

Effects of Damper Locations and Base Isolators on Seismic Response of a Building Frame

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Abstract : Structural vibration means repetitive motion that causes fatigue and reduction of the performance of a structure. An earthquake may release high amount of energy that can have adverse effect on all components of a structure. Therefore, decreasing of vibration or maintaining performance of structures such as bridges, dams, roads and buildings is important for life safety and reducing economic loss. When earthquake or any vibration happens, investigation on parts of a structure which sustain the seismic loads is mandatory to provide a safe condition for the occupants. One of the solutions for reducing the earthquake vibration in a structure is using of vibration control devices such as dampers and base isolators. The objective of this study is to investigate the optimal positions of friction dampers and base isolators for better seismic response of 2D frame. For this purpose, a two bay and six story frame with different distribution formats was modeled and some of their responses to earthquake such as inter-story drift, max joint displacement, max axial force and max bending moment were determined and compared using non-linear dynamic analysis.

Keywords : fast nonlinear analysis, friction damper, base isolator, seismic vibration control, seismic response

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