UNIVERSITI TEKNOLOGI MARA

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

BUIILDING CONDITION SURVEY AT ETIQA TWINS, JALAN PENANG, 50450 KUALA LUMPUR.

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2010969471
DIPLOMA IN BUILDING SURVEY

PRACTICAL TRAINING REPORT
JUNE 2013 – OCTOBER 2013

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ABSTRACT

Implementation of condition assessment, or condition-based-maintenance, involves many disciplines such as failure analysis, on-line diagnostics, diagnostic data interpretation, management and communication, follow-up corrective actions and lastly the program maintenance.

Guideline for Condition Assessment of the Building envelope provides a guideline and methodology for assessing the condition and performance of existing building envelope system and components, as well as identifying problematic and dysfunctional elements. Failures of the building envelope can result in safety and health problems, as well as structural damage. That is The Standard of basic information, procedures, and references. So, it will be an asset to the investigator developing a logical approach to the assessment of the building envelope in order to focus on fundamental defects rather than outward symptoms.

The benefits of the condition-based maintenance programs lie in elimination of many time-based maintenance tasks, in exchange for maintenance tasks deemed necessary due to the actual condition of the equipment. While the specific condition is always monitored during normal operation, its evaluation serves to better manage the life and therefore the reliability of a specific asset.

ACKNOWLEDGEMENT

I would like to thank the Almighty Allah for giving me chance to complete this industrial training successfully. I have gone through ups and downs throughout this practical. It taught me to become mature and well-trained in the field of my studies. Apart from that, it has also exposed me to experiences which would never gain from the university. This is due to the reason that, meaningful learning is coming from the real experience itself.

Apart from that, I would like to dedicate my appreciation to the company for accepting me and friends to learn and experience the reality of working in this field. It is undeniable that the industrial training has exposed me to many great experiences which were good and bad. However, I believe that all of these will benefit me once I enter the working phase one fine day. Besides, the staffs in the company have given me infinite guidance especially regarding to the course. I would also be happy to dedicate my gratitude to the employer for the never-stop supports and guidance. He has also accepted all the mistakes made during the industrial training. This has definitely motivated me to perform better for the practical and the company. Despite all the hard works, I am happy because the company has put high hopes and trust on me. This could be seen by the countless outstation job opportunities given to me. This clearly told me that the company trust me to do the work that was supposedly done by the more experienced worker.

Next, I would also like to thank my lecturer Sr. Nurul Fadzila Bt. Zahari for all the guidance and help given to me effortlessly. Even though, I hardly consult the lecturer, she has never giving up to guide me during this industrial training. All the knowledge and advices by the lecturer are very important to put me as who I am now. Everything good comes from the lecturer and I really appreciate that.

Last but not least, my special thank you is dedicated to family members and friends for the countless supports and helps in terms of motivations, money and time. It is unquestionable that I am pioneer in this industrial training. There are lots of improvements to be made. Thus, my friends have continuously helped me throughout the practical. Whereas, my family members have never stop motivated me to keep on strive for the success.

CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

Industrial practices program of diploma in building surveyor is a professional learning process that compulsory to be involved in the final semester (6^{th} semester). The program's targets is to provide practical experience to the students in the field of private or government agencies in turn be able to apply theory and practical in the field of development that they have been learned in campus or university respective. With practice and systematic program based on professionalism in the field of development and construction.

Students will undergo industrial practices which involve the governments companies and private sectors. However the practices must revolve around the courses and subjects taken in the college or university. Each and every information must be documented in the form of daily journal. This will be useful as the reference for report writing at the end of the practical. Based on the report, the assessment and marks will be given.

1.1 Aim of industrial practical

The program is to learn a theory and applied in accordance with the current state that emphasize the efficient and productive management to produce a student with self – reliance and ability and competitive in career, both in academic and non-academic with a high professional appearance.

1.2 Industrial practical objectives

The objectives of this practical are to enable the students to:

i. Build a good individual character -communicate effectively.
ii. Practice the techniques and good values of working.
iii. Produce a report on industrial practice.
iv. An occupational exposure and acquisition of knowledge directly (hand-on) from industry through agencies in the public and corporate sectors.
v. A process of student's personal development, particularly in term of preparing themselves for career in the market, particularly in the arts and entertainment industry.
vi. Provide an opportunity for graduates to apply the theory in applied in the context of implementation of tasks and jobs.
vii. Improve the skills, creativity and innovation for the purpose of enhancing student and expansion of knowledge.
viii. To train the students to familiarize themselves before entering the world of work in the field of professional
ix. To ensure that students are able to respond quickly to any problems that may be encountered during the working world

1.3 Objectives of report writing.

The objective of report writing is to an able the students to produce a daily report of the routines throughout the practical. Apart from that, it can be useful to be the reference for future. The report writing can be done by referring to the format and organization provided by the lecturer. Besides, this report writing can be used to document the experiences faced by the trainees during the practical.

1.4 Importance of industrial practical.

It enables the students to experience the real working environment apart from put the theories learned in the university into practices. It also helps the students to gain knowledge on the field of their study.

CHAPTER 2

COMPANY BACKGROUND

2.0 INTRODUCTION

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 specialisation in the Built-Environment Industry.

2.1 COMPANY'S VISION AND MISION

2.1.1 VISION

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

2.1.2 MISI

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

2.2 SERVICE

2.2.1 ASSET MANAGEMENT

i. Asset Register
ii. Asset Condition Assessment

2.2.2 FACILITY MANAGEMENT

i. Operation and Maintenance Planning
ii. & Maintenance Costing

2.2.3 PROJECT MANAGEMENT

i. Refurbishment works

2.2.4 SPACE MANAGEMENT

i. Inventory
ii. Space Audit

2.2.5 BUILDING SURVEYING & BUILDING AUDIT

i. Building Inspection
ii. Building Condition Survey & Building Audit
iii. Defect Listing
iv. Building Dilapidation Schedule
v. Hand-over Building

2.2.6 FACILITY MANAGEMENT TRAINING

i. Audit Space
ii. Management Space
iii. Asset Register
iv. Inventory / Asset Listing
v. Assessment / Inspection of Building Conditions

2.3 COMPANY INFORMATION

Company Name	: AMAS FM CONSULTANT SDN.BHD.
Registered Address	: No.55-A JalanUdang Kara 31, Off Jalan Hassan, Sungai Udang, 41250 Klang Selangor.
Telephone No.	: 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 No.	: 1013363W
Consultant Firm Registration No. (Ministry of Finance)	: J22006724261075241

2.4 ORGANIZATION CHART

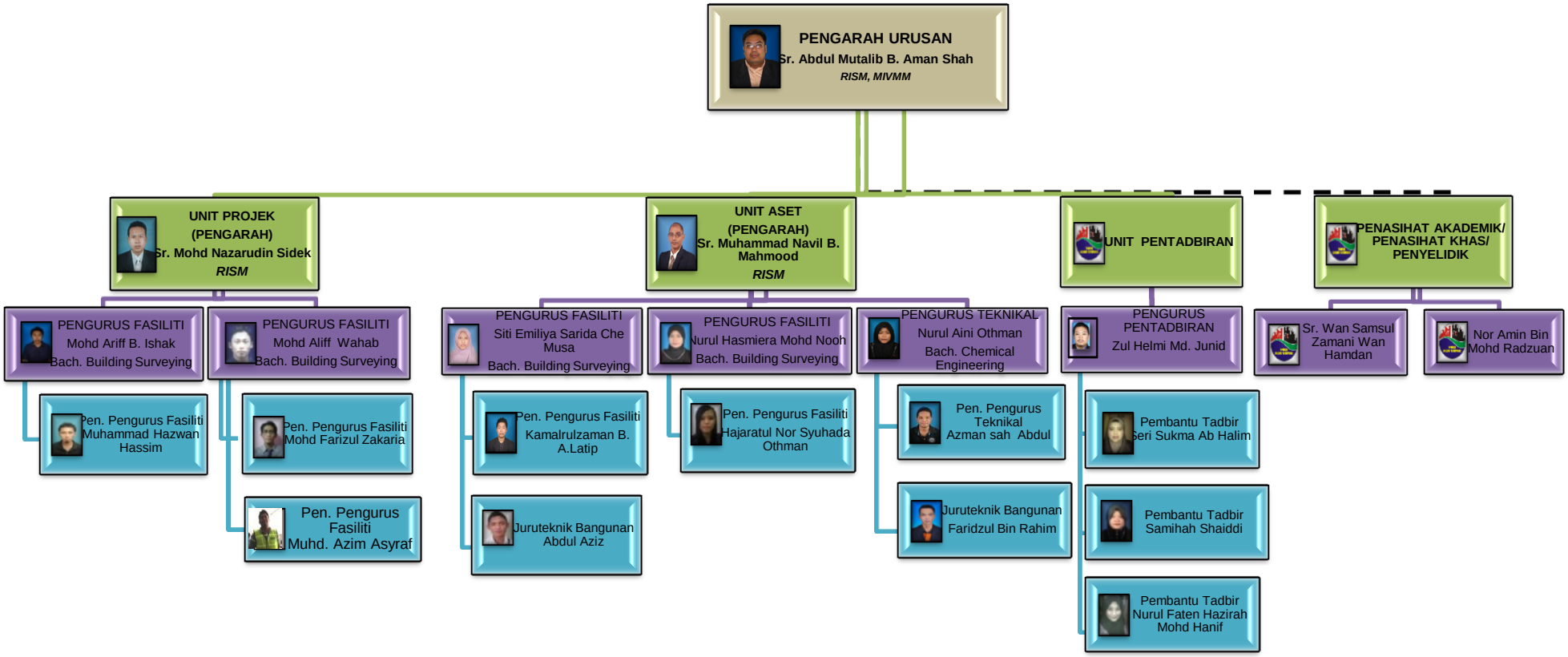


***Chart 2.1**: Show the organization chart of AMAS FM workers*

2.5 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*
5	*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 Darul Ehsan.*	*Sin Seong Hin Sdn. Bhd*
6	*Building Condition Assessment for Admin Building and Janamanjung 1*	*Manjung Power Station TNB Janamanjung Sdn. Bhd*
7	*Facilitator For General Space Audit Course*	*Universiti Putra Malaysia*
8	*Facilitator For General Asset Management Introduction and Building Audit*	*Universiti Putra Malaysia*

***Table 2.1**: Shows the list of jobs and experience of AMAS FM*

PERUNDING UKUR BANGUNAN

Perunding Berdaftar
Dengan
Kementerian Kewangan Malaysia &Pertubuhan Juruukur Diraja Malaysia

PROFIL SYARIKAT

TOWARDS BUILDING PERFORMANCE

COMPANY PROFILE

AFC
AMAS FM CONSULTANT

Building Surveying Consultant

Registered Consultant
With
Ministry of Finance Malaysia & Royal Institute of Surveyors Malaysia

No.55-A Jalan Udang Kara 31, Off Jalan Hassan, Sungai Udang, 41250 Klang, Selangor.
Tel: 03-3381 5445, Fax : 03-3381 5444,HP/WhatsApp/SMS No.: 019-2822820
Email: admin@amasfm.com / amasfm@gmail.com
Website: www.amasfm.com

2.6 CERTIFICATION OF REGISTRATION

No. Sijil Praktis : 00024

ROYAL INSTITUTION OF SURVEYORS • MALAYSIA •

PERAKUAN PRAKTIS

UKUR BANGUNAN

DENGAN INI DIPERAKUKAN BAHAWA

Sr ABDUL MUTALIB AMAN SHAH
No. Kad Pengenalan 750212-10-5449

No. Ahli : RISM / M2830

Dari

AMAS FM CONSULTANT SDN BHD

Adalah seorang Juruukur Berdaftar di bawah Bahagian Ukur Bangunan Pertubuhan Juruukur Diraja Malaysia (RISM), Diiktiraf sebagai Juruukur Bangunan Profesional (Sr), Berkelayakan dan terlatih dari program Ukur Bangunan yang diiktiraf oleh Jabatan Perkhidmatan Awam Malaysia, memenuhi fungsi kerja dan hasil pembelajaran agensi / rangka kelayakan Malaysia (MQA/MQF) dan diakreditasi oleh RISM selaras dengan amalan Ukur Bangunan Antarabangsa bagi menjalankan skop kerja

Kategori : SATU

(Kategori Tambahan Khas : PENGURUSAN FASILITI, INVENTORI & AUDIT RUANG)

Presiden | Naib Presiden | Setiausaha Bahagian Ukur Bangunan

Tarikh Sah Laku Sijil : *05.08.2012 – 04.08.2013*

Nota :
1. **Kategori Satu :** Semua Jenis / Ketegori Bangunan. **Kategori Dua :** Premis Kediaman 3 Tingkat ke Bawah
2. **Skop Kerja :** (Meliputi – Pematuhan syarat & peraturan / penggunaan / urus-senggara / kondisi / konservasi / prestasi / risiko / audit / pengesahan Bangunan)
3. **Perakuan** ini ditarik balik sekiranya pemegang perakuan tidak lagi menjadi Ahli Pertubuhan Juruukur Diraja Malaysia atau gagal memenuhi CPD ditetapkan
4. **Bukti Praktis :** Satu salinan sah sijil ini mesti ditunjukkan kepada klien apabila pemegang perakuan menawarkan khidmat Pemeriksaan / Ukur Bangunan
5. **Tempoh Sah Laku Perakuan :** Perlu diperbaharui setiap tahun

***Figure 2.1**: Show the certificate of registration AMAS FM*

CHAPTER 3

LITERATURE REVIEW

3.1 CONDITION SURVEY

A Condition Survey provides an assessment of physical property conditions. The survey should identify deficiencies, and maintenance issues including, but not limited to structural, mechanical, electrical, plumbing, fire protection, site layout, site utilities, storm water management, soil erosion and life safety systems. To facilitate an informed decision making process, a Condition Survey should result in a clear understanding of the current condition of operating systems by a Client.

The extent of a Condition Survey can vary depending upon the Client's need for information. Staring with a visual observation of existing conditions to periodic monitoring and testing of building and site systems, the Condition Survey can be summarized in a one-page letter or prepared in a bound report complete with test results, calculations, detailed narrative and photographs.

In a detailed Condition Survey, on-site interviews, maintenance history review, review of local municipal records, code compliance research, testing of operating systems, design and performance criteria definition, load capacity calculations and preparation of schematic drawings are generally areas addressed in the findings and recommendations report. The report should also address immediate, mid-term and long-term needs

3.1.1 Scope of work condition survey

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

1. To inspect building defects level.
2. To analyse the seriousness of building defects.
3. To show the defects indication plan

3.1.2 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, advise 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.

3.1.3 Example of Condition Survey checklist

AMAS FM CONSULTANT

Element: Wall	Inspector: Mohd Aliff, Mohd Hazwan, SitiEmiliya, Azim Asyraf	Date: 25/4/2013 - 30/4/2013	Time: 08.30am-06.00pm
Location: First Floor: F18/0, F22/0 ,			
  			
Defect: i. Peeling off paint on wall			
Symptom: i. Peel of paint			
Factor i. Human activity ii. Exposed to hard object			
Causes: i. Human activity ii. Exposed to hard object			
Suggestion: i. Repaint			
Quantity : 2	Cost	Overall Cost	Priority

***Table 3.1**: Shows the checklist of defect for Condition Survey*
(**Sources:**AMAS FM Condition Survey report)

3.2 CONDITION ASSESSMENT

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.

Infrastructure asset management encompasses a wide variety of activities. These include, in part: Asset inventory, inspection, condition assessment and prediction, short and long range work planning, and budgeting. This paper focuses on best practices in condition assessment, specifically for buildings.

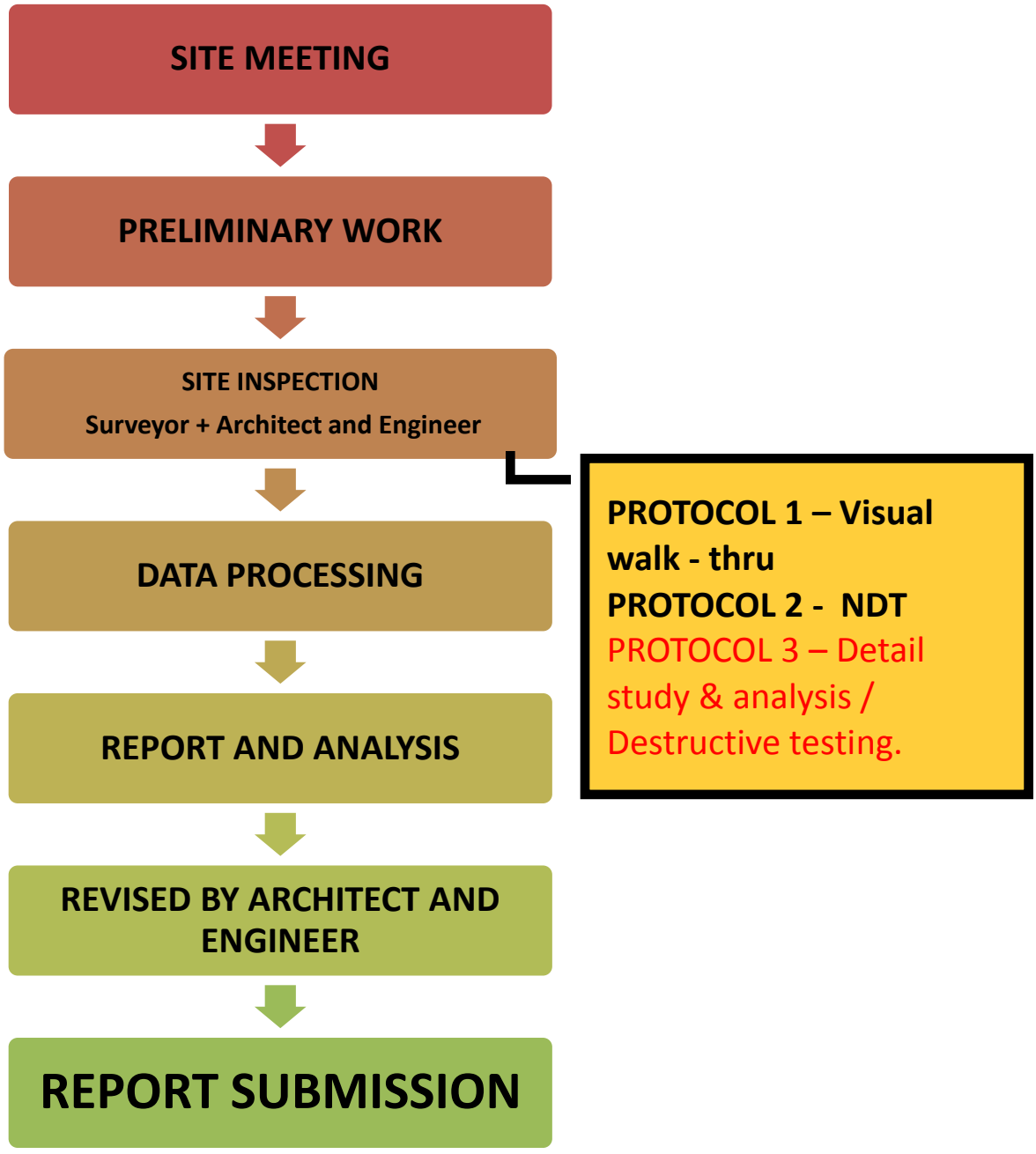


***Chart 3.1**: Show the structure of Condition Assessment method*

3.2.1 Physical analysis and Benchmarks by using Condition Assessment Survey

1. Physical analysis and Benchmarks

VisualConditionAssessment (VSA)

Score	Description
1 **(Very good)**	Asset is new or as new **No action required.**
2 **(Good)**	Asset requires minor repairs **Minor service required.**
3 **(Fair)**	Asset requires maintenance **Minor repair required.**
4 **(Poor)**	Asset is beginning to fail **Major repair work.**
5 **(Critical)**	Asset has failed **Requires immediate action.**

***Table 3.2**: Shows the stage of Visual Condition Assessment (VSA)*

Priority Assessment (PA)

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 3.3**: Shows the Priority Assessment of defect*

3.3 DUE-DILIGENCE SURVEY

A survey carried out by a Professional Building Surveyor (or Building Inspector) is to assess the condition of the building, in particular, the structure, fabrics and components, finishes, services and safety requirements. Surveys are a kind of 'health check' for buildings by a building doctor. If you're buying a property, you should have a building survey done by a Professional Building Surveyor before you enter into a contract or before making an offer.

3.3.1 Due-diligence Survey purpose

The purpose of the building surveys is to provide an opinion on the building condition or the general presentation of a property.

The due-diligence survey will assist the prospective buyers to have a good understanding on the property before they purchase the property, as the building survey report done by a Professional Building Surveyor will provides information on building defects, building hazard, explaining what current repairs and feature maintenance are needed. In other words, due-diligence survey report contains our findings and condition assessment for use by the buyers.

3.4 DILAPIDATION SURVEY or PRE-CONSTRUCTION CONDITION SURVEY

Dilapidation Survey is also known as a pre-construction condition survey in Malaysia. A dilapidation survey done by a Professional Building Surveyor is an inspection of the existing structural condition of the surrounding buildings and structures before the commencement of demolition, construction or development. All prominent defects in the form of cracks, settlement, movement, water seepage, spalling concrete, distortion, subsidence and other building defects will recorded in photographs together with notes.

3.4.1 Dilapidation Survey purpose

The purpose of dilapidation surveys or pre-construction survey is to provide an accurate record, pre-construction and post construction woks, of the condition of the building. While it is not expected that neighbouring construction will cause damage to any building, the survey is undertaken as precautionary measure.

CHAPTER 4

CASE STUDY

4.0 INTRODUCTION CASE STUDY

AMAS FM Consultancy has been appointed by Etiqa Property Management to carry out the Building Condition Assessment at Etiqa Twins tower, Jalan Penang.

4.1 ETIQA TWINS, JALAN PENANG.

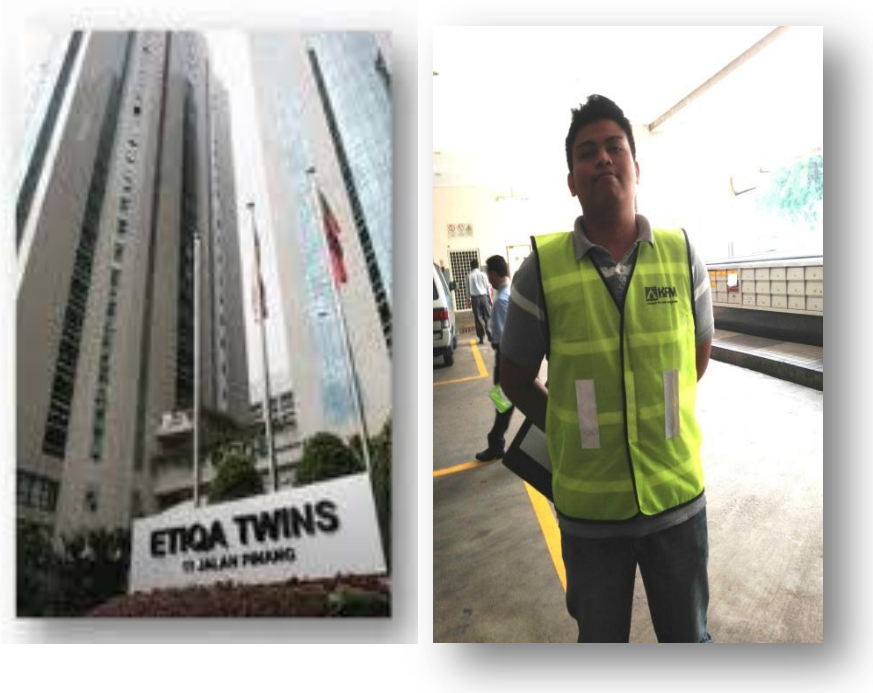


***Figure 4.1**: Show the picture of Etiqa Twins Tower*

4.2 BUILDING BACKGROUND

Etiqa Twins is another prominent twin towers in KL city centre. It is located in between of Impiana KLCC Hotel & Spa and Kirana Residence condominium and neighbors One KL and Marc Service Residence. The twin office towers are designed by Haje edar& Associates, a Malaysian architect firm; and Woods Bagot, an Australian interior design consultant firm. Etiqa Twins is completed in 1994.

Etiqa Twins comprises two 27-storey towers. There are 5-storey basement car parks with approximately 700 car park bays. Each tower is served by 8 passenger lifts, 1 service lift and 2 basement car park lifts. It uses centralized air-conditioning system. Furthermore, it features three compartments under the floor for data, power and telecommunication.

4.2.1 Property Details

i. Name: Etiqa Twins (formerly known as MNI Twins)
ii. Address: 11, Jalan Pinang, 50450 Kuala Lumpur
iii. Completion Date: 1994
iv. Type: Commercial Office
v. Tenure: Freehold
vi. No. of Blocks: 2
vii. No. of Storey: 27

4.2.2 Facilities Management

i. Concierge at lobby
ii. Food court at mezzanine floor
iii. 24-hour security with CCTV

4.3 LOCATION OF BUILDING

i. Name : Etiqa Twins
ii. Address : 11, Jalan Pinang, 50450 Kuala Lumpur

Etiqa Twins is adjacent to vast arrays of amenities, mostly are just minutes away by foot. Suria KLCC and KLCC Park are just a stone's throw away. Besides that, it is surrounded by aplenty hotels and serviced residences such as Ascott Kuala Lumpur, Mandarin Oriental Hotel and Equatorial Hotel. Plus, it is also within 5 minutes driving from Royal Selangor Golf Club.

Nestled amidst of bustling city centre, Etiqa Twins can be easily reachable by LRT as it is less than 10 minutes of walking distance to KLCC Rapid KL LRT station and Raja Chulan Monorail station. For private transportation, it can be accessible from Jalan Ampang and Jalan Sultan Ismail via Jalan P Ramlee and Jalan Kia Peng that linked to Jalan Pinang.

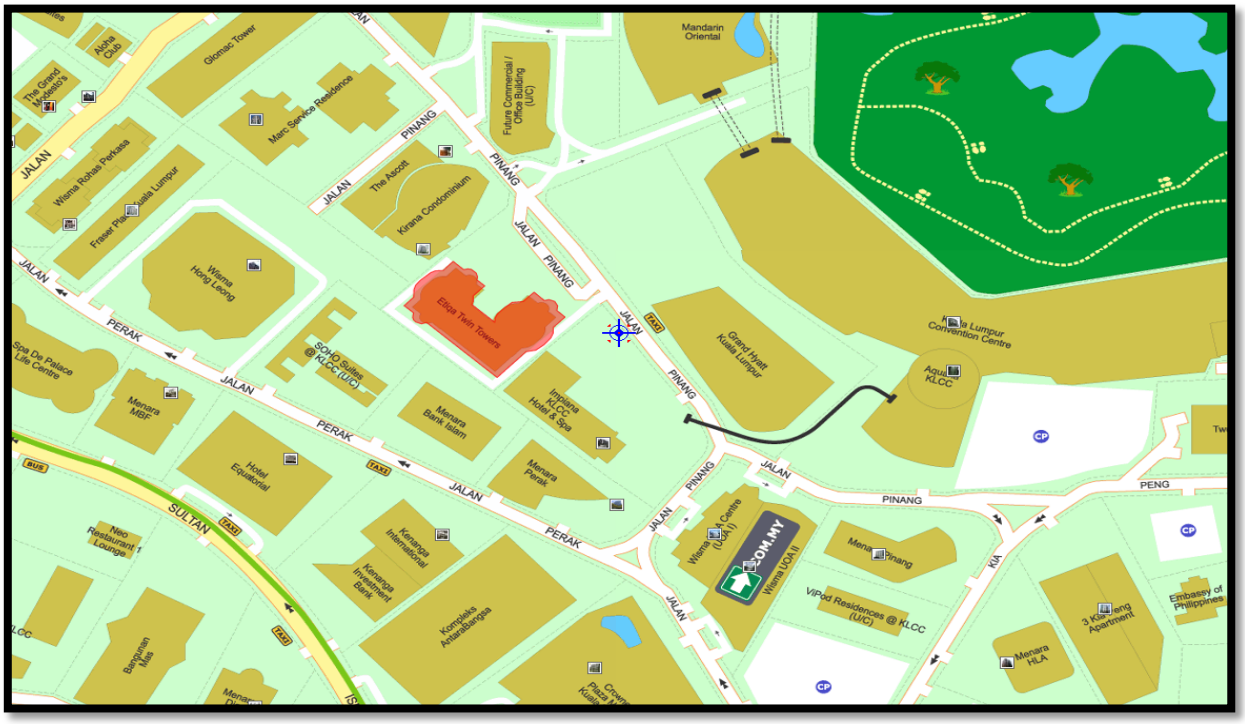


***Figure 4.2**: Show the Master Plan for Etiqa Twins, Jalan Pinang.*

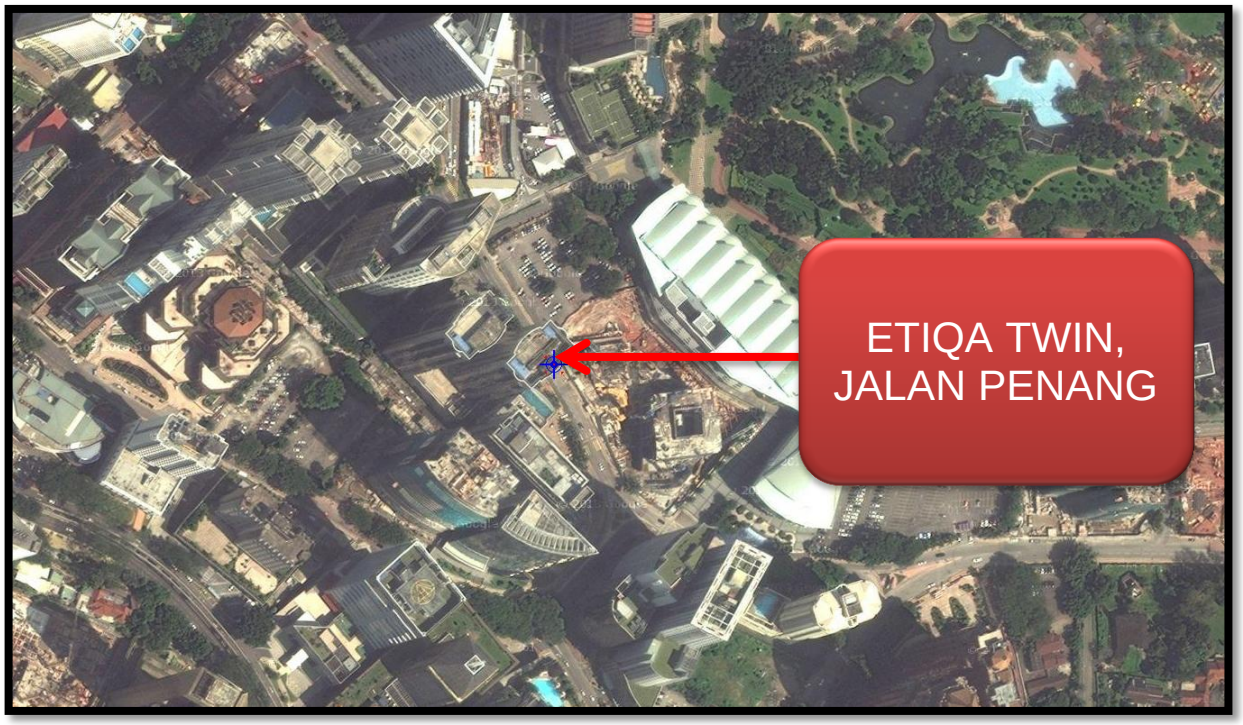


***Figure 4.3**: Show Location Plan of Etiqa Twins, Jalan Pinang*

4.4 Project Management

In general, AMAS FM Consultant shall conduct building condition assessment visual inspection and evaluations of the condition of the facility. This includes building, civil and structural assessment. AMAS FM Consultant also carry out assessment recommendation which is identifying major structural defects and recommending the remedial works to be carried out.

The work involved is to record the defects including type of defects and the amount of defects, provide repair recommendations, cause defects, overall condition and estimated cost to repair. Revisions will be made together with engineers and architects.

The inspection was carried out on 19th August 2013 until 24rd August 2013 on the building by 4site inspectors divided into 2 groups.

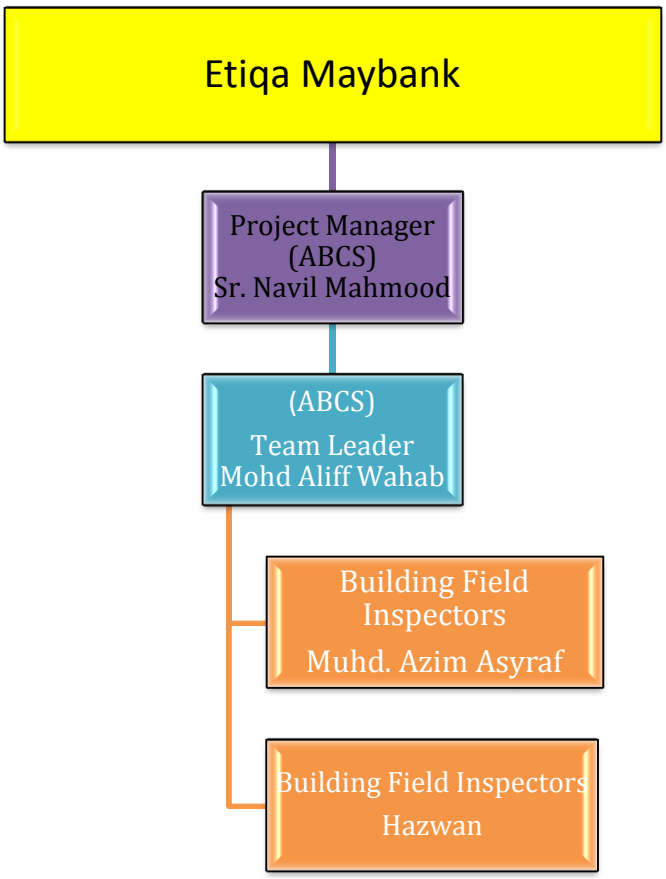


***Chart 4.1**: Show the organization chart of the Condition Assessment Project*

Project Manager (ABCS) – Sr. Navil Mahmood

Navil is a registered Building Surveyor and has more than 20 years of experience in managing Residential, Commercial, Industrial and Recreational Facilities, right from inception to operation.

ABCS Audit Team Leader – Mohd Aliff Wahab

Mohd Aliff Bin Wahab is a graduate Building Surveyor, he has 2 years of experience in building condition assessment projects.

ABCS Field Inspectors – Various (6)

The 6 field officers chosen will depend on the actual start date of the project. However, all chosen officers have had experience in such projects and are fully conversant in building audit and condition assessment methodology.

4.5 METHODOLOGY GUIDE

1	**Site visit** - To identify buildings, infrastructures, ancillary buildings and structures of the adjoining properties to be surveyed.
2	Finalize with consultant or clients to get the confirmation of the proposed list of buildings, structures, infrastructures and ancillary buildings to be surveyed internally and externally.
3	Perform a visual survey and inspection of internal and external elements of a building and structure including but not limited to wall, column, beam, external facade, basement, pavement, driveway, apron, finishes and services. (Collect data inspection)
4	Record and take both overview and close-up photographs of all visible defects.
5	Describe cracks line according to the following four (4) categories; i. Fine Crack for width less than 1mm; ii. Medium Crack for width, 1mm $\leq$ Crack $\leq$ 2mm; iii. Wide Crack for width, 2mm $\leq$ Crack $\leq$ 5mm; and iv. Very Wide Crack if the width exceeds 5mm
6	Recommend areas for monitoring of cracks and other structural defects for further investigation.
7	Report shall contain the following features; a) Cover page with references to project name, work location, property identification. b) Introduction including property information and objective of the building condition assessment survey. c) Term of scope of work. d) Exclusion and limitation of Survey. e) Sketches and drawings showing the location of defect clearly. f) Dated photographs with labels and description (using digital camera) g) Recommendation for remedial works h) Cost estimating for repair works i) All relevant correspondences with the property owner as an appendix or separate volume. j) Summary of the survey.

8	Immediately after conducting the survey, request the owners, tenants, residents, build management corporations or his/her/their representative to sign off a form to verify no loss of properties during the survey and to ensure that all defects have been captured and agreed.
9	A draft Building Assessment Survey Report shall be submitted for consultant's comments before final official report is submitted.
10	The time frame of condition survey is 15 days for the field works and 40 days for the report preparation.

***Table 4.1**: Shows the methodology guide for Condition Assessment*

4.5.1 Physical Inspection of Assets

Our working methodology as following:

i. A group of surveyor consists of 4 people divided into two teams and followed by Architect and Engineer. Each team covered a building.
ii. Form with a check list prepared by the elements. This form contains details about the location, the elements and type of defects.
iii. Briefings from management be held before entering the site and begin inspection work. Permission to carry out building inspection work was also requested.
iv. Conducted site inspections and photographs taken as part of the final report.
v. Reporting and analysis are based on the inspection report.

Condition Assessment	
Protocol 1	**Visual Walk-Thru Assessment**
Protocol 2	**Non Destructive Testing (NDT)**
Protocol 3	**Detail Study and Analysis / Destructive Testing**

***Table 4.2**: Shows the Protocol of Condition Assessment*

4.5.2 Condition Assessment Scoring Method

A simple but effective condition scoring method has been developed 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**
Poor	**4**	**Major Repair**
Very Poor	**5**	**Failed**

***Table 4.3**: Shows the Condition Assessment Scoring Method*

4.6 Scope of Project

As we know, this consultancy will cover Building Audit using Visual 'Walk-Tru' Condition Assessment for each building;

Etiqa Twin Towers:

4.6.1 Building audit

This covers a number of areas including:

i. Physical inspection looking at the operation and maintenance program
ii. Reviewing existing operation and maintenance documentation including staff interviews
iii. Review facilities condition and methodology applied
iv. Attempt to determine causes of deficiencies
v. Review previous repairs for acceptability

The audit will address the above issues on the following asset types:

i. Building foundations
ii. Walls Exterior
iii. Walls Interior and Ceilings
iv. Floors and floor coverings
v. Roofs and trusses

4.7 Process During Site Inspection

Tasks were distributed before we start the project at Etiqa Twins building. As a practical training candidate we have been described, and were guided by a project manager to run the Condition Assessment Survey run fluently. We also havebeen noticed with work plan that was prepared by project manager. By adopting this process, a skills or technology transfer is achieved for staff and executive management.

Specific tasks included in this work plan are:

4.7.1 Introductory meeting

i. Review asset register
ii. Review Operation & Maintenance (O&M) manuals and as built drawings

4.7.2 Physical Visual Building Inspection

i. Building and Finishes
ii. Civil & Structure
iii. Mechanical
iv. Electrical
v. Plumbing

4.7.3 Analysis and Report

i. Observation meeting
ii. Report of facility condition
iii. Report on repair, service and maintenance
iv. Prioritise repairs
v. Review of staff skills

Table below show the work schedule that have been prepared by Project Manager :-

Maybank Buildings Schedule

Building	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Dataran Maybank	Preliminaries, Data Collection, Asset Register, Dest Study	Inspection		Condition Assessment Data Analysis, Desk Study and Report			Submission of DRAFT Report	Ammendment and Submission of Final Report
Etiqa Twin Tower			Inspection		Condition Assessment Data Analysis, Desk Study and Report			
Academy Etiqa				Inspection		Condition Assessment Data Analysis, Desk Study and Report		

***Table 4.4**: Shows the work schedule for Condition Assessment*

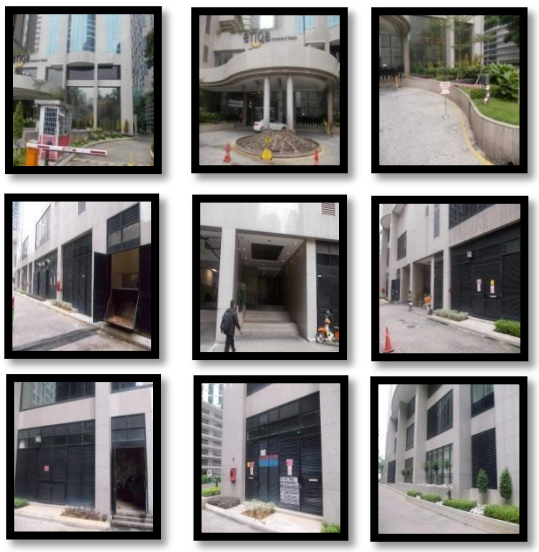
4.7.4 Site Diary

19th August 13

The inspection was started at the Etiqa Twins Tower which is located at Jalan Penang. Among the roles of an inspector at the site are to follow 'Protocol 1' method, which is inspectors must do a Visual Walk-Thru Assessment. During follow the rule 'Protocol 1' method, inspector will record the data which is using the checklist and take photo for reference. Once the division of group has been made, the inspections started from external area of the Etiqa Twins Tower. External area consists in three (3) levels.

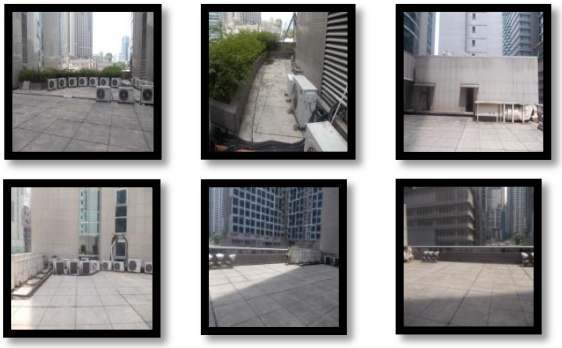
i. Level 1
ii. Level 4
iii. Level 5

These are the pictures of inspection at the external areas of Etiqa Twins:



External Area (Level 1)

External Area (Level 4)



External Area (Level 5)

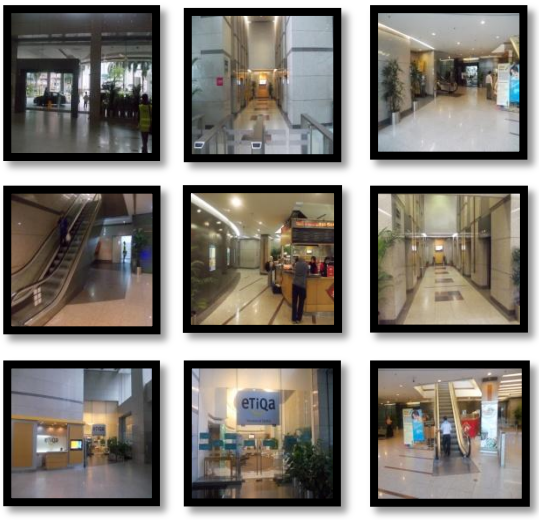
***Figure 4.4**: Shows the general picture of External area at Etiqa Twins Building*

20th August 13

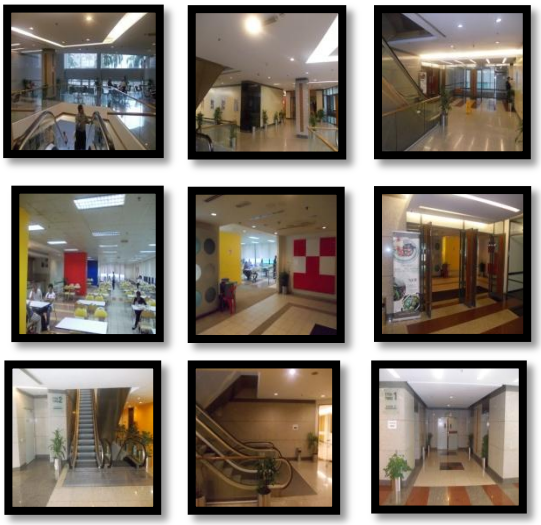
Inspection continued at The Podium area which is the podium is connected between Tower 1 and Tower 2. Podium area space consist Food court, Office, Mini Shop, Hall area and other space for consumer connected between Tower 1 and Tower 2. Podium area at Etiqa Twins's tower contained within four (4) levels.

i. Level 1
ii. Level 2
iii. Level 3
iv. Level 4

These are the pictures of inspection at the Podium Area of Etiqa Twins:



Podium Level 1



Podium Level 2

***Figure 4.5**: Shows the general picture of Podium area at Etiqa Twins Building*

21th August 13

Constitute as a last day inspection work at Etiqa Twins Tower. Inspection continued at office area which is inspector faced with office tenant. For this stage, all field have a problem to access in office tenant because they have a privacy area to give inspector do inspection work. Because of this area have a privacy area, for this area inspectors must have staff from Building Management to assist the inspection work. According to the building plan staircase are close to each office. Staircase also the important structure elements for consumer ascending to the next level. To simplify the inspection work for staircase, we began at the top level.

These are the pictures of inspection at the Staircase and Office area of Etiqa Twins:

Office Area (Level 6-27) Staircase Area (Level 1-29)

Figure 4.6*: Shows the general picture of Office and Staircase area at Etiqa Twins Building.*

22th August 13

At the completion of each day the checklists are entered onto MICROSOFT Excel worksheets. This table is updated (or added to) each time after the building assessment. This table in MICROSOFT Excel will be analyse for further manipulation if required.

This technique has been used extensively by us and has proven to be most reliable and cost efficient in data collection projects.

Bil	Asset Criteria	Asset Name	Asset Type	Asset Description	Defect	Condition (K)	Photo ID
1	Level 1	External	Ramp Wall (exit)	-	General View	1	AR/ET/L1/DSCN0843
2	Level 1	External	Ramp Wall (exit)	Wall	Crack on wall surface	2	AR/ET/L1/DSCN0844, AR/ET/L1/DSCN0845, AR/ET/L1/DSCN0846, AR/ET/L1/DSCN0847, AR/ET/L1/DSCN0848
3	Level 1	External	External Wall	-	General View	1	AR/ET/L1/DSCN0849
4	Level 1	External	External Wall	Wall	Peeling off wall tiles	2	AR/ET/L1/DSCN0850, AR/ET/L1/DSCN0851
5	Level 1	External Corridor	External ceiling	-	General View	1	AR/ET/L1/DSCN0853
6	Level 1	External Corridor	External ceiling	Ceiling	Water mark on ceiling surface	1	AR/ET/L1/DSCN0854, AR/ET/L1/DSCN0856, AR/ET/L1/DSCN0857, AR/ET/L1/DSCN0858
7	Level 1	External Corridor	External wall	-	General View	1	AR/ET/L1/DSCN0859
8	Level 1	External Corridor	External wall	Wall	Peeling off wall tiles	2	AR/ET/L1/SDC14264, AR/ET/L1/SDC14265
9	Level 1	External Corridor	External Floor	-	General View	1	AR/ET/L1/DSCN0862
10	Level 1	External Corridor	External Floor	Floor	Peeling off floor tiles	2	AR/ET/L1/DSCN0863

***Table 4.5**: Shows the defect checklist MS Excel at Etiqa Twins.*

23th August 13

For client clarification, after completed the MICROSOFT Excel worksheet, we provide the worksheet with a pictures of defects for client know what and where the defects located clearly.

Table below show the worksheet with pictures of defect:-

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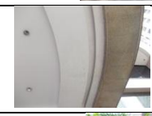
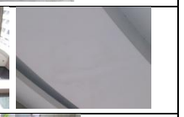
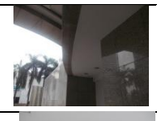
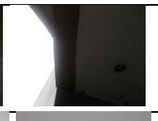
Bil	Asset Class	Asset Criteria	Asset Name	Asset Type	System	Asset Description	Asset Component	Defect	Condition (K)	Priority (U)	Index (I)	Photo No	Photo ID	Remarks
1	Etiqa Twins	Level 1	External	Ramp Wall (exit)	-	-	-	General View	1	1	1	DSCN0843	AR/ET/L1/DSCN0843	
2	Etiqa Twins	Level 1	External	Ramp Wall (exit)	S	Wall	Pebble wash	Crack on wall surface	2	1	2	DSCN0844, DSCN0845, DSCN0846, DSCN0847, DSCN0848.	AR/ET/L1/DSCN0844, AR/ET/L1/DSCN0845, AR/ET/L1/DSCN0846, AR/ET/L1/DSCN0847, AR/ET/L1/DSCN0848	 
3	Etiqa Twins	Level 1	External	External Wall	-	-	-	General View	1	1	1	DSCN0849	AR/ET/L1/DSCN0849	
4	Etiqa Twins	Level 1	External	External Wall	S	Wall	Planter Box	Peeling off wall tiles	2	1	2	DSCN0850, DSCN0851	AR/ET/L1/DSCN0850, AR/ET/L1/DSCN0851	 
5	Etiqa Twins	Level 1	External Coridor	External ceiling	-	-	-	General View	1	1	1	DSCN0853	AR/ET/L1/DSCN0853	
6	Etiqa Twins	Level 1	External Coridor	External ceiling	A	Ceiling	Gypsum Board	Water mark on ceiling surface	1	1	1	DSCN0854, DSCN0856, DSCN0857, DSCN0858	AR/ET/L1/DSCN0854, AR/ET/L1/DSCN0856, AR/ET/L1/DSCN0857, AR/ET/L1/DSCN0858	 
7	Etiqa Twins	Level 1	External Coridor	External wall	-	-	-	General View	1	1	1	DSCN0859	AR/ET/L1/DSCN0859	
8	Etiqa Twins	Level 1	External Coridor	External wall	S	Wall	Planter Box	Peeling off wall tiles	2	1	2	DSCN0860, DSCN0861	AR/ET/L1/SDC14264, AR/ET/L1/SDC14265	 
9	Etiqa Twins	Level 1	External Coridor	External Floor	-	-	-	General View	1	1	1	DSCN0862	AR/ET/L1/DSCN0862	
11	Etiqa Twins	Level 1	External Coridor	External ceiling	A	Ceiling	Gypsum Board	Water mark and crack on ceiling surface	2	1	2	DSCN0864, DSCN0865, DSCN0866, DSCN0867	AR/ET/L1/DSCN0864, AR/ET/L1/DSCN0865, AR/ET/L1/DSCN0866, AR/ET/L1/DSCN0867	 
12	Etiqa Twins	Level 1	External Coridor	External ceiling	A	Ceiling	Gypsum Board	Crack on ceiling surface	2	1	2	DSCN0868, DSCN0869	AR/ET/L1/DSCN0868, AR/ET/L1/DSCN0869	 
13	Etiqa Twins	Level 1	External	Ramp Wall (Enter-staff)	-	-	-	General View	1	1	1	DSCN0872	AR/ET/L1/DSCN0872	

4.7.5 Building Defects

Building Etiqa Twins	Element	System	Asset	Date 30.7.13-23.8.13
	Ceiling	Architecture	Gypsum board & plaster ceiling	
Location : Etiqa Twins/Level 1/Podium/Podium Ground Etiqa Twins/Level 1/Podium/Podium Ground Etiqa Twins/Level 2/Podium/Podium Level 2 Etiqa Twins/Level 2/Podium/Food Court Etiqa Twins/Level 26, 27/Tower 1/Office Area Etiqa Twins/Level 6/Tower 2 /Office Area		**Ref. No** AR/ET/L1/DSCN0996, AR/ET/L1/DSCN0997 AR/ET/L1/DSCN1002, AR/ET/L1/DSCN1003, AR/ET/L1/DSCN1004, AR/ET/L1/DSCN1005 AR/ET/L1/DSCN1025, AR/ET/L1/DSCN1026 AR/ET/L2/DSCN1055, AR/ET/L2/DSCN1056, AR/ET/L2/DSCN1060, AR/ET/L2/DSCN1061, AR/ET/L2/DSCN1062, AR/ET/L2/DSCN1082, AR/ET/L2/DSCN1083, AR/ET/L2/DSCN1134,		
				
Defect: Water mark on ceiling surface				
Remarks: • Stain • Watermark				
Condition	3	**Priority**	1	**Condition Priority Index**	3
Recommendation: • Check piping air cond piping system • Repair piping air cond piping system • Replace new ceiling				
Quantity : 9	Estimated Cost	RM4,050		

***Table 4.6**: Shows the defect checklist at Etiqa Twins.(Copyright AMAS FM Report)*

Etiqa Twins	Element	System	Asset	Date
	Ceiling	Architecture	Gypsum board and Plaster Ceiling	30.7.13-23.8.13

Location : Etiqa Twins/Level 1/Podium/Podium Ground Etiqa Twins/Level 2/Podium/Podium Level 2 Etiqa Twins/Level 3/Podium/Podium Level 3 Etiqa Twins/Level 27/Tower 1/Office Area Etiqa Twins/Level 14/Tower/Corridor 1 Etiqa Twins/Level 26/Tower 2/Office Area	**Ref. No** AR/ET/L1/DSCN1007, AR/ET/L1/DSCN1008, AR/ET/L1/DSCN1011,AR/ET/L2/DSCN1139, AR/ET/L2/DSCN1140,AR/ET/L3/DSCN1236, AR/ET/L3/DSCN1237, AR/ET/L3/DSCN1238, AR/ET/L3/DSCN1239,AR/ET/L27/SDC15638, AR/ET/L27/SDC15639,AR/ET/L27/SDC15657, AR/ET/L27/SDC15680, AR/ET/L27/SDC15681, AR/ET/L27/SDC15682, AR/ET/L27/SDC15683 AR/ET/L14/DSCN1459, AR/ET/L14/DSCN1460 AR/ET/L26/DSCN1637, AR/ET/L26/DSCN1638 , AR/ET/L12/SDC15519, AR/ET/L12/SDC15520

Defect: Water mark on ceiling surface,Water mark and broken on ceiling surface, Broken on ceiling surface

Remarks:

- Stain
- Watermark

Condition	5	Priority	1	Condition Priority Index	5

Recommendation:

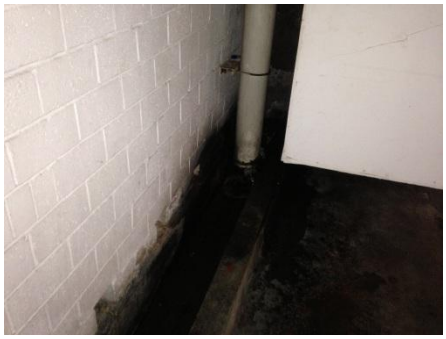
- Check piping / air cond piping system
- Repair piping / air cond piping system
- Replace new ceiling

Quantity : 8	Estimated Cost	RM8,000

***Table 4.7**: Shows the defect checklist at Etiqa Twins.(Copyright AMAS FM Report)*

Building Etiqa Twins	Element	System	Asset	Date 30.7.13-23.8.13
	Floor	Structure and architecture	Cement screed, floor trap	

Location : Etiqa Twins/B4 A Basement 4 A/Fan room 3 (DB B4-1 FR2) Etiqa Twins/B5 A/Basement 5 A/ Parking Lot Etiqa Twins/Level 1/Podium/Podium Ground Etiqa Twin/Level 1/Podium/Rumah Sampah Etiqa Twins/Level 28/Roof top/Corridor	**Ref. No** AR/ET/B4A/SDC15165 AR/ET/B5A/IMG_0529, AR/ET/B5A/IMG_0530, AR/ET/L1/DSCN0999, AR/ET/L1/DSCN1000 AR/ET/L1/DSCN1014, AR/ET/L1/DSCN1015, AR/ET/L1/DSCN1016, AR/ET/L1/DSCN1017, AR/ET/L1/DSCN1018,AR/ET/L28/DSCN1858, AR/ET/L28/DSCN1859,



Defect: Water ponding ,Clogged floor trap,Crack on floor tiles
Crack on floor surface

Remarks:

- Water leakage from plumbing system

Condition	3	Priority	1	Condition Priority Index	3

Recommendation:

- Check plumbing system
- Repair Plumbing system
- Replace new floor tiles
- Fill the crack with new cement screed

Quantity : 5	Estimated Cost	RM3,400

***Table 4.8**: Shows the defect checklist at Etiqa Twins.(Copyright AMAS FM Report)*

Etiqa Twins	Element	System	Asset	Date
	Wall	Architecture	Wall finishes	30.7.13-23.8.13

Location : Etiqa Twins/Level 2/Podium/Food Court Etiqa Twins/Level 2/Podium/Podium Level 2 Etiqa Twins/Level 3/Podium/Podium Level 3 Etiqa Twins/Level 4/Podium/Podium Level 4 Etiqa Twins/Level 14/Tower 2/Corridor 1	**Ref. No** AR/ET/L2/DSCN1074, AR/ET/L2/DSCN1075, AR/ET/L2/DSCN1076, AR/ET/L2/DSCN1080, AR/ET/L2/DSCN1081, AR/ET/L2/DSCN1091, AR/ET/L2/DSCN1092, AR/ET/L2/DSCN1151, AR/ET/L2/DSCN1156, AR/ET/L2/DSCN1157, AR/ET/L3/DSCN1252, AR/ET/L3/DSCN1254 AR/ET/L4/DSCN1293, AR/ET/L4/DSCN1294 AR/ET/L14/DSCN1455, AR/ET/L14/DSCN1456, AR/ET/L14/DSCN1457
	
Defect: Peeling off wall tiles	
Remarks: • Wear and tear • Human activity	

Condition	5	Priority	1	Condition Priority Index	5

Recommendation: • Replace new wall tile		
Quantity : 6	Estimated Cost	RM3,600

***Table 4.9**: Shows the defect checklist at Etiqa Twins.(Copyright AMAS FM Report)*

4.7.6 Site Analysis

The physical inspection conducted from 19th August 2013 until 23rd August 2013covers general condition assessment of building. The inspection shows that the general condition of the building is still in satisfactory level. There is no deterioration that affected the building structures.

There are the analyses of the structure element at Etiqa Twins:

1. **Floor**

   a. **Basement's Floor**

   There are fine cracks can be found at the parking area and in fan room. The reasons of these problems are probably due to the insufficient water content during the construction curing process. We also noted that there are water ponding in fan room's floor at the basement. This happens from the water that comes from the wall or ceiling. The Visual Condition Assessment show that the floor trap needs a well maintenance to prevent any serious defects happens in the future.

   b. **Podium's Floor**

   Generally, there are not many defect can be found at the podium's floor. We noted that there are peeling off tiles at Podium Level 2,3 and 4. Thus, there are uneven, water ponding and water mark on floor surface at Podium Level 3. The inspection it shows that floor finishes is in good condition.

   c. **Floor level's Floor**

   The floor is constructed of with tiles finishes at lift lobby area. For tenant area, various types of finishes have been used depending on tenant.Generally, most of the floor finishes is in good condition. There are less of major defects can be found on this area.

d. Roof Top's Floor

Generally, most of the floor finishes is in good condition. There are less of major defects can be found. Significant signs of shear cracks were observed a floor area. This is probably due to the weather and insufficient water content during the construction curing process and there are no well maintenance was makes.

2. Ceiling

This building installed with gypsum board, plaster ceiling and soffit slab. The inspection shows that mostly there watermark can be found at ceiling surface. Other defect can be found is broken and crack. All this defects mostly located at the office area, lift motor room, external ceiling, and parking lot.

3. Wall

a. External Wall

The external wall is constructed with Plaster Brick Wall and Glass Panel.Generally, the wall areas are in good condition. There just fine area in detected with fine crack, peeling off tiles and chipping on wall tiles.

b. Internal Wall

The internal wall is constructed with Plaster Brick Wall and Glass Panel.This defects can be found at the office, food court, podium, rumah sampah and staircase area. The areas that is detected with watermark, peeling off paint and blistering on wall surfaces just minor area. This defects can be found at the office, foodcourt, podium, staircase area, control room and lift lobby.

CHAPTER 5

COMMENT & RECOMMENDATION

5.0 COMMENT AND RECOMMENDATION

5.1 Comment

i. The format for report writing is not parallel with the client's request. The client has its specific format for the report writing and it has not briefed earlier.

ii. The inspection process was distracted during the execution of inspection. This was caused by the consumer or tenant who has not or being late informed by the person in charge of the building facilities. Thus, the work has been disrupted a bit as the consumer was not ready for the inspection process.

iii. Since Etiqa Twins is a building which deals with money profit, there were a lot of areas inside the building that were limited for the inspection. This could be due to the reason that the company did not want the inspection working to distract the process of the business.

iv. The attire for the inspection was not suitable to be worn at the working site. The company has not provided the attire for the inspector. Thus it looked like unprofessional to do the work. Due to that, some people could not easily trust the inspector.

5.2 Recommendation

i. It is advisable for the company to provide the actual report writing that can satisfy the client's need. The least they could do is to give the sample of the report writing so that the inspector could have a clearer picture of what they ought to do.

ii. The consumer or tenant should have been informed earlier about the inspection process. This could make them to get ready before the inspectors come to do their work.

iii. It is good if the company could provide the inspectors with the proper attire for them to do their work. Another way is to have the attire that could present the company's name. Apart from gain the trust from people, this could also give the professional look for the workers.

CHAPTER 6

CONCLUSION

6.0 CONCLUSION

A special gratitude and thankful because University Teknologi MARA (Uitm) has given us the chance and opportunity to experiences this industrial training. This experience with AMAS FM Consultancy, it has given me a wide experience and knowledge in Building Survey scope. The writing of case study entitled Building Condition Assessment 'BCA' has also benefited me to learn a lot of things regarding to the works of a Building Surveyor. And at the same time it could minimize the cost for maintenance work and expenses for building works. Whereby for a long term life-spend, Building Survey scopes is beneficial and effective for the good of every building in terms of its infrastructure and economy spent.

REFERENCES:

i. Holmes, R (1990) Property Condition Assessment- A Cost Effective Approach.

ii. Hoxley, M (2006) Building Condition Survey (Good Practice Guide) RIBA Publications.

iii. http://www.qproq.com/downloads/What%20is%20a%20Condition%20Survey.pdf

iv. http://www.isurv.com/site/scripts/documents.aspx?categoryID=416

v. http://www.p-consurvey.com/Dilapidation-surveys.htm

APPENDIX:

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Bil	Asset Class	Asset Name	Asset Type	System	Asset Description	Asset Component	Dimension	Defect	Condition (K)	Priority (U)	Index (I)	Photo No	Photo ID	Remarks
1.	EH&P Twin Tower	Tower 2	Podium Level 3		Wall 3			Dampness	1			1222-1225		UNP
2.	"	"	"		Floor			Tiles peel off	2			1222-1224		"
3.	"	"	"		Ceiling			Dampness	2			1226-1230		"
4.	"	"	"		Ceiling			Leakage	3			1245-1250		Store
5.	"	"	"		~~Beam~~ Wall			Peel off tiles	2			~~1251~~ 1254		Koridor
6.	"	Tower 2	Level 4		Ceiling			Dampness	2			1278-1281		"
7.	"	"	"		"			Dampness	2			1282-1286		"
8.	"	"	"		Wall			Crack	2			1287-1289		"
9.	"	"	"		Ceiling			Peel off tiles Dampness	2			1292-1294		"
10.	"	"	"		Ceiling			Dampness	2			1297-1298		"
11.	"	"	"		Floor			Chiping tiles	2			1301-1304		"
12.	"	"	"		Ceiling			Watermark	1			1305-1306		"
13.	"	"	Level 7		~~Ceiling~~ Wall			Chiping tiles	1			1342-1343		"
14.	"	"	"		"			"	1			1350-1352		"
15.	"	"	Level 8		Ceiling			watermark	1			1368-1369		"
16.	"	"	"		Wall			Chiping tiles	2			1370-1372		"
17.	"	"	"		Ceiling			Dampness	2			1373-1374		"
18.	"	"	"		Wall			Plaster peel off	1			1378-1379		Lift lobby
19.	"	"	Level 10		Ceiling			Watermark	1			1394-1395		ofis area
20.	"	"	Level 12		Floor			Chiping tiles	2			1399-1401		Lelaki toilet
21.	"	"	Level 12		Floor			Chiping tiles	2			1428-1430		Lift
22.	"	"	"		Wall			"	2			1432-1433		Lift
23.	"	"	" 14		Wall			Chiping tiles	2			1452-1458		Kondo lelaki
24.	"	"	"		Ceiling				2			1459-1460		"
25.	"	"	"		Wall			Peel off tiles	2			1461-1462		"
26.	"	"	" 16		Wall			"	2			1498-1499		"
27.	"	"	" 19		Wall Floor			Chiping tiles	2			1515-1520		Lift
28.	"	"	"		Wall			Peel off tiles	2			1522-1524		Kondo lelaki
29.	"	"	" 20		Ceiling			Dampness	2			1527-1529		Lift lobby
30.	"	"	"		W-11			Blistering	2			1533-1536		Kondo perempuan
31.	"	"	"		Wall			Peel off tiles	2			1537-1538		"
32.	"	"	"		Wall			"	2			1542-1544		Kondo lelaki
33.														
34.														

AMAS FM CONSULTANT

Bil	Asset Class	Asset Name	Asset Type	System	Asset Description	Asset Component	Dimension	Defect	Condition (K)	Priority (U)	Index (I)	Photo No	Photo ID	Remarks
35	Bldg Twin Towers		Level 21		Ceiling 3			Watermarks	1			1548-1548		Left lobby
36	"	"	"		Wall "			Blistering	2			1552-1554		" "
37	"	"	" 9		" "			"	2			1555-1556		Kandor panamplan
38	"	"	"		" "			Peel off tiles	2			1559-1561		Kandor lelolu
39	"	"	"		" "			"	2			1564-1565		"
40	"	"	" 22		" "			Watermark	1			1575-1577		Kandor panamplan
41	"	"	"		" "			Blistering	2			1571-1572		"
42	"	"	"		" "			"	2			1573-1574		"
43	"	"	"		" "			Peel off tile	2			1580-1582		Kandor lelolu
44	"	"	" 23		Wall			Watermark	1			1589-1590		Kandor panamplan
45	"	"	" 24		Ceiling			Watermark	1			1596-1598		Lift Lobby
46	"	"	" "		Floor			Chipping tile	2			1603-1604		Kandor lelolu
47	"	"	" "		Wall			Peel off tile	2			1605-1606		"
48	"	"	" "		"			"	2			1608-1609		"
49	"	"	" 25		Wall			Peel off tile	2			1615-1616		Kandor panamplan
50	"	"	" 25		Ceiling			watermark	1			1621-1624		Kandor lelolu
51	"	"	" 26		Wall			Peel off tile	2					"
52	"	"	" 26		Ceiling			watermarks	2			1627-1638		OK J.
53	"	"	" 27		Wall			Peel off tiles	2			1647-1646		Kandor panampa
54	"	"	"		"			"	2			1660-1661		" lelolu
55	"	"	"		"			"	2			1652		" lelolu

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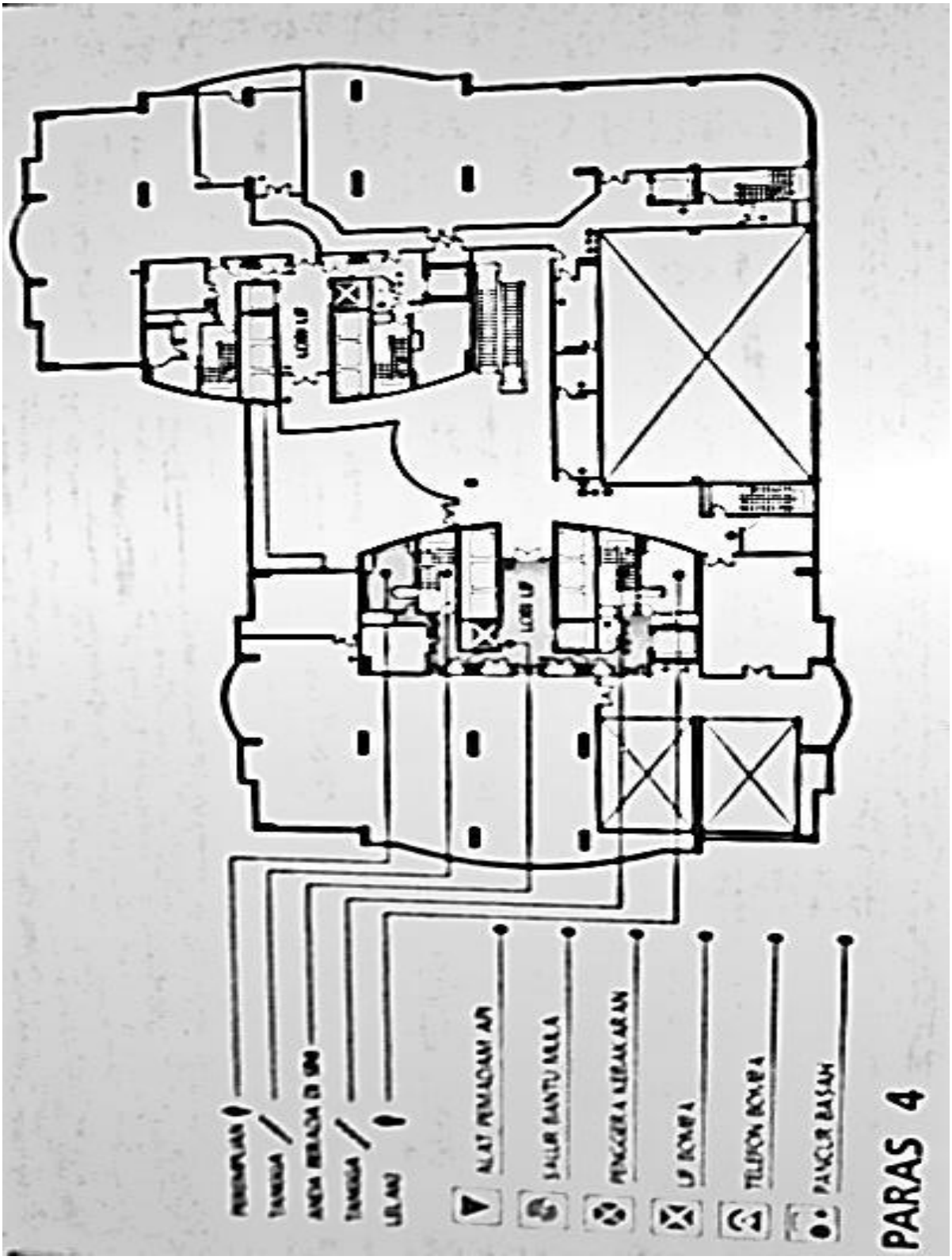

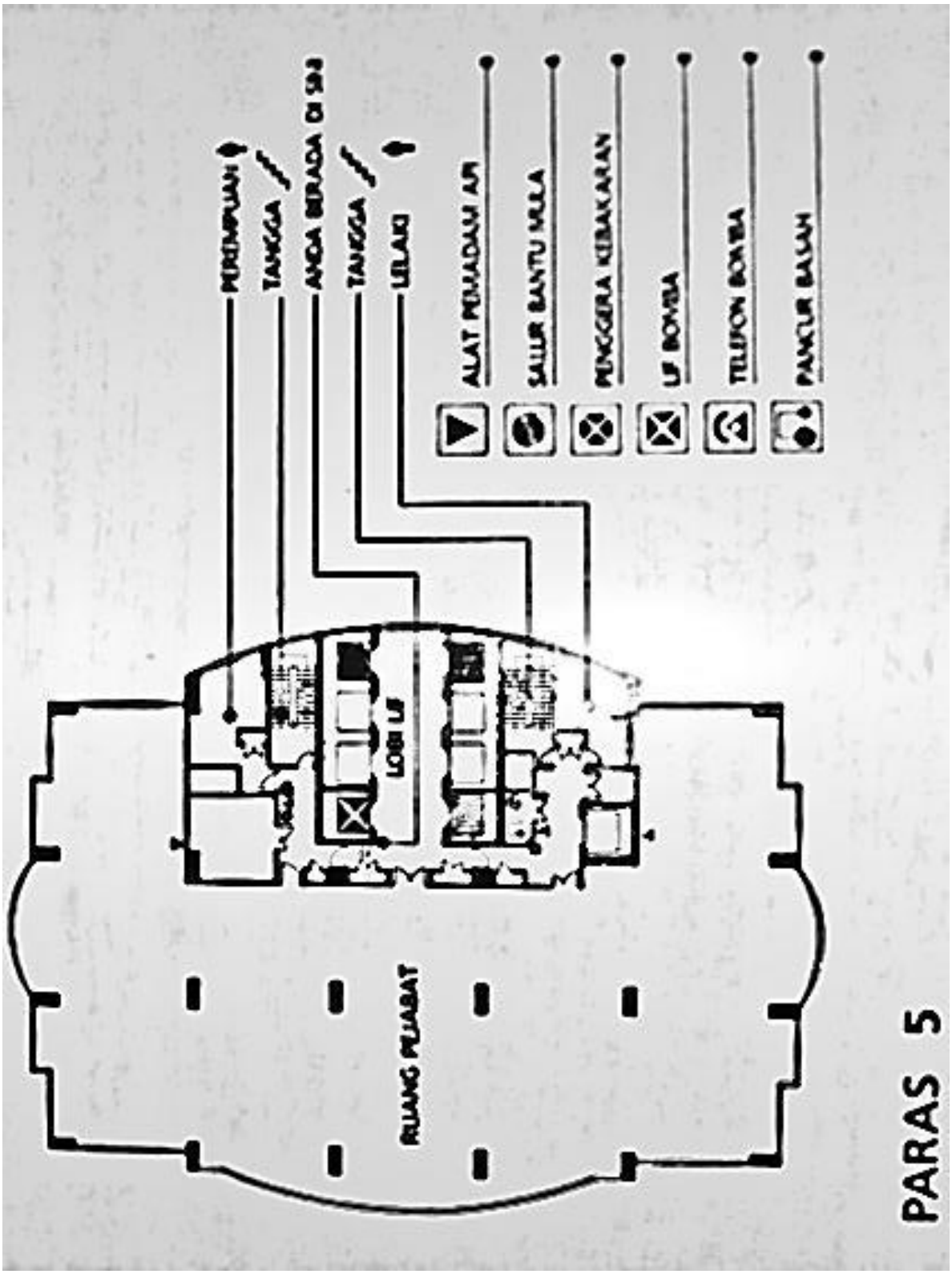
PERHENTIAN
TANGGA
ANCAK BERADA DI SINI
TANGGA
LELAKI
ALAT PEMADAM API
SALUR BANTU MULA
PENGGERA KEBAKARAN
LP BOMBA
TELEFON BOMBA
PANCUR BALUH
LOBI LIF
RUANG PEJABAT
PARAS 5

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