

Inelastic seismic response of RC building with control system.

ABSTRACT

Conventional buildings are mainly designed based on elastic analysis of structures subjected to moderate earthquakes. In this case, the seismic forces are much smaller than the forces introduced by strong ground motions with the considered structural behavior going to nonlinear response during these severe earthquakes. Improving the earthquake resistance of reinforced concrete buildings using a variety of earthquake energy dissipation systems has received considerable attention in recent years by civil engineers. In the present study, a nonlinear computational scheme was developed to predict the complete nonlinear dynamic response of reinforced concrete framed buildings equipped with viscous damper device subjected to earthquake excitation. A finite element program code is developed based on the nonlinear analysis procedure of reinforced concrete buildings equipped with viscous damper devices and a two dimensional, five story models of RC buildings subjected to earthquake were analyzed. Result of nonlinear analysis of RC buildings which furnished by viscous dampers indicated that using of viscous dampers effectively reduced the damages occurring in the building and structural motion during severe earthquakes.

Keyword: Displacement; Nonlinear dynamic analysis; Plastic hinge; Viscous damper