KARNATAKA POWER TRANSMISSION CORPORATION LTD.,

No: KPTCL/B8/2074/2014-15
Encl : As in the Circular

Corporate Office,
Kaveri Bhavan,
Bengaluru - 560 009.
Dated: 27 MAR 2015

Circular

Sub: Standardisation of Tower designs to be adopted for construction of 220 kV transmission lines in case of Turnkey/Partial Turnkey/DCW works of KPTCL and Self Execution Works by IPPs/EHT Consumers – Reg.

Ref: 1. Note No. SEE(T)/EETR.L/KCO-102/2010-2011 dt. 19.10.2010 approved by the MD, KPTCL.
2. Note No. SEE(T)/EETR.L/KCO-102/2014-15 dt. 23.03.2015 from Chief Engineer (Electy.,), P&C, KPTCL, Bengaluru.

In view of limitations in case of space requirement, mechanical strength, problems faced by field personnel and other technical parameters related to the existing designs of Towers for Transmission lines, the Corporation has taken a decision to adopt a robust structural design with optimum space requirement for the transmission line towers were got designed as per latest versions of Indian/other applicable Standards.

Design based tenders were floated for Construction of a 220 kV Double Circuit Transmission Line between Gadag and Bagalkot for which the Transmission Towers were got designed as per the latest amendment to IS: 802 Part I/Sec I(1995) by M/s L&T, the T-key contractor. The designs of the offered towers were evaluated and the Proto type testing of the complete towers type 'DA', 'DB', 'DC' and 'DD' have been carried out successfully at the test bed of M/s L&T, Kanchipuram.

Hence, it is directed that the Technical Parameters for New Designs with weights of tower structures and volumes for excavation and concreting in respect of towers for 220 kV D/C Transmission Lines as Annexed to this Circular shall be adopted for estimation as well as for Construction of new 220 kV D/C Transmission Lines in KPTCL, with immediate effect.

These designs shall be christened as ***"220 kV D/C TOWERS of M/s L&T Design adopted for GADAG – BAGALKOT line"*** and these are applicable for ***ALL*** future works inclusive of Turn Key/Partial Turn Key /DCW works executed by KPTCL and Self Execution works to be taken up by IPPs and EHT Consumers.

EE(T) 27/3/15

In case of any clarifications, the SEE (Technical)/ SEE (Civil), O/o Chief Engineer (Electy.,), P&C, KPTCL, Kaveri Bhavan, Bengaluru shall be contacted.

Sudha 27/3/15

Deputy General Manager (Tech.)
KPTCL, Bengaluru.

Copy to:

1. All the Chief Engineers (Electy.,), KPTCL.
2. Executive Assistant to Director (Transmission), KPTCL, Kaveri Bhavan, B'luru - 09.
3. Technical Assistant to Managing Director, KPTCL, Kaveri Bhavan, Bengaluru - 09.
4. PS to Managing Director /Director (Transmission)/ Director (Finance)/ Director (A&HR) and Director & Company Secretary, KPTCL, Kaveri Bhavan, Bengaluru - 09.

To:

1. SEE, IT&MIS, KPTCL, Kaveri Bhavan, Bengaluru with a request to arrange to upload the Circular in the KPTCL website.
2. All Superintending Engineers (El), RT/ Works/ Works & Maintenance Circles and R&D, KPTCL.
3. All Executive Engineers (El), Major Works/ TL &SS Divisions, KPTCL.

Annexure-I

Details of approved tower weights and volumes for excavation and concreting for STANDARDISED KPTCL Design for 220kV D/C Transmission line towers to be adopted as per Circular No. KPTCL/88/2074/2014-15 dtd 27/3/15

220KV DC TOWER (M/s. L&T Design)						
WEIGHT OF TOWER (in Kgs)						
Type of Tower	Fabricated Steel members			Stub & Cleat		Bolts & Nuts
	HT	MS	Total	HT	MS	
DA Normal	963	2943	3906	150	_	232
+3M Extn	238	406	644	150	_	38
+6M Extn	303	715	1018	150	_	43
+9M Extn	626	1114	1740	170	_	84
+12M Extn	711	1460	2171	170	_	100
+15M Extn	818	1993	2811	170	_	121
+18M Extn	1246	2281	3527	170	_	167
+24M Extn	1426	3528	4954	170	_	214
DB Normal	2237	3422	5659	227	_	255
+3M Extn	398	636	1034	227	_	55
+6M Extn	546	1047	1593	227	_	78
+9M Extn	990	1536	2526	285	_	105
+12M Extn	1354	2337	3691	285	_	147
+15M Extn	1593	2907	4500	285	_	180
+18M Extn	1987	3708	5695	285	_	216
+24M Extn						
DC Normal	2619	3608	6227	278	_	310
+3M Extn	328	770	1098	278	_	50
+6M Extn	500	1284	1784	278	_	84
+9M Extn	800	1941	2741	310	_	95
+12M Extn	1266	2745	4011	310	_	153
+15M Extn	1657	3221	4878	310	_	190
+18M Extn	2048	4003	6051	310	_	211
DD Normal	3859	3145	7004	325	_	300
+3M Extn	428	980	1408	325	_	63
+6M Extn	710	1457	2167	325	_	85
+9M Extn	1170	2090	3260	360	_	120
+12M Extn	1781	3388	5169	360	_	188
+15M Extn	2422	3780	6202	360	_	217
+18M Extn	2791	4778	7569	360	_	270

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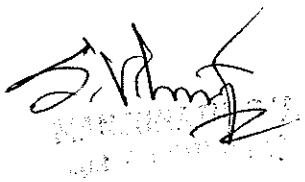
SEE (TECHNICAL)

DESIGN PARAMETERS:

The towers are designed for

a. Wind Zone - 2
b. Reliability level - 1
c. Terrain Category – 2
d. Normal Span - 320M
e. Conductor Used - ACSR Drake
f. Ground Wire used- 7/3.15mm
g. Max. Conductor Temp – 85^0 C
h. Tension at 32^0 C Full Wind – 5675 Kgs
i. Tension at 32^0 C No Wind – 3544 Kgs
j. Max. Sag at 85^0 C No Wind – 7.95M
k. Bottom Cross-arm height from GL – 15.6M



19	DC(NT,+3,+6)	70.27									0.90	6.88	371
20			286.9								4.21	23.04	1558
21				208.68							3.00	16.95	1219
22					167.85						2.37	13.99	1004
23						129.88					1.79	11.24	732
24							60.41				1.18	8.45	493
25								181.45			3.39	19.24	1331
26									139.8		2.59	14.61	1145
27										106.1	2.00	11.45	1044
28	DD(NT,+3,+6)	81.12									1.06	7.86	445.29
29			312.1								4.61	25.42	1968.82
30				232.32							3.36	19.07	1545.32
31					186.28						2.65	16.84	1025.70
32						145.32					2.02	13.22	830.71
33							69.91				1.35	10.29	558.16
34								206.00			3.75	22.03	1430.90
35									156.70		2.89	17.78	1112.78
36										118.6	2.22	14.38	878.20

ANNEXURE-II

BOQ AS PER THE APPROVED DESIGN FOR 220kV DC LINE GADAG-BAGALKOT LINE (KPTCL / L&T DESIGN)

TO BE ADOPTED FOR ALL 220 kV TRANSMISSION LINE WORKS AS PER CIRCULAR NO. KPTCL/68/2074/2014-15 dtd 27/3/15

Sl.No.	Tower type	Excavation Volumes, Cmtr.									Concreting Volumes, Cmtr.		
		NDS	WBC	FSS	PSS	WET	DFR	SFR	PSFR	WFR	1:03:06 Cmtr	1:1.5:3 Cmtr	STEEL, kgs
1	DA(NT,+3,+6)	34.68									0.39	3.11	145
2			127.5								1.75	9.16	417
3				77.41							1.00	5.96	267
4					58.03						0.72	4.86	202
5						51.91					0.63	4.52	185
6							19.17				0.42	3.22	148
7								64.00			1.24	6.89	336
8									44.00		0.89	5.52	246
9										30.00	0.63	4.52	185
10	DB(NT,+3,+6)	58.00									0.72	5.59	243.80
11			241.92								3.51	19.69	1106.65
12				171.46							2.42	13.32	921.44
13					136.28						1.88	11.21	717.38
14						103.00					1.38	9.12	506.00
15							46.28				0.92	6.61	373.15
16								149.84			2.77	15.20	971.63
17									112.63		2.11	11.87	822.60
18										83.24	1.59	9.50	657.52

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