

6.

INDUSTRIAL ROOFS

- If loads from purlins, false ceiling etc. are applied in between the nodes, then principal rafters or main ties are designed for combined stresses from bending and axial load.

PURLINS AND GRITS

- Angle, channel, I and Z sections are used for purlins and grits to support the cladding.
- IS : 800 - 1984 provides general design procedure for angle purlins conforming to steel grades Fe 410-O, Fe 410-S, Fe 410 -W and roof slopes not exceeding 30° based on a minimum live load of 750 N/m² if the following requirements are fulfilled:
 - (i) Width of angle leg in the plane perpendicular to the roof

$$\text{covering} \geq \frac{L}{45}$$

- (ii) Width of angle leg in the plane parallel to the roof covering $\geq \frac{L}{60}$

- (iii) Maximum bending moment in the purlin,

$$M = \frac{w \times L^2}{10}$$

Where w = uniformly distributed load per unit length on purlin including wind load

L = span of purlin

- (iv) The bending moment about minor axis may be neglected and the angle purlin may be designed for the above moment.

$$\therefore Z_{x, \text{required}} = \frac{M}{\sigma_{bc}} = \frac{w \times L^2}{10 \times 165} \text{ mm}^3$$

