DESIGN OF THE ELECTRICAL SERVICES

OF A HOTEL

by

Vasilis Economides

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 1991

PROJECT NO. 1814

٠.

AKNOWLEDGEMENTS

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

My thanks and appriciation to Mr. L. Josephides and Mr. M. Nicolaides and also to the staff of Intersol Engineering Ltd. for their help and advice.

Finally, I would like to express my thanks to my mother Mrs. Lena Economidou who has kindly and patiently undertaken the typing of this project.

> Vasilis Economides HTI, June 1991

ABSTRACT

This project deals with the desing of the Electrical Services of a Hotel.

The work has been devided into chapters as follows:

- <u>Chapter 1</u>: This Chapter deals with the illumination design in order to find the levels of illumination for the various areas of the Hotel in accordance with the CIBS code.
- <u>Chapter 2</u>: This Chapter deals with safety and earthing. It describes the methods used for protection against electric shock and the methods used for earthing.
- <u>Chapter 3</u>: This Chapter deals with the Power and lighting circuits in accordance with the IEE regulations as currently amended and the local EAC conditions of supply.
- <u>Chapter 4</u>: This Chapter deals with the isnpection and testing of the installation.
- <u>Chapter 5</u>: It deals with the telephone distribution system of the Hotel in accordance with CYTA requirements.

In each chapter the relevant theory and information is given.

Design calculations were carried out for typical circuits.

The final results of all the circuits are given in tables.

Additional information about the design procedure and materials used is given in the various appendices.

- I -

CONTENTS

PAGE

ABSTRACT	I
INTRODUCTION	ΙI
ASSUMPTIONS AND ABBREVIATIONS	IV
SYMBOL LIST	VI

CHAPTER 1 : ILLUMINATION

1.1.	Introduction	1
1.2.	Units and definitions	1
1.3.	Illumination design procedure	3
1.4.	Actual design	4
1.5.	Explanations conserning the illumination design in some specific areas	6
1.6.	Illumination design results	7

CHAPTER 2 : SAFETY AND EARTHING

2.1.	Safety	17
2.1.1.	Protection against electric shock	17
2.1.2.	Protection against overcurrent	19
2.2.	Earthing	21
2.2.1.	General requirements for earthing	21
2.2.2.	Circuit protective conductor	22
2.2.3.	Equipotential bouding	22

CHAPTER 3 : POWER AND LIGHTING CIRCUITS

3.1.	General	24
3.2.1.	Main Switchgear	24
3.2.2.	Distribution boards	24
3.2.3.	Protection devices	24
3.2.4.	Wiring method and cables used	25
3.3.	Design procedure	25
3.4.1.	Socket outlet circuits	27
3.4.2.	Lighting circuits	35
3.4.3.	Fun coil unit circuits	41
3.4.4.	High power circuits	42

3.5.	Balancing and diversity	46
3.5.1.	Balancing	46
3.5.2.	Diversity	46
3.6.1.	Typical procedure for determining	
	(i) The size and type of the dist.boards	47
3.6.2.	Final results of distribution boards and supply cables	51
3.6.3.	Procedure for determining the main panel and supply cable size and type	52
3.6.4.	Fault level calculations	53
CHAPTER	4 : INSPECTION AND TESTING	
4.1.	General	57
4.2.	Visual inspection	57
4.3.	Testing	57
CHAPTER	5 : TELEPHONE DISTRIBUTION SYSTEM	
5.1.	General	59
5.2.	Basic Princibles govering the internal Telecommunication network	59
5.3.	Telecommunication network	59
5.4.	Installation of the distribution cases	60
5.5.	Installation of the conduit network	60
CONCLUS	IONS	61
REFEREN	CES	62
APPENDI	X 1 ILLUMINATION	
APPENDI	X 2 DISTRIBUTION PROTECTION AND ACCESSORIES USED	
APPENDI	X 3 SINGLE LINE DIAGRAMS AND DRAWINGS	