NONLINEAR ANALYSIS OF REINFORCED CONCRETE DEEP BEAMS

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Submitted to the Faculty of Engineering
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of the Requirement of M.Sc. Degree
In Civil Engineering

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STRUCTURAL ENGINEERING

By

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DEDICATION

I wish to dedicate this work to who suffered to educate, support and encourage me during the thesis work

TO MY PARENTS,

MY WIFE, MY SISTER, AND MY BROTHERS

Also, I wish to dedicate my thesis to my Professors

PROF. DR. OSMAN MOHAMMED RAMADAN
PROF. DR. OMAR ALI MOUSA ELNAWAWI
For the encouragement and support to complete this work.

STATEMENT

This dissertation is submitted to Ain Shams University, Faculty of Engineering for the degree of M.Sc. in Civil Engineering.

The work included in this thesis was carried out by the author in the department of Structural Engineering, Faculty of Engineering, Ain Shams University, from July 2012 to December 2017.

No part of the thesis has been submitted for a degree or a qualification at any other University or Institution.

The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others

Date: 4/1 /2017

Signature: ----------

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Ain Shams University
Structural Engineering Department

Abstract of the M.S.C. Thesis Submitted by:

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Title of thesis

Nonlinear Analysis of Reinforced Concrete Deep Beams

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Investigation of fortified deep beams is a subject of an impressive enthusiasm for basic building. A deep beam is a shaft having a profundity that is similar to the traverse length. Deep beams regularly show up as move supports in elevated structures and also heap tops, establishment dividers, water tanks, canisters, folded plate rooftop structures, floor stomachs, shear dividers and sections or corbels. Never the less, most codes of practice do not give sufficient attention to the design of deep beams. This thesis provides a preview for previous studies in this field. Also, results of their previous studies are compared to estimate based on nonlinear finite element analysis using ANSYS. Many models for deep beams with different H/L ratios were made to reach a unified design approach for the deep beam. Finally, a comparison between the obtained results using the finite element analysis by (ANSYS) program and the proposed strut and tie model was made and a good agreement was obtained. The effect of shrinkage and temperature variation was studied.

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