UNIVERSITI TEKNOLOGI MARA
Cawangan Johor
Kampus Pasir Gudang

ECS 358

CIVIL ENGINEERING DESIGN PROJECT

REINFORCED CONCRETE BUILDING DESIGN PROJECT

&

PROJECT BASED LEARNING

(CASE STUDY)

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DIPLOMA IN CIVIL ENGINEERING

FEBRUARY 2022

ACKNOWLEDGEMENT

Assalamualaikum and good day, nowadays, technology and economy has evolved gradually that lead the change of how nowadays industry and construction project works. A computer can solve a certain equation with the help of software. With this project that was given to me, I have studied both manual and software calculation, thus finished the project within the time given. And for this opportunity, first of all, I would like to thanks to the Almighty that obviously the one that has guided me to the right path of life and also give me strength and health so that I can finish this final year project. Without His grace, this project could not become a reality. Next, thanks to my parents whom I am greatly indebted. They always support me and give me encouragement when I feel like I am down to a bottomless pit with no end, they are the one who pull me up so that I can continue to move forward until the day I reach my dream. Especially, during the pandemic Covid-19 when all of the students learned through E-learning. I am feeling oblige in taking the opportunity to sincerely thanks to Sir Mohammad Hazizi Bin Jamal and Miss Nurul Izziyantie Binti Mat Noor, my Design Project lecturer, who guide, spent their leisure time to teach us about Prokon and help me and my friends using the software during the E-learning and studio coaching. Other than that, I would like to thanks to Miss Narita Binti Noh, my Structural Reinforce Concrete and Steel Design lecturer, who teach me about the subject from A to Z. Without them, I will not be able to finish this project for this semester. Last but not least, I would like to thanks to the other lecturers, students, and friends for giving some advices and helping me when I am in doubt certain things throughout this semester so that I can complete all the elements required in this subject. I have no valuable words to express my thanks except thank you so much, and my heart is still full of the favours received from everyone.

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1.1.1 Requirement of building – by – law , fire safety regulations

In this world, everything we do have their own law including the construction work in civil engineering. The buildings or infrastructures that have been constructed at around us follow the specification that required by Uniform Building By Law 1984 (UBBL). UBBL major purpose surely is about the building's structural requirements related to the design and specifications of materials, loadings, foundation and superstructure which govern the design, specifications and construction of walls, floor and building structure. This law is to make sure the public safety and environmental and standardized all work for buildings must obey by all contractors or party that handle the construction. The law also will make work progression at site more easier because they only need the requirement that already prepared. Based on my project, reinforced concrete double storey house, the design of the house must follow the UBBL and fire safety regulations to ensure the house is safe for people living. Thus, based on the UBBL standard value, the features of this home project are as follows: first, the width of every livable room in a residential house shall not be less than 2 metres (UBBL, Section 42 paragraph 2). Another relevant component is the kitchen's space and breadth being less than 4.5 square metres and 1.5 metres, respectively. Furthermore, in Section 43(d), UBBL declared that a bathroom with closet fittings must be at least 2 metres long and 0.75 metres wide. Every double-story terrace home must have a party wall, which is a separating divider between two neighbouring buildings shared by the tenants of each property. In addition, according to Section 86(3) of the UBBL, all party walls must be carried above the top surface of the roof for a distance of at least 200 mm at right angles to such higher surface. Section 165(3) of the Fire Safety Regulations states that the travel distance from any location in the room to the room entrance must not exceed 15 metres. Section 227 requires portable extinguishers to be installed in all buildings in conformity with the code of practise. These are some of the instances taken from UBBL 1984 where engineers must follow the legislation in order to develop a standardised building or house.

1.1.3 Project Background

This project is about design a double storey house. This house is located at No: 404, Ptd 111441, Jalan Ceria 11, Bandar Baru Kangkar Pulai, 81110 Kangkar Pulai, Kulai, Johor. The design concept of this double storey house is simple and very suitable for family rather than single. The area of the house is quite big and it has basic sections that every house has such as porch, kitchen, toilets, living room, and others. All dimension and size in the house are clearly stated and showed in architectural drawing. Hence, the materials also shown in the drawing such as tiles used. The project were designed by an architect named Ar. Lee Wee Meng from company Lee M. Architect. For the client of this house already known at the architectural drawing information who is Mr. Chong Jian Xiang. Next, for this design project, I prefer to use the Malaysia Standard Eurocode Code of Practice where I can refer all the materials loading, permanent load, imposed loads, partial safety factor for actions (Ultimate Limit State) and all the actions on structures exist in the building. The Eurocode Standard choosen also including Eurocode 1 and 2. As the project needs to design a double storey building, each structure element must be determined. Common structural elements in a residential building are pad footing, column, beams (simply supported and continuous beam) and slab. The project designed not only followed the standard or law however also need to ensure the house is suitable and economical for client.