ENDS 231. Assignment #5

Date: 2/19/08, *due 2/26/08*   *Pass-fail work*

Problems: Onouye, Chapter 4 *and* 5A
*Note: Problems marked with a * have been altered with respect to the problem stated in the text.*

(25%) 5A)   The floor framing plan is subject to uniform distributed loads of: dead load = 45 psf, live
load = 120 psf. Determine the resulting reactions by the beams & load on the columns.
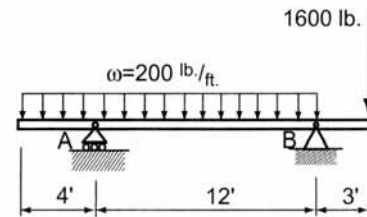
(load tracing)

Partial answer to check with: R_{B2} = 16706.25 lb, $R_{G3@G1}$ = 10395 lb,
$R_{G1@C1}$ =12529.7 lb, P_{onC2} =20,822.8 lb .
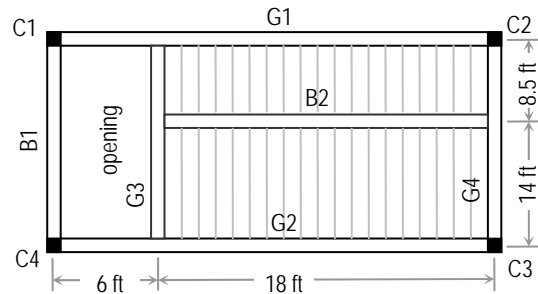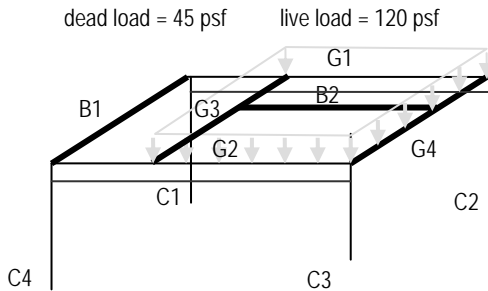
Construct FBDs and solve for the support reactions in each problem.

(15%) **3.3.1**   A double overhang beam is loaded as shown. Solve for the reactions at *A* and *B*. *(distributed loads)*
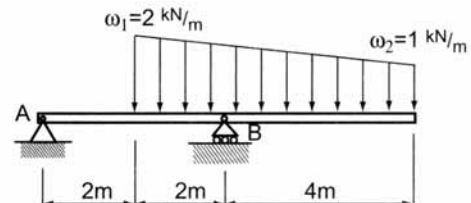
Partial answers to check with: A_y = +1,733 lb.,
B_x = 0, B_y = +3,067 lb.

Problem 3.3.1

(15%) **3.3.5**   Determine the support reactions at *A* and *B* for the overhang beam shown.   *(distributed loads)*
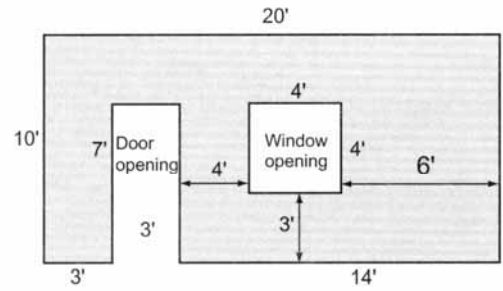
Partial answers to check with: A_x = 0,
A_y = -1.5 kN, B_y = +10.5 kN

Problem 3.3.5

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(25%) 7.1.4 A precast concrete wall panel with dimensions shown is to be hoisted into position at a building site. In hoisting the wall panel, it might be useful to know the location of its centroid. Determine the centroidal *x* and *y* axes referenced from the lower left corner.
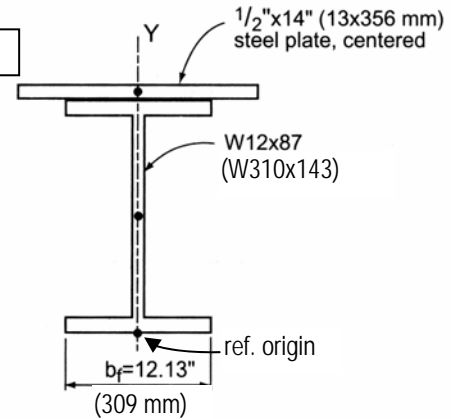(*centroids*)

Problem 7.1.4

Partial answers to check with: $\hat{x} = 10.5'$, $\hat{y} = 5.2'$

(20%) ***Use metric units, and a <u>W310x143</u>. (W310x129 is not listed.)**

7.1.6 Find the centroid of the built-up steel section composed of a W12 × 87 (wide flange) with a $\frac{1}{2}$" × 14" cover plate welded to the top flange. See the steel table in the Appendix for information about the wide-flange section.
(*centroids*)

Partial answers to check with: $\hat{x} = 0$, $\hat{y} = 196$ mm

Problem 7.1.6