

Seismic evaluation of earthquake resistance and retrofitting measures for two story masonry houses

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Abstract This paper discusses on the shaking table test results of two 1:4 scale model of two-story masonry structure typically used in constructing low-rise residential buildings. This test is performed to provide a better understanding of the seismic behavior of the PP-band (polypropylene band) mesh retrofitted adobe masonry house. The test structure is subjected to a series of different levels of harmonic motion that applied along the longitudinal direction. The results of the shaking table tests on building models show that the PP-band retrofitting technique can enhance the safety of masonry buildings, even during severe ground motion.

Keywords PP-band retrofitting · Shaking table test · Masonry · Earthquake resistance

1 Introduction

Unreinforced masonry structure (URM) is one of the most widely used constructions. In the developing countries, many non-engineering adobe houses have one or two stories. These constructions usually have no reinforcement, and when an earthquake shakes them, they had collapsed causing injuries or even death of their occupants. However, adobe is still the best solution for poor people housing in developing countries, due to economic reasons; also, earth units are the only available material suitable for walls due to their thermal properties.

Adobe type structures share two serious structural deficiencies: (1) of having little if any tension strength, and (2) brittleness. Due to their high mass and lack of tensile resistance that

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