Salwa Akl

بسم اللّه الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني

Salwa Akl

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

Salwa Akl

بعض الوثائق الأصلية تالفة
وبالرسالة صفحات لم ترد بالأصل

Minufiya University
Faculty of Engineering
Civil Engineering Department

ANALYSIS OF THE COMBINED BEHAVIOR OF PILE GROUPS UNDER VERTICAL LOADING

By

MOHAMED ABDEL HAMID MOSTAFA

B.Sc., M.Sc Civil Engineering.

A Thesis submitted in partial fulfillment for the requirements of the degree of

PhD Degree in Engineering

(Structural Engineering)

In the field of Soil Mechanics and Foundations

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STATEMENT

This thesis is submitted to the Department of civil engineering faculty of engineering El Meniofia University for the award of Ph. D

Thesis title

ANALYSIS OF THE COMBINED BEHAVIOR

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The work in this thesis has been carried out by the author.

No part of this thesis has been submitted to any other university or institute for the award of a degree or qualifications

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Date:

The above statement has been signed by the thesis author

Supervisor

ABSTRACT

The development during the last decades created a great demand for use pile foundations. One of the most important factors in the analysis of piles is the settlement of the pile groups. This thesis is concerned about the study of the settlement of piles groups. A numerical method has been proposed in order to analyses a pile group embedded in arbitrary soil formation with non-linear soil behavior and considering the installation effect. The proposed method has been compared to other rigorous solutions as well as filed loading tests and satisfactory results were obtained.

The proposed method has been used to develop an easy and practical approach, which is, called "Equivalent single pile approach". In this approach the pile group is converted to an equivalent single pile for case of concrete floating piles in uniform soil and end bearing piles. The equivalent single pile will have the same load-settlement behavior and the same total base load of the pile group. Series of design charts have been developed for determining the dimensions of the equivalent single pile. The factors affecting the load-settlement behavior of the pile group are presented and discussed herein.

The equivalent single pile approach has been used in order to study the interaction between different pile groups in an easy way. A parametric study has been carried out in order to evaluate the factors affecting the interaction between different groups.

Finally, based on the study and the analysis presented in the course of this thesis, a series of conclusions and recommendations was drawn regarding the settlement analysis and prediction of pile groups.

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