

Experimental Evaluation of Masonry Infill Walls of RC Frame Buildings Subjected to Cyclic Loads

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Abstract

Masonry infill walls of reinforced concrete frame structures are still commonly used for non-engineered and engineered buildings. For this establishment, exterior walls and interior partitions are made of masonry for producing a cost-effective solution for building purposes. Although walls are usually considered non-structural elements of reinforced concrete frame structures, the masonry infill walls contribute significantly to the seismic building performance. The interaction effect between bounding frame and infill wall is a complicated issue in the experimental test. This paper presents experimental investigations of masonry infill walls of RC frame buildings under cyclic in-plane loads. Three typical reinforced concrete frames with and without infill masonry walls were experimentally conducted to seek their structural behavior in terms of stiffness, strength and ductility of the structures. In this research, tie-beam and tie-column (practical beam and column) components applied to non-engineered buildings were adopted to perform typical reinforced concrete frames. Their hysteretic behavior of RC frames as well as the effect of gaps between the frame and the infill on the structural behavior are briefly discussed.

Keywords: structural behavior, stiffness, strength and ductility, infill masonry wall, cyclic in-plane load, non-engineered building