CENTRE OF STUDIES FOR BUILDING SURVEYING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

SERI ISKANDAR CAMPUS

DEFECT INSPECTION OF BUILDING ELEMENT WALL AND FLOOR FOR ECONOMIC AND COMMERCIAL OFFICE SPAIN IN MALAYSIA

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FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

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This practical training report is fulfillment of the practical training course.

PREPARED BY

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AKNOWLEDGEMENT

In the name of Allah S.W.T, most gracious, most merciful. First of all, I would like to thanks and show grateful to HIM because without HIM I will not be able to complete this internship and also this practical report. I also would like to thanks to my lecturer Sr. Zahir as my supervisor in this practical session. I am really appreciated all the cooperation from his.

Next, special thanks to my supervisor at my internship company that is Sr, Tan Ji Aun the head of project management in the company. Thanks to his sharing all the information and also sharing his knowledge during this internship. Not only that, thanks also to all staff because give me support, cooperation and guidance. Without his I will not be able to make this internship successfully.

This practical training has make I learned lot about the building survey, which is all the thing that I have learned at lecture class before, now I can practice and also teach I how to work together as a team with responsibility.

Last but not least, thanks to my family and friends because be with me to give support during this internship until complete the report.

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INTRODUCTION

1.0 INTRODUCTION

1.1 Introduction of Practical Training

Practical training is a training programme for students in their final semester. This training serves as an initial training for the student to become acquainted with the working environment. It is also a requirement to complete all courses taken in order to graduate from the University. Every student may be able to gain from this training, which implies that the working environment can provide the student a perspective of how real-world work is performed, which can be useful in the future.

In addition, students can apply all the techniques and skills learned in class last semester. This technology and skills can be applied to their training, which helps to improve company performance. Therefore, a total of 16 weeks was allocated for the practical training chosen by the students. There is no restriction on the choice of training locations for students, and they can be located in two departments, which means that the selected departments are examples of public or private companies that performed either building control, building works and appraisals, facilities management and maintenance, development and construction management, heritage and building conservation, or insurance/risk management.

In the company, each student is supervised by experienced employees who are responsible for training students and supervising the attendance, discipline, and performance of company students. Therefore, this will be recorded in the student evaluation report provided by the university.

1.2 Problem Statement for Defect in New Building

Construction deficiencies such as poor workmanship and low quality of materials, design deficiencies like not according to the specification and faulty design, limited time and cost, external environment and etc. lead to various types of defects in new buildings. In Malaysia, defects in new building are too many unabated and the impacts of defects are high maintenance costs, poor user satisfactions, dangerous to the tenants and the buildings cannot function properly. While there is information on defects in buildings in general, such is not available for new buildings, though theoretically, new buildings should be free from defects.

1.3 IDPM SDN BHD

Photo 1.1: Logo IDPM SDN BHD

` IDPM is a full-service office interior design firm in KL, Malaysia, specialising in cost-effective premium design and space planning for corporate offices and commercial spaces. Since 2000, an under the expert guidance of founder and partners, it has expanded capabilities and services into producing and providing custom quality finishes and furnishings. In 2018, IDPM SDN BHD are registered under the Construction Industry Development Board (CIDB) Malaysia with a G7 license, and following year registered with Ministry of Finance (MOF) which permits us to undertake civil engineering construction and building interior construction projects.

1.3.1 vision

To grow and succeed as a trusted designer and builder, specializing on corporate clientele striving on high quality and influential design with the most cost-efficient manner.

1.3.2 Mission

To create and inspire a team accentuating on client relationship consistently deliver the most effective space planning with leading and influential design; at all-time maintaining prudent cost efficiency and high level project management skills, to deliver every given task punctually with maximum client's satisfaction.

1.4 IDPM Milestone

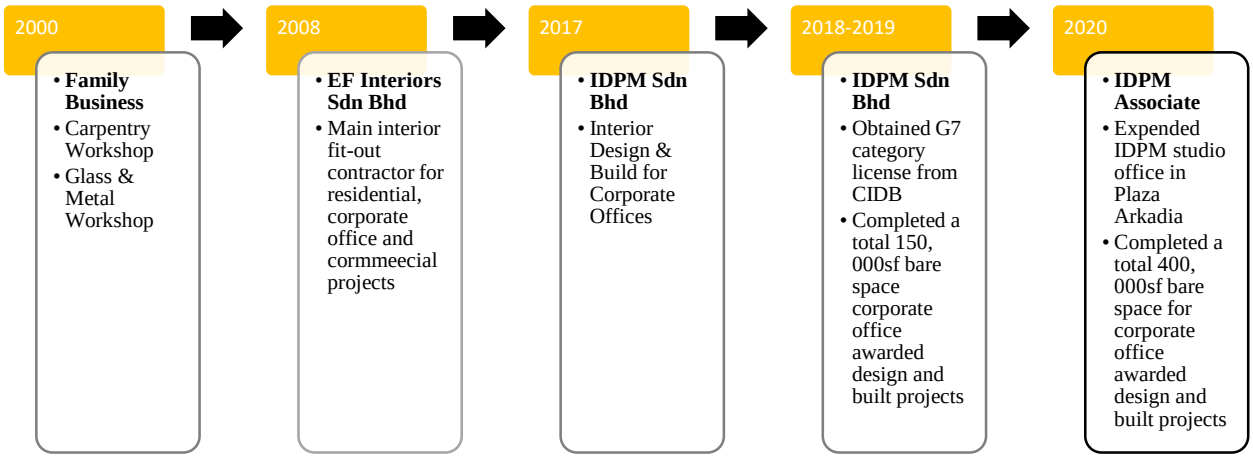


Figure 1.1: IDPM Milestone

1.5 List of Department in IDPM

- HR and Admin Department
- Business Development Department
- Quantity Surveyor Department
- Project Management
- Design Department

1.6 Project Management

Name	Position
Tan Ji Aun	Head of Project Management (H.O.D)
Niven NG	Project Manager
Leong Chun Hoong	Assistance of Project Manager
Zulaikha Saim	Project Executive
Lee Jia Jun	Project of Coordinator
Rajendran Nair	Project of Coordinator
Goh Weitek	Site Supervisor
Arieff Rahman	Site Supervisor

Table 1.1: Project Management

1.7 Key Plan, Site Plan, and Location Plan

IDPM SDN BHD was located at Block A, No A-3-10 Anson Plaza Arkadia No.3 Jalan Intisari Desa Parkcity, 5200 Kuala Lumpur Malaysia

1.7 .1 Key plan

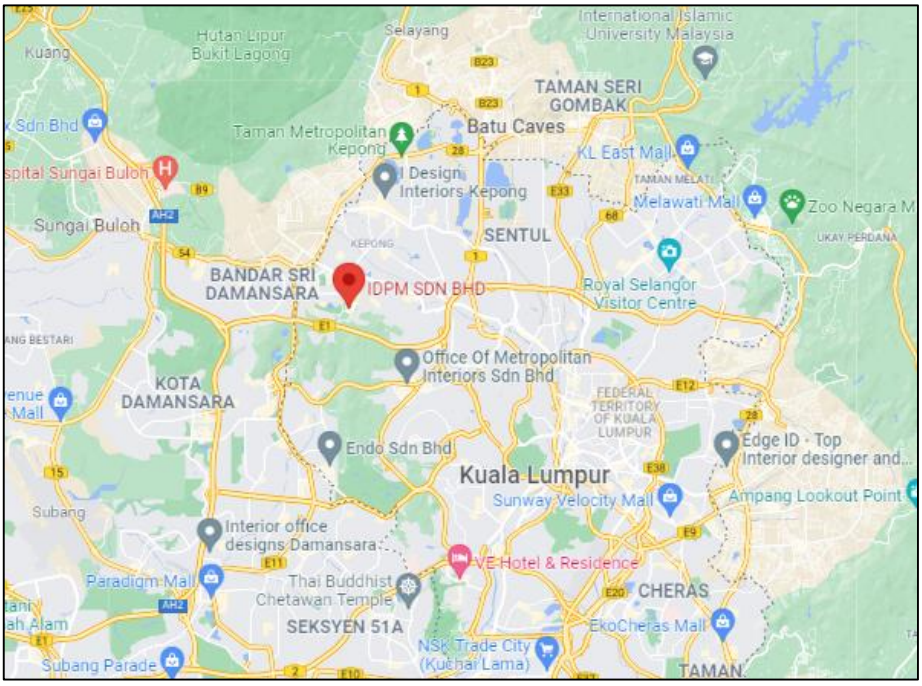


Photo 1.2: Key Plan

1.7.2 Site Plans

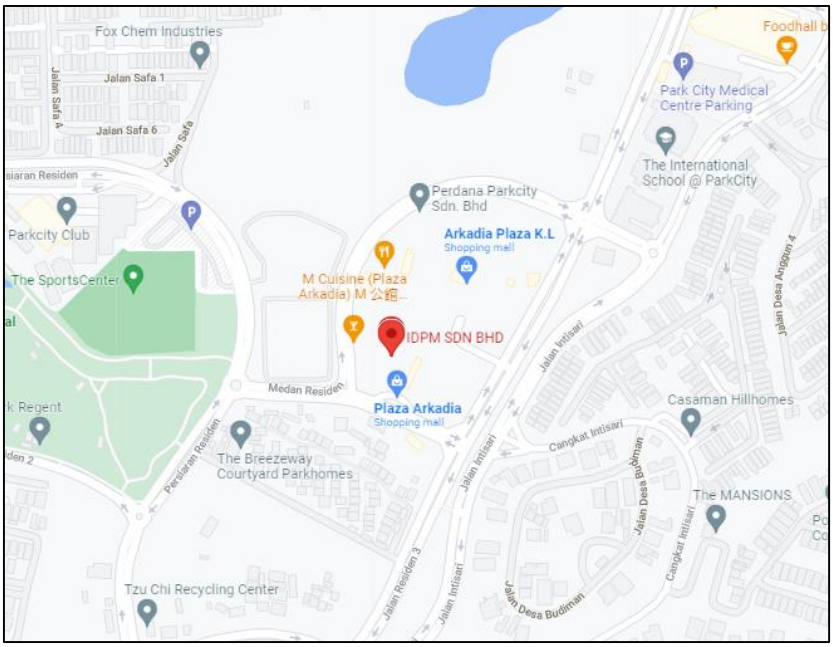


Photo 1.3: Site Plans

1.7.3 Location Plans

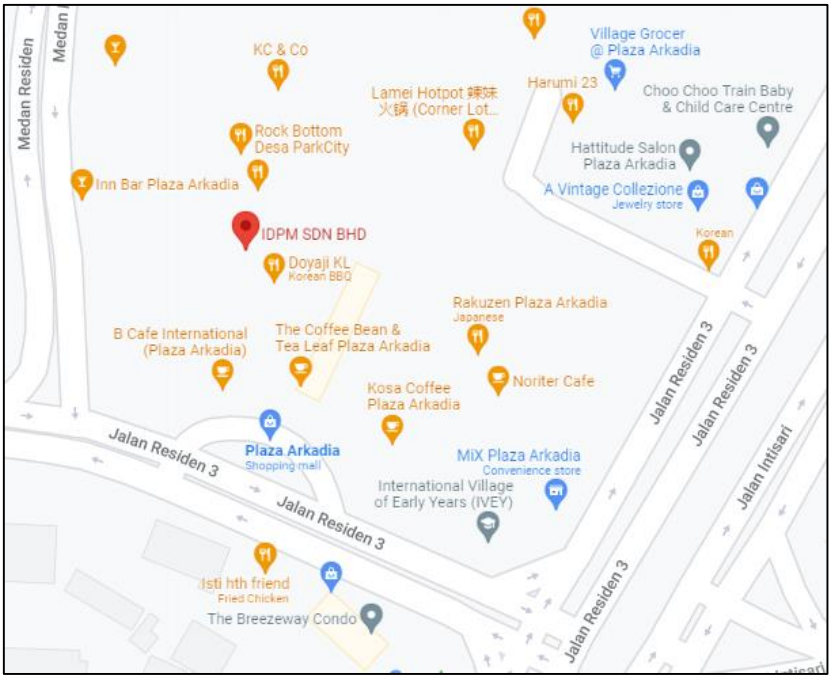


Photo 1.4 Location Plans

1.8 Scope of Work During Training

During practical training, I had places in project management team who need to handle all the construction work in site during training. In this company the form of interior design project management. I as supervisor must give and picture on progress at site to report team to make the report. I also must be covering site to guide subcontractor workers during they working in site. It was an experience that giving me a lot of knowledge and I want more knowledge to improve my skill in wok and hope it will use for my future. Here i learn all process in construction works interior design. I need to understand and remember the drawing layout, because contractor always follows up latest drawing layout plans for site. Beside when handover this project I do inspection defect work, I also learn to make full inspection survey which is complicated report because it needs to finalize the entire defect in each location of office

CHAPTER 2

BUILDING DEFECT

2.0 BUILDING DEFECT

2.1 Definition of Building Defect

According to Webster's Dictionary, building defect is meant by missing of something important to achieve perfectness or in other words, shortcoming (Ahzahar et al., 2011). Moreover, defects also defined as improper condition that may cause impact to the building structure, leading to low quality and performance of the building (Burden, 2004). Defect that occurred will not only cause aesthetic problems but also will affect the safety of the users (Che-Ani et al., 2011).

Besides that, defects also being defined as not perfect, faulty; and also blemish. Another meaning for defect is deficiency which does not meet its expected performance criteria. The Dictionary of Webster interprets the meaning of deficiency that will cause the quality to be affected. A building defect also can be defined as any issue that can reduces the value of the residential buildings, or home and it is dangerous to building occupants if being neglected.

Moreover, building defects can have categorized into two types. First one is the defect that will eventually affect the appearance of the structure while the second one is defects that affect the performance of building structure. A building defect also is a violation of the applicable building code and violation of standard of care in community in which the project is located or violation of manufacturer's recommendations (Robert, 2007). Error in design, inferior materials, fault design, lack of maintenance and etc. can cause defects in building.

Normally the defects that occur in the buildings are structural defects that cause cracks, faulty ventilation, inadequate of fire and sound proofing, etc. In addition, timber rot, dry and wet rot, fungus and mould infection can be happen due to result of building defect. To identify the defects in a building, experts such as experienced engineer or the architects are required in order to determine the root cause of the defects.

2.2 Causes of defect in new building

There are many causes that lead to defects in the new buildings. The defects in new buildings are due to reason of design and construction problems which is poor workmanship, construction materials, faulty during construction, and not according to the specification, etc. Other than that, climatic condition, lack of maintenance, external 15 environments, limited time and cost will also cause defects to be occurred. All these causes will eventually reduce the value of the buildings and the cost of rectifying it will be expensive if the defects are being neglected by the occupants (Anthony, 2013)

2.3 Category of Building Defect

Building defect is one of the major components of building problems that significantly needed attention. When a building fails to function as it should, we must immediately seek for the determination. The defect also can be divided into two categories, which are:

a) Structural Defect

Structural defect means any defect in a structural element of a building that is attributable to defective design, defective or faulty workmanship or defective material and sometimes any combination of these. Building structure includes earth retaining walls, columns, beams and flat slabs (Jorge et al,2005). Structural defect can be categorized as cracks in foundations (Substructure), cracks in floor or slabs (superstructure), and cracks in walls (superstructure). These defects can be caused by improper soil analysis, inappropriate site selection, and the use of defective materials. Most of the structural problem can be avoided by implying the exact and detail of the design and planning (Augusto et al, 2009)

b) Non-Structural Defect

A non-structural defect in a residential building is described as a defect in a non-structural element of the building as a result of defective residential building work. Non-structural defect includes defect in brick work, dampness in old structures, and defects in plaster works. Non-structural defect also is defect at the element at the building didn’t have any load.

2.4 Type of Defects

Defects that occurring in the building are due to poor workmanship, lack of supervision and etc. There are various types of building defect can be found in the building, regardless of the age. According to Sommerville, (2007), in new build projects, we can see defects and rework happen. The example of types of defects are, peeling of paint, roof defects, dampness, damage of exterior surface, corrosion of reinforced steel, cracking, foundation failure and blemishes which is honeycomb.

2.4.1 Cracking

Cracking normally can occur in various elements in the buildings. For instance, walls ceiling, columns or beams. Moreover, cracking also is a sign of corroded reinforcement. Precaution steps can be used to reduce the cracking that appear in the buildings. The cracks can be classified as structural and non-structural cracks. Structural cracks usually can be found in wall, columns or the beams and it is cause by dead loads or other forces that applied on it. Other than that, poor soil bearing, poor construction site and overloading may cause structural cracks to be formed as well (Admin, 2015) while non-structural cracks will occur because of the internally induced stresses in the building materials.

2.4.2 Defective Plaster Rendering

The coating of the mortar is like plaster or the render at the block work. The plaster is known as a coating at the inside of the wall while the coating at the outside of the wall is known as render. Both is a different thing and have different function. The function of the plaster is to make the wall feel smooth, can clean it more easily and have a good appearance. Furthermore, the plaster is a fire protection, resistant to the abrasion, breathable for the walks and can use for decorating. Other than that, the renders are used to protect the plaster from the weather. Apart from that, plaster rendering that are defective occurs at the external surface of the building walls and ceiling. The defects in the rendering occur is because of the attacks from the biological like acid rain penetration, pollution of the air, hot temperature and dry out of the external walls. The growth of mould or invasion of insects will also cause the defect in plater rendering. Plaster rendering can be classifying as few types which is plaster cracks, shrinkage cracks, and plaster fall off from the ceiling. These three types are the most common defect to occur for plaster rendering (Low & Wee, 2001).

2.4.3 Cissing paint

A defect in which freshly applied paint recedes from the surface leaving small craters or bare areas. The usual cause is contamination of the surface, e.g. by grease, oil, wax polish or silicones. Cissing may also occur when water-thinned paints are applied over glossy or semi-gloss oil based coatings. It can be prevented by ensuring that the surface is clean and by flatting oil based coatings before applying water-thinned materials. When cissing has occurred, the paint must be allowed to harden before it is rubbed down and recoated.

2.4.4 Rising Dampness

Dampness can be a genuine matter, especially to structures situated close water sources. Does it break down building structures as well as harms to decorations. The primary driver of clamminess is water entering a working through various courses. Water infiltration happens usually through dividers presented to winning wet wind or rain. With the presence of gravity, water may infiltrate through vessels or splits between mortar joints, and blocks or squares before working up trap dampness behind hard renders. Water may likewise drive additionally up the divider to rise at a more elevated amount. Clamminess additionally happens in dividers because of different components, for example, spilling canals or down funnels, faulty channels, burst pipes and build up because of lacking ventilation.

2.5 Solutions of Defect in New Buildings

Defects are major contributions to rework. Therefore, unnecessary efforts are needed to correct it. However, defects in new buildings can be prevented and minimized by implementing a strict supervision towards the workers and also the construction of new buildings, provide training and education to the workers, communicate well with the parties that are involving inside, proper design and construction management, lastly will be the allocation of the manpower.

2.5.1 Strict Supervision

According to Ghaffar et. al. (2010), the quality of the construction of new buildings can be enhanced by having a strict supervision towards the workers. Besides, the site supervisors also need to inspect their work regularly in order to prevent the defects from become worsen. Moreover, the subcontractors or main contractors also need to carry out daily supervision to supervise the workers so that any problems regarding the workmanship can be identified immediately and rectify it before it is too late. In addition, the site supervisor and the contractors must possess such knowledge, skills and the abilities to inspect the construction work and supervise the workers effectively (Maloney, 2002).

2.5.2 Provide training and education

In order to have a good quality of construction, it is essential to have a good training and experience from the related field (Chan et al., 2006). Osama and Khan (2010) also mentioned that the quality of construction can be enhanced by improve the capabilities of the labours. This is because they will have the knowledge from the related field if they go through the trainings and programmes that will benefit them.

2.5.3 Proper design and construction management

According to Chong & Low (2005), a proper design in construction can reduce the defects in workmanship. The proper design need to be start of from beginning until completion of the whole projects in order to avoid the defects. For example, the drawings and the designs must be well-prepared to prevent rework in the future due to defects. The construction work will progress faster and easier if the defects have been identified and remedy it immediately before it become worst. Other than that, the proper construction management also will minimize the defects in new buildings. The ability of the project manager to arrange, lead and manage the work will affect the productivity of the construction labour. If the project manager cannot manage and lead the construction project efficiently, then the quality issues will arise which are defects. Therefore, the project manager must possess such skills and knowledge so that he can manage and control the project fully.

2.5.4 Allocation of Manpower

According to Ali & Wen (2011), the allocation of manpower in a construction site will affect the quality of the buildings. This is because insufficient of manpower will cause the work to be done is a rush manner and therefore, the quality will be affected. Likewise, a project will sufficient of manpower will eventually produce a good quality of project. Moreover, Abdul Aziz (2010) mentioned that the availability of manpower will be the sole for the source of production. Hence, the productivity in a construction is depends on the worker's performance as well. In a nutshell, the allocation and management of manpower in the projects need to be arranged skilfully so that defects can be minimized.

2.5.5 Proper communication among parties involved

Communication is very important in construction site. Communication is to deliver a message or information from one person to another. According Tai et al. (2009), he mentioned that if there are no communications, there will be no management. However, the workers got barriers in communicating with the supervisors due to the reason that they are from foreign country. Therefore, it is important to let the workers understand what the supervisors are trying to deliver the message or information to them. Apart from that, the contractors and subcontractors also need to communicate with each other effectively to prevent any misunderstanding especially when casting or installing formwork and concreting. One wrong information will cause the whole formwork to be installed again due to wrong communication. Therefore, a proper communication is essential in order to improve the quality of workmanship and construction by deliver correct information and message.

CHAPTER

3

CASE

STUDY

3.0 CASE STUDY: ECONOMIC AND COMMERCIAL OFFICE SPAIN IN MALAYSIA

3.1 Introduction

The aim of this chapter is to identify the defect appear on new building after construction work is done. The data collection has done at Economic and Commercial Office Spain in Malaysia that located at the Kuala Lumpur. The defect inspection has done at selected a part of building element in the building which focus on the Wall and Floor.

Photo 1.5: Economic and Commercial Office Spain in Malaysia

3.2 Building of Background

The embassy of Spain was in Kuala Lumpur may provide a range of consular services such as visa and passport processing as well as document legalization for foreigner Spain. This office was already move from old place and tenant at Level 20, TS Law Tower. In addition to the embassy in Kuala Lumpur, Spain also has a consulate in Kota Kinabalu, Sabah. Owner of Embassy Spain was hire IDPM for full building service and design in office

Description	Detail
Project Title	Proposed Corporate Interior Design and Fit-out Works for Economic and Commercial Office of Spain in Malaysia
Commencement Date	28/07/2021
Contract Period	The Time for Completion for the whole of the Works shall be Eleven (11) months after commencement date
Period of Work	15/01/2022
Defect Liability Period (DLP)	Six (6) months from the Date of Completion
Contractor	IDPM SDN BHD

Table 1.2 List of Building Information

3.3 Location of Building Background

The site is located at 20th Floor, TS Law Tower, Jalan Kemuning Kuala Lumpur. The storage area is 4012 sf. Embassy Spain office. The tenant place for Embassy Spain was TS law Tower is new building and just two tenant in this building and another level just still in progress. The place also has conveniences surrounding this building likes food, hotspot place, and also crowded city.

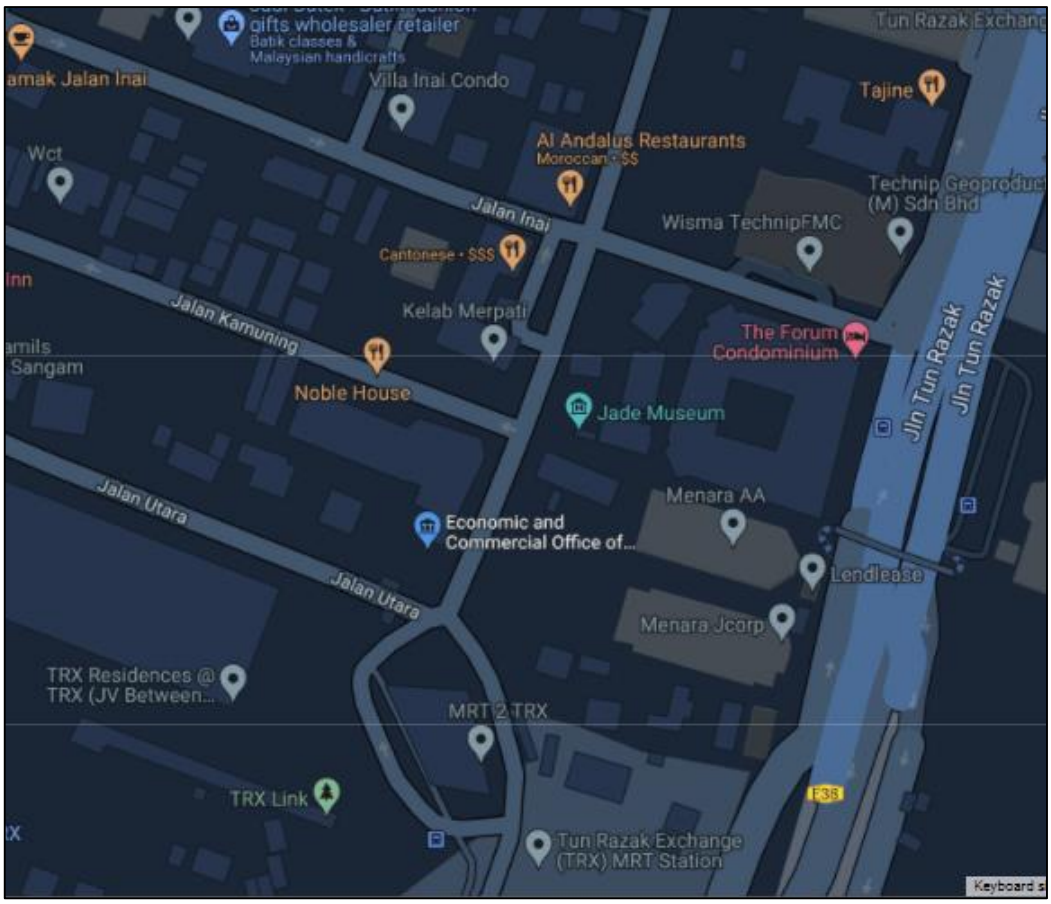


Photo 1.6: Location of Embassy of Spain

3.4 Scope of Work

1	2	3	4	5	6	7
		Interior design will start after all drawings have been freeze in the design process	Contractor to produce the final drawing for review by the consultants and gave status A only for construction.		Successful project if incorporated with interior design scheme in early stage	
Architect, M&E, C&S to build the building	Interior Design come on board with client requirement			Contractor will use coordination drawing Status 'A' as a single drawing for references along with consultants		Less renovation work if needed by the client/end user
To be finalized and approved by the client and endorsed by the consultants respectively with status 'A' before construction began.						
DESIGN PROCESS	DESIGN FREEZED	INTERIOR DESIGN (ID)	COORDINATION REVIEW	IMPLEMENTATION CONSTRUCTION	HANDOVER	MAINTENANCE

Table 1.3: Scope of Work

Without these systems, the co-ordination and control of all groups and resources within the team is difficult. The orientation of the project team will be towards the task rather than the people. This will be particularly true as deadlines for achieving work are stressful and become paramount in people's thinking. The scope of interest here will be the completion of work and delivery of the project. The diagram of this table, illustrated how each of the parties previously identified, interact with the project during this lifecycle. It also highlights the role of a new group - that of third parties. There are various third parties who could influence the development and use of a project. These include: statutory authorities, both local and national; the media; environmental groups and the general public.

3.5 Plans Layout Drawing

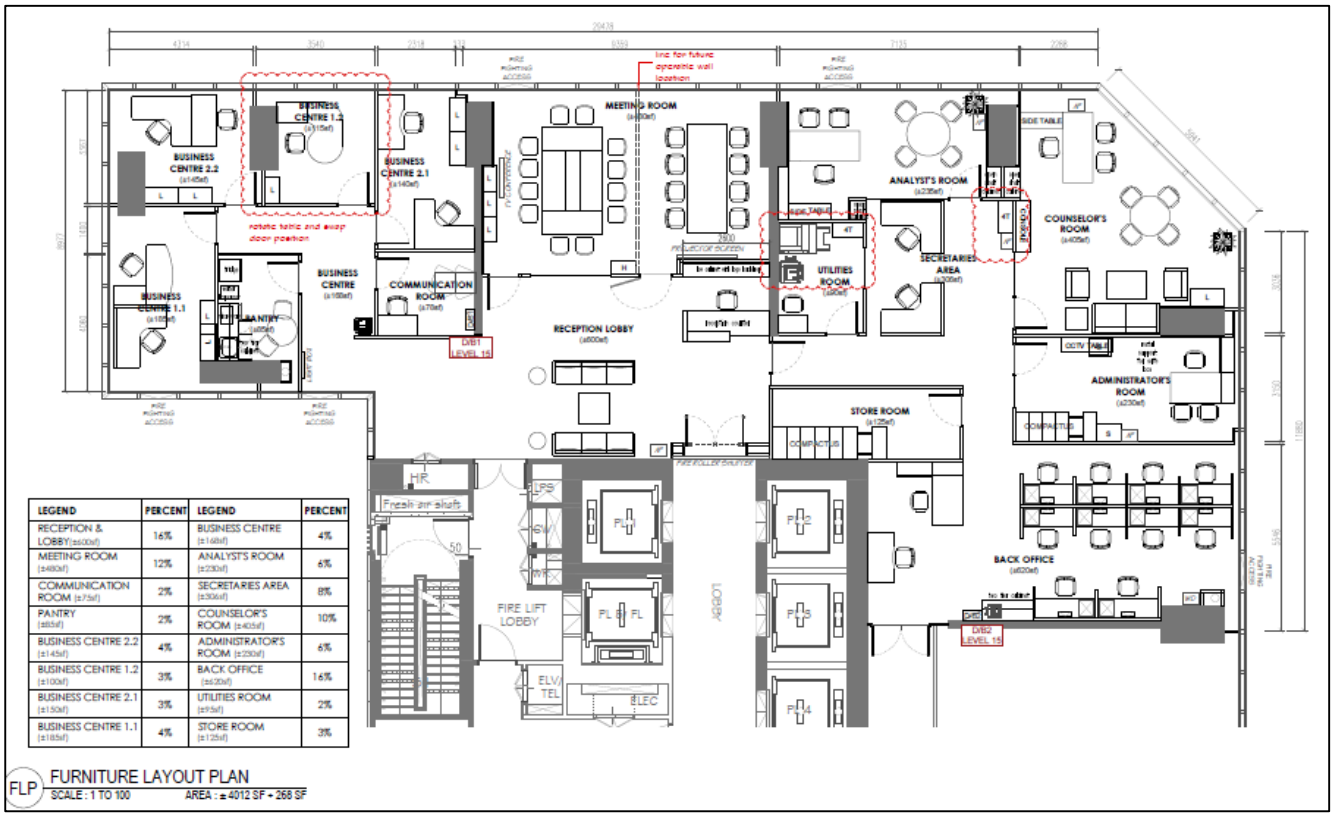


Photo 1.7: Furniture Layout Plan

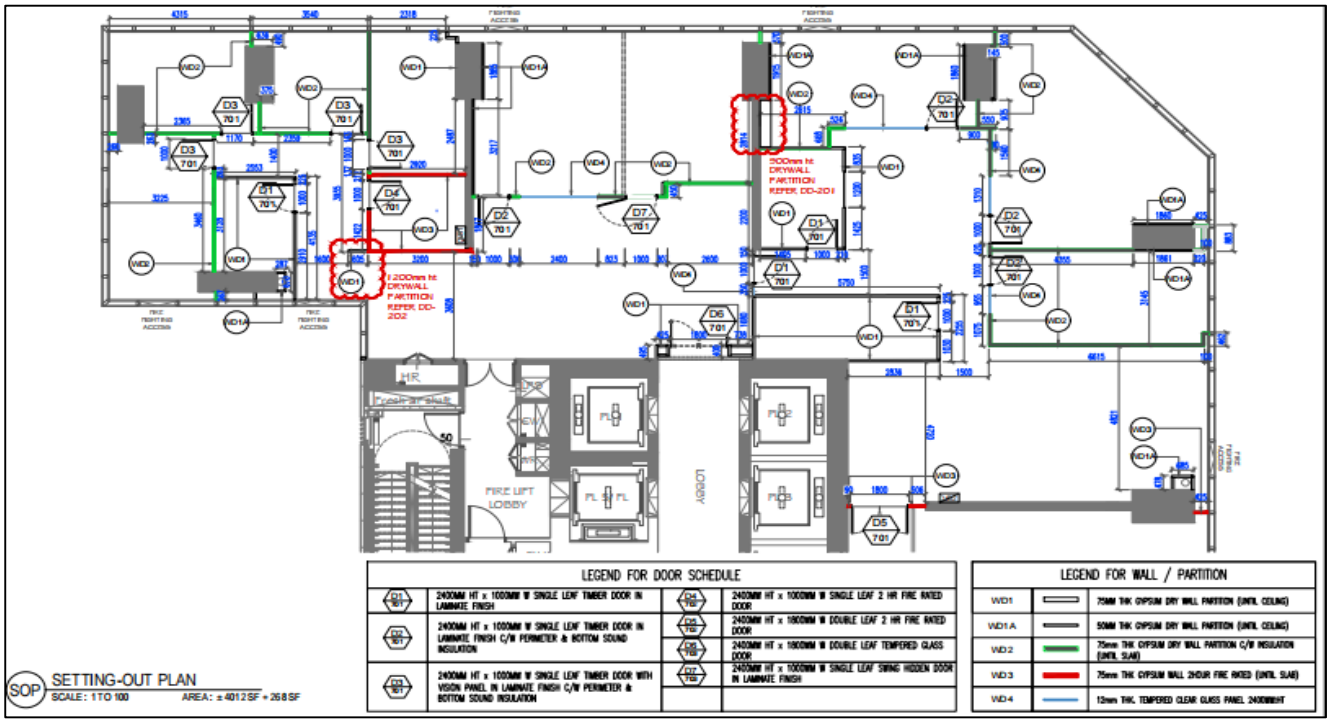


Photo 1.8: Setting-out Plan

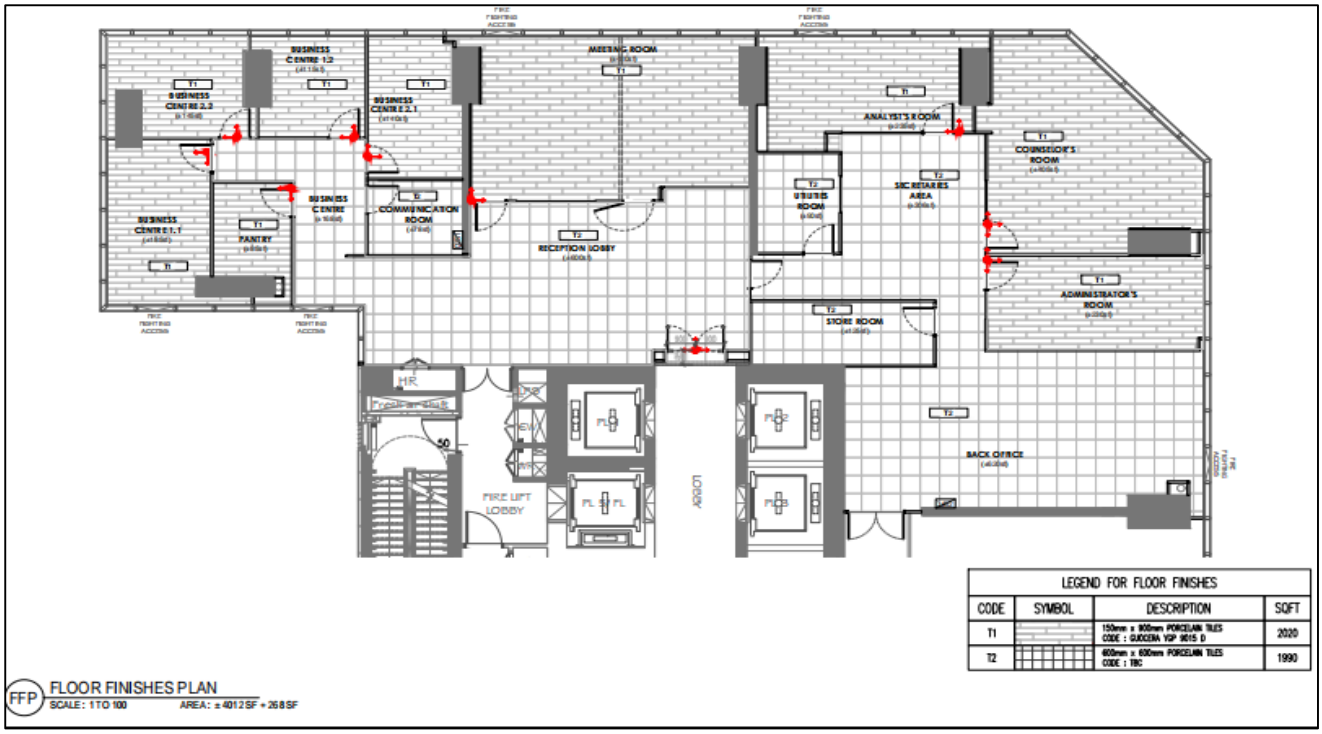


Photo 1.9: Floor Finisher Plan

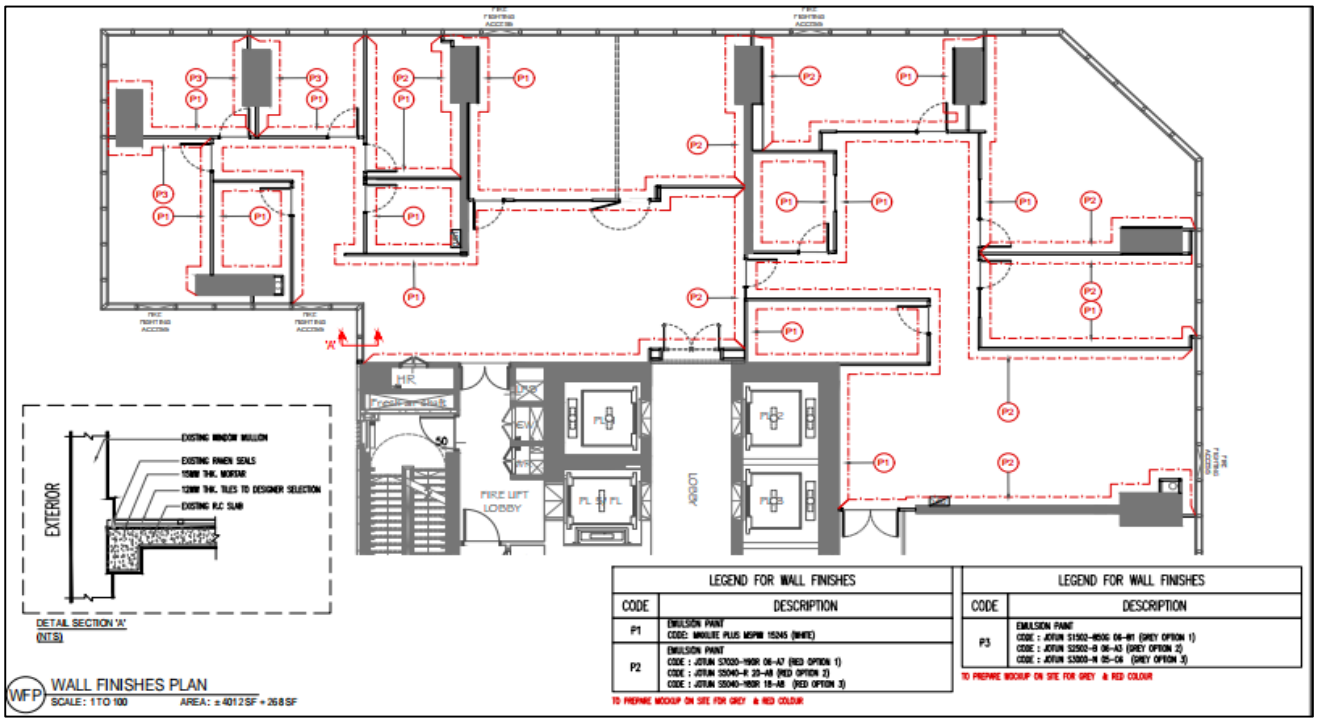


Photo 1.10: Wall Finishes Plan

Photo 1.11: Reflected Ceiling Plan

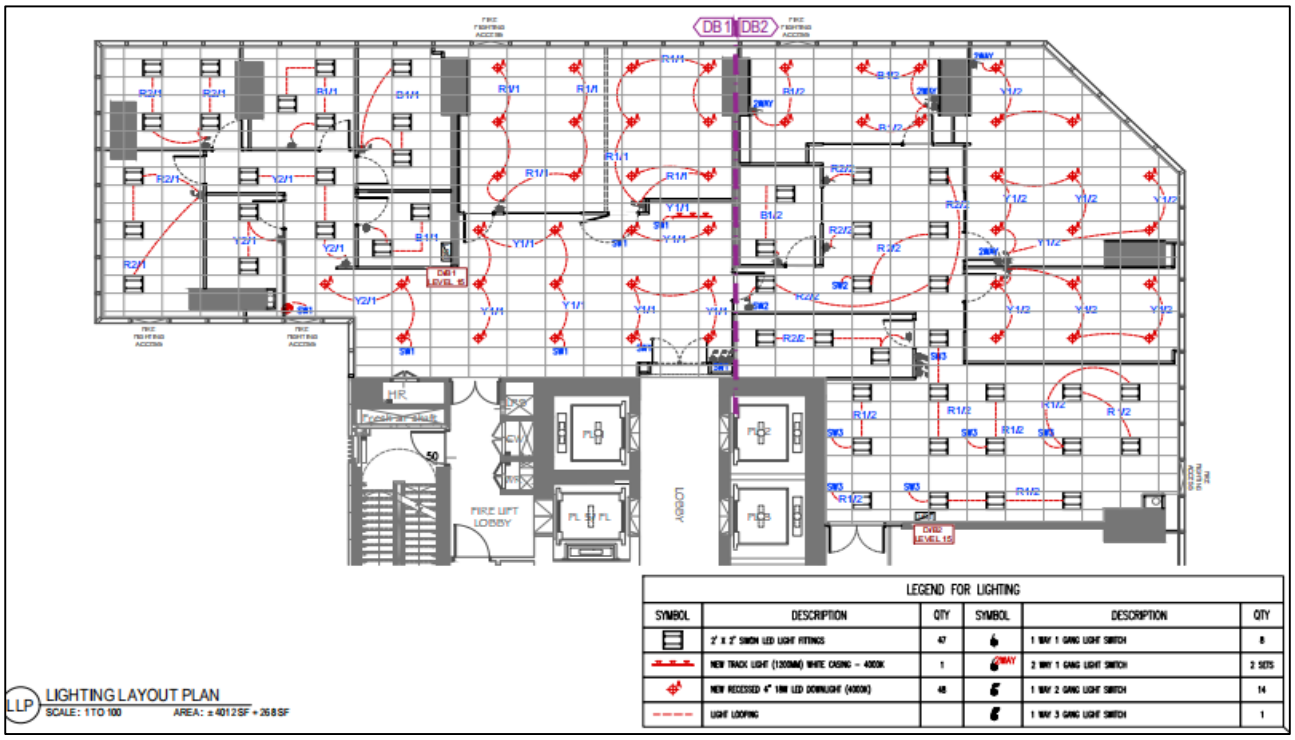


Photo 1.12: Lighting Layout Plan

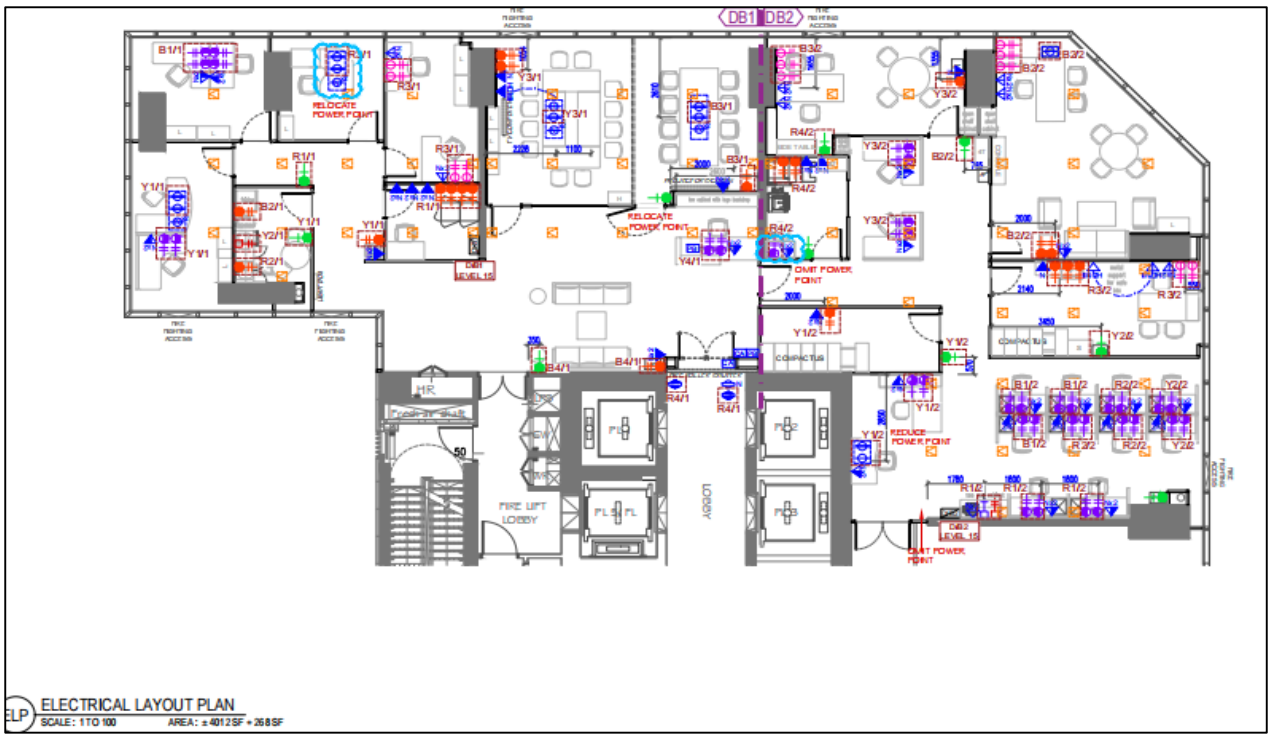


Photo 1.13: Electrical Layout Plan

Photo 1.14: Sprinkler Layout Plan

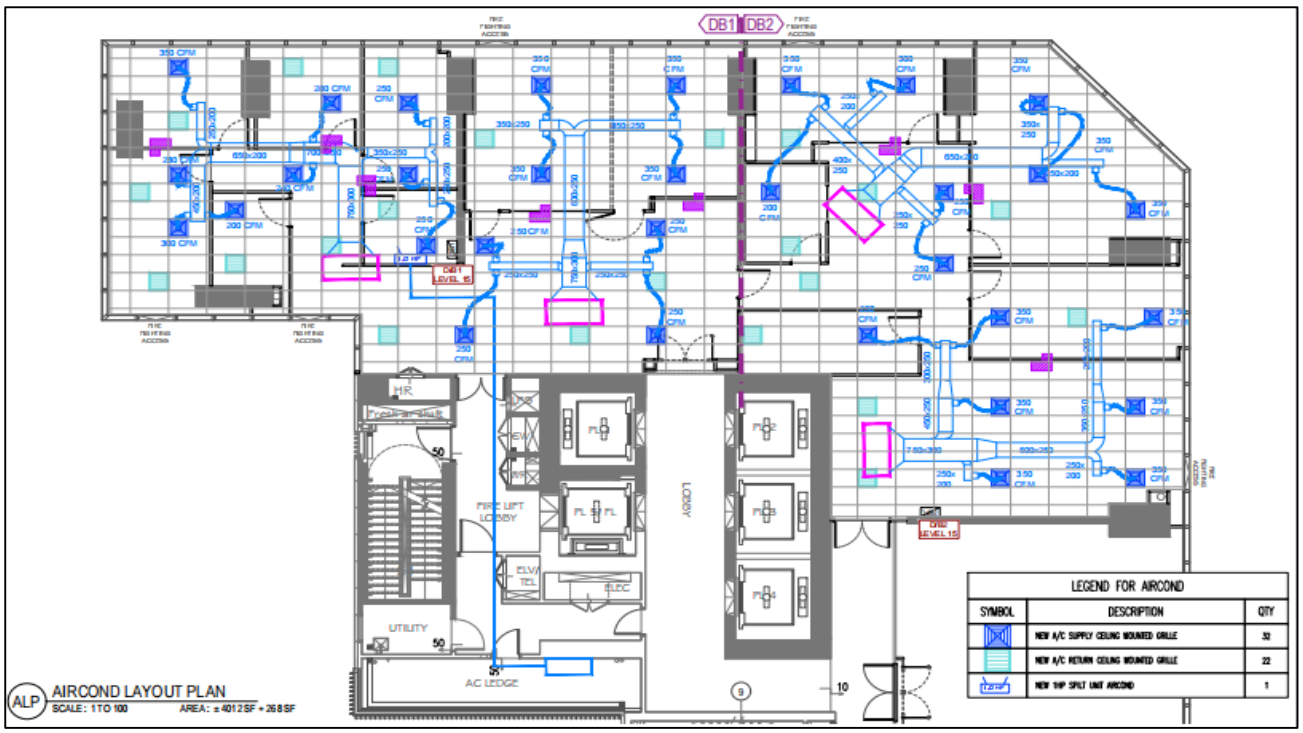


Photo 1.15: Air Cond Layout Plan

CHAPTER 4

PROCESS AND PROBLEM

4.0 PROCESS AND PROBLEM

4.1 Introduction

This chapter will explain the process of the defect inspection and the problems happen in the inspection work after handover from client at Economic and Commercial Office Spain. This inspection work is to ensure that the building is in good condition and well maintenance. It is also for the sake of the building users in conjunction for the life span of the building. With the proper maintain this building can stand longer in a good condition. After the inspection work have done, the defect will come out with the report which mean the progress report will hand on to the contractor for the repairing work.

4.2 Scope of work

1. Do the preliminary site visit to gain some information about the property.
2. Identify the structural elements used for the building.
3. The inspection works which is include:
    - Identify the structural building defect.
    - Identify the possible causes and the symptoms of defect.
    - Identify the problem might be happening in future of structural defects.
4. Make some assumption that come out with the solution and remedial works.

i. Identify and evaluate structural damage.
ii. Identifying and investigating the causes of structural damage occurring in buildings.
iii. Inspecting other damage to the structural component in the same location.
iv. Submit appropriate repair recommendations and security measures to be implemented.

4.3 Method of Inspection

The inspection work done in 5 days. For the first day, walk-in with client also manager supervisor and student practical and does the survey in the whole area office Spain that selected to gain more information. On the 2nd day, the manager supervisor and student practical does the walk over survey review if any obstacle that need to be considered and stated in notes. On the 3rd day, the inspection work was carried out. Instrument used in this inspection is measuring tape, ruler and notes. There only 1 staff and student practical indulging in this inspection. Task given based on the information or works that needed to complete this report.

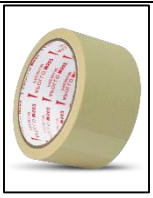
No.	Description	Equipment
1.	**Notebook** – for taking notes or sketches of the location defects and wrote down the number of defects	 Photo 1.16: Note Book
2.	**Measuring Tape 5m** – to measure the length of the defect on the area affected.	 Photo 1.17: Measuring Tape 5m
3.	**Telephone** – uses for recording the photo of defects at the surrounding of the area office , area of office space, elements and all the surrounding views.	 Photo 1.18: Telephone
4.	**Masking tape** -uses for marking location of defect when do inspection defects and for follow in drawing plans - Uses for Subs contractor as a references for them to know when do repairing and remedial works defects.	 Photo 1.19: Masking Tape

Table 1.2: Inspection of Instrument

4.5 Process of Defect Inspection on Building Element

4.5.1 Defect of Building Element Floor

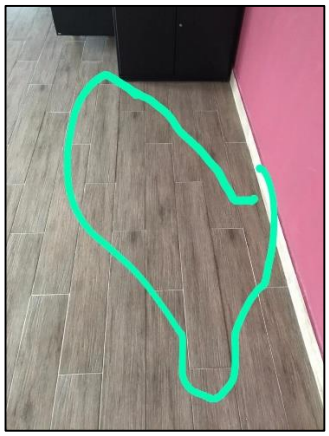
No.	Type of Defect	Description
1.	Chipping  Photo 2.0: Chipping	• There is a defect of chipping found on the surface tiles with between jointing tiles. • When a heavy object accidentally drops tiles surface, it will cause the defect of chipped tiles. • May also caused due to the loading of heavy materials and not doing the protection for covering of tiles when completed display. Workers are still doing construction work in site and through this area. • Location at walkway area
2.	Uneven Surface  Photo 2.1: Uneven Surface	• The defect tiles that are uneven can see a difference between their heights or feel the difference while walking across them were generally installed incorrectly. • One of the most common problems is “lippage,” the uneven surface that occurs when a tile is higher than the one beside it. • Uneven application of thinnest or mortar, which holds the tiles in place, is another potential cause of uneven tiles. This typically happens when the contractor was rushed and didn’t take time to spread the adhesive evenly. • Uneven tiles aren’t something it should ignore. They present a tripping hazard and increase the likelihood the tile will chip on the edges. Tiles like these are also harder to keep clean. • The location of defect at Counsellor room

Table 1.3: Type of Defect Building Element Floor

4.5.2 Defect of Building Element Wall

No	Type of Defect	Description
1.	Improper Finished Paint  Photo 2.2: Improper Finished Paint	• The defect found is shows that improper finished paint. The paint which supposedly repaint maroon colour but not finished yet. • This situation cause painter just skims base coat covering hole wires and poor workmanship form painter was rushed and didn't take time to wait and just leave site. • The condition of paint on the surface so messy. • The location of defect at Administration room.
2.	Hairlines Cracks  Photo 2.3: Hairlines Cracks	• The defect is a hairlines cracks found on the surface wall • The hairlines cracks were measured and got less I millimetres. The defect was just slight of cracks. • The cause of this defect because material of this element was partition board or timber. • The material not suitable using because possibly low material durability which are low temperature and when concussion occurs. • The probability for cracks will occur frequently in the wall. • The location are all area in office Spain

Table 1.4: Type of Defect Building Element Wall

4.6 Problems in Practical Training

4.6.1 Protection

Problem:

Based on observation, most of the workers during inspection are not wearing the Personal Protective Equipment's (PPE) at most of the time. They wearing sport shoes which not protecting their feet at all. This may can be risk in getting injuries or casualties getting higher.

Recommendation:

To overcome this problem, the company should provide their workers with safety equipment's (PPE) like safety, gloves and safety boot and make them used these instruments are compulsory during work progress. If the staff cannot follow the safety regulation, the safety officer must take an action on the staff.

4.6.2 Access Card

Problem:

From the observation, student practical does not have any access card to entering the office Spain for inspection work when the staff already leaves office. This problem might be difficult for the student to do inspection individually. So that, the student need to follow the staff in doing the inspection work.

Recommendation:

To overcome this problem, they must provide access card for student practical to make it easier for entering the common area that need to touch for access. So that, student practical can do the inspection by self.

CHAPTER 5

Conclusion and Recommendation

5.0 Conclusion and Recommendation

5.1 Conclusion

A study was conducted to investigate the causes of defects in new buildings and a conclusion has been drawn based on the outcome of the analyses from the chapter 4. New buildings mean different thing to different people. In fact, there is not exact definition for what is meant by new building. However, the definition is centre around the age of the buildings. While some might have considered building less than five years old as new building some might have considered building less than ten years old as new. New building is defined as building within the defects liability period. In Malaysia, the defects liability period is from 12 months to 24 months which is 1 to 2 years (minter, 2016). After that, the buildings will be defined as new which is free from DLP.

. So that, I can know Embassy Spain office are being managed by IDPM SDN. BHD. Furthermore, I can identify company group structure, company particular and previous and latest record project by IDPM SDN. BHD. Next, I can gain more information about the building. Hence, it gives more knowledge to know about types of the defects appear on the on this project after handover such as hairline crack, damages, leakage and many others. Furthermore, I can identify tools and equipment that used by the workers to do the inspection work. In a nutshell, I need to wish thank you to my supervisor and the other workers had help me a lot by exposed the practical students with the training activities. There is lots of knowledge that can be getting during the period of industrial training. My supervisor and friends is very helpful and always gives an advice in order to complete the report. Thank you for all.

5.2 Type of New Building Defect

These types of defects are mostly will be found in new buildings due to less vibration for the concrete and cause cracks at the wall and joints. Sometimes rework for the new buildings are needed if the defects are serious and need to be rectify immediately to prevent it from getting worse.

The structural cracks in the buildings can be prevented by have a proper inspection and good workmanship when constructing works are on-going. Moreover, the architectural cracks like plastering fall off and peeling paint can be prevented by using a good quality of materials and apply additional coats to it. Apart from that, honeycomb defects can be minimized by vibrating the concrete properly and give sufficient curing.

Lastly will be the hollowness at the floor tiles and columns. This defect often can be seen in new buildings. Unnecessary efforts are need to correct the construction error. The workers need to ensure sufficient of concrete and vibrate it compactly to prevent hollowness. In conclusion, the types of defects can be prevented if the contractors have a strict supervision for the workers.

5.3 Solutions for Defects in New Buildings

In a nutshell, it is important for the parties like construction managers, consultants, project managers, engineers and many more. that are involved in the construction of new buildings have a strict supervision to all the workers and inspect the buildings carefully to minimize the defects. Besides that, they can engage the third party or an expert to solve the defects when their own general workers cannot solve it. This is because the third party and the experts will have more knowledge and experience.

They can identify the problem and rectify it immediately without delaying the whole project. Apart from that, the company need to provide trainings to the workers so that they can gain more knowledge about the field that they are involving into. This will give a lot of benefits to them. Other than that, the contractors need to ensure the materials are in good quality. This is because low quality of materials will cause many defects in new buildings. For example, poor quality of concrete will cause cracks to be happened and the buildings also might collapse. Therefore, the contractors need to compare the 88 materials before purchasing it and get agreement from the architects as well as the clients.

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