

## Experimental and Analytical Study to Investigate the Effect of Tension Reinforcement on Behavior of Reinforced Concrete Short Beams

**Authors :** Hakan Ozturk, Aydin Demir, Kemal Edip, Marta Stojmanovska, Julijana Bojadjieva

**Abstract :** There are many factors that affect the behavior of reinforced concrete beams. These can be listed as concrete compressive and reinforcement yield strength, amount of tension, compression and confinement bars, and strain hardening of reinforcement. In the study, support condition of short beams is selected statically indeterminate to first degree. Experimental and numerical analysis are carried for reinforcement concrete (RC) short beams. Dimensions of cross sections are selected as 250mm width and 500 mm height. The length of RC short beams is designed as 2250 mm and these values are constant in all beams. After verifying accurately finite element model, a numerical parametric study is performed with varied diameter of tension reinforcement. Effect of change in diameter is investigated on behavior of RC short beams. As a result of the study, ductility ratios and failure modes are determined, and load-displacement graphs are obtained in order to understand the behavior of short beams. It is deduced that diameter of tension reinforcement plays very important role on the behavior of RC short beams in terms of ductility and brittleness.

**Keywords :** short beam, reinforced concrete, finite element analysis, longitudinal reinforcement

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