

: TAMIL NADU TRANSMISSION CORPORATION LTD:

From
Er.M.Asokan, BE.(Hon's)
Chief Engineer / Transmission,
VI Floor,
NPKRR Maaligai,
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/ P&C, Chennai
5. The CEs/ System Operation & Grid
Operation
6. The Chief Engineer/ NCES, Chennai
7. The Chief Engineer/ Planning & RC,
Chennai
8. The Chief Engineer/ Distribution
Regions
9. CFC/TANTRANSCO

Lr. No. CE/TR/SE/TR IV/EE1/AEE1/F. Cost Data 19-20 /D. 52/19, Dt.04.07.2019
Sir,

Sub: TANTRANSCO – Cost Data for the year 2019-20 – Copy
Communicated – Reg.

TANTRANSCO's Cost Data for the financial year 2019-20 is enclosed for
reference. The following few points may be considered while preparing estimates.

1. All electrical equipment and material rates are inclusive of 18% GST, except batteries which are inclusive of 28% GST.
2. The rates of all Civil items are excluding GST and hence applicable GST may be included while preparing the estimates.
3. For the Lines and Towers Civil Estimates, the Labour welfare Fund component has been withdrawn as per memo. no.099718/1113/G.44/G.441/ 2018, dt.17.12.2018. EPF is also not included as per memo. no.094813/II/ G.44/G.441/2007, dt.21.01.2019, as per the direction of Accounts branch.

Sd/---
Chief Engineer/ Transmission

Encl: As above

Copy submitted to the Managing Director/TANTRANSCO
Copy submitted to the Director/ Transmission/ Projects
Copy submitted to the Director/ Finance/ TANTRANSCO

Copy submitted to the Director/ Operation/ TANTRANSCO
Copy to the Superintending Engineer/ Transmission I, II, III, IV, V & 765 kV (w.e)
Copy to the Superintending Engineer/ Civil/ Transmission I & II (w.e)
Copy to the Superintending Engineer/ Design/ P&C/ Chennai (w.e)
Copy to the Superintending Engineer/ GCC/ Chennai I & II, Coimbatore, Madurai,
Salem & Trichy (w.e)
Copy to the Superintending Engineer/ CDC I & II/ Chennai (w.e)
Copy to the Superintending Engineer/ P&C/ Chennai, Madurai & Coimbatore (w.e)
Copy to the Superintending Engineer/ Operation Circle/ Chennai I, Chennai II,
Trichy, Vellore, Villupuram, Salem, Tirunelveli, Madurai & Coimbatore (w.e)
Copy to the Superintending Engineer/ Planning, System Studies & RE&I(D)/Chennai
(w.e)
Copy to the Superintending Engineer/ Wind Energy Development Circle/ Udumalpet
& Tirunelveli (w.e)

TANTRANSCO-COST DATA 2019-20

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
1	Auto Transformer & Power Transformer	
	765/400 KV,3X 500MVA , single phase Interconnection Transformer with OLTC, NIFPS and Online bushing monitoring system.	209745410.00
	Supply, Erection and Commissioning of 500 MVA ,3 Phase 50C/S, 400 / 230 / 33 KV YNaod11, Auto Transformer with OLTC and NFIPS	145386790.00
	400/230 KV, 315 MVA Auto (3 phase unit) transformer with OLTC and NFIPS	94753300.00
	400/110 KV, 200 MVA Auto(3 phase unit) transformer with OLTC and NFIPS	91002750.00
	230/110 KV, 160 MVA Auto Transformer with OLTC and NFIPS	52997590.00
	230/110 KV, 100 MVA Auto Transformer with OLTC and NFIPS	43842090.00
	230/110 KV, 33.33 MVA ,1Ø Auto Transformer with OLTC and NFIPS	17207960.00
	230/33KV, 160 MVA Power Transformer with OLTC and NFIPS	77437500.00
	110/33 KV, 50 MVA Power Transformer with OLTC and NFIPS	20265390.00
	110/33-22 KV, 25 MVA Power Transformer with OLTC	12489350.00
	110/33-11 KV, 16 MVA Power Transformer with OLTC	10410250.00
	110/33-11 KV, 10 MVA Power Transformer with OLTC	7991200.00
	110/22-11 KV, 16 MVA Power Transformer with OLTC	10410250.00
	110/22-11 KV, 10 MVA Power Transformer with OLTC	7991200.00
	33/11 KV, 8 MVA Power Transformer with OLTC	5024540.00
	33/11 KV 16 MVA Pr.Tr. with OLTC(Indoor)	9526970.00
	33 KV/433 V ,500KVA , Station Transformer with scada compatible RMU Panel provision	4078870.00
	33 KV/433 V ,1000KVA , Station Transformer with all accessories	1841540.00
	Supply of Station Transformer, 250 KVA, 22 KV/433 V Station Transformer 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	960150.00
	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 no's) with Insulator for station Transformer, all consumables and all accessories	1789100.00
2	REACTORS	
	765kv 80 MVAR single phase Bus reactor with NFIPS	55527030.00
	765kv 80 MVAR single phase Line reactor with NGR with NFIPS	55527030.00
	400 KV, 125 MVAR, Line Reactor, with NGR with NFIPS three phase	55689380.00
	80 MVAR, 400KV Bus Reactor with NGR with NFIPS three phase	45794060.00
	80 MVAR, 400KV Line Reactor with NGR with NFIPS three phase	50039110.00
3	Breakers	
	765 KV, 3150A ,50 KA ,3PH Outdoor SF6 Breaker with support structure , pre-insertion resistor and CSD	13955110.00
	765 KV, 3150A ,50 KA ,3PH Outdoor SF6 Breaker with support structure and CSD and without pre-insertion resistor	10640340.00
	765 KV, 3150A ,50 KA ,3PH Outdoor SF6 Breaker with support structure with pre-insertion resistor WITH OUT CSD	13341260.00
	420 KV, 3150A ,63KA ,3PH Outdoor SF6 Breaker with support structure with pre-insertion resistor WITH CSD.	4376240.00

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
	420 KV, 3150A ,63KA ,3PH Outdoor SF6 Breaker with support structure without pre-insertion resistor WITH CSD supervision charges.	4070390.00
	420 KV, 3150A ,63KA ,3PH Outdoor SF6 Breaker with support structure with pre-insertion resistor WITH OUT CSD.	5453730.00
	230 KV SF6, 50 KA Outdoor Breaker	1257220.00
	230 KV SF6,40 KA Outdoor Breaker with support structure	1452370.00
	110 KV SF6 (outdoor), 40 KA Breaker	597420.00
	33 KV VCB (outdoor) 1250A, 40KA with TC	215470.00
	11 KV VCB (outdoor),1250A ,25KA	118000.00
4	CURRENT TRANSFORMERS	
	765 KV single phase 6 core current Transformer, 3000A, 50 KA, 1 Sec. with support structure and accessories and junction box	2131780.00
	420 KV,3000A, 63 KA, 6 core single phase current Transformer with support structure, accessories and Junction box.	715580.00
	420 KV, 3000A, 63 KA, 5 core single phase current Transformer with support structure, accessories and Junction box	719290.00
	245 KV, 2000A, 63 KA, 5 core single phase current Transformer with structure with junction box.	339590.00
	230 KV (1600-1200-600-300/1A) Outdoor CT with TC(5Core) with junction box with supervision charges	265770.00
	230 KV(2000-1200-800-400/1A) Outdoor CT with TC (5Core) with junction box	269630.00
	110 KV (1200-600-300/1A) Outdoor CT with TC & junction box without support structure.	148060.00
	110 KV (600-300-150/1A) 5 core outdoor CT & junction box without support structure	113070.00
	33 KV (1200-600-300 /1A) Out door type CT with TC without support structure	23170.00
	33 KV outdoor type(600-300-150/1A) CT with TC without support structure	20790.00
	11 KV (1200-600/1A) Oil filled (out door) CT without support structure	20730.00
	11 KV (400-200/1A) Oil filled(Out Door) CT without support structure	17100.00
5	CVT	
	765 KV single phase CVT with support structure and 1no junction box	968570.00
	420 KV single phase CVT with support structure	365140.00
	230 KV single phase CVT with structure	199150.00
	110 KV single phase CVT with structure	186440.00
6	POTENTIAL TRANSFORMERS	
	230 KV Outdoor PT with Terminal Connectors, Junction box and support structure	265510.00
	230 KV Outdoor PT with Terminal Connectors and Junction box	263980.00
	110 KV Outdoor PT with T.C, Junction box and support structure	140190.00
	110 KV Outdoor PT with T.C. with Junction box without support structure	104520.00
	33 KV Outdoor PTs with T.C without support structure	21130.00
	22 KV Outdoor PT with T.C without support structure	17430.00
	11 KV Outdoor PT with T.C without support structure	29800.00
7	LAS	
	624 KV Lightning arrester with support structure	624410.00
	400 KV Lightning arrester with support structure	117860.00

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
	230 KV Lightning arrester with support structure	58190.00
	230 KV Lightning arrester without support structure	42800.00
	110 KV Lightning arrester with support structure	45530.00
	110 KV Lightning arrester with surge monitor, terminal connectors with all accessories	46600.00
	110 KV Lightning arrester without support structure	26830.00
	33 KV Lightning arrester without support structure	3760.00
	22 KV Lightning arrester without support structure	3430.00
	11 KV Lightning arrester without support structure	2090.00
8	AB switches	
	765kv 3150 A 50KA isolator with double earth with insulator with support structure	2807660.00
	765kv 3150 A 50KA isolator with single earth with insulator with support structure	2402520.00
	420KV bus earth switch (single phase) with structure and insulator	366700.00
	420 KV, 3150 A, 63KA Isolator with double earth with Insulator with support structure.	944480.00
	420 KV, 3150 A, 63 KA Isolator with single earth with Insulator with support structure.	821430.00
	245 KV AB Switch WOE 2000A with Insulator with support structure	448810.00
	230 KV AB Switch WOE 2000A without support structure	164940.00
	245 KV AB Switch WE 2000A with Insulator with support structure	495770.00
	230 KV AB Switch WE 2000A without support structure	209050.00
	110 KV AB Switch WE 2000A with Insulator with support structure with motor operated	333410.00
	110 KV AB Switch WOE 2000A with Insulator with support structure with motor operated	295510.00
	110 KV AB Switch WOE 2000A without support structure	112100.00
	110 KV AB Switch WE 2000A without support structure	140350.00
	22/33KV Centre rotating AB Switch without support structure	21420.00
	11 KV AB switch (centre rotating) without support structure	27500.00
9	BATTERY	
	220V, 535 Ampere Hour (AH) battery complete set with stand, insulators and terminal connectors Electrolyte, Hydrometer Room Thermometer and Multimeter	1187670.00
	220V, 400 Ampere Hour (AH) battery complete set with stand, insulators and terminal connectors Electrolyte, Hydrometer Room Thermometer and Multimeter	1245240.00
	220V, 300 Ampere Hour battery complete set with wooden stand	922430.00
	110V, 300AH with stand	464090.00
	110V, 300AH without stand	452360.00
	110V, 120AH With stand	298500.00
	110V, 120AH Without stand	269390.00
	48 V 1250 AH Battery complete Set with stand, insulators and terminal connectors, electrolyte, hydrometer, room thermometer and multi meter	957600.00
	48V,600AH(with stand)	242550.00
	Lead Acid tubular batteries, Teakwood stand, Inter – row tie-connector, Electrolyte & Accessories	
	48V/120 AH batteries	56670.00

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
	48V/250 AH batteries	132550.00
	48V/400 AH batteries	187360.00
10	BATTERY CHARGER	
	220V , 100 Amps Battery charger with potential free contacts for all indications for SAS interface.	402680.00
	220V 80 Amps Battery charger with potential free contacts for all indications for SAS interface.	502320.00
	220VDC, 60 Amps Battery charger with potential free contacts for all indications for SAS interface.	151040.00
	220V, 60 Amps Automatic Thyristor controlled Battery Charger.	400540.00
	110 V, 60 Amps Battery charger with potential free contacts for all indications for SAS interface(without SAS).	118000.00
	110V, 60 Amps Automatic Thyristor controlled Battery Charger.	292000.00
	110V, 24 Amps Battery charger with potential free contacts for all indications for SAS interface(without SAS).	48950.00
	48 V/120 Amps Battery charger with potential free contacts for all indications for SAS interface.	284890.00
	Thyristor version battery chargers (for communication applications)	
	48v/80 Amps chargers	105020.00
	48v/40 Amps chargers	56640.00
	48v/20 Amps chargers	42480.00
11	CABLES	
a.	Control Cables per Km Armoured (Copper,Multistranded)	
	2x2.5 Sq.mm	70270.00
	4x2.5 Sq.mm	104320.00
	8x2.5 Sq.mm	179720.00
	14x2.5 Sq.mm	282500.00
	20 X 2.5 sq.mm	405630.00
	28 X 2.5 sq.mm	513480.00
	4 X 4 sq.mm	146910.00
	8 X 4 sq.mm	220670.00
b.	Aluminium cable Armoured	
	4 X 25 sq.mm	131640.00
	4 X120 sq.mm	892690.00
c.	LT UG Alu. Cable	
	2x16 Sq.mm	78720.00
	4x25 Sq.mm	122940.00
	4x120 Sq.mm	417180.00
	4x240 Sq.mm	760040.00
d.	Extra High Tension Cable and accessories	
	110 kV, 1*1000 Sq.mm Aluminium XLPE cable (Km)	7741740.00
	110 kV 400 Sq.mm Copper XLPE cable (Km)	5900720.00
	110 kV 1x630 Sq.mm Aluminium XLPE cable (Km)	6999800.00
	110 kV 1x240 Sq.mm Copper XLPE cable (Km)	6183210.00
	230 kV 1x1200sqmm Aluminium XLPE cable (Km)	9542000.00
	230 kV straight through joint	564740.00
	230 kV insulated joint	587330.00
	230 kV indoor termination kit	749440.00
	230 kV outdoor termination structure	109650.00
	230 KV 1 phase link box with CCPU(cable coupling protection unit)	41370.00
	230 KV 3 phase link box with CCPU(cable coupling protection unit)	48590.00

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
	240 sq.mm co-axial cable	3373070.00
	6.35/11 KV, 240 sq.mm sheath bounding cable	2560640.00
	110 kv straight through joint	210680.00
	110 KV insulated joint	206910.00
	110 kv outdoor termination kit	342470.00
	110 kv indoor termination kit	305380.00
	110 kv outdoor termination structure	37730.00
	110 KV 3 ph link box with CCPU(cable coupling protection unit)	150740.00
	3 ph link box without CCPU(cable coupling protection unit)	114820.00
	1 ph link box without CCPU(cable coupling protection unit)	25760.00
	110 KV 1 ph link box with CCPU(cable coupling protection unit)	35840.00
12	FIRE FIGHTING EQUIPMENTS	
	Fire extinguisher foam type trolley mounted 60 Ltr capacity with accessories.	21390.00
	Fire extinguisher foam type trolley mounted 50 Ltr capacity with accessories.	7220.00
	Fire extinguisher foam type trolley mounted 10 Ltr capacity with accessories	5240.00
	Fire extinguisher foam type trolley mounted 9 Ltr capacity with accessories	3480.00
	Fire extinguisher DCP type trolley mounted 25 KG capacity with accessories.	9770.00
	Fire extinguisher DCP type Portable 10 KG capacity	3690.00
	Fire extinguisher DCP type portable 9 Kg capacity.	3360.00
	Fire extinguisher DCP type portable 6 Kg capacity.	3190.00
	Fire extinguisher DCP type portable 5 Kg capacity.	3410.00
13	DG SET	
	500 KVA DG set complete set	1138110.00
	250 KVA DG set complete set	1518270.00
	125 KVA DG set complete set	952000.00
	Supply of 100 KVA DG Set complete set with all accessories including AMF panel	683310.00
14	GIS EQUIPMENTS (Breakers, Bus PT, Earth Switch)	
	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)	337358030.00
	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)	295556310.00
	VTs with dis-connector Assembly in separate chamber for bus section	18912830.00
	420KV, SF6 GIS Indoor Feeder bay with double bus ,one and half breaker along with all equipments, with on line PD Monitoring system.	72513590.00
	420KV, SF6 GIS transformer bay with double bus ,one and half breaker along with all equipments	149995960.00
	230KV 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.	18684100.00
	230KV, SF6 GIS Indoor Transformer bay with all equipments	15513000.00
	230KV, SF6 GIS Indoor Bus coupler bay with disconnectors	15513000.00
	110KV, SF6 GIS Indoor Feeder bay with all equipments	7673640.00

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
	110KV, SF6 GIS Indoor Transformer bay with all equipments	7009070.00
	110KV, SF6 GIS bus coupler bay with all accessories	5540620.00
	400kv voltage transformer (single phase) with Disconnecter assembly in separate chamber with earth switch.	2082240.00
	230 kv Bus PT (three phase)	6220200.00
	110 kV Bus PT (Single Phase)	813910.00
	420kv Earth Switch for bus	5619280.00
	110 kv Earth Switch for bus	435580.00
	110 KV outdoor Termination	197470.00
	110 KV outdoor Termination Structure	25190.00
15	CAPACITOR BANK WITH ASSOCIATED EQUIPMENTS	
a.	110 KV/24 MVAR	13505710.00
b.	22 KV/2.4 MVAR	
	Supply of 22KV capacitor bank	1774460.00
	Erection of 22KV capacitor bank	296720.00
c.	11 KV/ 2.4 MVAR	
	Supply of 11 KV capacitor bank	1782510.00
	Erection of 11 KV capacitor bank	285110.00
	11KV/2 MVAR auto switched shunt capacitor bank	3329860.00
16	PANELS	
a.	AC Panels (Each)	
	765 KV SS (1500A)	1858230.00
	765 KV SS (500A)	2064700.00
	400 KV SS	322580.00
	230 KV SS	106200.00
	110 KV SS	69510.00
	33 kV SS	78950.00
b.	DC PANELS (each)	
	220V DC Distribution Panel for 400 KV SS	179210.00
	48 V DC Distribution panel	135360.00
	220V DC Distribution Panel for 230 KV OR 110KV SS	80010.00
	110V DC Distribution Panel for 110KV OR 230KV SS	80010.00
	110V DC indoor Control & Relay Panel for GC Breaker	42720.00
	110V DC indoor Control & Relay Panel for LV Breaker	82640.00
	110V DC indoor Control & Relay Panel for Twin feeder	64430.00
	110V DC outdoor Control & Relay Panel	44610.00
	110V DC annunciator Type A	78830.00
	110V DC annunciator Type B	71390.00
17	Bay Marshalling Box	
	AC Junction Box (FRP)	31500.00
	DC Interlock Box (FRP)	31500.00
18	Control & relay (C&R) Panel (With SAS)	
	765 KV Relay panel for Transformer/Reactor	1910620.00
	765 KV Relay panel for Feeder	1973550.00
	765 KV Bus bar protection panel	3247130.00
	765 KV Relay panel for Tie Breaker	445810.00
	Islanding panel for 765 KV Feeder Transformer/Reactor	1783240.00
	Relay Panel for 400 KV Feeder/ Line	1776590.00
	Relay panel for 400 /230 KV ICT	856430.00
	Relay panel for 400 /110 KV ICT	856430.00

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
	Relay panel for 400 KV Tie breaker for lines / Transformer	355400.00
	Relay panel for 400 KV Bus bar protection	1786800.00
	Relay panel for 400 KV Bus reactor with NGR protection	942630.00
	Relay panel for 400 KV Line reactor with NGR protection	942630.00
	Relay panel for 230 KV Feeder (with U/F protection)	868200.00
	Relay panel for 230 KV Feeder	858210.00
	Relay panel for 230/110 KV Auto Tr.	694380.00
	Relay panel for 230 KV Bus coupler	255600.00
	Relay panel for 230 KV Bus bar protection	1473640.00
	Relay panel for 110kV Feeder	417450.00
	Relay panel for 110kV Feeder (with UF protection)	425840.00
	Relay panel for 110kV Transfer Bus Coupler	362370.00
	110kV Bus Coupler Panel	248410.00
	110 KV Bus bar protection Relay Panel	1414410.00
	Synchronizing panel	182210.00
	DFR (digital fault recorder) with PMU and Fault Recorder locator functions complete with all devices and work station for 2nos 400 kV feeders	10660120.00
	Spares for DFR cum fault locator equipment	558130.00
19	Control & relay (C&R) Panel (Without SAS)	
	400 KV Feeder Control Panel	156290.00
	400 KV Feeder Relay Panel	722360.00
	400/230 KV Auto Transformer Relay Panel	1023620.00
	400 /110 KV Auto Tr. Relay Panel	254660.00
	230 KV Feeder Control panel	178450.00
	230 KV Feeder Relay panel(With U/F protection)	735000.00
	230 KV Feeder Relay panel	603910.00
	230/110 KV Auto Tr. Relay Panel	560720.00
	230 kV Bus Coupler Panel	200560.00
	230 kV Bus bar protection Relay Panel	1919470.00
	110 kV Feeder Relay panel	415250.00
	110 kV Feeder Relay panel (with UF protection)	420790.00
	110kV Bus Coupler Panel	330710.00
	110 kV Bus Bar Protection Panel	1984260.00
20	Carrier Communication (CC) Equipments	
	Coupling Device	69660.00
	Co-Axial cable	87730.00
	Wave Trap (0.5mH/630 A) for 110 kV side	213630.00
	Bay control unit	262500.00
	OPGW - 24 Fibre DWDM cable, Accessories	284610.00
	ADSS - 24 Fibre OPTIC Cable, with Accessories	218070.00
	OLTE with ADM configuration and STM -4 in four directions	1769450.00
	OLTE with cross connectivity	1729700.00
	Bit Error Rate Meter	513640.00
	Optical Power Meter	355600.00

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
	Optical Time Domain Reflectometer	940350.00
	Optical Splicing Machine and optical time domain reflectometer	1071870.00
	Transformer winding resistance test Kit	664170.00
	40W PLCC Carrier set with 4 command PC	289940.00
	Telephone cable 0.6mm 4 pair/km	27680.00
	Multi function Transformers	9450.00
	Protection Coupler(Digital) 8 command	270910.00
	Dig protection coupler	250150.00
	OLTC transformer	4200.00
	Visual monitoring system (VMS) for switchyard and premises for 400KV, 765KV substations	6419510.00
	EPAX for PLCC system	837190.00
21	Other SS Materials	
a.	Aluminium Bus Bar	
	75 mm	367570.00
	50 mm	367570.00
b.	Conductor	
	Moose ACSR	365180.00
	Zebra ACSR	283210.00
	Panther ACSR	154530.00
c.	Insulators	
	110 KV, 90 KN polymer Insulators (each)	2400.00
	230 KV, 90 KN polymer Insulators (each)	4000.00
	230 KV, 120 KN polymer Insulators (each)	4410.00
	11 KV, 160 KN Antifog Disc Insulators (each)	1110.00
	11 KV, 120 KN Ordinary Disc Insulators (each)	610.00
	11 KV, 120 KN Antifog Disc Insulators (each)	780.00
	11 KV, 90 KN Ordinary Disc Insulators (each)	440.00
	11 KV, 90 KN Antifog Disc Insulators (each)	680.00
	110 kV Solid core insulator (each)	7660.00
	230 kV Solid core insulator (each)	18070.00
	400 kV Solid core insulator (each)	47880.00
	11 kV PT insulator	290.00
	22 kV PT insulator	420.00
d.	HTGS Earth wire 7/3.55 mm (per MT)	76520.00
e.	MS Tower (per MT)	75120.00
	HTS Tower (per MT)	77240.00
f.	Aluminium C -Type wedge connector -Zebra to Zebra	2110.00
g.	40mm dia GI pipe per length	1690.00
h.	Paint	
	Anti Corrosive black paint (per/lit.)	90.00
	Red Oxide Paint (per/lit.)	60.00
	Aluminum paint (per/lit.)	110.00
i.	HD GI Hanger Rod 20 mm (each)	290.00
j.	GASKET	
	Gasket 900×900×10 mm	2410.00
	Gasket 900×900×8 mm	1930.00
	Gasket 900×900×6 mm	1450.00
	Crepe tape 1" width	600/kg
	Pre Compressed Insulating Press Board	310/kg

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
	Lubricant Oil (MAK 100) for Vacuum pump	170/lit
k.	Connectors	
	Free end clamp for 100 mm Al. Bus bar	1240.00
	Free end clamp for 75 mm Al. Bus bar	400.00
	T - Clamp for Quad moose to 4" Alu. Bus	5590.00
	T - Clamp for double moose to 4" Alu. Bus	4970.00
	T - Clamp for Quad moose to 3" Alu. Bus	4970.00
	T - Clamp for Double moose to 3" Alu. bus	4350.00
	T - Clamp for single moose to 3" Alu. Bus	3730.00
	T Clamp for 75mm Bus bar To Zebra	720.00
	T Clamp for 50mm Bus bar to Zebra	900.00
	T Clamp for Twin Zebra to Twin Zebra	1120.00
	T Clamp for Twin Zebra to Single Zebra	1760.00
	T Clamp for Zebra to Zebra	500.00
	T clamp for Panther to Zebra	680.00
	T clamp double moose to double moose with 225 mm centre	2230.00
	Switch end clamp for twin zebra	590.00
	Switch end clamp for Panther	360.00
	Spacer Clamp for Zebra (each)225mm spacing	290.00
	PG Clamp for Zebra	320.00
	PG Clamp for Panther	410.00
	Corona Bell for 100 mm Bus Bar	1320.00
	Corona Bell for 75 mm Bus Bar	130.00
	Corona Bell for 50 mm Bus Bar	90.00
	Joint Clamp for 75mm Bus Bar	860.00
	Reducer Clamp for 75mm Bus to Zebra	720.00
	Seating block for 75 mm bus bar	490.00
l.	TENSION FITTING	
	6 bolt Tension fitting for Zebra (each)	1660.00
	4 bolt Tension fitting for Zebra (each)	1460.00
	Single tension fitting for panther	1660.00
	Single suspension fitting for panther	1160.00
	Single tension fitting for 7/3.55 mm steel earth wire	530.00
	Bolted type suspension fitting for 230 kv Quad moose	4130.00
	Bolted type suspension fitting for 230 kv Twin moose	2840.00
	Bolted type suspension fitting for 110 kv Quad moose	3930.00
	Bolted type suspension fitting for 110 kv Twin moose	2570.00
	Tension fittings for Twin disc set with twin moose conductor for 230 kV (6 Bolted Gripper set)	6940.00
m.	POLE	
	4.7 mtr long Tubular yard light pole (each)	2590.00
	5.5 mtr long stepped tubular pole for yard light (each)	5010.00
	8.0 mtr long stepped tubular pole for yard light (each)	3680.00
n.	Instruments	
	5 kV Megger battery operated	111160.00
	Earth Megger (Digital 0-50-500 ohm) (each)	454630.00
	Digital Multi meter (each)	15130.00

Sl.No.	Description	Final Rate in Rs. (inclusive of GST)
o.	Others	
	Rubber mat of size 2000×1000×10 mm	1910.00
	MOM box 220 V DC	43620.00
	MOM box for 110 kV AB switch	35580.00
	Spacer for 225 mm double moose conductor	1240.00
	Desktop personal computer	33000.00
	Laser printer	9930.00
	Steel Executive Table (TANSI)	10710.00
	S Type chair with arm	3290.00
	Supply & Erection	
22	Substation structures	
	400 KV SS	48754210.00
	230 KV side	23009050.00
	110kv side	6532540.00
	66 kv side	1124760.00
	33 kv Side	1073830.00
	22 kv side	587500.00
	11 kv side	295080.00
23	Earthing and Painting	
	400 KV SS AIS	23100000.00
	230 KV SS AIS	8400000.00
	110 KV SS AIS	945000.00
24	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	2100000.00
	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	945000.00
	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	420000.00
25	Sub-Stations	
a.	Control Room (Only building)	
	400 KV SS AIS	41946560.00
	230 KV SS AIS	30606530.00
	110 KV SS AIS	6487280.00
b.	Quarters	
	2P Type	2415200.00
	2Q Type	2834380.00
	2R Type	3080590.00
	2S Type	3862430.00

DETAILED ESTIMATE FOR 11KV BAY EXTENSION

Rs. In lakhs

SI No	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	11kV AB switch	Nos.	2	0.275	0.550
2	11 kV VCB Breaker	Nos	1	1.180	1.180
3	11 kV (1200-600/1A) Oil filled (outdoor) CT	Nos	3	0.207	0.622
4	11 kV LAS	Nos	3	0.021	0.063
5	Relay & control panel for LV breaker	Nos	1	0.826	0.826
6	Structure		LS	2.150	2.150
7	Control cables		LS	0.301	0.301
8	Busbar arrangement		LS	0.375	0.375
9	Foundation materials		LS	0.330	0.330
10	Sub total				6.397
	Contingencies 1 %				0.064
	Cost of materials and equipments				6.461
	Labour and transport 15%				0.969
	Cost of materials and labour				7.430
	Establishment and Supervision Charges @15%				1.115
	Total				8.545

Say Rs. 8.54 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	2.154	2.154
3	22 kV CTs	Nos	3	0.231	0.693
4	22 kV LAS	Nos	3	0.034	0.102
5	Relay & control panel for LV breaker	Nos	1	0.826	0.826
6	Structure		LS	4.280	4.280
7	Control cables		LS	0.287	0.287
8	Busbar arrangement		LS	0.394	0.394
9	Foundation materials		LS	0.330	0.330
10	Sub total				9.493
	Contingencies 1 %				0.095
	Cost of materials and equipments				9.588
	Labour and transport 15%				1.438
	Cost of materials and labour				11.027
	Establishment and Supervision Charges @15%				1.654
	Total				12.681

Say Rs. 12.68 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	2.154	2.154
3	33 kV (1200-600-300/1 A) out door CT	Nos	3	0.231	0.693
4	33 kV LAS	Nos	3	0.037	0.111
5	Relay & control panel for LV breaker	Nos	1	0.826	0.826
6	Structure		LS	7.810	7.810
7	Control cables		LS	0.301	0.301
8	Busbar arrangement		LS	0.394	0.394
9	Foundation materials		LS	0.330	0.330
10	Sub total				13.047
	Contingencies 1 %				0.130
	Cost of materials and equipments				13.178
	Labour and transport 15%				1.977
	Cost of materials and labour				15.154
	Establishment and Supervision Charges @15%				2.273
	Total				17.427

Say Rs. 17.43 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	1.121	1.121
2	110 kV AB switch 2000 A with earth	Nos	1	1.403	1.403
3	110 kV SF6 Breaker 40 kA	Nos	1	5.974	5.974
4	110 kV CTs (Single Phase)	Nos	3	1.480	4.440
5	Relay & control panel (with U/F protection)	Nos	1	4.208	4.208
6	Structure		LS	13.100	13.100
7	Control cables		LS	1.691	1.691
8	Busbar arrangement		LS	1.691	1.691
9	Foundation materials		LS	2.080	2.080
10	Sub total				35.707
	Contingencies 1 %				0.357
	Cost of materials and equipments				36.064
	Labour and transport 15%				5.410
	Cost of materials and labour				41.474
	Establishment and Supervision Charges @15%				6.221
	Total				47.695

Say Rs. 47.69 Lakhs

DETAILED ESTIMATE FOR 230 KV BAY EXTENSION

Rs. In lakhs

SI No	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	Civil works including foundation		LS	76.200	76.200
2	230 kV, SF6 50 KA out door Breaker	Nos	1	12.572	12.572
3	230 kV, (1600-1200-600-300/1 A) out door CT with TC (5core) with JB	Nos	3	2.657	7.971
4	230 kV Isolator 2000 A with earth blades	Nos	1	2.090	2.090
5	230 kV Isolator 2000 A without earth blades	Nos	4	1.649	6.596
6	Relay panel (with U/F protection)	Nos	1	8.682	8.682
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
	Sub total				166.317
	Contingencies 1 %				1.663
	Cost of materials and equipments				167.980
	Labour and transport 15%				25.197
	Cost of materials and labour				193.177
	Establishment and Supervision Charges @15%				28.977
	Total				222.154

Say Rs. 222.15 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	43.762	131.286
2	420 kV, CT	Nos	12	7.192	86.304
3	400 kV Isolator with double earth	Nos	10	9.444	94.440
4	400 kV Lightning Arrester	Nos	6	1.178	7.068
5	400kv Single phase CVT	Nos	6	3.651	21.906
6	400 KV double tension fitting with disc insulator for twin moose	Nos	24	0.213	5.112
7	400 kV single suspension string Insulator	Nos	18	0.106	1.908
8	400 kV support Insulator	Nos	27	0.478	12.906
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 & Relay panel for 400 kV feeders	Nos	2	17.765	35.530
13	Control & Relay panel for 400 kV tie Breaker	No	1	3.554	3.554
14	Marshalling box	Nos	3	0.315	0.945
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	219.210	219.210
20	400KV Wave Traps	E	4	3.641	14.564
21	Line Matching coupling Device for 400KV	E	2	0.696	1.392
22	PLCC carrier set	E	6	2.899	17.394
23	Protection coupler for 400KV	E	4	2.500	10.000
24	Subtotal				804.652
25	Spares 3%				24.140
26	Cost of Equipment & material				828.792
27	Erection charges at 10%				82.879
28	Transportation 5%, Insurance 1%, Central & State ST 4%.Total 10%				82.879
29	Contingencies 1 %				8.288
30	Total				1002.838
31	Cost of material & Labour				1002.838
32	Establishment (7.5%), T&P (1%), Loss on stock (0.25%), Audit & Accounts (1%), Maintenance during construction (1%). Total 10.75%				107.805
Overall Cost					1110.643

Say Rs. 1110.64 Lakhs

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

Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs
I	CIVIL WORKS				
1	Land Cost (actuals)			As applicable	
2	Control room building with internal electrification, bore well with septic tank			LS	64.870
3	Plinths,Fencing, Road and cable duct etc.,			LS	86.490
4	Filling the yard with Gravel			LS	16.630
5	Filling the yard with crusher dust (100 mm depth) and 20 mm HBG metal (200 mm depth)			LS	9.920
	Total				177.910
II	ELECTRICAL WORKS				
1	110 kV AB Switch 2000 A with earth blade	2 Nos	1.404	Each	2.807
2	110 kV AB Switch 2000 A w/o earth blade	6 Nos	1.121	Each	6.726
3	110 kV SF6 Breaker	4 No	5.974	Each	23.896
4	110 kV CTs(Single Phase) with JB	12 Nos	1.481	Each	17.767
5	110 kV PTs(Single Phase) with JB	3 Nos	1.045	Each	3.135
6	110 kV LAS (Single Phase)	6 Nos	0.268	Each	1.610
7	11 kV AB Switch	12 Nos	0.275	Each	3.300
8	11 kV VCB (LV breaker)	2 Nos	1.180	Each	2.360
9	11 kV VCB (Feeder)	4 Nos	1.180	Each	4.720
10	11 kV VCB (Bus coupler)	1 No	1.180	Each	1.180
11	11 kV CTs	18 Nos	0.207	Each	3.731
12	11 KV PTs	3 Nos	0.298	Each	0.894
13	11 kV LAS - Station type	6 Nos	0.021	Each	0.125
14	11 kV LAS - Disn. Type	12 Nos	0.003	Each	0.037
15	16 MVA, 110/33-11 kV Power Transformer with OLTC	2 Nos	104.103	Each	208.205
16	Earthing and painting		9.900	LS	9.900
17	Outdoor Illumination		4.400	LS	4.400
18	110V DC indoor C&R panel for GC breaker	2 Nos	0.427	Each	0.854
19	110V DC indoor C&R panel for LV breaker	2 Nos	0.826	Each	1.653
20	110V DC indoor C & R (2 feeder) panel	2 Nos	0.644	Each	1.289
21	110V DC Annunciator Panel	1 No	0.788	Each	0.788
22	Control cable		5.000	LS	5.000
23	110 V DC, 300 AH Battery set with stand	2 Set	4.641	Set	9.282
24	110 V, 60A charger	2 set	1.180	Set	2.360
25	Fire Fighting equipments		2.000	LS	2.000
26	110 V D.C Distribution Panel	1 set	0.800	Set	0.800
27	A.C Panel for 110kV SS	1 set	0.695	Set	0.695

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

Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs
28	100 KVA, 11 kV /433 V Distn.Tr (Energy Efficient)	1 No	2.246	Each	2.246
29	P&T Phone	1 No	0.100	Each	0.100
30	T&P materials			LS	1.000
31	T&P furnitures			LS	1.000
32	Scientific Instruments			LS	2.000
33	Sub total				325.861
34	Contingencies @ 1% for Sl.no.33				3.259
35	Cost of materials				329.120
36	Labour & Transport @ 15% for Sl.no.35				49.368
37	Sub-Total for material and labour				378.488
38	Establishment and supervision charges @ 15% for Sl.no.37				56.773
III	Total				435.261
39	110 KV Structure	1 set	65.325	Each	65.325
40	11 KV Structure	1 set	2.951	Each	2.951
IV	Total (Sl.no.39+40+III)				503.537
	Total for both electrical and civil works (Gross & Nett) I+IV				

**'A,
FEEDER**

**Total in
Lakhs**

177.91

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	332.68
3	Climatisation				LS	16.64
4	Generator room and burnt oil sump				LS	8.33
5	Cable duct				LS	8.33
6	Station yard filling and levelling				LS	8.33
7	Compound Wall and fencing				LS	16.64
8	Lead road formation				LS	8.33
9	Water supply and drainage system				LS	4.99
	Total for civil works					404.27
II	ELECTRICAL WORKS					
A	110 KV GIS SWITCH GEAR ERECTION					
	110 KV SF6 Indoor GIS with 3 feeders, 2 transformers and 2 nos. disconnector switch with following components					
1	110 KV Indoor GIS line bay with all equipments.	3	Nos	76.7	E	230.2
2	110 KV Indoor GIS transformer bay with all equipments.	2	Nos	70.1	E	140.2
3	110 KV Indoor Bus PT	2	Nos	8.1	E	16.3
4	Off load Disconnector Switch	1	Nos	19.8	E	19.8
5	Earthing switch	2	Nos	4.4	E	8.7
6	Earthing arrangements				LS	20.0
B	STATION AUXILIARIES					
1	110 V, 300 AH Battery set with stand	2	Nos	4.64	E	9.282
2	110 V, DC, 60 A battery charger	3	Nos	1.18	E	3.540
3	250 KVA, 11 KV/433 V Distribution Transformer (energy efficient)	1	No.	4.659	E	4.659
4	Control & Relay panel				LS	35.000
5	110 V, DC panel	2	No	0.80	E	1.600
6	AC panel	1	No	0.70	E	0.695
7	11 KV VCB (Transformer LV)	2	Nos.	6.74	E	13.48
8	11 KV Indoor VCB for feeder	6	Nos.	6.23	E	37.37

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
9	11 KV VCB Indoor (Bus coupler)	1	No.	7.84	E	7.84
10	Control cable				LS	1.58
11	Fire fighting equipment				LS	1.00
12	VHF communication				LS	2.40
13	SCADA and Substation automatiopn system				LS	40.00
14	P &T and CC Phone				LS	0.02
15	Scientific Intruments				LS	1.25
16	T & P and Furniture				LS	1.00
17	Earthing, painting & Yard lighting				LS	3.465
18	110 KV, 1 x 630 sq.mm XLPE cable	0.3	Km	70.00	Km	20.999
19	110 KV cable terminations outdoor GIS	6	nos	3.42	E	20.548
20	110 KV cable terminations indoor GIS	15	nos	3.05	E	45.807
21	11 KV, 1 x 630 sq.mm. XLPE cable with accessories with termination kit				LS	3.50
22	EOT Crane Arrangments 10T	1	No	16.268	E	16.268
23	Illumination and ventilation				LS	4.000
24	Sub total (A+B)					710.51
C	Total cost of materials and equipments (A+B)					710.51
1	Contigencies @ 1% for C					7.11
2	Sub total					717.62
3	Labour and transport charges @ 15 %					107.64
D	Sub total					825.26
E	110 KV POWER TRANSFORMERS ERECTION					
1	16 MVA, 110/11 KV Pr Tr with OLTC	2	Nos	104.103	E	208.21
2	Plinth, 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					217.22
F	Total cost of materials and equipments (D+E)					1042.48
	Establishment and Supervision Charges @15% for F					156.37
	Total					1198.85
G	Total for Civil & Elcl. works (Gross & Nett)					1603.12

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

Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs
I	CIVIL WORKS				
1	Land Cost (actuals)			As applicable	
2	Control room building with internal electrification, bore well with septic tank			LS	64.870
3	Plinths,Fencing, Road and cable duct etc.,			LS	86.490
4	Filling the yard with Gravel			LS	16.630
5	Filling the yard with crusher dust (100 mm depth) and 20 mm HBG metal (200 mm depth)			LS	9.920
	Total				177.910
II	ELECTRICAL WORKS				
1	110 kV AB Switch 2000 A with earth blade	2 Nos	1.404	Each	2.807
2	110 kV AB Switch 2000 A w/o earth blade	6 Nos	1.121	Each	6.726
3	110 kV SF6 Breaker	4 No	5.974	Each	23.896
4	110 kV CTs(Single Phase) with JB	12 Nos	1.481	Each	17.767
5	110 kV PTs(Single Phase) with JB	3 Nos	1.045	Each	3.135
6	110 kV LAS (Single Phase)	6 Nos	0.268	Each	1.610
7	22 kV AB Switch	12 Nos	0.214	Each	2.570
8	22 kV VCB (2 LV Breaker)	2 Nos	2.155	Each	4.309
9	22 kV VCB (4 feeder)	4 Nos	2.155	Each	8.619
10	22 kV VCB (Bus coupler)	1 No	2.155	Each	2.155
11	22 kV CTs	18 Nos	0.232	Each	4.171
12	22 KV PTs	3 Nos	0.174	Each	0.523
13	22 kV LAS - Stn type	6 Nos	0.034	Each	0.206
14	22 kV LAS - Disn. Type	12 Nos	0.006	Each	0.073
15	16 MVA, 110/22 kV Power Transformer with OLTC	2 No	104.103	Each	208.205
16	Earthing and Painting		9.900	LS	9.900
17	Outdoor illumination		4.400	LS	4.400
18	110V DC indoor C&R panel for GC breaker	2 No	0.427	Each	0.854
19	110V DC indoor C&R panel for LV breaker	2 Nos	0.826	Each	1.653
20	110V DC indoor C & R (2 feeder) panel	2 Nos	0.644	Each	1.289
21	110V DC Annunciator Panel	1 No	0.788	Each	0.788
22	Control cable		5.000	LS	5.000
23	110 V DC, 300 AH Battery set with	2 Set	4.641	Set	9.282
24	110 V , 60A charger	2 set	1.180	Set	2.360
25	Fire Fighting equipments		2.000	LS	2.000
26	110 V D.C Panel	1 set	0.800	Set	0.800
27	A.C Panel	1 set	0.695	Set	0.695

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

Sl. No	DESCRIPTION	QTY		Rate in Lakhs	PER	Amount in Lakhs
28	100 KVA, 22 kV /433 V Distn.Tr (Energy Efficient)	1	No	3.830	Each	3.830
29	P&T Phone	1	No	0.100	Each	0.100
30	T&P materials				LS	1.000
31	T&P furnitures				LS	1.000
32	Scientific Instruments				LS	2.000
33	Sub total					333.723
34	Contingencies @ 1%					3.337
35	Cost of materials					337.060
36	Labour & Transport @ 15%					50.559
37	Sub-total for material and labour					387.619
38	Establishment and supervision charges @ 15%					58.143
III	Total					445.762
39	110 KV Structure	1	set	65.325	Each	65.325
40	22 KV Structure	1	set	5.875	Each	5.875
IV	Total (Sl.no.39+40+III)					516.962
	Total for both electrical and civil works Gross & Nett (I + IV)					

0/22 KV

Total in
Lakhs

177.91

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

SI.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	64.870	
3	Plinths,Fencing, Road and cable duct etc.,			LS	86.490	
4	Filling the yard with Gravel			LS	16.630	
5	Filling the yard with crusher dust (100 mm depth) and 20 mm HBG metal (200 mm depth)			LS	9.920	
	Total				177.910	177.91
II	ELECTRICAL WORKS					
1	110 kV AB Switch 2000 A with earth blade	2 Nos	1.404	Each	2.807	
2	110 kV AB Switch 2000 A w/o earth blade	6 Nos	1.121	Each	6.726	
3	110 kV SF6 Breaker	4 No	5.974	Each	23.896	
4	110 kV CTs(Single Phase) with JB	12 Nos	1.481	Each	17.767	
5	110 kV PTs(Single Phase) with JB	3 Nos	1.045	Each	3.135	
6	110 kV LAS (Single Phase)	6 Nos	0.268	Each	1.610	
7	33 kV AB Switch	12 Nos	0.214	Each	2.570	
8	33 kV VCB (2 LV Breaker) outdoor	2 Nos	2.155	Each	4.309	
9	33 kV VCB (4 feeder)	4 Nos	2.155	Each	8.619	
10	33 kV VCB (Bus coupler)	1 No	2.155	Each	2.155	
11	33 kV CTs(1200-600-300/1A)	18 Nos	0.232	Each	4.171	
12	33 KV PTs(outdoor)	3 Nos	0.211	Each	0.634	
13	33 kV LAS - Stn type	6 Nos	0.038	Each	0.226	
14	33 kV LAS - Disn. Type	12 Nos	0.006	Each	0.073	
15	16 MVA, 110/33-11 kV Power Transformer with OLTC	2 Nos	104.103	Each	208.205	
16	Earthing and Painting		9.900	LS	9.900	
17	Outdoor illumination		4.400	LS	4.400	
18	110V DC indoor C&R panel for GC breaker	2 Nos	0.427	Each	0.854	
19	110V DC indoor C&R panel for LV breaker	2 Nos	0.826	Each	1.653	
20	110V DC indoor C & R (2 feeder) panel	2 Nos	0.644	Each	1.289	
21	110V DC Annunciator Panel	1 No	0.788	Each	0.788	
22	Control cable		5.000	LS	5.000	
23	110 V DC, 300 AH Battery set with	2 Set	4.641	Set	9.282	
24	110 V , 60A charger	2 set	1.180	Set	2.360	
25	Fire Fighting equipments		2.000	LS	2.000	
26	110 V D.C Distribution Panel	1 set	0.800	Set	0.800	
27	A.C Panel	1 set	0.695	Set	0.695	
28	100 KVA, 33 kV /433 V Distn.Tr	1 No	3.830	Each	3.830	
29	P&T Phone	1 No	0.100	Each	0.100	

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

Sl.No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs	Total in Lakhs
30	T&P materials			LS	1.000	
31	T&P furnitures			LS	1.000	
32	Scientific Instruments			LS	2.000	
33	Sub total				333.854	
34	Contingencies @ 1%				3.339	
35	Cost of materials				337.192	
36	Labour & Transport @ 15%				50.579	
37	Sub-Total for material and labour				387.771	
38	Establishment and supervision charges @ 15%				58.166	
III	Total				445.937	
39	110 KV Structure	1 set	65.325	Each	65.325	
40	33 KV Structure	1 set	10.738	Each	10.738	
IV	Total (Sl.no.39+40+III)				522.000	522.000
	Total for both electrical and civil works Gross & Nett (I+IV)					699.91

**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
A	CIVIL WORKS					
1	Land cost				As applicable	
2	Control room including electrification				LS	332.68
3	Climatisation				LS	16.64
4	Generator room and burnt oil sump				LS	8.33
5	Cable duct				LS	8.33
6	Station yard filling and levelling				LS	8.33
7	Compoud Wall and fencing				LS	16.64
8	Lead road formation				LS	8.33
9	Water supply and drainage system				LS	4.99
	Total for civil works					404.27
B	ELECTRICAL WORKS					
	110 KV GIS SWITCH GEAR ERECTION					
	110 KV SF6 Indoor GIS with 3 feeders, 2 transformers and 1 no. disconnecter switch with following components					
1	110 KV Indoor GIS line bay with all equipments.	3	Nos	76.7	E	230.2
2	110 KV Indoor GIS transformer bay with all equipments.	2	Nos	70.1	E	140.2
3	110 KV Indoor Bus PT	2	Nos	8.14	E	16.3
4	Off load Disconnecter Switch	1	Nos	19.8	E	19.8
5	busbar Earth switch	2	Nos	4.36	E	8.7
6	Earthing arrangements				LS	20.0
C	STATION AUXILIARIES					
1	110 V, 300 AH Battery set with stand	2	Nos	4.64	E	9.282
2	110 V, DC, 60 A battery charger	3	Nos	1.18	E	3.540
3	250 KVA, 11 KV/433 V Distribution Transformer (energy efficient)	1	No.	4.659	E	4.659

**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
4	Control & Relay panel				LS	35.000
5	110 V, DC panel	2	No	0.80	E	1.600
6	AC panel	1	No	0.70	E	0.695
7	33 KV VCB Indoor (LV-2)	2	Nos.	6.74	E	13.476
8	33 KV VCB Indoor for feeder	6	Nos.	6.23	E	37.368
9	33 KV VCB Indoor (Bus coupler)	1	No.	7.84	E	7.835
10	Control cable				LS	1.58
11	Fire fighting equipment				LS	1.00
12	VHF communication				LS	2.40
13	SCADA and Substation automation system				LS	40.00
14	P &T and CC Phone				LS	0.02
15	Scientific Instruments				LS	1.25
16	T & P and Furniture				LS	1.00
17	Earthing, painting & Yard lighting				LS	3.638
18	110 KV, 1 x 630 sq.mm XLPE cable with accessories	0.3	Km	70.00	Km	20.999
19	110 KV cable terminations outdoor GIS	6	nos	3.42	E	20.548
20	110 KV cable terminations indoor GIS	15	nos	3.05	E	45.807
21	33 KV, 1 x 630 sq.mm. XLPE cable with termination kit				LS	2.50
22	EOT Crane	1	No	16.268		16.268
23	Illumination and ventilation				LS	4.000
24	Sub total					709.64
D	Total cost of materials (B+C)					709.64
1	Contingencies @ 1% for D					7.10
E	Sub total					716.74
3	Labour and transport charges @ 15 % for E					107.51
F	Sub total					824.25

**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
G	110 KV POWER TRANSFORMERS ERECTION					
1	25 MVA, 110/33 KV Pr Tr with OLTC	2	Nos	124.89	E	249.79
2	Plinth, 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
H	Sub total for G					258.80
I	Total cost of materials and equipments (F+H)					1083.05
	Establishment and Supervision Charges @15% for I					162.46
J	Total					1245.50
K	Total for both electrical and civil works Gross & Nett (A+J)					1649.77

**DETAILED ESTIMATE FOR ESTABLISHMENT OF 230/110 KV SS WITH 2x110 KV
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
I	CIVIL WORKS				
1	Land cost			As applicable	
2	Control room building with internal electrification, bore well with septic tank			LS	306.060
3	Diesel Gen set room			LS	9.560
4	Compound wall			LS	114.770
5	Plinths for Breaker and Transformer, RCC retaining wall, Cable duct, filling the yard with gravel and allied civil works.			LS	802.780
6	Road ,Drain and sump			LS	123.480
7	Filling the yard with crusher dust (100 mm depth) and 20 mm HBG metal (200 mm depth)			LS	37.170
	Total (inclusive of all charges)				1393.820
II	ELECTRICAL WORKS				
1	230 kV SF6 Breakers 50 KA	5 Nos	12.572	E	62.861
2	230 kV Isolator 2000 A with earth	2 Nos	2.091	E	4.181
3	230 kV Isolator 2000 A w/o earth	20 Nos	1.649	E	32.988
4	230 kV PT (single phase) with Jn Box	6 Nos	2.640	E	15.839
5	230 kV CT(single phase) with Jn Box	15 Nos	2.658	E	39.866
6	230 kV Lightning Arresters	6 Nos	0.428	E	2.568
7	110 kV SF6 Circuit Breakers (6+2+1)	9 Nos	5.974	E	53.768
8	110 kV Isolator 2000 A with earth	6 Nos	1.404	E	8.421
9	110 kV Isolator 2000 A w/o earth	12 Nos	1.121	E	13.452
10	110 kV CT(single phase) with Jn Box	27 Nos	1.481	E	39.976
11	110 KV PT with Jn Box	6 Nos	1.045	E	6.271
12	110 kV Lightning Arresters	18 Nos	0.268	E	4.829
13	220 V, 300 AH Battery sets with stand	2 Set	9.224	Set	18.449
14	220V, 60 A chargers	3 Set	1.510	Set	4.531
15	100 MVA,230/110 kV Auto Transformer with OLTC	2 Nos	438.421	E	876.842
16	Control & Relay Panel				
i	Relay Panel for 230/110 kV Tr	2 Nos.	5.607	E	11.214
ii	Relay Panel for 230 kV feeders with U/F Relay	2 Nos.	7.350	E	14.700
iii	230 kV bus bar protection relay panel	1 No.	19.195	E	19.195
iv	230 kV bus coupler C & R panel	1 No.	2.006	E	2.006
v	110 kV feeder relay panel	6 Nos.	4.153	E	24.915
vi	110 kV bus coupler C & R panel	1 No	3.307	E	3.307

**DETAILED ESTIMATE FOR ESTABLISHMENT OF 230/110 KV SS WITH 2x10
230/110 kV AUTO TRANSFORMERS, 2 NOS. 230 KV FEEDERS AND 6 NOS. 110 KV**

SL NO	DESCRIPTION	QTY		RATE RS IN LAKHS	PER	AMOUNT RS IN LAKHS
vii	110 kV busbar protection panel	1	No	19.84	E	19.843
viii	Marshalling Box	14	Nos	0.300	E	4.200
x	Synchronising Panel	1	set	1.822	set	1.822
xi	AC panel	1	set	1.062	set	1.062
xii	220 V DC panel	1	set	0.800	set	0.800
17	Substation Automation System	1	No	202.909	E	202.909
18	Sub Total					1490.814
19	Accessories at 3% on item No.18					44.72
20	Control cables of assorted size				LS	15.00
21	Auxiliary panel & Interconnecting cables				LS	10.00
22	230 kV structure	1	No	230.091	E	230.091
23	110 kV structure	2	Nos	65.325	E	130.650
24	Earthing and Paintining			84.000	LS	84.000
25	Outdoor illumination			9.450	LS	9.450
26	250 kVA, 11 kV/433 V Distribution transformer (energy efficient)	2	Nos	4.659	E	9.317
27	DG set 100 kVA with accessories including AMF panel	1	No	6.833	E	6.833
28	Fire fighting equipments				LS	5.000
29	Scientific instruments				LS	2.500
30	P&T Phone				LS	0.200
31	Cost of materials					2038.579
32	Contingencies @ 1%					20.386
33	Sub total					2058.964
34	Labour and transport charges @ 15 %					308.845
35	Cost of materials & labour					2367.809
36	Estt. & supervision charges @ 15%					355.171
37	Subtotal					2722.980
III	Provision of PLCC equipment					
1	Digital Protection Coupler	6	no	2.50	E	15.01
2	EPAX -for PLCC system	1	No	8.37	E	8.37
3	48 V / 600 AH Battery System	2	Nos	2.426	No	4.851
4	48 V/120 A Battery Chargers	3	Nos	2.849	No	8.547
5	Optic line terminal equipments (OLTES)	2	Nos	17.297	No	34.59
6	Multiplexers	1	No	6.60	E	6.60
7	Multiplexers with cross connectors	1	No	21.83	E	21.83
8	Commissioning of SAS	14	bays	0.150	bay	2.100
9	Subtotal					101.901
IV	Total for both electrical and civil works	Gross & Nett (I+II+III)				

**00 MVA,
CV FEEDERS**

**TOTAL RS
IN LAKHS**

1393.820

**00 MVA,
CV FEEDERS**

**TOTAL RS
IN LAKHS**

2722.980

101.901

4218.701

**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
A Civil Works					
1	Land Cost	As applicable			
2	Control Room			LS	332.68
3	Climatisation			LS	49.91
4	Generator room and burnt oil sump			LS	26.11
5	RCC cable ducts			LS	74.87
6	Filling and Levelling of site			LS	24.96
7	Compound wall/Fencing			LS	49.91
8	Road formation with block topping			LS	24.96
9	Water supply and Drainage system			LS	12.49
	Sub total				595.89
Electrical Works					
B 230 KV GIS Switch Gear Erection					
1	230 KV line bay with all equipments with double bus arrangement	3 Nos	186.84	E	560.52
2	230 KV transformer bay with all equipments with double bus arrangement	2 Nos	155.13	E	310.26
3	230 KV bus bar PT (three phase)	6 nos.	62.20	E	373.21
4	Bus bar Earthing switch	2 No	8.98	E	17.96
5	Earthing arrangements			LS	20.00
6	Plinth arrangements			LS	25.00
	Subtotal				1306.95
C Auto Transformer Erection					
1	100 MVA, 230/110 KV auto transformer with OLTC	2 Nos	438.42	E	876.842
2	Plinth for 230/110 KV auto transformer	2 Nos	4.400	E	8.800
3	Earthing	2 loc	0.550	loc	1.100
5	230 kV, 1x1200 sq.mm XLPE cable	0.6 Kms	95.420	Km	57.252
6	230 KV GIS terminations	6 Nos	10.870	E	65.222
7	230 KV out door terminations	6 Nos	10.630	E	63.780
8	230 KV out door terminations structure	6 Nos	1.097	E	6.582
9	230 KV Single phase link box with CCPU	6 Nos	0.414	E	2.482
10	230 KV Single phase link box without CCPU	6 Nos	0.286	E	1.716
11	Sheath bonding cable -240 sq.mm	0.5 Km	25.606	Km	12.803
12	Sheath link box	2 Nos	1.332	E	2.664
13	110 KV, 1x630 Sq.mm, XLPE cable between LV of auto tr and 110 KV GIS breaker	0.6 Kms	69.998	Km	41.999
14	110 KV GIS terminations	6 Nos	8.042	E	48.252
15	110 KV out door terminations	6 Nos	1.975	E	11.848
16	110 KV out door terminations structure	6 Nos	0.252	E	1.511
17	110 KV Single phase link box with CCPU	6 Nos	0.358	E	2.150

**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
18	110 KV Single phase link box without CCPU	6	Nos	0.258	E	1.546
Subtotal						1206.550
D	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)	2	No	8.14	E	16.28
3	110 KV off load disconnecter switch	1	No	14.01	E	14.01
4	Earthing switch	2	No	4.14	E	8.28
5	Earthing arrangements				LS	15.00
6	Plinth arrangements				LS	15.00
Sub total						668.57
E	Station Auxiliaries					
1	230 KV feeder Relay panel	3	Nos	6.039	E	18.12
2	Relay panel for 230/110 KV auto Tr.	2	Nos	5.607	E	11.21
3	230 KV Bus bar protection relay panel	1	No	19.195	E	19.19
4	Relay panel for 110 KV feeders	5	Nos	4.208	E	21.04
5	110 KV Bus bar protection relay panel	1	No	19.84	E	19.84
6	AC Panel	1	No	1.062	E	1.06
7	DC Panel	1	No	0.800	E	0.80
8	Synchronising panel	1	No.	1.82	E	1.82
9	Substation automation system	1	Set	96.84	E	96.84
10	Earthing, Painting and Station yard lighting				LS	13.979
11	DG set 100 kVA with accessories including AMF panel	1	No.	6.833	E	6.83
12	220 V, 300 AH Battery set with stand	2	3	9.22	E	18.45
13	220 V DC, 60 A battery charger	3	Nos	1.51	E	4.53
14	Control cables of assorted size with tray arrangement					20.00
15	Fire fighting equipment				LS	4.00
16	P&T and CC Phone				LS	0.25
17	Scientific Instruments				LS	2.00
18	T&P and Furniture				LS	2.00
19	EOT crane arrangements				LS	15.00
20	Cable testing equipments & accessories				LS	100.00
21	Illumination and ventilation				LS	7.00
Subtotal						383.97
F	Communication Equipments					
1	OLTes	1	Nos	17.297	No	17.30
2	Multiplexers with cross connectors	1	Nos	21.828	E	21.83
3	Digital Protection coupler	3	No	2.501	E	7.50
4	48 V / 250 AH battery with stand	1	No	1.326	No	1.326
5	48 V/ 40 A battery charger	2	Nos	0.566	No	1.133

**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.N o.	DESCRIPTION	QUANTITY		RATE	PER	AMOUNT
6	EPAX -for PLCC system	1	No	8.37	E	8.372
7	OPGW cable (24 fibre) DWSM cable and accessories	1	set	2.846	E	2.846
8	Sub total					60.30
G	Total for equipments (B+C+D+E+F)					3626.349
	Contigencies @ 1% for G					36.263
H	Sub Total					3662.612
	Labour and Transport @15% for H					549.392
I	Total cost of Materials, Labour & Transport					4212.004
	Establishment and Supervision Charges @15% for I					631.801
J	Total					4843.805
	Total for both electrical and civil works Gross & Nett (A+J)					5439.695

**DETAILED ESTIMATE FOR ESTABLISHMENT OF 400/230-110KV SUB-STATION,
2 NOS. 315 MVA 400/230 KV AUTO TRANSFORMER, 2 NOS. 200 MVA 400/110 KV AUTO
TRANSFORMER, 4 NOS. 400 KV FEEDERS, 6 NOS. 230 KV FEEDERS, 4 NOS. 110 KV
FEEDERS**

SL NO	DESCRIPTION	QUANTITY		RATE in Lakhs	PER	AMOUNT in Lakhs
I	<u>CIVIL WORKS</u>					
1	Cost of land					As applicable
2	Control room Building,Internal electrification, water supply arrangements				LS	419.46
3	Gravel filling ,metal spreading and yard leveling				LS	591.61
4	Approach Road				LS	352.30
5	Cable duct and Retaining wall				LS	691.31
6	Compound wall				LS	244.62
7	Structure Foundation ,Plinths ,supply of towers & Foundation for Towers in yard and allied civil works				LS	3105.58
	SUB-TOTAL					5404.88
II	<u>ELECTRICAL WORKS</u>					
A	<u>EQUIPMENTS</u>					
8	500KVA/11KV/433V Distribution Transformer (energy efficient)	2	set	7.900	set	15.800
9	315 MVA, 400/230KV Auto Transformer with OLTC	2	no	947.53	no	1895.066
10	200 MVA, 400/110KV Inter connecting Transformer with OLTC	2	Set	910.03	Set	1820.055
11	420KV,3150A, 63KA 3 phase outdoor SF6 Breaker with pre insertion resistor all accessories	6	nos	43.762	E	262.574
12	420KV,3150A, 63KA SF6 Breaker with out pre insertion resistor all accessories	6	nos	40.704	E	244.223
13	420KV, 3000A, 63KA - 5 Core Single Phase Current Transformers with support structure, accessories and junction box	72	nos	7.193	E	517.889
14	420KV single phase Capacitive Voltage Transformer with suppoet structure	18	nos	3.651	E	65.725
15	400KV ,10KA,Station Type LAS	24	nos	1.179	E	28.286
16	400KV,3150A, 63KA Horizontal Center Break Disconnecter with Single Earth blades.	24	set	8.21	set	197.143
17	400KV,3150A, 63KA Horizontal Center Break Disconnecter with double Earth blades.	8	set	9.44	set	75.558
18	400KV Bus Earth switch (single phase)	6	nos	3.667	E	22.002
19	400KV Busbars, All Types of Power connectors, Tension Fitting Clamps, Insulators and hardwares	1	Lot	142.0	Lot	142.000
20	230KV, 2000A, 50KA SF6 Breaker	9	nos	12.572	E	113.150
21	230KV,2000A,40KA - 5 Core Single Phase Current Transformers wiyh TC & JB (Ratio 2000-1200- 800-400 / 1A)	27	nos	2.696	E	72.800
22	230KV outdoor Potential Transformers with TC & JB	6	nos	2.640	E	15.839

SL NO	DESCRIPTION	QUANTITY		RATE in Lakhs	PER	AMOUNT in Lakhs
23	230 KV- 10 KA Station Type LAS	24	nos	0.428	E	10.272
24	230 KV Capacitive Voltage Transformer with Structures	18	nos	1.9915	E	35.847
25	230 KV - 2000 A, 40 KA Isolator with Earthblades	6	Set	2.0905	set	12.543
26	230 KV - 2000 A, 40KA Isolator without Earthblades	36	set	1.6494	set	59.378
27	230KV All Types of Power Connectors, Tension Fitting Clamps, Insulators and for 230KV Yard	1	Lot	37.0	Lot	37.000
28	110KV,2000A,40KA SF6 Breakers with all accessories	7	nos	5.974	E	41.819
29	110KV,1200A,40KA - 1 Phase CTs (Ratio - 1200-600-300/1A) with TC & JB	21	nos	1.481	E	31.093
30	110KV,200VA Single Phase Potential Transformers with TC & JB	6	nos	1.045	E	6.271
31	110 KV- 10 KA Station Type LAS	18	nos	0.268	E	4.829
32	110 KV Capacitive Voltage Transformer	4	nos	1.8644	E	7.458
33	110 KV - 2000A,40KA Isolator with Earthblades	4	nos	1.404	E	5.614
34	110 KV - 2000A,40KA Isolator without Earthblades	28	nos	1.121	E	31.388
35	110KV All Types of Power Connectors, Tension Fitting Clamps, Insulators and hardwares	1	Lot	16	Lot	16.000
36	ACSR Moose Conductor ,Aluminium Tubes and GI wire for 400KV, 230KV and 110KV Yards	1	Lot	100	Lot	100.000
37	220V, 400 AH Battery Set with Stand	2	Sets	12.45	set	24.905
38	220V, 300 AH Battery Set with Stand	2	Sets	9.22	set	18.449
39	220V 80 Amps Battery charger with potential free contacts for all indications for SAS interface.	3	nos	5.02	E	15.070
40	220VDC, 60 Amps Battery charger with potential free contacts for all indications for SAS interface.	3	nos	1.510	E	4.531
41	Control Cables, LT Power Cables and Cable Trays			LS		530.000
42	Earthing and Painting					231.000
43	Outdoor Illumination					21.000
44	100KVA DG Set with accessories	1	set	6.833	set	6.8331
45	Sub-Total					6739.411
	III CONTROL AND RELAY PANEL					
46	DC Distribution Panel for 400kv SS	4	nos	1.792	E	7.168
47	AC Panel for 400KV SS	3	nos	3.226	E	9.677
48	Relay Panel for 400KV IC Transformer	4	nos	8.564	E	34.257
49	Relay Panel for 400KV Feeders	4	nos	17.766	E	71.064
50	Relay Panel for 400KV ICT Tie Bkr	2	nos	3.554	E	7.108
51	Relay Panel for 400KV Feeder Tie Bkr	2	nos	3.554	E	7.108
52	400KV Busbar Protection Panel	1	nos	17.9	E	17.868
53	Relay Panel for 230KV Feeders with UF	1	nos	8.68	E	8.682
54	Relay Panel for 230KV Feeders w/o UF	5	nos	8.58	E	42.911

SL NO	DESCRIPTION	QUANTITY		RATE in Lakhs	PER	AMOUNT in Lakhs
55	Relay Panel for 230KV Bus Coupler	1	no	2.56	E	2.556
56	230KV Busbar Protection Relay Panel	1	no	14.74	E	14.736
57	Relay Panel for 110KV Feeders w/o UF	3	nos	4.175	E	12.524
58	Relay Panel for 110KV Feeders with UF	1	nos	4.258	E	4.258
59	Relay Panel for 110KV Bus coupler	1	nos	3.624	E	3.624
60	110KV Busbar Protection Panel	1	nos	14.144	E	14.144
61	Marshalling Box	28	nos	0.32	E	8.820
62	Synchoscope with Trolley mounted	2	nos	0.500	E	1.000
63	Sub-Station Automation System	1	lot	202.90	E	202.900
64	Sub-Total					470.405
IV	PLCC EQUIPMENTS					
65	Optical Line Terminal Equipments	1	no	17.297	E	17.297
66	Multiplexers	3	no	3	E	9.000
67	Multiplexers with cross connectors	1	no	21.828	E	21.828
68	Digital Protection Coupler	6	nos	2.502	E	15.009
69	EPAX for PLCC System	1	no	8.372	E	8.372
70	48V,600AH Battery Set with Stand	2	sets	2.426	set	4.851
71	48V/120A Battery Chargers	3	nos	2.849	E	8.547
72	230KV , 0.5mH , 1250A Wave Trap with elevating Structure and Solid Core insulators	12	nos	2.54	E	30.480
73	230KV Coupling Devices	6	nos	0.697	E	4.180
74	230 KV Carrier set (Programmable single band carrier set -40 watts output)	6	nos	2.899	E	17.396
75	Co-axial Cable for 230 KV PLCC link	1	Km	1.073	E	1.073
76	110KV , 0.5mH , 630A Wave Trap with elevating Structure and Solid Core Insulators	4	nos	2.136	E	8.545
77	110KV Coupling Devices	4	nos	0.697	E	2.786
78	110 KV Carrier set(10 watts output)	4	nos	2.899	E	11.598
79	Co-axial Cable for 110 KV PLCC link	1	Km	1.073	E	1.073
80	Sub-Total					162.034
81	Cost of materials and equipments (II+III+IV)					7371.851
82	Accessories at @ 3% for Sl.no.81					221.156
83	Sub-Total					7593.006
84	Contingencies @ 1% for Sl.no.83					75.930
85	Sub-Total					7668.936
86	Labour and Transport @ 15% for Sl.no.85					1150.340
87	Cost of Material and Labour					8819.277
88	Estt & Supervision Charges @ 15% for Sl.no 87					1322.892
V	SUB-TOTAL					10142.168
VI	OTHERS					
89	Fire Fighting Equipments			LS		8.000
90	Scientific Instruments like Megger 5KV (Battery operated), Multimeter etc.,			LS		2.000
91	Circuit Breaker analysing kit (multi break)	1	no	12.000	E	12.000
92	CT/PT Analyser kit	1	no	15.000	E	15.000
93	Primary Injection Kit (2000 Amps))	1	no	15.000	E	15.000
94	Transformer winding resistance test Kit	1	no	6.642	E	6.642
95	T & P Furnitures				LS	2.000

SL NO	DESCRIPTION	QUANTITY		RATE in Lakhs	PER	AMOUNT in Lakhs
96	PC & Software	1	no	1.000	E	1.000
97	Optical Power Meter	1	no	3.556	E	3.556
98	Optical Source	1	no	2.850	E	2.850
99	Optical Splicing Machine and optical time domain reflectometer	1	no	10.719	E	10.719
100	Commissioning of SAS	33	bays	0.2	E	6.600
101	SUB-TOTAL for VI					85.366
	VII STRUCTURES					
102	400KV Structures	1	Loc	487.54	Loc	487.542
103	230KV Structures	1	Loc	230.09	Loc	230.091
104	110KV Structures	1	Loc	65.325	Loc	65.325
105	SUB-TOTAL for VII					782.958
106	Total for both electrical and civil works (G&N) (I+V+VI+VII)					16415.37

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 nutsetc.,			
a	114.72	MT	a. MS 100%	68200.00	MT	7823904.00
b	7.58	MT	b. Ordinary Bolts & nuts	90000.00	MT	682200.00
2	600	No.	90 KN Disc Insulators	372.00	No.	223200.00
3	1029	No.	120 KN Disc Insulators	509.86	No.	524645.94
			Conductor & Earth wire accessories			
4	60	Set	Single Suspension fittings for ACSR Panther	1442.07	Set	86524.20
5	12	Set	Sus.fittings for Jumper	1442.07	Set	17304.84
6	120	Set	Single Tension fittings for ACSR Panther	1761.25	Set	211350.00
7	6	Set	Double Tension Fittings for Panther	2617.98	Set	15707.88
8	120	Set	Vibration Damper for Panther	691.90	Set	83028.00
9	15	Set	Mid span comp.joint for ACSR Panther	446.25	Set	6693.75
10	10	Set	Repair sleeve for ACSR Panther	357.00	Set	3570.00
11	60	Set	PA rod for Panther	907.00	Set	54420.00
12	20	Set	Suspension clamp for Earth wire 7/3.55mm	463.25	No.	9265.00
13	40	Set	Tension Clamp for Earth wire 7/3.55mm	458.15	Set	18326.00
14	5	Set	Mid span comp.joint for GS Earth wire 7/3.55mm 0.3 No. per 1 KM RL	192.10	Set	960.50
15	60	Set	Alu.Earthbond	306.49	No.	18389.40
16	30.3	KM	ACSR PANTHER conductors 1.0% sag	130952.19	KM	3967851.36
17	10.15	KM	GI EARTH WIRE 7/3.55mm 1.5% sag	49344.00	KM	500841.60
			Earthing materials			
18	40	No.	Pipe type earthing	2410.00	No.	96400.00
19	2	No.	Counter poise earthing (120m length)	8471.67	No.	16943.34
			Tower Accessories			
20	40	No.	Number plate	299.00	No.	11960.00
21	40	No.	Danger Board	362.00	No.	14480.00
22	20	No.	Phase plate(Set of three)	319.00	No.	6380.00
23	20	No.	Circuit plate	306.00	No.	6120.00
24			TOTAL COST OF MATERIALS			14400465.81
			TOWER FOUNDATIONS			
25	20	No.	PA type tower 0° to 2° Suspension tower	47030.36	No.	940607.20
26	8	No.	PB type tower 2° to 30° Medium angle tower	65282.00	No.	522256.00
27	12	No.	PC type tower 30° to 60° High angle & Dead end tower	108632.00	No.	1303584.00
28			Tower protection works			500000.00
29			TOTAL COST OF FOUNDATION WORKS			3266447.20
30			Erection charges(10% on Item 24)			1440046.58

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.
31			Total amount (item 24+29+30)			19106959.59
32			GST @ 18% on total amount			3439252.73
33			Transportation & Insurance charges (5% on Item 24)			720023.29
34			Contingencies (1% on item 24, 29 & 30)			191069.60
35			Total Cost of materials & Foundation and Erection charges but excluding GST			20018052.47
36			Establishment & Supervision Charges at 15.0% on item 35			3002707.87
37			Total Cost of materials & Foundation and Erection charges including GST			23457305.20
38			TOTAL COST (Item 36 & 37)	10	KM	26460013.07
39			ESI at 4.75 % on labour portion			130464.71
40			Land compensation			6000000.00
41	10	KM	Tree/Crop compensation	1000000	KM	10000000.00
42			TOTAL COST PER	10	KM	42590477.78
43			TOTAL COST PER 1 KM			4259047.78
			(Rounding to nearest 1000)	SAY		4260000
			TOTAL COST PER 1 KM IN LAKHS			42.60

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%	68200.00	MT	16705590.00
b	15.17	MT	c) Ordinary Bolts & nuts	90000.00	MT	1365408.00
2	686	No.	90 KN Disc Insulators	372.00	No.	255192.00
3	1029	No.	120 KN Disc Insulators	509.86	No.	524645.94
			Conductor & Earth wire accessories			
4	60	Set	Single Suspension fittings for ACSR Panther	1442.07	Set	86524.20
5	36	Set	Suspension fitting for jumper	1442.07	Set	51914.52
6	120	Set	Single Tension fittings for ACSR Panther	1761.25	Set	211350.00
7	6	Set	Double Tension Fittings for Panther	2617.98	Set	15707.88
8	120	Set	Vibration Damper for Panther	691.90	Set	83028.00
9	15	Set	Mid span comp.joint for ACSR Panther	446.25	Set	6693.75
10	10	Set	Repair sleeve for ACSR Panther	357.00	Set	3570.00
11	60	Set	PA rod for Panther	907.00	Set	54420.00
12	20	Set	Suspension clamp for Earth wire 7/3.55mm	463.25	No.	9265.00
13	40	Set	Tension Clamp for Earth wire 7/3.55mm	458.15	Set	18326.00
14	5	Set	Mid span comp.joint for GS Earth wire 7/3.55mm 0.3 No. per 1 KM RL	192.10	Set	960.50
15	60	Set	Aluminium earth bond	306.49	No.	18389.40
16	30.3	KM	ACSR PANTHER conductors 1.0% sag	130952.19	KM	3967851.36
17	10.15	KM	GI EARTH WIRE 7/3.55mm 1.5% sag	49344.00	KM	500841.60
			Earthing materials			
18	40	No.	Pipe type earthing	2410.00	No.	96400.00
19	2	No.	Counter poise earthing (120m length)	8471.67	No.	16943.34
			Tower Accessories			
20	40	No.	Number plate	299.00	No.	11960.00
21	40	No.	Danger Board	362.00	No.	14480.00
22	20	No.	Phase plate(Set of three)	319.00	No.	6380.00
23	20	No.	Circuit plate	306.00	No.	6120.00
24			TOTAL COST OF MATERIALS			24031961.49
			TOWER FOUNDATIONS			
25	20	No.	GC type tower	70249.48	No.	1404989.60
			0° to 2° Suspension tower			
26	8	No.	HC type tower	170217.50	No.	1361740.00

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.
			2° to 30° Medium angle tower			
27	12	No.	KC type tower	221084.50	No.	2653014.00
			30° to 60° High angle & Dead end tower			
28			Tower protection works			500000.00
29			COST OF FOUNDATION			5919743.60
30			Erection charges(10% on item 24)			2403196.15
31			Total amount (item 24+29+30)			32354901.24
32			GST @ 18% on total amount			5823882.22
33			Transportation & Insurance charges (5% on Item 24)			1201598.07
34			Contingencies (1% on materials, foundation & erection charges)			323549.01
35			Total Cost of materials & Foundation and Erection charges but excluding GST			33880048.32
36			Establishment & Supervision Charges at 15.0% on item 35			5082007.25
37			Total Cost of materials & Foundation and Erection charges including GST			39703930.54
38			TOTAL COST (Item 36+37)			44785937.79
39			ESI at 4.75 % on labour portion			226626.95
40			Land compensation			6000000.00
41	10	KM	Tree/Crop compensation	1000000	KM	10000000.00
42			TOTAL COST PER		10 KM	61012564.74
43			TOTAL COST PER 1 KM			6101256.474
			(Rounding to nearest 1000)	SAY		6102000.00
			TOTAL COST PER 1 KM IN LAKHS			61.02

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%	68200.00	MT	16705590.00
b	15.47	MT	b) Ordinary Bolts & nuts	90000.00	MT	1392300.00
2	1111.00	No.	90 KN Disc Insulators	372.00	No.	413292.00
3	2057.00	No.	120 KN Disc Insulators	509.86	No.	1048782.02
			Conductor & Earth wire accessories			
4	120	Set	Single Suspension fittings for ACSR Panther	1442.07	Set	173048.40
5	36	Set	Sus.fittings for Jumper	1442.07	Set	51914.52
6	240	Set	Single Tension fittings for ACSR Panther	1761.25	Set	422700.00
7	12	Set	Double Tension Fittings for Panther	2617.98	Set	31415.76
8	240	Set	Vibration Damper for Panther	691.90	Set	166056.00
9	30	Set	Mid span comp.joint for ACSR Panther	446.25	Set	13387.50
10	10	Set	Repair sleeve for ACSR Panther	357.00	Set	3570.00
11	120	Set	PA Rod for Panther	907.00	Set	108840.00
12	20	Set	Suspension clamp for Earth wire 7/3.55mm	463.25	No.	9265.00
13	40	Set	Tension Clamp for Earth wire 7/3.55mm	458.15	Set	18326.00
14	5	Set	Mid span comp.joint for GS Earth wire 7/3.55mm 0.3 No. per 1 KM RL	192.10	Set	960.50
15	60	Set	Aluminium earth bond	306.49	No.	18389.40
16	60.6	KM	ACSR PANTHER conductors 1.0% sag	130952.19	KM	7935702.71
17	10.15	KM	GI EARTH WIRE 7/3.55mm 1.5% sag	49344.00	KM	500841.60
			Earthing materials			
18	40	No.	Pipe type earthing	2410.00	No.	96400.00
19	2	No.	Counter poise earthing (120m length)	8471.67	No.	16943.34
			Tower Accessories			
20	40	No.	Number plate	299.00	No.	11960.00
21	40	No.	Danger Board	362.00	No.	14480.00
22	40	No.	Phase plate(Set of three)	319.00	No.	12760.00
23	40	No.	Circuit plate	306.00	No.	12240.00
24			Total Cost of materials			29179164.75
			TOWER FOUNDATIONS			
25	20	No.	GC type tower	70249.48	No.	1404989.60
			0° to 2° Suspension tower			
26	8	No.	HC type tower	170217.50	No.	1361740.00
			2° to 30° Medium angle tower			

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.
27	12	No.	KC type tower 30° to 60° High angle & Dead end tower	221084.50	No.	2653014.00
28			Tower protection works			500000.00
29			Total Cost of Foundations			5919743.60
30			Erection charges(10% on item 24)			2917916.48
31			Total amount (item 24+29+30)			38016824.83
32			GST @ 18% on total amount			6843028.47
33			Transportation & Insurance charges (5% on Item 24)			1458958.24
34			Contingencies (1% on item 24, 29 & 30)			380168.25
35			Total Cost of Materials, Foundation and Erection charges but excluding GST			39855951.32
36			Establishment & Supervision Charges at 15.0% on item 35			5978393.00
37			Total Cost of materials, Foundation and Erection charges including GST			46698979.78
38			TOTAL COST (Item 36 & 37)	10	KM	52677372.78
39			ESI at 4.75 % on labour portion			251076.16
40			Land compensation			6000000.00
41	10	KM	Tree/Crop compensation	1000000.00	KM	10000000.00
42			TOTAL COST PER	10	KM	68928448.95
43			TOTAL COST PER 1 KM (Rounding to nearest 1000)			6892844.89
				SAY		6893000.00
			TOTAL COST /KM in LAKHS			68.93

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%	68200.00	MT	26383033.60
b	20.372	MT	c) Ordinary Bolts & nuts	90000.00	MT	1833480.00
2	1114	No.	90 KN Disc Insulators	372.00	No.	414408.00
3	2228	No.	120 KN Disc Insulators	509.86	No.	1135968.08
			Conductor & Earth wire accessories			
4	48	Set	Single Suspension fittings for ACSR Zebra	2029.50	Set	97416.00
5	144	Set	Single Tension fittings for ACSR Zebra	2277.71	Set	327990.24
6	6	Set	Double Tension Fittings for Zebra	4212.21	Set	25273.26
7	144	Set	Vibration Damper for Zebra	917.00	Set	132048.00
8	30	Set	Mid span comp.joint for ACSR ZEBRA	803.00	Set	24090.00
9	30	Set	Repair sleeve for ACSR ZEBRA	357.00	No.	10710.00
10	54	Set	PA rod for ZEBRA	1876.00	Set	101304.00
11	18	Set	Suspension clamp for Earth wire 7/3.55mm	463.00	Set	8334.00
12	36	Set	Tension Clamp for Earth wire 7/3.55mm	458.00	Set	16488.00
13	6.00	Set	Mid span comp.joint for GS Earth wire 7/3.55mm	192.10	Set	1152.60
14	56	Set	Alu.earthbond	306.49	No.	17163.44
15	30.3	KM	ACSR Zebra conductors 1.0% sag	240006.00	KM	7272181.80
16	10.15	KM	GI EARTH WIRE 7/3.55mm 1.5% sag	49344.00	KM	500841.60
			Earthing materials			
17	35	No.	Pipe type earthing	2410.00	No.	84350.00
18	2	No.	Counter poise earthing (120m length)	8471.67	No.	16943.34
			Tower Accessories			
19	37	No.	Number plate	299.00	No.	11063.00
20	37	No.	Danger Board	362.00	No.	13394.00
21	37	No.	Phase plate(Set of three)	319.00	No.	11803.00
22	37	No.	Circuit plate	306.00	No.	11322.00
23			Total COST ON Materials			38450757.96
			TOWER FOUNDATIONS			
24	18	No.	G type tower	178952.38	No.	3221142.75
			0° to 2° Suspension tower			

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.
25	10	No.	KS type tower	199031.00	No.	1990310.00
			2° to 30° Medium angle tower			
26	9	No.	LS type tower	435332.50	No.	3917992.50
			30° to 60° High angle & Dead end tower			
27			Tower protection works			500000.00
28			TOTAL FOUNDATION COST			9629445.25
29			Erection charges(10% on item 23) Rs.			3845075.80
30			Total amount (item 23+28+29)			51925279.01
31			GST @ 18 % on total amount			9346550.22
32			Transportation & Insurance charges (5% on Item 23)			1922537.90
33			Contingencies 1%			519252.79
34			Total Cost of materials, foundation & erection charges but excluding GST			54367069.69
35			Establishment & Supervision Charges at 15.0% on item 34			8155060.00
36			Total Cost of materials, foundation & erection charges including GST			63713619.92
37			TOTAL COST (Item 35+36)	10	KM	71868679.92
38			ESI at 4.75 % on labour portion			365600.56
39			Land compensation			9500000.00
40	10	KM	Tree/Crop compensation	1000000	KM	10000000.00
41			TOTAL COST PER	10	KM	91734280.48
42			TOTAL COST PER 1 KM			9173428.05
			(Rounding to nearest 1000)	SAY		9174000.00
			TOTAL COST PER 1 KM IN LAKHS			91.74

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%	68200.00	MT	26383170.00
b	20.78	MT	b. Ordinary Bolts & nuts	90000.00	MT	1870200.00
2	1751	No.	90 KN Disc Insulators	372.00	No.	651372.00
3	4284	No.	120 KN Disc Insulators	509.86	No.	2184240.24
			Conductor & Earth wire accessories			
4	96	Set	Single Suspension fittings for ACSR Zebra	2029.50	Set	194832.00
5	36	Set	Single Suspension fitting for Jumpering	2029.50	Set	73062.00
6	288	Set	Single Tension fittings for ACSR Zebra	2277.71	Set	655980.48
7	12	Set	Double Tension Fittings for Zebra	4212.21	Set	50546.52
8	288	Set	Vibration Damper for Zebra	917.00	Set	264096.00
9	30	Set	Mid span comp.joint for ACSR ZEBRA	803.00	Set	24090.00
10	15	Set	Repair sleeve for ACSR ZEBRA	357.00	No.	5355.00
11	96	Set	PA rod for ZEBRA	1876.00	No.	180096.00
12	16	Set	Suspension clamp for Earth wire 7/3.55mm	463.00	Set	7408.00
13	48	Set	Tension Clamp for Earth wire 7/3.55mm	458.00	Set	21984.00
14	6.00	Set	Mid span comp.joint for GS Earth wire 7/3.55mm 0.3 No. per 1 KM RL	192.10	Set	1152.60
15	64	Set	Al earth bond	196.35	No.	12566.40
16	60.6	KM	ACSR Zebra conductors 1.0% sag	240006.00	KM	14544363.60
17	10.15	KM	GI EARTH WIRE 7/3.55mm 1.50% sag	49344.00	KM	500841.60
			Earthing materials			
18	40	No.	Pipe type earthing	2410.00	No.	96400.00
19	2	No.	Counter poise earthing (120m length)	8471.67	No.	16943.34
			Tower Accessories			
20	40	No.	Number plate	299.00	No.	11960.00
21	40	No.	Danger Board	362.00	No.	14480.00
22	48	No.	Phase plate(Set of three)	319.00	No.	15312.00
23	48	No.	Circuit plate	306.00	No.	14688.00
24			TOTAL COST ON MATERIALS			47795139.78
			TOWER FOUNDATIONS			
25	16	No.	GR type tower	178952.38	No.	2863238.00
			0° to 2° Suspension tower			
26	12	No.	KSR type tower	199031.00	No.	2388372.00
			2° to 30° Medium angle tower			

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.
27	12	No.	LSR type tower	435332.50	No.	5223990.00
28			Tower protection works			500000.00
29			COST OF FOUNDATION WORKS			10975600.00
30			Erection charges(10% on item 25)			4779513.98
31			Total amount (item 24+29+30)			63550253.76
32			GST @ 18 % on total amount			11439045.68
33			Transportation & Insurance charges charges (5% on Item 24)			2389756.99
34			Contingencies 1%			635502.54
35			Total Cost of Materials, Foundation & Erection charges but excluding GST			66575513.28
36			Establishment & Supervision Charges at 15.0% on item 35			9986326.99
37			Total Cost of Materials, Foundation & Erection charges including GST			78014558.96
38			TOTAL COST (Item 36+37)	10	KM	88000885.95
39			ESI at 4.75 % on labour portion			435563.31
40			Land compensation			9500000.00
41	10	KM	Tree/Crop compensation	1000000.00	KM	10000000.00
42			TOTAL COST PER	10	KM	107936449.27
43			TOTAL COST PER 1 KM			10793644.93
			(Rounding to nearest 1000)	SAY		10794000.00
			Total Cost per KM in LAKHS			107.94

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	68200.00	MT	45685979.68
2	210.65		HT Tower parts	71400.00	MT	15040095.84
3	21.59	MT	Ordinary Bolts & nuts	90000.00	MT	1943100.00
4	1751	No.	90 KN Disc Insulators	372.00	No.	651372.00
5	4284	No.	120 KN Disc Insulators	509.86	No.	2184240.24
			Conductor & Earth wire accessories			
6	96	Set	Single Suspension Fittings for ACSR Zebra	2029.50	Set	194832.00
7	72	Set	Single suspension fittings for jumperig	2029.50	Set	146124.00
8	288	Set	Single Tension fittings for ACSR Zebra	2277.71	Set	655980.48
9	6	Set	Double tension fittings	4212.21	Set	25273.26
10	288	Set	Vibration Damper for ACSR Zebra	917.00	Set	264096.00
11	30	Set	Mid span comp. joint for Zebra	803.00	Set	24090.00
12	15	No.	Repair sleeve for Zebra	357.00	No.	5355.00
13	96	Set	PA rod for ZEBRA	1876.00	Set	180096.00
14	16	Set	Suspension clamp for Earth wire 7/3.55mm	463.00	Set	7408.00
15	48	Set	Tension Clamp for Earth wire 7/3.55mm	458.00	Set	21984.00
16	3	Set	Midspan compression joint for GS Earth wire 7/3.55mm	192.10	Set	576.30
17	64	No.	Flexible Al. Earth bond	306.49	No.	19615.36
18	60.6	KM	ACSR Zebra	240006.00	KM	14544363.60
19	10.15	KM	GI Earth wire 7/3.55mm	49344.00	KM	500841.60
			Earthing Materials			
20	40	No.	Pipe type earthing	2410.00	No.	96400.00
21	2	No.	Counter poise earthing (120m length)	8471.67	No.	16943.34
			Tower Accessories			
22	40	No.	Number plate	299.00	No.	11960.00
23	40	No.	Danger Board	362.00	No.	14480.00
24	48	No.	Phase plate(Set of three)	319.00	No.	15312.00
25	48	No.	Circuit plate	306.00	No.	14688.00
26	40	No.	Anti-climbing devices	10791.00	No.	431640.00
27			TOTAL COST OF MATERIALS			82696846.70
			TOWER FOUNDATIONS			
28	16	No.	MA type tower	405383.28	No.	6486132.48
			0° to 2° Suspension tower			

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.
29	12	No.	MC type tower	1086412.32	No.	13036947.84
			2° to 30° Medium angle tower			
30	12	No.	MD type tower	1294739.08	No.	15536868.96
			30° to 60° High angle & Dead end tower			
31			Tower protection works			5000000.00
32			TOTAL FOUNDATION COST			40059949.28
33			Erection charges 10% on item 27			8269684.67
34			Total amount (item 27+32+33)			131026480.65
35			GST @ 18 % on total amount			23584766.52
36			Transportation & Insurance charges (5% on Item 27)			4134842.34
37			Contingencies 1%			1310264.81
38			Total Cost of materials, foundation & erection charges but excluding GST			136471587.79
39			Establishment & Supervision Charges at 15.0% on item 38			20470738.17
40			Total Cost of materials, foundation & erection charges including GST			160056354.31
41			TOTAL COST (Item 39+40)	10	KM	180527092.48
42			ESI at 4.75 % on labour portion			1153949.06
43			Land compensation			9500000.00
44	10	KM	Tree/Crop compensation	1000000.00	KM	10000000.00
45			TOTAL COST PER	10	KM	201181041.54
46			TOTAL COST PER 1 KM			20118104.15
			(Rounding to nearest 1000)	SAY		20119000.00
			COST PER KM IN LAKHS			201.19

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	68200.00	MT	45685816.00
2	210.65		HT Tower parts	71400.00	MT	15040410.00
3	24.508	MT	Ordinary Bolts & nuts	90000.00	MT	2205720.00
4	4456	No.	90 KN Disc Insulators	372.00	No.	1657632.00
5	8568	No.	120 KN Disc Insulators	509.86	No.	4368480.48
			Conductor & Earth wire accessories			
6	192	Set	Single Suspension Fittings for ACSR Zebra	2029.50	Set	389664.00
7	72	Set	Single suspension fittings for jumperig	2029.50	Set	146124.00
8	576	Set	Single Tension fittings for ACSR Zebra	2277.71	Set	1311960.96
9	24	set	Double tension fittings	4212.21	Set	101093.04
10	576	Set	Vibration Damper for ACSR Zebra	917.00	Set	528192.00
11	60	Set	Mid span comp. joint for Zebra	803.00	Set	48180.00
12	30	No.	Repair sleeve for Zebra	357.00	No.	10710.00
13	192	Set	PA Rod for ZEBRA	1876.00	Set	360192.00
14	16	Set	Suspension clamp for Earth wire 7/3.55mm	463.00	Set	7408.00
15	48	Set	Tension Clamp for Earth wire 7/3.55mm	458.00	Set	21984.00
16	5	Set	Midspan compression joint for GS Earth wire 7/3.55mm	192.10	Set	960.50
17	64	No.	Flexible Al. Earth bond	306.49	No.	19615.36
18	121.2	KM	ACSR Zebra	240006.00	KM	29088727.20
19	10.15	KM	GI Earth wire 7/3.55mm	49344.00	KM	500841.60
			Earthing Materials			
20	40	No.	Pipe type earthing	2410.00	No.	96400.00
21	2	No.	Counter poise earthing (120m length)	8471.67	No.	16943.34
			Tower Accessories			
22	40	No.	Number plate	299.00	No.	11960.00
23	40	No.	Danger Board	362.00	No.	14480.00
24	96	No.	Phase plate(Set of three)	319.00	No.	30624.00
25	96	No.	Circuit plate	306.00	No.	29376.00
26	40	No.	Anti-climbing devices	10791.00	No.	431640.00
27			TOTAL COST OF MATERIALS			102125134.48
			TOWER FOUNDATIONS			
28	16	No.	MA type tower	405383.28	No.	6486132.48
			0° to 2° Suspension tower			
29	12	No.	MC type tower	1086412.32	No.	13036947.84
			2° to 30° Medium angle tower			
30	12	No.	MD type tower	1294739.08	No.	15536868.96
			30° to 60° High angle & Dead end tower			
31			Tower protection works			5000000.00
32			TOTAL FOUNDATION COST			40059949.28
33			Erection charges(10% on item 27)			10212513.45
34			Total amount (item 27+32+33)			152397597.21
35			GST @ 18 % on total amount			27431567.50

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.
36		Transportation & Insuranc charges charges (5% on Item 27)			5106256.72
37		Contingencies 1%			1523975.97
38		Total Cost of materials, foundation & erection charges but excluding GST			159027829.90
39		Establishment & Supervision Charges at 15.0% on item 38			23854174.00
40		Total Cost of materials, foundation & erection charges including GST			186459397.40
41		TOTAL COST (Item 39+40)	10	KM	210313571.40
42		ESI at 4.75 % on labour portion			1246233.43
43		Land compensation			9500000.00
44	10 KM	Tree/Crop compensation	1000000.00	KM	10000000.00
45		TOTAL COST PER	10	KM	231059804.83
46		TOTAL COST PER 1 KM			23105980.48
		(Rounding to nearest 1000)	SAY		23106000.00
		TOTAL COST PER KM IN LAKHS			231.06

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	71400	MT	24238158.00
	246.86 MT	b) MS	68200	MT	16835852.00
	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	509.86	No.	1579036.42
3	9988 No.	160 KN Disc Insulators	891	No.	8899308.00
		Conductor & Earth wire accessories			
4	78 Set	Single I suspension string for Twin ACSR Moose	18354.05	Set	1431615.90
5	54 Set	Single I suspension pilot string with counter weight	39037	Set	2107998.00
6	204 Set	Double Tension string	21269	Set	4338876.00
7	408 Set	Vibration Damper for Twin ACSR Moose	1317.5	Set	537540.00
8	1273 Set	Bundle spacer for Twin Moose	1413.55	Set	1799449.15
9	306 Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	849.15	Set	259839.90
10	60 Set	Midspan compression joint for Moose	1268.2	Set	76092.00
11	30 No.	Repair sleeve for Moose	403	No.	12090.00
12	13 Set	Suspension clamp for Earth wire 7/3.66mm	845	Set	10985.00
13	34 Set	Tension Clamp for Earth wire 7/3.66mm	845.06	Set	28732.04
14	5 Set	Midspan compression joint for GS Earth wire 7/3.66mm	352.75	Set	1763.75
15	68 No.	Vibration Damper for Earth wire 7/3.66mm	640.05	Set	43523.40
16	47 No.	Flexible copper bond for earthing	935	No.	43945.00
17	121.8 KM	ACSR Moose conductors 1.0% sag	309470	KM	37693446.00
18	10.1 KM	GS EARTH WIRE 7/3.66mm 1.50% sag	52650	KM	531765.00
19	10.5 KM	OFC ground wire with accessories	214783.34	KM	2255225.07
		Earthing Materials			
20	23 No.	Pipe type earthing	2410	Each	55430.00
21	7 No.	Counter poise earthing (120m length)	8471.67	Each	59301.69
		Tower Accessories			
22	30 No.	Number plate	299	Each	8970.00
23	30 No.	Danger Board	362	Each	10860.00
24	60 No.	Phase plate(Set of three)	319	Each	19140.00
25	60 No.	Circuit plate	306	Each	18360.00
26	30 No.	Anti-climbing devices	10791	Each	323730.00
27		TOTAL COST OF MATERIALS			105219032.32
		TOWER FOUNDATIONS			
28	13 No.	DA type tower	533332	Each	6933316.00
		0° to 2° Suspension tower			
29	4 No.	DB type tower	1239470	Each	4957880.00
		2° to 15° Light angle tower			
30	4 No.	DC type tower	1664827	Each	6659308.00
		15° to 30° Medium angle tower			
31	9 No.	DD type tower	2455026	Each	22095234.00
		30° to 60° High angle & Dead end tower			
32		Tower protection works 15% on Foundation			6096860.70
33		TOTAL COST OF FOUNDATION			46742598.70
34		Erection charges(10% on item 26)			10521903.23
35		Total amount (Item 27+33+34)			162483534.25
36		GST @ 18% on total amount			29247036.17

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.
37		Transportation & Insurance charges (5% on Item 27)			5260951.62
38		Contingencies (1% on Material, Foundation & Erection)			1624835.34
39		Total Cost of Materials, Foundation and Erection charges but excluding GST			169369321.21
40		Establishment & Supervision Charges at 15.0% on item 39			25405398.00
41		Total Cost of Materials, Foundation and Erection charges including GST			198616357.38
42		TOTAL COST (Item 40+41)	10	KM	224021755.38
43		ESI at 4.75 % on labour portion			1387899.78
44		Land compensation			13700000.00
45	10 KM	Tree/Crop compensation	2000000	KM	20000000.00
46		TOTAL COST PER	10	KM	259109655.15
47		TOTAL COST PER 1 KM			25910965.52
		(Rounding to nearest 1000)	SAY		25911000.00
		COST PER KM IN LAKHS			259.11

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	71400	MT	12248670.00
	306.90	MT	b) MS	68200	MT	20930580.00
	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	509.86	No.	1579036.42
3	9988	No.	160 KN Disc Insulators	891	No.	8899308.00
			Conductor & Earth wire accessories			
4	78	Set	Single I suspension string for Twin ACSR Moose	18354.05	Set	1431615.90
5	54	Set	Single I suspension pilot string with counter weight	39037	Set	2107998.00
6	204	Set	Double Tension string	21269	Set	4338876.00
7	408	Set	Vibration Damper for Twin ACSR Moose	1317.5	Set	537540.00
8	1273	Set	Bundle spacer for Twin Moose	1413.55	Set	1799449.15
9	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	849.15	Set	259839.90
10	60	Set	Midspan compression joint for Moose	1268.2	Set	76092.00
11	30	No.	Repair sleeve for Moose	403	No.	12090.00
12	13	Set	Suspension clamp for Earth wire 7/3.66mm	845	Set	10985.00
13	34	Set	Tension Clamp for Earth wire 7/3.66mm	845.06	Set	28732.04
14	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	352.75	Set	1763.75
15	68	No.	Vibration Damper for Earth wire 7/3.66mm	640.05	Set	43523.40
16	47	No.	Flexible copper bond for earthing	935	No.	43945.00
17	121.8	KM	ACSR Moose conductors 1.0% sag	309470	KM	37693446.00
18	10.1	KM	GS EARTH WIRE 7/3.66mm 1.50% sag	52650	KM	531765.00
19	10.5	KM	OFC ground wire with accessories	214783.34	KM	2255225.07
			Earthing Materials			
20	23	No.	Pipe type earthing	2410	Each	55430.00
21	7	No.	Counter poise earthing (120m length)	8471.67	Each	59301.69
			Tower Accessories			
22	30	No.	Number plate	299	Each	8970.00
23	30	No.	Danger Board	362	Each	10860.00
24	60	No.	Phase plate(Set of three)	319	Each	19140.00
25	60	No.	Circuit plate	306	Each	18360.00
26	30	No.	Anti-climbing devices	10791	Each	323730.00
27			TOTAL COST OF MATERIALS			96928272.32
			TOWER FOUNDATIONS			
28	13	No.	DA type tower	367234	Each	4774042.00
			0° to 2° Suspension tower			
29	4	No.	DB type tower	668681	Each	2674724.00
			2° to 15° Light angle tower			
30	4	No.	DC type tower	855024	Each	3420096.00
			15° to 30° Medium angle tower			
31	9	No.	DD type tower	1464844	Each	13183596.00
			30° to 60° High angle & Dead end tower			
32			Tower protection works 15% on Foundation			3607868.70
33			TOTAL COST OF FOUNDATION			27660326.70

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 item 27)			9692827.23
35			Total amount (Item 27+33+34)			134281426.25
36			GST @ 18% on total amount			24170656.73
37			Transportation & Insurance charges (5% on Item 27)			4846413.62
38			Contingencies (1% on Material, Foundation & erection)			1342814.26
39			Total Cost of Materials, Foundation and Erection charges but excluding GST			140470654.13
40			Establishment & Supervision Charges at 15.0% on item 39			21070598.00
41			Total Cost of Materials, Foundation and Erection charges including GST			164641310.86
42			TOTAL COST (Item 40+41)	10	KM	185711908.86
43			ESI at 4.75 % on labour portion			985955.50
44			Land compensation			13700000.00
45	10	KM	Tree/Crop compensation	2000000	KM	20000000.00
46			TOTAL COST PER	10	KM	220397864.36
47			TOTAL COST PER 1 KM			22039786.44
			(Rounding to nearest 1000)	SAY		22040000.00
			COST PER KM IN LAKHS			220.40

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	71400	MT	32560542.00
	181.92	MT	b) MS	68200	MT	12406944.00
	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	509.86	No.	1579036.42
3	9988	No.	160 KN Disc Insulators	891	No.	8899308.00
			Conductor & Earth wire accessories			
4	78	Set	Single I suspension string for Twin ACSR Moose	18354.05	Set	1431615.90
5	54	Set	Single I suspension pilot string with counter weight	39037	Set	2107998.00
6	204	Set	Double Tension string	21269	Set	4338876.00
7	408	Set	Vibration Damper for Twin ACSR Moose	1413.55	Set	576728.40
8	1273	Set	Bundle spacer for Twin Moose	1413.55	Set	1799449.15
9	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	849.15	Set	259839.90
10	60	Set	Midspan compression joint for Moose	1268.2	Set	76092.00
11	30	No.	Repair sleeve for Moose	403	No.	12090.00
12	13	Set	Suspension clamp for Earth wire 7/3.66mm	845	Set	10985.00
13	34	Set	Tension Clamp for Earth wire 7/3.66mm	845.06	Set	28732.04
14	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	352.75	Set	1763.75
15	68	No.	Vibration Damper for Earth wire 7/3.66mm	640.05	Set	43523.40
16	47	No.	Flexible copper bond for earthing	935	No.	43945.00
17	121.8	KM	ACSR Moose conductors 1.0% sag	309470	KM	37693446.00
18	10.1	KM	GS EARTH WIRE 7/3.66mm 1.50% sag	52650	KM	531765.00
19	10.5	KM	OFC ground wire with accessories	214783.34	KM	2255225.07
			Earthing Materials			
20	23	No.	Pipe type earthing	2410	Each	55430.00
21	7	No.	Counter poise earthing (120m length)	8471.67	Each	59301.69
			Tower Accessories			
22	30	No.	Number plate	299	Each	8970.00
23	30	No.	Danger Board	362	Each	10860.00
24	60	No.	Phase plate(Set of three)	319	Each	19140.00
25	60	No.	Circuit plate	306	Each	18360.00
26	30	No.	Anti-climbing devices	10791	Each	323730.00
27			TOTAL COST OF MATERIALS			109106696.72
			TOWER FOUNDATIONS			
28	13	No.	DA type tower	540772	Each	7030036.00
			0° to 2° Suspension tower			
29	4	No.	DB type tower	1234229	Each	4936916.00
			2° to 15° Light angle tower			
30	4	No.	DC type tower	1560358	Each	6241432.00
			15° to 30° Medium angle tower			
31	9	No.	DD type tower	2310900	Each	20798100.00
			30° to 60° High angle & Dead end tower			
32			Tower protection works 15% on Foundation			5850972.60
33			TOTAL COST OF FOUNDATION			44857456.60
34			Erection charges(10% on item 27)			10910669.67
35			Total amount(Item 27+33+34)			164874822.99
36			GST @ 18% on total amount			29677468.14

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.
37		Transportation & Insurance charges (5% on Item 27)			5455334.84
38		Contingencies (1% on Material, Foundation & erection)			1648748.23
39		Total Cost of Materials, Foundation and Erection charges but excluding GST			171978906.06
40		Establishment & Supervision Charges at 15.0% on item 39			25796836.00
41		Total Cost of Materials, Foundation and Erection charges including GST			201656374.20
42		TOTAL COST (Item 40+41)	10	KM	227453210.20
43		ESI at 4.75 % on labour portion			1370548.48
44		Land compensation			13700000.00
45	10 KM	Tree/Crop compensation	2000000	KM	20000000.00
46		TOTAL COST PER	10	KM	262523758.68
47		TOTAL COST PER 1 KM			26252375.87
		(Rounding to nearest 1000)	SAY		26253000.00
		COST PER KM IN LAKHS			262.53

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	71400	MT	32685492.00
	380.25	MT	b) MS	68200	MT	25933050.00
	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	509.86	No.	2512080.22
3	19976	No.	160 KN Disc Insulators	891	No.	17798616.00
			Conductor & Earth wire accessories			
4	78	Set	Twin I suspension string for QUAD ACSR Moose	20100	Set	1567800.00
5	54	Set	Single I suspension pilot string with counter weight	36493	Set	1970622.00
6	204	Set	QUAD Tension string	56358	Set	11497032.00
7	1091	Set	Spacer Damper for Quad ACSR Moose 6 Nos. for 330m	2019	Set	2202729.00
8	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	2218.5	Set	678861.00
9	120	Set	Midspan compression joint for Moose	1268.2	Set	152184.00
10	60	No.	Repair sleeve for Moose	403	No.	24180.00
11	13	Set	Suspension clamp for Earth wire 7/3.66mm	845	Set	10985.00
12	34	Set	Tension Clamp for Earth wire 7/3.66mm	845.06	Set	28732.04
13	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	352.75	Set	1763.75
14	68	No.	Vibration Damper for Earth wire 7/3.66mm	640.05	Set	43523.40
15	47	No.	Flexible copper bond for earthing	935	No.	43945.00
16	243.6	KM	ACSR Moose conductors 1.0% sag	309470	KM	75386892.00
17	10.1	KM	GI EARTH WIRE 7/3.66mm 1.5% sag	52650	KM	531765.00
18	10.5	KM	OFC ground wire with accessories	214783.34	KM	2255225.07
			Earthing Materials			
19	23	No.	Pipe type earthing	2410	No.	55430.00
20	7	No.	Counter poise earthing (120m length)	8471.67	No.	59301.69
			Tower Accessories			
21	30	No.	Number plate	299	No.	8970.00
22	30	No.	Danger Board	362	No.	10860.00
23	60	No.	Phase plate(Set of three)	319	No.	19140.00
24	120	No.	Circuit plate	306	No.	36720.00
25	30	No.	Anti-climbing devices	10791	No.	323730.00
26			TOTAL COST OF MATERIALS			179173229.17

			TOWER FOUNDATIONS			
27	13	No.	A type tower 0° to 2° Suspension tower	563456	No.	7324928.00
28	4	No.	B type tower 2° to 15° Light angle tower	1739124	No.	6956496.00
29	4	No.	C type tower 15° to 30° Medium angle tower	2187305	No.	8749220.00
30	9	No.	D type tower 30° to 60° High angle & Dead end tower	2574033	No.	23166297.00
31			Tower protection works 15% on foundation			3454596.60
32			TOTAL FOUNDATION COST			49651537.60
33			Erection charges(10% on item 26)			17917322.92
34			Total amount (Item 26+32+33)			246742089.69
35			GST @ 18% on total amount			44413576.14
36			Transportation & Insurance charges (5% on Item 26)			8958661.46
37			Contingencies (1% on Foundation, material & Erection charges)			2467420.90
38			Total Cost of Materials, Foundation and Erection charges but excluding GST			258168172.04
39			Establishment & Supervision Charges at 15.0% on item 38			38725225.81
40			Total Cost of Materials, Foundation and Erection charges including GST			302581748.19
41			TOTAL COST (Item 39+40)	10	KM	341306973.99
42			ESI at 4.75 % on labour portion			1794452.05
43			Land compensation			13700000.00
44	10	KM	Tree/Crop compensation	2000000	KM	20000000.00
45			TOTAL COST PER	10	KM	376801426.05
46			TOTAL COST PER 1 KM			37680142.60
			(Rounding to nearest 1000)	SAY		37681000.00
			COST PER KM IN LAKHS			376.81

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	71400	MT	41123544.00
	396.73	MT	b) MS	68200	MT	27056986.00
	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	509.86	No.	2512080.22
3	19976	No.	160 KN Disc Insulators	891	No.	17798616.00
			Conductor & Earth wire accessories			
4	78	Set	Twin I suspension string for QUAD ACSR Moose	20100	Set	1567800.00
5	54	Set	Single I suspension pilot string with counter weight	36493	Set	1970622.00
6	204	Set	QUAD Tension string	56358	Set	11497032.00
7	1091	Set	Spacer Damper for Quad ACSR Moose 7 Nos. for 400m	2019	Set	2202729.00
8	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	2218.5	Set	678861.00
9	120	Set	Midspan compression joint for Moose	1268.2	Set	152184.00
10	60	No.	Repair sleeve for Moose	403	No.	24180.00
11	13	Set	Suspension clamp for Earth wire 7/3.66mm	845	Set	10985.00
12	34	Set	Tension Clamp for Earth wire 7/3.66mm	845.06	Set	28732.04
13	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	352.75	Set	1763.75
14	68	No.	Vibration Damper for Earth wire 7/3.66mm	640.05	Set	43523.40
15	47	No.	Flexible copper bond for earthing	935.00	No.	43945.00
16	243.6	KM	ACSR Moose conductors 1.5% sag	309470	KM	75386892.00
17	10.1	KM	GI EARTH WIRE 7/3.66mm 1.0% sag	52650	KM	531765.00
18	10.5	KM	OFC ground wire with accessories	214783.34	KM	2255225.07
			Earthing Materials			
19	23	No.	Pipe type earthing	2410	No.	55430.00
20	7	No.	Counter poise earthing (120m length)	8471.67	No.	59301.69
			Tower Accessories			
21	30	No.	Number plate	299	No.	8970.00
22	30	No.	Danger Board	362	No.	10860.00
23	60	No.	Phase plate(Set of three)	319	No.	19140.00
24	120	No.	Circuit plate	306	No.	36720.00
25	30	No.	Anti-climbing devices	10791	No.	323730.00
26			TOTAL COST OF MATERIALS			189049317.17

			TOWER FOUNDATIONS			
27	13	No.	A type tower 0° to 2° Suspension tower	1005739	No.	13074607.00
28	4	No.	B type tower 2° to 15° Light angle tower	2343760.00	No.	9375040.00
29	4	No.	C type tower 15° to 30° Medium angle tower	2831014.00	No.	11324056.00
30	9	No.	D type tower 30° to 60° High angle & Dead end tower	3477625.00	No.	31298625.00
31			Tower protection works 15% on foundation			9760849.20
32			TOTAL COST ON FOUNDATION			74833177.20
33			Erection charges(10% on item 26)			18904931.72
34			Total amount (Item 26+32+33)			282787426.09
35			GST @ 18% on total amount			50901736.70
36			Transportation & Insurance charges (5% on Item 26)			9452465.86
37			Contingencies 1% on Foundation Erection and Materials			2827874.26
38			Total Cost of Materials, Foundation and Erection charges but excluding GST			295067766.21
39			Establishment & Supervision Charges at 15.0% on item 38			44260164.93
40			Total Cost of Materials, Foundation and Erection charges including GST			345969502.90
41			TOTAL COST (Item 39+40)	10	KM	390229667.83
42			ESI at 4.75 % on labour portion			2319814.62
43			Land compensation			13700000.00
44	10	KM	Tree/Crop compensation	2000000	KM	20000000.00
45			TOTAL COST PER	10	KM	426249482.46
46			TOTAL COST PER 1 KM			42624948.25
			(Rounding to nearest 1000)	SAY		42625000.00
			COST PER KM IN LAKHS			426.25

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	71400	MT	51300186.00
	368.8	MT	b) MS	68200	MT	25152160.00
	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	509.86	No.	2512080.22
3	19976	No.	160 KN Disc Insulators	891	No.	17798616.00
			Conductor & Earth wire accessories			
4	78	Set	Twin I suspension string for QUAD ACSR Moose	20100	Set	1567800.00
5	54	Set	Single I suspension pilot string with counter weight	36493	Set	1970622.00
6	204	Set	QUAD Tension string	56358	Set	11497032.00
7	1091	Set	Spacer Damper for Quad ACSR Moose 7 Nos. for 400m	2019	Set	2202729.00
8	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	2218.5	Set	678861.00
9	120	Set	Midspan compression joint for Moose	1268.2	Set	152184.00
10	60	No.	Repair sleeve for Moose	403	No.	24180.00
11	13	Set	Suspension clamp for Earth wire 7/3.66mm	845	Set	10985.00
12	34	Set	Tension Clamp for Earth wire 7/3.66mm	845.06	Set	28732.04
13	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	352.75	Set	1763.75
14	68	No.	Vibration Damper for Earth wire 7/3.66mm	640.05	Set	43523.40
15	47	No.	Flexible copper bond for earthing	935	No.	43945.00
16	243.6	KM	ACSR Moose conductors 1.5% sag	309470	KM	75386892.00
17	10.1	KM	GI EARTH WIRE 7/3.66mm 1.0% sag	52650	KM	531765.00
18	10.5	KM	OFC ground wire with accessories	214783.34	KM	2255225.07
			Earthing Materials			
19	23	No.	Pipe type earthing	2410	No.	55430.00
20	7	No.	Counter poise earthing (120m length)	8471.67	No.	59301.69
			Tower Accessories			
21	30	No.	Number plate	299	No.	8970.00
22	30	No.	Danger Board	362	No.	10860.00
23	60	No.	Phase plate(Set of three)	319	No.	19140.00
24	120	No.	Circuit plate	306	No.	36720.00

25	30	No.	Anti-climbing devices	10791	No.	323730.00
26			TOTAL COST OF MATERIALS			197318433.17
			TOWER FOUNDATIONS			
27	13	No.	A type tower	1058540	No.	13761020.00
			0° to 2° Suspension tower			
28	4	No.	B type tower	2337163	No.	9348652.00
			2° to 15° Light angle tower			
29	4	No.	C type tower	2974874	No.	11899496.00
			15° to 30° Medium angle tower			
30	9	No.	D type tower	4460925	No.	40148325.00
			30° to 60° High angle & Dead end tower			
31			Tower protection works 15% on foundation			11273623.95
32			TOTAL COST ON FOUNDATION			86431116.95
33			Erection charges(10% on item 26)			19731843.32
34			Total amount (Item 26+32+33)			303481393.44
35			GST @ 18% on total amount			54626650.82
			Transportation & Insurance charges (5% on Item 26)			9865921.66
36						
37			Contingencies 1% on Foundation Erection and Materials			3034813.93
38			Total Cost of Materials, Foundation and Erection charges but excluding GST			316382129.03
39			Establishment & Supervision Charges at 15.0% on item 38			47457319.35
40			Total Cost of Materials, Foundation and Erection charges including GST			371008779.85
41			TOTAL COST (Item 39+40)	10	KM	418466099.20
42			ESI at 4.75 % on labour portion			2579453.78
43			Land compensation			13700000.00
44	10	KM	Tree/Crop compensation	2000000	KM	20000000.00
45			TOTAL COST PER	10	KM	454745552.98
46			TOTAL COST PER 1 KM			45474555.30
			(Rounding to nearest 1000)	SAY		45475000.00
			COST PER KM IN LAKHS			454.75

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	71400	MT	107,934,666.00
	501.78	MT	MS STEEL	68200	MT	34,221,396.00
	78.94	MT	c) Ordinary Bolts & nuts	90000	MT	7,104,600.00
	0	MT	d)Anti-theft bolts and nuts	90000	MT	-
2	4364	No.	120 KN Disc Insulators	509.86	No.	2,225,029.04
3	9988	No.	160 KN Disc Insulators	891	No.	8,899,308.00
			Conductor & Earth wire accessories			
4	78	Set	Single I suspension string for Twin ACSR Moose	18354.05	Set	1,431,615.90
5	108	Set	Single I suspension pilot string with counter weight	39037	Set	4,215,996.00
6	204	Set	Double Tension string	21269	Set	4,338,876.00
7	408	Set	Vibration Damper for Twin ACSR Moose	1317.5	Set	537,540.00
8	1273	Set	Bundle spacer for Twin Moose	1413.55	Set	1,799,449.15
9	306	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	849.15	Set	259,839.90
10	60	Set	Midspace compression joint for Moose	1268.2	Set	76,092.00
11	30	No.	Repair sleeve for Moose	403	No.	12,090.00
12	13	Set	Suspension clamp for Earth wire 7/3.66mm	845	Set	10,985.00
13	34	Set	Tension Clamp for Earth wire 7/3.66mm	845.06	Set	28,732.04
14	5	Set	Midspace compression joint for GS Earth wire 7/3.66mm	352.75	Set	1,763.75
15	68	No.	Vibration Damper for Earth wire 7/3.66mm	640.05	Set	43,523.40
16	47	No.	Flexible copper bond for earthing	935	No.	43,945.00
17	121.8	KM	ACSR Moose conductors 1.0% sag	309470	KM	37,693,446.00
18	10.10	KM	GI EARTH WIRE 7/3.66mm 1.50% sag	52650	KM	531,765.00
19	10.5	KM	OFC ground wire with accessories	214783.3	KM	2,255,225.07
			Earthing Materials			
20	23	No.	Pipe type earthing	2410	No.	55,430.00
21	7	No.	Counter poise earthing (120m length)	8471.67	No.	59,301.69
			Tower Accessories			
22	30	No.	Number plate	299	No.	8,970.00
23	30	No.	Danger Board	362	No.	10,860.00
24	60	No.	Phase plate(Set of three)	319	No.	19,140.00
25	60	No.	Circuit plate	306	No.	18,360.00
26	30	No.	Anti-climbing devices	10791	No.	323,730.00
27			TOTAL COST ON MATERIALS			214,161,674.94
			TOWER FOUNDATIONS			
28	13	No.	QA type tower	1977268	No.	25,704,484.00
			0° to 2° Suspension tower			
29	4	No.	QB type tower	3809126	No.	15,236,504.00
			2° to 15° Light angle tower			
30	4	No.	QC type tower	4952856	No.	19,811,424.00
			15° to 30° Medium angle tower			
31	9	No.	QD type tower	7215698	No.	64,941,282.00
			30° to 60° High angle & Dead end tower			
32			Tower protection works 15% on Foundation cost			18,854,054.10
33			TOTAL COST OF FOUNDATION			144,547,748.10
34			Erection charges(10% on item 27)			21,416,167.49
35			Total amount (Item 27+33+34)			380,125,590.53
36			GST @ 18% on total amount			68422606.30

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.
37		Transportation & Insurance charges (5% on Item 27)			10,708,083.75
38		Contingencies (1% on Material, Erection & Foundation charges)			3,801,255.91
39		Total Cost of Materials, Foundation and Erection charges but excluding GST			394,634,930.19
40		Establishment & Supervision Charges at 15.0% on item 39			59,195,239.53
41		Total Cost of Materials, Foundation and Erection charges including GST			463,057,536.48
42		TOTAL COST (Item 40+41)	10	KM	522252776.01
43		ESI at 4.75 % on labour portion			6866018.03
44		Land compensation			13700000.00
45	10 KM	Tree/Crop compensation	2000000	KM	20,000,000.00
46		TOTAL COST PER	10	KM	562818794.05
47		TOTAL COST PER 1 KM			56281879.40
		(Rounding to nearest 1000)	SAY		56,282,000.00
		COST PER KM IN LAKHS			562.82

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	71400	MT	107,934,666.00
	501.78	MT	MS STEEL	68200	MT	34,221,396.00
	78.94	MT	c) Ordinary Bolts & nuts	90000	MT	7,104,600.00
	0	MT	d)Anti-theft bolts and nuts	90000	MT	-
2	6194	No.	120 KN Disc Insulators	509.86	No.	3,158,072.84
3	19976	No.	160 KN Disc Insulators	891	No.	17,798,616.00
			Conductor & Earth wire accessories			
4	156	Set	Single I suspension string for Twin ACSR Moose	18354.05	Set	2,863,231.80
5	108	Set	Single I suspension pilot string with counter weight	39037	Set	4,215,996.00
6	408	Set	Double Tension string	21269	Set	8,677,752.00
7	816	Set	Vibration Damper for Twin ACSR Moose	1317.5	Set	1,075,080.00
8	2546	Set	Bundle spacer for Twin Moose	1413.55	Set	3,598,898.30
9	612	Set	Rigid Spacer for conductor ACSR Moose 3 Nos. per jumper	849.15	Set	519,679.80
10	120	Set	Midspan compression joint for Moose	1268.2	Set	152,184.00
11	60	No.	Repair sleeve for Moose	403	No.	24,180.00
12	13	Set	Suspension clamp for Earth wire 7/3.66mm	845	Set	10,985.00
13	34	Set	Tension Clamp for Earth wire 7/3.66mm	845.06	Set	28,732.04
14	5	Set	Midspan compression joint for GS Earth wire 7/3.66mm	352.75	Set	1,763.75
15	68	No.	Vibration Damper for Earth wire 7/3.66mm	640.05	Set	43,523.40
16	47	No.	Flexible copper bond for earthing	935	No.	43,945.00
17	243.6	KM	ACSR Moose conductors 1.0% sag	309470	KM	75,386,892.00
18	10.10	KM	GI EARTH WIRE 7/3.66mm 1.50% sag	52650	KM	531,765.00
19	10.5	KM	OFC ground wire with accessories	214783.3	KM	2,255,225.07
			Earthing Materials			
20	23	No.	Pipe type earthing	2410	No.	55,430.00
21	7	No.	Counter poise earthing (120m length)	8471.67	No.	59,301.69
			Tower Accessories			
22	30	No.	Number plate	299	No.	8,970.00
23	30	No.	Danger Board	362	No.	10,860.00
24	120	No.	Phase plate(Set of three)	319	No.	38,280.00
25	120	No.	Circuit plate	306	No.	36,720.00
26	30	No.	Anti-climbing devices	10791	No.	323,730.00
27			TOTAL COST ON MATERIALS			270,180,475.69
			TOWER FOUNDATIONS			
28	13	No.	QA type tower 0° to 2° Suspension tower	1977268	No.	25,704,484.00
29	4	No.	QB type tower 2° to 15° Light angle tower	3809126	No.	15,236,504.00
30	4	No.	QC type tower 15° to 30° Medium angle tower	4952856	No.	19,811,424.00

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	7215698	No.	64,941,282.00
32			Tower protection works 15% on Foundation cost			18,854,054.10
33			TOTAL COST OF FOUNDATION			144,547,748.10
34			Erection charges(10% on item 27)			27,018,047.57
35			Total amount (Item 27+33+34)			441,746,271.36
36			GST @ 18% on total amount			79514328.84
37			Transportation & Insurance charges (5% on Item 27)			13,509,023.78
38			Contingencies (1% on Material, Erection & Foundation charges			4,417,462.71
39			Total Cost of Materials, Foundation and Erection charges but excluding GST			459,672,757.86
40			Establishment & Supervision Charges at 15.0% on item 39			68,950,913.68
41			Total Cost of Materials, Foundation and Erection charges including GST			539,187,086.70
42			TOTAL COST (Item 40+41)	10	KM	608138000.38
43			ESI at 4.75 % on labour portion			4029764.47
44			Land compensation			13700000.00
45	10	KM	Tree/Crop compensation	2000000	KM	20000000.00
46			TOTAL COST PER	10	KM	645867764.85
47			TOTAL COST PER 1 KM			64586776.49
			(Rounding to nearest 1000)	SAY		64,587,000.00
			COST PER KM IN LAKHS			645.87