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U.S. Builders Show Japan Some New Tricks

by Scot Simpson

With its huge housing market hobbled by outmoded building techniques, Japan offers opportunities for U.S. framers

As the *Wall Street Journal* put it in 1991, what Japan is to electronics and Germany is to automobiles, the United States is to home construction: No other country can match our combination of efficiency and quality. My recent experience framing a house at Japan's first international home show, Kobe Interhome '96, confirms this observation. Japan has a long way to go to match our construction techniques.

Increasing interest in learning about our way of building is giving some U.S. contractors an opportunity to participate in spreading our knowledge, products, and skills worldwide. For some, this can mean earning an all-expense-paid trip to Japan, or possibly some other country, just by doing what they do every day — framing.

Birth of stick framing. America's stick-framing tradition started back in 1832, when Chicago entrepreneur George Snow needed to build a warehouse, but only had small, second-growth trees on his land. He had his logs milled into small-dimension lumber, and built his ware-

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A U.S. crew frames a model stick-frame house in Kobe, Japan. High-tech Japan still uses ancient traditional methods to build homes.

Certifying Lead Carpenters

by Chuck Green

The National Association of the Remodeling Industry (NARI) reports strong interest in its new Certified Lead Carpenter (CLC) program, introduced this year to complement the organization's established Certified Remodeler (CR) program.

C. BATES

A new NARI program provides training and recognition for key employees.

While the CR program focuses on providing business skills for company owners, the CLC program is aimed at readying lead carpenters to effectively manage remodeling jobs on site. Individuals who complete the course receive a NARI Certified Lead Carpenter certificate. After a successful start in four cities, the program is expanding to NARI chapters nationwide.

A tradesperson doesn't have to belong to NARI to qualify for the CLC program. But each applicant must have at least five years' experience in the remodeling industry, including two years as a lead carpenter. He or she must also provide skill and character references, including a recommendation from a past customer on whose project the applicant was the lead person.

Upon acceptance, NARI provides each participant with a three-part *CLC Study Guide Manual,* which serves as the core of the program. The manual's first section, "Pre-Construction Basics," has chapters on business management, plans and specifications, codes and laws, preconstruction evaluation and planning, and equipment and safety. The second section, "Construction Technical Knowledge," covers carpentry, concrete, masonry, roofing, mechanical systems, math, and structure

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STATE BY STATE

Florida. The Insurance Services Office (ISO), an industry group that rates community building departments on a scale of 1 to 10 (with 1 being the best), has rated South Florida building departments at 4, reports the January 30 Miami *Herald*. While South Florida codes are considered tough, the ISO faulted some local departments for inadequate staffing and training. The less-than-perfect rating means Dade County homeowners will qualify for only a modest insurance discount.

Mississippi. A bill in the state legislature would redefine coverages under home warranties, reports the *Mississippi Business Journal*. Currently, the state recognizes a six-year implied warranty on new homes. Home builders want to restrict that six-year coverage to structural problems. They say customers are unfairly using the warranty to force builders to maintain items like paint.

New Jersey. The Board of Public Utilities has started to crack down on violators of the state's new one-call law, passed after a huge gas-line explosion leveled several buildings last year. The board has identified 93 excavators who dug without calling the one-call number, and plans to fine each of them $1,000.

Foundation Vision Strip Is Energy Loser

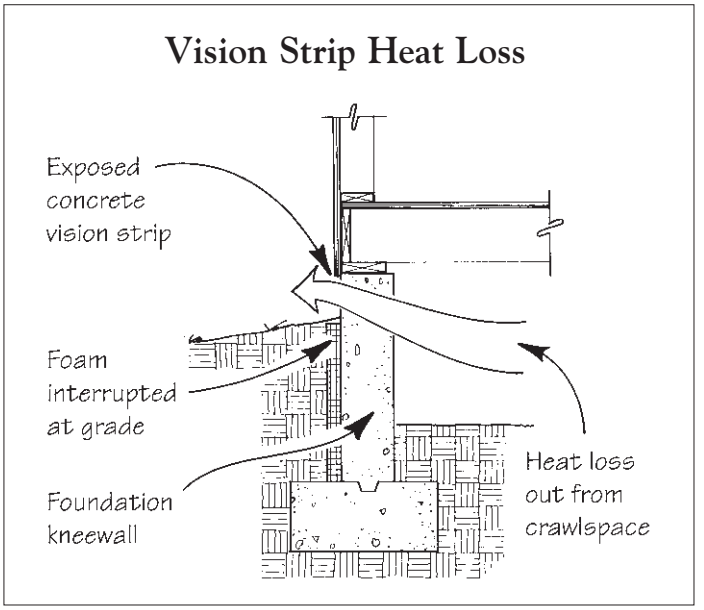
Concern that termites will crawl into buildings undetected behind foam foundation insulation has led several southern states to modify perimeter insulation requirements in their energy codes, reports January's *Energy Design Update (EDU)*. Energy analysts say the modifications will be costly in energy terms.

North Carolina code now recommends a 2-inch gap in the foam just below the sill plate, to allow pest control operators to inspect for termite tunnels (see drawing at right). For deep foundations, the code calls for another 4-inch gap below grade. Florida is considering a similar "vision-strip" requirement for its energy code.

Georgia's new version of the model energy code, slated to take effect in April, will include an amendment that gives builders the choice of increasing the insulation in attics from R-30 to R-38 or increasing wall insulation by R-1 instead of insulating around foundations, *EDU* reported.

But the energy newsletter says that the tradeoff involved in the Georgia code makes little sense in terms of energy dollars: According to the newsletter's analysis, the extra R-8 of attic insulation added by builders who exercise this option will not begin to make up for the energy cost of forgoing foundation insulation. And "how do you increase wall R-value by R-1 anyway?" asked editor Ned Nisson.

A separate analysis by Oak Ridge National Laboratory researcher Jeff Christian concluded that the vision strip called for in the North Carolina code imposes a severe energy penalty. So much heat moves to the bare spot and escapes from the building that the remaining insulation is no longer cost-effective, said Christian.



Heat bleeding through a "vision strip" defeats the purpose of foundation insulation, says ORNL scientist Jeff Christian.

"If you leave out that strip, you might as well not bother putting any insulation around the foundation," Christian told *JLC*.

Christian is working on developing foundation systems that use insulating lightweight concrete instead of foam. □

Government Expands Energy-Efficient Mortgage Program

After a two-year test run in five states, the U.S. Department of Housing and Urban Development (HUD) has decided to take its Energy-Efficient Mortgage program nationwide. Administered by the Federal Housing Administration (FHA), the program will allow home purchasers who qualify for FHA home loans to borrow up to $8,000 more for energy upgrades, with no need for a new appraisal or additional credit test.

The energy loan cannot exceed 5% of the home's cost, and energy savings from the improvements (as determined by an independent auditor such as Energy Rated Homes) must exceed the financing costs of the loan. However, purchasers can get the extra money for insulation or heating upgrades even if it pushes the total amount financed over their FHA borrowing cap.

The EEM program applies to existing or newly built one- and two-family homes. Adjustable rate mortgages and 203(k) rehabilitation loans are also eligible for the energy-efficiency boost. For information, call any FHA-approved lender or any local HUD office. □

Progress on Code Unification

If all goes as planned, the United States will have a single model building code by the year 2000. The Southern Building Code Congress International (SBCCI), the Building Officials Council of America (BOCA), and the International Conference of Building Officials (ICBO) adopted a common format for their three model codes in 1994 (*Eight-Penny News*, 3/94). Now the International Code Council (ICC), an umbrella organization composed of representatives from all three groups, is coordinating committee efforts to reconcile the three documents into a single *International Building Code*.

The ICC has nearly completed work on an *International Plumbing Code*, an *International Mechanical Code*, and an *International Private Sewage Disposal Code*. In addition, the Council of American Building Officials (CABO) has handed over to the ICC the responsibility for maintaining and developing the *One and Two Family Building Code* and the *Model Energy Code*.

Draft versions of the *International Building Code* are slated to be ready for public comment by early 1999, with a vote of the model code group memberships on the final document scheduled for September 1, 1999. □

Certifying Carpenters, *continued*

and loads. The final section, "People and Job Management Skills," covers communication, supervision, dealing with subs and clients, and quality control.

To gain certification, all a tradesperson needs to do is pass a six-hour exam. But most CLC candidates join optional study groups with anywhere from 5 to 25 members. Graduates of the pilot program credit the study groups with supplying much of the CLC program's value.

Certified Remodeler Shawn McCadden, of Custom Contracting Inc., in Arlington, Mass., led a CLC group that met for two six-hour Saturday sessions and one evening meeting. McCadden asked participants to read and study material from the manual on their own before meetings. In sessions, the group held wide-ranging discussions on issues drawn from the manual and from participants' experience on jobs.

McCadden paid for his production manager and three lead carpenters to take the course and the exam. Earning the CLC designation has raised his employees' morale, he says, making them feel like members of an elite group. He plans to feature his employees' new qualifications in a special marketing effort, having each of his newly designated CLCs send a letter to the customers whose projects they previously directed.

Cost for the full program is set by NARI regional chapters and varies from place to place. In eastern Massachusetts, the cost is $415 for NARI members and $600 for nonmembers. For more information about the CLC program and groups now forming, call Janice Hawkins at NARI (800/966-7601, ext. 3029). □

Remodeler Chuck Green owns and operates Four Corners Construction, in Ashland, Mass.

FROM WHAT WE GATHER

Straw panel plants are proliferating. The January 24 Salt Lake *Tribune* reports that a group of Utah farmers has raised enough money to build its own compressed-straw panel facility in hopes of earning cash for wheat straw that usually gets burned after the harvest.

The government is working to reduce your tax paperwork, reports the February *Contractor's Guide*. The Small Business Administration, the Treasury Department, and the IRS are trying to create a 1-page quarterly tax form for businesses with 10 or more employees. The new form would replace 11 to 15 forms employers presently must use to report unemployment insurance, Social Security, and income tax withholding each quarter.

A hard-hat can protect your dignity as well as your safety — if you're wearing it, that is. According to the *Wall Street Journal*, Windsor Canadian Supreme Whisky awarded first prize in its "worst workday" contest to electrical contractor Harry Glass of Pasadena, Texas. Glass was warning his coworkers to always wear their hard-hats when a passing bird deposited a dropping on his head. Unfortunately, he was holding the protective headgear in his hands at the time.

OSHA has reportedly hit a 22-year low in construction inspections. For the fiscal year ending on September 30, 1995, the federal agency conducted only 13,001 construction inspections, down from over 22,000 in the previous year and the fewest since 1973. The agency says its new focused inspection program is the reason for the decrease.

If you're looking for a primer on house framing, check out "House Building Basics," available for $5 from APA - The Engineered Wood Association (Publications Department X461L, P.O. Box 11700, Tacoma, WA 98411; 206/565-6600). An experienced framer won't find anything new in this 40-page pamphlet, but it looks great for getting a new apprentice oriented.

Want to make more money? Raise your prices, advises quality consultant Dr. Anthony Costonis of Corporate Development Services in Lynnfield, Mass. (617/595-0550). Costonis, who consults with large general contractors, isn't kidding: He claims that current world economic conditions presage steady growth in the construction industry, meaning now is a good time to pad profit margins by "at least 15%." This reasoning may hold as true for a small remodeler as for the big boys Costonis works for: Look back at your last 10 or 20 pricing decisions, he advises, and see how many bids you would have lost if you'd boosted your markup a little. Then figure out if the increased margin would balance any lost volume.

U.S. Shows Japan Tricks, *continued*

house out of stud walls instead of the posts and beams typical of his day.

The efficient stick-framing techniques that evolved from Snow's experiment have become known internationally as 2x4 construction. But most Japanese homes are still framed the old-fashioned way, with large timbers connected by complicated mortise-and-tenon joinery.

Japan looks to the West. After Kobe's earthquake wreaked havoc with thousands of traditionally built homes, the governor of the province of Hyogo, where Kobe is located, decreed that of the 150,000 homes to be built in the immediate recovery project, 10,000 should be imported. Japan's first global model home show, administered by the Hyogo Imported Housing Center, aims to give citizens of Kobe an up-close look at their imported home choices.

Bare ground and crumbling foundations are all that remain of the rubble of traditional Japanese homes destroyed by the Kobe quake (above). Above right, a Kobe carpenter balances on the ridge beam of a traditional post-and-beam frame under construction. Skilled Japanese craftsmen spend years learning the careful joinery used in almost all Japanese homes (right).

On a piece of land big enough for an American-style subdivision, Japanese builders are assembling 33 model homes supplied by seven countries. Nineteen of the models come from the U.S., seven from Canada, three from Australia, and one each from Denmark, Britain, Sweden, and Finland. All but five of the models are standard 2x4-framed houses. The exceptions are two timber frames (one from Canada and one from the U.S.), a wood panel package from Denmark, a structural steel building from Australia, and a post-and-beam home from Canada.

Japanese methods: expensive and slow. Hyogo Prefecture had three reasons for wanting imported housing: low cost, high quality, and structural strength. This combination of attributes is scarce in Japan's huge housing market.

With only about half the population of the United States, Japan has more housing starts: 1.57 million units in 1994 alone. Why the problems in supplying this huge market with low-cost, strong housing? One big reason is Japan's reliance on ancient traditional methods. Although 2x4-style construction was introduced to Japan in 1974, it still accounts for less than 5% of the country's housing starts.

Traditional post-and-beam methods used in Japan involve impressive feats of intricate joinery, but the resulting structures lack the inherent ruggedness and structural redundancy of a stud-and-plywood frame.

The fine work of mortise-and-tenon joinery also takes a lot of time. While it may take me two to four years to turn an apprentice into a lead framer, it takes seven years to train a Japanese carpenter. The crew who framed the Home Show home consisted of one experienced contractor (myself), two 19-year-olds with less than a year's experience each, and a 26-year-old with less framing experience than the 19-year-olds. Not a good balance for a framing crew — yet Japanese observers expressed their appreciation of our professionalism.

But the cost and efficiency problem in Japan's residential construction market runs deeper than carpentry techniques. A recent Japanese study found that construction costs (excluding land) for similar homes built with similar materials are two to two-and-a-half times higher than in the United States. A recent study by the University of Washington blamed the high cost of building in Japan on a whole collection of factors, including "high labor costs and low labor productivity, a lack of skilled carpenters familiar with the 2x4 system, nonstandardized building materials, a lack of competition in the construction industry, restrictive building regulations, high building material costs, inadequate construction management systems, and extended distribution systems for imported building materials."

Opportunity knocks. History tells us that once the Japanese recognize the need to improve their technology and organization, they will approach the task with energy and focus. Rather than become dependent on Western sources for housing, they will probably aim for self-sufficiency. But in the short run, they will buy enough American home packages to get a good look at the product, and they will learn as fast as they can from the foreigners they invite to Japan. That gives American builders our chance at a piece of the action.

About your trip to Japan? Well, about half of the framers in the Seattle area that I talk with either have been to Japan or have had an opportunity to go. Although there are many cases of projects that never materialize, when a project does happen, the Japanese usually cover plane fare, room, board, and a salary.

And Japan is not the only country that wants our houses. Two summers ago one of my lead men and I went to the Czech Republic to teach their carpenters to frame 2x4 houses.

This is a unique time when international opportunities for our home-building industry are opening. There will be chances to work abroad, be an international ambassador of goodwill, make money, and help our balance of trade, all at the same time. □

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