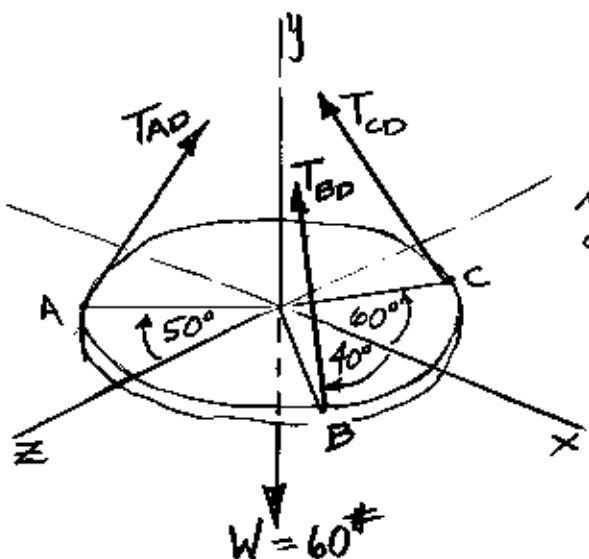
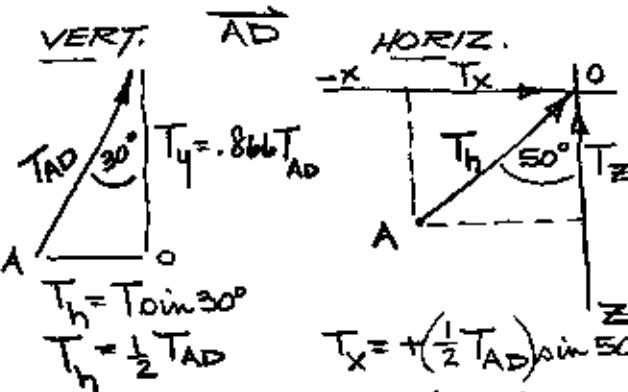


G. MILAWA



EQUIL. $\sum F = 0$

NEED COMPONENTS OF ALL CABLE TENSIONS.

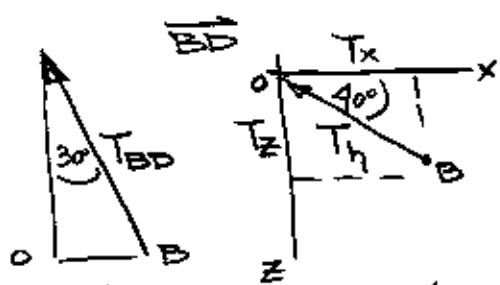


$$T_h = T_{AD} \sin 30^\circ$$

$$T_h = \frac{1}{2} T_{AD}$$

$$T_x = +\left(\frac{1}{2} T_{AD}\right) \sin 50^\circ$$

$$T_z = -\left(\frac{1}{2} T_{AD}\right) \cos 50^\circ$$

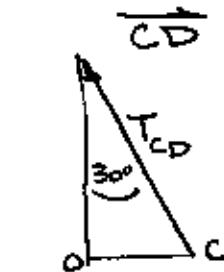


$$T_h = \frac{1}{2} T_{BD}$$

$$T_y = .866 T_{BD}$$

$$T_x = -\left(\frac{1}{2} T_{BD}\right) \cos 40^\circ$$

$$T_z = -\left(\frac{1}{2} T_{BD}\right) \sin 40^\circ$$



$$T_h = \frac{1}{2} T_{CD}$$

$$T_y = .866 T_{CD}$$

$$T_x = -\left(\frac{1}{2} T_{CD}\right) \cos 60^\circ$$

$$T_z = \left(\frac{1}{2} T_{CD}\right) \sin 60^\circ$$

GROUP LIKE TERMS: $\sum F_x = 0$, $\sum F_y = 0$, $\sum F_z = 0$

$$\sum F_x = 0 = \frac{1}{2} T_{AD} \sin 50^\circ - \frac{1}{2} T_{BD} \cos 40^\circ - \frac{1}{2} T_{CD} \cos 60^\circ = .766 T_{AD} - .766 T_{BD} - .5 T_{CD} \quad (1)$$

$$\sum F_y = 0 = .866 T_{AD} + .866 T_{BD} + .866 T_{CD} - 60 \# \quad \div .866$$

$$T_{AD} + T_{BD} + T_{CD} = 69.284 \quad (2)$$

$$\sum F_z = 0 = -\frac{1}{2} T_{AD} \cos 50^\circ - \frac{1}{2} T_{BD} \sin 40^\circ + \frac{1}{2} T_{CD} \sin 60^\circ = -.643 T_{AD} - .643 T_{BD} + .866 T_{CD}$$

$$\therefore (3) \quad T_{CD} = \frac{.643}{.866} [T_{AD} + T_{BD}] = \boxed{\frac{.742}{.766} [T_{AD} + T_{BD}] = T_{CD}} \quad \text{BACK SUB. INTO } (1) + (2)$$

$$\text{SUB. INTO } (1) \quad .766 [T_{AD} - T_{BD}] - .5 [.742 (T_{AD} + T_{BD})] = 0$$

$$.395 T_{AD} - 1.137 T_{BD} = 0 \quad \therefore \boxed{T_{AD} = 2.878 T_{BD}} \quad \text{SUB. INTO } (2)$$

$$(2) (2.878 T_{BD}) + T_{BD} + (.742 [2.878 T_{BD}] + .742 T_{BD}) = 69.284$$

$$6.755 T_{BD} = 69.284$$

$$\boxed{T_{BD} = 10.256 \#}$$

$$\therefore \boxed{T_{AD} = 29.517 \#}$$

$$\therefore \boxed{T_{CD} = 29.511 \#}$$