



**DEPARTMENT OF BUILDING SURVEYING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA**

**BUILDING DESIGN EFFECT RELATIONSHIP TO
MAINTENANCE**

**This academic project is submitted in partial fulfillment of the
requirement for the Bachelor Of Building Surveying (Hons.)**

**NADIA BINTI KAMARUDDIN
(2006699891)**

APRIL 2008

ABSTRACT

Maintenance is important in buildings in order to maximize the life span of building, to reduce the probability of failure in term of performance of the building, to retain value of the property and to make sure a good appearance of the building. Design deficiencies are one of the causes that deterioration occurred. Thus, maintenance aspect should be considered in early stage of building design until the end. This is important to avoid deterioration on building and to avoid problems in maintenance in the future.

The objectives of this research are to find out whether the building design does affect the maintenance work on high rise building and to study the problems of maintenance work regarding the design of the building. For the purposes, postal surveys by hundred questionnaires set were distributed to at least 20 buildings in Klang Valley.

The feedback from the survey of questionnaires, only 48 questionnaires were returned and answered completely by 16 buildings. Then in depth interviews have been made to the selected 4 out of 16 buildings to discuss further regarding to building design effect to maintenance.

The data collected from the respondents were analyzed by using statistic which was the simple graph and pie chart fro the questionnaires. While for the interview the discussion of findings were made where data was analyzed

ACKNOWLEDGEMENT

Alhamdulillah, I wish to give all the praise to Allah All-mighty for giving me the strength, ability, time and confirmation to complete this dissertation as it planned.

I would like to express my sincere gratitude to all persons who have provided assistance to me throughout the duration of this course and succeeding this dissertation, especially to my supervisor Sr. Mahayudin b. Mahmood for his supervision, continual guidance, encouragement, ideas and constructive criticism which was stimulating and inspiring for the writing of this dissertation.

Special thanks to my dissertation coordinator Sr. Mohamad Sufian b. Hasim for his guidance, encouragement and useful advice throughout the duration in completing this dissertation. I would like to thank to all parties who kindly cooperated, answered and gave excellent ideas to my questionnaires.

A million thanks to my family and friends for the support and encouragement from beginning until the end of this dissertation. May ALLAH bless all of you.

Finally, I'm hoping that all the knowledge and experience from this task are well remembered and will be useful in the future.

LIST OF CONTENTS

Abstract	i
Acknowledgement	ii
List of Contents	iii
List of Tables	vii
List of Figures	ix
List of Appendices	x

CHAPTER 1 : INTRODUCTION

1.1	Introduction	1
1.2	Statement of Problems	3
1.3	Research Objective	4
1.4	Scope and Limitation of Research	5
1.5	Research Methodology	5

CHAPTER 2 : INTRODUCTION TO BUILDING MAINTENANCE

2.1	Buildings	7
	2.1.1 Introduction	7
	2.1.2 Classification Uses of Building	7
	2.1.3 Requirement of Buildings	11
2.2	Building Maintenance	14
	2.2.1 Introduction	14
	2.2.2 Concept of Building Maintenance	15

2.2.3	Nature of Maintenance	16
2.2.4	The Economics of Building Maintenance	16
2.2.5	Design and Building Maintenance	17
2.2.6	Consideration of Maintenance at Design Stage	18
2.2.7	The Effect of Design on Maintenance	19
2.2.8	Access for Maintenance	20
2.2.9	New Materials and Construction Techniques	21
2.2.10	Maintenance Planning	22
2.3	Summary	23

CHAPTER 3 : BUILDING DESIGN AND DETERIORATION

3.1	Building Design	24
3.1.1	Introduction	24
3.1.2	The Design Team in Building	24
3.1.3	Duties and Responsibilities	26
3.1.4	Design Decisions	27
3.1.5	The Process of Design	28
3.1.6	Building Shape and Design	30
3.1.7	Detailed Design Consideration	30
3.2	Deterioration of Building	33
3.2.1	Introduction	33
3.2.2	Causes and Agents of Deterioration	34
3.2.3	Deterioration on Effect of Design	39
3.3	Summary	41