

Viability of Slab Sliding System for Single Story Structure

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Abstract : Slab Sliding System (SSS) with Coulomb friction interface between slab and supporting frame is a passive structural vibration control technology. The system can significantly reduce the slab acceleration and accompanied lateral force of the frame. At the same time it is expected to cause the slab displacement magnification by sliding movement. To obtain the general comprehensive seismic response of a single story structure, inelastic response spectra were computed for a large ensemble of ground motions and a practical range of structural periods and friction coefficient values. It was shown that long period structures have no trade-off relation between force reduction and displacement magnification with respect to elastic response, unlike short period structures. For structures with the majority of mass in the slab, the displacement magnification value can be predicted according to simple inelastic displacement relation for in elastically responding SDOF structures because the system behaves elastically to a SDOF structure.

Keywords : earthquake, isolation, slab, sliding

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