



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

**INDUSTRIALISED BUILDING SYSTEM (IBS) CONCEPT:  
LIGHTWEIGHT BRICKWALL INSTALLATION**

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**(PERAK)**

**FEBRUARY 2022**

It is recommended that the report of this practical training provided

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**entitled**

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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 Ampenan Tech 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 : 10<sup>th</sup> January 2022

## ACKNOWLEDGEMENT

Alhamdulillah, praise to Allah, the Most Merciful, the Most Graceful.

I would like to extend my heartfelt gratitude for the guidance, advice and help rendered throughout the period of training by the following group of amazing individuals. First and foremost, I would like to thank Encik Faiz bin Othman for the opportunity given, to conduct my practical training in his esteem company. His team of professionals comprising of Nur Firyal Batrisha binti Zahari and Encik Zainal bin Abidin have enabled me to learn and develop my understanding, knowledge and feel of real time projects, and the theory involved. It is an honour for me to be given the opportunity to 'work' with all of you.

I would also like to thank all the UiTM lecturers that have taught and nurtured me in becoming a better student and person. I would also like to extend my deepest Ts Dr Azamuddin bin Husin, Supervising Lecturer, Ts Normila Ahmad, Evaluation Lecturer, Dr. Nor Asma Hafizah Bt. Hadzaman, Practical Training Coordinator and Dr. Dzulkarnaean Bin Ismail, Programme Coordinator, I value the time, effort, encouragement and ideas that they have contributed towards the successful completion of my practical training, this report and the valuable knowledge that have been shared over the last few semesters.

Last but not least, for my classmates, AAP1165J, thank you for helping me with giving many ideas and suggestions for my report. With these efforts, I hope we all we will pass with flying colours. For my beloved parents, thank for always giving the best moral support to me during the industrial training. I am very grateful for all of you.

Thank you very much.

## **ABSTRACT**

The Industrialised Building System, or IBS, is a strategy for speeding up the construction process by using a prefabricated idea in which each component is constructed separately in a component manufacturing factory. CIDB defines five types of IBS, one of which is system block work. The interlocking block-concrete masonry unit (CMU) and lightweight concrete blocks are two types of components found in the block system (AAC). To speed up the construction process and lower construction expenses, the block work approach was created to replace conventional bricks.

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# CHAPTER 1: INTRODUCTION

## 1.1 Background of Study

The term "Industrialised Building System" (IBS) refers to a construction system made up of prefabricated components (Rahman and Omar, 2006). Machines, formworks, and other mechanical equipment are used to manufacture the components in a methodical manner (Rahman and Omar, 2006). Despite this, the Construction Industry Development Board offered the most substantial, practicable, and practical definition of IBS in Malaysia's IBS Roadmap (CIDB, 2003). IBS is a construction technology in which components are created in a controlled environment, transported, positioned, and integrated into a structure with minimal additional site work, according to the CIDB.

Precast concrete systems, steel formwork systems, steel framing systems, prefabricated timber framing systems, and block work systems are the five forms of IBS (M.A. Othman Mydin et. al, 2014). The most extensively utilised precast concrete system in IBS building. Precast concrete columns, beams, slabs, and walls, as well as "3-D" components, lightweight precast concrete, and permanent concrete formwork are all included (Azman M. N. A. et al, 2011). Meanwhile, the steel formwork system is one of the least prefabricated varieties of IBS, requiring concrete on the job site and strict quality control (Azman M. N. A. et al, 2011). Steel frame system is also one of the varieties of IBS. Steel trusses, beams, and a column portal frame system are all part of this system. It is always preferred and commonly utilised in the construction of skyscrapers, as well as huge factories and exhibition halls that demand a large amount of space (Azman M. N. A. et al, 2011). Prefabricated timber framing systems also include prefabricated wood truss beams and columns. It is widely used and popular because it provides appealing designs and excellent aesthetic values as chalets for resorts, contributing significantly to the tourism industry.

One of the IBS on which this report will focus is block work systems. It is a construction system that uses lightweight concrete blocks (AAC) and concrete

masonry units (CMU) as the principal building elements for the systematic construction of low-rise structures (Wesley Wong, 2019). These blocks are presently employed in the building of load-bearing walls, retaining walls, partitions, and foundations, among other things. Hollow-cored blocks are included in the design to reduce weight and increase insulation (Wesley Wong, 2019). The usual block size is 440mmX215mm, or three bricks high and two long, which is the largest size that one person can easily lift. They come in a variety of widths ranging from 50mm to 300mm. According to Wesley Wong (2019), the density, load-bearing characteristics, appearance, weight and handling properties, and thermal characteristics will all influence the type of block used for a certain application. According to the case study, AAC was utilized to construct a one-story low-rise building.

Additionally, there are several advantages and disadvantages to employing AAC blocks. One of the benefits of adopting AAC blocks is that they are three to four times lighter than standard blocks, making them more suited and less expensive to transport (Civil Lead, n.d). Another advantage is that AAC blocks may be simply cut, drilled, nailed, miled, and grooved to meet specific needs. It's also available in custom sizes, making hydro sanitary and electrical installations like pipes and ducts that much easier (Civil Lead, n,d). Furthermore, due to microscopic air gaps and the thermal bulk of the blocks, it provides great thermal insulation. As a result, it aids in the reduction of a building's heating and cooling expenditures (Civil Lead, n.d). Last but not least, employing AAC blocks has the advantage of being non-combustible and fire resistant up to 1600°C. Depending on the thickness of the wall, these blocks can withstand a fire for 2 to 6 hours (Civil Lead, n.d.).

However, there are some disadvantages to using AAC blocks, including the fact that they are prone to cracking after installation, have a brittle nature that necessitates more care than clay bricks when handling and transporting, and cannot be hammered for services such as chiselling because it may break. Although a tungsten hand saw can be used to cut it, it is time-consuming and requires special labour for this task (Civil Lead, n.d.).

## **1.2 Objectives**

The objectives of this report are:

1. To investigate the methods of lightweight concrete blocks installation.
2. To explain the elements of equipment and machineries that used during construction works.
3. To identify issues that happens during the construction works.

## **1.3 Scope of Study**

This study will provide applicable information of the beginning to final stages on the method of lightweight concrete block to build one single storey house at Kampung Bukit Pulau, Melaka, Malaysia. The process consists of substructure and superstructure activities related to building construction. Other problems and elements such as parties involve, planning, workers and plants are not within the scope of this study.

## **1.4 Method of Study**

The research method that being used for this study are:

1. Observation

The construction methods of IBS construction using lightweight concrete blocks system was observed on site. Other than that, site visits were carried out when there were specific jobs such as concreting work and brickwork. The observation includes every single works carried out by the general worker. Furthermore, the pictures and video were taken using Iphone 7. This is due to the fact that having photos and videos would make it simpler to recall, especially when it comes to construction methods.

## 2. Interview

The unstructured interviews were conducted during site visits. Typically, unstructured inquiries will be directed to employees on the construction site, particularly during installations that need a high level of skill such as installation of IBS lightweight concrete blocks system. Unstructured interviews will also be performed with the site supervisor about the structure discovered on the construction site.

## 3. Document reviews

The document referred to is a company profile, which was used to explain the company's background. Furthermore, architectural drawings and structural drawings are two other sorts of documents that have been referenced. Standard operating procedures also had been used to understand about the construction of IBS especially for lightweight concrete blocks systems. Usually, document reviews were done in the office.

## **CHAPTER 2: COMPANY BACKGROUND**

### **2.1 Introduction of Company**

Ampenan Tech Construction was registered under the Companies Act 1965 with the Companies Registration Office of Malaysia on 6<sup>th</sup> September 2016 and it is a limited company. The company is a stand-alone company that is competitive to date. Moreover, Ampenan Tech is also a Bumiputera owned company registered with the Ministry of Finance Malaysia. Its main activity is to make the construction of houses as a result of plans designed according to customer criteria based on pre-fabricated houses namely the IBS system. In the same time, the company is a supplier of essential goods.

In general, this company using pre-cast concrete system and block work system which is lightweight concrete block or it can be called as IBS system as medium to build a single house. It is highly experience contractor specializes in building work, maintenance and renovation. The staffs or workers in this company had many experienced in civil and structural works. The professional teams have the skill sets such as competency and capabilities to deliver high-quality cost-effective projects customized to client requirements.

Ampenan Tech is a company that has good future planning by organizing the company's strategy to expand the scope of business by engaging in the quotation and tender process. The company's goal is to provide the best quality work and service as well as ensure customer satisfaction.

## 2.2 Company Profile



*Figure 2. 1 Ampenan Tech Logo Company*

1. **Company name:** AMPENAN TECH
2. **Name of Manager:** Encik Muhammad Faiz bin Othman
3. **Address:** No. 30A, Jalan Hang Tuah, 75300, Melaka, Malaysia
4. **Telephone No.:** 016-9808225
5. **Email:** amptech12@gmail.com
6. **Date established:** 6<sup>th</sup> September 2016
7. **Service provided:** Plan drawing, consulting and construction
8. **No. SSM Registration:** (CA 0188266-u)
9. **Vision:** Committed to making a viable company a priority customer needs and satisfaction with IBS system.



**10. Mission:**

- 1) Identify suitable and strategic land locations for presence
- 2) Ensure construction work is carried out by skilled manpower
- 3) Ensure construction works meet specifications
- 4) Strive to ensure the execution of work on time
- 5) Always provide friendly service

**2.3 Organization Chart**

The organizational chart is the general view for the position of each employee. This organizational chart as shown in Figure 2.2 help in illustrating data management for employees in workplace. It illustrates the tasks that must be done and aids in understanding the design of the organisational chart.

The manager, Encik Muhammad Faiz bin Othman, plays an important role of this organizational chart, where he acts to monitor all works done by following specification. Furthermore, the finance manager, Puan Mazura Binti Othman, acts the accountant responsible for financial management such as recording all data related to company accounts or cash flows meanwhile the human resource, Cik Siti Zainab Binti Muhammad Faiz acts as administration of company where she takes responsible for ensuring that everything on the construction site runs smoothly. Next to that, the site supervisor, Cik Nur Firyal Batrisha Binti Zahar, acts as supervisor at a construction site.



*Figure 2. 2 The organization chart of Ampenan Tech*

## 2.4 List of Projects




Ampenan Tech is one of the construction company for build one-single storey house and it covered jobs around Malacca and state near Melaka. This company also provides renovation and maintenance work. This company used the Industrialised Building System (IBS) to build the house and by using this system, it can reduce the time of construction than using conventional methods. There are several projects where successfully completed and still under construction.

### 2.4.1 Completed Projects

Ampenan Tech Construction has successfully completed several projects as shown in Table 1.

*Table 1 Completed Projects*



No.	Project's Name	Photos	Year
1.	Proposed construction of one-single storey house at Kampung Bukit Tembakau, Umbai, Melaka.	 <p><i>Figure 2. 3 Kampung Bukit Tembakau, Umbai, Melaka</i></p>	2021
2.	Proposed construction of one-single storey house at Gadek, Melaka	 <p><i>Figure 2. 4 Gadek, Melaka</i></p>	2021

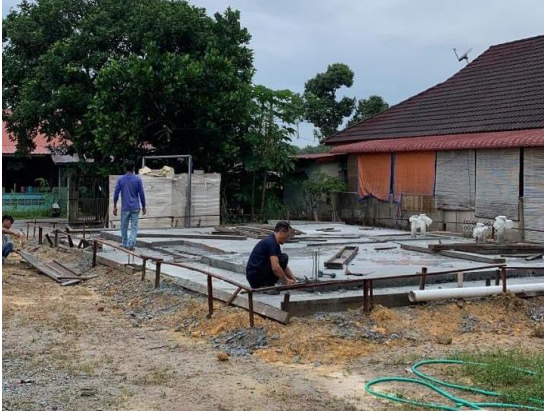
3w3.	Proposed construction of one-single storey house at Sebatu, Merlimau, Melaka.	 <p data-bbox="721 645 1212 680"><i>Figure 2. 5 Sebatu, Merlimau Melaka</i></p>	2021
4.	Proposed construction of one-single storey house at Air Paabas, Alor Gajah, Melaka.	 <p data-bbox="737 1115 1197 1182"><i>Figure 2. 6 Air Paabas, Alor Gajah Melaka</i></p>	2020
5.	Proposed construction of bungalow house at Kampung Durian Daun, Durian Daun, Melaka	 <p data-bbox="737 1675 1197 1742"><i>Figure 2. 7 Kampung Durian Daun, Durian Daun Melaka</i></p>	2020

## 2.4.2 Projects in Progress

Ampenan Tech also manages the number of projects that still under construction as shown in Table 2.

*Table 2 Ongoing Projects*

No.	Project's Name	Photos	Year
1.	Proposed construction of bungalow house at Kampung Bukit Pulau, Melaka.	 <p><i>Figure 2. 8 Kampung Bukit Pulau, Melaka</i></p>	2021
2.	Proposed construction of one-single storey house at Bukit Kepok, Jasin, Melaka.	 <p><i>Figure 2. 9 Bukit Kepok, Jasin Melaka</i></p>	2021

3.	Proposed construction of one-single storey house at Kampung Tedong, Merlimau, Melaka.	 <p data-bbox="683 651 1230 719"><i>Figure 2. 10 Kampung Tedong, Merlimau Melaka</i></p>	2021
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## CHAPTER 3: CASE STUDY

### 3.1 Introduction to Case Study

Ampenan Tech was given responsibility as a contractor to conduct a project which is one-single storey house that were located at Kampung Bukit Pulau, Duyong Melaka. Figure () illustrated the satellite image of the project site. The project costed around RM 150,000. The size of the house was 30' x 36' as shown in Figure (). The project itself was started from early month of November 2021 and still in progress. The estimated time of the project was finished in the end of January 2022, it took only 3 months to complete. The construction site was located a few kilometers from shopping complex, restaurants, and other facilities. There are also had many types of public transportation such as bus and taxi. From this reason, the traffic area at this site quite busy because it was near with the town and strategic location.

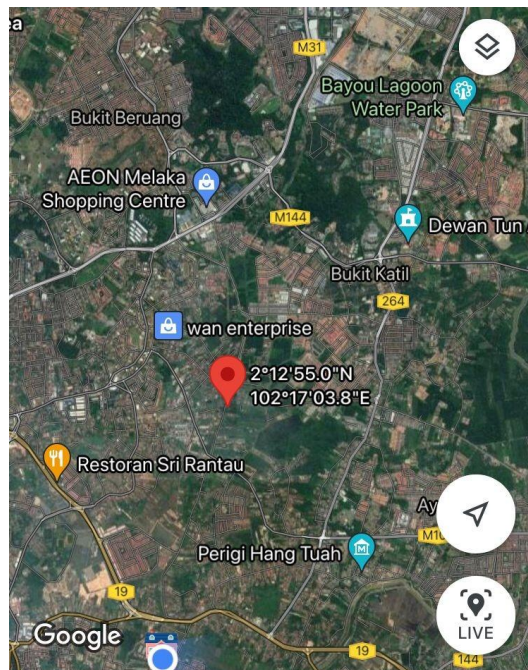


Figure 3. 1 The location of construction site by Google Maps

(2.2153125, 102.2844375)

(Source: <https://goo.gl/maps/3MpjWkcT5oM7cYXM8>)

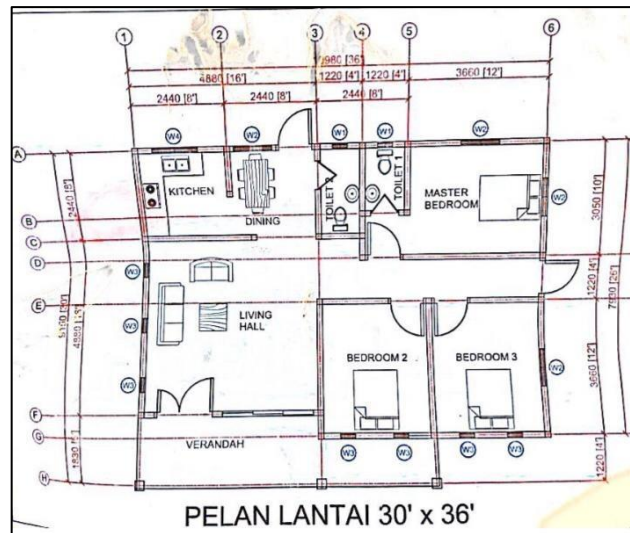


Figure 3. 2 The size of the house

### 3.2 The Methods of Lightweight Block Installation

Figure 3.3 shows the whole process of the lightweight concrete block installation starting from site clearance, setting out, foundation which is raft foundation and IBS installation is lightweight concrete block.



Figure 3. 3 The methods of Lightweight concrete block installation

#### 3.2.1 Site clearance

The first process to do before any construction and structural work is site cleaning. In this case study building, the site clearance done by using the backhoe as shown in Figure 3.4. Backhoe is a common machinery that used for the site clearance. Site clearance is the process of clearing all plants and removing the top soil layer's surface. As a result, a backhoe was utilized to clear bush, shift debris, dig out rocks, and remove the top soil layer's surface.



*Figure 3. 4 Site clearance*

### **3.2.2 Setting out**

Setting out is the procedure of clearly defining and marking the excavation's outline as well as the centre line of the walls as illustrated in Figure 3.5, so that construction can be carried out exactly according to the plan. The centre line approach of layout is widely used and preferred. As shown in Figure 3.6, the worker was knocking the pegs. Setting out was done by marking the outline by using pegs as shown in Figure 3.7.



*Figure 3. 5 Setting out*

(Source: <http://constructionhints.blogspot.com/2015/02/setting-out-of-building.html>)





*Figure 3. 6 Knocking pegs*



*Figure 3. 7 Pegs*

### **3.2.3 Foundation**

Before any work can begin, a site investigation will be conducted to determine the site's overall suitability. The entire construction process for this structure is based on a raft foundation. This is due to the site's limited bearing capability. As a result, this strategy can aid in the reduction of differential settlement

Firstly, the formwork has been installed according to the drawing plan as shown in Figure 3.8. To install the formwork in a straight line, a thread is pulled between two indicated pegs. Plywood and wood are used to construct the formwork.



*Figure 3. 8 Install formwork*

Next to that, the crusher run was poured into the formwork area and the crusher run was levelled using a hoe. Next to that, the crusher run was excavated one feet width from the marking line to make a gap between each section. The surface of the of the crusher run was covered with the bed sheet plastic cover (P.E sheet) as shown in Figure 3.9. The function of the P.E sheet is to minimize water from the soil from entering into the concrete. The P.E sheet provides a barrier to water moisture, ensuring that termites from the soil do not damage the building structure.



*Figure 3. 9 Install P.E. Sheet*

Furthermore, the rebar was placed at the spacing area and the reinforcing fabric of steel (BRC) were placed on the rebar as illustrated in Figure 3.10. The brick is

placed on the P.E sheet as the spacer component to provide a gap between the P.E sheet and the BRC. The rebar is made from steel reinforcement with bar with diameter 10 mm grade Y10 and link with diameter 6mm grade R6 while the BRC steel with size 10 mm grade A10.



*Figure 3. 10 BRC*

Lastly of raft foundation is concrete and level the concrete. The formwork area was poured with the concrete from the concrete mixer truck as shown in Figure 3.11. Then, the surface of the concrete was levelled to smooth the surface as shown in Figure 3.12. After this process, raft foundation had been completed as shown in Figure 3.13.



*Figure 3. 11 Pouring concrete into the foundation*



*Figure 3. 12 Levelled the concrete*



*Figure 3. 13 Raft foundation*

### 3.2.4 Lightweight Block Installation

First and foremost, lay out wall lines on building slab by control lines as shown in Figure 3.14. The wall line marked with PVC ink pot. The wall lines must be clear as shown in Figure 3.15.



*Figure 3. 14 Lay out wall line*

(Source: <https://youtu.be/yCLTJXyPUcQ>)



*Figure 3. 15 Wall lines*

Secondly, start levelling the bed. Using a masonry trowel, create a full width  $\frac{1}{2}$  inch deep sand-cement mortar joint at the slab's highest corner. as shown in Figure 3.16.



*Figure 3. 16 Place mortar*

Next to that, set the first corner block in the sand-cement mortar and adjust the joint as needed as shown in Figure 3.17. To achieve the required height, lower or raise the block by tapping down with a rubber mallet as shown in Figure 3.18 or by adding additional mortar beneath.



*Figure 3. 17 Set the first corner block*



*Figure 3. 18 Tapping down with rubber mallet*

(Source: <https://youtu.be/yCLTJXyPUcQ>)

Next to that, mix thin-bed mortar with concrete hand mixer in a clean mixing container as shown in Figure 3.19. Then, set the second corner block in place, using the ¼-inch notched trowel to apply thin-bed mortar to the head joint. Using a builder's level, repeat for other corners to maintain an even elevation.



*Figure 3. 19 Mixing thin-bed mortar*

To finish the levelling course as shown in Figure 3.20, pull a thread between the corners after set up the corners. For the bed joint, sand-cement mortar should be used, and for each head joint, thin-bed mortar should be utilised. To ensure a plumb



wall, level across each block.

*Figure 3. 20 Continuous levelling course*

Last but not least, lintels were installed as required as shown in Figure 3.21 with minimum 8” where concrete spreaders or pad stones should be used when lintel bearing strains will exceed permitted limits. The use of AAC in conjunction with specific types of lintels can prevent cold bridging at lintel positions. These allow the insulating characteristics of AAC blocks to run the length of the wall face, making subsequent door and window fasteners easier to install.





*Figure 3. 21 Install lintel*

### 3.3 The Details Equipment and Machineries that used During Construction Works

#### 3.3.1 Equipment

##### 1. Staging scaffolding

Figure 3.22 shows the staging scaffolding. Staging scaffolding is a type of temporary structure that is frequently used on building sites. Scaffolds are commonly employed on construction sites to get access to heights and areas that would otherwise be difficult to reach because its function resembles that of a ladder. In this case study, staging scaffolding is used to binding the lightweight block at higher level as shown in Figure 3.23.



*Figure 3. 22 Staging Scaffolding*

(Source: Google Images)



*Figure 3. 23 Binding lightweight block*

## 2. Masonry trowel

As shown in Figure 3.24, it is masonry trowel. Generally, a masonry trowel is a hand trowel used for levelling, spreading, and shaping cement or concrete in brickwork or stonework. In other terms, it's a little hand tool that's used to dig, apply, smooth, or move small amounts of viscous or particle material. In this case study, masonry trowel used for spread the mortar on the surface of lightweight block.



*Figure 3. 24 Masonry trowel*

## 3. Rubber mallet

In Figure 3.25, it is rubber mallet. A hammer mallet is a tool that can be used to strike an object without harming it. They are usually made of solid wood, rubber, or leather and are lightweight. They are often not very good at transporting anything a long distance due to their lack of weight. For this case study, a hammer mallet used for nudging lightweight blocks together.



*Figure 3. 25 Rubber mallet*

(Source: Google Images)

#### 4. Thin-bed adhesive

Figure 3.26 shows thin-bed adhesive. Thin bed adhesive is used for bonding the blocks, panels and lintels.



*Figure 3. 26 Thin-bed adhesive*

#### 5. PVC ink pot

As shown in Figure 3.27, it is PVC ink pot. Normally, PVC ink pot is used with nylon string and black ink. In this case study, the purpose of PVC ink pot is for marking the wall lines. The marking is according by size of lightweight block.



*Figure 3. 27 PVC ink pot*

## 6. Brick hammer

Figure 3.28 illustrates brick hammer. It is commonly referred to as a stonemason's hammer since it is employed in masonry or stone. The head's flat face is used to break stones, while the chisel-shaped face is utilized to remove uneven chips from the material's surface. In this report, brick hammer is used to scratch the blocks to apply the cement for bonding it together.



*Figure 3. 28 Brick Hammer*

## 7. Tungsten hand saw

Figure 3.29 describes tungsten hand saw. The blades on most tungsten handsaws are precisely designed to cut through woods or concrete blocks in a curve. In this case study, tungsten hand saw is used to cut the lightweight blocks.



*Figure 3. 29 Tungsten hand saw*

## 8. Spirit level

In Figure 3.30 shows the spirit level. The purpose of spirit level is to determine if a surface is level on the horizontal or vertical planes, and they come in a range of sizes and styles to suit any job. A spirit level is used during construction to assess the horizontal and vertical levels of lightweight blocks so that they seem straight and balanced.



*Figure 3. 30 Spirit Level*

## 9. Measuring tape

In Figure 3.31 shows measuring tape. The measuring tape is a hand tool that is commonly used to measure length or width. The readings on a tape measure can be in imperial, metric, or both. In this case study, the measuring tape is used for marking the measurement that in need.



*Figure 3. 31 Measuring tape*

## 10. Concrete hand mixer

The function of concrete hand mixer as shown in Figure 3.32 is to combine cement with sand or gravel, and water to form the mortar or concrete. In this project, the concrete hand mixer uses a revolving drum to mix thin-bed adhesive with water to form mortar for apply on the surface of lightweight blocks.



*Figure 3. 32 Concrete hand mixer*

(Source: Google)

### 3.3.2 Machineries

#### 1. Backhoe

Figure 3.33 illustrated backhoe. The backhoe's two-part articulated arm includes two portions that perform two different functions. It can clear the land by digging up and removing trees for constructions with the help of a backhoe. A bucket is attached to one end of the backhoe, which can be used to establish a well-organized plumbing system. In this case study, backhoe is used for site clearance and installing the septic tank in the ground as shown in Figure 3.34.



*Figure 3. 33 Backhoe*



*Figure 3. 34 Installing the septic tank*



## 2. Concrete mixer truck

As shown in Figure 3.35 it is concrete mixer truck. The concrete mixer truck is used to mix and transport large amounts of concrete, which is made up of cement, sand, or gravel, and water, for use on construction sites. In this case study, concrete mixer is used for concreting the raft foundation as shown in Figure 3.36.



*Figure 3. 35 Concrete mixer truck*

(Source: Google Images)



*Figure 3. 36 Concreting the raft foundation*

### **3.4 Issues Happens During the Construction Works**

#### **3.4.1 Required skilled labour**

During construction works at Kampung Bukit Pulau, Melaka, one of the issues that happened was required skilled labour. Since Movement Control Order (MCO) due to Covid-19, it is difficult to attract new workers and train them with new IBS skills. Because of that, Ampenan Tech just retained existing labour which only 8 people. There are three projects in progress, where need to carry on in one time. Hence, they needed to more struggling to completed the projects. Besides that, several of the skilled labour were still lack of appropriate technical skills and knowledge where will affect the end of product quality.

#### **3.4.2 Lack of equipment, machineries and IBS component**

The issue that happened during construction works was lack of equipment, machineries and IBS component. Because of three projects were still ongoing, the most equipment that used in each project such as construction hand mixer, thin-bed adhesive and scaffolding were not much cause the projects were slow to complete. The workers had to wait the equipment for use them at site, like take turn. For thin-bed adhesive which always run out at site because of bonding lightweight blocks, they need to wait until the manager had to buy again. With this reason, they had wasting their time. Practically, a large - scale production IBS components are often manufactured off-site, necessitating the need of a transportation medium to convey the components from the manufacturing location to the building site. It is critical to plan ahead of time when anticipating the arrival time of IBS components to ensure that it coincides with the site preparation. Otherwise, the components are at risk of being damaged, especially if they are not securely stored. In comparison to traditional construction materials, damage to IBS components on-site will have a greater impact on cost, time, and process. Other transportation-related issues include the large component limit and transportation curfews.

### 3.4.3 Bad weather which effect on construction works

Last but not least, inclement weather occurred during the construction process. Malaysia recently had a nonstop rainy season, which resulted in floods in various states. The construction site in Kampung Bukit Pulau, Melaka was also disrupted. The construction had to discontinue working when it started pouring because the project had been disturbed.

## CHAPTER 4: CONCLUSION

In a nutshell, Industrialised Building System (IBS) have five types which are precast concrete system, steel formwork system, steel framing system, prefabricated timber framing and block work system. For this case study, block work system has used for build the one-single storey at Kampung Bukit Pulau, Duyong Melaka with using lightweight concrete blocks. There are some pros and cons which are the pros, it is lightweight, easy workability and design flexibility, thermal insulation and energy efficient and fire resistant. Meanwhile, the cons are easily crack, have brittle nature and cannot be hammered. The objectives of this case study are to investigate how lightweight concrete block being installed, to describe the elements of equipment and machineries during construction works and to identify the issue happened on construction site. From this report, to build one-single storey house at Kampung Bukit Pulau are starting with site clearance, doing setting out, concreting the raft foundation and installing the lightweight concrete block. Next to that, the equipment that used during construction works are staging scaffolding, masonry trowel, rubber mallet, thin-bed adhesive, PVC ink pot, brick hammer, tungsten hand saw spirit level, measuring tape and concrete hand mixer. Meanwhile, the machineries that used on the site are backhoe and concrete mixer truck. However, during the construction works, there are few of issues that happened which are required skilled labour, lack of equipment, machineries and IBS component and bad weather which effect on construction works. From this conclusion, it can be seen clearly how lightweight concrete block system being installed includes the equipment and machineries that been used on the construction site and the issue that can identified during construction works.

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