

Solutions: 21-S-6.5-MK-02

$$d_1 = 4.5$$

$$d_2 = 4$$

$$d_3 = 4$$

$$d_4 = 3$$

$$d_5 = 2.5$$

$$P = 3 \text{ kN}$$

Point A

$$\sum F_y = AB \frac{4.5}{\sqrt{4.5^2 + 1.5^2}} = P \rightarrow AB = 3.16 \text{ T}$$

Symmetrical $\therefore F_{DA} = F_{AC}$

$$\sum F_y = -AB \frac{1.5}{\sqrt{4.5^2 + 1.5^2}} + 2 F_{AC} \frac{4}{\sqrt{4^2 + 4^2}} \rightarrow F_{AC} = F_{AD} = 0.706 \text{ kN C}$$

Point B $F_{BC} = F_{BD}$ because of symmetry

$$\sum F_z = -AB \frac{4.5}{\sqrt{4.5^2 + 1.5^2}} + 2 F_{BC} \frac{4.5}{\sqrt{4.5^2 + 2.5^2 + 4^2}} \rightarrow F_{BC} = F_{BD} = 2.77 \text{ kN C}$$

Assume
BE in tension

$$\sum F_y = +BE + AB \frac{1.5}{\sqrt{4.5^2 + 1.5^2}} + 2 F_{BC} \frac{2.5}{\sqrt{4.5^2 + 2.5^2 + 4^2}} \rightarrow F_{BE} = 2.66 \text{ kN T}$$