

Designing and Building a Pergola

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Pergolas are simple structures comprised of columns and posts that support beams or a lattice overhead. They create the feeling of an enclosed ambience while maintaining a connection to the outdoors. A pergola is a functionally aesthetic addition to the landscape that adds a unique dimension to an outdoor living space. Much like a shade tree, a pergola limits the amount of sunlight that passes through. Pergolas provide a cool reprieve from the summer sun, allowing a more comfortable experience in the landscape. The process of constructing a pergola will be outlined in this guide, followed by some plant options one can use to further enhance this landscape feature.

Figure 1 shows the different components of a pergola including the **posts**, **beams** and **rafters**.

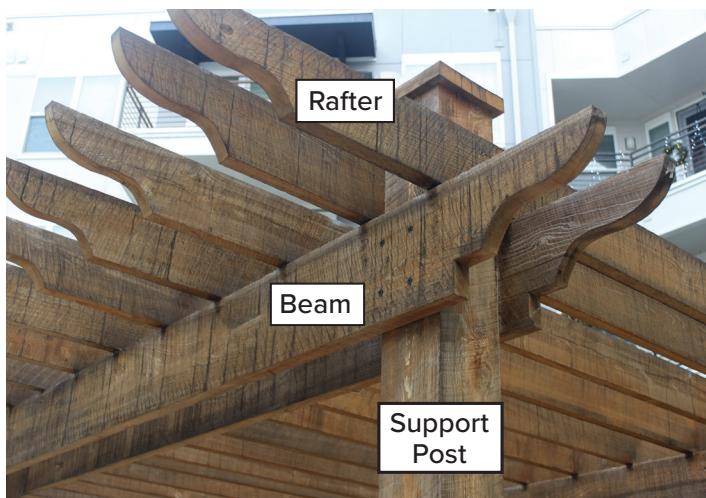


Figure 1. Components of a pergola.

Posts

Before breaking ground on your new pergola, make sure to call #811 to mark utilities on construction site before digging.

The first step in constructing a pergola is to ensure that the vertical posts are installed correctly. Typically, these are 4"x4" or 6"x6" pressure treated lumber, with the size selected based on how much weight needs to be supported. Posts can be installed directly into the ground, or on a concrete

surface or pier. If the post is going directly into the ground, the depth of the hole should equal approximately 1/3 of the length of the post. For example, if the desired height for a pergola will be 8', then using a 12' post will allow 4' to be underground. It is a good practice to anchor posts on top of a concrete pier or surface to have increased stability, particularly if the pergola will be bearing a lot of weight (Figure 2). This also offers more protection from soil heaving and post rot/breakdown. The most important part is making sure that the posts are perpendicular to the ground and are oriented flush with each other.

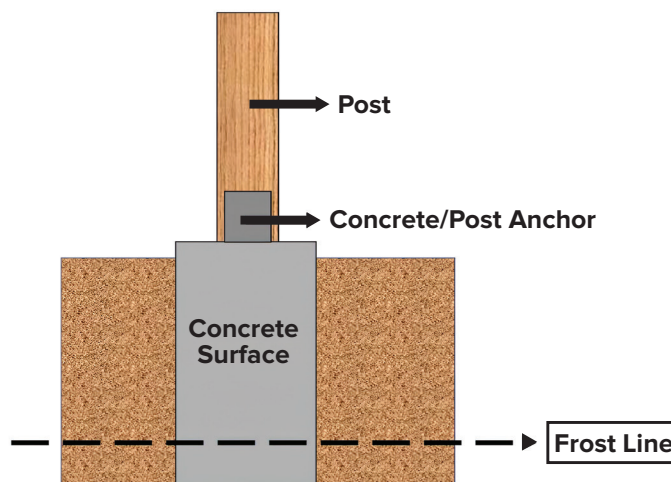


Figure 2. Anchoring a post to a concrete pier or surface.

Beams

The beams, also known as headers, are the horizontal support system for your pergola. Beams will typically be 2"x6" or 2"x8". Beams can be connected to the posts by either making a notch into the post, allowing the beam to rest on top of the post, affixing it to the side of the post or any such combination. All of these methods would then be secured using hardware or carriage bolts to hold the beams in place (Figure 3). To add a decorative twist on the beams, use a jigsaw to create unique geometric cuts at either end.

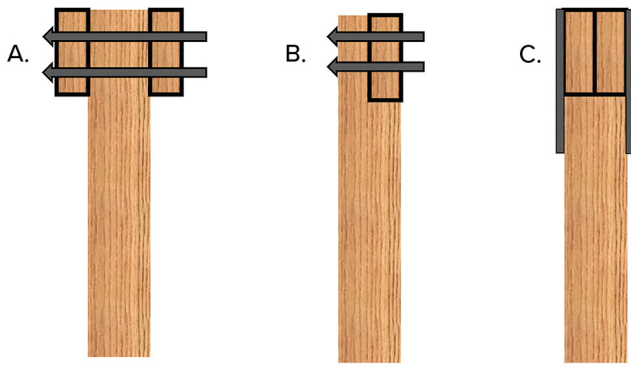


Figure 3. Different methods to connect a beam to a post. A: Beams attached with carriage bolts on the side; B: Notched post with beam attached with carriage bolts; C: Beams laid on top of post, secured with hardware plates.

Rafters

The rafters are the component of a pergola which offers the desired shading feature. Typically, these boards are 2"x4" or 2"x6". The spacing between the rafters and the height of each rafter can offer more or less shade, based on what is desired. Spacing is oftentimes 12" to 16" on center.

Top Runners

While not always part of a pergola installation, top runners are boards that can be placed perpendicularly over the rafters and give the most control over the shading below the pergola. These are typically 2"x2" boards and are not installed with the stability of the structure in mind. Installing runners at a tighter spacing will provide more shade than at a wider spacing; however, if more shading is desired then the use of lattice may be preferred.

Customizing for Aesthetics

There are a variety of ways to enhance the visual appeal of a pergola. Staining the wood will not only protect the structure from early breakdown, but also provides a desirable color. Hanging baskets, lighting, wind chimes and other decorations can offer more interest to the landscape. Adding lattice to the sides of the structure can further impact the shaded area under a pergola and create a more enclosed atmosphere. Lattice or wire trellis can be installed to accommodate vining plants, offering a natural enhancement to the structure.



An overhead view of a pergola shows the overall structure.



Pergola posts can be installed on a concrete surface or pier.



This pergola's beams have been affixed to the sides of the vertical posts.



The rafters of a pergola are the component of which offers the desired shading. The spacing between the rafters and the height of each rafter help determine the amount of shading it provides.

Vining Plants for Pergola

Common Name	Latin Name	Features
Black-eyed Susan Vine	<i>Thunbergia alata</i>	Yellow, white or orange petals surround a black center throughout summer.
Carolina Jessamine	<i>Gelsemium sempervirens</i>	Showy yellow flowers in springtime.
Chocolate Vine	<i>Akebia quinata</i>	Purple flowers in spring with mild fragrance.
Clematis	<i>Clematis</i> sp.	White, pink or purple flowers. Bloom time varies by cultivar.
Climbing Hydrangea	<i>Hydrangea anomala 'petiolaris'</i>	White, fragrant flowers throughout summer.
Coral Honeysuckle	<i>Lonicera sempervirens</i>	Native, red, tubular flowers in early summer. Attractive blue/green foliage through winter. Sweet fragrance and attracts hummingbirds.
Mexican Flame Vine	<i>Pseudogynoxys chenopodioides</i>	Root-hardy tropical vine that provides bright orange flowers and attracts pollinators.
Coral Vine	<i>Antigonon leptopus</i>	Pink flowers abundant in late summer.
Evergreen Wisteria	<i>Callerya reticulata</i>	Purple flowers in late summer with a powerful fragrance.
Passion Flower	<i>Passiflora</i> sp.	Unique pink/purple spring flowers give way to edible fruit. Host plant for Gulf Coast fritillary butterfly.
Trumpet Creeper	<i>Campsis radicans</i>	Tubular orange flowers from June to August.



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