DIPLOMA PROJECT

DESIGN OF THE ELECTRICAL INSTALLATION SERVICES OF A BANK

SUBMITTED BY

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In partial fulfilment of the requirements for the diploma award of the Technician Engineer in Electrical Engineering of the

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Project type: Individual

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INTRODUCTION

The work performed in this project deals with the electrical design and the specialised services design. The specialised services cover the uninterruptible power supply (U.P.S.), fire alarm and telephone design. Of course at the beginning the illumination design is performed.

The installation is of 5m height and there is a fault ceiling located 1m below the true ceiling. Also a cable tray is used for the conduit runs and it is located 0.3m below the true ceiling.

The supply to our installation is a three phase 415Vrms 50 Hz T.T. system.

The cables which are used are PVC copper single core and PVC SWA PVC cables.

The wiring method used is plastic conduit in walls and in cable tray. Also trunking is used. Details for the wiring method are given later.

The overcurrent protective devices which are used are the `Type 1 miniature circuit breakers to BS 3871´. The ambient temperature is 30 degrees.

Two installation methods are used: Method 3 (enclosed in conduit on a wall or in trunking) and method 11 (cable tray).

The external impedance is taken as Ze=0.4 Ohm and it remains the same at all distribution boards. This is because Ze is assumed as the worst case.

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

luminaires mainly used are universal colour fluorescents.

The electrical design is covered by the main distribution board and nine auxiliary distribution boards. Lighting, power and fixed appliances (cooker) circuits are supplied by the auxiliary distribution boards.

The U.P.S. design makes use of the main distribution board, the U.P.S. main distribution board and two auxiliary distribution boards. The above together with the U.P.S. device give uninterruptible power supply to the telephones in the offices and office spaces.

The fire alarm design through the control unit, the smoke and heat detectors and the manual call points provides protection against the danger of a fire.

The telephone design covers a large scale of telephone points and through the E.P.A.B.X. several operations are performed by these telephone points.

The earthing as well as 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 some 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 regulations applied in the installation.

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

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