

CRACKING AND TORSIONAL DUCTILITY BEHAVIOR OF HSC BEAMS

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ABSTRACT

Experimental investigation was carried out to study the Torsional behavior of the Medium strength concrete (MSC) and High strength concrete (HSC) beams with the mix proportion of the concrete M50 –M80 grade and more than M100 grade. Nine NSC and Nine HSC beams with constant width (100 mm), and depth (100 mm) with effective span 800mm with varying longitudinal and transverse reinforcement ratio were tested under the standard testing conditions. A special arrangement was fabricated to apply the torque to the beams. The beams were tested under standard torsional loading procedure. The parameters studied in this investigation are ductility behavior, cracking torsional strength, ultimate torsional strength, failure pattern, Torque-rotation behavior, torsional stiffness and strains. The results obtained from the experiment were compared with the different codal equations and also the equations given by researchers. Based on these observations, conclusions were drawn. A parametric analysis was also presented for the 95 data collected from previous investigations on this topic.

KEY WORDS: HSC, NSC, Crack, Failure, Ductility, Torsion, Strength, Deformation