بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / سلوي محمود عقل

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

ملاحظات:

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NUMERICAL ANALYSIS OF THE INSTALLATION OF END BEARING AND FLOATING STONE COLUMNS

By

Dalia Ragab Sayed Ahmed Mohamed

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY
In
CIVIL ENGINEERING – PUBLIC WORKS

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
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Title of Thesis:

Numerical analysis of the installation of end-bearing and floating stone columns

Key Words:
Soft soil improvement - Installation effects - Settlement - Stone columns analytical method - Numerical analysis

Summary:
This research aims to investigate the influence of stone column installation on the behavior of the surrounding improved soil. Two-dimensional axisymmetric and three-dimensional (3D) finite element analyses (FEA) are carried out simulate the installation process of end-bearing and floating columns. A parametric study is conducted with cavity expansion using various parameters. This study shows that stone column installation could be simulated using 3D FEA with limitations. Well-documented case histories are employed to develop an empirical data in estimating the post-installation coefficient of lateral earth pressure. Evaluation of analytical methods is discussed for floating and end-bearing columns through a database of settlement field measurements of improved soil. The use of estimated post-installation coefficient of lateral earth pressure in available analytical methods or FEA obtains settlement results that are in very well agreement to the field measurements.

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: Dalia Ragab Sayed Ahmed Mohamed Date: / /2022

Signature:

Dedication

This work would not have been possible without the support and love of my father, mother, my sister and my brothers. I am gratitude to my mother and her continuous encouragement to me nothing to be said is sufficient to reveal my sincere gratitude to you all.

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