UNIVERZA V LJUBLJANI
Fakulteta za gradbeništvo in geodezijo
Katedra za metalne konstrukcije

JEKLENE STAVBE IN MOSTOVI

INDUSTRIJSKE HALE

prof. dr. Darko Beg

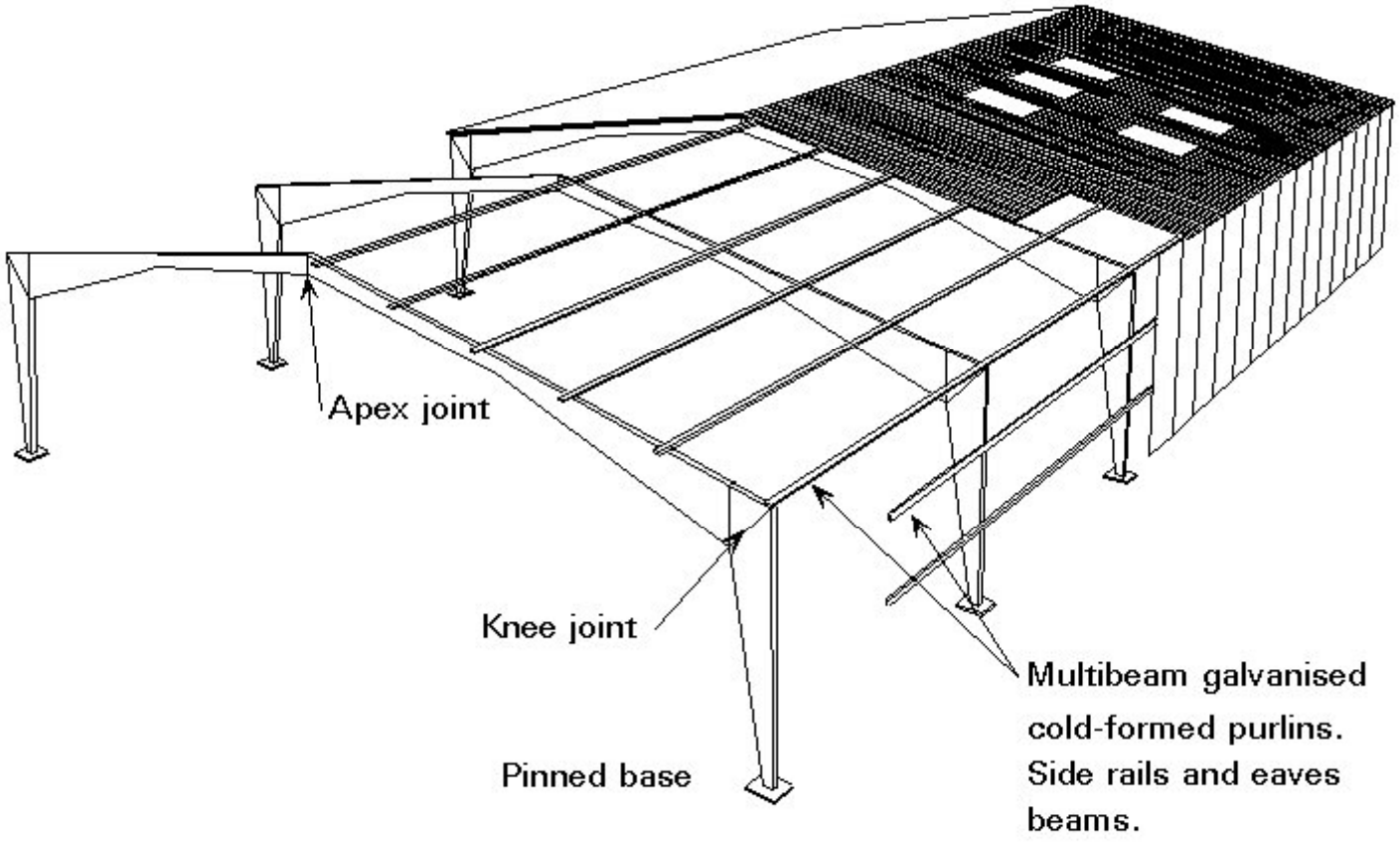


Figure 3 General view of tapered portal frame building

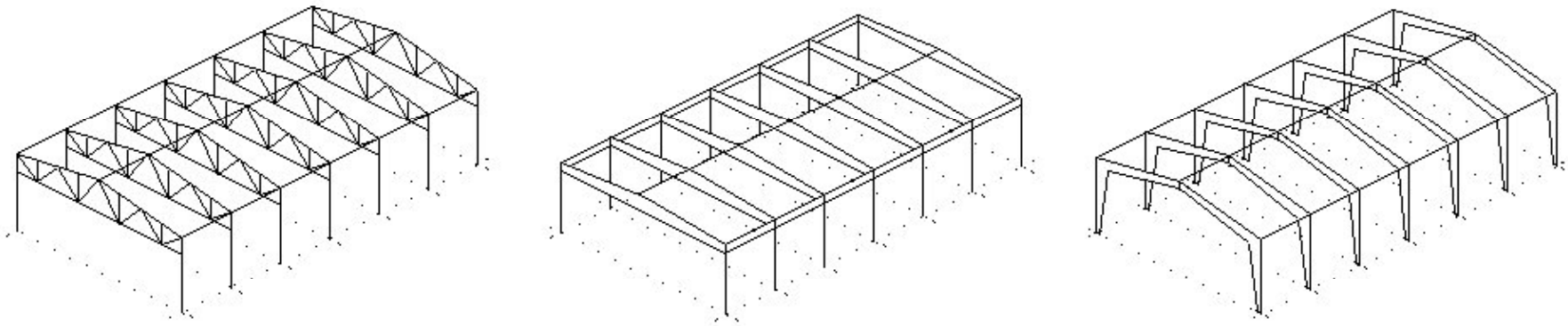


Figure 1 Truss & column and portal frame system

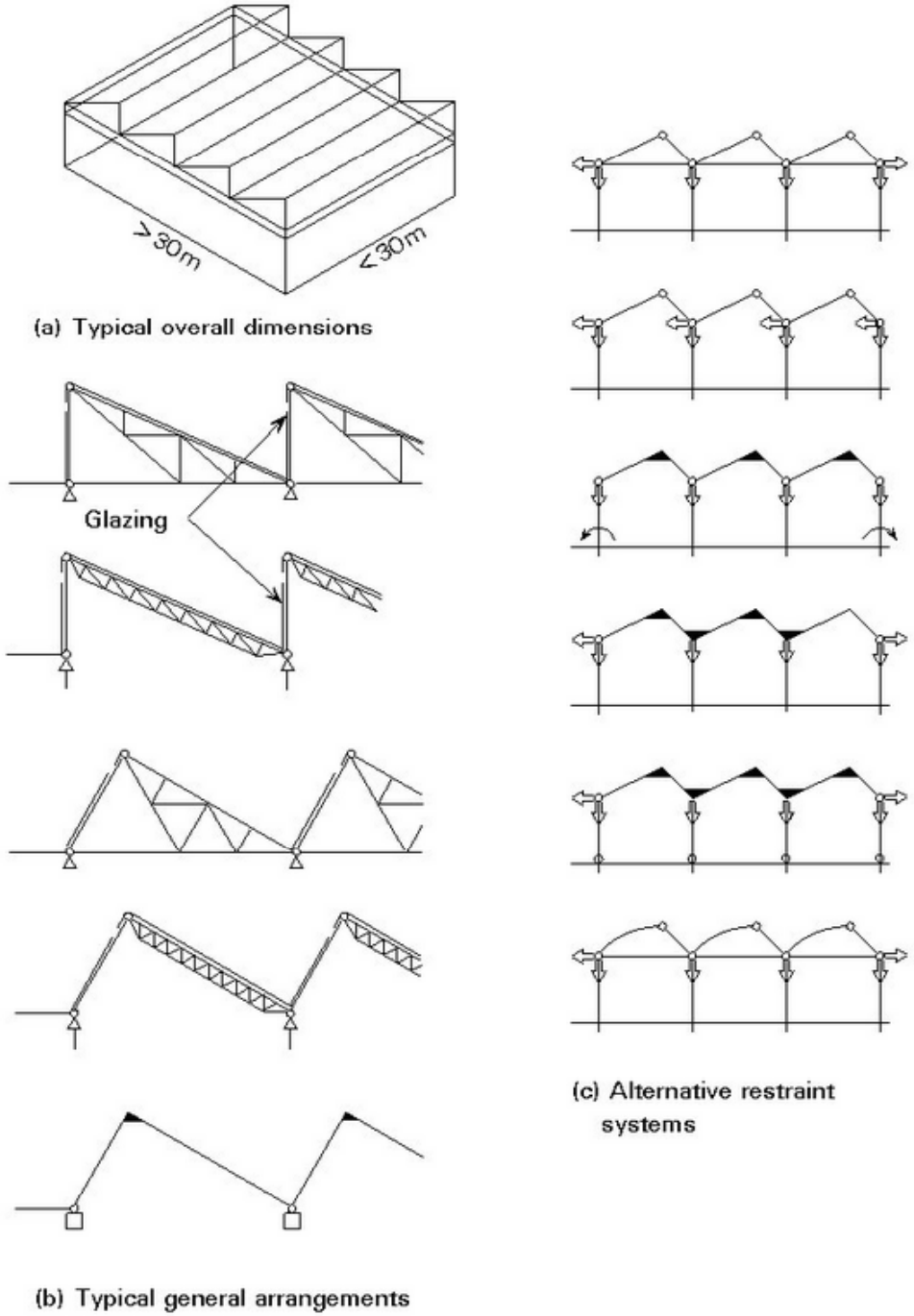


Figure 2 Saw-tooth roof system

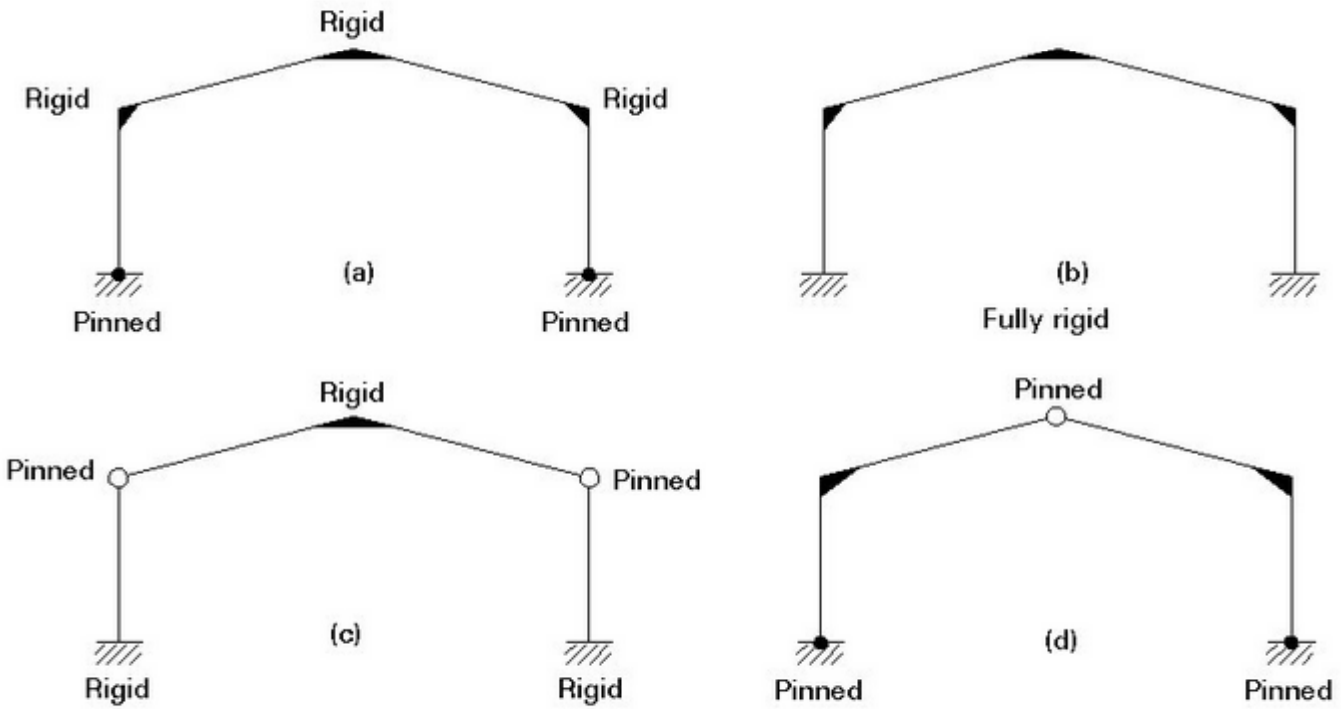


Figure 5 Basic arrangements for portal frames

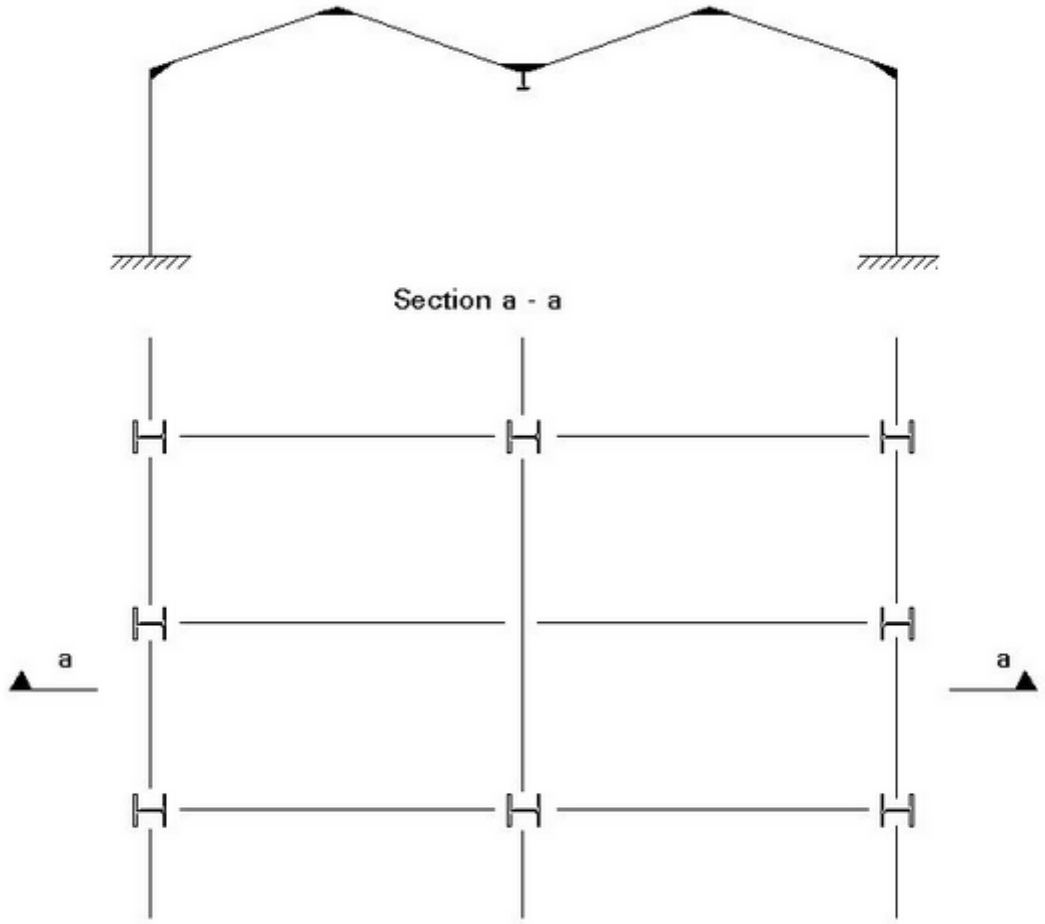


Figure 4 Portal frame with alternative valley columns omitted

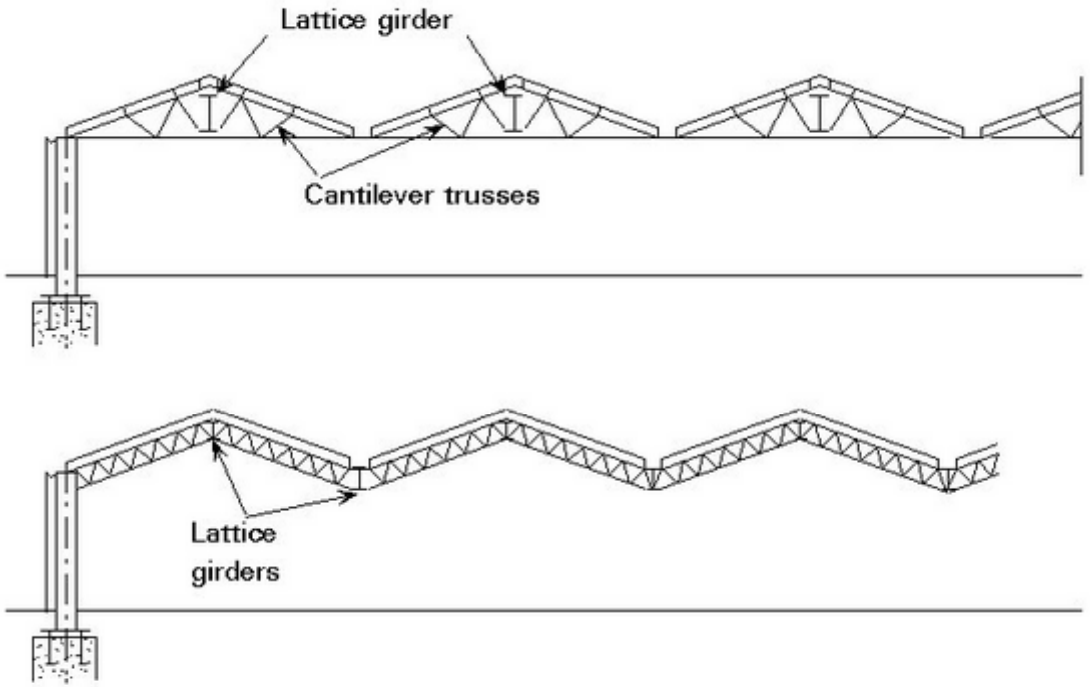


Figure 3 Umbrella and butterfly roof systems

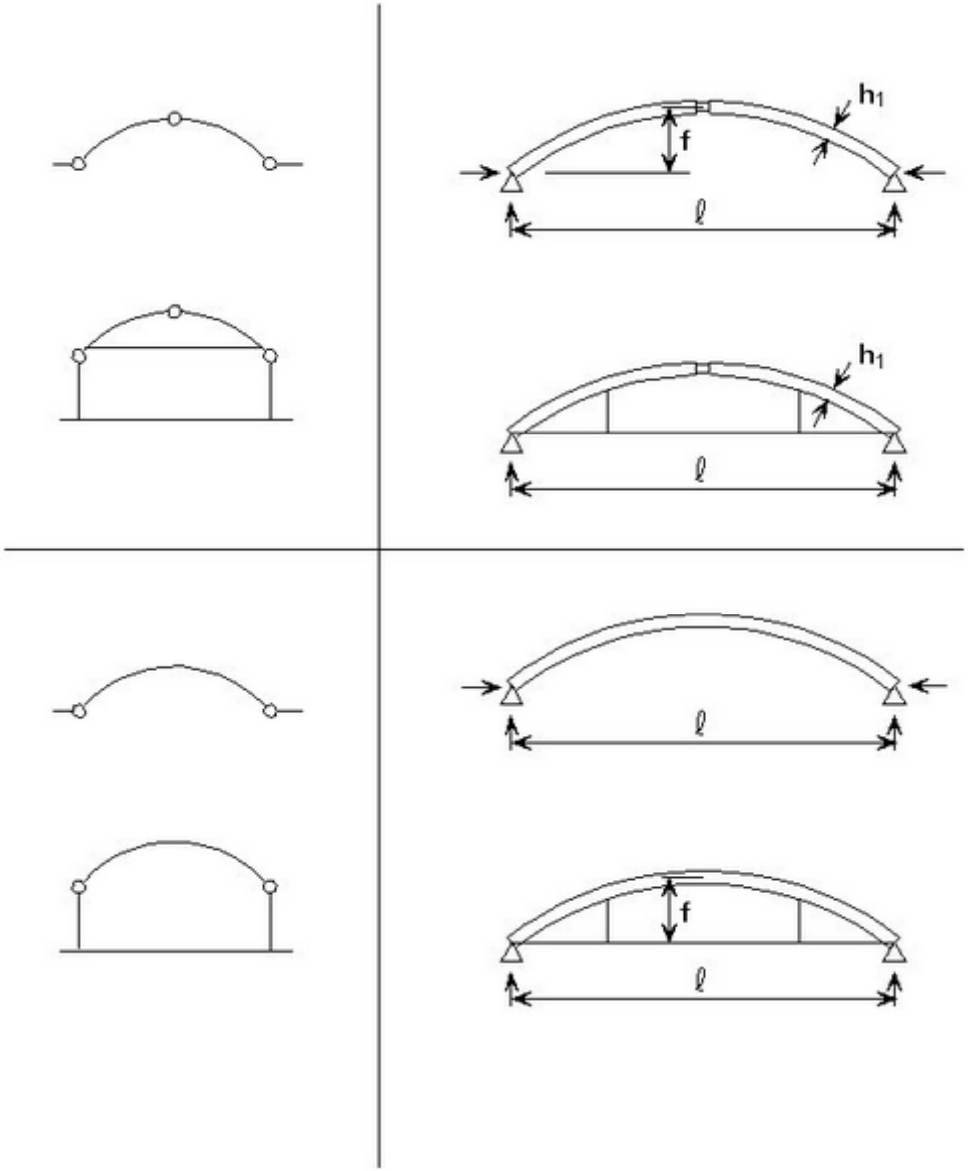


Figure 5 Arched roof systems

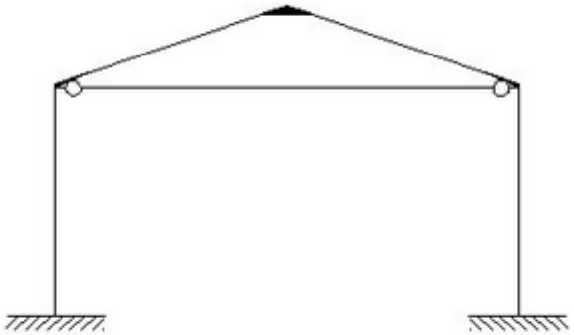


Figure 6 Tied portal frame

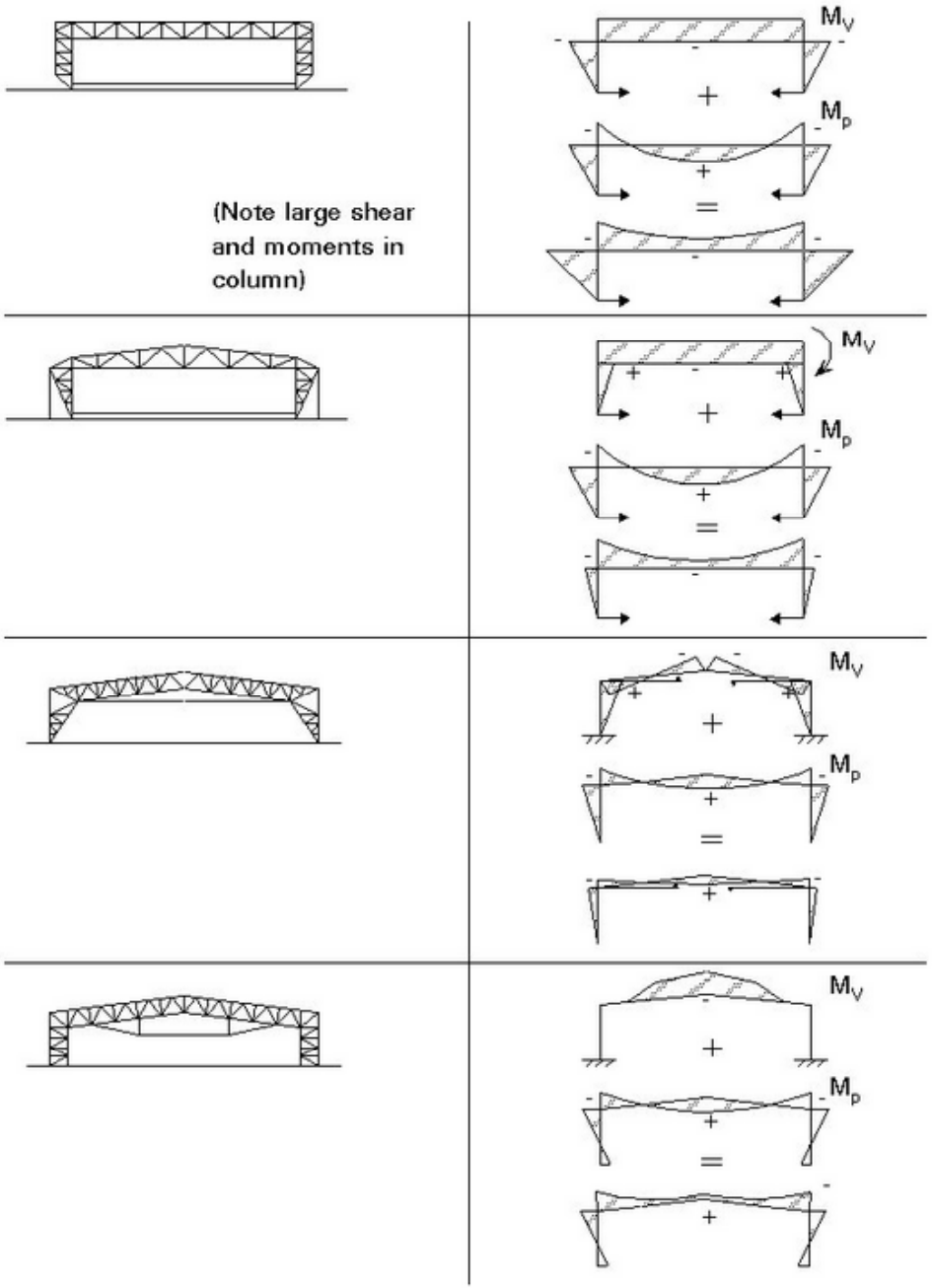


Figure 7 Prestressing of frames-some possibilities

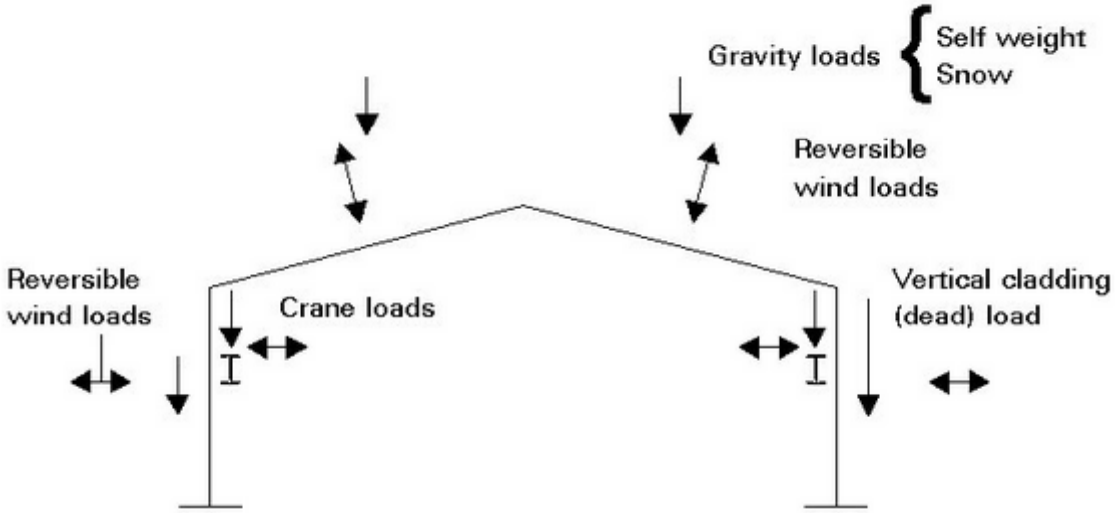
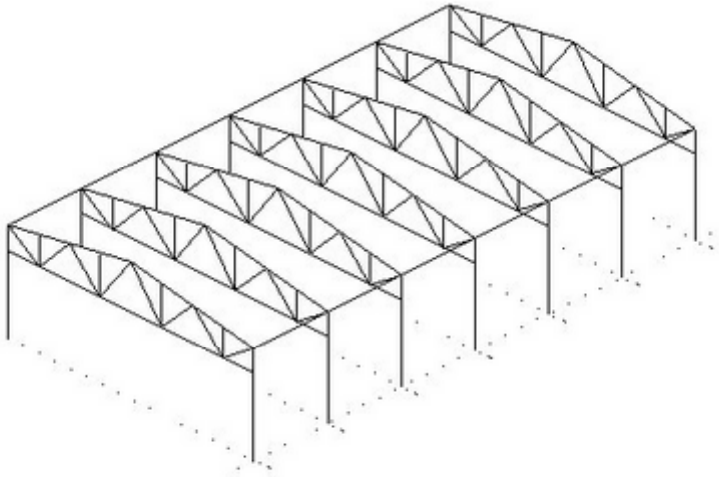


Figure 3 In-plane frame loads



Note: Bracing elements are not shown

Figure 6 Typical lattice girder solution

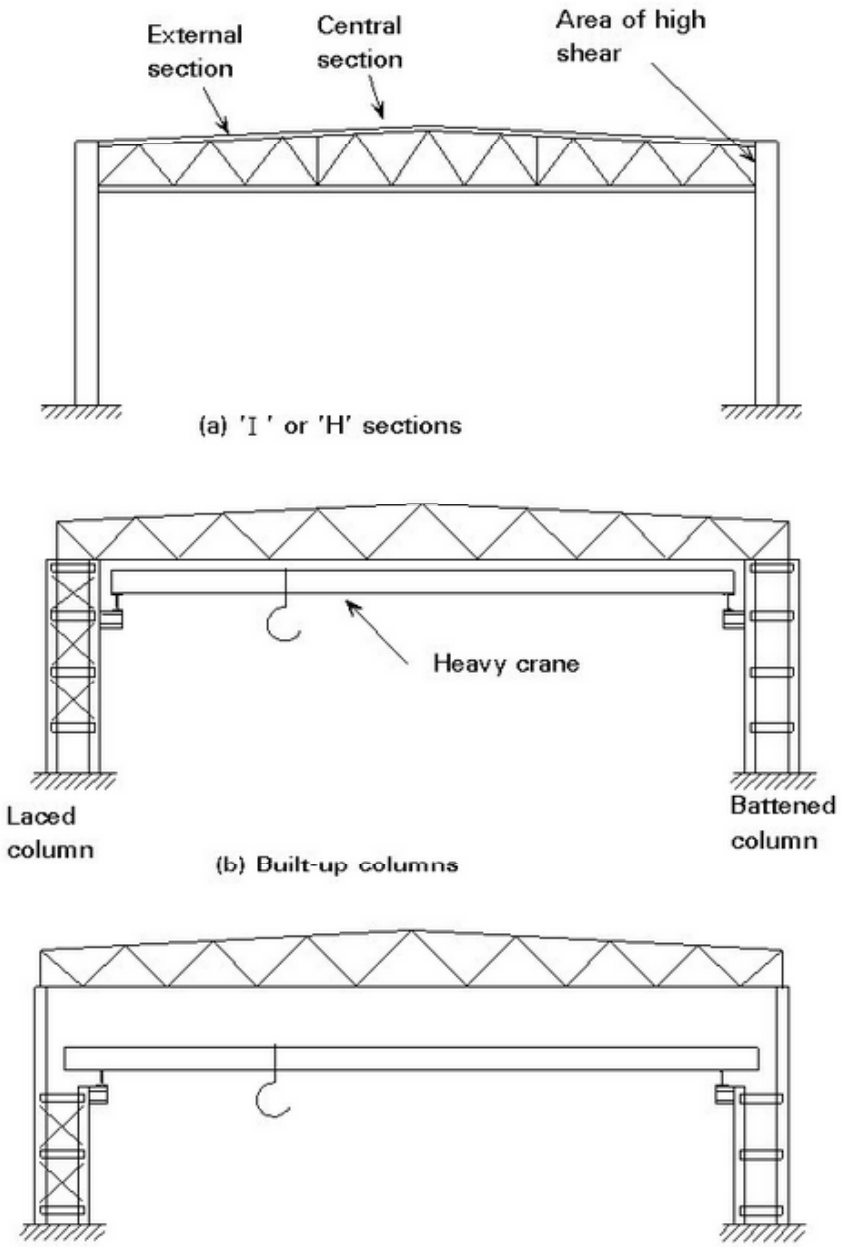


Figure 12 Alternative column shapes

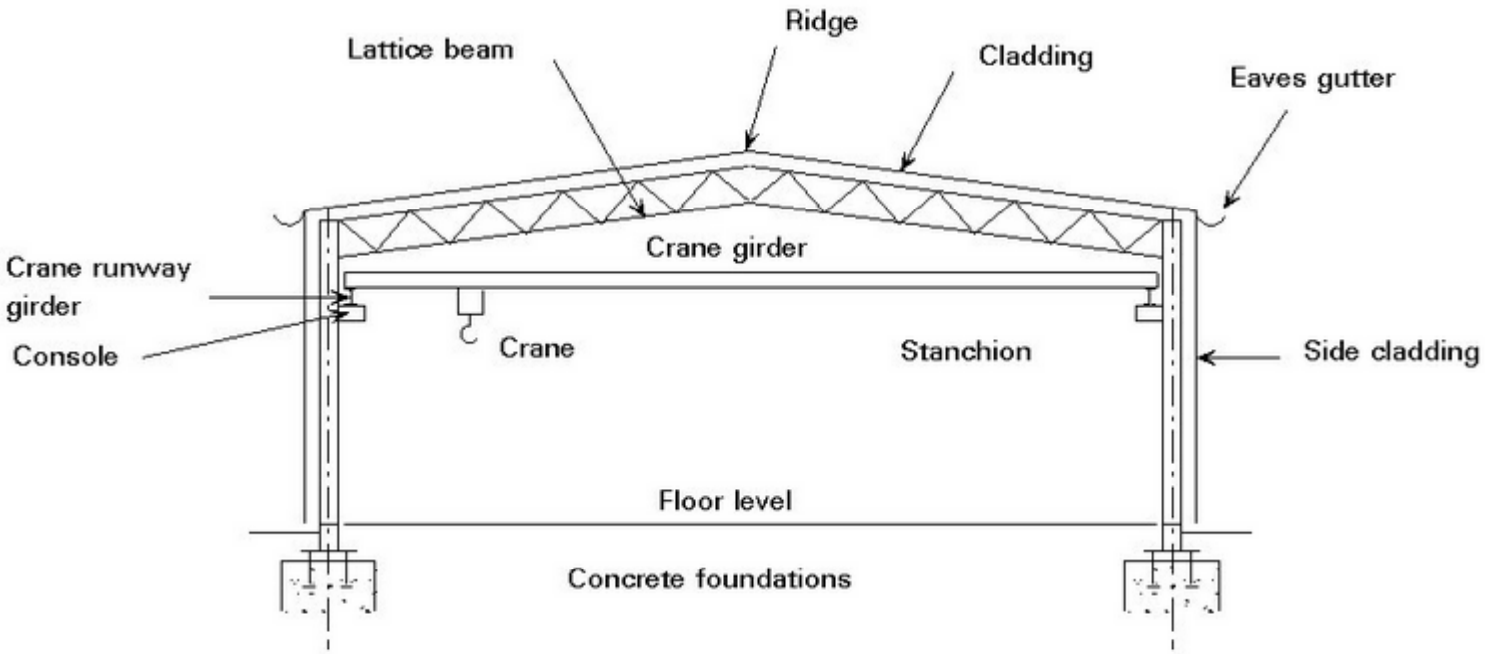
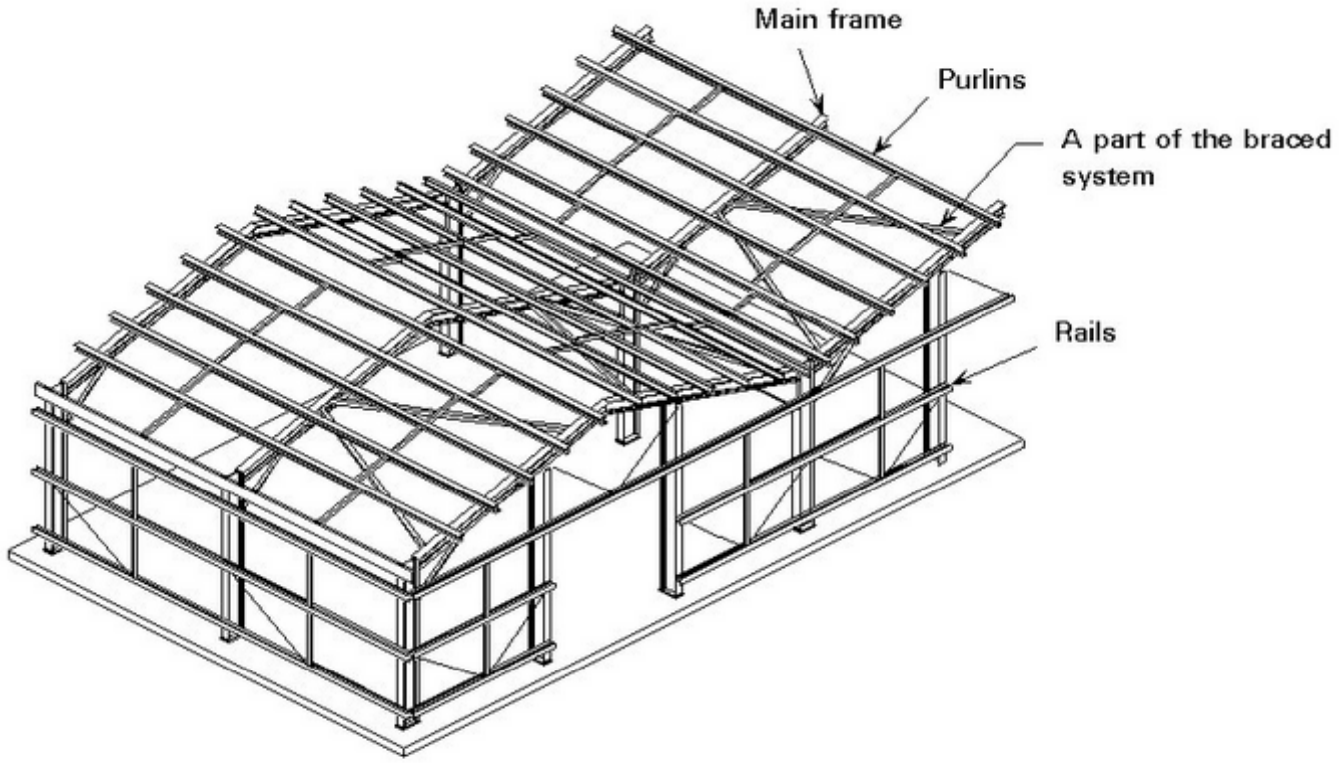


Figure 8 Single bay low pitch roof



Note : Cladding and foundation are not represented.
Some rafter bracings have been omitted for clarity.

Figure 1 Components of portal structure

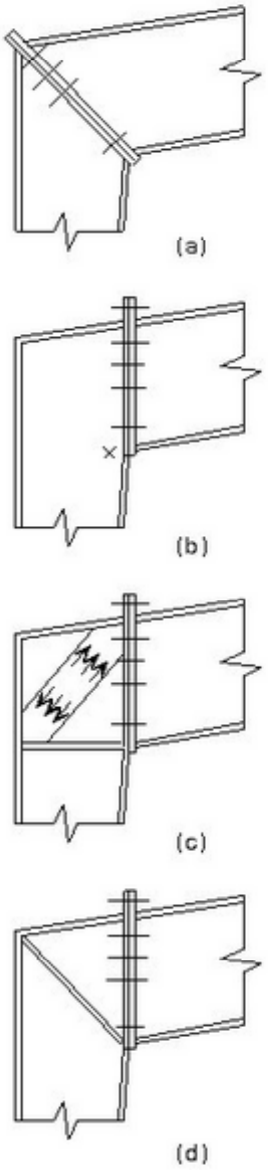


Figure 12 Types of eaves connection

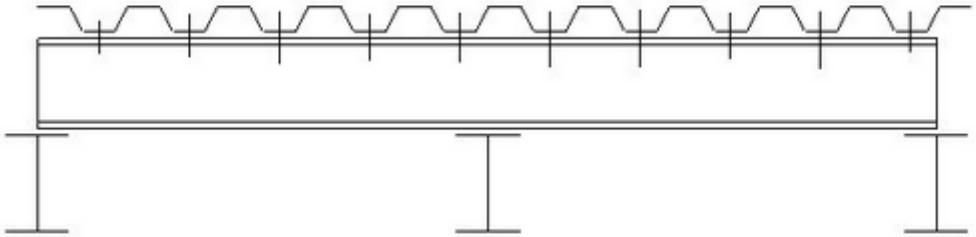


Figure 9 Cladding restraint to purlins

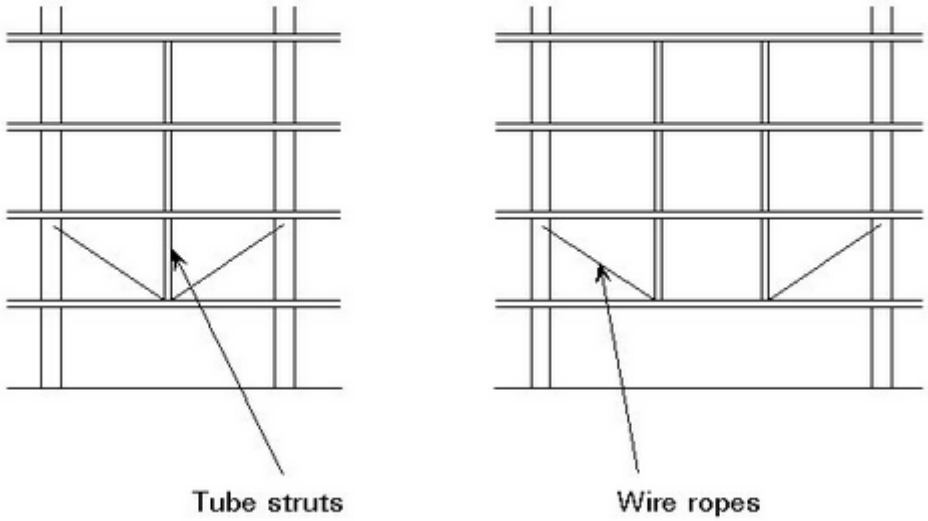


Figure 12 Typical anti-sag systems for wall cladding

Figure 7 Common purlin and rail sections

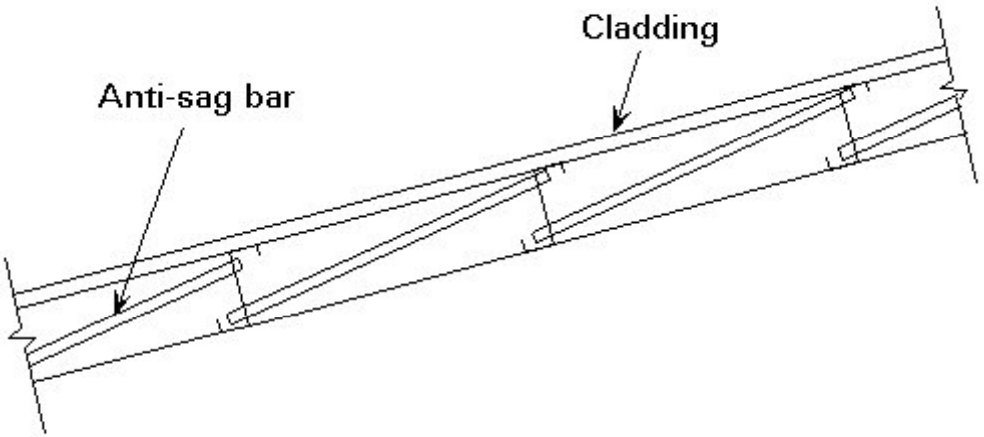
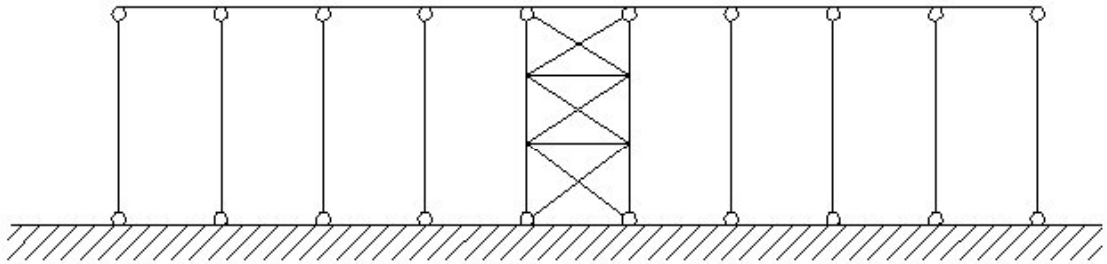
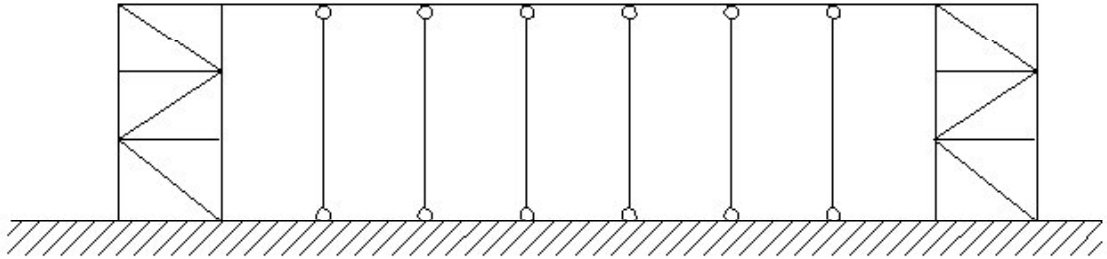


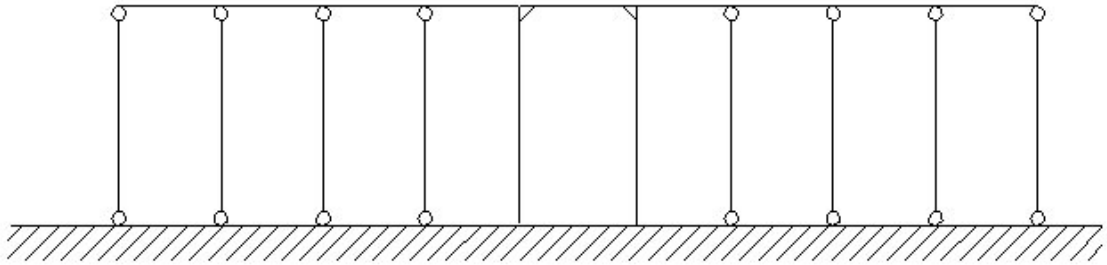
Figure 8 Anti-sag bars in the purlins



(a)



(b)



(c)

Figure 14 Vertical bracing for longitudinal stability

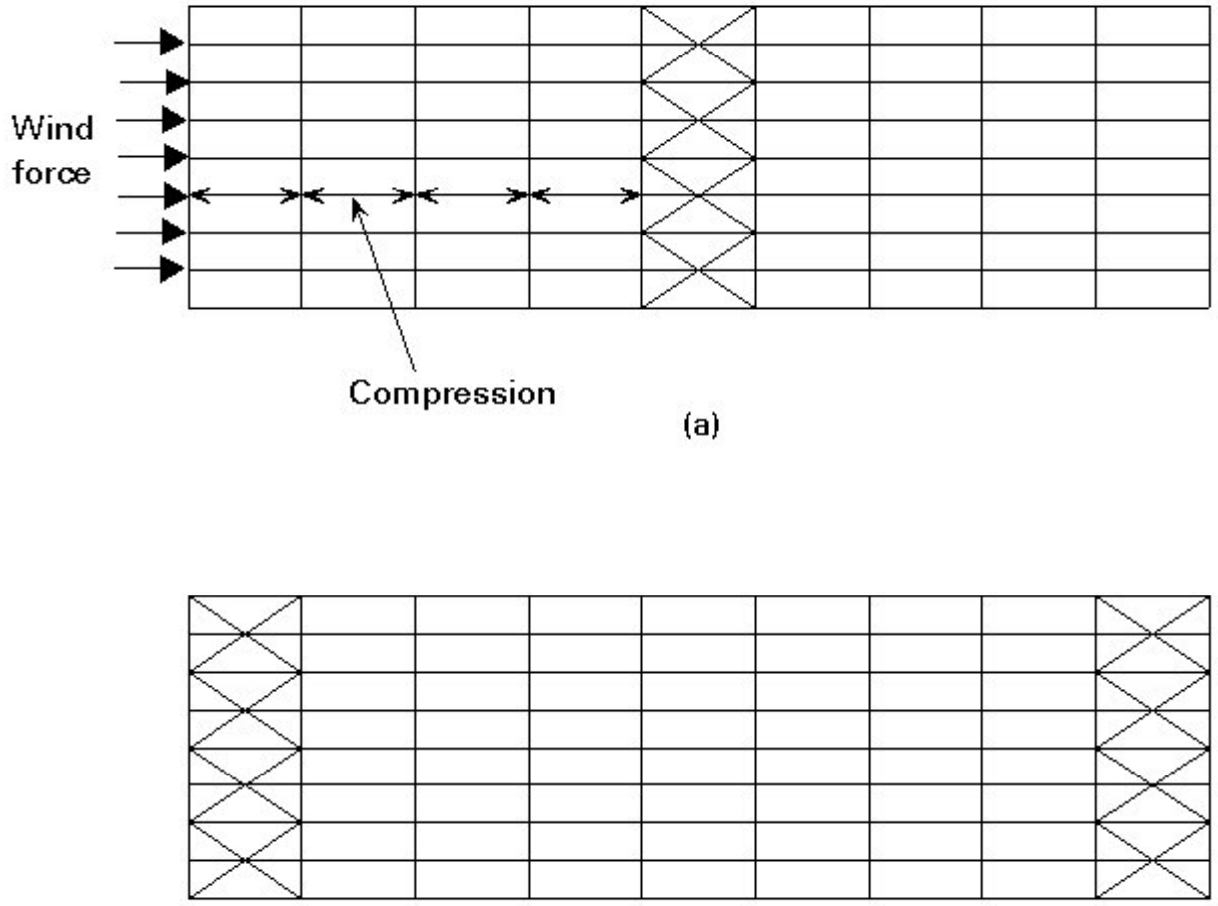


Figure 13 Horizontal bracing

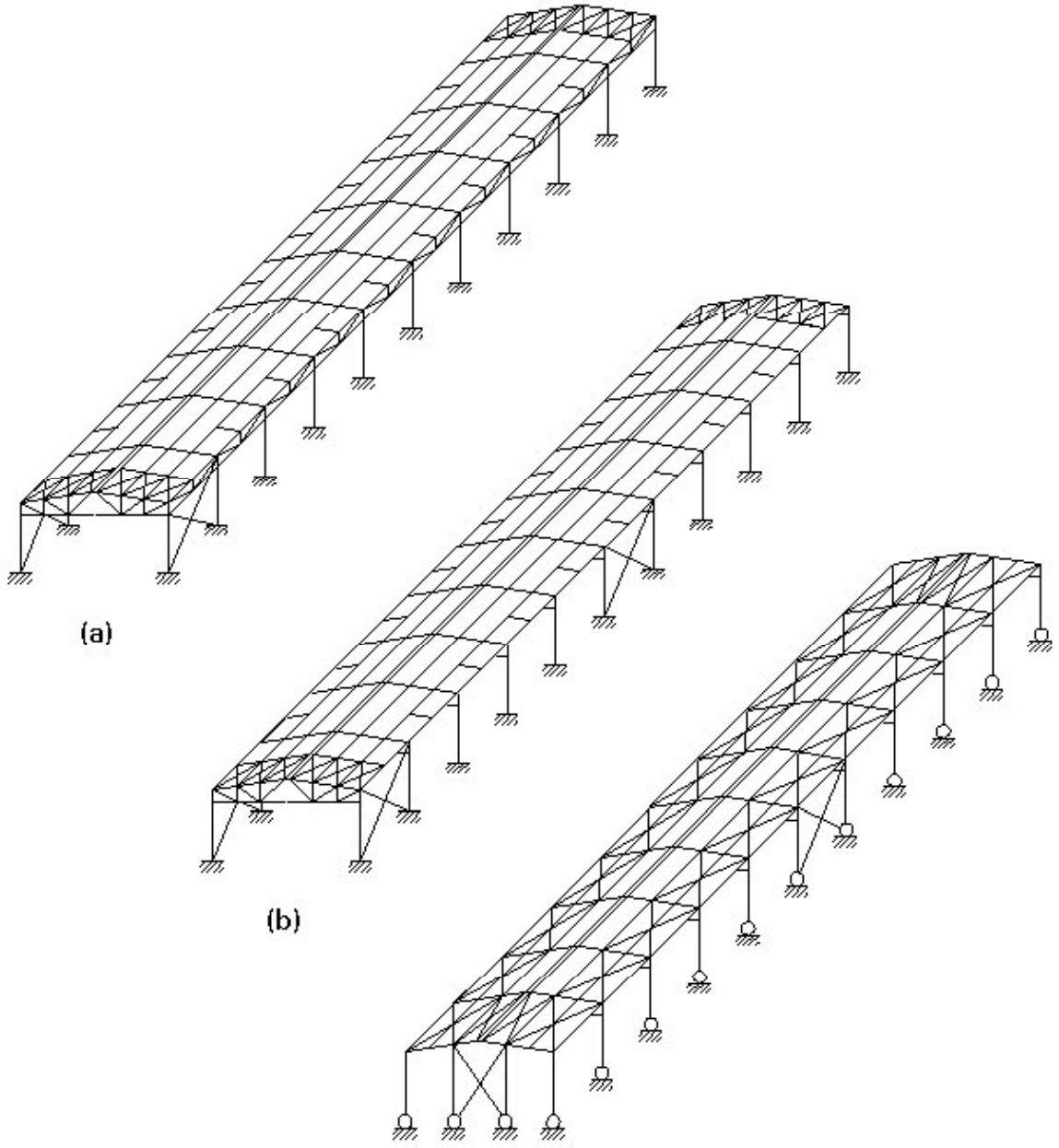
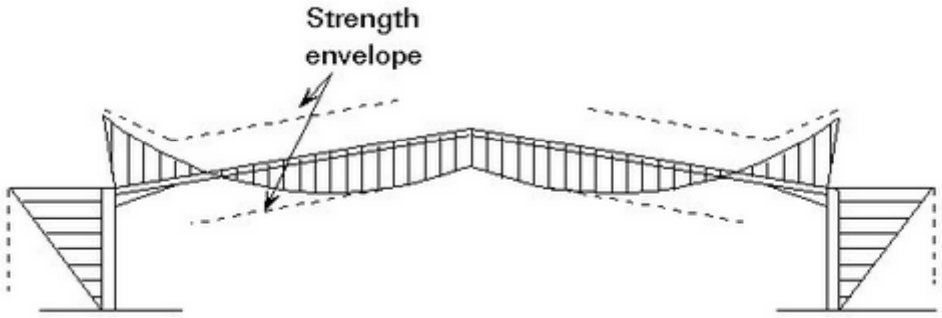
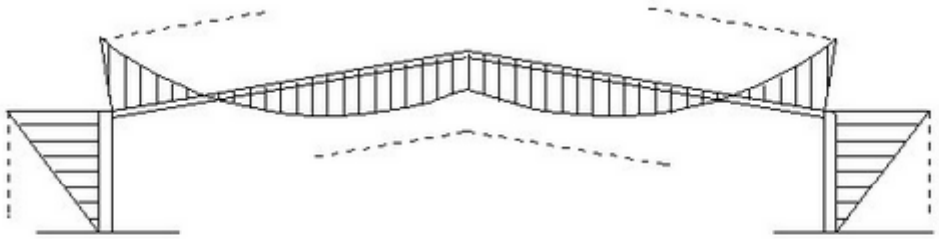


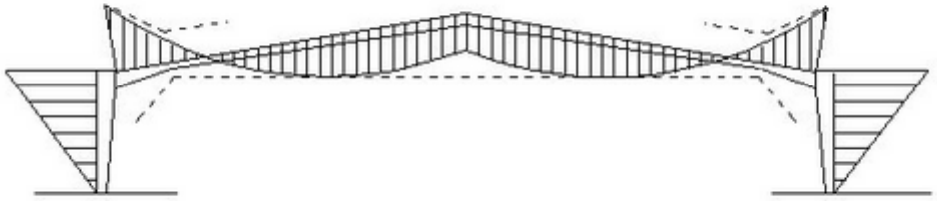
Figure 7 Typical bracing solutions.



(a) Plastically designed portal frame with haunch



(b) Elastically designed prismatic portal frame



(c) Elastically designed tapered portal frame

Figure 2 Typical moment diagrams for portal frames

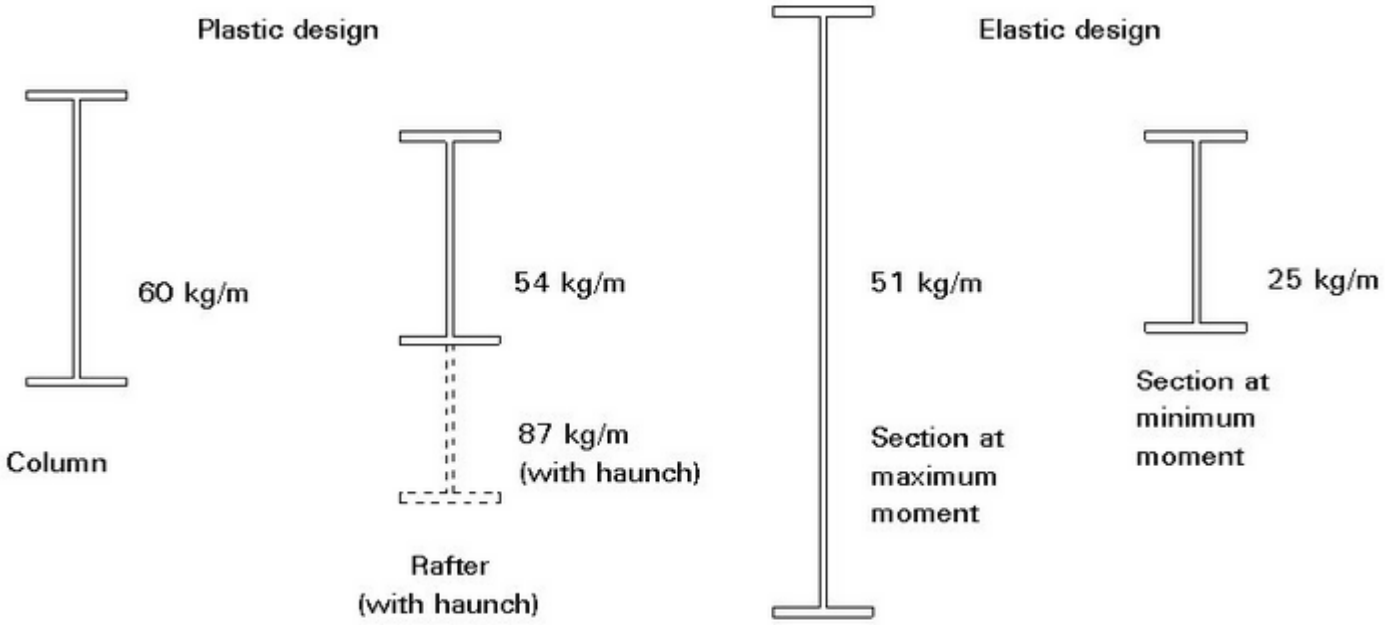


Figure 4 Comparative cross-sections for portal frames

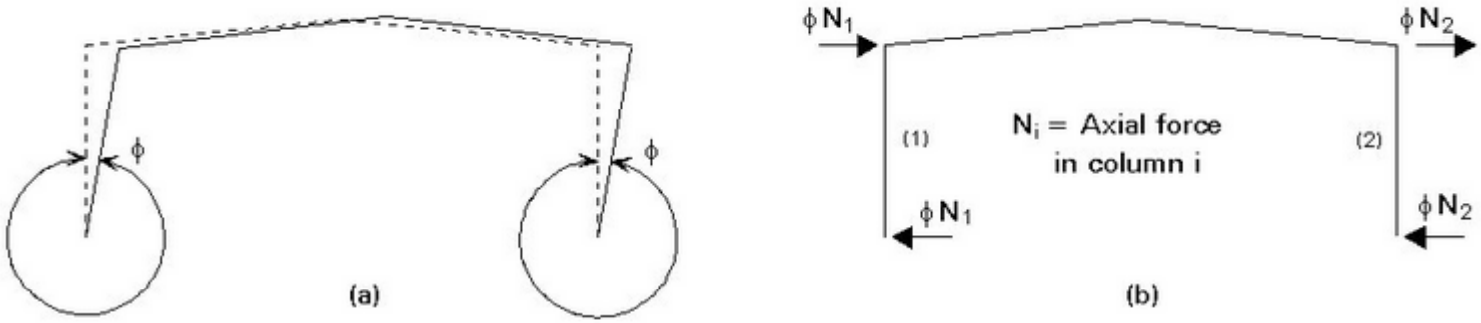
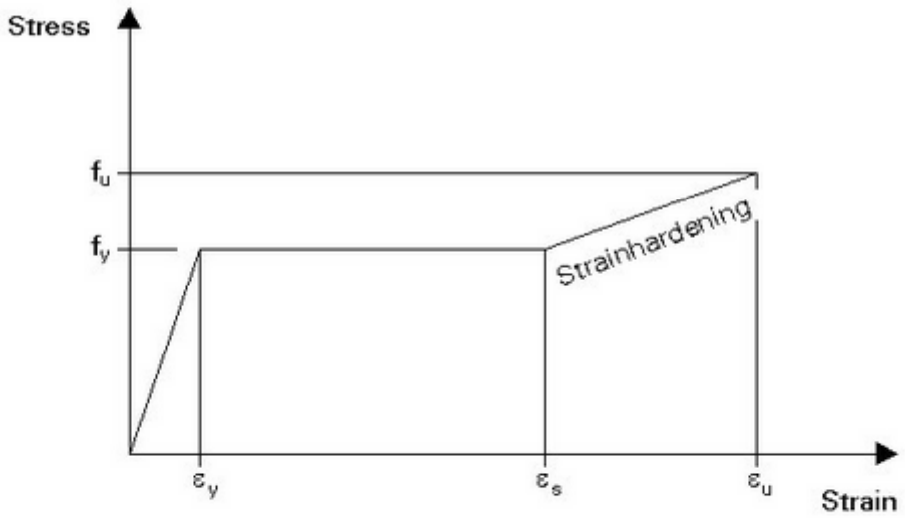


Figure 7 Frame imperfections



Clause 3.2.2.2 $\frac{f_u}{f_y} \geq 1{,}2$ $\frac{\varepsilon_u}{\varepsilon_y} \geq 20$

Figure 3 Simplified stress/strain curve

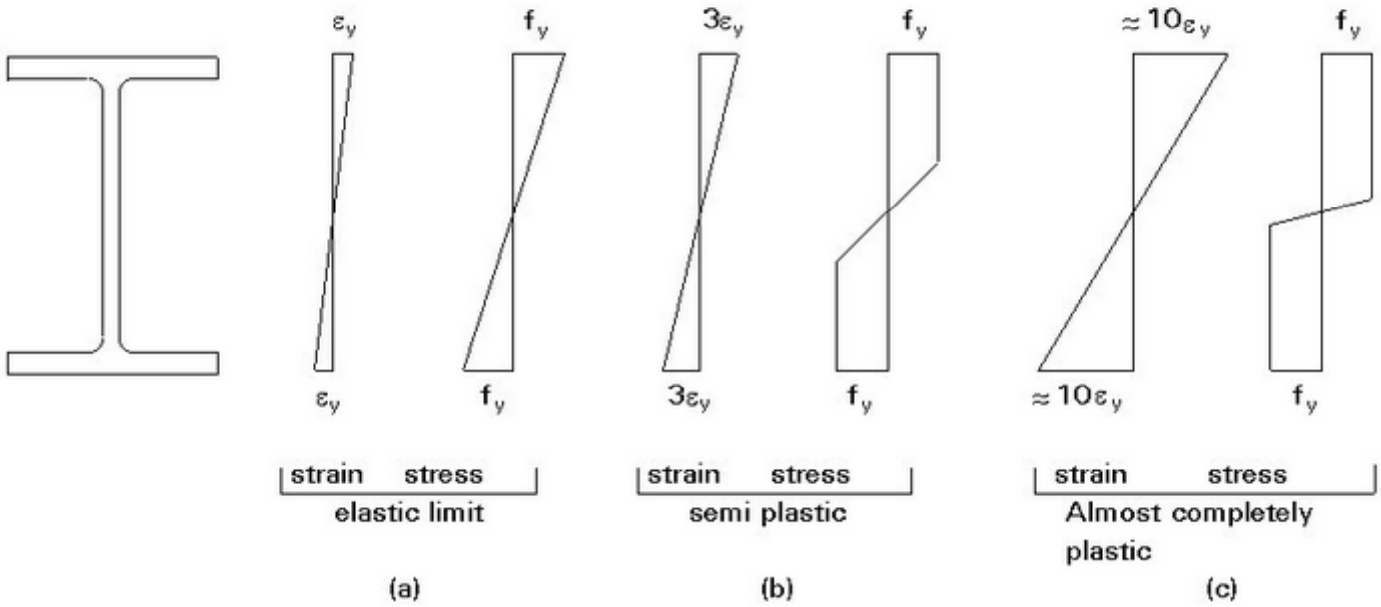


Figure 5 The development of a plastic hinge in a section subjected only to a bending moment

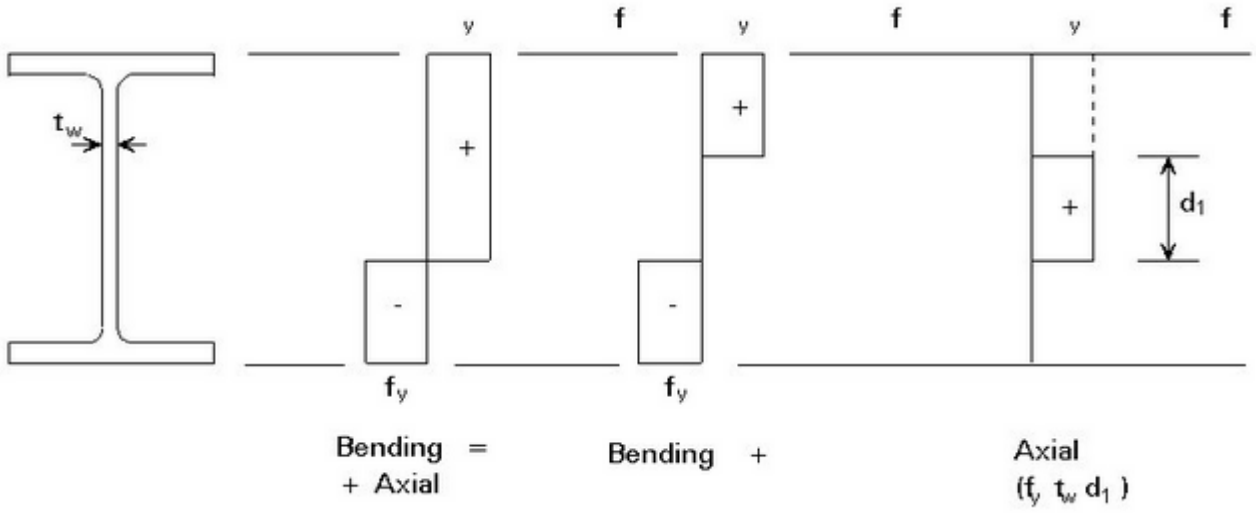


Figure 6 The bending moment capacity at a plastic hinge location is reduced by the presence of an axial load

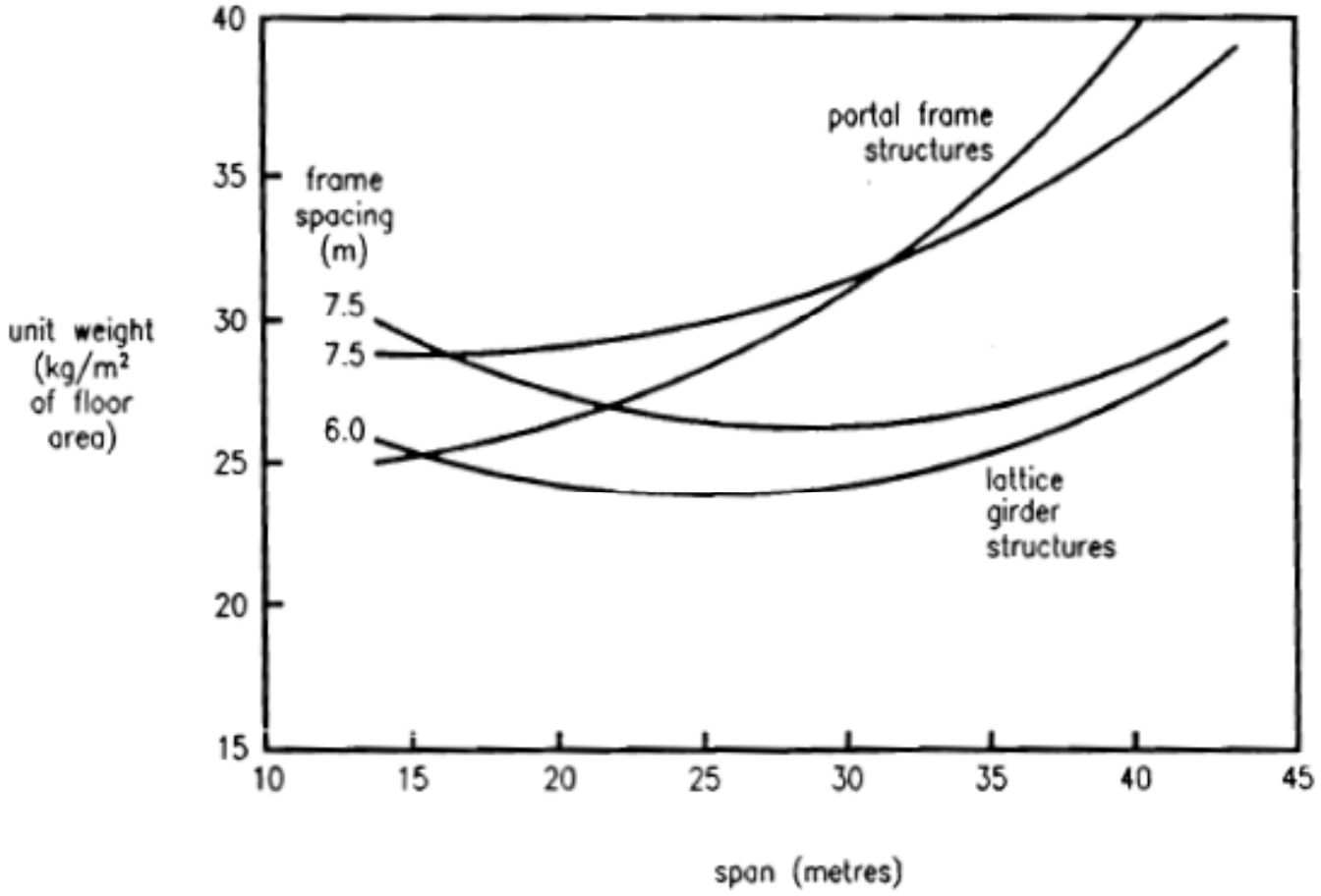


Fig. 1.1 Comparison of bare frame weights for portal and lattice structures

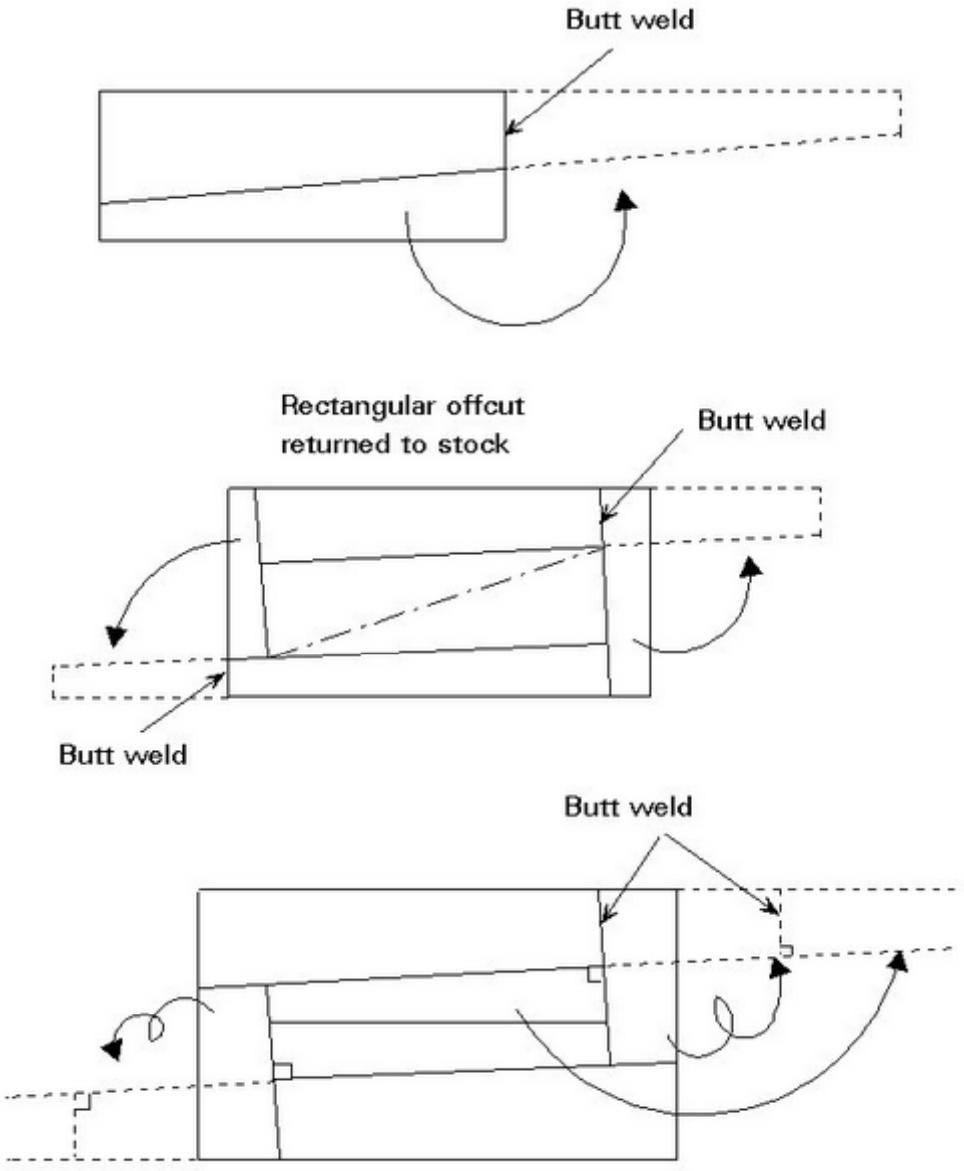


Figure 13 Cutting patterns for web plates