



Rooftop Education

Roof Safety (A/V presentation and instruction manuals) by The National Roofing Contractors Association, One O'Hare Centre, 6250 River Road, Rosemont, IL 60018. Available as either slide cassette or videotape – specify VHS or Betamax – for \$250 per copy, student workbooks \$8 each, instructors guide \$15 each.

The NRCA has prepared a training program for roofing firms consisting of a slide or video presentation plus student workbooks and an instructor guide. The narrated video is made from the slides and has the disadvantage of being difficult to stop at specific points for comment or discussion. The overall presentation is divided into three parts covering general roof safety, built-up roofing, and modified bitumen/single ply systems. All the basics are there and the slides are generally clear enough (with the exception of ladder set-up, which was quite blurred in my copy) – but they won't win any awards for graphics.

The student workbook is a three-ring binder giving the text of the narration (keyed to each slide), plus ten review questions for each segment and four multiple-choice exams (with answers). The instructor manual includes all the above plus several pages of program presentation guidelines for four formats, with suggested commentary for selected slides. Not a terribly rigorous program, but definitely better than just having someone stand up and yak, and the prepackaging will save you a lot of work. Also reusable to defray the initial investment. If I were using it to train a crew though, I would try to include some hands-on demos as suggested in the manual.

Fine Timber Framing

The Timber Frame Home: Design, Construction, Finishing by Todd Benson: Taunton Press, Newtown, Conn.; 230 pages \$24.95, hardcover.

Despite a few flaws, it is hard to say enough good things about *The Timber Frame Home* by Todd Benson. Having practiced the craft of timber framing for the last 14 years, Benson is a man who knows his stuff. His presentation is consistently well organized, and his text is profusely illustrated with 97 color photos and almost 150 other illustrations. Not only does Benson cover his subject well, but he manages to furnish a measure of inspiration in the process.

Benson's goal is to write about the whole house, not just the frame: "...the frame is, after all, just one component of a building [and this book is] my attempt to integrate timber framing with the best attitudes, ideas, and technology of modern times..." By the end of introduction I had very high and broad expectations,

which Benson nearly met. In general he offers well-balanced coverage of many complex and interrelated issues. At the same time, he acknowledges that his personal prejudice have found their way into the book (which they have).

Chapter One recounts the history of timber frame development – touching on questions such as the transition from the feudal European manor house to the house of the common man in colonial America. He recounts the effects of forest abundance or depletion on frame design, and the evolution of a "home" from one big room with a smoke hole to two-story structures following the advent of the chimney. Even if you're not into timber frames, the history is interesting.

Benson's next three chapters directly attack the problem so often ignored in other literature – the vital link of design and construction. This is perhaps nowhere so apparent as in timber framing – where structure is a strong and highly visible design ingredient. First Benson sets out structural principles – forces, truss types, bent/wall systems, and joinery basics: "practically the definition of the product." Next he analyzes in lay terms the pros and cons of 14 different framing options for a typical saltbox house (calculations and span/tables can be found in his previous book, *Building the Timber Frame House*, 1980). Fewer variations might have sufficed, supplemented by some other styles.

Occasional anecdotes add a note of humor and reality to the text, such as the wry comment: "One of the biggest mistakes you can make is putting a timber in a position where other beams, posts, or rafters make drilling or driving the pegs impossible. Don't ask how I know."

Having guided the reader through *Structural Mechanics 101*, Benson elaborates on the importance of integrating floorplan and frame layout from the very beginning. A series of transformations applied to a given floorplan and some interior elevations effectively illustrate the design impact of "structural" designs. This is reinforced by discussion of the visual role of second floor timber placement as a way of defining space. Benson's continual focus on this issue and his tasteful choice of illustrations strengthens his theme. You may not agree with all of the author's design decisions (I didn't), but this chapter and indeed the whole book will open your eyes to design issues ignored elsewhere. In fact *The Timber Frame Home* may be worth the cover price on the strength of this feature alone (keep in mind your reviewer is primarily a designer, and only an occasional builder).

Though excellent as far as it goes, it doesn't go far enough. Benson is

content with emphasizing only questions of siting and floorplan/framing layout. One chapter is not enough to delve into all the things that make a house functional, comfortable, beautiful, and in the end, a "home." Matters such as traffic, flow, kitchen planning, cross ventilation, and the aesthetics of fenestration (window and door openings) are addressed only peripherally. These omissions are perhaps understandable given the book's timber frame focus.

The last several chapters delve deeply into the nuts-and-bolts of skins and frames, foundations and floors, wiring, plumbing and interior/exterior detailing – again with Benson's constant care for both beauty and function I garnered much practical wisdom and detail from these pages, as I'm sure other architects, builders, and homeowners will. This is also where I had most of my quibbles with Benson.

Some were minor – his claim that thickened-edge slabs are only for frost-free regions for instance (*Journal of Light Construction* readers will remember they are used extensively in Scandinavia), or his omission of surface-bonded block from an otherwise thorough foundation chapter.

My more serious reservations had to do with Benson's treatment of insulation, where he left a few stones unturned. His chapter on skins and frames opens with a fairly one-sided argument against fiberglass, but this is balanced elsewhere by his thoughts on appropriate uses.

He argues that the intense summer heat in attics is due to stratification of hot air brought upwards by convection currents.

Though warm air definitely rises, I think most people would agree that uninsulated attics reach scorching

temperatures due to the sun beating down on the roof. Benson says good insulation prevents stratification, citing an example of one of his houses where temperatures at the peak were less than 10°F warmer than at floor level. Temperature stratification is a non-issue as far as energy use or comfort is concerned.

Like most other timber framers, Benson uses stressed-skin panels to sheathe and insulate. I've never been completely convinced of the wisdom of this, but Benson provides a detailed and generally good review of what to look for when comparing products (such as OSB makes a better exterior surface than plywood). He is well qualified, having chaired the stressed-skin panel committee of the Timber Framers Guild several years.

In listing panel selection criteria Benson notes the importance of resistance to delamination, which he says would be "our worst fears come to life." Later he warns that polystyrene-core panels begin to melt at 130°F, which sounds to me like it could lead to serious delamination. Is a 15-minute gypsum-board ceiling an adequate fire barrier in his respect? And supposing occupants do get out, what about the safety of firefighters on the roof of a stressed-skin during "meltdown?" Benson doesn't give hard answers.

Though he mentions the effect of so-called "thermal drift" in reducing the R-value of urethane core panels (foamed with CFC blowing agents), he doesn't address the question of whether CFC panels are contributing to ozone depletion. Given the controversial nature of the subject, I can understand this effort to be objective, but I wish he hadn't sidestepped this common concern.

—Paul Hanke

Free & Cheap

Setting Standards: *APA Structural-Use Panels for Mobile Home Roofs and Floors* presents the results of an APA study to develop a set of guidelines for the performance of structural panels in mobile homes. This 17-page research report defines this performance in terms of uniform load and concentrated load for roofs and floors, and recommends specific loads and spans set out in tables, for various panels. A free copy can be obtained from the American Plywood Association, Dept. N440, P.O. Box 11700, Tacoma, WA 98411; 206/565-6600.

Specs on High: *The APA Design/Construction Guide: Non-Residential Roof Systems* introduces criteria by which structural wood panels are selected and specified. This free 20-page booklet gives recommended specifications for panels used in built-in-place roofs as well as panelized roofs, and touches on cost estimating, diaphragm design, roof-deck insulation, and rated roof systems. To order, write to the APA, Dept. A310H, P.O. Box 11700, Tacoma, WA 98411; 206/565-6600.

Roofing Reference: The National Roofing Contractor's Association publishes *Roofing Resource Center, A Catalog of Publications & Audiovisuals*, a nine-page catalog of its books and videos on roofing. It includes brief descriptions and costs for NRCA members and non-members. This free catalog can be ordered by contacting: Roofing Resource Center, NRCA, P.O. Box 3129, Oak Park, IL 60303; 312/318-NRCA.

All About Asphalt: For \$10, you can order the *Residential Asphalt Roofing Manual*, a 60-page rundown on asphalt roofing products. This comprehensive manual covers everything from how these products are manufactured, to estimating required quantities for a job, to actual application procedures. Tools and safety are given mention, and the manual concludes with a glossary of terms. To request a copy, contact the Asphalt Roofing Manufacturers Association (ARMA), 6288 Montrose Road, Rockville, MD 29852; 301/231-9050.