Evaluate Local Recycled Concrete Aggregates And possible content used in concrete construction works*

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Abstract

Saving environment and environmental resources through enhancing conceptions of sustainable development, saving energy, and increase fields of using alternative and renewable energies.

This framework includes saving the natural resources of rocks and quarries from oppressive withdrawal, or throwing wastes in landfills resulted from demolishing buildings and projects and its remains. In this context, the theories and applications of material recycling take a big role in most countries of the world.

The remains of building construction, demolition remains and its different types of waste (concrete, wood, steel, stones, metal, decorating materials and papers..etc.) that differs according to construction method , are considered to be one of the most important environmental problems. Construction materials are about 30_40% of wastes, and concrete is 90% of these wastes .

That makes researchers and concerned interested to reuse and recycle demolition wastes from concrete and buildings, and use it as (RCA) Recycled Concrete Aggregate, to produce concrete of new and accepted properties that can be used in building and construction, and which is called RAC (Recycled Aggregate Concrete). The construction and demolition waste (C&D W) is essential material and available choice in recycling, because of its high flexibility and economic feasibility, in addition to its role in saving natural resources and saving environment when compared to other options.

This research aims to study the possibility of using recycled aggregates from concrete elements resulted from building demolition, breaking and smashing structural systems of debris (slabs, walls, columns.. etc), or any other structural element.

In addition to study the physical and mechanical properties and compare it with the properties of natural aggregates (raw). As well to study the replacement ratio of the coarse aggregates, to get a new concrete product with properties of high quality that meets all requirements of utilization. And then compare it with properties of concrete made from natural aggregates according to local conditions, to certify the feasibility of reusing and recycling the remains of demolished buildings in order to achieve the principle of saving environment and sustainable development.

The importance in this research is to decrease the remains sent to landfills from demolished buildings and projects, and saving natural quarries, to achieve the principle of sustainable development and saving environment, and suggest new alternatives to construction materials used in concrete production.

Key words: Sustainable development, Recycled aggregates, Demolition wastes, Recycled aggregate concrete, Aggregate replacement Ratio .

* For the paper in Arabic see pages (37-45).

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