شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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HANAA ALY

Cairo University

NUMERICAL ANALYSIS OF STONE COLUMNS IN LIQUEFIABLE SOIL

By

Adham Gamal Diaaeldin Abdelrazek

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

Civil Engineering - Public Works

FACULTY OF ENGINEERING, CAIRO UNIVERSITY

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Under the Supervision of

Assoc. Prof. **SHERIF A. AKL**
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Title of Thesis:

NUMERICAL ANALYSIS OF STONE COLUMNS IN LIQUEFIABLE SOIL

Key Words:
Stone Column; Numerical Modelling; Liquefaction; PM4Sand; UBC3D-PLM.

Summary:

This research examines the behaviour of stone columns in liquefiable soils. Stone column in-situ stiffness and the improvement in the field's liquefaction resistance are not directly related to results of plate load tests. Two series of parametric studies program compromise static and dynamic analyses conducted using a 2D finite element model to investigate this relation. The study addressed the effect of stone columns on liquefiable soils, also, it studied the stone columns behaviour in such soils and estimate the degree of soil improvement against liquefaction. The study performs a design curve that relates the interpreted column stiffness with the reduction in shear stresses.

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: Adham Gamal Diaaeldin Abdelrazek

Signature: Date:

Dedication

To: My Family

&

To: Prof. Dr Sherif Wissa (Kind Soul)

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First, Thanks for God for all things given throughout my entire life and for giving the ability to proceed in my life, studies till the moment and more.

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