



**DEPARTMENT OF BUILDING
UNIVERSITI TEKNOLOGI MARA
(PERAK)**

**PRACTICAL REPORT TITLE:
METHOD INSTALLATION OF FENCING WORKS**

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(PERAK)**

DECEMBER 2019

It is recommended that the report of this practical training provided

By

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Entitled

METHOD INSTALLATION OF FENCING WORKS

Accepted in partial fulfillment of requirement has for obtaining Diploma in Building.

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DECEMBER 2019

STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at Asmawi Construction SDN. BHD. In the duration of 20 weeks starting from 5 August 2019 and ended on 20 December 2019. It is submitted as one of the prerequisite requirements of BGN310 and accepted as a partial fulfillment of the requirements for obtaining the Diploma in Building.

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Last but not least, I would like to thank my beloved family and friends for the unlimited support, guide and sacrifice that they had made.

ABSTRACT

The aimed of this report is to obtain a comprehensive understanding on how the method of wire mesh fence installation for outdoor futsal court project was undertaken. To achieve the aim as mentioned above, there were three objectives involved such as to explain the method of the fence installation, to determine the machinery and tools needed and to identify the problem occurred as well as its solutions to solve the problem. Thus , three (3) research methods were carried out such as observation, unstructured interview and document review The findings revealed that there were eight (8) methods need to take into consideration consists of site clearance, setting up steel posts, formworks installation, poured the concrete, plastering works, installing the welded wire mesh fences, painting works as well as site cleaning. Apart of that, a mixer machine as the main machinery and also several tools such as hammer, wireless hand drill, measuring tape, cement spatula, grinder, shovel, hoe, scaffolding and paint roller has been used throughout the installation process. Nevertheless, several problems and its solutions were determined during the installation process. In conclusion, methods installation for wire mesh fence are simple and common if compare to the other types of fence for futsal court used.

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CHAPTER 1

INTRODUCTION

A fence is a structure that enclose an area, usually constructed outdoors, and typically constructed from posts that are connected by rails, netting, boards or wire. (Hanks, 1985) The difference between fence and wall is fence did not have a solid foundation along its whole length. (Hessayon, 1992). Fences are usually be installed at a place which are regulated, variously in commercial, residential and agricultural areas.

As for choosing and installing fence on the properties, some importance that should be considerate. The importance of fences that should take into considerate are height, material, setback and aesthetic aspects. Suitable height is important for the owner to choose the fences around their properties. For example, privacy fences are usually higher than the other types of fences and are usually 8 to 10 feet high. Fences can comes in many sorts of material such as wood, aluminium, PVC and steel. All materials used as a fence usually can withstand everything such as scorching hot, heavy rain and pressure, if they are maintained properly. (Handy, 2013)

There are several types of fence such as picket fences, split rail fences, agriculture fences, chain link fences and wire mesh fences. Each types of fences have its own function and exact place to be installed. As example, picket fences usually found in the front yard of the home while split rail fences and post and rail fences are known as farm fences. Fences also can provide security for family from strangers. A fence placed in front of garden will help to accentuate the garden and helps to keep the animals such as dogs and cats from damaging the beauty of the garden. For the futsal court, football field and turf field, the usual fence for this type of place are chain link fence and wire mesh fence and the function of the fence installed are to avoid the animals comes inside and to avoid the ball going out from the place. (Handy, 2013)

Thus, the aim of this study is to determine the method involved in welded wire mesh fence installation for outdoor futsal court at Triang, Pahang.

1.1 Objectives

There are three objectives to achieve the aim of this reports as stated below:

1. To explain the method of the welded wire mesh fence installation.
2. To determine the machinery and tools during installation process.
3. To investigate the problem occurred and solutions to solve the problem.

1.2 Scope of study

This study was carried out at futsal court in Jalan Jati 8, Triang, Pahang, which focused on installation wire mesh fence. The explanation also includes the machinery and tools involved during the installation process to ensure the work run smoothly. This study also investigate the possible problems occurred and its solution to solves the problem. The total cost for this project is RM 139,144.00. Apart of that, several materials also being used such as sand, aggregate and cement to build concrete footing as well as steel bars. Due to small project, in-situ concrete will be done at the site using concrete mixer as discussed in Chapter 3. Only eight labourers involved throughout the process.

The fences work started by pulling off exist fence of chain link and steel post. Then, it is replaced with new steel posts as a part of installation process which further discuss in Chapter 3. Next, constructed the concrete footing as a base for welded wire mesh fence. After constructing the footing are done, the process to install the wire mesh fences will be commenced.

1.3 Research methods

There were three methods applied to obtain the data and comprehensive information for this report as stated below:

1. Observation-

An observation is undertaken by observing the installation method of welded wire mesh fence on site. The observation is carried out in a week and several pictures were undertaken using smart phone camera during the installation process. On the other hand, the written notes also undertaken to obtain further explanation while doing an observation.

2. Interview-

The interview that has been conducted is unstructured interviews during site observation. Random questions are asked spontaneously to the workers and site clerk especially when looking at installation process, including machinery and quantity of workers. This makes it easier to understand the true structure of the welded wire mesh fence. The duration of the unstructured interview is from the starting of the works until the end which is one week. The answers obtained through unstructured interviews were recorded in the form of written notes.

3. Document reviews-

Several document have been reviewed, such as bills of quantities, site drawings including company profile. However, some of these documents contain private and confidential information in which need to be kept as confidential. For academic purpose, the information obtained was in general aspect only.

CHAPTER 2

COMPANY BACKGROUND

2.1 Introduction

Asmawi Construction Company was founded by Dato 'Asmawi bin Harun since 1998 and located at No 63, *Kampung Paya Pagar, 28200 Bandar Bera, Pahang Darul Makmur*. He was an experienced, educated and professional staff in engineering, quantity survey in the construction fields. In 2009, the company had received an award of National Youth Award, in Entrepreneur categories of Pahang State Level. That was a highest achievement by the company in construction field.

Established with the aim of providing excellent service, the company has a high commitment to quality of service. The company was born through direct involvement of the Managing Director of the company in a project carried out with the support of staff and the use of information technology for high-tech professionals.

The vision for this company is creating a sustainable and reliable construction company for customers in terms of quality, cost savings, security and service. For the same time, is to help Malaysians succeed in achieving public development and infrastructure. As for the mission, the company eager to perform quality work within a set time. Next, to provide jobs and create skilled and semi-skilled workers in civil and construction engineering. Last but not least, construction site safety is a company's priority.

2.2 Completed projects

Table 2.1 Completed projects

Source Asmawi Construction Company file.

Projects	Grade	Quotation cost	Duration	Started	Finished
Built a public hall for a parliamentary constituency of Kuala Krau, Temerloh, Pahang Darul Makmur.		RM2954220.00	56 WEEKS	19/11/2015	25/01/2017
Propose to build and complete 4 additional building blocks containing 2 dormitories 2 floors, 1 block dining hall 1 floor and 1 storey pump house at Sekolah Kebangsaan Gemuroh, Mukim Triang, Daerah Bera, Pahang Darul Makmur.		RM5752256.00	72 WEEKS	04/01/2016	22/05/2017
Proposals to replace existing drains and related works at Laluan C08, Jalan Kuala Bera, Seksyen 0.250-1.725, Daerah Bera, Pahang Darul Makmur.		RM427231.08	7 WEEKS	28/08/2017	16/10/2017
Build and prepare open-air multi-faceted courtyard Sekolah Menengah Kebangsaan Ahmad, Pekan, Pahang darul Makmur.		RM1384136.00	36 WEEKS	19/03/2019	06/01/2019

2.3 Organisation chart

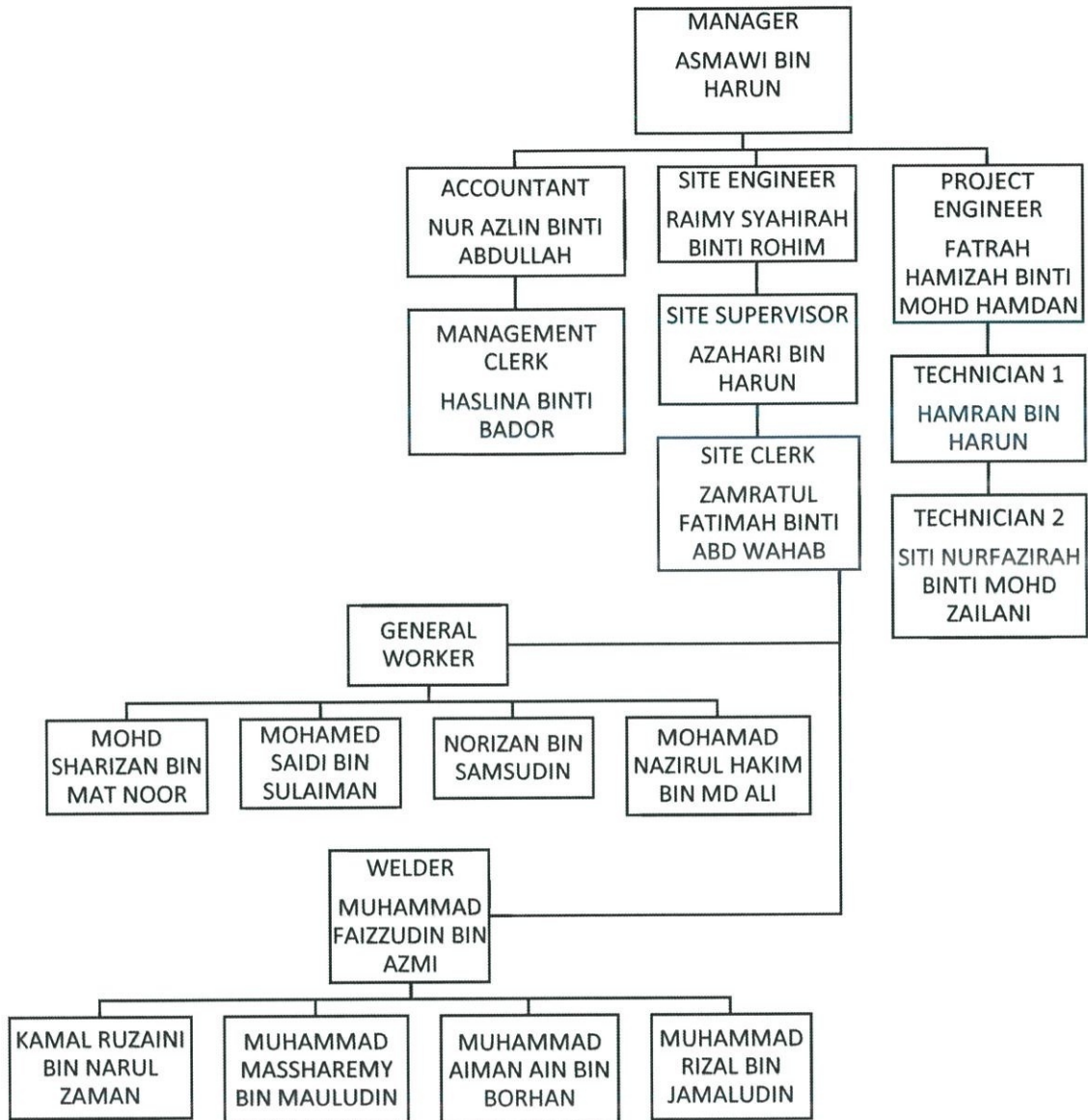


Figure 2.1 Organisation chart.

Source Asmawi Construction Company file.

Figure 2.1 shows the organization chart for Asmawi Construction Company. The manager of the company is Dato' Asmawi Bin Harun and assisted by office staffs and general workers for every project. Most of the staffs in the company are a degree holder and once an intern at Asmawi Construction.

CHAPTER 3

CASE STUDY: WELDED WIRE MESH INSTALLATION

3.0 Introduction

The case study is regarding installations of fencing works in outdoor futsal court project that located at futsal court Jalan Jati 8, Triang, Pahang. The cost for the project is RM 139,144.00, which took for one week to complete the work from 4th September 2019 to 10th September 2019. The futsal court is in the centre of the residence, placed beside other facilities such as Surau and playground that have been built for almost 5 years since 2015. Previously, the futsal court fence used old chain link which need be replaced with wire mesh type. The old chain link fences around the futsal court need to be replaced as well as the gate posts. The reason for replacement are because the posts and fences was not in good condition with rust and several damages occurred. Thus, the new materials of fences proposed for the project is welded wire mesh. This material had several advantage such as strong, rigid, ease of installation and durable. Therefore, for this report, further explanation regarding the method of installation is discussed in subsequent section below.

3.1 Objective 1 and 2: To explain the method of the fence work installation and the machinery and tools involved in the process.

Before the installation of fencing works begins, there are several steps must be prepared at the site to ensure the materials are adequate for the concrete footing and the machinery and tools fully functioning without any disruption while the works is carried out.

3.1.1 Site clearance.

At the first step, eight workers are employed to pull off the existing chain link fences around the futsal court by using the wireless hand drill to open the bolt and nut that hold the fences at the gate posts. After all the fences have been pulled off, the existing gate posts above the ground level are being cut by using the grinder to ease the workers to pull out the remaining gate posts from the soil. The wastage of the fences and posts are thrown into the lorry and dumped.

3.1.2 Set up steel posts.

Then, excavation work around the site were undertaken. For this work, the workers excavated one foot depth of the soil using a hoe to set up the steel posts. There are two different height of the posts required such as in 15 feet (front and rear) and 11 feet (right and left) as illustrated in **Figure 3.1**.

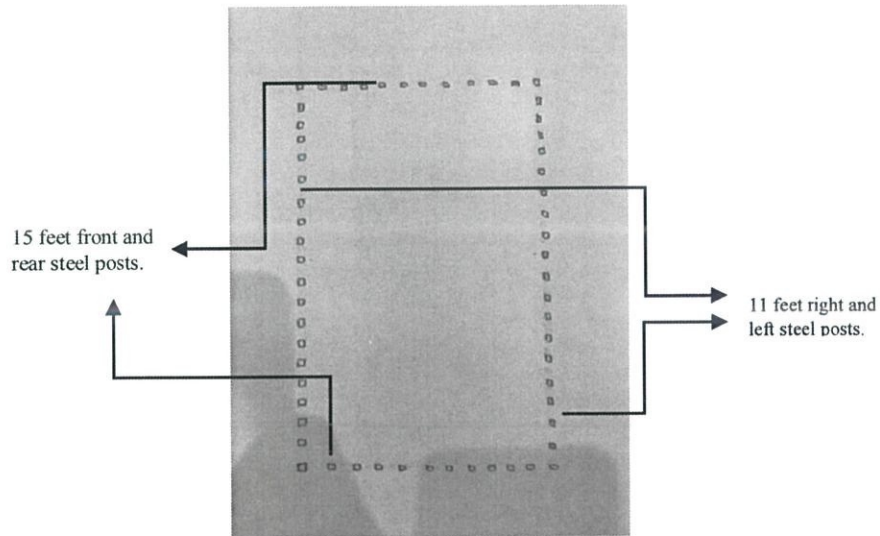


Figure 3.1 Steel posts layout

A total of 24 holes has been excavated in front and rear while 36 holes at the right and left side of the futsal court area. Then, eight workers set up all of the steel posts in the position and grouting the steel posts holes with the cement which has been mixed up using the mixer machine as portrayed in **Figure 3.2**.

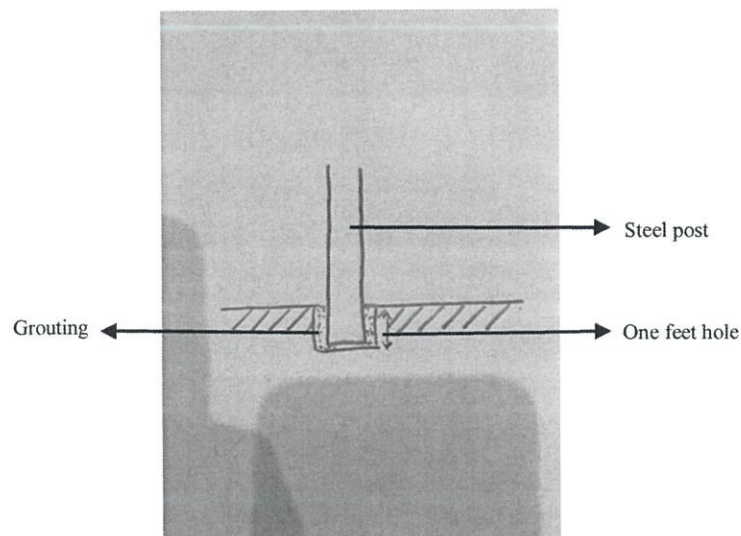


Figure 3.2 Steel posts construction.

The works continued after the grouting are hardened enough to hold the steel posts. This is important to make sure the steel posts in static and stable condition while carried out the works, which probably affect the concreting work of concrete base.

3.1.3 Formworks installation.

To construct a concrete base, the formworks, which made from timber must be installed around the area of futsal court. The workers are using the hammer to knock the nail to connect all the timber to form the formworks around the futsal court as shown in the **Figure 3.3**. The installation finished in 3 hours.

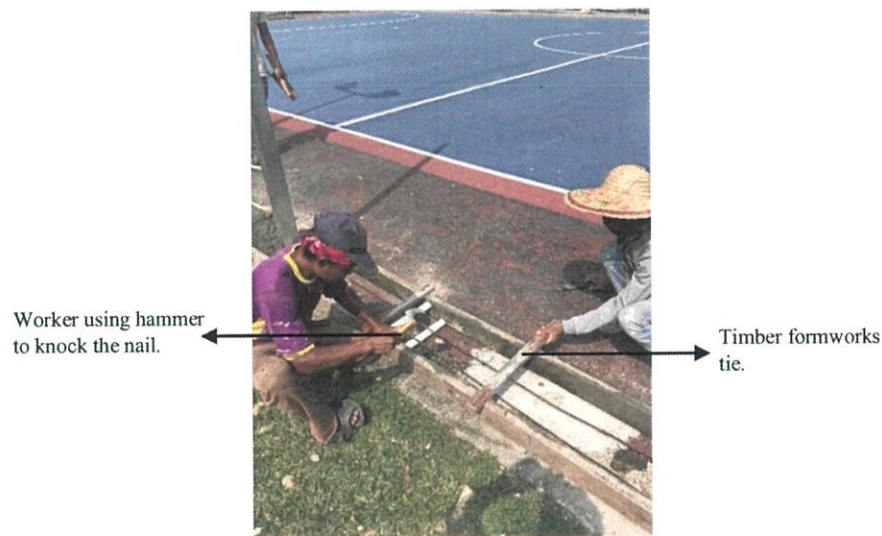


Figure 3.3 Formworks installation.

Reinforcement bar were then installed before tie of the formworks are knocked using hammer. The function of reinforcement bar are to strengthen and hold the concrete tension. As shown in **Figure 3.4**, two 6mm diameter reinforcement bar are installed inside the timber formworks on the top of 50mm spacer block.

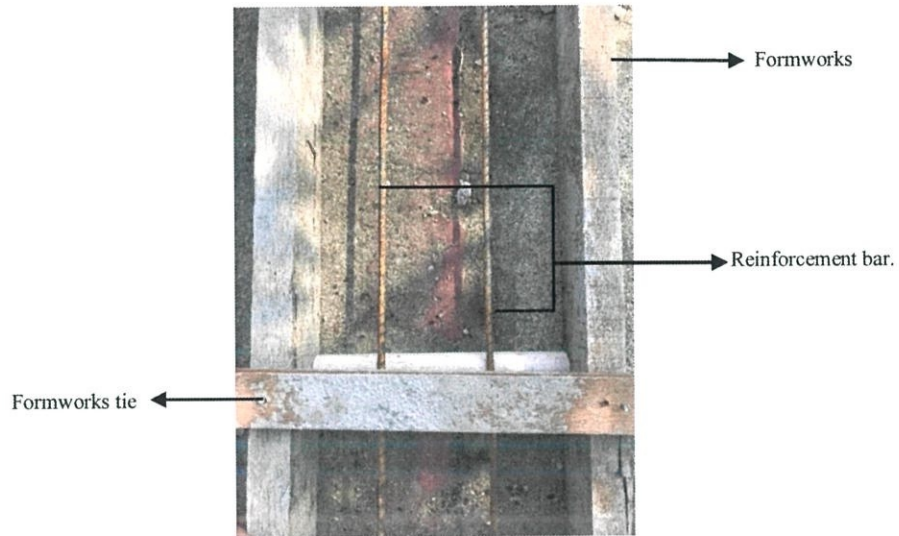


Figure 3.4 Reinforcement bar in the formworks.

3.1.4 Pouring the concrete.

After that, inspection was carried out by the head worker in order to make sure the concrete base formwork and reinforcement bars were in place and ready for concreting work. Upon observation, two of the eight workers started to mix the raw materials such as aggregate, sand, cement and water in appropriate ratio. Hence, small mixer machine was used including shovel during the mixture of concrete were undertaken. All these activities were demonstrated in **Figure 3.5** below.



Figure 3.5 Concrete mixing work.

The method of concrete placement to the concrete base formwork was using 2 wheel barrow. After that, the next process is trowelling using hoe and cement spatula to smooth the surface as demonstrated in the **Figure 3.6**.



Figure 3.6 Concrete spread into formworks.

3.1.5 Plastering work

Before plastering work begins, the concrete must be hardened and dry for 3 hours. After the concrete has been confirmed hardened and achieve the target strength, there were three workers dismantled the formworks using hammer, by pulling off the nails as a joint of each timber formwork panel. Then, the workers did several inspections by measuring the thickness of concrete base, just to make sure the dimension of 150mm (height) and 300 mm (width) was accurate before proceeding to the plastering process. After inspection, the workers marked using string by tying up from one post to another post for levelling marking for plastering as demonstrated in **Figure 3.7**.

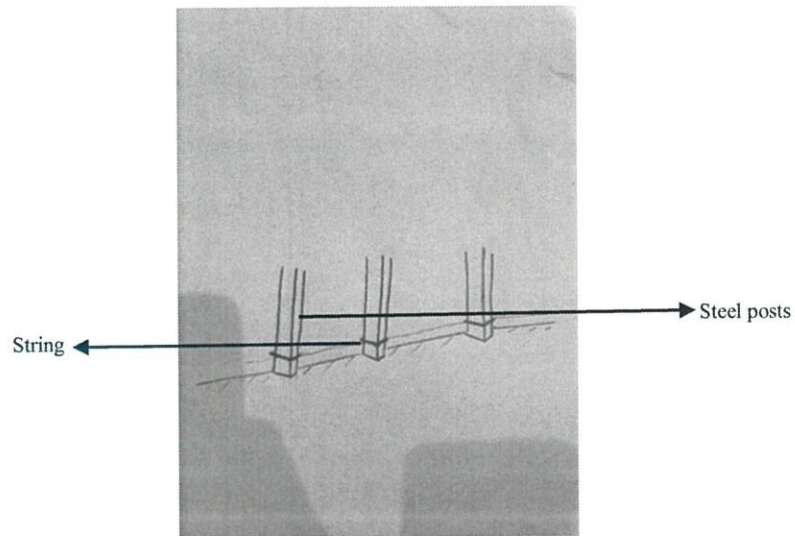


Figure 3.7 String pulled from post to post.

The plastering mixture consists of sand, cement and water. All these materials were mixed up using mixer machine as shown in **Figure 3.5**. Then, with wheel barrow, the plastering mixture was carried out to the located area and poured on top of concrete strip foundation to start plastering process. The plastering process continued with trowelling activity using cement spatula tool to smooth the surface and skimmed coat which was conducted by four workers. Skimmed coat was the last process before the installation of wire mesh fence started. **Figure 3.8** demonstrated the plastering and skimmed coat activities as indicated below.



Figure 3.8 Plastering works.

3.1.6 Installing the welded wire mesh fence.

There are two sizes of the fences, such as 5 feet for right and left sided, and 7 feet to be installed in front and rear sided area of the outdoor futsal court. Each side, required two stages of wire mesh fences. Firstly, the fence was installed of left and right sided, with the total height was 10 feet (5 feet of each height) and 14 feet (7 feet of each height) for the front and rear. **Figure 3.9** shown the jointing of the first and second stages of the wire mesh fences.

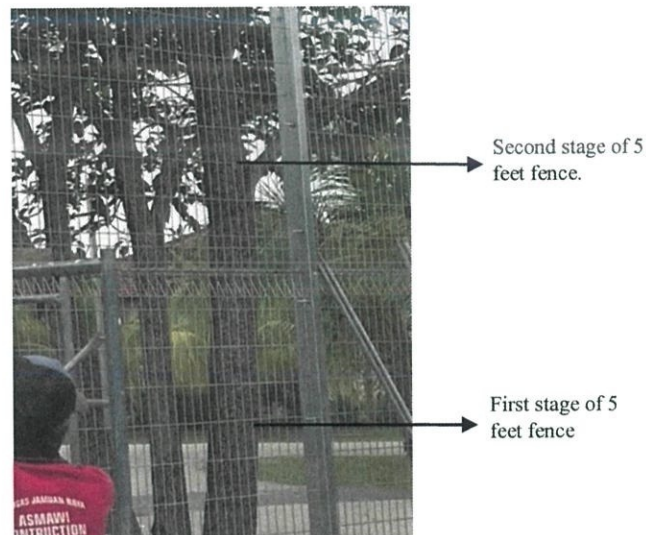


Figure 3.9 Fences jointing.

At the first stage, three workers were lifted of the 5 and 7 feet fences and connected the fences to each other using bolts and nuts, then wireless drill as demonstrated in **Figure 3.10** used to tighten the connection. Meanwhile, the steel posts purposely to hold each wire mesh fence at the certain distance.



Figure 3.10 Tighten the bolt and nut.

After completed the first stage. The workers used scaffolding for the installation at the top layer at each side. This process required scaffolding equipment to carry the fences and installed at the higher level as portrayed in **Figure 3.11**.

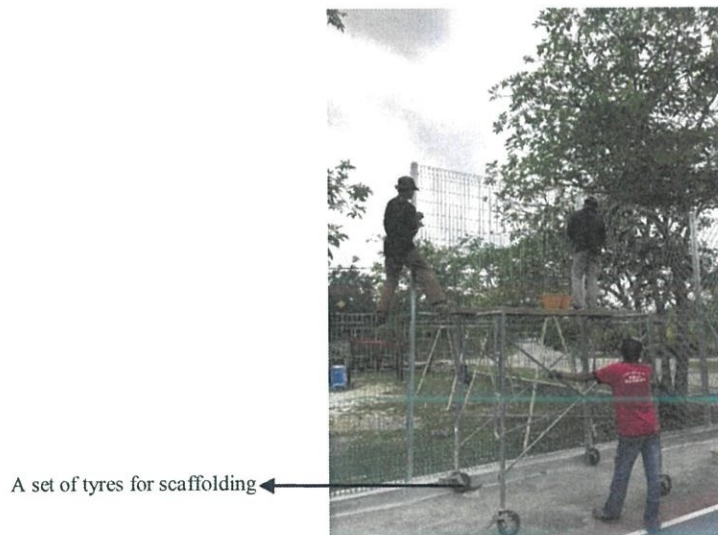


Figure 3.11 Scaffolding.

Opening needs to be done as an access into the futsal court. So, one worker use measuring tape to measure the opening size 900mm x 1200 at the wire mesh and using the grinder to cut the wire mesh fence, as demonstrated in the **Figure 3.12**.



Figure 3.12 Cutting the fences.

3.1.7 Paint works

Painting is important for aesthetic value. Using the paint roller, painting process was carried out at the concrete based in two layers, undercoat with white colour and main coat with green colour as shown in **Figure 3.13**.



Figure 3.13 Painting works.

3.1.8 Site cleaning

Lastly, the worker cleaned up the futsal court area by removing unwanted material waste such as sand and cement including any rubbish and obstructions where the project handed over to the client in good condition and complies the standard requirement set by the client.

3.2 To determine the problem occurred and solutions strategy to solve the problem.

There were several problem occurred during installation process and the strategy to solve the problem also determined as well. First, from the safety aspect, all the workers do not wear the right protective equipment such as, safety helmet, proper safety boots, glove, face mask, and vest while doing the work. As portrayed in the **Figure 3.14**, some of the workers are just wearing slippers during their working time. There are cases happens which one of the workers, step on the formwork's nail and causing a bleeding. This will lead to another problem which is the shortage of workers and might delayed the duration to complete the job. Workers also only wears cap, instead of safety helmet. Thus, workers have high potential of the risk to exposes hazardous at site. To solve this problem, site supervisor has to provide the workers with suitable personal protective equipment. As well as regularly brief on awareness regarding safety at the site during the working day. Another solution is construction team must provide safety signs on the project site to warn site workers. So, the workers will be more careful.

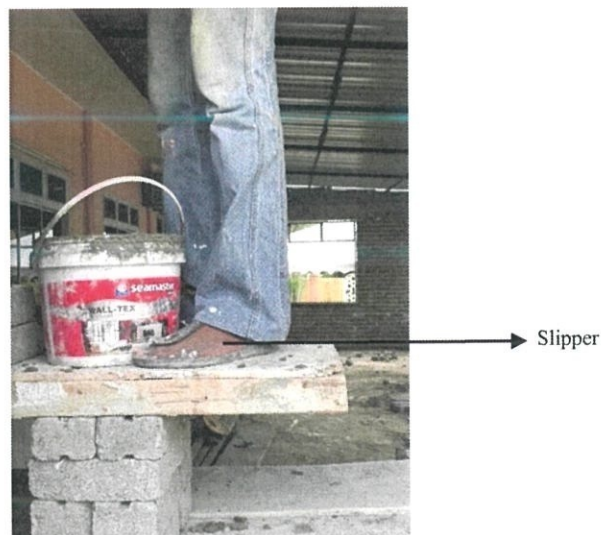


Figure 3.14 Worker wearing slipper.

Then, a place to put the tools and materials are not provided. This is because the installation only for the short period time frame. Thus, providing closed storage would be incurred the cost. Therefore, there are high potential for loss of tools, materials and equipment. This had create another problem where the work has been delayed because the workers need to search the tools that is time-consuming. To solve the problem are the workers put all the tools and materials on the lorry and take it to the office store every time after the working hour.

CHAPTER 4

CONCLUSION

The study is to discuss regarding the method installation of wire mesh fences for outdoor futsal court. The purpose of wire mesh fence is to replace the existing chain link type, and a lot of advantages occur when using wire mesh type such as strong and durable. In conclusion, it can be seen the methods are simple and common if compare to the other types of fence for futsal court used. The only different in both type, where in wire mesh the contractor has to build concrete base, which was not for chain link type.

There are some problems that the construction faced and every problem need the solution. One of the problem, in terms of safety aspect and lack of storage for tools and material. Nevertheless, several solution has been discussed by providing the personal protection equipment, regularly briefing to the workers as well as locate the suitable place for temporary storage.

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