$$\delta_{AD} = \frac{\delta_{AC}}{\cos 45^\circ}$$

$$\frac{F_{AD}(40)}{A_s E_s} = \frac{F(60)}{A_c E_c \cos 45^\circ}$$

$$\frac{F_{AD}(40)}{29 \times 10^3} = \frac{F(60)}{11 \times 10^3 \times \cos 45^\circ} \quad \cdots (4)$$

From (1) & (4)

$F_{AD} = 107.89\ (lb)$

$F = 29.18\ (lb)$

Superpose (i) & (ii)

$F_{AD} = 114.03\ (lb)$

$F_{AC} = F_{AB} = 25.44\ (lb)$

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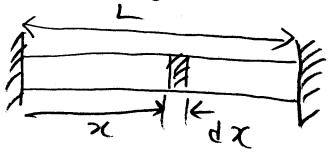
• compatibility

$\delta_T = \delta_F$

$$\delta_T = \int_0^L \alpha \Delta T \, dx, \quad \delta_F = \frac{FL}{AE}$$



$$\alpha \int_0^L \left[T_A + \frac{T_B - T_A}{L} x - T_A \right] dx = \frac{FL}{AE}$$

$$\alpha \int_0^L \left(\frac{T_B - T_A}{L} \right) x \, dx = \frac{FL}{AE}$$

$$F = \frac{\alpha AE (T_B - T_A)}{2}$$

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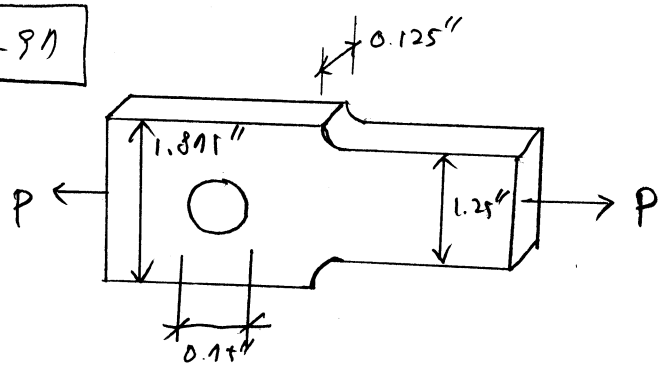

• Maximum Normal stress at fillet

$$\frac{r}{h} = \frac{0.25}{1.25} = 0.2 \quad \& \quad \frac{w}{h} = \frac{1.875}{1.25} = 1.5$$

From the text $K = 1.15$

$$\sigma_{max} = K\left(\frac{P}{A}\right) = 1.15\left(\frac{2}{1.25 \times 0.125}\right)$$

$$= 22.4\ (ksi)$$

• Maximum Normal stress at hole

$$\frac{r}{w} = \frac{0.375}{1.875} = 0.20$$

From the text $K = 2.45$

$$\sigma_{max} = 2.45\left(\frac{2}{(1.875 - 0.75)(0.125)}\right)$$

$$= 34.8\ (ksi)$$

∴ Maximum Normal stress

$= 34.8\ (ksi)$