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BEHAVIOR OF CONCRETE SLABS REINFORCED WITH WELDED WIRE MESH UNDER DIFFERENT VERTICAL LOADS

By

El-Sayed Salah El-Sayed El-Mahdi Ewida

This thesis is submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements of the Degree of
DOCTOR OF PHILOSOPHY
In
Structural Engineering

FACULTY OF ENGINEERING - CAIRO UNIVERSITY
GIZA - ARAB REPUBLIC OF EGYPT

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Under the supervision of

Prof. Dr. Akram Mohamed Torkey

Professor of concrete structures
Structural Engineering Department
Faculty of Engineering, Cairo University

Dr. Nasser Fekry El-shafey

Associate Professor
Structural Engineering Department
Faculty of Engineering, Cairo University

Dr. Rasha Tharwat senousi

Associate Professor
Structural Engineering Department
Faculty of Engineering, Cairo University

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Approved Examining Committee

Prof. Dr / Akram Mohamed Torkey

Thesis main advisor

Dr / Nasser Fekry Elshafey

advisor

Dr / Rasha Tharwat senousi

advisor

Prof. Dr / Magdy El-sayed Kassem

Internal Examiner

Prof. Dr / Mohy El-din Salah El-din Shoukry

External Examiner

Professor of Concrete Structure, Faculty of Engineering, Alexandria University

FACULTY OF ENGINEERING - CAIRO UNIVERSITY
GIZA - ARAB REPUBLIC OF EGYPT

2022

Engineers Name: El-Sayed Salah El-Sayed El-Mahdi Ewida
Date of Birth: 24/11/1988
Nationality: Egyptian
E-mail: Sayedewida@yahoo.com
Phone: +201066558791
Address: 2002 Zahraa Madinit Naser, Naser City, Cairo
Registration Date: 01/10/2104
Awarding Date: --/--/2022
Degree: Doctor of Philosophy
Department: Structural Engineering



Supervisors:

Prof. Dr. Akram Mohamed Torkey
Dr. Nasser Fekry El-Shafey
Dr. Rasha Tharwat Senousi

Examiners:

Prof. Dr. Akram Mohamed Torkey	(Thesis main advisor)
Associate Dr. Nasser Fekry El-Shafey	(advisor)
Associate Dr. Rasha Tharwat senousi	(advisor)
Prof. Dr. Magdy El-sayed Kassem	(Internal examiner)
Prof. Dr. Mohy El-din Salah Shoukry	(External examiner)
Professor of Concrete Structure, Faculty of Engineering, Alexandria University	

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Behavior of Concrete Slabs Reinforced with Welded Wire Mesh Under Different
Vertical Loads

Key Words

Solid slab; Welded metal mesh; Crack; Ductility; ABAQUS.

Summary

This thesis aims to study the behavior of solid slabs reinforced with welded metal mesh to develop a design approach for solid slabs reinforced with metallic welded mesh with variable types of loads and continuity of slab edges. To accomplish this objective, eight groups with twenty-four simple and continuous specimens' tests were conducted, comprising concentrated, line, and uniform static load for one-way and two-way solid slab and for one-way continuous solid slabs. This research was designed to investigate the feasibility and effectiveness of employing small welded metal meshes in the construction of structural slabs as low cost and effective structural material.

The experimental data were used for validation of the finite element models that were developed using the ABAQUS software package. The validated models were used as part of a comprehensive parametric study to investigate the effects of a number of design parameters including the effects of material strength, reinforcement geometry and arrangement, and the influence of the load type.

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: El-Sayed Salah El-Sayed El-Mahdi Ewida.

Date: / / 2022.

Signature:

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