

Behaviour of Unreinforced Masonry Buildings Subjected to Earthquakes

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Abstract:

The collapse of unreinforced masonry buildings during an earthquake is the main contributor to the maximum loss of lives and injuries to people and it will continue to be so because an earthquake is a recurring natural calamity. Therefore, there is a need to develop a realistic understanding of the seismic response of masonry buildings, to evolve rational practicable design requirements, and to develop better structural systems for masonry building construction. This paper briefly describes the determination of different material properties of masonry. The behaviour of unreinforced and partially reinforced masonry house models subjected to earthquake-like loads is also presented.

A new masonry building system with sliding substructure is also presented to obtain the advantage of seismic isolation. Seismic response of masonry buildings with sliding substructure, subjected to Koyna and El Centro shocks, is computed. The results show that the sliding system scheme is a practical and economical seismic isolation technique to achieve less damage as well as non-collapsible masonry buildings requiring only the usual skills of construction locally available.

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