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UNIVERSITI TEKNOLOGI MARA
(PERAK)

SEPTEMBER 2014

It is recommended that the report of this practical training provided

By

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Construction of in-situ Concrete Beam

Accepted to fulfill partial of the requirement for Diploma in Building.

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(PERAK)

SEPTEMBER 2014

STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated here in, prepared during a practical training session that I underwent at SBS IndahJaya Development for duration of 5 months starting from 12 May and ended 29 September 2014. It is submitted as one of the prerequisite requirements of DBN307 and accepted as a partial fulfilment of the requirements for obtaining the Diploma in Building.

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Date : 30th September 2014

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, friends and others whose names could not be written here. May Allah swt reward all of you for your deeds and sacrificed.

Thank you.

ABSTRACT

This report briefly describes the construction for insitu concrete beam, machinery and tools used for build the in-situ concrete beam. The objective of this report is to identify the construction of in-situ concrete beam and to identify the machinery and tools used in construction of insitu concrete beam. In this report, there have two method of study that is primary and secondary to get obtain information on the construction, machinery and tools used for construction of insitu concrete beam. Primary study is divided into two method that is observation and interview method. Observation has been made by visit to construction project. In addition, for the interview a person who know detail about this project and have responsibility about work. The finding from this report is the construction of insitu concrete beam is start from setting out, site clearance, installation of formwork in footing, installation formwork in ground beam, installation of reinforcement bar, infill concrete, remove formwork and finish. The machinery used for construction of insitu concrete beam is excavator and concrete mixer. While tools used is hammer, wheelbarrow, measuring tape. Hope with this report can give a lot of advantage and benefit to the render on how to construction of insitu concrete, machinery and tools used for construction of insitu concrete beam.

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Appendix A : Certificate approval of CIDB.

Appendix B : Date of site completed.

List of Abbreviations

UiTM – Universiti Teknologi Mara

CIDB – Construction Industry Development Board.

SBSID – SBS Indahjaya Development sdn. Bhd.

CHAPTER 1

INTRODUCTION

1.1 Introduction

This report is based on the construction of the 1 1/2 half storey bungalow at Kampung Bunut Payong, Kota Bharu. The selection of this topic is based on the observation at the site which is involve the concreting work. This report is about the concreting work that had been done at the site.

Concreting work is the main work in construct 1 ½ half storey bungalow. The structural of the building like beam and column is construct by using concrete. Therefore this report will describe practically and theoretically how to construct beam.

Moreover for concreting work, inspection by consultant must be done before concreting work started. This inspection is to check the structural reinforcement, space and the arrangement of the reinforcement. While the concreting work in progress, site supervisor responsible to make sure all works done by the labour are right.

1.2 Objective of study

The concreting work is important in order to produce the quality result. This section will explain the objective and purpose of this study and objective were identified:

- i. To identify the construction of in-situ concrete beam.
- ii. To identify the tools and machinery used in construction of in-situ concrete beam.

1.3 Scope of study

This report is about the construction of 1 unit for 1 ½ half storey bungalow at Bunut Payong in front of the school Sekolah Rendah Bunut Payong near Ceria supermarket at wakaf Che Yeah around Kota Bharu .This area construct bungalow house and take cost RM500,000 to finish on December 2014.

The owner of this bungalow is Hassan bin Rahamat and Rosnah binti Jaffar.En.Hassan as a army at kem kementah and he wife as a teacher at Sekolah Menengah Kebangsaan Penambang.

This report will describe about the construction of in-situ concrete beam and to identify the tools and machinery in construction of insitu concrete beam.

1.4 Method of study

Primary study through postal survey of questionnaires to contractor project manager to identify the actual scenario of risk Project Manager in design and build contract divided by two such as observation and interview.

i. Observation

Observation is one method that is used widely for this report. Through this method, the author gets a lot of important information quickly, whether at the construction site or at the office. For concrete works, it should require a lot of workers if the concrete is in a big amount.

ii. Interview

The interview was based on an interview with site engineer Mohamad Nazri and Muhamad Zakhiri. Besides that, the author was also assisted by the site supervisor of Muhamad Syafiq bin Suhaimi.

Secondary study is the first step in searching for information for this practical report. It was undertaken through library on-line services, which are available at the library. The relevant textbooks, research papers, seminar papers, journals, articles, and special publications, etc. were listed. The relevant journals, special publications, articles, etc. were gathered and summarized to the relevant chapters like journal and book.

i. Book

The author has also done a book reference. A few books were borrowed to find more information about this research.

CHAPTER 2

COMPANY BACKGROUND

2.1 Introduction



Source: SBS Indahjaya Development.

SBS INDAHJAYA DEVELOPMENT SDN BHD (822510 M) is a company incorporated in Malaysia since 22nd June 2008. This company is helmed by two directors and also a shareholder. The company is 100% Bumiputra-owned and is registered with Lembaga Pembangunan Industri Pembinaan (CIDB). The setting up of the company aims to help customers have their desired houses according to their taste. The company is also ready to offer future residences with various forms and special prices at the best locations.

SBS Indahjaya Development Sdn Bhd has management expertise that is made up of a director and a board of directors with a lot of experience in housing construction.

The corporate goal is to give customer satisfaction with work quality in the construction industry at a price that is suitable, ensure the project is workable and resolved in the best possible way.

Next, solid support have been administered by various parties like supplier, department produce tender and service center for the contractor had given high spirit until this company is successful in the business

2.2 Company profile



Company name : SBS INDAHJAYA DEVELOPMENT SDN BHD

Registration No : 822510 M

Company address : LOT 1962-D, TINGKAT ATAS, KM 10,
JALANKUALA KRAI, 16010 KOTA BHARU,
KELANTAN.

Office no :

Fax no : 09-7124661

Date of incorporated: 22 JUN 2008

Status of company : SENDIRIAN BERHAD

Modal Berbayar : RM 250,000.00

Modal Dibenarkan : RM 500,000.00

Jenis Ekuiti : 100% BUMIPUTRA

Name of bank : RHB BANK ISLAMIC
LOT PT 383 & PT 384, KEDAI KETEREH,
BANDAR KETEREH,
16450, KETEREH,
KELANTAN

Account no : 25302500007005

Setiausaha Syarikat : REDZUAN MAZIHAN & CO
(PEGUAMBELA & PEGUAMCARA)
NO 42, KEDAI MULONG,
16010 KOTA BHARU KELANTAN

2.2.1 Appendix



Figure 2.0: Certificate of registration with CIDB.

Source: SBS Indahjaya Development.

2.3 Organisation chart

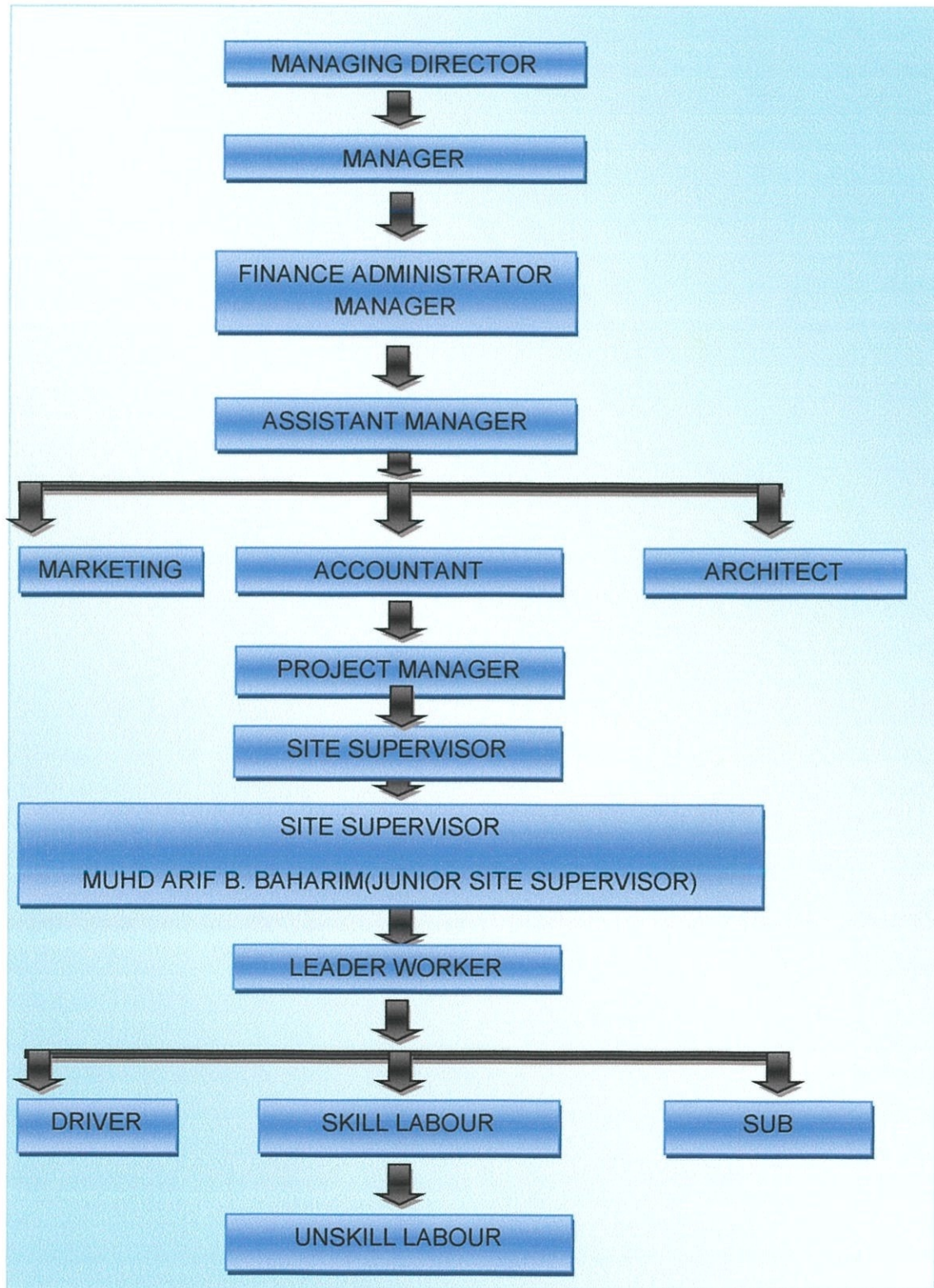








Figure 2.1: Organisation chart in SBS Indahjaya Development sdn bhd.

2.4 List of project

2.4.1 Completed project

Table 2.0: Completed project at SBS Indahjaya Development sdn bhd.




NO	PROJECT	CLIENT	PROJECT VALUE	PICTURE
1.	One unit one storey bungalow at mukim Kijang, Kota Bharu.	Puan Rosmah Binti Yacob.	RM 250,000	 <p>Figure 2.2: One unit one storey bungalow completed. Source: SBS Indahjaya Development.</p>
2.	One unit one storey bungalow at Mukim Marak.	Encik Syazwan bin Rahman.	RM 255,000	 <p>Figure 2.3: One unit one storey bungalow completed. Source: SBS Indahjaya development</p>
3.	One unit one storey bungalow at Mukin Badak, Ketereh.	Encik Hanapi bin Ariffin.	RM 275,000	 <p>Figure 2.4: One unit one storey bungalow completed. Source: SBS Indahjaya Development.</p>

4.	One unit one storey bungalow at Mukim Badak, Ketereh.	Haji Ali bin Haji Wan.	RM 245,000	 <p>Figure 2.5: One unit one storey bungalow completed. Source: SBS Indahjaya Development.</p>
5.	One unit one storey bungalow at Mukim Badak, Ketereh.	Puan Che masnira binti Che Sabri.	RM 255,000	 <p>Figure 2.6: One unit one storey bungalow completed. Source: SBS Indahjaya Development.</p>
6.	One unit one storey bungalow at Mukim Bunut Payong, Kota Bharu.	Encik syafiq bin Suhaimi.	RM 271,000	 <p>Figure 2.7: One unit one storey bungalow completed. Source: SBS Indahjaya Development.</p>

Source: SBS Indahjaya Development sdn bhd.

2.4.2 Project in progress

Table 2.1: Project in progress at SBS Indahjaya Development sdn bhd.

NO	PROJECT	CLIENT	PROJECT VALUE	PICTURE
1.	One unit one storey bungalow at Mukim Badak, Ketereh.	Wan Azhar bin Zaman.	RM 271,000	 <p>Figure 2.8: One unit one storey bungalow in progress. Source: SBS Indahjaya Development.</p>
2.	One unit one storey bungalow at Mukim Murei, Ketereh.	Puan Norliana binti Shariffdin.	RM 268,000	 <p>Figure 2.9: One unit one storey bungalow in progress. Source: SBS Indahjaya Development.</p>
3.	One unit 1 ½ half storey bungalow at Bunut Payong, Kota Bharu.	Encik Hassan bin Rahamat.	RM 500,000	 <p>Figure 2.10: One unit one half storey bungalow in progress. Source: SBS Indahjaya Development.</p>

Source: SBS Indahjaya Development sdn Bhd

CHAPTER 3

CONSTRUCTION OF IN-SITU CONCRETE BEAM

3.1 Introduction

The concreting work is a important work in site concrete made from such aggregate has better sound absorption and acoustical properties, (Smith, 1988) Concreting work need a lot of workers for a large scale construction and chepper worker for a small site construction depend on site needed. This main beam is the main structure because it will support all the load from the all element. Secondary beam has different size but in construction site at Bunut Payong, it only use one size of beam that we call the main beam.

For a main beam, a time required to complete the steel work for 2 weeks. This is because this main beam have various type and size of reinforcements. Most of this main beam used reinforcement type Y16. Besides that, for the formwork installation in take 3 days for a skilled worker beacause need a detail.

Concreting work for this main beam need at least 4 labours. This is importance because the labour can prevent the concrete from hardens before the concreting work completed. Concreting work for this main beam it take a long time because it is very complicated and to avoid from failed. Before concreting work proceed for beam, slab and column, the inspection from site supervisor should be performe.

3.2 Background of project

Based on case studies, the project was carried out in practical training is project construction and completion of one unit of one half storey bungalow on lot 389 lorong haji hamzah, Kampung Bunut Payong, Jalan Kuala Krai 15150 Kota Bharu, Kelantan Darul Naim.

The total amount of construction and completion of one unit of one half storey bungalow is RM 500,000. This building is very strategic and well know location. This is because the location of this building is near to the town Kota Bharu, Wakaf Che Yeh, school and main road.

In the construction project, there are parties involved directly and responsible for the completion of this project. Between the parties involved in the construction and completion of one unit one half storey bungalow is Hassan bin Rahamat and Rosnah binti Jaffar as a client and also owner bungalow for this project. Muhamad Syazwan bin Suhaimi as a director of SBS Indahjaya Development Sdn Bhd and also the main contractor in this project. The architect for this project is Miss Yasmin bin Samsudin and the site supervisor is Muhamad Syafiq bin Suhaimi.

3.3 CASE STUDY

3.3.1 Construction for in-situ concrete beam

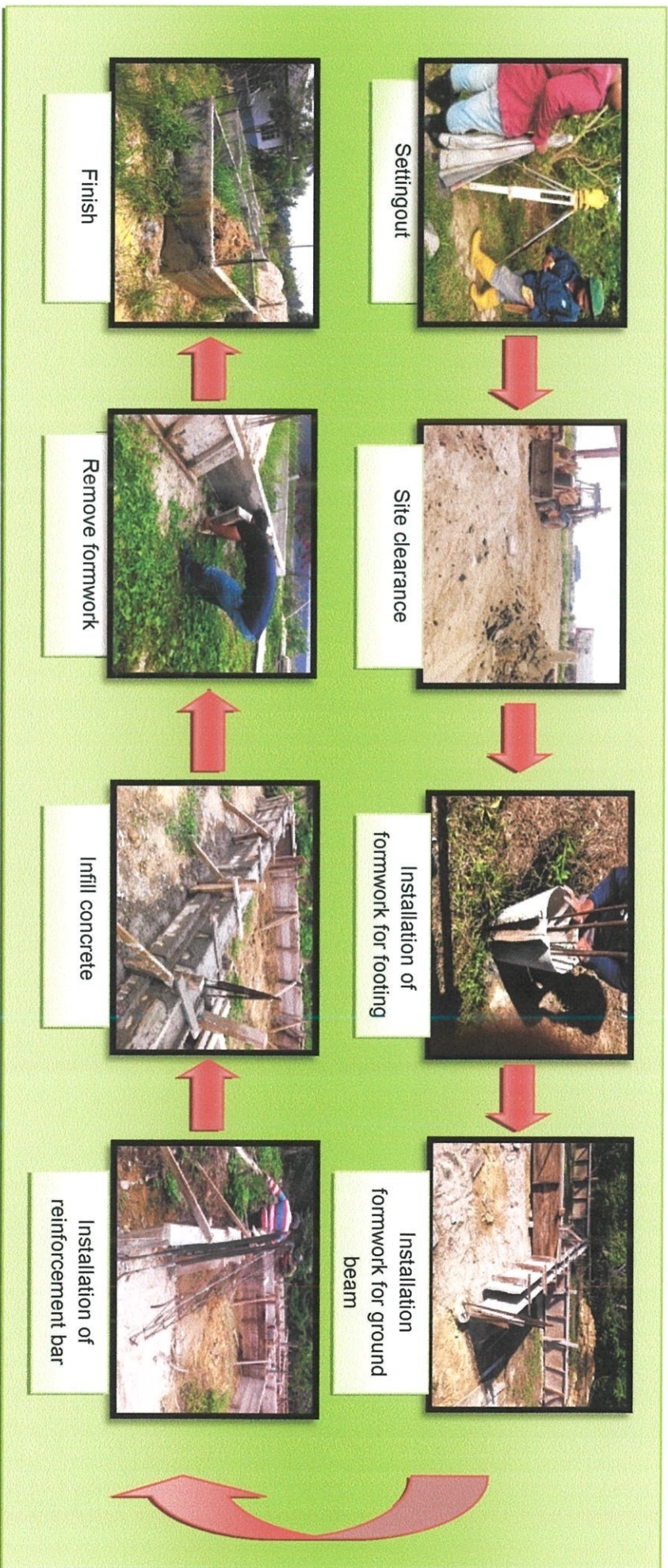


Figure 3.0: Construction method of in-situ concrete beam.

3.3.1.1 Setting out

Firstly, method the construction of one unit one storey in setting out. Setting out is the establishment of the marks and line to determine the position of ground floor. In the work for setting out , there are a few tool that should be used such as, hammer, rope,L shape and so on. In the construction of one unit one half storey bungalow, first thing that must be determined is the lenght and width of this bungalow.



Figure 3.1: Setting out work to get mark and line to determine position at ground floor.

3.3.1.2 Site clearance

Site must be cleaned first to ease construction work. Material not required collected on a place to ease work disposal. Clear the high land while places with hole pack with land so that surface become flat. For cleaning works carried by using excavator to save time and accelerate cleaning process. Before cleaning work, site supervisor need to have to giving direction so that not to damage other areas and hole dug exactly as in plan to do foundation.



Figure 3.2: Excavator used to clear the site before construction start.

3.3.1.3 Installation formwork for footing.

For construction of footing, the work of excavate the soil was done as deep as 3” and tie the reinforcement need to be done first to streng then further footing. Reinforcement type use is Y16 and this type always be used to high average bungalow construction project. After reinforcement bound it will be install hole and attached with formwork installation, formwork that used is round in shape and use plastic material to save cost and can be used for the next project.



Figure 3.3: The installation formwork for footing and infill concrete into formwork in doing by using wheelbarrow.

3.3.1.4 Installation of formwork for ground beam

After footing complete to build, install the formwork as high as 3ft for ground beam beam carried out. For this work need to be monitored by site supervisor so that the position of formwork always right and according to existing. 1x2 inch wood use to support formwork from falls and formwork broken when fill the concrete.



Figure 3.4: Installation formwork for ground beam is doing and used support wood to avoid formwork from falling down.

3.3.1.5 Install reinforcement for ground beam

After the installation for formwork done around site, work to tied reinforcement carried out, the reinforcement that needed depend on distance between one footing to another footing. Reinforcement beam should placing of reinforcement for footing and bound by using steel so that the reinforcement will strong.



Figure 3.5: Installation reinforcement bar for ground beam after formwork done to install, type for reinforcement bar used is Y16.

3.3.1.5.1 Method for reinforcement binding

- i. Cutting reinforcement bar



Figure 3.6: Skill worker cut the reinforcement bar by using cutter.

Reinforcement bar need to be measured first before cut to laught at occur difficulty during installation for reinforcement in construction site by using steel cutter.

- ii. Installation to tied reinforcement bar by used steel wire.



Figure 3.7: Skill worker used steel wire to tied reinforcement.

After the cutting work for reinforcement bar completed, work to tied reinforcement with link by using steel wire is doing.

iii. Reinforcement bar for ground beam completed.



Figure 3.8: Reinforcement bar completed and ready to install.

After to tied reinforcement completed by using steel wire, reinforcement bar ready to install at ground beam.

3.3.1.6 Infill the concrete

Cement mixed by using machine mixture because able to save time and number of worker usage could be reduce. Mixture was is a 50kg cement bag mixed with two sand wheelbarrow, a aggregate weelbarrow and water. After completed the concrete mixed, concrete will be filled with use wheelbarrow untill the concrete full in formwork as high 3 feet.



Figure 3.9: Work to infill concrete into formwork high as 3 feet.

3.3.1.7 Remove formwork

After the fill concrete to formwork done and concrete also already completely dry, remove the formwork by removing stopper stopper wood first. To remove formwork, hammer used to remove nail at open space and to remove nail at the hard space, worker use iron steel. wastage for formwork that came off and collected on one place only.



Figure 3.10: Unskill worker remove formwork after concrete totally dry.

3.3.1.8 Finish the ground beam

After work to remove formwork completed, the ground beam will look beautiful and tidy. New work which is turn can be done as working for example infill the sand, installation for column, brick work, installation frame for window and so on.



Figure 3.11: Work to remove formwork totally completed.

3.3.2 Machinery and tools used for construction of insitu concrete beam

In construction of insitu concrete beam, there have some machinery and tools need to be used for completion of construction concrete beam.

3.3.2.1 Machinery

i. Excavator

Normally, excavator machine used for excavation work on the ground. It can also be used for other purpose. This excavator machine, available in various size ranging from 7000 pound to 23000 pounds. The machine also can excavate the soil up to 17 feet deep (Richardson,2009). In this project,excavator machine were used for site clerance. By using excavator machine, it can greatly reduce the amount of labour and cost saving.



Figure 3.12: Excavator used to clear construction area.

ii. Concrete mixer

A concrete mixer is a device combines cement, aggregate such as sand, and water to form the concrete. A typical concrete mixer uses a revolving drum to mix the components. For smaller volume works portable concrete mixers are often used so that the concrete can be made at the construction site, giving workers ample time to use the concrete before it hardens.



Figure 3.13: Concrete mixer used to mix the concrete at construction site.

3.3.2.2 Tools

i. Hammer

A hammer is a tool meant to deliver an impact to an object. The most common uses for hammers are to drive nails, fit parts and break apart object. Hammers are often designed for a specific purpose, and vary in their shape and structure.



Figure 3.14: Hammer.

ii. Wheelbarrow

A wheelbarrow is a small hand-propelled vehicle, usually with just one wheel, design to be pushed and guided by a single person using two handles to the rear. The wheelbarrow is designed to distribute the weight of its load between the wheel and the operator so enabling the convenient carriage of heavier and bulkier loads than would be possible were the weight carried entirely by the operator.



Figure 3.14: Wheelbarrow used to bring brick and other material.

iii. Measuring tape

A measuring tape is a flexible ruler. It is a common measuring tool used at construction site. Its design allows for a measure of great length of the formwork and reinforcement bar that needed for build ground beam, the other advantage about measuring tape is it to be easily carried in pocked or toolkit.



Figure 3.15: Measuring tape used to measure length at construction site.

CHAPTER 4

CONCLUSION AND RECOMMENDATION

4.1 Conclusion

The conclusion of this report is about construction of insitu concrete beam 1 unit for 1 ½ half storey bungalow, that located at Kampung Bunut Payong, Kota Bharu, Kelantan. The name of owner for this house is Hassan bin Rahamat and Rosnah binti Jaffar. The objective of this report is to identify the construction of insitu concrete beam and the machinery and tool used for construction of insitu concrete beam. From this report, that can find out the construction of insitu concrete beam beginning from setting out, site clearance, installation of formwork in footing, installation formwork in ground beam, installation of reinforcement bar, infill concrete, remove formwork and finish. Other than that, this report describe the machinery and tools used for the construction of insitu concrete beam. The machinery used is excavator machine and concrete mixer. While, the tools used is hammer, wheelbarrow and measuring tape.

4.2 Recommendation

For the future report and new aspect about this topic, is recommendation to do a report about the construction of precast concrete beam. Construction of precast concrete beam is very popular among now. There are many advantages of using precast construction for beam and other part such as labour cost for concrete work and concrete cost can be saved and also be able to construct building in a short time.

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