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Prediction of Nonlinear Torsional Behavior of High Strength RC Beams

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Abstract : Seismic design criteria based on performance of structures have recently been adopted by practicing engineers in response to destructive earthquakes. A simple but efficient structural-analysis tool capable of predicting both the strength and ductility is needed to analyze reinforced concrete (RC) structures under such event. A three-dimensional lattice model is developed in this study to analyze torsions in high-strength RC members. Optimization techniques for determining optimal variables in each lattice model are introduced. Pure torsion tests of RC members are performed to validate the proposed model. Correlation studies between the numerical and experimental results confirm that the proposed model is well capable of representing salient features of the experimental results.

Keywords : torsion, non-linear analysis, three-dimensional lattice, high-strength concrete
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