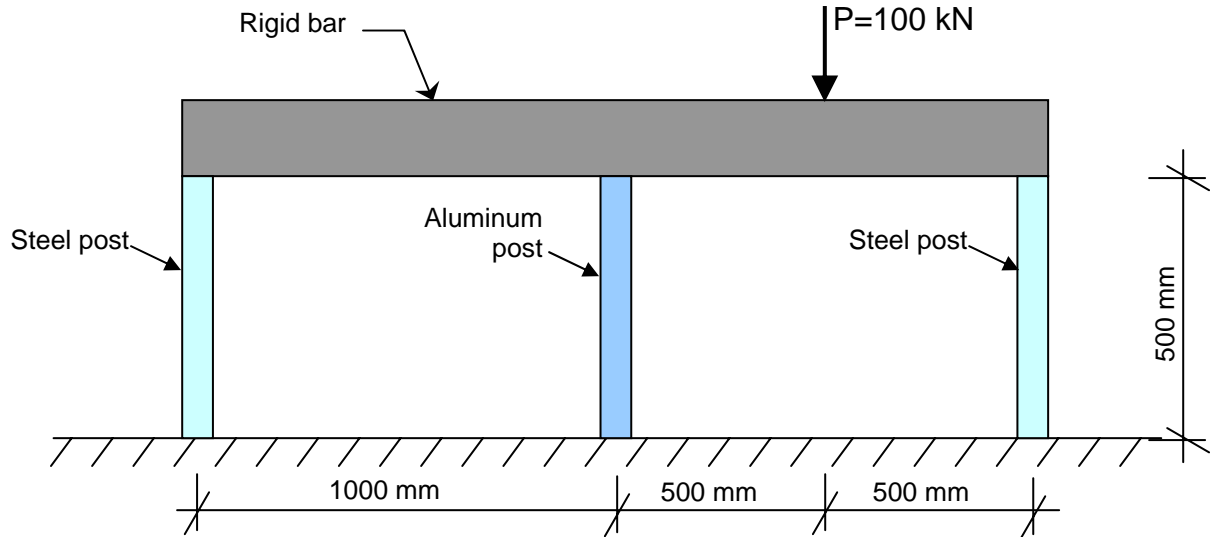


CE-204 Mechanics of Materials  
2007-2008 Spring Semester  
Homework #2  
Due: March 20<sup>th</sup>



A 100 kN load is applied to a rigid bar, which is supported by three vertical posts, as shown. The posts are made of steel and aluminum and have 30 mm diameter circular cross section. If the posts are subjected to a temperature increase of  $\Delta T = 70^\circ\text{C}$ , in addition to the 100 kN load shown, what will be the force in each of the three posts? The relevant material properties for steel and aluminum are as follows:

$$E_{\text{steel}} = 200 \text{ Gpa}$$

$$E_{\text{aluminum}} = 70 \text{ Gpa}$$

$$\gamma_{\text{steel}} = 11.7 \times 10^{-6} / ^\circ\text{C}$$

$$\gamma_{\text{aluminum}} = 23.6 \times 10^{-6} / ^\circ\text{C}$$