

Timber joists

Timber joists appear in storey partitions until roughly 1950.

Beams are normally timber with square cross-sections – sometimes slightly longer than wide – and are set at an average interval of just under one metre.

In buildings with normal house depths of 9-10 metres, spanning from facade to facade and centrally supported on longitudinal (main) partitions, the beam dimension is 17.5 x 17.5 cm (in early buildings) or 20 x 20 cm.

Half-width beams, where the beam interval is shorter than normal, typically occur against brick-built transverse walls.

On normal floors of residential buildings, joists are used in floor, ceiling and interleaved systems.

Floor boards are joined with tongue and groove and usually have a thickness of just under 3 cm.

Wood sheathing of 2.5-cm thickness and resting either in grooves in the sides of the beams or on seamed battens is laid (interleaved) between the beams.

A clay covering of 5-cm thickness is laid upon this wooden sheathing and was originally intended to serve as a fire retardant. With the introduction of enclosed fireplaces and then central heating and electric lighting, this layer was assigned other functions (heat and sound insulation) and the clay covering was often replaced by other materials.

On the underside of the joists, 2-cm-thick boards are set at intervals of approximately 1 cm and covered with matting (reed) which is then plastered.

In the case of joists above basements that are used solely for storage purposes, matting is usually laid and plastered directly onto pugging boards.

Beams are included in internal timber-frame transverse walls. For gable walls and internal transverse brick-built walls, the beams are placed up to the walls to provide support.

In early buildings, beams are laid on a continuous strip of wood (wall plate) in load-bearing walls – in both facades and main partitions – and later, on strips of structural iron or smaller pieces of wood to distribute the load.

As a damp-proofing measure for enclosed beam ends, wrapping with tar cardboard is occasionally seen; otherwise it is normal to simply avoid tight enclosures around the beams.

Beams in early construction are most often seen as a continuous section running from

facade to facade. Later on, it becomes more commonplace to join them over the main partition wall.

Some of the beams – usually every third one (legal requirement) – serve as support for the facades and are therefore equipped with iron wall ties.

The same applies to beams placed up to and along gable walls, where ties are placed at a corresponding interval, i.e. just under three metres.

Where beams cannot be placed in walls, trimming work is carried out, typically in chimneys and stair landings, but also with high-placed windows, for example in basement levels.

