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**ECS 358
CIVIL ENGINEERING DESIGN PROJECT**

**REINFORCED CONCRETE BUILDING DESIGN
PROJECT**

**PROJECT BASED LEARNING
(CASE STUDY)**

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DIPLOMA

FEBRUARY 2022

ACKNOWLEDGEMENT

First, thanks to Allah S.W.T for giving the opportunity to me finish this Final Year Project successfully as one of the assessments that need to be accomplish for course ECS358 which Civil Engineering Design Project. With the strength He gave to me, it helps me to search the materials and information's for me completing this final year project.

I would like to say a gratitude to my Civil Engineering Design Project (ECS 358) lecturers, Sir Ahmad Idzwan Yusuf and Dr Lee Siong Wee for their help and guidance in the process to do the design project. All the comments and advice given were so helpful for me to complete this project. They provided me with a lot of knowledges and information's on how to analyses and calculate the structural element of the building such as slab, beam and many more. Their commitment in giving all her time to guide me and my classmates about this subject has ease this assessment to be done. Also special thanks to my family and my friends for their support and helps throughout completing this final year project.

Finally, I want to thank for all who involved either directly or indirectly in completing this project.

The Uniform Building by Law of 1984 (UBBL) is a building code that defines the basic standards for the maintenance and development of roadways, infrastructure, and structures under local government jurisdictions. These are some of the prerequisites for constructing a two-story home, according to the UBBL.

- **PART II: SUBMISSION OF PLAN APPROVAL**

Section 12: sketch plans for approval in principle

- 1) When a building has been approved in principle, plans in accordance with by-laws 3 to 10 and 14 to 16 shall be submitted and approved before erection of the building approved in principle may be commenced

- **PART III: SPACE, LIGHT AND VENTILATION**

Section 42: Minimum areas of rooms in residential buildings

- 1) The area of the first habitable room in residential building shall not be less than 11 square meters, the second habitable room be not less than 9.3 square meters and all other rooms be not less than 2 meters.
- 2) The width of every habitable room in a residential building shall be not less than 2 meters.
- 3) The area and width of kitchen in a residential building shall be not less than 4.5 square meters and 1.5 meters respectively.

Section 44: Height of rooms in residential buildings, shophouses, school

- 1) The height of rooms in residential buildings other than shop houses:
 - a. For living rooms and bedrooms, not less than 2.5 meters
 - b. For kitchens, not less than 2.5 meters
 - c. For bathrooms, water-closets, latrines, porches, balconies, verandahs, garages and like, not less than 2 meters.

In designing process, both manual and software calculation come out with different output. Almost of this case is because of different method or formula were applied into the calculation. For example, manual design use summation moment method, Shear Force Diagram (SFD) and Bending Moment Diagram (BMD). But, the software that we used, PROKON, use Wood – Armer formula to compute the moment. From this, it will give the different result. However, there is have the method to comparing the output between manual calculation and software calculation that I applied in this project. The method is the percentage different between software output and manual output must under 30%. This percentage range I assumed acceptable. For percentage range more than 30%, it considers as risk to be apply for these two storeys - house project.

During the process of designing, can't be deny that error can be happen such as using wrong design parameters, apply wrong formula, consider wrong case for structural element such as slab which have its case according to their continuous edge. No matter how, as the student which still a beginner in designing, we will keep improve our skill in design also with the software. At last, we are managed to do both manual and software design correctly.

Hence, we have to master's in design calculation also must have deep understanding with the formula uses before we start the design process. This to make sure that the structure that we design is surely safe and last to the proposed design life. In addition, the design that be proposed must cost – effective follow the aspect in UBBL design rules. This is to save project cost at the same time achieve the requirement of the project.

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