HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING COURSE

DIPLOMA PROJECT

DESIGN OF THE ELECTRICAL SERVICES OF A RESTAURANT AND SHOPS

E.1160

VASSILIOU ANDREAS, 3E1

JUNE 1998

HIGHER TECHNICAL INSTITUTE
NICOSIA - CYPRUS

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

Academic Year 1997/98

Project Number, E.1160

Title:

Design of the Electrical Services of a Restaurant and Shops

Objectives:

1. To design the complete electrical services of a Resturant and Shops which include the following:

(i) power
(ii) lighting
(iii) telephone distribution
(iv) Central antenna and T.V. system

2. To provide all necessary diagrams schedule of materials and costing including labour.

Terms and Conditions:

1. Three-phase 415 Vrms 50Hz, T.T. earthing system.

2. Architectural drawing will be provided.

3. The IEE Wiring Regulations 16th Edition as currently amended and the local EAC conditions of supply must be complied with.

4. The illumination design must be in accordance with the CIBS code.

5. CYTA requirements to be taken into consideration.

Student : Mr Andreas Vassiliou, 3EL1

Supervisor : Mr G Kourtellis

External Assessor :

GK/ML

CONTENTS

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to my project supervisor Mr. G. Kourtellis for his valuable guidance and assistance given throughout the project period.

I would also like to thank my family that helped me to overcome the difficulties during the project period.

Finally I would like to thank all my friends that encouraged me to finish this project and made company to me up to the morning hours and especially Polina and Melina that helped me with the diagrams and the architecture drawings.

SUMMARY

DESIGN OF THE ELECTRICAL INSTALLATION OF RESTAURANT / SHOPS

Submitted by: Andreas Vassiliou

This project deals with the design of the electrical installation and telecommunications services of a restaurant and shops.

The electrical installation is composed of the design of the lighting and power circuits as well as some other arrangements such as earthing which provides the normal operations of these circuits. The project includes typical calculations of each part of design and analytical tables with the results of the relevant part.

The telecommunication service is composed of the telephone installation.

It is also installed central antenna system in a part of the building.

The whole design was carried out in order to provide the safely operation of the different works for the people working or visiting the building.

All the paths of the conduits and loads are shown on the drawings.

INTRODUCTION

This project as it is stated in its title deals with the electrical installation and telecommunication services of a restaurant and shops.

The electrical design is based on the sixteenth edition of IEE Wiring Regulations and to E.A.C conditions of supply. Also telecommunication design is based on CY.T.A regulations.

The main body of this project is divided into three parts where detailed results are given for the whole installation design.

In the first part a detailed analysis of the electrical design is carried out. This is done in the following chapters:

Chapter I deals to the illumination design of the complex using the Lumens method.

Chapter II deals with the procedure of circuit design.

Chapter III deals with the lighting circuits.

Chapter IV deals with the power circuits that include the socket outlets, the fixed appliances and the air-conditioning.

Chapter V deals with the methods used for earthing the installation.

Chapter VI deals with the distribution boards calculations and with the selection of the proper size of the supply cable to them.

Chapter VII deals with the fault level calculations.

Chapter VIII deals with the methods used for inspection and testing the installation.

The second part includes the telecommunication services and the design of the central antenna system.

Chapter I deals with the basic theory of the telephone distribution system. Also it includes a detailed design of the system with relevant single line diagrams.

Chapter II deals with the installation of central antenna system.

Finally in part three it is given a detailed analysis for the costing of the whole installation. The route of cables is given on the provided drawing and relevant information about the symbols used is given on the attached legends.

Finally at the end of the project four appendices are given with information that covers the three parts of the project.