عنوان مقاله:

FRP Retrofitting of Reinforced Concrete Beam-Column Joints

محل انتشار:

چهارمین کنفرانس بین المللی مقاوم سازی (سال: 1391)

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خلاصه مقاله:

Fibre reinforced polymer (FRP) has been widely used for retrofitting/upgrading of reinforced concrete joints. The efficiency of this composite system in enhancing the performance of deficient RC joints has been proven in past studies. Relocating plastic hinge from the column face toward the beam is accounted as one of the most effective methods for upgrading of RC beam-column joints which could prevent the formation of undesirable weak-column strong-beams mechanism. This study is conducted in order to investigate the effectiveness of FRP retrofits in improving the performance of the beam to column joints through the relocation of plastic hinges away from the beam-column connections. The studied joints are selected from the RC frames designed based on intermediate ductility levels. The well-known finite element software, ANSYS, is employed to carry out the nonlinear finite element analysis. Different configurations of FRP application including a novel configuration at beam-column joints are assessed and the efficiency of each composite architecture in relocating the plastic hinge is discussed. The parameters studied for each technique are the thickness of FRP and the length of FRP. The results show that the proposed configuration is not only capable of relocating plastic hinges and improving the load carrying capacity of the joints but also prevents the premature failure of de-bonding. The latter also has been proven by the experimental tests

کلمات کلیدی:

FE analysis, FRP, RC joint, plastic hinge