UNIVERSITI TEKNOLOGI MARA

DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

APRIL 2015

It is recommended that this practical training report prepared

by

NORASYIKIN BT MAHAMAD ALI

2012736123

entitled

ANCILLARY WORKS FOR PROPOSAL TO BUILD AND COMPLETE A TWO-STOREY BUNGALOW ON LOT 315549, MUKIM HULU KINTA, 31400 IPOH, PERAK

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

Report Supervisor	En. Zulkifli Bin Ab.Halim.
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STUDENT'S DECLARATION

I 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 Associate Architect for a duration of 5 months starting from 17 November and ended on 3 April 2015. It is submitted as one of the prerequisite requirements of DBN 307 and accepted as a partial fulfillment of the requirements for obtaining the Diploma in Building.

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ABSTRACT

This report described the ancillary works under taken in this building construction. For the building under construction located at Mukim Hulu Kinta, Ipoh, this included the project construction of a gabion wall and a swimming pool. The report will show the construction process of both items. Site visits including taking photographs of the works and a study of the project documents are done to prepare the report. The report will explain the construction process of both the gabion wall and swimming pool from beginning to the end.

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CHAPTER 1.0

PREFACE

1.1 Introduction

Ancillary works for proposal to build and complete a two-storey bungalow on Lot315549, Mukim Hulu Kinta, Daerah Kinta, 31400 Ipoh, Peraka re gabion wall construction and swimming pool. A gabion wall construction is lined with stone arranged in steel wire baskets .The purpose of the gabion wall is to prevent soil erosion. The gabion wall baskets are available in a variety of different sizes. The size used for gabion wall construction is1 meter high and 1 meter long. Types of gabion are gabion wall, gabion mattresses and gabion cladding.

According to APCO Pool Specialties, Inc. (2010), a swimming pool can do wonders for any home. Swimming pools at home are a lot of fun but one must realize that if a pool is not installed correctly, it will cause a lot of problems for the homeowners.

The swimming pool is important for training to swim and can make the body become healthy. There are many exercises that can be made in the swimming pool which are primarily water toning and water yoga. There are several types of swimming pool such as athletic pools, in-ground pool, above-ground pool, lap pool, spa pool and kiddies pool.

1.2 Objective

There are two main objectives in this report:

1) To study the installation of gabion wall construction.
2) To study the installation of swimming pool.

1.3 Scope of Study

In relation with the objectives of the study, the scopes of study are:

a) The scope of study focuses is about the construction of gabion wall and construction of swimming pool on a project proposal to build and provide residential two-storey on lot 315549, Mukim Hulu Kinta, Daerah Kinta, 31400 Ipoh, Perak.

b) This research is about the study of installation of gabion wall construction and the study of installation of swimming pool construction.

1.4 Method of Study

There are several methods of study that has been used to complete this report by using primary and secondary methods.

1.4.1 Primary Method

The primary method used is direct interview with contractor Song Yon Choi and clients who are, all parties involved in this process. They have given their full commitment to briefly describe the process of making a swimming pool and a gabion wall construction. Furthermore from observation, the author gets more first hand knowledge that what the author has learned from books and websites.

1.4.2 Secondary Method

Secondary method must be consulted prior to a study carried out. These methods serve as a guide and provide the description of the topics of study to meet the first objective on the use of building materials at construction sites. These data can be obtained from printed materials such as books and reports. These materials need to strengthen the basic method conducted in this study.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

Company Name	: ARAZ Design Consultant
Company Registered No.	: IP0305394-P
Address	: No, 53a Tingkat 1, PersiaranDataran 4, 32610 Bandar SeriIskandar, Perak DarulRidzuan
Registered Date	: 1 June 2009
Register Place	: Ipoh
Telephone & Fax No	:

2.2 Company Profile

Established in the year 2000, Arkitek Azman Zainonabidin Araz will offer a true professionalism and dedication to all assignments undertaken, coupled with a continuous striving for the highest standard in design and project delivery. Araz recognizes the value of innovative design approaches which are compatible with Malaysia's environment and culture and endeavours to follow this trend but moderated with sound constructional principles to ensure long term durability and reliability of all projects undertaken. Araz draws it experience and expertise from its principal who has worked for major practices in Malaysia. Projects included high rise condominiums, housing development, mixed development, offices, shopping complexes, resorts, sport complexes, highway facilities and interior design. Araz provides comprehensive services including master planning, architectural concept design, contract management and interior design.

2.2.1 Basic Service of the Architect

The basic service shall be as follows:

1. Schematic Design Phase
    a) Taking of instruction from the client to ascertain the requirements and constraints of the work.
    b) Preparing preliminary sketch designs to interpret the design brief.
    c) Developing the sketch designs to a stage sufficient to enable applications to be made for planning approval or approval in principle in connection with any specific by law.
    d) Preparing preliminary estimates of the probable construction cost based on current area, volume or other unit costs.
2. Design Development Phase
    a) Upon the approval of the proposals by the relevant approving authority or the client, developing schematic design drawings to a stage to enable other independent consultants to commence detailed design work.
    b) Preparing working drawings and submitting the same together with necessary particulars to the relevant authority to obtain statutory building approval.
    c) Updating of preliminary estimates of construction cost.
    d) Preparing a probable construction schedule and submitting the same to the client.
3. Contract Documentation Phase
    a) Upon the approval by the client of the updated estimates of construction cost and probable construction schedule, preparing and finalizing drawings, specifications and other particulars necessary for the preparation of the bills of quantities by a quantity surveyor.
    b) Preparing all documents necessary for obtaining competitive tenders for the works.
    c) Pre-qualification of contractors.

d) Inviting, on behalf of the client, tenders for the work or collaborating with the quantity surveyor engaged by the clients to do so.
e) Evaluating the results of the tender including the merits of alternative tenders and submitting a report and recommendation to the client.
f) Awarding the contract on behalf of the client.
g) Preparing the contract document either alone or in collaboration with other consultants appointed by the client for the documents to be signed by the client and the contractor.

4. Contract Administration and Implementation Phase
   a) Performing all the function conferred upon the consulting architect under the terms of the contract.
   b) Providing all information and the issuing of instruction to the contractor to enable the contractor to proceed with the works.
   c) Examining the construction schedule to ensure that the works can reasonably be completed within the contract period.
   d) Providing periodic supervision of the works so as to ensure that the work are being executed in accordance with the contract and the enable the architect to certify the completion of the stages of the works in order to apply for certificate of fitness for occupation from the relevant authority.

2.2.2 Special Service of the Architect

The special services shall be as follows:

a) Preparing detailed development plans in connection with housing or other development based on a layout plan approved by the relevant approving authority.
b) Serving as an expert witness in connection with litigation, giving evidence, setting proofs, conferring with legal counsel, attending court or arbitration or other inquiries.
c) Serving as specialist consultant.
d) Providing town planning services.
e) Providing full interior design services including the taking of instruction from the client, formulating the brief, deciding on the themes, estimating and establishing the budget and implementation schedule, preparing sketch layouts and studies, preparing working and construction drawings, detailed, schedules and colour schemes, designing special items of and soft furnishings, preparing tender documents, obtaining tenders or quotations and advising thereon, accepting on behalf of the client offers for implementation, preparing the contract documents if necessary, managing the contract supervising the works and certifying the works on completion.
f) Providing landscape design services.
g) Providing services for renovation works.
h) Providing services for measured drawing and conservation works.

2.3 Organization Chart

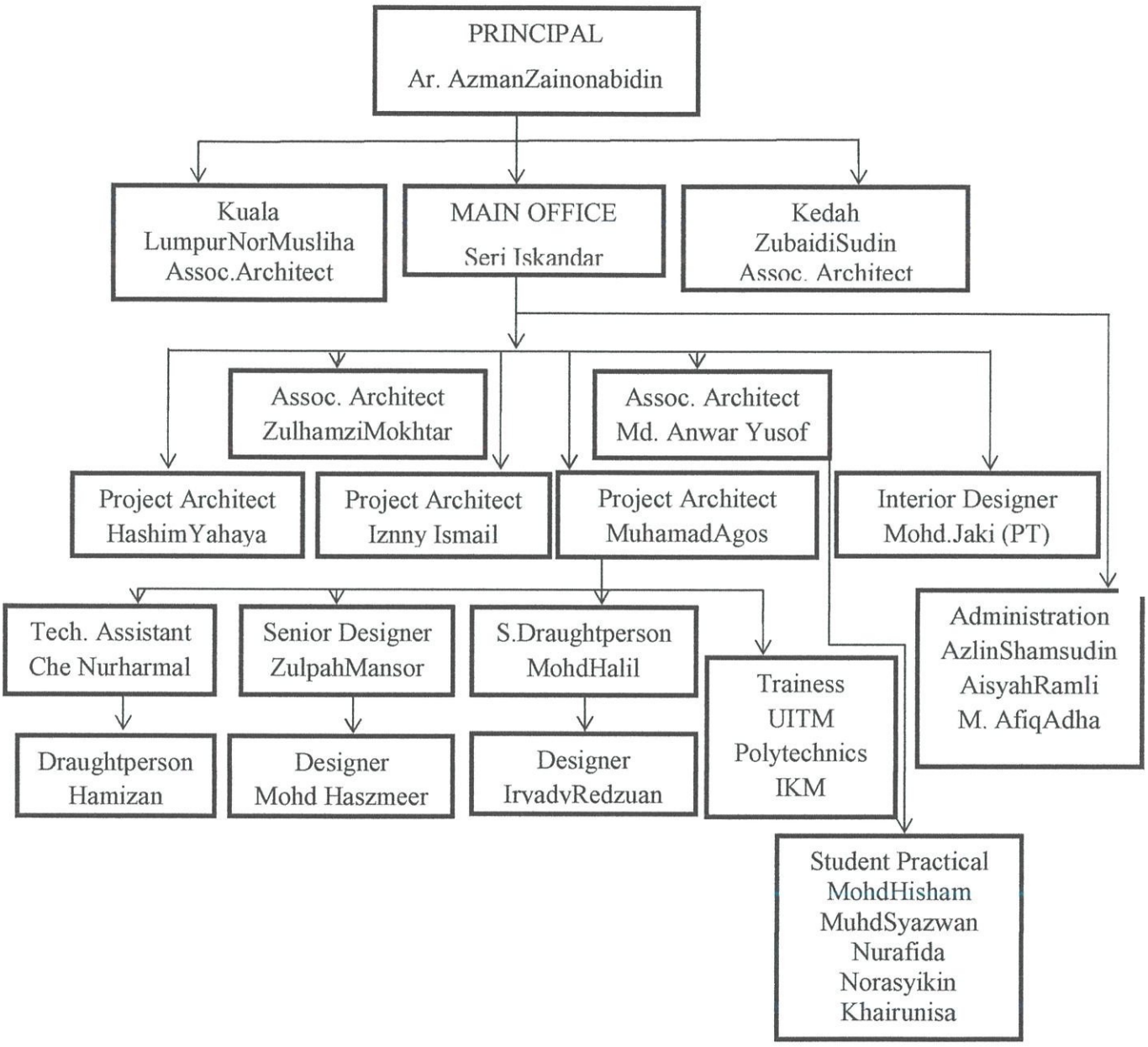

Figure 2.1: Organization charts of ARAZ Design Consultant

2.4List of Project

2.4.1 Completed Project

Academic Building

No.	Name of Project	Construction Sum
1.	Kolej Latihan Tentera Laut Di Raja Malaysia, Lumut Naval Base, Perak for Kementerian Pertahanan Malaysia.	RM 80 million
2.	Academic block for Sekolah Menengah Agama Al-Alum, Selekoh, Perak for AJK Pembangunan Al-Ulum.	RM2 million
3.	IT Lab, Ladge, CISC & Office at Politeknik Ungku Omar, Ipoh, Perak for Kementerian PengajianTinggi Malaysia.	RM6 million
4.	Additional Academic Blocks at Universiti Utara Malaysia, Sintok, Kedah for Kementerian Pengajian Tinggi Malaysia.	RM80 million
5.	Sekolah Kebangsaan Proton City, TanjongMalim, Perak for KementerianPelajaran Malaysia.	RM12 million
6.	Academic Block for Program StudiIlmuKeperawatan at UniversitasSyiah Kuala, Banda Aceh, Indonesia for MERCY Malaysia.	RM 3million
7.	Sekolah MenengahKebangsaanPinji, Perak for KementerianPelajaran Malaysia.	RM12 million
8.	Sekolah Menengah Atas Lhoknga at Aceh, Indonesia for Dinas Pendidikan Nanggroe Aceh Darussalam.	RM 4million

Table 2.1: List of Completed Project for Academic Building

Housing and Apartments

No.	Name of Project	Construction Sum
1.	5 Block of Walk-up Apartment (100 units) of Teacher's Quarters at Simpang Taiping, Perak for Kementerian Pelajaran Malaysia.	RM12 million
2.	100 unit's pf Low-cost Flat at Tapah, Perak for Yayasan Perumahan untukTermiskin.	RM5.5 million
3.	60 units of Low-cost Flat at PengkalanHulu, Perak for Yayasan Perumahan untukTermiskin.	RM2.6 million
4.	200 unitspf Low-cost Flat at Bidor, Perak for Yayasan Perumahan untukTermiskin.	RM10.3 million
5.	Staff Housing at Hutan Melintang &Bagan Dato'for Jabatan Kastam Di Raja Malaysia.	RM5.5 million
6.	25 units Typical 2 ½ storey Bungalows at Chemor, Perak for Markaz Bersatu Sdn.Bhd.	RM8 million
7.	254 units CORE HOUSE at Desa WeuRaya,Lhoknga, Aceh, Indonesia for MERCY Malaysia.	RM1 million
8.	Design & Build of Staff Quarters fot TNB Janakuasa Manjung.	RM250 million

Table 2.2: List of Completed Project for Housing and Apartments

Mosque and Surau

No.	Name of Project	Construction Sum
1.	Extension & Renovation of Masjid Hijau,ParitBuntar, Perak for AJK Masjid Hijau.	RM250 k
2.	Surau Al-Ikhwan Desa Manjung Raya, Manjung, Perak for AJK Pembangunan Surau Al-Ikhwan.	RM350 k
3.	Mosque at Kampong TanjungRambai, Gerik, Perak for Pejabat Daerah Hulu Perak.	RM610 k
4.	Mosque at Kampung Tanjung Kala, Gerik, Perak for Pejabat Daerah Hulu Perak.	RM550 k
5.	Mosque at Gunung sitoli, Nias, Indonesia for RANTF.	RM2 million
6.	Masjid Bandar Universiti, Seri Iskandar, Perak	RM4.5 million

Table 2.3: List of Completed Project for Mosque and Surau

Hospital and Medical Buildings

No.	Name of Project	Construction Sum
1.	RevitalizationofGunungsitoli General Hospital, Nias, Indonesia for BRR Indonesia.	RM25 million
2.	Pharmacy College at Aceh, Indonesia for DinasKesihatanNanggroe Aceh Darussalam.	RM1 million
3.	KlinikKesihatan&Staf Quarters at Langkap, Perak for KementerianKesihatan Malaysia.	RM20 million
4.	Community Health Centre at Panga&Meuraxa, Aceh, Indonesia DinasKesihatanNanggroe Aceh Darussalam.	RM2 million
5.	Community Health Centre at Awa'ai&Gido, Nias, Indonesia for BRR Indonesia.	RM2 million
6.	Community Health Centre at Dlingo, Yogjakarta, Indonesia for MERCY Malaysia.	RM1.5 million

Table 2.4: List of Completed Project for Hospital and Medical Building

Public Buildings and Sport Facilities

No.	Name of Project	Construction Sum
1.	Podium and Football Field At Gerik, Perak for Majlis Daerah Gerik.	RM1 million
2.	20 units Multi-Purpose Hall for Majlis Daerah Gerik.	RM200 k
3.	Badminton Hall &Gymnasiium at Universiti Teknologi MARA Seri Iskandar, Perak.	RM1.5 million
4.	Changing Facilities at Universiti Teknologi MARA Seri Iskandar, Perak.	RM500 k
5.	Dewan Persidangan at Gerik Perak for Majlis Daerah Gerik.	RM2 million
6.	Futsal Complex at Universiti Teknologi Petronas, Tronoh, Perak.	RM1.5 million
7.	Orphanage Centre at Babun Najah, Daruzzahidin, Sukamakmur&KayeeKunyit, Aceh, Indonesia for MERCY Malaysia.	RM4 million

Table 2.5: List of Completed Project for Public Building and Sport Facilities

Hotel, Resorts & Tourism

No.	Name of Project	Construction Sum
1.	Purnama Beach Resort consists of 100 rooms & resort facilities, Pangkor, Perak.	RM6 million
2.	Istana Rimba Resort Development, Teluk Batik, Perak for Pangkor Outdoor Quest Sdn. Bhd.	RM5 million
3.	Teluk Batik Resort Development consists of 150 rooms & resort facilities at Teluk Batik, Perak for Pangkor Outdoor Quest Sdn. Bhd.	RM20 million
4.	Tourist Facilities at Lenggong Archeological Park, Lenggong, Perak for Kementerian Kebudayaan Keseniandan Warisan.	RM2 million
5.	9-storey Hotel nlock consists of 150 rooms & hotel facilities at Taiping, Perak for Koperasi Guru Negeri Perak.	RM20 million

Table 2.6: List of Completed Project for Hotel, Resort & Tourism

Other Projects

No.	Name of Project	Construction Sum
1.	5 Blocks of Hostel, Dining Hall & Counseling Centreat Pusat Serenti PERLOP,SungaiSiput, Perak for AADK & KKDN.	RM5 million
2.	Upgrading & Refurbishment of Existing Staff Quarters at IPD Gerik, Perak for Kementerian Dalam Negeri.	RM650,000
3.	Institut Latihan Memandu at Sungai Petani, Kedah.	RM5 million
4.	Commercial Complex at Langkawi, Kedah for HIG Sdn. Bhd.	RM25 million
5.	Bazaar MARA at Sungai Petani, Kedah for MARA.	RM1.3 million
6.	Office & Store for Kastam Di Raja Malaysia at Taiping, Perak.	RM5 million
7.	Bazaar at Parit, Perak for Majlis Daerah Perak Tengah.	RM1.5 million

Table 2.7: List of Completed Project for Other Project

Interior Works and Renovations

Bil	Name of Project	Construction Sum
1.	Interior Works of Lecturer's room, Post Graduate office, STP lab, Central lab, Guest Flat, Registrar Office, Exam Unit & Library for Universiti Teknologi Petronas, Tronoh. Perak.	RM1.2 million
2.	Interior Works of existing Office Space for Persatuan Bolasepak Amatur Perak at Ipoh, Perak.	RM400 k
3.	Interior Works of Guest Room, Main Lobby & Public Spaces at 9-storey Hotel, Taiping, Perak.	RM3 million
4.	Extension, renovation and interior works of existing bungalow for En. Megat Shahrani at Ipoh, Perak.	RM350 k
5.	Interior Works of existing Rest House at Gerik, Perak for Majlis Daerah Gerik.	RM800 k

Table 2.8: List of Completed Project for Interior Works and Renovations

2.4.2 Current Project

Bil	Name of Project	Construction Sum
1.	Cadangan Membina dan Menyiapkan Rumah Kediaman Dua Tingkat Di Atas Lot 315549, Mukim Hulu Kinta, Daerah Kinta, 31400 Ipoh, Perak.	RM 2.5 million
2.	Proposed Alterantion and Renovation Works, Registry Office, Universiti Teknologi Petronas, Bandar Seri Iskandar, Perak Darul Ridzuan.	RM480,000
3.	Proposed Renovation Works of External Hostel Administrative Office [Plot108] at Seri Iskandar Business Centre [SIBC], Universiti Teknologi Petronas, Bandar Seri Iskandar, Perak Darul Ridzuan.	RM2.8 million

Table 2.9: List of Project for Current Project

CHAPTER 3.0

CASE STUDY

3.1 Introduction of Project

Ancillary works for proposal to build and complete a two-storey bungalow onLot315549, Mukim Hulu Kinta, Daerah Kinta, 31400 Ipoh, Perak are gabion wall and swimming pool. Gabion wall is steel wire basket filled with stone and arranged within. Gabion wall can be made to any size because it is very useful for home owners to reduce erosion of the slope. Apart from that, gabion wall is easily built and the cost of a gabion wall is RM 3000. These works need to be leveled on pitched surface. Gabion wall construction does not require space between rocks because there is already water drainage at the back of wall. This project relates to a gabion wall construction at the site of 127 on lot 315549, Mukim Hulu Kinta, Daerah Kinta, 31400 Ipoh, Perak.

A swimming pool is built in the house compound according to the client's requirements. The cost of a swimming pool is RM 7000 because this work is precise and specialized. Apart from that, the swimming pool location area and depth is built according to the client's requirement as written in the work specification.

3.2 Case Study

3.3.1 Project Background

The project under study isa proposal to build and complete a two-storey bungalow on Lot 315549, Mukim Hulu Kinta, Daerah Kinta, 31400 Ipoh, Perak.

The client of this project is Prof. Ir. Dr. Ahmad Fadzil Bin Mahani and Prof. Dr. Norani Muti Binti Mohamed and the architect for this project is Architect Azman Zainonabidin.

This project cost RM2.5 million and it started in May 2013 and is expected to be completed in August 2015.

Photo 3.1 Current Site Progression

CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM ULU KINTA, DAERAH KINTA, 31400, IPOH, PERAK DARUL RIDZUAN

PEMILIK

PROF. IR. DR. AHMAD FADZIL BIN M. HANI &

PROF. DR. NORANI MUTI BINTI MOHAMED

ARKITEK

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PERAK DARUL RIDZUAN
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KELULUSAN PELAN BANGUNAN DEWAN BANDARAYA IPOH
NO. File: M.B.I : OSC (120-B) L/B/5/64/163/12
TARIKH LULUS : 24 MEI 2012

Photo3.2: The detail of this project

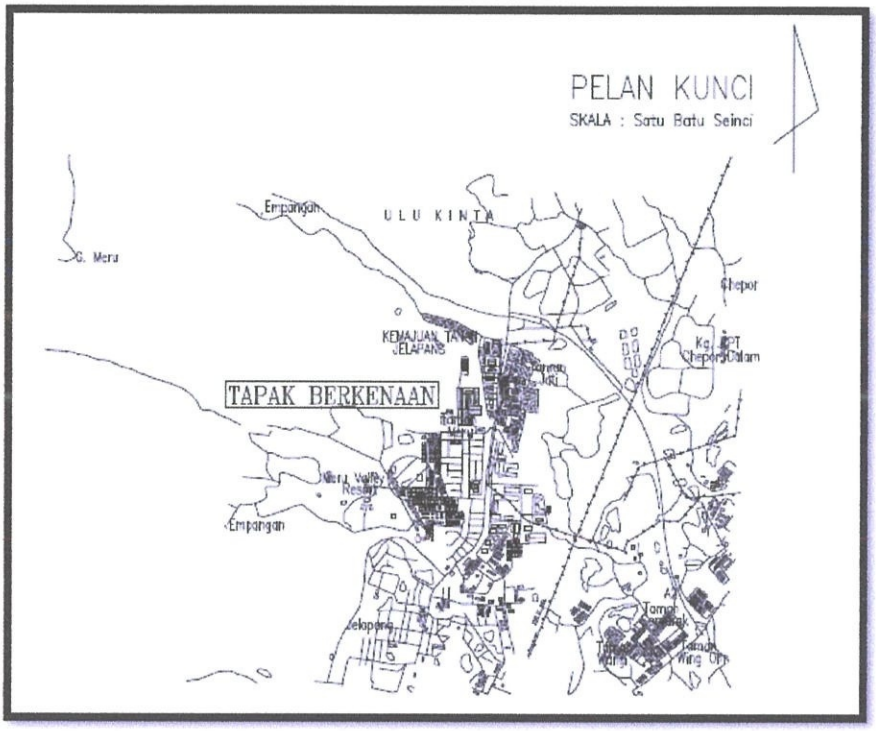

Figure 3.1: The location plan of this site

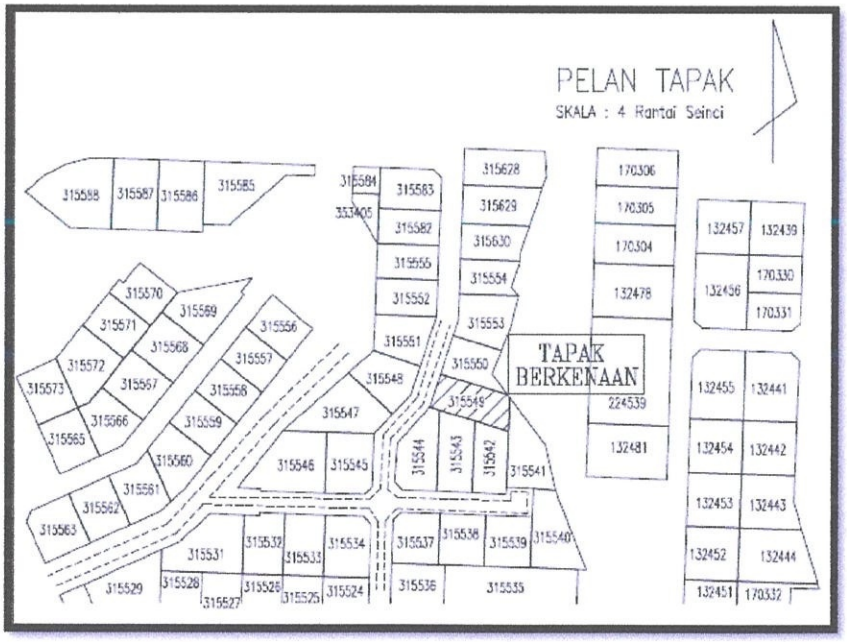

Figure 3.2: The site plan

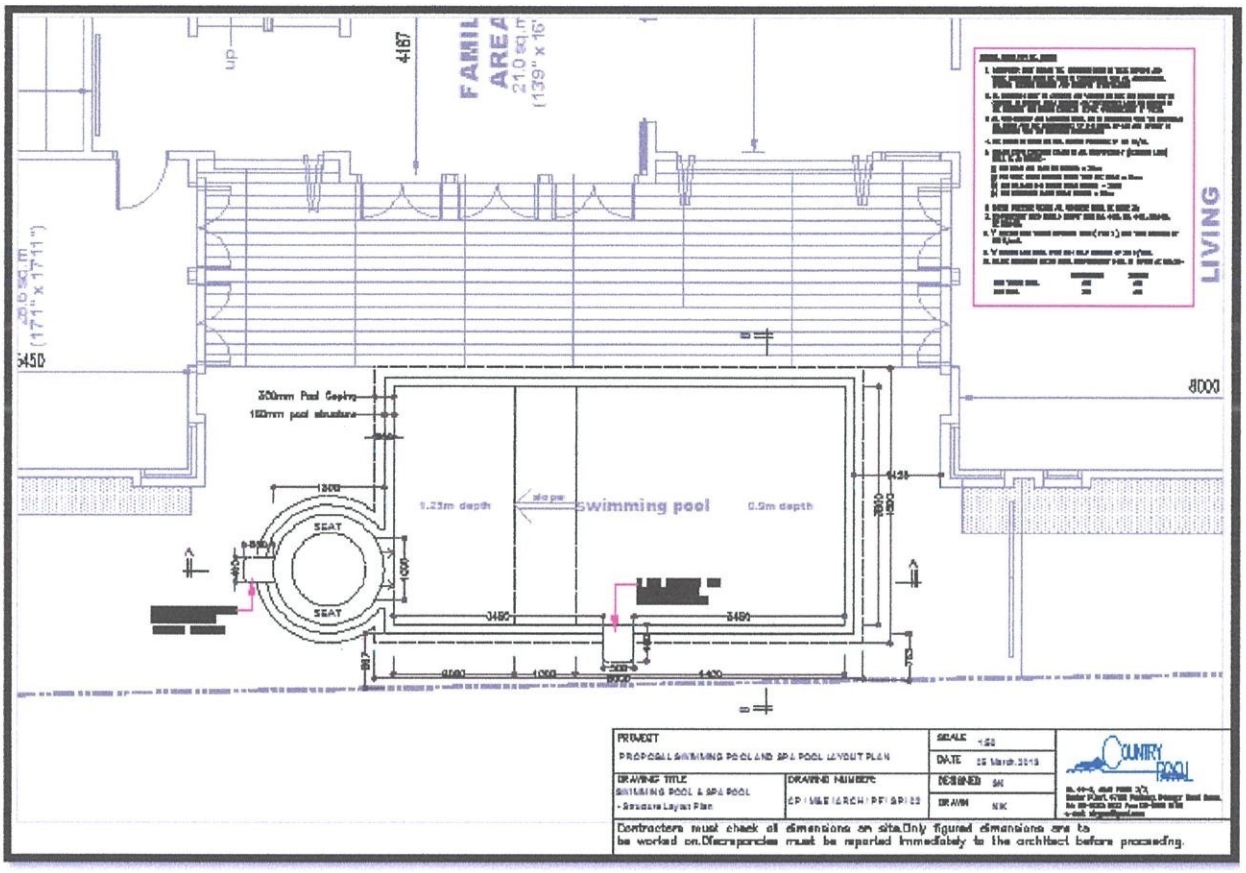

Figure 3.3: Layout Plan Swimming Pool

3.3 Method Statement

3.3.2 Installation of gabion wall

Photo 3.3: The area of gabion wall

Firstly, specify a gabion wall construction should refer to the drawing of the plan that had been provided by the responsible person.Next, specify the strong places on the slope to gabion wall construction. In addition, the site must be cleaned like rocks and grow plants for gabion wall construction. Next, determine the area gabion wall construction to be placed and determine depth and length to facilitate the gabion wall construction is placed in the area. Depth of gabion wall construction taken 4000mm.

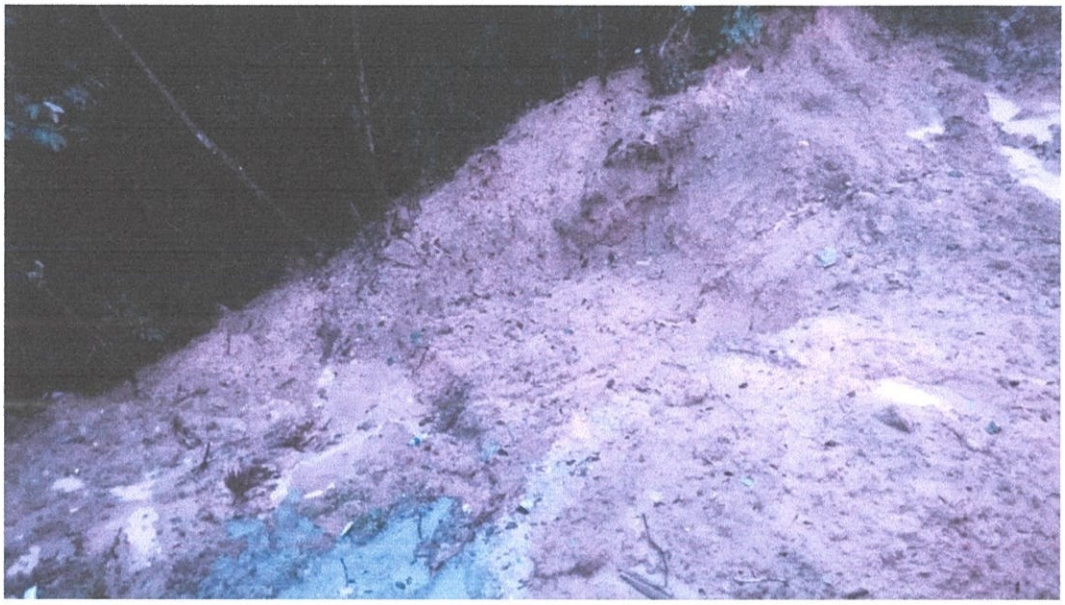

Photo 3.4: Excavation work

Secondly, excavation works were carried out at the slope areas according to the length and depth of the gabion wall. Excavation works for area gabion wall construction takes 2 day using backhoe.

Photo 3.5: Clean a gabion wall area

Next, after the excavation works undertaken and would recommend the slope the soil is excavated to be placed in other areas so that the area of the gabion wall construction easy to clean so that gabion wall can be easy to construct.

Photo3.6: Leveling floor

In addition, area for gabion wall construction should smooth out a little in order to facilitate the gabion wall construction placed on the slopes.

Photo 3.7: Installation of wire basket gabion wall

After the excavation work contractor have makes a basket gabion wall construction installation works in the form of cube. Installation of gabion basket gabion wall construction should be using strong iron to cover all that is in the basket gabion wall construction of a cube to facilitate the work of filling stones that have been selected by the contractor.

Figure 3.8: Gabion Installation Instruction

First of all, steel wire that has been formed into a square the same laid flat place to facilitate employee tuck each section to be the same square shape. Second, the steel wire folded each section in the form of the same square should be folded according to a measure that has been determined by the contractor. Steel wire that has been folded each section need to be bound strongly by using tools such as plier in order to avoid rock that filled the venue does not come out.

Photo 3.9: Type of stone

After that, the stones have been selected to be included in the basket gabion wall construction that was made by three employee in the same size. All stones have selected by the contractor. Next, contractor has determined the types of rocks to put in the basket gabion wall construction. Contractor can should be compiled in a systematic manner in order to accommodate all the stones into the basket gabion wall construction.

Photo 3.10: Arrangement of stones in basket gabion wall

Next, stones will be included in the same square-shaped basket gabion wall construction. The stones should be sorted by size to facilitate the work to fill the stones. Basket gabion wall construction filled with rock should be placed in a systematic manner in order to put the total specified by the contractor. Basket gabion wall construction which was completed by filling stones must be elevated using dredges to be placed at the bottom of the slope.

Photo 3.11: Mark steel

Next, mark steel in gabion wall construction to facilitate the work of the order of gabion wall construction. Gabion wall construction should be arranged so that no occurrence of slope erosion. Mark steel in gabion wall construction to facilitate the work of the order of gabion wall construction. Gabion wall construction should be arranged so that no occurrence of slope erosion.

Photo 3.12: Arrange of gabion wall

Finally, basket gabion wall construction filled with stones must be carried and arranged each line in order to withstand the wide. Basket gabion wall construction in the form of the same square should be arranged according to the number of which has been determined by the contractor.

Photo 3.13: Layer of gabion wall

The total of gabion wall construction has been determined by the contractor. Contractor also has determined the position of gabion wall construction on every hillside to avoid the occurrence of landslides in the area of detached houses are sorted after the gabion wall, gabion wall covered with soil in order to maintain the durability of the gabion wall.

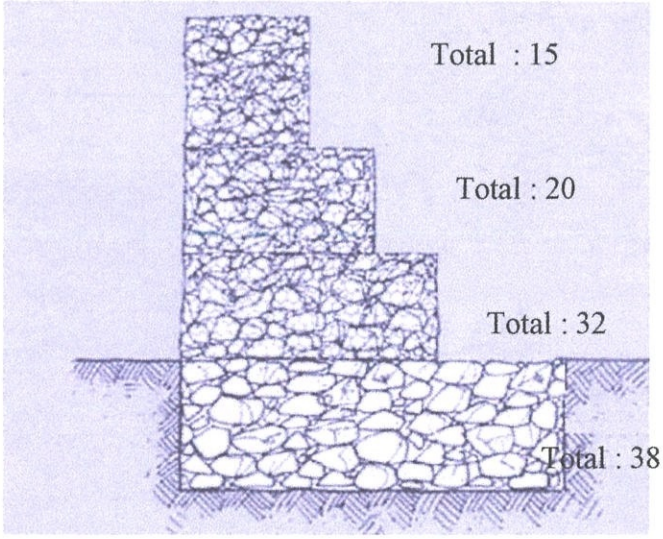

Figure 3.4: Layer of gabion wall

Source: FAO. (1989)

3.3.4 Installation of swimming pool

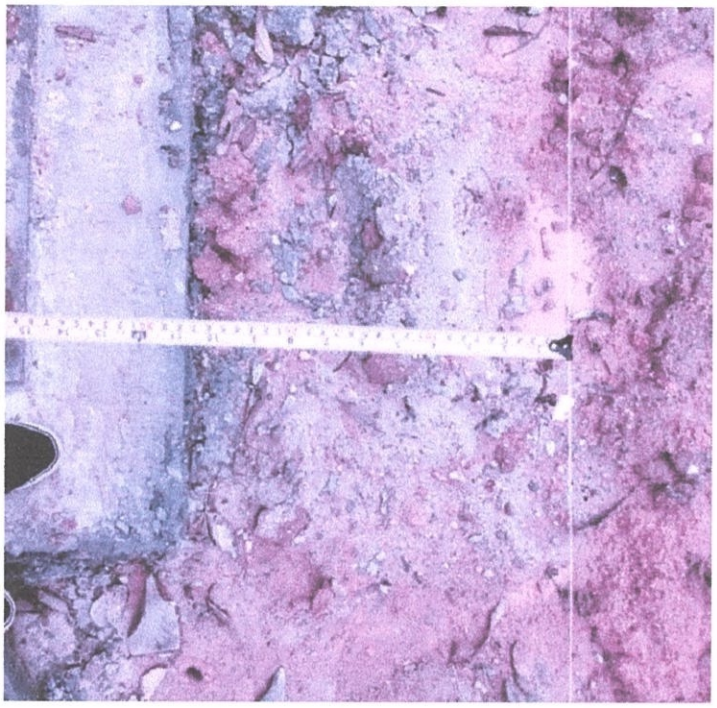

Photo 3.14: Measure the distance swimming pool

Firstly, determine the design of swimming pool desired by homeowners and choice color of a swimming pool that fits the needs of homeowners. Contractors measure a position with a home to determine areas where the outdoor swimming pool to pick from. The contractor also refers to the size of the swimming pool of the drawing were made by architect to gain pool position correctly. The distance between the walls of the swimming pool is 3350mm.

Photo 3.15: Excavated the area

After that, a measure that has been measured by the contractor must be dug up in order to facilitate the work of making the swimming pool to make well. In addition, the area has been dug up to be cleaned in order to show the depth and the distance required by the swimming pool. The depth for swimming pool is 900mm.Next, after the excavation works carried out, an area for swimming pool need to be cleaned in order to facilitate the work of cementing and tie the bricks at the boundary of swimming pool. The drawing is refer to appendix.

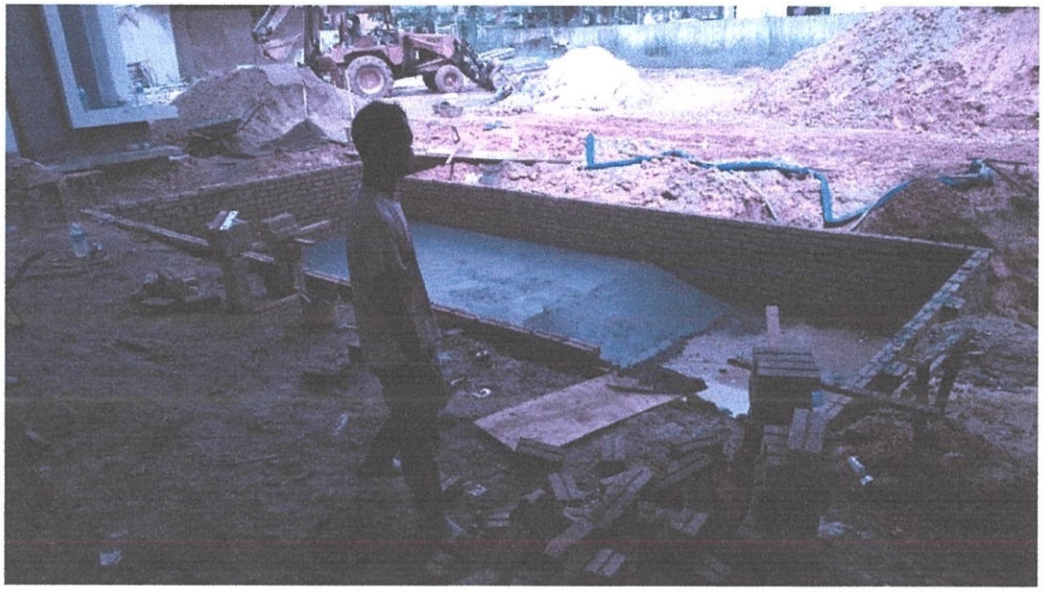

Photo 3.16: The binding brick work

After that, the work of binding brick in the swimming poolis taken in order to form the walls of the swimming pool. In addition, the area of the swimming pool should also been cement in order to view the depth of the swimming pool. Next, cementing work carried out in the floor area of the swimming pool in order to facilitate the installation of tiles installed on the floor.

Photo 3.17: Installation of framework steel

Next, installation of framework of steel into the swimming pool was been done. It is in order to provide stability in concrete. Steel frame mounted on the side and bottom of the swimming pool. Installation of this steel frame installed with 4 employees and takes about five hours.

Photo 3.18: Installation of frame

In addition, the installation of the frame also installed in order to facilitate concrete forms into a swimming pool. Next, frame-mounted swimming pool must be of wood in order to make it easy to remove the frame has been filled with concrete. Installation of the frame is installed with two employees so that the installation of the frame can be made quickly. Installation of the frame also takes in three hours.

Photo 3.19: Cementing work in swimming pool

After the installation the frame installed around swimming pools, concrete will be included in the frame to the formation of the swimming pool. Next, cementing work made with two workers and takes four hours to complete the swimming pool.

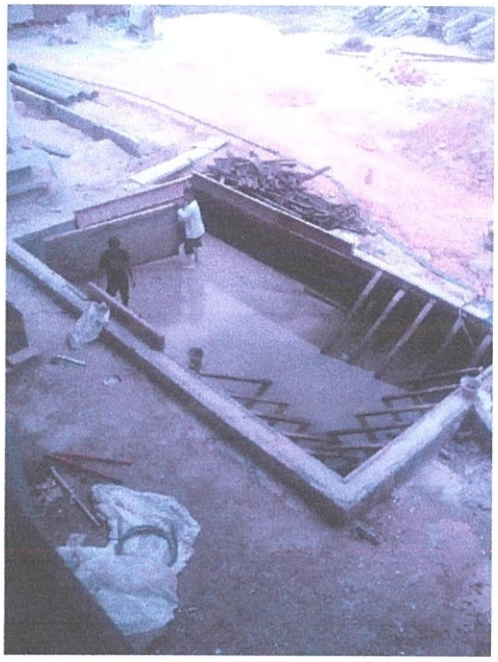

Photo 3.20: Remove frame a swimming pool

After the cementing work carried out in the swimming pool, the area should be left for one day to show the form of decoration made by employees of the . After the cementing works has been left for a day should open all the frame that hold a concrete swimming pool.

Photo 3.21: Swimming pool completed

Photo 3.22: Installation of piping swimming pool

Finally, the installations of pipes turn on every hole on the swimming pool. This pipe should be consulted on the drawing that has been determined by the architecture. A pipe used for swimming pool is PVC pipe. This pipe must have a depth that is 600mm in order to facilitate water flow going. Thickness of the pipe used for the swimming pool is 2 inch in order to withstand the water flow decoration. The drawing refer to appendix.

Photo 3.23: Plumbing system

After that, the installation of pipe is connected at the back of the house so that it can be installed by filtrationsystem. An employee for installation of pipe was four people and take the time to installation of pipe swimming pool is six hours.

Photo 3.24: Filtration system

Installation of taps on connected with filtration system. In addition, this pipe will be connected on two switches to facilitate lighting and pump water installed and working. In addition, filtration system functions to facilitate water swimming pool flow with speed and do not exhibit any impurities in the water swimming pool.

CHAPTER 4.0

CONCLUSION

4.1 Conclusion

In conclusion, the author have learned more about the process of gabion wall construction and how the process of swimming pool construction is made and implemented successfully. The author was fortunate to work with Araz design consultant to be able to understand the installation of gabion wall construction and installation of swimming pool. The author also learnt how to make basket gabion wall construction from the contractor. In addition, the author can know the installation of pipes in the swimming pool. While at the site author meet and talk to all contractors who manage detached houses. The author can also gained more knowledge from all contractors on the site. Furthermore, it also can help the author to write the case study. Thank you for all helping author to finish the case study during practical training.

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5. Hormoz Pazwash. (2011). Urban Storm Water Management
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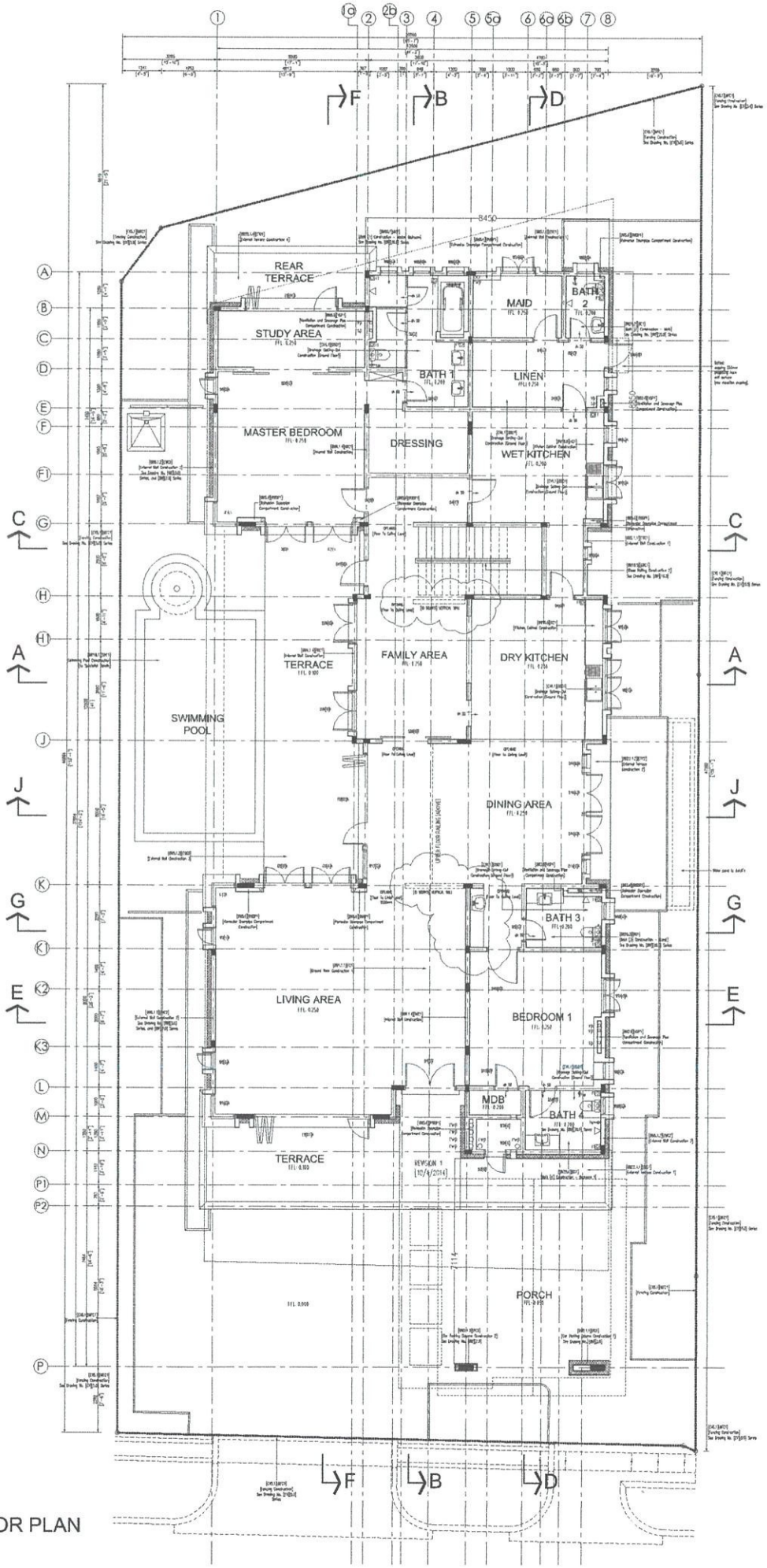
APPENDIX A



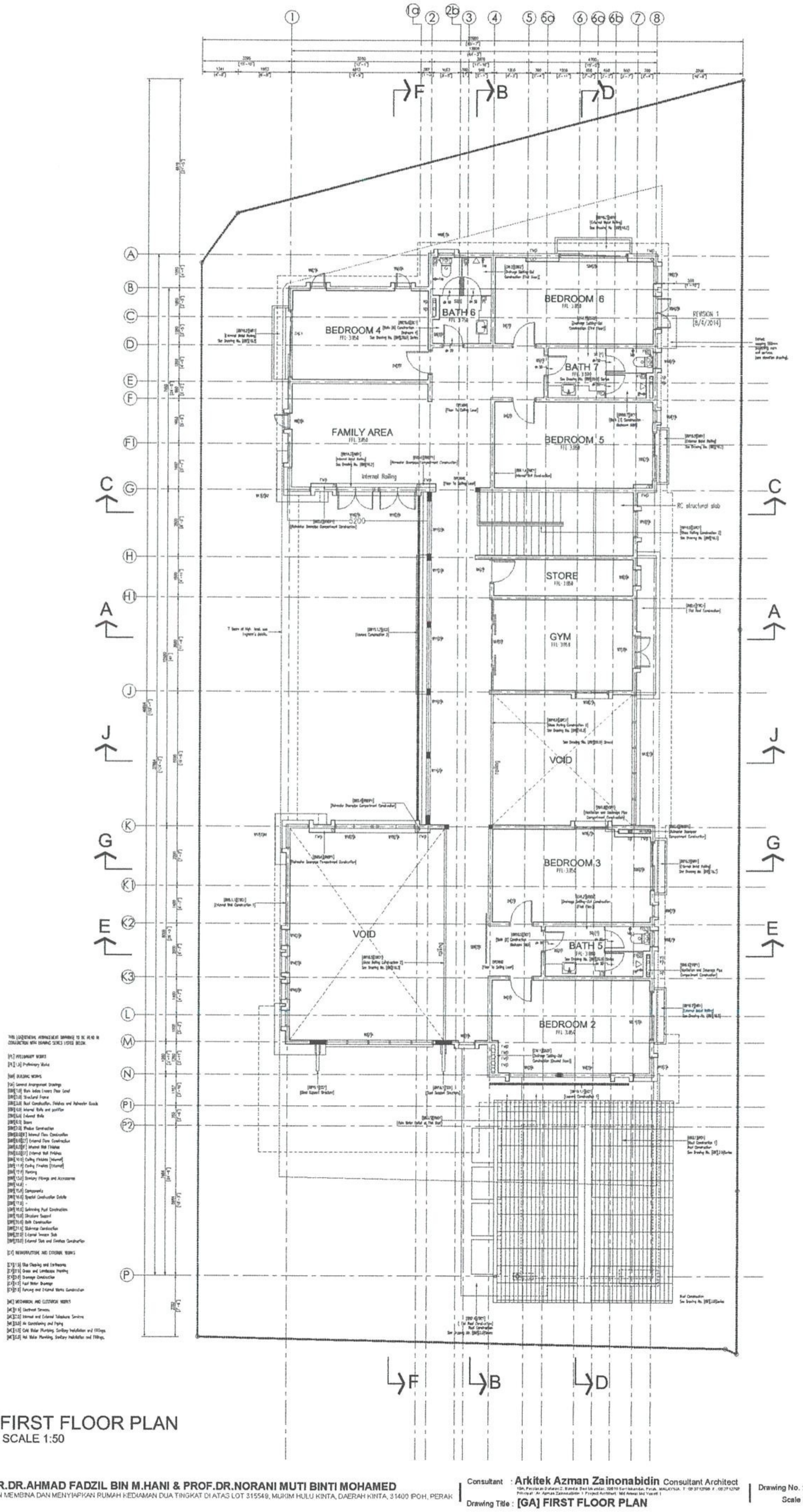
GROUND FLOOR PLAN
SCALE 1:50

PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED
CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

Consultant : **Arkitek Azman Zainonabidin** Consultant Architect
Drawing Title : **[GA] GROUND FLOOR PLAN**

Drawing No. : [MDA]11.2015[PF]-[GA]101[R4]
Scale : **1:50**

Date : **2014.8.12**



FIRST FLOOR PLAN
SCALE 1:50

PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED
CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

Consultant : Arkitek Azman Zainonabidin Consultant Architect

Drawing Title : [GA] FIRST FLOOR PLAN

Drawing No. : [MDA]11.2015[PF]-[GA]102[R4]
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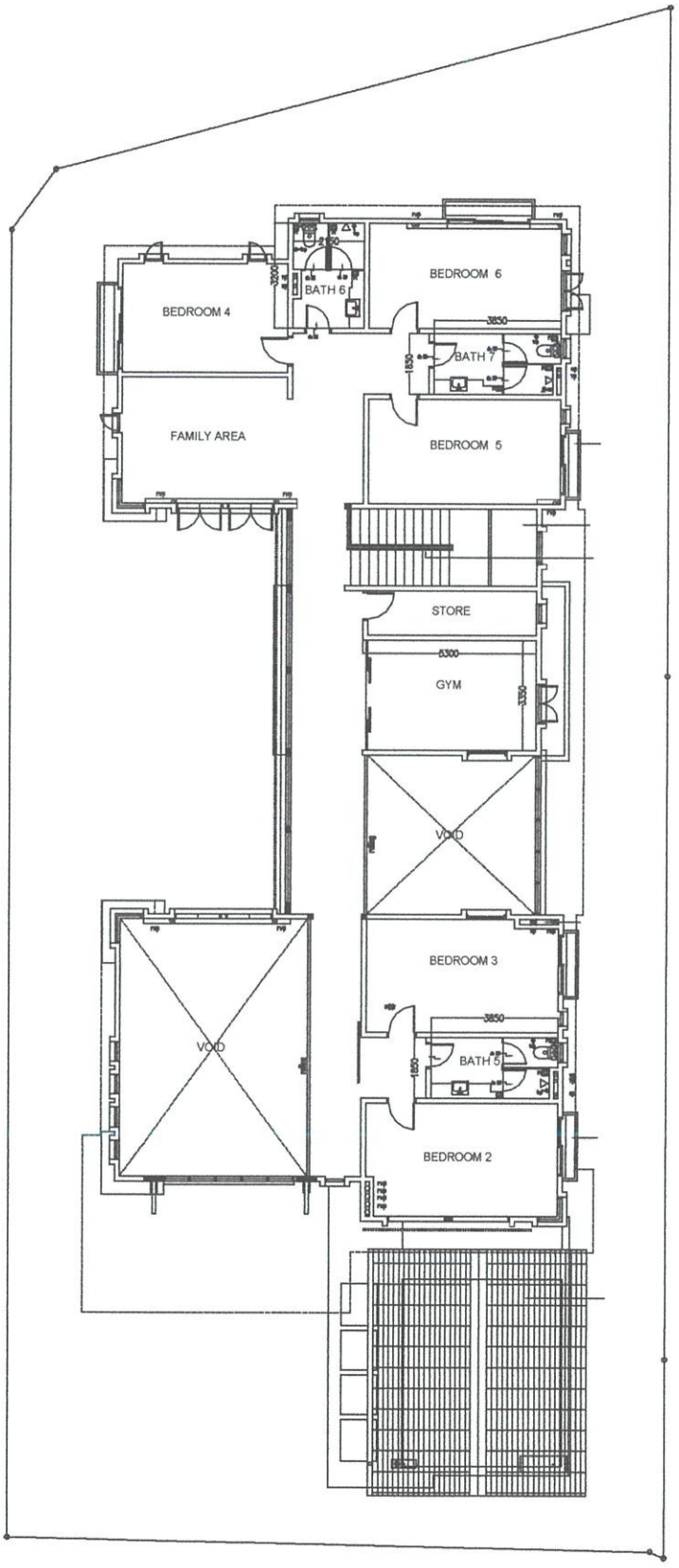
Date : 2014.8.12



N

FIRST FLOOR PLAN
SCALE 1:50

Client : **PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED**
Project : CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

Consultant : **Arkitek Azman Zainonabidin** Consultant Architect

Drawing Title : **[GA] FIRST FLOOR PLAN**

Drawing No. : [MDA]11.2015[PF]-[GA]102[R4]
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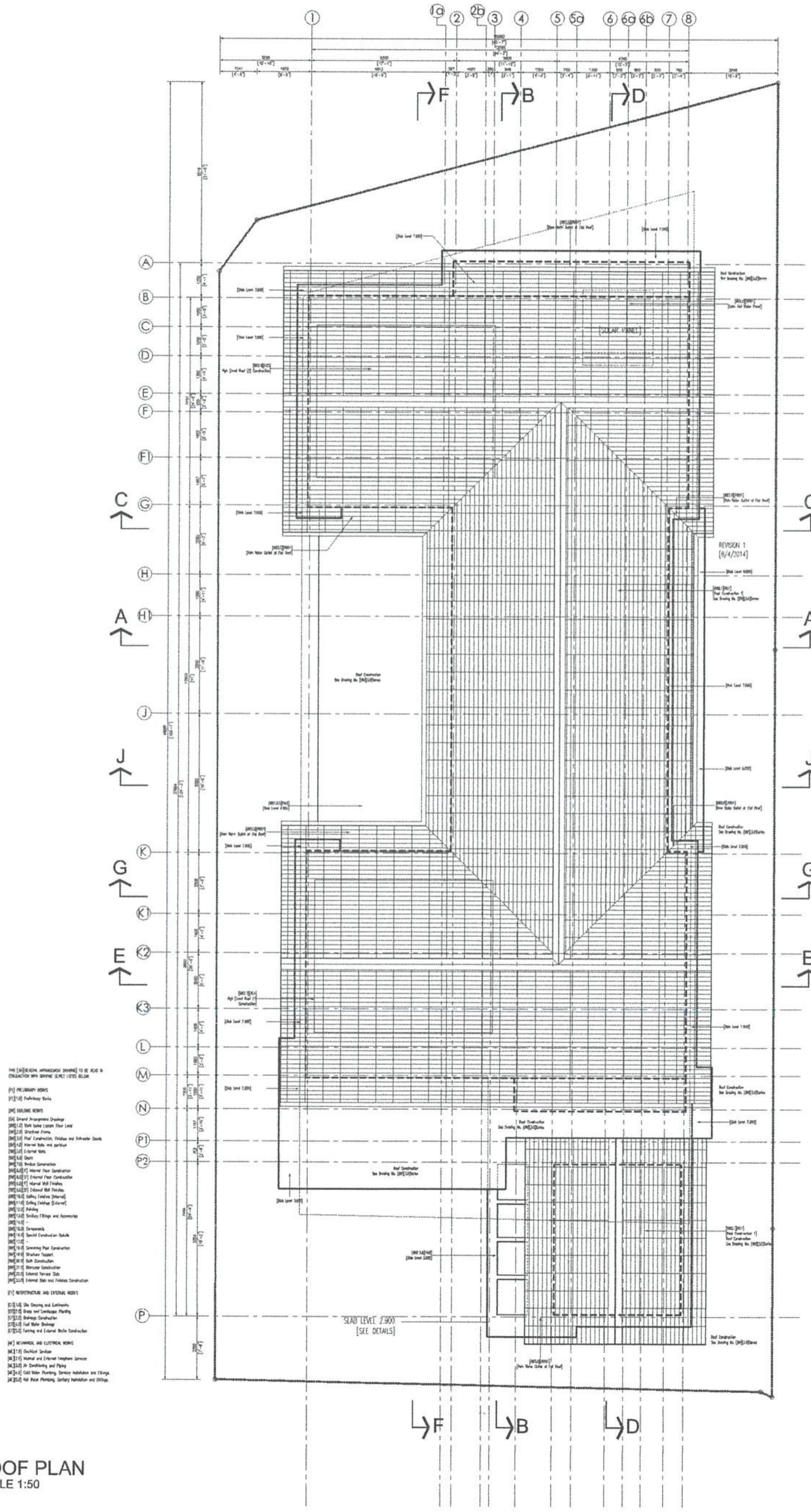

ROOF PLAN

SCALE 1:50

PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED

CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

Consultant : **Arkitek Azman Zainonabidin** Consultant Architect

Drawing Title : **[GA] ROOF PLAN**

Drawing No. : [MDA]11.2015[PF]-[GA]103[R4]

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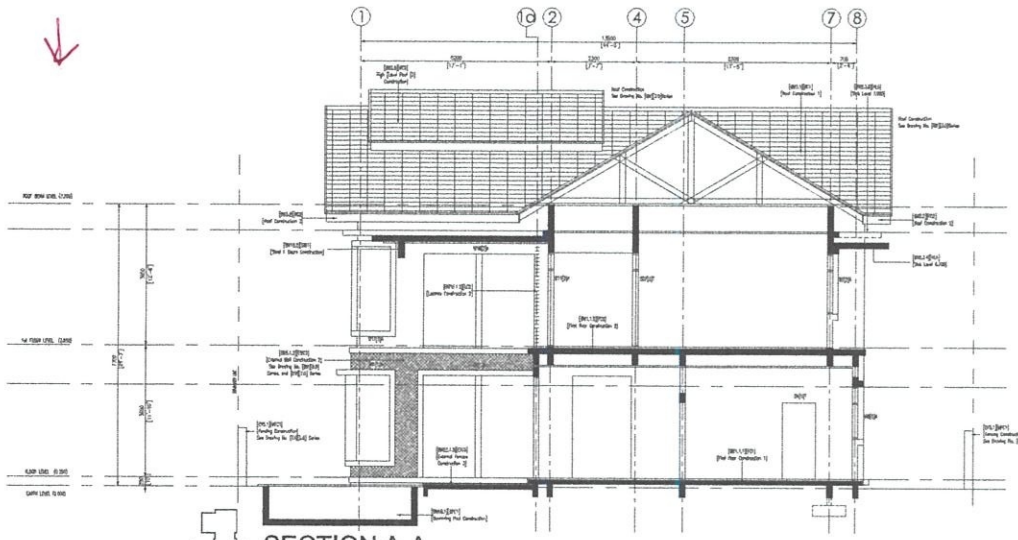

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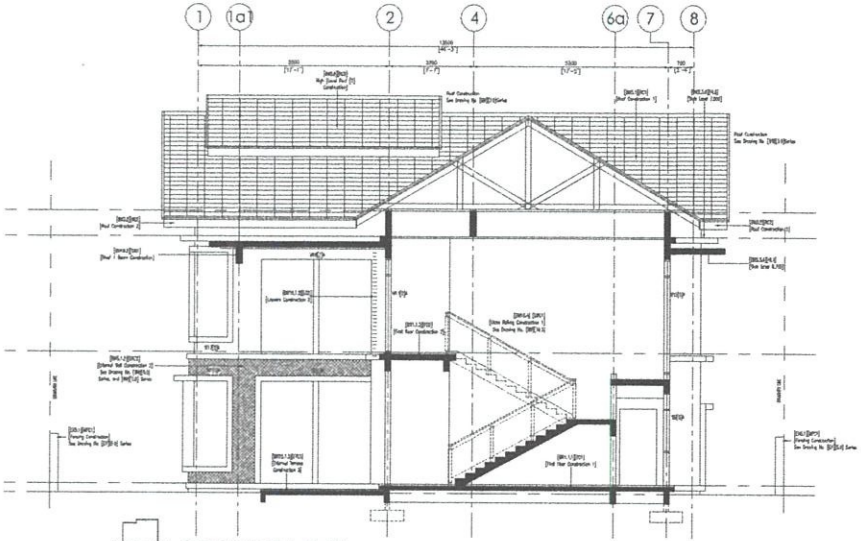

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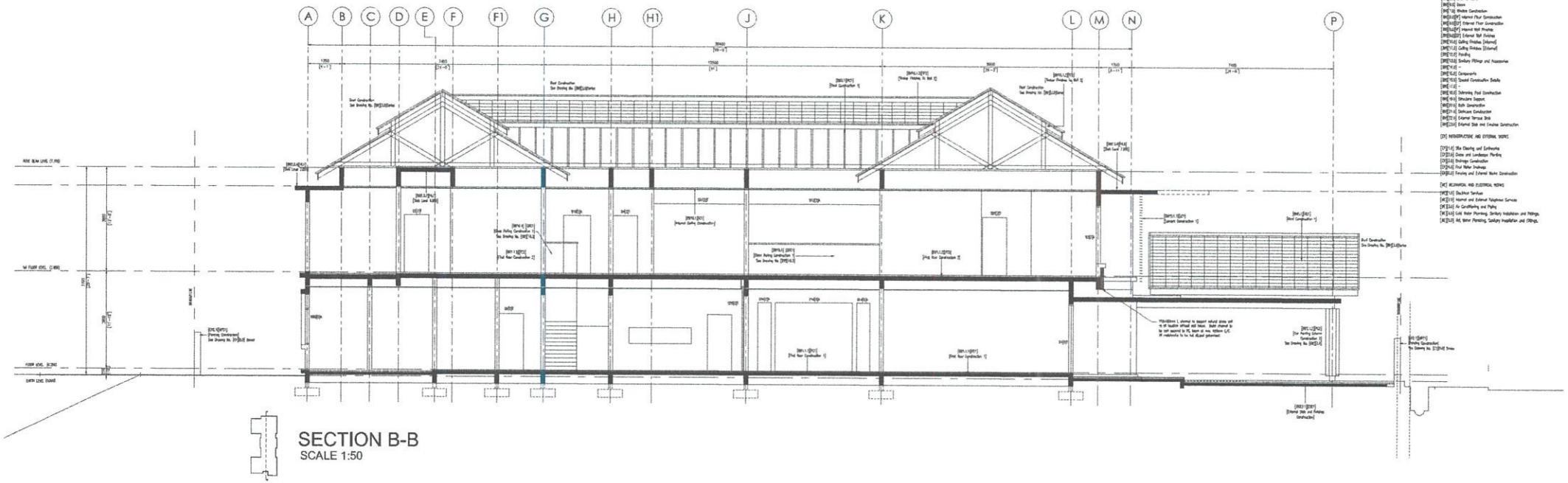

SECTION B-B
SCALE 1:50

Client : **PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED**
Project : CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

Consultant : **Arkitek Azman Zainonabidin** Consultant Architect
19A, Persiaran Dataran 2, Bandar Seri Iskandar 32610 Seri Iskandar, Perak. MALAYSIA. T : 05 3712796 F : 05 3712797
Principal : Ar. Azman Zainonabidin | Project Architect : Mohd Anwar Md Yusoff

Drawing Title : **[GA] SECTION [1]**

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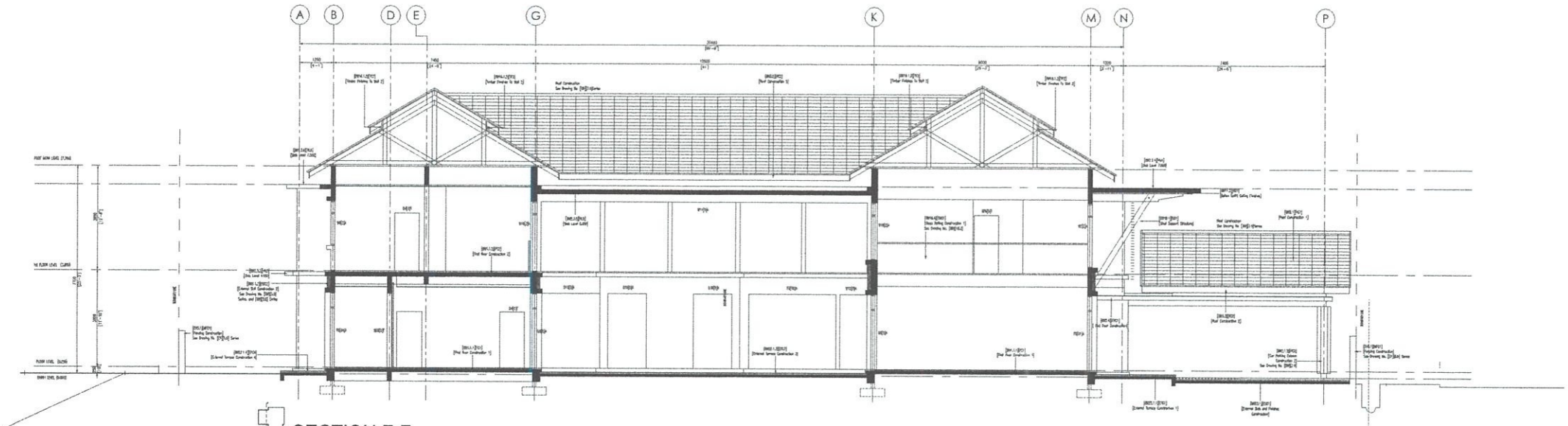

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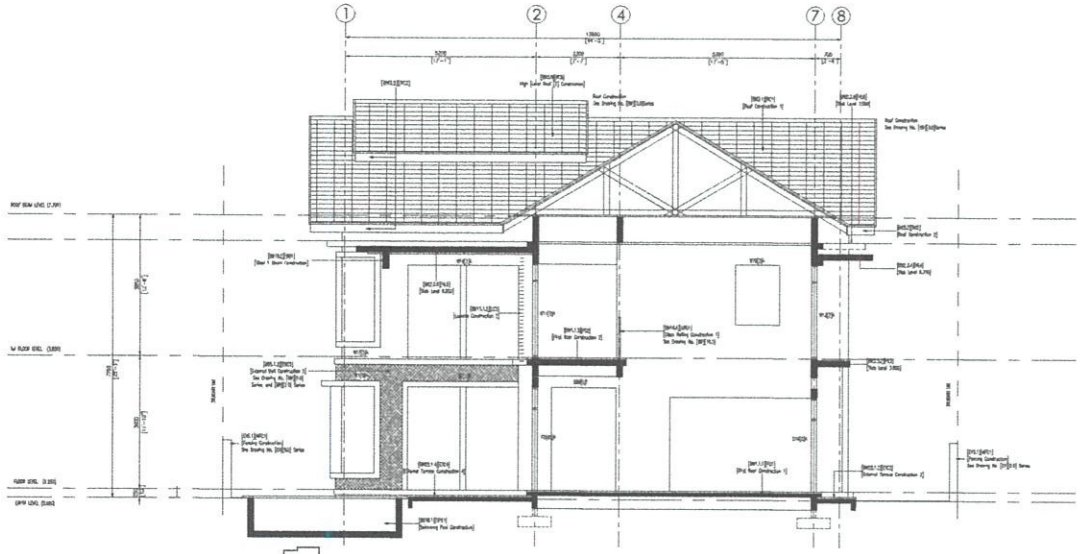

SECTION J-J
SCALE 1:50

Client : **PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED**
Project : CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

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Principal : Ar. Azman Zainonabidin I Project Architect : Mat Anwar Md Yusoff I

Drawing Title : **[GA] SECTION [3]**

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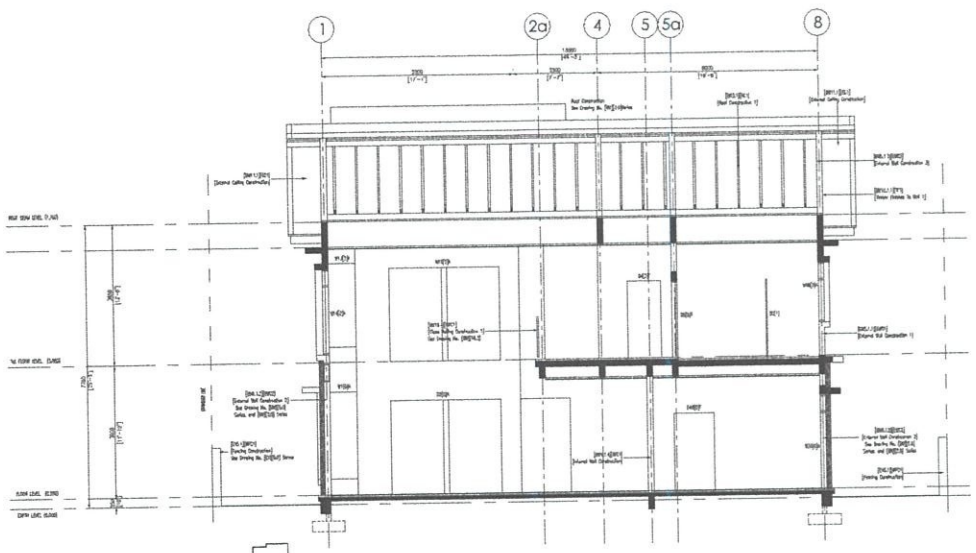

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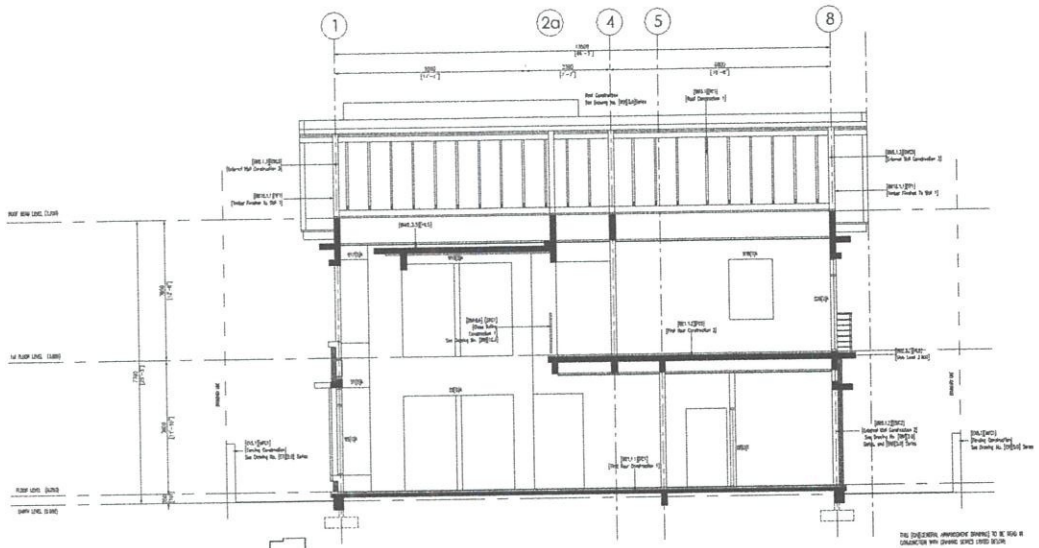

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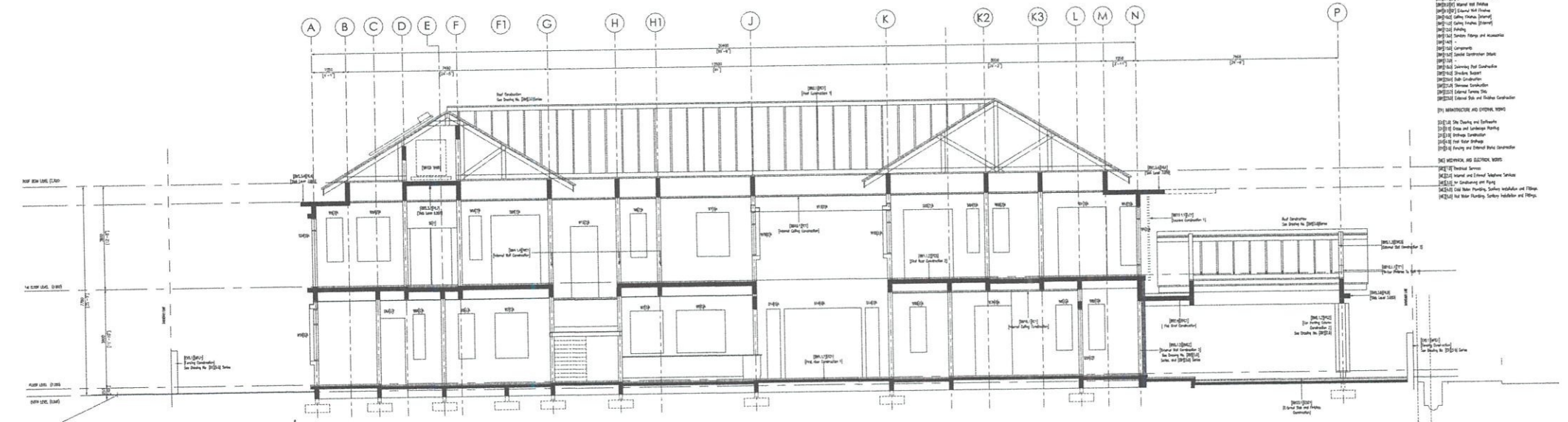

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Client : **PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED**
Project : CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

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15A, Persiaran Dataran 2, Bandar Seri Iskandar, 32610 Seri Iskandar, Perak, MALAYSIA. T : 05 3712796 F : 05 3712797
Principal : Ar.Azman Zainonabidin I Project Architect : Md Anwar Md Yusoff I

Drawing Title : **[GA] SECTION [2]**

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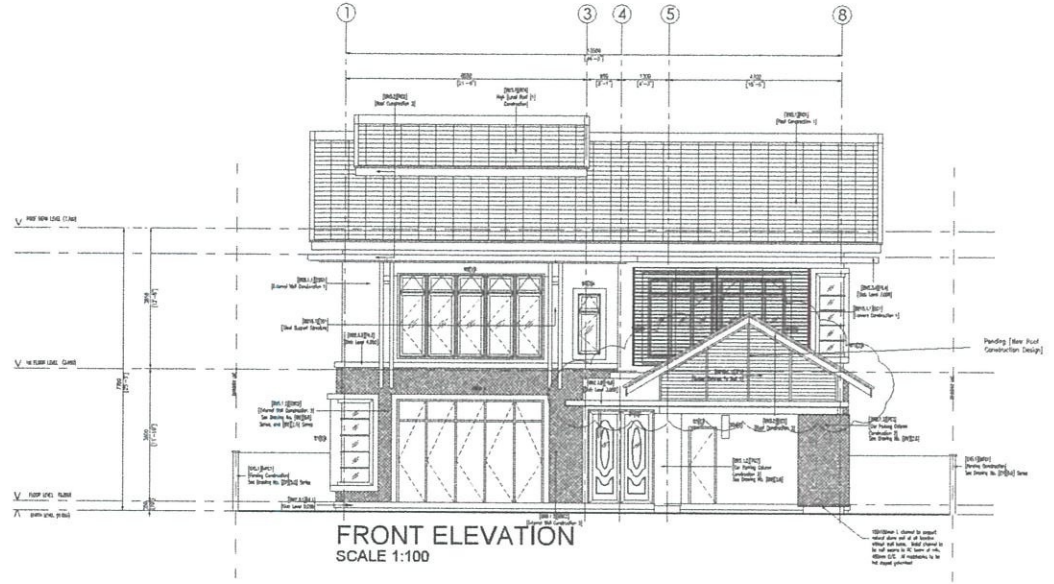

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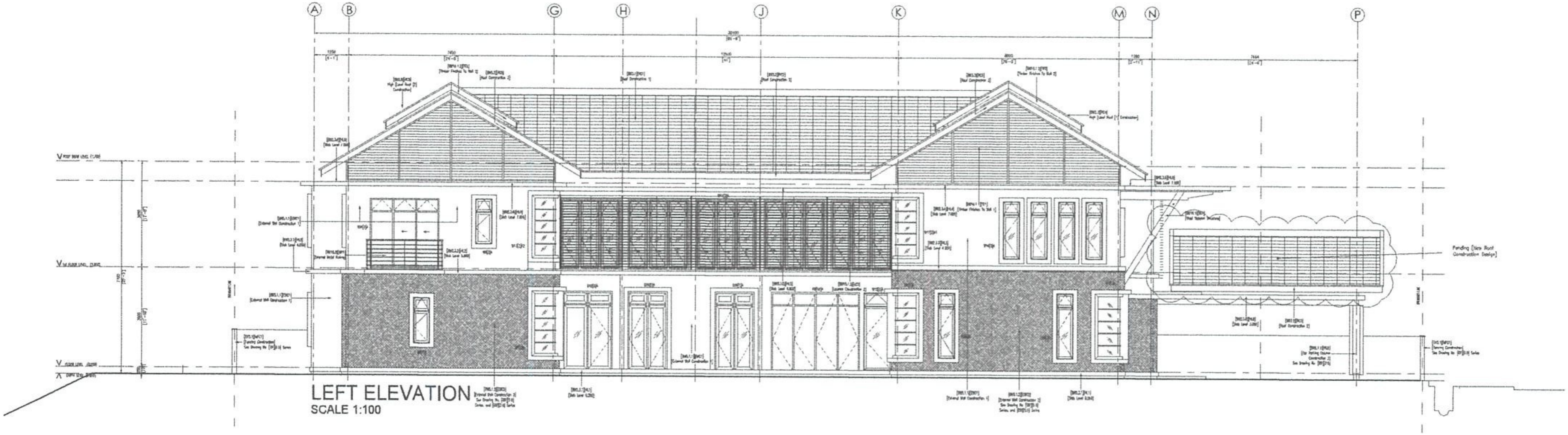

LEFT ELEVATION
SCALE 1:100

Client : PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED
Project : CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

Consultant : Arkitek Azman Zainonabidin Consultant Architect

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Date : 2014.8.12

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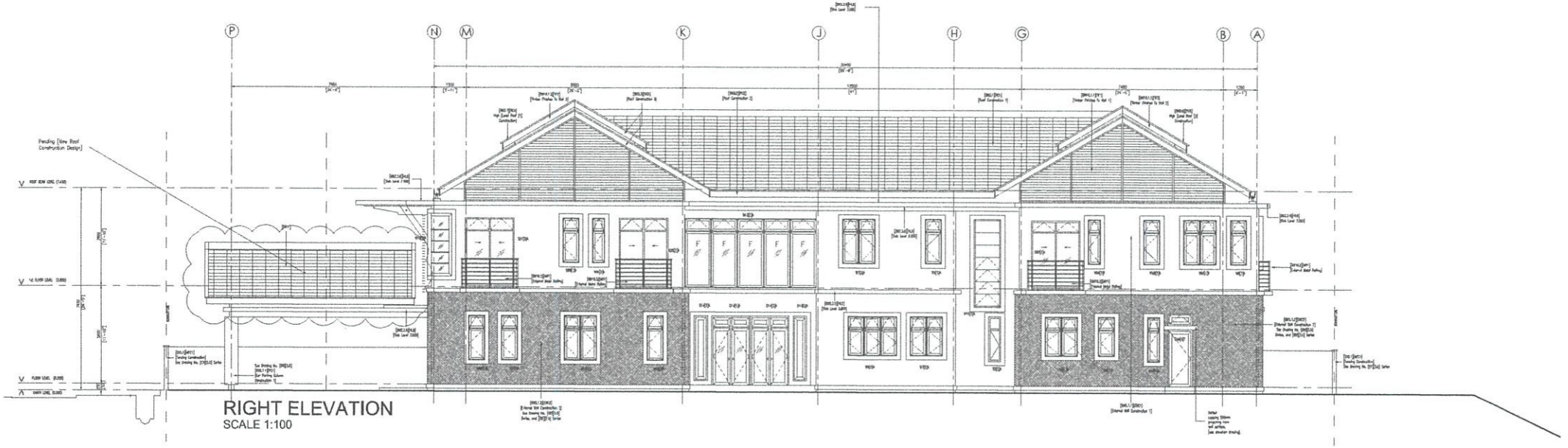

RIGHT ELEVATION
SCALE 1:100

Client : **PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED**
Project : CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

Consultant : **Arkitek Azman Zainonabidin** Consultant Architect
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Principal : Ar. Azman Zainonabidin | Project Architect : Md Anwar Md Yusoff |

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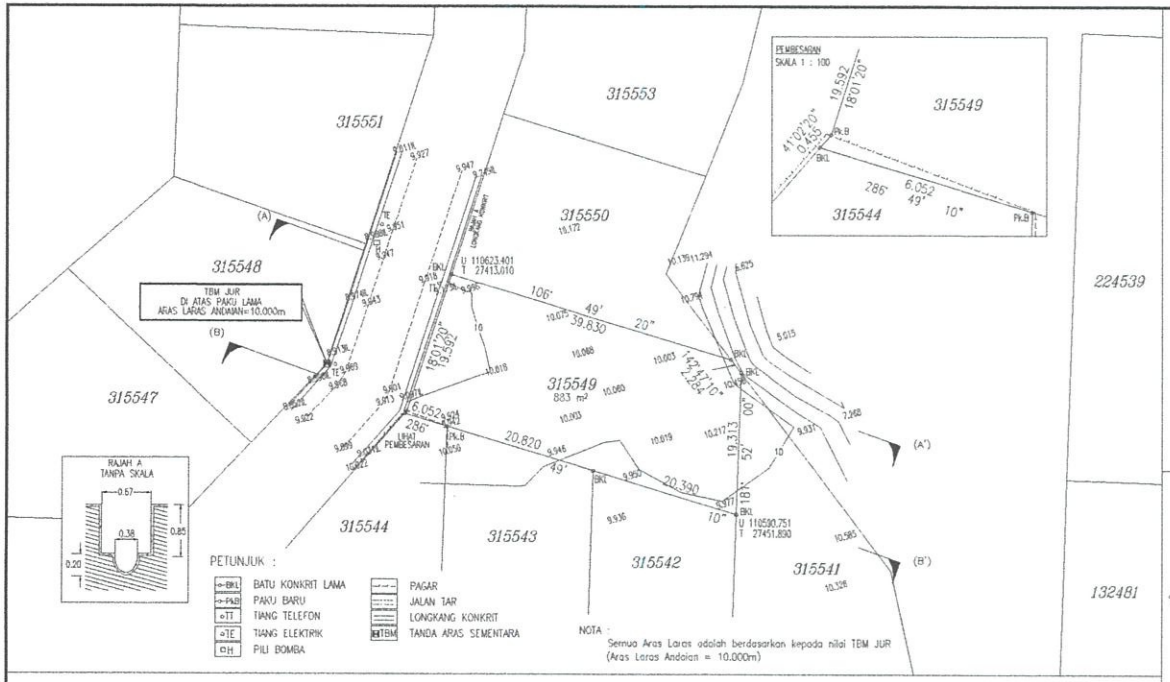

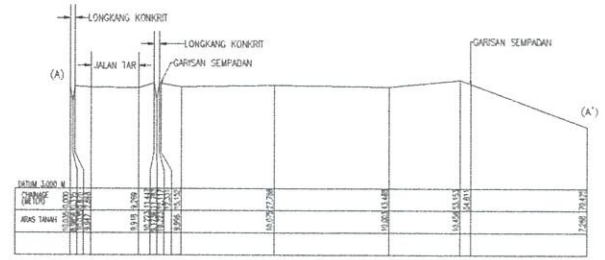

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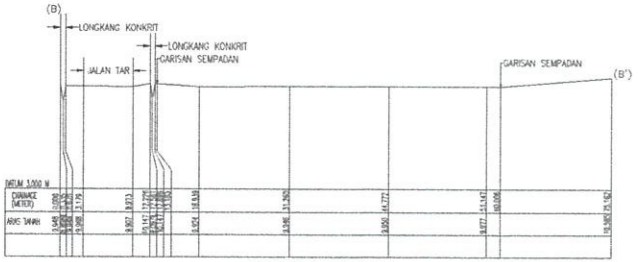

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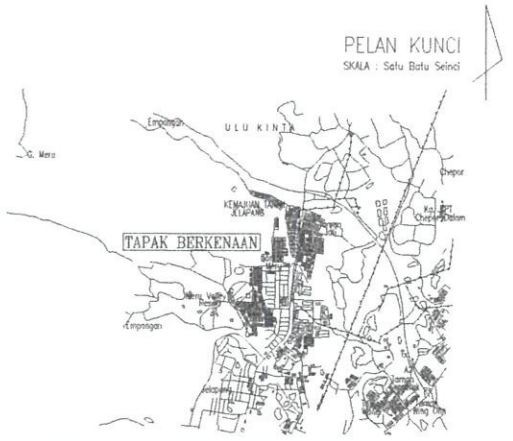


SKALA 1 : 500 (A2)
NO. SYIT : 601

TAJUK PROJEK :
CADANGAN MEMBINA RUMAH KEDIAMAN PERSENDIRIAN DI ATAS LOT 315549 MUKIM HULU KINTA DAERAH KINTA PERAK DARUL RUDZUAN UNTUK TETUAN PROF. IR. DR. AHMAD FADZIL MOHAMAD HANI DAN PROF. DR. NORANI MUTI BT MOHAMED

TAJUK PELAN :
PELAN UKURAN TOPOGRAFI & DEMAKASI DI ATAS LOT 315549 MUKIM HULU KINTA DAERAH KINTA PERAK DARUL RIDZUAN

TANDA TANGAN/COP PEMILIK :

PENGARAH TANAH DAN GALIAN
PERAK DARUL RIDZUAN

PEJABAT TANAH

DILUKIS OLEH : HAFIS

DISEMAK OLEH : HASBULLAH — DISEMBER 2011

CAD. REF : A307/018

T/T JURUKUR BERTAULIAH :

RIDZUAN B. ZULKIFLI, PPT
Dip. In L.S. Adv. Dip. In L.S. (ITM). MISM, MAALS
Land Surveyor Licensed Under Act 458 (Revised 1991)

ALAMAT LENGKAP & TELEFON
JURUKUR PERUNDING :

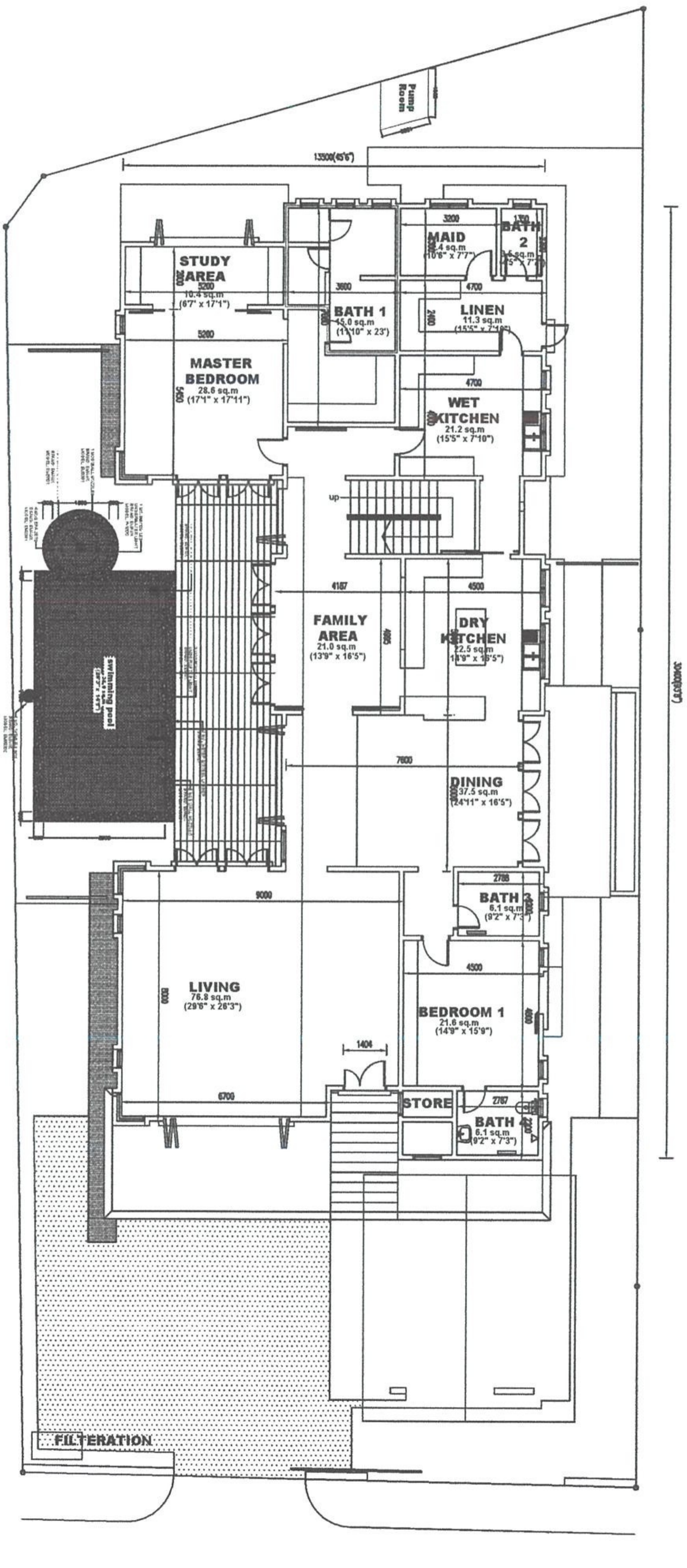
JURUKUR RADIAN SDN BHD
(Formerly Known as Jurukur Geotech (Ipoh) Sdn. Bhd.)
67A, Kompleks PKNP,
Laiyan Medan Gopeng 5,
Medan Gopeng, 31350 Ipoh,
Perak Darul Ridzuan.
Tel : 05-3136795 Fax :05-3125193
SURVEY & MAPPING CONSULTANT

NO. PELAN : JURPK 03 / 307 / 018 / A

DISEDIAKAN OLEH	
DISEMAK SEMULA OLEH	
URUSAN FAIL NO.	
TARIKH	
URUSAN P.U NO.	

PENGARAH PERANCANG BANDARAYA,
JABATAN PERANCANG BANDARAYA,
MAJLIS BANDARAYA IPOH.

DATUK BANDAR
MAJLIS BANDARAYA IPOH.


Pump Room
13500(45'6")
STUDY AREA
10.4 sq.m
(6'7" x 17'1")
MAID
(10'6" x 7'7")
BATH 2
BATH 1
(11'10" x 23')
LINEN
11.3 sq.m
MASTER BEDROOM
28.6 sq.m
(17'1" x 17'11")
WET KITCHEN
21.2 sq.m
(15'5" x 7'10")
up
FAMILY AREA
21.0 sq.m
(13'9" x 16'5")
DRY KITCHEN
22.5 sq.m
DINING
37.5 sq.m
(24'11" x 16'5")
BATH 3
6.1 sq.m
(9'2" x 7'3")
LIVING
76.8 sq.m
(29'6" x 26'3")
BEDROOM 1
21.6 sq.m
(14'9" x 15'9")
STORE
BATH 4
6.1 sq.m
(9'2" x 7'3")
FILTERATION
5200
5260
3600
3200
4700
4167
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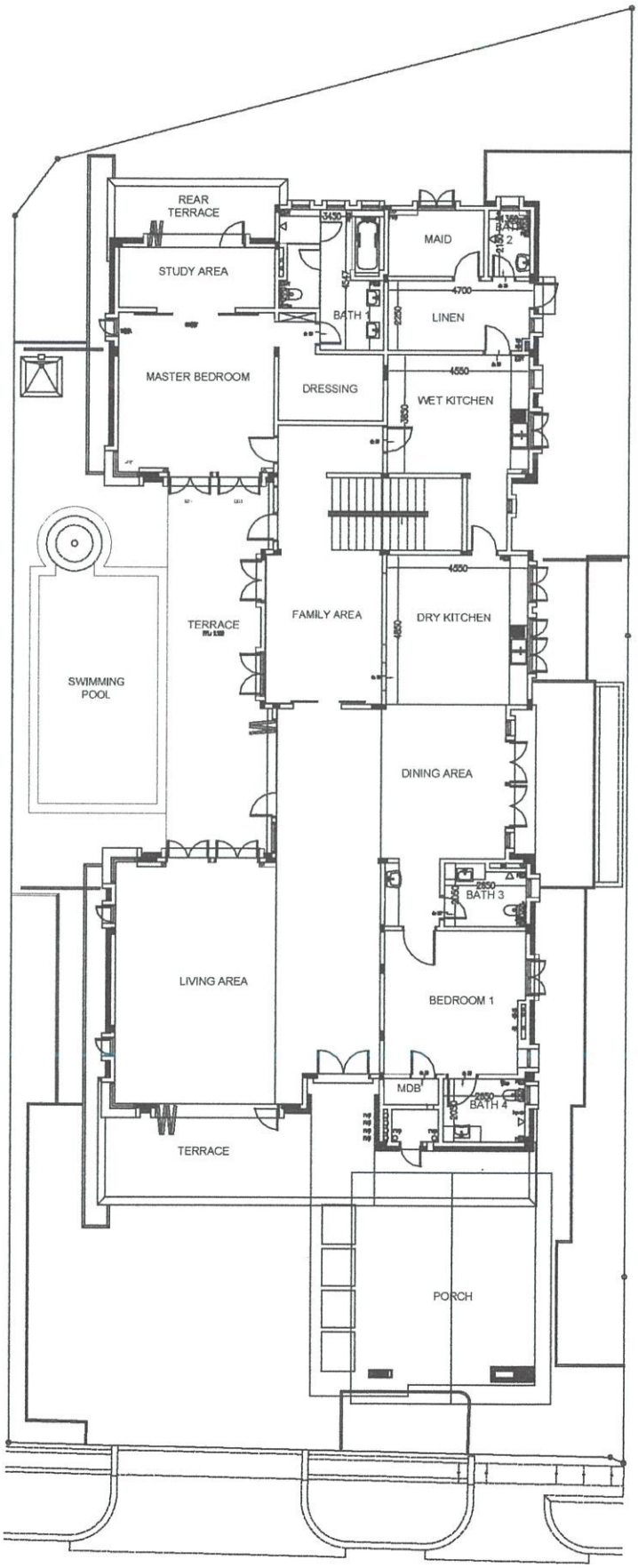

N

GROUND FLOOR PLAN
SCALE 1:50

Client : **PROF.IR.DR.AHMAD FADZIL BIN M.HANI & PROF.DR.NORANI MUTI BINTI MOHAMED**
CADANGAN MEMBINA DAN MENYIAPKAN RUMAH KEDIAMAN DUA TINGKAT DI ATAS LOT 315549, MUKIM HULU KINTA, DAERAH KINTA, 31400 IPOH, PERAK

Consultant : **Arkitek Azman Zainonabidin** Consultant Architect

Drawing Title : **[GA] GROUND FLOOR PLAN**

Drawing No. : [MDA]11.2015[PF]-[GA]101[R4]
Scale : **1:50**

Date : **2014.12.12**

FILTERATION
BATH
STORE
BEDROOM 1
LIVING
BATH 2
DINING
DRY KITCHEN
FAMILY AREA
WET KITCHEN
LINEN
BATH 1
MASTER BEDROOM
STUDY AREA
swimming pool