Edge details

Edge trims are formed from galvanised pressed sheet and supplied in standard lengths for various depths of slab. Lengths are cut on site to suit column positions etc. The designer must specify edge details which comply with certain criteria. The trims must be tied back to the decking by straps at 0.6 m to 1.0 m centres, depending on the slab depth and overhang of the decking from the edge beams. The distance which the slab may cantilever beyond the edge beams is dictated by the orientation of the decking ribs. When the ribs run perpendicular to the beam axis, the decking can cantilever up to 600 mm. For ribs running parallel to the beam, a support must be provided when the overhang exceeds 160 mm. Typical edge details are shown in Figure 6.11.

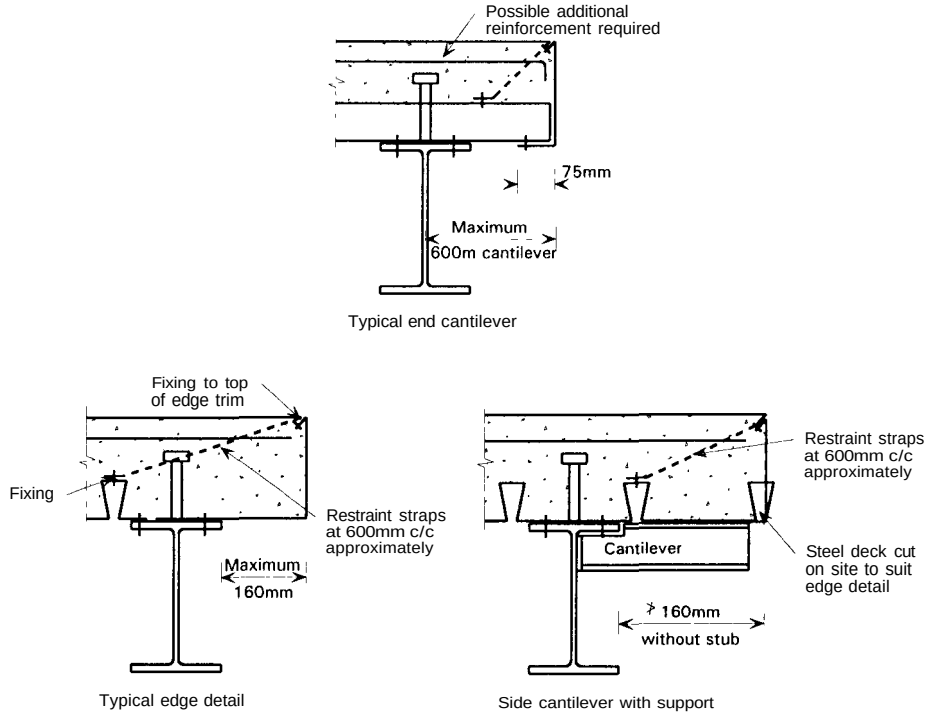

Figure 6.11 *Typical slab edge details*

ACTIONS - Composite beams

Composite beams are normally specified for use in conjunction with composite slabs. Profiled steel decking is used to span between the beams. The designer should:

- arrange the frame members so that the decking can be used as unpropped, permanent formwork
- specify through-deck welding of the shear connectors
- choose appropriate decking for the required performance
- beware of holes being cut in the slab adjacent to beams.

6.5 Precast concrete floors

Floors can be constructed using precast concrete units. These units may be supported on the top flange of a steel beam, or on shelf angles attached to the beam web. Alternatively, when a slim floor system is adopted to minimise the structural floor depth, the units may be supported on a wide bottom flange, or a wide plate welded to the bottom flange of a standard I section beam. Typical details employing precast units are shown in Figure 6.12.

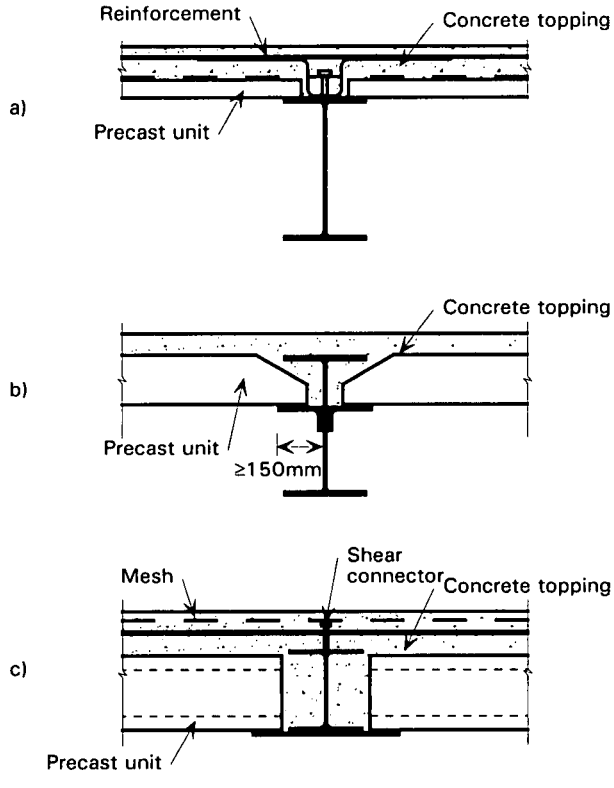

Figure 6.12 *Typical details employing precast concrete units supported on (a) top flange of the beam, (6) shelf angles, (c) slim floor beam*

A cross-section in which precast planks sit on the top flange of a steel beam is shown in Figure 6.12a. The designer must respect certain detail requirements when specifying such a system. BS 8110 [87] requires a minimum seating length of 50 mm for planks which are tied together. If the planks act in isolation 75 mm seating is required. These values include an allowance of 10 mm for variations in length and position of the planks. Reference should be made to the code BS 8110, or manufacturers details, for more information. Composite action may be achieved by fixing a line of shear connectors along the centre line of the beam and casting concrete around these and the planks. Reinforcing bars running across the flange and into voids in the planks (see Figure 6.13), or over the planks, prevent the connectors punching horizontally through the slab as the beam deflects under load.