

Questions & Answers

The editors invite questions on building, renovation and restoration. We also publish reader comment on answers. Send questions and comments to "Q&A," Fine Homebuilding, P. O. Box 5506, Newtown, CT 06470-5506, or e-mail us at fhbqa@taunton.com.

Rafter ties vs. collar ties

With all of the discussion and controversy surrounding the question of collar ties (FHB #137, pp. 24, 26), the 1998 international code does discuss "rafter ties" in section 802.3. But isn't rafter tie just another way to say "collar tie"?

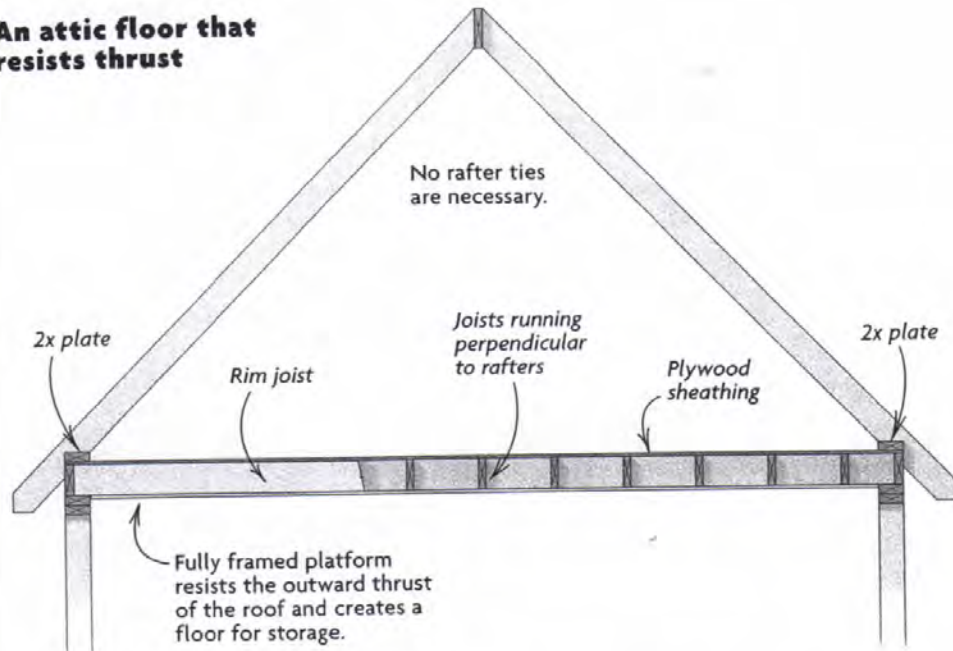
—Darlan Butler, Wakefield, RI

Mike Guertin, a contributing editor to Fine Homebuilding, replies: Collar tie is a colloquial phrase that you usually won't find in construction or engineering documentation even though the words are commonly used among builders, architects and homeowners. The correct phrase as used in textbooks and when specified is *collar beam*.

As I stated in my earlier "Q&A" response, international residential code does not require collar beams. However, in those cases when they are specified, collar beams are usually installed in the upper third of the roof between opposing rafters.

On the other hand, rafter ties are installed between opposing rafters as close to the top plate as possible (drawing below). Common ceiling joists function as rafter ties when they run parallel to the rafters. How-

An attic floor that resists thrust



ever, when ceiling joists run perpendicular to roof rafters, rafter ties should be installed to resist the thrust that the rafters exert on the exterior walls.

Rafter ties amount to an additional framing member that runs above the ceiling joists and that connects opposing rafters. They are generally required every 4 ft., which means that you need a rafter tie only for every other pair of 24-in. o. c. rafters or for every third pair of 16-in. o. c. rafters.

Open attic storage

We are planning to build an addition to our house, and the design of the addition is such that the only practical way to run the ceiling joists is perpendicular to the rafters. Installation of the rafter ties will negate any use of this space for storage. Is there some way of making the addition structurally sound while creating useful storage space in the attic?

—Jake O'Brien, New Milford, CT

Mike Guertin, a contributing editor to Fine Homebuilding, replies: When the ceiling joists run perpendicular to the rafters and when you don't want to have the rafter ties interfering with the attic floor, your best bet is to treat the ceiling joists as an attic-floor system.

After you have framed the walls of the addition in the regular way, install the ceiling joists with a rim joist running around the entire perimeter (drawing above). Next, glue and nail the sheathing over the entire joist deck. Before you install the rafters, nail a 2x plate along the edges of the deck. The heels of the rafters are then cut to sit on the plates. This system is structurally stronger than the standard arrangement involving rafter ties and ceiling joists, and the system should give you a strong-enough floor to accommodate most light storage in the attic.

Rafter-tie placement

