

Department : Civil

Year : 2013-2014

Group No: 2

Guided By

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Project Title

“USE OF E-WASTE AS A REPLACEMENT OF NATURAL SAND IN CONCRETE”

Abstract:

Concrete is a composite material composed of coarse granular material embedded in a hard matrix of material that fills the space among the aggregate particles and glues them together. Engineers are continually pushing the limits to improve its performance with the help of innovative chemical and mineral admixture. Nowadays, most concrete mixture contains supplementary cementations material which forms part of the cementations component. These materials are majority byproducts from other processes. The main benefits of SCMs are their ability to replace certain amount of cement and still able to display cementations property, thus reducing the cost of using Portland cement. Electronic waste or waste electronic and electrical equipment is an emerging issue posing serious pollution problems to the human and the environment. New effective waste management options need to be considered especially on recycling concepts. This paper presents the results of an investigation to study the performance of concrete prepared with E plastic waste as part of coarse aggregate. An effort has been made to detail a systematic study of compressive strength of concrete with various proportions of E-waste as coarse aggregate in concrete. The test results showed that a significant improvement in compressive strength was achieved in the E-plastic concrete compared to conventional concrete. The tests were also designed to evaluate the internal pore structure, its chemical resistance to environmental agents and reactivity with some components of the cement. The results indicated that the E-plastic aggregate up to 15% weight of the coarse aggregate and replacement of cement with fly ash (10% by weight) can be used effectively in concrete and thus results in waste reduction and resources conservation.

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