



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

**THE CONSTRUCTION OF STEEL FRAMING SYSTEM FOR
PROJECT PEMBANGUNAN PROGRAM KHAS PERUMAHAN
PERWIRA NEGERI PERAK (PKPPNP) BAGI DAERAH
MANJUNG, NEGERI PERAK**

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(PERAK)**

DECEMBER 2018

It is recommended that the report of this practical training provided

By

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THE CONSTRUCTION OF STEEL FRAMING SYSTEM

accepted in partial fulfilment of requirement has for obtaining Diploma In Building.

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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 Asas Bina Enterprise Sdn Bhd for duration of 14 weeks starting from 3 September 2018 and ended on 7 December 2018. It is submitted as one of prerequisite requirements of DBG307 and accepted as a partial fulfilment of the requirements for obtaining the Diploma in Building.

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Date : 18th DECEMBER 2018

ACKNOWLEDGEMENT

Alhamdulillah, praise to Allah, the Most Merciful, the Most Graceful.

I would like to extend my heartfelt gratitude for the guidance, advice and help rendered throughout the period of training by the following group of amazing individuals. First and foremost, I would like to En Mohd Haiqal bin Ramli thank for the opportunity given, to conduct my training in his esteem company. His team of professionals comprising have enabled me to learn and develop my understanding, knowledge and feel of real time projects, and the theory involved in analysis of structures, building and civil works. They are also responsible towards streamlining and assessing my training. Also to the site personal, who have extended their cooperation and help to further enhance my ability in understanding the procedures in construction and site administration, tests procedures, site safety and best practices in the industry. It is an honour for me to be given the opportunity to work with all of you.

I would also like to thank all the UiTM lectures that have taught and nurtured me in becoming a better student and person. I would also like to extend my deepest appreciation to the lectures who are directly involved during my training stint. To Puan Ida Nianti binti Mohd Zin, Supervising Lecturer, En Muhammad Naim bin Mahyuddin, Practical Training Coordinator and Dr Dzulkarnaen bin Ismail, Programmer Coordinater, I values the time, effort, encouragement and ideas that they have contributed towards the successful completion of my training, this report and the valuable knowledge that have been shared over the last few semesters.

Last but not least, my special thanks to my beloved parents for their sacrifices over the years.

Thank you so much.

ABSTRACT

Industrialized building system (IBS) has been introduced in construction industry as early as 1960's. The report involved Industrialized Building System (IBS), a construction technique whereby building components are manufactured in factories then transported and assembled into a structure with limited on site work. The aim of this report was to know more about the construction of steel framing system at site. The project site located at Jalan Teluk Senangin, Segari, Perak. The objectives of the construction of steel framing system are the method of steel framing system, the advantages of the steel framing system during construction stage and the problems that happens during the construction of steel framing system and the solution for the problem. There are many methods of study that used as data in the report such as observation, interviews and document reviews. This report only discovers the construction of steel framing system in Project Pembangunan Program Khas Perumahan Perwira Negeri Perak (PKPPNP) Bagi Daerah Manjung, Negeri Perak.

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CHAPTER 1.0

INTRODUCTION

1.1 Background

Industrialized Building System (IBS) is a construction technique whereby building components are manufactured in factories then transported and assembled into a structure with limited on site work. The benefits of IBS are clear and eminent as it allows for building to be constructed in a shorter time span and with greatly reduced activities at the construction site, which in turn provides tremendous cost savings to the builders. (MIDF, 2014)

The use of IBS in Malaysia started in 1963. In Malaysia, IBS are generally divided to six main groups that usually used which are, Pre-cast concrete framing, panel and box system, Steel formwork system, Steel framing system, Timber framing system, Blockwork system and Innovative system. (MATEC, 2017) Firstly, the pre-cast concrete framing, panel and box system. This IBS consists of precast concrete columns, beams, slabs, walls, “3-D” components (e.g. balconies, staircases, toilets, lift chambers, refuse chambers), lightweight precast concrete and permanent concrete formworks.

The steel formwork system is another type of IBS system. This IBS is made up of tunnel forms, beams and columns moulding forms, and permanent steel formworks. This system is the least pre-fabricated among the IBS, as it normally involves site casting. Therefore, it is subject to structural quality control, high-quality finishes and fast construction with less site labour and material requirement.

Besides, the other type of IBS system is steel framing system. This IBS is commonly used with precast concrete slabs, steel columns/beams and steel framing systems, and is used extensively in the fast-track construction of skyscrapers. Apart from that, it is extensively used for light steel trusses consisting of cost-effective profiled cold

formed channels and steel portal frame systems as alternatives to the heavier traditional hot-rolled sections.

Furthermore, another IBS system is timber framing system. It consists of timber building frames and timber roof trusses. Although the latter is more common, timber building frame systems also offer interesting designs from simple dwelling units to buildings such as chalets for resorts.

Moreover, Blockwork system is other types of IBS system. It includes of interlocking concrete masonry units (CMU) and lightweight concrete blocks. The block system is mainly used for non-structural wall as an alternative to conventional brick and plaster.

Lastly, innovative system which is the latest IBS type which incorporates various “green” elements, which are considered innovative in the industry. An example of the innovation is the mixture of two elements such as polystyrene and concrete, to produce IBS components for use in the construction of a wall which has better heat insulation properties. Indeed, with the advancement in technology and innovation, new materials are being introduced at the fabrication stage. Some of the new materials introduced in IBS include gypsum, wood wool, polymer, fiberglass and aluminium-based IBS components.

There are many types of IBS system as discuss above, however the report is only discover the construction of steel framing system in Project Pembangunan Program Khas Perumahan Perwira Negeri Perak (PKPPNP) Bagi Daerah Manjung, Negeri Perak.

1.2 Objectives

1. To investigate the method of steel framing system.
2. To investigate the advantages of steel framing system during construction stage.
3. To determine the problems that happens during the construction of steel framing system and the solution for the problems.

1.3 Scope of study

The title project is Project Pembangunan Program Khas Perumahan Perwira Negeri Perak (PKPPNP) Bagi Daerah Manjung, Negeri Perak. The study is carried out at Segari, Perak. This report focuses on steel framing system method in IBS system. It also includes the methods of steel framing system, including the materials and machineries that used during the process. Besides, this report also includes the study about the problems and solutions that taken to solve the problems during the construction.

The project involved two types of IBS system, which are steel framing system and steel formwork system. Besides, there are also the installation of retaining wall and drainage. However, this report only focuses in steel framing system of IBS System.

1.4 **Methods of study**

There are many methods has been used as data in the report such as observation, interviews and document reviews.

Firstly, the method of study is observation method. This study is observed for 3 month to know the method of IBS system which is steel framing system. During the observation, the pictures and videos were taken to gain more data about steel framing system. The picture and videos can be the reference to refer for more research data. Besides, taking notes during the observation for the method of steel framing system can keep my data and be the references for the report.

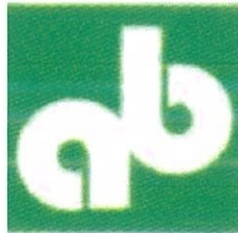
Secondly, the method of study is interviews. During the observation, interview the labours to understand more about their works and the tools that they use. Besides, there also interview session with the supervisor at the site to know more about the method of steel framing system. The interview session takes almost for 20-30 minutes and the information was written down on the notes.

Lastly, the method of study is document reviews. There are the site diary documents, request for infection documents (RFI) and others to gain information of the construction of steel framing system. The documents that usually refer are construction drawings at site. Moreover, refer using the drawing can know the detail of the plan, the material that used for the steel framing system and others.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company



Figures 2.1: Logo Asas Bina Enterprise Sdn Bhd

Source: Placesmap.net

Asas Bina Enterprise Sdn Bhd (ABESB) is a growing construction company lead by a young daring entrepreneur En. Zolkiplee Bin Osman with a high vision and mission to become a first Malay developer in Manjung district. Originated from a small dedicated enterprise company called Asas Bina Enterprise Sdn Bhd, they developed their own path to cater the very legendary mission in becoming the successful civil work service that ever have in Manjung. Going for the “A” class company, they eager to give their full commitment in becoming a well-known organization in construction field.

ABESB is leveraging the skills and specialities in the construction field from the basic foundation in construction up to the complex method to intensity our knowledge. Their goal is to stay ahead of the curve and constantly offering our client the best-in-class services from the starting to the end. Just their quote, “We hear, We build, You smile.”

Customers first are the most valuable ethic in ensuring ABESB’s client satisfactions. ABESB believe that the earnestness and skills combine through strategic planning will incredibly result and achievable. With the best interest of our client, our actions and ideas are always the right focused on the conversions and business growth.

Success is a tricky part in measuring the satisfaction of ABESB's clients. To deal with it, they benchmark their success in a way form of happiness of the clients, and clients' loyalties. With this formula, we able to predict either the clients are truly satisfied in each of every task given or not. To help ABESB with a better understanding, they try to establish not only the goals but what are our clients' current returns, challenges and the opportunities to growth. Our approach has yielded many successful sites and happy customers over the years.

Keeping in mind of the various sectors that they cater make them to employ a highly skilled and fresh minded engineers and admin executives for their business development. Every interaction that the customers have with their skilled resources, they can uniquely experience the different that they bring on-board. They are committed to the overall growth and development and strive towards achieving this goal.

Their expertise covers all aspect of engineering and construction work including building maintenance works, civil engineering and mechanical & electrical work. They also looking forward the development project especially in residential and commercial specialist that field the market of construction industry nowadays which also required the specialist contractors to perform with the best method equipment machine and technology and to achieve successful business similar as their vision.

2.2 Company Profile

Table 2.1: Company Profile of Asas Bina Enterprise Sdn Bhd

Company Name	Asas Bina Enterprise Sdn Bhd (ABESB)
Company Registration No.	850187-D
ISO Registered Number	001119993857
Shareholder Bill	2
Authorized Capital	RM5000000.00
Share Capital	RM5000000.00
Incorporation Date	17 March 2009
Established Date	4 Ogos 1993
Address	142, Tingkat atas, Persiaran Pm/2, Pusat Bandar, Seri Manjung, 32040 Seri Manjung, Perak
Tel No	
Fax No	
Email	abesb2011@gmail.com

Source : Asas Bina Enterprise Sdn Bhd Company Profile

2.3 Organization Chart

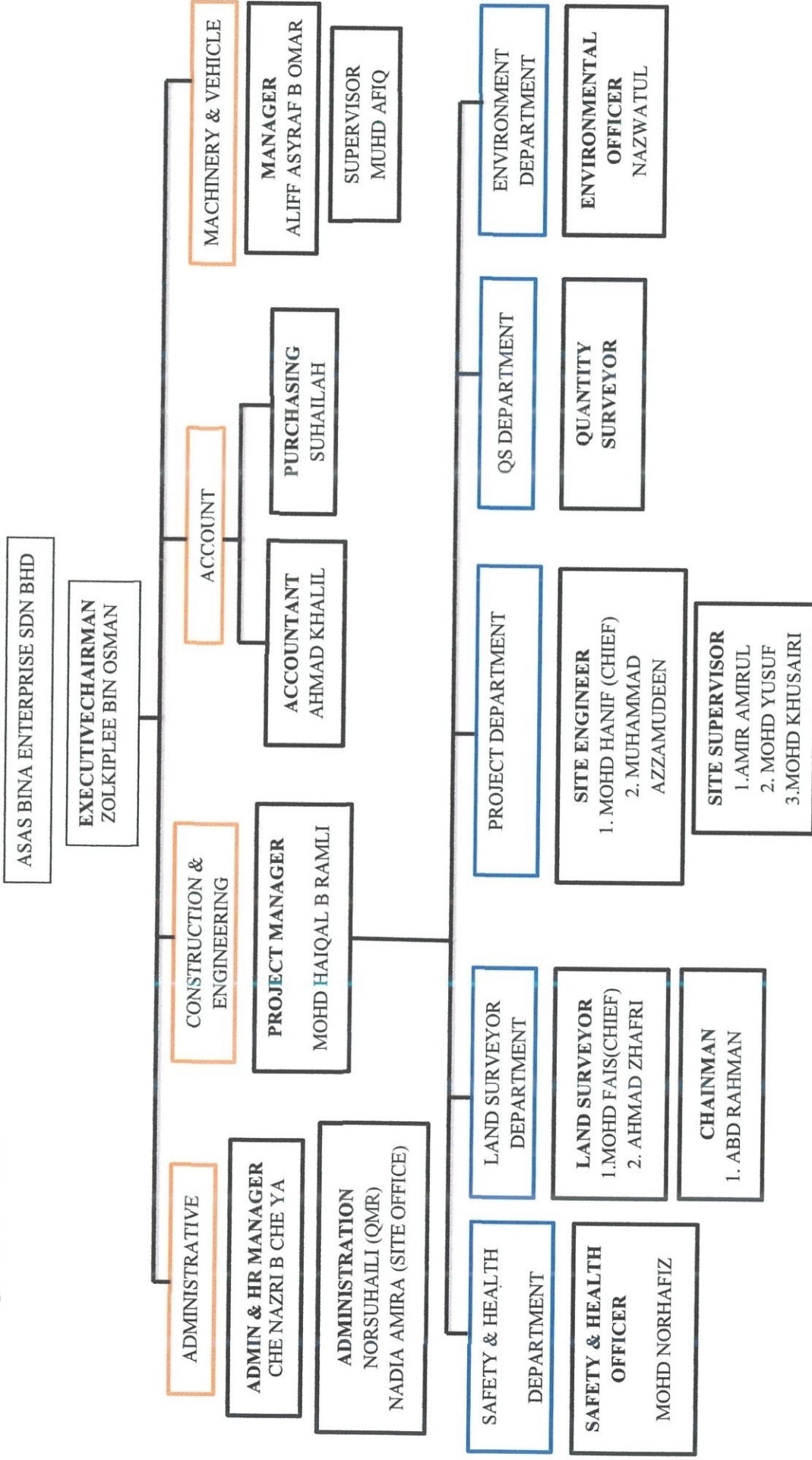


Figure 2.2: Asas Bina Enterprise Sdn Bhd's Organization Chart

2.4 List of Project

2.4.1 Completed Projects

Table 2.2: List of Completed Projects

No	Project Title	Client	Contract Value	Start	Finish
1.	Proposed and Construction three Storey Orphanage Hostel Building at and all Related Works at Lumut Perak	Yayasan Nur Ikhlas	RM 2,467,548.00	-	-
2.	Refurnishment Works At Block A30 Rmn Lumut	Kd Malaya	RM 1,986,124.80	-	-
3.	Proposed Construction Of 21 Housing Units Of Sria (Skim Rumah Insan Amanjaya), For The Development Of Desa Bina Upaya, A Structered Settlement, On State Government Land, In Kg. Tanjung Batu, Mukim Lumut, Daerah Manjung, Perak	Yayasan Bina Upaya	RM 1,634,252.00	-	-
4.	Proposed And Construction A Minaret At Masjid Al-Khairiah, Sungai Pinang Kecil, Pulau Pangkor	Pejabat Daerah Manjung	RM 323,995.00	-	-
5.	Proposed Build Completion of Sekolah Agama Rakyat Al-Afiah, Batu 3, Segari, Perak	Pejabat Daerah Manjung	RM 1,337,922.85	-	-

Source : Asas Bina Enterprise Sdn Bhd Company Profile

2.4.2 Project in Progress

Table 2.3: List of Projects in Progress

No	Project Title	Client	Contract Value	Start	Finish
1.	Project Pembangunan Program Khas Perumahan Perwira Negeri Perak (Pkppnp) Bagi Daerah Manjung, Negeri Perak.	Perbadanan Harta Perwira	RM 36,570,000.00	15 May 2017	14 Nov 2018
2.	Build New Road From Kampung Baharu To Kampung Teluk, Manjung, Daerah Manjung, Perak (Phase 3)	Jabatan Kerja Raya	RM20,316,45 9.00	28 April 2017	29 Aug 2018
3.	Reclamation Works For The Development Of The Perkampungan Nelayan, Teluk Muroh, Lumut, Manjung, Perak (Phase 1)	Jabatan Pengaliran Dan Saliran	RM 32,050,196.40	31 March 2017	February 2018

Source : Asas Bina Enterprise Sdn Bhd Company Profile

CHAPTER 3.0

CASE STUDY

3.1 Introduction to Case Study

The project title is Project Pembangunan Program Khas Perumahan Perwira Negeri Perak (PKPPNP) Bagi Daerah Manjung, Negeri Perak. The project value is RM 36,570,000.00. For the date of completion for the project is in 14 November 2018. The location of the project is at Jalan Teluk Senangin, Lumut, Perak.



Figure 3.1: The location of the project

Source: Google Maps



Photo 3.1: The project signboard

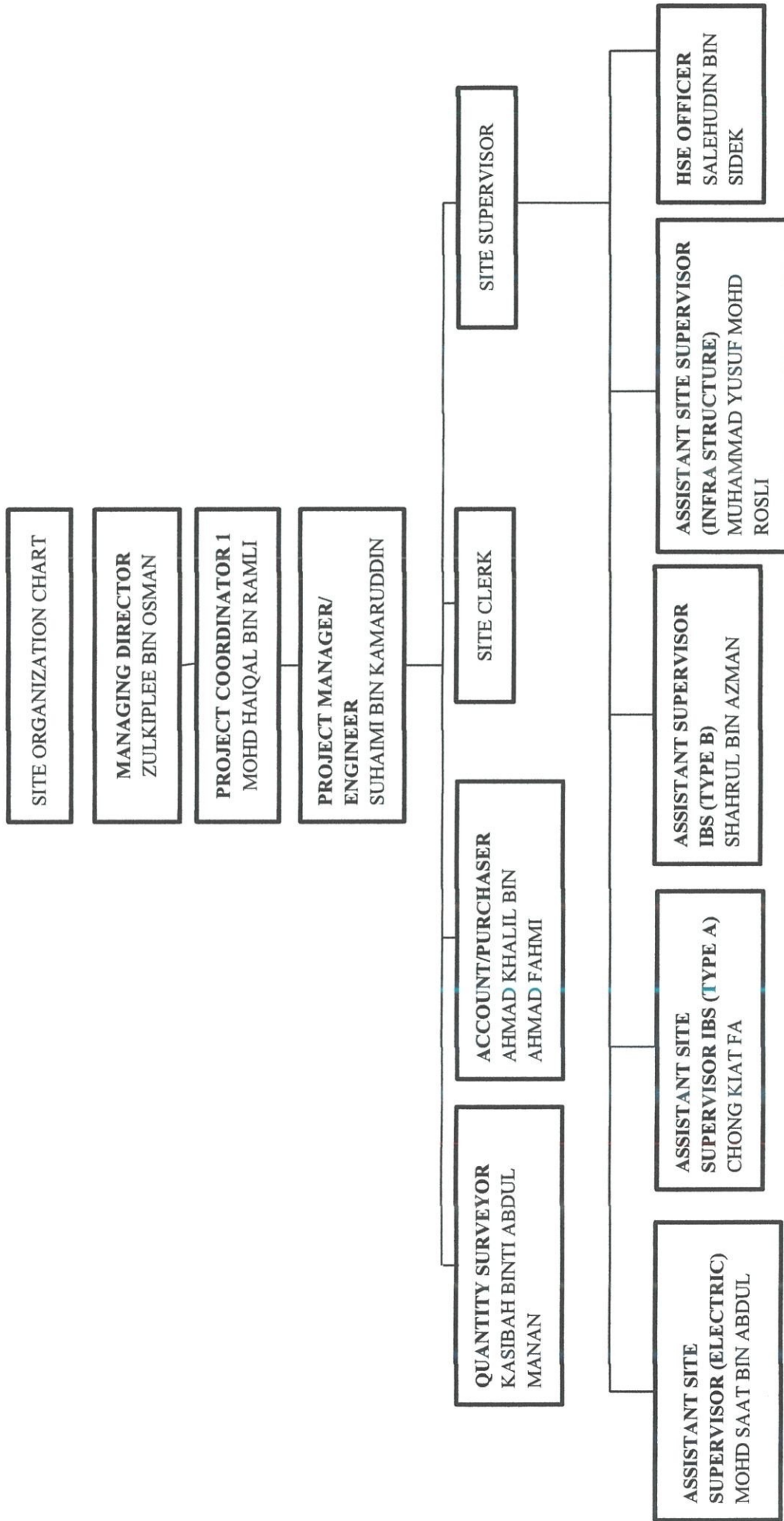


Figure 3.2: Site Organization Chart

The project involved Industrialized Building System (IBS), a construction technique whereby building components are manufactured in factories then transported and assembled into a structure with limited on site work. In Malaysia, IBS are generally divided to six main groups that usually used which are, Pre-cast concrete framing, panel and box system, Steel formwork system, Steel framing system, Timber framing system, Blockwork system and Innovative system.



Photo 3.2 : Steel framing system

3.1 The method of Steel Framing System

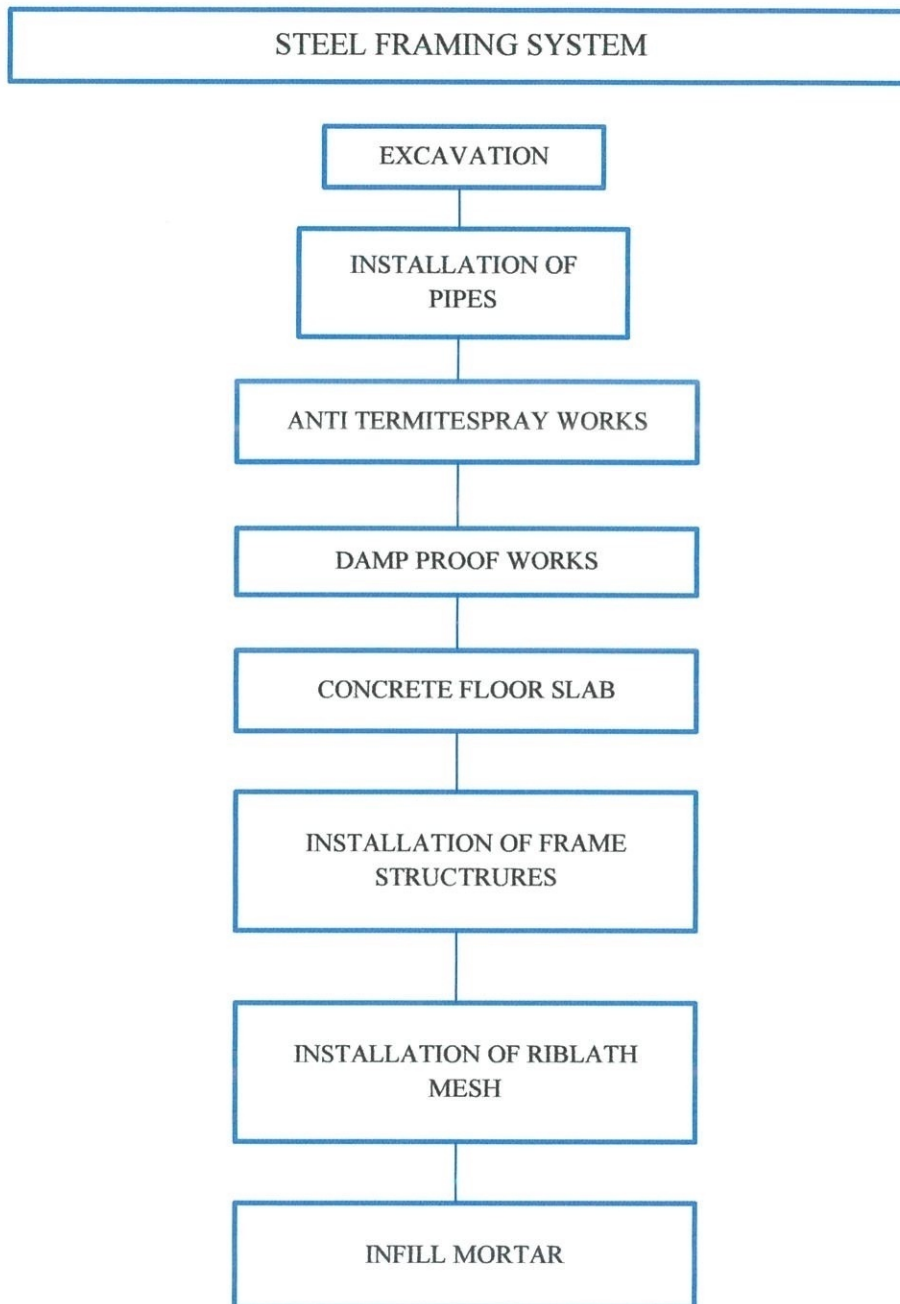


Figure 3.3: Method of Steel Framing System flow chart

For the first step in built the house using Steel Framing System of IBS System is excavation. The house area according the plan was setting out the corner benchmarks. The ground also had survey and top levels that made by the surveyor first. Then, the area of shrubs and trees had cleared and the excavation was begun. The top soil was excavated 3 feet thickness using backhoe as shown in photo 3.3.



Photo 3.3: Top soil was excavated using backhoe

The sewage plumbing system was installed after the excavation works done as shown in photo 3.4. The plumbing system is used for water supply in building. It supplies water to kitchen toilet outlets via distribution system of pipes. Drainage system is used to get rid of human wastes through well-arranged network of drainage pipes.

For distribution system pipes generally used are GI, copper, HDPE, CPVC, mostly now a days CPVC plastic pipes are used as they don't get rusted, light weight, easy installation and maintenance and economic. The underground pipe shall be Unplasticised Polyvinyl Chloride (UPVC) to BS4515 & BS5255, referring to the drawing plan. There are two types colour of UPVC pipe that they are used:

- 1) UPVC (White colour)

The uses of the UPVC white colour for drainage from the sink, bathroom and toilet.

- 2) UPVC (Orange colour)

The uses of the UPVC orange colour is for stool flow from toilet bowl to manhole and to septic tank.



Photo 3.4: Installation of pipe

After the soil has compacted, the soil was sprayed with the anti-termite before the P.E sheet on it as shown in photo 3.5. The smallest crack of 1/16th of an inch of cement walls or floorings would be large enough for an army of termites to pass through. The damage caused by termites include door and window frames, wood paneling, floor parquets, cupboards, books, roof beams and joints. Hence through protection using an effective chemical recommended by APC's anti termite treatment plan remains potent in the soil for at least 5 years with research analysis from the manufacturer.

The Polythene or polyethylene sheet is spread after the soil was sprayed with anti-termite as shown in 3.6. It is commonly used as a damp-proof membrane with over site concrete for all but severe conditions of dampness. It is recommended that the sheet should be at least 0.25 mm thick.



Photo 3.5: Anti-termite spray works



Photo 3.6: The damp proof works

After pouring the lean concrete, the thickness of the concrete for floor slab was measured by the workers with the string. The string was tied from the end to the end of the formwork to put the thickness of concrete which is 6 inch correctly. The BRC Wire Mesh was spread and it was tying with the stainless wire using the twisted tool on the slab. The spacer which is 2 inch, which positioned in the upper-third of the slab thickness, was put under the BRC because shrinkage and temperature cracks originate at the surface of the slab as shown in photo 3.7.



Photo 3.7: The installation of concrete floor slab

When the concrete mixer lorry arrived at the site, the concrete was taken a little bit to make the concrete cube test. Then, the concrete was poured into the slab with the bucket that carried by the crane. The concrete was spread by the concreter evenly so that the concrete floor slab looked nice and neat as shown in photo 3.8.



Photo 3.8: The concrete was poured by the concreters

After the concrete slab was done, the framing activities of the house start to build. The framing system is using the light gauge steel. They are light, and allow quick building without heavy tools or equipment. Every component can easily be carried by hand - a house is like a carpentry job on a larger scale.

The frame structures were assembled for the required panels on the floor slab as shown in photo 3.9. The frame structure was fabricates by fastening components with WALLTITE screw. The WALLTITE screws are used for all pre-punched recessed holes. The wall panels was screwed using the screw gun. Once the wall stud in position, the wall fixed to the ground slab through the bottom plate of the frame using the L-Bracket (Hold Down) and Anchor Bolt. Then, continue erecting until final wall panel is erected. Large wall frames required additional stiffening to assist stability during installation process. Then, the pre-installed ducting and piping was installed after the framing structures done built.



Photo 3.9: The installation of frame structures

The RIBLATH mesh was installed using the nail gun. RIBLATH mesh is secured to every stud at every rib using high pressure air gun with nails ST-25. The air gun should be pointed slightly 20 degree upward/ downward from horizontal to achieve the best result for stronger clip holding between Lib Lath with wall frame as shown in photo 3.10.



Photo 3.10: The installation of RIBLATH mesh works

Finally, the wall panel of steel framing system was filled with the mortar. The mortar which contained cement, sand and water. The mixture of mortar was filled in the mortar filter before pumping to the wall panel as shown in photo 3.11. It is to make sure there are no aggregates or rubbish in the mortar pump. Then the wall panel was filled by the mortar using the mortar pump as shown in photo 3.12. The mortar need to distribute evenly and not on the one location to get a neat and smoother surfaces of wall. Finally, the mortar had fixed to its position in the wall panel as shown in photo 3.12. The wall panel are ready to plaster after the filling mortar process was done.



Photo 3.11: The mortar was made in the mortar filter



Photo 3.12: The mortar was filled into the wall panel using the mortar pump

3.2 The advantages of the steel framing system during construction stage

There are many advantages of steel framing system during construction stage that can be obtained at the site which are the site more cleanly, faster completion time and decreased heavy machinery usage.

The construction of steel framing system sites have proven to be tidier and better organized as compared to the traditional construction sites which are often wet and dirty. Usages of components can reduce wet work at construction sites. Wastage of time and materials on temporary works such as timber formworks and props, which are common in conventional constructions are reduced greatly when the construction emphasizes more on IBS components. This prompts construction sites to be neater, reduces involved risks related to health and well-being besides promoting a safer working environment.

The construction of steel framing system project are able to reduce the construction time periods and this can save valuable time and help to reduce monetary losses. This is because the constructions of prefabricated components are concurrent constructions which can proceed even when the foundations of the construction sites are under survey or when they are involved in earthwork. This phenomenon helps in reducing the risks of project delays and unnecessary expenditures. Instead, the use of large panel structures would be able to accelerate structural-related tasks such as painting, electrical wiring and plumbing.

Furthermore, the construction of steel framing system had decreased heavy machinery usage. It is because the frame structures, which is the light gauge steel is light and can be carried by the workers easily. There are not needs to use the crane to carried the components during the construction stage.

3.3 The problems that obtained during the process and the solution that taken to solve the problems.

It is common knowledge that the construction industry is complicated and challenging. Therefore, there are some problems that occurred during the construction of steel framing system at the site.

The location of the houses in B10, which only 4 house can be built while the another 3 houses cannot be built because of the presence of the big rock as shown in photo 3.13. The big rock makes the excavation work cannot be start and makes the work delayed. The solution for this problem is having the explosive activity at construction site for the excavation can be worked like usual in B10 area. The use of explosives is controlled by Explosives Act 1957 and Explosives Rules 1923, enforced by PDRM. (Article KSM, 2015)



Photo 3.13: The big rock that delayed the excavation works

Another problem that obtains at the site is the first unit of house in the B01 area has the wrong position of the roof as shown in photo 3.14. It's happen when the worker have install the roof trusses wrongly. This problem has to identity carefully and the person in charge should take the blame. According to site supervisor of Cipta Omega as sub-contractor in this project, this problem can be solved with netting the frame with RIBLATH mesh and filling the wall panel with mortar. This action is the best solution because it can save time and cost.



Photo 3.14: The wrong location of roof truss

Besides, the deficiency of material is one of the problems that occur in the construction of the steel framing system. When this happened, the activities at the site cannot be done and the work was delayed for a long time. (IMCPIP,2013) The workers also do not have work to do and they will not have payment for that day. The solution of this problem is the main contractor which is Asas Bina take part of this project 100% of the purchasing order of material. Before this problem happens, the purchasing order was the responsibility of sub-contractors which is Cipta Omega, Ascension and Infra Teguh. After Asas bina take part to purchasing order of material at the site, the deficiency of materials not a problem anymore.

CHAPTER 4.0

CONCLUSION

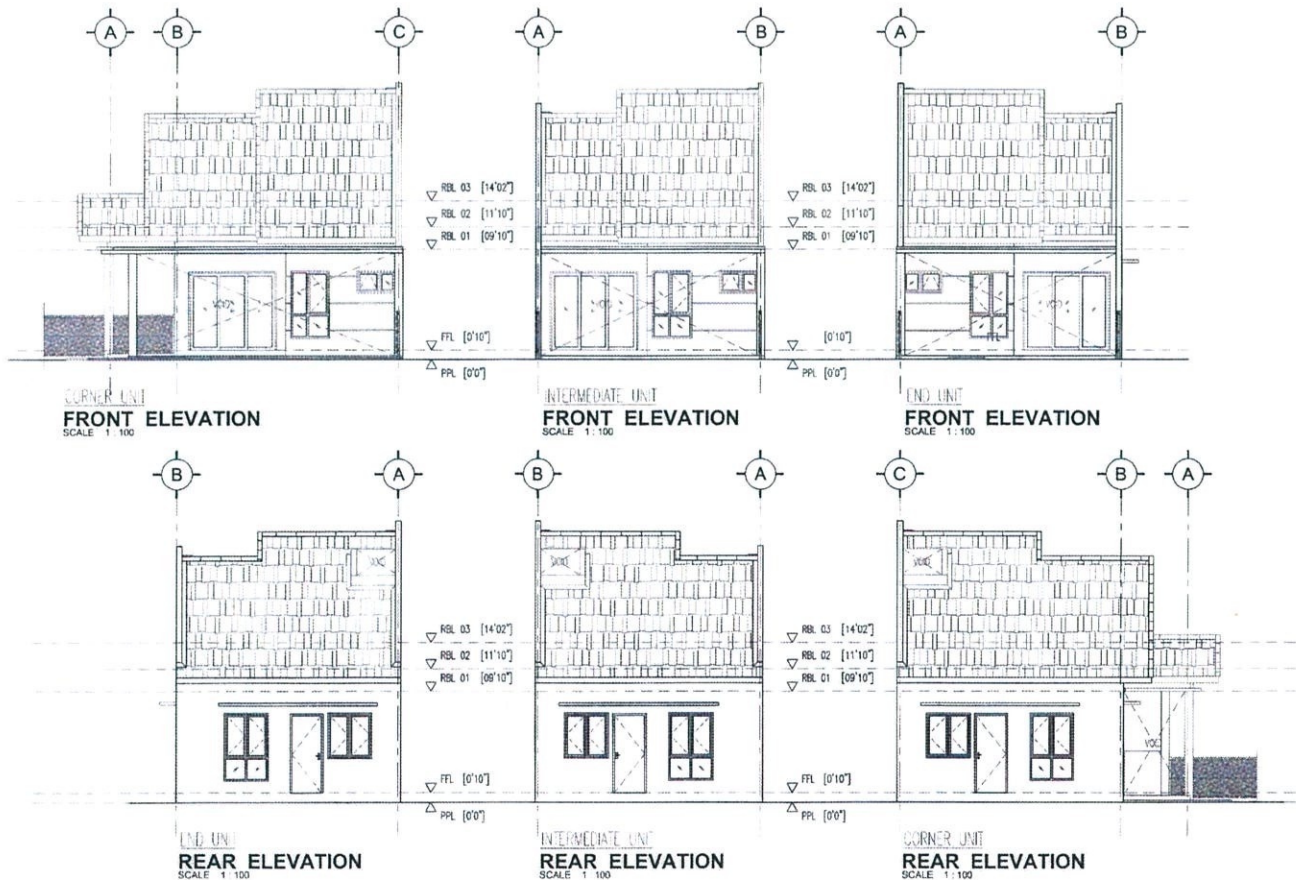
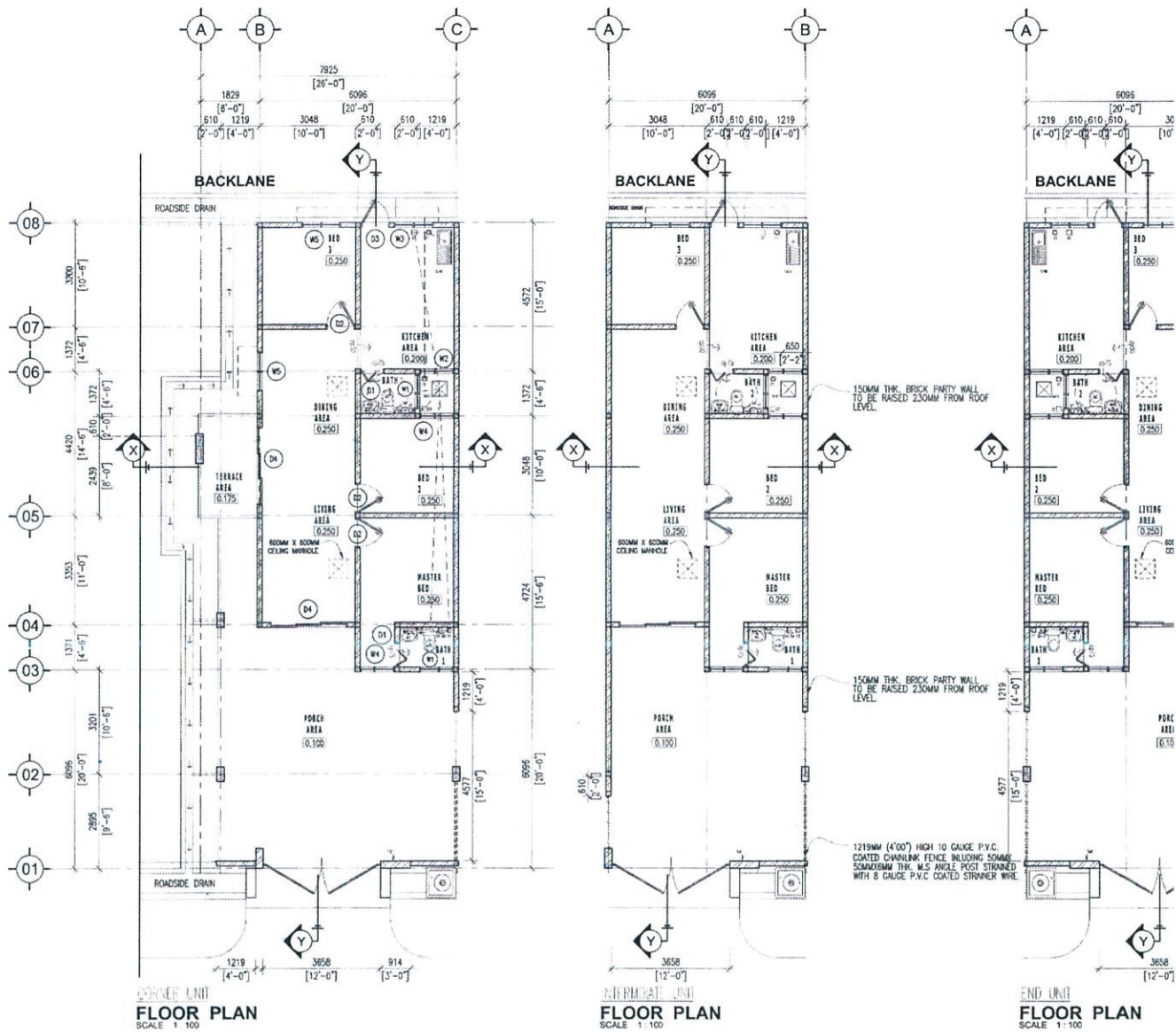
There are many type of IBS System, however this report only discover the construction of steel framing system in Project Pembangunan Program Khas Perumahan Perwira Negeri Perak (PKPPNP) Bagi Daerah Manjung, Negeri Perak. The methods of the construction of steel framing system at the chosen site which at Segari, Perak was not quite similar to the theory. The IBS System is the building components which already manufactured in factories and assembled the structure at the site while at the chosen site, the building components had to manufacture at the site, not at the factories. The building components had to manufacture at site because of not enough cost. The labours had to install the building components which is the light gauge steel using the screw gun. However, the light gauge steel was light and easy for the labours to install them. From the report, the problem occurred in the construction of steel framing system was discussed in 3.3 of the report.

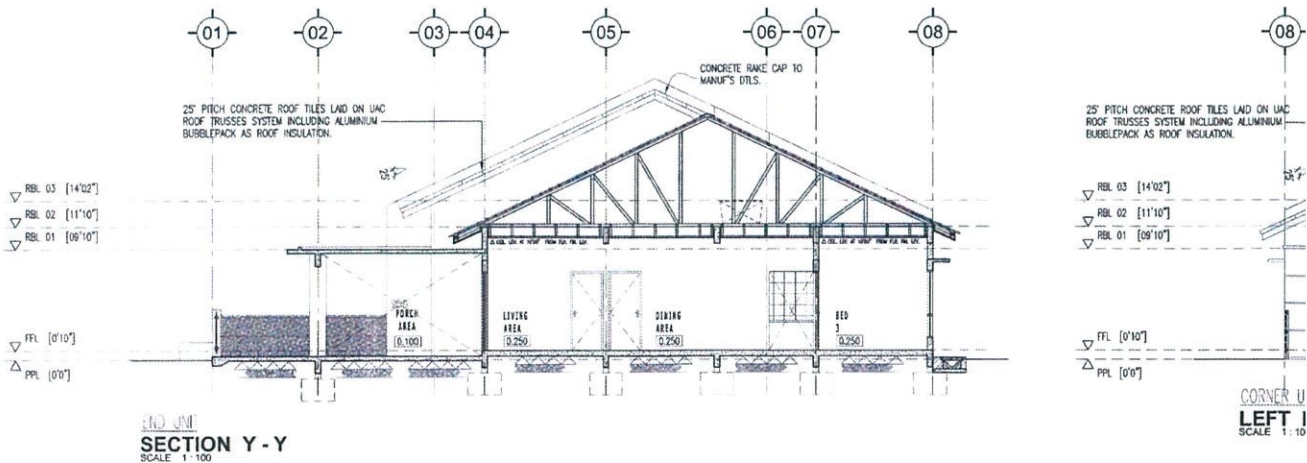
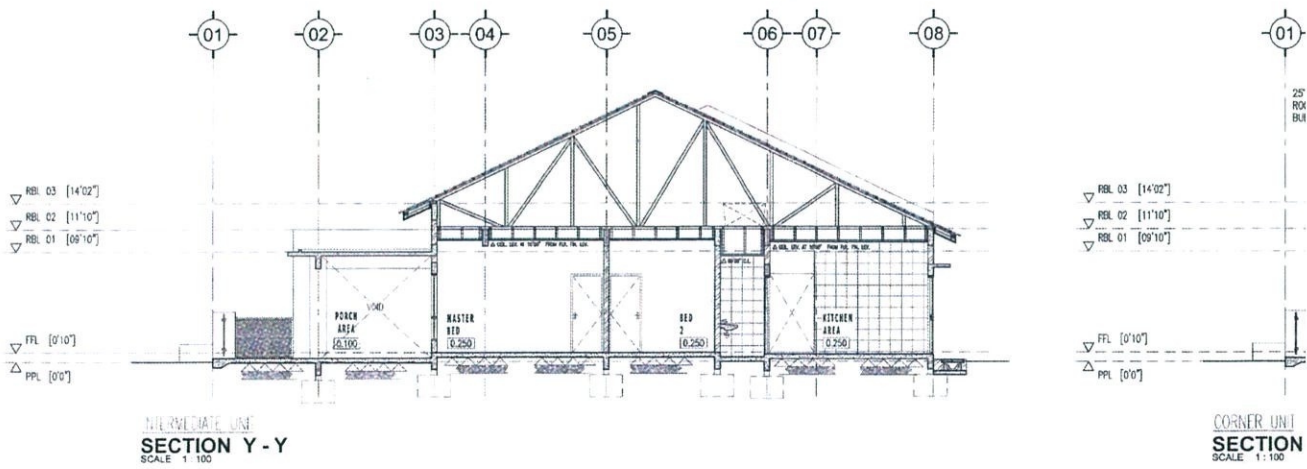
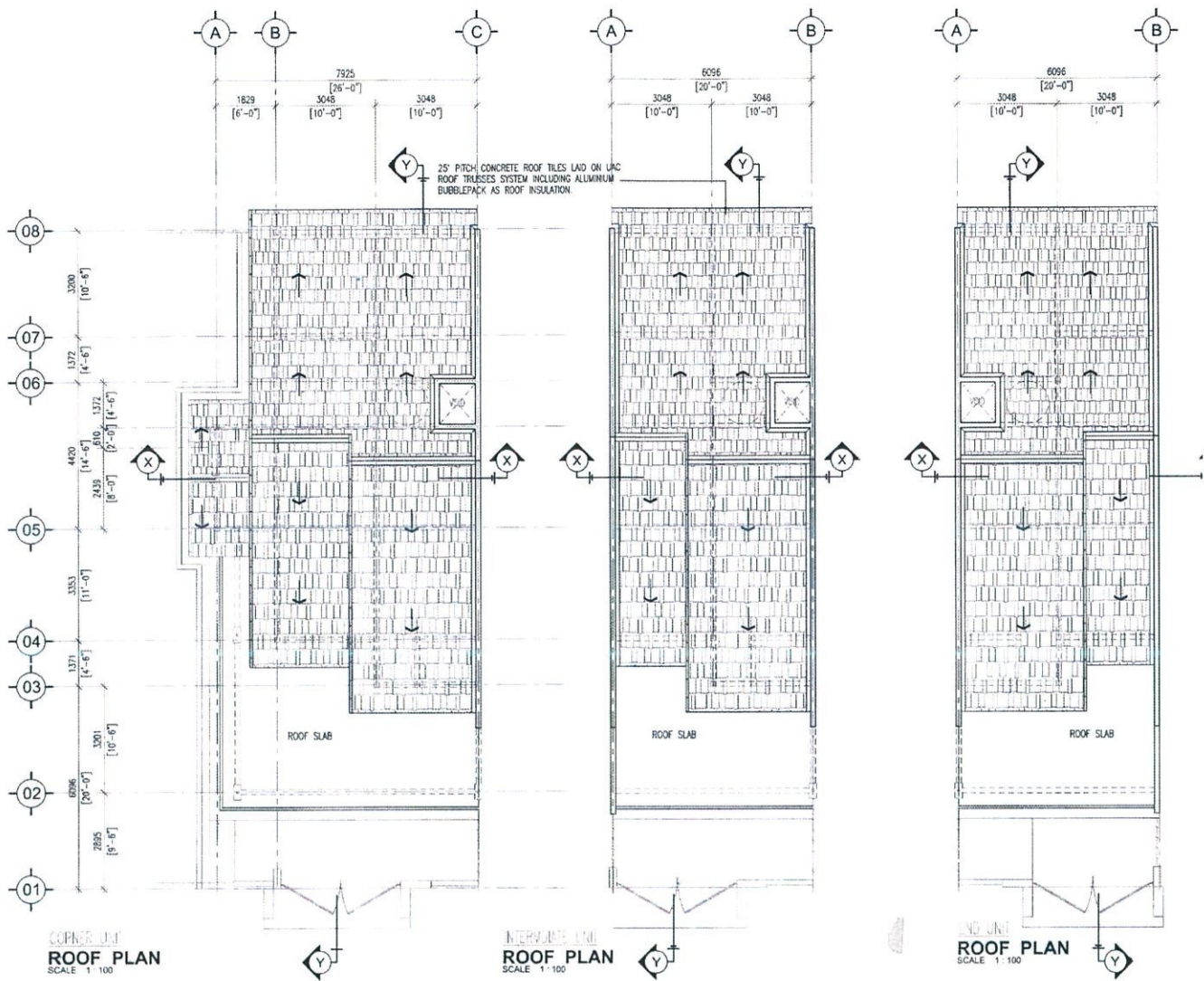
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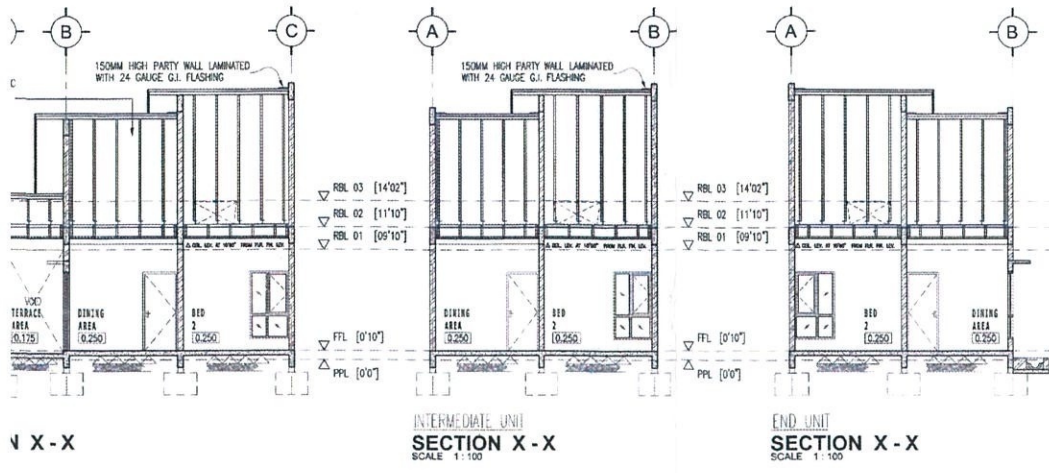
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3.2	The Method of Steel Framing System	14
3.3	The Advantage of Steel Framing System During Construction Stage	20
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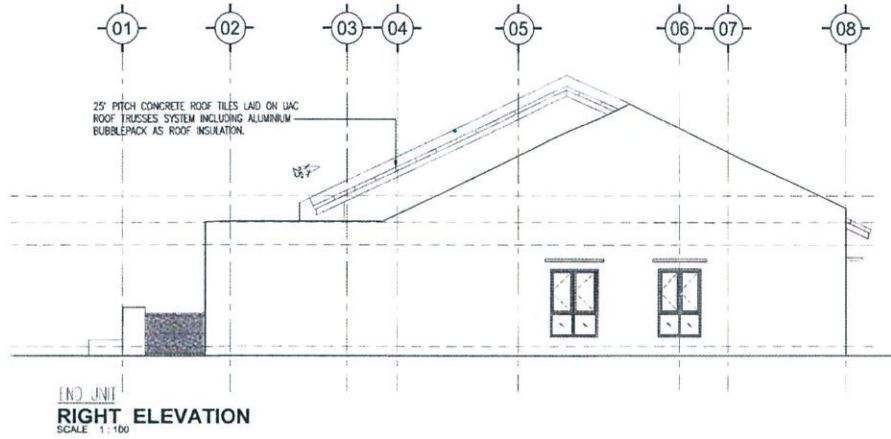
DITERIMA
15 MAY 2017



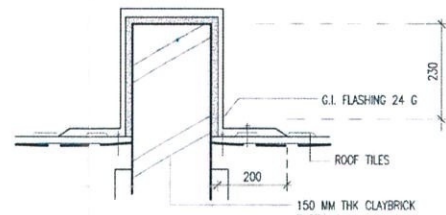
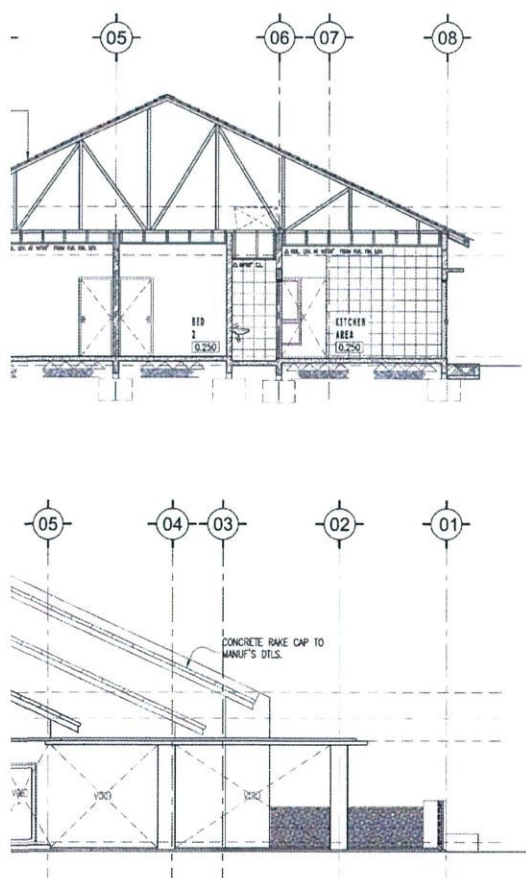
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INTERMEDIATE UNIT SECTION X - X
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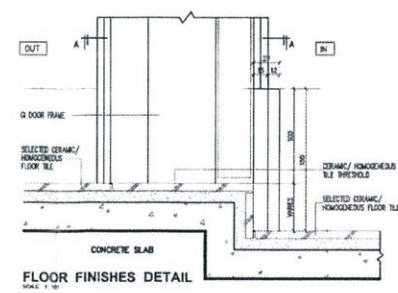
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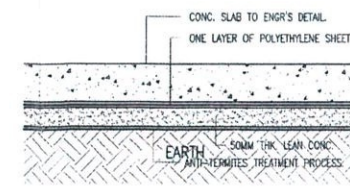
RIGHT ELEVATION
SCALE 1:100



SECTION THRO' 150MM THK CLAYBRICK PARTY BRICK WALL



FLOOR FINISHES DETAIL
SCALE 1:100



SECTION THROUGH GROUND CONC. SLAB


- NOTES:**
- 1) PROVIDE ANTI-TERMITES TREATMENT BEFORE STRUCTURAL WORKS COMMENCE.
 - 2) BEFORE CASTING OF GROUND FLOOR SLAB, PROVIDE ONE LAYER OF POLYETHYLENE SHEET FOR ALL BUILT-UP AREA.

PROJECT TITLE
CADANGAN PEMBANGUNAN PROGRAM KHAS PERUMAHAN PERWIRA NEGERI PERAK YANG MENGANDUNGI: A) 181 UNIT RUMAH TERES SETINGKAT JENIS 'A' B) 123 UNIT RUMAH TERES SETINGKAT JENIS 'B' DI ATAS TANAH KERAJAAN, MUKIM LUMUT, DAERAH MANJUNG PERAK DARUL RIDZUAN

untuk
KERAJAAN NEGERI PERAK DARUL RIDZUAN

LAND'S OWNER:

PEJABAT DAERAH DAN TANAH MANJUNG
KOMPLKS PENTADBIRAN DAERAH
52840 SERI MANJUNG
PERAK DARUL RIDZUAN

BUILDING'S OWNER:

PERBADANAN PERWIRA HARTA MALAYSIA
BANGUNAN LTAT
Jalan Bukit Bintang
55100 KUALA LUMPUR
WILAYAH PERSEKUTUAN KUALA LUMPUR

ARCHITECT:
architect . interior design . health facility planning
taufik
ARCHITECT
NO. 32, PERSARAN PERDANA 16
TAMAN PINJU, PERDANA
31500 IPOH
PERAK DARUL RIDZUAN
MALAYSIA

LEMBAGA ARKITEK MALAYSIA
Ar. Mohammad Taufik bin A.Aziz
ARKITEK PROFESIONAL
No Pendaftaran LAM: A/M 113
Siapa mempunyai hak atas semua gambar-gambar ini adalah peribadi dan tidak boleh dipamerkan, diterbitkan, diperjualbelikan, atau digunakan untuk tujuan lain tanpa kebenaran bertulis daripada saya.

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(f) :
(e) : as2perak@gmail.com

DRAWING STATUS
 Preliminary Submission Construction
 Information Tender As-Built

DRAWING TITLE
TYPE 'B'
ROOF PLAN SECTION X - X SECTION Y - Y
LEFT ELEVATION RIGHT ELEVATION
SECTION THROUGH GROUND CONC. SLAB
SECTION THRO' 150MM THK CLAYBRICK PARTY WALL

Designed	Date	Drawn	Date
MAMU	MAY 2017	MFA	MAY 2017
Scale		Checked	Date
AS SHOHAN		AMMA	MAY 2017
CAD FILE			

DRAWING NUMBER
TAA IPH PPP CD 2016 - 35 05 OF 5

CONSTRUCTION DRAWING

DITERIMA
15 MAY 2017

PROJECT TITLE
CADANGAN PEMBANGUNAN PROGRAM KHAS PERUMAHAN
PERMIRA NEGERI PERAK YANG MENGANUNGI: A) 181 UNIT
RUMAH TERES SETINGKAT JENIS 'A'
B) 123 UNIT RUMAH TERES SETINGKAT JENIS 'B'
DI ATAS TANAH KERAJAAN, MUKIM LUMUT, DAERAH MANJUNG
PERAK DARUL RIDZUAN

untuk
KERAJAAN NEGERI PERAK DARUL RIDZUAN


LANDS OWNER:

PEJABAT DAERAH DAN TANAH MANJUNG
KOMPLEKS PENTADBIRAN DAERAN
32040 SERI MANJUNG
PERAK DARUL RIDZUAN

BUILDINGS OWNER:

PERBADANAN PERWIRA HARTA MALAYSIA
BANGUNAN LITAT
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55100 KUALA LUMPUR
WILAYAH PERSEKUTUAN KUALA LUMPUR

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taufik
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MALAYSIA
Telephone


**LEMBAGA
ARKITEK
MALAYSIA**
At Mohamad Taufik bin A.Aziz
ARKITEK PROFESIONAL
No Pendaftaran LAM : A/M 113
Sila rujuk peraturan perundangan berkaitan dengan pendaftaran keajaib
dalam carian maklumat berkaitan dengan keajaib keajaib perundangan perundangan
Tulis dan maklumat perundangan keajaib keajaib perundangan perundangan keajaib

CIVIL & STRUCTURE ENGINEER:

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(e) : as2prak@gmail.com

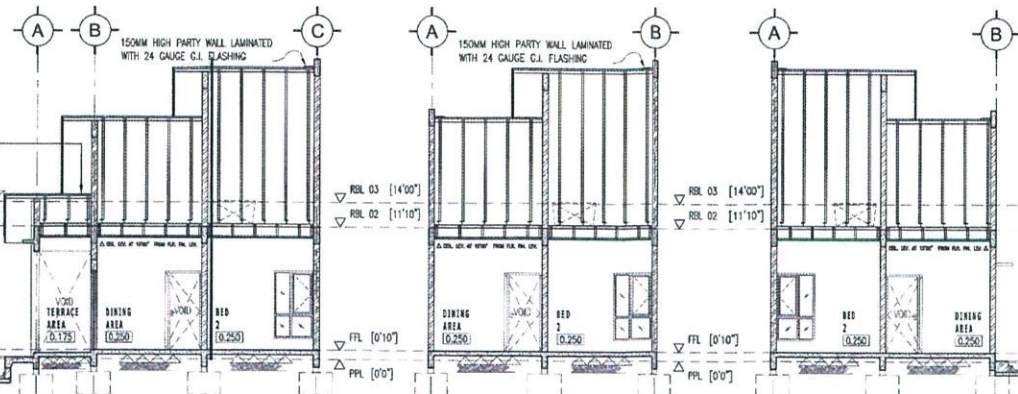
DRAWING STATUS:
 Preliminary Submission Construction
 Information Tender As-Built

DRAWING TITLE:
TYPE 'A'
ROOF PLAN SECTION X - X SECTION Y - Y
LEFT ELEVATION RIGHT ELEVATION
SECTION THROUGH GROUND CONC. SLAB FLOOR FINISHES DETAILS
SECTION THRO' 150MM THK CLAYBRICK PARTY WALL

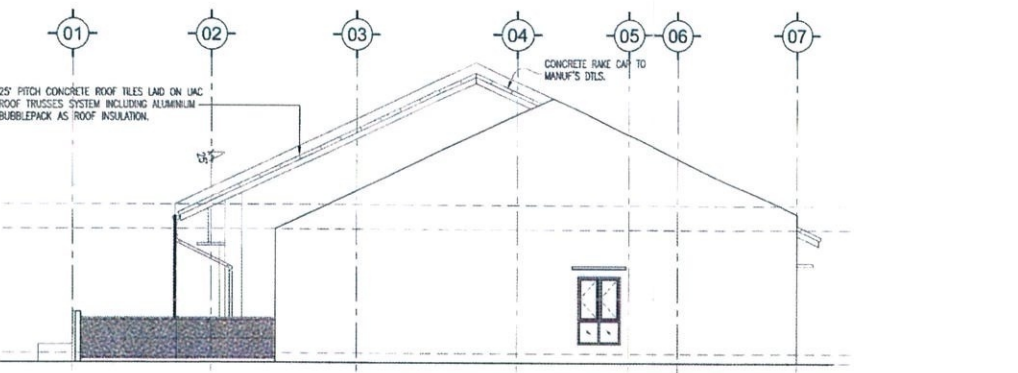
This drawing is copyright. Contractors must check all dimensions on site. Only the
personnel who is in charge of the construction must be responsible for any errors or
omissions in this drawing.

Designed: MAMJ	Date MAY 2017	Drawn: MFA	Date MAY 2017
Scale: AS SHOWN	Checked: MAMA	Date MAY 2017	

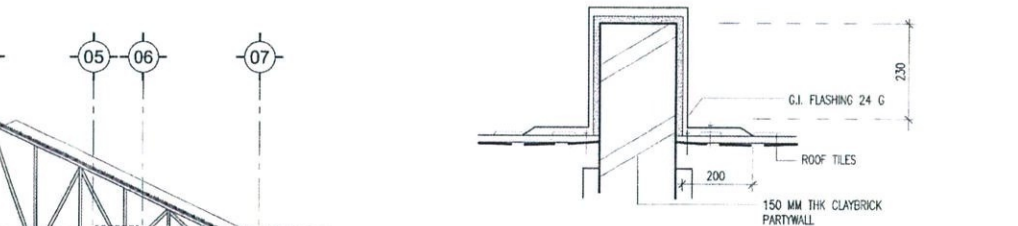
DRAWING NUMBER
TAA IPH PPP CD 2016 - 35 03 OF 5



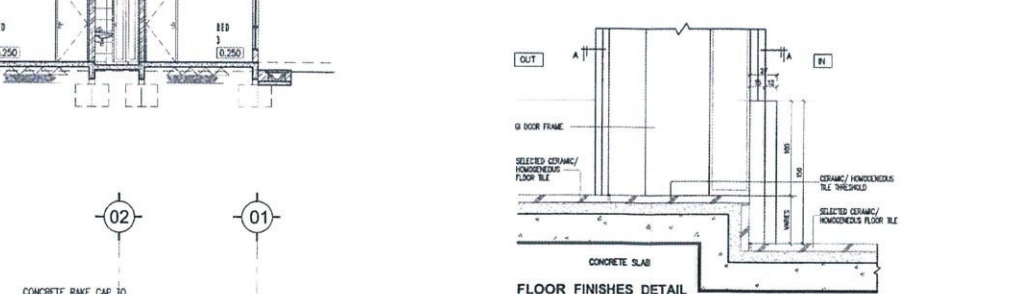
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SECTION X - X SCALE 1:100
SECTION X - X SCALE 1:100



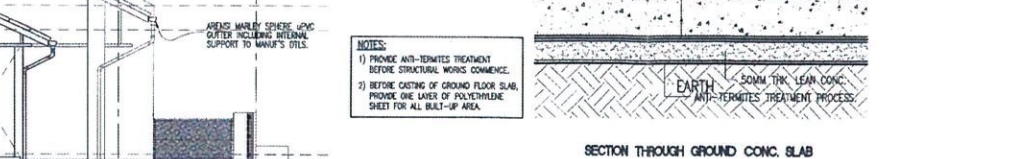
RIGHT ELEVATION SCALE 1:100



SECTION THRO' 150MM THK CLAYBRICK PARTY BRICKWALL

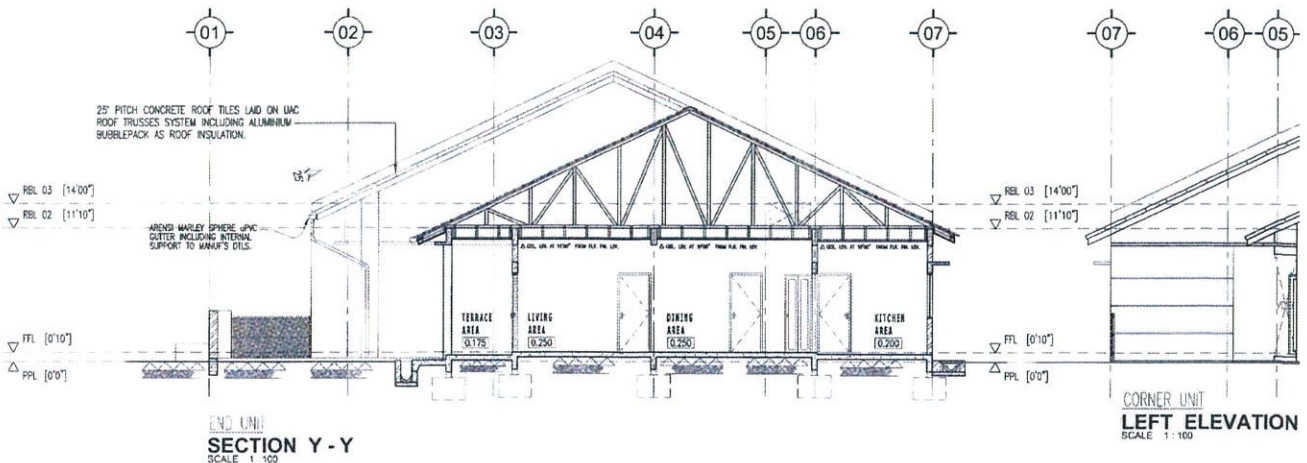
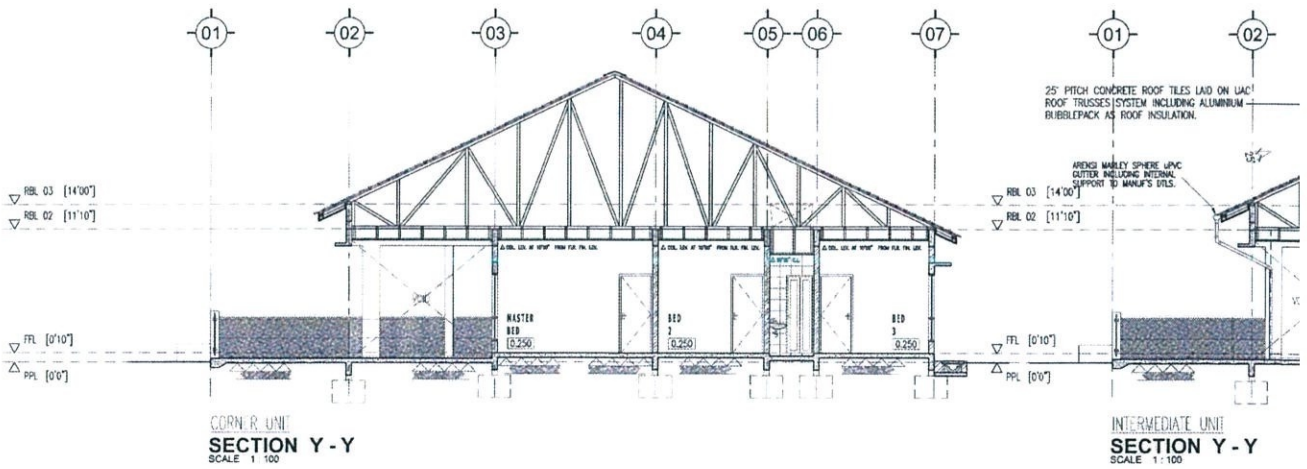
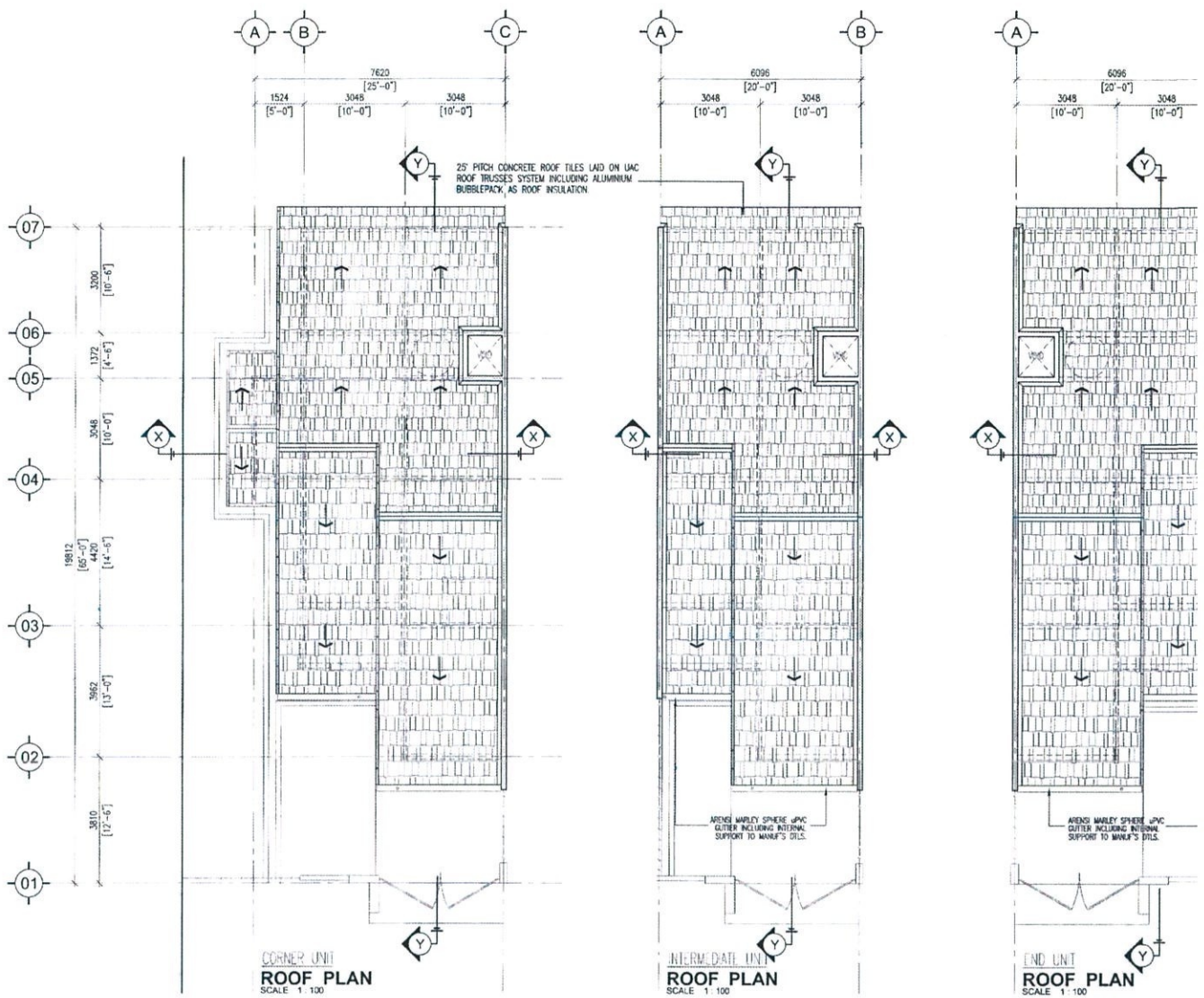


FLOOR FINISHES DETAIL SCALE 1:100



SECTION THROUGH GROUND CONC. SLAB

NOTES:
1) PROVIDE ANTI-TERMITE TREATMENT BEFORE STRUCTURAL WORKS COMMENCE.
2) BEFORE CASTING OF GROUND FLOOR SLAB, PROVIDE ONE LAYER OF POLYETHYLENE SHEET FOR ALL BUILT-UP AREA.



CONSTRUCTION DRAWING

DITERIMA
15 MAY 2017

PROJECT TITLE

CADANGAN PEMBANGUNAN PROGRAM KHAS PERUMAHAN PERWIRA NEGERI YANG MENGANCIH:
A) 181 UNIT RUMAH TERES SETINGKAT JENIS 'A'
B) 123 UNIT RUMAH TERES SETINGKAT JENIS 'B'
DI ATAS TANAH KERAJAAN, MUKIM LUMUT, DAERAH MANJUNG, PERAK DARUL RIDZUAN

UNTUK

KERAJAAN NEGERI PERAK DARUL RIDZUAN

LAND'S OWNER:



PEJABAT DAERAH DAN TANAH MANJUNG
KOMPLEKS PENTABIRAN DAERAH
37040 SERI MANJUNG
PERAK DARUL RIDZUAN

BUILDING'S OWNER:



PERBADANAN PERWIRA HARTA MALAYSIA
BANGUNAN LATIT
Jalan Bukit Bintang
55100 KUALA LUMPUR
WILAYAH PERSEKUTUAN KUALA LUMPUR

ARCHITECT:

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TEL :
FAX :

M/E ENGINEER



**JURUTERA NUSANTARA
BERSEKUTU SDN BHD.**

QUANTITY SURVEYOR

as2 CONSULT SDN. BHD.

DRAWING STATUS

- Preliminary Submission Construction
 Information Tender As-Built

DRAWING TITLE

KEY PLAN
LOCATION PLAN
SITE LAYOUT

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Designed NAME	Date MAY 2017	Drawn NAME	Date MAY 2017
Scale AS SHOWN	Checked AAMA	Date MAY 2017	

DRAWING NUMBER

TAA	IPH	PPP	CD	2016 - 35	1 OF 5
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NOTA :
Pemaju dan kontraktor yang dilantik hendak memastikan keselamatan, kesihatan dan kebajikan orang-orang lain selain daripada pekerja yang mungkin teresetuh semasa aktiviti pembinaan dijalankan sebagaimana yang ditetapkan di bawah Akta Keselamatan dan Kesihatan Pekerjaan 1994 serta peraturan-peraturan yang dibuat dibawahnya, dan Akta Kilang dan Jentera 1967 serta peraturan-peraturan yang dibuat dibawahnya, dan perlu menyediakan sumber bagi dibuat dibawahnya, dan perlu menyediakan sumber bagi mencapai tujuan tersebut.

PERUNTUKAN SEKSYEN 18, AKTA SPIRM (AKTA 694) 2009

"Sebarang melakuan kesalahan jika dia memberi seseorang ejen, atau sebagai seorang ejen dia menggunakan, dengan niat hendak memperdayakan prinsipalnya, apa-apa resit, akaun atau dokumen lain yang berkenaan dengannya prinsipal itu mempunyai kaperingatan, dan yang dia mempunyai sebab untuk mempercayai mengandungi apa-apa pernyataan yang palsu atau silap atau tidak lengkap tentang apa-apa bufor matan, dan yang dimaklumkan untuk mengelirakan prinsipalnya".

NOTA PENYEDIAAN REZAB LOJI RAWATAN

JADUAL PENGIRAAN PENDUKUT SETARA (PE) FASA 1

NO. SEMENTARAN	UNIT	PE/UNIT	JUMLAH PE
LOTI PERUMAHAN	204	5.0	1,020
DEWAN (50 ORANG)	1	0.2/Orang	50
Jumlah			1,070

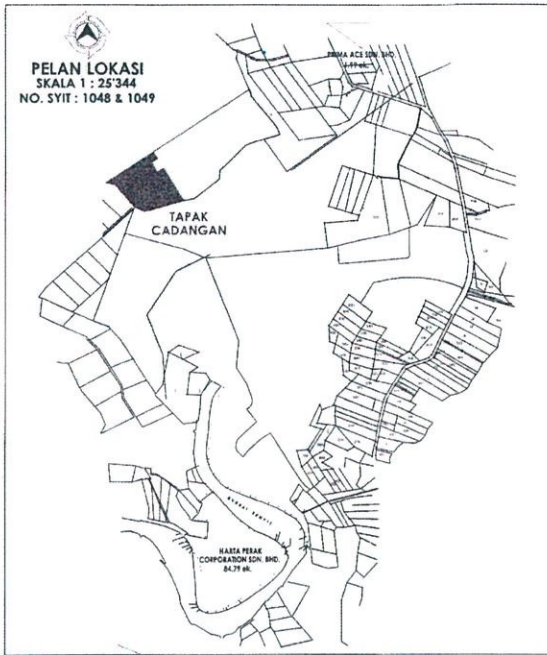
KEPERLUAN TAPAK LINTUK REZAB LOJI RAWATAN

- Staf Jarak 4.1 (Dewasa Treatment Plant Volume 4)
- Jumlah Kenderaan PE = 1,530 keta
- Kenderaan Tapak Yang Diperlukan = 0.32 ek
- Kenderaan Tapak Yang Diperlukan = 0.32 ek

ANGGARAN PERMINTAAN AIR - BEKALAN AIR SEHARI

KLASIFIKASI	UNIT	ANGGARAN PERMINTAAN AIR / UNIT	JUMLAH (LITER)
RUMAH TERES	204	1500 liter / unit	456,000
Jumlah			456,000

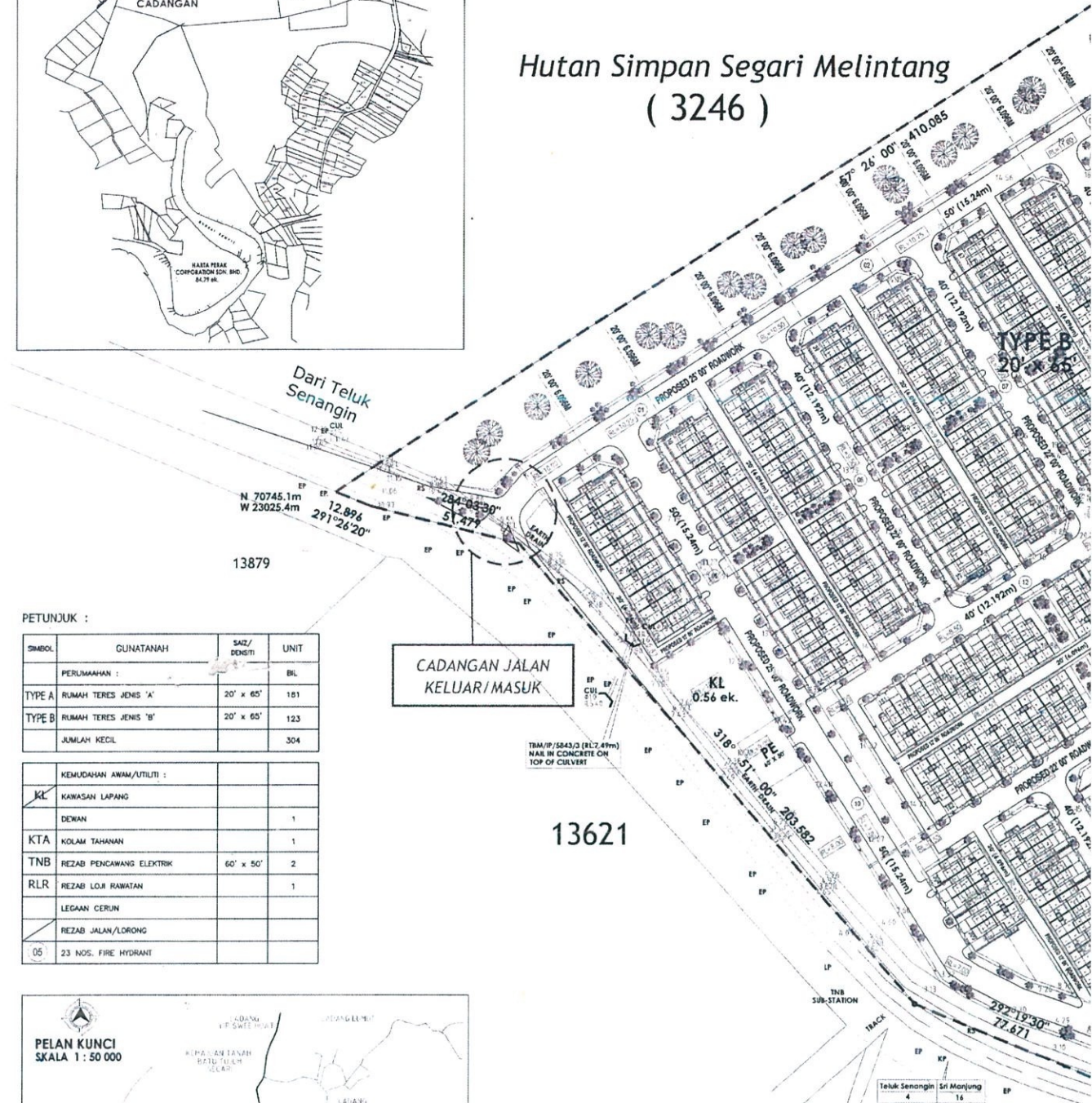




SITE LAYOUT
SCALE 1 : 1000
NO. SYIT PIAWAI 1048 & 1049

ITEM	BUILDING'S TYPE / LOT	UNIT			TO
		CORNER	INTERMEDIATE	END	
1/-	TERRACE HOUSE (TYPE 'A')	18	133	30	
2/-	TERRACE HOUSE (TYPE 'B')	15	89	19	

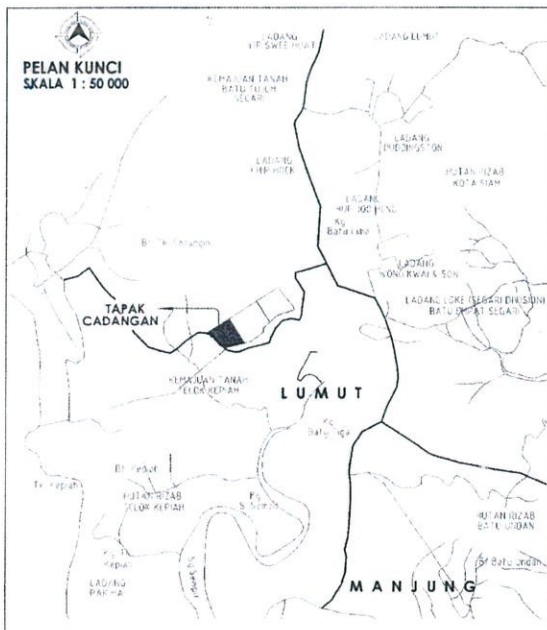
Hutan Simpan Segari Melintang (3246)



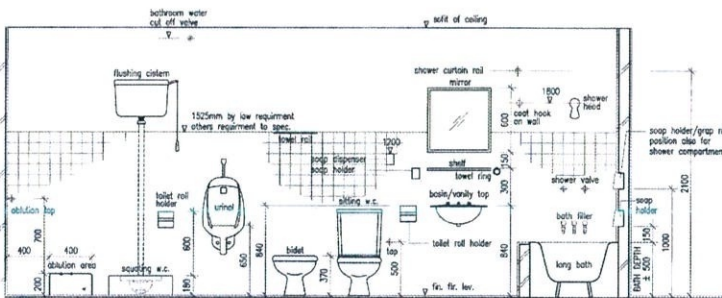
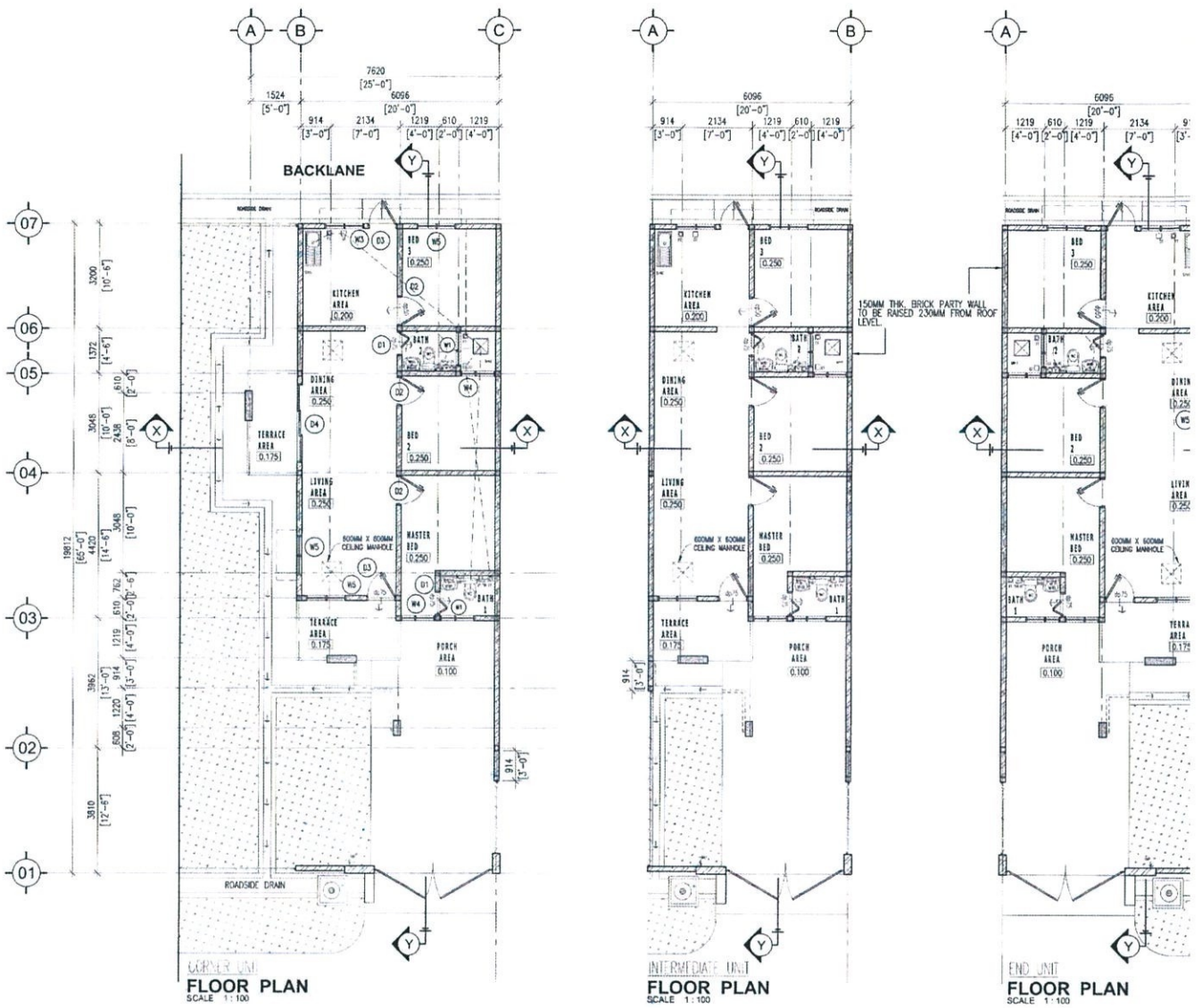
PETUNJUK :

SYMBOL	CUNTANAH	SAIZ/ DENSITI	UNIT
	PERUMAHAN :		
TYPE A	RUMAH TERES JENIS 'A'	20' x 65'	181
TYPE B	RUMAH TERES JENIS 'B'	20' x 65'	123
	Jumlah Kecil		304

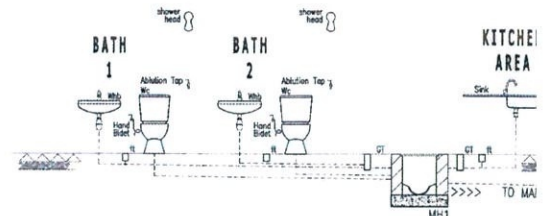
KEMUDAHAN AWAM/UTILITI :			
KL	KAWASAN LAPANG		
	DEKAT		1
KTA	KOLAM TAHAPAN		1
TNB	REZAB PENCAWANG ELEKTRIK	60' x 50'	2
RLR	REZAB LOJ RANJARAN		1
	LEGAM CERUN		
	REZAB JALAN/LORONG		
OS	23 NOS. FIRE HYDRANT		



NOTA :
SEMUA UKURAN MUKTAMAD LOT-LOT DIDALAM PELAN SUSUNATUR INI AKAN TERTAKLUK KEPADA PELAN P.U. YANG AKAN DISEDIAKAN OLEH JURUKUR TANAH BERLESEN SELEPAS KELULUSAN PELAN SUSUNATUR INI.



SANITARY FITTINGS SETOUT HEIGHT REFERENCE



SANITARY SCHEMATIC DIAGRAMMATIC LAYOUT

DOOR SCHEDULE

SYMBOL / LEGEND	D1	D2	D3	D4
PLAN VIEW				
ELEVATION				
DOOR TYPE	PVC BIO-FOLDING DOOR	HOLLOW CORE DOOR	HARDWOOD TIMBER DOOR	ALUMINUM SLIDING DOOR
WIDTH (MM)	782 (2' 8")	914.4 (3' 0")	914.4 (3' 0")	2438 (8' 0")
HIGH (MM)	2134 (7' 0")	2134 (7' 0")	2134 (7' 0")	2134 (7' 0")
FIRE RATED DOOR (HR)	-	-	-	-
FRAME	GJ FRAME	GJ FRAME	GJ FRAME	-
NO. OF S/S HINGES	2	3	3	-
LAMINATION MATERIAL	-	MELLAMINE	MELLAMINE	-
HYDRAULIC DOOR CLOSER	-	-	-	-
LOCKSET	-	CYLINDRICAL LOCKSET	CYLINDRICAL LOCKSET	-
BATHROOM LOCKSET	SS LATCH	-	-	-
COAT HOOK	-	-	-	-
DOOR FINISH	ACRYLIC PAINT FOR FRAME	ACRYLIC PAINT FOR FRAME	ACRYLIC PAINT FOR FRAME	-
SONAGE / SYMBOL	-	-	-	-
NOTES:				

WINDOW SCHEDULE

SYMBOL / LEGEND	W1	W2	W3	W4
PLAN VIEW				
ELEVATION				
WINDOW TYPE	FIXED GLASS LOUVRES	ALUMINUM CASSETT WINDOW	ALUMINUM CASSETT WINDOW	ALUMINUM CASSETT WINDOW
WIDTH (MM)	914.4 (3'00")	914.4 (3'00")	1219.2 (4'00")	914.4 (3'00")
HIGH (MM)	808.8 (2'00")	1219.2 (4'00")	1219.2 (4'00")	1028.8 (3'00")
FRAME	GJ FRAME	ALUMINUM FRAME	ALUMINUM FRAME	ALUMINUM FRAME
ROOF CONC. HOOD (R x L)	-	-	-	-
SECURITY BAR	-	-	-	-
WINDOW FINISH	-	-	-	-
PRE-CAST COPING	-	-	-	-
GLAZING THICKNESS (MM)	5MM THK.	5MM THK.	5MM THK.	5MM THK.
TYPE OF GLAZING	GREEN GLASS GLAZING	GREEN GLASS GLAZING	GREEN GLASS GLAZING	GREEN GLASS GLAZING
NOTES:				