UNIVERSITI TEKNOLOGI MARA

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

DEPARTMENT OF BUILDING SURVEYING

TITLE

THE INSTALLATION OF DRAINAGE SYSTEM AND STAIRCASE FOR 8 LOT DOUBLE STOREYS

TERRACE AT LAMAN ANNUR, PANJI,

KOTA BHARU, KELANTAN

PREPARED BY:

MUHAMAD ISKANDAR BIN ISMAIL

(2010187745)

DIPLOMA IN BUILDING SURVEYING

PRACTICAL TRAINING REPORT

(JUNE 2013 – SEPTEMBER 2013)

ABSTRACT

Practical training course is one of core subject which is be completed by student to finish the last semester of Diploma in Building Surveying. Students should be chosen any company that to find their practical training which is concerned with their programmed.

I have selected the Non-Government Department to conduct the practical training. The company was chosen is Pasir Puteh Development Corporation Sdn. Bhd. I have placed at site construction project at laman An-Nur Mukim Pauh Panji Kota Bharu to conduct practical training. The site supervisor, Mr Zulkefli Bin Husin as a leader in this department had been appointed to be my supervisor during the practical training.

During the practical training, I was exposed to the real situation of the construction site for double storey terrace house and do a report of the drainage and staircase based on the site during practical training. I also do the progress report on the site construction to present in project meeting. This project started at 24 October 2011 and will expect finish 23 October 2013.

Practical training will be end after four months the students completed the training. Finally, the student must be prepared a report according to the topics they are choose that relevant to the work construction during the practical training that have been done.

ACKNOWLEDGEMENT

A very thankful to great of Allah because finally I can complete this report with successfully. Firstly, I would like to thanks to my family who always give me a supported in everything to done this report. I also would like to thank to my beloved lecture, Pn Zubaidah Binti Hashim who always give an advice and guide on how to do this report completely. The supervision and support that she gave truly help the progression and smoothness of the practical report. The co-operation is much indeed appreciated.

Other than that, I would like to thank to the company Pasir Puteh Development Corporation Sdn.Bhd because give me opportunity to practical training in this company. Furthermore, I would like to thank to staff and my supervisor, Mr Zulkefli Bin Husin and other people in the site at Laman An-Nur Mukim Pauh Panji who always give the guidance and help about of construction site. All the work that I have handles during practical training not easily to success without the cooperation from them.

Finally, I would like to thanks to all my friends especially those who work together for the ideas and help. Thanks for help me to implement the final report of practical training was be completed successfully.

TABLE CONTENT

CHAPTER1

COMPANY BACKGROUND

1.1 COMPANY BACKGROUND

Pasir Puteh Development Corporation Sdn Bhd (PPDC) was incorporated on 3rd January 1985 under Company Act 1965 Ordinance with its registered address at 3893-D, Jalan Hamzah, 15050, Kota Bharu, Kelantan Darul Naim. The company was started with the planning, marketing and constructing of low cost houses in the 80's to become one of the biggest Housing Developers not only in Kelantan but also in the East Coast.

PPDC then was accepted as "Pusat Khidmat Kontraktor" (PKK) Class 'A' Contractor. PPDC also was awarded the First Design and Build Government project in 90's and successfully completed it. Later PPDC was recognise as Construction Industry Development Board (CIDB) 'G7' Grade Contractor. It has gained vast experience in the construction industry from a number of housing projects and government contracts.

With the passing away of Tuan Haji Nik Ab. Rahman Bin Nik Taib, the Executive Chairman of the company, PPDC experienced a setback. However he is replaced by his eldest son, Nik Mohd Nasrudeen and PPDC will continue to progress to greater heights. The young and energetic managing Director together with the experience management team will continue the legacy of Tuan Haji Nik Ab Rahman and his father, Tuan Haji Nik Taib.

Before of that, this company was address at 523 Jalan Raja Perempuan, Zainab II, Kubang Kerian, 16150 Kota Bharu, Kelantan and now, this company to shift their company to other place which is address at Lot 625, Taman Al-Qari Hadapan Istana Negeri, Kubang Kerian, 16150 Kota Bharu, Kelantan.

1.1.1 Company Information

Name Of Company	• PASIR PUTEH DEVELOPMENT CORPORATION SDN BHD (PPDC)
Registration Number	• Tempatan 132615-T
Date Of Incorporation	• 3rd January 1985
Business Address	• Lot 286, Taman Al-Qari Hadapan Istana Negeri, Kubang Kerian, 16150 Kota Bharu, Kelantan.
Authorized Capital	• RM 10,000,000 of RM 1.00 each
Paid Up Capital	• RM 2,050,000
Auditors	• Chua & Chu Chartered And Public Accountant 3893-D Jalan Hamzah, 15050 Kota Bharu, Kelantan, MALAYSIA
Company Secretary	• Tan Siew Chin 3893-D Jalan Hamzah, 15050 Kota Bharu, Kelantan, MALAYSIA.

Solicitors	• Azham Zamiri & Co Advocates And solicitors 1909-A Jalan Tok Kenali, Kubang Kerian, 16150 Kota Bharu, Kelantan
Bankers	• CIMB Bank Berhad Wisma Ibrahim & Sons, No 4585-K & 4581-I, Jalan Sultan Yahya Petra, Wakaf Siku, 15200 Kota Bharu, Kelantan, Malaysia EON Bank Berhad (Kota Bharu Branch) PT 174 & 175 Block C Jalan Parit Dalam Seksyen 8 15000 Kota Bharu Kelantan MALAYSIA
Nature Of Business	• Property Development And Construction
Directors	• Nik Mohd Nasrudeen Bin Nik Ab Rahman (Executive Chairman) Ab. Azais Bin Jusoh (Executive Director) Abd. Rahman Bin Ahmad (Executive Director)

Membership	• Member of Housing Developer Association Malaysia (Membership No. HAD095KEL0017/90 Member of Malay Chamber of Commerce (Kelantan) MALAYSIA Member of Guild of Malay Contractor Malaysia (Kelantan) MALAYSIA
Licences And Certificate Of Registration	• Pusat Khidmat Kontraktor (PKK) Kelas A (Registration No. 0302A920154) with Bumiputera Status Construction Industry Development Board Malaysia (CIDB) Grade 7 Registration No. 1970103-KN020661) Malaysian Airport Berhad (MAB) (Registration No. 13/000654/94 Registered as General Supplier / Contractor with KTM (Malaysia Railway) Syarikat Perumahan Negara Berhad Putrajaya Holdings Sdn. Bhd. (Registration No. PJH/CTR/1192)
Inter - Company	• Hidni Holdings Sdn.Bhd • Ikatan Intra Sdn.Bhd • PPPDC Management Services Sdn. Bhd

1.1.2 COMPANY LOGO

Figure1.1.2: Logo of Pasir Puteh Development.Sdn.Bhd.

1.1.3 NATURE OF COMPANY BUSSINESS

The main business of the company is entirely focused on the property and housing development as well as building construction. Nevertheless, PPDC also produced in-house skill construction personnel comprising of a team of experienced construction workers ready and capable to support and give assistance to our contractors. In housing development, PPDC mainly concentrates on low cost houses for the lower income sector of the society. However medium and high cost houses are also being constructed particularly in urban areas where the demand for such houses is abundant. As to date, PPDC has managed to reserve a pool of land bank sufficient enough to spearhead the company through the years ahead.

1.1.4 OBJECTIVE

The main objective of the company are :

- to develop and grow as a leader in the housing and property industry with the ultimate aim of public company.
- To provide the best possible service to the purchaser in particular and the public.
- To provide affordable comfort houses in order to the purchaser in particular and the public.
- To participate in the development of social and economic activities in the country to ensure the well being of the society as a whole.

1.1.5 MISSION

PPDC shall be to supply the need and to provide affordable shelter for the lower income group and to upgrade the living standard of the society as a whole as lined encourages by The Ministry Of Housing And Local Government.

1.1.6 VISION

"To Be Preferred Contractor and Developer"

Pasir Puteh Development Corporation Sdn Bhd (PPDC) who believe in the significance of client satisfaction, quality-based management and a culture of progressive management within the company for a sustainable success in the sector, bases its quality policy on the following value we constantly strive ;

- To provide the most appropriate solution to client, through assessment of their needs and demands, and consultation, with the PPDC's experience and expertise in project management.
- To conform to every valid standard within the context of project at the maximum level; contract agreement conditions, comply statutory and regulatory requirements, health and safety at the workplace, other compulsory standard and with all ethical rules.
- To be a sector leader in utilization of modern and valid techniques, material and management systems, and to maintain the sustainable development in every area.

- To provide professional services that help the realization of projects in advance of set deadlines, conforming to every quality standard prescribed.
- To prioritize and value the most valuable asset of PPDC, which is company employees. This is by contributing to their technical and self development through company's continuous learning environment and to provide social securities.
- To create permanent relations with subcontractors, suppliers and project partners based on good intentions and trust and accordingly to contribute also to their progress within the sector.
- To transfer successively company corporate culture and values to its employees and will continually improve our products, services and management system.

1.2 ORGANIZATION CHART

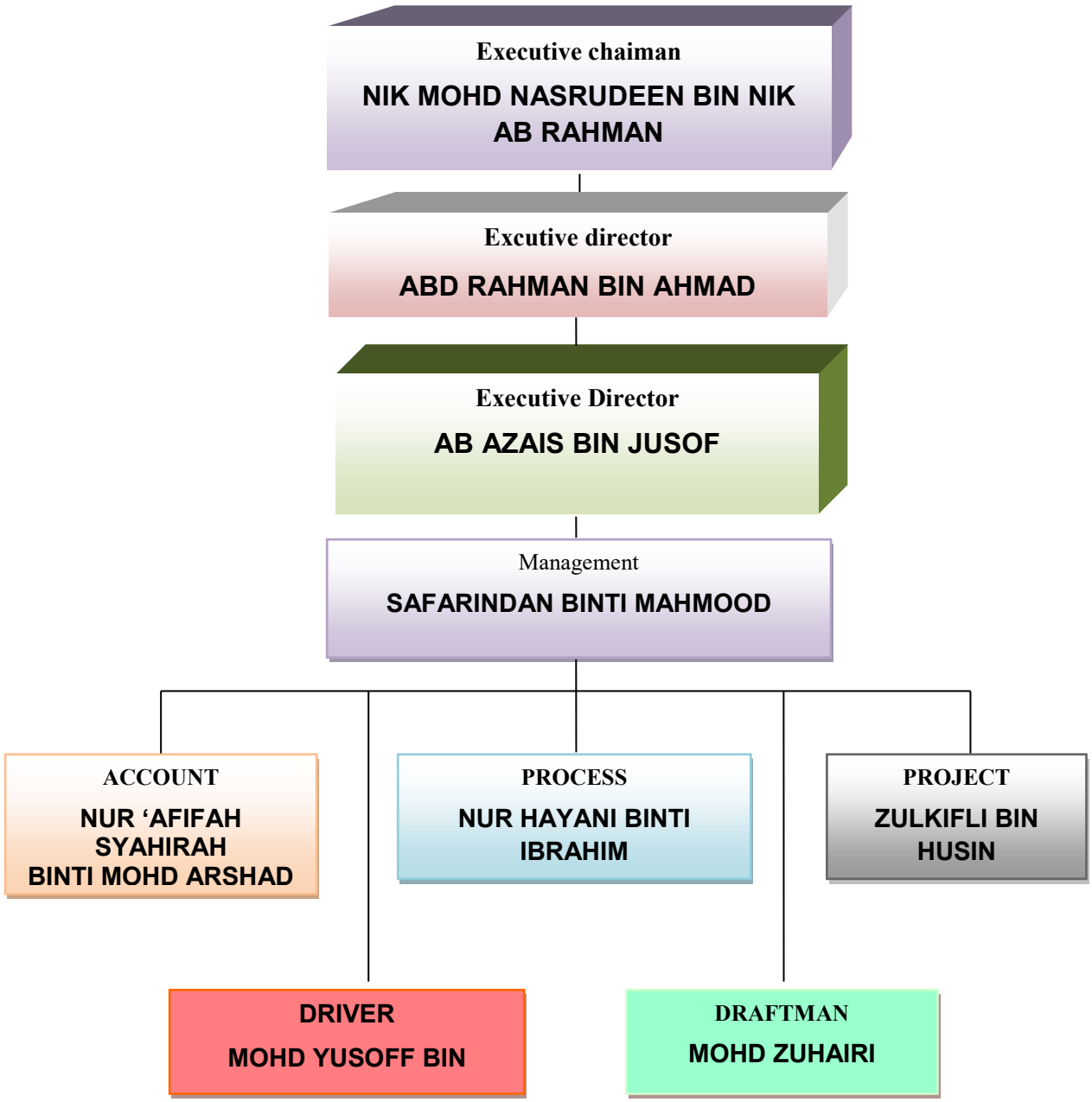


Figure 1.2: Organization Chart

1.3 KEY MANAGEMENT PERSONNEL

The following names with respective designations make up the in-house management team for the implementation Pasir Puteh Development Cooperation Sdn. Bhd projects.

Safarindan Bt Mahmood : Account And Administration Officer

Nur Afifah Syahira Bt Mohd Arsyad : Account Clerk

Nur Hayani Bt Ibrahim : Admin Clerk

Zulkefli Bin Husin : Site Supervisor

Mohd Yusoff Bin Ibrahim : Driver

The following professional firms will be assisting the company:

- **Development Manager**

  Ppdc Managements Services Sdn. Bhd

  Lot 523 Jalan Raja, Perempuan Zainab II, Kubang Kerian, 16150, Kota Bharu

  Kelantan.

- **Architect**

  Ikatan Cipta Bina

  Chartered Architect

  3455-E, Tingkat , Bangunan Fa Peninsular Jalan Sultanah Zainab

  15050 Kota Baharu Kelantan.

- **Structural Engineer**

  Perunding Teknik Padu Sdn.Bhd

  Lot 1882, Tingkat 1, Hilir Market, Jalan Tok Kenali, Kubang Kerian,

  16150 , Kota Baharu Kelantan.

- **Civil & Land Surveyor**

  Ezam & Associates

  Tingkat 1, Lot 2861 & 2862 Jalan Hospital, Paya Bembam, 15200

  Kelantan

  Darul Naim, Kelantan

- **Legal Advisor**

  Azham Zamiri & Co

  Advocates & Solicitors

  1909-A Jalan Tok Kenali, Mukim Kenali Kubang Kerian, 16150 Kota

  Bharu, Kelantan

1.4 Certificated Of Company

No. Siri AD 338651

PUSAT KHIDMAT KONTRAKTOR
KEMENTERIAN KERJA RAYA MALAYSIA

NO. SIJIL PENDAFTARAN
0302 A 92 0154

Adalah disahkan Syarikat seperti butir-butir berikut berdaftar dengan Pusat ini tertakluk kepada syarat-syarat yang tercatit di dalam sijil ini.

TARIKH MULA BERDAFTAR DENGAN PKK: 14/07/1992

NAMA DAN ALAMAT BERDAFTAR :
132615T
PASIR PUTEH DEVELOPMENT CORPORATION SDN.BHD.
LOT 523, JALAN RAJA PEREMPUAN ZAINAB II
KUBANG KERIAN
16150 KOTA BHARU
KELANTAN

TEMPOH SAH LAKU :
DARI : 14/07/2012
HINGGA : 13/07/2014

KELAS	KEPALA	SUB KEPALA
A	I	1 , 2 , 3a , 7a , 7b , 7c , 7d ***
	II	1 , 2a , 2b ***
	IV	1 , 2a , 2b , 2d , 2e , 3a , 3b , 4a , 6a , 8 ***
	VI	2 ***
	***	**********

PEGAWAI SYARIKAT YANG DITAULIAHKAN	NO. K/P	JAWATAN
NIK MOHD NASRUDEEN BIN NIK AB RAHMAN	850131-03-5715	PENGARAH URUSAN
ABD RAHMAN BIN AHMAD	540811-07-5071	PENGARAH EKSEKUTIF
AB AZAIS BIN JUSOH	481121-03-5171	PENGARAH EKSEKUTIF
**********	*********	*********

(YAHAYA BIN HASAN)
Pengarah
Pusat Khidmat Kontraktor
Kementerian Kerja Raya Malaysia

Tarikh Cetak : 03/08/2012

Figure 1.4: Certificate of Registration

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION OF DRAINAGE

Malaysia is one of the developing countries and many project being implemented. Drainage is an underground pipe that serves a single storey. If the pipe runs from the property and joins a public sewer directly, it remains a drain until it joints the public sewer. If the pipe runs along and joins a neighbour's drain it is a drain up to the point. A drain is always private and therefore the responsibility of the owner or occupiers of the property of the building.

Drain installation is necessary to drain the water from the waste and sanitary equipment, stoves, water main showed as well as a paved surface water to the public and the next sewerage to the waste and special treatment.

Figure 2.1: Drainage System

Source: http://teknologi-pembinaan.blogspot.com/2012/10/sistem-longkang.html (2013)

.

2.1.1 TYPES OF DRAINAGE

Drain is water discharge drainage as water and water from the sink. Drainage is of two forms:

1. Surface drainage
2. Sub surface drainage or underground drainage

a) Surface drainage (natural system of drainage)

- It may consist of open ditches that are laid out by eye judgment, leading from one wet spot to another and finally into a river. This is often called natural system. It consists by three such as open ditch drains, field ditches and narrow ditches.
- Open ditch drains is the pattern of ditches is regular. The method is adopted to land that has uniform slope.
- Other than that, field ditches is field ditches for surface drains may or either narrow with nearly vertical sides or v shaped with flat side slopes. V shaped ditches have the advantages of being easier to cross with large machinery.
- For the narrow ditches, its most common where large farm machinery is not used. In level areas, a collecting ditch may need to be installed at one side of the field and shallow shaped ditches are constructed to discharge into the collecting ditch. The field ditches should be laid out

parallel and spaced 15 to 15 meters or more apart as required by the soil surface conditions and crop to be grown. It is should be 30 to 60 cm deep depending upon the depth of collecting ditch.

- Farming operation should be parallel to the field ditches. The care that a ditch will drain satisfactorily depends up on how quickly water runs into the ditch how much rain falls on the land, slope, and the condition of the soil and plant cover.

b) Sub-surface or underground drainage

- A sub surface or underground drainage will remove excess soil water. It percolates in to themselves, just like open drains. These underground drains afford the great advantages that the surface of the field is not cut off, no wastage of lad and do not interfere with farm operations.
- Underground drains may be classified such as tile or pipe drain, box drain, rubble (coarse stones or gravel filled) drains mole drain and use of pumps for drainage.
- Tile drain is consists of digging a narrow trench, placing short section of tiles at the bottom and covering the tiles with earth. The loose joints between two sections of the tiles serve as a place where drainage water may enter into the drainage system. Water moves by gravity into the joins between tiles and through tile walls. The drains

are two types of tiles in use. Tile should be always placed at least 75 cm deep to prevent breakage by heavy machinery.

- Box drains is instead of pipes, underground drains may be made in v shaped cut or trench, side of which are reverted with soil, restoring the surface of the field. Depth may be 90 cm below ground.
- Rubble drains is a somewhat equally substitute or tile drains is made by cutting narrow v shaped drains or rectangular in section as for box drains, filling stones large and small and then covering the whole up with soil level with surface field soil which needed a depth 90 cm.
- Mole drains is used in clay loam soils. A moiling machine is one that draws a bullet nosed cylinder which is used 10 cm to 15 cm in diameter is therefore formed. A mole drain should be at least 75 cm below the surface to prevent closing of the holes by compaction from farming operations.
- Lastly, the use of pumps for drainage is a classification of underground drain. The subsequent must be sufficiently permeable for the ground water to move the pipes enough for effective pumping.

Source: http://www.agriinfo.in/?page=topic&superid=1&tpoidic=35 (2013)

2.1.2 REGULATION AND REQUIREMENTS INSTALLATION OF DRAINAGE

Now days, most of the company did not take into account about the installation work for drainage system. The regulation and requirements that need to be addressed in drainage installation is as follow by below:

A. Slope of drains

- The drain slope must be installed very definitely to allow the water from building or natural can through very smoothly to other drains.
- The slope of drains is 2 inches from the start drains.

B. Depth of drains

- The depth of drains which is underground drain shall be planted to depth. It is because to avoid a leak or burst pipe caused by the load there is on it. For example the vehicles such as lorry can burst pipe if the drainage no planted to depth.

C. Ventilation of drain

- Ventilation to drain is needed. It is to prevent the stench of unpleasant.

D. Cover

- Cover of drainage is one of the requirements of installation of drainage. The cover should be held at the top of drain and not to way to prevent foul odour into the building and can give pollution of ventilation.

E. Materials

- The materials should be durable and not easily broken. This is ensure that plumbing and drain resistant and able to withstand the load and tensile.

F. Path

- The path must be available or easy to open the cover of drain for inspection or cleaning if blocked into the drains.

G. Connection

- The connection of drain must be held to avoid a leak or crack in the drains.

H. Retainer

- The drainer must be placed a retainer such as soil at the drainage to perform as a retainer to ensure the support and drain placement unbreakable.

I. The size and load volume

- The size and load volume of drains are be according to the nature or form of the drain.

2.2 INTRODUCTION OF STAIRCASE

Staircase is an important component of a building providing access to different floors and roof. It is consists of a flight of steps and one or more intermediate landing slabs between the floor levels. Many different types of staircase can be made by arranging stairs and landing slabs depending upon the purpose, location and availability of space and like by follow the design.

Other than that, staircase is a structure enclosing a stair. The design of the main components of a staircase, landing slabs and supporting beams or wall. The design of staircase is application of the design of the different elements of the staircase. Additional, the staircase design must be follow a Uniform Building By Law (UBBL, 1984) which it is to ensure the users comfort and safety and thus can use the stair with good.

The staircase that are be located, it must be inadequate ventilation and sufficient lighting in the staircase. The pitch of staircase is not exceed 40 degree and the width of the stair at least 3 feets. The riser and tread of a staircase shall be not more than 180 millimetres and the tread shall be not less than 225 millimetres and must be uniform and consistence to comfortable users climb up and down while using this staircase (UBBL, 1984).

2.2.1 TYPES OF STAIRCASE

Staircase is an importance components to a building to give a user using with safely and comfortable. There are many types of a staircase using in a building construction. It's such as below:

1) Staircase with straight flight

- There are three types of staircase with straight flight such as below :

    a) Straight stair

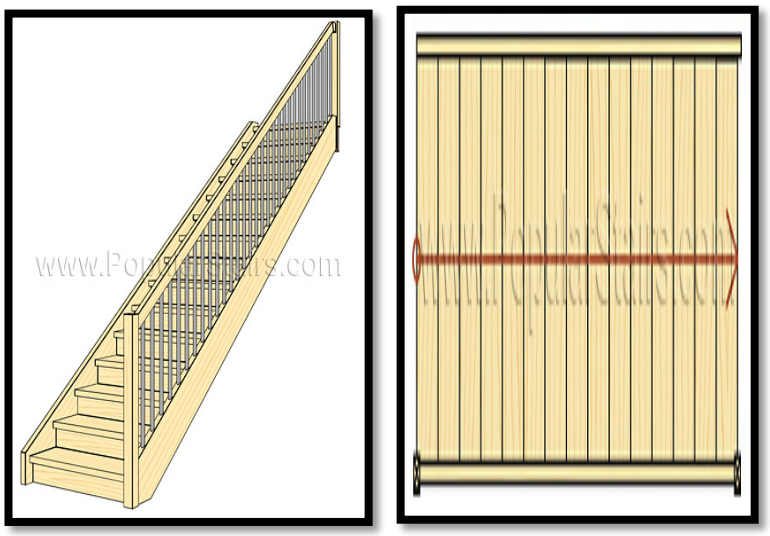


Figure 2.2.1.1: Straight Stairs

Sources:http://popularstairs.com/basic-stair-building/stairs-types (2013)

❖ The straight stair is the most simple in term of design, manufacture and installation. It is easy to go up and down to carry things on the next floor but the presences of one long flight makes this types of staircase limited in height. It is because the amount of threads in one straight flight shall not

exceed sixteen of a thread. Other than that, this staircase also is simplicity which it is convenient and functional.

- If two flights of stair going in one direction are supplement by a landing, the minimum depth of the landing should be amount to the sum of the step length and depth of one tread in a plan. If depth of the landing shall be more than the value received, the increase shall be a multiple of the minimal depth value.
- The landing divides the staircase into two such as :
    i. Can reduce the quantity of tread in one flight.
    ii. Ensure the walking more comfortable.
- The usage of staircase with straight flights and intermediate landing is limited in view of inefficient usage of space needed for the stair flight construction.

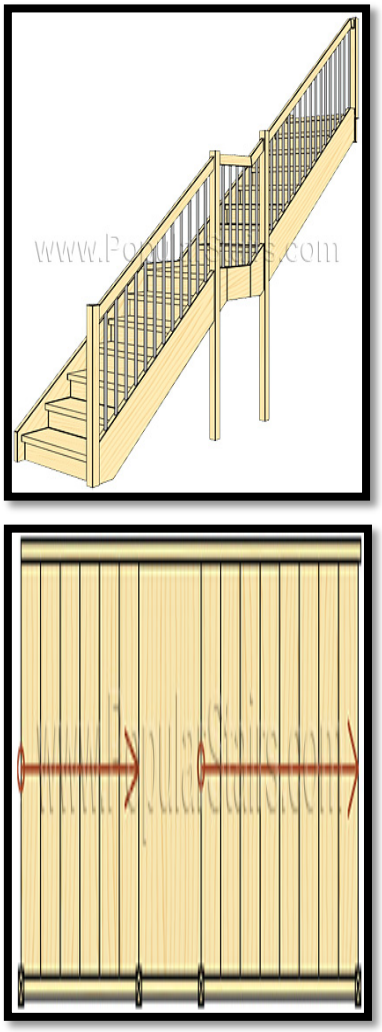


Figure 2.2.1.2: Straight Stairs with Intermediate Landing

Sources: http://popularstairs.com/basic-stair-building/stairs-types (2013)

b) Quarter landing stairs

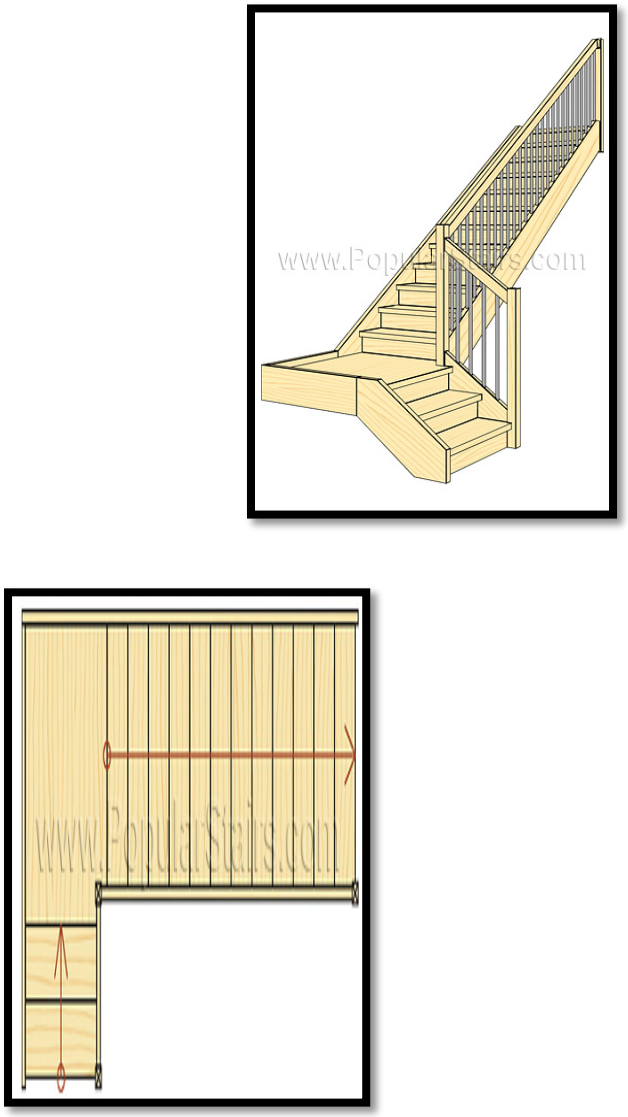


Figure 2.2.1.3: Quarter Landing Stairs

Sources: http://popularstairs.com/basic-stair-building/stairs- types(2013)

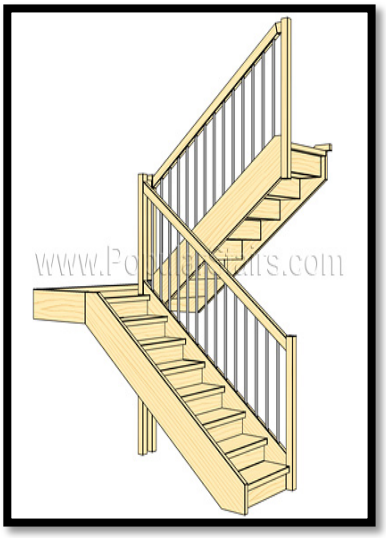
- Quarter landing stairs represent a type of stair's which it's also includes a landing of a stairs. The landing is needed to change a direction of the flight by 90 degrees which it's a place for user rest when a moving through the stair. The landing also may

chance its position in the flight from its beginning and up to its end.

- This staircase are more comfortable and safety than straight staircase because it's have a landing while moving.

- The presence of the landing the flight is divided into two such as:
  i. Can reducing quantity of treads in one flight.
  ii. To ensure the user comfortable to walking.
- This type of the staircase is enable rationale use of the space needed for the stair flight construction.

c) Half landings stairs.



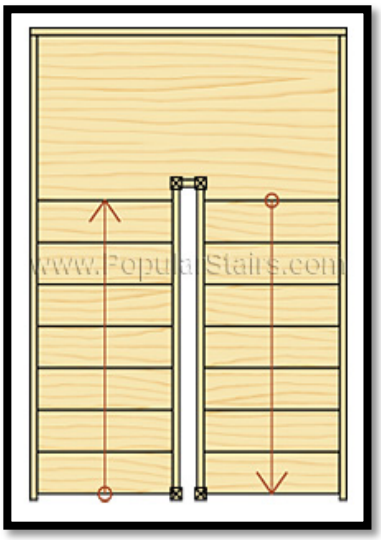


Figure 2.2.1.4: Half Landing Stairs

Sources: http://popularstairs.com/basic-stair-building/stairs-types(2013)

- Half landing stairs is also a variety of staircase with straight flight. It is same with the quarter landing stairs which this staircase also have a landing but it changes a direction of the flight by 180 degrees already and also serves as a place to user for a rest when moving in this stairs.

- ❖ The landing of staircase divided by two such as :
    i. Can reducing quantity of treads in one flight.
    ii. To ensure the user comfortable to walking.
- ❖ Staircase of these types is very convenient, functionality and safety.
- ❖ Differentiation of the quarter landing and half landing stair is shape of the landing which direction of the flight quarter landing is 90 degree and 180 degree for direction of the flight half landing stairs.

2) Winder stairs

- Winder stair are the stair with a turn by 90 and 180 degrees but in contradistinction to quarter landing stairs and half landing stair on turn the wedge-shaped treads are used for their construction.
- There are two types of winder stairs such as below:

    A. Single winder stairs

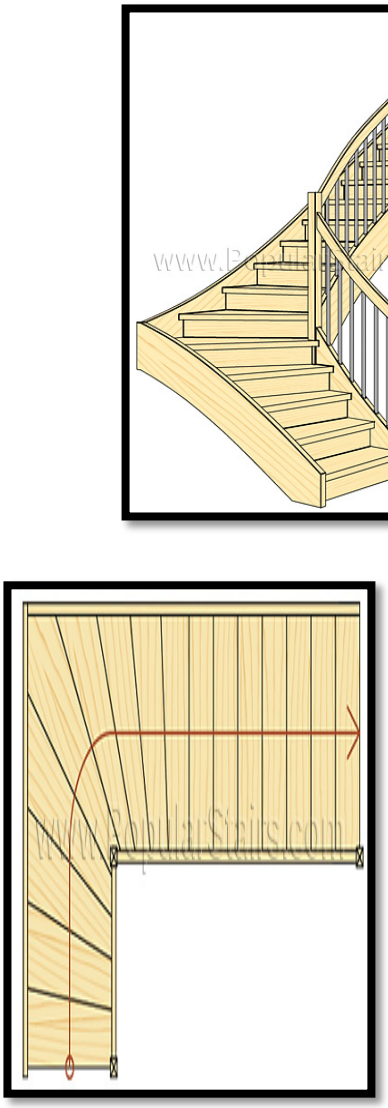


Figure 2.2.2.5: Single Winder Stairs

Sources: http://popularstairs.com/basic-stair-building/stairs-types(2013)

❖ Single winder stairs are stair with a turn by 90 degrees. Winder treads may change their position in the flight from its beginning and up to its end.

- However, it is worth mentioning that the staircase with winder treads located at the beginning of the flight are more convenient than these with winder treads located at the end of the tight.
- This is because of winder treads, located at the beginning of the flight are well within view from below and it is handier to make over with things when you carry them onto the next floor.

B. Double winder stairs

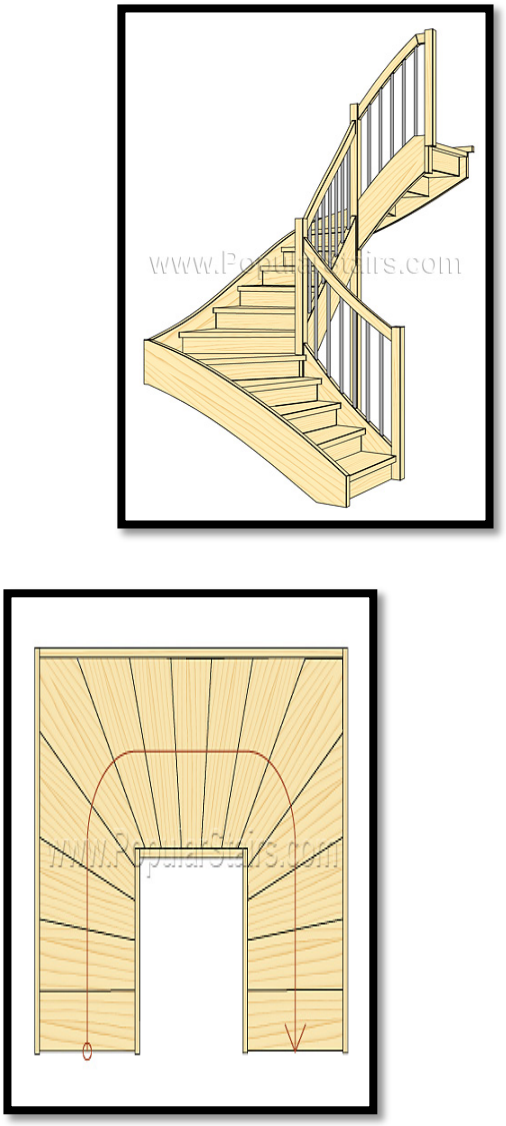


Figure 2.2.2.6: Double Winder Stairs

Sources: http://popularstairs.com/basic-stair-building/stairs-types(2013)

❖ Double winder stairs are stairs with turn by 180 degrees.

❖ It is more compact than single winder stairs.

❖ In this type of staircase we can divide by two varieties such as smoother passage of winder treads from turn to turn and more abrupt passage.

❖ Stairs with smoother passage are more convenient but its need more space to construct.

3) Arched stairs

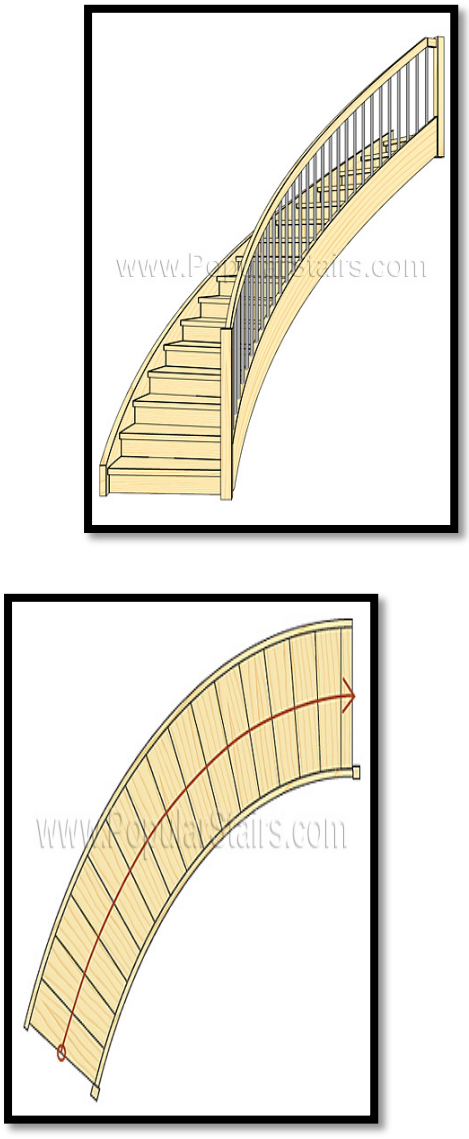


Figure 2.2.2.7: Arched Stairs

Sources:http://popularstairs.com/basic-stair-building/stairs-types(2013)

- Arched stairs are the stairs with a flight resembling an arch in its shape. The treads in such stairs are wedges-shaped as well but tapering at one side is not very vital than winder stairs
- It is elegant and graceful in appearance and with pertinent components the staircase looks very effective. Other than that, it is very difficult to make because all basic detail, closed and open string as well as the handrail are curved.

4) Spiral stairs

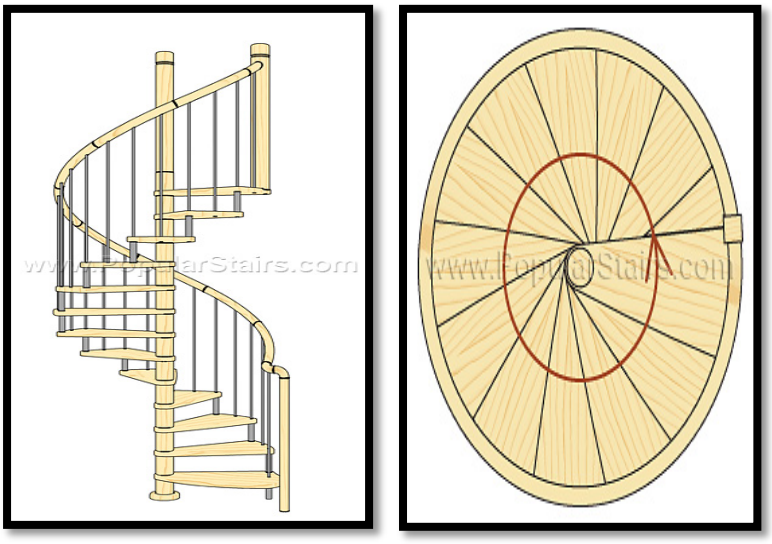


Figure 2.2.1.8: Spiral Stairs

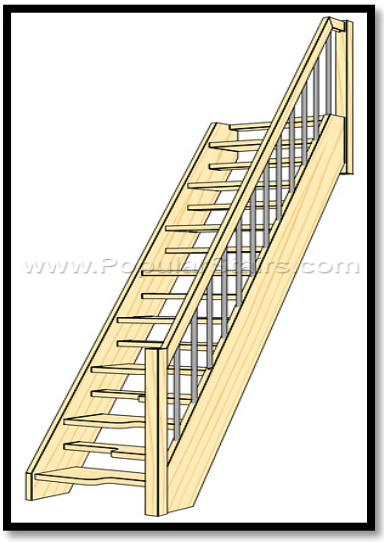
Sources: http://popularstairs.com/basic-stair-building/stairs-types(2013)

- Stairs of this type have stair flight resembling a circle or part of it in its shape. It is same with winder stairs and

arced stairs the treads are wedges-shapes but all of it's except for the last one are uniform sized.

- Spiral stairs have a central vertical post constituting the backup abutment for all treads in the flight. Due to their spiral shape such staircase look very effective such staircase are not convenient for frequent use in view of fast climbing up on a confined area.

5) Compact stairs



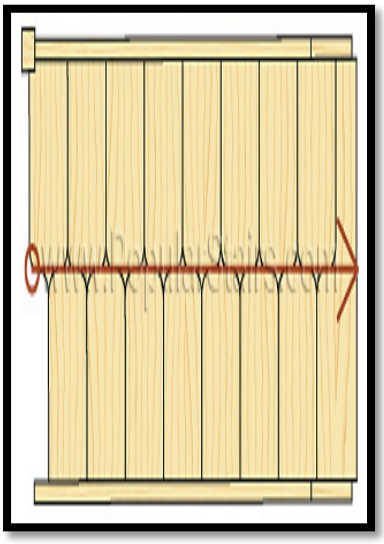


Figure 2.2.1.9: Compact Stairs

Sources:http://popularstairs.com/basic-stair-building/stairs-types(2013)

- This stair is occupying minimums space in the house. Quite often they are called “goose-step” or “sambo” stairs because of the distinctive shape of their treads.
- It is shall start going up or down them only with the proper foot which is may end up by falling down.
- When design a compact stairs, it should be taken into account that as a rule people start moving with the right foot. This is why the quantity of treads in the flight shall be such as to start going up or down with the right foot. It is extremely inconvenient and ergonomic consequently the usage of such stairs shall be limited.
- Its can only be installed in utility rooms where there is particularly little movement.

2.2.2 PRINCIPLE CONSTRUCTION OF THE STAIRCASES

There are many principle of construction of the staircase such as below:

a. Flight Of Stairs

- A series of steps must be continuous between the lower floor with the top floor which is straight flight between floors with the landing or between landing to landing which are between the quarter round, half-round and geometry.

- Besides that's, steps of stairs must also have not less than three riser and not more sixteen of riser. Usually width of threads for houses are using between 800 to 1200 mm.

b. Steps

- In order to construction of staircases, it must be built parallel or uniform to each other except reversed in flight of stair. It also built in series of treads on open and closed stairs.

c. Slope

- For the construction of stairs, its slope not exceeding 42 degrees for normal use. The slope of the recommended balanced according to British Standard BS 5395 (1997) is 42 degrees for homes. In additionally, for the construction of public buildings, the recommended slope is 27 degrees to 33 degrees.

d. Tread And Riser

- It is a horizontal portion knows as a treads and a vertical portion know as a riser. For the construction wooden stairs to tread, the treads must be organized in the range of 32mm nosing.
- Other than that, the measurements of tread shall not exceed 190mm and must not exceed 230mm of width.
- Normally, the maximum distance for tread for public staircase is 350mm.

e. Space Of Staircase

- Space of staircase are functional as a spaces for user to use a staircase for furniture removal and comfortable to user using the stairs.
- The principle of stairs space is minimal space for vertical space is 2 meters measured vertically between the stair host and line side of stair floor or minimum 1.5 meters measured at right angles to the line of 90 degrees on the floor host and the underside of the floor.

f. Landing Of Staircase

- Landing of staircase is a space between two steps of staircase which is functional for separation to steps of stairs as paragraph or run the switch towards turning.
- The landing of staircase must be good air ventilation and the space of stair always is enough of lighting. It's because for safety to user of staircase.
- The needed of landing is the stair must finish by balustrade and hand rail. The height of handrail is between 800mm to 1000 mm to host line.

CHAPTER 3

CASE STUDY

3.1 PROJECT INFORMATION

PROJECT : CADANGAN MEMBINA DAN MENYIAPKAN LAPAN(8) UNIT RUMAH TERES BANGLO 2 TINGKAT KOS SEDERHANA DI ATAS LOT PT 1017, LOT 1018, LOT 1019, LOT 1020, LOT 1021, LOT 1022, LOT 1023, LOT 1024, MUKIM PAUH, DAERAH PANJI JAJAHAN KOTA BHARU, KELANTAN DARUL NAIM.

CONTRACT NO : 10080-3/10-2014/1471

START DATE : 24 / 10 / 2011

END DATE : 23 / 10 / 2013

DURATION : 24 months

LOCAL AUTHORITY : MAJILS PEMBANDARAN KOTA BHARU BANDAR RAYA ISLAM
Jalan Hospital 150000
Kota Bharu, Kelantan

DEVELOPMENT MANAGER : PPDC MANAGEMENTS SERVICES SDN. BHD
Lot 523 Jalan Raja, PerempuanZainab II,
KubangKerian, 16150, KotaBharu,
Kelantan.

ARCHITECT : IKATAN CIPTA BINA
: CHARTERED ARCHITECT
3455-E, Tingkat ,Bangunan Peninsular
. Jalan Sultanah Zainab,
15050, Kota Bharu,
Kelantan.

STRUCTURAL ENGINEER : PERUNDING TEKNIK PADU SDN.BHD

Lot 1882, Tingkat 1, Hilir Market,

JalanTokKenali, KubangKerian, 16150,

Kota BharuKelantan.

CIVIL & LAND SURVEYOR : EZAM & ASSOCIATES

Tingkat 1, Lot 2861 & 2862 Jalan Hospital,

PayaBembam, 15200

Kelantan

LEGAL ADVISOR : AZHAM ZAMIRI & CO

ADVOCATES & SOLICITORS

1909-A JalanTokKenali, MukimKenali

KubangKerian 16150 Kota Bharu,

Kelantan.

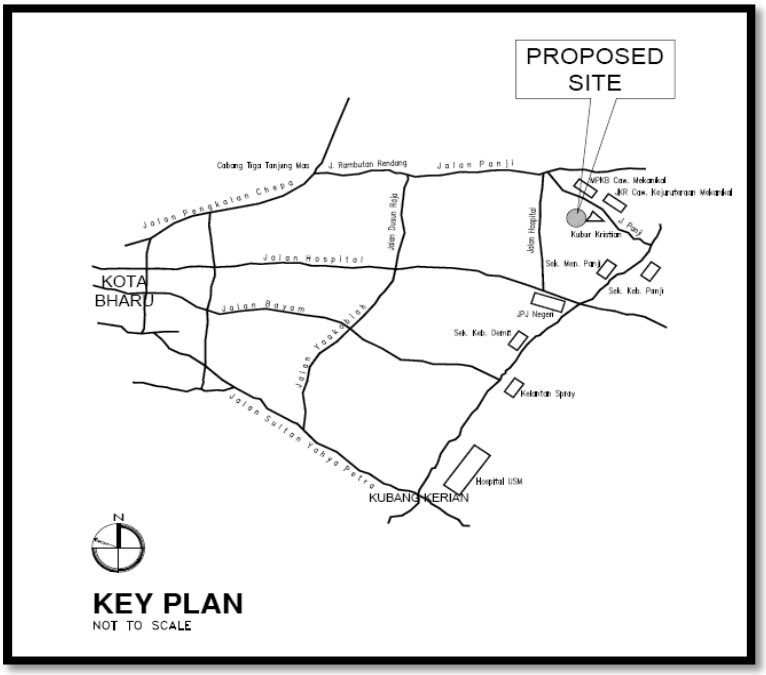


Figure 3.1.1: Key Plan

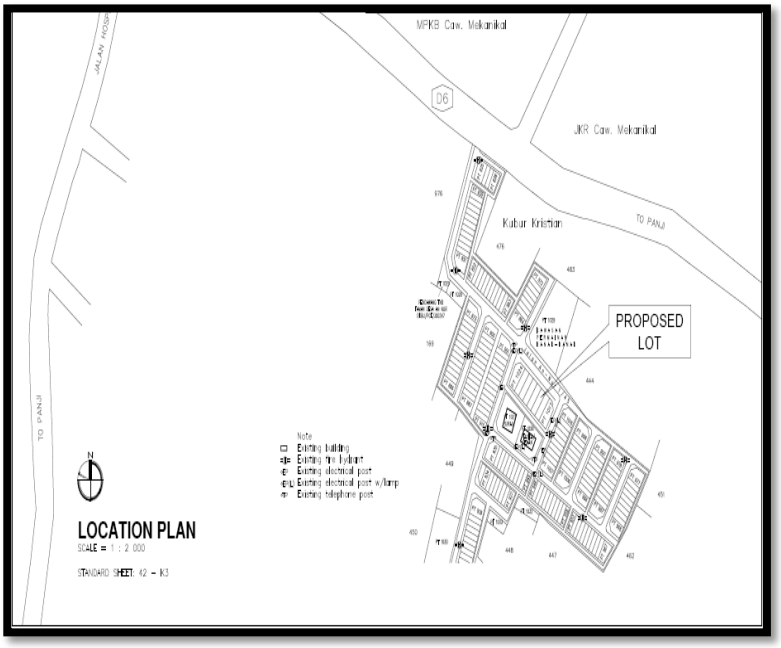


Figure 3.1.2: Location Plan

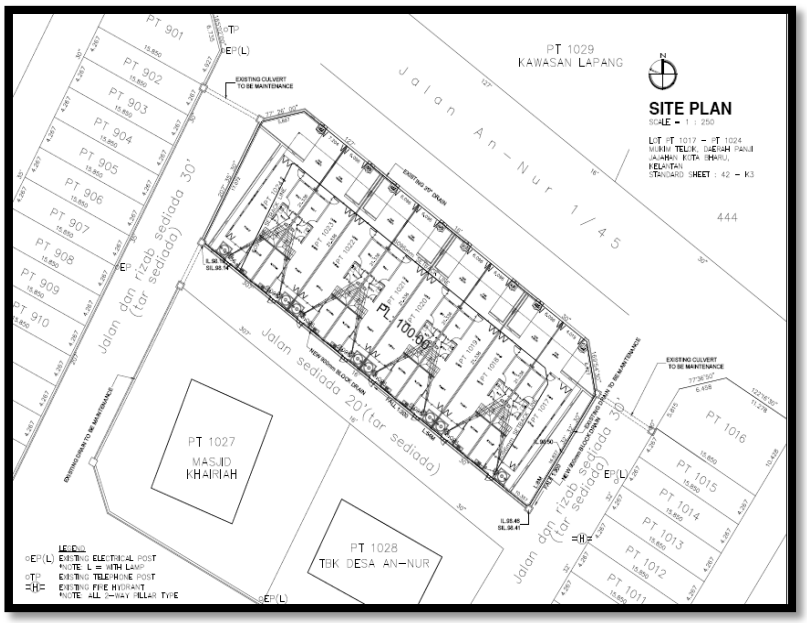


Figure 3.1.3: Site Plan

3.2 INTRODUCTION OF DRAINAGE SYSTEM

A drain is an underground material use to through the water from the property and joins a public sewer directly and water up to the last point. A drain always be private and must be responsibility to the owner or occupier of the property of the building.

Based on the case study, this building used a precast concrete drain as a drainage system. It is use two type of drain such as U-shaped drain and V-shaped drain on the site. The dimension of v shaped drain is 2 feet length and 2 feet of width. It is known as large drain. It is also be used on behind of the building because to support the water front and side of building to through drain V-shape and next to other drain.

Other than that, the dimension of u shape drain size is 3 feet length and width is 1 feet. It is normally used in housing construction. It is also knows as small drain because it holds water a little. This u-shaped drain is used in front of the house to accommodate the rain water flowing on the home page.

Figure 3.2.1: V- Shaped Drain Figure 3.2.3: U-Shaped Drain

3.2.1 METHOD OF INSTALLATION OF DRAIN FOR TERRACE HOUSES

Based on the case study, it describes the ways of installation of drain on the site construction. The step will be follow as shown below:

Step 1: Cleaning Site Appearance

Figure 3.2.1.1: Cleaning Site Appearance

- Before excavation work, the appearance should be clean up. It is to prevent that from happening obstacle to this drain installation.
- The machinery such as backhoe used to clean the site area. Directly it can save time for the drain installation.

Step 2: Excavation Work

Figure 3.2.1.2: Excavation Work Done

- After clean up the site appearance of drain, the excavation work will carry out to make a hole of drain.
- Size of excavation work should follow the in plan or based on specification size of drain. Machinery such as backhoe been used to easy the process of excavation works.
- Size of excavation work used is 2 feet of width.

Step 3: Levelling Of Excavation Work

Figure 3.2.1.3: Pouting the Timber in Soil

- Marking process is used to determine the uniformity of the drain to be included in this excavated.

- The timber was installed and be planted in soil of excavated for marking process for temporary work before install of drain.

Figure 3.2.1.4: Thread

- Furthermore, the thread also been used for uniformly of installation of drain.

Figure 3.2.1.5: Levelling Process

- Other than that, water tube also used for marking process for timber to determine the soil needed for uniformly the drain.
- It is to avoid the deep of excavated of soil before putting the drain.

Step 4: Installation Of Drain

Figure 3.2.1.6: Installation of Drain

- After finish all the levelling process, the installation of drain will be installing in soil which have been excavated.
- Spirit level used to avoid the drain slanting in the excavation.
- Therefore, process of filled up soil between the both of side drain to support the drain from pack and broken.

Figure 3.2.1.7: Drill of Drain

- Then, 8 unit of drainage block will be drilled to install for joining pipe from manholes to drain.

- The drain block has drilled four inches to each of pipe which is joined from each house.
- This process was not take a lot of time as the perimeter of pipe has been determined was same on drawing plan.

Figure3.2.1.8: Concrete Mixture

- The drain block has to been joint to each other using the concrete mixture.
- The concrete mixture also will be put on the surrounding of pipe to make sure that the bond between the pipe and drainage toughen.
- This process to avoid other water from the ground flow into the drainage.
- The construction brick wall of drain also has been used to block water from leakage to outside the drain. It is constructed by follow the dimension of drain such as 2 x 2 feets.

3.2.2 METHOD OF CONSTRUCTION THE DRAIN COVER

Based on the case study, it describes the ways of process to make the drain cover on the site construction. The step will be follow as shown below:

Step 1: Cutting The Bar Reinforcements Concrete (Brc)

Figure 3.2.2.1: Cutting the Bar Reinforcements Concrete (Brc)

- Before make a formwork, cut the bar reinforcements concrete (Brc) to small size.
- Dimension of bar reinforcements concrete (Brc) that has been cut is 2 x 2 feet's for each of bar reinforcement's concrete (Brc) steel. The length of it has been use is 2 feet as the same size also has been used for width.
- Other than that, hold the drain is also made to facilitate easy drainage lifted when needed.

Step 2: Make A Formwork Of Drain Cover

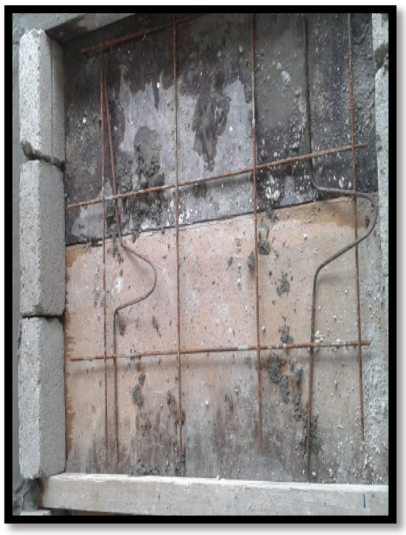


Figure 3.2.2.2: Formwork of Drain Figure 3.2.2.3: Hold of Drain Cover

- Formwork drain cover was shaped to make up of drain cover. A formwork use is several brick and timber by follow the size of drain cover to be made.
- Then, after finish of formwork, the bar reinforcements concrete (Brc) was placed into formwork.
- The hold drain of bar reinforcements concrete (Brc) must be putted below of bar reinforcements concrete (Brc) 2 x 2 feet's by see a figure 3.2.2.3 It is to support the drain cover from broken or crack after the poured of concrete mixture.

Step 3: Poured Concrete Mixture into Formwork.

Figure 3.2.2.4: Poured Concrete Mixture into Formwork

- Lastly, concrete mixture poured into formwork. Concrete mixture used was 1: 2: 4 where is1 cement, 2 sand and 4 aggregates.
- Concrete mixture should be dry in 2 or 3 days from the time of rupture to avoid the drain cover.
- After concrete mixture have been dried, the removing a formwork should be done.

Figure 3.2.2.5: Drain Cover Dried

3.3 INTRODUCTION OF STAIRCASE

Staircase is an important thing of components to access the different floors and roof. It is consist of flight of step or more intermediate landing slabs between the floor levels.

Based on case study, 8 units double storey terrace houses bungalow is using type quarter landing stairs. The landing is needed to change a direction of the flight by 90 degrees which it a place for user rest when moving through the stair. It also are more comfortable and safety than straight staircase because have a landing while moving.

Other than that, the amount of steps stairs is 18 and slope of stair on this house is 40 degree. Other than that, dimension of stairs is 1200mm of width. The riser and tread of this staircase is 7 inches and 9 inches to thread length.

3.3.1 METHOD OF INSTALLATION STAIRCASE

Based on the case study, it describes the ways of installation staircase on the site construction for 8 unit double storey terrace. The step will be follow as shown below:

Step 1: Make A Formwork For Staircase.

Figure 3.3.1.1: Formwork of Staircase

- Most of plywood and timber used in construction of formwork based on construction requirements of staircase.
- The plywood installation will be supported by a timber.

Figure 3.3.1.2: Timber as a Retainer

- Timber also as a retainer a formwork from destroy and broken. The size of timber used 2 x 4 inches.
- The installation plywood and timber of formwork should be carefully to avoid the failure of formwork.

Step 2: Installations Of Reinforcement Steel Into Formwork

Figure 3.3.1.3: Cutting the Reinforcement Steel Y12

- This figure 3.3.1.3 describes cutting the reinforcement steel types yield steel cutter a piece by using a plier by follow the size of staircase.

Figure 3.3.1.4: Spacing Bond .

- After reinforcements steel cutter by a piece, it bonded with wire between reinforcements steel.
- The spacing bond between reinforcement steel is 4 x 4 inches. Process of bend work steel is using an iron spanner because this steel very strong to bend.

Figure 3.3.1.5: Installation Of reinforcement steel

- After completely installation of bend reinforcement, the steel placed into a formwork.
- A piece of timber placed for 4 side of reinforcement's installation.
- Size of pieces of timber used is 2 x 2 inches.

Step 3: Make A Formwork For Thread And Riser.

Figure 3.3.1.6: Formwork for Thread and Riser.

- Before make a formwork of thread and riser, Angle L and spirit level was used to determine the formwork installation equality.
- It is should be careful to avoid the plywood of formwork not precise.
- The hammer and nail was used to make a joining a formwork. The size of thread was used is 7 inches and 9 inches for riser.

Step 4: Pouring Concrete Mixture Into Formwork.

Figure 3.3.1.7: Pouring Concrete Mixture Into Formwork.

- After that, pouring concrete mixture into a formwork, it using a precast concrete which is using a ratio 1:2: 4 for cement, sand and aggregated.
- It is order from manufacturer to minimise time of installation.
- After completion poured of mixture, the concrete should be dried before uninstallation the formwork.
- The process of dried take time about 2 up to 3 days in depend on weather condition.

3.4 EQUIPMENTS USED ON CONSTRUCTION SITE

Equipment's are the main important things that we should consider on construction site. We should use all the equipment that to complete the construction to easy and smoothly of construction work. Based on case study, there are several equipment used such as below:

Bil	Equipments	Description
1	**MEASURING TAPE** 	• It is used to measure the height and width box of drain cover and box of staircase by follow the required size needed.
2	**SPIRIT LEVEL** 	• Its use to determine precise of Equality of staircase and drain construction.
3	**MACHINE MIXTURE CONCRETE** 	• It is used for mixing the concrete for drain construction. • Automatically function using a diesel. • A material used to produce the mixture is water, cement and aggregate.

Table3.4.1: Equipment Use on Construction Site.

Bil	Equipment	Description
4	**PLIER** 	• Pliers used to cut the strong thing such as reinforcements steel. • For example: this pliers used to cutting the reinforcement steel for construction of staircase.
5	**BUCKET** 	• This buckets used for take up the concrete mixture to construction work. • Can be loaded a little concrete mixture.
6	**WHEELBARROW** 	• Use to transporting the things such as concrete mixture, brick, and sand. • Can be added to many items. • Quickly equipment for transporting material construction.
7	**SHOVEL** 	• Used as a tool for applying sand and concrete mixture to bucket or wheelbarrows. • Also used to process of land levelling.

Table3.4.2: Equipment Use on Construction Site.

Bil	Equipment	Description
8	**HAMMER** 	• It used to be a nail for construction boxes. • It's also to uninstall the formwork after finish the work construction.
9	**BACKHOE** 	• It is used to clean up the site appearances. • It's also used as for excavated soil.
10	**SPIKES MACHINE** 	• Spikes machine used as equipment for transporting of mixture concrete from ground floor to first floor. • For example: The precast concrete mixture to be placed in the formwork staircase.
11	**JACK HAMMER** 	• It is used to hack the strong thing such as process of drilled of drain.

Table 3.4.3: Equipment Use on Construction Site.

Bil	Equipment	Description
12	**SAW** 	• Saws used as a cutter and used for cutting plywood and timber to be used as formwork
13	**CEMENT SPADES** 	• Cement spades used to take or to put into bucket for construction work of staircase and drain.
14	**SPANNER IRON** ``` 	• Spanner iron used to bending the reinforcement steel. • It is manual use.

Table 3.4.4: Equipment Use on Construction Site.

CHAPTER 4

PROBLEMS AND RECOMENDATION

4.1 PROBLEM

Construction industry was very complicated and it a common thing that problem occur at the site. Nevertheless it should be avoid by all the parties to make sure the successful of the project. It was to avoid any unnecessary accident to the construction worker as well people near the site. The construction work must be done carefully and the safety measure should be taken by all the parties that involves.

Based on case study in construction work at Laman An-Nur in Panji there are a lot of negligence occur because of lack of labour awareness by doing his job. It shows by the method of construction for drainage cover which is not follow the specification in infrastructure plan that has been done before by the an engineer. By doing this, the consequence that may happen was lack of durability for drainage. The drainage also may collapsed and cause a problem in the future.

Besides, there is negligence by architect parties. Drawing plan does not have enough information that is needed to contractor. The complete design also is not practical to be doing by a contractor. For example in the drawing there was only one column to support the car porch. It was not practical to be constructing and as a contractor does not follow the plan in this thing. Other than that, exhausted fan that connect to the pipe from the toilet was direct to the main entrance. By doing this, unnecessary stink may happen. It is not practical cause the bad smell, but a lot of pipe needed as the toilet was far away to be

connected. Logically, the pipe should direct on top of house or direct behind the house. This design gives a lot of problem to the contractor and material wastage was occurring.

On the contractor party, they should be more professional in giving a sub-contract to other parties. From my observation, there was no written contract has been made by contractor to sub-contractor. This thing become a problem as sub-contractor does not bonding by contract with any law to completed his responsibility by the time given. The problem came when a lot of time has been taking to do a simple work. The contractor also not gives any authority to sub-contractor to buy any material besides the material was prepared by contractor. This system has their disadvantages as there was no awareness by sub-contractor to used material carefully and used material saving. When material out of stock, the sub-contractor cannot start construction work because need time to order the material. Sub- contractor should finish their job first before make any claim. The contractors have a small numbers of unskilled and skilled workers to carry out all the construction work.

4.2 RECOMMENDATION

In my opinion, all the involved parties in construction should be more professional by doing his work. They need to be more curious on every element that they have a responsibility on it. It was very important to be careful as well as look on every element because to construct a building, a bridge or anything has a lot of risk. Any small negligent that made by the parties can give a significant impact to the resident or live of human being.

Besides that, the parties that involves in construction also need to have a good relationship and always make a good discussion to solve any problem that occur in the site. Professional attitude and awareness can make a construction industry better.

Lastly, professional parties also should be always monitoring during the construction work. The monitoring that is to avoid the worker from negligent on construction work and then it is to avoid the failure of installation construction work.

CHAPTER 5

CONCLUSION

5.1CONCLUSION

In conclusion, the practical training was important course for student whether they choose to be in industry within government or non-government. By doing a practical training, we can learn a lot of thing that cannot get by just learning the theory on class. Practical training course provide many benefits to student as they getting an experience of real work, as well as how to working in industry that related on their courses in university. Other than that, students also are able to adapt on the job and to communicate with the surrounding people included at their working places or people that involved on the field. Additionally, student will have knowledge about problem that may occur and how to overcome with it. Student also is able to expand his skill to dealing with employees.

In construction site, as the practical student, I can learnt the method installation of drainage and method to make a drainage cover. I am also learning the method of installation of staircase based on site. Other than that, I am able to get a knowledge on how the equipment was functioning that has been used on construction site especially in drainage and staircase element. Furthermore, I am able to learning how to reading the drawing plan made by architecture and an engineer correctly.

Last but not least, practical training is very important to a student because it helps student to be more professional in their profession in the future. Other than that, it's give an experiences how to work and communicated with other professionals that involved in the industry whether government or private organization as well as individual person.

REFERENCES

NOTE

- BUILDING MATERIALS
  Staircase
  Mr. Al-Hafzan Abdullah Halim
  Dept of Building Surveying
  Uitm Perak.

- Uniform building by law (UBBL 1984)
  106. Dimension of staircase
  111. Lighting and ventilation of staircases

WEB

- STAIRS TYPES
  http://popularstairs.com/basic-stair-building/stairs-types

- SISTEM LONGKANG
  http://teknologi-pembinaan.blogspot.com/2012/10/sistem-longkang.html

- TYPES OF DRAINAGE
  http://www.agriinfo.in/?page=topic&superid=1&topicid=35

INTERVIEW PERSON

- Mr Zulkefli Bin Husin
  Site supervisor at Laman An-Nur, Panji Kota Bharu.

- Mr Hamid
  Site Labour At Laman An-Nur, Panji Kota Bharu.

COMPANY PROFILE PASIR PUTEH DEVELOPMENT COOPERATION.

INDEX