

## Performance Evaluation of Cement Mortar with Crushed Stone Dust as Fine Aggregates

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**Abstract :** The present work is based on application of cement mortar with natural sand and discontinuous steel fiber through which bending behavior of skinny beam was evaluated. This research is to study the effects of combining reinforcing steel meshes (continuous steel reinforcement) with discontinuous fibers as reinforcement in skinny walled Portland cement based cement mortar with crushed stone dust as a fine aggregate. The term 'skinny' means thickness of the beams is less than 25 mm. The main idea behind this combination is to satisfy the ultimate strength limit state through the steel mesh reinforcement (as a main reinforcement) and to control the cracking under service loads through fiber (Recron 3s) reinforcement (as secondary reinforcement). The main object of this study is to carry out the bending behavior of mortar reinforced thin beam with only one layer of steel mesh (with various transfer wire spacing) and with a recron 3s (Reliance) fibers. The wide experimental program with bending tests is undertaken. The following variables are investigated: (a) the reference mesh size - 25.4 x 25.4 mm and 50.8 x 50.8 mm; (b) the transverse wire spacing - 25.4 mm, 50.8 mm, and no transverse wires; (c) the type of fibers - Reliance (Recron 3s, 6mm length); and (d) the fiber volume fraction - 0.1% and 0.25%. Some of the main conclusions are: (a) the use of recron 3s fibers leads to a little better overall performance than that with no fiber; (b) an increase in equivalent stress is observed when 0.1% RF, 0.25% R Fibers are used; (c) when 25.4 x 50.8 size steel mesh is used, no noticeable change in behavior is observed in comparison to specimens without fibers; and (d) for no fibers 0.1% and 0.1% RF the transverse wire spacing has some little effect on the equivalent stress for RF fibers, the transverse wire has no influence but the equivalent stress are increased.

**Keywords :** cement mortar, crushed stone dust, fibre, steel mesh

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