

HIGHER TECHNICAL INSTITUTE	PROJECT NO
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HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DESIGN OF THE ELECTRICAL SERVICES OF A LUXIARY HOUSE

E.1440

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INTRODUCTION

TECHNICAL INSTRUCTIONS AND INFORMATION FOR ELECTRICAL INSTALLATION

The execution of work will be done in accordance with the Regulations of the 16th edition of the British Institute of Electrical Engineering.

Provision Of Electricity

- This study conducted for the earthing system TT
- The operating voltage must be AC single phase 50Hz, 240V, or 50Hz 240V/415V three-phase
- The Loop impedance earth short circuit outside the plant should be *about* 1 Ohm without taking into account the earth electrode of the consumer.
- The electric power supply will enter from the main distribution board of the position which seems in the projects
- Distribution boards shall be insulated Class II minimum.
- Where protection against indirect contact would be using RCD, then the total impedance of the short loops of the earth must be less than 200 Ohm. We want it approximately 1 ohm
- The resistance of the electrode shall be such as to satisfy the above conditions.

Insulators (isolator)

- The insulators at a TT system must discontinue all conductors (phase and neutral)
- The insulators must be able to lock the open or closed state to prevent the disabling or activating them accidentally.

The method 3 with single core wire enclosed in conduit is preferable. We assume that C_a , C_i , C_g are equal to 1.

Excepts the standard circuit, in this house will contain lightning protection circuit, decorative lighting, air conditions, security system, fire and bugler alarm, storage heater, central antennas and satellite circuit and motor for swimming pool.

Equipotential bonding is required to connect water pipes, gas pipes to the main earthing terminals.

From the nearest transformer of E.A.C which will provides to the house electricity, its output is 6 kA. So we are going to use mcb's of 6 kA protection fault current.

The electricians have to insert several earth electrodes to earth and connect them together. With that way we try to have resistance to the electrode approximately to 1 ohm. Adding that resistance with the resistance of the wire, we have $Z_{external}$ equals 1 ohms.

Distances of the points from the finished floor:

1. Distribution board - - - > 1.5m
2. Cooker unit - - - > 1.2m
3. Socket outlet - - - > 0.5m
4. Water heater - - - > 1.2m
5. Switches - - - > 1.2m
6. Bell point - - - > 2.2m
7. Bell switch - - - > 1.5m
8. sound surround - - - > 2 m
9. tv points - - - > 0.5m
10. ip points - - - > 0.5m

CHAPTER 1

1.1 Introduction

Chapter 1 is the first chapter of the book. It introduces the subject matter and provides a brief overview of the topics to be covered in the subsequent chapters.

The chapter is divided into several sections, each dealing with a different aspect of the subject. The first section discusses the importance of the subject and the need for a systematic approach to its study.

The second section describes the scope of the book and the objectives of the author. The third section discusses the organization of the book and the relationship between the various chapters.

The fourth section discusses the methodology used in the book and the sources of information. The fifth section discusses the results of the study and the conclusions drawn therefrom.

The sixth section discusses the implications of the study and the need for further research. The seventh section discusses the limitations of the study and the need for a more comprehensive study.

The eighth section discusses the contributions of the study to the field and the need for a more systematic approach to its study. The ninth section discusses the need for a more comprehensive study.

The tenth section discusses the need for a more comprehensive study. The eleventh section discusses the need for a more comprehensive study.

The twelfth section discusses the need for a more comprehensive study. The thirteenth section discusses the need for a more comprehensive study.

The fourteenth section discusses the need for a more comprehensive study. The fifteenth section discusses the need for a more comprehensive study.

CHAPTER 1

CHAPTER 1: ILLUMINATION DESIGN

1.1 Introduction

Illumination is the process of lighting an area or an object. Each area need different amount of light.

The reason for having good illumination is very important, such as:

- Safety
- Production efficiency
- Comfort
- Accuracy improvement

1.2 Units And Definitions

- **Luminous flux, F (Lm):** is the quantity which express the capacity of radiated power to produce visual sense.
- **Luminous intensity, I:** in a given direction is the quotient of the luminous flux emitted by a source in an infinitesimal cone containing the given direction.
- **Quantity of light, Q (Lm/h):** is the product of luminous flux and the time during which is maintain.
- **Illumination or luminance, E (Lm/m²):** is the luminous flux reaching a surface per unit of that surface.
- **Maintenance factor, Nm:** the ratio of illumination from a dirty installation to that from the same installation when is clean.
- **Coefficient of utilization, Nu:** the total flux reaching the working place divided by the total flux.
- **Room index, K:** an index derived from the dimensions of the room and used when calculating the coefficient of utilization of a lighting installation, and it can be found by the formula