



اُونِيُوَرْسِيْتِي تِيكْنُوْلُوْجِي مَارَا
UNIVERSITI
TEKNOLOGI
MARA

DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

(PERAK)

SEPTEMBER 2015

It is recommended that the report of this practical training provided

By

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OKU Toilet Construction

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

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(PERAK)
SEPTEMBER 2015

STUDENT DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at Sri Sekamat Enterprise Sdn. Bhd. for duration of 5 months starting from 25 May and ended 5 October 2015. It is submitted as one of the prerequisite requirements of DBN307 and accepted as a partial fulfilment of the requirements for obtaining the Diploma in Building.

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

Thank you so much.

ABSTRACT

Toilet is a very important part of a building and most of buildings in Malaysia have a toilet at least one in a building. But the toilet will be a bit different in specification when it is for disable people use. This toilet must meet the conditions stipulated for people with disabilities, so as to ensure their safety and feel comfortable .Therefore this report will briefly describes the method statement of OKU toilet in a building. Specifically, this report describe about construction method of OKU toilet on site project of “Cadangan Membina Dan Menyiapkan Kerja-kerja Terbengkalai Bagi Projek Ibs Bagi Sekolah Kebangsaan Putra Height 2, Yang Mengandungi 18 Bilik Darjah Dan Lain-Lain Kemudahan Diatas Lot 57401, Jalan Putra Bahagia 8/2P, Seksyen 8, Putra Height, Subang Jaya Mukim Damansara, Daerah Petaling, Selangor Darul Ehsan”. This report is produced based on the observation and experience during in five month in industrial training. Conclusion, this report explaines and describes about the construction of OKU toilet at the school for the disable.

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CHAPTER 1.0

PREFACE

1.1 Introduction

Industrial training is one of the requirements that have been done by a student of Diploma in Building to end their study in diploma. Student will undergo industrial training or practical work for one semester in a company.

Industrial training is an early exposure for a student to know and understand the real situation of the working environment. This is the first step for a student to know on how they can learn about working environment that is different in the class.

The industrial training gives benefits to a student. One of them is understanding on the theories that have been studied in the class. It is a opportunity to practice what has been learned.

The industrial training is also very important because a student will be guided by the personnel who has skills and experience. Therefore, industrial training is expected to help a student to acquire various information.

1.2 Objective

The objective of this study is to identify the construction of OKU toilet and details of design. This report is carried out based on the following objectives:

- i. To study the construction stage of toilet
- ii. To study type of bond in brick work
- iii. To study installation of sanitary fitting in OKU toilet
- iv. To study the installation of tile for wall and floor in OKU toilet

1.3 Scope of Study

In ensuring all objectives of the study achieved, scope of study need to be decided. The scope of study is to determine the sequence of OKU construction. Besides, it is important to know the aspects that make this system are better to apply. It is also has its own advantage that make it appealing compare to the other types of finishing. The methods of construction are also an important aspect that needs to be clear so that it apply properly and efficiently.

The scope of study area will be limited to:

- i. Step of brick lying
- ii. Types of equipment or machinery have to install the sanitary fitting.
- iii. Step of OKU toilet construction

1.4 Methodology

The methodology use as follow:

1.4.1 Site visit

Site visit is one way to get information because can know the phase of the construction of building. Be on site in working hour and state while the process of OKU toilet construction on progress. The site that has been choose as case study is located at Putra height residential area. It is a school construction site.

1.4.2 Observation

Observe labour work when the construction of OKU toilet in progress can be help to finish this report. The observation is done at the working hour at the construction site. The observation focus on the brick lying, sanitary fitting and tiling work for the case study topic By observation, it can help to identify and list the methods of construction and list all material that has been use in construction to finish the construction work.

1.4.3 Book.

Book is the main source of references to referred about the construction stage of a OKU toilet in a building. By refer books about this topic, it helps a lot to write this report. Books stated all the information needed like and it suitable for the topics. By finding the information at suitable book about the toilet construction in the building and write some important, it can be used to finish this report of OKU toilet construction.

CHAPTER 2

COMPANY BACKGROUND

2.1 Introduction of Company

Sri Sekamat Enterprise was established in 1984 and was incorporated under the companies Act 1965 on 14th October 1988 as a construction and civil engineering companies. The company's equity is owned 100% on behalf of the indigenous Sri Sekamat Enterprise Sdn. Bhd. and registered with the “Pusat Khidmat Kontraktor”, received recognition from the Ministry of Finance as the company's Integrity Contractor. Sri Sekamat Enterprise Sdn. Bhd. has also been certified by the Lembaga Pembangunan Industri Malaysia (CIDB) under the "Grade 7" after registered under Part IV of the Act the Malaysian construction industry Development Board. The company has already obtained recognition as Construction and Civil Engineering and building contractor with certification of ISO 9001:2008 in 2007.

Sri Sekamat Enterprise Sdn. Bhd. has also been selected by the leading Bumiputera Agenda (LEADING) to participate in the company's core program, which is recognized as a high-performing Bumiputera companies to thrive within the next 5-10 years through investments in these sectors and also increase NKEA Bumiputra contractors' contribution to KDNK by the year 2020 in the Economic Transformation Plan (ETP).

During the company's involvement in the construction and civil engineering sector, the company has completed all the projects that have been offered with great success. In 1996, the Dewan Perniagaan Melayu Malaysia Cawangan Selangor has selected Sri Sekamat Enterprise Sdn. Bhd. as the winner of ‘Entrepreneurial Excellence Award 1996’ by the implementation of many projects. As a result of the award of our company is able to implement projects that will be offered by the government and private, inside and outside the country which is supported by the State Financial Institutions.

Line management of Sri Sekamat Enterprise Sdn. Bhd. composed of professionals with vast experience in consultancy as contractors who are able to

implement projects Tender, Design & Built and Partnership. With over 30 years' experience, Sri Sekamat Enterprise Sdn Bhd has also successfully expanded its business network to areas other than the construction of real estate, sports centres, retail building materials and automobile construction as well as maintaining key business areas.

With all the experience, professional management team, business diversification and assets of the existing company, Sri Sekamat Enterprise Sdn Bhd is confident to face the challenges of future business with great success.



Photo 2.1: Company registered office

2.2 Company Profile

NAMA SYARIKAT	: SRI SEKAMAT ENTERPRISE SDN. BHD.
REGISTERED OFFICE	: Bangunan Dato' Mohd Said Hj. Mat Saman Lot 4711, Batu 12 ³ / ₄ , Jalan Cheras 43000 Kajang Selangor Darul Ehsan
DATE OF ESTABLISHMENT	: 7hb. November 1984 - Sri Sekamat Enterprise 14hb. Oktober 1988 - Sri Sekamat Enterprise Sdn Bhd
REGISTRATION UNDER	: PKK Sijil Taraf Bumiputera CIDB Gred G7 MS ISO 9001 : 2008
MAIN ACTIVITIES	: Pembinaan & Kejuruteraan Awam
DIRECTORS	: Dato' Hj. Mohd Said Hj. Mat Saman Mohd Safry Dato' Hj. Mohd Said Mohd Safuan Dato' Hj. Mohd Said
CAPITAL	: Authorised capital RM5,000,000.00 Paid-up Capital RM5,000,000.00
AUDITOR	: TETUAN SUNDAR & ASSOCIATES Suites B-02-05, Dataran 3 Two, No 2, Jalan 19/1, 46300 Petaling Jaya, Selangor.

COMPANY : SOPAN SECRETARIAL SERVICES (KL) S/B
SECRETARY

24-5-2, Jalan 2/101C

Cheras Business Centre

5th Mile, Jalan Cheras 56100 Kuala Lumpur

BANK : MALAYAN BANKING BERHAD

Cawangan Bukit Bintang

No.42-2, GF & 1st Floor,

Jalan Sultan Ismail

50250 Kuala Lumpur

CIMB BANK

No. 9 & 10, Jalan Tun Abdul Aziz

43000 Kajang, Selangor Darul Ehsan

PUBLIC BANK BERHAD

No. 10 & 11, Jalan Raja Harun

43000 Kajang, Selangor Darul Ehsan

LAWYERS : **THE LAW OFFICE OF ANITA FERNS**

No. 23-1, Jalan Semenyih Sentral 8,

Semenyih Sentral, 43500 Semenyih

Selangor

Organisation Chart

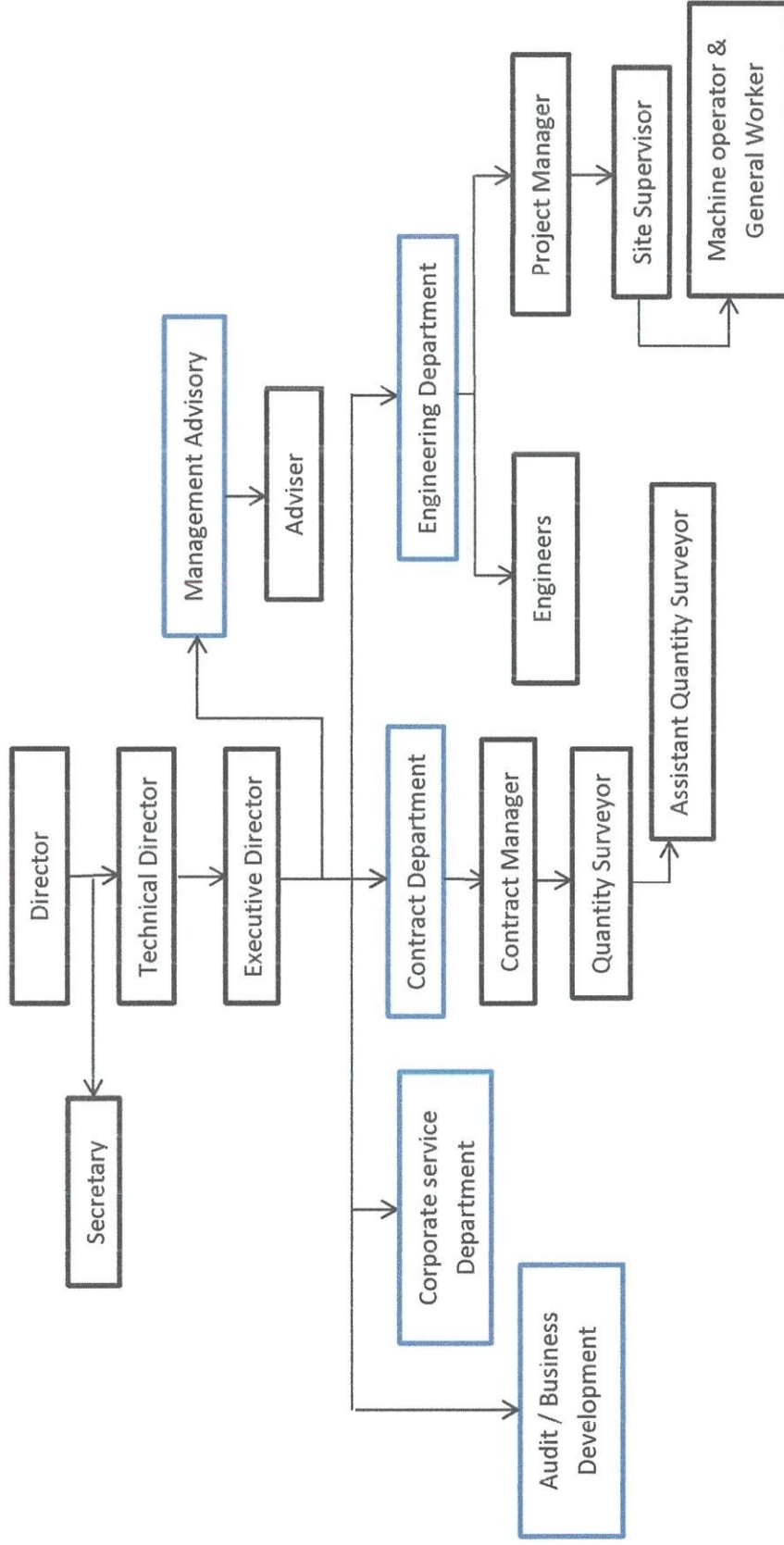


Figure: 2.1: Show the organization chart of Seri Sekamat Enterprise SDN. BHD.

Source: Company profile Sri Sekamat Enterprise Sdn. Bhd.

2.3 List of Project

2.3.1 Completed Project

Table 2.1: List of completed project

TAJUK PROJEK	TARIKH MULA	TARIKH SIAP	RM
Proposed Slope Rehabilitation Works to Protect Two(2) Nos of 600mm Diameter Pipes Near Mutiara Court Apartment, Jalan Bukit Permai, Wilayah Persekutuan Kuala Lumpur Proposal C: Soil Nailing and Guniting.	05/11/2012	04/04/2013	1,870,210.00
Projek Bekalan Air Luar Bandar(BALB) Negeri Sarawak untuk Tahun 2010-2012 For KKLW-Wilayah Serian, Samarahan Sarawak: Temporary Works For Site Protection And Diversion Works From Protection of Mechanical & Electrical Facilities.	28/02/2012	27/11/2012	8,550,000.00
Proposed Slope rehabilitation works to failed slope at Taman Desa Serdang Reservoir, Hulu Langat District, Selangor Darul Ehsan	10/05/2010	09/09/2010	637,147.00
Proposed Emergency Works to Rehabilitate Failed Slope at Castlefield Reservoir, Jalan Nikmat, Taman Bukit Aman, Petaling	14/12/2009	13/05/2010	1,984,154.80

District, Selangor			
Universiti Kebangsaan Malaysia (UKM)– Pusat Perniagaan Siswazah	26/03/2009	31/08/2011	19,953,716.30
Emergency works to Rehabilitate Failed Slope at Kawasan Industri Kundang Reservoir, Kundang, Hulu Selangor, Selangor Darul Ehsan	25/01/2009	24/07/2009	2,993,420.00
Emergency works to Rehabilitate Failed Slope at Reservoir, Taman Seapark SS2, Petaling Jaya, Selangor Darul Ehsan.	21/01/2009	20/06/2009	2,396,076.00

Source: Sri Sekamat Enterprise Sdn.Bhd.

2.3.2 Project in Progress

Table 2.2: List of project in progress

TAJUK PROJEK	TARIKH MULA	TARIKH SIAP	RM
Membina dan Menyiapkan Bangunan Pusat Islam serta Lain-lain Kerja Berkaitan di Universiti Sains Islam Malaysia, Bandar Baru Nilai, Negeri Sembilan Darul Khusus.	2/6/2014	1/2/2016	20,186,456.15

Cadangan Membina Sebuah Masjid Dua Tingkat dan Satu Tingkat Kuarters Berkembar beserta Tiga Unit Wakaf Di Atas Lot 110019, Kg Seri Aman, Puchong, Mukim Petaling, Daerah Petaling, Selangor Darul Ehsan. Untuk Jawatankuasa Pembinaan Masjid Kg. Seri Aman	24/5/2014	23/5/2016	9,800,000.00
Cadangan Membina Sebuah Kompleks Masjid Jamek di atas sebahagian Lot 5377, Jalan Institut, Serdang, Bandar Putra Permai, Mukim Petaling, Daerah Petaling, Selangor Darul Ehsan Yang Mengandungi Satu Blok Kuarters (4 unit) Kediaman 2 Tingkat, Satu Blok Rumah Sampah dan Pam Air 1 tingkat, Satu Loji Rawatan Kumbahan Dan Satu Blok Pencawang Letrik 1 Tingkat.	8/11/2012	15/9/2014	6,598,230.44
Cadangan Membina Dan Menyiapkan Kerja-Kerja Terbangkalai Projek IBS Bagi Sekolah Kembangan Putra Height 2, Yang Mengandungi 18 Bilik Darjah Dan Lain-Lain Kemudahan, Di Atas Lot 57401, Jalan Putra Bahagia 8/2P, Seksyen 8 Putra Height, Mukim Damansara, Daerah Petaling, Selangor Darul Ehsan	25/11/201 4	26/10/201 5	8,489,921.60

CHAPTER 3.0

CASE STUDY

3.1 Introduction of Project

This project is called “Cadangan Membina Dan Menyiapkan Kerja-Kerja Terbangkalai Projek IBS (Pakej IBS 2010) Bagi Sekolah Kebangsaan Putra Height 2, Yang Mengandungi 18 Bilik Darjah Dan Lain-Lain Kemudahan, Di Atas Lot 57401, Jalan Putra Bahagia 8/2P, Seksyen 8 Putra Height, Mukim Damansara, Daerah Petaling, Selangor Darul Ehsan untuk kementerian Malaysia”.

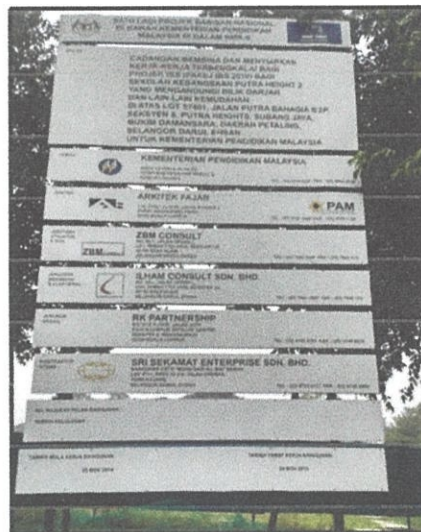


Photo 3.1: Project signboard

This project involve are as per following:

- i. Client: “Kementerian Pelajaran Malaysia” (KPM).
- ii. Architect: Arkitek Fajar.
- iii. Civil and structure: ZBM Consult
- iv. Mechanical and electrical: Ilham Consult Sdn. Bhd.
- v. Surveyor: RK Partnership.
- vi. Main contractor: Sri Sekamat Enterprise Sdn. Bhd.



Figure 3.1: Kementerian Pelajaran Malaysia (KPM), client for project SK Putra Height 2

This project is an abandoned project by previous main contractor which cost RM 8,489,921.60. Sri Sekamat Sdn. Bhd. take over this project on 25 November 2014 and expected to be completed in 26 October 2015. The contract period of this project is 48 week starting from the Sri Sekamat Enterprise take over this project from the previous main contractor.



Photo 3.2: Side block A-block B at 25 September 2014



Photo 3.3: Side block A-block D at 25 September 2014

At the beginning of industrial training season, this project is 31% finish. It is more to architecture and infra works remaining. Here is some photo of side view of site at the end of May 2015:



Photo 3.4: Side block B-block C



Photo 3.5: View of parking block A



Photo 3.6: View of administration block



Photo 3.7: View of road Pre School

(A)



Photo 3.8: View of football field-turfing area



Photo 3.9: View of sport facilities-block laboratory (C)



Photo 3.10: Side block A-block B



Photo3.11: Side block a-block D

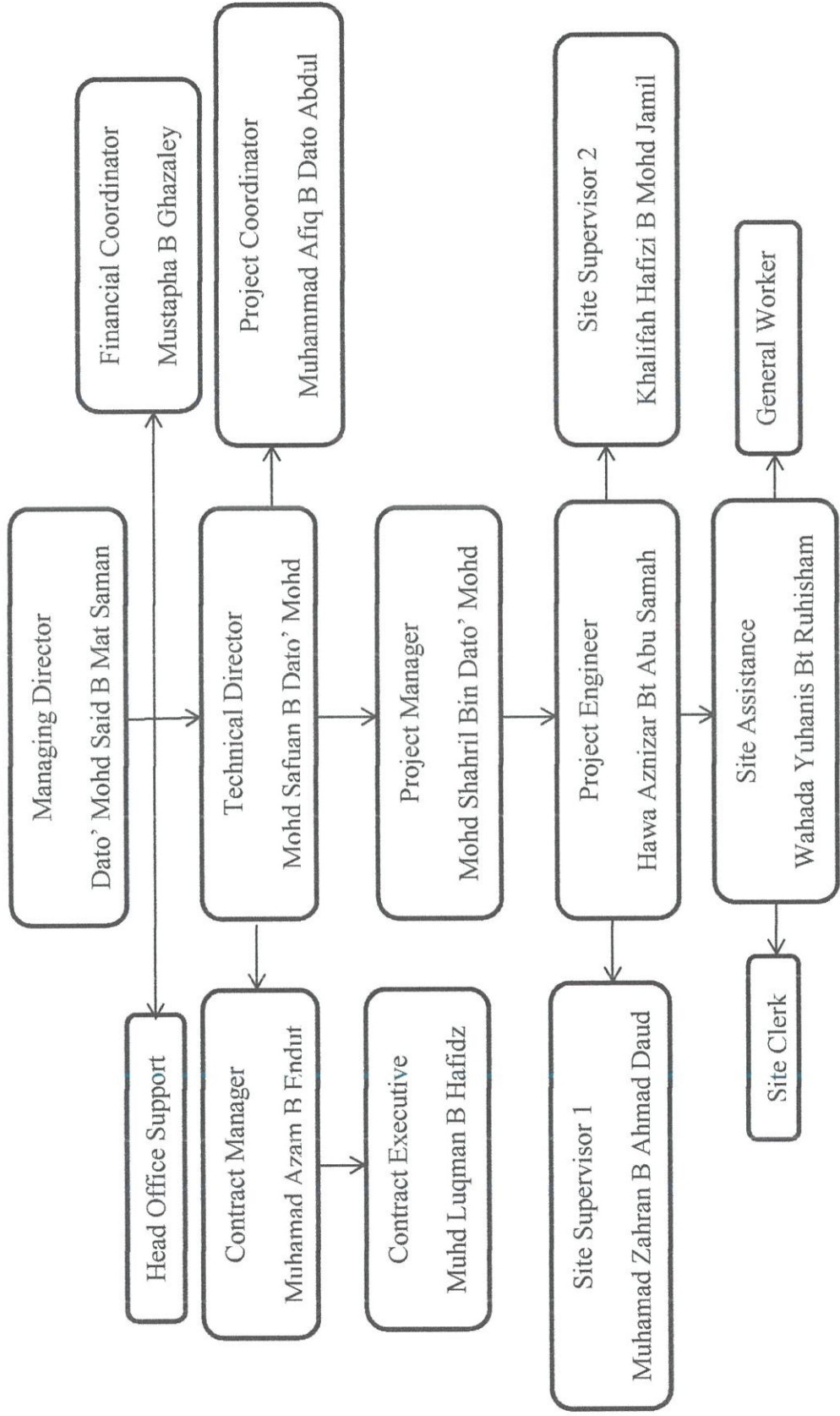


Figure 3.2: Organisation chart for this project

Source: Company profile Sri Sekamat Enterprise Sdn. Bhd.

3.2 Introduction of Case Study

People with disabilities (OKU) are part of the community. Therefore, they have equal rights and opportunities to live a life like other community members. This is to ensure proper protection of the interests and welfare of the disabled.

According to the Act, the Persons with Disabilities (OKU) in 2008, the definition of disabled person is a person who has long term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society.



Figure 3.3: Logo of disable people

3.2.1 Requirement of OKU Toilet

OKU toilet is one of the facilities that provided in a building. This toilet is usually located at ground floor for easing entering and out of disable people want to use the toilet. OKU toilet must meet the conditions stipulated for people with disabilities, so as to ensure their safety and feel comfortable. The requirement to have accessible sanitary facilities is to ensure people with disabilities are able to utilise a building's sanitary facilities, those facilities are able to be used by them and for their safety. Suitable sanitary facilities must be provided in convenient locations and that the provision of sanitary facilities should take into account of the function or use of a building, the number and gender of occupants and the needs of occupants including people with a disability. The design requirements for the toilets are (Uniform Building by Law 1984, 2003):

- i. The size of the toilets should be at least 4.5 square metres and the minimum size should be 2.13m by 2.13m
- ii. Toilet doors should be at least 900mm in width
- iii. Toilet seats should be 475mm from the floor
- iv. Wall mirror should be 1.15m from the floor and at a slant of between 5° and 10° (this requirement is not mentioned in the MS 1184 guideline)
- v. Hand rails by the toilet seat should be at 800mm from the floor and should be adjustable
- vi. Door handles must be 500mm from the floor and the length of the handles should be 900mm and fixed at the edge of the door
- vii. Emergency alarms must be fitted, with one emergency cord next to the toilet seat and one by the sink, an emergency siren and light beacon fitted inside of the toilet
- viii. Tissue holders should be next to the toilet seat, at a distance of 500mm

3.2.2 Detail construction drawing

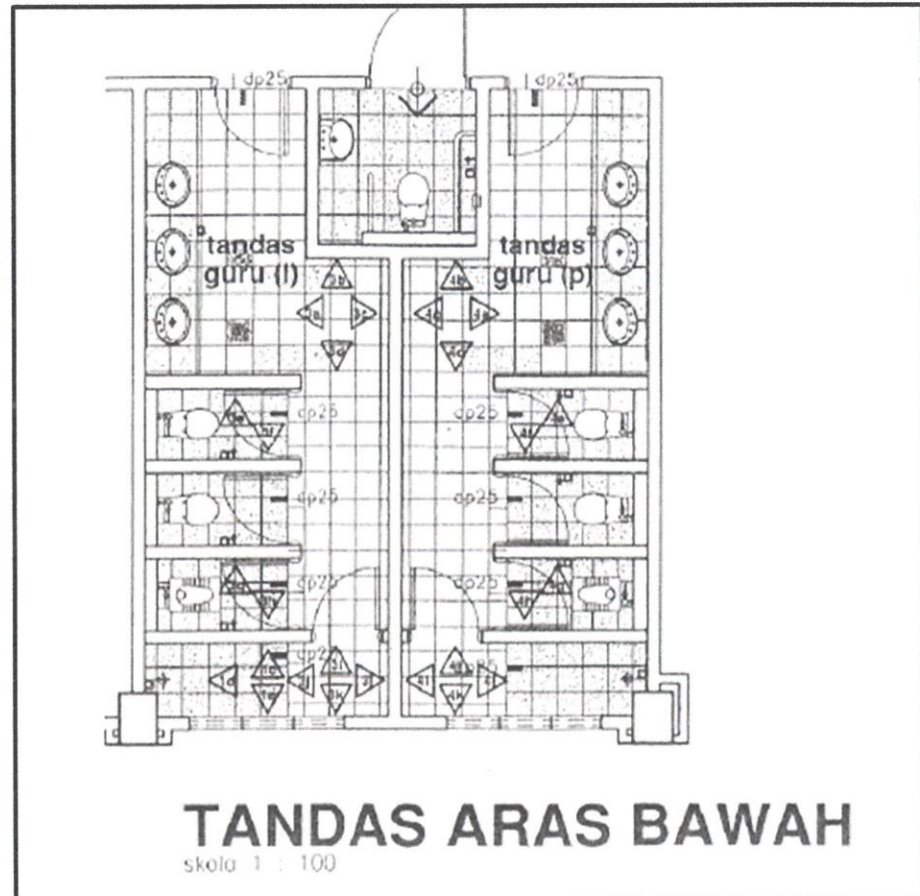
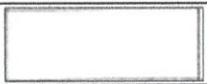




Figure 3.4: Tile pattern plan OKU toilet

Table 3.1: Tile pattern code

300×300 HOMOGENOUS FLOOR TILES		
COLOUR		CODE
	General	3011M
	Pattern	3013M
	Spot	3020M

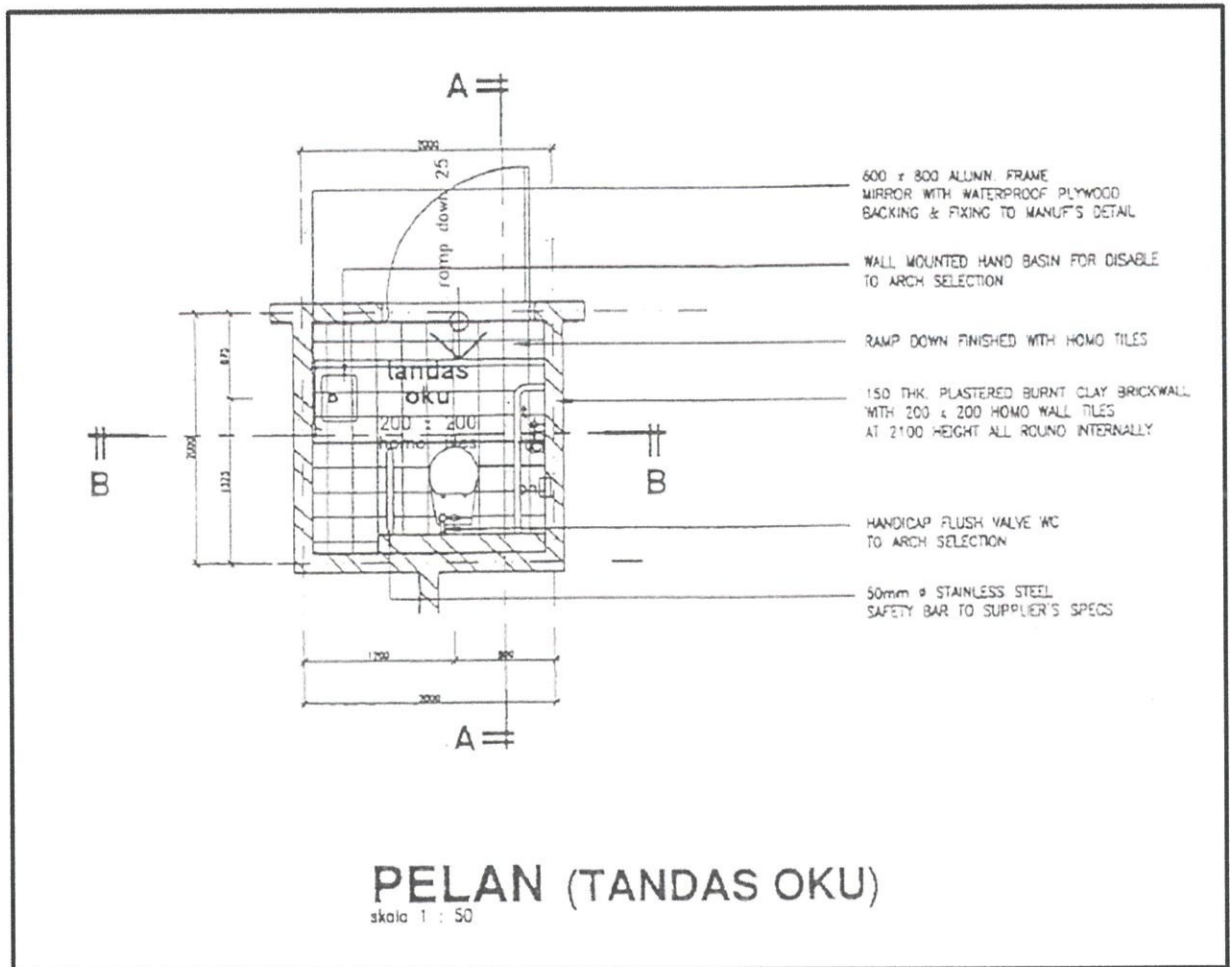


Figure 3.5: OKU toilet plan

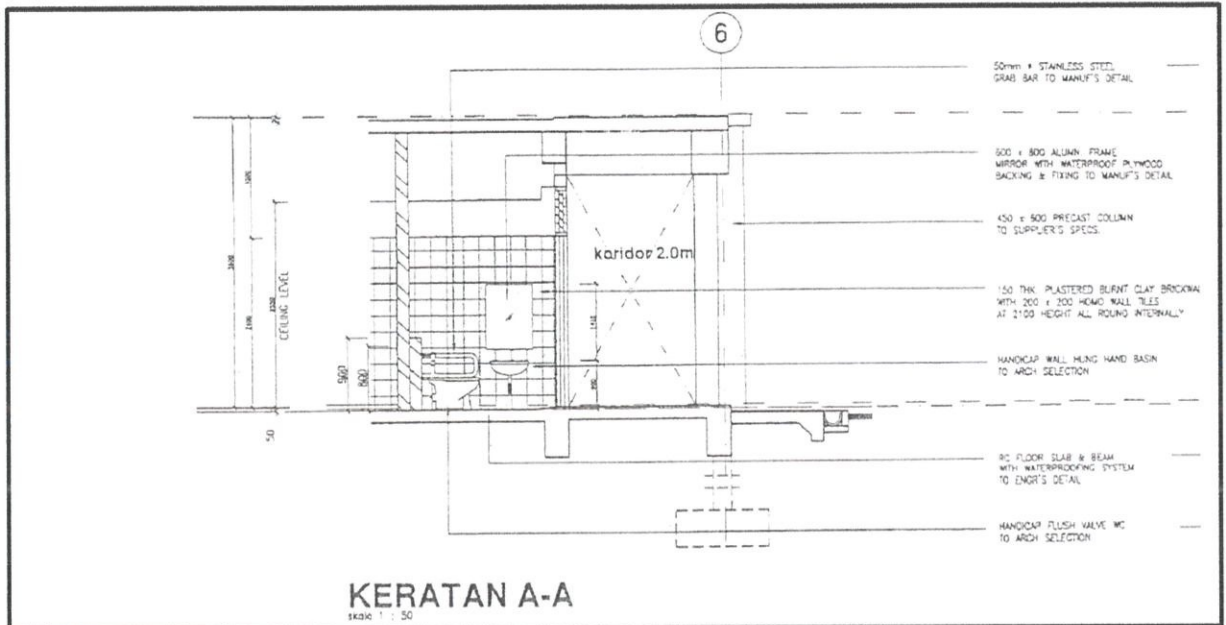


Figure 3.6: Intersection A-A

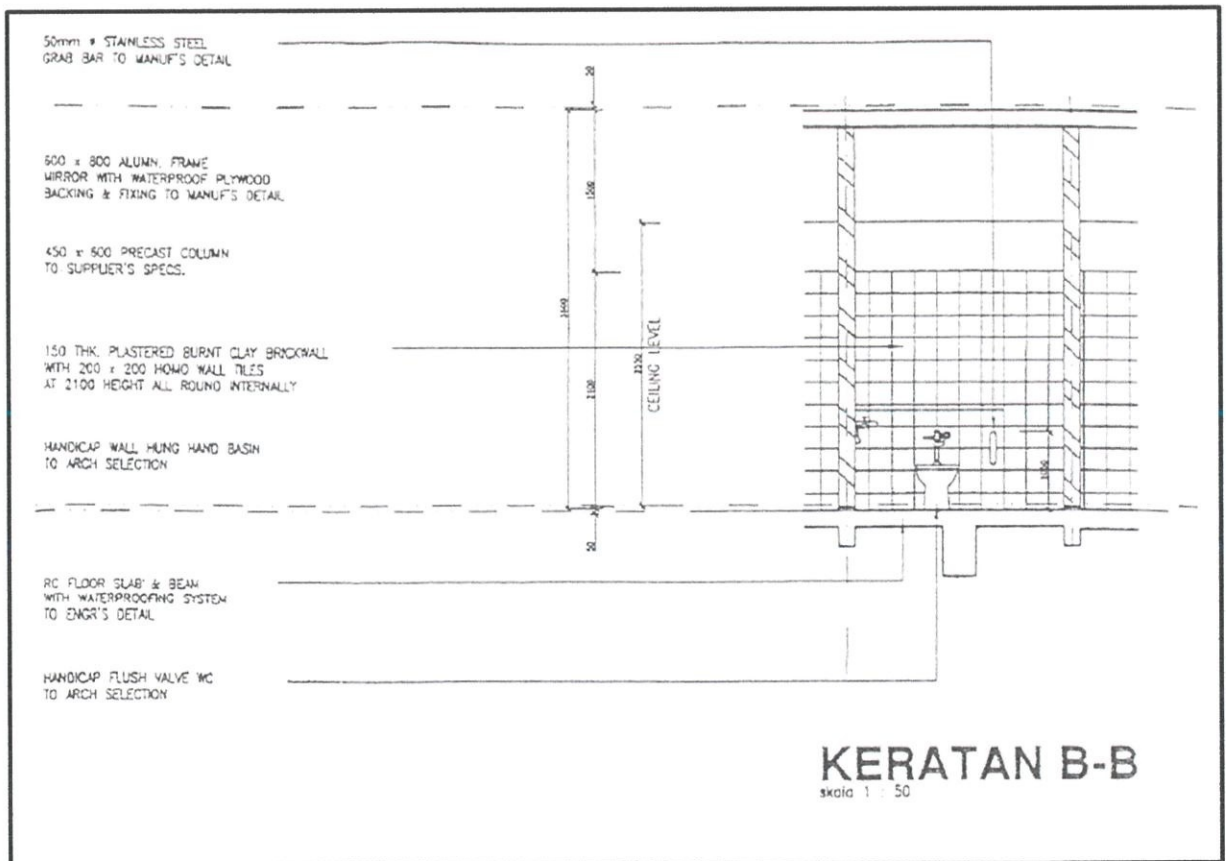






Figure 3.7: Intersection of B-B

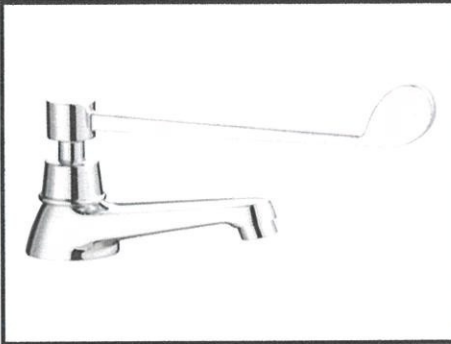
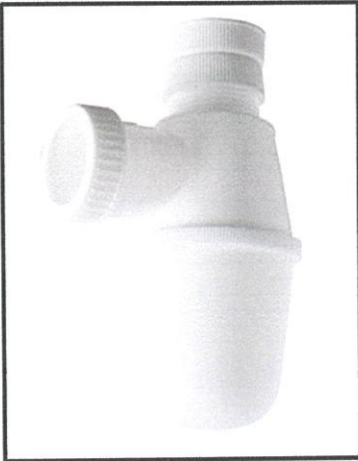

3.2.3 Material


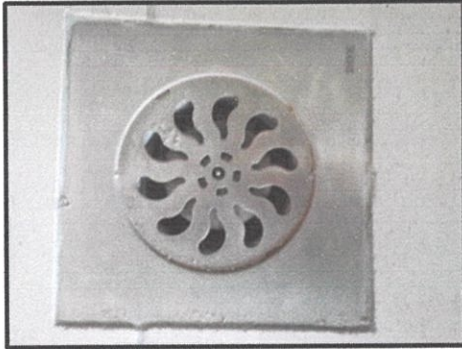

There are some important components that must have in the OKU toilet before it can be use by disable people. The component is:

Table 3.2: Material use for toilet construction

No.	Component	Function	Price (RM)
1	 <p data-bbox="339 1137 777 1173">Photo 3.12: Grab bar wall to wall</p>	It is design to promote safe sitting, standing and transfers in a bathroom setting	360.00 /piece
2	 <p data-bbox="379 1783 735 1818">Photo 3.13: Wall hung WC</p>	Carries waste down the sewer drain and also has a built-in trap that keeps sewer gas from entering the toilet	385.00 /piece

3	 <p data-bbox="355 840 753 931">Photo 3.14: Manual concealed flush valve push button</p>	<p data-bbox="810 309 1316 510">When flush handle is depressed, water will out into the bowl with enough force to flush the contents of the bowl through its trap and down the drain</p>	<p data-bbox="1364 309 1460 398">360.00 /piece</p>
4	 <p data-bbox="371 1534 743 1574">Photo 3.15: Wall hung basin</p>	<p data-bbox="810 1003 1236 1043">Washing hand or other purposes</p>	<p data-bbox="1356 1003 1452 1093">455.00 /piece</p>

5	 <p data-bbox="323 674 775 763">Photo 3.16: Pillar mounted elbow action basin tap</p>	Flow the water out for washing purpose	55.00 /piece
6	 <p data-bbox="323 1368 775 1413">Photo 3.17: PVC bottle trap</p>	<ul style="list-style-type: none"> <li data-bbox="810 842 1319 1032">i. Allowing wastewater to flow away while leaving clean water standing in the bottom half of the trap <li data-bbox="810 1055 1319 1144">ii. Prevent smells, bacteria and insects entering the toilet 	5.50 /piece
7	 <p data-bbox="363 1899 762 1933">Photo 3.18: Glass mirror frame</p>	Used for personal grooming or admiring oneself, decoration and architecture	75.00 /piece


8	 <p>Photo 3.19: Tile</p>	<ul style="list-style-type: none"> i. To improve the appearance of the wall and floor ii. To provide additional resistance to moisture 	4.50 /piece
9	 <p>Photo 3.20: Floor trap</p>	To collect waste water from the toilet	25.00 /piece
10	 <p>Photo 3.21: Hand bidet</p>	For cleaning and washing the private parts of the human body after using the toilet	48.00 /piece


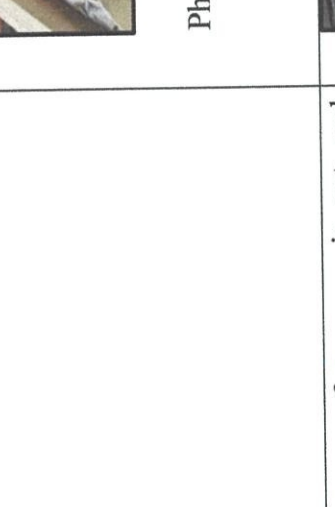
CHAPTER 3.3



METHOD STATEMENT

3.3.1 Brick lying (Stretcher bond)

Table 3.3: Method statement of brick lying

No	Operation	Method	Diagram	Plant /Equipment	Manpower	Output
1	Layout the wall	<ul style="list-style-type: none"> • Mark opening like window and door • Threads and pendulum bob used to marking the area of brick wall • The thread will be nailed on the bottom floor and pulled the up by the specified size , accompanied by nail 	 <p>Photo 3.22: Marking the area of wall</p>	Tread, nail, hammer, measuring tape & pendulum bob	1 bricklayer & 2 semi-skilled labour	1/2 hour

2	<p>Mix the mortar</p>	<ul style="list-style-type: none"> • Add three part of masonry sand to one part masonry cement • Mix it with water 	 <p>Photo 3.23: Adding cement for the mixture of mortar</p>	<p>Concrete mixer, bucket & shovel</p>	<p>1 unskilled labour</p>	<p>1/4 hour</p>
3	<p>Installation of damp proof membrane (DPC)</p>	<ul style="list-style-type: none"> • Damp proof course is cut and placed it before start brick laying 	 <p>Photo 3.24: Installation of DPC layer</p>	<p>Utility blade, nail & hammer</p>	<p>1 unskilled labour</p>	<p>1/4 hour</p>

4	Mortar bed	<ul style="list-style-type: none"> Using the trowel, mixture of mortar will be seal on a DPC 		Trowel, bucket	1 unskilled labour	1/4 hour
<p>Figure 3.8: Sealing on a DPC with mortar</p>			 <p>Photo 3.25: Bricklaying</p>	Trowel, bucket, spirit level	1 bricklayer & 2 semi-skilled labour	3/4 hour
5	Bricklaying the first row of brick	<ul style="list-style-type: none"> Set a brick down in this bed of mortar and tap it down with the handle of trowel Tap until it level, parallel to the line of the wall and the edge is plumb Repeat with six or eight brick, using the edge of trowel to cut away the excess mortar that is 				




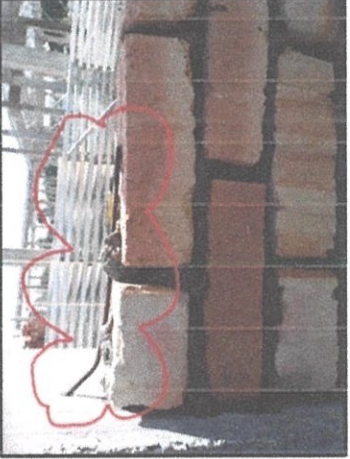

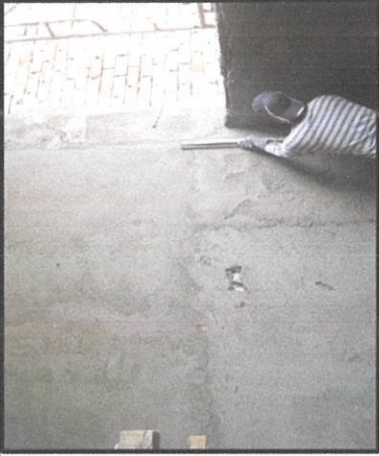
6	Move the guideline up to the next maker	<p>shoved out from under the brick</p> <ul style="list-style-type: none"> • Keep the height of the brick the same using spirit level • Move the line each time you move up a row • It should be the 1/2 mortar marker that joins your 1st and 2nd rows 		Tread	1 bricklayer & 1 semi-skilled labour	1/4 hour
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Photo 3.26: Tread that need to move

7	Bricklaying the second row	<ul style="list-style-type: none"> • Start the second row with 1/2 a brick on both ends • Place roughly mortar and place half brick on top of first row, press the brick into place, check the straightness with the guideline and level, and wipe up any excess mortar (The Builder's Pocket Manual, 1837). • Then place a full brick next it like normal • Repeat until the second row is done 	 <p data-bbox="651 660 686 1131">Photo 3.27: Second row of brick wall</p>	Trowel, bucket & spirit level	1 bricklayer & 2 semi-skilled labour	1/2 hour
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8	Installation of exmet	<ul style="list-style-type: none"> • Set the exmet on every fourth row of brick 	 <p>Photo 3.28: Installation of exmet</p>	Trowel & bucket	1 unskilled labour	1/4 hour
9	Installation of fish tail	<ul style="list-style-type: none"> • Set a fish tail on every sixth row of brick 	 <p>Photo 3.29: Installation of fish tail (RC bar)</p>	Hammer	Unskilled labour	1/4 hour

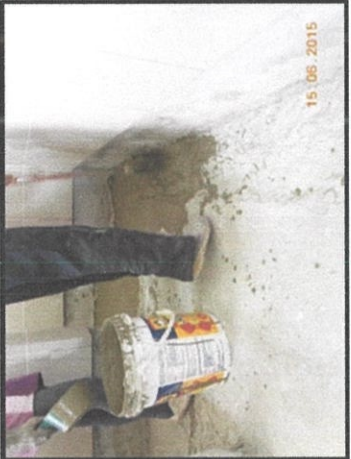
10	Continue the built wall	<ul style="list-style-type: none"> • With each row, the process is the same. • However, half bricks will use every other row to ensure that the joints in each row are not perfectly lined up (The Builder's Pocket Manual, 1837). 		Trowel, bucket & spirit level	1 bricklayer & 2 semi-skilled labour	1 day
11	Fill in any missing patches of mortar	<ul style="list-style-type: none"> • Use your trowel to fill in any patches or gaps in the joints • Making sure there is a nice, even amount of mortar holding the wall together 	<p>Photo 3.30: After bricklaying finish</p>	Trowel & bucket	2 semi-skilled labour	1 day

12	Finishes	<ul style="list-style-type: none"> • Plaster the brick wall 	 <p data-bbox="683 701 719 1099">Photo 3.31: Plastering the wall.</p>	Trowel & bucket	1 Semi-skilled labour	1 day
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3.3.2 Waterproofing Slurry and Protective Coating

Table 3.4: Method statement of waterproofing Slurry and Protective Coating

No	Operation	Method	Diagram	Plant/ Equipment	Manpower	Output
1	Mixing waterproofing slurry	<ul style="list-style-type: none"> Part A is a liquid polymer and additive and Part B is Portland cement, selective aggregate and additive Both component are mixed and form slurry consistency The consistency can be altered by reducing the amount of part A(liquid) to be used For trowel application, use only 90% of part A Mix in a clean container by 	 <p>Photo 3.32: Mixing the waterproofing slurry</p>	Bucket, shovel, mixer drill & paddle	1 Semi-skilled labour	1/2 hour

2	Application method	<p>slowly adding the powder component to the liquid component and stirring well</p> <ul style="list-style-type: none"> • Whilst the substrate is still damp from saturation, apply the first coat • Leave to harden for approximately 4-8 hour before applying second coat • For slurry consistency, apply with a broom. • Apply in the same direction • Apply the second coat of Sika Top Seal-107 as soon the first coat hardened • To avoid damage to the first 	 <p>15.06.2015</p>	Broom & bucket	2 semi-skilled labour	1/2 day
		<p>Photo 3.33: Applying the mixed Sika Top Seal-107 by hand using a broom</p>				

		<p>coat, it is recommended that the second coat be applied before 24 hours</p> <ul style="list-style-type: none"> • Apply the second coat of Sika Top Seal-107 in crosswise direction to the first application as soon as the first coat has hardened • Rubbing down with a soft dry sponge • For pore or blowhole filling, tightly trowel into it surface 				
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3	Testing of waterproofing	<ul style="list-style-type: none"> Waterproofing of slabs shall be tested by ponding the surface with water to a depth of 25 mm for 24 hours or longer 	 <p style="text-align: center;">Photo 3.34: Ponding test</p>	Water hose	1 unskilled labour	1 days
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3.3.3 Sanitary fitting installation

3.3.3.1 WC installation

Table 3.5: Method statement of WC installation

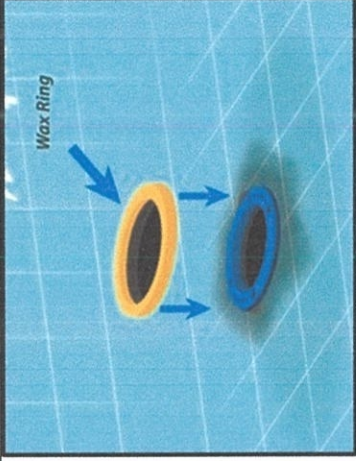


No.	Operation	Method	Diagram	Plant/ Equipment	Manpower	Output
	Installation of wax ring	<ul style="list-style-type: none"> • Clean the soil pipe • Fix the wax ring around the bottom of toilet bowl • Install it's around its drainage hole 	 <p>The diagram illustrates the process of installing a wax ring. On the left, a yellow wax ring is shown. On the right, a blue wax ring is shown being pushed into a hole. Blue arrows indicate the direction of movement. The label 'Wax Ring' is written above the yellow ring.</p>	Cordless screwdriver	1 semi-skilled labour	5 minute

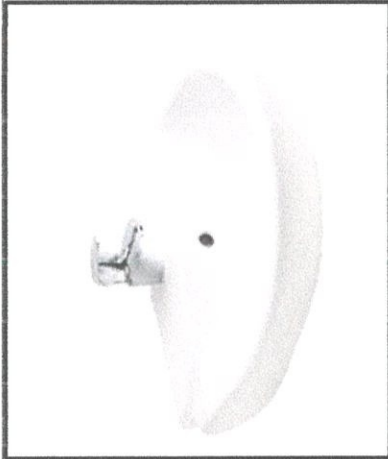
Figure 3.9: Installation of wax ring


	WC installation	<ul style="list-style-type: none"> • Lift and place the toilet bowl over the anchor bolt protruding from the floor • Level the pan using a spirit level • Insert the bolt through the hole, and then tighten lightly by hand • Tighten the wall bolts with adjustable wrench until secure 	 <p>Photo 3.35: Installation of WC</p>	Cordless screwdriver, drill gun, sealant, measuring tape & spirit level	1 Skilled labour & 1 Unskilled labour	1 hour
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	<p>Installation of flush valve</p>	<ul style="list-style-type: none"> • Install the flush valve • Connect water supply line 		<p>Cordless screwdriver, drill gun, sealant & measuring tape</p>	<p>1 skilled labour & 1 semi-skilled labour</p>	<p>1 hour</p>
<p>Figure 3.10: Installation of toilet flush valve</p>						

3.3.3.2 Wall Hung Basin

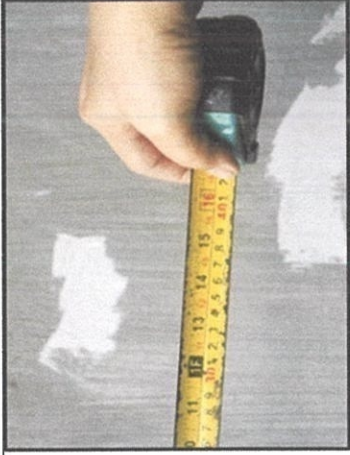
Table 3.6: Method statement of wall hung basin

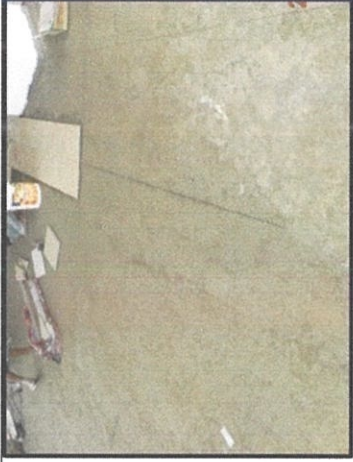

No.	Operation	Method	Diagram	Plant/ Equipment	Manpower	Output
1	Wall hung hand wash basin	<ul style="list-style-type: none"> • Mount the bracket to the wall, screwing into the backing • Install the basin and it pillar tap • Attach the basin at the wall and install the bolt (Plumbing and Central Heating, 1988). 	 <p>Figure 3.11: Installing the wall hung hand basin</p>	Bracket, bolt, Cordless screwdriver, drill gun, sealant, & measuring tape	1 skilled labour & 1 unskilled labour	1 hour



2	Bottle trap	<ul style="list-style-type: none"> • Install the bottle trap to the basin 	 <p data-bbox="628 656 663 1133">Picture 3.36: Installing the bottle trap</p>		1 unskilled labour	1/4 hour
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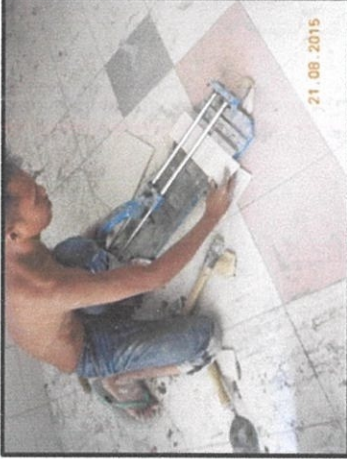
3.3.4 Tiling

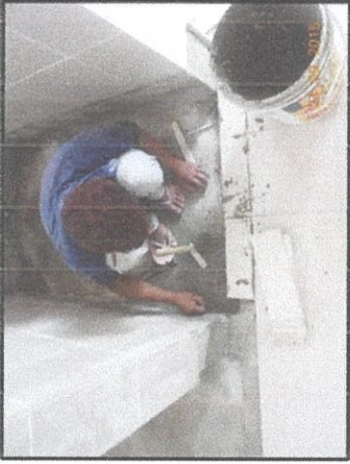

Table 3.6: Method statement of tiling

No.	Operation	Method	Diagram	Plant/ Equipment	Manpower	Output
1	Preparation	<ul style="list-style-type: none"> Swept and clean any debris 		Broom	1 unskilled labour	1 hour
2	Measure for tile locations	<ul style="list-style-type: none"> Measure and mark for the middle lines in the area you will be tiling Stretch a chalk line between the centre of two opposing tiling area Snap the chalk line onto the tiling area Do the same between the center of two remaining tiling area The line must be perpendicular to 	 <p>Photo 3.37: Measuring for tile locations</p>	Chalk & measuring tape	1 tiller	1 hour

		each other		 <p>Photo 3.38: Marking the line</p>			
3	Adhesive spreading	<ul style="list-style-type: none"> • Spread the adhesive with the trowel over a tiling area 	 <p>Photo 3.39: Adhesive spreading</p>	Bucket, cement board, shovel & trowel	2 semi-skilled labour	1/2 hour	
4	Tiling work	<ul style="list-style-type: none"> • Lay the first sheet of tile on the 		Tile spacer, spirit level,	1 tiller & 1 semi-skilled	1/2 day	

5	Installation	<p>adhesive</p> <ul style="list-style-type: none"> • Butt each sheet tight against the previously placed sheet Place spacers between each tile as going • Place spacers between each tile as going • Finish laying all full sheet of tile before cutting any sheet • Pound the tile gently • Check the tiles for level using spirit level 	 <p>Photo 3.40: Tiling work</p>  <p>Photo 3.41: Placing tile spacer and pounding the tile gently</p>	<p>bucket & trowel</p>	<p>labour</p>	<p>1/2 day</p>
5	Installation	<ul style="list-style-type: none"> • Place a sheet of tile precisely on 		<p>Tile cutter,</p>	<p>1 tiller & 1</p>	<p>1/2 day</p>

	<p>of cutting tile</p>	<p>top of the last full sheet of laid tile</p> <ul style="list-style-type: none"> • Lay another sheet of tile on top but butted against the wall • Use the edge of the top sheet as straightedge to draw a line onto the sheet below • Cut the sheet along the line with tile cutter • Spread the adhesive and lay in the cut sheet • Pound the tile gently 	 <p>Photo 3.42: Drawing a line to be cut</p>  <p>Photo 3.43: Cutting the tile</p>	<p>spirit level, pencil, spacer, bucket & trowel</p>	<p>semi-skilled labour</p>
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6	Grouting bathroom	<ul style="list-style-type: none"> • Pull the tile spacers out from between the tile • The joint can be grouted by rubbing into the joints a grout paste either using a sponge (Building Construction Handbook 8th Edition, 2010). • Remove the excess grout 	 <p>Photo 3.44: Installing the cutting tile</p>	Grout float, & sponge bucket	1 tiller & 1 semi-skilled labour	1/2 day
			 <p>Photo 3.45 : Spreading grout</p>			

CHAPTER 4

CONCLUSION

The selection of the material for a OKU toilet construction is very important. This is because it will make sure the safety of the user. The error of choosing the material of the OKU toilet construction will lead to any hazard, danger and accident in the toilet. For example, choosing slippery surface tile compare to non-slippery tile can lead to slip in the toilet because of slippery surface of tile with water on it. Therefore, the materials need to be choosing wisely and efficiently for safety.

OKU toilet also must meet the requirement of OKU toilet. The design requirement for the toilet are the size of the toilet should be at least 4.55 meter square, toilet seat should be 475mm from the floor and hand rails by the toilet seat should be at least 800mm from the floor and should be adjustable. The requirement to have accessible sanitary facilities ensures people with disabilities are able to utilise a building's sanitary facilities, and that those facilities are able to be used by them.

Moreover, flushing system is one of important part in a toilet. The flushing system function is to carries waste down the sewer drain. The force of water needed to flush all the waste in the bowl down the drain is provided. So it is important to install the flushing system properly to achieve enough pressure to carries waste down the sewer drain. This is to prevent the toilet bowl from clog and produce odours.

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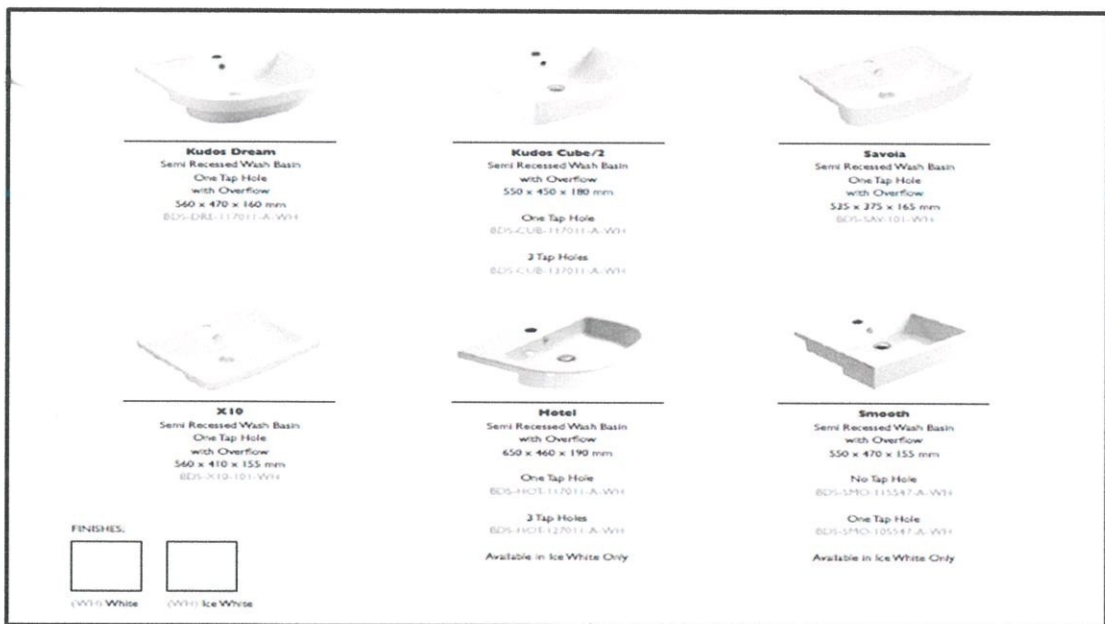
Appendix

Appendix A: Colour chart for tile



Source: White horse ceramic (2014).

Appendix B: Basin design



Source: Bagno design (2014)