On the House

Grounding Steel Studs

Q. ***Are there any special requirements for electrical grounding when using metal studs?***

A. *Redwood Kardon responds:* Wherever steel studs are used to support NMC cable (the plastic-jacketed cable commonly used in residential construction), there is the potential for the framing to become energized. Metal electrical boxes or metal equipment that might be attached to steel studs must always be grounded, which effectively grounds the studs. When plastic device boxes are used, I recommend installing a bonding jumper to the steel frame. This jumper should be sized to match the highest-rated breaker that feeds the specific section of wall. In some areas, the electrical inspector may require a bonding jumper for steel boxes as well.

While the *National Electric Code (NEC)* does not specifically address the question of grounding a steel frame in residential construction, Section 250 of the *NEC* contains two citations that mention "structural metal frame of a building" as applied to large steel structures. Section 250-58a says the metal frame must not be used as the equipment grounding conductor for alternating-current equipment. The intent here is to make sure that any electrical faults are directed to the equipment grounding conductor — not through an unreliable path like the steel beams or studs.

Section 250-81b says the metal frame must be part of the Grounding Electrode System (GES) when the frame is intentionally grounded. The GES primarily provides an alternate path for external voltages (lightning and utility surges) so they do not find their way through the structure. In residential construction, steel studs are often used in conjunction with wooden laminated beams or treated wood mudsills, both of which act to isolate the steel frame. But if the entire structure is framed in metal and lightning is a significant threat, then the structure should be effectively bonded to the GES. (For more information on lightning requirements, refer to National Fire Protection Association publication 780-1992 [ANSI] and check with your local jurisdiction.)

Redwood Kardon is a building inspector in Oakland, Calif.

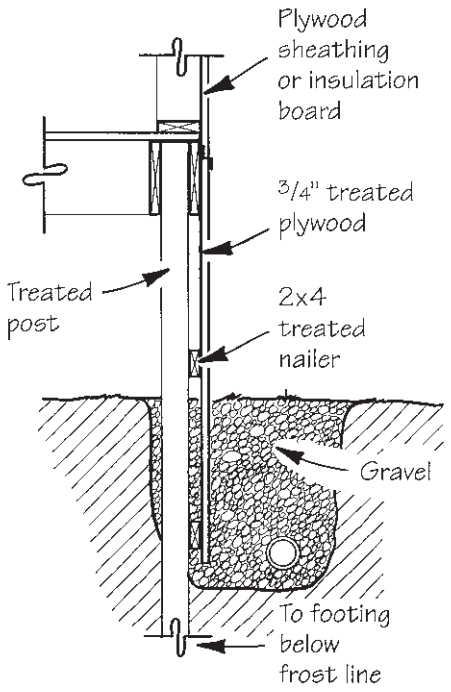
Skirts for Pier Foundations

Q. ***What's the best way to build a skirt around an addition that's built on piers or posts?***

A. *David Bowyer responds:* Our company has built many additions on wooden posts and concrete piers, and we've developed a simple technique to close off the open area between the floor system and the ground. We install a pressure-treated plywood skirt that matches the thickness of the wall sheathing above (see illustration). The top edge of the plywood skirt is nailed to the rim joist; the lower portion extends about 1 foot below grade and is fastened to a treated 2x4 nailer that is held a few inches above the ground. The plywood can be sided to match the walls, or parged (over wire lath) to simulate the look of a masonry foundation.

We've never had a problem using this approach in our area of Indiana, where the frost line is 3 feet and local soils drain well. In colder regions with heavy clay soils, it would be wise to surround the buried portion of the plywood skirt with gravel, and place a drain to daylight in the bottom of the trench.

Plywood Skirt Board



This simple skirt works well for room additions on wood posts or concrete piers. In heavy soils, good drainage prevents frost heaves.

No matter what your local conditions are, check in with your building official for approval of this post-and-skirt foundation system before breaking ground. (For more on this topic, see "Post-and-Pier Room Additions," 7/94.) ■

David Bowyer is designer and sales manager for Peacock & Co., a South Bend, Ind., remodeling firm.

Got a question about a building or renovation project? Send it to On the House, *JLC*, RR 2, Box 146, Richmond, VT 05477; or e-mail to *jlc@bginet.com*.