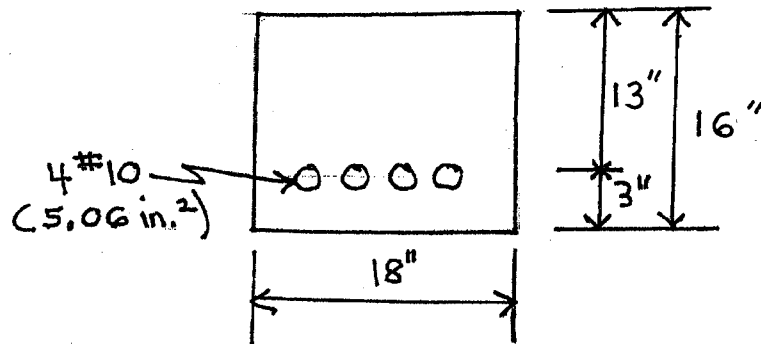


PROB# 3.9



$$a = \frac{A_s f_y}{0.85 f'_c b} = \frac{(5.06)(60)}{(0.85)(4)(18)} = 4.961 \text{ in.}$$

$\beta_1 = 0.85$ for 4000 psi concrete

$$c = \frac{a}{\beta_1} = \frac{4.961}{0.85} = 5.836 \text{ in.}$$

$$\epsilon_t = \left(\frac{d-c}{c} \right) (0.003) = \left(\frac{13-5.836}{5.836} \right) (0.003)$$

$$= 0.00368 < 0.004 \quad \therefore \text{Section}$$

may not be used as per ACI

Section 10.3.5.

v JCMC