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

بعض الوثائق الأصلية تالفة

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

بالرسالة صفحات

لم ترد بالأصل

HOSSAM MAGHRABY

DESIGN OF COMPOSITE BEAM-COLUMNS UNDER BIAXIAL BENDING

B16490

THESIS
Submitted in Partial Fulfillment of the Requirements for the Degree of

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IN
STRUCTURAL ENGINEERING

By

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B.Sc. 1987, M.Sc. 1993
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ABSTRACT

The thesis is divided into two parts as given below:

- **Part I:** Analysis of the composite column.

The finite element method is introduced to solve the problem of composite beam-columns under biaxial bending. The incremental loading procedure is applied to take into account the material and geometric nonlinearities.

Necessary modifications are introduced to the classic derivation of the stiffness matrices to be applicable for beam elements with unsymmetric cross-sections.

A parametric study has been performed to consider the effect of concrete strength, steel grade and steel profile on the composite-columns.

Contour lines are provided to determine the capacity of the column for different models having different slenderness ratios.

Simple formulas are deduced to describe the relation between the moments and each of the concrete strength or steel grade under a specified axial load.

A complete computer program has been developed to solve the problem of composite-columns under biaxial bending having any slenderness ratio.

- **Part II:** Optimization

The optimal criteria is adopted to achieve the composite column having the least cost.