بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / حسام الدين محمد مغربي

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات:
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COMPARATIVE ANALYTICAL STUDY ON CRACK WIDTH OF REINFORCED CONCRETE STRUCTURES

By

Ahmed Abdel Fattah Abdel Kader Abu El Naas

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

Prof. Dr. Hany Mohamed El-Hashimy

Professor of Concrete structures
Faculty of Engineering,
Cairo University

Dr. Khaled Farouk El-Kashif

Associate Professor,
Department of Structural Engineering
Faculty of Engineering,
Cairo University

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Approved by the
Examining Committee

_____
Prof. Dr. Hany Mohamed El-Hashimy **Thesis Main Advisor**
Professor of Concrete Structures, Cairo University

_____
Dr. Khaled Farouk Omar El-Kashif **Advisor**
Associate Professor, Department of Structural Engineering, Cairo University

_____
Prof. Dr. Ashraf Hasan Mohamed El-Zanaty **Internal Examiner**
Professor of Concrete Structures, Cairo University

_____
Prof. Dr. Amr Ali Abdel Rahman **External Examiner**
Professor of Concrete Structures, Ain Shams University

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2021

Engineer's Name: Ahmed Abdel Fattah Abdel Kader Abu El Naas
Date of Birth: 18/09/1993
Nationality: Egyptian
E-mail: abdelfatahahmed37@gmail.com
Phone: 01091391948
Address: 13 Tutankhamunst Tanta, Gharbia

Registration Date: 01/10/2017
Awarding Date: …./…./2021
Degree: Master of Science
Department Structure Engineering
Supervisors:

Prof. Dr. Hany Mohamed El-Hashimy
Dr. Khaled Farouk Omar El-Kashif

Examiners:

Prof. Dr. Hany Mohamed El-Hashimy (Thesis Main Advisor)
Dr. Khaled Farouk Omar El-Kashif (Advisor)

Prof. Dr. Ashraf Hasan Mohamed El-Zanaty (Internal Examiner)

Prof. Dr. Amr Ali Abdel Rahman (External Examiner)
Professor of Concrete Structures, Ain Shams University

Title of Thesis: **COMPARATIVE ANALYTICAL STUDY ON CRACK WIDTH OF REINFORCED CONCRETE STRUCTURES**

Key Words:

Flexural cracks, Crack width, Serviceability, Codes provisions, Non-linear FE-analyses

Summary:

This study investigates the cracking behavior of flexural reinforced concrete beams which was model analytically and numerically to link the results of the research with the equations of the famous codes in this field to reach the appropriate recommendations. The analytical program included twelve groups of reinforced concrete beams. The parameters studied analytically in this work include the parameters affecting on the crack width such as steel stress, concrete cover for longitudinal reinforcement at tension zone, surface geometry of reinforcement bar (smooth, deformed), area of longitudinal tension steel, spacing between bars in tension zone, diameter of bars in tension zone and compressive strength for concrete. The numerical program included a 3-D finite element analysis through the well-known program. Verification of the numerical model has been done to check the accuracy of results. The numerical models were compared with other experimentally tested beams found in literature review then compared with the analytical results of the suggested reinforced concrete beams models in the analytical program. It was concluded that some codes doesn't take into consideration the effect of some important variables and cases on the width of the crack. Also, it was found that that some codes are not clear in the region concerning the position of the crack width calculation and the values obtained for the crack width. JSCE (2007) equation for calculating crack width the most suitable for calculating value of crack width because it take into consideration the most important factor which effected on the crack width.

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 the references section.

Name: Ahmed Abdel Fattah Abdel Kader Abu El Naas Date: ../../…

Signature:

Dedication

To my parents, my sisters and the spirit of the late my uncle

Acknowledgments

First and foremost, praise and thanks to be to Almighty Allah for his limitless gifts and guidance and peace be upon his last messenger Mohamed.

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