



Cairo University

NUMERICAL ANALYSIS OF SOIL NAIL/GEOSYNTHETIC REINFORCED SOIL WALLS ON HYBRID RETAINING WALL SYSTEM

By

Hussein Salah Abbas Madbolly

A Thesis Submitted to the
Faculty of Engineering - Cairo University
In Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
In
Civil Engineering - Public Works

**FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT**

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Under the Supervision of

Prof. Dr. Abdelsalam M.Salem

Prof. Dr. Rami M. El-Sherbiny

.....

.....

Professor of Geotechnical Engineering and
Foundations

Professor of Geotechnical Engineering and
Foundations

Public Works Department
Faculty of Engineering, Cairo University

Public Works Department
Faculty of Engineering, Cairo University

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Approved by the Examining Committee

Prof. Dr. Abdelsalam M.Salem,	(Main Advisor)
Prof. Dr. Rami Mahmoud El-Sherbiny,	(Advisor)
Prof. Dr. Hani Abdel-Latif Lotfi,	(Internal Examiner)
Prof. Dr. Sherif Wissa Agaiby, (Head of Geotechnical Department - Dar Al-Handasah)	(External Examiner)

**FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT**

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Engineer's Name: Hussein Salah Abbas Madboly
Date of Birth: 23/08/1988
Nationality: Egyptian
E-mail: husein.salah1988@gmail.com
Phone: +2 01007945667 – 02/25319244
Address: 18A-Abou Rabia St. – Old Cairo
Registration Date: 01/10/2012
Awarding Date:/....../2019
Degree: Master of Science
Department: Civil Engineering - Public Works



Supervisors: Prof. Dr. Abdelsalam M.Salem
Prof Dr. Rami M. El-Sherbiny

Examiners: Prof. Dr. Abdelsalam M.Salem (Main Advisor)
Prof. Dr. Rami M. El-Sherbiny (Advisor)
Prof. Dr. Hani Abdel-Latif Lotfi (Internal Examiner)
Prof. Dr. Sherif Wissa Agaiby (External Examiner)
(Head of Geotechnical Department - Dar Al-Handasah)

Title of Thesis:

Numerical analysis of soil nail/geosynthetic reinforced soil walls on hybrid retaining wall system

Key Words: Hybrid, Nail, Reinforced, Geosynthetic, PLAXIS 2D.

Summary:

This research examines the behaviour of soil nail/geosynthetic reinforced soil walls on hybrid retaining wall system with different soil and geometry parameters. A 2D finite element model was verified against a case history and in a parametric study to simulate the behavior of different wall configurations. The study addressed the effect of different soil nail parameters such as friction angle, nail length to height ratio, set back distance, and reinforcement stiffness. Empirical methods were evaluated.

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:

Date:

Signature:

Dedication

To: My Father

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Foremost, i would like to thank my supervisor, Prof. Dr. Abdelsalam M.Salem, Professor of Geotechnical Engineering and foundations, Faculty of Engineering, Cairo University for the patient guidance, encouragement and advice he has provided throughout my time of research. I have been extremely lucky to have a supervisor who cared so much about my work, and who responded to my questions and queries so promptly.

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