

## Estimation of Seismic Deformation Demands of Tall Buildings with Symmetric Setbacks

**Authors :** Amir Alirezaei, Shahram Vahdani

**Abstract :** This study estimates the seismic demands of tall buildings with central symmetric setbacks by using nonlinear time history analysis. Three setback structures, all 60-story high with setback in three levels, are used for evaluation. The effects of irregularities occurred by setback, are evaluated by determination of global-drift, story-displacement and story drift. Story-displacement is modified by roof displacement and first story displacement and story drift is modified by global drift. All results are calculated at the center of mass and in x and y direction. Also the absolute values of these quantities are determined. The results show that increasing of vertical irregularities increases the global drift of the structure and enlarges the deformations in the height of the structure. It is also observed that the effects of geometry irregularity in the seismic deformations of setback structures are higher than those of mass irregularity.

**Keywords :** deformation demand, drift, setback, tall building

**Conference Title :** ICCESE 2015 : International Conference on Civil, Environmental and Structural Engineering

**Conference Location :** Boston, United States

**Conference Dates :** April 20-21, 2015