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Study of steel plate shear wall using ETAB

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Unstiffened steel plate walls are effective and economical system to resist lateral load due to earthquake ad wind forces in the steel structures, which have attracted the structural engineer's interests widely during the last decade. Steel plate walls also provide major stiffness against building drift for the hi-rise buildings. This paper provides an introduction to SPSW system and its performance against lateral loads. The analysis of 20-story high-rise steel buildings frames with steel plate shear walls (SPSWs) is carried out using ETABS program considering orthotropic membrane modelling technique has been proposed in "AISC Steel Design Guide 20". The primary variable in the analysis are thickness of plate, aspect ratio and configuration of wall. Finally, the effect of changes in web plate variables (thickness, aspect ratio, and configuration) on the behaviour of SPSW boundary element (HBE, VBE) and overall building frame is studied, which is illustrated in this study. From the result obtained it is observed that, the bending moments are reduced with the use of steel shear walls in the buildings. There is a little effect on the bending moments and shear forces of the beams with the increase of shear wall thickness and a small decrease in the lateral deflections. With increase of aspect ratio the storey drift increases while bending moment and shear force shown a considerable increase. configurations of shear wall panels is compared with that of bare frame, the zigzag shear wall configuration is found to be better than the other systems studied in controlling the response to lateral loading.

Biography

Mr. A J Shah has completed his M. E. (CIVIL) specialization in Structure in 1985 from S. G. U., Gujarat, India. He is the Associate Professor of Applied Mechanics Department. He has published more than 16 papers Journal & International Conference.

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