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Prepared by: MOHAMAD AMIR NASRUDIN BIN ZULKEPELI
2019424384

DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE,

PLANNING AND SURVEYING

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It is recommended that the report of this practical training provided

By

MOHAMAD AMIR NASRUDIN BIN ZULKEPELI

2019424385

entitled

CONSTRUCTION OF SINGLE STOREY HOUSE IN SELANGOR DARUL EHSAN

be accepted in partial fulfillment of requirement has for obtaining Diploma inBuilding.

Report Supervisor : Dr. Hafizah Binti Mohd Latif.

Practical Training Coordinator : Ts. Muhammad Naim Bin Mahyuddi

Programme Coordinator : Dr. Dzulkarnaen Bin Ismail.

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JANUARY 2022

STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at IMhome Company for duration of 20 weeks starting from 23 August 2021 and ended on 7 January 2022. It is submitted as one of the prerequisite requirements of BGN310 and accepted as a partial fulfillment of the requirements for obtaining the Diploma in Building.

Name :

MOHAMAD AMIR NASRUDIN BIN ZULKEPELI

UiTM ID No : 2019424384
Date :6/9/2021

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I am really fortunate that , I had the kind associate as well as supervision of IMHOME company officer ,Nur Nisa Azhari .Her exemplary guidance , constant encouragement , and careful monitoring throughout the practical studies are so great that , even my most profound gratitude is not enough.

I also would like to thank my senior supervisor of IMHOME company which is Encik Faizal , work as checking defects of the house project , for his care and support.

In my practical training at Shah Alam , I was mentored by two supervisor - Nur Nisa Azhari and Hasniyatulmawaddah kasim. They have all provided a huge amount of their precious time and effort for me.I fell really lucky to be able to work under their direction.

I also want to thank CEO of the company , Datin Saiyidah Othman for teaching me about construction knowledge that make me more understanding .It really make me see clearly based on my course studies.

I also take this opportunity to express a deep sense of gratitude to all employees of IMHOME Property Management Sdn. Bhd. for presenting me such amazing experience. They are all wonderful people, and I will never forget this experience during my practical training period.

ABSTRACT

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CHAPTER 1: INTRODUCTION

Write about what is structural members in constructions

In the construction of a house, especially a single-story house, there are numerous structural parts. Footings, lintels, doors, and windows are examples of structural members. The foundation, which was placed at the lowest portion of the building structure and sat on earth below ground level, is the first structure member I'd like to discuss. Through the use of a beam and column system, all of the building's loads were shifted to the foundation. Its primary role is to uniformly and safely disperse the load to the ground. Deep foundation and shallow foundation are the two types of foundation and footing used in the construction business. Strip foundations and raft foundations are examples of shallow foundations, while pile foundations are examples of deep foundations. The foundation depth is determined by structural and soil conditions. As a result, the foundation depth for a single-story structure should be at least 1.5 metres below ground level.

The bulk of thin-walled structures are made of lightweight cold-formed steel or aluminium, and they are widely employed in the construction and automobile sectors (Sharma et al., 2022). Cold-rolled profiles, for example, frequently fail in instability before reaching their yield capacity/stress limit (Sharma et al., 2022). Geopolymer concrete has the potential to dramatically improve the durability of concrete building, according to materials study(Fang & Visintin, 2022).The structural performance of geopolymer concrete-filled steel tube members is examined experimentally and numerically in this study to take use of the favourable confinement provided by the outer steel tubes(Fang & Visintin, 2022).Traditional member-based two-step design approaches, as well as more recent system-based direct-design alternatives, necessitate the development of rigorous structural reliability frameworks for the calibration of partial coefficients (resistance factors) in order to meet specified target reliability requirements(Arrayago et al., 2020).The fundamental structural characteristics of single-story structures, whether they are used for industrial, commercial, or recreational purposes(Vayas et al., 2019). Under drop hammer impacts, 11 specimens made of structural steel encased in reinforced concrete were evaluated (Zhu et al.,

2021). Damage observations, impact force, and mid-span displacement of SRC members were gathered and studied, with an emphasis on the effect of impact velocity, boundary condition, and axial load (Zhu et al., 2021). Several structural solutions are proposed, along with their benefits and drawbacks, with a focus on the most common (Vayas et al., 2019).Both the primary and secondary structural elements are mentioned. Cladding panels, as well as hot rolled, welded, or cold-formed parts, are detailed(Vayas et al., 2019).Next,First-order generalised beam theory uses deformation functions for bending, torsion, and distortion to describe the behaviour of prismatic structures using conventional uncoupled differential equations(Schardt, 1994). The influence of deviating forces couples the differential equations in second-order theory(Schardt, 1994). The fundamental equations of second-order generalized beam theory are given(Schardt, 1994).Furthermore,Corrosion of the concrete reinforcements has been identified as a serious element that lowers the concrete structure's durability(Bhagwat et al., 2022). However, as the impact energy grows, so does the proportion of energy dissipation in the structural steel, implying that encasing structural steel in concrete elements is a good way to improve impact resistance(Zhu et al., 2021). Corrosion assaults are a threat to structures found in marine environments(Bhagwat et al., 2022)

At any rate,LTB, or Lateral Torsional Buckling, is a prevalent failure mode in thin-walled columns and beams(Sharma et al., 2022). It's crucial to figure out how this instability failure will affect the structure(Sharma et al., 2022). The goal of this research is to use first order Generalized Beam Theory to obtain the cross-sectional characteristics and warping functions of a channel section needed to forecast the pure Lateral Torsional Buckling strength of light gauge steel channel sections (GBT)(Sharma et al., 2022).Nominal or characteristic values in design standards are paired with partial coefficients that must be calibrated from measurements on real samples to model key design parameters impacting the strength of structures and their random changes(Arrayago et al., 2020).To predict pure LTB and the critical , a first order GBT formulation and numerical analysis of cold-formed steel lipped channel beams (C80 40 10 1, C90 40 10 1, C100 40 10 1, C80 40 10 1.6, C90 40 10 1.6, and C100 40 10 1.6) of two different thicknesses (1 and 1.6 mm) and three different depths (80, 90, and 100 mm) subjected to uniform moment are performed(Sharma et al., 2022).The coupling effect is demonstrated by modes and loads in solutions for pin-

ended supports(Schardt, 1994). The specimens failed in a shear–flexural reaction, and impact velocity was found to be an important factor in influencing the dynamic response of SRC components(Zhu et al., 2021).Next.Concrete degradation is visible as expansion, cracking, and slow concrete cover spalling(Bhagwat et al., 2022). The non-uniformity of corrosion throughout the rebar and smaller cross section leads reinforced components to collapse suddenly and without warning(Bhagwat et al., 2022). Experiments on eleven geopolymer concrete-filled steel tube specimens with either square or circular sections are described, which were subjected to compression, flexure, or combination loading conditions(Fang & Visintin, 2022).The experimental data are acquired and utilised as the basis for validating a finite element model, which is then used to perform parametric analyses on structures with different cross-sectional dimensions, steel yield strength, and member slenderness ratios(Fang & Visintin, 2022).While the statistical characterization of structural steels' material and geometric properties has been consolidated over the last few decades, information on the characterization of structural stainless steels is almost non-existent due to the small pool of available data (Arrayago et al., 2020).

Additionally,When distortions are present in the final failure mode, the results demonstrate that theoretical buckling load values are 0.3 percent higher than GBT buckling values, and critical buckling values determined from GBT exhibit no difference(Sharma et al., 2022).While the statistical characterization of structural steels' material and geometric properties has been consolidated over the last few decades, information on the characterization of structural stainless steels is almost non-existent due to the small pool of available data (Arrayago et al., 2020).Vertical bracings, which provide lateral stability to the building, wind bracings on roofs, and utilising the skin panels as stability elements are all examples of bracing systems (Vayas et al., 2019). Buildings in seismic zones receive special attention, as they must meet stricter requirements for strength and ductility(Vayas et al., 2019).Individual modes provide sufficient estimates for the critical load in various length ranges(Schardt, 1994). Individual modes provide sufficient estimates for the critical load in various length ranges(Schardt, 1994).The study looked into the causes of bar corrosion and their impact on bond strength, as well as the structural performance of normal and prestressed concrete(Bhagwat et al., 2022). Based on the test results, a finite element analysis (FEA) model was built and verified by the experimental

investigation(Zhu et al., 2021). FEA models are used to determine the distributions of impact energy among various components(Zhu et al., 2021). The energy dissipation was discovered to be dominated by concrete rather than structural steel or reinforcement (Zhu et al., 2021). Thus, using a comprehensive database compiled from the literature, this research gives the core ingredient for constructing dependability frameworks for stainless steel structures and components by statistically defining the primary random elements affecting their strength(Arrayago et al., 2020).When applied to a thin-walled bar with a C-section under eccentric normal force, the single-mode solution outperforms the exact solution(Schardt, 1994).Pore dispersion on concrete, concrete–steel, and aggregate–paste interfaces all contribute to rebar corrosion and reduce bond strength and structural performance of RCC structures, according to the report(Bhagwat et al., 2022). The experimental and numerical results are also utilised to assess the applicability of existing design standards for geopolymer concrete-filled steel tube members that are subjected to combined compression and bending(Fang & Visintin, 2022). The results show that existing design methodologies for regular Portland concrete-filled steel tubes provide conservative strength forecasts for structures with geopolymer concrete infill and can thus be used directly for safe structural design(Fang & Visintin, 2022). Lastly, every building should consist all the structural members to maintaining its durable and to avoid collapse from any forces and natural disaster. The purpose of my practical studies is to be understanding and give more knowledge about structural members for all construction house in Selangor.

1.1 Objective

The objective of this study is:

1. To describe the construction methods of structural members for two single storey house located at Sungai Buloh,Selangor and Jalan Kebun Selangor.
2. To elaborate the detail connection of structural members.
3. To identify the problems occured during construction.

1.2 Scope of study

During my practical training, I am monitoring a lot of site project which are at Selangor, Pahang and Johor. But for my report assignment I just focused on 2 sites.

The 2 sites are located at Buloh and Jalan Kebun, Selangor. What I just focused as supervisor in this both site is “what are the type of foundation uses” and “what is the materials needed” in finishing a house based on client needed. Next, what others I studied during my practical training is communicate with people. For example, have a good communication with labours, officers and clients. Furthermore, for what I am not studied here is do the soil investigation before starting the project and prepared the Building Quantities (BQ) when the house project nearly start.

1.3 Research Method

Methods uses along my practical training:

1.Surveys-The first method I use is do the surveys whether the projects still ongoing or the project is already finish. A construction survey is used to determine or designate the ideal position of the engineer's designed building corners, roadways, walkways, or utilities. The building is carefully measured to ensure that it does not infringe or overlap the designated setbacks, easements, or property line. These points are then "staked out" onto the actual property to identify the location of the improvement, which is usually done with flagged or painted lathe, stakes, or rebar. Stakes and points are typically set during the construction surveying phase on some form of offset rather than at the actual construction point. This is done to prevent the survey stake from being disturbed by excavation or other activities that will occur at the construction site. The stakes are marked with a "offset" and a "grade," which informs the construction crew of the construction stake's spatial proximity to the actual construction location. The "offset" refers to the distance between the survey stake and the horizontal location of the actual point of construction, which ranges from three feet for curb and gutter to ten feet for underground pipes. The offset distance should be discussed with the contractor to suit any unusual requirements arising from field conditions or special equipment, and it should be clearly stated on the survey stake (usually by a number enclosed in a circle). The "grade" is the elevation change required from the reference point to the actual construction position, expressed as a "cut" (lower elevation) or a "fill" (higher elevation) (higher in elevation). The grade should also specify the vertical feature it is referring, which is typically a flowline or finished floor elevation.

2.Observation -When going to site, I always do the observation for collecting my data and knowledge especially for both site that I supervised. The example that I do the observation, when I stayed at site, I observe the method installation of materials from start the building until finish. One of the examples is installation of brick wall. For record my observation I do writing some note and taking the photo or videos by using my handphone (iPhone X). Others than observe method of installation, I also focused on type of foundation, and I can see clearly of their function. As we know foundation is the general support the loads from building and its structure The concept uses are transferring loads to the ground.

3.Document reviews -`For document reviews I refer the progress file that already serve by the company. All information about site project is keep in the file. The information is the period taken to finish the house. Example, for finishing the Helmi's house at Sungai Buloh the estimate time taken needed is 13 weeks. In progress file also contain drawing plan. So, when at site I can investigate the position of house structure and know the total area of the entire house. This can be seen, when labour want to start build a house, they need refer to the plan as their guide like confirming the position of ground beam, roof beam etc. Building Quantities (BQ) also have in the progress file. So the staff at the office can be easily order the materials to the hardware near site location.

4.Interviews - I also do some interviews for collecting some data and add more knowledge about construction. When I go to site with my senior supervisor, I ask him/or her everything about constructions. For example, what kind of size reinforcement bar we use in ground beam? and I also ask what happens to the house structure if we don't install the BRC to the floor of the house. The duration of interviews is on how long me staying at the site. The longer me at the site the more questions I asking to them. Interviews with labour also give me more benefits about constructions. I ask labour because they have more experience because they already work for many years with this company. I always take a note to what answer they gave to me. Given questions to experience people is really help me to explore about construction.

CHAPTER 2 : COMPANY BACKGROUND

IMHome Property Management Sdn Bhd started in 2016 as a construction and affordable property company in Malaysia. The idea of setting up this company came about because they felt that property and construction prices in Malaysia were quite burdensome at that time. So, they gained awareness to help those who own their own land to build houses at low prices according to the customer's budget.

Initially, iMHome Property Management Sdn Bhd offered an affordable home construction package at a price of RM 28 900.00 only. The company provides affordable home construction in the form of packages that customers can choose from themselves. There are 18 types of affordable housing packages offered, 6 of which are 'semiD' house packages and 12 'single storey' house packages. Apart from that, there are also conventional package houses that are offered starting at RM 105.00 up to RM 150.00 per foot. Each price offered uses different building materials and specifications.

The company is located at No P4-1, Level P4, Mutiara Anggerik Service Apartment, Jalan Tukul 015/Q, Section 15, Shah Alam, Selangor. The company also has 13 employees, most of whom are graduates from the Polytechnic in engineering. The staff all have knowledge of construction.

To date, iMHome Property Management Sdn Bhd has successfully built approximately 250 housing units throughout Malaysia excluding Sabah and Sarawak. The company has also helped many customers to own a home according to their own budget. Therefore, iMHome Property Management Sdn Bhd aims to be an affordable construction and property company that can provide affordable property development and construction services to Malaysians.

The founder of IMome Property Management Sdn Bhd. Dato 'Haji Ahmad Tajuddin bin Haji Idris is the founder who developed iMhome Property Management Sdn Bhd. He hails from Negeri Sembilan and is a graduate of the University of Malaya majoring in Syariah and Usul Fiqh. Apart from developing construction companies, he also has application companies such as The Noor, Haji Furada Consulting Center and ZeptoLab Sdn Bhd

Housing Construction Services

The construction industry is an industry that is very important in driving the development of a country and in turn will increase or generate economic development of the country. Malaysia is one of the developing countries that is growing towards becoming a developed country. In line with the improvements and progress achieved towards developed countries, the construction industry plays an important role in the development process, especially in the housing sector, infrastructure and so on.

IMHome Property Management Sdn Bhd provides private house construction services on its own land with the slogan Bina Rumah Atas Tanah Sendiri (BRATAS). Every customer who wants to build a house can choose the package that has been prepared. There are 18 home packages offered to customers at affordable prices. Customers can also choose a 'custom made' package according to the budget they want.

MISSION AND VISION OF THE COMPANY

• Aspires to provide design and consultancy services for
realizing affordable real estate to the community

VISION

• Aspire to be a real estate company that they can afford,
build and provide affordable property development services to the community.

2.1 Completed Project

Construction of house that already complete after do the 100% check list by supervisor and client .In the table 1 below is the complete project that handle by IMHome Property Company.

Table 1: Completed project

Project's Name	Contractor's Grade	Price(RM)	Duration	Started	Estimated to finis
Plan with the client and started build a house which is Lily (type c) that located at Jalan pedan, Pagoh, Johor	Grade 3	57,900	8 weeks	3/4/21	17/5/21
Work and build a Lily type c house based on package that serve by the Company at Kampung jenderam Hilir, sepang, Selangor	Grade 3	57,900	8 weeks	17/3/21	17/5/21
Build 1 units Medium package house (Orked C) that have been choose by customer at Bagan Datoh, Johor	Grade 3	77,900	12 weeks	12/3/21	19/5/21

2.2 Ongoing Project

Construction work that still ongoing and monitoring by IMHome property's staff that shown in the table 2.

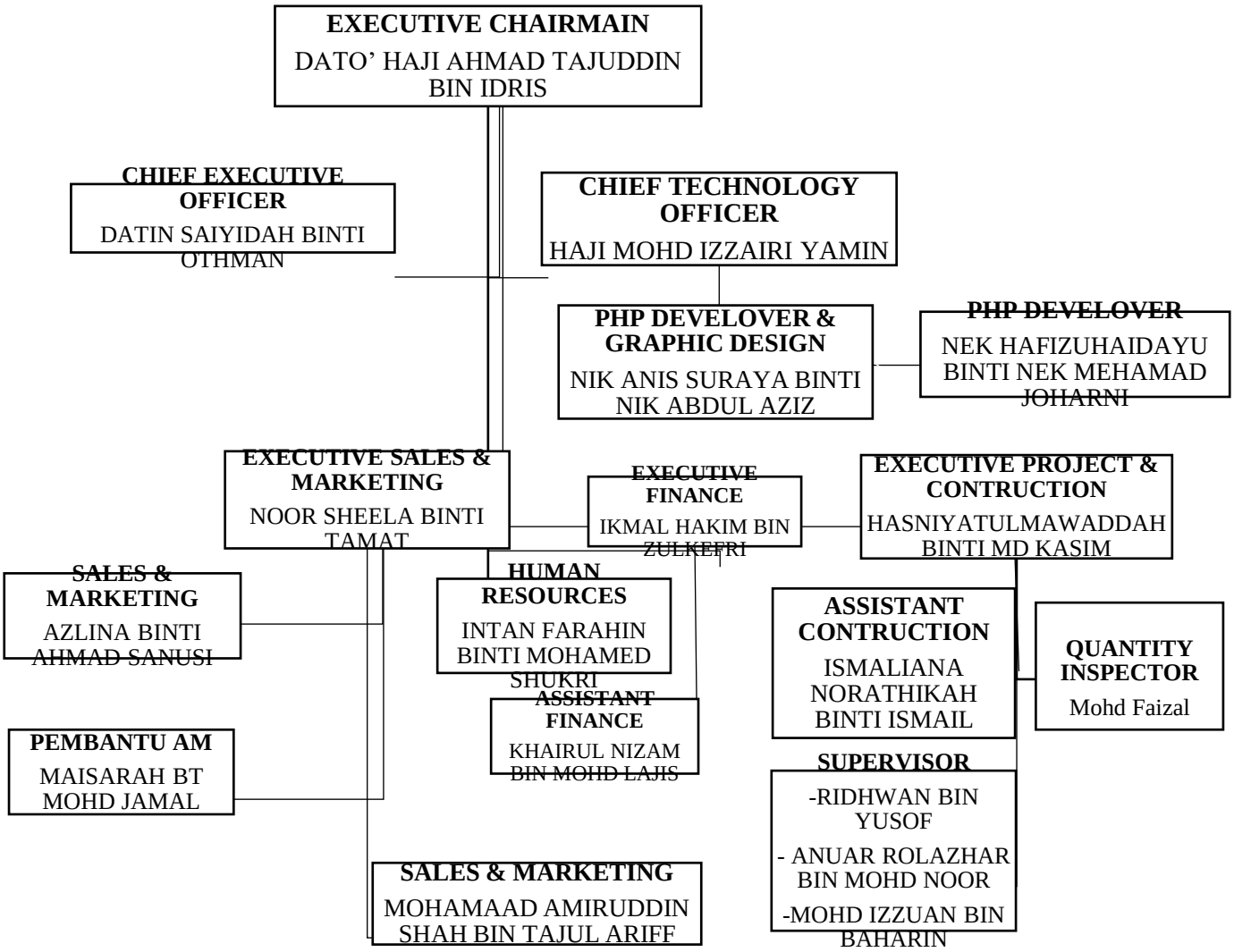
Table 2 : Ongoing project

Project's Name	Contractor's	Price(RM)	Duration	Started	Estimated to finish
Plan with the client and start build a new two storey custom house that located at Seri Kembangan, Selangor	Grade 3	355,000	42 weeks	10/9/20	1/10/21
Work and build a package house (Orked C) that have been choose by customer at Sungai Buloh , Selangor	Grade 3	79,680	13 weeks	18 /8/21	8/11/21
Build 3 units small Bungalow house based on package that serve by the Company at Jalan Kebun, Selangor	Grade 3	151,200	12 weeks	16/8/21	15/10/21

2.3 Organization Chart

The organization chart below shows that the role and the responsibilities that have to be carried by every individuals that work under the IMHOME company.The executive chairman and chief executive officer is the highest role and can give any orders about construction activities.The responsibilities and task is followed based on positioning shown in Figure ? below.

Figure 1 :Main Office Organisational Chart



CHAPTER 3:CASE STUDY

The case study of this report is about construction of two different type of single storey house located at Jalan Kebun and Sungai Buloh, Selangor. This construction project is proposed by IMhome Property Sdn. Bhd. In figures 2 and figure 3, below showed the specific location of the projects .

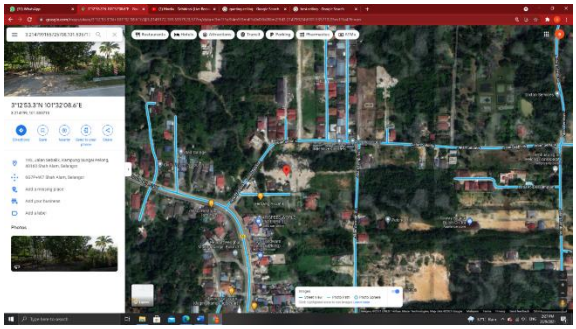


Figure 3:The location of house at Sungai Buloh

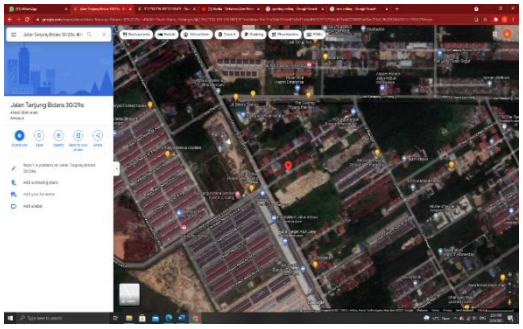


Figure 2:The location of house at Jalan Kebun

In figure 4 and figure 5, is the example of house plan that going to be built at the site.Both , house plan is based on the package that serve by the company. In figure 4 , the package is called Orked C and the plan in figure 5 is Lily C. For Orked C, consist of 3 numbers of room and 2 numbers of bathroom while in Lily C have 2 rooms and 1 bathroom. This can be seen that orked package is more bigger than lily package The total area house for Orked C is 920 square feet (20 feet width x 46 length). For Lily C, the total area is 700 square feet (20 feet width x 35 feet length). The plan in figure 4, the client have do some addition changes from

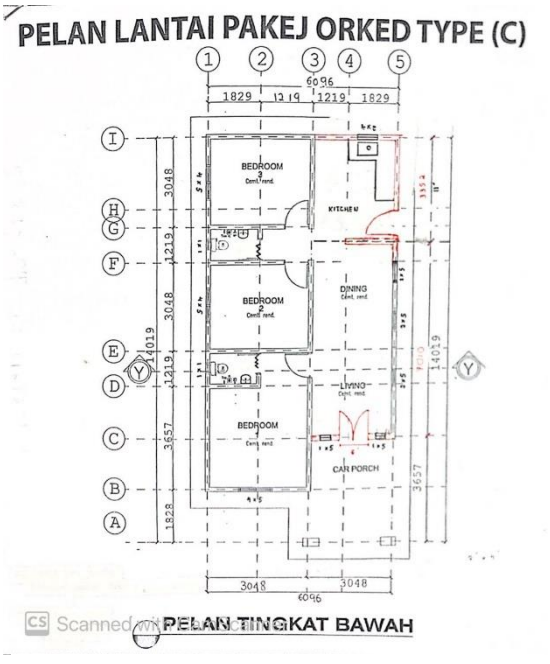


Figure 4:The house's plan thant construct at Sungai Buloh

(Source:Courtesy of IMhome Property Sdn Bhd)

original plan. The changes is be done during discussion between clients and Sales of the company. The changes that can be seen in figure 4 are area of the kitchen house . The original area of kitchen based on companies plan is 60 sf but when do the discussion, the clients want have big kitchen and request to upgade the spaces to 110 sf. The double leaf door also one of the addition that request by the client. For every addition, the cost must be charge and Sales need to explain the details before do the agreement.The total payment for Orked house package is RM 73,000 while for Lily is RM 53,900. This floor plan is very important especially for the labours. Before start the construction, labours must confirm the spec of the house by refered the plan given . The example of specification need to be confirm are the length of walls , position of column , positon of the ground beam and etc.The payment have to be done based on progression in finishing house project. There are 5 times payment that should be done by the clients. In the table 3 below is showed the flow method of payment that planned by clients and sales department of the company. The payment need to be done step by step alongside of house progress. If the clients don't do the payment the project will be stop immediately and can cause pending.

Figure 5:The house' plan that construct at Jalan Kebun

(Source:Courtesy of IMhome Property Sdn Bhd)

Table 3 : Method Of Payment For Package Orkade C and Lily C

Type	Booking (RM)	Agreement (RM)	50% done (RM)	80% done (RM)	100% done (RM)
Orked C	3,500	38,000	20,000	12,000	400
Lily C	2,500	27,000	18,000	6,000	400

3.1 The construction methods of structural members for two single storey house located at Sungai Buloh,Selangor and Jalan Kebun Selangor.

Ground beam at Sungai Buloh, Selangor

One of the structure members I going to describe is about foundation. This two house used different type of foundation. For house that constructed in Sungai Buloh are use ground beam while house in Jalan Kebun use raft foundation.Based on figure 6, this is the correct method to install ground beam. First step before pouring the concrete mixer, the soil at site must be

Levelled and add some crusher run for more compacted by using backhoe. After that, dig the ground beam hole according to the measurements specified in the plan.The depth of the ground beam hole must be 1 feet deeper than ground level and 10 inches wide like in the figure 7 given. In figure 7 also shown the installation of pole column before start use the ready mix concrete. The position of the pole point must be according to the plan and planted to a depth of 1 feet deeper . When the poles are planted, pour the concrete mixture into the holes that have been dug. Tie the reinforcement bar (Y 12) with (R 6) and place it in the hole of the ground beam that has been dug. Install formwork and BRC a8 according to the size of the house.The purpose of installing formwork is to forming the house slab and sidewalk after done pouring the ready mix concrete like in figure 8. After installing the BRC and formwork, ready mix concrete is ready be

Figure 6:Installation ground beam at Sungai Buloh

(Source:Courtesy of IMhome Property Sdn Bhd)

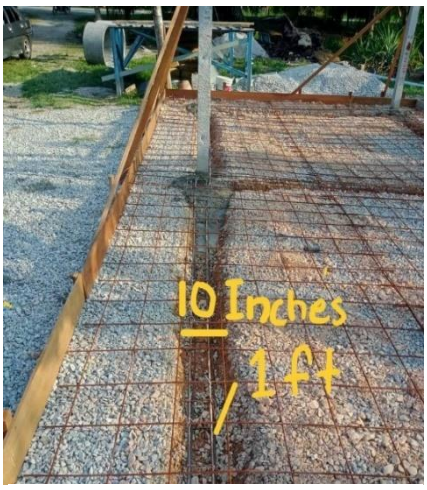


Figure 7:Depth and width of ground beam

(Source:Courtesy of IMhome Property Sdn Bhd)

poured to produce floors and sidewalks. Finally, the site work and the installation of ground beam is fully completed

Raft Foundation at Jalan Kebun, Selangor

Raft foundation is the easiest foundation to be install than other type of foundations. this is because it does not need to dig any holes except holes to place poles and holes to plant toilet pipes and septic tanks. Before starting the raft foundation installation, the supervisor needs to make sure of a few things . The thing that needs to be ascertained is the condition of the land and the area of the house to be built. soil conditions must not be moist. For example oil palm soil. If the soil is moist, raft foundation is not suitable for use or need to change the soil with suitable one. For the next step, install 4 -inch high formwork wood for the sidewalk and 6 inches for the floor. In figure 9, is the sidewalk and slab formed after finished concrete. Raft foundation also uses BRC size a8 before pouring concrete. As shown in figure 8, the septic pipe, shower pipe and etc should be placed under the BRC iron and shall be covered with concrete. In conclusion, before doing the last step for site work, the supervisor must ensure that Pipe, Brc, Formwork and others are installed first.

Figure 9: Slab and sidewalk formed after finish pour the ready mix concrete

(Source:Courtesy of IMhome Property Sdn Bhd)

Figure 8:Installation of pipe before do the concrete

(Source:Courtesy of IMhome Property Sdn Bhd)

Walls

Upon completion of the site work, the labours will connect with the bricklaying work.

Bricks will be stacked from pole point to pole that already planted during previous site work as shown in the figures 10. During the bricklaying process, the bricklayer will leave empty space to install home accessories such as door frames and window frames. In figures 11,for windows and doors will be added lintels for take loads coming from above wall and transfer its load to the side walls

Figure 10:Installation of sand brick wall from pole to pole

(Source:Courtesy of IMhome Property Sdn Bhd)

For both sites the bricks used are sand bricks. The height of the constructed brick is 10 feet from the floor to the roof beam.In Figures 11, the labours also has to install wire mesh to strengthen the strength of the bricks.Wire mesh will be installed every three layers of brick tied. After the brick is ready to be tied 10 feet from the floor level, on the part where there is a pipe will be planted into the brick and the pipe will be closed during wall plaster work.To keep the brick bond straight, the craftsman will use brick bonding thread.

Figure 11:wiremesh provide every layer of sand brick

(Source:Courtesy of IMhome Property Sdn Bhd)

3.2 Detail connection of structural members

For the two houses I monitored, I found many structural connections used on the site one of them is the connection reinforcement bar (Y12) which is used to produce ground beams and roof beams the iron used to produce the ground beam and roof beam iron frame is Y12 iron and R6 iron. Reinforcement bar must be installed inside the beam, this is to ensure that the beam can withstand the load and not easily crack iron wire is the wire used to connect iron Y12 and iron R6. The advantage of this iron wire is to bind the rebar iron firmly without any looseness. Based on figure 13, this is the installation of iron wire on rebar iron. The height of the ground beam iron is 1 foot and 4 inches wide.Iron R6 needs to be bent to form the Y12 into squares.To bend the iron it is necessary to use an iron bender and it is necessary to prepare a table with nails on it like in. As we can see in figures 13, ground beam iron must be installed and fastened to the poles that have been planted. This is to ensure that the ground beam iron does not move during the concrete work is carried out. Ground beams will be connected crosswise to the poles and fastened using iron wire. For the floor, the iron used is BRC with standard size which is a8. In figures 14, The material used to join the BRC also uses iron wire . The purpose of using iron wire to join the BRC is to ensure no empty space and to ensure the floor is completely solid when finished in concrete. When the brc is tied, the brc level will be

Figure 13:Installation of iron wire to ground beam rebar

(Source:Courtesy of IMhome Property Sdn Bhd)

Figure 12:installing ground beam reinforcement bar with poles

(Source:Courtesy of IMhome Property Sdn Bhd)

neat and flat. The shape of the concrete will also be beautiful because the shape will follow the iron frame.

Figure 14:Jointing BRC using iron wire

(Source:Courtesy of IMhome Property Sdn Bhd)

Next for the roof structure of the second two houses using a machine roof frame. The iron is called c channel because the shape of the iron is c -shaped. The picture on the side is a form of c channel installation to complete the roof frame. Why is it necessary to have a roof frame ?. The main function of using c channel iron is to hold the roof firmly.The roof frame must be installed because to accommodate the load generated by the roof and ensure the roof can be arranged neatly without any leakage. Based on the given picture, iron c channel should be installed in a zig zag manner. The size of the c channel iron used is 0.45mm. The side part must be small and the middle part large. The frame should be installed like this because the force applied to the middle part is more than the side part.

Figure 15:C channel iron and Batten iron are used for roofing work

(Source:Courtesy of IMhome Property Sdn Bhd)

The force on the middle part of the roof is big because in the middle of the roof, we will install ridge cap to cover the roof from entering rainwater. Batten iron should also be used to complete the roofing work. This batten iron is known as roof reinforcement because it facilitates the arrangement of or without the spread of exposed space. The standard size of the batten iron used is 0.75 mm. to connect the c channel iron into a zig zag shape, the labours uses brackets and iron screws to connect the c channel iron so that it is stronger and the structure of the house is not easy to collapse. Roof beam is also an important structure to accommodate the load imposed by the roof. as we

know the way to install steel reinforcement bars on the roof beam is the same as the ground beam but the difference is the size of the steel used. The rebar iron used for the roof beam is Y10 while for the ground beam Y12. The side picture shows the correct measurements to produce the roof beam frame before concreting. The fastener used to fasten the iron roof beam is the same as the ground beam i.e. the iron wire. In conclusion, the steel frame for the foundation, ground beam, column and others must have a connection with each other so that the structure of the house built becomes strong from collapsing.

Figure 16:Correct height measure for roof beam frame structure

(Source:Courtesy of IMhome Property Sdn Bhd)

Figure 17:Correct width measure for roof beam frame structure

(Source:Courtesy of IMhome Property Sdn Bhd)

3.3 The problems occured during construction

There are many problems that often occur during the construction project is carried out one of the problems encountered is the hardware items are slow to arrive at the site. The cause of the error was due to the office staff not being aware of the progress of the project and being slow to make payments on nearby hardware. Materials for coaching, our office makes orders with selected hardware. payment must be made to the hardware before making the delivery, so if it is late to make payment from the office then the material will be slow to arrive at the site. When building materials are not on site, craftsmen cannot do the work consistently. For example, to complete the site work, the hardware department staff must make orders such as concrete cement, steel reinforcement bars, 10-foot poles, BRC and others. Once the material has been ordered and arrives at the site, the craftsman can do the work smoothly. without any problem. The next problem that often occurs on the site is that the building materials delivered by the hardware are insufficient and of poor quality. Such problems can cause losses to the company and can delay progress to complete the project. As long as I take care of the site, things like this often happen for example cement on 4 x 4 columns cracks, broken or broken craftsmen tools and broken ceilings. Poor quality goods sent have a big impact on a project. In addition, insufficient carpentry skills are also a big problem in managing a construction project. Before this, there have been things like this, for example, the bricks are not in the right way. Things like this can have a detrimental impact on the structure of the building. The bricks fastened by the unskilled craftsman look slanted so when installing the door and window frames will also be slanted. Next, among the wrong methods done by the craftsman is the installation of ground beam iron and roof beam iron is not correct. if this method of installation is not correct the cement installed on the iron will easily break and cause the construction structure to be unstable. To avoid the problem of unskilled craftsmen, our company requires at least 3 craftsmen to undergo the project. Craftsmen are divided into two, namely skilled and unskilled craftsmen, so the company hires one skilled craftsman assisted by two unskilled craftsmen. Lack of concern for safety is also a serious problem and should be controlled. When the craftsman or supervisor does not care about safety while on site, the probability of serious injury or death is

high. The percentage for injury or death is 40%. Therefore, to prevent this problem from happening again and again, the craftsman, supervisor or anyone who is on the site must wear safety equipment or called Personal Protective Equipment (PPE). The most important and mandatory safety item to wear is a safety helmet. The function of this safety helmet is very important when you are on the site, especially the construction of tall buildings, if the tools, bricks or anything solid fall accidentally from the top floor and continue to hit the head and can cause death. If wearing the safety helmet, the condition of the victim's head is not too serious. The last problem that always occurs is the wastage of costs to complete the house on both sites. A lot of wastage of costs occurs on the purchase of building materials. For example cement bags ordered by company staff are in excess. The extra cost of cement can cause huge losses to the company. Apart from the purchase of hardware items, the purchase of readymix concrete more than the required rate also has a large impact of losses. For example, for the Sungai Buloh Selangor site, the required concrete readymix concrete is only 13 meters but the cause of the supervisor's negligence was to take 15 meters of readymix concreteThe price for 1 meter is RM 250. so there is a loss of 2 meters equivalent to RM 500. The construction done by the craftsman did not follow the prescribed plan. problems like this cause the company to suffer losses when the specifications of the house to be built do not follow the set plan. This has happened before at the Sungai Buloh site, the area of the room built by the craftsman is quite large so there is a loss of building materials such as sand and cement in excess of the rate that has been set.

CHAPTER 4 : CONCLUSION

As long as I am looking for experience at imhome property sdn. bhd. there is a lot I learned and added to my knowledge of the field of construction. I can also understand more clearly about the trends to deal with a construction project from start to finish. In addition, while I monitored the construction site, I was able to learn the correct method to install building structures such as foundations, beams, columns and so on. For me, the structure of the house must be installed properly and use quality materials to ensure that the users of the house are safe and the building is always strong. The iron frame in the members structure plays a role for the strength of the house built. The steel frame used is steel reinforcement bar and BRC. Monitoring the craftsmen doing the construction work, I was able to gain knowledge related to construction more clearly. Conversations with clients and craftsmen I am becoming more fluent because as a supervisor conversations and explanations are important. I also learned that safety while doing the construction work is especially important for laborers. the importance of wearing safety equipment is to protect oneself from being inflicted by minor or major injuries. Next, something that gave me the most knowledge about the course I studied was the rules for building a house or any type of building. Before starting a construction project, the Supervisor must do research first such as soil condition, site area, entrance of hardware truck or concrete truck, provision of shared houses for labor workers and more. During the project, the supervisor must monitor and research the work of the craftsman and if there is a problem such as the installation of the house structure is not correct then immediately give a reprimand and make a report to the office regarding the problem.

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