## Q When faced fiberglass batts are installed, does the fold have to lap over the edge of the stud facing the room?

A *Editor Clayton DeKorne responds:* This is a question we get a lot, partly because of an ad that used to run in the magazine that showed the tab on faced batts being stapled to the wide side of the stud (a method known as inset stapling). Often the question is asked with obvious dissatisfaction at seeing an installation method that is "wrong." But from an insulation manufacturer's perspective (and hence a code perspective), inset stapling is acceptable. It might not be the best way, but it is allowed.

When you inset-staple faced batts, the tab needs to be positioned along the room-side corner of the stud and must lie flat without crinkles or buckles. In the worst case, installers push the batt into the cavity so they can get a straight swing on the tab with a hammer tacker, and they even occasionally catch the facing and leave a tear. That's two strikes against a good insulation installation: compressing the batt and tearing the facing. But taking care to avoid compression and get the tab flat and well aligned on the corner will take more time. Whereas if you have cut the batt correctly to fit the stud bay in the first place, you can fold the tab over the facing edge and smack it down with a hammer tacker without ever risking a gap or tear in the face of the batt. This is reason enough in my book to choose face stapling every time. That is, unless you're using drywall adhesive. It's not common in residential construction, but if you are using drywall adhesive, inset stapling is the only way to go with faced batts.

The readers asking the question have two specific objections to inset stapling that are worth covering.

**Continuity.** First, readers commonly urge that unless you face staple the batts, you will end up with a discontinuous vapor retarder, defeating the purpose of using a faced batt. But, no, in fact, it doesn't matter.

Why? A vapor retarder does not need to be continuous. (Don't confuse vapor retarders with air barriers; the facing on insulation is not an air barrier.) Area is a controlling factor for diffusion, which is what vapor retarders are trying to control. If 90% of the area is intact, the material is 90% effective at the perm rating for the facing. (That's not the case with an air barrier, for which pressure is a controlling factor.)

**Convective looping.** Another common objection is that inset stapling leaves small, triangular channels of air at both edges of stud bays that can siphon off energy in a "convective loop." While this may sound improbable, it is one of the possible convective heat flow paths within wall cavities. John Straube explored this in detail in 2007 in the Building Science Corporation paper "Thermal Metrics for High Performance Enclosure Walls: The Limitations of R-Value." Convective looping within a wall can siphon off heat if, for example, a heated interior warms the drywall, which then radiates into the wall cavity and warms the cavity air. If that air can move freely up the cavity, the warmed air will rise. If there is a gap at the top of the batt that allows the air to loop over the batt to the cold exterior, the air will give up its heat to the exterior and begin to fall. Then if there is a gap at the bottom, the now cool air will loop back toward the interior and the loop will start all over again. This effectively pumps indoor heat to the outside.

While this is a very real effect, note that in order for this to occur, air must move fully around the batt. According to Francis "JR" Babineau, a building scientist with Johns Manville's corporate research and development arm, testing in a large 8-foot-by-10-foot "hotbox" at Johns Manville showed that measurable heat loss of inset stapled batts occurred only when there were significant installation defects, namely a ½-inch gap at the top and the bottom of the stud bay.

Babineau aptly reframed the question for me: "People often ask, is inset stapling allowed for a Grade I or QII installation?" Here, "Grade I" refers to the installation standards established by RESNET; "QII" is the Quality Insulation Installation standard established by CalCerts that is an accepted method of meeting California's Title 24 insulation requirements. The answer to this new question is that inset stapling is allowed for both a Grade I and a QII installation. But while it's allowed, this has not been accepted without intense debate. In the case of RESNET, the standards development committee only recently issued this interpretation: "If the insulation specified achieves its labeled R-value, while including some amount of reduced thickness for inset staples, Grade I can still be achieved. Compression that exceeds ¾ inch of that 'specified insulation thickness' would result in Grade III."

In short, as long as the inset stapling is the only compression, the insulation passes muster for Grade I. But that means the installation can have zero defects—an unrealistic bar to reach, in my opinion. It seems obvious that face stapling is the right way to go.