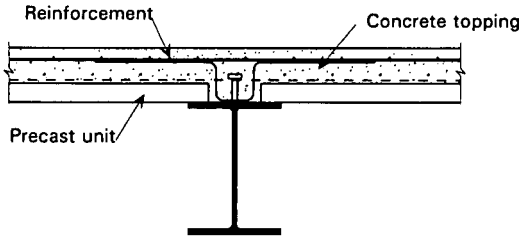
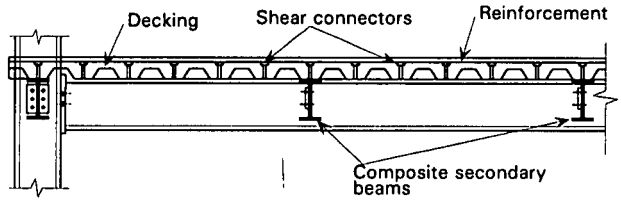
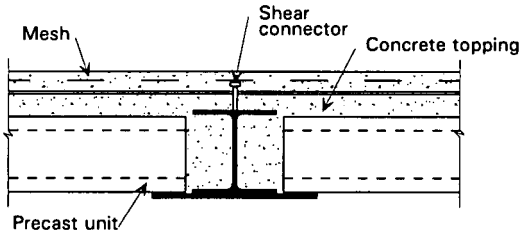


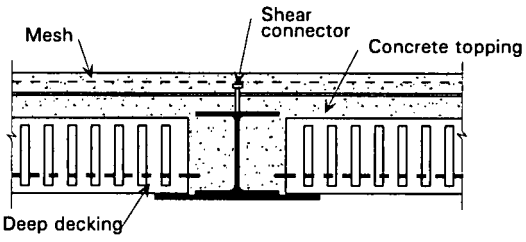
a) Steel beam and precast slab



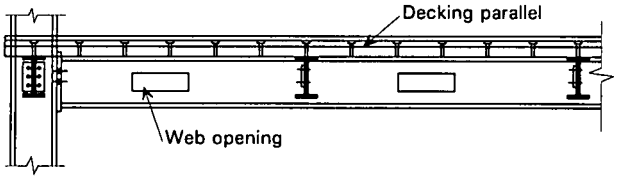
b) Composite beam and insitu composite slab



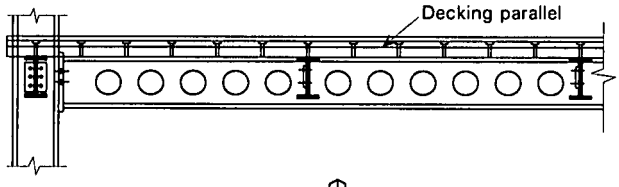
c) Slim floor beam and precast slab



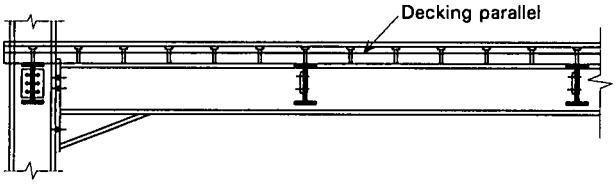
d) Slim floor beam and deep composite slab



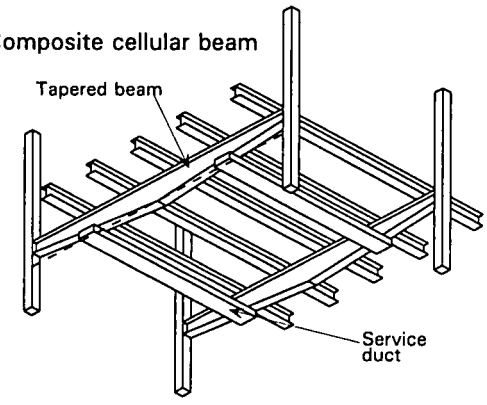
e) Composite beam with web openings



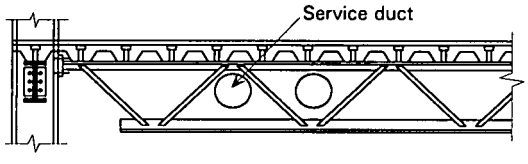
f) Composite cellular beam



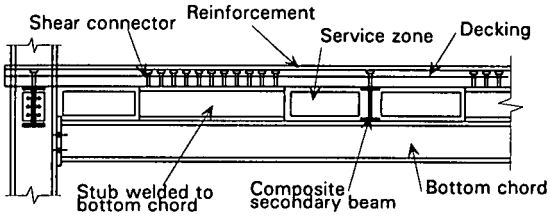
g) Haunched composite beam



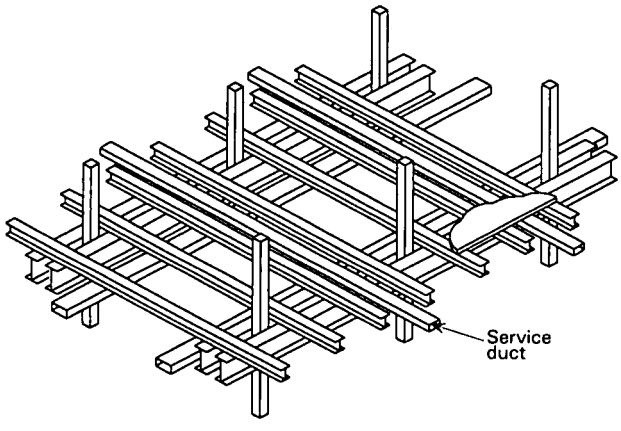
h) Composite tapered girder (viewed from below)



i) Composite truss



j) Composite stub girder



k) Parallel beams (viewed from above)

Figure 3.3 *Floor systems*

An economic comparison of various options, including the benefits of speed of construction, is presented in the SCI publication *Comparative structure cost of modern commercial buildings*[12] . The total structure cost for each system should not be considered in isolation from the overall building cost. Structure costs vary between 12% to 18% of the overall building cost, and time related savings, ease of service integration, cost of cladding etc. are also important. The use of a more expensive floor system may be justified by savings in one or more of these areas. Total building cost per square metre of floor area varies between approximately €550 to €580 for a building with a typical developer's specification, depending on the floor system. For a prestige building the cost is between €830 to €890. Prices were correct in 1992. Table 3.1 lists some of the different floor systems, giving the relative merits of each option.

Table 3.1 *Floor systems - relative merits*

Construction	Span (m)	Familiar	Erection	Span to depth	Service integration	Fire resistance
Steel beam & precast slab	6 - 9	●●●●●	●●●	●	●	●●●
Composite beam & in-situ composite slab	6 - 12	●●●●	●●●●●	●●●●	●●●	●●●
Slim floor beam & precast slab	6 - 10	●●●	●●●	●●●●●	●●●●●	●●●●●
Slim floor beam & deep composite slab	6- 10	●●●	●●●●●	●●●●●	●●●●●	●●●●●
Composite beam with web openings	9 - 15	●	●●●●●	●●●●	●●●●	●●●
Composite castellated or cellular beam	9- 15	●●●	●●●●●	●●●●	●●●●	●●●
Haunched composite beam	12 - 20	●●	●●●●●	●●●●●	●●●●●	●●●
Composite tapered girder	10- 18	●	●●●●●	●●●●	●●●●	●●●
Composite truss	12 - 20	●	●	●●●●	●●●●●	●
Parallel beams	10- 15	●	●●●●	●●●●●	●●●●●	●●●
Composite stub girder	10- 18	●	●	●●●●	●●●●●	●●●

Key:
●●●●● Good ●●● Average ● Poor
●●●● Above average ●● Below average

Alternatives which require more care during erection than straightforward beams generally suffer from one or more of the following problems:

- beams which rely primarily on the concrete to form the top flange need propping during construction
- a lack of lateral stability may necessitate the use of a lifting beam
- a lack of robustness may necessitate extra care during transportation and on site.