

HIGHER TECHNICAL INSTITUTE

*ELECTRICAL ENGINEERING COURSE
DIPLOMA PROJECT*

DESIGN OF A RESTAURANT BUILDING

*Rodosthenous Yianna
No. E1093*

*In partial fulfilment of the requirements for the award of
Diploma of Technician Engineer in Electrical
Engineering of the Higher Technical Institute, Cyprus.*

JUNE 1997



SUMMARY

DESIGN OF A RESTAURANT BUILDING

Submitted by : Yianna Rodosthenous

This project deals with the design of the electrical services of a restaurant.

The electrical installation is composed of the design of the lighting power circuits cooker and hand wash circuits, also is composed the design of fire alarm system and telephone installation, as well as some other arrangements such as earthing, testing etc. The project includes typical calculations for each part of design and tables with the results of the relevant part.

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

CONTENTS

	PAGE
ACKNOWLEDGEMENTS.....	I
SUMMARY.....	II
INTRODUCTION.....	III
ASSUMPTIONS MADE.....	IV
ABBREVIATIONS.....	V
REFERENCES.....	VI
<u>CHAPTER 1</u> : ILLUMINATION	1 - 11
1.1. General	1
1.2. Definition And Units.....	1 - 2
1.3. Design Procedure - Lumen Methods.....	3 - 4
1.4. Spacing Of Fitting.....	4
1.5. Advantage Of Good Illumination.....	4 - 5
1.6. Examples Of Illumination Design.....	5 - 7
1.7. Illumination Design Results	8 - 11
<u>CHAPTER 2</u> : PROTECTION , SELECTION OF CONDUCTOR	12 - 15
2.A. Protection	12 - 14
2.A.1. Short Circuit Protection.....	12
2.A.2. Overload Protection	12
2.A.3. Electric Shock Consideration	12 - 13
2.A.4. Thermal Constraints Consideration	13 - 14
2.B. Selection Of Line Conductors	15
2.B.1. General Requirements.....	15
2.B.2. Basic Regulations.....	15
2.B.3. Determination Of Conductor Size.....	15
<u>CHAPTER 3</u> : LIGHTING DESIGN	16 - 20
3.1. Introduction.....	16
3.2. Assumptions.....	16
3.3. Lighting Design Calculation For L4	16 - 19
3.4. Conduit Selection.....	19

CHAPTER 4 : SOCKET OUTLET CIRCUITS.....	21 -26
4.1. Assumptions.....	21
4.2. Socket Outlet Design And Calculations.....	21
4.3.A. Selection Of Phase Conductor	22 - 23
4.3. B. Selection Of c.p.c. Conductor	24 - 25
4.4. Conduit Size Calculation.....	25
4.5. Table - Socket Outlets Results.....	26
CHAPTER 5 : FIXED APPLIANCES.....	27 - 32
5.A. Hand Wash.....	27 - 29
5.A.1. Assumptions	27
5.A.2. Selection Of Protective Device	27
5.A.3. Selection Of Live Conductors	27 - 28
5.A.4. Selection Of c.p.c. Conductors.....	28 - 29
5.A.5. Conduit Size	29
5.B. Cooker Unit.....	30 - 32
5.B.1. Assumptions	30
5.B.2. Selection Of Protective Device	30
5.B.3. Selection Of Live Conductors	30 - 31
5.B.4. Conduit Size	32
CHAPTER 6 : FIRE ALARM SYSTEM	33 - 36
6.1. Introduction.....	33
6.2. Manual Fire Alarm Systems	33
6.3. Automatic Fire Alarm Systems.....	33 - 34
6.4. Detectors Used.....	34 - 35
6.4.1. Smoke Detector.....	34
6.4.2. Heat Detector	34
6.4.3. Flame Detector.....	34 - 35
6.5. Wiring.....	35
6.6. Installation	35
6.7. Table.....	36
CHAPTER 7 : TELEPHONE INSTALLATION	37 - 41
7.1. Definitions Of The Terms Used	37
7.2. General	38 - 41
CHAPTER 8 : BALANCING	42 - 44
8.1. Table - BDB1.....	42
8.2. Table - BDB2.....	43
8.3. Table - GDB	44

<u>CHAPTER 9</u>	: SUPPLY CABLES TO DISTRIBUTION BOARDS.....	45 - 47
9.1.	Supply Cable To BDB1.....	45
9.2.	Supply Cable To BDB2.....	45 - 46
9.3.	Supply Cable To GDB	46
9.4.	Supply Cable To MDB.....	47
<u>CHAPTER 10</u>	: EARTHING	48 - 49
10.1.	Introduction.....	48
10.2.	Methods Of Earthing	48
10.3.	Direct Or Solid Methods Of Earthing	48 - 49
<u>CHAPTER 11</u>	: TESTING	50 - 51
<u>CHAPTER 12</u>	: FAULT LEVEL CALCULATIONS.....	52 - 53
12.1.	General	52 - 53
<u>CHAPTER 13</u>	: SCHEDULE OF MATERIAL AND COSTING.....	54 - 58
13.1.	Introduction.....	54
13.2.	Table - Material Costs.....	55 - 56
13.3.	Table - Labour Cost	57 - 58
<u>APPENDICES</u>	: APPENDIX 1	
	APPENDIX 2	
	APPENDIX 3	
	APPENDIX 4	