Page 50  Replace the diagram for Fig. 5.4 - Illustration of the relationship between a load acting along the ridge line and tension in the strap bracing with:

![Diagram of the relationship between a load acting along the ridge line and tension in the strap bracing]

\[ T = 2W \cos \theta \]

Hence, the imposed tension force on each strap brace is

\[ W = \frac{T}{2 \cos \theta} \]

Fig. 5.4  Illustration of the relationship between a load acting along the ridge line and tension in the strap bracing
Replace the diagram for Fig. 5.9 - Analysis of a typical portal frame with:

(a) frame and reactions

\[ \Delta = \frac{W}{6E} \left( \frac{H^3}{I_b} + \frac{H^2L}{I_c} \right) \]

(b) shear force diagram

(c) deflection

(d) bending moment diagram

Note: \( I_b \) and \( I_c \) refer to the moment of inertia of the beam and columns, respectively, and \( E \) is the modulus of elasticity.

*Fig. 5.9 Analysis of a typical portal frame*