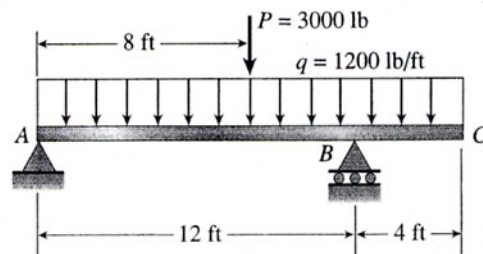


**Strength of Materials
Spring 2008
Project Assignment**

A simple beam with an overhang supports a uniform load with intensity $w = 1200 \text{ lb/ft}$ and a concentrated load $P = 3000 \text{ lb}$. The uniform load includes an allowance for the weight of the beam. The allowable stresses in bending and shear are 18 ksi and 11 ksi, respectively.

Select the lightest American Standard (S) beam shape that will support the loads and not exceed either of the allowable stress.



To solve this problem do the following:

1. Solve the problem using hand calculations and techniques such as drawing shear and bending moment diagrams and calculation of maximum normal and shearing stresses in beams.
2. Solve the problem using SolidWorks to draw the beam and COSMOS to compute the shearing and bending stress at all points in the beam. Also the beam deflection at all points should be obtained.

Note that your report of your work should follow the standard ASME format:

http://www.asme.org/Publications/ConfProceedings/Author/Formatting_Paper.cfm

The report is due on May 5 by 5:00 p.m.

There is a template for this report on the course web-site:

http://evan.lemley.org/courses/engr2143_spring_2008/engr2143.php