Performance of Steel Fiber Reinforced Concrete Corbels

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Abstract

Seven full-scale reinforced concrete corbel specimens were tested to study performance of steel fiber reinforced concrete corbels with and without fibers were investigated. The test variables were steel fiber content (Vf %) and shear span-to-depth ratio (a/d), which Constants of concrete compressive strength (fcu), area of main steel reinforcement (As) and presence of horizontal stirrups. Test results showed that, addition of steel fibers or/and horizontal stirrups improves both shear strength and ductility of the tested corbels, and results in a more ductile failure mode. The Experimental results observed that the ultimate strength of reinforced concrete corbels along with fibers can be predicted by adding the fibers contribution to strength using the shear friction equation to the ACI Building Code provisions. It is found that considerable improvement in ultimate shear strength and first crack in the corbels. This study shows that there is a considerable increase in the ultimate shear strength of steel fiber reinforced concrete corbels is obtained by the addition of steel fibers for a specific range and with a fiber content of 1,2 and3 percent, an increase in the shear strength was obtained and decrease shear span to depth ratio from 0.80 to 0.65.

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