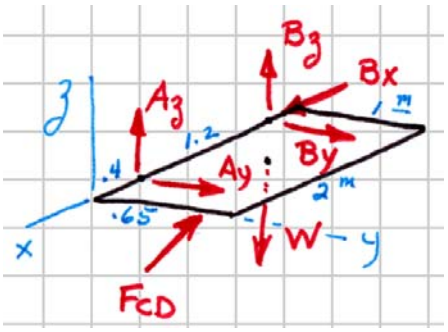
1-43

$$W = 25(9.81) = 245.25 \text{ N}$$

$$\mathbf{F}_{CD} = F_{CD}\frac{0.65\mathbf{j} + 0.95\mathbf{k}}{\sqrt{0.65^2 + 0.95^2}}$$

$$= 0.56468F_{CD}\mathbf{j} + 0.82531F_{CD}\mathbf{k}$$



Moment equilibrium about *B*

$\Sigma\mathbf{M}_B = \mathbf{0}$:

$$(1.2\mathbf{i}) \times (A_y\mathbf{j} + A_z\mathbf{k}) + (0.6\mathbf{i} + 0.5\mathbf{j}) \times (-245.25\mathbf{k})$$

$$+ (1.6\mathbf{i} + 0.65\mathbf{j}) \times (0.56468F_{CD}\mathbf{j} + 0.82531F_{CD}\mathbf{k}) = \mathbf{0}$$

has components

x: $\quad -122.625 + 0.53645F_{CD} = 0$

y: $\quad -1.2A_z + 147.150 - 1.32050F_{CD} = 0$

z: $\quad 1.2A_y + 0.90349F_{CD} = 0$

$F_{CD} = 228.586 \text{ N} \cong 229 \text{ N}$ ..... **Ans.**

$A_y = -172.104 \text{ N} \cong -172.1 \text{ N}$ ..... **Ans.**

$A_z = -129.915 \text{ N} \cong 129.9 \text{ N}$ ..... **Ans.**

Then the *x*-, *y*-, and *z*-components of the force equilibrium equation give

x: $\quad B_x = 0$

y: $\quad (-172.104) + B_y + 0.56468(228.586) = 0$

z: $\quad (-129.915) + B_z + 0.82531(228.586) - 245.25 = 0$

$B_x = 0 \text{ N}$ ..... **Ans.**

$B_y = 43.026 \text{ N} \cong 43.0 \text{ N}$ ..... **Ans.**

$B_z = 185.511 \text{ N} \cong 185.5 \text{ N}$ ..... **Ans.**