بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

OPTIMIZATION OF THE MIX DESIGN OF STYROFOAM LIGHT WEIGHT CONCRETE USING ORTHOGONAL ARRAYS AND NEURAL NETWORKS

By

Amr Hamdy Mohamed Shawat

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. Osama Abdel Ghafor Hodhod

Professor of properties & testing of materials
Structural engineering department
Faculty of Engineering, Cairo University

Dr. Hatem Hassan Ali

Lecturer
Structural engineering department
Faculty of Engineering, Cairo University

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Approved by the
Examining Committee

Prof. Dr. Osama Abdel Ghafor Hodhod	Thesis main advisor
Dr. Hatem Hassan Ali	Advisor
Prof. Dr. Ahmed Mahmoud Ragab	Internal examiner
Prof. Dr. Mariam Farouk El Ghazy Professor of material properties and testing Faculty of Engineering, Tanta university	External examiner

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2020

Engineer's Name: Amr Hamdy Mohamed Shawat
Date of Birth: 26 / 6 / 1991
Nationality: Egyptian
E-mail: Amr.shawat@eng.cu.edu.eg
Phone: 01003530013
Address: 4A Juhaina st. Dokki, Giza
Registration Date: 01 / 10 / 2013
Awarding Date: / / 2020
Degree: Master of Science
Department: Structural Engineering

Supervisors:

Prof. Dr. Osama Abdel Ghafor Hodhod
Dr. Hatem Hassan Ali

Examiners:

Prof. Dr. Mariam Farouk El Ghazy, professor of material properties & testing, faculty of engineering, Tanta university (External examiner)
Prof. Dr. Ahmed Mohamed Ragab (Internal examiner)
Prof. Dr. Osama Abdel Ghafor Hodhod (Main advisor)

Title of Thesis:

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Key Words:
Neural Networks; Orthogonal arrays; Styrofoam concrete; Mix Design, Machine learning;

Summary:
This research aims at creating a mathematical model for optimizing the mix proportions of extruded polystyrene Styrofoam aggregate concrete. This was achieved by an experimental program based on the application of orthogonal arrays to create a signal-to-noise ratio analysis that investigates the effects of 10 mixing parameters on 6 fresh and mechanical properties. The data is used to train and verify an artificial neural network that predicts the resultant properties of any given concrete mix within its operational parameters.

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: Amr Hamdy Mohamed Shawat Date: / / 2020

Signature:

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