In the News

Deck Ledger Bolting Schedule Wends Its Way Into the Code

Every year, dozens of residential decks come crashing to the ground across the country. According to Frank Woeste, professor emeritus of wood engineering at Virginia Tech and a passionate advocate of safely built decks, "Except for hurricanes and tornadoes, more injuries and deaths may be connected to deck failures than to all other structural failures stemming from typical residential code loads, including seismic and snow loads."

And yet there is very little in the building code that directly addresses deck structure. "With respect to the structural integrity of a deck," says Woeste, "there are only two numbers in the IRC: 40 pounds per square foot, the occupancy live load; and the 200-pound concentrated load, which relates to the guardrail. That's it. Other than the fact that the code now says you can't use nails in withdrawal, those two numbers are the only guidance given related to design for resisting gravity loads. The problem is there's no way for a contractor to translate a number like 40 pounds per square foot into ledger bolting requirements on a project."

Two men working on a deck in Chattanooga, Tenn., sustained serious injuries when it came down in May; the grandmother of one of the men had stepped back inside the house moments before the collapse.

That may change with the 2009 IRC, if a ledger bolting table that Woeste and his colleagues at Virginia Tech and Washington State University have developed makes it through the code approval process. The ledger attachment proposal was heard at the recent International Code Council annual meeting in Orlando, Fla., which concluded October 1. The proposal, RB159-06/07, passed "as approved"; it can

■ Colorado builders who have a comprehensive general-liability policy in place during construction are covered even after the home has been sold, the state's Court of Appeals ruled in June. Village Homes of Colorado, a builder, had been sued by homeowners because of damages from expansive soil; when the company submitted the damages to Travelers Casualty and Surety Co., the claim was denied because it came after the policy ended. However, the court ruled that the damage occurred during construction and while the policy was in effect. Although the decision limits the time frame in which homeowners can file a claim, it essentially gives builders extended protection.

■ Responding to questions about a 6 percent increase in construction-site burglaries, Charlotte, N.C., police suggested that part of the problem might be solved if builders delayed appliance installation. Andy Leonard, a captain in the Charlotte-Mecklenburg police department, told the *Charlotte Business Journal* that if contractors "waited until 24 hours before the closing to install appliances, it could have a significant impact."

still be amended before becoming code in 2009.

Woeste has worked on the ledger issue since 2003, when he — along with fellow professor Joe Loferski and former graduate student Cheryl Anderson — published the article "Attaching Deck Ledgers" in *JLC* (8/03), which included ledger attachment schedules developed using conventional connection design methods.

One child and three adults were injured when this Chesterfield County, Va., deck collapsed in June (top). Three of the victims were treated at the hospital, one with a head injury caused when she struck the brick patio below. A rotted band joist was the clear cause (above).

The results of the engineering calculations included bolt and lag screw spacings that were glaringly conservative — 2 to 3 inches in some cases. Predictably, *JLC* readers expressed skepticism, so Woeste and team took a different tack and tested the ledger connections to failure in the lab using calibrated equipment.

The results of those tests were published in *JLC* in March 2004 ("Load-Tested Deck Ledger Connections") and became the basis for the current code proposal. The original data was valid only for pressure-treated southern pine ledger boards, which are common in the East.

That limitation was addressed when former Woeste student Don Bender, now a professor of engineering at Washington State, replicated the tests using pressure-treated hem-fir, a common western species. Though hem-fir is less dense than southern pine, the test results were nearly identical, essentially confirming the earlier numbers and yielding a bolting schedule that is useful coast to coast.

JLC requested that in addition to the usual single shear connections, where the ledger is attached tight to the rim joist or sheathing, Woeste include a ledger connection with a half-inch drainage space — a detail commonly used in New England and the Northwest, where rain and snow can penetrate behind ledger flashings and attack the band. The "cantilever" effect had only a slight effect on the bolt spacing.

To view the proposed ledger table in its entirety, go to www.jlconline.com/deckledgers. — *Don Jackson*

■ With real estate prices so high, some homeowners looking for extra space have been doing away with pitched roofs. By switching to a flat roof, they gain a floor without exceeding height restrictions. However, this trend has already earned itself a backlash: Community members who argue that these modifications ruin neighborhood aesthetics are pushing for minimum-roof-pitch requirements. The town of Bethany Beach, Del., for example, instituted a minimum 7/12 pitch for houses that reach the jurisdiction's maximum 35-foot height. The change came in response to a number of renovations done by investors looking to get more floor space in houses they intended to resell or rent out.

■ Frustration with the cost of coastal insurance isn't just a problem in the Southeast. Connecticut insurance commissioner Susan Cogswell declared a 90-day moratorium on new underwriting guidelines, including increased rates, starting September 7. Her move was in response to consumer outrage after the Andover Co.s announced plans to cancel policies in Connecticut if homeowners didn't install storm shutters over all openings. Other insurers have instituted similar requirements that also affect policyholders.

Pump Truck Accident Leaves Worker Dead

A concrete pumping truck capsized on a residential construction site in northeast Madison County, Miss., killing a construction worker who was pinned beneath the boom. The September 15 accident is still under investigation, according to Clyde Payne of the OSHA area office in Jackson, Miss. The investigation will focus on whether the boom truck's outriggers were set properly, or whether one of them failed. Payne did not say when he expects the investigation to be complete, but he promised to contact *JLC* with the results.

According to a safety bulletin published by the American Concrete Pumping Association, setting the outriggers is a critical part of the boom operator's job, but the general contactor also has an important role to play in ensuring a safe outcome on any pumping job.

For example, the GC should be certain to order the correct boom size. If the boom is too small, the truck may need to set up close to the foundation, over disturbed soil. If it's too large, more cribbing may be needed under the outriggers to spread the load, increasing setup time and expense.

The GC should also have an open area ready for the pump before it arrives, and should make the boom operator aware of any patches of soft or disturbed soil, as well as any underground utilities.

Finally, the GC should monitor the job to make sure the boom operator takes no chances.

The ACPA's bulletin, "Setting Outriggers to Prevent Accidents," is available for download at www.concretepumpers.com. It provides excellent information for anyone involved in a concrete pumping job: contractor, dispatcher, and operator. — *D.J.*

This concrete pump truck tipped over on a job site in Lake Caroline, Miss., pinning a worker beneath the boom. OSHA is investigating.

A wrecker crew prepares to right the capsized pump truck.

■ A Pennsylvania court struck down an ordinance requiring fire sprinklers in all new-construction and renovation projects of more than 1,000 square feet. Schuylkill Township had enacted the ordinance in March 2005; it was overturned in September, reports the *Central Penn Business Journal*. The decision was based on the state Uniform Construction Code's requirement that unique local conditions must be identified for local ordinances to exceed the UCC. The Pennsylvania Builders Association hailed the ruling as a victory for affordable housing.

■ Although Chinese cedar — which is actually a member of the bald-cypress family — is marketed in the United States as an inexpensive alternative to western red cedar, members of the lumber industry disagree on its quality as a material. While some argue that it's a better wood than western red cedar, with fewer and tighter knots, others say it's inferior because it's kiln-dried and subject to swelling in rain. A recent study at Oregon State University seems to bolster the species' credentials: According to industry newsletter *Random Lengths,* researchers say the wood shows a cedar-like resistance to rot.

Green Builders Convene in San Francisco

More than 6,000 people attended the first annual West Coast Green residential building conference and exposition in San Francisco in September. The three-day event, which showcased the latest green and healthy building products and resource-efficient materials, attracted a diverse crowd: architects, builders, engineers, green-movement activists, and representatives of government and nonprofit housing agencies.

Green appeal. In one of the more interesting business-oriented presentations, Marc Richmond of Practica Consulting spoke about how to market yourself as a green builder. Only 5 percent or so of the market, he said, is committed to green principles and will buy something because it's green. Of those who do hire green builders, only 40 percent want to discuss payback and only 10 percent actually care about it. So why are people buying green stuff? Because, Richmond explained, "it's cool, high-tech, or their neighbor doesn't have it."

In a room filled with green advocates, Richmond made the point that being a green-building professional is not about ideological purity: You still have to give customers what they want. "Let them buy your green stuff because it's cool. Don't make the mistake of trying to sell your product or service [to customers] for the same reasons you would buy it."

Forget the hair shirt. In a presentation on green remodeling, a panel of remodelers recounted their efforts to integrate green building principles into their business. "I don't believe in the hair-shirt mentality of green," said Michael McCutcheon, of Berkeley, Calif., referring to the all-or-nothing thinking often associated with green building. "We do what we can. We start where we are and if we can do 10 percent better, great. If we can do 20 percent better, that's great, too."

McCutcheon warned against material vendors who push the green qualities of their products to the exclusion of all else: "Watch out for people who are just telling you it's green. It still has to be durable, it has to be high quality, they have to deliver it on time, and it has to be what you ordered." And he pointed out that even if a material is "certified," it isn't green if you can't use it and it goes to waste.

Greening your company. Builder Dennis Allen of Santa Barbara, Calif., spoke about the importance of getting field employees to buy into green building. His company offers training and financial incentives, including a program that encourages supervisors to replace large trucks with hybrid, biodiesel, or other low-polluting, fuel-efficient vehicles.

Performance testing. On the technical side, performance testing was a key theme in discussions about building science and the efficiency of hvac and water-heating systems. Or, as speaker John Proctor, a consulting engineer, put it: "If you don't test, how do you know you did it right?"

Walking the floor. On the expo floor, some 250 booths displayed a broad array of products, among them such relatively conventional wares as spray-in-place insulation products, ICFs, and SIPs. Manufacturers of photovoltaic power systems also exhibited.

Alternative products — which at a traditional industry event might account for one or two displays — took up a large portion of the show floor. There was a profusion of millwork — flooring, doors, cabinets, trim — made from reclaimed lumber, as well as bamboo flooring, recycled cotton insulation, wool insulation, "organic" paint, knobs and tile made from recycled glass, rainwater-catchment systems, a pine-tree resin and aggregate paving product, and a countertop material made from recycled paper.

Nearly as unusual as some of the products — at least by building-show standards — were the concessions, which featured mostly Indian and Middle Eastern food with a heavy emphasis on vegetarian fare. Maybe next year I'll try the vegan corn dogs. — *David Frane*