

Study of shear characteristics of recycled aggregate concrete beams

Name of Student : Ravi Inder S. Dhaliwal (1168266)

Deptt. : Civil

Guide : K. S. Bedi & Harpal Singh

Mode of Study :

ABSTRACT

The objective of this study is to use of recycled aggregate as replacement of natural aggregate for saving the natural resources and energy. Recycled aggregates consist of crushed, graded inorganic particles processed from the materials that have been used in the constructions and demolition debris. The aim for this present work is to determine to prepare a comprehensive literature review that encompasses the sourcing, production and use of recycled aggregate in concrete. To investigate the shear behavior of RAC rectangular beams without stirrups with different percentages of recycled aggregate. Mixes with 0%, 30%, 50%, 80% and 100% replacement of coarse natural aggregates by coarse recycled concrete aggregates will be considered. To identify the influence of size effect, in terms of the shear span to effective depth (a/d) ratio, on the shear failure of RAC beams without stirrups. Beams with four ' a/d ' ratios, viz. 1.5, 2.5 and 3.5 will be considered to cover short, intermediate, and long beams. To experimentally investigate the variation of shear strength due to variation in main tensile reinforcement, four percentages of tension reinforcement (1%) will be considered. To compare the shear strength of RAC with the available codal provisions for Normal concrete. The shear stresses of the beams made with recycled concrete were found to be significantly dependent on the span to depth ratio. Ultimate shear stress is influenced by grade of concrete. For all the three a/d ratios the change in grade from M20 to M30 increases the average ultimate shear stress by 22.5% for 1% longitudinal steel and 11.7% for 2% longitudinal steel. For all the recycled Concrete beams tested during experimental investigation, both the IS 456 and the ACI recommendations were found to be conservative in predicting the shear strength.