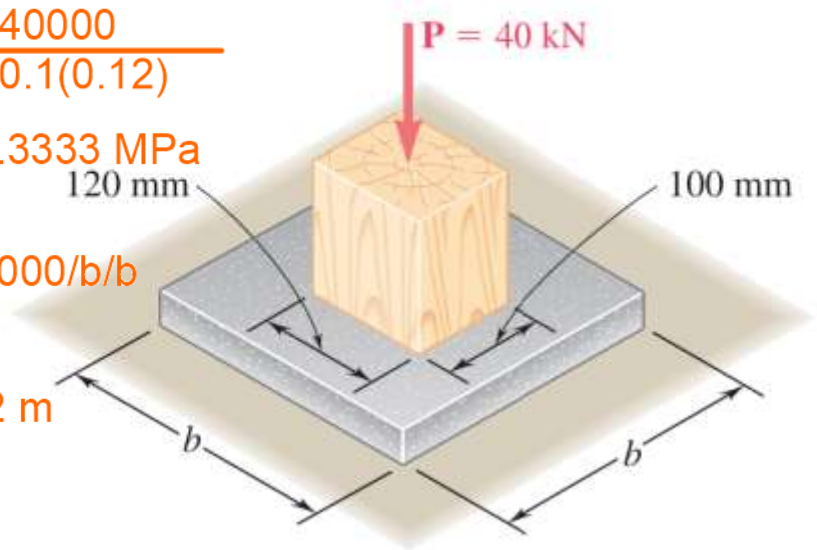


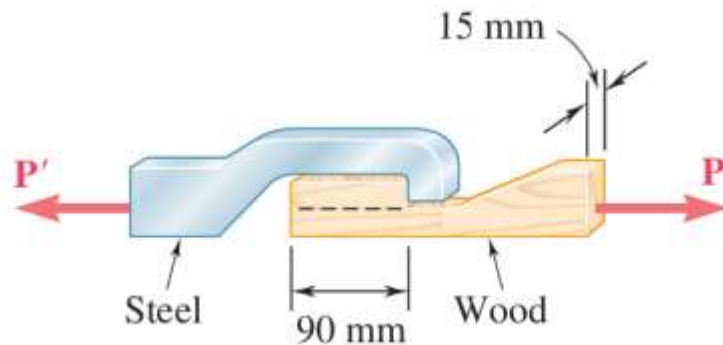
A 40-kN axial load is applied to a short wooden post that is supported by a concrete footing resting on undisturbed soil. Determine (a) the maximum bearing stress on the concrete footing, (b) the size of the footing for which the average bearing stress in the soil is 145 kPa.

a) $\sigma_b = \frac{40000}{0.1(0.12)}$
 $= 3.3333 \text{ MPa}$



b) $145000 = 40000/b/b$
 $b = 0.52522 \text{ m}$

When the force **P** reached 8 kN, the wooden specimen shown failed in shear along the surface indicated by the dashed line. Determine the average shearing stress along that surface at the time of failure.



$\tau = 8000 / (0.090) / (0.015) = 5.9259 \text{ MPa}$