

# LETTERS



## Splicing Engineered Lumber

To the Editor:

The article, "Engineered Beams and Headers" (8/91), presented a good review of new materials in wood. However, two items in the sidebar, "Making Connections," need revision. Beams resting in pockets must be isolated from the concrete so that moisture cannot move from the concrete to the wood beam. Making a treated wood box does not serve this purpose.

A more critical error was in the "splices" paragraph. The author recommends splicing a continuous beam at the points of maximum bending moment. A reasonable estimate of the position of points of zero bending moment is at the quarter spans on either side of the center post. It is at these points that splices can be made with no effect on beam strength. The detail presented reduces the beam strength to one third its normal value.

John Peterson, P.E.  
Corvallis, Ore.

Clayton DeKorne Responds:

Technically, you are right about the optimal splice location, but the practical solution is not so simple. Even the experts don't agree on the best location for splices. One approach is to oversize the beam slightly and place the splice at center-span to ensure there is adequate nailing at the lap. For example, if a splice can't be positioned over the support, Bill Bolduc, manager of Engineering Services at MacMillan-Bloedel, recommends designing the beam with three pieces, when, theoretically, two would be adequate to support the load.

Another approach is to place the splice at the position of zero bending moment on either side of the supporting posts, as you advise. If you choose this path, make sure to provide adequate nailing. Recommended practice calls for a minimum nail penetration in the second member that is equal to eight times the nail diameter. Still, the beam should be oversized to make

up for any variance in the bending moment. The point of zero bending moment can vary, depending on the actual loading of the beam.

In general, you should probably avoid splices whenever possible, which you can usually do with engineered wood. If a splice is necessary, (1) don't position the splice just off the bearing point, which is the point of maximum shear, and (2) make sure you follow the recommended nailing schedule.

As for the beam pocket, several alternate details are given in the article. The one using a treated box would be accepted by all model building codes. The treated plywood sides of the box would retard most of the moisture from the concrete, and if there is enough water to wick up through the 1½-inch treated wood bottom, chances are you'll have more severe problems elsewhere before the beam shows any sign of damage.

## Square Footage Quandary

To the Editor:

Steve Carlson's article, "How Big Is a House?" (9/91), was interesting and helpful, but seemed to raise as many questions for me as it answered:

- I can accept the arbitrary rule that a finished basement, walkout or otherwise, doesn't count in the primary living space. However, if the house is built on a hillside with a stepped foundation and all of the walls of the lower floor are fully framed, wouldn't this bottom floor area now count as primary living space?
- If the above is true, what about spaces with low retaining walls and kneewalls to bring the room walls to full height? How much "below grade" does a room have to be before it ceases to count as primary living space?
- If a workshop or storage room that is part of the house structure is insulated, drywalled, painted, and electrified, but not heated, is it still "unfinished" and thus not counted as primary

space? Does it make a difference whether access is through the house, the garage, or from outside?

- Does the "4-foot" rule for ceiling height in living areas apply to closets also?
- The appraisers' square-footage method "double-counts" the area that stairs and stairwells take up; do most real estate brokers do this also?
- In a living room with an open shed roof that rises from 8 to 16 feet, where the 16-foot wall is common with a full two-story portion of the house, is the square footage contribution of the living room more than just its single-floor square footage?

Some of these questions probably arise from the fact that West Coast houses are often designed differently than those in colder climates such as Carlson's; but the issues have some importance since square footage is often the primary statistic used in comparing (and thus pricing) houses here.

Bruce V. Rodgers  
Pleasanton, Calif.

Steve Carlson Responds:

As noted in my article, the basic square footage figure is, by itself, a terrible measure of either the size or value of a house. But since many people insist on using it that way, it is important that builders, developers, and real estate brokers be reasonably consistent in how they determine square footage. The rules of thumb are pretty clear on some of the questions you raise. On others, judgment calls must be made, depending on the specifics of the structure.

If the lower floor is almost totally at or above grade, and finished in a manner consistent with the rest of the house, you could probably get away with calling it "primary living space." A good test would be whether each side is far enough above grade to accommodate regular living room or bedroom windows, rather than basement-type windows. If not, the space would be considered below-grade, no matter how nicely it serves as actual living space.

If a finished workshop or storage space is structurally part of the main house, and the entrance is from the interior of the house, I'd have no problem rating it as primary living space. Presumably, if you opened the entrance door from the house, the space would be reasonably comfortable year-round. If the lack of direct heating becomes an issue, you can resolve it by putting in a cheap electric heater, whether or not it is used. However, if the entrance is from the outside or through the garage, it generally would not be rated as primary living space.

Closets are treated like all other space in determining square footage. Therefore, when the four-foot rule is used, it is observed in closets, just as it is in any other room.

Every system I've seen for measuring square footage of a full house "double-counts" stairwells and all other spaces that penetrate through an upper floor. If you don't, then you are understating the square footage. This also applies to cathedral foyers. If the height of a structure is sufficient for two full stories, then it is rated as two full stories, regardless of how much of the second story has an actual floor. However, the high side of a cathedral ceiling does not add to square footage. It adds only to the value per square foot.

Repeating for emphasis, none of this makes much sense if your purpose is to measure elbowroom. The rules of thumb do make sense for appraisers, who multiply the number of square feet by the determined value per square foot, and who also calculate the value of parts of the house that are not primary living space.



**Keep 'em coming...** We welcome letters, but they 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, RR#2, Box 146, Richmond, VT 05477.