



Sub-Transmission & Distribution System

(33 kV and Below Systems)

Cost Data FY 2017-18


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

COST DATA FOR FY- 2017-18**PREFACE**

1	This Cost Data has been prepared in pursuance to regulation 13 of HPERC (Recovery of Expenditure for Supply of Electricity) Regulation, 2012, for the purpose of making initial estimate for erection of electric lines and/or electric plants and/or any other works to be executed in order to provide supply of power to applicants/consumers in cases where cost is to be recovered on actual basis.
2	Configurations and costs for Sub-Stations and Lines contained in this Cost Data comprising of rates of individual items (Equipment / Material) are merely indicative in nature. The Estimates shall however be prepared by the field units on the basis of proposed layout of the sub-station & other requirements etc. and in accordance with the relevant Standards and Rules / Regulations.
3	Cost of civil works for laying of lines, erection of sub-station and equipment has not been incorporated in this Cost Data, as these vary from place to place. The area & site specific conditions shall be taken into account while preparing the estimates.
4	Cost of land development for sub-station and laying of lines is not envisaged in this Cost Data. The estimations shall be based upon actual requirements.
5	The estimates for the works/ equipments / material not specifically covered in this Cost Data shall be prepared from available stock rates or recent purchase orders or market prices as may be accessible and proof to this effect shall be submitted to the O/o SE(RGGVY).
6	Estimates prepared by Field Units based upon specifications and other considerations using costs not available in this Cost Data shall NOT be subject to Audit Objections by Internal / External Audit Parties or any other Agency.
7	This Cost Data shall not be applicable in cases where prices / costs / rates are discovered or discoverable through competitive bidding as in case of Turn Key Contracts / Awards of Work Contracts.
8	The Vat / GST / Sales Tax on material / service tax on D.C. / Labour cess on material and other statutory levies shall be as per prevalent rates. The prevalent rates as on 01.04.2017 are depicted separately in the Cost Data.
9	IEEMA (Indian Electrical and Electronics Manufacturing Association) formula calculates the variation in prices for the purpose of price adjustments between start of tendering process and delivery of equipment and services and is intended for the purposes of Contractual clauses. This formula is applied to specific equipment / material and is calculated using a host of factors / indices that are distinct for different items. This formula has not been applied in this Cost Data, being not pertinent to Cost Data.
10	Escalation in the price over past years is calculated based upon WPI / inflation in those cases where costs for the financial year under consideration are not available. Rates of material not considered in previous years has been estimated based upon the contiguous items available in the Cost Data. Where items are used in the field which are not available in this Cost Data, the same shall be intimated to the O/o SE(RGGVY) by the field unit so as to enable updating of this Cost Data.
11	The Labour Rates for erection/manual carriage for the labour hired on daily wages basis in the Scheduled Tribal Areas/ Remote Area/Hard Area as notified by State Government from time to time shall be separately allowed 25 % enhancement on the prevalent daily wages rates in accordance with the Finance Department's Office Memorandum No. FIN(PR)B(7)-1/95-II dated 17.04.1998.
12	Where Purchase Orders for the Financial Year have been made available, costs of such items in this Cost Data are based on these Purchase Orders (POs) . Where Purchase Orders for the Financial Year have not been made available, costs have been based upon escalation (Esc) on the Cost Data of previous year. For other items, costs are based on Market Rates (MR) / Estimation (Est) / Awards. Accordingly , in order to continue to build this Cost Data in the future, discovery of new costs by the Field Units by way of POs / MR / Awards may be intimated to the office of SE(RGGVY) along with documentary proof.
13	All Technical / Engineering provision in relevant statutes in force shall be kept in mind at the time of framing estimates based on this cost data viz:- (a) The Electricity Act, 2003 (b) The Electricity Rules, 2005 (c) HPERC (Recovery of Expenditure for Supply of Electricity) Regulation, 2012 and amendments thereto. (d) CEA (Technical Standards for construction of Electrical Plans and Electrical Lines) Regulation, 2010 and amendments thereto. (e) CEA (Installation and Operation of Meters) Regulation, 2006 and amendments thereto. (f) REC Specifications and Construction Standards (g) For Civil Works - Latest HP Schedule of Rates (HPSR)
14	DISCLAIMER: (a) This is a broad based Cost Data for the purpose of cost estimation only and is not intended as a design substitute. The design for the construction shall be based on construction standards which shall be prepared separately at the time of Framing Estimates. The drawings given in this Cost Data are indicative and field units may make upward modification / improvements so as to include for or improve stability and safety. The Office of SE(RGGVY) shall not be liable on any account for any errors made by the Field Units as a result of this Cost Data. (b) This Cost Data covers only a limited number of configurations and costs. Configurations and Costs being innumerable, all configurations and costs as may be required on case to case basis cannot be covered under the scope of this Cost Data due to practical constraints, which may be prepared at the field level as per case requirements. The Office of SE(RGGVY) shall not be liable on any account for any errors made by the Field Units as a result of this Cost Data. In case of doubts, office of SE (RGGVY) may be consulted. (c) Estimations of costs and other components made in this Cost Data shall NOT be subject to Audit Objections by Internal / External Audit Parties or any other Agency.


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MAIN COST DATABASE
(including optional scope of items)

Cost Escalation in FY18 over Cost Data for FY17 (%)

= -1.15

Item	Type	Broad Spec	Minor Spec (opt)	Unit	Rate FY18 (Rs)	PO/ Esc / Est
Auto Voltage Booster	11 kV	11 kV, 100 A, 1-Phase Outdoor Type		No	553484	Esc
Cable	Control	2.5 mm ²	PVC(1.1 kV, 2C, HR FRLS, Cu, Un-Screen)	km	42846	Esc
Cable	Control	2.5 mm ²	PVC(1.1 kV, 4C, HR FRLS, Cu, Un-Screen)	km	73953	Esc
Cable	Control	2.5 mm ²	PVC(1.1 kV, 7C, HR FRLS, Cu, Un-Screen)	km	120318	Esc
Cable	Control	2.5 mm ²	PVC(1.1 kV, 12C, HR FRLS, Cu, Un-Screen)	km	204249	Esc
Cable	Control	2.5 mm ²	PVC(1.1 kV, 19C, HR FRLS, Cu, Un-Screen)	km	313417	Esc
Cable	Control	4 mm ²	PVC(1.1 kV, 2C, HR FRLS, Cu, Un-Screen)	km	66557	Esc
Cable	Control	4 mm ²	PVC(1.1 kV, 4C, HR FRLS, Cu, Un-Screen)	km	113276	Esc
Cable	Control	6 mm ²	PVC(1.1 kV, 4C, HR FRLS, Cu, Screen)	km	187815	Esc
Cable	Control	6 mm ²	PVC(1.1 kV, 7C, HR FRLS, Cu, Screen)	km	305199	Esc
Cable	LT	6 mm ²	PVC(1.1 kV, 2C, Al, Outdoor)	km	10000	PO
Cable	LT	10 mm ²	PVC(1.1 kV, 2C, Al, Outdoor)	km	15890	PO
Cable	LT	16 mm ²	PVC(1.1 kV, 2C, Al, Outdoor)	km	25000	PO
Cable	LT	25 mm ²	PVC(1.1 kV, 2C, Al, Outdoor)	km	40000	PO
Cable	LT	10 mm ²	PVC(1.1kV, 4C, Cu, Armour)	km	225378	Esc
Cable	LT	16 mm ²	PVC(1.1kV, 4C, Al, Un-Armour)	km	55414	PO
Cable	LT	25 mm ²	PVC(1.1kV, 4C, Al, Un-Armour)	km	78187	PO
Cable	LT	16 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	52864	Esc
Cable	LT	25 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	73238	PO
Cable	LT	35 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	93167	PO
Cable	LT	50 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	125302	PO
Cable	LT	70 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	160189	Esc
Cable	LT	95 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	215449	PO
Cable	LT	120 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	288563	Esc
Cable	LT	150 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	338291	PO
Cable	LT	185 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	356096	Esc
Cable	LT	240 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	469538	Esc
Cable	LT	300 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	669959	PO
Cable	LT	400 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	871764	Esc
Cable	LT	500 mm ²	PVC(1.1kV, 3½ C, Al, Un-Armour)	km	1114389	Esc
Cable	11kV Line	3 x 70 mm ²	XLPE(11 kV, 3C)	km	426500	Est
Cable	11kV Line	3 x 95 mm ²	XLPE(11 kV, 3C)	km	492700	Est
Cable	11kV Line	3 x 120 mm ²	XLPE(11 kV, 3C)	km	569048	PO
Cable	11kV Line	3 x 150 mm ²	XLPE(11 kV, 3C)	km	645500	Est
Cable	11kV Line	3 x 185 mm ²	XLPE(11 kV, 3C)	km	736629	PO
Cable	11kV Line	3 x 240 mm ²	XLPE(11 kV, 3C)	km	871658	PO
Cable	11kV Line	3 x 300 mm ²	XLPE(11 kV, 3C)	km	1018300	Est
Cable	11kV Line	3 x 400 mm ²	XLPE(11 kV, 3C)	km	1235000	Est
Cable	22kV Line	3 x 95 mm ²	XLPE(22 kV, 3C)	km	766485	Esc
Cable	22kV Line	3 x 185 mm ²	XLPE(22 kV, 3C)	km	1063441	Esc
Cable	33kV Line	3 x 120mm ²	XLPE(33 kV, 3C)	km	955133	PO
Cable	33kV Line	3 x 240 mm ²	XLPE(33 kV, 3C)	km	134000	Est
Cable	33kV Line	1 x 300 mm ²	XLPE(33 kV, 1C)	km	506686	Esc
Cable	33kV Line	1 x 400 mm ²	XLPE(33 kV, 1C)	km	654000	Est
Cable	33kV Line	1 x 630 mm ²	XLPE(33 kV, 1C)	km	869000	Est
Cable	ABC (11kV)	3 x 35+35 mm ²	XLPE(11 kV, 3C + Earth)	km	491192	PO
Cable	ABC (11kV)	3 x 70+95 mm ²	XLPE(11 kV, 3C + Earth)	km	424882	Esc
Cable	ABC (11kV)	3 x 70+95 mm ²	XLPE(11 kV, 3C + Earth)	km	488352	Esc
Cable	ABC (11kV)	3 x 95+70 mm ²	XLPE(11 kV, 3C + Earth)	km	549032	PO
Cable	ABC (11kV)	3 x 95+75 mm ²	XLPE(11 kV, 3C + Earth)	km	537021	Esc
Cable	ABC (11kV)	3 x 120+95 mm ²	XLPE(11 kV, 3C + Earth)	km	629913	Esc
Cable	ABC (11kV)	3 x 35+70 mm ²	XLPE(11 kV, 3C + Earth)	km	309500	Est


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Item	Type	Broad Spec	Minor Spec (opt)	Unit	Rate FY18 (Rs)	PO/ Esc / Est
Cable	ABC (11kV)	3 x 95+70+35 mm ²	XLPE(11 kV, 3C + Earth)	km	504455	Esc
Cable	ABC (11kV)	3 x 70+70 mm ²	XLPE(11 kV, 3C + Earth)	km	399000	Est
Cable	ABC (LT)	3 x 50+35+35 mm ²	PVC(1.1kV, 3+1 C. Al)	km	153935	Esc
Cable	ABC (LT)	3 x 50+16+35 mm ²	PVC(1.1kV, 3+1 C. Al)	km	119897	PO
Cable	ABC (LT)	3 x 50+35 mm ²	PVC(1.1kV, 3+1 C. Al)	km	110000	Est
Cable	ABC (LT)	3 x 35+25+16 mm ²	PVC(1.1kV, 3+1 C. Al)	km	108907	Esc
Cable	ABC (LT)	3 x 35+16+25 mm ²	PVC(1.1kV, 3+1 C. Al)	km	98536	PO
Cable	ABC (LT)	3 x 35+25 mm ²	PVC(1.1kV, 3+1 C. Al)	km	82700	Est
Cable	ABC (LT)	3 x 120+95 mm ²	PVC(1.1kV, 3+1 C. Al)	km	298422	Esc
Cable	ABC (LT)	3 x 70+50+16 mm ²	PVC(1.1kV, 3+1 C. Al)	km	188929	Esc
Cable	ABC (LT)	3 x 70+16+50 mm ²	PVC(1.1kV, 3+1 C. Al)	km	163931	PO
Cable	ABC (LT)	3 x 120+70+16 mm ²	PVC(1.1kV, 3+1 C. Al)	km	304863	Esc
Cable	ABC (LT)	3 x 70+50+35 mm ²	PVC(1.1kV, 3+1 C. Al)	km	203942	Esc
Cable	ABC (LT)	3 x 70+35+50 mm ²	PVC(1.1kV, 3+1 C. Al)	km	181000	Est
Cable	ABC (LT)	3 x 70+50 mm ²	PVC(1.1kV, 3+1 C. Al)	km	159000	Est
Cable	ABC (LT)	3 x 25+25+16 mm ²	PVC(1.1kV, 3+1 C. Al)	km	91662	Esc
Cable	ABC (LT)	3 x 25+16+25 mm ²	PVC(1.1kV, 3+1 C. Al)	km	77156	PO
Cable	ABC (LT)	3 x 25+35+35 mm ²	PVC(1.1kV, 3+1 C. Al)	km	110576	Esc
Cable	PVC (0.45/0.75 kV)					
Capacitor Bank	11 kV	Thyristor Controlled along with Series Reactor	1200 kVAr	Each	688583	Esc
Capacitor Bank	11 kV	Thyristor Controlled along with Series Reactor	1800 kVAr	Each	947965	Esc
Capacitor Bank	415V	for 25 kVA DTR	9 kVAr	Each	6190	Esc
Capacitor Bank	415V	for 63 kVA DTR	27 kVAr	Each	18571	Esc
Capacitor Bank	415V	for 100 kVA DTR	36 kVAr	Each	24762	Esc
Capacitor Bank	415V	for 250 kVA DTR	81 kVAr	Each	55714	Esc
Capacitor Bank	415V	for 400 kVA DTR	135 kVAr	Each	92857	Esc
Capacitor Bank	415V	for 630 kVA DTR	216 kVAr	Each	148571	Esc
Chemical Earth		With Back Fill Compound, Conductive gel, Cu bonded rod, Earth Pit Cap etc		kg	9885	Esc
Clamps	Half	For Poles		No	136	Esc
Communication Equipment	Auto Recloser	Router, Modem, M2M Gateway, Ethernet Switch, Control Cable, Panel for meters, Battery and Battery Charger, LAN Cables, Software		LS	988500	Esc
Communication Equipment	Package Sub Station			LS	197700	Esc
Communication Equipment	Cable (OFC)	ADSS	6 pair /12 core	km	64253	Esc
Communication Equipment	Cable (OFC)	ADSS	12 pair /24 core	km	74138	Esc
Communication Equipment	Cable (OFC)	OPGW	12 pair /24 core	km	247125	Esc
Communication Equipment	VSAT			set	98850	Esc
Communication Equipment	RTU	With Interface	For SCADA	set	988500	Esc
Communication Equipment	Satellite Phone			set	118620	Esc
Communication Equipment	Radio Frequency			set	276780	Esc
Communication Equipment	Terminal Equipment	With STM-1	SCADA	set	2471250	Esc
Conductor	ACSR	30 mm ² , 6/1/2.59 mm (Weasel)		km	19373	PO
Conductor	ACSR	50 mm ² , 6/1/3.35 mm (Rabbit)		km	32540	PO
Conductor	ACSR	80 mm ² , 6/1/4.09 mm (Raccoon)		km	50299	PO
Conductor	ACSR	100mm ² , 6/7/4.72 mm (Dog)		km	66250	PO
Conductor	ACSR	150 mm ² , 30/7/2.59 mm (Wolf)		km	109435	PO
Conductor	ACSR	200mm ² , 30/7/3.00 mm (Panther)		km	137194	Esc
Conductor	AAAC	34 mm ² , 7/2.50 mm (Ea. to Weasel)		km	18585	PO
Conductor	AAAC	55 mm ² , 7/3.15 mm (Ea. to Rabbit)		km	29190	PO
Conductor	AAAC	80mm ² , 7/3.81 mm (Ea. to Raccoon)		km	42945	PO
Conductor	AAAC	100mm ² , 7/4.26 mm (Ea. to Dog)		km	55500	PO
Conductor	AAAC	150mm ² , 19/3.48 (Ash)		km	98850	Esc
Conductor	AAAC	175mm ² , 19/3.76 (Elm)		km	123563	Esc
Conductor	AAC	50 mm ² , 7/3.10(Ant)		km	27878	Esc
Conductor	AAC	7/2.21(Gnat)		km	14228	Esc
Conductor	ACSS (HTLS / Composite)	(Linnet)		km	152549	Esc
Conductor	Covered Conductor	11kV	(XLPE, AAAC, 12kV, 245 Amps, 70mm ²)	km	302481	Esc
Conductor	Covered Conductor	11kV	(XLPE, AAAC, 12kV, 305 Amps, 99mm ²)	km	403308	Esc
Conductor	Covered Conductor	22kV	(XLPE, AAAC, 24kV, 245 Amps, 70mm ²)	km	351906	Esc
Conductor	Covered Conductor	22kV	(XLPE, AAAC, 24kV, 305 Amps, 99mm ²)	km	452733	Esc


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**MAIN COST DATABASE
(including optional scope of items)**

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

Item	Type	Broad Spec	Minor Spec (opt)	Unit	Rate FY18 (Rs)	PO/ Esc / Est
Conductor	Covered Conductor	33kV	(XLPE, AAAC, 36kV, 245 Amps, 70mm ²)	km	401331	Esc
Conductor	Covered Conductor	33kV	(XLPE, AAAC, 36kV, 305 Amps, 99mm ²)	km	502158	Esc
Cross Arms	11kV	HDGI	V-shape	No	976	Esc
Cross Arms	33kV	HDGI	V-shape	No	1492	Esc
CT-PT Unit	33kV	PT(1 Unit, 33 kV/110 V) ; CT(3No, 25-400/1A)	Accuracy Class: 0.5S	Set	63863	PO
CT-PT Unit	11kV	PT(1 Unit, 11 kV/110 V) ; CT(3No, 10-400/5A)	Accuracy Class: 0.5S	Set	27611	PO
CT-PT Unit	22kV	PT(1 Unit, 22 kV/110 V) ; CT(3No, 25-400/5A)	Accuracy Class: 0.5S	Set	48637	PO
Current Transformer	33kV	1200-600/1-1-1-1-0.577A		Each	58773	Esc
Current Transformer	33kV	800-400/1-1-1-1-1 A		Each	58773	Esc
Current Transformer	33kV	400-200/1-1-1-1 A		Each	54122	Esc
Current Transformer	33kV	400-200/1-1-1 A		Each	49471	Esc
Current Transformer	33kV	600-300/1-1-1 A		Each	49471	Esc
Current Transformer	33kV	300-150/1-1-1 A		Each	49471	Esc
Current Transformer	22kV	300-150/1-1-1-1 A		Each	49471	Esc
Current Transformer	22kV	100-50/1-1-1-1 A		Each	49425	Esc
Current Transformer	33kV	400-200/5-5 A		Each	46581	Esc
Current Transformer	33kV	400-200/1-1 A		Each	46581	Esc
Current Transformer	33kV	Resin cast 25/5 A		Each	27331	Esc
Current Transformer	33kV	Resin cast 50/5 A		Each	27331	Esc
Current Transformer	33kV	Resin cast 100/5 A		Each	27331	Esc
Current Transformer	11kV	Epoxy cast, Indoor, 50/5, 15VA, Class 0.5		Each	10330	Esc
Current Transformer	11kV	Epoxy cast, Indoor, 25/5, 15VA, Class 0.5		Each	10330	Esc
Current Transformer	11kV	Epoxy cast, Indoor, 12.5/5, 15VA, Class 0.5		Each	10765	Esc
Energy Meters		LTAC Single Phase kWh Meter (ISI Marked 1-Ph, Two Wire, 5-30 A)	Accuracy Class: 1.0	No	638	PO
Energy Meters		LTAC Single Phase kWh Meter (ISI Marked 1-Ph, Two Wire, 10-60 A)	Accuracy Class: 1.0	No	656	PO
Energy Meters		Metal Meter Box (MMBs) (CRCA M.S. Sheet Deep Drawn for housing 1-Ph Energy meters)		No	352	PO
Danger Plate		203X200X1.6 mm		No	115	Esc
Fault Path Indicator	7kV - 69kV	Clipon Type (3 No., 25KA / 170ms, conductor dia -5 to 22mm, Op temp -40° to +85°)		Set	32621	Esc
Fitting	Packing Pieces	CI for Rail Pole 11 /13m		No	147	Esc
Fitting	Packing Pieces	CI for Rail Pole 9m		No	147	Esc
H.G. Fuse unit 11 kV 200 Amps				Set	7068	Esc
ICTPN		32A/415V		No	990	Esc
ICTPN		63A/415V		No	2065	Esc
Insulator	33 kV	Disc(Porcelain: 36kV,BS, 90 KN)	CD- 900mm	No	1400	Est
Insulator	11 kV	Disc(Porcelain: 12kV,BS, 45 KN)	CD- 230mm	No	230	PO
Insulator	11 kV	Disc(Porcelain: 12kV,BS, 45 KN)	CD- 400mm	No	297	PO
Insulator	11 kV	Disc(Porcelain: 12kV, BS, 90 KN)	CD- 320mm	No	375	PO
Insulator	11 kV	Disc(Porcelain: 12kV, BS, 90 KN)	CD- 400mm	No	396	PO
Insulator	11 kV	Disc(Porcelain: 12kV, CT, 45 KN)		No	326	Esc
Insulator	11 kV	Disc(Porcelain: 12kV, CT, 90 KN)		No	373	Esc
Insulator	15 kV	Disc(Glass: 15kV, BS, 90 KN)		No	445	Esc
Insulator	33kV	Pin(Porcelain, 36kV, 10 KN)	CD- 840mm	No	664	PO
Insulator	33kV	Pin(Porcelain, 36kV, 10 KN)	CD- 580mm	No	507	PO
Insulator	22kV	Pin(Porcelain, 24kV, 10 KN)	CD- 560mm	No	396	PO
Insulator	22kV	Pin(Porcelain, 24kV, 10KN)	CD- 430mm	No	274	PO
Insulator	11kV	Pin(Porcelain, 12kV, 5KN)	CD- 230mm	No	117	PO
Insulator	11kV	Pin(Porcelain)	CD- 320mm	No	133	PO
Insulator	11kV	Disc(Polymeric,TC, 45 KN)		No	141	Est
Insulator	11kV	Disc(Polymeric,TC, 90 KN)		No	228	Est
Insulator	11kV	Disc(Polymeric,BS, 90 KN)	CD-320	No	237	PO
Insulator	11kV	Disc(Polymeric, BS, 45 KN)	CD-320	No	143	PO
Insulator	11kV	Disc(Polymeric, BS, 5 KN)	CD-320	No	151	PO
Insulator	11kV	Pin (Polymeric,BS, 5 KN)		No	148	Est
Insulator	11kV	Pin (Polymeric,TC, 5 KN)		No	148	Est
Insulator	33kV	Pin (Polymeric,BS, 10 KN)		No	321	Est
Insulator	33kV	Pin (Polymeric, TC, 10 KN)		No	321	Est
Insulator	33kV	Disc(Polymeric)	With fittings	No	890	Esc
Insulator	HT	Egg		No	28	Esc
Insulator	LT	Egg		No	18	Esc
Insulator	LT	Shackle(16KN)	Type-II	No	33	PO
Insulator	LT	Shackle(11.5KN)	Type-I	No	13	PO
Insulator	LT	Pin(3.5KN)		No	7	Esc
Insulator	15kV	Break(88KN)		No	129	Esc
Insulator	8kV	Break(44KN)		No	109	Esc
Insulator	11kV	Post		No	395	Esc
Insulator	33kV	Rod		No	4547	Esc
Insulator	LT	Guy (90x65 mm, 44 KN)	Type-A	No	13	Est
Insulator	LT	Guy (110x75 mm, 53KN)	Type-B	No	21	PO
Insulator	HT	Guy (140x85 mm, 88 KN)	Type-C	No	32	PO
Kit Kat Fuse		200A, 415V		No	1483	Esc
Kit Kat Fuse		400A, 415V		No	1878	Esc
Kit Kat Fuse		100A, 415V		No	1087	Esc
Kit Kat Fuse		300A, 415V		No	1680	Esc

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[Signature]
Sr. Executive Engineer

R. K. Pattnaik
Superintending Engineer

MAIN COST DATABASE
(including optional scope of items)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

Item	Type	Broad Spec	Minor Spec (opt)	Unit	Rate FY18 (Rs)	PO/ Esc / Est
Lightning Arrestor / Surge Arrestor	11kV	Porcelain(9kV, 5KA)		Set	1384	Esc
Lightning Arrestor / Surge Arrestor	11kV	Porcelain(9kV, 10KA, Station)		Set	4943	Esc
Lightning Arrestor / Surge Arrestor	33kV	Porcelain(30kV, 5KA, Station)		Set	5931	Esc
Lightning Arrestor / Surge Arrestor	33kV	Porcelain(30kV, 10KA, Station)		Set	14333	Esc
Lightning Arrestor / Surge Arrestor	33kV	Polymeric(30kV, 10KA)		Set	9600	Est
Lightning Arrestor / Surge Arrestor	22kV	Polymeric(18kV, 5KA)		Set	2745	PO
Lightning Arrestor / Surge Arrestor	11kV	Polymeric(9kV, 10KA)		Set	3707	Esc
Lightning Arrestor / Surge Arrestor	11kV	Polymeric(9kV, 5KA)		Set	1224	PO
Muff (For ST Pole)		With concrete filling		No	1531	Esc
Paints		Aluminium paint.		Ltr	346	Esc
Paints		Red oxide paint.		Ltr	130	Esc
Paints		Aircraft Gray paint.		Ltr	163	Esc
Transformer Oil				Ltr	58	PO
Panel(Bus Coupler)	11kV	With VCB(12 kV, 1250A, 25 kA)		Each	411216	Esc
Panel(Bus Coupler)	33kV	Without Circuit Breaker		Each	212528	Esc
Panel(Distribution Box LT)	63 kVA DTR	With MCCB(100A, 10KA, 4P, 1No) & SFU(32A, 4No, rewirable)		No	18895	Esc
Panel(Distribution Box LT)	100 kVA DTR	With MCCB(160A, 10KA, 4P, 1No) & SFU(32A, 5No, rewirable)		No	26492	Esc
Panel(Distribution Box LT)	250 kVA DTR	With MCCB(400A, 36KA, 4P, 1No) & SFU(100A, 4No, rewirable)		No	71073	Esc
Panel(Distribution Box LT)	400kVA DTR	With ACB(630A, 50KA, 4P, 1No) & SFU(100A, 6No, rewirable)		No	188408	Esc
Panel(Distribution Box LT)	630 kVA DTR	With ACB(1000A, 50KA, 4P, 1No) & SFU(100A, 9No, rewirable)		No	228245	Esc
Panel(Distribution Box LT)	6.3 kVA DTR	With MCCB(15A, 10KA, 2P) & SFU(16A, 1No, rewirable)		No	3559	Esc
Panel(Distribution Box LT)	16kVA DTR	With MCCB(32A, 10KA, 2P) & SFU(16A, 2No, rewirable)		No	4152	Esc
Panel(Distribution Box LT)	25 kVA DTR	With MCCB(40A, 35KA, 4P) & SFU(16A, 4No, rewirable)		No	19078	Esc
Pole	Steel Tubular	8m		No	5384	PO
Pole	Steel Tubular	9m		No	7491	PO
Pole	Steel Tubular	10m		No	11215	PO
Pole	Steel Tubular	11m		No	12165	PO
Pole	Steel Tubular	13m		No	15816	Esc
Pole	Rail	I Beam (19.6 Kg/m, 9m long)		No	10676	Esc
Pole	Rail	H Beam (37.1Kg/m, 11m)		No	24713	Esc
Pole	Rail	H Beam (37.1Kg/m, 13m)		No	29210	Esc
Pole	PSCC	8m		No	2968	Esc
Pole	PSCC	9.5m		No	3262	Esc
Pole	PSCC	7.5m		No	3949	Esc
Pole	PCC	8m		No	3900	Est
Pole	PCC	9m		No	4400	Est
Pole	PCC	10m		No	5437	Esc
Pole	PCC	11m		No	6425	Esc
Pole	Lattice Structure	13m		No	31632	Esc
Potential Transformer		(33 kV/√3/ 110V/√3- 110/√3-110V)		Each	29161	Esc
Reactor	33kV	33 kV, 7.2 kVA Series		Each	140367	Esc
Safety & Protective Gear	Snow Kit			No	4547	Esc
Safety & Protective Gear	Safety Belt / Safety Harness	Full body Harness Type with adjustable leg and shoulder straps and scaffolding hooks.	Tensile Strength (Max 24KN)	No	1720	Est
Safety & Protective Gear	Earth Discharge Rod	Fibre Glass Material, Telescopic Type (4m - 20m)			4500	Est
Safety & Protective Gear	Gum Boots		Industrial Grade	Pair	1140	Est
Safety & Protective Gear	Hand Gloves		11kV Grade	Pair	710	Est
Safety & Protective Gear	Shelmet (Helmet)				140	Est
Safety & Protective Gear	Fire Extinguisher	ABC Type(Portable, Dry Chemical, 2 kg)		No	1087	Esc
Safety & Protective Gear	Fire Extinguisher	ABC Type(Portable, Dry Chemical, 4 kg)		No	1582	Esc
Safety & Protective Gear	Fire Extinguisher	ABC Type(Portable, Dry Chemical, 6 kg)		No	1928	Esc
Safety & Protective Gear	Fire Extinguisher	ABC Type(Portable, Dry Chemical, 9 kg)		No	2372	Esc
Safety & Protective Gear	Fire Extinguisher	ABC Type(Portable, Dry Chemical, 25 kg)		No	10874	Esc
Spacer	LT	Spiral 3-Φ		No	59	Esc
Spacer	LT	Spiral 2-Φ		No	51	Esc
Steel Sections		MS Angle	50x50x6	M/T	33363	Est
Steel Sections		MS Angle	65x65x6	M/T	33546	Est
Steel Sections		MS Angle	75x75x6	M/T	33728	Est
Steel Sections		MS Channel	75x40x6	M/T	33741	Est
Steel Sections		MS Channel	100x50x50	M/T	33783	Est


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MAIN COST DATABASE
(including optional scope of items)

Cost Escalation in FY18 over Cost Data for FY17 (%)

= -1.15

Item	Type	Broad Spec	Minor Spec (opt)	Unit	Rate FY18 (Rs)	PO/ Esc / Est
Steel Sections		MS Channel	125x65x6	M/T	33825	Est
Steel Sections		MS Channel	150x75x6	M/T	33908	Est
Switchgear [Gas Insulated (GIS) Panel]	33kV	1250A, 25kA/3-sec, Double Bus-Bar Gas Insulated, Fixed Type VCB Panel, Indoor Type	Incomer VCB-3 Nos; Outgoing VCB- 2 Nos; Bus Coupler- 1 No; Bus PT Panel- 1 No; Industrial Grade Networking Switch- 1 Nos; Touchproof Cable Termination kit- 5 Nos etc	LS	19150000	Est
Switchgear [Gas Insulated (GIS) Panel]	33kV	33kv Indoor GIS Switchgear 2000A	(2 Incomer with VCB + 4 Outgoing with VCB) etc	LS	14200000	
Switchgear (Air Insulated Panel)	11 kV	1250A, 25kA/3-sec, Single Bus-Bar Air Insulated VCB for BIL 38kV/95kVp, SCADA compatible, Indoor Type	Incomer VCB- 2 Nos; Outgoing VCB- 6 Nos; Bus Sectionalizer Panel- 1 No; Industrial Grade Networking Switch- 1 Nos etc	LS	6000000	Est
Switchgear (Auto Recloser)	11kV	Auto Recloser(interruption: Vaccum, Insulation: Solid Dielectric, with C/R Panel and without Communication) etc	15.5 kV, 630 A, 12.5KA	No	544940	Esc
Switchgear (Auto Recloser)	33kV	Auto Recloser(interruption: Vaccum, Insulation: SF6, With C/R Panel & Without Communication) etc	38 kV, 800 A, 16KA	No	691950	Esc
Switchgear	33kV	VCB (36 kV, 1250A, 26.2 kA, Outdoor Type)		No	216036	Esc
Switchgear	33kV	SF6(36kV, 1250A, 31.5KA, Outdoor)		No	296550	Esc
Switchgear	22kV	VCB (24kV, 1250A, 26.2 KA, Outdoor)		No	187815	Esc
Switchgear	22kV	SF6(24kV, 1250A, 31.5KA, Outdoor)		No	247125	Esc
Switchgear	11kV	VCB(12 kV, 1250A, 25 KA, Outdoor)		No	158160	Esc
Switchgear	11kV	SF6(12kV, 1250A, 31.5KA, Outdoor)		No	197700	Esc
Switchgear	33kV	Isolator(2000 A with ES)		Each	98850	Esc
Switchgear	33kV	Isolator(1600 A with ES)		Each	54368	Esc
Switchgear	33kV	Isolator(1250 A with ES)		Each	49425	Esc
Switchgear	33kV	Isolator(2000 A without ES)		Each	79080	Esc
Switchgear	33kV	Isolator(1600 A without ES)		Each	49425	Esc
Switchgear	33kV	Isolator(1250 A without ES)		Each	44483	Esc
Switchgear	33kV	Isolator(2000 A with ES, Motorised)		Each	118620	Esc
Switchgear	33kV	Isolator(1600 A with ES, Motorised)		Each	61287	Esc
Switchgear	33kV	Isolator(1250 A with ES, Motorised)		Each	59310	Esc
Switchgear	33kV	Isolator(2000 A without ES, Motorised)		Each	86988	Esc
Switchgear	33kV	1600 A without ES, Motorised		Each	54368	Esc
Switchgear	33kV	Isolator(1250 A without ES, Motorised)		Each	52391	Esc
Switchgear	22kV	Isolator(630 A, 25 kA, with ES)		Each	33918	Esc
Switchgear	22kV	Isolator(630 A, 25 kA, without ES)		Each	29492	Esc
Switchgear	11kV	Isolator(630 A, 25 KA, with ES)		Each	24711	Esc
Switchgear	11kV	Isolator(630 A, 25 KA, without ES)		Each	22231	Esc
Switchgear	11kV	Sectionaliser(11kV, 400 A, 12.5KA, SF6/ Vaccum, Outdoor)	With Remote Communication	Each	340505	Esc
Switchgear	415V	FSU(100A)		No	3262	Esc
Switchgear	415V	FSU(200A)		No	4597	Esc
Switchgear	415V	FSU(315A)		No	7216	Esc
Switchgear	415V	FSU(400A)		No	8007	Esc
Switchgear	415V	FSU(63A)		No	1977	Esc
Switchgear	11kV	GOABS(400 Amps)		Set	5638	Esc
Switchgear	22kV	GOABS(400 Amps)		Set	6962	Esc
Substation (Package)	11/0.4 kV	400 kVA, (Oil Type Hermetically sealed Transformer) with 11kV SF6 Insulated compact switchgear with SF6 / Vacuum Circuit Breaker as protection to transformer LT Switchgear	Outdoor, HV: 3 WAY (2 Nos Isolators + 1 No Breaker), 630A, 21 KA; LV Incomer: 4P ACB, 1000 A, 50KA; Outgoing TPN MCCB 250/125 A, 35KA 5No.	LS	2075850	Esc
Substation (Package)	11/0.4 kV	630 kVA, (Oil Type Hermetically sealed Transformer) with 11kV SF6 Insulated compact switchgear with SF6 / Vacuum Circuit Breaker as protection to transformer LT Switchgear	Outdoor, HV: 3 WAY (2 Nos Isolators + 1 No Breaker), 630A, 21 KA; LV Incomer: 4P ACB, 1000 A, 50KA; Outgoing TPN MCCB 250/125 A, 35KA 5No.	LS	2471250	Esc
Substation (E-House / Container)	33/11 kV	1x8 MVA (2 panels- 33kV, 1250A, 25kA/3sec ; 4 panels -11kV, 630A, 25kA/3sec)	L 8 x W 4.5 x 3.5H (m) (without stair & platform)	LS	45000000	Est
Substation (E-House / Container)	33/11 kV	2x3.15 MVA (4 panels- 33kV, 1250A, 25kA/3sec ; 5 panels - 11kV, 630A, 25kA/3sec)	L 9.5 x W 4.5 x 3.5H (m) (without stair & platform)	LS	53000000	Est
Tools / Plants / Tackles	Megger / Insulation Tester	1000V (Hand operated, 200 MΩ)		No	4597	Esc
Tools / Plants / Tackles	Megger / Insulation Tester	2500V (Hand operated, 5000 MΩ)		No	7859	Esc
Tools / Plants / Tackles	Megger / Insulation Tester	5000V (Hand operated, 10000 MΩ)		No	9094	Esc
Tools / Plants / Tackles	Earth Tester			No	8647	Esc


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**MAIN COST DATABASE
(including optional scope of items)**

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

Item	Type	Broad Spec	Minor Spec (opt)	Unit	Rate FY18 (Rs)	PO/ Esc / Est
Tools / Plants / Tackles	Tong Tester	Clipon Type		No	9653	Esc
Tools / Plants / Tackles	Lighting	Emergency Solar (complete fitting including pole and LED lamp (as per HMM/IR/IA rates))		Set	15164	Esc
Tools / Plants / Tackles	Earthing Rods			No	297	Esc
Tools / Plants / Tackles	Pliers			No	148	Esc
Tools / Plants / Tackles	Screw Driver			Set	198	Esc
Tools / Plants / Tackles	Rope	25mm		Kg	99	Esc
Transformer	33/11	Power(1.6 MVA)		No	2151840	Esc
Transformer	33/11	Power(3.15 MVA)		No	2728260	Esc
Transformer	33/11	Power(5 MVA)		No	3459750	Esc
Transformer	33/11	Power(6.3 MVA)		No	4000334	Esc
Transformer	33/11	Power(10/ 12 MVA, ONAN, with OLTC)		No	4780883	Esc
Transformer	33/11	Power(10/ 12 MVA, ONAF, with OLTC)		No	5823644	Esc
Transformer	11/0.4kV	DTR(25kVA, O/D)		No	44814	PO
Transformer	11/0.4kV	DTR(63kVA, O/D)		No	78389	PO
Transformer	11/0.4kV	DTR(100kVA, O/D)		No	108213	PO
Transformer	11/0.4kV	DTR(250kVA, O/D)		No	186300	Est
Transformer	11/0.4kV	DTR(400kVA, O/D)		No	488200	Est
Transformer	11/0.4kV	DTR(400kVA, I/D)		No	464880	Esc
Transformer	11/0.4kV	DTR(630kVA, O/D)		No	655672	Esc
Transformer	11/0.4kV	DTR(630kVA, I/D)		No	666373	Esc
Transformer	11/0.4kV	DTR(100kVA, O/D, Star)		No	98833	Esc
Transformer	11/0.4kV	DTR(200kVA, O/D, Star)		No	173403	Esc
Transformer	11/0.4kV	6.3 kVA (CSP)		No	33249	Esc
Transformer	11/0.4kV	6.3 kVA (DRY TYPE)		No	28949	Esc
Transformer	22/0.4kV	DTR(25kVA, O/D)		No	85200	Est
Transformer	22/0.4kV	DTR(63kVA, O/D)		No	139300	Est
Transformer	22/0.4kV	DTR(100kVA, O/D)		No	186000	Est
Transformer	22/0.4kV	DTR(250kVA, O/D)		No	319500	Est
Transformer	22/0.4kV	DTR(250kVA, I/D)		No	380573	Esc


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MAIN COST DATABASE
(including optional scope of items)

Cost Escalation in FY18 over Cost Data for FY17 (%)

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-1.15

Item	Type	Broad Spec	Minor Spec (opt)	Unit	Rate FY18 (Rs)	PO/ Esc / Est
Transformer	22/0.4kV	DTR(400kVA, I/D)		No	612870	Esc
Transformer	22/0.4kV	DTR(630kVA, O/D)		No	824000	Est
Transformer	22/0.4kV	DTR(100kVA, O/D, Star)		No	98833	Esc
Transformer	22/0.4kV	DTR(200kVA, O/D, Star)		No	173403	Esc
Transformer	33/0.4kV	SSTR(100kVA)		No	355594	Esc
Transformer	33/0.4kV	SSTR(250kVA)		No	398366	Esc
Transformer		SSTR(250kVA)		No	470526	Esc
Wire	GI	6 SWG (5 mm)	Earth, Hot Dip	MT	50190	PO
Wire	GI	8 SWG (4 mm)	Earth, Hot Dip	MT	50502	PO
Wire	GI	10 SWG (3.15 mm)	Earth, Hot Dip	MT	51765	PO
Wire	GI	7/8 SWG (7/4.00 mm)	Stay, Strand, Galvanised	MT	53011	PO
Wire	GI	7/10 SWG (7/3.15 mm)	Stay, Strand, Galvanised	MT	54073	PO
Wire	Barbed	HDGI		MT	68207	Esc


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CONFIGURATION 1: (33 kV LINE)

Cost Data

A) Estimated Cost (per Km): [For 33 kV Single Circuit Line on Single Pole Structure (Delta Formation) using Conductor (Dog / 100 mm² / ACSR 6/7/4.72 and Double continuous earth wire]

^{A1} (Assume: Wind pressure upto 100 kg/m²; Ice / Snow Loading: Moderate ; Span (Max= 90m, Sag=1.73m; Ruling= 75m, Sag=1.20m)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	¹ ACSR 6/1/4.72 (100 mm ²) {Includes 3 conductor lengths for 3Φ and Additional 1% (Sag, Jumpering and wastage)}	66250	Km	3.03	200738	PO
2	Steel Tubular Poles (11 m, Working Load > 227 kg) (with Ruling Span 75 m, 10 No. Run thro' and 3 No. Double Pole Dead End Structures)	12165	No	16	194640	PO
3	³ Muffs with concrete filling	1531	No	16	24496	Esc
4	⁴ Run Thro' Structures (Δ Formation): on Single Pole Structures (Adopt Ten (10) No. Run-through Structures per Km) -					
a	X-Arms: [MS Channel Iron (100x50x5 mm), Length:1525 mm] x 10 No. Structures	389	m	15.3	5932	Est
b	[MS Angle Iron(50x50x5 mm), Length: 2 x 950 mm] x 10 No. Structures	150	m	19	2850	Est
5	33 kV Pin Insulators (Porcelain, 36 kV, 10 kN): 3 No per single pole structure	664	No	30	19920	PO
6	Pole top Bracket (On single Pole Structure)	148	No	8	1184	Esc
7	⁷ Dead End Structures: (Adopt three (3) No. per Km) on Double Pole (Prefer along road side):-					
a	Belt Set - MS Angle Iron: 65x65x5, Length:1500 mm x 2 No.	195	m	9.0	1755	Est
b	X-Bracing Set - MS Angle Iron: 50x50x5, Length [2700 mm x 2 No.]	150	m	16.2	2430	Est
c	X-Arm (Horizontal) - MS Channel Iron: 100X50x5, Length [3050 mm x 2 No.]	389	m	18.3	7119	Est
d	^{7d} Discs insulator String sets on Dead End structures (comprising 3 No. Discs in each string: ^^(Porcelain, BS, 12 kV, 90 kN) including Dead End Clamps etc.) x (3 No. conductors) x (2 No. sides)	2060	Set	18	37080	Est
e	33 kV Pin Insulators (Porcelain, 36 kV, 10 kN): 3 No per double pole structure	664	No	9	5976	PO
8	Stay / Guy Arrangement					
a	Stay set complete in all respect (1No. / Single Pole , 4 No. / Double Pole Structures)	762	No	22	16764	Esc
b	Stay Wire (7/4.00 mm) (9.0 kg Per Stay Set)	53	Kg	198.0	10494	PO
9	Earthing:-					
a	HT Earthing set complete	2471	No	13	32123	Esc
b	Earth wire (GI, 6 SWG) {Includes 2 wire lengths and Additional 1% (Sag and wastage)}@ 150 kg/km	50	Kg	303	15150	PO
c	Eye Hook for earth wire	40	No	26	1040	Esc
d	Earth Reel	21	No	26	546	Esc
e	MS Angle Iron: 50x50x5, Length: 3300 mm	150	m	42.9	6435	Est
10	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg	75.0	6375	Esc
11	Half clamps: [On Double Pole structure: 4 No, On Single Pole structures: 1No.]	136	No	44	5984	Esc
12	Barbed wire	68	Kg	80.0	5440	Esc
13	Danger Plate (203X200X1.6 mm)	115	No	10	1150	Esc
14	Aluminium Paint	346	Ltr	10.0	3460	Esc
15	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions (such as Guarding for Road Crossing, 4 pole structures for 90° spans etc not included here)] (Per Km)				X	
	Estimated Cost of the material		X	+	609080	
16	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (Per Km) (After Justification and with Approval)	1.0%	0.01X	+	6091	
	TOTAL ESTIMATED COST of MATERIAL **		1.01X	+	615171	


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CONFIGURATION 1: (33 kV LINE)**Cost Data**

- A) **Estimated Cost (per Km): [For 33 kV Single Circuit Line on Single Pole Structure (Delta Formation) using Conductor (Dog / 100 mm² / ACSR 6/7/4.72 and Double continuous earth wire]**
- A1 The Span / Sag shown are for Level Spans. For Non Level Spans recalculate Spans / Sags. For Areas where Ice / Snow loading are absent recalculate span / sag (In absence of data assume: Max Span= 95m, Sag =1.67m, Ruling Span= 80m, Sag= 1.19m), For Areas where there is Extreme High Ice / snow / wind loading (150kg/m²) recalculate span / sag (In absence of data assume: Max Span= 75m, Sag = 1.77 m, Ruling Span= 65m, Sag= 1.33m)
- ¹ Higher conductor sizes / DC Line shall be preferred for feeding 33 / 11 kV Sub Stations of capacities >15MVA; Insulated conductors may be preferred when lines pass through cities / townships. AAAC conductors to be used in plain areas.
- ² PCC Poles, H Beams, ST Poles of higher sizes may be used as per site conditions
- ³ Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting
- ⁷ Use of additional Dead End Structures depend on Site Conditions such as large span angles, Non Level Spans, Ridge spans, River crossing spans etc . Where necessary and justified 3 or 4 pole structures shall be preferred.
- ^{7d} For Lesser Discs per string, 15 KV Glass Disc Insulators may be preferred; Composite Polymeric Insulators may also be preferred but shall not be used for Snow bound areas. Discs of strength 45 kN may be used where ever feasible.
- ** Cost Includes VAT / Sales Tax/ GST
- B) **Optional Scope of Items (if Included in Estimate):** **Refer Main Cost Database**
- C) **** ADD: Additional Charges and Taxes (Including Overhead Charges):** **Refer Annexure 'A'**
- D) **Note:** The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendements there to.


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CONFIGURATION 2: (33 kV LINE) **Cost Data**
A) Estimated Cost (per Km): [For 33 kV Single Circuit (SC) Line on Double Pole (DP) Structure (Horizontal Formation); using Conductor (Dog / 100 mm² / ACSR 6/1/4.72) and Double continuous Earth wire]

^{A1} (Assume: Wind pressure upto 100 kg/m²; Ice / Snow Loading: Moderate ; Span (Max= 110m, Sag= 2.58m; Ruling= 90m, Sag= 1.73m;)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	¹ ACSR 6/1/4.72 (100mm ²) (Includes 3 conductor lengths for 3Φ and Additional 1% (Sag, Jumpering and wastage)	66250	Km	3.03	200738	PO
2	² Steel Tubular Poles (11 m, Working Load > 227 kg) (with Ruling Span 90 m, 8 No. Run thro' and 3 No. Dead End Structures)	12165	No	22	267630	PO
3	³ Muffs with concrete filling	1531	No	22	33682	Esc
4	Run Thro' Structures: (Horizontal Formation) on Double Pole Structures (Adopt Eight (8) No. Run-through Structures per Km) -					
a	X-Arm: [MS Channel Iron(100x50x5 mm), Length: 3050 mm] / Run Through Structure	389	m	24.40	9492	Est
b	Disc insulator String (Suspension) sets: 3 No. Discs in each string: ^^(Porcelain, CT, 12 kV, 90 kN) including Suspension Clamps etc.) x (Single Circuit: 3 No. conductors) / Run Through structure	1954	No	24	46896	Est
c	Belt Set - MS Angle Iron: 65x65x5, Length [1500 mm x 2 No.]	195	m	24	4680	Est
d	X-Bracing Set - MS Angle Iron: 50x50x5, Length [2700 mm x 2 No.]	150	m	43	6480	Est
5	⁵ Dead End Structures (Adopt three (3) No. per Km) on Double Pole (Prefer along road side)					
a	Belt Set - MS Angle Iron: 65x65x5, Length [1500 mm x 2 No.]	195	m	9	1755	Est
b	X-Bracing Set - MS Angle Iron: 50x50x5, Length [2700 mm x 2 No.]	150	m	16	2430	Est
c	X-Arm: - MS Channel Iron: 125X65x5, Length [2x3050mm / Dead Structure]	457	m	18.30	8363	Est
d	^{5d} Disc insulator String (Strain) sets: 3 No. Discs in each string: ^^(Porcelain, BS, 12 kV, 90 kN) including Dead End Clamps etc.) x (Single Circuit: 3 No. conductors) x (2 No. sides) /Dead Structures	2060	Set	18	37080	Est
e	33 kV Pin Insulators (Porcelain, 36 kV, 10 kN): 3 No per double pole structure	664	No	9	5976	PO
6	Stay / Guy Arrangement					
a	Stay set complete in all respect (4 No. / DP Structure)	762	No	44	33528	Esc
b	Stay Wire (7/4.00 mm) (9.0 kg Per Stay Set)	53	Kg	396	20988	PO
7	Earthing					
a	HT Earthing set complete	6816	No	11	74976	Esc
b	Earth wire (GI, 6 SWG) (Includes 2 wire lengths and Additional 1% (Sag and wastage)) @ 150 kg/km	50	Kg	303	15150	PO
c	Eye Hook for earth wire	40	No	22	880	Esc
d	Earth Reel	21	No	22	462	Esc
e	MS Angle Iron: 50x50x5, Length [3300 mm	150	m	36.3	5445	Est
8	Half clamps: [On Double Pole structure: 4No]	136	No	88	11968	Esc
9	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg	75	6375	Esc
10	Barbed wire	68	Kg.	80	5440	Esc
11	Danger Plate (203X200X1.6mm)	115	No	10	1150	Esc
12	Aluminium Paint	346	Ltr	10	3460	Esc
13	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions (such as Guarding for Road Crossing, 4 pole structures for 90° spans etc not included here)] (Per Km)					X
	Estimated Cost of the material		X	+	805023	
14	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (Per Km) (After Justification and with Approval)	1.0%	0.01X	+	8050	
	TOTAL ESTIMATED COST of MATERIAL **		1.01X	+	813073	


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- CONFIGURATION 2: (33 kV LINE)** **Cost Data**
- A) **Estimated Cost (per Km): [For 33 kV Single Circuit (SC) Line on Double Pole (DP) Structure (Horizontal Formation); using Conductor (Dog / 100 mm² / ACSR 6/1/4.72) and Double continuous Earth wire]**
- A¹ The Span / Sag shown are for Level Spans. For Non Level Spans recalculate Spans / Sags. For Areas where Ice / Snow loading are absent recalculate span / sag (In absence of data assume: Max Span= 120m, Sag = 2.67m, Ruling Span= 100m, Sag= 1.86m), For Areas where there is Extreme High Ice / snow / wind loading (150kg/m²) recalculate span / sag (In absence of data assume: Max Span= 90m, Sag = 2.55 m, Ruling Span= 75m, Sag= 1.77m)
- ¹ Higher conductor sizes / DC Lines shall be preferred for feeding 33 / 11 KV Sub Stations of capacities >15MVA; Insulated conductors may be preferred when lines pass through cities / townships. AAAC conductors to be used in plain areas.
- ² PCC Poles, H Beams, ST Poles of higher sizes may be used as per site conditions
- ³ Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting.
- ⁵ Use of additional Dead End Structures depend on Site Conditions such as large span angles, Non Level Spans, Ridge spans, River crossing spans etc . Where necessary and justified 3 or 4 pole structures shall be preferred.
- ^{5d} For Lesser Discs per string, 15 KV Glass Disc Insulators may be preferred; Composite Polymeric Insulators may also be preferred but shall not be used for Snow bound areas. Discs of strength 45 kN may be used where ever feasible.
- ** Cost Includes VAT / Sales Tax / GST
- B) **Optional Scope of Items (if Included in Estimate):** **Refer Main Cost Database**
- C) **** ADD: Additional Charges and Taxes (Including Overhead Charges):** **Refer Annexure 'A'**
- D) **Note:** The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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A) CONFIGURATION 3: (33 kV LINE) Cost Data

Estimated Cost (per Km): [For 33 kV Double Circuit (DC) Line on Double Pole (DP) Structure (Vertical Formation); using Conductor: (Dog : 100mm² : ACSR 6/1/4.72) and Double continuous Earth wire]

^{A1} (Assume: Wind pressure upto 100 kg/m²; Ice / Snow Loading: Moderate ; Span (Max= 100m, Sag= 2.13m; Ruling= 80m, Sag= 1.36m)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	¹ ACSR 6/1/4.72 (100mm ²) {Includes 3 conductor lengths for 3Φ and Additional 1% (Sag, Jumping and wastage)}	66250	Km	6.06	401475	PO
2	² Steel Tubular Poles (13 m, Working Load > 227 kg) (with Ruling Span 80 m, 10 No. Run thro' and 3 No. Dead End Structures)	14478	No	26	376428	Est
3	³ Muffs with concrete filling	1531	No	26	39806	Esc
4	⁴ Run-through Structures (Vertical Formation) on Double Pole Structures (Adopt Ten (10) No. Run-through Structures per Km) -					
a	X-Arm: [MS Channel Iron(100x50x5 mm), Length: 3050 mm] x 3 No (for two circuits :Left and Right) / Run Through Structure	389	m	91.5	35594	Est
b	33 kV Pin Insulators (Porcelain, 36 kV, 10 kN): Upper Circuit: 3 No. conductors) / Run Through Structure	664	No	60	39840	PO
c	Belt Set - MS Angle Iron: 65x65x5, Length [1500 mm x 2 No.]	195	m	30	5850	Est
d	X-Bracing Set - MS Angle Iron: 50x50x5, Length [2700mm x 2 No.]	150	m	54	8100	Est
5	⁵ Dead End Structures (Adopt three (3) No. per Km) on Double Pole (Prefer along road side)					
a	Belt Set - MS Angle Iron: 65x65x5, Length [1500 mm x 2 No.]	195	m	9	1755	Est
b	X-Bracing Set - MS Angle Iron: 50x50x5, Length [2700 mm x 2 No.]	150	m	16	2430	Est
c	X-Arm (Horizontal) - MS Channel Iron: 125X65x5, Length [2x1525 mm / Dead Structure]	389	m	9.15	3559	Est
d	^{5d} Discs insulator String (Strain) sets: 3 No. Discs in each string: (Porcelain, BS, 12 kV, 90 kN) including Dead End Clamps etc.) x (Left and Right Circuits: 6 No. conductors) x (2 No. sides) /Dead Structures	2060	Set	36	74160	Est
e	33 kV Pin Insulators (Porcelain, 36 kV, 10 kN): Left and Right Circuits: 6 No. conductors) / Dead End Structure	664	No	18	11952	PO
6	Stay / Guy Arrangement					
a	Stay set complete in all respect (4No. / DP Structure)	762	No	52	39624	Esc
b	Stay Wire (7/4.00 mm) (9.0 kg Per Stay Set)	53	Kg	468	24804	PO
7	Earthing					
a	HT Earthing set complete	6816	No	13	88608	Esc
b	Earth wire (GI, 6 SWG) {Includes 2 wire lengths and Additional 1% (Sag and wastage)}@ 150 kg/km	50	kg	303	15150	PO
c	Eye Hook for earth wire	40	No	26	1040	Esc
d	Earth Reel	21	No	26	546	Esc
e	MS Angle Iron: 50x50x5, Length: 3300 mm	150	m	42.9	6435	Est
8	Half clamps: [On Double Pole structure: 4No]	136	No	104	14144	Esc
9	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg	75	6375	Esc
10	Barbed wire	68	Kg.	80	5440	Esc
11	Danger Plate (203X200X1.6mm)	115	No	10	1150	Esc
12	Aluminium Paint	346	Ltr	10	3460	Esc


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A) CONFIGURATION 3: (33 kV LINE) Cost Data
Estimated Cost (per Km): [For 33 kV Double Circuit (DC) Line on Double Pole (DP) Structure (Vertical Formation); using Conductor: (Dog : 100mm² : ACSR 6/1/4.72) and Double continuous Earth wire]

13	Add: [Cost of Optional Items Required as per Site Conditions (such as Guarding for Road Crossing, 4 pole structures for 90° spans etc not included here)] (Per Km)				X	
	Estimated Cost of the material		X	+	1207725	
14	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (Per Km) (After Justification and with Approval)	1.0%	0.01X	+	12077	
	TOTAL ESTIMATED COST of MATERIAL **		1.01X	+	1219802	

^{A1} The Span / Sag shown are for Level Spans. For Non Level Spans recalculate Spans / Sags. For Areas where Ice / Snow loading are absent recalculate span / sag (In absence of data assume: Max Span= 107m, Sag = 2.1m, Ruling Span= 90m, Sag= 1.5m), For Areas where there is Extreme High Ice / snow / wind loading (150kg/m²) recalculate span / sag (In absence of data assume: Max Span= 77m, Sag = 1.87 m, Ruling Span= 65m, Sag= 1.33m)

¹ Higher conductor sizes shall be preferred for feeding 33 / 11 KV Sub Stations of capacities >15MVA; Insulated conductors may be preferred when lines pass through cities / townships. AAAC conductors to be used in plain areas.

² Lattice Structure, PCC Poles or H Beam may be used as per site conditions for longer span lengths.

³ Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting.

⁵ Use of additional Dead End Structures depend on Site Conditions such as large span angles, Non Level Spans, Ridge spans, River crossing spans etc . Where necessary and justified 3 or 4 pole structures shall be preferred.

^{5d} For Lesser Discs per string, 15 KV Glass Disc Insulators may be preferred; Composite Polymeric Insulators may also be preferred but shall not be used for Snow bound areas. Discs of strength 45 kN may be used where ever feasible.

** Cost Includes VAT / Sales Tax / GST

B) Optional Scope of Items (if Included in Estimate): Refer Main Cost Database

C) ** ADD: Additional Charges and Taxes (Including Overhead Charges): Refer Annexure 'A'

D) Note: The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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A) CONFIGURATION 4: (11 kV LINE) Cost Data
Estimated Cost (per Km): [For 11 kV Single Circuit (SC) Line on Single Pole (SP) Structure (Delta Formation): using Conductor: (Dog : 100mm² : ACSR 6/1/4.72) and Single continuous Earth wire]

A¹ (Assume: Wind pressure upto 100 kg/m²; Ice / Snow Loading: Moderate ; Span (Max= 110m, Sag=2.58m; Ruling= 90m, Sag=1.73m)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	¹ ACSR 6/1/4.72 (100mm ²) {Includes 3 conductor lengths for 3Φ and Additional 1% (Sag, Jumpering and wastage)}	66250	km	3.03	200738	PO
2	² Run Thro' Structures (Δ Formation): Steel Tubular Poles (11 m, Working Load > 227 kgf/m ²) (with Ruling Span 90 m, 8 No. Run thro' and 3 No. Double Pole Dead End Structures)	12165	No	14	170310	PO
3	³ Muffs with concrete filling	1531	No	14	21434	Esc
4	Cross Arm: [Channel Iron (100x50x5 mm), Length (1070) mm x 8 structure	389	m	8.56	3330	Est
5	Angle Iron (50x50x5 mm), Length (2x750) mm x 8 structures	150	m	12	1800	Est
6	Pole Top Bracket	148	No	10	1480	Esc
7	11 kV Pin Insulators (Porcelain, 12 kV, 10 KN): 3 No per pole structure	133	No	24	3192	PO
8	⁸ Dead End Structures: (Adopt three (3) No. per Km) on Double Pole (Prefer along road side)					
a	Belt Set - MS Angle Iron: 50x50x5, Length [1500 mm x 2 No.]	150	m	9	1350	Est
b	X-Bracing Set - MS Angle Iron: 50x50x5, Length [2125 mm x 2 No.]	150	m	12.75	1913	Est
c	X-Arm (Horizontal) - MS Channel Iron: 100X50x5, Length [(1070x2)mm x 2 No.]	389	m	12.84	4995	Est
d	^{8d} Discs insulator sets on Dead End structures (comprising 1 No. Disc: (Porcelain, BS, 12 kV, 90 kN) including Dead End Clamps etc.) x (3 No. conductors) x (2 No. sides)	1268	Set	18	22824	Est
e	11 kV Pin Insulators (Porcelain, 12 kV, 10 KN): 3 No per double pole structure	133	No	9	1197	PO
9	HT Stay / Guy Arrangement					
a	Stay set complete in all respect (1No. / Single Pole , 4 No. / Double Pole Structures)	762	No	20	15240	Esc
b	Stay Wire (7/3.15 mm) (6.0 kg Per Stay Set)	52	kg	120	6240	Est
10	Earthing					
a	HT Earthing set complete	2471	Nos	11	27181	Esc
b	Single Continuous Earth wire (GI, 8 SWG) (alongwith 1 wire lengths for avg. one road crossing @ 20 m and Additional 1% (Sag and wastage)) @ 0.102 kg/m	51	kg	105.08	5359	PO
c	Cross Lacings (GI, 8 SWG) [2.2 m x 9 Nos @ 2 m spacing] (0.102 kg/m)	51	kg	2.02	103	PO
d	Eye Hook for earth wire	25	Nos	4	100	Esc
e	Earth Wire Clamp	198	Nos	13	2574	Esc
f	MS Angle Iron: 50x50x5, Length : 2210 mm for Road crossing	150	m	4.42	663	Est
11	Danger Plate (250X200X1.6 mm)	115	No	10	1150	Esc
12	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg	35	2975	Esc
13	Barbed Wire	68	Kg	30	2040	Esc
14	Aluminium Paint	346	Ltr	16	5536	Esc
15	Pole Clamps (M.S. Flat 50X6 mm)	58	No	56	3248	Esc
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions (such as Guarding for Road Crossing, 4 pole structures for 90° spans etc not included here)] (Per Km)					X
	Estimated Cost of Material		X +		506971	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (Per Km) (After Justification and with Approval)	1.0%	0.01X +		5070	
	TOTAL ESTIMATED COST of MATERIAL **		1.01X +		512040	

A¹ The Span / Sag shown are for Level Spans. For Non Level Spans recalculate Spans / Sags. For Areas where Ice / Snow loading are absent recalculate span / sag (In absence of data assume: Max Span= 115m, Sag =2.45m, Ruling Span= 100m, Sag= 1.86m), For Areas where there is Extreme High Ice / snow / wind loading (150kg/m²) recalculate span / sag (In absence of data assume: Max Span= 90m, Sag = 2.55 m, Ruling Span= 75m, Sag= 1.77m)

1 Higher conductor sizes / DC Line shall be preferred for feeding 11/0.4 KV Sub Stations of capacities >400 KVA; Insulated conductors may be preferred when lines pass through cities / townships. AAAC conductors to be used in plain areas.

2 PCC Poles, H Beams, ST Poles of higher sizes may be used as per site conditions. 9 m Poles may be used in places other than across or along streets.

3 Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting


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- A) **CONFIGURATION 4: (11 kV LINE)** **Cost Data**
Estimated Cost (per Km): [For 11 kV Single Circuit (SC) Line on Single Pole (SP) Structure (Delta Formation); using Conductor: (Dog : 100mm² : ACSR 6/1/4.72) and Single continuous Earth wire]
⁸ Use of additional Dead End Structures depend on Site Conditions such as large span angles, Non Level Spans, Ridge spans, River crossing spans etc. . Where necessary and justified 3 or 4 pole structures shall be preferred.
^{8d} For Lesser Discs per string, 15 KV Glass Disc Insulators may be preferred; Composite Polymeric Insulators may also be preferred but shall not be used for Snow bound areas. Discs of strength 45 kN may be used where ever feasible.
 ** Cost Includes VAT / Sales Tax/ GST
- B) **Optional Scope of Items (if Included in Estimate):** **Refer Main Cost Database**
- C) **** ADD: Additional Charges and Taxes (Including Overhead Charges):** **Refer Annexure 'A'**
- D) **Note:** The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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CONFIGURATION 5: (11 kV LINE)

Cost Data

B) Estimated Cost (per Km): [For 11 kV Double Circuit (DC) Line on Double Pole (DP) Structure (Vertical Formation); using Conductor (Dog / 100 mm² / ACSR 6/1/4.72) and Single continuous Earth wire]

A¹ (Assume: Wind pressure upto 100 kg/m²; Ice / Snow Loading: Moderate ; Span (Max= 100m, Sag= 2.13m; Ruling= 80m, Sag= 1.36m)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	¹ ACSR 6/1/4.72 (100 mm ²) (Includes 3 conductor lengths for 3Φ and Additional 1% (Sag, Jumpering and wastage)	66250	km	6.06	401475	PO
2	² Steel Tubular Poles (11 m, Working Load > 227 kgf/m ²) (with Ruling Span 80 m, 10 No. Run thro' and 3 No. Dead End Structures)	12165	No	26	316290	PO
3	³ Muffs with concrete filling	1531	No	26	39806	Esc
4	Belt Set - MS Angle Iron: 50x50x5, Length [1500 mm x 2 No.]	150	m	39	5850	Est
5	X-Bracing Set - MS Angle Iron: 50x50x5, Length [2125 mm x 2 No.]	150	m	55	8288	Est
6	X-Arm (Horizontal) - MS Channel Iron: 100X50x5, Length [1070x2 mm x ((10*3)+(3*2*3)) No.]	389	m	103	39958	Est
7	⁷ Discs insulator sets on Dead End structures (comprising 1 No. Disc: (Porcelain, BS, 12 kV, 90 kN) including Dead End Clamps etc.) x (3 No. conductors) x (2 No. sides)	1268	Set	18	22824	Est
8	11 kV Pin Insulators (Porcelain, 12 kV, 10 kN): 6 No per structure	133	No	78	10374	PO
9	HT Stay / Guy Arrangement					
a	Stay set complete in all respect (4 No. / Structure)	762	No	52	39624	Esc
b	Stay Wire (7/3.15 mm) (6.0 kg Per Stay Set)	54	kg	312	16848	PO
10	Earthing					
a	HT Earthing set complete	2471	No	13	32123	Esc
b	Single Continuous Earth wire (GI, 8 SWG) (alongwith 1 wire lengths for avg. one road crossing @ 20 m and Additional 1% (Sag and wastage)) @ 0.102 kg/m	51	kg	105.08	5359	PO
c	Cross Lacings (GI, 8 SWG) [2.2 m x 9 Nos @ 2 m spacing] (0.102 kg/m)	51	kg	2.02	103	PO
d	Eye Hook for earth wire	25	No	4	100	Esc
e	Earth Wire Clamp	198	No	13	2574	Esc
f	MS Angle Iron: 50x50x5, Length : 2210 mm for Road crossing	150	No	4.42	663	Est
11	Danger Plate (250X200X1.6 mm)	115	No	13	1495	Esc
12	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg	70	5950	Esc
13	Barbed Wire	68	Kg	50	3400	Esc
14	Aluminium Paint	346	Ltr	26	8996	Esc
15	Pole Clamps (M.S. Flat 50X8 mm)	58	No	260	15080	Esc
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions (such as Guarding for Road Crossing, 4 pole structures for 90° spans etc not included here)] (Per Km)					X
	Estimated Cost of Material			X	+	977180
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (Per Km) (After Justification and with Approval)	1.0%	0.01X		+	9772
	TOTAL ESTIMATED COST of MATERIAL **			1.01X	+	986951

A¹ The Span / Sag shown are for Level Spans. For Non Level Spans recalculate Spans / Sags. For Areas where Ice / Snow loading are absent recalculate span / sag (In absence of data assume: Max Span= 100m, Sag =1.87m, Ruling Span= 80m, Sag= 1.19m), For Areas where there is Extreme High Ice / snow / wind loading (150kg/m²) recalculate span / sag (In absence of data assume: Max Span= 80m, Sag = 2.1 m, Ruling Span= 60m, Sag= 1.13m).

¹ Higher conductor sizes / DC Line shall be preferred for feeding 11/0.4 KV Sub Stations of capacities >400KVA; Insulated conductors may be preferred when lines pass through cities / townships. AACR conductors to be used in plain areas.

² PCC Poles, H Beams, ST Poles of higher sizes may be used as per site conditions

³ Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting

⁷ Use of additional Dead End Structures depend on Site Conditions such as large span angles, Non Level Spans, Ridge spans, River crossing spans etc . Where necessary and justified 3 or 4 pole structures shall be preferred.

⁷ For Lesser Discs per string, 15 KV Glass Disc Insulators may be preferred; Composite Polymeric Insulators may also be preferred but shall not be used for Snow bound areas. Discs of strength 45 kN may be used where ever feasible.

** Cost Includes VAT / Sales Tax / GST

B) Optional Scope of Items (if Included in Estimate): Refer Main Cost Database

C) ** ADD: Additional Charges and Taxes (Including Overhead Charges): Refer Annexure 'A'

D) Note: The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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CONFIGURATION 6: (11 kV LINE with AB Cable)

Cost Data

A) Estimated Cost (per Km): [For 11 kV Line on Single Pole (SP) Structure; using AB Cable (3x70+95 mm²) x 2 Cables]

^{A1} (Assume: Wind pressure upto 100 kg/m²; Ice / Snow Loading: Moderate ; Span (Max=48m, Sag= 1.69m; Ruling= 30 m, Sag= 0.66m)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	11 kV AB Cable [Size: (3x70+95 mm ²) x 2 Cables (additional 1% sagging & wastage)	488352	km	2.02	986471	Esc
2	² Steel Tubular Poles (9 m, Working Load > 200 kgf/m ²) (with Ruling Span 35 m)	7491	No	33	247203	PO
3	³ Muffs with concrete filling	1531	No	33	50523	Esc
4	Stay Set Complete	762	No	33	25146	Esc
5	Stay Wire (7/3.15 mm) (6.0 kg Per Stay Set)	0	Kg	198	0	Est
6	Anchoring Assembly for HT	299	No	17	5083	Esc
7	Suspension Assembly for HT	237	No	16	3792	Esc
8	Facade Hooks for HT	78	No	33	2574	Esc
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions (such as Guarding for Road Crossing, 4 pole structures for 90° spans etc not included here)] (Per Km)				X	
	Estimated Cost of Material		X	+	1320792	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (Per Km) (After Justification and with Approval)	1.0%	0.01X	+	13208	
	TOTAL ESTIMATED COST of MATERIAL **		1.01X	+	1334000	

^{A1} The Span / Sag shown are for Level Spans. For Non Level Spans recalculate Spans / Sags. For Areas where Ice / Snow loading are absent recalculate span / sag (In absence of data assume: Max Span= 52m, Sag =1.76m, Ruling Span= 40m, Sag= 1.04m), For Areas where there is Extreme High Ice / snow / wind loading (150kg/m²) recalculate span / sag (In absence of data assume: Max Span= 44m, Sag = 1.71 m, Ruling Span= 25m, Sag= 0.55m)

² PCC Poles, H Beams, ST Poles of higher sizes may be used as per site conditions

³ Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting

** Cost Includes VAT / Sales Tax / GST

B) Optional Scope of Items (if Included in Estimate): Refer Main Cost Database

C) ** ADD: Additional Charges and Taxes (Including Overhead Charges): Refer Annexure 'A'

D) Note: The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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CONFIGURATION 7: (3Φ LT LINE)

Cost Data

A) **A Estimated Cost (per Km): [For 3Φ LT Line on Single Pole (SP) Structure (Vertical Formation); using Conductor (Doq / 100 mm² / ACSR 6/1/4.72) and Single continuous Earth wire]**

A1 (Assume: Wind pressure upto 100 kg/m²; Ice / Snow Loading: Moderate ; Span (Max= 70 m, Sag= 2.13m; Ruling= 60m, Sag= 1.36m)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S. No	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1 a	¹ ACSR 6/1/4.72 (100mm ²) {Includes 3 conductor lengths for 3Φ and Additional 1% (Sag, Jumpering and wastage)}	66250	km	3.03	200738	PO
b	ACSR 6/1/3.35 (50mm ²) { Neutral conductor including 1% (Sag, Jumpering and wastage)}	32540	km	1.01	32865	PO
2	² PCC Poles (9 m, Working Load > 180 kgf/m ²) (with Ruling Span 60 m)	4400	No	17	74800	Est
3	³ Muffs with concrete filling (1800 mm)	1287	No	17	21879	Esc
4	Shackle Insulator (16 kN)	33	No	68	2244	PO
5	D-Iron (U- Clamps)	54	No	68	3672	Esc
6	Earth Knob	10	No	17	170	Esc
7	LT Stay Set	628	No	12	7536	Esc
8	Stay Wire (7/3.15 mm) (6.0 kg Per Stay Set)	54	Kg	72	3888	PO
9	Kit Kat I.C.	124	No	12	1488	Esc
10	¹⁰ Earthing Set complete	578	No	6	3468	Esc
11	Earth wire (GI, 8 SWG) {Additional 1% (Sag and wastage)} @ 0.102 kg/m	51	Kg	103	5254	PO
12	Spool Tie	23	No	68	1564	Esc
13	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg	25	2125	Esc
14	Aluminium Paint	346	Ltr	16	5536	Esc
15	Spiral PVC Spacer	62	No	30	1860	Est
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions (such as Guarding for Road Crossing, Dead End Structures not included here)] (Per Km)					X
	Estimated Cost of Material		X	+	369087	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (Per Km) (After Justification and with Approval)	1.0%	0.01X	+	3691	
	TOTAL ESTIMATED COST of MATERIAL **		1.01X	+	372778	

A Horizontal Formation may be adopted where necessary

¹ It is desirable that the length of LT feeders do not increase beyond 500m from the feeding DTR. Higher conductor sizes / DC Line shall be preferred when feeding from 400KVA or higher DTR or feeding areas greater than 400m from the DTR; AB Cables may be preferred when lines pass through cities / townships. AAAC conductors to be used in plain areas.

² I Beams, ST Poles of higher sizes may be used as per site conditions.

³ Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting

** Cost Includes VAT / Sales Tax / GST

B) **Optional Scope of Items (if Included in Estimate):** Refer Main Cost Database

C) **ADD: Additional Charges and Taxes (Including Overhead Charges):** Refer Annexure 'A'

D) **Note:** The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall conform to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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Optional Configurations

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S.N.	Item	Qty	Unit	Rate	Cost	PO/ Est/ Esc
1	Material for surveying and stacking of 1 km Line					
a	Wooden pegs	12	No.	27	324	Esc
b	Stone Pillar/ RCC Pillars	7	No.	1232	8624	Esc
2	LT Guarding for Road Crossing @ 10 m (As per REC Std B-1)					
a	Cross Arm: [Channel Iron (75x40x5 mm), Length 1200 mm x 2 structure	2.4	m	168	411	Est
b	Cross Lacings (GI, 8 SWG) [1.2 m x 5 Nos @ 2 m spacing] {0.102 kg/m}	0.6	kg	51	31	PO
c	LT Pin Insulator	8.0	No	49	392	Esc
d	Earth Knob	2.0	No	10	20	Esc
e	Spool Insulator	5.0	No	10	50	Esc
f	Pole Top Bracket	2.0	No	148	296	Esc
g	Pole Clamps (M.S. Flat 50X8 mm)	2.0	No	58	116	Esc
3	33 KV // 11 KV Line Guarding					
	Material for guarding of one road crossing point					
a	PCC poles 8 mtr. Long	2	No	3900	7800	Est
b	Stay set	2	No	762	1524	Esc
c	Stay Wire 7/3.15 mm (@ 6.0 kg Per Stay Set)	12	kg	54	648	PO
d	Earthing set	2	No	6816	13632	Esc
e	Catenary wire	15	m	51	765	Est
f	Cross Arm (2 Nos of Angle iron 2240x65x65x5mm) @ 5.80Kg/m	4.48	m	195	874	Est
g	Half clamps	2	No	136	272	Esc
4	Material cost of 11 kV, 4 Pole Structure for installation of Auto Voltage Booster/ Auto Line Sectionliser					
1	Steel tubular pole 9 m long	4	No	7491	29964	PO
2	Cross Arm: [Channel Iron (100x50x5 mm), (Length 2400 mm)					
	I For line & four pole structure =6 nos.					
	II For G.O. switch & G.O. fuse unit =4 nos.					
	III For foundation of Auto Voltage Booster =6 nos.					
	Total = 16 nos.	38.4	m	389	14938	Est
3	Half Clamps with nuts & bolts	14	No	136	1904	Esc
4	Full Clamps with nuts & bolts	8	No	217	1736	Esc
5	11 kV Strain Insulator complete with fittings	6	No	1268	7608	Est
6	11 kV Pin Insulators (Porcelain, 12 kV, 10KN)	6	No	133	798	Esc
7	Stay Set complete	5	Set	762	3810	Esc
8	Earthing set complete	3	Set	2471	7413	Esc
9	Danger plate	2	No	115	230	Esc
10	Barbed wire	10	Kg	68	680	Esc
11	Set of jumpers with PG clamps (each of 3 nos.)	2	Set	374	748	Esc
4	Material Cost of Double Pole Structure on 11 kV line for installation of Auto Voltage Booster/ Auto Line Sectionalizer					
1	Steel Tubular poles 9 mtr long	2	No.	7491	14982	PO
2	Cross Arm: [Channel Iron (100x50x5 mm), (Length 2400 mm)	9.6	m	389	3734	Est
3	Knee Bracing: [Angle Iron (50x50x5 mm), (Length 2x750 mm)	1.5	m	150	225	Est
4	Channel Iron (100x50x5 mm), (Length 2x 980 mm)	1.96	m	389	762	Est
5	11 kV Strain Insulators complete with fittings	6	No.	1268	7608	Est
6	Stay set complete with guy trip	5	Set	762	3810	Esc
7	Earthing Set complete	2	Set	2471	4942	Esc
8	Danger plate	2	No.	115	230	Esc
9	Barbed wire	8	Kg	68	544	Esc
10	MS Half clamps with nuts & bolts	2	No.	136	272	Esc
11	MS Full clamps with nuts & bolts	6	No.	217	1302	Esc
12	Set of Jumpers with PG clamps(each set of 3 no.)	2	Set	374	748	Esc


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CONFIGURATION 8: (Distribution Substation 11/0.4 kV)

Cost Data

A) ^A **Estimated Cost for 25 KVA, 11/0.4 kV Pole Mounted Distribution Substation**

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

Sr.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	¹ Distribution Transformer (Ordinary), 11/0.4 kV, 25 KVA	44814	No	1	44814	PO
2	Steel Tubular Poles (9 m, Working Load > 200 kgf/m ²)	7491	No	2	14982	PO
3	³ Muffs with concrete filling	1531	No	2	3062	Esc
4	X-Arm: [Channel Iron (100x50x5 mm), Length : 2800 mm X 4 Nos]	389	m	11.2	4357	Est
5	X-Arm: [Channel Iron (75x40x5 mm), Length : 2800 mm X 4 Nos] for supporting DO fuse unit & GO switch	168	m	5.6	941	Est
6	X-Arm [Channel Iron (100x50x5 mm), Length : 460 mm x 2 Nos for supporting Main Channel of Transformer]	389	m	0.92	358	Est
7	MS Angle Iron (50X50x5 mm), Length: 2800 mm x(1 Nos for LA's + 2 No. for Dist Panel Box)	150	m	8.4	1260	Est
8	Transformer Belting & Knee Bracing					
a	MS Angle Iron (50X50x5 mm), Length : 2800 mm x 4 Nos	150	m	11.2	1680	Est
b	MS Angle Iron (35X35x5 mm), Length : 460 mm x 2 Nos	87	m	0.92	80	Est
9	⁹ GO AB Switch Unit (11kV, 400A, 25 KA)	5638	Set.	1	5638	Esc
10	D.O Fuse Unit	1881	Set.	1	1881	Esc
11	¹¹ Surge Arrester, 9 kV Station Class (Porcelain Type)	1170	No	3	3510	Est
12	Discs insulator sets (comprising 1 No. Disc: ^^(Porcelain, BS, 12 kV, 90 kN) including Dead End Clamps etc.)	1268	Set.	3	3804	Est
13	Stay set complete	762	Set.	4	3048	Esc
14	Stay Wire (7/3.15 mm) (6.0 kg Per Stay Set)	54	Kg.	24	1296	PO
15	Pipe Earthing Set	2935	Set.	3	8805	Esc
16	LT Distribution Panel Box with MCCB(40A, 25 kA, 4P) and SFU(16A, 4No, rewirable)	19078	Set.	1	19078	Esc
17	Half Clamp (M.S. Flat 50X6 mm)	66	No.	22	1452	Esc
18	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg.	25	2125	Esc
19	Aluminium Thimble	36	No	16	576	Esc
20	Aluminium Thimble	292	No	4	1168	Esc
21	Lead-Tin Solder (60:40)	941	Kg.	0.75	706	Esc
22	Solder Flux	113	Tin	1	113	Esc
23	Danger Plate	115	No	1	115	Esc
24	Barbed Wire	68	Kg.	15	1020	Esc
25	LT Cable (3.5 Core) 35 mm ²	93	m	15	1395	PO
26	Energy Meter (3-Phase, 4-Wire) DLMS compliant 50 A CT Type for 25KVA Transformer	10887	No	1	10887	Esc
27	Aluminium Paint.	346	Ltr	4	1384	Esc
28	LT Switched Capacitors 9- KVAr for 25 KVA (rate per KVAr)	688	No	9	6192	Esc
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions				X	
	Estimated Cost of Material			X	+	145726
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (After Justification and with Approval)	2.5%	0.025X		+	3643
	TOTAL ESTIMATED COST of MATERIAL **			1.025X	+	149369

A Pole Mounted Sub Stations shall be used upto 100 KVA transformer rating. Sub Stations of capacities > 100 KVA shall be floor mounted - civil platform / bed based.

1 For Transformer Ratings > 25KVA, the allied structure and equipment specifications shall be worked out accordingly

3 Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting

9 Isolators may be preferred

11 Polymeric Lightning Arrestors may be used except in snow bound areas

** Cost Includes VAT / Sales Tax / GST

B) **Optional Scope of Items (if Included in Estimate):**

Refer Main Cost Database

C) **** ADD: Additional Charges and Taxes (Including Overhead Charges):**

Refer Annexure 'A'

D) **Note:** The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 47 to 73 under Chapter IV (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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CONFIGURATION 9: (Distribution Substation 22/0.4 kV)

Cost Data

A) ^A Estimated Cost for 25 KVA, 22/0.4 kV Pole Mounted Distribution Substation

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	¹ Distribution Transformer (Ordinary), 22/0.4 kV, 25 KVA	85200	No	1	85200	Est
2	Steel Tubular Poles (9 m, Working Load > 200 kgf/m ²)	7491	No	2	14982	PO
3	³ Muffs with concrete filling	1531	No	2	3062	Esc
4	X-Arm: [Channel Iron (100x50x5 mm), Length : 2800 mm X 4 Nos	389	m	11	4357	Est
5	X-Arm: [Channel Iron (75x40x5 mm), Length : 2800 mm X 4 Nos] for supporting DO fuse unit & GO switch	168	m	6	941	Est
6	X-Arm [Channel Iron (100x50x5 mm), Length : 460 mm x 2 Nos for supporting Main Channel of Transformer	389	m	7.34	2856	Est
7	MS Angle Iron (50X50x5 mm), Length : 2800 mm x (1 Nos for LA's + 2 No. for Dist Panel Box)	150	m	8.40	1260	Est
8	Transformer Belting & Knee Bracing					
a	MS Angle Iron (50X50x5 mm), Length : 2800 mm x 4 Nos	150	m	11.2	1680	Est
b	MS Angle Iron (35X35x5 mm), Length: 460 mm x 2 Nos	87	m	0.9	80	Est
9	G.O Switch Unit (22 kV, 400A, 25 kA)	6962	Set.	1	6962	Esc
10	D.O Fuse Unit	3689	Set.	1	3689	Esc
11	¹¹ Surge Arrester, 18 kV Station Class (Porcelain Type)	921	No	3	2763	Esc
12	Discs insulator sets (comprising 2 No. Disc: ^\Porcelain, BS, 12 kV, 90 kN) including Dead End Clamps etc.)	1664	Set.	3	4992	Est
13	Stay set complete	762	Set.	4	3048	Esc
14	Stay Wire (7/3.15 mm) (6.0 kg Per Stay Set)	54	Kg.	12	648	PO
15	Pipe Earthing Set	2935	Set.	3	8805	Esc
16	LT Distribution Panel Box with MCCB(40A, 25 kA, 4P) and SFU(16A, 4No, rewirable)	19078	Set.	1	19078	Esc
17	Half Clamp (M.S. Flat 50X6 mm)	66	No.	22	1452	Esc
18	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg.	25	2125	Esc
19	Aluminium Thimble	36	No	16	576	Esc
20	Aluminium Thimble	292	No	4	1168	Esc
21	Lead-Tin Solder (60:40)	941	Kg.	0.75	706	Esc
22	Solder Flux	113	Tin	1	113	Esc
23	Danger Plate	115	No	1	115	Esc
24	Barbed Wire	68	Kg.	15	1020	Esc
25	LT Cable (3.5 Core) 35 mm ²	93	Mtr	15	1395	PO
26	Energy Meter (3-Phase, 4-Wire) DLMS compliant 50 A CT Type for 25 KVA Transformer	10887	No	1	10887	Esc
27	Aluminium Paint.	346	Ltr	4	1384	Esc
28	LT Switched Capacitors 9- KVAR for 25 KVA (rate per KVAR)	688	No	9	6192	Esc
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions				X	
	Estimated Cost of Material		X	+	191535	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (After Justification and with Approval)	2.5%	0.025X	+	4788	
	TOTAL ESTIMATED COST of MATERIAL **		1.025X	+	196324	

A Pole Mounted Sub Stations shall be used upto 100 KVA transformer rating. Sub Stations of capacities > 100 KVA shall be floor mounted - civil platform / bed based.

1 For Transformer Ratings > 25KVA, the allied structure and equipment specifications shall be worked out accordingly

3 Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting

** Cost Includes VAT / Sales Tax / GST

¹¹ Polymeric Lightening Arrestors may be used except in snow bound areas

B) Optional Scope of Items (if Included in Estimate):

Refer Main Cost Database

C) ** ADD: Additional Charges and Taxes (Including Overhead Charges):

Refer Annexure 'A'

D) Note: The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 47 to 73 under Chapter IV (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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CONFIGURATION 10: (Distribution Substation 11/0.4 kV)

Cost Data

A) ^A Estimated Cost for 400 KVA, 11/0.4 kV Outdoor Type Distribution Substation

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

Sr.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	¹ Distribution Transformer (Outdoor Type) , 11/0.4 kV, 400 KVA	488200	No	1	488200	Est
2	Steel Tubular Poles (9 m, Working Load > 200 kgf/m ²)	7491	No	2	14982	PO
3	³ Muffs with concrete filling	1531	No	2	3062	Esc
4	X-Arm: [Channel Iron (100x50x5 mm), Length : 2800 mm x 2 Nos	389	m	5.6	2178	Est
5	X-Arm: [Channel Iron (75x40x5 mm), Length : 2800 mm x 4 Nos] for supporting DO fuse unit & GO switch	168	m	11.2	1882	Est
6	MS Angle Iron (50X50x5 mm), Length : 2800 mm x 1 Nos for LA's	150	m	2.8	420	Est
7	Transformer Bed [Civil Work (As per HPSR)]	24713	Job	1	24713	Esc
8	G.O Switch Unit (11kV, 400A, 25 kA)	5638	Set.	1	5638	Esc
9	D.O Fuse Unit	1881	Set.	1	1881	Esc
10	¹⁰ Surge Arrester, 9 kV Station Class (Porcelain Type)	1170	No	3	3510	Est
11	Discs insulator sets (comprising 1 No. Disc: ^^(Porcelain, BS, 12 kV, 90 kN) including Dead End Clamps etc.)	1268	Set	3	3804	Est
12	Stay set complete	762	Set.	2	1524	Esc
13	Stay Wire (7/3.15 mm) (6.0 kg Per Stay Set)	54	Kg	20	1080	PO
14	Pipe Earthing Set	2935	Set	3	8805	Esc
15	LT Distribution Panel Box with ACB(630A,50 kA, 4P, 1 No) and SFU(100A, 6 No, rewirable)	188408	Set	1	188408	Esc
16	Half Clamp (M.S. Flat 50x5 mm)	66	No	14	924	Esc
17	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg	25	2125	Esc
18	Aluminium Thimble	36	No	16	576	Esc
19	Aluminium Thimble	292	No	4	1168	Esc
20	Lead-Tin Solder (60:40)	941	Kg.	0.75	706	Esc
21	Solder Flux	113	Tin	1	113	Esc
22	Danger Plate	115	No	1	115	Esc
23	Chain Link Fencing, Angle Iron, Gate etc. for transformer fencing	19770	Job	1	19770	Esc
24	LT Cable (3.5 Core) 400 mm ² x 2 incoming	872	m	14	12208	Esc
25	LT Cable (3.5 Core) 70 mm ² x 6 outgoing feeder	160	m	90	14400	Esc
26	Energy Meter (3-Phase, 4-Wire) DLMS compliant 400 A CT Type for 400 KVA Transformer	10190	No	1	10190	Esc
27	Aluminium Paint	346	Ltr	4	1384	Esc
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions					X
	Estimated Cost of Material			X	+	813766
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (After Justification and with Approval)	2.5%	0.025X		+	20344
	TOTAL ESTIMATED COST of MATERIAL **			1.025X	+	834110

^A Sub Stations of capacities > 100 KVA shall be floor mounted - civil platform / bed based.

¹ For Transformer Ratings other than 400 KVA, the allied structure and equipment specifications shall be worked out accordingly

³ Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting

** Cost Includes VAT / Sales Tax / GST

¹⁰ Polymeric Lightening Arrestors may be used except in snow bound areas

B) Optional Scope of Items (if Included in Estimate):

Refer Main Cost Database

C) ^{} ADD: Additional Charges and Taxes (Including Overhead Charges):**

Refer Annexure 'A'

D) Note: The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 47 to 73 under Chapter IV (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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CONFIGURATION 11: (Distribution Substation 11/0.23 kV)

Cost Data

A) Estimated Cost for 6.3 KVA, 11/0.23 kV, 1-Ø Distribution Substation

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

Sr. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	1-Ø Distribution Transformer (Ordinary), 11/0.23 kV, 6.3 kVA	28949	No	1	28949	Esc
2	Steel Tubular Poles (9 m, Working Load > 200 kgf/m ²)	7491	No	1	7491	PO
3	³ Muffs with concrete filling	1531	No	1	1531	Esc
4	X Arm [Channel Iron : (100X50x5 mm), Length : 1500 mm]	389	m	2	584	Est
5	X Arm [Channel Iron : (100X50x5 mm), Length : 1500 mm] for GO Switch	389	m	2	584	Est
6	Bracing Set - MS Angle Iron: 50x50x5, Length : [750 mm x 2 No.]	150	m	2	225	Est
7	Double pole G.O Switch Unit (11kV, 400A, 25 kA)	5638	No	1	5638	Esc
8	⁸ Surge Arrester, 9 kV Station Class (Porcelain Type)	1170	No	2	2340	Est
9	Discs insulator sets (comprising 1 No. Disc: ^{Porcelain, BS, 12 kV, 90 kN) including Dead End Clamps etc.)	1268	Set	2	2536	Est
10	Stay set complete	762	Set.	2	1524	Esc
11	Stay Wire (7/3.15 mm) (6.0 kg Per Stay Set)	54	Kg	12	648	PO
12	Nuts and Bolts of Various Sizes (Galvanised / Coated) [Preferably 16 mm Φ or more (with flat and spring washers)]	85	Kg	15	1275	Esc
13	Pipe Earthing Set	2935	Set	3	8805	Esc
14	Aluminium Thimble	292	No	6	1752	Esc
15	Lead-Tin Solder (60:40)	941	Kg.	0.5	471	Esc
16	Solder Flux	113	Tin	0.5	57	Esc
17	Danger Plate	115	No	1	115	Esc
18	Energy Meter (1-Phase) DLMS compliant 10-60 A CT Type	786	No	2	1572	Esc
19	Aluminium Paint.	346	Ltr	2	692	Esc
20	PVC Cable T/C 16 mm ²	25	Mt.	10	250	PO
21	Barbed Wire	68	Kg.	4	272	Esc
22	LT Distribution Panel Box with MCCB(40A, 25 kA, DP) and SFU(16A, 4No, rewirable)	3559	No	1	3559	Esc
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions					X
	Estimated Cost of Material		X	+	70868	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (After Justification and with Approval)	2.5%	0.025X	+	1772	
	TOTAL ESTIMATED COST of MATERIAL **		1.025X	+	72640	

** Cost Includes VAT / Sales Tax / GST

³ Concrete Filling not included in earlier Cost Data; Where Muffs are not available we may opt for concreting

⁸ Polymeric Lightening Arrestors may be used except in snow bound areas

B) Optional Scope of Items (if Included in Estimate): Refer Main Cost Database

C) ** ADD: Additional Charges and Taxes (Including Overhead Charges): Refer Annexure 'A'

D) Note: The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 47 to 73 under Chapter IV (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.


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CONFIGURATION 12: (Service Connections)

Cost Data

A) Estimated Cost of 1-Ø Domestic Service Connection

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	Pole Clamp	82	No	1	82	Esc
2	T/C PVC 10 mm ²	16	m	4	64	PO
3	T/C PVC 6 mm ²	10	m	20	200	PO
4	G.I Wire 8 SWG	51	Kg	2	102	PO
5	Link Clip 80x8 mm	25	Pkt	1	25	Esc
6	Black Tape	5	m	1	5	Esc
7	Guy G.I. Wire with Clamp	17	No	1	17	Esc
8	RAG Bolt (16X105) mm	24	No	2	48	Esc
9	RAG Bolt (16X150) mm	28	No	3	84	Esc
10	Anchor Hook	21	No	2	42	Esc
11	Meter Box	352	No	1	352	PO
12	Kit Kat Fuse Unit 16 A, 240 V	49	No	1	49	Esc
13	GI Bolt for Earth Terminal (12X75) mm	15	No	3	45	Esc
14	Polycarbonate seal	16	No	3	48	Esc
15	1-Ø Energy Meter (5-30A/10-40A)	638	No	1	638	PO
16	T-Connector	28	No	2	56	Esc
	Add: Cost of Essential Optional Sub-Configurations Required as per Site Conditions					X
	Estimated Cost of Material		X	+	1857	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (After Justification and with Approval)	2.5%	0.025X	+	46	
	TOTAL ESTIMATED COST of MATERIAL **		1.025X	+	1903	

Estimated Cost of 3-Ø Commercial Service Connection

S. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	Pole Clamp	82	No	1	82	Esc
2	T/C PVC 10 mm ²	16	m	4	64	PO
3	4 Core PVC Cable 16 mm ² for 3 Phase (Commercial)		m	20	1100	PO
4	G.I Wire 8 SWG	51	Kg	2	102	PO
5	Link Clip 80x8 mm	25	Pkt	1	25	Esc
6	Black Tape	5	m	1	5	Esc
7	Guy G.I. Wire with Clamp	17	No	1	17	Esc
8	RAG Bolt (16X105) mm	24	No	2	48	Esc
9	RAG Bolt (16X150) mm	28	No	3	84	Esc
10	Anchor Hook	21	No	2	42	Esc
11	Meter Box	352	No	1	352	PO
12	Kit Kat Fuse Unit 32 A, 415 V	124	No	1	124	Esc
13	GI Bolt for Earth Terminal (12X75) mm	15	No	3	45	Esc
14	Polycarbonate seal	16	No	3	48	Esc
15	3 Phase 4 wire energy Meter (10-60A)	3794	No	1	3794	Esc
16	T-Connector	28	No	2	56	Esc
	Add: Cost of Essential Optional Sub-Configurations Required as per Site Conditions					X
	Estimated Cost of Material		X	+	5988	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (After Justification and with Approval)	2.5%	0.025X	+	150	
	TOTAL ESTIMATED COST of MATERIAL **		1.025X	+	6138	

** Cost Includes VAT / Sales Tax / GST

B) Optional Scope of Items (if Included in Estimate): Refer Main Cost Database

C) ** ADD: Additional Charges and Taxes (Including Overhead Charges): Refer Annexure 'A'

D) NOTE:-
a) The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.
b) This is broad based Cost Data for cost estimation only and is not intended as a Design substitute. The Design for the construction shall be based on construction standards which shall be prepared separately at the time of Framing Estimates. The drawings given in the cost data are indicative and field units may make upward modification / improvements so as to include for or improve stability and safety.
c) Estimate for GSC should be prepared as per site requirement as well as on need basis.
d) Earthing of wiring should be mandatory.


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

CONFIGURATION 13: (Service Connections)

Cost Data

A) Estimated Cost of 1-Ø Industrial/ Agricultural Connection upto 20 kW

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	Pole Clamp	80	No	1	80	Esc
2	T/C PVC Cable 25 mm ²	40	Mtr	30	1214	PO
3	G.I. Wire 8 SWG	51	Kg	3	153	PO
4	A.I (50X50x5) mm Length 2m	150	Kg	2	300	Est
5	Eye Bolt (16X300) mm	31	No	1	31	Esc
6	Eye Hook/G.I. Wire Guy	17	No	1	17	Esc
7	RAG Bolt (16X225) mm	29	No	4	116	Esc
8	RAG Bolt (16X150) mm	27	No	4	108	Esc
9	Meter Box	352	No	1	352	PO
10	Kit Kat Fuse Unit 32 A, 240 V	69	No	1	69	Esc
11	G.I Bolt for Earth terminal (12X75) mm	15	No	1	15	Esc
12	T-Connector	27	No	4	108	Esc
13	Black Tape	5	Roll	1	5	Esc
14	Link Clip	25	Pkt	2	50	Esc
15	Polycarbonate seal	16	No	6	96	Esc
16	Crimping Thimble	9	No	6	54	Esc
17	1-Ø 2 wire Static Energy Meter 5-30 A	638	No	1	638	PO
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions				X	
	Estimated Cost of Material		X	+	3406	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here](After Justification and with Approval)	2.5%	0.025X	+	85	
	TOTAL ESTIMATED COST of MATERIAL **		1.025X	+	3491	

Estimated Cost of 3-Ø Industrial/ Agricultural Connection upto 20 kW

S. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	Pole Clamp	80	No	1	80	Esc
2	3.5 Core PVC Cable 25 mm ² for 3 Phase	73	m	30	2200	PO
3	G.I. Wire 8 SWG	51	Kg	3	153	PO
4	A.I (50X50x5) mm Length 2m	150	Kg	2	300	Est
5	Eye Bolt (16X300) mm	31	No	1	31	Esc
6	Eye Hook/G.I. Wire Guy	17	No	1	17	Esc
7	RAG Bolt (16X225) mm	29	No	4	116	Esc
8	RAG Bolt (16X150) mm	27	No	4	108	Esc
9	Meter Box	352	No	1	352	PO
10	Kit Kat Fuse Unit 63 A, 415 V	217	No	1	217	Esc
11	G.I Bolt for Earth terminal (12X75) mm	15	No	1	15	Esc
12	T-Connector	27	No	4	108	Esc
13	Black Tape	5	Roll	1	5	Esc
14	Link Clip	25	Pkt	2	50	Esc
15	Polycarbonate seal	16	No	6	96	Esc
16	Crimping Thimble	9	No	6	54	Esc
17	3 Phase 4 wire static energy Meter (10-60A)	2175	No	1	2175	Est
	Add: Cost of Essential Optional Sub-Configurations Required as per Site Conditions				X	
	Estimated Cost of Material		X	+	6077	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here] (After Justification and with Approval)	2.5%	0.025X	+	152	
	TOTAL ESTIMATED COST of MATERIAL **		1.025X	+	6229	

** Cost Includes VAT / Sales Tax / GST

B) Optional Scope of Items (if Included in Estimate): Refer Main Cost Database

C) ** ADD: Additional Charges and Taxes (Including Overhead Charges): Refer Annure 'A'

D) NOTE:
a) The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall conform to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendements there to.
b) This is broad based Cost Data for cost estimation only and is not intended as a Design substitute. The Design for the construction shall be based on construction standards which shall be prepared separately at the time of Framing Estimates. The drawings given in the cost data are indicative and field units may make upward modification / improvements so as to include for or improve stability and safety.
c) Estimate for GSC should be prepared as per site requirement as well as on need basis.
d) Earth leakage circle breaker is required to be checked by the JE Concerned as the same has been provided in the wiring by the consumer.
e) Earthing of wiring should be mandatory.


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

CONFIGURATION 14: (Service Connections)

Cost Data

A) Estimated Cost of 3-Ø Industrial/ Agricultural Connection ≤ 50KW

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S. NO.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	Pole Clamp	80	No	1	80	Esc
2	3.5 Core PVC Cable 95 mm ²	215	Mtr	20	4300	PO
3	G.I Wire 8 SWG	51	Kg	2	102	PO
4	T-Connector	27	No	4	108	Esc
5	A.I (50x50x5) mm	150	Mtr	2	300	Est
6	Eye Bolt (16x300) mm	31	No	1	31	Esc
7	Eye Hook with G.I Wire Guy	17	No	1	17	Esc
8	RAG Bolt (16x225) mm	29	No	4	116	Esc
9	RAG Bolt (16x150) mm	27	No	4	108	Esc
10	L.T Switch 200A	3682	No	1	3682	Esc
11	Black Tape	5	Roll	1	5	Esc
12	Polycarbonate seal	16	No	6	96	Esc
13	3-Ø, 4-Wire Trivector Meter with 200/5A CT. with meter box	13059	No	1	13059	Esc
14	Crimping Thimbles	9	No	6	54	Esc
15	G.I. Bolt for earth Terminal (12x75) mm	15	No	1	15	Esc
	Add: [Cost of Essential Optional Sub-Configurations Required as per Site Conditions				X	
	Estimated Cost of Material			X +	22073	
	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P etc) not included here](After Justification and with Approval)	2.5%	0.025X	+	552	
	TOTAL ESTIMATED COST of MATERIAL **		1.025X	+	22625	

** Cost Includes VAT / Sales Tax

B) Optional Scope of Items (if Included in Estimate): Refer Main Cost Database

C) ** ADD: Additional Charges and Taxes (Including Overhead Charges): Refer Annexure 'A'

D) NOTE:
a) The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall conform to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.
b) This is broad based Cost Data for cost estimation only and is not intended as a Design substitute. The Design for the construction shall be based on construction standards which shall be prepared separately at the time of Framing Estimates. The drawings given in the cost data are indicative and field units may make upward modification / improvements so as to include for or improve stability and safety.
c) Estimate for GSC should be prepared as per site requirement as well as on need basis.
d) Earth leakage circle breaker is required to be checked by the JE Concerned as the same has been provided in the wiring by the consumer.
e) Any connection above 50 kW should be on HT.
f) Earthing of wiring should be mandatory.


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

CONFIGURATION 15: (Street Light Point on Existing Pole)

Cost Data

A) ^A Estimated Cost of Street Light Point on Existing Pole)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S. No.	Description	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	¹ AAAC 20 mm ²	11	m	60	660	Esc
2	Pipe Bend, Clamps, nuts & Bolts, Shackle Insulator, D Clamp etc	791	LS	1	791	Esc
3	Twin Core PVC Cable 1.5 mm ²	7	m	2	14	Esc
4	Photo Switches (Static Switch)	395	No	1	395	Esc
5	⁵ LED Fitting Complete (18 W)	1236	Set	1	1236	Esc
	Add: [Cost of Essential Optional Sub-Configurations Required as per requirement]				X	
	Estimated Cost of Material		X	+	3096	
	Add: [Cost of Optional Miscellaneous Items not included here] (After Justification and with Approval)	2.5%	0.025X	+	77	
	TOTAL ESTIMATED COST of MATERIAL **		1.025X	+	3173	

^A The Cost shall be deposited by the Agency / Local Body

¹ Cost is based on Ruling Span

⁵ LED fittings of higher ratings may be included in Estimates with justification (such as based on area to be illuminated) only under special circumstances and after prior approval of higher office

* Based on availability

** Cost Includes VAT / Sales Tax

B) Optional Scope of Items (if Included in Estimate):

Refer Main Cost Database

C) ** ADD: Additional Charges and Taxes (Including Overhead Charges):

Refer Annexure 'A'

D) NOTE:
a) The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall conform to relevant REC standards and regulations 90 to 111 under Chapter V (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.
b) This is broad based Cost Data for cost estimation only and is not intended as a Design substitute. The Design for the construction shall be based on construction standards which shall be prepared separately at the time of Framing Estimates. The drawings given in the cost data are indicative and field units may make upward modification / improvements so as to include for or improve stability and safety.
c) Estimate for GSC should be prepared as per site requirement as well as on need basis.
d) Earth leakage circle breaker is required to be checked by the JE Concerned as the same has been provided in the wiring by the consumer.
e) Earthing of wiring should be mandatory.


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

Configuration 16 (33/ 11 kV, 3.15 MVA - Single)**Cost Data**

- A) **Estimated Cost of 33/11 kV, 3.15 MVA Substation (with Single Power Transformer)**
(With Single 33 kV Incomer Bus / Bay, Single 11 kV Bus from Transformer, Single 11 kV Outgoing feeder)

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S.N.	Description of item	Rate	Unit	Qty	Cost (Rs/ Km) (Man)	CD Basis (PO/ Esc / Est/ MR)
1	Transformer(s)					
a	^a Power Transformer (3.15 MVA, 33/11 kV, ONAN, OLTC, Outdoor)	2728260	No.	1	2728260	Esc
b	^b Sub Station Transformer (100 kVA, 33/0.4 kV)	355594	No.	1	355594	Esc
2	33 kV Switchgear & Allied Equipment: with 01 No., 33 kV Incomer					
a	33 kV Control and Relay (CR) Panel (with Numeric Differential Relay, IEC 61850)	350526	Set	1	350526	Esc
b	33 kV Control and Relay (CR) Panel (33 kV Incomer Bus) [Numeric Relay, IEC 61850]	321290	Set	1	321290	Esc
c	33 kV VCB (36 kV, 1250A, 26.2 kA, Outdoor Type)	216036	Set	2	432072	Esc
d	33 kV Isolator (800 A, 25kA, with Earth Switch)	101436	Set	1	101436	Esc
e	33 kV Isolator (800 A, 25kA, without Earth Switch)	75152	Set	2	150304	Esc
f	33 kV LA /Surge Arrester (30 kV, 10KA, Station class, ZnO, Porcelain)	4777	No.	6	28662	Esc
g	33 kV Current Transformer (33 kV, 1Φ, Multi Ratio Multi Core, Outdoor) (1 No. per Φ)	58773	No.	6	352638	Esc
h	33 kV Potential Transformer (33 kV/110 V, 1Φ, Multi-Core, Outdoor), (1No. per Φ)	29161	No.	3	87483	Esc
i	33 kV Drop Out Fuse Unit (33 kV, Expulsion)	11052	Set	1	11052	Esc
3	11 kV Switchgear and Allied equipment: 01 No. incomer Bus					
a	11 kV incomer Bus: Control and Relay (CR) Panel with VCB (12 kV, 1250 A, 25KA) [Numeric Relay, IEC 61850]	499193	Set	1	499193	Esc
b	11 kV Incomer Bus: Potential Transformer (11 kV/110V, 3Φ, Indoor)	9885	Set	1	9885	Esc
c	11 kV LA/ Surge Arrester (9 kV, Station Class, ZnO, Porcelain, Outdoor)	408	No.	3	1224	Est
d	11 kV Cable (11 kV, 400 mm ² , XLPE, Three Core, Armoured) {Transformer to 11 kV Bus} {50m+ Spare- 50m}	1235	m	100	123500	Est
e	11 kV Cable Termination Kit (400 mm ² , Outdoor)	1779	No.	3	5337	Esc
f	11 kV Cable Termination Kit (400 mm ² , Indoor)	1518	No.	3	4554	Esc
4	11 kV Switchgear and Allied equipment: Single (1 No.) Outgoing Feeder					
a	11 kV Outgoing Feeder: Control and Relay (CR) Panel with VCB (12 kV, 1250 A, 25KA) including CT	390458	Set	1	390458	Esc
b	11 kV Incomer Bus: Potential Transformer (11 kV/110V, 3Φ, Indoor)	9885	No.	1	9885	Esc
c	11 kV Isolator (12 kV, 630 A, 25 kA, without Earth Switch, Outdoor)	22231	Set	1	22231	Esc
d	11 kV LA/ Surge Arrester (9 kV, Station Class, ZnO, Porcelain, Outdoor)	408	No.	3	1224	Est
e	11 kV Cable (11 kV, 185 mm ² , XLPE, Three Core, Armoured) {Busbar VCB to Isolator} {50m+ Spare- 50m}	737	mtr	100	73700	Est
f	11 kV Cable Termination Kit (185 mm ² , Outdoor)	1779	No.	1	1779	Esc
g	11 kV Cable Termination Kit (185 mm ² , Indoor)	1518	No.	1	1518	Esc
5	LT Cable (1.1 kV, 3.5 Core, 70 mm²) {from Station Tfr}	160	mtr	100	16000	Esc
6	CAPACITOR BANK:- (REC Spec. 19/1981)					
a	^{6a} Capacitor Bank (3-Φ, 50 Hz, 1200 KVAR) [IS:2834]	688583	No	1	688583	Esc
b	Automatic Capacitor Switch (12 kV, 1250 A, 25 kA) [REC Spec. 20/1981]	197700	No	1	197700	Esc


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

Configuration 16 (33/ 11 kV, 3.15 MVA - Single)

Cost Data

A) **Estimated Cost of 33/11 kV, 3.15 MVA Substation (with Single Power Transformer)**
 (With Single 33 kV Incomer Bus / Bay, Single 11 kV Bus from Transformer, Single 11 kV Outgoing feeder)

7	GENERAL EQUIPMENT:-					
a	Battery Bank with Battery Charger (15 No x 2V Cell, Lead Acid, 30 V, 100 AH)	116331	No.	1	116331	Esc
b	Distribution Panel (30V, DC)	47020	No.	1	47020	Esc
c	Distribution Panel (415 V, AC)	591598	No.	1	591598	Esc
8	TELECOMMUNICATION FACILITIES					
a	SCADA	3500000	Set	1	3500000	Est
b	ADSS OFC (6 Pair / 12 Core)					
c	Routers / Switches etc					
9	SUPERSTRUCTURE & BUSBAR					
a	33 kV super structure & busbar	520300	job	1	520300	Est
b	11 kV super structure & busbar per feeder	38148	job	1	38148	Est
10	EARTHING (33 kV Sub-Station)	219547	job	1	219547	Est
11	Yard & Colony Fencing	408865	job	1	408865	Est
12	LIGHTING					
a	Yard Lighting	63958	job	1	63958	Est
b	Lighting Emergency (3 No LED Bulbs with holders / wire)	989	No	1	989	Esc
13	Control and LT power cables	86325	job	1	86325	Est
14	Add: [Cost of Essential Optional Sub-Configurations]					Y
	Estimated Cost of the material / Equipment		Y	+	12559169	
15	Add: [Cost of Optional Miscellaneous Items (Protective Gear, T&P, Safety Provisions, Safety Equip etc) not included here] (After Justification and with Approval)	5%	0.05Y	+	627958	
	TOTAL ESTIMATED COST of MATERIAL / EQUIPMENT **		0.05Y	+	13187127	
16	CIVIL WORKS					
a	Transformer Foundation	31897	job	1	31897	Est
b	Trenches	340393	job	1	340393	Est
c	Baffle wall (As per HPSR)					Z
d	Oil Sump	49425	job	1	49425	Esc
	TOTAL ESTIMATED COST of CIVIL WORKS **		Z	+	421715	
	TOTAL ESTIMATED COST of SUB STATION **		0.05Y + Z	+	13608842	

** Cost Includes VAT / Sales Tax

^a For transformers of capacity more than 10 MVA, ONFA Trfs / Nitrogen Injection system to be considered.

^b Provision of oil pit should be kept under transformers to collect oil spills.

⁴ The number of outgoing feeders along with allied equipment shall be as per requirement and resultant cost shall be multiple of this number.

^{6a} Refer REC Specifications 19/1981 (Capacitor Bank at 33/11 kV Sub-Station), 20/1981 (11 kV Circuit Breakers for Controlling Capacitors) & 35/1984 (Pole Mounted Switched Capacitors)

B) **Optional Scope of Items (if Included in Estimate):** Refer Main Cost Database

C) **** ADD: Additional Charges and Taxes (Including Overhead Charges):** Refer Annexure 'A'

NOTE:

- D1) The Material / Equipment specifications shall conform to relevant IS / IEC Standards. The Construction / laying of 33KV line shall confirm to relevant REC standards and regulations 47 to 73 under Chapter IV (Part-B) of CEA (Technical standard) Regulation 2010 and amendments there to.
- D2) The cost of Additional 33 kV Bay and associated Terminal Equipment at EHV end should be taken from EHV Cost Data.


 Assistant Engineer


 Sr. Executive Engineer


 Superintending Engineer

33 KV Super Structure and Bus-bar for 33/11 kV or 33/22 KV S/Stn.

Cost Escalation in FY18 over Cost Data for FY17 (%)

=

-1.15

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
A.	SUPER STRUCTURE					
	(i) R.S. Joists, size 10,000x225x150 mm 12 supports i.e. (12x10x33.9)=4068 kg say 4.07 MT	38000	MT	4.07	154660	Est
	(ii) R.S. Joists, size 4200x225x150 mm supports for lightening arrester differential CT's (6x33.9x4.2) =854 kg say .854 MT	38000	MT	0.854	32452	Est
	(iii) Foundation of R.S. joists supports	5436	job	18	97848	Esc
	(iv) M.S. channel iron 125x65 mm, X-arm @ 13.1 kg/m At 5% wastage for bus-bar,isolators,LA's,transformer etc.					
	(a) 9150 mm long =9 no. i.e. 1098.14 kg					
	(b) 4725 mm long =14 no. i.e. 882.11 kg					
	(c) 750 mm long =2 no. i.e. 20.00 kg					
	Total = 9.15*9+4.73*14+0.75*2=150 m	457	m	150.07	68582	Est
	(v) Add 5 % workshop charges on item A (iv) above		%	5	3429	
	(vi) M.S. angle iron 65x65 X-arm @ 5.8 kg/m & 5% wastage for body supports belt of station transformer	195	m	12.00	2340	Est
	(vii) Add 5% w/shop charge on item A(vi) above		%	5	117	
	(viii) Nuts & Bolts with Washers off sizes	83	Kg	60	4980	Esc
	S/Total (A) :-				364408	
B.	BUS-BAR					
	(i) 3 disc insulators tension string complete with fitting	2060	No.	51	105060	Est
	(ii) ACSR conductor 200 mm ² at 10 % wastage (8x4.5+1x3.5)x3x1.1=130.35 say 130 m	137	m	130	17810	Esc
	For jumpers at 2 m average					
	25 sets i.e. 2x3x25x1.1=165 m	137	m	165	22605	Esc
	(iii) Tee connections	224	No.	24	5376	Esc
	(iv) PG clamps	120	No.	42	5040	Esc
	S/Total (B) :-				155891	
	Total (A+B) :-				520299	
					520300	

11 kV Super Structure & Busbar for 33/11 kV Sub-Station.

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
A	SUPPORTS					
	(a) Steel tubular pole 10 m long for 4 nos. out going Feeder	11215	No.	4	44860	PO
	(b) RCC muffs & concreting thereof for 4 nos. out going Feeder	1553	No.	4	6212	Esc
	S/Total (A) :-				51072	
B	CROSS ARMS					
	(a) 3.75 m long M.S. channel iron 100X50X5 mm 9.56 kg/m Cross arms for Sub-Station With 4 nos. out going Feeder	389	m	113	43763	Est
	(b) 3.75 long M.S. angle iron 50X50X5 mm 4.5 kg/m Cross arms for Sub-Station With 4 nos. out going Feeder	150	No.	16	2400	Est
	(c) M.S. half clamps with nuts & bolts for S/Stn with 4 nos. out going Feeder	216	No.	48	10368	Esc
	S/Total (B) :-				56531	
C	BUS-BAR					
	(i) Single insulators tension string for S/Stn with 4 nos. out going Feeder	1268	No.	6	7608	Est
	(ii) ACSR 200 mm ² Conductor for 4 nos. out going Feeder for:-					
	(a) Bus-bars	137	m	23	3151	Esc
	(b) Jumpers & 6 sets of jumpers at 2.5 m Average	137	m	180	24660	Esc
	(iii) 11 kV Pin Insulators (Porcelain, 12 kV, 10KN): for 4 nos feeder	133	No.	14	1862	Esc
	(iv) Clamps for 4 nos. out going Feeder	214	No.	36	7704	Esc
	S/Total (C) :-				44985	
	Total (A+B+C):-				152588	
	Say Rs.				152590	
	Cost of 11 kV Super Structure & Bus Bar per Feeder				38148	


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

Foundation of R.S. joists

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	(a) Round 12 mm dia = $0.925 \times 2 \times 4 + 0.625 \times 2 \times 4 + 0.4 \times 2 \times 4 + 1.927 \times 4 \times 3 = 44.804$ m					
	Adding 10 % wastage = 49.28 m or 43.61 kg		kg	43.61	1526	Est
	(b) Round 8 mm dia = $2 \times 8 \times 0.8 + 2 \times 4 \times 0.46 + 2 \times 4 \times 0.23 + 2 \times 4 \times 0.1 = 17.52$ m					
	after adding 10% wastage = 19.2 m Or 7.52 kg		kg	7.52	286	Est
	Total (a+b) = 51.13 Kg		kg	51.13	1812	
2	(a) M.S. plate 225x160x10mm for top & bottom of R.S. joists supports i.e. $2 \times 2.84 = 5.68$ kg	42	kg	5.68	239	Est
	(b) Angle iron 50x50x6mm supports at the bottom $2 \times 0.15 = 0.3$ m	162	m	0.3	49	Esc
3	M.S. 16 mm dia foundation bolts with washers and nuts etc.	83	No.	4	332	Esc
4	R.C.C. 1:2:4 = $(1.155 \times 0.96 \times 0.08) + 2(0.4 \times 0.35 \times 0.325) + 2(0.35 \times 0.208 \times 0.205) + 2(0.8 \times 0.11 \times 0.095) + 2(1.72 \times 0.205 \times 0.065) + 2(0.517 \times 0.05 \times 0.045) = 0.091 + 0.091 + 0.04 + 0.017 + 0.046 + 0.002 = 0.287$	9199	m ³	0.287	2640	Esc
	Total :-				6883	

Estimated Cost for Earthing of 33/11 kV or 33/22 kV Sub-Station with Indoor Type Switchgear

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	Cost of Material for Earth Mat laying	171092	No	1	171092	Esc
2	Earthing of 33 kV yard & equipment & 22 kV or 11kV panels M.S. flat 50x6 mm.wt. 2.4 kg/m At 5% wastage:-					
	(a) For 3 no. Transformer earthing at 3 points (body & neutral) at 10 m Each (3x3x10) 1.05=94.5 m					
	(b) For 3 sets of LA's at 20 mtr each 3x20x2x1.05=126 m					
	(c) For 4 nos. 33 kV super structure at 20 mtr each 4x2x20x1.05 =168 m					
	(d) For 2 nos. VCB & CT body earthing at 10 m Each (2x10)2x1.05					
	(e) For earthing of 22 kV or 11kV super structure 80 mtr each					
	(f) For earthing of 22 kV or 11kV super structure 15 mtr each 2x15x1.05 =31.5 m					
	Total (a+b+c+d+e+f) =542 m, 1300 kg =1.3 MT	33000	MT	1.3	42900	Est
3	Welding of risers and corrosion protection @ 5% of Sr. No.2		%	5	2145	
4	GI wire no. 6 SWG for screening etc.	50	kg	25	1250	PO
5	Eye block for screening	72	No	30	2160	Esc
6	Turnbuckle for Screening	148	No.	30	4440	Esc
	Total :-				219547	

Schedule of cost and material Earthing Electrode (pipe type) (refer REC Construction Std. J-2)

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	G.I. Pipe 50 mm dia with holes of 16 mm dia at 150 mm from centre to centre for 2 m Distance from bottom.	990	No	3	2970	Esc
2	Workshop charges 5 % on item no. 1		%	5	149	
3	M.S. plates 150x150x6 mm for two connection	33	Kg	1.13	37	Est
4	50x6 mm M.S. flat connection with the mat to mat	33	Kg	4.8	158	Est
5	Nuts & bolts galvanized 16 mm dia, 50 mm long	83	Kg	0.5	42	Esc
6	Chequered plate cover 500x500x6mm i.e. 11.8 kg	87	Kg	11.8	1027	Esc
	Total :-				4382	


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

Schedule of cost & material for layout of Earthmat at 33/11 kV or 33/22 kV Sub-Station

Cost Escalation in FY18 over Cost Data for FY17 (%) = -1.15

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	M.S. flat 50x6 mm for ground mat including 5% wastage & weighing 2.4 kg/m (37x10+27x5)x1.05=1060.5 m or 2545.2 kg say 2.55 MT	33000	MT	2.55	84150	Est
2	Earthing pipe electrode	4382	No.	12	52587	Est
3	20 mm round, 3 m Long & weighing 2.47 kg/m 4 no. electrode 4x3x2.47 =29.64 kg, say 30 kg	35	Kg	30	1050	Est
4	Welding etc. of points @ 5% on above items		%	5	6889	
Total :-					144677	

Extension Earthing of Equipments for 33 kV out going feeder

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	M.S. flat 50x6 mm weighing 2.4 kg/ m at 10% wastage for:- (a) Each set of LA's at 20 mtr each 20x2x1.1=44 m (b) Structure at 20 m each 20x2x1.1= 44 m (c) 1 no. VCB & set of CT's body earthing at 10 m each 2x10x2x1.1 =44 m Total a+b+c =132 m or 317 kg say 0.317 MT	33000	MT	0.317	10461	Est
	(d) Welding of riser and corrosion protection @ 5% of above		%	5	523	
2	G.I. Wire no. 6 SWG for screening	50	kg	10	500	PO
3	Eye block for screening	72	No.	6	432	Esc
Total :-					11916	

Schedule of cost of yard lighting for 33/11 kV or 33/22 kV Sub-Station or 22 kV control point

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	8 m, Steel Tubular poles for yard lighting	5384	No.	5	26920	PO
2	18 W LED Lamp complete with fittings	1236	No.	10	12360	Esc
3	Post Erection for gate	1082	No.	4	4328	Esc
4	Clamps for GI pipe bracket	133	No.	20	2660	Esc
5	Underground cable 16 mm ² for yard lighting	74	m	220	16280	Esc
6	PVC cable size 6 mm ² for connecting LED lamp supply	10	m	75	750	PO
7	Junction box	66	No.	10	660	Esc
Total :-					63958	

Super structure for 33 kV bay for 1 no. out going feeder for each 33 kV VCB, 33 kV super structure and busbar controlled tapping for each outgoing 33kV feeder from existing 33 kV line

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
A. SUPER STRUCTURE						
1	R.S. Joists, size 10,000x225x150=746kg say 0.75 MT 37.3 kg/mt 2 no. supports i.e.(2x10x37.3) MT	38000	MT	0.75	28500	Est
2	Foundation of R.S. Joists supports	5658	job	2	11316	Esc
3	(a) M.S. channel iron 125x65x6mm, X-arm @ 12.1 kg/m At 5% wastage for bus-bar,isolators,LA's,transformer etc. (i) 4650 mm long =7 no. i.e. 447.73 kg (ii) 3725 mm long =2 no. i.e. 102.47 kg Total =9 no. i.e. 550.20 = 0.55 MT	457	m	42	19194	Est
	(b) Add 5 % workshop charges on item 3 (a) above		%	5	960	
4	Nuts and Bolts of Various Sizes (Galvanised / Coated) (with flat and spring washers)	83	Kg	25	2075	Esc
S/Total (Y) :-					62045	
B. BUS-BAR						
	(i) 3 disc insulators tension string complete	2060	No.	6	12360	Est
	(ii) 3 disc suspension tension string complete	1954	No.	3	5862	Est
	(iii) ACSR conductor 200 mm ² at 10 % wastage:- (a) for busbar 3.5x3x1.1 =11.55 m (b) For jumpers at 2 m average 9 sets i.e. 2x3x9x1.1=59.4 m Total (a+b) =70.95 m Say 71 m	137	m	71	9727	Esc
C. PG clamps						
	PG clamps	120	No.	21	2520	Esc
S/Total (Z) :-					30469	
Total (Y+Z) :-					92514	


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

Estimated Cost of Control cable for 33/11 kV or 33/22 kV Sub-Station using 22 kV indoor type switchgear.

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	2x2.5 mm ² control cable	43	m	605	26015	Esc
2	4x2.5 mm ² control cable	74	m	300	22200	Esc
3	12x2.5 mm ² control cable	205	m	125	25625	Esc
4	3.5 core 95 mm ² aluminium cable suitable for 415 V, AC	227	m	55	12485	Esc
Total :-					86325	

Schedule of cost & material for 33kV yard and Colony fencing of 33/11 kV or 33/22 kV Sub-Station

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
A) Expended metal fencing around switchyard						
1	M.S. angle iron 65x65x6 mm, 3 m long supports 0.6 m bent outwards at top & to contain 3 strands of barbed wire 0.4 m Sagged and concreted in ground and 2 m Vertical Supports required at every 2 m for 127 m Periphery for gauge fencing of switchyard 64 nos.	195	m	230	44928	Est
2	Expended metal at 10 % wastage 1.1x127x2=279.4 (say 280 m ²)	961	m ²	280	269080	Esc
3	G.I. Wire no. 6 SWG 6 strand all along the periphery to hold the metal 10% wastage i.e. 1.1x127x6=833.2 m @ 0.150 kg/m=125.73 kg or 0.126 MT	50	kg	125	6249	PO
4	Angle iron stays with eye hooks etc. for 20% of supports	1332	set	13	17316	Esc
5	Cement etc. for concreting of supports & angle iron stays	374	bag	90	33660	Esc
6	Barbed wire 3 strands of 127 m at 10% wastage 1.1x3x127=419 m =84 kg	66	kg	84	5544	Esc
S/Total (A)					376777	
B) Gate at colony & switchyard entrance						
1	Gate cost of masonry	2134	No.	3	6402	Esc
2	M.S. angle iron 65x65x6 mm ² gates, 1.5x2.5 m Each grill works 2 no. i.e. 2x1.5x2.5 = 7.5 m ²	778	m ²	7.5	5835	Esc
3	Wicket gate	3807	No.	1	3807	Esc
Cost of 2 no. gates :-					32088	
Total (A+B) :-					408865	

Foundation of each of 33/11 kV or 33/22 kV Transformer (for 4.4 kg/ cm² soil bearing capacity) (refer 33kV Sub-station standard layout)

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	PCC 1:4:8= 3.8x1.8x0.25=1.026 m ³	2819	m ³	1.026	2892	Esc
2	RCC 1:2:4=(3.5x1.5x0.2)-2(1.4x0.325x0.175)-(1.4x0.39 x0.175)+2(0.68x0.35x0.175)=0.837	9199	m ³	0.837	7700	Esc
3	M.S. round 12 mm dia 230 mm center to center at 18% wastage (21x1.5+3.5x7x2)+(0.68x7x6x7x0.2)1.1=81.31 say 80 m Or 72.9 kg, say 73 kg	35	kg	73	2555	Est
4	M.S. rails 133.8 kg/m 2 no. 1.8 m ln length 2x1.5x133.8=401.4 say 402 kg	35	kg	402	14070	Est
5	M.S angle iron slapper 75x75x8 mm, 2 nos. of 1.75 m length 1.75x2x8.9=31.15 kg say 31.2 kg	34	kg	31.2	1061	Est
6	M.S. angle iron 65x65x6 mm supports along the M.S. rails 2x1.5x7.7=23.1 kg	34	kg	23.1	785	Est
7	GI drain pipe 100 mm dia 2 m long	1103	m	2	2206	Esc
8	Stoppers for Transformer wheels & horing of M.S. rails & angle iron with stoppers.	628	Job	1	628	Esc
Total :-					31897	

Foundation of each of 33 kV or 22 kV CB (outdoor type) - [33kV Sub-station Standard layout]

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	RCC 1:2:4 (2.3x1.75x0.05)+(2.2x1.65x0.5)=2.016 m ³	9199	m ³	2.016	18545	Esc
2	M.S. round 12 mm dia at 10% wastage 1.1(10x1.65+8x2.2+5x4x0.6)=48.51 m =43.17 kg say 44	35	kg	44	1540	Est
Total :-					20085	


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

Schedule of cost of construction of 1 m of Open Brick Trench with cover

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	PCC 1:5:10=(1.13x0.075x1)=0.085 m ³	3106	m ³	0.085	264	Esc
2	PCC 1:2:4=(0.075x0.25x1)+(0.025x0.25x1)+0.5(22/7x0.05x0.05)=0.021 m ³	5059	m ³	0.021	106	Esc
3	RCC 1:2:4 =2(0.09x0.24x1)+(0.04x0.5x1)+0.043+0.025 =0.068 m ³	8107	m ³	0.068	551	Esc
4	Brick Masonary1:6=2(0.24x0.6x1)+(0.25x0.05x1)=0.301 m ³	4147	m ³	0.301	1248	Esc
5	10 mm cement plaster in cement mortar 1:4(22/7x0.05x1)+(0.25x1)=0.085 m ²	86	m ²	0.085	7	Esc
6	M.S. round 6 mm dia for at 10% wastage = 1.1(8x0.73+6x1) =13.02 mtr =2.9 kg	35	kg	2.9	102	Est
7	Angle iron 40x40x6 mm at10% wastage= 0.49x3= 1.47 mtr. Or 5.15 kg	33	kg	5.15	170	Est
Total :-					2449	

Schedule of Cost of Construction of One Meter of Open Concrete Trench with Cover

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	PCC 1:5:10=(0.98x0.075x1) =0.074 m ³	3106	m ³	0.074	230	Esc
2	PCC 1:2:4=2(0.025x0.175x1)+0.5(0.05x0.175x1)=0.018	5059	m ³	0.018	91	Esc
3	RCC 1:2:4 =2(0.09x0.24x1)+(0.05x0.35x1)= 0.061	9199	m ³	0.061	561	Esc
4	Brick Masonry 1:6=2(0.24x0.21x1)=0.101 m ³	4147	m ³	0.101	419	Esc
5	10 mm cement plaster in cement mortar 1:4=(0.152+0.152)x1=0.864 m ²	86	m ²	0.364	31.304	Esc
6	M.S. round 6 mm dia for at 10% wastage = 1.1(8x0.59+6x1) =11.792 mtr =2.64 kg	38	kg	2.64	100	Est
7	Angle iron 40x40x6 mm, 8.3 mm long =2.01 kg	34	kg	2.01	68	Est
Total :-					1501	

Cost of Trenches in 33/11 kV or 33/22 kV Sub-Station

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
1	Construction of Open Brick of Trench in the yard and control room	2614	m	91.4	238919.6	Esc
2	Construction of Open Concrete of Trench in the yard and control room	1588	m	63.9	101473.2	Esc
Total :-					340393	

Switch Room & Control Room Building of 33/11kV or 33/22 kV Sub-Station or 33 kV Control Point

S.N.	Description of item	Rate	Unit	Qty	Cost (in Rs) / Km	CD Basis (PO/ Esc / Est/ MR)
A) Manned Sub-Station						
1	Sub-Station Building/ Control Room of 120 m ² Covered Area	19709	m ²	120	2365080	Esc
2	Cost of Land (May vary from place to place)	274	m ²	7000	1918000	Esc
3	Electrical installation & Water supply service connection @5% on Sr. No. A(1)		%	5	118254	
Total :-					4401334	
B) Un-Manned Sub-Station						
1	Sub-Station Building/ Control Room of 80 m ² Covered Area	19709	m ²	80	1576720	Esc
2	Cost of Land (May vary from place to place)	274	m ²	7000	1918000	Esc
3	Electrical installation & Water supply service connection @5% on Sr. No. B(1)		%	5	78836	
Total :-					3573556	


Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

LABOUR COST PER DAY

S.No.	DESCRIPTION	No. of Days
1	Total Working Days in a Year	237
2	Total Working Days in a Month	20

A Details of Labour Cost Per Day					
S.No	Description	Pay per day	Pay per day	Pay per day	Pay per day
		Foreman	Line man	AL/man	T/mate
1	Pay Band	PB-3	PB-2	PB-1	PB-1
2	Scale of Pay	10900-34800	6400-20200	5100-10680	5100-10680
2	Total Pay per month :-	67988	41971	25397	24824
3	Pay per day Rs.	3399	2099	1270	1241
	Say Rs.	3400	2100	1270	1240

B Per Day Working Wages for Beldar					
1	Daily wages (Rs.)	=	210		
2	Total working day in a year	=	256		
	Actual wages of Beldar per day	=	285.16		
	Say Rs.	=	285		


Assistant Engineer


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Erection/ Labour charges

S.No.	Description	Amount (in Rs.)			
		PCC Poles (S/C)	S/T Poles (S/C)	40% S/T+ 60 % PCC Poles (S/C)	S/T Poles (D/C)
1	Total Erection/ Labour charges for construction of 1 km of 33 kV line on 11 M long Double Pole Structure with ACSR 6/1/4.72 mm Conductor with continuous earth wire	388610	393170	388886	481030

Erection charges for New 33/11 kV Sub-Station

S. No.	Description	Amount (Rs)
2	Erection charges for New 33/11 kV Sub-Station (with indoor 11 kV System)	5293272

Erection Charges for Outdoor Yard for one 11 kV feeders

S. No.	Description	Amount (Rs)
3	Erection Charges for 11 kV Yard (Outdoor) for 4 feeders	333745
4	Erection Charges for Yard of Single 11 kV feeder = 350550/ 4 =	83436.25
	Say Rs.	83440

Therefore, Total Erection Charges for 33/11 kV Sub-Station = **5376712**
(=5293272+83440)

Say Rs= 5376700

Erection Charges for Terminal Equipment & Allied Material for each of 33 kV out going Feeder

S. No.	Description	Amount for 33/11 kV S/Stn	
		PT's already installed	PT's not installed
5	Total Erection Charges for Terminal Equipment & Allied Material for each of 33 kV out going Feeder	315938	327908
	Say Rs.	315938	327908

Erection Charges for 11 kV Auto voltage Booster/Sectionalizer/ Auto recloser

S. No.	Description	Amount	Amount
		11 kV auto voltage booster	11 kV line sectionalizer/ Auto recloser
6	Total Erection Charges for 11 kV Auto voltage Booster/Sectionalizer/ Auto recloser	107409	81525
	Say Rs.	107410	81530


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ERECTION CHARGES PER KM FOR 11 KV AND 22 KV HT LINE

S. NO	DESCRIPTION	PCC POLES	STEEL POLES
		AMOUNT (Rs)	AMOUNT (Rs)
1	Erection Charges per km for 11 kV and 22 kV HT Line with :-		
	(i) ACSR/AAAC 30 mm ² AL EQ.	165969	166031
	(ii) ACSR/AAAC 50 mm ² AL EQ.	177246	177308
	(iii) ACSR/AAAC 80/100 mm ² AL EQ.	216414	216476

ERECTION CHARGES PER KM FOR 3-Ø LT LINE

S. No.	DESCRIPTION	PCC POLES	STEEL POLES
		AMOUNT (Rs.)	AMOUNT (Rs.)
2	Erection Charges per km for 3 phase LT Line with :-		
	(i) ACSR/AAAC 30 mm ² AL EQ.	101199	97359
	(ii) ACSR/AAAC 50 mm ² AL EQ.	116235	112395
	(iii) ACSR/AAAC 80/100 mm ² AL EQ.	168459	164619

ERECTION CHARGES PER KM FOR 2-Ø LT LINE

S. No.	DESCRIPTION	PCC POLES	STEEL POLES
		AMOUNT (Rs.)	AMOUNT (Rs.)
3	Erection Charges per km for 2 phase LT Line with :-		
	(i) ACSR/AAAC 30 mm ² AL EQ.	91571	87731
	(ii) ACSR/AAAC 50 mm ² AL EQ.	102848	99008
	(iii) ACSR/AAAC 80/100 mm ² AL EQ.	142016	138176

ERECTION CHARGES PER KM FOR 1-Ø LT LINE

S. NO	DESCRIPTION	PCC POLES	STEEL POLES
		AMOUNT (Rs.)	AMOUNT (Rs.)
4	Erection Charges per km for Single phase LT Line with :-		
	(i) ACSR/AAAC 30 mm ² AL EQ.	71924	68324
	(ii) ACSR/AAAC 50 mm ² AL EQ.	79442	75842
	(iii) ACSR/AAAC 80/100 mm ² AL EQ.	105554	101954


Assistant Engineer


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Superintending Engineer


Abstract for Manual Carriage

Sr. No.	Description	F/MAN @ Rs.		3400		L/MAN @ Rs.		2100		ALM @ Rs.		1270		T/Mate @ Rs.		1240		Beldar @ Rs.		285		TOTAL	
		NO	DAYS	WAGES	NO	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	WAGES
Manual carriage of material for 1 km of 33 kV line assuming avg lead distance of 1 km from road head																							
1	Steel poles 11 M long	--	--	--	--	--	--	--	--	--	--	1	6	7440	9	6	15390.00					22830.00	
2	PCC poles	--	--	--	--	--	--	--	--	--	--	1	9	11160	14	9	35910.00					47070.00	
3	M.S. cross arms, bracing sets insulators nuts & bolts Etc.	--	--	--	--	--	--	--	--	--	--	1	1	1240	11	1	3135.00					4375.00	
4	Stay set complete with stay wire	--	--	--	--	--	--	--	--	--	--	--	--	0	5	0.75	1068.75					1068.75	
5	(i) ACSR 6/1/4.72 mm conductor	--	--	--	--	--	--	--	--	--	--	1	1	1240	9	1	2565.00					3805.00	
	(ii) AAAC 7/4.26 mm conductor	--	--	--	--	--	--	--	--	--	--	1	1	1240	7	1	1995.00					3235.00	
6	GI wire 6 SWG	--	--	--	--	--	--	--	--	--	--	--	--	0	2	1.5	855.00					855.00	
	Total for S/T Pole (ACSR 6/1/4.72)	--	--	--	--	--	--	--	--	--	--	--	--	9920	--	--	23013.75					32933.75	
	(AAAC 7/4.26)	--	--	--	--	--	--	--	--	--	--	--	--	9920	--	--	22443.75					32363.75	
	or PCC poles (ACSR 6/1/4.72)	--	--	--	--	--	--	--	--	--	--	--	--	13640	--	--	43533.75					57173.75	
	(AAAC 7/4.26)	--	--	--	--	--	--	--	--	--	--	--	--	13640	--	--	42963.75					56603.75	
	Manual carriage for 1 km line with PCC poles			=	ACSR 6/ 1/4.09=			=	AAAC 7/4.26 mm =														
	Say Rs			Rs	57173.75				56603.75														
	Manual carriage for 1 km line with S/T poles			=	32933.75				32363.75														
	Say Rs.			Say Rs.	32930				32360														

Detailed analysis of Labour Rates for 33 kV line

SR. No.	Description	F/MAN @ Rs.		3400		L/MAN @ Rs.		2100		ALM @ Rs.		1270		T/Mate @ Rs.		1240		Beldar @ Rs.		285		Total	
		NO	DAYS	WAGES	NO	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	S/C	D/C		
SUB HEAD-'A'																							
1A)	Surveying & Stacking (33 kV line per km)	--	--	22100	--	--	35700	--	--	0	--	--	0	--	--	14535.00					72335.00	72335.00	
SUB HEAD-'B'																							
1B)	Erection of double PCC pole structure																		Say Rs.			72340.00	72340.00
	Total :-			2550			1050			1428.75			3720						Say Rs.	2921.25	11670.00	14728.75	
																			Say Rs.		11670.00	14730.00	
SUB HEAD-'C'																							
1C)	Erection of double S/T pole structure (As per head "B" for PCC (9.75 M))	--	0.75	2550	--	0.5	1050	--	--	1428.75	--	--	3720	--	--	2921.25					11670		
	Total :-			2550			1050			1428.75			4340			3491.25					12860.00	12860.00	
																			Say Rs.		12860.00	12860.00	
SUB HEAD-'D'																							
1D)	Erection of double PCC pole structure (Dead End)																						
	Total :-			3400			1575			1746.25			4030			2956.88					13708.13	13708.13	
																			Say Rs.		13710.00	13710.00	
SUB HEAD-'E'																							
1E)	Erection of double pole S/T poles (Dead End) structure (dead end 9.75 M long)																						
	Total :-			3400.00			1575			1746.25			4650			3526.88					14898.13	14898.13	
																			Say Rs.		14900.00	14900.00	
SUB HEAD-'F'																							
1F)	Earthing of 33 kV line																						
	Total :-			0			1050			635			310			2422.50					4417.50	4417.50	
																			Say Rs.		4420.00	4420.00	


Assistant Engineer


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SR. No.	Description	F/MAN @ Rs.		3400	L/MAN @ Rs.		2100	ALM @ Rs.		1270	T/Mate @ Rs.		1240	Beldar @ Rs.		285	Total	
		NO	DAYS	WAGES	NO	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	S/C	D/C
	SUB HEAD-'G'																	
1G)	Erection of stay set of 33 kV lines																	
	Total :-			596			525			0			775			570.00	2466.00	2466.00
															Say Rs.		2470.00	2470.00
	SUB HEAD-'H'																	
1H)	Fixing of jumpers (1 set) for 33 kV line	1	0.25	341.5	1	0.25	220.75	1	0.25	162	--	--	0	1	0.25	39.00	763.25	1526.5
															Say Rs.		760.00	1520.00
	SUB HEAD-'I'																	
1I)	Stringing of 1 km of line (33 kV)																	
1	GI wire																	
	Total :-	2	0.5	1700	3	1.75	3675	6	1.75	4445	4	0.5	1240	10	0.5	712.50	11772.50	11772.50
															Say Rs.		11770.00	11770.00
2	100 mm ² 33 kV (SC) line																	
	Total ACSR 6/1/4.72 mm	--	--	4250	--	--	7350	--	--	4445.00	--	--	3720.00	--	--	5130.00	24895.00	24895.00
															Say Rs.		24900.00	24900.00
	Total AAAC7/4.26 mm	--	--	4250	--	--	7350	--	--	4445.00	--	--	3720.00	--	--	1923.75	24040.00	24040.00
															Say Rs.		24040.00	24040.00
	SUB HEAD-'J'																	
1J)	Road path stream etc.																	
	Total :-			0			2152.5			1301.75			2645.33			3325.00	9424.58	9424.58
															Say Rs.		9420.00	9420.00

Detailed analysis of Labour Charges for 33/11 kV Sub-Station

SR. No.	Description	F/MAN @ Rs.		3400	L/MAN @ Rs.		2100	ALM @ Rs.		1270	T/Mate @ Rs.		1240	Beldar @ Rs.		285	Total	
		NO	DAYS	WAGES	NO	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES		
2A)	Laying of earth material rods & pipe																	
	Total :-	--	--	15300	--	--	25200	--	--	6350	--	--	26040	--	--	67830.00	140720.00	
															Say Rs.		140720.00	
2B)	Erection of R.S. joists 10000x225x150 mm																	
	Total :-			1700			0			635			1240			1923.75	5498.75	5499.00
															Say Rs.		5499.00	
2C)	Erection of each cross arms of various sizes including drilling of pole & fixing clamps etc.	1	0.25	850	1	0.25	525	--	--	0	1	0.25	310	2	0.25	142.5	1827.5	
															Say Rs.		1830	
2D)	Foundation of VCB																	
	Total :-			6800			2100			2540			2790			1923.75	16153.75	16154.00
															Say Rs.		16154.00	
2E)	Foundation of transformer																	
	Total :-			3400			2100			1270			2480			6270.00	15520.00	15520.00
															Say Rs.		15520.00	
2F)	Laying of trenches (per Mtrs.)																	
	Total :-			1700			1050			0			620			997.50	4367.50	4370.00
															Say Rs.		4370.00	
2G)	Erection of 1 set of Bus bar	1	0.66667	2266.667	--	--	0	1	0.667	846.667	2	0.66667	1653.33	--	--	0.00	4766.67	
															Say Rs.		4770.00	
2H)	Installation of isolator	2	0.875	5950	4	0.875	7350	4	0.875	4445	--	--	0	4	0.875	997.50	18742.50	
															Say Rs.		18740.00	
2I)	Installation of Lightning Arrestors	1	0.375	1275	1	0.375	787.5	--	--	0	1	0.375	465	--	--	0.00	2527.50	
															Say Rs.		2530.00	
2J)	Installation of PT's	1	0.375	1275	2	0.375	1575	--	--	0	2	0.375	930	2	0.375	213.75	3993.75	
															Say Rs.		3990.00	
2K)	Installation of D.O. fuse unit	1	0.75	2550	1	0.75	1575	2	0.75	1905	2	0.75	1860	--	--	0.00	7890.00	
															Say Rs.		7890.00	



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SR. No.	Description	F/MAN @ Rs.		3400	L/MAN @ Rs.		2100	ALM @ Rs.		1270	T/Mate @ Rs.		1240	Beldar @ Rs.		285	Total
		NO	DAYS	WAGES	NO	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	
2L)	Installation & commissioning of power transformer (1 no. including dehydration)	3	5	51000	3	5	31500	3	5	19050	3	5	18600	18	1	5130.00	125280.00
															Say Rs.		125280.00
2M)	Installation of S/Stn transformer	3	4	40800	3	4	25200	3	4	15240	3	4	14880	12	0.5	1710.00	97830.00
															Say Rs.		97830.00
2N)	Installation of VCB with CT 11 kV, voltage booster, 11 kV line sectionalizer	3	2	20400	3	2	12600	3	2	7620	3	2	7440	6	2	3420.00	51480.00
															Say Rs.		51480.00
2O)	Erection of 1 set of jumper inclu. PG clamps	1	0.25	850	1	0.25	525	1	0.25	317.5	1	0.25	310	--	--	0.00	2002.50
															Say Rs.		2000.00
2P)	Connection set	1	0.25	850	1	0.25	525	1	0.25	317.5	1	0.25	310	--	--	0.00	2002.50
															Say Rs.		2000.00
2Q)	Installation of 11 kV incoming panel	3	5	51000	3	5	31500	3	6	22860	--	--	0	6	1	1710.00	107070.00
															Say Rs.		107070.00
2R)	Laying of control cable	2	3	20400	2	3	12600	2	3	7620	2	3	7440	--	--	0.00	48060.00
															Say Rs.		48060.00
2S)	Installation of 11 kV out going feeder panel or bus coupler	3	5	51000	3	5	31500	3	6	22860	--	--	0	6	1	1710	107070
															Say Rs.		107070.00
2T)	Laying of power cable (per no. of 50 m)																
	Total :-			2550			1575			0			0			3420.00	7545.00
															Say Rs.		7550.00
2U)	Connecting the cable ends to Heat Shrinkable Terminal Kit	2	0.75	5100	2	0.75	3150	--	--	0	2	0.75	1860	--	--	0.00	10110.00
															Say Rs.		10110.00
2V)	Installation of Substation Auxiliaries																
	Total :-			81600			50400			30480			620			5557.50	168657.50
															Say Rs.		168660.00
2W)	Yard lighting	3	0.875	8925	3	0.875	5512.5	3	0.875	3333.75	3	0.875	3255	18	0.25	1282.50	22308.75
															Say Rs.		22310.00
2X)	Erection of yard fencing (1 m)																
	Total :-			0			2625			2222.5			0			1140.00	5987.50


Assistant Engineer


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Detailed analysis of Labour Rates for 11 kV & below lines

S. NO	DESCRIPTION	F/MAN @ Rs.		3400 WAGES	L/MAN @ Rs.		2100 WAGES		ALM @ Rs.		1270 WAGES		T/Mate@ Rs.		1240 WAGES		Beldar @ Rs.		285 WAGES		TOTAL WAGES	
		NO	DAYS		NO	DAYS	NO.	DAYS	NO.	DAYS	NO.	DAYS	NO.	DAYS	NO.	DAYS	NO.	DAYS	NO.	DAYS		
	SUB HEAD-'A'																					
3A)	ERECTION OF 11 kV LINE																					
1)	ERECTION OF PCC POLES																					
	TOTAL							892.50				920.75				775.00					1347	3935
																						SAY Rs. 3935
2)	ERECTION OF STEEL TUBLAR POLES																					
	TOTAL:-							892.50				920.75				899.00						1147 3859
																						SAY Rs. 3859
3)	PCC POLE DOUBLE STRUCTRE																					
	TOTAL:-							1207.50				1778.00				1736.00						2423 7144
																						SAY Rs. 7144
4)	S/T POLE DOUBLE STRUCTURE																					
	TOTAL							3307.50				2889.25				3596.00						2386.88 7569.63
																						SAY Rs. 7570.00
5)	EARTHING																					
	TOTAL							262.50				158.75										356.25 777.50
																						SAY Rs. 778.00
6)	STAY SET (HT)																					
	TOTAL							525.00				317.50										598.50 1441.00
																						SAY Rs. 1441.00
7)	FIXING OF JUMPER					1	1/12	175.00		2	1/12	211.67		-	-							386.67
																						SAY Rs. 387.00
	SUB HEAD - 'B'																					
3B)	SAGGING OF CONDUCTOR																					
1)	1KM, SINGLE GI WIRE ACSR/AAAC 20 MM ²																					
	TOTAL							1575.00				1587.50				1240.00						712.50 5115.00
																						SAY Rs. 5115.00
2)	1KM SINGLE ACSR/AAAC 30MM ²																					
	TOTAL							2100.00				2540.00				2015.00						1425.00 8080.00
																						SAY Rs. 8080.00
3)	1KM SINGLE ACSR/ AAAC 50MM ²																					
	TOTAL							2493.75				3016.25				2945.00						3384.38 11839.38
																						SAY Rs. 11839.00
4)	1KM SINGLE ACSR/ AAAC 80/100MM ²																					
	TOTAL																					24895.00


Assistant Engineer


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S. NO	DESCRIPTION	F/MAN @ Rs.		3400 WAGES	L/MAN @ Rs.		2100 WAGES	ALM @ Rs.		1270 WAGES	T/Mate@ Rs.		1240 WAGES	Beldar @ Rs.		285 WAGES	TOTAL WAGES	
		NO	DAYS		NO	DAYS		NO.	DAYS		NO.	DAYS		NO.	DAYS			
	SUB HEAD - 'C'																	
3C)	ERECTION OF SUB STATION																	
	TOTAL				-	-	21262.50			16986.25			19220.00				12454.50	69923.25
																	SAY Rs.	69923.00
	SUB HEAD - 'D'																	
3D)	ERECTION OF LT LINE																	
1)	ERECTION OF STEEL POLE																	
	TOTAL				-	-	656.25	-	-	317.50	-	-	387.50	-	-		783.75	2145.00
																	SAY Rs.	2145.00
2)	ERECTION OF PCC POLE																	
	TOTAL				-	-	595	-	-	359.83	-	-	599.33	-	-		831.25	2385.42
																	SAY Rs.	2385.00
3)	FIXING OF JUMPER				1	1/12	175.00	2	1/12	211.67	-	-		-	-			386.67
																	SAY Rs.	387.00
4)	ERECTION OF LT STAY SET																	
	TOTAL						262.50			158.75							522.50	943.75
																	SAY Rs.	944.00
5)	EARTHING																	
	TOTAL						262.50			158.75							356.25	777.50
																	SAY Rs.	778.00
	SUB HEAD - 'E'																	
3E)	SERVICE CONNECTIONS																	
1)	DOMESTIC/COMMERCIAL				-	-		1	1	1270.00	-	-		1	1		285.00	1555.00
2)	INDUSTRIAL/AGRICULTURAL:-																	
a)	UPTO 20 KW				1	1	2100.00	1	1	1270.00	-	-		1	1		285.00	3655.00
b)	UPTO 100 KW				1	1	2100.00	1	1	1270.00	2	1	2480.00	3	1		855.00	6705.00
	SUB HEAD- 'F'																	
3F)	SURVEY OF 1 KM LINE				1	1	2100.00	1	1	1270.00	1	1	1240.00	4	1		1140.00	5750.00
																	SAY Rs.	5750.00
	SUB HEAD - 'G'																	
3G)	MANUAL CARRIAGE OF MATERIAL FOR 1 KM HT LINE CONSIDERING AVERAGE DISTANCE FROM ROAD TO SITE OF WORK 1 KM:-																	
	TOTAL																	
	(i) WITH STEEL POLES				-	-		-	-		-	-	5580.00	-	-		13680.00	19260.00
																	SAY Rs.	19260.00
	(ii) WITH PCC POLES				-	-		-	-		-	-	8060.00	-	-		25650.00	33710.00
																	SAY Rs.	33710.00


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S. NO	DESCRIPTION	F/MAN @ Rs.		3400	L/MAN @ Rs.		2100	ALM @ Rs.		1270	T/Mate @ Rs.		1240	Beldar @ Rs.		285	TOTAL		
		NO	DAYS	WAGES	NO	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	NO.	DAYS	WAGES	WAGES		
3H)	SUB HEAD - 'H'																		
1)	MANUAL CARRIAGE OF MATERIAL FOR 1KM LEAD LINE CONSIDERING AVERAGE DISTANCE FROM ROAD TO SITE OF WORK 1KM:-																		
2)	1-Ø LT LINE																		
	(i) WITH STEEL POLES					-		-	-			-	-	5373.33			9500.00	14873.33	
																	SAY Rs.	14873.00	
	(ii) WITH PCC POLES					-	-	-	-			-	-	7853.33			18620.00	26473.33	
																	SAY Rs.	26473.00	
3)	2-Ø LT LINE																		
	(i) WITH STEEL POLES					-	-	-	-			-	-	5373.33			9785.00	15158.33	
																	SAY Rs.	15158.00	
	(ii) WITH PCC POLES					-	-	-	-			-	-	7853.33			18905.00	26758.33	
																	SAY Rs.	26758.00	
4)	3-Ø LT LINE					-	-	-	-			-	-						
	(i) WITH STEEL POLES													5373.33			10070.00	15443.33	
																	SAY Rs.	15443.00	
	(ii) WITH PCC POLES													7853.33			19190.00	27043.33	
																	SAY Rs.	27043.00	
3I)	SUB HEAD - 'I'																		
1)	MANUAL CARRIAGE OF POLE MOUNTED DISTRIBUTION SUB STN. AVERAGE DISTANCE 1 KM																		
	(i) 25 KVA							700.00						423.33			2170.00	4987.50	8280.83
																		SAY Rs.	8281.00
	(ii) 63 KVA							1050.00						635.00			2376.67	5510.00	9571.67
																		SAY Rs.	9572.00
	(iii) 100 KVA							1575.00						952.50			2686.67	6293.75	11507.92
																		SAY Rs.	11508.00
	(iv) 250 KVA							2100.00						1270.00			2996.67	7077.50	13444.17
																		SAY Rs.	13444.00
3J)	SUB HEAD - 'J'																		
1)	DISMANTLING CHARGES FOR 1KM OF 11 KV LINE PER CONDUCTOR WITH GI WIRE 8 SWG, 6 SWG & Cu 8 SWG & 6 SWG WIRE ACSR 6/1/2.11 & 6/1/2.36 MM																		
	TOTAL													1587.50			1240.00	712.50	3540.00
																		SAY Rs.	3540.00
2)	DISMANTLING CHARGES FOR 1KM OF 11 KV LINE PER CONDUCTOR ACSR 6/1/2.59 & ACSR 6/1/3.35																		
	TOTAL													1905.00			2480.00	890.63	5275.63
																		SAY Rs.	5276.00


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Abstract of Transportation Charges for 33 kV Systems

S.No.	Description	Unit	Road Tpt	Manual Tpt	Unloading & Stacking of material		Total
1	33 kV line material for:-						
a	Conductor size ACSR 6/1/4.72mm						
(i)	On PCC poles	Km	20060	57170		--	77230
(ii)	On Steel tubular poles	Km	20060	32930		--	52990
(iii)	On 60% PCC & 40% S/T poles	Km	20060	47470		--	67530
b	Conductor size AAAC 7/ 4.26mm						
(i)	On PCC poles	Km	20060	56600		--	76660
(ii)	On steel tubular poles	Km	20060	32360		--	52420
(iii)	On 60% PCC & 40% S/T poles	Km	20060	46900		--	66960
2	(i) Material for 33/11 kV Sub-Station	No.	376200	--	530x30=	15900	392100
	(ii) Material for 33/11 kV Terminal Equipment	No.	35570	--	530x3=	1590	37160
	(iii) Material for 11 kV auto Voltage Booster/ Sectionalizer/ Auto reclosure	No.	13680	--	530x1=	530	14210

Average Distance from Divisional Store to Site of Work

Sr. No.	Name of Sub-Station	Store	Site of Work	Distance from Div Store (km)		Remarks
				Sub/Stn	Site	
1	Chauontra	Joginder Nagar	Bassi	15	5+20 (line length)	
2	Chowari	Dalhousie	Lahru	45	40+5 (line length)	
3	Sandole	Sarkaghat	Jaisinghpur	40	35+7 (line length)	
		Total :-		100	80+32 (line length)	

Average distance of Sub-Station From Divisional store = 100/3=33.33 Say = **33 Km**
 Average distance for carriage of 1 km of 33 kV line material = 32/3 = 10.66 Say = **11 Km**
 Average distance for carriage of Terminal Equipment = 80/3= 26.66 Say = **27 Km**

Transportation Charges for 33 kV line and 33/11 kV Sub-Station

Average distance of divisional store to central stores (Km) 77
Average out turn of departmental truck in Rs. Per Km 57

Transportation charges for 1 km of 33 kV line material:-

- Average distance of divisional store to central stores (Km) 77
- Average lead distance from Divisional store to site of work (Km) 11
- Line material of 1 km of 33 kV line length requires
2 trip of truck, so total journey of truck = (77+11)x2x2 352
- Average out turn of Departmental truck in Rs. Per Km 57
- Transportation charges for items of 33 kV Line material 20064**

Say Rs. = 20060


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Transportation charges for 33/11 kV Sub-Station (Manned):-

1	Average distance of central store to Divisional store (Km)	77
2	Average lead distance from Divisional store to site of work in Kms	33
3	Carriage of material for 1 no. 33/11 kV Sub-Station requires 30 trips of truck, therefore total journey of truck (30x2(77+33))	6600
4	Transportation Charges for 1no. 33/11kV Sub-Station material	376200
	Say Rs	376200

Transportation charges for 33/11 kV Sub-Station (Un-Manned):-

1	Average distance of central store to Divisional store (Km)	77
2	Average lead distance from Divisional store to site of work in Kms	33
3	Carriage of material for 1 no. 33/11 kV Sub-Station requires 30 trips of truck, therefore total journey of truck (30x2(77+33))	6600
	Transportation Charges for 1no. 33/11kV Sub-Station material	376200
	Say Rs	376200

**Transportation Charges for Terminal Equipment and 11 kV auto Voltage Booster/
Line Sectionalizer/ Auto Recloser**

Transportation charges for Terminal Equipment :-

1	Average distance from central store to Divisional store (km)	77
2	Average lead distance from Divisional store to site of work	27
3	Total Journey of truck for 1 no. Terminal Equipment (3 trips)	624
4	Average out turn of truck	57
	Transportation charges for 1 set Terminal Equipment	35568
	Say Rs.=	35570

Transportation charges for 11 kV auto voltage booster/11 kV line sectionalizer/ 11kV Auto Recloser

1	Average distance from Central store to Divisional store (KM)	77
2	Average lead distance from Divisional store to 33/11 kV Sub-Station site	33
3	Average lead distance from 33/11 kV, Sub-Station to site of installation of 11 kV Auto Voltage Booster/ 11 kV Line Sectionalizer/11kV Auto Recloser (km)	10
4	Total journey of truck (1 trip)	240
5	Average out turn of truck	57
	Transportation charges for 1 no. 11kV Auto Voltage Booster / 11 kV Sectionalizer/11kV Auto Recloser	13680
	Say Rs	13680


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TRANSPORTATION CHARGES (in Rs.) FOR 11 kV AND BELOW SYSTEMS

S. NO.	Description	1 KM 11 kV Line		Distribution Substation				L.T.Line					
		PCC Pole	STEEL Pole	25 KVA	63 KVA	100 KVA	250 KVA	3-Phase		2-Phase		1-Phase	
								PCC Pole	STEEL Pole	PCC Pole	STEEL Pole	PCC Pole	STEEL Pole
1	Road Transportation by Truck from Central Store to Site of work	12200	12200	12200	12200	12200	12200	12200	12200	12200	12200	12200	12200
2	Manual Carriage from Road to Site of work	33710	19260	8281	9572	11508	13444	27043	15443	26758	15158	26473	14873
	Total (Rs)	45910	31460	20481	21772	23708	25644	39243	27643	38958	27358	38673	27073

S.No.	Description	
1	Average distance of Divisional store to Central Store (in km)	77
2	Average lead distance assumed from divisional store to site of work (in km)	30
3	Total Distance for one trip from Central Store to Site of work (in km)	214
4	Average out turn Rate (in Rs)	57
5	Transportation charges per trip for material from Central Store to Site of Work (in Rs)	12198
	Say (Rs):	12200


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Annexure 'A'**Other Charges (including Overhead Charges) & Taxes**

a)	Transportation charges on Total cost of material	
b)	Erection charges on Total cost of material	
c)	Contingency charges on Total cost of material	3%
d)	Labour cess on Total cost of material+ (Contingency + Erection + Transportation) Charges	1%
e)	Deptt. Charges on Total cost of material + (Contingency + Erection + Transportation) Charges	11%
f)	Service Tax including Swachh Bharat cess @ 0.5% and Krishi Kalyan Cess @ 0.5% on Deptt. Charges	15%

RATINGS & SPECIFICATIONS

- (A) The REC schematic diagrams attached in the end are intended to give a description of BoQ. The specifications there in may vary from those adopted in the Cost Data.

1 PCC Poles sizes/working load

a)	8 Mtr.	180kg
b)	9 Mtr.	200kg
c)	9.75 Mtr.	300kg

2 Steel Tubular poles sizes / working load

a)	8 Mtr.	148kg
b)	9 Mtr.	200kg
c)	10 Mtr.	300kg
d)	11 Mtr.	300kg

3	Three phase DTRs	11KV		22KV	
		LT current	HT current	LT current	HT current
a)	25KVA	32.8	1.31	32.8	0.66
b)	50KVA	65.61	2.62	65.61	1.31
c)	63KVA	82.67	3.31	82.67	1.65
d)	100KVA	131.22	5.25	131.22	2.62
e)	250KVA	328.05	13.12	328.05	6.56
f)	400 KVA	524.88	21	524.88	10.5
g)	630 KVA	826.68	33.07	826.68	16.53

- (B) Conductors sizes (ACSR / AAAC/ AAC) & Rating tables are as per British standards. Use of special conductors of type 'Covered' / 'HTLS' may be done under special circumstances with technical justification where the operating conditions are of extreme nature such as heavy wind / snow loading etc.
- (C) System Designs on which Estimates are prepared, shall capture load growth for the next 15 years based on maximum demand recorded in the last 5 years.

(D) Preferable Standard Conductor Sizes / Current Rating

Type of conductor	Code Name	mm2 Sizes	Standard dia	Current rating
ACSR	Wesel	30	6/1/2.59	146
	Rabbit	50	6/1/3.35	297
	Horse	70	12/7/2.79	241
	Dog	100	6/7/4.72	312
	Wof	150	30/7/2.59	406
	Luynx	175	30/7/2.59	445
	Panther	200	30/7/3.0	486
AAAC	Cedar	30	7/2.54	145
	Hazel	50	7/3.30	201
	Oak	100	7/4.65	307
	Ash	150	19/3.43	398
	Elar	175	19/3.76	438
	Upas	300	37/3.53	610

Intermediate sizes shall be adopted only under special conditions.

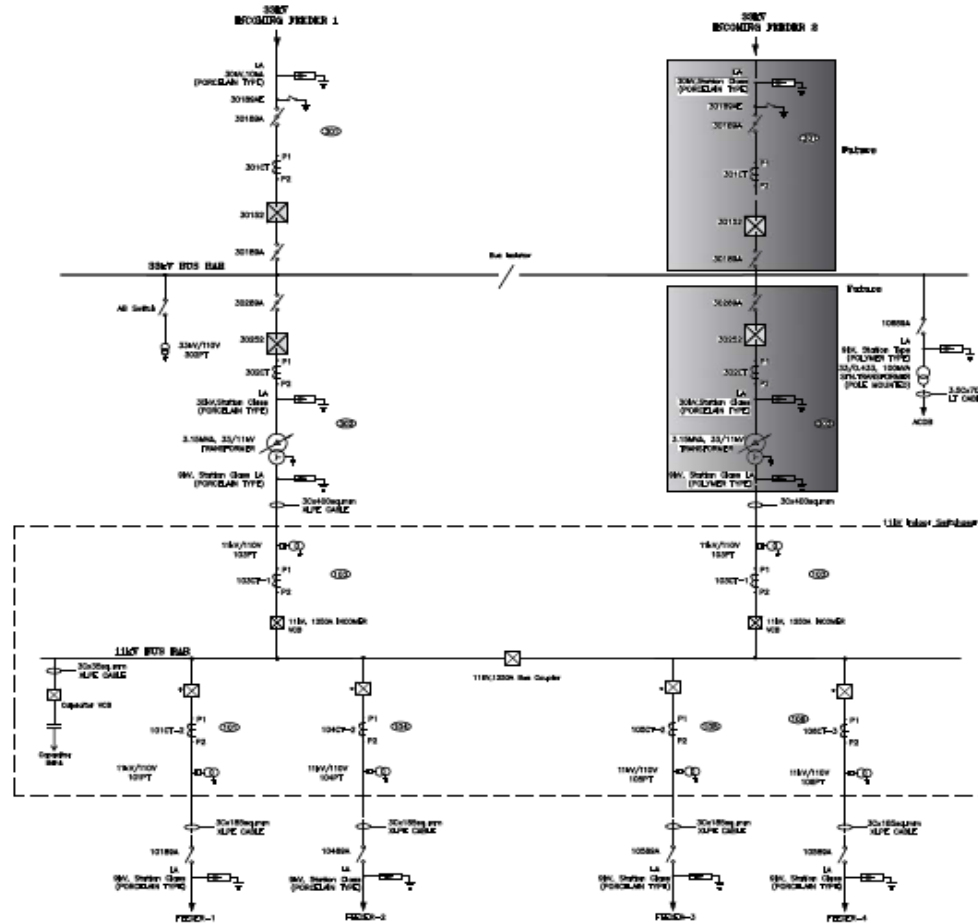

Assistant Engineer


Sr. Executive Engineer


Superintending Engineer

Annexure 'B'

**REC Construction Standard
Gen-42A**



BILL OF QUANTITY - 33KV			
SL. NO.	ITEM DESCRIPTION	SYMBOL	QTY
1.	3.15MVA, 33/11KV TRANSFORMER		1 NO.
2.	30KV, 1250A, O/D VOLTAGE CIRCUIT BREAKER		2 SETS
304	30KV, 30KV 50 AMP EARTH SWITCH		1 SET
305	30KV, 30KV 50 AMP EARTH SWITCH		3 SETS
4.	CT RATIO 300-100/5A		8 NOS.
5.	33KV/11KV, POTENTIAL TRANSFORMER		3 NOS.
6.	33KV/30KV Class SURGE ARRESTER (PORCELAIN TYPE)		3 SETS
7.	33KV/12.5KV, 1000VA, 30KV TRANSFORMER		1 NO.

BILL OF QUANTITY - 11KV			
SL. NO.	ITEM DESCRIPTION	SYMBOL	QTY
104	11KV, 1250A FEEDER VCB @ Bus Coupler		3 SETS
105	11KV, 1250A OUTGOING VCB		4 SETS
3.	30kV Class 50amp SURGE ARRESTER (PORCELAIN TYPE)		4 SETS
3.	10KV, 30KV, 51KV TYPE SAND OPERATED ESO		4 SETS
4.	11KV/11KV, POTENTIAL TRANSFORMER		16 NOS.
5.	CAPACITOR BANK VCB		1 SETS

LEGEND:-

- 11KV, 1250A OUTGOING VCB.
- CT-1 300-100/5-A
- CT-2 300-100/5-A
- CT-3 100-50/5-A

This SLD is indicative. P&L/Utilities may suitable adopt a ckt. as per site requirement.

FOR TENDER PURPOSE ONLY



Rural Electrification Corporation Ltd.

PROJECT:

REGVY XII Plan Projects

TITLE: Single Line Diagram of 1x3.15MVA (Type-A) 33/11KV Substation with Indoor 11kV Switchgear

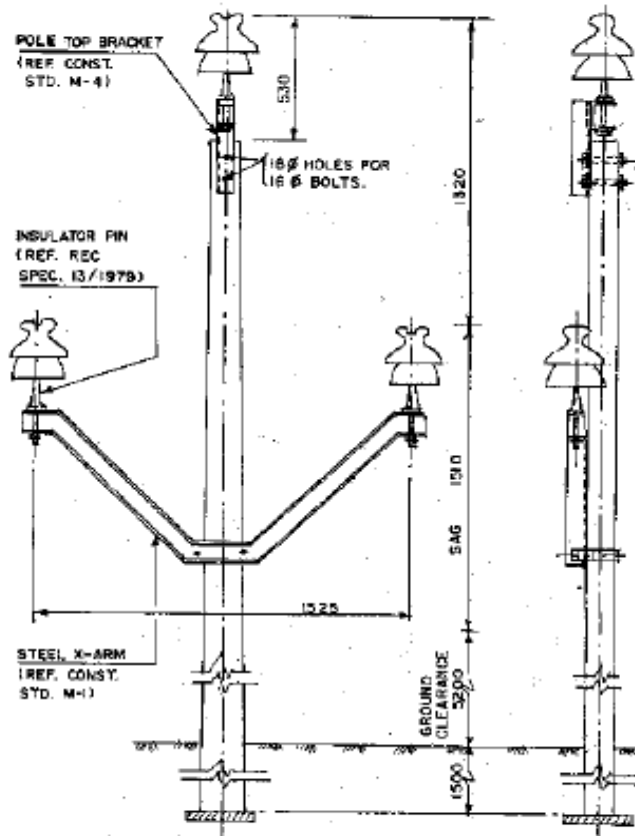
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Assistant Engineer

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Sr. Executive Engineer

R.K. Pathania
Superintending Engineer

Annexure 'B'

R E C
CONSTRUCTION STANDARD
M - 3



BILL OF MATERIAL

9-DM SUPPORT	1
POLE TOP BRACKET	1
V- CROSS ARM (MS CHANNEL-100X50X6-4)	1
BACK CLAMP	1
BOLTS 16 Ø	4
33 KV PIN INSULATOR	3
33 KV PINS	3
EARTHING COMPLETE	1

TANGENT LOCATION
MAX. SPAN 125 M
(CROSS COUNTRY)

ALL DIMENSIONS ARE IN mm.

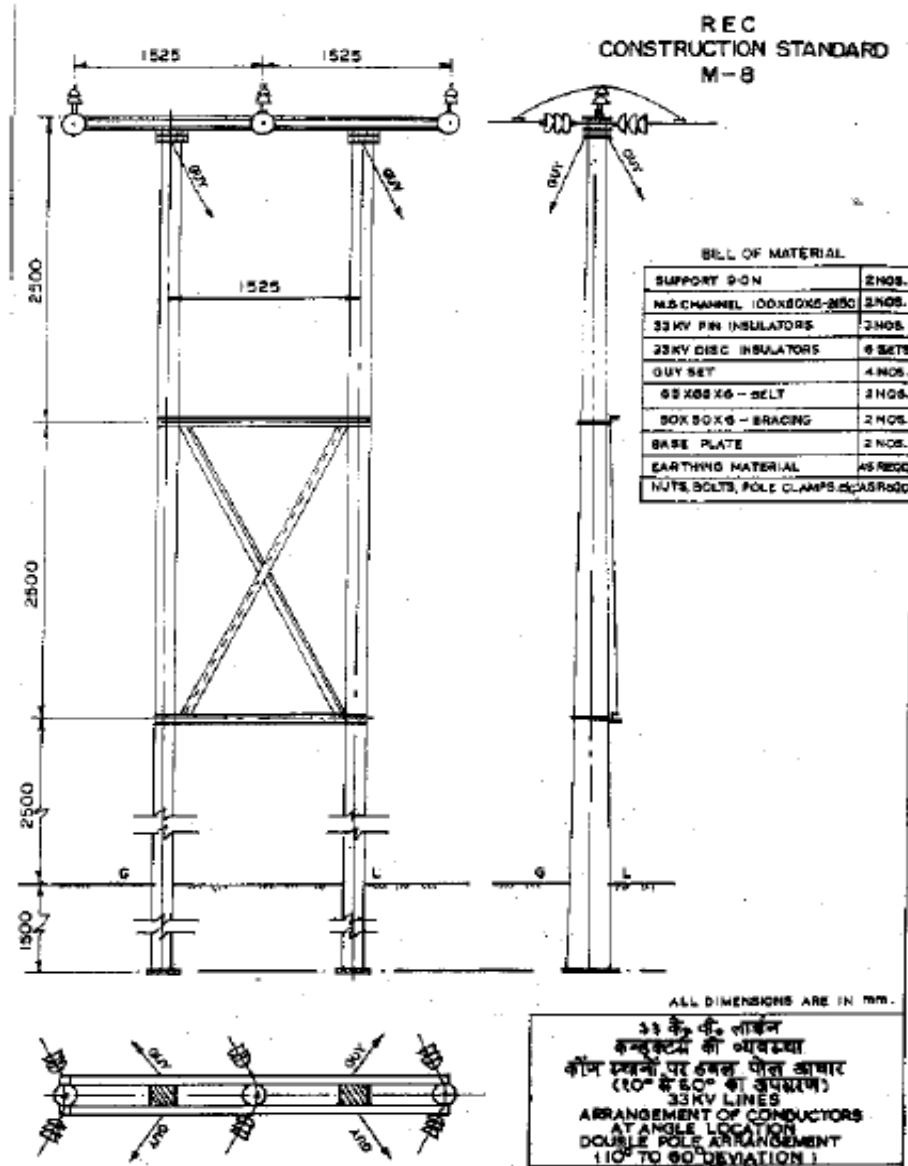
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कन्डक्टर रचना एवं अन्तराल
33KV LINE
CONDUCTOR FORMATION
AND CLEARANCES

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Assistant Engineer

[Signature]
Sr. Executive Engineer

R. K. Pathania
Superintending Engineer

Annexure 'B'



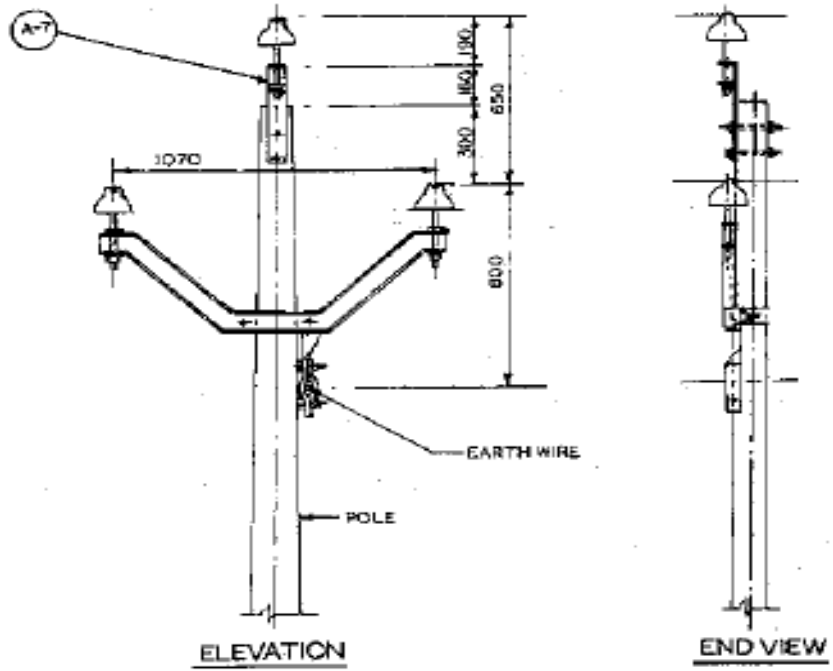
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Assistant Engineer

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Sr. Executive Engineer

R. K. Pathania
Superintending Engineer

Annexure 'B'

**REC
CONSTRUCTION STANDARD
A-3**



**TANGENT LOCATION
MAXIMUM SPAN-107 METRES**

ALL DIMENSIONS ARE IN mm.

NOTE:- 11KV-CONSTRUCTION WITHOUT CONTINUOUS EARTH WIRE VIDE A-2 IS PREFERRED.

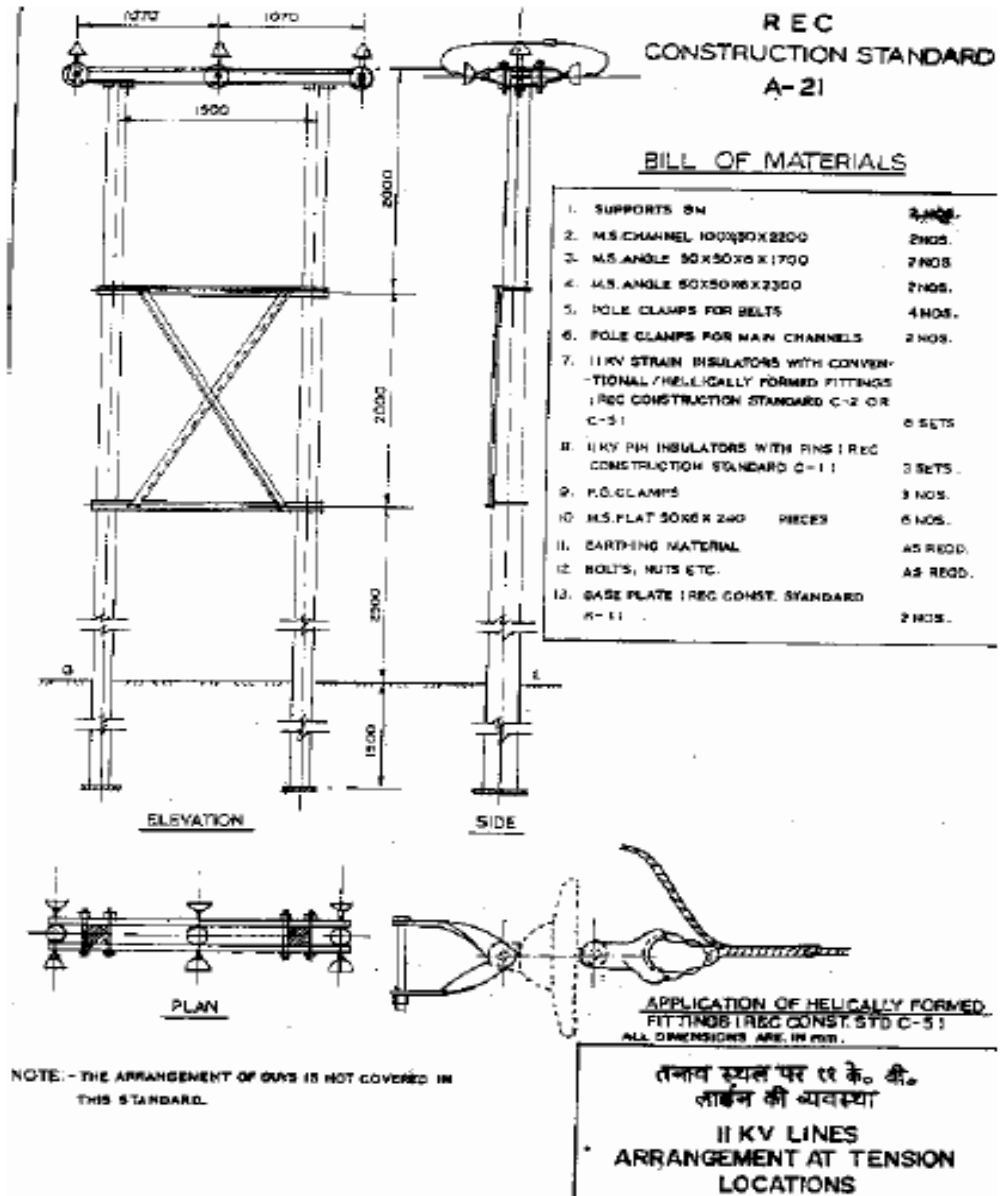
११ के. वी. लाईन
भू तार सहित कन्डक्टर रचना व अन्तराल
**11 KV LINES
CONDUCTOR FORMATION AND
CLEARANCES
WITH EARTH WIRE**

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Assistant Engineer

[Signature]
Sr. Executive Engineer

R. K. Pathania
Superintending Engineer

Annexure 'B'



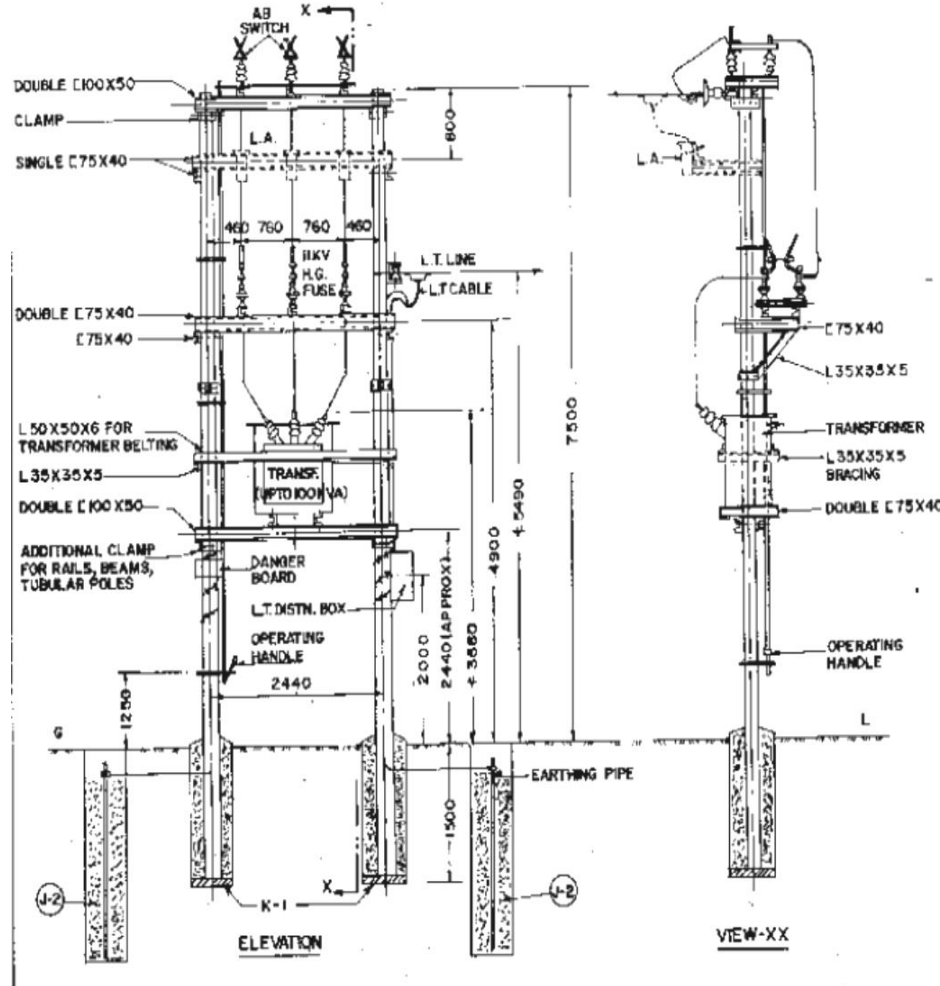
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Assistant Engineer

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Sr. Executive Engineer

R. K. Pathania
Superintending Engineer

Annexure 'B'

REC
CONSTRUCTION STANDARD
F-2



BILL OF MATERIAL

SUPPORTS	- 9m.	2
CHANNELS	100X50 - 2800 (APPROX.)	4
CHANNELS	75 X 40 - 2800 (APPROX.)	2+1
CHANNELS	75 X 40 - X-ARM FOR SUPPORTING H.G. FUSE & L.A.	2+2
ANGLES	50 X50X6 - 2800 (APPROX)	2
ANGLES	35X35X5 - 460 (APPROX)	2
ANGLES	35X35X5 - BRACING FOR SUPPORTING H.G. FUSE FOR SUPPORTING DISTRIBUTION BOX	2
DISTRIBUTION TRANSFORMER		1
AIR BREAK SWITCH (HORIZONTAL TYPE)		1
H.G. FUSE UNIT-3 PHASE		1SE
11 KV. LIGHTNING ARRESTERS		3
DISTRIBUTION BOX		1
EARTHING SET		AS REQD.
DANGER BOARD		1
CLAMPS, NUTS, BOLTS, BARBED WIRE ETC. AS REQD.		
L.T. CABLE		AS REQD.

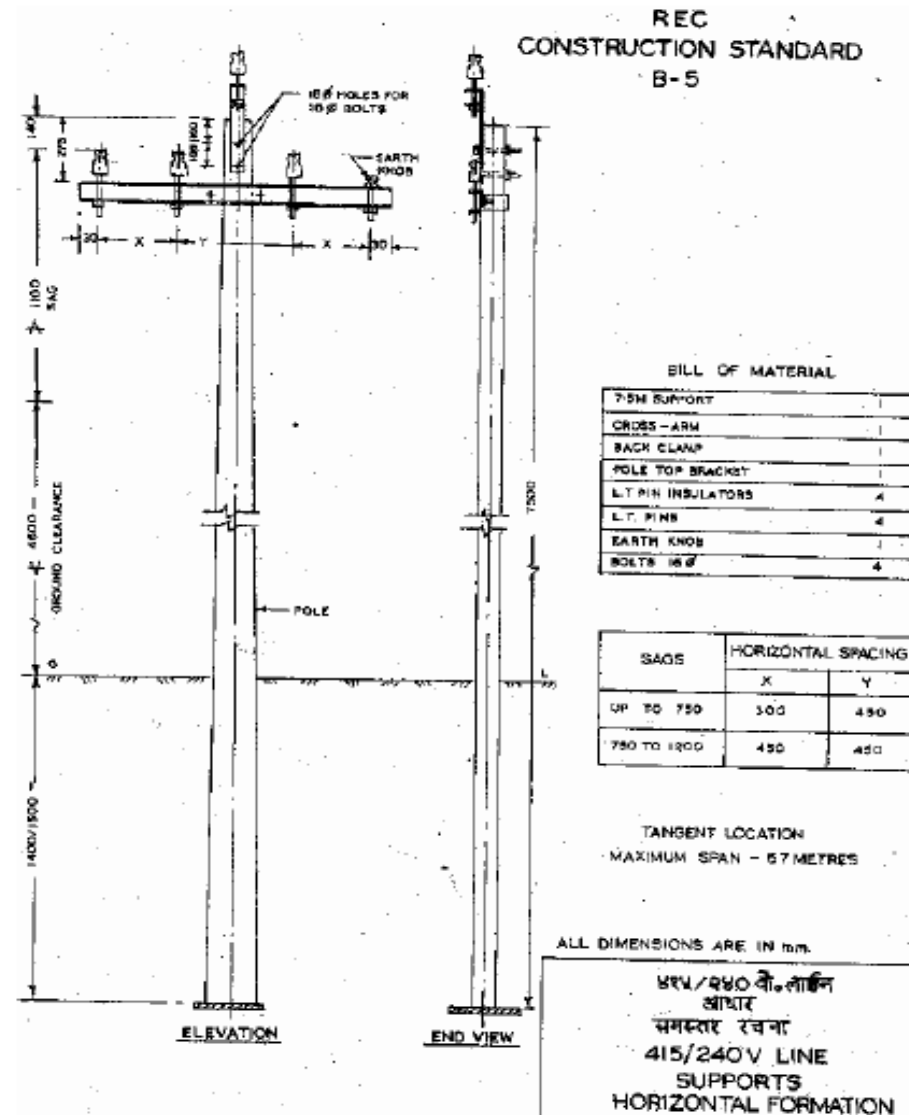
११ के. वी. / ४३३-२५० वोल्ट
११ के. वी. वित्त वॉर हॉर्न गैप फ्यूज मीट
वित्त वॉर स्टेशन
11KV/433-250V
DISTRIBUTION SUB-STATION
WITH A.B. SWITCH &
HORN GAP FUSES
SCALE: N.T.S 1972 / JAN. 195

Hiw
Assistant Engineer

[Signature]
Sr. Executive Engineer
56/58

R. K. Pathania
Superintending Engineer

Annexure 'B'



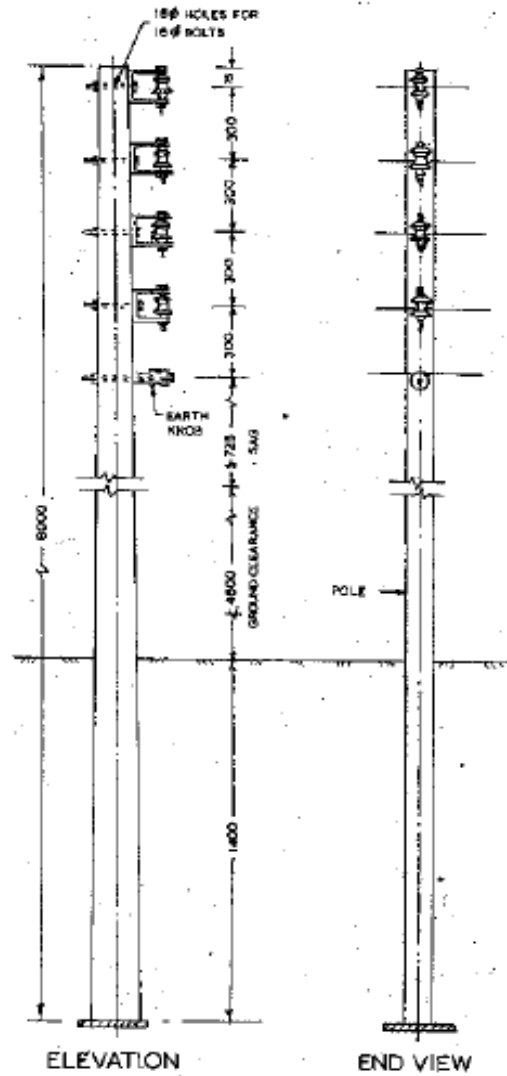
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Assistant Engineer

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Sr. Executive Engineer

R. K. Pathania
Superintending Engineer

Annexure 'B'

REC
CONSTRUCTION STANDARD
B-6



BILL OF MATERIAL

BM SUPPORT	1
U-CLAMPS	4
SHACKLE INSULATORS	4
EARTH KNOB	1
BOLTS 16 Ø	5

TANGENT LOCATION
MAXIMUM SPAN - 67 METRES

ALL DIMENSIONS ARE IN mm.

४१५/२४० वी. लाईन
आधार
खड़ी रचना
415/240V LINES
SUPPORTS
VERTICAL FORMATION

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Assistant Engineer

[Signature]
Sr. Executive Engineer

R. K. Pathania
Superintending Engineer