

TRANSMISSION CORPORATION OF TELANGANA LIMITED
VIDYUT SOUDHA :: HYDERABAD

From
Chief Engineer
Construction
Vidyuth Soudha
Hyderabad – 500082.

To
The Chief Engineer/Zone
Metro/Rural/Warangal/Karimnagar
The Chief Engineer
400KV/PRLIS/LIS/Transmission/P&MM
Vidyuth Soudha / Hyderabad

Lr.No.CE/Constn/SE(Designs)/DE(Designs)/F.CEA/D.No. 95 , Dt. 23 .03.2023.

Sub: TSTRANSCO – Revision of minimum Rated Short time Withstand Current of the SS equipment in the TSTRANSCO Specifications and to follow CEA (Technical Standards for Construction of Electrical Plants & Electric Lines) Regulations, 2022 in all matters – Regarding.

Ref: Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 – Notification dated 23.12.2022.

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The Central Electricity Authority vide notification dated 23-12-2022 has published regulations titled “**Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022** “ applicable to Generating Companies, Transmission Licensees, Distribution Licensees, Central Transmission Utility, State Transmission Utilities.

Some of the salient points in above regulations are as follows

1) Clause 43. (Page No. 159, Chapter-IV – Part-A)

Provided that the minimum rated short time withstand current of the equipment in substation or switchyard of following voltage level shall be as per Table 6 below “

Voltage Level	Rated short time withstand current
66 kV	31.5 kA (for 1 sec.)
110 or 132kV	40 kA (for 1sec)
220 kV or 230kV	50 kA (for 1 sec)
400kV	63 kA(for 1sec)
765 kV	50KA (for 1sec)

As no value is specified for 33KV level, it is suggested that Short Circuit Level of 31.5KA specified for 66KV level shall be adopted for 33KV level.

2) Clause 84 (5) & (6) - (Page No. 175, Chapter-V – Part-A)

For transmission lines in areas where Right-of-way constraint is encountered, appropriate technology options such as use of steel pole structure, narrow based lattice towers, multi-circuit and multi-voltage towers, lattice or steel pole structure with one side stringing, XLPE cable or Gas Insulated Line, compact towers with insulated cross arm, and Voltage Source Converter based HVDC transmission on overhead line or underground cable shall be adopted.

- # Steel pole structure, Multi-circuit (more than two circuits) or multi-circuit and multi-voltage towers for overhead lines up to and including 400 kV voltage level shall be considered in the urban areas, approach section of substation or switchyard and as an alternative to number of parallel lines passing through forest, eco-sensitive zone, wildlife sanctuary for effective use of available corridor.

3) Clause no.85 (4f), (4h) & 4 (g) (Page No. 177 & 178 , Chapter-V – Part-A)

For the transmission lines to be laid within 50 km of the border of the two wind zones specified in the Wind Map, towers shall be designed for the higher of the two wind zones.

The prototype of towers or poles shall be tested as per relevant Indian Standards. However, it shall not be mandatory to test prototype of tall river crossing towers or poles and other special towers or poles designed for reliability level 3 (500 year return period)

Additional earthing shall be provided on towers after every seven to eight km distance for direct earthing of shield wires

4) Clause no.85(9) (Page No. 179 , Chapter-V – Part-A)

The Route of transmission line (66 kV and above voltage level) shall be clearly identified as normal sections without constraint, sections through forest area, and sections through urban areas or populated area or approach section near substations and normal design span for various voltage level transmission lines be as indicated in the Table 21 below shall be adopted:

Voltage (kV)	Normal design span (m)		
	Normal route without constraint	Forest area	Urban area / Populated area / approach section near substation
765 kV / 400 kV AC	400	300	250
230 kV/ 220 kV AC	325-350	250	200
132 kV	320	200	150
110 kV AC	305	200	150
66 kV AC	250	150	100

5) Clause no.86 (Page No. 180 , Chapter-V – Part-A)

- Utilities shall assess the condition of structure of towers, conductors, earth wire, all associated accessories, foundation and earthing system periodically using modern techniques and diagnostic tools and shall take appropriate action, wherever abnormality is noticed.
- For condition assessment of conductors, clamps, connectors, insulators etc., provision for on- line or off- line diagnostic tools and equipment shall be made.

- c) On- line tools shall include thermo-vision camera for detection of hot spots, corona camera and live line punctured insulator detector.
- d) Off-line tools shall include insulation resistance measuring instrument, contact resistance measuring instrument and tower footing impedance measuring tool.
- e) The on line (as in-built feature of Numerical relay) and off-line fault locator shall be used for locating the transmission line faults.
- f) Patrolling of the lines shall be carried out on half yearly basis for smooth and trouble-free operation of line and activities like replacement of missing members or bolts, coping of chimney to avoid rusting of stubs, identifying rusted members, missing earthing connections etc.
- g) During patrolling, if any unauthorised construction/use/storage under and around the towers is observed, local administrative authority shall be immediately informed for assistance and necessary action.
- h) Frequency of patrolling of transmission lines shall be increased for the vulnerable tower locations (thunder prone, cyclonic prone area) and in theft prone areas. Members or nuts or bolts, if found missing during patrolling, shall be replaced to avoid failure of towers.
- i) The nuts and bolts of section above bottom cross arm level shall be rechecked and re-tightened after five years of commissioning of the transmission line and every ten years of service thereafter.
- j) Condition of earthing shall be checked after ten years of commissioning of transmission line and every five years of service thereafter and corrective action, if required may be taken.

In this regard, the JMD (Finance, comml. & HRD) approval was accorded for revision of minimum Rated Short time withstand current in TSTRANSCO Specification and to follow the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 (<https://cea.nic.in/regulations-category/construction-standards/?lang=en>) in all matters in addition to above mentioned salient points.

It is for information and to take further necessary action.

Yours faithfully,

S. Rajan
23-3-23
CHIEF ENGINEER
CONSTRUCTION

Copy submitted to :

The Superintending Engineer-I/Construction/ TSTRANSCO/VS/Hyderabad

The Superintending Engineer-II/Construction/ TSTRANSCO/VS/Hyderabad

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Yours faithfully,
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The Managing Director
The Secretary