



**PERGOLAS**



**PAVILIONS**



**GAZEBOS**



**WHAT KIND OF SHADE STRUCTURE**  
*is right for you?*



Patricia Vallejo | **Editor**  
Special thanks to Deacon Rodda  
[www.foreverredwood.com](http://www.foreverredwood.com)  
1 (866) 332-2403



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## SELECTING YOUR PERGOLA OR PAVILION STYLE

Search online for a Pergola or Pavilion kit and you'll get thousands of pages of results. There are countless products on the market, some of which are very good. You'll also find plans to build your own structure from scratch, which we know is a lot of fun! You can also go into most big-box stores and see inexpensive mass-manufactured Pergolas in standard, smallish sizes (under 200 sq ft).

If you're looking for a truly premium product, a special shape, a relatively large structure, or if you need to attach your Pergola to a building, your choice of manufacture drops to a handful of options. By working with us, you can be sure your outdoor structure will be perfectly designed and handcrafted to provide a balance of shading, visibility, privacy, and proportions for decades of enjoyable use. Our most popular shade structure styles are shown on these pages.



The Granada Pavilion



# POPULAR PERGOLAS

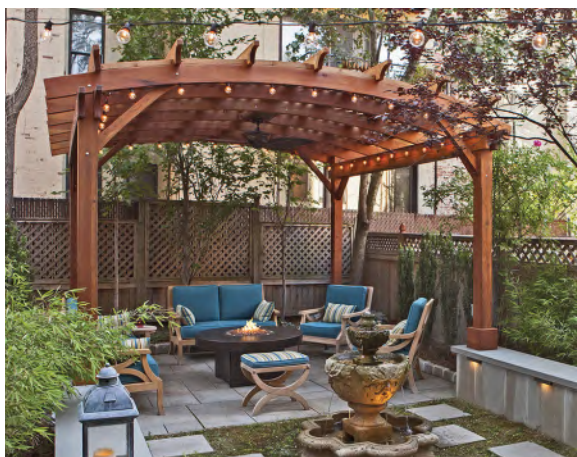
Tired of seeing low-quality pergolas that look flimsy? Want a structure that will last decades? We have been the leaders in this industry for many years because we get it.

We are here to support you and make your plans a reality without wasting your time. From design and sizing to building and installing, reach out at any point to see how easy it is to make your vision possible.



## Modern Louvered Pergola

With a sleek modern design, this Pergola comes with heavy-duty louvers as the main roof component. These adjustable louvers allow you to control the amount of sunlight passing through.



## Arched Pergola

This customer favorite includes a beautiful, heavy-duty framed lattice panel roof that maximizes shade.



## Silverado Modern Pergola

This Pergola is a no-frills, thick-timbered, clean-cut beauty that comes in any size you need with any alterations you can think of. Just let us know what will work for you and it will work for us. You can order the Silverado with a cantilevered roof as shown in the photo or you can have the posts out to the very edge on all sides.



## The Traditional Garden Pergola

This classic Pergola style features traditional post-and-beam construction. It is a design that goes back to ancient Greece. No need to fix what isn't broken.



## Marin Outdoor Kitchen Pergola

This playful, arching roof design is a customer favorite. The curves are the same as those of the Backyard Pavilion (pg. 4), but with an open roof. This Pergola can be used for any outdoor function, not just for kitchens. As with all our structures, you can size it to your heart's desire.



# Popular PAVILIONS

Forever Redwood Pavilions are our most loved and popular structures. We build to fit almost any space in any climate. Pavilions provide expansive, beautiful, open-air outdoor spaces protected from the sun and rain.

Here are some possibilities to get your creative juices flowing.

*When you place an order with Forever Redwood, you are also hiring an architectural and engineering firm. We have an in-house engineering department that is staffed by experienced architects and civil engineers. Instead of hiring an architect first, and then searching separately for an engineer and a builder, choose Forever Redwood. We have all three under one roof.*



**Del Norte Kitchen Pavilion**

While this design can accommodate any outdoor use and has been known to double as a carport, it's especially preferred for outdoor kitchens and dining areas.



**Toledo Pavilion**

If you are looking for a massive thick-timbered Pavilion with a tall, high-pitched, expansive ceiling, the Toledo is for you. This extra-large structure is perfect for events and gatherings and doubles as a hefty, beautiful carport too. We don't cut corners.



**Backyard Pavilion**

Featuring a graceful, curved roof, the Backyard is an all-around favorite. Perfect for year-round use, rain or shine. For an open-roof version of this structure, see the Marin Outdoor Kitchen Pergola (pg. 3).



**Cardinal's Nest Pavilion**

Our most expansive Pavilion combines a high-pitched roof with huge timbers and curved supports to create a memorable natural and intimate setting for your most special occasions.





## Quick Facts

We are a custom woodworking shop. We are happy to fulfill your special requests. Here are some details about our products and service:

- Redwood is the most decay-resistant natural wood available in the North American market. We offer warranties of up to twenty years for our shade structures. Your Pergola will last for decades in any climate with minimal maintenance.
- We take the old school approach. Our lumber is sawn extra thick. Depending on the timber size, our boards will contain up to 36% more wood compared to the industry standard sizing.
- All joints are notched so that your pergola will never sag, warp, twist, or shrink. Each timber is finely sanded to a smooth-to-the-touch feel and sealed with what we believe to be the best sealant on the market after 25 years of trying every option on the market (Sikkens Brand).
- We offer dozens of possible configurations and customizations for pergolas and pavilions including shading options, privacy screens, custom stains, accessory bases, electrical trims and more.
- Every structure can be customized. You can choose from our standard sizes and options, and if you don't see a size or detail you'd like just let us know. We have built structures as small as 6' x 3' and can go up to 150' L x 44' W. If you dream it, we can build it.

A San Francisco Patio Table with 2 Ruth Chairs, a Storage Bench and Mendocino Planters with Trellises under a Garden Pergola. Dream Gazebo shown in background.

1 (866) 332-2403  
sales@foreverredwood.com



# More PERGOLAS & PAVILIONS



**Arched Open Sky Pergola**

The Arched Open Sky Pergola is a popular variation on our best-selling Arched Pergola. The main difference is that the lattice is removed to create a more open feel. Its open roof design can be built in almost any size and configuration imaginable. For example, we can alter the radius of the arch if you want a bit more vaulted look.



**Sebastopol Pergola**

The graceful arch of this massive Pergola is designed to allow for extra wide spans. We can build the Sebastopol over a pool if need be. Whether you're hosting a party, dining outdoors, or lounging by the pool—the Sebastopol Pergola has you covered.



**Del Rio Pavilion**

The Del Rio is designed to house your entire outdoor kitchen needs under one roof with enough space for dining and bar areas too. Entertain your guests all year long with this classic pavilion designed to showcase its natural longevity with beautiful, thick-timbered post-and-beam construction.



**Montvale Pergola**

A grid roof is achieved for the Montvale by joining the timbers perpendicularly in a cross-notched fashion. This allows the timbers to line up at the same height. Curved diagonal braces complete this breathtakingly beautiful design.



**Hexagonal Park Pavilion**

The Hexagonal Park Pavilion was originally created for a city park. But you don't have to be in a city park to enjoy its large exposed timbers and curving, diagonal braces. This Pavilion adds elegance to any occasion.





### Victorian Trellis Pergola

Walk back in time to when Queen Victoria was sovereign and electricity was the wonder of the times. As a respectable member of society, you understood the importance of designing and placing your Victorian Trellis as a focal point of your estate.







### Asian Fusion Pavilion

The child of a custom project, the beautiful open-walled Asian Fusion can be customized further to fit your every whim. Ring us with your outlandish ideas and consider it done.



### Viking Pergola

Conquer your backyard blues with a design from another time when quality timber was plentiful and woodworkers spent lifetimes honing their skills.



### Fan Pergola

A unique design for unique outdoor spaces. Two or three smaller Fan Pergolas can accent a larger landscape. A single large Fan Pergola can serve as a full outdoor great room.



### Breezy Small Pavilion

Breezy is light on the eyes. She is a bit more svelte than her thick-timbered Pavilion siblings. Make no mistake, she is no pushover and is plenty strong.



### The Sunset Pavilion

Create a central gathering spot with this multi purpose, open-air pavilion. With our design support, you can personalize it to make sure it will work as planned.

### Dome Pergola

This curvaceous design is the instant centerpiece of any landscape. Meticulously handcrafted wood graces every inch of the structure. We can build this masterpiece in diameters from 8' to 20' or more.

*Wide Selection +  
Design & Engineering +  
Installation*

*From the small Pergolas to our huge Cardinal's Nest Pavilion, let us know what you have in mind and consider it done.*



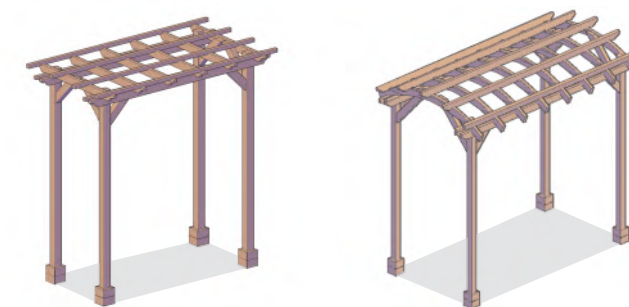
# Small PERGOLAS

Each of our smaller Pergola models are available up to 14' x 12' and quickly ship for free in the continental U.S. While they cost considerably less than their larger counterparts, you'll still enjoy our warranties of up to twenty years against decay.



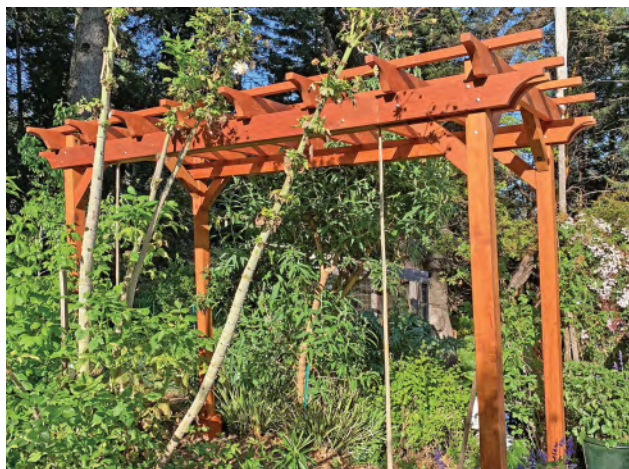
**Small Lattice Pergola**

Need a lot of shade for your investment? Want a traditional, beautiful, all-natural wood pergola? The Small Lattice pergola's classic lines will create a shaded, comfy gathering area for decades to come.



**Small Arched Pergola**

Small Arched Pergola kits are a popular and easy way to transform any space on your property into a beautiful gathering spot with the added benefit of providing almost complete shade.



**The Small Traditional Garden Pergola**

The younger brother of our Traditional Garden Pergola, the Small Traditional Garden Pergola will enhance your space without breaking the bank.



**Small Arched Open Sky Pergola**

The Small Arched Open Sky Pergola is your answer if you are looking for strong yet elegant curves to shelter your gatherings for years to come.



# ATTACHING A PERGOLA OR PAVILION

Any of our Pergola or Pavilion designs can be modified to be attached to an existing structure. Attached Pergolas or Pavilions are sometimes preferable because they use fewer posts and create immediate transition spaces from indoors to outdoors. Since each building is different, we'll need to know the height of your eaves, and whether there are windows, sliding doors, or light fixtures that have to be considered. What type of siding or other wall construction exists? What types of hardscaping make up the ground (undeveloped, wood, stone, pavers, concrete, etc.)? Yes, there are few extra details to consider. We do it all the time and can help you get exactly the measurements needed.

Retractable Canopy Pergola



## Del Norte Porch Pavilion & Backyard Porch Pavilion



The photos above and on the following page are examples of how we can convert any free standing Pavilion or Pergola into an arched structure. When we convert a freestanding pavilion to an arched structure, it becomes an instant porch, hence the name Del Norte and Backyard Porch Pavilions...



## *Custom attached structures*



The Silverado Modern Pergola



Custom L.A. Modern Pergola



Modern Louvered Garden Pergola



Sunset Patio Pavilion



Photo shows a Traditional Garden Pergola  
attached to a Del Norte Pavilion





# Pergola-Pavilion Combo?

*Yes, we can!*

You can combine our shade structures into a hybrid beauty with two or more attached designs.

The photos on this page show some custom projects that combine Pavilions with the airy Attached Garden Pergola. The result is a gorgeous, multi-use structure that can be enjoyed rain or shine.

Adding a Pergola is also a low-cost solution to increase the useful shade space of any Pavilion.

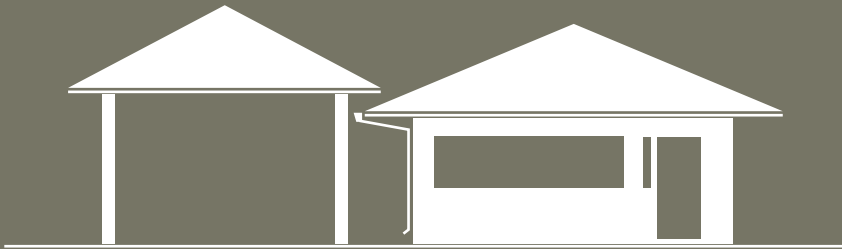
We welcome your custom requests!





## Low eaves?

Low eaves may be a limitation for Pavilions and Pergolas that will be attached to your home. There are several ways to get around height limitations. One solution is to have a free standing pavilion that slightly covers your roof line to allow drainage into existing gutters. See example photo below:



Del Norte Outdoor Kitchen Pavilion

Once we receive your attached shade structure order, we'll email you requesting a few photos of the install area. Once we have the photos, we'll email (or call if you prefer) and ask a few questions. This level of service is standard with every Forever Redwood order.

From your answers, we will design and create drawings of your order so we can both be sure everything will work prior to building.

After many years, we've learned that this level of attention to detail is the best way to ensure that your project will work perfectly.  
<https://www.foreverredwood.com/pergolas-gazebos.html>



Custom Attached Garden Pergola





Attached Garden Pergola

# ASSEMBLY

The standard method for attaching a Pergola or Pavilion to an existing structure is via a Ledger Board (see photo on left). If our assembly team is installing for you, we use lag bolts on every framing timber (16" on center in most cases). Sometimes common joist hangers are added for additional strength, but in most cases they are not necessary.

Sometimes obstructions or other wall details make a ledger board unworkable. We then design and build custom metal anchors (see photos below).

You can download the assembly instructions for any of our structures right from the product's webpage. Just go below the images to the Assembly & Care tab to download the pdf file.



Attached Arched Pergola Kit

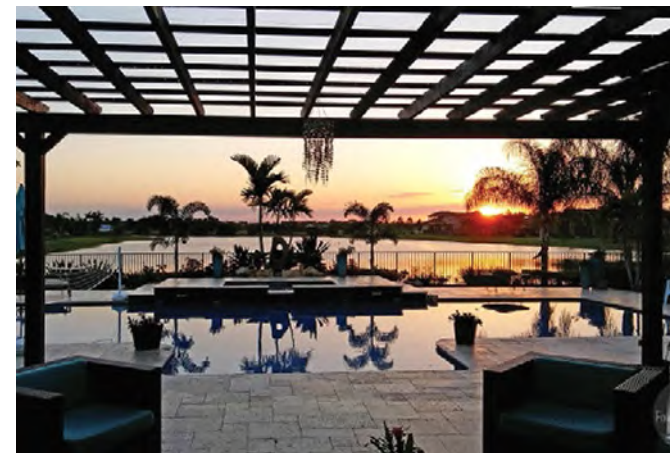


Forever Porch Pavilion



Attached Pergolas and Pavilions are always custom jobs in some way. A pergola can be built with as few as one post (see photo below). This 24' pergola is attached with three custom steel anchors to the building using short ledger boards. The ledger boards are sized to bolt into at least two framing studs behind the siding for added strength while sized similarly to one another to maintain aesthetic balance.

The photos on this page are included to show examples that highlight the range of variations possible in design for what is essentially one product: The Attached Garden Pergola.



Attached Garden Pergolas (2 photos above) with rafter and slat spacing at 18" on center



Douglas-fir, Transparent Premium Sealant



Slats at 12", Coffee-Stain Premium Sealant



Mature Redwood, Vertical Post Decorative Trim, Transparent Premium Sealant.



Mature Redwood, Transparent Premium Sealant

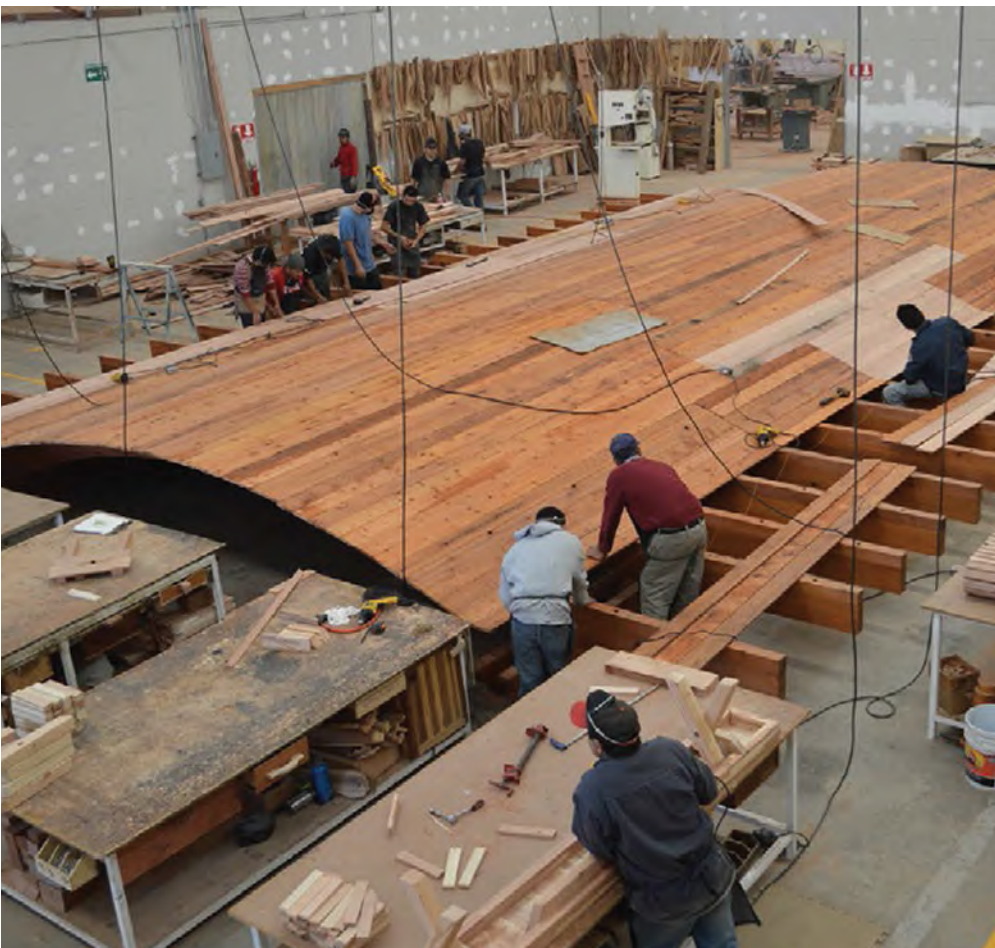


Extensive notching and finishing work



# *If You Dream it,* **WE CAN BUILD IT**

As a traditional woodworking shop dedicated to the principles of old-world craftsmanship, we specialize in custom work. Our standard customizable options include timber sizing, roof styles, rafter and slat spacing, privacy panels, premium finishes, waterproofing options, accommodating accessories of all kinds, personalizing design details, and limitless sizes to choose from. We often create hybrids from standard Pergola or Pavilion designs and regularly receive conceptual drawings from architects and designers to convert to finished products.





You might also be interested in...



Retractable Canopy Pergola



Loreto Pavilion



This custom job started with the masonry columns already in place. We built a better, thicker, and more decay-resistant new Pergola roof in Mature Redwood for this villa in Mexico City. The prior Pergola—from another manufacturer—had only lasted six years. The new Redwood timbers are massive, full-dimension 3x6" and 2x6" timbers, and the arc is built using rounded 4x8"s that are bolted together. The Pergola's center arch is 16' in diameter and the overall length is over 50'.



We custom designed this 22' entryway arched pergola with overlapping 16' sides, 22' deep and partially attached to the house. Photo Courtesy of Kelly F. of Okotoks, AB, Canada.



*We can also build sunrooms in any shape by hybridizing our designs.*

We can also build sunrooms in any shape by hybridizing our designs. We can design the walls to accommodate windows, which you can purchase locally. So, you can have dual-paned glass sunrooms constructed in three days instead of a month-long local construction job from scratch. Any size, any personalized detail, and the sawdust stays here.



Sun Gazebo with Sliding Doors



Hot Tub Enclosure Kits / Hot Tub Pavilion



Dream Gazebo



Entryway Arbor



Backyard Pavilion with Attached Pergola



Custom Pavilion



# *We make very large* **PERGOLAS AND PAVILIONS** *too!*

In 2015, we installed this majestic 60' x 30' oversized custom Del Rio Pavilion at the Grace Gardens of El Paso, TX.



Larger structures often require thicker wood and additional posts to support the extra weight. We will work with you to determine the optimal mix of supporting elements to meet your aesthetic and functional needs. For example, instead of adding additional posts to a larger structure, we can sometimes increase the size of the roof support beams to use 2" x 10"s or larger. Our staff engineer will ensure structural integrity and provide drawings for your permitting process.

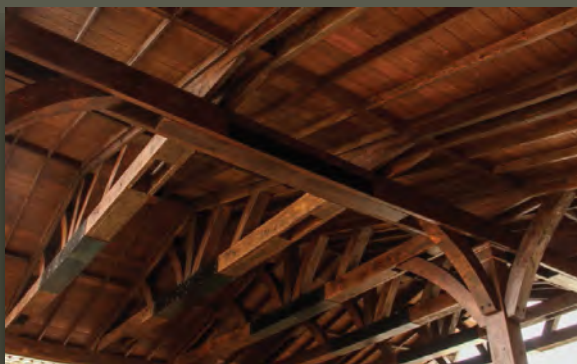






## Meet another of Forever Redwood's big, custom, fat-timbered pavilions.

Designed as a massive protected entry area for a home in California, this custom Pavilion measures 51' x 47', with a tile roof installed by Forever Redwood.





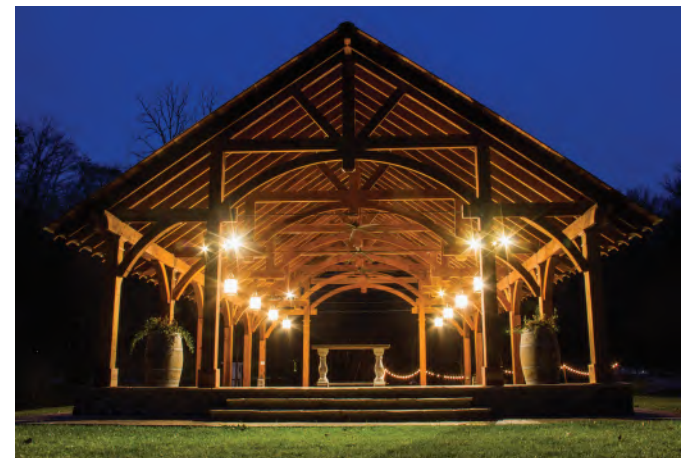
*If you dream it,*  
**WE CAN BUILD IT...**



Photo courtesy of Stan & Monica H. of Sevierville, TN.

*So, there was an outdoor wedding and  
naturally everything had to be perfect....*

The Cardinal's Nest Pavilion was our answer. Luckily, we don't insist that you must have a wedding to get one built. You don't have to go with the original 60' x 34' size either.



**...in any size, or configuration, and with all the bells and whistles you like.**



# HOW IT ALL WORKS

## *A Process Overview*

### *Whenever You're Ready, Just Reach Out*

I just wanted to take a moment to introduce myself and our company. We have been in the patio furniture business for 26 years. Our underlying mission is to restore California Redwood forest lands to their ancient state—full of very old, very large trees.

We use the proceeds from sales to fund our forestry work. Our ethic when it comes to building patio furniture and shade structures is to create something that, like the trees, will last virtually forever.

We would love the opportunity to hear more about your project. It usually just takes one or two quick conversations to work out the details of a project and give you a quote. Once you put down a deposit, our engineers will create your custom drawings, making sure everything will be built exactly to fit your location and fulfill your vision.

Please feel free to reach out anytime.  
Ask for me directly,

Raul Hernandez  
Founder, Forever Redwood  
(866) 332-2403  
[sales@foreverredwood.com](mailto:sales@foreverredwood.com)



Del Norte Outdoor Kitchen Pavilion





Del Norte Kitchen Pavilion



Arched Pergola Kit with Swings & Ti Amo Bench

Forever Redwood is proud to offer extensive product customization and flexible purchase options.



Del Norte Kitchen Pavilion



Sebastopol Pergola

With all of these options there is bound to be a little complexity in the process. What follows is a handy guide which will help you to get pricing, shipping information, specifications on any product, assembly support, and even discounts. We will walk you through navigating this large site efficiently toward the garden oasis, outdoor great room, or site development project of your dreams.



## Design & Engineering

Our process integrates architecture, design and engineering with high-end carpentry, specializing in custom projects and the use of big timbers. Our emphasis on a thorough design process is the key to ensuring that each job exceeds expectations. The time it takes to complete a complex design can be substantial, and we encourage you to order early and take your time with your assigned Architect to get the details just right. Many projects involve coordinating with local contractors to create seamless backyards that include new pools, hardscapes, outdoor kitchens, outdoor classrooms, meeting rooms, places of worship, workshops, barns, wedding venues, etc. You will benefit from our years of focused experience building custom shade structures.

Custom The Granada Pavilion

The Design process is the first step and the key to a successful project. It should not be hurried. Some projects are straightforward and can be designed in one or two revisions over a week or two. Larger projects can take a month or more depending on custom details and revisions.

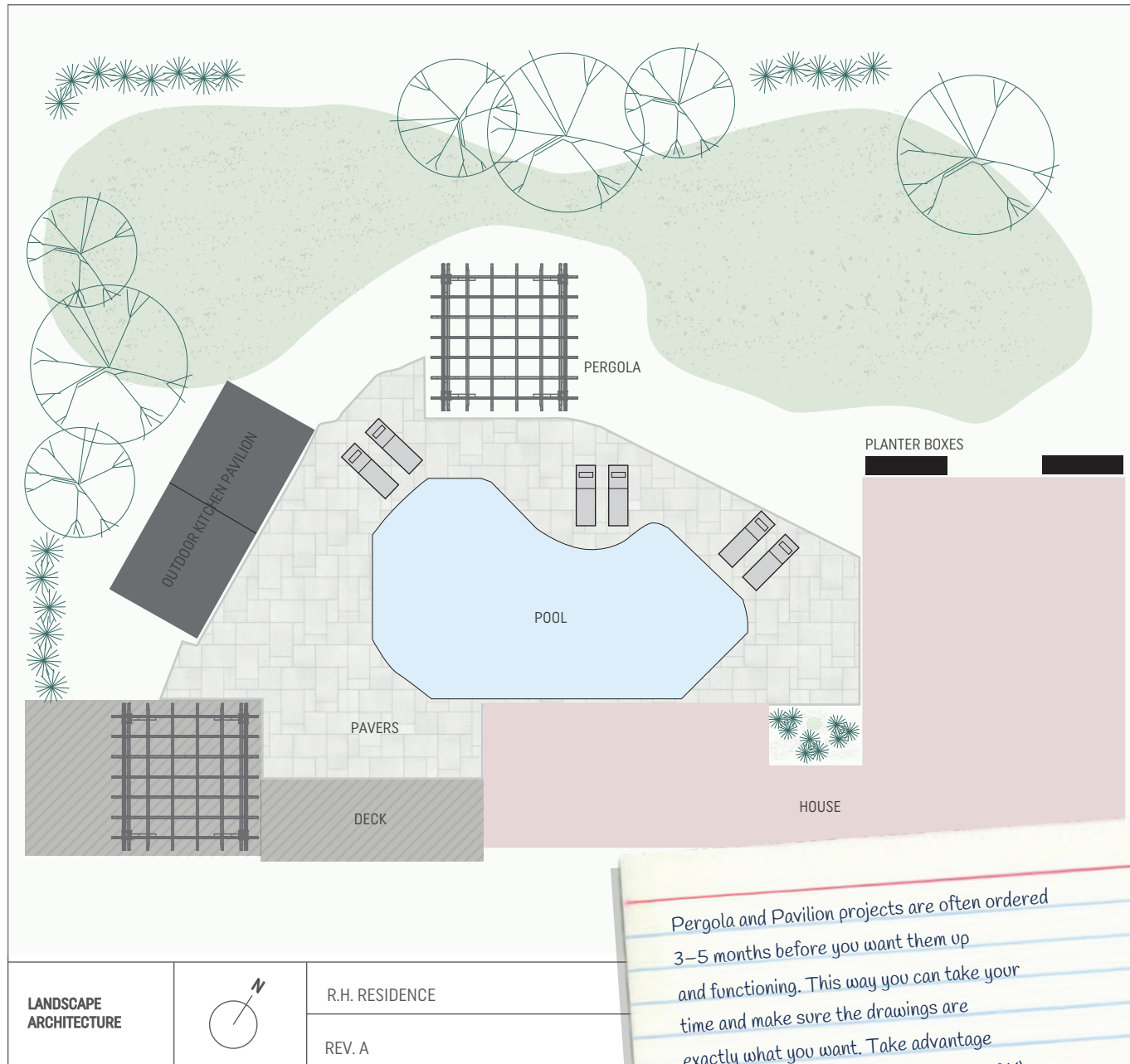


# Purchase Options

## Project Timing & Coordination

If your plans involve getting other projects completed in your yard (pool, outdoor kitchen, fountain, new hardscape, etc), we encourage you to place your order with an extra month or two built in so that you can take your time to make sure every detail is worked out. It is typical for customers planning springtime projects to place their order in the fall because they are also coordinating the construction of a pool or outdoor kitchen. You may be planning a carport, barn, workshop, an outdoor classroom, a boat house or small gym. The variety of uses for our Pergolas and Pavilions continues to surprise us over the years.

Adding a Pergola, Pavilion, or Gazebo to your property often needs to be coordinated to ensure that the hardscape and footings required for the structure are incorporated in a seamless manner and not as an afterthought. If you are planning a new hardscape with your new shade structure, do yourself a favor and hold off on the hardscape until you finalize your shade structure plans. This will allow you to take drainage, structure anchors, and other factors into consideration. Before you lay a new hardscape, decide if you are going to run electrical, gas, water, internet, and other utilities to the site. If so, your conduits will not only need to be run under the hardscape, they'll need to be run right to the posts of your shade structure to achieve a clean design. So, in order to achieve an optimal design and installation process, you will want to consider what amenities you will ultimately be placing within your structure. Our process will take you through the steps to get all of these details accounted for. The larger and more detailed the project, the longer the timeline you'll want to set aside for our design process. Unsure of your project's complexity? Give us a call.



Pergola and Pavilion projects are often ordered 3–5 months before you want them up and functioning. This way you can take your time and make sure the drawings are exactly what you want. Take advantage of our Free US Shipping! (Excludes HI & AK).



Note: The timeline you choose at checkout for your order to ship out does not include the design time.

Configure For Pricing ?



Rating: 2 reviews

Starting at: **\$8,880.00**

1. SELECT PERGOLAS POST THICKNESS:

Choose from 8in x 8in - (MOST POPULAR) to 10in x 10in

2. SELECT MODERN LOUVERED ROOF LENGTH:

Choose this option 2nd

3. SELECT MODERN LOUVERED ROOF WIDTH:

Choose this option 3rd

4. SELECT LOUVERED OPTIONS:

Help me Choose ?

Choose this option 4th

5. SELECT FASCIA:

Help me Choose ?

Choose this option 5th

*Get Free Shipping*



Forever Redwood delivers anywhere in the world. You can get Free Shipping anywhere in the Continental U.S. You can see the shipping cost options once you've gotten your selections in the shopping cart. There, you can enter your zip code and state to review the different shipping timelines we offer. Plan your project ahead, and get your shipping free!

<https://www.foreverredwood.com/customer-service/shipping-information/>

SELECT OPTIONS ABOVE



**SHIPPING**

Shipping in the Continental U.S.

## Configuring Your Price

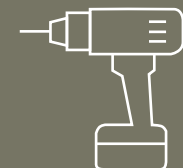
On any Pergola or Pavilion product page, you can choose the drop down options for length, width, privacy options, etc. and get to a price quickly. Just make sure to start at the top and select from each drop down menu without skipping any, and the pricing will adjust instantly at the top. Try as many different options as you like until you find the best configuration to meet your needs.

If you have questions about an option, go to the right of the drop down menu and click the 'Help Me Choose' link to review more details about that option.

A side panel will open with diagrams and detailed information to help you make the best possible decision for your ideal space.

## White Glove Complete Assembly Service

Another great option at checkout is complete nationwide assembly, our White Glove Assembly service. A Forever Redwood crew will travel to your home or business and assemble your structure from footings to final roofing. It is a turnkey solution.





## Not Ready to Commit?

Erecting a beautiful long-lasting shade structure is not a decision to be made on a whim. If you aren't ready to buy, there's a quick way to get a quote for the structure you're envisioning.

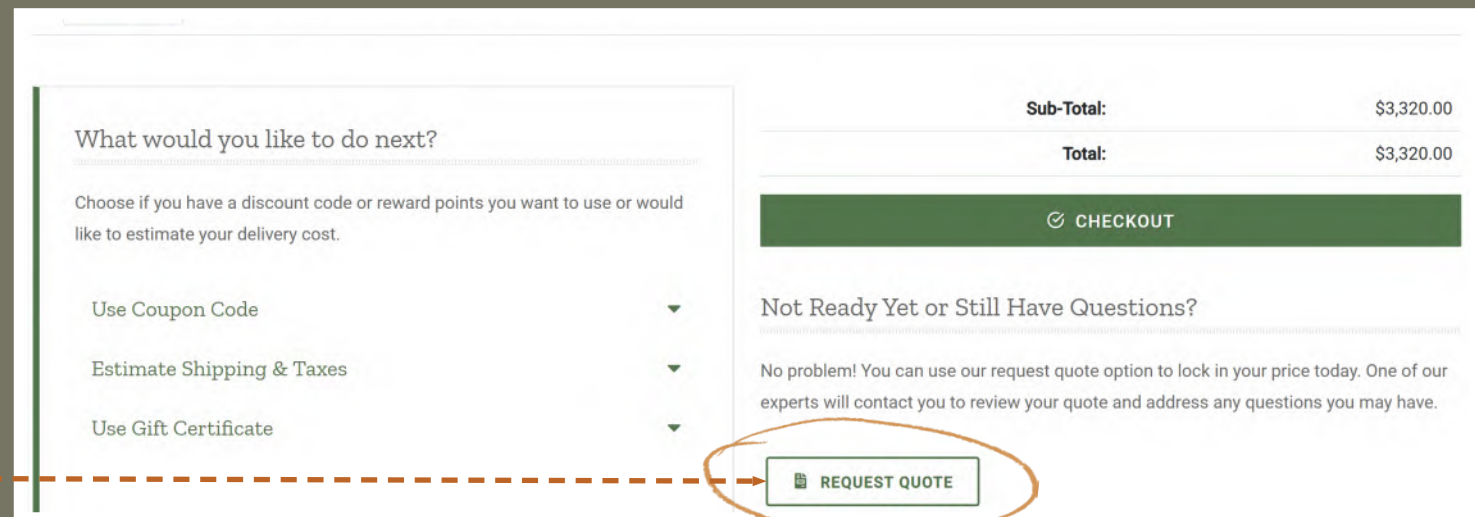
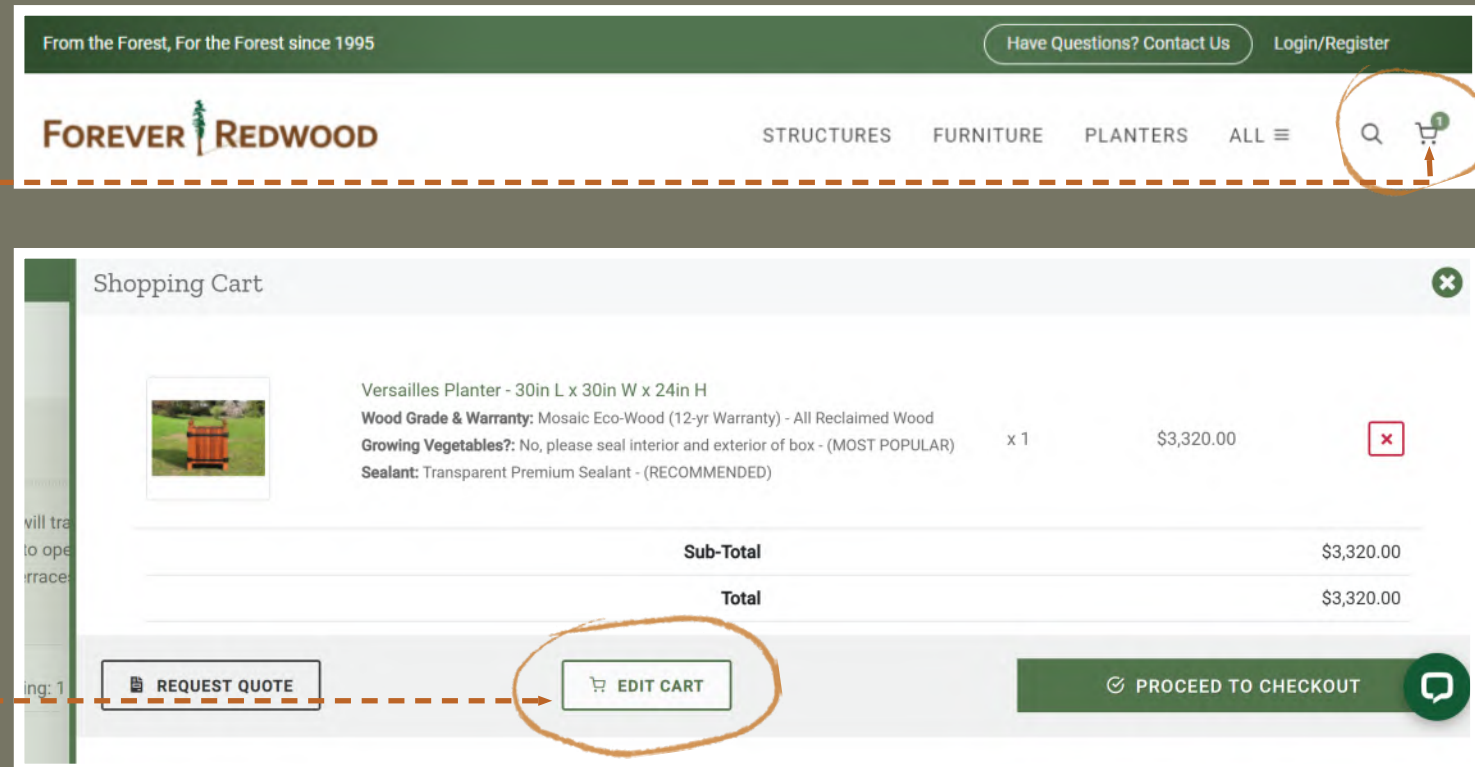
Once your desired structure is configured and in your shopping cart, click the shopping cart icon at the top of the page.

The shopping cart should slide open. Click on 'Edit Cart'.

You'll be taken to a screen where you'll be able to enter some basic contact information and get a quote right away.

Have questions? contact us at:  
1 (866) 332-2403

or email us:  
sales@foreverredwood.com





# Getting DETAILED INFORMATION

## Product Details

On every product page, you will see a carousel of photos at the top left with thumbnail shortcuts just below. The photos shown will include diverse variations we've produced for clients over the last twenty-five years of delivering custom work.

Just below this, you will find a richly populated section with details split between seven tabs, including all of the product information from drawings, assembly instructions, specifications sheets, wood grade information, shipping options, and many more details.

## Finding the Right Product

Whether you're trying to find a specific Pergola you saw a while back or if you want to find the right set of furniture to include in your new Pavilion, there are enough possibilities that we made sure to include ample routes to get you there. You can browse through the product categories or try the search bar. You can search for a particular product name you may have heard about, like Silverado or Kikue, or search keywords such as Pergola or Gazebo. Any way you get there is fine: we've done our best to set you up for success on your way to the perfect outdoor oasis.

## Save 3% When You Pay by Wire or ACH Transfer

For big ticket items like Pergolas, Pavilions, or Gazebos, you can save 3% by choosing to not pay by credit card or mail in check. Instead, if you pay by ACH or wire transfer, we save by not having to deal with credit card processing or check handling costs and so pass the 3% savings on to you automatically. Just choose to pay by wire transfer and your cart will automatically factor in a 3% savings to your product, shipping, and White Glove Complete Assembly Service.

If you wish to only place a quote for now, but want to include the 3% wire transfer in your quote, be sure to select the wire transfer option. Before checking out, add a note in the comment box that reads "Preliminary Quote Only". This way, we won't keep an eye out for your wire transfer deposit, and will reclassify your pending order as a quote when it comes in.



 [VIEW ALL](#)

Description

Specifications

Ratings & Reviews

Assembly & Care

Materials

Warranty

Shipping

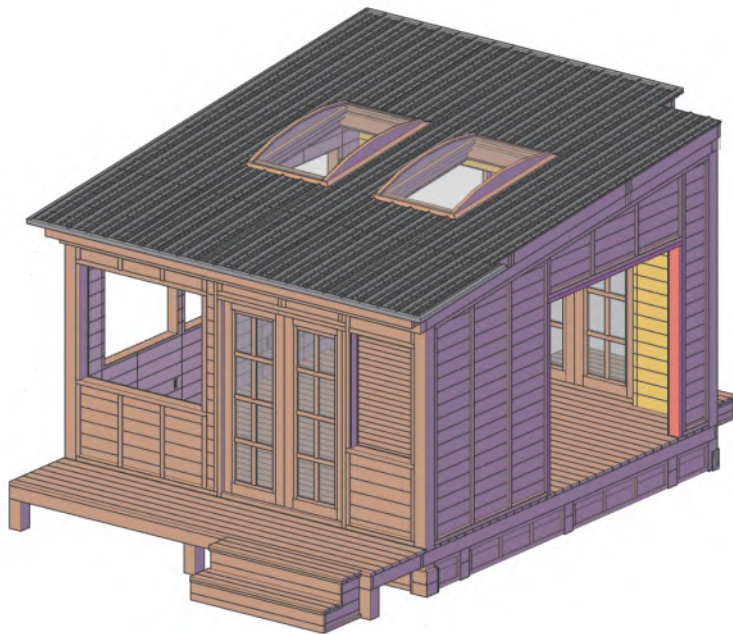


# PROCESS OVERVIEW

Investing in an additional structure for your property is a project with several distinct stages. Here's a walk-through of what to expect from your process with Forever Redwood.



18'-4" L x 16'-2" W Palo Alto Backyard Cabin



## Product Details

Getting started is the hardest part. We are happy to get on a call with you to discuss your plans. But in the end, nothing replaces the drawing process to bring out your ideas in full. If you are not sure that you made the right selection, we advise you not to worry too much about it. All we really need is a starting point. If you know you want to go with Forever Redwood, we recommend you go with the size and style you like the most. Together, we will fill in the fine details over the coming weeks. When you place your order, you'll have a Design Engineer assigned to your project. They will ask you for some photographs of your space and rough size estimates. That's all we need to get started.

Within a week, you will receive your first set of drawings. We recommend printing them out and spending a few minutes with them outside in the intended spot. Being at the "construction site" with your drawings will allow you to see what needs changing quickly. And, of course, if you have questions, please don't hesitate to reach back to your designer by email or phone. That's what we are here for.

Turnaround time for a well-considered, finished job from the initial deposit to the completed on-site assembly varies according to the shipping option you choose. For example, a Rush Order can be completed within 30 days, but the typical turnaround is 4-5 months, allowing you to take advantage of our free shipping option and taking the time to not rush any step.

If you are in a low water table area, be sure to let us know so that we can take that into account for the footing design work.

## Revisions

Expect a few rounds of design draft emails to make sure we get the proportions you want and the design details you need in the drawings.

There are three critical measurements we want to get perfect before the process is done:

### • Placement of posts

Where are they best located to be out of the way and provide the overall desired roof size?

### • Overall roof size

How long and wide will the roof be?

### • Height

What will be the clearance height of the structure?

Upon completion, your structure's design should be perfect in every way possible. Take the time to consider not only the structure's dimensions, but what accessories you envision for the space. Consider how your family and friends will spend their time in the space. Will you want counters, ceiling fans, lights, heaters, misters, audio equipment or television, or possibly a smoker or grill? Each of these inclusions can enhance the design of the space. We can add wire-concealing trim, custom housing for smokers and entertainment appliances, and more. For features such as outdoor kitchens, post piers, custom hardscapes, and pools, a local mason, landscape contractor, or concrete specialist is usually part of the project.

Imagine your shade structure as it will eventually be accessorized. Then let your Architect know the specifications for the accessories and where they will go. We will add them to your drawings, so you can see how they look and make adjustments as needed before signing off on the pavilion. We want to be sure it will all work as you are envisioning.



## Deposits

To get started, a 25% deposit is needed for orders over \$10,000. You will be assigned an Architect within two days of receiving your order. They will email you to get started and will correspond with you to fine-tune all of the details of your drawings until the project is exactly the way you want.

Once in a while, for unforeseen reasons, a project cannot continue. It is rare that this happens and each case is unique. We have in some instances built furniture instead or gone in a completely different direction to make things work out. If continuing is not possible, your order can be placed on hold or cancelled and depending on the amount of work completed, a portion of your deposit will be retained to cover staff costs and the balance will be refunded.

## Outdoor Kitchens

Outdoor Kitchens can be designed by specialists and you can hire masons to pour your counters, etc. You can also avail yourself of modular, do-it-yourself companies that help you lay out your whole space. Many customers have spoken highly of RTA Outdoors as a source to help with your outdoor kitchen plans:

<https://rtaoutdoorliving.com/>

## Permits & HOA Approval

You have our support if you need to obtain permits from the city and HOA approval. We deal with these entities regularly. There is no such thing as a quick drawing when it comes to an HOA or municipal authority. They will want a lot of details. We can make changes to satisfy both your interests and their rules by adjusting measurements, roof pitches, design details, etc.

To get all of this taken care of, once you complete the design process with your order, you will want to have the Design Engineer who prepared your drawings mark up the drawings with all of the specifications. The specifications usually clutter up the drawings and many are left off so that you can see the design clearly as you are fine tuning it. However, if you are going to present the drawings to the city, details such as timber size, bolt size, span, angle, footing information, etc. should be visible. Two sets of drawings will go to the permitting office and one set will be for your records.

We give an exhaustive breakdown of this process in Section 5, Drawings — Permit & HOA Support. The above is a basic yet thorough description of the process. We'll be with you each and every step of the way.

Please factor an extra 2–4 weeks into the project planning phase if you need to have your drawings approved. You are responsible for obtaining your own permit and/or working with your HOA. We will provide the design drawings and engineering documentation required to complete the process in as timely a manner as possible.

## Custom Woodworking

Once your order has been finalized, it is sent to our workshop floor. Your order is completely hand-built except for the bolts. We harvest, mill and dry the lumber, craft the structure, and weld the footing anchors—all from scratch. Before shipping, we fully erect your structure at our site to ensure that it meets specification perfectly. Then, we disassemble and package each box in double cardboard and plastic to make the boxes waterproof. Smaller structures ship ready for assembly in sturdy crates handmade in our workshop from recycled wood.

## Installation

All of our structures ship with assembly instructions and hardware, fully sanded and finished and ready for you to install on your own. If you prefer, we can take care of installation for you. Our Complete Nationwide Assembly crew will handle everything from setting the anchors to final roofing and clean up. The advantage of working with us is that you will have our crew on site for a few days total. They'll be re-erecting a structure that has already been fully built in our shop. If you go with a local contractor, your property will turn into a construction site for weeks.



## The Custom Workshop Difference

For a household looking to improve their outdoor space with a shade structure, there are four common routes:

- You can walk into a big box store and buy a general, premade structure that isn't customized for anyone.
- You can do it all yourself.
- You can work with an architect and building pro to get it done.
- You can work with an integrated firm specializing in outdoor structures that has full design and engineering support and complete carpentry support.

### Pros and Cons of Each:

The big box store will give you a flat price, but any efforts and expenses incurred to make the structure fit your unique needs are unknowns that you'll have to figure out on your own.

An architect plus a contractor is the traditional high end custom solution, and in some cases this is your best option. The downside is that you rarely have access to the best quality big timbers, and the on-site process will be extremely time consuming.

The advantages to working with a specialist firm like Forever Redwood is that you have design, architecture, engineering, construction, and on-site assembly all in one place. Our workshop has produced thousands of structures. We can give you a solid quote and timeline as soon as we have the broad details of your project.

*In the following sections, we cover other details of the design process, the benefits of our traditional craft method, and installation. And, always, feel welcome to call or write to us with any questions.*



The Silverado Modern Pergola



A custom wooden pergola with a stone base and a wooden roof, situated next to a swimming pool and a house. The pergola has a flat roof made of horizontal wooden slats and is supported by square stone pillars. The base of the pergola is a low wall with a mosaic tile pattern. The pool is in the foreground, and a house is visible in the background.

# The Planning Stage

*Sizing and Roof Options*

Once you've decided on the style you like, it's time to focus on exact sizing and roof configuration of your structure.

Custom Wooden Pergola



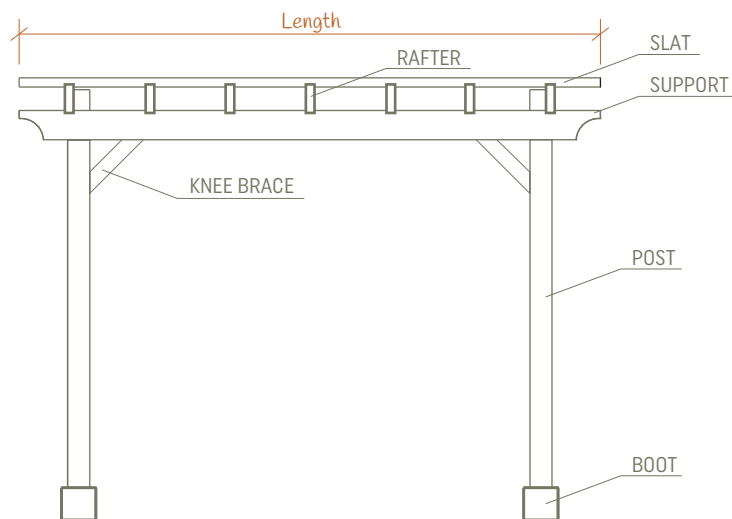
# Build It Your Way

Each structure is sized by roof area, so, for example, a 10' x 10' Traditional Garden Pergola has a square roof with ten foot long sides. Since the roof overhangs the posts, the posts are set in from each corner. For most Pergolas and Pavilions, the ideal setback for the posts is 8–12". Our default is 12", but this can be reduced or increased depending on the style and circumstances.

All of our shade structures are fully designed, engineered, and built in-house.

First, we use full sawn, oversized timbers for posts made from real wood (Refer back to Page 5 for a more complete explanation on what we mean by "full sawn" and "oversized").

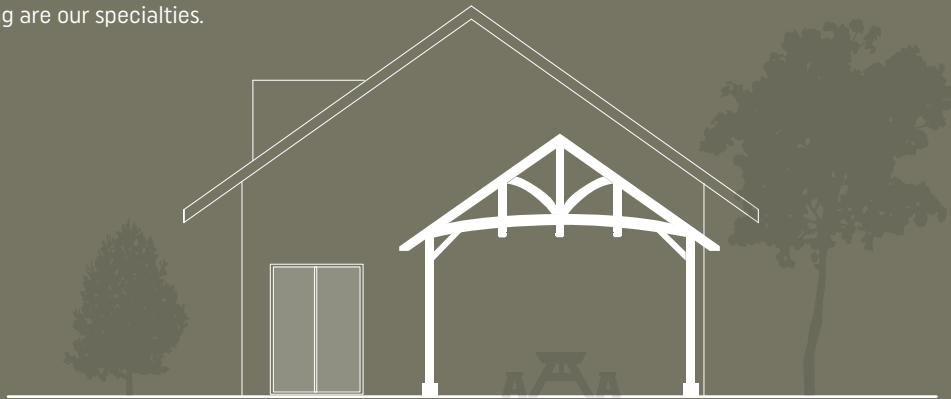
For additional long-term structural strength, we use boxed timbers to support all of our structures. A boxed timber is a triple timber that has an outer and an inner support timber notched into the posts with a solid timber blocking between the dual support timbers (see lower image on the right). With this blocking, the dual supports are, in effect, converted into one solid 7 1/4" x 6 1/2" timber. We add knee braces at a 45° angle (or hidden L-brackets depending on the design you choose). These steps ensure that all of our structures are initially rated to a minimum 50 lbs/sq ft snow load. If you need a higher rating, just let us know and we'll make the design adjustments needed to meet your local code.



On each product page (on our website: [foreverredwood.com](http://foreverredwood.com)) you'll find a product configurator that lets you mix and match sizes, styles, and other options for an instant price quote. However, if you don't see exactly what you're looking for, you can always contact us to find out if we can make it for you. Odds are, we can.

We can mimic the roof lines of your home by adjusting the roof pitch and even finish your Pavilion or Gazebo with the same roof style and color as your home. Note: increasing the roof pitch to create a more vaulted ceiling increases the amount of wood used and thus incurs an additional expense.

Since each Forever Redwood Pergola, Pavilion, and Gazebo is handmade, custom sizing and shaping are our specialties.







15' x 12' Traditional Garden Pergola with open roof with slats and rafters at 18" and widthwise roof support timbers

# Garden Pergola

## Roof Styles

The Traditional Garden Pergola was the first Pergola we ever built. It is the traditional flat roof design built with large timbers that goes back thousands of years. We offer a variety of roofing configurations to meet your needs.

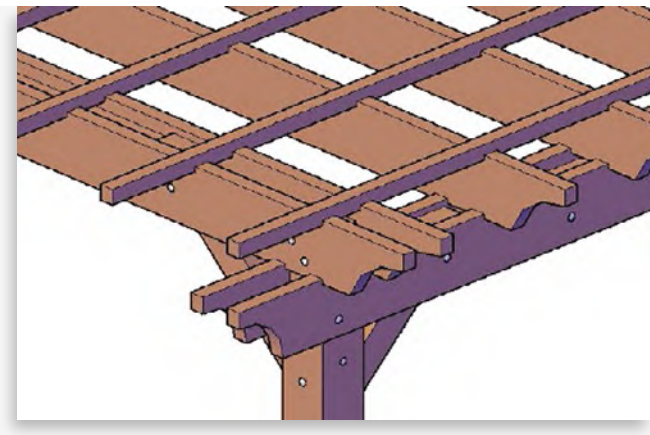
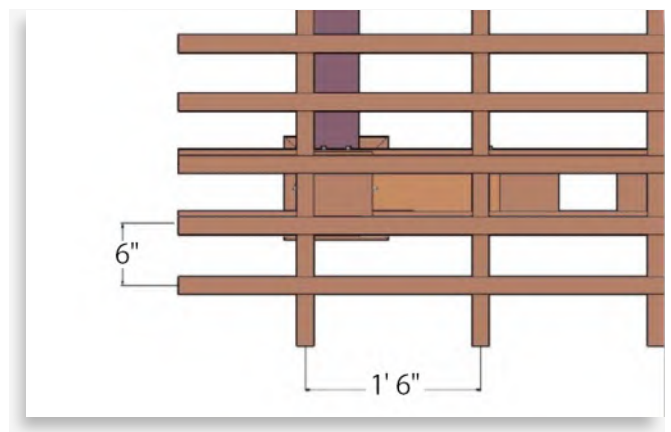
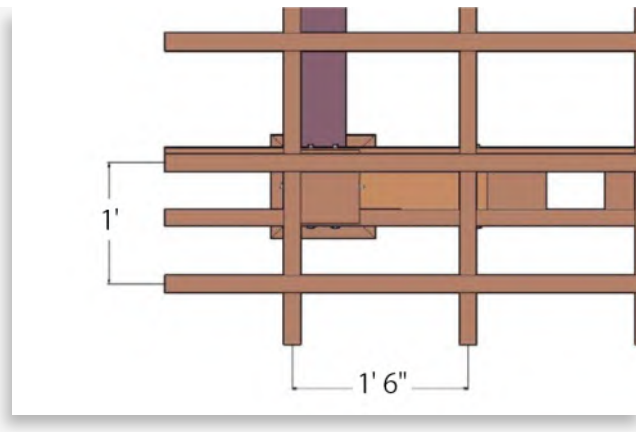
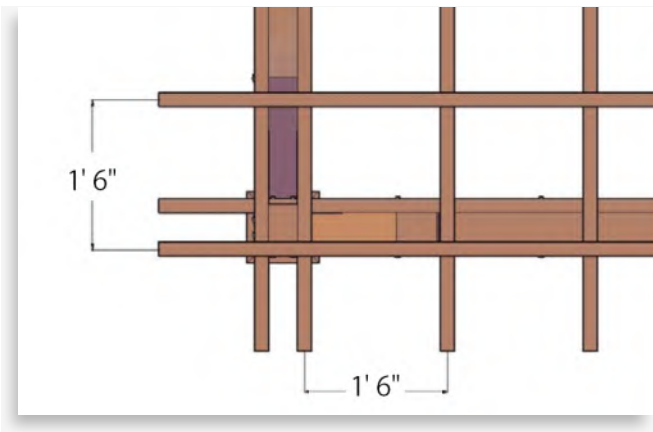
### Standard Open Roof

This is our strongest roof configuration and our most popular. It uses 1 3/4" x 1 3/4" roof slats with 1 3/4" x 5 3/4" rafters perpendicular to the slats below. We usually recommend 18" on center spacing for rafters and slats initially.

We keep your pergola details on file. After installation, if you realize that you still need more shade, you can add slats to create the spacing that works best for you. We'll have all of the details of your structure on hand to produce the addition.

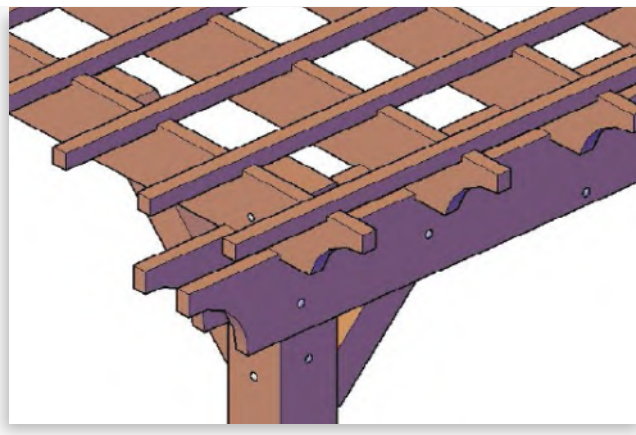


Shown here are comparative drawings of the three most popular rafter and slat spacing options on our standard open roof, plus a lattice panel alternative.



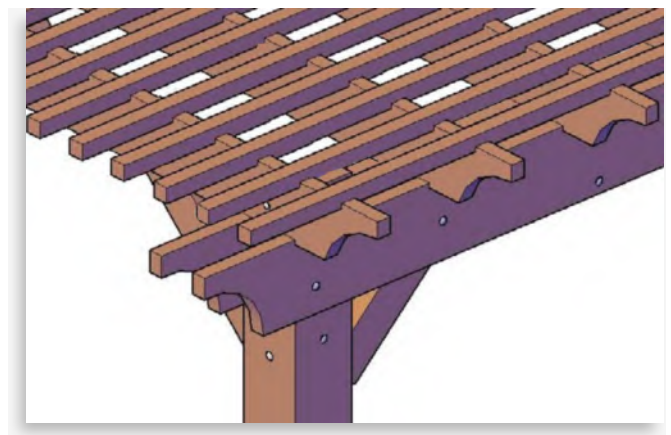
Slats at 18" Apart, Rafters at 18" Apart

This is our most recommended arrangement. You get excellent visibility and more shade than you would think due to the height of the rafters and because the sun is rarely directly overhead.



Slats at 12" Apart, Rafters at 18" Apart

Not enough shade? The second most popular open roof configuration includes slats spaced 12" apart, keeping the rafters spaced at 18". This increases shading substantially and makes the structure even stronger.



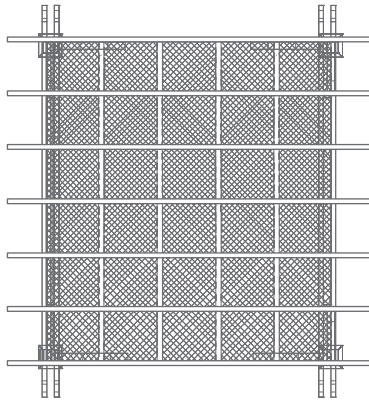
Slats at 6" Apart, Rafters at 18" Apart

We offer this layout for substantial shade in extreme climates.



## Lattice Roof

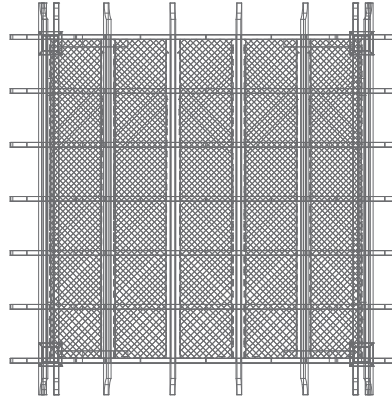
Creates the most shade and privacy. Adding a lattice is the lowest cost option for maximizing shading. Lattice panels are built doubled up using  $\frac{3}{8}$ " x  $1\frac{3}{4}$ " slats with  $1\frac{3}{4}$ " x  $1\frac{3}{4}$ " openings and  $1\frac{3}{4}$ " x  $1\frac{3}{4}$ " framing ( $\frac{3}{4}$ " total thickness). Each panel is fastened in-between the rafters (see image below). Rafters are normally set at 24" on center when lattice panels are ordered.



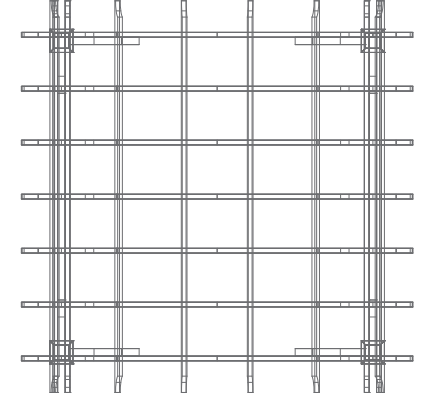
## Arched Pergola Roof Styles

Arched Pergolas are made with lattice panels, while Arched Open Sky Pergolas are made without lattice panels.

Our Arched Pergola Roof with lattice panels is below. Rafters, and the slats above them, are normally set at 24" on center.



For Arched Open Sky Pergolas, the rafters and the slats above them are normally set to 18" on center.

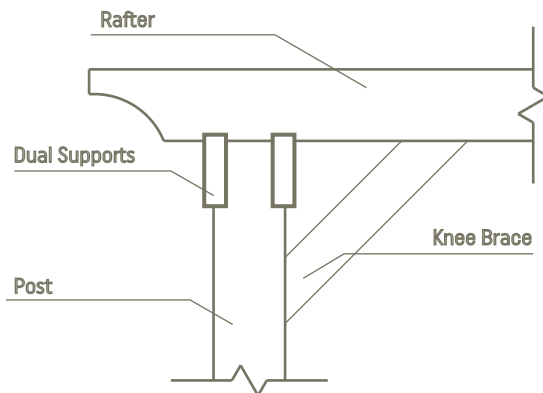




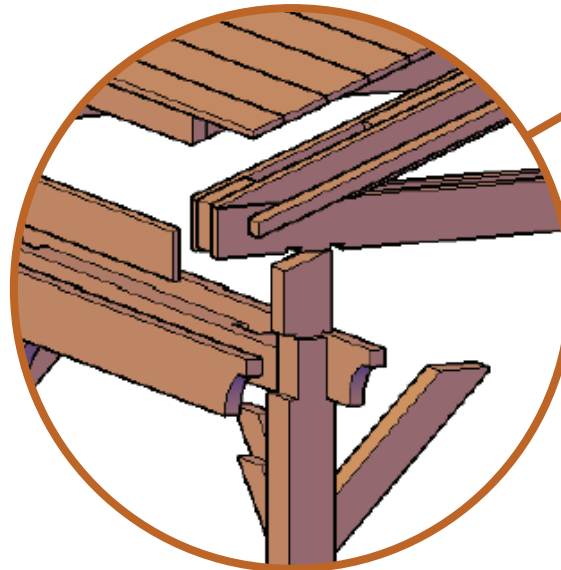
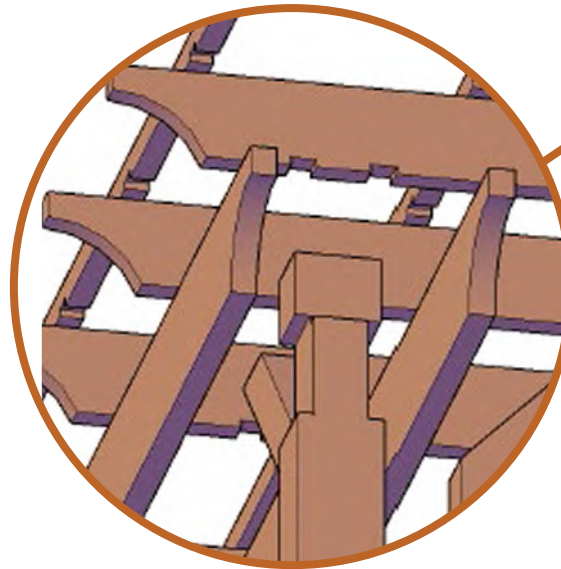
# Timber Notching For Superior Strength

If you want a shade structure that will hold up well and look great for decades, be sure that it is fully notched. Our shade structures have every timber notched into every other timber. Everywhere two timbers touch, we add a notch. This is time-consuming, but it accomplishes two important things:

- 1) It distributes the stresses throughout the structure for a stronger structure that will not sag or warp.
- 2) It ensures that no timber ever moves even an inch. The timbers cannot move since each is tied into its neighbor. This keeps the structure straight and beautiful through the decades. Not notching (or incomplete notching) will inevitably lead to twisting, turning and shrinking timbers that will throw the alignment off as the years go by.



Detail of timbers connection





# Pavilion Roof Styles

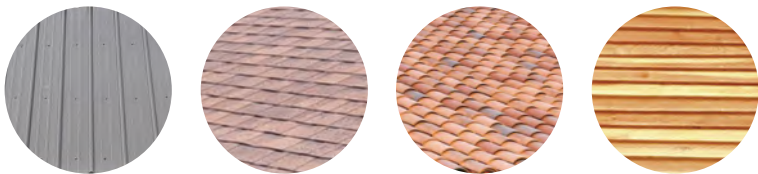
Shade structures break down into four general categories: Pavilions, Pergolas, Gazebos, and Arbors. Each of them solves different needs. Pavilions are similar to pergolas, but with a solid roof to keep out rain and snow. Pavilions are often favored as wedding venues, as well as for carports, hot tubs, and outdoor kitchens. Many people searching for a pergola find out that they really want a Pavilion and vice versa.

You can finish your Shade structure with at least 4 different roofing options. All roofing options come with an internal tongue and groove ceiling. Then we add a Peel and Stick roofing underlayment (like the popular Ice & Water Shield product name) to ensure it is waterproof, and then the final roofing above it of your choice. The roofs are extra strong, can be walked on as needed, and are rated to 60 lbs/psf minimum. After the roofing underlayment is attached, most customers add 30-year warranty asphalt shingles. It is the least expensive option and there is a wide variety of colors to choose from.

There are many roofing options. Most folks try to match what is on the roof of their home or an adjacent building. The most popular roofing options are: Asphalt Shingles, Metal roofs in various styles, Shiplap boards, or Wood Shingles. Your final roofing choice will be fine-tuned during the design phase of your order in terms of color and the final product. The final roofing option is up to you.

Unless you are immediately going to add the final roofing skin, we recommend against standard felt paper (because it will inevitably rip if left exposed) and rather recommend the Peel and Stick roofing underlayment that will give you no issues if exposed for weeks or even months before you get around to doing the final roofing.

For gable or hip-roofed structures, a metal roof is a good option. You can also opt for the added investment of a ceramic tiled roof, which pairs perfectly with the heft and substance of a thick-timbered pavilion.



To allow extra light under your pavilion, we can swap out part or all of the tongue and groove ceiling for a polycarbonate roof. We use a 1/4" thick polycarbonate that is extra strong and you'll be able to choose between tinted/non-tinted, UV protection levels, clear or diffused. Here's a look at the Illuminati Pavilion to give you a sense for how it looks:



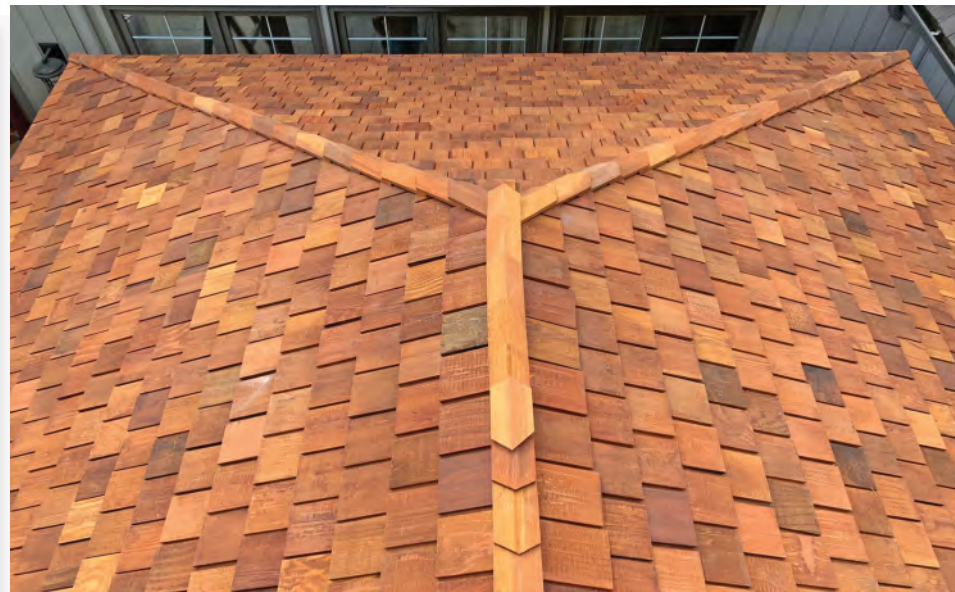
Backyard Pavilion with copper roof



Pergola and Pavilion projects are often ordered 4-5 months lead time. This way you can take your time to make sure the drawings will be exactly to your specifications, and you can take advantage of the Free Shipping option too.



Del Norte Pavilion with a typical asphalt shingled roof.



Loreto Pavilion with Redwood Shingles



Del Rio Pavilion with a standing seam metal roof.



Custom Fat Timber Pavilion with a tile roof.



For many years, we built almost all pavilions with standard sized 1x6's tongue and groove boards. All the photos in this manual show a 1x6's.



**Pavilions can serve many functions.  
Sometimes they make the perfect Carport...**

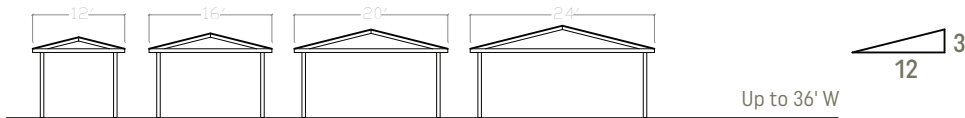




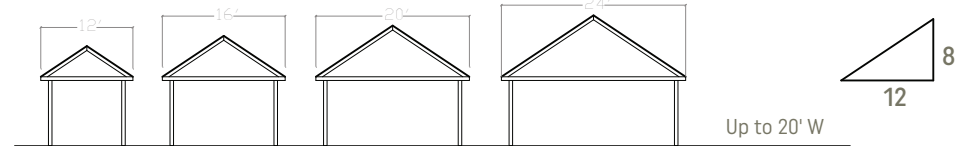
# STANDARD ROOF PITCHES FOR PAVILIONS

Notice how the overall height of the structure increases when we increase the width. For the full list of pavilions visit:  
<https://www.foreverredwood.com/media/pdf/PITCH-INFO.pdf>

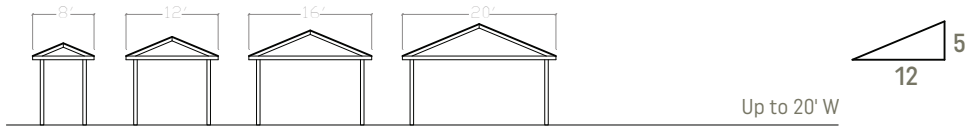
Forever Porch Pavilion



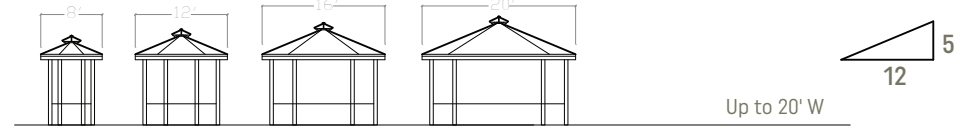
The Granada Pavilion



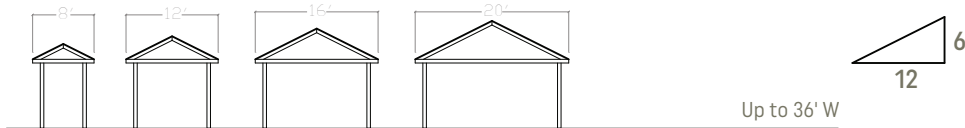
Del Norte Outdoor Kitchen Pavilion & The Del Norte Porch Pavilion



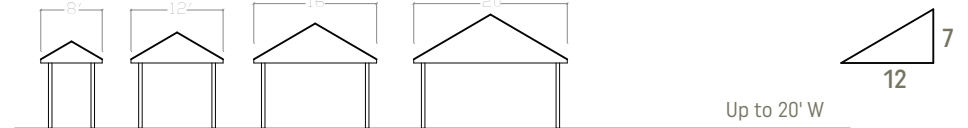
Hexagonal Park Pavilion



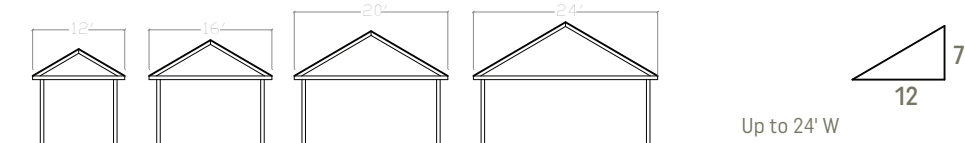
The Illuminati Porch Pavilion



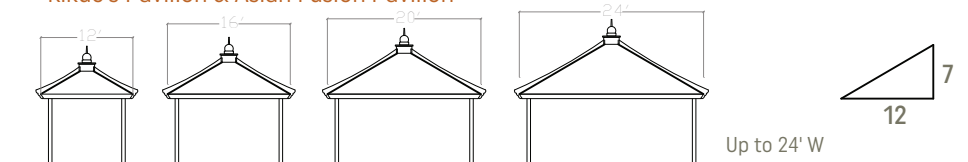
The Loreto Pavilion



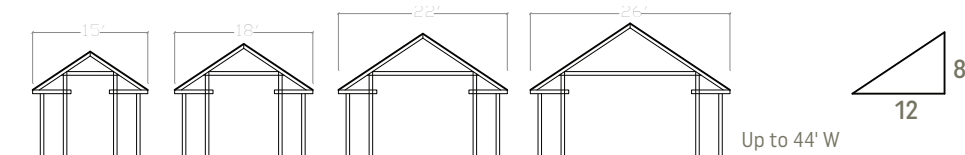
The Thick Timber Toledo Pavilion & Del Rio Cathedral Ceiling Thick Timber Pavilion



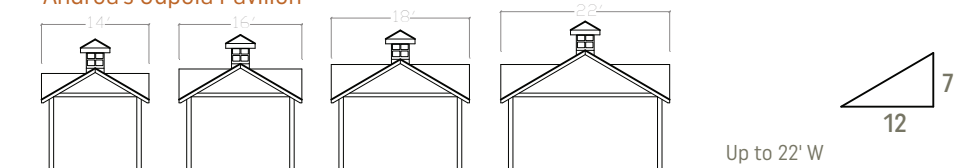
Kikue's Pavilion & Asian Fusion Pavilion



The Cardinal's Nest Pavilions



Andrea's Cupola Pavilion





# Rooftop Installations: Our recommendations for creating ballast when we cannot bolt to the roof.

This photo features a rooftop installation for a Manhattan skyline. The photo was taken just after installation. The light-colored wood is holding the planters together while the concrete hardens. This example illustrates how aesthetically attractive ballast can be created to hold the Pergola in place without bolting to the roof.

Each planter is filled to 60% capacity with concrete. Soil, plants, or decorative material can be added above the concrete.





## RETRACTABLE SHADE CANOPIES

We build most of our retractable Pergolas using Infinity Canopy Retractable Canopies. We have used other canopy manufacturers like ShadeFX for motorized and waterproof solutions also. Depending on your needs, we will recommend the most appropriate one. Let us know when ordering, or during the design phase, that you would like to include a retractable canopy. Once you have your design drawings finalized, you can send the drawings to the canopy manufacturer ensuring your canopy will fit snugly and attach to our Pergola perfectly. You will purchase the canopy directly from the shade manufacturer and they will ship the canopy directly to you for installation.

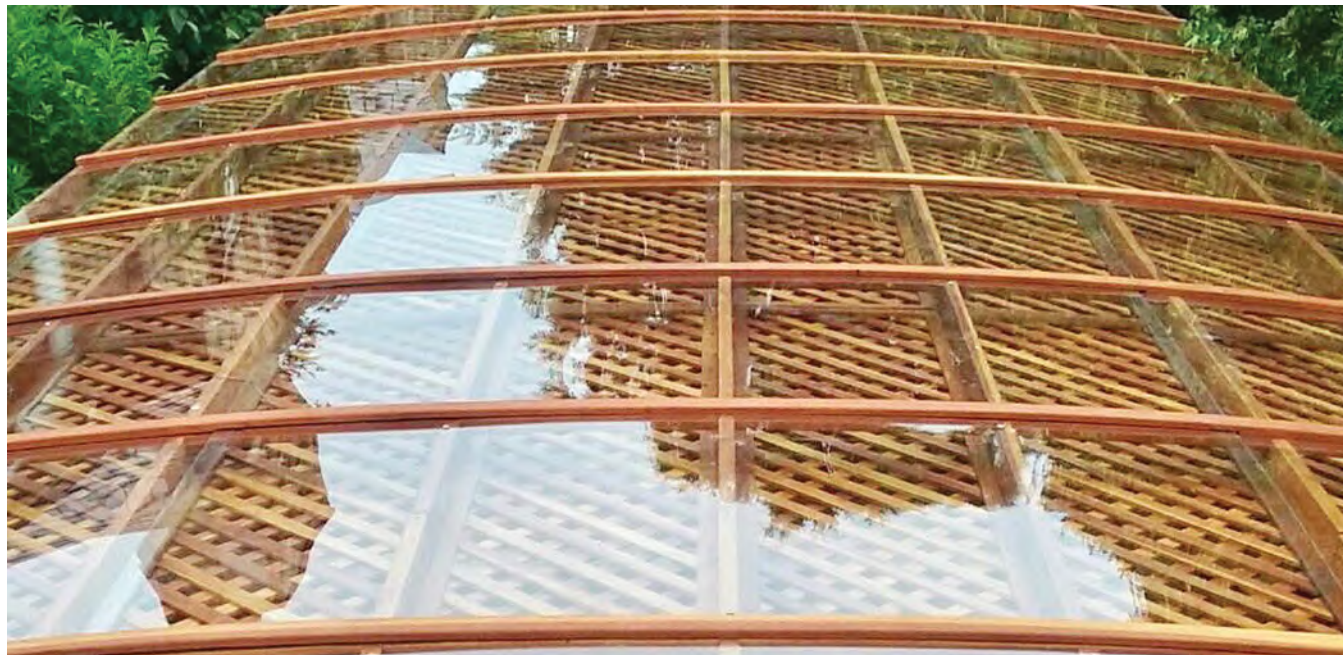
For more information about their retractable canopies, see:  
[www.infinitycanopy.com](http://www.infinitycanopy.com)  
[www.shadefxcanopies.com/retractable-solutions/](http://www.shadefxcanopies.com/retractable-solutions/)



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## RAIN GUARD OPTION

Wondering about adding a polycarbonate roof to keep your Pergola out of the rain? Our Rain Guard option works well if you are looking to keep sunlight coming in while making the space 100% waterproof. The Rain Guard can be added to any of our Pergola designs. Depending on your tree cover, you may find yourself wanting to hose down the panels every couple of weeks as leaves tend to collect on the guard and look messy from below. Switching to a Pavilion is another option to consider. We're happy to discuss your options and help you come to the best decision for you. Most Rain Guard options add around 20% to the overall cost of a Pergola project. These durable polycarbonate Rain Guards come with a ten year warranty.





## LOUVERED SYSTEMS

You can bridge some of the gap between a Pergola and a Pavilion with a louvered roof. The louvers are made from high-quality, thick wood, and are held in place with a recessed set of aluminum hardware that will never rust or decay. They can be set to any degree between fully opened and fully closed. Our Modern Louvered Pergola gives you the option to let in more sunlight during the low light months or portions of the day, and less sunlight during hot periods. Louver systems can also be added to other pergola models, or even as privacy panels on the sides of pavilions.

The most effective layout for a louvered pergola is to set the louvers running east and west so that the sun stays in the same trajectory and the shade changes little during the day. A light drizzle can be handled by closing the louvers—it is partially water resistant, but it is not waterproof like a Pavilion or a Pergola with a Rain Guard (polycarbonate roof).



Watch the louvers in action at:  
[www.foreverredwood.com/modern-louvered-garden-pergola.html](http://www.foreverredwood.com/modern-louvered-garden-pergola.html)



# Whatever you choose

we believe you'll be pleased with the improvement of your space. A Forever Redwood shade structure can remove the harsh transition from indoors to outdoors on those days when the sun is beating down, or provide a tranquil retreat as a part of a dynamic landscape design.

[www.foreverredwood.com](http://www.foreverredwood.com)  
1 (866) 332-2403



The Traditional Wooden Garden Pergola



Before



After



A close-up photograph of a wooden structure, likely a pergola or privacy screen, featuring horizontal redwood slats and vertical posts. The wood has a warm, reddish-orange hue and a visible grain. The slats are arranged in a staggered, overlapping fashion. A dark metal bracket is visible on the right side, securing a slat to a post.


## *Custom* FEATURES

Privacy panels, posts and columns, masonry, end cuts, electricity, and more!

The design process is best handled in stages to keep it simple. First, focus on getting the basic skeleton the way you want. Make sure you have the posts where you need them and determine the post height that works best, the overhang of the roof beyond the posts, and the pitch of the roof. Once you have the basics down, you can then move into the bells-and-whistles phase.

How are you going to use this structure? What accessories will you eventually add to it? For example, will you be adding a ceiling fan or two? Lights, heaters, misters, bug zappers, audio, TV? What about gutters to control the water flow? Are you adding a kitchen that will need a hood to be vented out the roof?



A custom garden pergola with a waterfall feature. The pergola is made of dark wood and has a stone wall on the left side. Water is cascading over the edge of the pergola into a pool. The scene is set in a lush green yard with a large house in the background. The sun is low in the sky, creating a warm glow. Two blue Adirondack chairs are on the patio under the pergola. A stone wall with a clock face is part of the pergola structure. A satellite dish is visible on the house in the background.

Custom Garden Pergola: Plumbing was built into the timbers to create a waterfall. Photo Courtesy of D. Hogan of Charlottesville, Virginia.

If your structure will include any special features, you want to let your assigned Architect know what accessories you may be adding and where you think they will go. The Architect will look up the specifications for the accessories and draw them in so you can see how they look. You can then double check that you like the look and layout, and make adjustments to either the accessories, the Pavilion lines or dimensions to make sure it all fits together.





www.foreverredwood.com  
1 (866) 332-2403

If you are planning a fireplace or wood-fired pizza oven, a common practice we encourage is a chimney cutout in the roof line. For example, let's say the chimney is 4' wide and 3' deep. You can choose to cut out a 4' x 1' portion of the roof beyond the posts so that you can tuck the chimney in a bit under the Pavilion roof line. We usually make these cutouts removable as a separate bolt-on portion of the roof so that you have a placeholder until you get around to building the chimney down the road.





# PRIVACY PANELS

Privacy panels are a great way to create more intimacy in your space. They're especially appropriate for hot tubs, but lend themselves well to any outdoor living room where having one or more partially closed sides is desirable.

Forever Redwood offers a variety of custom panels, allowing you to create the perfect mix of openness and privacy for your structure.



15' x 15' Traditional Garden Pergola in California Redwood with Lattice Panels. Photo also shows 2 Wood Pool Loungers and 1 Adirondack Chair in background.



## Lattice Panels

An inexpensive traditional solution, lattice panels let partial air and light through with no moving parts. The lattice slats are  $\frac{3}{8}$ " thick x  $1\frac{3}{4}$ " wide with  $1\frac{3}{4}$ " x  $1\frac{3}{4}$ " openings. The panels can be up to 48" tall. If you prefer a shorter height, just let us know. To have your privacy panels extend from the ground to the roof on one or more sides, you'll need two panels to cover the approximate 8' height.

Horizontally, privacy panels can be made long enough to fit between posts up to 17' 1" apart (which is for roof sizes of up to 20' x 20'). Add as many panels as you like to achieve the perfect balance between visibility, privacy and additional shade. Your custom drawings will allow you to verify that the placement and sizing are correct.

Orientation of the slats is diagonal by default, but they can be placed vertically or horizontally by request.

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When ordering privacy panels, please let us know in the Comments box at checkout what distance you'd prefer between the ground and the bottom of your panels. We'll drill installation holes in the posts to achieve the height you specify. If no height is specified, we'll ship your posts without holes so you can determine the best height during installation.



18' x 15' Custom Pergola in California Redwood with two Lattice Panels as well as two Rory's Swing Seats by custom request. Lexan roof panels added by customer. Photo Courtesy of Tina P. of Palo Alto, CA.





10' x 12' Traditional Garden Pergola in California Redwood with three Lattice Panels of different sizes. Photo also shows a Napa Planter. Photo Courtesy of Bill & Sandy G. of Coeur d'Alene, ID.



15' x 15' Traditional Garden Pergola in California Redwood with Lattice Panel (full side by custom request). Furnishings also by Forever Redwood. Photo Courtesy of Susannah S. of New York, NY.



16' x 8' Traditional Garden Pergola in Douglas-fir (delivered with Off-White Oil-Based Primer) with Lattice Panel. Photo Courtesy of Leo and Genevieve K. of South Amboy, NJ.



## Louver Panels

You will love our louvers! This option offers the ultimate in privacy and openness. Simply adjust the angle of the horizontal slats to let in the right amount of light and air. They can be made in any configuration imaginable, including a solid wall on the bottom and louvers above, or all louvers.

Louver panels can be made any height and up to 5' wide. If you require louvers for only a portion of the height of the wall or a special size or shape, please let us know.



Louver Panels Open



Louver Panels Closed



Open/Closed: 12' x 12' Arched Pergola in California Redwood with Louver Privacy Panel. 8x8" Posts by custom request. Photo Courtesy of S. H. of Fort Smith, AR.





16' x 14' Arched Pergola in California Redwood with Louver Panels and solid wall under.  
Photo Courtesy of George J. of Commerce Township, MI.





Del Norte Pavilion with a Sunset Patio Pavilion attached and solid overlapped wall on rear side.



## Shutter Panels

Solid, yet adjustable, shutters let you create sections of paneling that open and close on hinges. Shutter panels are normally made full length, starting 6" above the ground and extending to the height of the first timber in the roof. The bottom half is normally designed as a solid wall, while the top half opens inward. Of course, you can skip the shuttering part and simply have a solid panel wall all the way up. As always, we are happy to accommodate custom configurations.



20' x 18' Custom Arched Pergola in California Redwood with Shutter Panels and Solid Wall at the bottom.

Photo also shows a San Francisco Patio Table Set with Ruth Chairs.

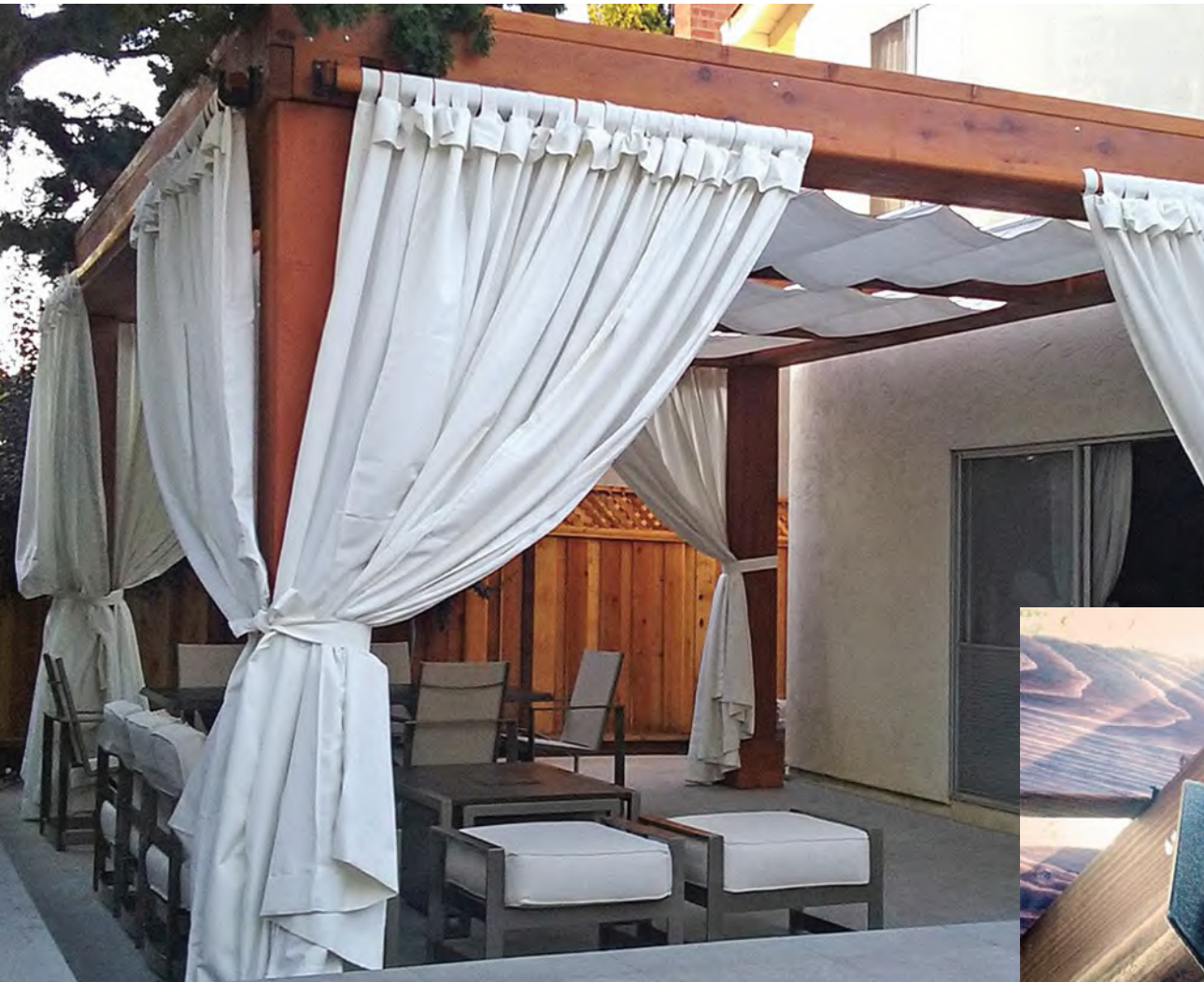


## Curtain Rods

For a softer look, add curtains to your Pergola or Pavilion. We can add heavy duty Curtain Rods with strong hangers. The rods are made with a husky 2 11/16" diameter, so they'll never snap on you.

Forever Redwood does not provide curtains, and our thick curtain rods do make it tough to find off the shelf curtains that will fit. We strongly recommend Sunbrella fabrics available through Trivantage, and hiring a local cut-and-sew shop for assembly.

<https://www.trivantage.com/>



20' x 16' Custom Wooden Custom Fat Timber Pergola in Old-Growth Redwood with Curtain Rods on four sides. Retractable canopy designed in cooperation with Infinity Canopy of Los Angeles, CA.

Photo Courtesy of Darren & Elva L. of San Jose, CA.







Silverado Modern Pergola with Coffee-Stain Premium Sealant.

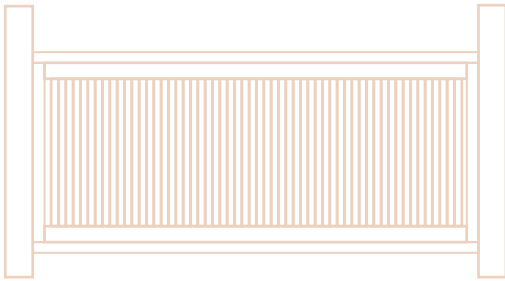
Photo Courtesy of Brian A. of Lincoln, CA.



## Custom Privacy Options

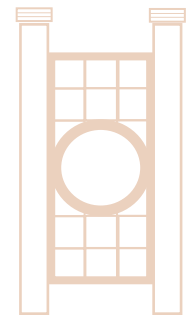
Whether you're creating a unique backyard oasis for intimate family occasions or a bold gathering space in a corporate office park, Forever Redwood is prepared to listen, and help clarify your vision.

Here we have a sampling of custom privacy panels and structure details that we've developed with customers over the years.



40' x 14' Arched Pergola in California Redwood with privacy stalls added by custom request.

Photo Courtesy of D. H. of Lewis Center, OH.



40' x 18' Custom Pergola with custom trellis panels between corner posts and custom copper caps on all posts.

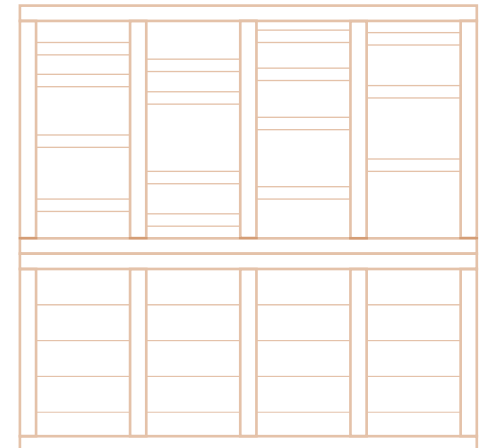
Photo Courtesy of L. H. of Greenwich, CT.



8' x 6' Small Pergola in Mature Redwood with custom gates by custom request. Photo Courtesy of M. R. of Carpinteria, CA.



12' x 10' Catalina Cabana with Coffee-Stain and Transparent Premium Sealant. Installed in Catalina Island, CA.





More  
custom  
privacy  
panels



Above: 9' X 9' Custom Pergola in California Redwood with three custom, solid privacy panels and two shelves.



Above: Custom privacy panels wrap around two and a half sides of the Pergola. The wood is finished in Transparent Premium Sealant. Photo Courtesy of Wanlass Park of San Pablo, CA.

Below: 12' x 22' Custom Arched Pergola in Douglas-fir with Coffee-Stain Premium Sealant. Photo Courtesy of Steve and Heidi J. of Windsor, CA.





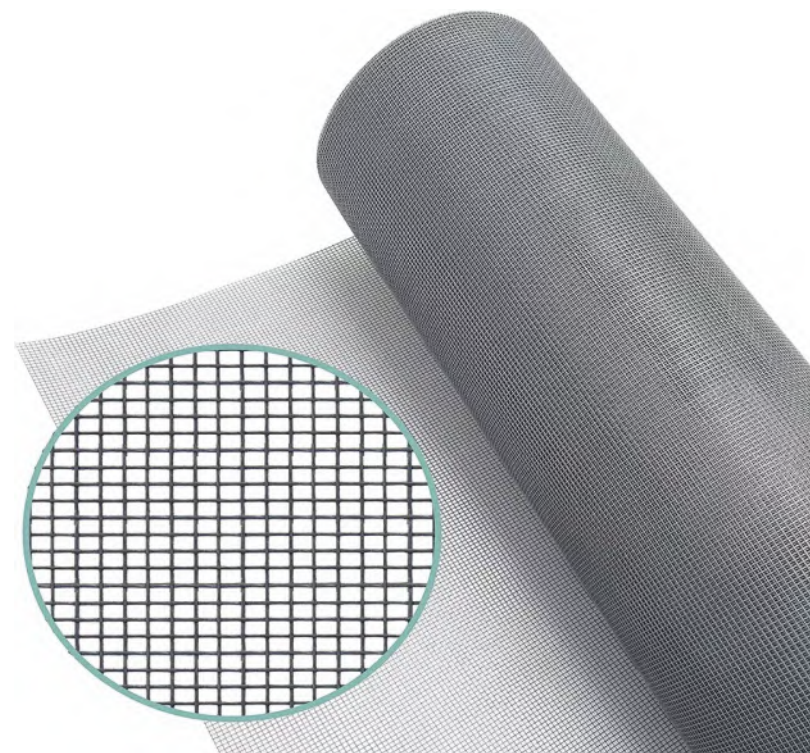


## Mosquito Hell?

Add screening. It is not on our website as an option, but if you need screening just let us know when you order!



Photo shows the original Asian Fusion Pavilion installed without screens.







Asian Fusion Pavilion (Options: 22' L x 16' W, Mature Redwood, 4-Asian Fusion Anchoring Sets, 10' H, Coffee-Stain Sealant). Custom Screens Added: Customer called 5 years after original order was installed to add screens all around. You can see the different finished look with the newly added screens from the original structure



# For more privacy, Consider a Gazebo

Add walls to a pavilion and it becomes a Gazebo. Gazebos are outdoor rooms that can serve as a private getaway and an intimate gathering space.

Our Gazebos come in many configurations and styles. They can be built up to 20' x 20'. Special features include sliding doors, hinged doors, sunroofs, and floor-to-ceiling windows. You can even add electrical conduits for lighting, a fan, a space heater, or an entertainment center.

Gazebos can be made to adjust with the changing of the seasons. Our Sun Gazebo, for example, comes with sliding doors. Additional doors can be provided with screens in place of solid panels. They're easy to swap out.

Ask your Architect about seasonal options for your project. You may also want to discuss other options, such as window tinting and wire concealing trim.

10' x 14' Dream Gazebo in Mature Redwood. Photo Courtesy of Gail Edelman of Rockaway NJ.







14' x 12' Sun Gazebo in California Redwood with skylight and complete floor. Photo Courtesy of P. G. of Sammamish, WA.



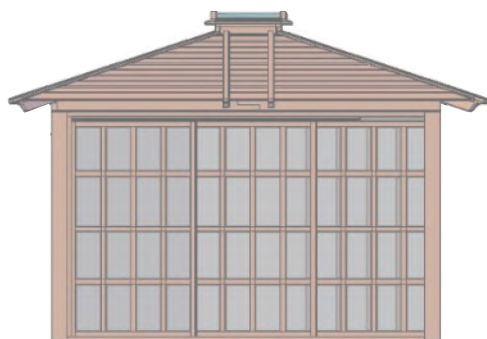
12' x 10' Kikue's Tea House in California Redwood with interior and exterior decking.





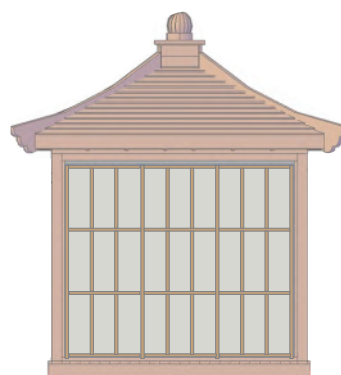
## Sun Gazebo with Sliding Doors

Sun-filled space with sliding and removable polycarbonate window panels on all sides. This long-lasting, light-infused Gazebo can include a skylight that opens for ventilation and more sun.



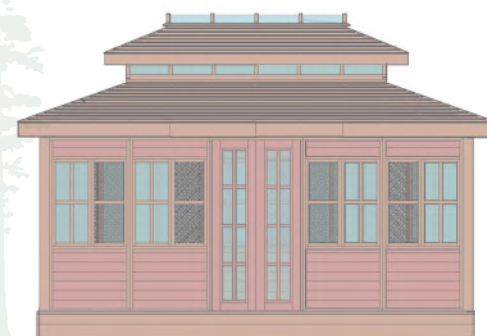
## Kikue's Tea House

When nothing but a traditional Japanese Tea House will do, there's the Kikue. This gorgeous, flexible design takes you from complete privacy to a sun-filled open Pavilion in seconds.



## Dream Gazebo

The Dream Gazebo is our finest. The cupola roof, the finely finished interior walls, the flooring, the shingle roof... the list of detailed craftsmanship doesn't fit in this tiny space!







## Octagonal Sunroom Gazebo

Bring light and beauty to your yard with this gorgeous octagonal-shaped sunroom. This sun-friendly design showcases the natural long-lasting beauty of California Redwood.



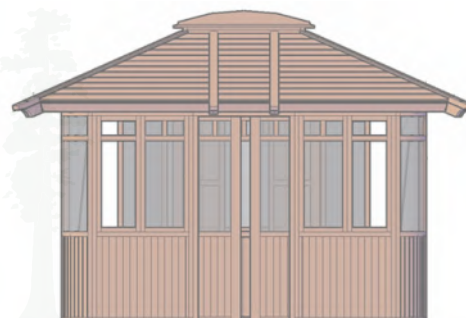
## DIY Gazebo

Create a new indoor space in your backyard for private relaxation. The DIY, like most of our Gazebos, can be customized with dimensions up to 20' x 20'.



## Spa Gazebo

Perfect for your hot tub, massage table, meditation room, or even hammocks and comfy chairs. The Spa Gazebo Kit includes a sunroof option to let in all of those beautiful rays during any season.





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Since 2005, we have built fully insulated gazebos with internal walls and floors.



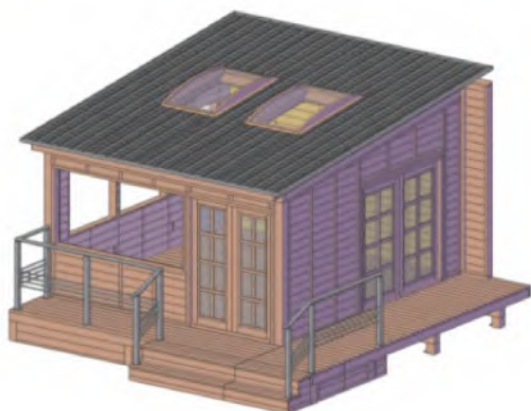
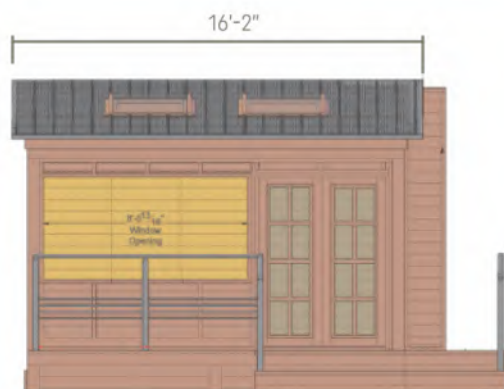
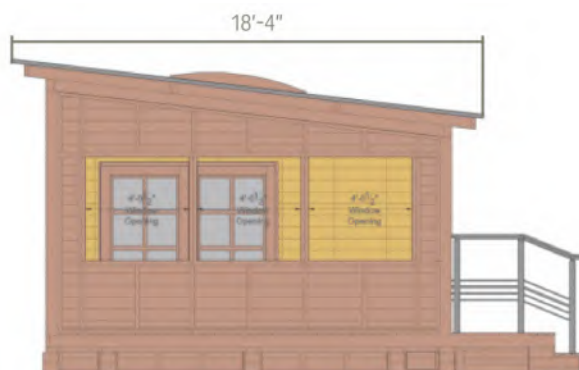
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Since 2014, we have also built the Kid's Backyard Cabins in sizes up to 16' x 16'.





In 2021, we completed our first Palo Alto Backyard Cabin as an 18' x 16' with a wrap around deck. It is a completely insulated cabin with skylight, double paned windows, internal ceiling, walls and flooring. The Palo Alto is available up to a 20' x 20' size. Each is personalized to meet your wishes.



The Palo Alto Backyard Cabin shown here as an 18' x 16' in California Redwood California Redwood, Sugar Pine Internal Walls and Ceiling, Windows Purchased Locally, With Two 3' x 5' Skylights, Custom Roof, Horizontal Siding, Custom French Door without Screens, Complete Floor & Deck, Custom Metal Railings and Wood Steps, Electrical Wire Trim on the Walls & Transparent Premium Sealant. Photo Courtesy of A. Ramon of South San Francisco, California.



Soon after The Palo Alto went live on the site, we began receiving requests for variations with a bathroom partition and/or with a mini kitchen. We were asked to build a two story Tiny House with a footprint of under 120 square feet so that it can be built without the need for permits. The first Tiny House was designed for Ms. Penny White of Chico, CA. So, it is called Penny's Tiny House. Here are renderings since it is still in design as of publication date. Basically, you dream up what you want, we draw it and get your feedback until you say "build it". Whether it is one or two stories, we can stick to a minimal square feet to fly under the permit radar or larger with full documentation for permitting, just let us know what you need and we'll come up with a plan:

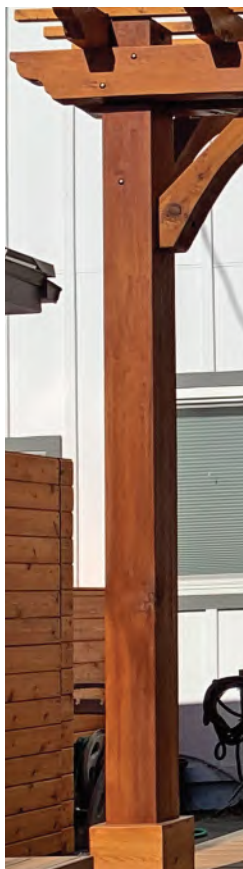




# Decorative POST TRIM

Another special option we offer is adding vertical or horizontal trim pieces to the standard posts to give them a more multifaceted appearance.

Standard



Vertical



Horizontal



## *Need taller or shorter posts?*

Our standard heights range from 8 ½'-12'. Most customers choose post height in proportion to the longest side of their structure. Generally, structures smaller than 15' tend to go with posts 9' or less in height, while structures 20' or longer (and structures planned through existing decks) go with 10' or longer posts. If you require posts over 12', add a note in the comment section at checkout.



# Decorative COLUMNS & MASONRY WORK

## Masonry Work

If you have existing masonry work in place, or would like masonry work to serve as part of your pergola or pavilion support, the post length can be customized to accommodate the existing height of the masonry. Or, we can simply provide you with a roof, and no posts. As with decorative columns, your masonry work can be load-bearing or non-load-bearing. In the former case, the posts are anchored to the top of the column. In the latter case, the masonry is built around the standard pergola posts after they are anchored to the ground. When masonry work is added after the posts are installed, it is a good idea to create a barrier between the wood posts and the masonry work. We recommend Hardiboard. It's a small investment that will add longevity to the posts.

Clockwise from top-left:  
15' x 20' Arched Pergola in Mature Redwood with Lattice Roof Panels, 10' Post Height and Anchor Kit for Stone (non-load-bearing columns).

20' x 20' Arched Pergola in California Redwood, Customized with Two Extra Posts (some wrapped in masonry).

14' x 18' Attached Arched Pergola in California Redwood with Both Posts Wrapped in Masonry.

19' x 32' Custom Pergola in Mature Redwood (non-load-bearing Tuscan columns).

## Decorative Architectural Columns

Some customers choose to add architectural columns (or pillars) to their Pergola or Pavilion. Columns may be load-bearing or non-load-bearing. Load-bearing columns sustain the weight of the roof, replacing the wooden posts that would otherwise be there. Non-load-bearing columns are hollow and made to hold a 6x6" timber within them. They are installed around the wooden posts, which are anchored to the ground.

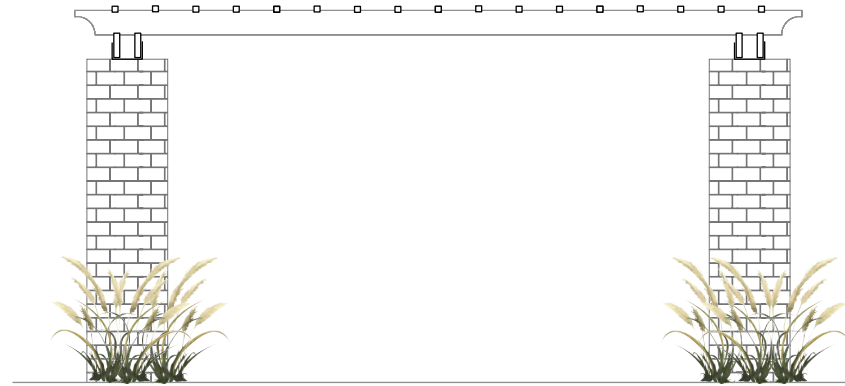
Although Forever Redwood does not manufacture architectural columns, we support you in crafting a pergola or pavilion to incorporate the style of columns you choose. If you're interested in load-bearing columns, we recommend you purchase them locally, as shipping costs are substantial. If you're interested in non-load-bearing columns (the most popular option), you can find many examples on the Internet. Google "architectural columns" for a variety of options in fiberglass, wood, PVC, and other materials. One company we've successfully worked with repeatedly is Pacific Columns. If you are going to add non-load bearing architectural columns, just let your Architect know which ones you want and we will design them to fit the structure, adding them to your order once we have worked out all the details with you.





## You can also combine an Attached Pergola with masonry columns. The possibilities are endless!

A slight variation on combining a pergola with masonry columns involves building your Pergola atop a pony wall or crib wall. The Pergola shown is finished with our cherry stain.







The Montvale Pergola, finished with our coffee stain, comes with 8x8" posts and 2x8" roof timbers.



# END CUTS

*Custom & Standard*

In addition to customizing your post trim, you can also customize the end cuts of the roof rafters to get the exact aesthetic you desire.

Here are several examples. You aren't limited to these variations, as you can see reflected in our custom projects.

**Crescent (Standard)**



**Clouds**



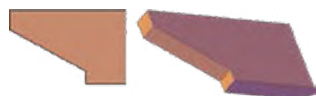
**Montvale**



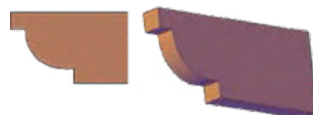
**Viking**



**Axis Step**



**Corbel**



**Champion**



**Flush**





# HEATER DETAILS

If you plan to add heaters under your pavilion, let your Architect know the specifications for the heater(s) you wish to use and where you'd like to place them. We can then draw them in the design, add bases as needed, and make sure they are set at the appropriate distance for safety.

Sometimes we have to add a bit of height or adjust the size to create adequate spacing between the structure and the heat source. It is important to use common sense when incorporating heat sources near a wood structure. For example, it is not a good idea to let your teenagers throw a winter party under the pavilion unsupervised.



# REMOVABLE ROOF CUTOUT

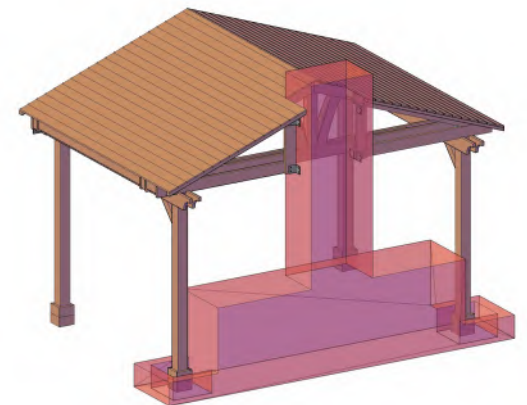
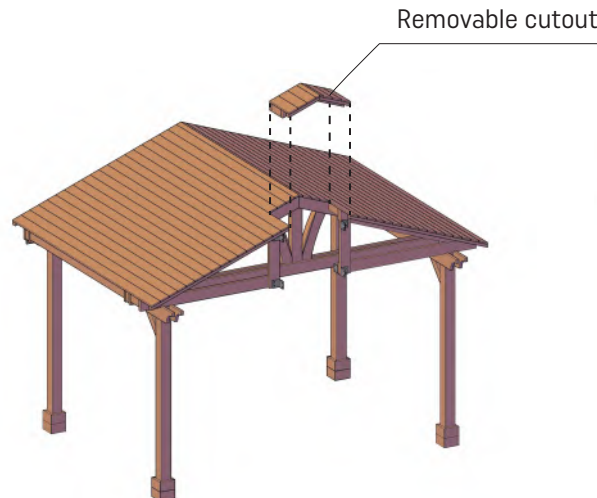
A fireplace can be the cozy focal point of your Pavilion.

You can place a fireplace anywhere under your Pavilion.

A popular option is to abut the chimney to the pavilion's roof line with a cutout so the fireplace is partly under the roof.

If you are planning a fireplace in the future, we recommend the removable roof cutout. When you're ready to add the chimney, just unbolt the cutout. This eliminates the need to cut the roof or make structural changes.

The following drawings and photos show typical perimeter removable roof cutouts and how they bring the fireplace under the roof line:









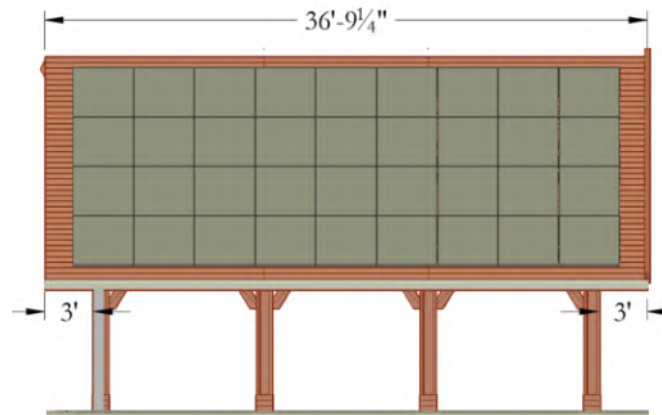
# SOLAR PANELS

Just let your assigned Architect know the specifications of the panels along with how many you wish to add and they will prepare drawings for your review.

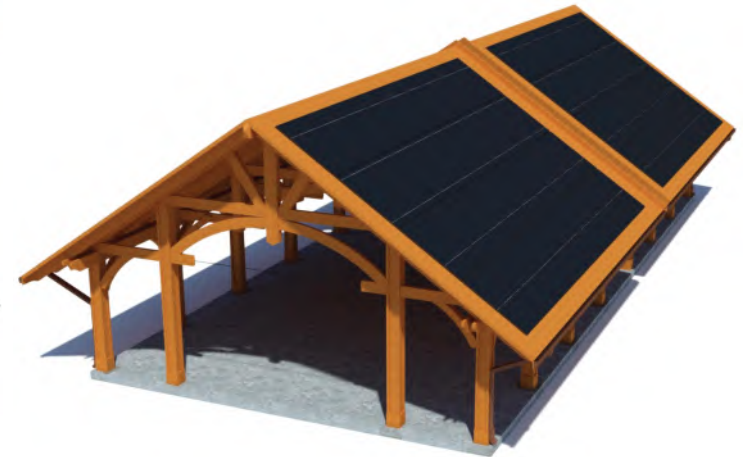
Solar panels are not too heavy, only minimal customization is generally needed since our structures tend to be oversized.

One customization that is often requested is to adjust the pitch of flat roof Pergolas to maximize sun exposure as illustrated by the image on the right.

In the sample below, we prepared a Cardinal's Nest Pavilion for solar panel installation. The tongue and roof boards were increased to 1 3/8" in thickness to accommodate the huge array while the rest of the structure remained unchanged.



ELEVATION VIEW



ISOMETRIC VIEW

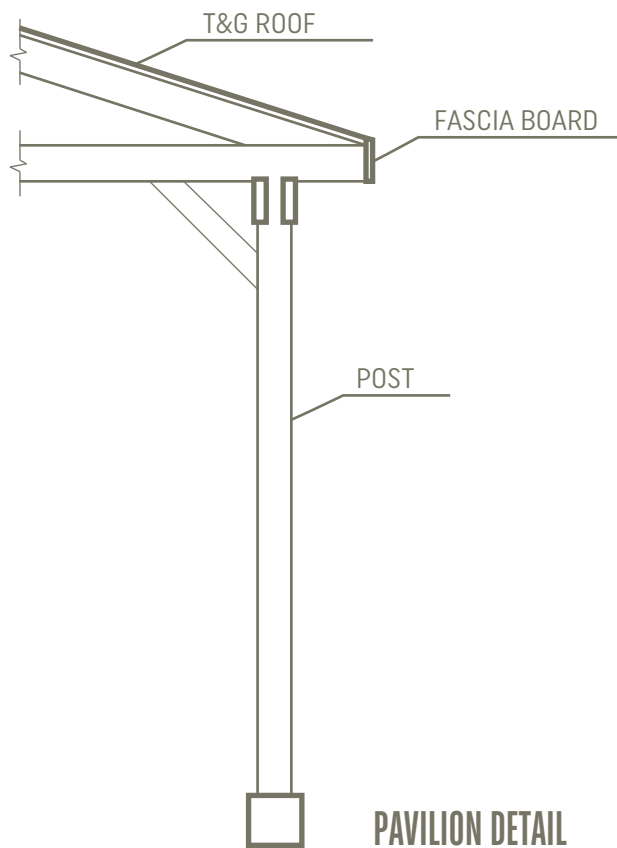
## *Introducing* The Solar Panel Pergola





# FASCIA BOARD

If you are planning to add gutters to your Pavilion to manage water runoff, we offer a fascia board option that is made with the same wood and finish as the rest of the structure. The fascia board closes up the rafter ends, creating a better surface for attaching the gutters.





# Accessory Bases & Shelving

Once you finish the design of your shade structure's basic elements (height, length, width, roof pitch, trim details, etc.), it's time to consider whether any accessories you're planning to include will require shelving or bases. For example, to beat the summer heat, you might wish to install a ceiling fan or two. If so, we'll provide a matching base to make it easy. Typically, the base is bolted between the rafters. If you're ordering one ceiling fan, the default position for the base is the center of the ceiling. But you can place the base anywhere, as long as you have sufficient clearance. For larger structures, you may want to add two or more ceiling fan bases.

When a ceiling fan is part of the project, please let us know the specifications in advance. This way, we can include the fan's dimensions in your drawings. You'll get a good sense of how the fan(s) will look as well as whether or not you'll have adequate clearance — before you buy it.

Many of our customers have had good experiences with Big Ass Fans, a manufacturer out of Kentucky. Funny name, great fans! These fans circulate a lot of air while remaining quiet: <https://www.bigassfans.com/> Alternatively, many customers go to Amazon and find an infinity of options under "Ceiling Fans Outdoors." Consider fans with comparatively high CFM (cubic foot per minute rate of air movement). Fans with LED lights are popular because they often create generous lighting.

We recommend Accessory Bases if you are planning stand-alone lighting, television mounting, speakers, heaters, and/or a hood to vent your outdoor grill. Whatever accessories you have in mind, tell your Forever Redwood Architect the specifications and planned location. The Architect will then update your drawings so you can then review and adjust your accessories or the structure to accommodate them.



Del Rio Cathedral Ceiling Thick Timber Pavilion



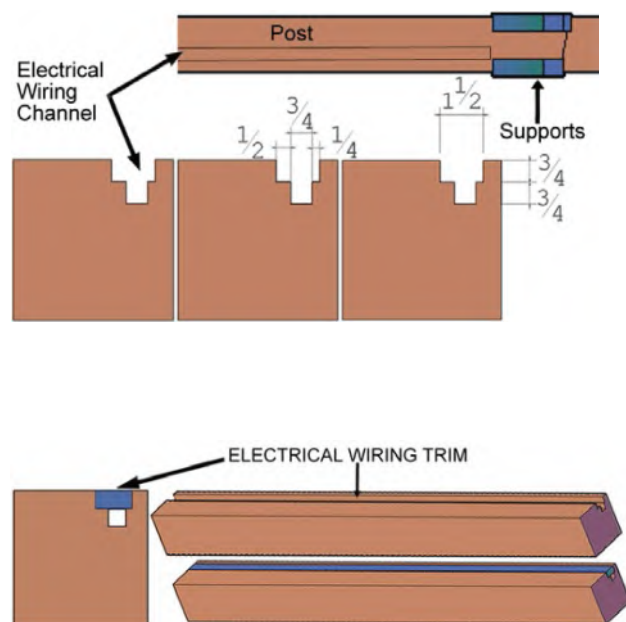
Del Norte Outdoor Kitchen Pavilion



# Trim Kit

## To Hide Electrical Wiring

If you plan to run wiring to add lights or fans to your Pergola, we can add a cutout to your posts and place a trim piece so the electrical wiring will be invisible, see diagram. The trim is on the interior side of the posts and is attached with finishing nails for a smooth finish. When you order a structure with an electrical trim kit, your first set of drawings will include numbered posts, so you can then let us know on which posts you would like these accommodations made. If you are installing patio pavers, concrete, or a deck along with your structure, you will want to make sure that a conduit is run underground to the posts first.



14' x 14' Arched Pergola in Mature Redwood with electrical wiring trim on two posts and one ceiling fan base. Photo Courtesy of Steve W. of Hoboken, NJ.





# DECKING

We can design, build, and install a deck of any size and shape along with your Pergola, Pavilion, or Gazebo. Decking can be added inside your structure, outside, or both. We do not offer standalone decks. Those are best done by a local contractor. If you are combining one of our shade structures with a new deck, it is a good idea to design and build both as an integrated project. We don't normally attach our shade structures to the deck because it is best to keep them closely related but structurally separate. This is usually done by having the shade structure's posts go through the deck to their own footings below. The deck openings are trimmed out in a handsome way so as not to leave an unsightly opening. In this way, they are structurally fully independent of one another. Decades from now, if the deck needs some work you don't have to touch the shade structure to replace any deck timbers.

If you have an existing deck on which you would like to place a pergola, pavilion, or gazebo, we'd be happy to have a look. We determine feasibility for such projects on a case-by-case basis. Generally, we recommend going through the existing deck and keeping the structures independent of each other. However, depending on the quality and age of the deck and the overall weight and design you envision for your new shade structure, it can be bolted to an existing deck. In these cases, the main timbers under the deck must be aligned to the posts above the deck for anchoring purposes. These details will be fine-tuned during the design phase of your order.

Remember to let your Architect know what accessories you'll be adding to your structure so that we can draw them into your design to help you make the best decisions with fan bases, heaters, audio, lights, television mounts, and more.





## Accessories you may want to consider

### Big Ass Fans

Whether it's a porch, a portico, or a lakefront lanai, fans from Big Ass Fans keep your outdoor space comfortable year-round.

<https://www.bigassfans.com/>



### Sunesta Screens

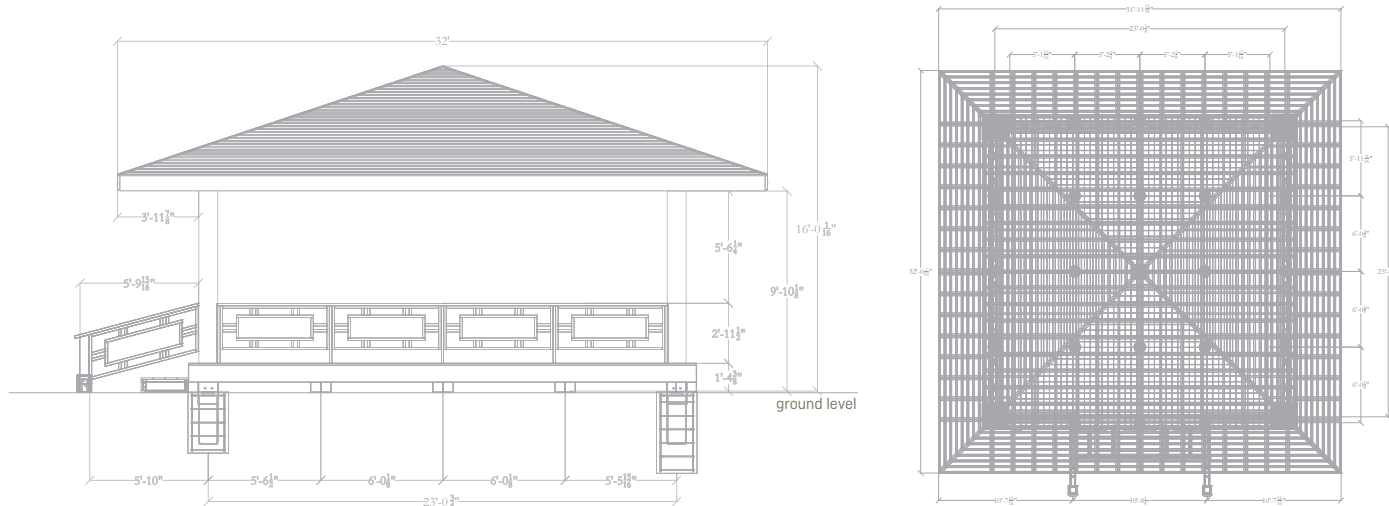
Retractable screens from Sunesta are a delightful way to enhance your favorite living space. When it's bright out, extend one of these patio screens over your Pergola and enjoy some much-needed shade. Then roll the screen back up when you need less protection from the elements. <https://www.sunesta.com/blog/retractable-screens/>





# DRAWINGS

*Everything is Made to Order in Our Custom Woodworking Shop*



All shade structure purchases include custom drawings. You will have an assigned Architect from our Engineering office who will prepare detailed drawings for your review and final approval prior to beginning construction. This ensures that everything has been considered and all details are to your liking. The drawing process adds time to the production process, and is the key to making sure your dream outdoor structure is exactly as you envision it.

Custom drawings help you:

- Double-check your project site to be certain that the proposed sizing will work. We will ask you for photos from at least two angles of the site area so that your Architect can see what you are seeing and offer input as needed.
- Make any required changes to your plans to incorporate details you didn't think about when you first ordered.
- Ensure that nothing is left to interpretation: every detail will be assessed from different angles so that you can check the proportions, joints, spans, and heights, confirming that the accessories you have in mind will work functionally and aesthetically.



Custom Loreto Pavilion



# CUSTOM STRUCTURES ARE OUR SPECIALTY

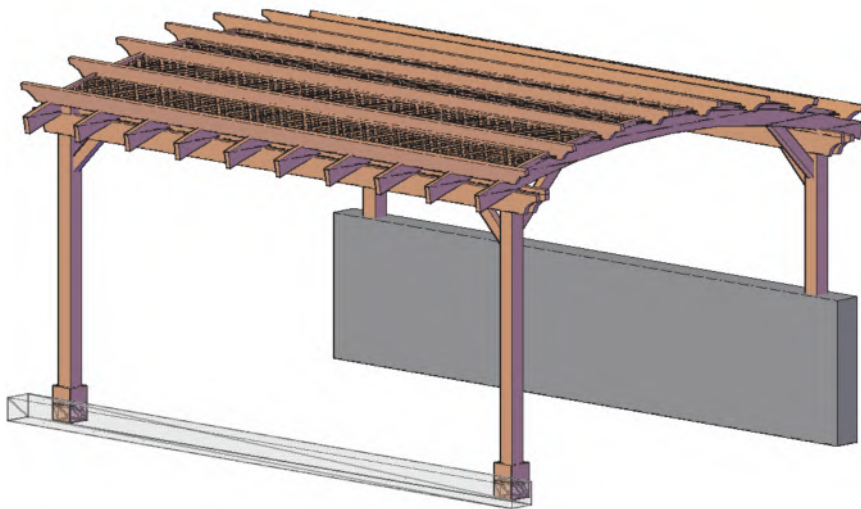
Creating personalized structures is the focus of our process. For many projects, a clear-cut standard design will work and you will approve your drawings with just a few minor revisions. But in some cases, it is difficult to visualize a solution for a space. You can spend months thinking about it and never get a project started because you are not clear what will work. You can hire an architect, landscape designer, and/or an engineer to prepare conceptual drawings, but you still need to find a builder. With Forever Redwood, you have Architecture, Engineering and Manufacturing all under one roof.

If you are not clear on what will work for your space, don't let it stop you. One advantage of working with us is that you don't need to have it all figured out in advance. Let us know your basic idea and we will create a drawing. After spending a few minutes with the drawings in the location you are planning to put the structure, you will undoubtedly have ideas for improvement. Send us the changes and we'll prepare another drawing, continuing the process for as long as it takes.

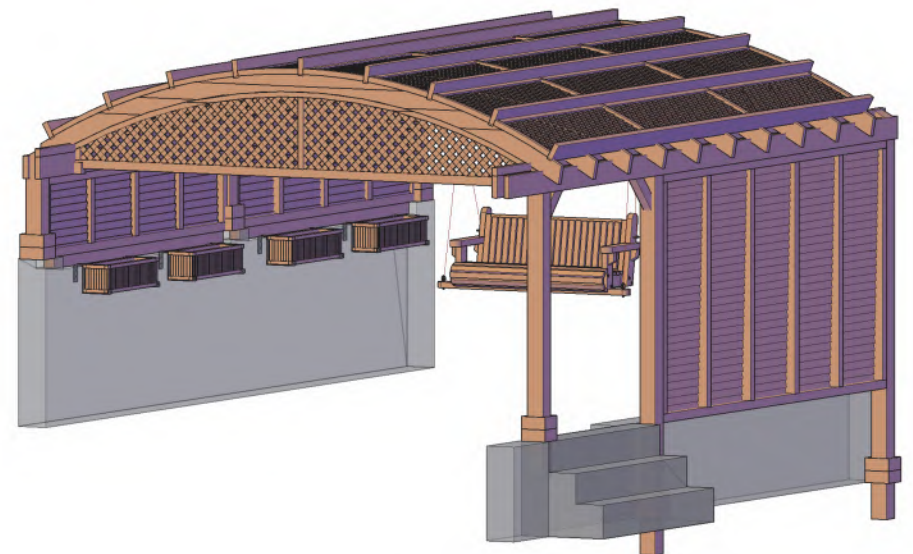
The example below illustrates this process. The customer started with an arched pergola and via emails with his assigned Architect, the project changed step-by-step into something completely different. Beginning as a standard arched pergola with 2 shorter posts, the pergola was then sized and resized over a couple of months. A privacy panel was added, and then louvers, a swing, and planters followed. The metamorphosis of this design highlights the tools we offer you to fine-tune a hazy, initial idea into something you love and have confidence will work—all before giving us the green light to build.



Arched Pergola with fixed walls and louvers



Revision A



Revision G



# MORE CUSTOM DESIGNS

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*The possibilities are truly endless!*







## VISUALIZE YOUR STRUCTURE

As you're winding down the design process with your assigned Architect, you can position placeholders where your structure's posts will be to help visualize the completed project. Customers often use potted plants for this purpose. For example, if your posts are set at 18' x 18' spacing, place a potted plant where each of the posts will be. Then take photos from the two or three angles with the views that you are most concerned about. Be sure to take photos from a distance to show how the structure will line up with your house and other major elements. Send the photos to your Architect and ask them to drop the drawing into the photos. This mock-up will give you a precise feel for the final installation. If needed, you can request last minute adjustments before signing off to begin the next stage — building.

## PERMIT & HOA SUPPORT

Most Pergolas, Pavilions, and Gazebos we build are done without permits. Simply order and install. About 20% of our customers pull permits because their structure is relatively large. In all cases, you have to take into account the local set back rules that limit how close to your neighbor's property line your structure can be. There may be other limitations. You can usually research this on the Building Department's website for your local jurisdiction.

In most areas, structures up to 120 sq ft are exempt from permit requirements. In some areas, 150 sq ft (or even up to 200 sq ft) structures have no or minimal requirements. In many cases, when you are over 200 sq ft, or are in a high snow load or hurricane wind zone, you are required to secure structural drawings and calculations, including a wet stamp signature from a licensed structural engineer in your State. In some areas, you may need prior approval to put any new structure on your property—whether from your Homeowners Association, your municipality, or both.

If you do need to pull permits, once you approve the final drawings, we will send them to a Structural Engineer licensed in your state to stamp and sign them in the required format and to prepare the necessary structural calculations. You will have to pull your permit yourself, but we will organize and prepare all the needed documentation. We have relationships with licensed Structural Engineering firms in all 50 states. There is an additional cost of \$2,500 for this service for most structures up to 500 sf. Structures over 500 sf can be as much as \$3,500. Your assigned Architect will handle all the paperwork. This amount is added to your invoice total. You will receive three sets of Structural Drawings in an 18" x 24" printed format with a wet signature, stamp, and structural calculations. The structural documentation will include every timber size, bolt size, span, angle, as well as detailed information concerning footings. It takes 4 weeks

in most cases to convert your final approved drawings into the three sets of stamped and signed structural drawings and structural calculations. You'll need to submit two sets to the county permitting office to pull your permit. Keep one copy for your records so you can document how everything was built.

Once you have your permit in hand, reach back out to us and we will place your order into the production queue.

Unfortunately, there's no way for us to guarantee that your municipality or HOA will approve the construction. However, we do have a success rate of over 98% over the past 10 years. In the few cases where an order wasn't approved, the number one reason was fire risk and not due to the structures themselves. In certain areas, fire risk has increased which has resulted in much stricter rules and the need for approval from the local Fire Marshall.

We sometimes can mitigate the fire concerns for Pavilions for example by using a metal roof and a flame retardant product on all the wood like FlameStop II.

Also, in some hurricane-prone areas we do need to do more extensive structural engineering and use more extreme construction techniques. We have yet to fail at getting our customers the documentation needed to pull permits in these cases. If your order is unable to proceed due to a strict fire code, or if you change your mind for any reason and do not want to proceed, we will cancel your order and refund half of your initial (one third) deposit. The other half of the deposit is retained for the design and engineering costs that have already been incurred.

We understand that, especially for large structures, this bureaucratic portion of the project may be a pain. Our process does ensure, however, that when your project is at last finished it will be in complete compliance with local authority. This protects and adds value to your home equity.

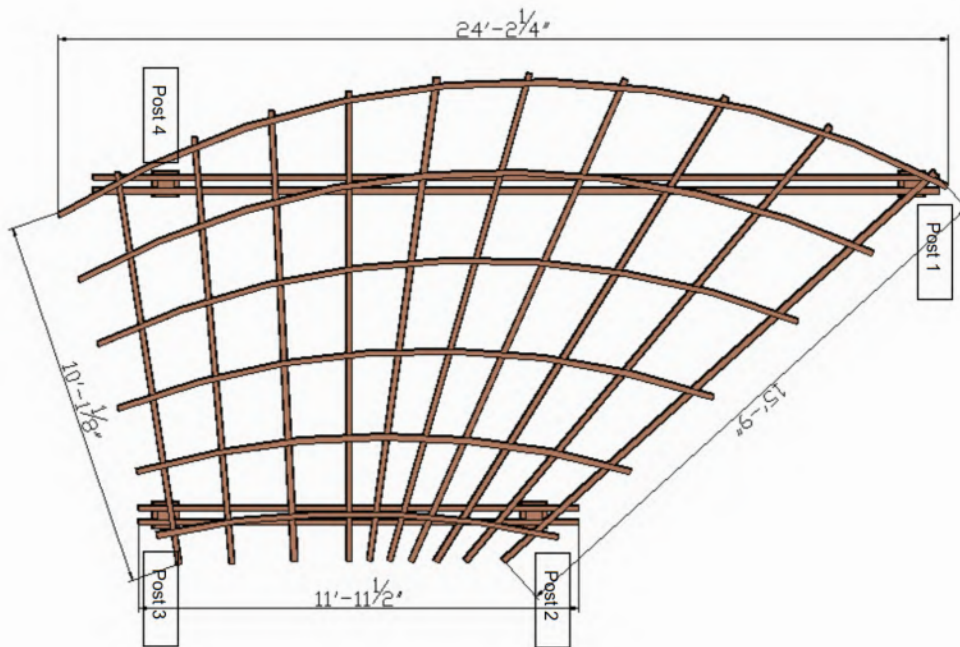


*So you have an irregular space that needs a shade structure...*

Sample of an irregular shaped deck:



We can help. Working with irregularly shaped houses and decks is how we got our start building custom projects. The details may take a bit longer to fine-tune. And you may need a site visit to confirm measurements once the design phase is completed. But rest assured — we work with irregular spaces everyday. Your Architect will assist with ideas until you have the look you love.



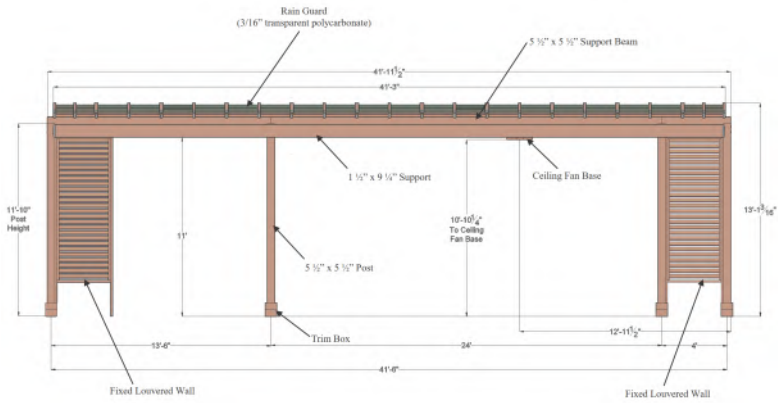
Drawing and photo above feature a pergola designed to match the irregular shape of the patio.



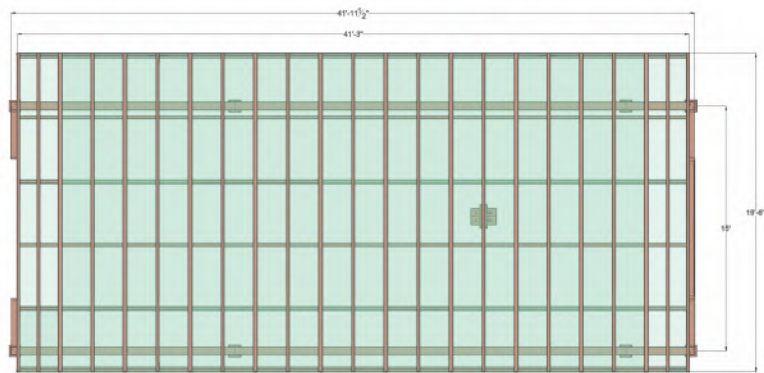




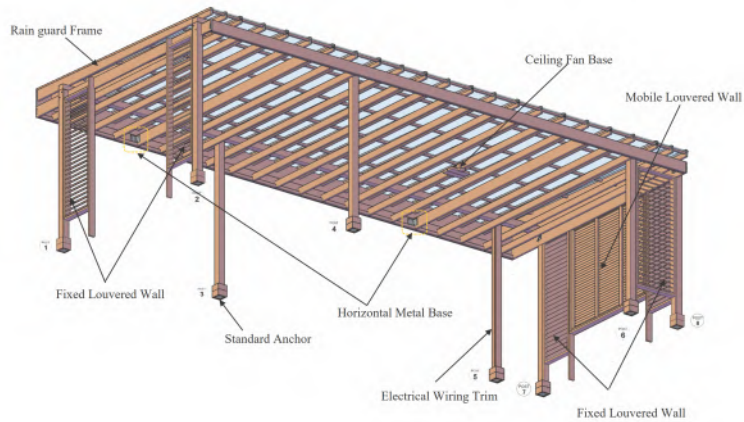
# CUSTOM L.A. MODERN PERGOLA



Front Elevation



Top Elevation



Isometric View





The first Victorian Trellis Pergola being built to order in our custom woodworking shop.





# WOOD CHOICES

## *The Pros and Cons of Redwood, Cedar, Pine, and Other Materials*

One of the most important decisions you'll make about your structure is what material to use to build it. For hundreds of years, wood has been the traditional and favored material for outdoor structures. Many wood species are available, and your choice of wood will determine how your structure will look, what maintenance will be required, and whether it will last just a few years or many decades.

The six most abundant types of wood available for outdoor use in the U.S. and Canada are Cedar, Pressure Treated Wood, Pine, Teak, Exotic Hardwood, and California Redwood. This chapter will review the pros and cons of these wood grades specifically for use in Pergolas, but can be applied to any type of outdoor structure or furniture you are considering.



The Traditional Wooden Garden Pergola (Options: 20' L x 14' W, Mature Redwood, Slats at 6" and Rafters at 18", 4-Post Anchor Kit for Stone, 9' Post Height, Transparent Premium Sealant). Photo Courtesy of Mary Louise and Gerry Neugent of Des Moines, IA.

## THE TRUTH AND FICTION OF TEAK

Teak (*Tectona Grandis*) is a deciduous hardwood renowned for its elegance, durability, and longevity, and holds up well even in severe climate conditions. Teak is becoming the most widely used outdoor wood in the U.S. and Canada. It's a good economic choice for outdoor furniture and structures you want to last. It has some maintenance issues, but is reasonably priced and well-distributed.

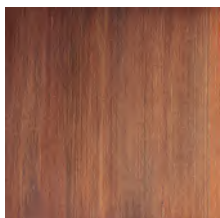
Environmentally, teak is a mixed bag. Teak sold in the U.S. and Canada is 99% plantation grown. There are teak plantations all over the world now with a growing concentration in Central and South America. These plantations grow teak in rows and harvest in 20–40 yr rotations in most cases. The highest quality teak plantations have up to 80 yr rotations, but are rare. Teak is marketed as a "sustainably harvested" alternative to exotic woods taken from rainforests. The teak industry is large and strongly markets this environmental angle. It's part truth, part fiction.

The truth is that teak does take pressure off of native forests as a source of good quality wood. However, a significant percentage of these plantations are grown on lands that were once forests. Teak is not native to the Americas and is a transplant from Asia. They often replace native biologically diverse lands with an imported monoculture that is known to degrade the wildlife habitat for many species.

So, it's a mixed bag with teak—good quality wood and better than logging the Amazon, but not green in any real sense either.

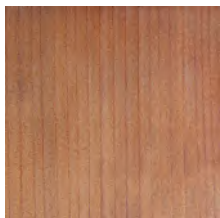
info@foreverredwood.com  
1 (866) 332-2403





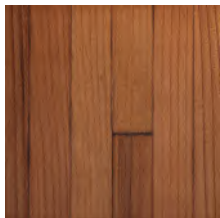
#### **Old-Growth Redwood**

All Reclaimed Wood (Available for all furniture but only upon special request for Pergolas, Pavilions and Gazebos). Choose from Heart Grade (or better) Tight-Grain.



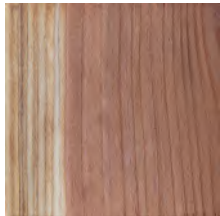
#### **Mature Redwood**

20 year warranty  
Premium quality and excellent weather resistance.



#### **Mosaic Mature Redwood**

20 year warranty  
00% Recycled Wood  
Combination of Mature Redwood with some Old-Growth Redwood.



#### **California Redwood**

15 year warranty  
High quality and very good weather resistance. Most popular.



#### **Mosaic Redwood**

12 year warranty  
100% Recycled Wood from all 3 Redwood Grades.  
Economical, Ecological, and increasingly Popular.



#### **Douglas-Fir**

10 year warranty  
Good quality and good weather resistance. Money saving option.



#### **Mosaic Douglas-Fir**

10 year warranty  
Eye-catching, sturdy and 100% post manufacturing recycled material.

# WHAT ABOUT REDWOOD?



26' x 24' Sebastopol Pergola in Mature Redwood (extra large timber custom design with 8x8" posts and 2x10" arches).  
Photo Courtesy of Ms. Diane Williams of Encinitas, CA.

Redwood was the outdoor wood of choice for most of the 20th century. Like teak, it is a beautiful wood with an excellent reputation for outdoor durability. It was available nationwide and used for everything outdoors until the early 1990s. But, the Redwood forests were over-logged and in the 1990s, lumber production collapsed to one third the level of prior decades. It has not recovered and will not unless major changes are implemented in the way the privately owned forests are harvested. Today, Redwood is available only in California and a few western states. The overall quality has dropped because the average size of trees being harvested is smaller than in prior decades.

In 1995, Forever Redwood purchased and began to restore Redwood forestlands. We offer Pergolas and Pavilions in three grades of wood: two different grades of Redwood along with Douglas-fir. California Redwood, our most popular grade, has a 15 year decay warranty and is higher quality than the standard Redwood available on the West Coast market today. The Mature Redwood has a 20 year decay warranty and is comparable in durability to the highest grades of teak.



From left to right: Mosaic Douglas-fir, Douglas-fir, Mosaic Redwood, California Redwood, Mosaic Mature Redwood, Mature Redwood, Old-Growth Redwood





Custom Thick Timber Garden Pergola Built in Western Red Cedar (Options: 23' L x 14' W, Open Roof with Slats at 12", Rafters at 18", 4-Post Anchor Kit for Wood, 2 Curtain Rod, Transparent Premium Sealant). Photo Courtesy of B. Barkman of Santa Monica, CA.

## AND CEDAR?

There are six cedar species available in the U.S. and Canada. We only recommend Western Red Cedar and Port Orford Cedar.

Western Red Cedar is native to the west coast and is the most common cedar. It is more decay and insect resistant than the Eastern varieties. Western Red Cedar is a fine option because of its naturally strong decay and insect resistance. It is lightweight, dimensionally stable, relatively strong, and has a beautiful grain that is easy to work. Tables, pergolas, and other outdoor structures built from all-heartwood Western Red Cedar can be expected to last 15 years or more in most climates with minimal maintenance. With some maintenance, they'll last longer. The heartwood is a fragrant red/dull brown and the sapwood is nearly white. If the manufacturer won't specify all-heartwood, then it has sapwood in it and you can expect decay issues within 10–12 years if you live in a moist climate.

Port Orford Cedar is a West Coast native of Oregon and California. It is also relatively strong and highly decay-resistant. It's similar to Western Red Cedar, but not as abundant. If you can purchase an item made with all-heartwood Port Orford Cedar, you'll have a long-lasting beautiful piece at a reasonable cost.

The other North American Cedars—Atlantic Cedar, Incense Cedar, Northern White Cedar, and Southern Red Cedars—are not recommended for large projects like tables, pergolas, big benches, or planter boxes. They are beautiful, aromatic, and have good to excellent decay and bug resistance, but they are relatively weak in terms of structural, compression, or bending strengths. They will not hold up well to wind, weight, or other structural stresses unless you significantly overbuild in terms of the amount and size of the timbers used.

In general, for any large project involving cedar, we recommend that you:

- 1) Make sure all the timbers are heartwood-only for maximum durability.
- 2) Ask where the wood is coming from and how it was harvested if you are ecologically minded.

Western Red Cedar has become about 5% more expensive than Redwood due to tariffs placed on Canadian imports in 2017. This caused U.S. suppliers to take advantage of the higher Canadian pricing and increase their costs. Now WRC is more expensive than Redwood. Redwood will last about 25% longer than WRC of a comparable grade. You are better off with Redwood especially now that it is a bit less expensive. However, if—for any reason—you would prefer that your project be completed using all heartwood timbers of Western Red Cedar, we can and will happily provide you with a beautiful Cedar structure that will hold up well for years.



## HOW CEDAR COMPARES TO REDWOOD, TEAK, AND THE EXOTIC HARDWOODS

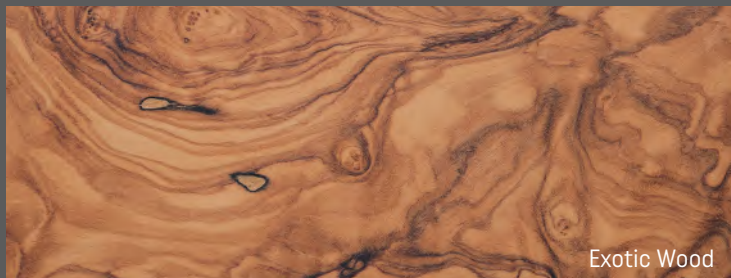
Western Red Cedar competes mostly with Teak, Redwood, and exotic hardwoods like Ipe in the higher-end outdoor furniture and structure market when considering appearance and durability. Exotic Hardwoods are not considered in this chapter because they tend to be harvested in ecologically murky ways and are not widely or consistently available.

Cedar is just as beautiful, dimensionally stable, and easy to work as Redwood. Like Redwood, it works well with just about any stain too. However, even though it is highly decay and bug resistant, a pergola built with the best all-heartwood Western Red Cedar will not last as long as the same structure built with the best all-heartwood Redwood.

Redwood has more decay and insect resistant tannins in its wood. For outdoor applications, it is the longest lasting wood that grows naturally in North America. Comparing the same wood grades, Redwood on average lasts 25% longer than Western Red Cedar.

Western Red Cedar is relatively strong in terms of compression, bending, and overall structural strength, but Redwood is about 10% stronger in all strength categories.

We have built a few projects using Western Red Cedar over the years for Cedar enthusiasts. If you'd like to design and build with Western Red Cedar, we can do it, but generally your cost will be 15 to 20% more than building with a comparable grade of Redwood that will last longer. Also, please keep in mind the Cedar timbers will be a bit thinner than the photos on our website because we cut our Redwood timbers to full inch dimensions, which on average is 25% thicker than standard lumber sizes.



12' x 22' Custom Arched Pergola in Douglas-fir with Coffee-Stain Premium Sealant. Deck and stairs added by custom request. Photo Courtesy of Steve and Heidi J. of Windsor, CA.

<https://www.foreverredwood.com/arched-pergola-kits.html>



## WHAT ABOUT PINE?

In dry climates, you can build outdoor items from untreated pine and either paint the wood or use a good quality oil finish. Unfortunately, most pines have minimal insect or decay resistance. For example, Southern Yellow Pine is a beautiful wood that is readily available at a good price, but it won't hold up in the moist outdoors for more than 5–7 years unless you are constantly refinishing or resealing it.

In almost all cases, much work is required to maintain any outdoor item built using pine, regardless of how dry your climate may be. Planter boxes in particular will not hold up well because of the constant moisture from the inside out. By contrast, anything built from Western Red Cedar, California Redwood, Teak or Pressure Treated Pine will require minimal maintenance.

## A BETTER ECONOMICAL ALTERNATIVE: DOUGLAS-FIR

Blonde or light-brown colored, Douglas-fir is structurally very strong, with substantial decay resistance (though not as much as Redwood). It's ideal for drier climates, where a 20-year lifespan is possible with little to no maintenance. In wetter climates, we recommend resealing your Douglas-fir pergola to help the wood last longer. Forever Redwood offers all our products in Douglas-fir with a 10-year warranty.

## MOSAIC ECO-WOOD

We have been manufacturing Mosaic Eco-Wood in our shop since 2009. We currently offer two options: Mosaic Redwood and Mosaic Douglas fir. Mosaic Redwood is composed of all three Redwood grades, and Mosaic Douglas-fir is composed of purely Douglas-fir. Each board is a mosaic of small reclaimed pieces. The contrast of colors and grains is eye-catching. But best of all—this wood grade is 100% recycled material. Our Mosaic Eco-Wood grades are made via labor intensive hand-jointing techniques in our shop to convert small pieces back into beautiful, strong, thick-timber boards. Although our Mosaic Eco-Wood is labor intensive, we are thrilled to finally stop sending these small beautiful pieces of wood to the local landfill. Best of all, what would otherwise be trash has been converted into beautiful wood works of art composed entirely of 100% post-manufacturing recycled material!

Both of our Mosaic Eco-Wood grade options are ideal for structures and furniture, although we do not use it for decking. We believe that solid wood is the best option for the kind of impact and wear that a deck must endure.

Even when left out in the harsh year-round sun, rain and snow without maintenance, all of our products made out of either Eco-Wood grade comes with a warranty against decay for 10 years.



The Traditional Wooden Garden Pergola



Del Norte Outdoor Kitchen Pavilion





## Last & Least PRESSURE TREATED WOOD

Pressure Treated Timbers are popular because they are inexpensive, long-lasting, and available widely in any size you need. They are made from average-quality pine lumber of several species processed chemically into timbers resistant to both decay and insects. Pressure Treated Pine has improved in appearance over the years and is heavily marketed. This industrial wood product can last for several decades and is relatively strong structurally. While Pressure Treated Pine will work well for some installations, there are a few drawbacks worth considering:

- The surface tends to dry out and develop splinters in a few years unless regularly maintained.
- The wood is toxic due to the chemical processes used to make it decay-resistant. This makes it a poor candidate for seating areas or eating surfaces.
- The appearance just can't match the natural beauty of Teak, Cedar, Redwood, or an exotic hardwood.
- The wood grain is punctured and of an unnatural color. It requires more staining and other finishing work to create a decent surface appearance.



Above photo shows a custom Pergola in California Redwood. Part of the order and design process is to make sure you select the right material for your project. Feel welcome to call or email anytime. We want to make sure that you love your structure since it will be with you for a long time!



## A note about aluminum

Aluminum is a popular solution for pergolas and pavilions. It is marketed as 'Alumawood' and made to look like wood. Its strengths include longevity and functionality. There are several louvered aluminum pergolas that are quite popular and available in almost any size. However, there are a couple of disadvantages. Unlike natural wood, aluminum gets hot to the touch in summer and cold in winter. It is also noisy when it rains. That said, we can add an aluminum or other metal roof as the final roofing skin on many of our pavilion designs (*see § 3, The Planning Stage —Sizing and Roof Options*). This works well because the solid-wood, tongue-and-groove ceiling muffles the sound of the rain.



## *Finishing Touches* **SEALANT AND FINISH OPTIONS**

Now that you've chosen the optimal wood for your structure, it's time to protect the surface and get it looking its best.



20' x 14' The Montvale Pergola in California Redwood with Coffee-Stain Premium Sealant



16' x 16' Modern Louvered Garden Pergola in California Redwood & Coffee-Stain Sealant

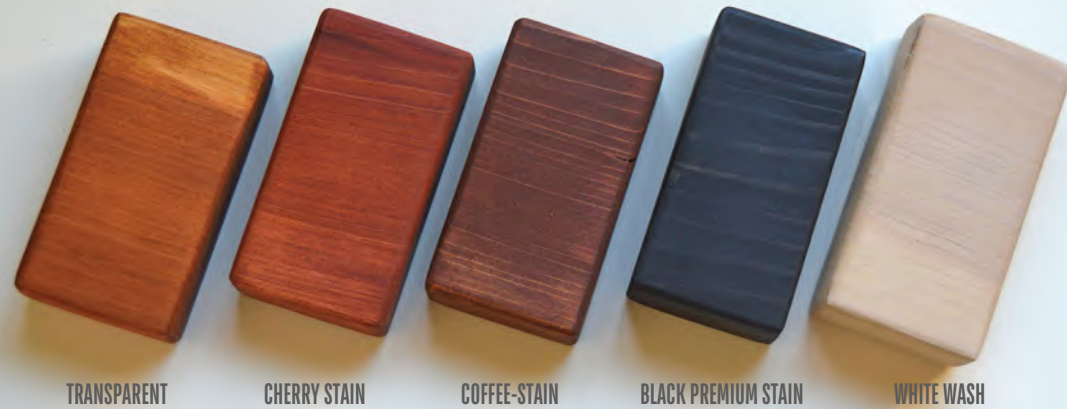
All of our furniture and shade structures ship finely sanded to 220 grit for a smooth-to-the-touch finish.



# Stains

If you would like a color stain, we will first seal your furniture or outdoor structure with our Transparent Premium Sealant. To follow, our stain options are: Cherry, Coffee, Black, and White Wash. There is a small charge for adding these stains. Different finishes may be used for different parts of the structure.

You can make a note of this preference in the comments box when placing your order and go over it with your Architect. We will not build the structure until you have signed off on all details of construction as well as the finish details you'd like to see.



## TRANSPARENT PREMIUM SEALANT

Our most popular finish is our Transparent Premium Sealant, which is recommended for the outdoors. This sealant leaves your furniture looking natural. It is a non-shiny, penetrating oil finish that helps keep the beautiful wood surface colors from fading. We will send you your new purchase completely sanded and sealed with two coats of the best penetrating oil finish on the market (Sikkens Brand). We wait 24 hours between coats to make sure they fully dry and cure for best results. We wait a minimum of 24 hours before packaging for the same reason. We recommend that you add one more coat after about 6 months or after the first winter. This allows the wood to adjust to its new environment. With every order, we include a small can of sealant for you with this in mind.

This is also the best option if you want to let the wood's finish fade over time, as is traditional for wooden Pergolas. Most of our customers like the traditional 'I have been here forever' look that a quality wooden Pergola develops over the years. If you go this route, hose and brush down the Pergola every once in a while. Otherwise just enjoy it! Often customers choose to grow vines along their Pergola as it weathers. Then, even the need for brushing or cleaning is eliminated.

For more on finish options and caring for your structure long-term, go to: <https://www.foreverredwood.com/redwood-furniture/care-finish/>

We offer the Transparent Premium Sealant for all of our 7 wood grades. The color tones shown are close representations of the color your structure will have. There is no extra charge for the Transparent Premium Sealant.

Transparent Premium Sealant





The Traditional Wooden Garden Pergola in California Redwood with Custom Stain.

Please note that with Douglas-fir, a dark stain creates a tiger-stripe effect. It is beautiful and most customers love it. If you are looking for a dark, uniform stain, we recommend any of the Redwood grades for a more consistent finish.

Learn more at: <https://www.foreverredwood.com/redwood-furniture/care-finish/>

Well, that's the long and short of finishing your shade structure. In the next section, we'll go back to the beginning, and take a deep dive into installation. Everything you could possibly want to know about securing your investment will be covered in detail. As always, if you do come up with a question we haven't thought of give us a call or shoot us an email. We're always happy to hear from you.

## OTHER FINISH OPTIONS

### UNFINISHED

You may be applying your own stain or want the surface color to fade to a 'weathered look' in a few months.

### OFF-WHITE OIL-BASED PRIMER

A perfect choice if you are painting your structure a light color. We apply two coats so that it is ready for one final coat.

### GRAY OIL-BASED PRIMER

Are you interested in painting your structure a darker color? We can apply two coats of this darker primer.

### WAX FINISH

Recommended for indoor furniture. Two coats of Howard's Feed 'N Wax. Without maintenance the finish becomes a beautiful patina.

### CUSTOM STAIN

If you need a specific stain, let us know. We can accomodate most requests.



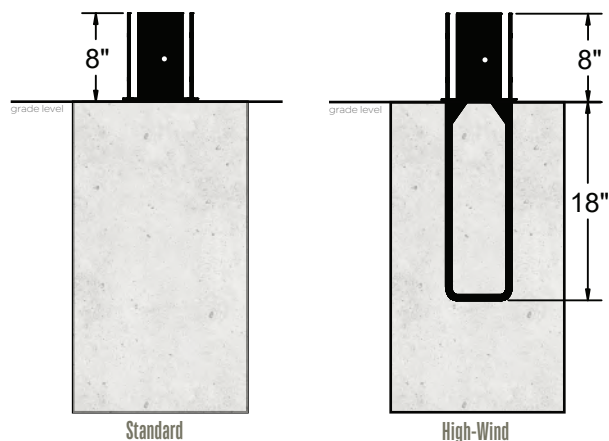


# INSTALLATION MADE EASY

## Anchoring Options Explained

We want to ensure that your investment continues to provide you and your family with comfort and enjoyment for decades to come. Deliberate and thorough craftsmanship from the foundation up is essential to your structure's longevity.

All Pergola and Pavilion posts should be attached to the ground. We offer two different options: a Standard Anchor Kit or a High Wind Anchor Kit (rated to 150 mph). All anchor kits come with wood trim that will hide the metal of the anchor. The anchor kit that is best suited to your situation depends on a combination of what type of hardscaping you have (or intend to have), shade structure type, and how much wind you get in your area.



## Buried pipes

If your structure will be installed where buried pipes for utilities run (electrical, plumbing, gas, phone or fiber optic lines), make sure to contact the companies responsible for each of the lines in your path, to verify how deeply the lines are buried. Electric lines are typically buried 18" or so, but cable TV lines may be much shallower.

## General Considerations

You may consider decking options. Structures can be sold with wood decking inside, outside, or both. Be sure to discuss your need for decking and facing components with your project engineer, especially in areas with inclines or stepped changes in elevation. On a substantial slope, footings and a deck are sometimes more sensible than a concrete pad. Footings and a deck can be designed, built, and handled by our Complete Nationwide Assembly crew. Concrete pads are best handled by a local mason or landscape contractor.

Confirm your drawings before laying new foundations. All shade structure orders receive design drawings within five business days. In reviewing your drawings, you may realize that you overlooked something or want to make a change that will affect the position of the posts. For example, for a standard 10' x 12' Arched Pergola, the posts are recessed back 12" from the edge of the roof. This places the outside four corners of the posts at 8' x 10' and inside four corners at 7' 6 1/2" x 9' 6 1/2". It is not unusual for customers to change details after seeing their drawings, such as adding space between posts or adding a foot or two to the length or width.

It is especially important to confirm your drawings for structures that will require footings. Once footings are installed you will not be able to move post positions without undue complications. For structures atop decks, we recommend placing the posts through the deck onto their own footings. This way, your deck and shade structure are independent of one another and if the deck fails first, which usually occurs, you won't have to take down the Pergola or Pavilion to replace it.

If you've selected our White Glove Complete Assembly Service, it is important to confirm the details of your surrounding landscaping. We usually use fast drying concrete to avoid a second trip. However, if you are also installing a new hardscape, we will come out to do the footings first. Let us know what your plan is and we will schedule the footings as needed.



Pavilion with deck



High wind anchors installed in footings



# Concrete & Pavers

If you are installing your shade structure on an established concrete pad, there are a few things to consider. How old is the concrete pad? If it is less than two years old, is it sealed? Concrete pads less than two years old need to be sealed to avoid staining issues with Redwood. The wood contains tannins which are actually a major component of Redwood's incredible longevity, but these tannins can stain concrete that is not fully cured.

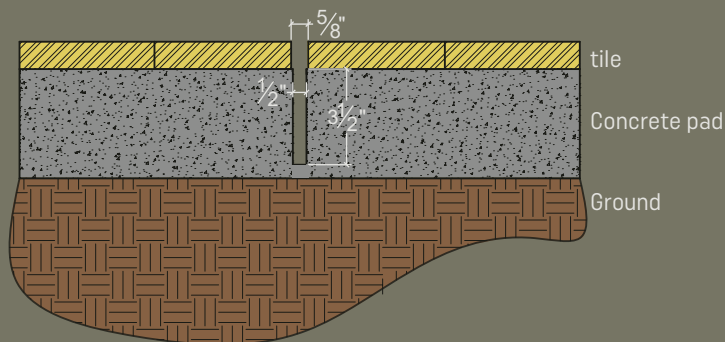
Is the concrete pad at least four inches thick? For Pergolas, this is all that is needed. For Pavilions, the pad will have to be cut to make openings for deeper footings. For Gazebos, in some cases footings will be needed and in others the Pergola standard will apply.

Is the concrete sloped? If so, we include the slope calculation in the design details to ensure the roof is level by making posts longer or shorter as needed.

Additionally, if you desire a paver or stone patio, or if you live in a high-wind area, a little pre-planning for installation of the footings will be necessary to achieve a seamless surface. Read on about the different scenarios and the best anchors for each, and learn how installation works.

**If you have either tile or stone work above your concrete pad, please take the following steps to avoid damaging your tile or stone work:**

1. We drill first through the tile or stone work with a 5/8" sized drill bit. We use the Diamond Plus Hole Saw. Just drill through your stone or tile only. Don't drill into the concrete.
2. Then change to a 1/2" sized bit and drill into the concrete for 3 1/2 inches or more.
3. The slightly larger holes in the tile or stone surface protects them from cracking as you ratch down the expansion bolts. The bolts expand only in the concrete below and don't stress or crack your surface hardscape.



## Developed/Undeveloped Ground, Level/Unlevel Ground – plan ahead if you can

Most shade structures are built on developed level land with a hardscape in place (concrete pad, pavers, stonework or a wood/composite deck). If your hardscape is in, let us know what it is so we can review with you and make sure it will work as is. If you are still planning your hardscape, contact us to go over the footings options to hopefully avoid having to remove small portions to dig footings.

For Pergolas and Gazebos in most areas, you'll attach Standard Anchors atop your footings once the concrete has cured. For Pergolas and Gazebos in high-wind areas and all Pavilions, the High Wind Anchors are set in wet concrete within the footing. The size of the footings is usually determined by post size (except in some high wind or seismic areas). See the detailed tables in the following pages for specifications of standard and high wind anchors.

If you plan to install on a sloping developed hardscape like a driveway or concrete pad with some drainage angle built-in, just let us know during the design phase. Your assigned in-house architect will work with you to calculate the additional inches needed on the lower side to make sure the final shade structure roof is level. In most cases, the posts on the lower side are made longer (but you can also build up the footings if you prefer).

If you plan to install your structure in an undeveloped area and do not plan a hardscape for it, two points should be considered:

1. The land around the footings must be compacted prior to adding the footings to avoid long-term settling. This can be done with a manual compactor at installation time.
2. If the land is sloping and will remain undeveloped, let us know so the design process can incorporate solutions you like that ensure the structure is safe long term and level.

If you plan to place posts atop or near a retaining wall, make sure to let us know so we can be sure it will work and propose workarounds if necessary.





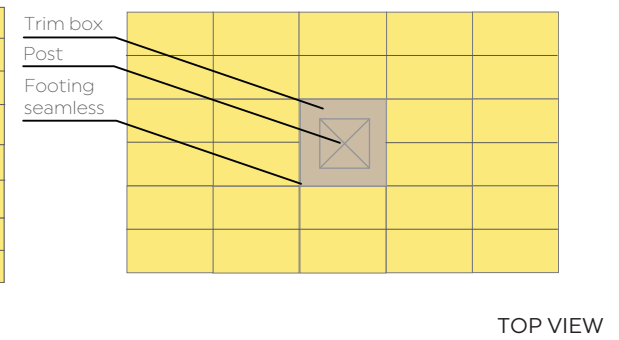
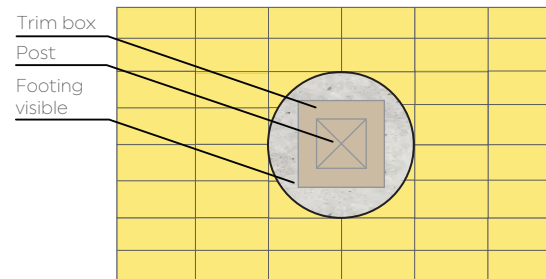
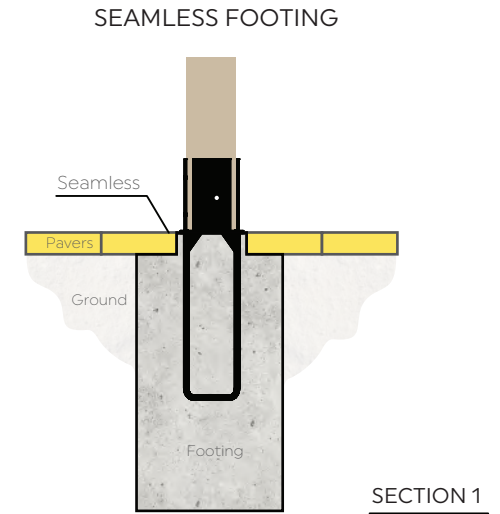
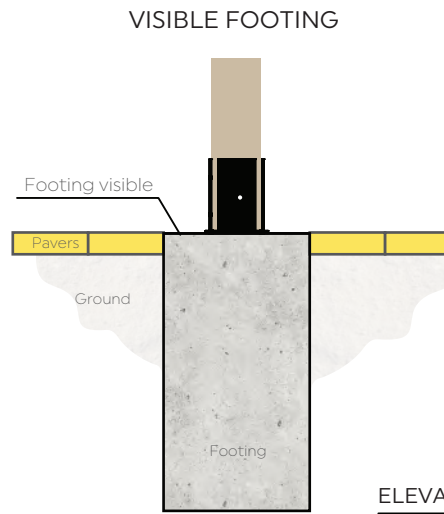
## Stone or Paver Patios

For stone or paver patios, you'll also need footings. If you don't mind seeing them, you can pour the footings to the level of your existing or future patio and use the anchor kit best-suited to your structure and wind levels. For a seamless look, use the High Wind Anchor Kit, even for Pergolas. The footings are poured to align with the top of the final patio surface, and the anchor is set in the wet concrete. After the footings cure, a portion of each footing is removed so it is not visible once the wood trim is installed. See diagrams to the right and photos below.

### Note about Footings:

If your order requires footings, it is important to make sure the footings are at least at grade if you have a developed hardscape already (pavers, stone, tile, etc.).

If possible, we recommend the footings be at least 3 inches above grade. If your order is on undeveloped land, we recommend the footings be at least 3 inches above grade to keep the wood from constant moisture exposure. Having your footings below grade ensures the bottoms of your posts will be sitting in a moist environment conducive to increased microbial activity that will lessen the wood's lifetime. If you must have them exactly at grade, that is better, but the ideal situation in all cases is to keep the wood above the ground or any moisture wicking situation.

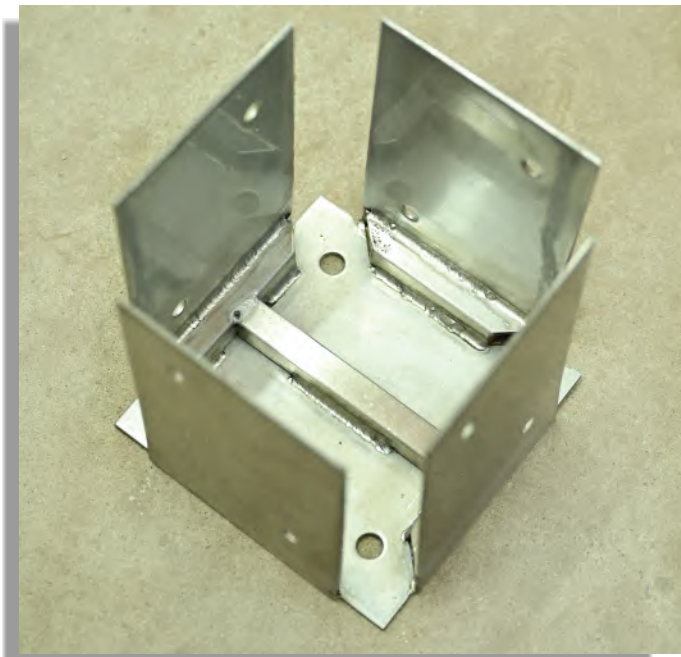


Want a seamless look and need help with the footings? We can help. Inquire about our installation services.



## ANCHOR SOLUTION FOR MOST PERGOLAS (unless in high wind areas)

If you have an existing concrete pad that is in good shape, in most cases you can use it without the need to dig footings. Our standard metal anchors are attached to the surface of the concrete pad or a wooden deck using either four anchor bolts (for concrete) or four lag bolts (for a wood deck). The posts are then attached to the anchors with lag bolts. All the hardware is included; simply choose our Standard Anchor Kit for the appropriate surface.



### A NOTE ABOUT OUR ANCHORS:

We weld our anchors in-house. They are substantially over engineered to provide long-lasting elegance as well as structural stability. It is a labor-intensive process. We offer the option of having your anchors made in stainless steel for areas of high humidity or with low ground water conditions. For most applications, the Standard Steel anchors are more than sufficient.

We are regularly asked by non-customers if we can sell only our anchors for their projects. We cannot do so because it is not practical for us to produce additional anchors for sale as a standalone product.



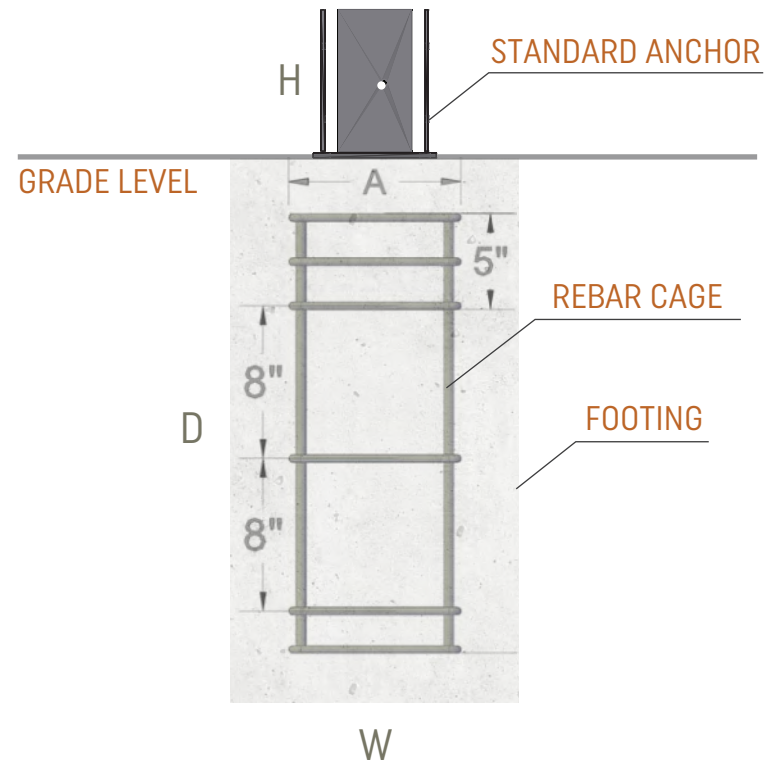
23' L x 9'-6" W Silverado  
Modern Pergola in California  
Redwood, Unfinished by  
Custom Request. Photo  
Courtesy of J. Maskill of  
Rockford, Michigan.





## STANDARD ANCHOR FOOTING DETAILS

Dig holes 30" deep (in freeze areas, adjust depth to go below the frost line by 6") and place cardboard Sono tubing in the hole up to ground level or higher, if desired (See table and diagram for proper footing dimensions). Add rebar if necessary, then pour concrete. Allow up to 7 days for the concrete to cure (or the next day if using fast-drying concrete) before following the Standard Anchor Kit Installation steps in the sidebar at right.



Larger shade structures sometimes require rebar cages to be embedded within the footing along with the anchors. If your order requires rebar cages and is being assembled by Forever Redwood's own teams, we will ship the rebar cages from the shop to facilitate our teams' on-site work. If you are having the installation done locally and determine you will need rebar cages and your local team doesn't have the ability to make them, reach back to us for a quote.

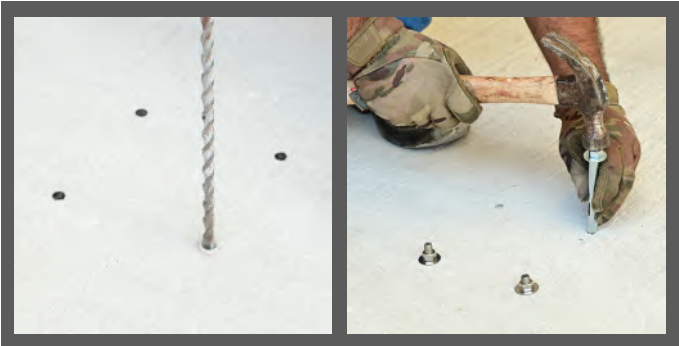


# Standard Anchor Kit Installation

**STEP 1:**  
Place the anchor where it will be installed; mark the ground as shown



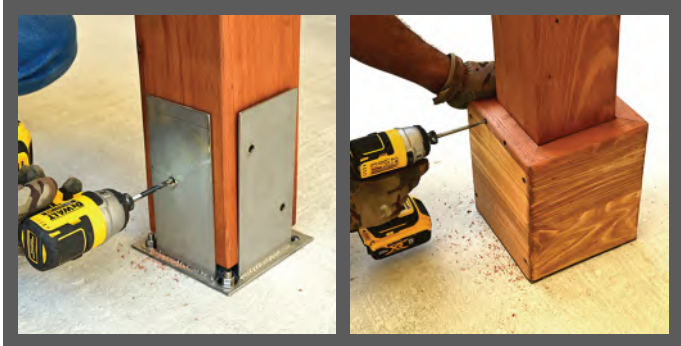
**STEP 2:**  
For anchor bolts, drill holes 1/2" wide and 4" deep, then embed the bolts with a hammer. Remove the nut before placing the metal anchor (wood decks use lag bolts in this step)



**STEP 3:**  
Place and attach metal anchor (with 1/2" x 4" anchor bolts) then place the post



**STEP 4:**  
Attach post to metal anchor with lag bolts (5/16" x 3"). Place the wood trim boots to hide the metal anchors, fix in place with screws

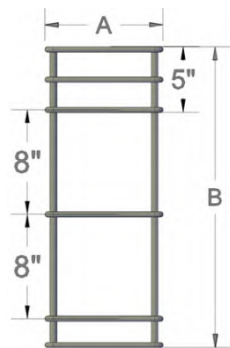


Post Dimensions	Anchor Bases Base Steel Gauge    H	Footing W    D
4 x 4 (3 3/4" x 3 3/4")	1/8"      6"	14"   30"
6 x 6 (5 1/2" x 5 1/2")	1/8"      8"	16"   30"
8 x 8 (7 1/4" x 7 1/4")	1/8"      8"	18"   30"
10 x 10 (9 1/4" x 9 1/4")	1/8"      10"	20"   30"
12 x 12 (11 1/4" x 11 1/4")	1/8"      10"	24"   30"

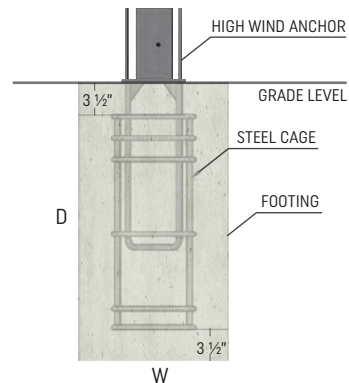


# High Wind Anchor Kit

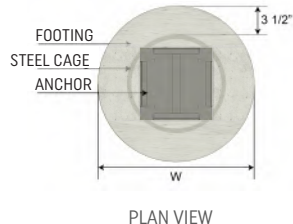
**STEP 1:** Dig footing hole per size shown on your drawings. Add a 3 1/2" concrete base to then place the rebar cage as shown (you may use a sono tube).



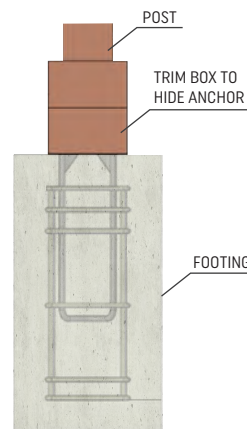
**STEP 2:** Place the high wind anchor level (you can use some timbers as shown to keep it in place). Make sure all the anchors are level to one another and square to one another.



**STEP 3:** Pour concrete to a few inches below grade as shown. This way you can place your final hardscape over most of the footing so it will never be visible.



**STEP 4:** Attach the post to the anchor with lag bolts, then place the wood boots over the anchors and fix it with the screws.



## Notes About Concrete and Pavilions



Concrete pads are best poured after setting your footings, since if hardscape work is done prior to installing your high wind anchors, you wind up having to cut into that hardscape to set them, which results in a joint around the posts. Even when it is concrete next to concrete.

Digging the footings and setting the anchors ahead of time allows it to be done in a way that leaves the last 4 inches of the footing unpoured. The anchor has plenty of steel under the saddle so it is still firmly set in place, and the final concrete patio contributes to the overall structural stability. You can then pour your new pad right over the footing and have no seams around the posts.

Below: Footing detail showing High Wind Anchors with steel cage. Rebar steel cage size depends on structural recommendations and surface conditions.

Post Dimensions	Anchor Bases				Steel Cage		Footing	
	Base Gauge	H1	H2	Steel Bar	A	B	W	D
4 x 4 (3 3/4" x 3 3/4")	1/8"	6"	12"	3/8"	7"	23"	14"	30"
6 x 6 (5 1/2" x 5 1/2")	1/8"	8"	18"	3/8"	9"	29"	16"	36"
8 x 8 (7 1/4" x 7 1/4")	1/8"	8"	18"	3/8"	11"	29"	18"	36"
10 x 10 (9 1/4" x 9 1/4")	1/8"	10"	20"	1/2"	13"	35"	20"	42"
12 x 12 (11 1/4" x 11 1/4")	1/8"	10"	24"	1/2"	17"	35"	24"	42"

Each structure order includes drawings for concrete installation instructions. The High Wind Anchors are normally installed in a 30" deep concrete pour. Footing size is based on post dimensions. Table shows the size of footings and steel reinforcement that we recommend for every post size.



# PAVILIONS

All Pavilions require High Wind Anchors because the closed-roof design creates more wind resistance. Unless the pavilion is relatively small, (under 150 sq ft) and in a low-wind area year-round, we recommend the High Wind Anchors for all designs and sizes. In hurricane prone areas, the High Wind Anchors and large footings are required to make sure your Pavilion stays planted in your yard when the next storm blows in.



High wind anchor



The Humboldt Log Pavilion (Options: 6in x 6in Posts thickness, 12' L x 25' W, California Redwood, 2 Fascia Boards for Gutters, 9.5' Post Height, 4-Post Anchor Kit for High Wind, Transparent Premium Sealant).



Custom Andrea's Cupola Pavilion (Options: 28' x 26', Douglas-fir, High Wind Anchors, Coffee-Stain Premium Sealant). Photo Courtesy of T. Wilsford of Montgomery, Alabama.

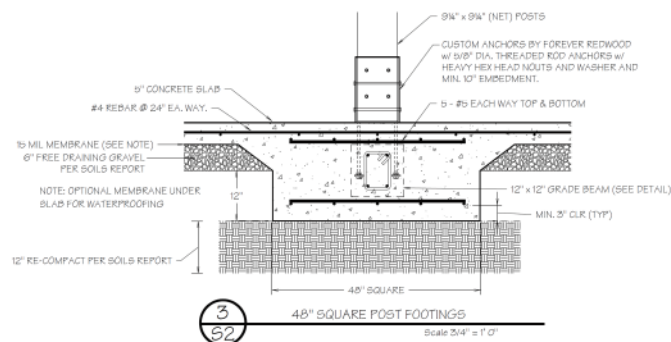


## A Forever Redwood Pergola in Bermuda



The Traditional Wooden Garden Pergola (Options: 15' L x 15' W, Mature Redwood, Open Roof with Slats at 18", Rafters at 18", 4-Post Anchor Kit for Stone, 9' Post Height, Transparent Premium Sealant).

Note: For over 99% of our projects, the High Wind Anchors or the Standard Anchors with a standard depth footing is all you need structurally. If you choose to have Forever Redwood do the installation work for you, we can dig and pour the footings as well. Every once in a while, we run into a situation where someone needs to pour a shallow footing of two feet or less because there may be plumbing or wiring or ground water at a relatively shallow depth. There are footing designs for cases like this. One example is band footings. We can help design the band footing or another solution if your situation requires one, but these special footings need to be installed by local concrete contractor. Our install team can still come out and do the rest of the structure if you like, but you need a licensed concrete contractor to do the band footings to code. See example below:



info@foreverredwood.com  
1 (866) 332-2403

Laying the groundwork is the most sensitive part of the on-site work. The crafting of your structure has already been taken care of in our workshop. What's more, the whole structure has already been fully assembled once. So, all that's left after getting your anchors set perfectly into position is to put your structure *back* together.

Once your foundation is established, you will:

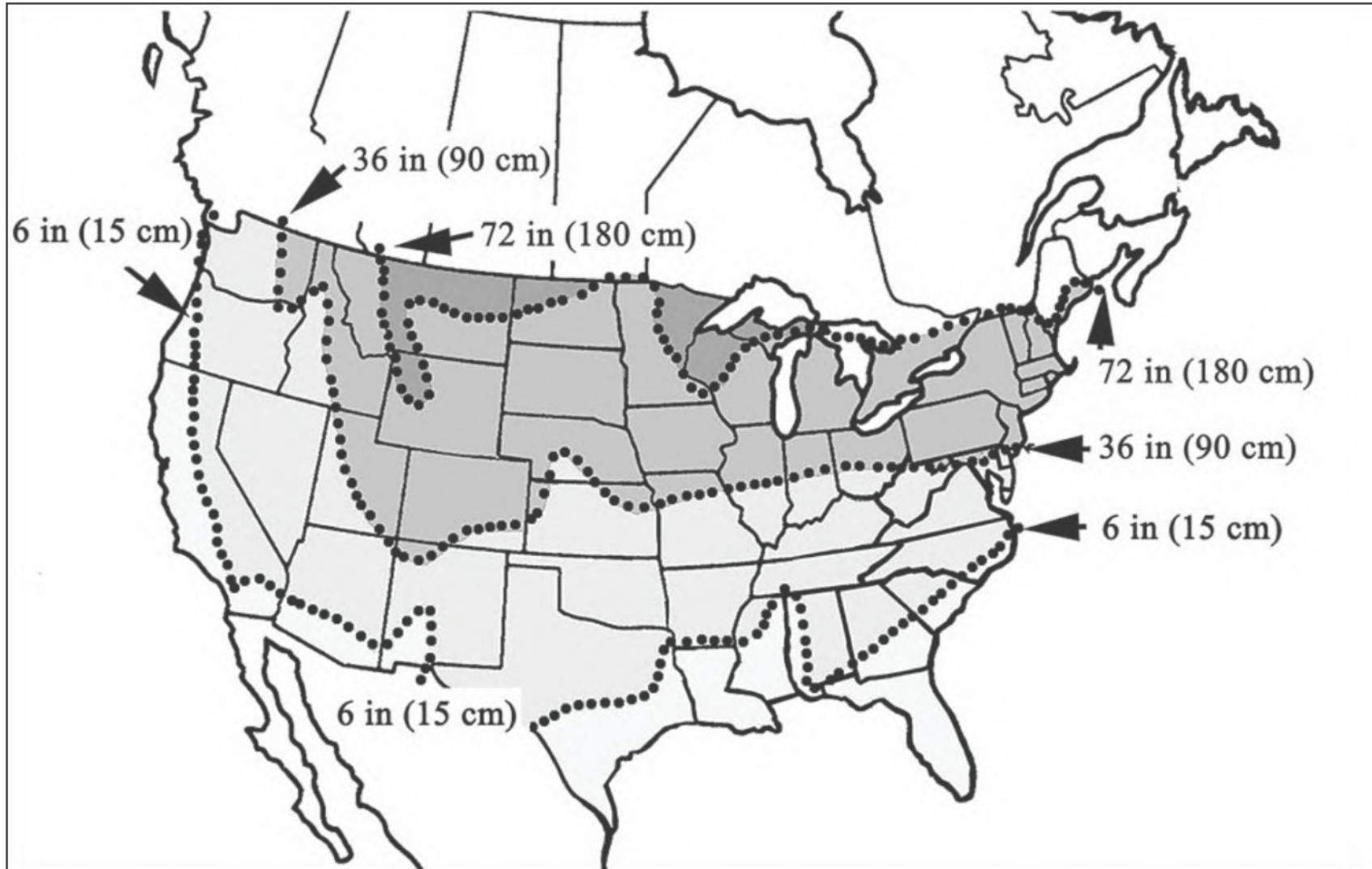
- Erect your posts
- Add support headers
- Place rafters and roof slats (Pergolas)
- Apply roofing materials (Pavilions and Gazebos)
- Add trim and all of your extras

All of these steps are detailed in instructions that you can check out right now on our website. Each product style comes with specific instructions for assembly, and can be found toward the bottom of each product webpage. You can download all of our structure's default instructions now before you decide whether or not to request White Glove Complete Assembly Service, and see if the task of erecting your shade structure is one you'd like to take on.



# FROST LINE

In areas where the ground freezes, you must go at least six inches below the frost line with the concrete pour. This map from the National Snow and Ice Data Center shows the frost lines across the United States. Note how it moves down from a 72inch depth to a 6 inch depth.







12' x 16' Cardinal's Pavilion in California Redwood.  
Photo Courtesy of S. Moore of Shingle Springs, CA.




# Tips for BUYING ONLINE

## Customer Service, Free Shipping & Lifetime Support

For many people, buying an outdoor structure is a significant investment. It's an exciting purchase that adds beauty and value to your home. Making these changes requires foresight and planning to avoid problems. We've helped thousands of different types of customers—homeowners, restaurants, hotels, government installations, parks—through the buying process, from choosing the right style and size to selecting custom options. We also manage shipping, offer installation, and provide long-term support. For example, we provide replacement parts, act as maintenance guides and offer consultation. Here are some things you may want to consider beyond the many types and styles of outdoor structures that will work best for you.

### FINDING A RELIABLE MANUFACTURER

Look for a manufacturer that has been in business for at least ten years. If they haven't been making shade structures for long, you will be paying for their learning curve. You want a structure that will pass the test of time and never sag, split, or fail. A few key considerations to look out for are a 10 year minimum warranty, as well as specifications that exceed local building code requirements for snow load and wind resistance. You'll want to see a wide selection of examples of prior projects. For example, Forever Redwood's website has several thousand photos of prior projects. Don't settle for incomplete answers. If the company doesn't have an experienced representative to answer all of your questions, move on. Forever Redwood has twenty-five years of experience informing our answers to your questions, which we're happy to answer before, during, and after your purchase. We don't shy away from requests for custom sizing, design details, or delivery and installation complexity. We can walk you through the assembly, refinishing, or restoration of your structure at any time, and take care of these concerns for you.

A man wearing a black t-shirt, blue jeans, and a black baseball cap is walking from left to right in the foreground. He is holding a smartphone in his right hand. In the background, there is a large, reddish-brown wooden pergola with a slatted roof. The pergola is situated on a paved walkway, and there are green bushes and trees around it. The scene is brightly lit, suggesting a sunny day.

The Traditional Wooden Garden Pergola (Options: 30' L x 10' W, California Redwood, Open Roof with Slats at 12", Rafters at 18", Lengthwise Roof Support Timbers, 4-Post Anchor Kit for Concrete, 9.5' Post Height, Transparent Premium Sealant). Photo Courtesy of Sunday Stevens and David Klein of Los Angeles, CA.





## SHIPPING CROSS-COUNTRY WITHOUT A HITCH

For example, if your pergola suffers storm damage a few years from now, will you be able to order replacement parts from the original manufacturer? It's worth asking if you can get parts should the need arise. Here at Forever Redwood, we keep all of your order details filed.

If an old oak tree sheds a branch into your pergola someday, just call us. We'll make and completely finish the necessary replacement parts at a reasonable cost so you don't have to spend a substantial sum again.

Email us anytime at [info@foreverredwood.com](mailto:info@foreverredwood.com).

If you are considering a pergola or pavilion purchase, you may be curious about our shipping and delivery process.

We ship pergola kits cross-country and across oceans. In the US, we ship to your door either in our own trucks or via common carriers like Conway Freight, UPS Freight, and others.

Since 1995, Forever Redwood has shipped thousands of crates all over the U.S., Canada, and occasionally even to Europe, Africa, and Asia. Forever Redwood pergolas ship in custom crates built in our shop. All parts are strapped inside padded cardboard boxes.

We ship from San Diego, CA and it usually takes 4–6 business days transit time to locations in the U.S. and Canada. Our shipping partners are fast and reliable. They will call you a couple of days in advance to set up a time for you to receive your crates. Once your crates arrive at the distribution center near you, you'll be called to set up a convenient time to deliver. Crates are usually dropped off on a driveway (for homes) or a loading dock (for buildings). Once you've received the crate, moving it is difficult. Rather than trying to move the entire crate, unscrew the crate so you can move the relatively light individual boxes. We package individual boxes to be under 90 lbs for ease of movement.







Over the years, we've fine-tuned the designs of our outdoor structures to minimize reassembly. You will never receive a bunch of boxes filled with hundreds of parts for you to decipher. All of our structures are fully assembled in the shop to ensure that all of the parts will fit perfectly. This process ensures that you have the least amount of work necessary to re-assemble. All sanding, routing, drilling, cutting, planning, and sealing is done. All parts are numbered so you know which corner post goes with which corner roof support notch. All hardware is included so you won't have to run to the hardware store in the midst of the job. All you have to do is put it back together again—like a giant Lego set! And, just let us know if you don't want to do the installation yourself. Our White Glove Complete Assembly Service is available in all 50 states.

If you're curious how our outdoor structures are re-assembled, visit our website for downloadable PDF files:  
<http://www.foreverredwood.com/redwood-furniture/assembly/>

If you provide us with detailed plans or site specifications prior to ordering, this can save time by requiring fewer revisions to our drawings (city permits requiring structural calculations will add to our lead time).

When your order ships, you'll receive tracking information by email detailing the arrival time. Visit our website for more details about your shipping options.

In the rare case that an item is damaged in transit, we ask that you accept the crate nonetheless and assemble the structure. Once assembled, send us a couple photos so we can quickly identify which part needs replacing. Crate damage occurs less than 1% of the time. But, if your order has any damage at all, Forever Redwood will quickly remake replacement parts at no cost to you.





# INSTALLATION

## Two Easy Options

### LET US HELP YOU

#### Forever Redwood White Glove Complete Assembly Service

We can send one of our experienced carpentry teams to do your installation in all 50 states. You can see the cost of a complete turnkey assembly service by clicking the White Glove box at checkout. Depending on your location and the size, style and footings needed for your project, White Glove Complete Installation Service adds anywhere from 30 to 50% to the cost of your project. If you have questions about assembly costs, please contact us.

White Glove Complete Assembly Service is a complete on-site assembly and anchoring service. Our crews come from California and do round-robin trips throughout the U.S. There are no geographic or seasonal restrictions for this service. During poor winter weather, we may need to schedule around inclement conditions. But other than this limitation, we deliver and assemble anywhere our customers are.



We will assemble your structure as well as any additional associated components you have on-site. For example, gutters can be added if purchased locally to add to your pavilion. If you have a structure which is being replaced by your Forever Redwood shade structure, our assembly team can tear down that structure at a reasonable cost. Just let us know any additional details like this so it can be added to your scope of work and be sure to order a dumpster ahead of time because we don't offer removal services.

Once your installation appointment is booked, a 50% deposit will be placed with the balance due once the crew completes the work.

### DO IT YOURSELF

Assembly for the smaller structures is best done by two people and can take a day or two depending on size. Larger structures take longer. Pergolas and Pavilions vary in their level of difficulty to re-assemble. If you plan to pour footings, the project will require additional time to square your corners, dig footings, and let the concrete dry. If you have assembly questions, email or call us.



## WORKING WITH OTHER CONTRACTORS & DESIGNERS

Our installation team can coordinate with other contractors on projects that require electrical, gas, new hardscape, pools, outdoor kitchens or other features to make sure the end product is seamlessly incorporated. Please make sure to let us know what accessories you have in mind.

A list of typical accessories includes fans, heaters, lights, audio, television, ventilation for cooking, removable cut-outs for fireplaces, and misters. When designing your hardscape, you may need to run conduit underneath for electrical, gas, or water. This should be done in coordination with the Design Engineer so the conduit is run to the correct posts of your shade structure. Also, you may need our team to come out on an initial trip to install the footings if you are in the process of adding a new hardscape. This will allow you to complete your hardscape while we are building your structure, saving you time.

If you are adding accessories, share the details with your Forever Redwood Design Architect, including where you'd like to place them and the specifications of the product. The idea is to eliminate the need to create solutions after delivery or installation. Take your time and dress up your structure with the options you desire. Coordinate with the work of other pros so your final drawings incorporate every possible accessory you plan to install, now or down the road.

Forever Redwood has been building premium quality wood products since 1995. Whether you're interested in a custom size, a new design, or an off-the-shelf product, we have honed the process to just a few upfront minutes of your time by phone, a couple of emails, or both—if you've got really creative ideas—to finalize most orders.

Our top notch customer service includes:

- Phone & Email Support to Size & Customize Your Structure as Needed
- Detailed Design Drawings in Coordination with Other Landscape Pros
- Permit Support (Structural Drawings & Calculations)
- Detailed Assembly Instructions if DIY or Complete Assembly Service
- Quality Communication, Follow Up, and Warranty Support
- Green Focus



You can purchase a wooden shade structure kit online and get personalized, professional support from Design to Installation!



# How to keep your structure looking great through the years

We have been shipping our shade structures to the toughest climates in the U.S. and Canada for nearly 3 decades. We offer decay warranties of up to 20 years for our shade structures regardless of how harsh the weather is. No other outdoor furniture line has comparable warranties. We are often asked if our kits will really hold up that long. They will. And, with a bit of TLC, they'll last much longer.

Because of the quality workmanship and materials used, a Forever Redwood structure may cost a bit more upfront than some of our competitors. But, you save money by never having to replace it. Aside from some surface fading, you can expect your shade structure to last for decades. And, if you ever have a problem with one of our products, such as damage from a fallen tree, contact us and we'll ship replacement parts to you at minimal cost.

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## REASONS WHY WE CONFIDENTLY OFFER OUR WARRANTIES

First, Redwood is extremely decay-resistant. We regularly pull intact logs off the forest floor that have been sitting for decades. In some cases, these Old-Growth logs have been sitting on our forestland soil for over a century and the wood is still in perfect condition!

Second, Forever Redwood Pergolas and Pavilions are built the old-fashioned way using genuine high quality thick-timbers that are no longer available in the marketplace. No make-believe wood, like particle board or wood-imprinted plastic, is ever used. We use only free of heart timbers that are of the highest quality.

And lastly, Forever Redwood structures are available with stainless steel bolts so regardless of climate, you won't have to worry about staining, rust, or replacement issues. Combining generous amounts of the high-quality lumber with the best hardware ensures your structure will last decades in any weather. We have customers in Chicago's winters, Florida's summers, Arizona's 110° dry heat, the stormy high and dry Colorado Rockies, Quebec, Manitoba, Montana, Washington State, Alaska, and Yukon Territory to name a few. All their structures are holding up beautifully against the brutal elements.

info@foreverredwood.com  
1 (866) 332-2403

Occasionally, as your structure ages, you may find bees, wasps, or other insects taking an interest in the shelter of your eaves. Bees and other insects, in general, prefer dry wood and don't go after supple, sealed wood as much. If your wood is well-sealed and you are still experiencing issues, apply a coat of orange oil. It is non-toxic and tends to be an effective deterrent.



## SPRUCING UP IS OPTIONAL BUT RECOMMENDED

Although your Forever Redwood shade structure can be left unattended in the year-round weather, we don't recommend it. There are simple steps you can take to keep your structure looking its best for years to come.

### Special Climates

If you are in the dry desert or at high altitudes, reseal six months after installation and again after another year. If you are oceanfront or within a mile of the ocean, you need to take a few additional steps to protect your wood structure or furniture. Whether high quality Redwood or a medium or low-quality wood, the steps are the same:

1. Hose off and wipe away the salt accumulation with some regularity.
2. Reseal the exposed surfaces.

For oceanfront installations, we recommend hosing down and wiping clean every few months. Reseal every year initially. After the first few years, reseal every other year. Do not powerwash, sand, or chemically strip the old sealant off. None of this is recommended or necessary. Just hose down and wipe clean to remove the salt, grime, and bird poop from your structure or furniture. Then, add a coat of the recommended Sikkens brand wood sealant with a rag.



The Cardinal's Nest Pavilion



## Maintenance Tips

In any location, we recommend a yearly cleaning of your shade structure. Do not power wash or use soap or chemicals on fine wood. Use a soft brush first and then wipe down with a rag and bucket of water. Let it air out and then take a good look at the finish. If there are signs of drying, please add a coat of sealant to keep the lumber supple for as long as possible. The most effective way to apply sealant is the old-fashioned way, by rubbing it on with a rag. Brushes, rollers, and sprayers don't penetrate. They're also messy and wasteful. You'll see better results, and maybe even find some enjoyment, leaning into the strong wood with sealant and an old rag.

Our standard recommendation is to reseal your exposed surfaces after the first winter, including the posts and perimeter timbers of your Pavilion, and the rafters and slats of your Pergola. Exposed timbers will be the first to show finish fade and surface drying. In most areas, resealing every three years is sufficient. In very dry and hot areas, every other year is better.

Each round of resealing will handsomely darken the finish. Without refinishing, the surface color will eventually fade to a darkish, silvery hue. This tells the story of daily battles with moisture, pollution, and sunlight.

These color changes are not indicative of decay. The wood will not be compromised in any way if you choose to let your structure silver over the years and do nothing to restore the original gorgeous wood tones. It is only surface deep. If you scratch the surface, you'll see the beautiful natural wood tones again. Some of our display items have remained outdoors in the weather for over 10 years. We have never refinished them on purpose, letting them stand as a testament. They've silvered, but as strong as day one.

The worst thing that may happen over the years is that the wood can develop some light checks (surface cracks). This happens because the wood expands and contracts in temperature and humidity. The constant minor size adjustments sometimes cause a few boards to develop these small fissures, but it is no cause for concern. A bit of checking is part of the charm of having wood, adding character to the piece.

If, down the road, you find yourself saying "I wish my pergola looked as good as it did back when...", our website offers several different solutions to completely restore the original surface beauty of the wood.

For more information about maintaining your structure and other Forever Redwood products, visit: <https://www.foreverredwood.com/redwood-furniture/care-finish/>

TOUCH UP KIT INCLUDED WITH EACH ORDER



Photo taken 1 year after installation. Photo Courtesy of K. Cates of Oajland, California.



Photo taken 5 years after installation. Photo Courtesy of Jeremy M. of Morgantown, Pennsylvania.



# Putting It All Together

*Creating the Outdoor Great Room of Your Dreams*

Creating an outdoor great room is the perfect way to enjoy dining and relaxation in the comfort, privacy, beauty, and openness of the outdoors surrounding your home.

This chapter will offer five key tips for how to personalize your furniture choices to best meet your needs within the space you have available.

Whether you're envisioning a traditional space for small barbecues and family get-togethers, or a full-featured kitchen and dining complex ready to entertain dozens of guests, by following a few easy tips you'll be sure to create a space that you'll love for years to come.

## Tip #1: Think Big (even if you're going small)

You'll probably want your Outdoor Great Room to include a central dining area. But you don't have to stop there. In fact, the best outdoor spaces are multipurpose. By properly designing your outdoor room, you'll be able to easily transition between:

- Fun with family
- Entertaining friends & neighbors
- Social functions
- Intimate evenings
- Relaxing solo

Take a moment to imagine all the different ways you would like to use your space. This will help determine the table styles, quantity of seating, small furnishings, and other options.



18' x 14' Del Norte Outdoor Kitchen Pavilion with Garden Pergola Attached in California Redwood. Photo Courtesy of T. Lee of Noblesville, Indiana.



18' x 12' Del Norte Pavilion, with Jhoola Daybed Swing



## Tip#2: Provide for Shade & Privacy

The beauty of an outdoor room is that you get to enjoy the sunshine, breeze, bird sounds, and other natural wonders. But no one wants to sit outside on a sweltering, sunny day without shade.

One of the best ways to provide a shaded area is with a Pergola. Although Pergolas are open structures, they provide a surprising amount of shade. A Pergola can be attached to your house (see our Attached Pergolas) or freestanding (see our Traditional Garden Pergola).

The style of the Pergola roof can be customized to your desired level of shading. You can even grow climbing vines along the posts and beams of your Pergola for extra shade and visual interest.

For additional privacy, consider adding a privacy screen to one or two sides of your Pergola. Finally, a great way to create a boundary around your outdoor area is to install a series of planter boxes (see our Planter Boxes) filled with flowers, veggies, or even small bushes and trees.



20' x 14' Backyard Pavilion Kit in California Redwood, 1 Electrical Wiring Trim, 4 Post Anchor Kit for Gale-Wind, 1 Ceiling Fan Base & Transparent Premium Sealant.



16' x 16' Modern Louvered Garden Pergola in California Redwood, with Mobile Louvers, Electrical Wiring Trim for 1 Post, 4 Post Anchor Kit for Concrete, 1 Ceiling Fan Base, 4 Curtain Rods & Coffee Stain Sealant.



12' x 14' Backyard Pavilion Kit in California Redwood with 2 Post Electrical Wiring Trim, 4 Post Anchor Kit for Stone, 1 Ceiling Fan Base, & Coffee-Stain Premium Sealant.



## Tip#3: Choose a Beautiful Table that Meets Your Needs

The first question many people have when it comes to dining tables is: What shape should I get, round or rectangular? Keep in mind, a round table (see our Round Dining Tables) will tend to promote more intimate and inclusive conversations, while a rectangular table (see our Rectangular Dining Tables) will afford greater seating capacity.

An extra-wide table can be especially useful if you have large platters you'd like to place in the middle of the table. Forever Redwood tables can be easily customized in larger widths. If you prefer a smaller main dining table, a couple of side tables (see our Side Tables) can provide useful surface space for platters, trays, extra utensils, etc.



<https://www.foreverredwood.com/redwood-tables-and-patio-furniture.html>



10' x 46" San Francisco Redwood Patio Table with Benches & End Armchairs in Mature Redwood.



20' x 12'-6" Backyard Pavilion Kit in California Redwood, 4 Post Anchor Kit for Concrete, 1 Ceiling Fan Base, Transparent Premium Sealant) with 2 Picnic Tables with Attached Benches.



10' x 46" Chris's Picnic Table with Attached Benches in California Redwood, Standard Tabletop, Slightly Rounded Corners & Transparent Premium Sealant).



## Tip #4: Outdoor Kitchen Layout

If you are in the early stages of planning an outdoor kitchen, consider visiting RTA Outdoor Living's website which features a design tool many of our customers have found useful. RTA builds modular outdoor kitchens, so you can layout the space and appliances online in a one-stop shop:

<https://rtaoutdoorliving.com/>

If you are planning to add accessories to your Pergola or Pavilion, during the design phase of your order tell your designer what accessories you eventually will add and where they will be located.



18' L x 12' W Traditional Wooden Garden Pergola with an outdoor kitchen designed by RTA Outdoor Living.



Forever Picnic Tables with Unattached Benches, 1 Sonoma Planter and 2 Mendocino Planters.



20' L x 14' W Loreto Pavilion with an outdoor kitchen designed by RTA Outdoor Living.



## Tip #5: Accessorize Generously

Once you have the basic layout of your outdoor room, the fun really begins. The little details will help make your space more charming, unique, and functional.

If you are planning to add lights, ceiling fans, audio, heaters, misters, television, or other items, decide on the specific accessories and the location. Share that information with your assigned Architect so that they can incorporate these accessories into your drawings. You can then review the look of your shade structure with the inclusion of your planned accessories, making any necessary changes prior to purchasing the accessories. In this way, we can account for the necessary custom woodwork involved in adding fixture bases, shelves, or trim kits to hide wiring. The idea is to make sure everything looks right, is proportional, and leaves sufficient headroom. We also want to build in all of your bases or shelves because locally sourced wood won't match your structure.

The design process is your insurance policy against any oversights. Take your time and get every detail on paper to ensure your outdoor great room is dressed properly for the parties to come.



28' x 26' Custom The Granada Pavilion in Douglas-fir & Coffee-Stain Premium Sealant. Photo Courtesy of T. Wilsford of Montgomery, Alabama.



Viking Pergola with two Adirondack Rocking Chairs and a San Francisco Redwood Patio Table set with Benches & End Armchairs.



## Conclusion:

## Go with Redwood for Durability and Distinctive Style

There are dozens of choices when it comes to the materials for your outdoor room. Authentic California Redwood stands apart for its proud tradition, earthy tones, robust strength, and virtually decay-free longevity. Feel free to request wood samples to see for yourself. The impressive quality of our redwood is why we offer up to 30 year warranties on our elegant designs.

Last but not least, by investing in a Forever Redwood set you'll be able to tell your friends and neighbors that your outdoor room is helping to restore the Redwood forests. Learn more about our Restoration Forestry practices in Section 13 — The Forever Redwood Story. Beyond just going green, you'll be fostering a subtle and sustainable connection to a majestic species—one of the most powerful and beautiful trees on the planet. And you'll feel it as you sit back and watch the sun go down, enjoying an evening surrounded by elegance, strength, serenity, and a classic style.



19' x 11'-5" Custom Modern Louvered Garden Pergola with Some Mobile Louvered Panels and Some Fixed Panels to Install Heaters by Custom Request in California Redwood, with 2 Ceiling Fan Bases & Custom Weathered Finish.



Traditional Garden Pergola with posts wrapped in masonry, a San Francisco Redwood Patio Table and 2 Bar Stools in California Redwood with Coffee-Stain Premium Sealant.



Old-Growth Redwood  
(by special request only)

Mature Redwood

California Redwood





## Family Pavilion Offers Relief from the Houston Sun for Disabled Son

John and Ann L.'s youngest son, Benjamin, was born with severe disabilities. Now a young adult, he is unable to walk or speak. Benjamin is being cared for by his parents who have two adult children, Jeb and Jenny, and their five grandchildren.

Five years ago, John and Ann decided to move from Boston to Houston where their elder son and daughter had moved after college and started their own families. This would allow the entire family to spend more time together and let the grandkids see Uncle Benjamin more often. There was just one problem, the scorching Houston sun.

Benjamin enjoyed sitting outside in the backyard during the day, but the picnic table umbrella simply couldn't provide enough shade— and certainly didn't cut it when the entire family was over. It was Ann's idea to consider adding a larger shade structure. During a visit to a local Big-Box store, she and John saw a prefab pavilion that could potentially meet their needs. But unfortunately, as John not-too-delicately put it, "It looked like a piece of crap that I knew could only look a lot worse with age." (You can take the man out of Boston, but not the other way around.)

As John started looking online for something nicer, most of what he saw looked like "similar junk." That is until he found Forever Redwood. He saw the photos on the website and began learning about the quality of our Pergolas and Pavilions.

...

"I noticed that it was more expensive," said John. But in the back of his mind he was thinking, "You try to cut corners and you end up spending more money in the long run." So, he decided to give us a call and find out if our Pavilions were really worth the additional investment.

A conversation with our resident Pergola and Pavilion expert, CEO and Founder Raul Hernandez, was enough to convince him. "I was impressed by Raul's honesty and open-handedness," said John. "I could tell that quality is important to Raul and that he was a savvy businessman. It was evident that Raul knew that the best referral is a happy customer."

After reviewing the project requirements and making a set of drawings for John's approval, Forever Redwood built the family a beautiful 14' x 16' Backyard Pavilion, including electric wiring trim for two ceiling fans. I was concerned about the fact that it would be a "big Lincoln Log set," said John, "but it's not Lincoln Log, it's Raul Redwood!" (We might just need to steal this phrase).

He installed the structure in a day and half with the help of a friend, and hired an electrician for the ceiling fans and lights. "I couldn't believe how easy it was to put together. And I can't believe how much it's dressed up the backyard! It's a piece of art that I can take personal pride in helping to create."

Being a retired Wall Street professional, it was not lost on John that his investment would pay off should he ever decide to sell the house.

## CUSTOMER STORIES & Testimonials

"Most slapped together outbuildings end up detracting from the property's value." But, a Forever Redwood structure, "will not only cost me nothing in the end, I will actually make money on the investment since the structure has enhanced the value of my property."

In the meantime, and most importantly, John and Ann are enjoying having their family nearby. The Backyard Pavilion serves as a gathering place by the pool, where John has also added a couple Forever Redwood Pool Loungers.

...

"My initial objective was a shelter for Benjamin. The end result is that my Pavilion gives the entire family an enhanced view, relaxation, and pleasure."

Working from home, John now enjoys his lunches outside in the shade. And, Benjamin has a place to sit more comfortably and enjoy the warm Houston days.

Our deepest thanks to John and Ann for sharing their story.



The Ligums' Backyard Pavilion: 14' x 16' in California Redwood & Transparent Premium Sealant. Photo Courtesy of John L. of Houston, TX.



## Couple's Pergola Provides a Private Retreat Space on Their Beautiful Property

Bob and his wife Jill own a large, beautiful property northwest of Los Angeles. Semi-retired, Bob has enjoyed a long and successful career in the entertainment technology industry, winning numerous awards and even being inducted into the Video Hall of Fame for his contributions to the growth of home video.

Behind Bob and Jill's hilltop home, there is a large infinity pool, an outdoor kitchen and dining area, a fireplace, and a bocce court. Beyond the fenced yard and down the hill, there is an undeveloped piece of land, where Jill, a yoga enthusiast, saw the perfect little spot for a private oasis to nurture body, mind, and spirit along the valley floor's stream.

She envisioned a quiet, secluded spot where she could lay down her yoga mat and meditate. But the couple also imagined it as a place to read, enjoy a glass of wine, or simply talk.

"We're a close couple," Bob says. "And we love being outdoors."

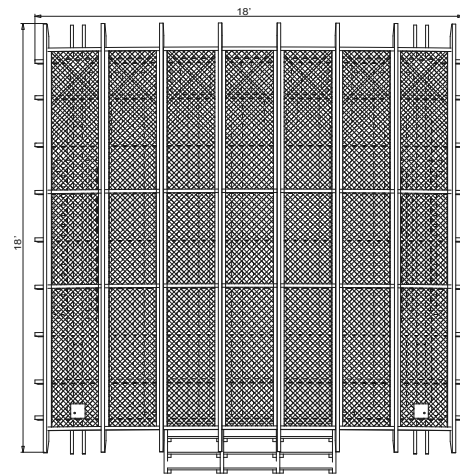
In fact, they often read books to each other. (Most often, Bob reads while Jill listens.)

The architect who designed their home recommended they contact Forever Redwood about designing and building a Pergola to provide the shade structure around which Bob's friend, a landscape architect, would help create a small park. When Bob first spoke with Raul, he described his idea for the pergola park and the two quickly began fleshing it out. Partly because of the strict zoning requirements in Bob's city and guidelines from the homeowners association, the original drawings required a few revisions and took longer than usual. However, the delay turned out to be a blessing in disguise, as it inspired Raul and Bob to add to the original idea and make it even more special.

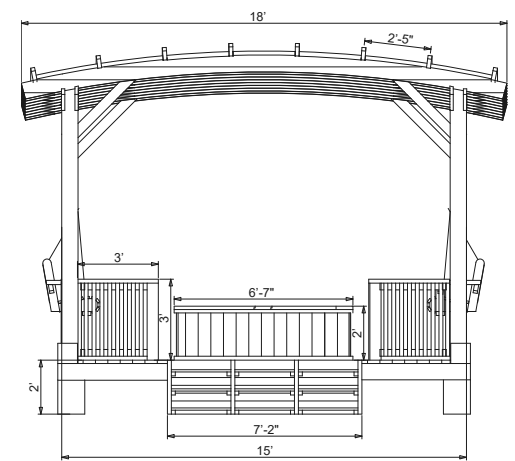
"Raul's recommendations were amazing," Bob says. "He knows what you need to do and he has good taste. The guy did a wonderful job."

Working with Forever Redwood Architect Paty Vallejo, the team created at least seven iterations of the project plans, adding beautiful features and touches along the way. (This is not normal, by the way—most projects take only one or two revisions. But, when a project requires it, we love to engage the process. It's an art.)

It started with a 14' Arched Pergola, which quickly became an 18' Arched Pergola with a deck. Two hanging Bench Swings were added facing each other, and then made bigger to fit Bob's frame (he's tall and wanted to be able to nap on the swings). A Storage Bench followed to be placed opposite the steps. Raul suggested it be made the same length as the swings for symmetry.



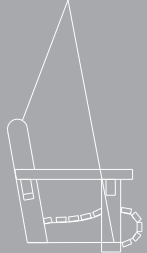
TOP VIEW



ELEVATION VIEW







Railings and steps were added. Electrical conduits were provided. Timbers were beefed up to meet local code.

After a number of conversations and email exchanges, finally the plans were done and approved and an installation date was set.

Forever Redwood's team performed the installation over a couple days in the summer of 2014.

"The guys were detailed, very detailed, let me tell you," reports Bob. "They walked around with a level and showed me every railing, every beam. All the joints fit perfectly."

See a less-than 2 minute video of Bob and Jill's pergola and deck installation:  
<https://www.youtube.com/watch?v=VUbmrtqxumc>

Bob is quick to point out that the overall project is not yet done, so the photos and video don't quite do it justice. He expects to finish the landscaping in the spring.

Nonetheless, Bob is thrilled. "I have nothing but plaudits for Raul and his team."

A winding gravel path leads from the backyard patio area down the hill, over a small wooden bridge and past some large boulders to his beautiful pergola retreat. Bob doesn't mind that the grandkids (he and Jill have seven of them) will go exploring in the "park" when they come over.

The path is gently lit. The pergola sports a wireless music system. Bob is thinking of adding electric lights and a small fridge.

"The reason you're so happy is that you took your time," Raul commented to Bob.

We are delighted to have helped Bob's vision take shape and become a place that he and Jill will use to read, reflect, spend precious time together, and find their inner peace for years to come.

## *Arched Pergola kit with deck, railings, swings and a storage bench*



See Bob and Jill's pergola and deck installation in a 2-minute video at: <https://www.youtube.com/watch?v=VUbmrtqxumc>



## The Victorian Trellis in Mature Redwood



Inspired by a shade structure at a nearby winery, JR says the finished Forever Redwood custom pergola is "even better!"

## A Victorian Trellis 18 Years in the Making

When Trish and JR West of King George, VA reached out to Forever Redwood, it was to realize a dream eighteen years in the making. They'd made countless attempts over the years to create the perfect poolside oasis, experimenting with umbrellas, dining room sets, and outdoor furniture. But nothing was ever quite right.

During a visit to a nearby winery to research wedding venues for their daughter, the Wests spotted the ideal solution — a graceful wooden outdoor structure with trellised walls and an arched roof. JR snapped pictures and created drawings. Now, all he needed was a team with the woodworking expertise and imagination to bring his vision to life.

JR searched the web for 'custom woodworking' and 'custom pergolas' and eventually found Forever Redwood. Over the course of six months, he worked with the architectural and engineering team to adapt his photos and drawings to a 22' x 14' design, 14' tall. Trish and JR added their own touches, including three arches on the pool-facing side and an opening in the roof to accommodate a stone fireplace with a custom Redwood mantel. They chose gorgeous, long-lasting mature Redwood as a building material.

"The entire process was smooth and efficient," says JR. "We could not be happier."

Trish and JR's outdoor oasis is finally complete. The finished structure (which we dubbed The Victorian Trellis) sits beneath towering trees on the 22-acre property. "It's like an outdoor secret room where you can look up and see the stars," JR says. On cool evenings when the fireplace is ablaze, "our guests don't want to leave!"



## The Cardinal's Nest Pavilion

At Forever Redwood, we have a time-honored saying, "If you dream it, we can build it." In 2017, as Monica Hilton planned her wedding, she called upon us to fulfill that promise in a very literal sense. "I had a dream one night of what I wanted," said Monica. "I drew it out on a piece of paper."

What Monica saw in her dream was a magnificent, chapel-esque outdoor pavilion, 22 feet at its peak with lofty arches and elegant columns. In this sacred space at the foot of the Smoky Mountains, couples would exchange vows and say "I do" witnessed by their loved ones.

The first couple to tie the knot? Monica and her fiancé (now husband) Stan. Their story is the stuff of dreams as well. When Stan reached out to Monica eight years ago, they'd known each other for 50 years but had fallen out of touch. During that time, they'd both married and divorced. "I swore I'd never marry again," Monica said.

But love found a way and soon they were head over heels and planning a life together.

Monica moved from Georgia to Tennessee, leaving behind her job as a business administrator in geospatial architecture. Stan asked what she saw as her next career move. "I told him I'd always wanted to have a wedding venue." She dreamed of the pavilion soon after.



"I wanted someone who would take my dream and go with it. That's what Forever Redwood did."

[www.foreverredwood.com](http://www.foreverredwood.com)



Fans help create an atmosphere of simple elegance.

Stan was 100% supportive of Monica's vision. But a few obstacles had to be overcome before the dream could become reality—such as building a 60' x 34' pavilion with a 22' high roof—while also planning a wedding! "Apparently, I'm really good with stress," Monica laughed. "Plus Stan promised it would happen."

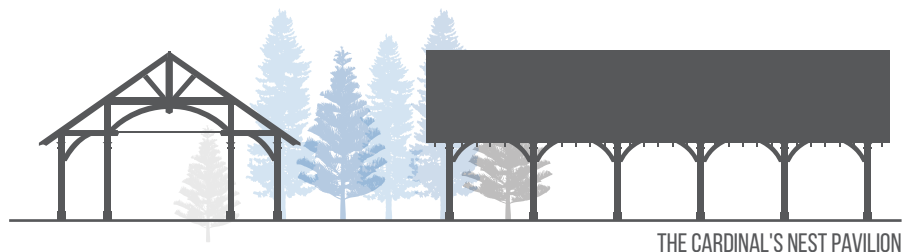
Partnering with the right company to build the pavilion was critical. Monica first tried a local business but grew frustrated when she was told aspects of her vision were impossible because of the wedding timeline. Unwilling to compromise her dream, Monica told Stan, "they're not going to get it. I'm going to find someone who does."

When she found Forever Redwood online, the hand-crafted construction and use of Redwood grabbed her attention. "I wanted something special, not something made out of Douglas-fir that looked like a baseball bat." Monica's grandfather was a carpenter. Because of his influence, she'd developed a love for the strength, beauty and color of Redwood. "When I found Forever Redwood, I knew this was meant to be."

Monica shared her sketches and described her vision to the Forever Redwood design team who then created an initial set of drawings. She went back and forth several times, until every detail was perfect. Stan would laugh to find her poring over each iteration with a magnifying glass. "I was really picky about how I wanted the arches. And the flow of it. But Forever Redwood managed to do everything I asked."



The final drawings detailed one of the largest structures Forever Redwood had built to date. Monica named her custom design "The Cardinal's Nest."



Our Complete Nationwide Assembly Team flew out to construct the project onsite. Each time a roof beam was fastened into place, Monica would exclaim to Stan, "This is exactly what I dreamed." When the structure was at last completed and the builders said their goodbyes, Monica began to cry. "My husband asked what was wrong. I could only say, 'It's just so beautiful.'"

On October 17, 2017, Monica and Stan tied the knot and christened the Cardinal's Nest Pavilion.

Since then, they've hosted several weddings in The Cardinal's Nest. Couples and their guests marvel at the design, the Redwood and the beautiful surroundings. "Most brides say it's so pretty you don't need decorations."

"I have to give Stan full credit," Monica said, reflecting on the journey of their wedding and the realization of the Cardinal's Nest. "If it wasn't for him, it would never have happened. It's built with a lot of love and we want couples to have a great start like we did. It's our love story."

The love story continues as Monica graciously agreed to make her design available to other Forever Redwood customers.

View more photos and a video of The Cardinal's Nest Pavilion at:  
<https://www.foreverredwood.com/the-cardinals-nest-pavilions.html>





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December 10, 2014

Raul F. Hernandez  
Forever Redwood  
33710 Annapolis Rd. Annapolis, CA 95412

Dear Raul,

It gives me great pleasure to write you this letter of appreciation and gratitude for the services you and your company "Forever Redwood" provided for me this year. I have been in business for just about 30 years designing and creating spectacular landscapes for high net worth individuals. We provide a very personalized service for each of our clients. It is not common to find other companies that I can join with in order to describe them as being a part of one such creation.

I have taken some time in writing this letter because out of all the letters I have written (not very many), yours is unique. This letter is different from the others because our business relationship had started purely with a search on the internet. All of the others I had the opportunity to meet the individual and get to know them. From the first time we spoke on the phone and your initial commitment to provide me with the exact product I was looking for. Well, the reality is that the product I was looking for was only in the left side of my brain and really did not exist, yet. With your constant guidance and the oversight of your employees I was able to finish one of my gardens exactly how I imagined it. You and your team provided me with the perfect Arbor complete down to the smallest detail of my design. I consider our first business encounter a huge success. You were able to take my design and build me exactly what I needed efficiently and effectively. The amount of time and the total cost exceeded my expectations of the best case scenario to get what I really wanted.

I am looking forward to a long and profitable business relationship. Myself and other business owners in the landscape industry are always in need of high quality woodwork and craftsmanship. My hopes are to visit you and the forest in California soon.  
Thank you again

Gratefully & Sincerely,  
Alexander Amodio  
Owner/ Park Avenue Gardens, L.L.C.



I was very impressed with the job the crew did yesterday. I couldn't believe such magnificent structures could be built in one day, but I guess Forever Redwood can do miraculous work.

Thank You

Aly I. of Irvine, CA.

"I've lost track of the amount of compliments we've received. Forever Redwood's workmanship stands on its own with top quality."

— Donn D. of Stansbury Park, UT



We finished! It was a little harder than I expected but really not too bad. The triangle trusses and the roof panels were heavy but we got help with those.

It looks beautiful!!

I still have the metal roof to get done. I have the rough-in electrical done but we have to still get the LED lights and probably a small ceiling fan.

Thanks for your team's great work with our Pavilion!!

— Jim F. of Beaverton, OR.





"Wow, I'm impressed. The pergola is even better than expected! The quality of the redwood is outstanding. Everyone is asking me where it came from. With help from a couple of friends, we assembled and anchored it in about five hours. Now I have shade in my backyard that I can sit under and watch my kids play in the pool."

— Brian R. of League City, TX



A wisteria is growing up the wires on the back side and roses are planted to go up the front posts. The deck is Pakari, a treated radiata pine. Our contractor, landscaper and garden designer think this is a perfect structure for the site (as do we). We will send more photos as the plants mature and maybe you can use them in your promo materials.

— Robin & Mary of Carmen Valley, CA.



"The new pergola we just finished today was a breeze to install. It took less than five hours to assemble it."

— Glen V. of Lafayette, IN.



It looks great!! The crew was efficient and did a careful job! Haven't tested it yet with rain but I'm looking forward to being dry while sipping wine in a storm!! Well worth all the time and planning!

— Don W. of Palo Alto, CA.



# The FOREVER REDWOOD Story



## INTRODUCTION

Forever Redwood builds its beautiful Pergolas and other outdoor structures using lumber from forests we've carefully managed since 1995. We believe good forestry practices are central to mankind's future. Our company was founded to demonstrate the highest standards of forest restoration. We hope you agree it is important to consider where the lumber is coming from and how it is harvested.

Here we'll discuss how forestry practices are improving in some parts of the world and how to tell if your Pergola, Pavillion, Gazebo or Arch's lumber comes from real, ecologically positive forestry or from questionably managed forests.

Although the airwaves are flooded with promising green marketing campaigns, if you look closely much of the talk is inflated. For example, forestry is at the center of the climate change equation because forests sequester enormous amounts of carbon. The larger the trees are in a forest, the more carbon is held per acre. But, what is really going on in forestry?

## WHAT ABOUT SUSTAINABLE FORESTRY?

Since the early 1990s, a fast-growing "Sustainable Forestry" worldwide movement has been making positive inroads. A handful of organizations now "certify" many millions of acres of forestland as "sustainably harvested." Standards vary, but certification requires overall improvements in forestry practices away from traditional industrial models. Sustainable forestry is helping many forests around the world reverse degradation and rehabilitate deteriorated stands to a limited degree.

Unfortunately, even the more stringent sustainable forestry standards can only have a modest impact on the climate change equation. To actually stop and reverse climate change—inducing global cooling back to pre-industrial levels—we will need to trap a lot more carbon dioxide from the air. The way a forest is managed has a direct impact on the amount of carbon it sequesters.

For example, in California's Redwoods, several large forestland owners are certified sustainable. These sustainably harvested forests are logged at approximately 20% of the standing timber volume per decade, whereas most "certified" sustainably harvested forests are cut at 30–35% per decade. An average quality young stand of Redwoods adds about 30–35% per decade in new wood volume. As it ages, this growth rate slows. If cut at 20% per decade, let alone the more typical 30%, the young stand will add a modest amount of net volume for a few decades and then level out. The forest will then be maintained as a healthy and robust stand of trees of average size, with few if any large or old trees—and little net gain in carbon sequestration.





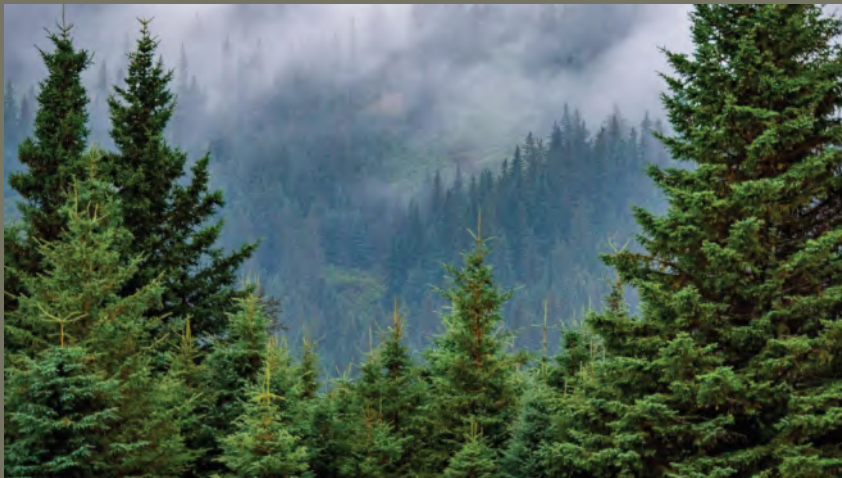
## THE FOREVER REDWOOD DIFFERENCE

Our mission is to demonstrate a much higher standard for working forestlands than is currently practiced. Since the majority of the Earth's forests are working forests, either in private hands or government regulated, a higher forestry standard needs to be put into practice.

Parklands are gorgeous and indispensable, but it is cost prohibitive to convert most of the forests of the world to parklands. Setting aside more forestlands as parks will help, but they will still only represent relative islands of stability.

Restoration forestry has many aspects that work together to restore most of the ancient forest conditions over time. The two most important are to protect and restore the soil's productivity and to strictly limit the rate of cut. For example, to be truly restorative, the rate of thinning living trees must be far below the natural rate at which a young or maturing forest grows new lumber. This is a central practice that is key to allowing the forest to grow large and ancient trees again.

By limiting the rate of cut to a maximum of 10% in any one decade, the forest will retain more than double the wood volume per acre over the coming century than if "sustainably harvested" at 20% per decade. Forestland managed at this more conservative rate will grow ancient trees again over time and make a large contribution to global cooling. This is Restoration Forestry in a nutshell.



## OUR HISTORY & FUTURE GOALS

Forever Redwood currently manages over 550 acres of average-quality forests that had 95% of the Redwood volume cut in the 1960s. By the mid 1990s, the forest had endless young trees of average-to-poor quality and was overrun with the many species of hardwoods like oaks and madrone that were left uncut during the major harvests of the 1960s. Instead of about 80–100 trees per acre of all sizes and ages, we inherited over 1,000 mostly small and suppressed trees per acre, which among many of the negative consequences increases the risk of a forest fire. Most were dying or in danger of dying from lack of growing space.

The roads were leaching soil into the streams. Poorly constructed roads were collapsing in the winter storms. You couldn't see a foot in front of you because most trees had grown low-lying branches. It was a far cry from the cathedral-like open spaces of the original old-growth forest canopy.

In 1995, we began thinning out the poorest quality trees and the over-represented tree species (mostly hardwoods and some Douglas-fir). It was an acre-by-acre, hands-on thinning from below. Our minimal array of tools included a couple of chainsaws, manual loppers, and a pole saw. We fixed the worst erosion problems by adding natural structure to the soil, and thinned most of the lower branches to lower the fire hazard and open up the understory. It took two people three and a half years working two days a week to complete the initial thinning and planting of the first 40 acres—while also selling firewood, building a cabin, and woodworking. Over time, we've become much more efficient, learning to leave most of the thinned material as woody debris to build soil structure and moisture. Now we can complete an average acre in twelve to fifteen hours, including planting.



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## GETTING RESULTS

When the initial thinning was completed in 1999, a strong contrast with neighboring parcels was obvious. The neighbors noticed, the government noticed, our friends noticed. We began to receive requests to work on neighboring lands and modest financial offers to help buy and restore nearby parcels. We purchased a portable mill to process some of the downed material—and a furniture company was born.

In the last 15 years we've grown to manage nearly 700 acres. In 2011, we completed the first round of thinning and planting on all the acreage that we felt needed to be thinned. Some lands are too steep and are best left alone. The thinned stands are already significantly transformed. If we do nothing else, the forest will grow back to Old-Growth Again with better spacing, restored species composition, improved tree quality, and partially restored soils. The fire hazard will have been reduced, wildlife habitat improved, and the forest opened from below and closed from above as it is and should be in a mature forest. For example, birds can now fly through the forests whereas before it was mostly an impenetrable maze of branches and dying trees.

If we repeat the thinning, planting, and soil building twice more over the next three decades, the forest will return to being multi-canopy and full of large, mature trees with the general structure of the original stand restored. Passing decades will add the larger old-growth trees whether or not the land is ever managed again. And, this is after yielding a modest timber harvest every decade or so to help fund the restoration!

We recently partnered with a few like-minded landowners who have deeper pockets than ours. Our company has grown and we can no longer cut sufficient lumber from our own lands, while buying more parcels is a slow process. Almost everyone claims to be green these days. If you shake the bushes, you'll find that most claims are green marketing and legal mumbo jumbo. But, there are a few people who put their money where their mouths are and we are proud to work with them. Together with the support of our thousands of customers, we are now directly helping to restore over 23,000 acres of Redwood and Douglas-fir forests in Northern California.

To learn more (and download our manual) visit <http://www.foreverredwood.com/restoration-forestry/overview/>

Every day, a 40-foot tree takes in 50 gallons of dissolved nutrients from the soil, raises this mixture to its topmost leaves, converts it into 10 pounds of carbohydrates and releases about 60 cubic feet of pure oxygen into the air.





## ABOUT THE AUTHOR

Raul F. Hernandez founded Forever Redwood in 1995 by purchasing 41 acres of logged forestland to focus on hands-on restoration. He incorporated Forever Redwood in 1999, serves as CEO and wrote the manual *Old-Growth Again, Restoring Logged Forests One Tree at a Time*. Raul spent years in management positions with the Miami Herald Publishing Company before moving to Northern California to become vice-president of Urban Renaissance, Inc., an inner-city, low-income housing redevelopment firm (1988–1993).

Raul studied forestry and ecological issues exhaustively and accumulated a wealth of hands-on experience in forest restoration. He has a Bachelor's Degree in Business Administration from Florida International University (Miami, FL). Raul has five children: Sky, Lucio, Raulito, Norma, and Santiago. He spends his time between the Redwood forests of Annapolis, CA and Forever Redwood's woodworking shop in Ensenada, Baja California.



From left to right: Raul Hernandez, founder of Forever Redwood; Ian Morris, forestland owner partner and early permaculture consultant; Frank Marrero, co-founder; Terry Patten, forestland owner and early investor.

Photo taken in January 2015 on the Cataract Trail on Mount Tamalpais in Marin County, Northern California.



Since 1995  
From the Forest, For the Forest



# Carbon architecture

Carbon Architecture is a growing design movement in the building professions that is changing the makeup of buildings large and small and is reversing the carbon intensive building techniques we have historically relied on. The introduction below is excerpted from the 2021 book titled "Regeneration: Ending the Climate Crisis in One Generation" by Paul Hawken. It discusses the great advances being made in carbon architecture and its importance to the global climate. Building with wood and other carbon-based products is the future and your purchase of a Forever Redwood product supports our direct "hands on" forest restoration work.

The Carbon Architecture movement replaces the raw materials used in building construction with bio-based materials that sequester carbon. Instead of building with rocks (steel and cement), it makes buildings out of fiber. It employs plant materials that draw carbon dioxide from the atmosphere in order to transform the building industry from a major driver of climate change into a carbon sink. This is construction that cools instead of heats the planet. The population of the earth will increase by 25 percent in the coming three decades, which will require massive amounts of steel and concrete for residences, commerce, and workplaces if they are conventionally built. Carbon architecture can flip cities into carbon sinks instead of carbon sources.

The raw materials used in carbon architecture are primarily wood, dirt (clay), bamboo, straw, and hemp, engineered to compete with steel, cement, brick, and stone in durability, fire resistance, and structural strength. The initial green building movement focused on reducing operating emissions—those produced in heating, cooling, and powering a building. That makes sense, since approximately 29 percent of total U.S. emissions come from buildings. The carbon content required to manufacture steel, glass, coatings, cement, and brick is the embodied carbon, and it was not considered as important until more recently. Today there are thousands of net-zero buildings that consume no more, or even less, than the energy they produce on-site. Carbon architecture goes further; it creates buildings that sequester carbon before the power is turned on. The goal is buildings constructed of biologically derived material to transform cities, low- and mid-rise buildings that can capture and hold more carbon per acre than does a primary forest. Essentially, it is a transfer of carbon-sequestering materials into the built environment, panel by beam by floor by building—a complete transformation of what we now think of as a city.

The twenty-four-story high HoHo Tower complex in Vienna, Austria, is currently the world's tallest timber building. It houses a hotel, apartments, a restaurant, a wellness center, and offices. Most of the building was prefabricated and assembled on-site. The construction system was kept deliberately simple, consisting of stacks of four prefabricated building elements: supports, joists, ceiling panels, and facade elements. About eight hundred wooden columns made of Austrian spruce carry the floors. It is designed to achieve "passive-house" energy efficiency."

Clay has been used in masonry buildings for millennia. Earthen clay bricks, called adobe in New Mexico, are standing after one thousand years in multistory residences in Yemen.

Clays contain extremely fine particles that are electrostatically charged, which is why a gummy, sticky medium can be kiln-dried to make durable, watertight ceramics. Clay cannot replace cement in strength, but it can substitute for concrete in other ways, reinforced with mesh or bamboo for flooring, countertops, and bricks.

Think of straw as delicate, small hollow trees that support crops of rice, wheat, rye, oats, barley, and hemp. When these grains and seeds are harvested every year, what remains is carbon stored in tubular stalks. Billions of pounds of straw are produced annually in the world. Architects and material scientists want to transform 2 billion tons of fibrous cellulose into panels, blocks, and insulation. There are many ways to employ straw and hemp as a replacement material; however, building codes and the industry are risk-averse and conservative. Architects, engineers, and contractors are wary of postconstruction lawsuits resulting from component failure and pursue a safe strategy of what can be called "infectious repetitis." If construction is done in the customary way, there will be less risk. The advantage of straw is its abundance and cost. The story is better in Europe. France has been building with hemp since the early 1990s, and is the largest hemp producer in the European Union. In Spain, architect Monika Brümmer has created a significant market for her company, Cannabric, which manufactures bricks, blocks, insulating panels, felt, and boards made entirely of biofiber.

For centuries, the most abundant structural material for buildings has been wood. The 220-foot, 9-story Sakyamuni Pagoda, in Yingxian, China, was built nine hundred years ago and has survived wars, earthquakes, and dynasties. It contains no nails, bolts, ties, or metal—it is held together by hundreds of different joinery techniques.





Wood was used as logs, shaped logs, or sawn timber up until the twentieth century. Steel and concrete took over in an era of cheap fossil fuels and lack of awareness about its long- and short-term impacts. The advantage of steel and concrete is its strength, durability, and uniformity. Engineers could precisely specify materials needed for shear and load-bearing strength. The challenge with steel and concrete was weight. The higher the building, the greater the load and stress on lower floors, which meant greater use of steel to support it. As buildings got taller, material intensity increased exponentially. When steel and concrete were relatively inexpensive, intensity was not a consideration. Today the true cost of steel and concrete far exceed their nominal price: annual carbon dioxide emissions are around 3.7 billion tons and 2.6 billion tons respectively. The mining impact of iron and the theft and ransacking of sand from coastal shores for cement are but two of the direct impacts upon the environment.

In the past two decades, architects and designers, inspired by the possibilities of eliminating steel and concrete in low- and mid-rise buildings, created what is known as the “tall wood” movement. And the movement has taken off. The largest mass timber commercial building in the United States is the Carbon12 building, in Portland, Oregon. The number 12 refers to the atomic number of carbon, not its eight-story height. Completed tall timber and hybrid tall timber buildings can be found in France, Australia, Italy, Sweden, Canada, and the UK. The Mjøstårnet in Brumunddal, Norway, was until recently the tallest mass timber building in the world. It is a 280-foot, 18-story apartment and hotel development. (The two on-site 25-meter swimming pools were built entirely of wood.) Large glued laminated timber (glulam) was used for the internal columns, beams, and cross diagonals because of their pliability and fire resistance. Cross-laminated timber (CLT) was used for inner walls, elevator shafts, balconies, and stairs. The timber was connected with steel plates and dowels. It is imperative that the wood come from certified sustainable forestry practices.

The Brock Commons at the University of British Columbia, an eighteen-story student residence, is the third-tallest mass timber building, at 174 feet. Because mass timber buildings consist of prefabricated components, the Brock Tower structure was completed in less than seventy days. Perkins&Will architects have submitted plans for the eighty-story River Beech Tower in Chicago. Because mass timber buildings are innovative, involve newly designed structural components that are difficult to source in most areas, and are on a learning curve, they are more expensive. Several engineered and designed mass timber buildings have been delayed or canceled due to financing challenges.

The ecological advantage of wood is considerable, as steel and concrete combined are responsible for 12 percent of greenhouse gas emissions. Proponents calculate that the steel and concrete in a building that would emit two thousand tons of carbon dioxide in its manufacture would capture two thousand if built with mass timber. The challenges of withstanding fire is the most prevalent concern from those who have not studied mass timber technology. Fire can be addressed with drywall (gypsum); however, a Yale study on mass timber building materials states unequivocally that glulam and cross-laminated

timber can form a protective, charred layer in intense fire that prevents further combustion. Timber buildings are engineered to take into account how a theoretical fire might partially weaken structural timber. No material is inherently better at withstanding fire exposure. When subjected to high heat, steel becomes plastic and will bend, leading to structural collapse.

Engineered wood is constructed from numerous sources: small trees garnered from forest thinning, sawmill boards that are not commercially useful, plantation wood, dead trees from forest fires that have not begun to decay, and wood recovered from demolition. Smaller pieces of wood are glued together to create timber that has greater strength than a beam from a single large tree and, at this point in time, are far larger than those that could be obtained from temperate forests. Nevertheless, as mass timber buildings grow in popularity, deforestation could result. Thus far, the companies that choose to construct timber buildings want the source of the wood to match the intent of the building. Mass timber buildings have another advantage: they weigh 80 percent less than steel-and-concrete construction. Ninety percent of the weight of a high-rise building is the steel and concrete. Ninety percent of the greenhouse gas emissions from material are the steel and concrete. If and when mass timber buildings become less expensive than steel-and-concrete ones, and the demand for timber threatens to have a damaging impact on intact forest systems, there is a substitute for wood that is even stronger: bamboo.

Slats made from bamboo can be laminated, creating timber, beams, posts, plywood, flooring, and paneling superior to wood in overall strength and durability. And bamboo sequesters carbon far more quickly than fast-growing trees. Carbon offsets are easily identified and measured annually, giving bamboo an economic advantage over wood. And unlike trees, as many a gardener has discovered, bamboo does not die when cut. You can harvest bamboo from the culms indefinitely for decades.

The research and application of bio-based materials is slowed primarily by the inertia of the awareness, knowledge, and regulatory environment, including building codes. As is true for any industry that has long prospered making products in a certain way, there is resistance. But as with food and energy, a transition is underway as architects, engineers, and companies show the way to a world built biologically.

Caroline Palfy is the master builder, engineer, and project developer of the new Hoho Vienna. “We keep getting asked whether our timber resources are jeopardized by the current timber boom in the construction industry. In Austria, forests produce thirty million cubic meters of timber a year, of which 26 million cubic meters are logged. The remaining four million cubic meters remain in the forest, continually increasing timber stocks. In other words, one cubic meter of wood grows back every second, and thus the timber used for the entire Hoho Vienna project will have grown back in our country's forests in only one hour and seventeen minutes.”



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Del norte Pavilion with a Loveseat and two Ensenada Easychairs with Ottoman. Photo Courtesy of D. Leetz of Petaluma, CA.





The Hexagonal Retreat Pavilion in Douglas-fir. Photo Courtesy of P. Redmond of Coto De Caza, CA.



Interior view of The Thick Timber Toledo Wood Pavilion in Douglas-fir with Coffee-Stain Premium Sealant. Photo Courtesy of M. Moffitt Jackson of Foothills Ranch, California.