

Seismic Vulnerability Mitigation of Non-Engineered Buildings

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Abstract : The tremendous loss of life that resulted in the aftermath of recent earthquakes in developing countries is mostly due to the collapse of non-engineered and semi-engineered building structures. Such structures are used as houses, schools, primary healthcare centres and government offices. These building are classified structurally into two categories viz. non-engineered and semi-engineered. Non-engineered structures include: adobe, Unreinforced Masonry (URM) and wood buildings. Semi-engineered buildings are mostly low-rise (up to 3 story) light concrete frame structures or masonry bearing walls with reinforced concrete slab. This paper presents an overview of the typical damage observed in non-engineered structures and their most likely causes in the past earthquakes with specific emphasis on the performance of such structures in the 2005 Kashmir earthquake. It is demonstrated that seismic performance of these structures can be improved from life-safety viewpoint by adopting simple low-cost modifications to the existing construction practices. Incorporation of some of these practices in the reconstruction efforts after the 2005 Kashmir earthquake are examined in the last section for mitigating seismic risk hazard.

Keywords : Kashmir earthquake, non-engineered buildings, seismic hazard, structural details, structural strengthening

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