

Time-Dependent Behavior of Damaged Reinforced Concrete Shear Walls Strengthened with Composite Plates Having Variable Fibers Spacing

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Abstract : In this study, the time-dependent behavior of damaged reinforced concrete shear wall structures strengthened with composite plates having variable fibers spacing was investigated to analyze their seismic response. In the analytical formulation, the adherent and the adhesive layers are all modeled as shear walls, using the mixed finite element method (FEM). The anisotropic damage model is adopted to describe the damage extent of the RC shear walls. The phenomenon of creep and shrinkage of concrete has been determined by Eurocode 2. Large earthquakes recorded in Algeria (El-Asnam and Boumerdes) have been tested to demonstrate the accuracy of the proposed method. Numerical results are obtained for non uniform distributions of carbon fibers in epoxy matrices. The effects of damage extent and the delay mechanism creep and shrinkage of concrete are highlighted. Prospects are being studied.

Keywords : RC shear wall structures, composite plates, creep and shrinkage, damaged reinforced concrete structures, finite element method

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