

TIMBER FRAMING

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On the front cover, timber framers and students pose during the Gwozdziec Synagogue roof reconstruction workshop at Sanok, Poland. Photo Ed Levin. Below, Polish and American students in Krakow display their decorative painting work on the assembled west ceiling boards and three zodiac panels. Photo HandsHouse Studio. On the back cover, detail of Lordship Barn, ca. 1440, about 30 miles from London. Photo David Leviatin.

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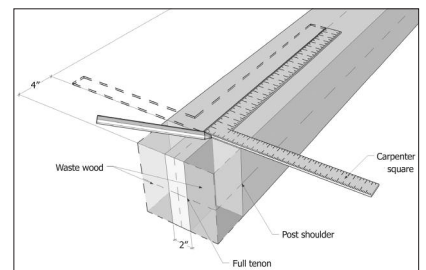
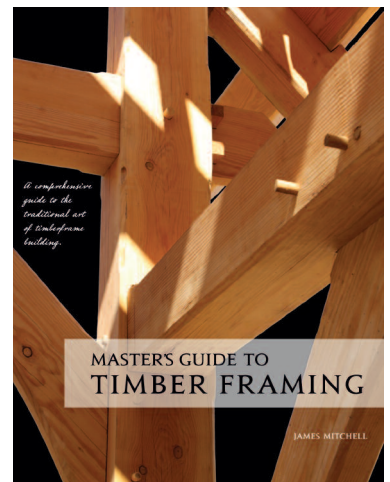
Timber Framing Manual

Master's Guide to Timber Framing: Project Post & Beam, Project Hammer Bents, by James Mitchell, with drawings by Eric Clark. Gabriola Island, British Columbia, Canada V0R 1X7, J. D. Mitchell Publications, 2011. 8½x11, 239 pp., profusely illustrated. Embossed hardcover, \$79.95.

JAMES MITCHELL'S new guidebook, *Master's Guide to Timber Framing*, opens with a dedication to "all my students past, present and future" and states a clear intention: "This book is designed to progress in skills development from simple to the complex." And indeed it does. From the table of contents to the final glossary there is much for the student and seasoned practitioner to embrace and appreciate in this carefully laid-out and well-illustrated book. In addition to the abundant drawings, an eight-page color photo insert set between the two project sections of the book adds that extra dimension of proof to the pudding. Along with a planned companion book, *Master's Guide to Log Building*, this new work draws on 30 years of study, teaching and direct application (and refinement, the author suggests). It's part shop manual, part history book and a thoroughly encompassing journey through the fundamentals and varied complexities of timber framing.

A six-page table of contents describes the comprehensive scope that the author, who has previously written *The Craft of Modular Post and Beam* (Hartley and Marks, 1996), has laid out for his reader through the format of two distinct projects, each in six chapters, followed by four appendices.

Brief at four pages, a preliminary chapter, "A Post & Beam Perspective," is nonetheless a captivating read as one is taken from Stonehenge through Europe and Asia to the colonization of the New World to the Industrial Age to Sears & Roebuck mail-order catalog houses—right through to the concept of the new hybrid designs experimented with today.



In the first part, “Project Post & Beam,” the author carefully lays out a successful map to a basic orthogonal (no compound joinery) 24x32-ft. timber frame structure. His mission, which he never hesitates to restate, is to impress upon the reader the vital logic and pleasing simplicity of centerline layout (example inset below left), as opposed to face-and-edge layout. Methodology, terminology, good planning, a remarkable list of joint designs, helpful math, pegging and drawboring tenons and finishing the timbers, all are covered clearly and concisely before carrying on to roof and wall systems. The illustrations that accompany the text are crisp, sharp and clear. The figures are close to their explanations, not pages away.

Mr. Mitchell places importance on well-presented shop drawings and careful grid-based labeling. He explains in straightforward fashion how to organize a useful spreadsheet inventory of a timber frame’s component pieces. He treats the spreadsheet as an essential tool in the timber framer’s toolbox and provides a fine template that allows the entire timber frame job to be cost-analyzed logically.

The discussion on preparing and laying out timber joints, perhaps the heart of what a budding timber framer might wish to embrace (or fast-forward to), is presented in chapter four of the first part. The author’s observations on the idiosyncrasies and nuances of unsquare timbers and dimensioned objects is refreshing in its approach and proposed solutions. The discussion of centerline vs. virtual square-rule layout is levelheaded and easy to follow.

The second part takes the reader, presumably now comfortable with the completion of the first project, to one of more detail, sophistication and complexity. Chapters one through four in both parts follow similar paths with identical titles: “The Plan,” “Joinery Design,” “Shop Drawings” and “Timber Joinery.”

Chapters five and six of the first part move from the orthogonal simplicity to common-rafter roof framing (with a nice look at the Pythagorean theorem), and then wall infill systems. In the second part, the final two chapters cover frame raising and wall and roof systems. The frame-raising chapter in the second part is one of the best outlines of procedure I’ve observed to address the entire preparation of a timber frame structure for raising. Volume and weight, center of gravity, lifting tackle loads and the discussion of forces are all clear and logical. Aspects of the outlined procedures read, perhaps, a little too much like an assembly manual, but the precision and repetitiveness may be necessary to carry home the objective.

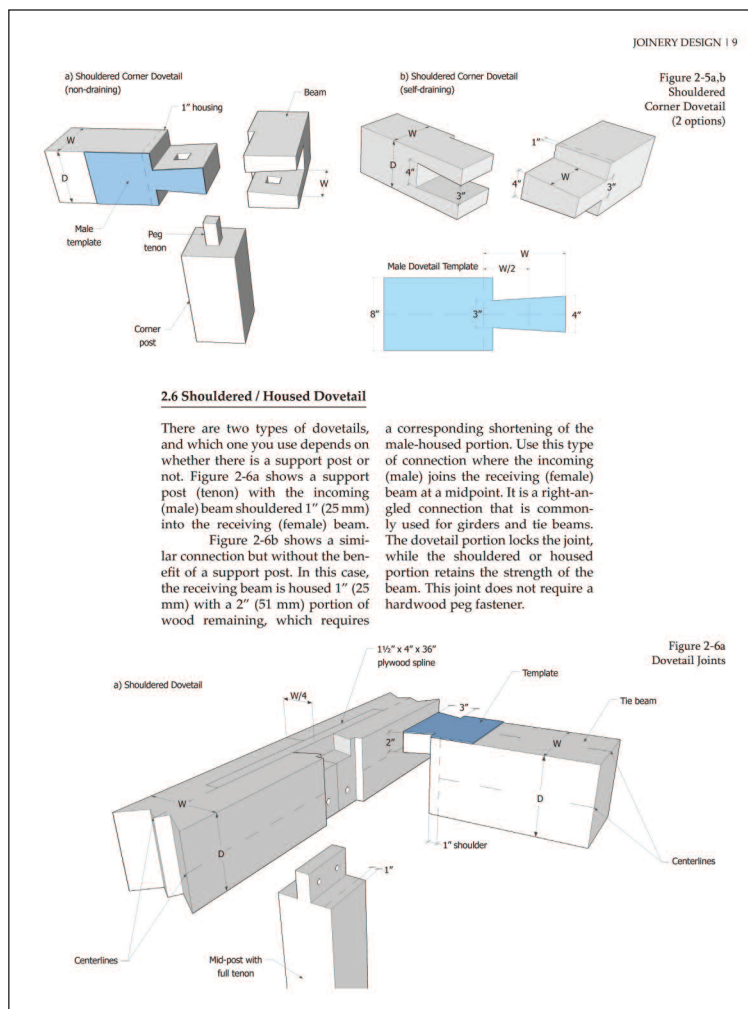
Appendix I describes an adequate list of timber framing tools. Appendix II is a fine discussion of wood structure, drying, shrinkage and timber defects, treatments and finishes. Appendix III deals with defining and calculating loads and beam sizes. Appendix IV offers up a good presentation of the concepts of load distribution, forces in equilibrium, strength of materials and structural properties of wood. And finally, the glossary is an exhaustive list of timber terminology A through W (no X, Y or Z entries—or Q).

While I did not read this book word for word, and so may have missed these things (there is no index), I saw no mention anywhere of working with recycled timber, a fairly important topic these days. Only three species of wood appear to be mentioned at all, and only two of them (Douglas fir and Western red cedar) are cited in the allowable stresses table in Appendix IV. The third, oak (all oak apparently) is mentioned under “Patina” in Appendix II. A discussion of different wood species for timber framing and their behavior, weight, strength and how their fibers behave with edge tools (cutting mortises, etc.) might have been of value.

But everyone interested in timber framing and the exacting craft that it is will appreciate this work. Ideally, we never cease to be “students future.”

—JAKE JACOB

Jake Jacob (jake.thw@mac.com) has been a marine engineer, a timber framer and a specialist in engineered treehouses, cofounding TreeHouse Workshop in 1997 and lately Treehouse ARTZ. He was a member of the Guild’s board of directors 1992–94 and 1995–98.

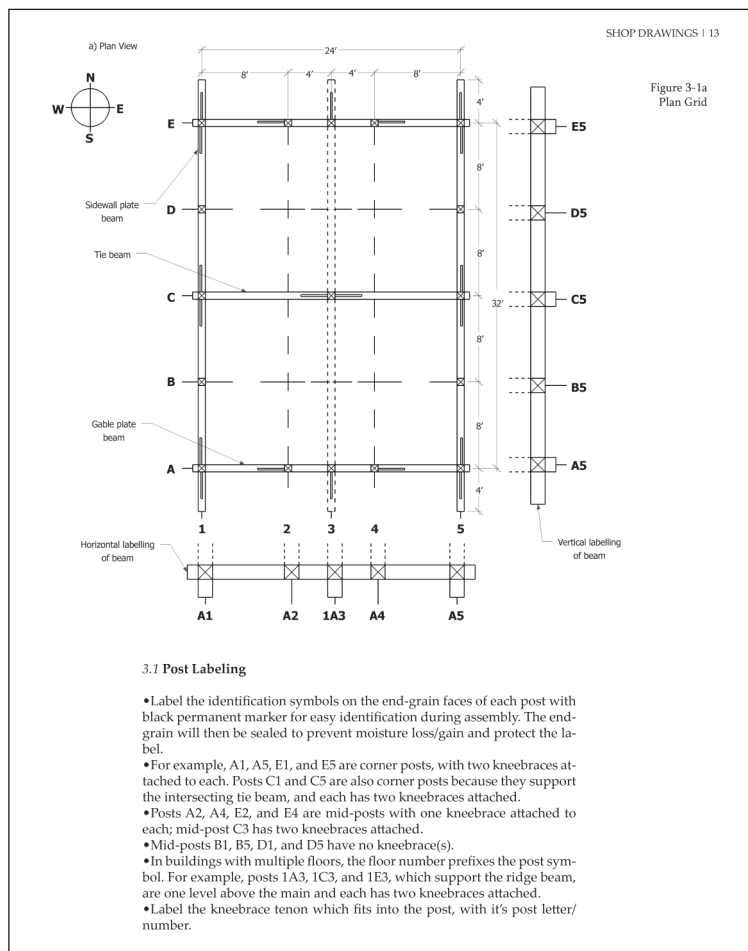


2.6 Shouldered / Housed Dovetail

There are two types of dovetails, and which one you use depends on whether there is a support post or not. Figure 2-6a shows a support post (tenon) with the incoming (male) beam shouldered 1" (25 mm) into the receiving (female) beam. Figure 2-6b shows a similar connection but without the benefit of a support post. In this case, the receiving beam is housed 1" (25 mm) with a 2" (51 mm) portion of wood remaining, which requires a corresponding shortening of the male-housed portion. Use this type of connection where the incoming (male) joins the receiving (female) beam at a midpoint. It is a right-angled connection that is commonly used for girders and tie beams. The dovetail portion locks the joint, while the shouldered or housed portion retains the strength of the beam. This joint does not require a hardwood peg fastener.

JOINERY DESIGN | 9
Figure 2-5a,b
Shouldered
Corner Dovetail
(2 options)

Figure 2-6a
Dovetail Joints



SHOP DRAWINGS | 13
Figure 3-1a
Plan Grid

3.1 Post Labeling

- Label the identification symbols on the end-grain faces of each post with black permanent marker for easy identification during assembly. The end-grain will then be sealed to prevent moisture loss/gain and protect the label.
- For example, A1, A5, E1, and E5 are corner posts, with two kneebraces attached to each. Posts C1 and C5 are also corner posts because they support the intersecting tie beam, and each has two kneebraces attached.
- Posts A2, A4, E2, and E4 are mid-posts with one kneebrace attached to each; mid-post C3 has two kneebraces attached.
- Mid-posts B1, B5, D1, and D5 have no kneebraces(s).
- In buildings with multiple floors, the floor number prefixes the post symbol. For example, posts 1A3, 1C3, and 1E3, which support the ridge beam, are one level above the main and each has two kneebraces attached.
- Label the kneebrace tenon which fits into the post, with its post letter/number.

Representative shop drawing and joinery design pages from *Master’s Guide to Timber Framing*. Drawings by Eric Clark.