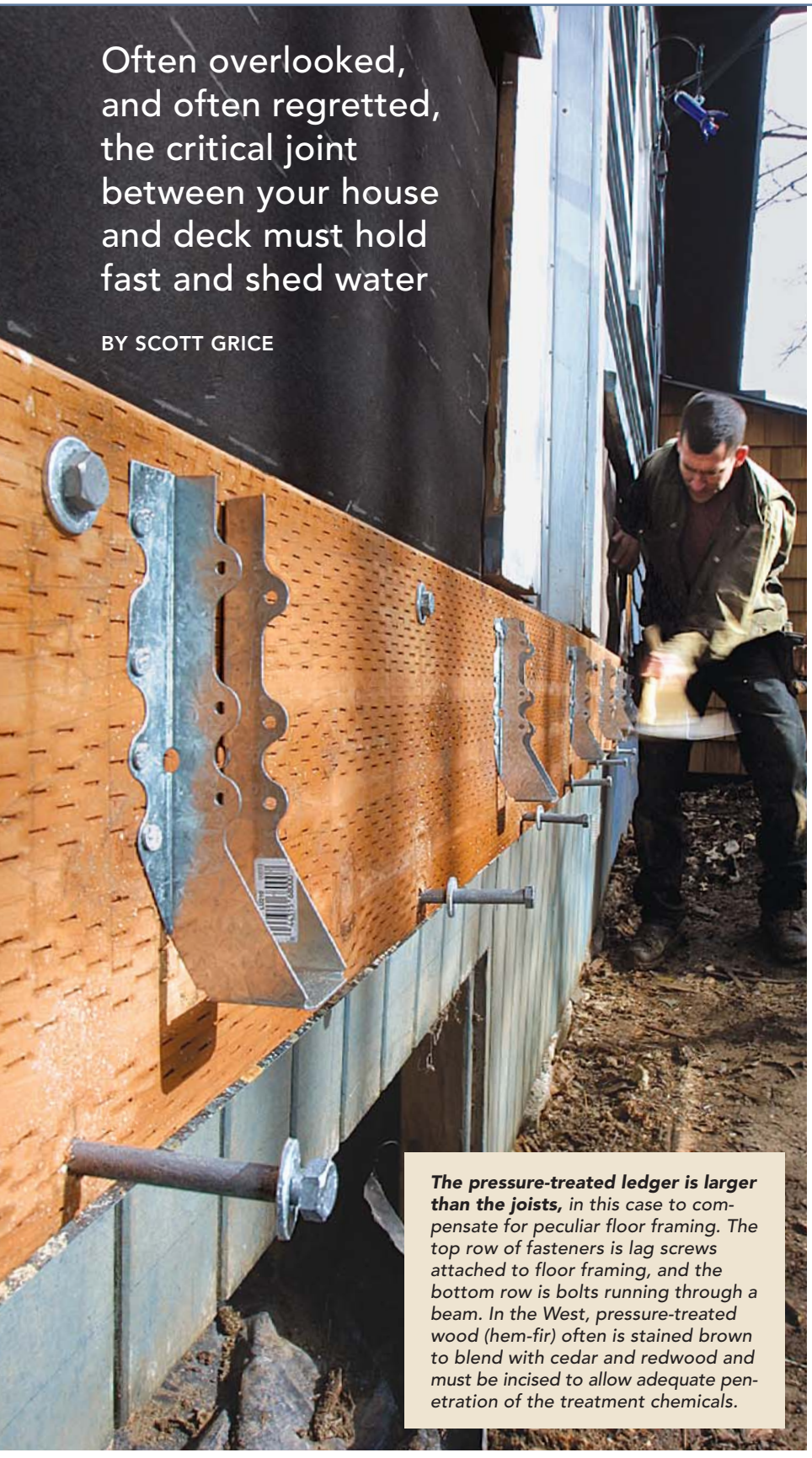
Get Your Deck off

Often overlooked, and often regretted, the critical joint between your house and deck must hold fast and shed water

BY SCOTT GRICE



The pressure-treated ledger is larger than the joists, *in this case to compensate for peculiar floor framing. The top row of fasteners is lag screws attached to floor framing, and the bottom row is bolts running through a beam. In the West, pressure-treated wood (hem-fir) often is stained brown to blend with cedar and redwood and must be incised to allow adequate penetration of the treatment chemicals.*

Whether it's used for barbecuing or for relaxing in a hot tub, the deck, by my estimation, is the best room of the house. If built the wrong way, though, this asset quickly can become a liability. More often than not, the catalyst for this transformation is a poorly detailed ledger board, usually in the form of bad flashing.

Proper detailing requires two things: selecting the right hardware to attach the ledger to the house; and adequately weatherproofing the house/ledger connection.

A ledger supports and stabilizes a deck

Because it supports floor joists, the ledger carries much of the deck's load. Its connection to the house transfers this load to the foundation while providing stability. Because the connection is usually a shear load, the fasteners must be strong and well anchored to the house.

Through bolts, such as hex or carriage bolts, are the best choice for anchoring the ledger because they won't strip out of the wood as lag screws might. But often, due to inaccessible framing, lag screws must be used. As long as they're installed with care (drawing, facing page), lag screws work fine. You may want to talk with the building inspector, though. The International Residential Code says, "Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting."

Regardless of which fasteners you use, be sure that they provide a suitable amount of corrosion resistance to the new arsenic-free pressure-treated wood (*FHB* #160, "Pressure-Treated Wood: The Next Generation," pp. 82-85, online at www.finehomebuilding.com).

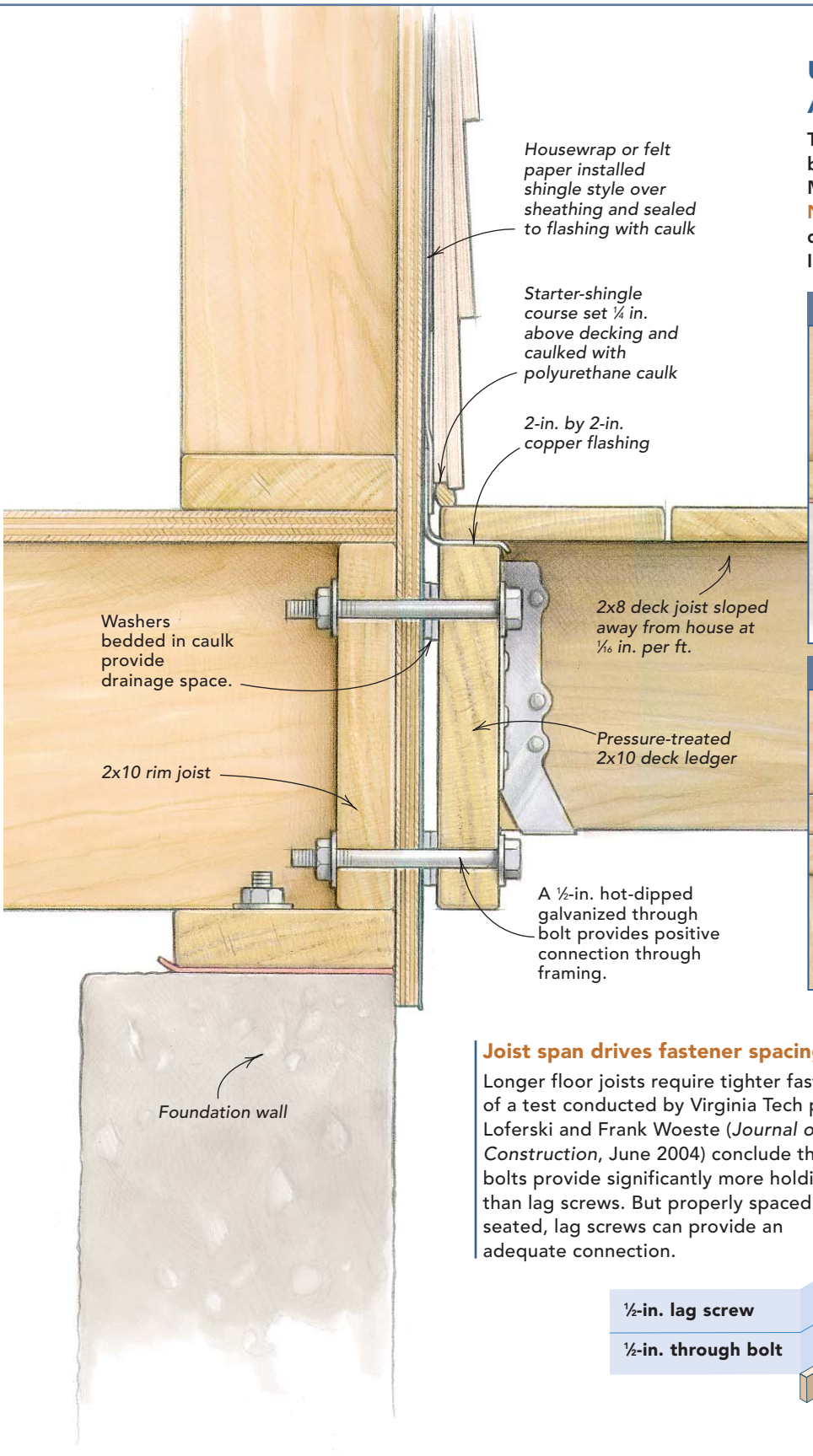
Don't let the ledger rot the walls

In Portland, Ore., we receive an average of 37 in. of rain every year; the rain here is persistent. If there's a hole in the siding, rainwater gets into it. Once in the house, water gets to and rots the framing. Flashing, gravity, and sealants are critical to keeping out water.

Because the thought of leaks disrupts my sleep, I use backups when detailing a ledger. Sloping the deck, caulking the vulnerable joints, and flashing properly should prevent water from getting in at the ledger board. Felt paper above the ledger directs any water that has made its way behind the siding to the 2x2 flashing and out. And if water somehow does make it behind the ledger, there's another layer of paper to protect the house and a space for that water to drain. As with any security program, redundancy is superfluous only when not needed. □

Scott Grice is a framer turned deck and fence specialist in Portland, Ore. Photo by Daniel S. Morrison.

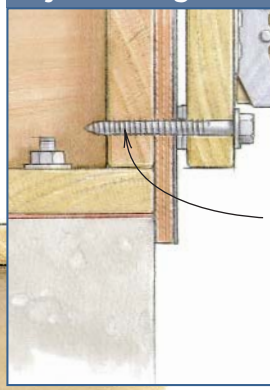
to a Good Start



USE BOLTS, FLASHING, AND AN AIRSPACE

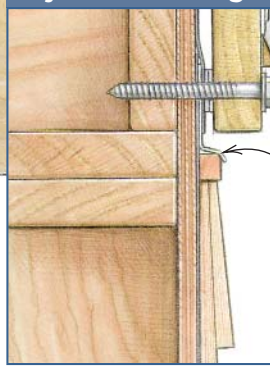
Through bolts are the best choice for fastening the ledger, but they'll do no good if they're fastened to rotten wood. Meticulous water detailing stops rot before it starts.
Note: If you live in a cold climate, you can step the deck down to avoid water problems caused by melting snow. The International Residential Code allows up to an 8-in. step.

If you use lag screws



For the threads to engage the wood fibers fully, the pilot hole should be slightly smaller than the root diameter of the lag screw; for a ½-in. screw, a ⅜-in. hole is about right. And lag screws should penetrate the rim joist fully. The tip doesn't count.

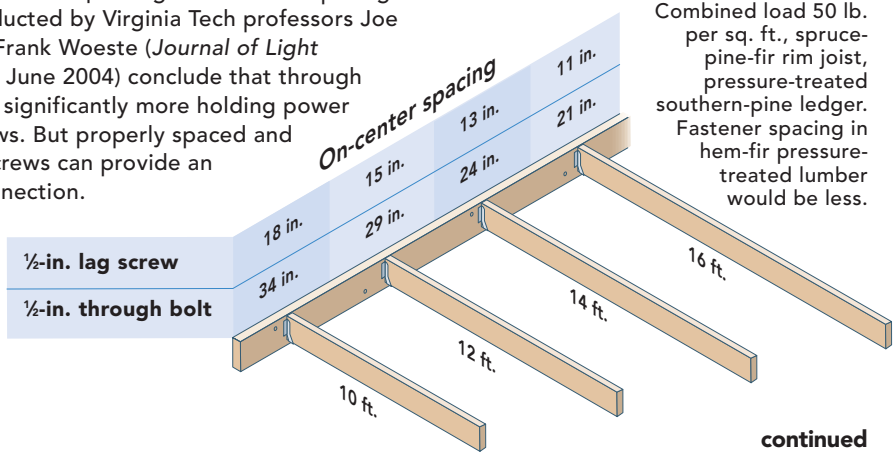
If you have siding below the deck



Add a drip-cap flashing above the siding, and tuck it behind the housewrap. The detail will match that of the flashing above the ledger.

Joist span drives fastener spacing

Longer floor joists require tighter fastener spacing. Results of a test conducted by Virginia Tech professors Joe Loferski and Frank Woeste (*Journal of Light Construction*, June 2004) conclude that through bolts provide significantly more holding power than lag screws. But properly spaced and seated, lag screws can provide an adequate connection.



Combined load 50 lb. per sq. ft., spruce-pine-fir rim joist, pressure-treated southern-pine ledger. Fastener spacing in hem-fir pressure-treated lumber would be less.

continued

Drawings: Bob La Pointe

Reader Response

Comments on deck connections

In the article addressing the house-to-deck connection (*FHB* #164, pp. 74-75), the author shows copper flashing at the connection, supposedly to let excess water weep. But with the sealant (or caulk) installed as shown, there is no way for the water to weep if it gets behind the siding, which we all know it will. The sealant becomes a dam for the water and will rot the siding from the blind side or find its way into the wall itself.

—GLEN MORGENWECK
Houston, Texas

I enjoyed Scott Grice's article on connecting decks (*FHB* #164, pp. 74-75). However, in addition to flashing, gravity, and sealants, he should be aware of galvanic corrosion. I was taught to watch out for placing materials that are more noble (less anodic) physically above those lower on the galvanic scale. Placing a copper flashing right above galvanized hangers and bolts may cause them to corrode because galvanized steel is more anodic than copper. I would suggest making the flashing out of galvanized steel.

—MIKE ORTH
Morgan Hill, Calif.