

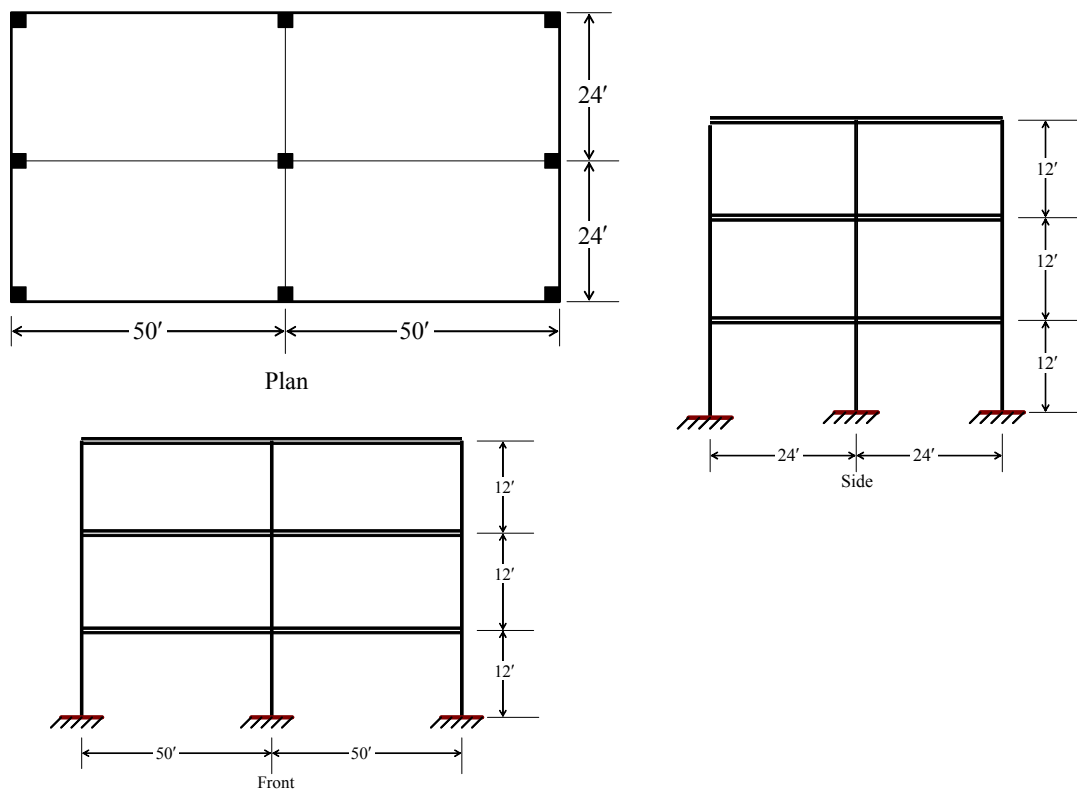
# DESIGN PROJECT OF TWO-STORY OFFICE BUILDING

## ENCE 454 – Design of Concrete Structures

SPRING 2004

The design and analysis of a two-story office building must adhere to the following general requirements:

1. Each team (if applicable) will design a full-scale reinforced concrete, two-story office building according to the ACI-318-02 Code.
2. The building layout must adhere to the following set of dimensions (see figure):
  - a) Overall length of building: 100 ft
  - b) Overall width of building: 48 ft
  - c) Overall height of each floor : 12 ft



3. Design details should include, but are not limited to, the following main items:
  - a) Design of reinforced concrete beams in each bay – shape, maximum stress, and maximum deflection.
  - b) Design of reinforced concrete columns – shape and maximum stress.

- c) Buckling of support columns
  - d) Design of slabs – shape, maximum stress, and maximum deflection
4. Specify material type for all components. Material property data (i.e. elastic modulus, yield strength, ultimate strength, etc.) should be obtained from appropriate tables.
  5. Design gravity loads should be estimated accurately for each floor. Gravity loads on the roof of the building should include snow as well as rain loads.
  6. Structural members should be sized to support the specified loads with the appropriate partial safety factor according to ACI Code.
  7. Create drawings of the entire building as well as individual components, including assembly details. All drawings should be generated with a computer (preferred) or NEATLY by hand.
  8. The final report\* will be due on the last day of class – **Tuesday, May 11, 2004.**

\*NOTE: Detailed guidelines and contents of your final report will be provided in a separate handout.