

Binay Charan Shrestha 2008: Effect of Unreinforced Full and Partial Infilled Brick Masonry Wall in RC Frame Under Seismic Loading. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Mr. Kitjapat Phuvoravan, Ph.D. 100 pages.

Masonry infill panels in framed structures affect the strength, stiffness, and ductility. Being a stiffer component, it attracts larger part of the lateral seismic shear force on the building and hence reduces the demand on the reinforced concrete frame members. However, the behavior of infill is not easy to predict because of its inherent brittle nature and variable material property and hence are treated as a non-structural component in analysis and design of a frame structure.

For seismic loading, ignoring the composite action is not always on the safe side, since the interaction between the panel and the frame under lateral loads dramatically changes the stiffness and the dynamic characteristics of the composite structure, and hence, its response to seismic loads. The influence of brick masonry infill panels on seismic performance of reinforced concrete (RC) frames that were designed in accordance with the current seismic code IS1893:2002 is studied. Equivalent diagonal strut is used to model the stiffness effect of the masonry panels. The response of a bare frame is compared with the full and partial infill with centrally located opening of 10%, 20%, 30%, 40% and 50%. In general, axial force in the column is increased whereas; the shear forces and bending moments in columns and beams are decreased by the presence of infill panels. When subjected to lateral loadings, the frame with full infill has better response whereas; infill with large openings has little effect.

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Thesis Advisor's signature

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