

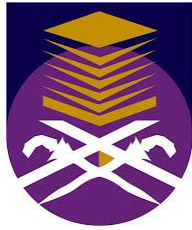


**DEPARTMENT OF BUILDING
UNIVERSITI TEKNOLOGI MARA
(PERAK)**

DRAINAGE MAINTENANCE

Prepared by:

**MUHAMMAD HAFIZ BIN
MAZLAN
2019212064**



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(PERAK)**

FEBRUARY 2022

It is recommended that the report of this practical training provided

By

Muhammad Hafiz Bin Mazlan

2019212064

entitled

Drainage Maintenance

Report Supervisor : TS. Dr Mohd Rofdzi Bin Abdullah

Practical Training Coordinator : Dr. Nor Asma Hafizah Bt. Hadzaman

Programme Coordinator : Cik Nor Azizah Binti Talkis

**DEPARTMENT OF BUILDING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
(PERAK)**

AUGUST 2021 – JANUARY 2022

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 Eximus Sdn Bhd for duration of 24 weeks starting from 2 September 2021 and ended on 7 January 2022. It is submitted as one of the prerequisite requirements of BGN310 and accepted as a partial fulfilment of the requirements for obtaining the Diploma in Building.

Name : Muhammad Hafiz Bin Mazlan

UiTM ID No : 2019212064

Date : 10 January 2022

ACKNOWLEDGEMENT

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

I would like to extend my heartfelt gratitude for the guidance, advice and help rendered throughout the period of training by the following group of amazing individuals. First and foremost, I would like to thank En. Muhammad Faiz Bin Kamsani for the opportunity given, to conduct my training in his esteem company. His team of professionals comprising of En. Mohd Syazwan Bin Mazlan, Pn. Siti Nur Aina Bt Shamsulbahri, En. Daing Mohd Hafizi Bin Khairi, En. Muhammad Ali Khamizi Bin Abd Hamid, En. Hilmi Hakim Bin Jamaludin and En. Muhamad Haziq Bin Hasan, have enabled me to learn and develop my understanding, knowledge and feel of real time projects, and the theory involved in analysis of structures, building and civil works. They are also responsible towards streamlining and assessing my training at Eximus Sdn Bhd.

I would also like to extend my deepest appreciation to the lecturers who are directly involved during my training stint to Supervising Lecturer, TS. Dr Mohd Rofdzi Bin Abdullah, Practical Training Coordinator Dr. Nor Asma Hafizah Binti Hadzaman and Programme Coordinator, Cik Nor Azizah Binti Talkis. I value the time, effort and encouragement they have contributed towards the successful completion of my training, this report and the valuable knowledge that have been shared over the last few semesters.

Last but not least, my special thanks to my beloved parents for their sacrifices over the years.

Thank you so much.

ABSTRACT

This internship report serves the purpose to record the detail of my industrial training which conducted in Eximus Sdn. Bhd which is one of construction company in Kelana Jaya. This report will cover the detail of my internship in construction which began from 23 August 2021 until 7 January 2022.

All the undergraduate students from department of building Universiti Teknologi Mara are compulsory to attend 20 weeks Industrial

l Training during the period of their study. The purpose of this industrial training is to expose the students to the world of careers and working environment and also offer a chance for them to apply all the knowledge which learnt in the lecture room during their training. The main goal of this industrial training is to enhance student's knowledge and their skills in their respect profession in line with the graduates with professional, ethical, skilled, creatives and competent.

Besides that, there also have several other objectives of industrial training such as expose the students to the environment and working condition in their respective field, to use the knowledge of the industrial training and this might be useful in the study, to train students to interact and communicate effectively at all levels in the workplace and to appreciate the ethical values of their profession. For 20 weeks industrial training at Eximus Sdn. Bhd, the objective and the purpose of the training had been achieved successfully. Student had been implanted suitable knowledge and also the ethic of building study. Then, there are many trainings conducted at the company and the related knowledge will help the students and the staff of the plant execute the job more effectively. Meanwhile, the student also given a chance to get involved in the building daily job and this will be useful in the future. As a summary, the company was playing an important role to guide the students in complete their internship.

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CHAPTER 1.0

INTRODUCTION

1.1 Background of Study

Drainage maintenance is the maintenance of drainage system by keeping ditch, culvert and other drainage structure, clean and ready to carry next flow water as well as removing sediments deposited during period of heavy flow. This help to ensure the roadway achieves its designed service life.

Below are key reasons why drainage maintenance is important:-

To Prevent Erosion

The next reason for regular road drainage maintenance is to prevent erosion. Uncontrolled water that flows on the road can cause erosion. But with regular drainage maintenance, it can help reduce erosion.

To Prevent Permanent Road Deformation

Poor drainage and moisture is a main contributor to permanent deformation on roads. Preventing permanent road deformation is another key reason why regular drainage maintenance is vital. This is because, prevention of permanent road deformation helps reduce undesirable rutting on low volume roads.

To Increase Pavement Lifetime and Reduce Pavement Management Costs

The most important factor triggering the need for paving is poor quality drainage. Improving the drainage condition increases the pavement lifetime. And regular drainage maintenance and rehabilitation can lead to major savings in the annual maintenance costs for paved road networks.

1.2 Objectives

There are several objectives have been developed from this construction as follow:

- i) To identify the documentation process.
- ii) To determine the construction process of drainage maintenance.
- iii) To identify the construction method of drainage maintenance.

The importance of an adequate system for maintenance of the drainage system cannot be overemphasised if the system is to operate at its design capacity. If rubbish and silt are allowed to accumulate in channels and rivers, these facilities will not be capable of satisfactorily fulfilling their primary function - the removal of stormwater run-off. If the inlets into the drainage system from roads are not regularly cleared, they will become blocked and stormwater will be prevented from entering drains, so causing local flooding. The objective of a maintenance programme should, therefore, be to keep the drainage system operating dependably, at its design capacity, without breakdowns.

Protection of the capital investment in the drainage system necessitates a planned programme of inspection and routine clearing. Periodic, thorough, and competent inspection while cleaning will reveal points at which damage begins to take place. Adequate financial and labour resources must be allocated to ensure successful drainage operation and maintenance. It is therefore necessary for drainage authorities, usually the local government, to ensure that maintenance is accorded a sufficiently high priority in the allocation of funds in annual budgets.

The objectives of carrying out the maintenance programme should be to:

- i. Keep the system operating at design standard at all times.
- ii. Obtain the longest life and greatest use of the systems facilities by providing adequate maintenance and timely repairs.
- iii. Achieve the foregoing two objectives at the lowest possible cost.

The history of drainage is full of examples of the difficulties which can occur when maintenance is neglected. Even the best constructed system will eventually fail if adequate maintenance is not undertaken.

Maintenance activity should begin the day the system is placed in operation or, under some circumstances, prior to completion of a system and before the system is placed into operation. Keeping maintenance work current on all facilities in a system is the keystone to any successful drainage enterprise.

There are two primary concepts of maintenance of public property, and most maintenance operations can be readily classified into one of these categories:

- (a) Maintenance by necessity
- (b) Preventive maintenance

“Maintenance by necessity” refers to the practice of “fixing it when it breaks down”. Under this approach cleaning of drains is confined to the minimum necessary to satisfy complaints. Likewise, repair work is undertaken only when a condition becomes so bad that it must be corrected or repaired to restore service or for safety reasons. Unfortunately, this approach is all too common in rapidly growing cities where the funds for routine maintenance are inadequate.

“Preventive maintenance” is represented by a systematic programme of inspection, cleaning and repair that reduces breakdowns and complaints to a minimum. Preventive maintenance not only pays dividends in economical operation; a smooth working system also means uninterrupted removal of water at lower cost with reduced risk of damage from flooding as a result of design storms.

Preventive maintenance also has other distinct advantages:

- i. It can be scheduled and performed on a regular basis at times that least disrupt other operations functions.
- ii. Pre-ordered parts can be made more readily available; they may not be so readily available under emergency conditions.
- iii. Work can be carried out during normal working hours with less emphasis on extension of hours and weekend work.
- iv. More experienced personnel can be used if the work is scheduled; they may not be available in emergencies.
- v. Special tasks of preventive maintenance may be contracted out to reduce the need to carry a specialist workforce.

1.3 Scope of Study

The scope of the industrial training including the project management, site management, design management and product testing and quality. These scopes are made to be as a guideline to the student to be succeed in the industrial training achieved the objective for this course program

1.4 Methods of Study

1.Observation

Observation is a method of gathering facts through observation. The observation is about how the maintenance construction process works, from break through to completion. The average length of time for this observation is around 3-4 days. This means that the entire maintenance procedure will take about a week. Smartphones and notes were used to record observations of the maintenance construction process over the duration of 24 weeks.

2.Interview

The structured or semi structured interview with a project's trusted person is one of the ways for collecting construction data. They were completed while observing and working on the site. The interview was done with the company manager, who is the contractor in charge of overseeing the project on the job site. This interview was also conducted with the workers who were on-site at the time of the project. Every week in the office, semi-structured interviews with the project's contractor were performed, which lasted about 10 – 15 minutes on average. Short notes were taken during the semi structured interview.

3.Document Review

Company profile, construction drawing, standard operating procedures (SOP), progress report, and images taken by other personnel are among the documents reviewed to collect all of the data for the construction. The drawing design will be utilised as a reference at the project's monitoring location. During document evaluations, photos that belong to others are also the finest reference. In most cases, document evaluations will take 30 minutes per drawing plan per week. This material has been submitted in the office for evaluation.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

- Eximus Sdn Bhd was established in 2016 with the objective of exploring the field of services offered through tenders - tenders and quotations by the government and the private sector.
- Stability in financial capital is also aided by a workforce that has extensive experience in various areas of skills and expertise can raise the status of the company to provide the best services.
- Eximus Sdn Bhd is also ready to compete with existing companies with a competitive and efficient competitiveness to meet the needs of today's customers.

2.2 Company Profile



Company's' Detail	
Company's Name	Eximus Sdn. Bhd
Company's Registered SSM	1179279 -T
Company's Address	No. 6B, Ss 4d/14, Kelana Jaya, 47301 Petaling Jaya, Selangor Darul Ehsan
Principal Business Address	2 nd Floor, No. 6B, Ss 4d/14, Kelana Jaya, 47301 Petaling Jaya, Selangor Darul Ehsan
Email Address	Off.eximus@gmail.com
Date of Incorporation	11 March 2016
Company's Registered CIDB	0120160613-WP175735

Table 2.2: Company's detail

This company is located at Jalan SS 4d/14, Kelana Jaya which near to Caltex Kelana Jaya. Dealing hours are between 8.30 a.m. to 5.30 p.m. every Monday to Friday.

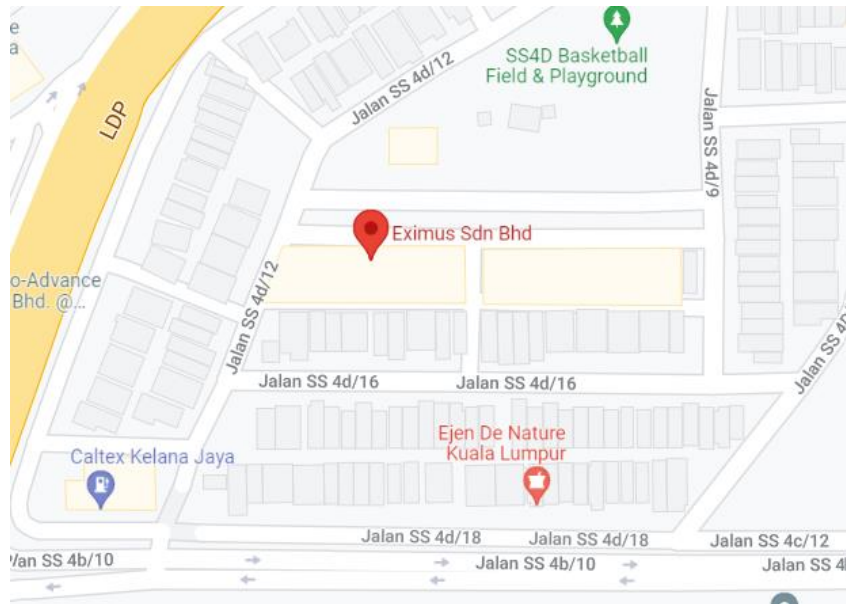


Figure 2.1: Company's location



Figure 2.2: Company's front view

2.3 Company Organisation Chart

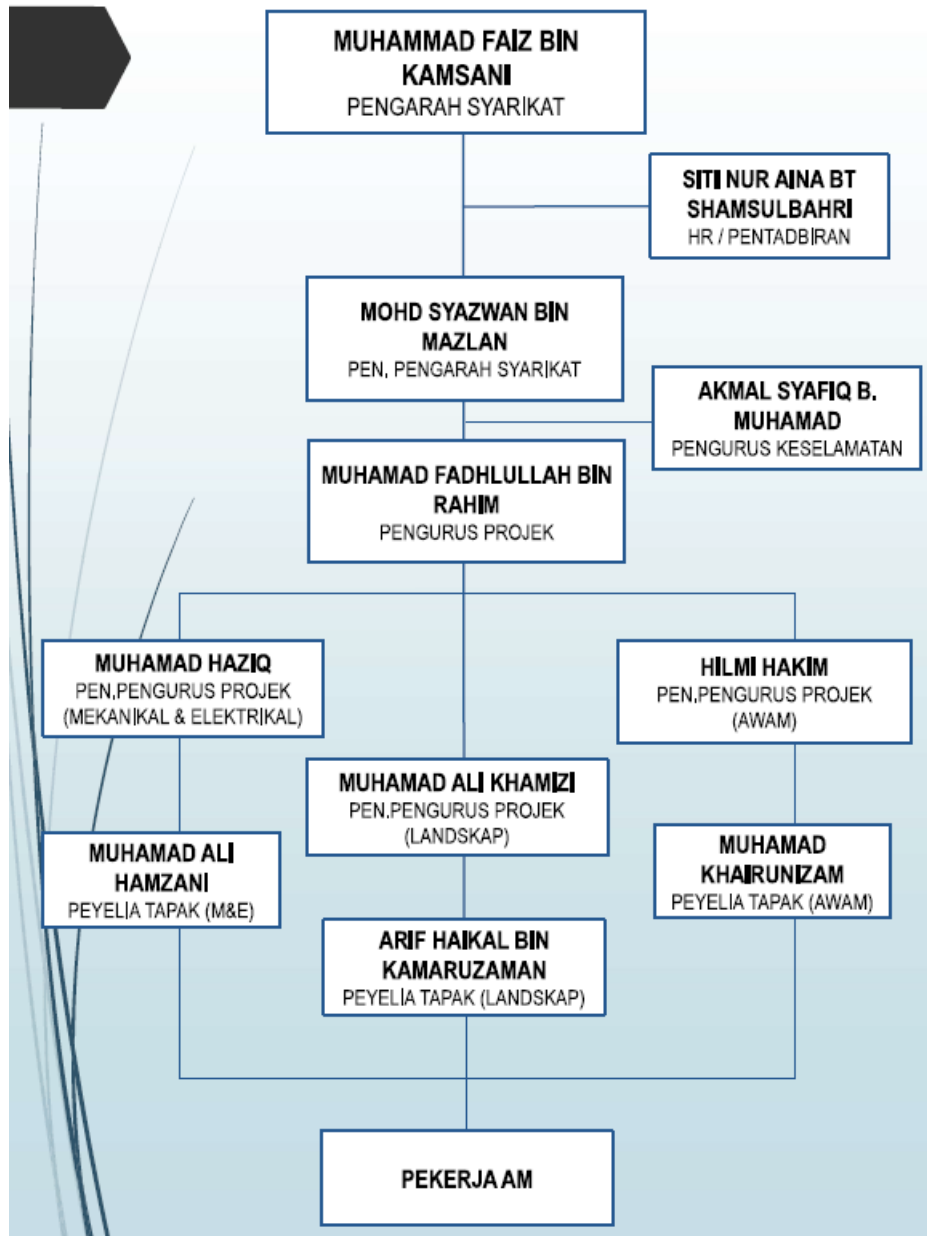


Figure 2.3: Organization Chart

2.4 List of Projects

2.4.1 Completed Projects

No	Project Title	Project Value (RM)	Start Date	Completion Date	Project Duration	Client
1	CADANGAN KERJA-KERJA PENYELENGGARAAN TAMAN PERMAINAN DAN PADANG BOLA SERTA KERJA-KERJA YANG BERKAITAN BAGI KAWASAN SEKSYEN 18, SHAH ALAM UNTUK MBPJ	330,009.60	01/03/2016	28/02/2018	24 MONTHS	ADE TUAH ENTERPRISE
2	PROJEK MASS RAPID TRANSIT LEMBAH KELANG: JAJARAN SUNGAI BULOH – KAJANG PACKAGE V5: CONSTRUCTION AND COMPLETION OF VIADUCT GUIDE WAY AND OTHER ASSOCIATED WORKS FROM MALURI PORTAL TO PLAZA PHOENIX STATION	600,000.00	20/08/2018	10/03/2017	6 MONTHS	ERO BUILDERS ENTERPRISE
3	CADANGAN MENAIKTARAF KAWASAN LAPANG BAGI PADANG CERGAS DI JALAN 17/1A UNTUK MBPJ	635,397.88	21/11/2018	10/04/2019	5 MONTHS	I BE TRADING

Figure 2.4: Company's completed projects

2.4.2 Project in Progress

No.	Project Title	Project Value (RM)	Start Date	Completion Date	Project Duration	Client
1	CADANGAN KERJA-KERJA MENYELENGGARA, MENAIKTARAF DAN BAIKPULIH UNIT KOSONG RUMAH PANGSA DI KAWASAN PERUMAHAN AWAM (PA) DAN PROJEK PERUMAHAN RAKYAT (PPR) DEWAN BANDAYA KUALA LUMPUR BAGI TEMPOH DUA TAHUN	1,000,000.00	-	-	2 YEARS	DBKL
2	CADANGAN KERJA-KERJA PEMBAIKAN CERUN DAN SISTEM PERPARITAN DI RUMAH REHAT DBKL, TANAH RATA, CAMERON HIGHLANDS, PAHANG DARUL MAKMUR.	2,880,000.00	21/02/2020	03/12/2020	40 WEEKS	IRAMA INSPIRASI

Table 2.4.2: Company's projects in progress

CHAPTER 3.0

CASE STUDY (BASED ON TOPIC OF THE REPORT)

3.1 Introduction to Case Study

The drainage maintenance was proposed by the ‘Majlis Bandaraya Petaling Jaya’, at area PJU 1, SS 4, SS 25, SS 21, SS 22 and SS 22A, Petaling Jaya. The project under construction started **5 April 2021** and finished on **20 September 2021**. The period of the structure must be done within 24 weeks and cost of this project is **RM 249,1596.00**. The title of this project is “**Cadangan Kerja Penyelenggaraan Tidak Berjadual Parit Tepi Jalan, Penutup Longkang Dan Lain-Lain Kerja Berkaitan Di Kawasan PJU 1, SS 4, SS 25, SS 21, SS 22 and SS 22A, Petaling Jaya Untuk Tahun 2021**”. The Contract Number of this project is **SH148/2021**. The company that responsible to construct this project is **Ikay Bena Enterprise** which had been sub by **Eximus Sdn Bhd**.

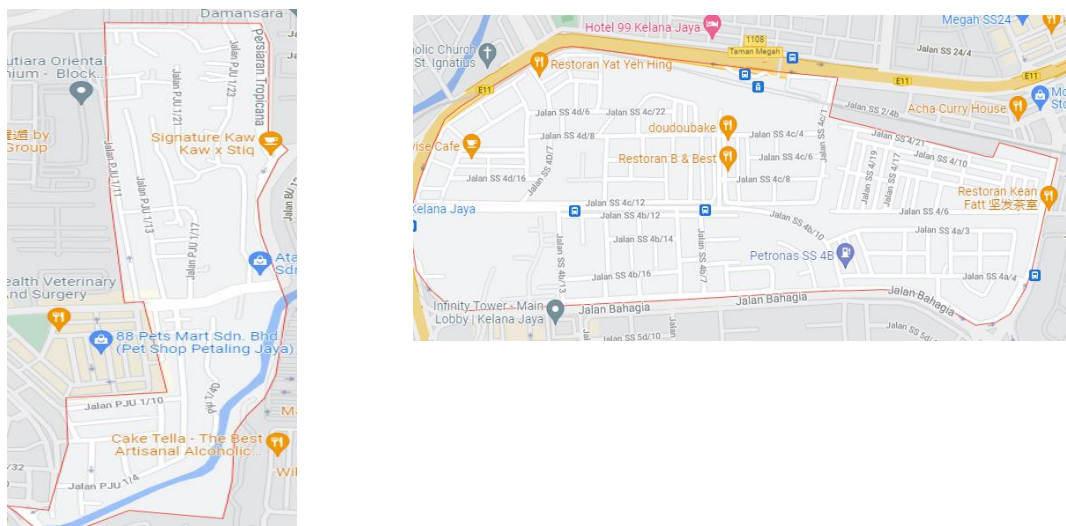


Figure 3.1: The location of the project

3.2 To identify the documentation process

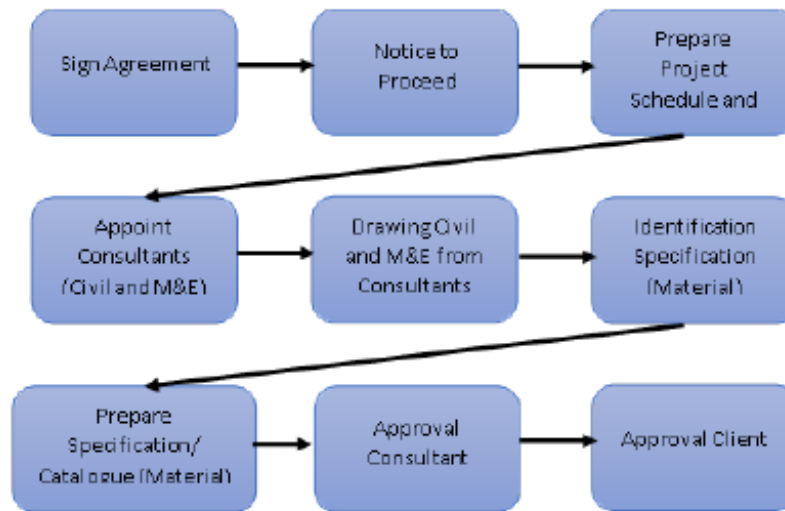


Figure 3.2: Documentation process

After sign agreement, client will give notice to proceed for the project. Then, contractor needs to prepare project schedule based on original bill of quantity that stated in tender and contractor also needs to prepare insurance for this project as initial step after get notice to proceed from client. After prepare project schedule and insurance, contractor needs to submit this document to our client.

Contractors need to appoint two consultants which are both from 'Majlis Bandaraya Petaling Jaya' for mechanical and electrical works. The two consultants will be responsible in preparing drawing for civil work and mechanical and electrical work. Contractors need to prepare official letter on assignment consultants to our client. If client agrees with our consultant, we can proceed preparing documentation.

Consultants will prepare the drawing for this work and give to contractor. Then, contractor needs to analyze the drawing and identify the material and specification that use. After that, contractor needs to prepare material approval form for each item that stated in drawing and bill of quantity and need sign from consultant as evidence that consultant agrees with contractor to use certain item on construction site material approval form needs to be attached with catalogue or specification or certificate as references to consultant and material approval form that have been sign by consultant also must get approval from client.

3.3 To determine the construction process of drainage maintenance

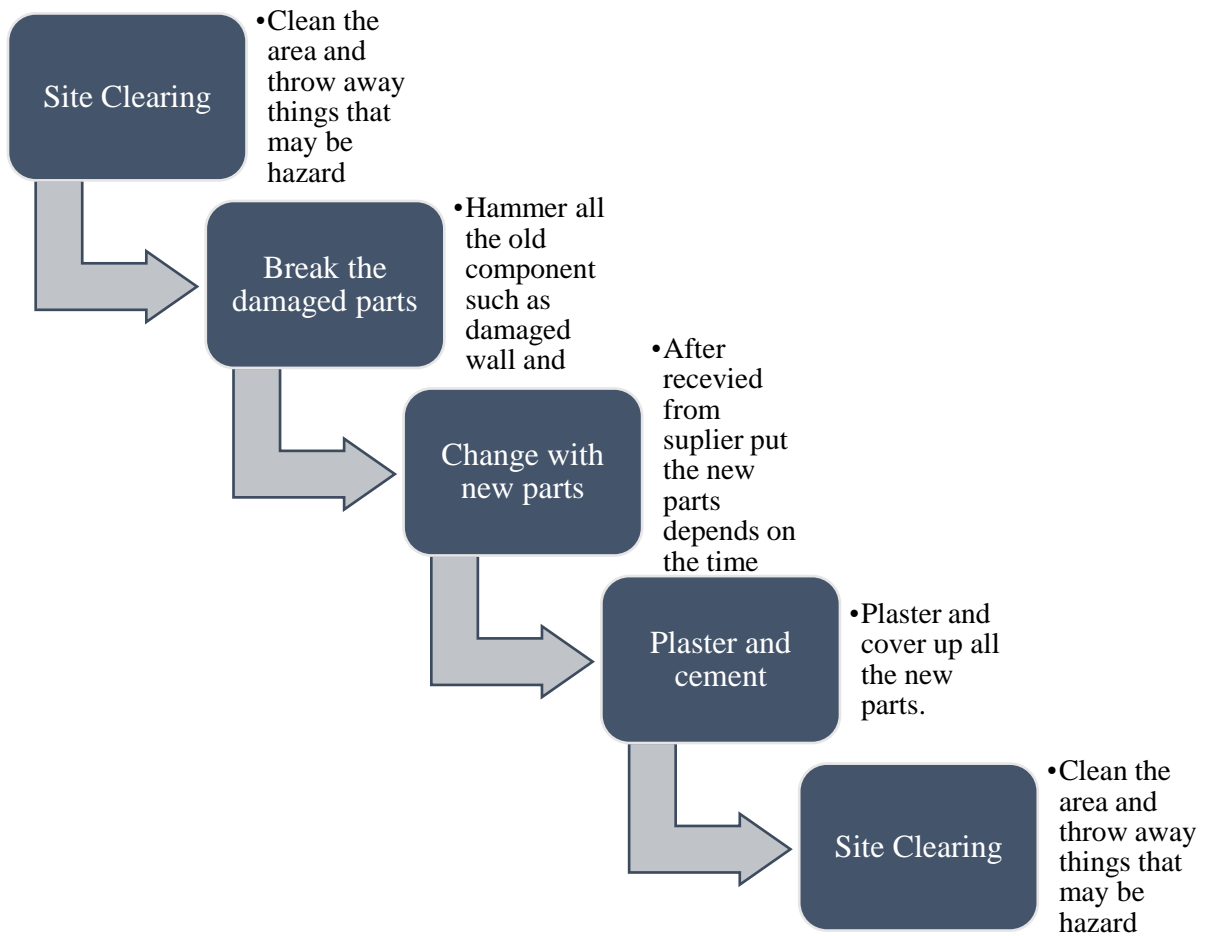


Figure 3.3: Construction process

3.4 To identify the construction method of drainage maintenance

PREPARATION WORK

For preparation work, the site was setting out by taking all the data and measurements during survey. Later, the site must be clean from the bushes, vegetation and anything that prevent the construction work to proceed. All the machines, materials and the equipment must be arrived before the undergone construction such bar bender, formwork, and reinforcement steels. All the equipment and the materials must be stored at the safe place to prevent any loss or incidents.



Figure 3.4: Site Clearing

BREAK THE DAMAGED PARTS

Before start break through the damaged parts, site supervisor must be there to survey the worker's work. This is to make sure the workers are following the rules such as wearing helmet, safety vest, gloves and boots also do their works as scheduled.

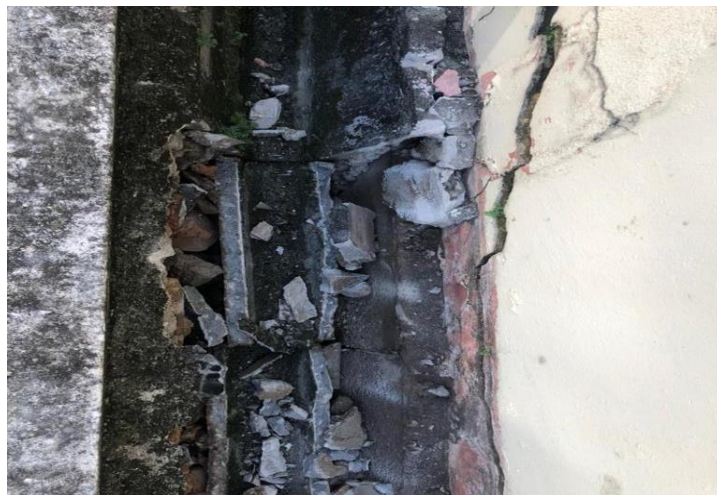




Figure 3.5: Breaking the damaged parts

When breaking the damaged drainage, make sure to analyze what is in the inside of wall so to make sure the problem that made the drainage cracked and clean the inside and use new component.

CHANGE WITH NEW PARTS

After had finished with the breaking works, clean the away the scattered damaged parts that had been break. Then put the new components with plaster so that it would not loosen up its position.



Figure 3.6: Change with new parts

PLASTER AND CEMENT

Plaster the whole area of the drainage components. The half u cement drain and the wall.





Figure 3.7: Plaster and cement

SITE CLEARING

Lastly, make sure all the works were done and inspect the work thoroughly so that any repair that needs must be done. Later, the site must be clean from the bushes, vegetation and anything that prevent the construction work to proceed. All the machines, materials and the equipment must be arrived before the undergone construction such bar bender, formwork, and reinforcement steels. All the equipment and the materials must be stored at the safe place to prevent any loss or incidents. Take some pictures of the after work and prepare the documentation and reports for the projects such as claim reports.





Figure 3.8: Project completed

CHAPTER 4.0

CONCLUSION

In a nutshell, there were many things that I had learned and undergone during my twenty-four weeks of industrial training at Eximus Sdn. Bhd, Kelana Jaya, Selangor. The whole training period was very interesting, productive, instructive, and challenging. Through this training, student gains new insights and more comprehensive about the real industry working condition and practice.

The practical training experiences in this company also gave me a good experience of working in development of the construction and gain more understanding of the work culture in dealing with the sub-contractor and clients. This practical training helps me as student to improve communication skill, work under pressure and be creative thinker to solve the problem either on site or in preparing documents. During training, the application of theoretical that was learned from university need to be applied in the real working experienced. From my view, I am hundred percent agreed that an internship program had achieved its primary objective and very helpful to help student understand the real situation when involving with construction field. Besides, it is also a best way to prepare student in facing a real working life also learning cycle for future.

Once again, my appreciation to all people especially to the company's director En. Muhammad Faiz Bin Kamsani, En. Hilmi Hakim Bin Jamaludin as my supervisor during my internship, Pn. Siti Nur Aina Bt Shamsulbahri for supervising me in all kinds of documentations and all Eximus Sdn. Bhd staff for their good cooperation and also my coordinator for this subject TS Dr. Mohd Rofdzi Bin Abdullah from Faculty of Architecture Planning and surveying, Universiti Teknologi Mara Seri Iskandar for the guidance and advice for me to complete this industrial training.

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- <https://sapienvendors.com.ng/road-drainage-maintenance/>
- <https://www.google.com/maps/place/Eximius+Medical+Administration+Solutions+Sdn+Bhd/@3.1720592,101.6964895,17z/data=!3m1!4b1!4m5!3m4!1s0x31cc48227db3f22f:0x708d6c0324eff851!8m2!3d3.1720592!4d101.6986782>
- <https://etender.mbpj.gov.my/>