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Smart House: They'd Do It Again, But ...



Despite considerable head-scratching time, builder Mark Anderson (at right in photo, pondering wiring options with electrician Mike Schmidt) says he would be happy to build another Smart House.



In the Smart House, all the wires converge on the central computer and breaker box. At left is the breaker box; hybrid cables bring 110-volt wire to the breaker box and computer wires to the central computer, which will be installed just to the right of the breaker box. At right are two kinds of wires (the darker wires); one is a communications cable controlling audio-visual, TV cable, and telephone lines. The other is an "application" cable with low-voltage wire and a computer wire; it is used to communicate with appliances, sensors, and other low-voltage circuits and controls.

When builder-architects Mark and Peter Anderson decided to build the Seattle area's first Smart House, it wasn't so the buyers could clap their hands to turn on the hot tub. The Anderson brothers wanted to provide the means to conveniently manage energy and increase comfort and safety. The glitz was just icing. They also figured the Smart House would bring increased exposure to other energy-efficient and material-efficient techniques they wanted to experiment with.

The Anderson brothers have seen all these expectations realized, along with one other: That the hype over Smart House would have a few holes in it. Now that they've built a Smart House, they say they'd do it again — but with reservations.

High end only, please. The Anderson's project is one of 150 demonstration homes planned by Smart House L.P., a consortium of manufacturers and trade groups spearheaded by the Research Center of the National Association of Home Builders. Smart Houses are distinguished by a patented "smart" wiring system integrating electrical supply, telecommunications, and computerized control lines (see photo). A central computer uses these lines to control various "smart" components

throughout the house, which might be anything from lights and thermostats to complex alarm systems or off-site control of appliances or hvac systems.

The problem, say the Andersons, is the cost. For high-end projects like theirs — a 5,000-plus-square-foot, \$700,000, three-story home set on a golf course — they say the system is appropriate. But they feel it will take a long time before the system is marketable to medium-income buyers, as was originally intended.

"The marketing literature really understates the cost of installing the system," says Mark, who estimates the system has doubled the cost of the house's electrical system.

Fragile wiring. The system has three types of cables — a yellow hybrid branch cable combining 110 voltage and a computer line, a gray communications coaxial cable for audio-visual, TV, cable, and telephone service, and an orange "applications" cable combining low voltage and a computer line. To reduce costs, the Andersons decided not to automate every outlet, so some conventional wire is being used as well.

Mike Schmidt, the electrician installing the system (his first), estimates he had to run two to three times as much wiring as in a conventional

continued

STATE BY STATE

New Jersey: In an effort to revitalize the construction industry here, the Permit Extension Act, signed into law last summer, allows all construction permits that expired or are scheduled to expire between January 1, 1989 and December 31, 1994 to remain approved until December 31, 1994. Builders will not be required to pay additional fees to activate formerly expired permits.

Texas: To speed the permit process in Houston, officials recently opened a One-Stop Permit Center. Builders can now get all their permits within two hours of arriving at the center. The process formerly took several weeks. The one-stop service consolidates staff reviews and provides immediate redlining of plans when changes are required. Electrical, mechanical, and plumbing reviews have been eliminated. These will take place in the field instead.

Illinois: Pedal power is taking hold here, as the state has granted \$3 million to 19 communities to build bicycle paths. About 49 miles of trails will be added or improved with the grants, funded by the motor vehicle transfer fee fund.

Arizona: The Tucson market is one of the few that are picking up, but its contractors are having a hard time finding skilled help, according to a recent report in the *Arizona Business Gazette*. For the first half of 1992, single-family starts rose 61% from last year. When home builders looked around to hire people, they found many had left during Tucson's 1989 to 1990 housing collapse to find jobs in Las Vegas and California. The situation is made tougher by high temperatures and low pay. Tucson's carpenters get about \$8 to \$12 an hour, about 15% less than the national average. □

Economists: What Goes Around, Comes Around

In a pattern that is now entrenching itself, the boom states of the '80s will continue to suffer in this decade, and the states that starved before will continue to fill their plates. That was the consensus of economists speaking at a National Association of Home Builders' (NAHB) "Construction Forecast" conference this fall.

Several economists, including Barbara Alexander, managing director of Dillon, Read and Company, Robert Dedrick, chief economist at The Northern Trust Company, and David Seiders, chief economist for the NAHB, made the following predictions:

- Over the next three years, job growth, and therefore

housing starts, will increase in the formerly depressed "oil patch" states, the mountain states, Nebraska, the Dakotas, and West Virginia.

- The worst housing markets over the next two years will be in New England, Virginia, North Carolina, California, and Maryland — the boom markets of the late '80s.
- Current interest rates, among the lowest in 30 years, will hold steady for at least the next year.

Some of these predictions differ in their specifics from those made by other organizations. The National Association of Realtors, for example, says the Mid-Atlantic and the South in general will join the oil patch states in

rebounding this year. But almost everyone agrees on one point: The states that suffered during the economic downturn in the early 1980s, especially Texas and Louisiana, will have their day in the sun as job growth and immigration, as well as reasonable housing costs, give those construction economies a boost.

California's present dramatic recession, which has hit the southern half of the state hardest, will be brief, the economists agreed, with housing starts rebounding by 1995. The downturn will be short-lived because there is no severe overstock of housing, as existed in New England, for instance, at the end of its boom in the late 1980s. (That excess inventory still plagues

the housing market in some New England states.) So while Californian home values will continue their slide through the first half of this year, the small inventory should keep prices from collapsing. It is unlikely, however, that homes will return to high, precession values anytime this decade.

Housing starts in the Midwest and the mountain states (including Colorado, Utah, Wyoming, Idaho, and Montana) are expected to climb slowly but surely over the next five years. The South is a mixed bag. Starts in some areas, such as Atlanta and Tampa, will likely grow. Other areas, including North Carolina, will remain stagnant, said several economists. □

Montana Builders Beg for Code Enforcement

Most home builders see codes as a burden that must be borne. But home builders in the Montana Building Industry Association (BIA), an NAHB affiliate representing six chapters around the state, are asking the state to broaden enforcement of its code, including one of the toughest energy codes in the nation.

“...Right now, anybody with a dog, a pickup, and some tools can say he’s a builder. What they know is immaterial.”

Montana’s building code is based on the Uniform Building Code used in many western states; its energy code is based on the 1989 Council of American Building Officials (CABO) Model Energy Code, but with higher window and insulation standards.

The problem, says the BIA,

is that in most cases, builders don’t actually have to meet the code, because state law exempts buildings with four or less units from all but electrical inspections. Local jurisdictions can opt to inspect buildings with up to four units for building and mechanicals, and 54 local programs do so, but these tend to be in urban areas. This leaves most of the state’s vast rural areas exempt from all but electrical inspections.

Don Chance, former executive director of the BIA in Billings, Mont., says this situation allows subcode builders to set the bottom line. Builders not meeting code, he says, can undercut competitive bids and tarnish the industry’s reputation by producing poor work.

Byron McBride, a contractor for 25 years, agrees. Broader inspection laws, he says, are needed to “clean out people who shouldn’t be in the industry and improve our image. Right now, anybody with a dog, a pickup, and some tools can say he’s a builder. What they know is immaterial.”

— Kathleen O’Brien

Smart House, continued

home of the same size. To avoid problems, he says, the fragile cables must be pulled carefully; Schmidt is also checking each of the building’s 13 runs for continuity as he installs them, so that the walls won’t be closed over bad circuits. All this takes time and adds to the bill.

Smart, but not too Smart. Regardless of these challenges, Peter Anderson gets excited when he points out “smart” features in the home.

“We don’t want electronic gimmicks to take over the house,” says Peter. “The client doesn’t need to be constantly aware that the house is fundamentally different, even though it really is.”

The Andersons did include some obvious features to demonstrate the home’s unique electronic capabilities, however. One is a Heat ‘N Glo gas fireplace that can be turned on and off remotely. “Not an extremely useful feature,” admits Peter, “but visual proof that the home is ‘smart.’” The remote control does have a practical aspect, however, allowing it and other appliances to be shut off if the smoke detectors sense fire.

The home will also feature rain and temperature sensors in an area that has operable roof windows; the sensors will

open the windows if they detect too much warmth inside, but close them if it begins to rain.

Despite the problems the Andersons have with the way the program was promoted to them, Peter says the system represents “the first major step in home electrical wiring in 100 years.” He likes the fact the system has significant safety features for the homeowner and the installer. “Things go together only one way. It’s a foolproof, snap-together system.” He adds that the technical assistance provided by the Smart House program itself has been excellent. Anderson believes the promotional problems will be cleared up in time.

Would he recommend the Smart House? Peter says, “Sure I would. For the homeowner who just wants a few simple features, the price of the system right now is probably too high to justify it. But for the homeowner who wants a broad range of needs met electronically, the Smart House is definitely better (and probably cheaper) than a bunch of separate systems providing separate features. Now that I know what to expect, I’d have no problem building another one.”

— Kathleen O’Brien

From What We Gather

Cigarette smoking is hazardous to home sales, according to *Real Estate Today* magazine. A real estate agent in Arizona discovered that homes labeled smoke-free — that is, either new homes or those in which the occupants have not smoked for two years or more — sell twice as fast as those that aren’t smoke-free. “Buyers aren’t just looking at homes, but sniffing them too,” the magazine says. If a house smells like smoke, the interior may need to be repainted and the carpeting replaced — an additional \$3,000 to \$5,000 investment.

Custom-build clients often feel overwhelmed by the decisions they have to make, according to a client survey taken by Deck House, an Acton, Mass., design/build firm. The survey found that prior clients felt snowed by the number of choices they had to make, and also felt their homes took too long to build and cost more than expected. The company

responded by designing a new line of standardized homes that met most customers’ requirements. The next year, standard-design homes accounted for 75% of the company’s sales, up from 25% the year before.

Roughly two thirds of remodeling contractors now use computers in their businesses, according to Northwest Construction Software of Vancouver, a firm specializing in construction software. This is up sharply from a figure of about one-third from only five years ago. Among larger firms, the figure approaches 90%.

Imitation sunlight may soon be pouring out of fluorescent fixtures, according to a recent article in *Popular Science*. Lighting manufacturers have been trying for years, without much success, to simulate natural lighting. But researchers have reportedly recently developed fluorescent lighting that not only closely matches

the spectrum of light delivered by sunlight, but also increases visual comfort and reduces electricity costs by 80%, compared to conventional incandescent bulbs. “Full-spectrum polarized lighting” combines full-spectrum bulbs, special lenses to reduce glare, and electronic ballasts.

Pet doors may be easy on the dog, but they don’t go easy on your energy bill, according to *Home Energy* magazine. Heeding the call for better, more insulative pet doors, manufacturers have introduced sophisticated designs that include radio transmitters. When attached to the pet’s collar, these send a signal that tells the door to latch or unlatch, depending on the pet’s proximity. Prices may be higher than the traditional vinyl-flap-over-the-hole-in-the-back-door, but the additional cost may be worth it to avoid drafts — not to mention invaders such as raccoons or that tomcat from down the street. □

TAX TALK

Slipping the Noose

by Mark Battersby

It’s well known that the IRS often “targets” certain types of returns for auditing: returns with huge medical or employment-related expenses, for instance, or home-office deductions, or returns with income from tips (which are frequently underreported). These traits serve as red flags to alert IRS agents that a potentially fruitful audit awaits them.

What’s not so well known is how the IRS identifies these red flags. This is done through the 50,000 audits it conducts each year on returns selected strictly on a random basis. These so-called “Taxpayer Compliance Measurement Program” (TCMP) audits provide the basis for the IRS audit formulas. If the TCMP audit shows that firefighters with two kids and incomes between \$20,000 and \$30,000 virtually never err or underpay on their tax returns, you won’t run a very high risk of being audited if you’re one of these people.

On the other hand, if their

random audits show that a high percentage of remodeling and building contractors err or underpay on their returns, you will run a substantial risk of being audited if you are such a person.

What can you do about this? By following a few guidelines, you can improve your chances of avoiding a routine TCMP audit while helping to make all contractors look better in the IRS’s eyes, thus reducing your risk and other contractors’ risks of being targeted at some future date:

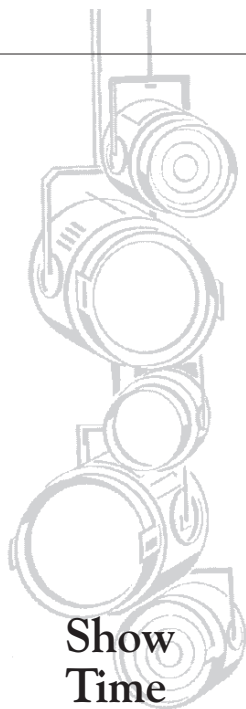
- Report all income, no matter how small the source. The IRS computers routinely cross-check tax return figures against everyone that paid you, and against deposit and other information at financial institutions. If the numbers don’t jibe, up goes the flag.
- Use precise numbers. For instance, you should actually add up the miles you drive each year before deducting for them. A

rounded number of, say, 10,000 miles suggests that you are guessing or, worse, lying.

- Keep good records. Not even the best-kept records will make a disallowed deduction allowable. But good records can help substantiate a borderline or unusual deduction, and can also help prevent a limited audit (one seeking documentation for only one or a few deductions) from spreading into other areas.
- Explain anything unusual. If you’re writing off the loss of tools and equipment destroyed by a tornado, for instance, attach a note with the date of the storm and a list of the equipment destroyed. Answering such questions up front may prevent that dreaded phone call or letter.

By the way, the general legal limitation on the IRS’s power to assess additional taxes is three years from the date of a return filed on time. For fraudulent returns, however, the period is longer. □

Mark Battersby writes on legal and business issues from Ardmore, Penn.



A few upcoming shows of note:

► The combined **New England Sustainable Energy Association/Energy Efficient Builders Association** "Building Solutions Conference" will be held in Boston, Mass., at the Boston Park Plaza Hotel, March 3 to 6. Both of these shows have offered much to progressive builders over the years, and this combined effort, the first, should prove rewarding to anyone interested in resource-efficient building. This is one we never miss. For information, contact EEBA, 1000 Campus Dr., Wausau, WI 54401; 715/675-6331.

► **Remodel USA**, at the Baltimore Convention Center in Baltimore, Md., March 26-28, will be the inaugural trade show and conference of the newly formed **Remodeling Contractors Association** of

American (RCAA), which seeks to bring grass-roots education to small contracting firms across the country. RCAA plans to offer a full seminar schedule, including information on office management, marketing, legal issues, consumer trends, and the use of computers. The show will also include a "customer showcase" on its last day, when members of the public may attend if accompanied by a remodeling contractor, designer, or architect. For information, call Thomas Driscoll at RCAA, 8180 Greensboro Dr., Suite 1175, McLean, VA 22102; 202/362-0200.

► The **International Remodeling Contractors Association (IRCA)** will hold its 19th annual trade show and convention at the TropWorld casino complex in Atlantic

City, N.J., March 18-20. The three-day convention will feature exhibits of state-of-the-art products and systems by manufacturers, as well as several dozen seminars. The cost for IRCA members is \$125, for non-members, \$155. For more information, contact the IRCA, P.O. Box 17063, West Hartford, CT 06117; 800/937-4722.

► **The American Concrete Institute** will be offering seminars on concrete around the country from February through April. Subjects include concrete repair basics, troubleshooting concrete construction, and design, specification, and construction of slabs on grade, among others. For specifics, contact ACI Member/Customer Services, P.O. Box 19150, Detroit, MI 48219; 313/532-2600. □

Teaching Bankers To Build

In any bank-financed construction or remodeling project, one of the tensest moments is when the bank's inspector comes by to assess the project and approve the next payment. Many of these inspectors don't know much about construction, so contractors often find themselves arguing over whether work has progressed far enough to get the next draw.

To help alleviate this problem, the Association of Construction Inspectors (ACI) was formed to educate and train inspectors hired by lenders. Through ACI, inspectors can become

Certified Construction Inspectors. This designation is designed to assure lenders, their customers, and the contractors involved that the inspector fully understands the construction process. A qualified inspector will not only be able to verify that work has been properly completed, but will also be able to assure the lender there will be sufficient funds to finish the project as contracted and as required by code.

For more information, contact ACI at 44 Montgomery St., Suite 500, San Francisco, CA 94104; 415/292-7575. □

Avoiding Phonelock At the EPA

If you've ever tried to get information about hazardous material disposal or other construction-related issues from the Environmental Protection Agency (EPA), you know how hard it is to find someone who can actually give you the information you need. Here are some numbers that may be helpful for builders:

- **Control Technology Center:** For information on the Clean Air Act and general pollution control technology, call 919/541-0800.
- **Small Business Ombudsman Hotline:** For information geared to small businesses, call 800/368-5888.



- **Office of Pollution Prevention:** For step-by-step technical assistance, call 703/821-4800.
- **Office of Air Quality Planning and Standards:** For information on asbestos and other specific pollutants, call 703/308-8699. □