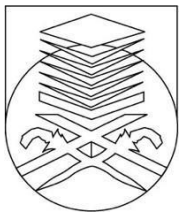

PROGRAMME IN BUILDING SURVEYING

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PERAK BRENCH

SERI ISKANDAR CAMPUS

PROPOSED BUILDING AND SETTING UP 1 UNIT BUNGALOW AT KAMPUNG PADANG KALA, MELOR, KELANTAN''

MUHAMMAD EL-HUSAIRI BIN ABDUL RONI

(2019678502)

BACHELOR OF BUILDING SURVEYING (HONS.)

PRACTICAL TRAINING REPORT

JANUARY 2022

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JANUARY 2022

This practical training report is fulfilment of the practical training course

PREPARED BY

NAME : MUHAMMAD EL-HUSAIRI BIN ABDUL RONI

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ACKNOWLEDGEMENT

First and foremost, I want to thank Allah for keeping me strong and encouraging me to never give up during my internships. Without his blessing, I will be unable to complete my internship day without any difficulties.

Secondly, I would like to thank my supervisor Encik Muhammad Syafiq Najmi Bin Muhammad Sanusi, who never gave up in giving me guidance and advice to assist me in my internships and also throughout all the years in my degree.

Furthermore, I would also want to express my gratitude towards my internship's supervisor at the Haustek Group Sdn Bhd, Encik Ahmad Ahnaf Bin Zainuddin and Puan Raja Nor Ilani who had gave me this opportunity to experience about the construction management and throughout my industrial training, I received support, supervision, and encouragement from them. Encik Ahmad Ahnaf also showed up his patience in guiding and sharing his personal experiences is much appreciated.

And of course, thanks to my family who had never stopped supporting me in whatever the decision I had made. I will not be able to do all this without their prayer and blessing. Lastly, I would like to thank myself for always believe that I can do this and endure all the hardships and struggles of studies. Getting this far is a proud moment and will be cherish in years to come.

TABLE OF CONTENT

LIST OF FIGURES

LIST OF CHARTS

LIST OF TABLES

CHAPTER 1 : INTRODUCTION

1.0 INTRODUCTION

The industrial training is required for every student Degree in Building Surveying as a condition for the graduation and award for a degree. This training is also meant to offer students with exposure and experience in the field of working environments, as well as to serve as an early preparation for students before entering the industry. The industrial training start on 11 October 2021 – January 2022.

I looked for and selected a place where I could receive industrial training at HausTek engineering Sdn. Bhd. Lot 662, Kampung Jambu Merah, Melor,16400 Kota Bharu, Kelantan. I was place in the building department and my position was as an assistance site supervisor. During this training I was given the opportunity to follow the learning involved technical assistance related. I was involved with a few housings project such as ‘‘Proposed building and setting up 1 unit bungalow at Kampung Padang Kala, Melor, Kelantan’’.

This report will include information on the firm that I worked for throughout my internship. Meanwhile, the literature evaluation for the project at hand and the case study selection for the project in question will be described. Problems or concerns that happen during the activities on site will also be reported. Based on the case study and project, a conclusion and suggestion will be developed. Finally, this report will include references and appendices.

1.1 BACKGROUND OF HAUSTEK ENGINEERING SDN.BHD

Figure 1 : *Haustek Engineering logo*

Haustek Group Sdn Bhd is a construction company and was first established in 2004 by Mr. Zainuddin. It has now made a name for itself and known by many people out there. It is located at Kampung Pondok Jambu Merah, Melor, Kelantan. Haustek leading the Construction Sector where 40-70% of construction products are from Haustek's own factory. Haustek's main mission is to develop sustainable human capital by using sustainable raw materials to generate a sustainable economy to create a sustainable ecosystem for our green world. In the future, Haustek wants to produce 70% of the construction materials are from Haustek Group's Factory.

1.2 VISION & MISSION

VISION

"Begins with a society that fights for life. Ends with a life that fights for society".

MISSION

“Haustek is an independent organisation who take responsibilities for the society to create a SUSTAINABLE living environment by developing SUSTAINABLE "modal insan" or labours using SUSTAINABLE materials, so that in the future, we all together can achieve”.

1.3 OBJECTIVE

Develop knowledge of local raw materials and advance raw material technology. Develop and train local workers to adapt to a construction career either in terms of factory or construction site management. Making the company one of the building knowledge resource centres and develop local component assemblers or craftsmen.

1.4 COMPANY CORE BUSINESS

As a construction company, Haustek engineering provide a few main services such as Wooden IBS roof structure, aluminium frame such as door and window and wooden door frame as their main sources of income and business. They also give consultation on people who want to build their own house and Haustek engineering will supervise and give advice during pre-construction, mid-construction, and post construction.

1.4.1 WOODEN IBS ROOF STRUCTURE

This company start their first business by making wooden IBS roof structure. Wooden IBS roof structure is design to cut the cost and time of making a normal roof where an installation of a normal roof structure take about 3 to 4 weeks to complete while with this factory build roof structure will cut the time of the installation to 1 week to 2 weeks maximum.

Figure 2 : *Installation of wooden IBS at the factory and construction site*

1.4.2 ALUMINIUM FRAME

Aluminium frame is their second main business where it also connected to the construction project. Door and window are one of the important expect of a house because they provide the entrance and natural ventilation of a house. Haustek sell a few types of aluminium frame such as silver frame, black frame, and white powder coat. This type has its own range of price and its sell based on the owner budget and needs.

Figure 3 : *Installation of aluminium frame at the factory and construction site*

1.5 KEY PLAN, LOCATION PLAN AND SITE PLAN

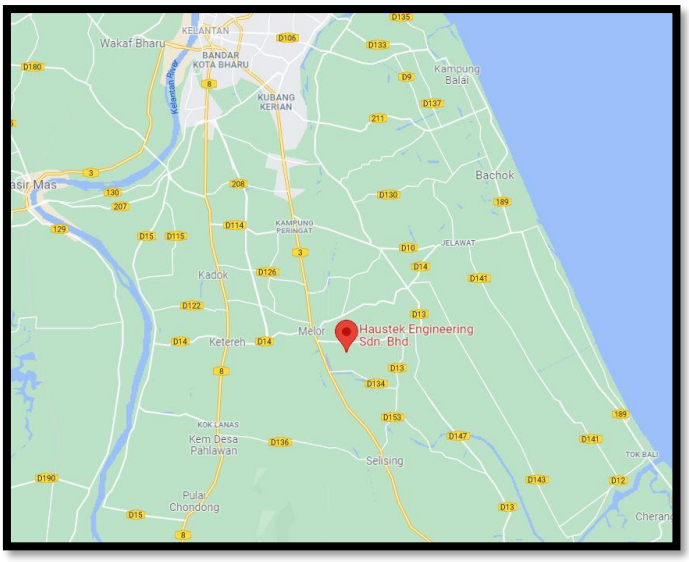


Figure 4: *Key plan of Haustek Engineering sdn. bhd*

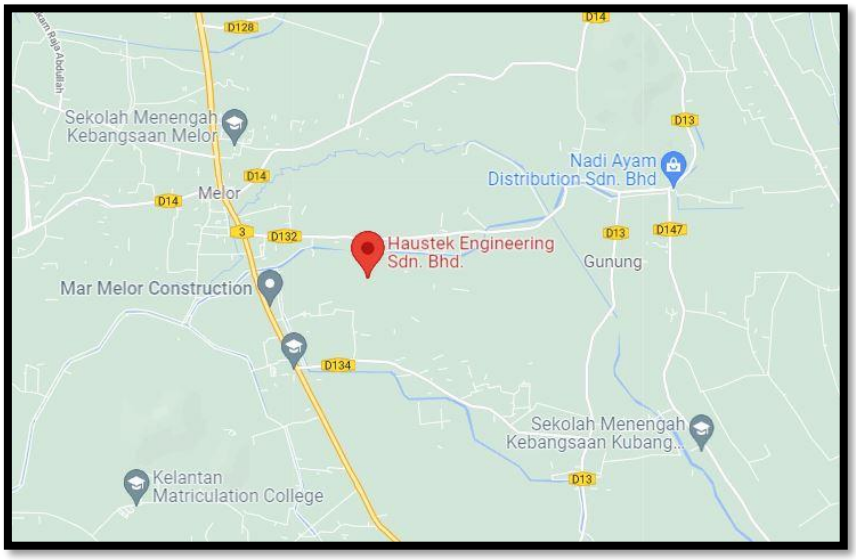


Figure 5: *Location plan of Haustek Engineering sdn. bhd*

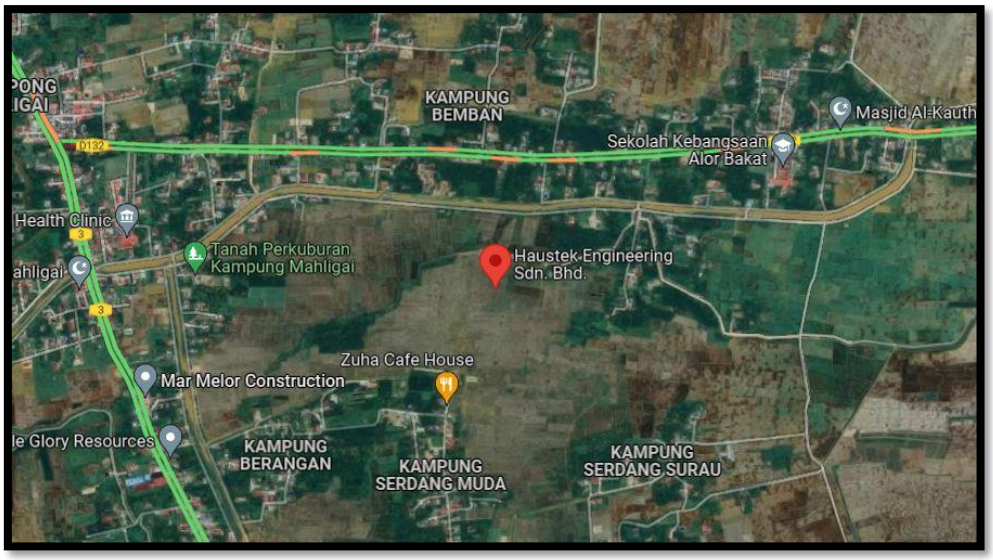


Figure 6: *Site plan of Haustek Engineering sdn. bhd*

1.6 ORGANIZATIONAL STRUCTURE

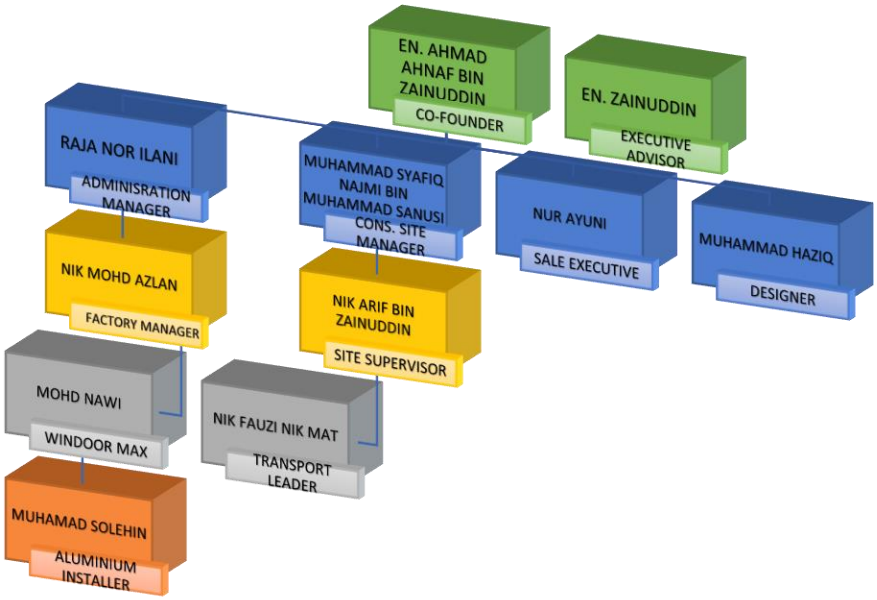


Chart 1: *Organizational Structure of Haustek Engineering sdn. bhd*

1.7 SUMMARY

For the summary, this chapter 1 has clarified the data and details of the company background such as where it is located and what is their mission, vision, and objective of Haustek Engineering SDN. BHD. Other than that, through this chapter we learn that the core business of Haustek engineering is related to construction business such as making wooden IBS roof structure and making aluminium frames and wooden frames. In the end, this chapter also tell us about the hierarchy of Haustek Engineering where there is 10 executive or people who control their own department and 1 executive advisor which is The Founder of Haustek Engineering SDN. BHD

CHAPTER 2 : LITERATURE REVIEW

2.0 INTRODUCTION

This chapter will concentrate on the information that will be included in the report as well as the topic that has been chosen. The chosen topic for this literature review is related to the process of constructing a building. It also goes through the details that explained what the meaning of construction includes the type of construction, phase of construction, management of construction and types of foundation that usually use in construction.

2.1 INTRODUCTION TO CONSTRUCTION

A private construction project is any project in which a private entity owns, controls, or commissions the work. Individuals, homeowners, businesses, other corporate entities, non-profit groups, privately supported schools, hospitals, and publicly listed enterprises are examples of private parties. Private construction projects come in many shapes and sizes, and it's at this point that it's helpful to look at the nature of the job to divide it into distinct subcategories. These subcategories would include:

- **Residential Construction**

  Whenever work is being done on a single-family home or a residential facility with (typically) less than three or four units it can be called as residential construction. Working on an apartment complex would be classified as a business project rather than a residential one. Working at a condominium, for example, would be classified residential if performed on a single unit, but commercial if performed on the entire complex or shared parts.

- **Commercial Construction**

  The construction of any buildings or comparable structures for business reasons is known as commercial construction. Restaurants, grocery shops, skyscrapers, retail complexes, sports facilities, hospitals, private schools and colleges, and other commercial development projects are only a few examples.

- Industrial Construction

  This is a relatively small segment of the construction industry. These projects include power plants, manufacturing plants, solar wind farms, refineries, etc. While termed “industrial construction,” it is pretty interchangeable with “commercial construction.”

2.2 PHASE IN CONSTRUCTION

Projects cannot be completed all at once. To make them happen, they will require preparation, synchronization, and a large number of competent individuals. As a result, projects are divided into building phases, each with its own set of contractors and hazards. From plans to completion, most sites go through the following six construction stages.

2.2.1 PRE-CONSTRUCTION

The pre-construction phase is when someone takes a concept and turns it into reality. Planning, surveying, engineering, design, permits, and other tasks are all part of this stage. It acts as a road plan for the rest of the project. The property owner, the general contractor handling the work, the architect or design expert, an engineering company, a surveyor, and anybody else who would need to approve the site or designs are all involved in the pre-construction process. A general contractor will also begin looking for subcontractors at this time.

The risks in the pre-construction period are relatively low because the project hasn't yet broken ground. This building phase mostly entails getting a plan together, aside from the back-and-forth of drawings and standards altering during the design process.

2.2.2 SITEWORK AND FOUNDATION

The project ultimately breaks ground in the second stage of construction. Grading the property, excavating or drilling for a foundation and footings, and building a driveway for delivery and subs are all things that crews do to prepare the site. They'll also drill wells and bring in services like power and gas to the site.

At this point, the general contractor, architect, engineer, and surveyor are still participating, but more subcontractors have been added to the mix. Subcontractors for excavation, earthwork, drilling, utilities, concrete, framing, and scaffolding are often on-site and working together to have the concrete poured and the foundation ready for vertical construction.

2.2.3 ROUGH FRAMING

Rough framing is the third of the six phases of construction, and it is when the building begins to go vertical. The structural steel is lifted into place by cranes, and steel contractors link it to the foundation and footings by steel contractors. Crews pour the concrete for the floors once the steel for each storey has been installed. The framing sub will then construct the walls and provide the building's basic framework.

Although this is a large project, it generally includes fewer subcontractors. The general contractor, as well as the scaffolding, frame, and structural steel and metal subs, are on site as usual. Cranes, welding, and metal framing are all used extensively at this stage. Weather delays are still a major worry at the third stage because the building is still exposed to the elements. Furthermore, the worry of bankruptcy persists until the task is completed and the checks have cleared the bank

2.2.4 EXTERIOR CONSTRUCTION

The fourth step of construction is "drying in," or sealing the structure from the elements. This step entails putting in the windows, doors, siding, roofing, any brick or plasterwork, and anything else on the building's exterior that the plans ask for. At this point, the subcontractors on the jobsite start to appear a little different. The general contractor, as well as the scaffolding and metal subs, are still on the job. However, now that the roofing, siding, glass, doors and windows, masonry and brick, and plastering subcontractors have arrived, the structure is sealed against the elements.

2.2.5 MEP (MECHANICAL, ELECTRICAL, PLUMBING)

Specialty subcontractors can now enter the site and complete their work because the superstructure has been completed. The job is still being overseen by the general contractor, who is still on-site. Boilers, air handlers, ducting, and other equipment can be installed by mechanical contractors. Electricians may begin putting up panels, generators, switchgear, and distribution rooms, as well as pulling wire throughout the structure. Plumbers are also on the scene, working on water supply, waste, drain, and vent pipes. Subcontractors for fire suppression and alarm systems will begin installing their systems at this time, while elevator builders will begin constructing shafts and vehicles.

2.2.6 FINISHES AND FIXTURE

Finishes and fixtures involve the last push in the building process. The building's ultimate form, both inside and out, begins to take shape at this time. At this point, there are a lot of moving components, and the general contractor needs to remain on top of everything to make sure everything works properly. The number of subcontractors working inside the building increases dramatically: glazing, door and window, masonry, plastering, elevator, insulation, drywall, painting, tile, finish carpentry, and flooring subcontractors are all working to complete the task. Landscapers and swimming pool contractors may be putting the finishing touches on the external elements. For everyone concerned, it's a hectic moment.

2.2.7 CLOSE OUT

It's time to finish up the task once the key stages of building have been completed. Typically, this is when a general contractor goes over a punch list of minor issues that still need to be addressed. Final payments and retainage can be made to the individual contractors once the project is substantially completed. This infusion of cash enables the subs to float their next jobs and repeat the process.

2.3 CONSTRUCTION PROJECT MANAGEMENT

Construction management is both an art and a science, and it's typically fairly difficult to master. It's difficult since you have to consider a wide variety of variables and try to predict what influence each one will have on a building job. For example, a construction manager in the middle of a project must consider the following factors:

- The weather
- The availability of construction workers who may be sick or may not feel like showing up for work
- The fact that some materials are out of stock just when they are needed
- The availability or non-availability of key equipment like cranes
- Changes made to the existing design by architects and clients the previous evening
- Juggling the work of 20 or more different trades at the same time
- Surprise discoveries of electrical cables below the ground that no-one knew about
- Inspection and permitting delays by government authorities

Complexity in project management arises from the interrelationships between all of these factors and the impact they will have on the project. The owners' team, who frequently sit in luxurious offices far from the construction site and have little awareness of the challenges in building construction, worsen these issues by demanding that the project be completed ahead of schedule. It is because of these obstacles that it is both exceedingly tough and extremely rewarding if done correctly. People having a thorough understanding of building construction, such as civil engineers or architects, are ideally suited for construction management. Some components of this activity, such as financial planning and procurement, can be completed by persons with no prior experience in building. A layperson can develop enough skill to operate as a construction project manager with adequate training and experience.

2.4 FOUNDATION

The foundation (sub-structure) is the section of the building below ground level that transmits the weight of the superstructure to the sub-soil. The section of the structure that is in direct contact with the ground and through which the loads are transferred is referred to as the foundation. The sub-soil or foundation soil is the soil directly beneath the foundation's base, while the footing refers to the lowermost elements of the foundation that are in direct touch with the sub-soil.

A foundation is a component of a structural system that supports and anchors a building's superstructure while also transmitting its loads to the ground. The bottom of the foundation must be below the frost level to avoid damage from repeated freeze-thaw cycles. Low-rise residential structures are almost always supported on spread footings, which are wide concrete bases that support walls or piers and distribute the weight over a larger area.

To support the outer wall, a concrete grade beam supported by isolated footings, piers, or piles may be constructed at ground level, especially in a structure without a basement. For high-rise buildings, spread footings are also employed in a substantially larger form. Piles, concrete caisson columns, and constructing directly on exposed rock are also other options for bearing enormous loads. A floating foundation made out of stiff, boxlike structures positioned at a depth where the weight of the soil taken to install it equals the weight of the construction can be utilised to yield soil.

2.4.1 FUNCTION OF FOUNDATION

- **Even Distribution of Load**

  The non-uniform weight of the superstructure is distributed uniformly to the sub soil via the foundations. Two columns carrying unequal loads, for example, might have a combined foundation that uniformly distributes the weight to the subsoil while maintaining consistent soil pressure. As a result, uneven or disparate settlements are reduced.

- **Reduction Of Load Density**

  Foundation distributes the loads of the super structure, to a larger area so that the intensity of the load at its base. For example, total load divided by the total area does not exceed the safe bearing capacity of the sub soil.

- **Safety Against Undermining**

  It provides the structural safety against undermining or scouring due to burrowing animals and flood water.

- **Protection Against Soil Movements**

  In some problematic soils, special foundation procedures avoid or limit discomfort (or fissures) in the superstructure owing to sub-soil expansion or contraction due to moisture movement.

- **Provision Of Level Surface**

  Foundation provide leveled and hard surface over which the super structure can be built.

2.4.2 LOADS ON FOUNDATION

The foundation must be strong enough to handle all potential forms of load that a structure may be subjected to. This is the most fundamental criteria in structural design. As a result, establishing the design load is effectively the first step before deciding on the kind of foundation.

- **Dead Load**

  This is the total load, which includes the structure's self-weight, footing, foundation, and the load of materials used for the various components of a building, such as walls, floors, and roofs. The term "dead loads" refers to all permanent burdens. The weights of the cubical contents of the various materials employed in the building may be utilised to determine these loads.

- **Live Load**

  This is a changeable load since it is a moving load on the floor. Super imposed load is another name for it. It comprises the weight of people standing on a floor, the weight of objects temporarily kept on a floor, and the weight on the roof, among other things.

2.5 TYPE OF FOUNDATION

2.5.1 PAD FOUNDATION

Pad foundations are a form of spread foundation formed by rectangular, square, or sometimes circular concrete ‘pads’ that support localized single-point loads such as structural columns, groups of columns or framed structures. This load is then spread by the pad to the bearing layerof soil or rock below. Pad foundations can also be used to support ground beams. Pad foundationsare usually shallow, but deep pad foundations can also be used.

Types of Pad Foundation

- **Plain concrete** is only an economic option where the loading is relatively light as T mustequal P otherwise excessively thick pads are needed which is not economic

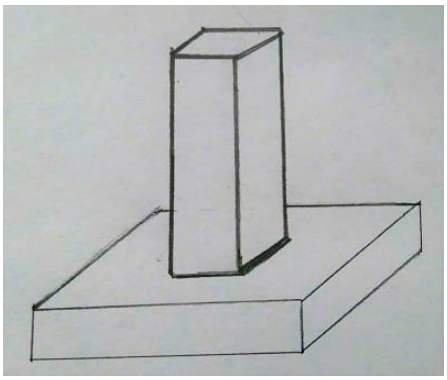


Figure 7 : *Plain Concrete*

- **Rectangular pads** are used for eccentric/inclined loading (longer dimension parallel to direction of inclination/eccentricity).

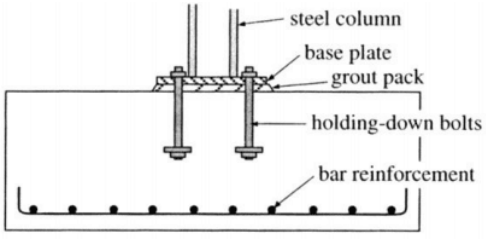


Figure 8 : *Rectangular pads*

- **Combine Pad Foundation** are where two pad foundations are combined into a longer oneand can be used where the outer column is close to a site boundary or existing wall. The purpose is that the balancing effect of the internal column can be incorporated. The plan shape is usually a rectangle

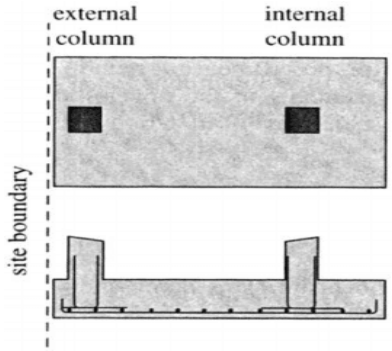


Figure 9 : *Combined Pad Foundation*

- **Continuous pad** exists when pads and the columns they support are fairly closely spaced.Extending the reinforcing between pads ensures longitudinal stiffness (resists differential settlement).

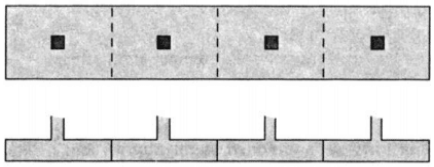


Figure 10 : *Continuous pad*

- **Pad and ground beam:** here smaller isolated pads are connected by ground beams toprovide structural rigidity.

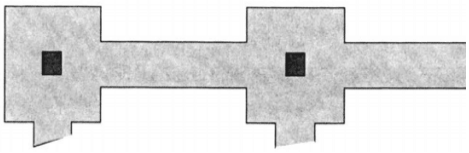


Figure 11 : *Pad and Ground Beam*

2.5.2 STRIP FOUNDATION

Strip foundations are used where the soil is of good bearing capacity. The key sizes of a strip foundation for concrete cavity wall construction and timber frame cavity wall construction are similar. The size and position of the strip is directly related to the overall width of the wall. The principal design features of a strip foundation are based on the fact that theload is transmitted at 45 degrees from the base of the wall to the soil. The depth of a strip foundationmust be equal to or greater than the overall width of the wall. The width of the foundation must bethree times the width of the supported wall.

It is vital that the strip foundation is strengthened through the inclusion of steel reinforcement. A compacted hardcore base of minimum 150mm is installed to form a platform for the subfloor and the subsequent loads of the dwelling. The 150mm concrete subfloor is poured on the hardcorein order to provide a strong, smooth platform for the insulation. A radon barrier is installed to form a continuous seal on the entire footprint of the house. A Damp-Proof Course is installed in order to repel any rising moisture. It is vital that the DPC is carried up into the blockwork to form a watertight seal over the entire floor area. The DPC must run through the blockwork at a minimum of 150mm above finished ground level.

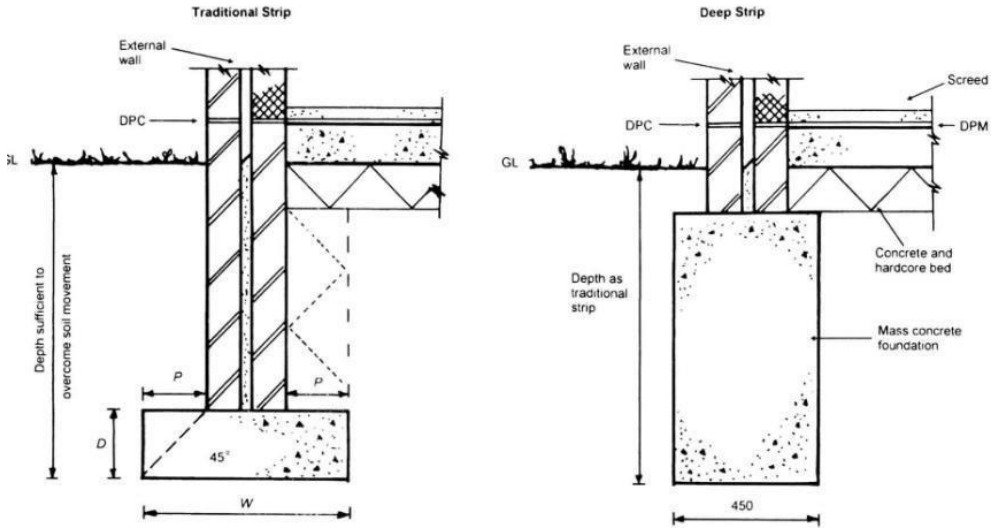


Figure 12 : *Strip foundation*

2.5.3 RAFT FOUNDATION

Raft foundations (sometimes known as Mat Foundations) are a large concrete slab which can support a number of columns and walls. The slab is spread out under the entire building or at least a large part of it which lowers the contact pressure compared to the traditionally used strip or trench footings. Because of the speed and volume of houses required after the Second World War, the raft foundation was widely used. The raft foundation was cheaper, easier to install and most importantly, did not require as much excavation as the usual strip foundations.

When the Building Regulations were introduced in 1965 there were no generic rules for raft foundations as there were for strip foundations. This meant that to use a raft foundation, it had to be designed and approved by Building Control.This made the entire operation much more difficult and time consuming so raft foundations became less widely used almost overnight.

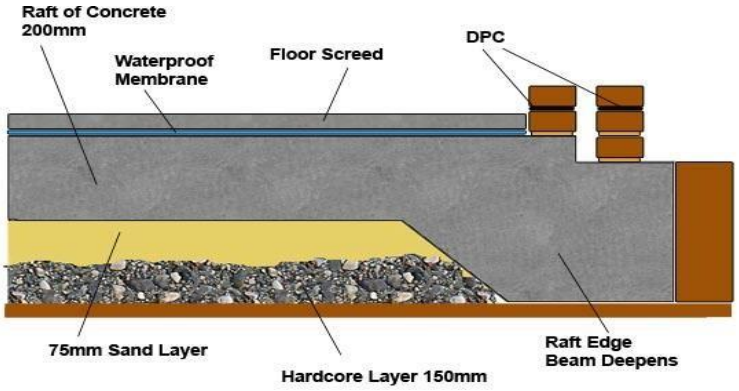


Figure 13 : *Raft Foundation*

2.6 WIDTH OF FOUNDATION

The width of footings should be laid according to structural design. For light loaded buildings such as houses, flats, school buildings, etc, have not more than two storeys, the width of the foundation is given below:

- The width of the footing should not be less than 75 cm for one brick thick wall.
- The width of the footing should not be less than 1 meter for one and a half brick wall.

2.7 CONCRETE AND MORTAR RATIO FOR FOUNDATION

- The cement concrete 1:8:16 is generally used in the foundation of walls in construction work.
- In the case of column raft cement concrete, 1:4:8 is the best-recommended ratio for it in the foundation.
- For brick masonry, cement mortar 1:4 to 1:6 is used as a loading condition.

2.8 SUMMARY

The choice on the depth, width, and marking pattern for excavation and foundation centreline is the first step in the foundation building process. The section of the structure below the plinth level that is in direct contact with the soil and transmits the load of the superstructure to the ground is known as the foundation. It is usually found below ground level. If any component of the foundation is above ground level, earth filling is used to cover it. This part of the construction isn't exposed to air, light, or anything else. The foundation is referred to as the structure's hidden portion. A footing is a structure built under the base of a wall or column in bricks, masonry, or concrete to distribute the weight across a vast area.

CHAPTER 3 : CASE STUDY

3.1 INTRODUCTION TO CASE STUDY

During my internship, I was involved with the process of the foundation of “Proposed building and setting up 1 unit bungalow at Kampung Padang Kala, Melor, Kelantan’’. This construction project is located near the bypass Melor to Kota Bharu which is near the capital city of Kelantan. This building also near to surrounding facilities such as Melor police station, primary and secondary school and Melor old town (Pekan Melor).

Figure 14 : *Location plan of 1 unit bungalow at Kampung Padang Kala*

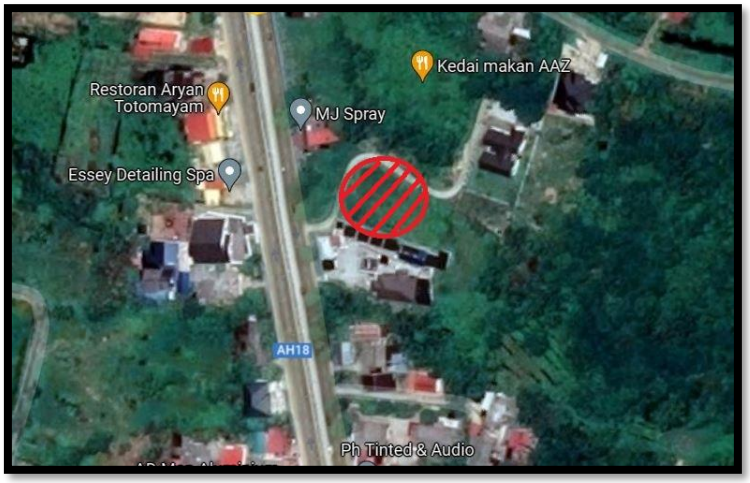


Figure 15 : *Key plan 1 unit bungalow at Kampung Padang Kala*

3.2 EXECUTIVE SUMMARY OF THE PROJECT CASE STUDY

Project title	Proposed building and setting up 1 unit bungalow at Kampung Padang Kala, Melor, Kelantan.
Contract amount	RM250,000.00
Contractor	HAUSTEK ENGINEERING SDN. BHD Lot 662, Kampung Jambu Merah, Melor,16400 Kota Bharu, Kelantan
Contract Period	8 Month
Defect Liability Period	12 months
Commencement date	15/07/2021
Completion date	16/03/2022

Table 1: *Executive summary of the project case study*

3.3 LIST OF CONSULTANTS OF THE PROJECT CASE STUDY

Architect, Structural & Civil	AEE CONSULTANT PT 288, Tingkat 1, Wisma Watan, Jalan Sultan Yahya Petra, 15200 Kota Bharu, Kelantan
Infrastructure , Mechanical & Electrical	HAUSTEK ENGINEERING Lot 662, Kampung Jambu Merah, Melor,16400 Kota Bharu, Kelantan
Quantity Surveyor	WAW QUANTITY SURVEYOR Lot 195 Tingkat Satu, Jalan Kuala Krai, Kelantan, 15050 Kota Bharu

Table 2: *List of consultants*

3.4 FOUNDATION USED ON CASE STUDY

The pad foundation was applied for this project. Because of the structure of the building, which was a single-story house, the construction site chose the pad foundation. Individual or numerous columns are supported by a pad foundation, which distributes the load to the ground below. It usually has a square or rectangle plan, with the plan area set by the soil's permitted bearing pressure. The arrangement of the column and the weight to be transferred into the earth will determine the plan form. The footing is the bottom component of the foundation that is built in solid surface below ground level. The goal of the footing is to distribute the structure's living and dead loads to the soil across a big enough area so neither the earth nor the building moves, preventing settlement and lateral load. A certain in sequence should be followed regardless of the kind of footing and foundation employed. The order may vary significantly depending on the approach used. The basic sequence is as follows:

- Prepare the item needed for the pad footing
- Lay out footing and foundation shape.
- Excavate to proper depth.
- Level the footing corners.
- Build the foundation forms.
- Reinforce the form as needed.
- Estimate concrete needs.
- Pour the concrete footing.
- Build the foundation forms.
- Reinforce the form as needed.
- Pour the concrete into forms.
- Finish the concrete and embed anchors.
- Remove the forms.
- Waterproof and drain as required.

3.5 PAD FOOTING

The support used at a point load, such as a column or framed structure, is known as pad footing. They might be round, square, or rectangular, and are made out of a thick block or slab. If the weight from a heavy column must be distributed, the pad footing may be steeped. The pads are normally shallow, but depending on the construction, deep ones can be encountered. There are a few factors that need to be done before the making of pad foundation such as accessibility of the materials and site, condition of the ground, nature of load requiring the support, and proximity to other structure.

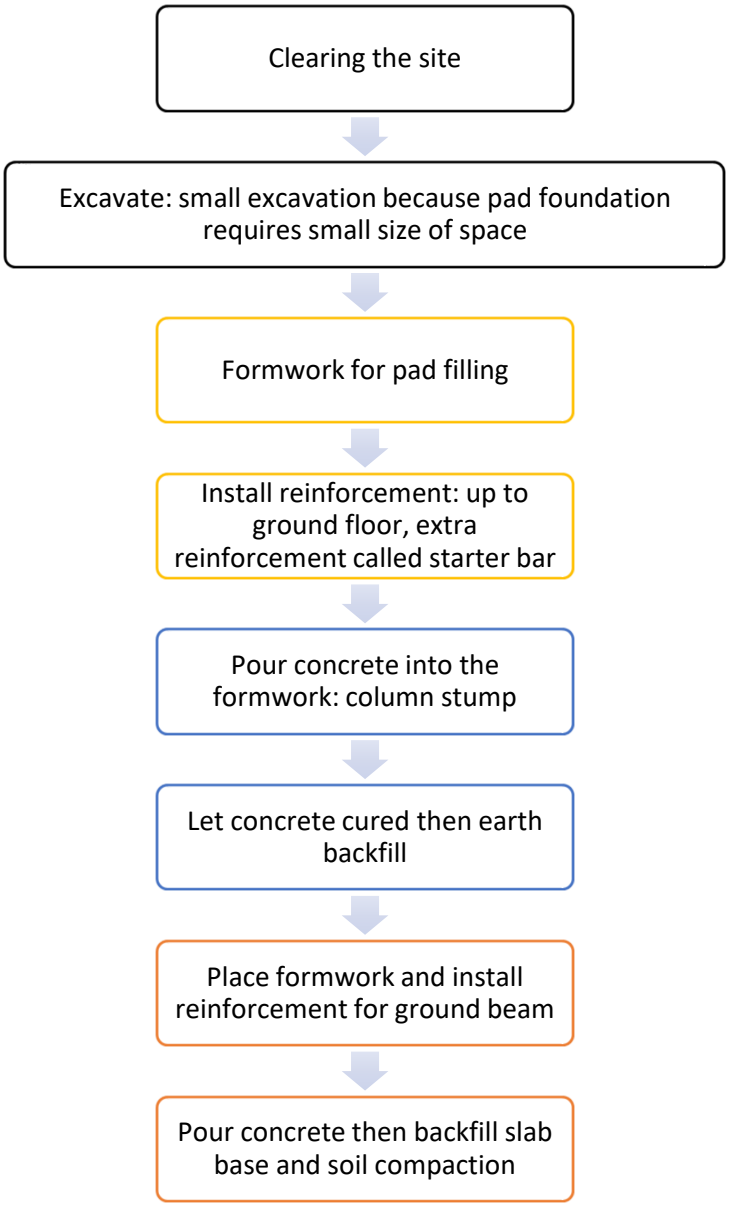
3.6 ADVANTAGES OF PAD FOOTING

- Economic due to control of foundation size
- Shallow form of foundation needs little excavation
- Shape can be designed to accommodate tight sites.

3.7 DISADVANTAGE OF PAD FOOTING

- Can become very large to cope if used for high point loads.
- Limited foundation to dealing with points loads of framed building
- Weak against uplift forces, wind forces and earthquake forces.

3.8 PROCESS OF MAKING PAD FOOTING



3.9 PAD FOOTING PROCESS

DESCRIPTION	PHOTO
• Clearing the site then pegging the site with correct position of foundation. Excavate to 3ft or 1.2 m deep and compact soil in boundary. Setting out is carried out to the determine position of pad footing. • Excavation commences from the reduce level, footing is marked to the reduce level and down to the desired level	 Figure 16 : *excavation work*
• Rebars were bent and tied by using manual tying rebar tools by workers before the whole thing been lowered and placed inside the formwork. Make sure the steel is placed properly on spacer blocks, avoid touching the ground below.	 Figure 17 : *bending bars*
• Build the formwork to the side of pad footing and supported by other wood to prevent the formwork collapse when the concrete is being pour into it. • Spacer blocks are placed before reinforcement been laid. This is to provide sufficient concrete cover for rebars.	 Figure 18 : *spacer block*  Figure 19 : *reinforcement*

- Stump reinforcements are then erected. Length of rebars should be extended beyond stump level and act as starter bars for column above.
- Concrete will set and curing shall be performed to avoid excessive loss of water during hardening. When the concrete has gained sufficient strength, formwork can be dismantled.

Figure 20 : *Pile cap*

Figure 21: *stamp*

CHAPTER 4 : PROCESS/ PROBLEM IDENTIFY

4.1 PROBLEM IDENTIFY ON SITE

Construction delays are no longer denied due to weather conditions. Heavy rains are one of several climatic variations that might cause a project to be delayed. Weather is one of the issues that develop at building sites, based on my experience. This is because when it rains heavily during working hours, the building site's operations must likewise come to a halt. In addition, I was a participant of the foundation building process. The weather has a significant impact on the procedure. This is due to the fact that significant rains fall on the building site after the foundation excavation work is completed. Water standing in the foundation occurs as a result of the weather. Standing water may cause a multitude of issues, none of which are more dangerous or costly than foundation difficulties. Water standing in the foundation is a concern for us, therefore we've included another functioning mechanism to remove it.

The supply of materials during the MCO period is another difficulty at the building site. The MCO period has a significant impact on building activity since a few items are unable to be delivered on time. All of the issues that have arisen during the building process may cause the project to be delayed. Construction delays will aggravate these parties' relationships, and the cost of a construction project will rise in tandem with the length of time granted.

CHAPTER 5 : CONCLUSION AND RECOMMENDATION

5.1 RECOMMENDATION

After 4 months of the industrial training at Haustek Engineering, I gain a lot of experience through this short times. There is a few recommendation that I came up with after finish with my internship to the organization and university. Firstly, for the university I suggest that they recommend a lot more establish company that can take a degree students to their level of work. Most of the times and what I heard from my friends, there is a few company that taking advantages of the intership student due to their learning stage and due to no experience with the industry. By having a recommendation by the university or making a list where for the student to practical by their past students is better rather then make them find some local company that don't have that much work for the students to gain experience.

Other than that, there is a few recommendation for the organization that I work with. The organization need to organize their worker according to their scope of work, most of the times in this company they don't have a specific work for their worker that make some of them have a mood swing which lead to a bad working environment. So, my recommendation is that they need to split their worker to a few department so they can have their specific scope of work based on what department they working in.

5.2 CONCLUSION

Overall, industrial training carried out by final semester students is especially useful for me. The knowledge gained at university may be put to use immediately in the business. The gap between divergence and actual instruction, particularly in terms of how to connect with strangers, is vast. Their manner of communicating appears to be more mature. This is now my benefit in terms of improving my communication skills.

As a result, this training is excellent and should be continued in order to generate more high-quality graduates who want to become active professionals. Many of the new information and experience that I have gained both in the office and on the job came through my industrial training at Haustek Engineering as a construction firm. This information and experience will help me to grow as a person and brighten my future. When I join the real world of employment, all of that information and experience will contribute to my confidence, expertise, and skills to accomplish my job. I get a lot of expertise and techniques when working in the office or on the job. When compared to on-site labour, office employment is not as exhausting.

Following my interesting construction site visit during my internship, I got a wide range of useful information and expertise. I was able to learn something that I would not have been able to learn in a lecture or class. Following the site tour, I now have a greater grasp of how a construction site operates.

Finally, my understanding of building sites has substantially improved as a result of my visit. I am happy for the opportunity to explore there since I have received a great deal of information. I wish I could have more opportunities like this in the future since it would be really beneficial to me.

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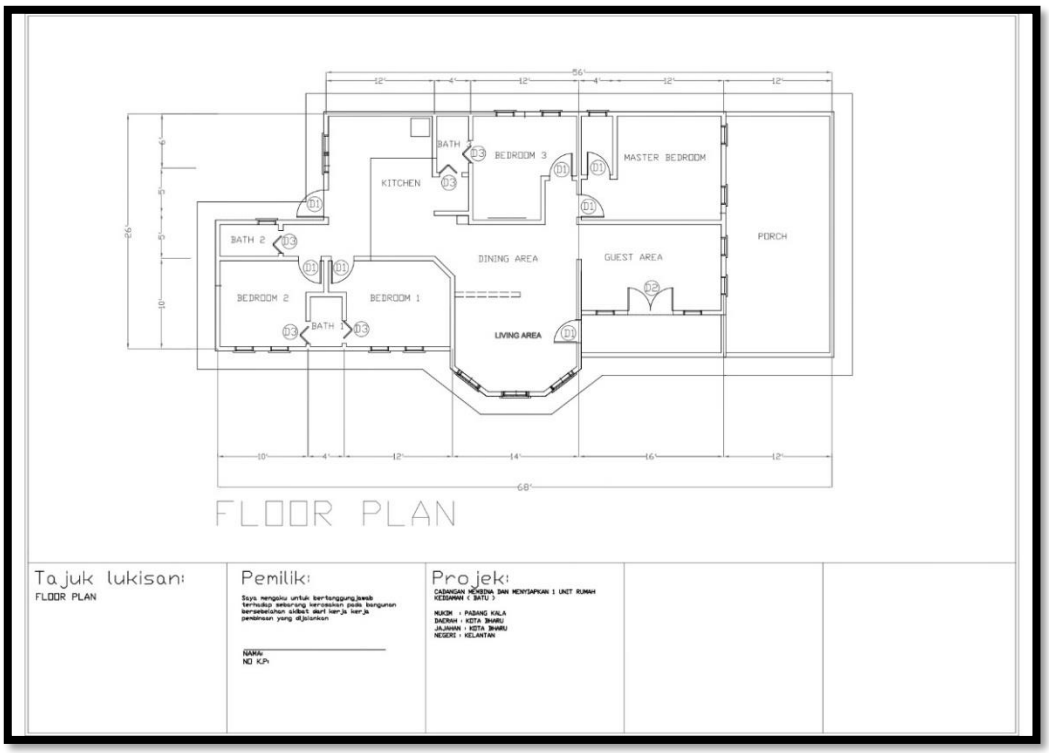
APPENDICES

4-sided view (front, rear, left, right)



Floor Plan

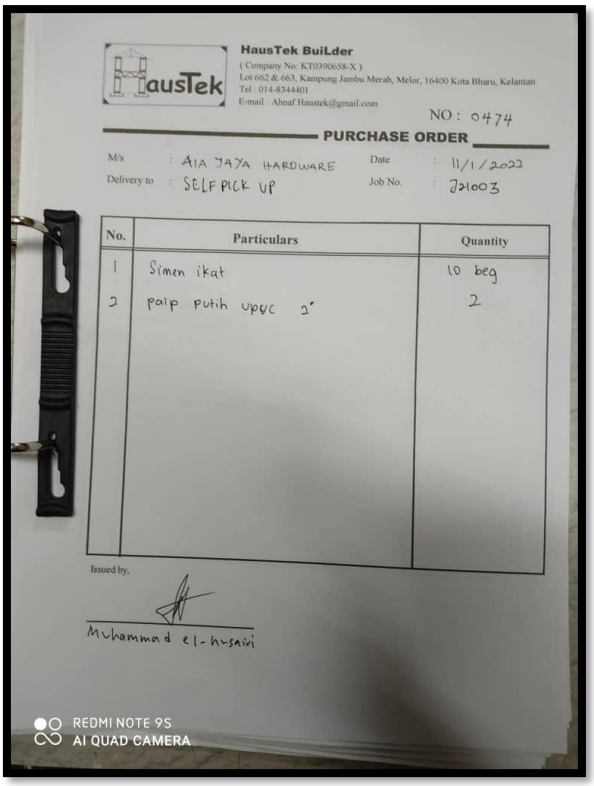
60% progress front view

60% progress rear view

70% progress front view

70% progress rear view

80% progress front view



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NO : 0474

PURCHASE ORDER

M/s : AIA JAYA HARDWARE
Delivery to : SELF PICK UP
Date : 11/1/2022
Job No. : J21003

No.	Particulars	Quantity
1	Simen ikat	10 beg
2	paip putih upvc 2"	2

Issued by,

Muhammad el-husaini

Purchase Order (PO)