

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

**THE CONSTRUCTION DEFECT ISSUE
INVOLVING METHOD OF RECTIFIED OF
DOUBLE STOREY HOUSE**

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It is recommended that the report of this practical training provided

by

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entitle

**THE CONSTRUCTION DEFECT ISSUE
INVOLVING METHOD OF RECTIFIED OF
DOUBLE STOREY HOUSE**

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

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DECEMBER 2019

STUDENT'S DECLARATION

I declare that all parts of this report are the result of my own work except for the quotations, references and the sources which have been acknowledged in bibliography and the references section at the end of this report.

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ABSTRACT

The construction industry is one of the largest contributors to the nation's economy. It is included the development of residential area where many of developer now running the potential land that will become a new city. Unfortunately, all the developer and contractor facing a same issue after they hand-over the house. It is normal for a building or house have a defect after construction. The focus of this report is to identify and learn about the type of defect, the factor of defect and method of the rectified defect. Some of defect that emerge in this case study at Taman Klebang Putra and Taman Meru Perdana more to non-structural defect like plastering crack, leaking and dampness at slap porch. This is happened because of 3 main problem. First problem is regarding people, where their lack of supervision and poor workmanship. Second is on material and design, which they applied the low quality material because of the low price and not follow the exact specification. Environment also one of the reason for defect to occur where climatic condition always change and it will cause be solve and rectified immediately as soon as possible. It is because it will cause more defective and faulty at the entire house. For example, crack, it must be hacked and redo properly, use a better material with a good quality. For conclusion, defect is common thing in construction. Either developer or contractor must take a serious action to learn, to detect, too rectified and also to prevent the defect because it is related to their performance and company profile.

TABLE OF CONTENT

STUDENT'S DECLARATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
TABLE OF CONTENT	v
LIST OF FIGURES	vii
LIST OF TABLES	vii
CHAPTER 1.0 INTRODUCTION	
1.1 Background	1
1.2 Objective	2
1.3 Objective	2
1.4 Research Method	2
1.4.1 Observation.....	2
1.4.2 Interview.....	2
1.4.3 Document review.....	2
CHAPTER 2.0 COMPAMNY BACKGROUND	
2.1 Introduction to the Company.....	3
2.2 Company Profde.....	5
2.3 list of Project.....	6
2.3.1 Complete Project	6
2.3.2 Project in progress	7
2.3 Organization Chart.....	8
2.3.1 Technical Department.....	9
CHAPTER 3.0 CASE STUDY	
3.1 Introduction to the Case Study	
.....	10
3.2 Definition of Defect.....	11
3.3 Type of Defect.....	12
3.3.1 Plastering Crack and Spider Web	12
3.3.2 Defective Electrical and Wiring.....	12
3.3.3 Defective and faulty plumbing	13
3.3.4 Dampness at flat roof.....	13
3.4 Cause of Defect	14
3.4.1 Weathering.....	14
3.4.2 Workmanship.....	14
3.4.3 Lack of Supervision.....	14

3.4.4 Material Quality	14
3.4 Method of Rectified	15
3.4.1 Plastering Crack and Spider Web.....	15
3.4.2 Defective Electrical and Wiring	15
3.4.3 Defective and faulty plumbing.....	16
3.4.4 Dampness at flat roof.....	16

CHAPTER 4.0 CONCLUSION

4.1 Conclusion.....	17
References	18

LIST OF FIGURES

Figure 1	Office of Zaman Teladan Sdn Bhd at Mem Perdana 2.....	3
Figure 2	Overall layout of Taman Meru Perdana, Ipoh (https://maps.google.com/)	4
Figure 3	Overall layout of Taman Klebang Putra (https://maps.google.com/)	4
Figure 4	overall layout of Taman Naluri Perdana (https://maps.google.com/)	4
Figure 5	Logo of the Company (http://www.mkland.com.my/).....	5
Figure 6	Organization Chart for Zaman Teladan Sdn Bhd	8
Figure 7	Organization Chart for Technical Department.....	9
Figure 8	Site Plan of Emerald 5 and Emerald 4 at Taman Klebang Putra	10
Figure 9	Site Plan of Azalea Project at Mem Perdana 2	11
Figure 10	Plastering Crack on Cement Rendering floor and outside wall partition	12
Figure 11	Defect at Azalea where the fan is not working and the problem of switch.....	12
Figure 12	Stop cock leaking at master bedroom and pipe crooked at kitchen	13
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Figure 14	The method to rectified plastering crack at floor rendering.....	15
Figure 15	The method of earthing test for electrical failure.....	16

LIST OF TABLES

Table 1	Company Profile	5
Table 2	List of complete project	6
Table 3	list of On-going Project.....	7

CHAPTER 1.0

INTRODUCTION

1.1 Background

In Southeast Asia, Malaysia is one of the develop country in this regions. The economy growing in Malaysia is helping by the construction industry. This sector create a positive value that will increase the gross domestic product (GDP) per capita. It make Malaysia now 4th largest economy in Southeast Asia behind Indonesia, Thailand and Singapore (World Economic Outlook Database, April 2019). The highest percentage of value over RM 102.2 billion was share contribute by construction of non-residential building which recorded 34.6 per cent. This was followed by civil engineering sub-sector 30.6 %. Residential project only had contribute 29.7 % and other 5.1 % is a special trade (Infrastructure and Rural Development in Malaysia, Retrieved 25 May 2011). The construction is the best way to increase the social-economy development and develop complementary industry such as tourist industry. It can create more job opportunities to improve live of living.

One of the category type project in construction industry that helping growing the socialeconomy is a housing development. Housing development is a group of individual houses usually have the same design that is usually built and sold or leased by developer (Dictionary.com. Retrieved 17 September 2016). The duty of developer is make money from buying land, building new house, office and public facilities in their area (Frej, Anne B Peiser, Richard B, 2003). According to report by Ministry of House and Local Government, 'the development of housing policy since independent can be divided into 5 phases, the early housing phase of independent 1957-1970), housing for the problem of poverty(1970-1985), market-focused housing(1986-1997), housing for elimination slabs (1998-2011) and the latest is affordable housing (2011-2018)'. Every housing phase has been the purpose of the development and links to the social, economy and politics environment of the country since independence. This system make the Malaysia policy of housing development is unique and differences of other country in this regions, (<https://www.kpkt.gov.my/>)

Today, Malaysia is known as the best of buying house because of the amount and quality of the housing properties, (<https://www.iproperty.com.my>). Not only for local market, but also for global market to make Malaysia their second homes. It easy to find the developed land to buy a house or business purpose across Malaysia. All access have been clear and easy for client, developer, contractor and consultant team to create, design and build.

But sometimes it can have some problem that occurred in every situation. Mostly come in post-construction. This report will identify and investigate about the defects, their problems and causes that effected the construction and find the best solution for be a better construction progressing for the industry.

1.2 Scope of Study

This report will focus on the construction defect that commonly occur which has the same pattern. It is because the residential area have a same design that lead to same problem. Hence, this report will mainly discussed about the reason of the defect and the solution for the problem. This report also a view from client as developer regarding to this issue.

1.3 Objective

- To identify the type of defect that regularly occur on double storey house at residential area
- To study the cause of defect that regularly occur on double storey house at residential area
- To observe and investigated the method of the rectified defect that regularly occurred on

1.4 Research Method

1.4.1 Observation

First method is to observe the perimeter of the house and project at site. This is done with looking the site work and complete work for determined the problem and find the solution. When there are complaint about defect at the house that may on Defect Liability Period (DLP) it an opportunity for visit their house and observe the defect occurred. It call appointment with the owner of the house.

1.4.2 Interview

Interview is the common method for every researcher. First is to set up meeting with one of the staff at customer services department. Customer services role is to engage with buyer who buys the house or they call owner of the house. Every problem occurred at their properties, like a damages, cracks or just want to settle with registration of Tenaga Nasional Berhad (TNB) or Lembaga Air Perak (LAP) also can refer to customer services. But most of the time, they settle with defect issue. The interview purpose is to know the scope of work of customer services and their responsibilities and ethics to the purchaser. To make a complaint about defect. The purchaser must fill in the form of defect, and list the defect that appears at their house. For more detail, photo can be included. This form will brought to the contractor to check and to rectify.

1.4.3 Document review

Review several document is an alternative way to find the information about the research purposes. But this method is very difficult because not every document it can be review by strangers. Some of the document is classified so it very limited.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction to the Company

Zaman Teladan Sdn Bhd is a wholly owned subsidiary company of MK. Land Holding Berhad. It founded by Tan Sri Datuk (Dr) Mustapha Kamal, founder and chairman of MK Group of Companies. Other company that is under brand of MK land like Saujana Triangle Sdn Bhd, Medan Prestasi Sdn Bhd and Bukit Merah Resort Sdn Bhd. Zaman Teladan is Developer Company that take over the control of 'Ipoh base project'. The company was established on 3 February 1999 with the main and first office at Ipoh, Perak. The company was in execute the real estate industrv and lately become one of the biggest develoner company in Perak. This company has a long history of providing affordable housing for the people at Ipoh with starting the pioneer successfully project such as Taman Bercham Raya and Taman UK Raya. Now continue with the development project of 240 acres of Taman Klebang Putra and 191 acres of Meru Perdana, Ipoh. The mission of the company was to develop the best affordable housing properties with the beautiful residential environment and commercial for business purposes. Within this two mega development project, many product of housing like Daisy, Akasia, Jasmine and the Emeralds had launched. It include also the several product is on-going construction like Cattelya, and Emerald 5 that just finished on September 2019. This company portfolio is outstanding when they just started the Emerald 6 on November 2019 and will start Cattelya 2 on March 2020. Lately, Zaman Teladan Sdn Bhd just spread the wings to be joint ventures with MB Incorporation to develop 91.5 acres of Naluri Perdana at Simpang Pulai, Perak.



Figure 1 Office of Zaman Teladan Sdn Bhd at Meru Perdana 2



Figure 2 Overall layout of Taman Merit Perdana, Ipoh (<https://maps.google.com/>)



Figure 3 Overall layout of Taman Klehang Putra (<https://maps.google.com/>)



Figure 4 overall layout of Taman Naluri Perdana (<https://maps.google.com/>)

2.2 Company Profile

As mention before, this company is a subsidiary company of MK Land. The name of the company is registered under Zaman Teladan Sdn Bhd but the logo of company still using MK Land logo.



Figure 5 Logo of the Company ([http://www.mkland.com. my/](http://www.mkland.com.my/))

Table 1 Company Profile

Company Name	Zaman Teladan Sdn Bhd
Office Address	No. 39, Laluan Meru Perdana 11, Taman Meru Perdana 2, 31200 Chemor, Perak
Categories	Housing Developer
No Registration	476564-U
Group Chief Executive Officer	Mr. K Mohanachandran
General Manager	Pn Norida Abdul Karim
Company Secretary	Mr. Yeap Kok Leong (MAICSA 0862595)
Auditors	BDO Malaysia Chattered Accountant
Share Registrar	Tricor Investor & Issuing House Services Sdn Bhd
No Telephone	
No Fax	
Email	info@mklandipoh.com.my
Website	Mklandipoh.com.my

2.3 list of Project

This company also known as one of the best developer company in Ipoh and it is the base place for Zaman Teladan Sdn Bhd to develop this city. Start with the Taman Bercham Jaya and Taman UK Perdana with housing and commercial area. After a good starting this company move forward to develop Taman Klebang Putra.

2.3.1 Complete Project

Table 2 List of Complete Project

No	Name of the project	Year started	Year complete	Contractor	Cost of the project
1.	Proposed construction and completion development project at Taman Bercham Raya	2002	2008	Pembinaan Kesan Sempurna	RM 20 million
2.	Proposed construction and completion of development project at Taman UK Raya	2006	2012	First City Construction	RM 27 million
3.	Proposed construction and completion of full phase development area at Taman Meru Perdana	2011	2015	Pembinaan Kesan Sempurna	RM 25 million
4.	Proposed construction and completion of phase 1A development comprising Ruby, Jade and Emerald project at Taman Klebang Putra	2009	2018	First City Construction	RM 29 million

2.3.2 Project in progress

Table 3 list of On-going Project

No	Name of the project	Year started	Year complete	Contractor	Cost of the project
1.	Proposed amendments to the approval of building and constructing 242 units of 2-storey terraced houses- Emerald 5 (20 'x 65') at Klebang Putra	June 2018	September 2019	First City Construction Sdn Bhd	Rm 14 million
2.	Proposed construction and completion of phase 2E construction comprising 63 units of 2 storey terraced houses- Cattleya (22 'x 75') at Meru Perdana 2	October 2018	December 2019	Pembinaan Kesan Sempuma Sdn Bhd	Rm 16 million
3.	Proposed development of 219.28 acres on government land at Naluri Perdana	September 2019	TBA	Pembinaan Kesan Sempuma Sdn Bhd	TBA
4.	Proposed construction and completion of phase 2E construction comprising 139 units of 2 storey terraced houses- Emerald 6 (22 'x69') at Taman Klebang Putra	November 2019	TBA	First City Construction Sdn Bhd	TBA

2.3 Organization Chart

This Company is led by the senior General Manager, who control and planning all department from the credit control, land matter, sales, marketing, technical, customer services, and administration. Senior General Manager be appointed by Executive Director at MK land headquarters. This company have five major department which is Land Matter and Licence Department, who plan the new developer area and settle about law, licences and taxes for land. Credit Control Department is to deal with or buyer's payment of buying house. Then Technical Department, representative as client to construction work. Appointed architect, consultant and contractor. Lastly a customer services Department who deal with owner about defect or other problem. For technical department, is led by Development manager and helped by assistance development manager. It have three clerk of work to supervise construction work

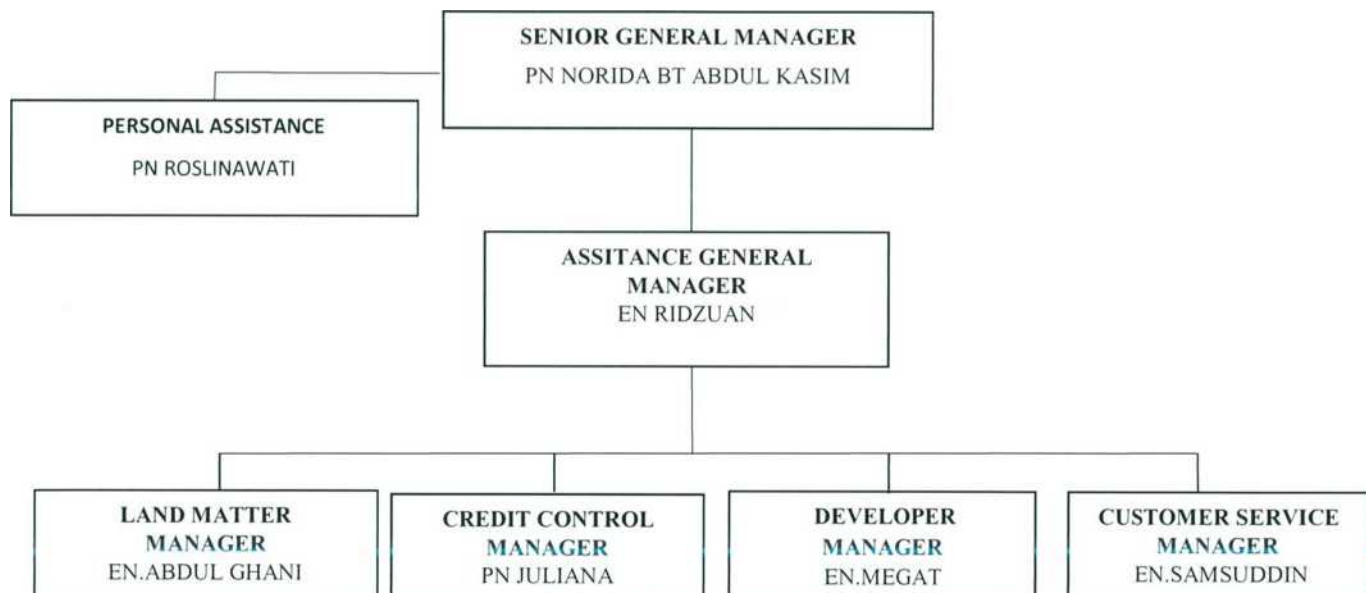


Figure 6 Organization Chart for Zaman Teladan Sdn Bhd

2.3.1 Technical Department

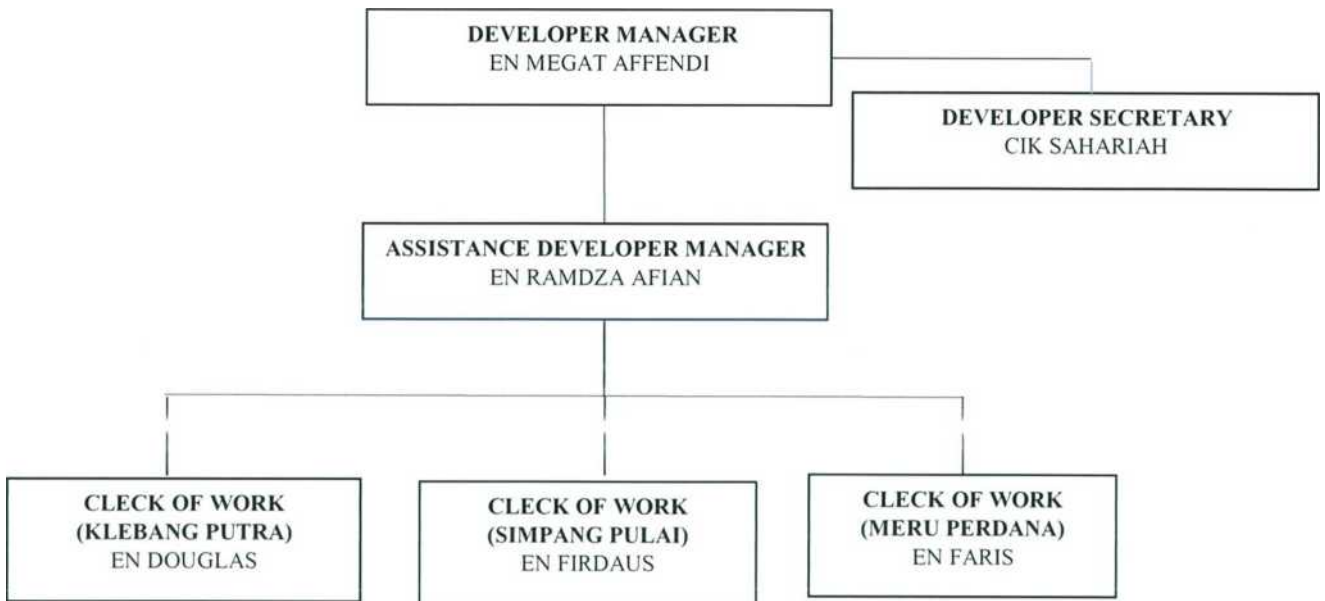


Figure 7 Organization Chart for Technical Department

CHAPTER 3.0

CASE STUDY

3.1 Introduction to the Case Study

There are several project that involved in this case study area. First is the Emerald 5 in Taman Klebang Putra. On this report written, Emerald 5 was on-going project which 85% finished. On 5th August until 29th September 2019, they are engaged in several inspection like California bearing ration (CBR) inspection, road and drainage inspection, sewerage inspection and many more. When they finished the construction on September 2019, they continue to proceed the Quality Assessment System in Construction (QLASSIC) inspection from Construction Industry' Development Board (CIDB) for the Certification Practical Completion (CPC) and Certification of Completion and Compliances (CCC).

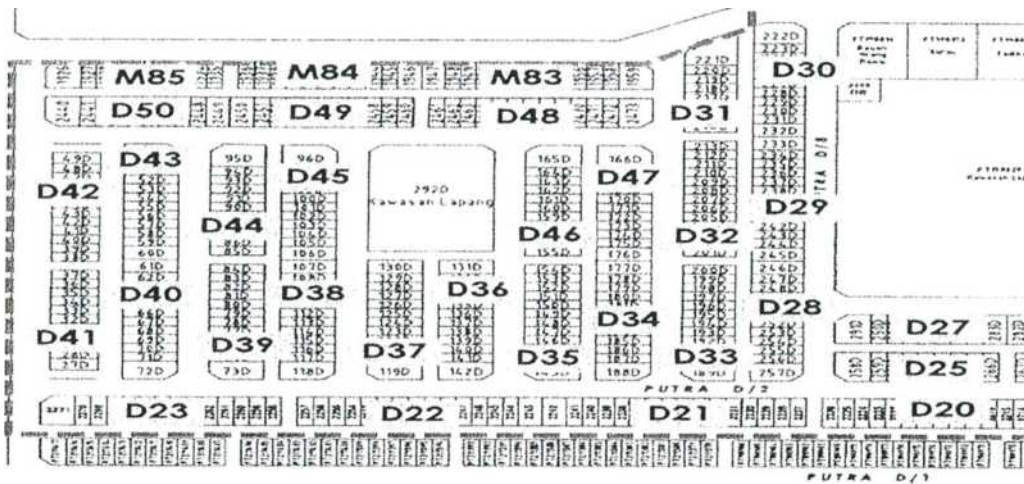


Figure 8 Site Plan of Emerald 5 and Emerald 4 at Taman Klebang Putra

Two of the other projects at Klebang Putra is the Emerald 4 and Ruby. There is now on-going process for the defect liability period (DLP) for 12 month. According to the record at customer services, Emerald 4 just completed on March 2019, and have more than 150 complained about the defect while Ruby have less than 50 complaints. Emerald 4 have one years and a half from DLP which is on March 2021 while Ruby will end DLP on April 2020. It shown difference types of building defect because Emerald 4 is a double storey house while Ruby is a single house. In this report. Project Azalea at Taman Mem Perdana 2 also ongoing DLP for 2 years that end on June 2020. It will focus more on double storey house

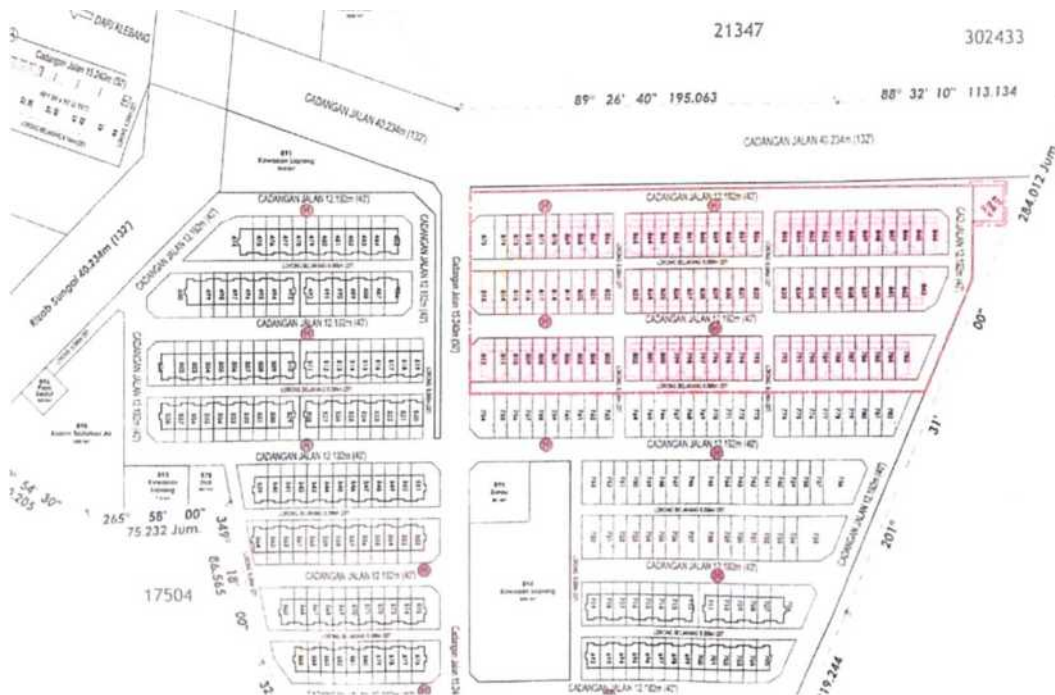


Figure 9 Site Plan of Azalea Project at Morn Perdana 2

3.2 Definition of Defect

According to Cambridge dictionary, "defect is a fault or problem in something or someone that spoils that thing and not to work correctly." A defect may be considered to be failing or shortcoming in the function, performance or user requirement of a building, might manifest itself within the structure, fabric, services or other facilities of the affected building (S.Watt, 2007). In general, the construction defect means for the defecation in the design, the workmanship, the materials or the method used on the project that effect in failure of a building element. The defective work or materials will increase the amount of contract by the building contractor. So the more defect occur, the more money borne by the contractor to repair. Defect can be easier or difficult to detect. To identify defect, it can be month or years after construction project is complete that defect can be appear.

Defect has two categories, which is a structures defect and non-structural defect. A structural defect is defined as actual physical damage to a specified bearing load element that affects the function of their bearing load to the extent that the building becomes unsafe or inaccessible. (Duncan Marshall, 2013) Non-structural defect is an imperfections of imperfect non-structural components in block work, mortar work, all finished work, door and window fixtures, and service components, for example electrical and plumbing.

Common construction defect can include sliding and fascia, windows, roofs, wood floors, ventilation and drywall. Development with tract homes seems to have more of its share of legal problem with defect. Defect also can relate to design and engineering, structure, soil settlement and drainage, settling of concrete slab and parking lots, equipment, roofs, mechanical and finishers.

3.3.1 Plastering Crack and Spider Web

3.3 Type of Defect

A plastering crack is a non-structural cracking where it formed on the plastered surfaces. Usually in a hexagon pattern, typically the measure only between 5 mm and 75 mm across the hexagon. They do not extend through the whole depth the plaster because it usually very fine and shallow. This crack can be hairlines crack which are difficult to notice, or it can wider crack which are easily seen. It is because plaster is very thin component made of mortar. The development of a series of hair crack on the finished plaster surfaces knows as map grazing. When it forms a haphazard pattern over the wall surfaces affected. For example, crack are detect at lot unsold shop at Meru Perdana 2.

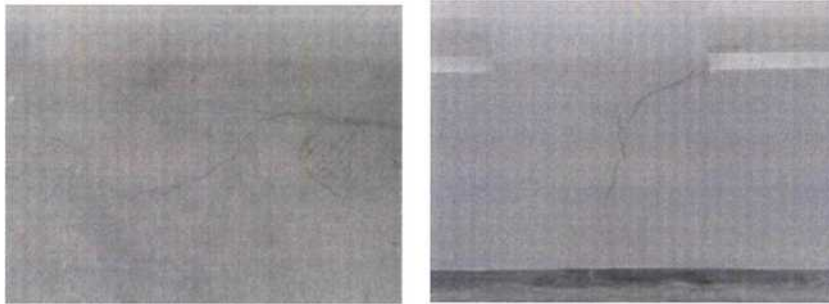


Figure 10 Plastering Crack on Cement Rendering floor and outside wall partition

3.3.2 Defective Electrical and Wiring

Electrical and wiring is a very complicated component. Every single wire have their own function and detailing. If not properly installed, it will cause the defect. These will lead to switch of light and fan is not working, flickering light, tripping circuit breaker and electric shock. In an electric power system, a fault or fault current is any abnormal electric current. For example, a short circuit is a fault in which current bypasses the normal load. An opencircuit fault occurs if a circuit is interrupted by some failure.



Figure 11 Defect at Azalea where the fan is not working and the problem of switch

3.3.3 Defective and faulty plumbing

In many cases, piping defect happen when it changes in water pressure and water flow. Some case about water pressure slow, leaking and clogged. Many of the complaint about leaking of pipe. When pipe corrode, they leak and cause endless problems. Leak can be small as a drip, but they also prove to be something must most disastrous to the buildings and belonging. If the owner ignore leaking pipe enough they can wreak havoc on their entire house. For example, it will cause other defect problem like poor water quality, wrapped and stained wall, invasive black mold, and flooding. When the pipe have a bad smell from rotting food or other debris, maybe something was wrong. It maybe because of pipe clogged

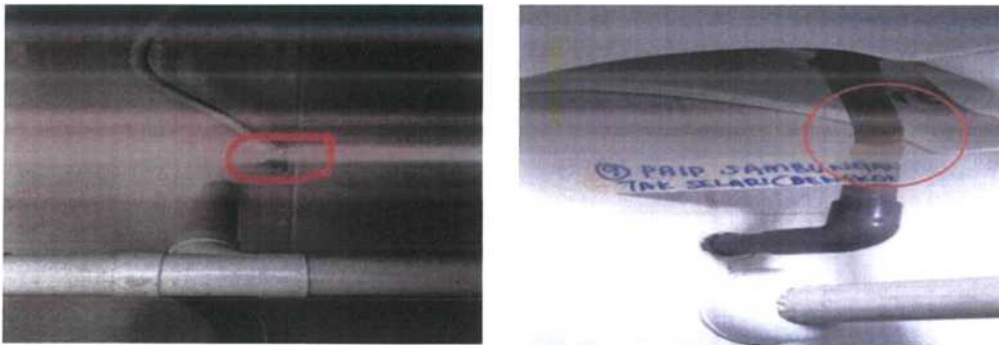


Figure 12 Stop cock leaking at master bedroom and pipe crooked at kitchen

3.3.4 Dampness at flat roof

Dampness and leaking are common problem faced by home owner and it can be a serious matter. Moreover, when it comes to rainy season. Dampness happened when water entering a building through different routes. Water penetration occurs commonly through walls exposed to prevailing wet wind or rain. Many complaint according to customer services department says, car porch and balcony is mostly area that effect to the dampness and leaking. The water absorbs from the roof directly down to slab. This also will affect the wiring of balcony and car porch lighting. Water may also drive further up the wall to emerge at a higher level. This happens due to poor quality construction and lack of waterproofing measures during construction of the building. Dampness also occurs in walls due to other factors such as leaking gutters or down pipes, defective drains, burst plumbing and condensation due to inadequate ventilation.



Figure 13 Dampness at car porch roof and balcony

3.4 Cause of Defect

3.4.1 Weathering

The environment has always been a challenge for construction work. When it comes to rainy season and extreme weather conditions, it is one of the factors affecting construction worker productivity and quality of work. This will cause the defects to occur in new buildings where the weather affects their mechanical or chemical erosion. Very hot conditions will not only affect the quality of the work but will also cause a line of cracks in the walls facing sunlight under high temperatures. This is because the heat will absorb moisture and water in the concrete.

2 4 2 Workmanshin

Lack of experience and efficiency in the workforce is one of the factors that can lead to poor quality of work. This is because the newly constructed residential buildings are experienced as a result of poor workmanship by the contractor or developer. It's also about communication on the construction site. Most foreign workers and workers, therefore, find it difficult to communicate with one another. This is because it is used by local laboratories between laboratories

3.4.3 Lack of Supervision

The contractor plays an important role in the construction site when building the building. This is because they have to keep track of all the work from stacking to completion of the project. Without proper supervision, workers can only build the structure without notice from the site supervisor. Therefore, it is important to always supervise the working people when concrete work is taking place or when they are installing work and so on.

3.4.4 Material Quality

The failures and defects that occur in the building is due to material of construction whereas the behaviour of the structure will be determined by the construction materials. For example, The effects of using low grade of materials will also slowly start to take effect like a cancer in a concrete, maybe after one or two years. In addition, the behaviour will also determine whether there will cause any defects to be happened in the future For example, the bricks that delivered to the site might got defects or when driver deliver to site,

3.4 Method of Rectified

3.4.1 Plastering Crack and Spider Web

The full thickness of plaster has come away to the background. Loose areas sound hollow which tapped, and crack will often be evident. The plaster may bulge or sag, and in extreme cause will have fallen away. Plaster has failed to adhere to a dense concrete background, probably due to the use of an unsuitable undercoat. Remove all loose plaster, clean up laths and re-plaster. If deterioration is extensive it may be preferable to replace the old lath and plaster work entirely with new construction, for example using plasterboard.



Figure 14 Method to rectified plastering crack at floor rendering

3.4.2 Defective Electrical and Wiring

The defective electrical can be anywhere indoor. The appliances fails to work when switch on. It will cause by loose wire, fuse has blown, faulty appliances and insulation breakdown. The way to rectified is first, reconnect the wire, replaces fuse with the correct size and try again. If still faulty refer to electrician. Instruct replacement of light flexes if in poor condition, but for any other failing instruct electrician to carry out inspection. Particularly if property was not rewired on conversion.



Figure 15 Earthing test for electrical failure

3.4.3 Defective and faulty plumbing

When water does not run away to waste, this is most frequently associated with kitchen sink. Internal corrosion causing restricted flow and hence blockage by normal household waste. Clear by rodding or flushing with safety precaution necessary or by drain clearing specialist in cases of persistence

blockage. Replaced corroded section with more suitable material. Relay waste pipe to proper fall. If the drain was blocked, attempt clearances using normal cleansing equipment and expertise. Identify fungal growth so that the food source can be identified and removed. Provides the deformation is temporary, releasing the blockage should return the pipes to its original shape. Ascertain the reason for breakage and replaces broken pipes.

3.4.4 Dampness at flat roof

Damp is visible on the internal plaster of the upper parts of external walls of the building. Damp patches are visible also after rain and in more severe cases water may drip from them for sometimes afterwards. Such patches may be brownish in colour and water may drip from crack to the electric light fitting. This is because condensation of water and direct rain penetration, although possible, is much rarer than might be thought. Where water does enter, it may travel horizontally between layers of roof felt before appearing as damp. To remedies, provide an efficient water proofing on the surfaces of the ceiling and ventilated any air spaces in flat roof. It will improve insulation. Drain off trapped moisture by drilling or hack the roof for temporary drainage holes and insert ventilation units. Repair defect at roof surfaces and at edges, whether contributing to the damp or not.

CHAPTER 4.0

CONCLUSION

4.1 Conclusion

This report had discovered all the information and knowledge about a defect. As a result, the construction defect is something normal to happens in every situation, either they aware and carefully construct a building or not, it going to be appears. They only can control it which not included in a big scale defect. Just a minor defect and avoid the major defect. Every parties must take the responsibility to come out with a fresh new design construction environment that take everyone involve in construction to manage the quality. This quality *cuniim must UL iiii) tuvus an aspects num utsi^n, management, supnei, anu me* importantly is the builder. Construction defects can affect projects that are completed in a variety of ways from poor aesthetics to disastrous collapse to human tragedy. When defects, failures or debris occur, contractors, designers and owners may be exposed to liability, depending on how they perform their responsibilities during the construction process.

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