شبكة المعلومات الجامعية

# بسم الله الرحمن الرحيم


HOSSAM MAGHRABY

شبكة المعلومات الجامعية


# شبكة المعلومات الجامعية

# التوثيق الالكتروني والميكروفيلم

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

## يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HOSSAM MAGHRABY

شبكة المعلومات الجامعية


# بعض الوثائق الأصلية تالفة

HOSSAM MAGHRABY

شبكة المعلومات الجامعية


# بالرسالة صفحات

# لم ترد بالأصل

HOSSAM MAGHRABY

Suez Canal University
Faculty of Engineering and Technology
Civil Engineering Department

# SPECIAL FIBROUS HIGH PERFORMANCE CONCRETE

By

Sherif Mohamed Galal Zaki

A Thesis

Submitted to the Faculty of Engineering in Partial Fulfillment
of the Requirements for the Degree of

MASTER OF SCIENCE
(Civil Engineering)

Under The Supervision of

Prof. Dr. Abd EL Kareem Atta
Prof. Of Strength of Materials
Faculty of Engineering
Ain Shams University

Dr. Kamal Gad Sharobim
Associate Prof. 24/8/96
Faculty of Engineering and Technology
Suez Canal University

Dr.Hussien Moktar Hassan
Assistant Prof.
Faculty of Engineering and Technology
Suez Canal University

1996

## APPROVAL SHEET

# SPECIAL FIBROUS HIGH PERFORMANCE CONCRETE


**By**

**Sherif Mohamed Galal Zaki**


**This thesis has been accepted and approved by the following Committee :**

1. **Prof. Dr. Ahmad Aly Al-Arian**
   Professor of strength of material
   Faculty of Engineering, Cairo University

2. **Prof. Dr. Hasan Saad Mahmoud Saad**
   Professor of strength of material
   Faculty of Engineering, Al-Azhar University

3. **Prof. Dr. Abd El-Kareem Mohamed Atta**
   Professor of strength of material
   Faculty of Engineering, Ain Shams University

4. **Dr. Kamal Gad Sharobim**
   Associate Professor
   Faculty of Engineering and Technology,
   Suez Canal University

24/8/1996

## ACKNOWLEDGMENT

Thanks God, who gives the power and provides with knowledge.

The author likes to express his sincere gratitude to Professor Dr. Abd EL Kareem Atta for his invaluable advises, great assistance and continuous encouragement. Special thanks to Dr. Kamal Gad Sharobim and Dr. Hussein Moktar for their assistance in all stages of this work and indispensable help without which this study wouldn't have been accomplished.

The author likes also to express his gratitude to Dr. Mohammed El Gahmry, head of Suez Canal Authority research center, for his support, continuous assistance and encouragement. Special thanks to all the people in the testing of materials laboratory and library of the research center, also the people of Ataka quarries of Suez Canal Authority.

The author likes to express his thanks to the Geology Department of the Faculty of Science, Suez Canal University, for the information and technical support they provided regarding gabbro rocks in Sinai.

The author also likes to express his thanks to Sika Egypt company for the providence with the superplasitcizer and Geos agents and distributors for polypropylene fibers.

TO
MY PARENTS, MY WIFE AND MY LITTLE BOY
TO WHOM I OWE MY LIFE

## TABLE OF CONTENTS

## LIST OF TABLES