

Title Performance Based Design of 56-Story Building for High Wind Zone

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Abstract

There are many established wind codes, which serves as guideline in structural design of structure against wind excitation. Wind events are frequent events, wind speed can be strong and weak depending on the season. Specific wind speed requires specific structural design requirement or design criteria for a building. Comparing the various wind codes tells three main wind design stages, which are comfort design stage, serviceability design stage and strength design stage. The three wind main design stages serve as guideline and combined with the ASCE 41-13 four performance level with each corresponding Structural system response, overall damage and reinforced concrete member behavior, one can establish various design criteria in structural design of a tall building subjected by various wind event based on the probable occurrences.

In this study, a 56-story residential concrete tall building has undergone various levels of wind speed based on probable occurrences and checked the structural performance of the tall building against established various design criteria based on various wind speed. The comparison of structural component action against maximum considered earthquake event and extreme rare wind event is also content in this study

Keywords Tall building. Performance based design, wind design criteria, wind structural performance.