



PROGRAMME IN BUILDING SURVEYING
DEPARTMENT OF BUILT ENVIRONMENT STUDIES AND
TECHNOLOGY
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
PERAK BRANCH
SERI ISKANDAR CAMPUS

DEFECT INSPECTION FOR HOUSE CONSTRUCTION

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This practical training report is a fulfilment of the practical training course.

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This chapter will briefly describe the objective and duration of industrial training at NH Ivory Home Sdn. Bhd. It also will state the scope of work and functions of the company. It also will explain the detail of the company background, vision, mission, and objective of the company. This chapter will provide some other information related to the company such as the location of the office, company organization chart, scope of work, and their responsibilities. The method that will be used to collect all the information is by an interview with some staff and through the information board.

1.2 OBJECTIVE AND DURATION OF INDUSTRIAL TRAINING

Industrial training known as practical training is a mandatory course for students to graduate with a Bachelor of Building Surveying (Hons). 16 weeks period from 11 October 2021 until 30 January 2022 is allocated for the practical training that was chosen by the student. It is required to fulfil this course to complete the degree stage and graduate from university as Building Survey Student. The training refers to work experience that can be related to what students had learned from the past semester during the classes.

There are three (3) main objectives in this study: -

- i. To learn and collect the experience of the actual working environment during the training process.
- ii. To develop their abilities in analysing and help to develop a new skill and collect new knowledge in understanding the principles, concepts, and procedures in construction industries.

- iii. To improve students' skills in managing the on-site problem and improve their communication skills.

1.3 PROBLEM STATEMENT OF STUDY



Photo 1.1: Issues from Newspaper

In Malaysia, the new house is facing the same problem relating to defects in the new building and this will impact the maintenance cost, poor user satisfaction, and cause risk for the user. Construction defects usually due to poor workmanship, low material quality, design mistakes such as not complying with specifications, and improper construction planning with limited time and cost can contribute to various types of defects in the new house.

1.4 COMPANY BACKGROUND

NH Ivory Home Sdn. Bhd. is one of a company registered under the Companies Act 2016. It is a private company that commenced operation on 20 June 2020. This company is owned by 2 owners is Mr. Muhammad Alhafiz bin Abdul Malik as Chief Executive Officer (CEO) and Mr. Muhammad Afiq bin Arif as Chief Operating Officer (COO). The company

is located in No 70A, Persiaran SIBC 4, Pusat Perniagaan Seri Iskandar, 32610 Bandar Seri Iskandar, Perak Darul Ridzuan.



Photo 1.2: NH Ivory Home Sdn. Bhd

This company is a design and build company that offers construction services on constructing the bungalows around Perak and Kedah. It is a growing company that focuses to be an expert in constructing bungalows that suits customers' perspective and demand. As a design and build company, it is responsible for designing, planning, organizing, controlling, and constructing the project. It is received a responsibility from the client to deliver the entire project.



Photo 1.3: Company's Staff and Intern

NH Ivory Home Sdn. Bhd. consist of 6 permanent staffs with only two departments which is Marketing Department and Operation

Department. For Marketing Department plays a vital role in promoting the company and fulfilling the mission of an organization. It serves as the face of the company that represents and promotes the production of the company. It is also responsible in assist and serving the clients for the appointment, collecting, and sharing the feedback of the company product.

While Operation Department is responsible for planning, organizing, and delivering projects that comply with client requirements. Operation Department plays an important role in constructing the bungalows complied with client perspective and demand. They are required to provide design and construct a bungalow that matches the client's budget.

NH Ivory Home is a private construction company that receives a lot of positive feedback from their previous clients on social media such as Facebook, Instagram, and YouTube. This company is focused on implementing the new technologies in the construction process and emphasizes the strength of the products aligned with the qualities and fineness of the house finishes. NH Ivory Home acts as an expert in constructing bungalows house and is responsible to produce appealing and quality bungalows for their clients.

1.5 LOCATION OF COMPANY

1.5.1 Site Plan

This is the site plan that shows the location of NH Ivory Home Sdn. Bhd.



Photo 1.4: Site Plan

1.6.2 **Mission**

- The NH Ivory Home is Perak's leading design and builds contractor premium home and premium service for family happiness.

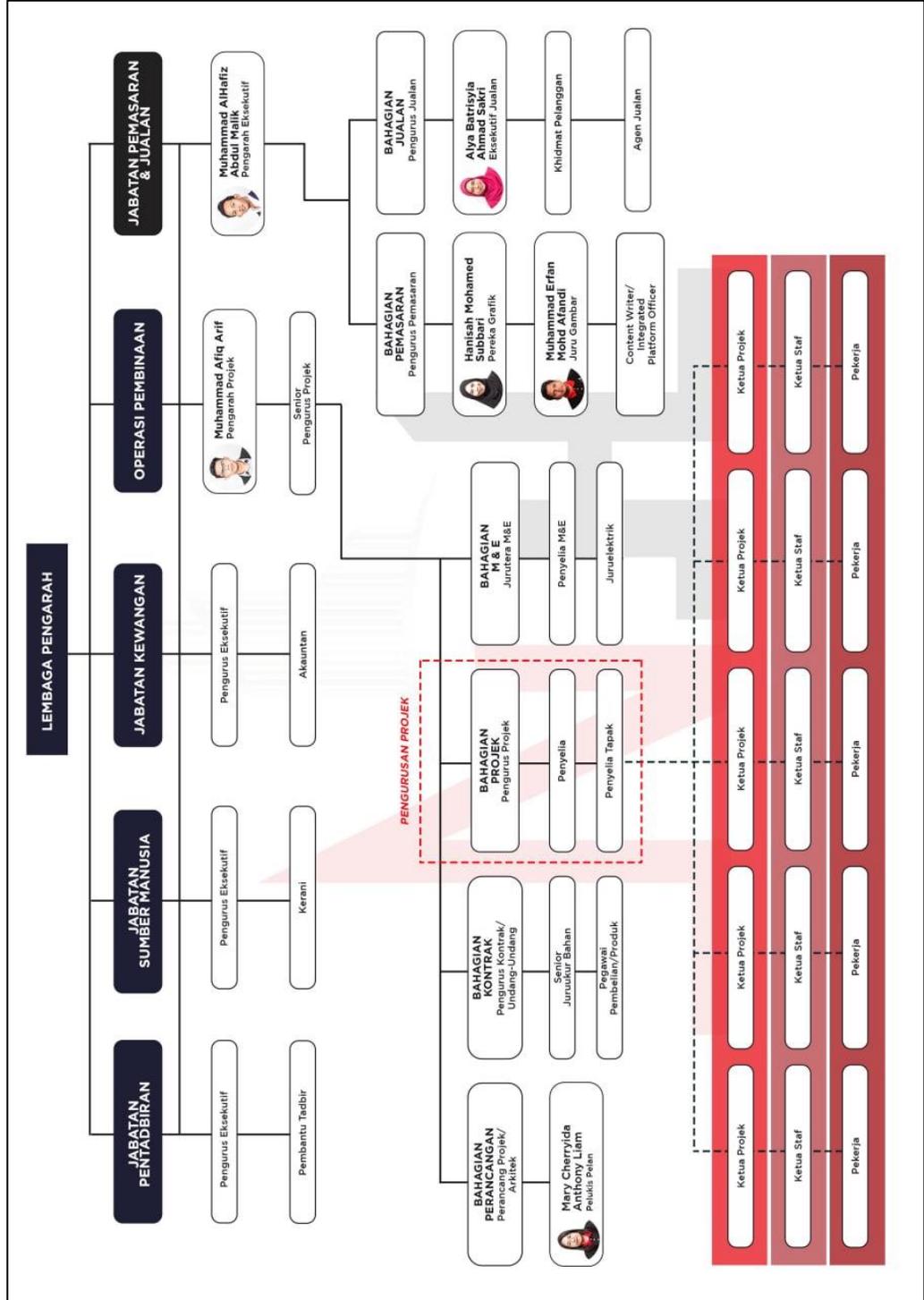
1.7 **OBJECTIVE OF NH IVORY HOME**

NH Ivory Home pledged to provide healthy and safe environments at the operation office and construction site for all employees, contractors, and visitors. NH Ivory Home's employees will always be trying to maintain and ensure that the working place is safe and healthy conditions.

Company objectives are:

- To protect all employees from the danger which can be detrimental to their safety and health and protect employee's welfare during working days,
- To protect all visitors from any danger during their visit to the construction site and operation office,
- To prepare the work procedure and working place that safe to reduce the injury risk and accidents.
- To ensure all protective and preventive equipment and procedures for emergencies during fires are arranged and maintained regularly and able to function in times of emergency and real fire events.
- To prepare all the medical facilities and medical aids that are reasonable to all employees.

1.8 ORGANIZATION CHART



1.9 SCOPE OF WORK

NH Ivory Home is a growing company that plays an important role in constructing the bungalow house around Perak. NH Ivory Home acts as an expert relating to building the bungalow house by providing consultancy for the design and square feet of the building depending on clients' budgets. NH Ivory Home also provides consultancy relating to budget by helping clients in managing the loan process and else. This company has two departments which are the marketing department and the operation department. Both departments will work together to assist the client from creating a design according to their request till the completion of the construction process.

1.10 POSITION AND RESPONSIBILITY

POSITION	SCOPE OF WORK
CHIEF EXECUTIVE OFFICER MUHAMMAD ALHAFIZ ABDUL MALIK	<ul style="list-style-type: none">• Responsible for managing overall company operation• Responsible for delegating and directing agendas• Responsible for managing company organizational structure and strategy.• Responsible for directing marketing department• Responsible to achieve favourable financial results concerning sales, profitability, cash flow.

Table 1.1: Table of Position and Responsibility of Staff

POSITION	SCOPE OF WORK
<p style="text-align: center;">CHIEF OPERATION OFFICER MUHAMMAD AFIQ ARIF</p>	<ul style="list-style-type: none"> • Manage administrative and operational functions of the business. • Implementation of company strategies and responsible for directing operation department • Responsible to consult and act as a problem solver for construction project • Work with CEO to achieve favourable financial results concerning sales, profitability, cash flow.
<p style="text-align: center;">GRAPHIC DESIGNER HANISAH SUBBARI</p>	<ul style="list-style-type: none"> • In charge of creating illustrations, brochures, logos, and editing photos for the sales and marketing process • Responsible for promotion work and advertising the company service • Responsible for planning and creating content and concepts for media social posting • Responsible for designing and promoting all company projects on media social or by hard media such as catalogue or magazine

Table 1.1: *Table of Position and Responsibility of Staff (cont'd)*

POSITION	SCOPE OF WORK
<p style="text-align: center;">PLANS DRAWER MARY CHERRYIDA ANTHONY LIAM</p>	<ul style="list-style-type: none"> • Responsible for creating a new house design • Prepare drawings and specifications for the construction project. • Consult with clients to determine their requirements or demand • Modify existing plan to fit with clients and sales needs
<p style="text-align: center;">PHOTOGRAPHER MUHAMMAD ERFAN MUHAMMAD AFANDI</p>	<ul style="list-style-type: none"> • Setting up photographic equipment • Taking contents picture, and progress work on site • Editing and retouching the images • Manage the photography sessions for media social contents • Provide photos or video for media social contents

Table 1.1: *Table of Position and Responsibility of Staff (cont'd)*

POSITION	SCOPE OF WORK
<p style="text-align: center;">SALE EXECUTIVE ALYA BATRISYIA AHMAD SAKRI</p>	<ul style="list-style-type: none"> • Involved in managing and assisting clients for appointments until the day for signing contracts • Evaluate clients' needs and demands for design and update all the data to plan drawer. • Setting up a meeting with potential clients to collect their wishes and concerns. • Seek out new clients and new opportunities
<p style="text-align: center;">QUALITY/BUILDING INSPECTOR NURUL FATIN IDAYU AZMAN (Intern Student)</p>	<ul style="list-style-type: none"> • Monitor the progress of construction work on site • In charge of dealing with the client by updating the progress on site, claim for construction cost, and preparing and updating payment receipt. • In charge in monitor the quality of construction work on-site by doing inspection work before the project is complete and during the construction process. • Responsible to manage projects' documentation and files

Table 1.1: Table of Position and Responsibility of Staff (cont'd)

1.11 CONCLUSION

This chapter is explained about objective and duration of practical training that has been assigned for the degree students. It also explains the company background and information, and the location of the company. This chapter also explains the vision, mission, and objective of NH Ivory Home. Besides that, it also consists of the detail of the company organization chart and the responsibilities of every staff in every department.

In conclusion of this chapter, it is a new company that consistently growing, and it is only focusing on their field by providing consultation and assisting clients to build the bungalows house that suitable with their budgets. It also helps to provide a design that will fulfil the client's demand or request and ensure it is still under the client's budget. As a design and build contractor, this company will help clients to manage the project starting from the design stage until the project is completed. NH Ivory Home is an expert company in constructing the bungalows house and responsible to produce appealing and quality bungalows for their clients.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

Since the early 1990s, Malaysia's construction industry has been recognized as a major beneficial sector. However, according to (Jasolav & Miloslava, 2018; Prof. Ashok & et al, 2017), construction projects are always criticized due to producing poor economic results that result from insufficient planning, poor project management, and poor craftsmanship. This poor construction result such as building defects not just happen in large projects but also happen in medium and small projects.

Thus, the construction team should be more interested in improving the project's result and should endeavour to prevent the realization of risks that will cause the project's failure. However, according to (Jasolav & Miloslava, 2018), routine risk management is ineffective in ensuring the quality of the components or elements of the project where individual threats to the quality of the building are realized.

The construction manager recommended grasping the link between quality management and project performance. This will improve the quality management strategies and quality improvement programs to improve the work quality and their performance.

2.2 DEFINITION OF CONSTRUCTION DEFECTS

According to (Zolkafli, et al., 2014), it is revealed that poor workmanship of housing units topped the list of complaints received by the Ministry of Housing and Local Government's monitoring and enforcement division. Therefore, house construction projects become a big concern for everyone. Furthermore, in recent years, housing projects have surfaced

various concerns especially in quality problems and building defects. Below is the table for the definition of construction defects from several authors.

Authors	Definitions Of Defects
(Rajendra & Philip, 2004)	Building defects are usually described by state laws and court definition and interpretation. In the construction industry, construction defect is defined as the failure of the building component to be constructed properly.
(Jessica, 2013)	Building defects are described as a defect in design, workmanship, materials, or systems used on a project that causes a failure of the building component or structure causes damage to person or property and causes financial harm to the building owner.
(Shittu, 2015)	Defects are non-conformities of a component with a standard of specified qualities given in the specification.
(Michal, Terezie, & Vladimir, 2017)	A defect is described as a lack of construction due to poor design, insufficient or imperfect execution, which reduces the performance of buildings.

Table 2.1: Definition of Construction Defects

Therefore, based on all those definitions that have been stated. To be concluded defects can be described as components, services, or systems that are unable to fulfil their functions, affect other component functions, causing damage and harm to its user.

2.3 DEFINITION OF CONSTRUCTION QUALITY

The success of a project based on the literature is depends on the project quality as a crucial point (Romeo, Andrew, Sarich, & Micheal, 2014). According to (Grace, 2021), construction quality is a project performed within the defined guidelines set out in the Scope of Work which is a set of guidelines for a project based on the client's expectations. Its defined construction quality is determined based on completing the project on time within the agreed-upon budgets and fulfilling the specification laid out in the job's contract and client's requirements.

Quality is also described as the degree to which a collection of intrinsic qualities fulfils the standards or requirements (Schlickman, 2003). While (Arditi & Gunaydin, 1997) define construction quality as achieved by meeting the project's legal, aesthetic, and functional requirements. Based on the study by (Prof. Ashok & et al, 2017) stated that most contractors defined construction quality as measured based on clients' perception and satisfaction which is not adequately quantified in construction.

Based on the definitions of quality in a construction project from different sources that have been stated. To conclude, most studies show that the construction quality is defined based on the final product that has been delivered to clients that meet their preference, requirement, and their satisfaction. If the final product was able to satisfy the clients, it means the project already achieved the quality standard and project requirements.

2.4 COMMON DEFECTS

Building construction projects faced many issues related to the quality of construction. To secure the project quality, building inspections can be used to evaluate the quality of the building. This inspection should begin in the early stages of construction to guarantee that the construction project complies with its requirement. (Ishan, Adi, Mohd, Norngainy, & Suhana, 2015) This is because the level of tolerance in the inspection of the new building is extremely low, and it should be defects free.

The building inspection requirements may relate to the structure, frame, fabric, services, and other building utilities. According to (Ishan, Adi, Mohd, Norngainy, & Suhana, 2015), there are 14 types of building defects that have been classified, which are as follows.

Types of defects	Description
Crack	It may be found in a variety of construction components. Cracks are divided into several categories and range from fine to massive cracks. External cracks usually do not affect building structures or walls, but a major crack can harm the users.
Leaks	These defects have usually been found caused by rain, water supply, or water leakage.
Clog	It usually happens in pipe systems such as tap or wastewater channels.
Distortion	These types of defects may be found in most work and metal materials as well as frames made of both materials.
Installation errors	It is typically found in various types of fittings and equipment or services such as pipe, wiring, and machinery.
Rust	These types of defects are discovered on metal construction materials, especially steel. These types of materials are highly oxidized and humid environments promote active corrosion. It is also induced by sodium exposed materials including soapy water.

Table 2.2: Common Defect in The New Building

Types of defects	Description
Exfoliation	These defects typically affect insulated or painted materials or construction components.
Rot and mould	These defects are usually found on wood brick components and materials, as well as corroded steel or cast iron. This decay can occur under both dry and moist settings.
Moisture/ dampness	Moisture or dampness are occurred due to high water content in building components such as walls and floors.
Bending/sagging	It is commonly found in wood construction materials.
Sedimentation	It is a common defect in constructing foundations and it affects the bottom floor as well as the building's apron or perimeter.
Condensation	These defects are caused by hot temperatures and humid environments. It can happen in cold, confined places with limited airflow or sunlight.
Stretching and tearing	It is commonly found in both external and external building fixtures.

Table 2.2: Common Defect in The New Building

Aside from defects that have been listed above, there is also a defect that has been caused due to construction mistakes such as hollows, gaps, uneven surfaces, malfunction, and incomplete construction works. Some defects occurred due to the design of the building and construction method errors.

2.5 CAUSES OF CONSTRUCTION DEFECTS

According to (Kenneth & Grossbart, 2002) common construction defects that usually can be found are structural defects that will result in cracks or collapse and defective or faulty plumbing and electrical. There are also defects of inadequate or fault of the drainage system and

inadequate fire protection or suppression system. All these defects are usually be grouped into four such design defects, material defects, construction defects, and geotechnical problems.

Construction defects occur because of an architect's design error, a manufacturing problem, defective materials, improper use or installation of material, contractor's failure to comply with the plan, or any combination of these factors. There is an article stating that construction defects arise due to design flaws, poor workmanship, or because the building was not built according to the design or because it was subjected to circumstances not anticipated in the design (Meor, et al., 2015).

For example, referring to (Ashley, 1985), poor workmanship could cause dampness penetration that is visible as a damp patch on the wall and resulting defects and affect the appearance of the building. Besides that, insufficient attention to foundation design also could lead to a ground movement which is causing a visible defect such as cracks in the brick walls and possibly causing a sagging roof that will cause the change in shape. This shows that one defect such as poor workmanship could cause several other defects and separate them to other elements.

Lastly, (Meor, et al., 2015) also stated that to achieve great workmanship, two factors are rarely considered before starting any construction project. First is the buildability of the design which will decide if good workmanship can ever be done if the requisite reasonable care and skill are available. Second is the materials' durability which represents the life span of each material used in a particular environment before it deteriorated.

2.6 CLASSIFICATION OF DEFECTS

Defects' classifications are subjective and various investigators may label the same defects as minor, moderate, or major. According to (Meor, et al., 2015) usually previous categories are based only on crack

width that has not been used anymore due to the measurement will not offer a clear estimate of the severity of the damage. Furthermore, the limited classification is not based on the causes or potential deterioration of the defect condition.

Therefore, (Sanghoon, Sanghyo, & Jaejun, 2018) stated that defects should be classified using a classification system that covered the period from construction until the operational stage. This system will require the investigator to examine the profile of building defects in number, type, location, and severity. The investigator also needs to investigate the factor of the defects, including the building types, floor area, number of bedrooms, build method, and the performance standard for the assessed building. But according to (Clara, Jorge, & Jose, 2020), most of the other's countries are using global systems that classification lists of defects based on diagnosis procedures and repair strategies. But this global system is lacking a classification of causes of defects.

The research of building pathology helps to identify defects, their causes, and the source of those issues (Clara, Jorge, & Jose, 2020). Thus, the defects are further classified based on their origin, type, and position as well as the architectural elements and activities.

2.7 STRATEGIES IN MINIMIZING DEFECTS

Defects usually are attributed to design and production management. The most common sorts of defects were a failure to coordinate design work, error in production planning, poor workmanship, and late delivery. Therefore, according to (Meor, et al., 2015) most researchers proposed alternative strategies to reduce the problem of poor workmanship quality.

2.7.1 Strict Supervision

The focus of modern practices in the building construction sector is to improve the quality through strict supervision on the construction site. Contractors or sub-contractors should provide daily monitoring so that

workmanship issues may be identified, and remedial work can be completed immediately. Furthermore, when carrying out the supervision, the contractor supervisory staff must have the knowledge, skills, and capacities to properly manage the construction activities and supervise the craft worker (Maloney, 2002). According to (Liang, 2018), by implementing strict supervision, all material used in construction will be thoroughly screened and examined, whether it is construction technology or construction equipment. It must be carefully measured to ensure that all relevant elements in the construction project can achieve the expected results. This is because (Victoria & David, 2018) stated, the sooner a defect is found, it will cost less to repair it. When a defect is discovered at the later phases, the damage is considerably more obvious and will cost more to repair. Once the inspection process is complete, it may be utilized in the actual construction to avoid measurement errors that will be affecting the overall project quality (Liang, 2018).

2.7.2 Training and Education

Most researchers believed that adequate training and expanding experience are required to produce a high-quality project. Therefore, labour productivity is important in construction because it influenced the completion of the project. It was agreed that improving on-site labour skills and increasing their knowledge may improve the building qualities. (Chan, Wong, & Lam, 2006; Osama & Khan, 2010) The ongoing training program might assist to solve the different issues that the construction industry faces. Furthermore, providing training may make employees feel more valued and contribute to a more active company culture. Besides that, training systems that are well designed can increase workers' performance and engagement as well as their health and safety (Andreas, Manuel, & The Boston, 2016). (European Construction Sector Observatory, 2020) stated that, training and education will help in upskilling and re-skilling of the worker which will develop and integrate upskilling frameworks at another level.

2.7.3 Proper Communication Among Parties Involved

According to the survey that been conducted by (Augusta, et al., 2009) 80 percent of construction workers believe that communication with supervisors is critical and between contractors and sub-contractors must be improved. The manager advised that training in communication skills should be provided to bridge the language gap between themselves and the foreign workers. The causal relations among construction parties may be strengthened by continuous communication among all parties involved. Therefore, the implementation of a checklist or documentation is needed to provide an update of progress work and act as an intermediary for the construction parties. (Xiao & Proverb, 2002) mention that the improvement of quality performance of Japanese construction projects can be reached due to the consistency and long-term working relationships between Japanese contractors and subcontractors. Therefore, (Meor, et al., 2015) concluded that efficient communication is critical for improving the relationship among construction teams, and as a result, it will help in improving construction workmanship quality.

2.7.4 Proper Construction Management

Construction workmanship quality would be improved with proper construction management by the contractor. The capacity of the construction manager to manage, organize and lead the operations would have an impact on construction labour productivities. The quality issues may develop if the construction manager fails to lead and oversee the construction process. (Meor, et al., 2015) Construction project with proper construction management usually will ensure all parties involved in the project are included in the task of quality planning for the project to control the quality of the project. The parties involved will set their quality standards based on the requirement during the quality management process (Pravin & Dr., 2015). Therefore, good construction management is important for every construction project.

2.7.5 Proper Manpower Management

The quantity and quality of skilled workers under manpower management is a major driver of contractor performance and has been prioritized by employers. A construction project which has a well-planned manpower arrangement will produce high-quality construction projects (Meor, et al., 2015). Furthermore, personnel are the main productive resource; hence construction productivity is mainly dependent on human effort and performance. Therefore, manpower management in any construction project must be carefully planned.

2.7.6 Proper Design

Proper design can help to eliminate workmanship defects and help to avoid the defects. Low building quality is always the outcome of inadequately defined requirements and unclear design. Furthermore, well-prepared plans and drawings make future work easier to complete and the defect may be recognized and corrected more efficiently (Meor, et al., 2015).

2.8 SITE WORKERS' CATEGORIES

To secure the quality of the project from the construction process, the quality of work performed by site workers must be evaluated. During the construction process, some works required site workers to undertake specialized jobs that cannot or should be performed mechanically. Currently, the construction industry employs several types of workers on-site to carry out the building construction process. However, not all workers that have been hired had a lot of skills for construction works. (Meor, et al., 2015) mention that, site workers act as the glue that held other construction resources such as material, plants, and equipment and finance together to accomplish the project's expected results. Therefore, to secure the quality of project results, construction workers need to be categorized into several categories of workers such as skilled, semi-skilled, and unskilled workers.

Categories of workers on site: -

i. Skilled Worker

Skilled workers are workers that have undergone training. These workers usually conduct complicated tasks that need unique abilities, education, training, and experience that must be proved on every given work. Workers in this category have a variety of skills and training, ranging from apprentice to trades foremen or supervisors. Masons, carpenters or joiners, electricians, painters, glazier, roofers, tilers, steel benders, scaffolding specialists, plumbers, and operators of plants and equipment are an example of workers that work under the supervision and control of professionals and the built environment to ensure that project objective are achieved. (Kunle, Hezekiah, Adekunle, & Babatunde, 2018)

ii. Semi-skilled Workers

For semi-skilled workers, it includes those who can be under proper supervision and control. The workers may have an extensive understanding of the subject at hand, yet they cannot be considered tradesmen. These semi-skilled workers have enough knowledge to follow instructions, take direction and work with prudence. This group of workers is included assistant operators, security guards, assistant electricians, and iron-benders' helpers. (Kunle, Hezekiah, Adekunle, & Babatunde, 2018)

iii. Unskilled Workers

Lastly, unskilled workers are mostly a worker with minimal skills or with low economic value for the task that is being performed. According to (Kunle, Hezekiah, Adekunle, & Babatunde, 2018) these unskilled worker does not require any specific or specialized talents to complete their tasks. It is because, most of their tasks do not need any special training, experience, or education. These categories of workers are identified by the levels of their payment and education. Their performance work remained the measured by which they were evaluated through familiarity or past

similar work experience may have aided in creating a level of work to justify their compensation. Therefore, many researchers stated that the low productivity and quality in developing countries is caused by incompetent supervision and a lack of skilled workers.

2.9 CONCLUSION

This chapter presented the relevant literature to justify the purpose of this study. Based on this chapter, defects are described as components, services, or systems that are unable to fulfil their functions, affect other component functions, causing damage and harm to its user. While for the project quality, usually it been evaluated based on the client's preference, requirement, and satisfaction. According to previous researchers, most of the defects that occur in a new house are due to poor workmanship. Therefore, there are several alternative strategies to minimize defects on-site such as providing strict supervision on-site to monitor the progress and quality of the project. It is also required to provide training and education to improve workers' skills, implement proper communication among parties involved, proper construction management and manpower management. Besides that, improper construction design is also part of the potential of defect occurs. Thus, by providing proper design, it can help to eliminate workmanship defects and help to reduce the number of defects. Besides that, to reduce workmanship defects during the construction process, site workers also need to be evaluated and categorized based on their skills and quality of work. This will help the supervisor to identify the workers that lack skills and need more supervise. All these initiatives will help to minimize the number of defects and improve the quality of projects.

CHAPTER THREE

CASE STUDY

3.1 INTRODUCTION

This chapter aims to identify the procedure of inspection during construction work and mitigate the number of defects that appear on the new house after construction work is done. Therefore, defects inspections have been done at selected construction projects to control the quality of construction work. These defects inspections have been conducted during the construction process to avoid defects due to poor workmanship. Thus, this chapter will explain the process of defects inspection and the outcome of the inspection process.

Defects inspections work has been done on a construction project located in Chenderong Balai. The contractor in charge of this project is NH Ivory Home Sdn. Bhd. and site supervisor is Mr. Muhamad Kamil. The defect inspection has been done on the selected element which focuses on the quality of finishes.

3.2 BACKGROUND OF CASE STUDY

The project is located in Lorong Sri Saga, 36600 Chenderong Balai, Perak, this project is a single-story bungalow house, and the size of this project is 1370 sq. ft. This house project is owned by Mr. Muhammad Ferdaus bin Selamat.

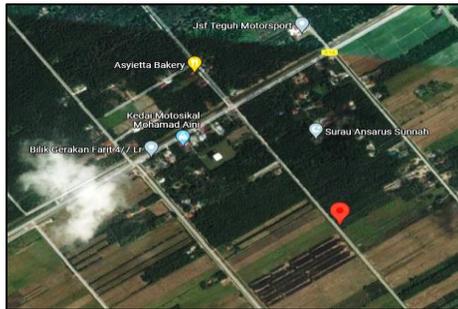


Photo 3.1: Key plan of case study

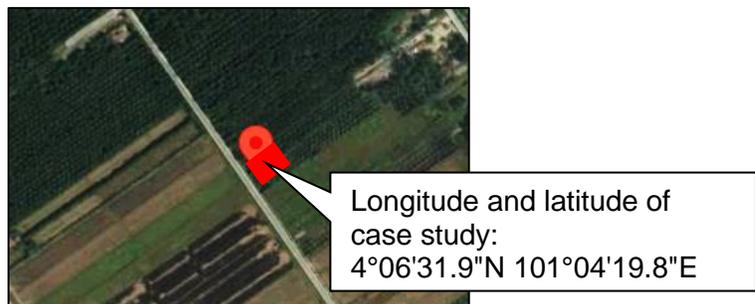


Photo 3.2: Location plan of case study

Project site located in palm oil plantation area and near with rice field and river that consist weak soil structure such as clay soil. Thus, this project is use mangrove piles to improve the strength of the house foundation. Specification for this house consists of four bedrooms, three toilets, one living area, one dining area, one dry kitchen, one wet kitchen, one washroom, one terrace, and one car porch. Below, there are several photos of the external and internal view of the project on-site Chenderong Balai.

3.3 LAYOUT OF THE PROJECT

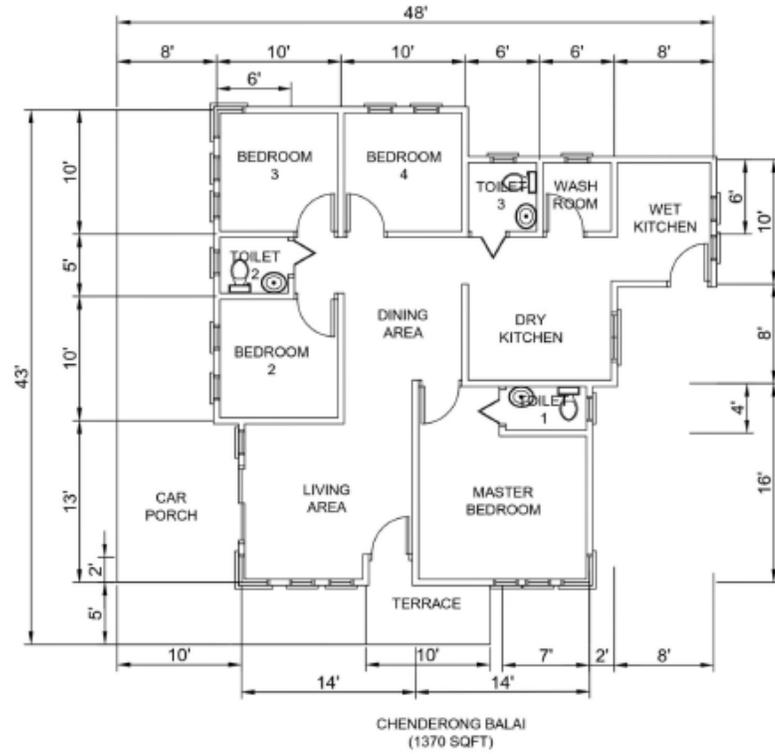


Figure 3.1: Floor Plan

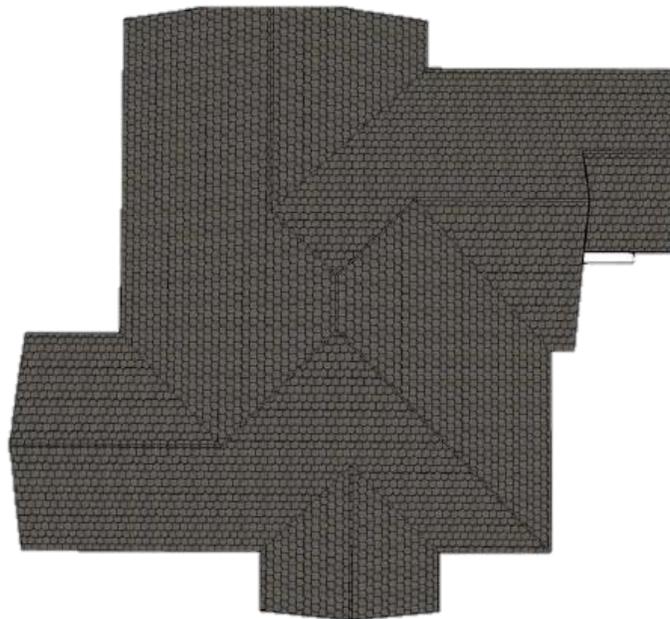


Figure 3.2: Roof Plan



Figure 3.3: Front Elevation



Figure 3.4: Rear Elevation



Figure 3.5: Right Elevation



Figure 3.6: Left Elevation

3.4 SCOPE OF WORK

Scope of work for the inspection process: -

- i. Do the site visit during the construction process and after completing construct every element.
- ii. Identify the requirement for elements for the house.
- iii. Do the inspection work which includes:
 - Ensure the size of actual build elements are comply with the plan.
 - Identify and mitigate the defects that appear for every element.
 - Monitor and ensure the defects that have been identified during the construction process are repaired completely.

3.5 DEFECTS INSPECTION PROCESS

For the defect inspection process in this project, there are inspection works during the construction process that have been done severally on selected construction progress. There are several constructions progresses such as preliminaries, substructure and superstructure, brick wall system, roof system, window system, electrical supply system, ceiling finishes, water supply system and accessories, wall finishes, door system, drainage, and sewerage system, bathroom and kitchen accessories, painting system and external work.

This inspection work is being done strictly to minimize the number of defects before handing over the project. The inspection work during the construction process is believed will help to secure and provide a high-quality project align with the company's objective which is to provide a premium bungalow house for the client. There is only 1 staff as the inspector and assistant who is also a practical student will carry out this inspection work. The task given during inspection depends on the stage of construction progress.

As mentioned before, these inspections will be carried out on selected construction stage and if there are defects that have been found, the inspector is in charge to provide a report for the contractor to carry out repairing work. All the inspection work needs to be done repeatedly on the same structure or element if it required repairing work until it complies with the requirement.

Inspection Instrument	Description
 <p data-bbox="597 695 764 726">Smartphone</p>	<p data-bbox="943 533 1373 617">Smartphone – use to record the photos of defects on site.</p>
 <p data-bbox="493 1014 867 1045">Skylon Measuring Tape 50m</p>	<p data-bbox="943 779 1373 1010">Measuring Tape 50m – uses to measure the length of every floor beam and element of the site, to ensure it is accurate with the plan.</p>
 <p data-bbox="607 1333 755 1365">Spirit Level</p>	<p data-bbox="943 1178 1373 1255">Spirit Level – uses to measure the horizontal and vertical levels.</p>
 <p data-bbox="558 1652 803 1684">Digital angle finder</p>	<p data-bbox="943 1472 1373 1598">Digital Angle Finder – uses to measure the angle of inside and outside of construction element.</p>

Table 3.1: Tools Uses for Inspection

Inspection Instrument	Description
 <p data-bbox="618 653 748 688">Flashlight</p>	<p data-bbox="943 457 1373 590">Flashlight – uses to evaluate the smooth quality of the wall surface.</p>
 <p data-bbox="597 972 764 1008">Tapping Rod</p>	<p data-bbox="943 789 1373 921">Tapping Rod – uses to evaluate the tiles work to avoid the hollow tiles.</p>
 <p data-bbox="634 1293 727 1329">Pencils</p>	<p data-bbox="943 1108 1373 1241">Carpenter Pencils – uses to mark the location of defects on skim work.</p>
 <p data-bbox="597 1614 764 1650">Label Sticker</p>	<p data-bbox="943 1430 1373 1562">Label Sticker – uses to label the location of defects on plasterwork.</p>

Table 3.1: Tools Uses for Inspection (cont'd)

Inspection Instrument	Description
 <p style="text-align: center;">Drawing plan</p>	<p>Drawing Plan – uses as a reference to evaluate the design measurement and actual build</p>
 <p style="text-align: center;">Inspection Form</p>	<p>Project Inspection Form - uses to record the measurement of elements on site.</p>

Table 3.1: Tools Uses for Inspection

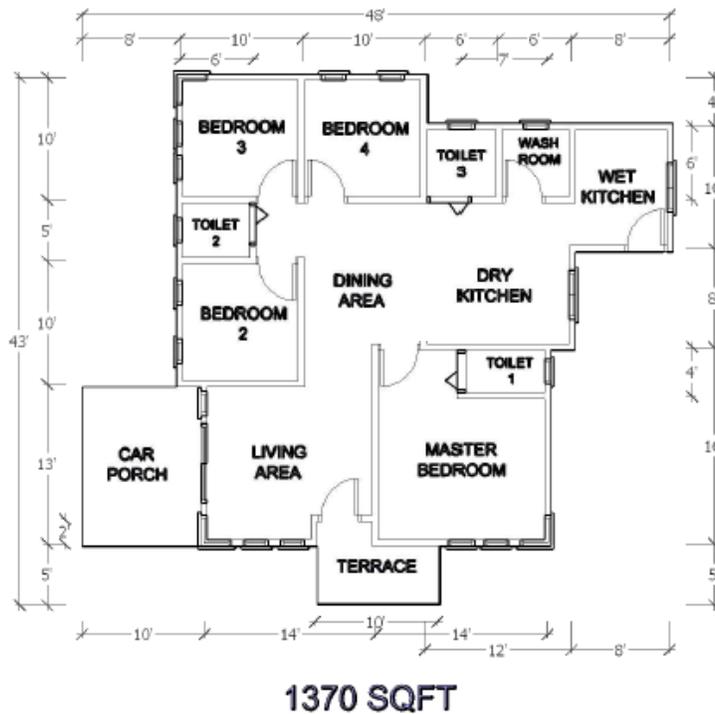


Figure 3.7: Floor Plan of The Project

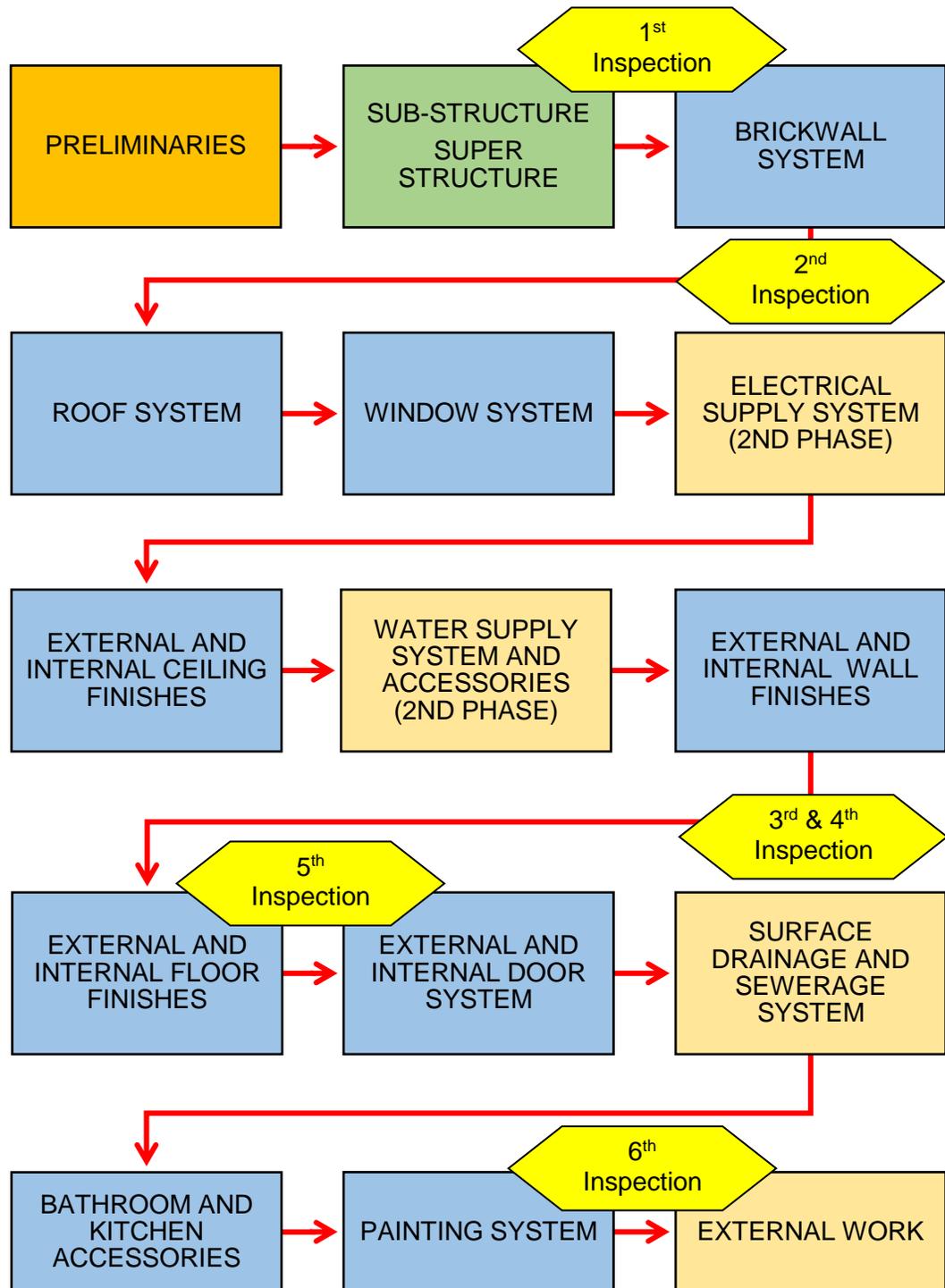


Figure 3.8: Flow of Inspection Work During the Construction Process

3.5.1 First Inspection – Sub-Structure Work

The first inspection is being done during the sub-structure work. On the first visit, the inspector needs to ensure that the position of project position complies with the approved plan. Inspectors need to measure the length of the proposed position from the project boundaries. This process ensures that the position of the project site is accurate and ensures the facade of the building is comply with the client's request.

After the project position has been confirmed, the inspector needs to do a second visit exactly after the floor beam has been constructed. The inspector needs to measure all floor beams on-site and record them into the inspection form. This process has been done to ensure the size of every beam and space area are comply with the drawing plan. The record of size and area of build space will be analysed to identify any inaccurate measurement.

If there are inaccurate measurements on-site, the inspector needs to report the issues to the contractor to solve the issues. After the issues have been solved, the inspector needs to do the same inspection procedure until it complies with the proposed drawing. Below is the process carried out on site after the approval of the inspector.



Photo 3.3: Land Filling



Photo 3.4: Concrete Slab

Besides that, during the measurement process, the inspector also needs to inspect the quality of constructed beam either in good condition or not. The inspector needs to ensure they're no honeycomb or crack on the surface of the beam. By referring to the drawing below, the inspector also needs to ensure the position of beams is aligned and comply with the proposed drawing.



Photo 3.5: Measurement Process

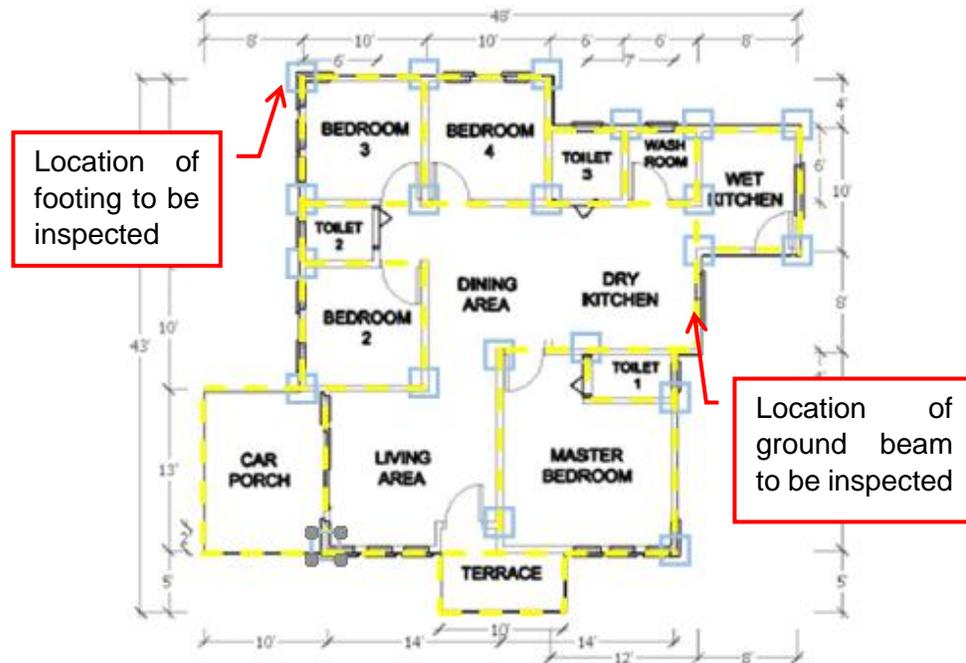


Figure 3.9: Plan for Sub-Structure Work

3.5.2 Second Inspection – Brick Wall Work

The second inspection work, it will be done during the progress of brick wall work. For this stage, the inspector needs to do a visual inspection on brick wall work to ensure the position of the brick wall is aligned with the beam position. The inspector also needs to do measurement work on every space of the house to ensure the area of all spaces is accurate and comply with the proposed plan. To ensure the brick wall is constructed straight, the inspector needs to use the spirit level to check the placing brick to vertical level and horizontal level. Other than that, the digital angle will be used to measure the angle of brick wall jointing to ensure the jointing is perfectly 90 degrees to ensure the wall is constructed straight.

For the mortar work, the inspector needs to ensure the thickness of the mortar joint is not exceed 10mm. Besides that, the inspector also needs to do a visual inspection on the wall surface to ensure the brick wall is not leaning

and straight, comply with the requirement. All this inspection work needs to be carried out during the progress of work to avoid the delay of the progress work. Below is the photo of the bricklaying process carried out on-site under the supervision of the site supervisor.



Photo 3.6: Bricklaying Process

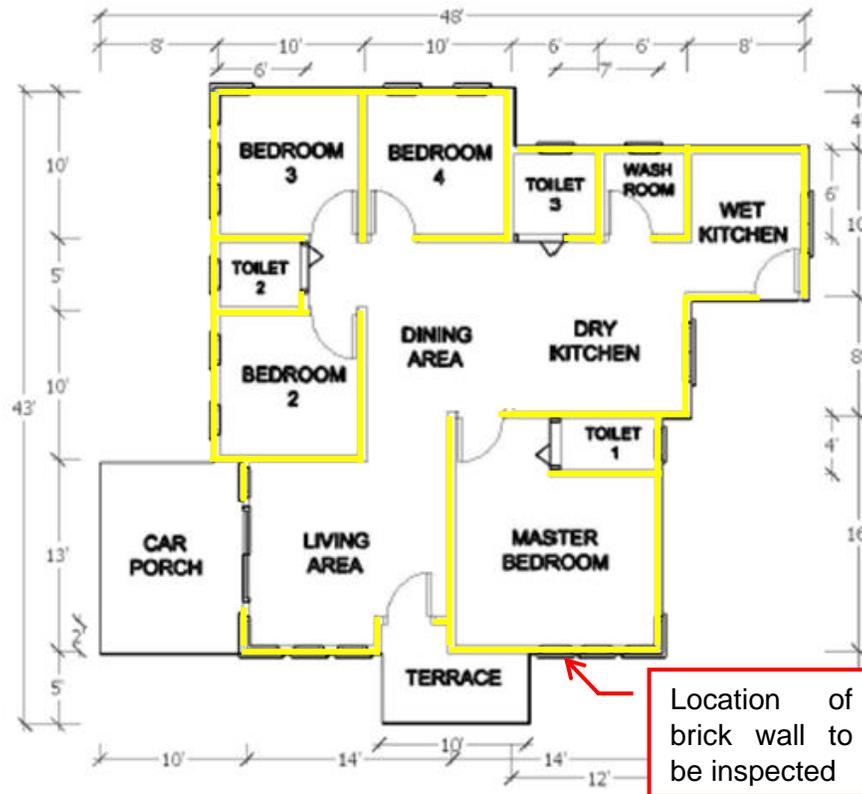


Figure 3.10: Plan for Brick Wall Work

3.5.3 Third Inspection – Plaster Work

After finishing the inspection on structure work, the inspector needs to conduct another inspection on finishes work such as plaster and skim work on the wall. The inspector is required to evaluate the plasterwork to ensure it is even and neater. The inspector also needs to inspect every wall surface to ensure there are no defects such as uneven surface, crack, chipping, and mould growth.

During the inspection process, the inspector needs to use spirit levels to identify the evenness of the plasterwork in vertical and horizontal directions. The inspector also needs to ensure the plastering thickness is even at all points during the plastering process. If there are defects that have been found, the inspector needs to record the defects and provide the report to the contractor

to repair them. After the repair works have been done, the inspector needs to do the same inspection work until it complies with the requirement.



Photo 3.7: Inspection of Plasterwork Process



Photo 3.8: Plaster Installation Process



Photo 3.9: Exterior Plaster Work

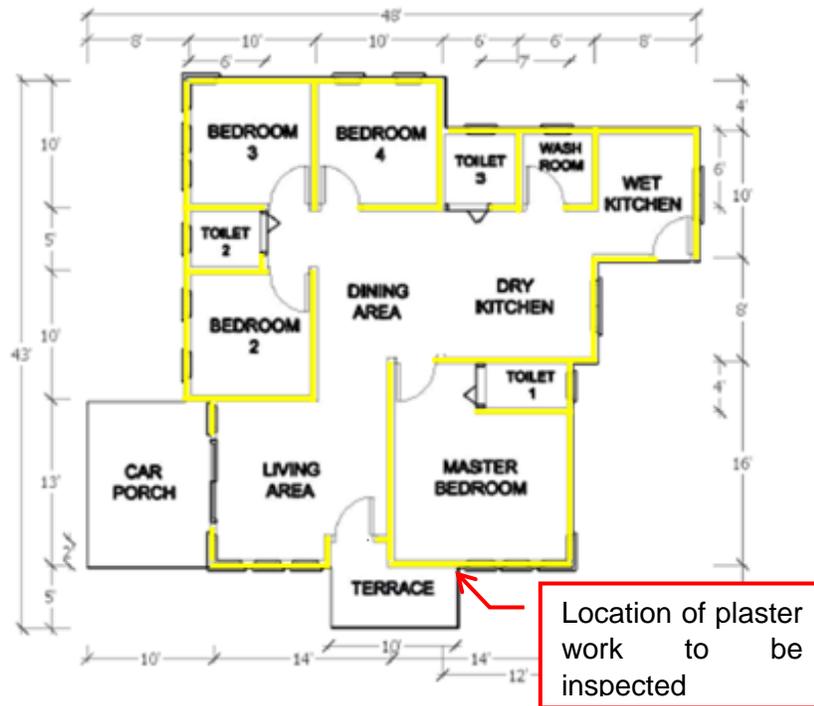


Figure 3.11: Plan for Plaster Work

3.5.4 Fourth Inspection – Skim Coat

Once the plasterwork is completed, workers will start to do skim work on the brick wall to provide a smooth surface of the wall before the painting work. If the plastering work is not done properly, it will cause more repairing work during the skim work and raise the cost of material used. The procedure of inspection on skim work is quite similar to procedure during plasterwork, but much detail in providing smooth finishes and avoiding uneven surfaces.

To identify the smoothness of the work, the inspector needs to use a flashlight or tube light on the wall to evaluate the quality of work. By using the tube light, it will help the inspector to evaluate the surface of the wall. If there are defects been found such as a crack, hole, uneven surface, and else, the inspector needs to mark the defects and ensure the site worker does the repairing work. After repairing work is complete, the inspector needs to repeat the inspection process until the work quality complies with the client's request.



Photo 3.10: Inspection on Skim Coat



Photo 3.11: Defect on Skim Coat

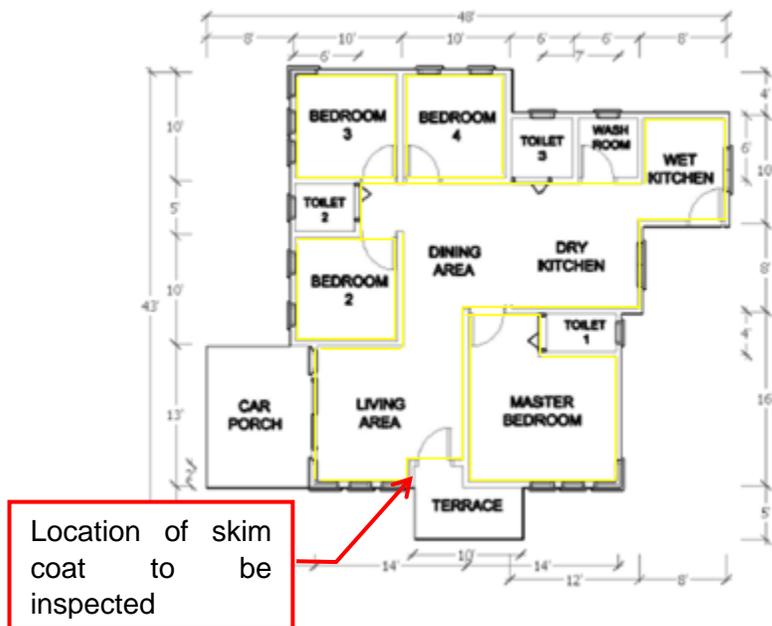


Figure 3.12: Plan for Skim Coat Work

3.5.5 Fifth Inspection – Tiles Work

Inspection during the tiles work usually been done after the tile's installation is completed. This inspection is done to avoid and minimize the defect on tiles such as hollow, crack, chipping, and else. For this inspection work, the inspector needs to do a visual inspection to evaluate the alignment of installed tiles whether it is straight or not.

Besides that, the inspector also needs to ensure there is a gap between every joint tile to avoid the occurrence of exploding tiles. For the gap between joint tiles, the inspector also needs to ensure joint tiles are filled properly to avoid leakage or dampness such as black lines along with the tiles joint.

For the inspection procedure, the inspector will use a tapping rod to tap on every surface of the floor tiles, wall tiles, and skirting to ensure there is no hollow sound. During this process, the inspector needs to focus more on the sound resulting from the tapping rod. Other than that, the inspector also needs to ensure the levels of tiles that have been installed are even.

For the tiles in the bathroom, the inspector needs to use the spirit level to measure the slope toward the drainpipe. The slope in the bathroom is very important to avoid other defects occurring such as water stagnant, leakage, seepage, and dampness. The installation of tiles on space need to comply with the tiles plan. The inspector needs to ensure there are no starches marks on the tiles surface and the colour shade of the tiles are comply with the client's requirement.

If there any defects are found during the inspection process, the inspector needs to label the location of the defect on-site and draw the plan for the monitoring process. The defects that have been labelled by the inspector will be repaired by the worker, and the inspector needs to do another inspection work after the repairing work is completed. This inspection progress will be repeated until it complies with the requirement.



Photo 3.12: Inspection on Tiles

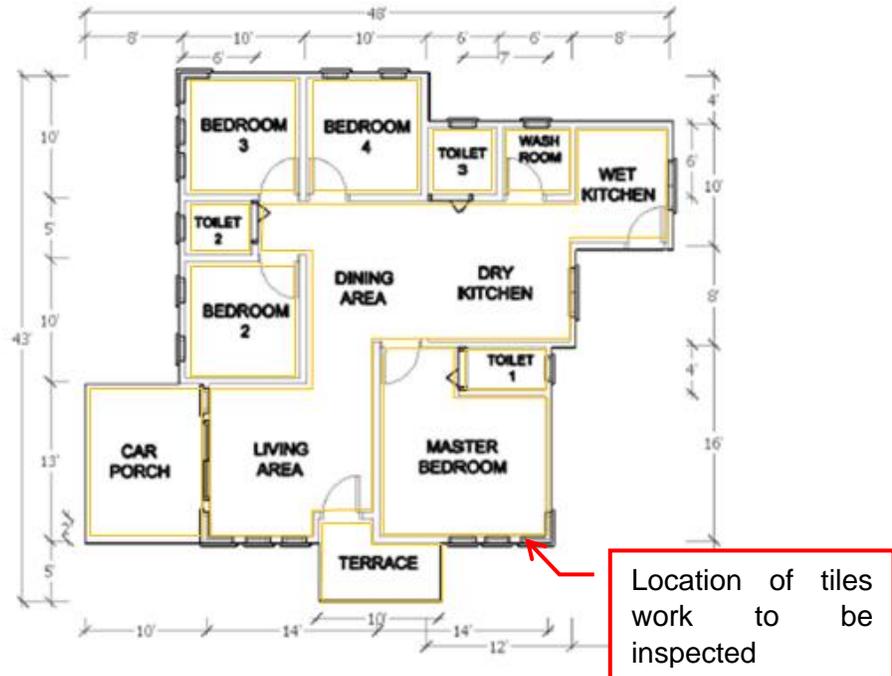


Figure 3.13: Plan for Tiles Work

3.5.6 Sixth Inspection – Painting Work

For inspection during painting work, there are 2 stages of assessment. The first is during the undercoating process and the second one is during the paint coat. For under-coat work, the inspection process is quite similar to the skim coat work inspection process. The inspector needs to evaluate the wall surface to ensure the wall surface is smooth and there are no cracks, uneven surface, chipping, hole, or else. The inspection work for the undercoating process usually is carried out together with the inspection for skim work that requires repair work.

To evaluate the progress of work, the inspector will use a flashlight to ensure there are no defects on the wall surface. The inspector needs to mark or label the defects and inform the worker to do the repairing work. After the repairing work is completed, the inspector needs to do the inspection work again until the work quality complies with the requirement.

While for the paint coat work, the inspector needs to do visual inspection work on the element surface to identify if any defects need to be repaired. The inspector needs to identify if the crack or fine crack is appearing on the element surface. Besides that, the inspector also needs to ensure there are no bulging, chipping, white patches, stains, or signs of dampness appearing on the house element process. Other than that, the inspector also needs to carefully evaluate the tone of painting work even or not and ensure the colour code complies with the client's request.

The inspector also needs to ensure the surface of the inspected element is in good condition without any sign of defect, if there any defects appear, the inspector needs to identify the causes of the defects and suggest the repairing method for workers to repair the defects. This process will be repeated until the quality of work comply with the requirement.



Photo 3.13: Painting Work Process



Photo 3.14: Under-coat Work Process



Photo 3.15: Inspection of Painting Work

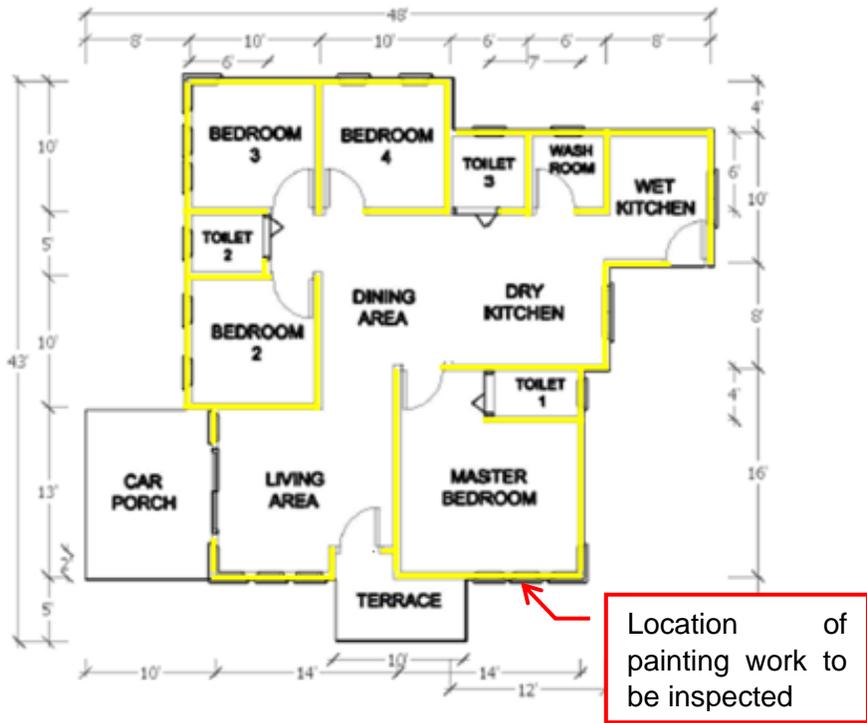


Figure 3.14: Plan for Painting Work

3.6 CONCLUSION

For the single-story bungalow house project in Chenderong Balai, the contractor decides to conduct several inspections during the construction process to evaluate the quality of workers' work. This is because the defects inspection during the construction process will help to control the quality of the project and secure the house quality before handing over the process.

For this project, the contractor decides to conduct several defect inspections to collect data on which stage of the construction process are required more monitoring process to reduce the defects before handing over. Based on the report, the stage of construction that need more supervision are starting with finishing work, which is the plastering process, skim coat process, tiles installation process, and painting process.

These inspections will help in producing a high-quality project, avoid the problem or another major repairing process before handing over and reduce cost for repairing work during the Defect Liability Period. These inspections process also help the contractor to identify skills that their workers need to improve and can help by providing training and improving their worker skills.

CHAPTER FOUR

PROCESS AND PROBLEM IDENTIFY

4.1 DEFECT ANALYSIS

For this project, there are 6 inspection processes have been carried out in order to monitor and control the quality of the project. Therefore, the chart below shows the number of defects found during the inspection work based on the stage of inspection. This data shows which stage of construction progress are required more monitoring from the inspector during the construction process.

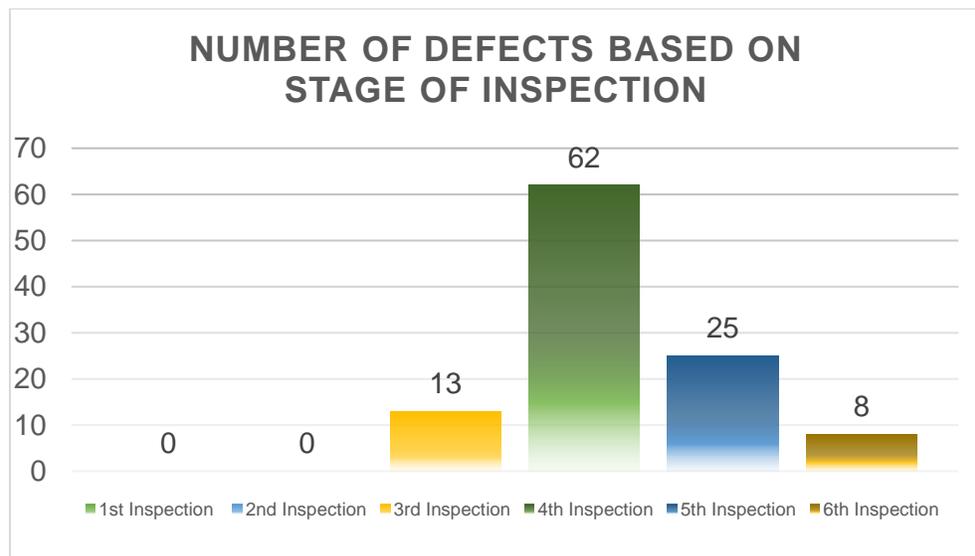


Figure 4.1: Defects Analysis

4.1.1 First Inspection – Sub-Structure

The first inspection for this project which is on the substructure work barely has any defects because work-related on this progress work is boundary marking, site position, and constructor install substructure elements such as pilling, pile cap, footing, stump, and ground beam. For this progress work, it will be done by a site worker with strict monitoring by the contractor and inspector. For the measurement of the length of the ground beam, there is a tolerate if the beam size exceeds 1-2 inches from the original plan but is counted as a defect if less than the original plan size. Therefore, there are no defects found during this progress work.

4.1.2 Second Inspection – Brick Wall Work

For this project, the second inspection is on brick wall work. For the brick wall work, defects will be counted if there is a crack, not aligning brick wall, bed joint too thick or improper filled and else. However, there are no defects found during this progress work because most of the workers have a skill in controlling the quality of structure components, especially for bricklaying work.

4.1.3 Third Inspection – Plaster Work

The third inspection is on the plasterwork of the wall. For this progress of work, there were 13 defects have been found by the inspector. Referring to the figure below, the inspection process found 9 defects which are uneven surfaces labelled with red colour on the internal wall, and another 4 defects are fine cracks on the external wall. This might be happening due to poor workmanship or thermal movement.

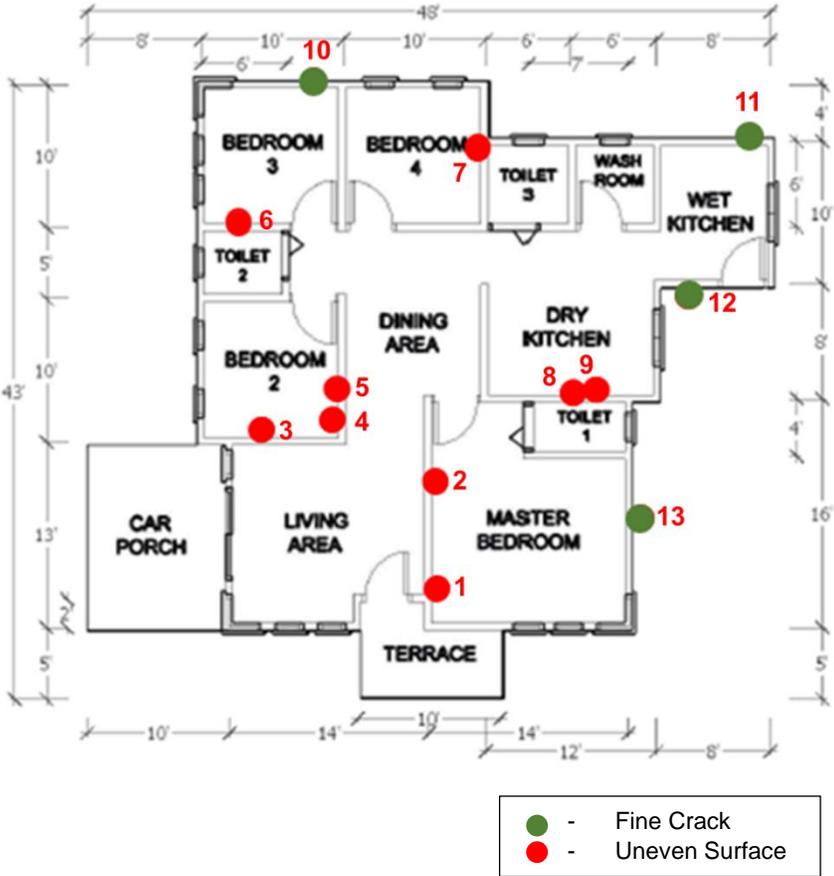


Figure 4.2: Location of Defects For Plaster Work

SPACE	CODE OF DEFECT	TYPE OF DEFECT	NUMBER OF DEFECTS
Living Area	-	-	-
Master Bedroom	1	Uneven Surface	2
	2	Uneven Surface	
Bedroom 2	3	Uneven Surface	3
	4	Uneven Surface	
	5	Uneven Surface	
Bedroom 3	6	Uneven Surface	1
Bedroom 4	7	Uneven Surface	1
Toilet 1	-	-	-
Toilet 2	-	-	-
Toilet 3	-	-	-
Dining Area	-	-	-
Dry Kitchen	8	Uneven Surface	2
	9	Uneven Surface	
Wet Kitchen	-	-	-
Terrace	-	-	-
Car Porch	-	-	-
External Wall	10	Fine Crack	4
	11	Fine Crack	
	12	Fine Crack	
	13	Fine Crack	
TOTAL			13

Table 4.1: Table of Defects for Plaster Work

4.1.4 Fourth Inspection – Skim Coat Work

The fourth inspection work is on the skim coat work progress. There were 62 defects found by the inspector. The defects that have been found are uneven surfaces, scratches marks, and bubbles or holes. According to the worker, the uneven surface of skim work is due to the tools that have been used, and scratch on the wall also due to the tools use. For the small hole on the skim coat surface, it might be due to the air bubbles during the mixing process.

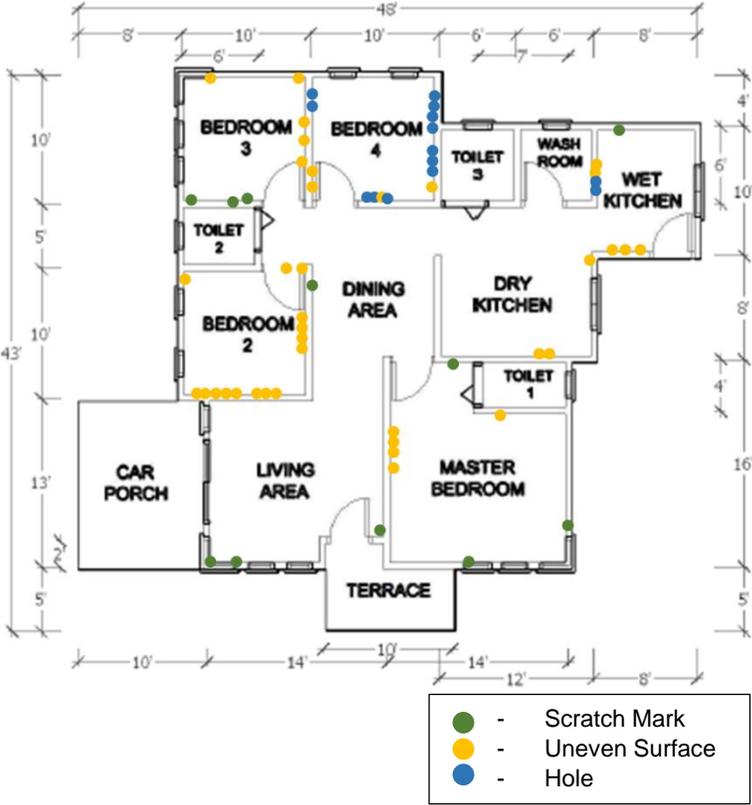


Figure 4.3: Location of Defects For Skim Coat Work

SPACE	TYPE OF DEFECT		NUMBER OF DEFECTS
Living Area	Scratch Mark	3	3
Master Bedroom	Uneven Surface	5	8
	Scratch Mark	3	
Bedroom 2	Uneven Surface	15	15
Bedroom 3	Uneven Surface	5	8
	Scratch Mark	3	
Bedroom 4	Uneven Surface	4	16
	Hole	12	
Toilet 1	-	-	-
Toilet 2	-	-	-
Toilet 3	-	-	-
Dining Area	Scratch Mark	1	1
Dry Kitchen	Uneven Surface	3	3
Wet Kitchen	Uneven Surface	5	8
	Hole	2	
	Scratch Mark	1	
Terrace	-	-	-
Car Porch	-	-	-
TOTAL			62

Table 4.2: Location of Defects for Skim Coat Work

4.1.5 Fifth Inspection – Tiles Work

The next inspection work is on the tile's installation process. During this progress of work, there are 25 defects found on the tiles work which are hollow tiles. Most of the hollow area has been found on the sides and corners of the tiles, but there is only a small hollow area that is within 24mm to 30mm width. This defect occurs might be due to improper installation process or improper mortar mixing. This is because mixing too much water during mortar mixing also will cause evaporation and voids during the drying up process. Therefore, strict monitoring and supervise are required during this process.

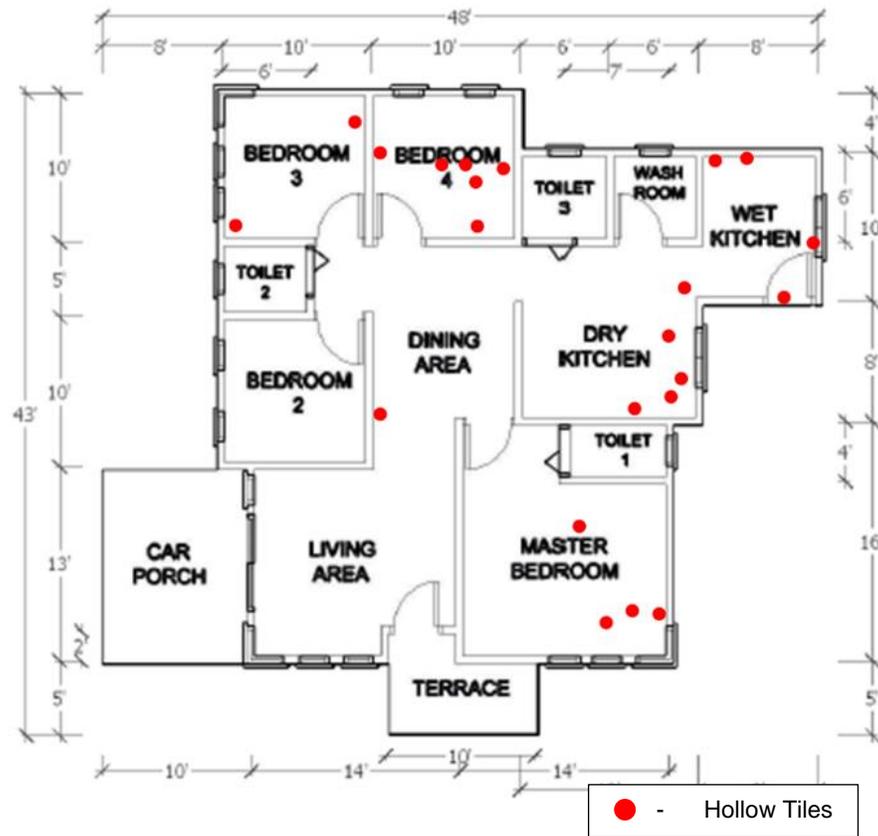


Figure 4.4: Location of Defects For Tiles Work

SPACE	TYPE OF DEFECT	NUMBER OF DEFECTS
Living Area	Hollow Tiles	2
Master Bedroom	Hollow Tiles	5
Bedroom 2	-	0
Bedroom 3	Hollow Tiles	2
Bedroom 4	Hollow Tiles	6
Toilet 1	-	-
Toilet 2	-	-
Toilet 3	-	-
Dining Area	Hollow Tiles	1
Dry Kitchen	Hollow Tiles	5
Wet Kitchen	Hollow Tiles	4
Terrace	-	0
Car Porch	-	0
TOTAL		25

Table 4.3: Location of Defects for Tiles Work

SPACE	CODE OF DEFECT	TYPE OF DEFECT	NUMBER OF DEFECTS
Living Area	-	-	0
Master Bedroom	1	Uneven	2
	2	Uneven	
Bedroom 2	3	Uneven	3
	4	Brush Mark	
	5	Uneven	
Bedroom 3	6	Uneven	1
Bedroom 4	7	Bittiness	2
	8	Bittiness	
Toilet 1	-	-	-
Toilet 2	-	-	-
Toilet 3	-	-	-
Dining Area	-	-	0
Dry Kitchen	-	-	0
Wet Kitchen	-	-	0
Terrace	-	-	0
Car Porch	-	-	0
External Wall	-	-	0
TOTAL			8

Table 4.4: Location of Defects for Painting Work

4.2 PROBLEM IDENTIFY

Several problems were discovered throughout the industrial training process. The detected problem might be an issue during the construction process that might cause delay and else. Therefore, it needs to be addressed and solved before becoming more serious in the future.

Firstly, the problem relating to the implementation of inspection work during the construction process. Before this, there are no inspections on the quality of work or before handling over are conducted by the company and it is causing a loss for the company due to more maintenance work that required a lot of money. Therefore, the inspector needs to arrange and proposed the new documentation work or checklist for every inspection work.

As mentioned before, these inspections process has just been implemented in this company. Thus, there was a problem in giving instructions and making decisions on site. This is because all these inspection works are conducted by a practical student, so it is quite difficult for site workers to receive instruction. Other than that, it is also quite difficult for the inspector to run the inspection process because sometimes the workers do not allow the inspector to conduct the inspection work, and this causes a delay in the inspection process.

Lastly, based on the observation on-site, this company has several teams with different levels of skills who are in charge of their project. All the projects have different quality of the final product depending on the in-charged team. Besides that, most of the workers had not skilled enough to control the quality of work on the finishes part, only a few teams were able to provide good quality on finishes work. This might be able to affect the company target in providing a high-quality house for the client.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

In conclusion, the inspection during the construction work is used to collect information related to the defects that occur during house construction. It helps the company to identify which stage of the construction process causes more defects and this will help the company to provide more supervise during the required process. This inspection will help to identify which skill of work that workers team need to improve for every project. By identifying all this information, it will help the contractor to reduce the number of defects before handing it over, and it might help to reduce repair costs during the Defect Liability Period. Therefore, according to the data gathered, the company needs to provide extra monitoring and supervision on the construction stage such as finishing work, which includes the plastering, skim coat, tile installation, and painting work process.

For the issues that have been addressed in the previous chapter, there are several recommendations for the company. Firstly, relating to the implementation of inspection work. The company is proposed to use proper documentation for every inspection work and a checklist as a record for the inspection work. The documentation and checklist will act as an intermediary for the construction parties in providing an update of progress work on site. Besides that, this implementation of inspection during the construction work seems more effective in controlling the quality of the project and reducing cost loss for the maintenance work before handling over and during the defect liability period. As mentioned by (Victoria & David, 2018), the sooner a defect is found, it will cost less to repair it.

Secondly, in terms of issues with giving instructions and making decisions on the work, the company and inspector have come up with an idea of establishing a checklist for each work progress on the site. Every site work will require quality verification from the inspector or site supervisor before moving on to the next work. This is used to ensure the inspection has been conducted on-site and it will help in controlling the quality of project work.

Lastly, the company is advised to evaluate the worker's skills and decide the categories of workers based on their skills. After that, the company is suggested to provide adequate training to expand workers' experience to produce a high-quality project. This also will help the company to secure the quality of their production and reach their target.

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LIST OF APPENDICES

Project View on site



Front View



Right View



Rear View



Left View

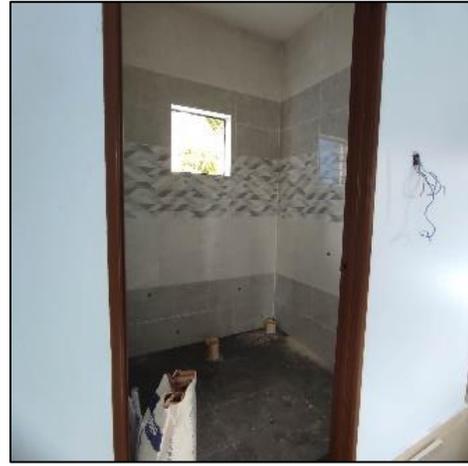


Left View



Bedroom 2

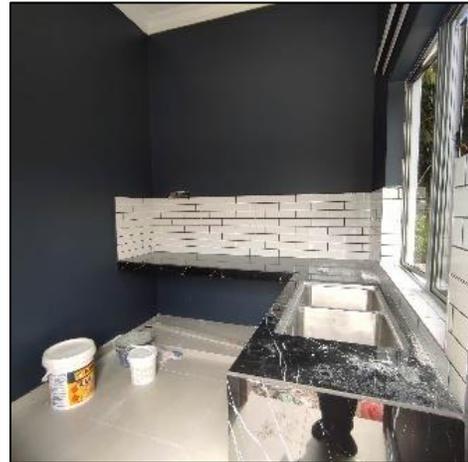
Close View



Toilet 3



Dining Space



Wet Kitchen

First Inspection Form (Sub-Structure)

PROJECT INSPECTION FORM

NH IVORY HOME SDN. BHD.

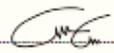
Tajuk : First Inspection
 Projek : Chenderong Balai
 Tarikh : / /



Spesifikasi	//X/NA	Nyatakan Sebab Jika 'X'	*Nota Tambahan
Bilik Tidur 1	/		
Bilik Tidur 2	/		
Bilik Tidur 3	/		
Bilik Tidur 4	/		
Bilik Tidur 5	/		
Bilik Air / Mandi 1	/		
Bilik Air / Mandi 2	/		
Bilik Air / Mandi 3	/		
Bilik Air / Mandi 4	/		
Bilik Solat			
Bilik/Ruang Basuhan			
Stor			
Ruang Wudu'			
Ruang Utiliti			
Ruang Tamu	/		
Ruang Makan	/		
Ruang Keluarga			
Dapur <small>terasa</small>	/		
Anjung Kenderaan	/		
Anjung Sisi Kanan			
Anjung Sisi Kiri			
Anjung Hadapan			
Anjung Belakang			
Foyer Sisi Kanan			
Foyer Sisi Kiri			
Foyer Hadapan			
Foyer Belakang			
<small>Dapur teras</small>	/		

- Hanya kegunaan syarikat SAHAJA
 - * Sekiranya perlu

/	Yes
X	No
NA	Tidak dapat menjalankan penilaian atau tidak tersedia


 (Tandatangan Pemeriksa)
 Nama:

Second Inspection Form (Brick Wall)

PROJECT INSPECTION FORM

NH IVORY HOME SDN. BHD.

Tajuk : Inspeksi brick wall
 Projek : C. Baki
 Tarikh : /



Spesifikasi	// X / NA	Nyatakan Sebab Jika 'X'	*Nota Tambahan
Bilik Tidur 1	/		
Bilik Tidur 2	/		
Bilik Tidur 3	/		
Bilik Tidur 4	/		
Bilik Tidur 5	/		
Bilik Air / Mandi 1	/		
Bilik Air / Mandi 2	/		
Bilik Air / Mandi 3	/		
Bilik Air / Mandi 4	/		
Bilik Solat			
Bilik/Ruang Basuhan			
Stor			
Ruang Wudu/			
Ruang Utiliti			
Ruang Tamu	/		
Ruang Makan	/		
Ruang Keluarga			
Dapur <small>(kitchen)</small>	/		
Anjung Kenderaan	/		
Anjung Sisi Kanan			
Anjung Sisi Kiri			
Anjung Hadapan			
Anjung Belakang			
Foyer Sisi Kanan			
Foyer Sisi Kiri			
Foyer Hadapan			
Foyer Belakang			
Meja Kiri/Kanan	/		

- Hanya kegunaan syarikat SAHAJA
 - * Sekiranya perlu

/	Yes
X	No
NA	Tidak dapat menjalankan penilaian atau tidak tersedia

(Tandatangan Pemeriksa)
 Nama:

Third Inspection Form (Plaster Work)

PROJECT INSPECTION FORM

NH IVORY HOME SDN. BHD.

Tajuk : Kerja Plaster
 Projek : Phaseding Teluk
 Tarikh : /



Spesifikasi	// X / NA	Nyatakan Sebab Jika 'X'	*Nota Tambahan
Bilik Tidur 1		2. uneven	
Bilik Tidur 2		3. uneven	
Bilik Tidur 3		1. uneven	
Bilik Tidur 4		1. uneven	
Bilik Tidur 5			
Bilik Air / Mandi 1	NA		
Bilik Air / Mandi 2	NA		
Bilik Air / Mandi 3	NA		
Bilik Air / Mandi 4			
Bilik Solat			
Bilik/Ruang Basuhan			
Stor			
Ruang Wudu/			
Ruang Utiliti			
Ruang Tamu	/		
Ruang Makan	/		
Ruang Keluarga			
Dapur <small>kerinci</small>		2. uneven	
Anjung Kenderaan	/		
Anjung Sisi Kanan			
Anjung Sisi Kiri			
Anjung Hadapan			
Anjung Belakang			
Foyer Sisi Kanan			
Foyer Sisi Kin			
Foyer Hadapan			
Foyer Belakang			
Lot Kuching	/		
Andas luar		4. Fine crack	

- Hanya kegunaan syarikat SAHAJA
 - * Sekiranya perlu

/	Yes
X	No
NA	Tidak dapat menjalankan penilaian atau tidak tersedia

.....
 (Tandatangan Pemeriksa)
 Nama:

Fifth Inspection Form (Tiles Work)

PROJECT INSPECTION FORM

NH IVORY HOME SDN. BHD.

Tajuk : Inspect Tiles
 Projek : Cenderang Indah
 Tarikh : / /



Spesifikasi	// X / NA	Nyatakan Sebab Jika 'X'	*Nota Tambahan
Bilik Tidur 1		5 follow	
Bilik Tidur 2	/		
Bilik Tidur 3		2 x	
Bilik Tidur 4		6 x	
Bilik Tidur 5			
Bilik Air / Mandi 1			
Bilik Air / Mandi 2			
Bilik Air / Mandi 3			
Bilik Air / Mandi 4			
Bilik Solat			
Bilik/Ruang Basuhan			
Stor			
Ruang Wudu'			
Ruang Utiliti			
Ruang Tamu		2 follow	
Ruang Makan		1 x	
Ruang Keluarga			
Dapur/koridor		5 x	
Anjung Kenderaan			
Anjung Sisi Kanan			
Anjung Sisi Kiri			
Anjung Hadapan			
Anjung Belakang			
Foyer Sisi Kanan			
Foyer Sisi Kiri			
Foyer Hadapan			
Foyer Belakang			
Dapur katrik		4 follow	

- Hanya kegunaan syarikat SAHAJA
 - * Sekiranya perlu

/	Yes
X	No
NA	Tidak dapat menjalankan penilaian atau tidak tersedia


 (Tandatangan Pemeriksa)
 Nama:

Sixth Inspection Form (Painting Work)

PROJECT INSPECTION FORM

NH IVORY HOME SDN. BHD.

Tajuk : Inspeksi Cat
 Projek : Grandeur Bahari
 Tarikh : /



Spesifikasi	// X / NA	Nyatakan Sebab Jika 'X'	*Nota Tambahan
Bilik Tidur 1		2. tidak rata	
Bilik Tidur 2		2. anjakan s. 1. berdebu murik	
Bilik Tidur 3		1. tidak rata	
Bilik Tidur 4		2. ketidakhadiran	
Bilik Tidur 5			
Bilik Air / Mandi 1			
Bilik Air / Mandi 2			
Bilik Air / Mandi 3			
Bilik Air / Mandi 4			
Bilik Solat			
Bilik/Ruang Basuhan			
Stor			
Ruang Wudu'			
Ruang Utiliti			
Ruang Tamu			
Ruang Makan			
Ruang Keluarga			
Dapur			
Anjung Kenderaan			
Anjung Sisi Kanan			
Anjung Sisi Kiri			
Anjung Hadapan			
Anjung Belakang			
Foyer Sisi Kanan			
Foyer Sisi Kiri			
Foyer Hadapan			
Foyer Belakang			

- Hanya kegunaan syarikat SAHAJA
 - * Sekiranya perlu

/	Yes
X	No
NA	Tidak dapat menjalankan penilaian atau tidak tersedia


 (Tandatangan Pemeriksa)
 Nama: