



اَوْنِيُوْسِيْتِي تِيكْنُوْلُوْجِي مَارَا
UNIVERSITI
TEKNOLOGI
MARA

FACULTY OF CIVIL ENGINEERING

INDUSTRIAL TRAINING REPORT

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ABSTRACT

This report describes the activities that I did during my 17 weeks and 3 days industrial training at Jabatan Kerja Raya (JKR) Daerah Manjung, Perak. I underwent my industrial training at building department first and then in the road department. This company conducts operations involving the building, roads, maintenance and electric. This company is a JKR branch unit that handles any development in the Manjung area. The contents of this report book that I have prepared are following the format that set by Universiti Teknologi Mara (UiTM). I have used various reference sources to prepare this industry report book for the purpose of producing quality industry report book.

In addition, this industrial training is to expose student to the real work environment in the field that related to the course taken. It gives an opportunity to student to improve their knowledge. Industrial training needs to be maintained in order to ensure the future of the next generation. Industrial training can form a positive identity as well as cultivate the nature of responsible and confidence in each student. Beside that, this report book contains information on industrial training as well as the organization, technical report on the work done during the industrial training, conclusion or summaries to the overall report that has been made. Next, it contains the comments and recommendations for organization for the future improvement.

Overall, this report book is presented for Universiti Teknologi Mara (UiTM) to evaluate and understand every work that I have done while undergoing industrial training in the organization. Therefore, this report book is expected to be useful to readers as additional reading material and as a source of knowledge in the relevant field. I also dedicate this industry report book to the next semester students who will undergo the industrial training by making this as reference material to complete their industry report.

ACKNOWLEDGEMENT

Firstly, I am grateful and thanks to Allah SWT for given me the opportunity to finish my Industrial Training Report. I also wish to express my sincere gratitude to my friends who helped me directly or indirectly in my Industrial Training Report. I

This industrial training report could not be completed without the help of my industrial supervisor Encik Mohd Suhaidi B. Ismail, Pn. Azrina Binti Hamid and all employees in Jkr company. All the guidance from all the employees in the company has given a valuable experience to me. This valuable experience can improve myself to be better, more confident and trustworthy in carrying out my responsibilities as an civil engineering student.

I would like to thank my faculty supervisor, En. Mohd Firdaus Akhbar for his guidance, encouragement and concern. With the guidance, assistance and the knowledge poured by my faculty supervisor, I have successfully managed to complete my report and I'm able to master a new thing in Jkr company. It is an honour for being work under the supervision of such a dedicated supervisor.

Last but not least , I would like to express my heartfelt gratitude to my family for their motivation, the attention and support throughout this industrial report work. Without them all, I could not be able to finish this project without them as my backbone.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The industrial training is a industrial internship programme that constructed by University Teknologi Mara (UiTM) management which is compulsory for each student in Civil Engineering programme as a condition for award of Diploma. The period of this industrial training is about 17 weeks and 3 days.

This industrial training is intended to provide experience to the student about the real situation in the work field. Furthermore, the student can develop their skills in work ethics, communication, safety practices, management, etc. Next, student can also be introduced to ways of interacting well, enhancing relationship between industrial workers where this could contribute to a sense of confidence and harmony as well as from all aspects.

The industrial training will also give the students an opportunity to improve their own weaknesses and think more rationally. From this industrial training, the student may evaluate their ability to work from employers. With this real life exposure, student should be able to develop their ability to explore and make a better decision about the consequences of change.

1.2 Background of the Company



Figure 1.2.1 Jkr Manjung Office

The construction of JKR Manjung office has started on 4 October 1982 under the provision of state government. The construction of this building is finished on 25 Disember 1983. This building that worth 1.6 million was first used in early 1984 while the old JKR Lumut building was taken over by the district council.

This building was officially opened by Duli Yang Maha Mulia Paduka Seri Sultan Azlan Muhibuddin Shah Ibni Almarhum Sultan Yusof Ghaffarullahu Shah on 2 October 1987. The attraction of this office is there is a fish pond and garden that built by the JKR staff.

JKR Manjung is led by a district engineer, Ir Ramendra Loganathan. He is assisted by 3 engineers, building engineer , road engineer and maintenance engineer. For information, JKR Manjung has 104 officers and staff from the professional and support management group.



Figure 1.2.2 JKR Logo

Objectives of The Department

As Principal Consultant to the Government of Malaysia and State Government of Perak, Perak Public Works Department pledge to leave the project that meet the quality , time and cost.

Mission of The Department

Perak Public Works Department's mission is to contribute to national development by:

1. Helping our customers realize the basic information and deliver services through cooperation as strategic partners.
2. Provides asset management services and effective and innovative projects.
3. We strive to provide a better quality of life to all employees.
4. Strengthen existing engineering competence.
5. Developing human capital and new competencies.
6. Prioritize integrity in delivering the service.
7. Build a harmonious relationship with the public.
8. Preserving the environment in service delivery.

Vision of The Department

We will be providing World Class Service and the Centre of Excellence in the Field of Asset Management, Project Management and Engineering for the Development of National Infrastructure Human Capital Based Creative And Innovative And Latest Technology.

1.3 Organizational Structure

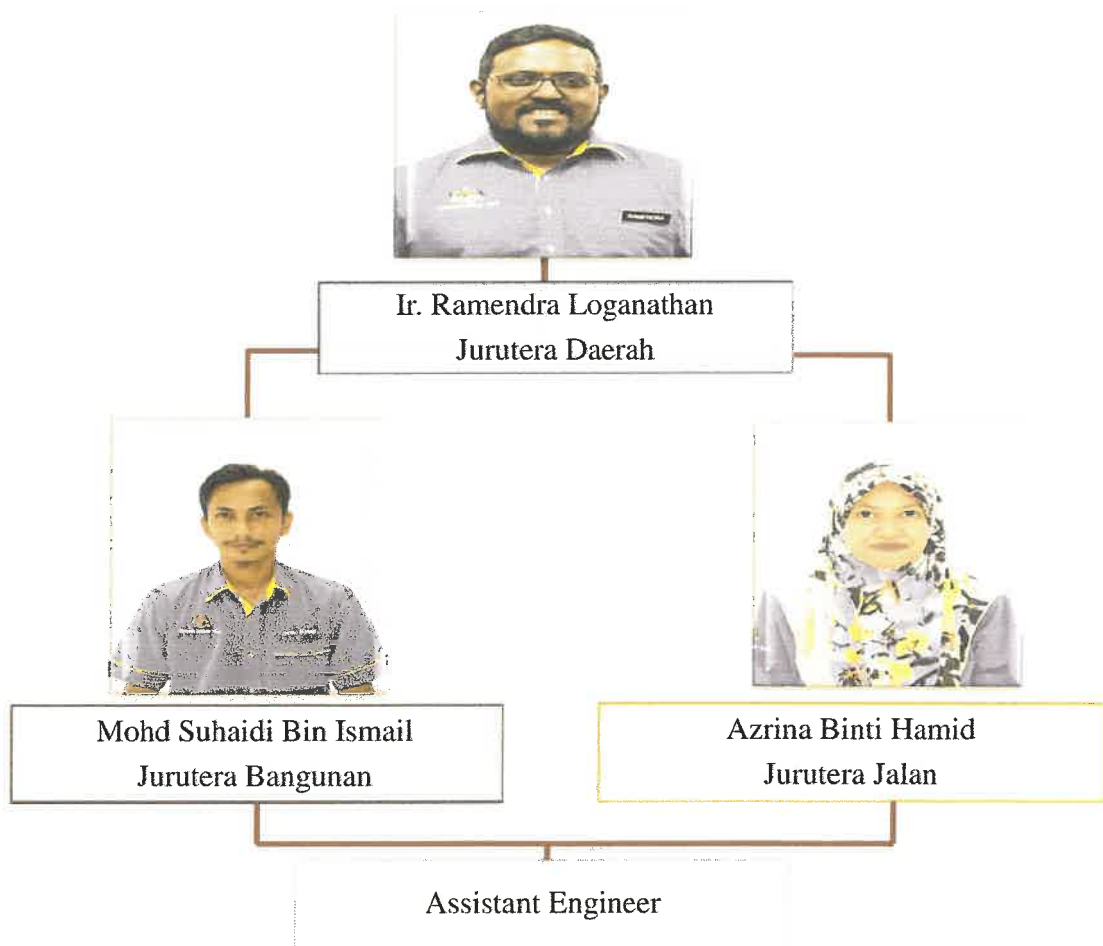


Figure 1.3.1 Organization Structure

1.4 Nature of Business

Project management

Jabatan Kerja Raya (JKR) company is it involved in building and road project management. In project management, we are involved in designing, execution and monitoring projects. In order to complete the project by fulfilling customer goals and requirements, JKR are balancing their time, money and efficiency when executing a project.

There are two ways to implement the JKR projects which are conventional ways and design and build. For the conventional method, all planning and design is done internally (in-house) while for design and build, we will start from planning, designing and building as well as monitoring will be done by the contractor.

Maintenance and Repair Management

This service will maintain public facilities such as ferry services and the development of road facilities for buildings, mechanical systems, electrical vehicles and plants. The most widely done services is road maintenance. The implementation of maintenance program involves the activities such as road surface pavement management system, slope management and mechanical asset.

The planning to maintain and conserve slope along Federal Road is done using computer software known as Slope Priority Ranking System (SPRS). Periodic inspections of high risk slopes are carried out by the JKR district and the data obtained will be included in the system. For the mechanical asset, we acts as advisor to the maintenance of mechanical equipment along the federal road network, such as vehicle weighing stations.

1.5 Products

NO.	PROJECT NAME	PERIOD
1.	MENGUBAH SUAI DAN MENAIKTARAF BENGKEL – BENGKEL NPAV, SEKOLAH MENENGAH VOKASIONAL SERI MANJUNG, DAERAH MANJUNG, PERAK DARUL RIDZUAN	2012
2.	KERJA-KERJA MEMBAIK PULIH STRUKTUR UTAMA JABATAN DAN KERJA-KERJA BERKAITAN DI JAMBATAN SUNGAI DERALIK, DAERAH MANJUNG, PERAK	2013
3.	KERJA-KERJA MEMBINA DAN MENYIAPKAN DEWAN CHANGKAT KERUING, BERUAS, DAERAH MANJUNG, PERAK DARUL RIDZUAN.	2015
4.	MEMBINA JALAN DARI KAPUNG BAHARU KE KAMPUNG TELUK, MANJUNG, DAERAH MANJUNG, PERAK DARUL RIDZUAN.	2016
5.	MEMBINA DAN MENYIAPKAN SISTEM LOJI RAWATAN KUMBAHAN DAN PENCAWANG TNB UNTUK PEMBANGUNAN DI TELUK BARU PULAU PANGKOR, PERAK.	2019
6.	PEMBANGUNAN SEMULA PERKAMPUNGAN NELAYAN DI KAMPUNG MASJID, PULAU PANGKOR, DAERAH MANJUNG, PERAK DARUL RIDZUAN.	2018 – 2020
7.	PROJEK PEMBANGUNAN SEMULA PERKAMPUNGAN NELAYAN DI KG. TELUK KECIL, PULAU PANGKOR, MUKIM LUMUT, DAERAH MANJUNG, PERAK DARUL RIDZUAN (FASA 2)	2020

Table 1.5.1 JKR Project List

PROJECT SITE PHOTOS



Figure 1.5.1 Project Pembangunan Semula Perkampungan Nelayan di Kampung Masjid , Pulau Pangkor, Daerah Manjung, Perak Darul ridzuan



Figure 1.5.2 Project Pembangunan Semula Pembangunan Nelayan di Kg. Teluk Kecil, Pulau Pangkor, Mukim Laut, Daerah Manjung, Perak Darul Ridzuan

1.6 Market Strength

A good market strength indicates the success of a company. Jkr is not denied as a successful company because it has many branches throughout Malaysia. The market strength that used by Jkr is client that selling tenders and finding contractor by their own for the project.

In addition, a complete tender attract many investor as well as their method of selling the tender which is open tender can attract the contractor to bid the tender. From this, Jkr can find the best contractor to handle the project . Jkr job is to monitor the projects that run by the contractor. Futhermore, Jkr also do the inspection to the building after the construction is completed and also after a year the building is completed. If there any damage to the building, Jkr will perform the maintenance on the building as soon as possible.

Next, Jkr also will take an immediate action if there any road problem or there is complaint from the road user by contacting the consession. The concession for the state road is Belati Company while for the district road is Empayar Indera. In addition, the road user is one of our clients so we will do our best to make ensure the comfort to the road user.

Lastly, Jkr company make a good company reputation by by ensuring their project runs according to the time period and is completed on time. Thus, Jkr can can attract more contractor to continue to bid Jkr 'Sebut Harga' and tender for the future project.

1.7 Conclusion

From this chapter, I have learned the history of my industrial places and I discover that the vision and mission are the important elements for a company because it determines the success of a company. By having a vision and mission, all staff will do their best to achieve that vision and mission. Company that have a well-organized organization have a bright opportunity in handling small and large projects. Next, to be a successful company, the company must have their own ways to attract the client to collaborate on the projects. A good relationship between the company and the client can increase the market strength and can ensure that clients can cooperate in the future project.

Besides that, from this chapter I have learned the scope of business of my company. My company are involved in planning and design works and maintenance works. In addition, my company is not only involved in road construction but also involved in building construction and building renovation. Next, I discover that many companies are bidding the tender and sebutarga from Jkr because most of the projects are open tender project. All companies can bid the tender according their company gred. Next, I have also been able to list out some of the projects that have been handled by Jkr from 2012 until 2020.

Finally, from this chapter I have learned a little bit about details of my company background. Next, I can list the market strength of my company and also I discover the method that used by Jkr when selling their tenders and sebutarga. Last but not least, with an organized organization and dedicated staff, this company can last a long time and achieve a lot of success in the future.

CHAPTER 2


TRAINING ATTENDED

2.1 Introduction

This chapter will describe my weekly activity throughout my industrial training. This weekly summary is based on my activities based on my experiences at the building and road department. In addition, this weekly summary is based on my activities that I have been written on my logbook. The logbook will be updated daily to facilitate the smooth process during my industrial training period. The logbook will be submitted to my industry supervisor in the end of the week and my supervisor will give a review on my logbook performance.

From the industrial training, I have expose to the real working environment. It also adds and expands technical knowledge and skills to me. Furthermore, when I attend this training, I find out more about things, and when something will work. In addition, I can learn about the latest technology or skills in industrial training. Next, this training introduces me in terms of ability, willingness and attitude to the employer. This training can highlight my ability to work hard and to work with dedication and show a positive attitude to the employer.

2.2 Exposure level



SUMMARY OF INTERNSHIP ACTIVITIES		
1 st week	24/2/2020 – 28/2/2020	<ul style="list-style-type: none"> • I was briefed on the general overview about the company rules and disciplinary action by my supervisor. • Given a task to calculate and record the document contract. • Transfer the list of document contract into the Excell. • Site visit to Ibu Pejabat Polis Manjung (IPD) and measure the area of roof for the renovation. • Estimate the bill of quantities.  <p>Figure 2.2.1 Site Visit to IPD Manjung</p>
2 nd week	2/3/2020 – 6/3/2020	<ul style="list-style-type: none"> • Learn about document tender and the purpose of the tender. • Discussion with assistant

		<p>engineer, Pn Hakimah about the types of the tender document.</p> <ul style="list-style-type: none"> • There are 2 types of tender: <ol style="list-style-type: none"> 1) Conventional 2) Design and build • Based on the discussion, JKR usually used the conventional tender which is open tender. • Learn the drawing in the document tender ,the piling types and drain types with building engineer, Encik Suhaidi . • There are 4 types of drain that have been used on construction : <ol style="list-style-type: none"> 1) Rectangular shaped 2) Semi-circular shaped 3) U shaped 4) V shaped • Attend gotong royong perdana at JKR Sitiawan. • Discussion with assistant engineer, Encik Hanafi about document tender.
3 rd week	9/3/2020 – 13/3/2020	<ul style="list-style-type: none"> • Learn about the joint guided by assistant engineer , Encik Hanafi. • About 10 joint that I have


		<p>learned such as butt joint, dowel joint, mitre joint and lap joint.</p> <ul style="list-style-type: none"> • Given a task by assistant engineer to differentiate the difference of 'Perolehan secara Terus' and 'Sebutharga' • Next identify the difference between 'Pemilihan kontraktor secara cut-off' and 'Anggaran Jabatan'. • Did a study review about 'Lantikan Terus, 'Sebutharga' and 'Undi' • Attend ceramah about the important of doa's. • Measure the drawing using scale ruler.
4 th week	16/3/2020 – 20/3/2020	<ul style="list-style-type: none"> • Meet my supervisor, Encik Suhaidi regarding our logbook performance. • Need to improve our explanation on the logbook. • Discuss a few question with my supervisor about the piling, pad footing, lintel, damp proof and drainage.
WORK FROM HOME DUE TO COVID CRISIS		
5 th week	17/4/2020 –24/4/2020	<ul style="list-style-type: none"> • Review study on road defect and repair method.

		<ul style="list-style-type: none"> Listed the type of the road defect
6 th week	25/4/2020 – 2/5/2020	<ul style="list-style-type: none"> Review study on type of sewerage system for urban and residential area. Understand the advantage of the combined and separate sewerage system Discover the methodology of combined and separate sewerage system
7 th week	3/5/2020 – 10/5/2020	<ul style="list-style-type: none"> Review study on selection of wiring method for residential and commercial area. Learn the advantage of using conduit wiring method Learn the step to install conduit wiring method
8 th week	11/5/2020 – 18/5/2020	<ul style="list-style-type: none"> Review study on fire - fighting system for commercial and industrial building. Understand the definition of the fire-fighting system. Listed the type of fire-fighting system Learned the methodology of the fire-fighting system.

9 th week	20/5/2020 – 3/6/2020	<ul style="list-style-type: none"> • Review study on Pavement construction method • Learn the layer of flexible pavement • Make a short video about the flexible pavement
10 th week	4/6/2020 – 5/6/2020	<ul style="list-style-type: none"> • Go through Standard Specification for Building Works (JKR) and learn about the production of concrete. • Determine the different about ready mixed concrete and site mix concrete.
11 th week	8/6/2020 – 12/6/2020	<ul style="list-style-type: none"> • Help processing Sebutharga • Discover about 70 company were bid for the Sebutharga and it opened for contractor G1. <div> </div> <p>Figure 2.2.2 Processing Sebut Harga</p> <ul style="list-style-type: none"> • Did a review study on placing under dry condition

13 th week	22/6/2020 – 26/6/2020	<ul style="list-style-type: none"> • Went to SMK Ambrose , Ayer Tawar with assistant engineer to do building inspection. • Inspect the ceiling, fan and • Purpose of the inspection is to inspect the building, check the proposed renovation at jetty and check whether the building is in a good condition • Jkr must do the inspection every one year after the building is construct. <div style="text-align: center;">  <p>Figure 2.2.4 Inspect the Ceiling</p> </div> <div style="text-align: center;">  <p>Figure 2.2.5 Site Visit to Jetty</p> </div>
14 th week	29/6/2020 – 3/7/2020	<ul style="list-style-type: none"> • Move to highway department.

		<ul style="list-style-type: none"> • Highway engineer explain about the federal road and state road. <ol style="list-style-type: none"> 1) Federal road connect state to state 2) State road connect the district • The federal road and state road are maintained by concession company <ol style="list-style-type: none"> 1) Federal road – Belati 2) State road – Empayar indera • Went to Kg. Teluk to take a road sample . • Purpose is to do the coring test • At least 1 sample is taken per 500m³. The sample are use to determine the thickness and the density after compaction. • After coring the hole will be compacted with other premix. • Went to Ulu Licin tp check the signage. • Went to Jabatan Perikanan Malaysia to do some building inspection. • The purpose of inspection is for the maintenance purpose
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15 th week	6/7/2020 – 10/7/2020	<ul style="list-style-type: none"> • Learn the pothole repairing process • The existing pothole cannot directly be patch. • Type of premix that can be used is cold mix and hot mix. • Rectangular section that used for patching must follow the specific size which is the (0.5mx0.5m) smallest and (1.3mx1.3) largest. • Went to Damar Laut to do some slope inspection. • The slope repark work use the ‘Gunting + Soil Nailing’ method. • About 72 points are made • 24 point can be done in a a day if there is no obstacle. • Learn the step of slope construction using tye soil nailing method.  <p>Figure 2.2.6 The Drilling Grit Machine</p>
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16 th week	13/7/2020 – 17/7/2020	<ul style="list-style-type: none"> • Help processing ‘Sebut Harga’ . • Check the qualifications of the bidding company including their certificate registration from cidb • Learn about crack sealing • Learn the sealing application method • Crack sealing material can be used for treat cracks in 4 configuration : <ol style="list-style-type: none"> 1) Flush fill 2) Reservoir 3) Overband 4) Combination (Reservoir and Overband) • Help assistant engineer, Pn. Hafizah to move the contract file into the box according the year of the project. • Corrupted files will be taken to disposal area.
17 th week	20/7/2020 – 24/7/2020	<ul style="list-style-type: none"> • Video call with faculty supervisor . • Discuss about activities and project involved at Jkr company. • Went to Kg. Sungai Tiram, to see the road resurfacing process with assistant

		<p>engineer, En. Jamal.</p> <ul style="list-style-type: none"> • Understand the details about the project which is the length of the road that will be paved is about 300m and before starting to paved the road, the road will be sprayed with tack coat. • The road pavement will be done using the paver machine. • There are 3 types of paver machine which is fixed screed paver, slipform paver and floating screed paver. • The compaction that we use for the project is steel wheel rollers and Pneumatic tire rollers. • Attend meeting “Program Audit Rutin Zon Utara” at meeting room with assistant Engineer, Pn. Farah and building engineer, En. Suhaidi. <div> </div> <p>Figure2.2.7 The Audit Meeting</p>
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18 th week	27/7/2020 – 31/7/2020	<ul style="list-style-type: none"> • Went Ayer Tawar with Encik Said and Encik Jamal to view the proposed pedestrian bridge construction site. • The purpose of the pedestrian bridge is for the student to cross to . • The location is near to Sk.Ayer Tawar. • There are many companies such as Tenaga Nasional Berhad and Celcom Axiata attend the site visit to discuss and estimate the cost of utility allocation. <div> </div> <p>Figure 2.2.8 Site Visit at Ayer Tawar</p> <ul style="list-style-type: none"> • Went to Damar Laut to visit slope construction. • Learn the process of drilling hole for pile. • Watch the grouting process using Drilling Grit Machine.
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		 <p>Figure 2.2.9Drilling Grit Machine</p>
19 th week	3/8/2020 – 5/8/2020	<ul style="list-style-type: none"> • Learn about the corrugated surface. • There are 2 type of corrugated surface which is Short waves and Long waves. • Learn the Road Surface Irregularity <ol style="list-style-type: none"> 1. Transverse Irregularity 2. Longitudinal Irregularity • Learn the International Roughness Index.

Table 2.2.1 Weekly Summary Of Industrial Training

2.3 Conclusion

This weekly summary makes it easy for me to recall on what activities that I did during the week. Furthermore, from this weekly summary I can discuss with my supervisor for more knowledge and to ask a few question regarding the project that I did not understand. Next, this weekly summary can be my reference after the training period in the firm after I'm completed my studies. This weekly summary proves that I understand and appreciate the work done during the industrial training.

In addition, from this industrial training, I have learned many things such as learn the difference between tender and sebutharga. The difference is tender is a project that more than RM500,000 and it opened for company that 100% owned by warganegara while sebut2harga is project that more than RM50,000 to RM500,000 .

Next, during my industrial training, I am able to handle the problem with wise based on my experience throughout my studies at University Teknologi Mara (UiTM). The conclusion that I can defined is this industrial training build and strengthen me to be more confidence to face any task in the workplace and to apply the theories that I have learned to practice and to solve problem that related to this field.

CHAPTER 3

TECHNICAL REPORT

3.1 Introduction

During my industrial training, there are few projects that I involved at Jabatan Kerja Raya (JKR) Manjung. For the first 8 weeks, I have involved project at the building department and for the remaining weeks of my industrial training, I have involved project at road department. The project that I involved at building department is “Kerja-Kerja Menaiktaraf dan Baikpulih Stor Barang Kes Jabatan Siasatan dan Jenayah Narkotik Daerah Manjung, Perak Darul Ridzuan. Beside that , I also involved in processing “Sebut Harga”. Next, at the road department, the project that I have involved is “ Kerja-Kerja Menurap Semula Permukaan Jalan A228 (section 1.00 – 1.50)” and “ Kerja Pembaikan Cerun Menggunakan Kaedah ‘Guniting + Soil Nailing’ ”.

“Kerja – Kerja Menaiktaraf dan Membaikpulih Stor Barang Kes Jabatan Siasatan dan Jenayah Narkotik Daerah Manjung, Perak Darul Ridzuan”

The site is located at Ibu Pejabat Polis (IPD) Daerah Manjung. JKR is responsible for the maintenance of the government building. For the project JKR Manjung was the client who conducts the site visit and selling the “Sebut Harga” to contractor. For this project, I am involved in doing site visits and measuring work. The site visit is led by building engineer , En. Suhaidi and assistang engineer, Pn. Halimaton. This project involved the renovation for roof, the parking area, the toilet, windows and grill installation. After the site visit, I received a task from Pn. Halimaton to produce the bill quantities. The bill quantities are based on the renovation work. Pn. Halimaton also guided me to prepare the bill quantities. This project is still in process to complete the ‘Sebut Harga’ and the renovation work has not started yet.

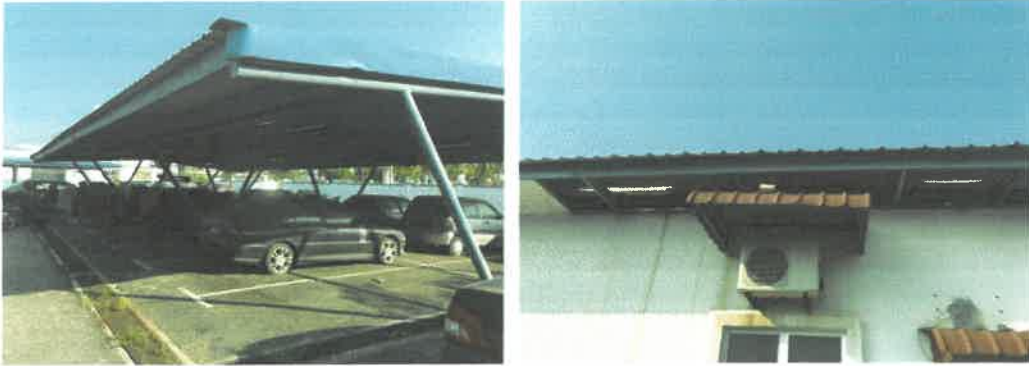


Figure 3.1.1 Parking Area and Roof



Figure 3.1.2 The Windows and The Room That Need To Be Renovate



Figure 3.1.3 Area to Build The Toilet

“ Kerja-Kerja Menurap Semula Permukaan Jalan A228 (section 1.00 – 1.50)”

The site is located at Kampung Sungai Tiram, Lekir. The length of road that will be paved is about 300m. The road paving process is done on the both of the road lane. Each lane has width about 3.5m. The company that handle this project is GB Kuari and been monitored by JKR Manjung. Before starting to paved, the road will be sprayed with tack coat. The road that has been sprayed must close to traffic. The fresh road premix will be carried by premix truck from the kuari. The weight of the premix and the premix truck is about 25 tan. Here I include the procedure of the road paving process.

1. The road will be sprayed with tack coat before the paving process.
2. The temperature of premix that carried by truck must exceed 140°C. The premix truck must be cover by canvas to maintain the temperature of the premix.
3. Next, the premix is transfer from premix truck to the paver.
4. The temperature of premix at the paver is checked and must not less than 140°C.
5. The premix is layer at the surface by paver and the temperature are checked and must at least 120°C.
6. The starting of the road resurfacing is done with hand casting to ensure the road pavement is even.
7. Next, the road paving is done using the paver machine.
8. For the compaction, we use the Steel Wheel Rollers and Pneumatic Tire Roller. The rolling pattern for both roller is 3-3-3 .
9. The speed of steel wheel rollers should not exceed 5km/h and for Pneumatic Tire Roller is 8km/h.



Figure 3.1.4 Tack Coat and Premix Transfer to Paver



Figure 3.1.5 Checked Temperature at Paver and After Layer at Road Surface



Figure 3.1.6 Hand casting Process and Paver machine

“ Kerja Pembaikan Cerun Menggunakan Kaedah ‘Gunting + Soil Nailing’ ”

The site location is located at Damar Laut. The main contractor of this project is Pintas Utama Company and the sub-contractor is Mega Sedaya Company. Encik Said, assistant engineer from JKR is responsible to monitor this project. This slope repair work use the ‘Gunting + Soil Nailing’ method. There are 72 point will be made for this project. The time taken to finish this project is about 1 month. This project is still ongoing and not finished yet. Here I include the procedure of the slope protection.

1. The first thing before starting the construction we must do the site clearance at the slope location.
2. Next, the point are determine and staging are done.
3. Drilling the holes using Drilling Grit Machine. If there is obstacle like rocks, the diamond pit will be used for the drilling process.
4. The cube test is done to determine the strength and types of cement.
5. Next, grouting process are done. The grouting is the work that inject the mixture of cement and water into the hole.
6. After the grouting process, the slope will be placed with BRC .
7. Lastly, the slope will be spray granite. After that, capping work will start.

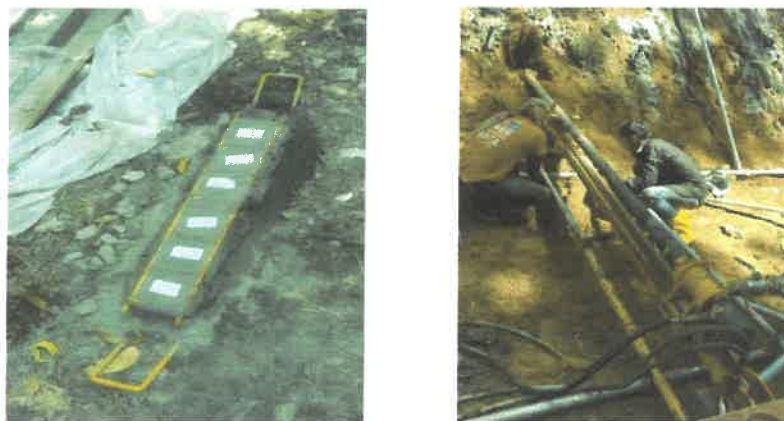


Figure 3.1.9 Cube Test Mould and Drilling Grit

3.2 Problem encountered and how to overcome it

1) **Problem** : The bill quantities price not followed the JKR Specification.

Solution : Refer the work and the price details from Jadual Kadar Harga (JKH) by JKR .

2) **Problem** : Never made bill quantities related to toilet renovation.

Solution : Refer to the previous JKR bill quantities and ask assistant engineer to guide when preparing the bill quantities

3) **Problem** : The temperature of road premix from the premix trucks are not more than 140°c.

Solution : The premix truck must be cover by canvas to maintain the temperature of the premix.

4) **Problem** : The layer of the new pavement is not compacted properly.

Solution: Ask the contractor to follow the rolling pattern and make sure the speed of steel wheel rollers should not be exceed 5km/h and for pneumatic tire roller is 8km/h.

5) **Problem** : The rainy weather cooling the premix and effect on the compaction.

Solution : Ask the contractor to stop the work and continue after the rain stop.

6) **Problem** : When making a slope protection there are rocks in the ground during drilling process. The rocks cause only 12 points out of 24 points to be drilled for a day. It slowdowns the drill process.

Solution : Use the 'diamond pit' machine if there is a rocks in the ground.

3.4 Conclusion

In conclusion, after undergoing 17 weeks and 3 days of industrial training at Jabatan Kerja Raya Manjung (JKR), there is a lot of new knowledge that can be gained and I can fully understand on how this company plays an important role in industry, especially in building and road construction. The exposure given to me by JKR employees on the work and technical aspects is a very useful knowledge for me to prepare myself before entering the real working environment.

Furthermore, I hope that with my participation on Industrial Training, there will be no unusual feelings when I'm start to work later and after I have completed this course. JKR staffs are very helpful and welcoming. They gave me a lot of insight to the terms of reference and the procedures relevant to my work cycle. Other than that, I also get a useful knowledge when visiting the construction site, meeting atmosphere etc. Exposure given to me at this firm will offer the image of a real-life situation, the challenge and responsibility that certain people on the field will bear.

It had been a good training platform to the intern to practice both technical and non-technical knowledge and skills in real life application. Furthermore , this experiences open my eyes on how the industry works and get the opportunity to explore new field an knowledge. Besides that, from this chapter I have discover the problem that encounter during my project and I learn on how to find the solution of each problem.

4.2 Lesson Learned

An internship is opportunities to test drive a career without making any serious commitments. It gives me experiences, lessons, and skill that I need before entering the real working world t in the future. The most valuable things that I have learned from an internship are newfound knowledge. This knowledge is very important for me to execute task that related to my career path, as well as sharpening the skills that I already have. Most of students believe that internship mostly making all-day coffee, doing printing work and following superior order, but this is not true. An internship is a chance to test all the skills that I have developed at college and see how they work in the real world.

Next, working in a professional environment for the first time can be hard to get used to. Yet it is the perfect way to learn how to navigate the working world through real-life, hands-on experience. One of the most important qualified that I have learn from the internship is the ability to communicate with people in a professional setting. Besides that, the discussion with bossed or co-workers are very different with lecturers or classmates. In addition, I should have a clear understanding on how to behave as a professional after this internship. This will support me a lot when I start interviewing for jobs because I will be more confident, mature and experienced.

Furthermore, the lesson that I learned is always work hard even if your task small and seems unimportant. It is because it will help me to build good work ethics and people will notice my effort. It's not nice to always be told what to do but the supervisor mostly know better. This makes it easier for me to obey the rules and guidelines which they give me. Lastly, the lesson that I learned is be independence. Sometimes, we believe the way to learned is to be spoon-fed, but learning independently has proved to be very useful. This internship teach me to make my own decisions, and to do things by my own. In the working world it is really important to be able to work independently with little direction.

4.3 Knowledge gained

Overall, my time at Jabatan Kerja Raya Manjung has been quite eye-opening and educational. Most significantly, the internship helped me to be more of a leader in my job and to be more optimistic. My training has been satisfying and I feel much more prepared for the real world. Here I state the knowledge that I gained during my internship.

First, the knowledge that I gained is don't be afraid to ask question. It shows by asking questions you are sincerely engaged in your job, and that you care about the outcome. Next, it is good to come early and leave late. Coming in early and staying late not only gives me more time to complete my work but also shows how committed I am to the job. People around me will understand the effort that I put in.

In addition, it is compulsory to keep a professional and cordial relationship with other employees. Being respectful and maintaining a professional with my colleagues makes my working life better and a more enjoyable experience. Lastly, the knowledge that I gained is I learn something new each day. Being fresh into the real world, learning the professional side of engineering is going to be new. There must be employees, or even acquaintances with experience that can inspire me. It's a big bonus to have a mentor because he or she has seen it all and can lead me in the right direction

4.4 Suitability of organization

Based on my experience while undergo industrial training for 17 weeks and 3 days, this company is suitable for my internship because it has the criteria wanted by my UiTM. There is a lot of information and the experience that can gained from this organization and I can apply the knowledge that I learn from my university at this company because it us similar to the course that I took at university. Furthermore, I have experience to work on site as well as in the office when doing the industrial training at this company.

4.5 Limitations and Recommendation

From my point of view, the limitations are the duration of the industrial training is short due to covid-19. My recommendation is the university need to extend the duration of industrial training because during 2 month of Movement Control Order (MCO), the students only undergo industrial training via online. This cause the period of industrial training at the company to be shortened. The ideal duration for the industrial training is at least four to six month. It is because the duration is suitable for the company to teach, guide and to develop the students.

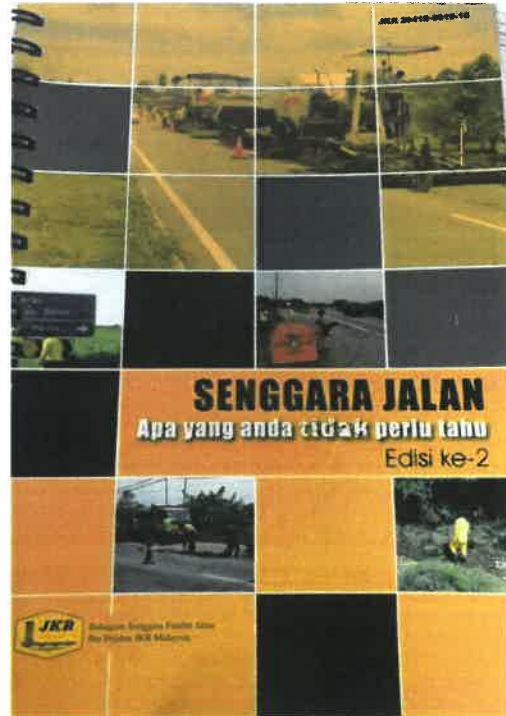
Next, throughout this industrial training period, I had encounter with a few limitations which is limited desk and computer in the company. The desk only enough for the employees only and I have to share the desk with other industrial training students. Besides that, the computers for student also cannot be used and we have to share the desktop with the staff. It would be very disturbance for the person who is in the process of working using the desktop. I am recommending my company to provide the desk and computer for each of the industrial training students.

Lastly, the limitation is the intern did not have many chance to go to construction site. My recommendation to my company is to give the student opportunity to see and visit construction site. Company should more often bring the students to construction sites to expose the student about the building and road construction. Thus, the student can apply their knowledge that they have learned at university at the construction site.

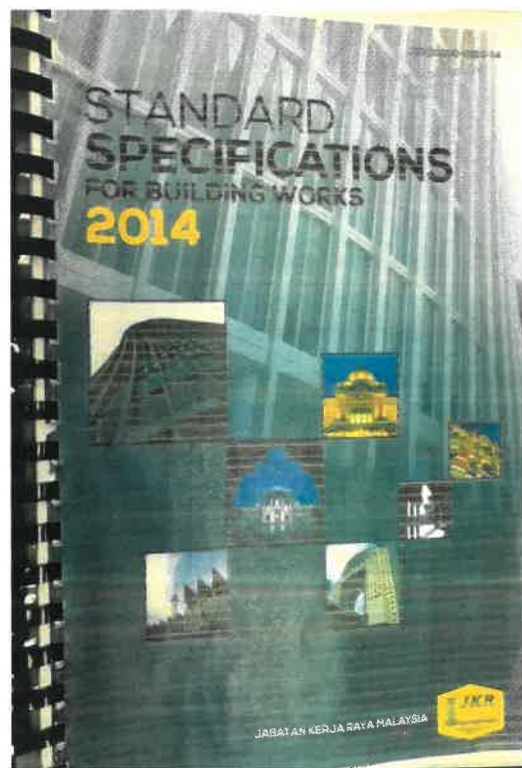
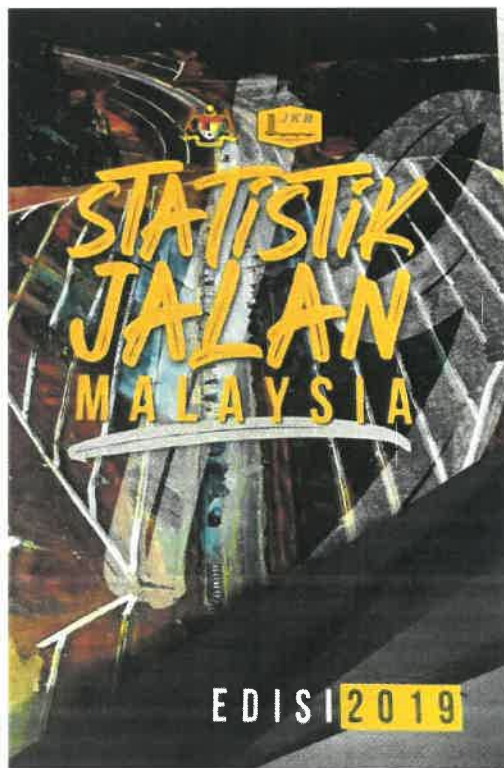
REFERENCES

1. Standard Specification For Building Works 2014 Jabatan Kerja Raya Malaysia
2. Jadual Kadar Harga (Kejuruteraan Awam Dan Bangunan Tahun 2019) Jabatan Kerja Raya Malaysia
3. Traffic Management Plan (TMP) Jabatan Kerja Raya Malaysia
4. Senggara Jalan (Apa yang Anda Tidak Perlu Tahu) Edisi ke-2 Jabatan Kerja Malaysia Bahagian Senggara Fasiliti Jalan
5. Statistik Jalan Malaysia Edisi 2019 Jabatan Kerja Raya Malaysia

APPENDICES



Appendix 1.0 Jadual Kadar Harga Book and Senggara Jalan Book



Appendix 2.0 Statistik Jalan Malaysia Book and Standard Specifications For Building Work Book

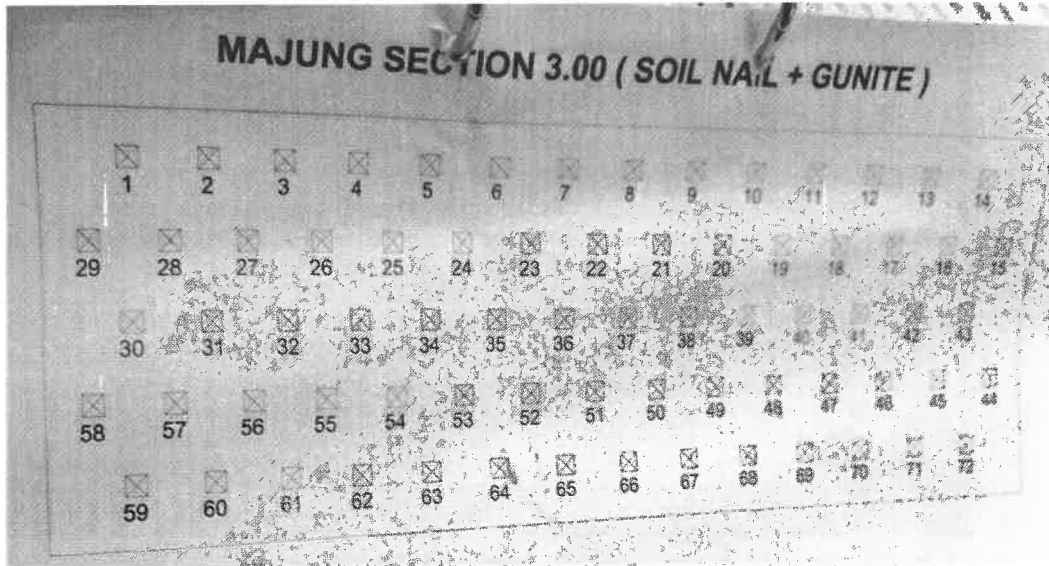
Bil	Perihal Huraian	Unit	Qty(A)	Kadar Harga	Harga (A)
1.00	KEHENDAK PEMULAAAN DAN SYARAT-SYARAT AM				
1.01	Insuran Contractor All Risk (Merangkumi keseluruhan tempoh pembinaan, Tempoh Tanggungan Kecacatan 6 Bulan dan 3 Bulan 14 hari. (Bayaran Mukatamad untuk item 1.01 adalah berdasarkan kepada resit perolehan polisi)	LS			
1.02	Insuran Workmen Compensation (Bermula dari tarikh milik tapak sehinggalah perakuan siap kerja)(Bayaran Mukatamad untuk item 1.02 adalah berdasarkan kepada resit perolehan polisi)	LS			
1.03	Bon Pelaksanaan dalam bentuk gerenti Bank/Insurans atau Wang Jaminan Pelaksanaan. *Kosongkan nilai sekiranya kontraktor memilih Wang Jaminan Pelaksanaan.	LS			
1.04	Sampel-sampel bahan, ujian @ ketukangan	LS			
1.05	Air Dan Kuasa Elektrik Sementara (Bayaran dibuat berdasarkan bil dan pengesahan dari pihak yang terlibat.)	LS			
1.06	Membekal gambar kemajuan kerja 3 peringkat saiz 4R setiap gambar, Sediakan dalam Buku Laporan Siap Kerja saiz A4 dan bekal dalam bentuk cakera padat gambar kemajuan 1 set bagi : i) Gambar Kemajuan Sediaada (bilangan minima 6 keping) ii) Gambar Kemajuan Semasa Kerja (bilangan minima 6 keping) iii) Gambar Kemajuan Semasa Siap (bilangan minima 6 keping)	LS			
2.00	KERJA PEMBAIKAN BUMBUNG DAN RUANG PARKING BAGI KENDERAAN BARANG KES				
2.01	Memasang 75mm diameter paip keluli sederhana keras	m		125.90	
2.02	Membekal dan memasang bumbung dek logam berombak untuk bumbung termasuk semua peralatan tambahan dan hendaklah mematuhi sepenuhnya arahan pengilang (diukur mengikut luas yang ditutup sahaja).	m ²	314.87	69.80	
	Membekal dan memasang parabundel logam	m	17.8	3000	
3.00	KERJA-KERJA PEMBAIKAN PINTU PEJABAT				
3.01	Membekal dan menggantikan pintu kayu dengan pintu besi	NO	1	1316.70	
4.00	KERJA-KERJA PEMASANGAN GRILL BESI DI PINTU				
4.01	Membekal dan memasang jerak (grille) dari keluli lembut tergalvani pada pintu termasuk semua kelengkapan yang perlu serta mengecat	m ²	2	180.20	
5.00	KERJA-KERJA PEMASANGAN GRILL BESI DI TINGKAP				
5.01	Membekal dan memasang jerak (grille) dari keluli lembut pada tingkap termasuk bolt dan semua kelengkapan yang perlu serta mengecat	m ²	5.76	120.70	
6.00	KERJA-KERJA PEMBAIKAN BUMBUNG DI BILIK PENYIMPANAN BARANG KES DAN PEJABAT POUND TRAFIK				
6.01	Membuka dan membuang bumbung logam berombak di bilik penyimpanan barang kes dan pejabat pound trafik	m ²	3.15	7.00	
6.02	Membuka dan membuang siling di bilik penyimpanan barang kes dan pejabat pound trafik	m ²	3.15	3.10	
6.03	Membuka dan membuang gutter di bilik penyimpanan barang kes dan pejabat pound trafik	m	26.1	40.70	
6.04	Memasang bumbung dek logam berombak di bilik penyimpanan barang kes dan pejabat pound trafik	m ²	43.15	7.00	
6.05	Memasang siling di bilik penyimpanan barang kes dan pejabat pound trafik	m	37.15	24.20	
7.00	KERJA-KERJA PEMASANGAN PAGAR BUMBUNG DEK LOGAM (0.48MM) DI KAWASAN PENYIMPANAN BARANG KES				
7.01	Memasang pagar bumbung dek logam sepanjang kawasan setinggi 2.30m dan panjang 99m.	m ²	237	222.00	
8.00	KERJA-KERJA PEMASANGAN BUILD IN CABINET UNTUK PENYUSUNAN BARANG KES DI TEMPAT PENYIMPANAN BARANG KES				
8.01	Membekal dan memasang build in cabinet	LS		98.20	

Appendix 3.0 Bill Quantities Kerja-Kerja Menaiktaraf Dan Membaikpulih Stor Barang Kes IPD Manjung

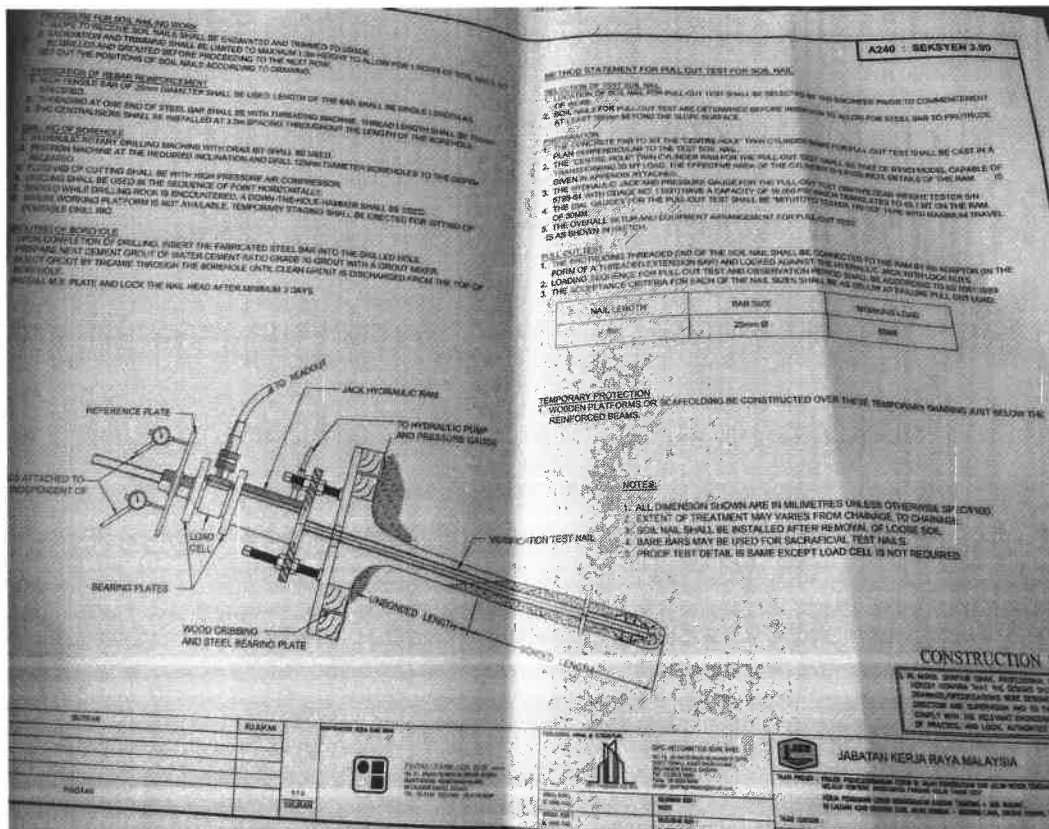
KERJA KERJA MEMBAIKPULIH BANGUNAN PEJABAT DAN KUARTERS DI JABATAN PERIKANAN MALAYSIA,
KEMENTERIAN PERTANIAN DAN INDUSTRI MAKANAN TAHUN 2020

BIL	PERKARA
	<p>PERYENGGARAAN PEJABAT INSTITUT PENEYELIDIKAN PERIKANAN KG.ACHEH</p> <p>SILING RM 146,500.00</p> <p>1. KERJA PEMBAIKAN BUMBUNG MENARA</p> <p>2. WATERPROOFING MENARA</p> <p>3. PEMEGANG KAYU MENARA (HANDRAIL)</p> <p>4. CAT ANTI KARAT <i>- Turges / h/put</i></p> <p>5. PENGGANTIAN DOWNPIPE</p> <p>6. PENGGANTIAN SILING YANG ROSAK ✓ (2) (1)</p> <p>7. PEMASANGAN GRILL JENIS BOLEH BUKA 6 UNIT (4 UNIT DI MAKMAL & 2 UNIT DI UNIT KAPAL) ✓</p>
	<p>PEMBAIKAN KUARTERS INSTITUT PENYELIDIKAN PERIKANAN (FASA 2G & 1E)</p> <p>SILING RM 200,000.00</p> <p>1. KERJA REWIRING ELEKTRIK 10 RUMAH (FASA 1E RUMAH NO 4,5,6,8,9,11,12,18,22 DAN 23)</p> <p>2. KERJA PEMBAIKAN AM (FASA 1E)</p> <p>a. rumah No 23 - resapan air dari flat roof</p> <p>b. Rumah no 5 & 18 - kerja paip</p> <p>c. Kerja pembaikan pagar 1 unit rumah</p> <p>d. Rumah no 8 & 4 -tukar tingkap nako kepada fixed glass</p> <p>e. Rumah no 6 - Pembaikan lantai</p> <p>f. Rumah no 6 -Penggantian pintu bilik 1 no</p> <p>g. Rumah no 5 & 4 - Pembaikan siling</p> <p>h. Rumah no 4 - Waterproofing (resapan air dari flat roof)</p> <p>3. KERJA PEMBAIKAN AM (FASA 2G)</p> <p>a. Rumah no 57 - Retak dinding</p> <p>b. Rumah No 57 - Pintu tandas 2 nos</p> <p>c. Rumah No 57 - Tile dinding</p> <p>d. Rumah No 59 - Point Elektrik</p>
	<p>PERYENGGARAAN PEJABAT CAWANGAN PERLINDUNGAN SUMBER KG ACHEH</p> <p>SILING RM 30,000.00</p> <p>KERJA CAT <i>mau dalam</i></p> <p>a. Pejabat <i>2</i></p> <p>b. Surau <i>cat/ pagar</i></p> <p>c. Setor <i>tambahan</i></p> <p><i>- parking</i></p> <p>(1E)</p> <p>(R) - <i>tambah utk aircond</i></p> <p>(2G) - (10)</p> <p>- <i>pagu</i></p> <p>- <i>cat</i></p>

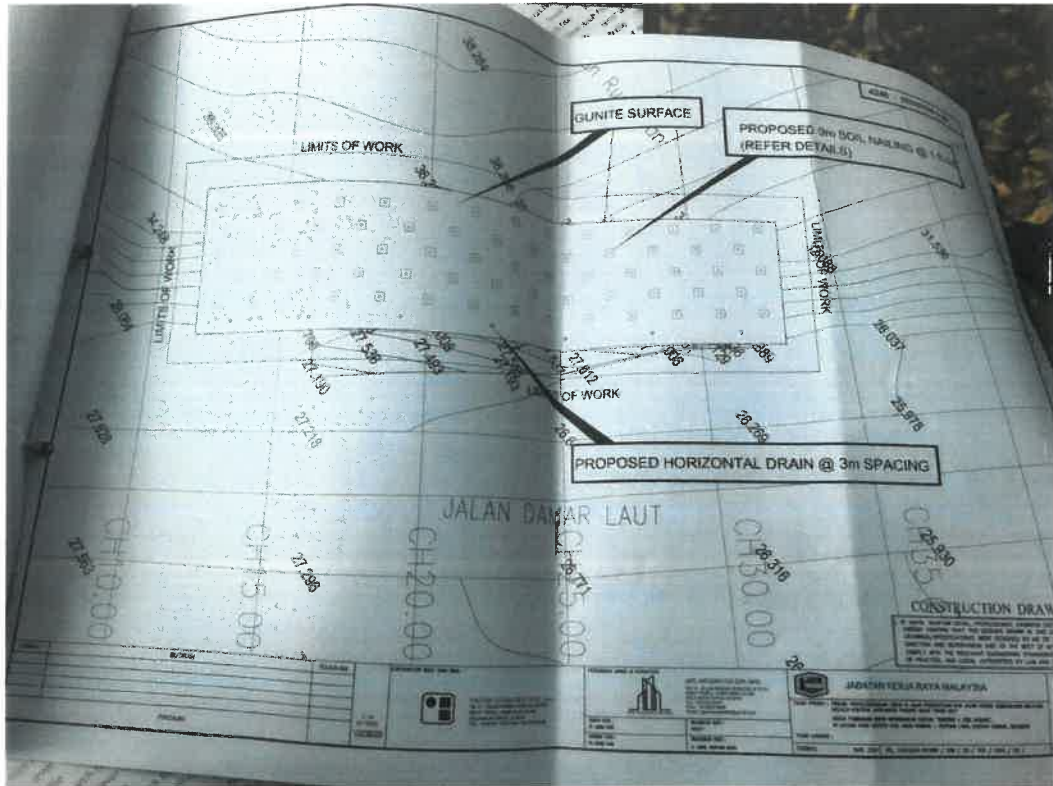
Appendix 4.0 List of inspection of Kerja-Kerja Menaiktaraf and Membaikpulih Bangunan dan Jabatan Perikanan Malaysia



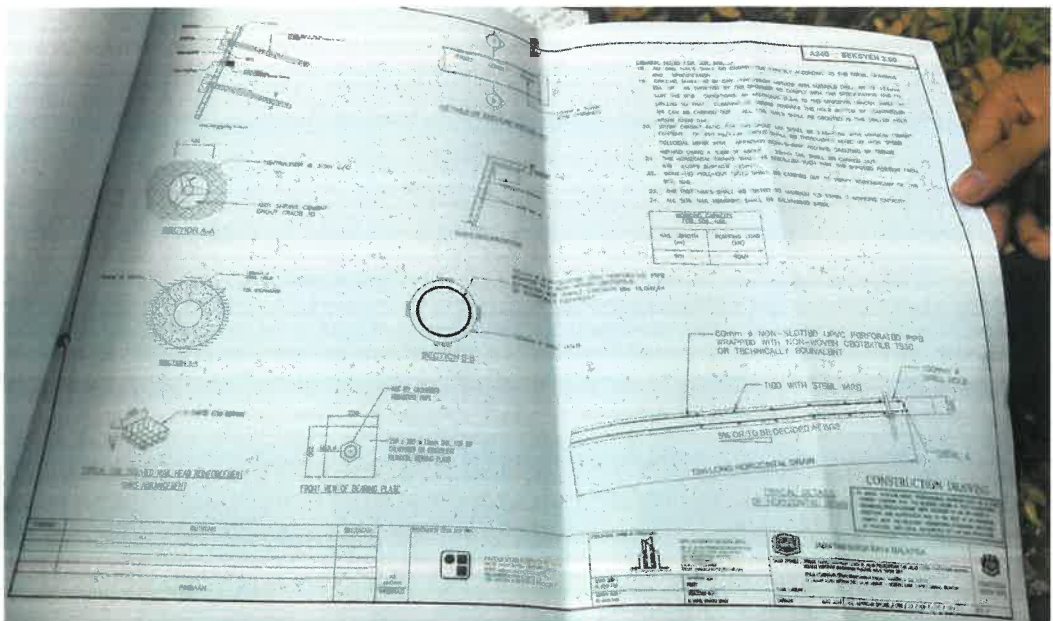
Appendix 5.0 Projek Penyelenggaraan Cerun (Stagging Point)



Appendix 6.0 Projek Penyelenggaraan Cerun (Details Drilling Grit)



Appendix 7.0 Projek Penyelenggaraan Cerun (Proposed Horizontal Drain)



Appendix 8.0 Projek Penyelenggaraan Cerun (Details of Drain)

PROJEK PENYELANGKAN CERUM MENDUKUNG KE KAZAN BOIL NALING DAN COUNTING DI LALUAN A300
SEKUTERA LALU LINTAS JALAN DAMAS LAUT, MALLANG, PERAK

No	Description	SOE REF	Unit	Quantity	Rate	Amount
4.1	TRAFFIC MANAGEMENT PLAN					
4.1.1	Preparation of traffic management plan (S.O.)	TFMG 0	Day	90		
4.2	TEMPORARY ROAD SIGNAGING					
4.2.1	Supply temporary road signposts including installation, transport, maintenance, replacement, removal within 100 meter either side roadwork area	TFMG 9	no/day	1,380		
4.2.2	Workmen installing signposts	TFMG 10	no/day	900		
4.2.3	Check and replace signposts	TFMG 10	m	40		
4.2.4	Remove signposts	TFMG 11	no/day	180		
4.3	TEMPORARY ROADWORK					
4.3.1	Supply, install in position and assembly of temporary works signs of high visibility reflective sheeting complete with posts, brackets and brackets including setting of the sign at each stage and removal at the completion of the works		no/day	180		
4.3.2	T 1 - Road Block Sign (12' Wide x 6' High)		no/day	180		
4.3.3	T 2 - Speed Limit Sign (12' Wide x 6' High)		no/day	360		
4.3.4	T 3 - Road Narrow Sign (12' Wide x 6' High)		no/day	180		
4.3.5	T 4 - Road Work Sign (12' Wide x 6' High)		no/day	270		
4.3.6	T 5 - Advance Warning Sign (12' Wide x 6' High)		no/day	180		
4.4	TRAFFIC MANAGEMENT PLAN AND REPORTS					
4.4.1	Allow for the preparation and submission of traffic management plan and traffic statement for approval upon request to the S.O.	TFMG 04	no	1		
4.4.2	Submission of traffic management plan report to the S.O.	TFMG 05	no	1		
TOTAL CARRIED TO SUMMARY						

PROJEK PENYELANGKAN CERUM MENDUKUNG KE KAZAN BOIL NALING DAN COUNTING DI LALUAN A300
SEKUTERA LALU LINTAS JALAN DAMAS LAUT, MALLANG, PERAK

No	Description	SOE REF	Unit	Quantity	Rate	Amount
5.1	Asphalt					
5.1.1	Supply and generally all items, plants, materials, labour and all other incidental items in connection with the work of 1.5m above ground including preparation, transport, storage and delivery	ECOW 1	sqm	300		
5.2	Excavation					
5.2.1	Excavate and dispose material in cutting or to bank and back cover free site	ECOW 5	m ³	100		
TOTAL CARRIED TO SUMMARY						

Appendix 9.0 Projek Penyelenggaraan Cerum (Bill of Quantities)

G.B. KUARI 10161454
 Pejabat: 15A, Jalan Sultan Nazrin Shah (Jalan Gopeng), 31350 Ipoh
 Tel: 05-3125111 (P), 3125012 (P) Fax: 05-3125028 (P) **TAK INVOICE**
 Kuant: Kuala Gopeng, (Off Jalan Sg. Siput (S)), 31900 Kampar
 Tel: 05-4660718 (T), 014-2987419 (T), 05-4660529/0492 (P) Fax: 05-4660121 (P)

Customer: JKR, MALANG
 Project: JALAN DAMAS LAUT CERUM LEBAT
 Location: MALLANG, PERAK
 Date: 22/7/2022
 Amount: 5.9 - 5.00
 9.
 8
 JERM

Appendix 10.0 Project Resurfacing Road (Details Of Premix)

PROGRESS ASSESSMENT FOR INDUSTRIAL TRAINING
(Report Evaluation Form)

Student Information			
Name	NURARINA HUSNA BINTI ZAHIDI	UITM No.	2017226206
Programme	DIPLOMA IN CIVIL ENGINEERING	ID No.	990421-08-8414
Session	MARCH 2020 – SEPTEMBER 2020	Semester	6
Date of Commencement	24 FEBRUARY 2020	Date of Completion	5 AUGUST 2020
Organization Information			
Organization	JABATAN KERJA RAYA DAERAH MANJUNG, PERAK		
Name of Supervisor	MOHD SUHAIDI BIN ISMAIL , AZRINA BINTI HAMID		
Designation	JURUTERA BANGUNAN , JURUTERA JALAN		
Faculty Supervisor Information			
Name	MOHD FIRDAUS AKHBAR		

No.	Criteria	CO2-PO3	CO5-PO12
1.	Abstract	/5	
2.	Introduction		/5
3.	Report content	/5	
4.	Conclusion and Recommendation for Industrial Training		/5
CO-PO MARKS		/10	/10

Signature & Official Stamp
(Faculty Supervisor)

Date

10%

No.	Criteria	5 (Excellent)	4 (Good)	3 (Satisfactory)	2 (Average)	1 (Weak)
1.	Abstract (CO2-PO3) Summary of; • Training that has been undertaken • Lesson learnt from the training.	Training and lesson learnt are described clearly	Training and lesson learnt are described with substantial clarity	Training and lesson learnt are described satisfactorily	Training and lesson learnt are described with minimal clarity	Fail to describe training and lesson learnt
2.	Introduction (CO5-PO12) • Background of Organization • Scope of Work Covered • Report Organization.	Clear description of content	The content is described with clear substantially	The content is described with moderate clarity	The content is described with minimal clarity	Fail to describe the content
3.	Report content (CO2-PO3) • Tasks carried out • Problems encountered • Problem solving Approach • Lesson learnt	All elements are clearly described	Tasks, problems encountered and problem solving approach are clearly described but lesson learnt is missing	Tasks and problems encountered are clearly described but problem solving approach is not clearly described	Tasks are clearly described but problems encountered is not clearly described	Tasks are not clearly described
4.	Conclusion and Recommendation for Industrial Training (CO5-PO12) • Conclude the findings of Industrial Training • Evaluations on outcomes of training & suitability of the placement.	Able to conclude & evaluate the training outcomes & placement clearly	Able to conclude & evaluate the training outcomes & placement with substantial clarity	Able to conclude and evaluate the training outcomes & placement with moderate clarity	Able to conclude & evaluate the training outcomes & placement with minimal clarity	No conclusion on the achievement of training & provide no evaluations on both training outcomes & placement

Percentage from Progress Report = Total Marks Earned From Progress Report X 10%

= 20 %