DEPARTMENT OF BUILDING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

BRICKWORK

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DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

FEBRUARY 2022

It is recommended that the report of this practical training provided

By

Nurul Asyura binti Md Zaini

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entitled

Brickwork

be accepted in partial fulfillment 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 MARKH Bina Enterprise for duration of 20 weeks starting from 23 August 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.

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Date : 07/01/2022

ACKNOWLEDGEMENT

Alhamdullilah, praise to Allah, the Most Merciful and the Most Graceful.

I would like to extend my heartful gratitude for the guidance, advice and help rendered throughout the period of practical training. Special appreciation goes to Encik Mohammad Akhfar bin Mohd Arifin for the opportunity given to conduct my training in his esteem company. His continuous support and supervision have contributed to the success of this study. I also express my appreciation to his teams of professionals comprising of Puan Siti Aishah binti Kamarul Azman. Her support and suggestion enable me to understand and develop my skill in office management. Thank also to Encik Mohammad Haziq Ifwat bin Hamzah for enhance my ability in administration. Also thanks to, Cik Nur Syafiqah Farhana binti Mohd Saflan have enabled me to enhance my skill in Autocad software. During practical, they enabled me to feel the real situation in working. it is an honour for me to feel the best practices in this industry.

Big appreciation goes to supervision lecturer, Dr Hasni Suryani binti Mat Hasan for her guidance, advice and support while doing this study successfully. Thank for your concern in making sure to be success in the training. I appreciate the time that has been given for assisting me to finish this report. Thanks also to Report Supervisor, Cik Nor Azizah binti Talkis and TS. Encik Muhammad Naim bin Mahyuddin as Practical Training Coordinator and TS. Dr Dzulkarnaean bin Ismail, Programme Coordinator. I value the time, effort, and encouragement that they have contributed towards the successful training and the valuable knowledge that have been shared over.

Finally, my gratitude goes to my beloved parent, Md Zaini bin Daud and Zaleah binti Zainal for send and pick me up to the office every weekday. Their sacrifices over the years are kindness means to me.

Thank you so much.

ABSTRACT

This report briefly describes the method of brickwork, equipment and tool used in brickwork and precautions step in brickwork. It is produced according to supervised the brickwork at the bungalow construction site. The objective of this report is to identify the method of brickwork, the tools and equipment of brickwork and to identify the precautions step in brickwork. In this report, there are primary method of study used to gain the information on method, equipment and precautions in brickwork is based on observation, interview and document review. Observation has been made by supervise on the brickwork. Interviewed the manager who is more experienced resulting more information. Document review like studying the Bungalow Plan. The finding from this case study is the method of brickwork which start from setting out, cleaning, marking, mortar mixing, installation of Damp-Proof Course (DPC), bricklaying process until installation of lintels and frames. The tools and equipment used in brickwork is concrete mixer, wheel barrow, trowel, scaffolding, bucket, thread, nails, shovel, spirit level and hammer. The precautions step in brickwork is wear respiration protective, installation of scaffolding properly, wear covered cloth and glove and safety boat. Hope this report can give a lot of advantages and benefits to the reader on how the method of brickwork, tools and equipment used in brickwork and also the precautions step in brickwork.

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CHAPTER 1.0

INTRODUCTION

1.1 Background of Study

A wall is a vertical element of construction formed of bricks and mortar that is used to construct building exterior walls, parapets, internal partitions, freestanding walls, retaining walls, and other structures. In structures, brick walls can be straight, curved, zig-zag and their thickness often varies (*Designingbuilding,2021*).

Bricks have been used from prehistoric times. Even if so, with variation in materials by area or state, it persists till this day. Brick is one of the most often used construction materials. Clay, sand and cement and sand and lime are among the materials of brick used (*Teknologi Pembinaan,2013*). The most common brick size used in the construction industry in Malaysia according to MS7.6 (*1972*) is 215mm (Length) x 102.5mm (Width) x 65mm (Height).

Brickwork is considered one of the more familiar construction skills and it is not an easy task, especially in building a bearing wall. The easiest way to get great results is to hire a good labor. Experienced labors are also cost-effective because they speed up construction and minimize errors in brickwork process (*Buildit,2021*). The bricklayer will stack and join these brick units together through the use of mortar to create a structure. There are several types of brick bonding techniques that may be used depending on the construction to be constructed.

1.2 Objectives

The objectives of this report is as follow:-

i. To identify the method of brickwork.
ii. To determine the tools and equipment of brickwork.
iii. To identify the precautions step in brickwork.

1.3 Scope of Study

The scope of study has been carried out at one storey bungalow house construction project. The construction located at Lot 20251 GM 227 Sungai Landak, Ampangan, Seremban Negeri Sembilan. The client and the owner of the bungalow is Tuan Saiful Azzri bin Hamzah. The project is currently in progress and will be complete on 10 February 2022 according to the contract. The focus of this study is to identify the method, materials and equipment of bricklaying. This study described the bricklaying process including type of brick bond used and materials and tools like advantage of exmet wire mesh. Then, the conclusion and recommendation are included in this case study. This study not concentrate on the labors and costs matter.

1.4 Method of Study

In order to obtain the data, there were several methods has been carried out which is observation, interview and document review.

i. Observation

This method is done with site visits while collecting data. Observation on how the bricklaying process is work taken 1-2 hours for 1 completed wall. It depends on how longer the length of the wall. The observation on brickwork process, materials and equipment has been recorded by camera and notes.

ii. Interview

To obtain more information, the interview session has been conducted at the site. The session is done while doing the observation with the company manager. Interviewing someone that is experienced in construction project obtained more detailed information about the brickwork process. The session is recorded by short notes.

iii. Document review

The document that has been reviewed is the project file, construction drawing, standard operating procedures (SOP) and pictures. When visited the site, project file must be brought to refer if there is any occurs happen. Floor plan used to refer while monitoring the bricklaying process.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

MARKH Bina Enterprise is a company registered under the Construction Industry Development Board of Malaysia 1994 (CIDB). MARKH Bina is currently active in bungalow construction, home renovation and government tender projects. The company is based in Seremban located at Lot 9701/196, Jalan Bunga Raya, Kampung Baru Block C, Ampangan 70400 Seremban Negeri Sembilan. The owner of MARKH Bina Enterprise is Encik Mohammad Akhfar bin Mohd Arifin. The company has 3 employees and collaborates with related panel companies. MARKH Bina can be contacted via company email at markhbinaenterprise@gmail.com, fax at 06 764 9946 or directly call the company's phone number at 06 764 9946. Social media on Facebook can be visited on the MARKH Bina Enterprise page.

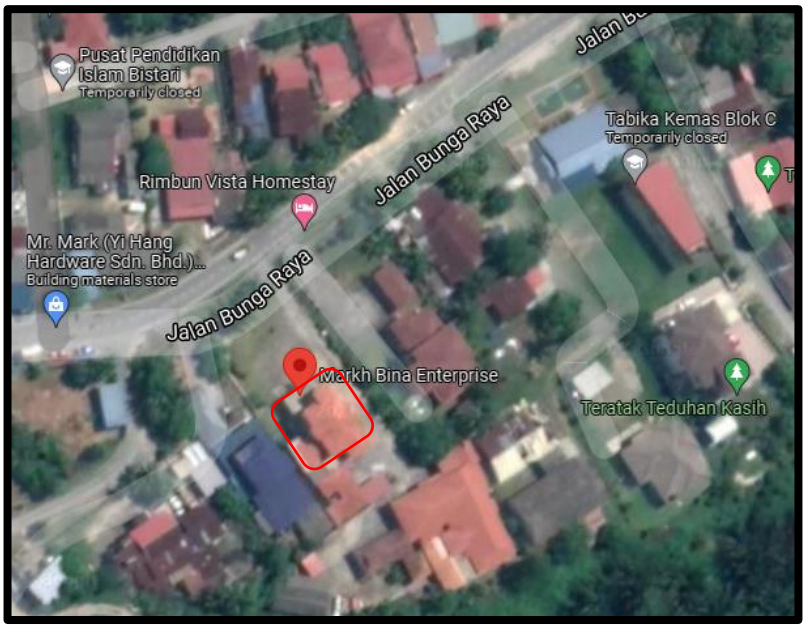

Figure 2. 1 Location of MARKH Bina Enterprise on satellite map

Figure 2. 2 Location Plan of MARKH Bina Enterprise

2.2 Company Profile

2.2.1 Company Recognition

- Malaysian Construction Industry Development Board (CIDB)

Registration number : 0120170222-NS185141

Grade	Category	Specialization
G2	B (Building Construction)	B04
G2	CE (Civil Engineering)	CE01, CE08, CE19, CE20, CE21
G2	ME (Mechanical and Electrical)	M15

Table 2. 1 Specialization on CIDB Registration

- SSM Business Registration

Registration number : NS017031-P

- Ministry of Finance Malaysia Company Registration

Registration number : K10344514472047851

- Bumiputera Ministry of Finance Company Registration

Registration number : BP10344514472097831

2.2.2 Mission and Vision

2.2.2.1 Mission

- Be one of the bumiputera construction companies that are able to provide the best, high quality and transparent services to all customers

2.2.2.2 Vision

- MARKH Bina Enterprise being a bumiputera company that actively contributes to national and international development

2.2.3 Collaborative Professional Panel Companies

Architect Panel

- KHATIJAH DESIGN
- ARTITEK NORMAN SELAMAT
- ALIES REKABINA
- BUSREE DESIGN

Surveyor Panel

- JURU UKUR SEPAKAT

Engineer Panel

- JURUTERA PERUNDING DAMAI

Contractor Panel

- ABRAR CREATIVE ENTERPRISE
- GEMAWAN TRADING
- MAZASOR ENTERPRISE
- RUSLI REMBANG ENTERPRISE
- RM KASTURI
- JUNIOR @ WORKS TRADING AND CONSTRUCTION SDN BHD

2.3 Company Organization Chart

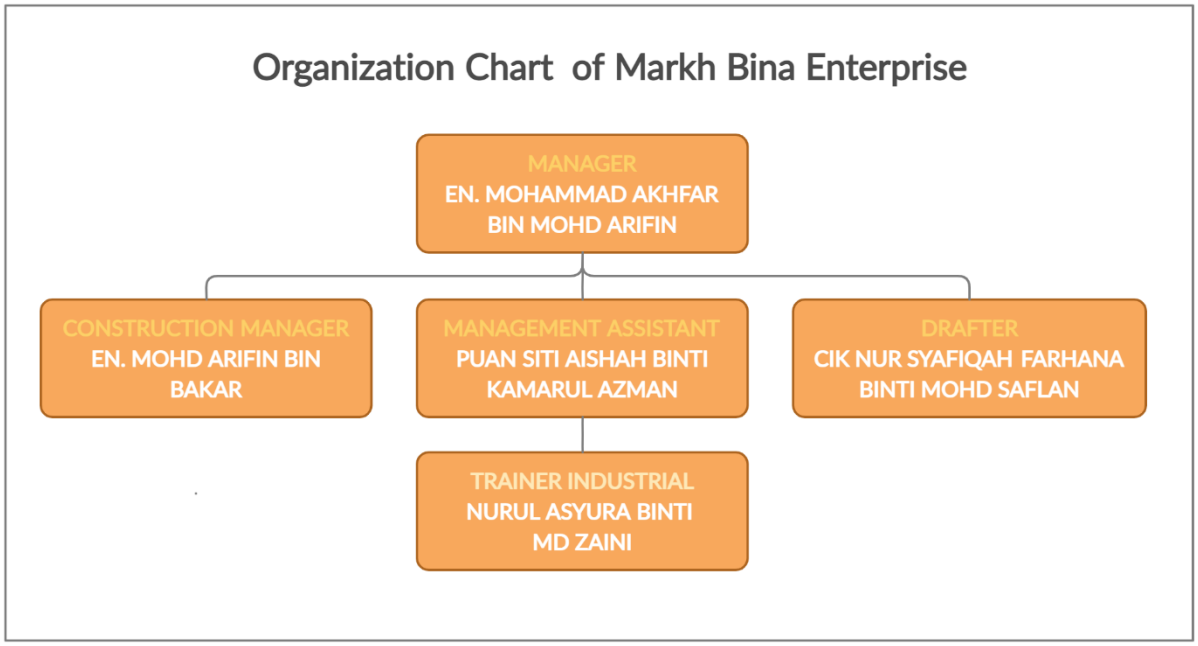

Figure 2. 3 MARKH Bina Enterprise Organization

2.4 List Of Projects

2.4.1 Completed Projects

2.4.1.1. Bungalow Construction

No	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	Construction of 2 storey bungalow house on Lot 8509 Batu 8, Jalan Seremban/Kuala Lumpur, Seremban N.S	RM 350,000	23 March 2017	23 September 2017	6 months	EN. MOHD AKHMAR BIN MOHD ARIFIN & PN. MUNIRA BINTI AZIZ
2.	Construction of 1 storey bungalow house on Lot 22312 Kampung Tok Dagang Ampangan Seremban N.S	RM 350,000	12 Jun 2019	3 May 2020	11 months	EN. AHMAD RUSHDI BIN MOHD YUSOF & PN. NORAINI BINTI GULILING
3.	Construction of 1 storey bungalow house on Lot 23346, Jalan Bahagia 9, Kampung Jiboi Baru Seremban N.S	RM 350,000	11 August 2018	26 December 2019	12 months	PN. SITI MASHITAH BINTI IBRAHIM & EN. AZHARRY BIN NINGGAL
4.	Construction of 1 storey bungalow house on Lot 23929, Kampung Pasir, Bandar Seremban N.S	RM 350,000	8 September 2018	9 March 2019	8 months	EN. SOORIA SEGERAN A/L KRISHAN
5.	Construction of 1 storey bungalow house on Lot 40585 Kampung Baru Gemas, Tampin N.S	RM 300,000	18 March 2019	23 December 2019	8 months	PN. ROHANA BINTI HASAN
6.	Construction of 1 storey bungalow house on Lot 20237, Mukim Si Rusa Port Dickson N.S	RM 400,000	19 Julai 2020	20 Julai 2021	12 months	EN. MOHD HASNIN BIN MOHAMED IDRIS

Table 2. 2 List of Completed Projects

2.4.1.2 Tender/Quotation Projects

No	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	Kerja-kerja Penyelenggaraan Tembok Penahan dan Sistem Perparitan di Jalan Tg Ipoh-Seri Menanti-Senaling (N24) dan lain lain kerja berkaitan.	Rm 456 618.00	22 June 2020	4 September 2020	2 months	JABATAN KERJA RAYA DAERAH KUALA PILAH
2.	Kerja-kerja Penyelenggaraan Jalan dan Struktur Tebing di MPKK Ulu Jelebu serta lain lain kerja berkaitan.	RM 275 216.00	24 June 2020	21 December 2020	6 months	PEJABAT DAERAH DAN TANAH JELEBU

Table 2. 3 List of Quotation Projects

2.4.2 Project in Progress

No	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	Construction of 1 storey bungalow house on Lot 20251, Sungai Landak, Ampangan Seremban N.S	Rm 357 000.00	10 February 2021	35% in progress	-	EN. SAIFUL AZZRI BIN HAMZAH

Table 2. 4 List of in-Progress Projects

Figure 2. 4 45% total amount progress work on Bungalow Project in Taman Setia Hati, Senawang

CHAPTER 3.0

BRICKWORK

3.1 Introduction to Case Study

This study describes the brickwall construction of a bungalow. In this case study only focused on brickwork process that located Lot 20251, Sungai Landak, Seremban. The project site is in Taman Setia Hati, Senawang which near to Mydin Senawang Hypermarket at Persiaran Senawang 1. The area is surrounded by existing residential, construction area and commercial property. MR D.I.Y is keyword for the site plan. Among the existing residential is Taman Seroja Indah and Taman Rasa Sayang.

The project is still in progress and estimated to finish in February 2022 that stated in contract. Contract period for this project is 12 months starting from 10th February 2021 and the completion date is on 10th February 2022. the total amount of project is RM 357,000.00 (three hundred fifty-seven thousand only).

In this construction of bungalow, there are parties involved directly and responsible for this project. This project is under Majlis Bandaraya Seremban (MBS) which the date application is approved on 25 August 2020. Between the parties involved in the construction and completion of one unit of 1-storey bungalow is the client and the owner, Saiful Azzri bin Hamzah. The contractor is MARKH Bina Enterprise while the engineer is Jurutera Perunding Damai. The architect for this project is Alies Reka Bina.

Figure 3. 1 Location Plan of the site at Taman Setia Hati, Senawang

Figure 3. 2 Project Signboard

The use of bricks is very important in the aspects of construction and its use covers the entire building that erected. Brickwork was been monitoring since 7th October 2021 until 3rd November 2021. This took a long time because there a one week

break due to absence of subcontractor workers for bricklaying and the weather condition that do not permit. The bricklaying work need to be handled by skilled worker to get a perfect brickwall. They were help with unskilled worker which help them mix the mortar and bring the bricks to the area of bricklaying work.

Common types of bricks used in the construction of house walls are cement bricks, clay bricks and lightweight blocks. The uniform shape of the cement bricks facilitates the work of brick bonding and speeds up the brick bonding process. Lightweight block is a lightweight brick that is easy to cut and shape. The block is made of cement and sand then mixed with a frothing agent. These results give the block surface that has fine air bubbles. But, in this case study focuses more on the use of clay bricks. There are 3 types of clay bricks which is ordinary clay bricks, face bricks and engineering bricks. Common clay bricks in local construction are now widely used. It's does not have an attractive surface appearance but will be covered with a layer of plaster as a finish.

There are various types of brick bonding in brick laying work, the purpose of brick bonding is to get a strong brick bond, a beautiful brick arrangement and suitable for bonding work. Among the types of bonds commonly used are Stretcher bonds, English bonds, Header bonds and Flemish bonds. This study focuses more on Stretcher bond that is commonly used in brick bonding work in Malaysia. This chapter will focus on the method of bricklaying, machinery, tools and equipment use in bricklaying.

3.2 To identify the method of bricklaying

3.2.1 Method of bricklaying

Figure 3. 3 Brickwork process

3.2.2 Implementation on case study

i) Setting Out

The first step in bricklaying is to calculate the total number of bricks needed to build wall for the bungalow. This calculation is referenced on the floor plan to calculate the area of the brickwall. The length of each wall is identified then multiplied by the height of the wall. Next, the wall area is subtracted by the opening area i.e. windows and doors. The opening area referring to the window and door table in the plan architect.

For stretcher bond, the number of bricks required is 60 pieces for 1 square meter (m^2). The wall area is then multiplied by 60 to get the number of stones needed. It will be divided by 650 because 1 pallet of stone equals to 650 pieces. For this project, the number of stones required is 13 000 pieces equivalent to 20 pallets. This amount is included with 5% of the wastage.

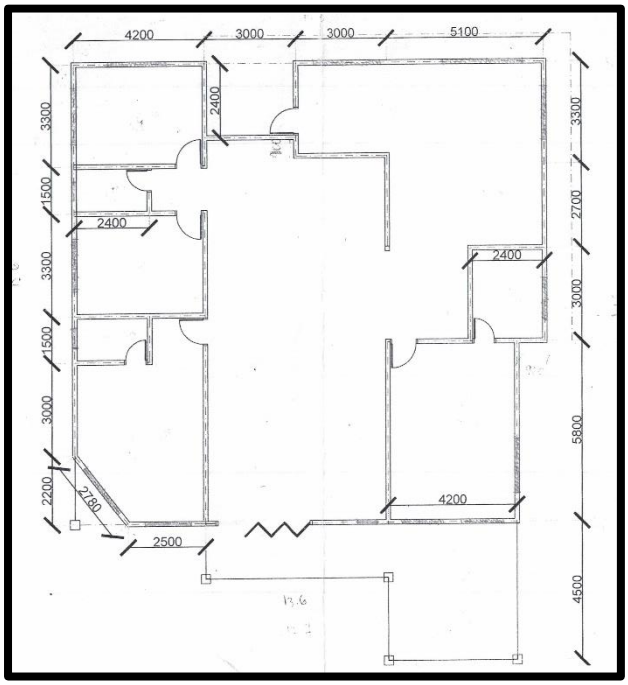

Figure 3. 4 Length of the brickwall

The type of stone used is clay brick or better known as red brick. The selection of Power Brick brand stone because the dimensions of this stone is the closest to the specifications set in the construction industry. Red brick absorbs heat during the day and absorbs cold at night making the house cooler. It will not cause adhesion to other parts of the stones and is easy to punch when working on the electrical wiring pipe planting punching work.

Figure 3. 5 20 pallets of clay brick has arrived at the site

Figure 3. 6 Specification of clay brick

ii) Clean the work area

All unnecessary materials are set aside first and the floor area where the stone will be flattened is cleaned using a broom and shovel. The bricks will just to be flattened on a flat floor surface and clean from debris. This will speed up the process of bricklaying because there is no interruption during bricklaying.

Figure 3. 7 Clearing the waste materials

iii) Marking session

Marking using threaded ropes is a common method used by workers for guidance during bricklaying. Both ends of the thread are tie to concrete nails and pulled straight from the top (roof beam) to the bottom (slab) for the vertical line. The threaded rope is then tensioned and the two nails are tapped into the concrete. This is to prevent the stone arrangement from running away which will be a problem to the plastering work.

Figure 3. 8 Pin and Lines process

Figure 3. 9 Thread as the guide for brickwork

iv) Mixing the mortar

Mortar is intended to bind bricks. Mortar mixing work with a ratio of 1: 3 i.e. cement: sand using manual method and cement mixing machine. NS Cement branded cement is used which is a type of Portland-limestone cement (multipurpose cement). Cement and sand are mixed in a dry state then water is poured slowly and mixed thoroughly. Water is measured by looking at the condition of the mortar which is not too liquid and not too hard.

Figure 3. 10 NS Cement used for mortar mixing

Figure 3. 11 Mixed dry sand and cement

Figure 3. 12 mixed with water for mortar mixing

v) Installation of Damp Proof Course (DPC)

DPC layer comes with bitumen rolled and cut large from the width of the brick. For this study, the DPC was cut to a width of 8 inches (200mm) which is larger than the brick surface. Bitumen layer is installed on the floor surface according to the length of each wall to be plastered. The bitumen layer is intended to prevent moisture from entering the building which in turn aims to block the flow of water/moisture from the soil to seep into the rocks. if not installed properly, it will eventually cause peeling of the paint on the walls of the house, fungal and moss infestation.

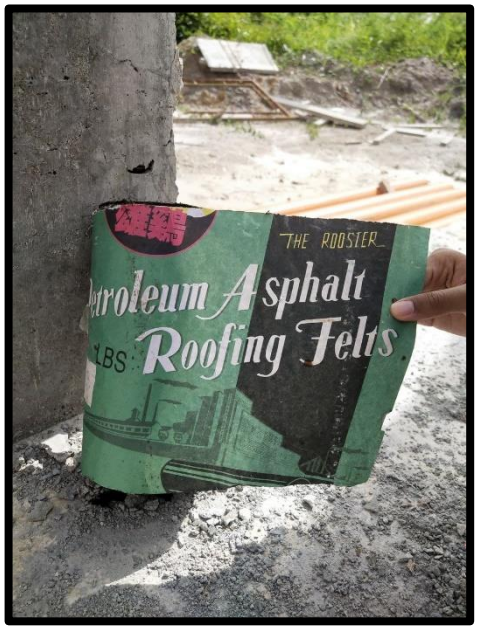

Figure 3. 13 Asphalt Proofing type of bitumen as DPC layer

Figure 3. 14 Installation of DPC layer

vi) Bricklaying Process

After the DPC layer is installed, the first layer of mortar is placed in the middle on top of the DPC layer using a cement trowel. The first layer of bricks is laid on top of the mortar layer and mortar placed on the each side and upper of each brick for the purpose of brick bonding. This step is repeated to obtain the second layer of mortar and the second layer of brick and the next layer. Arrange the bricks according to the guidelines that have been made using threaded rope. Each brick is tapped slowly using the bottom part of the trowel handle to ensure that the stone adheres to the mortar. Use the spirit level to keep the stone flat.

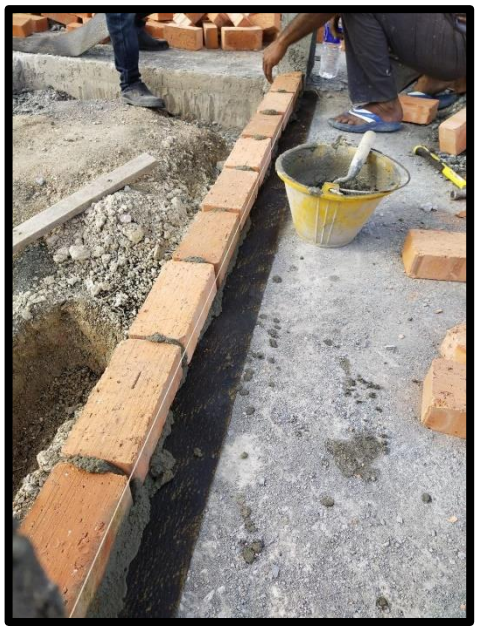

Figure 3. 15 First layer of brick on DPC layer

Bricks are bonded according to Stretcher bond type bonds. Stretcher bond ties are suitable in the construction of bungalow houses for brick bond because of the economical use of stone and thus save cost and time. Stretcher bonds are also suitable for use due to the climatic weather in Malaysia. The stones are stacked alternately to form bonds so that the walls built are solid. Stone walls attempt to cover the structure and form every space in the house. However, the stretcher tie is not able to withstand excessive loads. Thus, exmet wire is used to prevent cracks in the wall.

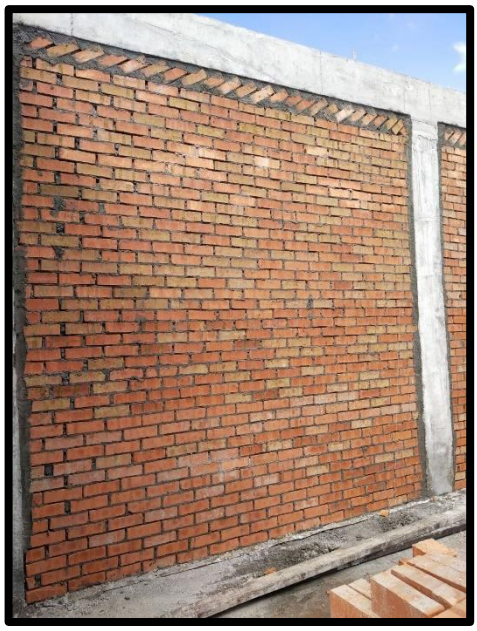

Figure 3. 16 Completed of Wall Partition

Next, install the exmet wire on every fourth and subsequent layer or at every 1-meter height. The width of the exmet wire is 3 inches and comes rolled over 120’. Exmet is rubbed with oil before installation to prevent rusting. Exmet is installed along a layer of stone on top of a layer of mortar. The purpose of this exmet installation is to make the walls of the house stronger and prevent cracks from occurring in the walls.

Figure 3. 17 3" x 120' (75mm X 36.6m) of exmet wire

Figure 3. 18 First layer of exmet wire

These steps are repeated until the stone layer reaches the height of the roof beam. Scaffolding is installed to bind the stone from an unreachable height to the roof beam. Scaffolding is installed properly and firmly and the cross brace should be locked on the frame firmly. Any excess mortar on the stone layer is removed make the walls look tidier.

vii) Installation of Frames and Lintels for opening door and window

Before the brickwork is completed, the opening space for the windows and pins is vacated according to the area of the doors and windows as stated in the architect's plan. Frames are installed on the opening space. For door frames, it is not installed next to the column. Install the frame next to a half of brick from the column so that the door maintenance work does not interfere the column which are one of the structure components of the building.

Figure 3. 19 The gap between column and door frame

Lintel is a structure made of reinforced concrete. It is installed on each of the window and door frames as well as openings where doors are not provided. It serves to support thin door and window frames. The primary function of the lintel is to take loads originating from the high wall and transfer its heap to the side walls. The installed lintel is longer than the opening. After installing the lintel, the brickwork can proceed until it covered to the roof beam.

Figure 3. 20 Lintel on door frame

DOOR SCHEDULE			
SYMBOL	TYPE	DIMENSION	QUANTITY
D1	Casement sliding door aluminium frame	2.1 x 2.7	2
D2	Casement door aluminium frame	2.1 x 1.5	1
D3	Casement door aluminium frame	2.1 x 0.9	6
D4	Timber door & aluminium internally	2.1 x 0.75	4
WINDOW SCHEDULE			
SYMBOL	TYPE	DIMENSION	QUANTITY
W1	Casement glass window aluminium frame	1.65 x 1.8	4
W2	Casement glass window aluminium frame	1.65 x 1.2	2
W3	Casement glass window aluminium frame	1.2 x 1.8	6
W4	Casement glass window aluminium frame	1.65 x 0.6	1
W5	Casement glass top hung aluminium frame	0.45 x 0.6	4

Table 3. 1 Window and Door Specification

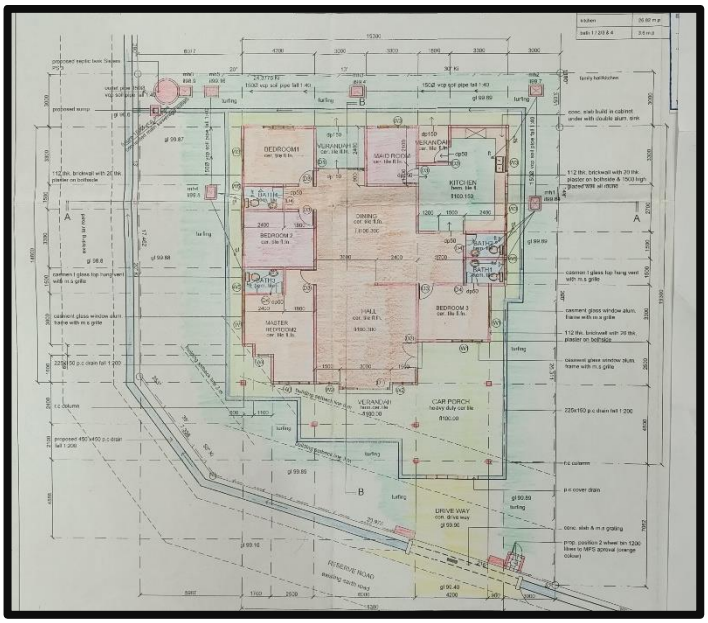

Figure 3. 21 Floor plan

3.3 To determine tools and equipment of brickwork

In the construction of wall, there was a machinery, tools and equipment use for completion of construction a brick wall.

i) Concrete Mixer 7T

This type of mixing machine is used to facilitate the work of mixing cement mortar for brick work. Diesel type engine that uses diesel oil as a power generator. The component of the machine that will mix the cement is the mixing drum. The load capacity of the mixer is $1m^3$. This mixing machine speeds up the process of mixing cement mortar compared to the traditional method that uses a hoe and shovel to mix cement. In addition, the mixing drum will also always rotate so that the mortar mixture does not harden quickly.

Figure 3. 22 Concrete mixer 7T

ii) Wheel barrow

Wheel barrows are used to transport and move building materials in large quantities. This has made it easier for workers not to repeatedly move materials. The use of wheel barrow further speeds up the brick work process. Wheel barrow used during the brick work is 2 pieces. Among the materials transported using a wheel barrow are sand and bricks.

Figure 3. 23 Wheel barrow

iii) Shovel

Shovel are used in bricklaying work to lift and move materials such as sand and cement into buckets and mixing drums. Shovel are also used manually to mix mortar mixes that use the fullest of human labour. The shovel consists of a wide blade for scooping up building materials. Commonly used shovel blades are made of strong steel.

Figure 3. 24 Shovel

iv) Bucket

Buckets are used to fill the ready -mixed mortar and brought it to the bricklaying work area. Plastic buckets are easy to carry because of their light weight and have a handle for lifting.

Figure 3. 25 Bucket

v) Cement trowel

Cement trowel is used to place and level cement mortar on the surface of the stone to bind the bricks. Trowel blades are made of iron and ordinary trowel lengths range from 150mm to 250mm.

Figure 3. 26 Cement trowel

vi) Hammer

A hammer is used to break a brick to obtain the required brick size. The bricks will be broken down according to the suitability of the size required to become one complete brick layer. A hammer is also used to tap the top surface of the brick after the brick is placed on top of the mortar layer so that the brick is in a stable position and adheres to the top of the mortar layer.

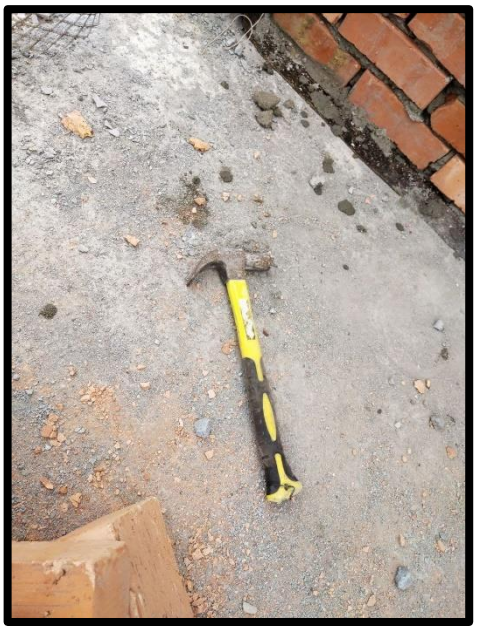

Figure 3. 27 Hammer

vii) Spirit level

A rectangular spirit level is used in levelling the brick layer. In the middle of the spirit level, there is a water tube that serves as a guide. The spirit level is placed on the surface of the brick and the water tube is checked. When the air in the water tube is in the middle of the water tube, the brick layer is flat and the same height.

Figure 3. 28 Spirit level

viii) Nails and thread

The threaded rope is pulled straight from the top (roof beam) to the bottom (floor slab) to get a vertical straight line and also pulled straight on both left and right sides to get a horizontal straight line. This is important because the threaded rope will be the guide during the brick binding process so that no wall defects occur such as curved walls. The ends of the threaded rope are fastened to nails and nailed to the roof beams, floors and pillars.

Figure 3. 29 Thread

ix) Scaffolding

Scaffolding is installed on the floor after the brickwork has reached a height that cannot be reached. the scaffolding sizes used were 5 feet (height) x 4 feet (width) and 3 feet x 4 feet. Among the scaffolding components are frame, base, cross brace and uhead and joint points. These components must be installed completely so that this structure does not collapse which will cause accidents at work.

Figure 3. 30 Installed scaffolding

3.3 Precaution steps in Brickwork

3.3.1 Wear respiratory protective equipment

Use respiratory protective equipment such as a face mask. Face masks are important when mixing cement mortar to prevent dry cement dust from entering the respiratory system. Pouring cement produces dust. This causes irritation to the nose, mouth and lungs.

Figure 3. 31 Personal Protective Equipment: Face mask

3.3.2 Install scaffolding properly

Scaffolding is inspected first before use to ensure compliance with safety requirements. The scaffolding components used must be in good condition. The cross brace is locked on the scaffolding frame tightly. Scaffolding is established on a flat surface which is able to bear maximum weight.

Figure 3. 32 Testing scaffolding: brick is placed on

3.3.3 Wear covered clothing and hand protection

The use of gloves when lifting stones is important because the rough surface of the stone can cause the skin of the hands to crack. It also avoids contact with hardened mortar. The compounds cause skin irritation and produce burns and rashes.

Figure 3. 33 Personal Protective Equipment: Gloves and Covered clothes

3.3.4 Wear foot and head protection

Wear safety shoes such as boots and safety hats properly during the bricklaying process. It's to prevent workplace accidents. Risks such as falling building materials can cause injury to physical limbs and cause death if the risk is higher.

Figure 3. 34 Personal Protective Equipment: Safety Boots and hat

CHAPTER 4.0

CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSION

This study is about method of brickwork of 1 storey bungalow that located at Taman Setia Hati, Senawang Seremban Negeri Sembilan Darul Khusus for Saiful Azzri bin Mohd Hamzah. The objective of this report is to identify the method of brickwork, machinery, tools and equipment used and precautions step in brickwork. From this report, that can find out the method of brickwork is begin with early plan, clean the work area, mortar mix, installation of Damp Proof Course (DPC), bricklaying process and installation of lintel. Other than that, this study describes more about machinery, tools and equipment used in brickwork. Concrete mixer 7T used to mix the mortar, tools and equipment used is wheel barrow, shovel, bucket, trowel, hammer, spirit level scaffolding and nails with thread. Also describes more about the precaution steps by wearing respiratory protective equipment, install the scaffolding properly, wear covered cloth and hand protection and wear foot and head protection. Through monitoring the brickwork process in the site, it can be seen more clearly how the process work. For the future brickwork process, is recommend to use wall meter laser as guide. It more accurate from using nails and thread. Laser meters can measure quickly and accurately in a short time.

4.2 RECOMMENDATION

For the future report, is recommend to do a study about the wall finishes. Starting for plastering and then last finishes like paint, tiles, wood panel and wallpaper. determination of wall finishes that are appropriate for a private home, the house is the foremost suitable put to relax and appreciate the beauty. this selection is also based on wall finish choice variables such as security, economy, excellence, strength, accessibility and sound absorption.

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