



CENTRE OF STUDIES FOR BUILDING SURVEYING
DEPARTMENT OF BUILT ENVIRONMENT STUDIES & TECHNOLOGY
UNIVERSITI TEKNOLOGI MARA, PERAK
SERI ISKANDAR

**CONSTRUCTION PROCESS OF BEAM AND SLAB IN
KOMPLEKS BELIA DAN SUKAN NEGERI TERENGGANU**

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This practical training report is a fulfillment of the practical training course.

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LIST OF ABBREVIATIONS

BRC	Reinforcing Rebric of Steel
BQ	Bill Quantity
CPM	Critical Path Method
DPM	Damp-Proof Membrane
JKR	Jabatan Kerja Raya
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
SS	Site Supervisor
SSS	Site Safety Supervisor
VO	Variation Order

CHAPTER 1

COMPANY BACKGROUND

1.0 INTRODUCTION OF COMPANY

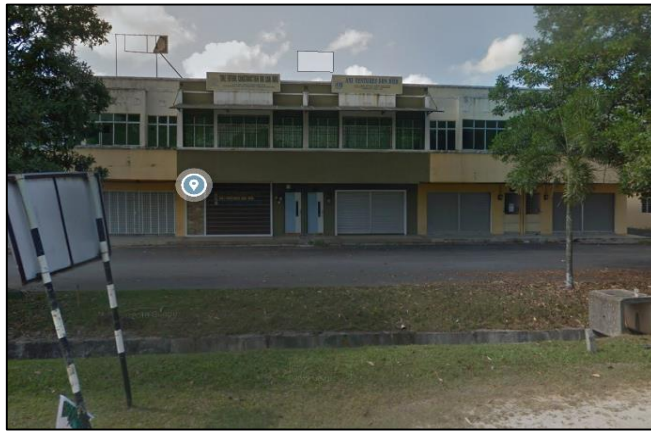


Figure 1. 1 : The RAFA Sepakat Sdn.Bhd building

RAFA Sepakat Sdn. Bhd. is a private limited company established on 10 September 2019 and operating until now. The company is a main contractor company that mostly focuses on building construction. In addition, the company has been certified by the Construction Industry Development Agency Contractors (CIDB) as a G6 contractor. Contractor G6 is a contractor who can carry out any construction not exceeding RM10,000,000.00. Therefore, most of the projects handled by this company are high-rise building construction projects.

1.2 SUMMARY DETAIL OF COMPANY INFORMATION



Table 1. 1: Detail information

Company Name	: RAFA Sepakat Sdn, bhd
Address	: Lot PT 32597, Tingkat 1, Rumah Kedai Tepoh, Jalan Kelantan, 21060 Kuala Terengganu, Terengganu.
Telephone No.	:096624089
Fax No.	:09-6623089
Website/foursquare/ Facebook	:RAFA Sepakat Sdn bhd
CIDB Registration No.	: 0120081231-TR121433
Company Registration No.	:200701042857 (800890-V)
Company Registration Date	:27 th December 2007
Type of company	: Limited by shares private limited
Class(Category of a company)	:G6

1.3 LOCATION OF COMPANY

This company was located at Lot 32597, Tingkat 1, Rumah Kedai Tepoh, Jalan Kelantan, 21060 Kuala Terengganu, Terengganu, Malaysia. The company building near to Felda Terengganu Regional Office which is located at Tepoh area in Kuala Nerus district.

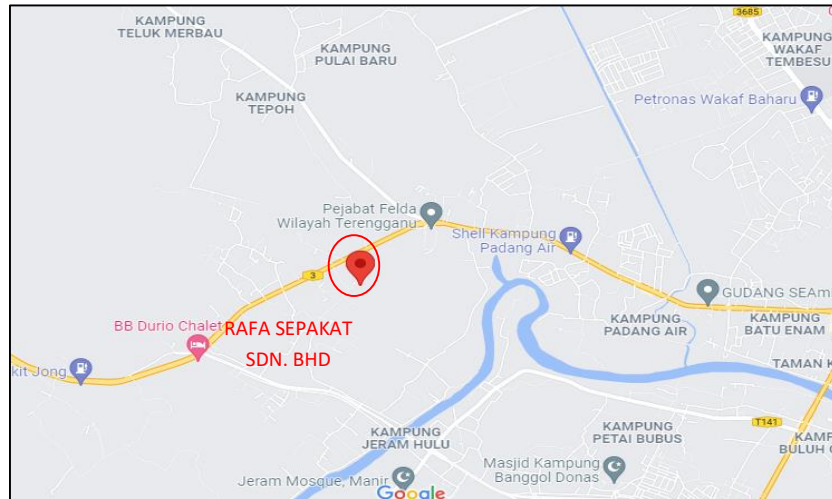


Figure 1. 2: Key Plan



Figure 1. 3: Site Plan

1.4 COMPANY SERVICES

SAFA Sepakat Sdn.Bhd provides construction-related services from the first step of the procedure until the completion of construction. This Company is in accordance with the terms of the contract. most provide experienced and qualified builders and hardworking employees to ensure all work can be completed perfectly and provide good service to customers. In addition, our architects or planners also offer and provide good quality building plans concerning customer requirements. among the construction management provided are construction works, renovation works, building plans, and others.

1.5 ORGANIZATION SCHEDULE ACTIVITIES

The table below shows the working hours for RAFA Sepakat Sdn.bhd. These working hours are the same for employees in the company whether in the office or on the construction site and students doing the practical training.

Table 1. 2:The Schedule for working hours

DAYS	HOURS						
	8:30am– 10:00am	10:01am- 10:30am	10:31am– 12:59 am	1:00pm – 2:00pm	2:01pm – 3:00pm	3:01pm – 3:30pm	3:31pm- 5:00pm
Sunday	Working time	Break time	Working time	Lunch hours	Working time	Break time	Working time
Monday							
Tuesday							
Wednesday							
Thursday							
Friday	WEEKEND						
Saturday							

1.6 RAFA SEPAKAT SDN BHD ORGANIZATION CHART

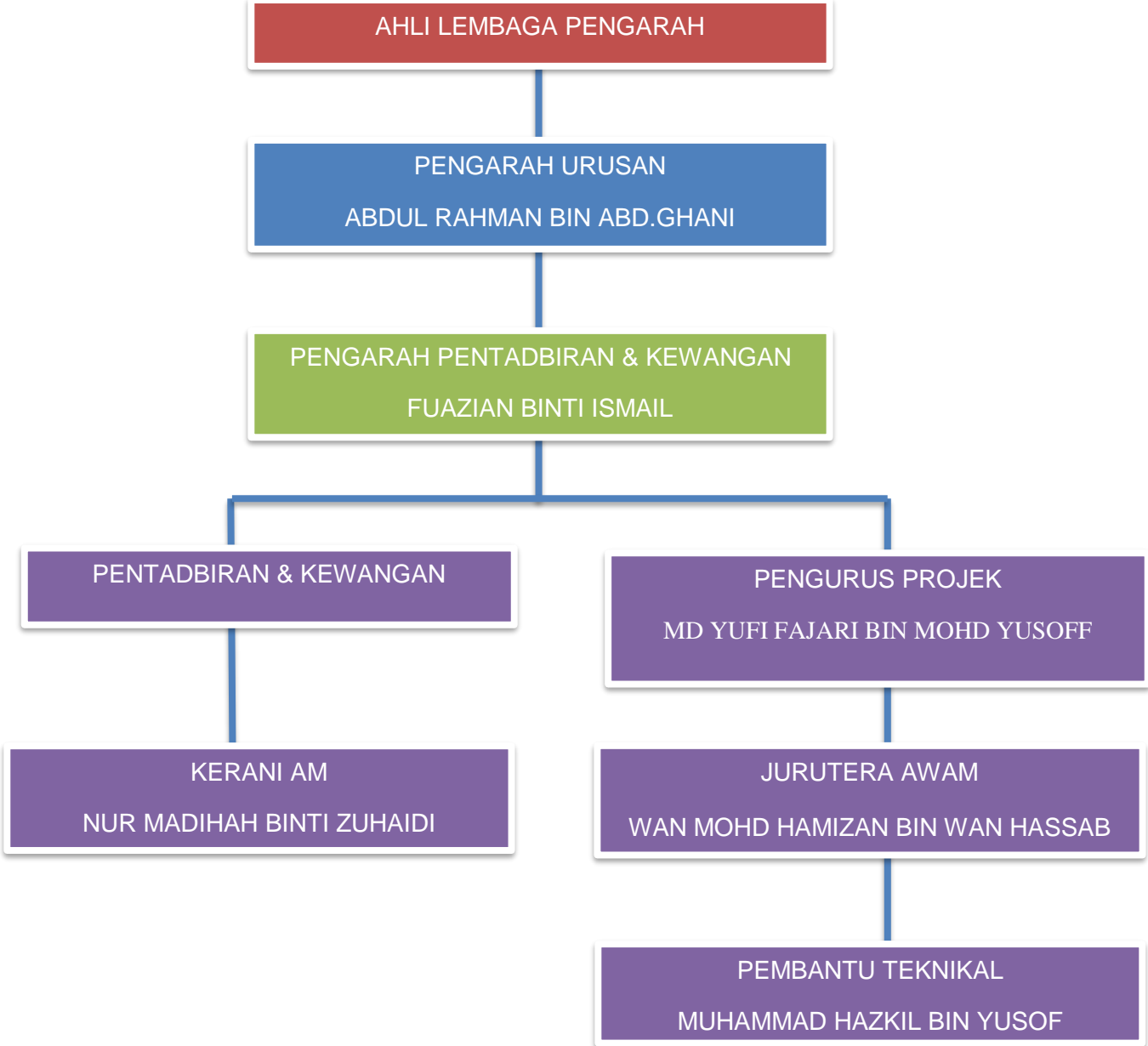


Chart 1. 1: The organization of RAFA Sepakat Sdn.Bhd

1.7 EXPERIENCE & CURRENT PROJECT

This such example completes the company project

Table 1. 3: Experience & current project

No	Description	Client	Contract (RM)	Start	Finish
1.	Builder of a district religious office building and other related work at Marang, Terengganu Darul Iman	Jabatan Kerja Raya Negeri Terengganu	RM 5,712,285.00	07/09/2009	16/01/2012
2.	Terengganu state reticulation system rural water supply (BLB) project 2011/2012 (ZONE 28)	Kementerian Kemajuan Luar Bandar Dan Wilayah	RM 7,185,650.00	22/06/2011	21/02/2012
3.	Proposal to build and complete a dormitory for 100 female and male students at Sekolah Menengah Kebangsaan Kuala Jenderis, Hulu Terengganu.Terengganu Darul Iman.	Kementerian Pelajaran Malaysia	RM 7,920,599.20	26/ 01/2010	26/04/2011
4.	Proposals to design, build and complete affordable housing projects in Kampung Batu Hampar III, Mukim Belara, Kuala Terengganu.Terengganu	Pejabat Setiausaha Kerajaan Terengganu (Perumahan)	RM 39,850,000.00	13/09/2009	04/0702011
5.	Construct two blocks of four-storey school	Jabatan Kerja Raya	RM 3,364,710.00	28/04/2014	14/12/2014

	building, one-storey Preschool building and other related works at Sekolah Kebangsaan Tengku Ampuan Intan, Hulu Terengganu, Terengganu . (preparing abandoned works)	Negeri Terengganu			
6.	Proposal to repair damage due to theft (vandalism) for affordable housing projects in Kampung Batu Mampar III, Mukim Belara, Kuala Terengganu, Terengganu Darul Iman	PMINT	RM 163,000.00	01/07/2015	25/06/2015
7	proposed construction of a kenyir lake research center, Universiti Malaysia Terengganu	Universiti Malaysia Terengganu	RM 6,454,250.00	15/12/2015	12/06/2015
8	Proposal to rebuild and upgrade existing facilities at Kompleks Belia Dan Sukan Negeri Terengganu.	Kementerian Belia Dan Sukan Negeri Terengganu	RM 8,850,000.00	03/03/2020	10/10/2022

1.8 SCOPE OF WORK GIVEN TO INTERNSHIP

During the internship at RAFA Sepakat Sdn Bhd which is starting on 11 November 2021 until 31 January 2022, there are several scopes of work that have been assigned by the employer. among the scope of work given is related to the scope of work of building surveyors. during this period of industrial training, most of the scope given was as a project manager at a construction site. such as the site visit which aims to update the construction site report book for contract work. For example, it is necessary to ensure that workers do the work and know the number of workers on-site and equipment used on the construction site. In addition, it should also ensure that employees do their work according to CPM so that there are no delays and problems. Table 1.1 below shows the scope of work given during the internship.

Table 1. 4: List of the scope of work

NO	SCOPE OF WORKS
1	Prepare the bill quantity (BQ) for the office block and dorm block.
2	Prepare taking off for quantity of concrete at the office block and dorm block. It is provided to make concrete orders before the concreted area is done.
3	Site daily need to update every day in " <i>Buku Harian Tapak Bina Untuk Kerja-Kerja Kontrak</i> ". it is evidence of the work progress based on CPM and knowing the number of employees doing the work
4	Prepare bill quantities (BQ) for project construction. This BQ is evidence of the total cost of the project and the types of material used.
5	Do a dilapidation survey for the administration block and gymnasium to find out if there is damage during the construction work done around the construction site.
6	Prepare the variation order (VO) for drain and apron in Dewan, Besar and Dewan Seberguna

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will explain a little bit of information related to the topic discussed in terms of keywords, terms, and meanings. In addition, this chapter will reveal what is construction, the types of components in a building, what are slabs and beams, the differences between slabs and beams. In addition, it will also reveal the construction process of slabs and beams and plates or machinery used in this process. In addition, it also discusses the types and safety equipment used throughout the slab and beam construction process.

2.2 INTRODUCTION ABOUT BUILDING CONSTRUCTION

Construction is an activity of construction or extension of infrastructure in a building in terms of architecture or civil engineering. Usually, construction will be led by the manager project and assisted by construction managers, construction engineers, construction engineers, and architects. This aims to ensure that the construction process runs smoothly by the CPM set and can resolve problems that occur in the shortest possible time. The construction process covers all activities performed at the construction site by all the requirements of the drawings and specifications contained in the construction contract document. Among the types of construction done is the construction of buildings, houses, bridges, and others.

Building construction is a very important permanent construction used by everyone. It is a place of residence or a place intended to carry out daily activities. In addition, the building can also make a shelter from the threat of danger and unpredictable weather. this can make, humans have shelter and residence.



Now, the construction of the building has received a high demand from the public as it can be developed according to the tastes of the occupants whether they want a classic or more modern design. Furthermore, the use of technology can speed up the construction process. This demand involves various types of buildings that can be defined or identified in manufacturing sectors such as residential, commercial, office buildings, and others. In fact, there are many processes or procedures involving the construction industry including building construction. For example, it includes the manufacture of construction products, the workers responsible for doing the work and completing it, and others. That is why construction management, quality control and insurance are important in the construction sector to ensure that all activities and processes can be done well and smoothly without any problems. The Contractor shall follow the procedures specified in the contract to avoid any problems in the future.




Furthermore, construction workers will be exposed to hazardous working conditions to complete their tasks or work. It is because, they engage in many risk-related activities such as falling from high places, collapsing structures, and others. This makes employees need to prioritize safety and health such as wearing PPE and so on.

2.3 TYPICAL EQUIPMENT AND MACHINERY IN CONSTRUCTION

As we know, in the construction sector there are many machines and equipment needed to complete the task and ensure that all processes can function or move smoothly. However, there are companies that will buy machinery for their needs in the future. So, they cannot have to rent equipment every time to build. In fact, they can rent the equipment they have The table below shows the machines and equipment commonly used in the construction as well as the function of the equipment.




Table 2. 1: List of common equipment and machinery



TYPE OF EQUIPMENT OR MACHINERY	DESCRIPTION
<p>1. CRANES</p>  <p>Figure 2. 1: Mobile crane</p>  <p>Figure 2. 2: Crawler crane</p>	<p>A crane is a piece of equipment used to lift heavy equipment to a high place. usually, it is used in limited site area space as in city and for large projects which includes high rises building. in addition, it can also be used to lift material from one place to another or a high location.</p>

<p>2. MIXER TRUCK</p>  <p>Figure 2. 3: Concrete mix truck</p>	<p>Concrete mixer truck is a vehicle used to transport ready mix concrete mix from the concrete mixing place of the project location where during the transport the mixer continues to rotate at a speed of 8-12 minutes so that the concrete remains homogeneous and does not harden.</p>
<p>4. CONCRETE VIBRATOR</p>  <p>Figure 2. 4: Vibrator poker</p>	<p>A concrete vibrator is equipment to use to eliminate air in concrete and help increase the strength of concrete.</p>
<p>5. HAMMER</p>  <p>Figure 2. 5: Hammer</p>	<p>A hammer is a tool used to hit the nail manually. It can be carried out easily and is easy to operate.</p>

2.4 TYPICAL MATERIAL USED IN CONSTRUCTION

Table 2. 2: Type of common material used

TYPE OF MATERIAL	DESCRIPTION
<p data-bbox="412 453 662 485">Plywood and wood</p>  <p data-bbox="493 831 760 863">Figure 2. 6: Plywood</p>  <p data-bbox="513 1129 740 1161">Figure 2. 7: wood</p>	<p data-bbox="863 453 1425 835">Plywood and wood are tools that are often used in construction. Usually, it is used to make formwork on slabs, column beams, and so on. It is always used because it is lightweight and durable. When making formwork, it can be used repeatedly. Furthermore, it can produce high-quality concrete surfaces when used.</p>
<p data-bbox="412 1184 532 1215">Concrete</p>  <p data-bbox="488 1556 764 1587">Figure 2. 8: Concrete</p>	<p data-bbox="863 1184 1425 1612">Concrete is the main material used in every construction project. Concrete is a mixture of materials such as aggregate, cement, small stones, sand, gravel, and water. The mixture will be mixed according to the required ratio or grade such as grade 20,25 and so on. This concrete will be used on foundations, slabs, beams, columns, and others.</p>

<p>Reinforcement bar</p>  <p>Figure 2. 9: Reinforcement bar</p>	<p>A reinforcement bar is steel used in buildings to give strength to concrete and absorb tension. However, there is also concrete that does not require steel. Reinforcement bars have two types is hot rolled deformed bars and mild steel plain bars. For rolled deformed bars have various sizes namely T8, T10, T12, T16, T20, T25, T32, T40 While mild steel plain has one size which is y10.</p>
<p>BRC steel</p>  <p>Figure 2. 10: BRC Steel</p>	<p>Reinforcing Fabric of Steel is a steel reinforcement material in concrete. BRC is used mainly for reinforced concrete .such as, floors, roads, slabs, etc</p>

2.5 SITE SAFETY PROCEDURE DURING THE CONSTRUCTION PROCESS FOR BEAM AND SLAB

Safety rules at construction sites are important to prevent and reduce the rate of accidents occurring at construction sites. This is because it can give a bad reputation to the workers and a company this causes the company to have to put procedures on the construction site aimed at ensuring that the workers on the construction site follow it. For example, a construction site has a site safety supervisor or safety and health office that aims to monitor the condition and safety of workers at the construction site. As is known the percentage of accidents at the site is increasing year by year. As an action to prevent accidents from happening, companies can adopt proper procedures in the work area especially construction sites.

In addition, safety procedures at construction sites must follow the Occupational Safety & Health Administration (OSHA). All of these measures have been specified in OSHA to provide a flexible framework to employees and employers. The responsibility of the site safety supervisor is very important to ensure the safety and health of employees. For example, the SSS is tasked with forming key contractors to meet the requirements of AKJ and promote a safe work ethic at construction sites. As can be seen at construction sites site safety supervisors play a role in occupational safety and health. Through the monitoring of the work done on the construction site. For every problem that occurs, SSS will submit a workplace inspection report or walkabout report to be given to the supervisor so that the supervisor corrects the situation. therefore, the employer can provide a safe and healthy place for employees.

Among the responsibilities of employers to ensure the safety and health of workers is that employers must provide personal protective equipment (PPE) to employees and monitor by ensuring that employees use them. This can help reduce problems or dangers that will occur. However, employers must provide and ensure PPE equipment is in good condition and safe and always monitor the equipment. in addition, workers must also ensure that the construction site is in

good condition and safe from danger. It aims to ensure no loss and also ensure the safety of employees. For example, workers re-store iron cutting equipment after using a faucet to avoid colliding with the equipment and causing injury. In addition, workers must ensure that the construction site is clean. If you do not prioritize hygiene, it will cause diseases such as dengue fever due to stagnant water and others. Next, equipment such as equipment and machinery used should be monitored or tested before use. This is to ensure that the equipment and machinery are in good condition so that there are no unwanted accidents such as uncontrolled machinery and so on.

2.5.1 Personal Productive Equipment (PPE) During The Construction Process of Beam and Slab

Personal protective equipment or PPE is a safety clothing used when doing work that aims to protect themselves from dangers that can affect health. It can be seen the use of personal protective equipment in the industry, especially in the field of construction. The use of this equipment can help protect workers. various types of visible personal safety equipment such as protection of the head, eyes, nose, hands, and others. Therefore, employers should provide PPE to all employees involved in construction. Employers are also responsible for ensuring that PPE is in good condition and functional at all times to avoid any problems while working. Therefore, PPE should be checked daily before use.

Therefore, the role of site safety supervisor or site supervisor is very important to monitor and warn employees. For example, give a briefing or toolbox related to safety, health, and cleanliness on-site before starting work as shown in figure 2.1.

In addition, equipment should also be visually inspected to ensure the PPE is in good condition and safe to use. For example, the SSS or SS will check the condition of safety helmets, gloves, safety shoes, and others. The equipment will also be stored in the right place.

Therefore, personal productive equipment (PPE) is important for workers working in the industry. it because is more vulnerable to dangers and accidents. PPE is one of the incentives to reduce the accident rate and an important element to ensure the construction process runs smoothly as well the attitude of wanting to maintain safety is also present in every employee,

2.6 INTRODUCTION OF BEAM AND SLAB

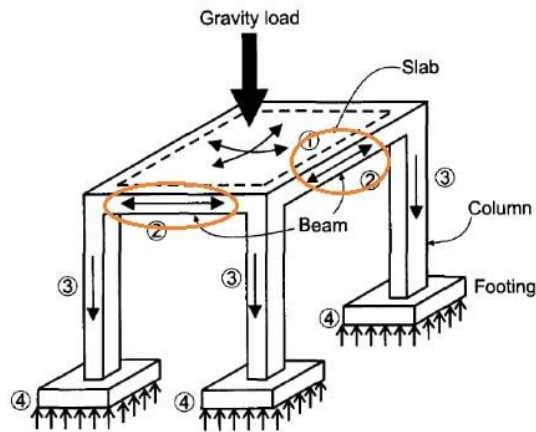


Figure 2. 11: The difference between slab and beam

In the building construction process, slabs and beams are the main components in the superstructure to ensure that the building can function and can withstand loads to prevent failures such as collapse. It is also known as a structural element that functions as a dead load in load flow.

A slab is an important structural element in construction that requires the production of a flat and solid surface. It is the base surface of the building that receives all activities and provides safety and comfort. The shape of the structural components is horizontal with the top and bottom surfaces parallel. Through the construction of the slab, it can produce strength in the transfer of force from the beam to the slab. In addition, it can also bear the live load and dead load received by the floor as well as be able to absorb water and prevent moisture from occurring. It also provides comfort to the occupants such as sound insulation, protection from cold and heat, and other.

Slab design, it has two types, namely suspended slab, and non-suspended slab. A suspended slab is a structure built on the top floor of a building while a non-suspended is a structure built in contact with the ground as shown in the figure below.

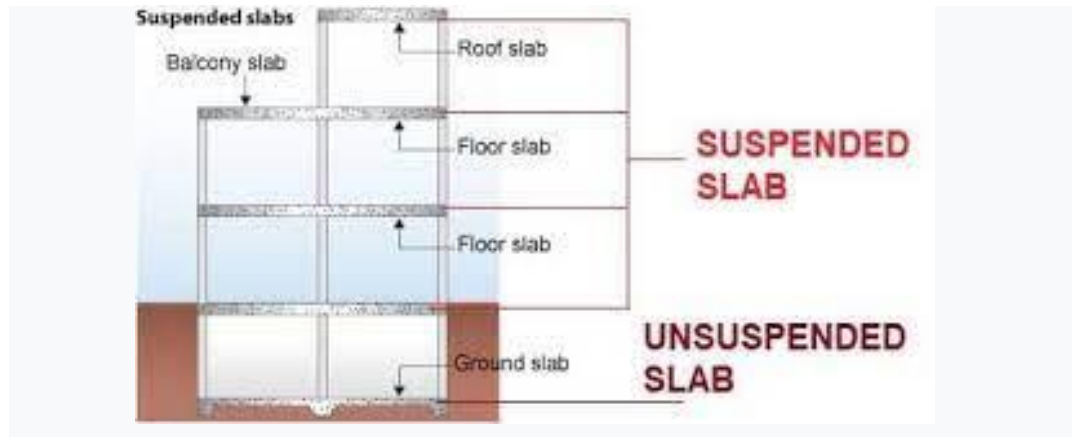
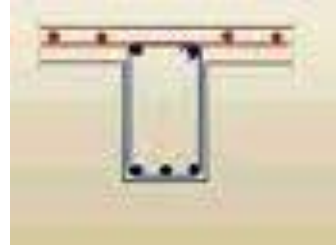
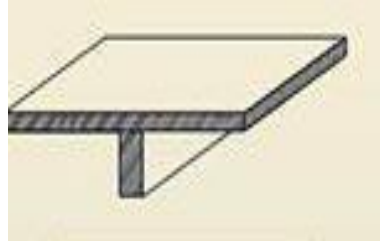


Figure 2. 12: The difference of suspended slab and unsuspended slab

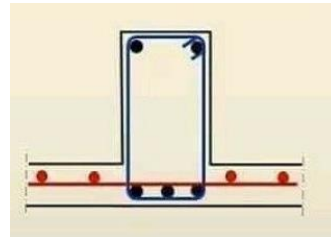
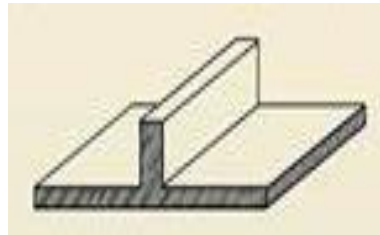
In the construction of the slab should emphasize the design of the structure so that in the degree of deflection. However, for non-suspended slabs do not have deflection because the type of floor is the soil below. Typically, deflection will occur when it is concentrated on a slab surface that is constructed depending on any arrangement of slab rebar and fastened to the rebar beam.

Meanwhile, the beam is an important structure that is horizontally shaped to withstand vertical loads, shear forces, and bending moments. Beam has two types, namely Division based on the position of its installation in the 'slab' and Division based on 'loading distribution'. Inside the beam also has some terms that are often used such as main beam and secondary beam. The main beam is the main beam constructed to allow the building load to be transferred to the column. Meanwhile, the secondary beam is built to build hanging through the slab and placed on the rebar section. In beam installation, it has three types of installation, namely dropped beam, inverted beam, and hidden beam. Below shows the types of beam installation.

i) Dropped beam



ii) Inverted beam



iii) Hidden beam

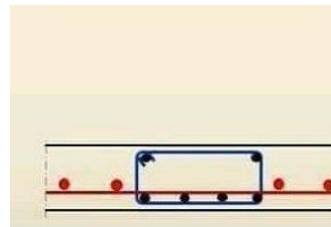
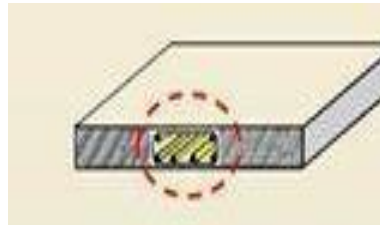


Figure 2. 13 : Type of beam

2.7 THE PROCESS OF SLAB AND BEAM

2.7.1 Slab

Slab is a structural element made of concrete that has a flat horizontal surface. The construction of a floor in contact with the ground surface is known as a non-suspended slab which serves as load support from the floor structure. While suspended slab serves as a structure built on the top floor of a building that does not involve the ground surface. Below is the construction process of the slab:

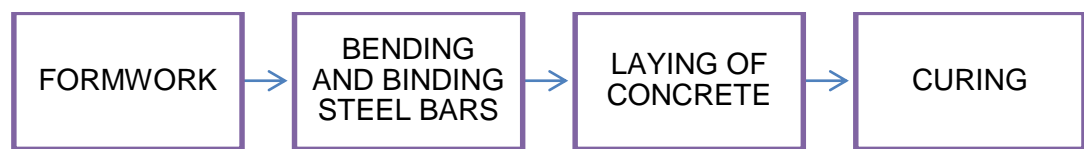


Chart 2. 1: The construction process of slab

First, shape the formwork. in the process of making formwork, it should be referenced based on the standard IS 14687-1999. Formwork or centering and shutters are important to maintain concrete properly. Formwork offers strong support to wet concrete unless it has achieved sufficient stability to be self-supporting.

Second, the work of bending and binding steel bars. In this work will form a slab. This construction will give strength to the concrete and make the structure sustainable against tensile stresses, steel bars are stacked. However, the slab span and the load present affect the diameter of the steel bar and the distance in the RCC slab. Typically, 12mm, 10mm and 8mm diameter sizes are often used in RCC slabs based on slab length.

Third, laying of concrete work. Laying of concrete work is done after bending and binding steel bars. Laying Cement concrete mix will be done according to the design of the formwork. Each concrete mix must contain cement, water, and aggregates according to the ratio set based on the grade of concrete.

Lastly, curing works. The curing work is done after the RCC slab is laid and needs to be curing for 28 days to achieve concrete strength.

2.7.2 Beam

The construction process for beam is very important to make the building not collapse. The purpose of Beam is to support the load from the flow from the top to the ground. Beam is a very important process to ensure the strength of the structure can withstand the weight of the load from above. therefore, the selection of the type of reinforcement bar from the type, strength and number is very important to ensure that it can accommodate the building load. Therefore, there are steps that need to be followed in constructing the beam. Below is the construction process of beam:

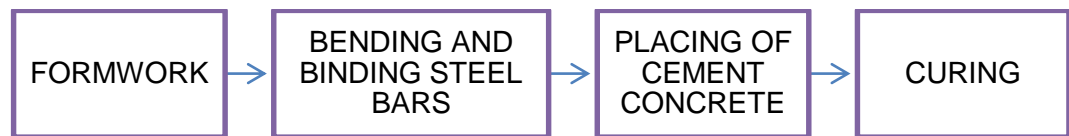


Chart 2. 2:The construction Process of beam

First, forming the formwork. Formwork or centering and shutters are important to maintain the concrete properly. Formwork offers strong support to wet concrete unless it has achieved sufficient stability to be self-supporting.

Second, the work of bending and binding steel bars. In this process, it is will design a slab that has sound compressive strength. however, weak in tensile strength. therefore, these works require steel bars to be arranged so that the slab is in a safe condition when faced with tensile stresses.

Third, placing of cement concrete works. For concrete pouring work, it requires less concrete volume quantity. Laying Cement concrete mixing will be done according to the formwork design. Each concrete mix must contain cement, water, and aggregates according to the ratio set based on the grade of concrete.

Lastly, the curing works. Curing work is done after the concrete is poured into the formwork and needs to be cured for 28 days to achieve concrete strength.

CHAPTER 3

CASE STUDY

3.1 PROJECT BACKGROUND

“Membina Semula Bangunan Dan Menaiktaraf Kemudahan Sedia Ada Di Kompleks Belia Dan Sukan Negeri Terengganu” is a project to upgrade facilities in order to provide comfort to residents and users. The owner of this building is the ‘Kementerian Belia Dan Sukan’ and is monitored by the authorities *is ‘Jurutera Daerah Dan Jurutera Awam Jabatan Kerja Raya Kuala Terengganu’* throughout the construction work carried out by the contractor, RAFA Sepakat SDN.BHD.

This construction area is located at Kompleks Belia dan Sukan Negeri Terengganu, Jalan Pasir Panjang, 21100 Kuala Terengganu, Terengganu. The project started on March 3, 2020, and is still running to this day. However, this project is expected to be completed on 22 June 2022, and construction work will be done for 120 weeks.

In this project, there are three buildings built, namely the pump house, dormitory block, and office block. Meanwhile, two buildings will be renovated to upgrade the facilities in the building, namely the large hall and multi-purpose hall. For the building that is built, the pump house will be built on one floor, while the dormitory block and office block will be built on 2 floors and 1 story store. The total cost stated in the contract is RM8,850,000.00.

3.2 LOCATION PLAN

3.2.1 Key plan



Figure 3. 1: The key plan for construction project

The construction project was located at the Kuala Terengganu. Kuala Terengganu which is one of the east coast state in Malaysia

3.2.2 Location plan



Figure 3. 2: The location plan

This construction project was located in Jalan Pasir Panjang, Terengganu. It is one hour away from the office and 5 minutes from *Pejabat Agama Daerah Kuala Terengganu*.

3.2.3 Site plan

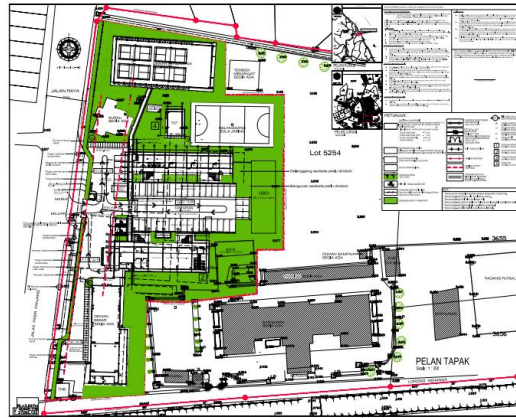


Figure 3. 3: The site plan

The project is located in the Kompleks Belia Dan Sukan Negeri Terengganu. It is another one project from the Kompleks Belia Dan Sukan Negeri Terengganu to upgrade the existing facilities in the area.

3.3 THE ORGANIZATION CHART OF PROJECT

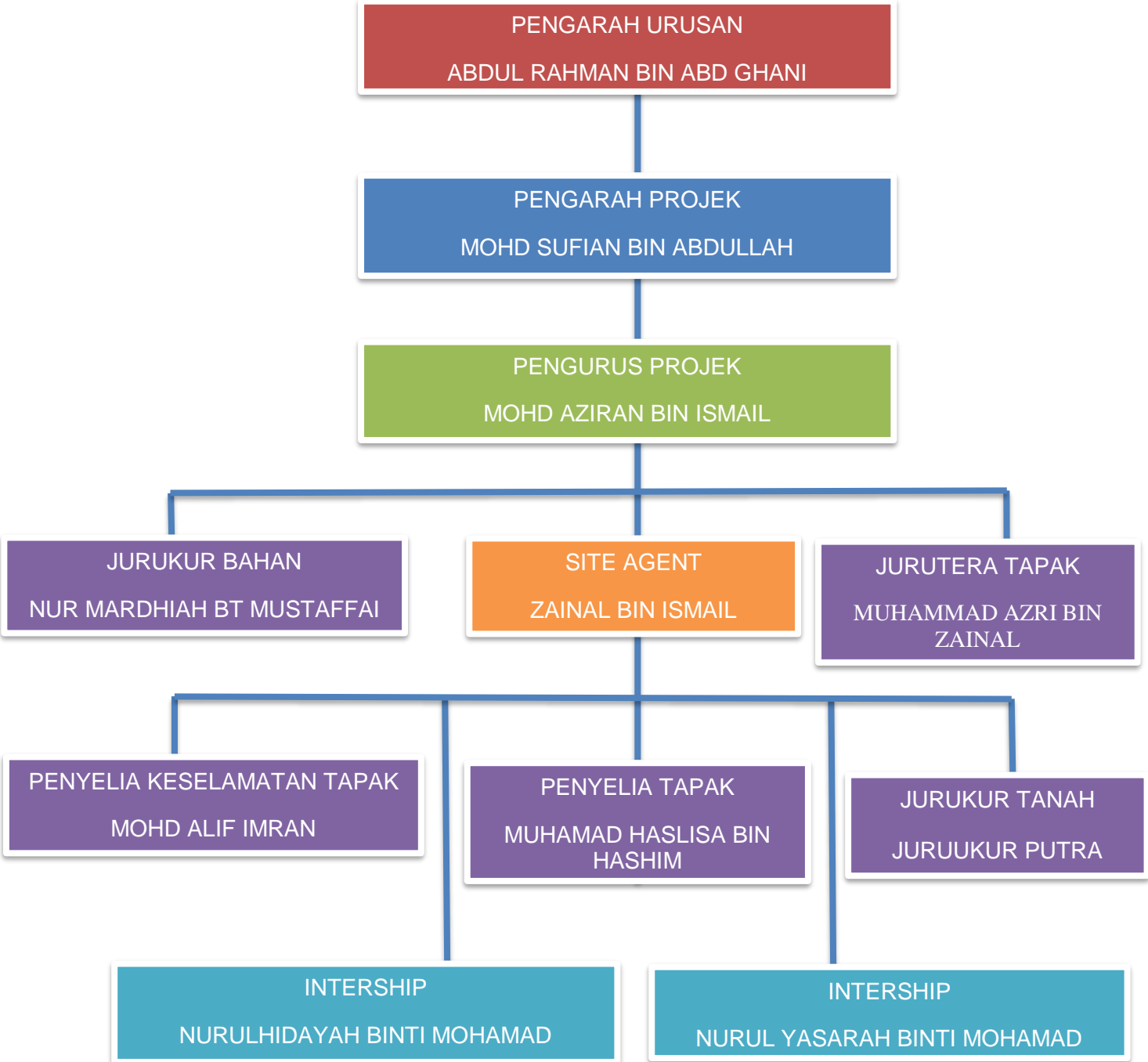




Chart 3. 1: The organization of contractor project

3.5 LIST OF EQUIPMENT AND MACHINERY

There are a few equipment and machines used by the workers on construction sites that are used in the slab and beam construction process. The equipment used is very important in ensuring that all work can be done and it can save time when using that. It is because the equipment and machines can make it easy for workers to do the work. There a few equipment and machinery that owned by the company and a few equipment and machines was a rent. Below is a list of equipment and machines used during the preparation of the slab and beam construction process.

NO.	EQUIPMENT AND MACHINERY
1	 <p data-bbox="786 1297 1105 1331">Figure 3. 4: Mobile crane</p>
2	 <p data-bbox="781 1822 1110 1856">Figure 3. 5: Crawler crane</p>

3



Figure 3. 6: Vibrator poker

4



Figure 3. 7: Steel cutter

6



Figure 3. 8: Concrete mixer truck

7

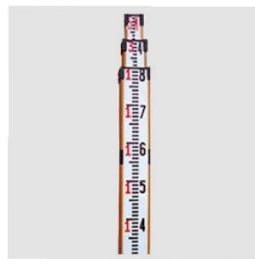













Figure 3. 9: Levelling staff

8	 <p data-bbox="781 604 1112 640">Figure 3. 10: Tripod stand</p>
9	 <p data-bbox="761 976 1131 1012">Figure 3. 11: Measuring tape</p>
10	 <p data-bbox="826 1398 1065 1434">Figure 3. 12: Level</p>
	 <p data-bbox="753 1816 1143 1852">Figure 3. 13 Concrete Bucket</p>

3.6 LIST OF MATERIALS USED IN SLAB AND BEAM CONSTRUCTION PROCESS

BIL	TYPE OF MATERIAL	DESCRIPTION
1.	<p>Concrete</p>  <p>Figure 3. 14 : concrete</p>	<p>Concrete used in this project is to apply into form columns, slabs, beams, and so on and it will be ordered by the supplier that is Mercu Mix Insutries Sdn.Bhd before using.</p>
2.	<p>Black Plywood</p>  <p>Figure 3. 15: black plywood</p>	<p>The selection of black plywood in the use of formwork is intended to facilitate the opening of the formwork and produce a smooth surface when formed. In fact, it can saves costs when you use it repeatedly.</p>
3.	<p>Wood</p>  <p>Figure 3. 16:wood</p>	<p>Wood used to make formwork, make the construction of weights, beam columns and so on.</p>

4.	<p>Reinforcement Bar</p>  <p>Figure 3. 17: Reinforcement bar</p>	<p>This project, it will use reinforcement bars by Alliance Steel (M) Sdn.Bhd and it is the following size used :</p> <ol style="list-style-type: none"> 1. R10 2. T10 3. T16 4. T20 5. T25 6. T32.
5.	<p>Reinforcing Fabric of Steel OR BRC</p>  <p>Figure 3. 18: BRC Steel</p>	<p>This project, will use Reinforcing Fabric of Steel OR BRC by Amsteel mills Sdn.Bhd and it is the following size used is A10.</p>
6	<p>Spacing cube</p>  <p>Figure 3. 19: Spacing cube or Tauhu</p>	<p>Spacing cube or Tauhu is a spacing that is placed to give the distance between the steel and formwork. It is made of cement, sand, and water and then formed into squares.</p>

7	<p data-bbox="467 289 613 321">Scaffolding</p>  <p data-bbox="568 583 885 615">Figure 3. 20: Scaffolding</p>	<p data-bbox="1015 289 1421 420">Scaffolding is built to support human and material in construction structure.</p>
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3.5 CRITICAL PATH METHOD (CPM)

CPM is a method or technique used in a project provided by the project manager to determine or identify important deadlines and deliver the project on time. In addition, this method is also used to identify the deadline of the claims process. Therefore, CPM is important in the project to ensure that all processes and progress will be done smoothly.

Based on the observations made, the Project of “*Kompleks Belia Dan Sukan Negeri Terengganu*” still in process and now it achieves the overall physical progress of the project as of 15 December 2021 is 37.49% While in CPM is 33.9%. this shows a 3.52% forward through the work planning schedule. The submission target of this project is on 10 October 2021.

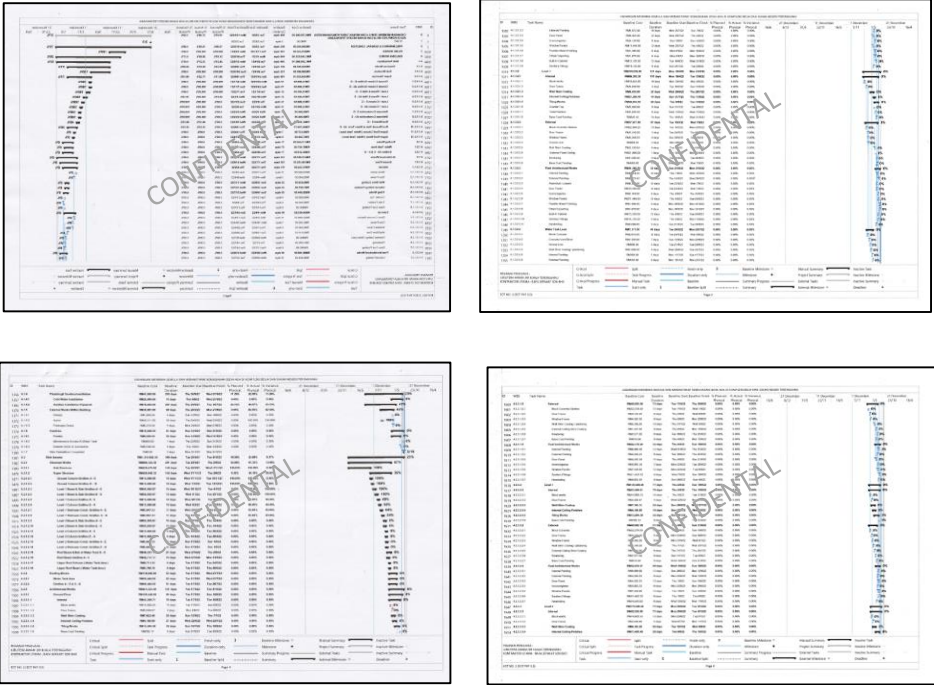




Figure 3. 21: CPM in project of ' *Kompleks Belia Dan Sukan Negeri Terengganu*'.

3.6 THE WORKERS AND COST FOR OFFICE BLOCK

For the project of '*Kompleks Belia Dan Sukan Negeri Terengganu*', the number of employees required to complete the task is around 11 people, such as project manager, site agent, site engineer, site supervisor, site safety supervisor, machine operator, and it is including employees for electrical work as many as 3 people. During the excavation and material lifting work, only two workers are required, namely the backhoe driver and the mobile crane. For general workers, it has 9 foreign workers while 2 local workers. This worker will do the work- binding iron making formwork and so on.

Furthermore, the cost of the process to make an office block is stated in the contract is about RM1,209,880.00. this cost is the cost of the office block and not the overall cost of the '*Kompleks Belia dan Sukan*' project which builds dormitory blocks, office blocks, water pumps and refurbishes the main hall and multipurpose hall.

3.7 THE CONSTRUCTION PROCESS OF BEAM AND SLAB IN OFFICE BLOCK

3.7.1 Ground Beam (unsuspended slab)

Step 1: Preparation and excavation

First, the construction process for the ground floor is preparation and excavation. This process will be done after the footing pad work is completed. After the footing pad work, workers will perform a process to specify the location of the beam. The process will follow the size of the site plan and take a week to two weeks. After the location is determined will a hole digging using a backhoe.

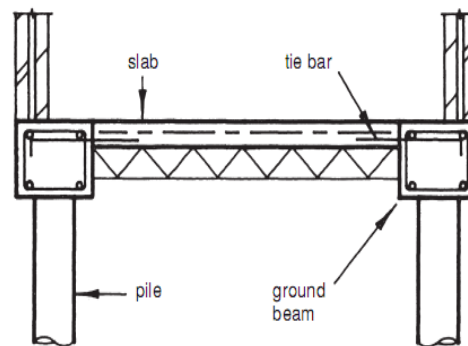


Figure 3. 22: The situation for ground beam in illustration



Figure 3. 23 : The situation for the exaction process

Step 2: Formwork installation

Second, formwork installation. This process will use wood and black plywood. For the process of assembling the formwork, workers will follow the size and height measurements specified in the plan. That is 600mm x 300mm.

Step 3: Bending and binding steel bars

Third, bending and binding steel bars. In this process, it is to make a beam reinforcement. the process does after being connected from the footing connecting iron and make as a beam frame. The formed iron will bend the mild steel into squares. In this project, it is used T10, R10, T20, T25, T30 and T8 reinforcement steel bars are utilized in the beam reinforcement as per the length of the span of the beam. Then will be installed on four reinforcements with links according to the size of the beam stated in the plan which is listed in the drawing. For the process, workers will first prepare the beam reinforcement and placed it in the formwork using a crawler crane. For connection, the beam frame from the footing will be tied using wire.



Figure 3. 24 : The situation when workers tie reinforcement bars



Figure 3. 25: The steel rebar



Figure 3. 26: The stirrups

Step 4: Spacing of steel bar

To ensure the reinforcement bar beam is in the middle between the formwork, the workers will place a spacing block or *tau hu* (name used in site). It is used to serve as a liner between the steel and the formwork. Furthermore, it can also prevent the concrete from having problems or defects on the concrete when finished. In the construction of the spacing block, workers will build the spacing block according to what is recorded in the plan. To make the spacing block, it needs cement, water, sand, and wire.

Step 5: Checker by the project manager

Before being concrete, the project manager will invite JKR to see the condition of the formwork. JKR will state if there are any errors and will approve when the built according to plan.



Figure 3. 27: The condition before concrete

Step 6: Laying of cement concrete

For the process of pouring the concrete mold, workers will pour concrete into the formwork. then, workers will knock or shake the mold box slowly or use a vibrator until ready to pour. The concrete used on the ground beam is grade 30. The formwork will be opened after waiting 7 -28 days until the concrete is in a strong condition.



Figure 3. 28: The condition of the formwork after the completion of the concrete activity

Step 7: Removal of Concrete Formwork

The formwork will be opened after waiting 7 -28 days until the concrete is in complete strength.



Figure 3. 29: the condition when the formwork is opened

Step 8: Spray the termite control

Lastly, the Workers will spray termite control to prevent the infestation from breeding. It will spray the poison around the construction site and also on the ground beam which aims to kill and barrier from entering the building.



Figure 3. 30: Spray the termite control in ground beam

3.7.2. Ground Slab

Step 1: Base layer or hardcore

The base layer is a leveled soil that has a layer of gravel as thick as 100mm-300. In this process, workers will compress and level the soil consisting of gravel, or crushed stone before slab work is carried out. In addition, this process is intended to be used to reduce the rise of water that will moisten the backhoe concrete site layer to bind sand and broken or small aggregate.

Step 2: Blinding

Second, workers will lay a layer of sand and then flatten it on the base layer. This process closes the rock crevices in the foundation layer as well as facilitates the process of leveling concrete works.

Step 3: Formwork installation.

Third, to build the formwork. This process will use wood and black plywood. For the process of assembling the formwork, workers will follow the size and height measurements specified in the plan. This process supports the wet concrete unless it has attained adequate stability to become self-supporting.

Step 4: Damp-proof membrane (DPM) installation

Fourth, workers will place the DPM layer on top of the sealing layer according to the area specified in the plan.

Step 5: Bending and binding the BRC

Fifth, the worker will place the BRC steel on it according to the required BRC size as well as ensure that the BRC has spacing between the DPM and the BRC using a spacing block or Tauhu.

Step 6: Checked with JKR

Before being concrete, the project manager will invite JKR to see the condition of the formwork. JKR will state if there are any errors and will approve when the built according to plan

Step 7: Pouring concrete

Next, for the process of pouring concrete, workers will be pouring concrete into DPM and BRC in thick until 100mm up to 50mm. then, workers will use a vibrator machine to ensure there are no air bubbles in the mold until it is ready to be poured. The concrete used on the ground slab is grade 30.

Step 8: Removal of concrete formwork

Finally, to ensure that the ground slab has hardened within a period of 7-28 days equivalent to the day the test cube test is performed.

3.7.3 First Floor beam and slab (suspended slab)



Figure 3. 31: The condition before slab and beam work is carried out

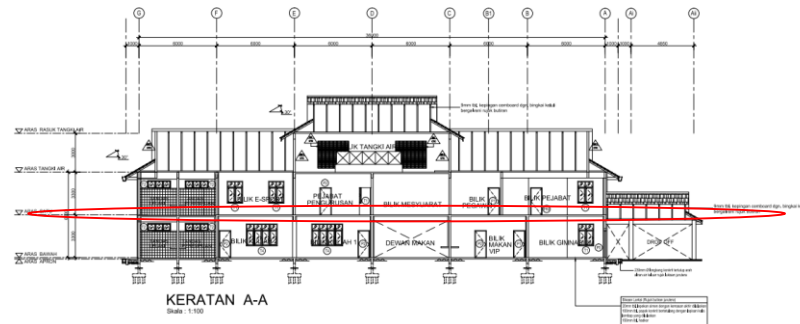


Figure 3. 32: The location of first floor slab and beam

Step 1: Setting out

First, workers will be setting out first before making the formwork. By benchmarking, the position of the beams and slabs before the formwork work is started. This is intended to ensure that the slab and beam conditions are parallel when constructed.



Figure 3. 33: The workers doing the setting out

Step 2: Formwork installation

After the setting out work, the workers will start the work of making formwork using plywood and wood. Workers will build the beam first and followed by the slab. Among the sizes used to make the beams are 300mm x500mm, 300mm x 550mm and 300mm x 600mm. while slabs use the sizes is 300mm x 150mm.



Figure 3. 34: The situation apply the formwork for beam

Step 3: Scaffolding installation

During the formwork work, workers also do the installation work of scaffolding, sleeper, or soffit beneath the beam and the wooden sleep will be placed as well as nails to the wooden T struts to each other. This construction is intended to withstand the load from above and make it easier for workers to do work at a high level.



Figure 3. 35 : The scaffolding installation in office block



Figure 3. 36: The view in the construction site during the beam and slab process

Step 4: Bending and binding reinforcement bar and BRC steel

Next, the workers will bend and bind the reinforcement bars for the beams below and then will be brought in ready-assembled using a mobile crane. Next, workers will place reinforcement bars into the formwork. while for the slab part, workers will place BRC steel and bind the BRC steel. then, followed by electrical pipe installation work that is uPVC pipe conduit (Upvc).



Figure 3. 37: The view in the construction site when the reinforcement bar for beam finish



Figure 3. 38 : The situation for workers during make the formwork for slab



Figure 3. 39: The view when doing the beam works



Figure 3. 40: The view when doing the beam and slab works



Figure 3. 41: The view when doing the beam and slab works

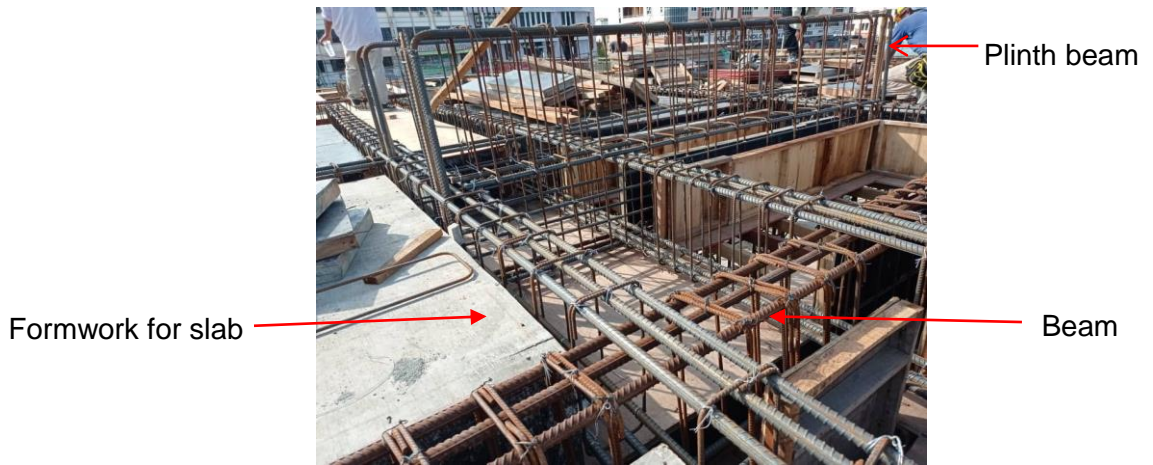


Figure 3. 42 : The situation when the worker tie the wires to tie the BRC steel in the slab area



Figure 3. 43: The situation when the electrical workers doing their work to apply the PVC pipe in the slab area

Step 5: Benchmark the level of concrete

Next, workers will perform horizontal control or benchmarking to determine the level of the concrete. Through this, workers can determine the thickness of concrete the slabs, and beams. In addition, the purpose of this benchmark is to ensure that the concrete is poured in parallel in all areas to avoid the occurrence of curved areas. Workers will read each corner using dumpy-level tools and staff. Once the reading has been read, the workers will mark using a marker pen and then, nail it using nails.

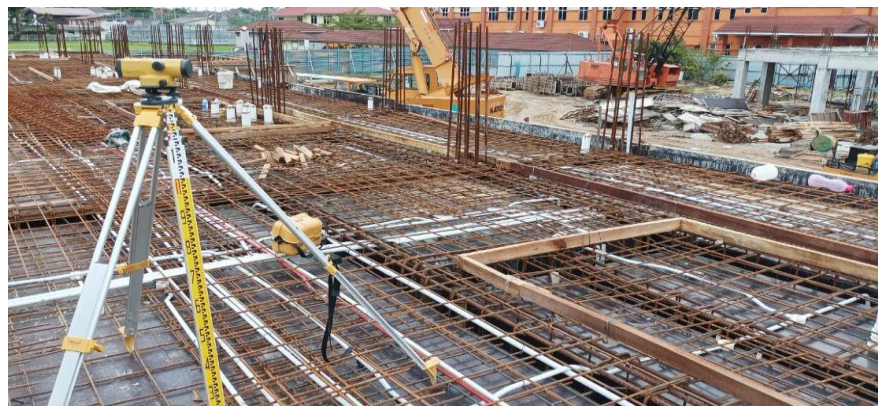




Figure 3. 44: The situation for setting out and marking for the level of concrete

Step 6: Inspection by the project manager and JKR

Before the concrete pouring work, the site supervisor and the JKR will first check the condition of the reinforcement bar installation in terms of size, the number of links, and the position of reinforcement. Each inspection will be filled in the construction works inspection (PKP) form.



Figure 3. 45: The view before an inspection by the project manager and JKR

Step 7: Pouring concrete

After completing the inspection of the construction work and continue with pouring the concrete. The concrete used will be tested through a concrete cube test conducted in advance at the concrete plant and construction site upon arrival. When the concrete arrives, workers will pour the concrete into a concrete bucket and then lifted using a mobile crane and then poured into the formwork and level. To avoid air spaces in the concrete, workers will use a poker vibrator to remove the air.



Figure 3. 46 : The view of beam and slab after concrete works



Figure 3. 47: A view when the worker pours the concrete into a concrete bucket

Step 8: Removal of concrete formwork

After finishing the pouring concrete, the concrete needs to wait to dry within 7 to 28 days before the formwork is opened



Figure 3. 48: The workers open the formwork of beam



Figure 3. 49: A view one day after concrete slab

CHAPTER 4

PROBLEMS AND RECOMMENDATION

4.1 INTRODUCTION

Problems are not uncommon for a construction project. Usually, it is related to the quality of work, materials, machines, and others. Every issue and problem needs to be controlled to prevent any problems from occurring that could affect the progress or cost of the project.

Through the internship period of approximately 15 weeks at RAFA Sepakat Sdn.Bhd, there are several issues that have been identified that often occur in the project to rebuild and upgrade existing facilities at the youth and sports complex in Terengganu. Most of the issues identified have little impact on the construction process but with the commitment of every site supervisor and other staff involved, all issues can be resolved and addressed.

4.2 ISSUE & PROBLEMS AT CASE STUDY

4.2.1 Weather Changing Problems

The monsoon season in November to January is not uncommon in Terengganu. This has become an issue for contractors in the construction industry. This causes the workers to be unable to carry out their work. If it continues for a long period of time it will cause the construction work to take a long time to complete and even cause losses. For example, workers do slab and beam formwork work for the 1st floor in rainy and strong wind conditions that risk falling due to slippery and wind repulsive. When such an accident occurs, it is very important for employees to have self-insurance. So that, all damages, losses, and accidents can claim insurance.

4.2.2 Lack of Workmanship

The main problem faced by the management in rebuilding the existing facilities at the Terengganu youth and sports complex is the lack of manpower. This is because there are some employees whose contracts have been terminated. Furthermore, management needs time to find employees to replace old employees. Due to this, the construction process did not run so smoothly and was a little later than the critical path method or CPM.

In addition, poor workmanship is also an issue by the management. At construction sites, there are a handful of workers who do not provide good quality work. This causes an issue that is complained about by the PWD and the client to the contractor. Furthermore, there are some defects such as honeycomb that need quick repair and solution. This issue also occurs at all those sites

4.2.3 Rising Material Prices

The rising material is also an issue for contractors. rising prices of building materials such as wood, steel, and others due to lack of supply caused by disasters such as floods make building materials limited and a little expensive.

4.2.4 The employees who do not care about the safety

Safety and health at construction sites are very important in keeping workers safe. However, there are a few workers who refuse to use PPE when working such as not wearing a safety helmet, not wearing a safety belt harness rope when doing work in high areas, and not wearing eye protection. This causes workers to be exposed to dangers such as the eyes being hit by nails when hitting, falling from a high place, and the risk of building materials falling on the head.

CHAPTER 5

RECOMMENDATION AND CONCLUSION

5.1 RECOMMENDATION

Based on the issues that have been identified and observed on site throughout the internship period, there are a number of appropriate suggestions to apply to help alleviate the problem.

5.1.1 Improve Workers Quality

Among the problems that can be identified during the internship is the management should be stricter with employees to ensure the quality of work is in good condition. For example, the project manager provides reprimands and monitoring in construction work at construction sites daily. As such, it also makes it easier for employees to deal with or have discussions with the project manager when wanting certainty in reading plans involving construction work.

5.1.2 Provide Proper Planning During Raining Season

Next, the problem that can be seen at the construction site is the rainy season that occurs at the end of the year. It should be noted that on the east coast, it often rains at the end of the year, from December to January. Therefore, there is a suggestion that the project manager should provide a backup plan that aims to avoid losses and delays due to the rainy season. Therefore, the project manager must provide careful planning such as CPM which must be prepared in advance before the rainy season as the project manager ensures that workers do work faster on the frame building to avoid delays due to rain. when it rains like doing work on the internal part that is binding bricks, lintol installation, frame door or window installation, and others.

5.1.4 Find and Increase the Number of Workers at The Construction Site

Among the problems that can be seen is the insufficient number of employees. As there are several reasons for the shortage of workers on construction sites, management should find incentives to increase the number of workers to ensure the progress of work on the site in line with the CPM.

In addition, the number of employees became small due to several issues. among them, workers are less interested in construction work and cannot tolerate construction work that needs sunlight exposure, doing work in high areas, and so on. Furthermore, the pandemic-19 situation added that workers were not interested in venturing into this field. Therefore, the management should add employees who are interested in the field of construction and have experience.

5.1.5 Safety and health are tightened

The problem that can be seen throughout the internship period is that safety and health are tightened. This is because there are a handful of workers who do not comply with safety on construction sites such as wearing PPE. Therefore, safety site supervisors should give a stern warning to employees who do not wear PPE such as safety helmets, safety belts,s and google.

In addition, the safety site supervisor also added safety signs such as warning signs about accidents, use of PPE, and others in each building. This is intended to warn workers to always protect themselves when in dangerous areas.

Next, the safety site supervisor also warned about the fines imposed and the risks that will be faced when not practicing safety during the talk box.

5.2 CONCLUSION

Throughout the observation period, among those that can be concluded is that it is recommended that management should be more assertive to employees to ensure the quality of work and safety in good condition.

In addition, the site supervisor should prepare a plan to avoid problems that will occur when the rainy season approaches

In addition, the management should increase the number of employees to ensure the progress of construction in line with the CPM and find employees who have experience in industry work.

Next, the safety site supervisor must take firm action to ensure that employees practice safety and listen to the instructions given by the safety site supervisor.

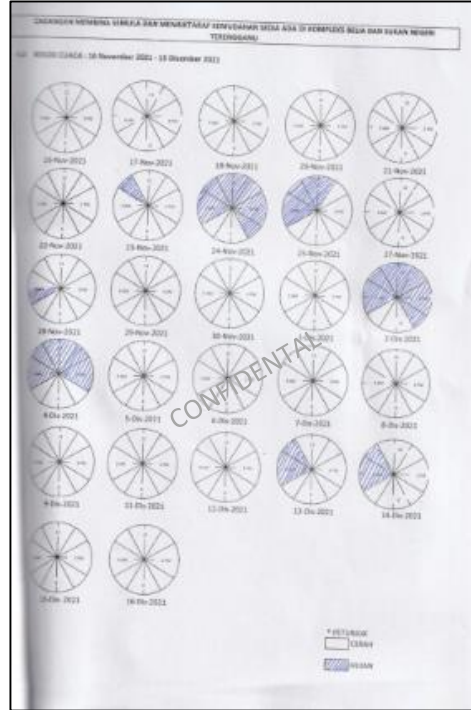
This is very important to ensure the quality of site work and problems that occur can be controlled and resolved as best as possible so as not to continue to recur.

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APPENDICES

1. Example of weather record




2. Examples of records of ongoing activities


KOD	FUNGSI	KAWASAN TERSEKUTUP (KAWAS)		KAWASAN TERSEKUTUP (KAWAS)		KAWASAN TERSEKUTUP (KAWAS)		KAWASAN TERSEKUTUP (KAWAS)	
		% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN
1	PROJEK PERANCANGAN & KONSTRUKSI	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
2	PROJEK PERANCANGAN & KONSTRUKSI	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
3	BANGUNAN PERENCANAAN	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
4	BANGUNAN PERENCANAAN	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
5	Perencanaan Struktur	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
6	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
7	Perencanaan Struktur	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
8	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
9	Perencanaan Struktur	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
10	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
11	Perencanaan Struktur	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
12	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
13	Perencanaan Struktur	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
14	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
15	Perencanaan Struktur	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
16	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
17	Perencanaan Struktur	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
18	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
19	Perencanaan Struktur	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
20	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%

KOD	FUNGSI	KAWASAN TERSEKUTUP (KAWAS)		KAWASAN TERSEKUTUP (KAWAS)		KAWASAN TERSEKUTUP (KAWAS)		KAWASAN TERSEKUTUP (KAWAS)	
		% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN	% HIMPUNAN
1	PROJEK PERANCANGAN & KONSTRUKSI	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
2	PROJEK PERANCANGAN & KONSTRUKSI	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
3	BANGUNAN PERENCANAAN	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
4	BANGUNAN PERENCANAAN	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
5	Perencanaan Struktur	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
6	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
7	Perencanaan Struktur	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
8	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
9	Perencanaan Struktur	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
10	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
11	Perencanaan Struktur	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
12	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
13	Perencanaan Struktur	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
14	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
15	Perencanaan Struktur	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
16	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
17	Perencanaan Struktur	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%	71.7%
18	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%
19	Perencanaan Struktur	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%	30.7%
20	Perencanaan Struktur	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%	48.8%

3. The example of *Borang pemeriksaan tanah*

	PROSEDUR PEMBINAAN DAN PENYELIAAN TAPAK BINA	No. Dokumen : JKR/PK(C).04-SKC.JL.1		
		No. Keluaran : 04		
		No. Pindaan : 00		
		Tarikh : 11 Disember 2015		
		Muka Surat : 1 / 2		
BORANG PEMERIKSAAN KERJA TANAH				
Nama Projek :				
Lokasi : dari Rantalan (m) ke Rantalan (m)				
Rujukan Lukisan No Rujukan Spesifikasi :				
Borang pemeriksaan ini perlu dirujuk bersama spesifikasi dan lukisan projek.				
Butiran Pemeriksaan	Keperluan Teknikal (SSRW)	Pengukuran Penilaian* Tapak Oleh Kontraktor	Pengesahan JKR	Catatan/ No. NCP
1. Pemeriksaan bahan : Oedka ada di tapak dan bahan yang dibekal.				
1.1 Kesesuaian bahan	Sub-Section 2.2.1			
1.2 Kesesuaian bahan pengganti (replacement method)	Sub-Section 2.2.3.5			
1.3 Kesesuaian geotextile (jika ada)	Lukisan alih Spesifikasi Tanah/ahar			
2. Pemeriksaan kaedah pembinaan.				
2.1 Penjagaan umum tapak	Sub-Section 2.2.2			
2.2 Pengorekan kerja-kerja top soil	Sub-Section 2.1			
2.3 Pengorekan tanah (Roadway excavation)	Sub-Section 2.2.3.1, 2.2.3.2, & 2.2.3.3.			
2.4 Pengorekan Unsuitable Material (USM) atau tanah lembut (mana berkaltan)	Sub-Section 2.2.1 atau Lukisan berkaltan			
2.5 Kerja-kerja penggantian USM dengan tanah/pasir (mana berkaltan)	Sub-Section 2.2 atau Lukisan berkaltan			
* f jika mematuhi spesifikasi dan lukisan. x jika tidak mematuhi spesifikasi dan lukisan (rujuk borang NCP). TB jika tidak berkaltan. ** Bagi projek-projek yang diawasi oleh perunding. SSRW - Standard Specifications for Road Works (JKR SP31968 - JKR 20401 - 0017 - 85)				
Diperiksa oleh: **Disemak oleh: Disahkan oleh: Diluluskan oleh:				
Wakil Kontraktor Nama: Jawatan: Tarikh:		Wakil Perunding Nama: Jawatan: Tarikh:		PTB JKR Nama: Jawatan: Tarikh:
		PP/WFP JKR Nama: Jawatan: Tarikh:		
© HAKCIPTA,JKR MALAYSIA		DOKUMEN TERKAWAL		

4. The example for *Borang Penghantaran Konkrit*

	BORANG RFI/04 PENGHANTARAN KONKRIT	JKR/OC/08/04						
		No. Siri :						
		Ruj. JKR :						
		Ruj. Kontraktor :						
No. Kontrak :		Nama Kontraktor :						
Nama Projek :								
Elemen Struktur Konkrit :								
Kadar Campuran / Grad :		Kaedah pemadatan yang digunakan :						
Bekalan dan penggunaan (Gunakan borang ujian JKR/OC/05/04 bagi ujian kub konkrit)								
Waktu bekalan bermula								
Waktu bekalan tamat								
Bil.	No. tiket penghantaran (Untuk konkrit siap campur sahaja)	No. rekod kelompok	Ukuran larian (mm)	Diameter (in) Ditebak (in)	Waktu penuangan	Kub dituang & senda kub	Lokasi penempatan (Grad)	Catatan
Disahkan oleh :				Disahkan oleh :				
Kontraktor (Nama & Jawatan) :				PTB JKR (Nama & Jawatan) :				
Tarikh :				Tarikh :				

5. The example of *Borang Pemeriksaan Kerja-Kerja Pembinaan (PKP)*

JKR MALAYSIA | **PROSEDUR PEMBINAAN DAN PENYELIAAN TAPAK BINA** | No. Dokumen: JKR (PKP) 04.8 | No. Koluman: 06 | No. Pindaan: 03 | Tarikh: 2 November 2021 | Mukasurat: 1/2

LAMPIRAN 8
BORANG PEMERIKSAAN KERJA PEMBINAAN (PKP)

Nama Projek: CADANGAN PEMBINAAN STRUKTUR DAN NEKARTARAT PEMBINAAN
 BEDIA ADA DI KOMPLEKS BELIA DAN SUKSES NEGOSI, TEBEHAN, KUALA LUMPUR.

Bidang: Kerja Awalan Sivil Struktur Pembina Mekanical Elektrik
 Uj Saksi (Witness testing) Lain-Lain

Keterangan Kerja Uji Saksi: Kerja-kerja pembinaan bagi 1st floor Slab 2
1st floor beam di blok A2000A

Kerja sedia untuk diperiksa pada: (tarikh) _____ (masa) _____

No. Rujukan: Baru Ulangan No. Rujukan Lama: _____ (jika ulangan)

Pemeriksaan Kerja Semasa Pembinaan
 (Rujuk Nota Semakan Pembinaan dan Penyeliaan Tapak Bina)

PERAKUAN KONTRAKTOR:	
Bil.	No. Luksan
(a) Tajuk Pemeriksaan & No. Rujukan Dokumen: (Rujuk Nota Semakan Pembinaan dan Penyeliaan Tapak Bina)	(Lampiran lukisan berkaitan jika perlu)
1. Kerja-kerja pembinaan bagi 1st floor Slab 2 1st floor beam di blok A2000A	
(b) Saya dengan ini telah melaksanakan dan memeriksa kerja membuat persiapan untuk uji saksi sebagaimana Nota Semakan Pembinaan dan Penyeliaan Tapak Bina dan mematuhi kehendak spesifikasi dan lukisan seperti yang dinyatakan di dalam kontrak.	Diterima Oleh:
Tandatangan Kontraktor:	(Cap "JKR/Penuding")
(Cap) Tandatangan: Nama: Tarikh:	Tandatangan: Nama: Tarikh:

* Nota:
1. * Potong yang tidak berkenaan
2. * Tangapan ini tidak perlu diisi untuk uji saksi

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BUKUMEN TERMAWAL

6. The view in an office block (9 November 2021)





7. The view in an office block (13 December 2021)



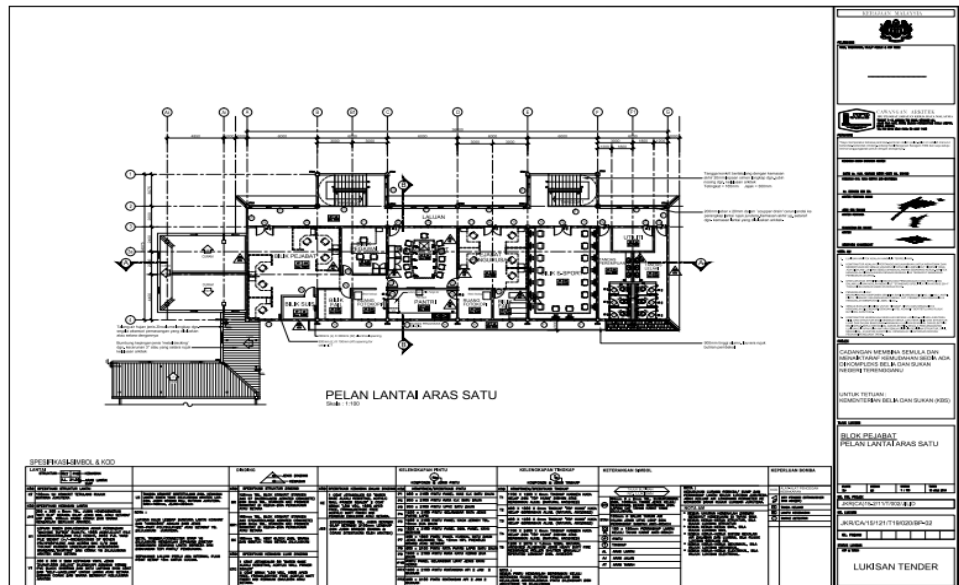
8. The view in an office block (16 January 2021)



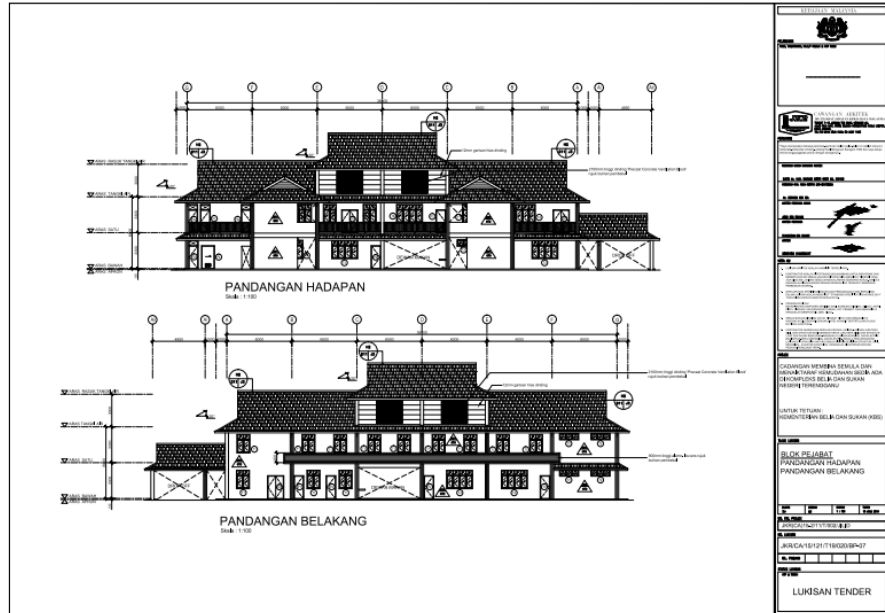
9. The view in an office block (31 January 2021)



10. Floor plan in the office block
 a. Ground floor



d. Front and rear views



e. Left and right views

