

KERALA STATE ELECTRICITY BOARD

ABSTRACT

Cost data for Transmission works – sanction accorded – Orders issued

Corporate Office (Planning wing)

B.O. (FM) No.2586 /2008(CP/R&P/Plg-1/REC/2008 - 09) dated 23.10.2008 Thiruvananthapuram

Read: Note No.CP/R&P/Plg 1/REC/2008-09 dated 13.10.2008 of Chief Engineer
(Corporate Planning)

ORDER

The cost data for the transmission works was last prepared during 2004-05 in the prescribed format as per the guide line of REC. Considering the escalation in price of equipments and labour, revision of cost data was necessary. A new cost data has been prepared based on the cost of material as taken from the latest purchase orders issued by KSEB and was brought to the notice of the Board.

Having considered the recommendation of Chief Engineer (Corporate Planning), the Board has decided to accord sanction to the transmission Cost data. The approved cost data is appended to this order.

Orders are issued accordingly.

By order of the Board
Sd/-
M. Subair
Secretary

To
Chief Engineer (Corporate Planning)
Chief Engineer (HRM)
Chief Engineer Transmission (South/North)
Chief Engineer (Trans) system operation

Copy to

The Director MIS / Deputy Chief Engineers of all Transmission Circles / TA to Chairman / TA to Member (Trans.) / TA to Member (Distribution) / TA to Member (Generation) / PA to Member (Finance) / Public Relations Officer / Senior CA to Secretary / Fair Copy Superintendent

Forwarded By Order

Assistant Engineer

1. m/s.
2. 30/04
3. 15/12/08

Sl. No.	Rates for Transmission Works	Amount (Rs. in Lakhs)
1	CONSTRUCTION OF 1 KM 33 KV SINGLE CIRCUIT LINE USING ACSR DOG CONDUCTOR AND A TYPE POLES AT A MAXIMUM SPAN OF 80 M	15.66
2	CONSTRUCTION OF 1 KM 33 KV DOUBLE CIRCUIT LINE USING ACSR DOG CONDUCTOR AND A TYPE POLES AT A MAXIMUM SPAN OF 80 M	18.05
3	CONSTRUCTION OF 1KM 33KV SINGLE CIRCUIT LINE USING LATTICE POLES WITH MAXIMUM SPAN 55Mtr.	27.82
4	CONSTRUCTION OF 1KM 33KV DOUBLE CIRCUIT LINE USING LATTICE POLES WITH MAXIMUM SPAN 55Mtr.	30.56
5	CONVERTING 66 KV LINE TO 110 KV DC LINE	66.01
6	CONSTRUCTION OF 1 KM 110 KV DC LINE	71.23
7	CONSTRUCTION OF 1 KM 220 KV DC LINE	116.43
8	CONSTRUCTION OF 2 Nos 66 KV FEEDER BAYS AT THE EXISTING SUBSTATION	167.60
9	CONSTRUCTION OF 2 Nos 110 KV FEEDER BAYS AT THE EXISTING SUBSTATION	187.92
10	CONSTRUCTION OF 2 NOS 220 KV FEEDER BAYS	343.32
11	CONSTRUCTION OF 2 Nos TRANSFORMER BAYS OF 66/11 KV, 2 X 10 MVA TRANSFORMER IN EXISTING SUBSTATION	505.65
12	CONSTRUCTION OF 2 Nos TRANSFORMER BAYS OF 110/11 KV, 2 X12.5 MVA TRANSFORMER IN EXISTING SUBSTATION	475.79
13	CONSTRUCTION OF 2 Nos 110 KV BAYS AND FOR THE INSTALATION OF 110/33 KV, 2 X 16 MVA TRANSFORMERS & 4 Nos 33 KV FEEDERS IN EXISTING 110 KV SUBSTTION	697.55
14	INSTALLATION OF 2 X 20 MVA 110/66 KV TRANSFORMER IN EXISTING SUBSTATION	710.86
15	UPGRADATION OF 66 KV SUBSTATION WITH 2 NOS 110 KV FEEDER BAYS & INSTALLATION OF 2 X 12.5 MVA 110/11 KV TRANSFORMER & 6 NOS 11 KV FEEDER WITH SWITCH GEAR	623.03
16	UPGRADATION OF 110 KV SUBSTATION TO 220 KV SUBSTATION WITH 2 NOS. 220 KV FEEDER BAYS, BY INSTALLING 2 X 100 MVA, 220/110 KV TRANSFORMER AND 2 NOS 110 KV FEEDER BAYS	2589.39
17	CONSTRUCTION OF 33/11 KV SUBSTATION BY INSTALLING 2 X 5 MVA, 33/11 KV TRANSFORMERS AND 2 NOS OF 33 KV FEEDER BAYS	274.42
18	CONSTRUCTION OF 110 KV SUBSTATION WITH 2Nos.110 KV FEEDER BAYS BY INSTALLALLING 2 X 12.5 MVA, 110/11 KV TRANSFORMERS	722.28
19	CONSTRUCTION OF 220 KV SUBSTATION WITH 2 NOS. 220 KV FEEDER BAYS, BY INSTALLING 2 X 100 MVA, 220/110 KV TRANSFORMER AND 2 X 12.5 MVA 110/11 KV TRANSFORMERS WITH 2 NOS. 110 KV FEEDER BAYS	3273.88

1) COST DATA FOR THE CONSTRUCTION OF 1 KM 33 KV SINGLE CIRCUIT LINE USING ACSR
DOG CONDUCTOR AND A TYPE POLES AT A MAXIMUM SPAN OF 80 M

Sl. No.	Particulars	Unit	Qty.	Rate Rs. Lakhs	Amount Rs. Lakhs
1	12 M. A-Type Fabricated Poles	No	15	0.25	4.00
2	Cross Arm with Accessories	LS		0.41	0.41
3	Back Clamp with Bolt & Nut	E	14	0.00045	0.01
4	Stay Set	E	28	0.0048	0.13
5	Insulators and hardware accessories	LS		0.18	0.18
6	Special fabricated Poles for road crossing	E	4	0.8	3.20
7	ACSR Dog Conductor	KM	3.15	0.508	1.60
Total Cost of Materials					9.53
	Foundation for poles	No.	20	0.1	2.00
	Pipe Earthing Coil Earthing, Danger Board, etc.	LS		0.06	0.06
	Labour Charge 10%				0.95
	Insurance, Sales Tax & Transporting 10%				0.95
	Contingencies 3.75%				0.36
	Tree Cutting Compensation				0.88
	Overhead Charges				0.95
	Survey	Km.	1	0.004	0.004
Grand Total					18.84

2) COST OF DATA FOR THE CONSTRUCTION OF 1 KM 33 KV DOUBLE CIRCUIT LINE USING ACSR
DOG CONDUCTOR AND A TYPE POLES AT A MAXIMUM SPAN OF 80 M

Sl. No.	Particular	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
1	12 M. A-Type Fabricated Poles	No	15	0.25	4.00
2	Cross arm with accessories	LS		0.6	0.60
3	Back Clamp with Bolt & Nut	E	42	0.00045	0.02
4	Stay Set	Set	28	0.0048	0.13
5	Insulator and hardware accessories	LS		0.38	0.38
6	Special angle iron Poles	E, etc.	4	0.8	3.20
7	ACSR Dog Conductor	KM	6.3	0.508	3.20
Total Cost of Material					11.51
	Foundation for poles	E	20	0.1	2.00
	Pipe Earthing Coil Earthing, Danger Board, etc.	LS		0.06	0.06
	Labour Charge 10%				1.15
	Insurance, Sales Tax & Transporting 10%				1.15
	Contingencies 3.75%				0.43
	Tree Cutting Compensation				0.60
	Overhead Charges				1.15
	Survey	Km.	1	0.004	0.004
Grand Total					18.08

3) DATA FOR THE CONSTRUCTION OF 1KM 33KV SINGLE CIRCUIT LINE USING LATTICE
POLES WITH MAXIMUM SPAN 80Mtr.

Sl. No.	Particulars	Unit	Quantity	Rate in Lakhs	Amount in Lakhs
1	Lattice pole C type	No	15	0.96	15.48
2	ACSR Dog conductor	Km	3.15	0.508	1.60
3	Insulators and hardware fittings	LS		0.48	0.48
4	Cross arm with accessories	LS		0.82	0.82
Total Cost of Material					18.38
	Pipe earthing/coil earthing and danger board fixing	LS			0.07
	Labour charge 10%				1.84
	Insurance, Sales Tax, Transporting 10%				1.84

Contingencies 3.75%	0.69
Tree cutting compensation	0.50
Overhead charges 10%	1.84
Foundation to lattice pole @ Rs. 15000/-	2.70
Grand Total	27.82

4) DATA FOR THE CONSTRUCTION OF 1KM 33KV DOUBLE CIRCUIT LINE USING LATTICE POLES WITH MAXIMUM SPAN 55Mtr.

SL. No.	Particulars	Unit	Quantity	Rate in Lakhs	Amount in Lakhs
1	Lattice pole C type	No.	18	0.86	15.48
2	ACSR Dog conductor	Km	6.3	0.508	3.20
3	Insulators and hardware fittings	LS		0.91	0.91
4	Cross arm with accessories	LS		0.82	0.82
	Total Cost of Material				20.41
	Pipe earthing/coil earthing and danger board fixing	LS			0.07
	Labour charge 10%				2.04
	Insurance, Sales Tax, Transporting 10%				2.04
	Contingencies 3.75%				0.77
	Tree cutting compensation				0.50
	Overhead charges 10%				2.04
	Foundation to lattice pole @ Rs. 15000/-				2.70
	Grand Total				30.56

5) ABSTRACT ESTIMATE FOR CONVERTING 66 KV LINE TO 110 KV DC LINE

Sl. No.	Particulars	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
	Part I				
1	Tower	MT	25	0.75	18.75
2	Tower Accessories	LS			0.75
3	Power Conductor (Wolf)	KM	6.09	0.58	3.53
4	Power Conductor accessories	LS			0.25
5	Earth Wire	KM	1.02	0.29	0.30
6	Earth Wire accessories	LS			0.04
7	Insulators & Hardware items	No	250	0.005	1.25
	Total				24.87
	Foundation materials	LS			28.00
	Spares 3%				0.75
	Erection & Commissioning 10%				2.49
	Insurance, Sales Tax & Transportating 10%				2.49
	Contingencies 3.75%				0.93
	Total				59.52
	Part II				
1	Dismantling charges for old 66 KV Line with transporting charges	LS			2.00
2	Depreciated value of old 66 KV materials	LS			4.00
	Total				53.52
	Overhead Charges				2.49
	Tree Cutting Compensation				10.00
	Grand Total				66.01

6) ABSTRACT ESTIMATE FOR THE CONSTRUCTION OF 1 KM 110 KV DC LINE

Sl. No.	Particulars	Unit	Qty.	Rate Rs. Lakhs	Amount Rs. Lakhs
1	Tower	MT	25	0.75	18.75
2	Tower accessories	LS			0.14
3	Power Conductor (Wolf)	KM	6.09	0.58	3.53
4	Power Conductor accessories	LS			0.25
5	Earth Wire	KM	1.02	0.29	0.30
6	Earth Wire accessories	LS			0.04
7	Insulators & Hardware items	E	250	0.005	1.25
	Total				24.26
	Foundation materials	LS			28.00
	Spares 3%				0.73
	Erection & Commissioning 10%				2.43
	Insurance, Sales Tax & Transportating 10%				2.43
	Contingencies 3.75%				0.91
	Surveys	KM	1	0.057	0.06
	Overhead Charges				2.43
	Tree Cutting Compensation				10.00
	Grand Total				71.23

7) ABSTRACT ESTIMATE FOR THE CONSTRUCTION OF 1 KM 220 KV DC LINE

Sl. No.	Particulars	Unit	Qty.	Rate Rs. Lakhs	Amount Rs. Lakhs
1	Tower	MT	40	0.75	30.00
2	Tower Accessories	LS			1.20
3	Power Conductor (Kundah)	KM	6.09	2.13	12.97
4	Power Conductor accessories	LS			0.91
5	Earth Wire	KM	1.02	0.287	0.29
6	Earth Wire accessories	LS			0.04
7	Insulators & Hardware items	E	550	0.007	3.85
	Total				49.26
	Foundation materials	LS			34.00
	Spares 3%				1.48
	Erection & Commissioning 10%				4.93
	Insurance, Sales Tax & Transportating 10%				4.93
	Contingencies 3.75%				1.85
	Surveys	KM	1	0.06	0.06
	Overhead Charges				4.93
	Tree Cutting Compensation				15.00
	Grand Total				116.43

8) ABSTRACT ESTIMATE FOR CONSTRUCTION OF 2 Nos 66 KV FEEDER BAYS AT THE EXISTING SUBSTATION

Sl. No.	Particulars	Unit	Quantity	Rate Rs. Lakhs	Amount Rs. Lakhs
1	66 KV Circuit Breaker (SF 6)	Set	2	6.84	13.68
2	66 KV Current Transformer	No	6	0.87	5.22
3	66 KV Lightning Arrestor	No	6	0.24	1.44
4	66 KV Bus Isolator	Set	4	1.07	4.28
5	66 KV Line Isolator	Set	2	1.35	2.70
6	66 KV Potential Transformer	No	6	0.65	3.90
7	Feeder control & Relay Panel	No.	2	4.48	8.96
8	Kundah Conductor for Bus arrangements	Km	1	2.12	2.12
9	Insulator & Hardware fittings	No	400	0.005	2.00
10	Earthing arrangements	LS			10.00

11	Control Cable of various sizes	Km	5	1.8	9.00
12	Fabricated steel structure	M T	38	0.75	28.50
13	Bus Arrangement	LS		8.82	8.82
Total					100.82
Civil Work					
	Cable Trench & Foundation of structures etc.			30	30.00
	Spares 3%				3.02
	Erection & Commissioning 10%				10.08
	Insurance, Sales Tax & Transporting 10%				10.08
	Contingencies 3.75%				3.77
	Overhead Charges				10.08
Grand Total					167.60

9) ABSTRACT ESTIMATE FOR CONSTRUCTION OF 2 Nos 110 KV FEEDER BAYS AT THE EXISTING SUBSTATION

Sl. No.	Particulars	Unit	Quantity	Rate Rs. Lakhs	Amount Rs. Lakhs
1	110 KV Circuit Breaker (SF 6)	Set	2	7.85	15.70
2	110 KV Current Transformer	No	6	1.36	8.16
3	110 KV Lightening Arrester	No	6	0.31	1.88
4	110 KV Bus Isolator	Set	4	1.75	7.00
5	110 KV Line Isolator	Set	2	1.89	3.78
6	110 KV Potential Transformer	No	6	1.3	7.80
7	Feeder control & Relay Panel	No.	2	5.37	10.74
8	Kundah Conductor for Bus arrangements	Km	1	2.12	2.12
9	Insulator & Hardware fittings	No	400	0.005	2.00
10	Earthing arrangements	LS			10.00
11	Control Cable of various sizes	Km	5	1.8	9.00
12	Fabricated steel structure	M T	38	0.75	28.50
13	Bus Arrangement	LS		8.82	8.82
Total					116.48
Civil Work					
	Cable Trench & Foundation of structures etc.			30	30.00
	Spares 3%				3.46
	Erection & Commissioning 10%				11.55
	Insurance, Sales Tax & Transporting 10%				11.55
	Contingencies 3.75%				4.33
	Overhead Charges				11.55
Grand Total					187.92

10) ABSTRACT ESTIMATE FOR CONSTRUCTION OF 2 NOS 220 KV FEEDER BAYS

Sl. No.	Particulars	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
1	220 KV Circuit Breaker (SF 6)	Set	2	18.93	37.86
2	220 KV Current Transformer	No	6	3.89	23.34
3	220 KV Lightening Arrester	No	6	0.52	3.12
4	220 KV Potential Transformer	No	6	4.69	28.14
5	220 KV Bus Isolator	Set	4	2.94	11.76
6	220 KV Line Isolator with Earth Switch	Set	2	3.44	6.88
7	Feeder Control & Relay Panel (Duplex Type)	No	2	20.03	40.06
8	Kundah conductor for Bus arrangements	Km	3	2.12	6.36
9	Insulator & Hardware fittings	No	800	0.007	5.60
10	Earthing arrangements	LS		10	10.00
11	Control Cable of various sizes	Km	5	2	10.00
12	Fabricated steel structure	M T	48	0.75	36.00
13	Bus Arrangement	LS		10	10.00
Total					229.12

Civil Works			
Foundation of structure & Equipments Cable Trench etc.	LS	30	30.00
Spares 3%			6.87
Erection & Commissioning 10%			22.91
Insurance, Sale Tax & Transportating 10%			22.91
Contingencies 3.75%			8.59
Overhead Charges 10 %			22.91
Grand Total			343.32

11) ABSTRACT ESTIMATE FOR CONSTRUCTION OF 2 Nos TRANSFORMER BAYS OF 66/11 KV, 2 X10 MVA TRANSFORMER IN EXISTING SUBSTATION

Sl. No.	Particulars	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
Part I - 66 KV Side					
1	Circuit Breaker (SF 6)	Set	2	6.84	13.68
2	Current Transformer	No	6	0.87	5.22
3	Lightening Arrestor	No	6	0.24	1.44
4	Neutral CT	No	2	0.15	0.30
5	Bus Isolator	No	4	1.07	4.28
6	Power Transformer (110/11 KV), 12.5 MVA	No	2	99.54	199.08
7	Transformer Control & Relay Panel	No	2	3.65	7.30
8	Kundah Conductor	Km	1	2.12	2.12
9	Insulator & Hardware fittings	No	200	0.005	1.00
10	Earthing arrangements	LS		10	10.00
11	Control Cable of various sizes	Km	2	1.8	3.60
12	Fabricated steel structure	M T	38	0.75	28.50
13	Bus Arrangement	LS		8.82	8.82
	Total				285.34
Part II - 11 KV Side					
13	10 Panel Indoor Switch Gear with 2Nos Neutral CTs	No	1	33	33.00
14	500 mm2 XLPE 1 Core Cable	Km	1	4.79	4.79
15	300 mm2 XLP 3 Core Cable	Km	1.5	9.4	14.10
16	Cable End Termination Arrangement	E	24	0.015	0.36
	Total				52.25
	Total Cost of Material (Part I + Part II)				337.59
Part III - Civil Works					
16	Foundation of Equipments & Structures Cable Trench	LS		44	44.00
	Total				44.00
	Total of Part I, II & III				381.59
	Spares 3%				10.13
	Erection & Commissioning 10%				33.76
	Insurance, Sales Tax & Transportating 10%				33.76
	Contingencies 3.75%				12.66
	Overhead Charges				33.76
	Grand Total				505.65

12) ABSTRACT ESTIMATE FOR CONSTRUCTION OF 2 Nos TRANSFORMER BAYS OF 110/11 KV, 2 X12.5 MVA TRANSFORMER IN EXISTING SUBSTATION					
Sl. No.	Particulars	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
Part I - 110 KV Side					
1	Circuit Breaker (SF 6)	Set	2	7.85	15.70
2	Current Transformer	No	6	1.36	8.16
3	Lightening Arrestor	No	6	0.31	1.86
4	Neutral CT	No	2	0.16	0.32
5	Bus Isolator	No	4	1.75	7.00
6	Power Transformer (110/11 KV), 12.5 MVA	No	2	84	168.00
7	Transformer Control Panel	No	2	4.21	8.42
8	Kundah Conductor	Km	1	2.12	2.12
9	Insulator & Hardware fittings	No	200	0.005	1.00
10	Earthing arrangements	LS		10	10.00
11	Control Cable of various sizes	Km	2	1.8	3.60
12	Fabricated steel structure	M T	38	0.75	28.50
13	Bus Arrangement	LS		8.82	8.82
Total					263.50
Part II - 11 KV Side					
13	10 Panel Indoor Switch Gear with 2Nos Neutral CTs		1	33	33.00
14	500 mm ² XLPE 1 Core Cable	Km	1	4.79	4.79
15	300 mm ² XLP 3 Core Cable	Km	1.5	9.4	14.10
16	Cable End Termination Arrangement	E	24	0.015	0.36
Total					62.25
Total Cost of Material (Part I + Part II)					315.75
Part III - Civil Works					
16	Foundation of Equipments & Structures Cable Trench	LS		44	44.00
Total					44.00
Total of Part I, II & III					359.75
Spares 3%					9.47
Erection & Commissioning 10%					31.58
Insurance, Sales Tax & Transportating 10%					31.58
Contingencies 3.75%					11.84
Overhead Charges					31.58
Grand Total					475.79

**13) ABSTRACT ESTIMATE FOR CONSTRUCTION OF 2 Nos 110 KV BAYS AND FOR THE
 INSTALATION OF 110/33 KV, 2 X 16 MVA TRANSFORMERS & 4 Nos 33 KV FEEDERS IN EXISTING
 110 KV SUBSTTION**

Sl. No.	Particulars	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
Part I - 110 KV Side					
1	Circuit Breaker (SF 6)	Set	2	7.85	15.70
2	Current Transformer	No	6	1.36	8.16
3	Lightening Arrestor	No	6	0.31	1.86
4	Neutral CT	No	2	0.16	0.32
5	Bus Isolator	No	4	1.75	7.00
6	Power Transformer (110/33 KV), 16 MVA	No	2	139	278.00
7	Transformer Control Panel 110/33 KV (both sides)	No	2	5.31	10.62
8	Kundah Conductor	Km	1	2.12	2.12
9	Insulator & Hardware fittings	No	250	0.005	1.25
10	Earthing arrangements	LS		10	10.00
11	Control Cable of various sizes	Km	1.5	1.8	2.70
12	Fabricated steel structure	M T	38	0.75	28.50
13	Bus arrangement	LS		8.82	8.82
Total					375.05
Part II - 33 KV Side					
14	Circuit Breaker (SF 6)	Set	6	2.26	13.56
15	Current Transformer	No	18	0.42	7.56
16	Lightening Arrestor	No	18	0.13	2.34
17	Bus Isolator	No	12	0.63	7.56
18	Line Isolator	No	4	0.74	2.96
19	Neutral CT	No	2	0.15	0.30
20	Potential Transformer	No	18	0.39	7.02
21	Feeder control Panel	No	4	1.57	6.28
22	Control Cable of various sizes	Km	5	1.5	7.50
23	Fabricated steel structure	M T	28	0.75	21.00
24	Bus arrangement (including conductor)	LS		4.851	4.85
Total					80.93
Total Cost of Material (Part I + Part II)					455.98
Part III - Civil Works					
22	Foundation of Equipments Cable Trench	LS			74.00
Total					74.00
Total of Part I, II & III					529.98
Spares 3%					13.68
Erection & Commissioning 10%					45.60
Insurance, Sales Tax & Transporting 10%					45.60
Contingencies 3.75%					17.10
Overhead Charges					45.60
Grand Total					697.55

14) ESTIMATE FOR INSTALLATION OF 2 X 20 MVA 110/66 KV TRANSFORMER IN EXISTING SUBSTATION

Sl. No.	Particulars	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
Part I - 110 KV Side					
1	Circuit Breaker (SF 6)	Set	2	7.85	15.70
2	Current Transformer	No	6	1.36	8.16
3	Lightening Arrestor	No	6	0.31	1.86
4	Bus Isolator	No	4	1.75	7.00
5	Power Transformer (110/66KV), 20 MVA	No	2	139	278.00
6	Neutral CT	No	2	0.16	0.32
7	Transformer Control Panel 110/66KV (both sides)	No	2	5.31	10.62
8	Kundah Conductor	Km	1	2.12	2.12
9	Insulator & Hardware fittings	No	250	0.005	1.25
10	Earthing arrangements	LS		10	10.00
11	Control Cable of various sizes	Km	4	1.8	7.20
12	Fabricated steel structure	M T	38	0.75	28.50
13	Bus Arrangement	LS		8.82	8.82
	Total				379.55
Part II - 66 KV Side					
14	Circuit Breaker	Set	2	6.84	13.68
15	Current Transformer	No	6	0.87	5.22
16	Lightening Arrestor	No	6	0.24	1.44
17	Bus Isolator	No	4	0.11	0.44
18	Neutral CT	No	2	0.15	0.30
19	Insulator & Hardware fittings	No	150	0.005	0.75
20	Kundah Conductor	Km	1	2.12	2.12
21	Earthing arrangements	LS		10	10.00
22	Control Cable of various sizes	Km	1.5	1.8	2.70
23	Fabricated steel structure	M T	25	0.75	18.75
24	Bus Arrangement	LS		8.82	8.82
	Total				64.22
	Total Material Cost (Part I + Part II)				443.77
Part III - Civil Works					
25	Foundation of Equipments & Structures and Cable Trench in 110 KV and 66 KV side	LS			104.00
	Total				104.00
	Total of Part I, II & III				547.77
	Spares 3%				13.31
	Erection & Commissioning 10%				44.38
	Insurance, Sales Tax & Transportating 10%				44.38
	Contingencies 3.75%				16.64
	Overhead Charges				44.38
	Grand Total				710.86

15) ABSTRACT OF UPGRADATION OF 66 KV SUBSTATION WITH 2 NOS 110 KV FEEDER BAYS & INSTALLATION OF 2 X 12.5 MVA 110/11 KV TRANSFORMER & 6 NOS 11 KV FEEDER WITH SWITCH GEAR

Sl. No.	Particulars	Unit	Qty	Rate Rs. Laks	Amount Rs. Lakhs
Part I - 110 KV Side					
1	Circuit Breaker (SF 6)	Set	4	7.85	31.40
2	Current Transformer	No	12	1.36	16.32
3	Potential Transformer	No	12	1.3	15.60
4	Lightening Arrestor	No	12	0.31	3.72
5	Neutral CT	No	2	0.16	0.32
6	Bus Isolator	No	10	1.75	17.50
7	Power Transformer (110/11 KV), 12.5 MVA	No	2	84	168.00
8	Transformer Control Panel 110/11	No	2	4.21	8.42
9	Kundah Conductor	Km	2	2.12	4.24
10	Feeder Control & Relay panel	No	2	5.37	10.74
11	Insulator & Hardware fittings	No	300	0.005	1.50
12	Earthing arrangements	LS		10	10.00
13	Control Cable of various sizes	Km	2	1.8	3.60
14	Fabricated steel structure	M T	38	0.75	28.50
15	Bus Arrangement	LS		17.64	17.64
	Total				337.50
Part II - 11 KV Side					
16	10 Panel Indoor Switch Gear with 2 NCTs	No	1	33	33.00
17	500 mm2 XLPE 1 Core Cable	Km	1	4.79	4.79
18	300 mm2 XLPE 3 Core Cable	Km	1.5	9.4	14.10
19	Cable End Termination Arrangement	E	24	0.015	0.36
20	PLCC Equipments	Set	1	20	20.00
	Total				72.25
	Total Cost of Material (Part I + Part II)				409.75
Part III - Civil Works					
1	Foundation of Equipments & Structures and Cable Trench	LS			74.00
	Total				74.00
	Total of Part I, II & III				483.75
	Spares 3%				12.29
	Erection & Commissioning 10 %				40.98
	Insurance, Sales Tax & Transportating 10%				40.98
	Contingencies 3.75%				15.37
	Overhead Charges				40.98
	Total				634.33
	Dismantling Charges				5.60
	Depreciation Charges				5.70
	Grand Total				623.03

16) ABSTRACT ESTIMATE FOR THE UPGRADATION OF 110 KV SUBSTATION TO 220 KV SUBSTATION WITH 2 NOS. 220 KV FEEDER BAYS, BY INSTALLING 2 X 100 MVA, 220/110 KV TRANSFORMER AND 2 NOS 110 KV FEEDER BAYS

Sl. No.	Particulars	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
Part I - 220 KV Side					
1	Circuit Breaker (SF 6)	Set	5	18.93	94.65
2	Current Transformer	No	18	3.89	70.02
3	Potential Transformer	No	12	4.69	56.28
4	Lightening Arrestor	No	12	0.52	6.24
5	Bus Isolator	Set	12	2.94	35.28
6	Line Isolator	Set	2	3.44	6.88
7	Power Transformer (220/110 KV), 100 MVA	No	2	600	1200.00

ESTIMATE FOR CONSTRUCTION OF 33/11 KV SUBSTATION BY INSTALLING 2 X 5
MVA, 33/11 KV TRANSFORMERS AND 2 NOS OF 33 KV FEEDER BAYS

8	Feeder control and Relay Panel	No.	2	5.31	10.62
9	Transformer Control Panel (Both sides)	No.	2	5.31	10.62
10	Kundah Conductor	Km	6	2.12	12.72
11	Insulator & Hardware fittings	No.	1500	0.007	10.50
12	Earthing arrangements	LS		20	20.00
13	Control Cable of various sizes	Km	5	2	10.00
14	Fabricated steel structure	M T	85	0.75	63.75
15	Neutral CTs	No.	2	0.18	0.32
16	Bus Arrangement	LS		20	20.00
Total					1627.88
Part II - 110 KV Side					
1	SF 6 Circuit Breaker including Panel	Set	4	7.85	31.40
2	Current Transformer	No.	12	1.36	16.32
3	Lightening Arrestor	No.	18	0.31	5.58
4	Feeder control and Relay Panel	No.	2	5.37	10.74
5	Bus Isolator	No.	10	1.75	17.50
6	Potential Transformer	No.	18	1.3	23.40
7	Kundah Conductor for Bus arrangements	Km	2	2.12	4.24
8	Insulator & Hardware fittings	No.	350	0.005	1.75
9	Control Cable of various sizes	Km	3	1.8	5.40
10	Fabricated steel structure	M T	30	0.75	22.50
11	Earthing arrangements	LS		18	18.00
12	Neutral CTs	No.	2	0.15	0.30
13	Bus Arrangement	LS		17.64	17.64
Total					172.77
Part III - Civil Works					
	Foundation of Equipments & Structure and Cable Trench	LS		120	120.00
	Provision for control room extension	LS		7	7.00
Total					127.00
Total Cost of Material (Part I + II)					1800.65
	Spares 3%				54.02
	Erection & Commissioning 10%				180.07
	Insurance, Sales Tax & Transportating 10%				180.07
	Contingencies 3.75%				67.52
	Overhead Charges 10%				180.07
Grand Total					2589.39

17) ABSTRACT ESTIMATE FOR CONSTRUCTION OF 33/11 KV SUBSTATION BY INSTALLING 2 X 5 MVA, 33/11 KV TRANSFORMERS AND 2 NOS OF 33 KV FEEDER BAYS

SL. No.	Particulars	Unit	Quantity	Rate in lakhs	Amount in lakhs
	Part I - Land acquisition				25.00
	Land	LS			
	Part II - Civil Works				
	Site leveling, road, compound wall, foundation work of yard equipment structure, office cum store building, control room, water supply, electrification, P&T phone etc.	LS			50.00
1		LS			3.00
2	Cable trenches	LS			53.00
Total					
	Part III - Equipments				
1	Busbar Arrangement	LS		4	4.00
2	Control cables	KM	3	1.89	5.67
3	Steel Structures	MT	10	0.75	7.50
33KV Side					
4	33/11KV, 5MVA Transformer	No.	2	32.89	65.78
5	Control&Relay Panel for 33/11KV Transformer		2	2.05	4.10
6	33KV VCB with Control Panel	No.	4	4.14	16.56

7	33KV Single Phase PT	No.	9	0.39	3.51
8	33KV CT	No.	12	0.42	5.04
9	33KV Lightning Arrestor	No.	12	0.13	1.56
10	33KV Bus Isolator	No.	5	0.63	3.15
11	33KV Isolator with earth switch for line	No.	2	0.74	1.48
12	Trivector meter(33KV Side of Transformer)	No.	2	0.73	1.46
13	33KV neutral CT	No.	2	0.15	0.30
11KV Side					
14	11KV, VCB with control panel	No.	2	2.8	5.60
15	11KV ODC	No.	4	2.34	9.36
16	11KV PT (3 phase set)	No.	2	0.12	0.24
17	11KV Lightning Arrestor	No.	18	0.06	1.08
18	11KV, 200A, AB switch	No.	4	0.05	0.20
19	11KV, 400A, AB switch	No.	2	0.09	0.18
20	11KV neutral CT	No.	2	0.15	0.30
Common Equipment					
19	11KV/415V, 100KVA Transformer	No.	1	0.91	0.91
20	Alarm Panel		1	0.33	0.33
21	AC Supply Panel	No.	1	0.60	0.60
22	100AH Battery set with battery charger	No.	1	1.80	1.80
Total					140.71
Part IV - Miscellaneous Items					
1	Earthing Arrangement	LS		4	4.00
2	Spare 3%				4.22
3	Erection and Commissioning 10%				14.07
4	Insurance, Sales tax and Transporting 10%				14.07
5	Overhead charges and Contingencies 13.75%				19.35
Total					55.71
Grand Total					274.42

18) ABSTRACT OF ESTIMATE FOR CONSTRUCTION OF 110 KV SUBSTATION WITH 2Nos.110 KV FEEDER BAYS BY INSTALLALLING 2 X 12.5 MVA, 110/11 KV TRANSFORMERS

Sl. No.	Particulars	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
Part I					
1	Land	Acre	2	25	50.00
Part II - Civil Works					
1	Site levelling & Roads	LS		12	12.00
2	Fencing & Compound wall	LS		15	15.00
3	Substation Building	LS		30	30.00
4	Water, Sanitation & Electrification	LS		10	10.00
5	Cable Trenches and Foundation for Yard structure & Equipments	LS		74	74.00
6	P & T Phone etc.	LS		0.25	0.25
Sub Total					141.25
Part III					
1	Steel structures, fabricated galvenised structure for switch yards	M T	40	0.75	30.00
2	110 KV, 11 KV Bus bar arrangements	LS		17.64	17.64
3	Earthing System & Metal spreading of Yard	LS		12	12.00
4	Yard lighting	LS		4	4.00
5	Fire fighting equipments	LS		2	2.00
6	Control Cable of various size	Km	1.5	1.8	2.70
Sub Total					68.34
Part IV - Electrical Equipments					
Part A - 110 KV Side					
1	Power Transformer, 110/11 KV, 12.5 MVA	No	2	84	168.00
2	Power Transformer control relay panel	No	2	4.21	8.42
3	SF 6 Circuit Breaker	Set	4	7.85	31.40

4	Current Transformer	No	12	1.36	16.32
5	Kundah Conductor	Km.	2	2.12	4.24
6	Lightening Arrestor	No	18	0.31	5.58
7	110 KV Feeder Control & Relay Panel	No	2	5.37	10.74
8	Neutral CT	No	2	0.61	1.22
9	Bus Isolator	No	10	1.75	17.50
10	Potential Transformer	No	12	1.3	15.60
11	Line Isolator with earth switch	No	2	1.89	3.78
12	Battery with Charger	No	1	1.8	1.80
13	Insulator & Hard ware fitting	No	300	0.005	1.50
Total, Part A					286.10
Part B - 11 KV Side					
1	10 Panel Indoor Switch Gear with 2NCTs	No	1	33	33.00
2	500 mm2 XLPE 1 Core Cable	Km	1	4.79	4.79
3	300 mm2 XLPE 3 Core Cable	Km	1.5	9.4	14.10
4	Cable End Termination Arrangement	E	24	0.015	0.36
Total, Part B					52.25
Sub Total of Part IV (Part A + Part B)					338.35
Sub Total of Part I+II+III+ IV					697.94
Spares 3%					10.15
Erection & Commissioning 10%					33.84
Insurance, Sales Tax & Transportating 10%					33.84
Contingencies 3.75%					12.69
Overhead Charges 10%					33.84
Grand Total					722.28

19) ABSTRACT ESTIMATE FOR CONSTRUCTION OF 220 KV SUBSTATION WITH 2 NOS. 220 KV FEEDER BAYS, BY INSTALLING 200 MVA, 220/110 KV TRANSFORMER AND 2 X 12.5 MVA 110/11 KV TRANSFORMERS WITH 2 NOS. 110 KV FEEDER BAYS

Sl. No.	Particulars	Unit	Qty	Rate Rs. Lakhs	Amount Rs. Lakhs
Part I					
1	Land	Acre	5	25	125.00
Part II - Civil Works					
1	Site levelling & Roads	LS		25	25.00
2	Fencing & Compound wall	LS		30	30.00
3	Substation Building	LS		50	50.00
4	Water, Sanitation & Electrification	LS		20	20.00
5	Foundation of Equipments & Structure and Cable Trench	LS		164	164.00
Sub Total					289.00
Part III - 220 KV Side					
1	Circuit Breaker (SF 6)	Set	5	18.93	94.65
2	Current Transformer	No	18	3.89	70.02
3	Potential Transformer	No	12	4.69	56.28
4	Lightening Arrestor	No	12	0.52	6.24
5	Bus Isolator	Set	12	2.94	35.28
6	Line Isolator	Set	2	3.44	6.88
7	Power Transformer (220/110 KV), 100 MVA	No	2	600	1200.00
8	Feeder control and Relay Panel	No.	2	5.31	10.62
9	Transformer Control Panel (Both sides)	No	2	5.31	10.62
10	Kundah Conductor	Km	6	2.12	12.72
11	Insulator & Hardware fittings	No	1500	0.007	10.50
12	Earthing arrangements	LS		20	20.00
13	Control Cable of various sizes	Km	5	2	10.00
14	Fabricated steel structure	M T	85	0.75	63.75
15	Neutral CTs	No.	2	0.16	0.32
16	Bus Arrangement	LS		20	20.00
Sub Total					1627.88

Part IV - 110 KV Side

1	SF 6 Circuit Breaker including Panel	Set	6	7.85	47.10
2	110/11 KV 12.5 MVA Transformer	No.	2	84	168.00
3	Transformer Control Panel	No.	2	4.21	8.42
4	Current Transformer	No	18	1.36	24.48
5	Lightening Arrestor	No	24	0.31	7.44
6	Feeder control and Relay Panel	No.	2	5.37	10.74
7	Bus Isolator	No	12	1.75	21.00
8	Potential Tranformer	No	18	1.3	23.40
9	Kundah Conductor for Bus arrangements	Km	3	2.12	6.36
10	Insulator & Hardware fittings	No	450	0.005	2.25
11	Control Cable of various sizes	Km	4	1.8	7.20
12	Fabricated steel structure	M T	45	0.75	33.75
13	Earthing arrangements	LS		24	24.00
14	Neutral CTs	No.	4	0.15	0.60
15	Bus Arrangement	LS		26.45	26.45

Sub Total

411.19

Part V - 11 KV Side

1	10 Panel Indoor Switch Gear with 2NCTs	No	1	33	33.00
2	500 mm ² XLPE 1 Core Cable	Km	1	4.79	4.79
3	300 mm ² XLPE 3 Core Cable	Km	1.5	9.4	14.10
4	Cable End Termination Arrangement	E	24	0.015	0.36

Sub Total

52.25

Total Cost of Material (Part III + IV + V)

2091.32

Total Cost (I + II + III + IV + V)

2505.32

Spares 3%

62.74

Erection & Commissioning 10%

209.13

Insurance, Sales Tax & Transportating 10%

209.13

Contingencies 3.75%

78.42

Overhead Charges 10%

209.13

Grand Total

3273.88