DEPARTMENT OF BUILDING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

TILES INSTALLATION

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2019222014

DEPARTMET OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

AUGUST 2021

It is recommended that the report of this practical training provided

By

Muhammad Alif Syakir bin Rosdi

2019222014

Entitled

Tiles Installation

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

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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 Ampenan Tech Builder Sdn Bhd for duration of 20 weeks starting from 25 August 2021 and ended on 7 January 2021. It is submitted as one of the prerequisite requirements of BGN 310 and accepted as a partial fulfilment of the requirements for obtaining the Diploma in Building.

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I'd also want to thank ALL of the UiTM lecturers who have taught and fostered me as a student and person. I'd also like to express my heartfelt gratitude to the lecturers who were personally involved in my training. I appreciate the time, effort, encouragement, and ideas that TS Normila Ahmad, Supervising Lecturer, SR Siti Jamiah Tun Jamil, Evaluation Lecturer, DR Nor Asma Hafizah binti Hadzaman, Practical Training Coordinator, and Dr. Dzulkarnaean Bin Ismail, Programme Coordinator have contributed to the successful completion of my training, this report, and the valuable knowledge that have been shared over the last few semesters. Last but not least, I'd want to express my heartfelt gratitude to my dear parents for their many sacrifices throughout the years.

ABSTRACT

Tiles are one of the aspects of a house's interior finish, thus this report will go through tile installation. The goal of this report is to go through the tile installation procedure in further depth and identify any difficulties that may arise and how to fix them. The primary goal of the report is to differentiate the procedures used to install tiles in the workplace from the ones learned at university. Many approaches are utilised to get information on tile installation, such as conducting indirect interviews with workers, practising the procedures used by workers, and so on. in order to disseminate this successful tile installation process more broadly.

CONTENTS **PAGE NO**

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1.0

INTRODUCTION

1.1 Background of study

Tiles are a type of decoration that may be utilised on interior walls, ceilings, and floors. Tiles may be created from practically any hard object, as well as a variety of soft materials. Marble, clay, slate, metal, ceramic, stone, and glass are some types of hard tiles. Soft tiles, on the other hand, can be composed of wool, cork, recycled paper, and perlite. Tiles may be practical as well as attractive, and they come in a variety of styles to suit all budgets and interests (Tiles, BUILD, 27TH December 2016). One of the most typical applications for interior tiles is in wet areas such as bathrooms, laundries, and kitchens, where tiles are frequently used to protect floors and walls from moisture. Some materials (such as ceramic and porcelain) are naturally resistant to water, however other types of tile may require sealing. Glass and metal are two alternatives to tiles in kitchens and bathrooms. Tiles can also be used to aid with acoustics and soundproofing. These tiles are often rather big and may be used to line the walls and ceilings of music rooms and home theatres. Tiles can also be utilised to create feature walls or to conceal damaged or unsightly interiors. In general, there are six different types of tiles that are constantly utilised in every home. Among them are ceramic tile, porcelain tile, glass tile, marble tile, granite tile, and other natural stone tile and each type serves a specific purpose.

According to its affordability and durability, ceramic tile is a flexible and popular choice for tile in home renovation projects since it is suitable for a wide range of uses. Ceramic is an excellent choice for every area in your property, including the bathroom, kitchen, and front door. Glazed ceramic tile is more resistant to stains and damage than wood, carpet, or even vinyl plank flooring. Porcelain is a more refined type of clay ceramic tile. Porcelain tiles are more durable and frequently more expensive than red clay ceramic rivals because they are made with a greater ratio of silica and quartz and baked or fired at a higher temperature.

Porcelain tile is a chameleon in that it comes in a broad range of colours and designs. Porcelain tiles can be glazed, etched, and texturized to seem like hardwood planks, pricey marble, or industrial bricks. Keep in mind that a do-it-yourself job involving the installation of porcelain tile might cause some complications since the tile is a stronger and denser material than ceramic and necessitates the use of a specific tool which is a diamond blade wet saw.

Sparkling glass tiles are a chic option for a backsplash or shower tile. Glass tiles have the strongest stain resistance of any tile, despite being impenetrable to red wine and acidic lemon juice. Glass tile has a relative ease of chipping and cracking if an item is dropped on it, hence this product functions best on wall. Marble, while often considered one of the more cost natural stone tile choices, is an exquisite and bold option, exuding an elegance and flair that is difficult to match with other materials. Marble, which is deeply veined with natural mineral lines, is generated under enormous heat and pressure and can withstand the heat and stress of everyday life quite well. Perhaps no other form of tile can as significantly enhance a place as marble tile. The natural stone provides tremendous depth and contrast, presenting a brilliant array of colour veining, and is naturally available in a wide range of colours, including green, grey, beige, white, and black. When choosing marble tiles or slabs, look for any rough areas that may require extra sealing to prevent stains owing to the porous nature of the material.

Granite is another natural rock tile that is utilised in both worktops and floors because of its naturally looking bits and flecks of colour imbedded inside. Granite is tougher than marble and hence less prone to chipping and cracks. Granite is a great choice for damp areas or counters since it is reasonably resistant and will not collect moisture or stains. Granite, which is often found in bigger size slabs, is not a material for the frugal or cost-conscious. However, marble and granite are not the only natural stone possibilities for tiling. Slate, limestone, travertine, and sandstone are porous materials, so if you want to use them for flooring inside your house, you need seal them on a regular basis to prevent stains and discoloration (6 Types of tiles & their best uses, The Good Guys, 17th October 2017).

1.2 Objectives

I discovered three associated objectives as a result of my research. The first objective is to outline the procedures that were utilised to install the tiles. Following that, determine which sort of tiles are appropriate for usage in a specific area. Finally, highlight the problems that occurred and the best methods used to resolve them.

1.3 Scope of study

This study was done out at a worksite in Bukit Tembakau. This study focused on the installation of floor and wall tiles. The technique outlines how the substrate will be prepared for the tile, the materials that will be needed, and the type of tile that will be used. This will be decided by the size of the area to be tiled as well as the level of performance required. The materials utilised include tile membrane, waterproof membrane tape, tile, tile spacers, and unmodified thinset mortar. Meanwhile, chisels, floor scrapers, levels, rubber mallets, and utility knives have been used. The only people needed are a tile setter, workers, and a foreman. Due to a variety of factors, some areas of a home require the installation of a specific type of tile. Finally, improper tile installation can result in flaws such as bucked tiles, cracked tiles, rust staining and shade variance on tiles, and others.

1.4 Methods of study

There are a two approaches that been used to acquire data for this study, and one of those is observation. According to these approaches, tile installation may be highly problematic because the tile itself is fragile and difficult to deal with. These observations were carried out over a two-week period at several work sites, and all of them were documented by capturing photographs and films of the tile installation process.

Interview is another strategy that has been employed. At one of the work locations, I conducted an unstructured interview with the tile setter, which took place during my observations. In the interview, I asked questions such as: what is the best way to place the tile so that there are no difficulties after installation, what is the best mortar ratio to use, how to put tiles in tough areas such as doors, and so on.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 INTRODUCTION

Ampenan Tech is a limited company that was incorporated with the Companies Registration Office of Malaysia on September 16, 2016 under the Companies Act 1965. To date, the firm is a competitive stand-alone corporation. Ampenan Tech is likewise a Bumiputera-owned firm registered with the Malaysian Ministry of Finance. Its primary business is the construction of houses based on designs made according to client specifications and based on prefabricated dwellings, namely the IBS system. Furthermore, the organisation is a supplier of necessities.

Essentially, this organisation uses the precast technique, also known as the IBS system, as a medium to construct a single house. It is a highly experienced contractor who specialises in construction, maintenance, and remodelling. This company's personnel or workers has extensive expertise in civil and structural works. Professional teams have the necessary skill sets, such as expertise and capabilities, to execute high-quality, cost-effective projects tailored to the needs of their clients. Ampenan Tech is a firm that plans for the future by establishing the company's strategy to increase the scope of operations via the quote and tender procedure. The company's mission is to deliver high-quality labour and services while also ensuring client happiness.

2.2 COMPANY PROFILE

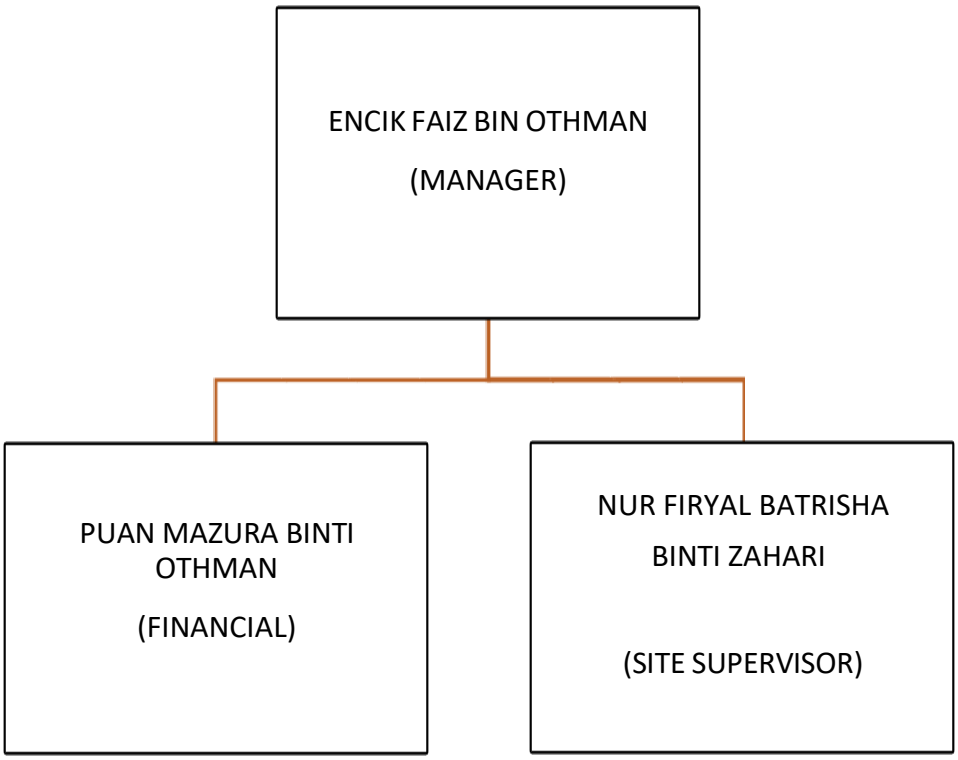
Ampenan Tech Builder SDN. BHD is a bungalow home construction company that serves Malacca and the surrounding states. This organisation also offers remodelling and maintenance services. This firm employed the Industrialised building system (IBS) to construct the house, and by employing this approach, it was able to cut construction time compared to traditional techniques. In Malaysia, IBS refers to a building process in which components are made in a controlled environment, either on or off site, and then put and assembled into construction works. This organisation provides a variety of services, including architectural services, project management services, and other services.

Figures 2.1 Company's logo

Company Name	AMPENAN TECH BUILDER SDN. BHD
Manager Name	Encik Muhammad Faiz bin Othman
Address	30A Jalan Hang Tuah, 75300, Melaka,Melaka.
No. Tel	016-9808225
Email	amptech12@gmail.com
Established Date	6 September 2016
Type of Company	Drawing plan
Type of services	Drawing plan, consult and construction
No. SSM Registaration	: (CA 0188266-u)

Table 2.1 company's summary

2.3 COMPANY ORGANISATION CHART



Figures 2.2 Company's Organization chart

2.4 LIST OF PROJECTS

2.4.1 COMPLETED PROJECTS

No.	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	Bukit Tembakau Worksite	RM 110,000.00 >	28 August 2021	29 December 2021	4 months	-
2.	Serkam Worksite	RM 85,000.00 >	24 March 2021	1 December 2021	8 months	-

Table 2.2 Completed projects

2.4.2 PROJECT IN PROGRESS

No.	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	Bukit Kepok Worksite	RM 90,000.00 >	13 September 2021	-	-	-
2.	Bukit Pulau Worksite	RM 100,000.00 >	1 November 2021	-	-	-

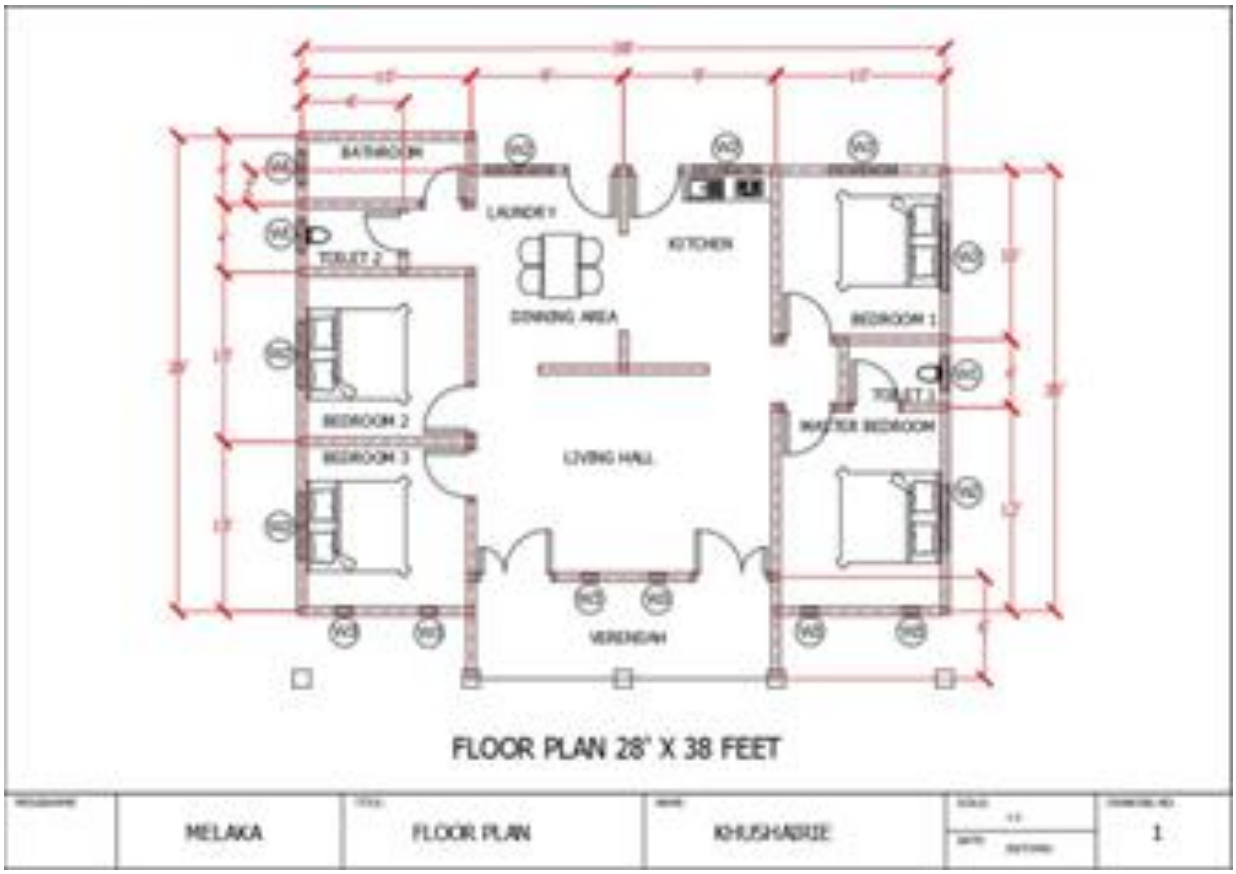
Table 2.3 Project in Progress

CHAPTER 3.0

CASE STUDY (TILES INSTALLATION)

3.1 Introduction to case study

In this case study, I've selected a project that already completed on December 29, 2021, at a worksite in Melaka, which is located at Bukit Tembakau. The project, which cost almost RM 110000.00. The 28 by 38-foot project has one master bedroom, three common bedrooms, and two bathrooms (based from figures 3.1). The project's surrounding area is bordered by small villages and farmland, and there are various services nearby, including a laundry, mosque, grocery shop, and others. (based from figures 3.2)



Figures 3.1 Floor plan for worksite at Bukit Tembakau

Figure 3.2 picture of worksite at Bukit Tembakau

3.2 SUBTOPIC (Based on objective 1)

Before installing, bear in mind that the floor will be 1/2" higher after installation. To compensate, you may need to alter the toilet, vanity, and other fixtures in the bathroom. Pay close attention to any appliances under worktops in a kitchen and ensure they fit between the new tile floor height and the bottom of the counter. Make sure the surface is smooth and secure before installing a ceramic tile floor. Install a cement board underlayment if the floor moves as you walk across it (based from figure 3.3).

Figure 3.3 Installation of a cement board underlayment

Determine the room's centre point. To begin, take a measurement across the room and mark the middle. Then, in the other way, measure the room and mark the middle. Draw a line by using threads across both centre points; the spot where the two lines connect represents the room's centre. Lay down the tiles in a dry run, beginning in the middle and working your way outward, following both threads lines (based from figure 3.4). Install spacers between the tiles to ensure optimum spacing. If required, reposition the starting location. Trace around the central tile after you're pleased with the placement.

Figure 3.4 One of the worker install tile

Place the middle tile using the manufacturer's suggested glue. Thin-set mortar is occasionally used (based from figure 3.5), however tile producers may prescribe a synthetic adhesive. Apply the glue to the floor while holding the notched edge of the trowel at a 45-degree angle to the floor. To secure the tile in place, press it in place while twisting it back and forth. Pull the tile back up and check that the glue is in touch with the whole bottom of the tile. If you still see bare places on the tile's bottom, thicken the glue when applying it with the notched trowel (based from figure 3.6). Replace the central tile.

Figure 3.5 The process of making thin-set mortar

Figure 3.6 One of the worker reinstall a tile with a thicker glue

Install the remaining tiles in straight lines, using the centre tile as a reference point. Install a few tiles at a time, applying glue for two or three tiles at a time. When you press the tile into position, if glue seeps up between the tiles, you're using too much adhesive. To create grout lines, place spacers between the tiles. If required, trim any tiles for the end rows near to the room's walls to size. Allow the tile to dry overnight or for the amount of time advised by the glue manufacturer after installation. Make the grout into a peanut butter-like consistency. Grout is available in a broad range of colours and may be coloured to complement your decor. Scoop some grout onto the tiles and massage it into the joints using a rubber grout float (based from figure 3.7). Spread the grout with the float at an angle to the grout lines to press it into the joints as far as possible.

Figure 3.7 Process of installing the grout

After you've finished working the grout into the joints, wash away the residue with a moist sponge or a mop, taking care not to pull any grout out of the grout lines between the tiles (based from figure 3.8). Rinse the sponge often for optimal results. Allow the grout to dry to a faint haze before buffing the tiles with a soft, moist cloth. Cure the grout according to the manufacturer's directions. This might take a few days if you use a spray bottle to keep the grout wet. After the grout has set, seal the grout lines with a sealer. Caulk around the tub line while laying tile in a bathroom to prevent moisture from leaking below the tiles.

Figure 3.8 Process of washing some leftover grout

3.3 SUBTOPIC (Based on objective 2)

The same type of tile cannot be used in all areas of a house. As a result, there are various elements that determine the type of tiles utilised in certain areas of a house. The first and most important consideration is the placement of the tile installation. Tile is a long-lasting, water-resistant, and easy-to-clean material that is ideal for your kitchen, bathroom, and entryway (based from figure 3.9). However, not every type of tile is appropriate for every space in your home. Your first tile decision should be one that is both safe and functional for your floors. Instead of a flat surface that becomes slippery when wet, choose textured tile for your shower floor. Textured tile in your doorway might be difficult to maintain, but smooth tile makes cleaning easier.

Figure 3.9 A worker installing tile in bathroom floor

Colour determines the entire mood of your area, therefore selecting the colour of your tiles is critical. Dark tiles offer coziness, but make sure you have enough open space and light to avoid the tile hue from overpowering your living room's palette (based from figure 3.10). In a big kitchen, choose chocolate brown, navy, or burnt-coloured floor tiles. Choose brighter colours to make a space appear bigger. The use of cream and pastel flooring tiles will make a small entryway or guest bathroom appear bigger (based from figure 3.11). Consider varying the hues in high-traffic areas; a minor difference in your floor tiles may help disguise grime. For busy sections of your home, consider mixed browns and tans, flecked tiles, or grey and white tones.

Figure 3.10 Example of dark coloured tile

Figure 3.11 Example of light coloured tiles

Not only that, flooring tiles are available in a variety of cheap designs to suit the interior decor of your house (based from figure 3.12). Use stone-patterned tiles for a more subtle effect that may complement a variety of décor styles. However, be certain that the style of your stone pattern does not clash with the personality of your property. Marbled stone surfaces have an austere appearance, so keep the dimensions of your house in mind if you choose this surface. Surface patterns are enjoyable, but they may become too crowded. If your walls already have a distinct pattern, avoid using patterned tile flooring (based from figure 3.13). This double patterning will make a space appear cluttered, and neither design will stand out.

Figure 3.12 Designs of tile

Figure3.13 A pattern tiles

Lastly, the pattern on your floor tiles determines not only the appearance but also the size of a room. Size is important when it comes to tile flooring. Large tiles make tiny spaces appear larger, making them a safe pick for most rooms. Small tiles can help to make a space feel more personal, but they should be utilised with discretion. Small tiles contain more grout lines, which can lend a complicated touch to the design of your home. In addition, larger tiles need less time and work to install than smaller tiles (based from figure 3.14).

Figure 3.14 Example of large tiles

3.4 SUBTOPIC (Based on objective 3)

Because of their durability and aesthetic appeal, tiles are a popular building material for both floors and walls. However, the use of tiles can lead to several defects. One of them is error installation of the tiles itself either the wrong sort of tile was installed or the tile was laid in the unsuitable place. This problem occurs due to the negligence of the worker himself due to a misunderstanding with the wishes of the customer. so to solve this problem, the worker has to unplug the wrong tile and re-install it according to the customer's wishes (based from figure 3.15).

Figure 3.15 one of the worker unplug the wrong tile

The next defect is there is an air pocket or void under the pre -installed tile. A hollow sound in a tile might indicate that there is a void beneath those hollow sounding locations and the tile is not bonded at those hollow sounding spots. A hollow sound can be created by the tile assembly's arrangement, or it might be the result of having some form of membrane under the tile. It might be a sign of an issue in the underlying substrate that is creating the hollow sound. The only method to find out what's creating the hollow sound is to gently remove the tile and look into the underlying problems. The only way to solve it is to fill the bottom of the tile with molten state mortars and make sure it is completely filled by gently tap the tile using a rubber mallet (based from figure 3.16).

Figure 3.16 Process of refill under the tile using molten state mortar

Finally, the most prevalent issue is cracked tiles. Cracked tiles are mostly caused by a large object being dumped on the tiles, the use of low quality tiles, an inappropriate subfloor, cutting, and bad handling (based from figure 3.17 and figure 3.18). The size of the cracked tile determines how to repair it. If the cracks are minor, use paint that closely matches the colour of the tiles; however, if the cracks are too large, replace the tiles with new ones of a comparable design.

Figure 3.17 Inappropriate method of cutting tile

Figure 3.18 Example of bad handling tile

CHAPTER 4.O

CONCLUSION

4.1 CONCLUSION

To summarise what has been said thus far, many new things about tile installation were uncovered throughout the 20 weeks of practical training. Among them is the process used to place the tiles, which is said to be particularly innovative and effective. Furthermore, the technique used is considerably different from the theories presented in university. This is due to the fact that various distinct processes are utilised, one of which being the use of thread to determine the centre of a room. There are also other tile installation problems that are difficult to resolve, such as error tiles installation of a room, in order to fix it, the worker must remove all the tile in the room and redo the tile installation procedure from the beginning.

REFERENCES

BuildDirect. (2016). *How to Choose a Tile Floor.* [Online]. Available:

https://www.builddirect.com/blog/how-to-choose-a-tile-floor/. Retrieve on 19 November 2021.

Curt, V. (2015). *Floor Tile Installation Methods.* [Online]. Available:

https://tiledoctor.com/floor-tile-installation-methods/. Retrieve on 18 November 2021.

Jose, S. (2017). *Methods Statement for Ceramic Floor Tile.* [Online]. Available:

https://qaqcconstruction.com/2018/06/27/method-statement-ceramic-floor-tiles/. Retrieve on 18 November 2021.