



UNIVERSITI TEKNOLOGI MARA

FACULTY OF CIVIL ENGINEERING

INDUSTRIAL TRAINING REPORT

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ABSTRACT

Industrial Training is a compulsory requirement for students in certain programs at all level of higher education in Institutions of Higher Learning. It is also to satisfy the Engineering Technician Education Programme Accreditation Standard (ETAC) accreditation objective for Continual Quality Improvement (CQI) and to set a tool of benchmark for all diploma graduate holder. In this industrial training session, student got many new knowledge and experience that can only be achieved through the experience sharing by the industrial player and task that they already provided. It is very helpful in order for student to make sure that they are ready and competent enough to be in this challenge industry through up and down. Time and mental management are two of the crucial things that need to be managed in best possible way in order to avoid any possible mental health crisis and unnecessary work load. Networking and negotiating are two of the new things that can required through meeting and discussion with all parties that involve in this challenge industry is an important skill that need to be learned and mastered.

ACKNOWLEDGEMENT

In completion of my industrial training, I had to take help and guidance of some respected persons, who deserve my deepest gratitude. First of all, I would like to thank the almighty Allah SWT for his blessing as I have completed this industrial training successfully. A special gratitude I give to Mr Sahidan Bin Hassan my industrial supervisor for your guide, motivation, sharing and support completion of my industrial training. Besides, I would like to give a special appreciation towards my faculty supervisor which is Mr Mohd Firdaus Bin Mohd Akhbar for your dedication and commitment easing us facing difficulties during Movement Control Order (MCO) period. Not to forget the company most experience person, Ir Rahimi Bin Haji Mat for your advice and knowledge that you have shared with me during this industrial training.

Not to forget, Perunding Sinar Teguh Sdn Bhd and Persada Consultancy for giving me this wonderful opportunity to gain some knowledge and experience through industrial training. The staff of the company that are willingly to help me when I got some difficulties during completing some of the task that already given. Truly, they were very supporting persons that I have ever met.

I also owe acknowledgement to my family for their endless support and motivation. They always love and support every of my choice. They also help me a lot by providing some necessary financial to make me undergo this industrial training successfully

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

Malaysia is an agricultural country before evolve to industrial based country that are growth rapidly and facing rapid development in order to satisfy our nation Key Performance Index (KPI) which is Malaysia Plan (MP-). It is significantly to set a bench mark for our country to make sure all citizen having a great living in this country.

Civil engineering is one of the industries that play a vital role to satisfy most of the Malaysia Plan. Construct the structures of all human settlement worldwide and is a vital discipline for many aspects in modern life. Bridge, road, drainage, buildings, sewerage system and water reticulation are the example of project under the Malaysia Plan in order to make sure all the citizen are having a great and decent living. As a civil engineering student, there is no doubt we have to deal with the construction. Theoretical knowledge and basic concept are no longer enough to prepare us for future challenges ahead.

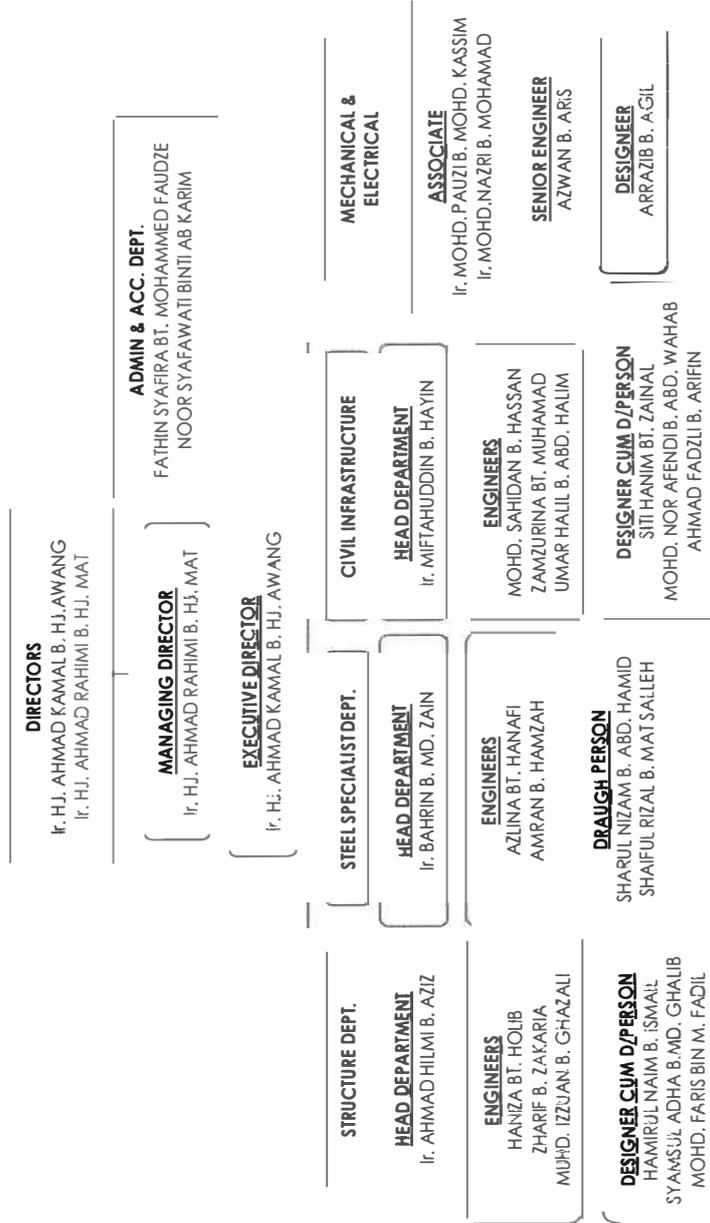
Industrial Training program provides pre-professional work experience with specific assignments and responsibilities. An Industrial training should be relevant to a student's personal career interests and academic courses of study, serving as a connection between university and the working world. Industrial Training is a chance to us provided by the university to make their students have better insight into reality of this field and can face some pictures of the real world of civil engineering. Through this we have chances to meet some professional engineers. We can learn ways of solving problems, people to deal with and even get some precious advices from them. Productive Industrial Training help students make firm decisions and improve our marketability after graduation.

1.2 BACKGROUND OF THE COMPANY

Perunding Sinar Teguh Sdn Bhd (PSTSB) is a consulting engineer firm specialize in civil, structure, mechanical, electrical and Project Management Consulting with 100% bumiputera company. They offered consultancy services for every stage of a project from design concept, project planning, feasibility study, detailed design, construction supervision until completion of the project.

Affiliated with the Ministry of Finance (MoF) and Board of Engineer, Malaysia (BEM) as well as the Institution of Engineers Malaysia (IEM) to make sure they are legally practiced consulting engineer. They were also registered under the Companies Commission of Malaysia (SSM) with the registration number 913701-H and also with Royal Malaysian Customs Department for service tax registration. This to make sure that the professional serviced that they are served are reliable and trusted.

1.3 ORGANIZATION CHART



1.4 NATURE OF BUSINESS

- 1) Providing professional services in structural engineering, geotechnical engineering, drainage and hydraulic engineering, civil infrastructure engineering, mechanical and electrical engineering services and project management consultant.
- 2) 100% bumiputera ownership company with most of the affiliated member are well experienced and give priorities to local university graduates product.
- 3) Other service provided are:-
 - a) Analysis, design and redesign
 - b) Value engineering
 - c) Shop drawing
 - d) Connection design
 - e) Design and Build

1.5 PRODUCT

1.5.1 COMPLETED PROJECT

No	PROJECT	CLIENT	COST	STATUS
1	CADANGAN MEMBINA DAN MENYIAPKAN 23 UNIT RUMAH TERES JENIS BERANGKAI (RB), TAMAN CHAMAR, TOK JEMBAL, KUALA TERENGGANU, TERENGGANU.	EDEN CAPITAL SDN BHD	RM 2,500,000.00	Completed
2	CADANGAN MEMBINA DAN MENYIAPKAN 70 UNIT RUMAH TERES 1 TINGKAT DAN 1 UNIT PENCAWANG TNB DAN KERJA-	PERBADANAN KEMAJUAN NEGERI TERENGGANU	RM7,000,000.00	Completed

KERJA BERKAITAN DI DAERAH MARANG, TERENGGANU				
3	CADANGAN MEMBINA DAN MENYIAPKAN BALAI BOMBA DI ROMPIN, PAHANG	JABATAN KERJA RAYA	RM 8,000,000.00	Completed
4	CADANGAN MEMBINA MAHKAMAH 10 TINGKAT DI ATAS LOT 55852, BANDAR INDERA MAHKOTA, MUKIM KUANTAN, PAHANG	JABATAN KERJA RAYA/ CEBEILLER SDN BHD	RM 20,000,000.00	Completed
5	CADANGAN MEMBINA LOJI BIODIESEL DI KUANTAN, PAHANG	IP MUDA	RM 8,000,000.00	Completed
6	CADANGAN MEMBINA DAN MENYIAPKAN SURAU DI TAMAN DESA GEMILANG, SG PUSU, GOMBAK, SELANGOR	JABATAN AGAMA ISLAM SELANGOR	RM 200,000.00	Completed
7	CADANGAN MEMBINA LOJI PRA-RAWATAN KUMBAHAN DI JUSCO BALAKONG, SELANGOR	PJBUMI BERHAD	RM 600,000.00	Completed
8	CADANGAN MEMBINA LOJI PRA-RAWATAN KUMBAHAN DI GIANT PUTRA PERMAI, SERI KEMBANGAN, SELANGOR	PJBUMI BERHAD	RM 600,000.00	Completed
9	CADANGAN MENAIKTARAF PERPUSTAKAAN DI MPOB SERDANG, SELANGOR	MPOB	RM 500,000.00	Completed
10	CADANGAN MEMBINA LOJI PRA-RAWATAN KUMBAHAN DI GIANT KEMUNING, SHAH ALAM, SELANGOR	PJBUMI BERHAD	RM 500,000.00	Completed

11	CADANGAN MEMBINA SEKOLAH ISLAM SRI AL-AMIN BANGI, SG TANGKAS, BANDAR BARU BANGI, SELANGOR	KUMPULAN SERDANG BANGI SDN BHD	RM 400,000.00	Completed
12	CADANGAN MEMBINA SEBUAH BANGLO DI SEKSYEN 9, SHAH ALAM, SELANGOR	MOHD RAZI BIN YAHYA	RM 500,000.00	Completed
13	CADANGAN MEMBINA DAN MENYIAPKAN BANGUNAN DEWAN BESAR SERTA LAIN-LAIN KERJA BERKENAAN DI USIM, NILAI, NEGERI SEMBILAN	USIM/ CEBEILLER SDN BHD	RM 4,000,000.00	Completed
14	CADANGAN MEMBINA RESORT BERTARAF 3 BINTANG DI SEKINCHAN, SELANGOR	JAMAL JAYA HOLDING SDN BHD	RM 2,000,000.00	Completed
15	CADANGAN MEMBINA SEBUAH BANGLO DI BANGI GOLF RESORT, BANDAR BARU BANGI, SELANGOR	DR IQBAL BIN ABDUL HAFIDZ / PN NOORUL AFIDZA BINTI MUHAMMAD		Completed
16	PROJEK BEKALAN AIR LUAR BANDAR NEGERI KELANTAN 2016 ZON 2	KEMENTERIA N PEMBANGUN AN LUAR BANDAR	RM 6,500,000.00	Completed
17	CADANGAN MEMBINA DAN MENYIAPKAN SEBUAH SEKOLAH SMK MACHAP, DAERAH KLUANG, JOHOR	KEMENTERIA N PENDIDIKAN MALAYSIA	RM 29,000,000.00	Completed
18	DEMOLITION RESTORATION AND MAKING GOOD TO FACTORY DAMAGED BY FIRE, KAWASAN MIEL PASIR GUDANG PHASE 4, MUKIM PLENTONG, JOHOR	MIDF PROPERTIES BERHAD	RM 1,200,000.00	Completed
19	PROPOSED 3S CENTER ON LOT 1608, MUKIM TELOK PANGLIMA GARANG, DAERAH KUALA LANGAT, SELANGOR	HNZ SDN BHD	RM 6,000,000.00	Completed

20	MENAIKTARAF PAGAR DAN ASTAKA DAN LAIN LAIN KERJA BERKAITAN DI STADIUM MERDEKA, PORT DICKSON, NEGERI SEMBILAN	MAJLIS PERBANDARAN PORT DICKSON	RM 1,200,000.00	Completed
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1.5.2 ON-GOING PROJECT

No.	PROJECT	CLIENT	COST	STATUS
1	CADANGAN MEMBINA SEBUAH VILLA DI PORT DICKSON, DAERAH PORT DICKSON, NEGERI SEMBILAN	PN AZATUL SHIMA	RM 2,000,000.00	On Going
2	CADANGAN MENAIKTARAF SMV TANAH MERAH KPD KV TANAH MERAH	KEMENTERIAN PENDIDIKAN MALAYSIA	RM 18,000,000.00	Design Stage
3	PROJEK BEKALAN AIR LUAR BANDAR NEGERI KELANTAN 2016 ZON 1	KEMENTERIAN PEMBANGUNAN LUAR BANDAR	RM 6,500,00.00	On Going
4	CADANGAN MEMBINA 30 UNIT RUMAH BERKEMBAR 2 ½ TINGKAT DI MUKIM RASAH, SEREMBAN, NEGERI SEMBILAN	JOSU PROPERTY SDN BHD	RM 24,000,000.00	On Going
5	CADANGAN MEMBINA BANGUNAN FAKULTI PENGAJIAN BAHASA UTAMA DI USIM, NILAI, NEGERI SEMBILAN	USIM	RM 50,000,000.00	Re-Tender

1.6 MARKET STRENGTH

This company market strength is more likely to a consultation and supervision of a project. They also highly specialized in Engineering & Project Management Consultant.

CHAPTER 2: TRAINING ATTENDED

2.1 INTRODUCTION

The period of my internship was 19 weeks and during this period, I had learned many things related to the scope of work in the engineering field. I had been through this training time learning about what I have got from my supervisor and other staff and eventually this encouraged me to understand more about civil engineering scope of work. By continuing the training, I realized that I gained new and additional knowledge that had not been exposed while in class. For the other purpose of completing this training, I also improved my soft skills such as the communication skills, time management, software literacy and teamwork. Giving some opportunity to get involve in many stages of project progress is a kind of good exposure for a student that eager to learn new things. I will summarize about the activities that I have went through during this industrial training weekly.

2.2 EXPOSURE LEVEL

2.2.1 WEEK 1

At the first week in industrial training, I tend to know about one of the PSTSB project that already been temporarily stopped because of termination of the contractor by the client and the method of installation and commissioning of the Industrialized Building System (IBS) according to the standard of practiced.

I also being asked to read and view the tender and construction drawing and some document related to the said project. From that activities, I get to know roughly that the building is construct by implying a new technology in civil engineering which is Industrialized Building System (IBS). The IBS is a system that is new in our country hence, our country is still lack of the expertise in this technology from the engineer, manufacturer, installer and supplier.

They also give me a chance to go with the assistant engineer to submit the tender at Putrajaya and do some other others matter. After submitting the tender document, I assist the assistant engineer to do the stamp duty process at the LHDN Cyberjaya regarding to the Consulting Service Agreement between the government of Malaysia through Kementerian Pembangunan Luar Bandar and my industrial training company.

My industrial supervisor also explained to me about the Indah Water Konsortium (IWK) submission format for sewerage system this is including the drawing, report and form that need to be prepared.

Others than that I also helped him preparing a Variation Order document by doing some replacement at the contract document and the document that need to be submitted to the client which is Kementerian Pembangunan Luar Bandar (KPLB).

Apart from that I also experienced doing some house-keeping process with them at the office. This is one of the activities that they always do if they have to work on Saturday. That was one of a activities that good to practice as it can improve bonding among the staff and can make sure that the working area are in conducive condition.

2.2.4 WEEK 4

I attend a software briefing about the improved version of INFRAVERA software that are BIM compliance and JKR recommended that waiting for a finalized stage before officially launch into market. The software briefing was led by the software provider sales engineer, Mr Yunus.

Other than that, I following the project engineer which is my supervisor Mr Sahidan to a site visit at Jalan Kencana, Cheras, Kuala Lumpur. This site visit is purposely to have some discussion with the client and contractor and to have some progress supervision.

This 4th week can only allow me to undergo a few days of working day before the government declare a state of emergency by announcing a Movement Control Order (MCO) in order to overcome the spread of COVID-19 pandemic.

2.2.5 WEEK 5

My supervisor gives me a task to do at home as a Work from Home (WFH) activity which is searching for Urban Stormwater Management Manual of Malaysia or known as MSMA2nd Edition that are widely use civil engineering construction. After that, he asked me to read and understand all the topic that are discuss in the guideline that published by the Drainage of Irrigation Department that comply the Department of Environment standard.

For this week, I managed to finish 5 chapter which consist of Design Acceptance Criteria, Quantity Design Fundamentals, Quality Design Fundamentals, Roof and Property Drainage and On-site Detention. This is to make sure there is no unnecessary water planning at the area that are built.

2.2.6 WEEK 6

For the following week I continue reading and understanding the guideline that already been write on the manual. For this week I managed to finish 5 chapter which consist of Rainwater Harvesting, Detention Pond, Infiltration Facilities, Bioretention System and Gross Pollutant Traps.

This is to make sure that the discharge water from site, domestic and industrial area are in a good quality and does not cause a further harmful towards the bio-marine ecology.

2.2.7 WEEK 7

In this week, I managed to finish another 3 chapter that consist of Water Quality Ponds and Wetlands, Erosion and Sediment Control and Pavement Drainage. In this week, the topic is quite heavy and I need an extra focus and time in order to understand it.

The heaviest topic is the Erosion and Sediment Control that really focused on soil erosion during rain and how to prevent it to minimize the effect and to make sure the water discharge is clean and not filled with excessive silt. This also including the application and suitability of sediment basin and sediment trap that need to be used at the site.

2.2.8 WEEK 8

For this week, my supervisor asked me to prepare a JKR Lampiran A16 which consist of organization chart and scope of work for the personnel that involve in the project. For the scope of work, I need to describe their work scope according to the position that they are assigned in.

After finishing and submitting the task to my supervisor, I continue with another 2 chapter which is Drains and Swales and Pipe Drain. These two topics are consisting of a hydraulic calculation that need to be performed in order to make sure the design drainage was satisfied with the hydraulic flow.

2.2.9 WEEK 9

Another 3 chapter I managed to finish this week which is consist of Engineered Channel, Bioengineered Channel and Culvert. All of the topic really acquired a strong basic concept in hydraulic and its calculation. The term of bio is specially for the channel that not used any medium of channeling or in another word, it is consist a weed that will contact with surface of the water and the channel.

2.2.10 WEEK 10

For this week I managed to finish the last 2 chapter of this MSMA 2nd edition which is Gate and Pump and Hydraulic Structures. These two topics are likely to describe a water dam and its specification. It also explained about the design consideration and the usage of valve, gate and pump in the dam construction.

More over for this week, I can report back to duty at office. The first task that they give me is to prepared a proper forensic report. Before that, they assign me to determine the live load of the usage area according to the British Standard and they show me how to running the test by using ESTEEM software.

In addition, as a reward for me finished the MSMA 2nd edition, my supervisor explained to me some infrastructure scope of work. The first is the earthwork by explained to me about the report that need to be prepared and the calculation that they always practiced. He also teaches me on how to calculate the cut and fill by using Microsoft Office Excel and the manual calculation.

2.2.11 WEEK 11

The infrastructure work scope explanation is continued with road and drainage.

He also tells me that the road specification may varies depending on the types of road but the pavement layering is still the same. He also explained to me clearly about the drainage including the drain type and the report that need to be prepared.

I then continue with helping the assistant engineer to prepare a testimonial report based on the forensic report that already been prepared earlier. The testimonial report is using to be the witness evidence of the structural failure case.

The engineer also inviting me to follow him to do some resubmission at Syarikat Air Negeri Sembilan (SAINS) HQ, Seremban 2. The purpose of the resubmission is to request for the extension of the permission of water works that have affected during MCO period. He also wants me to experience on how to deal with authorities.

The week went with the engineer give me a task to read and understand the Arahan Teknik Jalan (ATJ) prepared by JKR that widely used in road construction.

2.2.12 WEEK 12

This week started with the company conduct an internal Hari Raya Celebration and Company Establishment Anniversary with a tight Standard Operating Procedure (SOP) that have been announced by the MKN.

I also attending a site visit at Nilai for a proposed constructing a new bridge. The bridge is crossing the KTMB railway lines and might cause difficulties during the construction process and getting the permission from the KTMB.

My supervisor also asking me to help him prepare the Variation Order and the Extension of Time No 1 proposal document that need to be sent to the client for evaluation.

After completing all the task, I then continue with the ATJ and try revised some of the topic that have been teach in class during Highway Engineering (ECG 344) lecture.

2.2.13 WEEK 13

I then continued this week with reading the ATJ and try to relate it with the construction practiced. If I got some confusion, I ask the engineer to make sure that I truly understand the point in the guideline.

Other than that, I also followed the engineer to go to KPLB Putrajaya for the document submission and having some discussion about several matters that important.

In addition, I also have a chance to follow the assistant engineer to meet a client to get a sign on the drawing for the submission purpose. The submission that need to be done is at IWK Certifying Agencies which is located at Section 23, Shah Alam.

2.2.14 WEEK 14

In this week, I helped the engineer preparing for a Variation Order document. This is the finalized document need to be submitted to KPLB before undergo a meeting and decide whether the Horizontal Directional Drilling (HDD) work is necessary or not.

I also have a chance to witness the standard road test commissioning procedure before layering pavement which is California Bearing Ratio (CBR) and Crusher Run Thickness (CRT). The test also been witness by MPAJ representative, contractor, consultant and client.

For this week, my company principal allowed my supervisor request to bring me along to the project that are on-going which is located at Kelantan. At there, I attend another site visit to value and have a decision about the request that have been made by the Kelantan water authorities which known as Air Kelantan Sdn Bhd (AKSB). I also following the engineer having a discussion with the site staff and the contractor project engineer.

2.2.15 WEEK 15

My journey at Kelantan begin with in a new week with a site meeting that be held at KPLB Kelantan. However, due to the SOP I cannot get involve in the meeting because of the limited space. But before that, I already participated in their pre-meeting discussion.

Besides, I managed to help my supervisor preparing for the sewerage application for a commercial usage. This including compile and make sure all the check list been fulfilled. I also helped him preparing for the Certificate of Non-Completion for the contractor that failed to completed the work within the duration.

2.2.16 WEEK 16

I got a chance to view a claim from the contractor and the contract document that have been brought by the Inspector of Work to Office. Moreover, I also viewing the Bill of Quantities of the project. From that, I managed to know what type of material used and the commissioning testing method.

I also attending a waste water briefing by the specialist company that their expertized is constructing the Sewerage Treatment Plant. Surprisingly, the company are one of the panels contractors registered with the IWK.

Attending a site meeting with the engineer at Jalan Kencana Warehouse Project discussing about the project progress and the extension of time. After that, I followed my supervisor going to MPAJ paying fee for the test that have commissioned earlier.

At this week I got another chance to experience making a submission to the IWK Negeri Sembilan Certifying Agencies located in Senawang. It just a very simple procedure that need to follow the flow.

2.2.17 WEEK 17

As for this week, I need to prepare a last forensic report that have been fully checked by the professional. That document will be used as company reference and reading material.

I also making a last check to the slide that will be used in the VO meeting. Attending a VO meeting is one of the most expensive experience that I have ever had. The meeting is chaired by the KSUB Teknikal of KPLB Putrajaya and a few others high rank officer in the technical department.

As one of the meeting request and decision, I helped my supervisor preparing for another document which is Extension of Time (EOT) No 2 for zone 1 only because zone 2 have already been completed the work during the EOT No 1 period.

I also having an experience doing a banker cheque for the companies that need to be paid to the SPAN KWSMP for the sewerage application.

Not to forget my company principle did a sharing session on his journey to get the Ir tittle and the document that he needs to prepare as a motivation.

2.2.18 WEEK 18

For this week, I continue finishing the EOT No 2 documents preparation that acquired me to refer to the engineer simultaneously. Truly doing this EOT document is an amazing experience.

After doing a final checking for the IWK submission, I following the assistant engineer going to UiTM Sungai Buloh Hospital to meet a client before proceed to IWK Selangor Certifying Agencies.

Other than that, my supervisor assigned me to prepare minute of meeting for a site meeting and the Consulting Service Agreement (CSA) for a project between Jabatan Kerja Raya and our company.

2.2.19 WEEK 19

This week is the last week I will undergo industrial training at this company. However, I still managed to completed the CSA and send to my supervisor for final checking.

As for the last task, I need to submit a document to KPLB Negeri Sembilan which is located at Seremban 2 and doing a certificate of stage completion of JOSU housing project.

2.3 CONCLUSION

As for conclusions, I already learned a lot of thing during this wonderful 19 weeks of Industrial Training. From design stage, document preparation until project completion. Can get in touch and deal with the authorities and other parties that involve in this industry is one of the new skills that I acquired through this training. Not to forget, easy access on the standard specification and practiced is a precious thing that need to make it into my own benefits. As an example, the ATJ is a guideline that need to be purchased at the JKR and cannot be easily accessible on the internet.

CHAPTER 3: TECHNICAL REPORT

3.1 INTRODUCTION

During industrial training, I have learned and take part of some supervision works. In 19 weeks, I do a tough task that given by industrial supervisor and completed it. To make sure that task is completed, my industrial supervisor always checked my task and sometimes we do it together. Besides, I also learn about the material and term that are used at site.

3.2 PROBLEM ENCOUNTERED AND HOW I OVERCOME IT

The first problem I facing during the industrial training period is socializing with all the staff because most of them are older than me. For me it is one of the problems that I can encounter slowly through completing the task that have been given by them. From the task given and a question I asked, we can have a chat and a simple discussion that eventually can create a bonding among all of us.

The other problem that I facing and successfully overcome is stress. As for a newbie like me, I never experienced a tired and fixed working hour during my studies back in campus. The first week is the most tough week for me to overcome as my body slowly adapting it. Luckily after a week, I did not feel stress anymore instead of feeling happy because I can learn a lot of new things at the office.

3.3 EXPERIENCE GAINED

The scope of work that I have experience are:

- a) Document preparation
- b) Submission to the authorities
- c) Site visit
- d) Site meeting
- e) Expertized knowledge sharing

- f) Making a company bankers cheque
- g) File management
- h) Software usage
- i) Commissioning a test

3.3 CONCLUSION

Based on the technical report, there are many things that I learned especially the activities on site such as site visit, site meeting and test commissioning. Apart from that, I also learned how to read the drawing plans, and use a software that are widely use in civil engineering. In overall statement, my discussion on sharing about what I had learned through this industrial training report would be a great summary on what I had understand about the civil engineering scope of works that can be a useful knowledge in future endeavor.

CHAPTER 4: CONCLUSION

4.1 INTRODUCTION

19 weeks of industrial training at PSTSB really taught me many new things. I was exposed with the real working environment of this industry which is very important and useful for me as a preparation prior to working years ahead. It helps me in many ways and improve my skills and knowledge that I have learn in class. Based on the overall information and knowledge that I gathered during the period of my practical training and report's progress, I can conclude that all the objectives of my reports are answered in quite detail explanation.

4.2 LESSON LEARNED

There are many lessons that I have learn in my industrial training, some of it tell me do not cheat with our responsible, because we are in construction industries and build a building and of course it will give an effect to the safety of the building and can make a potential harm towards people surrounding or people that will occupy the building. For example, contractor always want an easy money by not following all the bills of quantity item that clearly stated that integrity test needs to be conduct to make sure the material and the construction are in good management practice. In this scenario the consultant needs to have representative in order to make sure they are complying the contract specifications.

Besides, we must do our tasks or work with carefully, because a simple mistake will affect other, and burden them. For example, while we do inspection of structure, we must make sure and carefully inspected the structure to assure it is saves to be in use.

Many skills that I can develop during industrial training, especially communication skill, it trains me to became a person that can give speech and easy to interact with other people. Besides, industrial training gave me a rough imagination about the construction progress.

4.3 KNOWLEDGE GAINED

During industrial training period, I have improved my knowledge in civil engineering in a broader way. Despite having some difficulties to suit the usual term that being used in the real world I am glad that I can eventually understand it and sometimes using it as topic of discussion with my supervisor. The knowledge that I got is drawing interpretation, before this I do not know about the basic of drawing interpretation. But now, I know to read the drawing that consist of architecture drawing, C&S drawing, M&E drawing, as-build drawing and detail drawing. This knowledge is very useful as an engineer in order to design and build the structure part. Besides, I also learned about the calculation of some parts of the structure and to find the types of loading that acts on the structure in order to determining the size of the reinforcement bar and type of link to be used by following the specification standard.

Other than that, I also learned about the usage of engineering software that widely use in engineering design stage. The software is sewer drain, storm, earth+ sediment basin+, ESTEEM and AutoCAD. Software literacy is become the most crucial and vital skills that need to be mastered in order to become an engineer. These days, many of construction process are involving the usage of software because it can save times.

The knowledge that I gained is not specified to the theory only, but I also gained from practical as expose more to supervision work. I was being taught on how to read the reading when conducting a CBR test. I also having the opportunity to feel the environment of feasibility study of a project before it being started. Feasibility study is one of important part in construction and development process.

Each new thing that I learned throughout this industrial training is very valuable as it was not easy to get and experience from anywhere else. Experience through gaining of better knowledge make student to develop with matured mind and acting as everything they will do to start thinking wisely.

4.4 SUITABILITY OF ORGANIZATION

The organization of this company is suitable to give opportunities for the student to complete their Industrial Training. Many projects that had been handled by the company may encourage student to learn during their Industrial Training that I also recommend based on the knowledge that I got from it which is the most important thing, it was related to the civil engineering scope of study. Although it was not as good as them, but I managed to be a part of them from continuous learning process

They will always try their very best in helping student in order to get experience and knowledge about our course. Because of that and together with my own experience, I think this organization may be suitable for the student to undergo the Industrial Training plus I hope in the future, many students will undergo industrial training with them and gain more knowledge that related with the theoretical that we learn in the lecture class.

4.5 LIMITATION AND RECOMMENDATIONS

As an intern student, there will be a limitation for them in getting me involved in management of the company because of my temporary position. However, my company slowly allowed me to get involved directly into the project that they are still handle. They also slowly encourage me to get involved directly into the project by bring me along to attend a meeting.

Moreover, most of the company would not let student to handle the project with million costs of the project as they want to avoid any risk that might be happened. Other than that, the industrial training period that only progress for 19 weeks are not enough for the student to fully involve in all scope of civil engineering field because most of the stage take a few months to completed.

This short period needs to be used wisely by the student so that they can gain better knowledge as much as possible. In other hand, the requirement for the student to complete their Industrial training within 19 weeks of their semester duration is still not long enough. Because of this, student need to do some initiative to go to the supervisor and ask him about the thing we have an enquiry about. From that, he can teach the student according to the student level of enquiries and he will share some of his past experienced. Plus, the work that can be done by the student also limited because of it is private and confidential. However, the limitation faced by the student are not being the factor for the student to not completing their Industrial Training in fact it is just the common problem that limits the knowledge yet to be learned during the training.

REFERENCES

- 1) <http://etac.org.my/diploma-programme/manual-for-diploma/>
- 2) Company profile
- 3) Industrial training log book
- 4) Arahan Teknik Jalan (JKR)
- 5) Urban and Stormwater Management

APPENDICES



Figure 1: One of the STP in UKM

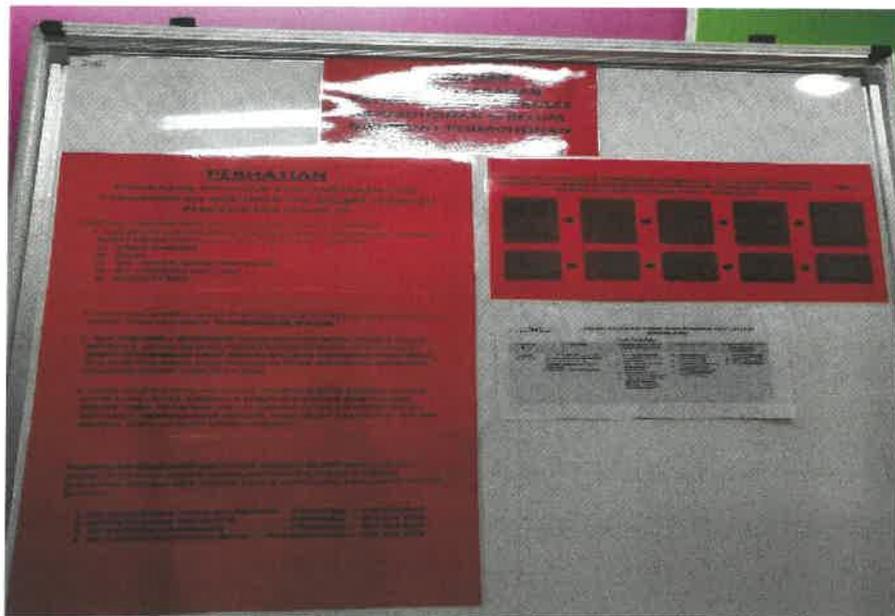


Figure 2: IWK SOP



Figure 5: Meeting for government project



Figure 6: KPLB Putrajaya



Figure 7: Meeting for private project

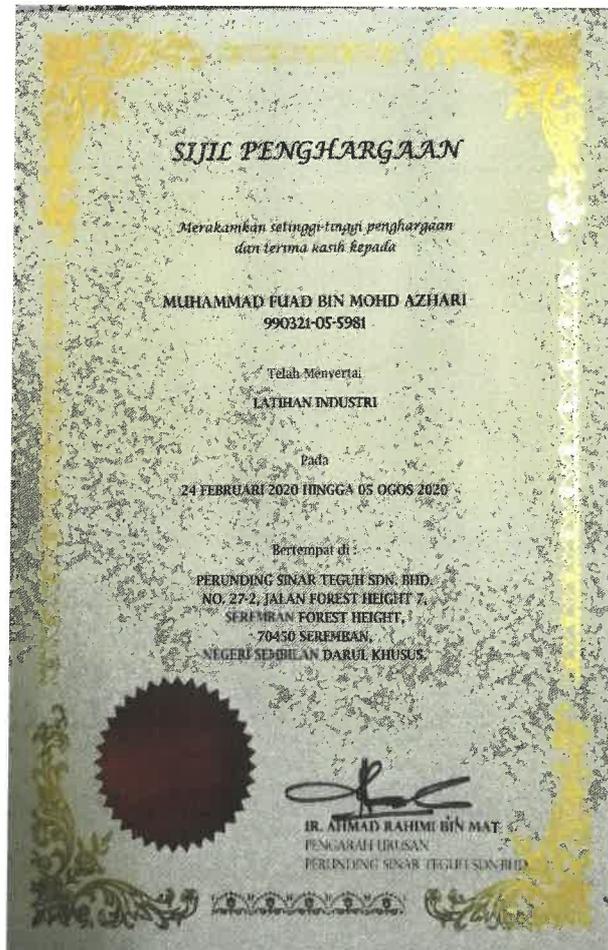


Figure 8: Certificate of Completion of Industrial Training