

**1-9.** Determine the resultant internal loadings acting on the cross section at point C. The cooling unit has a total weight of 52 kip and a center of gravity at G.

From FBD (a)

$$\zeta + \Sigma M_A = 0; \quad T_B(6) - 52(3) = 0; \quad T_B = 26 \text{ kip}$$

From FBD (b)

$$\zeta + \Sigma M_D = 0; \quad T_E \sin 30^\circ(6) - 26(6) = 0; \quad T_E = 52 \text{ kip}$$

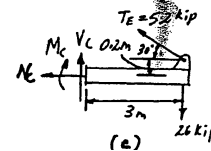
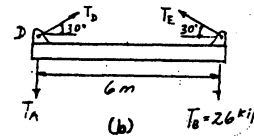
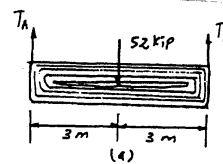
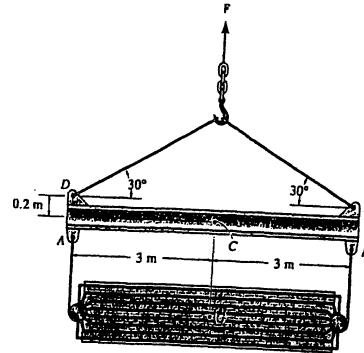
From FBD (c)

$$\rightarrow \Sigma F_x = 0; \quad -N_C - 52 \cos 30^\circ = 0; \quad N_C = -45.0 \text{ kip} \quad \text{Ans}$$

$$+ \uparrow \Sigma F_y = 0; \quad V_C + 52 \sin 30^\circ - 26 = 0; \quad V_C = 0 \quad \text{Ans}$$

$$\zeta + \Sigma M_C = 0; \quad 52 \cos 30^\circ(0.2) + 52 \sin 30^\circ(3) - 26(3) - M_C = 0$$

$$M_C = 9.00 \text{ kip} \cdot \text{ft} \quad \text{Ans}$$



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