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Behavior of Square Reinforced-Concrete Columns Strenghtened with Carbon Fiber Reinforced Polymers (CFRP) under Concentric Loading

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Abstract : This study aims at investigating the influence of cross-sectional size on axial compressive capacity of carbon fiber reinforced polymer (CFRP) wrapped square reinforced concrete short columns. Three sets of columns were built for this purpose: 200x200x1200 mm; 250x250x1500 mm and 300x300x1800 mm. Each set includes a control column and a strengthened column with one layer of CFRP sheets. All columns were tested under the effect of pure axial compression load. The results of the study show that using CFRP sheets resulted in capacity enhancement of 37%, 32% and 27% for the 200×200, 250×250, and 300×300 mm, respectively. The results of the experimental program demonstrated that the percentage of improvement in strength decreased by increasing the cross-sectional size of the column.

Keywords : CFRP, columns, concentric loading, cross-sectional
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