UNIVERSITI TEKNOLOGI MARA

FACULTY OF CIVIL ENGINEERING

INDUSTRIAL TRAINING REPORT

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JULY 2019

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ACKNOWLEDGEMENT

Thanks be to God Almighty for without His graces and blessings; this journey would not be possible.

I would like to extend my sincere gratitude to all the staffs in Jabatan Kerja Raya, Penampang. Coming from all walks of life, each one of them have been a blessing to me. Thank you for your warm companionship. Especially to Mrs. Leela Panickar, my impromptu supervisor. Thank you for your patience and sincere guidance throughout the course of this training.

A heartiest gratitude to our Industrial Training coordinator, Sir Mohd. Firdaus B. Mohd. Akhbar, for his guidance throughout this training from the beginning to the end.

An immeasurable appreciation to my family and friends. The unconditional supports that you have given to me and for being such an inspiration, I am grateful beyond words.

Finally, I would love to thank myself. I got rejected and ignored so much that I thought maybe I should just postpone my industrial training. Just a few more days of approaching our last paper for that semester, I, finally, found a place to do my training. It was a rollercoaster ride, at least for me, but thank you for not giving up.

CHAPTER 1: INTRODUCTION

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1.1 Introduction

Industrial training is an activity of enhancing and improving skill set and knowledge for students which boosts their performance and helping them to meet their career objectives. It is the best way to acquire as much mastery about their field as possible, hence helps in building confidence of the students.

As part of the Diploma in Civil Engineering programme requirement, all fifth semester students must complete industrial training in either government or private sector organizations. An 8 -week period is allocated for training at locations chosen by the students themselves. The training starts immediately upon completion of the final examination in semester 5. It starts on 15th July 2019 until 6th September 2019.

1.2 Industrial Training Objectives

- To provide learners hands on practice within a real-life work situation.
- To give students the opportunity to apply the knowledge and skills they have acquired in a real-life work situation.
- To improve self-confidence through acquired hard skill and soft skill.
- To expose students to the work environment, common practice, employment opportunities and work ethics in the relevant field.
- To provide opportunities for students to be offered jobs in the same organizations where they undergo industrial training.

CHAPTER 2: COMPANY BACKGROUND & STRUCTURES

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2.1 Introduction

2.1.1 Logo

Figure 1.1 Logo JKR Sabah

2.1.2 Background

Jabatan Kerja Raya Sabah (Public Works Department Sabah) was established since the British North Borneo Chartered Company era on the 1st November 1881. JKR was given a small role in the infrastructure field at that time. The main network system; port was used as a trade entry; whereas railway system as connection between districts.

In 1948, *Jabatan Kerja Raya* was given a bigger role when a department was established with the responsibility to implement infrastructure development that was designed by the government. The director of the public works was appointed as the advisor to the governor in the matter of infrastructure development and as a permanent member of State Advisory Council.

2.1.3 Vision & Mission

VISION

Jabatan Kerja Raya Sabah is committed to be a well-respected technical organisation in infrastructure development.

MISSION

To promote economic and social development in the state through the provision of adequate infrastructure facilities by ways of: -

- Roads & bridges
- Government buildings
- Sewerage facilities

2.1.4 Roles & Responsibilities

Roles and responsibilities of *Jabatan Kerja Raya* includes:

- To plan, inspect, design and implement public infrastructure
- To maintain public infrastructure
- To give advice related to the technical matters to the government

Public infrastructure such as state roads, federal roads, bridges, public schools etc.

2.1.5 Location

Figure 1.2 Location

JKR Penampang is located 12.2 km from Kota Kinabalu town. It is located near a police station and a district council.

2.2 Organization Chart

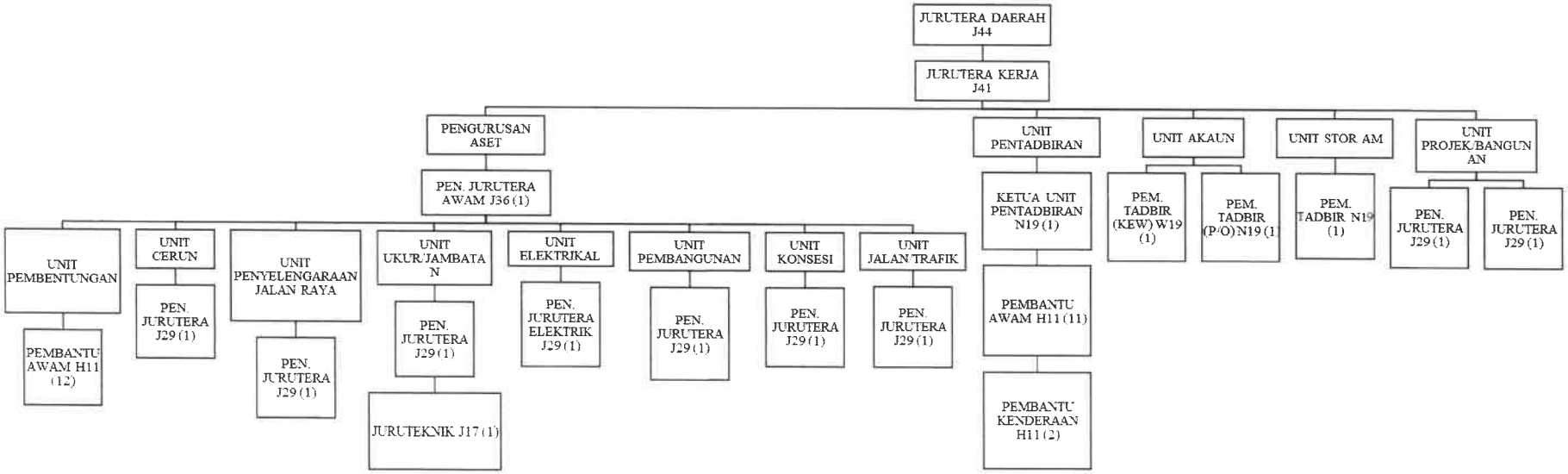

Figure 1.1 Organization Chart

CHAPTER 3: WEEKLY JOB SUMMARY

CHAPTER 3: WEEKLY JOB SUMMARY

DATE	ACTIVITIES
15/07/2019 – 19/07/2019 (Week 1)	• Reporting for duty • Short briefing & introduction to the staffs • Studied the defections that had the possibilities to occur in & outside of a house • Studied the process of bridges' inspection • Inspected the safety at SK. Sugud • Introduced to quality management; quality control (QC) & quality assurance (QA) • Keyed in information into master plan for QC & QA
22/07/2019- 26/07/2019 (Week 2)	• Keyed in information into master plan for QC & QA • Sketched RC berm drain to be submitted to the quantity surveyor • Inspected a road following a complaint letter from a local • Inspected a construction of speed humps • Routine condition inspection for bridges
29/07/2019 – 02/08/2019 (Week 3)	• Prepared a presentation for JKR Penampang's assets • Summarized for traffic light inventories • Studied projects of upgrading existing roads & bridges • Maintenance of drainage
05/08/2019 – 09/08/2019 (Week 4)	• Studied a plan of land acquisition survey • Studied a plan of proposed retaining wall • Organized the bill of quantities for the maintenance of public school's structure
12/08/2019 – 16/08/2019 (Week 5)	• Studied a survey plan & setting out plan • Studied a drawing of elevation of retaining wall

	• Studied a proposed land acquisition for road upgrading • Studied a drawing of bored piles for retaining wall along with all its cutting section
19/08/2019 – 23/08/2019 (Week 6)	• Studied the arched gunite structure that were installed between bored piles • Studied the waler beams for ground anchors • Learned the details of ground anchor installation • Studied a plan of horizontal drains • Studied the details of RC sumps & PC cover slab • Studied the RC steps & handrails; cast in-situ RC drain & cascade drain • Inspected the proposed bridge location • Studied a plan of blocked-out steel W-beam guardrail • Organized the bill of quantities for a public school
26/08/2019 – 30/08/2019 (Week 7)	• Studied the datils of road pavement • Studied a project to construct a public school by using IBS method • Incorporated AutoCAD with the construction of a roundabout • Studied a tender for the upgrading of a federal road
02/09/2019 – 06/09/2019 (Week 8)	• Inspection of bridges • Studied a tender for the upgrading of a federal road • Used AutoCAD to construct a roundabout & upgrading road

Table 1.1 Weekly Job Summary

CHAPTER 4: TECHINCAL REPORT

CHAPTER 4: TECHNICAL REPORT

4.1 Slope Repair Project

Project Title: *Projek Pembaikan Cerun di km2.3, Jalan Penampang Lama*

This project was completed for the purpose of repairing a slope failure that was caused by soil erosion in *Jalan Penampang Lama*. A total of 44 bored piles, labelled with BP1 to BP44, with depths approximately 8 metres to 16 metres. It took 18 months for the completion of this project.

Those who were involved; district engineer, chief assistant directors, assistant engineers, engineers, consultants and contractors. The soil erosion had caused a large amount of soil to enter a local's house. As a temporary protection, they used canvas. Due to the weak soil condition, sheet piles and heavy machinery are not possible.

Figure 1.3 Before Site Clearing

A meeting will be organized every month to update on the progresses of the projects. These include:

- Relocation of drainage & utilities
- Installation of rock-filled gabion & concrete block on slope failure
- Establish a traffic management (including furniture) for closing of one lane of road for bored pile work
- Establish a machinery parking & fabrication area of reinforcement
- Installation of canvas to cover the exposed surface of slope to avoid landslide
- Concreting works for bored pile
- Site clearing
- Installation of capping beam
- Installation of rebar & concreting for Waler beam
- Encasement of ground anchor head
- Installation of Horizontal Perforated PVC Pipe Drain

Figure 1.4 During Site Clearing

Figure 1.5 After Site Clearing

Figure 1.6 Relocation of Drainage

Bill of quantities (BQ) provide specific measured quantities of items of work identified by drawings and specifications in a project. BQ are prepared in accordance to the Standard Method of Measurement.

Summaries of bill of quantities:

Bill no.	Description
1	Construction preliminaries a) Contractual requirements b) SO's requirements c) Project requirements d) Authorities' requirements e) Contractor's requirements
2	Clearing, earthworks & turfing a) General clearance b) Excavation c) Filling d) Landscaping
3	Surface drainage (include culverts) a) Drain excavation b) Excavation ancillaries c) In-situ concrete design mix d) Formwork to surface drains e) Reinforcement f) Subsurface drains
4	Concrete works
5	Road pavement & road furniture a) Subgrade preparation b) Subbase c) Road base d) Road shoulder e) Surfacing f) Road furniture g) Provisional sum

6	Subsurface drainage a) Subsurface drains b) Filling c) Filling ancillaries d) Slope stabilisation
7	Metal works (handrail) a) Miscellaneous metal work
8	Bored cast in-situ piles a) Plant & equipment b) Piles
9	Prestressed ground anchors a) Plant & equipment b) Slope stabilisation
10	Geotechnical instrumentation a) Mobilisation & demobilisation b) Instrumentation
11	Guniting a) Excavation b) Surface protection c) Reinforcement
12	Traffic management a) Traffic management team b) Temporary road furniture c) Traffic management & control
13	Maintenance of road a) Routine maintenance for existing road b) Periodic maintenance for existing road c) Litter collection & disposal of minor obstruction/debris
14	Environmental management plan a) Environmental Management Plan (EMP) b) Erosion & Sediment Control Plan

Table 1.2 Bill of Quantities

Quality management are divided into two; quality control and quality assurance. These two elements are vital in ensuring that the materials used, and final products are in their utmost quality.

Listed below are some of the tests carried out for this project:

- Plasticity Index
- Gradation Analysis
- California Bearing Ratio (CBR)
- Field Density Test
- Clay, Silt & Dust Content
- Crushing Value
- Slump Test
- Los Angeles Abrasion

All the tests are in accordance to JKR specifications.

Figure 1.7 Slump Test

Figure 1.8 Preparing samples for cube test

There are a few problems faced during the completion of this project. One of the are the weather condition. Due to ever-changing weather, the construction needs to be postponed for a period of time. Some cases are forced to apply for extension of time. Which mean that the construction is not finished on time.

Figure 1.9 Progress photo I

Figure 2.0 Progress photo II

Figure 2.1 Progress photo III

Figure 2.2 Progress photo IV

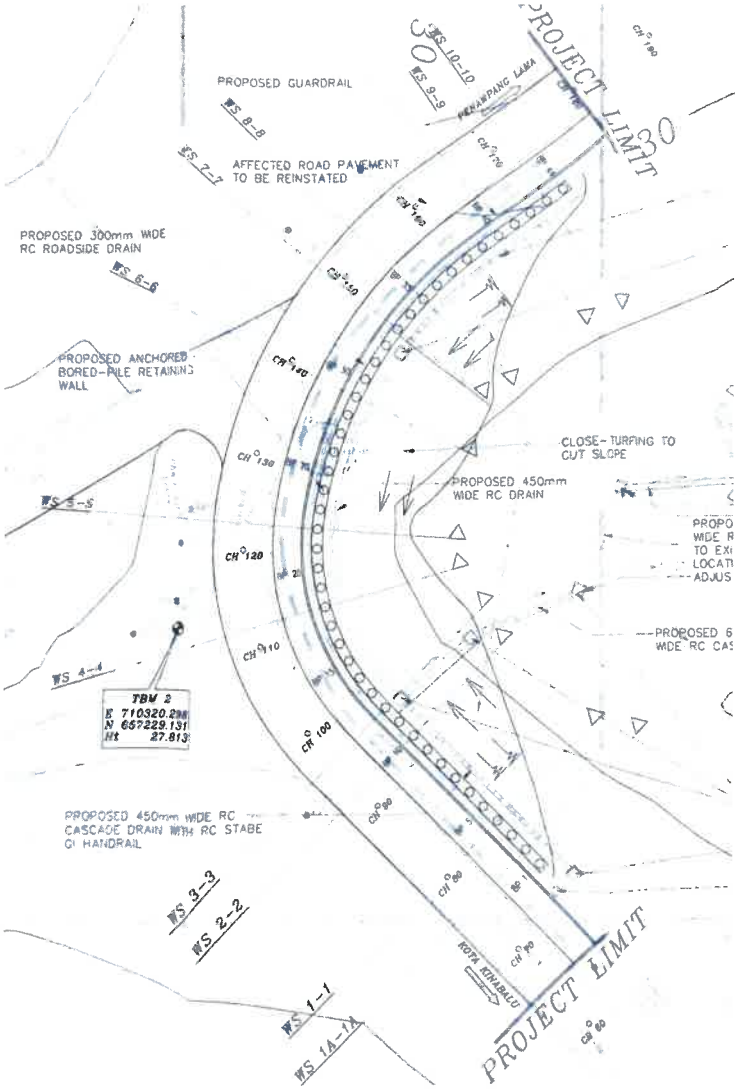

Figure 2.3 Plan of Proposed Retaining Wall

Compaction of new fill material must be carried out up to 98% of the Maximum Dry Density (M.D.D). Lift of fill layers to be compacted should not exceed 300mm.

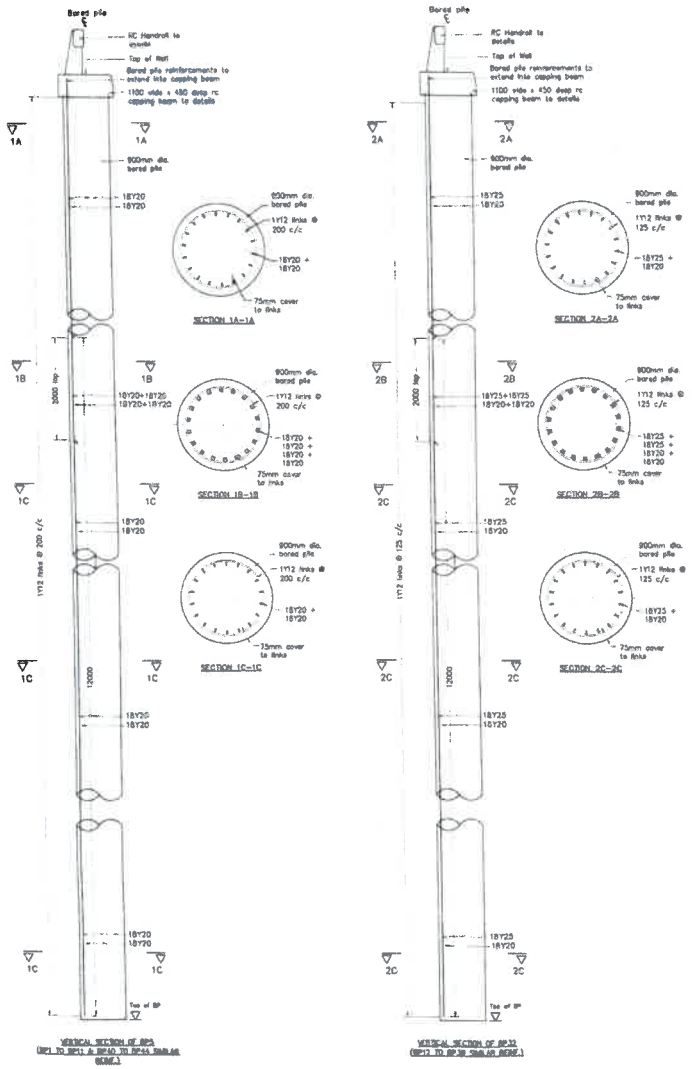

Figure 2.4 Details of Bored Piles

CHAPTER 5: FINDINGS & RECOMMENDATIONS

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Findings

In the span of 8 weeks, I have been exposed to the real working environment. The feeling is different than learning the theories in classes. It required me to think and act accordingly. I had the chance to try hands on based on the theories that I have learned.

For me, 8 weeks is short. I wanted to learn more, but time is not on my side. Throughout the training, I learned as much as I can if not all. The staffs are helpful and am grateful for the knowledge that were passed to me.

There is no allowance given. It will be better for any places of training offered allowance. This is extremely important to those students who are struggling financially.

Recommendations

The duration of industrial training can be increased to a semester. So that students can prepared themselves for when they are entering to working environment in the future. Preparing oneself not only in terms of knowledge and skills but also, physically and mentally.

It is also important for students to be reminded that every company has its own confidential matters that should be protected. Violating this may affect the company negatively and the university itself.

CHAPTER 6: CONCLUSION

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Throughout the 8 weeks of training, it had taught me a lot and it was a unique experience as I get to know people from all walks of life. It was definitely an eye-opener to get to experience this myself. I had received exposure both on-field and office work. The acquired soft skill and hard skill had increased my self-confidence and piqued my interest to learn more.

I learnt to communicate effectively and to be polite in whatever situation. The student that trained in a company is carrying their university's identity, so it is important to take responsibility for that.

The tasks and responsibilities that were given to me had taught me to be more discipline and committed in completing it. Time management is important, to avoid procrastination and late submission of works.

CHAPTER 7: REFERENCES

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INDUSTRIAL TRAINING STUDENT PLACEMENT REPORT
(Report Evaluation Form)

A) Student Information

Name : Shannon Lynn Erson
UiTM No. : 2016194753
Programme : Diploma in Civil Engineering
ID No. : 970318-12-5290
Session : July 2019- September 2019
Semester : 5
Date of Commencement : 15th & July 2019
Date of Completion : 6th September 2019

B) Organization Information

Organization : Jabatan Kerja Raya Penampang
Name of Supervisor: Leela Panicker
Designation : Assistant Engineer

C) Faculty Supervisor Information

Name :

D) Marks

No.	Criteria	CO1-PO5	TOTAL MARKS
1.	Abstract	/5	
2.	Introduction	/5	
3.	Report content	/5	
4.	Conclusion and Recommendation for Industrial Training	/5	
5.	Writing Quality	/5	
CO-PO MARKS		/25	/25

Signature & Official Stamp
(Faculty Supervisor)

Date

20%

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No.	Criteria	5 (Excellent)	4 (Good)	3 (Satisfactory)	2 (Average)	1 (Weak)
1.	**Abstract** Summary of; • Training that has been undertaken • Lesson learnt from the training. (CO1 – PO5)	☐ 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** • Background of Organization • Scope of Work Covered • Report Organization. (CO1-PO5)	☐ 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** • Tasks carried out • Problems encountered • Problem solving Approach • Lesson learnt (CO1-PO5)	☐ 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

**Please tick (V) at appropriate scale*