

Spalling Concrete Floors

Q. *Here in Minnesota, many garage floors suffer from spalling. What causes spalling concrete, and is there any cure?*

A. *Jay Meunier, contracting specialist at S.T. Griswold and Co., a ready-mixed concrete supplier in Williston, Vt., responds: I am not aware of any cure for spalling slabs. Spalling can be caused by poor weather conditions during finishing, improper finishing techniques, or damage from de-icing salts.*

Spalling slabs are more common in climates with frequent freeze-thaw cycles. Such climates require the use of air-entrained concrete (concrete with small bubbles of air to provide room for expansion when moisture freezes). Assuming that air-entrained concrete was used, most spalling problems can be traced to errors during the pour. Either the slab dried too quickly, or the concrete slab was worked too early, trapping the bleed water just below the surface.

When a slab is poured on a hot, windy day, it can dry too quickly. When that happens, some workers apply small amounts of water to the surface of the concrete to get the cream back to a workable condition. This reduces the strength of the concrete surface. The weaker surface layer can later spall when moisture freezes and pops the cream.

If the slab is worked too early, bleed water can be trapped in the concrete, since the concrete just below the cream on the surface has not yet set up. A weak layer in the concrete will form where the bleed water was trapped. Again, when the slab later freezes, the concrete can pop along the line at the weak layer.

Choose a concrete contractor with a reputation for quality work. Don't pour a slab that is open to the weather on a hot, sunny, windy day. Finally, always apply a curing-sealing compound to allow the slab to cure more slowly and seal the top from contaminants like road salt.

Stripping Interior Paint From Carved Moldings

Q. *I need to remove several layers of interior paint from elaborate egg-and-dart moldings in a historic house. What is the most efficient way to proceed?*

A. *John Leeke, a preservation consultant from Portland, Me., responds: First, do some tests to determine what paint removal methods will work best on the particular paint buildup you face. Heat methods are quite efficient, but because of the risk of fire, they should not be used unless the casings can be removed to a workshop. In that case, a hot-air gun or radiant lamp is used to soften the paint, which is then removed with special scrapers.*

If the casings must stay in place, most chemical strippers eliminate the fire hazard but introduce a new hazard: noxious fumes. Both heat and chemical methods can generate lead-containing chips and dust, which must be controlled to prevent health problems for workers and building occupants. With chemical methods, you must work slowly to prevent damage to the moldings. Highly aggressive and abrasive paint removal methods will round off the corners and edges of your carvings. The chemicals will begin to attack the wood or plaster of the casings, softening it and making it more susceptible to damage. Test at least three different methods or chemicals in small patches to determine which will work best.

When I recently removed paint from some egg-and-dart moldings that stayed in place, the method that worked best was chemical stripping. I used a solvent stripper, applying just a little and covering the surface with aluminum foil for a long period until the paint film was softened only a little. I waited until the paint had the consistency of leather all the way through to the substrate. Then

I carefully lifted it away with special scrapers. I custom-ground the scraper blades, using a Dremel tool. Starting with the Embee Molding Scraper no. 1240 with five interchangeable blades (Embee Corp., 800/228-9245), I ground the scraper blades into curves to match the curves in the carvings. I also used sharp wood-carving chisels to "carve" the softened paint film out of the deep recesses of the carvings.

Fall Protection Criteria

Q. *Your May 2001 article "Fall Protection Update" says that OSHA Standard 29 CFR 1926 requires fall protection for anyone working above 6 feet. Here in Washington state, I understand that the standard applies when there is a 10-foot fall potential. What accounts for the discrepancy?*

A. *Steve Cant, federal-state operations manager at the Washington Department of Labor and Industries, responds: You are correct that the fall protection standard used in Washington differs from the OSHA standard. The State of Washington, like 26 other states and territories, is authorized by OSHA to operate a state plan for occupational safety and health. In fact, Washington had a state-operated program long before Congress passed the OSHA legislation. State plans are required to be as effective as any applicable OSHA standards, although they are not required to be identical.*

Unlike the OSHA standard, Washington's fall protection standard relies on a "firm 10-foot" rule applied throughout the construction industry. The federal OSHA standard includes a range of requirements, depending on the type of construction activity involved; it even allows employers to declare that fall protection is not readily feasible in cases where the State of Washington requires it to be implemented. Washington has enforced the 10-foot fall protection

requirement in residential construction for more than ten years. In combination with requirements for walking-working surfaces at 4 feet, and special precautions above 6 feet, the consistent requirement for using fall restraint devices above 10 feet has proven to be an easily understood and applied alternative to OSHA's standard.

Venting a Porch Roof

Q. *I'm building a porch with a hip roof and a solid ceiling. Without soffit vents or roof vents will the roof get hot enough to shorten the life of the asphalt shingles? Are there any other reasons to vent a porch roof?*

A. *Bill Rose, architect and building researcher at the University of Illinois in Urbana-Champaign, responds:* I would expect the overall performance of a vented porch roof and a porch roof without vents to be about the same. I advise you to look at porch roofs in your area to see what the local practice is, and to check with building code inspectors and follow their direction.

The joint where the top of the porch roof meets the wall needs to be flashed well, and most of the vent details for that look to me like they might leak water under some conditions of rain and wind. Soffit vents have much less risk of water entry.

People have strong and differing opinions on whether roof venting affects shingle life. Research on the topic has shown that venting will cool shingles by a bit, but no one really knows whether it will enhance the shingle service life, by how much, what the service life really is, or how it is quantified.

Underlayment Orientation

Q. *Should underlayment for resilient tile be installed perpendicular to the joists, like the subfloor, or parallel to the joists?*

A. *Corresponding editor Paul Fisette responds:* I would install the underlayment panels perpendicular to the joists, the same direction as the subfloor. It is a good idea to stagger the joints — both the end and edge joints — by at least 6

inches. Most handbooks do not require that you “hit” the underlying joists with the underlayment. Personally, I prefer to have the end-joint hit a joist, so I would offset the ends of the panels by 16 inches.

APA—The Engineered Wood Association has a good publication called *The Design/Construction Guide: Residential & Commercial* that has a lot of very good information about many floor, wall, and roof applications. The publication addresses recommended installation details, including nail spacing, for the installation of underlayment. To order the guide, call APA at 253/565-6600.

GOT A QUESTION? Send it to On the House, JLC, 186 Allen Brook Ln., Williston, VT 05495; or e-mail to jlc@bginet.com.

