

عنوان مقاله:

Fabric Reinforced Cementitious Matrix (FRCM) and Textile Reinforced Mortar (TRM) – Part I: Finite Element Simulation

محل انتشار:

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خلاصه مقاله:

Fabric Reinforced Cementitious Matrix (FRCM) composites, due to the presence of fibers and polymers that are brittle, exhibit complex mechanical behavior. FRCM is especially, designed for the construction repair and renovation industry. Also textile reinforced mortar (TRM) are used for reinforcing members and seismic repair of rectangular bar (RC) frame filled with rocky sediments. In this paper using FEM software package Abaqus™ textile reinforced mortar (TRM) versus fiber-reinforced polymer (FRP) in the shear reinforcement of concrete bars is presented. Experimental studies along with tests on the shear reinforcement of concrete reinforced rectangular bars (RC) with advanced composite materials validated these simulation results. The reference concrete bar is two meters long and 250 mm x 150 mm rectangular section. Cross-section steel bars were used asymmetrically to create a failure in one side of the bar (the left side). Also, all concrete bars had an internal shear and a flexural reinforcement mesh designed to provide shear reinforcement for the bar. Numerical models under study were developed homogeneously using three-dimensional C3D8R elements. Also, one-way monotonic loading in static nonlinear analyses was applied to the proposed models, and then the response of reinforced concrete bars was studied numerically. This method is used for inelastic performance and provides a reasonable estimate of the structural response at design process. Eventually, the seismic parameters of the reinforced bars are calculated using the force-displacement curve

کلمات کلیدی:

Fabric Reinforced Cementitious Matrix (FRCM); textile reinforced mortar (TRM); concrete bar; static nonlinear analyses

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