BEHAVIOUR OF CONCRETE ENCASED STEEL COLUMNS UNDER AXIAL CONCENTRIC LOAD

By

Motaz Salah Sayed

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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Under the Supervision of

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Title of Thesis:

BEHAVIOUR OF CONCRETE ENCASED STEEL COLUMNS UNDER AXIAL CONCENTRIC LOAD

Key Words:
Composite Column, Concrete encased column, Structural Steel, Confinement, Shear Connector.

Summary:

This research investigates behavior of concrete encased steel column (CESC) subjected to axial loads, in order to study the effect of specific parameters such as shear connectors, concrete compressive strength, confinement and buckling length of columns on the behavior of CESC. This research studies the effect of presence, different type, amount and position of shear connectors at the interface between the concrete part and steel part of the column. An analytical model based on the stress-strain characteristics of concrete under triaxial state of stresses is proposed to predict the deformational behavior as well as the ultimate capacity of rectangular CESC columns.

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Last, but not least, the author thanks his family for their encouragement and prayers.

Dedication

I dedicate this thesis to the soul of my beloved friend Salah El-Din Alaa EL-Sherif may GOD bless his soul. I also dedicate it to those who never give up on Palestine.

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 references section.

Engineer Name: Motaz Salah Date: 22/9/2018

Signature:

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