UNIVERSITI TEKNOLOGI MARA

FACULTY OF CIVIL ENGINEERING

INDUSTRIAL TRAINING REPORT
ECM376

MUHAMAD ZAIFUL EZRAL BIN JAMIL
(2016122679)

CANTILEVER SDN BHD,

TAMAN DANAU DESA,

58100 KUALA LUMPUR,

FEDERAL TERRITORY OF KUALA LUMPUR.

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ABSTRACT

This industrial training consist of 4 chapter that are introduction, training attended (weekly summary based on logbook), technical report and conclusion. Chapter 1 consist of introduction, background of the company, organizational structure, nature of the business, products, market strength and conclusion. Chapter 2 consist of introduction, exposure level and conclusion. Then, chapter 3 consist of introduction (nature of work - design, supervision, investigation commissioning, maintenance, supply, management, construction etc. Lastly, chapter 4 which is consist of introduction, lesson learned - skills developed (technical, communication, human, image building etc), knowledge gained, suitability of organization, and limitations and recommendations. In order to complete study, trainee need to undergo 2 month company that has been selected by trainee is Cantilever Bumi Sdn Bhd. This company provided construction of highway, building and high rise building. For now they construct new highway which is highway SUKE from Sungai Besi to Ulu Kelang. Training schedule has been prepare by the head of division for the trainee to learn important task at company. Lastly, the knowledge, skill and experience that gain during practical training is the best method for student in order to prepare them for their real working environment and also to be a good engineer soon.

AKNOWLEDGEMENT

Firstly, I would like thanks to allah for the praises on whom we ultimately depend on for sustenance and assistance. With his's love and blessing, I am able to complete my practical training at Cantilever Bumi Sdn Bhd.

First of all, I am thankful to my industrial training lecturer sir Firdaus who had helped me a lot in completing this report. The understanding, encouragement and continuous support from his throughout the duration of fulfilling this assignment are most appreciated.

Besided that, a special appreciation and thanks to my company supervisor, En. Muhammad Aiman Bin Abdul Rahman for his guidance on me because without him maybe my practical training is nothing. From him I have learn a lot on how to attend meeting, read drawing and calculate concrete and formwork of the structure.He helped me a lot in completing the industrial report, and without his help and advice, I could not able to do the industrial training report well.

Then, I would also thanks to cantilever's staff who have directly and indirectly give me opinion to me to conduct special project at the company. I feeling lucky to have their guidance, knowledge sharing and encouragement throughout these 2 months practical training.

Lastly, I would like to thanks for my family who have support me up and down of my life and your prayer for me was what sustain me thus far. I would also love to thanks all my collage friends who was helped and supported me to strive toward my goal.

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Chapter 1: Introduction

1.1 Introduction

Universiti Teknologi Mara (UiTM) was established with the objective to produced well gruadated student who are not only good in theory but also good in technical possess to behaviour skills, communication and business management during practical training. Students can choose any company for example consultant, construction and others that including in civil engineering work.

In line with the vision, student industrial training program is conducted for 8 weeks (2 month) is compulsory for all student of UiTM in order to graduate with Bachelor's Diploma.the student will undergo their industrial training at a company that have been chosen.

The purpose of industrial training is to expose student for their real working environment so they can relate with the application in the industry. This could test their critical thinking when working with other company and become as a site engineer for construction company. They also will develop their soft skills, management and strengthen their mental and physical during practical training.

1.2 Background of the Company

Cantilever Sdn Bhd a big company that provided a good quality of works. We are established ISO certified Construction Company in the market undertaking many prominent projects in infrastructural and civil engineering works. Projects that we have successfully completed include Menara Telekom, Inner Ring Road for Pusat Pentadbiran Kerajaan Persekutuan (Putrajaya), Batu Cave MRR2 Elevated Highway, Maju Expressway (MEX), Duta-Ulu Klang Expressway (DUKE), Petronas Tower , Kompleks Kerja Raya 2, and Ampang-Kuala Lumpur Elevated Highway (AKLEH) phase 2.

A lot of opportunity to learn due to low hierarchy of company. Great working environment and culture within the company. Systematic procedure implemented in company to ease the work. Rewards of the performance is awesome and attractive annual bonus. Company providing not only working skills training but also self development on soft skills. The best superior I event meet, powerful advice was given and coaching me to a correct direction. The challenges is high quality of work expected from top management.

Figure 1.1: Cantilever Sdn Bhd logo

1.1.1 VISION AND MISSION

The vision of the company is to excel globally as a recognized Total Technical Engineering and Commercial Services Provider.

The mission of this company is to continuously be the most highly regarded value adder in terms of safety, quality and effectiveness. Besides that, the company also want to continuously be the first choice for customers that they need not look for other alternatives and profit contributor to our shareholders.

1.3 ORGANIZATIONAL STRUCTURE

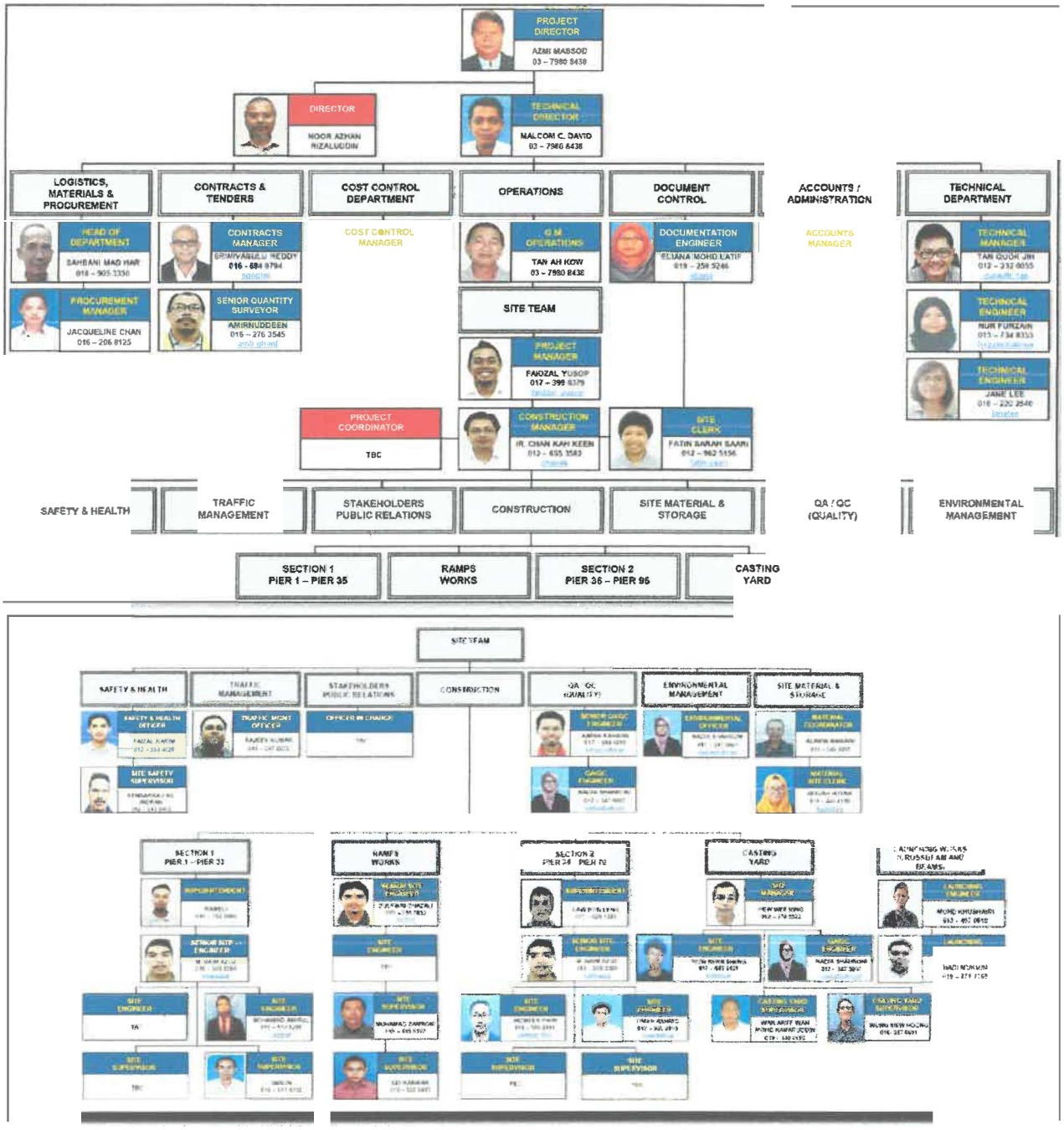

Figure 1.2: organization chart

1.4 NATURE OF THE BUSINESS

Cantilever Sdn Bhd operating for 6 days per week. Sunday is the weekend holiday for all the staff whom working on the construction site. Beside that, someday site engineer need to overtime work in case they got construction need to run on that day. They also got benefit work on that day because profit for overtime company spend more money for them who work overtime. The working hour is 8:00 am until 7:00 pm but mostly the staff will stay until their work would be done. Project manager need to monitor the staff during period hour of work because he must be an adamant person. As a construction manager, the site engineer will refer him first for checking either it can proceed the work or not. For night work, site engineer need to monitor the contractor working to avoid anything happen. Especially at night they will launching beam because does not interfere with the road traffic. Once in 2 weeks they will held minute of meeting with all staff in the company to discuss the problem that happen on the site.In the evening, all the progress in the site will be recorded in the site diary to hand in to the Clerk Of Work. As a student , I have to adapt this situation for 2 months and face the challenges happen in the site. Sometimes , students also need to collaborate well and gave them any idea that could contribute in solving problems.

1.5 PRODUCT

Cantilever Sdn Bhd is a company that have in construction seen ages. We are established ISO Certified Construction company in the market undertaking many prominent projects in infrastructural and civil engineering works. Project that we have successfully completed include Menara Telekom, Inner Ring Road for Pusat Pentadbiran Kerajaan Persekutuan (Putrajaya), Batu Cave MRR2 Elevated Highway, Maju Expressway (MEX), Duta-Ulu Klang Expressway (DUKE), Petronas Tower 3, Kompleks Kerja Raya 2, and Ampang-Kuala Lumpur Elevated Highway (AKLEH) Phase 2.

Figure 1.3: Menara Telekom

Figure 1.4: highway SUKE

Figure 1.5: highway DUKE

1.6 CONCLUSION

I am feel grateful because I have successfully complete my internship programmed. The result can be seen nowadays the highway SUKE almost done maybe on April 2020 the highway will fully done and can be used for all users. The working environment that have been applied so there no pressure when working with this company. The staff also friendly and easy to communicate with them. I learn a lot of new knowledge from the company.

CHAPTER 2: TRAINING ATTENDED (WEEKLY SUMMARY BASED ON LOGBOOK)

2.1 INTRODUCTION

Training attended is explain about journey and activity during 2 months. The activity were perform by the daily work that student are incharge for their work on industrial training. Every day student need to noted down their work into logbook so the lecturer know what they doing during 2 month of their practical training. From the practical training they got a lot of new knowledge that never had before. Even there are many complex problem on site, as an engineer need to solve the problem smart.

2.2 EXPOSURE LEVEL

Weekly Log No.	Starting Date	Ending Date
1	15/07/2019	21/07/2019
	Description of Activities:	
	The first week , the staff teach us about RFI (Request For Inspection). From RFI we know about inspection. Before going for inspection, they need to bring up with the RFI paper. They also teach us about how to read drawing and know well about drawing because as an engineer they need to know how to read drawing because all construction is based on drawing. - arrange drawing according to the file. - our company divided into two package that is CB3 and CB4. - update new drawing with old drawing. - for drawing it is divided into two that is QAQC and site. For QAQC is for the their staff to refer but site is for site engineer to refer the drawing. - study about SOP of the company. - study method statement before go to site. -we need to know purpose, safety others about the site progress.	

Weekly Log No.	Starting Date	Ending Date
3	29/07/2019	04/08/2019
	Description of Activities:	

Third week, site engineer expose me to the site which is going to inspect column at package CB3 with IOW that is our consultant. In this week I got a lot of knowledge about structure that has been use to construct highways.

- check the height and super elevation either it is stable or not.
- replace site engineer to check DO of concrete on site.
- supervise the technician do it slump test and check temperature of the concrete.
- see how they pouring concrete on pilecap.
- see how they install formwork before pouring the fresh concrete.
- for column they need to use pump because it is on high place.

Figure 1.7

Figure 1.8

Weekly Log No.	Starting Date	Ending Date
4	05/08/2019	11/08/2019
	Description of Activities:	

Fourth week, site engineer was bring me to the site and see how they tension the cable. En.Zulfikri was helped me a lot during my practical training. He teach me how to calculate tension for box girder.

- inspect box girder at package CB3.
- see how they tension the cable of box girder.
- for this structure, box girder just certain case we will construct box girder because it gain high cost to construct it.
- they tension using machine with every 1000kpa tensioning, they will measure the length of tension to compare with the drawing.
- measure the elongation for every 1000kpa until 6500kpa.

Figure 1.9

Figure 2.0

Weekly Log No.	Starting Date	Ending Date
5	12/08/2019	18/08/2019
	Description of Activities:	

For this week, I was given task to replace site engineer to make inspection cube test for every day. The structure will test based on 7 days and 28 days. Example of structure that use are parapet, T-beam, crossbeam, column, pilecap and box girder.

- before go for inspection I will issue RFI (Request For Inspection).
- after issue, key in RFI into server for today test so if anything happen it will refer it into server for certain case.
- then, make one copy to send at consultant office (RE2) for checking and received.
- the consultant will chop received for submission because before go for inspection site engineer need approved from consultant before go inspection.
- At 2 p.m, go for cube test at buildcon YTL.
- supervise the technician compress the cube based on structure.
- after done compression, consultant will comment on that RFI paper based on result obtained.
- after consultant comment, key the data that have been approved by consultant into the server.

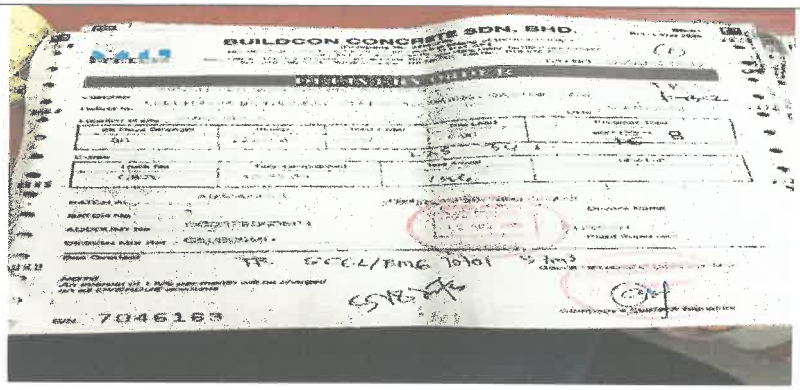

Figure 2.1

Figure 2.2

Figure 2.3

Weekly Log No.	Starting Date	Ending Date
6	19/08/2019	25/08/2019
	Description of Activities:	
	The sixth week, site engineer bring to inspect deck slab and RC plinth at package CB4. Before inspect, the surveyor will check elevation either the worker do their job properly or not. After done survey, site engineer and consultant will inspect the reinforcement bar either follow drawing or not. - inspect deck slab and RC plinth with consultant. - after inspection, it can proceed for pouring concrete on deck slab. - check lorry concrete by supervise technician slump test and check temperature of the concrete either it rejected or not. - usually concrete temperature maximum is 36 and slump it follow the structure because other structure got it own slump reading. - from that, I learn a lot of new knowledge from the consultant and site engineer that I never had before. - in university we only know the theory but never seen it in real life. - they teach me how to inspect and how to solve problem if any cases that happen on site. - in concreting, as site engineer they need to calculate how much concrete needed to order from concrete plant. - as site engineer they need to calculate properly because if miscalculate it will affect on your company financial.	

Figure 2.4

Figure 2.5

Figure 2.6

Weekly Log No.	Starting Date	Ending Date
7	26/08/2018	01/09/2018
	Description of Activities:	
	seventh week, help QAQC engineer settle monthly report. Print out all monthly report and punching until it complete. Then, help them update new drawing into the file by following the register list. From register list, we know the arrangement of the drawing. One night, we follow site engineer launching beam on 2 a.m until 5 a.m to settle the P9 part. They launching T-beam one by one because they need to put down carefully because if anything bad happen it will highly cost on your company and maybe happen bad tragedy for example beam fall down on worker. They need to setting smartly until it touch the rubber pad. On that night, got one special cases that T-beam when setting to put on rubber pad equally but it still not center by using centralize apparatus. It took 1 hour to setting the one T-beam because of that case. Maybe it got some smaller error when casting that T-beam.	

Figure 2.7

Figure 2.8

Weekly Log No.	Starting Date	Ending Date
8	02/09/2019	06/09/2019
	Description of Activities:	
	For last week, help them archive the file. Archive mean collect the old RFI paper that have been close and filing it to sent to HQ. When filing the RFI paper, we must check the grade from the RFI because some RFI that got grade C or D it must recheck with consultant. Some of the old RFI from last year are not close yet so we must check one by one from any problem happened. After that, collect drawing list and check one by one of the drawing. Then, arrange drawing according to the register list. The staff given me task to help him calculate deck slab asbuilt level using excel. When arranging the drawing, I learn a lot on how they build the highway and what component use on that structure. After lunch, site engineer teach me how to calculate rebar in the column before go for inspection. After calculate the rebar, he bring me to the site and meet with consultant to inspect the rebar column before concreting.	

Figure 2.9

Figure 3.0

2.3 CONCLUSION

To be conclude, I have successfully complete my practical training with my log book full of noted. This chapter help student to analyse their activity within 8 weeks during industrial training. This log book also help us to make summary from our daily work so it will help us to recheck back our log book on future soon if any problem happen that we forgot.

CHAPTER 3: TECHNICAL REPORT

3.1 INTRODUCTION

This chapter is explain about technical report that that we had during industrial training. For example nature of work such as design, supervision, investigation commissioning, maintenance, supply, management, construction and etc. Technical report is a process, progress, or results of technical or scientific research. In this technical report discuss about problem encounter and how to overcome it. Then, discuss about experience gained by the student from industrial training because they got a lot of new knowledge that never had before.

3.2 PROBLEM ENCOUNTERED AND HOW TO OVERCOME IT

a. T-beam crack or shrinkage

This problem happen in CB4 when site engineer and consultant will inspect first before they launch beam. There is 9 beam need to install on that day, so the site engineer and consultant will check one by one if any crack or dimension not follow according to the drawing. For this package CB4, we took precast T-beam form another company so we need to check carefully because our company pay them. Then, got 1 beam problem because got crack on the side of T-beam. So, as site engineer they need to overcome that problem by put SikaGrout@ 215 to cover up the crack on it. The function of the SikaGrout@215 is suitable for repairs to the following concrete structures. SikaGrout@215 is pumpable dual-shrinkage compensated, self- level ling, prebagged cementitious grout with extended working time to suit local ambient temperatures. After put SIKA 215, they need some for cube test.

Figure 3.1

Figure 3.2

Figure 3.3

b. Dimension problem

Before casting concrete on deck slab, the surveyor need to check elevation either it can proceed or not. Some dimension lost because of they just mark using marker. So, it will bother for the surveyor to check elevation if some of marking lost. Some problem is worker not do it properly maybe because of not monitoring them properly.on construction, they need to follow drawing truly. To overcome it as site engineer or site supervisor, they need to monitor them properly. So this problem will not longer happen again because small mistake if not monitor it, it will come to bigger problem.

Figure 3.4

Figure 3.5

3.3 EXPERIENCE GAINED

From this industrial training I got a lot of new knowledge from Cantilever Sdn Bhd. The staff are friendly and always help me if i not understand in any part. On first week, I got knowledge on how to read drawing as an engineer and know the structure to construct highway for example parapet, column, T-beam, RC plinth, pilecap and others. From that company, i know how they completing the monthly report progress. Because every month they need to submit to LLM (Lembaga Lebuhraya Malaysia). Then, I meet with head of (LLM) that IR Haji Ramlee and he thought me a lot of his experienced in this industry almost 40 years.

After that, on site I got a lot new knowledge that I never had before. Before this I just know the theory but now I know it in my real life of working on construction company. For example, I replace site engineer handle out concreting. I need to check all lorry concrete by do it slump test and check temperature either it rejected or not. On that site, I meet a lot of people and I ask them if I don't know about it. They teach me everything regarding on construction. Then, I make inspection on rebar column but before inspection we need to calculate first either worker follow the drawing given or not. After inspection, they can proceed with pouring concrete.

Lastly, I also replace site engineer go for cube test. Before go for cube test, I need to issue RFI and sent to consultant office for them to checking and received. After got received from consultant then I can proceed with the cube test. At cube test lab I meet with consultant (IOW) and technician. They teach me about why we need to compress cube for 7 day and 28 day. Before this, I just got experienced from lab on university. The consultant was teaches me a lot. I was thankful for him because now I know from beginning until the end.

3.4 CONCLUSION

To be conclude, this internship programme have teaches us a lot of new knowledge that all student never had before because in university they just know the theory. All this thing are related on our civil engineering. From the company, I learn more about how to solve problem because as an engineer we need to know how to solve problem. From industrial training, we can applied it on our next semester for subject Final Year Project.

CHAPTER 4: CONCLUSION

4.2 LESSON LEARNED

A. COMMUNICATION

We communicate with a lot of people on site ant that why when you go to site you will meet all good in person and they have teach me a lot about construction building. Communication is important in all because it will show you good In person and sociable. On site you need to communicate with all people to solve any problem happen on that site because you can ask for opinion how to solve problem.

Figure 3.6

B. MULTI - TASKING

Human Multitasking is an apparent human ability to perform more than one task. Form example site engineer given more task in one time, so I did it well as he need. First I need to check lorry concrete before it can proceed to pouring by slump test and check temperature then in the same time I need to monitor worker do it well when lorry concrete pouring.

Figure 3.7

C. SAFETY IN SITE

Safety in site is important in construction because it is involve your life and all worker on site. That why all contractor have to make CIDB card because if anything happen on you can claim the insurance. All site need to provide safety signboard because it is important for your life. If you work on high place, you need to wear safety hardness because it will support you from fall down. If you want to go to site, you need to wear all safety PPE such as safety helmet, safety vest and safety boot.

Figure 3.8

4.3 KNOWLEDGE GAINED

i. Slump test

Slump test mean is assessing the consistency of fresh concrete. It used, indirectly as means of checking that the correct amount of water has been added to the mix. On site, slump test and check temperature is very important part before pouring the concrete into that structure. The height for measuring either it good or not is 100 +- 25. some structure it got their measuring height. If it does not fulfill the requirement, the lorry will be rejected. This is to ensure the best quality of the concrete because we want to avoid from construction failure.

Figure 3.9

ii. Drawing

i have learn a lot of knowledge about drawing and how to read drawing. For our company, we use structure drawing because our company is contractor and we mostly use structure drawing.from the structure drawing, I know a lot about structure component for construct highway. For example, column, box girder, T-beam, RC plinth, parapet, crossbeam and others. Drawing is important for site engineer for them to refer it and apply it on real construction. If anything happen, they must refer back on drawing because drawing is the true.

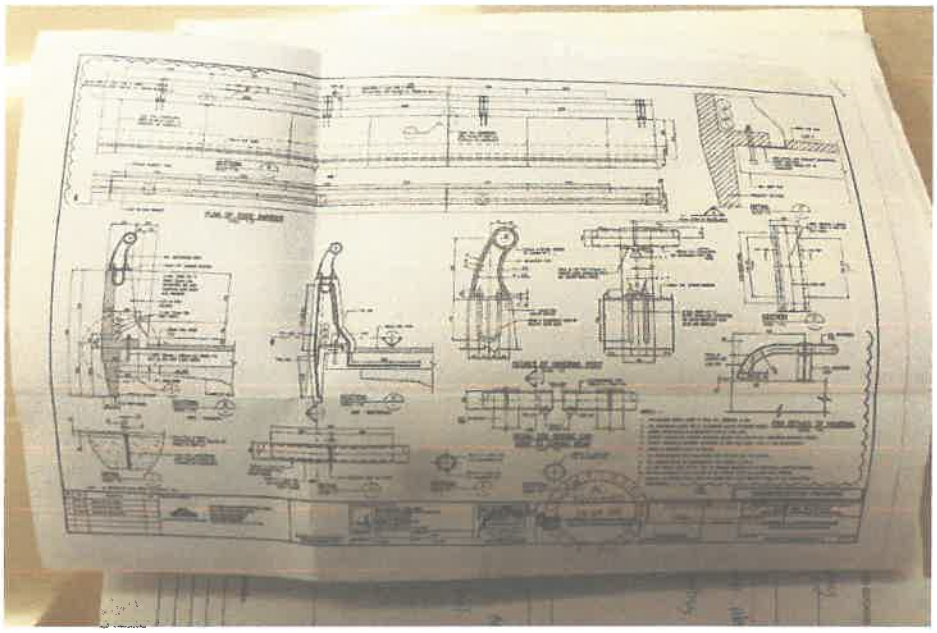

Figure 4.0

4.4 SUITABILITY OF ORGANIZATION

Based on this company Cantilever Sdn Bnd I got a lot of experienced during my industrial training for 8 weeks. The organization of the company is good and I recommend to all new student who want to undergo industrial training for civil engineering course. In this company you will got a lot new knowledge that you never had before. Then, this company give allowance for practical student so it will easy for you to survive with that allowance.

After that, the safety of this company also is very high because you need to undergo safety talk and take CIDB card for your life insurance if anything happen on site. Here many meeting were held for every 2 weeks between HQ and site. Meeting was mainly regarding project progress and cost monitoring.

To be conclude, Cantilever Sdn Bhd is very suitable for student undergo practical training. This company always got big project for example Menara Telekom, highway AKLEH and now still in progress highway SUKE maybe complete on august 2020.

4.5 LIMITATIONS AND RECOMMENDATION

Cantilever Sdn Bhd is very recommended by me because it good company that will serve you a lot of knowledge because they handle a lot of big project such as highway construction. Great working environment and culture within the company. Company providing not only working skills training but also self development on soft skills. The best superior I ever meet, powerful advice was given and coaching me to the correct direction.

The limitation in this programmed is for student who take EC110 civil engineering. They will be a lot thing can be learn and within 2 month is not enough for student to catch up all how they work on construction. On site, a lot of new knowledge you got because before this university student just know the theory. So, when on site, they can apply it based on study.This is so important to be learn but could not be learn as the internship programme only took 8 weeks to finish .

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1. Industiral Training Student Handbook Faculty Of Civil Engineering UiTM Pasir Gudang

- Staff

1. Staff of Cantilever Sdn Bhd
2. Clerk Of Work

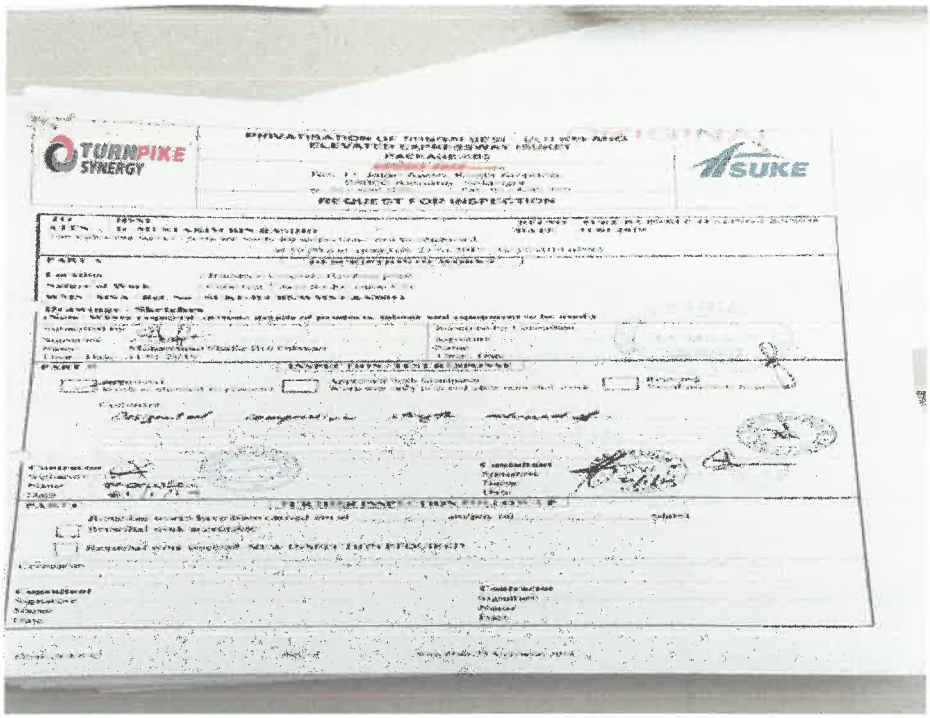
APPENDICES

(Process of pouring concrete)

Figure 4.1

(Launching beam at night)

Figure 4.2



(Inspect for cube testing)

Figure 4.3

(Fixed the crack of the T-beam)

Figure 4.4