AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING

EFFECT OF BLAST LOADINGS ON THE STRUCTURAL BEHAVIOUR OF BUILDINGS

THESIS
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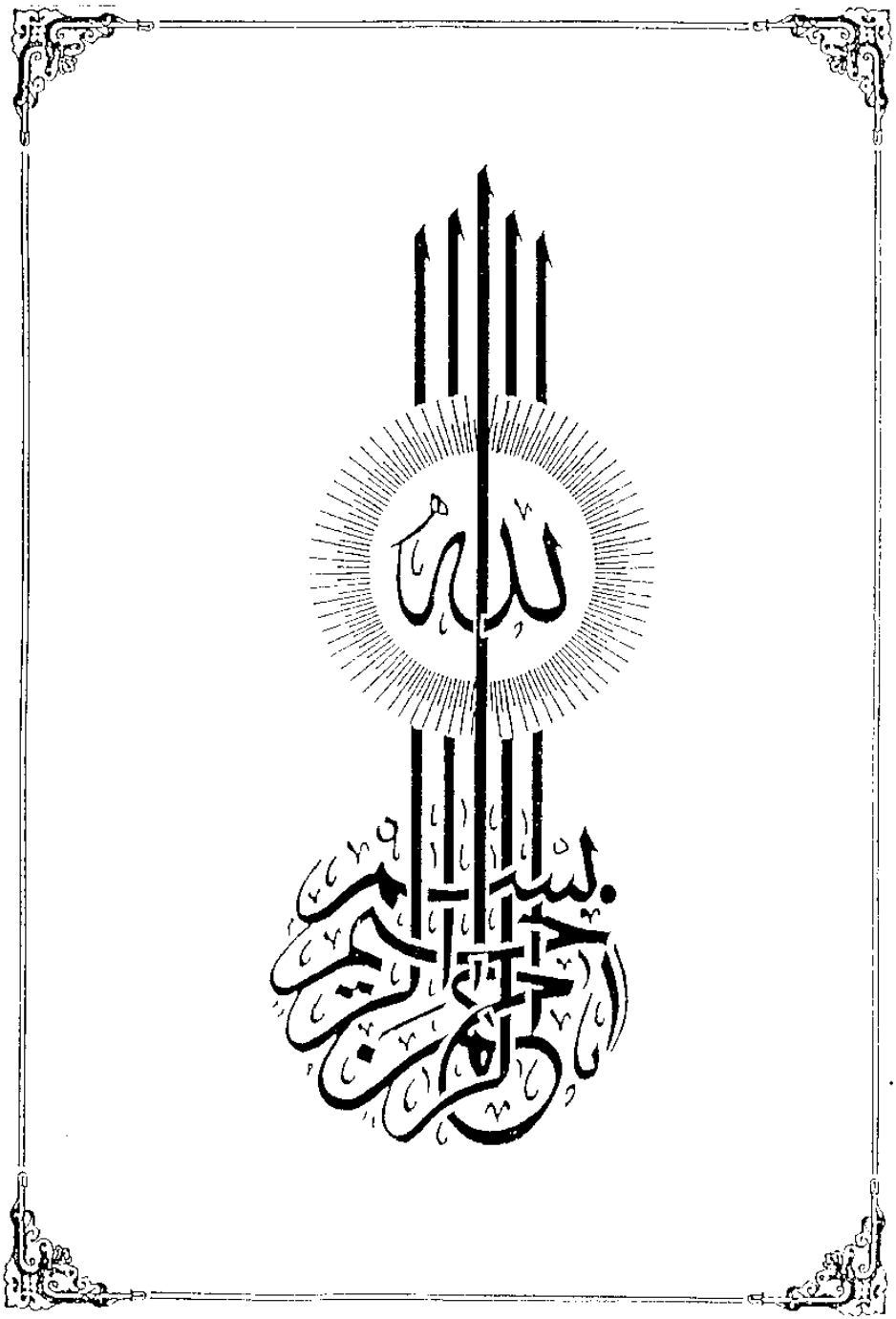

STATEMENT

This thesis is submitted to Ain Shams University for the degree of Master of Science in Civil Engineering (Structural Department) .

The work included in this thesis was carried out by the author in the Department of Structural Engineering , Ain Shams University , from December 1991 to September 1995 .

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

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ABSTRACT

The thesis starts by giving a background introduction about the ingredients and characteristics of the chemical explosives and the behaviour of the output gass pressures or seismic vibrations . The factors affecting the transmision of these outputs are illustrated either the explosion is in air, underground , or underwater . Also , the thesis presents some of the previous theoretical models for simulating the explosion load and denoting the procedures for these methods to calculate all characteristics of this load . The thesis presents an experimental work which was carried out by the researcher in different locations to record the dynamic load output from some explosions by using special measuring instruments at different distances from the explosion source . A discussion of these experimental results compared with the theoretical models results (including analytical study for all parameters affecting the loading behaviour) is presented . Some numerical applications to calculate the structures response due to explosions are illustrated using the available theoretical models through a computer program written in fortran language to simulate the dynamic response of stuctural elements . Finally , the thesis conclusions are presented .

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