

# TIMBER FRAMING

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*On the cover, Will Denton of Trillium Dell Timberworks stands before full-scale engineering test mockup of timber screen assembly destined for installation at new theater north of Chicago. Hydraulic rams stationed on the upper I-beam and fitted under the crossbars of the upper clamps force the slender battens into tension. Photo by Fire Tower Engineered Timber. On the back cover, scaling logs off the truck on a cool day at Garland Mill Timberframes, Lancaster, N.H. Photo by Matthew Hammon.*

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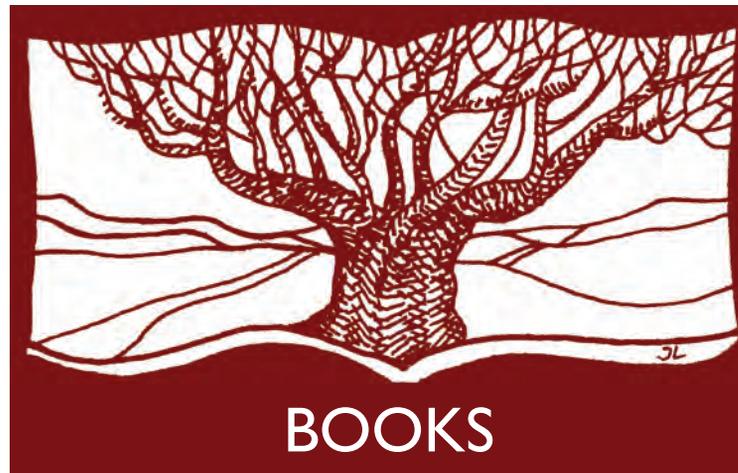
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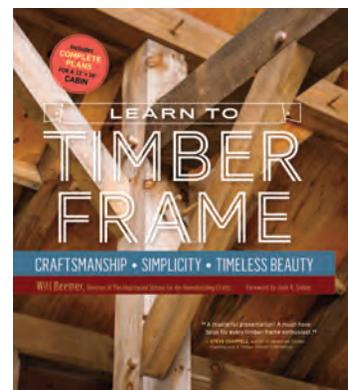
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## Will Beemer's Book

*Learn to Timber Frame*, by Will Beemer. North Adams, Mass.: Storey Publishing, May 2016. 8 in. x 9¼ in., 192 pages. Copiously illustrated. ISBN 978-1-61212-668-5. Paper over board, \$24.95.

**T**HIS new book exemplifies the disciplined approach that Will Beemer brings to all tasks, offering a solid background for the new-to-topic learner and then step-by-step direction to complete a small timber frame. Long a workshop offering at the Heartwood School, where the author has taught carpentry and timber framing for 30 years, the small timber frame in all of the iterations shown is a proven platform to learn the basics of square rule layout, cutting and assembly in roughsawn materials. That a simple tool kit and basic skills can be used to achieve a structure empowers the legions of enthusiastic builders who wish to build for self, family and the future.



Early in this book there is a dialogue about stick framing versus timber framing. The familiar invidious comparison of light stick framing with timber framing may unfairly criticize the more modern building system. This comparison may also ignore the transitional, hybrid systems such as the braced frame that developed in the evolution of American wood structures, and our society's constant demand for less skilled labor. Stick framing would appear to allow competency following a short learning curve, but without knowledge of materials both stick framing and timber framing can fail—really any building system will fail.

Consumer-culture memory does not perceive such failures as driven by lack of education. Couple the demand for ever more housing and structures with a profiteer's price point based on leaving out as much as possible, maximize allowable error and set the structure's service life for one generation, and the results are predictable. (The auto industry made some of these choices too.)

In our time, an educated and aware American consumer began to demand quality, craftsmanship, durability and stylish aesthetics. An educated builder can provide each of these as a real value to that consumer. The demand for the well-made objects of skilled trades has seen the resurfacing of skills thought lost, and the aspiring self-builder has been among us for some time now.

**Design** A discussion of how to configure the function and architectural layout of the book's representative frame, followed by an entry-level discussion of enclosures, wrap the topic of design in a tidy package. There are enough exemplary frame designs to be inspirational, with shots woven in of finished interiors, exteriors and perspectives.

**Wood** The carpenter's lack of knowledge of wood can degrade both timber framing and modern light framing. The green wood (fresh-sawn, ungraded material) carpenter needs to be aware of the variable quality of materials and how these materials are to be used in a structure. The modern stick-frame carpenter uses materials that have been graded (assigned a structural capacity designation by someone, somewhere and at speed), but designation alone does not define the usefulness of each piece. Many defects and callbacks common to modern stick-framed and timber-framed buildings are the result of poor materials selection by the builder. Learn to look at the wood; know what you are seeing.

The book introduces topics of species and grade at a level that enlightens without overwhelming. (The study of materials is a lifelong journey which is only begun and never finished.) The author's discussion of load types and the source of these loads is also an excellent start. No mention of seismic loads appears, but rather the suggestion that an engineer be consulted when the novice builder moves beyond simple model-building.

Knowing which engineering concerns govern material specification and frame design is key to improving a builder's skills. Load path (an example: gravity loads will find a way to the supporting foundation) is referred to but not discussed in detail, and my experience is that ignoring load path is the major source of defects in all buildings no matter the building system. Harvesting materials is discussed in a cursory fashion, but historical knowledge would remind us all that there are better times of the month and the year to cut trees for structural use. At risk: deformation (shrinkage), durability and performance.

In ordering materials, know what you want and be specific, the author suggests. The new builder may need some guidance and should not be afraid to ask questions. Storage of materials, meanwhile, should be defined by where as well as how. My experience suggests materials are best stored one foot from the ground, dry ground preferred, out of the direct sun, on 1-in. stickers if boards but if timbers on 2-in.-minimum stickers (helps avoid pinching fingers when handling beams). Keeping rain and organic materials out of the pile minimizes staining and allows some seasoning.

**Layout** The Guild publication *Timber Framing Fundamentals* (to which Will Beemer was a major contributor), published in 2011, offers a more comprehensive discussion of each layout style practiced by timber framers in the past and today. A certain kind of square rule layout is the primary lesson in the new book. This offering should be considered a primer on the topic, again possibly a lifetime study. Subtleties abound. Square rule as practiced today in the US is not a homogeneous set of skills with only one path to success. The common elements of all square rule styles are the use of reference planes (real or posited) and error compensation for material size discrepancy.

Square rule by centerline, snapline and arsis (reference planes one face and one edge with arsis in common) are three systems in practice (many subsets are scattered about), and the author notes

that these can be mixed in a building. Centerline rule (struck plumb and horizon lines) is an ancient log-building technique (logs preceded timbers). Square rule evolved as a production enhancement technique in the New World with its forests full of tall, straight trees that fit the system well, as relatively short, relatively crooked trees do not.

Most woodworking skills and the systems used to accomplish the task at hand are influenced by personal choice of tools, real or intellectual, and the materials available. Couple that with the fact that the consumer of the finished product has options regarding fit, finish, expense and a host of aesthetics. The author explicates his proven system very clearly, follows with a tool discussion (the reader is reminded that hand tools are enough to get the job done but powered options exist), and then turns to a step-by-step method of laying out the joinery for a small structure.

**Cutting** If you can read, you can cut it. This sums up Will Beemer's delivery—and nicely done it is. Clear images and multiple drawings marry a two- and three-dimensional presentation. Intuitive awareness of grain direction and tool use comes with experience. You are on the right path when you become aware which end of your timber was toward the top of the living tree. Knowing when to use a chisel bevel up or down is a step along this same path. Sharp: tools cannot be too sharp but the wood species and task define the edge best needed.

An attentive reader following along in this book will gain experience with each joint cut and piece prepared. The topic of joinery shrinkage is not identified as a major informant of technique, but it is implied. In truth, shrinkage offers challenges to aesthetics and engineering concerns, each an important part of the durable and desirable building. Also unemphasized is the effect of out-of-square materials on angular joinery elements such as the braces, collars and rafters of the subject frame. A longer discussion might better prepare the novice for the inevitable. The faces of timbers are either true or not, opposite faces are parallel or not. Knowing in detail how to resolve these anomalies efficiently improves the quality and satisfaction of the work early on.

**Assembly** Will Beemer's use of the raising script as a means of safely erecting frames is a method known to all professionals. The descriptive text and images may guide a safe raising, but responsibility still falls squarely on the builder. Let caution be your guide. Use 40 lbs. per person as a safe lifting limit for the novice. Test staging planks on the ground before you use them in the air.

A few other key assembly takeaways. Look carefully into the peg hole before you fasten a pegged joint, making sure there is a way through for the peg (daylight is a good sign in a through-hole). Using templates for repeated joints and test-fitting during cutting save embarrassing moments on raising day. There is nothing better than safe completion of a frame raising.

For 30-plus years working with Michele, his wife and partner, Will Beemer has collected a body of work and a stable of spirited instructors at the Heartwood School to accommodate many different learning styles. Successfully. High quality photos and graphics, concise language and clear process will make the new book equally successful with the motivated self-builder who chooses to timber frame.

—CURTIS MILTON  
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