1. Work Problem 3.27 from the textbook.

2. Work Problem 4.12 from the textbook.

3. [NOTE: This problem is similar to a previous HW problem, except that the beams along lines 1, 2, 3, etc. span only 15 ft (instead of 25 ft) between girders, and the floor supports a uniformly distributed live load of 100 psf.]

A corner of the floor system in a reinforced concrete building is shown in plan view. The tops of reinforced concrete columns are shown as rectangles along lines A, B, and C. Column A1 is a "corner column" at the exterior of the building. Columns B1, C1, A4, and A7 are "exterior columns" around the perimeter of the building. Columns B4, C4, B7, and C7 are "interior columns." Use the following information to determine dead loads (due to self-weight):

- Reinforced concrete girders (12 in. wide by 20 in. deep) span 30 ft. between columns along lines A, B, and C.
- Reinforced concrete beams (8 in. wide by 14 in. deep) span 25 ft. between girders (or occasionally between columns) along lines 1 through 7.
- The reinforced concrete floor slab is 5 in. thick and is supported by the concrete beams and girders.

A) Provide FBDs showing the total service load (D + L) acting on:

- An interior beam (spanning between girders) along line 3 (span = 15 ft.)
- An exterior beam (spanning between columns) along line 1 (span = 15 ft.)
- The interior girder spanning from Column B4 to Column B7 (span = 30 ft.)
- The exterior girder spanning from Column A4 to Column A7 (span = 30 ft.)

[Remember to label the maximum magnitudes of any distributed dead loads, and also the magnitudes of any point loads.]

B) Determine the total load (D + L) acting on:

- Column B4
- Column B1
- Column A4
- Column A1