Experimental Study for Strengthening of RC Rectangular Columns with Anchored CFRP Sheets

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Abstract

The purpose of this study was to investigate experimentally the behavior of strengthened masonry infilled reinforced concrete (RC) frames using diagonal CFRP strips under cyclic loads. Ten test specimens were constructed and tested under cyclic lateral loading. Specimens were constructed as 1/3 scale, one-bay, one-storey perforated clay brick-infilled nonductile RC frames. The aspect ratio (lw/hw, where lw is the infill length and hw is the infill height) of masonry-infilled wall was 1.73. CFRP strips were applied with different widths and with three different arrangements such as on both sides (i.e. symmetrically) and on the interior side or the exterior side of the masonry walls. This experimental study investigated the effects of CFRP stripsô width and arrangement type on specimensô behavior. Strength, stiffness and storey drifts of the test specimens were measured. Test results indicated that, CFRP strips significantly increased the lateral strength and stiffness of perforated clay brick infilled nonductile RC frames. Specimens receiving symmetrical strengthening showed higher lateral strength and stiffness. Specimens at which CFRP strips of the same width were applied to one of the interior or exterior surface of the infill wall showed similar lateral strength and stiffness.

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