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MARA

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

RENOVATION OF SPACE FOR CHOCOLATE LAB

Prepared by :

Nur Malisa binti Mohd Nadjil

2019208536

DEPARTMENT OF BUILDING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
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AUGUST 2021

It is recommended that the report of this practical training provided

By:

NUR MALISA BINTI MOHD NADJIL

2019208536

Entitled

RENOVATION OF SPACE FOR CHOCOLATE LAB

be accepted in partial fulfillment of requirement has for obtaining Diploma in Building.

Report Supervisor	:	_____
		Ts. Normila binti Ahmad
Practical Training Coordinator	:	_____
		Dr. Nor Asma binti Hadzaman
Programme Coordinator	:	_____
		Ts Dr. Dzulkarnaen Bin Ismail.

**DEPARTMENT OF BUILDING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA
(PERAK)**

AUGUST 2021

STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at ZR BINA JAYA SDN BHD for duration of 20 weeks starting from 23 August 2021 and ended on 7 January 2022. It is submitted as one of the prerequisite requirements of BGN310 and accepted as a partial fulfillment of the requirements for obtaining the Diploma in Building.

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Name : NUR MALISA BINTI MOHD NADJIL

UiTM ID No : 2019208536

Date : 10 January 2022

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Alhamdulillah, praise to Allah, the Most Merciful, the Most Graceful.

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At long last, I trust that everybody stays safe and take a really good care of yourselves from home since we don't have the foggiest idea when this pandemic will end. May God give the above characters achievement and honour in their life.

ABSTRACT

The report shows a deeper explanation about renovation in a building. Focusing on understanding the function and benefit of renovating. This may also leads onto the main objective of the project to change the overall look for the lab room in the building. Giving the opportunity for a structure to be more valuable and make use of the spaces. Renovation includes civil works, electrical, mechanical and finishes work. The report will show a deeper explanation for every aspect in renovating. Every process is important and how the contractors deal with the client while giving both side benefits. Finding solution for every problem occurred during the process are so important while catching up with the due date. At the end of this study, it can be conclude that renovation of an existing building will be beneficial in many ways as the lifespan of a structure increases and lower operational cost implied after implementing green technology to the structure.

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CHAPTER 1 : INTRODUCTION

Renovation is a way of remodeling a structure to avoid decay and keeping up with the ideal way to promote energy consumption and maintenance cost. This action mostly involve decision making between client and contractor as this include questions on balancing how to evolve the looks without wasting budget but yet creating a new look and functionality to the current area. Deciding on renovating a space would be an extreme choice as the goal of this process is to prioritize what component or system need to be replace. .(Yin et al., 2012) .

Firstly, make an overall indication for the existing cracking as over time the property will face mileage. Check on the chipped paint or leakage in the area to demonstrate that this is the opportunity for a change after a while of not making a significant update on the structure. Somehow, the design of the space should be change allowing the area to receive a new look. For an instance, many things can be beneficial such as introducing extra cabinet on the wall or upgrading the capacity area . Renovation helps the space to be more utilitarian and likewise keeping the occupants happy. Surely, keeping the stle of the space updated will make the property looks more refreshed. These normally include the task like fixing the floors and adjusting the new lighting. If there havent made significant upgrades in a while, this is an excellent opportunity to install more modernized features. (Morrison, 2021).A more modernize structure builds its worth and leads to higher rental cost and value in the future. Older buildings typically are not design with energy efficiency. Energy consumption of buildings accounts for around 20–40% of all energy consumed in advanced countries.(Juan et al., 2010) This will be a good option for the contractors to introduce equipments and materials which are much more energy saving especially air conditioning and light bulbs.

Lastly, cost of renovating is a major issue to be discuss as this involve the prices for every aspect such as materials and workers needed. Planning need to be done to ensure general cost. As an example, the cost will go up if the project worker lives farther from home or the desired type of tiles are no longer in the market. The more broad the undertaking, the higher the expenses. Make sure to take the time to collaborate with the designers and contractors.

1.1 Objectives

The objective for this study are :

1. To identify factors to considered when renovating.
2. To investigate process of renovation for the space.
3. To determine and find solution for the problem occurred during renovation.

1.2 Scope of Study

The main focus of this project is the renovation process of lab for the chocolate lab. The study was held at Cheese Plant ground level , Chemical & Technology Building, Malaysian Palm Oil Board(MPOB). The place of the case study is at Bangi,Selangor. From this study , few aspects need to be considered. By analysing the data in the site visit report, the renovation full process is responsible to Fadhlin Engineering which ZR Bina Jaya as the subcontractor. From demolishing to constructing , wiring , water supply system and finishing process. Every aspect need to be look over to ensure all the cost does not exceed too far from the Bill of Quantities . The amount of workers and machineries also need to be calculated to avoid massive loss. On site , the problem may occurs when some unexpected request from the client about the item installed in the lab . From here, the contractor need to handle the situation by giving option or alternative to satisfy their needs while not over spending the budget. Every item ordered should be calculated. Such as , the amount of cements and bricks use to construct brickwalls and concrete bench to the size of the glass for the partition wall and pipes for the water supply.

1.3 Research methods

Research method is the particular strategies or procedures used to recognize, select, measure, and examine data about a theme.From the study , few method has been explored :

1. Observation

Observation has been made .Before the demolishing process start, the survey has been conducted to ensure what to be maintain and what to be remove . Site visit will be done 2-3 times a week.Visit will be done according to every new specific work has been made. All the datas from the discussion on site and sketches for the design of the concrete bench and brick walls will be in the

notebooks and the progress for every particular work done will be captured by phone(Vivo Y15) as it is easier for references and understanding the method of work on how the work on site is completed

2. Document review

Following the work programme , each lab takes about a month and half to complete. Every progress will be observe and ensuring the workers on site follow the schedule to avoid late progress. Moreover, the architectural and structural drawing plan is given for us to refer on site for every progress completed . The bill of quantities are also important to make sure every progress is constructed with the right material. The progress report will be done in the office after having the site visit. Make sure to always take note on every progress made .

3. Interview

Interviews has been done frequently on site . Most of the time the unconstructed conversation are within the end user, supervisor and project manager. Question about the type material use or the thickness of bench and walls will be ask to the supervisor and the workers. All the information gathered from the interview will be written in the notebook and some in the audio recorder on smartphone (Vivo Y15). Most of the question is spontaneously asked before the work started on site. The unconstructed interview will be done time to time , avoiding misinterpretation on site.

CHAPTER 2 : COMPANY BACKGROUND

ZR BINA JAYA ENTERPRISE was established based on the call of the Malaysian Government which calls on local organizations in particular to offer a variety of services to meet the needs or wants of increasingly competitive customers. The owner's name is Rosmayudi bin Yusof and born in Terengganu. The organization's set of experiences traces all the way back to the mid 2000, set up under the name of ZR Bina Jaya Enterprise in a little office that was situated at Section 7, Bandar Baru Bangi. The early business around then was in exchanging industry which included stickers, standards and sign board printing.

The extended period of 2002 was a fresh start and making a major advance to reach out in Civil Construction work. With the coordinated effort of devoted and developed workers, ZR Bina Jaya Enterprise is continuously became one of the significant names in the Bumiputera Contractor in Malaysia; redesigning cottages, medical clinics, workplaces For nearly 10 years of working, ZR Bina Jaya Enterprise, it's currently to extending the extent of work to build up a G7 Contractor Company with the name of ZR Bina Jaya Sdn. Bhd. The foundation on February 23rd 2015 has carried them to what they are today.

To meet the needs of customers, this company offers 3 work speciality which are civil, mechanical and electrical. Civil construction works such as renovating old buildings, constructing buildings, renovating in buildings, installing tiles, wallpaper, painting and all related works. Moreover, performing mechanical work such as installation and maintenance of air conditioners, water pumps and so on. And last but not least , perform electrical work such as Sub DB connection, lights, switches, sockets, wiring and other work.

2.1 Completed projects

ZR BINAJAYA SDN BHD has monitored many projects that have been completed under main contractors as shown in Table 1:

Table 1: Completed Project

Project Name	Contractor's Grade	Price(RM)	Duration (weeks)	Started	Finish
Kerja-Kerja Pemasangan Lampu Jalan Baru Dan Kerja-Kerja Berkaitan Di Jalan Bangi Lama, Mukim Bangi, Daerah Hulu Langat	G2	190,043.00	5	25.10.2018	5.12.2018
Proposed Upgrading Of 2 Blocks Student Residence At Mohamad College Rashid, Universiti Putra Malaysia, Serdang, Selangor Darul Ehsan	G6	7,186,184.11	36	15.9.2018	15.6.2019
Construction Of Cold Room In Pre-Clinical Research Building, Mpob Headquarters, Bandar Baru Bangi	G2	187,885.00	16	10.8.2017	9.12.2017
Opening, Supplying, And Installing Hot Water Piping System And Cold Water On Level 4, Plumbing Hot Water And Cold Water On Level 3 And Cold Water Piping In Corridors Core C To Core B,	G3	695,450.00	20	27.09.2017	28.2.2018

2.2 Ongoing projects

ZR BINAJAYA SDN BHD has monitoring ongoing government projects under main contractors as shown in Table 2:

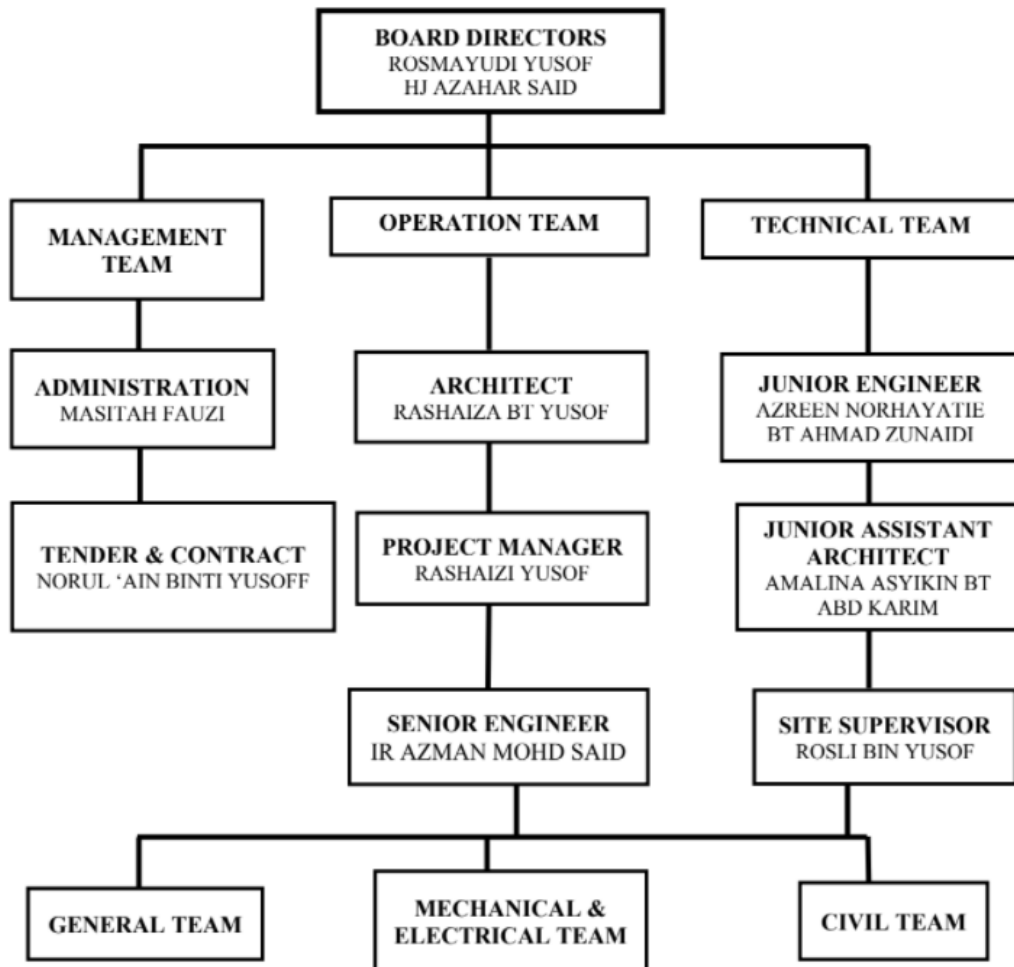
Table 2: Ongoing Projects

Project Name	Contractor's Grade	Price(RM)	Duration (weeks)	Started	Finish
Operating Services And Disposal Site Maintenance Solid Waste Of Sungai Muntoh, Jelebu,Negeri Sembilan	G3	2,949,300.00	240	1.11.2020	31.10.2025
Repair And Repair Works Civil And Structural Engineering(C&S) In The Convention Center Building Putrajaya International (PICC),Precinct 5, Federal Territory, Putrajaya.	G6	8,010,810.00	72	2.12.2020	1.06.2022
Proposal To Build And Complete A My Farm Outlet Building, Marketing And Other Related Support Service Space On Part Of Lot Pt 77735, Jalan Jurutera, Puchong, Mukim Petaling, Petaling District, Selangor.	G6	6,620,915.69	112	19.08.2019	4.01.2022

2.3 Organisational chart

At ZR BINA SDN BHD ,there are 5 departments responsible for overall construction starting with Administration department,Accounting department, Mechanical & Electrical department, Technical department and Civil department.

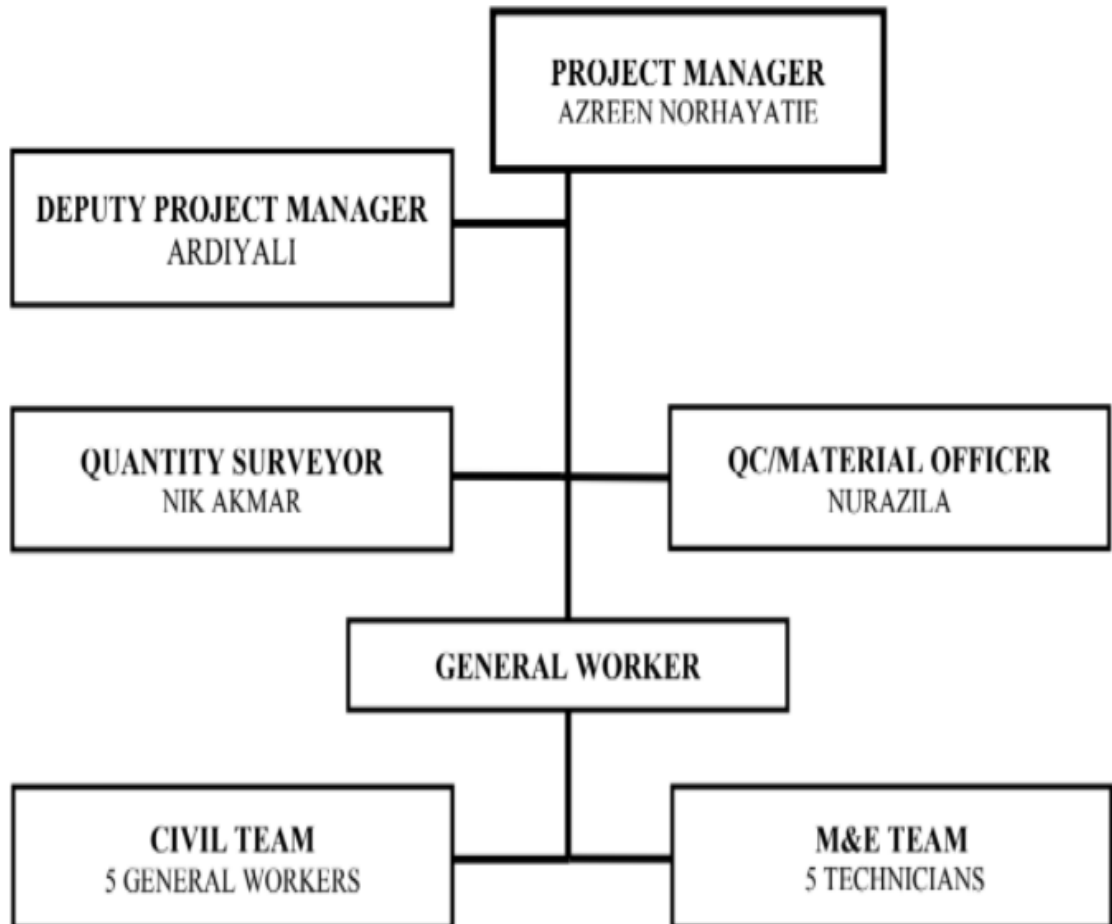
Table 3: Organisation chart



2.3.1 Site organisational chart

This organisation is responsible for the renovation project for chocolate lab, cheese lab and bakery lab at Malaysian Palm Oil Board (MPOB),Bangi. They are also the one who are in charge in work done on site and the one who did the communication with the clients and supplier.

Table 4: Site organisation chart



CHAPTER 3

CASE STUDY BASED ON THE RENOVATION OF SPACE FOR CHOCOLATE LAB

The remodelling of the labs for the chocolate lab is the main emphasis of this project. The research took place at ground level Malaysian Palm Oil Board's Cheese Plant, MPOB. The case study will take place in Bangi, Selangor.



Figure 1: Location of site

Few factors should be considered as a result of this research. Starting with data analysis from the site visit report, Fadhlin Engineering is in charge of the entire renovation process, with ZR Bina Jaya Enterprise as the project's subcontractor. Duration predicted for this project will be a month each for every lab. The project manager in charge would be Miss Azreen Norhayatie binti Ahmad Zunaidi and as for the assistant project manager would be Mr Muhammad Ardiyali bin Salim. From demolition to construction, including wiring, water supply, and finishing. Every component of the lab must be considered in order to guarantee that the total cost does not exceed the Bill of Quantities. To avoid large losses, the number of personnel and equipments must be calculated.

The total labour worker for this project is 6 individuals, with 4 technicians for electrical work in the room. On the job, an issue may arise when the client makes an unexpected

request for item installation and ask for the work done to be faster without realizing that the pandemic effect the whole process of the project including the availability of the materials. The contractor must then tackle the problem by providing options or alternatives to meet client needs while staying within budget. Each and every order should be computed. For example, the amount of cement and bricks used to build brickwalls and concrete benches, as well as the size of the glass for the partition wall, electrical materials and water supply pipes.

NAME LIST OF SITE PERSONNEL		
BIL	NAME	POSITION
1	AZREEN NORHARYATIE BINTI AHMAD ZUNAI	PROJECT MANAGER (CIVIL)
2	MUHAMAD ARDIYALI BIN SALIM	DEPUTY PROJECT MANAGER (M&E)
3	MOHAMMAD HAZWAN BIN MOHAMED HANAFIAH	TECHNICIAN
4	DZIKRI AMIN BIN ROSMAYUDI	TECHNICIAN
5	AZAM BIN SHAFIE	TECHNICIAN
6	MUHAMMAD NAJMI BIN BASERI	TECHNICIAN
7	ROSLI BIN YUSOF	TECHNICIAN
8	SHAHJAHAN	GENERAL WORKER (CIVIL)
9	TOWHIDUL ISLAM	GENERAL WORKER (CIVIL)
10	AKTER HOSSAIN	GENERAL WORKER (CIVIL)
11	KOFIL UDDIN	GENERAL WORKER (CIVIL)
12	NASIR	GENERAL WORKER (CIVIL)

Figure 1: List of site personnel

LIST OF MACHINARRIES		
NO	ITEM	QUANTITY
1	HACKING MACHINE 1500W	2
2	HAMMER 1.5KG	2
3	SINGLE WHEEL TROLLEY	1
4	DRILL MACHINE	2
5	5 STEP LADDER	1
6	3 STEP LADDER	2
7	SPADE / SHOVEL	4

Figure 2: List of site machineries

3.1 To identify factors to considered when renovating.

Before starting a renovation process, make an overall lookout for the condition of the building . Inspection will be the starter step and proceed by creating building report after completed the survey. In the report , every work scope need to be listed such as civil works, mechanical works , electrical works and so on. After analyzing the details, then the work can be proceed and make sure

to imply safety procedure to avoid outsider get harm when the contractors are working their part in the building.

The organisation are the one who are in charge on work done at site. They did everything from the beginning to the end. The parties would interact and communicate with clients and suppliers to ensure every decision making leads to a good renovation outcome. From our point of view, Project Manager is the one executing and monitoring. The project manager communicate with MPOB client on how to build and where the location of the installation of the lab equipment and new room spaces. Autocad drawing is one of the way to show the client get the first impression on how the look of the elements will be in the building's renovation space. Their idea will turn into a 2D drawing and the contractor is responsible to change into real structure .



Figure 3: Project manager discussing with client

For the general workers workscope, they are responsible on building up from the ground such as concrete wall, bench and room on time before the due.

Supervisor will play their role and ensure the workers to always get the job done. Make sure all the sizes of the structure is correct and they are mixing the right amount of mixture for the concrete to ensure the strength of the structure is according to the specification. Whereas, the technician team will ensure the placement of electrical wiring for the telephone line ,electrical supply and so

on. The job for the electrical section commonly happens when all the civil work are done before doing the finishes. That is when the installation of the wall plug and Distribution Board will be done. Whereas, the pipeflow position also need to be determine to ensure smooth flow of waste. After discussing with the client , the room have 3 waste sump that needs to stay open without any structure on top of them. From here, we find a solution for the size need for the concrete bench to avoid any problem happens in the future when the ebd user needs to do the cleaning. Every team is responsible to complete their work according to the expected completed date.



Figure 4: Workers doing work preparation



Figure 5: The position of the waste sum/manhole

3.2 To investigate process of renovation for the space.

There are few main items that are very important to ensure the need of renovating the lab completed. Concrete bench, building an office room , installation of electrical items, water system and wooden cabinet. Firstly the concrete bench need to be constructed, the area of the room need to be calculated and then divide the total area need by the size of brick . The purpose of this would be to ensure we calculate the amount needed correctly and avoid over spending. Before buiding the bench, drawing will be created to show the end user about the size specification. After the client approve, proceed with the position of the sink and the size of the cabinet under the bench. The size of the wooden cabinet will be different from the common cabinet outside the market as the contractor need to order a customize cabinet size because of the position of the sump under it. Ordering the customize cabinet would take a long time and that is why the site supervisor must always remind the workers to settle the works before due as the submission date will be within a month for each lab.



Figure 6: Concrete bench in Progress

Then settle instaling the cabinet, go on with the finishes for the concrete bench. The user wanted a dark theme for the overall look in the chocolate lab . The manager of the project plays the important role to show the customer the choices of tiles sample from the supplier. Make sure the client sign the approve

design to avoid any last minute changes that may effect the overall work for the lab renovation.



Figure 7: Concrete bench without wooden cabinet



Figure 8: Concrete bench with wooden cabinet

The size of the room need to be approved by the client before building it up. The room consist of glass wall and concrete cabinet. Discuss with the client about the thickness of the glass and wall .



Figure 9:Frame structure



Figure 10:Brickwall for office room

Settle the main structure, proceed with electrical installation such as wall plug, Distribution Board and Air conditioning. Every work need to be done according to the Bill of Quantites to avoid any problem or defect happens. Last before handing over , it would be the finishes in the lab room. Make sure the materials for the process are enough .Whereas, remind the workers to do the job properly and avoid wastage during the tiles finishing or painting process.



Figure 11: Overall view of the renovated lab room



Figure 12: Wooden cabinet and painted wall look

3.3 To determine and find solution for the problem occurred during renovation.

Every project consist different challenges. For an instance, on our site there are difficulties on deciding about the measurement of the cabinets and the total amount of

wall plug required. Relating to the size of the cabinet, the issue occurs when the length of the concrete bench needed from the client is not standardize with the common size of wooden cabinet sold outside the market. Whereas, on the floor near the position of the concrete bench, there is an existing manhole that we need to guarantee will not be an issue for them to make their cleaning routine when the lab has completely renovated. To solve this issue, we need to order a custom size cabinet for both side of concrete bench in the lab. Then , the office room in the lab. The contractor also need to suggest the best specification to avoid harm when the structure is completed. Somehow client does not see the outcome like the contractor does. So the client often wanting a structure without knowing the consequences. For instance, the client wanted the upper part of the room to be fully glass without frame in between. That is not safe at all as the structure of the glass is too heavy and it will be hard for the frame to support. That is when, the contractor suggest a better option while maintaining the budget and to ensure the looks still be elegant.



Figure 13: Customized wooden cabinet

Moreover, the demanded room in the lab from client has issue about the size and thickness of the partition glass. Originally, the client requested to have a full upper half partition glass but considering it was over cost and quite dangerous without any support so the recommended option was divided the glass into two part and have a smaller thickness so that it suits their budget and beneficial for us to collect profit.



Figure 14: Completed structure of the office room

CONCLUSION

At the end of this study, it can be concluded that renovation of an existing building will be beneficial in many ways as the lifespan of a structure increases and lower operational cost is implied after implementing green technology to the structure. Moreover, balancing the overall budget will be challenging while trying to please the client needs. The new structure in the renovation space should be balanced with a good functionality and a modernized look following nowadays design. From this case, decision making is a major issue. The contractor needs to be intelligent in predicting the proper amount of materials used to create every new element in the area. For an example, the amount of bricks and cement needed to build the additional room and concrete bench in the building should not exceed too far to avoid any loss. The contractor also needs to convince the client to choose the right colour for walls and tiles so that the interior look of the building will be exactly what the client wanted to avoid dissatisfaction after the process is completed. When proposing the idea of the structure inside the building, the contractor should propose drawings and samples of material to the client so they get a vision of what the outcome will look like. Make sure to guide the end user with detailed explanations for every process done. Lastly, when handing over, make sure every requirement from the client is completed and make sure every element is completely constructed while making sure the space is clean and safe.

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