# DESIGN OF THE ELECTRICAL INSTALLATION OF BANK OF CYPRUS GROUP OF ADMINISTRATIVE HEADQUARTERS BUILDING

by

#### **IOSIF PARIS**

Project Report Submitted to the Department of Electrical Engineering of the Higher Technical Institute Nicosia Cyprus in partial fulfillment of the requirements for the diploma of

### **TECHNICIAN ENGINEER**

in

### ELECTRICAL ENGINEERING

#### JUNE 1994



#### ACKNOWLEDGEMENT

)

I would like to express my thanks to my project supervisor Mr. Ch. Chrysafiades for his guidance and assistance given throughout the project period.

I also express my appreciation to Mr. St. Nicolaides and to the staff of the consultant office S. NICOLAIDES for their valuable advices in Electrical Installation Designing during my third module of my third year training.

P. losif

#### **SUMMARY**

This project deals with the design of the electrical installation of BANK OF CYPRUS GROUP ADMINISTRATIVE HEADQUARTERS BUILDING.

The project is divided into four parts:

In the first part all the technical information related to illumination design are presented (definitions, design methods, the actual design and its results).

In the second part the testing and earthing system are examined extensively.

The third part which is also the main part of the project covers the actual design of the electrical installation and the results of each part of the design.

The fourth part contains all the necessary leaflets and tables used during the designing.

The whole design is made in accordance to the relevant regulations concearning each part of the design.

# CONTENTS

Page

X

Acknowledgement Summary Introduction

# **CHAPTER 1 ILLUMINATION**

| 1.1 | General                              | 1 |
|-----|--------------------------------------|---|
| 1.2 | Definitions                          | 1 |
| 1.3 | Methods of illumination calculations | 3 |
| 1.4 | Actual design                        | 5 |

### **CHAPTER II EARTHING SYSTEM AND TESTING**

| 2.1 | General                     | 30 |
|-----|-----------------------------|----|
| 2.2 | Earthing System Definitions | 30 |
| 2.3 | Testing                     | 34 |

## **CHAPTER III ELECTRICAL DESIGN**

| 3.1   | Introduction                            | 39 |
|-------|---|----|
| 3.2   | Lighting                                | 41 |
| 3.2.A | Circuit Arrangements                    | 41 |
| 3.2.B | Actual Design                           | 45 |
|       | Sample calculations for third floor     |    |
| 3.2.C | Sample calculations for G.F.            | 48 |
| 3.2.D | Sample calculations for Basement        | 50 |
| 3.2.E | Results of Lighting calculations        | 52 |
| 3.4   | Power                                   | 54 |
| 3.4.A | Socket Outlets                          | 54 |
|       | Sample calculation for third floor      |    |
| 3.4.B | Sample calculations for G.F.            | 59 |
| 3.4.C | Results of Socket Outlets calculations  | 62 |
| 3.4.D | Cooker unit                             | 64 |
| 3.4.E | Refrigerators and dish washing machines | 66 |
| 3.4.F | Microwave oven                          | 68 |
| 3.4.G | Final Results for cooker, refrigerator, |    |
|       | dish washing machine and microwave oven | 70 |
| 3.4.H | Water pumps supply                      | 71 |
| 3.4.1 | Exhaust fan                             | 74 |
| 3.5   | Supply cables                           | 76 |
| 3.5.A | Sample calculations for DB A32          | 77 |
| 3.5.C | Calculations for DB A31                 | 80 |
| 3.5.D | Calculations for DB A33                 | 81 |
| 3.5.E | Calculations for DB AG1                 | 83 |
| 3.5.F | Calculations for DB AG2                 | 84 |
| 3.5.G | Calculations for DB AG3                 | 85 |
| 3.5.H | Calculations for DB A01                 | 86 |

| 3.5.I | Calculations for DB A02         | 86 |
|-------|---------------------------------|----|
| 3.5.J | Calculations for DB A03         | 87 |
| 3.5.K | Calculations for sub-main DB A3 | 88 |
| 3.5.L | Calculations for sub-main DB AG | 89 |
| 3.5.M | Balancing                       | 90 |
| 43.6  | Fault level calculations -      | 91 |
|       |                                 |    |

CHAPTER IV Costing

95

CHAPTER V Conclustion Appendices

105