Substrates for Tile Countertops

Q. *Can countertop tiles be installed directly to a plywood base?*

A. *Michael Byrne responds:* If the tiles in question will be used to cover a serving counter that is normally dry, then they can be set directly over plywood with an epoxy mortar or an organic adhesive. But if a sink is part of the installation, plywood should not be used as the base for tiles. The American National Standards Institute (ANSI) specification for tile characterizes plywood as dimensionally unstable and not ideal backing for ceramic or stone tiles. Nevertheless, many thinset mortar manufacturers produce tile adhesives specifically for use with plywood.

In my work, if plywood is specified in plans and must be used as the base for tiles, I get the architect or GC to include a waterproofing membrane. I recommend either a sheet membrane, such as NobleSeal TS (The Noble Co., P.O. Box 350, Grand Haven, MI 49417; 616/842-7844), or a trowel-applied membrane, such a Laticrete 92-36 (Laticrete International, One Laticrete Park North, Bethany, CT 06525; 800/243-4788).

A better approach than using plywood, however, is to use cement backerboard, which is made specifically for tiles. Cement backerboards provide a tough base for ceramic or stone tiles, and are unaffected by water or moisture.

For moderate protection against moisture penetration, the backerboard can be laminated directly to a plywood base with latex-modified thinset mortar. For a commercial or active residential kitchen or bathroom countertop, however, I recommend combining the backerboard with a waterproofing membrane as the base for the countertop tiles.

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Nailing Joist Hangers

Q. *Do you need to put a nail in every joist hanger hole? And do you have to use special hanger nails?*

A. *David Utterback responds:* The short answer is yes, you want to have a nail in every hole. It's the shear and the withdrawl resistance of the nails that carry the structural load, and joist hangers are sized with a specific number of holes to carry specific load ranges. Typically, wider dimension members carry heavier loads, so deeper joist hangers have more holes in them for more nails.

Just as important is using the right type of nail. I can't count the number of houses I've been to that have box nails, 8d galvanized nails, even roofing nails, instead of the common nails recommended by the manufacturer and required by code.

All hanger manufacturers have specific nail recommendations. Typically, the least you can use for a single joist hanger is a 10d common. The short joist hanger nails are also 10d nails, and they can be used for single joist hangers.

When it comes to double joist hangers and beam hangers, however, you need a full-length 16d common nail. When you're hanging a beam, you won't be hanging off a single member, so you don't have to worry about a full-length nail sticking out one side.

Don't use box nails or roofing nails, and don't substitute 16d sinkers for 16d commons. You can use 16d *sinkers* only in place of 10d *commons*. ■

David Utterback, of the Western Wood Products Association, provides technical information and gives building code seminars throughout the country.

Got a question about a building or renovation project? Send it to On the House, JLC, RR 2, Box 146, Richmond, VT 05477.