

Why *more* decks don't detach from houses

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Every year we read stories in the news about decks that have fallen off residential buildings. In some cases this results in serious injury to the people on the deck. Based upon my experience in the field, it is surprising that *more* decks do not fail.

Here are some deck safety basics and some possible reasons why we are lucky.

Deck construction

Although all components of the deck are important for safety, the most common area of failure is the connection of the deck to the house. Most deck framing details show the deck being attached with bolts directly to the floor framing of the house. In the Atlanta area, however, the common method of attaching a deck is to bolt the deck through the siding and into the floor framing of the house. Although this method simplifies the flashing detail at the connection (to keep water out of the house structure), the length of the bolts actually weakens the connection. In fact, using the engineered tables available to us, I rarely see a deck attached properly with the correct size and number of bolts.

Why we are lucky

If it is true that most decks are not properly connected to the house structure, why do so few fall? There are several likely answers to this question.

1) To comply with contemporary codes, deck floors must be constructed to withstand a uniform live load of 40 pounds per square foot. Simply, this means that a 10-foot-by-10-foot deck equals 100 square feet multiplied by 40 pounds per square foot, a capacity of 4,000 pounds. Divide the 4,000 pounds by the average weight of people on the deck, let's say 150 pounds (4000/150) equals a deck that can support about 27 people. In most cases it is rare to have this many people on a deck at one time.

2) Most people tend to congregate near the deck railing, not next to the house. At the railing the deck loads should be transferred vertically to posts.

3) The rated capacity of bolts is usually considerably less than the bolt's actual capacity. This difference compensates for errors that may be made in the installation of the bolts.

Lessons learned

Based upon the above information, it makes sense to use our decks wisely. If you are going to have a large number of people on your deck, think about keeping them from congregating close to the house. If you frequently have large numbers of people on your deck, I recommend having your deck evaluated by a qualified home inspector or registered structural engineer. Although rare, deck failures are potentially dangerous.

Good guidelines for deck construction are available from the manual "Wood Decks: Materials, Construction and Finishing," available from the Forest Products Society (www.forestprod.org, 608- 231-1361).