



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

**INSTAALLATION METHOD OF FLOOR FINISHES FOR A
UNIT OF SEMI-D SINGLE STOREY HOUSE**

Prepared by:

Syazwana Qistina Binti Abdul Aziz

2019426582

**DEPARTMENT OF BUILDING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
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It is recommended that the report of this practical training provided

By

**SYAZWANA QISTINA BINTI ABDUL AZIZ
2019426582**

entitled

Installation Method of Floor Finishes for A Semi-D Single Storey House

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

Report Supervisor : _____
Dr. Hafizah Binti Mohd Latif.

Practical Training Coordinator : _____
Dr. Nor Asma Hafizah Binti Hadzaman

Programme Coordinator : _____
Dr. Dzulkarnaen Bin Ismail.

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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 Usaha Kencana Builders SDN. BHD. for duration of 15 weeks starting from 27 September 2021 and ended on 7 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.

Name : Syazwana Qistina Binti Abdul Aziz

UITM ID No : 2019426582

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ABSTRACT

Floor finishes has its own importance in building construction. In this report, there will be discussion on what types of floor finishes that could be use as the floor coverings. The mainly focus of this report is to identify the procedure of tiles installation for a unit single storey house. Then, the focus shift to determine the time completion for installing specifically ceramic tiles in the report. There's also another topic to discuss; about the problems arise during the installation process and how to solve them in efficient way.

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CHAPTER 1.0:

INTRODUCTION

1.1 Background of Study

Floors are horizontal elements of building structures which divide building into different levels for the purpose of creating more accommodation within the restricted space, one above the other and provide support to the occupants, and furniture of a building (Engineer, 2012). Other term for floor finishes is floor covering in which, its purpose is to permanently cover the floor. Also, it is expected to protect our feet from the rigid surface, extend the life of the floor while providing an attractive appearance and slip resistance surface (Meraj, 2014).

There are several types can be used as the floor finishes such as timber or hardwood, carpet, laminate, tile, and vinyl (Admin, 2022). Timber may be quite resilient, albeit it is prone to scratching and movement. Because lumber is hygroscopic (sponge-like), it is inappropriate for use in spaces that may be subjected to humidity or moisture. Wax, oil, or lacquer are some of the alternatives for finishing wood. Solid hardwood flooring of the past in lengths able to span joists is becoming more of a rare thing. Commodity flooring in a variety of lengths, some as short as 6 or 8 inches, is more the norm.

An upper layer of pile is linked to a backing of a carpet. The pile is commonly made of wool or heat-treated fibers such as nylon, polyester, or polypropylene that have been twisted into tufts or woven. There are many different textures, styles, and colors (Engineer, 2012) to choose from, and carpet is typically durable and easy to maintain. In terms of both heat and sound, carpet also acts as an insulator. Carpets, on the other hand, are readily stained and destroyed by water and humidity (Editor, 2021).

Vinyl flooring can be supplied in rolls or tiles and is generally fixed by gluing. It can be manufactured in a very wide range of colors and profiles (for example studded) and as with laminate flooring can simulate the appearance of other materials (Editor, 2021).

Laminate flooring is a compressed fiberboard plank that is covered with an image of a substance such as wood, stone, or tiles, and then protected. Laminates may be appropriate for spaces that want the aesthetics of a "natural" floor but at a lesser cost, with quicker installation, and without the risk of scratching (Editor, 2021)

There are many options in terms of color, texture, shape and finishes of tiles. Because of their hardness, they are difficult to scratch or dent and are also suited to wet environments. However, they are difficult to install and can break if there is a lack of support beneath the tiles (Editor, 2021).

Because of its low cost, durability, and simplicity of upkeep, it is ideal for high-traffic areas that can withstand water. The tiles are resistant to abrasion and impact damage, and chemical strippers and mechanical buffing equipment may be used to refinish them frequently. When tiles are put correctly, they may be simply removed and changed if they become damaged. The tiles can have any appearance, such as marble or terracotta etcetera (happhoadmin7, 2022).

There are many types of floors finishing in construction building, however, the aim of this study is to discover the installation process on ceramic tiles for a unit single storey house.

1.2 Objectives

There several objectives have been developed from this construction as follows;

- i. To identify the methods of floor finishes installation
- ii. To determine the time of floor finishes installation
- iii. To identify the problem and solution in floor finishes

1.3 Scope of Study

Studies were conducted at Bandar Hilir, Langkap in Perak whereby a site was commenced for 18 units of semi-D single storey house on 15th September 2019 and has been on-going until recent time. Lots of experiences and observations have been made during the times spent at the site. Therefore, this report was entitled as 'The Installation Method of Floor Finishes for A Unit Semi-D Single Storey House' as the focus subject for this study. Aside from explaining on how to install ceramic or porcelain tiles onto the floor, the study includes on how much time pass as the floor finishes were installed for whole interior in the house from living room to kitchen. In the subtopic for the focus subject, details will be made on what materials and machineries and tools that would be use for the entire process for installation method. As the page goes on, a discussion will be made on what kind of problems would occur when installed the finishing. As for the contrast, solutions have been also made to the discussion as problem solving method. However, on what could not be included in the studies were the description on the quantity of labor, unit rate cost of installation and besides mentioned above. To obtain data for the studies several methods have been used to collect the data such as during observation, interview session and document reviews. Thus, the further explanation for the used methods will be shown below.

1.4 Methods of Study

1. Observation

The observation that has been made was mainly just stands about 5 meters away specifically from where the specialized sub-contractor doing its work. Mentally take note of the way they prepared materials to skillfully install the ceramic tiles with full concentration. intervals from step to another 2 to 3 pictures were taken as data and as reference and ideas on android phone. One or two short videos were taken to give ideas how the floor finishes were installed.

2. Interview

The interview was done on the way from the site to headquarters one time. the voyage took about one hour and more. the topic and questions came up in a casual conversation. It was a two-way conversation with the main contractor of the ongoing project. the feedback was saved in memory and later on, jot down on a notebook to use as a reference.

3. Document review

The place stationed is a small corporate company. in other words, there are not many documents that could do to collect data. from most of the times, to identify details and descriptions were found on specifications drawing of floor plan of the study area. data such as measurements and types of floor finishing were found in the drawings.

CHAPTER 2:

COMPANY BACKGROUND

Usaha Kencana Builders SDN. BHD was founded on the date of 23rd April in 2019 and locates at Section U12 in Shah Alam, Selangor with a mindset to become the leading company in construction both in the worldwide nation and in the local. The company offers services such maintenance, roadwork and building construction.

They offer a wide range of residential & commercial services, electrical services, interior designs, and landscaping maintenance. In addition, they do patch to holes on the road, painting faded spots of the sideroads, manage earthwork, thus roadwork construction of all kinds. Furthermore, construction management is one of their fortes in this kind of industry. They have experts in general building construction, management, planning and design building and much more.

To build an optimistic work site, Usaha Kencana Builders SDN. BHD quotes from Cesar Pelli in which that he said, “Construction is a matter of optimism; it’s a matter of facing the future with confidence”. They believe that we can achieve much greater if we have an upright mindset with a specific goal in mind. Their mission is to achieve customer recognition by committing to the highest level of performance with integrity, creativity and a passion for results. They have a vision to create a prominent profitable and sustainable business with various demandable diversification.

The organization corporate with another name of the company, Usaha Kencana Electrical & Construction in which states with the ownership, organizational structure, and also shares the same address.

2.1 Completed Projects

Higher up staffs of Usaha Kencana Builders SDN. BHD. Department has monitored a government project that have been completed under main contractor as shown in Table 1.

Table 1 : Completed project

Project's Name	Contractor's Grade	Price (RM)	Durati on	Started	Finished
To build and construct 34 units single storey house, 24 units double storey terrace house at Lot 5790 HS(M) Gading Ujana, Sg Belat, Kuantan, Pahang Darul Makmur.	Grade 4	1,611,129.00	35 weeks	11 th January 2019	11 th October 2019

2.2 Ongoing Projects

Higher executive officer of Usaha Kencana Builders SDN. BHD. Department has monitoring ongoing government projects under main contractors as shown in Table 2.

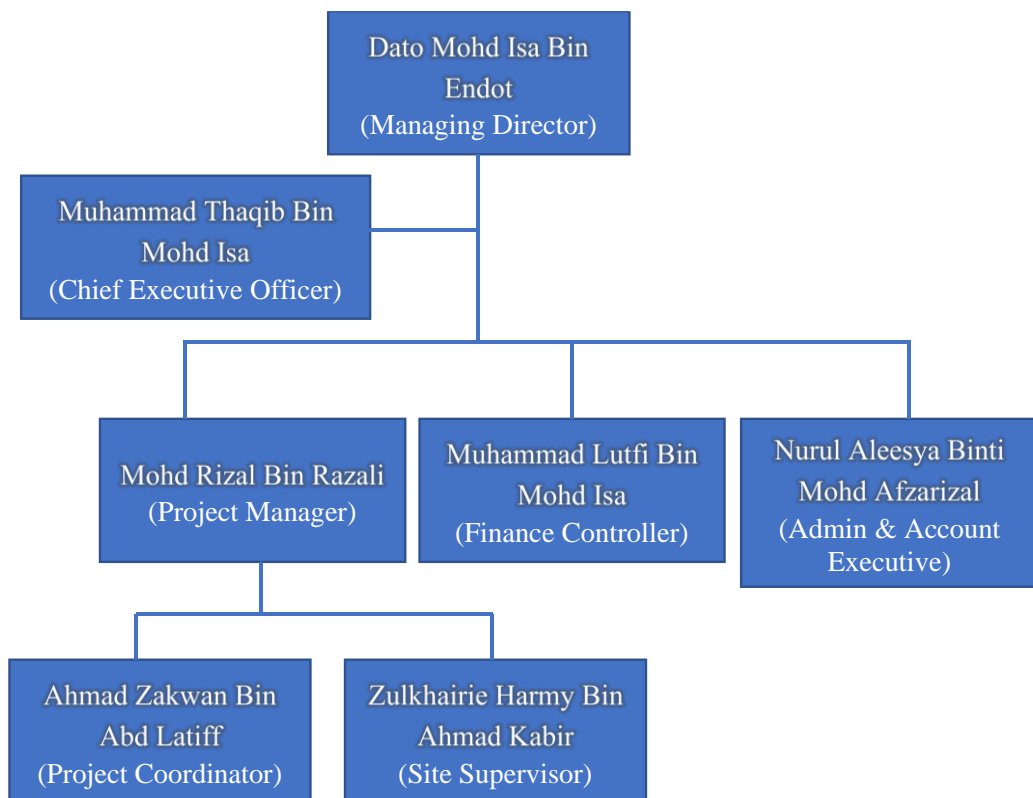
Table 2 Ongoing Projects

Project's Name	Contractor's Grade	Price (RM)	Durati on	Started	Estimate d to finish
To build 18 units Semi-D at Bandar Hilir, Langkap, Perak Darul Ridzuan.	Grade 4	1,937,400.00	35 weeks	15 th September 2019	14 th September 2020
To build main substation for TNB-mainhead at Teluk Intan, Perak Darul Ridzuan.	Grade 4	1,850,000.00	35 weeks	30 th April 2021	29 th December 2021

2.3 Organisational Chart

Usaha Kencana Builders SDN, BHD consists a few staffs including the ownership. They are the significance in management and constructing and site supervision for the completed project and ongoing projects. The chief executive officer, Mr. Muhammad Thaqib Bin Mohd Isa is implemented to be a leader in the team to manage and give direct order to the group members to ensure on a long- or short-term goals, of company growth, profits income and return on investment and so on. As often as it should be, the chief executive officer regularly present reports on the company's status to the Managing Director, Dato Mohd Isa Bin Endot.

Figure 1 Organization Chart



CHAPTER 3.0:

CASE STUDY

3.1 Introduction to Case Study

Installation method of floor finishes for a unit of semi-D single storey house was chosen as the case study for this report. Hence, the process time to install the tiles would determine and identifying problems and the solutions will be discuss in this chapter. The project commence is to build 18 units of semi-D single storey houses above HSM 7103 point to HSM 7120 point, 24670, Mukim Changkat Jong at Bandar Hilir Perak, Langkap, Perak, Malaysia.

Figure 2 The Key Plan of the Site

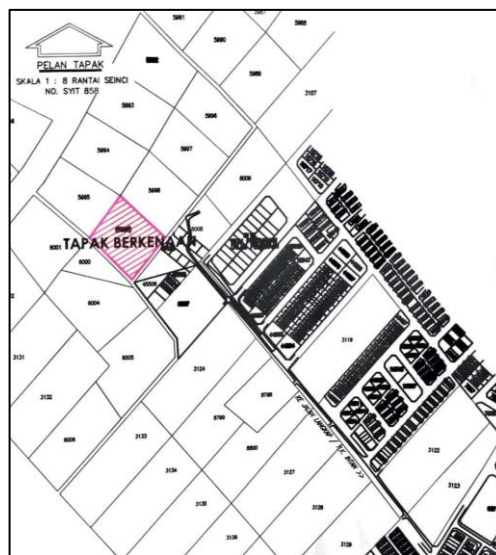


Figure 3 The Location of The Site

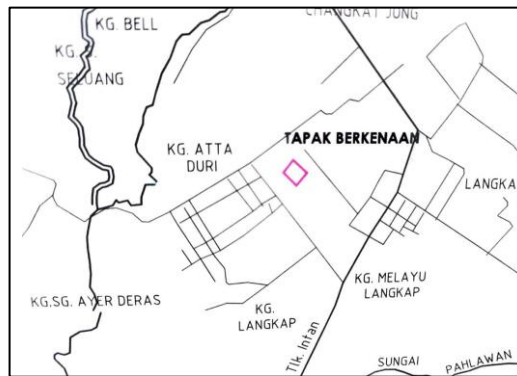


Figure 4 Details of the Site Location

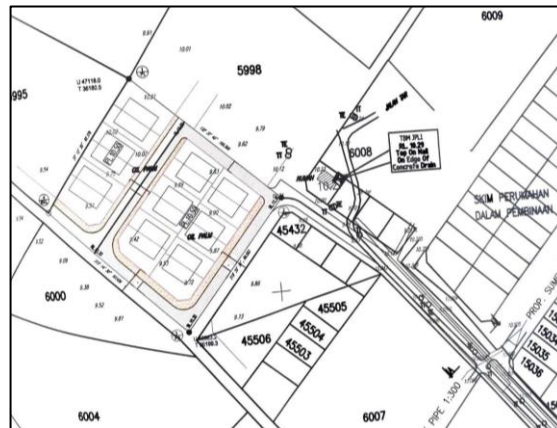


Figure 5 Site Location Through Satellite



The project has started its schedule on 15th September of 2019. The project was estimated to be finished after 8 months period that is, on the 14th of September in 2020. However, due to some circumstances, the project was on hiatus for a few months thus the project was still on progress extended until earlier of 2022. It was sealed on the contract that the value estimated for the project summed up to RM1,937,400.00.

The site was in a rather secluded area. Refer to the figure above, it's surrounded with palm oil plantation from behind, left and right from the site. At the front view from the site's point of view a double unit of single storey was seen and up further is yet another palm oil plantation and there is a neighborhood area beside the plantation.

During the time spent on the site, there were many activities conducted at the site that have been observed. Those activities were site clearance, installing U-shaped main drain, installing doors, planting earth rod, and working on defects work due to hiatus. Last but not least, the main subject for this report, installing the floor finishes for living room, bedrooms, bathrooms and toilet and at the kitchen. For the study, bathroom 2 is used as reference to explain about the installation method of floor finishes for the second subtopic of this chapter.

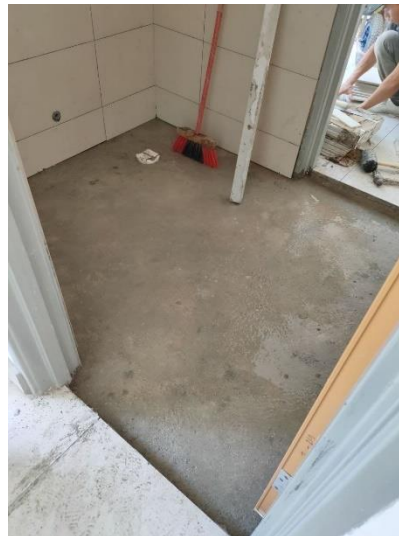
3.2 To Identify the Methods of Floor Finishes Installation

Preparation and Planning

For bathroom 2, ceramic tiles are used as the floor finishes. Before installing the tiles, preparation and planning are made so the process could be as efficient as possible. First, take out all the materials, tools and machineries to be used for the installation such as cement, lime, water, trowel, drill machinery, angle grinder, tile cutting machine, rubber mallet, marker pen, rotary green laser level and a bundle of 2 x 1 inch ceramic tiles. Then, plan out on the quantity of the tiles for the measured square meters of the bathroom. Add 5 percent of wastage into the unit rate per square meter. That way, the cost can be reduced.

Clean Up the Floor

Figure 6 Bathroom 2 Surface Area



Remove any debris, splinter woods, or any possible hard object on the floor. For efficiency, swipe the floor with a shovel. It is necessary to clean the floor before committing the installation. It makes the work progress fast and easier if there is no obstacles. Thus, the flat surface makes it easier to level the tiles when marking and enhance the installation.

Measurement and Marking

Figure 7 Marking Alignment for Tiles



Place the rotary green laser level at one point in the ground and switch on the laser. The function of the green laser is to give ideas so that the tiles were on the same level as one another. After that, measure the floor follows as the key in data as in unit rate per meter square for the tiles measurement. The tiles used were 2 x 1 inch's ceramic tiles. Then, mark the floor with a black ink coated on a long string.

Mix the Adhesive

Mix the mortar as in cement and water as the adhesive element for the tiles. Pour in the water first about half full in a bucket. Then, pour in the cement for about 1 to 3 full into the bucket. Mix them with a good drill machinery with torque control attach with mixing paddle attachment (jack sander, 2022). Tuck the bucket safely with both feet on the sides of the bucket. Make to put on a respirator when mixing because the dust from the cement could be harmful. Drill the mixture for about 2 to 3 minutes or more to have the perfect adhesive material for the tiles. If the mixture is too dry, add more water.

Installation of Ceramic Tiles to The Floor

Figure 8 Spreading Adhesive on a Tile



First things first, damp the floor with sprinkles of water onto the surface. It is because if the floor is too dry the adhesive will not work on a long time. The adhesive and the tile could fall off in time. After that, aligned first the tiles onto the marked line to measure the fitness and quantities of the tiles that could be use in one time spread of the adhesive. After confidently measured the tiles, spread the adhesive onto the surface like spreading a butter on a bread with trowel. Create vertical and horizontal line on the adhesive to spread evenly. Do the same thing as on the back of a tile.

After finish, carefully place the tiles onto adhesive that was spread on the floor and put a light pressure on the tile. Align the tile with the marked line with a light-controlled push at every corner of the tiles. Light tap using the rubber mallet to level the tile and check the levelling using a level tool. Satisfied with the result, place another tile beside the recent placed tile before with the same manner and procedure as before. Leave a gap to one another tile to create a space to place one or two spacers between the two tiles.

Figure 9 Using Angle Grind Machine



Figure 10 Using Cutting Tiles Machine



As for the corner of the bathroom, if the tile is too big to place it onto the surface, cut the excessive with tiles cutting machine to cut a straight line. If there's an obstacle whereby a drain comes in the view, cut the tile with angle grind machine to cut flexible line.

Finishes

There's a reason why spaces are created between the tiles. As for the finishes, fill in the gap of the tiles the mixture of cement and water ratio the same as before. Except, add more water into the mixture, so that the grout can be filled in the gap with ease. As in, fill in the gap were meant as grouting as the finish move. Use a grout float to force the grout into the joints of the tiles. Apply the grout in circular motion to evenly spread mixture into the gap. After finish with grouting, leave it to dry for 10 minutes. After that, clean the surface using sponge.

3.3 To Determine the Time of Floor Finishes Installation

Even if the time periods of the project have to be completed within 8 months prior to the contract, it is impossible to meet the end because there's will always be an obstacle. Due to the pandemic of Covid-19, the project was on hold for several months respectively. The restriction on the movements makes it harder for the contractor to follow the schedule and thus the project has been progressing until early year of 2022.

As for the floor finishes, the work has been delayed because of a few workers were caught positive of Covid-19. They have to quit and quarantine themselves for two weeks. The project started on 20th December of 2021 with new specialized worker. As they are an experienced worker, they manage to finish the installation in just more than two weeks with manpower of three or more people. The figure below is used as the reference for the measurements and planning.

The installation of floor finishes for a unit house started on 20th September 2021 until 30th September 2021

20th September 2021

Bathroom 2

Figure 11 Finished Product of Installed Tiles for Bathroom 2



21st September 2021

Kitchen Bathroom

Figure 12 Installation of Ceramic Tiles in Kitchen Bathroom



22th September 2021

Master Bathroom

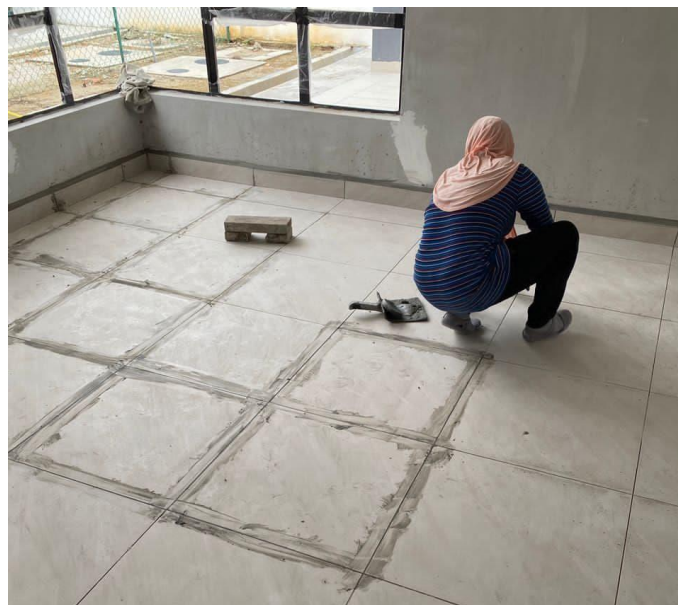
Figure 13 Finished Product of Installed Tiles for Master Bathroom



23rd September 2021 – 25th September 2021

Master Bedroom

Figure 14 Grouting for Master Bedroom Ceramic Tiles



26th September 2021 – 2nd October 2021

Bedroom 2 & Bedroom 3

Figure 15 Grouting for Bedroom 2 Ceramic Tiles



Figure 16 Grouting for Bedroom 3 Ceramic Tiles



3rd October 2021

Storage Room

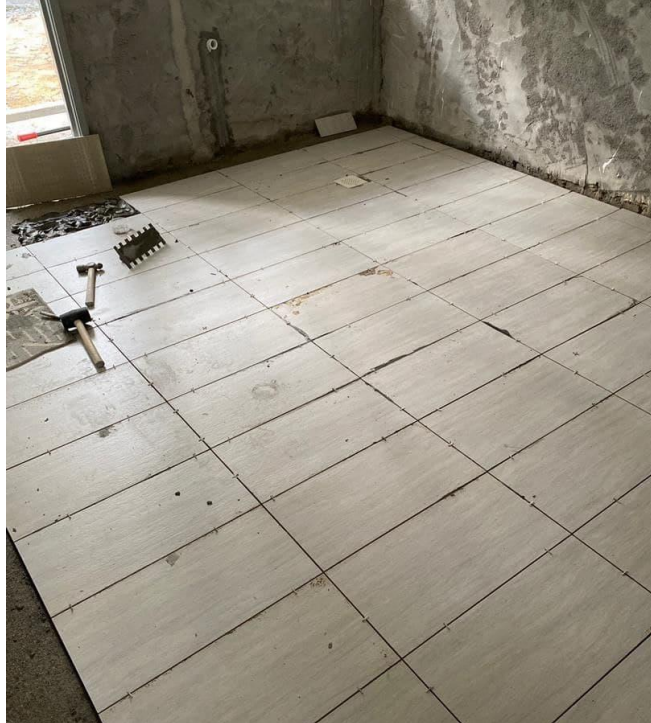
Figure 17 Finished Product of Installed Tiles for Storage Room



4th October 2021 – 6th October 2021

Kitchen

Figure 18 Installation of Ceramic Tiles in Kitchen



7th October 2021 – 11th October 2021

Living Room

Figure 19 Point of View from the Front Door



Figure 20 Point of View from Bedroom 2



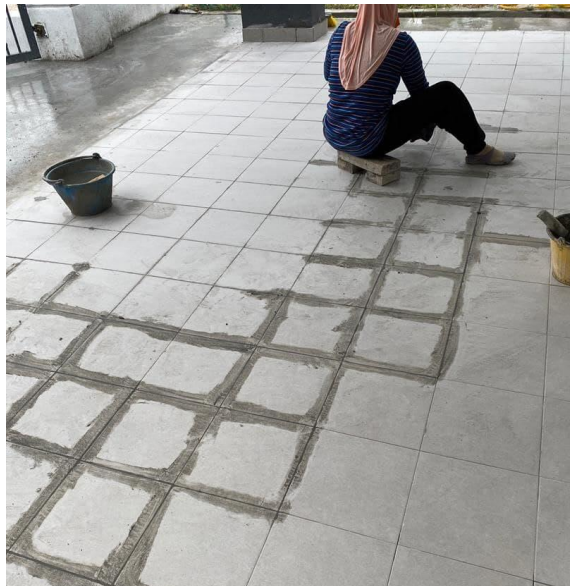
12th October 2021 – 15th October 2021

Car Porch

Figure 21 Installation of Tiles for Car Porch



Figure 22 Grouting for Car Porch



3.4 To Identify the Problems and Solutions in Floor Finishes

Problem: Excessive Tiles

There are times when the tiles there were mishaps on calculating the measurement of the tiles. Often times, it happened when it's at the droppings between the bedroom floor and the bathroom floor. The end of the bedroom's tiles could be long enough as it could cause discomfortness if remain unattended.

Solution: Cut the Excessive Tiles

For the solution, simply cut the excessive tiles with angle grind machine. Neat the edge of the tiles with sand paper if must so that it couldn't be harmful and the edge should not be sharp enough as it could cause injuries.

Problem: Tiles Crack

Often times the tiles could crack if there were movement of heavy object. For example, the number usage of wheelbarrow being moved from back to back could damage the tiles thus made it crack.

Solution: Remove and Install the New Tiles

Sometimes, it can't be helped. The crack could impact on the image of the contractors if shown to the owner so it is better to replace it with a new one. Use the same method as to install the tiles.

Problem: Adhesive Too Dry

Sometimes the adhesive was too dry because of the lack of judgment and measurement. It will be as not affective as adhesive material cause over time the dried mixture could fall off from the tile and from the surface thus the tile could shift and take it off on its own as it goes on.

Solution: Add More Water

As simple as title above, to solve the problem is to add more water into the mixture. Take off the adhesive before and pour back in the mixture and mix again will the drill machine. Drill for a good 2 to 3 minutes, and if the mixture are good enough, then it's good to go. (Meraj, 2014)

CHAPTER 4.0:

CONCLUSION

The studies concluded that the installation of floor finishes for ceramic tiles are quite possible to those who want to make some changes on the interior design. There are also many other finishes that can be used to if the occupants in the house had a change in hearts. Each of the finish types have its own pros and cons and its own uniqueness. In fact, the process isn't that long enough that must be wait for months prior because the mixture use as the adhesive is only cement and water, nothing else needed.

The method used at the site are quite recent because the worker was using advance hand tool in which there are not many people using it. Take the rotary green laser as the example, until last year, people still use string as alignment for the tiles to level. Then, compare to the present, people use advancing tool hence the work can be done in a flash.

It's necessary to have the floor covering such as tiles, timber, and vinyl as the finishes rather than cement or concrete finishes. The cement or the concrete finishes are more vulnerable as it exposes its surfaces and possible to have easier damage to the surface if contacted with certain hard and sharp objects.

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