

Roof Styles:

A roof is your building's protection from rain, snow, animals, the sun, it keeps out the heat on hot days and it holds the warmth in when it's cold outside. The roof doesn't just protect the interior of the structure but also protects the structure itself from weathering.

Unless you build a domed shelter, you'll have to choose a style of roof and framing for your structure. You'll need to construct it so that it will be able to support it's own weight, possibly the additional weight of accumulating snow and also to protect the interior of the structure from natural elements.

Roofs are conventionally covered using a variety of materials: grasses, reeds, palm fonds, bark, tar-paper, leaves, terracotta, turf, stone, metal and tiles. The durability of roofing materials should be considered before construction because of the inaccessibility of the roof for repairing and its damage or destruction can have serious effects.

The shape of roofs differs from region to region due to factors of climate and available materials for the roof structure and skin. These will be your main concerns when choosing your style of roof. The basic styles of roofs are flat, mono-pitched, gabled, hipped, arched and domed with many variations among these types. Pitched, gabled, hipped and skillion roofs are the most common choices for domestic roofs. Using flexible materials such as thatch can allow for roofs with organic shapes.

A **Gabled Roof** also known as a **Pitched Roof** and a **Peaked Roof** can be recognized by its triangular shape. Gabled roofs provide good run off of rain and snow and also have a lot of space for an attic.

Hip/Hipped Roofs have shady eaves, are strong and have excellent resistance to strong winds. It is a style of roof which is especially suitable to hot climates. This style is more complicated than Gables.

Flat Roofs can be characterized by their flat or low-pitched design which can be utilized as an exterior living area or roof garden. Water is more likely to sit/collect on this style of roof.

Mansard Roofs sometimes known as a **French Roof** is a historic variation of hip roofs. Though unusual, this type of roof offers plenty of interior space for an attic and adaptability for structural additions.

Domed Roofs use tension, compression, and gravity to create a structure which does not need vertical supports. Though they are strong and durable, domed roofs can be expensive and complicated to construct.

A **Skillion Roof** also known as a **Shed Roof** is similar to a flat roof but has better drainage because of its steeper pitch. This style is easy to assemble and provides good drainage for rain and snow.

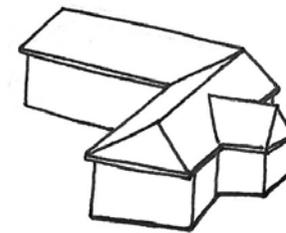
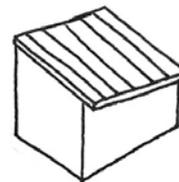
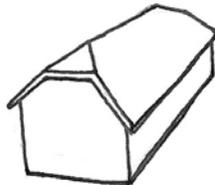
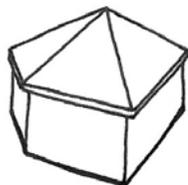
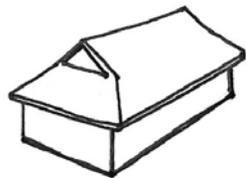
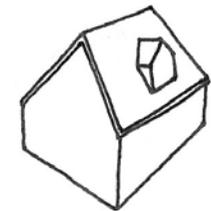
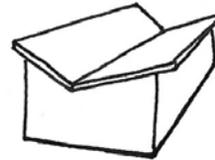
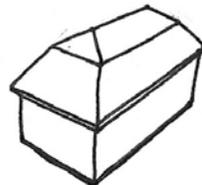
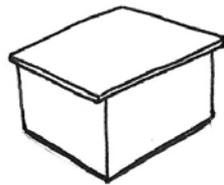
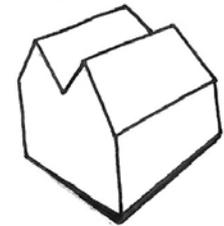
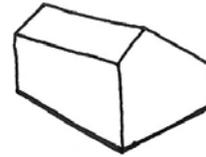
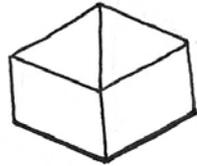
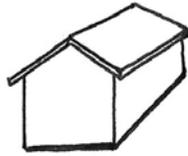
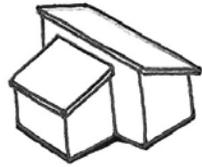
The **Butterfly Roof** employs an iconic V-shape. Water collection, solar panels and natural lighting can all be easily incorporated into this style making it a popular choice for modern and ecological home designs.

A **Salt-Box Roof** has an asymmetrical design where one side is a slightly sloping flat roof while the other is more of a lean-to. The style arose from the need for more room but the design can be complicated to build.

The **Gambrel**, or **Barn Roof**, provides extra usable space and is also simple to frame using fewer materials. This style is not recommended for regions with heavy wind or a lot of snow because of its simple structure.

NOTES:

- The optimum roof style is a simple gable for a cold climate or a hipped roof for a warm. Simple Gables are easy to vent and they don't have any valleys or hips. Rain and snow can easily run off of them which is good. It's easier to provide shade on all four sides of a structure by using a Hipped Roof.
- The more intersecting planes a roof has, the more difficult it will be to frame, to keep watertight and also to vent. Every crevice in your roof will provide a place for debris to accumulate and moisture to settle so it would be best to try to minimize crevices in your roof design.
- Make overhangs generous in any climate; by having a sturdy and abundant overhang, windows will be shaded in warmer climates and walls will be kept dry.



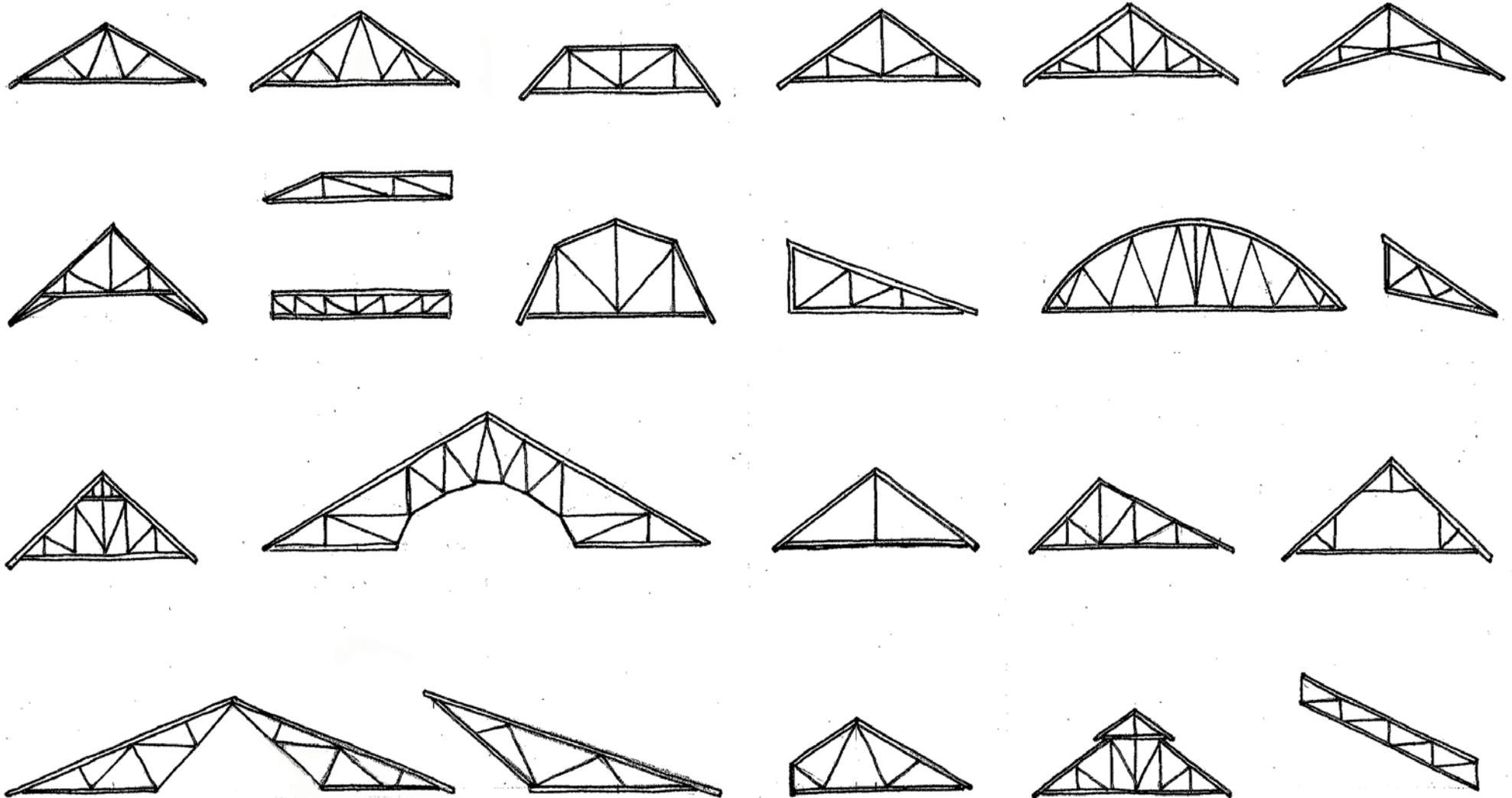
From top-left to bottom right:

Skillion and Lean-To Roof, Open-Gable Roof, Pyramid Hip Roof, Saltbox Roof, Box-Gable Roof, M-Shaped Roof, Flat Roof, Gambrel Roof, Mansard Roof, Butterfly Roof, Combination Roof, Dormer Roof, Dutch-Gable Roof, Hexagonal Gazebo Roof, Jerkinhead Roof, Shed Roof, Hip and Valley Roof.

Truss Types :

A truss is a support member which combines one or more triangles to form the structure of a roof. Most conventional trusses are constructed using wood. If wood is not available, then perhaps you can substitute it for metal or another material.

- **Fink Trusses** are the most common type of truss used in residential structures. These trusses provide support for the rafters and give the roof its rigidity.
- **Double-W Truss**, also known as a **double-fink truss** can span more than 65% more (16.5m) length than the possible span of a singular (10m) fink truss.
- **Hip Trusses** are more complicated to frame than a some other trusses because of the added complication in framing the hips.
- **The Howe Truss** was originally designed for steel bridges because of its impressive structural strength over long spans. It is relatively rare in home construction.
- **The Double-Howe Truss** can span nearly double the length of the single Howe, meaning that it can span up to 18m.
- **Bowstring Trusses** were originally used in bridge design because they perform particularly well in large open spaces with no supporting columns. Since the design is arched, it means that there is no seam to cover.
- **Though Scissor Trusses** do not need a bearing beam, they still have a load limit greater than many other types of trusses. Also, this type of truss increases the stability of the building.
- **The Half-Scissor Truss** is expectedly half of the normal scissor truss design and used in spaces for commerce, industry or residence.
- **Cambered Trusses** arch upwards giving the roof a normally peaked shape while the ceiling the appearance of being curved.
- **A Half-Hip Truss** has the same structure as the Hip but is cut off halfway.
- **Flat Trusses** are very slightly sloped to prevent water from pooling.
- **Gambrel Trusses** are symmetrical, with a double slope and give the roof a barn-like appearance. The gambrel truss is especially practical because it allows for the maximum amount of usable space in the attic.
- **The Mono-Pitch Truss** design is half of a normal truss design, often used for structures like sheds and lean-tos.
- **The King-Post Truss** is the simplest of trusses. It utilizes two rafters, a tie beam, and one central post known as the King Post. The King Post Truss is commonly used in conjunction with two angled struts.
- **Dual-Pitch Trusses** are for gable roofs with differently angled slopes on either side of its peak. Usually the front slope is steeper than the back.
- **Attic Trusses** are designed to create a space for additional storage or living area while leaving the outward appearance of the shelter normal.
- **Multi-Piece Trusses** are combination trusses which use a gable design on top of a hip design so that they can be installed in sections which would otherwise be too large.
- **The Barrel-Vault Truss** uses many small pieces of wood in the frame to achieve an arched ceiling.
- **A Piggy-Back Truss** is a combination truss which utilizes a gable end truss over a hip truss so that the two can be , which can be transported or installed in sections when a single triangular truss is too large.
- **A Double-Inverted Truss** is two inverted trusses which join at the peak which has the advantage of being able to span distances of up to 24m.
- **The Inverted Truss** is actually a Howe Truss turned upside down. This type can offer the interior space additional natural light and a vaulted ceiling in part of the space.
- **A Stub-End Truss**, also known as a **Bob-Tail**, is a gable shaped truss which has been clipped on one end. The slope of each side has the same pitch but with an asymmetrical peak.
- **Sloping Flat Trusses** are used to create vaulted ceilings, much like Inverted Trusses.



From top-left to bottom right:

Fink Truss, Double-W Truss, Hip Truss, Howe, Double-Howe, Scissor Truss, Cambered Truss, Half-hip Truss, Flat Truss, Gambrel Truss, Mono-Pitch Truss, Bowstring Truss, Half Scissor Truss, Multi-Piece Truss, Barrel-Vault Truss, King Post Truss, Dual Pitch Truss, Attic Truss, Double Inverted Truss, Inverted truss, Stub-End Truss, Piggy-Back Truss, and Sloping Flat Truss.