DEPARTMENT OF BUILDING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

RC PILE AND PILE CAP CONSTRUCTION

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DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

DECEMBER 2018

It is recommended that the report of this practical training provided

By

NUR ZULAIKHA BINTI MOHD RAZIP

2016458712

Entitle

RC Pile And Pile Cap Construction

Be accepted in partial fulfilment of requirement for obtaining Diploma in Building

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STUDENT'S DECLARATION

I hereby declare that this report is my own work, expect for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at Jabatan Kerja Raya Negeri Selangor for duration 14 weeks starting from 3 September 2018 and end on 7 December 2018. It is submitted as one of the prerequisite requirement of DBG307 and accepted as a partial fulfilment of the requirements for obtaining the Diploma in Building.

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UiTM ID No : 2016458712

Date : 18/12/2018

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

Thank you.

ABSTRACT

Pile and pile cap one of the most important structures in construction. The main topic discussed in this report is related to the structure that located below ground level based on project Cadangan membina dan menyiapkan Masjid Seksyen 24 Shah Alam, Selangor Darul Ehsan.. This report describes the type, materials, equipment used for during construction of reinforcement concrete pile and pile cap. This report also explained the construction method of reinforcement concrete pile. It also determines the construction method of pile cap. To complete this report requires observation and interviews with related individuals. In conclusion this report contains all elements related to reinforcement concrete pile and pile cap that are according to specification such as the method conducted type of structure used size of structure according to specifications.

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CHAPTER 1: INTRODUCTION

A pile can be defined as a column inserted in the ground to transmit the structural loads to a lower level of subsoil. A pile is basically a long cylinder of a strong material such as concrete that is pushed into the ground to act as a steady support for structures built on top it. The piles are cast underneath the corners and intersection of load bearing walls and at regular intervals between to reduce the span and depth of the reinforced ground beam, which transfers the wall and buildings loads to the foundation (Stephen Emmitt, 2005). The construction process of pile can be broadly characterized by the installation and testing. However, there are many proprietary types of piles and the testing process for each type differed. Pile may be classified by the way there are formed i.e. Displacement piles and non-displacement piles.

Displacement piles refer to piles that are driven, thus displacing the soil, and include those piles that are preformed, partially preformed or cast in place. This is the most cost efficient piling method but may not be suitable for areas sensitive to noise, vibration and dust. Displacement piles cause the soil to be displaced radially as well as vertically as the pile shaft is driven or jacked into the ground (R. Cudley, 2012). Non-displacement piles soil is removed and the resulting hole filled with concrete or sometimes a precast concrete pile is dropped into the hole and grouted in. Clay are especially suitable for this type of pile formation as in clay the bore hole walls only require support close to the ground surface. When boring through more unstable ground, such as gravels, some form of casing or support, may be required. Alternatively, grout or concrete can be intruded from an auger rotated into a granular soil.

There are many types of pile but in this assignment will more focus on reinforced concrete pile. Reinforced concrete pile is commonly used in construction nowadays. The advantages of reinforced concrete piles are reinforcement used in the pile is not liable to change its place or get disturbed and the defects in pile can be easily identified after the removal of form, these defects such as the presence of cavity and hole can be repaired before installation. Next, the cost of manufacturing will be less, as a large number of piles are manufactured at a time and precast concrete piles can be driven under water. If the subsoil water contains more sulphate, the concrete of cast in situ piles would not set. Thus, precast concrete piles have added advantage in such a circumstance. Furthermore, precast concrete piles are highly resistant to biological and chemical action to the sub soil and also this piles can be constructed in various cross-sectional such as circular, octagonal or square. (Suryakanta, 2015)

There are many types of piles used in construction, so the aim of this assignment is to show the construction of reinforced concrete pile at Masjid Seksyen 24, Shah alam.

1.1 Objectives

1) To describe the method of installation for Reinforcement Concrete pile and construction of pile cap.
2) To determine the types of machineries that used.

1.2 Scope of study

Figure 1.1 Location of case study

Source: Google Maps (2014)

The case study carried out at Sekyen 24. Seksyen 24 is in Shah Alam, Selangor. Case Study will more focus on method of Reinforcement Concrete pile construction. In this case study, not only methods but also including materials and machineries used during construction.

1.3 Method of study

1. Observation

   This method is be done by one week training at site construction. Observed the construction of pile cap start from first step until last step. Observed slump test and cube test for concrete. It gave more knowledge and experience more about reality on site during construction. Observation was done for one week and collected many important data. Each progress was recorded by pictures and written short notes.

2. Interviews

   This method is be done by interview an engineer and a site supervisor. With this method, a relevant information can be gather as a references to complete this assignment. The engineer and site supervisor help a lot by explained more detail about the procedure of piling and pile cap because they know the best answer for the procedure details.

3. Documents reviews

   This method is be done by referred a few documents at the office and also in site office. The documents are construction drawing, progress report and pictures that belongs to others also standard operating procedures. The documents content a lot of information and data that required for this assignment.

CHAPTER 2: COMPANY BACKGROUND

2.1 Introduction of Company

Jabatan Kerja Raya (JKR) Malaysia has been established ever since 1872 and operates as the technical expert to the Government of Malaysia. JKR is responsible in establishing development projects and infrastructure preservation to the various boards of ministries, departments, statutory bodies and state governments, such as roads, buildings, airports, harbours and piers.

JKR is responsible for planning, design and construction of infrastructure ventures such as roads, government buildings, airports, harbours, piers and related engineering works. Maintenance of roads and selected government buildings and Technical advisory services to the Federal Government, as well as states and districts.

Figure 2.1: Logo of company.

Source: Google Image

Photo 2.1: Kompleks Ibu Pejabat JKR Selangor.

Vision:

To become a world-class service provider and centre of excellence in asset management, project management and engineering services for the development of the nation's infrastructure through creative and innovative human capital and state-of-the-art technology.

Mission:

- Helping our customers grasp the basic information and providing services through collaborations as a strategic partner.
- Standardized our procedures and systems to deliver results dependable services.
- Provides asset management services and an effective and pioneering project.
- Strengthen existing engineering expertise.
- Developing human capital and new competencies.
- Prioritizing integrity in delivering the service.
- Fostering a well-proportioned relationship with the community.
- Preserving the environment in service delivery.

2.2 Company Profile

Table 2.1 Company Profile

Company Name	Jabatan Kerja Raya Negeri Selangor
Address	Kompleks Ibu Pejabat, Jabatan Kerja Raya Negeri Selangor, Persiaran Jubli Perak, Seksyen 17, 40200 Shah Alam.
Nature of Business	Government
Phone Number	03-55454388
Fax	03-55452392
Email	Jkr.gov.my
City	Shah Alam
State	Selangor
Postcode	40300

Figure 2.2: Company Site Location

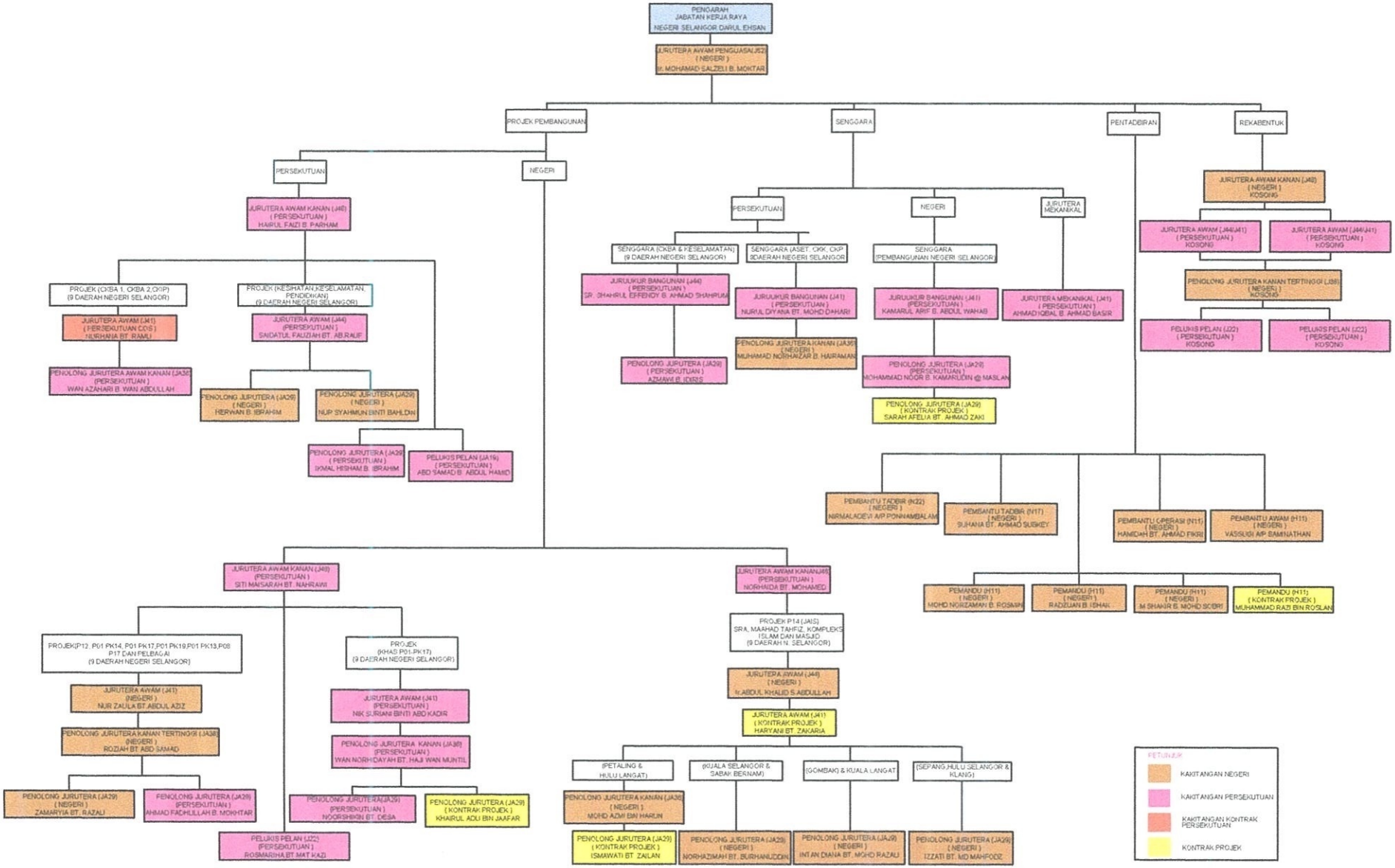
Source: Google Maps (2018)

2.3 Oraganization Chart

1.2 BAHAGIAN / DAERAH

CADANGAN CARTA ORGANISASI KAKITANGAN
BAHAGIAN BANGUNAN JKR SELANGOR 2018

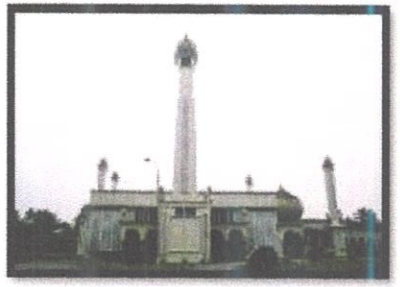
LAMPIRAN B

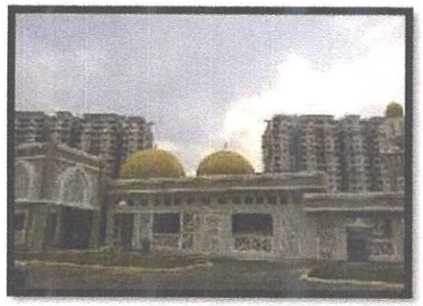


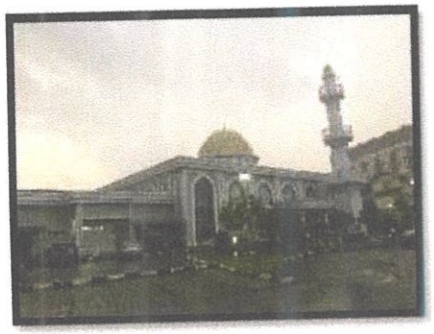
2.4 Listed of Project

2.4.1 Completed Projects

Table 2.2: Completed Projects.

Project	Client	Cost (RM)	Start Date	Dateline
Cadangan Membina dan Menyiapkan Kompleks Islam Kuala Selangor  Kompleks Islam Kuala Selangor	Jabatan Agama Islam Jais	21,815,930.00	26-03-2014	22-09-2016
Cadangan Menaiktaraf Masjid Jamek Pekan Kajang  Masjid Jamek Pekan Kajang	Jabatan Agama Islam Jais	2,000,000.00	11-11-2015	3-01-2017

Cadangan Membina dan Menyiapkan Masjid Al-Islah Sementa  Masjid Al-Islah	Jabatan Agama Islam Jais	10,000,000.00	11-06-2013	12-05-2015
Cadangan Membina dan Menyiapkan Baki Kerja Masjid Seksyen 7 Shah Alam  Masjid Seksyen 7	Jabatan Agama Islam Jais	7,000,000.00	25-07-2013	02-04-2014

Cadangan Membina dan Meyiapkan Masjid Dato Haji Kamaruddin  Masjid Dato Haji Kamaruddin	Jabatan Agama Islam Jais	15,000,000.00	20-12-2012	11-09-2014

2.4.2 Projects in Progress

Table 2.3: Projects in progress.

Project	Client	Cost (RM)	Start Date	Dateline
Cadangan Membina dan Menyiapkan Masjid Seksyen 24  Masjid Seksyen 24	Jabatan Agama Islam Selangor	14,000,000.00	28-11-2017	26-05-2020
Cadangan Membina dan Menyiapkan Masjid Putra Height  Masjid Putra Height	Jabatan Agama Islam Selangor	27,000,000.00	09-11-2017	07-05-2020

Cadangan Membina dan Menyiapkan Masjid Setia Alam  Masjid Setia Alam	Jabatan Agama Islam Selangor	18,000,000.00	07-03-2017	20-08-2020
Cadangan Membina dan Menyiapkan Maahad Integrasi Tahfidz Sains Bagan Lalang, Sepang.  Maahad Integrasi Tahfidz Sains Bagan Lalang	Jabatan Agama Islam Selangor	20,000,000.00	15-09-2017	13-09-2020

Cadangan Membina dan Menyiapkan Masjid Ar-Rahman (RTB) Kuala Langat  Masjid Ar-Rahman	Jabatan Agama Islam Selangor	16,000,000.00	27-02-2018	31-12-2019

3.0 Case Study

3.1 Introduction to Case Study

Seksyen 24, Shah Alam is a location for case study. It is a project under Jabatan Agama Islam Selangor. The location of the masjid is near to the residential area and also other facilties such as Kompleks Warga Emas, Kolam Pancing Seksyen 24 and also school. Seksyen 24 already have a mosque but due to the number of residents keep going increasing, existing mosque is not enough to support people. Existing mosque originally is a surau that already did a few renovation until became masjid. So, the residents there apply to Jabatan Agama Islam for a new mosque.

For this project, the value cost RM 14,000,000.00 and the date of completion is on 26 May 2020. Masjid Seksyen 24 can support around 2000 – 3000 people at the same time. The contractor that handle this project is Wira Muhibbah. For civil and structure is from Roadnett Solution Sdn. Bhd. In site office, there a few workers which is Project Manager, Residential Engineer, Quantiti Surveyor, Site Supervisor and also Site Safety Supervisor.

The foundation for this project is using Reinforcement Concrete pile with size 250mm x 250mm. The depth is 21m to reach to the hard layer. It used an end bearing pile. This project also has retaining wall. Retaining walls are made because there a small river beside the location of side. The retaining walls length are 16m that cover along the river.

Photo 3.1: Project Signboard.

Masjid Seksyen 24, Shah Alam.

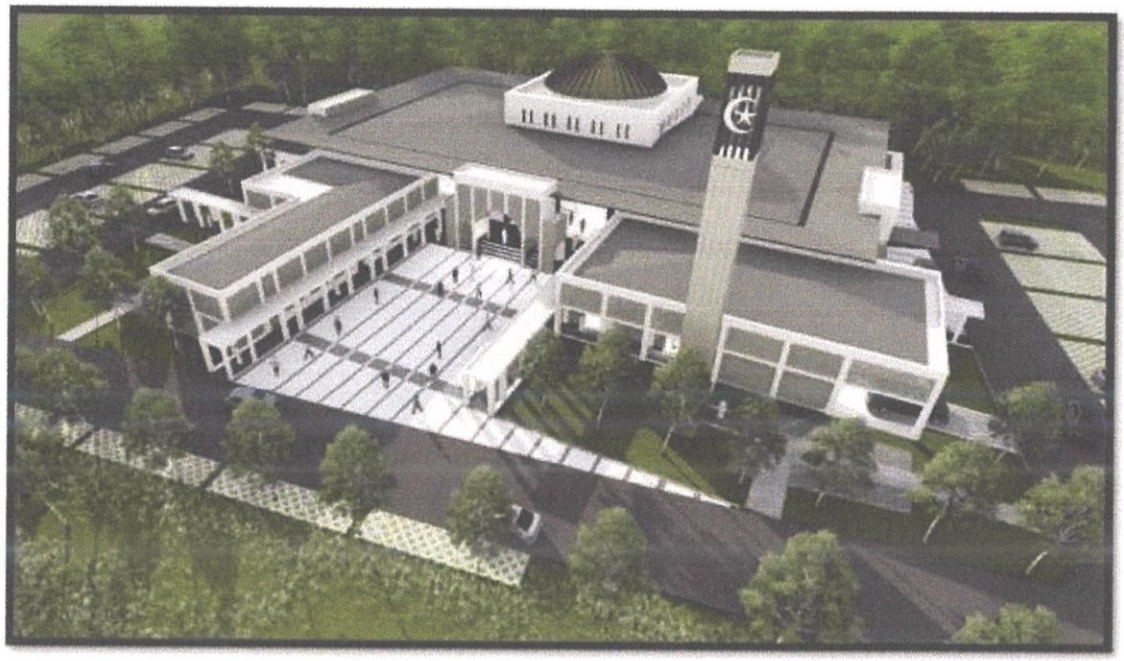


Figure 3.1: Aerial view.

Figure 3.2: Main Courtyard.

Figure 3.3: Exterior VIP.

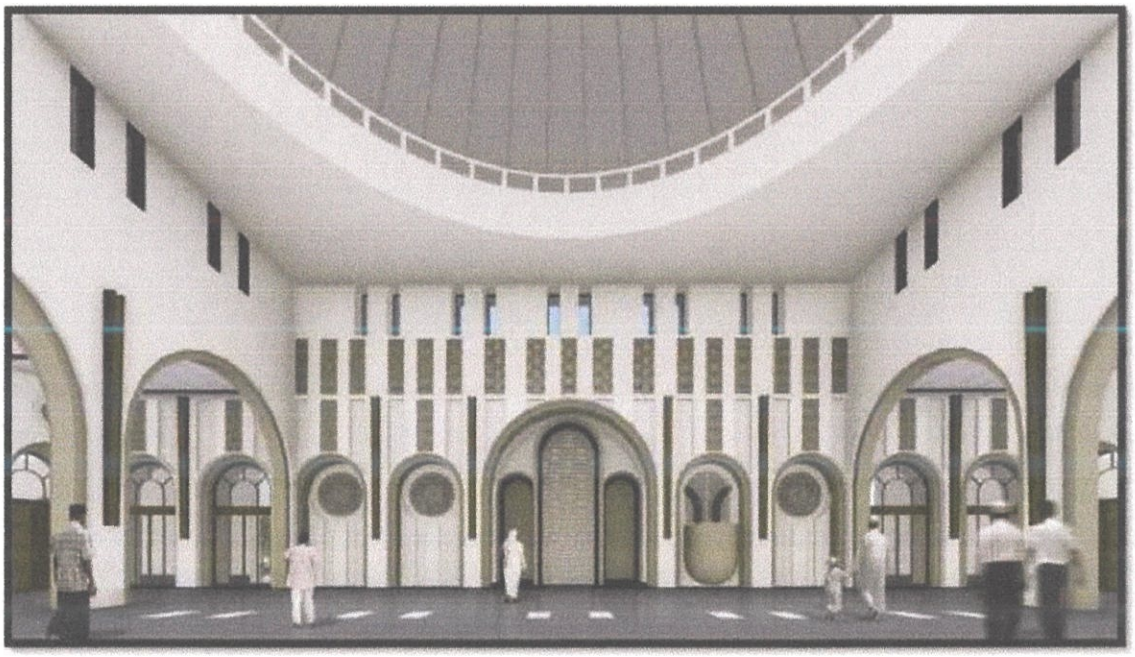


Figure 3.4: Interior Mihrab.

3.2 Method Statement of Construction for Reinforcement Concrete pile.

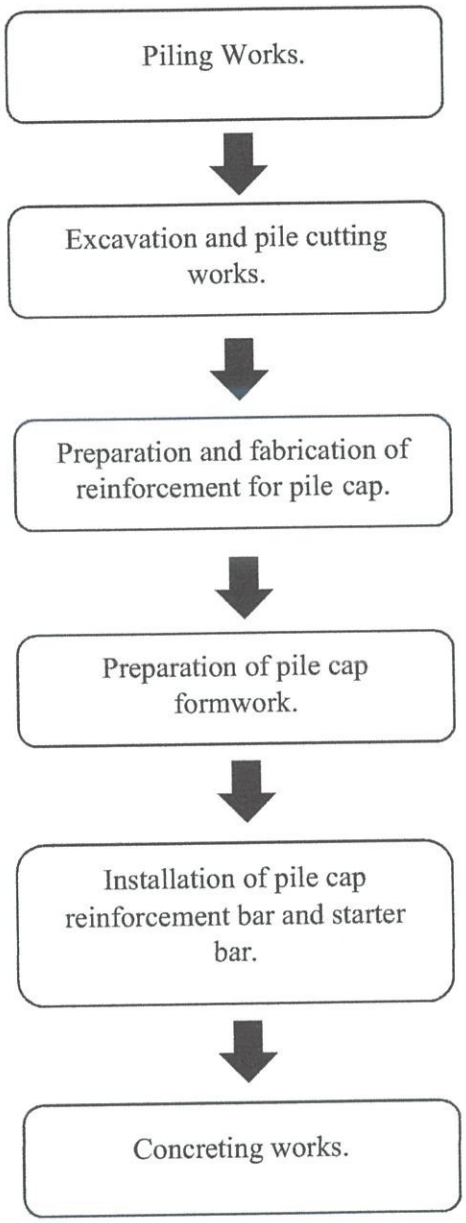


Figure 3.5: Sequence of work.

Method of Reinforcement Concrete Pile Construction

1. The pile position is set out on site using steel pin. There are two references steel pins would be installed equidistant from pile Centre location pin (about 500mm away. The pile would them pitched and positioned into the exact pile position such that the reference pins are equidistant from the pile face.

   Notes: Setting out shall be carried out using data and reference points as shown on the Drawing. The pile position shall be marked with suitable identifiable pins, peg or markers at least 300 mm length. The pins, pegs or markers should be driven to ground level and the location marked with contrasting materials.

Photo 3.2: Pile Point.

1. Each 250 mm x 250 mm RC piles marked with red ink at 1000mm intervals along its length to enable the jacked in pressure or force to be record at every 1000mm depth of pile penetration.

Photo 3.3: Marked pile.

2. The pile lifted and inserted into the Jack-In machine by crane to proceed the installation. The pile position was into the 'grip' of the equipment and gripped the pile body. Piles was lifted by using a crane.

Photo 3.4: Lifting pile.

3. The pile was installed by jacked-in machine which is using injection method. Each pile is jacked-in continuously until the required resistance or penetration is reached. The starter for piling is 12 m. During pile installation, the hydraulic pressure of main jacks measured by the pressure gauge and the corresponding pile penetration are recorded by means of welding.

Photo 3.5: Jacked-in pile.

4. The pile was extended 6 m by using butt-welding the steels plate on the pile heads. During welding, the slag was chipped off and wire brushed to receive anti-rust paint.

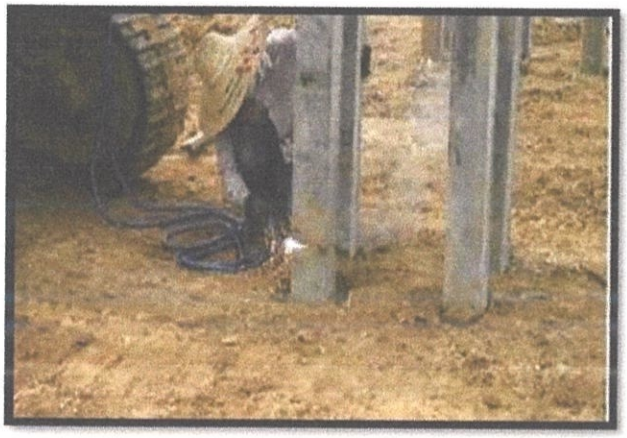


Photo 3.6: Welding.

5. Excavated the soil and then cut off pile to the specific level based on calculation by engineer. Backhoe loader is needed to excavate the soil and hydraulic pile cutter is required to cut the piles.

   Notes: When a pile has been driven to the required set or depth, the head of the pile shall be cut off to the level specified or shown on the drawing. This shall be done carefully to avoid shattering or otherwise damaging the rest of the pile.

Photo 3.7: Excavation

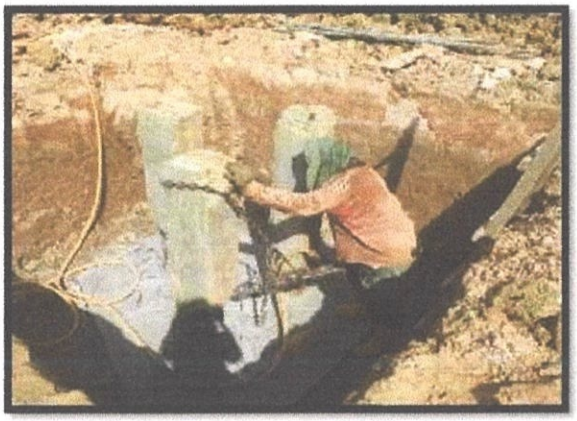


Photo 3.8: Cut off pile.

6. Pile driving analyzer (PDA) and Maintained Load Test (MLT) was carried out. Pile driving analyzer was carried out on 20 no's and Maintained Load Test was for 2 no's of pile. The number of tested RC pile for Pile driving analyzer (PDA) and Maintained Load Test (MLT) was decided by JKR.

   Notes: In order to verify the working load, the Contractor shall carry out pile load test as shown on the Drawing or as instructed by S.O. The Contractor shall give at least 48 hours notice of commencement of construction of any preliminary pile which is to be test loaded.

Photo 3.9: Pile Driving Analyzer (PDA).

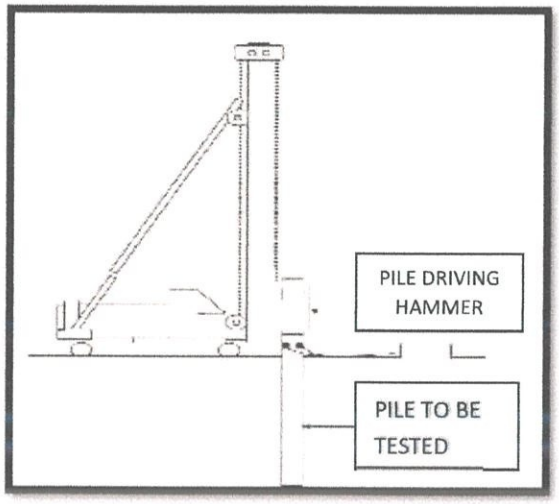


Figure 3.6: Illustration of Pile Driving Analyzer (PDA).

Photo 3.10: Maintained Load Test (MLT).

Method of Pile Cap Construction Size 1300 mm x 550 mm.

1. Setting out the position of pile cap based on survey result by land surveyor. Setting a grid line for pile cap by using a thread as a guide.

Photo 3.11: A thread for grid line.

2. Put a 50 mm lean concrete grade 15 and prepared the reinforcement bar for pile cap. The size of the reinforcement bar is 25 mm for 1300 mm x 550 mm size of pile cap.

Photo 3.12: 50 mm Lean Concrete

Photo 3.13: Basket of Reinforcement bar.

3. Formwork of pile cap was installed sufficiently rigid with according size of pile cap 13000 mm x 550mm. Put the spacing bar and the reinforcement and starter bars was installed inside the formwork. The size of reinforcement is based on the JKR Building Specification and also drawing.

   Notes: Formwork (including support) shall be sufficiently rigid o maintain the forms in their correct position, shape, profile and dimensions. The supports shall be designed to withstand the worst combination of forces due to self-weight, formwork weight, formwork forces, reinforcement weight, wet concrete weight, construction and wind loads, together with all incidental dynamic effects caused by placing, vibrating and compacting the concrete.

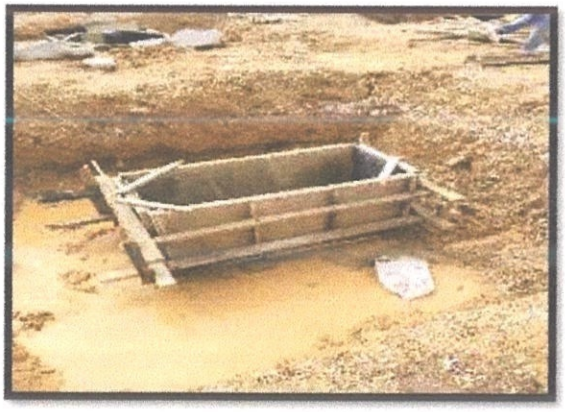


Photo 3.14: Formwork of pile cap.

4. Concrete was poured into the formwork of pile cap. The concrete is ready mix with grade 30. The concrete must be left about 7 days to get the strong concrete. Last step was uninstalled the formwork of the pile cap.

Notes: Before commencing to construct pile caps, the Contractor shall check and verify the eccentricities and the cut-off levels all piling works in the ground are as provided in the Drawing, and shall notify the S.O. in the event of any discrepancy.
The Contractor shall straighten the steel reinforcement projecting above the piles for anchoring pile caps, carry out excavation, erect formwork and temporary timbering for the construction of pile caps and ground beam.

Photo 3.15: Concrete Mixer Truck

Photo 3.16: Condition of pile cap size 1300 mm x 550 mm after formwork was uninstalled.

3.3 Plant and Machineries.

1. Hydraulic Jack-In Machine.

Function: Commonly used for medium loaded structures such as residential or commercial buildings. Does not produce as much noise or vibration as compared to the other piling machineries. It is suitable to use for projects in urban areas where residents are sensitive to noise and vibrations.

Photo 3.17: Hydraulic Jack-In Machine.

2. Crane.

Function : It is also used for during Pile Driving Analyzer (PDA) and also during Maintain Load Test (MLT) was carried out. It is also for lifting the Reinforcement Concrete Pile during process for installation of pile.

Photo 3.18: Crane

3. Excavator

Function: Excavator runs on two endless tracks (chain wheel system). These types of excavators are used in hilly areas where risks of sliding of machinery are on the verge. It has low ground pressure because of spreading of load on large area. Therefore, it is also used where soil support is weak. It is suitable for excavation and digging work.

Photo 3.19: Excavator

4. Concrete mixer truck

Function: A device that homogeneously combines cement, aggregate such as sand or gravel, and water to form concrete. A typical concrete mixer uses a revolving drum to mix the components.

Photo 3.20: Concrete Mixer Truck

5. Pile cutter.

Function: It is use during cut-off pile work. Usually for piles that have small size.

Photo 3.21: Pile cutter

4.0 Conclusion

4.1 Conclusion

At the end of the report, based on the study that clearly understand in practical and in details on how the piling is constructed and the procedure that being carried out on the site. Next, from case study can identify the type of pilling used which is in this project they used reinforcement concrete pile. The size used is only 250mm x 250mm only. From the study also types of plants and machineries that is used for the pilling during installation and pile cap work processes such as hydraulic jack in, excavator, concrete mixer, crane and also pile cutter. This equipment and machineries will give new experience and knowledge for student practical. The surroundings of site construction full with equipment like nail, hammer, and reinforcement bar. This situation will created intention to learn something new and develop this skill using these equipment for benefit.

Based on the case study, a real practical is a quite same with the theory. A little bit different from theory is a method and also specification. During design stage, the people who are involved must follow a new specification based on JKR Standard Specifications For Building Works 2014. Start from 2017, JKR had started using EURO CODE. So, all the contractors have to follow and alert with the new specification. Lastly, a conclusion that can made is all the objective are achieved. All the objectives that had been explained is based carefully based on during the case study was carried out.

Lastly, for safety and health. It can be conclude that construction site area is safe to enter. Although, there are certain worker not wearing personal protective equipment (PPE) and protective clothing, there are no injuries or fatal cases that occur during the construction work process. Therefore, it is recommended to all parties to taken safety precaution regarding the construction of reinforcement concrete part to minimize other contribution factor in building defect and human injury.

References

Book:

1. Chudley. R (2012) *"Advanced Construction Technology"* 5th ed. Oxford.
2. Stephen Emmitt (2005) *"Introduction to Construction of Buildings"*. United Kingdom, Pearson.
3. Jabatan Kerja Raya (2014) "Standard Specifications For Building Works 2014". Malaysia.

Article:

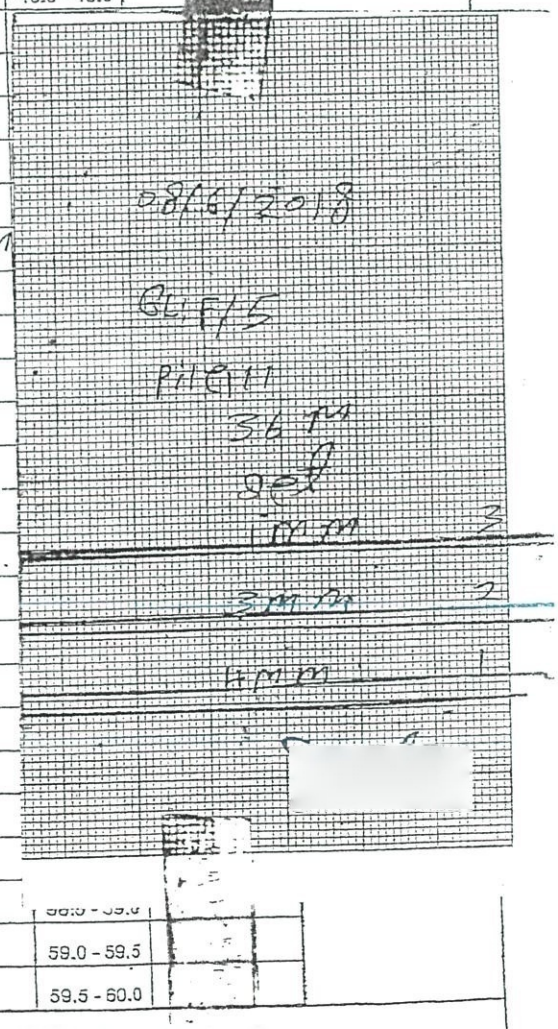
1. Suryanka (2015) "What Are The Advantages And Disadvantages of Precast Concrete Pile".

SPC ENGINEERING SDN BHD (360417-M)

Daily Piling Record

Project Name	: MASJID SEK 24, BSHH KLANG	Pile Running No	: 12+6+6+6+6
Pile Location	: F/S	Date	: 08/6/2018
Pile No	: 111	Cylinder Size	: 125 ton
Type of Pile	: RC 350mm x 350mm	Machine No	: 260

Depth (m)	Pressure mpa	Cyl.	Depth (m)	Pressure mpa	Cyl.	Depth (m)	Pressure mpa	Cyl.	Depth (m)	Pressure mpa	Cyl.	R.L OF G.L :
0 - 0.5			15.0 - 15.5			30.0 - 30.5			45.0 - 45.5			
0.5 - 1.0	6		15.5 - 16.0	6		30.5 - 31.0	15		45.5 - 46.0			
1.0 - 1.5			16.0 - 16.5			31.0 - 31.5			46.0 - 46.5			
1.5 - 2.0	6		16.5 - 17.0	6		31.5 - 32.0	15		46.5 - 47.0			
2.0 - 2.5			17.0 - 17.5	10		32.0 - 32.5			47.0 - 47.5			
2.5 - 3.0			17.5 - 18.0	12		32.5 - 33.0	16		47.5 - 48.0			
3.0 - 3.5	6		18.0 - 18.5			33.0 - 33.5			48.0 - 48.5			
3.5 - 4.0			18.5 - 19.0	10		33.5 - 34.0	17					
4.0 - 4.5	6		19.0 - 19.5			34.0 - 34.5						
4.5 - 5.0	6		19.5 - 20.0	8		34.5 - 35.0	20	10				
5.0 - 5.5			20.0 - 20.5			35.0 - 35.5						
5.5 - 6.0	6		20.5 - 21.0	8		35.5 - 36.0		11				
6.0 - 6.5			21.0 - 21.5			36.0 - 36.5	36m					
6.5 - 7.0	7		21.5 - 22.0	8		36.5 - 37.0	SET					
7.0 - 7.5			22.0 - 22.5			37.0 - 37.5						
7.5 - 8.0	7		22.5 - 23.0	8		37.5 - 38.0						
8.0 - 8.5			23.0 - 23.5			38.0 - 38.5						
8.5 - 9.0	6		23.5 - 24.0	11		38.5 - 39.0						
9.0 - 9.5			24.0 - 24.5			39.0 - 39.5						
9.5 - 10.0	6		24.5 - 25.0	12		39.5 - 40.0						
10.0 - 10.5			25.0 - 25.5			40.0 - 40.5						
10.5 - 11.0	6		25.5 - 26.0	13		40.5 - 41.0						
11.0 - 11.5			26.0 - 26.5			41.0 - 41.5						
11.5 - 12.0	7		26.5 - 27.0	12		41.5 - 42.0						
12.0 - 12.5			27.0 - 27.5			42.0 - 42.5						
12.5 - 13.0	7		27.5 - 28.0	12		42.5 - 43.0						
13.0 - 13.5			28.0 - 28.5			43.0 - 43.5						
13.5 - 14.0	7		28.5 - 29.0	13		43.5 - 44.0						
14.0 - 14.5			29.0 - 29.5			44.0 - 44.5			59.0 - 59.5			
14.5 - 15.0	7		29.5 - 30.0	14		44.5 - 45.0			59.5 - 60.0			



CONVERSION TABLE FORM

Conversion from Tons to PSI : **Formula :** $\frac{\text{Tons required x 2204}}{\text{Effective RAM area}} = \text{PSI}$

Project : MASJID SEKSYEN 24, SHAH ALAM
Pile Size : 250mm x 250mm RC pile
Working Load (WL) : 50 Ton
Test Load (2 WL) : 100 Ton
Hydraulic jack : CLS Series Capacity : 200 tons
Effective ram area : 41.31 sqr.in

1st cycle

Percentage of Working Load (%)	Tonnage (Ton)	Time Required	PSI
25	12.50	1 hour	667
50	25.00	1 hour	1334
75	37.50	1 hour	2001
100	50.00	1 hour	2668
75	37.50	1 hour	2001
50	25.00	1 hour	1334
25	12.50	1 hour	667
0	0.00	1 hour	0

2nd Cycle

Percentage of Working Load (%)	Tonnage (Ton)	Time Required	PSI
100	50.00	1 hour	2668
125	62.50	1 hour	3335
150	75.00	1 hour	4001
175	87.50	1 hour	4668
200	100.00	24 hours	5335
150	75.00	1 hour	4001
100	50.00	1 hour	2668
50	25.00	1 hour	1334
0	0.00	1 hour	0
		40 hours	

The calibration base on RAM area 41.31 in^2 by using ENERPAC RAM model. The holding of load up to 40 hours

BORANG PEMERIKSAAN KERJA UJIAN BEBAN CERUCUK (PRODUK SIAP)

Nama Projek : CADANGAN MEMBINA DAN MENYIAPKAN MASJID SEKSYEN 24 SHAH ALAM

Lokasi : P111

Rujukan Lukisan No : SSR/DICE NO/MASJID SEKSYEN 24/SA1601 Rujukan Spesifikasi : Standard Specifications For Building Works 2014

~~Borang pemeriksaan ini perlu dirujuk bersama spesifikasi/dan lukisan projek.~~

Butiran Pemeriksaan	Standard/ Keperluan Teknikal	Pengukuran/ *Penilaian Tapak Oleh Kontraktor	*Pengesahan JKR/ **Perunding	Catatan/ No. NCP
Pemeriksaan proses ujian	Seksyen C			
1. Rekod keputusan ujian dan kelulusan selepas ujian tamat.		✓	✓	
2. ~~Graf beban melawan enapan,~~ beban melawan masa, ~~enapan~~ melawan masa.		✓		
3. Cerucuk dianggap gagal jika:- 3.1 Baki mendapan setelah semua beban dibuang melebihi 6.50mm; atau 3.2 Jumlah mendapan dibawah beban rekabentuk melebihi 12.50mm; atau 3.3 Jumlah mendapan di bawah dua kali beban rekabentuk melebihi 38.0mm, atau 10% dari garispusat/lebar cerucuk, yang mana terendah		✓	✓ Settlement 1.60mm < 6.0mm. ok!	
4. Penilaian keputusan ujian dan penetapan prosedur untuk perlantakan cerucuk selanjutnya jika perlu.				

Nota: *Tandakan	√	jika **mematuhi** lukisan / spesifikasi
	x	jika **tidak mematuhi** lukisan / spesifikasi (rujuk borang NCP)
	TB	jika **tidak berkaitan**
**	Bagi projek-projek yang diselia oleh perunding	
***	Bagi projek-projek Reka dan Bina	

JKR MALAYSIA	PROSEDUR PEMBINAAN DAN PENYELIAAN TAPAK BINA	No. Dokumen : JKR.PK(O).04-SKC.AS.4B No. Keluaran : 05 No. Pindaan : 00 Tarikh : 1 Jun 2017 Muka Surat : 1 / 1

BORANG PEMERIKSAAN KERJA UJIAN BEBAN CERUCUK (PROSES PEMBINAAN)

Nama Projek : CADANGAN MEMBINA DAN MENYIAPKAN MASJID SEKSYEN 24 SHAH ALAM

Lokasi : P 111

Rujukan Lukisan No : SSR/PILE NO 1/MSJD. SKSYN 24/SA1 001 Rujukan Spesifikasi : Standard Specifications For Building Works 2014

~~Borang pemeriksaan ini perlu dirujuk bersama spesifikasi/dan lukisan projek.~~

Butiran Pemeriksaan	Standard/ Keperluan Teknikal	Pengukuran/ *Penilaian Tapak Oleh Kontraktor	*Pengesahan JKR/ **Perunding	Catatan/ No. NCP
Pemeriksaan proses ujian				
1. Laksanakan ujian ke atas cerucuk	Section B6 - SSBW	✓	✓	
2. Kenaikan beban keatas cerucuk	Section B6 Klausa 8.2 - SSBW	✓	✓	
3. Rekodkan bacaan (Rujuk : JKR.PK(O).04-SKC.AS.4B-1)	Section B6 Klausa 8.2 / 8.2.4 -SSBW	✓	✓	
4. Plotkan geraf	Section B6 Klausa 8.2.2 - SSBW	✓	✓	
5. Peningkatan beban seterusnya	Section B6 Klausa 8.2.2 - SSBW	✓	✓	
6. *Maintain maximum load*	Section B6 Klausa 8.2.3 - SSBW	✓	✓	
7. Pengurangan beban	Section B6 Klausa 8.2.4 - SSBW	✓	✓	

Nota: *Tandakan	√	jika mematuhi lukisan / spesifikasi
	x	jika tidak mematuhi lukisan / spesifikasi (rujuk borang NCP)
	TB	jika tidak berkaitan
**	Bagi projek-projek yang diselia oleh perunding	
***	Bagi projek-projek Reka dan Bina	

LAMPIRAN 4

BORANG KALIBRASI PERALATAN

Sila senaraikan semua peralatan yang telah dikenalpasti yang perlu kalibrasi (rujuk Pelan Kualiti Pembinaan). Lampirkan salinan sijil bagi kalibrasi peralatan berkenaan dari makmal yang diiktiraf bagi tujuan rekod.

Bil	Jenis Peralatan	No. Siri	No Sijil Kalibrasi	*Tarikh Tamat Tempoh Sijil Kalibrasi	*Tarikh Kalibrasi Peralatan
1.	Pressure Gauge.	12257		12/9/2019	
2.	Dial Gauge.	GRH 673		12/9/2019	
3	Dial Gauge.	KDG 492		12/9/2019	
4.	Dial Gauge.	KDG 371		12/9/2019	
5.	Dial Gauge.	KDG 411		12/9/2019	

Nota: Pastikan bahawa *tarikh kalibrasi peralatan tersebut berada dalam *tempoh yang telah ditetapkan. Rujuk Spesifikasi bagi julat ketepatan kalibrasi yang diperlukan/dibenarkan.

SPC ENGINEERING SDN BHD (360417-M)

PROJECT TITLE : CADANGAN MEBINA DAN MENYIAPKAN MASJID SEK-24 S-ALAM PAGE : 3

PILE REF : P. 111 BLOCK : MAIN Block PILE SIZE : 250X250mm R.C Pile PENETRATION : 36.0m SET : 1mm

DATE	TIME			LOAD CELL TON/KN	PRESSURE GAUGE	DIAL GAUGE READING A	B	C	D	AVERAGE	SETTLEMENT	LEVELS ON RULER JACK	TBM	REMARK
30/06/2018		30	Pm			5.71	6.22	5.45	5.13	5.63	0.63			
		45				5.69	6.19	5.42	5.10	5.60	0.60			
	8	00				5.69	6.19	5.42	5.10	5.60	0.60	100.5	100.0	
	8	00	Pm	50.0	2668	10.04	10.16	9.37	9.37	9.74	4.74	105.0	100.0	
		15				10.07	10.20	9.39	9.40	9.77	4.77			
		30				10.10	10.22	9.40	9.41	9.78	4.78			
		45				10.11	10.22	9.40	9.41	9.79	4.79			
	9	00				10.12	10.23	9.40	9.42	9.79	4.79	105.0	100.0	
	9	00	Pm	62.50	3335	11.65	11.70	10.92	11.00	11.32	6.32	106.5	100.0	
		15				11.71	11.76	10.98	11.07	11.38	6.38			
		30				11.76	11.81	11.01	11.10	11.42	6.42			
		45				11.73	11.84	11.03	11.13	11.43	6.43			
	10	00				11.75	11.85	11.04	11.15	11.45	6.45	106.5	100.0	
	10	00	Pm	75.00	4001	13.39	13.36	12.49	12.68	12.98	7.98	108.0	100.0	
		15				13.47	13.41	12.53	12.72	13.03	8.03			
		30				13.52	13.45	12.57	12.76	13.08	8.08			
		45				13.55	13.48	12.60	12.78	13.10	8.10			
	11	00				13.58	13.51	12.61	12.79	13.12	8.12	108.0	100.0	
	11	00	Pm	87.50	4668	15.46	15.38	14.32	14.58	14.94	9.94	110.0	100.0	

RECORDED BY :

PROJECT TITLE : CADANGAN MEMBINA DAN MENYIAPKAN MASJID SEK 24 S. ALAM

PAGE : 2

PILE REF : P-111

BLOCK : MAIN Block

PILE SIZE : 350X350mm R.C

PENETRATION : 36.0m

SET : 1mm

DATE	TIME			LOAD CELL TON/KN	PRESSURE GAUGE	DIAL GAUGE READING A	B	C	D	AVERAGE	SETTLEMENT	LEVELS ON RULER JACK	TBM	REMARK
30/06/2018		45				10.24	10.08	9.50	9.60	9.86	4.86			
	4	00				10.25	10.10	9.51	9.60	9.87	4.87	105.0	100.0	
	4	00	PM	37.50	2001	10.10	10.01	9.43	9.58	9.78	4.78	105.0	100.0	
		15				10.10	10.01	9.43	9.58	9.78	4.78			
		30				10.10	10.01	9.43	9.58	9.78	4.78			
		45				10.10	10.01	9.43	9.58	9.78	4.78			
	5	00				10.10	10.01	9.43	9.58	9.78	4.78	105.0	100.0	
	5	00	PM	25.00	1334	9.64	9.56	8.91	9.07	9.30	4.30	104.5	100.0	
		15				9.62	9.53	8.88	9.03	9.27	4.27			
		30				9.60	9.51	8.87	9.00	9.25	4.25			
		45				9.60	9.50	8.87	9.00	9.24	4.24			
	6	00				9.60	9.50	8.87	9.00	9.24	4.24	104.5	100.0	
	6	00	PM	12.50	667	8.56	8.51	7.79	7.94	8.20	3.20	103.0	100.0	
		15				8.54	8.49	7.78	7.94	8.19	3.19			
		30				8.52	8.47	7.77	7.93	8.17	3.17			
		45				8.52	8.47	7.77	7.93	8.17	3.17			
	7	00				8.51	8.46	7.77	7.93	8.17	3.17	103.0	100.0	
	7	00	PM	0	0	5.91	6.42	5.67	5.36	5.84	0.84	101.0	100.0	
		15				5.75	6.26	5.50	5.18	5.67	0.67			

RECORDED BY :

PAGE : 1

PROJECT TITLE : CADANGAN MEROBOH DAN MENYIAPKAN MASJID SEKSYEN 24 S-ALAM

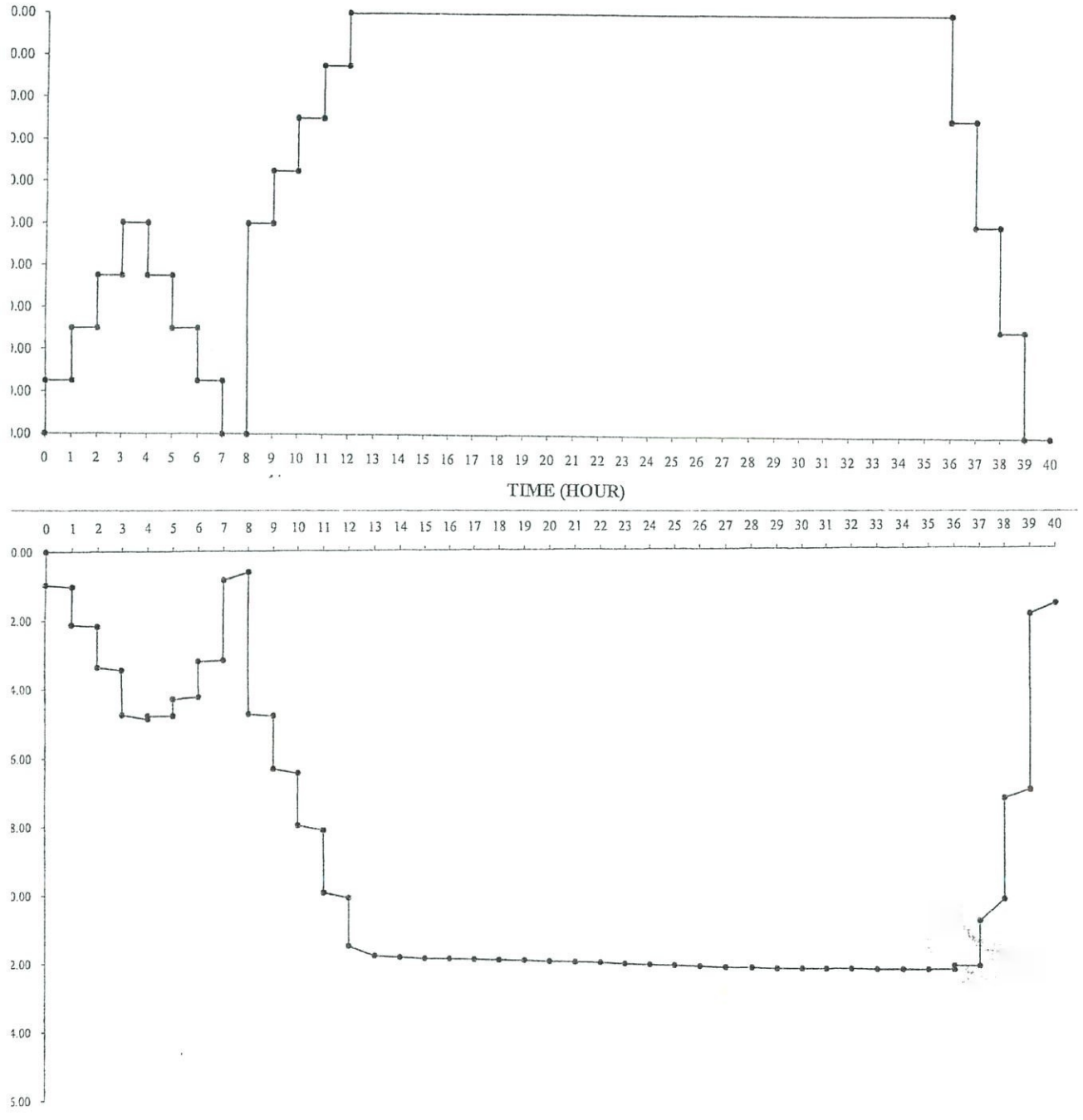
PILE REF : P 111 BLOCK : MAIN BLOCK PILE SIZE : 250 X 250 mm R.C Pile PENETRATION : 36 m SET : ~~[illegible]~~ 1mm

DATE	TIME			LOAD CELL TON/KN	PRESSURE GAUGE	DIAL GAUGE READING A	B	C	D	AVERAGE	SETTLEMENT	LEVELS ON RULER JACK	TBM	REMARK
30/6/2018	12	00	pm	0	0	5.00	5.00	5.00	5.00	5.00	0.00	100.0	100.0	
	12	00	pm	12.50	667	6.12	6.12	5.83	5.78	5.96	0.96	101.0	100.0	
		15				6.18	6.17	5.88	5.81	6.01	1.01			
		30				6.18	6.17	5.88	5.81	6.01	1.01			
		45				6.19	6.18	5.88	5.81	6.02	1.02			
	1	00				6.20	6.19	5.88	5.81	6.02	1.02	101.0	100.0	
	1	00	pm	25.00	133.4	7.39	7.31	6.88	6.88	7.12	2.12	102.0	100.0	
		15				7.43	7.35	6.90	6.91	7.15	2.15			
		30				7.47	7.38	6.90	6.91	7.17	2.17			
		45				7.47	7.38	6.90	6.91	7.17	2.17			
	2	00				7.47	7.38	6.90	6.91	7.17	2.17	102.0	100.0	
	2	00	pm	37.50	2001	8.68	8.56	8.06	8.13	8.36	3.36	103.5	100.0	
		15				8.74	8.60	8.09	8.17	8.40	3.40			
		30				8.77	8.63	8.12	8.19	8.43	3.43			
		45				8.79	8.64	8.13	8.20	8.44	3.44			
	3	00				8.80	8.65	8.13	8.20	845	3.45	103.5	100.0	
	3	00	pm	50.0	2668	10.13	9.96	9.39	9.51	9.75	4.75	105.0	100.0	
		15				10.18	10.02	9.45	9.56	9.80	4.80			
		30				10.22	10.06	9.48	9.58	9.84	4.84			

RECORDED BY : CHECKED BY : CERTIFIED BY :

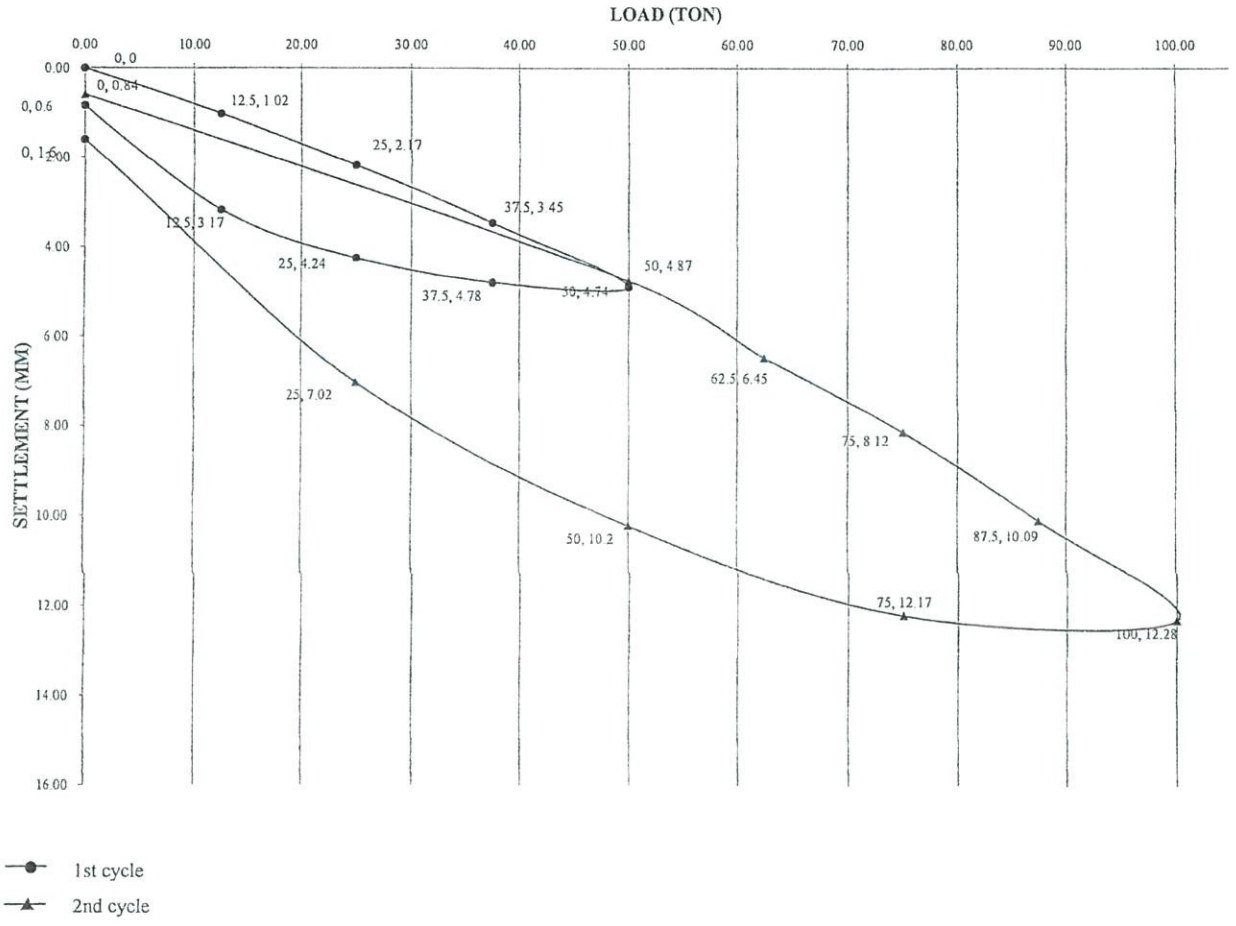
PROJECT : CADANGAN MEMBINA & MENYIAPKAN MASJID SEKSYEN 24, SHAH ALAM
PILE SIZE : 250MM X 250MM RC PILE
LOAD TEST NO.2 (PILE REF : P111)
DATE : 30/6 - 2/7/2018

LOAD AND SETTLEMENT VS TIME



PROJECT : CADANGAN MEMBINA & MENYIAPKAN MASJID SEKSYEN 24, SHAH ALAM
PILE SIZE : 250MM X 250MM RC PILE
LOAD TEST NO.2 (PILE REF : P111)
DATE : 30/6- 2/7/2018

SETTLEMENT VS LOAD GRAPH



JKR MALAYSIA	PROSEDUR PEMBINAAN DAN PENYELIAAN TAPAK BINA	No. Dokumen : JKR.PK(O).04-SKC.AM.3 No. Keluaran : 05 No. Pindaan : 00 Tarikh : 1 Jun 2017 Muka Surat : 1/ 1

BORANG PERMOHONAN PEMERIKSAAN/PENGUJIAN/BAHAN/MOCK UP (RFI)

Nama Projek : CADANGAN MEMBINA DAN MENYIAPKAN MASJID SEKUYEN 24 BAGI ACEH

Bidang : ☐ Sivil ☒ Struktur ☐ Senibina ☐ Mekanikal ☐ Elektrik ☐ Lain-Lain

Keterangan Kerja: PERCUBAAN LOAD TEST (NO2)

Kerja/Alatan sedia untuk diperiksa/diujiterima pada 8.30am (masa) 30/6/2018 (tarikh)

No. RFI : _____ Tarikh Permohonan: 29/6/2018 ☒ RFI Baru ☐ Ulangan

No. RFI lama: _____
(Jika Ulangan)

Bil.	Borang Pemeriksaan / Pengujian / Bahan / Mock-up	No.Siri	Tarikh Kelulusan	Lokasi (Jika berkaitan)	Grid
1.	PENGUJIAN LOAD TEST.			P III	F/5

	Maklumbalas Kelulusan Pemeriksaan / Pengujian / Bahan / Mock-up	JKR (Sila tanda √ diruang berkaitan)
A.	Lulus. Kontraktor dibenarkan untuk memulakan kerja	✓
B.	Pembaikan kerja diperlukan semula dan diperiksa/diuji semula	
C.	Kerja tidak bersedia untuk diperiksa/diuji. Mohon semula menggunapakai borang RFI yang baru.	

Ulasan:
JKR (PTB): _____

_____

Disahkan Oleh JKR:

FREYSSINET PSC (M) SDN BHD (9902-X)
NO. 9, JALAN 2/137B, RESOURCE IND. CENTRE,
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58000 KUALA LUMPUR, MALAYSIA.
TEL: +6 03-7982 8599 FAX: +6 03-7981 5530
EMAIL: admin@fpscmalaysia.com
(GST ID No. 000104611840)

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: D/2017/November/1923
ISSUED BY: Joklai Bte Kuin (Pauline)
DATE OF ISSUED: 14/11/2017

APPROVED SIGNATORY
Jamie Heng Wai Kheng

UNIT TO USE: mm
RANGE: 0-50 mm

RESOLUTION: 0.001 mm
READABILITY: 0.0005 mm

INSRUMENTAL ERROR

RANGE	FORWARD, mm		BACKWARD, mm	
mm	Read	Correction	Read	Correction
0	0.0000	0.0000	0.0000	0.0000
5	4.9990	0.0010	4.9990	0.0010
10	10.0000	0.0000	10.0000	0.0000
15	14.9960	0.0040	14.9960	0.0040
20	19.9980	0.0020	19.9980	0.0020
25	24.9950	0.0050	24.9950	0.0050
30	29.9970	0.0030	29.9970	0.0030
35	35.0000	0.0000	35.0000	0.0000
40	39.9950	0.0050	39.9950	0.0050
45	44.9940	0.0060	44.9940	0.0060
50	49.9950	0.0050	49.9950	0.0050

No.	Parameters	Data
1.)	Indication error over any 1/10 revolution	0.003
2.)	Indication error over any 1/2 revolution	0.003
3.)	Indication error over any one (1) revolution	0.003
4.)	Indication error over the whole measuring	0.010
5.)	Retrace Error	0.001
6.)	Repeatability	0.001

Expanded uncertainty= ±0.002 mm where k = 2, at about 95% confidence level.

NOTE:

NOMINAL VALUE

A value to designate a characteristic of a device or to give a guide to its intended use

CORRECTION

Correction = Nominal value - Read indication

TRUE VALUE

True value = Read + correction

UNCERTAINTY

Parameters, associated with the result of a measurement, that characteristic the dispersion of the value that could reasonably be attributed to the measured. The estimation of this value is based on ISO guide to the expression of uncertainty in measurement 1995.

The calibration and measurement results given are only related to the calibrated item(s) at the time of calibration unless otherwise stated.

FREYSSINET PSC (M) SDN BHD (9902-X)
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EMAIL: admin@fpscmalaysia.com
(GST ID No. 000104611840)

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: D/2017/November/1926
ISSUED BY: Joklai Bte Kuin (Pauline)
DATE OF ISSUED: 14/11/2017

APPROVED SIGNATORY
Jamie Heng Wai Kheng

UNIT TO USE: mm
RANGE: 0-50 mm

RESOLUTION: 0.001 mm
READABILITY 0.0005 mm

INSRUMENTAL ERROR

RANGE	FORWARD, mm		BACKWARD, mm	
mm	Read	Correction	Read	Correction
0	0.0000	0.0000	0.0000	0.0000
5	5.0020	-0.0020	5.0020	-0.0020
10	10.0010	-0.0010	10.0010	-0.0010
15	15.0000	0.0000	15.0000	0.0000
20	19.9960	0.0040	19.9970	0.0030
25	24.9980	0.0020	24.9980	0.0020
30	29.9980	0.0020	29.9980	0.0020
35	34.9980	0.0020	34.9960	0.0020
40	39.9950	0.0050	39.9950	0.0050
45	44.9970	0.0030	44.9970	0.0030
50	49.9950	0.0050	49.9960	0.0040

No.	Parameters	Data
1.)	Indication error over any 1/10 revolution	0.004
2.)	Indication error over any 1/2 revolution	0.005
3.)	Indication error over any one (1) revolution	0.005
4.)	Indication error over the whole measuring	0.005
5.)	Retrace Error	0.001
6.)	Repeatability	0.001

Expanded uncertainty= ±0.002 mm where k = 2, at about 95% confidence level

NOTE:

NOMINAL VALUE

A value to designate a characteristic of a device or to give a guide to its intended use.

CORRECTION

Correction = Nominal value - Read indication

TRUE VALUE

True value = Read + correction

UNCERTAINTY

Parameters, associated with the result of a measurement, that characteristic the dispersion of the value that could reasonably be attributed to the measured
The estimation of this value is based on ISO guide to the expression of uncertainty in measurement, 1995.

The calibration and measurement results given are only related to the calibrated item(s) at the time of calibration unless otherwise stated.

FREYSSINET PSC (M) SDN BHD (9902-X)
NO. 9, JALAN 2/137B, RESOURCE IND. CENTRE,
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58000 KUALA LUMPUR, MALAYSIA.

EMAIL: admin@fpscmalaysia.com
(GST ID No. 000104611840)

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: D/2017/November/1925
ISSUED BY: Joklai Bte Kuin (Pauline)
DATE OF ISSUED: 14/11/2017

APPROVED SIGNATORY
Jamie Heng Wai Kheng

UNIT TO USE: mm
RANGE: 0-50 mm

RESOLUTION: 0.001 mm
READABILITY: 0.0005 mm

INSRUMENTAL ERROR

RANGE	FORWARD, mm		BACKWARD, mm	
mm	Read	Correction	Read	Correction
0	0.0000	0.0000	0.0000	0.0000
5	5.0040	-0.0040	5.0035	-0.0035
10	9.9970	0.0030	9.9970	0.0030
15	15.0030	-0.0030	15.0030	-0.0030
20	19.9930	0.0070	19.9930	0.0070
25	25.0000	0.0000	25.0000	0.0000
30	29.9960	0.0040	29.9970	0.0030
35	35.0000	0.0000	35.0000	0.0000
40	39.9940	0.0060	39.9940	0.0060
45	45.0000	0.0000	45.0000	0.0000
50	49.9950	0.0050	49.9950	0.0050

No.	Parameters	Data
1.)	Indication error over any 1/10 revolution	0.004
2.)	Indication error over any 1/2 revolution	0.005
3.)	Indication error over any one (1) revolution	0.007
4.)	Indication error over the whole measuring	0.011
5.)	Retrace Error	0.001
6.)	Repeatability	0.001

Expanded uncertainty= ±0.002 mm where k = 2, at about 95% confidence level.

NOTE:

NOMINAL VALUE

A value to designate a characteristic of a device or to give a guide to its intended use

CORRECTION

Correction = Nominal value - Read indication

TRUE VALUE

True value = Read + correction

UNCERTAINTY

Parameters, associated with the result of a measurement, that characteristic the dispersion of the value that could reasonably be attributed to the measured The estimation of this value is based on ISO guide to the expression of uncertainty in measurement, 1995

The calibration and measurement results given are only related to the calibrated item(s) at the time of calibration unless otherwise stated.

FREYSSINET PSC (M) SDN BHD (9902-X)
NO. 9, JALAN 2/137B, RESOURCE IND. CENTRE,
OFF 5TH MILE, JALAN KLANG LAMA,
58000 KUALA LUMPUR, MALAYSIA.

EMAIL: admin@fpscmalaysia.com
(GST ID No. 000104611840)

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: D/2017/November/1924
ISSUED BY: Joklai Bte Kuin (Pauline)
DATE OF ISSUED: 14/11/2017

APPROVED SIGNATORY
Jamie Heng Wai Kheng

UNIT TO USE: mm
RANGE: 0-50 mm

RESOLUTION: 0.001 mm
READABILITY: 0.0005 mm

INSRUMENTAL ERROR

RANGE	FORWARD, mm		BACKWARD, mm	
mm	Read	Correction	Read	Correction
0	0.0000	0.0000	0.0000	0.0000
5	4.9930	0.0070	4.9930	0.0070
10	9.9980	0.0020	9.9980	0.0020
15	14.9910	0.0090	14.9920	0.0080
20	19.9960	0.0040	19.9960	0.0040
25	24.9910	0.0090	24.9910	0.0090
30	29.9980	0.0020	29.9980	0.0020
35	34.9920	0.0080	34.9920	0.0080
40	39.9970	0.0030	39.9970	0.0030
45	44.9990	0.0010	44.9990	0.0010
50	49.9960	0.0040	49.9960	0.0040

No.	Parameters	Data
1.)	Indication error over any 1/10 revolution	0.009
2.)	Indication error over any 1/2 revolution	0.009
3.)	Indication error over any one (1) revolution	0.006
4.)	Indication error over the whole measuring	0.015
5.)	Retrace Error	0.003
6.)	Repeatability	0.001

Expanded uncertainty= ±0.002 mm where k = 2, at about 95% confidence level

NOTE:

NOMINAL VALUE

A value to designate a characteristic of a device or to give a guide to its intended use

CORRECTION

Correction = Nominal value - Read indication

TRUE VALUE

True value = Read + correction

UNCERTAINTY

Parameters, associated with the result of a measurement, that characteristic the dispersion of the value that could reasonably be attributed to the measured The estimation of this value is based on ISO guide to the expression of uncertainty in measurement, 1995

The calibration and measurement results given are only related to the calibrated item(s) at the time of calibration unless otherwise stated.

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OFF 5TH MILE, JALAN KLANG LAMA,
58000 KUALA LUMPUR, MALAYSIA.

EMAIL: admin@fpscmalaysia.com
(GST ID No. 000104611840)

CERTIFICATE OF CALIBRATION

Certificate Reference No.: D/2017/November/1924

Issued By: Joklai Bte Kuin (Pauline)

Date of Issued: 14/11/2017

APPROVED SIGNATORY
Jamie Heng Wai Kheng

Customer: SPC Engineering Sdn Bhd
Job No.: C/W/3622/2017

Tel. No: 03-78465240 Fax No. 03-78465250

Description: Dial Gauge
Model: 3058S-19
Manufacturer: Mitutoyo
Serial No.: GXH 673
Capacity/Range: 0-50mm

Condition of Instrument
Before Calibration: Good Physical Condition
After Calibration: Calibrated and Serviceable

Date of Calibration: 13/11/2017
Recommended Due Date: - (Specified by customer)

Calibration Method: Calibration Procedure No. FPSC/C/WI/002

Calibration Venue: FPSC Calibration Room

Calibration Results: This result as following page(s). The expanded uncertainties are based on an estimated confidence probability of not less than 95% and have a coverage factor of k=2 unless stated otherwise.

ENVIRONMENTAL CONDITIONS

AMBIENT TEMPERATURE	20 - 20	°C
RELATIVE HUMIDITY	55 - 61	%RH

REFERENCE STANDARD(S) USED:

DESCRIPTION	SERIAL NO.	DUE DATE	TRACEABLE TO
Thermohygrograph	ADB410707-29	12/09/2019	PSYP-17055596
Mitutoyo Dial Calibration Tester	400532	19/03/2018	SST/SA/R/2016C/1375

CALIBRATED BY: Jinggut Anak Maluda

APPROVED SIGNATORY:

Calibration Sticker No. 0002901

(Jamie Heng Wai Kheng)

The calibration and measurement results given are only related to the calibrated item(s) at the time of calibration unless otherwise stated.

FREYSSINET PSC (M) SDN BHD (9902-X)
NO. 9, JALAN 2/137B, RESOURCE IND. CENTRE,
OFF 5TH MILE, JALAN KLANG LAMA,
58000 KUALA LUMPUR, MALAYSIA.

EMAIL: admin@pscmalaysia.com
(GST ID No. 000104511840)

CERTIFICATE OF CALIBRATION

Certificate Reference No.: D/2017/November/1925

Issued By: Joklai Bte Kuin (Pauline)
Date of Issued: 14/11/2017

APPROVED SIGNATORY
Jamie Heng Wai Kheng

Customer: SPC Engineering Sdn Bhd
Job No.: C/W/3622/2017

Tel. No. 03-78465240 Fax No. 03-78465250

Description: Dial Gauge
Model: 3058S-19
Manufacturer: Mitutoyo
Serial No.: KDG 492
Capacity/Range: 0-50mm

Condition of Instrument
Before Calibration: Good Physical Condition
After Calibration: Calibrated and Serviceable

Date of Calibration: 13/11/2017
Recommended Due Date: - (Specified by customer)

Calibration Method: Calibration Procedure No. FPSC/C/WI/002

Calibration Venue: FPSC Calibration Room

Calibration Results: This result as following page(s). The expanded uncertainties are based on an estimated confidence probability of not less than 95% and have a coverage factor of k=2 unless stated otherwise.

ENVIRONMENTAL CONDITIONS

AMBIENT TEMPERATURE:	20 - 20	°C
RELATIVE HUMIDITY:	57 - 61	%RH

REFERENCE STANDARD(S) USED:

DESCRIPTION	SERIAL NO.	DUE DATE	TRACEABLE TO
Thermohygrograph	ADB410707-29	12/09/2019	PSYP-17055596
Mitutoyo Dial Calibration Tester	400532	19/03/2018	SST/SA/R/2016C/1375

CALIBRATED BY: Jinggut Anak Maluda

APPROVED SIGNATORY: (Jamie Heng Wai Kheng)

Calibration Sticker No: 0002902

The calibration and measurement results given are only related to the calibrated item(s) at the time of calibration unless otherwise stated.

FREYSSINET PSC (M) SDN BHD (9902-X)
NO. 9, JALAN 2/137B, RESOURCE IND. CENTRE,
OFF 5TH MILE, JALAN KLANG LAMA,
58000 KUALA LUMPUR, MALAYSIA.

EMAIL: admin@fpscmalaysia.com
(GST ID No. 000104511840)

CERTIFICATE OF CALIBRATION

Certificate Reference No.: D/2017/November/1923

Issued By: Joklai Bte Kuin (Pauline)

Date of Issued: 14/11/2017

APPROVED SIGNATORY
Jamie Heng Wai Kheng

Customer: SPC Engineering Sdn Bhd
Job No.: C/W/3622/2017

Tel. No. 03-78465240 Fax No. 03-78465250

Description: Dial Gauge
Model: 3058S-10
Manufacturer: Mitutoyo
Serial No.: KDG 411
Capacity/Range: 0-50mm

Condition of Instrument
Before Calibration: Good Physical Condition
After Calibration: Calibrated and Serviceable

Date of Calibration: 13/11/2017
Recommended Due Date: (Specified by customer)

Calibration Method: Calibration Procedure No. FPSC/C/WI/002

Calibration Venue: FPSC Calibration Room

Calibration Results: This result as following page(s). The expanded uncertainties are based on an estimated confidence probability of not less than 95% and have a coverage factor of k=2 unless stated otherwise.

ENVIRONMENTAL CONDITIONS

AMBIENT TEMPERATURE:	20 - 20	°C
RELATIVE HUMIDITY:	57 - 62	%RH

REFERENCE STANDARD(S) USED:

DESCRIPTION	SERIAL NO.	DUE DATE	TRACEABLE TO
Thermohygrograph	ADB410707-29	12/09/2019	PSYP-17055596
Mitutoyo Dial Calibration Tester	400532	19/03/2018	SST/SA/R/2016C/1375

CALIBRATED BY: Jinggut Anak Maluda

APPROVED SIGNATORY: (Jamie Heng Wai Kheng)

Calibration Sticker No: 0002900

The calibration and measurement results given are only related to the calibrated item(s) at the time of calibration unless otherwise stated.

FREYSSINET PSC (M) SDN BHD (9902-X)
NO. 9, JALAN 2/137B, RESOURCE IND. CENTRE,
OFF 5TH MILE, JALAN KLANG LAMA,
58000 KUALA LUMPUR, MALAYSIA.

EMAIL: admin@fpscmalaysia.com
(GST ID No. 000104611840)

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: P/2017/November/1228
ISSUED BY: Joklai Bte Kuin (Pauline)
DATE OF ISSUED: 20/11/2017

APPROVED SIGNATORY
Ng Ming Khin (Jason)

UNIT TO USE: psi
RANGE: 0-10,000 (psi)

RESOLUTION: 100 psi
READABILITY: 50 psi
SPECIFICATION (±): 1.5 %FS

Test Point	Ref. Value	Series 1 (UUT)	Series 2 (UUT)	Repeatability Error (±)	Mean UUT	Linearity Correction	Specification(±)
2000	2000.0	2000	2000	0	2000	0	
4000	4003.6	4000	4000	0	4000	1	
6000	6005.1	6000	6000	0	6000	5	
8000	8005.6	8000	8000	0	8000	7	
10000	10008.0	10000	10000	0	10000	8	150.0
8000	8006.0	8000	8000	0	8000	6	
6000	6004.8	6000	6000	0	6000	5	
4000	4003.3	4000	4000	0	4000	3	
2000	2001.7	2000	2000	0	2000	2	

Expanded uncertainty= ±28 psi where k = 2, at about 95% confidence level

Hysteresis Test

Test Point	Mean UUT		
	Increase Pressure	Decrease Pressure	Error (±)
2000	2000	2000	0
4000	4000	4000	0
6000	6000	6000	0
8000	8000	8000	0
10000	10000	10000	0

Hysteresis Error: 0

NOTE:

NOMINAL VALUE

A value to designate a characteristic of a device or to give a guide to its intended use.

CORRECTION

Linearity Correction = Reference value - Mean UUT

ERROR VALUE

Error value = Mean UUT - Nominal (Test Point)

UNCERTAINTY

Parameters, associated with the result of a measurement, that characteristic the dispersion of the value that could reasonably be attributed to the measured. The estimation of this value is based on ISO guide to the expression of uncertainty in measurement, 1995

The calibration and measurement results given are only related to the calibrated item(s) at the time of calibration unless otherwise stated.

Tekton Beacon Sdn Bhd (273865-W) *Your dynamic pile testing specialist*
No 53, Jalan Penulis U1/42, Temasya Industrial Park Off Jalan Glenmarie,
Seksyen U1, 40150 Shah Alam, Selangor Darul Ehsan, Malaysia.
Email: tektonbeacon@yahoo.com

MS ISO 9001: 2000 REF: 7.5.1 & 7.5.2	**FIELD SHEET FOR DYNAMIC PILE TESTING**	DOC. REF : TBSB/OPS/PDA

Client Name : SPC Piling Date :

Project Name : Masjid, 24 seksyen

Test Personnel : FJR / Razak

PDA Equipment Set No: Pak – 5 Transducers & Accelerometer Set No: 10

Pile ID	P382	P383	P364		
Pile Details					
Pile Type	RC	RC	RC	RC	RC
Pile Size (mm)	250 X250	250X250	250 X250	250 X250	250X250
Temporary Casing (m)	-	-	-	-	-
Permenant Casing (m)	-	-	-	-	-
Section Area (cm²)	625	625	625	625	625
Material Strength (MPa)	45	45	45	45	45
Total Pile Length (m)	~~35~~ ~~37.0~~ cut 33	30.0	30.0		
Penetration Length (m)	~~26~~ ~~30.0~~ exC32.5	29.5 (exC)	29.5 (exC)		
Length Below Gauges (m)	~~26.5~~ ~~30.5~~ 32.7	29.7	29.7		
Pile Make-up (m) [top-btm]	6+~~6~~6+6+6+12	6+6+6+12	6+6+6+12		
Working load (tonne)	50	50	50	50	50
Required Test Load (tonne)	100	100	100	100	100
Hammer Details					
Hammer Type	DH				
Ram Weight (tonne)	1.5				
Drop Height (m)	1.0				

Results below are indicative. CAPWAP Analysis required to be carried out on collected wave traces

PDA Field Results						
RMX (tonne)		128	120	120		
RSU (tonne) / ~~RA2 (tonne)~~		193	212	184		
FMX (tonne)		167	120	129		
EMX (t-m)		1.21	1.05	0.77		
~~CSX~~ (Mpa)		26.2	18.8	20.3		
TSX (Mpa)		5.0	6.6	6.7		
Pile Integrity	**BTA**	BTC 27.7m	100%	100%		
	BT2	100%	100%	100%		
Supplemental Data						
Wave Speed (m/s)		3800	3800	3800	3800	3800
Density (t/cm³)		2.45	2.45	2.45	2.45	2.45
Measured DFN (mm)		1mm / blows	1mm / blows	1mm / blows	/ blows	/ blows
Date Driven/ Casting		26/6/18	26/6/18	18/6/18		

MOHD ISMAIL BIN JANTAN
RESIDENT ENGINEER
ROADNET SOLUTION SDN BHD

TESTING WITNESSED BY :

Company : WIRA MUHIBBAH SDN BHD SITE SUPERVISOR YUSAFFENDY BIN SHAFIE

Name : YUSAFFENDY SHAFIE

Signature :

Company : SPC ENGINEERING SDN BHD.

Name : MOHAMAD RAZI BIN ABDUL RAZAK

Signature :

PILING LAYOUT PLAN

SCALE 1:150

NOTES :-

1. ALL PILES SHALL BE 250x250 R C SQUARE PILE GRADE 45.
2. SAFE WORKING LOADING OF A PILE IS 500 kN WITH PROVISIONAL LENGTH OF 24.0 M
3. ALL PILES SHALL BE INSTALLED TO A SET BY HYDRAULIC INJECTION METHOD. THE CONTRACTOR IS TO SUBMITTED INSTALLATION WORK METHOD STATEMENT FOR APPROVAL.
4. SCHEDULE OF TESTS :
   - i. MLT = 3 NOS.
   - ii. PDA TEST = 20 NOS.

LEGEND :-
3P(250) - 3 NOS. OF 250x250mm R C SQUARE PILE (GRADE 45)

CONSTRUCTION DRAWING

J.K.R. Negeri Selangor D.E.

PELANGGAN
JABATAN AGAMA ISLAM SELANGOR

PENGARAH
IR. RUSLAN BIN ABDUL AZIZ

TIMBALAN PENGARAH
RABIAH BINTI AB. AZIZ

ARKITEK PENGUASA

ARKITEK
QAMARIAH BINTI ABDUL SHUKOR

PROJEK
CADANGAN MEMBINA DAN MENYIAPKAN MASJID SEKSYEN 24 SHAH ALAM, DALAM DAERAH PETALING, SELANGOR DARUL EHSAN

PERUNDING ARKITEK
RIZAL OSMAN ARCHITECT • R O A
7-2 Jalan PJU 7/7A
Mutiara Damansara
47800 Petaling Jaya
Selangor Darul Ehsan
Email : admin@roaarchitect.com
Tel : 603 7731 1144

KONSULTAN UKUR BAHAN
HAH ASSOCIATES
42-2 Jalan Wangsa Setia 4
Wangsa Melawati
53300 Kuala Lumpur

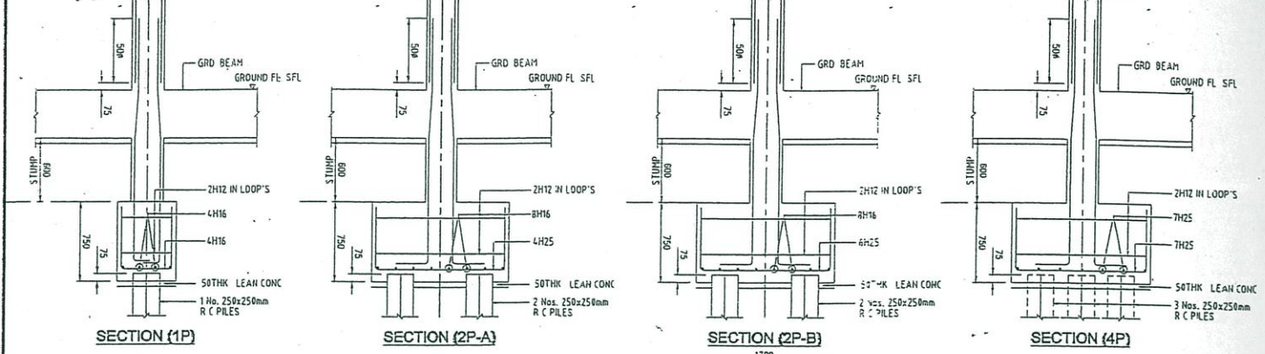
JURUTERA SIVIL DAN STRUKTUR
"Saya memperakui details-details dalam pelan-pelan ini adalah mengikut kehendak-kehendak Akta 133 Jalan, Parit & Bangunan 1974 dan saya sebiju terima tanggungjawab penuh dengan sewajarnya"

PROFESSIONAL ENGINEER WITH PRACTISING CERTIFICATE
CIVIL
Ir. ROFIE BIN SARBINI
C110240
MALAYSIA

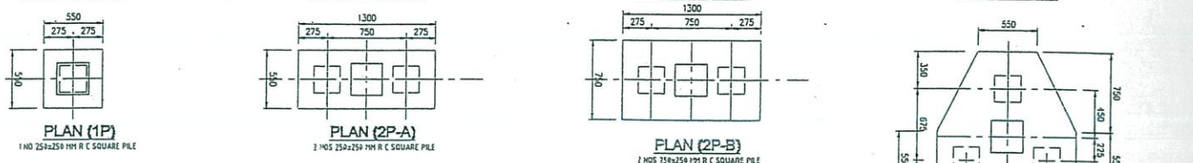
Ir. ROFIE BIN SARBINI
ROADNET SOLUTIONS SDN BHD (793352-T)
Consulting Engineers & Project Manager
Civil, Structural and Traffic
No.53B, Jalan BRP 1/4, Bukit Rahmat Putra,
47000 Sungai Buloh, Selangor Darul Ehsan
Tel: 03-6150 0757, Fax: 03-6157 5852
H/P: 019 - 2712 142 Email : roadnetsolutions@gmail.com

PERKARA
STRUCTURAL
PILING LAYOUT PLAN

UKURAN : AS SHOWN	
DILUKIS : nnZ	DISEMAK : WAN/SITI
TARIKH : NOVEMBER 2017	NO. FAIL :
NO. LUKISAN : RSSB/JKR/MSJ24/ST/PLN/01	PINDAAN



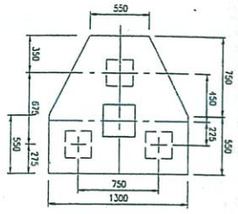
SECTION (1P) | SECTION (2P-A) | SECTION (2P-B) | SECTION (4P)



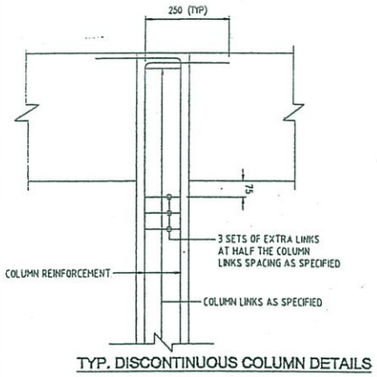
PLAN (1P)
1 NO 250x250 MM R C SQUARE PILE

PLAN (2P-A)
2 NOS 250x250 MM R C SQUARE PILE

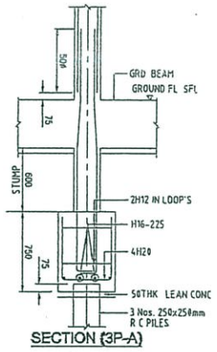
PLAN (2P-B)
2 NOS 250x250 MM R C SQUARE PILE



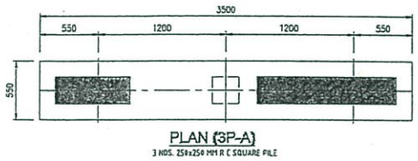
PLAN (3P)
1 NOS 250x250 MM R C SQUARE PILE



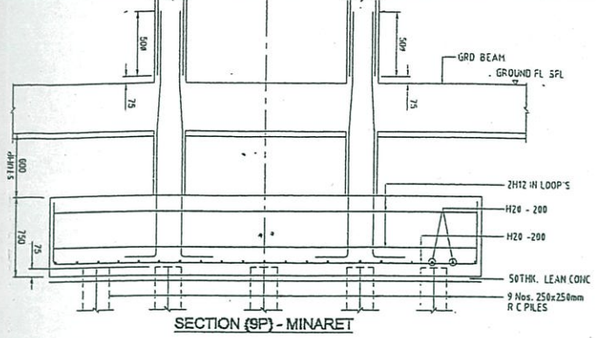
TYP. DISCONTINUOUS COLUMN DETAILS



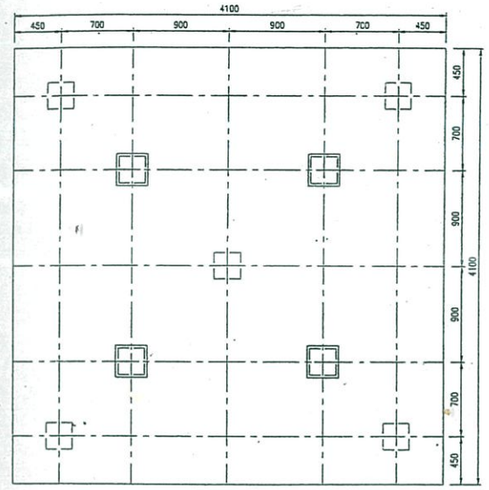
SECTION (3P-A)



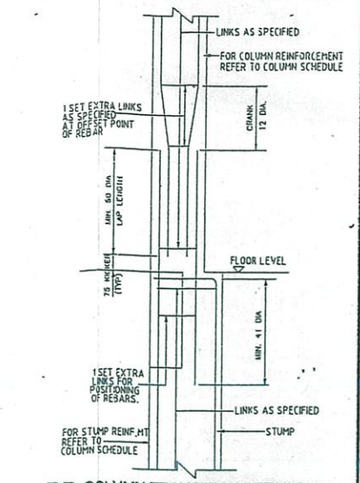
PLAN (3P-A)
3 NOS. 250x250 MM R C SQUARE PILE



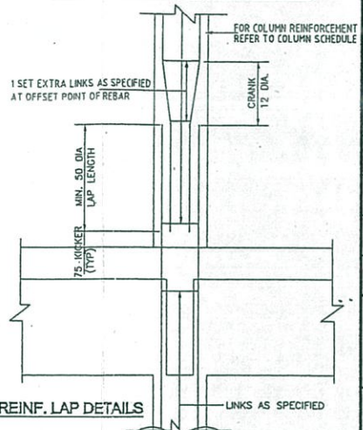
SECTION (9P) - MINARET



PLAN (9P) - MINARET
5 NOS 250x250 MM R C SQUARE PILE



TYP. COLUMN TRANSITION DETAILS



TYP. COLUMN REINF. LAP DETAILS

COLUMN MARK / FLOOR		C1.	C2.	C3.	C4.	C5.	C6.	C7.	C8.	C9.	C10.	C11.	ST1.	ST2.	COB.1	COB.2	COB.3	COB.4	C12.
ROOF LEV.2 TO 3	MAIN BAR				20H25														
	TIES				3H10-250														
	COL. SIZE				600 X 500														
ROFF LEV. 1 TO LEV. 2	MAIN BAR			16H16	20H25	32H16	24H16	16H16		12H16	10H16	8H16			12H16	10H16	8H16		16H16
	TIES			3H10-175	3H10-250	5H10-175	3H10-175	3H10-175		H10-175	H10-175	H10-175			H10-175	H10-175	H10-175		3H10-175
	COL. SIZE			600 X 600	600 X 600	600x600/200x600	600 X 1000	600 X 600		450 X 450	300 X 450	300 X 300			450 X 450	300 X 450	300 X 300		600 X 600
GB - ROOF LEV.1	MAIN BAR	12H16	10H16	16H16	20H25	32H16	24H16	16H16	8H16	12H16	10H16	8H16			12H16	10H16	8H16	4H16	16H16
	TIES	H10-175	H10-175	3H10-175	3H10-250	5H10-175	3H10-175	3H10-175	H10-175	H10-175	H10-175	H10-175			H10-175	H10-175	H10-175	H10-175	3H10-175
	COL. SIZE	450 X 450	300 X 450	600 X 600	600 X 600	600x600/200x600	600 X 1000	600 X 600	300 X 300	450 X 450	300 X 450	300 X 300			450 X 450	300 X 450	300 X 300	300 X 300	600 X 600
STUMP	MAIN BAR	12H16	10H16	16H16	20H25	34H16	24H16	16H16	8H16	12H16	10H16	8H20	20H16	16H16					16H16
	TIES	H10-175	H10-175	3H10-175	3H10-250	5H10-175	3H10-175	3H10-175	H10-175	H10-175	H10-175	H10-225	3H10-175	3H10-175					3H10-175
	COL. SIZE	450 X 450	300 X 450	600 X 600	600 X 600	600 X 1000	600 X 1000	600 X 600	300 X 300	450 X 450	300 X 450	300 X 300	800 X 800	450 X 450					600 X 600

R3

COLUMN REINF. SCHEDULE

TARIKH	BUTIRAN	RUJUKAN
06/12/17	REVISED REINFORCEMENT SIZE	R1
25/06/18	ADDED PILECAP DETAIL 3P-A	R2
01/08/18	REVISED STUMP C3 & C12 SCHEDULE	R3

CONSTRUCTION DRAWING

J.K.R. Negeri Selangor D.E.

PELANGGAN
JABATAN AGAMA ISLAM SELANGOR

PENGARAH
IR. RUSLAN BIN ABDUL AZIZ

TIMBALAN PENGARAH
RABIAH BINTI AB. AZIZ

ARKITEK PENGUASA

ARKITEK
OAMARIAH BINTI ABDUL SHUKOR

PROJEK
CADANGAN MEMBINA DAN MENYIAPKAN MASJID SEKSYEN 24 SHAH ALAM, DALAM DAERAH PETALING, SELANGOR DARUL EHSAN

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Mutiara Damansara
47800 Petaling Jaya
Selangor Darul Ehsan
Email : admin@roarchitect.com
Tel : 603 7731 1144

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HAH ASSOCIATES
42-2 Jalan Wangsa Setia 4
Wangsa Melawati
53300 Kuala Lumpur

JURUTERA SIVIL DAN STRUKTUR
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Ir. ROFIE BIN SARBINI
ROADNET SOLUTIONS SDN BHD (793352-T)
Consulting Engineers & Project Manager
Civil, Structural and Traffic
No.53B, Jalan BRP 1/4, Bukit Rahmah Putra,
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PERKARA
STRUCTURAL
PILECAPS & COLUMN REINF. SCHEDULE

UKURAN :
DILUKIS : nnZ | DISEMAK : WAN/SITI
TARIKH : NOVEMBER 2017 | NO. FAIL :
NO. LUKISAN : RSSB/JKR/MSJ24/ST/CS/01 | PINDAAN 1 2 3

D:\18082013_FAN\MASJID SEK 24\05-CONSTRUCTION\05-STRUCTURAL\01 - 1ST BATCH\7A-MASJID S24_PILECAP & COLUMN REINF. SCHEDULE_300718_REV3.DWG : 02-Aug-18 : 16:12:24 : PLOTTED BY : DELL