STUDIES ON POWER UTILIZATION OF ELECTRICAL SUPPLY DESIGN IN FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING, UITM PUNCAK ALAM

NUR 'ATIQAH BINTI SAMSUDIN 2012717403

FACULTY OF ELECTRICAL ENGINEERING UNIVERSITI TEKNOLOGI MARA MALAYSIA

ACKNOWLEDGEMENT

In the name of Allah, the Most Gracious and Most Merciful.

Foremost, I would like to express my sincere gratitude to Allah S.W.T for giving me strength and passion to complete my research and thesis. Also, thanks to my supervisor Dr Puteri Sarah Mohamad Saad for the continuous support of my study and research. Her patience, motivation, enthusiasm, and immense knowledge much needed for me to complete my research successfully.

Besides that, it would not have been possible to write this thesis without the help and support of the kind people around me. Above all, I would like to thank my parents, brothers, sisters and friends have given me their unequivocal support.

My sincere thanks also go to Puan. Norlaila bt. Omar and Ir.Haji Harizan bin Che mat Haris for their guides along the process to complete my research. Million thanks to consultant engineer in UiTM Alam Bina, Puncak Alam. Not forgotten, the members of Faculty of Electrical Engineering for providing me good facilities in completing this thesis.

Last but not least, my sincere thanks to all my friends that keep helping and supporting me during the process completing this thesis. I hope that all the kindness that be given will be paid back well. Thanks you very much.

ABSTRACT

Electrical supply design in a building has a few considerations to make. First was load, second was the circuit breaker used and third was the cable used. Total Connected Load (TCL) was calculated by taking data at each distribution box. The data collected at the drawing for each room in a building. Second was circuit breaker. Circuit breaker has few types used which were RCCB, MCB, MCCB and ACB. Miniature Circuit Breaker (MCB) was used for circuit from intake to load, Residual Current Circuit Breaker (RCCB) was used for single phase current from 3phase current, Moulded Case Circuit Breaker (MCCB) is commonly and widely used for current less than 800A. For Air Circuit Breaker (ACB), it was used only when the current is above 800A. Third, from calculation of Total Connected Load (TCL) it determines the size and type of cable need to use. To avoid the cable failure, cable size and type must support the supply intake to the load. Cable that been used are armoured and non-armoured. Armoured used for high voltage cable and underground cable. Usually used for supply from Main Switch Board (MSB) to a building Sub Switch Board (SSB). The type cable used for armoured was XLPE. Non-armoured cable was used for low voltage cable. Type that been used was copper. There is one more cable used that is for earth leakage protection which was cpc/ earth leakage cable. Sizing cable used were $2.5mm^2$, $16mm^2$, $50mm^2$, $150mm^2$, $300mm^2$, $400mm^{2}$

CONTENTS	PAGE
APPROVAL	i
DECLARATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
TABLE OF CONTENT	v-vii
LIST OF FIGURE	viii
LIST OF TABLE	ix
LIST OF SYMBOLS AND ABBREVIATIONS	x
CHAPTER 1	
INTRODUCTION	1
1.1 INTRODUCTION	1-3
1.2 RESEARCH BACKGROUND	3-4
1.3 PROBLEM STATEMENT	4-5
1.4 OBJECTIVES	5
1.5 SCOPE OF PROJECT	5
1.6 ORGANIZATION OF THESIS	5-6
CHAPTER 2	
LITERATURE REVIEW	7
2.1 INTRODUCTION	7-8
2.2 CIRCUIT BREAKER	9
2.2.1 Miniature Circuit Breaker	9
2.2.2 Residual Current Circuit Breaker	9-10
2.2.3 Moulded Case Circuit Breaker	11
2.2.4 Air Circuit Breaker	11-12
2.3 CABLE TYPE	12-13
2.3.1 Non-Armoured Cable	13
2.3.2 Armoured Cable	14

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

UiTM Puncak Alam is one of UiTM campus. Due to increasing number of student, UiTM make a new campus for "Kompleks Alam Bina Dan Seni Reka" in Puncak Alam. It is for Faculty of Architecture, Planning and Surveying (FSPU) and Faculty of Art and Design (FSSR).

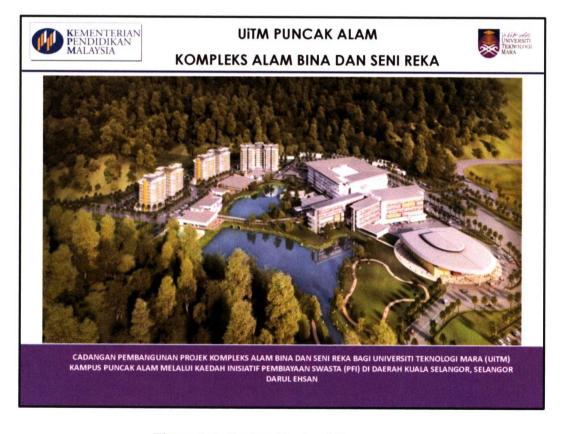


Figure 1.1: Project Design [1]