

Relationship of Earthquake Damage of Reinforced Masonry Shear Walls to the Frequency of the Ground Motion

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Abstract:

Seismic design requirements for reinforced masonry shear walls prescribe a required strength that is related to a seismic zone, building weight and structural system. Site soils condition and stiffness degradation of shear wall are not presently utilized in the design procedure. Seismic design of shear walls is based on zoned ground accelerations that are less than design level predicted accelerations. Current seismic risk mapping also gives predicted accelerations and velocities for very low probability of occurrence earthquakes. Three representative reinforced masonry shear wall buildings are designed in accordance with current seismic provisions for two seismic zones, and in accordance with proposed modifications. The influence of the site soils condition on the probable damage of the shear wall designed in conformance with current provisions were used in the research to make comparisons. The possible damage caused by very low probability ground motions is also investigated. Conclusions derived from the analyses as to the effectiveness of current and proposed seismic design provisions are presented.

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