Fiber vs. Wire Mesh Reinforcing

Q. *Which is better at preventing cracks in concrete slabs: fiber reinforcement or wire mesh?*

A. *Robert Shuldes responds:* Neither fiber mesh nor wire mesh will guarantee no cracks. In fact, a concrete slab will always crack as it shrinks during curing. By placing control joints at the proper spacing, you can limit where those cracks occur (see table of recommended joint spacing). If, however, a crack occurs where you did not expect it, wire mesh is better at keeping the crack tight and preventing it from opening up further.

Maximum Spacing of Slab Control Joints

Slab thickness	Slump 4 to 6 in.		Slump less than 4 in.
	Aggregate less than 3/4 in.	Aggregate 3/4 in. and larger	Aggregate 3/4 in. and larger
4 in.	8 ft.	10 ft.	12 ft.
5 in.	10 ft.	13 ft.	15 ft.
6 in.	12 ft.	15 ft.	18 ft.

Source: Portland Cement Association

__Robert Shuldes__, P.E., is an engineer with the Portland Cement Association.

Pressure-Washing Before Painting

Q. *Is it a good idea to pressure-wash wood siding before painting? It seems like this would drive a lot of water into and behind the siding — water that might still be present when the paint is applied. And what about pressure-washing decks?*

A. *James Benney responds:* Pressure-washing is a good way to remove dirt and loose paint, but you must use the pressure-washer carefully. Add a mild degreaser such as TSP to the water, and wait a day or two for the walls to dry out before applying paint. Many modern latex paints actually allow moisture to breathe out through their dried film. If using oil paints or stains, let the surface dry for an extra day or two before application. The same holds true for decks.

Remember that it is easy to do a lot of damage in a hurry with a pressure-washer, especially to wood siding and decks. Improperly handled, a pressure-washer can gouge soft wood, drive water into the interior of buildings (staining walls and ceilings), break glass windows and light fixtures, and injure the operator or someone nearby.

When pressure-washing wood siding that has peeling paint, it is important to let the entire surface dry and then scrape by hand. This is because the moisture will also start to lift the paint around the paint that was peeling. You don't want to paint over this compromised surface, because it will be the first thing to fail.

In California, all deck stains and sealers have been reformulated to meet tough new pollution standards, and this has affected surface preparation. Many manufacturers now recommend that decks be carefully pressure-washed in order to remove all of the previous finish and to open up the pores of the wood to accept the new sealer. Then look forward to repeating the process every couple of years.

__James Benney__ is a member of PaintCraft Associates, a guild of finishing experts in the San Francisco Bay area.

Unventilated Crawlspaces

Q. *Since 1983, we have been using unvented crawlspaces under many of our energy-efficient housing projects. Our county has recently hired a new building inspector who is unfamiliar with this building practice and can find no provisions for it in the BOCA code. He would like us to provide evidence that unvented crawlspaces are sound building practice in our climate.*

We build in a 9,500-degree-day climate. Our crawlspace construction includes 2 inches (R=10) of rigid foam insulation on the outside of the foundation from footing to subfloor, a continuous 6-mil poly ground cover sealed at the joints and the outside wall, and R-19 batts in the floor joists. We have inspected most of these systems over the years and have found no evidence of wood rot or crawlspace moisture problems.

What is the latest building science information on unvented crawlspaces, and how is it integrated into building code?

A. *Paul Fisette responds:* As your own experience suggests, unvented crawlspaces pose no real problems — as long as there isn't excessive moisture. In your case, you have provided a continuous

sealed vapor barrier across the crawlspace floor and, I would guess, proper foundation drainage on the outside.

Nevertheless, you still have two code hoops to jump through: the *Model Energy Code* and the BOCA code. Unfortunately, in this case, the two codes don't necessarily jibe.

The *Model Energy Code* tells you how much insulation you need and where and how to use it to define the thermal envelope that protects the "conditioned space" in a home. (To qualify as conditioned, the temperature within the space must be maintained at 50°F or higher.) The 1995 *MEC* (602.2.5) allows for an unvented crawlspace as long as the perimeter insulation meets a specified value. However, your design appears to define the thermal envelope twice. You should insulate either the floor of the living space or the walls of the crawlspace, but not both. If you remove the R-19 batts from the crawlspace ceiling and upgrade the exterior foam as needed, you could convert your "unconditioned" crawlspace into "conditioned" space, and treat it like any other conditioned space in the house where venting is not required.

But then there's the BOCA code. The bottom line is, unvented crawlspaces are not allowed under BOCA. Section 1210.2 treats crawlspaces as "special spaces," and requires that they be ventilated by either natural or mechanical means.

Still, given your track record, you might be able to convince your inspector to treat your conditioned space the same as a basement, which would typically not require any special ventilation measures. If the inspector disagrees, you still have a few options. You can get an engineer to review your plan, deem it acceptable, and stamp it to certify that it will perform as intended. This seems like the most practical approach. You could also install a mechanical exhaust system in the crawlspace that is governed by a humidistat. This may satisfy the code, but using an exhaust fan in the crawlspace could draw moisture and radon into the crawlspace. And lastly, don't forget that you have the right of appeal. You can petition your state building officials to review the code as it relates to your specific case. Refer to the code commentary (your code official might have this), which discusses the line of reasoning that went into the development of this particular code provision. If you can prove that your building system works and does not violate the intent of the code, you have a shot at gaining an approval.

Paul Fisette *is director of the Building Materials and Wood Technology program at the University of Massachusetts in Amherst.*

GOT A QUESTION? Send it to On the House, *JLC*, 932 West Main St., Richmond, VT 05477; or e-mail to *jlc@bginet.com*.