



اُونِيُوَرَسِيْتِي تِيكْنُوْلُوْجِي مَارَا
UNIVERSITI
TEKNOLOGI
MARA

DEPARTMENT OF BUILDING

UNIVERSITI TEKNOLOGI MARA (PERAK)

GABION WALL CONSTRUCTION

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(PERAK)

JULY 2021

It is recommended that the report of this practical training provided

By

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Entitled

Gabion Wall Construction

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 Hazuli Construction for duration of 20 weeks starting 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 Diploma in Building.

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Date : 11 December 2021

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After a few month, i have successfully finished my internship. Throughout the journey, i gain knowledge and assistance from many peoples. Therefore, in this section, i would like to express my gratitude and appreciation to everyone who has involved directly or indirectly in lending this group a hand towards the internship report completion. First of all, i sincerely would like to thanks to lecturers who is involved, Miss Azizah Talkis, Dr. Nor Asma Hafizah binti Hadzaman, Sir Muhammad Naim bin Mahyuddin and Sir Wan Akmal Zahri Wan Zaharuddin for giving good a guidance and guidelines for finish this report. From the guidance, I am able to understand and working on this report with full efforts. I glad that with their assistance too, I am able to finish the report on the stipulated time and date.

Other than that, i would to extend our gratitude to our friends for their help in many aspects. Our friend has always be ready if i about to ask them about any questions or exchanging ideas and with that, I am able to progress throughout the journey. Therefore, without the help of both parties, I will definitely have difficulties in doing this report. In conclusion, hopefully, I could use the insights and ideas while in the making of this report and internship experience in the future and in my career.

ABSTRACT

Gabions are cages, cylinders, or boxes filled with rocks, concrete, or occasionally sand and soil that are used in civil engineering, road construction, military applications, and landscaping. The gabion wall is constructed to avoid the landslide. The objectives of this report is to investigate the method of project and to investigate the problem and the solution to solve the problem. Then, it must be construct to prevent the river banks from eroding and collapsing

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CHAPTER 1

INTRODUCTION

1.1 Background of study

Gabions are cages, cylinders, or boxes filled with rocks, concrete, or occasionally sand and soil that are used in civil engineering, road construction, military applications, and landscaping. Early gabion-style fortifications protected the river Nile's bank around 7000 years ago. Gabions were utilised as military forts throughout the Middle Ages. In the past, civil engineers utilised gabions extensively for bank stabilisation, coast stabilisation, highway stabilisation, and slope erosion prevention. Gabion walls have been a benefit to the landscape since they were first built along the banks of the Nile River. It has been utilised as a gravity type retaining structure for thousands of years and produces an attractive, efficient, and low-cost wall system.

Gabion walls are often used to stabilise the soil behind the wall, although they can also be used as a cover wall. The wall is built of gabion baskets that are placed in one or more rows, depending on the height of the wall. Baskets have a cage form and are closed on all sides. They are built of galvanised hexagonal meshes and broken rock that is arranged in baskets. Retaining structures are constructed by stacking gabion baskets in a certain order and provide an alternate solution for concrete buildings in the field of soil stability.

Gabion walls are used primarily in road engineering, such as the construction of roads, embankments, retaining walls, slope protection, water barriers, and so on, and can perform a variety of functions, including the creation of a barrier that prevents soil erosion on the coast and embankment stabilisation. Avoidance of slipping and washouts Noise reduction by water speed decrease in the prevention of soil erosion in rivers Garden fence constructions that are visually appealing.

There are many benefits of gabion walls. First, aesthetic. Gabion walls look natural and by using natural materials fits into the environment. Second, compatibility with the environment. Gabion wall using the material made by excavations the costs of acquisition and transport are significantly reduced. Next, it is used as a cooling system in hot climate conditions and provides passive cooling by air movement. Then, water permeability. Gabion walls are permeable and are not damaged by passing water. Other than that, efficiency of gabion walls can increase in time, since the vegetation fills voids and strengthens the wall structure. Moreover, soil movements don't negatively influence gabion walls, which is an advantage in regard to stiffer structures (reinforced concrete walls). Last but not least, longevity which is stone blocks are materials that are frequently used because of their longevity, durability and stability. Usually the stone is selected because of aesthetic attributes or the possibility of excavation produced material usage.

1.2 Objectives

- i. To investigate the method of project.
- ii. To investigate the problem and the solution to solved the problem.

1.3 Scope of Study

The scope of study was carried out at site which is construct the gabion wall. The site is located at river bank of Sungai Batu 11, Kampung Lubok Bandan, Jementah. My study focus on the method used for the construction of gabion wall. I study about the materials for construct the gabion wall such as the cage, the rock, the mangroves branch and others. Then, I study the duration to complete the project. Lastly, I study about the problems encountered in the process of completing the project and the solution to solve the problem.

1.4 Methods of Study

The first method that I am used for obtaining data and information is through the observation which is I observe by self the project directly at the site. I am visit the site every day from the first day project until the project was finished. I am using my smartphone to take pictures the activities at the site.

Then, I interview the labor of the project to obtain data and information about the project such as procedure, time period to complete the project and others. This method is very good because I better understand and get the information clearly. In the same time, this method is difficult because the labor has limit free time.

CHAPTER 2

COMPANY BACKGROUND

2.1 Introduction of Company

Company Name	:	HAZULI CONSTRUCTION AND RENOVATION
Owner Name	:	AHMAD ZULFADLI BIN ZULKEFLI
Date of Establishment	:	5 April 2016
Company Address	:	LOT 88, JALAN MOHAMAD, KAMPUNG BERATA, 85000 SEGAMAT, JOHOR
No Tel. 1	:	017-744 7100
No Tel 2	:	017-700 1400
Email	:	hazuliconstruction@yahoo.com

2.2 Company Profile

First of all, this company which is addressed at Lot 88, Jalan Mohamad, Kampung Berata, Segamat was founded 6 years ago by Haji Zulkefli bin Haji Harun. After 4 years, this company rising forward. So, he gave the company to his son, Ahmad Zulfadli bin Zulkefli. From that year, this company was handled by Ahmad Zulfadli bin Zulkefli and assisted by his brother, Mohamad Aimaduddin bin Zulkefli.

This company perform various types of work in the field of construction and engineering. For example, this company taking on road maintenance and paving road. Then, if about building, this company do building renovation work, building wiring, building landscape and others. Next, this company take job do gabion wall construction. However, this company inly carries out work under government tenders. This is a security measure to avoid being cheated by the client such as the client do not pay for the work they do.

Vision and mission

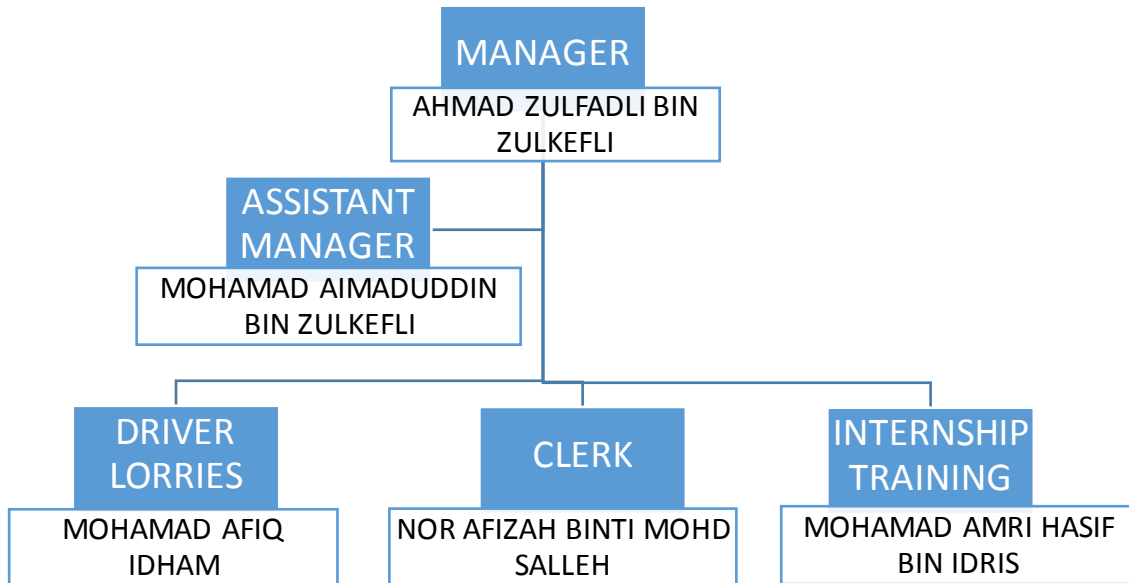
Vision

To be a leading and dynamic state cooperate organization in the field of socio-economic development.

Mission

To stir and instill the state economic growth via participation in the field of industrialization, trading, commerce and entrepreneurial development.

2.3 Organization Chart



2.4 List of Project

2.4.1 Completed Project

No.	Project title	Project value (RM)	Start date	Completion date	Project duration	Client
1	Installing gazebo at Sungai Kenawar's river bank.	15 000	5 July 2018	12 July 2018	8 days	Department of Fisheries
2	Installation culvert at Redong.	5 000	17 July 2018	-	1 day	Department of Irrigation and Drainage
3	Installation culvert at Redong.	7 600	25 January 2019	-	1 day	Department of Irrigation and Drainage
4	Renovation toilet at SK Mensudut Pindah.	16 000	7 March 2019	22 March 2019	16 days	<i>Pejabat Pelajaran Daerah</i>
5	Construction of gabion wall at Chaah.	75 000	15 April 2019	3 May 2019	19 days	Department of Irrigation and Drainage

Table 2.1 List of completed Project

2.4.2 Project in Progress

No.	Project title	Project value (RM)	Start date	Completion date	Project duration	Client
1	Construction of road at Kg Pogoh.	52 000	2 September 2021	5 September 2021	4 days	<i>Pejabat Daerah</i>
2	Construction of gabion.	60 000	23 November 2021	8 December 2021	16 days	Department of Irrigation and Drainage
3	Renovation at Lubok Kepong.	80 000	12 July 2021	24 November 2021	4 months 12 days	<i>Pejabat Daerah</i>
4	Renovation of restaurant.	20 000	24 November 2021	23 December 2021	31 days	Department of Fisheries
5	Installation furniture at <i>Pejabat Tanah Segamat</i> .	5 000	28 December 2021	30 December 2021	3 days	<i>Pejabat Tanah Segamat</i>

Table 2.2 List of current project

2.4.1 Completed Project

1. Installing gazebo at Sungai Kenawar's river bank



Figure 2.4.1 installing gazebo.

2. Installation culvert at Redong



Figure 2.4.2 Installation of culvert.

3. Construction of gabion wall at Bangas.



Figure 2.4.3 Gabion wall construction.

4. Renovation toilet at SK Mensudut Pindah.



Figure 2.4.4 Renovation toilet.

5. Construction of gabion wall at Chaah.



Figure 2.4.5 Gabion wall construction.

2.4.2. Project in Progress

1. Construction of road at Kg Pogoh.



Figure 2.4.6 Paving road.

2. Construction of gabion at Jementah.



Figure 2.4.7 Gabion construction.

3. Renovation at Lubok Kepong.



Figure 2.4.8 Renovation of *Balai Raya Kg Lubok Kepong*.

4. Renovation of restaurant.



Figure 2.4.9 installing partition as kitchen wall.

5. Installation furniture at *Pejabat Tanah Segamat*.



Figure 2.4.10 installing the cabinet.

CHAPTER 3

CASE STUDY

3.1 Introduction to Case Study

The project that I study is the construction of gabion wall at river bank of Sungai Batu 11, Kampung Lubok Bandan, Jementah. The project take 2 weeks and 2 days which is start from 23 November 2021 and complete at 8 December 2021. The project spend as much 60 000 ringgit Malaysia include the cost of machineries rental, the labors, the rock, the cage and other material for complete the project.

3.2 Project details

Project title : *Kerja-kerja pembinaan tembok penahan tebing di Kg Lubok Bandan*

Contractor : Hazuli Construction and Renovation

Client : Department of Irrigation and Drainage Johor

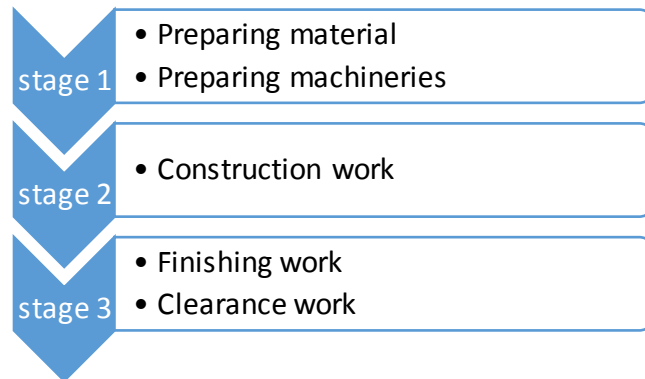
Contract sum : RM60 000.00

Start date : 23 November 2021

Complete date : 8 December 2021

3.3 Method of construction

3.2.1 Method of work



Stage 1

Preparing material

After received the tenders, this company preparing the material and start looking for machineries. This company start buy the culvert, the rock, crusher run, cage, mangroves tree trunks and others.



Figure 3.1 The material for gabion wall construction.

Preparing machineries

To smooth the work journey, this company rent the excavator to help the labors carrying out gabion wall construction work.

Stage 2

Construction work

First of all, the labors plant the mangroves tree trunks which has the same function as a piling work. It can help strengthen the gabion structure. After that, they starts the process arrange the cage on the mangroves tree trunks. Then, they put the rock into the cage and tie the cage using the wire.



Figure 3.2 Plant the mangroves tree trunks.

After that, they install the geotextile behind the cage to avoid the soil get in the cage. This process is until the gabion has two level. Next, they install the culvert as drainage for the water from. After that, they continue construct the gabion for the third level.



Figure 3.3 Installing culvert.

Stage 3

Finishing work

After finish the third level of gabion, the labors do the finishing work. They adjust and fix the work which worsens the view.

Clearance work

They put the extra rock and soil behind the gabion wall. Then, they level the road using the soil. Next, they put the crusher run on top of the road.



Figure 3.4 put crusher run on top of the road.

3.3.2 Problem and the solution to solved the problem.

The problem during the construction work is landslide. This is very dangerous to the lives of the workers. It has also caused losses when the soil hits the cage. This causes the cage to be damaged and can no longer be used.

Moreover, the problem that interferes with the smooth running of the project is that when it rains, the river water becomes so deep that the project has to be stopped and cannot be carried out. This had to wait until the river water returned to normal levels.



Figure 3.5 the broken cage effect from landslide.

CHAPTER 4

CONCLUSION

In a nutshell, this report include many thing about the project of Hazuli Construction and Renovation Company. In the process of gabion wall construction, mangrove wood has been used as a foundation to strengthen the gabion wall on the surface. It is the same thing as the process for the construction of a building. There is no need to use boards or wooden sticks on the walls of the cage to prevent them from inflating when the rock are inserted, but it is enough to manually stack the rock on the edge surface of the cage to prevent the cage from inflating and to show a neat work. The workers were able to do nothing when it was raining because the river water level rose and made the gabion construction work difficult

REFERENCES

<https://www.geotech.hr/en/gabion-walls/>