

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

BRICKWALL INSTALLATION

Prepared by:

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(PERAK)

DECEMBER 2019

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entitled

BRICKWALL INSTALLATION

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

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DEPARTMENT OF BUILDING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
(PERAK)

DECEMBER 2019

STUDENT'S DECLARATION

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

Name : AQILAH BINTI ABDULLAH

UiTMIDNo : 2017206614

Date : 12 DECEMBER 2019

ACKNOWLEDGEMENT

Alhamdulillah, praise to Allah, the Most Merciful, the Most Graceful. I would like to express my highest gratitude to Allah S.W.T for His guidance, bless and for giving me the strength to perform my responsibilities as a trainee and complete this industrial training successfully for 20 weeks at KITACON SDN.BHD.

My grateful thanks go to all the staff at KITACON SDN.BHD. especially the Director of company, Mr.Tan Ah Kee for giving me the opportunity to carry out my industrial training in this company with the help of my M&E supervisor, Cik. Muhammad Faizul bin Abdullah. A big contribution and hard worked from the staff at Elmina Valley Five team during my practical training period is very great indeed that I can utilize my skill and knowledge. I want to thank very much to my supervisor as he helps me a lot by guide me on the site, and helped me to finished my practical training report that need to be submit to the supervising lecturer in UiTM. As I can say, I gained many knowledges that I could not get in UiTM while I am the class.

To my beloved family, my strength and backbone I am very grateful that I have a supportive family. They always supporting me in everything I do in my life. With their blessing,

I successfully finished my practical training. For all money and facilities that they had been spend to me, to make sure that I can finished my practical training smoothly and gain as much knowledge as I can.

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That's all, thank you very much.

ABSTRACTS

Brick wall is very important element that used to defines an area or enclose to provides security, shelter, or soundproofing. This case study was focus more on the brick wall installation at Elmina Valley 5. Purpose of this report is to know and collect knowledge about the method and sequence of how to construct a brick wall, tools and machinery of the construction. During the installation process, few problems that can be observed, for example, the credibility of the workers and the supplier issue which has delayed the project. This problem must be solved immediately to avoid the delay of the project. Company can send their workers to training and make sure the supplier can send material or equipment and machineries at the time. This solution can make a project running smoothly and perfectly. It is because, any delayed project will affect the cost of the project and the contractor will be responsibility. A wall is very importance element to the construction industry because of its function and purpose to provides security, shelter, or even soundproofing to the occupants.

CONTENTS

ACKNOWLEDGEMENT	i
ABSTRACTS	ii
CONTENTS	iii
LIST OF TABLES.....	iv
LIST OF FIGURES.....	v
CHAPTER 1	1
1.1 Background and Scope of Study.....	1
1.2 Objective.....	4
1.3 Method of Study	5
CHAPTER 2	6
2.1 Introduction of Company.....	6
2.2 Company Particulars.....	7
2.3 Organization Chart	8
2.4 Certificates and Achievements	10
2.5 List of Completed Projects	18
2.6 List of Current On-Going Projects	19
CHAPTERS.....	20
3.1 Construction Procedures.....	22
3.1.1 Pre-Installation of Brick Wall.....	22
3.1.2 Execution of Work.....	24
3.1.3 Post Installation.....	33
3.2 Equipment and Machinery.....	34
3.3 Problem and Solution	36
CHAPTER 4.0: CONCLUSION	38
References.....	39
APPENDIX.....	40

LIST OF TABLES

Table 2.2	List of Completed Project	18
Table 2.3	List of Current On-going Project	19
Table 3.1	Equipment and Machinery Used for Brick Wall Installation	34

LIST OF FIGURES

Figure 1.1	Maps of Elmina Valley 5B, Elmina West	3
Figure 2.1	KITACON SDN BHD Logo	6
Figure 2.2	Project Organization Chart	9
Figure 2.3	Certificate of ISO 14001:2015	10
Figure 2.4	Certificate of OHS AS 18001:2007	11
Figure 2.5	Certificate of ISO 9001:2015	12
Figure 2.6	Certificate of ISO 14001:2015	13
Figure 2.7	Certificate of MS 1722:2011	14
Figure 2.8	Certificate of ISO 9001:2015	15
Figure 2.9	Certificate of OHS AS 18001:2007	16
Figure 2.10	Certificate of ISO 9001:2015	17
Figure 3.1	Layout plan of Elmina Valley 5B	20
Figure 3.2	Maps of Elmina Valley 5B	21
Figure 3.3	Architecture general notes/requirement	22
Figure 3.4	String that are attached with plumb-bob used in a setting out process	23
Figure 3.5	Mortar mixing process	24
Figure 3.6	Kicker at ground slab	25
Figure 3.7	Hot bitumen application	26
Figure 3.8	DPC laid on the top of Bitumen oil	26
Figure 3.9	Typical section of brick wall	27
Figure 3.10	Typical section of brick wall	27
Figure 3.11	Mortar spreading by using a trowel	28
Figure 3.12	Exmet that was embedding into the cement mortar	28
Figure 3.13	Exmet used at the site area	29
Figure 3.14	Mason's line	30
Figure 3.15	Spirit level	30
Figure 3.16	General notes of Brick wall	31
Figure 3.17	Request for Inspection	33
Figure 3.18	Training program done by KITACON SDN BHD for the workers at site	34

CHAPTER 1

INTRODUCTION

1.1 Background and Scope of Study

A wall is a building element that used to defines an area or enclose which can carries a load; provides security, shelter, or soundproofing; or is decorative. Brick walls is an element that form a fundamental part of the superstructure (Michael T. and J. Woodward, 2015). There are many kinds of walls, including: Brick walls, defensive walls in fortifications, glass walls, precast walls, retaining walls which hold back dirt, stone, water, or noise sound and also wall that were built as a border barrier between countries.

A brick is regular in shape and of size that can be conveniently handled with one hand. Bricks may be makes of burnt clay or mixture of sand and lime, or flyash lime and sand, or of Portland cement concrete. A brick also known as building materials used to make a walls, pavements and other elements in masonry construction pipe (Joseph E. Bowles ,1996). Bricks are laid in courses and numerous patterns known as bonds, collectively known as brickwork and may be laid in various kinds of mortar to hold the bricks together to make a durable structure. Building onto this ancient tradition can seem deceptively simple. But while the basics of brick and mortar are easy to understand, achieving a professional quality wall takes planning and practice.

The purposes of the walls in buildings are to support roofs, floors and ceilings; to enclose a space as part of the building envelope along with a roof to give buildings form; and to provide shelter and security. In addition, the wall may house various types of utilities such as electrical wiring or plumbing. Wall construction falls into two basic categories: framed walls or masswalls. In framed walls the load is transferred to the foundation through posts, columns or studs. Framed walls most often have three or more separate components: the structural elements (such as 2x4 studs in a house wall), insulation, and finish elements or surfaces (such as drywall or panelling). Mass-walls are of a solid material including masonry, concrete including slipform stonemasonry, log building, cordwood construction, adobe, rammed earth, cob, earthbag construction, bottles, tin cans, straw-bale construction, and ice.

Building walls frequently become works of art, externally and internally, such as when featuring mosaic work or when murals are painted on them; or as design foci when they exhibit textures or painted finishes

for effect. Walls in buildings that form a fundamental part of the superstructure or separate interior rooms, sometimes for fire safety (Carroll, E., & William, 1968).

Fire walls resist spread of fire within or sometimes between structures to provide passive fire protection (Williams, & Anthony, 2019). A delay in the spread of fire gives occupants more time to escape and fire fighters more time to extinguish the fire. Such walls have no windows, and are made of non-combustible material such as concrete, cement block, brick, or fire rated drywall—and have wall penetrations sealed with special materials. A doorway in a firewall must have a rated fire door. Fire walls provide varying resistance to the spread of fire, some intended to last one to four hours. Firewalls, generally, can also act as smoke barriers when constructed vertically from slab to roof deck and horizontally from an exterior wall to exterior wall subdividing a building into sections. When constructed in this manner the fire wall can also be referred to as an Area Separation Wall.

The case study was located at Elmina Valley 5 B, Elmina West, Section UI5, 40170 Shah Alam, Selangor. This study was focusing on developing of the brick wall construction from the beginning until the end of the process. This study was highlight on the methods installation of the brick wall and the machineries that have been used in the construction without stated the performance of the workers and the quality of the materials in details. The problems on site that be included in this study were usually happened when doing construction and also the suitable solutions to settle the problems.



Figure 1.1 Maps of Elmina Valley 5B, Elmina West.

Source: Google Maps.

1.2 Objective

- a) To investigate the sequences of brick wall installation.
- b) To determine the equipment and machinery to be used in construction.
- c) To determine the problems occurred during the construction process and the solutions taken to solve the problem.

1.3 Method of Study

This research is carried out by three methods which were by interview, observation and also literature. The resource and research method were helped by the person in charge, who take a responsibility to make a tour and share the information about brick wall installation. The flow of this research method had start with the observation on visiting a site and continue to the interview session.

i. Interview

Interview had been made with the project manager, quantity surveyor, architect and site supervisor on how they run the construction and on how they construct the pad footing of the pavilion while doing the observation. The sub-contractor also gives information about the materials and machineries used in construction. This interview has been made at the site construction and also at the official office of the company. All the data had been recorded by writing the short notes in the book and record for an audio.

ii. Observation

Observation had been made every day on activity been doing by the workers on the site construction. The method of construct the brick wall had been observed. On Friday have tool box meeting by the site safety supervisor that can give information to contractor and workers about the safety for the workers on the site construction. All activity that important on the site had been record by pictures, videos and write in the daily report for the company.

iii. Literature

The literature studies are from the construction drawing of Elmina Valley 5B, the bill of quantity document and progress report and the pictures that have in the site office at the site construction. All the data had been given by the site supervisor and project manager, on the site construction. All the data show the detail on installation of brick wall of the Elmina Valley 5B.

CHAPTER 2 COMPANY BACKGROUND

2.1 Introduction of Company



Figure 2.1 KITACON SDN BHD Logo.

KITACON SDN BHD is a construction company based in Malaysia. With the head office located in Klang, No 4, Jalan Renggans, Taman Selatan, 41200 Klang, Selangor. The enterprise operates in the Administrative Management and General Management Consulting Services Industry. The company was established on 19th MARCH 1990. The latest financial highlights indicate a net sales revenue increase of 77.64% in 2018. Its total assets grew by 108.15% over the same period. The net profit margin of KITACON SDN BHD increased by 0.6% in 2018.

2.2 Company Particulars

Registered Name of Company : KITACON SDN BHD

Registered Address : 52A, LEBUH ENGGANG, 41150 KLANG, SELANGOR
DARUL EHSAN

Business Address : NO 4, JALAN RENGGANS, TAMAN SELATAN, 41200
KLANG, SELANGOR

Telephone No :
Fax No :

Company Registration No Date of : 195139D
Incorporation Authorised Capital : 19th MARCH 1990

Paid-Up Capital Name of : RM 25,000.000-00

Directors : RM 20,000.000-00
: 1)MR. TAN AH KEE
2) MR. TEOW CHOO HING

Share holder : 1) LEMBAH REKA SDN.BHD
2) MR. TAN AH KEE
3) MR. TEOW CHOO HING
4) KIHARTA RESOURCES SDN BHD

Chief Executive Officer : TAN AH KEE
Auditors : CROWE HORWATH
SUITE 50-3, SETIA AVENUE,
NO 2. JALAN SETIA PRIMA SU 13/5,
SETIA ALAM, SEKSYEN U13, 40170 SHAH ALAM,
SELANGOR.

Registration with : I) CIDB G7: REGISTRATION NO: 1961018- SL 009468 II)
SPAN KELAS C: SPAN/EKS/(PT)/800-2C/1/12/297 III) PKK
KELAS A: 1002 A 2006 0407

Bank : 1)CIMB BANK BERHAD
2) HONG LEONG BANK BEHAD
3) STANDARD CHARTERED BANK
4) UNITED OVERSEAS BANK

2.3 Organization Chart

This Organization Chart is describing the position each of the employer in the company of KITACON SDN.BHD as a main contractor at EV5B project. This team will be in charge to complete the project in the duration of 18 months (72 weeks).

General Manager of this project is Mr. Jesse Chooi. Then followed by Senior Construction Manager, Mr. Kuik Shao Chu, Quality Management System, Mr.Kamaruzaman Mohamed Isa, and Contract Department Manager, Mr. Goh Thuan Hian.

To help create safer construction sites, the Environmental, Safety and Health team are in charge to lead the way. Cik Farah Izzaty as Environmental Officer and Cik Norgiehas as Safety and Health Officer are responsible for making sure all the workers at a construction site are working safely and following all the correct safety procedures.

The team that are fully in charge at the site of EV5B are Site Manager, Mr. Pathuma the person who supervise the planning, coordination and implementation of construction projects. Then to ensure the construction doing with planning, Mr. Pathuma will play the lead role in planning, executing, monitoring, controlling and closing projects with his Assistant Site Agent, Senior site Supervisor, Junior M&E Coordinator, Safety & Health Supervisor and also the SubContractor in this project.

PROJECT ORGANISATION CHART

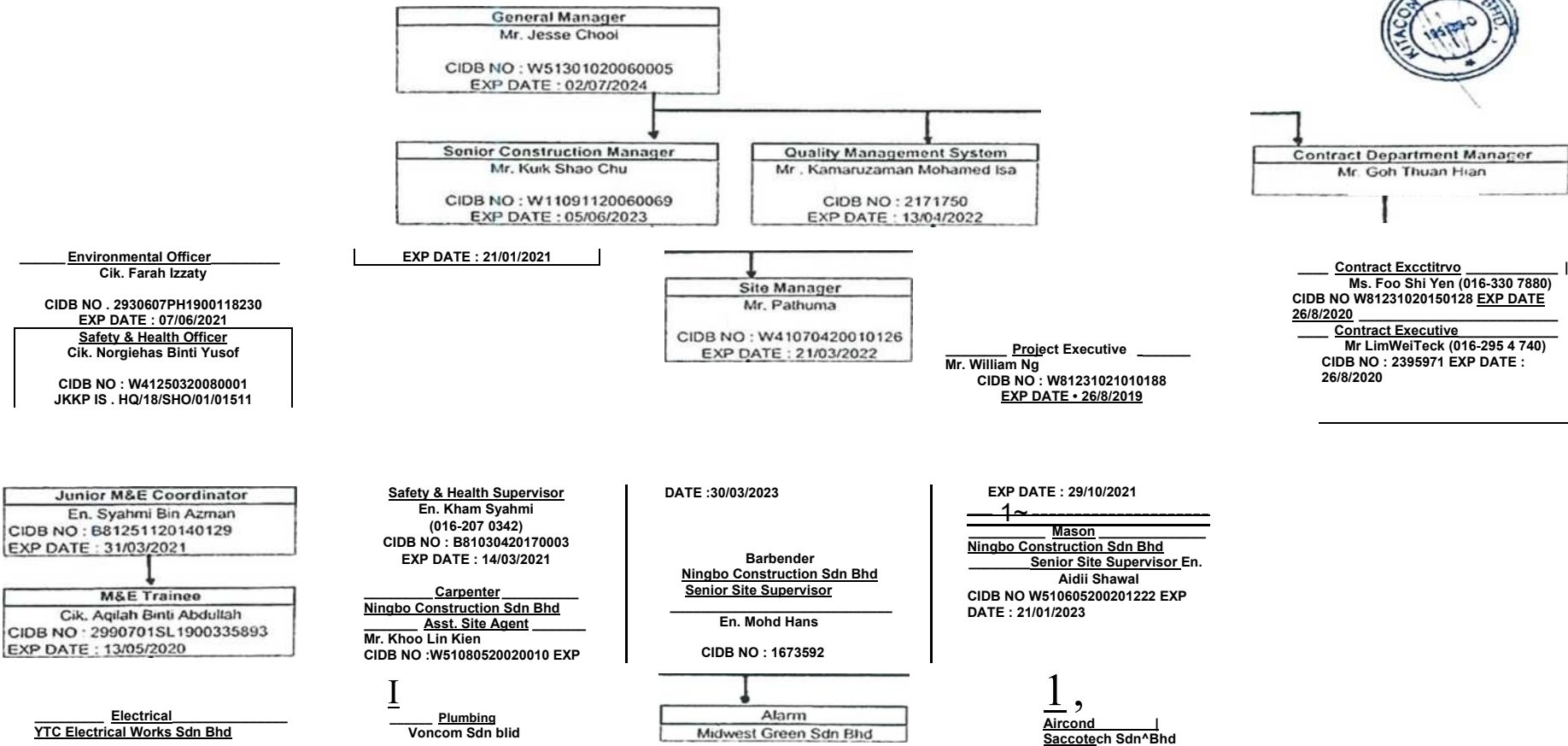


Figure 2.2 Project organization chart.

Source: KITACON SDN BHD minutes meeting.

2.4 Certificates and Achievements

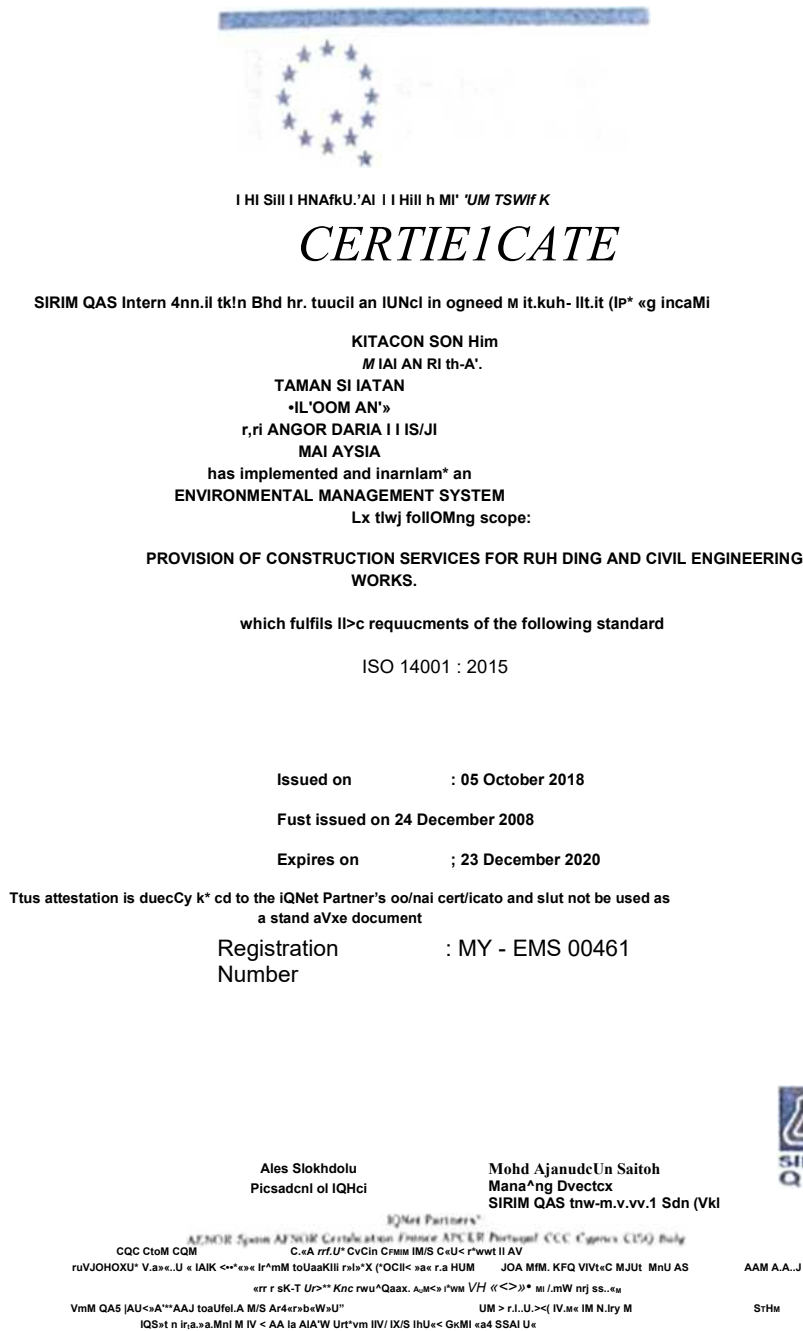


Figure 2.3 Certificate of ISO 14001:2015



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CERTIFICATE

IQNet and SIRIM QAS International hereby certify that

KITACON SDN. BHD.
24, JALAN RENGAS
TAMAN SELATAN
41200 KLANG
SELANGOR DARUL EHSAN
MALAYSIA

has implemented and maintains an

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

which fulfils the requirements of the following standard

OHSAS 18001 : 2007

for the following activities

**PROVISION OF CONSTRUCTION SERVICES FOR BUILDING AND CIVIL
ENGINEERING WORKS**

Issued on : 17 November 2017 ; 23
Validity date : December 2020
Certificate Number : MY-SR0411



Alei SinKuloil PivAMIU I

Motbt A?eiHi<*1in SAIMI
IZ*utpi lliocMX
JURIM OAS h>|< ttvhrvIM t'4>|



By the Signatory of the Certificate, the following information is provided:
The Certificate is issued to the organization named above for the purpose of certifying that the organization has implemented and maintains an Occupational Health and Safety Management System in accordance with the requirements of the standard OHSAS 18001:2007.
The Certificate is issued to the organization named above for the purpose of certifying that the organization has implemented and maintains an Occupational Health and Safety Management System in accordance with the requirements of the standard OHSAS 18001:2007.
The Certificate is issued to the organization named above for the purpose of certifying that the organization has implemented and maintains an Occupational Health and Safety Management System in accordance with the requirements of the standard OHSAS 18001:2007.

Figure 2.4 Certificate of OHSAS 18001:2007



THE INSTITUTIONAL & NATIONAL ACADEMY FOR QUALITY MANAGEMENT

CERTIFICATE

SIRIMQAS International Sdn Bhd is a member of SIRIMQAS Group of Companies, which is recognized by the Malaysian Government.

KITACOH SDN BHD
24, JAI AN RI NGAS
TAMAN SHAT AN
41200 KLANG
SELANGOR DARUL HAJAH
MALAYSIA

has implemented the ISO 9001:2015

QUALIFY MANAGEMENT SYSTEM

for the following scope

PROVISION OF CONSTRUCTION SERVICES FOR BUILDING AND CIVIL
ENGINEERING WORKS

which fulfills the requirements of the following standard

ISO 9001 : 2015

Issued on	20 July 2018
First issued on	17 August 2007
Expiry on	16 August 2019

This certificate is valid only for the scope of work as stated and should not be used as a reference for other purposes.

Registration Number : MY - QMS 01757

Figure 2.5 Certificate of ISO 9001:2015

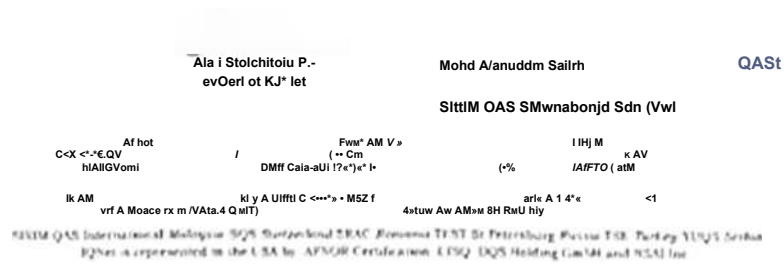


Figure 2.5 Certificate of ISO 9001:2015



CERTIFICATE



SIRIM (JAS International) (at)

KIACON SDN. BHD.
24, JALAN RENGAS TAMAN SELATAN
41200 KLANG
SEI ANGOR OARUL EHSAN MALAYSIA

has implemented an Environmental Management System complying with



ISO 14001 : 2015

ENVIRONMENTAL MANAGEMENT SYSTEM - Requirement for Environmental Management Systems



Scope of Certification

PROVISION OF CONSTRUCTION SERVICES FOR BUILDING AND CIVIL ENGINEERING WORKS.



Issue date	05 October 2018
Validity date	23 December 2020
Certificate No	EMS 00461

SIRIM QAS International Sdn. Bhd.
Kampar No. 10/104 B
1, Persiaran Cinta Mawani
Taman 2, P.O. Box 7025
40200 Kuala Lumpur
Selangor Darul Ehsan
MALAYSIA
Tel: 603 5144 5408
Fax: 603 5144 4787
http://www.sirim-qas.com.my
http://www.malaysianstandard.com.my

Mohd Azanuddin SaWh
Managing Director
SIRIM QAS International Son BM

Figure 2.6 Certificate of ISO 14001:2015



CERTIFICATE



SIRIM QAS International hereby certifies lli.it

KITACON SDN. BHD.
24, JALAN RENGAS TAMAN SELATAN
41200 KLANG
SELANGOR DARUL EHSAN MALAYSIA



has implemented an Occupational Health and Safety Management System
complying with

MS 1722:2011

Occupational Health and Safety Management System - Retirements

Scope of Certification

**PROVISION OF CONSTRUCTION SERVICES FOR BUILDING AND CIVIL
ENGINEERING WORKS.**



Issue date	17 November 2017
Validity period	24 December 2017 - 23 December 2020
Certification No.	SR 0413

SIRIM QAS International Sdn Bhd
Klang, Selangor No. 48234 M
1, Persiaran Cakra Mahasari
Section 2, P. O. Box 7055
40100 Shah Alam
Selangor Darul Ehsan
MALAYSIA
Tel: 603 5544 6804
Fax: 603 5544 6787

**Mohd Azanuddin Saitoh
Managing Director
SIRIM QAS International Sdn Bhd**

Figure 2.7 Certificate of MS 1722:2011



SHUM WAS
INTERNATIONAL

CERTIFICATE



SHUM WAS International hereby certifies that

KITACON SDN. BHD.
24, JALAN RIANGAS (AMAN SC 1) ATAN 41200 KLANG
SELANGOR DARUL EHSAN MALAYSIA



has implemented a Quality Management System conforming with
ISO 9001 : 2015

QUALITY MANAGEMENT SYSTEMS ■ Kwuswants



Scope of Certification

**PROVISION OF CONSTRUCTION SERVICES FOR BUILDING AND CIVIL
ENGINEERING WORKS.**

Figure 2.5 Certificate of ISO 9001:2015



SIRIM QAS International Sdn Bhd
Kementerian Hal Ehwal Negara
1, Persiaran DORA, Putrajaya
Seluruh 2, P. O. Box 7035
A1000, 62000 Putrajaya
Sempang Perak, Perak
Mulu Air/SAR
Tel: 603 5544 6134
Faks: 603 5544 6181

Mohd Azanuddin Salleh
Managing Director
SIRIM QAS International Sdn Bhd

Issue date

Valid to date

Certification No

20 July 2018

16 August 2019

QMS01757

Figure 2.5 Certificate of ISO 9001:2015



CERTIFICATE



SIRIM OAS International Sdn Bhd certifies that

KITACON SDN. BHD.
24, JALAN RENGAS I AMAN SELATAN 41200 KLANG
SELANGOR DARUL EHSAN MALAYSIA



has implemented an Occupational Health and Safety Management System
complying with

OHSAS 18001:2007

Occupational Health and Safety Management System • Requirements

Scope of Certification

**PROVISION OF CONSTRUCTION SERVICES FOR BUILDING AND CIVIL
ENGINEERING WORKS.**



Issue date	17 November 2017
Validity period	24 December 2017 • 23 December 2020
Certification No	SR 0411

SIRIM QAS International Sdn Bhd
Klang
1, Persiaran Delfin, Merlimau
Seremban 2, P.O. Box 7035
40100 Shah Alam
Selangor Darul Ehsan
Mulu, 47506
Tel: 62 3 5544 8404
Fax: 60 3 5544 6787

**Mohd Annuddin Saikh
Managing Director
SIRIM OAS International Sdn Bhd**

Figure 2.9 Certificate of OHSAS 18001:2007

2.5 List of Completed Projects

Table 2.1. List of completed project.

These are the 3 recently completed projects by KITACON SDN.BHD.

Name of Project	Project Value (RM)	Date of Award	Date of Completion
CADANGAN MEMBINA DAN MENYIAPKAN 43 UNIT RUMAH TERES 2 TINGKAT (FASA 1) YANG MENGANDUNGI: -			
1) 37 UNIT RUMAH TERES 2 TINGKAT JENIS B (20'X80')	12,380,000.00	16 OCT 2017	14 JUN 2019
2) 6 UNIT RUMAH TERES 2 TINGKAT JENIS C (20'X100')			
3) 1 UNIT PONDOK PENGAWAL			
4) 1 UNIT PENCAWANG ELEKTRIK			
5) PADANG PERMAINAN			
DI ATAS LOT PT 35789 - LOT 35818 DAN LOT 35820 - LOT 35855, PARCEL C, BANDAR ENSTEK, NEGERI SEMBILAN UNTUK TENTUAN THP ENSTEK DEVELOPMENT			
CADANGAN MEMBINA DAN MENYIAPKAN 12 UNIT KEDAI PEJABAT DUA TINGKAT DALAM FASA A5-08 DI ATAS PT. 146846 HINGGA PT. 146857 DAN PT. 142896 FASA 05-08 SEKSYEN 35,40470 SHAH ALAM, SELANGOR UNTUK TENTUAN I&P ALAM IMPIAN SDN BHD			
CONSTRUCTION & COMPLETION OF CADANGAN PEMBANGUNAN SKIM PERUMAHAN KOMUNITI BERPAGAR DAN BERKAWALAN (HAKMILIK STRATA) PRECINCT 7-1 (PACKAGE 2) YANG MENGANDUNGI: - PARCEL 1			
1) 88 UNIT RUMAH TERES 2 TINGKAT INTERMEDIATE 20'X 70'	50,160,000.00	3 APR 2017	2 FEB 2019
2) 4 UNIT RUMAH TERES 2 TINGKAT CORNER 22'X70'			
3) 12 UNIT RUMAH TERES 2 TINGKAT END 22'X70'			
4) 1 UNIT PONDOK PENGAWAL			
INCLUDING INFRASTRUCTURE & ASSOCIATED WORKS			
1) 56 UNIT RUMAH TERES 2 TINGKAT INTERMEDIATE 22'X70'			
2) 12 UNIT RUMAH TERES 2 TINGKAT END 24'X70'			
3) 1 UNIT PENCAWANG ELEKTRIK (PE)			
INCLUDING INFRASTRUCTURE & ASSOCIATED WORKS DI ATAS SEBAHAGIAN LOT 42195, MUKIM BERANANG, HULU LANGAT, SELANGOR DARUL EHSAN UNTUK TENTUAN ECO MAJESTIC SDN BHD.			

2.6 List of Current On-Going Projects

Table 2.2 List of current on-going project.

Nature of Project	(RM)	Project Value Award	Date of	Expected Date of Completion
CADANGAN PEMBANGUNAN PERUMAHAN 'GATED COMMUNITY STRATA (STRATA BERTANAH) FASA 10 YANG TERDIRI DARIPADA: a) 1 UNIT RUMAH TERES 2 TINGKAT (26'X80') JENIS A2- CORNER UNIT b) 1 UNIT RUMAH TERES 2 TINGKAT (26'X80') JENIS B2- CORNER UNIT DI ATAS LOT 73427 SELUAS 26.49 EKAR MUKIM TANJONG DUA BELAS, DAERAH KUALA LANGAT, SELANGOR DARUL EHSAN FOR TROPICANA AMAN SDN BHD	1,850,000.00	16 JUL 2019		15 NOV 19
CONSTRUCTION & COMPLETION OF CADANGAN PEMBANGUNAN SEBUAH KOMPLEKS PERNIAGAAN YANG MENGANDUNGI: FASA 1 1.1 UNIT KOMPLEKS PERNIAGAAN 1 TINGKAT 2.8 UNIT KEDAI MAMPU MILIK3. 1 UNIT PENCAWANG ELEKTRIK JENIS PADAT DI ATAS LOT PT 15607, ECO MAJESTIC, MUKIM BERANANG, DAERAH HULU LANGAT, SELANGOR DARUL EHSAN UNTUK TENTUAN ECO MAJESTIC SDN BHD	11,950,000.00	1 JUL 2019		29 FEB 2020
CADANGAN KERJA-KERJA INFRASTRUCTURE (KERJA TANAH, JALAN DAN PERPARITAN, PAIP PEMBENTUNGAN DAN PAIP BEKALAN AIR LUARAN) UNTUK CADANGAN MEMBINA DAN MENYIAPKAN 102 UNIT RUMAH KEDIAMAN BERKEMBAR 2 TINGKAT, 5 UNIT RUMAH KEDIAMAN SESEBUAH 2 TINGKAT DAN 1 UNIT PENCAWANG ELEKTRIK DI PLOT A BUKIT BANDARAYA, SEKSYEN UI 1,40170 SHAH ALAM, SELANGOR DARUL EHSAN UNTUK TENTUAN WORLDWIDE HOLDINGS BERHAD	6,800,000.00	11 JUN 2019		11 SEP 2020

CHAPTER 3 CASE STUDY

This project is located at Elmina Valley Five, the City of Elmina. Location is everything they said, and Elmina Valley Five has it all. The location is very strategic due to the essential destinations that are closer. The city of Elmina is extensively accessible via several major highways, enabling convenient connections to Kota Damansara, Shah Alam and Subang Airport. The DASH Expressway- set to complete by early 2020, will greatly enhance to Bandar Utama and Kuala Lumpur.

The project that cost RM 67,700,000.00 in the contract sum is started from 18 April 2019 and estimated to be finished on 17 October 2020. Figure 3.1 below show the layout plan of this project location.

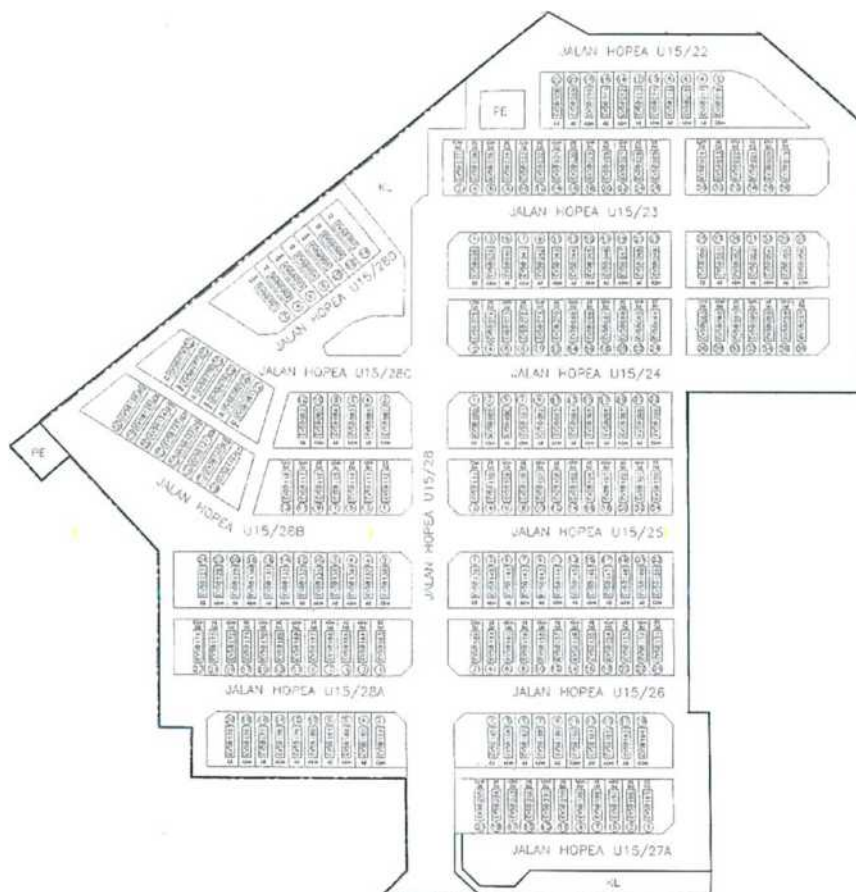


Figure 3.1 Layout plan of Elmina Valley 5B.

The name of this project is *PROPOSED CONSTRUCTION AND COMPLETION OF 205 UNITS DOUBLE STOREY LINK HOUSE TYPE 2 & 3 AND 2 UNITS OF TNB SUBSTATION WITH INFRASTRUCTURE WORKS ON PART LOT 368, PHASE EV5B ELMINA WEST, SECTION U15, 40170 SHAH ALAM, SELANGOR DARUL EHSAN.*

The client for this project is Sime Darby Elmina Development SDN BHD and the consultants that involve in this project are Seniwisma Architect Engineer SDN.BHD (architectural consultant), Ghazali & Associates SDN.BHD. (structural engineer), PE Associates SDN.BHD. (Mechanical and

Electrical engineer), Hashim Dan Lim SDN.BHD. (Quantity surveyor consultant), and Arkitek Urbanisma SDN.BHD. (landscape engineer).

The main contractor for this project is KITACON SDN.BHD. Person in charge in this construction at



the site are Mr. Pathuma as a Site Manager followed by En. Mohd Haris and En. Aidil Shawal as the Senior Site Supervisor that will monitor all the workers on the site.

3.1 Construction Procedures

3.1.1 Pre-Installation of Brick Wall.

Based on the case study at Elmina Valley Five B (EV5B), the architect has chosen a Fire rating

Cement Brick as the essential part of the wall structure. The selection of this brick was to provide

superior fire resistance and safety for occupants which can last for 2 hours duration.

(B)BRICKWALL	
1.	ALL BRICKWORKS TO BE USED AT THE BUILDING AREAS SHALL BE ORDINARY CLAY BRICKS MACHINE MADE AND WIRE CUT COMPLYING WITH M.S. 7.6 AND SHALL BE HARD, WELL BURNT, SOUND, SQUARE AND CLEAN.

Figure 3.2 Maps of Elmina Valley 5B.
Source: Google Maps.

2. DRAINAGE & SUMPS WALL CONSTRUCTED OF BRICKWALL SHALL USE CEMENT SAND BRICKS HAVING A MINIMUM COMPRESSIVE STRENGTH AFTER 24 DAYS OF 6894 KN/M2 OR 16.32 TONNE / BRICK
3. ALL BRICKS SHALL BE SOAKED IN A SUITABLE TANK OR PIT TO BE PROVIDED BY THE CONTRACTOR FOR AT LEAST 4 HR BEFORE BEING LAID AND SHALL BE KEPT WET WHILST BEING LAID.
4. ALL BRICKS SHALL BE PROPERLY BEDDED IN MORTAR AND ALL JOINTS SHALL BE THOROUGHLY FLUSHED UP AND RAKED OUT TO A DEPTH OF 13mm AS THE WORK PROCEEDS. NO JOINT SHALL EXCEED 10mm IN THICKNESS. ALL BRICK WALLS AND PARTITIONS SHALL BE REINFORCED AT EVERY FOURTH COURSE WITH APPROVED BRICK REINFORCEMENT COMMENCING TWO COURSES ABOVE FLOOR LEVEL
5. ALL HALF BRICK WALLS SHALL BE BUILT IN STRETCHER BOND AND OTHER BRICKWORK SHALL BE BUILT IN ENGLISH BOND OR AS DIRECTED / INSTRUCTED BY THE ARCHITECT
6. A SMALL AMOUNT OF LIME IS PERMITTED IN THE MORTAR MIX.
7. NO PART OF THE BRICKWALL WHEN COMPLETED SHOULD SHOW EFFLORESCENCE IS PRESENT WHEN EFFLORESCENCE IS PRESENT. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT. AND AFTER CONSULTATION WITH THE ARCHITECT START TO REMOVE IT BY WASHING WITH HIGH PRESSURE WATER AND FOLLOW WASHING WITH A 5% SOLUTION OF MURIATIC ACID IN WATER.
8. THE CONTRACTOR SHALL FOLLOW THE RC LINTEL BEAMS AND COLUMN STIFFENER AS DESCRIBED AND DEPICTED IN THE ENGINEER GENERAL NOTES A MISCELLANEOUS DETAILS / OR AS DIRECTED BY THE PROJECT CONSULTANT.
9. BITUMINOUS SHEET DAMP PROOF COURSE SHALL BE PROVIDED AND LAID TO ALL LOWER AND GROUND FLOOR AREAS THE SHEET SHALL COMPLY WITH B S 743 LAPPED AT LEAST 150mm AT ANGLES AND JOINTS AND LAID ON A LEVEL BED OF CEMENT MORTAR (1 : 1) AND COATED ON THE UPPER SURFACE WITH HOT BITUMEN. IN ALL CASES OF DOUBT AS TO THE EXACT LOCATION OF THE DAMP PROOF COURSE THE CONTRACTOR SHALL REFER TO THE S.O.J ARCHITECT BEFORE LAYING THE DAMP PROOF COURSE. CONSTRUCT I

Figure 3.3 Architecture general notes / requirement.

For additional information, before starting the installation process, the workers are required to refer all construction drawings (i.e. Architecture, Civil & Structural, M&E Drawing & the Architect General Notes/ Requirements) to ensure that all of the works comply strictly with the following acts in the contract. Figure 3.3 above, shown the Architect General Notes/ Requirements that need to be read by the workers before proceeding their job.

Next, site clearance has been done at the surrounding area. It consists of removing debris or unwanted material or any other obstructions that will interfere the proper construction of installing the Brick wall.

After the site clearance is done, the setting out process is being carried out by the workers to ensure that the horizontal, vertical sequences and squareness are according to the approved setting out drawings from consultant. The process of setting out are done by marking the alignments by using a string marker, which were pulled from the ground and column. In this process, coordination of works with other trades are important because all of this activity is connected to various types of utilities such as the installation of door and window frame, electrical wiring and plumbing. Marking the position each of this item by using a plumb-bob and measuring tape was done according to the drawings to ensure that will be jointed and placed in a correct position as show in Figure 3.4 below.



Figure 3.4 String that are attached with plumb-bob used in a setting out process Source: KITACON SDN BHD brickwork slide show (2019)

3.1.2 Execution of Work

In this stage, the workers will start their job by installing a form work to form a kicker of cement mortar (1:1) which consist of one part of cement and one part of sand. For addition information, all mortar that were built in this brick wall process are mixed by a mixer machine at the site area. Figure 3.5 below show a process of mortar mixing that are done by the workers.

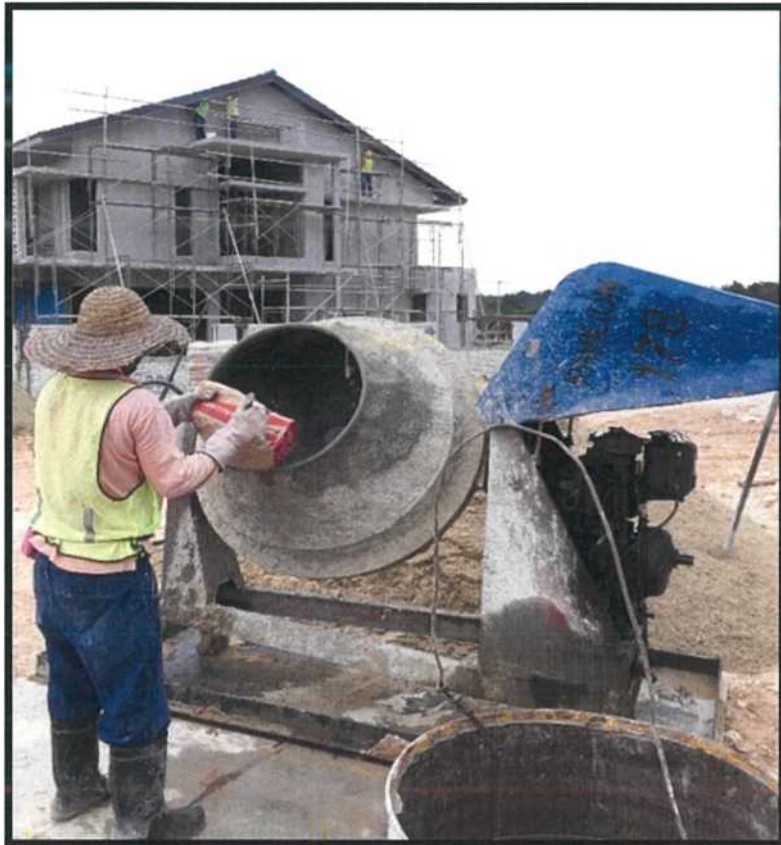


Figure 3.5 Mortar mixing process.



Figure 3.6 Kicker at ground slab.

After that, the kicker left for about 24 hours to allow the mortar to set and harden to achieve its initial bond strength before the brick laying process start. Figure 3.6 show a kicker (150mm height) that was provided to ensure that the coordinates of the wall are maintained uniformly between the slabs and essentially throughout the structure. The formwork was removed right after the mortar is completely hardened.

Next, the upper surface of kicker was coated with hot bitumen followed by laying a Damp- Proof Course (DPC) with B.S 743 lapped at least 150mm at angle and joints. Figure 3.7 and Figure 3.8 below show a process of laying a Bituminous sheet of Damp Proof Course which was to guard against such ground moisture.



Figure 3.7 Hot bitumen application.



Figure 3.8 DPC laid on the top of Bitumen oil.

Damp Proof Course is a layer of impermeable material built into the wall to prevent upward migration of ground water which can penetrate the building fabric, rising vertically through capillary action. The easiest to install is the polymer sheet, supplied in rolls to suit all width of brickwork.

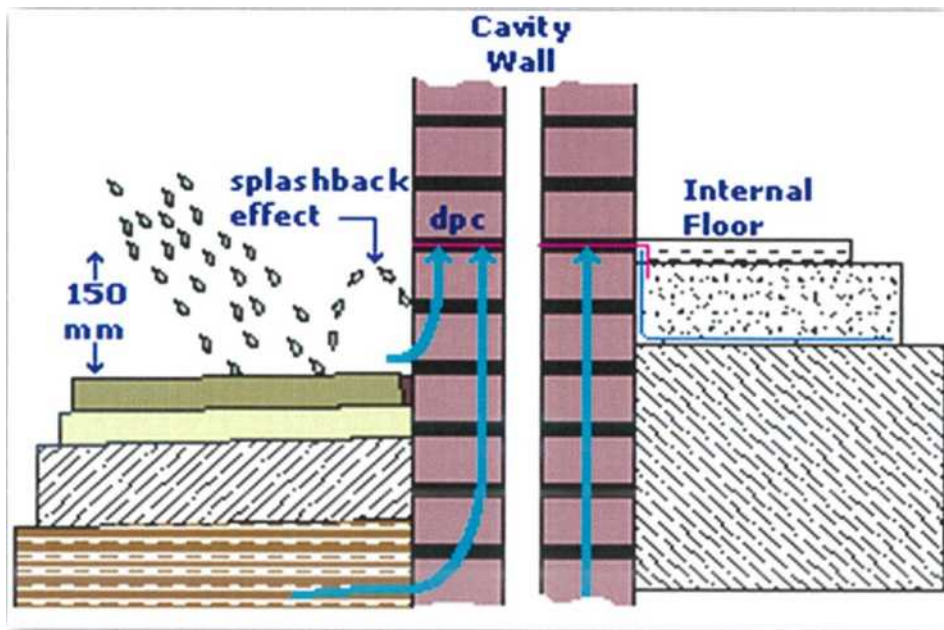


Figure 3.9 show a typical section of brick wall with DPC. Source: KITACON SDN BHD Brickwork slide show (2019).

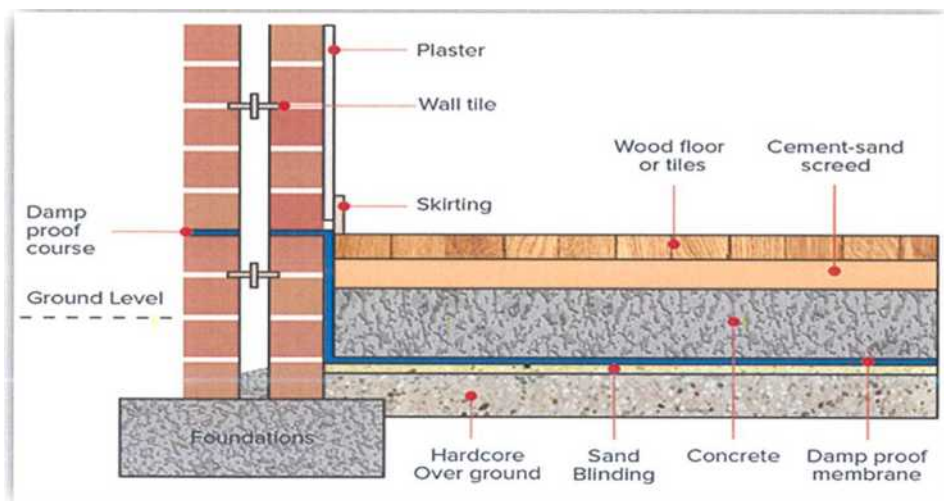


Figure 3.10 Typical section of Brick wall.

To protect against rainwater bouncing of the ground and splashing onto the wall, the DPC was then installed at 150mm height of kicker above the surrounding finished floor level as show in Figure 3.10 above.

Brick is then laid using the stretcher bond method and english bond are used for the connecting walls of two houses as a partiwall. All of the loose materials, dirt and set lumps of mortar which may be lying on the surface of which brick work will freshly started, was removed. After that, each of the brick will be properly bedded and set in position by gently pressing with the handle of trowel on top of cement mortar (1:3).



Figure 3.11 Mortar spreading by using a trowel.

Trowel (9-12 inches long and 4-7 inches wide) was used for spreading mortar as shown in Figure 3.11 above. The cement mortar between each layer must not exceed 10mm in thickness. Joint of the brick wall was fully filled and packed with mortar such that no hollow is left inside the joints. Inside of the brick face was also buttered with mortar before the next brick is laid and pressed against it.



Figure 3.12 Excess mortar that was embedded into the cement mortar.



Figure 3.13 Exmet used at the site area.

Source: KITACON SDN BHD Slide show.

Next, All brick wall and partitions was reinforced at every fourth course with brick reinforcement (Exmet) commencing two courses above floor level. A 62 mm wide x 20 mm gauge exmet forms an integral structure to absorb stress and vibration in building. Exmet that was embedding it into the cement mortar provides additional tensile strength as well as minimising the chances of cracks. Exmet is later cut off.

Alignment of the brick wall are archived through the use of mason's line. Mason's line used to lay a straight wall. Their lines stretched and anchored between two comers placed close to the brickwork but with enough distance for excess mortar extraction as shown in Figure 3.14.

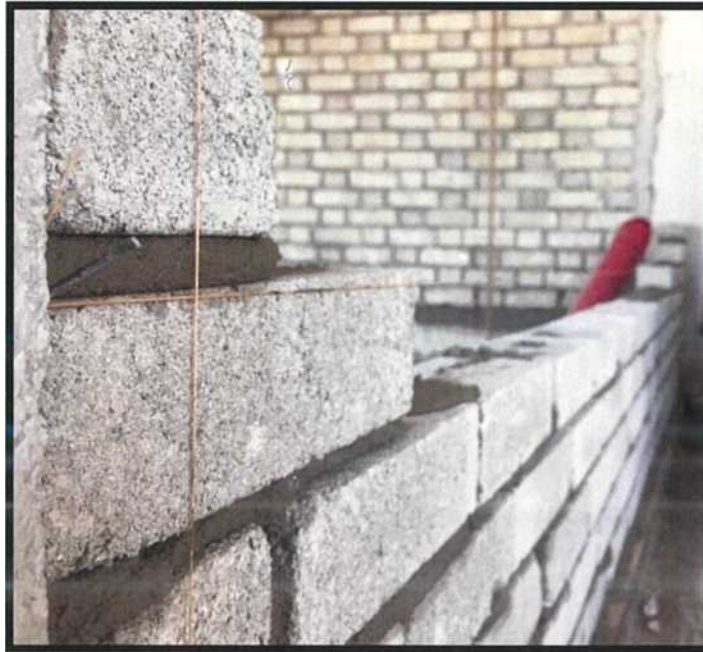


Figure 3.14 Mason's line.

After that, spirit level used to checked flatness and consist of bubbles that must line up within two lines. Figure 3.15 below show a spirit level that used in the installation of brick wall.

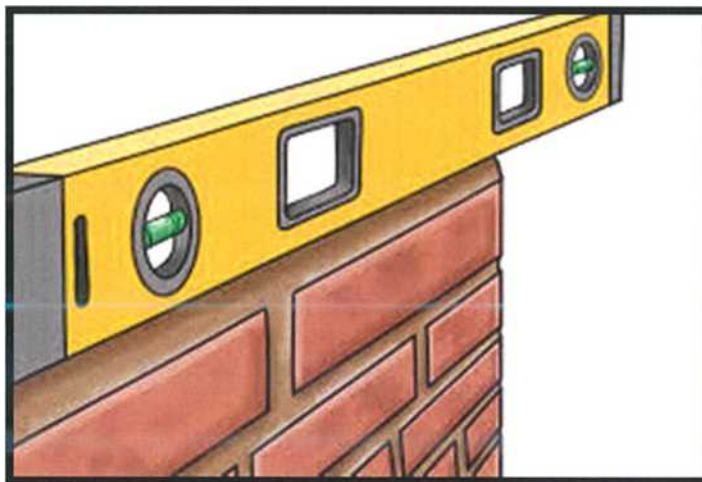


Figure 3.15 Spirit level.

Source: KITACON SDN BHD Brickwork slide show (2019)

Brick that was laid in mortar give poor support to the wall above is no support is given below. Lintel beams and column stiffener arc built to provide the support needed during these cases. Before start the installation of stiffener and lintel, workers are required to refer construction drawings of brickwalls. Figure 3.16 below show the construction drawing which were described and depicted by the engineer that need to be followed according to the specifications and dimension given.

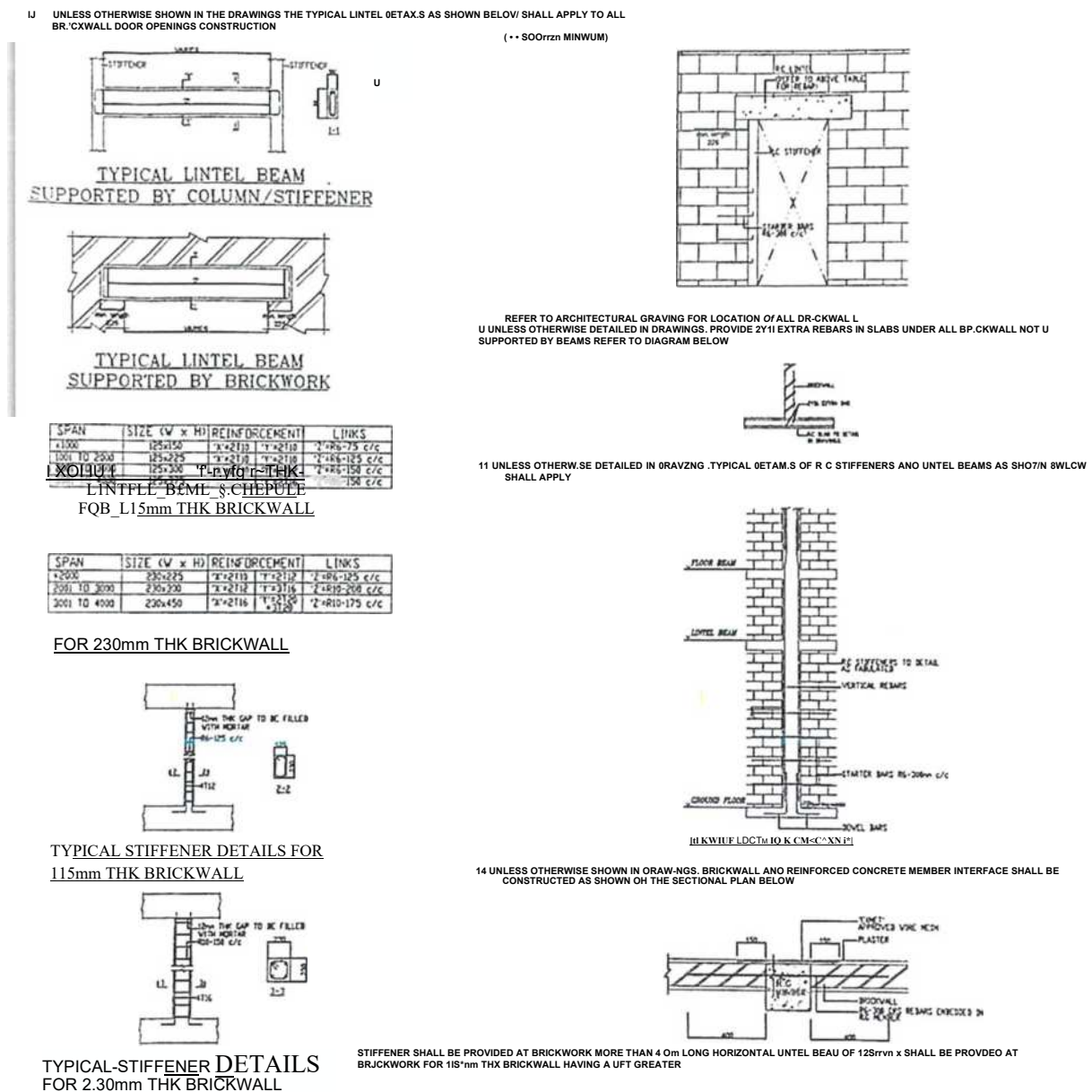


Figure 3.16 General notes of Brickwall.

Source: Construction Drawings.

For addition information, a lintel is placed across the openings of the doors and windows in buildings to support the load from the structure above while column stiffener arc used to support the lintel. The width of lintel beam is equal to the width of wall, and the ends of it is built into the wall.

3.1.3 Post Installation

Site clearance which consist removal of the waste after all of the brick wall installation is done. Brick wall must be well aged (To recommendation of BS 5385: Part 1 - 5 e.g. 4 & 6 weeks respectively/ preferably longer), before commencement of rendering. This will allow mortar to set and cure 7 days before go to the next stage, plastering. A completed brick wall should not expose too long due to the unpredict weather at the site construction area which also can cause damage to the wall.

KITACON SDN. BHD.		FORM KO : POP/C/M
		REV.: 2

Project No.: _____ DXi: _____
 Date: _____

INSPECTION CHECKLIST FOR BRICKWORKS				
HEM	DESCRIPTION	ACCEPT /REJECT (X)	REMARKS	RECTIFIED / INITIALED
1				
2	Sear; Ou			
3	FVrO. hcrvcr/ji 1 *-» ard			
4				
1				
2	CPC. ernct imtjltfcn			
3	Cx-ve			
4				
s	Lrtd			
6	\$.« C< CC«rr j			




Rctw j / KMV\ (H r t)

Figure 3.17 Request for Inspection.

Source: KITACON SDN BHD Brickwork slide show (2019)

Request for inspection (RFI) need to be proceed to the client after the installation process is done. Figure 3.17 above show the example of RFI. Inspector of work (I.O.W) who represent the client, inspected the brick wall first, either all of the work match with the classification from the client before proceed to the next stage. Door and window frames are insstalled after brickwork is done.

3.2 Equipment and Machinery

Description	Application
	<p>Two pins with a line wound onto them, used in the laying of wall bricks where the sills protrude out from the wall the pin is driven into the brickwork each end of the sills and the line set parallel with the two end sill bricks, also used as a means to connect the line into an internal corner where it is impossible to use line block.</p>
	<p>This tool is used for cutting bricks and stones.</p>
Brick bolster	<p>Trowel is a bricklayer's tool used for filling and shaping the mortar in between bricks, a process known as pointing. It has a triangular blade of around five inches (12.7cm) in length, joined onto a handle made of either plastic or wood.</p>
	
Trowel	



Measuring tape

Measuring tape is used in the checking of profiles at the beginning of a job, and frequently used in the constant checking in the requirements of bricklaying.

These are metal straight edges specially fitted with glass tube containing a spirit and a bubble of air. It used for keeping brickwork upright and level.



Table 3.2.1 Equipment and Machinery Used for Brick wall Installation

3.3 Problem and Solution

1. Limited skilled capabilities

Problem: The delay of project was caused the limited skilled capabilities which are the contractor or the project manager did not survey the pasts' performance of workers. Dealing with poor performances of workers that has no training and resources supplied by the organization. Skilled labour affects manufacturing and construction industries. Manufacturing job tends to have a bad reputation for being dangerous or outdated with work that is not relevant to today's worker.

Solution: However, there are some potential solutions that could remedy the issue in the longterm. Firstly, to be adequately staffed you have to have a recruiting funnel is refocused hiring practises to young workers and unskilled workers. The project manager or contractor making a weekly process for reviewing the candidates systematically to fill the funnel in good way. Other than that, companies can focus on developing their own training programs creates a recruitment funnel that attracts eager workers and equips them with the necessary skills as what KITACON SDN BHD did can be shown at the Figure 3.18 below.



Figure 3.18 Trailing program done by KITAKON SDN BHD for the workers at site

2. Inaccurate time of supply and machineries arriving to project site.

Problem: This is perhaps the most unpredictable issue that happens on project site. The workers would not be able to continue the projects as the material, equipment and machineries is not on time. A number of factors can affect timing, from the machines and equipment delays to the completion project delays. For this reason, it is difficult to avoid problems but it is not impossible to reduce risk. There is the most likely issue to encounter that can drag production down and approach these problems when working on reducing lead times.

Solution: One effective strategy to eliminate this issue is to consolidate the company's suppliers. Rather than ordering from various providers and receiving shipments at random, having one supplier means everything will arrive together. This can help cut down on shipping costs and make it easier to schedule builds and get them done with less hold-up.

CHAPTER 4.0: CONCLUSION

Wall is an important structure that defines an area. A wall is very importance element to the construction industry because of its function and purpose to provides security, shelter, or even soundproofing to the occupants. Can you imagine a house without a wall?

Any design of wall that was created by architect and engineer can be real and practical. This report had discovered all the information and knowledge about a brick wall installation. As a result, the main contractor had many challengers to face before start the installation process due to full filled the architect and client requirement. The method used to construct the wall at Elmina Valley 5B are completely different from the normal theory in the books. All the equipment and materials used are also different due to the use of fire rating cement brick and also a hot bitumen oil which were different from any others ordinary wall construction.

The problems occur only when the workers have a limited skills capability and also inaccurate time of supply and machineries arriving to site construction. This problem had made the installation of the brick wall did not turn out well as what have been planned and can cause a delay. But this problem had be solving quickly by the company.

All the workers also follow the rule from the safety and health officer by wearing the safety helmet, safety boots and suitable clothes on the site construction. All the workers know the personal protective equipment (PPE) when they are in the construction site area. Toolbox meeting will be held every Wednesday and Friday to give more safety information when on the site construction. All problems that occur on the site construction has been handle with successfully by the site supervisor and all workers on the site.

References

Carroll, E., & William. (1968). Brick and wall construction., Doi: 565,535 13 Claims.

(Cl. 5,2-424)

Williams, TC., & Anthony. (2019). How to build a brick wall. *Wikihow*,

Joseph E. Bowles (1996) Wall Analysis and Design, *McGraw-Hill Book Company*.

Michael T. and J. Woodward (2015) Wall Design and Construction Practices, *CRC Pres*



(A) GENERAL

ALL WORKS CARRIED OUT SHALL COMPLY WITH UNIFORM BUILDING BY LAWS 1984 AND COMPLY WITH ALL STATUTORY OBLIGATIONS CURRENTLY ENFORCED AND APPLICABLE INCLUDING ALL REQUIREMENTS AS MAY BE IMPOSED BY AND FROM THE LOCAL AUTHORITIES. THE CONTRACTOR SHALL AT ALL TIMES DURING THE PROGRESS OF THE WORKS COMPLY STRICTLY WITH THE FOLLOWING ACTS AND THE COST OF COMPLING SHALL BE DEEMED TO HAVE BEEN ALLOWED AND PROVIDED IN THE CONTRACT.

- A. FACTORIES AND MACHINERY LAWS AND APPLICABLE STATUTORY RULES AND REGULATIONS OF MALAYSIA.
- B. OCCUPATION, SAFETY AND HEALTH LAWS AND APPLICABLE STATUTORY RULES AND REGULATIONS OF MALAYSIA.
- C. ENVIRONMENTAL ACT AND APPLICABLE STATUTORY RULES AND REGULATIONS OF MALAYSIA.
- D. ANY OTHER STATURE, LAWS AS MAY BE AMENDED BY THE AUTHORITIES FROM TIME TO TIME IN COMPLIANCE WITH SAFETY, HEALTH AND ENVIRONMENTAL MATTERS.

THE CONTRACTOR SHALL ENGAGE A LICENSED LAND SURVEYOR FOR ALL SETTING OUT AND SUFFICIENT COPIES OF THE RECORDED SETTING-OUT SHALL BE FURNISHED TO THE RELEVANT PARTIES UPON COMPLETION. AS BUILT DRAWINGS SHALL BE SUBMITTED AS AND WHEN REQUIRED AND/OR DIRECTED / INSTRUCTED BY THE S.O. / ARCHITECT/ ENGINEER.

ALL STAIRCASE RISER FINISHED DIMENSION SHALL NOT EXCEED 180mm AND TREAD FINISHED DIMENSION NOT BE LESS THAN 255mm.

- 4. ALL CONSTRUCTION DRAWINGS SHALL BE READ AS A WHOLE (i.e. ARCHITECTURE, CIVIL & STRUCTURAL & M&E DRAWING). ANY DISCREPANCIES AMONG THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT / ENGINEER FOR FURTHER DIRECTIVE / INSTRUCTIONS. FAILURE TO OBSERVE AND COMPLY WITH THIS REQUIREMENT, THE CONTRACTOR SHALL RECTIFY THE SAID DISCREPANCY AT HIS OWN COST AND TIME. DIMENSIONS FOR CONSTRUCTION SHALL NOT BE SCALED FROM THE DRAWINGS UNLESS OTHERWISE APPROVED BY THE S.O / ARCHITECT / ENGINEER.

THE CONTRACTOR SHALL PRODUCE CO-ORDINATED SHOP DRAWINGS TO INCORPORATE ALL SERVICES AND UTILITIES WHICH ARE INCORPORATED IN THE WORKS AND SHALL SUBMIT THE SAME 2 WEEKS AHEAD OF THE AREAS THEY HAVE PLANNED TO CONSTRUCT TO THE PROJECT CONSULTANTS TO COMMENT, IF ANY.

THE CONTRACTOR SHALL ALLOW OTHER CONTRACTORS DIRECTLY ENGAGED BY THE EMPLOYER OR NOMINATED BY THE S.O./ARCHITECT TO WORK WITHIN THE SAME SITE AS AND WHEN DIRECTED BY THE S.O./ARCHITECT AT NO EXTRA COST INCLUDING MAINTENANCE WITHIN THE ACCESS OF THAT AREA AND FREE USE OF THE COMMON FACILITIES AT SITE. THIS ALLOWANCE, WHICH IS DEEMED TO BE INCLUDED IN THE CONTRACTOR'S PRELIMINARIES SHALL BE REFLECTED IN THEIR WORKS PROGRAM AS AND WHEN REQUIRED.

THE CONTRACTOR IS REQUIRED TO LIAISE AND CO-OPERATE WITH ALL OTHER EXISTING AND FUTURE CONTRACTORS IN THE MANNER OF SHARED SITE, SHARED ACCESS, KEEPING ROADS FREE OF MUD, COMMON SECURITY, ETC INCLUDING ALL COST SHARING OF THE COMMON ITEMS WHERE NECESSARY AND NO CLAIM FOR ANY COST AND ADDITIONAL COMPLETION TIME WILL BE ENTERTAINED ON GROUNDS OF HINDERANCE AND / OR OBSTRUCTION BY OTHER CONTRACTORS ON SITE.

- d. THE CONTRACTOR SHALL SUBMIT METHOD STATEMENTS AND CAUSE DRAWINGS TO BE PRODUCED AND CERTIFIED BY A COMPETENT PERSON HAVING JURISDICTION FOR ANY TEMPORARY WORKS AND LAYOUT PLAN FOR TEMPORARY FACILITIES AS AND WHEN DIRECTED BY THE S.O./ ARCHITECT AND TO THE SATISFACTION OF THE ARCHITECT.

STRICT COMPLIANCE SHALL BE ADHERED TO AND ANY DEFAULTER OF THE SAFETY, HEALTH AND ENVIRONMENTAL RULES AND REGULATION SHALL BE DISMISSED FROM SITE AT THE SOLE DISCRETION OF THE ARCHITECT. DAILY GENERAL HOUSEKEEPING 'OF THE SITE IS REQUIRED AT THE END OF EACH WORK DAY.

RAIN DAYS WHICH MAY AFFECT AND IMPLICATE THE WORKS SHALL BE ALLOWED IN THE WORK PROGRAM.

- 11 THE CONTRACTOR IS REQUIRED TO LIAISE WITH OTHER CONTRACTORS AND / OR AUTHORITIES WHETHER DIRECTLY ENGAGED BY THE EMPLOYER OR OTHERS INVOLVED IN THE PROJECT TO CO-ORDINATE THEIR WORK TO SUIT. THEY SHALL TAKE UPON THEMSELVES TO RESOLVE PROBLEMS PROFESSIONALLY AND TO ENGAGE PROFESSIONAL ENGINEER REGISTERED WITH THE BOARD OF ENGINEERS TO ENDORSE ON THEIR PROPOSED SYSTEM AND DRAWINGS. THEY SHALL SUBMIT SUFFICIENT COPIES OF THEIR DESIGN CALCULATIONS AND DRAWINGS TO THE S.O./ARCHITECT / ENGINEER IF DIRECTED SO. THEY SHALL ALSO PROVIDE A LETTER OF INDEMNITY TO THE ARCHITECT AND ENGINEER TO FREE THEM FROM ALL IMPLICATIONS, ENCUMBRANCES, LIABILITIES AT TORT AND AT COMMON LAW AND SHALL TAKE IMMEDIATE STEPS AND TAKE OVER ANY LEGAL PROCEEDINGS, WHICH MAY BE AND / OR IS RELATED TO THEIR PORTION OF THE WORKS AND DESIGN.

THE CONTRACTOR SHALL AT ALL TIMES ENSURE THAT DURING THE PROGRESS OF THEIR WORKS THEY SHALL ENSURE ALL TECHNICAL AND COMMERCIAL INFORMATION, SHOP DRAWINGS, CATALOGUES, ETC ARE FORWARDED IN SUFFICIENT COPIES TO THE ARCHITECT / ENGINEER WELL IN ADVANCE BEFORE COMMENCEMENT OF ANY WORKS. THEY SHALL BE SOLELY RESPONSIBLE AND ACCOUNTABLE FOR ALL IMPLICATIONS WHICH MAY ARISE DUE TO THEIR FAILURE TO FORWARD THE NECESSARY TECHNICAL, COMMERCIAL INFORMATION, SHOP DRAWINGS, CATALOGUES ETC IN A TIMELY AND ORDERLY MANNER FOR THE PROJECT CONSULTANTS AND THE EMPLOYER TO APPROVE.

- 13. ALL WORKMANSHIP, MATERIALS AND COMPONENTS THROUGHOUT SHALL COMPLY WITH THE GENERAL PROJECT SPECIFICATION, RELEVANT MALAYSIAN, OTHER SPECIFIED OR BRITISH STANDARD AND / OR CODE OF PRACTICE CURRENTLY IN PRACTICE IN THE EVENT IF THERE ARE ANY DISCREPANCIES BETWEEN THE CODES OR STANDARDS THE MORE ONEROUS SHALL PREVAIL.

- 14. THE CONTRACTOR SHALL PROVIDE AND SUBMIT ALL NECESSARY WARRANTIES AND / OR GUARANTEES AND AS-BUILT DRAWINGS, OPERATION AND MAINTANANCE MANUALS AS THE CONTRACT MAY REQUIRE, NOT LATER THAN ONE (1) MONTH FROM THE DATE OF CERTIFICATE OF PRACTICAL COMPLETION OR ANY OTHER DATES OR TIME FRAME AS MAY BE DESCRIBED IN THE CONTRACT DOCUMENT.

(B) BRICKWALL

- 1. ALL BRICKWORKS TO BE USED AT THE BUILDING AREAS SHALL BE ORDINARY CLAY BRICKS MACHINE MADE AND WIRE CUT COMPLYING WITH M.S. 7.6 AND SHALL BE HARD, WELL BURNT, SOUND, SQUARE AND CLEAN.
- 2. DRAINAGE & SUMPS WALL CONSTRUCTED OF BRICKWALL SHALL USE CEMENT SAND BRICKS HAVING A MINIMUM COMPRESSIVE STRENGTH AFTER 24 DAYS OF 6894 KN/M2 OR 16.32 TONNE / BRICK.
- 3. ALL BRICKS SHALL BE SOAKED IN A SUITABLE TANK OR PIT TO BE PROVIDED BY THE CONTRACTOR FOR AT LEAST % HR BEFORE BEING LAID AND SHALL BE KEPT WET WHILST BEING LAID.
- 4. ALL BRICKS SHALL BE PROPERLY BEDDED IN MORTAR AND ALL JOINTS SHALL BE THOROUGHLY FLUSHED UP AND RAKED OUT TO A DEPTH OF 13mm AS THE WORK PROCEEDS. NO JOINT SHALL EXCEED 10mm IN THICKNESS. ALL BRICK WALLS AND PARTITIONS SHALL BE REINFORCED AT EVERY FOURTH COURSE WITH APPROVED BRICK REINFORCEMENT COMMENCING TWO COURSES ABOVE FLOOR LEVEL.
- 5. ALL HALF BRICK WALLS SHALL BE BUILT IN STRETCHER BOND AND OTHER BRICKWORK SHALL BE BUILT IN ENGLISH BOND OR AS DIRECTED / INSTRUCTED BY THE ARCHITECT.
- 6. A SMALL AMOUNT OF LIME IS PERMITTED IN THE MORTAR MIX.
- 7. NO PART OF THE BRICKWALL WHEN COMPLETED SHOULD SHOW EFFLORESCENCE IS PRESENT. WHEN EFFLORESCENCE IS PRESENT THE CONTRACTOR SHALL NOTIFY THE ARCHITECT, AND AFTER CONSULTATION WITH THE ARCHITECT START TO REMOVE IT BY WASHING WITH HIGH PRESSURE WATER AND FOLLOW WASHING WITH A 5% SOLUTION OF MURIATIC ACID IN WATER.
- 8. THE CONTRACTOR SHALL FOLLOW THE RC LINTEL BEAMS AND COLUMN STIFFENER AS DESCRIBED AND DEPICTED IN THE ENGINEER GENERAL NOTES & MISCELLANOUS DETAILS / OR AS DIRECTED BY THE PROJECT CONSULTANT.
- 9. BITUMINOUS SHEET DAMP PROOF COURSE SHALL BE PROVIDED AND LAID TO ALL LOWER AND GROUND FLOOR AREAS. THE SHEET SHALL COMPLY WITH B.S.743 LAPPED AT LEAST 150mm AT ANGLES AND JOINTS AND LAID ON A LEVEL BED OF CEMENT MORTAR (1:1) AND COATED ON THE UPPER SURFACE WITH HOT BITUMEN. IN ALL CASES OF DOUBT AS TO THE EXACT LOCATION OF DAMP PROOF COURSE THE CONTRACTOR SHALL REFER TO THE S.O./ARCHITECT BEFORE LAYING THE DAMP PROOF COURSE.

(C) DRY WALL PARTITION

- 1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE S.O./ARCHITECT 4 WEEKS BEFORE COMMENCEMENT.
- 2. THE LIGHT WEIGHT DRY WALL PARTITION SHALL BE CONSTRUCTED ALL IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION, TECHNICAL BULLETINS RECOMMENDATIONS AND INSTRUCTIONS.
- 3. ONLY MANUFACTURERS WHO HAVE PROVEN TRACK RECORDS, COMPLETE SYSTEM AND TECHNICAL SUPPORTS WILL BE CONSIDERED. THE CONTRACTOR SHALL SUBMIT AT LEAST TWO REPUTABLE MANUFACTURER'S SYSTEM FOR THE S.O./ARCHITECT'S SELECTION.
- 4. GENERAL STANDARD PARTITION OF TOTAL WALL THICKNESS 76mm C/W INSULATION (IF REQUIRED) SHALL COMPRISE OF 51mm X 32mm X 0.55 BMT TOP / BOTTOM TRACK, 51mm X 33mm X 0.55 BMT VERTICAL STUD, USING 25mm NEEDLE POINT BULGE HEAD FASTENER, MIN 50mm WIDTH PAPER TAPE AND PREMIUM PREMIX JOINTING COMPOUND FOR A MAXIMUM HEIGHT OF 3210mm. FOR ANY OTHER HEIGHT 8GME 3210mm, THE CONTRACTOR SHALL ENSURE THE APPROPRIATE PARTITION FRAMING SIZES AND BASE METAL THICKNESS (BMT) SHALL BE USED WHICH CAN WITHSTAND INTERMITTENT LATERAL PRESSURE OF 0.25 KPA, A DEFLECTION LIMIT OF L/240. MANUFACTURER'S CONFIRMATION IS REQUIRED.
- 5. MIDSPAN NOGGING SHALL BE USED FOR ALL ERECTION IN WALLS HIGHER THAN 3600mm.
- 6. THE THICKNESS OF THE GYPSUM PLASTERBOARD FOR 1 LAYER SHALL BE 12.5mm UNLESS OTHERWISE APPROVED BY THE S.O./ARCHITECT.
- 7. WHERE IMPACT WALL IS SPECIFIED IN THE DRAWINGS, THEY SHALL BE CONSTRUCTED TO A TOTAL WALL THICKNESS OF 102mm FOR A MAXIMUM HEIGHT UP TO 3.75m COMPRISING OF PLASTERBOARD 19mm THICK TO EACH SKIN USING 64mm X 32mm X 0.55mm BMT BOTTOM TRACK, 64mm X 32mm X 0.75mm BMT FOR DEFLECTION HEAD TRACK, 64mm X 32mm X 0.55mm BMT VERTICAL STUD, 35mm NEEDLE POINT BULGE HEAD FASTENER, 50mm WIDTH PAPER JOINTING TAPE AND FINISHED WITH AN APPROVED PREMIUM PREMIX JOINTING COMPOUND TO FLUSH.
- 8. ALL PARTITION FRAMING SHALL BE LIPPED WALL STUDS ROLLED FORMED COATED WITH ZINCALUME TO THE BASE METAL STEEL OR GALVANISED COATED.
- 9. THE INSULATION TO BE USED IN THE CORE OF THE BOARD SHALL BE FIBERTEX RB40 OR EQUIVALENT HAVING A DENSITY OF 40KG/M3
- 10. BEFORE COMMENCING OF WORK, THE CONTRACTOR SHALL MARK OUT ACCURATELY THE PARTITION LAYOUT.

CONSTRUCTION DRAWING

TENDER DRAWING
13 AUG 2018

S :
To be read with Architect / Engineers' / Designers' drawing.
dimension on detail might be varied with actual field measurement conditions
to be verified prior to work execution
in millimetres unless otherwise stated

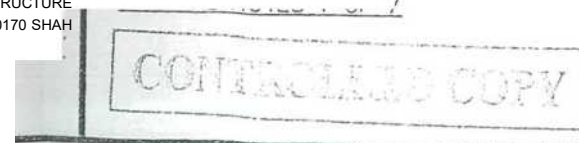
ARCHITECT :

NO.20, JALAN BALAPAN 13/32, SEKSYEN 13,
40100 SHAH ALAM, SELANGOR OARUL EHSAN.
TEL: 03-5511 1960 FAX: 03-5511 1961 (to.SyaMHOm-1)
EMAIL: saesb2@yahoo.com

PROJECT TITLE :
PROPOSED CONSTRUCTION AND COMPLETION OF 205 UNITS OF DOUBLE STOREY LINK HOUSE TYPE 2 & 3 AND 2 UNITS OF BIB SUBSTATION WITH INFRASTRUCTURE WORKS ON PART LOT J68. PHASE EV5B ELMINA WEST SECTION UI 5, 40170 SHAH ALAM.
SELANGOR OARUL EHSAN.

FOR MESSRS SIME DARBY ELMINA DEVELOPMENT SDN BHD

DRAWING TITLE :
GENERAL NOTES 1 OF 7



SCALE	AS SHOWN	PROJECT NO :	REVISED NO.:
DRAWN BY	WAN	SAESB-135/2018	
CHECKED BY	AR.HJH.FAUZIAH & IP. YEW	DRAWING NO :	
DATE	MAY 2018	EV5B/GN —01	
FILE NO.	EV5B/GN		

- NOTES ARE TO BE READ IN CONJUNCTION WITH THE GENERAL SPECIFICATIONS.
- THE CONTRACTOR MUST SEEK PRIOR APPROVAL FROM THE SUPERINTENDENT OFFICER (S.O.) / ARCHITECT EXECUTION OF ANY WORK DEVIATING FROM THE SPECIFICATIONS.
- TECHNICAL SPECIFICATIONS AS STATED IN DRAWING SHALL TAKE PRECEDENCE OVER SPECIFICATION REQUIREMENTS SPELT OUT IN THE SPECIFICATIONS.

H. SETTING OUT AND LEVEL

- THE CONTRACTOR SHALL ENGAGE A LICENSED SURVEYOR TO SET OUT PROFILE OF THE BUILDINGS AND ALL RELATED WORKS TO THIS CONTRACT IN ACCORDANCE TO SETTING OUT DRAWINGS.
- 4 COPIES OF THE SETTING OUT DRAWING DULY ENDORSED BY THE LICENSED SURVEYOR TO BE SUBMITTED TO S.O. FOR RECORD TWO WEEKS AFTER COMPLETION OF SETTING OUT SURVEY.
- ALL DIMENSIONS SHALL BE READ AND NOT SCALED.
- ALL STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL MECHANICAL AND ELECTRICAL ENGINEERING DRAWINGS.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LEVELS ON SITE AND RESOLVE ALL DISCREPANCIES WITH THE ARCHITECT OR ENGINEER BEFORE COMMENCEMENT OF WORKS.

I. MATERIAL

UNLESS OTHERWISE SPECIFIED:

- ALL CONCRETE USED IN STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
 - HAVE CHARACTERISTICS COMPRESSIVE STRENGTH OF 30N/mm² AT 28 DAYS.
 - USE MAXIMUM COARSE AGGREGATE OF 20mm.
 - HAVE MAXIMUM WATER/CEMENT RATIO OF 0.50.
- ALL LEAN CONCRETE USED SHALL BE GRADED 15N/mm² CONCRETE.
- REINFORCING BARS USED SHALL BE:
 - MILD STEEL HAVING A YIELD STRENGTH OF 250N/mm². (R)
 - HIGH YIELD STEEL HAVING A YIELD STRENGTH OF 460N/mm². (Y)
- SUBMISSION FOR S.O.'s APPROVAL
 - UNLESS OTHERWISE SPECIFIED, CONTRACTOR SHALL MAKE ALL NECESSARY SUBMISSIONS AT LEAST 2 WEEKS BEFORE SCHEDULED DATE OF EXECUTING WORKS FOR WORKS WHOSE METHODS AND/OR MATERIALS REQUIRE S.O. APPROVAL BEFORE EXECUTION.
 - CONTRACTOR MUST ENSURE THAT THE SUBMISSION CONTAINS ALL NECESSARY AND MOST UP TO DATE INFORMATION AND IS ADEQUATE FOR S.O. TO CONSIDER AND/OR APPROVE THE PROPOSAL/SUBMISSION WITHIN THE 2 WEEKS PERIOD.
 - IMPROPER SUBMISSION, OR SUBMISSION LACKING IN INFORMATION SHALL BE REJECTED FOR APPROVAL CONSIDERATION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DELAY AND TO BEAR AU-COST AR1SW4G FROM LATE PROPER SUBMISSION TO S.O. FOR APPROVAL ALL WORKS DONE PRIOR FORMAL APPROVAL BY THE S.O. SHALL BE REJECTED. S.O.'s APPROVAL REFERS TO THE FOLLOWINGS:
 - ALL ADDITIVES AND ADMIXTURES TO CONCRETE MUST BE SUBMITTED TO THE S.O. FOR HIS APPROVAL PRIOR TO USAGE.
 - SAMPLES OF ALL MATERIALS AND MANUFACTURER'S SPECIFICATION.
 - CONCRETE MIX DESIGN AND REINFORCEMENT TEST CERTIFICATES MUST BE SUBMITTED TO THE ENGINEER IMMEDIATELY UPON AWARD OF CONTRACT. NO CONCRETING WORK IS PERMITTED UNLESS ENGINEER HAS APPROVED THE MIX DESIGN AND ACCEPTED THE REINFORCEMENT TEST CERTIFICATES.
 - METHOD(S) OF CURING CONCRETE AND MATERIAL(S) USED SHALL BE SUBMITTED TO THE S.O. FOR APPROVAL PRIOR ANY CONCRETING WORKS. NO CONCRETING WORK IS PERMITTED PRIOR S.O.'s APPROVAL THE CONTRACTOR SHALL ADOPT THE APPROVED METHOD(S) CURING AND THE MATERIAL(S) FOR THE WHOLE CONTRACT.
 - CONTRACTOR SHALL SEEK PRIOR AGREEMENT AND APPROVAL FROM THE S.O. SHOULD THE ORIGINAL APPROVED METHOD(S) AND MATERIAL(S) NEED TO BE CHANGED FOR VALID REASONS.

J. CONCRETING

- BEFORE COMMENCING CONCRETING THE CONTRACTOR SHALL SUBMIT TO THE S.O. FOR HIS APPROVAL, ALL DETAILED PROPOSALS FOR THE SEQUENCE OF PLACING CONCRETE AND THE POSITIONS OF ALL VERTICAL AND HORIZONTAL CONSTRUCTION JOINTS. SUCH PROPOSALS SHALL BE SUBMITTED TO THE S.O. AT LEAST TWO WEEKS BEFORE SCHEDULED DATE OF CONCRETING.
- NO CONCRETING SHALL BE PLACED UNTIL THE STEEL REINFORCEMENT HAS BEEN CHECKED AND APPROVED BY THE S.O.
- ALL FRESH CONCRETE SHALL BE PROTECTED BY APPROVED MEANS FROM RAIN, SUN AND DRYING WIND TO MAINTAIN SUITABLE TEMPERATURE AND MOISTURE.

K. STRUCTURES IN CONTACT WITH GROUND

- BEFORE PLACEMENT OF LEAN CONCRETE OR HARD CORE FOR NON-SUSPENDED SLABS, SUB-GRADES SHALL BE COMPACTED MECHANICALLY TO THE SATISFACTION OF THE S.O.
- 50mm GRADE 15 LEAN CONCRETE SHALL BE PROVIDED UNDER THE SOFFIT OF ALL REINFORCED CONCRETE MEMBERS IN CONTACT WITH THE GROUND SURFACE.
- REFER TO ARCHITECTURAL DRAWINGS FOR WATER PROOFING OF STRUCTURES IN CONTACT WITH GROUND.
- APPROVAL WATERSTOPS SHALL BE PROVIDED IN ALL EXPANSION JOINTS INDICATED IN THE STRUCTURAL DRAWINGS.

L. JOINTS

UNLESS OTHERWISE SPECIFIED IN DRAWINGS, JOINT DETAIL SHALL BE :

- CONSTRUCTION JOINTS
 - LOCATION OF CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE TO CONSTRUCTION DRAWINGS AND/OR SPECIFICATION.
 - CONTRACTOR MAY PROPOSE ALTERNATIVE LOCATION, BUT THESE MUST BE AGREED BY THE S.O. PRIOR OFFICIAL SUBMISSION BY CONTRACTOR. OFFICIAL SUBMISSION SHALL BE SUBMITTED AT LEAST TWO WEEKS BEFORE CONCRETING.
- CONSTRUCTION JOINTS
 - LOCATIONS OF THESE JOINTS ARE SHOWN IN THE CONSTRUCTION DRAWINGS.
 - ALTERNATIVE LOCATIONS PROPOSED BY THE CONTRACTOR ARE NOT PERMITTED.
- EXPANSION JOINTS
 - WATERSTOP SHALL BE FIXED STRICTLY IN ACCORDANCE TO SUPPLIER'S RECOMMENDATION WHICH HAVE BEEN APPROVED BY THE S.O.
 - RECEIVING SURFACES SHALL BE MADE CLEAN PRIOR TO CASTING FOR S.O.'S INSPECTION. APPROVED SEALANT SHALL BE APPLIED ONLY AFTER S.O. HAS INSPECTED THE RECEIVING SURFACES.
 - UNLESS OTHERWISE SPECIFIED IN DRAWINGS, MINIMUM WIDTH OF WATERSTOP SHALL BE 150mm. REFER TO CONSTRUCTION DRAWINGS FOR ACTUAL WIDTH AND LOCATION OF EXPANSION JOINTS.
 - ALTERNATIVE LOCATIONS PROPOSED BY THE CONTRACTOR ARE NOT PERMITTED.

NOTES :

drawing to be read with Architect / Engineers' / Designers' drawing.
 Junction and detail might be varied with actual field measurement and conditions.
 Measurements are to be verified prior to work execution.
 Dimensions are in millimetres unless otherwise stated.

ARCHITECT :

seniwisma
 architect engineer sdn.bhd.

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PROJECT TITLE : PROPOSED CONSTRUCTION AND COMPLETION OF 205 UNITS OF DOUBLE STORED LINK HOUSE TYPE 2 & 3 AND 2 UNITS OF THE SUBSTATION WITH INFRASTRUCTURE WORKS ON PART LOT 568, PHASE EV5B ELMINA WEST SECTION UI 5. 40170 SHAH ALAM, SELANGOR DARUL EHSAN	DRAWING TITLE : GENERAL NOTES 6 OF 7
FOP MESSRS SIME DAPS @ ELMINIA DEVELOPMENT SOM 8HD	

TEEL BARS CONTINUOUS / CONTACT SURFACE

CONTACT SURFACE OF 1st CAST MUST BE HACKED TO CLEAR OFF ALL LAITANCE LOOSE MATERIALS AND TO EXPOSED SURFACE COARSE AGGREGATES. SURFACE MUST BE CLEANED BY PRESSURISED WATER JET.

TEEL BARS NO CONTINUITY / CONTACT SURFACE

CONTACT SURFACE OF 1st CAST SHALL BE FORMED WITH STOP BOARD. SURFACE SHALL BE CLEANED UPON REMOVAL OF FORMWORK AND SHALL BE COATED WITH TWO (2) COATS OF APPROVED BITUMINOUS POINT PRIOR TO CONCRETING OF THE 2nd COST.

PROVED WATERSTOP / PROVED SEALANT (1mm x 1mm X LENGTH OF JOINT)
 APPROVED JOINT FILLET (1mm) / VIDE EXPANSION JOINT

SUSPENDED STRUCTURE

50mm THK LEAN CONCRETE GROUND STRUCTURE

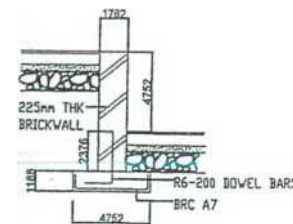
EXCEPT FOR WATERSTOP, ALL OTHER JOINT DETAILS ARE SIMILAR TO JOINT FOR SUSPENDED SLAB.

M. OPENING, CONCEALED CABLES AND CAST-IN CONDUITS

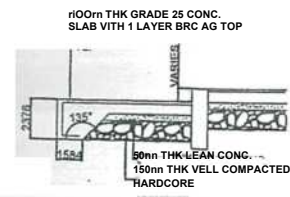
- NO HOLES OR CHASES ARE PERMITTED IN CONCRETE MEMBERS OTHER THAN THESE AS DETAILED IN STRUCTURAL DRAWINGS OR AUTHORISED BY THE STRUCTURAL ENGINEERS PRIOR TO CONCRETING.
- NO HOCKING OR CARING OF STRUCTURES IS PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM THE S.O. PRIOR TO CONSTRUCTION, THE CONTRACTOR IS DEEMED TO HAVE ALL STRUCTURAL AND MECHANICAL & ELECTRICAL (M & E) DRAWINGS FOR OPENINGS, CONCEALED CABLES AND CAST-IN CONDUITS. THE CONTRACTOR SHALL INFORM THE S.O. IMMEDIATELY OF ANY DISCREPANCIES IN DRAWINGS PRIOR TO CONSTRUCTION.

N. TYPICAL BRICKWORK RETAINING WALL BETWEEN DROPPED UNITS

FLOOR PLANS.

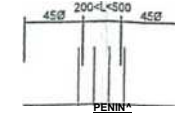


O. TYPICAL APRON DETAIL



P. STANDARD TRIMMING DETAILS FOR STRUCTURE OPENING

- COTRIMMER BARS TO STRUCTURAL OPENING SHALL BE PROVIDED AS DETAILED HEREIN. DIAMETER FOR TRIMMER BARS SHALL BE SIMILAR TO BIGGER REINFORCING BARS OF THE STRUCTURE THROUGH WHICH THE OPENING IS FORMED.
- NO TRIMMER BARS ARE REQUIRED FOR OPENINGS NOT GREATER THAN 200mm WIDE, BUT NO REINFORCING BARS SHALL BE CUT, REINFORCING BARS SHALL BE ADJUSTED IN POSITION TO AVOID OPENING.
- UNLESS OTHERWISE SHOWN IN THE STRUCTURAL DRAWINGS, TRIMMING BARS DETAILS FOR DIFFERENT SIZE OPENINGS ARE AS SHOWN :

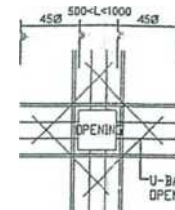


ONE NO. TRIMMING BAR ON EACH SIDE AND EACH FACE OF THE OPENING. DIAMETER (Ø) OF TRIMMING BARS SHALL BE GREATEST DIAMETER OF BARS OF EFFECTED STRUCTURE

L: MAXIMUM DIMENSION OF OPENING

U-BARS FOR WALL OPENING ONLY

200mm < MAX DIMENSION OF OPENING < 500mm



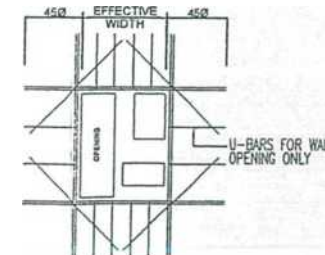
NOT: ON REPLACEMENT BARS

- SHALL NOT BE LESS THAN NOS OF BARS CUT BY OPENING.
- MINIMUM 2 NOS EACH FACE AND BAR DIAMETER (Ø) SHALL BE EQUAL TO THE GREATEST DIAMETER OF BARS CUT BY THE OPENING.
- BOTH PERPENDICULAR AND DIAGONAL TRIMMING BARS SHALL BE PROVIDED AS SHOWN AND ON EACH FACE OF THE STRUCTURE.

U-BARS FOR WALL OPENING ONLY

500mm < MAX DIMENSION OF OPENING < 1000mm

- WHEN THE DISTANCE BETWEEN OPENINGS IS LESS THAN 1.5 TIMES THE WIDTH OF THE LARGEST OPENING, THE GROUP SHALL BE TREATED AS A SINGLE OPENING WITH AN EFFECTIVE WIDTH AND LENGTH AS SHOWN:



CONSTRUCTION DRAWING I

NOTES ON REPLACEMENT BARS

- SHALL NOT BE LESS THAN NOS OF BAR CUT BY OPENINGS.
- MINIMUM 2 NOS EACH FACE AND BAR DIAMETER (Ø) SHALL BE EQUAL TO THE GREATEST DIAMETER OF BARS CUT BY THE OPENING.
- BOTH PERPENDICULAR AND DIAGONAL TRIMMING BARS SHALL BE PROVIDED AS SHOWN AS ON EACH FACE OF THE STRUCTURE.

TRIMMING DETAILS FOR A GROUP OF OPENING.

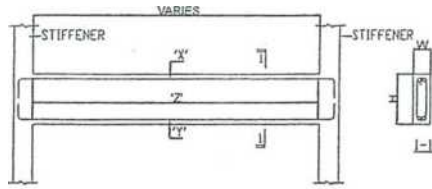
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TENDER DRAWING
 13 AUG 2018

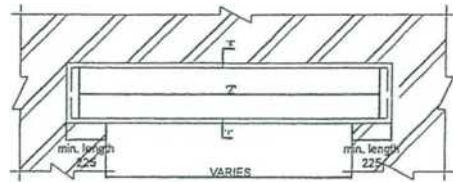
SCALE	AS SHOWN
DRAWN BY	WAN
CHECKED BY	AR.HJH.FAUZIAH ir. IR. TEW
DATE	MAY 2013
FILE NO	EV5B/GN

PROJECT NO : SAESB-135/2018	REVISED NO:
DRAWING NO : EV5A/GN-06	

11 VERTICAL R.C STIFFENERS & R.C LINTEL BEAMS SHALL BE PROVIDED FOR ALL BRICKWALL IN ACCORDANCE TO THE BELOW.



TYPICAL LINTEL BEAM SUPPORTED BY COLUMN/STIFFENER



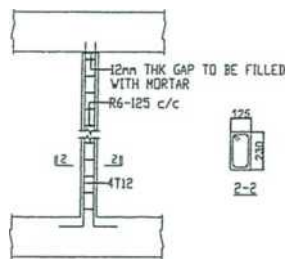
TYPICAL LINTEL BEAM SUPPORTED BY BRICKWORK

SPAN	SIZE (V X H)	REINFORCEMENT	LINKS
<1000	125x150	X=2T10 Y=2T10	Z=R6-75 c/c
1001 TO 2000	125x225	X=2T10 Y=2T10	Z=R6-125 c/c
2001 TO 3000	125x300	X=2T10 Y=2T12	Z=R6-150 c/c
3001 TO 4000	125x375	X=2T12 Y=2T16	Z=R6-150 c/c

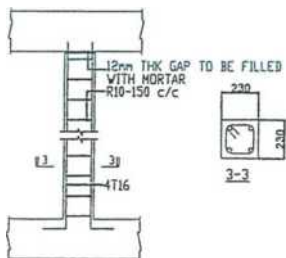
LINTEL BEAM SCHEDULE FOR 115mm THK BRICKWALL

SPAN	SIZE (V X H)	REINFORCEMENT	LINKS
<2000	230x225	X=2T10 Y=2T12	Z=R6-125 c/c
2001 TO 3000	230x300	X=2T12 Y=3T16	Z=R10-200 c/c
3001 TO 4000	230x450	X=2T16	Z=R10-175 c/c

LINTEL BEAM SCHEDULE FOR 230mm THK BRICKWALL



TYPICAL STIFFENER DETAILS FOR 115mm THK BRICKWALL



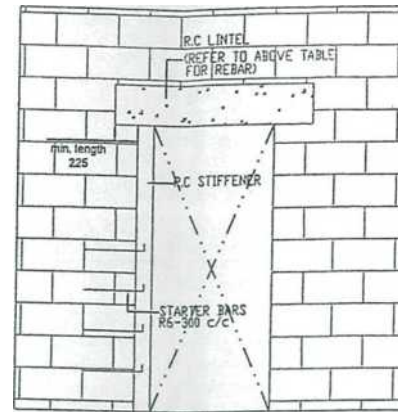
TYPICAL STIFFENER DETAILS FOR 230mm THK BRICKWALL

NOTES :
 1. All dimensions to be read with Architect / Engineers' / Designers' drawing, dimension and detail might be varied with actual field measurement and conditions.
 2. All measurements are to be verified prior to work execution.
 3. All dimensions are in millimetres unless otherwise stated.

ARCHITECT :

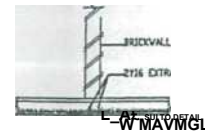
SEKSYEN 13
 TEL: 03-57781111 KUALA DARUL EHSAN,
 EMAIL: saesb20@yahoo.com

1.2 UNLESS OTHERWISE SHOWN IN THE DRAWINGS, THE TYPICAL LINTEL DETAILS AS SHOWN BELOW SHALL APPLY TO ALL BRICKWALL DOOR OPENINGS CONSTRUCTION.
 (* = 300mm MINIMUM)

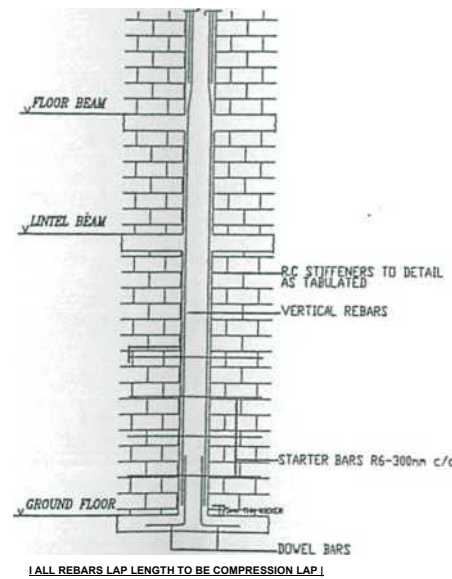


REFER TO ARCHITECTURAL DRAWING FOR LOCATION OF ALL BRICKWALL.

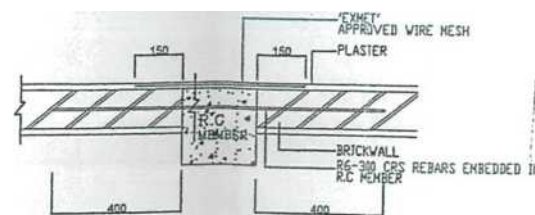
1.3 UNLESS OTHERWISE DETAILED IN DRAWINGS, PROVIDE 2Y16 EXTRA REBARS IN SLABS UNDER ALL BRICKWALL NOT SUPPORTED BY BEAMS. REFER TO DIAGRAM BELOW



1.5 UNLESS OTHERWISE DETAILED IN DRAWING, TYPICAL DETAILS OF R.C STIFFENERS AND LINTEL BEAMS AS SHOWN BELOW SHALL APPLY.



UNLESS OTHERWISE SHOWN IN DRAWINGS, BRICKWALL AND REINFORCED CONCRETE MEMBER INTERFACE SHALL BE CONSTRUCTED AS SHOWN ON THE SECTIONAL PLAN BELOW



STIFFENER SHALL BE PROVIDED AT BRICKWORK MORE THAN 4.0m LONG. HORIZONTAL LINTEL BEAM OF 125mm X 375mm SHALL BE PROVIDED AT BRICKWORK FOR 115mm THK BRICKWALL HAVING A LIFT GREATER THAN 2.8m HEIGHT.

PROJECT TITLE :

PROPOSED CONSTRUCTION AND COMPLETION OF 205 UNITS OF DOUBLE STOREY LINK HOUSE TYPE 2 #3 AND 2 UNITS OF TUB SUBSTATION WITH INFRASTRUCTURE WORKS ON PART LOT 368, PHASE EV5B ELMINA WEST SECTION U15, 40170 SHAH ALAM, SELANGOR DARUL EHSAN

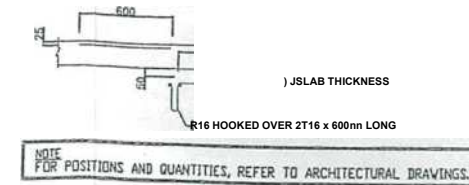
FOR MESSRS SIME DARUS ELMINA DEVELOPMENT SOH BHD

DRAWING TITLE :

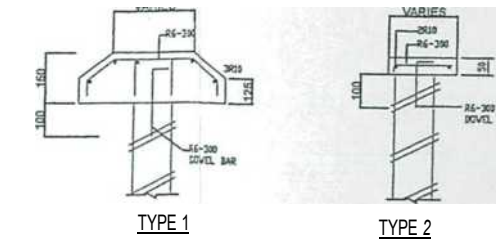
GENERAL NOTES 7 OF 7

2. STANDARD

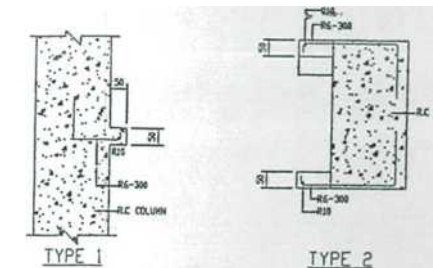
HOOK DETAIL FOR CEILING FAN



3. TYPICAL DETAIL OF CONCRETE COPPING



4. TYPICAL DETAIL OF CONCRETE FIN



R. - WATER PROOFING

1. TOILET AND WATER TANK

a) WATERPROOFED SYSTEM SHALL BE 2 COATS FOSROC'S BRUSHBOUND (M) ACRYLIC POLYMER MODIFIED CEMENTITIOUS WATERPROOFING C/W FILLET EDGING AND MIN 300mm HEIGHT UP TURN ALL APPLY AND INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S TECHNICAL SPECIFICATIONS, RECOMMENDATION AND TO THE ARCHITECTS SATISFACTION.

2. RC FLAT ROOF AREA (BACK & CAR PORCH)

a) WATERPROOF SYSTEM SHALL BE FOSROC'S PROFEX TORCHSEAL 3P C/W PROFEX PRIMER AT A RATE OF 6m²/LITRE ALL CARRIED OUT IN ACCORDANCE WITH THE MANUFACTURER'S TECHNICAL SPECIFICATIONS, RECOMMENDATION AND TO THE ARCHITECTS SATISFACTION.
 b) 2 COATS OF ESTOFLEXACRYL 1000m CEMENT SAND SCREED (1:4) TO FALL AT THE RC FLAT SLAB AREA.
 c) WATERPROOFED AREAS SHALL BE POND TEST FOR 48 HOURS TO A HYDROSTATIC PRESSURE HEAD OF MINIMUM 100mm AND/OR AS DIRECTED BY THE ARCHITECT/ENGINEER.
 d) FOSROC 'THIOFLEX 500' OR EQUIVALENT ON ALL CONSTRUCTION JOINTS ALL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS

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CONSTRUCTION DRAWING

19 MAR 2019

TENDER DRAWING 13 AUG 2018

SCALE	AS SHOWN
DRAWN BY	WAN
CHECKED BY	AR.HJH.FAUZIAH ic IR. YEW
DATE	MAY 2013
FILE NO.	EV58/GN

PROJECT NO :
 SAESB-135/2018

DRAWING NO :
 EV5A/GN-07

REVISED NO:				
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