عنوان مقاله:
Performance Based Seismic Design of RC Frames Retrofitted with FRP Composites

محل انتشار:
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خلاصه مقاله:
Many investigations have been carried out to assess the behaviour of different retrofitted parts of RC structures,but few studies have been done to investigate the overall response of structure after retrofitting by FRP composite materials. For this purpose, scaled-down eight-storey ordinary moment resisting frame, which was designed according to the old codes, was analyzed. To introduce the behaviour of joints before and after retrofitting in SAP 2000 software, moment-rotation curves of plain and retrofitted joints are obtained using simulation in ABAQUS finite element program. Nonlinear static pushover analysis is carried out to obtain components of behaviour factor, R, including the ductility reduction factor, overstrength factor and allowable stress factor of plain and retrofitted structures. It was observed that FRP strengthening not only maintains the lateral load-carrying capacity of damaged frame, but also increases the seismic performance of the frame. In addition, the maximum base shear of frame increases but ductility and factor of frames after retrofitting are reduced. To evaluate the earthquake response of structures, the performance points of two structures are calculated by the capacity spectrum method of ATC-40 report. Structure capacity and ground motion demand are transformed in terms of spectral acceleration and displacement. Results show that this technique of retrofitting can significantly increase the seismic performance point .of the two structures

کلمات کلیدی:
Performance Based Seismic Design, FRP Composite, Capacity Spectrum Method, Factor