

Stucco Over Concrete

Q. *I'd like to finish the above-grade portion of a poured-concrete foundation with a color coat of stucco. The broken-off snap-ties are visible and are slightly rusty. Do I need to treat these with anything before I apply the stucco to prevent a rust stain on the finished surface?*

A. *Jay Meunier responds:* Ideally, the snap-ties should be broken back so that the ends are 1 to 1½ inches from the surface of the concrete. Then the holes around the snap-ties should be plugged with hydraulic cement to prevent moisture from entering through capillary action. This should prevent rust from bleeding through and staining the stucco coat.

It sounds in your case like the concrete contractor used the kind of snap-ties that are designed to break off at the surface of the concrete. These are fine if the intention is to cover the foundation wall with a drain board or foam insulation system. But there are also special ties available that will break off below the surface. Next time you plan to stucco a wall, let your foundation contractor know in advance, and he can use those.

I've been in your situation a couple of times. Once, I drove a piece of ¼-inch tubing as far over the ties as possible and used it to rock the ties back and forth until they snapped off below the surface of the wall. Another time, I used a grinder to take them down. This also removed some of the concrete around the tie, but the hydraulic cement patched that. Fortunately, you usually have to stucco-coat only a narrow band of wall that's exposed above grade, so you won't have to treat every tie in the wall. Good luck.

Jay Meunier was formerly owner and operator of a residential concrete business.

He is now an estimator for Pizzagalli Construction in Burlington, Vt.

Detecting Live Romex

Q. *I'm a remodeler and often work around existing wiring. What's the most practical and inexpensive tool for detecting live current in either romex or wire in a metal conduit? Can you detect current inside the conduit without opening the conduit?*

A. *Rex Cauldwell responds:* In my opinion, the only dependable way to detect live current — the way I would want to bet my life on — is with a multimeter connected to the wires. Check the voltage, conduit to ground, ground to hot, ground to neutral, and neutral to hot.

The wands, or “sniffers,” I've used — the types you wave over the wires to tell you whether they're hot — have not been dependable. I have had many that gave false readings.

Regarding wires in conduit, you must remember that the conduit may be grounded, which would give a “dead” reading when the wires inside are hot. Another problem with low-cost voltage sensor pens is that many don't detect voltages of less than 60 volts. Thus, if there is a low-voltage circuit or a circuit making intermittent contact, the sensor won't pick it up.

One unit that I have not tried but that looks promising is made by Extech Instruments of Waltham, Mass. (781/890-7440, www.extech.com). Their model DVA30 (\$39 on the web) is claimed to measure from 5 to 250 VAC through conduit or shielded wire.

Rex Cauldwell is a master electrician in Roanoke, Va., a frequent contributor to JLC, and the author of several books, including *Wiring a House*.

Venting Bath Fan Into Soffit Not a Good Idea

Q. *It has become common practice in new construction around Nashville to vent bathroom fans into a nearby soffit. One problem is that the vent often gets covered with vinyl or metal soffit because the siding crew doesn't want to cut a hole in the finished soffit. Other than running the vent into the attic, which is not a good idea, what can you do? With the pitfalls of mold becoming more problematic, we need more options.*

A. *Harrison McCampbell responds:* The *International Residential Code* (Section R303), referring to mechanical ventilation in the bathroom, requires that “the minimum ventilation rates shall be 50 cfm for intermittent ventilation or 20 cfm for continuous ventilation. Ventilation air from the space shall be exhausted directly to the outside.”

This seems pretty clear: Venting to the attic is out of the question, as that is not directly to the outside. Venting into the area behind the soffit panel would be the same thing, while venting through a hole in the soffit is only a step away. While using a vent cap mounted in the soffit panel might be considered venting to the “outside,” the moist exhausted air will most likely be drawn back into the attic through the soffit vents as soon as it hits the outside (assuming that the soffit and ridge vents are properly sized and installed and have good convective flow). So while this follows the letter of the code, it doesn't follow the spirit.

Although it may cost more and add another penetration through the roof, you should take the time to do this right: Install a roof vent and flash it properly.

Harrison McCampbell is a consulting architect in Nashville, Tenn., specializing in construction defects.

Energy Payback From Instantaneous Water Heaters

Q. *Do the energy savings provided by instantaneous gas water heaters justify their higher cost?*

A. *Martin Holladay responds:* Before you consider installing an instantaneous gas water heater for energy efficiency, consider whether your customers will be satisfied with the flow rate of the model chosen. The most common models of instantaneous water heaters have maximum flow rates in the range of 2 to 3 gallons per minute. Three gpm is the bare minimum to supply two simultaneous showers, and most American families expect their water heater to provide up to 6 gpm of hot water when necessary.

Assuming you've decided to install an instantaneous gas water heater with at least 3 gpm of flow, a typical choice would be the AquaStar 240FX (800/642-3199, www.controlledenergy.com), which is available for about \$900 to \$1,030, depending on whether you need the outside vent hood. The AquaStar 240FX has an efficiency factor (EF) of 0.84. An ordinary 40-gallon gas water heater with an EF of 0.56 costs about \$270, so you would need to save around \$700 on your fuel bill before your energy savings would repay the added cost of the instanta-

neous heater. An instantaneous water heater will probably last 10 to 20 years, compared with 7 to 10 years for a conventional gas water heater.

Investing in an instantaneous model makes the most sense for those with high fuel costs. (See the table above, which is based on hot water use of 64.3

affect payback calculations, including how much hot water is used (high-use families see a quicker payback), differences in maintenance costs, the likelihood that an instantaneous heater will not need to be replaced as frequently as a conventional heater, and possible differences in installation

	Purchase price of water heater	Annual gas in therms consumption	Annual natural gas bill (at 87¢ per ccf)	Annual propane bill (at \$1.40 per gallon)
Conventional gas water heater (EF 0.56)	\$270	267	\$233	\$409
Instantaneous gas water heater (EF 0.84)	\$970	187	\$163	\$275

gallons per day, or 23,470 gallons per year, by the "average U.S. household," as shown in the Energy Guide Labels.) If you have access to natural gas, you won't save much, since the payback period (assuming that gas costs \$0.87 per ccf) is 10 years. If you're burning propane, however, the payback period is shorter: At \$1.40 a gallon, it would be a little over 5 years. In some areas of the country, including northern New England, where I am currently paying \$2 a gallon for propane, the payback period is less than 4 years.

Of course many other factors can

costs (an instantaneous heater may require a larger gas supply line and a larger flue than a conventional water heater).

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Got a question?
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