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KERALA STATE ELECTRICITY BOARD LIMITED

(Incorporated under the Companies Act, 1956)

Reg. Office: Vidyuthi Bhavanam, Pattom, Thiruvananthapuram – 695 004

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ABSTRACT

Upgradation of 66kV Substation, Thamarassery to 110kV and conversion of the existing 66kV SC Kunnamangalam- Thamarassery feeder (17.7km) to 110kV under Transmission Circle, Kozhikode - Administrative Sanction accorded - orders issued.

Corporate Office(SBU-T)

B.O.(FTD)No 268 /2020/D(T,SO&S)/T3/Thamarassery Upgradn to 110kV/2019-20 dated, Thiruvananthapuram .08.04.2020

- Read:1. Letter No. CE/TRN/E6/Kunnamangalam-Thamarasseri/2018-19/ 646 dated 04.07.2018 of the Chief Engineer(Transmission North)
2. Letter No.D(T&SO)/PSE/CE-NU/2018-19/210 dated 28-02-2019 of the Executive Engineer, Power System Engineering.
3. Letter No.CE/TRN/E6/Kunnamangalam-Thamarassery/2019-20/998 dated 14.10.2019 of the Chief Engineer(Transmission North)
4. Minutes of the DPR Committee meeting held on 15.01.2020.
5. Note No.D(T,SO&S)/T3/ Thamarassery Upgradn to 110kV/2019-20/144 dated 30.03.2020 of the Director(Transmission , System Operation & Safety) (Agenda No.5/4/20)

ORDER

The Chief Engineer(Transmission North) had forwarded a proposal as per letter read as 1st above seeking Administrative Sanction for an estimate amounting Rs.16 Crore for the Upgradation and conversion of 17.7 km 66kV SC Kunnamangalam-Thamarassery feeder to Double circuit in 110kV Parameters.

Currently a number of projects of doubling and uprating from 66kV SC line to 110kV DC in northern grid are under progress , particularly from Mundayad to Nallalam portion, as stretch by stretch manner. Some of these stretches are already completed and some are under construction/tendering stages. The subject stretch from Kunnamangalam to Thamarassery is a part of this project to be upgraded.

The 66kV Kunnamangalam –Thamarassery SC line was commissioned long back in 1947. This feeder is having a route length of 17.7km with 78 locations, partly constructed with ACSR Dog conductor and the balance with 80 sq mm Copper conductors. The present capacity of the line is inadequate to carry the load of Thamarassery Substation along with the connected Kuthumunda substation considering the future load growth. Moreover the line passes through residential and hilly areas where a lot of land development/construction works are being carried out violating statutory clearances due to earth filling activities. Hence the line has to be raised for obtaining sufficient ground clearance at many locations which is very urgent as far as safety aspect is considered. Considering the above facts and for satisfying the N-1 condition, upgradation of the existing 66kV SC line to DC in 110kV parameters with ACSR Wolf conductor is proposed.

The latest Load Flow study report as per letter read as 2nd recommended, both the upgradation of the 66kV Substation, Thamarassery to 110kV by installing 2x12.5MVA Transformers and the conversion of the existing 66kV SC Kunnamangalam- Thamarassery feeder to 110kV DC feeder together, citing considerable increase in voltage profile of 11kV feeders with the materialization of the project. Further, a loss reduction 0.26 MW was noticed in the EHT system, if both the line and substation upgradation are considered.

Accordingly a revised proposal was submitted by the Chief Engineer(Transmission North) as per letter read as 3rd above for the conversion of the existing 66kV SC Kunnamangalam- Thamarassery feeder to 110kV DC feeder incorporating the upgradation of 66kV Substation, Thamarassery to 110kV by installing 2x12.5MVA Transformers also, at a total estimate amount of Rs 27.80 Crore.

The proposal was placed before the DPR Committee held on 15.01.2020 and the Committee approved the proposal as per minutes read as 4th above .

The proposal was revised to an estimate amount of Rs 27.10 Crore incorporating correction in calculation of GST, and was placed before the Full Time Directors as per note read as 5th above seeking sanction .

Having considered the above, the Full Time Directors in the meeting held on 02.04.2020,

Resolved to accord Administrative Sanction for the Upgradation of 66kV Substation, Thamarassery to 110kV by installing 2x12.5MVA Transformers and conversion of the existing 66kV SC Kunnamangalam- Thamarassery feeder (17.7km) to 110kV DC at a total estimate amount of Rs 27.10 Crore (Rupees Twenty Seven Crore and Ten Lakh only).

Orders are issued accordingly.

By Order of the Full Time Directors,
Sd/-
Lekha G.
Company Secretary (In- Charge)

To

: The Chief Engineer (Transmission North)

Copy to: The Deputy Chief Engineer, Transmission Circle, Kozhikode
The Deputy Chief Engineer(IT)
The Financial Adviser/ The Chief Internal Auditor.
The RCAO/ RAO.
The TA to CMD/ D(T,SO&S)/ D(D, IT&HRM)/ D(G-C)/ D(G-E& SCM)
The PA to Director (Finance)/CA to Company Secretary
Fair Copy Superintendent/Library/Stock File.

Forwarded / By Order


Assistant Executive Engineer

Annexure to B.O.(FTD)No 268 /2020/D(T,SO&S)/T3/Thamarassery Upgradn to 110kV/2019-20 dated,
Thiruvananthapuram 08 .04.2020

KERALA STATE ELECTRICITY BOARD LIMITED

ABSTRACT OF ESTIMATE

Abstract of estimate for the upgradation of 66 kV substation, Thamarassery to 110 kV with the installation of 2x12.5 MVA 110/11 kV transformers and 2 nos.110 kV feeders and Conversion of existing 66kV SC Kunnamangalam- Thamarassery feeder(17.7km) to 110kV Double Circuit under Transmission Circle, Kozhikode

SL NO	PARTICULARS	AMOUNT IN Crore
1	PART- A- Upgradation of 66kV Substation to 110kV	9.60
2	PART- B -Conversion of existing 66kV SC Kunnamangalam- Thamarassery feeder (17.7 km) to 110kV DC feeder	17.50
	GRAND TOTAL	27.10
	Rupees Twenty Seven Crore Ten Lakhs Only	
	Cost of takenback items	1.43

Sd/-

Director (Transmission System Operation, & Safety)

17	Control cable of 2.5x7sq.mm	km	1	1.89691	1.8969
	Sub total Part III				54.3922
A	Sub total of Part I to III				397.27
B	Erection and commissioning @7.5% of A				29.7950
C	Transportation , Insurance & Contingencies @ 6 % of A				23.8360
D	Civil Works and special works				
1	Site filling, levelling and road	LS			60.00
2	Earthing arrangement and metal spreading of yard	LS			30.00
3	Building(Control room)	LS			70.00
4	Cable trench & Foundations equipments & yard structure work	LS			70.00
5	Fencing and compound wall	LS			25.00
6	Water , Sanitation and Electrification	LS			10.00
7	Watch man cabin	LS			5.00
8	Dismantling existing old sheet roofed quarters	LS			1.50
9	Dismantling existing 66kV Substation with equipments and accessories	LS			15.00
	Sub Total of D				286.50
E	Other& special items				
1	Tools & Plants , Fire fighting equipments & safety equipments etc	LS			15.00
2	Furnitures and fixtures	LS			2.50
3	Yard lighting arrangement	LS			7.00
	Sub Total of e				24.50
F	Sub total of A+B+C+D+E				761.8972
G	Overhead/supervision charges (10% of F)				76.19
H	Cost of materials w/o GST				206.35
I	Sub total of B+C+D+E+G+H				647.17
J	Taxes and duties if any extra (18% of H)				116.49
K	Electrical inspectorate fees	LS		2	2.00
L	Unforeseen items				3.42
	TOTAL OF PART A (F+G+J+K+L)				960.00

PART- B -Conversion of existing 66kV SC Kunnamangalam- Thamarassery feeder (17.7 km) to 110kV DC feeder

Sl no.	Item Description	unit	Quantity	Rate in Lakhs	Total in Lakhs
1	Tower parts including stub and cleat ,all accessories with B&N	MT	437.00	0.9499	415.11
2	Template for towers	MT	27.578	0.6519	17.98
3	ACSR Wolf	km	112	1.1343	127.04
4	7/9 Earth wire	km	19	0.3434	6.53
5	110kV 90KN Polymer Insulator (tension type)	set	470	0.02533	11.91
6	110kV 70KN Polymer Insulator (suspension type)	set	249	0.02339	5.82
7	Suspension hardware fittings for ACSR wolf with arcing horn	set	249	0.01	3.17
8	Tension hardware fittings(compression type) for ACSR wolf with				

KERALA STATE ELECTRICITY BOARD LIMITED

Estimate for the up-gradation of 66 kV substation, Thamarassery to 110 kV with the installation of 2x12.5 MVA 110/11 kV transformer bays and 2 nos.110 kV feeders and Conversion of existing 66kV SC Kunnamangalam-Thamarassery feeder to 110kV DC

PART- A- Upgradation Substation

Sl no.	Item Description	unit	Quantity	Rate in Lakhs	Total in Lakhs
Part I					
1	Steel structures, fabricated galvanized structures for switch yards	MT	40	0.810	32.40
2	110kV bus bar arrangements	LS			30.00
3	GI earth wire	km	0.5	0.34342	0.17
Sub total Part I					62.57
Part II-Electrical Equipments					
1	Power Transformer 110/11kV 12.5 MVA	Nos	2	80.51929	161.0386
2	110/11kV, 12.5 MVA Transformer C&R panel	Nos	2	5.27608	10.5522
3	110kV, Feeder C&R panel	Sets	2.0000	5.2717	10.5433
4	110kV SF6 Circuit Breaker with structure	Set	4	5.1802	20.7208
5	110kV Current Transformer 400/200/100/1-1-1-1A with structure	Nos	12	1.94702	23.36
6	ACSR Kundah conductor	km	1.5	2.00235	3.0035
7	ACSR Wolf conductor	km	1.2	1.1343	1.3612
8	110kV Lightning arrestor with structure	Nos	12	0.3653	4.3836
9	110kV Neutral CT 400/200/100/1A	Nos	2	0.23116	0.4623
10	110kV, 800A Bus isolator with structure	Nos	7	2.10783	14.7548
11	110kV potential transformer with supporting structure	Nos	9.0000	1.1269	10.1419
12	110kV 90IN tension composite polymer insulator	Nos	300	0.01889	5.6670
13	110kV,800A Line isolator with earth switch	Nos	2	2.5172	5.0345
14	110V, 200AH plante type battery	Nos	1	8.11250	8.1125
15	30A battery Charger	Nos	1	1.15876	1.1588
Sub total Part II					280.2992
Part III - 11kV Side					
1	11kV /415V 160kVA Auxiliary Transformer with accessories	Nos	1	2.35478	2.3548
3	1x500 Sqmm XLPE UG cable	km	1.5	6.0646	9.0968
4	3x300 Sqmm XLPE UG Cable	km	2	9.1302	18.2604
6	11 kV Lightning arrestor	Nos	6	0.02	0.12
7	11 kV XLPE, 3*300 cable end box (indoor)	Nos	9	0.03304	0.2974
8	11 kV XLPE, 3*300 cable end box (out door)	Nos	9	0.0295	0.2655
9	11 kV XLPE, 1*500 cable end box (indoor)	Nos	6	0.0180	0.1080
10	11 kV XLPE, 1*500 cable end box (out door)	Nos	6	0.01947	0.1168
11	Control cable of 2x2.5sq.mm	km	2	0.7835	1.5670
12	Control cable of 4x2.5sq.mm	km	2.5	1.19191	2.9798
13	Control cable of 19x2.5sq.mm	km	1	4.33701	4.3370
14	Control cable of 12x2.5sq.mm	km	3	2.8574	8.5722
15	Control cable of 2x4sq.mm	km	2.5	1.07602	2.69
16	Control cable of 4x4sq.mm	km	1	1.72956	1.7296

9	Tension set for 7/3.15mm Earth wire with copper bond	set	76	0.01	0.70
10	Suspension set for 7/3.15mm earth wire with copper bond	set	39	0.01	0.40
11	Vibration damper for ACSR wolf conductor	no.	470	0.003835	1.80
12	Vibration damper for 7/3.15mm earth wire	no.	76	0.003776	0.29
13	Preformed armour rod for ACSR wolf	no.	249	0.01	1.37
14	Repair Sleeve for ACSR Wolf	no.	40	0.001829	0.07
15	Midspan joint for ACSR Wolf	no.	50	0.003658	0.18
16	Midspan joint for 7/3.15mm earth wire	no.	50	0.001239	0.06
A	Cost of Material				598.09
B	Labour Charges				
	Civil work for foundation of Towers, line and earth stringing, Tower and line and earth conductor dismantling,			LS	600.00
	Erection and commissioning @ 7.5% A				44.86
	Transportation, Insurance and Contingencies @ 6% A				35.89
	Survey			LS	3.00
	Sub total for B				683.74
C	Protective work with BSNL			LS	0.50
D	Tower foot compensation			LS	80.00
E	Tree cutting compensation			LS	40.00
F	Electrical inspectorate fee			LS	0.10
G	Sub Total B+C+D+E+F				804.34
H	Total A+G				1402.43
I	Overhead/ Supervision Charges (10% of H)				140.243
J	Cost of materials w/o GST				35.706
K	Sub Total G+I+J				1542.672
L	GST @18% on(G+ I+J)				176.452
M	Sub Total H+I+L				1719.125
N	Unforeseen				30.88
	TOTAL OF PART B (M+N)				1750

RUPEES SEVENTEEN CRORE AND FIFTY LAKHS ONLY

COST OF TAKEN BACK ITEMS

SI No.	Item Description	unit	Quantity	Rate	Total
1	GI towers (45*1245+ 29*1486+ 2*1969+273*10+385*5)	kg	107712	0.00014	15.07968
2	Scrap value of dismantled Copper conductor	kg	5893.53	0.00315	18.5646195
3	Scrap value of dismantled ACSRDog conductor	kg	15795.46	0.00075	11.846595
4	Scrap value of dismantled GI earth wire	kg	6900	0.00014	0.966
5	Depreciated cost of 66/11KV 10 MVA Transformer(1997 make)	Nos	2	46.42	92.84
6	Depreciated cost of yard structures	MT	15	0.16726	2.5089
3	Depreciated cost of other equipments (PT CT,LA,Isolator,etc)				1.68
	Total				143.485795
					Sd/-

Director (Transmission System Operation, & Safety)