A study of the effects of using fine recycled aggregates in concrete mixes*

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Abstract

Construction and demolition wastes need a large place to dump in landfills, which has bad effects on environment and decrease green areas. The process of transport and disposal of wastes exhausts the national economy; so going for recycling it to be used in producing new elements in the field of engineering and construction material is a target to sustainable development and saving the alternative energy.

Many researchers were interested in using and recycling the Construction and Demolition Wastes (C&D W), especially to use it as coarse aggregates for concrete and pavements. On the other hand there are always worries from using it as fine aggregates in concrete, so standards control the replacement ratios.

This research aims to study the possibility of using Recycled Concrete Aggregates (RCA) resulted from destroyed buildings either by crushing structural elements or walls and demolished nonstructural elements, and compare it with concrete control mix made with natural fine and coarse aggregates according to local production circumstances. After that it's determined when convenient to be used in structural construction (buildings), possible replacement ratios, and how this affects the properties of the new concrete product.

The ultimate target of this research is to promote the use of Construction and Demolished Wastes in construction, and producing new construction materials and alternatives to known materials that are used now in making concrete, to get concrete products allowed to be used safely in building and construction.

This research is important to reduce waste disposal to landfills resulted from demolished and construction and saving natural quarries to achieve the principle of sustainable development, save environment, give new alternatives to construction materials used in concrete production, and try to use this technique in local industry.

Key words: Sustainable development, demolition waste, fine recycled aggregates, recycled aggregates concrete.

* For the paper in Arabic see pages (47-57).

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