

DESIGN OF A TWO STOREY RESIDENCE

by

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Project Report

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## SUMMARY

The present report deals with the structural analysis and design of the following sections of a two-storey residence :

- a) Slabs
- b) Staircase
- c) Beams
- d) Columns
- e) Foundations

Of course, some errors or omissions may be found in this report, but we hope that the reader will find it understandable and in this that the intention was to offer this work as a starting point for further study and research.

## INTRODUCTION

The object of this project was to carry out the structural analysis and design of all the members of the residence.

Proceeding with the design calculations, particular stress was given to follow the correct design procedure of all kinds of reinforced concrete structural members consisting the building. This was succeeded by following strictly the rules that govern the design in BS 8110.

Of course, some errors, or omissions may be found in this report, but we hope that the reader will show understanding having in mind that the intention was not to offer solutions, but to create a start for further study and research.

$a$	: characteristic depth of slab
$b$	: imposed load
$b$	: overall depth of column
$l$	: loaded length of beam
$l$	: effective length of a member
$l_e$	: effective height of a member
$l_{ex}$	: effective height in respect of the major axis
$l_{ey}$	: effective height in respect of the minor axis
$l_n$	: clear height between two floors
$l_x$	: length of shorter side of a slab
$l_y$	: length of longer side of a slab
$M$	: design ultimate moment
$M_x$	: design ultimate moment about the x-axis
$M_y$	: design ultimate moment about the y-axis
$M$	: design axial load
$S_x$	: spacing of links
$V$	: design shear force
$v$	: design shear stress at a cross-section
$v_c$	: design concrete shear stress
$\alpha_1$	: cement coefficients for two-way slabs

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