UNIVERSITI TEKNOLOGI MARA

ECS 358

CIVIL ENGINEERING DESIGN PROJECT

REINFORCED CONCRETE BUILDING DESIGN PROJECT & PROJECT BASED LEARNING (CASE STUDY)

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INTRODUCTION

1.1.1 REQUIREMENTS OF BUILDING BY LAW, FIRE SAFETY REGULATIONS

A good building design must fulfil all the requirements specifications because it can be used once the project have done. All the spaces in the building must have suitable size for each section. For this project, double storey bungalow house have to construct bathroom, living room, bedroom and kitchen. For an example, living room need to construct bigger than bedroom because the quantity people at living room is many compared to bedroom. This is to make sure the people in the building feel comfortable and safety. In this country, there are some guidelines, standard and requirement need to follow by contractors and engineers. Malaysia has established building code called as Uniform Building By Laws 1984 (UBBL) which is executed by local authorities could be used any construction building types in the local authorities area. These legal instruments stipulate the procedures for building plans approval and other means of development and construction control. Local authorities adopt and enforce Uniform Building By-Laws 1984. Laws are formulated by the Federal Government and passed down to be gazetted. These laws will be sent to Local authorities for adoption and enforcement. There are 9 parts to the building code which include preliminary, submission, of plans for approval, space light and ventilation, temporary works, structural requirements, fire requirements, fire alarms, fire detection, fire extinguishment and firefighting access and miscellaneous.

The advantages of UBBL is to create a uniform standard in Malaysia's Construction. Then, to control the layout and construction of building and other than that it could save the cost application, processing and approval of building developments. UBBL also provides safety precaution for the fire safety regulations and compartmentation. In addition, it provides roles of person in the construction site such as project manager, architecture and etc. Even though, It have a lot of advantages but it also have disadvantages such as the urban areas would not consider the uniformity standards and difficult to interpret laws that has been established.

In conclusion, As a professional civil engineer we need to follow all the requirement and standards code in building the construction. We need to follow all the details by UBBL to make sure the building are verified and can be used after the construction finished. If we did not comply with the law, our project might be affected in terms of cost, time and etc. As civil engineering part, we all know that to build a construction is not easy and sometimes it can be challenging. We must have a huge of knowledge about the construction such as designing reinforced concrete, time frame and etc.

Next, we know 60% material that use in construction is concrete while other 40% is steel. Thus, designing reinforce concrete with the Code of Practice is crucial. One of the example designing reinforced concrete is crucial because we want to construct a building that will be use by client. Other than that, we need to know which supplier is the perfect one that can be collaboration in this project. This is because we need to make sure all the materials that we buy are cheaper from market price and the quality are the best among all the supplier. In this term we must have a big of knowledge to avoid from be scammed. For this project, Microsoft project software has been used to make sure the flow and time frame are follow in schedule. This project duration are 287 days. It started on 29 march 2021 and ended on 3 may 2022. For this time frame, it is acceptable because the duration time is average.

For the design section we can see column design is the most critical part because it have a lot of calculation that sometimes can be confused. The beam design in this project is flanged beam so it not easy as rectangular beam. We need to be more careful because some of parts are different. All the design main reinforcement, deflection and cracking in this project are pass and can be used. Moving to prokon software, it shown us the actual value of the calculation and from that we can detect our error or false in the manual design calculation. It is good because we can redesign so the results with get similar in the software. For this project, different calculation percentage between manual design and prokon software are not more than 30% so the value is acceptable and can be used in the construction.

Lastly, for bill quantities and taking off, all parts are used same catalogue to make sure all the price are fixed. In my opinion, the most challenging part is continuous because the calculation is long.