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**REKAAN PEMASANGAN ELEKTRIKAL DENGAN VOLTAN RENDAH
(BANGUNAN PEJABAT YANG MENGANDUNGI TUJUH TINGKAT)**

ABSTRAK

Projek Tahun Akhir ini mempersembahkan rekabentuk pemasangan sistem elektrik untuk bangunan komersial. Bangunan pejabat yang mengandungi tujuh tingkat telah dipilih untuk projek ini. Sistem pemasangan elektrik termasuk sistem pencahayaan dan sistem pengagihan kuasa. Projek ini mengandungi lukisan reka untuk pencahayaan, soket, litaran untuk lampu dan soket, kabel saiz, pelindung peranti, skematik diagram dan juga bank kapasitor. Semua lukisan reka bentuk bangunan ini direka dengan menggunakan perisian komputer AutoCAD. Rekaan lampu adalah mengikuti pencahayaan yang dihitung manakala rekaan soket outlet adalah mengikuti kedudukan mesin ataupun kedudukan perabot dalam bangunan itu. Pengiraan pencahayaan dan pengiraan beban elektrik perlu dihitung dengan mematuhi peraturan IEE Wiring Regulation 17th, IES lighting handbook dan standard JKR. Keputusannya, sistem pemasangan elektrik untuk bangunan telah berjaya direka dengan penjimatan kos dan pengurusan tenaga yang baik.

ELECTRICAL INSTALLATION DESIGN FOR LOW VOLTAGE SYSTEM (OFFICE BUILDING WITH SEVEN FLOORS)

ABSTRACT

This Final Year Project demonstrated the design of electrical installation system for a commercial building. An office with seven floors has been selected for this project. The electrical installation system included lighting system and the power distribution system. This project included the design of lighting layout, power socket layout, circuiting of the lighting point and power point, lighting switching, cable sizing, protective device, schematic diagram and also design the power factor correction board. Those electrical installations were designed with the AutoCAD software. The design of lighting layout was depending on the illuminance calculation while the power point layout was based on the position of machine or furniture layout of the building. The illuminance calculation and the load calculation were determined by following the standard and regulations of IEE Wiring Regulation Edition 17th, IES lighting handbook and JKR standard and regulation. As a result, the electrical installation system for the building was successful designed with cost saving and well energy management.

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LIST OF SYMBOLS, ABBREVIATIONS OR NOMENCLATURE

C_a	ambient temperature correction factor
C_g	grouping correction factor
C_i	thermal insulation correction factor
C_Y	star connection capacitance
C_Δ	delta connection capacitance
E_{av}	average illuminance required in lux
f_{new}	frequency of the capacitor required
f_{cn}	frequency of the rated capacitor
H_m	mounting height
I_2	operating current for the protective device
I_b	design current
I_n	current rating of protective device
I_t	tabulated cable current carrying capacity
I_z	current carrying capacity of the cable
L	reactor inductance
P	magnitude of real power kW
Q_c	rating of capacitor required kVAR
Q_{new}	capacitor output at V_{new} and f_{new}
S	magnitude of apparent power kVA
V_{cn}	rated capacitor voltage

V_{new}	supply voltage the capacitor required
ACB	Air Circuit Breaker
CoU	Coefficient of Utilization
DB	Distribution Board
DF	Diversity Factor
HV	High Voltage
IEC	International Electro-technical Commission
IEE	Institution of Electrical Engineering
IES	Illuminating Engineering Society
JKR	Jabatan Kerja Raya
LDL	Lighting Design Lumen
Lux	illumination level
LV	Low Voltage
MCB	Minature Circuit Breaker
MCCB	Molded Case Circuit Breaker
MD	Maximum Demand
MF	Maintenance Factor
MSB	Main Switchboard
RCCB	Residual Current Circuit Breaker
SSB	Sub Switchboard
S.S.O.	Switch Socket Outlet
TCL	Total Connected Load
TNB	Tenaga Nasional Berhad
VD	Voltage Drop