DEPARTMENT OF BUILDING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

2-STOREY TERRACE HOUSE STRUCTURE CONSTRUCTION

Prepared by:

RABIAH NASHAMIRAH BT ABD RAHMAN

UiTM ID NO

2017213304

DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

DECEMBER 2019

It is recommended that the report of this practical training provided

by

Rabiah Nashamirah binti Abd Rahman

2017213304

entitled

2-Storey Terrace House Structure Construction

be accepted in partial fulfillment of the requirement for obtaining the Diploma In Building.

Report Supervisor	:	Dr. Asmat Binti Ismail
Practical Training Coordinator	:	En. Muhammad Naim Bin Mahyuddin.
Program Coordinator	:	Dr. Dzulkarnaen Bin Ismail.

DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

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 are stated herein, prepared during a practical training session that I underwent at MAG BUILDERS SDN BHD for a 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.

Name : RABIAH NASHAMIRAH BT ABD RAHMAN

UiTM ID No: 2017213304

Date : 13 December 2019

ACKNOWLEDGEMENT

Alhamdulillah, All praise to Allah S.W.T the creator of the universe. I would like to express my gratitude for every single guidance, advice and helps that given by the helpful teammates. First of all, I would like to thank IDr. Muhsin Abdul Ghani as the managing director of MAG Builders Sdn Bhd for willing to accept me to join the company to complete my practical training. He gave me chance to show my talent in designing and construction. Besides, he also let me gain some new experiences by trying other type of task. Meanwhile in department of Administration, Pn. Aida guided me in handling administration work and explain every single task for me very detail. While Ms. Dayang Ku Hanizah guided me in doing bill of quantity by using AutoCAD, Sketchup and also real drawings. Both of them taught me a lot in office management and they are the responsible persons in-charged for my training. Thanks to staff from Department of Architecture, Husairy for helping me in installing and taught me about computer software especially AutoCAD, Microsoft and Sketchup. Next, thank you to Zahir for helping me in managing the construction site and handling the foreign workers. It is an honour for me to be given such a great opportunity to join this amazing company and become teammates with all of you.

I also would like to thank all of the lectures from semester 1 until now that taught me in construction and guide me to become an excellent student. I would like to extend my appreciation to the lecturers that involved and managed everything related to my practical training. First of all, Dr. Asmat binti Ismail as my caring Report Supervising Lecturer that shared tips to complete the report and also informing any of the mistakes in the report. Thank you Encik Muhammad Naim bin Mahyuddin as my practical training coordinator that has run his responsibility as he should, even find solution for the student`s problem. With their sacrifices, help, guidance and ideas I am able to do my report and complete my practical training.

Last but not least, thank you to my parents that always supporting me and become my backbones. I wish I could list down the things that they had sacrificed for me. Both of them such an amazing parent ever.

Thank you so much.

ABSTRACT

In a building, everyone knows that the main part are the structure members, therefore this report will discuss things that related to the building structure. For example, structural work material for a strong structure, method used during the construction and etc. In the beginning of this report, there are some information about the practical training company, such as about the background, history, current location, completed project, organization flow and etc. This report was completed based on one of the projects handled by this company which at Puchong, Selangor. It is a 2-storey corner lot terrace house building that need some renovation and build. The main objectives of this report are to improve the knowledge about main parts of a building with more detail and also to find out either this project fulfil the requirements of a safe building or not. This report also will find out the factors of delay in project and what are the steps taken by the management to overcome the problems. Other than that, this report contains the basic stages in constructing the structure with some photos which were taken during the site visit from the beginning.

CONTENTS

Table of Contents

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1.0

INTRODUCTION

Building acts as a place for human protection from environment. A long time ago, people build their home just for some protection and not for the aesthetic due to lack of knowledge. During Neolithic era, the tools available were made from natural materials including bone, antler, hide, stone, wood, grasses, animal fibers, and the use of water. These tools were used by people to cut such as with the hand axe, chopper, adze, and Celt. Also to scrape, chop such as with a flake tool, pound, pierce, roll, pull, leaver, and carry. Building materials included bones such as mammoth ribs, hide, stone, metal, bark, bamboo, clay, lime plaster, and more (wikipedia,2019). Nowadays, method and material used for construction are changed and upgraded along the era. High quality material used for improving strength such as steel material, cement, aggregates, many type of fibre and etc. Technology of construction method are also improved by using modern machine.

However, a building without structure will not last long. Building structure is the most important part of any types of building because the main purpose of the building structure is to spread and transfer loads from the roof to the ground. It is very dangerous and unsafe for anybody in the building if the structures are having failure such as cracks. There are many factors of structure failure, for example Improper Installation as while everything might be planned properly, if it's not implemented the right way, results in terms of structural failure can occur, making it very important to not only plan accordingly, but to also stick to the plan throughout the construction process (atlas foundation company, 2019). Then, Defective Materials, if materials are defective, they can give way and cause structural failure. Typically, this occurs early in the manufacturing process. Foundation materials should be corrosion-free and provide utmost stability (atlas foundation company, 2019).

The structural system of a building is designed and constructed to support and transmit applied gravity and lateral loads safely to the ground without exceeding the allowable stresses in its members (Francis D.K Ching, 2001). There are two types of structure which are superstructure that is the vertical extension of a building above the foundation and another one is substructure that is underlying structure forming the foundation of a building (Francis D.K Ching, 2001). Some explanation for load, there are about three types of load which are dead loads, live loads and wind load. Dead loads are static loads acting vertically downward on a structure, comprising the self-weight of the structure and the weight of building elements, fixtures, equipment permanently attached to it (Francis D.K Ching, 2001). Live loads comprise any moving or movable loads on a structure resulting from occupancy, collected snow and water or moving equipment (Francis D.K Ching, 2001). A live load typically acts vertically downward but may act horizontally as well to reflect dynamic nature of a moving load (Francis D.K Ching, 2001). Wind loads are the forces exerted by the kinetic energy of a moving mass of air, assumed to come from any horizontal direction. (Francis D.K Ching, 2001)

Columns, beams, slabs, and bearing walls are the most common structural elements because of the rectilinear building geometry they are capable of generating (Francis D.K Ching, 2001). According to a dictionary, beam is a structural member that resists loading by bending – usually made of wood, steel, light alloy or reinforced and pre-stressed concrete (David Blockley, 2015). Meanwhile column can be defined as a structural member carrying a compressive force (David Blockley, 2015). However, it was found in another book, beam are rigid structural members designed to carry and transfer transverse loads across space to supporting elements (Francis D.K Ching, 2001). Meanwhile column are rigid, relatively slender structural members designed primarily to support axial compressive loads applied to end of the members (Francis D.K Ching, 2001). This study is to discover the important things in building structure construction.

1.1 Objectives of the Study

i. To identity stages of building structure construction for houses.

ii. To determine the material used in the construction of building structure.

iii. To investigate the problems and solutions on site.

1.2 Scope of Study

The study was carried out at Puchong Bandar Sierra 16. It is a 2-storey terrace house residential area. The postcode is 47110 and this area is under Sepang Municipal Council (MPSepang). Puchong is a wide area with a lot of residentials, schools, malls and other infrastructures.

The main focus of the study is about the building structures. For example, what are the materials used for the building structure construction, how long does the duration taken also how much does the material costs. The most important is what are the stages of the building structure construction. These are the main focus since it will give a big impact to the building. Besides that, this study also to find out about problems happen at site and how the responsible person handled it.

1.3 Limitation of Study

Other than that, there are a few things that are not necessary so it is excluded from the main focus. For example, the total of workers needed, what races are they and also which country are they all come from. All those things will not give any impact to the project but only in communication between workers.

.

1.4 Research Method

For this practical report, there were a few methods of study had been used.

a) Observation.

The observation was done during the previous semester before practical training. Lectures taught the basic knowledge of construction in different subjects such as Building Construction, Construction Material, Building Services and etc. Other than that, observation during site visit for any of the mentioned subject. Besides, observation during site visit on practical training. The observation was recorded by writing notes and capturing photos.

b) Interview session.

There are two types of interview session which are unstructured interview and semi-structured interview. For semi-structured interview, the questions were asked during meeting with the supervisor such as the starting date of the project and how much does the project cost. For unstructured interview, the questions asked during the site visit such as how long does the concreting process duration and how much does the supporters needed. Besides asking the supervisor, some of the questions answered by the experienced workers. All of the answers were recorded by voice recorder and some photos.

c) Drawings.

Before go for the site visit, the supervisor provided each of the practical student detail drawing such as floor plan layout. The main purposes of the layout plan are to make sure the student able to understand clearly about the building details and make it easier to imaging the position of the building. Besides, the supervisor also allowed the quantity surveyor (QS) to show the bill of quantity of the project to students as an additional knowledge. The supervisor gave the students a permission to keep the floor plan as a references and additional item in practical report.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

MAG Builders Sdn Bhd (641933-K) has registered to SSM to begin the business on 11th February 2004 which means this is MAG Builders` 15th year. This company owned by IDr Muhsin Abdul Ghani. This professional managing director from Wakaf Baru has a wonderful education background. He studied in MRSM during his secondary school, Bachelor Sc. Housing, Building and Planning (1995-1999) in UKM, Master Business Administration (2017-2018) in FTMS College and he is currently performing his PHD in Philosophy under UUM. He had won many awards such as winner Anugerah Personaliti Industri & Usahawan Malaysia 2017, winner SME 100 Fast Moving Company 2016 and Winner 11th Malaysia Outstanding SMEs Award 2017.

The new main office for MAG Builders is located at A-02-16, Block A, Radia Office, Persiaran Arked, Bukit Jelutong, Seksyen U8, 40150 Shah Alam, Selangor (Figure 2.2). Before this, the main office was located in Subang Jaya but with some suitable renovation the previous office has become MAG Builders` cabinet and steel factory (Figure 2.3). April 2019 MAG Builders has transferred to Radia office in Bukit Jelutong which is a new place, with classy buildings and efficient infrastructure that make it become a strategic place to expand the business. This office is easier to find for the new walk-in clients or anyone has appointment with MAG designers compared to the previous location which was quite hard to find. The surrounding area is calm without any traffic jam and secured with guard system. The office contact number is 03-77341116 and the admin number is 011-6529116. Client may contact the office through these two numbers. The business hour for this company is 9.00am until 6.00pm. Arranging an appointment in recommended than walk-in.

As mentioned earlier, MAG Builders has their own cabinet and steel factory. The machineries used are modern and high technology. This company produced their own cabinet and steel products. It is unique because their product designs are not available

anywhere because everything is custom-made. One of the advantages of having factory is client may choose various design of cabinet or steel products they want or they can have they own custom-made cabinet as they wish. Another advantage is, the cabinet and steel products will match the concept easier, there is no struggling in finding the furniture at other store. Figure 2.1 shows company location on google map.

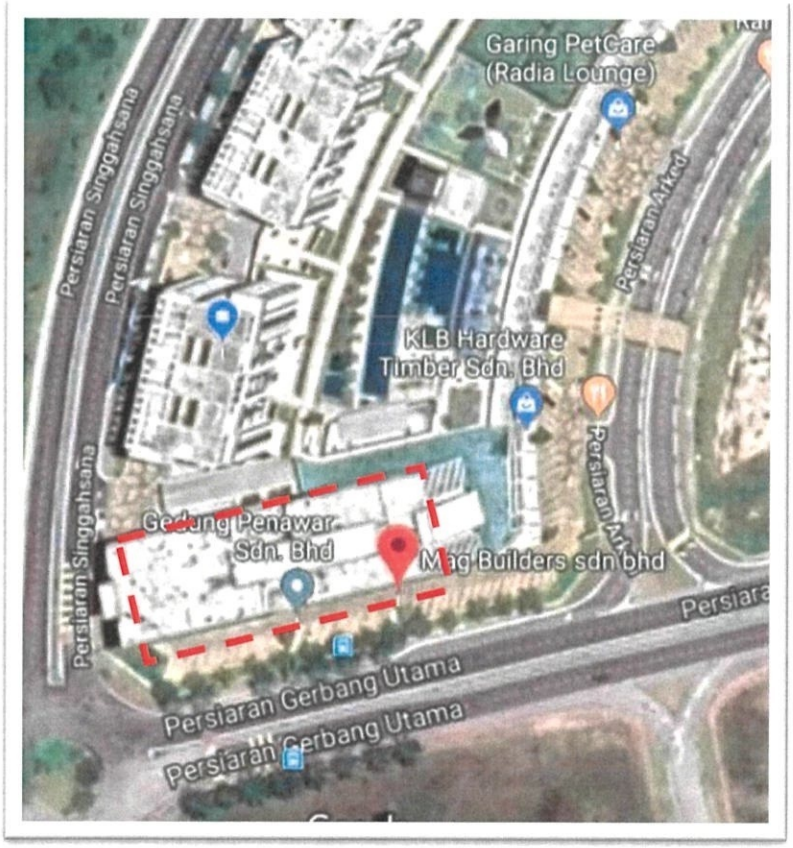


Figure 2.1 : Company location on google map

Source: Google Map

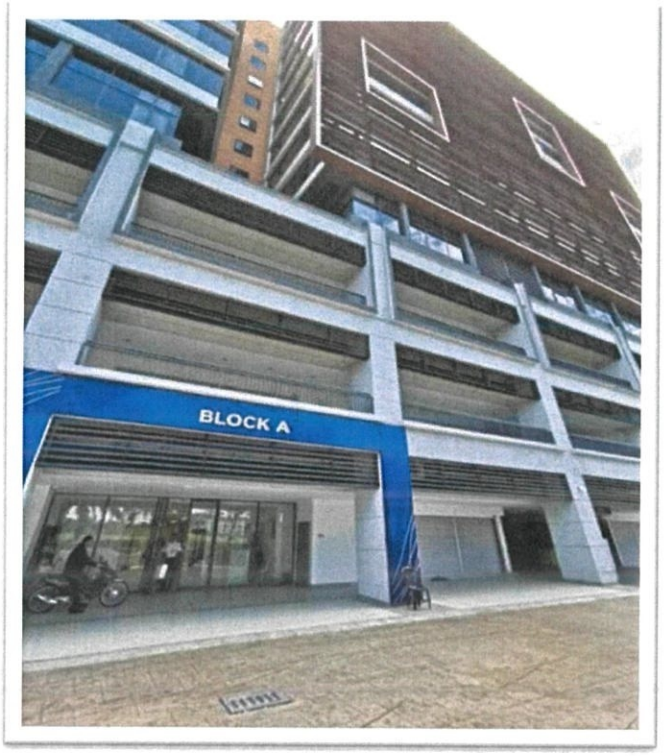


Figure 2.1 : The company office block

Source: MAG Builders Sdn Bhd

Figure 2.2 : MAG Builders factory

Source: MAG Builders Sdn Bhd

2.2 Company Profile

MAG Builders is a well-known company in Malaysia since the designs from MAG Builders are always appear in magazine, newspaper and in television channel as `out of the box` design. This company is popular with amazing variety of interior and exterior design. Scope of services are including architectural, designing and construction. For architectural, MAG Builders provide services in preparing drawing from layout drawing, 3D and animation according to the package (Figure 2.6 and Figure 2.7). Client may choose which package they would like based on their personal budget. They can choose either only architectural services, interior design services or both of them.

Meanwhile for designing services, MAG Builders is ready to handle interior and exterior designing project no matter what type of building it is such as residential building which are bungalow, semi-d, terrace, condominium and commercial building which are office, shop lot, factory and etc. Client usually make an appointment for details information and explanation design recommended. Designer will introduce types of concept and make a suggestion to the client if they do not have any idea in design and concept they want. However, if they do have their own dream design, MAG Builders will analyse the requested design and proceed the project with agreement from both sides.

For the last scope which is construction, MAG Builders also accepts construction project either build new or renovation works. Normally, this company receives project more than 1500 square feet such as build up bungalow project. Meanwhile, for renovation normally receives interior and exterior renovation project. Client may decide either they want to extend their house or adding rooms. Usually, clients choose to renovate their car porch become a new room also extend their kitchen and extend their living room. Besides, for residential building normally client wants to upgrade to double storey and for high rise residential building only interior renovation is allowed. For extreme renovation, MAG Builders will let the client know about the laws before proceed the project. If the client willing to face the risk such as they get charged by the authorities, the project will proceed with the next steps. Figure 2.4 and Figure 2.5 shows interior view of MAG office.

Figure 2.3 : Interior of MAG office

Source: MAG Builders Sdn Bhd

Figure 2.4 : Interior of MAG office

Source: MAG Builders Sdn Bhd

Figure 2.5 : Architectural package.

Source: MAG Builders Sdn Bhd

Figure 2.6 : Interior Design package.

Source: MAG Builders Sdn Bhd

2.3 Organization Chart

The chart begins with the director names, followed by his wife as the accountant and the admin. Then, every departments are separated which consist of architecture, project management, marketing, interior design, site management, site coordinator and cabinet and steel making. Figure 2.8 shows the flow of organizational chart for MAG Builders.

ORGANIZATION CHART MAG 2019

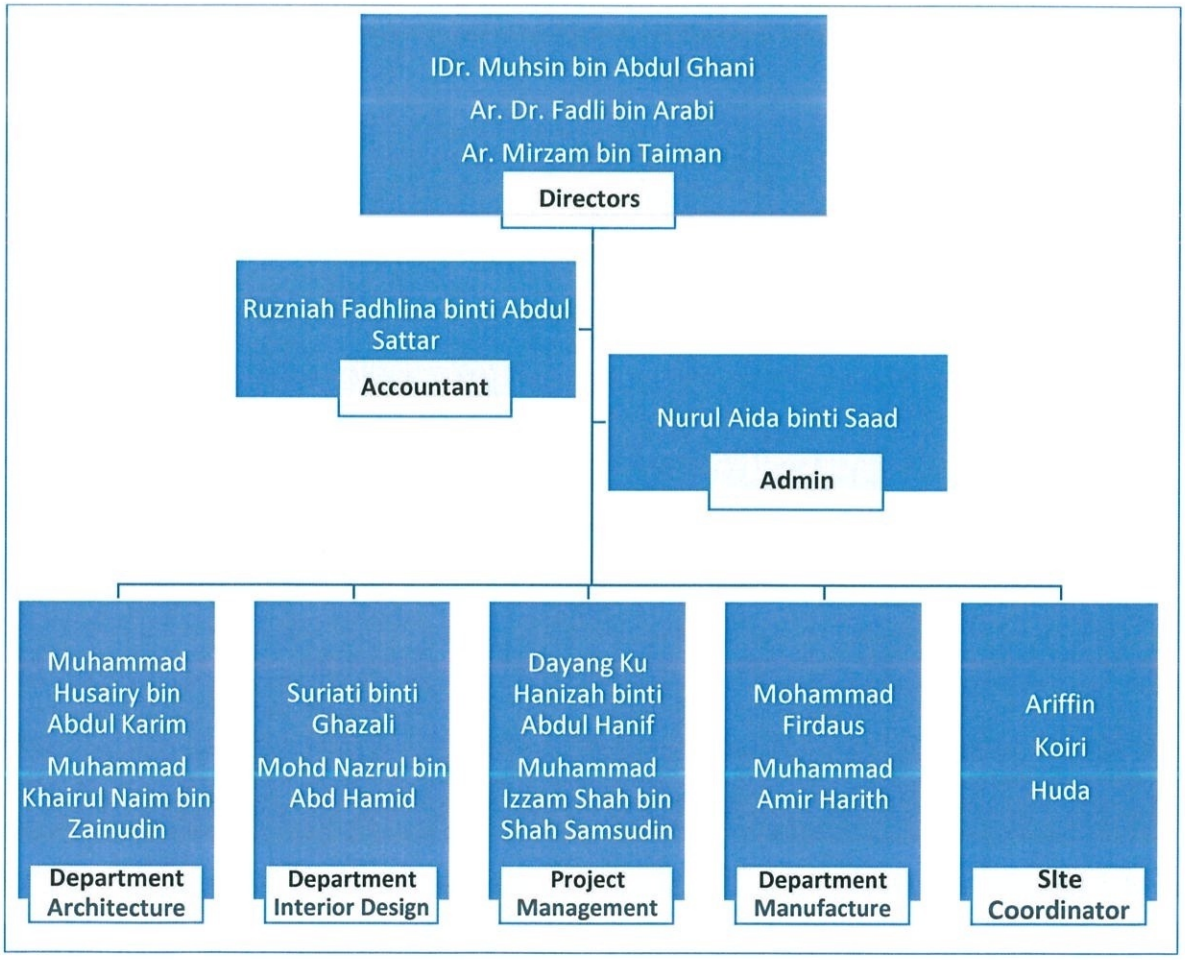


Figure 2.7 : Company`s organizational chart

Source: MAG Builders Sdn Bhd

2.4 List of Project

2.4.1. Completed Project

Table 2.1: Completed project

PROJECT TITLE	COST	COMPLETED YEAR
REFURBISHMENT 1 UNIT 3 STORY TERES CORNER LOT HOUSE INCLUDING INTERIOR DECORATION AT 60, JALAN 3/5A TAMAN MELATI, SETAPAK, 53100 KUALA LUMPUR	RM 3,192,798.00	2015
RENOVATION & INTERIOR OF MKM TRAVEL AT STAR AVENUE SUBANG B-29 JALAN ZUHAL U5/178 PUSAT KOMERSIL ARENA BINTANG, SHAH ALAM, SELANGOR	RM 1,133,708.00	2018
CADANGAN MEMBINA TAMBAHAN DAN PINDAAN KEPADA RUMAH BANGLO 2 TINGKAT SEDIA ADA DI NO 44, JALAN PULAU ANGSA U10/2, PERDANA HEIGHT, SEKSYEN U10, 40170, SHAH ALAM, SELANGOR DARUL EHSAN	RM 341,980.59	2017

Source: MAG Builders Sdn Bhd

2.4.2. On-going Project

Table 1.2: On going project

PROJECT TITLE	COST	COMPLETION (estimate)
PROPOSED DESIGN & BUILD OF 3 STOREY BUNGALOW AT 37 JALAN ANJUNG U8/34 BUKIT JELUTONG SEKSYEN U8, 40150 BUKIT JELUTONG	RM 4,879,442.00	2020
CADANGAN MEMBINA DAN MENYIAPKAN 1 UNIT RUMAH SESEBUAH 2 ½ TINGKAT, DI ATAS LOT 21452, JALAN 4/5J, BANDAR BARU BANGI, SEKSYEN 4, 43650 MUKIM KAJANG DAERAH HULU LANGAT, SELANGOR	RM 1,681,200.00	-
PROPOSED 2 STOREY BUNGALOW AT LOT 45073 LORONG HJ AMIN SG MERAB LUAR 43000 KAJANG SELANGOR	RM 756,500.00	-
PROPOSED RENOVATION OF 2 STOREY TERRACE CORNER LOT HOUSE AT NO 14, JALAN SIERRA 8/7, BANDAR 16 SIERRA 47110 PUCHONG SELANGOR	RM 438,671.00	2019

Source: MAG Builders Sdn Bhd

CHAPTER 3.0

2-STOREY TERRACE HOUSE STRUCTURE CONSTRUCTION

3.1 Introduction to Case Study

This case study had been run at Puchong, Sierra 16. This residential area is very secured with 24-hours guard and access card system. The environment surrounding the area is very calm and clean. For the infrastructure, the efficiency is very high and excellent. Everything is complete including electrical power lines, telephone and cable lines so there was no problem with connection. However, there was a project for roadway improvement that quite disturbing the area. Luckily that is not the main access way so there was no traffic jam happened. From the head office, it takes only less than half an hour to the site.

The client owned a double storey corner lot terrace house wants some renovation and build to enhance the appearance of her home. The client wants to extend the area of living area which located at the ground floor (Figure 3.1) and master bedroom which located at the second floor of the house (Figure 3.2). Other than that, she also wants to extend her swimming pool and add a shower area near the swimming pool. Some demolish works are needed to remove the unwanted area so it takes about six months to complete the project. This project was estimated to finish at the end of year 2019. Figure 3.3 and Figure 3.4 shows the site location.

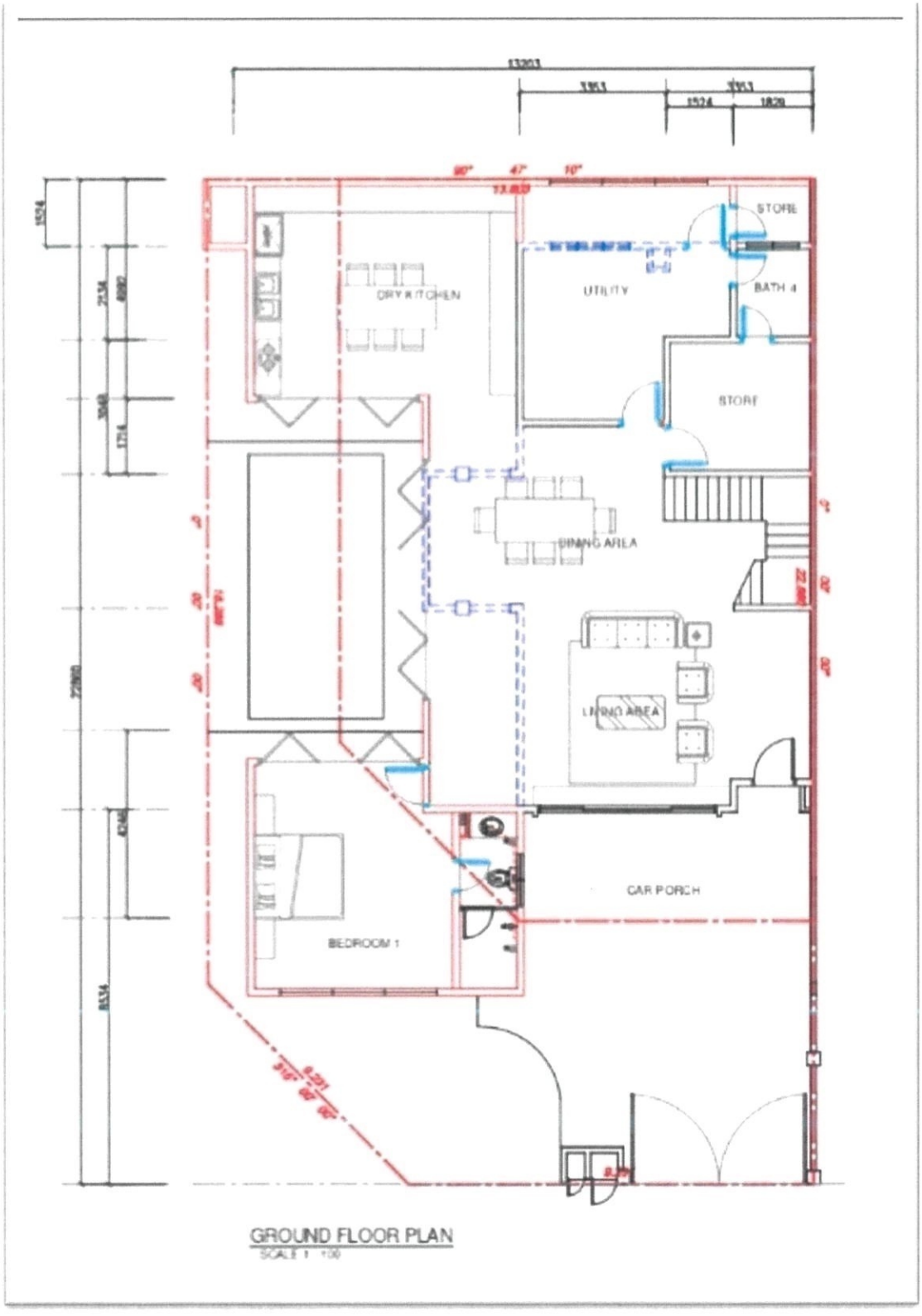


Figure 3.1 : Ground floor layout plan

Source: MAG Builders Sdn Bhd

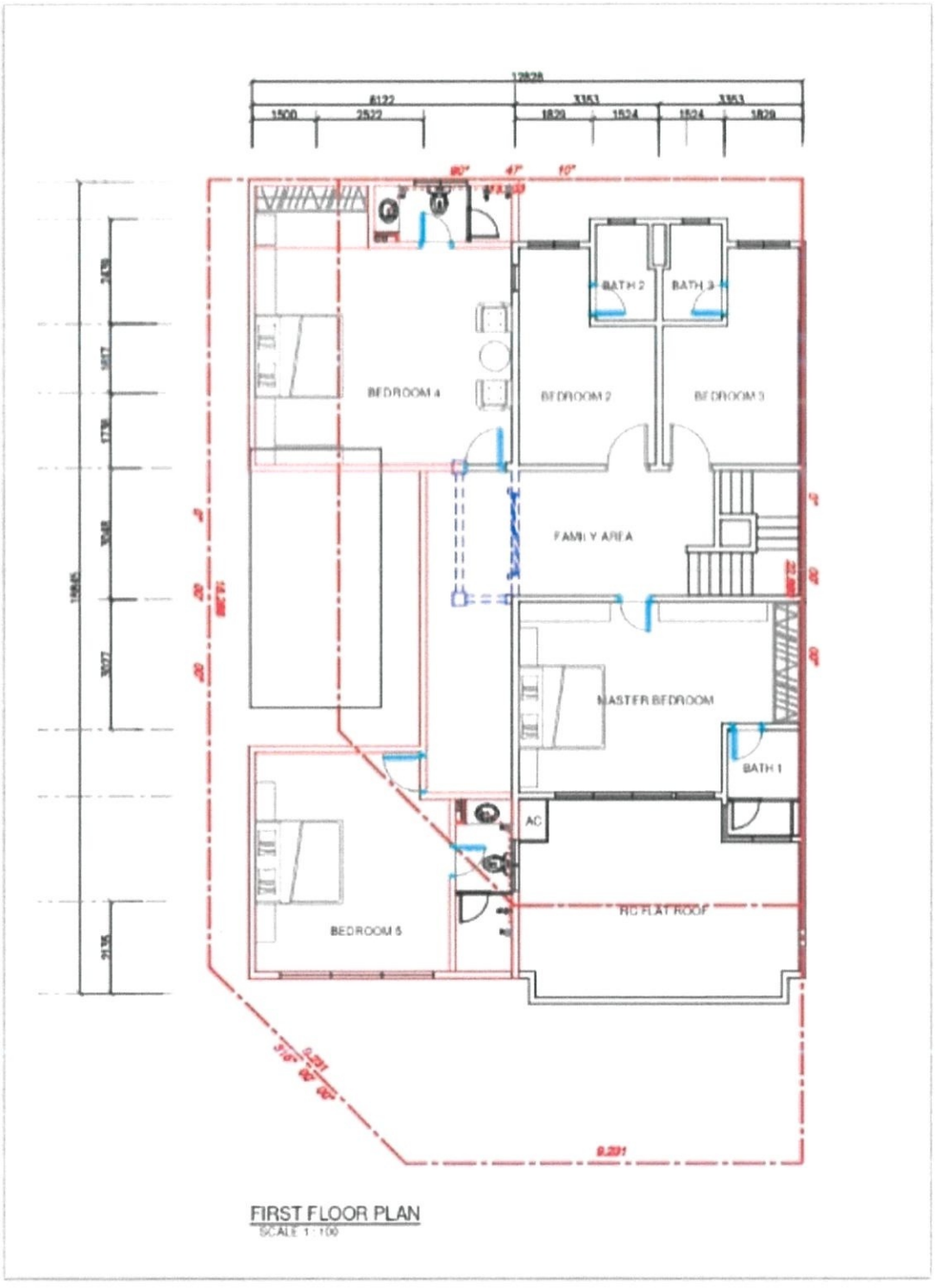


Figure 3.2 : First floor layout plan

Source: MAG Builders Sdn Bhd

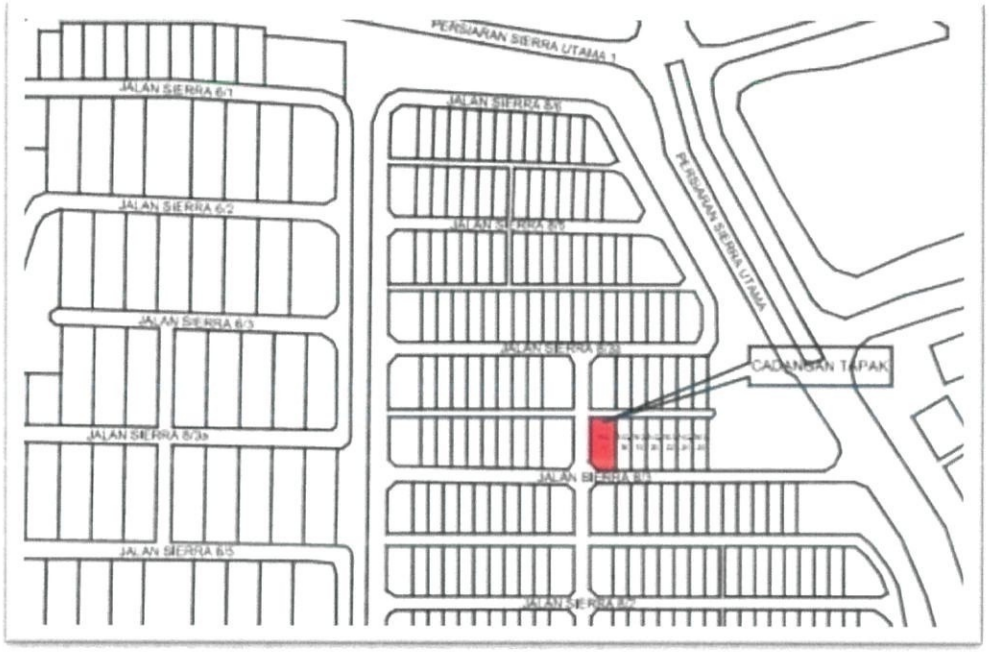


Figure 3.3 : Site location

Source: MAG Builders Sdn Bhd

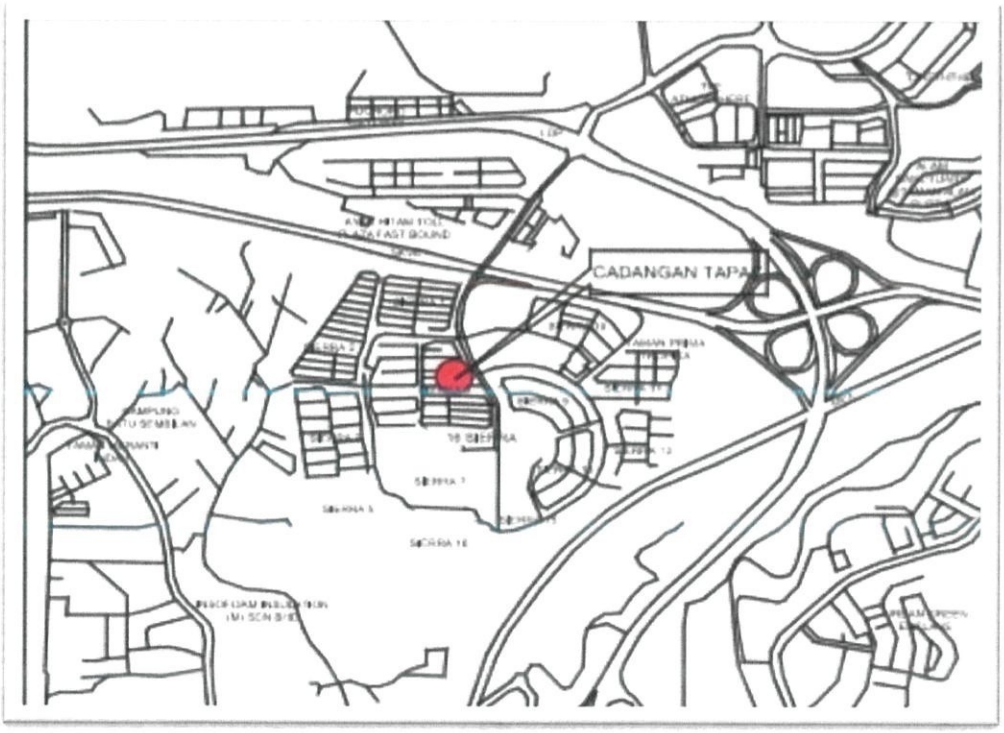


Figure 3.4 : Site location

Source: MAG Builders Sdn Bhd

3.2 Identify the important stages of building structures construction.

There are a bunch of works to do in constructing building structures. Basically, workers need to know the whole stages for constructing the building. Then, the workers will able to identify the important stages in structures work. The important stages will be used as a data to prepare a progress schedule for the project (Figure 3.5 and Figure 3.6). The main purpose of progress schedule is to define any delay of stages and also to mark what stages are done or on progress.

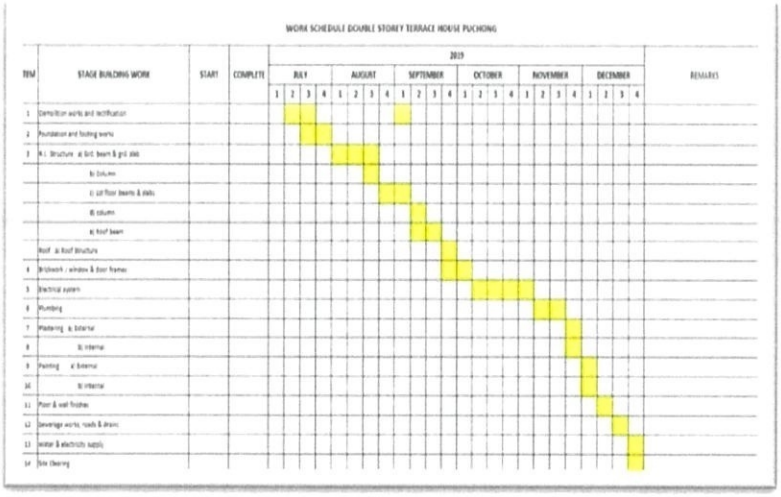


Figure 3.5 : Progress work schedule in excel

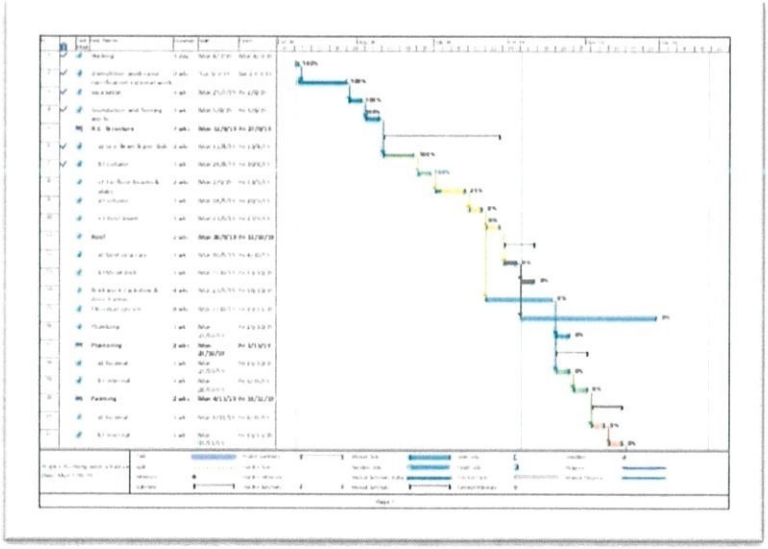


Figure 3.6 : Progress work schedule in Microsoft Project

The site work began with excavation for pad footing or foundation. This part is known as a base for the building. This project did not require excavator machinery so the method used only manual excavation by the workers using the suitable tools (figure 3.7). The project area has a limited space for huge machinery and tools. Figure 3.8 shows excavated soil for foundation.

Figure 3.7 : Worker excavating the foundation

Source: MAG Builders Sdn Bhd

Figure 3.8 : Excavated soil for foundation

Source: MAG Builders Sdn Bhd

Then, the excavated area filled with reinforcement bars and also concrete mixture (figure 3.9). Next stage runs after the foundation was totally cured. Figure 3.10 shows excavated ground beam.

Figure 3.9 : Foundation filled with concrete

Source: MAG Builders Sdn Bhd

Figure 3.10 : Excavated ground beam.

Source: MAG Builders Sdn Bhd

Next, the project continued with ground beam excavation. Ground beam excavation also by man power and there was no excavator used. Formwork were installed (Figure 3.12) and reinforcement bars placed inside of the formwork (Figure 3.11). After all parts are set, concrete mixture poured into the formwork (Figure 3.13). The formwork dismantled after the ground beam cured (Figure 3.14).

Figure 8 : Reinforcement bars placed in formwork

Figure 3.12 : Ground beam formwork

Figure 3.13 : Ground beam formwork filled with concrete

Figure 9 : Ground beam

Source: MAG Builders Sdn Bhd

For the ground floor slab, the labourer worked for it after column construction is done. Reinforcement bars placed on the cleared area and concrete were poured on it (Figure 3.15 and Figure 3.16). The concrete was mixed and poured using wheelbarrow.

Figure 3.15 : Ground floor slab on progress

Figure 3.16 : Ground floor slab on progress

Then, construction for ground floor column. The steps are same as ground beam but the different is the position. Ground beam is the horizontal structural members meanwhile column is the vertical structural member that transfers load from the beam directly into the ground. After the column formwork installed (Figure 3.17), reinforcement bars placed inside of the formwork. Then, concrete filled inside of the formwork from the bottom to the top of the column formwork. The formwork dismantled after the concrete it cured (Figure 3.18).

Figure 3.17 : Column formwork

Source: MAG Builders Sdn Bhd

Figure 3.18 : Completed slab and column formwork dismantled

Next, first floor beam construction. The construction method is same as the ground beam. However, this beam has another part called soffit since it is hanging and not lay down on the ground as ground beam. So, for the formwork, some supporters are placed to support the formwork (Figure 3.19). Supporters have to be in suitable amount and strong enough to avoid any failure during the first-floor beam construction. Then, the next steps proceed same as the other earlier structure. Figure 3.20 and Figure 3.21 shows the first floor beam formwork.

Figure 3.19 : First floor beam formwork

Source: MAG Builders Sdn Bhd

Figure 3.20 : First floor beam formwork

Figure 10 : First floor beam formwork

For the first-floor slab, the methods were the same as the ground floor slab. However, this time the concrete was placed by crane and concrete bucket (Figure 3.24). There were a few workers needed to control the movement of the concrete bucket (Figure 3.25). The concrete used also ready mix. There were a lot of temporary supporters placed to support the huge amount of concrete mix (Figure 3.22). Figure 3.23 shows the progress of first floor slab.

Figure 3.22 : Temporary supporters for first floor slab.

Figure 3.23 : First floor slab on progress.

Source: MAG Builders Sdn Bhd

Figure 114 : Concrete poured on the slab.

Source: MAG Builders Sdn Bhd

Figure 3.25 : Workers are handling the concrete bucket.

Source: MAG Builders Sdn Bhd

For the first floor column construction, the methods were the same as the ground floor column construction. Figure 3.26 shows the first floor column formwork dismantled.

Figure 12 : First floor column formwork dismantled.

Source: MAG Builders Sdn Bhd

Last but not least, roof beam construction. The methods for roof beams were same as the first-floor beam method. However, the workers needed to keep caution more than usual since they were working on the higher level. This roof beam also need to be strong enough to transfer the loads from the roof finishes. Figure 3.27 and Figure 3.28 shows the roof beam formwork on progress.

Figure 13 : Roof beam formwork on progress

Source: MAG Builders Sdn Bhd

Figure 14 : Roof beam formwork on progress

Source: MAG Builders Sdn Bhd

3.3 Determination of the material used for building structure

As mentioned earlier, building structure is the main parts of a building. So, it should be strong enough to endure the loads. One of the factors in improving structure strength is strong materials. It is very important to choose the best and perfect material for structure. Common material used in structure constructing are formwork (Figure 3.33), steel and concrete. Material for concrete mix are cement, sand, aggregates and water. The water used in concrete mix must be free of organic material, clay, and salts; a general criterion is that the water should be fit for drinking (penguin). This is to avoid any reaction between the steel and the water that caused corrosion and leads to low strength concrete. Concrete is strong under compression but weak in tensile strength, so steel added is to improve the tensile strength for concrete. The surface of reinforcement steel surface often deformed to promote a better bond with the concrete (Wikipedia, 2019). The plywood for formwork (Figure 3.32) has to be solid with no holes or defects to avoid any concrete leaking. For this project, plywood 3mm needed for formwork, Y12 steel (Figure 3.29 and Figure 3.30) and R6 steel (Figure 3.31) for linker and concrete mixture. Figure 3.34 shows steel structure for slab and Figure 3.35 shows steel structure for beam.

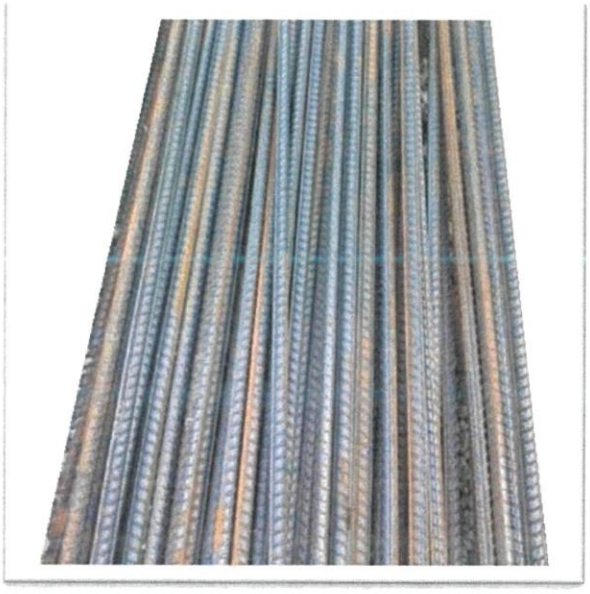


Figure 3.29 : Y12 reinforcement steel

Source: Google Images

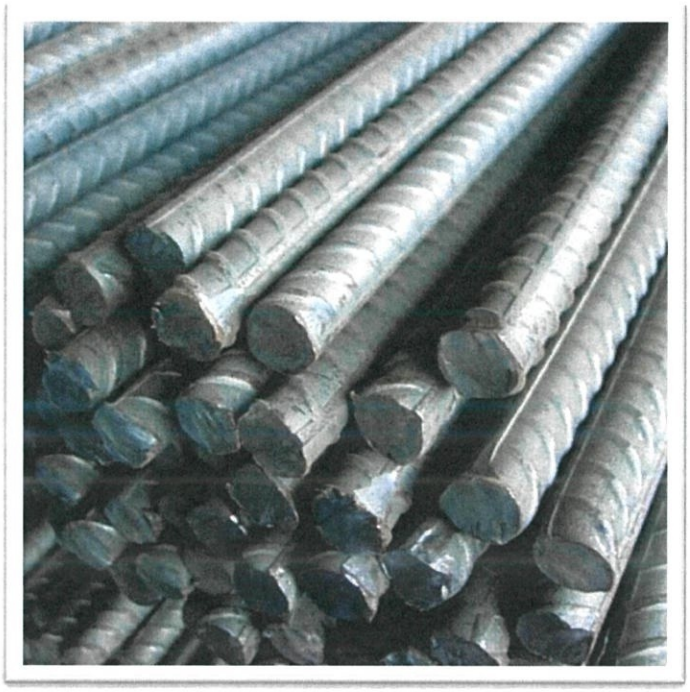


Figure 3.30 : Y12 reinforcement steel`s surface

Source: Google images

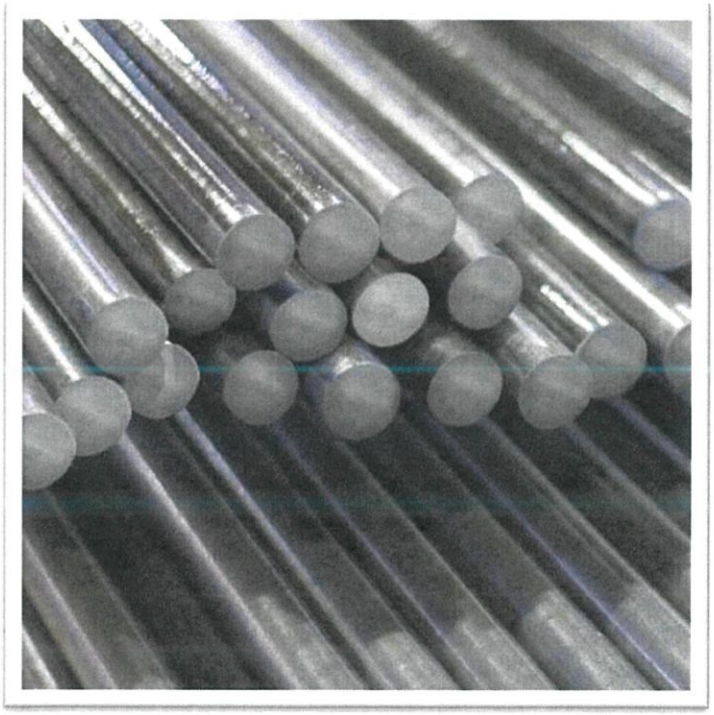


Figure 3.31 : R6 steel

Source: Google Images

Figure 15 : Plywood for formwork

Figure 3.33 : Plywood formwork

Source: MAG Builders SDN BHD

Figure 3.34 : Steel structure for slab

Source: MAG Builders SDN BHD

Figure 3.35 : Steel structure for beam

Source: MAG Builders SDN BHD

3.4 Identification of the problems encountered during the construction and solutions on site.

No matter what project it is, how much does it cost, how smooth it is, there must be problem that cannot be avoided and need to be solved. For this project, there was no big problems happened but only small problem. However, it happened frequently. Even though there are too many problems faced, there are also many solutions for it. The management and director worked very hard to find out the solution.

a) Lack of Perfect Timing

The supplier could not send the ordered item exactly on time that have been asked. This usually happened for some reason, such as the supplier has other item to be delivered so that they could not fulfil our request. This caused some of the works are delayed because of not enough material. The solution is by pick up the item. This company has their own vehicle for material transportation such as lorry and four wheels automotive vehicle. If the supplier could not send the ordered material on time, the company`s driver will pick up the material from the hardware or store directly to the site.

b) Weather and Environment Problems

Since September, this country faced haze problems. It was quite horrible because it reached the dangerous level that effecting every area including the site area. This problem caused the workers could not do their work as usual. Haze caused somebody to dehydrate and also heat stroke if exposed to the heat for a long duration. Due to the problem, the workers and labourer were asked to wear mask and glasses if necessary. As a result, they were able to do their work as usual. However, the director asked them to avoid themselves from working at the area that directly exposed to the sun.

c) Limited Working Time Problem

This project is in a residential area, sound pollution from the construction works should be minimized. So, the authority came out with a notice that says, the construction works operation may start at 8.00 am and has to end at 5.00 pm. This caused the workers could not do their work with extra time and the project also cannot be done earlier from the estimated duration. For the limited working time, the workers had to do their work as fast as possible. They also were asked to do multitasking if they able to do. Besides, on Saturday the labourer asked to work and the director paid double for their salary on that day. Everyone has to play their role to complete the project on the date line.

CHAPTER 4.0

CONCLUSION

4.1 Conclusion

In construction project, everything has to be very detail and carefully planned since it involves human lives and property. Every drawing should be verified by the authority and checked by the specialist. This is because, the building will be used for a very long duration and many people. Every building will fulfil the requirement if it is safe for everybody uses.

For the construction, it very important to make sure the structures are totally cured before continue with other works. Cured means the structure is already reach their maximum strength and durability. Every structure has their own duration to be totally cured. It is dangerous to work with structure that is not totally cured, failure possibility is really high. Other than that, structures must be construct according to the plan to make sure the loads transferred smoothly to the ground. Besides, compaction process should be done carefully to avoid any honeycomb happens. Honeycomb caused the structure`s strength decreased and lead to structure failure.

For costing, the budget should be estimated accurately to avoid any losses to the company. Every material even additional item bought for the project, must be recorded for the account statement data. Besides, any uses should be minimized as possible to reduce the cost. For example, if the transportation for material delivery is costly, use the company vehicle to pick up the item. Moreover, other material can be pickup all at once. This will save the fuel, toll and other expenses.

Since the workers majority are foreigner, the managers and director should know on how to communicate with them. This is because sometimes workers do not know the proper way to do the work, this is the supervisor duty to guide them. It is important to let them understand everything the project. Other than that, the responsible person should make sure they understand the salary system to avoid any provoke among them that could cause any work delayed.

REFERENCES

Blockley, B. (2005). The New Penguin Dictionary of Civil Engineering. Penguin Books Ltd., England.

Barrie, Donald S. & Paulson Boyd. C. (1992). Professional Construction Management. Mc Graw-Hill, U.S.A.

Ching, Francis D.K. (2001). Building Construction Illustrated. John Wiley & Sons, Canada.

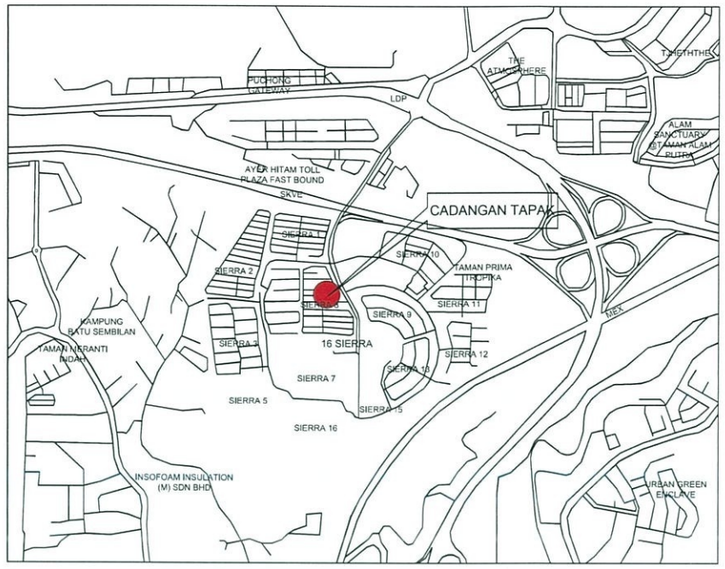
Atlas Foundation Company. (2019). Available from: https://www.atlasfoundation.com/common-culprits-4-factors-leading-structural-failure/

Daily Civil. (2019). Available from: http://www.dailycivil.com/basic-construction-process-rcc-column/

Wikipedia. (2019). Available from: https://en.wikipedia.org/wiki/Rebar

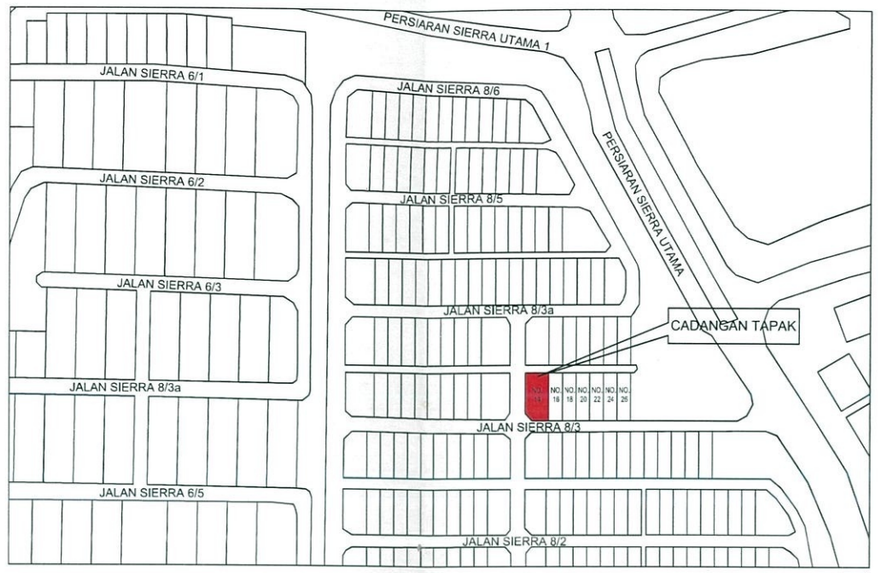
Wikipedia. (2019). Available from:

https://en.wikipedia.org/wiki/History_of_construction



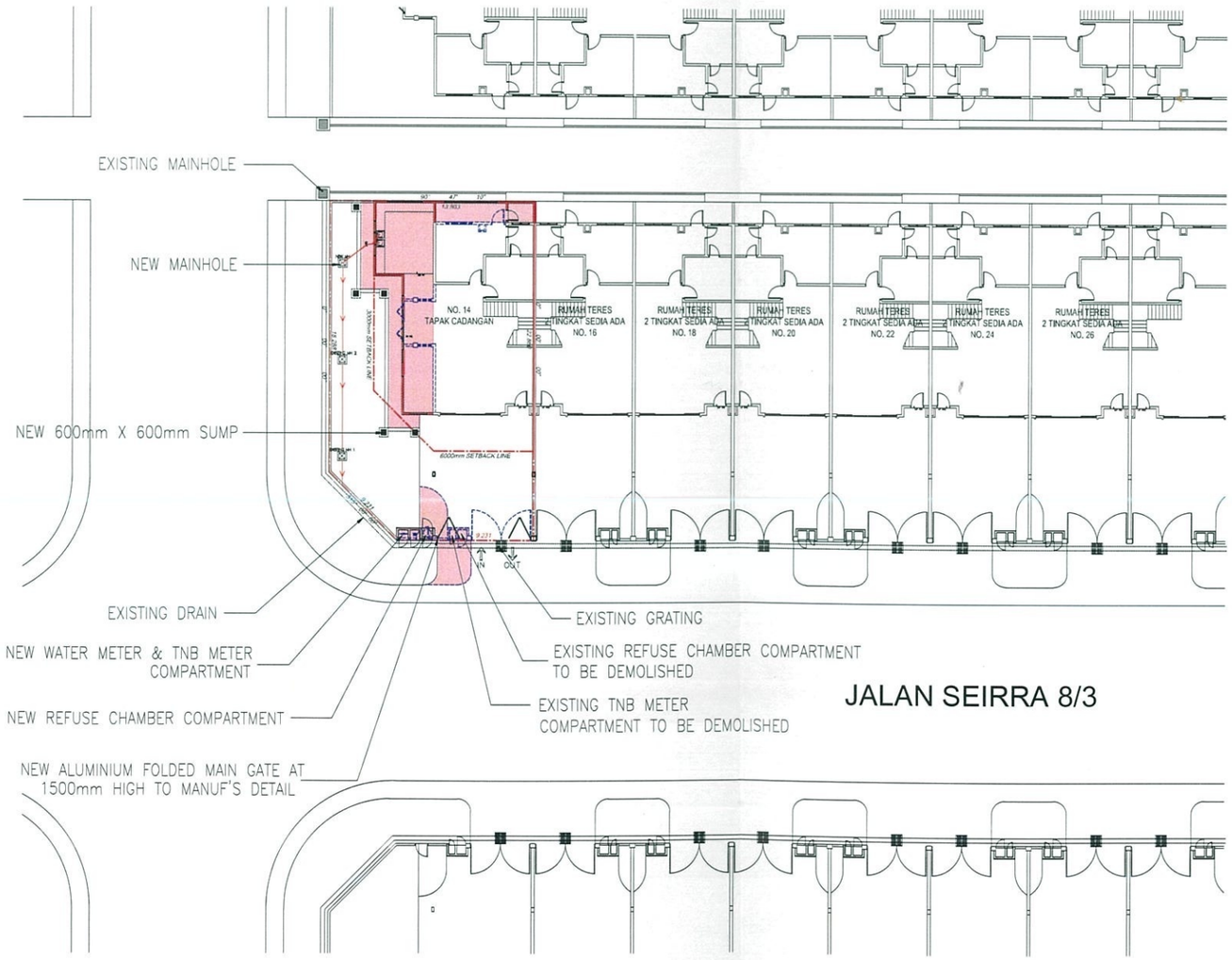
KIBLAT 292°30'

KEY PLAN
SCALE : NTS



KIBLAT 292°30'

LOCATION PLAN
SCALE : NTS



KIBLAT 292°30'

SITE PLAN
SCALE 1 : 200

NO. FAIL MPSepang :

UNTUK KEGUNAAN MPsepang:

TAJUK PROJEK

CADANGAN TAMBAHAN DAN PINDAAN KEPADA RUMAH TERES 2 TINGKAT SEDIA ADA DI NO.14, JALAN SIERRA 8/3, BANDAR 16 SIERRA, 47110 PUCHONG, SELANGOR DARUL EHSAN

UNTUK TETUAN :
MOHD KAMIL BIN AB GHANI &
ROHANA BINTI AHMAD

PEMILIK :

MOHD KAMIL BIN AB GHANI
NO K/P :
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA, SELANGOR DARUL EHSAN

ROHANA BINTI AHMAD
NO K/P :
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA, SELANGOR DARUL EHSAN

ARKITEK :

Saya memperakui bahawa perincian dalam pelan–pelan ini adalah menurut kehendak–kehendak Undang–undang Kecil Bangunan Seragam Selangor 1986 dan saya setuju terima tanggungjawab penuh dengan sewajarnya.

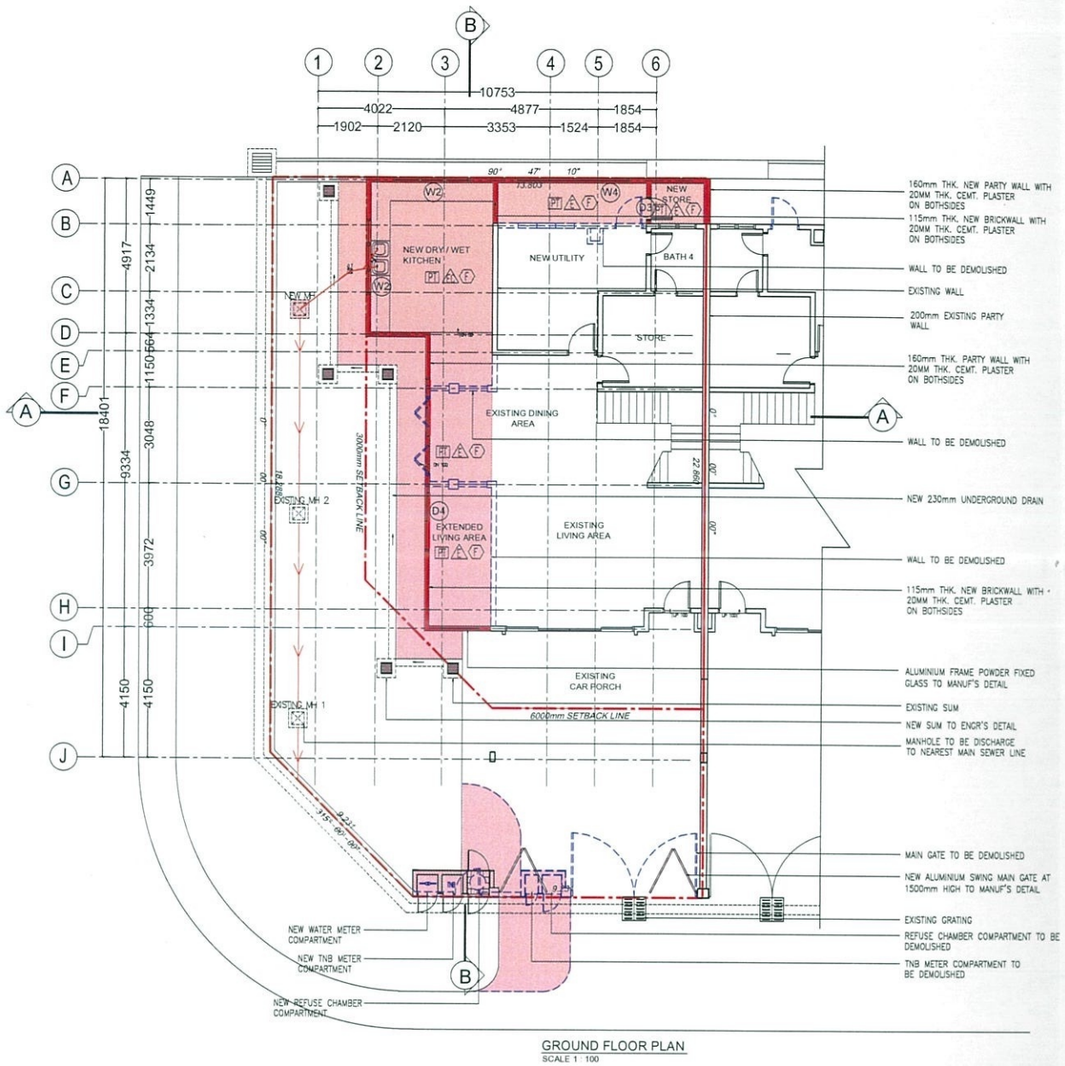
mag architect
MAG ARCHITECT SDN BHD (1193913-D)
A-02-16,block A, Radia Office, Persiaran Arked, Bukit Jelutong, Seksyen U8, 40150 Shah Alam, Selangor
h/p :
tel :

TAJUK LUKISAN :
- KEY PLAN
- LOCATION PLAN
- SITE PLAN

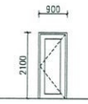
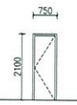
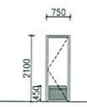
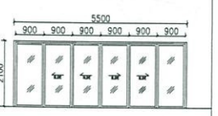
DISEMAK	MUHSIN
DIREKA	MAG ARCHITECT
DILUKIS	HUSAIRY
SKALA	AS SHOWN
PINDAAN	

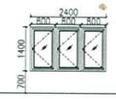
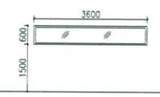
NO LUKISAN :
MAG / RP / BP / 19 / 01

COP TARIKH :



GROUND FLOOR PLAN
SCALE 1 : 100

SYMBOL	D1	D2	D3	D4
ELEVATION ▽FLOOR LEVEL				
PLAN				
SIZE	900(W) x 2100(H)	750(W) x 2100(H)	750(W) x 2100(H)	5500(W) x 2100(H)
DESCRIPTION	H.W FRAMED LAMINATED COMPRESSED SOLID DOOR	H.W FRAMED WATER RESISTANCE PLYWOOD FLUSH DOOR TO MANUF'S DETAIL	H.W FRAMED WATER RESISTANCE PLYWOOD FLUSH DOOR C/W BOTTOM LOUVERS TO MANUF'S DETAIL	POWDER COATED ALUMN. FRAMED SLIDING DOOR WITH GLASS PANEL
LOCATION	FIRST FLOOR – BEDROOM 4	FIRST FLOOR – BATHROOM 4	GROUND FLOOR – NEW STORE	GROUND FLOOR – EXTENDED & EXISTING DINING – EXTENDED & EXISTING LIVING AREA FIRST FLOOR – EXTENDED EXISTING FAMILY AREA

SYMBOL	W1	W2	W3	W4
ELEVATION ▽FLOOR LEVEL				
PLAN				
SIZE	900(W) x 2100(H)	750(W) x 2100(H)	750(W) x 2100(H)	5500(W) x 2100(H)
DESCRIPTION	ALUMINIUM FRAME POWDER FIXED GLASS WINDOW	ALUMINIUM FRAME POWDER CASEMENT GLASS WINDOW	ALUMINIUM FRAME TOP HUNG WINDOW	ALUMINIUM FRAME POWDER FIXED GLASS WINDOW
LOCATION	GROUND FLOOR – EXTENDED & EXISTING LIVING AREA FIRST FLOOR – EXTENDED & EXISTING FAMILY AREA	GROUND FLOOR – NEW DRY/WET KITCHEN	FIRST FLOOR – BATHROOM 4	GROUND FLOOR – EXTENDED NEW UTILITY FIRST FLOOR – BEDROOM 4

JALAN SIERRA 8/3

JADUAL PENGIRAAN LANTAI TAMBAHAN BARU

GROUND FLOOR	FLOOR AREA (m²)	FIRST FLOOR	FLOOR AREA (m²)
NEW DRY / WET KITCHEN	19.77	NEW BEDROOM 4	20.84
NEW UTILITY (EXTENDED)	7.07	BATHROOM 4	5.83
NEW STORE	2.65	EXTENDED FAMILY AREA	16.15
EXTENDED LIVING AREA	9.70		
EXTENDED DINING AREA	10.10		
TOTAL	49.29		42.82
GRAND TOTAL	92.11		

JADUAL PENGIRAAN PENCAHAYAAN DAN PENGUDARAAN

GROUND FLOOR	FLOOR AREA (m²)	REQUIRED (10%)	PROVIDED	PERCENTAGE (%)
NEW DRY/WET KITCHEN	19.77	1.977	6.72	34.00
NEW UTILITY + EXTENDED	23.84	2.384	2.16	9.06
NEW STORE	2.65	0.265	PENGCAHAYAAN & PENGUDARAAN MEKANIKAL	
EXISTING LIVING AREA + EXTENDED	39.26	3.926	11.55	29.41
EXISTING DINING AREA + EXTENDED	24.17	2.417	11.55	47.79
FIRST FLOOR	FLOOR AREA (m)	REQUIRED (10%)	PROVIDED	PERCENTAGE (%)
NEW BEDROOM 4	20.84	2.084	2.16	10.36
BATHROOM 4	5.83	0.583	0.72	12.34
EXISTING FAMILY AREA + EXTENDED	29.66	2.966	11.55	38.94

LEGEND

FLOOR FINISH
- TS TIMBER STRIP
- PT PORCELAIN TILE
- NHT NON-SLIP HOMOGENEOUS TILE

WALL FINISH
- A EMULSION PAINT
- A CERAMIC TILE

CEILING FINISH
- F FIBROUS PLASTER CEILING

LEGEND
- EXISTING
- NEW WORK
- DEMOLISH

NO. FAIL MPSepang :

UNTUK KEGUNAAN MPsepang:

TAJUK PROJEK
CADANGAN TAMBAHAN DAN PINDAAN KEPADA RUMAH TERES 2 TINGKAT SEDIA ADA DI NO.14, JALAN SIERRA 8/3, BANDAR 16 SIERRA, 47110 PUCHONG, SELANGOR DARUL EHSAN

UNTUK TETUAN :
MOHD KAMIL BIN AB GHANI & ROHANA BINTI AHMAD

PEMILIK :

MOHD KAMIL BIN AB GHANI
NO K/P :
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA, SELANGOR DARUL EHSAN

ROHANA BINTI AHMAD
NO K/P :
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA, SELANGOR DARUL EHSAN

ARKITEK :

Saya memperakui bahawa perincian dalam pelan-pelan ini adalah menurut kehendak-kehendak Undang-undang Kecil Bangunan Seragam Selangor 1986 dan saya setuju terima tanggungjawab penuh dengan sewajarnya.

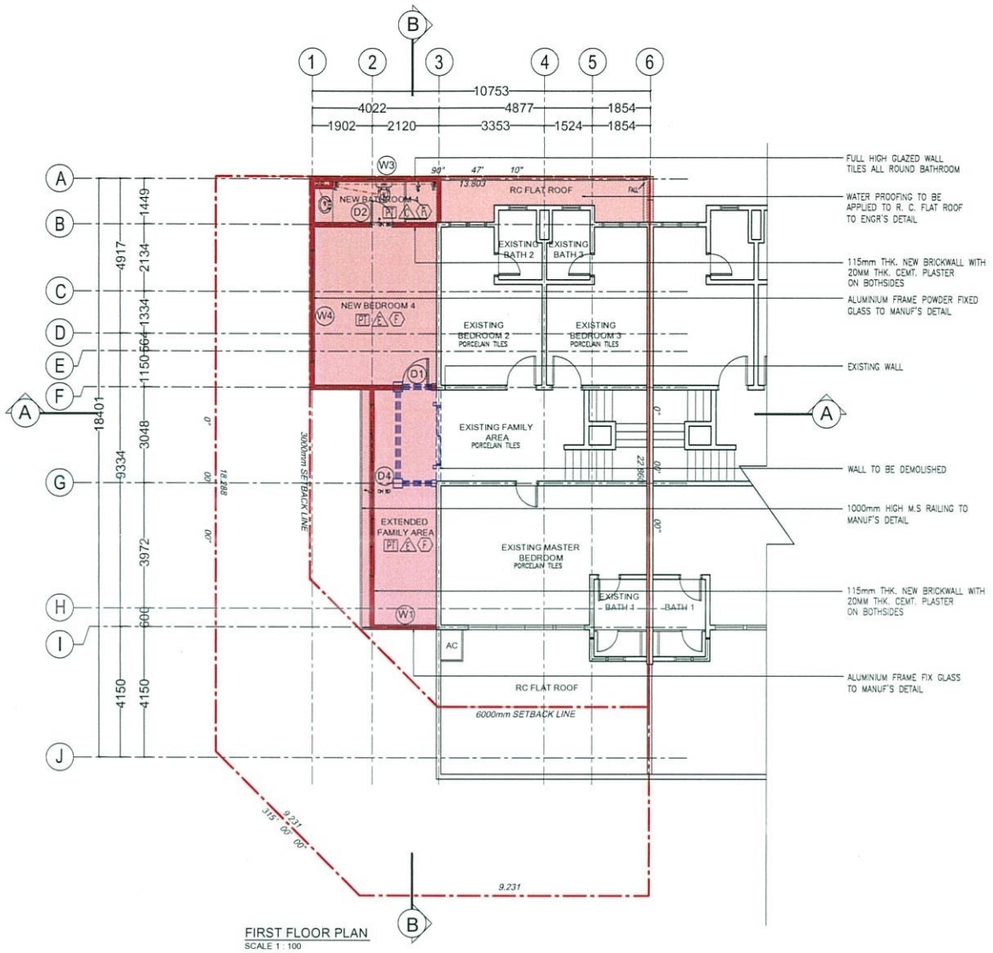
MAG ARCHITECT SDN BHD (1195913-D)
A-02-16,block A, Radia Office, Persiaran Anked, Bukit Jelutong, Seksyen U8, 40150 Shah Alam, Selangor
h/p :
tel :

TAJUK LUKISAN :
- GROUND FLOOR PLAN
- JADUAL PINTU DAN TINGKAP
- JADUAL PENGIRAAN LANTAI
- JADUAL PENGIRAAN PENCAHAYAAN DAN PENGUDARAAN

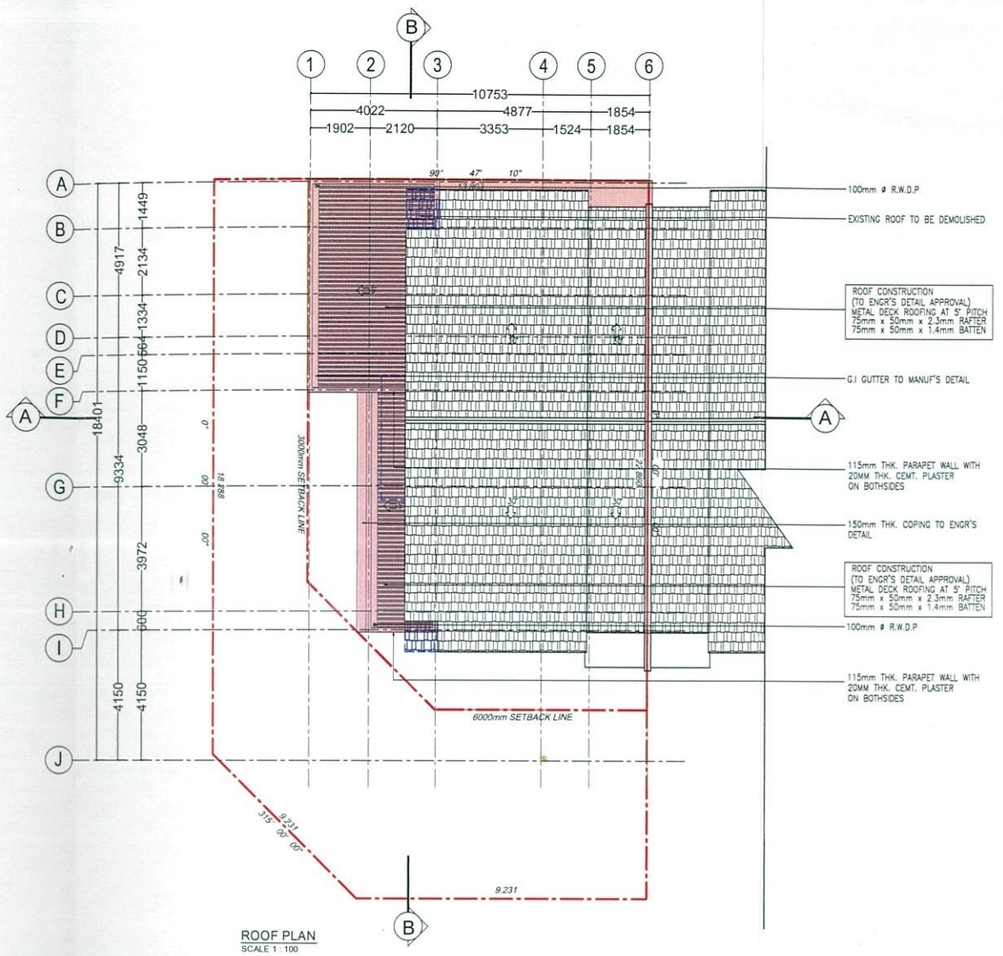
DISEMAK	MUHSIN
DIREKA	MAG ARCHITECT
DILUKIS	HUSAIRY
SKALA	AS SHOWN
PINDAAN	

NO LUKISAN :
MAG / RP / BP / 19 / 02

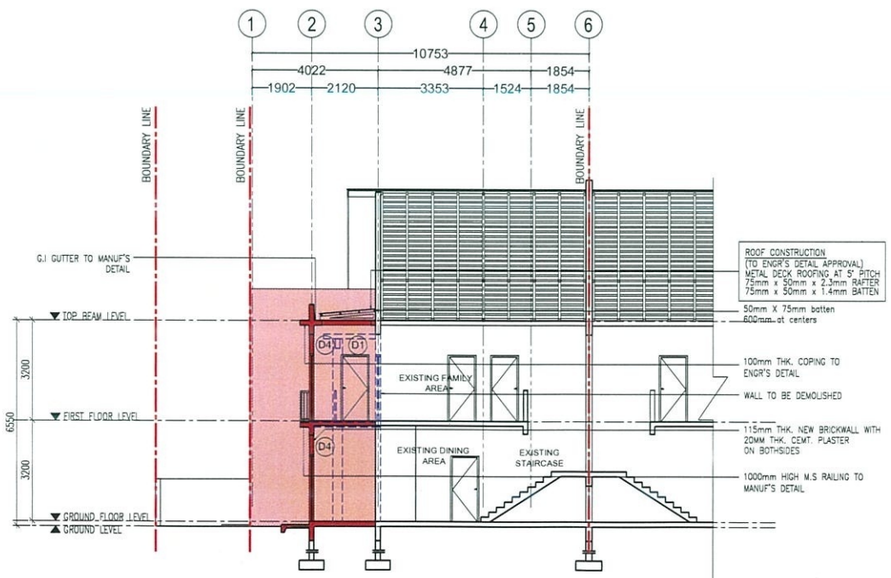
COP TARIKH :



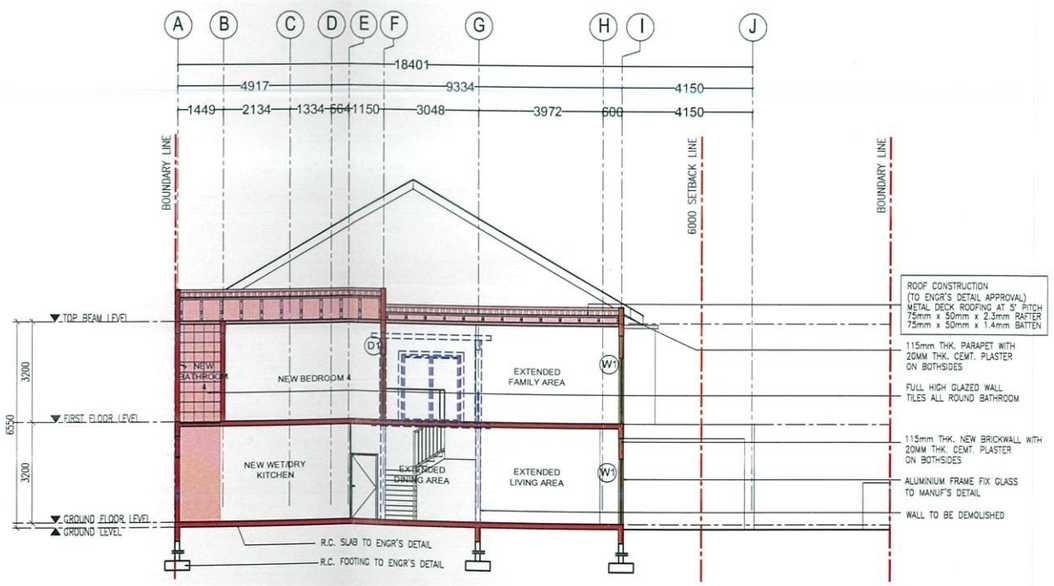
FIRST FLOOR PLAN
SCALE 1 : 100



ROOF PLAN
SCALE 1 : 100



SECTION A - A
SCALE 1 : 100



SECTION B - B
SCALE 1 : 100

LEGEND

FLOOR FINISH
- TS TIMBER STRIP
- PT PORCELAIN TILE
- NH NON-SLIP HOMOGENEOUS TILE

WALL FINISH
- A EMULSION PAINT
- A CERAMIC TILE

CEILING FINISH
- F FIBROUS PLASTER CEILING

LEGEND	
	EXISTING
	NEW WORK
	DEMOLISH

NO. FAIL MPSepang :

UNTUK KEGUNAAN MPsepang:

TAJUK PROJEK

CADANGAN TAMBAHAN DAN PINDAAN KEPADA RUMAH TERES 2 TINGKAT SEDIA ADA DI NO.14, JALAN SIERRA 8/3, BANDAR 16 SIERRA, 47110 PUCHONG, SELANGOR DARUL EHSAN

UNTUK TETUAN :
MOHD KAMIL BIN AB GHANI &
ROHANA BINTI AHMAD

PEMILIK :

MOHD KAMIL BIN AB GHANI
NO K/P :
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA,
SELANGOR DARUL EHSAN

ROHANA BINTI AHMAD
NO K/P :
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA,
SELANGOR DARUL EHSAN

ARKITEK :

Saya memperakui bahawa perincian dalam pelan-pelan ini adalah menurut kehendak-kehendak Undang-undang Kecil Bangunan Seragam Selangor 1986 dan saya setuju terima tanggungjawab penuh dengan sewajarnya.

MAG ARCHITECT SDN BHD (1190813-D)
A-02-18,block A, Radia Office, Persiaran Arked, Bukit Jelutong, Sekayen U8, 40150 Shah Alam, Selangor
h/p :
tel :

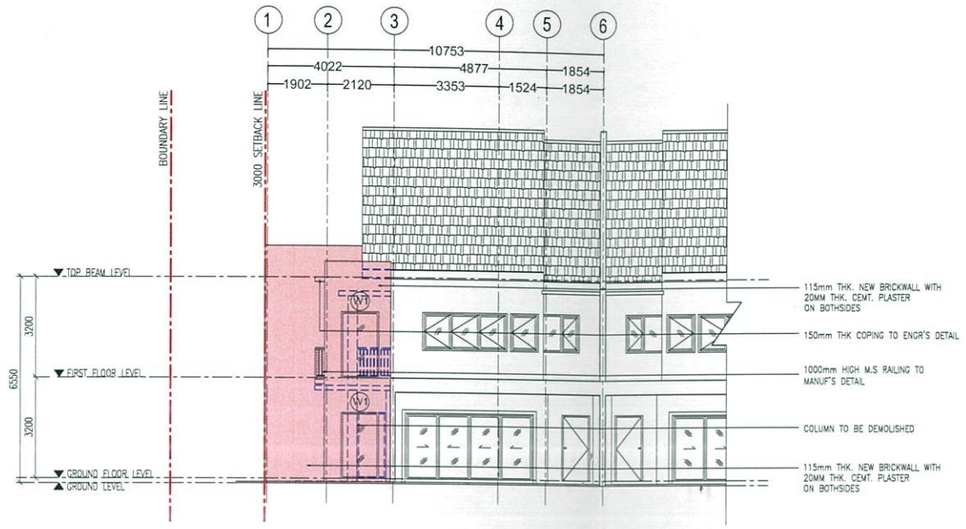
TAJUK LUKISAN :

- FIRST FLOOR PLAN
- ROOF PLAN
- SECTION A-A
- SECTION B-B

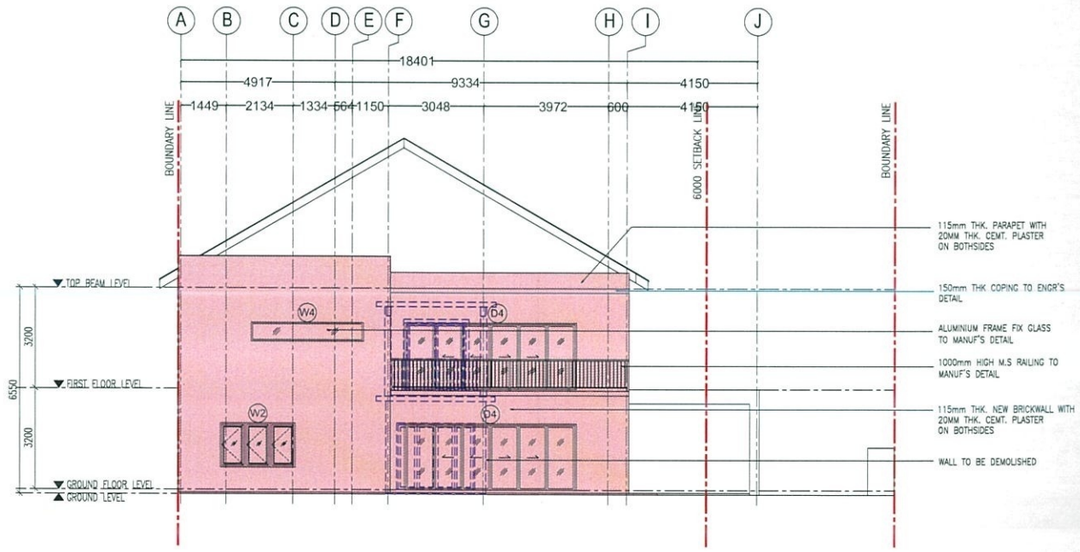
DISEMAK	MUHSIN
DIREKA	MAG ARCHITECT
DILUKIS	HUSAIRY
SKALA	AS SHOWN
PINDAAN	

NO LUKISAN :
MAG / RP / BP / 19 / 03

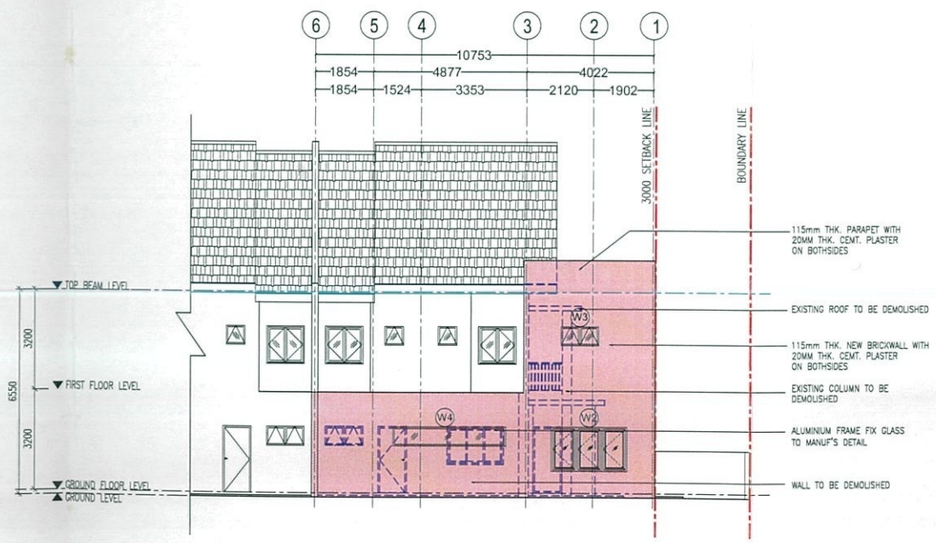
COP TARIKH :



FRONT ELEVATION
SCALE 1 : 100



LEFT ELEVATION
SCALE 1 : 100



REAR ELEVATION
SCALE 1 : 100

LEGEND	
	EXISTING
	NEW WORK
	DEMOLISH

NO. FAIL MPSepang :

UNTUK KEGUNAAN MPsepang:

TAJUK PROJEK

CADANGAN TAMBAHAN DAN PINDAAN KEPADA RUMAH TERES 2 TINGKAT SEDIA ADA DI NO.14, JALAN SIERRA 8/3, BANDAR 16 SIERRA, 47110 PUCHONG, SELANGOR DARUL EHSAN

UNTUK TETUAN :
MOHD KAMIL BIN AB GHANI &
ROHANA BINTI AHMAD

PEMILIK :

MOHD KAMIL BIN AB GHANI
NO K/P :
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA,
SELANGOR DARUL EHSAN

ROHANA BINTI AHMAD
NO K/P :
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA,
SELANGOR DARUL EHSAN

ARKITEK :

Saya memperakui bahawa perincian dalam pelan-pelan ini adalah menurut kehendak-kehendak Undang-undang Kecil Bangunan Seragam Selangor 1986 dan saya setuju terima tanggungjawab penuh dengan sewajarnya.

mag architect
MAG ARCHITECT SDN BHD (1195813-D)
A-02-18,block A, Radia Office, Persiaran Anasi, Bukit Jelutong, Sekayan U8, 40150 Shah Alam, Selangor.
h/p :
tel :

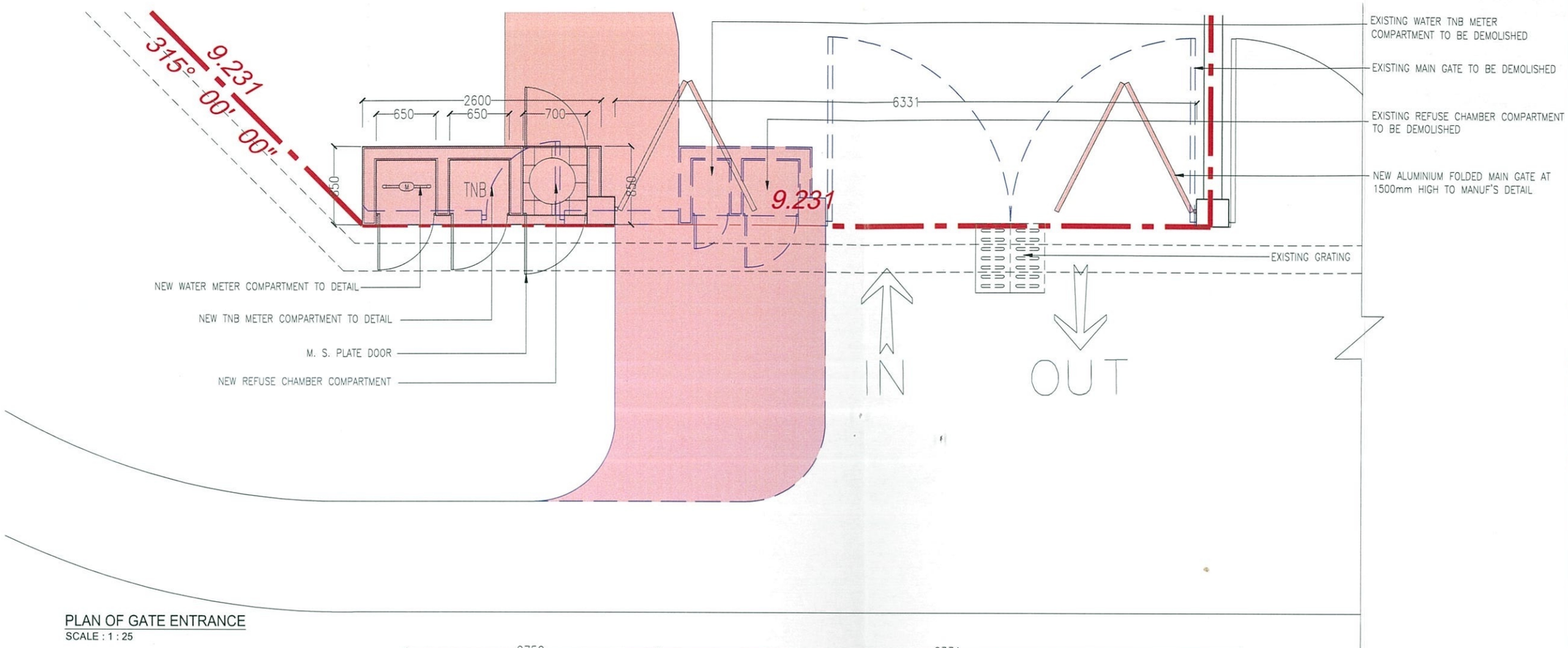
TAJUK LUKISAN :

- FRONT ELEVATION
- LEFT ELEVATION
- REAR ELEVATION

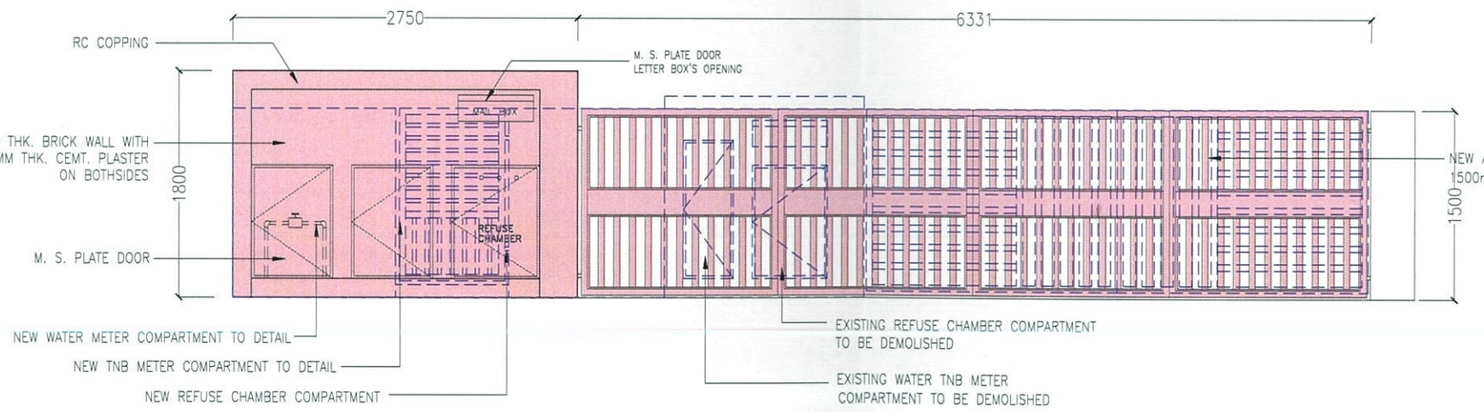
DISEMAK	MUHSIN
DIREKA	MAG ARCHITECT
DILUKIS	HUSAIRY
SKALA	AS SHOWN
PINDAAN	

NO LUKISAN :
MAG / RP / BP / 19 / 04

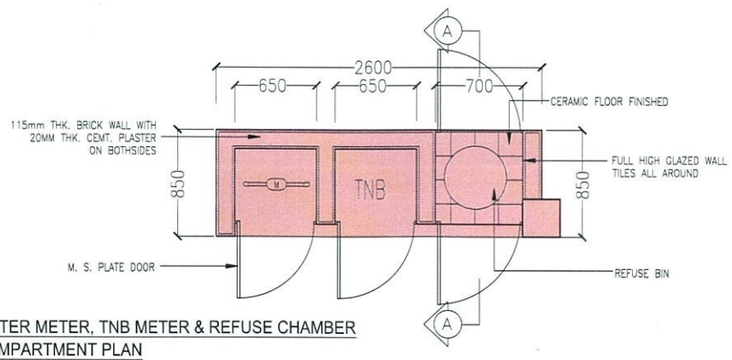
COP TARIKH :



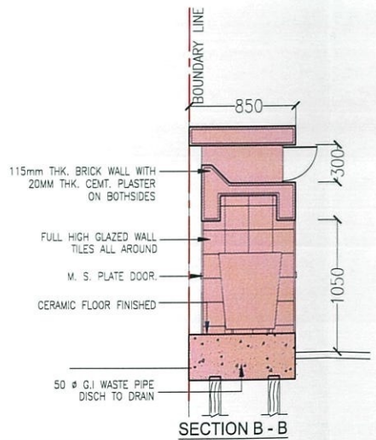
PLAN OF GATE ENTRANCE
SCALE : 1 : 25



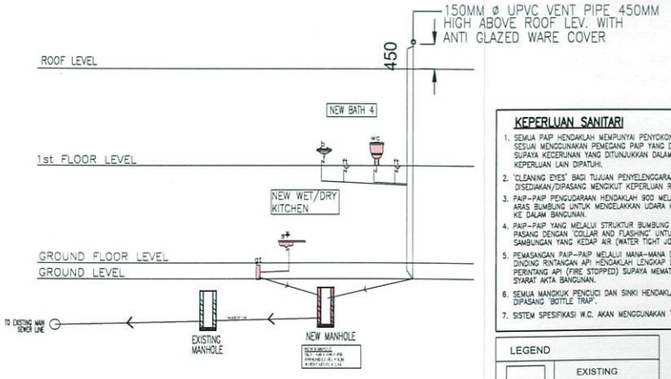
FRONT ELEVATION OF GATE 1 ENTRANCE
SCALE : 1 : 25



WATER METER, TNB METER & REFUSE CHAMBER COMPARTMENT PLAN
SCALE : 1 : 25



SECTION B - B
SCALE : 1 : 25



DIAGRAMMATIC SANITARY LAYOUT
SCALE : N.T.S

KEPERLUAN SANITARI

1. SEMUA PAIP HENDAKLAH MEMPUNYAI PENYOKONG/PENGIKAT YANG SESUAI MENGGUNAKAN PEMEGANG PAIP YANG DILULUSKAN SUPAYA KECERUNAN YANG DITUNJUKKAN DALAM PELAN DAN KEPERLUAN LAIN DIPATUHI.
2. 'CLEANING EYES' BAGI TUJUAN PENYELENGGARAAN HENDAKLAH DISEDIAKAN/DIPASANG MENGIKUT KEPERLUAN REKABENTUK .
3. PAIP–PAIP PENGUDARAAN HENDAKLAH 900 MELEBIHI ARAS BUMBUNG UNTUK MENGELAKKAN UDARA KOTOR MEMASUKI KE DALAM BANGUNAN.
4. PAIP–PAIP YANG MELALUI STRUKTUR BUMBUNG HENDAKLAH DI PASANG DENGAN 'COLLAR AND FLASHING' UNTUK MEMUJUDKAN SAMBUNGAN YANG KEDAP AIR (WATER TIGHT JOINT).
5. PEMASANGAN PAIP–PAIP MELALUI MANA–MANA DINDING DAN DINDING PENTANGAN API HENDAKLAH LENGKAP DENGAN PERINTANG API (FIRE STOPPED) SUPAYA MEMATUHI SYARAT–SYARAT AKTA BANGUNAN.
6. SEMUA MANGKUK PENCUCI DAN SINKI HENDAKLAH DISEDIAKAN/ DIPASANG 'BOTTLE TRAP'.
7. SISTEM SPESIFIKASI W.C. AKAN MENGGUNAKAN 'SISTEM DUAL PUMP'

LEGEND

	EXISTING
	NEW WORK
	DEMOLISH

NO. FAIL MPSepang :

UNTUK KEGUNAAN MPsepang:

TAJUK PROJEK
CADANGAN TAMBAHAN DAN PINDAAN KEPADA RUMAH TERES 2 TINGKAT SEDIA ADA DI NO.14, JALAN SIERRA 8/3, BANDAR 16 SIERRA, 47110 PUCHONG, SELANGOR DARUL EHSAN

UNTUK TETUAN :
MOHD KAMIL BIN AB GHANI & ROHANA BINTI AHMAD

PEMILIK :

MOHD KAMIL BIN AB GHANI
NO K/P : [redacted]
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA, SELANGOR DARUL EHSAN

ROHANA BINTI AHMAD
NO K/P :
NO 42, JALAN USJ 4/1D, 47600 SUBANG JAYA, SELANGOR DARUL EHSAN

ARKITEK :

Saya memperakui bahawa perincian dalam pelan–pelan ini adalah menurut kehendak–kehendak Undang–undang Kecil Bangunan Seragam Selangor 1986 dan saya setuju terima tanggungjawab penuh dengan sewajarnya.

mag architect
MAG ARCHITECT SDN.BHD (1125913-D)
A-02-16,block A, Radia Office, Persiaran Arked, Bukit Jelutong, Seksyen U8, 40150 Shah Alam, Selangor
h/p :
tel :

TAJUK LUKISAN :
- DETAIL OF GATE ENTRANCE
- DETAIL OF REFUSE CHAMBER
- REFUSE CHAMBER SECTION A - A
- DIAGRAMMATIC SANITARY LAYOUT

DISEMAK	MUHSIN
DIREKA	MAG ARCHITECT
DILUKIS	HUSAIRY
SKALA	AS SHOWN
PINDAAN	

NO LUKISAN :
MAG / RP / BP / 19 / 05

COP TARIKH :