

## Q. Cutting Holes in Sheathing

Are there any code restrictions on cutting outlet boxes into the sheathing of an interior alternate braced wall panel?

**A.** *JLC staff responds:* The IRC, in Section R602.10 (which covers braced wall lines), does not make specific reference to holes in any type of a braced wall panel. But there are some real structural limitations to cutting holes in the sheathing that provides bracing on these types of structural walls, and the decision to pierce the sheathing plane should be approached with real caution.

Braced wall lines are required on just about every building to provide resistance to wind and gravity loads, as well as to high-wind loading and seismic forces in areas where these more extreme conditions exist (see “Wall Bracing and the IRC,” *Coastal Contractor* magazine, July/August 2006). There are many ways to provide the required bracing (see IRC Table R602.10, below). The specific type of braced wall panel in question — referred to as an Alternate Braced Wall, or Method ABW in Section R602.10.3.2 — is one alternative to a wider 48-inch braced wall panel. Method ABW relies on sheathing, fastened to a specific schedule, to transfer loads to required hold-







downs. Any significant hole in the panel would interrupt the load path across the sheathing to the hold-down. The very definition of a braced wall panel speaks to the continuity of an uninterrupted panel. To count toward the total bracing requirement, a sheathed segment has to be tall enough to cover the full wall height and wide enough to satisfy minimum strength requirements. Clearly, windows and door openings (really big holes, in other words) are not allowed in a braced wall panel. But are *any* holes acceptable? If so, how big?

A strict reading of Section R602.10 could lead to the conclusion that no holes are acceptable. But general guidance from the APA/Engineered Wood Association suggests that small holes carefully placed will not have an adverse effect on bracing. APA’s Merritt Kline advises that it is best not to drill any holes in the sheathing of any of the IRC braced wall panel types. However, he says that a 7/8-inch or smaller hole is probably okay. With a small hole, it would be possible to use a direct-mount shallow box for light fixtures. Or you could fir the wall out for shallow outlets and switch boxes. Holes should be placed near the center of the wall width and away from the panel nailing, Kline says.

Although APA does not recommend drilling holes larger than 7/8 inch into sheathed braced wall panels, limited tests conducted by the association indicate that small holes up to 3 1/2 inches may have little effect on the performance of bracing methods (see APA Report T2004-54, “The Effect of Construction Tolerances and Constructability on the APA Portal Frame Design”). On the strength of this report, it is conceivable you could convince your local building official to allow single duplex outlets and switches, sparingly placed. Ultimately, though, the decision rests with the local building department, so check with them before the electrician grabs his recip saw.

## Q. Reusing Loose-Fill Cellulose

A blower-door test on an older home I’m renovating shows a need for some serious air-sealing. Unfortunately, a previous owner

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
LIB	Let-in-bracing	1 x 4 wood or approved metal straps at 45° to 60° angles for maximum 16" stud spacing		Wood: 2-8d nails per stud including top and bottom plate metal: per manufacturer
DWB	Diagonal wood boards	3/4" (1" nominal) for maximum 24" stud spacing		2-8d (2 1/2" x 0.113") nails or 2 staples, 1 1/2" per stud
HPS	Hardboard panel siding	7/16" For maximum 16" stud spacing		Wood: 2-8d nails with length to accommodate 1 1/2" penetration into studs at 4" spacing (panel edges), at 8" spacing (intermediate supports)
ABW	Alternate braced wall	See Section R602.10.3.2		See Section R602.10.3.2
PFH	Intermittent portal frame	See Section R602.10.3.3		See Section R602.10.3.3
PPG	Intermittent portal frame at garage	See Section R602.10.3.4		See Section R602.10.3.4

This table from the IRC specifies requirements for various methods of bracing walls based on the type and thickness of the bracing material, the configuration of the structure, and the need for sheathing to transfer seismic or high-wind loads to hold-downs.

*blew about a foot of loose cellulose into the attic without first addressing any of the usual sources of air leaks. Rather than shoveling cellulose out of the way and patching the leaks we can find — possibly missing some problem areas — I'm thinking of having an insulation sub vacuum up all the existing material, then seal the area with a flash layer of closed-cell foam. If we go that route, is there some way to re-use the original cellulose, or would that be more trouble than it's worth?*

**A.** Jonathan Tauer, an insulation contractor in Florence, Mass., responds: There's no problem with vacuuming up and reusing existing cellulose, as long as it's not mixed with lumber scraps, old plaster, or other debris. Insulation suppliers can provide vacuum bags large enough to hold several cubic yards of loose cellulose. The easiest way to fill them is to call in a contractor with a truck set up to install spray cellulose, which ordinarily includes a powerful vacuum used to suck scrubbed-off excess material back into the hopper for re-use. By reconfiguring the output, it can easily be adapted to fill bags instead. Another option is to rent a gasoline-powered impeller vacuum, which is something like a shop vac on steroids. Once the attic has been cleaned out, you can apply the flash coat of foam and blow the cellulose back on top of it.

But unless the attic floor is extremely leaky over much of its surface, that may not be the most cost-effective approach. You can find and seal many leaks from inside the living space by methodically working your way around it with a smoke

pencil while running a blower door. Some problem areas — like vents, chimneys, light fixtures, and partitions — will have to be sealed from within the attic, and that will require some shoveling and sweeping. Such work is no one's idea of a good time,

but because vacuuming out and replacing the cellulose is likely to cost \$1,500 or more, air-sealing may be a smarter use of resources. The key is to test before, during, and after the sealing process to be sure you've actually solved the problem.

## GOT A QUESTION?

Send it to Q&A, *JLC*, 186 Allen Brook Lane, Williston, VT 05495; or e-mail to [jlc-editorial@hanleywood.com](mailto:jlc-editorial@hanleywood.com).