



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

**TITLE
BUILDING CONDITION ASSESSMENT: DAMPNES**

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DIPLOMA IN BUILDING SURVEYING**

PRACTICAL TRAINING REPORT

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ACKNOWLEDGEMENT

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Thank you.

ABSTRACT

In this report contains practical about the building condition assessment: dampness. The report is available on methods of practical experience obtained within 4 months of practical training at the construction site based on observation and experimentation. This started a string of practical reports with company background, corporate information, and organizational charts and also followed by a list of current projects and past. Selected case studies in this report is the building condition assessment: dampness of the building defects found during inspection in this building. This defect can also make the building in the event of danger to the occupants or tenants if not repaired or inspected. Next, the most important thing during the work on the building maybe have some problems that occur when the work of the inspection are not repaired by the client. Some of the problems are mentioned in this report and the solutions are also stated too. Overall, this practical report can explain everything about the building condition assessment: dampness done which gain some knowledge.

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1.0 COMPANY BACKGROUND

1.1 BACKGROUND

AMAS FM CONSULTANT SDN. BHD. was established on 9th August 2012 and is registered with Ministry of Finance in the consultancy under Building Surveying section. AMAS FM is a consultant for Building Operation and Space Management Audit, Asset Inventory, Building Hand-over and Building Condition Assessment. Our Objective is to share our vast knowledge and experience in Physical Asset Management in Malaysia. With the support of experience team members, we are responsive to present and future policy and economic.

AMAS FM CONSULTANT SDN.BHD. is supported by knowledgeable and experienced personnel who are ready to provide services and co-operate with public and private sectors. In line with Malaysia's development to new paradigm, we plan to diversify our specialization in the Built-Environment Industry.

1.2 COMPANY LOGO**1.3 COMPANY INFORMATION**

AMAS FM CONSULTANT SDN.BHD.

Registered Address : No.55-A JalanUdang Kara 31,
Off Jalan Hassan, Sungai Udang,
41250 Klang Selangor.

Telephone Number : 03-33815445 (Office)

Hand Phone/WhatsApp/SMS No. : 019-2822820 (Sr. Mutalib)

Fax No. : 03-33815444

Email Address : amasfm@gmail.com

Web Site : www.amasfm.com

Company Registration Number : 1013363W

Consultant Firm Registration Number : J22006724261075241
(Ministry of Finance)

1.4 LOCATION PLAN

AMAS FM
CONSULTANT
SDN, BHD.



Figure 1.1 Maps of Klang.

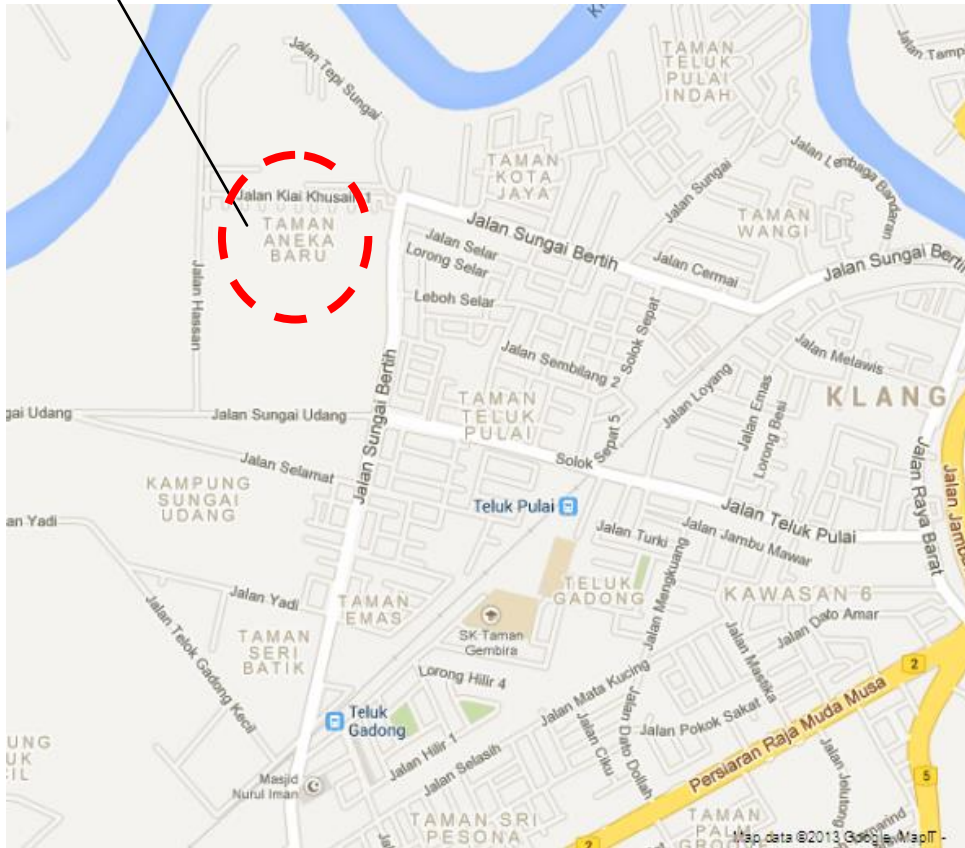


Figure1.2 Maps of location plan.

1.5 COMPANY'S VISION AND MISION

VISION

To be a premier Professional Bumiputra Asset Management Consultancy in-line with our customer and national Vision.

MISSION

To upgrade the Facilities Management and Optimizing Asset utilization in a professional manner adopting industry's best practice, thus giving added value to our customer.

1.6 ORGANIZATIONAL CHART

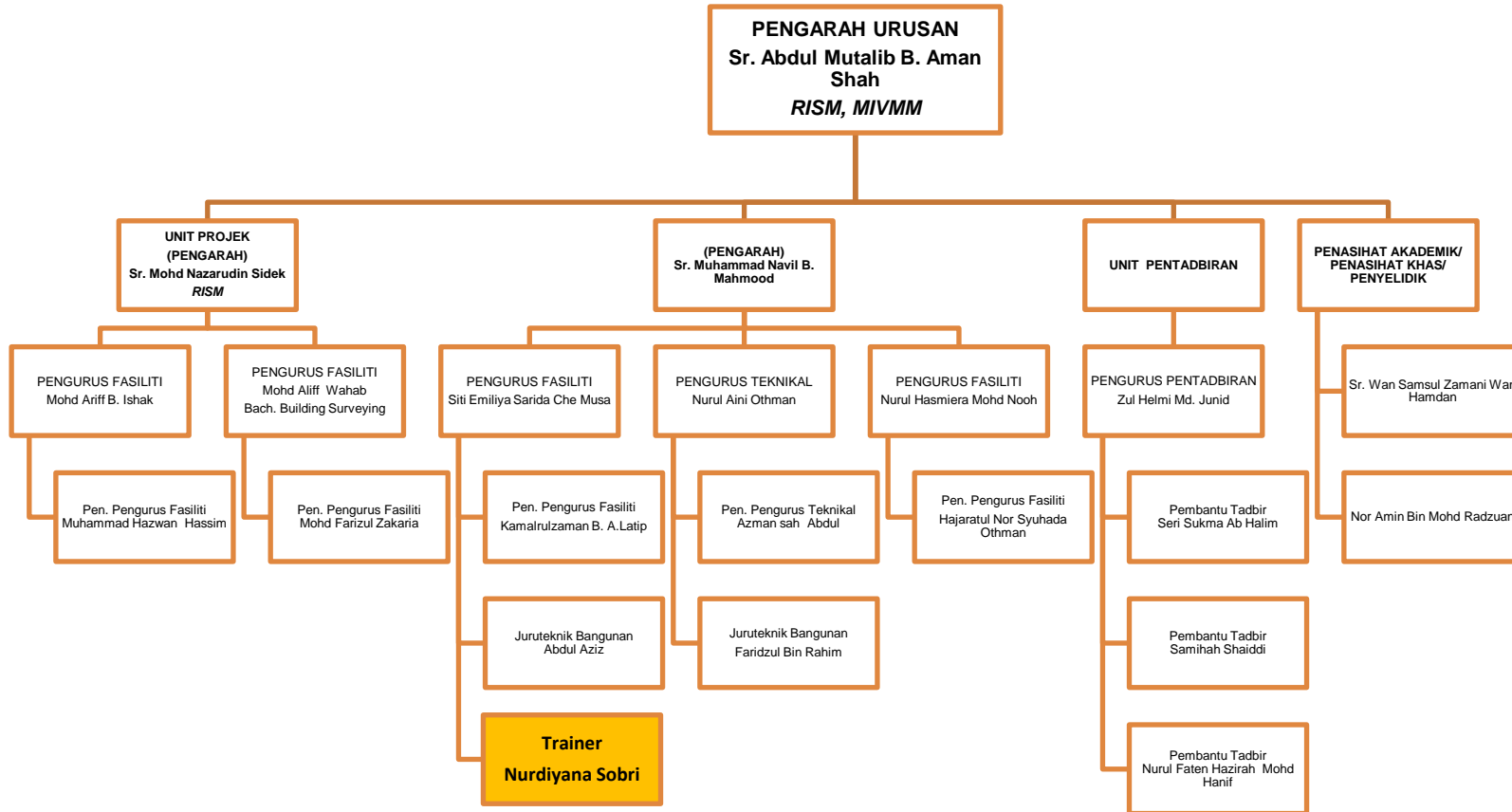


Figure 1.3 Organizational Chart

1.7 COMPANY SERVICES

- I. ASSET MANAGEMENT
 - i. Asset Register
 - ii. Asset Condition Assessment

- II. FACILITY MANAGEMENT
 - iii. Operation and Maintenance Planning & Costing

- III. PROJECT MANAGEMENT
 - iv. Refurbishment works

- IV. SPACE MANAGEMENT
 - v. Inventory
 - vi. Space Audit

- V. BUILDING SURVEYING & BUILDING AUDIT
 - vii. Building Inspection
 - viii. Building Condition Survey & Building Audit
 - ix. Defect Listing
 - x. Building Dilapidation Schedule
 - xi. Hand-over Building

- VI. FM TRAINING
 - xii. Audit Space
 - xiii. Management Space
 - xiv. Asset Register
 - xv. Inventory / Asset Listing
 - xvi. Assessment / Inspection of Building

1.8 EXPERIENCE/CURRENT PROJECT 2012-2013.

No	Jobs Description	Customer / Client
1	Building Management Consultancy at Sri Ixora Apartment, 602 unit at Shah Alam	Jumia Niaga / JMB Sri Ixora
2	Building Management Consultancy at Laguna Biru Apartment, 1224 unit at Kuang Selangor	Jumia Niaga / JMB Laguna Biru
3	Involvement in developing the Best Practice for Space Management at Public Higher Learning Institution, organize by Ministry of Higher Education.	Ministry of Higher Education, Malaysia
4	Internal Consultant for Contractor to Preparation Building Plan, Numbering System and Space Inventory Data for MARA University Technology Shah Alam (UiTM)	Jumia Niaga / UiTM

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5	<p>Dilapidation Survey For Proposed additional And Amendment for Existing Parking Containing Mixed Commercial Development: A) Block A (14th Floor 1 Floor Lobby Hotel Including 1) Hotel - (14th Floor 218 Room/12 Including Floor, B) Block B Incubator (14 vote includes 1 Floor Lobby 1) Office (Sovo) - Unit 180/9 Level 2) Office (Sovo 'Duplex') - 40 Unit / 2 Floor, C) 1 Unit Based Upon chamber Garbage Land Lot PT 23773, No 5, JalanJalan multimedia, Section 40000 Shah Alam, Selangor DarulEhsan.</p>	<p>Sin Seong Hin Sdn. Bhd</p>
6	<p>Building Condition Assessment for Admin Building and Janamanjung 1.</p>	<p>Manjung Power Station TNB Janamanjung Sdn. Bhd</p>
7	<p>Facilitator For General Space Audit Course</p>	<p>Universiti Putra Malaysia</p>
8	<p>Facilitator For General Asset Management Introduction and Building Audit.</p>	<p>Universiti Putra Malaysia</p>

Table 1.1 Experience Project 2012 – 2013

2.0 THEORY ON CONDITION ASSESSMENT

2.1 INTRODUCTION

Condition assessment consists of translating inspection data into one or more meaningful condition metrics, which are then used to support the asset management decision making process. Ideally, the metrics should be robust yet affordable to obtain.

The small number of building condition assessment metrics that have evolved over the years fall into two basic categories: Monetary-derived and engineering-derived. Each metric and approach is discussed below along with their strengths, weaknesses, and applicability to building specific asset management. A lack of such knowledge could result in:

- i. Unnecessary exposure to legal, social and other risks associated with deteriorated facilities, statutory non-compliance and hazardous materials.
- ii. Premature asset failures, shorter useful asset lives, higher repair and replacement costs, all of which ultimately affect service delivery capacity and quality.
Condition assessment generally comprises.
- iii. Physical inspection of a building to assess the actual condition of the building and its individual elements and services (e.g. air conditioning, fire protection), in comparison to the asset owner's specified condition standard.
- iv. Identification of maintenance works required to bring the condition of the building and its services up to, or maintain it at, the specified condition standard ranking of maintenance works in order of priority.
- v. Determination by the assessor of actions to mitigate any immediate risk until remedial works (or other actions) can be taken to address problems.

2.2 SCOPE OF WORK CONDITION ASSESSMENT

The condition survey is being done by followed the scope of work:

- i. To inspect building defects level.
- ii. To analyse the seriousness of building defects.
- iii. To show the defects indication plan.

2.3 PURPOSE OF WORK

The purpose of the building condition or defects survey by a Professional Building Surveyors is to provide an opinion on the general condition of the building, advice on any urgent or future repairs and the likely consequences of non-repair.

The building condition or defect survey done by a professional Building Surveyor will also assist the buyers or owner to have a good understanding on the condition of the building, as the building survey report provide information on building defects, building hazards and performance, explaining the causes of building defects and recommending the appropriate and effective remedial works.

2.4 METHODOLOGY FOR BUILDING CONDITION ASSESSMENT

2.4.1 CONDITION ASSESSMENT PROTOCOLS

The primary objective of the assessment is to evaluate the present condition of the assets and infrastructure. The Building Condition Assessment ('BCA') state describes the current physical condition of the buildings and identifies existing corrective maintenance repairs along with remedial cost estimates.

In general there are three type of Condition Assessment Protocol, shown in the diagram below;

Condition Assessment Protocols	
Protocol 1	Visual Walk-Thru Assessment
Protocol 2	Non Destructive Testing (NDT) – (capacity and functionality tests)
Protocol 3	Detail Study and Analysis / Destructive Testing (DT)

We will be carrying out Protocol 1 Condition Assessment, i.e. Visual Walk Tru Assessment.

Table 1.2 Condition Assessment Protocol

2.4.2 BUILDING CIVIL ARCHITECTURE (BCA)

The BCA is based on professional judgment and established via generalized visual inspection and observation of the subject elements, systems and asset. A simple but effective condition scoring method used by us. This method provides consistency and repeatability

Condition	Scoring	Description
Very Good	1	New or as new
Good	2	Minor Servicing
Fair	3	Minor Repair / Major Servicing
Poor	4	Major Repair
Very Poor	5	Failed

Table 1.3 Building Civil Architecture

2.4.3 PRIORITY ASSESSMENT

In addition to condition assessment it is recommended to apply a priority assessment methodology. The priority assessment will include the client's priority such as commercial / business image, safety and risks. The purpose of this is twofold, firstly it allows the high priority (most critical) assets to be identified, and secondly it assists in prioritising which assets require attention.

A simple approach is shown in the table below;

Priority	Rating	Description (Work to be carried out within)
Emergency	4	3 hours
Urgent	3	24 hours
Normal	2	72 hours
Renewal	1	> 72 hours (agreed period)

Table 1.4 Priority Assessment

2.4.4 CONDITION PRIORITY INDEX

The formula to determine:

Condition Priority Index = Condition Rating x Priority Rating.

Rating (Index)		Priority			
		Emergency 4	Urgent 3	Normal 2	Renewal 1
Condition	1	4	3	2	1
	2	8	6	4	2
	3	12	9	6	3
	4	16	12	8	4
	5	20	15	10	5

The outcome of the CPI is then grouped in the following category;

Table 1.5 Condition Priority Index

2.5 DAMPNESS

2.5.1 DEFINITION OF DAMPNESS

Any visible, measurable or perceived outcome of excess moisture that causes problems in buildings, such as mould, leaks or material degradation, mould directly measured excess moisture (in terms of relative humidity or moisture content) or microbial growth.

2.5.2 CAUSES BY DAMPNESS

- (a) Ground water
- (b) Rain water and
- (c) Leakages from pipes.

(a) Dampness due to Ground Water for all buildings are founded on soils. Soil holds water for a long time. Sometimes water level may rise and come in contact with foundation. Due to capillary action moisture from ground rises into foundation, floor and even in wall.



Figure 1.4 Dampness due to ground water

(b) Rain Water: May enter the building components due to various reasons.

Firstly, from wall top, if top of wall is not protected with impervious course like concrete, water can enter the wall and keep it damp for a long time. Then it can cause a defect to the building. Furthermore, rain water from face of external wall can make splashing of outer wall by rain results into moisture entering the wall. Poor plaster coat is the main source of this type of dampness. Another reason are because of improper fixing of down pipes system. If down pipes system from roof are not properly fixed, a thin layer of water stagnates near the mouth of down pipes system. This

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results into entry of rain water into roof and wall. Although, Improper slopes to roof in flat roofs, can cause for the dampness of roofs. If slope is not given properly, water ponds are formed on the flat roof, which results into entry of water into slab. Once water enters the slab it remains for long time creating dampness. Other than that are Leakage from Pipes: From over head tanks, pipes are taken over roof and along the wall. From bathrooms, toilets and kitchen water is drained out with different types of pipes. The pipes are joined to get required length and turns. Many times water leaks through joints resulting into moisture in building components.



Figure 1.5 Dampness due to rain water

2.6 DEFINATION OF STAIN

It should be noted that staining maybe attributed to improper design of the building and its facade. The causes of staining are used of details that traps and accumulates dirt. Streak marks are formed when dirt gets washed down along the sides of the painted vertical walls, especially on elastomeric coated wall. Then, the prevention for stain are avoid details and coatings that trap and attract dirt.



Figure 1.6 Stain on ceiling



Figure 1.7 Stain on wall surface

3.0 CASE STUDY

3.1 INTRODUCTION

AMAS FM Consultant Sdn. Bhd. (AFC) was engaged by Etiqa Insurance Bhd to conduct a Building Condition Assessment exercise at Akademi Etiqa. AMAS FM Consultant is a building surveying consultant that provides building surveying and asset management consultancy.

This report is prepared for the Building Condition Assessment carried out for Akademi Etiqa, Jalan Melaka, Kuala Lumpur. Our scope of work carried out includes building structures, ceiling and roof finishes, walls and openings, floor finishes, facade and mechanical and electrical inspection. The inspection is carried out via visual walk-thru.

In this case, the building condition surveys is stages of 3 main criteria which is surveying, assessment and evaluation, which will cover the historical back ground, research, the diagnosis of defect in the structure, fabric and services along with the building construction method, the technology and the material itself.

The inspection data collected at site is then analysed and we then listed out the defects, rectification recommendation and cost estimation. The structure assessments which require further advice by a Professional Engineer, we shall then advise accordingly. The inspection was carried out on both building by Surveyors divided into two groups and followed by Architect and Engineer.

3.2 AKADEMI ETIQA

Figure 1.8.Akademi Etiqa,

Akademi Etiqa, the building is a 27 storey building and located at Jalan Melaka of Kuala Lumpur City. minute nearer with Masjif Jamek LRT Stations and China Town. Surrounded by banks such as Maybank, HSBC, Hong Leong, Bangkok Bank, CIMB, Affin banks. Akademi Etiqa was an offices building and the size of this building are 3809 square feet. Facilities that are available in this building is 24- hour security, CCTV, basement car park, cafeteria and etc.

3.3 ASSESSMENT OF BUILDING AND STRUCTURAL

3.3.1 INTRODUCTION

The physical inspection conducted to covers general condition assessment of building, structural and MEP. Akademi Etiqa Building at Seksyen 32, Jalan Melaka, Kuala Lumpur was constructed sometime in year 2004 as the office building. The building is a 27 storey building including roof top.

3.3.2 GENERAL ASSESSMENT OF BUILDING AND STRUCTURAL

The general condition of the building was sound with little or no evidence of deterioration of the building structures. Structural systems of the building mainly consist of plastered brick on internal and external wall, concrete slab on ground with cement render.

Floor

The floor is constructed of RC with tiles finishes. For office area, various type of finishes has been used depending on tenant. The floor noted that generally the carpet and tiles finishes is in good condition however significant signs of water mark.



Figure 1.9 Water mark on the floor



Figure 2.0 Water mark on the floor

Ceiling

The ceiling is installed with gypsum board, plaster ceiling and soffit slab. That was noted that generally the plaster ceiling and gypsum boards is in good condition however it's noted the ceiling boards at basement, staircase, AHU room and office. Also there are some water marks on ceiling surfaces on chillers room and store at level 7. This is probably due to water leaked from plumbing joint problem.







Figure 2.1 Water mark on ceiling







Figure 2.2 Water mark on ceiling surface

3.4 DEFECT

	Element	System	Asset	Date
Building Akademi Etiqa	Architecture	Ceiling	Soffit slab	
Location : Akademi Etiqa / Level 5 / AHU Room		Ref. No: AR/AE/L5/DSCN2988, AR/AE/L5/DSCN2989		
				
Defect: Water Mark On Soffit Slab				
Remarks: <ul style="list-style-type: none"> • Leaking on plumbing joint 				
Condition	4	Priority	2	Condition Priority Index
Recommendation: <ul style="list-style-type: none"> ○ Check plumbing system ○ Repaint the soffit slab ○ Refer to professional engineer 				

	Element	System	Asset	Date
Building Akademi Etiqa	Architecture	Floor	Floor finishes	
Location : Akademi Etiqa / Level 7 / Chiller Room		Ref. No: AR/AE/L7/DSCN3035, AR/AE/L7/DSCN3038		
				
Defect: Water Mark On Floor Surface				
Remarks: <ul style="list-style-type: none"> • Leaking on plumbing joint 				
Condition	4	Priority	4	Condition Priority Index 16
Recommendation: <ul style="list-style-type: none"> ○ Check plumbing system ○ Remove the stain on the floor surface 				

	Element	System	Asset	Date	
Building Akademi Etiqa	Structure	Ceiling	Soffit slab		
Location : Akademi Etiqa / Level 7 / Chiller Room		Ref. No: AR/AE/L7/DSCN3040, AR/AE/L7/DSCN3041			
					
Defect: Water mark on ceiling surface					
Remarks: <ul style="list-style-type: none"> • Leaking on plumbing joint 					
Condition	4	Priority	4	Condition Priority Index	16
Recommendation: <ul style="list-style-type: none"> ○ Check plumbing system ○ Apply new paint 					

	Element	System	Asset	Date	
Building Akademi Etiqa	Architecture	Floor	Floor concrete		
Location : Akademi Etiqa / Level 7 / Chiller Room		Ref. No: AR/AE/L7/DSCN3066, AR/AE/L7/DSCN3067			
					
Defect: Water Mark On Floor Surface					
Remarks: <ul style="list-style-type: none"> • Leaking on plumbing joint 					
Condition	4	Priority	3	Condition Priority Index	12
Recommendation: <ul style="list-style-type: none"> ○ Remove the stain ○ Check plumbing system 					

3.5 CONCLUSION

Based on my inspection on Akademi Etiqa Buildings which was observed that this building is highly operational with high traffic of people coming in and out of the building during office hour.

Our assessment of Akademi Etiqa building is in fair state of condition. Overall, the building that was assessed, the defects are mainly rated at 2 (minor servicing work) and 3 (minor repair work). the overall rating for all three building is 2.72, fair maintenance with servicing and repair work.

On the major issues, the concern that we raised for this building are mainly on structural integrity at chiller room and AHU room. This building would highly and attend then to upgrade the BCA rating from fair maintenance to good maintenance rating.

4.0 PROBLEM AND RECOMMENDATION

4.1 PROBLEM

- a) This building does not have a planned maintenance schedule or schedule maintenance.
- b) The tenant in this building do not give a good corporation within the time we do this work.

4.2 RECOMMENDATION

- a) We proposed to upgrade Akademi Etiqa planned maintenance. Currently Akademi Etiqa planned maintenance only covers cleaning work. We propose to include painting work and improve cleaning work. From what we see on inspection, most of the structure got dirt stain. This figure are we propose to Akademi Etiqa used.

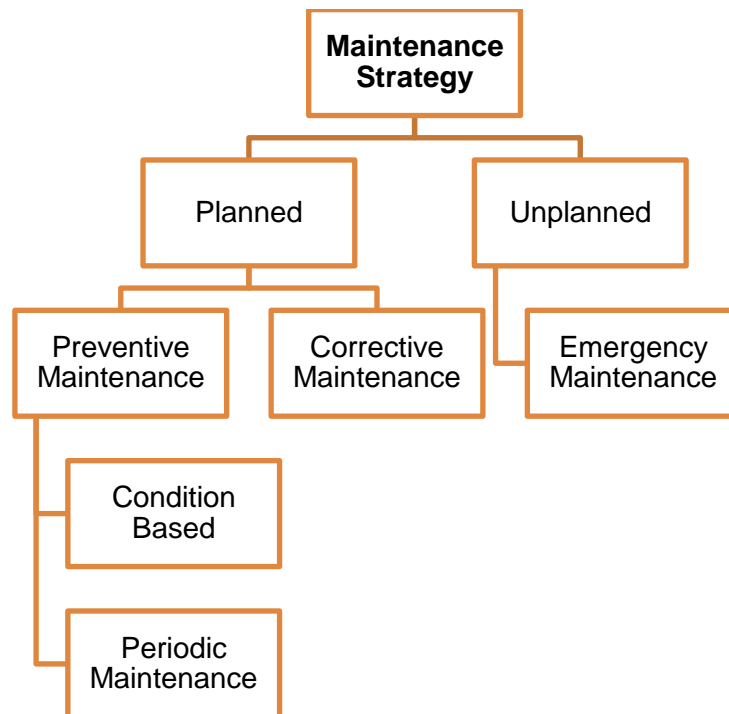


Figure 2.3 Planned and unplanned schedule

- b) We hope that we arrange all the necessary procedures to enter the space in the building running smoothly. And hope the tenants or owners to cooperate so that we can finish the job on time.

5.0 CONCLUSION

For those parties that involve in project condition assessments we need to cooperate well with each other in a group. Consultants that been appointed must work together and done their responsibility with commitment to fulfill client's requirement. Consultants must use their experience to done all the work. The right choice in selecting the type of tender, type of contract and correct method in preparing the pre-cost estimate is so important in order to pertaining the project in good virtue.

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- <http://www.sciencedirect.com/science/article/pii/S0360132303000854>
- <http://www.ckha.on.ca/imagine/presentations/ExecutiveSummaryBuildingAssessment.pdf>

BOOKS

- *Who Guidelines For Indoor Air Quality : Dampness and Mould by World Health Organization*
- *Damp Wall: Ernest George Blake*

PERSONS

- *PENGURUS FASILIT AMAS FM Consultant, Siti Emiliya Sarida Che Musa*
- *PENGURUS FASILIT AMAS FM Consultant, Mohd Aliff Wahab*