

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING COURSE

DIPLOMA PROJECT

DESIGN OF THE ELECTRICAL SERVICES

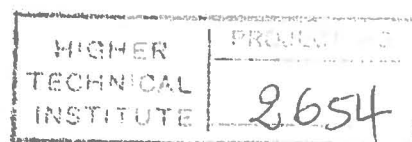
DEDICATED TO MY FAMILY

OF A MULTISTOREY BUILDING

E / 1063

CHRISTOFOROU ANNA

JUNE 1997



ABSTRACT

This report deals with the analysis electrical installation of a residential building and the objectives are:

- a) To design the complete electrical installation.
- b) To study the illumination engineering work involved.
- c) To provide all necessary diagrams, schedule of materials and costing including labour.

The design was carried out according to:

1) The E.A.C supply is 415/240V, 50Hz.

2) The LEE regulations (16th edition).

3) The CIBS code for designing the lighting system.

=====

DEDICATED TO MY FAMILY

AND REAL FRIENDS

=====

ABSTRACT

This project deals with the complete electrical installation of a multistorey building and the objectives are:

- a) To design the complete electrical installation.
- b) To study the illumination engineering work involved.
- c) To provide all necessary diagrams, schedule of materials and costing including labour.

The design was carried out according to :

- 1) The E.A.C supply i.e 415 / 240V , 50Hz.
- 2) The I.E.E regulations (16th edition).
- 3) The CIBS code for designing the lighting load.

ACKNOWLEDGMENTS

PAGES

I would like to express my sincere thanks to my project supervisor Mr. Georgios Kourtellis for his guidance and valuable advice during the whole process of this project, and the useful information about electrical installations learned to us through lectures during the three years in the H.T.I.

1.2 Wiring

1.6 Methods of earthing

1.6.1 Direct or solid earthing

1.6.2 Residual current devices

CHAPTER 2. INSULATION & TESTING..... 163

2.1 Introduction

2.2 Visual inspection

2.3 Testing

2.3.1 Continuity of ring final circuit conductors

2.3.2 Continuity of CPC and metallic parts

2.3.3 Insulation resistance

2.3.4 Polarity test

CHAPTER 3. ILLUMINATION DESIGN..... 201

3.1 Introduction

3.2 Methods of calculation

3.3 Definitions and terms

3.4 Procedure of illumination design

3.5 Examples of illumination design

3.6 Levels of illumination design

CONTENTS

	PAGES
CHAPTER 1 : EARTHING -----	1 - 8
1.1 Introduction	
1.2 Types of system earthing	
1.3 TT System	
1.4 Earth Fault Loop Impedance	
1.5 Boiting	
1.6 Methods of earthing	
1.6.1 Direct or solid earthing	
1.6.2 Residual current devices	
CHAPTER 2 : INSPECTION & TESTING -----	9-12
2.1 Introduction	
2.2 Visual inspection	
2.3 Testing	
2.3.1 Continuity of ring final circuit conductors	
2.3.2 Continuity of cpc and metallic parts	
2.3.3 Insulation resistance	
2.3.4 Polarity test	
CHAPTER 3 : ILLUMINATION DESIGN -----	13-21
3.1 Introduction	
3.2 Methods of illumination	
3.3 Definitions and units	
3.4 Procedure of illumination design	
3.5 Examples of illumination design	
3.6 Tables of illumination design	

CHAPTER 4 : LIGHTING DESIGN----- 22-28

4.1 General information-assumptions

4.2 Calculations for lighting cct L6 on ground floor

4.3 Tables

CHAPTER 5 : SOCKET OUTLETS & COOKER UNIT----- 29-39

5.1 Introduction

5.2 Typical calculations for a ring circuit

5.3 Tables for sockets

5.4 Electric cooker unit design

CHAPTER 6 : TELEPHONE INSTALLATION DESIGN----- 40-47

6.1 Definitions

6.2 Underground and overhead connection

6.3 Conduit size use in telephony

6.4 Table of telephone installation design

6.5 Conduit schematic

6.6 Wiring schematic

6.7 Table for telephony

CHAPTER 7 : CENTRAL ANTENNA SYSTEM----- 48-52

7.1 Introduction

7.2 Single line diagram for central antenna system

7.3 Calculations

CHAPTER 8 : DISTRIBUTION BOARDS & SUPPLY CABLES----- 53-61

8.1 Overload Protection

8.2 Fault level calculations

8.3 Tables showing the current demand for each phase

8.4 Supply Cables

CHAPTER 9 : COSTING----- 62-64

9.1 Importance of proper costing

9.2 Table of material cost

9.3 Labour cost

CHAPTER 10 : SINGLE LINE DIAGRAM----- 65-68

CHAPTER 1
EARTHING