**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: RB1 = 8415 lb, RB2 = 22,275 lb, RB3 = 13,860 lb, C1 = 22,275 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: Ax = +1,733 lb., Bx = 0, By = +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: Ax = 0, Ay = -1.5 kN, By = +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)

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 × 87 (wide flange) with a $\frac{1}{2}'' \times 14''$ 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