شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

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قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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EFFECT OF SAND PROPERTIES ON FRESH AND HARDENED CONCRETE PROPERTIES

By

Eng. Ahmed Helmy Mohamed Al Mahdy

A Thesis Submitted to the Faculty of Engineering at Cairo University in Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE
In
Structural Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

Effect of Sand Properties on Fresh and Hardened Concrete Properties

Key Words:

Fineness Modulus, % of Fine Materials, Sand Equivalent, Methylene Blue Value.

Summary:

Sand is one of the main concrete ingredient which occupies about 45% approximately of its volume. So, its characteristics have a significant influence on both the fresh and hardened concrete properties. The aim of this thesis is to investigate the effect of the nature of sand related to its grading on concrete properties. Twelve samples of natural sand were collected from various sources in Egypt to investigate the effect of their properties on concrete properties. Furthermore, two chemical admixtures with different chemical bases were also used. The experimental program was divided into two phases. The first phase investigated the effect of the nature of fine materials in sand on the workability and compressive strength of concrete. In the second phase the effect of fineness modulus, % of fine materials, sand equivalent, and methylene blue value on both the fresh and hardened concrete were investigated. The investigated fresh concrete properties in the second phase were admixture dosage, slump, and initial setting time, while the hardened concrete properties were compressive strength, flexural strength, splitting tensile strength, drying shrinkage, and water absorption. It was concluded that the nature of fine materials in sand is the most affecting property on both the fresh and hardened concrete properties. Also, the workability of concrete is the most affected property by the nature of fine materials in sand and it can be compensated by adjusting the admixture dosage in the mix.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

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Dedication

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