



# Timber Frame

## Product Guide

# Your Timber Frame Home begins with design...

But before we get down to the technical aspects of your timber frame system, let's focus on your overall home design. Your dream home should be all about you and your vision. And to help it stay "uniquely yours," we'll provide you with your very own Building Consultant. Together, you'll start by choosing from some of the best designs in the country. Then you can start customizing. And our online Virtual Design Center makes it a breeze. Plus, the entire design customization process has no additional costs. So relax and enjoy. From design and materials and manufacturing selections to construction, you'll get expert advice every step of the way. Simply, you deserve more than off-the-shelf. You deserve a dream home that's your dream home.

## Visit Our Design Center!

Yes, custom design services are included with your timber frame purchase. You may have already had your home designed by others and simply need the technical timber drawings from us. Or, you may want us to help you design your entire home from scratch or modify one of our many beautiful plans. Whatever the case, custom design services are included. And we encourage you to visit our Design Center in Athens, Tennessee. We have much to inspire you and will provide direct access to our design staff to work on your dream home.

## Meet us online!

If a trip to our Design Center doesn't work out for you, then we can do the same thing online. Yes, the internet has changed everything, including our design services. We are pleased to provide our Virtual Design Center to give you direct access to our designers from the comfort of your home or office. Now you can speak with our designer and watch your changes made to your plans in real time via your own computer. There is no software to learn. Just follow the web link at the appointed time and sit back and relax. The Virtual Design Center is fast, efficient and fun, and these services are included with your timber frame home purchase.





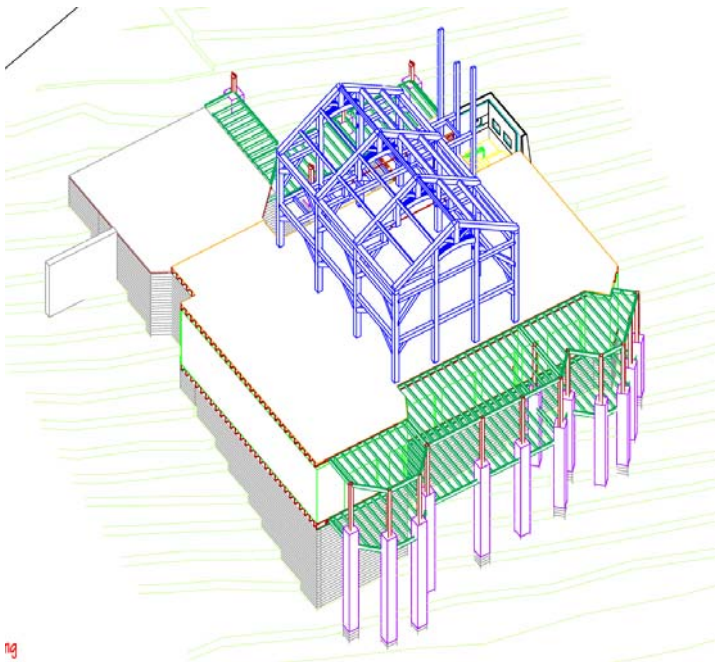
# Preliminary Home Design:

If you do not already have your home plans, the first stages of design involve the development of your floor plans and elevations. You may start the process by marking one of our plans for customization or submitting your ideas for a “from scratch” home design. Your changes and ideas will be incorporated and shared with you, and revisions will continue until you have approved the preliminary home design. Next, we move into the more technical aspects of designing your timber frame structure with technical design and engineering.

# Technical Timber Frame Design and Engineering:

Technical Timber Design is an integral part of producing a timber frame or post-and-beam system. In fact, the manufacturing equipment utilizes advanced CNC technology, which is driven by the computer CAD design files. In other words, the timber design files interface with the cutting machine to produce the hundreds of precision-cut timber parts that make up your timber frame system. Without the design, the equipment does not know what to cut.

We will help you understand all of the technical options such as bent selection, details of the cutting methods and styling, and joinery methods.



Hammer Detail 1



Hammer Detail 2



Queen Post Bent



Scissor Bent



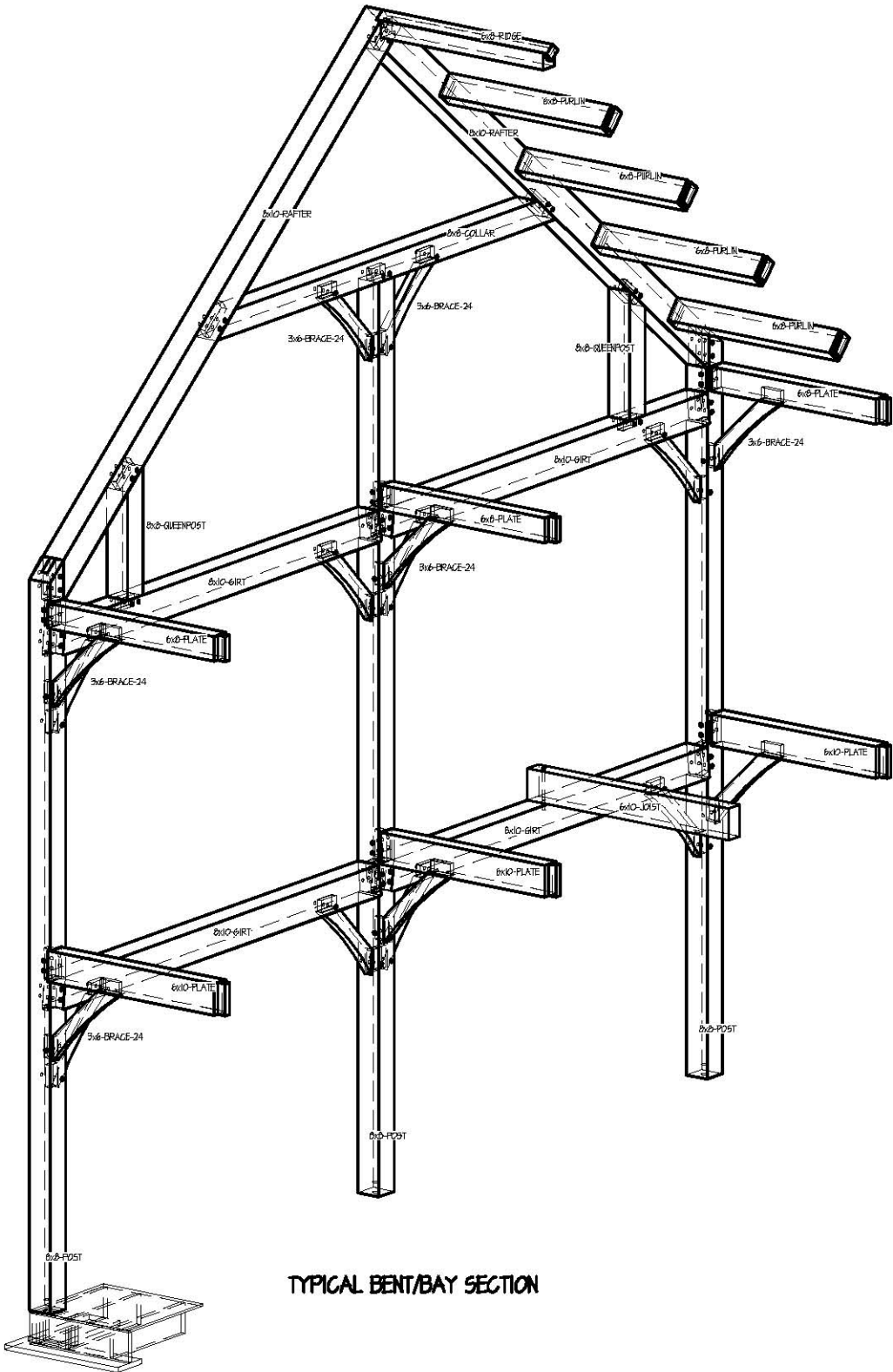
King Post Bent



Hammer Beam Bent

# Technical Timber Frame Design and Engineering:

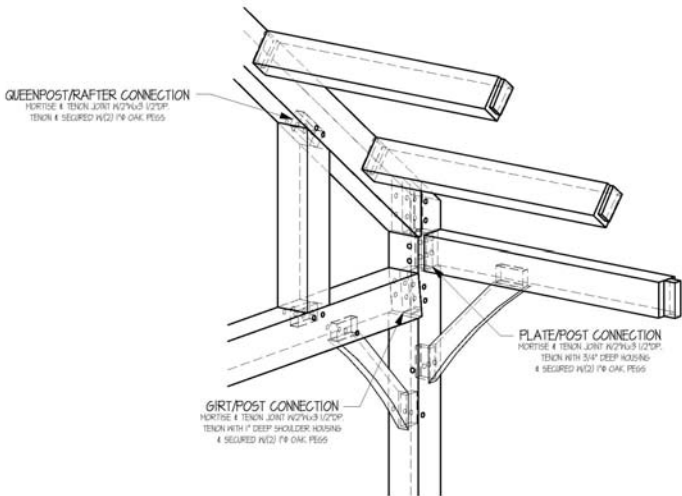
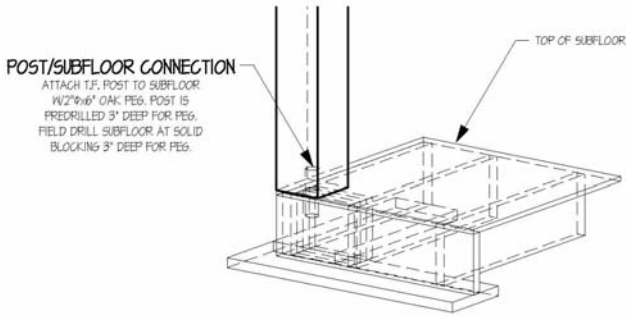
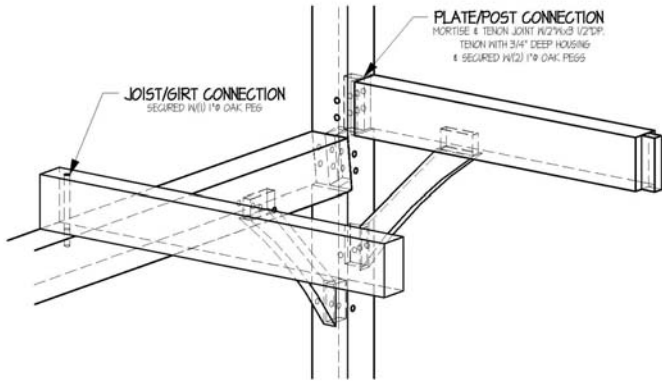
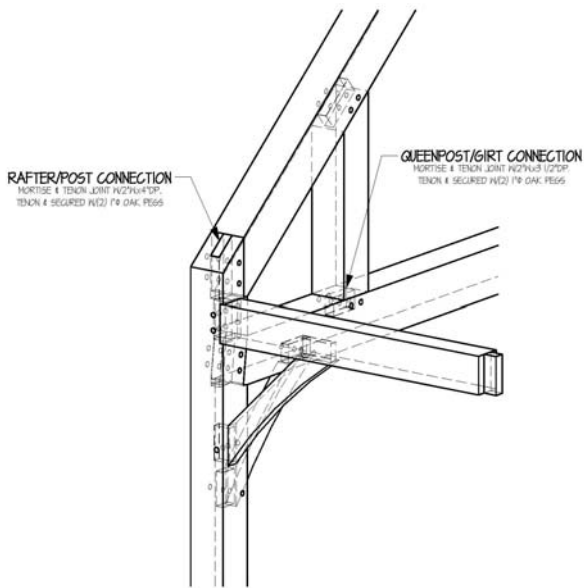
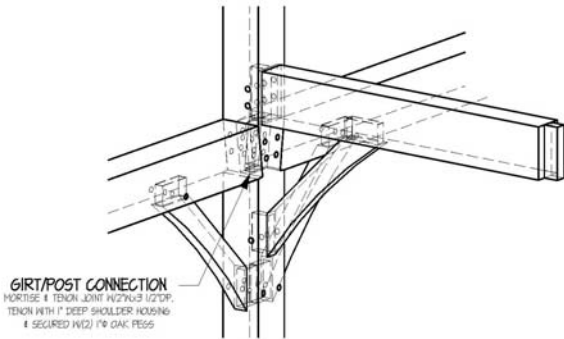
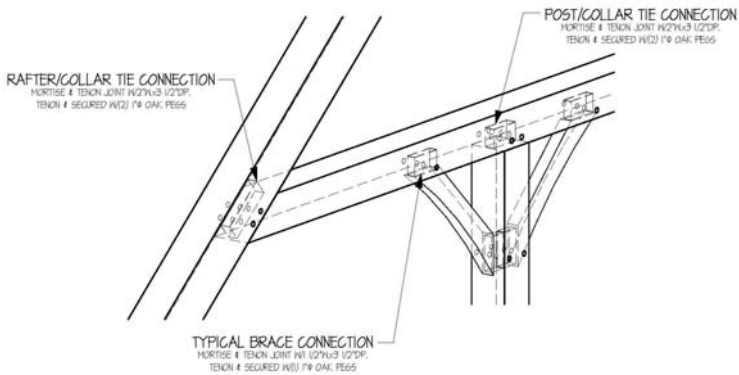
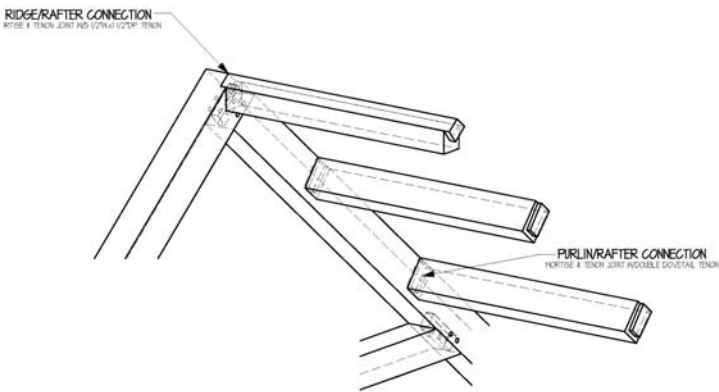
The drawing below depicts a typical bent design and connections to the bay members such as purlins, ridge beams, plates, joists and braces. The traditional mortise-tennon-pegged joinery is included with the manufacture of your timber frame or post-and-beam system.



TYPICAL BENT/BAY SECTION

# Typical Joinery Details:

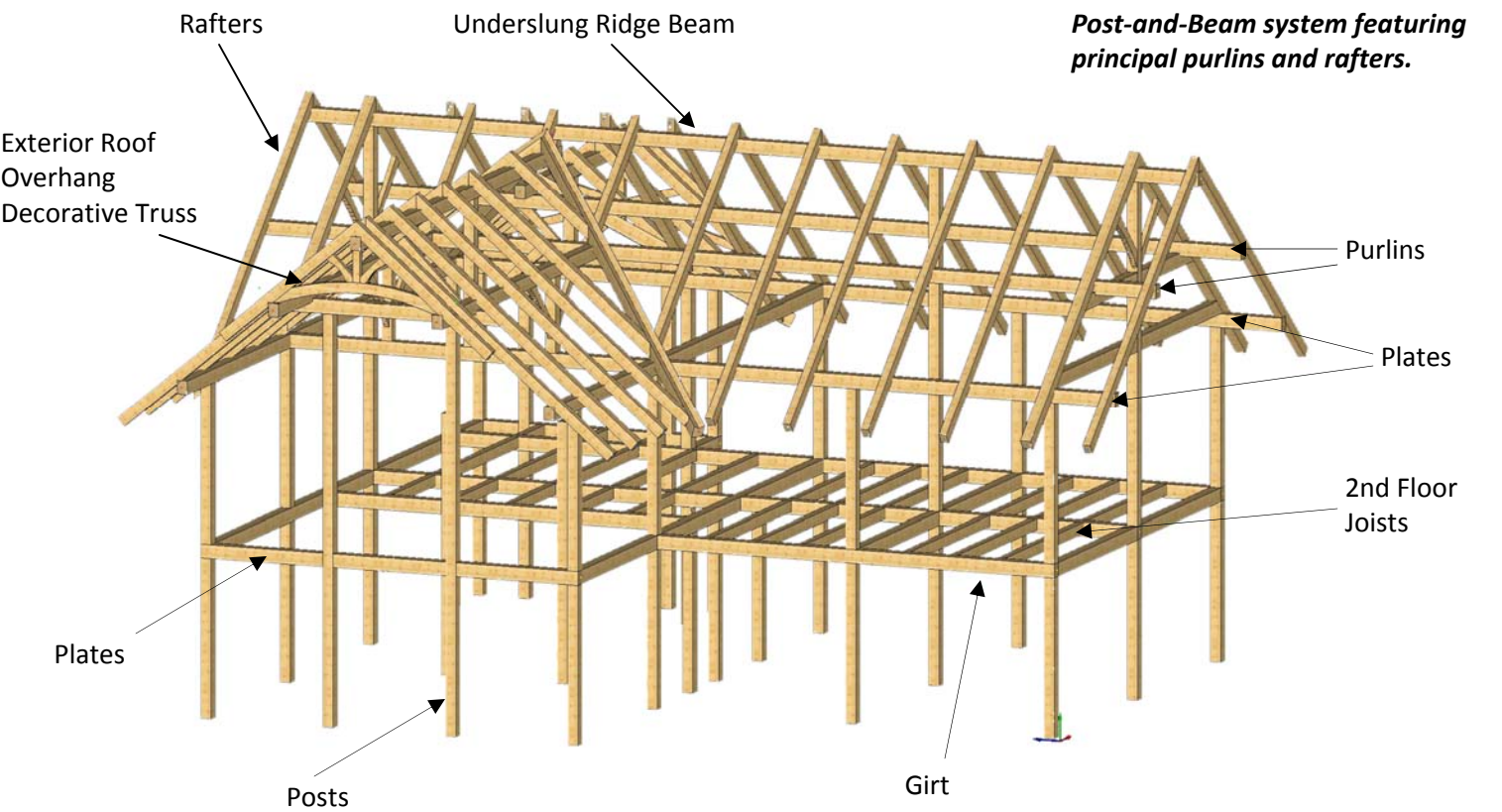
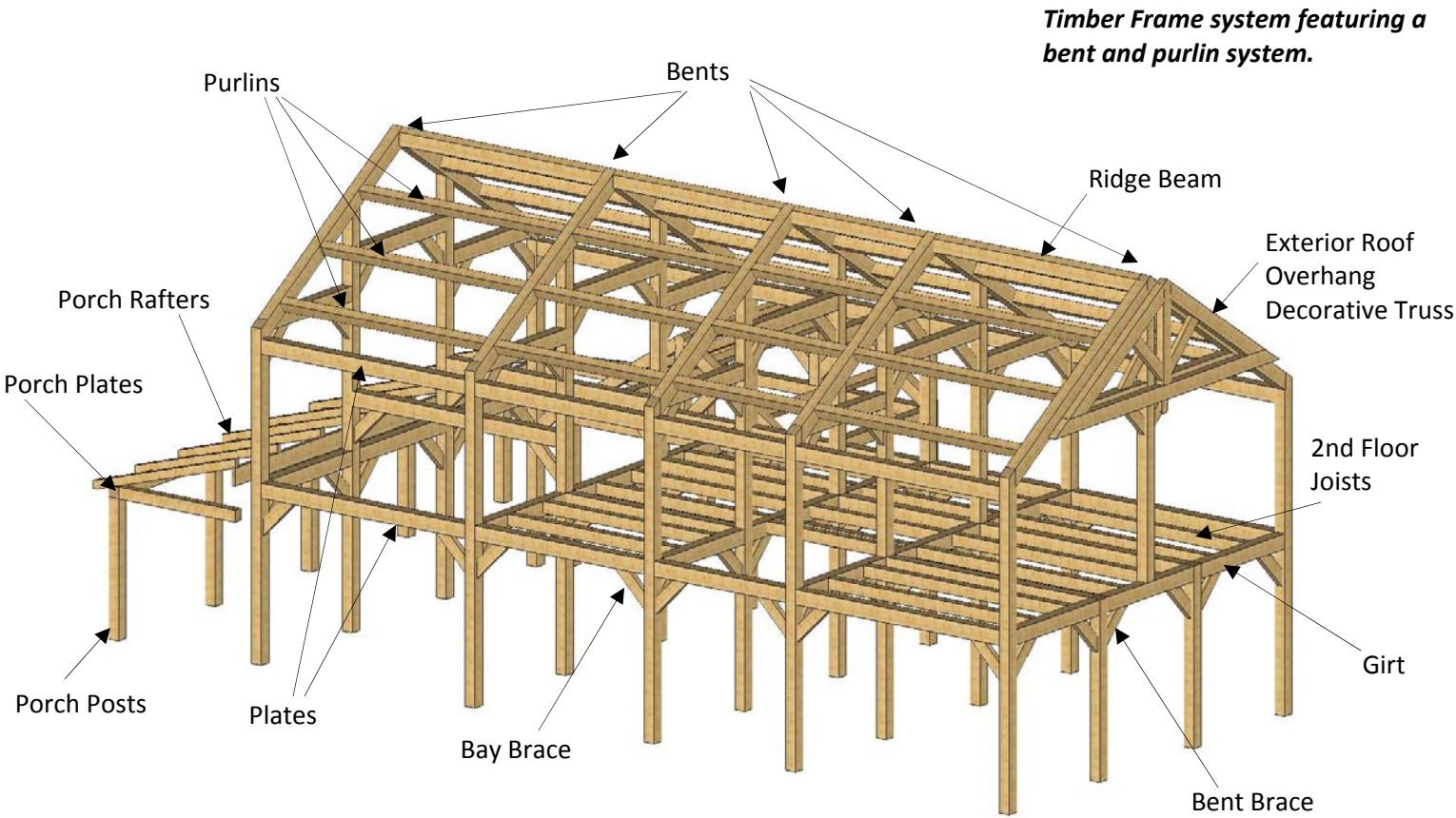
Your timber frame purchase will include mortise-tenon-pegged joinery similar to the details shown below. Each connection is designed in CAD format and precision milled during the manufacturing process. Exact specifications vary from design to design, but pre-cut joinery is included with your timber frame purchase. All hardware and pegs required to install the timber frame system is also included with your purchase.





# Final Frame Design:

During the design process, you will be able to see all details of the timber system and will eventually approve your final timber frame design. Once the frame design meets your approval, we are ready to move into production.





## High Quality Timber:

The wood used to produce your timber system should be of the highest quality. Our primary specie is Douglas Fir, and we use only #1 grade or select structural grade timber. Also, the large majority of timber used is free-of-heart for added stability and performance.

## Forester on Staff:

To help insure that you get the best available timber, we have our own graduate forester on staff to help make the best decisions regarding timber procurement and quality. We select the best wood from the best sawmills to produce your timber system.

## Sustainable Resource:

We also believe strongly in the wise use of our natural resources. Timber is a renewable resource, and we only utilize mills who grow more timber than they use. This insures that the nation's timber resource will be available for future generations. We have always promoted sustainable forestry practices.

## Eco-Friendly:

Not only is our Douglas Fir renewable and sustainable, but there is minimal environmental impact involved in the procurement and production of the timber. The average timber frame home can be delivered from sawmill to manufacturing facility using less than 70 gallons of fuel.

**Certified:** We utilize mills which are Forest Stewardship Council certified. This means there is a chain of custody provided for all timber used at the mill that proves its proper management and sustainability.





## Precision Manufacturing:

Once your design is complete, your timber frame will be crafted with the utmost care and precision. We manufacture each frame to order and always make one frame at a time. Every part is numbered and tagged to correspond to your CAD designs and blueprints.

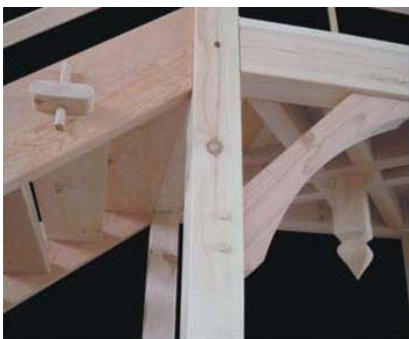
## Hundegger K2:

Most timber frames are manufactured using advanced CNC machinery known as a Hundegger machine. Developed in Germany, the Hundegger is driven by the CAD drawings created during the design phase, and each part of the timber frame is cut precisely as it was drawn in the CAD software. We utilize a network of Hundegger machines around the country for logistical purposes and timely delivery.

## Hand Shop:

Once the timber frame parts are cut on the Hundegger line, the parts are examined for accuracy, precision and overall quality. The parts are labeled, sanded and prepared for shipping. Parts that fit together are packaged together to make it simpler to locate timber on the jobsite.

Bundles are paper wrapped and carefully banded for shipping to your jobsite. All accessories such as pegs and screws are assembled with the timber for shipment.





## Typical Timber Frame:

The photo at right shows an erected timber frame. This frame features a 2-story bent system connected by plates, purlins and ridge beams. The left side of this frame features a cathedral area with hammer-beam bents. The middle section of the frame features a second floor system. The far right portion of the frame is a one-story area with a flat ceiling.



## Typical Post-and-Beam:

The photo at right shows a post-and-beam frame. The post-and-beam system utilizes posts to support plate beams and purlin beams which support a rafter system to form the roof. The post-and-beam system features the same types of mortise-tenon-pegged joinery with a few additional methods of joinery, such as a tongue-and-fork. The system shown at right is a 1-1/2 story post-and-beam.



## Specialty Timber Systems:

The photo at right shows a specialty timber frame system which utilizes arched laminated beams to create a barreled roof line. This photo is included to demonstrate the capabilities of our timber frame systems and is not intended to characterize the typical timber frame system to be used in your home. Specialty timber frames carry a significant up-charge over the typical timber frame system. However, if a specialty timber system is what you desire, we can create it for you.





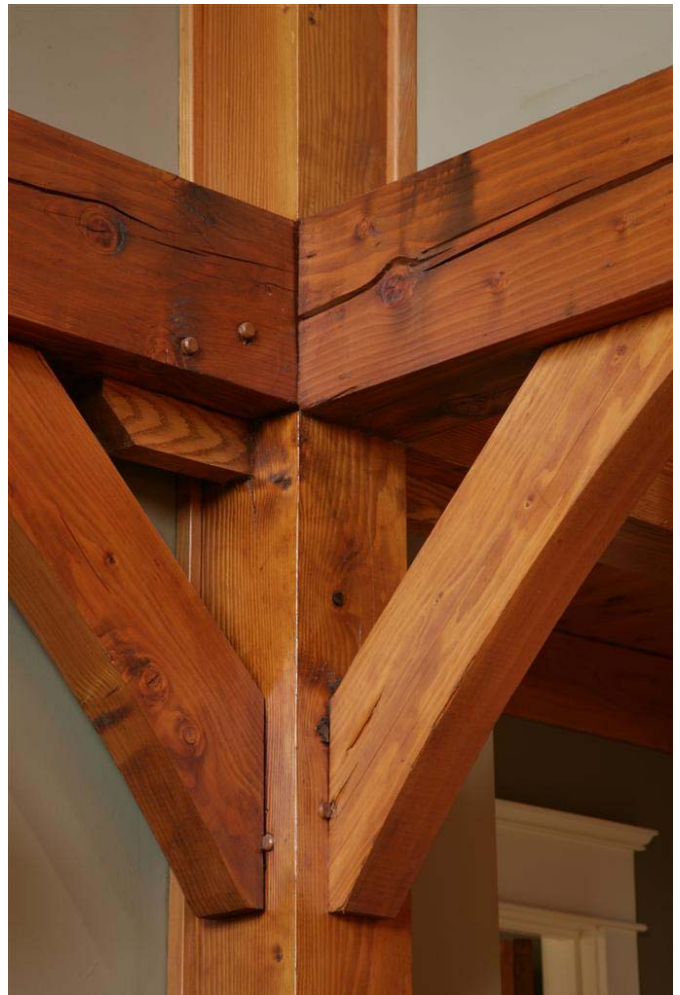
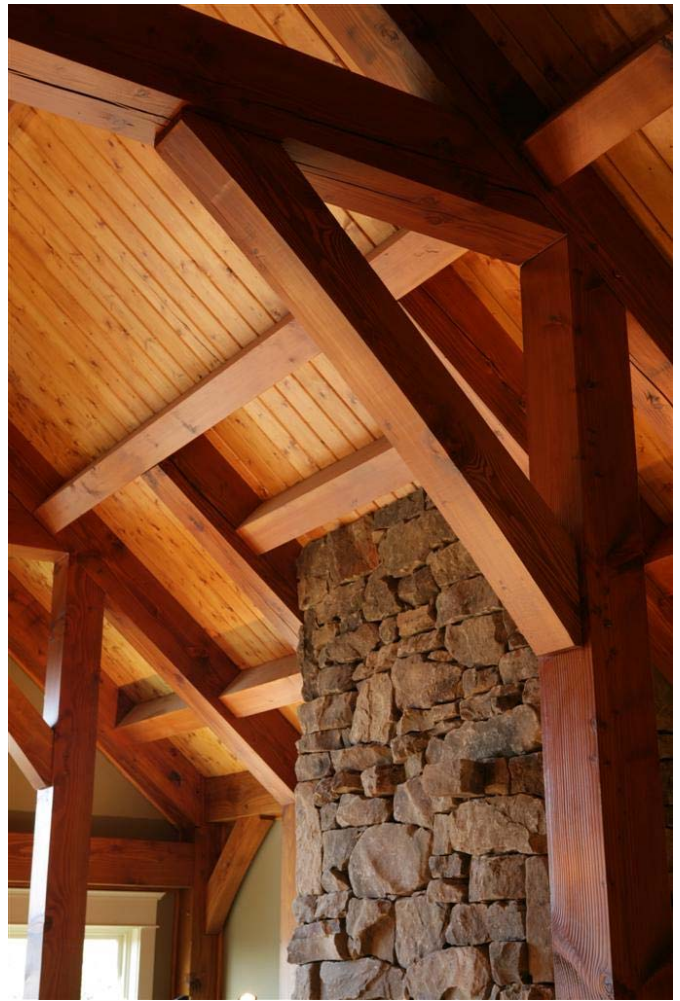
## Typical Joinery Photos:

This collection of photos illustrate the typical joinery details included with your timber frame or post-and-beam system.

Top right: This photo shows an arched brace within a bent and the connection of the rafter to the post and chord within the bent. Also shown are connections of purlins to the bent.

Bottom right: This photo shows plate beams and girt beams connecting to the post of a bent. The connection is strengthened by an oak spline and arched braces.

Below: The photo below shows the housed connection of the post in a bent to the plate beams connecting the bents together. The post is notched to allow the plate beams to have a shoulder to rest on within the post. Oak pegs are inserted through the predrilled holes and through the tenons of the plates.





## Detail Photos:

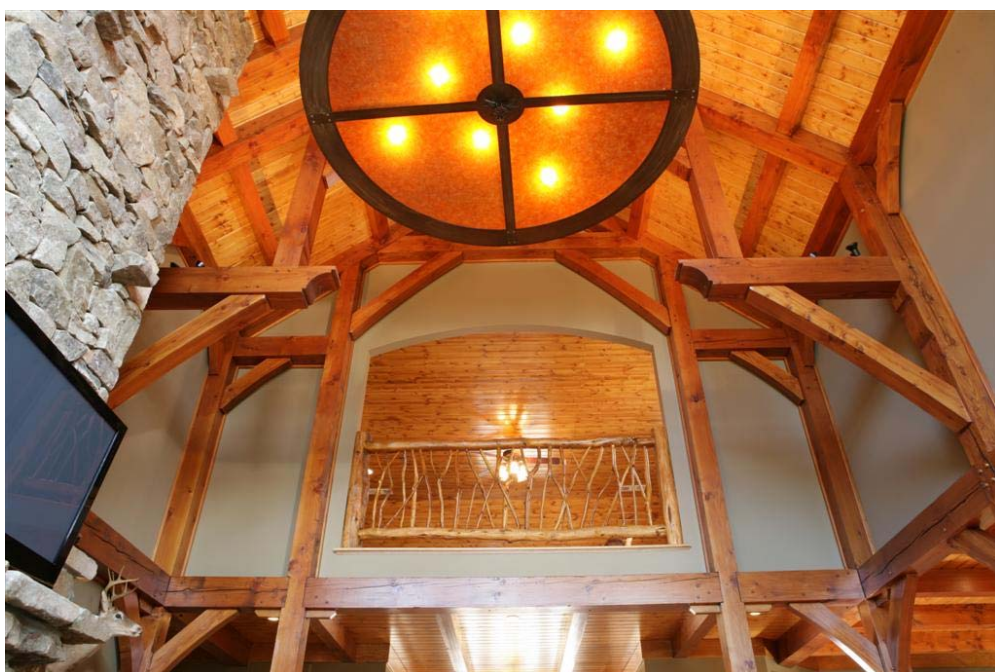
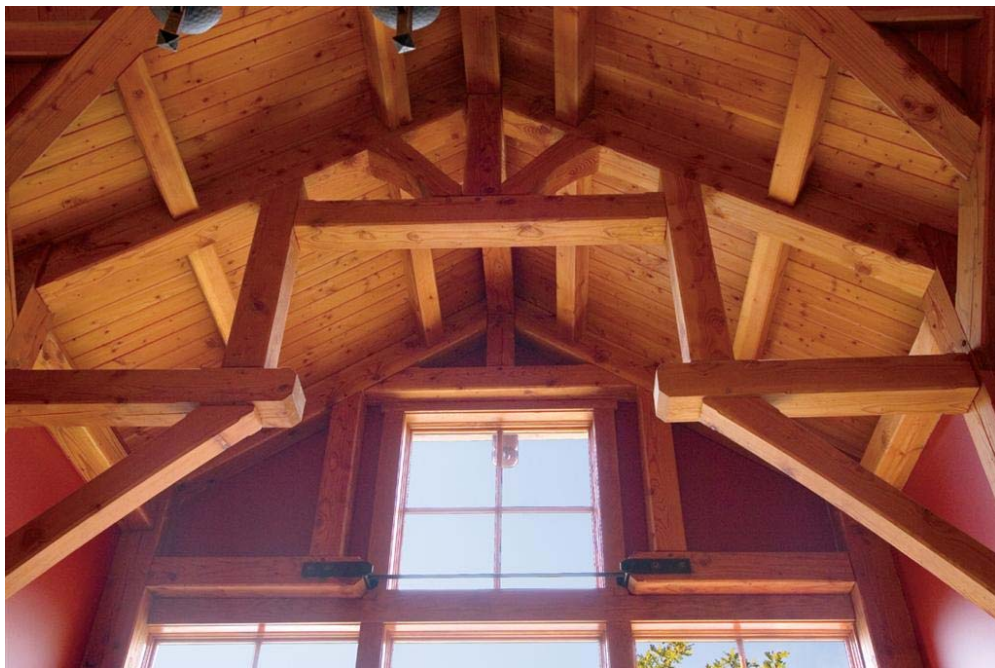
This collection of photos illustrate the typical design details included with your timber frame or post-and-beam system.

Top right: This photos shows two hammer-beam bents. The bent in the foreground does not utilize a steel turnbuckle connection of the hammers, while the bent shown in the background does utilize a steel turnbuckle. In some design instances, the steel is necessary or desired. If the exposed steel is not wanted, then the hammer bent is strengthened with steel members placed inside the timber pieces. This steel provides the strength needed but hides the steel from view. Notice the decorative cuts on the ends of the hammers.

Middle: This photo shows two types of 2-story bents. The bent in the foreground is a hammer-beam bent. The special design of this bent allows the bent to span an area without posts in the center. This is ideal for spanning over great rooms where posts would be problematic. The bent shown in the background is a standard 2-story bent which does have posts in the center that go to the floor. A second floor beam system connects to the far side of this bent at the girt beam. Notice the decorative cuts on the ends of the hammers.

Bottom right: This photo shows the upper portion of a 2-story hammer-beam bent and its connections to the closure plate beams and purlins. At the top of the outer bent post, the bent rafter connects to the post, and the closure plates also connect at this location. The hammer beam and closure plates are supported by arched braces which add significant strength to the timber frame.

These photos illustrate details found in the typical timber frame system provided by Natural Element Homes. Please check your Purchase Agreement for the exact details of your timber frame system.





## Completed Timber Frame Home Photos:

The photos at right illustrate completed timber frame or post-and-beam systems. These photos show how the main floor ceilings will look when drywall is used for the ceiling liner. Drywall is not a part of the timber frame package provided by Natural Element Homes. Drywall is typically provided by the builder or home owner.

The photos show posts supporting plate beams and girt beams with second floor joists between the girt beams. Plates are further supported by arched braces.





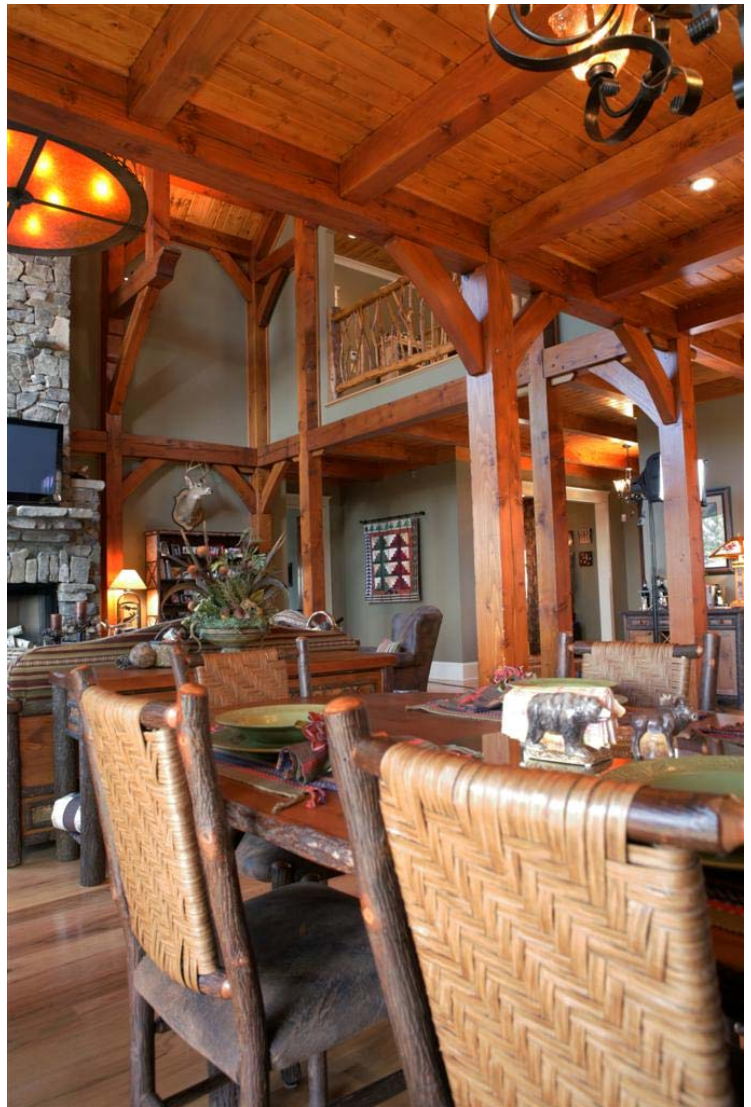
## Main Level Ceilings:

These photos illustrate completed timber frame systems. These photos show how the main floor ceilings will look when 2x6 tongue-and-groove decking is used for the ceiling liner.

The typical decking is a Premium Grade Spruce product of very high quality. Decking is not a part of the timber frame system, but if it is desired, decking can be added to your package purchase from Natural Element Homes.

Other species of decking are available as well. Douglas Fir decking is shown on the next page. Southern Yellow Pine is another species often selected. Others may choose barn wood or reclaimed boards.

Once the type of ceiling desired is determined, the decking may be added to your package.





**Typical Upper Level Ceilings:** The photo below illustrates the look of the upper level ceiling in the typical timber frame. In this case, Douglas Fir 2x6 tongue-and-groove decking was selected.





**Typical Upper Level Ceilings:** The photo below illustrates the look of the upper level ceiling in the typical timber frame. In this case, Spruce tongue-and-groove was selected as the ceiling liner.





**Typical Upper Level Ceilings:** The photo below illustrates the look of the upper level ceiling in the typical timber frame. In this case, drywall was selected as the ceiling liner.

