



PROGRAMME IN BUILDING SURVEYING
DEPARTMENT OF BUILT ENVIRONMENT STUDIES AND TECHNOLOGY
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
PERAK BRANCH
SERI ISKANDAR CAMPUS

**FLOOR FINISHES AND INSTALLATION SYNTHETIC
SPORT FLOORING AS FINISHES AT KOMPLEKS SUKAN
HULU TERENGGANU**

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PRACTICAL TRAINING REPORT

OCTOBER 2021

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This practical training report is fulfilment of the practical training course.

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ACKNOWLEDGEMENT

Assalamualaikum w.b.t and Alhamdulillah, highly thank to Allah S.W.T for his blessing and guidance that help to finish my report and for leading throughout the entire journey because finally my industrial training report on this topic can be successfully done within the time given by my lecturer.

Besides that, in performing this report, I had to take the help and guideline of some respected persons. The completion of this report gives me much pleasure. I would like to show my gratitude to Mr. Muhammad Nor Hisyam Bin Mohamad Nasir as my supervisor for giving a detail information to be fill in this report. I would also like to expand my deepest gratitude to all of staff at construction site of Kompleks Sukan Hulu Terengganu who have directly and indirectly guided me in writing this report. I am also indebted to Time Future Construction (M) Sdn. Bhd. for giving a chance to carried my industrial training.

Then, who deserve the greatest gratitude goes to Dr. Nor Diana Binti Aziz as my lecturer supervisor for assist me with a good guideline for this report throughout numerous consultations.

Many people, and the special gratitude goes to my beloved parents Zanita Binti Hashim and Ramlan Bin Abdul Rashid for their kind co-operation and encouragement make me feel more motivated. They also help me individually which is like providing necessary financial to complete this report. Without them, this report would never be complete.

Lastly, my greatest thanks to my classmates Nur Farah Aina Binti Hairul Anuar, Nurul Zulaikha Binti Alias and Nurazwani Binti Ahmad from AAP229D7B, and Wan Muhammad Aizat Bin Wan Azali for their valuable comment suggestions and all the work hard which gave me the inspiration to improve my report.



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LIST OF ABBREVIATIONS

PWD	- Person with Disabilities
TNB	- Tenaga Nasional Berhad
CIDB	- Construction Industry Development Berhad
PWD	- Public Work Department
LCC	- Life Cycle Cost
VRF	- Variable Refrigerant Flow
SW	- Sandwich
IAAF	- International Association of Athletics Federations
EPDM	- Ethylene Propylene Diene Monomer
PPE	- Personal Protective Equipment
CPM	- Critical Path Method



CHAPTER ONE: COMPANY OVERVIEW

1.1 Introduction

Practical Training coded as BSR666 is a programme of industrial training for final semester that need to be carried out by student of Building Surveying (AP229). Each of final year student will perform the industrial training for 4 months in order to fulfil the requirement of final semester before award as graduated student Bachelors of Building Surveying. The outcomes from this industrial training will ensure the student identify practical operation of an organization relevant to the profession of Building Surveying. Besides, it helps student become conform own judgement in the solution of problems in order to enhance entrepreneurship and management awareness in working environment. Student will be able to combine a practical and inquiring mind in the assessment of a building by possessing a good understanding.

Moreover, this preparation of report industrial training helps to enhance the written communication skills, systematic in handling projects and be able to be logically evaluate issues concerning with field of study. Therefore, student required to seek an internship placement as the stated period then select the company as the case study and collect the data regarding the suitable ongoing project. As the above-mentioned requirement, the selected company for this industrial training is Time Future Construction (M) Sdn Bhd as the main contractor of grade G7 project of Kompleks Sukan Hulu Terengganu which is as the case study of this report. It is suitable with the chosen training area in scope of development and construction management.

As the basic overview of this report, it is focus on the construction of sports complex property such as indoor stadium, football field pavilion, hockey field pavilion and other construction in this project. Therefore, this industrial training report will discuss regarding the installation synthetic sport surface as finishes that has been installed for this project in detail. The floor finishes will be explained on the common types of floor finishes and focus more on the types of synthetic sport surface as the finishes that has been used. This is because the surface finishes that has been installed for the construction of sports complex is more unique compared to common types of building. All the information is based on on-site works and theories as stated in literature review.



1.2 Company Background

Table 1.1: The Company Background

No.	Information of Company	Description
1.	Name of Company	Time Future Construction (M) Sdn Bhd
2.	Name of Director	Dato' Haji Abdul Rahman Bin Haji Mat Yasin
3.	Full Address of Company	Lot PT 32597, Tingkat 1, Jalan Kelantan, Rumah Kedai, Kampung Tepoh, 21060 Kuala Terengganu.
4.	Location	Kuala Terengganu
5.	Type of Building	3 Storey Shop Lot Building
6.	Number of Staff	16 Staff
7.	Nature of Business	Construction
8.	Business Activities	Contractor, Mechanical, Ventilation & Air Conditioning Engineer
9.	Date of Registration	11 Jun 2001
10.	Contact Number	+60 9 662 4089
11.	Email	
12.	Company Logo	Earth shaped: 

Figure 1.1: The Company Logo



1.2.1 Construction Site Background

The construction has been carried out on Lot 51646, Kawasan Paya Besar, Mukim Kuala Berang, Daerah Hulu Terengganu, Terengganu.

Table 1.2: The Construction Site Background

No.	Information of Construction Site	Description
1.	Full Address of Construction Site	Lot 51646, Kawasan Paya Besar, Mukim Kuala Berang, Daerah Hulu Terengganu
2.	Grade of Construction	G7
3.	Project	Kompleks Sukan Hulu Terengganu
4.	List of Development	<ul style="list-style-type: none"> a) 1 Unit Indoor Stadium b) 1 Unit Football Field Pavilion c) 1 Unit Hockey Field Pavilion d) 1 Unit Guard House e) 1 Unit TNB Sub Station f) 2 Unit Dump House g) 1 Unit Pump House
5.	Value of Project	RM 43,546,296.80
6.	Date of Commencement	21 th September 2015
7.	Expected Date of Completion	02 nd February 2022
8.	Number of Staff	9 Staff
9.	Owner	Hulu Terengganu District Council (MDHT)
10.	Total of Land Area	84,320.30 m ²
11.	Built-up Area	6,418.12 m ²
12.	Email	timefuture_komplekssukan@yahoo.com



1.3 Vision and Mission

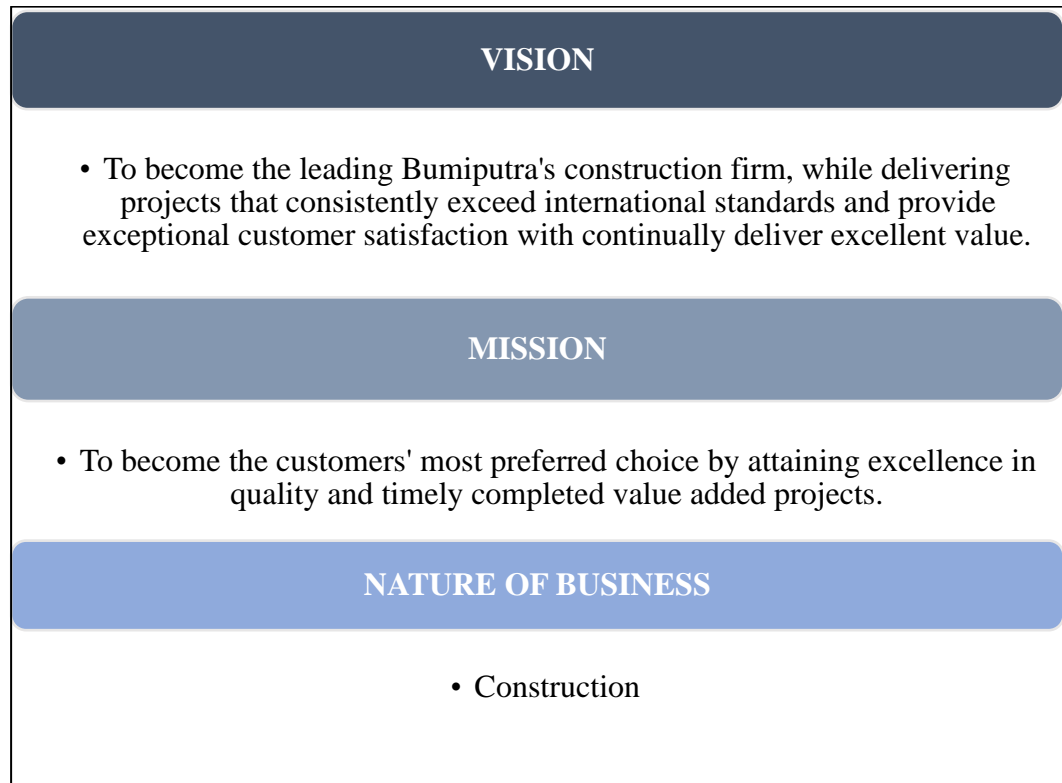


Figure 1.2: The Vision and Mission of Time Future Construction (M) Sdn. Bhd.



1.4 Organization Chart

1.4.1 Headquarter Chart

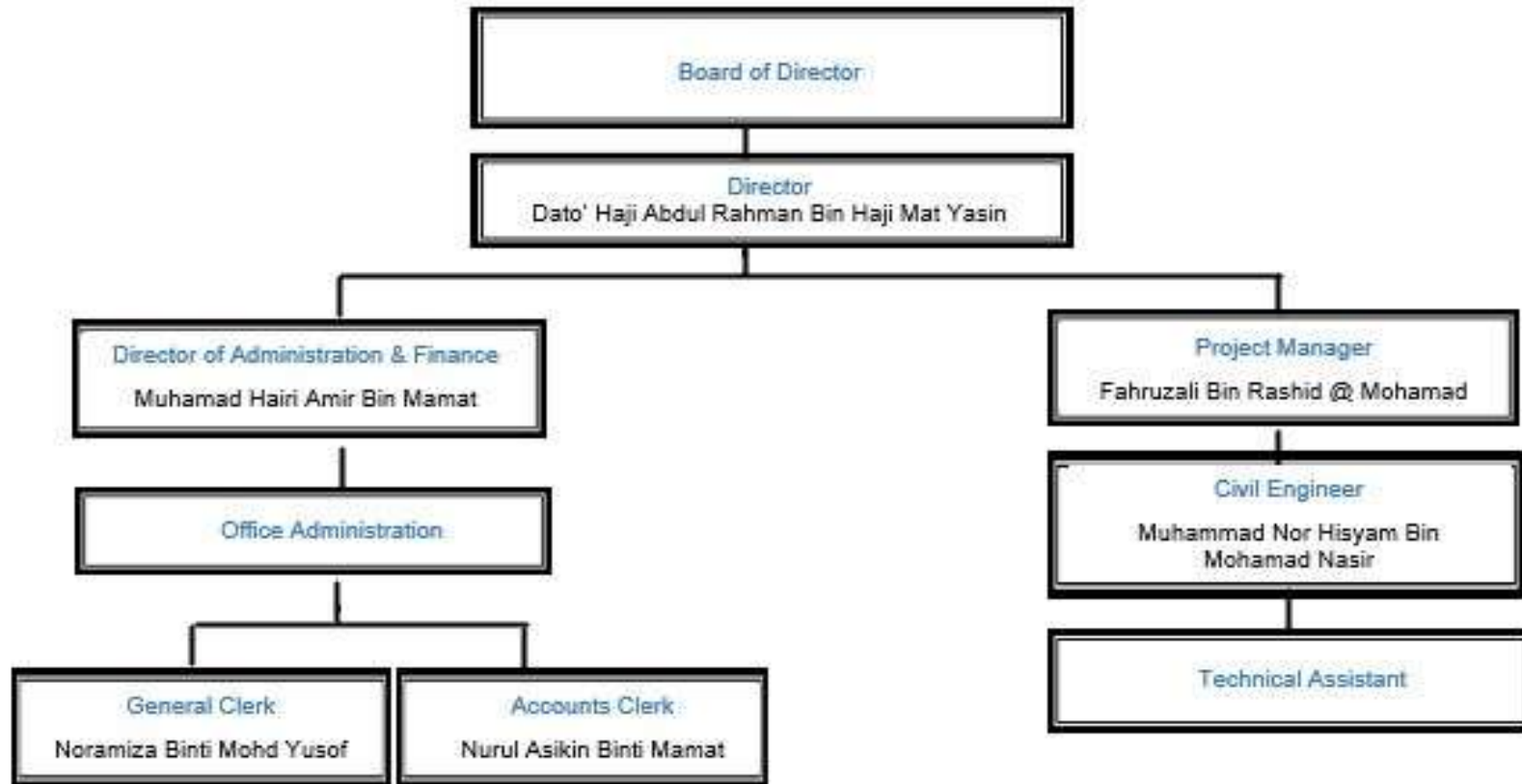


Chart 1.1: Organization Chart of Time Future Construction (M) Sdn. Bhd.



1.4.2 Construction Site Chart

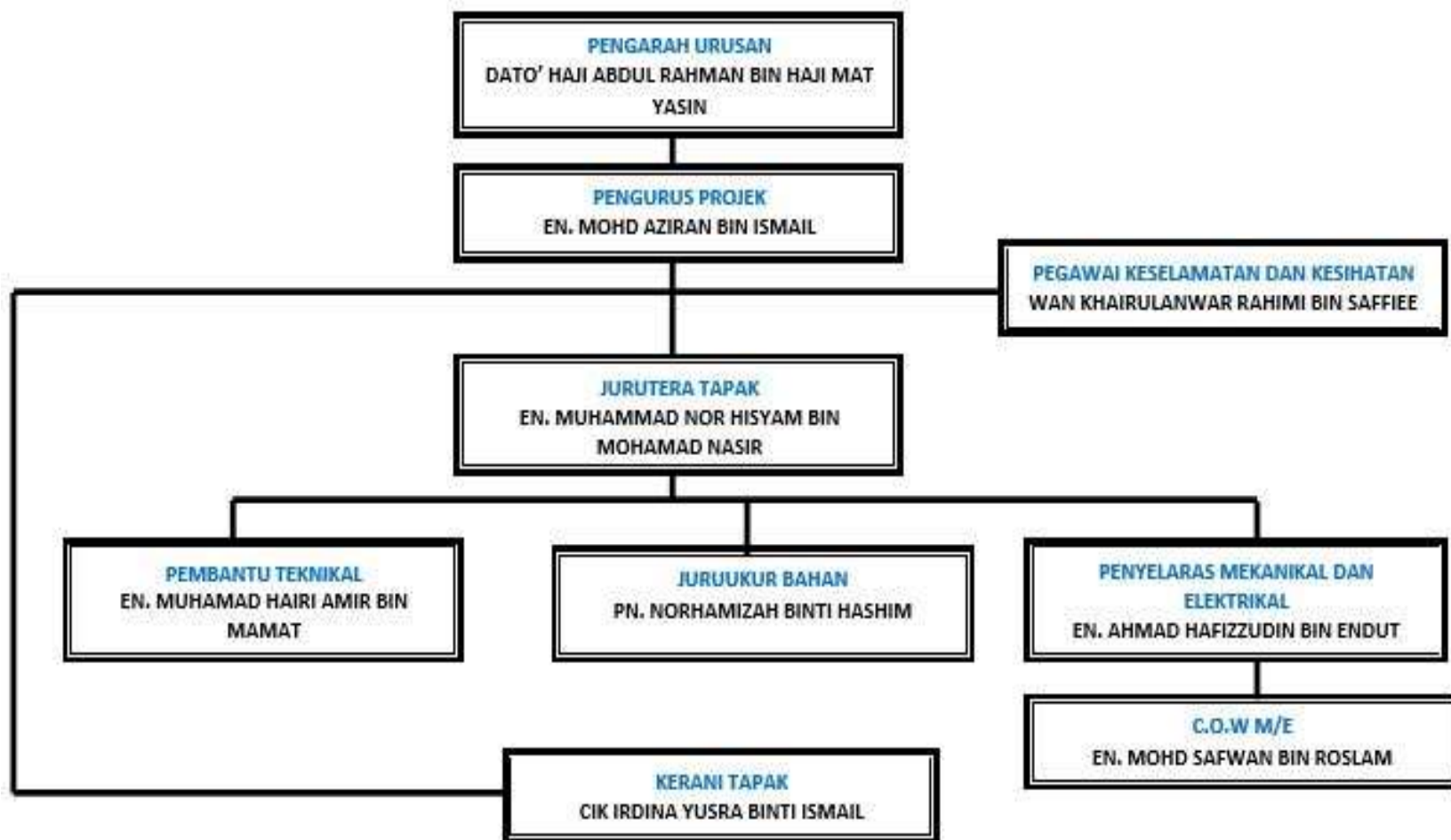


Chart 1.2: Organization Chart of Kompleks Sukan Hulu Terengganu



Roles and Responsibilities

Table 1.3: Roles and Responsibilities of Team

POSITION	ROLES AND RESPONSIBILITIES
Director	Responsible for all company affairs and acts as the final decision maker.
Project Manager	Lead, plan and manage construction activities and other related matters at the construction site.
Site Engineer	Check the quality of work on the construction site and ensure each item in the quotation and plan is the same.
Site Supervisor	Supervise the technical work, plant and equipment of workers at the construction site.
Quantity Surveyor	Plan, organize and manage claims for work on construction sites as well as financial flows to sub-contractors and others.
Mechanical and Electrical Coordinator (M&E)	Coordinate mechanical and electrical coordination work and ensure the work runs smoothly.
Safety and Health Officer	Provide and maintain the highest level of safety and health for every facility, plant, equipment, welfare and first aid.
Site Clerk	Ensure administrative management at the construction site runs smoothly.



1.5 Location Plan

Construction site of Kompleks Sukan Hulu Terengganu is located at Hulu Terengganu, Terengganu. It is situated Lot 51646, Kawasan Paya Besar, Mukim Kuala Berang, Daerah Hulu Terengganu, Terengganu Darul Iman.

1.5.1 Key Plan

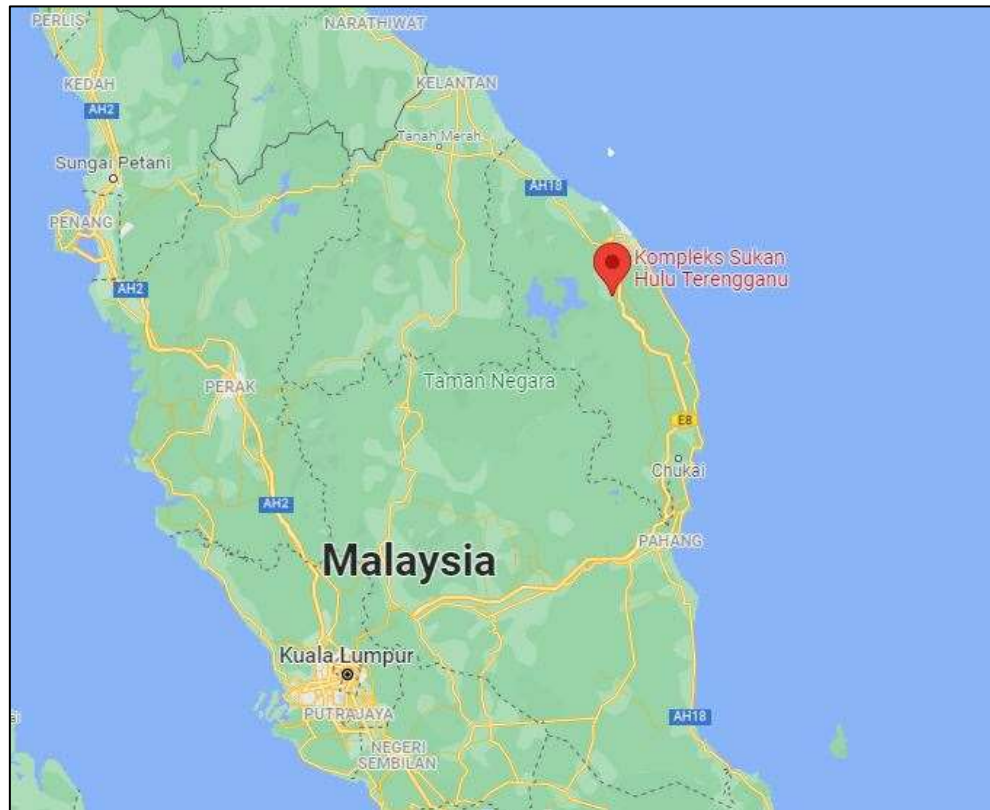


Figure 1.3: The Key Plan of Construction Site

Kompleks Sukan Hulu Terengganu is located at Terengganu state which in the east of Peninsular Malaysia. This construction site is approximately 36 Kilometres from Kuala Terengganu City Centre.



1.5.2 Location Plan

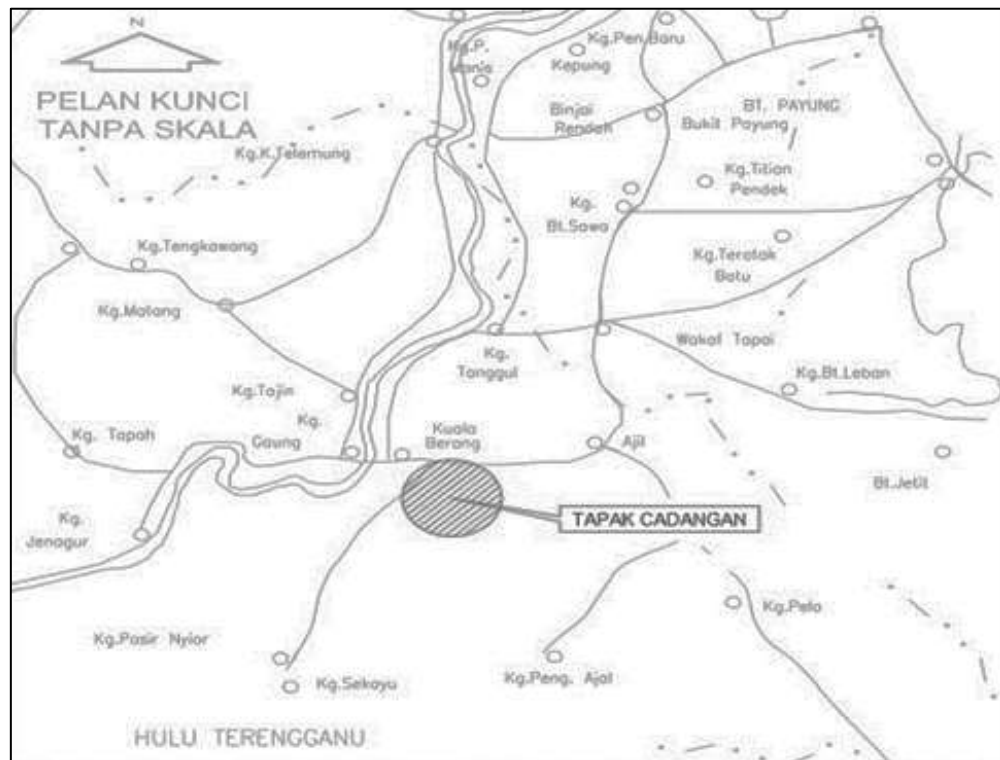


Figure 1.4: The Location Plan of Construction Site

This is the location plan of Kompleks Sukan Hulu Terengganu which is situated in the district of Hulu Terengganu. This project is being carried out in the city of Kuala Berang. This construction site is located on the route of Paya Besar, which shows it is near the Kuala Berang Fire and Rescue Station with approximately only 500 metres away. Besides, it is only 2 kilometres from the centre of Kuala Berang city.



1.5.3 Site Plan

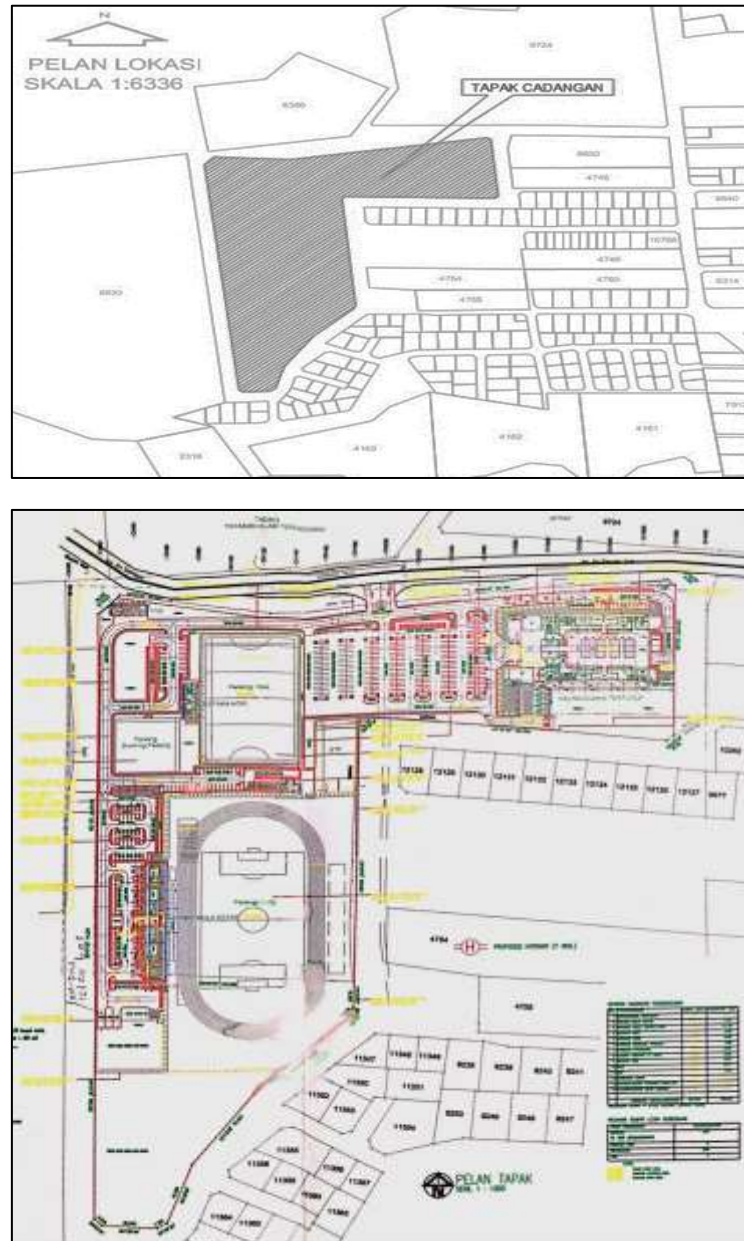


Figure 1.5: The Site Plan of Construction Site

This is the site plan of the Kompleks Sukan Hulu Terengganu. This construction site is consisting of a few developments such as 1 unit of Indoor Stadium, 1 unit Football Field Pavilion, 1 unit Hockey Field Pavilion, 1 unit Guard House, 1 unit TNB Sub Station, 2 unit Dump House, 1 unit Pump House and other facilities and amenities.



1.6 Scope of Work Given

Time Future Construction (M) Sdn Bhd expertise in construction and provide services in construction of commercial building which it has been registered with Construction Industry Development Board (CIDB) as a grade G7. Besides, in this construction project of Kompleks Sukan Hulu Terengganu, this company has been appointed as main contractor.

As the internship period from 11th October 2021 until 30th January 2022 at construction of Kompleks Sukan Hulu Terengganu under supervision of Time Future Construction (M) Sdn. Bhd., there are multiple scope of work given which relate with Programme of Building Surveying. Moreover, most of the scope is covered the civil works. All the scope of work given by the company are listed as below.

Table 1.4: The Scope of Work Given at Construction Site

No.	Scope of Work
1.	Prepare the taking off for types of ceiling finishes and floor finishes. Besides, carried the taking off of reinforcement bar for On-Site Detention tank.
2.	Monitor and supervise the construction work at Indoor Stadium, fences, installation of finishes, pavement work and drainage work. Record and update the site daily for reference of Public Work Department (PWD).
3.	Prepare report monthly based on the site daily which detailed on tge progress and issues arise to be presented in site meeting and technical meeting.
4.	Carried out the inspection and measurement after the floor finishes has been done in order to claim any excess and payment for workers.
5.	Attend meeting with management team and Public Work Department (PWD) which led by District Engineer and Site Engineer. The meeting is carried out twice a month with the purpose to discuss the issue and progress.



1.7 Summary

This chapter could summarize all the subtopic which focus on the company overview of Time Future Construction (M) Sdn. Bhd which has been selected as the company for carry out my industrial training. This chapter shows the company overview based on the company and construction project background, organisational chart involves, the vision and mission of company, the location of construction project and the scope and responsibilities that has been carried out by this company as the main contractor in completion project of Kompleks Sukan Hulu Terengganu. This chapter helps in recognition related with the respected company which has been undergo the internship placement through the collection of company information.



CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction of Floor Systems

Flooring system is one of the super structures of a building where the top layer of floor, which is designed to offer a wear surface. The floor of every area makes up a large amount of the surface area defines the space which its acoustic properties are important in determining the ambience of a room. As the theory, flooring systems is a structure that built in a building. It is a surface that divide a structure The structures that separate a building into distinct levels or storeys are referred as floors in a building. Ground floor refers to the floor that is built above ground level, whilst basement floor refers to the layer that is built beneath ground level. Upper or suspended floor refers to any floor over ground level that is not the balcony or roof of the building.

In a development of building, a floor is a levelled surface that can support and bear things, loads, and occupants. Multiple flooring types exist depending on a variety of characteristics. However, it is usually built up after construct of concrete slab and also made a slab for the upper level. As mentioned by Frederick, (2007), the common floor framing system in a building is made up of beams and girders has completely built with a concrete floor slab.

Each of structural system need to fulfill the functional requirement in order the expected system achieve the specifications. In terms of floor system there are basic of functional requirements such as the floor system is as a horizontal surface in a building which also functioned to bear and imposed all the loads either dead or live loads. It is stated by Hens, (2012), this system also expected to provide acoustic environment which ensure the privacy required by dwellers including fire and heat resistance. In a multi-storeys building, there are serves additional purposes such as the upper level serves as a ceiling for the lower level. The services fixtures in the building, which including electrical and telephone wiring will be stored in the area between the floors and ceilings.



The floor system is consist of two classifictaions which are ground floor and upper floor. The ground floor is involves of solid floor and suspended floor which these two sections is differents due to the structure that has been built under this floor structure. Solid ground is usually directly layered with hardcore, blinding and concrete slab while suspended floor is made of timber joist or concrete beam system. Besides, for the upper floor it is usually consist of construction suspended upper floor.

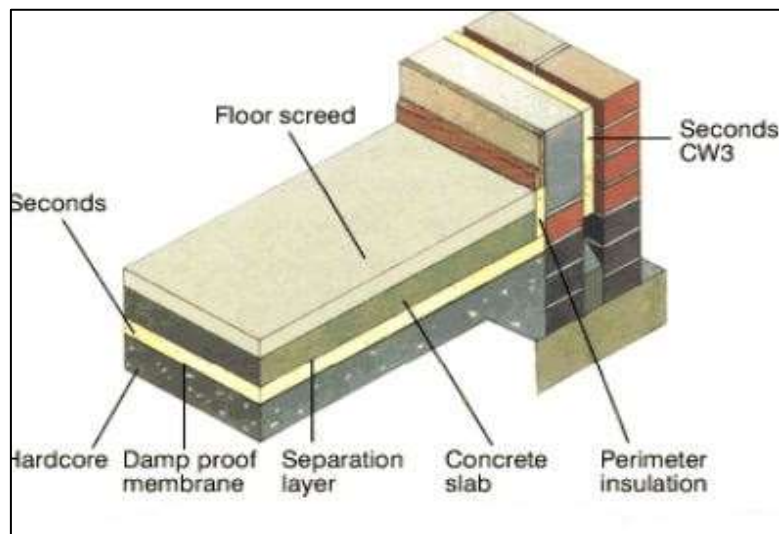


Figure 2.1: Concrete Flooring System

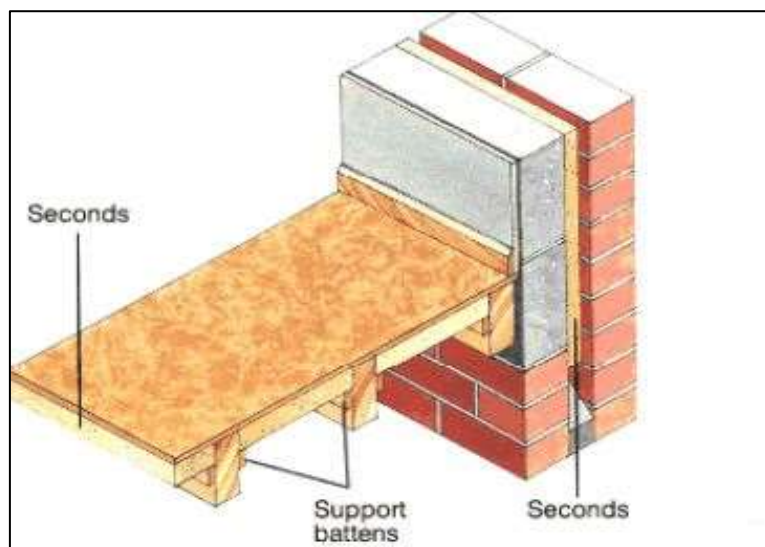


Figure 2.2: Timber Flooring System



2.1.1 Subfloor

The subfloor is the structure beneath the flooring. This serves as a foundation for the flooring system. Suspended floors, raised floors, and sprung floors are examples of specialty subfloors that can be installed on top of another underlying subfloor that provides structural integrity. Subfloors that have been properly prepared and installed provide a sturdy foundation for new flooring, assuring its functionality and longevity for many years. Affect from a properly prepared subfloor is so essential to the overall performance of new floors, it is really necessary to understand all of the factors that go into construct a good subfloor. It is stated by (Gerflor), The finished floor's quality can be as good as the sub-floor on which it is installed. Sub-floors that are near the ground shall be properly prevented from rising moisture and moisture vapour from the ground to the floor's upper surface.

A subfloor should be stable and have any expansion, contraction, and crack-inducing joints that are required. Surface treatments and floor finishes can reflect cracking, unevenness, and flaws in the subfloor. Any flaws or faults in the subfloor must be noted since they may cause the new design floor covering to degrade prematurely. As said by Turner, (2018), subfloor system must be able to support the entire weight on top of it, and it must be compatible with the type of soil in the area, such as reactive soils, which swell when wet and shrink as they dry. The expansion and contraction can result in structural cracking, sinking, and other difficulties, as well as affecting the flooring finishes. To obtain the minimum defect, the subflooring system must meet certain requirements. High strength, high panel shear, flexibility, moisture resistance, chemical and fire resistance, impact resistance, and insulation are all requirements for the subfloor.

Over concrete slab subfloors, additional construction is occasionally constructed to provide a level base appropriate for the installation of underlayment and flooring. When bearing circumstances or groundwater are present, this form of building may be utilised. A sturdier surface is achieved by laying a strong subfloor over the joists, covering it with underlayment, and then stacking it with flooring. It also ensures that the joists support the majority of the floor's load. The subfloor that will be construct need to be suitable with the type of floor finishes that proposed to be installed. Commonly subfloor is



consisting of plywood and oriented strand board (OSB) as types of subflooring system. However, some of construction of floor does not required the subflooring system which it depends on the types of floor finishes that need to be erected.

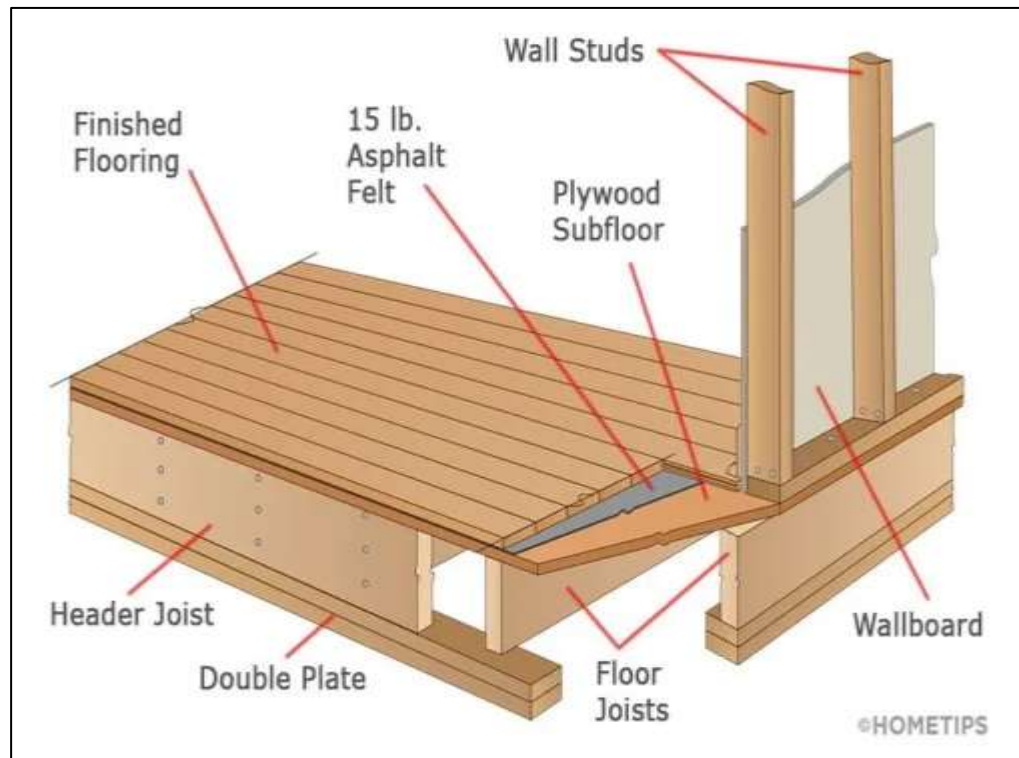


Figure 2.3: The Example of Subfloor System

The varieties of finish materials that can be installed on top of the subfloor are determined by its thickness and rigidity. The slab can be used as a base for nearly any form of flooring if the structure is built on a concrete slab. However, if the building has a plywood or board flooring, it's crucial to evaluate the type and thickness of the material you're planning to employ to see what restrictions you'll face. A slightly flexible or springy floor, for example, is not suited for stiff materials like ceramic tile and stone because the grout or materials may split with movement, said (Vandervort, 2021). The subfloor in large modern structures is frequently built of concrete, whereas in older and smaller buildings, it is made from soft wooden boards attached to wooden connectors.



2.2 General Construction Process of Floor System

Floor slabs must be built for the most cost-effective construction and flexibility of use, taking into account long-term deflections and the necessity for penetrations both at the start and throughout the life of the building.



Figure 2.4: The General Construction Process of Floor System

1. Preparation Formwork

The concrete slab's frame is made up of formwork. To verify that the formwork is set up correctly, examine the authorised building drawings for measurements. The chance of the concrete slab being affected is reduced if the formwork is installed appropriately. Formwork preparation must also adhere to specified construction standards and guidelines. There should be no unsealed nails and all joints must be covered and closed. Then, make sure the formwork's height is aligned with the top of the existing concrete slab, so screed the finished layer in accordance with the top of formwork.

2. Excavation Earth

Once the excavation is finished, the surveyor places points in the ground to mark off the floor space and provide measuring points for the workers. Engineer-specified footings and piers being dug, and the site is levelled using a laser level. The area of the slab to be poured is surrounded by formwork. This will help form the slab's shape and keep the concrete in place while it hardens.



3. Preparation Slab Bedding

It is essential to properly prepare the slab bedding. This will ensure that the concrete slab rests on a solid foundation and would not begin to break. Use a suitable layer of base material or crusher dust to prepare the slab bedding, as determined by building standards. Make sure the floor is level, flat, and well compacted. The concrete slab is protected from cracking by a well-drained base and compacted bed.

4. Installation Reinforcement

Reinforcement improves the tensile strength of the concrete and makes it more durable, preventing it from cracking, buckling, and collapsing in when a load is placed on it. Ascertain that the reinforcement bars, spacers, and ties are installed according to the approved construction designs. The reinforcement bar is installed prior to be function strengthen the floor smoothly in bearing and transmit the loads on the ground level.

5. Pour, Compact and Finish Concrete

The floor will be built to the appropriate grade, which will be determined by the finishes and purpose of the floor area. This ensures that the concrete meets the specified strength requirements. Soak the slab bed in water before pouring to prevent moisture loss. Add control joints where necessary after the concrete has been poured. The concrete will shrink as it dries. Make sure the concrete is compacted as well by vibration method. This helps in the binding and moulding of the concrete inside the formwork and around the reinforcement bars.

6. Cure Compact and Remove Formwork

The application of moisture to the concrete helps in its sealing. Using mild mist sprays with complete coverage and spraying twice daily is optimal. The formwork can be removed once the concrete has been poured for 24 hours. Remove the formwork with caution to avoid damaging the concrete slab.



2.3 Definition of Floor Finishes

The floor finishes help to cover a large area and are subjected to a great deal of wear and tear. The degree of cleanliness throughout the company is reflected in the clean and well-kept floors. In building construction, a floor is a levelled surface that can support things, occupants and other people. Various flooring types are available based on a variety of characteristics. There are many different types of flooring materials used in building construction, and the selection is based on the user's requirements, aesthetics, and implementations that produce positive outcomes for the purpose, whether financially or in terms of durability. Floor finishes also widely to be known as floor covering. It is because the flooring usually covers another, structural layer of flooring, floor covering is a more exact term than finish floor. Finish floor can sometimes be confused with a floor's finish, such as stains and surface coatings.



Commercial and institutional floor coverings make extensive use of a variety of materials. The floor covering is mainly consisting of hard finishes and semi-hard finishes. Floor covering refers more to loose-laid materials which the materials almost always classified as floor covering include carpet, area rugs, and resilient flooring such as vinyl flooring. Materials commonly called flooring include wood flooring, laminated wood, ceramic tile, stone, terrazzo and other various flooring such as carpet. Hard floors are frequently sealed to give them a non-absorbent, semi-permanent sheen that will fade with time. The sealant is applied on a clean, dry floor. Any residual seal must be ripped off before re-sealing. Except for wood and cork, which require sanding, this is done with chemical stripper.

The implementation and process of installation floor covering is based on the materials that has been chose. It is required different handling, installation and maintenance for different types of floor finishes. Various type of floor finishes usually has been used for construction in Malaysia. One of the typical types of floor finishes are carpets and rugs, vinyl, stone, glass, tiles and mosaic, and wooden.







2.3.1 Typical Types of Floor Finishes




Table 2.1: Typical Types of Floor Finishes

Classification	Types of Floor Finishes	Description
<p>Hard Finishes</p>	<p>Tiles</p> 	<p>Tiles become the common client's preference and become widely used due to the materials that suitable to be the finishes for most types of building. There are various types of tiles that widely being used matched with the concept of the building. According to the Gold, (2019), there are 12 the most prevalent varieties of floor and wall tiles which consist of ceramic tile, porcelain tile, marble tile, granite tile, mosaic tile, limestone tile, quarry tile, travertine tile, cement tile, homogeneous and non-homogeneous tile, and etc. The characteristic of tiles become advantage to be installed is based on the budget, easily to be install and maintain.</p>
<p>Hard Finishes</p>	<p>Wooden</p> 	<p>Wooden flooring has its own characteristic which become the factor of client selection. It is more durable, added the aesthetic value of building, easy to maintain and have a better air quality. There are six types of wooden floor widely used and usually become the desired of building owner. One of the wooden floor types are solid wood flooring, engineered wood flooring, parquet wood flooring, laminated flooring, wood effect vinyl flooring, and wood effect tiles (Brindsmead, 2021).</p>



<p>Hard Finishes</p>	<p>Terrazzo</p>  	<p>Terrazzo is a moulded or precast composite material used for floor and wall applications. It's made up of marble, quartz, granite, glass, or other suitable materials mixed with a cementitious binder and poured together. It is ground and polished smooth or otherwise treated after it has cured to give a consistently unique finish. Bagnara, (2009), said the interior area of building where terrazzo is mostly used. Grocery stores, train stations, airports, hospitals, receptionist rooms, bakeries, and public and private foyers and buildings are all places where it can be found. Terrazzo is a high-quality, long-lasting product that is hygienic, easy to clean, and can be utilised in a variety of heavy-duty interior applications.</p>
<p>Hard Finishes</p>	<p>Cement Screed</p>  	<p>Cement screed is made up of a combination of cement, aggregates, and water. It's then combined together to make a smooth paste, which is then applied to the cement surface. The ultimate product is a hard and firm surface that is sturdy and long-lasting once it has hardened. Cement screed is frequently used as a top coat for interior flooring or as a levelling agent. Simply put, screed is a type of cement that is used to coat the top of another hardened cement surface. It's a cost-effective alternative for high-traffic areas like schools, industries, offices, and even industrial warehouses.</p>



<p>Hard Finishes</p>	<p>Stone</p> 	<p>Stone is one of the most expensive materials for floor finishes due to the materials is from natural resource. The stone flooring that usually installed in a building such as marble, granite and slate. These type of floor finishes known based on the high durability. Besides, there are also stone flooring which is more economical such as sandstone where normally to be install in a pathway.</p>
<p>Semi-hard Finishes</p>	<p>Asbestos Vinyl Tiles</p> 	<p>Vinyl floors are popular in public spaces because of their low cost and ease of maintenance. According to the Lorena Zichella, (2021), because of this type of floor gives benefit such as mechanical properties, low cost, quick installation, and ease of cleaning, vinyl asbestos was frequently used for flooring in public buildings, schools, hospitals, and homes.</p>
<p>Soft Flooring Finishes</p>	<p>Carpets and rugs</p> 	<p>Carpet refers to a big floor covering that may be cut to fit any space. A loose-laid fabric which size and design are specified by the manufacturer is referred to as a rug. There are four types of carpet and rugs flooring that commonly installed in a building. It is consisting of yarns and fibers, flat weave rugs, mechanically produced carpets, and pile rugs and carpet.</p>



2.4 Selection of Flooring Materials

Ali, (2019) said, there are many different types of flooring materials used in building construction, and their selection is depending on the user's preferences, aesthetics, and applications that deliver the best results for the purpose, whether economically or in terms of durability. It is also stated by the Onochie,(2017), image of a surface is defined by its finish. As a result, it is clear that floors are finished with materials. These materials assure taste, comfort, and aesthetics by combining a variety of materials at an economical price while assuring durability, aesthetics, and other factors. This is showing the floor finishes as its own value and a lot of different characteristics which depends on the factor of selection. The factor of selection for floor finishes are as below. It's crucial to choose the right floor finish. It does have a direct effect on the safety of occupants, whether students, employees, or visitors which it could result in legal consequences if not addressed properly. When professional bodies such as architects and interior designers are involved in the product selection process, they have a "duty of care" that they must fulfil.

2.4.1 Initial Cost

The range of primary cost for installation flooring system is depending on the types of floor finishes that has been selected. Moreover, it is mainly affected by the life cycle cost (LCC) of the floor finishes which this could related on the maintenance and the life span of the material used. This is stated by Martin Miletic, (2014), there are three significant costs when a consumer built a floor such as cost of purchase, installation, and maintenance. Although the initial cost of a facility is significant and frequently influenced by budget constraints, the most cost-effective material selection is based on LCC. According to the Helena Moussatche, (2001), the initial cost, replacement cost, service life, and operations and maintenance costs of internal flooring are related to the materials of LCC. Each types of floor is consist vary of cost that will be need to be fulfil. The cost is vary interms of handling and procedure which it different depends on the types of floor finishes that has been selected.



2.4.2 Appearances

The selection of floor finishes is depending on the concept of the space or building which it shows the value of aesthetic and appearance. The look of a surface is defined by its finish. As a result, it is clear that floors are finished with materials. These facts would assure, among other things, the occupants' comfort, which is a benefit of a well-finished structure, without sacrificing the good appearance of the flooring material in order to achieve the client's desired design impact. Finishes, on the other hand, do not add to the strength of the floors; rather, they give beauty and colour. Climate, geography, and financial constraints all influence the materials used to decorate the walls and flooring. The appearance, which is crucial, must be good in order to provide the desired colour impact for the client. Based on the Fidelis Ifeanyi Emoh, (2017), the aesthetics are one of the characteristics of floor finishes that are essential concepts of choice, which are usually seen as acceptable.

2.4.3 Maintenance

Different finishes of flooring will be required different of maintenance that need to be carried out which either it is as if the same with a little different on the way it being handle or it must be handle with some obvious other way. As the example, there is a different in carry out the maintenance for the typical floor finishes usually used on the common building and the floor finishes that being used in special property such as stadium. This is could be detail where the floor finishes such as at indoor stadium is used synthetic sport surface with special material. The special floor finishes required the specialty of maintenance from professional to carry out the maintenance activities in specific. It is necessary to assume responsibility to clean and carry out proper maintenance suitable with the types of floor finishes in ensure the life span of materials is lasting as the expected. As stated by Fidelis Ifeanyi Emoh, (2017), the performance of fire resistance and low water absorption materials is only desirable for a good choice of floor finish with low maintenance properties. The possible causes that will occur and affect on the materials of floor finishes need to be avoid and minimize as much as possible. This is because the management team need to secure the busget without include any extra cost for the maintenance that able to be reduce if it being considered at the phase of selection floor finishes.



2.4.4 Function of the Floor

Each of the selection types of floors must be suitable and fulfil the needs of the space that has been built. It is for the purpose in fulfil the requirements of the space. The types of floor finishes need to be selected based on the function and location of the space. This is happened, each of floor finishes has its own properties which reacts based on the activities that being carried on the structure. As the example, all flooring near building entry points and locations where wet occurrences are likely should be classified as contributing to the danger of sliding is low or high when wet. This is considered reasonable to predict that people accessing a building while it is raining will be dripping rainwater from umbrellas, bags, backpacks, clothing, shoes, and other items for at minimum 25 metres within the structure. Based on the function of the space also include the footwear of the occupants on the space which needs to be suitable with the floor type that will be selected. According to the Onochie, (2017), the study shows the selection of floor finish and flooring materials is influenced by a number of factors, including the intended purpose of the structure.



2.5 Sport Surface for Finishes

Indoor stadiums, halls, and functional exercise spaces have customised surfaces for sports like football and hockey, as well as general surfaces. There are various types of sport surface that has been used as floor finishes. Different types of sport surface have different functioned of sport. As the example, football pitches used artificial grass or original grass, while hockey pitches usually apply the artificial grass such as Limonta, tennis courts used concrete or polyurethane, sport surface with finishes of Taraflex Sports used for indoor sports such as netball or basketball, and synthetic rubber either latex or polyurethane flooring used as running track.

The step of construct sport surface or running track, there are the most crucial decision to make which sort of surface to use. There are numerous solutions accessible, each with its own set of benefits and downsides. Because the surface layer can affect a runner's pace, technique, and physical posture, it's important to consider safety and performance while making a decision. Budget and ease of maintenance should also be high on your list of priorities. To come to a conclusion, contractor must be aware of the benefits and drawbacks of various types of running track surfaces and select the one that best meets their budget and needs. The majority of running tracks are made of synthetic rubber, which is made up of rubber particles linked together with latex or polyurethane.

2.5.1 Advantages of Synthetic Sport Surface

According to Stromberg, (2019), over all other types of track surfaces, a rubber running track surface provides a number of significant advantages. It generates a very fast and high-performing track that improves the efficiency of movement of runners by 2-3%. The rubber surface functions as a springboard, providing athletes with extra energy and speed for their next path.

A synthetic system protects sportsmen from injury and trauma by providing excellent impact protection and cushioning. The smooth, resilient surface is kind on muscles and joints, absorbing even the harshest impacts while also reducing muscle tension and supporting leg effort. Synthetic tracks are incredibly long-lasting, lasting up to 20 years or longer. It's almost resistant to the elements and requires very little upkeep.



CHAPTER THREE: THE PROJECT (CASE STUDY)

3.1 Common Types of Floor Finishes Installed at Case Study

There are various types of floor finishes that has been used as covering surface at Kompleks Sukan Hulu Terengganu. It has been installed suitable with each space and functioned that has been consider based on the factor in selecting the types of surfaces. The installation of floor covering is involved area of Indoor Stadium, Football Field Pavilion, Hockey Field Pavilion, Guard House, TNB Sub Station, Dump House, Pump House, Football Field, Synthetic Running Tracks, Synthetic Hockey Field and Bowling Field. However, the most common types of floor finishes that has been installed is listed as below.

3.1.1 Cement Screed

Cement screed is the mixture of cement, aggregate and water with certain grade which suitable for the area. It is usually applied as covering surface for interior floorings. In this construction site, there are numerous spaces or area that has been applied the cement screed either as a floor finishes or subflooring system. In terms of floor finishes, the cement screed has been applied mostly for utilities room, VRF unit, stores, AHU room, water tank room, M&E room and corridors. The application area of cement screed recorded at indoor stadium is approximately 2010 m².



Figure 3.1: The Installation of Cement Screed at Corridor of Indoor Stadium



3.1.2 Homogeneous

There are two types of homogeneous tiles that has been selected as floor finishes which consist of 600 x 600 mm Non-Slip Homogeneous Tiles and 300 x 300 mm Non-Slip Homogeneous Tiles. The characteristic of non-slip homogeneous tiles is designed for the heavy traffic in resist any impact and the most available widely in our market. It has been installed as finishes at foyer, dining area, shop, prayer rooms, VIP room, office, meeting rooms, changing room, stall areas, hallway, VIP seat area and corridors of indoor stadium. Besides, it is also being installed at Bilik Persalinan of Football Pavillion.



Figure 3.2: The Installation of Non-Slip Homogeneous Tiles at Kompleks Sukan Hulu Terengganu.



3.1.3 Interlocking Paving

Installation of interlocking paving is covering the certain area of side road inside this construction site. There are two types of interlocking paving that has been used which it consists of Grey Flexipave and Red Unipave. At indoor stadium it been installed with Grey Flexipave at rear, left and right of the building. Meanwhile, Red Unipave has been installed around of the lawn bowl area and side road of the site area.



Figure 3.3: The Installation of Red Unipave at Lawn Bowl



Figure 3.4: The Installation of Grey Flexipave at Indoor Stadium



3.1.4 Ceramic Floor Tiles

All of the top layer surface for toilets in Kompleks Sukan Hulu Terengganu consist of football pavilion, hockey pavilion and indoor stadium is covered with ceramic floor tiles with the specification size 300 x 300 mm. The firm and solid surface of ceramic tiles does not attract or trap dirt, dust, pollen, or other allergies. The benefit usage from the installation of ceramic floor tiles for all the toilets and *surau* in this construction site due to the characteristics of the materials.



Figure 3.5: The Installation of Ceramic Floor Tiles at Surau of Indoor Stadium



3.1.5 Concrete Imprint

Concrete imprint or also termed as stamped concrete which characterised as textured and patterned covering surface. It is resembling as slate, brick, stone or woods which suit as the design. This type of finishes helps a lot in save the cost compared to real flooring materials such as tiles, stone, brick and woods. It is commonly being installed as finishes at exterior area such as patio, decks, driveway and it also installed at indoor area as preference by the owner. In Kompleks Sukan Hulu Terengganu, it has only been applied as top layer surface at driveway and carpark of Person with Disabilities (PWD) and VIP at indoor stadium with total area covered is 290 m².



Figure 3.6: The Installation of Concrete Imprint at Driveway of Indoor Stadium



3.2 Installation of Synthetic Sport Surface as Finishes

3.2.1 Background of Conica Conipur SW

Conica is a world leading manufacturer of track surfaces. The high technologies products help athletes to achieve peak sporting performance. It is targeted for planners, users and organisers. The selection of track surfaces available from Conica covers a range of applications of Conipur M, Conipur MX+, Conipur SW and Conipur SP are intended for use in athletics stadium which is supplemented by multifunctional system solutions for multipurpose, school sports facilities or sports complex.

In this construction of Hulu Terengganu Sports Complex, the synthetic surface running that has been installed at football field has been using the materials of Conica with applications of Conipur SW from manufacturer Conica AG. Kompleks Sukan Hulu Terengganu has been dealing with company TMAS Services as local distributors. The background of the material of Conica with applications of Conipur SW which has certified as sandwich system with thickness 13.0mm. The material of this application first layer is with base that made of mixture granule and high quality Conica PUR binder which is the liquid elastic layer of pure polyurethane with range 1mm to 4mm. The sandwich system is furnished with top layer made of polyurethane coating using premium Conipur EPDM granules. The Conica EPDM granules is flexible with high quality of rubber which suitable for sport flooring surface.

The installation of Conica Conipur SW as the floor finishes of synthetic running is involved 10000mm width which cover the outer area of football field. The selection of Conica SW has been made through the discussion between Public Work Department (PWD) and project manager which is based on the technical specification on the materials, thickness, layers, warranty, climatic adaptability, spike and UV resistant, International Association of Athletics Federations (IAAF) approval and worldwide usage of product under IAAF certification. The process of installation required approximately 4 months to complete from the base of construction.




This type of sports floorings is known to become the most preferred as material finishing surface for outdoor sports which required the function in durability and flexibility of sport. Conica Conipur SW has been established with the most worldwide usage of product which also become one of the factors for Time Future Construction (M) Sdn Bhd has choose this product instead of Porplastic SW Competition. It is come with the function for track, field flooring, playground and other multipurpose use. Meanwhile, in this project, the Conica with implementation system Conipur SW that has been carried out at Kompleks Sukan Hulu Terengganu has become the main function for construction of synthetic running track.



3.2.2 Materials Used in Installation

The material has been applied for Conica Conipur SW is polyurethane with total thickness of sandwich system is 13.0 mm. There are a few layers for this installation of finishes which consist of materials as below.

Table 3.1: Materials Used in Installation of Conipur SW at Running Track

Material Used	Description
Sand	The sand used is with coarse size. It is the first layer which approximate 50mm thick sand lay.
Crusher Run	It is also known as coarse aggregate which cover the layer of sand. It is lay about 20mm thick.
Bituminous Prime Coat	This material being sprayed for 1 layer.
Asphaltic Binder Course	It is approximately 40mm thick of asphaltic binder course being laid with compactor.
Conipur 70	The consumption is 0.15kg/m ² has been sprayed on top of asphalt.
Conipur 326	This material is recycled rubber granules with colour code black.
Conipur 203	It is the type of glue which used to mix with EPDM powder.
Conipur 221	Conipur 221 is also type of glue which squeegee which also in red colour.
Conipur EPDM Granules 	It is act as coating of top layer with 2.8kg/m ² being broadcast on the area. This material is a type of granules rubber. The colour code for this material is red.
Conipur 8150	It is used as line paint on the top layer of running track with about 20g/m to 30g/m



3.2.3 Specification of Conica Conipur SW

As the picture below, it is the mock-up of finishes and specification of Conica Conipur SW system. This sport flooring consists of 6 layers of work with specification. The specification for construction running track in Kompleks Sukan Hulu Terengganu shows first layer required 50mm thick of well compacted sand, 200mm thick of compacted crusher run, 1 layer of bituminous prime coat, 40mm thick asphaltic binder course and a layer of bituminous tack coat before proposed Conica SW competition on the top layer.

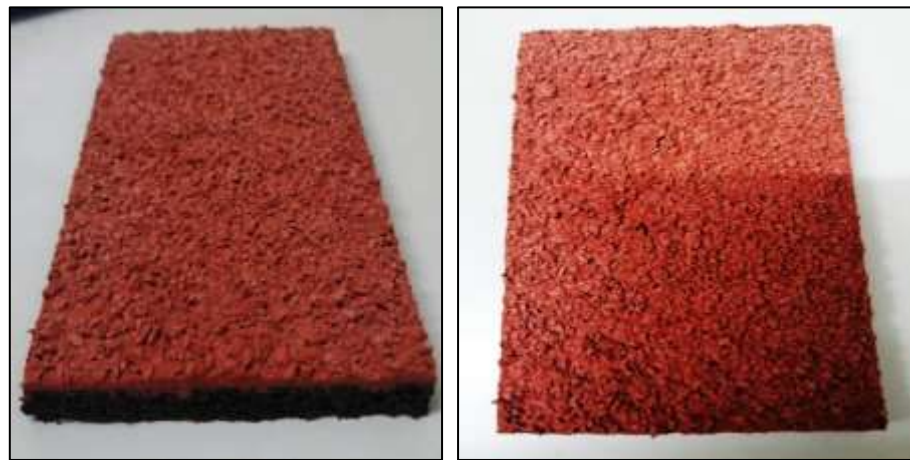


Table 3.2: Mock-up of Conipur SW

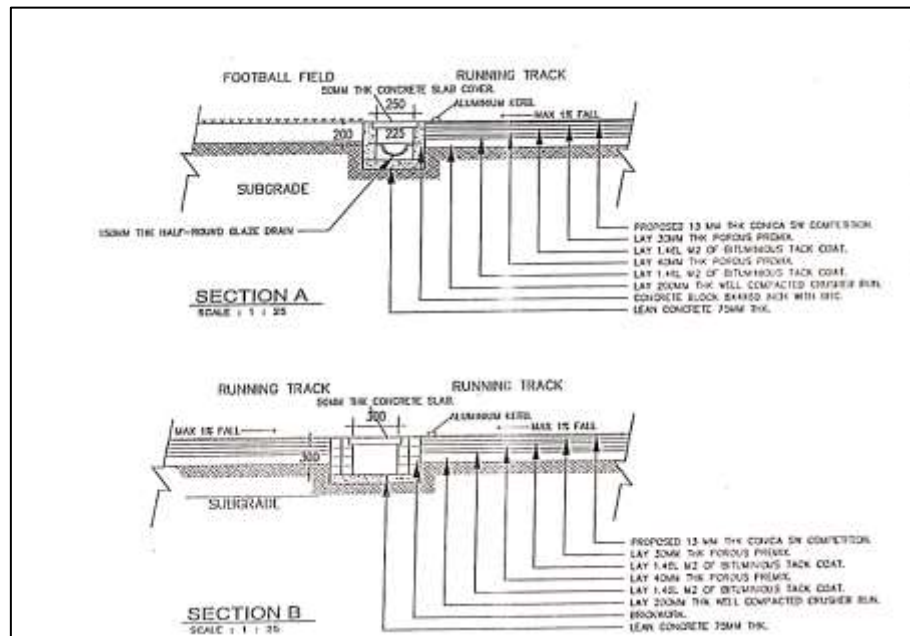


Table 3.3: Specification of Implementation Conica Conipur SW on Running Track



3.2.4 Method of Installation

There are 10 steps required to be done after carried out excavation work for installation of synthetic running track. The step is according to the materials that involved in this flooring installation. The list of steps is as below:

- I. Lay and compact sand
- II. Lay and compact crusher run
- III. Spray a layer of bituminous prime coat
- IV. Lay asphaltic binder course
- V. Spray Conipur 70
- VI. Pavement of Conipur 326
- VII. Lay the mix of Conipur 203 and EPDM powder
- VIII. Lay Conipur 221
- IX. Installation Conipur EPDM granules
- X. Spray Conipur 8150 as line track

Beforehand, the Tool Box Talks which carried out by the Safety and Health Officer regarding the compliance on regulation of safety that has been stated will be explained before any of installation work being erected. The risk controls on Personal Protective Equipment (PPE) are being emphasized in this talk. It is for the purpose to reduce and avoid any injuries or likelihood of risk occur during the installation work.



Table 3.4: Tool Box Talk Held by Safety and Health Officer



I. Lay and Compact Base

There are ten layer a material that consist in sandwich system of Conipur SW. This construction of running track required the earth work before it is being erected. Then the base being erected with lay 50mm thick of sand and follows with lay 200mm thick of crusher run which compacted using the roller machine. Then, a layer of bituminous prime coat will be spray all over the area before lay 40mm thick of asphaltic binder course with application of compaction.

The primer layers have two different products either for concrete or asphalt which for a subbase from concrete the Conipur 74 will be applied with method of spray and for asphalt Conipur 70 also will be applied with the same method. In construction site of Kompleks Sukan Hulu Terengganu, the subbase is asphalt which required the application of Conipur 70 as the primer.



Table 3.5: Process of Lay and Compact Sand, Crusher Run, Bituminous Prime Coat and Asphaltic Binder Course as Base



II. Pavement of Conipur 326

The next process after the base has been set and ready to install the layer of Conipur SW is installation of Conipur 326 with approximate 1.4kg/m^2 by using application of paver. The materials of Conipur 326 is a recycled rubber granules which being compacted by using paving machine. The rubber granules used is with colour code black.

As the picture below, the worker level the rubber granules and compact it using the asphalt paving machine. In this phase, the skilled worker will compact the materials and ensure the track achieve the slope with maximum 1 degree fall from the outer towards the drainage between the football field and the running track which in order to ensure the rainwater flow with avoid any stagnant water on running track.

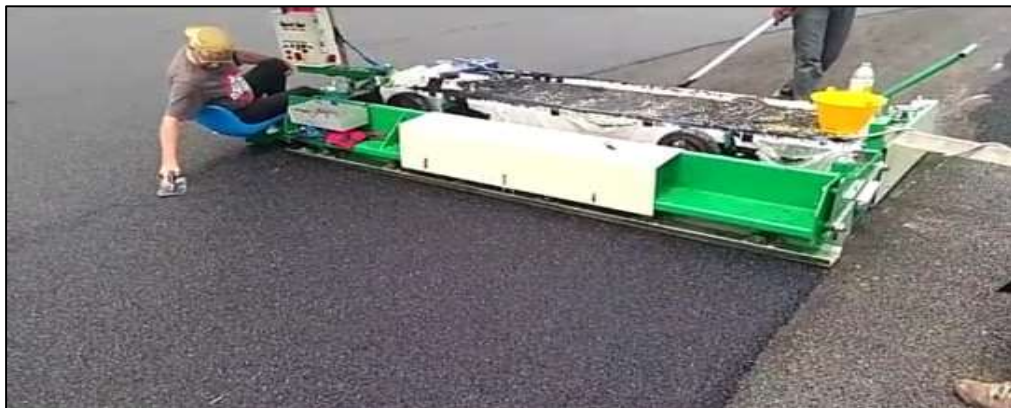


Table 3.6: Process of Pavement Conipur 326



III. Lay The Mix of Conipur 203 and EPDM Powder

Then, a layer of Conipur 203 with consumption 1.4kg/m^2 with the mix of EPDM powder has been applied by using flat squeegee. The conipur 203 is a type of glue that has been used for synthetic track while the EPDM powder is the rubber dust that mixed together. Mixing ratio for this materials is approximately 100:40. It is applied with a thin layer on top of overall recycled rubber granules. This process of installation required about 10 days to cover all the area.

The combination of these material helps to cover any porosity after being installed the recycled rubber granules and ensure to avoid any inflow or outflow of water from the hole exist between the rubber granules. This step is a crucial part where if it uncover properly, it will affect the quality of the track which the flooring surface will become bulging and unlevel.



Table 3.7: Process of Lay Conipur 203 and EPDM Powder



IV. Lay Conipur 221

After the base layer of Conipur 203 has cured which only required less than 24 hours for curing process, the coating of top layer Conipur 221 need to be laid. The Conipur 221 is also the mix of glue and rubber dust in red colour code which comes with the purpose to ensure adhere with Conipur EPDM granules. Therefore, the process of lay the Conipur 221 need to be erected together with the process of broadcast the entire surface with Conipur EPM granules before the coating layer dry.



Table 3.8: Process of Lay Conipur 221



V. Installation Conipur EPDM Granules

Conipur EPDM granules is types of polyutherane rubber which function as the top layer. It required to be installed directly once the Conipur 221 being laid. This process is the most crucial part where the outcome of the entire installation need to be perfect. Once this material rubber granule being installed an broadcast to all over the coating, it will result to some excess which it need to be removed after the curing process has completed.



Table 3.9: Process Installation of Conipur EPDM Granules as Top Layer



VI. Spray Conipur 8150 as Line Track

Lastly, the running track being sprayed by using the material of Conipur 8150 which functioned to create the line as required. The colour code that has been selected as the line is white. There are 8 line that has been created with approximately 1250mm for each row.



Table 3.10: Process of Spray Conipur 8150 as Line Track



CHAPTER FOUR: ISSUES AND PROBLEMS

4.1 Introduction

Each of company in construction industry is common to experienced various issues from every aspect related to the project either it is a small-scale project or a big scale project. The issues may be related with equipment and machineries, materials, employees, workmanship and more. Normally, all the issues need to be taken into consideration immediate as it can in order to ensure it will not affect the time and cost of project which also directly degrade the quality of the project.

In this construction project of Kompleks Sukan Hulu Terengganu, there are a lot of issues which related with serious issues and small issues. However, I have learnt the management team of this site has been handle all the issues smoothly throughout the internship period for approximate 15 weeks. Most of the issues is identify and encountered by the site supervisor and site engineer. They are intended to solve and monitor the issues before affect the primary constraints of the construction project.

However, in reality of construction industry there are also issues that taken a long period to be solve. Construction of Kompleks Sukan Hulu Terengganu has been experienced with this kind of issue where the construction team of this project is responsible and commit to take a proper step in handling the issue. Each of issues need to be considered and strategies need to be implemented in curbing the problem from more serious. All the issues could be solved and prevented from occur if it handles with a proper method.



4.2 Issues and Problems

Based on my observation on the process of installation the floor finishes at Kompleks Sukan Hulu Terengganu, there are some issues that usually occur which it slightly affects the process of the installation work. Some of it cause a small issue, however it also will become serious issues if it left untended without proper monitor and step to be considered. The issues that have been recorded explained as below.

4.2.1 Lack of Skilled Workmanship

During the process installation Conica SW as the floor finishes at Kompleks Sukan Hulu Terengganu, there are lack of skilled workers that carried out the process of work. The materials of Conica SW have been installed need a proper workmanship which required a qualified workers with certificate in handling the materials. There is limited of qualified workers for handling Conica materials in Malaysia.

Therefore, Time Future Construction (M) Sdn. Bhd. has taken a step with appoint and import the certified workers from Sweden to carried out the process of installation. However, the workers that has been appointed is in limited numbers which arise the difficulty in carry out the installation as the stated period.

4.2.2 Difficulty Complying with Safety Procedures

As the observation, there are issues with the safety during the construction process. As the safety guideline, process of installation work required the workers to adapt risk control Personal Protective Equipment (PPE) control as a measure which the workers need to wear chemical protective clothes, respiratory protection such as face mask, wear eye protection such as goggle and gloves

However, the issue arises regarding the compliance of the safety procedure that need to be fully consider by the workers. The general workers and skilled workers who is carried out the process of work is difficult to fully comply with the safety procedures that has been stated. The hazardous substances from materials will affect the workers as they expose to the chemical hazard from the materials without any personal protective equipment.



4.2.3 Complexity Process of Obtaining Materials

As above mentioned, the materials used as the finishes are from overseas' product which is made in Switzerland. This product has been selected as the best materials for the finishes to be installed at Kompleks Sukan Hulu Terengganu. It is imported directly from Conica AG at Switzerland to Malaysia. Therefore, there are some complexity processes in order to obtain the materials at construction site.

The procedure to order and receive is more complex compared with the materials available at this country. This material needs to be deal through agreement between the agent and company. Besides, there are some other issues along the process of obtaining the material which involve the charge and time taken for transportation due to some common delay problems that also could affect the time of construction. There are also issues related with the currency exchange due to the different rate of monetary between two countries.

4.2.4 Weather Changes

A common problem such weather changes in east coast area such as Terengganu is frequently often faced in construction project including Kompleks Sukan Hulu Terengganu. During the construction of floor finishes, there are frequent record as rainy in site diary which arise some difficulty in increase the progress as the expected time given.

This is happened when the workers are expected to stop the work and continue the installation finishes during a better weather. Besides, the weather issue could affect the materials which could become damp and unable to be installed. Rainy weather has caused the installation area muddy and not suitable for carrying out work that requires perfect finishing.



CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1 Recommendation

From the listed issues that has been recorded through my observation during the period of my internship, there are some recommendations that could slightly improve and possibly helps to avoid the issues from occur. The recommendation on the issues arise during installation work of finishes are stated as below.

5.2.1 Provide Training and Development Skill of Employees

It is advisable to use manpower from the company itself instead of hiring specialized workers from abroad. The root problem of the issue is lack of skilled workers with specific certificate in handling and installing Conica SW. Therefore, Time Future Construction (M) Sdn Bhd needs to provide programs for employees to follow expertise courses in the installation and handling of certain materials such as Conica SW as imported goods from abroad. From the suggestion, it also provide the opportunities for the employees to have various skills and enhance their quality of workmanship. Besides, the increase of certified workers with specified course could boost the number of skilled workmanships in construction team of Time Future Construction (M) Sdn Bhd which directly helps save the cost of manpower in hiring import skilled workers.

5.2.2 Tighten the Safety Compliance / Regular Supervision by SHO on SSS

Safety and health are the most crucial aspect which need to be taken into consideration in every construction project either in small scale and big scale project. It is become the responsibilities of Safety and Health Officer (SHO) and Site Safety Supervisor (SSS) to be more competent and stricter in monitoring the construction works that has been carried out with the procedure of risk control either through engineering control, administrative control or PPE control. In the context of issues arise at Kompleks Sukan Hulu Terengganu, the workers are unable to comply with the safety and health regulation. It seems the SHO and SSS required to carried out regular supervision on each phase of installation works. They need to tighten the safety in ensure the workers are fully comply with all safety regulation. Appropriate action needs to be taken immediately towards the workers with ignorance attitude.



5.2.3 Deal the Purchasing Materials Earlier

It is recommended the management team to plan and purchase the materials earlier before the erection of subbase which it due to the materials of finishes is from Switzerland and expected with delay of transportation. As being mentioned earlier, the issues of import materials from abroad is also related with the currency exchange.

Moreover, the company need to be extra particular with currency rate for the specific country by being update regularly which is helps to avoid from involve any extra cost. If these recommendations are considered, the issue of obtaining these materials can be avoided.

5.2.4 Provide Proper Planning for Monsoon Season

The project manager or person in charge need to have a proper planning for the monsoon season or rainy day which frequently occur in east coast state such as Terengganu. They need to provide the space or area to store to store all the materials safely without compromising quality from exposed to rainy weather. The proper planning in Critical Path Method (CPM) also needs to be expected the installation finishes some longer period during the monsoon season or rainy day.

Through these methods of proper planning, it will help to reduce the issues related with weather changes. Despite the issue with the weather, the construction work still be able to being carried out smoothly through all the suggestions that has been submitted.



5.2 Conclusion

As the conclusion, there are a lot of new experience in adapting the syllabus of Building Surveying through the industrial training. The carrier field that has been selected is construction and development which helps a lot in built a skill in communication with workers, team, employer and sub-contractors. Besides, it helps become cooperate with construction team and develop a competent worker inside the student. There are a lot of learning process with adapting with work culture and perform the duties as required.

Based on observation throughout the period of internship in 15 weeks at Kompleks Sukan Hulu Terengganu under supervision of Time Future Construction (M) Sdn Bhd, there are often faced with various issue which it common in construction industry. Hence, all duties need to be well performed with full responsibilities by all parties with implement the teamwork. The issues and problems occur is possible to be reduce and solve with a full responsibilities and performance of team. The construction team have a crucial roles and duties in manage and monitor all the issue in order it will unable to become major and affect the primary constraints of the project including the trust that has been built between client. As the issues arise, Time Future Construction (M) Sdn Bhd are capable in handle all the issues and ensure the construction project running smooth as planned.

Despite all of above, it creates my own challenge in handle and adapt in environment working as a team in construction industry. Through the challenge, there are vary of knowledge has been gain as an intern student in construction of Kompleks Sukan Hulu Terengganu with supervision under Time Future Construction (M) Sdn Bhd. The realistic in construction industry become new knowledge for the future together with the implementation theories that has been learned in campus.



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APPENDICES

APPENDIX A: CERTIFICATES


 SURUHANJAYA SYARIKAT MALAYSIA (COMPANIES COMMISSION OF MALAYSIA)		1 of 6
Although all efforts has been carried out to ensure that the information provided is accurate and up to date, the Registrar of Companies will not be liable for any losses arising from any inaccurate or omitted information.		
CORPORATE INFORMATION		
Name	: TIME FUTURE CONSTRUCTION (M) SDN. BHD.	
Last Old Name	: Nil	
Date of Change	: Nil	
Registration No.	: 200101014070 (549827-M)	
Incorporation Date	: 11-06-2001	
Registration Date	: Nil	
Type	: LIMITED BY SHARES : PRIVATE LIMITED	
Status	: EXISTING	
Registered Address	: WISMA PAKATAN, 131, TINGKAT 1, JALAN BATAS BARU, KUALA TERENGGANU, TERENGGANU	
Postcode	: 26100	
Origin	: MALAYSIA	
Business Address	: LOT PT 32597, TINGKAT 1, RUMAH KEDAI TEPOH, JALAN KELANTAN, KUALA TERENGGANU, TERENGGANU	
Postcode	: 21060	
Nature of Business	: CONSTRUCTION	

Table 0.1: Certificate of Suruhanjaya Syarikat Malaysia





PERAKUAN PENDAFTARAN

Adalah dengan ini dipersetujui bahawa kontraktor yang dinyatakan di bawah ini telah berdaftar dengan Lembaga mengikut Bahagian VI Akta Lembaga Pembangunan Industri Pembinaan Malaysia 1994. Pendaftaran ini adalah tertakluk kepada syarat-syarat yang telah ditetapkan bersama perakuan ini.

No. Pendaftaran	=	0120011116-TR088594
Nama Kontraktor	=	TIME FUTURE CONSTRUCTION (M) SDN. BHD.
Alamat Berdaftar	=	WISMA PAKATAN, 131, TINGKAT 1, JALAN BATAS BARU, 20000 KUALA TERENGGANU TERENGGANU
Daerah	=	KUALA TERENGGANU
Tarikh Mula Berdaftar	=	16/11/2001

GRED	KATEGORI	PENGKHUSUSAN
GT	B	B02 B04 B12 B13 B14 B24
GT	CE	CE01 CE02 CE03 CE10 CE13 CE21 CE34 CE36
GT	ME	M01 M15

Tarikh Mula Berkuatkuasa :	27/12/2020
Tarikh Habis Tempoh Perakuan :	15/03/2022

STATUS: AKTIF



Ketua Eksekutif
Lembaga Pembangunan Industri Pembinaan Malaysia
Tarikh: 27/12/2020



Table 0.2: CIDB Registration Certificate




KEMENTERIAN PEMBANGUNAN
USAHAWAN DAN KOPERASI
MINISTRY OF ENTREPRENEURSHIP AND COOPERATION

PUSAT KHIDMAT KONTRAKTOR


KEMENTERIAN PEMBANGUNAN USAHAWAN DAN KOPERASI
SIJIL TARAF BUMIPUTERA
KONTRAKTOR KERJA

Adalah dengan ini syarikat tuan seperti tercatat di dalam Sijil ini diiktiraf sebagai kontraktor kerja bertaraf Bumiputera. Pemberian pengiktirafan ini adalah tertakluk kepada syarat-syarat termaktub di belakang sijil.

<u>NO. SIJIL PENDAFTARAN</u>	<u>GED. PENDAFTARAN</u>	<u>KATEGORI</u>	<u>TEMPOH SAH LAKU</u>
0120011116-TR066594	G7	B	DARI : 30/12/2020
	G7	CE	HINGGA : 15/03/2022
	G7	ME	

NAMA DAN ALAMAT BERDAFTAR
TIME FUTURE CONSTRUCTION (M) SDN. BHD.
WISMA PAKATAN, 131, TINGKAT 1, JALAN BATAS BARU,
20300 KUALA TERENGGANU
TERENGGANU
KUALA TERENGGANU

<u>PEGAWAI SYARIKAT YANG DITAJILIAHKAN</u>	<u>NO. K/P</u>
MUHAMMAD NOR HISYAM BIN MOHAMMAD	920226115313
MUHAMAD HAIRI AMIR BIN MAMAT	891006115565
ABDUL RAHMAN BIN MAT YASIN, DATO' HAJI	560720115013



(MARLINA BINTI RAMLY)
Pegarah
Pusat Khidmat Kontraktor
Kementerian Pembangunan Usahawan dan Koperasi
Tarikh: 30/12/2020




Table 0.3: Certificate of Contractor Service Center



APPENDIX B: CONSTRUCTION TEAM



From left: Mr. Hairi (Site Supervisor), Mr. Hisyam (Site Engineer), Ms. Sabrina (Intern Student), Ms. Irdina Yusra (Site Clerk), Mr. Lukman Hakem (Resident Engineer), Mr. Arif (Site Safety Supervisor) and Mr. Syukri (C.O.W)