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FACILITY AND MAINTENANCE MANAGEMENT OF
APARTMENT TAMAN SRI PINANG BLOCK A,B,C
BUTTERWORTH PULAU PINANG

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CENTER OF STUDIES IN BUILDING SURVEYING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIIVERSITI TEKNOLOGI MARA

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ABSTRACT

Perbadanan Pengurusan Taman Sri Pinang (PPTSP) was my choice to under go my 12 week of Practical Training. The company was known as a Joint Manangement Bodies (JMB). During the 12 weeks period of practical training. I was supervised by Mr Hamizi Bin Abdul Hamid. I have been learned more about JMB and their procedure how to manage every account and maintain every facility provided for occupants in the apartment Taman Sri Pinang. Throughout my practical training. I was able to apply the skill and knowledge acquired from lecture to complete my work in practice. On the other hands, as a trainee, good attitude is a must to have in order to follow and complete the instruction given although it is a miscellaneous works. Lastly within 4 months practical training, I had gained incountable knowledge and experience and understand more on the roles of building surveying in facility and maintenance management of the building.

TABLE OF CONTENT

| | |
|----------------------------------|-------------|
| AUTHOR’S DECLARATION..... | ii |
| ACKNOWLEDGEMENT..... | iii |
| ABSTRACT..... | iv |
| TABLE OF CONTENT..... | v |
| LIST OF FIGURE..... | vii |
| LIST OF TABLE..... | viii |

CHAPTER 1: BUILDING BACKGROUND

| | |
|--|----|
| 1.1 Taman Sri Pinang Apartment Block A,B,C | 2 |
| 1.1.1 Background of Building Information | 2 |
| 1.1.2 Location of Building | 5 |
| 1.1.3 Organization Chart of PPTSP | 9 |
| 1.1.4 Vission and Mission | 10 |
| 1.1.5 Building Facilities | 11 |

CHAPTER 2: LITRETURE REVIEW

| | |
|--|----|
| 2.1 Introduction | 15 |
| 2.2 Building Maintenance | 16 |
| 2.3 Building Operation and Maintenance Practice | 17 |
| 2.4 Classifiaction of Building Maintenance | 19 |
| 2.5 The Importance of Building Maintenance | 22 |
| 2.6 The Impact of Building Maintenance on Life Cycle | 23 |

**CHAPTER 3: MAINTENANCE AND FACILITIES
MANAGEMENT**

3.1 Introduction25

3.2 Maintenance Procurement and Contract26

 3.2.1 The Housekeeping27

 3.2.2 Fire Fighting Systems.....27

 3.2.3 Elevator Systems33

 3.2.4 Pump Systems38

 3.2.5 Electrical Distribution Systems.....40

 3.2.6 The Sewerage Systems43

 3.2.7 Building Security Management Systems44

3.3 Building Management System48

3.4 Building Insurances.....49

3.5 Maintenance Cash Flow50

CHAPTER 4: CURRENT ISSUES

4.1 Introduction52

4.2 Collection Maintenance Fees52

4.3 Unoccupied House52

4.4 Insufficient of Manpower In-House Team.....53

CHAPTER 5: RECOMMENDATION AND CONCLUSION

5.1 Introduction55

5.2 Recommendation For Collection Maintenance Fees55

5.3 Recommendation For Unoccupied House55

5.4 Recommendation For Insufficient of Manpower.....56

5.5 Conclusion.....57

REFERENCES58

APPEDIEX.....59

LIST OF FIGURES

| | | |
|--------------|---|----|
| Figure 1.1: | Taman Sri Pinang Apartment Pulau Pinang | 3 |
| Figure 1.2: | Perbadanan Pengurusan Taman Sri Pinang | 4 |
| Figure 1.3: | The Front View of Block A | 5 |
| Figure 1.4: | The Rear View of Block A | 5 |
| Figure 1.5: | The Front View of Block B | 5 |
| Figure 1.6: | The Rear View of Block B. | 5 |
| Figure 1.7: | The Front View of Block C | 5 |
| Figure 1.8: | The Rear View of Block B | 5 |
| Figure 1.9: | Key Plan of Taman Sri Pinang | 6 |
| Figure 1.10: | Location Plan of Taman Sri Pinang | 6 |
| Figure 1.11: | Site Plan of Taman Sri Pinang | 6 |
| Figure 1.12: | View Adjacent Building Surrounding Area Apartment | 7 |
| Figure 1.13: | The Foodcourt | 7 |
| Figure 1.14: | The Musola Al-Muttaqim | 7 |
| Figure 1.15: | The Shoplot | 8 |
| Figure 1.16: | The Terrace House of The Residents | 8 |
| Figure 1.17: | Playground | 12 |
| Figure 1.18: | Musola | 12 |
| Figure 1.19: | Multipurpose Hall | 12 |
| Figure 1.20: | Covered Walkway | 12 |
| Figure 1.21: | Car Park Block A | 13 |
| Figure 1.22: | Motor Park Block A | 13 |
| Figure 1.23: | Car Park Block B and C | 13 |
| Figure 1.24: | Motor Park Block B and C | 13 |
| Figure 1.25: | Parking Free Block B and C. | 13 |
| Figure 1.26: | Vending Machine Block A | 14 |
| Figure 1.27: | Vending Machine Block B | 14 |
| Figure 1.28: | Elevator | 14 |
| Figure 1.29: | Guard House | 14 |
| Figure 3.1 : | Fire Storage Tank | 29 |
| Figure 3.2 : | Fire Extinguisher | 29 |
| Figure 3.3 : | Wet Riser | 29 |
| Figure 3.4 : | Fire Alarm | 29 |
| Figure 3.5 : | Fire Switch | 30 |
| Figure 3.6 : | Fire Sprinkler | 30 |
| Figure 3.7 : | Hose Reel | 30 |
| Figure 3.8 : | Exit Signboard | 30 |
| Figure 3.9 : | The Checklist Maintenance Work of CO2 System | 31 |
| Figure 3.10: | The Checklist of Wet Riser Fire Fighting System | 32 |

| | |
|--|----|
| Figure 3.11: Passenger Elevator | 33 |
| Figure 3.12: Fire Elevator | 33 |
| Figure 3.13: Operation of Traction Elevator Systems | 34 |
| Figure 3.14: Control Panel | 35 |
| Figure 3.15: Motor Generator | 35 |
| Figure 3.16: Guide Rails | 35 |
| Figure 3.17: Buffer | 35 |
| Figure 3.18: Counterweight | 36 |
| Figure 3.19: Elevator Button | 36 |
| Figure 3.20: Pit Safety Switch | 36 |
| Figure 3.21: The Checklist Maintenance Work of Elevator System | 37 |
| Figure 3.22: The Water Tank | 38 |
| Figure 3.23: Domestic Pump at Ground Floor | 39 |
| Figure 3.24: Domestic Pump at Roof Top | 39 |
| Figure 3.25: Electrical Distribution of Tenaga Nasional Berhad (TNB) | 40 |
| Figure 3.26: The Substation For Low-Cost | 40 |
| Figure 3.27: The Substation For Medium-Cost | 40 |
| Figure 3.28: The Main Switch Board | 41 |
| Figure 3.29: The Process of Main Switch Board | 41 |
| Figure 3.30: The Corridor Fluorescent Lamps | 42 |
| Figure 3.31: The Street Lamp | 42 |
| Figure 3.32: Logo of Juta Waja Security SDN BHD | 44 |
| Figure 3.33: Security Guard at Taman Sri Pinang Apartment | 45 |
| Figure 3.34: Guard House of Block B and C | 45 |
| Figure 3.35: Barrier Gate of Block A | 45 |
| Figure 3.36: Install The Bluetooth at Block A and B | 46 |
| Figure 3.37: Setting Up The Wiring of CCTV at Office | 46 |
| Figure 3.38: The Located of CCTV Around Block B and C | 46 |
| Figure 3.39: The Elevator Card Access and Parking Card Access | 47 |
| Figure 3.40: The Soyal Etegra Systems | 48 |
| Figure 3.41: The Solar Account Systems | 48 |
| Figure 4.1: The Condition Gutter at Roof Top | 55 |

LIST OF TABLES

| | |
|--|----|
| Table 1.1: Building of Apartment Block A,B and C..... | 4 |
| Table 1.2: The Adjacent Building Suraounding Area Taman Sri Pinang | 7 |
| Table 1.3: The List of Contrctors / Out-Source..... | 9 |
| Table 1.4: The Building Facilities of Apartment Taman Sri Pinang | 13 |
| Table 3.1: The List of Out-Source and In-House | 26 |
| Table 3.2: The Component of Fire Fighting | 30 |
| Table 3.3: The Types of Elevator | 33 |
| Table 3.4: The Component of Elevator | 36 |
| Table 3.5: The Types of Pumps System..... | 39 |
| Table 3.6: The Insurance Quotation Slip..... | 49 |

LIST OF CHARTS

| | |
|---|----|
| Chart 1.1: Organization Chart of JMB Taman Sri Pinang | 8 |
| Chart 2.1: Classification of Building Maintenance | 19 |
| Chart 2.2: The Concept of Fire Fighting Systems | 28 |
| Chart 2.3: The Process of Water Supply Systems | 38 |
| Chart 2.4: The Flow of Sewerage System | 43 |

**CHAPTER 1:
BUILDING BACKGROUND
STUDIES**

1.1 TAMAN SRI PINANG APARTMENT BLOCK A,B,C PULAU PINANG

1.1.1 BACKGROUND OF TAMAN SRI PINANG APARTMENT BLOCK A,B,C



Figure 1.1: Taman Sri Pinang Apartment, Pulau Pinang

The Pangsapuri Taman Sri Pinang apartment is a freehold property in Butterworth, Penang. This is a strata residential property. Harta Intan Development Sdn Bhd built it, and it was finished in 2003. Apartment Taman Sri Pinang are divided in three blocks, which are Block A, Block B, Block C and divided into two categories, namely low-cost apartment and medium-cost apartment. Based to figure 1.1, Block B was located in the middle between Block A on the left side and Block C on the right side.

Block A is a low-cost apartment which consisting of 10 storey. There are 260 units, each with an area of 603 square feet per units. Elevators, corridor lights, hallways, parking, water pumps, and rubbish collectors are all provided in Block A. However, parking is too limited because it is first come, first served, and the Seberang Perai Municipal Council (MBSP) was assigned to collect garbage in the apartment area.

Meanwhile, Block B and C are medium-cost apartments with 12 stories. A total of 125 units of houses in Blocks B and C with an area of one unit of houses is 853 square feet. Facilities available in the block are elevators, corridor lights, security guards, parking, water pumps and garbage collectors. MBSP was assigned to collect garbage in the apartment area. There is one parking lot for one unit



Figure 1.2: Perbadanan Pengurusan Taman Sri Pinang

Perbadanan Pengurusan Taman Sri Pinang Block A,B,C is a Joint Management Bodies (JMB) serves to represent all strata unit owners and decide how to best manage the apartment of Taman Sri Pinang Block A,B,C. The JMB is an essential part of strata management to ensure that amenities are well kept for residents to enjoy. Under the Strata Management Act 2013, there are duties and also powers that are given to members of the JMB to run their operations smoothly which to sustaining the building and common property, and has the power to charge, collect and deposit charges and fees.

Facilities and common areas within a strata property such as a apartment block are jointly owned by all unit owners. Therefore, owners have to collectively pay a maintenance fee, also known as a service charge, to manage and maintain the property and its facilities. Homeowners are required by law under SMA 2013 to pay these monthly fees. These fees are collected and managed by the JMB Maintenance fees charged for these two types of apartments are different, for medium cost maintenance fees of RM 80.70 will be charged while for low cost will be charged RM 41.10 which include sinking fund and insurance. If there are residents who do not pay maintenance fees within (3) three months, the management will restrict the use of facilities in this building which card access parking and chip access lift.

Block A



Figure 1.3: The Front View of Block A



Figure 1.4: The Rear View of Block A

Block B



Figure 1.5: Show the Front View of Block B



Figure 1.6: Show the Rear View of Block B

Block C



Figure 1.5: Show the Front View of Block C



Figure 1.8: Show the Rear View of Block C

Table 1.1: Building of Apartment Block A,B and C.

1.1.2 LOCATION OF APARTMENT TAMAN SRI PINANG BLOCK A,B,C

Taman Seri Pinang (TSP) is a next to the north of the Butterworth Outer Ring Road (BORR). It is also bordered by several major roads like Jalan Sungai Puyu and Jalan Kampung Benggali. This building is located at Pulau Pinang and the official address of this building is Lorong Sri Pinang, Taman Sri Pinang, Sungai Puyu 13020 Butterworth Pulau Pinang, Malaysia.

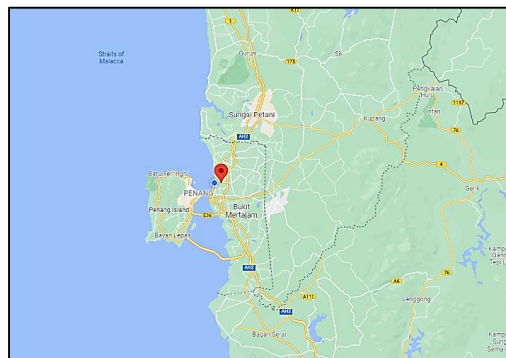


Figure 1.9: Key Plan of Taman Sri Pinang

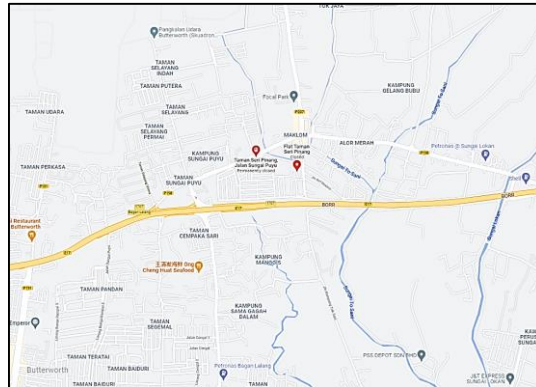


Figure 1.10: Location Plan of Taman Sri Pinang

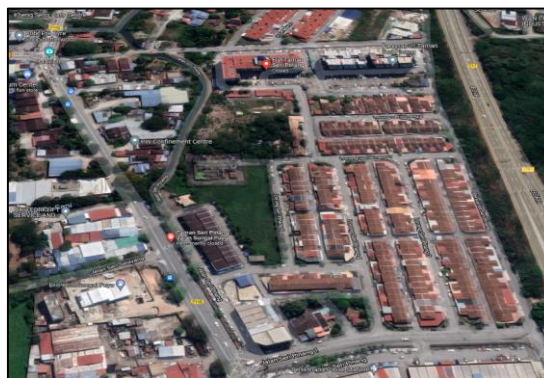




Figure 1.11: The Site Plan of Taman Sri Pinang

1.1.2.1 ADJACENT BUILDING SURROUNDING AREA TAMAN SRI PINANG.



Figure 1.12: The View Adjacent Building Surrounding Area Apartment TSP

Location of Taman Sri Pinang is at city centre which surrounded by a lot of building and various type of development. Therefore, the nearest adjacent building has been listed up below:

| ADJACENT BUILDING | DESCRIPTION |
|---|---|
|  <p data-bbox="592 1451 963 1485"><i>Figure 1.13: The Foodcourt</i></p> | <p data-bbox="1203 1144 1406 1290">Foodcourt is located in front Block A</p> |
|  <p data-bbox="528 1906 1027 1939"><i>Figure 1.14: The Musola Al-Muttaqim</i></p> | <p data-bbox="1203 1552 1406 1742">Musola of Al-Muttaqim is located in front Block C.</p> |



| | |
|--|---|
|  <p data-bbox="619 745 938 779"><i>Figure 1.15: The Shoplot</i></p> | <p data-bbox="1193 241 1420 873">Due to the higher amount of traffic passing by the neighbourhood, most of the properties here are shops and shop offices before entering Taman Sri Pinang, Sungai Puyu</p> |
|  <p data-bbox="459 1395 1098 1429"><i>Figure 1.16: The Terrace House of The Residents</i></p> | <p data-bbox="1193 958 1420 1205">There is a lot of residential area surrounding of apartment Taman Sri Pinang.</p> |

Table 1.2: The Adjacent Building Surrounding Area Taman Sri Pinang.

1.1.3 ORGANIZATION STRUCTURE JOINT MANAGEMENT BODIES (JMB) OF APARTMENT TAMAN SRI PINANG BLOCK A,B,C SUNGAI PUYU.

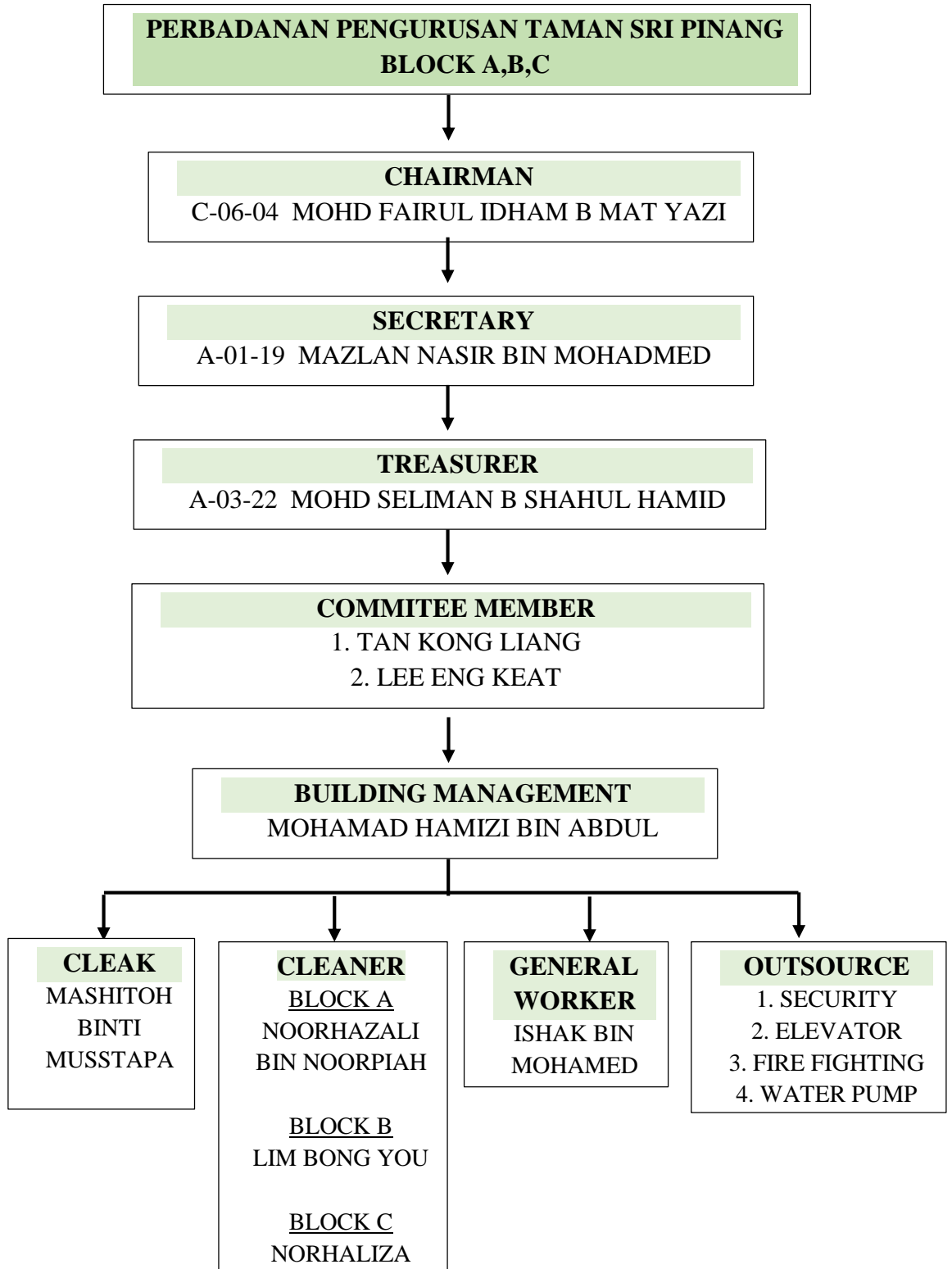


Chart 1.1: Organization Chart of JMB Taman Sri Pinang Block A,B,C

1.1.3.1 LIST OF SOURCED CONTRACRTOR

The PPTSP has appointed several companies to maintain the buildings and most of them are specialist vendor. They also used in-source staff which is charge man for monitoring the condition of electrical and repair the minor defect. Below is the few list of contractors appointed:

| COMPANY | SCOPE OF WORKS | ADDRESS | PHONE NO. |
|----------------------------------|----------------------|---|-------------|
| Juta Waja Security Sdn Bhd | Security Services | No.31, Persiaran Seksyen 4/7, Bandar Putera Bertam, 13200 Kepala Batas, Pulau Pinang | 04-5767605 |
| Conquest Fire Engineerin Sdn Bhd | Elevator Maintenance | 78, Jln Tan Sri Teh Ewe Lim, Taman Koperasi Jelutong, 11600 George Town, Pulau Pinang | 04-282 5506 |
| Conquest Fire Engineerin Sdn Bhd | Fire Fighting | 78, Jln Tan Sri Teh Ewe Lim, Taman Koperasi Jelutong, 11600 George Town, Pulau Pinang | 04-282 5506 |
| Conquest Fire Engineerin Sdn Bhd | Water Pump | 78, Jln Tan Sri Teh Ewe Lim, Taman Koperasi Jelutong, 11600 George Town, Pulau Pinang | 04-282 5506 |

Table 1.3: The List of Contractors / Out-source

1.4.4 VISSION AND MISSION





a) **VISSION OF PERBADANAN PENGURUSAN TAMAN SRI PINANG**

“To be a JMB with honest, responsible and committed to continuously bringing prosperous and improvement to Apartment of Taman Sri Pinang”

b) **MISSION OF PERBADANAN PENGURUSAN TAMAN SRI PINANG**

“PPTSP carry their duty with fair and integrity by means respect the rights and interests of every resident to encourage a win-win situations that bringing mutual benefit in Taman Sri Pinang. PPTSP endeavour to promote neighbourliness, harmony and cohesiveness amongst residents”

1.1.5 BUILDING FACILITIES

| NO | FACILITIES PROVIDED | DESCRIPTION |
|----|---|---|
| 1. | <p>Playground</p>  <p><i>Figure 1.17: Playground</i></p> | <p>The playground is located in front of Block C to provide an environment for children that facilitates play, typically outdoors. While a playground is usually designed for children.</p> |
| 2. | <p>Musola Al-Mutaqqim</p>  <p><i>Figure 1.18: Musola Al-Mutaqqim</i></p> | <p>Musola is located beside playground in area of Blok B,C which basically function for Muslim occupants to perform their prayer. The musola is divided by two place which ground floor for men and first floor for women. It is equipped with air conditioning systems for secure user's perform</p> |
| 3. | <p>Multi-Purpose Hall</p>  <p><i>Figure 1.19: Multi-Purpose Hall</i></p> | <p>This hall is located at ground floor of Block A. This hall is function for the purpose of any talk and programme by PPTSP/JMB.</p> |
| 4 | <p>Covered walkway</p>  <p><i>Figure 1.20: Covered Walkway</i></p> | <p>The walkway facility was provided for the use of pedestrian between Block B and C was equipped with an awning for the safety to protect pedestrians from rain and sunlight</p> |

5

Parking area



Figure 1.21: Car Park Block A



Figure 1.22: Motor Park Blok A



Figure 1.23: Car Park Blok B and C



Figure 1.24: Motor Park Blok B and C



Figure 1.25: Parking Free at Block and C

Car parking in Block A and Blocks B,C have differences in that parking in Block A is limited due to residents using first come, first served method. If there is no parking available, must park elsewhere.

While parking at Block B and C which each unit home received one parking space. The whole parking lot of Block B,C, which has an owner, was about 291 parking spaces provided. Car parking is exclusively available to residents who have an access card.

Furthermore, free parking is also provided for Blocks B and C residents who have an access card, and the parking is based on a first-come, first-served basis, with a white line parking

The motorcycle parking lot on the ground level of the building. The facility is exclusively provided to residents.




| | | |
|-----------|---|--|
| <p>6</p> | <p>Vending Machine</p>  <p><i>Figure 1.26: Vending Machine Block A</i></p>  <p><i>Figure 1.27: Vending Machine Block B,C</i></p> | <p>The vending is a machine where occupants can get a drinks before and back from home. This vending machine located at ground level behind motorcycle parking area.</p> |
| <p>7.</p> | <p>Guard House</p>  <p><i>Figure 1.29: Guard House</i></p> | <p>The security guard house was also provided at the entrance gate of the Block B and C to ensure safety and act as an information post.</p> |

Table 1.4: The Building Facilities of Apartment Taman Sri Pinang A,B,C.

CHAPTER 2: LITRETURE REVIEW

2.1 INTRODUCTION

Facilities Management carries out many definitions, but these can be summarized as “the integral managing and execution of housing, services and other means, which contribute to a better performance of the primary process (in relation to effectiveness flexibility efficiency and creativity) in changing surrounding (primary process, market, social and technological). Facilities Management is limited to building occupants, services and other means, the field of activities is very large. Facilities Management in the private and public sectors has developed from a discipline that has generally concentrated on individual buildings to one that focuses on the overall performance of a building portfolio in support of the overall purpose of an organization. It is often seen as a cost-efficiency management rather than a tool for achieving multi-dimensional productivity enhancement for companies. Facilities Management, however, is not just about delivering services in the most productive ways, it is also about providing them in an ever-evolving environment and industry. The scope of the FM discipline covers all aspects of property, space, environment control, health and safety and support services) and contributes to the delivery of strategic and operational objectives on day-to-day objectives.

Maintenance management or management of operations are roles that turn inputs into outputs, including personnel, resources, energy, materials and technology, namely products and services, defined as activities aimed at maximizing the availability and reliability of production equipment and maintaining its operability at an appropriate level of cost. It was also defined as a systematic operational process direction and control. The quality and efficiency of a building maintenance management operation depends, to some extent, on how information on the condition of the building, the needs of the users and the works carried out, is collected and used. Maintenance is big business and must be managed properly. The significance and importance of building maintenance was first recognized by the Government in its report Building Maintenance. The prime aim of maintenance is to preserve buildings for continual use.

2.2 BUILDING MAINTENANCE

Building maintenance is the process of ensuring building premises and other assets continue to operate at maximum efficiency and retains an exceptional appearance. Maintenance of a building involves the premise's upkeep which includes the structural, electrical and plumbing systems. The complexity of managing a building is always increasing. Building premises are no longer maintained by an onsite caretaker or handyman.

Maintaining a building is a complex operation and requires the right skills, experience and technology to manage a building premises, adhere to property and building compliance requirements as well as making continual improvements to efficiency. Outsourcing your building maintenance requirements to a reliable facilities management company means they will be responsible for managing your building and its grounds. The responsibilities can vary between different buildings. Proper building maintenance will help to prevent the process of decay of a building, maintain structural stability and safety as well as ensuring continued building compliance against statutory requirements.

However, a poorly maintained building can create big problems such as degradation, reduce performance and affect the health and safety of individuals around the area. Building maintenance includes a wide variety of tasks depending on the particular business or organization. It encompasses a great deal of "behind the scenes" work to ensure that a facility or building remains functional and comfortable for its users. Building maintenance includes cleaning common areas, removing trash regularly, and repairing items that are broken. It can involve inspecting, repairing, and maintaining electrical systems, heating and air conditioning systems, and other utility services. In some cases, building maintenance extends to the outdoor property as well and includes sprinkler management, lawn care, and landscape management

2.3 BUILDING OPERATION AND MAINTENANCE PRACTICE

Operations and Maintenance are the decisions and actions regarding the control and upkeep of property and equipment. These are inclusive the actions focused on scheduling, procedures, and work/systems control and optimization and performance of routine, preventive, predictive, scheduled and unscheduled actions aimed at preventing equipment failure or decline with the goal of increasing efficiency, reliability, and safety.

Operational Efficiency represents the life-cycle, cost-effective mix of preventive, predictive, and reliability-centred maintenance technologies, coupled with equipment calibration, tracking, and computerized maintenance management capabilities all targeting reliability, safety, occupant comfort, and system efficiency.

Effective operation and management is one of the most cost-effective methods for ensuring reliability, safety, and energy efficiency. Inadequate maintenance of energy-using systems is a major cause of energy waste in both the Federal Government and the private sector. Energy losses from steam, water and air leaks, uninsulated lines, maladjusted or inoperable controls, and other losses from poor maintenance are often considerable. Good maintenance practices can generate substantial energy savings and should be considered a resource. Moreover, improvements to facility maintenance programs can often be accomplished immediately and at a relatively low cost.

Sustainable operations and maintenance practices focus primarily on the actions of building occupants, and encompass safety, health and safety, comfort, and productivity, with an understanding of the need for subsequent generations to reuse and recycle building components. During the design and construction process, to the maximum extent possible, select systems that will be easy to maintain. Ensure that operation and maintenance personnel are part of the project planning and development process, such as by establishing commissioning criteria at the onset of a project.

Throughout a building's life cycle, the operations and maintenance plan / program / practices should:

- i. Train building occupants, facilities managers, and maintenance staff in sustainable design principles and methods that will minimize system failures.
- ii. Purchase cleaning products and supplies that are resource-efficient, biodegradable and as safe as possible for both janitorial staff and building occupants, and thereby ensure good indoor air quality.
- iii. Test sensor control points on a regular basis to ensure energy efficiency is not compromised.
- iv. Use automated monitors and controls for energy, water, waste, temperature, moisture, and ventilation.
- v. Reduce waste through source reduction, reuse, recycling and/or composting to eliminate disposal of reusable materials at landfills and incinerators.
- vi. Minimize travel by supporting telecommuting programs and enabling a mobile work environment.
- vii. Perform scheduled energy audits and re-commissioning of systems.
- viii. When updating a facility or its systems, choose higher efficiency equipment and durable materials that will withstand storms and other natural events, and improve the tightness of the building envelope if feasible.

2.4 CLASSIFICATION OF BUILDING MAINTENANCE

Maintenance strategy is about what they need to attain or to try and do in a very future at the building. This strategy is to make sure the building facility keep functioning furthermore to ensure the user satisfaction.

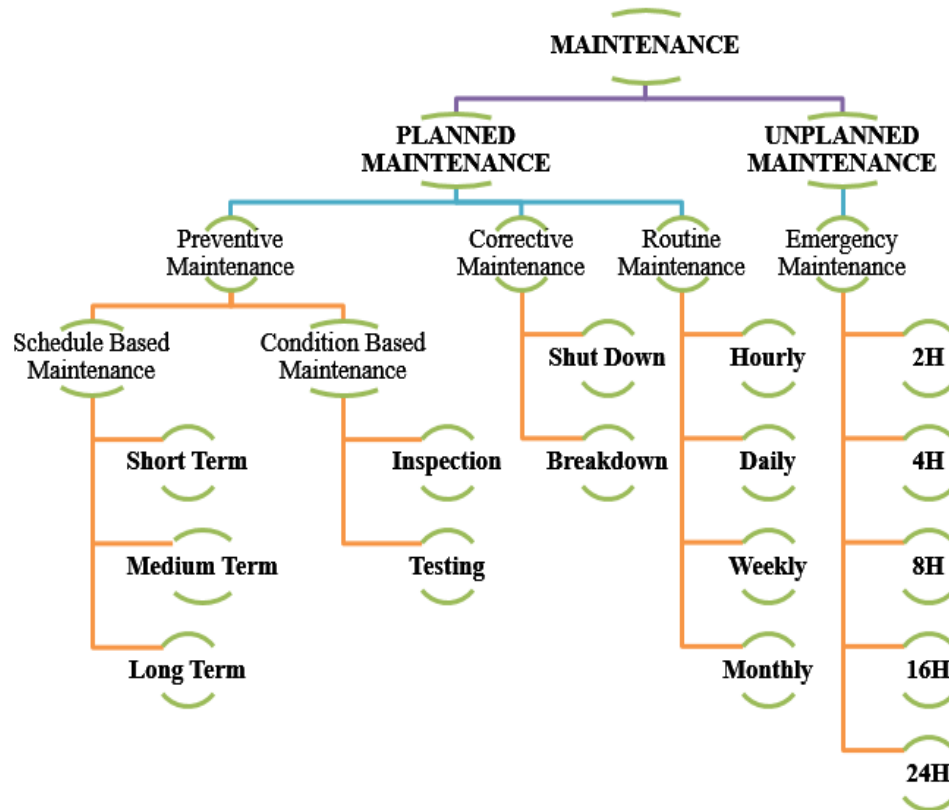


Chart 2.1 Classification of Building Maintenance

a) Maintenance Strategies

Maintenance strategies are divided in two which planned and unplanned maintenance. Planned maintenance is any variety of scheduled service carried out to ensure that an item of equipment is operating correctly and to avoid any unscheduled breakdown and downtime. Meanwhile unplanned maintenance is needed to be done immediately and often seen as urgent maintenance that need to be solve within 24hours upon for reasons of health, safety, or security to avoid serious consequences. Then, under planned maintenance divided in two categories which corrective maintenance and preventive maintenance.

Corrective maintenance has been done after the failure been occurred and attempt to restore an item such system or product to a specific condition. While preventive maintenance is an equipment maintenance strategy based on replacing,

overhauling, or remanufacturing an item a fixed interval, regardless of its condition at the time. For example, perform regular equipment inspections.

Emergency maintenance is a type of unplanned maintenance. Emergency maintenance, also known as breakdown maintenance, is required when an asset of equipment suffers an unexpected breakdown, creating an immediate threat to health and safety. It always happens without warning, therefore emergency repair, such as a leaking roof, an electrical failure, or an elevator breakdown, cannot be scheduled.

b) **Maintenance Programmed**

A maintenance programmed may be a combination of management procedures as well as maintenance tasks. Maintenance programmed area formulated at several various levels and every of those could also be utilized in a distinct way.

1. Long-Term Maintenance

Long-term is to identify the final level of expenditure on maintenance to achieve the required standards. Long-term programmed therefore to spot the major items of labor over the 5 to 10 years like electrical and lift.

2. Medium Term Maintenance

The medium term is typically between a year or two into the longer term. Any maintenance reliability initiatives would be executed with a medium-term view and the results fed into the short-term plans.

3. Short Term Maintenance

The short-term programmed, the coordination work is completed in a very certain period. It may be daily, weekly, and monthly. The reports will help the upkeep department to enable how often the element may be repair or replaced like housekeeping, pest control and landscaping.

c) **Maintenance Planning**

Planned maintenance is that the act of anticipating maintenance work and implementing a process for completing this work. This includes everything from the way to identify a task, to required materials and workflows, prioritization, and procedures for analyzing completed tasks.

1. Maintenance Information System

According to investigation, the building features a computerised system that monitors their disintegration. They will be able to tell whether or not the contractor completed their task on time using this approach. Aside from that, they do closed monitoring maintenance, particularly on air conditioning systems (more to chiller).

2. Planned Maintenance

Preventive maintenance could be a schedule of planned maintenance actions aimed toward the prevention of breakdowns and failures. The first goal of preventive maintenance is to stop the failure of kit before it occurs. Preventive maintenance activities include equipment checks, partial or complete overhauls at specified periods, oil changes, lubrication so on. Workers should record equipment deterioration, so that they know to interchange, or repair worn parts before they cause system failure. as an example, is repairing the lift when spoiled or damaged

3. Schedule of Maintenance

To manage the building, organizations use the maintenance building system. The target of maintenance is to prevent breakdowns and reduce power bill increases.

2.5 THE IMPORTANCE OF BUILDING MAINTENANCE

- i. Avoiding major repair
 - A structured schedule of maintenance will prevent unwanted and unwelcome surprises. Periodically ensuring that everything works well makes the building last longer and ensures that the building continues to function at its best. If all works inside and outside, there is no need to invest in large renovation projects that will interfere with your job, as before they get bigger, the repair and maintenance team will be able to recognize issues.

- ii. Safety
 - The health and safety of staff and clients. It is just as necessary to protect people entering the door as to get their company to make sure everything works. The building should be a secure and healthy place to work and do business - pest control measures can prevent anyone from getting sick, repairing loose tiles or pruning irregular branches can prevent anyone from getting hurt, and keeping the HVAC system running in good shape. Health is something that must be assured unless it is endangered: it will not be taken advantage of by proper repairs and maintenance.

- iii. Saving
 - Normal maintenance on a building is much more cost-effective because treatment is often simpler and more cost-effective than fixing a problem. Emergency repairs are costlier than routine upkeep. A building's routine and proper maintenance ensures that it is well maintained, free from destruction, expensive repair bills and the need for urgent repairs.

- iv. Improves the Appearance
 - A poorly maintained building may give a client a negative opinion of the company, which is why maintenance is necessary for a company. A well-maintained building would emphasise that the organization is well run, competent and has a positive attitude to the premises.

2.6 THE IMPACT OF BUILDING MAINTENANCE ON LIFE CYCLE

Building maintenance affects three aspects mainly with respect to our lives. Firstly, it links with safety and health of human and properties. Secondly, it is related with economy, from the small scale of economy that is a city or town's economy, but in the scale of large scale that is the whole country's economy. Finally, it is able to affect social and environmental issues to some extent. The objectives of building maintenance are explained below:

- To ensure the building and its services are under a safety condition.
- To ensure the buildings are available for use.
- To ensure the condition of the building meets all statutory requirements
- To maintain and retain the value of the physical assets of building stock by carrying out the building maintenance
- To ensure and retain the quality of building

Building maintenance is helpful for owners retain the economic and market value of their real assets. Building is like other consumption good, is a capital asset. They would be deteriorated by wear and tear lacking proper maintenance on a par with other assets, such as machines and vehicles. Despite building maintenance cannot eliminate the aging of building completely, but it can postpone the value of building asset declines retaining its value substantially. Furthermore, poor maintained buildings depreciate much faster than buildings which are under proper maintenance. From the viewpoint of housing supply, building maintenance can be regarded as part of determinant to influence the size and quality of housing stock in a country. Apart from the importance of building maintenance relating to safety and health of human and properties as well as importance of economic aspect, building maintenance inflicts its own impact on the social and environmental perspectives. Although, a comprehensive redevelopment can rub off slums and other urban taints, undeniably, it destroys the original local social networks by displacing local citizens' houses. Moreover, there are some groups, such as low-income families, ethnic minorities are expelled from the redevelopment areas, resulting in homelessness and unemployment as well as redevelopment would incur a mass of construction and demolition waste.

CHAPTER 3: MAINTENANCE AND FACILITIES MANAGEMENT

3.0 INTRODUCTION

The maintenance management is important to ensure continuous improvement of equipment performance, ensuring quality of operation in a safe environment for people and the environment. According to Seeley (1976), maintenance is defined as 'work done to maintain, restore or repair every part of a building, its services and environment, to current acceptable standards, and to maintain the utility and value of the building being maintained. Thus, system reliability analysis provides information on its failure processes, aids understanding of system operations and what is expected of its performance to better adapt maintenance planning. Birolini (2004) shows that reliability analysis is interrelated with the cost and effectiveness of the system. This provides important clues to making decisions in maintenance management to achieve the best possible use of equipment and systems, as higher reliability generally results in lower operating costs.

3.1 MAINTENANCE PROCUREMENT AND CONTRACT.

There are two types of contract used in PPTSP which is in-house contracting and outsource-contracting. In-house contracting can be defined as conducting activity or operation within the company, where the company is using its own employees or direct labors and time to keep a division or the assets in a good condition. Out-source contracting is where a company outsources some of its business tasks to another company to manage the maintenance works of their asset.

PPTSP use partially in-house contracting. Most of the maintenance work used out-source contracting and in-source contracting are available for minor maintenance work such as replacing light, wiring, replacing broken faucet and minor defect. Out-source contracting are for security, fire fighting systems, elevator systems and water pump.

| OUT-SOURCE | |
|-----------------------|----------------------------------|
| SCOPE OF WORKS | COMPANY |
| Security Services | Juta Waja Security Sdn Bhd |
| Elevator Maintenance | DP Versatile Enterprise |
| Fire Fighting | Conquest Fire Engineerin Sdn Bhd |
| Water Pump | Pro Water Pump Services |
| IN-HOUSE | |
| SCOPE OF WORKS | PERSON INCHARGE |
| Cleaner Block A | NoorHazali Bin Noorpiah |
| Cleaner Block B | Lim Bong You |
| Cleaner Block C | NorHaliza |
| General Worker | Ishak Bin Mohamed |

Table 3.1: The List of Out-source and In-House

3.1.1 THE HOUSEKEEPING

Housekeeping can be defined as a provision of a clean, comfortable and safe environment.

Perbadanan Pengurusan Taman Sri Pinang Block A,B,C B have hired an in-house which is residents Taman Sri Pinang in the scope of housekeeping and cleaning services of their building. Cleaner will be in-charge to manage all the cleaning services work in the building including toilet, infrastructure and others. Each block has one Cleaner who is in charge of cleaning.

The working hours for the cleaners in charge are started on Monday until Friday, 8.00 a.m. until 6.00 p.m. Saturday and Sunday are off day for the cleaners in this building.

3.1.2 FIRE FIGHTING SYSTEMS

Firefighting may be described as a system that is probably the most critical of building services to protect lives and prevent the destruction of property and the environment. Taman Sri Pinang provided comprehensive firefighting system and authorized by the Fire and Rescue Department Malaysia (refer to BOMBA regulation and requirement, Uniform Building By Law 1884) Conquest Fire will provide firefighting services once a month, on the 20th of each month.

3.1.2.1 THE CONCEPT OF FIRE FIGHTING SYSTEMS

This building has provided the fire fighting system that consist of active fire protection system and passive fire protection system. The chart below is the example of fire fighting system.

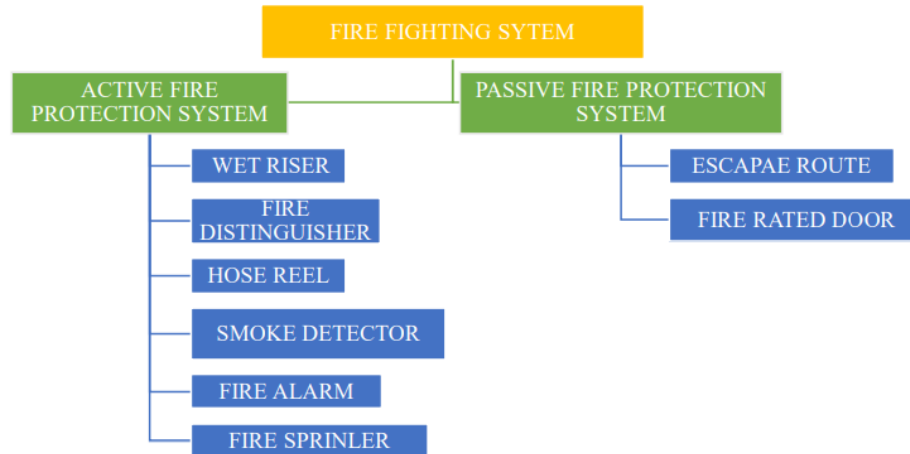


Chart 3.1: The Concept of Fire Fighting Systems





a) Active Fire Protection

Active Fire Protection is a group of systems that require some amount of action in order to work efficiently. These actions may be manually operated, like a fire extinguisher or automatic, like a sprinkler. So, when fire and smoke is detected in a facility, a fire/smoke alarm will alert those who are inside the building. Sprinkler systems and fire extinguishers help slowly the growth of the fire until fire-fighter have a chance to get there. Once fire-fighters arrive, they use fire extinguishers and fire hoses to put out the fire altogether.

b) Passive Fire Protection

Passive Fire Protection is a group of systems that compartmentalize a building through the use of fire-resistance rated walls and floors, keeping the fire from spreading quickly and providing time to escape for people in the building. Fire doors help compartmentalize a building, while giving its occupants means of escape. Fire walls and floors help separate the building into compartments to stop the spread of fire/smoke from room to room

3.1.2.2 THE COMPONENT OF FIRE FIGHTING

| NO. | COMPONENT | DESCRIPTION |
|-----|--|---|
| 1. |  <p data-bbox="491 725 885 763"><i>Figure 3.1: Fire Storage Tank</i></p> | <ul style="list-style-type: none"> <li data-bbox="948 412 1315 450">i. Located at groundfloor <li data-bbox="948 465 1533 719">ii. Supply water to the outlet points inside the house. This means that the fire brigade can have access to water remotely from a fire truck or from difficult/impossible locations. |
| 2. |  <p data-bbox="496 1115 877 1153"><i>Figure 3.2: Fire Extinguisher</i></p> | <ul style="list-style-type: none"> <li data-bbox="948 815 1533 965">i. Provided for a 'first attack' firefighting undertaken by the occupants of the building before the fire service arrived <li data-bbox="948 981 1257 1019">ii. Located each level |
| 3. |  <p data-bbox="544 1556 831 1594"><i>Figure 3.3: Wet Riser</i></p> | <ul style="list-style-type: none"> <li data-bbox="963 1205 1533 1294">i. Equipped with pumps one for main pump and another is standby pump. <li data-bbox="963 1310 1533 1460">ii. Standby pump is operated using generator set system in case of electrical failure. <li data-bbox="963 1476 1267 1514">iii. Located fire room |
| 4. |  <p data-bbox="536 1921 836 1960"><i>Figure 3.4: Fire Alarm</i></p> | <ul style="list-style-type: none"> <li data-bbox="963 1646 1533 1899">i. Supply water to the outlet points inside the house. This means that the fire brigade can have access to water remotely from a fire truck or from difficult/impossible locations <li data-bbox="963 1915 1506 1953">ii. Located at groundfloor at button lift |






| | | |
|----|---|---|
| 5. |  <p data-bbox="539 600 839 633">Figure 3.5: Fire Switch</p> | <ul style="list-style-type: none"> <li data-bbox="970 271 1535 416">i. This signboard was used to warn people on the way out of the building whether the building was on fire. <li data-bbox="970 439 1535 629">ii. This signage offered light as a guidance for people to save their lives and is typically placed at the top of the fire-rated door |
| 7 |  <p data-bbox="523 954 858 987">Figure 3.6: Fire Sprinkler</p> | <ul style="list-style-type: none"> <li data-bbox="970 685 1535 943">i. Consisting of a water supply system, providing an appropriate pressure and flow rate for the distribution of water piping to which fire sprinklers are attached. |
| 8 |  <p data-bbox="544 1458 831 1491">Figure 3.7: Hose Reel</p> | <ul style="list-style-type: none"> <li data-bbox="970 1043 1535 1245">i. Provided for use by occupants as a 'first attack' firefighting measure but may, in some instances, also be used by fire fighters. <li data-bbox="970 1267 1535 1469">ii. At each nozzle, a pressure of 200 kPa is required, and if the water main cannot provide this at the maximum reel pumping facility, it must be equipped. |
| 9 |  <p data-bbox="528 1839 847 1917">Figure 3.8: Emergency Exit Signboard</p> | <ul style="list-style-type: none"> <li data-bbox="970 1525 1535 1659">i. In this building, the exit signs have been provided at every floor at exit staircase. <li data-bbox="970 1682 1535 1816">ii. This signboard was used to warn people on the way out of the building whether the building was on fire |

Table 3.1: The Component of Fire Fighting

3.1.2.3 THE CHECKLIST MAINTENANCE WORKS OF FIRE FIGHTING SYSTEM FOR BLOCK A,B,C

i. The Checklist of CO2 Systems



CONQUEST FIRE ENGINEERING SDN. BHD. (415411-7)
CONQUEST ENGINEERING CO. (AS 0076505-T)
 78, Jalan Tan Sri Teh Ewe Lim, 11600 Penang, Malaysia.
 Tel: 04-2825506, 2817119 Fax: 604-2822564

WET-CHEMICAL/HALOON (1301/1211)/CO2 FIXED INSTALLATION SERVICING REPORT

NAME OF PROJECT/CUSTOMER: TAMAN SRI PINANG
BLK A SC CH No. **14626**

CONTRACT NO: _____

DATE: 20.1.2023

TIME IN / TIME OUT: _____

| DESCRIPTIONS | NORMAL | FAULT |
|---|--------|-------|
| 1. AC Power supply (unit of the control panel) | 1 ✓ | |
| 2. D.C. rectification unit | 2 ✓ | |
| 3. AC automatic change-over to D. C. circuitry | 3 ✓ | |
| 4. Battery electrolyte level | 4 N/A | |
| 5. Zone rotary switch for fault, alarm and isolate | 5 ✓ | |
| 6. Bulb indicators | 6 ✓ | |
| 7. Gas discharge short switch | 7 ✓ | |
| 8. Gas discharge monitoring signal to master alarm panel | 8 N/A | |
| 9. Alarm bell activation before gas is discharged | 9 ✓ | |
| 10. Manual gas-activation electrical key switch/manual pull handle box | 10 ✓ | |
| 11. Drop weight and tripping device (if applicable) | 11 N/A | |
| 12. Smoke/heat detectors/Breakglass | 12 ✓ | |
| 13. a) Dual circuit operation of the panel b) The gas discharge actuation delayed time | 13 ✓ | |
| 14. 24V D.C. solenoid for gas cylinder activation | 14 N/A | |
| 15. Asbestos curtain closure, AHU shut-down and exhaust fan before discharging of gas | 15 N/A | |
| 16. Nozzle seals in place | 16 ✓ | |
| 17. Piping and cylinder brackets | 17 ✓ | |
| 18. All tubing connection to cylinders | 18 ✓ | |
| 19. Pressure gauge in cylinder in "operate range" | 19 N/A | |
| 20. Weighing of cylinder every six months | 20 N/A | |
| 21. Memo-contact of the gas cylinder (optional) | 21 N/A | |
| 22. Pyrocharge of the gas cylinder | 22 ✓ | |
| 23. Remarks: <u>System in good condition</u> | | |


We certify the above job is done to our satisfaction.

Servicemen
 (i) HR
 (ii) NADIAH
 (iii) _____

Customer's signature: [Signature]
 Company stamp: _____

Figure 3.9: The Checklist Maintenance Work of CO2 Systems

ii. The Checklist of Wet Riser Fire Fighting Systems



CONQUEST FIRE ENGINEERING SDN. BHD. (415415-P)
CONQUEST ENGINEERING CO. (AS 0076505-T)
 78, Jalan Tan Sri Teh Ewe Lim, 11600 Penang, Malaysia.
 Tel: 04-2825506, 2817119 Fax: 604-2822364

(WET RISER) PRESSURISED HYDRANT/HYDRANT SYSTEM SERVICING & MAINTENANCE REPORT

NAME OF PROJECT/CUSTOMER: JAMANN ERI PINANG SC CWR No. 15708
BLK B.C.C

CONTRACT NO: _____

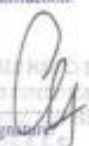
DATE: 20.1.2022

TIME IN/TIME OUT: _____

| DESCRIPTIONS | NORMAL | FAULT |
|---|--------------------------|----------------------------|
| 1. Pumpset control starter panel for manual and automatic operation | ✓ | |
| 2. Condition of the electrical components in the starter panel | ✓ | |
| 3. Condition of all indicators in the panel | ✓ | |
| 4. Proper functionality of all the control switches in the starter panel | ✓ | |
| 5. Pumpset gland packing and coupling alignment | ✓ | |
| 6. Electrical motor carbon brush and bearings | ✓ | |
| 7. Isolating valve gland packing and handwheel | ✓ | |
| 8. (a) Hydrant fire box contents (rubber line canvas hose) branch pipe, key and bar underground hydrant (b) Wet riser landing valve, canvas, hose and nozzle condition | ✓ | |
| 9. Physical condition of water storage tank and accessories | ✓ | |
| 10. Automatic activation and setting of pressure switches | ✓ | |
| 11. Diesel engine (if applicable) air filter, oil filter, fan belt, level of coolant, diesel and lubrication oil level | ✓ | |
| 12. Battery condition and electrolyte level of battery | ✓ | |
| 13. Battery charger unit | NA | |
| 14. Battery terminals connection | ✓ | |
| 15. Pumpset working Pressure | | |
| i) Jockey Pump | Cut In <u>170</u> psi | Cut Out <u>200</u> psi |
| ii) Duty Pump | <u>140</u> psi | <u>200</u> psi/manual stop |
| iii) Standby Pump | <u>120</u> psi | <u>200</u> psi/manual stop |
| 16. Remarks: <u>Standby pump Starter Panel faulty</u> | | |

(already quoted)

We certify the above job is done to our satisfaction.


 Customer's signature
 Company stamp

Servicemen

(i) HPR

(ii) NAO/ASH

(iii) _____

Figure 3.10: The Checklist of Wet Riser Fire Fighting Systems

3.1.3 ELEVATOR SYSTEM

Elevator system is one of the services provided in any building with more than 5 floors. Elevator is a vertical transport device that carries individuals or goods from the lowest levels to the upper floors. In fact, today elevators have become a necessary addition to high-rise and other big buildings to make it easier for people with mobility problems to negotiate those using wheelchairs. Apartment Taman Sri Pinang has a total of six (6) elevators, with two (2) elevators in each block. One (1) is for the fire elevator, while the other is for the residential lift. One of the elevators in Block A is a MONAJ brand, while the other five are FUJI brand, and they are utilised to carry all of the occupants within the building's levels. DP Versatile Enterprise is the main contractor of the elevator system in Apartment Taman Sri Pinang

i. Traction Elevator

Traction elevator is lifted by ropes which pass over a wheel attached to an electric motor above the elevator shaft. They are used for high rise building and speeds at higher travel compared to hydraulic elevator. A counterweight makes the elevator more efficient by offsetting the weight of the car and occupants so that the motor does not have to move as much weight.



| NO | TYPES | DESCRIPTION |
|----|--|--|
| 1 |  <p data-bbox="501 1585 916 1621">Figure 3.11: Passenger Elevator</p> | <ul data-bbox="1018 1350 1457 1464" style="list-style-type: none"> • A passenger elevator has a completely enclosed elevator car that travels vertically |
| 2 |  <p data-bbox="539 1917 877 1953">Figure 3.12: Fire Elevator</p> | <ul data-bbox="1018 1650 1457 1971" style="list-style-type: none"> • A fire elevator is housed in a protected fire rated enclosure and equipped with an emergency power supply. • During a fire emergency, a fire elevator is programmed to “home” to the ground floor when a fire alarm is activated. |

Table 3.2: The Types of Elevator



Figure 3.13: Operation of Traction Elevator System





Traction elevator acts by raising and lowering the car by traction steel ropes which are attached to the elevator car and looped around a sheave. Traction elevator utilizes an electric motor and gearbox located at the top of the hoistway to provide lifting power. The motor is connected to a sheave. When the motor turns one way, the sheave raises the elevator and when it turns the other way, it lowers the elevator.

The car is lifted by chains that run over pulleys at the top of the hoistway and then attach to a counterweight ride on guide rails along the side of the elevator shaft. The raise keeps the car and counterweight from swaying back and forth along the sides of the elevator shaft and work with the safety system to stop the car in an emergency.

The motor of a traction elevator utilizes a variable frequency drive that allows the motor to ramp up and down smoothly with an elevator controller that can be mounted in the hoistway, eliminating the need for a machine room.

If there is any problem during the elevator working, they can trace at what level the elevator stuck or stop operating by view the control panel.

3.1.3.1 THE COMPONENT OF ELEVATOR

| NO | PHOTO | DESCRIPTION |
|----|--|--|
| 1 |  <p data-bbox="544 656 890 689">Figure 3.14: Control Panel</p> | <p data-bbox="995 365 1493 439">Control all the component-component of elevator system.</p> |
| 2 |  <p data-bbox="523 1025 911 1059">Figure 3.15: Motor Generator</p> | <p data-bbox="970 734 1493 842">The function of the motor generator is to generate power to ensure that the elevator system is functional.</p> |
| 3 |  <p data-bbox="555 1388 876 1422">Figure 3.16: Guide Rails</p> | <p data-bbox="970 1097 1493 1279">Steel T-, round, or formed sections with guiding surfaces installed vertically hoist way to guide and direct the course of an elevator car and elevator an elevator car and elevator counterweights.</p> |
| 4 |  <p data-bbox="587 1720 847 1753">Figure 3.17: Buffer</p> | <p data-bbox="975 1469 1493 1576">Buffer can be defined as a device which is to stop a descending car or counterweight beyond its normal limit.</p> |

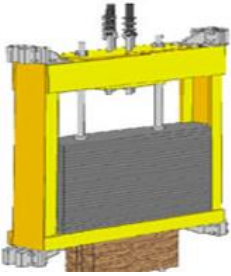

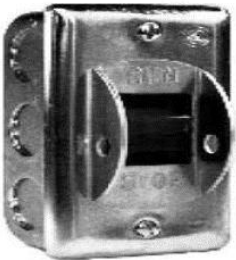
| | | |
|---|---|---|
| 5 |  <p data-bbox="536 589 895 622">Figure 3.18: Counterweight</p> | <p data-bbox="967 277 1503 488">Counterweight can be simply as equivalent counterbalancing load weight. Its function is to balances a load and to increases the ascending acceleration force. It also can decrease the acceleration force.</p> |
| 6 |  <p data-bbox="528 1014 903 1048">Figure 3.19: Elevator Button</p> | <p data-bbox="967 698 1503 909">Elevator button station can be defined as a system that control the elevator by each level which is consists total number of floors of the building, emergency button, button to open or close the elevator and others.</p> |
| 7 |  <p data-bbox="520 1406 911 1440">Figure 3.20: Pit Safety Switch</p> | <p data-bbox="978 1128 1493 1301">Pit Safety Switch is located at elevator entrance and exit section. Its function is to greatly enhances safety or personnel by avoid any unexpected elevator movement.</p> |

Table 3.3: The Component of Elevator

3.1.3.2 THE CHECKLIST MAINTENANCE WORK OF ELEVATOR SYSTEM

DP VERSATILE ENTERPRISE 202110302008(PMS4866-00)
 BLOCK B-6-10, PANGSAPURI BAGAN SENA,
 12100 BUTTERWORTH, PENANG, MALAYSIA

DATE: 17-1-22

Type of lift: PL HL GL Others:

Site Name: Sri Pinang

PMA No: PMA 101887 (A1), PMA 101888 (A2)

| | LIFT NO | | | LIFT NO | |
|--------------------------|--|-------------------------------------|-------------------------------------|---------|----|
| | A1 | A2 | | A1 | A2 |
| MACHINE ROOM | Operating Condition | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Peripheral Condition | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Control Panel | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Motor, Traction Mc | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Speed Governor | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Brake (Noise, Oil Adhesion, Slipping & Brake Lining) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Gear oil & Motor Oil | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Exhaust Fan at Motor Room / Lift Shaft | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Condition of Encoder | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Ehops/UPS | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| ENTRANCE | Hall Door | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Door Inter-lock & Switch | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Hall Call Button & indicator (HOP) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Indicator | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Landing Sill | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| CAGE / CAR TOP | Landing Door & Sensor Operation | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Car Top Switches, Junction Box | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Car Top Sheave | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Car Guide Shoe / Roller | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Car Door Inter-lock | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Car Door Safety Locking Device | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Car Sill & Car Levelling | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Alarm Bell | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Lighting, Ventilation Fan & Intercom | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Car Operating Panel (COP) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| LIFT SHAFT / PIT | Guide Rail Oil / Oil Can | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Appearance | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Counterweight Frame Sheave | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| OTHERS | Counterweight Shoe / Roller | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Upper Limit Switch | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Lower Limit Switch | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Pit Condition | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | Pit Lighting | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| Pit Switch | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| Guide Rail | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| Buffer | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| Oil Collector | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| Compensating Chain | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| Compensating Chain Guide | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

Normal To follow up / Defect Found Non-applicable NA

REMARK: Monthly service & checking
A2 wire rope need to replace
A1 under monitoring

| | |
|-----------------------------------|--------------------------|
| Technician Name: | <u>Hanna</u> |
| Time Arrive: | <u>2.30pm</u> |
| Time Leave: | <u>4.30pm</u> |
| Customer Satisfaction Evaluation: | |
| Excellent | <input type="checkbox"/> |
| Neutral | <input type="checkbox"/> |
| Good | <input type="checkbox"/> |
| Dissatisfied | <input type="checkbox"/> |

Customer Chop Sign
 Customer Name: _____
 IC: _____
 Position: _____
 Date: _____
 Comment: _____

Figure 3.21: The Checklist Maintenance Work of Elevator System

3.1.4 PUMP SYSTEMS

Pump is a device that moves fluids such as liquids or gases, or sometimes slurries, by mechanical action. Pumps can be classified into three major groups according to the method they use to move the fluid which is direct lift, displacement, and gravity pump. Pumps operate by some mechanism like reciprocating or rotary, and consume energy to perform mechanical work by moving the fluid.

The main water supply in the building is from Perbadanan Bekalan Air Pulau Pinang (PBA) for the district of Buuterworth. The process starts with the water received from the main pipe which is PBA and direct to the building storage tank at the ground floor. Domestic pump supplies the water to the whole building. The valve is positioned on the ground floor and dispersed until level 10 of building Blocks B and C. Due to low water pressure when distributing water to levels 11 and 12. PPTSP needs to install a water pump for levels 11 and 12.



Figure 3.22: The Water Tank

3.1.4.1 THE PROCESS OF WATER SUPPLY SYSTEMS

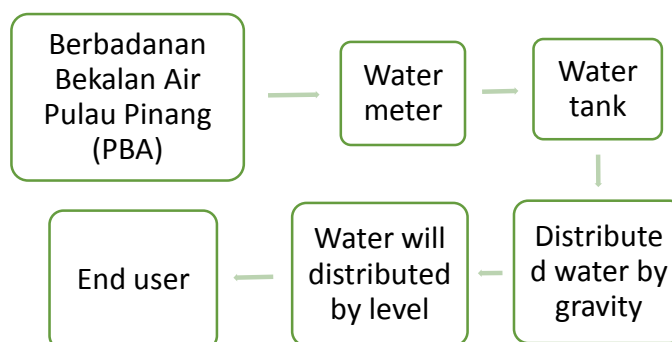


Chart 3.2: The Process of Water Supply Systems

3.1.4.2 THE TYPES OF PUMPS SYSTEM



| NO | PHOTO | DESCRIPTION |
|----|--|---|
| 1 |  <p data-bbox="544 1070 951 1155">Figure 3.23: Domestic Pump at Ground Floor</p> | <p data-bbox="1023 454 1437 562">Domestic pump is used to pump cold water from suction tank to level 10 of Block B and C.</p> |
| 2 |  <p data-bbox="544 1657 951 1742">Figure 3.24: Domestic Pump at Roof Top</p> | <p data-bbox="1023 1267 1437 1375">Domestic pump is used to pump cold water from suction tank to level 11 and 12.</p> |

Table 2.5: The Types of Pumps Systems

3.1.5 ELECTRICAL DISTRIBUTION SYSTEM

The power station generates electricity and the transmission network transfers the electricity from the power station to the distribution system. The substation flows through the electrical wire that one through the electrical wire that one through the underground wire called the earthing system or the grounding system directly to the main switchboard that consists of wire and cable placed through the wall that brings electricity to the outlet and switches through the whole building. The figure below the example of electrical distribution system of Tenaga Nasional Berhad (TNB).

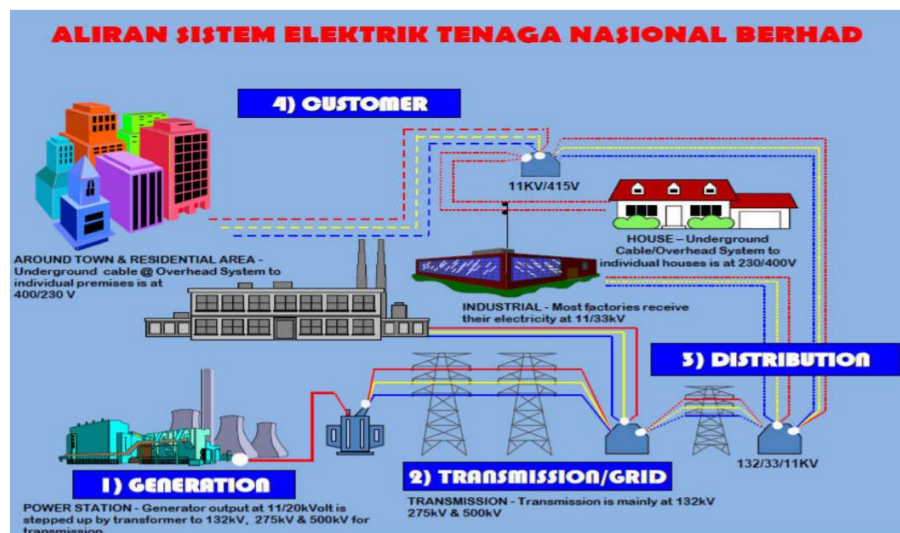


Figure 3.25: Electrical Distribution of Tenaga Nasional Berhad (TNB)

At Apartment Taman Sri Pinangg, the electrical distribution is supply by Tenaga Nasional Berhad (TNB) with high voltage electrical supplies. The building receives electrical supply from substation that located at the ground floor of the building.



Figure 3.26: The Substation For Low-cost Figure 3.27: The Substation For Medium-cost

3.1.5.1 MAIN SWITCH BOARD

Main switch board can be defined as a necessary part of any electrical installation and is generally where the service protection device and supply authority metering equipment is located. The main purpose of the board is to control the flow of power. It divides the main current supplied to it into several smaller chunks and distributes it to the devices. In precise, switchboards supply power to transformers, panels, and other equipment and from there power further gets distributed. Therefore, it is located in a space with good ventilation and as minimum vibration possible.



Figure 3.28: The Main Switch Board

3.1.5.2 THE PROCESS OF MAIN SWITCH BOARD

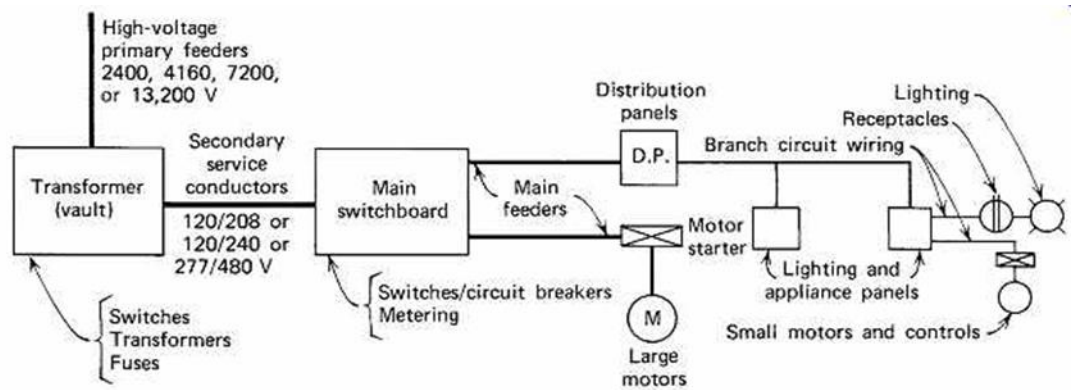


Figure 3.29: Process of Main Switch Board

3.1.5.3 LIGHTNING SYSTEM

The lighting system used for Taman Sri Pinang Apartment Block A, BC mainly uses fluorescent tubes in the building. LED lighting provides almost 90% more effective illumination than incandescent light bulbs. LED lights are durable and shockproof, unlike glass bulbs. LED lighting is also very spatial, which is beneficial for certain uses, such as eliminating stray light pollution on street lights. During the night, all lights in this building are normally turned on, which is from 7 p.m. to 7 a.m. for each level, including the staircase.



Figure 3.30: The Corridor Fluorescent Lamps

3.1.5.4 STREET LAMP

Street light is a source of light on the edge of a lane or road. The primary purpose of the street lamp is night-time lighting for protection and security, and efficient street lighting takes into consideration human street users. 18 street lights were provided at the parking lot around apartment blocks A, B, and C.



Figure 3.31: The Street Lamp

3.1.6 THE SEWERAGE SYSTEM

The essential function of the sanitary sewage system is to maintain the quality of water and public health. A variety of underground drains and manholes, pumping stations and other facilities carry sewage from households, enterprises and factories to wastewater treatment plants where it is treated and restored to the environment. Although much of the sanitary sewage system uses gravity to transport drainage, there are several instances where it is drained from low points or low-lying areas to higher elevations where it can once again use gravity to convey flows to treatment plants. Manholes are placed in the structure to provide access to the buried pipelines for maintenance and repair. Manholes are used if there is a change in the height of the pipe, a change in the direction of the sewage line, or a significant change of elevation. For the Taman Sri Pinang used public sewer that maintained by Indah Water Konsortium Sdn. Bhd (IWK). IWK is a national wastewater and sanitation company in Malaysia. It is a government-owned corporation under the Ministry of Finance Incorporated, which has the responsibility of establishing and sustaining a new and productive wastewater system.

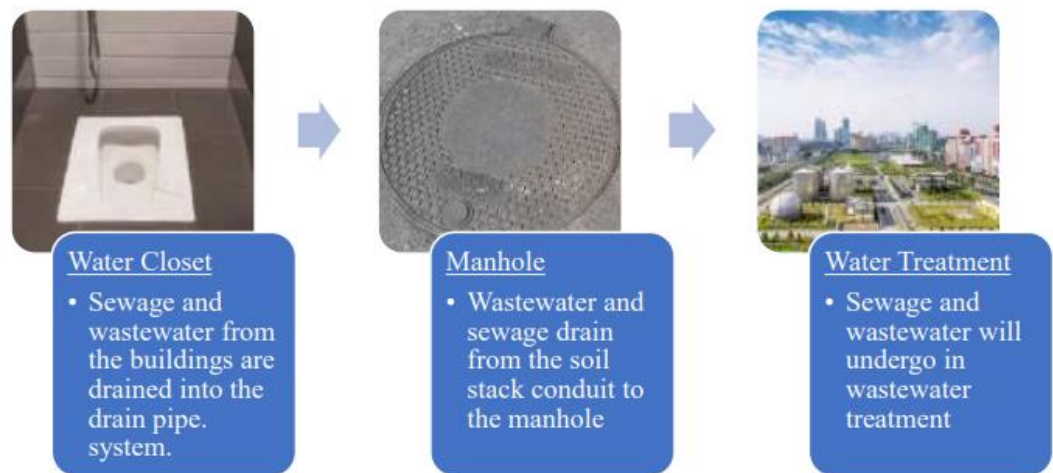


Chart 3.3: The Flow of Sewerage System

3.1.7 BUILDING SECURITY MANAGEMENT SYSTEM

To manage overall services, facilities and occupants, staff of the Apartment Block B and C Taman Sri Pinang, the maintenance department need a good and well-presented security system. For the sake of such a purpose, the building management of Taman Sri Pinang had our-sourcing security company to complete these tasks. The manager of building management had appointed JUTA WAJA SECURITY SDN BHD as their main sub-task company solely for security system that important to the building.



Figure 3.32: Logo of Juta Waja Security SDN BHD

Duties of security guard are responsible for the security of the resources (manpower, services, facilities, users etc.). Generally, the security guard is supposed to keep track of the entry and exit of any movable items or manpower from and out of the building and ward off any unauthorized entry of humans or vehicle inside the building. In summary, some informative of overall security services scope of work for Taman Sri Pinang Apartment Block A,B and C:

- i. 4 person of current security guard appointed for security duties.
- ii. The work schedule or shift time for the security guard is divided into two shift time which is the night shift time and morning shift time.
- iii. 2 persons of security guard that work during the morning shift due official office hours and to handle and monitor the building security in full services.
- iv. Other 2 persons of security in the night shift to guard and do a patrol at the building area.
- v. The security guards must check the building's outside and inside, as well as every level by level, every one hour.
- vi. The guard who have done doing checking, must do record in the logbook.

There is a guard house at a medium cost as a checkpoint for making sure about and observing the entrance control for residents only who have access card to the building. While Block A just has a barrier gate around the building that is monitored by security via CCTV monitoring. Barrier gate is a bar or pole to block vehicles access through a controlled point. Barrier gate helps to prevent unauthorised vehicles to enter restricted areas and limiting on authorised vehicles access



Figure 3.33: Security Guard at Taman Sri Pinang Apartment



Figure 3.34: Guard House of Block B and C



Figure 3.35: Barrier of Block A

a) CLOSED CIRCUIT TELEVISIONS AND SURVEILLANCE SYSTEM

Closed-circuit television (CCTV) is the use of video cameras to transmit a signal to a specific, limited set of monitors. It differs from broadcast television in that the signal is not openly transmitted, though it may employ point wireless links. CCTV in Apartment Taman Sri Pinang Block A,B,C is used for surveillance in areas, which need security, such entrance, elevator area, parking & others. Modern CCTV cameras use small high definition color cameras that can not only focus to resolve minute detail, but by linking the control of the cameras to a computer, objects can be tracked automatically.

All cctv recordings in Block A will transfer data to Block B through bluetooth from Block A to Block B, and data from Block B will be transferred to the office and security house via cable for all CCTV recordings in Block A,B,C. Block A has eight CCTV cameras, whereas Blocks B and C have ten.



Figure 3.36: Install the bluetooth at Block A and B



Figure 3.37: Setting up the wiring of CCTV at office.

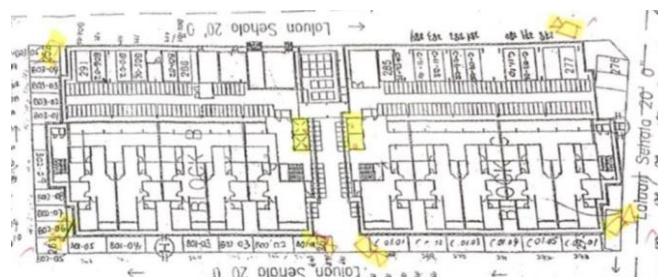


Figure 3.38: The located of CCTV around Block B and C

b) PARKING CARD ACCESS AND ELEVATOR CARD ACCESS

Controlling access to any premise is of vital importance for any common building. For Apartment Taman Sri Pinang, the building had used Swipe Card Access Control Systems as one of their security access system to restrict publics from entering apartment building. The access control system in this building was intended to screen, confine, and control the passageway of individual in the building and just residents who have access card into the apartment building. Barrier gate have actualizing the smart card reader at their entryway. The smart card reader is associated straightforwardly with the computerized system that work as a database. The developer will encode the resident's data with the access card once the card associated with reader devices. Furthermore, restrict two card access for one home unit.

Elevators don't appear to be all that dissimilar at first sight. However, upon closer study, there are critical distinctions that might have an influence on the safety of your institution. This is why a specialised elevator access control system might be critical to the safety of a multi-floor complex. Elevator Access Control is like securing a door or an entry point. An elevator access control system uses entry access as well as limited access. Thus, homeowners can enter the building but can only access their house level and ground floor by scanning the chip at the scan reader in the lift, which is already programmed in the systems. This helps in barring people from entering specific floors in the building system. For example, residents lives level five have access to their floor. They will also have access to the ground floor. But they do not have access to the other level. Furthermore, restrict six elevator card access for one home unit.



Figure 3.39: The Elevator Card Access and Parking Card Access

3.2 BUILDING MANAGEMENT SYSTEMS

The Management applied two systems to control the building, which are Soyal Etegra software is the process of developing an intelligent building by integrating security control, parking access management, elevator control, and apartment monitoring CCTV. As a result, management may control resident access and trace residents who leave the building using the system. This system can also register parking card access and lift chip access by management. If residents fail to pay their maintenance fees, management has the ability to block their access card.

In addition, there is one more system, Solar Account, which is financial software a kind of software that is especially created to computerise, assist, and store financial information about the apartment's maintenance fees and expenditures. It is in charge of storing, analysing, managing, and recording financial transactions.



Figure 3.40: Soyal Etegra Systems



Figure 3.41: The Solar Accounts

3.3 BUILDING INSURANCE MANAGEMENT

Building insurances for Apartment Taman Sri Pinang Block A, B, C was insured by RHB Insurance Berhad. the insurance covered for on all building including renovations, improvements, partitions, common properties, lifts, staircase, guardhouse, walls, gates, fences, electrical, installation, switchboard, switches, cabling, furnitures, fittings, fire-fighting installations, generator set, pump room and all other property not specifically mentioned. The period insurance was for one year 16/1/2022 - 15/1/2023. The sum insured was RM 16,000,000.00 and the cost spent for insurance was RM 9,613.98 annually.



31st December 2021

| RENEWAL QUOTATION SLIP | |
|--|---|
| Class of Insurance | : JMB Supreme Insurance |
| Renewal No. | : D21ZDJS6009793KK |
| Insured | : Perbadanan Pengurusan Taman Sri, Pinang Sungai Puyu Block A,B,C |
| Period of Insurance | : 16/1/2021 – 15/1/2022 |
| Correspondence Address | : Block A,B,C Lorong Seri Pinang 4, Taman Sri Pinang, Sungai Puyu, 13700 Seberang Jaya, Pulau Pinang |
| Summary of Cover / Rate | : The policy provides covers against property destroyed or damaged by : <ul style="list-style-type: none"> • Fire & Lightning • Aircraft Damage • Earthquake & Volcanic Eruption • Storm Tempest Endorsement • Explosion Endorsement (Non-Industrial W/O Boilers) • Impact Damage (Including Insured's own vehicle) • Bursting or overflowing of Water Tanks Apparatus or Pipes • Riot, Strike and Malicious Damage (Residential) |
| Occupation | : Apartment |
| Location of Risks | : Block A,B,C, Lorong Seri Pinang 4, Taman Sri Pinang, Sungai Puyu, 13700 Seberang Jaya, Pulau Pinang |
| Class Code | : 1008 |
| Class of Constructions | : Class 1A |
| Interest Insured : | |
| On All property of the insured of every description held by them in trust or on commission not specified insured are broadly described as follows: | |

Table 3.6: The Insurance Quotation Slip

3.4 MAINTENANCE CASH FLOW

Detailed cash flow as below:

| PERBADANAN PENGURUSAN TAMAN SRI PINANG BLOCK A,B,C | | | | | |
|--|------------------|-------------------|------------------|-------------------|-------------------|
| CASH FLOW TO MAINTAIN APARTMENT TAMAN SRI PINANG YEAR 2021 | | | | | |
| STATEMENT OF INCOME, OPERATING EXPENSES AND PROFIT | | | | | |
| BLOCK A | BLOCK A | | BLOCK B and C | | 2021 |
| | Montly | Annually | Montly | Annually | |
| PARTICULARS | | | | | |
| A. REVENUE | | | | | |
| Monthly maintenance charge | 10,842.00 | 130,104.00 | 20,175.00 | 242,100.00 | 372,204.00 |
| Rental Income-Vending Machine | 150.00 | 1,800.00 | 150.00 | 1,800.00 | 3,600.00 |
| Profit from previous (GROSS PROFIT) | | | | | |
| TOTAL REVENUE (RM) | 10,992.00 | 131,904.00 | 20,325.00 | 243,900.00 | 375,804.00 |
| | | | | | |
| B. EXPENSES | | | | | |
| B1 FIXED COST | | | | | |
| Fire Protection Systems | 170.00 | 2,040.00 | 170.00 | 2,040.00 | 4,080.00 |
| Generator Set, Water Pump | 150.00 | 1,800.00 | 150.00 | 1,800.00 | 3,600.00 |
| Security | - | - | 8,815.35 | 105,784.20 | 105,784.20 |
| Lift Maintenance Services | 260.00 | 3,120.00 | 520.00 | 6,240.00 | 9,360.00 |
| Petty Cash | - | - | 200.00 | 2,400.00 | 2,400.00 |
| Staff Salary with KWSP | - | - | 6,400.00 | 76,800.00 | 76,800.00 |
| TOTAL FIXED COST (RM) | 580.00 | 6,960.00 | 16,255.35 | 195,064.20 | 202,024.20 |
| | | | | | |
| B2 VARIABLE COST | | | | | |
| TNB | 1,000.00 | 12,000.00 | 2,000.00 | 24,000.00 | 36,000.00 |
| PBA | 500.00 | 6,000.00 | 800.00 | 9,600.00 | 15,600.00 |
| Insurance Building | - | 4,806.99 | - | 4,806.99 | 9,613.98 |
| Telephone and Internet | - | - | 182.40 | 2,188.80 | 2,188.80 |
| TOTAL VARIABLE COST (RM) | 1,500.00 | 22,806.99 | 2,982.40 | 40,595.79 | 63,402.78 |
| | | | | | |
| B3 CONTINGENCY COST | | | | | |
| Sinking Fund (RM) | 910.00 | 10,920.00 | 1,750.00 | 21,000.00 | 31,920.00 |
| TOTAL OPERATING EXPENSES | 2,990.00 | 40,686.99 | 20,987.75 | 256,659.99 | 297,346.98 |
| | | | | | |
| C. PROFIT | | | | | |
| Profit / Loss Before Taxation | | 91,217.01 | | (12,759.99) | 78,457.02 |
| | | | | | |

Table 3.1: The Cashflow For Block A and BC.

CHAPTER 4: CURRENT ISSUES IN MAINTENANCE MANAGEMENT

4.0 INTRODUCTION

This chapter will explore the current issues faced by Joint Management Bodies (JMB) in order to managing facilities and maintenance management the apartment Taman Sri Pinang Block, A,B,C.

4.1 COLLECTION MAINTENANCE FEES

The collecting of maintenance fees was one of the most challenging issues for JMB. According to financial records at solar account software, Block A has the most highest outstanding maintenance fees. It is because of a certain homeowner who never paid the maintenance fees, beginning with the homeowners' purchase of that unit's house in 2003 until now. One house's outstanding debt might reach RM10,000. While just a few homeowners in Blocks B and C did not pay maintenance fees, these blocks have had no outstanding debt for many years. Only around a year's worth of debt remains due.

Therefore, the monthly collection for all blocks did not reach the target. This is a major issue for JMB in terms of building management because the expenditure is more than collection. The building's expenses include the requirement to pay outsourced contractors for services such as security, fire, lift, and water pump. Aside from that, money is also utilised to pay a contractor if the structure requires minor repairs. As a result, the JMB was compelled to wait until the end of the month for collection from residents before making a payment to paid for service by contractor. At the some time, JMB is compelled to incur debt with the contractor.

4.2 UNOCCUPIED HOUSE

Many residences in all blocks are vacant, however the houses are owned. The majority of homeowners lived elsewhere. Therefore, homeowners are not have responsibility to pay monthly maintenance fees. Thus, this contributes to the collection of maintenance fees not reaching the target. It also causes a significant challenge for the management because it is unable to provide good services to the building.

4.3 INSUFFICIENT OF MANPOWER OF IN-HOUSE TEAM

According to the organisational JMB chart, the maintenance department, which under to the building supervisor, does not have enough workers to maintain the building. There is just one cleaner each block and one person as general worker. . It causes the job to be completed late and has certain defects at the roof top of the all block, as if it has never been cleaned in that area and that area also dirty. Some of the small issues on the maintenance will get to maintain by the in-house, which is the worker from the maintenance department. That is why it has a little bit problem due to not enough worker for right now.



Figure 4.1: The Condition Gutter at Roof Top

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

This chapter will provide recommendations for each current issue discovered in the Taman Sri Pinang Block,B,C Apartment.

5.1 RECOMMENDATION FOR COLLECTION MAINTENANCE FEES

The management should play a major role in recommending that residents of Block A who have outstanding maintenance fees which is create an agreement with the homeowners to pay maintenance fees every month. If the resident is fail to make the payment, the management may blocked all of the resident's facilities such as block parking access card and lift access card. This method will enhance maintenance fee collection while decreasing overdue maintenance fees. Therefore, for other residents who do not have overdue maintenance costs, if maintenance fees are not paid for three months, the management has the authority to blocked all entry to the building.

Therefore, if homeowners ignore the maintenance fees, it will have an impact on the homeowner to sell a house. This is because any thing related to selling requires homeowner to paid first the outstanding maintenance fees and get the a confirmation letter from management stating that there are no outstanding maintenance fees at that house.

Thus, if the residents fulfill the agreement, the management will not have to worry about financial maintenance fees, and the management will provide good maintenance to the building while also providing good comfort to the occupants.

5.2 RECOMMEDATION FOR UNOCCUPIED HOUSE

Due to many unoccupied houses in all blocks which have owners, the management should alert by marketing the house for rent on Facebook Apartment of Taman Sri Pinang after discussing with the homeowner about posting this advertisement. This is due to the increasing demand for rental houses, which may attract someone to rent a house in Apartment Taman Sri Pinang. The suggestion to enhance the income collection maintenance fees with have tenants rent the vacant house. It will make the homeowners paid the maintenance fees monthly.

5.3 RECOMMENDATION FOR INSUFFICIENT OF MANPOWER OF IN-HOUSE TEAM

To resolve the insufficient of in-house team manpower, the recommendation is to hire three cleaners, for a total of two workers each block. This is due to the fact that the quality of cleaning will be improved over what it is presently. Therefore, the job may be divided which is six floors per worker for each block. Following that, workers are required to clean the area on the roof of the apartment which is wash the gutter. It is important to maintain the building, if the area is not cleaned, the gutter may clog and cause water to accumulate on the roof. Following that, the roof area will get damp.

Not only that, but it make the job faster the work can be completed. In addition, providing good services for the residents and can increase the quality maintenance of the building.

5.4 CONCLUSION

Residential building requires a much attention in building maintenance since it consists of many levels as well as the residents. A service charge is the main source of funds management of stratified building. Failure to manage and maintain the building properly and consistently can caused a malfunction of facility thus leads to discomfort to the residents as well as dissatisfaction.

The resident's cooperation is required in collecting the maintenance fee to deliver the quality maintenance work with safety, security and comfort. The management team also need to sustain the condition of supporting indoor and outdoor facilities especially lift, parking and garbage collection as it becomes a significant indicator of the residential building management.

The relationship between resident and management team also need to enhance the cooperation between them. Besides, the resident needs to give space and full support to the management team intake charge of their building and the management team must provide their total commitment to ensure the building always in a top condition.

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APPENDICES

