UNIVERSITI TEKNOLOGI MARA

ECS358

CIVIL ENGINEERING DESIGN PROJECT

TECHNICAL REPORT

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Uniform Building by Laws (UBBL) is a set of standardized building regulations for the whole of Malaysia and applicable to all local authorities and building professionals.

1. Building Site

> No building shall be erected on any site which has been filled with any matterimpregnated with animal or vegetable matter until the entire surface of the ground or site the building has been made or rendered harmless and has been covered with a layer of hill soil, rigid, clinker, or solid crushed ash with a thickness of at least 0.305m. The ground on which any structure will be built must be carefully cleared of grass and other plant debris.

2. Natural lighting and ventilation

> Room that designed for residential or other purposes except hospitals and schools should provide with a natural lighting and natural ventilation. There must at least one or more windows with a total area of not less than 10% of the floor area of the room and the room must have openings capable to allow a free uninterrupted passage of air not less than 5% of such floor area.

3. Vehicular access to the site

> Restricted to specific hours to avoid obstructing flow of traffic if found to be necessary.

4. Building Materials

> (1) Any materials used-
>
> (a) in the erection of a building.
>
> (b) in the structural alteration or extension of a building.
>
> (c) in the execution of works or the installation of fittings, being works or fittings to which any provision of these By-laws applies; or
>
> (d) for the backfilling of any excavations on a site in connection with any
>
> building or works or fittings to which any provision of these By-laws applies, shall be-

Summary of design work

At the beginning, the student was assigning with their own drawing of double storey house. With the provided drawing the student was assigned to design its structural key plan. It is for the student know how to put the column at the right place, knowing type of slab such as one way or two-way slab. Not just that, the student also needs to know suitable thickness of slab. It is the first thing to calculate. It is because without slab calculation, all the other structure building cannot be continued. The student also needs to consider if the slab has drop or not, it will cause the student to reduce their slab thickness and still be in a safe range to design it. The cause of drop is happened when the slab was design around the toilet area. It is because it needs to hold the water and make sure it does not spill to outside of the toilet area.

When designing the slab, there something happened during the calculation, which is the slab was over design. The student needs to recalculate the slab or redesign it, so it does not overdesign. This is because when calculated the value of bill of quantities it will not overbudget. Overall, in designing slab, there is no failure happened when designing it. If it happened the student will provide different size of diameter bar or the different concrete characteristics value.

Next, in designing beam there is a lot of problem when need to find the value of load transfer from slab to beam. It is difficult when finding maximum shear stress and maximum bending moment if it not near zero the beam shear stress and maximum bending moment. The student may need to change the dimension of beam or provide the diameter of the bar new. That is how the student assign the size of diameter bar for reinforcement. The student also provide most of the beam same size because it will look more uniform and neat.

Other than that, in designing column the student needs to apply minimum four number of main reinforcement bar for rectangular and square column. Not just that, the size of bar also needs to be more or same as 12mm. That is how the student obtain the size of column to make sure it does not fail.

In designing pad footing, the student needs to find the soil bearing capacity to determine it failed or not. To find soil bearing capacity, it depends on site investigation report to identify its, qf value. It is very important to know what type of soil around the construction area. It is to prevent the house to crack within the year expected to hold. It also to prevent soil erosion after the construction.