AUT UNIVERSITY
NEW ZEALAND

ENBU800_2023_01

Structural Engineering Design

Assignment 40%

Semester 1 – 2023

You are required to prepare a report covering the aspects of the load calculations and structural design. The project report will be marked out of 100 and comprises 40% of your total mark for this course.

Due Date:
The due date for this assignment is **24/04/2023 at 23:59pm.** The final project report must be submitted as **one file (Word or Pdf)** via **Canvas**. **Please note that late assignments will not be marked.**

Project Description:
The building plans of a concrete structure are shown in Figure 1. This building is located in the Wellington CBD at a site about 75m above sea level. The intended use is parking on the ground floor and office on the first floor. It assumed that a shear wall (not shown in the figure) would carry the lateral wind and earthquake loading and not included in the design. The building design working life is 50 years. Below are design information:

- The density of reinforced concrete is $25kN/m^3$.
- The maximum aggregate size is 16mm.
- The compressive strength of concrete 40MPa.
- Assume beam size of 300×450mm.
- The yield strength of main steel bar 300MPa.
- The yield strength of stirrups 300MPa.

All design and detailing should be in accordance with NZS3101 and loading should be in accordance with NZS1170.

- **Design the one-way slab for first floor and roof level using simplified design method.**

Report presentation:

It is expected that your assignment adheres to professional standards of presentation and report-writing. The body of report should be completed with typed pages (the hand-writtten or excel calculations should be in appendix).

Academic honesty:

All work submitted must be the original work of the student. You are advised to consult the website http://www.turnitin.com to obtain further information on what constitutes plagiarism or unauthorized copying.

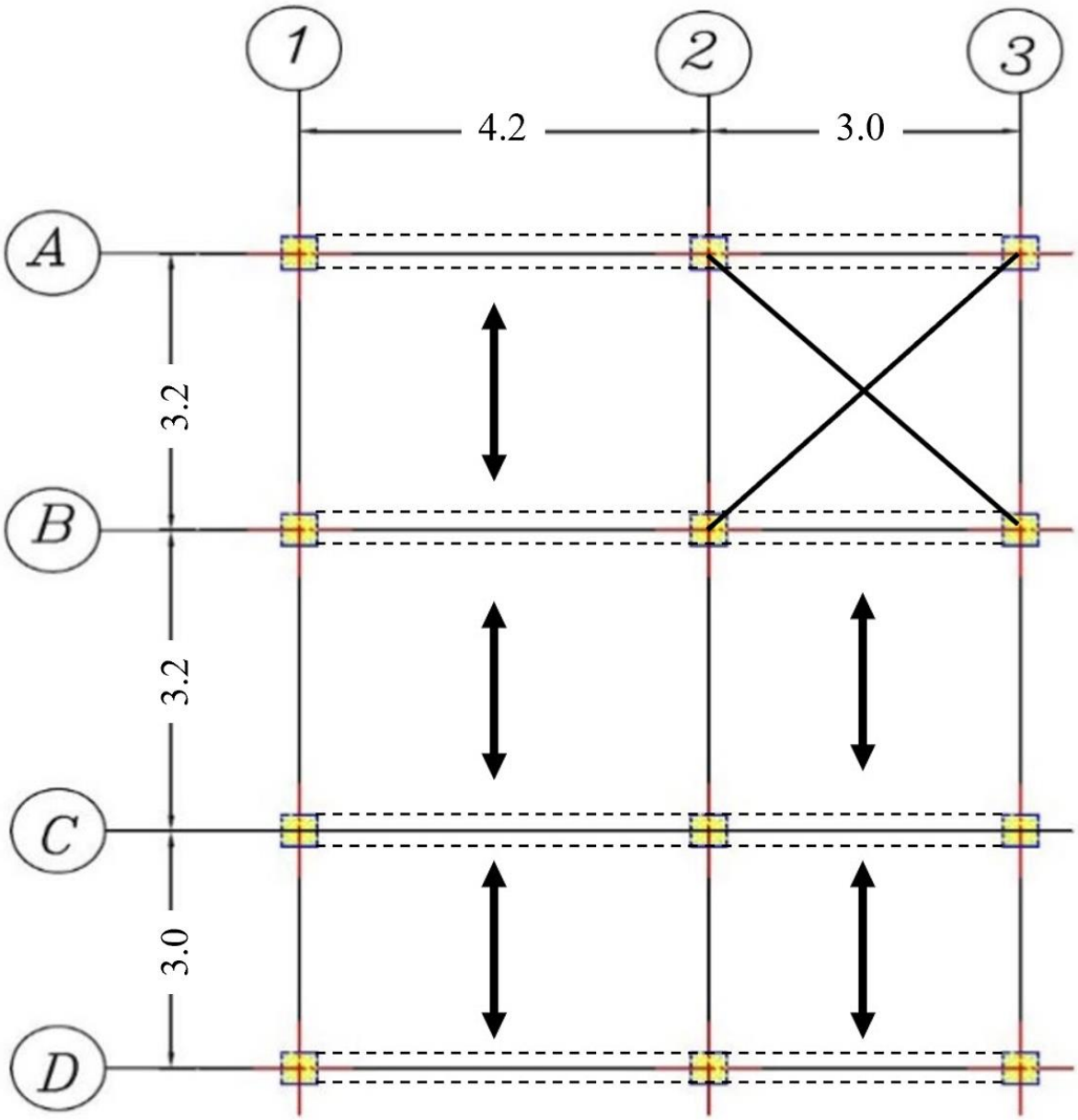

Figure 1. First Floor and Roof Level Building Plan