



اَوْنِيُوْا تِيْكَوْلُوْجِيْ مَارَا
UNIVERSITI
TEKNOLOGI
MARA

DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

SEPTEMBER 2014

It is recommended that the report of this practical training provided

By

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2011151091

“REINFORCED IN-SITU CONCRETE DRAIN”

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)**

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 herein, prepared during a practical training session that I underwent at Larisan Maju Sdn Bhd 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 fulfillment of the requirements for obtaining the Diploma in Building.

Name : NOR AUNI SAADIAH BINTI MOHAMAD ANSOR

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Date : 29 SEPTEMBER 2014

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Thank you very much

ABSTRACT

This report briefly describes how to construct a reinforcement in-situ concrete drain. The objective of this report is to identify the machinery and tools used in the construction of reinforced drains and also to investigate the problems and solutions of the drains. It is produced based on the experience of five months at the project site. Observation has been made by site visit to the project site. In addition, it also can interview a person who is experienced in the work of constructthe in-situ drain such as site supervisors, contractors. It involves many parties and construction processes are very complicated. During the construction process being carried out some of the problems related with a construction method of the drains and get solve problems that have been identified. In conclusion, this report will describe in more detail about the method how to construct a reinforcement drain. Hope that this report can give a lot of advantages how the construction of reinforced in-situ concrete drain and the machinery and tool used for construction an in-situ drain also the maintenance in-situ drains.

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LIST OF ABBREVIATIONS

UiTM Universiti Teknologi MARA

CIDB Construction Industry Development Board

CHAPTER 1

PREFACE

1.1) INTRODUCTION

Reinforced concrete in-situ drains is a very important element in the construction of a residential building. The drainage system is also an essential part in a city or urban area, because it can reduce flood. Factors in selecting a drain depend on the plan that has been prepared. Selection of the drain is not associated with buildings constructed, because the structure of the drain was only to facilitate the users to avoid flooding or blockage. Before the work concrete drains conducted, a detailed inspection should be carried out on the drain in terms of size and number of steel reinforcement usage should be appropriate. If not followed as prescribed, it will reduce the strength of drains. The concrete to be used shall be qualified and the quantity should be sufficient and the concrete should be tested first.

Drains have different types and it has a way to build their own and different strengths. Based on this study, it is drains that have the simple construction method, but take some time to build it. Moreover, the drain is more suitable for all types of buildings, such as housing.

1.2) OBJECTIVE

The objective of this practical is to gain more knowledge about the drain such as:

- 1) To describe the method of construction of reinforced in-situ drains.
- 2) To identify the machinery and tools required in the construction of a reinforced drains.
- 3) To investigate the problems and solutions

1.3) SCOPE OF STUDY

The scope of study focused on the construction of a reinforced in-situ drains, machinery and tools required to construct the drains and also maintenance of reinforcement drains. Work of the drain started with the excavation of soil until the end of the concrete work. This means that, starting from the land excavator, levelling the work, installing the wall, installing the reinforcement, concrete floor drains and concrete slab drain. Moreover, the construction of a drain is also available plumbing works or works of sewage pipe. This project is located in Taman Emas, Pancang Bedena Sungai Besar Selangor Darul Ehsan.

1.4) Method of study

1) Preliminary data

- Observation method

To get the information more clearly and quickly, observation method is chosen. Information will be easily understood at a construction site. While looking at the construction site it will help to remember things easily. Besides that, camera can be used to assist in the construction; such as to take pictures at the site to see the work at the construction site.

- Interview method

Another method that can be used is interview. This method is very effective and suitable to get more detailed information about the projects carried out because a lot of expertise involved in the project such as interviewing engineers, site supervisors, contractors, project managers and skilled workers in the construction site.

2) Secondary data

- Book

To obtain information more clearly and concisely, the book is the one reference that can be used to find out more details about the construction of the building. There are several books that have been used to obtain information such as civil engineering book.

- Internet

Internet was used to search for additional information about how to construct a building and also to find the equipment and machineries used. With this method, it was able to obtain information quickly and easily.

CHAPTER 2

COMPANY BACKGROUND

2.1 INTRODUCTION

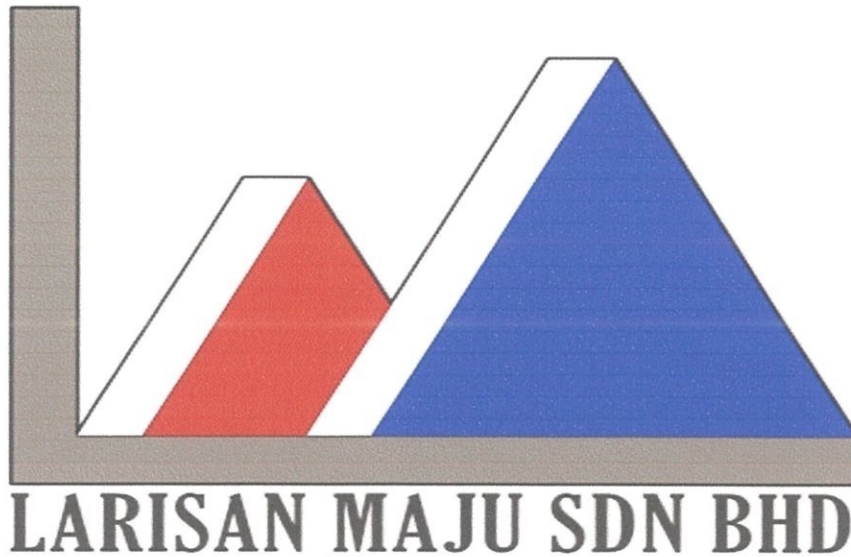


Photo 2.1: Company Logo

Source: Larisan Maju Sdn Bhd

LARISAN MAJU SDN. BHD. was incorporated on 21 September 2002. The company was established from Larisan Maju by Pn Arbaiah bt Samsuddin with authorised capital of RM 1,000,000.00 and the paid-up of RM750,000.00. The company established are as Housing Development and Building Contractor PKK Class A license and a licensed Bumiputra status CIDB Class G7.

2.2) COMPANY PROFILE

Logo of Company	 <p>LARISAN MAJU SDN BHD</p>
Company name	LARISAN MAJU SDN BHD
Registration no	559562-A
Registration date	10/08/2009
Company registration	SUITE B, 1ST FLOOR. WISMA HUP TAI, NO. 1 LORONG RAJA BOT, 41400 KLANG, SELANGOR DARUL EHSAN
Company address	NO.12 JALAN BUNGA MATAHARI, TAMAN PERTAMA FASA 4, 45200 SABAK BERNAM, SELANGOR DARUL EHSAN
No. Phone	
No. Fax	03-32161456
Email	larisanmaju@yahoo.com
Owner	Pn Arbaiah Bt Shamsuddin
Bank	MAYBANK (Account no: 5-12099-62208-1)

Name & accountant address	K. B. TAN & CO. 2ND FLOOR, WISMA HUP TAI, NO.1, LORONG RAJA BOT, 41400 KLANG, SELANGOR DARUL EHSAN
Name & address Secretary company	BT MANAGEMENT SERVICES SDN BHD SUITE B, 1ST FLOOR. WISMA HUP TAI, NO. 1 LORONG RAJA BOT, 41400 KLANG, SELANGOR DARUL EHSAN
No. phone & Fax	
Name	TETUAN WAN SHARIFAH JAMILAH
Legal advisor address	PARTNERS PEGUAMBELA & PEGUAMCARA NO.8, 1ST FLOOR, JALAN TP-1, TAMAN PERDANA, 45300 SUNGAI BESAR, SELANGOR DARUL EHSAN
No. phone & Fax	

Table 2.1: Company Profile

2.3 HISTORY OF COMPANY

Larisan Maju Sdn. Bhd. was established in 2009, in Taman Matahari, Sabak Bernam Selangor. It was established as a private limited company. Initial capital invested by Larisan Maju is five hundred thousand only. Larisan Maju experienced mainly in the field of infrastructure and building construction.

Location Larisan Maju operating company is in No.12 Jalan Bunga Matahari, Taman Pertama Fasa 4, 45200 Sabak Bernam, Selangor Darul Ehsan. Projects undertaken by the company Larisan Maju Sdn. Bhd engineering and building construction, however, Larisan Maju also not left behind in engaging in maintenance.

Larisan Maju Sdn Bhd, was registered with the Companies Act on 10 August 2009, with registration number 559 562-A. Now with 26 years of work experience in the field of construction, Larisan Maju have talent in performing all construction work, the company is now focused entirely on building construction and project management. Among the projects Larisan Maju under construction now is at Taman Pertama project Batu 40, Mukim Sabak Bernam .

2.4 MISSION AND VISION COMPANY

Larisan Maju Sdn. Bhd. is progressive, success and dynamic leading company in construction and development of housing project. The company is desirous to establish in construction field towards achieving Malaysia Vision 2020.

The company will continue to strive, improve and respond to the need and concern of our customers, suppliers, employees and communities in which it serves. The management strongly believe the universal principle which an accountability and dynamic management will lead to success and accomplish our mission.

2.5 COMPANY CHART ORGANISATION

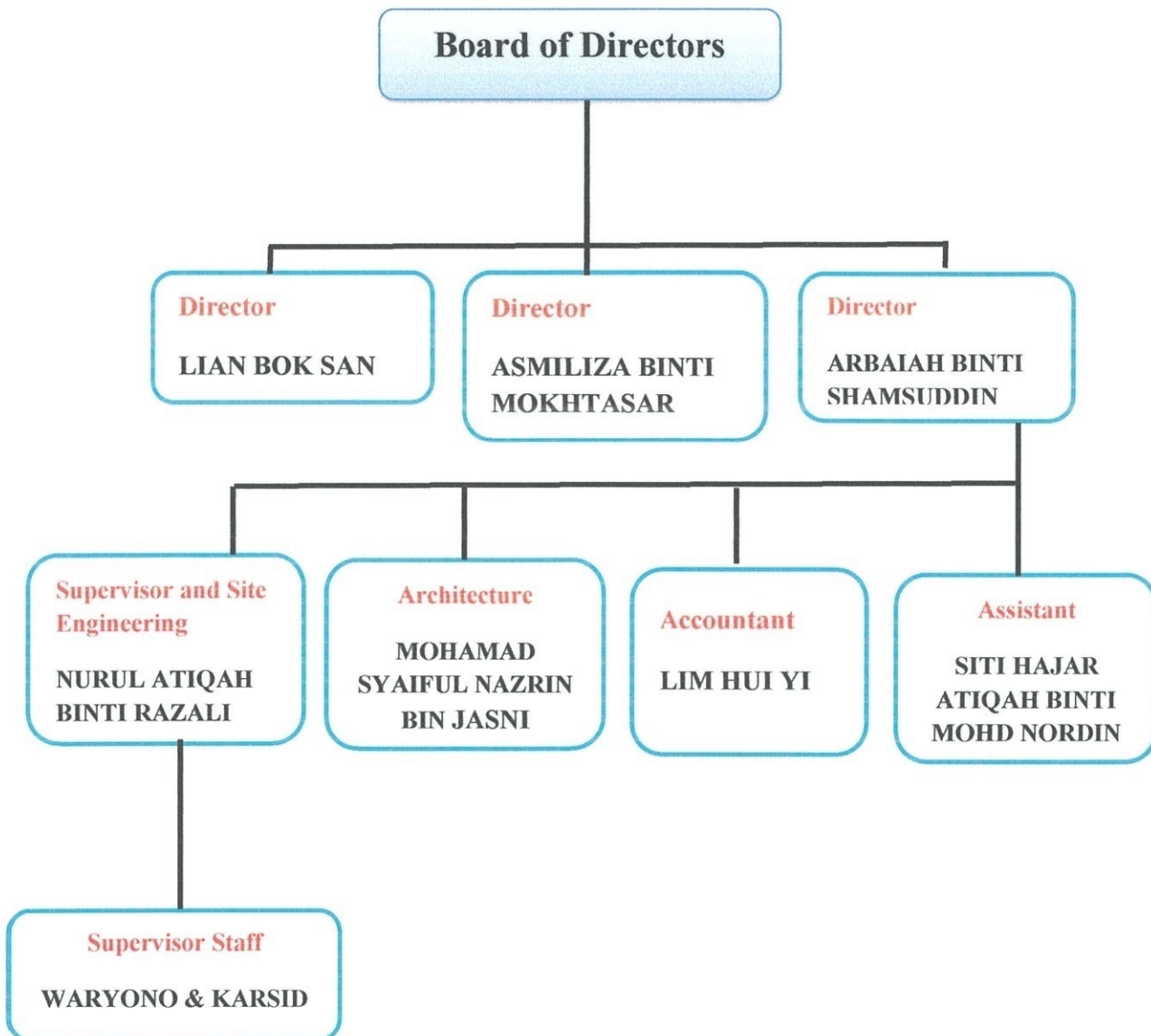


Chart 2.1: Chart Organization

Source: Larisan Maju Sdn.

2.6 LOCATION OFFICE AND SITE



Photo 2.2: Showing the location of office and site distance.

Source: Google Map

The company had 30 arce to build the project. Project location nearby Jabatan Pengangkutan Jalan (JPJ) Sabak Bernam Selangor. This project is a big project for the company, they will be build 10 type of housing and 3 type of shop on this land. The location consist a good place, environment ,security and accesibility for transport.

2.7 LIST OF COMPLETED PROJECT

BIL	PROJECT	PRICE	PHOTO
1	<p>JALAN ORKID</p> <p>Purposed to build 6 unit single semi- detached storey houses (PT 2936 – PT 2941), 9unit single terrace houses (PT 2942 – PT 2950) – (size 22' X 72') 9 unit single terrace houses (PT 2951 – PT 2959) (size 24' X 78') in lot 8618 Taman pertama, Daerah Sabak Bernam, Selangor Darul Ehsan</p> <p>Approved by Majlis Daerah Sabak Bernam (MDSB) and occupied on: <u>02 FEBRUARI 2009</u></p>	RM 500,000	
2	<p>JALAN ROS</p> <p>Purposed to build 6 unit single semi- detached storey (PT 2909 – PT 2914), 11 unit single terrace houses (PT 2915 – PT 2925) (size 24' X 72'), 10 unit single terrace houses (PT 2926 – PT 2935) (size 25' X 78') in lot 8617 Taman pertama, Daerah Sabak Bernam, Selangor Darul Ehsan</p> <p>Approved by Majlis Daerah Sabak Bernam (MDSB) and occupied on: <u>02 FEBRUARI 2009</u></p>	RM 500,000	

<p>3</p>	<p>JALAN KEKWA</p> <p>Purposed to build 20 unit single semi-detached storey houses (PT2730 - PT2749), in lot 3743 Taman pertama, Daerah Sabak Bernam, Selangor Darul Ehsan</p> <p>Approved by Majlis Daerah Sabak Bernam (MDSB) and occupied on: 17 MEI 2006</p>	<p>RM450,000</p>	
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Table 2.2: list of completed project

Source: Larisan Maju Sdn. Bhd

2.8 ON-GOING PROJECT

1. Purposed to build 12 unit 1 ½ double storey (size 39' x 75') and 14 unit 1 ½ double storey (size 42' x 75') in lot 904 Mukim Sabak Bernam, Daerah Sabak Bernam, Selangor Darul Ehsan. (RM299,000)



Photo 2.3: storey bungalow, Sabak Bernam Selangor



Photo 2.4: double storey, Sabak Bernam Selango

2. Purposed to build 2 unit double storey semidi type A (PT 56 – PT57), 8 unit 1 ½ double storey type B (PT 58- PT65), 10 unit 1 ½ double storey (PT660PT75) in lot 8611, Mukim Sabak Bernam, Daerah Sabak Bernam, Selangor Darul Ehsan. (RM480, 000)



Photo 2.5: Double Storey Semi-D, Sabak Bernam Selangor



Photo 2.6: one and half double storey, Sabak Bernam Selangor

3. Purposed to build 8 unit double storey 1 ½ type (PT 8104 – PT8111), in lot 871, lot 872, lot 873 Mukim Panchang Bedena, Daerah Sabak Bernam Selangor Darul Ehsan. The total amount of construction and completion is RM 340,888



Photo 2.7: Double storey semi-D, Panchang Bedena sabak bernam

4. Purposed to build 12 unit double storey 2 ½ type (PT 8056 – PT8061 & PT8068 – PT8069), (size 22' x 80') in lot 871, lot 872, lot 873 Mukim Panchang Bedena, Daerah Sabak Bernam Selangor Darul Ehsan. The total amount of construction and completion is RM 430,000



Photo 2.8: Double storey house, Panchang Bedena Sabak Bernam

5. Purposed to build 26 unit double storey 2 type (PT7989 – PT8005 & PT8007 – PT8015), (size 23' x 80') in lot 871, lot 872, lot 873 Mukim Panchang Bedena, Daerah Sabak Bernam Selangor Darul Ehsan. The total amount of construction and completion is RM 340,000



Photo 2.9: Double storey house, Panchang Bedena Sabak Bernam

6. Purposed to build 8 unit double storey 1 ½ type (PT8112– PT8119), (size 40' x 80') in lot 871, lot 872, lot 873 Mukim Panchang Bedena, Daerah Sabak Bernam Selangor Darul Ehsan. The total amount of construction and completion is RM 430,000

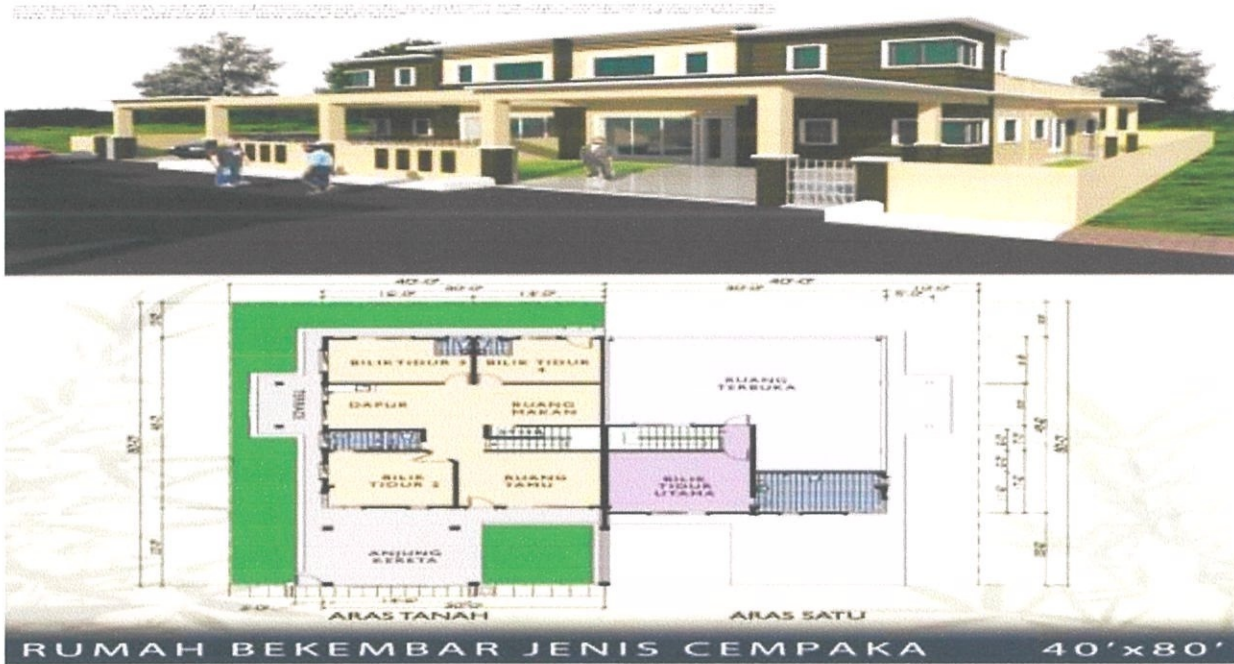


Photo 2.10: Double storey house, Panchang Bedena Sabak Bernam

2.9

INCOMING PROJECT

1. Proposed to build 6 unit storey bungalow type A (PT3436 – PT 3441) , 2 unit storey bungalow type A1 (PT 3442 – PT3443), 4 unit storey bungalow type A2 (PT3444 – PT3447) , 10 unit storey bungalow type B (PT3996 – PT3405), 10 unit storey bungalow type B1 (PT3406 – PT3415) , 10 unit double storey type B2 (PT3416 – PT3425), and 10 unit storey bungalow type B3 (PT3426 – PT3435) in lot 2143 Mukim Sabak Bernam, Daerah Sabak Bernam, Selangor Darul Ehsan. RM450,000




Photo 2.11: double storey bungalow, Sabak Bernam Selang



Photo 2.12: double storey bungalow, Sabak Bernam Selangor

2.10 APPENDIX



No. Siri AD 306713

PUSAT KHIDMAT KONTRAKTOR
KEMENTERIAN KERJA RAYA MALAYSIA

NO. SIRI PENDAFTARAN
1005 A 2003 0067

Adalah disahkan Syarikat seperti butiran-butiran berikut berdaftar dengan Pusat ini tertakluk kepada syarat-syarat yang tercatat di dalam sijil ini.

TARIKH MULA BERDAFTAR DENGAN PKK: 21/01/2011

NAMA DAN ALAMAT BERDAFTAR:	TEMPOH SAHLAKU:
559562-A LARISAN MAJU SDN BHD SUITE B, 1ST FLOOR WISMA H.P. TAJ NO. 1, DORONG RAJA BOT 41400 KLANG SELANGOR	DARI: 21/01/2011 HINGGA: 20/01/2013

KELAS	KEPALA	SUB KEPALA
A	I	1, 3a, 5, 7a, 7b, 7c, 7d***
	II	1, 2a, 2b, 5, 7a, 7b, 8a, 8b***
	IV	1, 2b, 2d, 2e, 3a, 3b, 3c, 3d, 6a***

PEGAWAI SYARIKAT YANG DITAJLHMIKAN	NO. K.P	JAWATAN
ARBALAH BINTI SHAMSU DEIN		PENGARAH
ASMILZA BINTI MOKHI ANAR		PENGARAH
*****	*****	*****

(ANWARSA BT MUHAMMAD DAIN)
 h.p. Pengarah
 Pusat Khidmat Kontraktor
 Kementerian Kerja Raya Malaysia

Tarikh Cetak: 11/01/2011

Photo2.13 : Certificate contactor

Source: Larisan Maju Sdn Bhd



No. Siri TB 110574

PUSAT KHIDMAT KONTRAKTOR
KEMENTERIAN KERJA RAYA MALAYSIA

SIJIL KONTRAKTOR KERJA
TARAF BUMIPUTERA

Adalah dengan ini syarikat tuan seperti tercatat di dalam Sijil ini diiktiraf sebagai kontraktor kerja bertaraf Bumiputera. Pemberian pengiktirafan ini adalah tertakluk kepada syarat-syarat termaktub di belakang sijil.

<u>NO. SIJIL PENDAFTARAN</u>	<u>KELAS PENDAFTARAN</u>	<u>TEMPOH SAHLAKU</u>
1005 A 2003 0067	A	DARI 21/01/2011 HINGGA 20/01/2013

NAMA DAN ALAMAT BERDAFTAR

LARISAN MAJU SDN BHD
SUITE 01 1ST FLOOR WISMA HEPTAI
NO 1, LORONG RAJA BOI
41400 KLANG
SELANGOR

PEGAWAI SYARIKAT YANG DIJALIAHBAS

ARBALAH BINTI SHAMSUDDIN
ASMILIZA BINTI MOKHTASAR

SO. K. P.

JAWALAN

(ANARESA BT BINTI HAMDAD DAIN)

b.p. Pengarah
Pusat Khidmat Kontraktor
Kementerian Kerja Raya Malaysia

Tarikh Cetak : 11/01/2011

Photo2.14: Certificate contractor

Source: Larisan Maju Sdn Bhd



A 126129

Perakuan Pendaftaran

Adalah dengan ini diperakoi bahawa kontraktor yang dinyatakan di bawah ini telah berdaftar dengan Lembaga mengikut Bahagian VI Akta Lembaga Pembangunan Industri Pembinaan Malaysia 1994. Pendaftaran ini adalah tertakluk kepada syarat-syarat yang telah ditetapkan di belakang Perakuan ini

No Pendaftaran: 0120030311-SL081167

Nama Kontraktor : LARISAN MAJU SDN. BHD.

Alamat Berdaftar : ROOM 101, 2ND FLOOR
WISMA HUP TAI
LORONG RAJA BOT
41400 KLANG
SELANGOR

Gred, kategori dan pengkhususan berdaftar

G7	Tiada limit	B	B04
G7	Tiada limit	CE	CE21

Tarikh Mula Berkuatkuasa : 08 JAN 2009

Tarikh Habis Tempoh Perakuan : 24 JUN 2010*

*Perakuan ini hendaklah diperbaharu seawal-lewatnya 60 hari sebelum tarikh habis tempoh

STATUS : DORMAN - Kontraktor yang tidak diawardkan projek dan tidak menyertai tender semasa perakuan pendaftaran ini dikeluarkan.



(DAPOR IR. HAMZAH HASAN)
Ketua Eksekutif
Bertarikh: 08 JAN 2009

Photo 2.15: Certificate of registration with CIDB

Source: Larisan Maju Sdn Bhd









Photo2.16: Certificate of registration with vendor

Source: Larisan Maju Sdn Bhd

2.11 EQUIPMENT AND PLANT

2.11.1 Equipment and plant used on construction site

NO	EQUIPMENT/ PLANT	FUNCTION	PICTURE
1	Lorry	To bring and send a matter in huge amount of quantities in construction area such as, sand, wood and stone to the site. Therefore lorry used to facilitate complete job	
2	Comb spreader	Comb used to smooth floor surface.	
3	Concrete Mixer	Used when the quantity of concrete in a small amount.	

4	Concrete Vibrator	Used to ensure that the pour is even and free of air bubbles so that the concrete will remain strong and have a smooth finish even after the formwork is removed.	
5	Crain	Used to carry the material that heavy load.	
6	Excavator	To excavate the soil easily and faster.	




7	Shovel	Shovel is a tool for digging and moving the materials such as soil, sand, cement and aggregate.	
8	Dumping level	A dumpy level, is an optical instrument used in surveying and building to transfer, measure, or set horizontal levels	
9	Wheel loader	Wheel loader is a piece of construction machinery that is equipped with a front mounted bucket. Bucket is supported by a boom structure	

Table 2.3: equipment and plant

CHAPTER 3

CASE STUDY

3.1 INTRODUCTION



Photo 3.1: reinforced in-situ concrete drain.

This project is “Cadangan Membina Skim Taman Perumahan”. This study describes and identifies the method to build a drain that is used in the construction site with good drainage in the residential house. In Malaysia there are a lot of types of drains, but in this case study only focused on the ways of construction a rectangular shape of reinforcement drains. The project is located in lot 871, lot 872 and lot 873 Mukim Panchang Bedena, Daerah Sabak Bernam Selangor Darul Ehsan.

Drain is commonly used in the building construction industry in Malaysia. The drains are used in any site housing. In construction of drains on the structure of the house is very important. Drains construction is necessary for every building in the area of house. It was used as a substance that is required to avoid flooding or blockage. This project aims to build a drain to a residential house. For this project, the drains are built for a suitable long-term users, therefore it is not constructed drains are using precast reinforced concrete U-drain, but the residential is using the drainage system of reinforced in-situ concrete drain to avoid many problems.

This project used an in-situ reinforced concrete drains size of 58 inches (W) x (depends on plan) (H) x 5ft-9ft (L). The size of the drains will not be fixed for each of the construction of the drains and the readings also will not be fixed by the amount given, this is because the drains constructed in descending order. There are many advantages and few disadvantages of using in-situ reinforced concrete drain. The advantage is the resistance of the strength of concrete drain. The main advantage is to drain the water from the waste from the house to drain easily without penetrating into the soil. In addition, the method of in-situ concrete drain is also easy to operate even it takes a long time to complete.

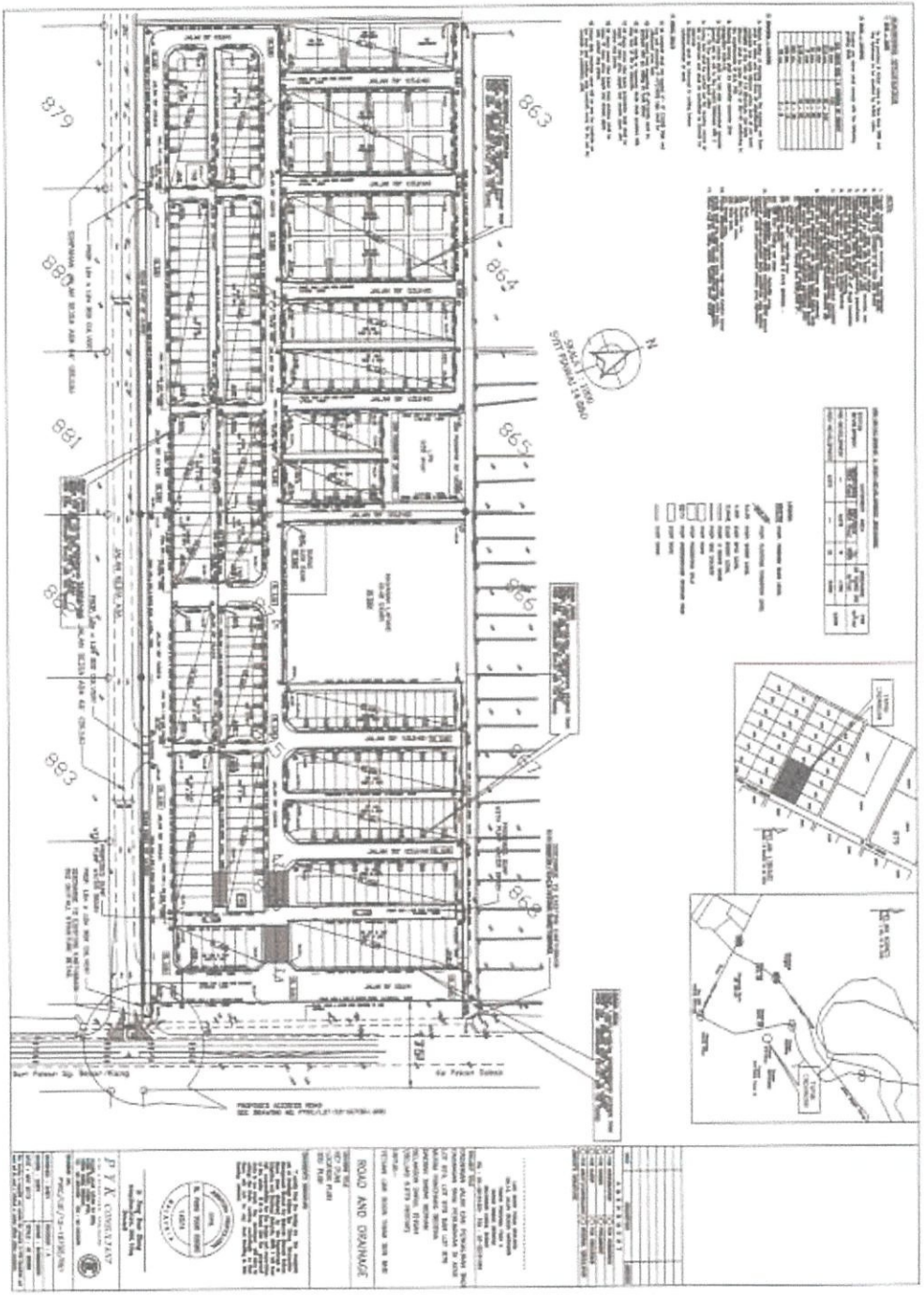


Photo 3.2: Construction Plan of Reinforced Concrete

Sources: Larisan Maju Sdn Bhd

3.2 CONSTRUCTION METHOD OF DRAIN

The constructions of reinforced drains are described as below:

3.2.1 Preliminary work

Preliminary work is the work done before the excavation works. In this preliminary work, there is a work to measure the ground level and the work carried out by the surveyor. Normally, the contractor will appoint the surveyor to carry out this work. Preliminary work is important because of the need to find a point pole position and the position of the house as required in the architect's drawing. If the project is done without carrying out this preliminary work, the problem will exist as the columns are not correct and will broke again. This will be a waste of time, energy and money. During the survey work carried out, the point of the pole shall be marked with stone and concrete, so it will not easily lost. This mark, it will serve as a reference for workers in the construction of buildings.



Photo 3.3: stone and concrete for marked the point centre, Sabak Bernam Selangor

3.2.2 Excavate the soil

Before excavation work, the drain shape should be ensured. In this project, the shape of drains to be built is a square shape. The dimension of the drains in this project depends on the drawing. In the construction of drains, there are some things that need to be determined, such as the shape and dimension of the drains to be built. The shape and dimension of the drain is selected based on the site area. The work to excavate the soil can be done. In this project, soil was excavated with a depth of 9 feet. The work to excavate the soil was done using the excavator machines. The excavator machine helps to excavate the soil of drains on the desired dimension easier and faster.



Photo3.4: Excavate the soil use excavator machine, sabak berna selangor

3.2.3 Level the drain

After the excavation complete, the drains necessary was excavate according to size, level and slope. Drains need to be avoided from over excavate, because this will cause over depth. In this matter, after the excavation was carried out, the worker have to use level dumping tool to determine the reading on soil at ground level and record all the readings for every excavation conducted. This is because; it is to know the readings will not over from excavated. Apart from that, the wood also needed to mark the level from centre and the wood will be measured from below with reading of 2 inches for screeding and 1 inch for sand.

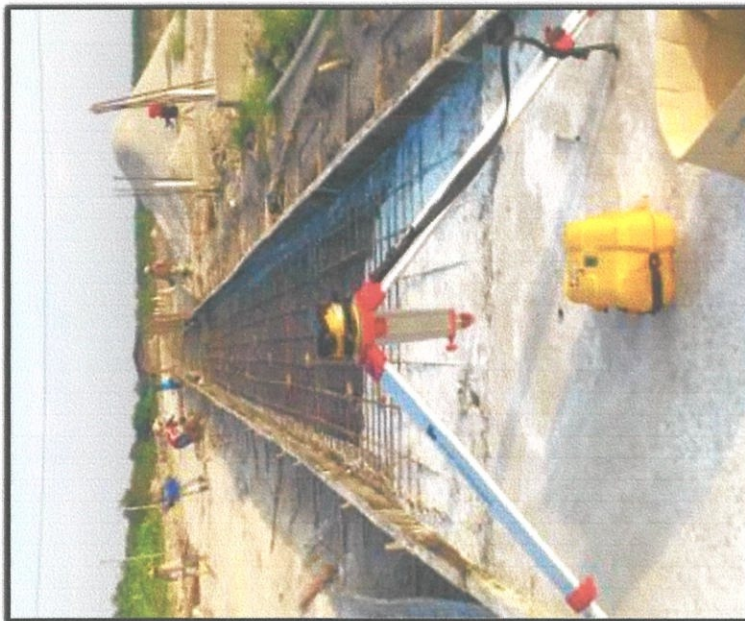


Photo3.5: Levelling Work



Photo 3.6: wood at the centre of drains, sabak bernam selangor



Photo 3.7: installation of screeding in drains, sabak bernam selangor

3.2.4 Wall Drain

After completion of the levelling work, the work that will be carried next is the wall drain. Installation of drain wall is the most difficult work to do, because the wall drains require installation twice, the next installation is the external plate and internal plate, between the plate installation, reinforced the work will be conducted, the iron size is 16 mm and 12 mm and iron type R 8 as a binder, this process will take some time to complete. There is a finished tied reinforced before the concrete work done. However, 5 employees were required to complete the drain.



Photo 3.8: molds use to install the wall drains, sabak bernam selangor

3.2.5 Reinforcement Drain

The next step, after the installation wall drains work is completed is the work to installing the reinforcement can be conducted. Installation of the drains reinforcement is one stage in the construction of the drains structure. Installation of reinforcement consists to the walls and floor slab of the drains. Installation of reinforcement for the wall drains is only 1 layer. Type of steel used is Y8 for horizontal with spacing 150mm centre to centre. Reinforcement drains is an important material used in construction drains. It is a framework that will strengthen a construction. The purpose of reinforcement used in this construction, is to add strength to the concrete. In addition to compression and tensile forces, shear forces also occur on parts of the construction. The important thing of all in the installation of reinforcement is the type of steel use. All types of steel bars used for reinforcement shall not rust; oil or materials that can prevent concrete strength to reinforcement.

In addition, the holes for the inlet and outlet of water will be made before the concrete work done. In the construction of the drains the water inlet holes were made by two holes on the floor of the drains. The water outlet holes were made at holes in the wall of the drains

Type and size reinforcement	Function of reinforcement
Y8	The reinforcement is used as main reinforcement in wall and floor drains.

Table 3.1: type and size reinforced drain, sabak bernam selangor



Photo 3.10: reinforced that has been bent for drains, sabak bernam selangor



Photo 3.11: installation of reinforced drains, sabak bernam Selangor

3.2.6 Installation Of Floor Drains

Installation of reinforced works the floor drain is installed together with the installation of reinforced walls, area of the floor drain is 58 inches, so the readings are 29 from centre and 2 inches for walls drain which is the same size as the slab drains. The gradient of drains are required for each drain line to easy the drainage water flow, when the rains are built in horizontally of flow water will be stagnant in the drains. The total of employee needed is 3 were tasked with launching the work of completed the drain. Normally this drain installation takes one day to complete.



Photo 3.12: reinforced for floor drain, Sabak Bernam Selangor



Photo 3.13: reinforced for floor drain, Sabak Bernam Selangor

3.2.7 Concrete Works

Concrete work will be done after the completion of the installation of the reinforcement and the formwork in the drains. Concrete is a mixture made from a combination of cement and aggregate. In this project, grade concrete 30 has been used because it is suitable for housing project like this, to get the concrete high quality and strong, Test on the concrete strength in test first in the concrete plan before it used. For this project, concrete usually booked in plan that near like Chuan Seng industry because, the process concrete drain will be quicker if concrete plan that near with construction site. The cranes were used in concrete work. The purpose of cranes construction sites is to facilitate and accelerate the work pouring concrete in the drains. Moreover, while doing the work of concrete, vibrator machine was used in the construction of drains. The vibrator machine used is to ensure that the concrete poured is compact and fills the entire mold.

3.2.8 Installation of slab

After all the work is completed, the works to concrete slab this drain will be conducted. Concrete works slab is the last works in this drain construction process. These concrete works drains need to be carried out continue to follow reinforcement installation limit. Works concrete need of workers that many to ensure concrete can be flattened before manage it is hardened. However, 6 employees will be enough for settle the housing project which carrying out concrete work to every drain.



Photo 3.15: reinforced in floor drain, sabak bernam selangor

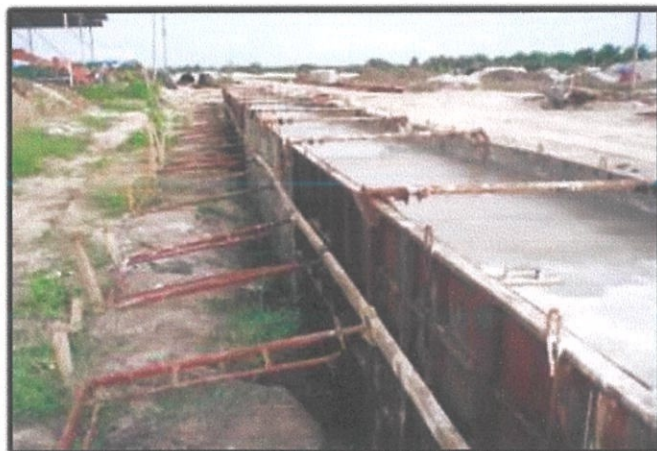


Photo 3.16: concrete of slab drain, sabak bernam selangor

3.2.9 Test

After the concrete work has been completed, the formwork is opened after 1 day the concrete of wall drain done. Next, testing will be done after the all of drains finish installed. This test will take only 2 day. For example, the drains test will be done in a way to make the water reservoir in the drains. The water reservoir will be marked and recorded the highest water level of the reservoir. Then, the next day, examine and record how many inches drop of water came down from the reservoir water in the drains, from the first day of a water reservoir made. If, within a day, water reservoir only drop about 1/2 inch, this means that the drains have no leaks and is in good condition. On the other hand, if the water collected decreased by 3 or 4 inches in two day, meaning that most likely this drain has something wrong with it because if the drains still have the water, this meaning the drains is alright. The main purpose of this test is to make sure the water flow running smoothly. This pump is used to help to remove the water from the drains by pumping water using a pump and water will be sucked out through a pipe from the pump.

3.3 MACHINERY AND TOOL USED FOR CONSTRUCTION OF REINFORCEMENT DRAINS

3.3.1 In the construction a drains, there are some machinery and tools need to be used for completing of construction reinforcement drains.

Machinery

1) Excavator

In this project, excavator machine were used for construction of reinforcement drain. Excavator machine are used to excavate the soil. By using excavator machine, it can reduce the amount of labour and cost saving. In addition, excavator machine also help speed up the process of soil excavation work. Normally, by use of excavator machines, the labour that is required is four workers only.



Photo 3.17: excavator

2) Concrete Vibrator

Concrete vibrator is a construction tool in the construction of pouring concrete. The machine vibrator is used to ensure that the concrete is free of air bubbles and has a smooth finish on concrete when the mold is removed. This tool is essential on large load bearing projects. The machine uses an off-centred weight, which rotate as much as 10,000 times a minute, causing large air pockets in the concrete to disperse as the concrete is shaken. Especially in pours of low slump concrete, which uses minimal water, the use of a vibrator is essential to ensure that the concrete does not bubble or form holes. This machine is important to build the reinforced in-situ concrete drain so that the wall drain looks neater. It is used in concrete work done on the in-situ drains of the wall.



Photo 3.18: concrete vibrator

3) Mobile Crain

Mobile cranes function mainly to assist in people to carry heavy items. Generally a mobile crane is suspended by wire rope and sheaves. This crane type is wheeled type used in construction site that is medium, easy displaced from a different place through usual road. Cranes that highly control wide area but need position that is flat and stable. Normally, an overhead crane can carry 2 to 3 tons and a height of 500 tons or more. Now, it is considered as a vital machine in our modern world and very important at site area.



Photo 3.19: Mobile Crane

4) Lorry

Lorry is the most widely used for transporting material such as sand, gravel, soil for construction industry. The machinery is used to deliver the material from one side to another site, such as when excavation soil works are conducted, it also used the lorry to transfer the material.



Photo 3.20: lorry for pick up soil

5) Concrete mixer

Concrete mixer is a tool used in the construction to make the concrete. A concrete mixer also commonly called a cement mixer is a device that can combine cement, aggregate such as sand or gravel, and water to form 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 the workers ample time to use the concrete before it hardens. This machine usually used when the total of concrete for make the drain is in small amount and the works will slow when use this machine it's because the way to make the materials with one by one, starts with entered the sand, aggregate, water and cement.



Photo 3.21: concrete mixer to mix the cement

6) Shovel

Shovels are common tools that are used in construction site. Shovel is a tool for digging, lifting, and moving bulk materials, such as soil, sand, and aggregate. Shovels are used as a hand tool for shovelling soil, sand or rock at the site. This shovel is also important in the construction of the drain because the sand is put into the drains and will flattened using a shovel.



Photo 3.22: Shovel for digging the soil

CHAPTER 4

PROBLEM AND SOLUTION

4.1 INTRODUCTION

In order to complete the project and this report, there are various problems that have arise and have been disrupting the process of completing a drain on site. There are many problems have arisen in connection with the management, the employees, the weather, and many more. This problem is common and somewhat disturbing construction work. However, the problem is not inevitable by any party because it is an unplanned event and need to be addressed as soon as possible. But every problem there are have the solution, and the responsible party must find a way to ensure that the desired solutions to the project as usual.

4.1.1 PROBLEM

Problem happened during the process is

1) Communication problems

Issue

Communication between all parties is the best delivery method to get a clear understanding of the construction process. With this, communication is very important for someone to be the leader of the workers. Without a good communication, other problems will arise and the problem will increase more. Problems cannot be solved properly if we are in a state of poor communication. This is so because, the workers at the site is mostly foreign workers and their lack of fluency to speak Malay. They also cannot communicate in English. Moreover, the problem for taking the time to discuss with the specialist workers such as engineers, architects and others are also a problem as they experience the hustle and bustle. Problems communicating with superiors also often cause problems because if there are two changes that need to be done on site and not in accordance with the drawings, the site is difficult to explain to the parties involved.

Solution

Communication problems can actually be solved by good meeting site. In this meeting, the authorities can inform about the problems that occur on the site and all design changes can be expressed through a meeting. In this meeting also, the site supervisor can communicate well with all parties. In addition, the site supervisor should describe all planning projects from time to time to the parties involved. Not to focus on the only site supervisors, superiors, such as the monitor should also keep abreast of the construction site. In addition, the monitor is not necessary to always find mistakes on the job site supervisor that can cause displeasure among the sites.

2) Improper Site Preparation

Issue

Arrangement items at construction sites that are not proper and do not have an uncluttered at all times. This will be a danger to the workers involved and will also disturb the workers to move from one place to another. This is because, with the state of things which are not arranged properly will make the space more cramped site. In addition, the vehicle will also work problems to bring in the materials to the construction site. Materials such as wood, stone, iron, machines and so on will be exposed to the risk of damage. Materials such as wood will rot and become unsuitable for use, and this will cause a loss.

Solution

How to overcome this problem is to provide a specific place to keep all items. Storage must also be separated by category or type of material. The material should be kept out of the rain is inevitable, therefore these items should be placed in a covered site conditions will look more neat and comfortable.

3) Flooding

Issue

Flooding will happen when rain continues for 12 hours. Because of this it will cause difficulties to continue the work because of the road conditions become flaccid and difficult to move the transportation even the structure of drain are large.

Solution

The solution is to use a water pump to suck up the water; the solution is to pump the water and will be included in a large barrel to use as concrete work, to facilitate the use of water during do the work. Besides, water will be pumped into the trench around it to clean the water that has flooded the site.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

CONCLUSION

The conclusion of this report is about the construction of a reinforced in-situ drain in residential site that located at Panchang Bedena, Sabak Bernam, Selangor Darul Ehsan. From this report, we can find out that the construction of reinforced in-situ drains is beginning from preliminary work, excavate the soil, installation wall, reinforcement, floor, slab and concrete work, and the last is test. Other than that, machineries and tools are very important role in any industry. During the construction site, there are various functions of machinery and equipment. The machineries and equipment is importance to facilitate the work to save time and labour. While at the construction site, there are various machines and equipment function. Installation for the construction of reinforced drain is not easy. Therefore, planning for the installation of reinforced drain is very important. It is used in the construction site to explain how to do the tasks related to the work done on construction sites and how to operate the machine or equipment. In addition, each project will have a problem and the solution. So, when a problem arises such as when the workers are not paid a salary, the problem that will arise is the workers will run, so the manpower needed to complete the drain will be decrease. As contractor we shall be responsible and pay attention to the workers in order to facilitate the job quickly.

RECOMMENDATION

Based on the knowledge and observations over five months during at site project, we found a construction site that did not follow the safety on site guideline, so there are some recommendations for this project. For example

1. Provide safety equipment to workers.

Contractor shall provide safety equipment such as safety boots and helmets to prevent injuries from happening to employee. This equipment is important for all employees working at the project site. Contractors can take action to employees who do not comply with the laws site because it is one mistake to not comply and wear perfectly.

2. Project signboard

Project signboard installation that are late and installed in hidden places. This is an important sign that the person entering the site should be easily found and people can see that the on-going project.

3. Planning job

To work in accordance with what has been arranged as the plan has been prepared to facilitate the employee to complete the construction correctly and properly.

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