بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

AIN SHAMS UNIVERSITY

FACULTY OF ENGINEERING

3-D Finite Element Model For Analysis of R.C. Structures

By

Hossam El-Din Hassan Fouad Ahmed Abdel-Wahid
B.Sc. 1989, Structural Division
Civil Engineering Department

Thesis

Submitted In Partial Fulfillment of The Requirements of The Degree of Master Of Science In Structural Engineering

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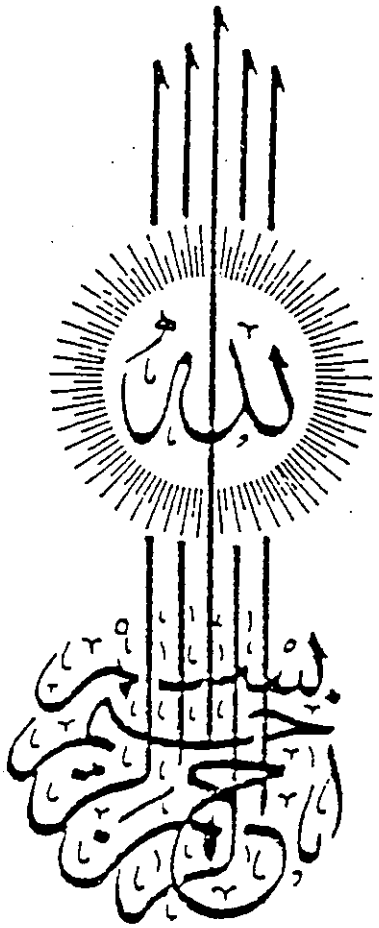
B ١٠٩٢

Cairo-1998



﴿ وعلمك ما لم تكن تعلم
وكان فضل الله عليك عظيما ﴾

صدق الله العظيم [النساء ١١٣]

APPROVAL SHEET

3-D Finite Element Model For Analysis of R.C. Structures

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STATEMENT

[illegible] thesis is submitted [illegible] Shams Univ[illegible]
[illegible] of Master of Science in the structural Engineering

No part of this thesis has been previously submitted for [illegible] qualification.

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[illegible] 19

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Thanks God

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AIN SHAMS UNIVERSITY
Faculty of Engineering
Structural Department

Abstract for the Master of Science
Thesis Submitted by
Eng. Hossam El-Din Hassan Fouad Ahmed Abdel-Wahid

Title of the thesis: 3-D FINITE ELEMENT MODEL FOR ANALYSIS OF R.C. STRUCTURES.

Supervisors: Prof. Dr. Omar Aly Moussa El-Nawawy
Dr. Samir Abdel-Meguid Hekal

ABSTRACT

The thesis deals with the study of using finite element method for analysis of reinforced concrete beams (Simple and Continuous beams). A three-dimensional model for finite element analysis of reinforced concrete based on smeared cracking approach is presented. The chosen element is three dimensional isoparametric brick element with twenty nodes. The steel reinforcement is smeared into equivalent steel layers with uniaxial properties in the bar direction (8-node element). Perfect bond between concrete and reinforcement is assumed.

Different experimental results of several tests conducted on R.C. Beams are taken as examples to show the applicability and the accuracy of the presented program. In these examples, the analytical results are compared with the experimental results including deflections and strains.

Finally, useful recommendation regarding the analysis of R.C Beams using the finite element method are stated as it is an efficient tool to predict the strains, deformations, failure loads and defections of the tested beams.

Key Words: R.C. beams-Finite element - 3-D-Mathematical model-Constitutive low- Non-linear behavior-Material behavior- Solution of non-linear equetion.