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A STUDY OF THE PROTECTION OF RIVER BANKS AGAINST EROSION

By

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A Thesis
Submitted for the Fulfillment
of the Requirements for the Degree of
Master of Science
in Civil Engineering

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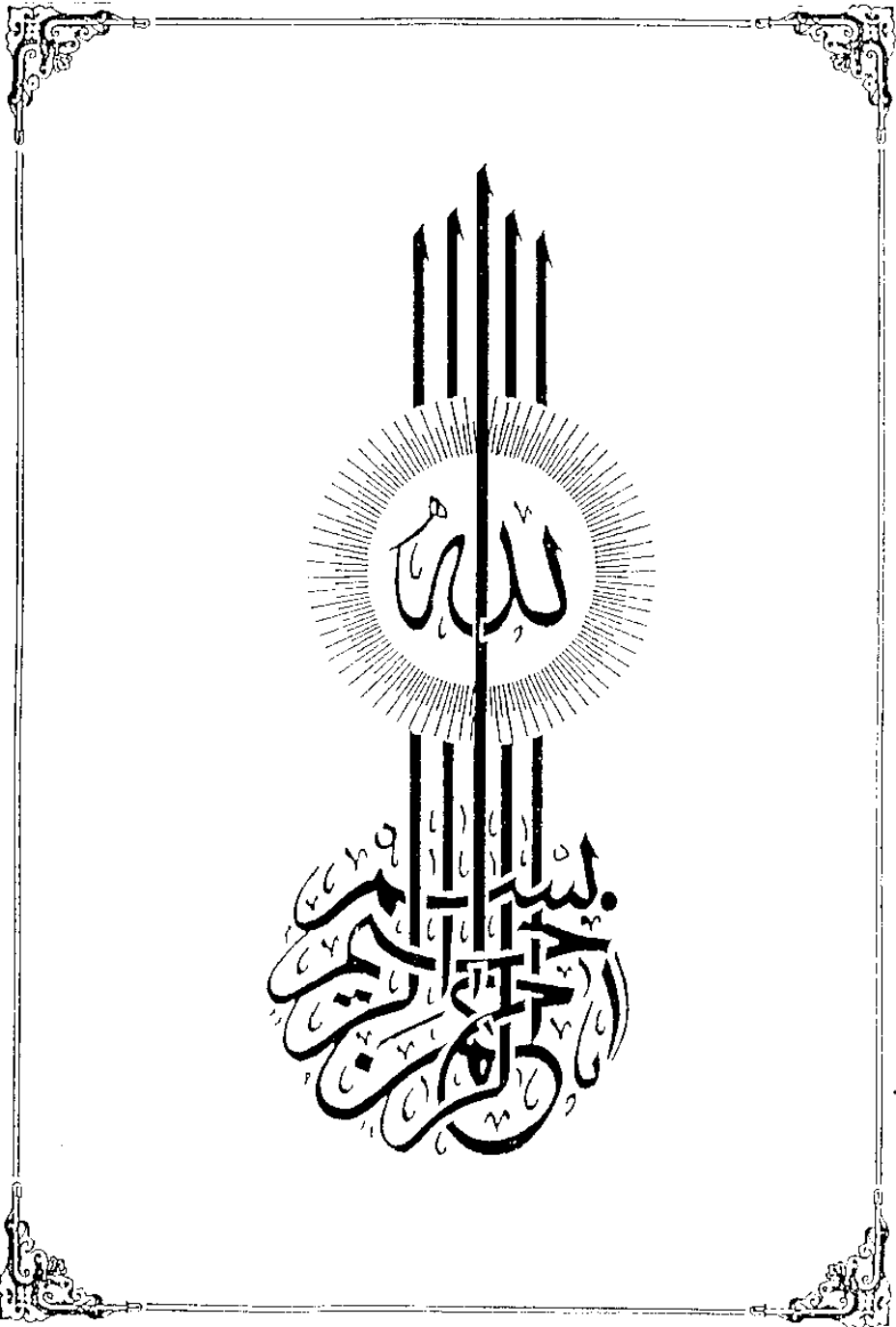
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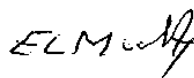
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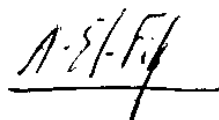
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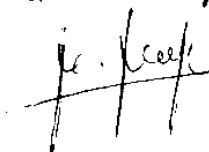
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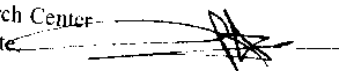
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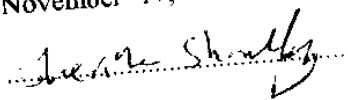
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STATEMENT

This dissertation is submitted to Ain Shams University for the partial fulfillment of the requirements for degree of Master of Science in Civil Engineering.

The work included in this thesis was carried out by the author in the Department of Irrigation and Hydraulics, Ain Shams University, from April, 1992 to November, 1997.

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

Date	:	November 17, 1997
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To
my parents,
my dear husband Khaled,
and my lovely daughter Aysel

Finally words are not enough to express my thanks for my dear husband *Khaled*, and my lovely daughter *Aysel* for their endless love, care, continuous encouragement and support which provided great aid for the accomplishment of this work. To all of them, I would like to present this dissertation.

A STUDY OF THE PROTECTION OF RIVER BANKS AGAINST EROSION

ABSTRACT

This study was performed to analyze the factors affecting the bank erosion. The Nile River banks were selected for this analysis by studying many eroded sites and their condition from 1982 to 1990's. These sites were distributed all over the Nile course in Egypt and the analyses include most of the associated parameters causing bank erosion. An erosion analysis was performed for these selected sites and the results were tabulated to present the changes occurred in the Nile River Banks through the period of 1982 to 1990's. In addition to the erosion analysis a complete morphological analysis for these sites was studied. These analyses include many parameters such as: river bed changes, river bends, river contractions and expansions, cross sectional areas, cross sections top width, movement of the lowest points of cross section throughout the years, and how much close is the navigation path from the banks. The analyses also include the banks soil characteristics and their effect on the bank's erosion. These sites are classified according to the major reasons causing the erosion. One of the most effective causes for the bank erosion was found to be the ship waves effect; for this reason it was simulated by an extensive laboratory testing program. The effect of ship waves was tested under different ship speeds and different bank slopes. The results of this experimental analysis were presented in this study. The conclusions of the experimental program are also presented at the end of the analysis for different ship speeds and different banks side slopes.

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