سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

سامية محمد مصطفى

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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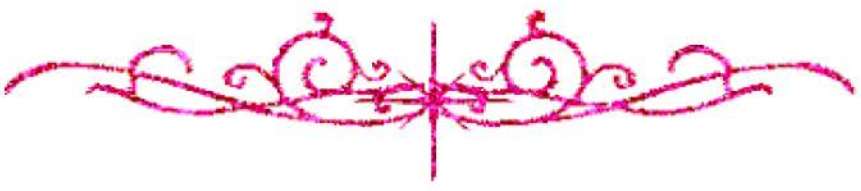

سامية محمد مصطفى

شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

LOAD RESPONSE OF REINFORCED SIDE SLOPES AND EMBANKMENTS

By

Mohamed El-Sayed El-Naggar

A Dissertation
Submitted to the Faculty of Engineering through
Civil Engineering Department
in Partial fulfilment of the Requirements for the
degree of Doctor of Philosophy at the
University of Alexandria

Alexandria, Egypt
1995

We certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a dissertation for the degree of Ph.D. of science.

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ABSTRACT

This dissertation is concerned with the stability of reinforced soil embankments and slopes. The study was carried out on reinforced embankments subjected to a strip loading aligned parallel to the slope crest. Effect of both vertical and horizontal loads and different cases of loading were considered. Different embankments geometries; spacing between reinforcements in vertical, horizontal and transverse directions; embankment heights; degrees of slope; and, reinforcing element lengths were studied. The tensile force distributions in the reinforcing elements, displacements of the slope facing elements, displacements at the foundation-embankment interface and the change of both stresses and strains within the soil mass were also investigated.

A total of five models including fifty experiments were tested up to failure. The results of these tests were used to investigate the improvements in the load carrying capacity of the embankment due to the presence of reinforcement and to verify the finite element modelling. The results from the finite element model showed good agreement with those obtained from the experimental work. Therefore, an extensive analytical parametric study for all the parameters pertaining to reinforced soil embankments was conducted to examine the behaviour of the structure. Design equation for predicting the maximum tensile

force within the embankment was proposed.

Triaxial tests were carried out on reinforced and unreinforced soil cells to investigate the mechanical properties of the soil. A simplified procedure to determine the initial modulus of elasticity, angle of internal friction and cohesion of both reinforced and unreinforced soil was presented.

TO MY PARENTS,

MY WIFE & MY DAUGHTER

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