Letters

Advantages of Design-Build

To the Editor:

Thank you for running Andrew DiGiammo's article "Shearwalls for Coastal Homes" (*Practical Engineering*, 2/04), which helps to explode the myth that shearwalls are only needed in earthquake zones. The wind forces discussed in his article exceed any seismic forces that I have ever had to design a residence for, even one within a quarter mile of a major California earthquake fault.

However, Mr. DiGiammo's otherwise excellent article introduces some confusing points that could result in either undersized shearwalls or wasted effort on the part of the builder. First, the "Shear Panel & Hold-Down Schedule" in the article lists some very optimistic strength values for shearwalls. The schedule lists 1/2-inch plywood with 8d nails spaced at 4 inches along the panel edges as having a strength of up to 576 pounds per foot of wall length. The *IBC* and *UBC* both give this wall a strength of only 380 pounds per foot. The schedule also lists plywood glued to the studs and then nailed as described above as having a strength of 688 pounds per foot. The codes do not provide for increased strength based on field application of adhesives, as the quality control is impossible to verify.

Allowable shear strength values for the U.S. model codes come from the APA – The Engineered Wood Association. Perhaps the article was based on local code provisions; if that was the case, citing the local code would have enlightened at least this reader.

Secondly, the article states that anchor rods used to attach shearwall tie-downs should be inserted through snug-fitting holes in the underlying framing. The reason given is that "there's no wiggle room allowed when you're fastening down a shearwall." Tie-downs serve to keep the shearwall from rocking *up and down*; it is the regular sill anchors (such as anchor bolts for a mudsill, or increased nailing for sole plates) that keep the wall from *sliding*. Holes for mudsill anchors should not be oversized. On the other hand, forcing tie-down anchor rods through snug-fitting holes just creates unnecessary work.

Thor Matteson, S.E.
Mariposa, Calif.

Andrew DiGiammo responds: Thank you for your comments. As a design-build company, we provide engineering services for our clients. While the codes include prescriptive fastener schedules like the one you refer to, most codes also allow for alternative performance-based design.

We use the Rhode Island State Code, *which provides several high-wind design methods to choose from, including, for example,* ASCE-7. *Because our projects are custom, our engineer provides a specific structural design for each one. He also includes a conservative increase in strength for the inclusion of construction adhesive, based on field experience as well as on adhesive design data. As design-builders, we are in fact able to verify the quality of the installation because we not only design the structure but also build it with our own crew. The sample schedules shown in the article are accurate.*

(Incidentally, the IBC *shear value of 380 pounds per foot that you mention refers to a weaker grade of sheathing; we use Structural 1 panels, which are listed in the table at 430 pounds. Plus, for anyone designing for wind loads only,* IBC *2306.4.1 allows a 40% increase in the values listed in the table, which applies to both wind* and *seismic loading. This would increase the number to 602 pounds.)*

As for the holes drilled in the plates for hold-down bolts, the Simpson catalog specifies that the hole should be a minimum of 1/32 inch to a maximum of 1/16 inch larger than the bolt diameter — not a whole lot of slop if you were to ask most framers. But more important, we train our carpenters to install hardware accurately, and we don't really want them thinking about the difference between sliding forces and uplift forces. So we install both types of hardware the same way, to the same degree of accuracy, every time. In the long run, the consistency saves time and ensures a workmanlike product.

Save a Few Arrows

To the Editor:

In the March issue, Frank Woeste responded to a question (*Q&A*) about placing 1/2-inch drywall on a ceiling framed at 16 inches on-center, stating that "it doesn't matter if the truss spacing is at 12, 16, or 24 inches. What dictates the truss design is the roof design snow load." Mr. Woeste provides an explanation of load calculations and wood grade in truss design, but misses the point of the question, which is about the *perceived* quality of placing roof framing on 16-inch centers and using 1/2-inch drywall. In this ultra competitive industry, builders and remodelers need to exploit every opportunity to shed unnecessary expenses. Mr. Woeste's accurate response about proper structural evaluation of load is one variable that cannot be changed, but the configuration of the building components can be. We have found that by placing trusses 24 inches

on-center (with proper design load ratings taken into account) and using 5/8-inch drywall, we have saved around 5% in the cost of roof construction. To further reduce our costs, we will use 7/16-inch OSB sheathing with H clips. Our clients perceive the efficiencies of 24-inch on-center framing, we have an adequately engineered system, we both save construction costs, and everyone is happy. Proper detailing is still required, and sloppy craftsmanship will ruin even the best designed system.

We have also found that in our area of high insulation values, 1/2-inch drywall should only be used on 16-inch on-center framing due to the weight of ceiling insulation and the pressure of wall insulation. We've seen too much "pillowing" of the wallboard where 1/2-inch drywall is used on 24-inch spacing. Some builders in our area are framing partition walls at 24 inches with 1/2-inch drywall, and we've seen a lot of popped joints just from the owners leaning against these walls (not to mention the kids).

It is a fine balance to stay competitive, but by "overbuilding" you can differentiate yourself from the competition. We take the high road, but save a few "arrows" in our quiver if the bidding gets tight.

Jim Breidenbach, CGR
Craftsmen Construction, Inc.
Spokane, Wash.

Setting the Record Straight

To the Editor:

In the article "Wood and Steel Deliver Double Price Whammy" (*In the News*, 4/04), I was either misquoted or there was an editorial error. In talking about material substitutions, I would never suggest using 15-gauge pieces doubled up back to back; that should have read "16-gauge or 18-gauge pieces." Anyone who knows LGS (light-gauge steel) knows that 15-gauge is not an option; it would be the same as calling out a 2x7 rafter.

Matt Macarewich
Capistrano Beach, Calif.

KEEP 'EM COMING!

Letters must be signed and include the writer's address. *The Journal of Light Construction* reserves the right to edit for grammar, length, and clarity. Mail letters to *JLC*, 186 Allen Brook Ln., Williston, VT 05495; or e-mail to jlc-editorial@hanleywood.com.