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"BEHAVIOR OF TRANSMISSION TOWER WITH DIAPHRAGM SYSTEM TO THE WIND LOAD AND THE SETTLEMENT OF SUPPORT FORCES"

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ABSTRACT

KEYWORDS: Diaphragm, Bracing, Retrofitting, Wind load, Settlement of support.

In recent years, with the increasing demands on electric power supply, it is very important to enhance the safety of power transmission line. Hence, considerable efforts have been made by different researchers to investigate the behaviour of power transmission towers under different loading and environmental conditions.

One of the main cause for the failure of transmission tower is the strong wind load acting on the tower. Another reason for failure of the tower is settlement of support. The ground settlement will cause the incline of tower and distortion of tower leg, which will influence the capacity of towers suffering from wind, and threaten the safety of overhead transmission lines Hence, for the safe design of transmission towers in geological disaster areas, it is important to understand the behaviour of the transmission tower subjected to the combined effects of wind load and ground surface deformations. In order to mitigate the damage caused by natural calamities, study on the failure mechanism and retrofitting of tower structures is of great significance and urgency.

The failure of these old transmission towers could be eliminated through the development of a cost-effective structural upgrading scheme. Simple diaphragm bracing systems can be very effectively used in the upgrading of transmission towers. Diaphragm uses less steel and is easier to implement in practice, and led to improved tower performance. In the present research the behaviour of tower with diaphragm system, when tower is subjected to varying settlement and varying wind load is studied.