

CIV 420 Design Project: Design Continuous Beam in Concrete Floor System

Design continuous beam along column line H at 2nd floor (see 2nd floor plan in attached drawing) by using both PCA-beam program and manual calculation. The live load should be determined based on ASCE standard listed below. For superimposed dead load, concrete and steel strength and design parameters, see attached drawings.

Design Standard:

1. International Building Code-2000
2. *ACI 318-02 Building Code Requirements for Structural Concrete*
3. *ASCE 7-02 Minimum Design Loads for Buildings and Other Structures*

Requirement (or Learning Experience):

1. Determine bottom flexural reinforcement at mid span and top flexural reinforcement at each end near column and make the beam reinforcement schedule.
2. Determine shear reinforcement and its spacing at each end of beam (based on maximum design shear at each end, reduce space of shear reinforcement is not required in this project).
3. Draw one beam section at midspan and one beam section near support (column) and show all reinforcement and dimension.

Project Submission:

1. Project cover sheet with project title, designer, submission date, and signature
2. The beam reinforcement schedule for the continuous beams along column line H;
3. Engineering drawing of two beam section: one at the selected mid span, and another at the selected beam end;
4. Hand calculation of flexural reinforcement at mid span section and one end section near the column for a selected beam;
5. Hand calculation of shear reinforcement at the beam end for the selected beam;