COMPUTRIZED DESIGN TOOL FOR POST-TENSIONING SLABS

By

Anas Abdulhkim Aburawwash Abdulhkim

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements for the Degree of

MASTER OF SCIENCE
IN
STRUCTURAL ENGINEERING

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Under the Supervision of

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FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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COMPUTRIZED DESIGN TOOL FOR POST-TENSIONING SLABS

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Post-tensioning slabs; Boundary element method; Graphical user interface

Summary:

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Dedication

I dedicate this thesis to my infinitely wonderful Father, Mother, Brothers and Sisters:

Abdulhakim Aburawwash

Rokaya Mohammed Elsayed

Abdulrahman Aburawwash

Ahmad Aburawwash

Mohammed Aburawwash

Abdulla Aburawwash

Safa Aburawwash

Zeinb Aburawwash

Table of Contents

List of Tables

List of Figures

Abstract

In this thesis, a new software "PTDesign" is developed for systematic analysis and design of post-tensioned slabs based on the boundary element method. A full integrated and user-friendly environment is developed using a versatile GUI language (Visual Basic), which allows the user to: First: place pre-stressing cables on slabs (editing it through built-in template with actual cable profiles), second: visualize contours before and/or after the pre-stressing effects, third: check stresses and design of user-defined strips in any direction, and finally industrial and practical post-tensioned slab are analyzed and designed through the PTDesign and compared with results achieved similarly from commercial software.