

**HIGHER TECHNICAL INSTITUTE**

**ELECTRICAL ENGINEERING DEPARTMENT**

**DIPLOMA PROJECT**

**DESIGN OF THE ELECTRICAL SERVICES OF A BANK  
SUB-BRANCH**

by

**IOANNOU IOANNIS**

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**DIPLOMA PROJECT**

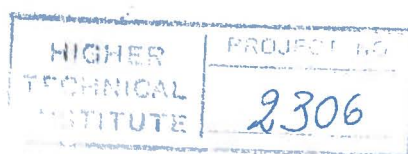
**DESIGN OF THE ELECTRICAL SERVICES  
OF A BANK SUB-BRANCH**

**SUBMITTED BY  
IOANNOU IOANNIS**

**In partial fulfilment of the requirements for the  
diploma award of the Technician  
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*DEDICATED TO MY  
FAMILY AND FRIENDS*

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# DESIGN OF ELECTRICAL SERVICES OF A BANK SUB-BRANCH

## IOANNOY IOANNIS

The purpose of this project is to design the electrical services of a bank such as:

1. Illumination
2. Lighting
3. Aircondition
4. Data Distribution
5. Power
6. Burglar and Fire Alarm
7. Instant hot water
8. Telephony

The building has two floors. (see drawings). The whole work was carried out on the basis of the I.E.E. 16th edition wiring regulations, the E.A.C. conditions and C.Y.T.A. regulations.

The installation is carefully designed to provide safety and proper operation. The materials used are properly selected and erected.

All the equipment installed are protected and are constructed so that to be capable of being maintained, inspected, and tested so as to prevent danger.

All the electrical conductors have sufficient size and current carrying capacity for the purpose they are intended.

Protection against overcurrent and short circuit is provided using miniature circuit breakers (mcb's) and protection against leakage currents is achieved by the use of RCD's. Also RCCB's are used which are a combination of an MCB and RCD.



## INTRODUCTION

The work performed in this project deals with the electrical design and the specialised service design. The specialised services cover the data distribution, fire alarm, burglar alarm, telephony. Of course at the beginning the illumination design is performed.

The installation is at 3m height.

The supply to our installation is a three phase 415V rms 50HZ T.T. system.

The cable used to our installation are PVC single core. The wiring method used is plastic conduit in walls. Also in some cases trunking is used.

The overcurrent protective devices which are used are the type 1, type 2, type 3 miniature circuit breakers to BS3871. The ambient temperature is 30 degrees, except in the instant hot water where I use 40° degrees. One installation method is used: Method 3 (enclosed in conduit on a wall or in trunking).

The external impedance is taken as  $Z_e=0.4$  Ohm and it remains the same at all distribution boards.

The illumination design specifies the accurate number of luminaires used in rooms of the installation.

The electrical design is covered by the main distribution board and 1 auxiliary. Lighting, power, instant hot water and air-conditions are supplied by the auxiliary.

The fire alarm design through the control unit the smoke detectors and the discharge nozzles provides protection against the danger of the fire.

The burglar alarm design through the control unit, the passive infrared detectors the glass break detectors and magnetically operated switches provide protection and security.

The telephone design covers a large scale of telephone points and through the E.P.A.B.X. several operations can be performed. With the data distribution design computer can communicate to each other by the use of modems.

The earthing as well the inspection and testing are carefully studied to provide safety and proper operation.

The costing is carefully planned to give accurate results. For the costing the labour plus other minor costs are also included. The drawings together with the writing part of the project try to give a clear view of how the electrical services of an installation are distributed.

In addition all the calculations done comply with the number of regulation applied in the installation.

Details, catalogues and specifications of the equipment and material used are all provided at the end.