ENDS 231. Assignment #5

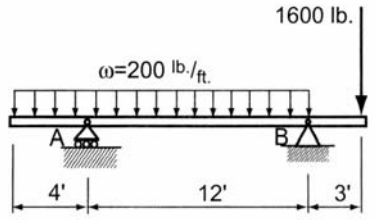
Date: 6/9/06, *due 6/15/06* *Worth 30 pts.*

Problems: from Onouye, Chapters 3 & 7.
*Note: Problems marked with a * have been altered with respect to the problem stated in the text.*

Construct FBDs and solve for the support reactions in each problem.

3.3.1 A double overhang beam is loaded as shown. Solve for the reactions at ***A*** and ***B***.

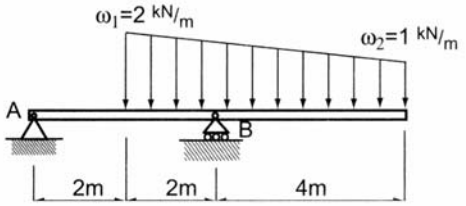
Partial answers to check with: A_y = +1,733 lb., B_x = 0, B_y = +3,067 lb.



Problem 3.3.1

3.3.5 Determine the support reactions at ***A*** and ***B*** for the overhang beam shown.

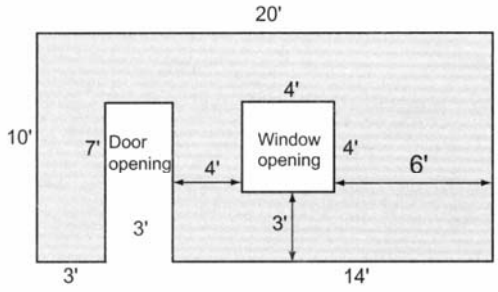
Partial answers to check with: A_x = 0, A_y = -1.5 kN, B_y = +10.5 kN



Problem 3.3.5

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.

***Also find the moments of inertia about the x axis and the y axis through the centroid found.**

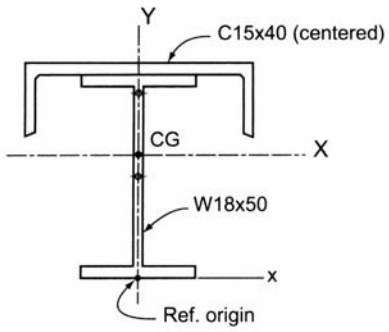


Problem 7.1.4

Partial answers to check with: $\hat{x} = 10.5'$, $\hat{y} = 5.2'$, I_x = 1506 ft^4, I_y = 5888 ft^4

7.3.4 A heavily loaded floor system uses a composite steel section as shown. A C15 × 40 channel section is attached to the top flange of the W18 × 50. Determine the I_x and I_y about the major centroidal axes using the cross-sectional properties given in the steel tables for standard rolled shapes (see Appendix).

Partial answers to check with: $\hat{x} = 0$, $\hat{y} = 12.9 in.$, I_x = 1309 $in.^4$, I_y = 389 $in.^4$



Problem 7.3.4