

**FINAL YEAR PROJECT REPORT  
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**COMPUTER PROGRAM DESIGN ON  
PRECAST PRESTRESSED HOLLOW SLAB**

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## TABLE OF CONTENTS

<b>TITLE</b>	<b>PAGE</b>
ACKNOWLEDGEMENTS	i
TABLE OF CONTENTS	ii -iii
LIST OF TABLES	iv
LIST OF FIGURES	v
LIST OF SYMBOLS	vi
ABSTRACT	vii
<b>CHAPTER 1</b>	
1.0 INTRODUCTION	1
1.1 Objective And Scope Of Work	1
<b>CHAPTER 2</b>	
2.0 LITERATURE REVIEW	2 - 3
2.1 Special Features & Meries Of Spiroll Hollows	4 - 6
Core Slabs	
<b>CHAPTER 3</b>	
3.0 METHODOLOGY	7 - 11
<b>CHAPTER 4</b>	
4.0 DESIGN REQUIREMENT FROM BS 8110	12
4.1 Concrete	12
4.2 Steel	13
4.3 Loss Of Prestress	13

## ABSTRACT

In designing PHCS ( Precast Hollow Core Slab ) using manually it will take more time, cost and others constraints. Therefore, the aim of this project is to develop a computer programme for analyse, design and choose the best size using PHCS and it is also friendly used. It will be easier for the consultant engineers, architects, Quantity Survey (Q.S) and those interested to used to used the programme.

The language programme going to be used is MS-DOS QBasic. This is because is simpler and easier to used compare to any other computer language.

This programme is mainly for PHCS with simply supported and cantilever slab. Which are subjected to dead load, imposed load and line load.

The main constraint is that the PHCS is designed only for one - way spanning simply supported only. This is because the ratio of  $l_y/l_x > 2$  (According to BS 8110 : Part 1: Clause 3.5.3). where  $l_y$  the longest span and  $l_x$  the shorter span. The supported condition are fixed supported, pinned supports and roller.

The main finding will be to determine the maximum span of PHCS that the slab can catered which are satisfied for bending, shear and deflection. This also to design the PHCS according to the client need. Another finding is to find the suitable size of PHCS subjected to the loading being by the client.

## **1.0 INTRODUCTION**

Precast-Prestressed is a technique for inducing a state of pre-compression in a slab of sufficient magnitude and distribution to counteract the tensile stresses which arise from the external loading system.

As a result of Precast-Prestressed, the concrete section will invariably be state of full compression under serviceability loads conditions and flexural cracking will not occur at the underside of the slab. Precast-Prestressed also helps to control and minimise the development of shear cracks.

The computer as a design aid for Precast-Prestressed concrete provides a means of carrying out the numerical calculations both quickly and accurately. Interacting with the computer the designer will be able, in the short space of time, to consider more options than would generally be possible to consider using manual methods. More optimised and efficient design solutions therefore become a possibility. Development of this program is attributed to such factors as recent advances in microcomputer software technology.

### **1.1 Objective and Scope of work**

The main objective of the project is to develop a computer program for the preliminary design of Precast-Prestressed Hollow Core Slabs for simply supported and cantilever slab, which is subjected to dead load, imposed load and line load.