HIGHER TECHNICAL INSTITUTE ELECTRICAL ENGINEERING DEPARTMENT

DIPL PROJECT

DESIGN OF THE ELECTRICAL SERVICES
OF SUPERMARKET

by

KOULERMOU MICHALIS E/1 076

- JUNE 1997

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DESIGN OF THE ELECTRICAL SERVICES OF SUPERMARKET E.1076

BY
MICHALIS KOYLERMOU
E3L2

SUPERVISOR: Mr. EFSTATHIOS MICHAEL

JUNE 1997



DESIGN OF THE ELECTRICAL SERVICES OF SUPERMARKET

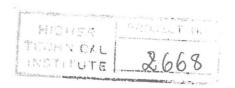
BY KOULERMOU MICHALIS

PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF ELECTRICAL ENGINEERING OF HIGHER TECHNICAL INSTITUTE NICOSIA-CYPRUS

IN PARTIAL FULFILMENT
OF THE REQUIREMENTS
FOR THE DIPLOMA OF TECHNICIAN
ENGINEERING IN ELECTRICAL ENGINEERING

JUNE 1997

PROJECT SUPERVISOR: Mr. E. MICHAEL



CONTENTS

ACKNOWLEDGMENTS

INTRODUCTION

CHAPTER 1	ILLUMINATION DESIGN	L
CHAPTER 2	LIGHTING CIRCUITS	35
CIM ILK 2	DIGITING CIRCOTTO.	43° 48°
CHAPTER 3	SINGLE PHASE SOCKET OUTLET CIRCUITS	58
3.1	Radial Circuits's Calculations	58
		61
3.3	Ring Circuits's Calculations	64
3.4	Three Phase Socket Outlets's Circuits.	72
CHAPTER 4	FIXED APPLIANCES	76
4.1		76
4.2	Bakery Fan Coil Units.	77
4.3		79
4.0	Cooker Appliance	17
CHAPTER 5	MECHANICAL LOADS	84
5.1	Automatic Revolving Doors	84
5.2	Chillers	88
5.3	Refrigerator's Compressor	91
5.4	15hp Goods Lift Motor	93
CHAPTER 6	DIVERSITY FACTOR & BALANCING OF PHASES	95
CIVI WILLIAM C		
CHAPTER 7	FAULT LEVEL CALCULATIONS.	152
CHAPTER 8	ELECTRICITY CONSUMPTION COST	165
CHAPTER 9	TELEPHONY INSTALLATION	169
	THE MAN THE SECOND SECTION SEC	
CHAPTER 10	LIGHTNING PROTECTION SYSTEM	172
CHAPTED 11	EARTHING	189
CHAN INVITE	EARTHING	107

To my family for its support and encouragement during the years of my studies.

ACKNOWLEDGMENTS

This project wouldn't have be done without the support, encouragement, and comments of many people I would like to express my thanks to:

My family whose constant support over the years of my studies enabled me to appreciate the necessity for restless efforts to enjoy the benefits of education.

My supervisor Mr.E.Michael for his assistance and valuable discussions in helping me to work with my project.

All the staff of the Higher Technical Institute that showed enthusiasm and competence during the year of my studies.

My friends whose sustained encouragement and motivation during the endless nights of study kept me working.

INTRODUCTION

The project, as its title states, is the design of the electrical installation of a supermarket (Super-Shopping Center). More specifically the basic aims to study were the following:

- a. Power
- b. Lighting
- c. Telephone Distribution
- d. To provide protection against Lightning strikes.

The lightning load was determined in accordance with the study of the illumination engineering work. During the illumination design care was taken so as all the requirements used to comply with CIBS codes for interior lightning. The selection of the required number, kind of position of any other load had been taken after an examination of the work carried at each area.

In carrying out the design of the whole installation the I.E.E (16th Edition) regulations as well as the local regulations established by the E.A.C were taken into consideration.

The telephony installation was designed considering all C.Y.T.A. requirements and regulations.