



Above: Heavy timber and traditional mortise and tenon woodwork were ideal choices for this remote Buddhist center due to their spiritual and aesthetic properties.

California Retreat

Spiritual center embraces traditional joinery and heavy timber

This remote Californian retreat is a center for education, healing, and spirituality. Open to all, it is a working community guided by Buddhist teachings and a mission to “share what is best, most beautiful and most meaningful in this precious human existence.” The retreat’s principles informed its approach to design and construction.

Right and below: Designers ensured “dream beams” by developing a two-stage wood specification: Douglas fir was selected, dried to the core in an RF Kiln and re-milled to a strait, stable beam.

It was agreed early on that the retreat’s mission statement would govern the processes and construction of new buildings. Heavy timber was a perfect fit, and was ultimately the only material option due to its spiritual and aesthetic properties. Traditional mortise and tenon woodwork was also a natural choice.

Design work began as a simple remodel of a commercial kitchen and dining hall to better serve the volunteers at the center. However, as the design process evolved, the scope of the project was expanded to include a new 1000-sq.ft. library, 1600-sq.ft. conference hall and a 2000-sq.ft. meditation hall. As separate buildings, each one also needed to be connected by four additional pavilions and covered walkways (2200 sq.ft.).

Craftsmanship and attention to detail were very important aspects, beginning with the design itself. The timber frames were modeled in 3D digital form. Every element – from the joinery and rafter tail profiles, to the detailing of the oak pegs – was meticulously planned and designed.

The structures were not to be modeled after any historical buildings and needed to embrace the essence of Buddhist teachings. The designers were left to devise the spaces as they saw fit: the library was designed with



a traditional east coast hammer beam truss; the conference hall was distinguished by open space; while the meditation hall took on a life of its own.

From the outside, the meditation hall is a simple four-hip box with four hipped dormers. Inside, the supporting structural timber work is a three-dimensional hipped truss system. Each dormer has a structural platform to hold 6,000-pound prayer wheels. Each platform is supported by a set of cantilevered or hammer-beamed-and-braced timbers. Two octagons of timber circumnavigate the interior of the structure to form the dormer support system. An additional octagon – decorative in nature – acts as a very large chandelier holding up-lighting and down-lighting. This octagon forms a compression ring, supported by 16 timber braces, and creates the illusion of a floating timber centerpiece.

core in a radio-frequency (RF) kiln and re-sawing it to a straight, stable beam.


There are only two operating RF kilns of this kind in North America. Unlike a traditional kiln where warm air is circulated around each timber to dry it from the surface in, an RF kiln uses radio waves to excite and heat the water molecules throughout the timber, much like a traditional microwave oven. The water throughout the timber turns to steam. The steam inside the timbers is at higher pressure than the air pressure at the timber surface, so the steam migrates to the ends and surfaces where the drop in pressure and temperature converts it back to water which is drained from the kiln.

After a dwell time between 5 and 8 days, enough water has been removed from the timbers to give them a much lower and more consistent moisture content of



Specific attention was given to the detailing and engineering of the traditional joinery since the retreat sits on a major fault line with severe seismic activity. Further, it is located on top of a ridge in a coastal zone so high winds are also a consideration for lateral stability. The timber frame serves as the structural skeleton to withstand vertical loads, while lateral loading was transferred to conventional wood roof diaphragms and wood shear walls. The traditionally braced timber frame pavilions and walkways were exceptions to the latter. The wood roof provided a stiff diaphragm, but the traditional mortise and tenon knee braces were designed to withstand all the lateral loading.

The designers ensured “dream beams” and avoided any potential shrinkage of the solid-sawn timber during and after construction by developing a two-stage wood specification. First, to ensure quality fiber, Douglas Fir (cross arm grade, FOHC-min 2, dense, with a 1.5-inch max knot size restriction) was selected. The second stage involved drying the timber to the

17 per cent or less, easily meeting the engineering requirements for dry timber. The timber is then re-sawed and surfaced to the final architectural appearance requirements. This dryer timber is stable and will experience little to no additional shrinkage, so its continuing beauty and performance is assured. 

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