

BEHAVIOR OF FRP STRENGTHENED MASONRY WALLS UNDER OUT-OF-PLANE SEISMIC LOADING

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ABSTRACT

The effectiveness and efficiency of fiber reinforced polymer (FRP) sheets in strengthening the concrete block walls subjected to out-of-plane seismic loadings has been investigated. Two concrete masonry wall specimens were cast for this purpose. One specimen was used as control (unstrengthened) and other was strengthened with GFRP sheets. These wall specimens were then tested under out-of-plane loadings and load carrying capacities were obtained and compared. Results of experimental observations are presented in the form of load-displacement curves and response envelopes. FRP strengthened wall showed a many fold increase in the strength with respect to unstrengthened control specimen. In order to predict load carrying capacity and failure modes of control and FRP strengthened masonry walls, simple analytical models are also proposed employing conventional assumptions of bending theory and force equilibrium conditions. The results indicate that there is an excellent agreement between predicted values and measured test results.

KEYWORDS

Masonry walls, seismic, URM, strengthening, repair, cyclic loads.