COST /KM in LAKHS			76.13

TAMILNADU TRANSMISSION CORPORATION LIMITED

230 KV SC line on DC towers with Zebra conductor

Sl. No.	QTY	Unit	DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc..			
a	386.848	MT	b) MS 100%	63499.00	MT	24564461.15
b	20.372	MT	c) Ordinary Bolts & nuts	90000.00	MT	1833480.00
2	1114	No.	90 KN Disc Insulators	392.00	No.	436688.00
3	2228	No.	120 KN Disc Insulators	481.00	No.	1071668.00
			Conductor & Earth wire accessories			
4	48	Set	Single Suspension fittings for ACSR Zebra	2140.00	Set	102720.00
5	144	Set	Single Tension fittings for ACSR Zebra	2390.00	Set	344160.00
6	6	Set	Double Tension Fittings for Zebra	4919.00	Set	29514.00
7	144	Set	Vibration Damper for Zebra	1075.00	Set	154800.00
8	30	Set	Mid span comp.joint for ACSR ZEBRA	700.00	Set	21000.00
9	30	Set	Repair sleeve for ACSR ZEBRA	357.00	No.	10710.00
10	54	Set	PA rod for ZEBRA	1400.00	Set	75600.00
15	30.3	KM	ACSR Zebra conductors 1.0% sag	263852.65	KM	7994735.30
16	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing materials			
17	35	No.	Pipe type earthing	2176.94	No.	76192.90
18	2	No.	Counter poise earthing (120m length)	8166.00	No.	16332.00
			Tower Accessories			
19	37	No.	Number plate	270.00	No.	9990.00
20	37	No.	Danger Board	362.00	No.	13394.00
21	37	No.	Phase plate(Set of three)	303.03	No.	11212.11
22	37	No.	Circuit plate	303.03	No.	11212.11
23			Total COST ON Materials			38664971.57
			TOWER FOUNDATIONS			
24	18	No.	G type tower	190801.00	No.	3434418.00
			0° to 2° Suspension tower			
25	10	No.	KS type tower	209807.00	No.	2098070.00
			2° to 30° Medium angle tower			
26	9	No.	LS type tower	452887.00	No.	4075983.00
			30° to 60° High angle & Dead end tower			
27			Tower protection works			500000.00
28			TOTAL FOUNDATION COST			10108471.00
29			Erection charges(10% on cost of materials)			3866497.16

		Transportation & Insurance charges (5% on cost of materials)			1933248.58
30		Total amount			54573188.30
31		Labour Welfare Fund 1.0% on Foundation & Erection Charges			139749.68
		EPF at 13% on labour portion			1028285.12
32		ESI at 3.25 % on labour portion			257071.28
		Total			55998294.39
33		GST @ 18 % on total amount			10079692.99
		Total			66077987.38
34		Establishment & Supervision Charges at 15.0%			9911698.00
35		Total			75989685.38
36		Contingencies 1%			759896.85
		Land compensation			14103000.00
42	10 KM	Tree/Crop compensation	1000000	KM	10000000.00
43		TOTAL COST PER		10 KM	100852582.23
44		TOTAL COST PER 1 KM			10085258.22
		(Rounding to nearest 1000)	SAY		10086000.00
		TOTAL COST PER 1 KM IN LAKHS			100.86

TAMILNADU TRANSMISSION CORPORATION LIMITED

230 KV DC line on DC towers with Zebra conductor

Sl. No.	QTY	UNIT	DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
a	386.85	MT	a. MS 100%	63499.00	MT	24564588.15
b	20.78	MT	b. Ordinary Bolts & nuts	90000.00	MT	1870200.00
2	1751	No.	90 KN Disc Insulators	392.00	No.	686392.00
3	4284	No.	120 KN Disc Insulators	481.00	No.	2060604.00
			Conductor & Earth wire accessories			
4	96	Set	Single Suspension fittings for ACSR Zebra	2140.00	Set	205440.00
5	36	Set	Single Suspension fitting for Jumpering	2140.00	Set	77040.00
6	288	Set	Single Tension fittings for ACSR Zebra	2390.00	Set	688320.00
7	12	Set	Double Tension Fittings for Zebra	4919.00	Set	59028.00
8	288	Set	Vibration Damper for Zebra	1075.00	Set	309600.00
9	30	Set	Mid span comp.joint for ACSR ZEBRA	700.00	Set	21000.00
10	15	Set	Repair sleeve for ACSR ZEBRA	445.00	No.	6675.00
11	96	Set	PA rod for ZEBRA	1400.00	No.	134400.00
16	60.6	KM	ACSR Zebra conductors 1.0% sag	263852.65	KM	15989470.59
17	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing materials			
18	40	No.	Pipe type earthing	2176.94	No.	87077.60
19	2	No.	Counter poise earthing (120m length)	8166.00	No.	16332.00
			Tower Accessories			
20	40	No.	Number plate	270.00	No.	10800.00
21	40	No.	Danger Board	362.00	No.	14480.00
22	48	No.	Phase plate(Set of three)	303.03	No.	14545.44
23	48	No.	Circuit plate	303.03	No.	14545.44
24			TOTAL COST ON MATERIALS			48717640.22
			TOWER FOUNDATIONS			
25	16	No.	GR type tower	190801.00	No.	3052816.00
			0° to 2° Suspension tower			
26	12	No.	KSR type tower	209807.00	No.	2517684.00
			2° to 30° Medium angle tower			
27	12	No.	LSR type tower	452887.00	No.	5434644.00
28			Tower protection works			500000.00
29			COST OF FOUNDATION WORKS			11505144.00
30			Erection charges(10% on cost of materials)			4871764.02
			Transportation & Insurance charges charges (5% on cost of materials)			2435882.01
31			Total amount			67530430.25

32			Labour Welfare Fund 1.0% on Foundation & Erection Charges			163769.08
			EPF at 13 % on labour portion			1231596.81
			ESI at 3.25 % on labour portion			307899.20
33			Total			69233695.35
			GST @ 18 % on total amount			12462065.16
34			Total			81695760.51
35			Establishment & Supervision Charges at 15.0%			12254364.08
36			Total			93950124.59
			Contingencies 1%			939501.25
			Land compensation			14103000.00
43	10	KM	Tree/Crop compensation	1000000.00	KM	10000000.00
44			TOTAL COST PER		10 KM	118992625.83
45			TOTAL COST PER 1 KM			11899262.58
			(Rounding to nearest 1000)	SAY		11900000.00
			Total Cost per KM in LAKHS			119

TAMILNADU TRANSMISSION CORPORATION LIMITED						
COST DATA FOR 230 KV DC Line ON MC TOWERS WITH ZEBRA CONDUCTOR						
Sl. No.	Qty		DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc...			
1	669.88	MT	MS tower parts	63499.00	MT	42536862.52
2	210.65	MT	HT Tower parts	65999.00	MT	13902398.95
3	21.59	MT	Ordinary Bolts & nuts	90000.00	MT	1943100.00
4	1751	No.	90 KN Disc Insulators	392.00	No.	686392.00
5	4284	No.	120 KN Disc Insulators	481.00	No.	2060604.00
			Conductor & Earth wire accessories			
6	96	Set	Single Suspension Fittings for ACSR Zebra	2140.00	Set	205440.00
7	72	Set	Single suspension fittings for jumperig	2140.00	Set	154080.00
8	288	Set	Single Tension fittings for ACSR Zebra	2390.00	Set	688320.00
9	6	Set	Double tension fittings	4919.00	Set	29514.00
10	288	Set	Vibration Damper for ACSR Zebra	1075.00	Set	309600.00
11	30	Set	Mid span comp. joint for Zebra	700.00	Set	21000.00
12	15	No.	Repair sleeve for Zebra	445.00	No.	6675.00
13	96	Set	PA rod for ZEBRA	1400.00	Set	134400.00
18	60.6	KM	ACSR Zebra	263852.65	KM	15989470.59
19	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing Materials			
20	40	No.	Pipe type earthing	2176.94	No.	87077.60
21	2	No.	Counter poise earthing (120m length)	8166.00	No.	16332.00
			Tower Accessories			
22	40	No.	Number plate	270.00	No.	10800.00
23	40	No.	Danger Board	362.00	No.	14480.00
24	48	No.	Phase plate(Set of three)	303.03	No.	14545.44
25	48	No.	Circuit plate	303.03	No.	14545.44
26	40	No.	Anti-climbing devices	10791.00	No.	431640.00
27			TOTAL COST OF MATERIALS			81144379.54
			TOWER FOUNDATIONS			
28	16	No.	MA type tower	447241.00	No.	7155856.00
			0° to 2° Suspension tower			
29	12	No.	MC type tower	1211412.00	No.	14536944.00
			2° to 30° Medium angle tower			
30	12	No.	MD type tower	1428546.00	No.	17142552.00
			30° to 60° High angle & Dead end tower			
31			Tower protection works			5000000.00
32			TOTAL FOUNDATION COST			43835352.00
33			Erection charges 10% on cost of materials			8114437.95
			Transportation & Insurance charges (5% on cost of materials)			4057218.98

34			Total amount			137151388.47
35			Labour Welfare Fund 1.0% on Foundation & Erection Charges			519497.90
			EPF at 13 % on labour portion			3334315.24
36			ESI at 3.25 % on labour portion			833578.81
			Total			141838780.42
37			GST @ 18 % on total amount			25530980.48
			Total			167369760.90
38			Establishment & Supervision Charges at 15.0%			25105464.13
39			Total			192475225.03
			Contingencies 1%			1924752.25
1			Land compensation			14103000.00
46	10	KM	Tree/Crop compensation	1000000.00	KM	10000000.00
47			TOTAL COST PER		10 KM	218502977.28
48			TOTAL COST PER 1 KM			21850297.73
			(Rounding to nearest 1000)	SAY		21851000.00
			COST PER KM IN LAKHS			218.51

TAMILNADU TRANSMISSION CORPORATION LIMITED

COST DATA FOR 230 KV 4 CIRCUITS LINE ON MC TOWERS WITH ZEBRA CONDUCTOR

Sl. No.	Quantity		DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
1	669.88	MT	MS tower parts	63499.00	MT	42536710.12
2	210.65		HT Tower parts	65999.00	MT	13902689.35
3	24.508	MT	Ordinary Bolts & nuts	90000.00	MT	2205720.00
4	4456	No.	90 KN Disc Insulators	392.00	No.	1746752.00
5	8568	No.	120 KN Disc Insulators	481.00	No.	4121208.00
			Conductor & Earth wire accessories			
6	192	Set	Single Suspension Fittings for ACSR Zebra	2140.00	Set	410880.00
7	72	Set	Single suspension fittings for jumperig	2140.00	Set	154080.00
	72	Set	Single suspension fittings for jumperig	2140.00		154080.00
8	576	Set	Single Tension fittings for ACSR Zebra	2390.00	Set	1376640.00
9	24	set	Double tension fittings	4919.00	Set	118056.00
10	576	Set	Vibration Damper for ACSR Zebra	1075.00	Set	619200.00
11	60	Set	Mid span comp. joint for Zebra	700.00	Set	42000.00
12	30	No.	Repair sleeve for Zebra	445.00	No.	13350.00
13	192	Set	PA Rod for ZEBRA	1400.00	Set	268800.00
18	121.2	KM	ACSR Zebra	263852.65	KM	31978941.18
19	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing Materials			
20	40	No.	Pipe type earthing	2176.94	No.	87077.60
21	2	No.	Counter poise earthing (120m length)	8166.00	No.	16332.00
			Tower Accessories			
22	40	No.	Number plate	270.00	No.	10800.00
23	40	No.	Danger Board	362.00	No.	14480.00
24	96	No.	Phase plate(Set of three)	303.03	No.	29090.88
25	96	No.	Circuit plate	303.03	No.	29090.88
26	40	No.	Anti-climbing devices	10791.00	No.	431640.00
27			TOTAL COST OF MATERIALS			102154720.01
			TOWER FOUNDATIONS			
28	16	No.	MA type tower	447241.00	No.	7155856.00
			0° to 2° Suspension tower			
29	12	No.	MC type tower	1211412.00	No.	14536944.00
			2° to 30° Medium angle tower			
30	12	No.	MD type tower	1428546.00	No.	17142552.00
			30° to 60° High angle & Dead end tower			
31			Tower protection works			5000000.00
32			TOTAL FOUNDATION COST			43835352.00

33			Erection charges(10% on cost of materials)			10215472.00
			Transportation & Insuranc charges charges (5% on cost of materials)			5107736.00
34			Total amount			161313280.01
35			Labour Welfare Fund 1.0% on Foundation & Erection Charges			540508.24
			EPF at 13 % on labour portion			3607449.66
36			ESI at 3.25 % on labour portion			901862.42
			Total			166363100.33
37			GST @ 18 % on total amount			29945358.06
			Total			196308458.39
38			Establishment & Supervision Charges at 15.0% on item 39			29446269.00
39			Total			225754727.39
			Contingencies 1%			2257547.27
1			Land compensation			14103000.00
46	10	KM	Tree/Crop compensation	1000000.00	KM	10000000.00
47			TOTAL COST PER		10 KM	252115274.67
48			TOTAL COST PER 1 KM			25211527.47
			(Rounding to nearest 1000)	SAY		25212000.00
			TOTAL COST PER KM IN LAKHS			252.12

TAMILNADU TRANSMISSION CORPORATION LIMITED

COST DATA FOR 400 KV DC LINE ON DC TOWERS (WIND ZONE-4, TC-2) WITH TWIN MOOSE CONDUCTOR

Sl. No.	Quantity	DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1		Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
	339.47 MT	a) HT Steel	65999.00	MT	22404680.53
	246.86 MT	b) MS	63499.00	MT	15675363.14
	22.2 MT	c) Ordinary Bolts & nuts	90000	MT	1998000.00
	0 MT	d)Anti-theft bolts and nuts	90000	MT	0.00
2	3097 No.	120 KN Disc Insulators	481.00	No.	1489657.00
3	9988 No.	160 KN Disc Insulators	662	No.	6612056.00
		Conductor & Earth wire accessories			
4	78 Set	Single I suspension string for Twin ACSR Moose	19271.00	Set	1503138.00
5	54 Set	Single I suspension pilot string with counter weight	40988.00	Set	2213352.00
6	204 Set	Double Tension string	22332.00	Set	4555728.00
7	408 Set	Vibration Damper for Twin ACSR Moose	1318.00	Set	537744.00
8	1273 Set	Bundle spacer for Twin Moose	1484.00	Set	1889132.00
9	306 Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	892.00	Set	272952.00
10	60 Set	Midspan compression joint for Moose	1000.00	Set	60000.00
11	30 No.	Repair sleeve for Moose	423.00	No.	12690.00
12	13 Set	Suspension clamp for Earth wire 7/3.66mm	719.00	Set	9347.00
13	34 Set	Tension Clamp for Earth wire 7/3.66mm	726.00	Set	24684.00
14	5 Set	Midspan compression joint for GS Earth wire 7/3.66mm	353	Set	1765.00
15	68 No.	Vibration Damper for Earth wire 7/3.66mm	635.33	Set	43202.44
16	47 No.	Flexible copper bond for earthing	935.00	No.	43945.00
17	121.8 KM	ACSR Moose conductors 1.5 % sag	309475.00	KM	37694055.00
18	10.1 KM	GS EARTH WIRE 7/3.66mm 1.0% sag	67675.00	KM	683517.50
19	10.5 KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
		Earthing Materials			
20	23 No.	Pipe type earthing	2176.94	Each	50069.62
21	7 No.	Counter poise earthing (120m length)	8166	Each	57162.00
		Tower Accessories			
22	30 No.	Number plate	270.00	Each	8100.00
23	30 No.	Danger Board	362.00	Each	10860.00
24	60 No.	Phase plate(Set of three)	303.03	Each	18181.80
25	60 No.	Circuit plate	303.03	Each	18181.80
26	30 No.	Anti-climbing devices	10791	Each	323730.00
27		TOTAL COST OF MATERIALS			100098395.83
		TOWER FOUNDATIONS			
28	13 No.	DA type tower	629932	Each	8189116.00
		0° to 2° Suspension tower			
29	4 No.	DB type tower	1450300	Each	5801200.00
		2° to 15° Light angle tower			
30	4 No.	DC type tower	1951480	Each	7805920.00
		15° to 30° Medium angle tower			
31	9 No.	DD type tower	2797616	Each	25178544.00
		30° to 60° High angle & Dead end tower			
32		Tower protection works 15% on Foundation			7046217.00
33		TOTAL COST OF FOUNDATION			54020997.00
34		Erection charges(10% on cost ofmaterials)			10009839.58
		Transportation & Insurance charges (5% on cost of materials)			5004919.79
35		Total amount			169134152.20

TAMILNADU TRANSMISSION CORPORATION LIMITED					
COST DATA FOR 400 KV DC LINE ON DC TOWERS (WIND ZONE-4, TC-2) WITH TWIN MOOSE CONDUCTOR					
Sl. No.	Quantity	DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
36		Labour Welfare Fund 1.0% on Foundation & Erection Charges			640308.37
		EPF at 13% on labour portion			4110370.99
37		ESI at 3.25 % on labour portion			1027592.75
		Total			174912424.31
38		GST @ 18% on total amount			31484236.38
39		Total			206396660.68
		Establishment & Supervision Charges at 15.0%			30959499.00
40		Total			237356159.68
		Contingencies at 1%			2373561.60
46		Land compensation			19470800.00
47	10 KM	Tree/Crop compensation	2000000	KM	20000000.00
48		TOTAL COST PER	10	KM	279200521.28
49		TOTAL COST PER 1 KM			27920052.13
		(Rounding to nearest 1000)	SAY		27921000.00
		COST PER KM IN LAKHS			279.21

TAMILNADU TRANSMISSION CORPORATION LIMITED

COST DATA FOR 400 KV DC LINE ON DC TOWERS (WIND ZONE-2, TC-2) WITH TWIN MOOSE CONDUCTOR

Sl. No.	Quantity		DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
	171.55	MT	a) HT Steel	65999.00	MT	11322128.45
	306.90	MT	b) MS	63499.00	MT	19487843.10
	17.8	MT	c) Ordinary Bolts & nuts	90000	MT	1602000.00
	0	MT	d)Anti-theft bolts and nuts	90000	MT	0.00
2	3097	No.	120 KN Disc Insulators	481.00	No.	1489657.00
3	9988	No.	160 KN Disc Insulators	662	No.	6612056.00
			Conductor & Earth wire accessories			
4	78	Set	Single I suspension string for Twin ACSR Moose	19271.00	Set	1503138.00
5	54	Set	Single I suspension pilot string with counter weight	40988.00	Set	2213352.00
6	204	Set	Double Tension string	22332	Set	4555728.00
7	408	Set	Vibration Damper for Twin ACSR Moose	1318.00	Set	537744.00
8	1273	Set	Bundle spacer for Twin Moose	1484.00	Set	1889132.00
9	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	892.00	Set	272952.00
10	60	Set	Midspan compression joint for Moose	1000.00	Set	60000.00
11	30	No.	Repair sleeve for Moose	423.00	No.	12690.00
12	13	Set	Suspension clamp for Earth wire 7/3.66mm	719.00	Set	9347.00
13	34	Set	Tension Clamp for Earth wire 7/3.66mm	726.00	Set	24684.00
14	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	353	Set	1765.00
15	68	No.	Vibration Damper for Earth wire 7/3.66mm	635.33	Set	43202.44
16	47	No.	Flexible copper bond for earthing	935.00	No.	43945.00
17	121.8	KM	ACSR Moose conductors 1.5 % sag	309475.00	KM	37694055.00
18	10.1	KM	GS EARTH WIRE 7/3.66mm 1.0% sag	67675.00	KM	683517.50
19	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing Materials			
20	23	No.	Pipe type earthing	2176.94	Each	50069.62
21	7	No.	Counter poise earthing (120m length)	8166	Each	57162.00
			Tower Accessories			
22	30	No.	Number plate	270.00	Each	8100.00
23	30	No.	Danger Board	362.00	Each	10860.00
24	60	No.	Phase plate(Set of three)	303.03	Each	18181.80
25	60	No.	Circuit plate	303.03	Each	18181.80
26	30	No.	Anti-climbing devices	10791	Each	323730.00
27			TOTAL COST OF MATERIALS			92432323.71
			TOWER FOUNDATIONS			
28	13	No.	DA type tower	436084	Each	5669092.00
			0° to 2° Suspension tower			
29	4	No.	DB type tower	786214	Each	3144856.00
			2° to 15° Light angle tower			
30	4	No.	DC type tower	1004705	Each	4018820.00
			15° to 30° Medium angle tower			
31	9	No.	DD type tower	1729238	Each	15563142.00
			30° to 60° High angle & Dead end tower			
32			Tower protection works 15% on Foundation			4259386.50
33			TOTAL COST OF FOUNDATION			32655296.50

TAMILNADU TRANSMISSION CORPORATION LIMITED

COST DATA FOR 400 KV DC LINE ON DC TOWERS (WIND ZONE-2, TC-2) WITH TWIN MOOSE CONDUCTOR

Sl. No.	Quantity	DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
34		Erection charges(10% on cost of materials)			9243232.37
		Transportation & Insurance charges (5% on cost of materials)			4621616.19
35		Total amount			138952468.77
36		Labour Welfare Fund 1.0% on Foundation & EPF at 13% on labour portion			418985.29
37		ESI at 3.25 % on labour portion			2899695.63
		Total			724923.91
38		GST @ 18% on total amount			142996073.59
		Total			25739293.25
39		Establishment & Supervision Charges at 15.0%			168735366.83
40		Total			25310305.00
45		Contingencies (1% on Material, Foundation & erection)			194045671.83
46		Land compensation			1940456.72
47	10 KM	Tree/Crop compensation	2000000	KM	19470800.00
48		TOTAL COST PER		10 KM	20000000.00
49		TOTAL COST PER 1 KM			235456928.55
		(Rounding to nearest 1000)	SAY		23545692.86
		COST PER KM IN LAKHS			23546000.00
					235.46

TAMILNADU TRANSMISSION CORPORATION LIMITED						
COST DATA FOR 400 KV DC LINE ON DC TOWERS (WIND ZONE-5, TC-1) WITH TWIN MOOSE CONDUCTOR						
Sl. No.	Quantity		DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
	456.03	MT	a) HT Steel	65999.00	MT	30097523.97
	181.92	MT	b) MS	63499.00	MT	11551738.08
	21.7	MT	c) Ordinary Bolts & nuts	90000	MT	1953000.00
	0	MT	d)Anti-theft bolts and nuts	90000	MT	0.00
2	3097	No.	120 KN Disc Insulators	481.00	No.	1489657.00
3	9988	No.	160 KN Disc Insulators	662	No.	6612056.00
			Conductor & Earth wire accessories			
4	78	Set	Single I suspension string for Twin ACSR Moose	19271.00	Set	1503138.00
5	54	Set	Single I suspension pilot string with counter weight	40988.00	Set	2213352.00
6	204	Set	Double Tension string	22332.00	Set	4555728.00
7	408	Set	Vibration Damper for Twin ACSR Moose	1318.00	Set	537744.00
8	1273	Set	Bundle spacer for Twin Moose	1484.00	Set	1889132.00
9	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	892.00	Set	272952.00
10	60	Set	Midspan compression joint for Moose	1000.00	Set	60000.00
11	30	No.	Repair sleeve for Moose	423.00	No.	12690.00
12	13	Set	Suspension clamp for Earth wire 7/3.66mm	719.00	Set	9347.00
13	34	Set	Tension Clamp for Earth wire 7/3.66mm	726.00	Set	24684.00
14	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	353	Set	1765.00
15	68	No.	Vibration Damper for Earth wire 7/3.66mm	635.33	Set	43202.44
16	47	No.	Flexible copper bond for earthing	935.00	No.	43945.00
17	121.8	KM	ACSR Moose conductors 1.5 % sag	309475.00	KM	37694055.00
18	10.1	KM	GS EARTH WIRE 7/3.66mm 1.0% sag	67675.00	KM	683517.50
19	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing Materials			
20	23	No.	Pipe type earthing	2176.94	Each	50069.62
21	7	No.	Counter poise earthing (120m length)	8166	Each	57162.00
			Tower Accessories			
22	30	No.	Number plate	270.00	Each	8100.00
23	30	No.	Danger Board	362.00	Each	10860.00
24	60	No.	Phase plate(Set of three)	303.03	Each	18181.80
25	60	No.	Circuit plate	303.03	Each	18181.80
26	30	No.	Anti-climbing devices	10791	Each	323730.00
27			TOTAL COST OF MATERIALS			103622614.21
			TOWER FOUNDATIONS			
28	13	No.	DA type tower	639210	Each	8309730.00
			0° to 2° Suspension tower			
29	4	No.	DB type tower	1434672	Each	5738688.00
			2° to 15° Light angle tower			
30	4	No.	DC type tower	1818251	Each	7273004.00
			15° to 30° Medium angle tower			
31	9	No.	DD type tower	2688895	Each	24200055.00
			30° to 60° High angle & Dead end tower			
32			Tower protection works 15% on Foundation			6828221.55
33			TOTAL COST OF FOUNDATION			52349698.55
34			Erection charges(10% on item 27)			10362261.42
			Transportation & Insurance charges (5% on Item 27)			5181130.71
35			Total amount			171515704.89

TAMILNADU TRANSMISSION CORPORATION LIMITED						
COST DATA FOR 400 KV DC LINE ON DC TOWERS (WIND ZONE-5, TC-1) WITH TWIN MOOSE CONDUCTOR						
Sl. No.	Quantity	DESCRIPTION	Rate in Rs.	Per	Amount in Rs.	
36		Labour Welfare Fund 1.0% on Foundation & Erection Charges			627119.60	
		EPF at 13% on labour portion			4069278.31	
37		ESI at 3.25 % on labour portion			1017319.58	
		Total			177229422.38	
38		GST @ 18% on total amount			31901296.03	
		Total			209130718.41	
1		Establishment & Supervision Charges at 15%			31369608.00	
		TOTAL COST			240500326.41	
45		Contingencies (1% on Material, Foundation & erection)			2405003.26	
46		Land compensation			19470800.00	
47	10 KM	Tree/Crop compensation	2000000	KM	20000000.00	
48		TOTAL COST PER		10 KM	282376129.67	
49		TOTAL COST PER 1 KM			28237612.97	
		(Rounding to nearest 1000)	SAY		28238000.00	
		COST PER KM IN LAKHS				282.38

TAMILNADU TRANSMISSION CORPORATION LIMITED						
COST DATA FOR 400 KV DC LINE ON DC TOWERS (WIND ZONE 2, TC 2) WITH QUAD MOOSE CONDUCTOR						
Sl. No.	Quantity	Unit	Description	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
	457.78	MT	a) HT Steel	65999.00	MT	30213022.22
	380.25	MT	b) MS	63499.00	MT	24145494.75
	37.04	MT	c) Ordinary Bolts & nuts	90000	MT	3333600.00
	0	MT	d)Anti-theft bolts and nuts	90000	MT	0.00
2	4927	No.	120 KN Disc Insulators	481.00	No.	2369887.00
3	19976	No.	160 KN Disc Insulators	662	No.	13224112.00
			Conductor & Earth wire accessories			
4	78	Set	Twin I suspension string for QUAD ACSR Moose	16788.00	Set	1309464.00
5	54	Set	Single I suspension pilot string with counter weight	28984.00	Set	1565136.00
6	204	Set	QUAD Tension string	54248.79	Set	11066753.16
7	1091	Set	Spacer Damper for Quad ACSR Moose 6 Nos. for 330m	2019.00	Set	2202729.00
8	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	2219.00	Set	679014.00
9	120	Set	Midspan compression joint for Moose	1000.00	Set	120000.00
10	60	No.	Repair sleeve for Moose	423.00	No.	25380.00
11	13	Set	Suspension clamp for Earth wire 7/3.66mm	719.00	Set	9347.00
12	34	Set	Tension Clamp for Earth wire 7/3.66mm	726.00	Set	24684.00
13	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	353	Set	1765.00
14	68	No.	Vibration Damper for Earth wire 7/3.66mm	635.33	Set	43202.44
15	47	No.	Flexible copper bond for earthing	935.00	No.	43945.00
16	243.6	KM	ACSR Moose conductors 1.5 % sag	309475.00	KM	75388110.00
17	10.1	KM	GI EARTH WIRE 7/3.66mm 1.0 % sag	67675.00	KM	683517.50
18	10.5	KM	OFC ground wire 48 fibres with accesso	179724.00	KM	1887102.00
			Earthing Materials			
19	23	No.	Pipe type earthing	2176.94	No.	50069.62
20	7	No.	Counter poise earthing (120m length)	8166	No.	57162.00
			Tower Accessories			
21	30	No.	Number plate	270.00	No.	8100.00
22	30	No.	Danger Board	362	No.	10860.00
23	60	No.	Phase plate(Set of three)	303.03	No.	18181.80
24	120	No.	Circuit plate	303.03	No.	36363.60
25	30	No.	Anti-climbing devices	10791	No.	323730.00
26			TOTAL COST OF MATERIALS			168840732.09

			TOWER FOUNDATIONS			
27	13	No.	DA type tower 0° to 2° Suspension tower	667032	No.	8671416.00
28	4	No.	DB type tower 2° to 15° Light angle tower	2024028	No.	8096112.00
29	4	No.	DC type tower 15° to 30° Medium angle tower	2564454	No.	10257816.00
30	9	No.	DD type tower 30° to 60° High angle & Dead end tower	3027201	No.	27244809.00
31			Tower protection works 15% on foundation			4053801.60
32			TOTAL FOUNDATION COST			58323954.60
33			Erection charges(10% on cost of materials)			16884073.21
			Transportation & Insurance charges (5% on cost of materials)			8442036.60
34			Total amount			252490796.50
			Labour Welfare Fund 1.0% on Foundation & Erection Charges			752080.28
35			EPF at 13% on labour portion			5227775.16
			ESI at 3.25 % on labour portion			1306943.79
36			Total			259777595.73
37			GST @ 18% on total amount			46759967.23
##			Total			306537562.96
##			Establishment & Supervision Charges at 15.0% on item 39			45980634.44
##			TOTAL COST			352518197.40
44			Contingencies (1% on Foundation, material & Erection charges)			3525181.97
45			Land compensation			19470800.00
46	10	KM	Tree/Crop compensation	2000000	KM	20000000.00
47			TOTAL COST PER	10	KM	395514179.38
48			TOTAL COST PER 1 KM			39551417.94
			(Rounding to nearest 1000)	SAY		39552000.00
			COST PER KM IN LAKHS			395.52

TAMILNADU TRANSMISSION CORPORATION LIMITED						
COST DATA FOR 400 KV DC LINE ON DC TOWERS (WIND ZONE 4 TC 2) WITH QUAD MOOSE CONDUCTOR						
Sl. No	Quantity	Unit	Description	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
	575.96	MT	a) HT Steel	65999.00	MT	38012784.04
	396.73	MT	b) MS	63499.00	MT	25191958.27
	40.53	MT	c) Ordinary Bolts & nuts	90000	MT	3647700.00
	0	MT	d)Anti-theft bolts and nuts	90000	MT	0.00
2	4927	No.	120 KN Disc Insulators	481.00	No.	2369887.00
3	19976	No.	160 KN Disc Insulators	662	No.	13224112.00
			Conductor & Earth wire accessories			
4	78	Set	Twin I suspension string for QUAD ACSR Moose	16788.00	Set	1309464.00
5	54	Set	Single I suspension pilot string with counter weight	28984.00	Set	1565136.00
6	204	Set	QUAD Tension string	54248.79	Set	11066753.16
7	1091	Set	Spacer Damper for Quad ACSR Moose 7 Nos. for 400m	2019.00	Set	2202729.00
8	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	2219.00	Set	679014.00
9	120	Set	Midspan compression joint for Moose	1000.00	Set	120000.00
10	60	No.	Repair sleeve for Moose	423.00	No.	25380.00
11	13	Set	Suspension clamp for Earth wire 7/3.66mm	719.00	Set	9347.00
12	34	Set	Tension Clamp for Earth wire 7/3.66mm	726.00	Set	24684.00
13	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	353	Set	1765.00
14	68	No.	Vibration Damper for Earth wire 7/3.66mm	635.33	Set	43202.44
15	47	No.	Flexible copper bond for earthing	935.00	No.	43945.00
16	243.6	KM	ACSR Moose conductors 1.5% sag	309475.00	KM	75388110.00
17	10.1	KM	GI EARTH WIRE 7/3.66mm 1.0% sag	67675.00	KM	683517.50
18	10.5	KM	OFC ground wire 48 fibres with accessc	179724.00	KM	1887102.00
			Earthing Materials			
19	23	No.	Pipe type earthing	2176.94	No.	50069.62
20	7	No.	Counter poise earthing (120m length)	8166	No.	57162.00
			Tower Accessories			
21	30	No.	Number plate	270.00	No.	8100.00
22	30	No.	Danger Board	362.00	No.	10860.00
23	60	No.	Phase plate(Set of three)	303.03	No.	18181.80
24	120	No.	Circuit plate	303.03	No.	36363.60
25	30	No.	Anti-climbing devices	10791	No.	323730.00
26			TOTAL COST OF MATERIALS			178001057.43

			TOWER FOUNDATIONS			
27	13	No.	DA type tower 0° to 2° Suspension tower	1192739	No.	15505607.00
28	4	No.	DB type tower 2° to 15° Light angle tower	2719211.00	No.	10876844.00
29	4	No.	DC type tower 15° to 30° Medium angle tower	3269301.00	No.	13077204.00
30	9	No.	DD type tower 30° to 60° High angle & Dead end tower	4062417.00	No.	36561753.00
31			Tower protection works 15% on foundation			11403211.20
32			TOTAL COST ON FOUNDATION			87424619.20
33			Erection charges(10% on cost of materials)			17800105.74
			Transportation & Insurance charges (5% on cost of materials)			8900052.87
34			Total amount			292125835.24
35			Labour Welfare Fund 1.0% on Foundation & Erection Charges			1052247.25
			EPF at 13 % on labour portion			6860093.94
36			ESI at 3.25 % on labour portion			1715023.49
			Total			301753199.93
37			GST @ 18% on total amount			54315575.99
38			Total			356068775.91
39			Establishment & Supervision Charges at 15.0%			53410316.39
#			TOTAL COST			409479092.30
44			Contingencies 1% on Foundation Erection and Materials			4094790.92
45			Land compensation			19470800.00
46	10	KM	Tree/Crop compensation	2000000	KM	20000000.00
47			TOTAL COST PER	10	KM	453044683.22
48			TOTAL COST PER 1 KM			45304468.32
			(Rounding to nearest 1000)	SAY		45305000.00
			COST PER KM IN LAKHS			453.05

TAMILNADU TRANSMISSION CORPORATION LIMITED

COST DATA FOR 400 KV DC LINE ON DC TOWERS (WIND ZONE 5, TC 1) WITH QUAD MOOSE CONDUCTOR

Sl. No	Quantity	Unit	Description	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
	718.49	MT	a) HT Steel	65999.00	MT	47419621.51
	368.8	MT	b) MS	63499.00	MT	23418431.20
	40.5	MT	c) Ordinary Bolts & nuts	90000	MT	3645000.00
	0	MT	d)Anti-theft bolts and nuts	90000	MT	0.00
2	4927	No.	120 KN Disc Insulators	481.00	No.	2369887.00
3	19976	No.	160 KN Disc Insulators	662	No.	13224112.00
			Conductor & Earth wire accessories			
4	78	Set	Twin I suspension string for QUAD ACSR Moose	16788.00	Set	1309464.00
5	54	Set	Single I suspension pilot string with counter weight	28984.00	Set	1565136.00
6	204	Set	QUAD Tension string	54248.79	Set	11066753.16
7	1091	Set	Spacer Damper for Quad ACSR Moose 7 Nos. for 400m	2019.00	Set	2202729.00
8	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	2219.00	Set	679014.00
9	120	Set	Midspan compression joint for Moose	1000.00	Set	120000.00
10	60	No.	Repair sleeve for Moose	423.00	No.	25380.00
11	13	Set	Suspension clamp for Earth wire 7/3.66mm	719.00	Set	9347.00
12	34	Set	Tension Clamp for Earth wire 7/3.66mm	726.00	Set	24684.00
13	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	353	Set	1765.00
14	68	No.	Vibration Damper for Earth wire 7/3.66mm	635.33	Set	43202.44
15	47	No.	Flexible copper bond for earthing	935	No.	43945.00
16	243.6	KM	ACSR Moose conductors 1.5% sag	309475.00	KM	75388110.00
17	10.1	KM	GI EARTH WIRE 7/3.66mm 1.0% sag	67675.00	KM	683517.50
18	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	1887102.00
			Earthing Materials			
19	23	No.	Pipe type earthing	2176.94	No.	50069.62
20	7	No.	Counter poise earthing (120m length)	8166	No.	57162.00
			Tower Accessories			
21	30	No.	Number plate	270.00	No.	8100.00
22	30	No.	Danger Board	362.00	No.	10860.00
23	60	No.	Phase plate(Set of three)	303.03	No.	18181.80
24	120	No.	Circuit plate	303.03	No.	36363.60

25	30	No.	Anti-climbing devices	10791	No.	323730.00
26			TOTAL COST OF MATERIALS			185631667.83
			TOWER FOUNDATIONS			
27	13	No.	DA type tower	1251593	No.	16270709.00
			0° to 2° Suspension tower			
28	4	No.	DB type tower	2733073	No.	10932292.00
			2° to 15° Light angle tower			
29	4	No.	DC type tower	3473646	No.	13894584.00
			15° to 30° Medium angle tower			
30	9	No.	DD type tower	5213456	No.	46921104.00
			30° to 60° High angle & Dead end tower			
31			Tower protection works 15% on foundation			13202803.35
32			TOTAL COST ON FOUNDATION			101221492.35
33			Erection charges(10% on cost of materials)			18563166.78
			Transportation & Insurance charges (5% on cost of materials)			9281583.39
34			Total amount			314697910.35
35			Labour Welfare Fund 1.0% on Foundation & Erection Charges			1197846.59
			EPF at 13% on labour portion			7676729.28
36			ESI at 3.25 % on labour portion			1919182.32
			Total			325491668.55
37			GST @ 18%			58588500.34
38			Total			384080168.89
			Establishment & Supervision Charges at 15.0%			57612025.33
#			TOTAL COST			441692194.22
44			Contingencies 1% on Foundation Erection and Materials			4416921.94
45			Land compensation			19470800.00
46	10	KM	Tree/Crop compensation	2000000	KM	2000000.00
47			TOTAL COST PER	10	KM	485579916.17
48			TOTAL COST PER 1 KM			48557991.62
			(Rounding to nearest 1000)	SAY		48558000.00
			COST PER KM IN LAKHS			485.58

TAMILNADU TRANSMISSION CORPORATION LIMITED						
COST DATA FOR 400 KV DOUBLE CIRCUITS LINE ON MC TOWERS (WIND ZONE-5, TC-1) WITH TWIN MOOSE CONDUCTOR						
Sl. No.	Quantity		DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
	1511.69	MT	HT STEEL	65999.00	MT	9,97,70,028.31
	501.78	MT	MS STEEL	63499.00	MT	3,18,62,528.22
	78.94	MT	c) Ordinary Bolts & nuts	90000	MT	71,04,600.00
	0	MT	d)Anti-theft bolts and nuts	90000	MT	-
2	4364	No.	120 KN Disc Insulators	481.00	No.	20,99,084.00
3	9988	No.	160 KN Disc Insulators	662	No.	66,12,056.00
			Conductor & Earth wire accessories			
4	78	Set	Single I suspension string for Twin ACSR Moose	19271.00	Set	15,03,138.00
5	108	Set	Single I suspension pilot string with counter weight	40988.00	Set	44,26,704.00
6	204	Set	Double Tension string	22332.00	Set	45,55,728.00
7	408	Set	Vibration Damper for Twin ACSR Moose	1318.00	Set	5,37,744.00
8	1273	Set	Bundle spacer for Twin Moose	1484.00	Set	18,89,132.00
9	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	892.00	Set	2,72,952.00
10	60	Set	Midspan compression joint for Moose	1000.00	Set	60,000.00
11	30	No.	Repair sleeve for Moose	423.00	No.	12,690.00
12	13	Set	Suspension clamp for Earth wire 7/3.66mm	719.00	Set	9,347.00
13	34	Set	Tension Clamp for Earth wire 7/3.66mm	726.00	Set	24,684.00
14	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	353	Set	1,765.00
15	68	No.	Vibration Damper for Earth wire 7/3.66mm	635.33	Set	43,202.44
16	47	No.	Flexible copper bond for earthing	935.00	No.	43,945.00
17	121.8	KM	ACSR Moose conductors 1.5 % sag	309475.00	KM	3,76,94,055.00
18	10.10	KM	GI EARTH WIRE 7/3.66mm 1.0% sag	67675.00	KM	6,83,517.50
19	10.5	KM	OFC ground wire 48 wires with accessories	179724.00	KM	18,87,102.00
			Earthing Materials			
20	23	No.	Pipe type earthing	2176.94	No.	50,069.62
21	7	No.	Counter poise earthing (120m length)	8166	No.	57,162.00
			Tower Accessories			
22	30	No.	Number plate	270.00	No.	8,100.00
23	30	No.	Danger Board	362.00	No.	10,860.00
24	60	No.	Phase plate(Set of three)	303.03	No.	18,181.80
25	60	No.	Circuit plate	303.03	No.	18,181.80
26	30	No.	Anti-climbing devices	10791	No.	3,23,730.00
27			TOTAL COST ON MATERIALS			20,15,80,287.69
			TOWER FOUNDATIONS			
28	13	No.	QA type tower	2326950	No.	3,02,50,350.00
			0° to 2° Suspension tower			
29	4	No.	QB type tower	4440673	No.	1,77,62,692.00
			2° to 15° Light angle tower			
30	4	No.	QC type tower	5767601	No.	2,30,70,404.00
			15° to 30° Medium angle tower			
31	9	No.	QD type tower	8414751	No.	7,57,32,759.00
			30° to 60° High angle & Dead end tower			
32			Tower protection works 15% on Foundation cost			2,20,22,430.75
33			TOTAL COST OF FOUNDATION			16,88,38,635.75
34			Erection charges(10% on cost of materials)			2,01,58,028.77
			Transportation & Insurance charges (5% on cost of materials)			1,00,79,014.38
35			Total amount			40,06,55,966.59
36			Labour Welfare Fund 1.0% on Foundation &			18,89,966.65
			EPF at 13% on labour portion			11400152.80
37			ESI at 3.25 % on labour portion			2850038.20

TAMILNADU TRANSMISSION CORPORATION LIMITED					
COST DATA FOR 400 KV DOUBLE CIRCUITS LINE ON MC TOWERS (WIND ZONE-5, TC-1) WITH TWIN MOOSE CONDUCTOR					
Sl. No.	Quantity	DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
38		Total			41,67,96,124.24
39		GST @ 18% on total amount			75023302.36
40		Total			49,18,19,426.60
41		Establishment & Supervision Charges at 15.0%			7,37,72,913.99
		TOTAL COST			565592340.59
45		Contingencies (1% on Material, Erection & Foundation charges			56,55,923.41
46		Land compensation			19470800.00
47	10 KM	Tree/Crop compensation	2000000	KM	2,00,00,000.00
48		TOTAL COST PER		10 KM	610719064.00
49		TOTAL COST PER 1 KM			61071906.40
		(Rounding to nearest 1000)	SAY		6,10,72,000.00
		COST PER KM IN LAKHS			610.72

TAMILNADU TRANSMISSION CORPORATION LIMITED						
COST DATA FOR 400 KV 4 CIRCUITS LINE ON MC TOWERS (WIND ZONE-5, TC-1) WITH TWIN MOOSE CONDUCTOR						
Sl. No.	Quantity		DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
1			Galvanised steel tower materials with extension part wherever necessary, and bolts and nutsetc.,			
	1511.69	MT	HT STEEL	65999.00	MT	9,97,70,028.31
	501.78	MT	MS STEEL	63499.00	MT	3,18,62,528.22
	78.94	MT	c) Ordinary Bolts & nuts	90000	MT	71,04,600.00
	0	MT	d)Anti-theft bolts and nuts	90000	MT	-
2	6194	No.	120 KN Disc Insulators	481.00	No.	29,79,314.00
3	19976	No.	160 KN Disc Insulators	662	No.	1,32,24,112.00
			Conductor & Earth wire accessories			
4	156	Set	Single I suspension string for Twin ACSR Moose	19271.00	Set	30,06,276.00
5	108	Set	Single I suspension pilot string with counter weight	40988.00	Set	44,26,704.00
6	408	Set	Double Tension string	22332.00	Set	91,11,456.00
7	816	Set	Vibration Damper for Twin ACSR Moose	1318.00	Set	10,75,488.00
8	2546	Set	Bundle spacer for Twin Moose	1484.00	Set	37,78,264.00
9	612	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	892.00	Set	5,45,904.00
10	120	Set	Midspan compression joint for Moose	1000.00	Set	1,20,000.00
11	60	No.	Repair sleeve for Moose	423.00	No.	25,380.00
12	13	Set	Suspension clamp for Earth wire 7/3.66mm	719.00	Set	9,347.00
13	34	Set	Tension Clamp for Earth wire 7/3.66mm	726.00	Set	24,684.00
14	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	353	Set	1,765.00
15	68	No.	Vibration Damper for Earth wire 7/3.66mm	635.33	Set	43,202.44
16	47	No.	Flexible copper bond for earthing	935.00	No.	43,945.00
17	243.6	KM	ACSR Moose conductors 1.5 % sag	309475.00	KM	7,53,88,110.00
18	10.10	KM	GI EARTH WIRE 7/3.66mm 1.0% sag	67675.00	KM	6,83,517.50
19	10.5	KM	OFC ground wire 48 fibres with accessories	179724.00	KM	18,87,102.00
			Earthing Materials			
20	23	No.	Pipe type earthing	2176.94	No.	50,069.62
21	7	No.	Counter poise earthing (120m length)	8166	No.	57,162.00
			Tower Accessories			
22	30	No.	Number plate	270.00	No.	8,100.00
23	30	No.	Danger Board	362.00	No.	10,860.00
24	120	No.	Phase plate(Set of three)	303.03	No.	36,363.60
25	120	No.	Circuit plate	303.03	No.	36,363.60
26	30	No.	Anti-climbing devices	10791	No.	3,23,730.00
27			TOTAL COST ON MATERIALS			25,56,34,376.29
			TOWER FOUNDATIONS			
28	13	No.	QA type tower 0° to 2° Suspension tower	2326950	No.	3,02,50,350.00
29	4	No.	QB type tower 2° to 15° Light angle tower	4440673	No.	1,77,62,692.00
30	4	No.	QC type tower 15° to 30° Medium angle tower	5767601	No.	2,30,70,404.00

TAMILNADU TRANSMISSION CORPORATION LIMITED						
COST DATA FOR 400 KV 4 CIRCUITS LINE ON MC TOWERS (WIND ZONE-5, TC-1) WITH TWIN MOOSE CONDUCTOR						
Sl. No.	Quantity		DESCRIPTION	Rate in Rs.	Per	Amount in Rs.
31	9	No.	QD type tower 30° to 60° High angle & Dead end tower	8414751	No.	7,57,32,759.00
32			Tower protection works 15% on Foundation cost			2,20,22,430.75
33			TOTAL COST OF FOUNDATION			16,88,38,635.75
34			Erection charges(10% on cost of materials)			2,55,63,437.63
			Transportation & Insurance charges (5% on cost of materials)			1,27,81,718.81
35			Total amount			46,28,18,168.48
36			Labour Welfare Fund 1.0% on Foundation & Erection Charges			19,44,020.73
			EPF at 13% on labour portion			12102855.95
37			ESI at 3.25 % on labour portion			3025713.99
38			Total			47,98,90,759.16
39			GST @ 18% on total amount			86380336.65
40			Total			56,62,71,095.80
41			Establishment & Supervision Charges at 15.0%			8,49,40,664.37
42			Total			65,12,11,760.17
45			Contingencies (1% on Material, Erection & Foundation charges)			65,12,117.60
46			Land compensation			19470800.00
47	10	KM	Tree/Crop compensation	2000000	KM	20000000.00
48			TOTAL COST PER		10 KM	697194677.78
49			TOTAL COST PER 1 KM			69719467.78
			(Rounding to nearest 1000)	SAY		6,97,20,000.00
			COST PER KM IN LAKHS			697.20

SAVE ENERGY