



# HIGHER TECHNICAL INSTITUTE

## ELECTRICAL ENGINEERING COURSE

### DIPLOMA PROJECT

E. 1129

## DESIGN OF THE ELECTRICAL SERVICES AND SPECIALIZED ELECTRICAL SERVICES OF A LUXURY HOUSE

PETROS SAVVA

JUNE 1998

HIGHER TECHNICAL INSTITUTE	PROJECT NO. 2864
----------------------------------	---------------------

**DESIGN OF THE ELECTRICAL SERVICES  
AND SPECIALIZED ELECTRICAL SERVICES  
OF A LUXURY HOUSE**

By, Savva Petros

Project report submitted to the department of Electrical Engineering of the Higher Technical Institute Nicosia, Cyprus in partial fulfillment of the requirements for award of the diploma of Technician Engineer in Electrical Engineering

Project Supervisor: Mr. A. Georgiou  
Lecturer in Electrical Engineering at H.T.I.

**June 1998**



## Table of contents

	Page
Dedication-Acknowledgment	
Introduction	1
Chapter 1- Lighting Circuits ✓	3
Chapter 2 - Socket Outlet Circuits ✓	33
Chapter 3 - Fixed Appliances ✓	46
Chapter 4 - Storage Heaters ✓	56
Chapter 5 - Air Conditions ✓	65
Chapter 6 - Swimming Pool Lights, Motors & Swing gates ✓	74
Chapter 7 - Supply cable & Distribution Boards ✓	88
Chapter 8 - Earthing & Inspection And Testing ✓	99
Chapter 9 - Central Antenna Network ✓	107
Chapter 10 - Telephone Network ✓	111
Chapter 11 - Emergency Lighting ✓	119
Chapter 12 - Lightning Protection ✓	123
Chapter 13 - Burglar Alarms ✓	128
Chapter 14 - Fire Alarms ✓	132
Chapter 15 - Costing	138
Conclusions	144
Appendix 1 - Tables From IEE Regulations	
Appendix 2 - Tables From Other Sources	
Appendix 3 - Material Leaflets	
Drawings	

To

*All my family and especially to my parents for their help and support the offered me with love and understanding throughtout my years at the H.T.F.*

## **ACKNOWLEDGEMENT**

I would like to express my thanks to all that have helped throughout this project and especially my project supervisor Mr. A. Georgiou

## **INTRODUCTION**

This project deals with the design of the electrical and specialized electrical services of a luxury house.

In the Part A of the project the electrical services of the luxury house will be designed.

This services include:

- (i)
  - \* Lighting design
  - \* Power Design
- (ii)
  - \* Central antenna network
  - \* Telecommunications system

In the Part B of the project the specialized electrical services of the luxury house will be designed.

This services include:

- (i)
  - \* Emergency Lighting
  - \* Lightning Protection
  - \* Burglar Alarms
  - \* Fire Alarms

The design will be carried out according to:

- (i) The 16th edition of the IEE Regulations
- (ii) At the designing of the lightning protection, the burglar and fire alarms the British Standards BS 6651, BS 4737, BS 5839 will be used accordingly.
- (iii) In the designing of the telecommunications services the CyTA regulations will be followed

## **Assumed height of the various loads and switches**

- 1) All power distribution boards are considered to be at a height of 1.75 m
- 2) The socket outlets are at a height of 0.5 m
- 3) All the switches of the fixed loads are at a height of 1.5 m
- 4) The socket outlet's which are placed over the kitchen's bench, are at a height of 1.5 m
- 5) The lighting points are mounted on the ceiling at a height of 3.0 m
- 6) The wall mounted lamps in the bathrooms, the verandahs and the front porch are at a height of 2.5 m
- 7) All the switches of the lighting circuits are placed at a height of 1.5 m
- 8) The extractor fan in the kitchen is at a height of 2.5 m and it's switch at a height of 1.5 m
- 9) The air-conditioners switches are at a height of 0.5 m
- 10) The EAC meter, fuse and RCCB are at a height of 1.75 m
- 11) The sensors of the security and fire alarm systems are at height of 3 m