

Span-to-Depth Rules

Architecture

The rule-of-thumb depths that let you draw a section before an engineer sizes it.

Structural depth is roughly the span divided by a number that depends on the system.

$$\text{depth} = \text{span} / \text{ratio}$$

Steel beam, 9 m

ratio about 20

$$9000 / 20 = 450 \text{ mm}$$

Timber joist, 4 m

ratio 16 to 20

$$4000 / 18 = 222 \text{ mm}$$

Flat slab, 7.5 m

ratio about 30

$$7500 / 30 = 250 \text{ mm}$$

THE COMMON MISTAKE

✗ Drawing a 200 mm zone for a 12 m span

✓ Reserve 600 mm plus services

Preliminary depths are governed by deflection, not strength. Under-reserving in section is the common cause of a lost floor or a dropped ceiling.

Educational reference. Typical ratios: timber 16-20, steel beam 18-22, concrete beam 12-16, flat slab 28-33.