



Roof Construction

Carpentry - Residential Construction

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OVERVIEW

This text introduces a variety of subject matter which relates to the Building and Construction Industry.

There are three main principles related to roofing, which are critical to the accurate construction of roofs in general, all ridges must be level and parallel to wall plates, all rafters must be placed at 90° to the wall plates, regardless of the roof shape and all external and internal corners must be bisected to allow for correct placement of hips and valleys, regardless of the angle.



INTRODUCTION

A roof is the covering on the uppermost part of a building. A roof protects the building and its contents from the effects of weather.

The construction of a roof is determined by its method of support and how the underneath space is bridged and whether or not the roof is pitched. The pitch is the angle at which the roof rises from its lowest to highest point. Most domestic architecture, except in very dry regions, has roofs that are sloped, or pitched. The pitch is partly dependent upon stylistic factors, but has more to do with practicalities. Some types of roofing, for example thatch, require a steep pitch in order to be waterproof and durable. The durability of a roof is a matter of concern because the roof is often the least accessible part of a building for purposes of repair and renewal, while its damage or destruction can have serious effects.

ROOF TYPES

Bellcast:

This is a roof, which changes its pitch to a lower pitch or angle near the eaves. It is commonly used where the main roof pitch meets the lower pitch of a covered balcony or veranda.

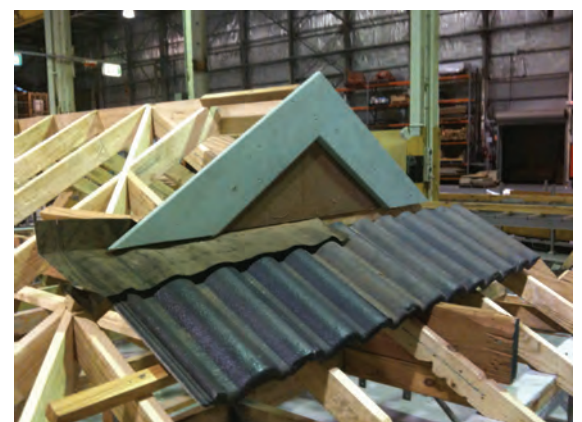
Clerestory:

This is a roof having two levels separated by a row of windows, which provide light and/or ventilation to the rooms below. It gets its name from the upper part of a church nave, which is the main source of light.



Dutch gable:

This is a hip type roof with small gables or gablets at either end of the ridge. It may also be referred to as a 'half-hipped roof' or a 'Gambrel'.



Gable:

This is a roof with a double pitch and vertical ends. It may also be used as an add-on main roof in the form of gablets over entries or simply decorating the main roof surface in the form of a dummy gable.

**Hip or Hipped:**

This is a roof with four sloping sides on a rectangular base. The ends are triangular in shape and the sides form a trapezoidal shape.

Hip and Valley:

This is basically a hip roof, which is 'T' or 'L' shaped on plan. The ridge lines are the same height for the main and extended roof sections.



Hip and Valley (Broken):

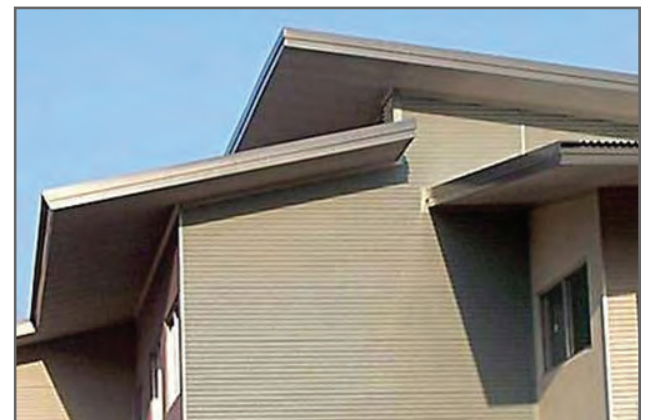
Again it is similar to the hip and valley type except the ridge(s) of the extended sections are not at the same height as the main roof. This creates a shortened or broken hip used to link the minor ridge to the major ridge.

**Jerkin head:**

This is a roof, which is hipped from the end of the ridge half way down to the eaves, and gabled from half way to the eaves. It is also sometimes called a 'Hipped gable' or a 'Clipped gable'.

**Monoslope:**

Also known as a 'Monopitch' roof, it is any roof with a continuous slope, which has no ridge. Skillion and lean-to roofs are monoslope roofs



SECTION 1: CEILING FRAMING

The ceiling frame is the horizontal area between the top of walls and the roof, which is designed to enclose the room by providing a dust barrier, insulation and security.

The frame consists of ceiling joists, ceiling trimmers, hangers and hanging beams. This system is designed to tie-in with a conventionally pitched skillion, gable or hip roof.

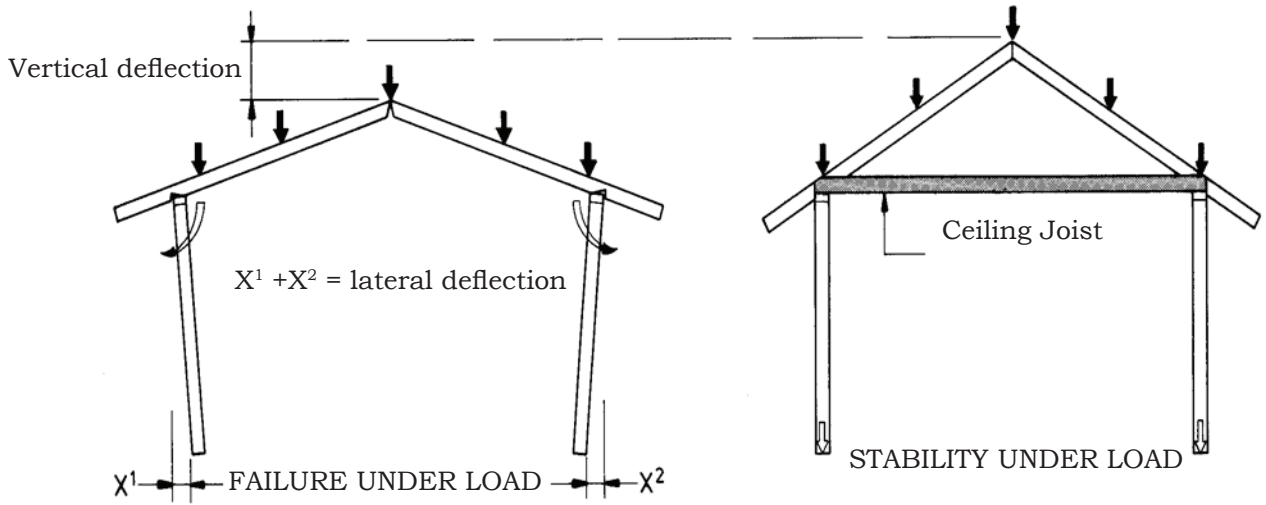
The ceiling frame of a trussed roof is made up of the bottom chords of the individual trusses and does not require additional ceiling joists, hangers or hanging beams, and accordingly will be reviewed under a separate volume.

CEILING JOISTS

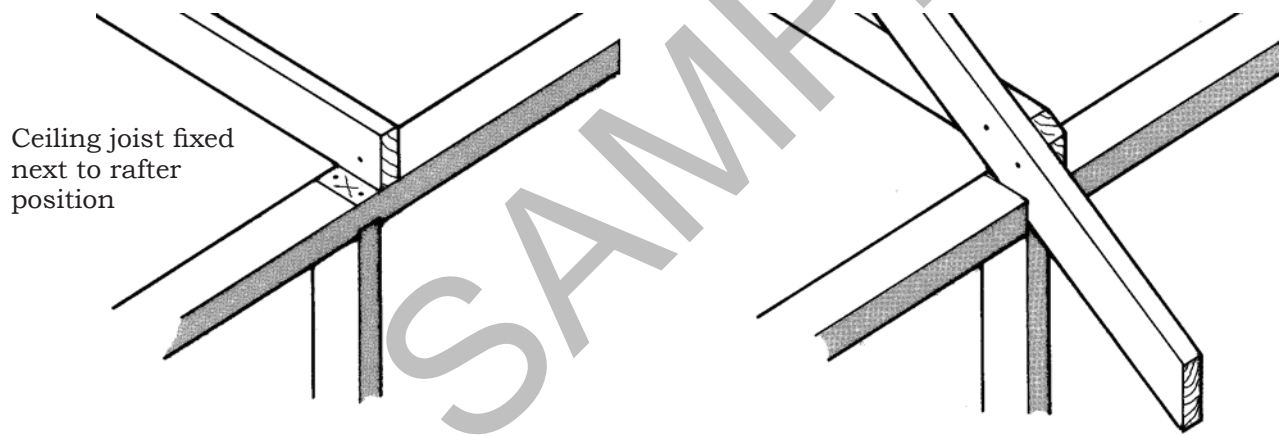
These are the horizontal members with ends that rest on top of the wall plates. They carry the ceiling sheets, and provide a lateral tie between the feet of opposing rafters to form a strong, coupled frame. They may be nailed or bolted to the rafters.

They are spaced at maximum centres of 450 mm and 600 mm depending on their stress grade, section size and thickness of ceiling lining being used. They may be joined in length over a wall or under a hanger, where the join can be supported.





Position and purpose of ceiling joists



CEILINGS JOIST FIXED TO TOP PLATE

RAFTER FIXED NEXT TO CEILING JOIST

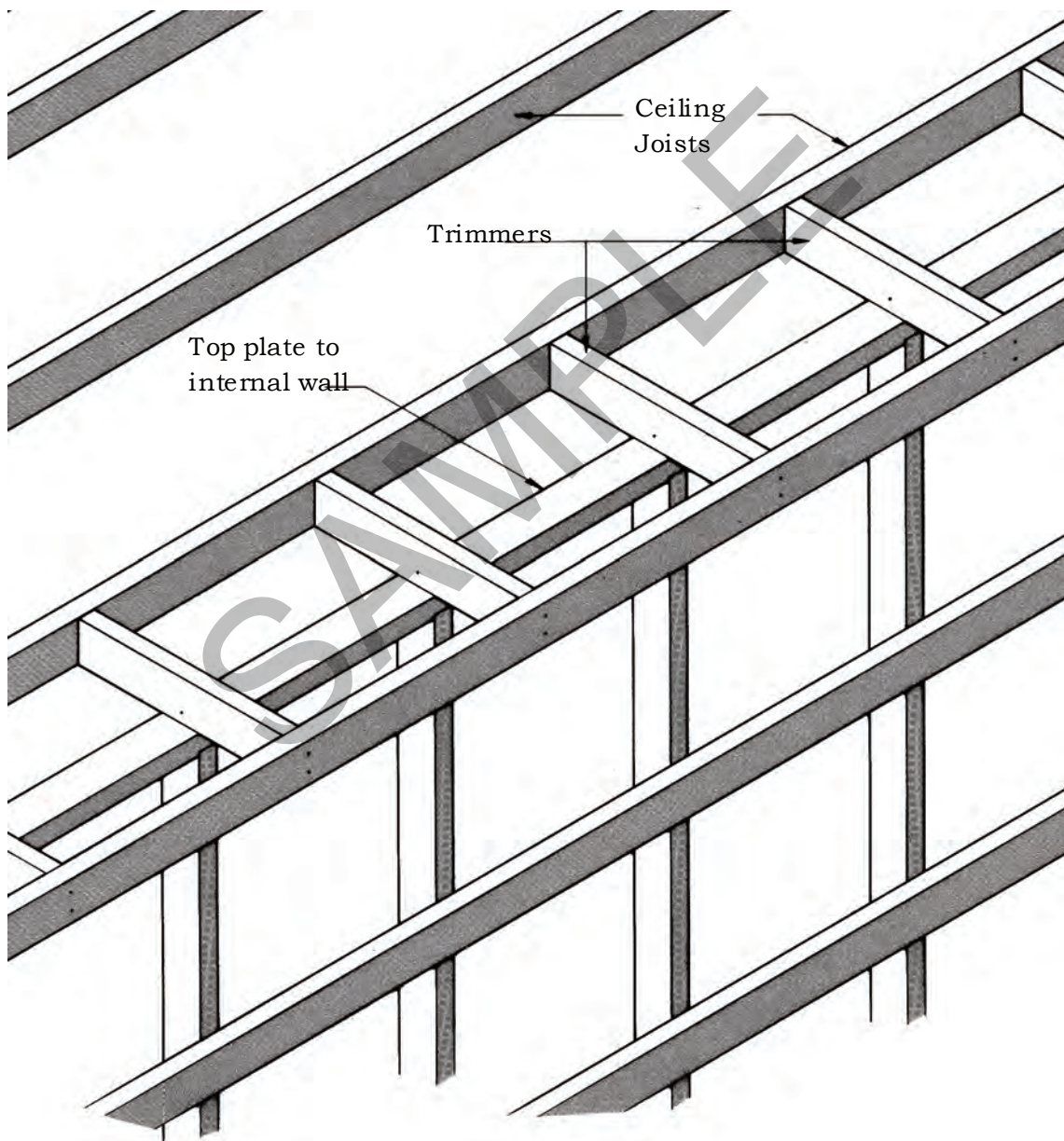
Placement and fixing of ceiling joists

CEILING TRIMMERS

These are short lengths of ceiling framing material, fixed at right angles between ceiling joists, placed at the same maximum spacings as the joists.

They are designed to provide:

- Fixing for the ends of ceiling sheets and cornices
- Fixing for the top internal wall plates
- Provide continuous lateral stability for the ceiling frame once hangers are fixed.



Placement and fixing of ceiling trimmers over an internal wall