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SEISMIC RESPONSE CONTROL OF ASYMMETRIC BUILDING USING VISCO-ELASTIC DAMPER

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Abstract

Earthquakes are one of the most destructive of natural hazards. Earthquake occurs due to sudden transient motion of the ground as a result of release of elastic energy in a matter of few seconds. The impact of the event is most traumatic because it affects large area, occurs all on a sudden and unpredictable. They can cause large scale loss of life and property. Hundreds of small earthquake occurs around the world every day. Some of them are so minor that humans cannot feel them, but seismographs and other sensitive machines can record them. Buildings being one of the prime structures for mankind, it is necessary that they are designed to resist earthquake forces. In past earthquake events worldwide, it was observed that building with regular shape, size and geometry has performed well as compared to building with H,C,L,T and + shaped buildings. Therefore, it is important to control structural response of asymmetric buildings when subjected to earthquake ground motion. In order to control structural response of building basic technologies are used to impart additional stiffness in the building. These basic technologies are Base Isolation, Passive Energy Dissipation Devices and Active Control Devices. The main objective of this paper is to control the seismic response of asymmetric building having Regular shape, C shape, L shape and T shape subjected to four different types of earthquake ground motions namely Elcentro, Kobe, Northridge and Loma Prieta using Visco-elastic dampers. A three storey building is considered and designed is done using E-Tabs software and various response quantities like displacement, acceleration and inter-storey drift are extracted. Comparison of buildings with visco-elastic damper is done with that of uncontrolled building. It is observed that controlled building shows moderate range of reduction for all response quantities as compared to uncontrolled building.

Author Keywords

Viscoelastic dampers,asymmetric building,C,L,T shape.

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Seismic excitation,E-Tabs software,SMEOC.

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