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Ain Shams University
Faculty of Engineering

DEFORMATION ANALYSIS OF EARTH EMBANKMENTS

BY

AHMED MOSALEM SAMIEH MONAZA

A Thesis
Submitted in partial fulfillment for the
requirements of the Degree of Master of Science
in Civil Engineering
Department of Structural Engineering

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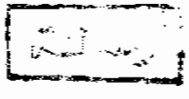

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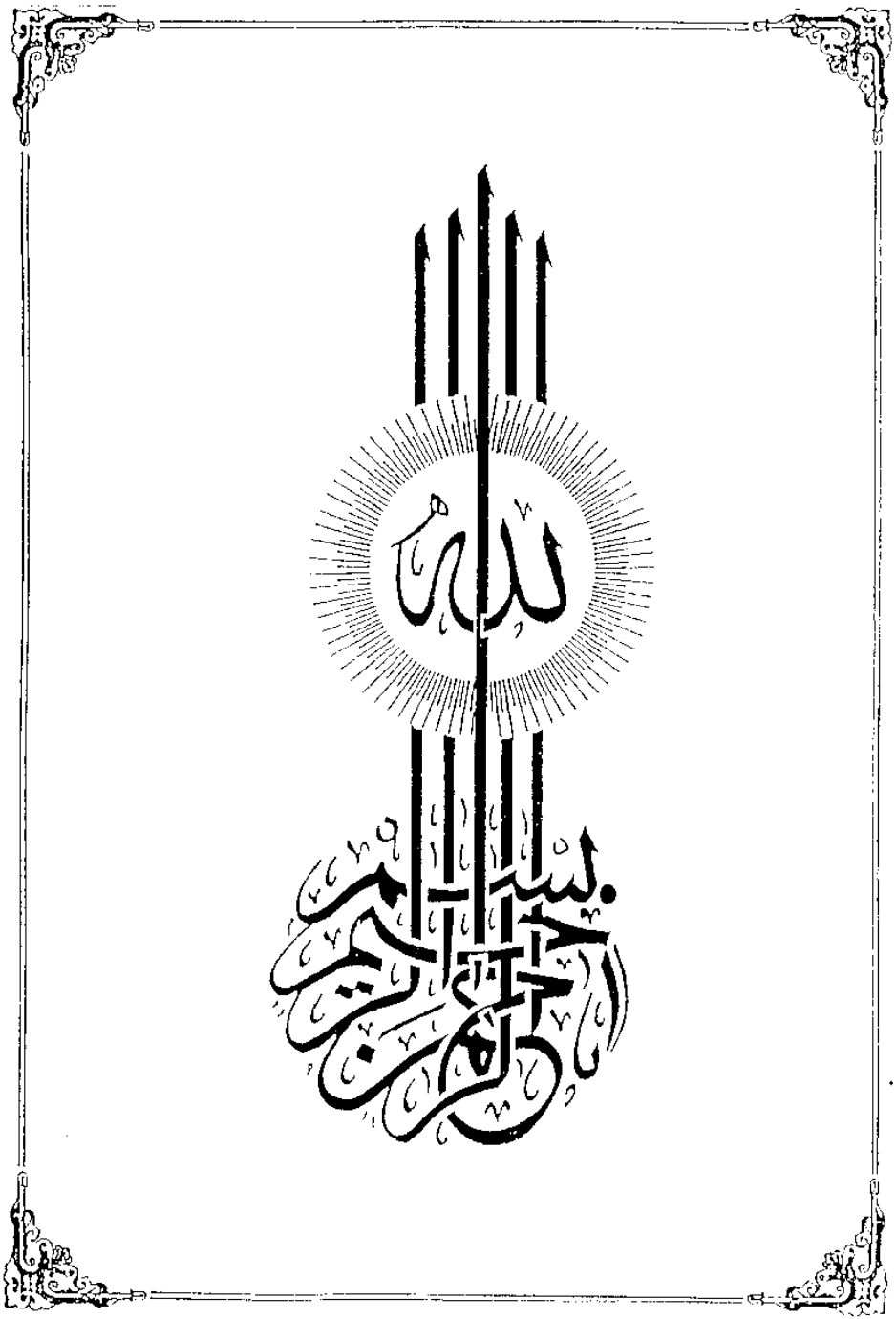

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STATEMENT

This dissertation is submitted to Ain Shams University for the degree of M.Sc. in Civil Engineering.

The work included in this thesis was carried out by the author in the departmrnt of Structural Engineering ,Ain Shams University, from October 1986 to March 1990.

No part of this thesis has been submitted for a degree or a qualification at any other university or institution.

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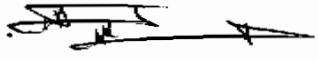
Signature : 

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Abstract: Geotechnical design of earth embankments was conventionally based on the overall stability of the embankment and its foundation against failure. This traditional approach does not give any direct information about the magnitude and distribution of the deformation within the embankment and its foundation during or after construction. Review of previous studies indicated the great potential of numerical methods for predicting such deformation.

This thesis presents a parametric study, using the finite element method, to investigate the main factors controlling the deformation of the embankment and its yielding foundation. Different constitutive models linear, bilinear and nonlinear models, were employed. An algorithm for predicting nonlinear deformations is suggested and factors affecting the predicted deformation were parametrically investigated. Furthermore, results of the finite element analysis were compared with field measurements compiled during construction of an earth embankment resting on stratified foundation.

Keywords : *Earth embankment, Yielding foundation, Finite Element Method, Constitutive Models, Deformations, Field measurements*

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