



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

**BRICKLAYING PROCESS IN  
CONSTRUCTION SITE**

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TEKNOLOGI MARA  
(PERAK)**

**JANUARY 2022**

It is recommended that the report of this practical training provided

**By**

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**entitled**

**The Process of Reinforce Concrete Slab Installation**

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

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**DEPARTMENT OF BUILDING  
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING  
UNIVERSITI TEKNOLOGI MARA  
(PERAK)**

**10 JANUARY 2022**

**STUDENT'S DECLARATION**

I hereby declare that this industrial training report is the result of my own experiences and knowledge, except for extract and summaries for which the original references stated herein, which is gained during my 20 weeks of industrial training at MKA DEVELOPMENT SDN BHD starting from 23 August 2021 and ended on 7 JANUARY 2022. It is submitted as one of the prerequisite requirements of BGN 310 and accepted as a partial fulfillment of the requirements for obtaining the Diploma in Building.

.....

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## **ABSTRACT**

Brickwork is masonry produced by a bricklayer, using bricks and mortar. Typically, rows of bricks called courses are laid on top of one another to build up a structure such as a brick wall. However, currently there is limited research conducted on proper bricklaying process in residential building. Therefore, this report will discuss the bricklaying process in a construction site. This report was conducted for the Construction of One Storey Bungalow House at Lot 446, Mukim Taking, Daerah Mentuan, Jajahan Bachok, Kelantan that owned by En Mohd Azman Bin Mohamed Firdaus. The objective of this report is to explain the bricklaying process and problem occurs during the processes. In addition, this report is conducted by using three appropriate method such as observation, interview, document review. As a result, to conduct a bricklying process, there are 10 step need to follow which is plan out the wall, prepare all the materials that are needed, make guide post or gauging rods, clamp a string on first guide line and lay the first row of bricks for a dry run, laying the next course of bricks, plastering the Wall. However, there are two problems occurred during the bricklaying process for example the weather and the material management. As the conclusion, the proper bricklaying process is crucial to understand by contractor who are willing to construct the wall in the future.

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## CHAPTER 1.0

### INTRODUCTION

#### 1.1 Background of study

Construction evidence with brickwork from many parts of the world reflects the existence of brickwork even from prehistoric time and the impassibility of construction without bricks. Brick work is a masonry construction work using bricks and mortar. In simple joining bricks using mortar in a systematic pattern is called brick work. Mortar is a paste like substance used to bind the bricks together. It resembles the meaning of filling gaps between bricks (*Gerard Lynch 2010*)

Bricks, beds and perpends simply form a brick work. Here, brick is an element made using clay, bed is basic layer of mortar which is buttered beneath a brick and perpends is the imaginary vertical line drawn along joints located between two bricks, which filled with mortar. Bricks can be classified into number of types on their manufacturing method, source material, size, texture, use and many more (*William George Nash, 2003*).

Bricklaying is the art of building with bricks, or of uniting them by cement or mortar into various forms. It is the act or occupation of laying bricks which is done by a bricklayer. Bricklayers build walls and structures using bricks, concrete blocks, and mortar. The work varies in complexity, from laying a simple masonry walkway to installing an ornate exterior on a high-rise building (*Thomas, F G, 2000*).

Therefore, the aim of this report is to discover the bricklaying process in the construction site.

## **1.2 OBJECTIVE**

There are 2 objectives have been highlighted in this report

- i. To determine the bricklaying processes in construction site.
- ii To investigate the problem and solution in bricklaying process

### **1.3 SCOPE OF STUDY**

This scope of study has been carried out at Lot 446, Mukim Taking, Daerah Mentuan, Jajahan Bachok, Kelantan. The project had started in 25 June 2021 and will be completed on 25 June 2022. The construction is a construction of One Storey Bungalow House and cost One hundred thousand Ringgit Malaysia (RM 199,500.00). The project is currently on going. Therefore, the focus of study is to determine on how the brickwork process for a house is undertaken. The study will be explain about the bricklaying process and the problem and solution for the bricklaying process. The data that are collected in this report were the result of the interview with the contractor, from observation and document reviews. In conclusion, all the method relating above were explained as below.

## **1.4 METHOD OF STUDY**

### **Observation**

Observation is one of the way collecting the data for the report. From the observation, the time of wall construction process is around 3 to 4 weeks. The observation was made about 3 to 4 hours at the site. From the observation there are also problem that arise during the construction and have been collected for this report. Meanwhile the preliminaries work took a few weeks also. The observation of the wall construction process had been recorded by smartphone and some notes that lasted for 20 weeks.

### **Interview**

Another method to collect data is by doing semi structured interview with the workers of the site. The interview was about how long does the project is, the price for the house, the procedure of brick laying, what are the preliminaries work and what is the problem that have occur during the construction and how to handle the problem. The interview was conducted with the company manager, the contractor who is responsible for handling the project while at the construction site. The interview was carried out for at least 10 - 15 minute and were recorded through audio and short notes

### **Document Review**

Document review are used to collect all the data for the construction. The document is Compony profile, Construction drawing which is plan, progress report and so on. Drawing plan were used as the reference of the site that under monitoring for brickwork process. The pictures which are belongs to worker of the construction were used in the document reviews. The time for the document reviews will take about 30 minutes for one drawing plan in a week. This document reviews placed at the office

## COMPANY BACKGROUND

### 2.1 INTRODUCTION OF COMPANY

MKA Development Sdn Bhd was established on October 2019. It is a company registered under the Malaysian Construction Industry Development Board (CIDB). Apart from being registered under CIDB, this company has SSM Business Registration certificate. This company is a company limited by shares and is a private company. The company has collaborated with several professional panel companies to meet client demands as well as facilitate all construction matters. The professional panel involved consists of panel of architects, panel of surveyors, panel of engineers and panel of contractors. There are also some general workers and skilled workers who have skills and experience in the fields of wiring, electricity, irrigation and construction. With specialized skills in the construction of bungalows, MKA development has been entrusted to manage, plan and build single and double storey bungalows throughout Negeri Sembilan. The company is actively involved building exclusive bungalows all over the country. The company also offers the client to design the plan and help client for loan LPPSA. (MKA Development Sdn Bhd, 2019).

### 2.2 COMPANY PROFILE

MKA Development Sdn Bhd is, on and from the 26th day of September 2019, incorporated under Companies Act 2016, and that the company limited by shares and that the company is a private company. The company is active in carrying on the general construction, builders, contractor and to do any marketing & advertising activities related to main business activities. This company is based in Kelantan located at Jalan Raja Perempuan Zainab II, Kampung Pauh, Panji, 16100 Kota Bharu, Kelantan. (MKA Development Sdn Bhd, 2019).



Figure 2.1: Location of the company based on the satellite map

Source: <https://www.google.com.my/maps>

## 2.2 COMPANY ORGANIZATION CHART

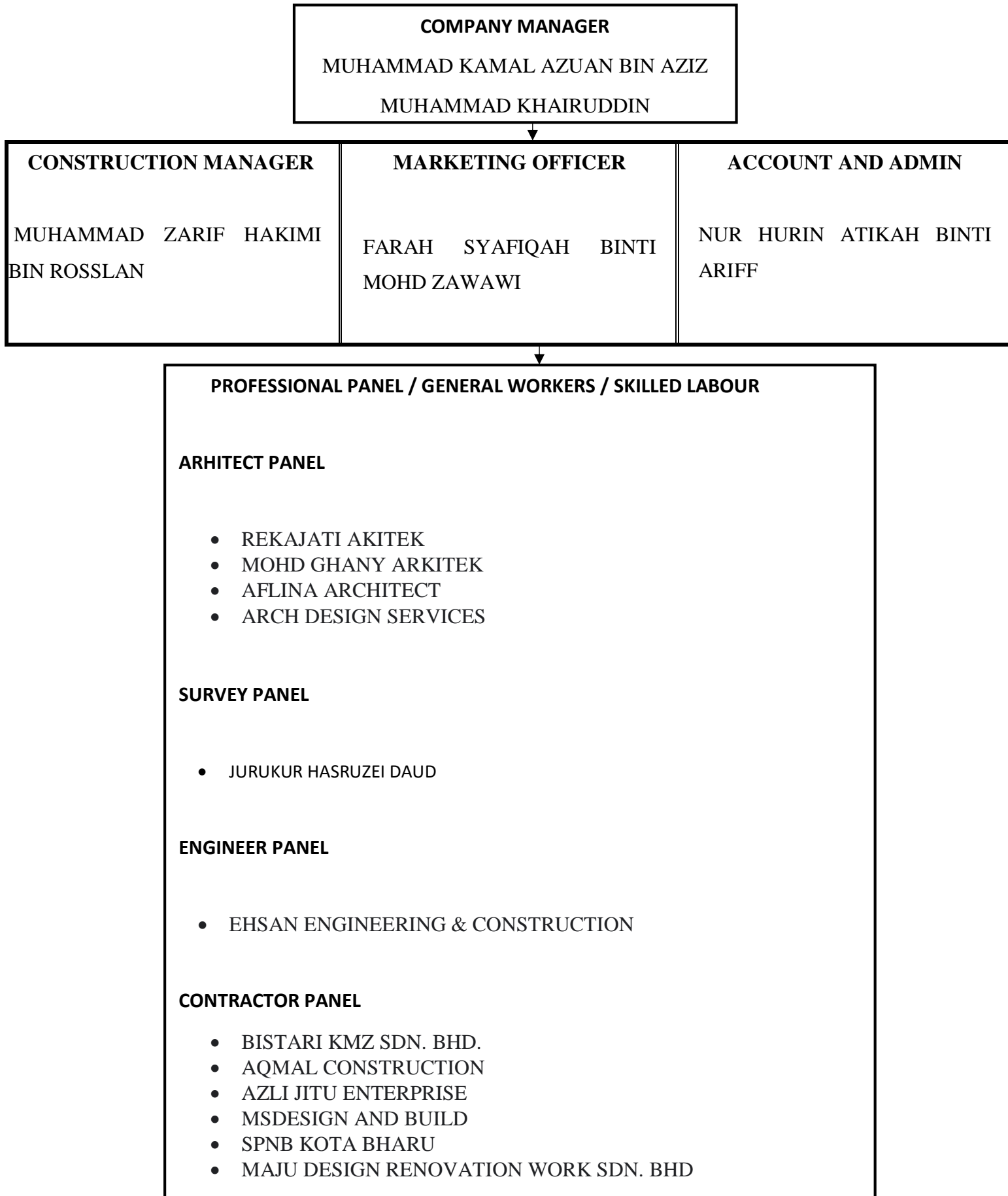


Figure 2.2 : Organisation Chart of MKA Development Sdn Bhd (Development Sdn Bhd 2019)

## 2.4 LIST OF PROJECT

There are 8 project that are already completed this year. Meanwhile, currently there are 5 project still on going.

### 2.4.1 COMPLETED PROJECTS

NO.	PROJECT TITTLE	ADDRESS	PROJECT VALUE	PROJECT DURATION	PROJECT STATUS
1.	Membina 1 unit rumah banglo 1 tingkat	Lot 3514, Mukim Bator, Daerah Gunong, Jajahan Bachok, Kelantan	RM 152,500.00	12 Month	Completed
2.	Membina 1 unit rumah banglo 1 tingkat	Lot 244 H, Kampung Lundang, 15150 Kota Bharu, Kelantan	RM 255,000.00	15 Month	Completed
3.	Membina 1 unit rumah banglo 1 tingkat	Pt5340 Taman Lpt Bestari, Jalan Jelatok, Kampung Jelatok, 17500 Tanah Merah, Kelantan	RM 196,700.00	12 Month	Completed
4.	Membina 1 unit rumah banglo 1 tingkat	Pt2280, Jalan Permai 2 Taman Sri Bayu, Kg Sri Tujoh, 16200 Tumpat, Kelantan	RM 399,500.00	24 Month	Completed
5.	Membina 1 unit rumah banglo 1 tingkat	Lot 388, Jalan Tok Ku Haji Nik Mat, Kampung Pulau Melaka, 16150 Kota Bharu, Kelantan	RM 283,000.00	13 Month	Completed

## 2.4.2 PROJECT IN PROGRESS

<b>NO.</b>	<b>PROJECT TITTLE</b>	<b>ADDRESS</b>	<b>PROJECT VALUE</b>	<b>PROJECT DURATION</b>	<b>PROJECT STATUS</b>
1.	Membina 1 unit rumah banglo 1 tingkat	Pt 996, Jalan Bayam, Kampung Bayam, 15200 Kota Bharu, Kelantan	RM 172,500.00	12 Month	On going
2.	Membina 1 unit rumah banglo 2 tingkat	Lot 589, Alor Terap, Mukim Guntung, Daerah Setiu, Terengganu	RM 375,000.00	18 Month	On going
3.	Membina 1 unit rumah banglo 1 tingkat	Pt 294 (12884), Mukim Lundang Paku, Daerah Beta, Jajahan Kota Bharu, Kelantan	RM 280,000.00	24 Month	On going
4.	Membina 1 unit rumah banglo tingkat	Lot 446, Mukim Takang, Daerah Mentuan, Jajahan Bachok, Kelantan	RM 199,500.00	12 Month	On going
5.	Membina 1 unit rumah banglo 1 tingkat	Lot 11319, Mukim Changgai, Daerah Gong Datok, Jajahan Pasir Puteh, Kelantan	RM 270,000.00	24 Month	On going



## CHAPTER 3.0

### CASE STUDY

#### 3.1 INTRODUCTION TO CASE STUDY

The case study is regarding the bricklaying processes in construction site. The project were started in 25 June 2021 and will be completed on 25 June 2022. The cost of the construction is One hundred thousand Ringgit Malaysia (RM 199,500.00). The project is currently on going. The study will be explain of the process of the bricklaying in a construction site and the problem and solution that might occur during the bricklaying process. The site location is at Lot 446, Mukim Taking, Daerah Mentuan, Jajahan Bachok, Kelantan.

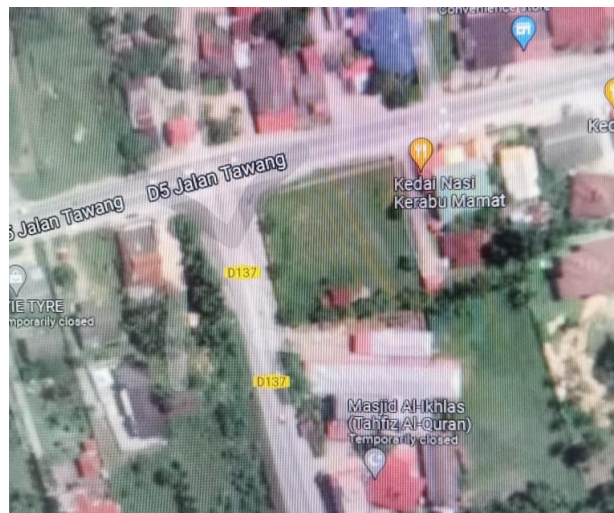


Figure 3.1: Location of site based on the satellite map

Source: <https://www.google.com.my/maps>



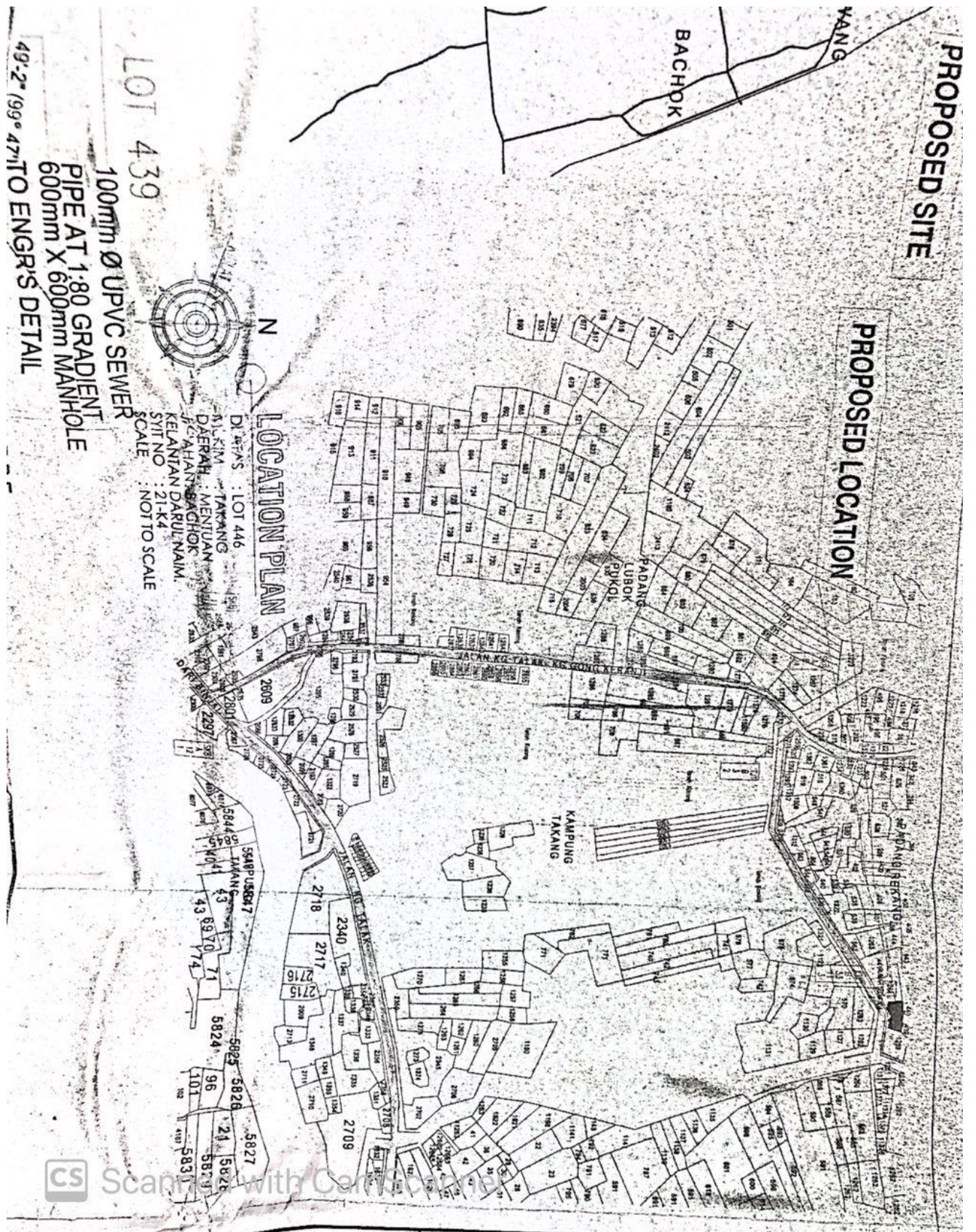
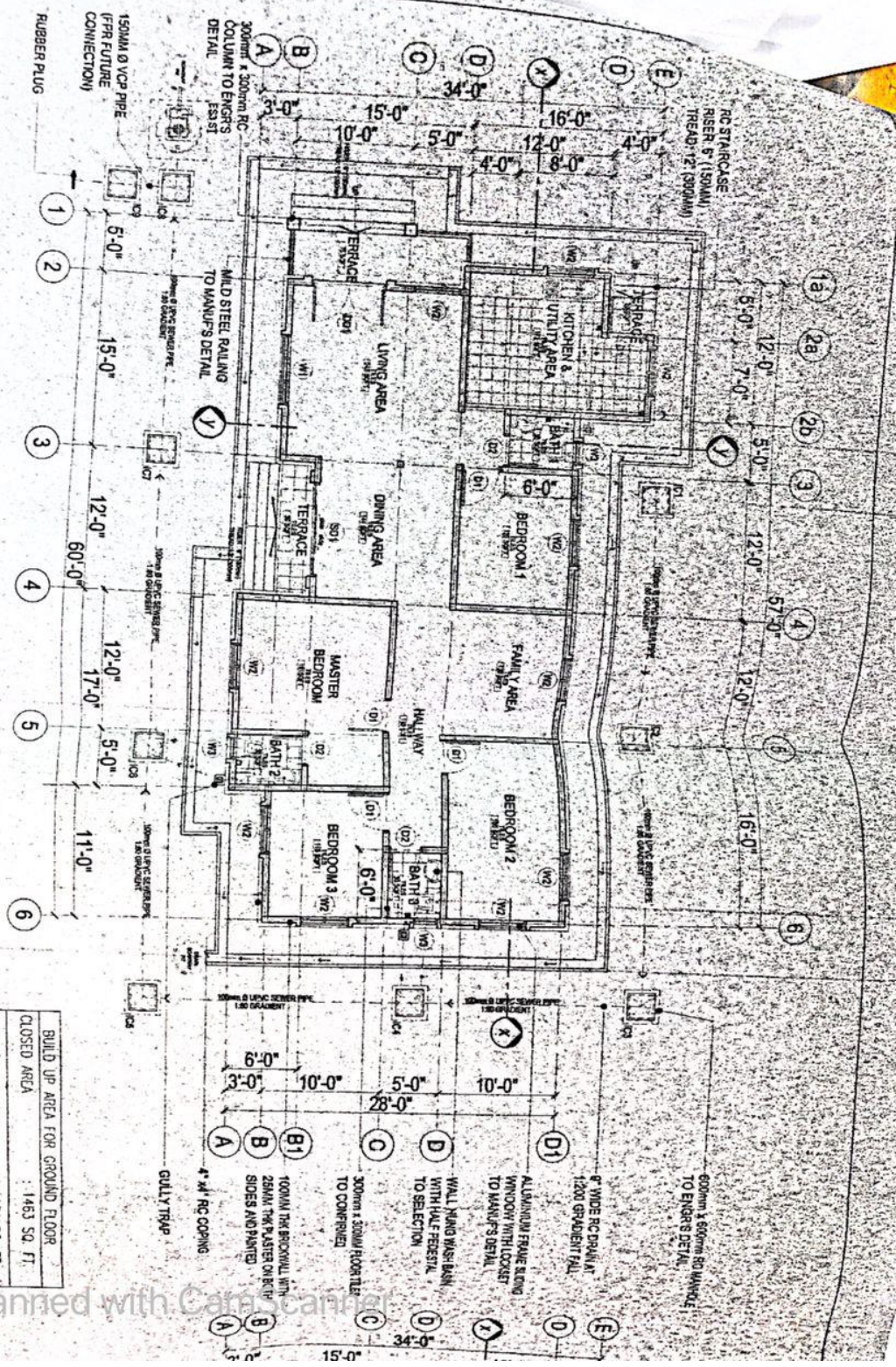


Figure 3.2: The location, site and key plan of the project



**GROUND FLOOR PLAN**  
SCALE: 1/8" = 1'-0"



BUILD UP AREA FOR GROUND FLOOR	
CLOSED AREA	1463 SQ. FT.
OPEN AREA	131 SQ. FT.
<b>TOTAL GROUND FLOOR AREA</b>	<b>1594 SQ. FT.</b>

Figure 3.3 : plan of the house



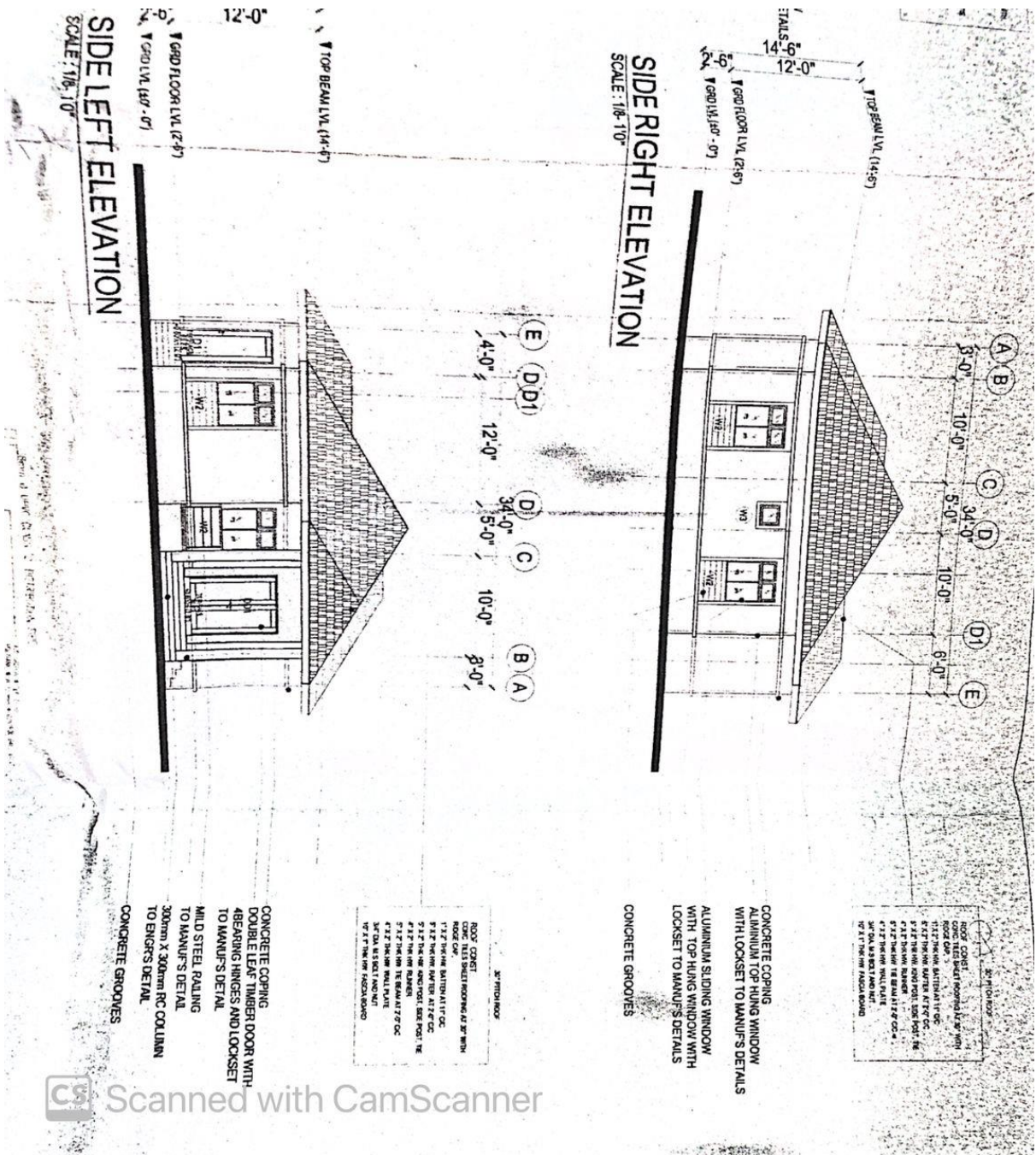


Figure 3.4 : right and left elevation of the house

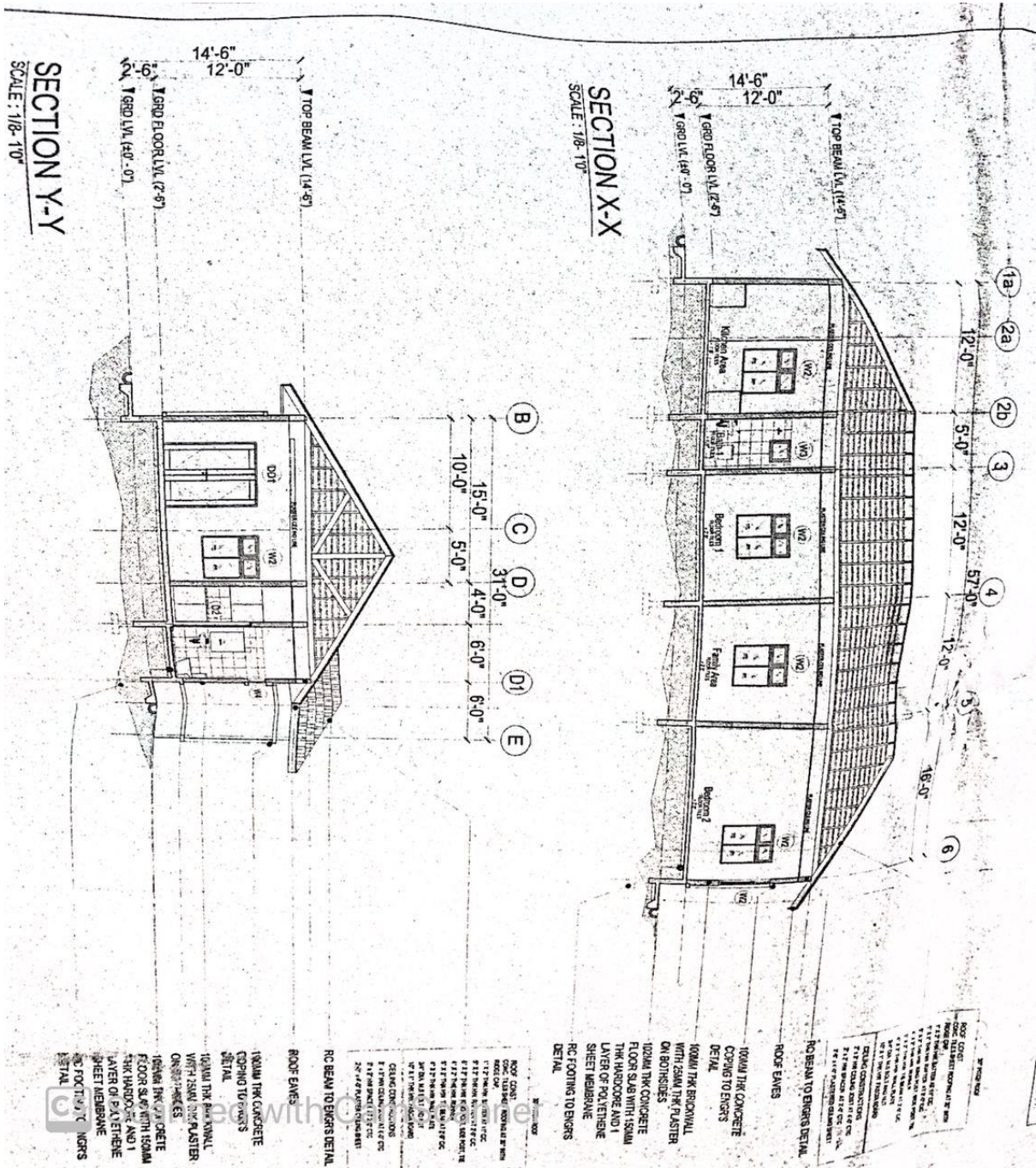


Figure 3.5: Section x-x and y-y of the house



### 3.2. The bricklaying processes in construction site.

#### Step 1



Figure 3.6: Site Clearance

Site preparation is the first activity of the construction phase of the building project. Site clearance is the necessary procedure to remove any obstructing elements such as vegetation found at the site to prepare for excavation. The process of site clearance involves the following steps which is grubbing of bushes or trees and removal of topsoil to form the reduced levels.

#### Step 2:



Figure 3.7: Setting out

After the completion of site clearance activities, the next phase is the site survey and layout. Site layout survey is the process of interpreting construction plans and marking the location of proposed structures with the help of surveying equipment such as level, theodolite, total station, etc.

### Step 3:



Figure 3.8: Excavation work

Excavation is the process of moving earth, rock or other materials with tools, equipment or explosives. The first and primary step involved in the excavation is to find out the extent of soil and clearing of construction site is of unwanted bushes, weeds and plants. After establishing the layout of the structure, the excavation process starts using backhoe loader. Excavator is used to excavate 1.5m soil for the pile foundation. To make sure the pile foundation excavated with the right height needed, the height is measured every time excavator stop excavating soil.

### Step 4 :



Figure 3.9: Foundation

Building activity begins with digging the ground for the foundation and then building it. A bed of concrete (PCC) is laid at the base of trenches and over it, the brick or stone masonry is

constructed in accordance with the foundation details provided by the structural designer. Column footing is constructed in the trench. Steel bars tied together according to the structural engineer's specifications are placed at the bottom of the footing pit. Column steel bars are also tied in place with the help of a bonding wire. Column formworks are erected around it for pouring concrete. Before pouring concrete in the formwork architect and structural designer have approved the steel details and the quality of work, the concrete can be poured. Concrete for pouring can prepare on-site or the contractor may opt for ready mix concrete (RMC) if there are very large footings and large requirements of concrete.

**Step 5:**



Figure 3.10: Plinth Beam or Slab

The part of the wall between the ground floor and the ground level is called a plinth. It is usually of stone masonry. A plinth beam is inserted to support the wall above the floor level. A damp proof course is provided at the top of the plinth. It is a 75 mm thick plain concrete course.



## Step 6



Figure 3.11: Walls & Column

The function of walls and columns is to transfer the load of the structure vertically downward so that it can be transferred to the foundation. In addition, the wall encloses the building and provides privacy, protection from thieves and insects, and keeps the building warm in winter and cool in summer.

## Step 7



Figure 3.12: Brick Masonry Work

As beam and column framework completed, masonry work is started with various materials like fly ash bricks, concrete blocks, bricks, etc. according to building drawing. Masonry work is done with a cement mortar mix. It's a mixture of cement & sand.

## Step 8



Figure 3.13 Lintels

Lintels are reinforced cement concrete or stone beams provided over the door and window openings to support the masonry work over it.

## Step 9



Figure 3.14: Doors and windows

The job of the door is to give access to different rooms in a building and also to deny access whenever necessary. The building has windows to receive light and ventilation.

## Step 10



Figure 3.15: Finishing Works

Finishing operations such as ceiling plastering, external and internal plastering of walls begin after the construction of the structure. They are then provided with whitewash, distemper or paint, or tiles.

### **3.5 The problems involved in bricklaying process and the solutions**

#### **Problem : weather**

Reduces visibility for workers on the site and the drivers operating heavy machinery. It also cause less than ideal working conditions and create mud in site which is difficult to work in.

#### **Solution: Get prepared**

You will be more productive if they can comfortably work in all sorts of weather. The right clothing and footwear will allow you to get the job done.

If possible, provide some sort of shelter so you can warm up from the rain. Ensure you has water, especially during the hot days and rainy days.

#### **Problem : material management**

Delayed Materials affect the entire scheduling process and put productivity to a halt.

#### **Solution :**

Relying on a distribution representative for planning and scheduling process can help save on time and money. They'll track the materials and deliveries so that when you get to your job site, they have the equipment needed to get the job done.

## **Chapter 4**

### **Conclusion**

Typically, a brick wall is a vertical element of construction that is made of bricks and mortar and is used to form the external walls of buildings, parapets, internal partitions, freestanding walls, retaining walls and so on. Bricklaying is the art of building with bricks, or of uniting them by cement or mortar into various forms. It is the act or occupation of laying bricks which is done by a bricklayer. The objective of this report is to determine the bricklaying processes in construction site and to investigate the problem and solution in bricklaying process. The process took at least took a couple of weeks to finish from 20 July to 29 August. The method of study is collected from the observation, from the interview of the worker and the document review. As a results, there are 10 steps involved in bricklaying process and two problems are identified along this process. In conclusion, from the report it will benefits the contractor to learn the proper process of a bricklaying and overcome all the problems during the process. Apart of that, it is hope that, by knowing the proper bricklaying process enable to help the contractor to execute bricklaying process in their projects soon.

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