

8-32 (a) Table 8-2, $A_t = 0.1419 \text{ in}^2$. Table 8-9, $S_p = 120 \text{ kpsi}$.

Eq. (8-31), $F_i = 0.75 F_p = 0.75 A_t S_p = 0.75(0.1419)120 = 12.77 \text{ kips}$

Eq. (f), Sec. 8-7,
$$C = \frac{k_b}{k_b + k_m} = \frac{4}{4 + 12} = 0.25$$

Eq. (8-28) with $n_p = 1$,

$$P_{\text{total}} = N \left(\frac{S_p A_t - F_i}{C} \right) = \frac{0.25 N S_p A_t}{C}$$
$$N = \frac{P_{\text{total}} C}{0.25 S_p A_t} = \frac{80(0.25)}{0.25(120)0.1419} = 4.70$$

Round to $N = 5$ bolts *Ans.*

(b) Eq. (8-30) with $n_0 = 1$,

$$P_{\text{total}} = N \left(\frac{F_i}{1 - C} \right)$$
$$N = \frac{P_{\text{total}}(1 - C)}{F_i} = \frac{80(1 - 0.25)}{12.77} = 4.70$$

Round to $N = 5$ bolts *Ans.*