IN THE NEWS

Southern California Works To Address Wildfire Risks

STEVE QUARLES

Brick siding and a cement roof didn't save this wood-framed building: Its wood roof and walls were ignited either by flames that shattered a vulnerable window or by flaming debris sucked into a roof soffit vent.

Many local governments still lack codes designed to protect homes from fires

In the fall of 2003, wildfires in California burned 750,000 acres, destroyed 3,645 homes, and killed 22 people. San Diego County's Cedar Fire alone killed 14 and wiped out 2,232 houses, 22 commercial properties, and 566 outbuildings as it blackened more than a quarter-million acres.

The infernos prompted municipal and state governments to take a hard look at the way homes in the area were built. But this past fall, as another fire season began with the region tinder-dry, local governments were struggling to come up with final recommendations.

"Despite the fact that past wildland fires have destroyed more homes and killed more people than past earthquakes, California and most cities in San Diego County still have no codes to address the wildland-urban interface fire threat," reported the San Diego Regional Fire Prevention and Emergency Preparedness Task Force in October.

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Post-Storm Florida Faces Plague of Soggy Walls

Months after four hurricanes drenched Florida with record rainfall, homeowners, builders, and building officials are puzzling over an unexpected problem: While wind damage in much of the state was lighter than feared, water damage was surprisingly extensive. In particular, wind-driven rain appears to have soaked right through painted concrete block walls in thousands of new and nearly new homes, ruining carpets and drywall and fostering mold and mildew.

Orlando television station WESH, which aired homeowner-shot video of crumbling walls and saturated carpet in November, has logged more than 600 telephone and e-mail complaints about the problem. Homes built by nearly all the area's large builders are affected, according to the station and its sister paper, the *Orlando Sentinel,* but only a few builders have been willing to help homeowners with repairs.

In many cases, insurance companies have also declined to cover the damage, blaming it on defective construction. Even if a claim is accepted, says Robert Olin, manager of the Orange County Building Division, many insurance companies are applying separate deductibles to each hurricane event. "If you have a $100,000 home, a 5 percent deductible might be $5,000," he points out. "Replacing the drywall or carpet in a couple of rooms is not going to cost that much, and homeowners figure filing a claim will just cause their premiums to go up."

That doesn't mean they're happy footing the bill, though, says Olin: "Homeowners are telling me they don't expect any water to come through their interior walls under any conditions. It just shouldn't happen, and they want the builder to fix it."

But no one expected the state to experience four hurricanes in one month — especially such big, wet ones. "Builders say they've been building the same way for 20 or 30 years and never had this problem," says Olin, "that it's due to this unique hurricane event, and that therefore the insurance company should take care of it."

Builders who say their construction methods met code are probably right, says Olin. "All our present code states is that a wall shall act as weather protection for the building; it doesn't

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Homeowner Challenges Michigan Environmental Law

A Grand Rapids, Mich., lawyer who tried to build a home on a Lake Michigan waterfront lot was awarded $2 million after the state tried to stop him. The case is a good example of how unexpected things can happen to a building project that runs into an arcane environmental law.

William Heaphy owned what he thought was buildable property in Holland, Mich., on the shore of Lake Michigan. But when he applied for a building permit, the town denied it, citing a state law that restricted building size near the shore. (The law said that no structure could be built that was more than three times the size of the first dune facing the water.) Heaphy sued the town, and won a $25,000 judgment from the Ottawa County Circuit Court.

But that was just the beginning. The town then repealed the ordinance to avoid paying the judgment, which put the case under the jurisdiction of the state's Department of Environmental Quality. Heaphy applied for another permit, which the DEQ denied. He took the case to the County Court of Claims (which hears claims against the state), contending that the state had, in effect, taken his property. The court agreed, and awarded him $1.16 million.

At that point, the state tried to compromise by telling Heaphy that if he combined the lot with two smaller lots he owned, he could build without violating the ordinance. But because the lots crossed a public road, he was still unable to get a permit. The Court of Claims awarded him yet another $580,000.

The state is appealing the judgment in the State Court of Appeals. In the meantime, Heaphy is earning interest of $220 per day, which he will get if he wins.

"If I had it to do over again, I might not have bought the land," Heaphy says. "But if I end up getting a check for two million dollars, which is where it's at now, I guess it would end up being a fantastic investment." — *Charles Wardell*

Permanent Coatings Gaining Ground

Vinyl siding has become a common alternative to wood siding, with well-defined trade-offs for both builders and homeowners. Vinyl is reasonably priced and durable, and it eliminates the need to repaint. But it also presents aesthetic issues in custom and high-end homes, as well as in historic projects where the home's original appearance must be carefully maintained.

So-called permanent coatings look like paint but last several times longer, say manufacturers.

COURTESY ALVIS COATINGS

But now there's another option, thanks to the so-called "permanent coating" industry. Invented in the late '90s, permanent coatings are permeable, breathable mixtures of small-molecule resins and polymers. While some companies refer to these substances as "spray-on siding," that name is misleading, because they're actually a longer-lasting substitute for paint. These days, they're being touted as a way to have a home with wood siding that never needs repainting.

"It goes on 10 times thicker than paint — but the way the compounds are formulated, when it dries it's only five times as thick," says Dan McConkey, advertising and marketing specialist for Alvis Coatings, Inc., of Charlotte, N.C., which counts the Marconi Museum in Bedford, N.H., among its historical-building clients. "The end result is that it looks just like paint, and you can see the same level of detail in the wood grain underneath."

Of course, the biggest selling point of permanent coatings is their durability. Alvis warranties its product for the life of the home in residential applications, and gives a 25-year guarantee for commercial projects. Such durability comes with a price: McConkey says that while the cost of a job varies according to the size of the house, the expense is two to three times that of a professional paint job. — *C.W.*

Changes in California Lighting Law To Increase Builder Costs

In California, the ongoing energy crisis has become a fact of life for both residents and builders, and so have the associated higher prices for many basic services. But the economics of one of those services are about to shift: The upcoming changes in the California Energy Commission's new Title 24 lighting standards for 2005 will affect both groups in complicated ways.

The state's broad-based mandate to become more energy-efficient by switching to fluorescent lighting could provide consumers with as much as a tenfold cost savings in their lighting bills. But they will pay for that shift by absorbing higher fixture costs, and they may need to add dimmer switches to meet the law's requirements.

The law does include some loopholes. For instance, David Wilds Patton, a lighting designer in San Mateo, says that although the law states that all light fixtures in the house should be fluorescent, it does allow some incandescents if they are placed on dimmer switches. He believes this exception will lead to a "huge increase" in the number of dimmers sold in California.

The law also allows exceptions for incandescents placed on motion sensors, says Patton. "You can get around some parts of the switch through exception clauses that allow you to use incandescent lighting if you implement it with a motion sensor. You see that in normal commercial projects, but we really haven't seen much of it in residential construction. The biggest impact will be in kitchens, bathrooms, laundry rooms, and garages."

The cost increases for individual items are striking. According to Patton, a standard fluorescent fixture costs at least a third more than its incandescent counterpart. The cost of a dimming fluorescent fixture is 50 percent to 75 percent higher than that of a standard fluorescent fixture. And motion sensors hike up the price yet another $50 to $75 per fixture.

Despite the cost increases, Patton likes the move toward energy efficiency, but he doesn't necessarily approve of the state's methods. "I'm not positive that the technology has caught up with the regulations, in terms of people wanting everything in the house to be fluorescent," he says. "This is an unintended consequence of the energy crisis, and it's a big change for builders to get through the transition process."

The new law will likely force designers and builders think of different strategies for lighting a house. "How do you make the choice as to what kind of fixture you want to use in what part of the house? I think it will push a lot of builders toward the use of lighting designers," Patton says. "That will be good for us designers, but overall I'm not sure this was the right way to go." — *C.W.*

OFFCUTS

Timber Treatment Technologies (TTT) has introduced a new wood preservative that the Grosse Pointe Farms, Mich., company hopes will provide a nontoxic alternative to traditional, copper-based treatments like ACQ. Called TimberSIL, the product doesn't kill wood-eating organisms, as traditional treatments do. Rather, it uses a mineralization process that makes the wood unappetizing to them. TimberSIL contains sodium silicate, typically used as a flame retardant. In the past, sodium silicate's tendency to leach out of the wood precluded its use as a preservative, but TTT says it has developed an insoluble form of the substance.

In mid-October, Nevada officials announced a program to train electrical workers to install photovoltaic systems, which convert sunlight to electricity. According to an article in the *Las Vegas Review-Journal,* a $250,000 federal grant will fund the first two years of a state training program, which will be managed by the electrical trade unions. The program will train new apprentices and about 80 journeymen each year.

Indianapolis-area Trinity Homes, a division of Beazer Homes, has set aside $24 million for mold remediation after a court approved a settlement in a class-action lawsuit between the builder and owners of more than 2,000 area homes, according to *The Indianapolis Star.* The suit had charged that construction defects such as improperly installed brick siding and leaky roofs had caused moisture, mold, and other damage. The work could take years to complete: Trinity has agreed to complete 216 houses every six months. It also agreed to a two-year warranty on the repairs.

Wildfire Risks

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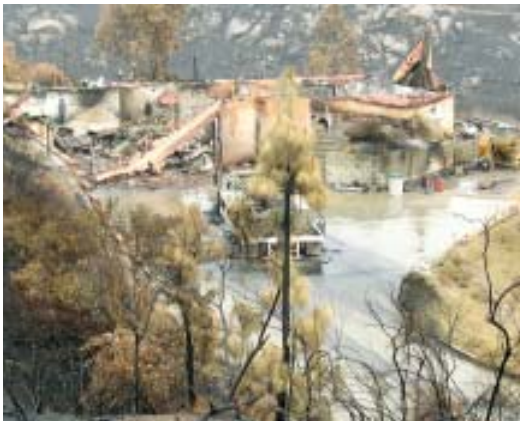
San Diego County adopted new building rules in June 2004 that mandate double-glazed windows, fire-resistant roofs, siding, and eaves, and fire-resistant material between roof tiles and framing. Owners must also clear brush in a 100-foot buffer zone around their buildings.

But the city of San Diego was still pondering changes in November. After changing city codes to require class A roofing last winter, the city council sent provisions on brush clearing, sprinklers, and fire-resistant exteriors to an advisory committee for review. The committee's recommendations, back in front of the board in November, reportedly include provisions governing gutters, siding, windows, fences, and sheds. Sprinkler mandates, supported by many firefighters and adopted by a few smaller cities, remain contentious: Home builder groups oppose the idea as costly and ineffective.

Urban-wildland interface fire risk is a major concern statewide. Of the state's 12.5 million homes, the California Department of Forestry reckons that 7.2 million are exposed to a high risk of wildfire — 6 million of them located in areas defined as "urban."

To assess specific ways of protecting a home, University of California researcher Steve Quarles says builders should look more closely at site characteristics. For example, San Diego's Scripps Ranch area, hit hard in last year's fire, was "pretty much just a tract development," says Quarles. "You had home next to home next to home, and once the fire got in, the spacing was close enough that one house would ignite the next. The way you would protect a house in a development like that might be different than how you'd protect a house in a true interface area, where you find a lot of vegetation around the house."

For close-together houses, says Quarles, radiant heat exposure from the next-door fire is the major ignition factor. But for isolated houses surrounded by brush or woods, greater risks come from flying brands and embers, or direct flame impingement from nearby burning vegetation.



STEVE QUARLES

FEMA

Wildfires spared many houses seemingly at random, while leaving few clues in the ashes of their destroyed neighbors (left). Once a wildfire gains entry to a built-up neighborhood, it spreads from house to house like any urban fire, says researcher Steve Quarles. The isolated house above, built of concrete block and roofed with metal, probably was ignited by a wind-blown ember that entered a vent. For such widely separated homes, safety efforts focus on clearing brush and protecting vents and windows.

Quarles and university colleagues have studied the fire risk extensively, touring burned-out areas to inspect damage and conducting tough tests on building materials to simulate a wildfire exposure. The hit-or-miss pattern of fire destruction makes it hard to draw conclusions, he notes. "Most structures were either completely lost, or untouched. There is very little 'in-between' in a wildfire."

Dumb luck, good and bad, plays a role, he says, "and I don't think there is any one magic bullet you can apply to your house and guarantee that it will survive." Still, there are precautions homeowners can take. "Number one is to do something about the vegetation near the house, so you don't disadvantage the house from the get-go." Plantings next to a vent or window are a major risk: Heat from a burning shrub can break windows and let flame into rooms, and burning pieces of plant material can be sucked into soffit vents and ignite attics.

Double-pane windows are more likely to keep out fire, Quarles says. Storm windows or operable shutters also might protect windows during a brief fire exposure.

Vent treatments are a complex problem. "There's a whole discussion in the building science community about whether foundation and roof vents are even needed in our climate," Quarles says, but he's concerned that builders who focus only on fire protection may be eliminating vents without considering potential moisture problems.

A variety of venting products, including vents that close automatically in response to heat, and vents coated with an intumescent paint that expands when exposed to fire, are finding their way into the California market. But, says Quarles, "that makes people a little uncomfortable, because we don't have a way yet to evaluate those products' performance in a fire-exposure situation." — *Ted Cushman*

Soggy Walls

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define the term 'weather protection.' As a code official, I have a hard time enforcing something that isn't defined."

A search for causes. As Florida building officials investigate hundreds of homeowner reports, Olin says, some patterns are beginning to emerge: "Before August 2004, there were no problems with water intrusion through masonry construction. The codes, the technology, the methods seemed to be working." And the new problem hasn't shown up in older homes. "We have tens of thousands of homes made of painted concrete block, dating from the 1930s through the '60s, and they didn't get the same water intrusion in these storms."

One explanation for that difference, Olin suggests, has to do with how many times a house has been painted. "Most homes that are just a few years old have never been repainted. The ones that have, we aren't seeing the same incidence. So perhaps five coats of paint over the years has put pretty good waterproofing over those older buildings."

Sloppy building practices? Orlando attorney Guy Haggard represents several Orlando homeowners who are considering filing suit against their builder. The reason new houses were more affected by the storms, he argues, is that builders have changed their practices. "Contractors in the field have told me that in just the last few years, production builders started putting on stucco only about an eighth to a quarter inch thick. And then they started putting on just one coat of paint, with no primer. They're trying to cut costs any way they can."

Haggard says a report by his hired investigators shows that walls in problem houses leak not just in hurricanes but during ordinary rainstorms. His experts have also found evidence of pre-existing leakage and mold from before the hurricanes. The storms didn't cause the problem, he asserts, they've just made people more aware of it: "There was virtually no rain here for three years. Then the hurricanes came and revealed the problem. Now homeowners recognize the problem and are looking for it — and sure enough, after every rain the water comes right in."

Insurance companies, says Haggard, are all saying the same thing: "It's a construction defect, and we don't cover construction defects. It's not a result of hurricanes. And they're right. There's no hurricane damage to these structures. Nothing is broken on the house. The water simply goes through the walls."

Investigators from Tampa, Fla.–based Construction Moisture Consulting sprayed water on the exterior walls of 10 Florida homes. Within minutes, interior moisture readings maxed out at garage-wall mortar joints (left) and living-space drywall. Soon, water was visibly trickling down block wall faces (below left) and seeping out from behind baseboards (below).

Code change to come? As of November, building officials in Florida were still tabulating questionnaire data. Meetings this winter may produce a recommendation for a code change to require heavier, more effective waterproof coatings for new masonry walls.

But, says Orange County's Olin, any new rule will require something of a judgment call. "It's a thorny question: Who determines how much water is enough? Where do you set the criteria? Does the wall have to withstand one hurricane, two hurricanes, three hurricanes? What is the standard? Because until you establish a criteria standard for that wall — exactly what you expect it to do — you can't say if the contractor built it properly or not." — *T.C.*