DEPARTMENT OF BUILDING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

WORK ON UPGRADING DRAIN

Prepared by:

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2019296556

DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

FEBRUARY 2022

It is recommended that the report of this practical training provided

By

Muhammad Hazrul Amin Bin Abdul Razak

2019296556

entitled

Work On Upgrading Drain

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

Report Supervisor : Dr Nor Asma Hafizah Bt Hadzaman

Practical Training Coordinator : Dr Nor Asma Hafizah Bt Hadzaman

Programme Coordinator : Dr. Dzulkarnaen Bin Ismail.

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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 Fazli Electrical 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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UiTM ID No : 2019296556

Date : 10 January 2022

ACKNOWLEDGEMENT

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

First of all, I would like to acknowledge myself because felt gratitude for the guidance and advice throughout practical training or internship surrounded by good and great people. The first thing that matters is I would like to thank and grateful to my boss Encik Fazli for giving an opportunity to continue my second last semester which is practical training under his own company 'Fazli Electrical'. In addition, also special thanks to Encik Mohd Faizal , my supervisor in-charge for always being with me to give guidance and develop my skills and understanding in this work scope. He also helps a lot if I don't understand a lot of things when at the site and enabled me to feel this time is real working in civil works though this is only practical training. They are also willing to cooperate and their help to enhance my knowledge in this construction industry. It is the best gift from God and honour for me to involve and given this opportunity work in this company.

Furthermore, I was indeed to thank all lecturer that has always been helpful for all the technical issues during graduate studies at Uitm Perak. They are also provide guidance for me to become a better and successful student. I would like to extend my gratitude to lecturer who was involved during my practical training is Dr Nor Asma Hafizah Bt Hadzaman, Report Supervisor and Practical Training Coordinator, Ir Raja NurulHaiza, Evaluation Lecturer and Dr Dzulkarnaen Bin Ismail, Programme Coordinator. Their effort and motivate to me that contribute to succeed my practical training and report.

Last but not least, have to be thankful to my beloved parents for sacrificing so much time throughout this study.

ABSTRACT

Drain installation is very important thing nowadays. In fact, the contents of this report will be discussed about how important the construction of this drain installation. The aims of this topic is to purpose that the installation of this is very important in every place in the country as it can overcome all the problems faced in a place. Until today, we can see in Malaysia there are still many things happened like floods because the installation of these drains some people think it is not very important things. The objective from this topic is environmental protection which it is can control of environmental pollution, improve environmental quality to enable healthy ecosystem. Most importantly is to prevent the damages and maintain such an environment that no affect the public health in general. To illustrate the function drain installation it can evaluate in terms of various aspects before and after the construction of a drain in a place. To sum up, this report as we can see the effectiveness of these drain installation can solve any matters and impact for environment will get better in the future.

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INTRODUCTION

1.1 Background of Study

A drain is a pipe that serves only one building as a means of conveying water and waste water away to a sewer. Drainage is often a major element of civil engineering and construction projects and it is necessary to avoid flooding and other damage. The detailed drainage design is a plan or set of plans used to inform the contractor of the requirement for surface water drainage on site. A proper drainage system works to prevent excess water from damming up either in the ground surface or underground. Excess water, especially from rain, can easily build up without a proper drainage system.

First, the importance of proper drain on a construction site to ensure there's no problem with flooding at the job site. Without proper drain at construction site, contractors will often have to remove the paved area that's part of the site and it will be leading to erosion that can cause further construction delays. Then, it is important to prevent landscaping from getting destroyed because the water that floods out onto the properly will end up destroying all of the landscaping and the walkways. The advantages of U-drain is easy to install with its simple and bolt-together design. Its also easy to place and maintain a straight drain line during the installation.

However, the aim of this is to discover the drain construction is important in Malaysia where each place needs to install drain to avoid flooding problem at some place.

1.2 Objectives

There has three major objectives of drain construction are :

ii) To explore the features and design consideration of precast u-shape drain

iii) To explain the construction method of precast u drain installation

iv) To identify the machineries and tools

1.3 Scope of Study

First and foremost, this study is carried out at Lenggong, Perak which is district of Hulu Perak and Batu Kurau, Perak district of Larut Matang & Selama. Here, has two site drain construction which at RPA Gua Badak and Kg. Baru Selat Pagar. In this study more focus for construction to install the drains only. What I learned or studied is about the methods to install the drains including used of materials and machineries. Other than that is involvement project by client, sub-contractor and supplier.

1.4 Methods of study

Methods are the specific tools and procedures by me use to collect and analyze the data from the study/site.

The data that has been collect and analyze from the study/site are :

1. Observation

I was observe the methods of drain installation at construction site . For 4 months, that I involve in drain construction for an example monitor everyday at the construction site. I used take the pictures to observe it.

Figure 1.0 RPA Gua Badak

Figure 1.1 Batu Kurau, Perak

Figure 1.2 Kg Baru Selat Pagar

2. Interviews

When do I observe this study at the site, I had been asked to labors for example ‘ Why drain installation should be carried out at the top first’. Then , I often asked question to my supervisor in-charge to more understand about this method at the site.

3. Document reviews

The document that I refer to understand in this method is Laporan Kemajuan Kerja Mesyuarat Tapak Bil.8.

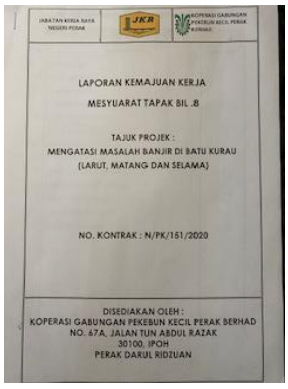

LAPORAN KEMAJUAN KERJA
MESYUARAT TAPAK BIL .8
TAJUK PROJEK :
MENGATASI MASALAH BANJIR DI BATU KURAU
(LARUT, MATANG DAN SELAMA)
NO. KONTRAK : N/PK/151/2020
DISEDIAKAN OLEH :
KOPERASI GABUNGAN PEKEBUN KECIL PERAK BERHAD
NO. 67A, JALAN TUN ABDUL RAZAK
30100, IPOH
PERAK DARUL RIDZUAN

Figure 1.3 Document Project

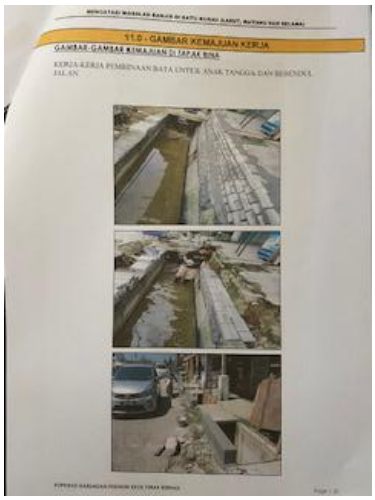


Figure1.4 Progress Report

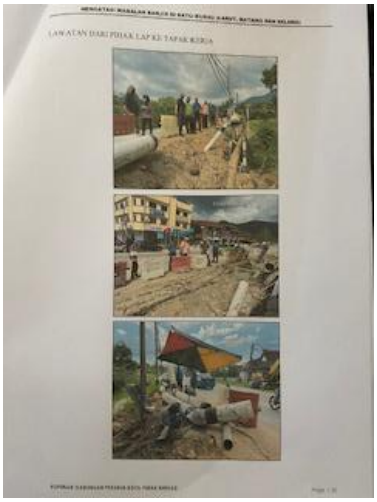


Figure 1.5 Progress Report

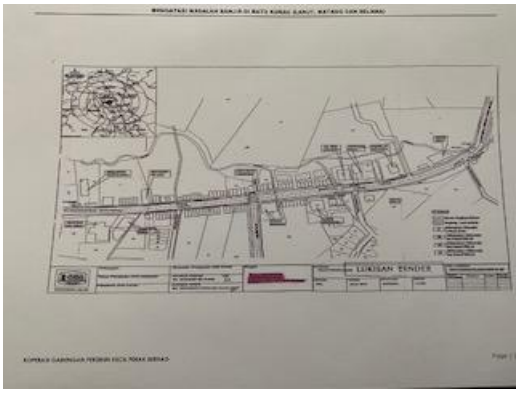


Figure 1.6 Site Plan

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

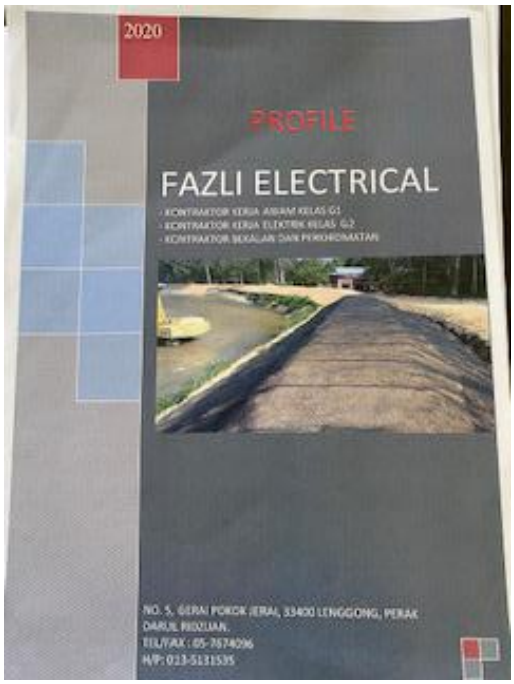


Figure 1.7 Company profile

Fazli Electrical was established on 18 June 1999 with the aim of increasing Bumiputera participation in the field of civil and electrical engineering as well as supply and services.

Starting with a small operation as a sub-contractor, the company is now registered with the Malaysian Ministry of Finance, Contractor Service Centre and Malaysian Industrial Development and Construction Board to realize the company's ambition to become a major Bumiputera leader in the field of supply and engineering.

The company's core business is now more focused on civil and electrical engineering works as well as the supply of workshop equipment for government departments and government-linked agencies.

Then, is the of Fazli Electrical to continue to be given opportunities in this venture and become a strong and competitive Bumiputera company. In the hope that you all can give due consideration to the Fazli Electrical company to equally participate in the existing business opportunities.

2.2 Company Profile

Company Name : Fazli Electrical

Registered Address : No.5 Gerai Pokok Jerai 33400 Lenggong, Perak

Date of Registration : 18 June 1999

ROB Registration No. : IPO145127-A

Phone Number / Fax : 013-5131535/05-7676833

Form of Business : Sole Ownership

Type of Business : Civil and Electrical Engineering, Supply and Service

Working Capital : RM 100,000.00

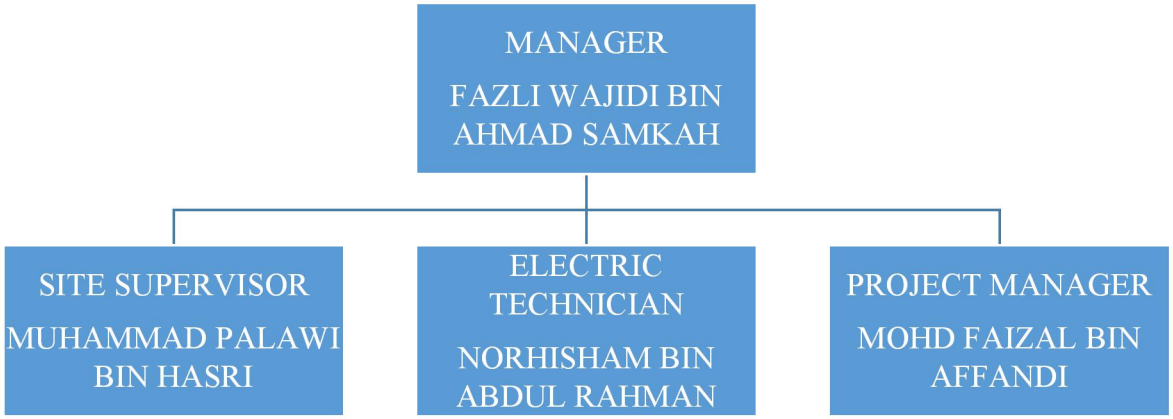
CIDB Registration No. : 0120010225-PK062456

CIDB Registration Class : Civil (G1), Electric (G2)

Financial Registration No. : 357-02014295

Business Status : Bumiputera

2.3 Organization Chart



2.4 List of Projects

2.4.1 Completed Projects

No.	Project Title	Project Value	Completion Date	Client
1.	Menaik taraf Bangunan Di Sekolah Kebangsaan Raban	RM 19,996.35	2017	Pejabat Pendidikan Daerah
2.	Menyelenggara Dan Menurap Semula Jalan Resort Tasek Raban	RM 43,470.00	2017	Majlis Daerah Lenggong
3.	Menurap Semula Jalan Di Kampung Luat	RM 19,993.90	2017	Pejabat Daerah Dan Tanah

4.	Pelaksanaan Projek Pakej Membaik dan Baikpulih Sekolah Negeri Perak Di SK Plang	RM 55,584.29	2017	Pejabat Pendidikan Daerah
5.	Membina Jambatan Kampung Banggol Kuak Lenggong	RM 89,800.00	2018	Pejabat Daerah Dan Tanah
6.	Menaiktaraf Jalan Dari Kampung Beng Ke Kampung Batu Ring Lenggong	RM 63,470.00	2018	Pejabat Daerah Dan Tanah
7.	Kerja-Kerja Membina Parkir Crusher Run Dan Jalan Berturap Premix Di UPSI	RM 178,850.00	2018	UPSI
8.	Menaiktaraf Longkang Dan Pemasangan Penutup Longkang Jenis FRP Di Medan Selera Dataran Lenggong	RM 20,000.00	2019	Majlis Daerah Lenggong
9.	Menaiktaraf Longkang Dan Mengatasi Masalah Banjir Di Kg Baru Selat Pagar Lenggong	RM 274,000,00	2021	Majlis Daerah Lenggong
10.	Menaiktaraf Longkang Di RPA Gua Badak	RM 100,000.00	2021	Majlis Daerah Lenggong

Table 1 List of completed projects

2.4.2 Project in Progress

No.	Project Title	Project Value	Start Date	Completion Date	Project Duration	Client
1.	Mengatasi Masalah Banjir Di Batu Kurau (Larut, Matang Dan Selama)	RM 1,740,795.00	4 February 2020	-	-	JKR Larut, Matang Dan Selama Koperasi Gabungan Pekebun Kecil Perak Berhad
2.	Penyelenggaraan Lampu Jalan Dan Feeder Pillar	RM 497,105.00	1 December 2021	-	-	Majlis Daerah Lenggong

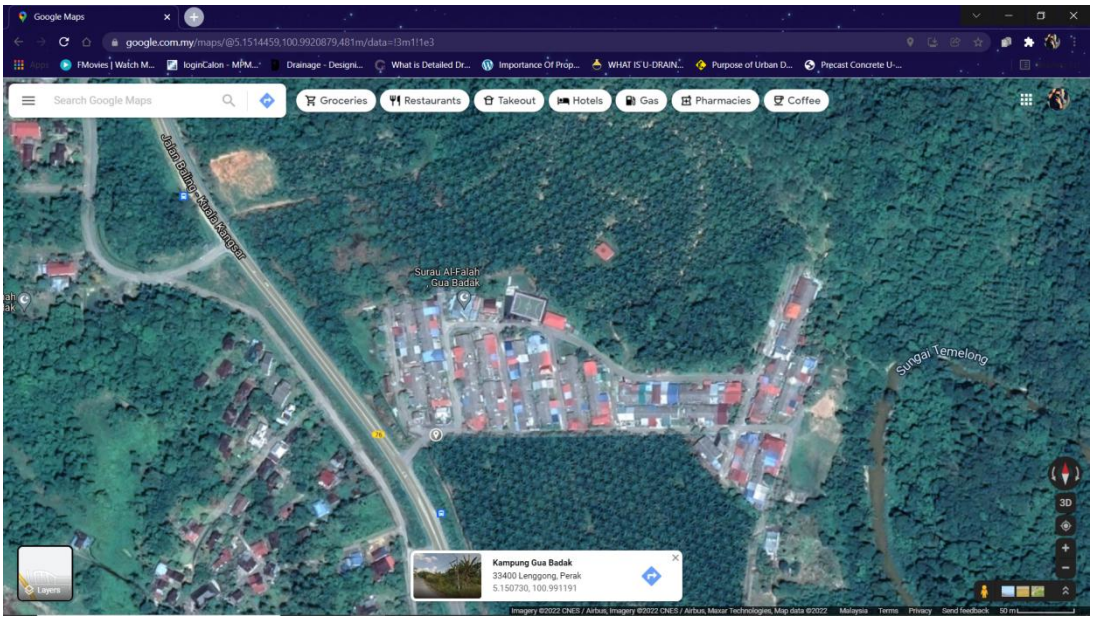
Table 2 List of on going projects

CHAPTER 3.0

CASE STUDY

3.1 Introduction to Case Study

The case study is about Work On Upgrading Drain. The project where has started carried out on 25th August 2021 and project completed on 6th December 2021. The cost or project value for this construction of drain installation is One Hundred Thousand Ringgit only (RM 100,000.00). Furthermore, in this case study will be explained more details about this construction method to install the drains, used what machineries and tools and the features of types of U-drain. The project site location took place at Kampung Gua Badak, RPA Gua Badak, Lenggong, Perak.



Source : Google maps

Then, the activity have been carried out on the site is Work On Upgrading Drain which the project was carried out near the houses of the villagers. It is also disturbing all household residents in the area around the project site. In addition, all drains, machineries and tools are safed to place it at the stop pile.

3.2 To explore the features and design consideration of precast u-shape drain

Features :

First of all, in this case study shown that the project for drain installation using API precast u-drain.

Figure 1.8 U-drain

For the features of API precast U-drain is available in both standard size [for nominal width between 600mm and 1800mm] and super size [for nominal width between 2100mm and 3600mm] in length of 1 metre as shown it. As for small size, API U-drain is available [for nominal width between 300mm and 450mm] in length of 1.2 metre. API U-drain is available in both WITH and WITHOUT Dry Weather Flow (DWF) Channels. Moreover, it also easy in handling and laying, allows for fast construction of waterways / open drains in using high quality factory cast units with a minimum of wet concrete works construction.

Design consideration :

Then, to consider what design used for API U-drain is designer in accordance with the requirement of BS 8110 with the following concrete cover to reinforcement :

a) Small Size U-drain : 25mm
b) Standard Size U-drain : 25mm
c) Super Size U-drain : 30mm

API U-drain is made from high strength concrete with a 28 days characteristic strength of 40 N/mm2. Other than that, it is also designed for the standard loading conditions as shown below :

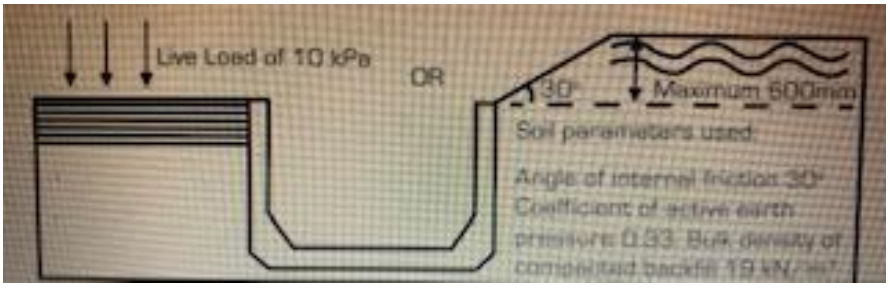


Figure 1.9 Example of high strength concrete

In addition, 50mm diameter weepholes are provided for drainage of the retained soil which, when combined with the butt jointed units, prevent the build up of hydrostatic pressures. As such, design does not take into consideration of hydrostatic pressures. The backfill material adjacent to wall should be granular type of soil. This type of U-drain standard design is catered for a maximum height of 150mm in-situ capping

3.3 To explain the construction method of precast u-drain installation

Delivery of material

This is the first step or method to install the precast API U-drain. Before the project is carried out, the main contractor already find and deal with U-drain supplier to deliver the drains at the project site. While at the project site, when the loader with drains arrived at site to stop pile all drains, a crane and excavator standby and ready to lift the U-drain into the lorry provided. A crane easy to use because it is convenient and its supported for lifting the drains and drain cover. Then, an excavator plays an important role to lift the drain at the stop pile.

Figure 2.0 Lifting drain

Figure 2.1 Lifting using crane

Setting out the proposed alignment

After the method of delivery of material, for the second method is setting out the proposed alignment. This setting out is guide for the excavation. To alignment control and invert level to propose the setting out is marking by a contractor for this project. Before start to mark the level, first bring out the instrument for leveling such as automatic level, ruler staff and tripod. Then, setup the instrument start with install the tripod according our comfort. Secondly, put and install an automatic level on the tripod by tightening and lock it. Thirdly, setting the bubble enters the circular area and thereafter can be used to level the soil. Lastly, one of the workers of this site hold the ruler staff straight while the contractor using automatic level to level directly a ruler staff.

Figure 2.2 Bubble centre

Excavation work

Other than that method, excavation is carried out by an excavator to excavate the ground after the setting out the alignment control. After finished the excavation work at the drain installation area, placing and spreading of crusher-runs inside the excavated section as bedding formation level for the U-drain construction.

Figure 2.3 Excavation work

Figure 2.4 Spreading crusher-runs

Installation work the U-drain

After the excavation work done by an excavator and spreading the crusher-runs inside the excavated section, drains installation work was carried out in stages. Moreover, the installation of this drain also done by an excavator. Lifting sling used with tie on the excavator bucket to lift and install the drains.

Figure 2.5 Install the drains

Backfilling work

Lastly, backfilling work is the latter method for construction method of precast U-drain installation. After finish the installation of U-drain, on the empty space on the side was carried out by backfilling work with granular soil using an excavator. It is the process of replacing the soil that is removed during the excavation to support and strengthen a structure.

3.4 To identify the machineries and tools

Machineries and tools means all appliances and equipment of whatsoever nature for the use in this construction industry. Each construction has a machineries and tools to be used. So, this is the types of machineries and tools used in this project drain installation :

Machineries

Figure 2.6 Excavator

Figure 2.7 Backhoe

Tools

Figure 2.8 Lifting sling

Figure 2.9 Wheelbarrow

Figure 3.0 Hoe and scope

CHAPTER 4.0

CONCLUSION

To sum up this report, this topic Work On Upgrading Drain shows that the project are very important to any place in Malaysia. The construction of this drain installation project plays an important role because to avoid ease the flooding in an area and it helps to protect the environmental by construct this drains project. The process to complete this project according to the schedule, without any delay. Anybody who a new workers in this drain construction industry quite difficult to understand in this path. Moreover, the method used for this construction were the similar method according to the theory. For an example, the material used to install the drain is precast U-drain shape. Besides, the method of each step also the similar such as delivery the material, setting out to propose the alignment to level the soil and do an excavation work. After the excavation, the drains had been set ready to install inside the site section and finished the drain installation, backfilling work is carried out with granular soil where the process is to replace after removing the soil. Other than that, there has a problem on this project but its not hard to solve it. Thus, weather conditions on that day could disrupt the process of completing the installation of this drain. For an example, the soil conditions will become soft when it rained and it will be slowed time of the process like excavation work. Last but not least, the drain installation or work on upgrading drain is one of the important things in the construction industry especially to avoid ease the flooding in an area. Nowadays, the responsible part like the government need to care about how important it is solving the flood matters.

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