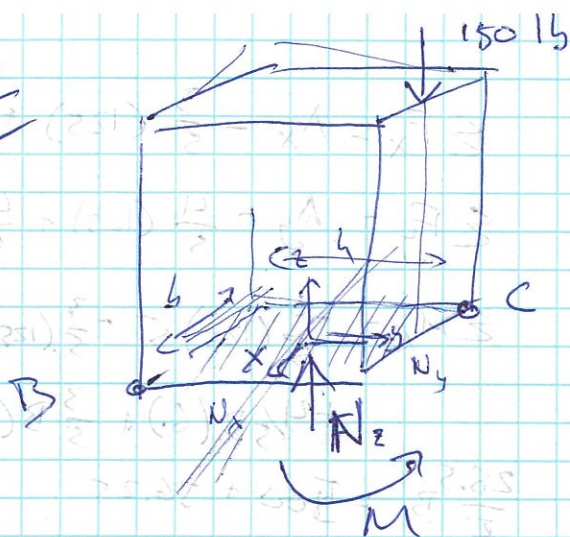


8.2



$$\sum F_z = 0 \quad N_z = 150 \text{ lb}$$

$$\sum M_x = 0 \quad M = 5(150) = 750$$

$$M = 750 \text{ in}\cdot\text{lb}$$

Normal (same at B+C)

$$\sigma_N = N/A = 150/40 = -3.75 \text{ psi}$$

(compression)

@C

$$-3.75 - 11.25$$

$$= -15 \text{ psi}$$

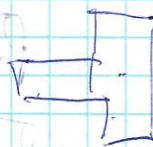
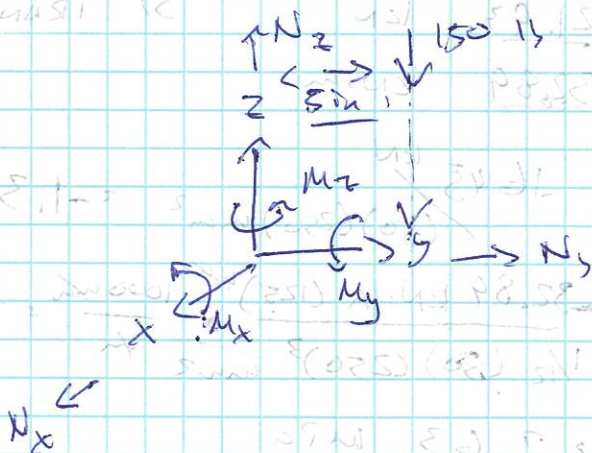
BENDING

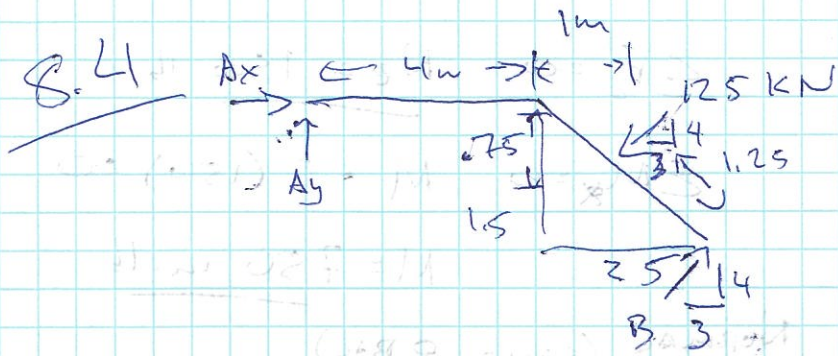
$$\sigma = \frac{My}{I} = \frac{750 \text{ in}\cdot\text{lb} (5 \text{ in})}{\frac{1}{12} (4) (10)^3 \text{ in}^4}$$

$$= 11.25 \text{ psi}$$

@B

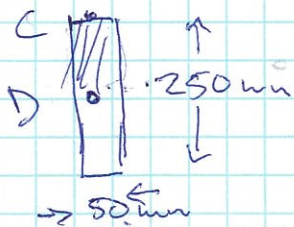
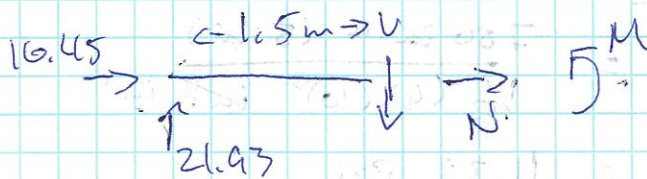
$$-3.75 + 11.25 = 7.5 \text{ psi}$$





$$A_x = 16.45$$

$$A_y = 21.93$$



$$N = -16.45 \text{ kN}$$

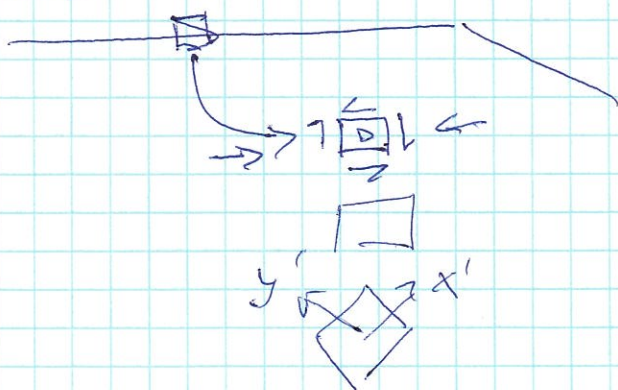
$$V = 21.93 \text{ kN}$$

$$M = 32.89 \text{ kN}\cdot\text{m}$$

$$\sigma_A = \frac{N}{A} = \frac{-16.45 \text{ kN}}{(50)(250) \text{ mm}^2} = -1.32 \text{ MPa}$$

$$\sigma_B = \frac{M_y}{I} = \frac{32.89 \text{ kN}\cdot\text{m} (125) \frac{1000 \text{ mm}}{\text{m}}}{\frac{1}{12} (50) (250)^3 \text{ mm}^4} = -63.16 \text{ MPa}$$

$$\tau_s = \frac{VQ}{It} = 2.63 \text{ MPa}$$



$$\sum F_x = A_x - \frac{3}{5}(125) + \frac{3}{5}B$$

$$\sum F_y = A_y - \frac{4}{5}(125) + \frac{4}{5}B$$

$$\sum M_A = -\frac{4}{5}(125)(5) - \frac{3}{5}(125)(7.5) + \frac{4}{5}B(6) + \frac{3}{5}B(1.5)$$

$$\frac{26.5}{5}B = 500 + 56.25$$

$$= 97.6 \text{ kN}$$

1) AXIAL

2) BENDING

3) TRANSVERSE SHEAR