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AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING

INVESTIGATION AND DESIGN OF
MITER-TYPE LOCK GATES

Thesis submitted in the
partial fulfillment of the
requirements for the degree of
Master of Science

By

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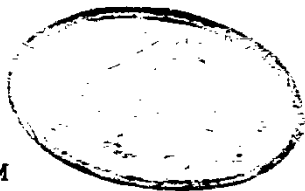
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1989

ACKNOWLEDGEMENTS

The author wishes to express his sincere gratitude to his supervisor Prof. Dr. MOHAMED W. ABDELSALAM for his keen interest , constant encouragement , and valuable guidance during the course of the work described in this thesis. The author also greatly acknowledges the valuable discussions and useful suggestions presented by Dr. ABDELKAWI A. KHALIFA and Dr. ABDELRAHIM K. DESSOUKI.

My sincere thanks are also due to Prof. Dr. MOHAMED M. GASSER, Director of the Hydraulics and Sedimentation Institute for his continuous encouragement and facilities presented during the execution of this work.

Thanks are also expressed to Prof. Dr. MOHAMED ELNIAZI , head of the Hydraulics and Irrigation Department , Ain Shams University , for all facilities presented by the department.

A great deal of assistance has been provided by the Irrigation Sector at El-Gharbia Governorate which is greatly acknowledged.



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 by the author in the Department of Hydraulics and Irrigation , Ain Shams University, from October 1986 to April 1989.


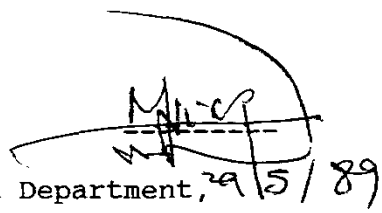
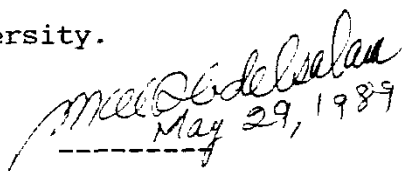
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ABSTRACT

The present thesis is planned to provide more detailed information on the miter type lock gates analysis. Moreover, the study deals with the effect of the drawbacks during operation or execution on the stresses and deformations of the gate. The classical analysis can not give a deep view for these effects. So, a theoretical analysis applying the finite element method (using the SAP80 Program) has been applied to some gates with different dimensions and properties. Moreover, this finite element model is verified in order to check it against real data from the field. As a conclusion from the analysis of results obtained from the finite element model , the major reason of the gate tilting and failure is that the miter post is not completely coinciding for the two gates.

In addition, the finite element analysis is applied to the miter type lock gate for the new Naga Hammadi lock which is being currently erected at the Upper Egypt. This gate will be the highest miter gate in Egypt. The effect of the drawbacks which, may occur during the execution or operation of this gate, on the stresses at the different elements of the gate are studied.

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