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ARCH 324 - Structures 2, Winter 2009

von Buelow, Peter

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$E_c = 3625 \text{ ksi} \quad n = 8$

$M = \frac{wL^2}{8} = \frac{(212.5 \text{ ksi})(12)^2}{8} = 3825 \text{ kips-foot} = 45.9''k$

$f_c = 1.35 \text{ ksi}$

$M_{\text{抵抗}} = R_c \left(4 - \frac{x}{3}\right)$

$45.9''k = \left(\frac{f_c b x}{2}\right) \left(4 - \frac{x}{3}\right)$

$45.9''k = \left(1.35 \text{ ksi} \right) \left(12''\right) \left(4 - \frac{x}{3}\right)$

$x = 1.64''$

$M = 45.9''k = R_T \left(4 - \frac{x}{3}\right) = A_s f_s \left(4 - \frac{1.64''}{3}\right) = A_s \left(20 \text{ ksi} \right) \left(4 - \frac{1.64''}{3}\right)$

$A_s = 0.66 \text{ in}^2$