

**DYNAMIC ANALYSIS OF 4-LEGGED SELF SUPPORTING  
TELECOMMUNICATION TOWERS SUBJECTED TO WIND  
AND SEISMIC ACTIONS WITH DIFFERENT BRACING  
CONFIGURATIONS**

by

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## ABSTRACT

The rapid development in the telecommunication sector has increased the demand for wireless technology. The wireless telecommunication technologies which are commonly used can be identified as CDMA (Code Division Multiple Access), GSM (Global System for Mobile), WAP (Wireless Access Point), satellite television etc. This wireless transmission and broadcasting require antennas which needs to be placed at certain heights above ground and the height of the antenna is depending on the radiation transmission patterns of the antenna to facilitate a reliable coverage. Therefore, the telecommunication towers are constructed to support these antennas at different elevations as required. Therefore, it is a significant structural element in wireless telecommunication technology.

The telecommunication towers can be generally classified according to the type of the structure as: monopoles, support poles, self-supporting lattice towers and guyed masts. The most common type of telecommunication tower structure can be identified as self-supporting lattice structures in local and global context. It is advantageous in many aspects such as: effective load transferring technique, minimum base area required to reach higher elevation, high load carrying capacity, light weight, and ease of construction.

Telecommunication tower structures also recognized as antenna support structures are vertical cantilevered structures in considering its structural fixity. Therefore, the lateral actions i.e., wind and seismic actions are critical on this type of structure. Thus, in most of the cases, the failure of telecommunication tower structure is occurred due to high winds and seismic actions. This will cause severe damage to human life and also it can be directly or indirectly impacting the economy of the country. Further, in such disastrous occasion the failure in providing communication facilities will result the delay in rescue operations which may worsen the situation.