

AIN SHAMS UNIVERSITY
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**WAVE ENERGY DISSIPATION
BY USING
FLOATING BREAKWATER**

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A Thesis
Submitted in Partial Fulfilment
for the Requirements of the Degree of
**MASTER OF SCIENCE
IN CIVIL ENGINEERING**

Supervised by

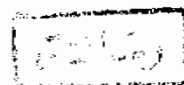
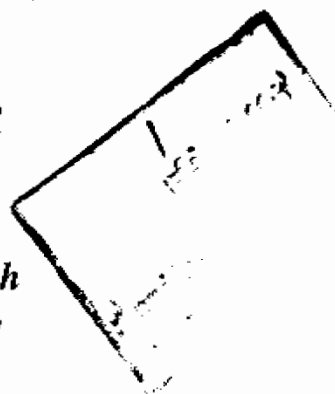
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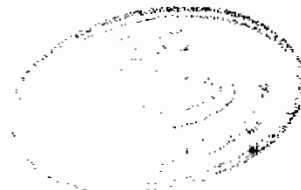
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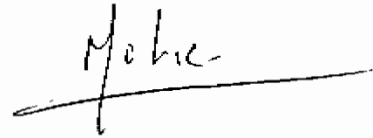


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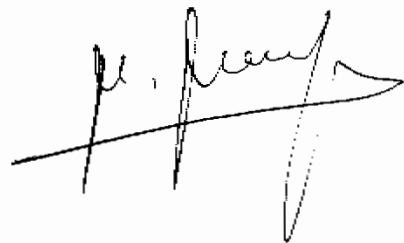


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STATEMENT

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

The work included in this thesis was carried out in the department of Irrigation and Hydraulics, Ain Shams University from December 1991 to May 1994.

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

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Dedication

To my parents: my beloved mother and my dearest father, without whose love, encouragement and prayers I could not have continued with this study.

To my husband, Eng. Ahmed Soltan, without his help, advice, and encouragement this work would not have been possible.

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Summary

WAVE ENERGY DISSIPATION BY USING FLOATING BREAKWATER

The study presents a two dimensional hydraulic model investigation for the box type floating breakwater behavior. The thesis is devoted to the following main objectives:

- Study the effect of the floating breakwater characteristics on the amount of dissipated, transmitted, and reflected energy from the breakwater.
- Comparison between the efficiency of four different breakwaters in cross sectional shape (Rectangular, Trapezoidal, Inverted Trapezoidal, and Thin Inverted Trapezoidal) in order to show the effect of the different parameters of shape on the breakwater behavior.
- Comparison between two immersing systems (Immersion by Tension, and Immersion by Weights) on the breakwater efficiency.

The thesis consists of five chapters and is arranged as follows:

Chapter 1: Introduction

This chapter contains a general introduction to the research, and describes scope and objectives of the study.

Chapter 2: Literature Review

This chapter discusses the concept and historical background of the different types of breakwaters. The characteristics, advantages, and disadvantages of each type are also discussed. A detailed investigation of floating breakwater is presented.

Chapter 3: Modeling and Experimental work

This chapter discusses the experimental phase of this study. It presents a summarized discussion of the modeling approach and the experimental procedure. It also includes a description of the experiment apparatus components and its calibration process.

Chapter 4: Results and Analysis

This chapter presents a parametric analysis of the experimental results. It also contains linearly regressed empirical equations, curves relating the different variables and technical comments on these curves.

Chapter 5: Comments, Conclusions, and Results

This chapter presents a classification of the possible errors and their sources. It also presents the conclusions revealed by the study containing the effect of relative draft, shape parameters, and method of immersion on the amount of dissipated, transmitted, and reflected energy of waves. Recommendations for future researches are also introduced.

Appendices

Consist of references and tables of measuring and calculated quantities.

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