ملخص البحث رقم (4)

العنوان باللغة الإنجليزية:

Cyclic Behavior of Fiber-Reinforced Polymer-Strengthened Reinforced Concrete Shear Walls with Square Openings

الملخص باللغة الإنجليزية:

Reinforced Concrete (RC) shear walls are used as a part of the lateral load resisting system of the majority of the high rise buildings all over the world. Due to architectural or mechanical reasons, openings may be required to be provided in these walls. These openings affect the behavior of the RC shear walls and their lateral load carrying capacity, however these openings are unavoidable. Accordingly, strengthening these walls using Fiber Reinforced Polymers (FRP) is one of the effective methods to increase their shear capacity. In this research work, the effect of openings on the behavior of the RC squat shear walls has been investigated using the Finite Element (FE) software (ANSYS) under lateral cyclic loading conditions. Also, this study aims to figure out the enhancement in the lateral load carrying capacity of these walls when being strengthened by CFRP sheets with a specific strengthening scheme. It has been found that, both the size and the location of the opening significantly affect the wall's lateral load carrying capacity. To avoid the severe effect of the near-edge-positions of the opening, it is recommended to locate the opening at the wall's center. On the other hand, the opening size has the largest effect than any other factor. Finally, the used CFRP strengthening system around the opening has proven its reliability in enhancing the nonlinear performance of RC shear walls with opening and increasing the shear capacities of these walls. It has been found that the enhancement in the shear capacities depends mainly on the location of the constructed opening.

المجلة والعدد:

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