5-4. A shear force $V \sim N(320, 30^2)$ kN is applied to a square beam with the cross section as shown. If the allowable shear stress is $\tau_a \sim N(12, 1.2^2)$ MPa, determine the probability of failure of the beam. Assume that τ_a and V are independent.   (**Ans.** $p_f = 8.83 \times 10^{-4}$)