



**UNIVERSITI TEKNOLOGI MARA**

**FACULTY OF CIVIL ENGINEERING**

**INDUSTRIAL TRAINING REPORT  
ECM376**

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## **Abstract**

The motive of the industrial training are mainly to let the student to gather some of experiences from real time job for students to further studies onto higher degree. By letting the students experienced such things, the students are able to apply the knowledge that they have learnt from attending classes for theories and able to applied those theories into real life situation. Apart from fulfilling the mandatory requirement for programme Diploma of Civil Engineering, students should be able to emphasize all of the knowledge that they learn academically and success in use the knowledge for real life application such as in the job perspective.

From this report, I have state and clarify all of the activities about how the internship going right from the beginning until the end of the internship programme. As for information, the students should attend the internship programme duration which are 2 months or 8 weeks. The company that I have undergoes my internship, Zainal & Din are managing 2 main projects which is Taman Perumahan Soga Sutera and also school construction at Kulai district in Johor. The site that I have been assigned to is Taman Perumahan Soga Sutera located at Batu Pahat district in Johor.

This report also will have a details about the company background, the things that I have learnt and experienced and even the organizational structure of the company. During the internship programme, there are many problems that that have been encountered but it will also come with solution to solve the issues. I am hoping that this report will be able to assure the readers and should be easily to understand about the civil engineering field in job perspective.

## Acknowledgement

First and foremost, I am humbly grateful towards Allah s.w.t because I am able to finish my internship programme with less obstacles and also manage to complete the final report of it. I am also want to give special thanks to Zainal & Din Construction Sdn. Bhd. for accepting me to become one of their interns. There are many useful and important lesson that I have learnt from the company that is so precious and cannot be gained easily. After all of those experiences, I have been able to apply some of the knowledge that I have learnt from attending classes and manage to practically use it in engineering scope for any kind of job. I am gratefully blessed with the warm welcome and friendly treat from all the staff members.

Next, I would like to give my gratitude for the team members of the of the company that have been assigned to handle me during my internship especially Encik Riduan and Encik Hafizuddin as the project manager and also the site supervisor for teaching me a lot of valuable lessons and wonderful experiences in the site of construction. Without their enthusiasm, I will not able to understand many of the things that I had learnt academically at class and be able to practically done it at the site. They also have supported me throughout my internship time with more life tricks and how to be able to solve many problems as a civil engineer that I wish to be. Throughout every stage of their project supervisions, I am able to complete this report successfully.

Last but not least, I am eternally grateful for the help and support from my parents for having my backs as I face hardship along the internship duration. Without their morale boost and supports, I may not make it through until this point. I am also would like to thanks to all of the lecturers that act as the internship programme coordinator for guiding all of the students to successfully finishing the internship reports.

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## Chapter 1: Introduction

## 1.2 Background company



Figure 1.2.1: Logo of Zainal & Din Construction Sdn. Bhd.

Zainal & Din Construction Sdn. Bhd. was established on October 15, 1992 as a wholly owned Bumiputera Company specializing in its business of building construction and civil engineering work. This area was chosen in line with government policy at the time which encouraged Bumiputera entrepreneurs to be active and seize opportunities in the construction sector for national development projects implemented by the government.

The history of the establishment of this company begins with the Saiza Construction Company owned by Mr. En. Zainal Bin Md. Said was registered with the Class D Contractor Service Center in 1982. During the 10 years under the Saiza Construction Company, more than 30 projects with a total contract value of RM 12 million have been obtained and the projects have been successfully completed. With a more stable financial footing and confidence and confidence to move forward, in 1992 Zainal & Din Construction Sdn. Bhd, was set up to replace Saiza Construction Company.

Zainal & Din Construction Sdn. Bhd. began registering as a contractor with the Contractor Service Center (PKK) in Class BX on May 3, 1993. For 3 years in Class BX and after successfully completing RM 17.94 million worth of projects, the increase to Class B was approved by PKK on July 15, 1996. And then 4 years later on June 7, 2000 after completing the RM 50.58 million project value, the Class A raise application was approved by the PKK (G7). Since its establishment in 1992 to 2016,

for almost 24 years, Zainal & Din Construction Sdn. Bhd. has successfully completed 50 projects totaling RM 389,598 Million.

During the involvement of Zainal & Din Construction Sdn. Bhd. In the field of construction, the company has explored a wide range of branches including the following projects such as for building: officers, school block, quarters, hospital, training center and plaza toll. Other than that we also involved in constructing interior decoration and furniture, roads, bridges and jetty, water pipe and building maintenance.

These projects are obtained from the government through various channels including direct negotiations, selected tenders or open tenders.

The company's earnestness, persistence and excellence have been recognized by the government with the selection of Zainal & Din Construction Sdn. Bhd. Into the first 'HELP CONTRACTOR' Scheme. Zainal & Din Construction Sdn. Bhd. It has been recognized as a High Performance Bumiputera Company under the TERAS-Prime Minister's (TERAJU) TERAS program.

In addition, Zainal & Din Construction Sdn. Bhd. Successfully obtained confirmation from Sirim QAS Sdn. Bhd. Where Successfully Implemented MS ISO 9001: 2008 Quality Management System – Requirements where the scope of registration was “Provision Of Construction Services In Building And Civil Engineering Works” on November 28, 2002.

## 1.5 Conclusion

As a conclusion, I am considered to be very lucky and grateful because of the company that I applying is a very thriving construction company. The reason I mention this is due to the products of this company which is Taman Perumahan Soga Sutera will be likely to be one of the most successful suburban area. The job environment that occurs when running any errands in this company also feels relaxing with it efficient system. It can be shown by the relationship among the workers that always treating their employees with good treats after achieving any success. Thus, all of the workers and employees will not feel pressured and work with full commitment and integrity.



## CHAPTER 2: TRAINING ATTENDED

## 2.1 Introduction

For this chapter, it will show the content and explaining onto what have the students have been exposed during the internship duration. The whole 2 month of studies on the assigned company will be summarized from the logbook report that have been written everyday by the students by a weekly. Along the internship programme duration, most of the application of the civil engineering comprehension can be related in any situation such as construction and also consultation. At construction site, there are many incoming confusing problems may be faced, but by using the civil engineering knowledge, the problem can be solved easily. The working time for the company that I attended is starting from 8:00 a.m. until 5:00 p.m. and run six days per week.

## 2.2 Exposure level (weekly report)

| Date                              | Description of activities   |
|-----------------------------------|---|
| 14/7/2019 – 20/7/2019<br>(week 1) | <ul style="list-style-type: none"><li>• Checking in to the company.</li><li>• Introducing myself to all staff members and briefing for the site I assigned to.</li><li>• Observing concrete pouring concrete session for block 2 phase 2c and culvert reinforcement.</li><li>• Observing the worker doing steelwork by preparing the reinforced bar for column structure.</li><li>• Doing inspection for any the architectural defect for housing and soil work for phase 2b.</li><li>• Calculating the volume of ready mix concrete needed to be ordered by finding the volume of the structure (beam 1<sup>st</sup> floor).</li></ul> |

| Date   | Description of activities   |
|--|---|
| <p>28/7/2019 – 3/8/2019<br/>(week 3)</p> | <ul style="list-style-type: none"> <li>• Assigned to take photos of finished soil work for claim purposes.</li> <li>• Assigned to take photos of certain area for soil work claim purposes.</li> <li>• Running defect inspection at phase 2b.</li> <li>• Assisting the subcontractor for measuring the underground pipe works for claim purposes.</li> <li>• Doing survey works to find the lost markers point that is damaged and got ran over by heavy vehicles by using total station.</li> <li>• Observing the concrete pouring session for 1<sup>st</sup> floor slab (block 3) and ground floor beam (block 4).</li> <li>• Supervising the workers preparing the reinforced bar for column structure.</li> <li>• Observing workers dismantling formworks of 1<sup>st</sup> floor slab.</li> <li>• Supervising the workers installing the tied reinforced bar for 1<sup>st</sup> floor column.</li> </ul> |

| Date   | Description of activities  |
|--|--|
| <p>4/8/2019 – 10/8/2019<br/>(week 4)</p> | <ul style="list-style-type: none"> <li>• Doing survey works to find reduced level for different points at On-Site Detention pond.</li> <li>• Observing workers constructing the formwork for column and installing them properly and ground beam for block 4 phase 2c.</li> <li>• Observing the subcontractor doing pipe works by connecting the cold water pipe to the main water supply and installing the fire hydrant.</li> <li>• Observing the workers dismantling the formwork for column and beam for ground floor block 3 phase 2c.</li> <li>• Assigned by the site supervisors to assist the subcontractor for doing repair for leakage problem at water tank due to damaged ballcock valve.</li> <li>• Meet up with owner of house with site supervisors to provide solution for leakage problems.</li> <li>• Observing the workers constructing the embankment wall of On-Site Detention pond.</li> <li>• Observing the operator of excavator removing the soil from the ground for the construction of On-Site Detention pond.</li> <li>• Observing the concrete pouring session for 1<sup>st</sup> floor column block 3 phase 2c, upper roof and column and slab for block 2 phase 2c.</li> </ul> |

|                                   | <ul style="list-style-type: none"> <li>• Doing inspection for any defects on Banglo Hj. Maadon.</li> <li>• Doing calculation for ground beam structure for block 4 phase 2c RSDJA.</li> </ul>  |
|-----------------------------------|--|
| Date                              | Description of activities  |
| 11/8/2019 – 17/8/2019<br>(week 5) | <ul style="list-style-type: none"> <li>• Doing defects inspection for housing phase 2b.</li> <li>• Observing the workers constructing formwork for beam structure of the 1<sup>st</sup> floor for block 3 phase 2c.</li> <li>• Differentiate between the plan and the real location of floor trap for each RLB2TJB.</li> <li>• Observing the workers constructing the channel for sewer manhole pipework.</li> <li>• Assisting the workers by showing the defects location for the repair works.</li> <li>• Supervising the workers setting up the reinforced bar for beam structure of the 1<sup>st</sup> floor.</li> <li>• Measuring the length of desired points for the construction of wall to protect the houses from golf ball.</li> <li>• Observing the concrete pouring session for ground beam structure of block 4 phase 2c and also for JPAM parking slot slab structure.</li> <li>• Doing inspection for the arrived reinforced bar either it is following the Delivey Order.</li> <li>• Instructed to run an inspection for the condition of the balcony for housing in phase 2b for any defects.</li> <li>• Doing inspection for the arrived culverts either it is following the Delivery Order.</li> </ul> |

| Date  | Description of activities  |
|---|--|
| <p>18/8/2019 – 24/8/2019<br/>(week 6)</p> | <ul style="list-style-type: none"> <li>• Observing workers cutting down tree branches that is obstructing the area of construction at Padang Golf.</li> <li>• Doing survey works to find the ramp level for houses at phase 2b using dumpy level.</li> <li>• Calculating the volume of concrete needed to be ordered for footing pad of RLB2TJB phase 2c.</li> <li>• Observing workers doing steelworks for pad footing and stump structure.</li> <li>• Observing the concrete pouring session for roof beam structure for block 3 phase 2c.</li> <li>• Measuring the area of ground for each houses of phase 2b for cost estimation of planting the grass.</li> <li>• Preparing the item which is hinges and screw in order to hand over to subcontractor that handling the door installation.</li> <li>• Supervising the workers constructing the formwork of staircase for block 2 phase 2c.</li> <li>• Hand over the hinges and screw that has been prepared to subcontractor.</li> <li>• Presentation for the faculty supervisors and site supervisors for evaluation.</li> <li>• Observing the workers constructing the concrete walk path for RLB2TJA at phase 2b.</li> </ul> |

| Date                                    | Description of activities   |
|---|---|
| <p>1/9/2019 – 8/9/2019<br/>(week 8)</p> | <ul style="list-style-type: none"> <li>• Calculating the volume of concrete needed for 1 unit lot of RSD2TJB.</li> <li>• Doing survey works to find the invert level and the platform level of the manhole and also find the level of the bituminous road for the adjustment of the level of telecommunication manhole.</li> <li>• Measuring the depth of manhole.</li> <li>• Measuring the distance between each sump and recording the dimension of the round concrete pipes and the sump.</li> <li>• Supervising the workers constructing the embankment wall of the On-Site Detention pond.</li> <li>• Doing calculation of beam structure 1<sup>st</sup> floor for RSDJB2.</li> <li>• Doing survey works to find the difference of depth of 2 manholes around TNB substation using dumpy level.</li> <li>• Marking the house area to obtain a straight line at phase 2c.</li> <li>• Observing the concrete pouring session for block 4 ground floor slab structure.</li> <li>• Farewell party to celebrate the end of internship at this company.</li> </ul> |

### 2.3 Conclusion

As a conclusion, the content of this chapter will aid the students to increase their understandings for all of the things that they had learnt during the internship programme duration. By gaining all of those knowledge, all students will be able to demonstrate all the experience in using it for the future references. Apart from it, the main point of this chapter is to ensure the students are able to summarize all of the understandings from the logbook and put it into weekly summary. The students are exposed onto many precious experience from many aspects making them have better chances for having job experiences. During this modern and hard time, there are many civil engineering graduates that are unemployed. This is due to the lacking experience in this field and graduates is not ready to face the engineering field. Therefore, this programme will help the students that is soon to be civil engineering graduates to gather experiences which is very important factor for any company to hire the graduates. In the end, all of the studies that student gone through will help them to strive in the harsh economy and be able to become a successful civil engineer.



## CHAPTER 3: TECHNICAL REPORTS

### 3.1 Introduction

Basically, “Chapter 3: Technical reports” is the 3<sup>rd</sup> chapter for the internship report that is mainly to give elaboration about the technical report. This scientific report is known to describe all of the process and the outcome of the technical problem solving method along the time during the internship duration. Other than that, this chapter will also reveal about the main project along with their progress during the students having their interns. For me, the nature of work that I have been exposed to are more to supervision, construction and also maintenance. Even though the time given for the students to complete their internship is 2 months, the time given may shows only a little progress at the site construction due to many problems arise from any kind of situation. And for the problem, there will always be a solution onto how to deal with it. Last but not least, this chapter will explain on how students are able to grab any knowledge regarding any course including civil engineering, mechanical and electrical engineering, safety and health and even some business management.

### 3.2 Problems encountered and how to solve it

#### ➤ Concrete problems

For site Taman Perumahan Soga Sutera, phase 2c is still under structural phase. Therefore, there are many problem comes due to concreting problems. Concreting problem is a common problems during the structural phase. The concrete problem arise due to there are air voids in the concrete mixture. In order to encounter the problem, the workers needed to use construction vibrator to ensure all of those voids are filled with concrete mixture. If the air void are not filled, it will lead to honeycombs problem that will reduce the structural strength of the whole structure and if the honeycomb defect is major, the structure will crack easily in short amount of time. Luckily, right after the workers dismantling the formworks, there are little amount of the honeycombs defect and it is small enough that it can be filled with new concrete mix.

#### ➤ Lost pegging and markers.

All of the pegging and markers that has been set up by the surveyor by using the total station. This pegging are actually very important as it serve for the starting main point for the workers to set up the site of any housing. The pegging is made up of a small rectangular woods that have been spiked to the ground at the top tip of the pegging lies a small nail that act as the centre of the points. Unfortunately, the markers that have been set up by the professional land surveyor has been moved or ran over through heavy machinery. From this problem, the contractor cannot start the construction of the building of house without proper main point to start as referred to the pre-construction plan. Due to this problem, the site supervisor come up with solution of rechecking and remarking again the position of the pegging at the site. By using total station, we refer to the pre-construction plan start find the correct

bearing and distance from each points. From doing that, we manage to recover most of the pegging locations. After we manage to recover the pegging locations, we cover the pegging location with staging and warning tape so that the pegging location will easily become visible to all of the workers and heavy machineries operators not to run over them again.

➤ Architectural defects

Architectural phase is a phase when the structural of building completed and the building will be decorated with the designated plan. There are many problems that have been arise from this phase but this problems will not affect any structural integrity of the building. The defects problems are caused by many factors such as the condition of the material used, the skill level of the workers and even the weather. Usually, there are many kind of defects such as small cracks at the skim coating surface due to very high temperature causing the hydration process rate becoming too high and cracking happen. Other than that, unfinished works such as unremoved nails and bad finishing for the surface of the wall may be influenced by the level of skill of each workers. Next, the condition of the materials used also contributing to the defects problem. As an example, any chipped tile that being used for tiling purposes can be seen with naked eyes will be rejected and the tile needed to be replaced with the new one. For any kinds of defect, it can be identified with defects inspection throughout each houses so that the repair works can be set up. If all of the houses are free from any defects, it can be ready for sell.

### 3.3 Experienced gained

Zainal & Din construction Sdn. Bhd is a thriving construction company that handle most of the residential project. Luckily for me, I got a chance to be assigned into the construction site of Taman Perumahan Soga Sutera which is the construction site of house with the client of Sumiteras Sdn. Bhd. Taman Perumahan Soga Sutera project started June 2016 and still under construction. The project are divided into many phases such as 1a, 1b,2a,2b and 2c. The finished phase and already open for residential is phase 1a and 1b meanwhile phase 2b is almost completed. Phase 2c is ongoing on for construction of structural phase while phase 2a not started yet. I am lucky to have the chances to observe and supervise many process of construction starting from earthwork to architectural phase of housing.

Firstly, I managed to get myself observing the operator doing soil work by excavating the ground in order to make space for pad footing structure and also creating pit for the construction of On-Site Detention pond. Most of the operators in this company have exceptional skills that they manage to finish their work in a short amount of time while getting their job done correctly according to the engineer desire. They also know how to run a maintenance for each of the heavy machineries so that the machineries would not get damaged and can be used for a long period time of works. They also really helpful in helping me gathering knowledge by teaching me about the scope of their job which really help me understanding many of the terms and words that is used in construction knowledge.

Other than that, the site supervisors also help teaching me a lot of things that I am bluntly skilled such as how to setting up the dumpy level in a short amount of time, how to understand everything on a Delivery Order description, how to calculate the volume of concrete by referring the structural plan, how to check the work done by the workers and also how to prepare the claim works for payment. Those are the precious experience that I cannot learn anywhere without having an internship at their company.

### 3.4 Conclusion

As a conclusion, the internship program that I have attended have benefits me so much from any aspects. And I also can learn to relate my civil engineering knowledge that I have theoretically and manage to use it practically during the internship duration. From this programme, I have learn to overcome the problems arise from any aspect and come up with brilliant solution like how civil engineers should be. I also manage to get immersed in the depth of civil engineering working field which is so broad and so much things to be considered. This programme also will help me in teaching me the lesson that I have not learn yet in my classes. For me, the industrial programme is needed to boost the knowledge of every students so that they will get to know about the job scope of civil engineering properly so that they will get ready for their future.

## CHAPTER 4: CONCLUSION

#### **4.1 Introduction**

This chapter is named “Chapter 4: Conclusion” is concerning about the knowledge that has been gained during the internship programme. This chapter is crucial for any reader to prepare the reader to get ready to undergo for any industrial training. In order to avoid the mistakes that have been done by me, I will provide the correction of my doings so that the readers would not get confused due to the lack of explanation from this report. As I can conclude that this chapter will be reviewing about the sum up of my whole internship at my company which is Zainal & Din Construction Sdn. Bhd. I was hoping that this report will give the better view onto the civil engineering field.



## 4.2 Lessons Learned

➤ Safety measurements of construction site.

Safety is major and mandatory subject in order to handle any construction on a site. This is because some mistakes may not become forgiving and may lead to a loss of life. As a civil engineer, we do not want to have any casualties at the site of construction in order to get project run smoothly. Therefore, it is a must for everyone that coming to the construction site to wear Personal Protective Equipment. By wearing PPE, the safety of the user will have protection by helmet, safety harness and boots. They will be protected from falling debris, sharp object on the ground, prevents from falling and so much more. Working at a high place is dangerous and that is why safety measurement needed to be taken into consideration. Therefore, the safety officer in charge of the site will give a penalty for anyone that is not equipped with PPE on site.

➤ Interpreting drawing

Drawing is essential for construction purposes. Therefore, as a civil engineering student, we should have a deep understanding onto drawing plan. There are many kind of drawing such as structural drawing, architectural drawing, infrastructural drawing and even mechanical & electrical drawing. As example, structural drawing will only explain about structural structure such as beam, column, footing and even stump for their dimensions and description of the reinforced bar used. As for architectural drawing, it explain a lot about esthetical value such as decoration for types of tiles, positions of sanitary fittings, windows position and etc. Lastly for infrastructural drawing, it will have the details of many utility structure such as manhole, sewerage and drainage. In civil engineering field, it is crucial for anyone to understand the drawing plan so that the construction will be exactly as planned.

➤ Land surveying.

For land surveying, I am manage to get a lot of knowledge from it. Land surveying is crucial in civil engineering because the orientation of structures is needed to follow as the plan required it to be. If the construction proceed without referring to the surveyor, the position of houses will become messy. In surveying, we use dumpy level for finding any differences in level such as platform level and invert level for certain point. Meanwhile, by using total station and prism, we are able to find the coordinate of desired points at the site according to the pre-construction plan by using the bearing and the distance. I am also have been trained to set up all of the equipment to be ready in a short amount of time correctly. This will help a lot in sharpening my skills in handling these equipment.

#### 4.3 Limitations and Recommendations

Zainal & Din Construction Sdn. Bhd. is one of the top construction company in Batu Pahat district. Therefore, I am strongly recommending for any students to apply for their internship towards this company. It is a company that have a wide variety and job scope of civil engineering and students can gain many precious experience there. But, for any construction site, it is more likely to prefer male student due to safety reason on the construction site. Any incidents can happen to female students due to this reason.

As for the limitations, the durations of this internship programme is so short which is 2 month or 8 weeks. This limitations somehow making the students unable to collect more knowledge because the construction project cannot be rushed to get finished. The time needed for construction is long and can take a lot of years depending on the level of project. Therefore, if the internship duration can be increased then it will help the students to gain more knowledge that will help them to understand deeper into civil engineering field.

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**Appendices**



Figure 8.1: Using dumpy level for levelling



Figure 8.2: Running inspection for items that have been delivered to the site.



Figure 8.3: Supervising workers pouring concrete.



Figure 8.4: Supervising the workers constructing formwork.



Figure 8.5: Supervising subcontractor on roadwork construction.



Figure 8.6: Supervising the workers pouring concrete to slab structure.



Figure 8.7: Observing the workers aligning the formwork of column.



Figure 8.8: Observing the workers pouring concrete to beam structure.