

Seismic Response Evaluation of Reinforced Structure with Embedded Viscous Damper in Shear Wall.

ABSTRACT

Recently implementation of viscous damper devices as seismic energy dissipation attracts a lot of civil engineer interested due to effect of dampers in diminishing of earthquake loading. Furthermore along lateral load resistance systems, shear wall has better resistance performance by providing enough stiffness to the structure. But the overall weight of building is dramatically increased whenever shear walls are used as lateral resistance system. So, in present study an attempt has been made to evaluate seismic response of reinforced concrete structure which is equipped with viscous damper inside of shear walls. So, seismic response assessment carried out by aid of time history analysis and the results emerged in terms of average story displacement, axial force, moment and torsion in critical elements. Various models with different shear wall arrangement and embedded viscous damper layouts were subjected to earthquake excitation and response investigated. The results indicated that the best performance achieved when the viscous damper located at the top of the shear wall frame structure with the highest reduction percentage of axial forces, moment at the base of the shear wall, torsion and base shear values.

Keyword: Viscous damper; Shear wall; Time history analysis; 3-D earthquake excitation; Smbdedd viscous damper