56. A steel strip has a length of $l = 500$ mm and a thickness of $t = 2$ mm. It is subjected to a torque $T \sim N(20, 2^2)$ kN·m. If the allowable shear stress is $\tau_a \sim (150, 15^2)$ MPa and the maximum probability of failure is designed to be $p_f = 10^{-5}$, determine the minimum width of the steel using membrane analogy theory and select a preferred one.

Answer: $w = 192.5$ mm, $w_{preferred} = 200$ mm