بسم الله الرحمن الرحيم

HANAA ALY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

HANAA ALY

شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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HANAA ALY

BEHAVIOR OF COMPOSITE CONCRETE COLUMNS WITH EXTERIOR STEEL ANGLES AND BATTEN PLATES USING DIFFERENT TYPES OF CONCRETE

By

Dina Salah El Din Mohamed Abd El Aziz

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfilment 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

Behavior of Composite Concrete Columns with Exterior Steel Angles and Batten Plates Using Different Types of Concrete.

Key Words: Composite column; Steel fiber concrete; Light weight concrete; Reinforced concrete; Finite element modelling.

Summary:

The main objective of this research is to study the effectiveness of employing lightweight concrete or fiber reinforced concrete or reinforced concrete in composite steel angled columns. The parameters of the study are: Compressive strength, Ultimate strains, Earlier concrete crushing, Non-linear Ductility, Local buckling of steel section and Mode of failure. Experimental investigation was carried out for twelve specimens (120*120*700 mm) of composite columns filled with plain concrete, Light weight aggregate concrete, Fiber reinforced concrete, and Reinforced concrete. Strength development, Compressive strength, Density of concrete and Modulus of elasticity for different mixes of types of concrete were investigated in order to be used in Finite Element Modelling as a parameter of concrete material. Using ABAQUS finite element program, models for composite columns of different types of concrete had been conducted. The Finite Element model was verified by the experimental results, and then used to investigate the compressive strength, load-deflection of overall column, and stress-strain curve for concrete type that filled column.

Disclaimer

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

I further declare that I have appropriately acknowledged aa sources used and have cited them in the reference section

Name: Dina Salah El Din Mohamed Abd El Aziz Date: / / 2021

Signature:

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Dina Salah El Din Mohamed Abd El Aziz

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