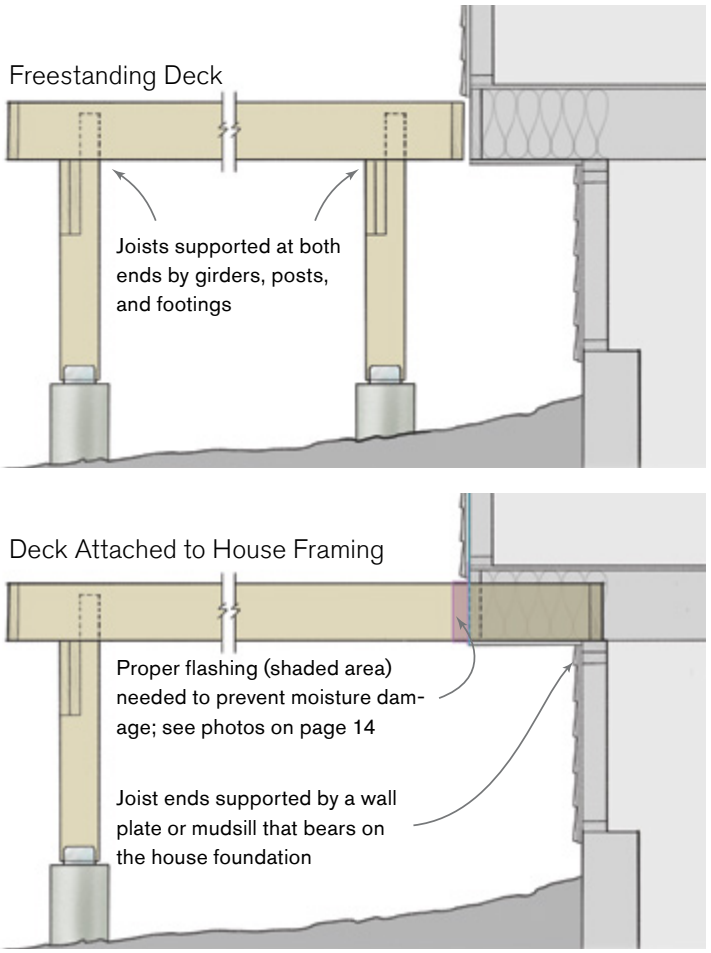
Attaching a Deck to Cantilevered Joists

Q The deck plans I recently submitted for a building permit were rejected by the building department's plan reviewer, with a note explaining that—according to the building code—a deck ledger can't be attached to the rim joist of a house with a cantilevered floor. I've mounted deck ledgers to many cantilevered floors in the past without a problem, and I've never heard of a prohibition in the code about doing so. Is he just blowing smoke? And if he isn't, how can I attach a deck to a house with a cantilevered floor? There are lots of raised ranches where I work, and most have 1-foot to 2-foot cantilevers, so if I can't attach a ledger to the cantilever rim joists, I need to know what other options I have.

Cantilevered Deck Options



CHUCK LOCKHART

A deck ledger cannot be attached to cantilevered house framing. Instead, build the deck either so that it is freestanding (top), or so that the deck joists extend into the house and bear on a wall plate or mudsill (above).

A Mike Guertin, a custom home builder in East Greenwich, R.I., and a regular presenter at Deck Expo, responds: While the language has changed with each code revision, the last three versions of the IRC haven't allowed deck ledgers to be connected to the rim joists of cantilevered floors. Here's what the 2015 IRC (R507.2.2) says: "Band joists attached by a ledger in accordance with Section R507.2 shall be fully supported by a wall or sill plate below." Sure, it doesn't specifically say you can't connect a ledger to a cantilevered rim joist, but that's what it means, since a cantilevered rim joist by nature is not supported by a wall or sill plate. And this isn't something that was added to the building code for no reason. Many deck failures have been attributed to a cantilevered floor rim joist pulling away from the house or shearing downward. Rim joists are just nailed to the ends of the floor joists. Without any direct support beneath a rim joist, the nails alone can't support the load from the deck.

I've used two solutions to build a deck when the house has a cantilevered floor. The simplest is to build a freestanding deck, as shown in the top drawing. Install a beam with posts and footings along the house end of the deck, just as you would at the outside of the deck. The beam can be built into the floor system—say a double or triple rim joist—or it can be placed beneath the deck joists.

If you don't want posts and a beam at the house side of the deck, then you'll need to run the deck joists into the house floor joist system so the ends rest on top of a bearing wall or mudsill inside. The easiest way to do this is to remove the existing house rim joist and soffit and any insulation inside the cavities. Then nail PT deck joists alongside each house joist, making sure the sistered-joist end bears at

least 1 ½ inches on top of the wall plate or mudsill inside. After installing solid blocking between the joists where the old rim joist used to be, you can go ahead and reinstall the insulation and soffit.

Of course, each deck joist is a penetration through the exterior wall, so each will need to be properly flashed to prevent water from getting inside the building. Don't try to seal the siding or trim to the joists with just a bead of caulk, because the caulk will fail after a few years, resulting in sheathing damage and wall decay. Instead, I use flexible self-adhering window flashing tape to make two-piece saddle flashings right in place. It takes only a couple of minutes to flash each joist, and the tape bonds right to the sides of the joists for a long-lasting seal, eliminating the need for caulk altogether.

Before the flashing is installed, the housewrap should already be installed, trimmed around the joists, and stapled tight to the wall to prevent it from pulling away when the flashing tape is applied.

Each joist needs two pieces of flashing tape about 5 inches wide, and long enough to wrap around two-thirds of the perimeter of the joist. For 2x8 joists, for example, I cut 11 ½-inch-long pieces from leftover lengths of DuPont FlexWrap flashing tape. Its release paper is prescored, so cutting through the flashing tape 1 ½ inches to the side of the score line lets me bond the 1 ½-inch portion to the joist while the remaining 3 ½-inch-wide portion of the tape stays protected by release paper **(1)**. I remove the release paper from the 1 ½-inch-wide portion—the joist leg—and bond it to the bottom of the joist and fold it up onto the sides, pressing the tape tight to the joist **(2)**. The tape should reach more than halfway up the sides of the joists, so that later it can be overlapped by the top piece of flashing tape.

Next, I remove the second half of the release paper **(3)** and flare the wall leg

out so that I can bond it to the housewrap around the bottom half of the joist **(4)**. I use both hands to stretch the flashing tape evenly and form an arc around the bottom of the joist without too many wrinkles **(5)**. If tape tries to curl up off the housewrap when it is stretched, I staple the flashing tape to the wall to hold it in place.

Before installing the upper piece of flashing, I make a pair of 3-inch-long diagonal cuts in the housewrap, starting at the top corners of the joist, to create a head flap **(6)**. After removing the narrow strip of release paper from the second piece of flashing tape, I center the tape on the joist and bond it around the top half, so that the upper legs overlap the lower legs of the flashing tape **(7)**. Then I remove the release paper from the wall leg of the flashing tape and flare the tape onto the wall and over the sheathing where the head flap is lifted **(8)**. Finally, I fold the flap of housewrap back down over the flashing tape, and seal the cuts with scraps of flashing tape **(9)**.

Most flashing tapes can't be left exposed to sunlight, so I apply a 1 ½-inch-wide strip of aluminum coil stock around the joist to protect the tape **(10)**. The metal strip also looks more finished than the flashing tape and leaves a crisp line for siding and trim to butt against.

By the way, you mentioned that you've built many decks with ledgers connected to cantilevered floors. It might be a good idea to go back to inspect those decks (and make repairs if necessary) to keep your reputation intact and reduce your liability in the event one does fail. ❖