



**DEPARTMENT OF BUILDING
UNIVERSITI TEKNOLOGI MARA
(PERAK)**

TOILET RENOVATION

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(PERAK)**

FEB 2022

It is recommended that the report of this practical training provided

By

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entitled

Toilet Renovation

be accepted in partial fulfillment of requirement has for obtaining Diploma in Building.

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FEB 2022

STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at UiTM Johor, Segamat Campus for duration of 20 weeks starting from 06 September 2021 and ended on 06 January 2022. It is submitted as one of the prerequisite requirements of BGN310 and accepted as a partial fulfillment of the requirements for obtaining the Diploma in Building.

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ABSTRACT

The basic mechanism a toilet utilizes to flush and dispose of waste defines its kind. The ideal style and flushing technology are then determined by the type of toilet selected. Gravity-feed, pressure-assisted, double-cyclone, and waterless toilets are the most common types of toilets. Upgrading a toilet while upgrading allows to experiment with the design of the space. For example, combining a WC and a bathroom, or removing a boiler or water tank from a cabinet to make extra room. However, upgrading entails extra labor. This report was conducted for toilet renovation in Bentara Bakti Building at UiTM Johor Cawangan Segamat. The objective of this report is to show the process of ongoing project from time to time based on the work schedule that has been provided. To make sure the staffs feel comfortable and safe when they use the toilet. It is because the toilet will be main toilet for the staffs. Conclusion, choosing a suitable design for toilet is not easy. This is because it has many factors to consider in addition to the physical design of the drive.

The objective is to upgrade an existing structure to improve performance by either altering the scope of structure, providing additional facilities or improving existing facilities. Besides, the purpose of this toilet renovation is fixing toilet leaks can save water. A leaking sink or toilet may waste up to 700L of water every day. Furthermore, a moist bathroom is an ideal breeding ground for mold and insects.

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Remodeling a toilet while remodeling allows you to experiment with the design of the space. For example, removing a boiler or water tank from a cabinet to make extra room. However, remodeling entails extra labor. Furthermore, keeping the toilet clean is an essential element of maintenance. If the toilet is filthy, it makes no difference how clean the rest of the area is, because the toilet will spread germs throughout the area. Besides, a more efficient toilet will save the money in the long term while also reducing environmental stress. Remodeling the toilet allows to replace outdated inefficient pipes and fixtures, which saves money on power costs and reduces water use. (Remodelers, 2021)

A tile installer, also known as a tile setter, covers surfaces such as floors, shower stalls, worktops, walls, and patios with tile composed of durable materials such as ceramic, granite, porcelain, or even cement. A tile installer works with both hand and power equipment to complete this task. They utilize wet saws, tile scribes, or portable tile cutters to cut tiles with uniform edges. They use trowels of various sizes to uniformly lay mortar or a sticky material known as mastic on the surface to be tiled. (HomeAdvisor, 2021) Furthermore, there are one benefits when tiles were install at toilet. Because of the inherently moist and humid circumstances connected with this part of the area, water resistance is an essential attribute in toilet tiles. Fortunately, glazed ceramic tiles have a functional protective coating that makes them resistant to both water and stains. (Chard, 2020)

In addition, there are a few advantages of tiles installation in toilet. If want a high-quality finish with a superior seal against water damage, always tile the floor first. With the tiles installed beneath the toilet, the floor will be much more sealed. It is also less difficult to accomplish this than to cut tiles surrounding the toilet. Because of the inherently moist and humid circumstances connected with this part of the area. Water resistance is an essential attribute in toilet tiles. Fortunately, glazed ceramic tiles have a functional protective coating that makes them resistant to both water and stains. (Tiles, 2020)

A toilet is a bathroom fixture that consists of a bowl with a removable, hinged seat and lid and a water-flushing apparatus used for excrement and urination. The bowl of a toilet that can be flushed with water. Bowl is a circular vessel with an open top that is primarily used to carry food or beverages; commode, crapper, potty, pot, throne, toilet, stool, can be a faeces and urination plumbing fixture. Besides, a toilet tank sink is a gadget that saves water by using gravity. The sink is placed where the top of the toilet tank would normally be. When you wash your hands, the soapy water goes via a little tube connected to the toilet supply and then fills the cistern for the next flush. (Scheinder, 2020)

Furthermore, there are a few advantages for toilet bowl and toilet sink. Using toilets keeps germs out of the environment and preserves the health of the entire community. Toilets are not simply built and used for health reasons. People also desire a toilet might be as simple as a large hole in the ground. Because it comes straight from the water supply pipe, water from a toilet sink is just as clean as water from a standard sink. Because they allow for touch-free hand washing, toilet sinks enhance sanitation. (Guides, 2018)

In nutshell, there are many types of toilet renovation, however, the aim of this report the toilet renovation focus on tiles, toilet bowl and sink installation in the toilet. The replacement of new tiles, toilet bowl and sink to make sure the user feel comfort when use the toilet especially for staff.

1.2 Objectives

- i. To investigate the methods tiles, toilet bowl and sink installation.
- ii. To investigate the cost and time based on the contract period and budget that have been provided either it is enough or not to complete the job.
- iii. To determine the problems occurred and solutions taken to solve the problems especially at the construction site.

1.3 Scope of Study

This research was carried out in order to get information and understanding of every way of toilet renovation for the building construction of Bentara Bakti Building at UiTM Johor campus Segamat. The toilet renovation was separated into multiple construction works, which is tiles, toilet bowl and sink installation. Several equipment, such as a lorry and others, have been utilised for all installation while carrying out the toilet renovation. However, various issues may arise throughout the construction process, such as a lack of workers and not enough tiles.

1.4 Method of Study

For this report, there are three (3) method that has been used. First and foremost, observation method. An observational strategy that includes studying people's behaviour in their natural context. When research did naturalistic observations. They try to be as inconspicuous as possible so that participants are unaware that they are being observed. For this project, have been involved for 1 months. There are a few observations which is the way how the workers work on toilet renovation.

i. Observation

An observational study is a sort of research design in which the effects of a product or condition are investigated without officially randomising patients in an experimental design. The comparative effectiveness researcher benefits greatly from observational studies. For this report, observation method of study has been done during the practical training period at UiTM Segamat, Johor.

This method of study is quit important since it delivers the most up-to-date information on individuals, their work, and their requirements Because the most interested in people's behaviour, observation is the most significant of these activities because it gives the most precise knowledge about individuals, their duties, and their requirements. Besides, an observation also is a type of data collection approach in which obtain information of the examined phenomenon by making observations of it as it occurs. You should try to concentrate your observations on human behaviour, the utilisation of the phenomena, and human interactions with the phenomenon.

All of the data may be documented using cell phones which is by taking some photos and videos or by taking notes in a book. To prepare this report. All data that has been get from site has been used to make a complete and perfect report as required by report supervisor.

ii. Interviews

An interview is a type of qualitative research approach that includes asking open-ended questions to respondents in order to talk with them and extract facts on a subject. Interviews are done with a population sample, and the essential trait they display is their conversational tone.

- a) By interviewing the contractor and workers at the site. Purpose of the interview is to know information about project which is either this project related and use same method or materials with previous project that has been involved by them. The interview took about 30 minutes during our site survey. All the information has been recorded by cell phone.
- b) By interviewing the site supervisor at office. The main objective is to get detail information about price, material that has been choose, period given to the contractor to finish the project and etc. The discussion took around 45 minutes. All the information has been writing in a book and has been given the hands out by the site supervisor.
- c) By interviewing the project manager. The purpose is to know the detail about how to bid tender and the process to bid tender. And also about the organization which is UiTM Segamat. This is because this project is a sub contract project under UiTM Segamat. All the details given has been write in a book and recorded by cell phone.

iii. Document Review

As a data gathering process in research, document review is the systematic collection, documenting, analysis and interpretation, and arrangement of data. The study of documents yields knowledge and insight into the research subject as well as the practise of teaching. All the document about the project and organization has been given by my supervisor also known as project manager for this project.

CHAPTER 2

ORGANIZATION BACKGROUND

2.1 Introduction of Organization

The UiTM Johor Branch has stood out attractively on property granted by the state government at KM12, Jalan Muar-Segamat. By fulfilling its obligations as the State UiTM campus, UiTM Johor Branch has developed fast.

The Facilities Management Division is in charge of monitoring, overseeing, and guaranteeing that all assets of UiTM Johor Branch are always in excellent and safe shape to use or live in, and that Universiti Teknologi MARA is the most attractive campus with comprehensive infrastructure and hospitable.

The Segamat Campus Facilities Management Division is led by a Deputy Director and supported by a Senior Engineer and 34 other employees. Meanwhile, it is managed by a Senior Engineer, two Assistant Engineers, an Electrical Machinery Caretaker, and two Skilled Assistants.

There are mission and vision for this organization that make them perform perfectly on the department. The mission is improving facility management and optimising the use of assets experts by utilising the finest techniques and technology to provide educational infrastructure, conducive learning and research, and a dynamic environment to UiTM. Besides, the vision is make a bumiputera facility management organisation in accordance with the UiTM vision.

In addition, there are many facilities that provided in UiTM Segamat to make students, staff and lecturer feel comfort. For example, there are a few cafeterias, students residential, sport gymnasium, and etc.

2.2 Organization Profile

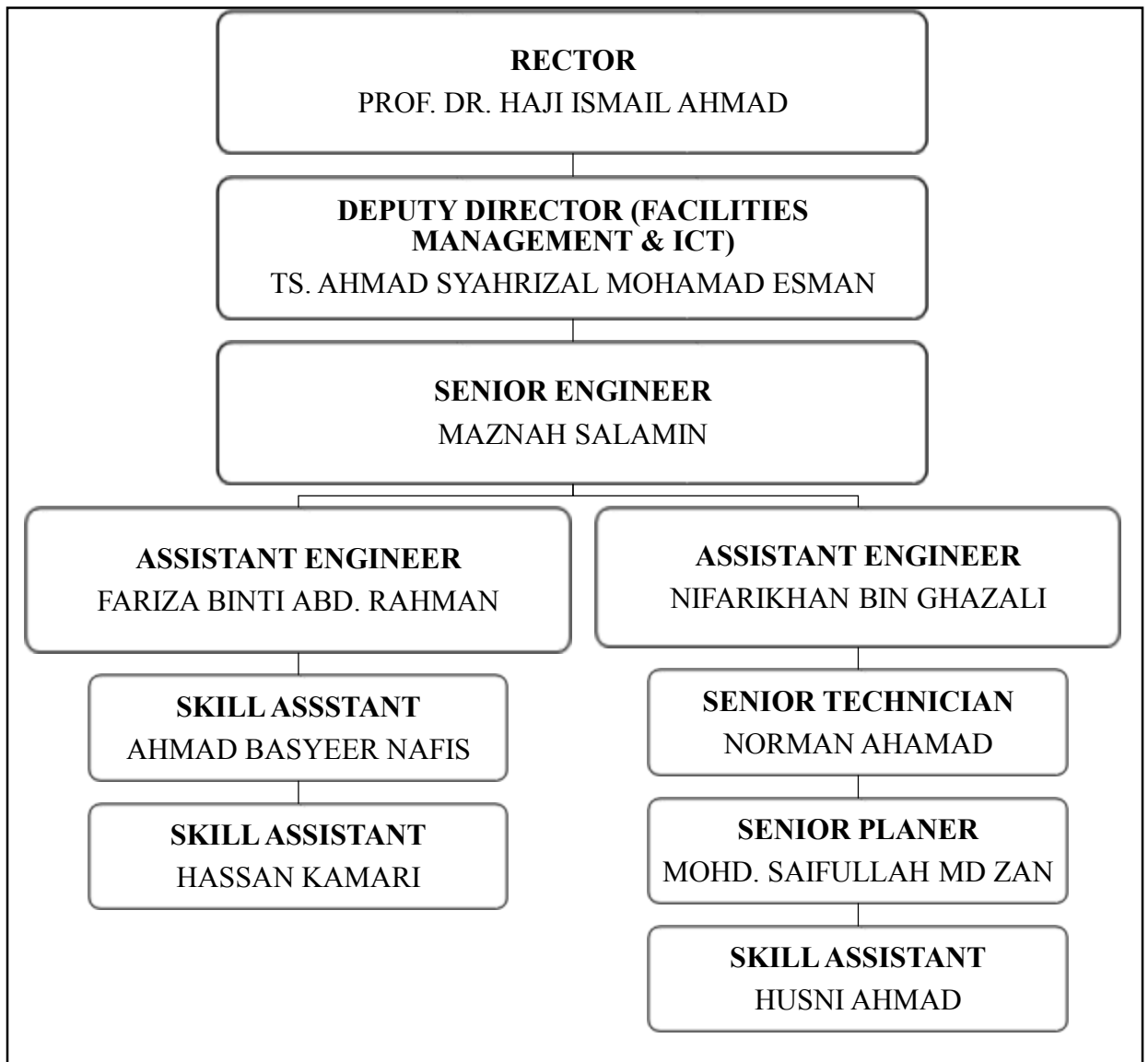


Figure 2.1: Front of Main Office

Organization Name	: UiTM Johor Campus Segamat (Facilities Department)
Year of Cooperation	: 1983
Contact Info	: Telephone 07 735 244 : E-mail mazna954@uitm.edu.my
Business Address	: Jalan Universiti Off Km. 12, Jalan Muar, 85000 Segamat, Johor Darul Ta'zim
Organization Status	: Government
Number of Staff	: 34

2.3 Organization Chart

Table 2.1: Organization Chart of Civil Department



2.4 List of Projects

2.4.1 Complete Projects

Table 2.2: List of complete project

NO	TITLE	CONTRACT SUM / VALUE	START DATE	END DATE	DURATION	CONTRACTOR
1.	 <p><i>Figure 2.2: Build a Permanent Billboard</i></p>	RM24,800.00	12/03/2018	08/05/2018	40 working days	Mustikaza Enterprise
2.	 <p><i>Figure 2.3: Replacement A Steel Ladder to Concrete Ladder</i></p>	RM8,500.00	04/04/2018	16/05/2018	33 working days	Triple I Enterprise

NO	TITLE	CONTRACT SUM / VALUE	START DATE	END DATE	DURATION	CONTRACTOR
3.	 <p data-bbox="315 555 817 587"><i>Figure 2.4: Repairing Pedestrian Roof</i></p>	RM164,830.00	16/04/2018	23/07/2018	14 weeks	Tetap Bina Enterprise
4.	 <p data-bbox="293 938 840 1008"><i>Figure 2.5: Repairing an Entrance at Blok Nilam</i></p>	RM29,680.00	18/04/2018	31/05/2018	30 working days	FSZ Bina Enterprise Sdn Bhd.



NO	TITLE	CONTRACT SUM / VALUE	START DATE	END DATE	DURATION	CONTRACTOR
5.	 <p data-bbox="315 627 819 691"><i>Figure 2.6:Awning and Gutter Grating Installation</i></p>	RM17,661.61	03/06/2018	02/08/2018	45 working days	HIO Bina Enterprise Sdn Bhd
6.	 <p data-bbox="342 1062 790 1094"><i>Figure 2.7:Flag Place Installation</i></p>	RM161,000.00	08/05/2019	31/07/2019	12 weeks	Perusahaan Hazami

NO	TITLE	CONTRACT SUM / VALUE	START DATE	END DATE	DURATION	CONTRACTOR
7.	 <p data-bbox="331 596 797 632"><i>Figure 2.8: New Finishes (Painting)</i></p>	RM143,800.00	15/07/2019	14/11/2019	4 months	FSZ Bina Enterprise Sdn Bhd
8.	 <p data-bbox="327 823 806 858"><i>Figure 2.9: Upgrading Lecture Room</i></p>	RM647,700.00	17/02/2020	16/08/2020	6 months	Redan Engineering

NO	TITLE	CONTRACT SUM / VALUE	START DATE	END DATE	DURATION	CONTRACTOR
9.	 <p data-bbox="331 624 801 660"><i>Figure 2.10: Premix Surface Repair</i></p>	RM60,000	01/08/2020	31/10/2020	3 months	Jamiran Bin Ngaliman
10.	 <p data-bbox="309 1011 824 1082"><i>Figure 2.11: An Upgrading of Research Workstation</i></p>	RM8,000.00	01/08/2020	31/10/2020	3 months	Auda Enterprise

NO	TITLE	CONTRACT SUM / VALUE	START DATE	END DATE	DURATION	CONTRACTOR
11.	 <p data-bbox="304 751 831 820"><i>Figure 2.12: Upgrading Auxiliary Police Station</i></p>	RM19,967.94	01/08/2020	31/10/2020	3 months	Lim Pah Construction
12.	 <p data-bbox="304 1080 831 1149"><i>Figure 2.13: Upgrading Lecture Room as Smart Classroom</i></p>	RM47,000.00	08/08/2020	08/12/2020	2 months	MSI Trading

NO	TITLE	CONTRACT SUM / VALUE	START DATE	END DATE	DURATION	CONTRACTOR
13.	 <p data-bbox="376 627 757 659"><i>Figure 2.14: Repairing Drains</i></p>  <p data-bbox="409 1010 725 1042"><i>Figure 2.15: Sign Board</i></p>	RM38,532.29	09/08/2020	31/10/2020	3 months	Mustikaza Enterprise

NO	TITLE	CONTRACT SUM / VALUE	START DATE	END DATE	DURATION	CONTRACTOR
14.	 <p data-bbox="309 644 819 715"><i>Figure 2.16: Toilet Renovation at Kolej Intan</i></p>	RM17,545.00	03/11/2021	15/11/2021	2 weeks	Azai Impian Enterprise
15.	 <p data-bbox="293 1086 835 1157"><i>Figure 2.17: Toilet Renovation at Bentara Bakti Building</i></p>	RM25,000.00	06/01/2021	30/12/2021	4 weeks	Azai Impian Enterprise

2.4.2 Project in Progress

Table 2.3: List of project in progress

NO	TITLE	CONTRACT SUM / VALUE	START DATE	END DATE	DURATION	CONTRACTOR
1.	 <p data-bbox="286 810 844 847"><i>Figure 2.18: Upgrading Apron and Drains</i></p>	Rm74,600.00	01/11/2021	28/02/2022	3 months	Perusahaan Hazami

CHAPTER 3

CASE STUDY

3.1 Introduction to Case Study

Azai Impian Enterprise was given responsibility by UiTM Segamat as a contractor to carry out a toilet renovation at Bentara Bakti Building in UiTM Segamat. The project cost around RM25, 000.00. The project itself began in early December 2021, and was completed in late December 2021 which is its took around 1 month to complete the project. The project location was a few kilometres distant from main office of facilities department. During this time, the traffic area at this site seems to be less congested due to the many paths that may be used to reach the same destination. The working hours are from 8:00 a.m. in the morning to 5:00 p.m. in the evening, Sunday through Thursday, although it also depends on the weather and surrounding conditions. In addition, since this project was under UiTM Segamat which is a government institution there are many rules that the contractor must follow before started the project.



Figure 3.1: Site Area

(<https://www.google.com/maps/place/UiTM+Cawangan+Johor,+Kampus+Segamat>)



Figure 3.2: Site Area

3.2 The Methods Tiles, Toilet Bowl and Sink Installation

- i. This project begins with the most important thing which is the concrete work. For the floor, this project use 25mm thick cement and sand (1:3) cement mortar ratio. This is because it is toilet renovation work, they just hacking the old floor and tiles. Besides, for the tiles they use homogenous tiles (600mm x 300mm x 8mm) in dark grey colour. As everyone know, homogeneous tile is a type of ceramic tile that is made from fine porcelain clays and burned at substantially greater temperatures than ceramic tile. This method produces homogenous tiles denser, tougher, and less porous than ceramic tiles, making them less prone to moisture and stain absorption.
- ii. Next, for the wall, it used 20mm cement and sand (1:6) cement mortar ratio. The renovation same as the floor. They hacking the floor and tiles and touch up with new cement mortar and install new tiles. The tiles that has been used is homogenous tiles (600mm x 300mm x 8mm) in white colour. Homogeneous tiles are nonporous and resistant to water. A homogeneous tile has a substantially lower absorption rate than other porcelain tiles. Homogeneous tiles are the ideal choice for bathroom tiling because of their impermeable qualities.



Figure 3.3: Homogeneous Tiles has been selected

- iii. In addition, for this toilet renovation project, 2 types of toilet bowls have been installed by the contractor. Close coupled toilet bowl is one of the toilet bowls types. Close coupled toilets have the cistern linked to the toilet bowl, resulting in a single streamlined device that integrates both necessary pieces. These toilet bowl are quick and simple to install, making them an excellent choice for any toilet. Close toilets get its name from the close connection of the pan and cistern, which results in a single toilet unit rather than a separate bowl and cistern. Close-coupled toilets are simple to install, clean, and maintain, and they come in a variety of designs.



Figure 3.4: Close Coupled Toilet Bowl

- iv. Besides, squatting toilet bowls is the another one toilet bowl has been selected to install. Squat toilets, often known as Indian toilets, are toilets that are used by squatting rather than sitting. This indicates that the defecation posture is to kneel over the toilet drain or hole with one foot on each side. A toilet pan of this type is sometimes known as a "squatting pan."



Figure 3.5: Squatting Toilet Bowl

- v. In addition, there was 2 sinks has been installed for this project. 2 sinks have been installed with size 585mm x 430mm. It was installed to make easy for the staff to wash their hand.



Figure 3.6: Sink that has been selected

3.3 The Cost and Time

Basically, this project was under UiTM Segamat which is the government institution. The contractor that has been selected is Azai Impian Enterprise. For this project, RM25, 000.00 has been provided by UiTM Segamat. This project also has been 1 month to complete perfectly during the period has given.

Table 3.1: Value of work

NO.	WORK DESCRIPTION	VALUE
1.	<u>Floor</u>	
	25mm thick cement and sand (1:3) cement mortar	RM655.20
	Homogenous tiles (600mm x 300mm x 8mm)	RM3,494.40
2.	<u>Wall</u>	
	20mm thick cement and sand (1:6) cement mortar	RM163.07
	Homogenous tiles (600mm x 300mm x 8mm)	RM6,656.00
3.	<u>Table Top</u>	
	25mm thick cement and sand (1:3) cement mortar	RM93.60
	Homogenous tiles (600mm x 600mm x 8mm)	RM499.20
	(2) Sink in 585mm x 430mm	RM759.20
4.	Squatting toilet bowl	RM226.72
5.	Close coupled toilet bowls	RM413.92
6.	Cistern High Level	RM110.00

3.4 The Problems Occurred

3.4.1 Limited Construction Space

This project was carry out in Bentara Bakti Building. The space for the workers was limited since they have to complete the project at the same place with UiTM Segamat staffs it is because the Bentara Bakti Building was one of the office in facilities department.

3.4.2 Noise Pollution

Besides, noise pollution also one of the problems especially during the hacking and tiles cutting work. It is because the workers working hours same with office hours. So, the noise will make the UiTM Segamat staff lack of focus during they did their work in office. Noise pollution from construction sites is hazardous to the health of persons who work on construction projects and stay at the site for extended periods of time. The use of mufflers or silencers on construction machinery and equipment is an important solution to noise pollution on construction sites.

3.4.3 Miscommunication with the workers

Other than that, miscommunication with the workers was the biggest challenge for this project. It is because they have different language with us. So, the information can't have delivered perfectly since they hard to understand. Communication in construction is critical to a successful building process from start to finish. Good team communication may increase teamwork abilities, lead to good cooperation, and result in an optimistic project journey for the customer.

CHAPTER 4

METHOD STATEMENT



4.1 Method Statement



PROJECT : TOILET RENOVATION



PREPARED BY : NUR HANIS KAMARUDIN (2019237582)



PAGE : 1

DATE : 22 DECEMBER 2021

No.	Operation	Sequence Diagram	Machinery	Workers	Tools	Duration	Notes
1.	Delivered material	 <p><i>Figure 4.1: Material have been delivered</i></p>	Lorry 1 tonne (1)	2 skilled workers	<ul style="list-style-type: none">• Wheelbarrow	½ days	Delivered material from the supplier to make the easy during they did their work.
2.	Hacking Wall and Floor	 <p><i>Figure 4.2:Hacking wall</i></p>	Hacking machine (1)	2 skilled workers	<ul style="list-style-type: none">• Hacking machine• Wheelbarrow	3 days	Hacking process is the process that they remove the old tiles for floor and wall.

No.	Operation	Sequence Diagram	Machinery	Workers	Tools	Duration	Notes
3.	Site clearance	 <p><i>Figure 4.3: Situation after hacking process</i></p>	Lorry 1 tonne (1)	2 workers	<ul style="list-style-type: none"> • Shovel • Wheelbarrow 	1 day	The workers make site clearance after they did the hacking work to make them easy to did their tiles installation work.
4.	Concrete mixture work	 <p><i>Figure 4.4: Cement and sand mixture</i></p>		1 skilled workers	<ul style="list-style-type: none"> • Shovel • Hoe • Bucket • Watering can 	½ day	Labour did concrete mixture work for wall plaster and toilet bowl installation.

No.	Operation	Sequence Diagram	Machinery	Workers	Tools	Duration	Notes
5.	Remove squatting toilet bowl	 <p data-bbox="651 699 969 772"><i>Figure 4.5: After remove squatting toilet bowl</i></p>		1 skilled worker	<ul style="list-style-type: none"> • Hand trowel • Concrete trowel • Bucket 	2 days	Fill the hole with cement. It is because the squatting toilet bowl will be replaced with close coupled toilet bowl.
6.	Tiles Installation for Wall	 <p data-bbox="680 1139 940 1212"><i>Figure 4.6: Tiles installation for wall</i></p>		2 skilled worker	<ul style="list-style-type: none"> • Hammer • Hand trowel • Concrete trowel • Close up water levelling 	2 days	Tiles installation for wall using the tiles that have been selected in white colour.



No.	Operation	Sequence Diagram	Machinery	Workers	Tools	Duration	Notes
7.	Squatting toilet bowl installation	 <p data-bbox="645 703 992 767"><i>Figure 4.7: Squatting toilet bowl have been install</i></p>		1 skilled worker	<ul style="list-style-type: none"> • Hand trowel • Concrete trowel 	½ days	Squatting toilet bowl has been selected because they are perceived by as easier to clean more hygienic.
8.	Tiles Installation for Floor	 <p data-bbox="633 1150 999 1214"><i>Figure 4.8: Tiles installation for floor</i></p>		1 skilled worker	<ul style="list-style-type: none"> • Hammer • Hand trowel • Concrete trowel • Scrapper • Close up water levelling 	4 days	Tiles installation for wall using the tiles that have been selected in dark grey.



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No.	Operation	Sequence Diagram	Machinery	Workers	Tools	Duration	Notes
9.	Tiles installation at table top	 <p><i>Figure 4.9: Tiles installation for table top</i></p>		2 skilled worker	<ul style="list-style-type: none"> • Hand trowel • Concrete trowel • Scrapper • Tiles cutter 	3 days	Homogenous tiles have been applied. It is because suitable for toilet users.
10.	Sink Installation	 <p><i>Figure 4.10: Sink has been installed on table top</i></p>		1 skilled worker	<ul style="list-style-type: none"> • Bucket • Hand trowel • Scrapper 	1 days	Ceramic sink has been installed using bucket hand trowel and scrapper within a day.



No.	Operation	Sequence Diagram	Machinery	Workers	Tools	Duration	Marks
11.	Close Coupled Toilet Bowl and Cistern Installation	 <p data-bbox="667 703 1016 767"><i>Figure 4.11: Close coupled toilet has been install</i></p>  <p data-bbox="685 1169 999 1233"><i>Figure 4.12: Cistern has been install</i></p>		2 workers	<ul style="list-style-type: none"> • Bucket • Hand trowel • Scraper 	1 days	Close coupled toilet bowl and cistern has been installed after tiles installation completed. It is because it will simply the workers to finish their project.

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No.	Operation	Sequence Diagram	Machinery	Workers	Tools	Duration	Marks
12.	Door and Pipe Installation	 <p><i>Figure 4.13: Pipe have been installed</i></p>  <p><i>Figure 4.14: Door have been installed</i></p>	Driller	2 workers	<ul style="list-style-type: none">• Bucket• Hand trowel• Scrapper	2 days	Doors and pipe was the last thing to install.





4.2 List of Machineries





Table 4.1: List of machineries



No.	Machineries	Uses
1.	 <p data-bbox="475 786 815 824"><i>Figure 4.15:Lorry 1 tonne</i></p>	As a transport for material and site clearance.
2.	 <p data-bbox="448 1126 844 1164"><i>Figure 4.16:Hacking machine</i></p>	Hacking all the tiles on floor and wall to make smooth surface rough. It makes on surface of concrete to provide strong bond for plastering.
3.	 <p data-bbox="517 1547 774 1585"><i>Figure 4.17:Driller</i></p>	Used for insert screw for door installation.

4.3 List of Tools

Table 4.2: List of tools

No.	Tools	Uses
1.	 <p data-bbox="475 636 815 674"><i>Figure 4.18: Wheelbarrow</i></p>	Used to carrying heavy loads of dirt, rocks, cement and etc.
2.	 <p data-bbox="467 981 823 1019"><i>Figure 4.19: Cement bucket</i></p>	Used to delivered and carry concrete mixture from one place to another place.
3.	 <p data-bbox="491 1473 801 1512"><i>Figure 4.20: Tiles cutter</i></p>	Used to cut the tiles based on shape and size that they need.
4.	 <p data-bbox="520 1966 772 2004"><i>Figure 4.21: Shovel</i></p>	Used as a tool for digging, lifting and moving bulk materials, such as soils, coal, gravel and etc.

No.	Tools	Uses
5.	 <p data-bbox="517 577 804 613"><i>Figure 4.22: Scrapper</i></p>	<p data-bbox="938 331 1369 591">Used as single-edged tool used to scrape metal from surface. This may be required where a surface needs to be trued, corrected for fit to a mating part.</p>
6.	 <p data-bbox="497 922 826 958"><i>Figure 4.23: Hand trowel</i></p>	<p data-bbox="938 703 1369 904">The gauging trowel is a versatile tool used for transferring plaster and for applying plaster to a wall or surface.</p>
7.	 <p data-bbox="520 1339 801 1375"><i>Figure 4.24: Hammer</i></p>	<p data-bbox="938 1057 1369 1317">Nailing is tacks and small nails with a regular size hammer can be difficult. To avoid breaking tacks or small frames, a tack hammer allows greater precision.</p>
8.	 <p data-bbox="549 1756 772 1792"><i>Figure 4.25: Hoe</i></p>	<p data-bbox="938 1585 1359 1621">Used for concrete mixture work.</p>

No.	Tools	Uses
9.	 <p data-bbox="453 600 868 636"><i>Figure 4.26: Measurement Tape</i></p>	<p data-bbox="940 344 1370 546">Used to measure size. It is like a much longer flexible ruler consisting of a case, thumb lock, blade/tape, hook and etc.</p>
10.	 <p data-bbox="421 1016 900 1052"><i>Figure 4.27: Close up water levelling</i></p>	<p data-bbox="940 819 1370 909">Used to determine the level of tiles surface especially in toilet.</p>

CHAPTER 5

CONCLUSION

As a result of the favourable weather conditions and the good collaboration of the working crew, the toilet renovation, which comprised the new toilet bowl and new tiles installation were finished within the time frame specified owing to the smooth progress of the entire project.

Aside from it, no occurrences of hurt or damage occurred during the construction phase. The safety and health agency could find that the construction location was safe from danger despite the fact that the pandemic was high risk, but the construction area is distant from the high-risk area.

Finally, there are several reasons why you may consider renovating your bathroom and it primarily boils down to what you want to achieve.

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