

The Motivation behind Designing and Constructing Twisted Tall Buildings

Sinan Bilgen ^{*1}, Bekir Özer Ay ²

¹ Middle East Technical University, Building Science Program, Ankara, Turkey

² Middle East Technical University, Building Science Program, Ankara, Turkey

ABSTRACT

After decades of conventional shapes, irregular forms with complex geometries are getting more popular for form generation of tall buildings all over the world. This trend has recently brought out diverse building forms such as twisted tall buildings. Despite their iconic forms that fascinate the community, designers' primary interest is still the structural robustness. Considering the difficulties arisen from inherent complexity of twisted forms, this study investigates the dynamic characteristics of these buildings, particularly those having adaptive structural systems. Since twisting the structural system give rise to additional challenges on structural system, dynamic performance of these forms have been examined. Modal and static linear analyses of an existing twisted tall building and its prismatic counterpart were performed and the results have been compared. The preliminary findings of this study shows the performance level of lateral load resisting system of twisted forms compared to their prismatic twins.

Key words: Tall buildings; twisted forms; adaptive structural system; structural analysis; dynamic characteristics.