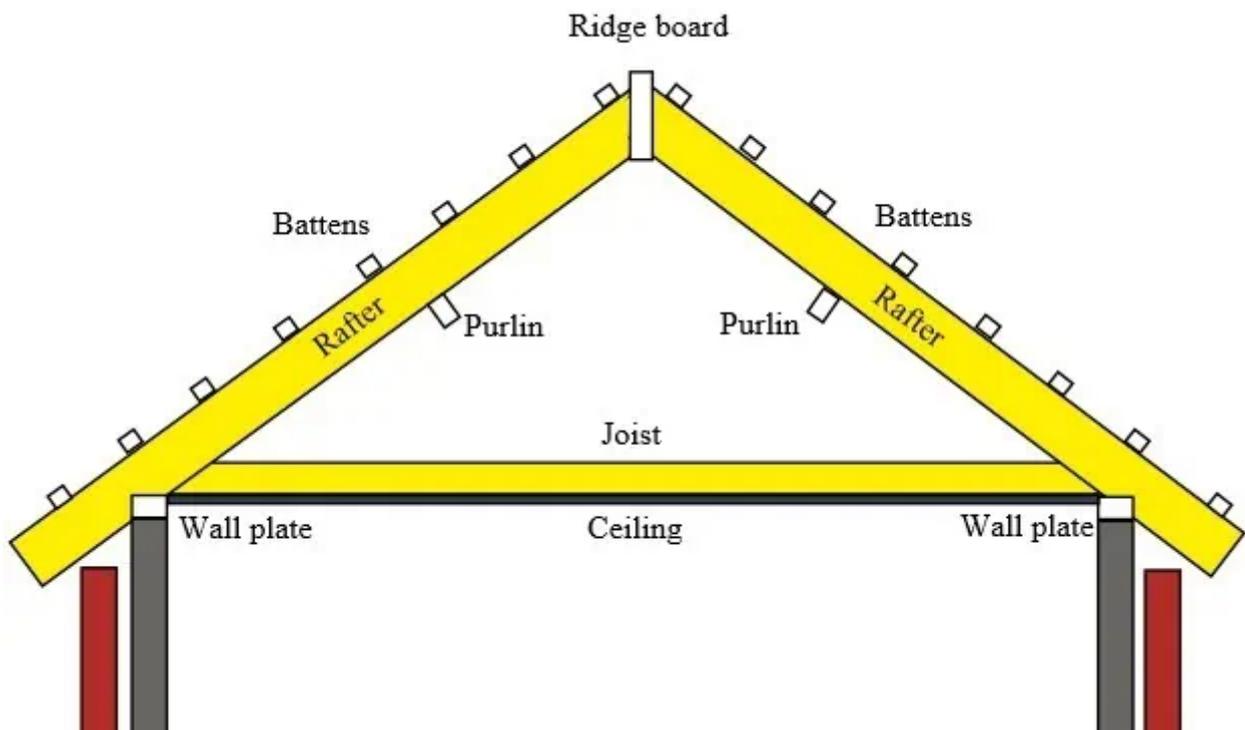


What Is Pitched Roof?

 dailycivil.com/types-of-pitched-roofs-what-is-pitched-roof

August 1, 2021

When the angle of inclination of a roof exceeds about 10° with the horizontal it is known as a ***pitched roof***. Pitched roofs may have their slope on both sides or they may be sloping in one direction only.



Pitched Roof

Source: designingbuildings.co.uk

The angle of slope is increased proportionally with the increase of conditions like wind, rain, and also snowfall. But the slope should not exceed 60° .

A pitched roof is made from timber, structural steel, RCC, and prestressed concrete. Pitched roof is the only roof used in hilly areas and where subjected to extreme winds, rains, and snowfalls. It is also used for roofing large spanned structures like factory buildings, warehouses, workshops, etc.

Types Of Pitched Roof

The different types of pitched roofs are as follows:

1. Lean to roof
2. Coupled roof
3. Couple-close roof
4. Collar roof
5. Scissors roof
6. Double or purlin roof
7. King post truss
8. Queen post truss
9. Mansard roof
10. Steel truss
11. Truncated truss
12. Bel-fast truss
13. Composite truss.

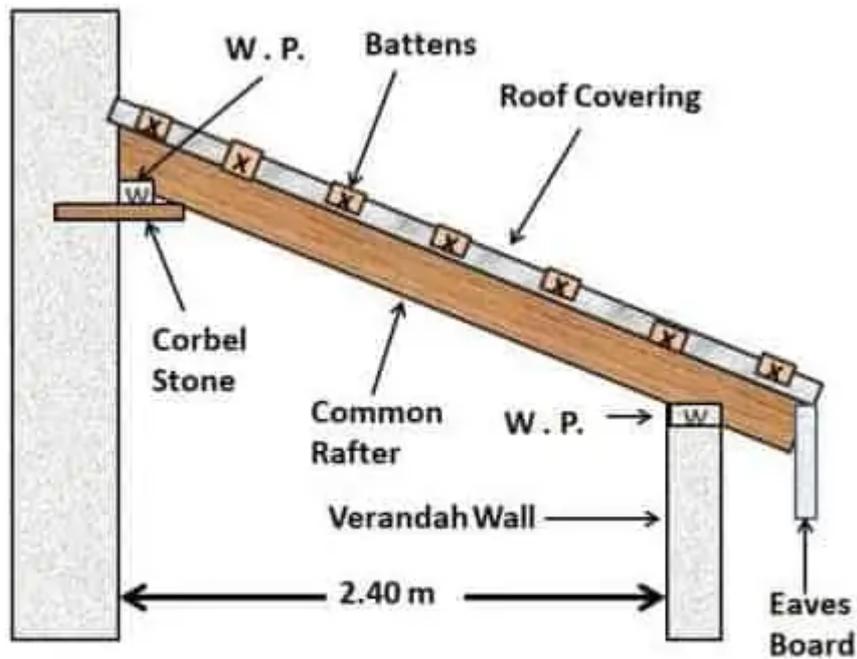
Let us discuss each type of pitched roof in detail below.

1. Lean To Roof

It is the simplest form of pitched roof having a slope on one side only. One wall is raised sufficiently higher than the other to create the slope.

The roof consists of common rafters at the higher ends of which are supported on a wall plate. This wall plate is supported on a projecting corbel from the wall. This type of pitched roof can be used up to spans of 2.4 m.

Uses: Verandah in building, small shed, etc.



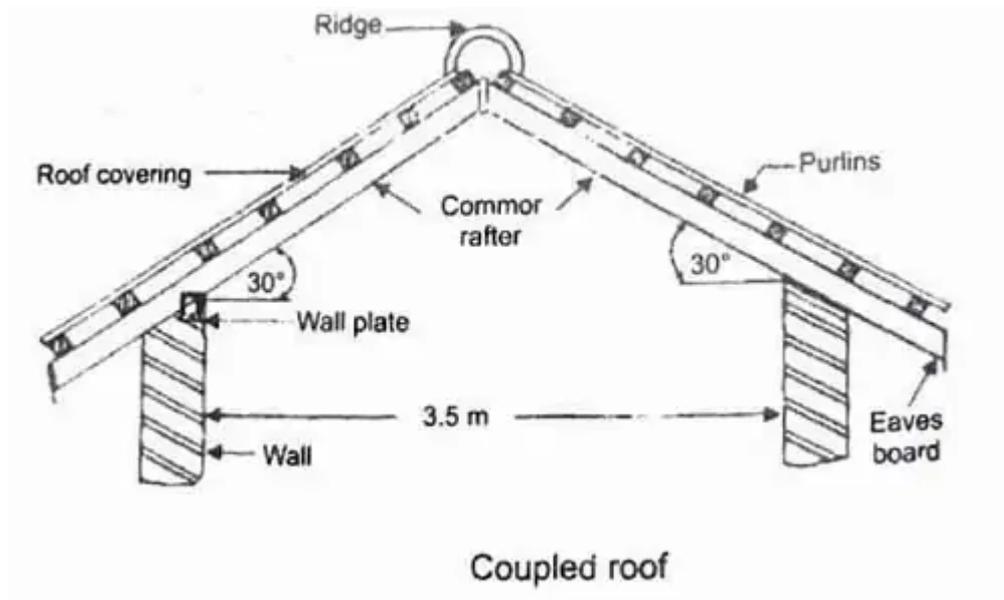
Lean To Roof

2. Coupled Roof

It is an advanced type of lean-to roof constructed over rafters only. It has slopes on both sides of the ridge. In this type of pitched roof, common rafters slope upwards from the opposite walls and meet on a ridge piece in the middle.

lower ends of the rafters are firmly secured by notching or nailing to the wooden plates fixed on the top of the walls.

After fixing the rafters at suitable intervals, roofing is lastly fixed on the framework of battens. This roof can be constructed up to 3.6 m spans.

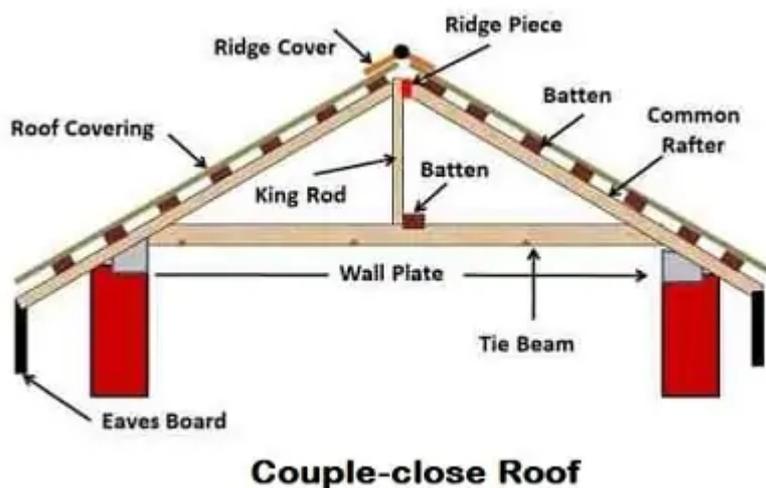


3. Couple-close Roof

The couple-close roof is similar to the coupled roof except that the common rafters are connected by a tie beam near the lower ends of the rafters.

The tie beam takes all the horizontal thrust and prevents the tendency of the rafter to spread out and also helps to eliminate the chances of overturning the walls.

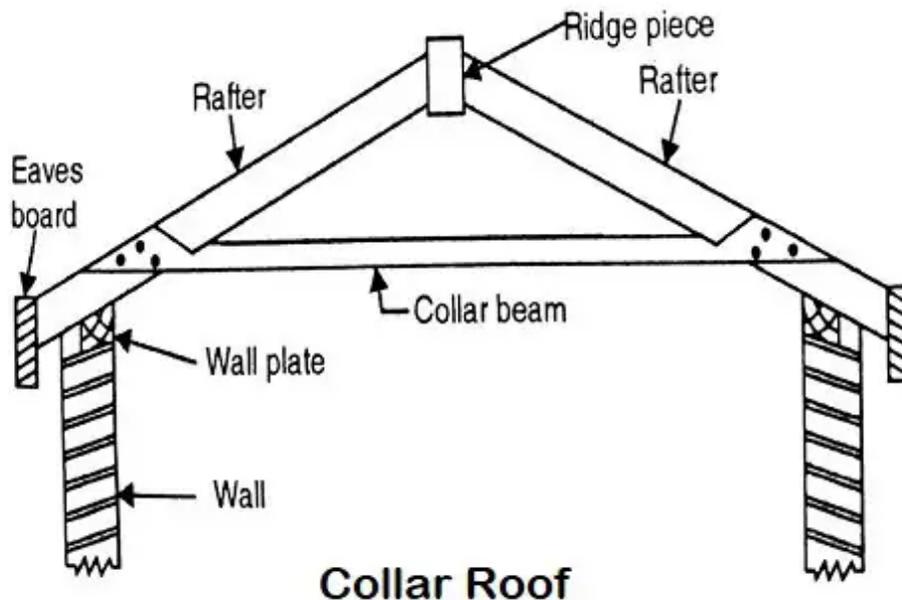
This pitched roof can be used up to a span of 5 m. For spans exceeding this, a vertical rod known as king rod may be used in between the ridge piece and the tie. It prevents the sagging of tie beam.



4. Collar Roof

When tie beam is fixed at a higher level instead of feet in couple-close roof, it is known as collar roof and the tie beam is called collar beam.

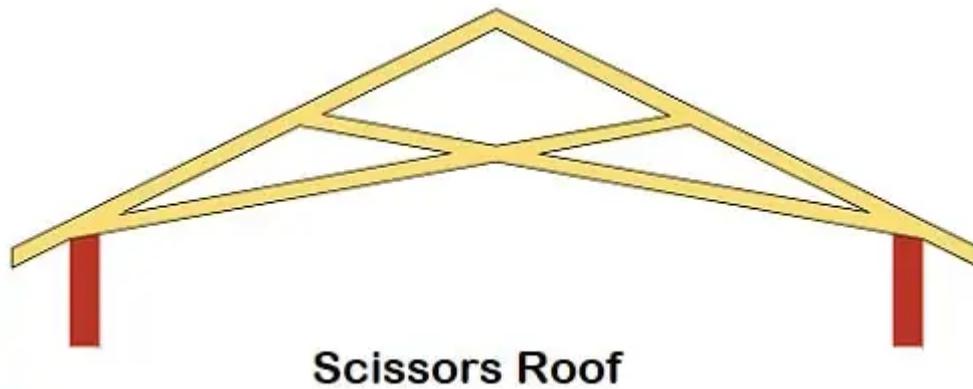
It provides more height of the room. The collar beam should be attached at $\frac{1}{3}$ rd to $\frac{1}{2}$ the vertical height from the wall to the ridge. The maximum span of collar roof is 5 m.



5. Scissors Roof

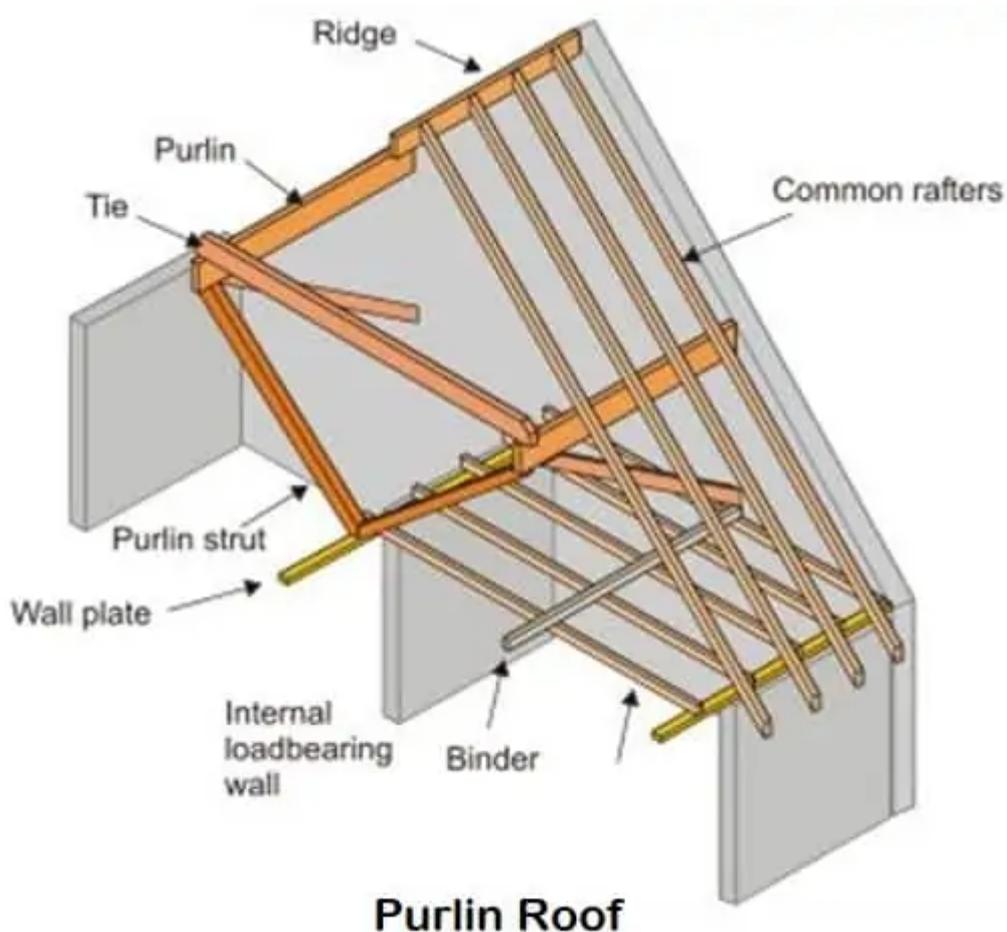
This pitched roof consists of two common rafters like coupled roof. Two additional members called scissors members are used to strengthen the roof.

One end of each scissor member is connected at wall plates with common rafters and the other end is connected to the centre points of common rafters.



6. Double Or Purlin Roofs

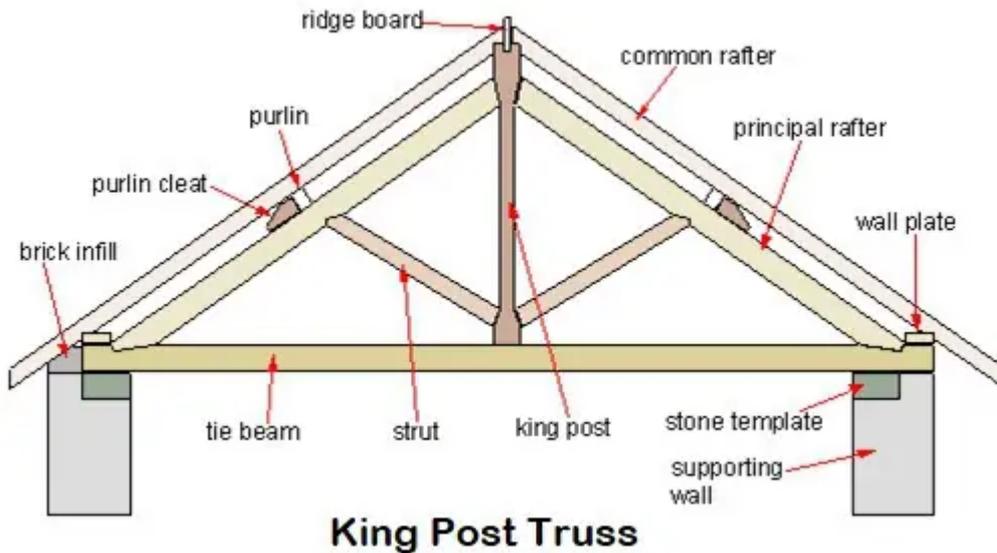
When the roof span exceeds 5 m, the rafter becomes very long and uneconomical. To reduce the size of rafters intermediate supports, called struts are used under the rafters. The maximum span of this pitched roof is 5 m.



7. King Post Truss

This roof consists of two principal rafters, one tie beam, two struts, and a king post. The trusses are provided at a c/c distance of about 3 m. The framework of the truss is made such that its shape does not change under external load.

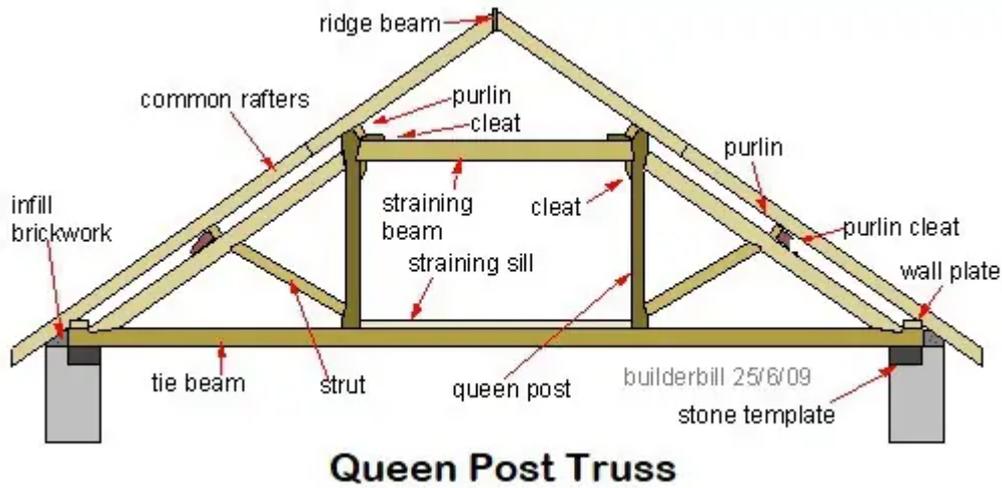
The central vertical post that connects the ridge and tie beam is known as king post. Struts are used to prevent the principal rafter from bending. This truss is suitable for roof spans from 5 m to 9 m.



8. Queen Post Truss

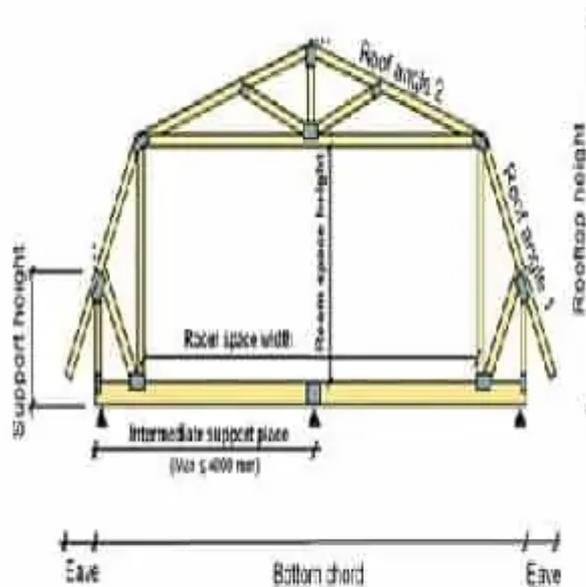
This truss consists of two queen posts, two principal rafters, struts, tie beam, straining beam, purlins, etc. The upper ends of the queen posts are kept apart by a horizontal member, called straining beam.

A straining sill is also provided on the tie beam to resist the thrust of struts. Queen post truss is suitable for roof spans from 9 m to 14 m.



9. Mansard Truss

It is a combination of king post truss and queen post truss. The upper part of the truss is king post type and the lower part is queen post type.



Mansard Truss

10. Steel Truss

Steel trusses are among the strongest types of pitched roof. Steel trusses are made from rolled steel structural members. Steel trusses are economical than timber trusses for spans exceeding 10 m.

Mostly Angle iron sections are used for roofing trusses. However, T-sections, I-sections, channel sections can also be used for large spans.

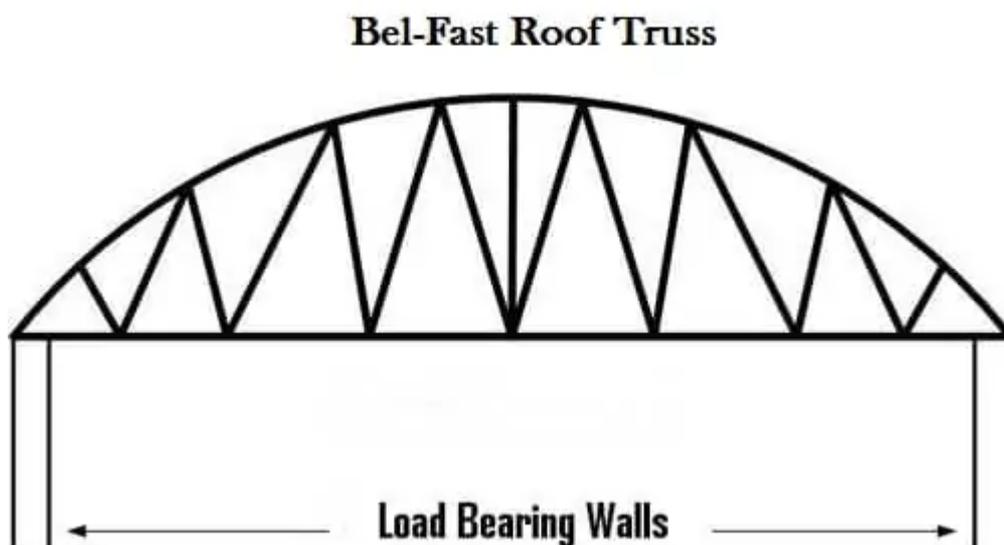


11. Truncated Truss

It is just the lower part of the mansard truss.

12. Bel-fast Truss

It is another type of pitched roof. The top surface of this truss is made in the form of a curve instead of slope. It is made from timber sections and can be used up to 30 m span. It is also known as bowstring truss or latticed roof truss.



13. Composite Truss

Composite trusses are made by using timber and mild steel sections.

Also Read

[How To Calculate Length Of Roof Rafter](#)

[How To Calculate Slope Of Staircase](#)

[Advantages Of Steel Truss Over Timber Truss](#)
