

HIGHER TECHNICAL INSTITUTE  
ELECTRICAL ENGINEERING DEPARTMENT  
DIPLOMA PROJECT

DESIGN OF THE ELECTRICAL SERVICES  
OF AN OFFICE BLOCK

E. 1262

BY: THEMISTOCLEOUS CHRISTOS

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# DESIGN OF THE ELECTRICAL SERVICES OF AN OFFICE BLOCK

SUBMITTED BY: THEMISTOCLEOUS CHRISTOS

E.1262

## PROJECT REPORT

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Project supervisor: Mr. J. Demetriou  
Consultants contributed: Mr. Lakis Josephides, Mr. G. Anayiotos  
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# SUMMARY

**PROJECT TITLE:** DESIGN OF THE ELECTRICAL SERVICES OF AN OFFICE BLOCK

**SUBMITTED BY:** THEMISTOCLEOUS CHRISTOS

**OBJECTIVE:** The main objectives of this project are shown below:

- I. To design the complete electrical services of an office block which will include the following.
  - a. Lighting design (illumination design)
  - b. Power design
  - c. Power factor correction
  - d. Fire alarm systems design
  - e. Telecommunications systems design
  - f. Lightning Protection design
- II. To provide all necessary diagrams and detailed drawings.

According to these objectives the project was carried out and the best possible solution was given.

Firstly the illumination design was investigated and assessed in accordance to the C.I.B.S code and luminaries were chosen to ensure a good operation and complied with installation standard NFC 15100.

In addition, lighting and power circuits were designed in accordance to the I.E.E wiring regulations 16<sup>th</sup> edition, calculations were made, illustrated and tabulated.

Therefore, the fire alarm system was designed in accordance to BS 5839 and also the lightning design was executed in accordance to NFC17 102 British Standards.

Moreover, for the Telephone and Internal communication design, structure cabling system was designed in accordance to ISO/IEC DIS 11801 Generic cabling for customer premises and ANSI/EIA-TIA 568 British Standards and relied to Cyprus Telecommunications Authority requirements.

# INTRODUCTION

Before the execution of the electrical services, it must be mentioned that the building uses a raised floor and false ceiling through which the power and electrical services of the installation are allocated.

Therefore, the whole building is distributed by a substation where its position was chosen via an agreement between the owner, electric consultant and contractor, and E.A.C to be in the basement floor for a good and accurate operation.

However, the whole project includes general theoretical points on the objectives followed by the actual practical suggestions, which are carried out with reference based on the building's drawings provided, and on various standards that are internationally accepted.

In addition, the design is completed by the selection of proper equipment to satisfy the requirements of relevant standards.

Moreover, the whole building consists of a basement, Ground, Mezzanine and First floor and therefore, the main body of this design includes ten chapters where results and tables are given for the complete installation design.

- Chapter 1:** It deals with the Illumination method design where the correct number and type of luminaries is determined.
- Chapter 2:** It deals with the Fundamental requirements of an electrical installation that must be taken into account.
- Chapter 3:** It deals with the Technical specifications of the electrical installation where types, sizes and an overview of components used are determined.
- Chapter 4:** It deals with the Samples calculations of typical circuits.
- Chapter 5:** It deals with Maximum demand, diversity and fault level calculations of the building.
- Chapter 6:** It deals with the appropriate Inspection and Testing on completion of the electrical installation.
- Chapter 7:** It deals with the necessary Power Factor correction system.
- Chapter 8:** It deals with the Fire Alarm system design where the necessary requirements are taken into account.
- Chapter 9:** It deals with the Lightning protection system design where the necessary requirements are taken into account.
- Chapter 10:** It deals with the Telecommunication system design through where the communication needs of the building are provided.

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