ES120 Spring 2018 – Section 9 Notes

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April 26, 2018

Problem 1:

Determine the dimension d so that the aluminum and steel struts will have the same weight, and compute the critical load for each strut.

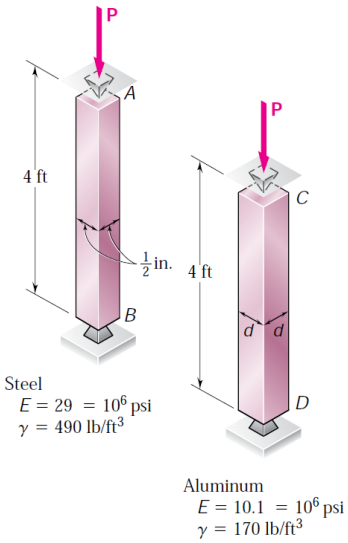

Figure 1

Problem 2:

Knowing that a factor of safety of 2.6 is required, determine the largest load **P** that can be applied to the structure shown. Use $E = 200$ GPa and consider only buckling in the plane of the structure.

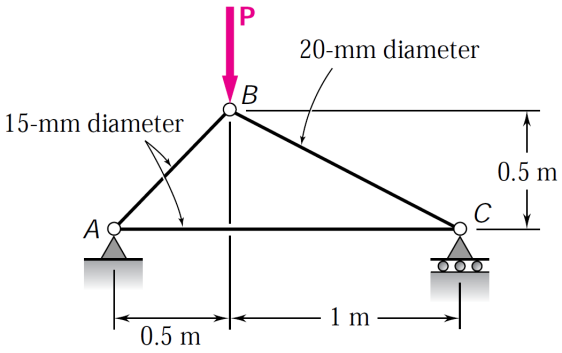

Figure 2

Problem 3:

Using the method of work and energy, determine the deflection at point D caused by the load **P**.

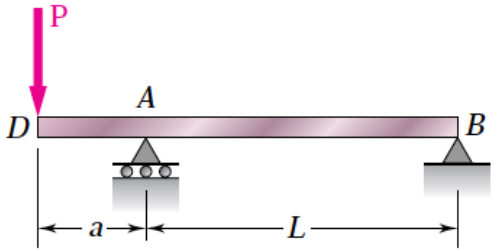

Figure 3

Problem 4:

For the uniform rod and loading shown and using Castigliano's theorem, determine the deflection of point B.

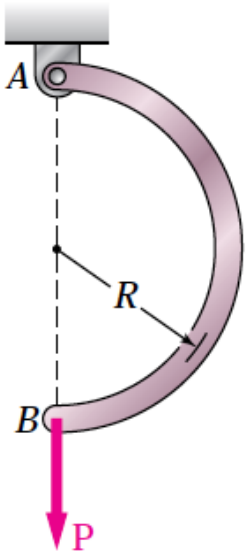

Figure 4