STUDENTS’ NAMES:                       DATA:
___________________________________   

___________________________________   L = _ _ _ _ _ _ _ _ _
___________________________________   

___________________________________   f’c = _ _ _ _ _ _ _ _ _

___________________________________   Fy = _ _ _ _ _ _ _ _ _

HOMEWORK PROJECT

The floor plan of a four-story “Print shop” is shown in the figure in the attached page. The first floor (on grade – on the ground) and the second are dedicated to paper storage. The printing is done on the third floor where all the machinery is located. On the fourth floor there are two offices. The stairs and the elevator shafts are located on the outside of the main building. The roof (only) covers also the spaces above the stairs forming a rectangle. The new building will be built in Charleston, South Carolina Area (located in Zone 3 Earthquake).

L –given above is the base for the dimensions in the figure – see attached drawing. All dimensions are function of the base dimension L

Required

1. Design the beams at the fourth floor assuming that the lab is supported in one direction on beams located along axes A, B, C and D.
2. Design the beams on the third floor assuming that the slab is supported in one direction on beams located along axes 1, 2, 3 and 4.
3. Design the slab at the second floor supported in one way as a ribbed slab supported by the beams located along axes A, B, C and D.
4. Design the slab for the roof as a two-way flat slab (without beams).
5. Design and detail column B2 and dimension all other columns at all stories.
6. Design and detail the footing for column B2 and dimension all other foundations.

Follow detailed instructions for each of the home-works on separate sheets.

FORMAT OF HOMEWORK SUBMITTAL:

1. All homeworks have be submitted following a special class requirement:
2. Each homework must have a cover page indicating the
   a. Homework number
   b. Homework title
   c. Group number
   d. All names of group participants (printed caps)

Continued on next page
e. Date of submittal
3. Each homework must include the instructions page for the homework submitted, i.e. Homework 1, or 2, or …
4. Each page in the homework must have a **free margin** of 1.0 inch on all sides.
5. Each page must be **numbered on the bottom right corner** in the free margin space.
6. Each page must have the **group number written in the top right corner**.
7. The text must be at least 1.5 spaces.
8. All computations must follow the following format:
   a. The page should be divided in two columns:
      i. On one column you can write your numerical computations, comments or else
      ii. On the other column you must include sketches for the item being calculated – beam, slab static scheme with dimensions, diagrams, cross sections or any sketch required.
         (width of columns may be determined by you)
   b. Floor layout sketch may cover entire page and is not subjected to the column divided format.
   c. Tables can cover the entire with of the page in either portrait or landscape
   d. The final drawing (or sketch) must be a multiple of page size (8.5x11).
   e. The final sketch can be made by computer, but it is not advisable.
9. There are many repetitions in these homeworks. It is advisable to use programmed spreadsheet functions and show the results in tables. In such case you must:
   a. Show a full sample computation, including formulas which you are using.
   b. Show results in a table, using same nomenclature as used in the sample.
   c. Show the results in the sketches when required.
10. The homeworks are made in groups. Only one homework report should be submitted by the whole group.
11. The homeworks are designed such that parts can be divided in three parts so each member of the group may be able to exercise one part. Other parts cannot be divided. The group work may help you exchange knowledge and interact during the learning process.
12. Hand sketches are desirable. All sketches must be in scale, include all dimensions required to evaluate the results and must be clean.
13. A sample project will be available in the library reserve, or in instructor’s office to be used only for the format requirements. The sample project (a past homework of one of the previous groups) can be used for understanding the requirements, only. The sample project has errors which may mislead you. Use it to clarify only the format requirements and understand the details written in the homework sheets.
14. The same formats are required when writing your examinations.

*NOTE: Failure to follow the format requirements will result in unnecessary deductions in grades and evaluations. In some cases the homework and project may be completely rejected, with all implications from this action.*
Floor(s) Plan

\[ L_1 = L, \quad L_2 = 0.9L, \quad L_3 = 0.3L, \quad L_4 = 0.9L, \quad L_5 = 1.1L \]