

In the News

Expanded AFCI Requirements Spark Controversy

In June, the National Fire Protection Association — which publishes the National Electric Code — voted to greatly expand requirements in the 2008 code for residential use of arc-fault current interrupters (AFCIs). These devices prevent fires caused by faulty wiring; unlike conventional circuit breakers (which trip on gross faults) or ground-fault circuit interrupters (which cut off power to a circuit if they detect an imbalance between the hot and neutral conductors), AFCIs trip in response to unintentional arcs in household wiring. Already, the more stringent rules are provoking debate within the industry — even though they won't take effect until January.

Back story. Requirements for AFCIs aren't new: The devices have been cropping up in the NEC for several years, ever since an amendment to the 1999 code mandated their use in all bedroom receptacles. The 2002 code extended that requirement to all bedroom outlets, including light fixtures, receptacles, and smoke alarms. And the 2005 code reduced current levels and required for the first time that the devices detect both series and parallel arcs. (Series arcs occur when the current jumps a gap, as when a wire is cracked; parallel arcs form when damaged insulation allows the current to jump between conductors, or from a conductor to ground.)

Now the pending 2008 code has gone even further, specifying combination-type AFCIs — the type capable of detecting both kinds of arc — in all 120-volt 15- and 20-amp circuits that supply “dwelling-unit family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas.”

Advocates tout fire prevention. Gerard Winstanley of the National Electrical Manufacturers Association (NEMA) contends that the new



The pending 2008 NEC will require AFCI circuit breakers — like the ones shown here from four manufacturers — to protect 15- and 20-amp circuits in most rooms of the house. Opponents claim the devices are not ready for general use, and that nuisance tripping will be a problem.

■ The chief executive of the nation's largest mortgage lender says that home prices are falling “almost like never before, with the exception of the Great Depression,” reports the *New York Times*. According to the paper, Angelo Mozilo of Countrywide Financial predicts that because there are currently so many homes on the market, the housing sector will continue to struggle until sometime in 2008, and will not start to recover until 2009.

■ Union carpenters, cement masons, and laborers in Washington will get 5 percent to 6 percent raises in 2007, 2008, and 2009 under the terms of a recent agreement between union representatives and the Associated General Contractors of Washington, reports the *Puget Sound Business Journal*. Despite the nationwide housing slump, the state — particularly the Seattle area — continues to experience a building boom.

■ Home Depot has agreed to provide free replacement shutters to South Florida consumers who purchased the store's shutters in 2006. An investigation by the state attorney general's office determined that the company had falsely claimed that the shutters met the stringent wind-velocity requirements of Broward and Miami-Dade counties. According to the *South Florida Sun-Sentinel*, buyers who live outside the two-county area will be eligible for a 25 percent refund.

In the News

Expanded AFCI Requirements
continued from page 1

AFCI requirement will prevent numerous fatal fires. “I expect them to have a similar effect to smoke alarms on reducing fire deaths,” he says. “That data will be collected 10 or 20 years down the line.” He refers to figures on NEMA’s consumer-information Web site (www.afcisafety.org) that ascribe 67,800 fires, 458 deaths, and \$868 million in property losses to home electrical problems each year. (It should be noted, however, that estimates of losses from fires of electrical origin vary widely according to source; the Underwriters Laboratory Web site, for example, puts the figures at 32,000 fires, 220 deaths, and \$674 million in damages, while a 2006 NFPA report cites 19,100 fires, 140 deaths, and \$349 million in damages.)

According to Winstanley, the difference in cost between a conventional circuit breaker and a combination-type AFCI is typically about \$15, meaning it should cost \$200 or less to install a full complement of AFCI breakers in a typical new home. “That’s a fairly small outlay,” he says. “Once it’s explained, consumers will accept them.”

Opponents predict glitches. Other industry observers, however, are skeptical; they question not only NEMA’s numbers but also its motivation, noting that the electrical manufacturers themselves are in the business of selling the mandated products. Independent NEC expert Mike Holt, for example, contends that AFCI technology is “not even close” to being ready for general use. Few electrical contractors, he says, have experience with the new combination AFCIs, making it impossible to know whether normal arc-producing events like distant flashes of lightning or the operation of motorized devices will lead to widespread nuisance tripping. “I’m totally convinced there will be a huge problem,” he says.

Moreover, Holt scoffs at NEMA’s cost figures. “Look,” he says, “if they’re smart, electrical contractors are going to figure out their real costs and add some money for service calls to the job.” He figures that the AFCI provision will cause most subs to up their bids by \$500 to \$1,000 per home. “Electrical contractors will be okay,” he says, “but they don’t have to sell that increase to the buyer. I still can’t believe home builders didn’t fight this more than they did.” — *Jon Vara*

RECALLS

Milwaukee Electric Tool Co. is recalling about a million 14.4- and 18-volt 2.4-Ah nicad battery packs that could explode during use or while being charged if an overpressure vent is compromised or damaged. The company has received reports of more than 35 incidents involving the battery packs, including at least 11 injuries.



The recalled batteries — used to power drills, saws, radios, flashlights, wrenches, and Extractor windshield

glass removers — were sold from July 1999 through 2005 under the brand names Milwaukee Power Plus (though not all 14.4-volt packs include the Power Plus label), Chicago Pneumatic, and Extractor. For more information, call 800/729-3878 or go to www.milwaukee tool.com.

Southern California Grapples With Three Trench Collapses — One Fatal

June was not a good month for trench safety in Riverside County, Calif.: In a period of less than two weeks, three separate trench collapse accidents — one fatal — occurred in the Southern California county. State OSHA officials are investigating all three incidents, but are not expected to make their findings public for several months.

The first two incidents occurred on consecutive days at construction sites only a few miles apart, in the fast-growing community of Temecula. On June 11, a 21-year-old worker, Herminio Parra-Alarcon, was acting as a spotter for a backhoe operator digging a septic-tank hole when he fell into the 12-foot-deep excavation and was engulfed by a wall of dirt. A co-worker jumped in after

In the News

Trench Collapses
continued from page 2

him and dug away most of the dirt around his upper body, then called rescuers. (Actually, the co-worker was lucky to get out safely himself: According to the National Utility Contractors Association, an untrained person who goes into a hole to offer help has a 40 percent chance of becoming an additional victim.)

An unshorable trench and a life lost. Riverside County Fire Department spokesman Rick Griggs, who was at the scene, says two conditions complicated the rescue: First, the injured man had come to rest directly beneath an undercut bank; and second, the 14-foot-wide hole exceeded the span of the department's available shoring. Stabilizing the sides of the hole so that



More than 80 rescuers worked for seven hours to rescue a contractor from this excavation in Desert Hot Springs, Calif. The breadth and depth of the excavation, the loose, sandy soil, and the victim's position made the rescue especially difficult. A powerful vacuum excavation truck (note the suction hose at center in photo above) was used to remove soil from around the trapped man's body.

rescuers could work safely took nearly three hours, Griggs reports, after which it took about 20 minutes to pull Parra-Alarcon free.

Shortly before he was lifted from the hole, however, Parra-Alarcon's condition rapidly deteriorated, and though he was revived by paramedics after going into cardiac arrest, he died in the hospital three days later.

Even among victims who are only partly buried, that outcome is not uncommon, notes Griggs. "It's called 'crush syndrome,'" he says, explaining that when blood flow is cut off by soil pressure, red blood cells die and rupture. "When the pressure is released, that sends a big surge of potassium into the bloodstream, which can cause irrecoverable cardiac arrest."

A stable trench and a life saved. The following day, Riverside Fire Department responded to a second Temecula call: A Metropolitan Water District employee had been struck and injured by a section of concrete form. This rescue, however, was straightforward: The victim was not buried and the trench was safely sloped and stable, making it possible for the first firemen on the scene to simply walk in and carry the injured man to safety.

Shifting sand and an arduous rescue. A week and a half later, on June 23, the Riverside team was called to what Griggs describes as an "extremely complex" situation in the community of Desert Hot Springs.

A 45-year-old private contractor was trapped at the bottom of a crater-like excavation — estimated to be 20 feet deep and 20 to 25 feet wide — in loose, sandy soil. The victim, who had been working with two companions to repair a broken residential water line, had gone into the hole to remove the chain from a precast concrete ring when he fell feet-first into an open stack of previously placed rings. He was buried almost to his neck in sand.

Because the massive hole was extremely difficult to shore and the victim's position inside the concrete rings left little room to maneuver, it took more than 80 rescuers about seven hours to free him. A powerful vacuum excavation truck was used to suction soil from the concrete casing enclosing the victim's body (see photos, left).

The injured man was taken to a nearby medical center. He has refused to talk with the media, but the length of time he spent buried makes it almost certain that he suffered extensive tissue injury, with a high likelihood of permanent nerve and muscle damage. — J.V.