

Shaking Table Test and Seismic Performance Evaluation of Spring Viscous Damper Cable System

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Abstract : This research proposes a self-centering passive damping system consisting of a spring viscous damper linked with a preloaded tendon. The seismic performance of the spring viscous damper is evaluated by pseudo-dynamic tests, and the results are used for the formulation of an analytical model of the damper in the structural analysis program. The shaking table tests of a two-story steel frame installed with the proposed damping system are carried out using five different earthquake records. The results from the shaking table tests are verified by numerical simulation of the retrofitted structure. The results obtained from experiments and numerical simulations demonstrate that the proposed damping system with self-centering capability is effective in reducing earthquake-induced displacement and member forces.

Keywords : seismic retrofit, spring viscous damper, shaking table test, earthquake resistant structures

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