DEPARTMENT OF BUILDING SURVEYING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

TITLE

(MAINTENANCE PLANNING)

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DIPLOMA IN BUILDING SURVEYING

PRACTICAL TRAINING REPORT

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ACKNOWLEDGEMENT

In the course of practical training for four months, many of those who supported me for the success of the report. First of all, I would like to thanks Facilities of Department Management for giving me the opportunity to do practical training in companies.

In addition, I would like to thank the technician at Uitm En Syidi b Syamsuri because give more information and guidance to me about construction. He also gave full faith and an opportunity of doing any work.

Not forgetting my parents a lot of help in financial terms in the success of this practice. They also often provide support and encouragement to me to complete the practical training report.

I would also like to thank my supervisor,En. Amin because she has helped and assisted in completing the practical training report. Additionally, not forgetting my fellow friend because gave support and cooperation in making my final project.

Finally, I am satisfied with all the work I do and it's a lot of positive impact on me. I hope the University of Technology Mara (UiTM) will continue to cost and practical training such as this to the coming generation.

ABSTRACT

Practical training is a course that should be completed by all students who took the final semester of Diploma in Building Surveying. Students can choose where company or palace to conduct the practical training.

I have selectthe state government departments of the Facilities Management as a place for the practical training. I have placed at site office zone 2 .The site supervisor as a leader in this site had been appointed to be my supervisor during the training.

During the practical training, I learned about the use of concrete in construction of apartments. For example, knowing that each type or grade of concrete, know the making and delivery of concrete to the construction site.

Practical training will be end after four months the students complete the training. Finally, students will then prepare a report according to the topics that relevant to the work during the practical training that had been done.

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CHAPTER 1

INTRODUCTION

1.1 **Company Background**

Figure 1.0 *Building of Administration*

Universiti Teknologi MARA (UiTM) is a Public Higher Education Institution under the Ministry of Education established under the operation of the MARA Institute of Technology, 1976 (Act 173).UiTM Board is a body formed to formulate policies, manage and facilitate the administration of the University's operations. The tasks carried out by the formation of policy are in line with the provisions of Act 173 (and amendments) and the operation of government regulation and the adoption by UiTM. While implementation is managed by the University staff, headed by the Vice-Chancellor as Chief Executive. Implementation of student affairs and discipline is in accordance with the provisions of Act 174 (and its amendments). ITM has been upgraded by the Prime Minister as Universiti Teknologi MARA on 26 August 1999.

UiTM Perak was established on January 1, 1985 and was inaugurated by the Chief Minister of Perak, Dato 'Ramli Ngah Talib. Opening of Phase I groundbreaking in UiTM Seri Iskandar campus was done in 1995. On July 21, 1997 Opening Ceremony of Phase I Campus Seri Iskandar was launched by HRH Paduka Seri Sultan of Perak. The transition from a temporary campus in Seri Manjung to permanent campus in Seri Iskandar started since January 1996 until July 2002.Universiti Teknologi MARA (Perak) was established with the co-operation of the Perak State Government and officially opened in 1985 at Bandar Baru Seri Manjung.

The campus is now located at Bandar Seri Iskandar, Perak Tengah District and occupies an area of approximately 392.36 acres. This campus is strategically located along the Ipoh – Lumut main road, which provides easy access to both Ipoh and Lumut.

The campus has built new hostels for the students and is able to accommodate a maximum of 8000 students. As of now, there are 9665 full-time students in 30 programs and 418 part time students in seven programs, with 539 full time lecturers and 359 administrative and support staff.

Apart from the classrooms, other facilities available are 38 computer laboratories with more than 1,000 computers, 10 technology-enabled classroom (TEC), drafting studios, building and ceramic workshops, a multipurpose hall, a library and various state of art sporting facilities.

1.2 Vision and Mission Company

Vision

To establish UiTM Perak as a premier university of outstanding scholarship and academic excellence capable of providing leadership to Bumiputera's dynamic involvement in all professional fields of world – class standards in order to produce globally competitive graduates of sound ethical standing

Mission

To enhance the knowledge and expertise of Bumiputeras in all field of study through professional programmes, research work and community service based on moral values and professional ethics

Objective

I. To provide maximum opportunities for bumiputeras to pursue professionally recognised programmes of study in science , technology , industry , business , arts and humanities

II. To provide quality and innovative programmes of study relevant to current market needs and customer demands , and in line with policies of national development

III. To establish a human resource development programme as a tool for the assimilation of a value system within the university community

IV. To ensure that UiTM graduates are adequately prepared to join the local as the global workface

V. To establish UiTM as a centre that is accountable for the effective and efficient management of its human resources , finances and assets in order to achieve its educational objectives , while playing its role as a catalyst in community development

1.3 Location Plan

Figure 1.1 *Location map of UiTM Seri Iskandar*

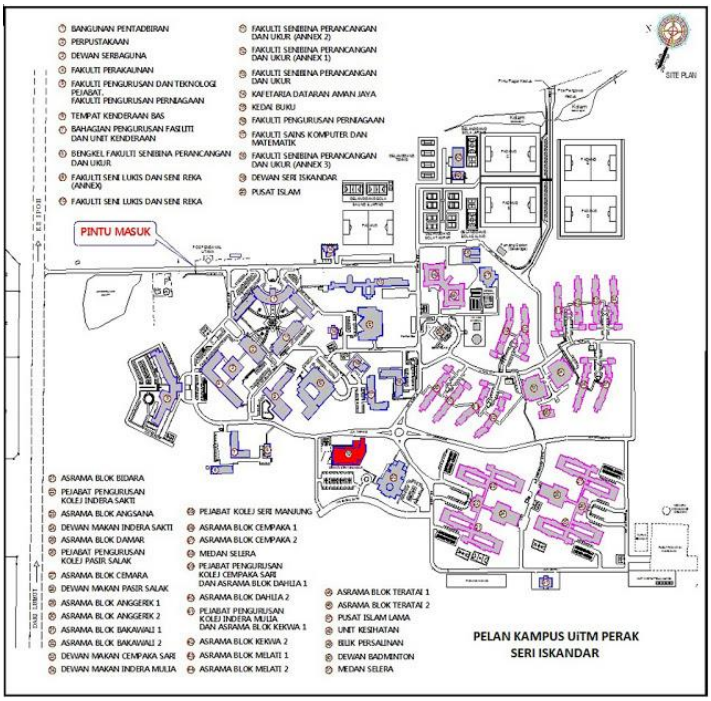


Figure 1.2 Campus *map of UiTM Seri Iskandar*

1.4 Department of Facilities Managements

Division of Facilities Management has outlined six (6) core objectives in order to realize the desire to become a professional indigenous facilities management organization to world-class universities such as the following:

1. Provides management services and complete facilities to create an atmosphere of learning, teaching and research environment and safety
2. Provides a planned package of facility management and strategic to increase the efficiency of service delivery facilities
3. Ensure that the standard implementation of facility management is measured by the index of achievement outlined in Article 5.2
4. Securing and enhancing strong customer service conjunction with its status Article 4.4.2
5. Generate the University, through a number of financial packages that are appropriate to the portfolio of sustainable facility management, and
6. It is a reference management organization (referral organization) in the field of facility management.

1.5 Authority and Staff Relations

Head duty officers who are related	Given authority	The duties of other types of relationships as well as other duties related
<u>Rector</u> 1. Giving instructions / circulars issued / setting policies (rules). 2. Sign and approve letters / documents related to UiTM Perak in overall. <u>Deputy of Rector (HEA)</u> 3. Giving instructions to sign the letters / documents of academic affairs at UiTM Perak.	Take rules according to the rules/instructions set.	5. Deputy of Rector (HEA) 1.1 Prepare and repair the damage in the office and building at UiTM Perak. 6. Deputy Treasurer Prepare and repair the damage in the office and building at UiTM Perak. 7. Deputy Chief Librarian Prepare and repair the damage in the office and building at UiTM Perak. 8. Hostel management Prepare and repair the damage in the office and building at UiTM Perak.

<u>Deputy of Rector (HEP)</u> 4. Give instructions relating to the affairs of the students in UiTM Perak and sign documents.		
Head duty officers who are related	**Given authority**	**The duties of other types of relationships as well as other duties related**
<u>Program Coordinator</u> 9. All matters pertaining to the maintenance and repair of the lecture rooms. <u>Engineers</u> 10. Directing, supervising and monitoring the	Take rules according to the rules/instructions set.	12. Assistant (HEA & HEP) Prepare and repair the damage in the office andbuilding at UiTM Perak. 13. Security officers Prepare and repair the damage in the office andbuilding at UiTM Perak.

daily tasks. <u>Assistant Engineer</u> 11. Directing, supervising		

1.6 **Organization Chart for UiTM**

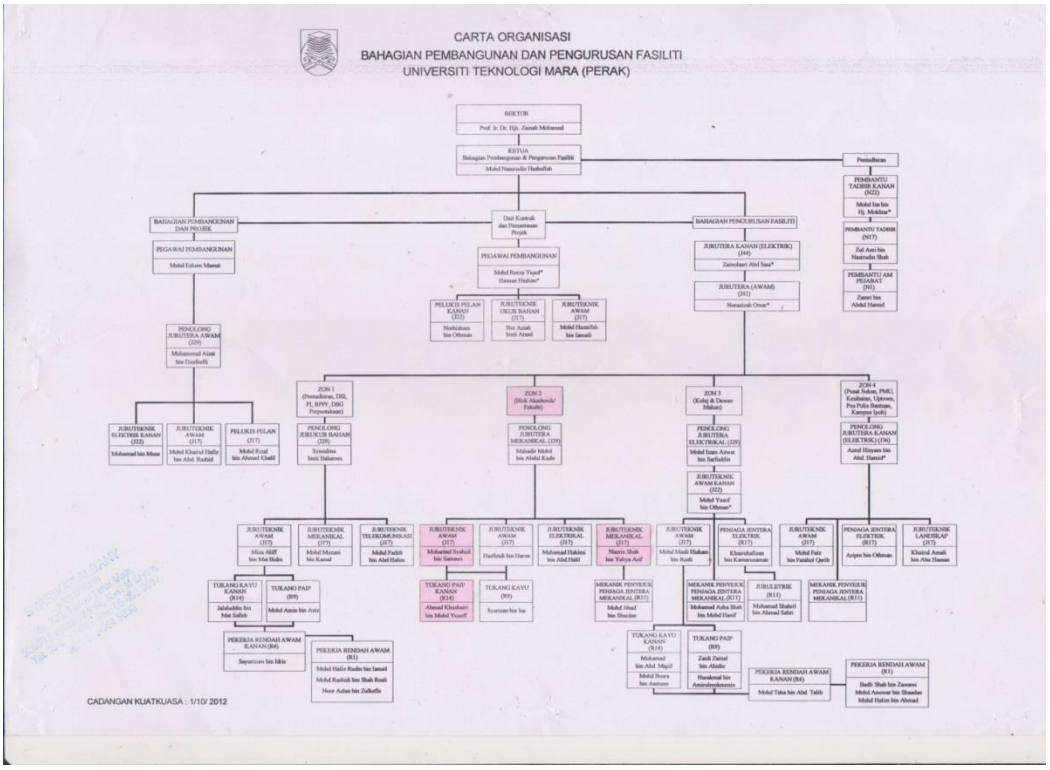


Figure 1.3 organization chart at UiTM

1.6.1 Organization Chart for Zone 2

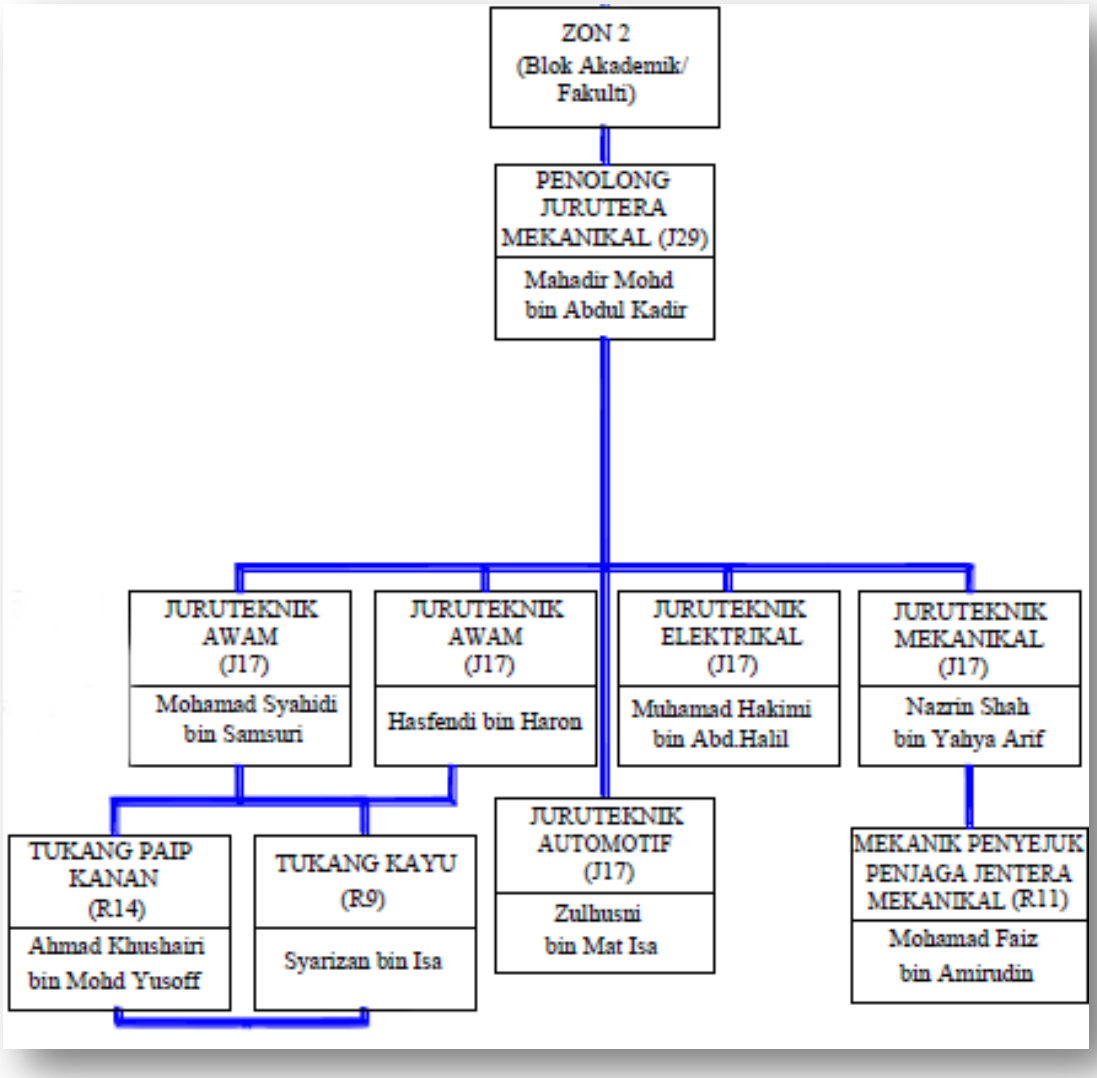


Figure 1.3 Organization Chart for Zone 2

Figure 1.4 Department of Facilities Managements(Head Quarters)

Figure 1.5 Department of Facilities Managements(Zone 2)

1.7 Scope Of Work Department of Facilities Management

1. Main functions: **Project and Contract Unit**

   Scope of work:

   I. Site investigation work and project cost estimates

   II. Quotation document preparation

   III. Preparation of tender documents

   IV. Work preparation quotes job offer

   V. Tender bid preparation work

   VI. Job work payment

2. Main functions: **Building Operations and Infrastructure Unit**

   Scope of work:

   I. Provide quotation document

   II. Prepare tender documents

   III. Civil damage repair

   IV. Building cleaning services and area

1 Main function: **Mechanical Electrical Service Unit and Telecommunications**

Scope of work:

I. Repair of Mechanical and Electrical damage complaints

II. The M & E services of UiTM

III. Scheduled maintenance for high voltage power supply systems

IV. Electrical substation fault repair

V. Site investigation and the estimated cost of project.

VI. Work preparation quotation documents

VII. Job offer quotation preparation

VIII. Working payment

2 Main function: **Administrative unit**

Scope of work:

I. Responsible for the correspondence

II. Manages the application and hiring office equipment

III. Responsible for recording and updating the staff leave

IV. Handling telephone calls to customers (Special Assistant)

V. Prepare reports punch card

VI. Receive damage complaints

3 Main function: **Operation and Unit council Unit**

Scope of work:

I. Installation banner, backdrop and bunting
II. Managing the site preparation and equipment
III. Maintenance and landscape areas
IV. Preparation of flower decoration for council
V. Preparation of tree flower decoration for office furnishings

Emergency works

1.8 General Administrative Regulations

General

I. Staff need to record time in / out on the card provided.

II. Staff are required to fill the holidays form and supported by the Head of week before being forwarded to the Engineer approved.

Distinctive

I. Provide cost estimates

II. Budget based on the specifications and plan/layout

III. Budget based on plans only

IV. Budget based on Malaysian Standard Method of Measurement of Building Works Second Edition (SMM2)

V. Budget based on schedule of small work rates and repair

VI. Provides tender price quotation

VII. Based on JKR 203 / JKR 203A

VIII. Provides analysis/report of call notice

IX. Arrange payment to the contractor for the project in accordance with the procedures set

X. Department Orders and Work Validation Form

XI. To bring the holidays to the following year, staff must obtain the approval of the service of UiTM Shah Alam, with support of the Engineer and Director of Campus

1.9 Aims and Objectives

I. The specific aims of the department are as follows

II. To develop the student's intellectual, powers and ability in analyzing fact finding and investigation through relevant scientific and qualitative analysis.

III. To develop a knowledge and understanding of the principles, concepts and procedures with special emphasis in the field of material and construction, maintenance, legal and management and interrelated aspects of technologies in construction industry.

IV. To educate the student in dealing with the implication of developments and awareness of factors affecting the built environment and society

V. It enables the Department to develop an information technology system over the broad area of subjects, which can be used as a basis for future research.

VI. To produce graduates an opportunity to reinforce taught or learnt material and strengthens integration in fostering individual relationship between the student, staff and other members of the construction industry.

CHAPTER 2

LITERTURE REVIEW

(Maintenance Planning)

2.0 Introduction of Maintenance Planning

Building is a valuable asset in the present for an organization or company. Great buildings are buildings that can last long though life expectancy has exceeded the prescribed period. Therefore, great efforts should be taken to prolong life span and have to be planned building maintenance strategy

The term ‘maintenance’ means to keep the equipment in operational condition or repair it to its operational mode. It is a continuous operation to keep buildings, furniture inside the buildings, and equipment in the best form of normal use. Maintenance activity covers the whole building envelope which includes the building structures, roofing, building exterior and interior, wall, columns and fixed furniture.

Maintenance Planning is an orderly and systematic approach to planning, organizing, monitoring and evaluating maintenance activities and their costs. A good maintenance management system coupled with knowledgeable and capable maintenance staff can prevent health and safety problems and environmental damage; yield longer asset life with fewer breakdowns; and result in lower operating costs and a higher quality of life.

Main objective of the maintenance is to have increased availability of production systems, with increased safety and optimized cost. Without the work of a proper maintenance, the entire structure and building materials over time will be faded, worn, damaged and dilapidated. The basic principle of maintenance is important to make sure that the work is done correctly and perfectly in time.

Building services covers on :

I. Commercial Buildings

II. Conventional Buildings

III. Residential Buildings

IV. Government Buildings

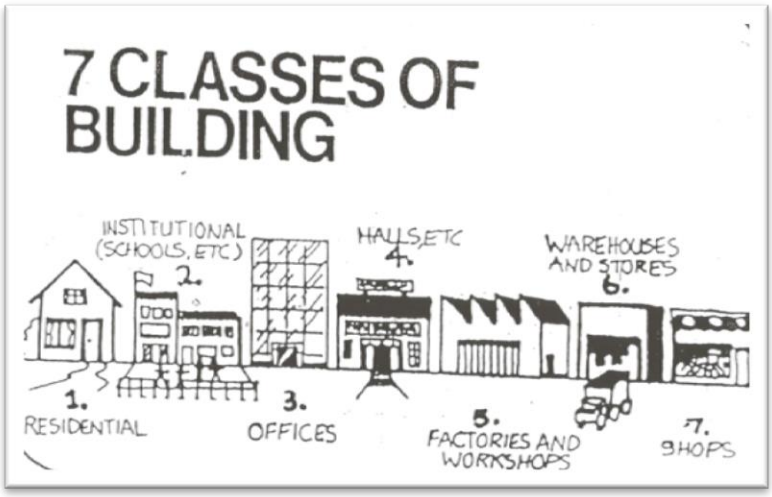


Figure 2.0 1 classes of Builiding

Component should be maintained in each category in the building is

1. Mechanical ventilation and Air – conditioning system.
2. Fire protection system
3. Building Automation and safety
4. Gas distribution system
5. Electrical System
6. Telecomunication system (PABX)

In UiTM Perak, Department Of Facilities And Management has been given order to be in charge in maintenance work. However the scope of has been divided into few departments such as

- Civil work and mechanical services
- Contract and cost control
- Projects
- Buildings operation and infrastructure
- Housekeeping services
- Occupational safety and health

Maintenance is the routine every day that has been done and work needed to prevent decay in Uitm Perak :

- Maintaining interpretation , exhibitions, and interactive
- Maintaining lighting
- Management and maintenance planning
- Maintaining facilities for visitors and other services
- Clearing gutters and keeping drains clear
- Dealing with litter , waste collection and disposal
- Regular inspections of equipment, structures and services
- Caring for trees and other vegetation
- Housekeeping and routine cleaning

2.1 Preventive maintenance

Preventive maintenance is a schedule of planned maintenance actions aimed at the prevention of breakdowns and failures. The primary goal of preventive maintenance is to prevent the failure of equipment before it actually occurs. It is designed to preserve and enhance equipment reliability by replacing worn components before they actually fail.

The activities in preventive maintenance are:

I. Equipment checks, partial or complete overhauls at specified periods, oil changes, lubrication and so on

II. Workers can record equipment deterioration so they know to replace or repair worn parts before they cause system failure

III. Recent technological advances in tools for inspection and diagnosis have enabled even more accurate and effective equipment maintenance

IV. The ideal preventive maintenance program would prevent all equipment failure before it occurs

Long-term benefits of preventive maintenance include:

I. Improved system reliability

II. Decreased cost of replacement

III. Decreased system downtime

IV. Better spares inventory management

2.2 Corrective maintenance

Corrective maintenance is a form of system maintenance which is performed after a fault or problem emerges in a system, with the goal of restoring operability to the system. In some cases, it can be impossible to predict or prevent a failure, making corrective maintenance the only option. In other instances, a poorly maintained system can require repairs as a result of insufficient preventive maintenance and in some situations people may opt to focus on corrective, rather than preventive, repairs as part of a maintenance strategy.

Corrective maintenance involves the repair or replacement of components that have been identified as worn, defective, or broken .Occasionally, however, in spite of the best preventive maintenance, equipment will unexpectedly malfunction or breakdown altogether during an exercise.

The activities in corrective maintenance are:

I. The maintenance worker must acknowledge this eventuality and be ready to deal with it when it occurs
II. A comprehensive preventive maintenance program will keep these occurrences to a minimum, so that corrective work will be done easily
III. Troubleshooting and repair - detecting the cause of any malfunction
IV. Casualty diagnosis - Constant test operation and inspection

2.3 Maintenance Contract

Maintenance contract is defined as the contract between two parties that creates the agreement between both parties that only one party will maintain an asset owned by another party. Maintenance contract exist for equipment, a building, a landscape, computer technologies, and more.

Maintenance contract is simply an agreement to maintain something, for example, maintaining a property. It is a fixed fee service provided by a contractor of a buildings or equipment.

Maintenance contract includes;

I. Maintenance agreement
II. Maintenance contract policy
III. Maintenance contract management
IV. Maintenance contract management features

2.4 Maintenance agreement

Maintenance agreement usually includes;

I. Preventive maintenance work
II. Every month for each year
III. Stated agreement price
IV. Signature

2.5 Maintenance contract policy

Maintenance contract policy describes about the maintenance contract.

Pricing

I. Maintenance contracts are priced at 20% of a service's list price per year, payable in advance.

II. Maintenance contracts can only be implemented together with a service stated in the contract, or together with an upgrade of the work, with a minimum upgrade amount.

The purposes of policies, regulations and rules

The purpose of this Statement is to outline the procedures to be used by clients, departments and administrative units towards contractor in obtaining required maintenance and/or repair services for equipment under their control.

Rules

I. Service or maintenance contracts are generally the most economical method for servicing or maintaining equipment.

II. Procedures

III. In-Warranty Service and Repair

IV. Out-of Warranty Service and Repair

V. Emergency Repairs/Non-Contract Equipment Service

VI. Software Licenses and Maintenance

2.6 Maintenance contract management

The purpose of maintenance contract management is to manage operational and financial aspects of contractual relationship.

Profitability is tracked on a per-contract basis by actual, estimated, and forecasted costs in user-defined cost categories. Various contract models are supported, including full coverage agreements, preventive maintenance planning, and warranty agreements.

To control over the timely performance of maintenance services. Flexible and detailed preventive maintenance plans can be created to ensure maximum availability of equipment under contract. The application tracks the skill set, parts and tools required to complete a preventative maintenance task.

2.7 Maintenance contract management features

1. Maintenance contract administration and renewal functions
2. Ability to attach extensive notes and user-definable fields to each contract
3. Maintenance tasking database by piece of equipment with time and cost estimates
4. On-screen Contract Status tracks contract amount, actual costs, estimate, forecast and contract earned amounts
5. Multiple revenue recognition methods
6. Flexible billing capability allows numerous automatic billing periods
7. User-definable billing schedule allows “front loading“ and seasonal billing
8. Automated routine increases maintenance contract service calls for dispatching
9. Ability to generate renewal letters
10. Automatic price increases
11. Master contracts
12. Maintenance Contract Quotes

2.8 Maintenance Organization

It concerns in achieving an optimum balance between plant availability and maintenance resource utilization. The two organization structures that are common are: Centralized and Decentralized. A decentralized structure would probably experience a lower utilization than centralized one but would be able to respond quickly to breakdowns and would achieve higher plant availability. In practice, one may have a mix of these two. A maintenance organization can be considered as being made up three necessary and interdependent components.

1. Resources: men, spares and tools
2. Administration: a hierarchy of authority and responsibility for deciding what, when and how work should be carried out.
3. **Work Planning and Control System**: a mechanism for planning and scheduling the work and feeding back the information that is needed for correctly directing the maintenance effort towards defined objective.

It may be mentioned that maintenance / production system is a continuously evolving organism in which the maintenance organization will need continuous modifications in response to changing requirements. Moreover, it is required to match the resources to workload. Maintenance activities – be it preventive or condition monitoring, involve use of resources- men and materials including documents.

This requires coordination amongst the involved personnel so that these are timely undertaken. Work planning and control system under maintenance management in the plant ensures this and provides planning and control of activities associated with maintenance. This means application of general management principles of planning, organizing, directing and controlling to the maintenance functions, e.g. to the establishment of procedures for development of maintenance strategy and to models for describing the flow of work through maintenance work planning department. Control system controls the maintenance cost and plant condition

2.9 Maintenance Policy

Maintenance policy is a strategy within which decision on maintenance are taken. A building maintenance policy should be a clear statement of the objectives and methods to be employed by the department in keeping buildings fit for use and preserving their asset value.It should define the framework on which all building maintenance and management operations are based and state the life expectancy, or required life expectancy, of the asset. [Source: RICS]. The emphasis of a maintenance policy should be to maximize planned and cyclical maintenance works and reduce responsive maintenance. The policy statement should also set out the organization's approach to miscellaneous works.

Miscellaneous Works – are defined as remedial works to specifically identified 'components' or 'areas' of Association-owned property where works or measures are necessary:

a) To ensure the health and/or safety of tenants/others; or

b) To comply with new statutory requirements.

Most miscellaneous works situations have existed since the dwelling/ property was built/ or improved, at which time the problem/hazard was not known or recognized. In certain circumstances, these may now be tending to cause harm to the tenant's and others health, and require work/ measures to ensure the dwelling remains safe for occupation; or property may not now comply with new statutory requirements or responsibilities on the Association as a Landlord.

The department, as responsible social landlords, must provide an effective, efficient and responsive repair service to their residents. To aid this objective, the department should formally adopt a Building Maintenance Policy Statement, which:

I. Sets out the organizations' obligations;
II. Details the approach to the maintenance of its housing stock;
III. Details the priority that should be attached to undertaking this type of work;
IV. Details how information is recorded and targets/ programmed monitored;
V. States review timeframe to ensure policy is current and relevant; and
VI. Details timetabling arrangements for achieving a ratio of 60:40, or better, in favour of planned and cyclical maintenance.

In order to manage this work, the department should appoint a member of staff to oversee all repairs and maintenance works and have a 'contact point' to deal with queries, and to record and monitor progress.

Industry standards would suggest that a balance of 60:40 in favor of planned and cyclical maintenance should be the target. The department should have a timetable in place to meet this target, monitor progress towards achieving this ratio and have suitable arrangements in place for reporting on this to their Boards. Measurement and monitoring is an essential part of maintenance management and progress should be reported to the Board on at least an annual basis. During inspection, the department will be required to demonstrate that they are implementing these requirements appropriately

CHAPTER 3

CASE STUDY

3.0 Introduction of Case Study

Department of facilities management services to uitm. One of the important tasks for the department of facilities of management is to provide a safe, comfortable, to every student or lecturer to carry out the learning process. Department of Facilities of management is divided into 2 parts, construction department and maintenance department. Maintenance department is divided into 4 zones :

I have been placed in facilities of management which mostly make work - public works and public improvements in the zone 2 as well as zone 2 to ensure the building is in good condition. In addition, to ensure the safety of consumers in the building and reduce the cost of building repairs

I took some building / faculty in zone 2 to be used as an example case study to demonstrate the maintenance planning has been done to the building:

1. Faculty of Architecture, Planning and Surveying
2. Faculty of Art & Design (Workshop)
3. Akademi Bahasa

Zone 1

1. Dewan seri iskandar
2. Bangunan pentadbiran
3. Pusat islam
4. Pusat mahasiswa
5. Dewan serbaguna
6. Bahagian pembangunan projek dan fasiliti

Zone 2

1. Faculty of Architecture, Planning and Surveying
2. Annex 1
3. Annex 2
4. Annex 3
5. Faculty of Accounts
6. Faculty of Art & Design
7. Faculty Business Management
8. Faculty of Computer and Mathematical Services
9. Makmal Bahasa

Zone 3

1. Field A
2. Field B
3. Field C

Zone 4

1. Teratai 1 & 2
2. Anggerik 1 & 2
3. Bakawali 1 & 2
4. Dahlia 1 & 2
5. Kekwa 1 & 2
6. Cempaka 1 & 2
7. Bidara
8. Angsana
9. Cemara
10. Damar

3.1 Introduction of Case Study Building

3.1.1 Faculty of Architecture, Planning and Surveying

Figure 3.0 Front view Fspu

Faculty of Architecture, Planning and Surveying (FSPU) is one of the largest faculties in UiTM Perak. 7 Department faculty . FSPU building is located in front of the field A. FSPU building was built in the first phase of construction of UiTM Perak. Date of commencement of this project is on 29/12/1994 and it was completed in 30/12/1996. The cost of construction of this FSPU RM15 Million including the building - built another building phase 1 . Architects, engineers, contractors involve in construction are :

I. Arkitek : Rrkabina Sdn Bhd
II. Civil & Stru: Eng Const . Sdn . Bhd
III. M & E Const : R M Z Perunding Sdn. Bhd
IV. Cont : Sykt Pembinaan limbangan setia Sdn . Bhd

3.1.2 Faculty of Art & Design (Workshop)

Figure 3.1 Front view

Faculty of Art & Design (Workshop) was built in 2008. The workshop was built in the 8th phase. Start date of this project on 16/4/200 and was completed in 30/10/2010. The cost of construction for this workshop is 9.5 million. Architects, engineers, contractors involved in construction are:

I. Architect : FAA Sdn Bhd

II. Civil & Stru : Perunding Aidid Sdn Bhd

III. M & E Const : Perwira Al – Shuara Const Sdn Bhd

IV. Cont : Sykt. Linkangan Muhibah Sdn Bhd

b) Details plan refer appendix

3.1.3 Faculty Business Management

Figure 3.0 Front view Faculty of Business Managment

Faculty of Business Management (Blok Akademik) was built on 2008. The workshop was built in the 8th phase. Start date of this project on 16/4/2008 and was completed in 30/10/2010. The cost of construction for this ‘ Blok Akedemik ‘ is 20 Million. Architects, engineers, contractors involved in construction are

I. Architect : FAA Sdn Bhd

II. Civil & Stru : Perunding Aidid Sdn Bhd

III. M & E Const : Perwira Al – Shuara Const Sdn Bhd

IV. Cont : Sykt. Linkangan Muhibah Sdn Bhd

b) Details plan refer appendix

3.2 Case Study 1 (Routine Maintenance)

The first case study is about the cleaning near the Faculty Business Management of UiTM. The project title is ' **PERKHIDMATAN MEMBERSIH DAN MENCUCI DI BANGUNAN DI ZON 2 UNIVERSITI TEKNOLOGI MARA, KAMPUS SERI ISKANDAR , PERAK DARUL RIDZUAN SELAMA TIGA (3) TAHUN (2012 – 2015).** The name of company is POWER CALIBRE Sdn.Bhd and the total cost for one month (AUGUST) is RM 32,945.30

The cleaning work is done to avoid impurities in the Faculty of Business Management to make the occupant in the building will be comfortable to use the building

3.2.1 Scope of work for Cleaning

a) Daily Work

NO	Specification of Work
1.a	The work of cleaning and sanitization (1a – 1b)
b	The work of supplying Plastic bag for small dustbin and big dustbin (1c)
c	The work of supplying hygiene in the toilet that has been listed (1d)
d	The work of supplying roll tissue in the toilet that has been listed

b) Weekly Work

NO	Specification of Work
2.a	The work of mops cement render , tiles dan parquet like office , lobby , pedestrian walk and stairs
b	The work of brushing tiles at toilet , office, and pedestrian walk using scubbing machine to detach dirty like the spefication work (2b)
c	Cleaning the notice board , white board , chair , celling , column like the specification works

c) Periodic Work

No	Specification of Work
1	Cleaning and swipe from any dirty like leafs at the roof , RWP, Gutter

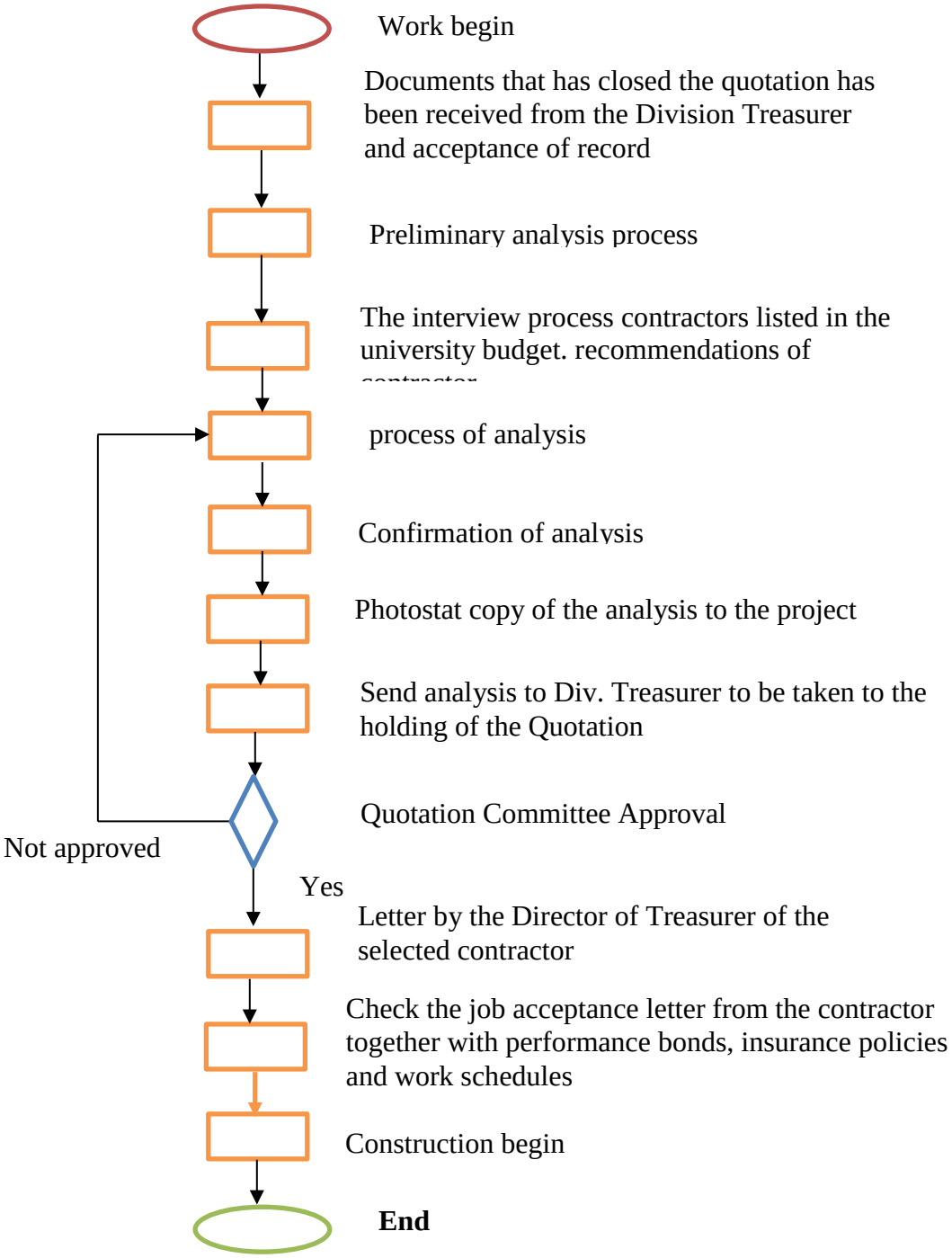
1.2 Case study 2 (Emergency Maintenance)

The second case study is about emergency maintenance near at Faculty Art and Design. The title of project is **CADANGAN KERJA – KERJA PEMBAIKPULIH SILING DI BANGUNAN SENI LUKIS DAN REKA DI UITM SERI ISKANDAR, PERAK.** The total cost for repair this damage is RM 2500.00. The name of company is SRI CENTAYU ENTERPRISE

The repairing of ceiling is because it can dangerous the student and staff at the building. It is because it was the main entrance to the inside faculty. The original ceiling is broken because there is leakage at the roof when at raining day.A new ceiling is need to replace because the broken ceiling might fall anytime.

3.2.2 Flowchart

Providing job offer quotations



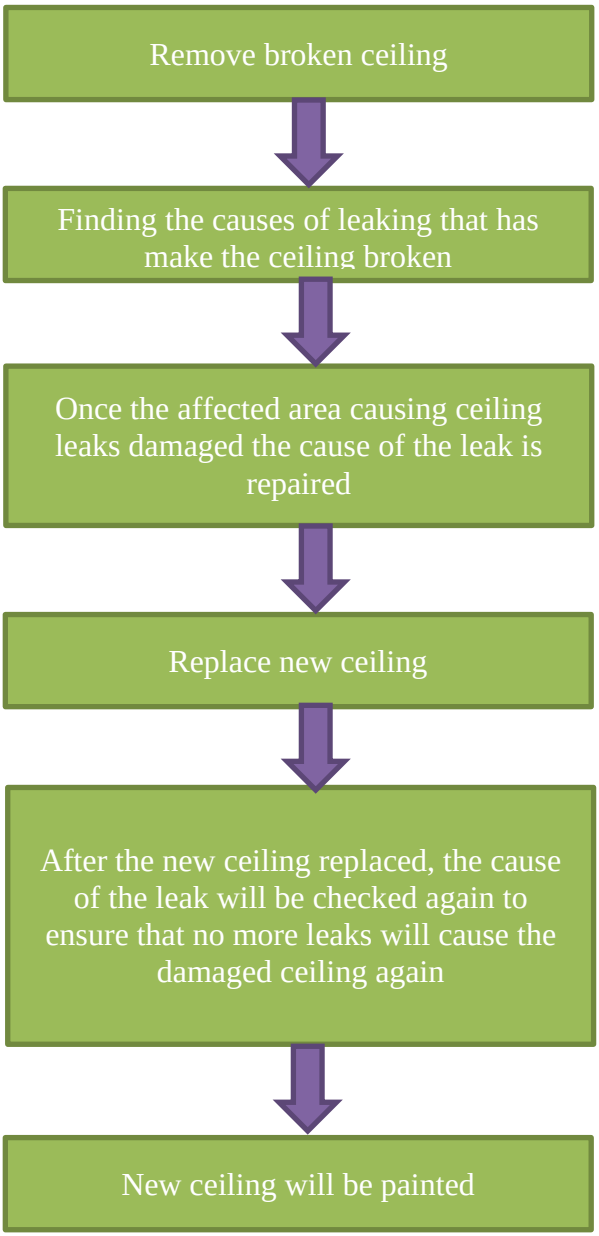
3.2.3 Main causes of damages

The basic cause behind a ceiling leak is water either dripping through an existing crack or water pooling somewhere and creating a crack by wearing through the material it's on. Depending on the strength of the material, the water could take some time to wear through. Water can also travel along a surface inside the attic or crawlspace to leak through into a room that's nowhere near the original outside leak.

Too much rain on the roof is an obvious cause of ceiling leaks. The rain pelts and wears away at the roof, eventually dripping into any attic or crawlspace, where the process repeats itself on the layer that acts as your ceiling.

Figure 3.3 Shows the broken ceiling

3.3.3 Procedure of work repairing ceiling



3.4 Case Study 3 (Preventive Maintenance)

The case study is about wall leaking at Department Facilities and Management Seri Iskandar. The title of the project is "**CADANGAN KERJA-KERJA BAIKPULIH KEBOCORAN DINDING UNTUK FAKULTI PERAKAUNAN,FPP DAN FSPU ZON 2, UNIVERSITI TEKNOLOGI MARA (PERAK) SERI ISKANDAR, PERAK DARUL RIDZUAN**". The name of the contractor is Imza Maju Enterprise and the contract amount is RM 18,110.03.

The causes of the leak happened at Department Facilities and Management is because of the unsuitable materials used during construction and also because of environmental factors such as wind and heavy rain. Design of the wall construction is also one of the causes of one of the leak , crack and dampness problems.

3.4.1 Research of case study

The leakage that occur because the heavy rain on parts of the wall and water flowing through the wall because the wall is not covered with a roof and uncertain wheather condition at Sri Iskandar is causing leakage, crack and dampness in the walls.

The defects has been checked using some equipment to know the details of the defects. The cracked at the outside is more than 40 mm and depth of 6 mm and it can cause the wall become worse and effect to another building element. The moisture meter have been used to determine and the dampness is 32.0%

Therefore , the repairing work need to be done due to leakage at the 3rd floor of the office building management . From this damage , it can cause the same effect or defect if not repair early.

3.4.2 The process of repairing work

The picture that shows the part that need to repair is before breaking work on building work on building walls that has been categorized broken wall.

Figure 3.3 Show the *crack outside the building*

Figure 3.4 Show the *peel of paint (dampness) inside the building*

After inspecting and collecting data , the wall is break for purpose repairing wall that has leaxkage and crack. The work it done for 3 three days until it all complete break. After the leaking and crack the new brick will replace and plaster the walls with appropriate materials

Figure 3.4 Show the the wall has been repair

Figure 3.5 show the worker doing plastering work

Next, after the plastering work has done , cleaning and repaint the walls to make sure the walls in good condition . Meanwhile the the same job is done.

Figure 3.6 show the worker painting the wall

Figure 3.7 show the crack inside the building has been repair

3.5 Oraganization Chart of Maintenance Staff at Zone 2

Uitm Perak has use external maintenance companies ‘ outsource ‘ to make all public repairing . All costs of public improvements that have been made by the company was going in Claim to UiTM Perak. Uitm staff will only give orders to the company after complaints from the staff uitm / students - students of the campus.

SAS BINA ENTERPRISE have been choose by Uitm Perak to take all responsibility to make all repairing work in Uitm. Sas Bina Enterprise have 6 workers that have giving responsibility to take make all maintenance work :

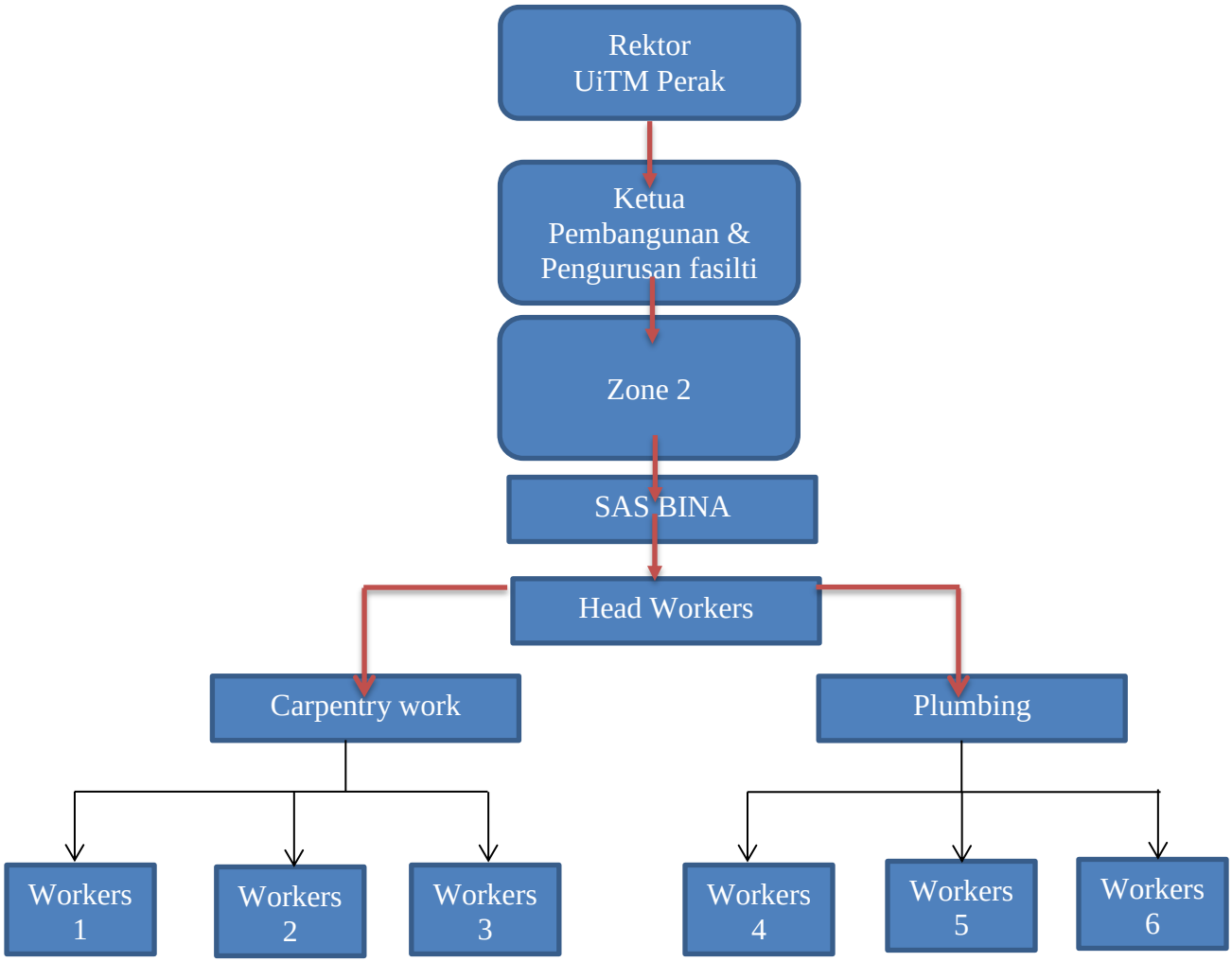


Figure 3.8 Show the organization chart for Sas Bina Enterprises

3.6 Process Of Building Defects Complain in Uitm Perak

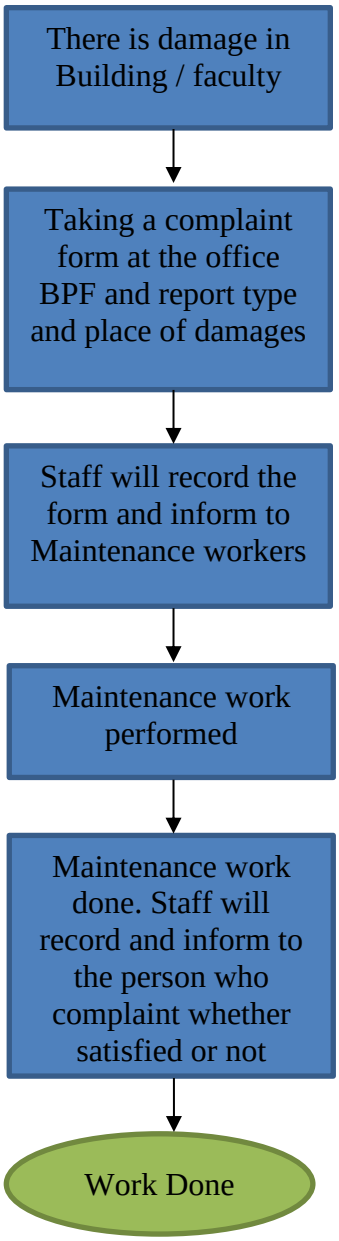
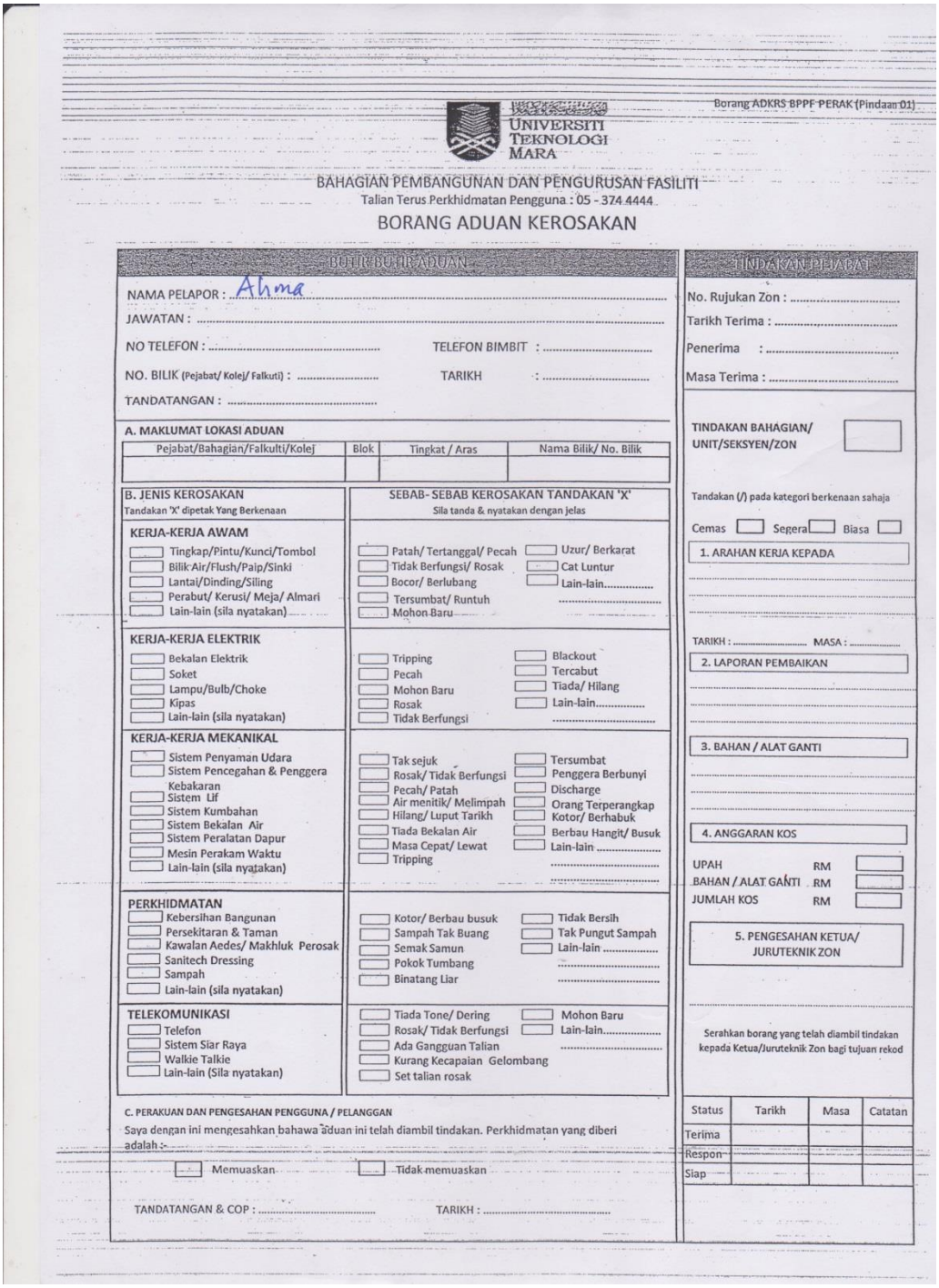


Figure 3. 9 Process of Complain at Uitm Perak

3.6.1 Example of Complain / Report Form



Borang ADKRS BPPF PERAK (Pindaan 01)

UNIVERSITI TEKNOLOGI MARA

BAHAGIAN PEMBANGUNAN DAN PENGURUSAN FASILITI
Talian Terus Perkhidmatan Pengguna : 05 - 374 4444

BORANG ADUAN KEROSAKAN

BUTIR-BUTIR ADUAN

NAMA PELAPOR : Ahma
JAWATAN :
NO TELEFON : TELEFON BIMBIT :
NO. BILIK (Pejabat/ Kolej/ Falkuti) : TARIKH :
TANDATANGAN :

A. MAKLUMAT LOKASI ADUAN

Pejabat/Bahagian/Falkulti/Kolej	Blok	Tingkat / Aras	Nama Bilik/ No. Bilik

B. JENIS KEROSAKAN
Tandakan 'X' dipetak Yang Berkenaan

SEBAB-SEBAB KEROSAKAN TANDAKAN 'X'
Sila tanda & nyatakan dengan jelas

KERJA-KERJA AWAM
- Tingkap/Pintu/Kunci/Tombol
- Bilik Air/Flush/Paip/Sinki
- Lantai/Dinding/Siling
- Perabut/ Kerusi/ Meja/ Almari
- Lain-lain (sila nyatakan)

Patah/ Tertanggal/ Pecah; Tidak Berfungsi/ Rosak; Bocor/ Berlubang; Tersumbat/ Runtuh; Mohon Baru; Uzur/ Berkarat; Cat Luntur; Lain-lain.....

KERJA-KERJA ELEKTRIK
- Bekalan Elektrik
- Soket
- Lampu/Bulb/Choke
- Kipas
- Lain-lain (sila nyatakan)

Tripping; Pecah; Mohon Baru; Rosak; Tidak Berfungsi; Blackout; Tercabut; Tiada/ Hilang; Lain-lain.....

KERJA-KERJA MEKANIKAL
- Sistem Penyaman Udara
- Sistem Pencegahan & Penggera Kebakaran
- Sistem Lif
- Sistem Kumbahan
- Sistem Bekalan Air
- Sistem Peralatan Dapur
- Mesin Perakam Waktu
- Lain-lain (sila nyatakan)

Tak sejuk; Rosak/ Tidak Berfungsi; Pecah/ Patah; Air menitik/ Melimpah; Hilang/ Luput Tarikh; Tiada Bekalan Air; Masa Cepat/ Lewat; Tripping; Tersumbat; Penggera Berbunyi; Discharge; Orang Terperangkap; Kotor/ Berhabuk; Berbau Hangit/ Busuk; Lain-lain .....

PERKHIDMATAN
- Kebersihan Bangunan
- Persekitaran & Taman
- Kawalan Aedes/ Makhluk Perosak
- Sanitech Dressing
- Sampah
- Lain-lain (sila nyatakan)

Kotor/ Berbau busuk; Sampah Tak Buang; Semak Samun; Pokok Tumbang; Binatang Liar; Tidak Bersih; Tak Pungut Sampah; Lain-lain .....

TELEKOMUNIKASI
- Telefon
- Sistem Siar Raya
- Walkie Talkie
- Lain-lain (Sila nyatakan)

Tiada Tone/ Dering; Rosak/ Tidak Berfungsi; Ada Gangguan Talian; Kurang Kecapaian Gelombang; Set talian rosak; Mohon Baru; Lain-lain.....

C. PERAKUAN DAN PENGESAHAN PENGGUNA / PELANGGAN

Saya dengan ini mengesahkan bahawa aduan ini telah diambil tindakan. Perkhidmatan yang diberi adalah :-

[ ] Memuaskan [ ] Tidak memuaskan

TANDATANGAN & COP : TARIKH :

TINDAKAN PEJABAT

No. Rujukan Zon :
Tarikh Terima :
Penerima :
Masa Terima :

TINDAKAN BAHAGIAN/ UNIT/SEKSYEN/ZON

Tandakan (/) pada kategori berkenaan sahaja

Cemas Segera Biasa

1. ARAHAN KERJA KEPADA

TARIKH : MASA :

2. LAPORAN PEMBAIKAN

3. BAHAN / ALAT GANTI

4. ANGGARAN KOS

UPAH RM
BAHAN / ALAT GANTI RM
JUMLAH KOS RM

5. PENGESAHAN KETUA/ JURUTEKNIK ZON

Serahkan borang yang telah diambil tindakan kepada Ketua/Juruteknik Zon bagi tujuan rekod

Status	Tarikh	Masa	Catatan
Terima			
Respon			
Siap			

Figure 3.10 Form Complain at Uitm Perak

CHAPTER 4

PROBLEM AND RECOMMENDATIONS

4.1 Problem

Here is some problem that occurred when the maintenance work is in process, the problems are;

1. Staff are available at the BPF is not sufficient to cover any damages that occur in UiTM Perak. Each time it takes to repair the damage have to take about a long time. Apart from the staff to record the report / complain delivered at the office BPF takes a long time to be recorded and notified to the contractor to make public improvements.
2. The workers who have been asked to make maintenance not do the work seriously it is because their headworkers is not watching their work.
3. Staff and students are also difficult to make a complaint to the BPF in case of damage due to each student and staff wish to report they had to fill out a complaint form for the purpose notified to the person responsible for repairing the damage
4. Low quality of materials are used in maintenance works by the company making repairing is low due to cost savings and higher profit
5. Technician that work in UiTM is not have many experience in handling technical issues

4.2 Recommendations

Here some suggestion to outcome the problem that occur

1. UiTM need to add more staff are available at the BPF for more pleasant work Complain record data sent by staff and students. Further work carried out more efficient
2. The supervisor are responsible for taking care of their employees must constantly monitor his employees so that work could be done better and neat
3. BPF must provide more alternatives to make a report if there is damage as providing Complain forms on the internet and make a hotline straight to the company that is responsible for repairing the damage in case of emergency maintenance
4. Uitm should evaluate the items used by the contractor shall be of high quality so that it can survive for long periods of time
5. Technician also need to take their work seriously and more often to ensure the condition in the building is always in good

CHAPTER 5

C0NCLUSION

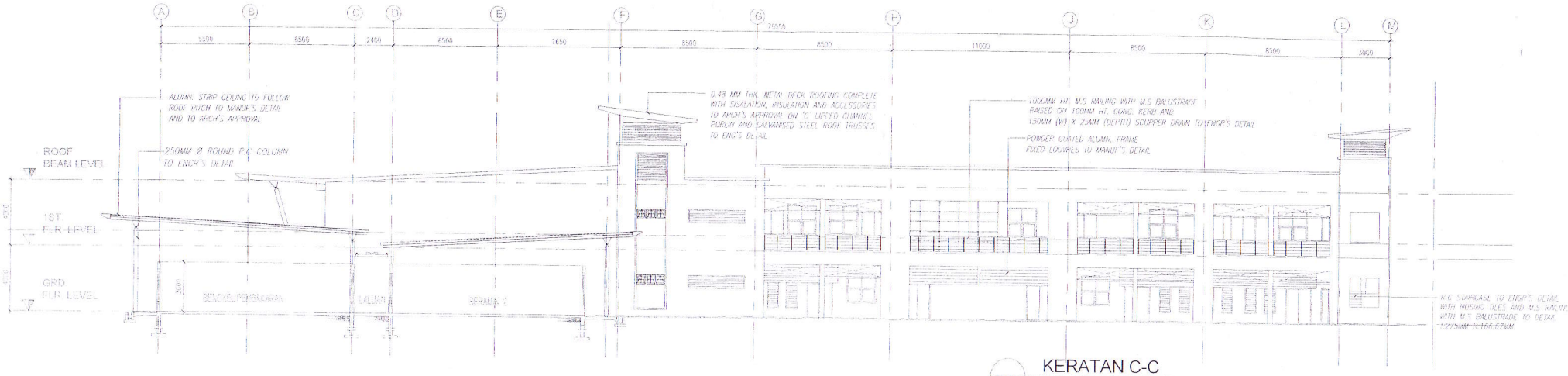
5.1 Conclusion

Based on the survey report that I have made maintenance work has been done by the Department Of facilites, UiTM Perak, Sri Iskandar. Maintenance plays an important role in a department to ensure that all conditions and facilities in the building. Next, ensure the safety of users and extending the life of the building. On the other hand , there is many defects that in UiTM Perak. To handle all this defects, department facilities management has to use latest technology and management skills in all spheres of activities to perform its effective role profibility of the company

5.2 References

1. David Arditi and Manop Nawakorawit. (1999). Designing Building For Maintenance: Designers' Perspective. Journal of Architectural Engineering:107-108.
2. Kelly, Anthony, "Managing maintenance resources", Butterworth-Heinemann, 2006.
3. Encik Syahidi Bin Samsuri (Civil Technician) – UiTM Perak Sri Iskandar
4. Encik khusyairi bin Mohd Yusoff (carpenter) – UiTM Perak Sri iskandar
5. http://inspectapedia.com/Wet_Basements/Basement_Water.htm

APPENDIX



KERATAN C-C

SCT

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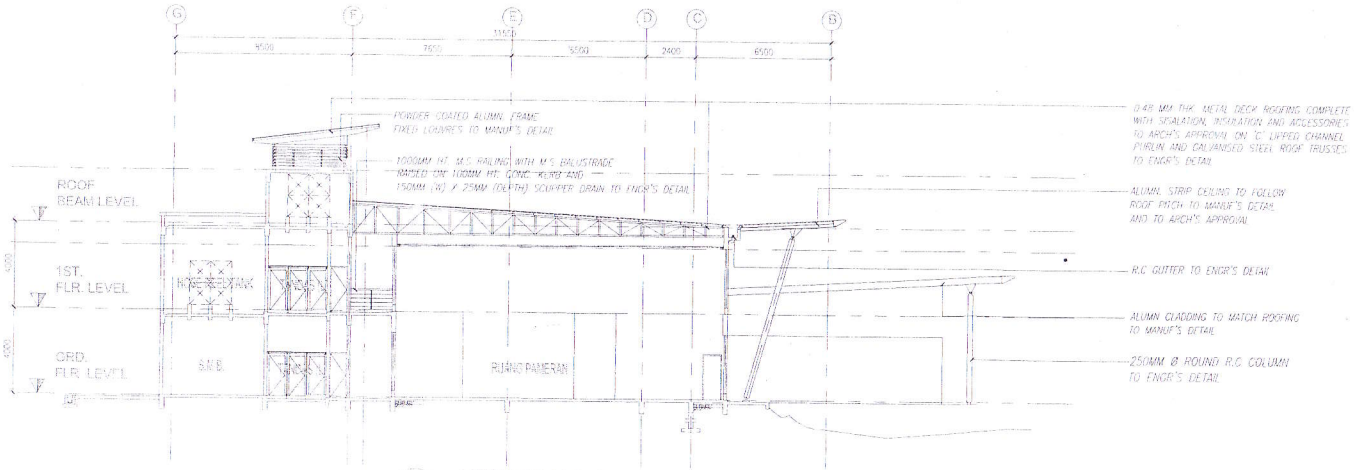

KERATAN A-A

SCT

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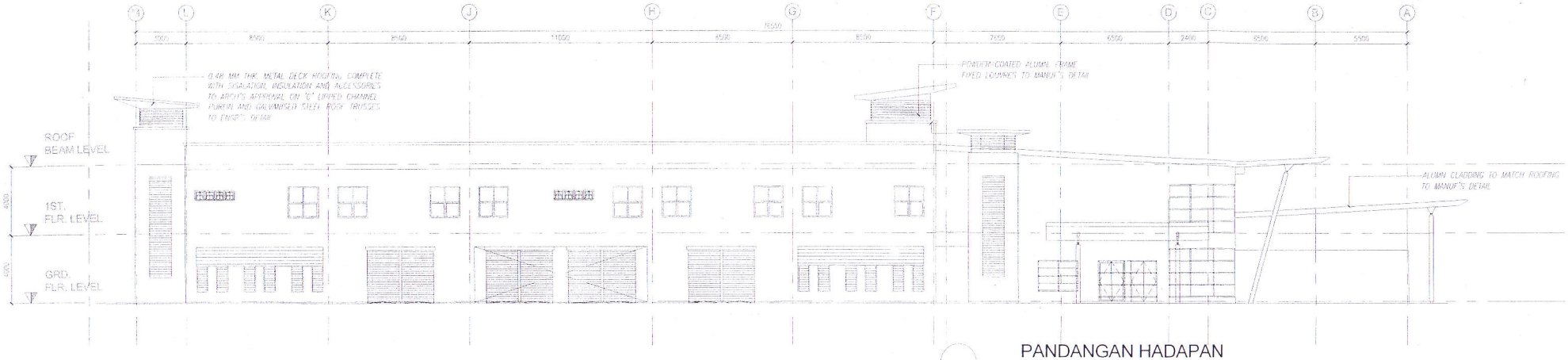


PLN

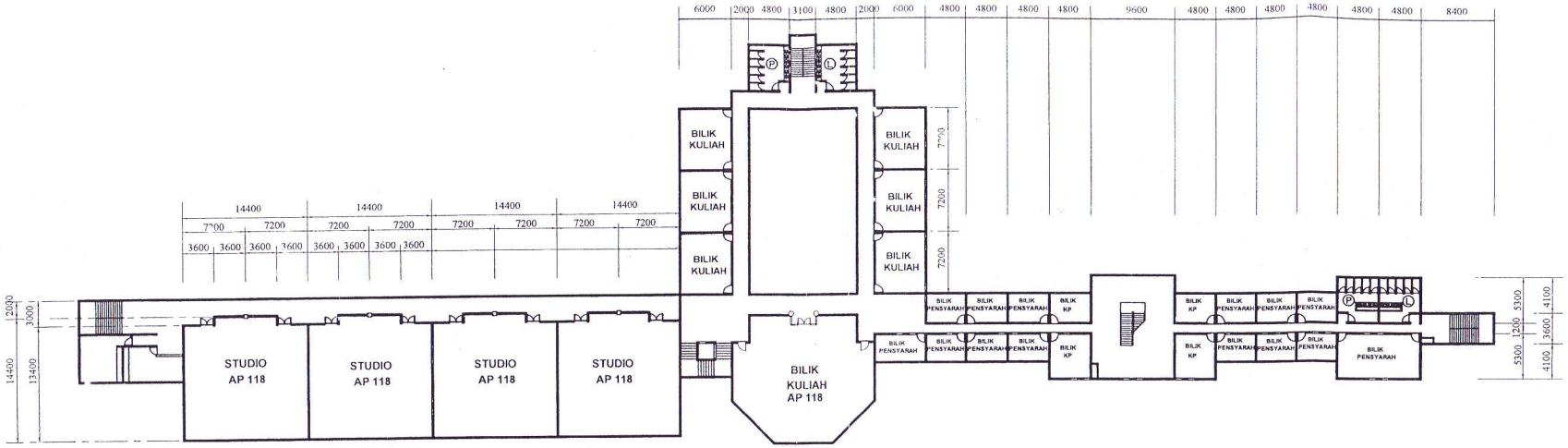
PANDANGAN HADAPAN

SKALA 1 : 200

PLN

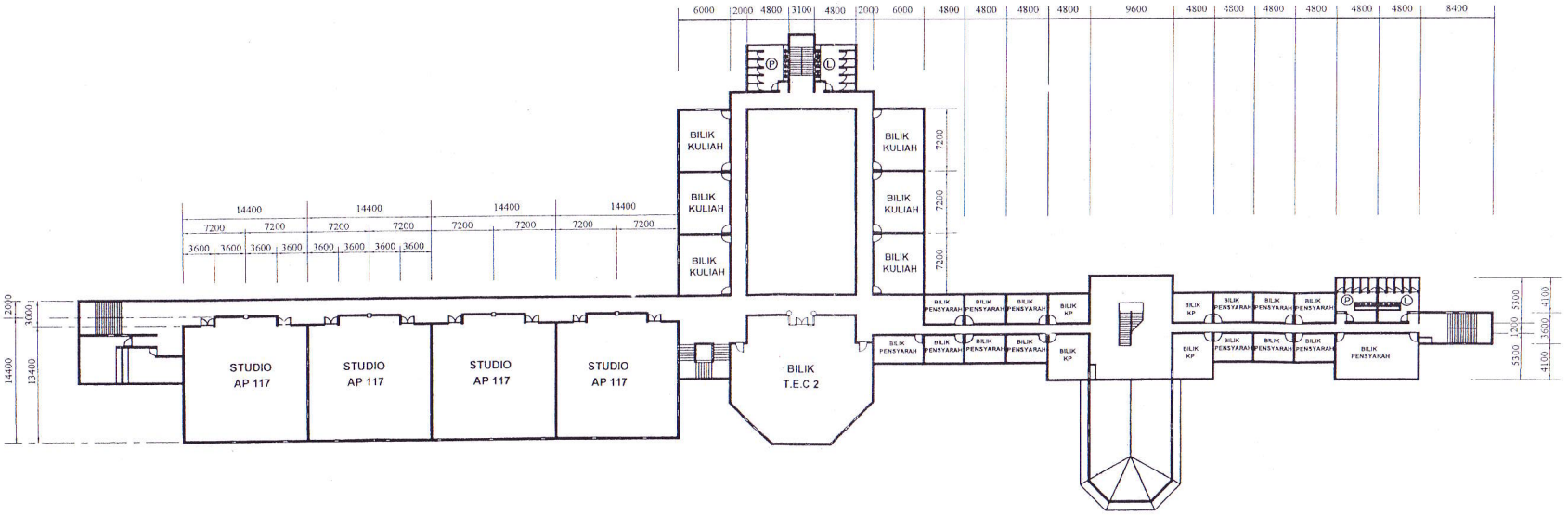
PANDANGAN BELAKANG

SKALA 1 : 200



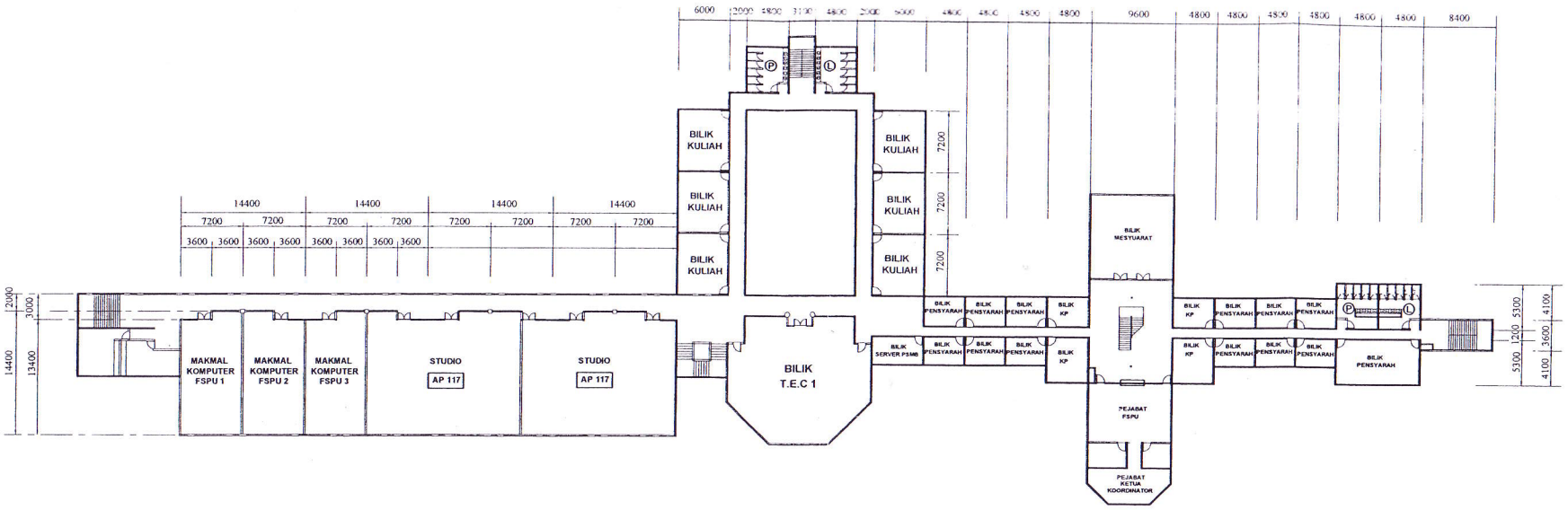
THIRD FLOOR PLAN

FAKULTI SENIBINA PERANCANGAN DAN UKUR (UTAMA)



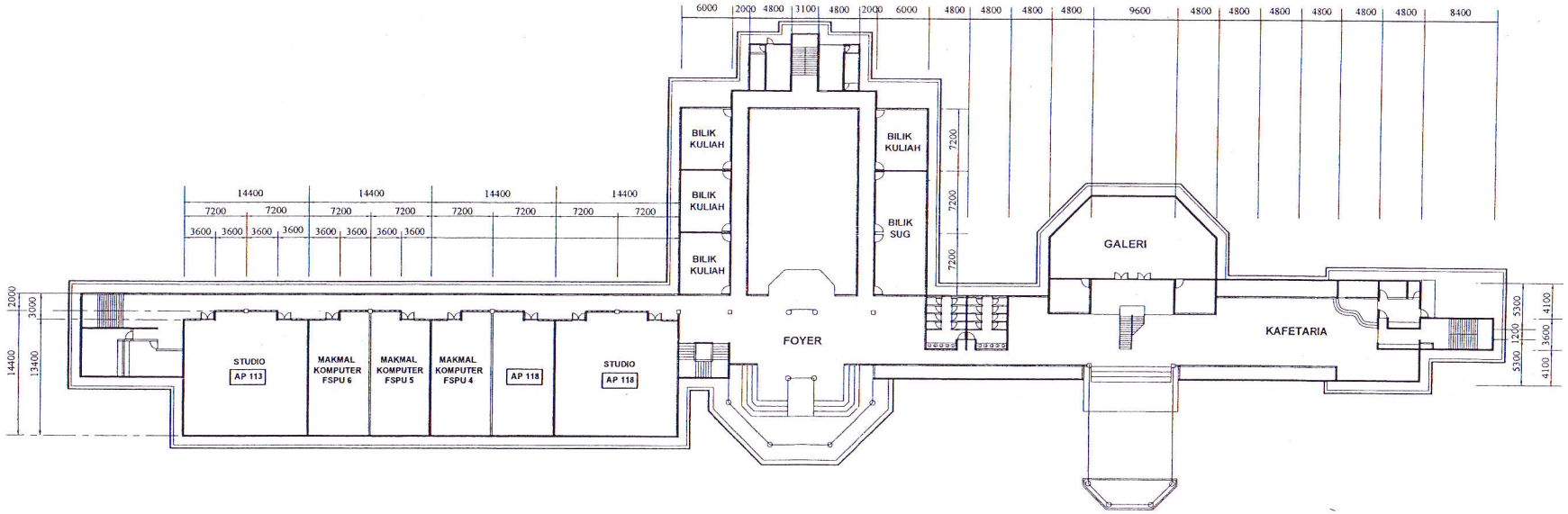
SECOND FLOOR PLAN

FAKULTI SENIBINA PERANCANGAN DAN UKUR (UTAMA)



FIRST FLOOR PLAN

FAKULTI SENIBINA PERANCANGAN DAN UKUR (UTAMA)



GROUND FLOOR PLAN

FAKULTI SENIBINA PERANCANGAN DAN UKUR (UTAMA)

WALL FINISHES

PP	PLASTERED & PAINTED
SC	SKIM COAT & PAINT
ST	SPRAY TILE
SG	SPRAY GRANITE
GT	300 X 300mm GLAZED CERAMIC TILE
HG	GYPSUM BOARD PARTITION WITH GLASS PANEL
FG	FULL HT. GYPSUM BOARD PARTITION
GP	GLASS PANEL/ PARTITION
AW	ACOUSTIC PANEL/WALL
FP	FOLDING ACOUSTIC PARTITION TO SPECIALIST DETAIL

FLOOR FINISHES

CR	CEMENT RENDER
WCR	WATERPROOF CEMENT RENDER
HT1	300 X 300 SEMI-POLISH HOMO. TILE
HT2	300 X 300 ANTI-SLIP HOMOGENEOUS TILE
HT3	600 X 600 POLISHED HOMOGENEOUS TILE
CT	300 X 300mm CERAMIC TILE
WA	WASH AGGREGATE
PW	PEBBLES WASH
CP	CARPET
CP1	CARPET TILE
VT	VINYL FLOORING
PF	PARQUET
PV	PAVER
RFV	RAISED FLOOR WITH VINYL ANTI-STATIC

CEILING FINISHES

AT	ACOUSTIC BOARD
AC	4.5 MM THK. CEMBOARD FIXED CEILING
PP	PLASTERED & PAINTED
SC	SKIM COAT & PAINT
FP	FIBROUS PLASTER CEILING
MF	1200 X 600mm MINERAL FIBRE BOARD SUSPENDED CEILING
CS	PLASTER CEILING (CALSIUM SILICATE)
FR	2 HOUR FIRE RATED CEILING
AC1	9.5MM THK LAMINATED MOISTURE RESISTANT GYPSUM BOARD CEILING

RAILING

SR	STAINLESS STEEL RAILING
MR	MS RAILING
GR	TEMPERED GLASS RAILING
BR	BRICKWALL RAILING

JADUAL PINTU

JENIS PINTU	KETERANGAN	SAIZ (MM)
D 1a	SINGLE LEAF HIGH DENSITY FIBERBOARD WITH SOLID CORE AND FINISH WITH VENEER	2100 X 1000mm
D 1b	DOUBLE LEAF HIGH DENSITY FIBERBOARD WITH SOLID CORE AND FINISH WITH VENEER	2100 X 1500mm
D 2a	SINGLE LEAF HIGH DENSITY FIBERBOARD FLUSH DOOR	2100 X 900mm
D 2b	DOUBLE LEAF HIGH DENSITY FIBERBOARD FLUSH DOOR	2100 X 1200mm
D 2c	SINGLE LEAF HIGH DENSITY FIBERBOARD FLUSH DOOR	2100 X 750mm
D 2d	SINGLE LEAF HIGH DENSITY FIBERBOARD FLUSH DOOR	2100 X 600mm
D 3c	SINGLE LEAF SOLID CORE HIGH DENSITY FIBREBOARD WITH GLASS VIEWING PANEL AND PREPAINTED FINISH	2100 X 1000mm
D 3b	DOUBLE LEAF SOLID CORE HIGH DENSITY FIBREBOARD WITH GLASS PANEL AND PREPAINTED FINISH	2100 X 1500mm
D 3c	DOUBLE LEAF SOLID CORE HIGH DENSITY FIBREBOARD WITH GLASS PANEL AND PREPAINTED FINISH	2100 X 1800mm
D 4a	SINGLE LEAF HIGH DENSITY FIBREBOARD DOOR WITH HIGH WATER AND FUNGUS RESISTANT WITH PREPAINTED FINISH	2100 X 1000mm
D 4b	DOUBLE LEAF HIGH DENSITY FIBREBOARD DOOR WITH HIGH WATER AND FUNGUS RESISTANT WITH PREPAINTED FINISH	2100 X 1500mm
D 5a	SINGLE LEAF 1 HOUR FIRE RATED DOOR	2100 X 1000mm
D 5b	DOUBLE LEAF 1 HOUR FIRE RATED DOOR	2100 X 1500mm
D 6a	SINGLE LEAF 2 HOUR FIRE RATED DOOR	2100 X 1000mm
D 6b	DOUBLE LEAF 2 HOUR FIRE RATED DOOR	2100 X 1800mm
D 7a	SINGLE LEAF POWDER COATED ALUM. DOOR WITH 6MM THK. TEMPERED GLASS PANEL	2100 X 1000mm
D 7b	DOUBLE LEAF POWDER COATED ALUM. DOOR WITH 6MM THK. TEMPERED GLASS PANEL	2100 X 1500mm
D 8c	DOUBLE LEAF 2 HOUR FIRE RATED DOOR	2100 X 1200mm
D 8a	DOUBLE LEAF FIXED TIMBER LOUVRES DOOR TO DETAIL	2100 X 1200mm
D 8b	SINGLE LEAF FIXED TIMBER LOUVRES DOOR TO DETAIL	2100 X 900mm
D 8c	SINGLE LEAF FIXED TIMBER LOUVRES DOOR TO DETAIL	2100 X 600mm
D 9a	SINGLE LEAF FIXED POWDER COATED ALUM. LOUVRES DOOR TO MANUF'S DETAIL	2100 X 900mm
D 9b	DOUBLE LEAF FIXED POWDER COATED ALUM. LOUVRES DOOR TO MANUF'S DETAIL	2100 X 1800mm
D 10g	SINGLE LEAF POWDER COATED GMS DOOR TO MANUF'S	2100 X 900mm
RS 1a	MOTORIZED COMBINED MANUAL OPERATED POWDER COATED ALUM. ROLLER SHUTTER TO MANUF'S DETAIL	3000 X 4300mm

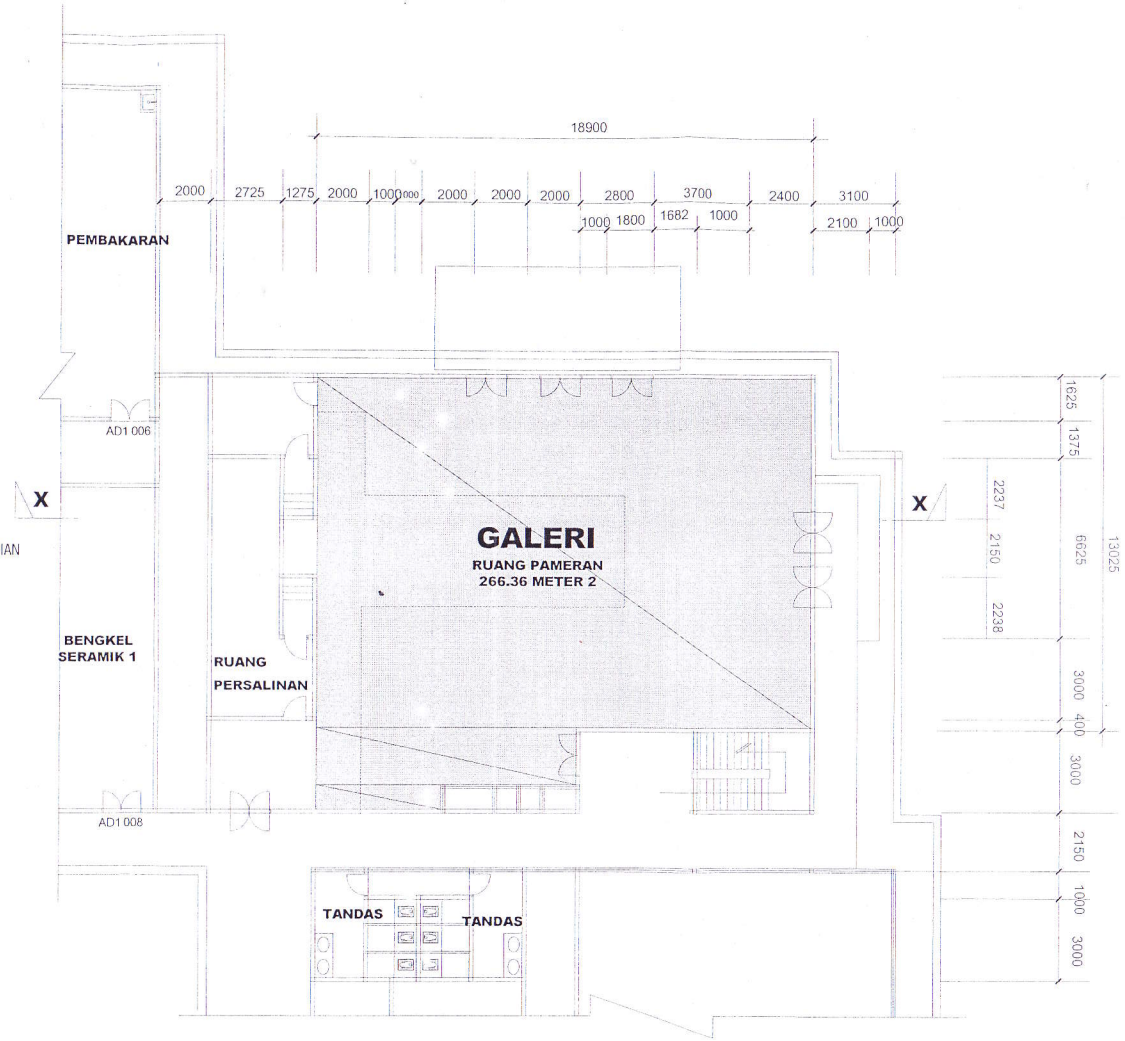
JADUAL TINGKAP

JENIS TINGKAP	KETERANGAN	SAIZ (MM)
W 1a	POWDER COATED ALUM. FRAME WITH 6MM THK. TINTED HIGH LEVEL TOP HUNG WINDOW WITH FIXED GLASS PANEL TO MANUF'S DETAIL	2600W X 2200H
W 1b	POWDER COATED ALUM. FRAME WITH 6MM THK. TINTED HIGH LEVEL TOP HUNG WINDOW WITH FIXED GLASS PANEL TO MANUF'S DETAIL	2600W X 2200H
W 1c	POWDER COATED ALUM. FRAME WITH 6MM THK. TINTED HIGH LEVEL TOP HUNG WINDOW WITH FIXED GLASS PANEL TO MANUF'S DETAIL	2600W X 2200H
W 2a	POWDER COATED ALUM. FRAME WITH 6MM THK. TINTED HIGH LEVEL TOP HUNG WINDOW WITH FIXED GLASS PANEL TO MANUF'S DETAIL	1800W X 1800H
W 3a	POWDER COATED ALUM. FRAME WITH 6MM THK. TINTED HIGH LEVEL TOP HUNG WINDOW TO MANUF'S DETAIL	850W X 800H
W 3d	POWDER COATED ALUM. FRAME WITH 6MM THK. TINTED HIGH LEVEL TOP HUNG WINDOW TO MANUF'S DETAIL	2400W X 600H
W 5a	ADJUSTABLE GLASS LOUVRES WINDOW WITH ALUMINIUM FRAME TO MANUF'S DETAIL	600W X 2200H

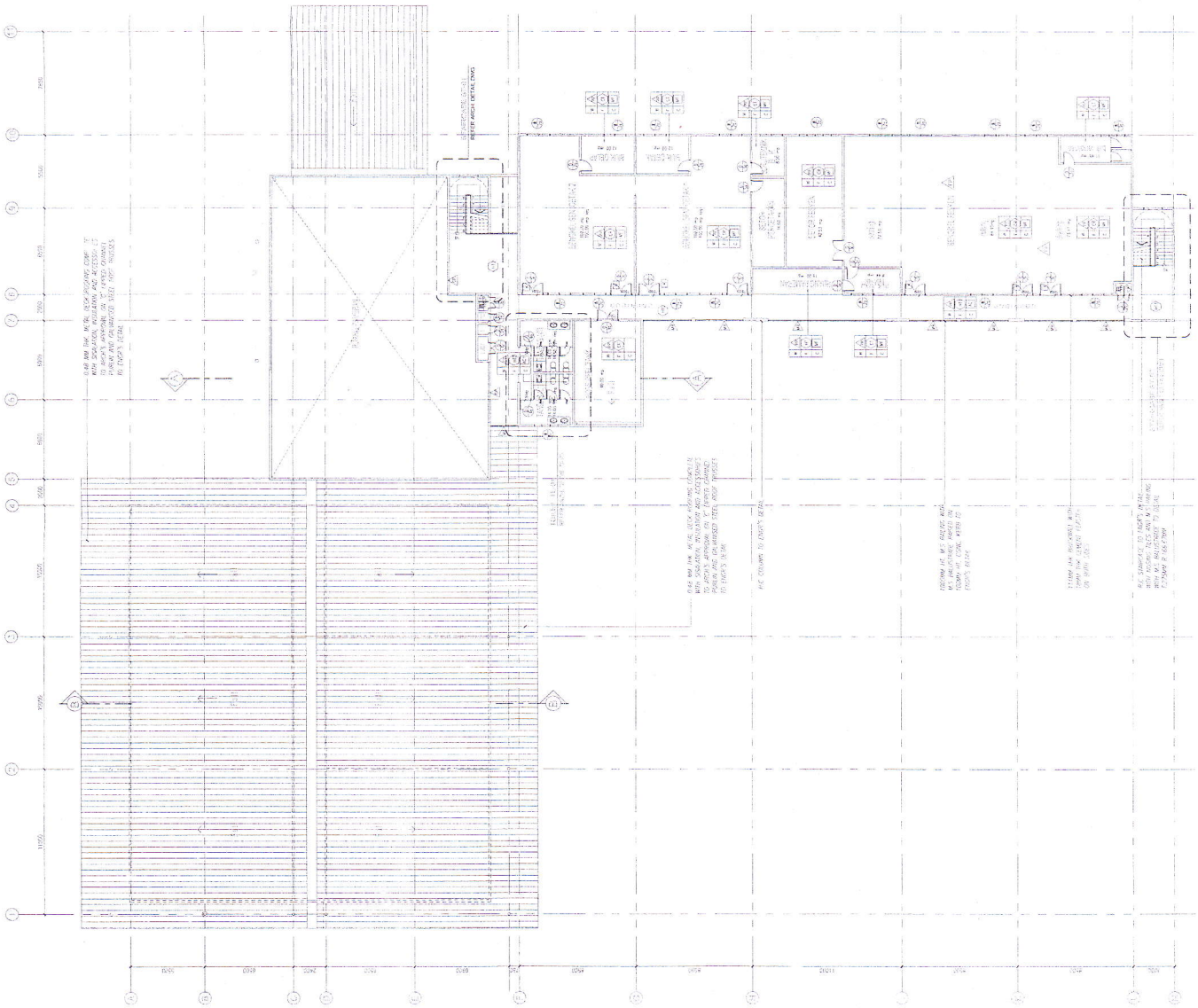
ARKITEK FAA

CONSTRUCTION DRAWING

SECTION X-X
BANGUNAN FSSR (ANNEX)

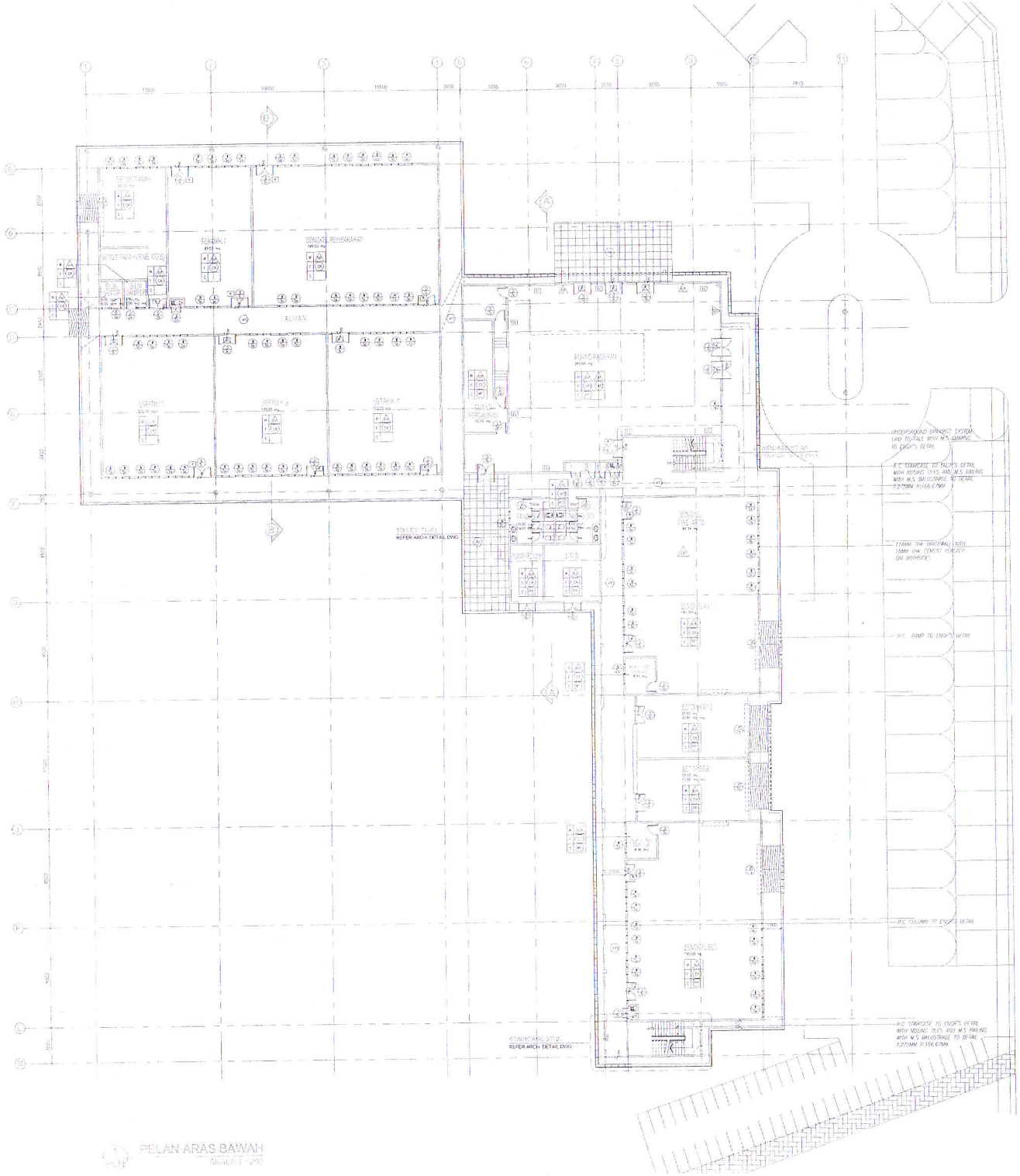


PELAN ARAS BAWAH
GALERI BANGUNAN FSSR (ANNEX)



PELAN ATAS SATU

SKALA 1 : 200



PELAN ARAS BAWAH
SKALA 1:100