HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DESIGN OF THE ELECTRICAL SERVICES AND SPECIALIZED ELECTRICAL SERVICES OF A LUXURY HOUSE

E.1441

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Project report submitted by

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To the department of the electrical engineering of

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Summary

The purpose of the electrical installation project is the design of the electrical services in a luxury house that must be carried out according with
responsibility in order to provide safety to people in it.

The electrical design of the building is carried out according to IIE regulation of the 16 edition.

The design of the electrical services of the luxury house is explained in detail in the main body of the report. At the end of the report appendices are included giving specifications for the devices and equipment used. Eventually detailed architectural drawings are provided showing the locations of the different equipment.

Introduction

Design of electrical services of a luxury house as the title of this project

The objectives of this project are:

- lighting
- power
- telecommunication
- data distribution

To provide all the necessary drawings schedule of material and costing including labour.

Terms and conditions

- Architectural drawings will be provided
- The phase supply is 415v,50Hz and TT earthing system must be used
- The IEE regulation 16 edition and all related local EAC conditions of supply should be considered
- Level of illuminations must be according with the CIBS code
- Telecommunications must confine with CYTA requirements
- In the design of the specialized services all appropriate standards and regulations must be considered.

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Chapter 1 Illumination design

Introduction

Illumination design is the procedure followed in order to provide the proper amount of light in a certain area using proper type of luminaries.

Advantages of good illumination

- Safety
- Production
- Comfort
- Accuracy
- Sales promotion

Definitions of illumination

Luminous flux = F
Illuminance = E
Maintenance factor = Nm
Coefficient utilization = Nu
Room index = K
Length of the room = L
With of the room = W
Mounting plate of the luminaire above working plate = Hm
Number of luminaires = N
Average illumination required = E
Area of room = A

Calculation of a typical case

Bedroom 1 on first floor

Lamp type = 100W 240V E27satin
Lumens flux = 1330 Lm
Illumination level = 50 lux
Maintenance factor = 0.99 (clean room for 6 months between cleaning)
Mounting height = 3m-1m = 2m
Length = 3.45m
With = 3.90m
Area = 13.4m²

K = (L*W)/ Hm (L+W) = 1.3
Nu = 0.32
N = (E*A) / (F*Nu*Nm) = 0.85 (1 fitting)