

Q&A

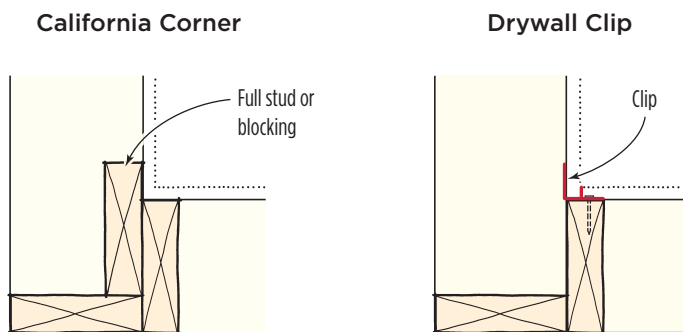
Q. Best Corner Framing

What's the best way to frame outside corners?

A. *Tim Uhler, a lead framer for Pioneer Builders in Port Orchard, Wash., responds:* Most of the time, we frame walls with a "California" corner — just two exterior wall studs nailed together in an L shape, with another backing stud (see illustration, below). Compared with a traditionally framed four-stud corner, this method uses less lumber and provides room for some insulation.

In cases where the corner doesn't have to transfer shear loads between adjoining walls, the IRC allows the backing stud to be replaced with scrap lumber or with metal or plastic drywall clips (R602.3[2], 2006 IRC). Using drywall clips leaves the corner stud bay completely open for insulation, but it also increases the drywaller's labor. For this reason — and to reduce framing waste — we typically use scrap material for the drywall backing at corners and intersections.

Because I frame in an earthquake zone, corner framing on many of our jobs is subject to seismic design requirements, which typically call for doubled end studs or solid 4-by or 6-by corner posts, as well as hold-downs. When this is the case, we follow the engineered design but still try to install backing so as to maximize the insulation in the corner bay.



Q. Concrete Without Steel?

Does the addition of fibers eliminate the need for steel in a concrete-slab basement floor?

A. *Bill Palmer, former editor of Concrete Construction magazine and president of Complete Construction Consultants in Lyons, Colo., responds:* For the last 30 years or so, synthetic fibers made from nylon, polypropylene, and other plastics have been used in low dosage rates of around 1.5 to 3.0 pounds per cubic yard to help reduce plastic shrinkage cracks (the ones that occur immediately

following placement) in concrete. Plastic fibers can also increase a slab's impact resistance.

However, they're ineffective at controlling crack width and location; that's the main purpose of wire mesh, welded wire fabric (WWF), and regular reinforcing steel. But even these metal reinforcements aren't very effective if they're not chaired up properly and end up in the bottom of the slab rather than in the upper half.

Research into polymer fibers and improvements in concrete admixtures have recently led to the development of concrete mixed with much higher dosages of "structural" fibers. Sometimes called macro polymeric fibers, these are much longer (about 2¹/₄ inches in length) and thicker than regular fiber additives, and are added at dosage rates of as high as 30 pounds per cubic yard.

GOT A QUESTION?

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(A more typical rate is 7¹/₂ pounds per cubic yard.) The resulting “high-volume synthetic fiber” concrete has yet to gain widespread acceptance — perhaps because of concerns about workability — but studies show that

it resists cracking better than regular steel-reinforced concrete. So it’s possible that structural fibers may eventually replace WWF and other traditional crack-control reinforcements.

Q. Burying Electrical Wiring In Attic Insulation

I know that knob-and-tube wiring can’t be covered with insulation, but what about BX cable and joist-mounted junction boxes? Are there any restrictions on blowing cellulose insulation into an attic and burying the cable and junction boxes?

A. *Lynn Underwood, a licensed contractor and building code official in Norfolk, Va., responds:* While there are no prescriptive prohibitions against covering junction boxes or electrical cables with insulation, there is always the issue of heat buildup around any electrical device or wiring. Temperature ratings (in degrees Celsius) for various types of conductors can be found in the National Electric Code (Table 310.13, 2005 NEC); unfortunately, BX cable is no longer manufactured and is not listed, but it is similar to AC cable and can generally be assumed to have at least a 60°C temperature rating.

Electrical conductors can’t be used in an environment that exceeds their temperature rating, but actually determining the operating temperature of a conductor is tricky. Factors such as ambient temperature, the amount of heat generated internally inside the conductor, the rate at which this heat dissipates (which can be affected by the presence of thermal insulation), and the presence of adjacent load-carrying conductors must all be taken into account (Article 310.10, 2005 NEC). Understanding these temperature ratings and matching the intent of the building code should be attempted only by a licensed

electrician on a case-by-case basis, but the electricians I’ve consulted agree that it’s safe — under normal conditions — to bury older BX cable in cellulose insulation in an attic. Still, depending on the installation’s location (Arizona vs. Maine, for example), on whether or not the attic is vented or unvented, and on whether some of the junction boxes also contain light fixtures (which generate heat), installing insulation around existing wiring could violate one of these NEC performance standards.

Buried junction boxes can be an issue too. The NEC says that a junction box must be accessible “without removing any part of the building” (Article 314.29, 2005 NEC). In my opinion, blown-in insulation is neither part of the structure nor a finish material, and therefore wouldn’t create a violation. On the other hand, this kind of insulation would tend to obscure the location of such a box and make it difficult to find, thus making it violation of the spirit of this section.

If your inspector is concerned about concealment, a reasonable compromise would be to mark boxes and wiring with placards that are clearly visible after the insulation is installed.

Q. Gluing a Glulam

For one of our projects, we need to make a solid wood attachment to a glulam beam that seems to have a special finish on it. Should we use a particular type of glue to make the connection?

A. *Mark Stypczynski, manager of technical development at AkzoNobel/Liquid Nails in Strongsville, Ohio, responds:* Two types of sealers meet the American Institute of Timber Construction standards for protecting

glulams during transit, storage, and construction (AITC 111-05). One is a translucent penetrating sealer, and the other is a nonpenetrating coating. If your glulam is protected by a penetrating sealer, use a subflooring adhesive

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that meets either APA specification AFG-01 or ASTM D-3498 (adhesive manufacturers will list one or both of these standards on their product label).

Some of our products that meet these requirements are Liquid Nails Subfloor & Deck Construction Adhesive (product codes LN-602 and, for the low-VOC version, LN-902) and Polyurethane Construction Adhesive (LN-950). Other manufacturers — such as Henkel/OSI, Franklin, and TACC — also have subfloor adhesives that meet the standards.

If your glulam has a nonpenetrating coating (it will

be obvious on inspection), the coating could potentially interfere with adhesion. If your glulam manufacturer doesn't list a specific adhesive in its literature, contact an adhesive manufacturer for a recommendation. Glulam manufacturers typically know what type of coating is used on their product — but not necessarily what adhesive will work with that coating.

Keep in mind that regional differences in air-quality regulations (including limits on VOCs) may preclude the use of certain adhesives in some areas.

Q. Flexible Fittings and Plumbing Codes

No-hub rubber couplings with band clamps on the ends are handy for making all sorts of plumbing connections, but are there limitations on where they can be used?

A. *Mike Casey, a licensed plumbing contractor and co-author of Code Check Plumbing, responds:* Often referred to as Fernco fittings (after the name of a major manufacturer), flexible neoprene and elastomeric PVC couplings are available in dozens of sizes and configurations. They're designed for nonpressure (drain, waste, and vent) applications, and are manufactured in shielded (completely wrapped in stainless steel) and unshielded (stainless band clamps at each end only) versions. They're accepted by a number of codes — including the

Uniform Plumbing Code and the International Plumbing Code — for both above- and below-grade use.

I've installed many of these couplings above and below grade and have never encountered a problem. Be aware, however, that the listings for some of the couplings indicate that use above grade is subject to approval by the local building official. Always use the correct coupling for the pipes you're connecting, and check with your inspector when the coupling is used above grade.