CARPENTRY & JOINERY

Community College HACKNEY

FCA

CARPENTRY & JOINERY

THEORY

13 PARTITIONS

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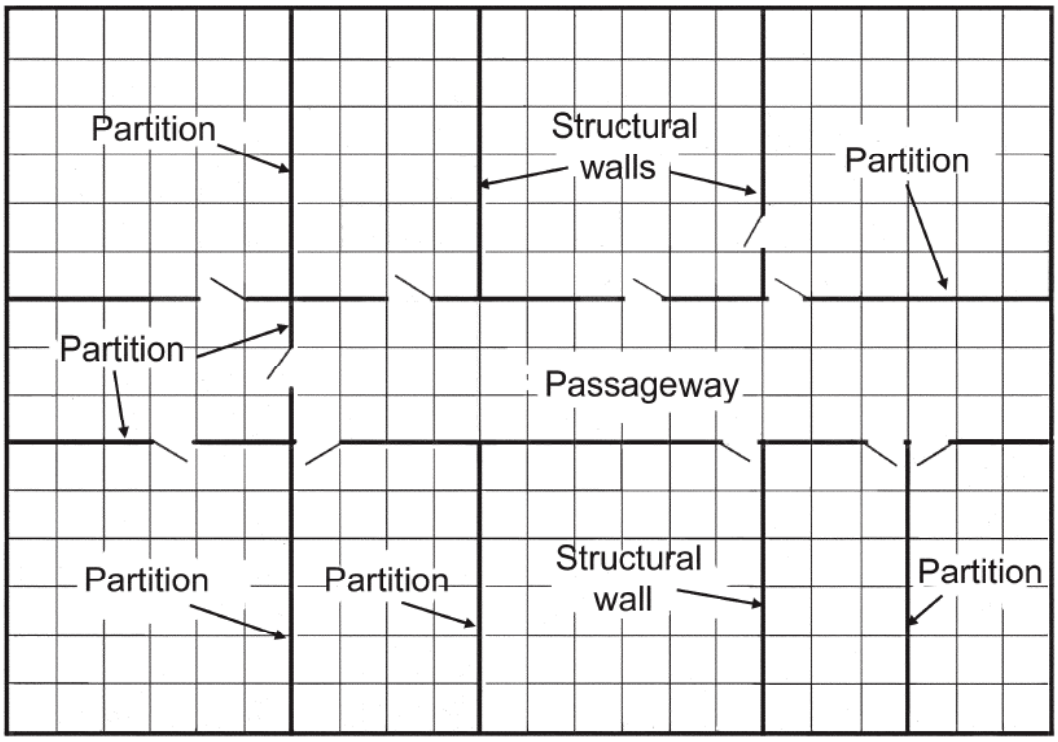
Introduction

Partitions are the vertical walls or panels used to divide rooms or portions of buildings
The diagram below shows how existing building space can be sub-divided into smaller rooms using partitions.



Partitions can be constructed so as to be load bearing or non-load bearing. Traditionally, partitions were constructed of timber but the expanding use of proprietary lightweight partitioning and lightweight insulation block walling is decreasing the need to use timber as a material for partitions.

However, it is still used for certain work and is found extensively when carrying out repair or renovation work.

Types of partition
As mentioned, partitions can be constructed using a variety of materials. The most come types of partition are:
• Timber stud partition.
• Metal stud partition.
• Dry wall partition.

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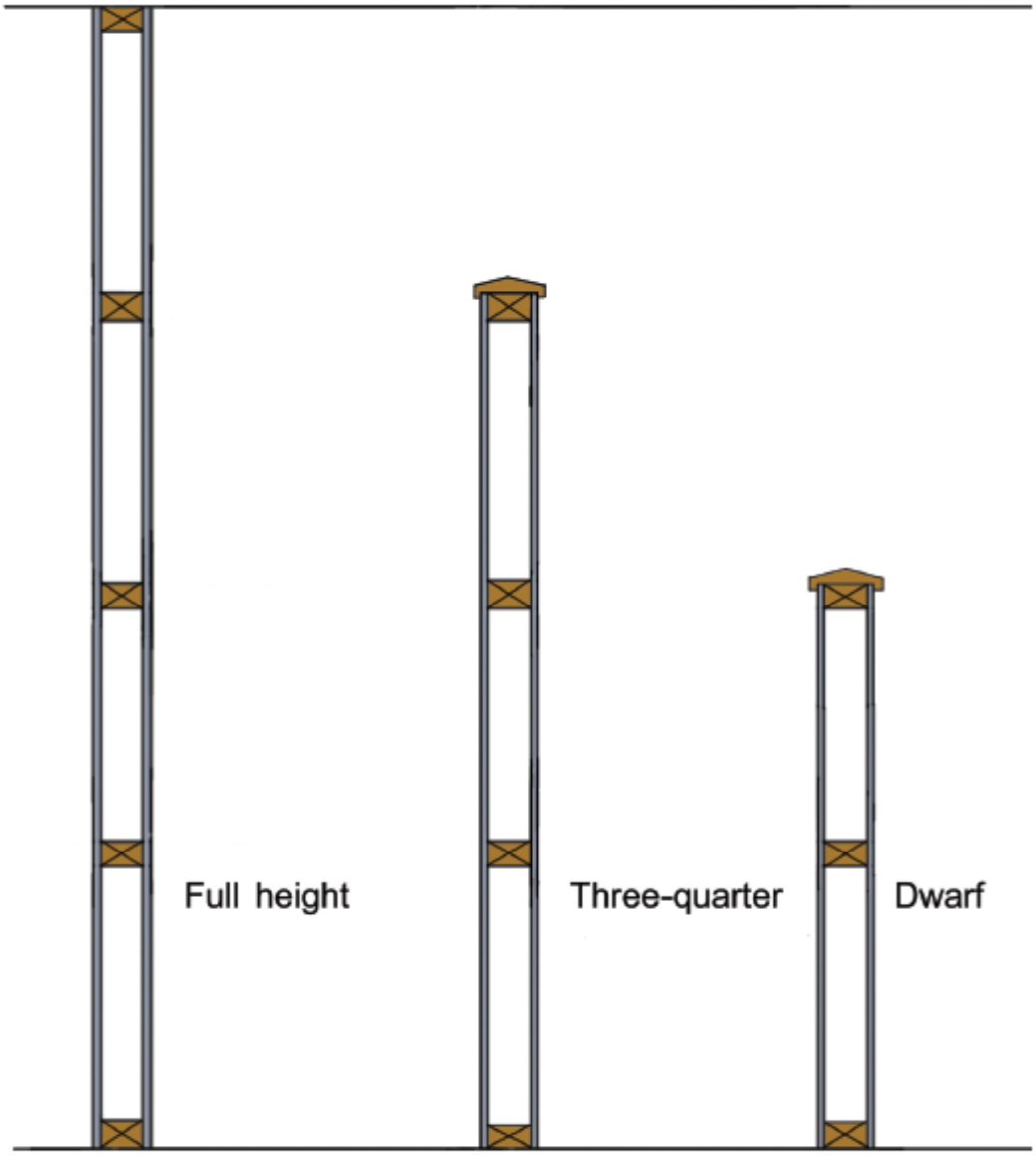
Classification of Partitions



Partitions are generally classified according to their height, but they can be further classified according to the way they are designed and constructed such as:

- Timber stud, plaster skimmed.
- Timber stud, dry-lined.
- Timber stud, partially glazed.
- Timber framed and panelled.
- Timber framed and panelled and partially glazed.
- Metal stud partition.
- Metal stud, dry-lined.
- Metal stud, partially glazed.

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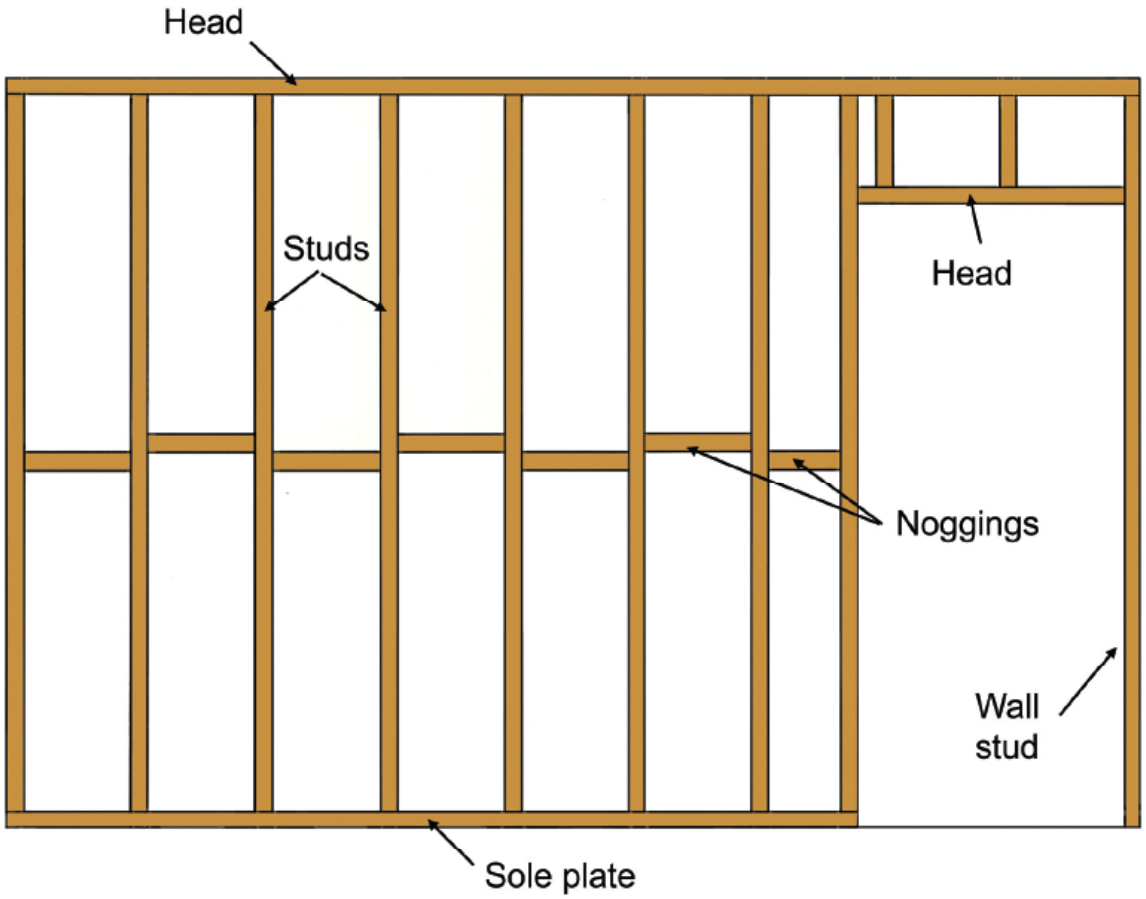
Timber Stud Partitions



Timber partitions consist basically of a wooden framework between horizontal members at the top and bottom, called ‘head and sole pieces’ with a series of uprights called ‘studs’. These studs are placed and fixed according to the needs of the covering material. The timber used is softwood, and the cross-sectional size of the timber is generally 100mm x 50 mm or 75mm x 50mm.

Intermediate stiffening pieces are placed between the studs. These are called ‘noggings’. Where a door is required, provision must be made within the framework. The size of the opening is governed by the size and type of door required. This usually means that that an extra stud and a short head will be required to form the opening.

In some cases, timber partitions can be framed on the floor and lifted into place. This will require the framework to be slightly smaller all around than the space into which the partition is to be fixed. However, this way of constructing a timber partition assumes that the walls are plumb and the floor and the ceiling are level. If they are not, the framework will need to be wedged and packed into place before fixing to the fabric of the building.

In normal situations, the partition framework is built in situ at the required position.

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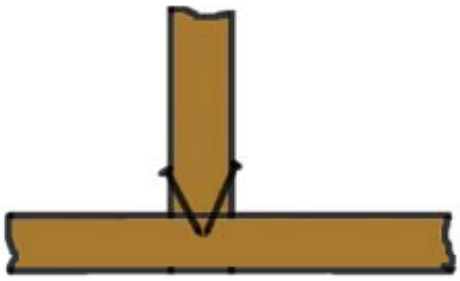
Timber Partitions

Traditionally, timber partitions are formed with various basic wood joints. However, modern techniques call for speed of erection with low labour costs. To facilitate these needs, simple butt joints or framing anchors are used for securing the components of the framework.

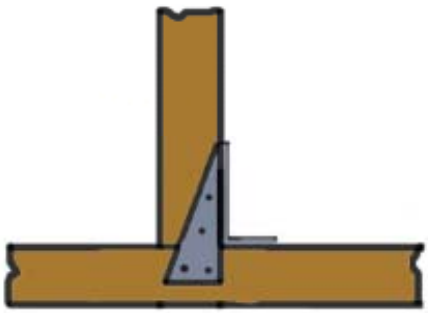
The material commonly used as a covering is plasterboard. This sheet material is available in various sized sheets, but the most common sizes are 2.4m x 1.2m or 1.2m x 1.2m with a thickness of 12.5mm. The studs and the noggings of the framework are therefore placed and secured to accommodate these sheet sizes.

Timber partitions are always classed as non-load bearing partitions as they are relatively lightweight. They are quick and easy to construct but can be damaged easily under impact.

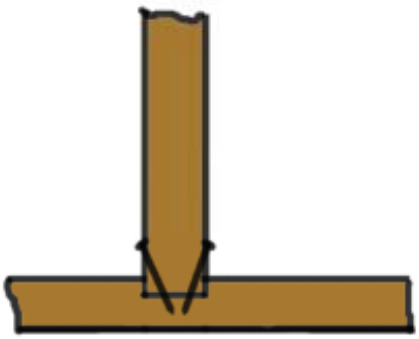
Alternative stud fixing methods



Skew nailed butt joint



Framing anchor



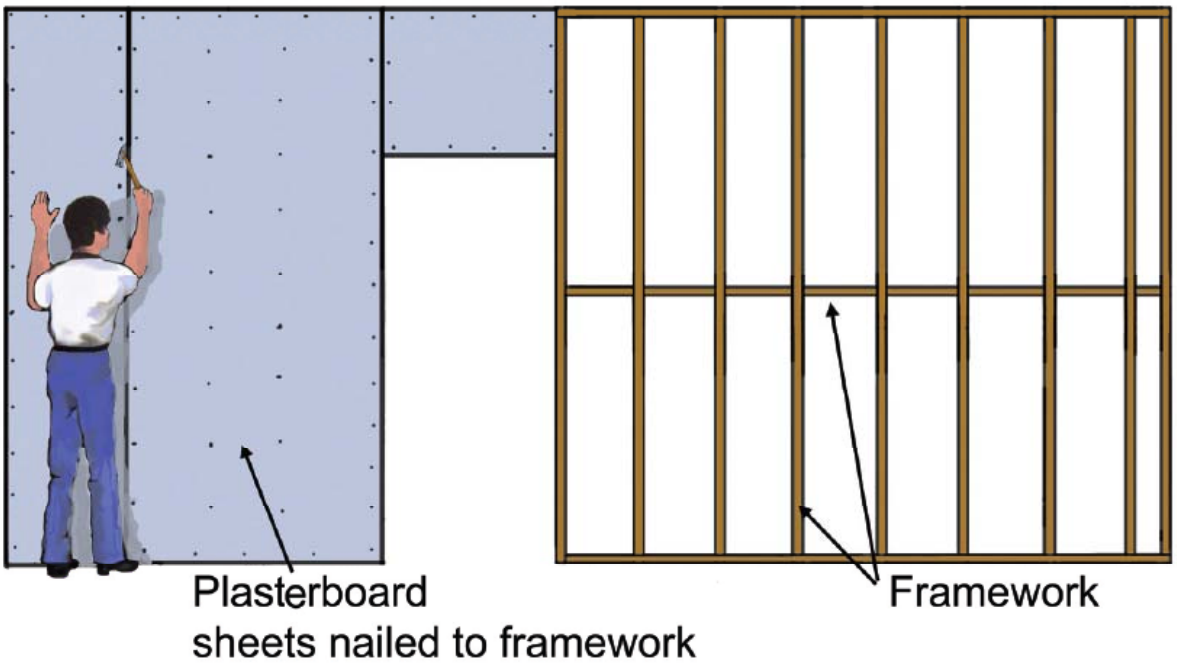
Skew nailed housed joint

Covering Timber Partitions

As previously stated, the material commonly used as a covering is plasterboard. This sheet material is available in various sizes, but the most common sizes are 2.4m x 1.2m or 1.2m and 1.2m with a thickness of 12.5mm. The studs and the noggings of the frame work are therefore placed and secured to accommodate these sheet sizes.

Sheeting or covering the partition is a simple task, but care must be taken not to mark or damage the sheets when nailing them in place. The sheets are nailed with 30mm galvanised nails at 150mm centres.

Depending upon the shape and size of the partition, sheeting should commence at a doorway opening, with the edge of the first sheet flush with the stud face. If the floor is level, the bottom edge of the sheets can be supported on the floor during fixing. However, if the floor is slightly out of level, care must be taken to ensure that the edges of the sheets are parallel to the centre of the framework studs. When the sheeting is complete, the door casing can be fixed in place, prior to applying the surface finish to the partition.

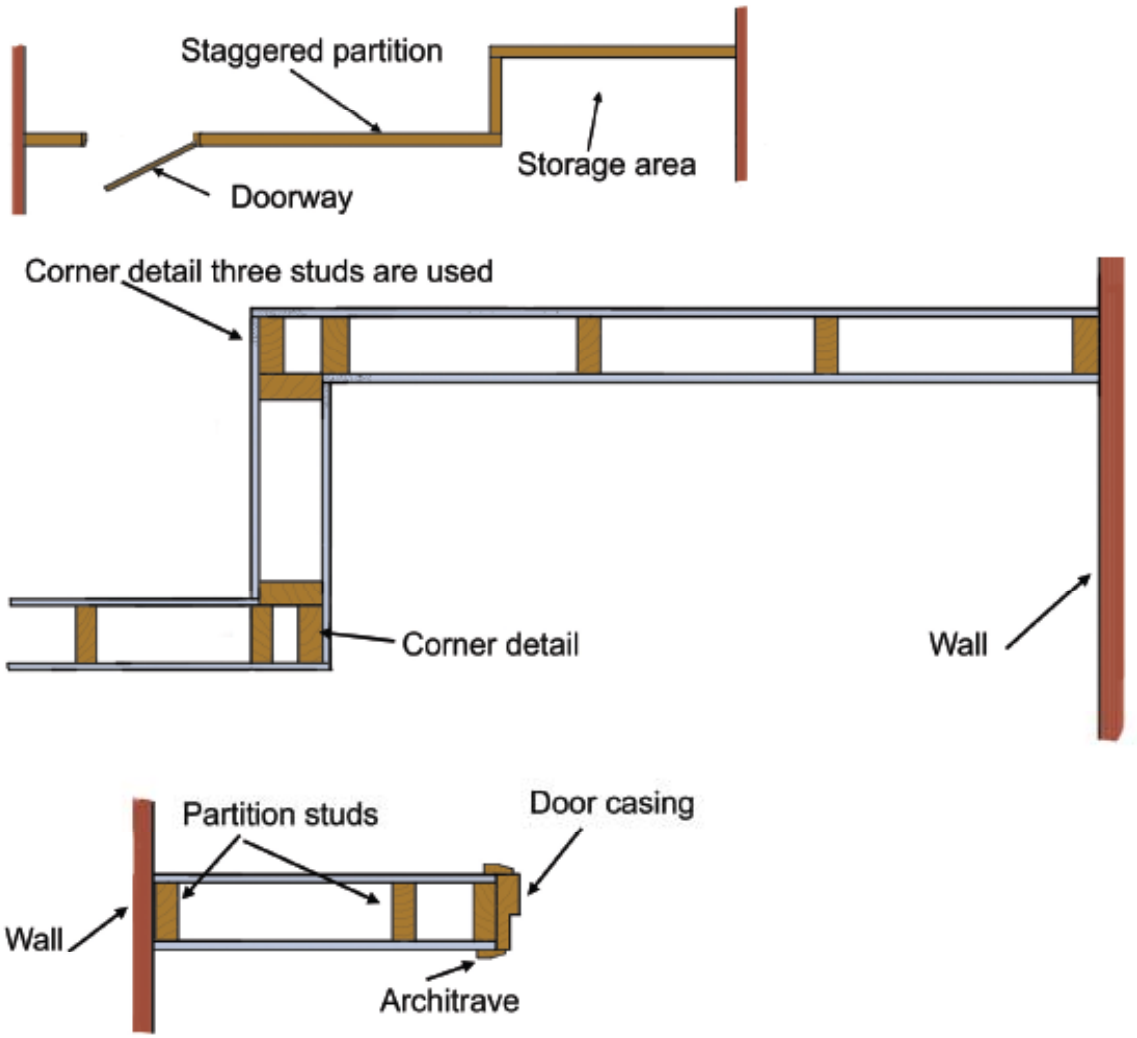


Nailing plasterboard sheets to timber stud partition

Staggered or offset timber partitions

Not all rooms are square or rectangular in shape, and not all rooms will require straight partitions to sub-divide them into smaller units.

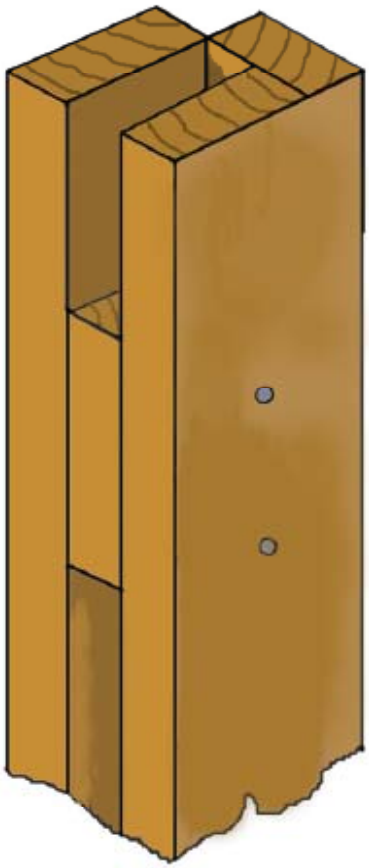
For instance you can divide a large room in two and, at the same time, provide built-in storage areas.These storage areas may be simple cupboards or, if the room is a bedroom, the storage areas may be wardrooms.
Construction partitions to accommodate these storage units will require the partition to be constructed as a staggered partition. These partitions are built exactly the same as straight timber stud partitions but will include right angle junctions at the position designated as a storage area.



Staggered partition constructional details

When constructing this type of partition, the right angle corners and ends of the short partition will require extra studs to provide a fixing for the plasterboard.

End post detail using two studs



Corner post detail using three studs and packing piece

Sequence of constructing a staggered partition
- Mark out the position of the partition on the floor.
- Transfer marks to ceiling.
- Cut cills and fix to floor.
- Cut heads and fix to ceiling.
- Make corners using three studs.
- Mark and fix other studs to required spacing.
- Cut, fit and fix noggings.
- Fit and fix plasterboard sheets.
- Construct, fit and fix door casing.

Metal stud partitions

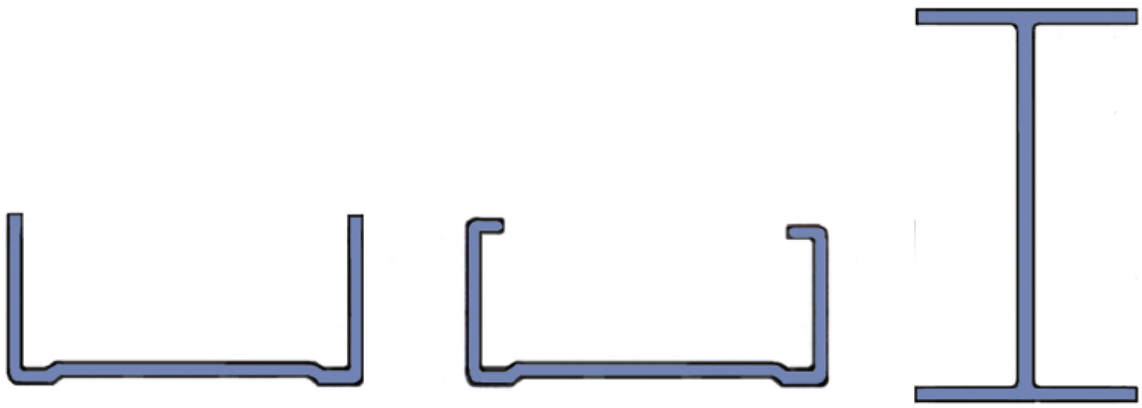
Metal stud partitions are non-load bearing partitions which consist of a framework of metal studding. Metal studding is lightweight but very strong and stable. The framework is usually covered with ordinary plasterboard sheets or special fire-resistant sheets which, when finally sealed, offer good sound and fire resistance to the partition.

For that reason, this type of partition is often used in public buildings such as offices and hospitals as it is:
- Quick and easy to erect.
- Cost-effective.
- Suitable for all types of buildings as well as residential housing.
- Available in a variety of finishes to the completed partition.

The framework consists of a range of metal studs and channels, some of which are preslotted to accommodate services such as electric cables and water pipes.

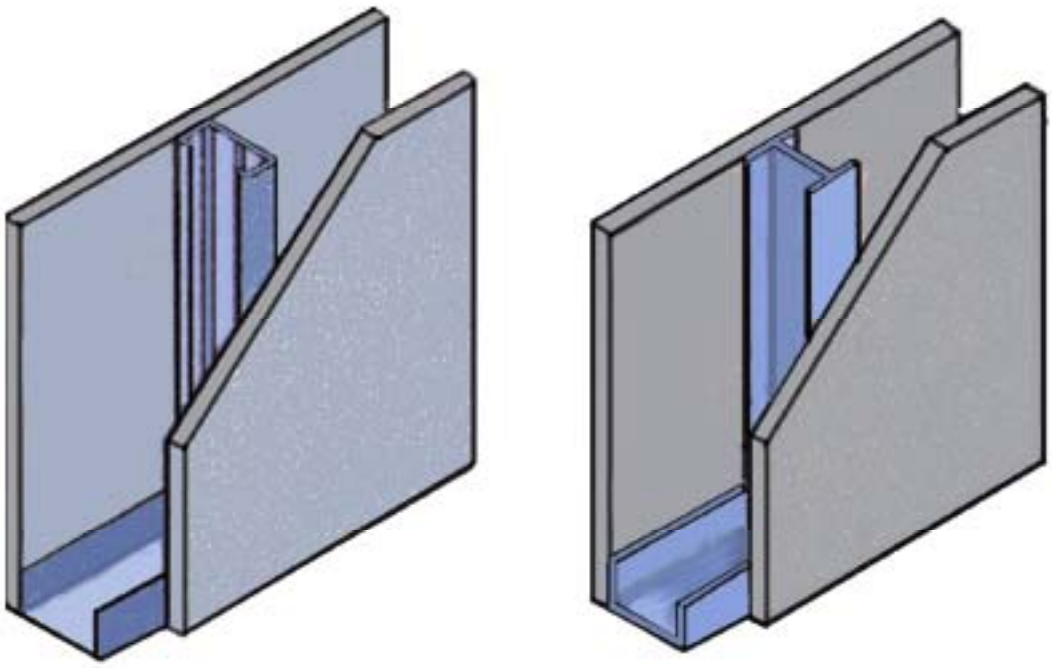
The frame is fitted together using self-tapping screws, and covering material is fitted in the same manner. If the partition includes a doorway and wood skirting, the frame, architrave and skirting are screwed to the plasterboard and metal studs using long self-tapping screws.

The metal studs are manufactured from sheradised or galvanised steel sheet folded into various shaped sections which slot into each other. The sections are produced in various lengths ranging from 2.4m to 6m in length and widths ranging from 50mm to146mm.

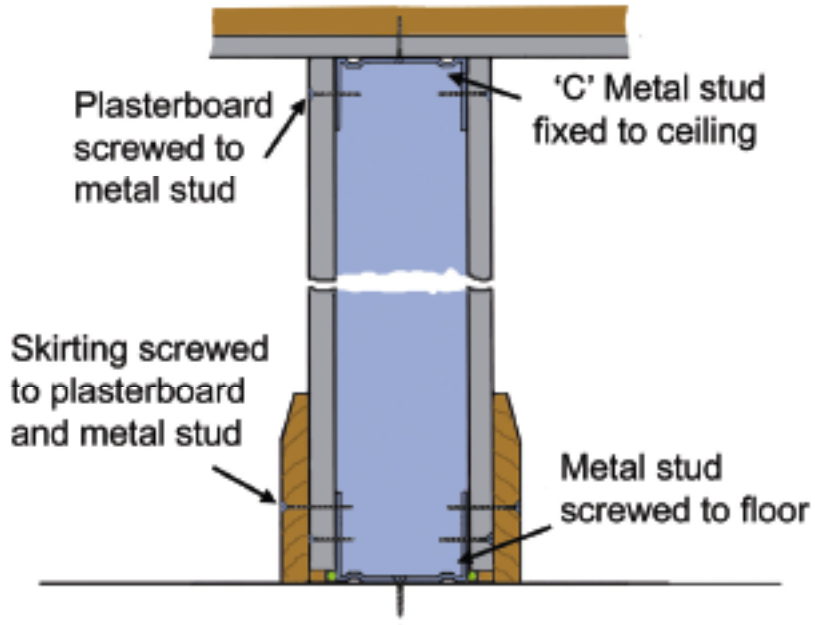


U-channel section *C-section stud* *I-section stud*

Types of Metal Stud Partition Construction



C-stud system *I-stud system*

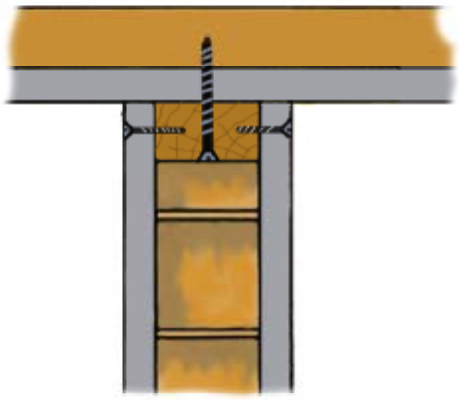


Head and cill detail

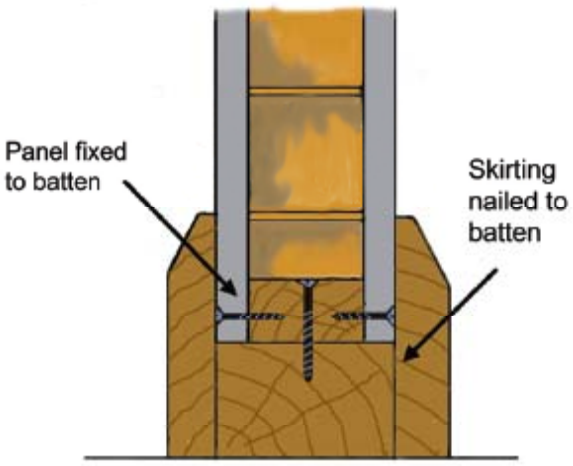
Drywall partitions

Drywall partitions are also referred to as cellular core partitions. The wall units are pre-made under factory conditions and consist of two sheets of plasterboard bonded to a gridded cellular cardboard core. The sheet units are rigid, yet the cellular structure makes them lightweight. The sheets are available in standard 2.4m x 1.2m sheets with thicknesses of 57mm and 63mm.

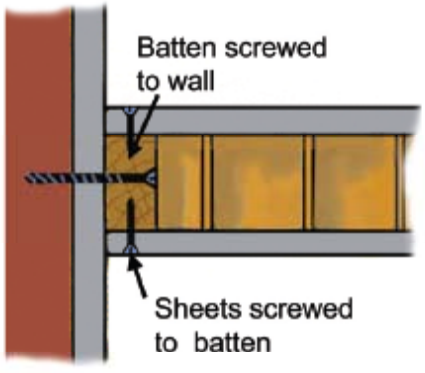
The partition is easily assembled and requires a cill nailed to the floor and a head nailed to the ceiling. Where the partition abuts onto an internal leaf of a cavity wall, a batten is fixed to receive the plasterboard unit which is then screwed to the batten. Where a door opening is required, the sheets are cut to size to the position of the doorway. At the door opening, the core is removed and battens inserted to be flush around all three sides. A door casing is then inserted in the usual way.



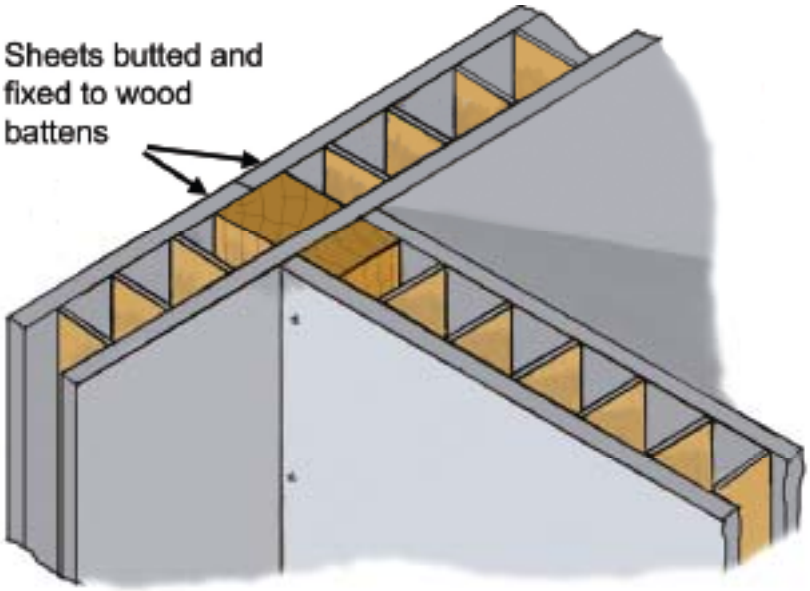
Fixing panel to ceiling



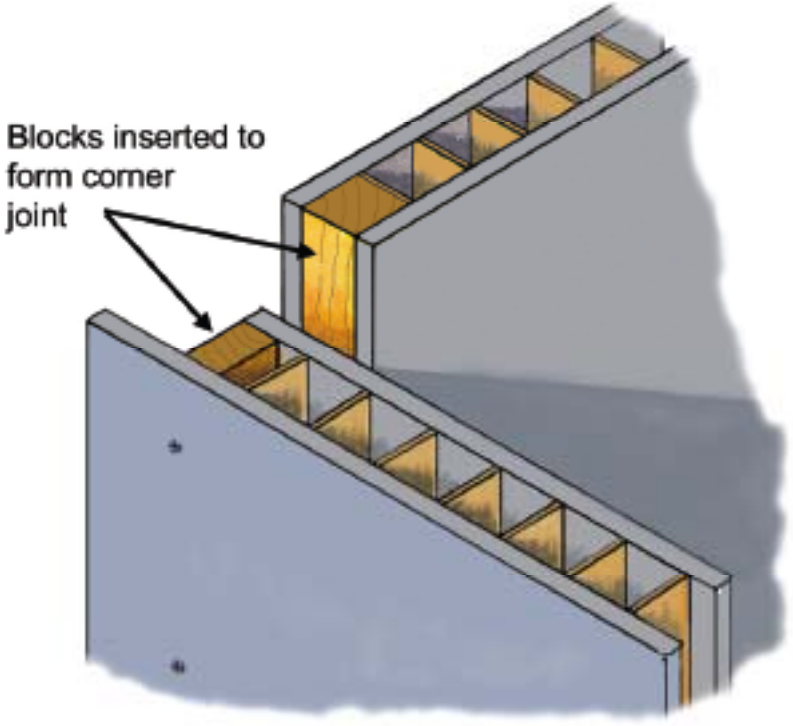
Fixing panel to floor



Fixing panel to wall



T-junction between two panels



End joint between two walls