

ENDS 231. Assignment #5

Date: 10/2/07, due 10/9/07

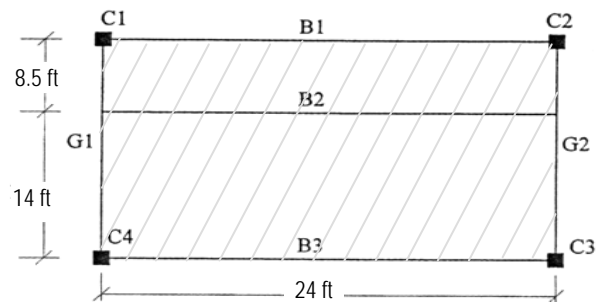
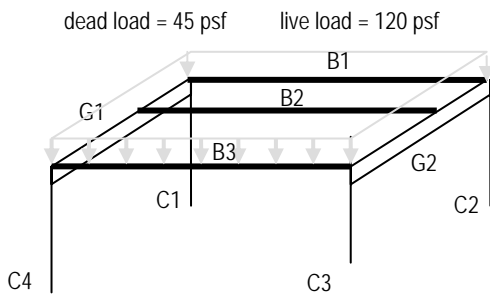
Pass-fail work

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 & on the columns. (*load tracing*)

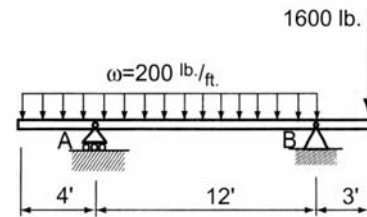
Partial answer to check with: $R_{B1} = 8415 \text{ lb}$, $R_{B2} = 22,275 \text{ lb}$, $R_{B3} = 13,860 \text{ lb}$, $C_1 = 22,275 \text{ lb}$.



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*)

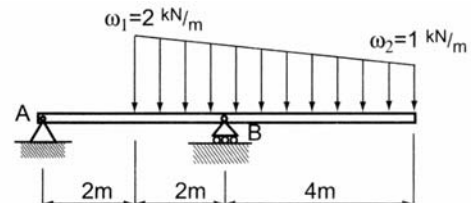
*Partial answers to check with: $A_y = +1,733 \text{ lb}$,
 $B_x = 0$, $B_y = +3,067 \text{ lb}$.*



Problem 3.3.1

(15%) 3.3.5 Determine the support reactions at A and B for the overhang beam shown. (*distributed loads*)

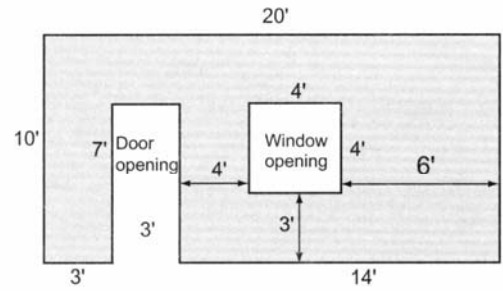
*Partial answers to check with: $A_x = 0$,
 $A_y = -1.5 \text{ kN}$, $B_y = +10.5 \text{ kN}$*



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)

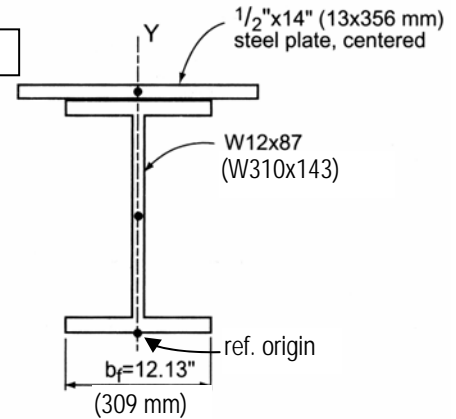


Problem 7.1.4

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

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

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



Problem 7.1.6

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