Q&A

Q. Tree Roots and Foundation Cracks

Can the roots of a tree actually dry out the soil beneath a foundation enough to cause the concrete to crack?

A. *Bill Palmer, president of Complete Construction Consultants in Lyons, Colo., responds:* Trees consume enormous amounts of moisture, so it's conceivable that a root system growing too close to a home could suck enough moisture out of the soil to crack the foundation. This is particularly true in dry areas with very expansive soils, which shrink or expand with changes in moisture content.

In nonexpansive soils, damage from tree roots is often caused by a different mechanism. Root structures seeking water can grow to the point where the pressure they exert on a wall causes foundation walls to bulge and slabs to crack and move. There are even cases where tree roots have grown into or through concrete walls, cracking them and causing further structural damage.

According to HUD guidelines, trees and plants should be planted no closer to a building foundation than the anticipated height of the particular plant. Neither the Concrete Foundation Association nor the American Concrete Institute offer formal rules on how far trees should be from a structure. One CFA member I spoke with told me that in states with expansive soils, where builders have to disclose expansive conditions and take proper precautions for drainage and moisture content, the recommended clearance between a tree and a foundation is one and a half times the height of the tree. At that distance, the amount of moisture that the tree would draw from the ground would not be enough to cause significant settling.

Q. R-19 vs. R-20 Wall Insulation

The federal stimulus plan's energy tax credits for insulation are based on the 2009 IECC, which raises the wall insulation requirement for climate zones 5 and 6 from R-19 to R-20. To meet this requirement, the R-value of the cavity insulation must be at least 3.63 per inch. Does this mean that standard R-19 fiberglass batts used to insulate 2x6 walls would not qualify for the tax credit? How about Icynene, an open-cell spray foam with an R-value of 3.6 per inch?

A. *Martin Holladay, senior editor at GreenBuilding Advisor.com, responds:* Since insulation lobbyists were closely involved with this code change, it should come as no surprise to learn that manufacturers of fiberglass batts, open-cell spray foam, and cellulose insulation can all provide products meeting the new requirement.

Most builders complied with the old code by compressing 6-inch-thick R-19 fiberglass batts into 5 1/2-inch-thick wall cavities. Since the batts are labeled "R-19," most inspectors accepted the practice, even though the actual R-value of these compressed batts is only R-18. But fiberglass manufacturers have long produced 5 1/2-inch-thick high-density R-21 batts that fit a 2x6 wall without compression. More expensive than R-19 batts, these high-density batts will meet the new code, but because they aren't typically stocked by most insulation contractors, home centers, or lumberyards, they will probably have to be special-ordered.

According to a spokesperson, Icynene has recently reformulated its open-cell spray foam to increase its R-value from 3.6 to 3.7 per inch, in anticipation of the code change. Now a 5 1/2-inch wall insulated with Icynene can claim an R-value of 20.35. With a higher density than open-cell foam and an R-value exceeding 6 per inch, closed-cell polyurethane foam has no problem meeting the new code.

The R-value of cellulose insulation depends on its density. Denser installations of cellulose have lower levels of air infiltration (but also a lower R-value per inch) than fluffier installations. When installed using the dense-pack method (about 3.5 pounds per cubic foot density), cellulose achieves R-3.65 per inch, suitable for meeting the new IECC.

GOT A QUESTION?

Send it to Q&A, *JLC*,
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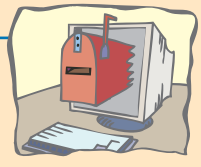

Q. Leaky Air-Conditioner Coil

After replacing both a condensate pan and a pump, the plumber fixing my client's leaky air-conditioning coil finally determined that the problem was actually in the condensate drain. The drain's small trap was clogged with a mucuslike substance; unclogging it was a simple repair that took just a few minutes, but (needlessly) replacing the pump and pan cost my client a couple of service visits. Is the trap really necessary or is it just a way for hvac installers to set up nuisance service calls?

A. *Dave Yates, a plumbing contractor in York, Pa., responds:* One way for corner-cutting hvac installers to avoid clogs — and eliminate altogether the expense of traps and condensate pumps — is to simply drill a hole in the concrete floor and drain the condensate directly into the stones under the slab. But this is a bad idea, for a couple of reasons.

First, instead of clogging the drain trap on its way to the condensate pump, the condensate will collect in the subslab. To get rid of it, a pro will need to come and pull the line, cement the hole shut, and — yes — install a condensate pump and trap.

Second, terminating an untrapped condensate line in the subslab zone creates a pathway for radon to be drawn into the air stream and delivered directly to the living quarters. Even if radon gas isn't present, air streaming up through the A/C coil can — through a weak venturi effect — create a pressure differential that draws air in through the condensate drain and blocks condensate from flowing out. The condensate will overflow the drain pan and spill down onto the furnace heat exchanger, shortening its life considerably.

Because condensate drain traps often clog, a close inspection should be a routine part of an annual service agreement. It's not hard to pinpoint problems in the condensate system: If the condensate pan under the coil is full, it's not cracked. If the condensate pump is not overflowing, it's either working properly or nothing is getting to it from the AC pan. To test the pump, pour enough liquid into the reservoir to trip its float switch and observe how well it pumps. If the pan is overflowing and the pump is working properly, the drain is clogged and must be cleared.

Dave Yates

A clear bend and access ports make this condensate trap easy to inspect and clean.

To make inspection and cleaning easier, we typically include an access point at (or near) the condensate trap. We also like to install condensate traps with clear see-through bends, an easy access port, and a flexible brush to facilitate cleaning, such as the EZ-Trap EZT-110 (see photo; 800/324-7832, airtecproducts.com). Such traps cost about $17 compared with about $15 for a plain-Jane PVC trap.