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لم ترد بالأصل

HOSSAM MAGHRABY

ALEXANDRIA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF IRRIGATION AND HYDRAULICS

THE BEHAVIOUR OF ANCHORED SCREW PILES TO RESIST VERTICAL AND HORIZONTAL PULL-OUT PRESSURES

A THESIS SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE

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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 Master of Science.

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TO
MY FATHER

In Appreciation And Gratitude For
Everything

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Synopsis

The necessity of knowing the characteristic behaviour of the screw anchor subjected to pull-out loads, either vertically horizontally, or inclined after failure, is the main target of the present work.

For this, a new system of loading was proposed, utilizing a compression spring to manifest the load through a tie rod to the screw anchor. The corresponding loads, after the elastic failure, were recorded. Extra pull-out spring displacements were applied and the loads were recorded and plotted against corrected depths.

Skin friction values, with the depth of embedment, as the main resisting force after the elastic failure, were computed for the vertical pull-out loads.

The existence of skin friction on the planes of failure is responsible, mainly for a stable resisting force between 70% to 80% of the maximum elastic load.

The new system of loading facilitated the experimental studies for horizontal and inclined pull-out after failure.

At the end of every test, sand removal in layers was carried out up to zero load.

Relations between the resisting forces, i.e. the loads, and the depths were given for the three positions of pull-out : the vertical, the horizontal and the inclined at 45°.

The effect of submergence and the upward seepage flow on horizontally pulled out anchors embedded in sand are also presented for failure and after failure conditions.

The presence of skin friction as the main resisting force for saturation and upward seepage flow conditions, after failure, is presented, but with an apparent decrease in the soil shear strength.

TABLE OF CONTENTS

1-2 : Inclined and Horizontal Anchors