8-50 Per bolt, $P_{b\max} = P_{\max}/N = 80/10 = 8$ kips, $P_{b\min} = P_{\min}/N = 20/10 = 2$ kips

$C = k_b / (k_b + k_m) = 4/(4 + 12) = 0.25$

(**a**) Table 8-2, $A_t = 0.141\ 9$ in^2, Table 8-9, $S_p = 120$ kpsi and $S_{ut} = 150$ kpsi

Table 8-17, $S_e = 23.2$ kpsi

Eqs. (8-31) and (8-32), $F_i = 0.75\, A_t S_p \Rightarrow \sigma_i = F_i/A_t = 0.75\, S_p = 0.75(120) = 90$ kpsi

Eq. (8-35), $$\sigma_a = \frac{C\left(P_{b\max} - P_{b\min}\right)}{2A_t} = \frac{0.25(8-2)}{2(0.141\,9)} = 5.29 \text{ kpsi}$$

Eq. (8-36), $$\sigma_m = \frac{C\left(P_{b\max} + P_{b\min}\right)}{2A_t} + \sigma_i = \frac{0.25(8+2)}{2(0.141\,9)} + 90 = 98.81 \text{ kpsi}$$

Eq. (8-38),

$$n_f = \frac{S_e\left(S_{ut} - \sigma_i\right)}{S_{ut}\sigma_a + S_e\left(\sigma_m - \sigma_i\right)} = \frac{23.2(150-90)}{150(5.29) + 23.2(98.81-90)} = 1.39 \qquad \textit{Ans.}$$