ENDS 231. Assignment #5

**Date:** 2/20/07, due 2/27/07

**Pass-fail work**

**Problems:** from all but 5A from Onouye, Chapter 4.

*Note: Problems marked with a * have been altered with respect to the problem stated in the text.*

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.

Partial answer to check with: $R_{B1} = 8415$ lb, $R_{B2} = 22,275$ lb, $R_{B3} = 13,860$ lb, $C_{1} = 22,275$ lb.

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

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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.

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

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 $1/2'' \times 14''$ cover plate welded to the top flange. See the steel table in the Appendix for information about the wide-flange section.

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