EIGHT-PENNY NEWS

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Storm Damage Survey Sheds Light on Code Improvements

A survey by the Southern Building Code Congress International (SBCCI) has found that structural failures from 1995's Hurricane Erin, while fewer in number, were similar to those sustained during Hurricane Andrew.

In addition, the SBCCI investigators observed extensive damage to many buildings' "weather integrity" — including loss of asphalt shingles, metal roofing, roofing tiles, and vinyl siding.

Since most of the buildings damaged in the storm were built before SBCCI beefed up the fastening schedules for roofing and siding, it's hard to gauge how homes built to current code would have fared in the storm. But Hurricane Erin's effects point up the weaknesses in previous versions of the code and suggest that some new requirements should be stiffened further, concluded the team. Learning a lesson from Erin's relatively mild winds may help builders prevent worse damage in stronger future storms.

Shingle nailing. Although SBCCI revised its code in 1993 to require six nails per shingle in 90-mph and higher wind zones, most roofs in the storm's path predate that change and had only three nails per shingle. Hurricane Erin's winds, although often slower than 90 mph, ripped shingles off many of these roofs (mostly at the edges and

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SBCCI

Metal roofs like the one shown, and many asphalt shingle roofs, suffered blow-offs in the storm (above). Some gable end trusses failed when 80-mph to 100-mph winds tore sheathing off roof edges, leading to partial roof collapses (left).

Radiant Barrier Study: Cooling Costs Cut

Radiant barrier sheathing can significantly reduce the cooling load in homes with air-conditioning ducts running through attic spaces, report researchers Mark Modera of Lawrence Berkeley National Laboratory, in Berkeley, Calif., and Robert Hageman of the Austin, Texas, company KoolPly.

Radiant barrier attic sheathing keeps a hot roof from radiating heat to the ceiling and ductwork below. In an Austin, Texas, test, the material cut home cooling needs by 16%.

The report, based on observations of an Austin, Texas, test house, confirms a belief already held by Austin-area builders. Austin contractor Bill Moore, a member of the city's Green Builder program who builds energy-efficient homes, told *JLC* last year that attic radiant barriers are often part of his energy-conservation strategy. "A lot of the homes in this area have truss roofs with air conditioning duct runs in the attic," he explained. "The radiant barrier keeps those ducts cooler."

How much cooler? According to the researchers, replacing standard roof sheathing with KoolPly reflective foil-faced sheathing cut daytime cooling use in a test house by 16%, mostly because of a 30% drop in conductive heat flow into the supply ducts and a 25% drop in heat gain by return ducts. Before the modification, the home's air conditioner ran continuously from 2:50 PM to 9:00 PM on a typical summer day. On a similar day after the radiant barrier

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STATE BY STATE

Maryland. Federal officials are giving Maryland's Department of the Environment greater power to handle wetland permitting, reports June 18's Baltimore *Sun*. Permit applications for projects that have minimal impact, and affect fewer than five acres of freshwater wetlands or fewer than three acres of tidal wetlands, will be handled completely by the state. Large or high-impact projects will still require federal review.

North Dakota. Voters have overwhelmingly rejected a workers comp ballot initiative backed by trial lawyers and organized labor. The state HBA had opposed the measure, saying it would increase litigation and delay, obstruct cost-containment measures, reduce fraud enforcement efforts, and hamper return-to-work programs. The initiative lost by a 70% to 30% margin.

Texas. Workers comp reforms have slashed the state's comp bill by 80.9%. Total comp costs for the state have dropped from $3.9 billion in 1989 to only $743.4 million in 1994. Stiff competition among insurers has resulted in discounts of 25% to 50% for some employers, luring many businesses who had "opted out" under Texas law to rejoin the comp insurance system.

Sore Thumb Sparks Bright Idea

When Colorado stone mason Michael Williams smashed his thumb with a hammer while building a mantel, his first impulse was to get even. He took the offending tool to his stone-cutting saw and chopped off its head.

Still not satisfied, Williams dumped out his bucket of tools and decapitated his entire collection of specialized hammers.

Now he felt better — but he still had a mantel to build. The fit having passed, he started putting the hammers back together. That's when the idea struck him: Instead of carrying around a whole set of specialized hammers, why not a single hammer handle with a set of interchangeable heads?

Hammerhead's basic hammer heads are slotted to accept a wide variety of specialty tips.

That was the birth of Hammerhead Hammers, the company headed up by Ilze Williams, Michael's wife. Hammerhead's product is the "Swiss army knife of hammers," says Ilze: one hickory handle with a basic hammer head, slotted to receive a variety of specialty tips ($35 for the heavy-duty version). The 20 available attachments range in price from $1.50 to $4.50. If a tip wears out, just buy a replacement tip instead of a whole new hammer.

For more information, contact Hammerhead Hammers (P.O. Box 350, Sedalia, CO 80135; 303/688-2385). □

TAX TALK: DON'T FORGET TO DEPRECIATE

by Martha Myron

At tax time, most businesses can claim depreciation, but many people don't understand it.

Depreciation applies to tangible property like machinery, equipment, and to buildings used for business purposes (you can't depreciate land). If an item you buy has a useful life longer than one year, you must spread the recovery cost of that item out over many years using applicable IRS tables.

For instance, software must be depreciated over three years; heavy equipment, trucks, and office equipment over five years; and furniture and fixtures over seven years. If you're a landlord, you depreciate rental properties over 27.5 years, but property used for business, like a workshop or showroom, must be depreciated over 39 years.

If you do your own taxes, straight-line depreciation tables are the simplest to use. Say you buy a generator for $2,500. It's subject to a five-year depreciation, so you subtract a fifth of the cost from your net before-tax business income each year — $500 a year for five years.

There are also accelerated depreciation schedules for three-year, five-year, and seven-year items, which allow you to deduct most of the cost in the first two years, and smaller proportions later in the item's life. This method is complicated, and I'd suggest getting an accountant's help.

Loss or gain? Depreciation can be trouble if you don't take it but resell the item later. For example: Suppose you buy a $25,000 backhoe, but forget to place it on your fixed asset depreciation list. Two years later, you sell it for $20,000. Think you have a loss of $5,000? If so, you're mistaken. The IRS adjusts your basis by the *allowable* depreciation whether or not you claimed it each year — 20% in the first year ($5,000), and 32% in the second year ($7,000). Your adjusted basis is only $13,000, your sale nets you a gain on paper of $7,000, and you owe taxes on that income.

If the real property in question is a building that you've held for many years, missed depreciation can really add up — and hammer you when you finally sell.

Correcting errors. Sometimes you can claim some of the depreciation you missed by filing an amended return. This might generate refunds only in the three most recent years, though, and there is usually an additional filing fee. □

Martha Myron is a certified public accountant practicing in Concord, N.H.

Masonry Vaults and Domes — for the Space Age

In centuries past, architects and builders often used brick and stone to build structural spans such as arches, or even vaulted roofs and domes. The appealing simplicity of such structures led famous architect Louis Kahn to observe, "The brick wants to be an arch."

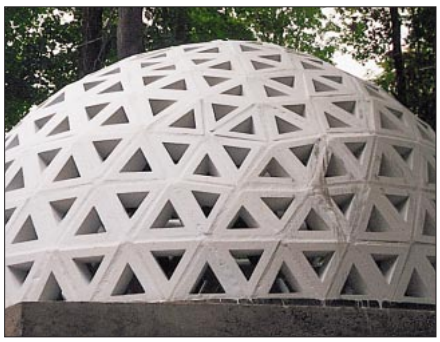
In modern times, however, masonry has settled for a more limited role. Concrete masonry units, for instance, rarely span more than a narrow opening, and are never used for roofs.

But all that may soon change, say inventors Peter Roberts and Kevin Hayes, of PolyCeramics, Inc., in Alfred, N.Y. The company has high hopes for its recently patented system that uses triangular and diamond-shaped concrete masonry units to form inherently strong geodesic domes and vaults.

Masonry students at the Alfred State College Masonry Program in Alfred, N.Y., have already laid up a few prototype geodesic domes using early versions of the triangular blocks and ordinary mortar. Inventor Roberts says future domes will use watertight flexible gaskets instead of mortar, and steel cables placed in grooves in the block to provide tensile reinforcement.

Even without the steel, says Roberts, his geodesic creations have the strength to hold up even against seismic loading — in an earthquake, the structures should deform temporarily, then return to their original shapes. "The entire structure is in compression," he explains. "Gravity is the restoring force."

The inventors must now work to obtain code approvals and financial backing. In the meantime, some interested builders may get to try out the system by participating in the testing program. For further information, contact PolyCeramics at 607/587-8450. □



Using an innovative triangular block mass-produced at a local block plant, students from Alfred State College assemble a prototype geodesic dome. The system's inventor says half-triangle blocks can be used to create square openings for standard windows and doors.

FROM WHAT WE GATHER

A Maryland developer is facing a 21-month jail term for filling in wetlands, reports the June 18 Baltimore *Sun*. A federal judge slapped multimillionaire developer James Wilson with the unusual prison sentence and fined his companies $5.5 million after a jury convicted them of filling in 70 acres of wetlands without permits between 1988 and 1993. Prosecutors said the swampy areas were vital protection against pollution and flooding on the sensitive Potomac River and Chesapeake Bay. Wilson's lawyers argued unsuccessfully at the trial that the filled properties were really not wetlands, saying that the government's definition of wetlands was too confusing.

You can earn an Associate of Science degree in solar construction technology through a distance learning program offered by the Florida Solar Energy Center (FSEC) and Florida's Brevard Community College. Courses are presented online through the Electronic University Network and America Online. FSEC's expanding program of continuing education also includes one- and two-day minicourses leading to a Certificate in Solar Energy or Energy-Efficient Building, as well as on-site intensive instruction for companies and organizations. For information write Ken Sheinkopf, FSEC, 1679 Clearlake Rd., Cocoa, FL 32922 (407/638-1015; or e-mail to *sheinkopf@fsec.ucf.edu*).

Drug use among construction workers is diminishing, according to federal statistics. The Substance Abuse and Mental Health Services Administration of the Department of Health and Human Services credits employer drug-testing programs for cutting drug use from 18.5% in 1985 to 13.1% in 1993.

BOCA has amended its roof venting requirements in the 1996 *National Building Code*. The BOCA code now calls for "balanced venting," with half the vent openings provided by eave or cornice vents and half by gable or ridge vents. Also, roof vent products must be tested to show that they will not allow rain or snow into the attic. The BOCA code covers most states in the Northeastern U.S.

Home inspectors: Watch out for unexploded ordinance. Jesse Perry, of Ocean State Home Inspections, in Riverside, R.I., reports in the May/June *NAHIforum* that a routine inspection of an older home turned exciting when he chanced upon two Korean-war vintage mortar rounds in a closet under a cellar stairs. While the home's prospective buyer conducted an orderly evacuation, Perry called in the Providence bomb squad — all in a day's work for a true professional. The impressed customer, who credits Perry with averting a possible tragedy, has since sent friends Perry's way; Perry says business is booming.

Storm Damage, *continued*

corners), leading the team to argue that the wind-speed threshold for the six-nail requirement should be lowered to extend the rule to areas farther inland from the coastal high-wind zone.

Tile fastening. Many roofs also lost tile roofing, the team reported, due in most cases to inadequate nailing. Nails were placed in the ribs of tiles rather than the troughs, failing to penetrate roof decks to the currently required 3/4-inch depth, and only one nail was used when more would be required by current code. Loss of these poorly nailed tiles teaches little about the adequacy of current codes, the team concluded, but points up again the weakness of the older codes in the face of even a moderate hurricane.

Structural problems. Unlike Hurricane Andrew, the weaker Erin did not completely demolish any finished homes, although it flattened a few half-completed buildings. The storm did have the strength to rip sheathing off the gable ends of some roofs, leading to partial truss collapses (see photo). And wind uplift forces ripped apart some truss-to-plate connections, pulling off sections of roof.

SBCCI engineer Gary Nichols says examination of such structural failures showed the same problems found in the thorough investigations of Hurricane Andrew: Plywood on gable ends had insufficient nailing, and hurricane straps on trusses, where they existed at all, connected only to top plates and did not extend down to the wall studs.

The area hit by Erin is defined by code as a 110-mph wind zone, and new homes there are covered by beefed-up provisions requiring 4-inch o.c. nailing at plywood edges, as well as hurricane strapping that securely ties the roof structure to the foundation. But Nichols said that the 80-mph and 90-mph winds experienced in Erin caused enough damage to justify a possible extension of those stricter requirements into areas defined as 80-mph or 90-mph zones. □

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Radiant Barrier Study, *continued*

was installed, the air conditioner ran only from 5:30 PM to 8:00 PM, more than three hours less.

Unlike radiant barriers that are draped over rafters or trusses before sheathing the roof, KoolPly comes as a foil facing on structural sheathing. Contractors just have to nail the sheathing to the roof with the foil face inward. But KoolPly has to be specially ordered from the lumberyard, and adds $4 to $5 a sheet to the cost of 1/2-inch plywood or OSB sheathing, according to *Energy Source Builder*. In areas outside the company's Southwestern U.S. distribution area, builders may have to choose a different product. For information, call KoolPly at 512/443-4747. □

Bugged by Birds? Here's Help

Alone or in small groups, birds are nice to have around. But when they hold a major convention on a building, it can be trouble. The uric acid in bird droppings can cut a built-up roof's lifespan in half, and the dust from layers of dried droppings can cause the dangerous lung disease histoplasmosis. Accumulated pigeon litter in attics has been known to collapse ceilings, and bird nests that clog furnace or boiler exhausts have led to fatal carbon monoxide poisonings.

If you've got bird trouble, help is nearby — especially if you have Internet access. Bird Barrier America Inc., a nationwide distributor of non-lethal bird-control products, has a new Web page (*www.birdbarrier.com*) filled with information on how to deal with pest birds. In a few minutes, you can read up on bird facts, skim through the frequently asked questions, ask Bird Barrier's experts about your specific problem, check out the company's products, and locate a qualified installer. (If you're not online, don't worry — just phone the company at 800/503-5444.)

Knowledge is power. Bird control contractor Steve Binder, who has his own Web site at *www.birdproof.com*, installs many of Bird Barrier's products, as well as a few specialty items of his own. He says, "I have to think like a bird. No product will work every time — you have to understand why the birds are there."

General pest-control operators called to deal with bird problems may need more training before they can provide a permanent solution, says Binder. His company, Birdproof, Inc., often sends consulting technicians to help pest-control operators design and set up case-specific bird deterrent systems.

If your bird-control strategy isn't 100% effective, check out Bird Barrier's Web site (www.birdbarrier.com) for some expert advice.

Binder spends a lot of time solving bird problems on large projects like bridges and powerplants, but he's willing to briefly consult by phone on small residential problems. "We've done a lot of work on condos with pigeon problems," he explains. "If some residents start feeding the pigeons, the birds congregate on nearby balconies to loaf. We can set up netting to block them out, with zippers you can use to remove the nets when you don't want them."

Netting is the most effective control method, says Binder, followed by an electrified stainless-steel wire system that zaps the birds with low-voltage. Bird Barrier also recommends nets to keep pigeons out of eaves, or to prevent swallows from returning to their mud nests each spring (swallows are an endangered species — once they've moved in, you have to leave them alone).

Nonviolent deterrents and barriers can handle most problems; only rarely do the experts resort to lethal means like trapping, shooting, or poisoning birds. □