

## عنوان مقاله:

Seismic Evaluation of Reinforced Concrete Frames Retrofitted by FRP Sheets

## محل انتشار:

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## خلاصه مقاله:

Seismic performance of existing Reinforced Concrete (RC) frames which had been designed based on old building codes were unacceptable; the main reason is that such structures have low resistance to lateral loads which result in large deformations during earthquakes. The seismic retrofit procedure for bending frames must consider the strengthening of columns, beams and beam-column joints in order to prevent brittle failure modes. The Fiber Reinforced Polymer (FRP) strengthening procedure would cause minimal increase in size and weight of structural members, ease of installation and efficient corrosion resistance. In this paper, seismic behavior of RC frames externally bonded with FRP sheets under three significant earthquakes have been investigated. The formation of the plastic hinges generated in the members and the inter-story drift ratio of the floor levels were studied. Analytical results indicated that in RC frames with no FRP strengthening, large hinge rotations lead to a brittle column mechanism but conversely, the frames strengthened with FRP jackets showed an improved plastic hinge distribution with more hinges in beams and fewer in columns. Also by comparing moment-curvature curves and moment-axial load interaction curves of columns before and after FRP jacketing, it was observed that FRP strengthening would lead to considerable increase in the strength and ductility of columns. Finally as a parametric study, the thicknesses of FRP layers used for the strengthening of the columns, beams and joints were taken into account and various models with different amount of FRP materials were compared and the optimized thickness was obtained

## کلمات کلیدی:

RC Frame, Fiber Reinforced Polymer, Seismic, Externally Bonded, Plastic Hinge

## لینک ثابت مقاله در پایگاه سیویلیکا:

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