

project
AEE/W

ADMINISTRATION

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TAMIL NADU TRANSMISSION CORPORATION LIMITED

ABSTRACT

Electricity - Coimbatore Region - Coimbatore Operation circle Establishment of 110/22-11 SS at Somayapalayam with 1x25 MVA, 110/22 kV power transformer and 2x10 MVA, 110/11 kV power transformer - Administrative approval - Accorded.

TECHNICAL BRANCH

(Per).FB.TANTRANSCO Proceedings No.1

Dated: 14.12.2010

Karthigai. 28

Thiruvalluvar Aandu 2041.

READ: 1.Lr.No.CE/D/CBE/AEE/Plg/F.Somayapalayam/D.No.581/10,Dt. 08.06.2010 and its subsequent correndences
2. Minutes of the 10th meeting of the Board of Directors of TANTRANSCO held on 07.12.2010 in item.No.16.

PROCEEDINGS:

1. The Tamil Nadu Transmission Corporation Limited hereby approves the proposal for establishment of 110/22-11 kV SS at Somayapalayam with 1x25 MVA, 110/22 kV power transformer and 2x10 MVA, 110/11 kV power transformer in Coimbatore Operation circle of Coimbatore Region at an estimated cost of Rs.987.31 lakhs Gross and Nett. The detailed estimate and report are annexed to these proceedings.
2. The expenditure is chargeable to TANTRANSCO - Funds - Capital Expenditure - Coimbatore Operation circle - A/C code No: 14.655.
3. By virtue of the provisions contained in sub-section (2) (a) of section 185 of the Electricity Act, 2003, the TANTRANSCO being the Transmission utility, Licensee and successor entity of Tamil Nadu Electricity Board will exercise the powers of the Telegraph Authority under the provisions of section 164 of the Electricity Act, 2003, which have already been conferred upon the Board under section 51 of the Indian Electricity Act, 1910.
4. The work is to be taken up after ensuring budget provision.

// BY ORDER OF THE BOARD//

S.KALYANI
CHIEF ENGINEER / PLANNING & RC

Encl: Report and detailed estimate.

AG/
fy/
18/12/10

To

The Chief Engineer / D/ Coimbatore Region (2 Copies)

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The Managing Director/TANTRANSCO/Chennai-2

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☒ The Superintending Engineer/ Coimbatore EDC/North

The Superintending Engineer/ Operation/ Coimbatore

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A. G. M.
14/12/2010

EXECUTIVE ENGINEER/MASTER PLAN (i/c)

End. No:- SE/CEDC/N/462/AEE-4/AE1/F. SHIP 23/ D.No:- 2082/10 dt 21.12.10

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} For information
and
necessary action.

22/12/10

DISPATCHED

shy
31/12/10
for SE/CEDC/N/462

REPORT TO ACCOMPANY THE ESTIMATE

This proposal envisages establishment of 110/22-11 kV SS at Somayapalayam with 1x25 MVA, 110/22 kV power transformer & 2x10 MVA, 110/11 kV power transformer in Coimbatore Operation circle of Coimbatore Region at an estimated cost of Rs.987.31 lakhs Gross and Nett.

NEED

The areas in and around Somayapalayam such as Pannimadai, Vadavally etc, are being fed by S.N.Palayam 110/11 kV SS and Thudiyalur 110/22 kV SS. The details of the substations and feeders feeding these areas are detailed below;

➤ S.N.Palayam 110/11 kV SS is having 4x16 MVA, 110/11 kV power transformers. The sustained peak on this SS is 51.92 MVA. The power transformers are loaded to 81.13 % of their capacity with a load growth of 7.4 %. Two 11 kV feeders are feeding a portion of the above area. They are furnished below:

Sl. No	Name of the feeder	C.L in MVA	Length of # in km	Peak reached in MVA	Voltage regulation	Line loss in LU
1.	11 kV Maruthamalai feeder	10.029	13.165	6.52	18.81 %	12.67
2.	11 kV P.N.Pudur feeder	11.052	7.0	6.07	14.82 %	10.98

➤ Thudiyalur 110/22 kV SS is having 2x25 MVA, 110/22 kV power transformer. The sustained peak on this SS is 38.91 MVA. The power transformers are loaded to 77.8 % of their capacity with a load growth of 11.53 %. Two 22 kV feeders are feeding the remaining portion of the above area. They are furnished below:

Sl. No	Name of the feeder	C.L in MVA	Length of # in km	Peak reached in MVA	Voltage regulation	Line loss in LU
1.	22 kV Somayapalayam feeder	17.750	8.61	6.58	11.59 %	16.46
2	22 kV Kanuvai feeder	21.650	7.24	8.97	8.25 %	8.7

From the above, it may be seen that the voltage regulation of 11 kV Maruthamalai feeder, 11 kV P.N.Pudur feeder off S.N.palayam 110 kV SS, 22 kV Somayapalayam feeder and 22 kV Kanuvai feeder off Thudiyalur 110 kV SS have exceeded the permissible limit of 8%. Also, the loading on the existing power transformers in the two substations has exceeded 70% of their capacities.

There is no possibility of transferring the load to the nearby substations since, load on the nearby substations have reached more than 70% their power transformer capacity. The CE/D/Coimbatore has reported the following;

This area is situated between Seeranaickenpalayam and western Ghat, there is no margin in the nearby substations to cater the expected load growth. The above said areas are located in between Vadavalli, Coimbatore Corporation and Thudiyalur area along the foot hills of the western Ghat. The existing substations are feeding prime locations like Bharathiyar University, Tamil Nadu Agricultural University and industrial units of Kanuvai and Somayapalayam area. Now, the Registrar, Bharathiyar University has given load requirement for a demand of 7 MVA in this area.

In addition, M/s. ELCOT has also proposed to establish IT center within the Bharathiyar University campus. Further, 2 nos of HT applications for a demand of 1.6 MVA is pending in this area. Enormous load growth is expected in the near future and also new Satellite townships are developing in and around Vadavalli, Bharathiyar University and Somayapalayam areas. Hence, the proposed and expected demand could not be effected in S.N.palayam 110 kV SS and Thudiyalur 110 kV SS. To feed the above areas, there is a need for new SS at perfect load centre.

Establishment of new 33 kV SS at Selvapuram and Kaleeswaranagar and establishment of 110/22-11 kV SS at Edayarpalayam have been included in the 11th master plan for which technical feasibility has been ascertained. The suitable land for these substations could not be able to identified. Further, introduction of 110/33 kV ratio at Coimbatore 110/11 kV SS to feed these above 33 kV SS is not possible since, there is no space available for erection of additional power transformers in view of proposed 230/110 kV SS at the premises of Coimbatore 110 kV,SS.

Further, suitable lands are not available in the Selvapuram and Kaleeswaranagar area. Alternatively, a government poromboke land measuring an extent of 4.00 acres in Somayapalayam instead of Edayarpalayam has been found suitable. Therefore, in order to improve the voltage regulation of the above feeders, reduce line loss, to provide load relief to the existing substations, to accommodate the future load growth in and around Somayapalayam area and to new HT services, establishment of a new substation at Somayapalayam is very much essential.

Reduction in line loss:-

On establishing a new 110/22-11 KV SS at Somayapalayam, the feeder regulation details of the feeders from which loads are proposed to be transferred are detailed below;

Sl. No	Name of the feeder	C.L in MVA	Volt. regn	Line loss in LU
1.	22 kV Thudiyalur – Somayapalayam #	7.375	1.41 %	0.203
2.	22 kV Thudiyalur – Kanuvai #	6.525	2.74 %	0.393
3.	11 kV S.N.palayam – Maruthamalai #	5.139	5.65 %	0.68
4.	11 kV S.N.Palayam – P.N.pudur #	4.836	3.15 %	0.41

On establishing a new 110/22-11 KV SS at Somayapalayam, the savings in line loss will be 42.87 LU per annum ie, Rs 144.90 lakhs per annum.

Details of Power transformer Capacity proposed:

A load of 11.106 of 11 kV load and 25.5 MVA of 22 kV load is proposed to be transferred to the (proposed) Somayapalayam 110/22-11 kV SS from the following SS:-

1. S.N.palayam 110/11 kV SS – 11.106 MVA of 11 kV connected load with anticipated peak of 7.404 MVA and
2. Thudiyalur 110/22 kV SS – 25.5 MVA of 22 kV connected load with anticipated peak of 17 MVA

Hence, in order to cater an anticipated peak of 7.404 MVA on 11 kV side and 17 MVA on 22 kV side, it is proposed to install 1x25 MVA, 110/22 kV power transformer and 2x10 MVA, 110/11 kV power transformers at the proposed SS. Initially the SS will be commissioned with one no. 10 MVA, 110/11 KV power transformer and 25 MVA, 110/22 kV power transformer and when the loading on the 10 MVA power transformer reaches 70% of its capacity, the second 10 MVA, 110/11 kV power transformer will be erected.

Feeding Arrangements;

Details of Source SS ;

a.	Name of the substation	Othakkalmandapam 230/110 kV SS
b.	230/110 KV auto transformer capacity	3x100
c.	Peak reached in MVA	267.33
d.	Proposed addition in MVA	45 MVA
e.	Anticipated peak in MVA	312.33 MVA
f.	Whether auto tr. capacity of the source SS is adequate: Not adequate. In order to avoid overloading, administrative approval for establishment of 230/110 kV SS at Karamadai has been accorded vide B.P.(CH).No.566 dt 27.10.2007. The erection works are under progress. On commissioning of Karamadai 230 kV SS, the loading capacity of Othakkalmandapam will be adequate.	

Details of the source feeder:

a.	Name of the feeder	110 KV Othakkalmandapam - Thudiyalur II
b.	Size/Loading capacity of the conductor	Panther, 84 MVA
c.	Present loading in MVA	91.28
d.	Proposed addition in MVA	45
e.	Anticipated load in MVA	136.28
f.	Whether conductor size is adequate: Not adequate. Administrative approval for conversion of the existing 110 kV SC Coimbatore – Othakkalmandapam line with Leopard conductor into 110 KV DC line on DC tower with Panther conductor, from loc 1-3 and 6B-83 has been accorded vide B.P(CH).No 540 dt 15.10.2007. Erection work is under progress. On completion of the above work, Ukkadam 110 kV SS (3x16 MVA) which is being fed by 110 kV Othakkalmandapam – Thudiyalur II line will be transferred to 110 kV Othakkalmandapam – Coimbatore II. Afterwards the line capacity will be adequate.	

DETAILS OF WORK:

- Establishment of Somayapalayam 110/22-11 kV SS with 1x25 MVA, 110/22 kV power transformers and 2x10 MVA, 110/11 kV power transformers with associated equipments.
- LILO of 110 kV Othakkalmandapam – Thudiyalur line at Somayapalayam 110 kV SS for a distance of 6.5 kms.

LAND AVAILABILITY:

4 acres of Government poromboke land in Somayapalayam village has been identified for establishment of 110/22-11 kV SS. Formal concurrence for issuing the enter upon permit has been obtained from the District Collector/Coimbatore to carry out the work subject to payment of guideline value of Rs.14.60 lakhs. The land should be acquired within two months after getting administrative approval.


14/12/2010
EXECUTIVE ENGINEER/MASTER PLAN (i/c)

**DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/22-11 KV SS WITH 1x25
MVA, 110/22 KV POWER TRANSFORMER AND 2x10 MVA, 110/11 KV POWER
TRANSFORMER AT SOMAYAJALATHI IN COIMBATORE EDC, NORTH (Coimbatore
Operation circle).**

Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs	Total in Lakhs
I	CIVIL WORKS					
1	Land Cost				14.600	
2	Control Room				24.610	
3	Station yard & cable duct				6.000	
4	Lead Road				4.000	
5	Fencing / Compound Wall				5.000	
6	Water system				3.000	
					57.210	57.210
II	Electrical works					
1	110 kV AB Switch with Earth blade	2 Nos	0.983	E	1.966	
2	110 kV AB switch w/o Earth blade	7 Nos	0.749	E	5.243	
3	110 kV SF6 breaker	2 Nos	8.078	E	16.156	
4	110 kV CTs (Single Phase)	6 Nos	1.744	E	10.464	
5	110 kV PTs (single phase)	3 Nos	1.219	E	3.657	
6	110 kV LAS (Single phase)	6 Nos	0.332	E	1.992	
7	22 kV AB switch	5 Nos.	0.160	E	0.800	
8	33 kV SF6/VCB (1LV+ 2fdr)	3 Nos.	4.53	E	13.590	
9	33 kV CTs(Single phase)	9 Nos.	0.404	E	3.636	
10	22 kV PT	3 Nos	0.178	E	0.534	
11	22 kV LAS (Station type)	3 Nos.	0.028	E	0.0840	
12	22 kV LAS (Distribution type)	6 Nos.	0.006	E	0.036	
13	11 kV AB switch	10 Nos.	0.171	E	1.710	
14	11 kV VCB (2LV+4 fdr)	6 Nos.	1.459	E	8.754	
15	11 kV CTs (Single phase)	18 Nos.	0.158	E	2.844	
16	11 kV PT	3 Nos.	0.228	E	0.684	
17	11 kV LAS (Station type)	6 Nos.	0.0213	E	0.128	
18	11 kV LAS (Distribution type)	12 Nos.	0.0027	E	0.033	
19	Plinth for breakers	11 Nos.	0.200	E	2.200	
20	Earthing, Painting and Yard lighting				3.150	
21	Control and relay panel					
	Pr.Tr. GC. C&R Panel	2 No	2.617	E	5.234	
	Pr.Tr. LV. C&R Panel	3 Nos	4.897	E	14.691	
	22 kV C&R (2 feeder) panel	1 No	3.122	E	3.122	
	11 kV C & R (2 feeder) panel	2 Nos	3.122	E	6.244	
22	Annunciator Panel(100 windows)	1 No	1.098	E	1.098	
23	Control cable			Ls	5.000	
24	Fire fighting equipments				1.000	
25	Scientific instruments				1.000	
26	T&P Furniture & Materials				1.000	
27	110 V DC Panel	1 No	0.634	E	0.634	
28	110 V, 300 AH Battery&Charger	2 sets	2.71	set	5.420	
29	AC Panel	1 No	1.000	E	1.000	
30	P&T Phone				0.010	

DETAILED ESTIMATE FOR ESTABLISHMENT OF 110/22-11 KV SS WITH 1x7 MVA, 110/22 KV POWER TRANSFORMER AND 2x10 MVA, 110/11 KV POWER TRANSFORMER IN OTHAKKALMANDAPAM IN COIMBATORE EDC/NORTH (Coimbatore Operation circle).						
Sl. No	DESCRIPTION	QTY	Rate in Lakhs	PER	Amount in Lakhs	Total in Lakhs
31	100 KVA, 11 kV/433 V Station Tr	1 No.	1.406	E	1.406	
32	Sub-total				124.519	
33	Contingencies				1.245	
34	Cost of Materials				125.765	
35	Labour & Transport @15%				18.865	
36	Total for materials and labour				144.629	
37	25 MVA, 110/22 kV Pr.Tr	1 No	178.533	E	178.533	
38	10 MVA, 110/11 kV Pr.Tr	2 Nos	69.038	E	138.076	
39	Plinth, Labour & Transfort for Pr. Trs	3 loc	3.151	loc	9.453	
40	Earthing	3 loc	0.500	loc	1.500	
40	22 kV capacitor bank	2.4 mvar	9.581	mvar	22.994	
41	11 kV capacitor bank	2.4 mvar	6.847	mvar	16.433	
42	Sub-total				511.619	
43	Establishment & Supervision charges @15%				76.743	
44	Total				588.361	588.361
45	110 kV structure	1 No	41.699	E	41.699	
45	22 kV structure	1 No	3.75	E	3.750	
46	11 kV structure	1 No	1.883	E	1.883	
47	Erection of 110 kV DC line on DC towers with Panther conductor (LILO of 110 kV Othakkalmandapam - Thudiyaiur II feeder at Somavapalavam)	6.50 km	36.890	km	239.79	
48	22 kV link line with 7/4.09 mm ACSR conductor	5 kms	3.532	km	17.66	
49	11 kV link line with 7/4.09 mm ACSR conductor	10 kms	3.696	km	36.96	341.737
50	Total Gross and Nett					987.31


 14/12/2010
 Executive Engineer/Master plan
 1/2