

عنوان مقاله:

Seismic performance of RC frames joints retrofitted by CFRP composites

محل انتشار:

دومین کنفرانس بین المللی و ششمین کنفرانس ملی زلزله و سازه (سال: 1394)

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خلاصه مقاله:

The relocation of the plastic hinges from the vicinity of the joint more towards the beams is an appropriate approach to increase the performance of the joint and also the structure. One of the methods to attain this aim is strengthening the joint with FRP material. Joints in real structures deal with some limitation, such as sides beams which is connected to the joints at the floor level. These conditions make some problems to strengthen the joints. Therefore, the configuration of FRP application is considered in the form of L-shaped at the top and bottom beam, wrapping for beam and wrapping for the columns. This paper reports on the results of an evaluation into the effectiveness of FRP strengthening the joints in enhancement of load carrying capacity and ductility capacity of the frame. The additional flexural stiffness generated by FRP is calculated comparing the moment-rotation of the FRP retrofitted and the original joints obtained from the finite element analysis. It is then implemented into a numerical model for the strengthened frame and using nonlinear static analysis method, the original frame and strengthened frame are analyzed. The nonlinear results confirm a considerable increase in the lateral load carrying capacity and ductility capacity. Also, predicted damage confirms the relocation of the plastic hinges from the vicinity of the joint more towards the beams.

کلمات کلیدی:

Beam-column joint, FRP scheme, plastic hinge relocation, moment-rotation, and pushover analysis

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