Durable Details for VINYL SIDING

Allowing for expansion and contraction is the key to a trouble-free installation

by George Schambach

Vinyl siding is the highest-volume siding product on the residential market today. The material is relatively inexpensive, readily available, and requires few specialty tools to install. Yet despite the short learning curve, I'm constantly surprised by the number of installers who just can't seem to "get it right."

I work for the fourth-largest siding manufacturer in the country. When our company receives a complaint from a customer, I'm one of the reps who goes out and inspects the work. Often, the customer will point out buckled fascia, loose siding panels, or wavy siding. Over 90% of these problems are because of fastening methods that do not allow the vinyl and aluminum products to expand and contract freely. In this article, I'll explain the methods contractors should use to avoid callbacks.

Level the Playing Field

In most cases, siding should be installed level. On new homes, this is seldom a problem — you just snap a level line around the house by measuring off the foundation sill plate. But older homes can present a challenge. The foundation may have settled, or a cobbled addition may be seriously out of level.

Start laying out courses at the lowest spot on the structure, and use a transit, water level, or line level to establish ground zero. Measure up from this low point, and make a mark that represents the top of the first course of siding. Carry this mark around the entire house, and use a chalk line to connect the points.

Foundations that crowd too far up into the siding can present problems when it's time to apply the siding starter strip. If the foundation wanders away from the siding plane (a stone foundation, for example), a plywood nailing band can be installed to extend a nailing base below the top of the foundation (see Figure 1). To find the foundation high points, measure down from the level layout line.

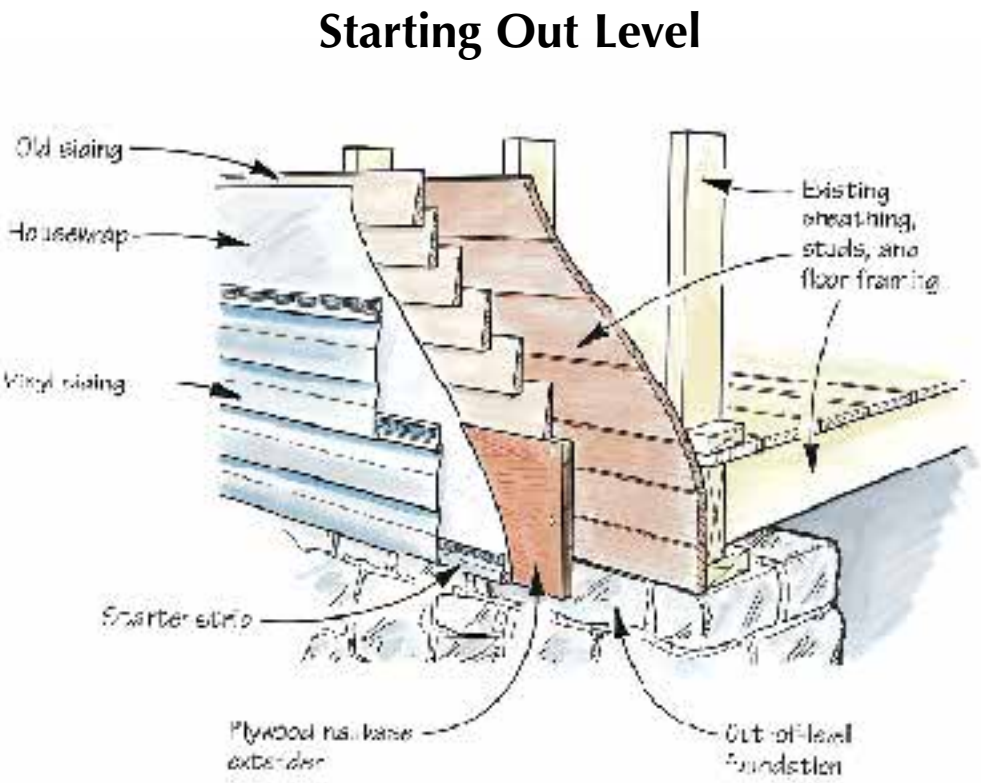

Figure 1. Siding should be installed level. When foundations are out of level, extend the nail base with a piece of plywood that matches the thickness of the existing siding.

Behind-the-Scenes Protection

Think of vinyl siding as more of a weather screen than a weather barrier. Wind-driven rain will make its way behind this screen. In new work, it's important that you carefully apply housewrap or felt paper before installing the siding. Make sure all seams are overlapped and taped, and that door and window openings are detailed properly (see "Making Walls Watertight," 12/95).

When an older home is being resided, the vinyl is often installed over the existing siding. In these situations, it's important to "tighten up" the original siding. This usually involves fastening loose boards and recaulking around windows, doors, and other penetrations. Cosmetics aren't important — the goal is to provide a second line of defense for any moisture that finds its way past the vinyl siding.

Fascia and Soffits

It's a good idea to complete the soffit and fascia work before installing the sid-

Aluminum Soffit & Fascia Details

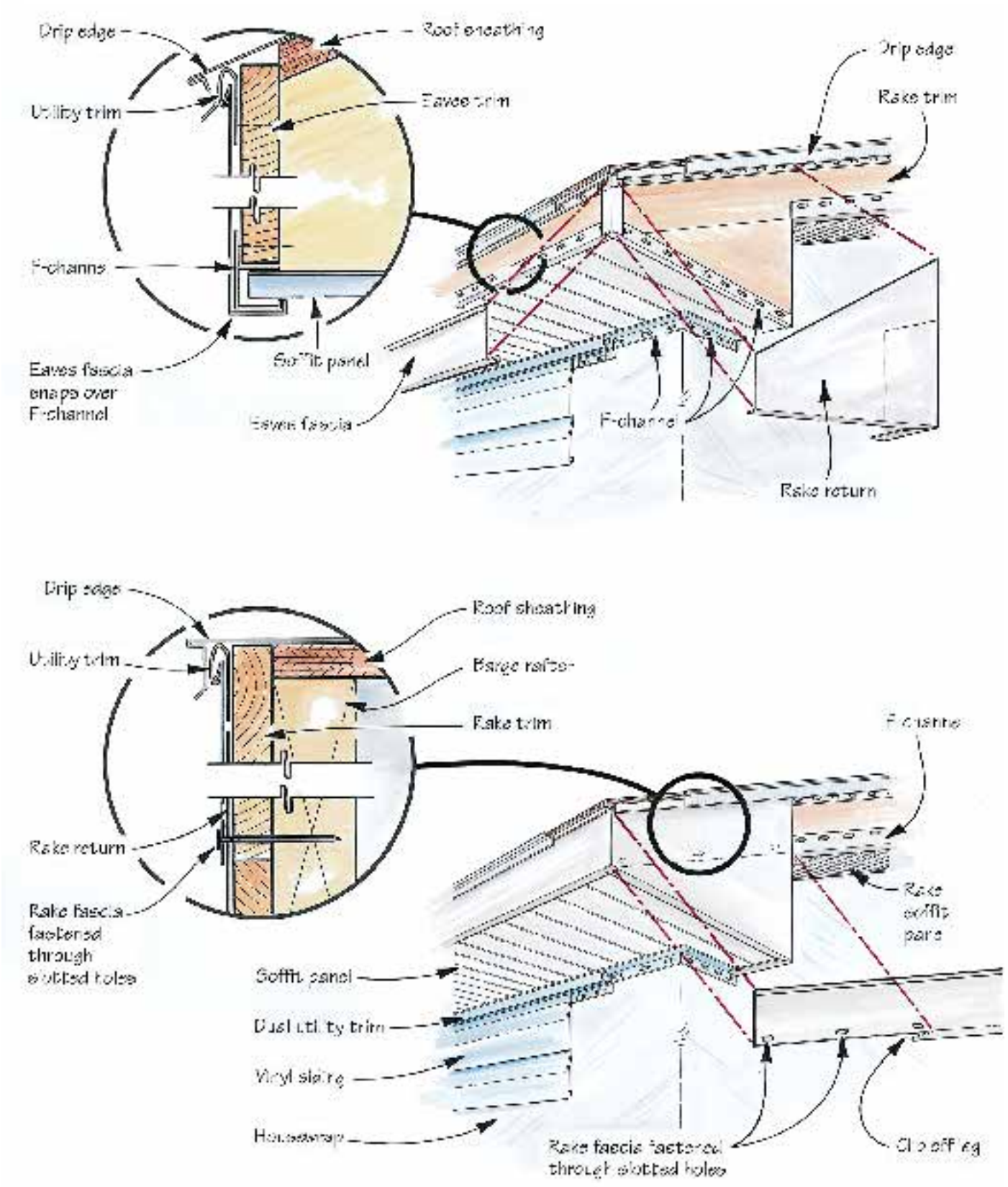

Figure 2. The author prefers aluminum fascia, because it can be site-bent to trim out different rake and soffit configurations. Although small pieces of aluminum (such as the corner insert or the triangular return piece) may be nailed tight, the long lengths of fascia are held in place with trim strips or nails in slotted holes, which allow for movement.

Room to Move

A siding panel that is not pulled up snug in the locking flange may come loose when warm temperatures cause the panel to expand (top). A panel installed in hot weather with the nails driven too tightly will tear when cold weather causes the panel to contract (bottom).

It's essential that vinyl and aluminum products be allowed to expand and contract freely. The photos illustrate what happens if movement is restricted. To reduce the chance of problems, follow these guidelines:

- Think of vinyl and aluminum products as being hung, not fastened, in place. To prevent nails from restricting panel movement, installation literature specifies a 1/32-inch clearance between the nail head and the siding panel. I like to tell installation rookies that they should be able to slip the hook end of their tape measure between the nail head and the siding panel. All it takes is one overdriven nail to create problems.
- Adjust the recommended gapping (typically 1/4 inch) to allow for current temperatures. In extremely cold weather, use a slightly larger gap, since cold panels will be on the short side of the expansion and contraction cycle. Conversely, it doesn't hurt to tighten up the gaps in very hot weather.
- Be sure to place all nails in the center of the nailing slot. A nail shank that bottoms out in the nail slot of an expanding or contracting panel will restrict movement.
- Pull each panel up snug against the locking hem of the previous panel, but do not overtighten. Panels that are pulled too tight can tear when they contract, just as loosely fit panels can pop loose as they expand.
- Fascia runs should never turn the corner. Stop all runs at inside and outside corners and slip a small corner insert behind the fascia to mask the subfascia. —G.S.

ing. Soffit material may be either vinyl or aluminum, but for fascia I prefer aluminum coil stock. It's thinner than vinyl, so joints are less apparent, and it can also be site-formed for a variety of eaves conditions.

Never use nails to fasten fascia. Instead, snap the fascia over the F-channel at the bottom of the subfascia and insert the top in a strip of vinyl utility trim under the roof drip-edge (Figure 2). The fascia material will be held firmly in place, but will still be able to expand and contract.

Punch locking tabs in the top edge of preformed fascia with a snap-lock punch (Figure 3). These tabs prevent the fascia from pulling out of the utility trim without restricting movement caused by changes in temperature. Fascia that is formed on site from thinner coil stock should have a continuous locking hem formed on the top edge.

The lower edge of rake fascia should be fastened to the subfascia with aluminum trim nails driven through slot-punched holes. These slots permit the fascia to expand without buckling.

Many installers mistakenly "turn the corner" by bending the fascia material at a 90-degree angle. Instead, stop fascia runs at inside and outside corners, and tuck a corner insert behind the fascia at these points. The insert provides a "background cover" that prevents the wooden subfascia from showing at the joint.

Soffit panels are held in place by the F-channel at the subfascia and a matching F-channel that's fastened to the wall. Slip the soffit panels into the F-channel slots, and snap the ends together using the locking hem formed into the panels.

Figure 3. Specialty tools are required for a quality vinyl job. Use a snap-lock punch to make tabs in the top edge of preformed metal fascia (left). These tabs prevent the fascia from pulling out of the utility trim without restricting movement. A slot punch (right) makes the elongated nail holes that allow for movement under a nail head.

Hanging the Corners

Install vinyl corner posts at all inside and outside corners. To allow for expansion and contraction, the corner post is hung by placing a nail in the top of the uppermost nailing slot. The balance of the nailing should be in the center of the slots, 6 to 12 inches on center. This allows expansion and contraction to occur at the bottom of the corner post. Hanging the corner post also makes installation easier. I've watched more than one contractor fight with a flopping corner post as they struggled to nail it from the bottom up.

Corner posts are available in 10- and 20-foot lengths. I always recommend using a one-piece corner post. Splices are unsightly and if designed incorrectly, may allow rain to enter.

After the corner posts are installed, measure down from the chalk line snapped earlier, and snap another line that represents the top edge of the starter strip. The starter strip layout line is typically 2 inches above the bottom edge of the first siding course, but the distance will vary depending on the manufacturer. When installing the starter strip, leave 1/4-inch gaps between butting ends and at corner posts.

Running the Siding

Snap the first course of siding panels into the starter strip and fasten them along the top flange with nails driven through the center of the nailing slots. To allow for expansion and contraction, draw the nails up just short of snug (see "Room to Move," page 4). Use corrosion-resistant nails, with heads at least 5/16 inch in diameter (roofing nails, for example). Stagger the end laps and check alignment every five or six courses.

Always overlap panels so the exposed ends face away from main entrances and high-traffic areas. The lap joints will be much less noticeable as people approach the building.

Some installers will try to adjust the panel to an out-of-level condition by pulling one side of a panel up tighter than the other. Don't do this: Over-ten-

Trimming a Window

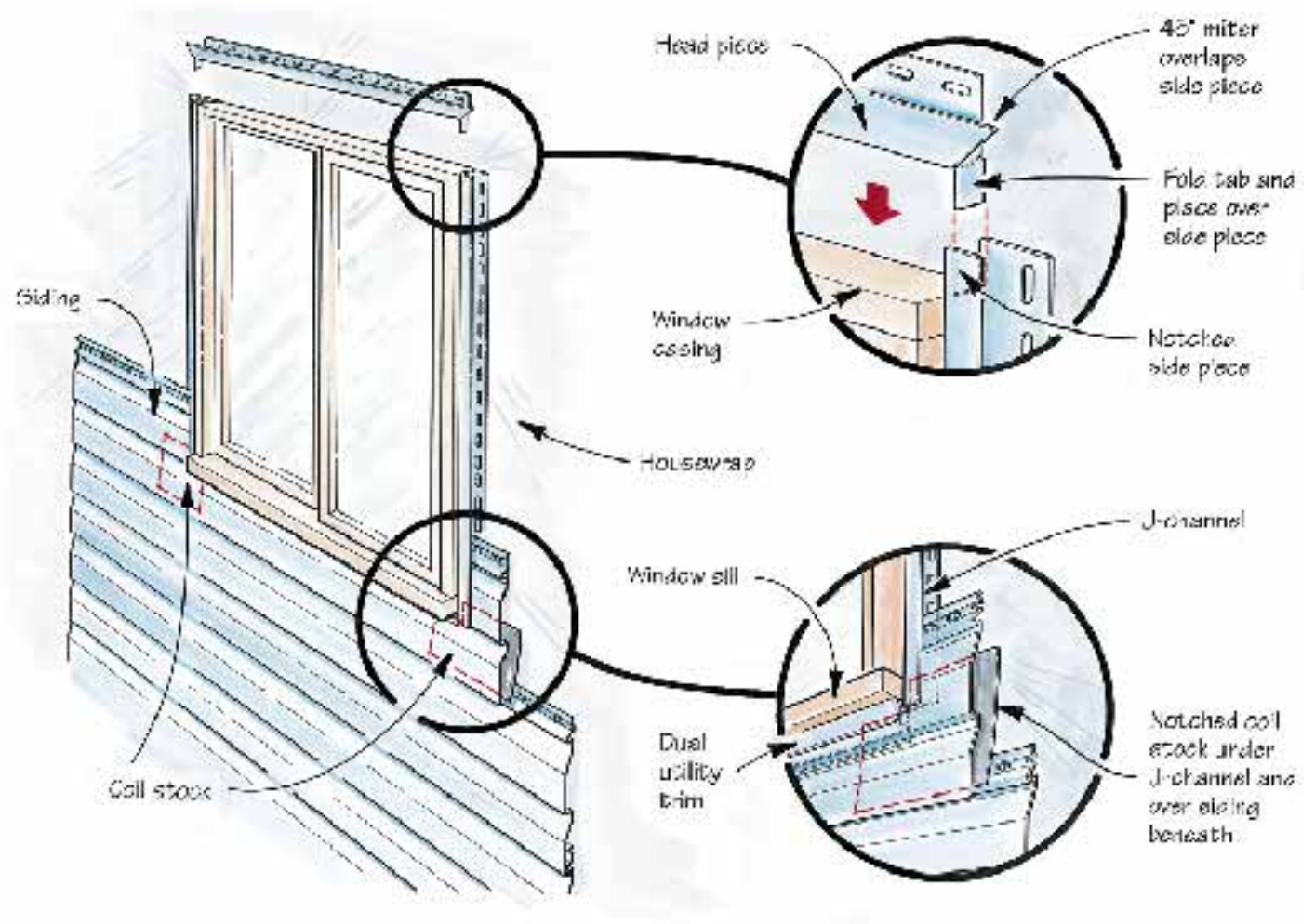

Figure 4. When trimming a window, first run J-channel around all four sides, detailing the head piece as shown. Place a notched piece of coil stock at each corner of the sill to help direct water running down the J-channel over the top of the siding beneath.

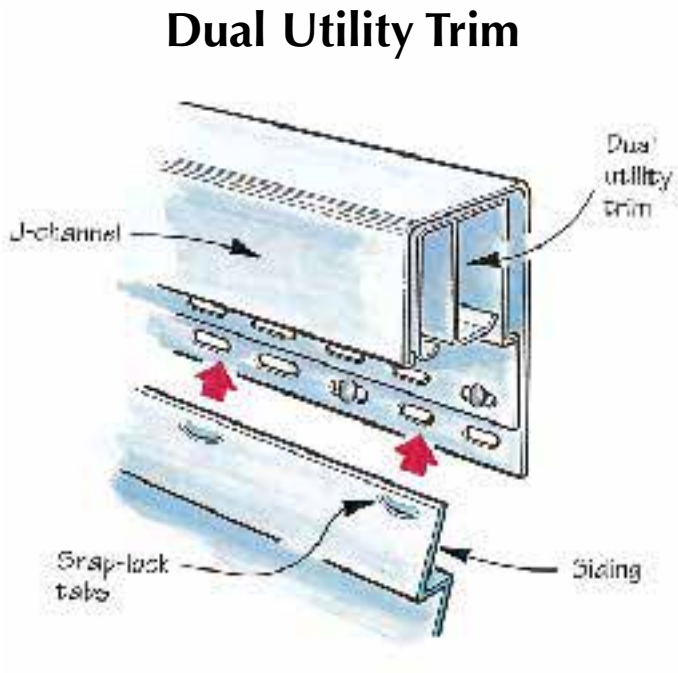

Figure 5. Dual utility trim is used to secure panels that have been notched around openings. Use the outer channel if the notch ends at the thicker portion of the panel profile; use the inner channel when the notch ends at the thinner panel profile.

sioned panels can tear when they contract. On the other hand, if the fit is too loose, the panel may work free from the locking hem as it expands.

Consider this scenario: It's 10°F outside and you just finished installing a 10-foot length of fascia on the west end of a house. Next summer, when the temperatures hit the high 90s and the sun-baked surface of the fascia reaches 120°F, that 10-foot length will have grown over 1/2 inch. If it can't expand freely, buckling will result.

If the scenario is reversed, and you've installed a 12-foot vinyl siding panel on the hottest day of the year, that panel can shrink a full 1/2 inch when temperatures drop to 10°F. The panel can tear apart if the shrinkage movement is restricted.

If it were up to me, I would require every vinyl siding crew to spend five minutes at the beginning of each day chanting this mantra: "expansion and contraction, expansion and contraction, expansion and contraction...." This issue is responsible for over 80% of the complaints I investigate.

Door and Window Detailing

Use J-channel around windows and doors to receive the siding panels (Figure 4). The side pieces run long at window or door heads, and are notched around the bottom of the sill. Miter the free flange of the head piece, and fold the remaining tab over the side piece to serve as a cap flashing. I recommend caulking around windows and doors before installing the J-channel.

When panels are notched to fit under windows or mounting blocks, the slotted nailing flange is removed. Secure these "flangeless" portions of the panel by fastening a piece of dual utility trim in the J-channel or mounting block, and slip the notched portion of the panel into one of the two receiving channels of the utility trim (Figure 5).

Use a snap-lock punch to punch barbs along the notched panel edge before inserting it into the utility trim. The barbs will hold the panel in place but allow the panel to expand and contract. Use this detail to secure the cut edge of panels at the soffit as well.

At sills, slip a piece of coil stock under the base of the side pieces of J-channel. The coil stock should extend over the top lock of the siding panel below.

Figure 6. Subcontractors can create problems when they fasten exterior fixtures directly through the siding panels, because the fasteners will prevent the siding panels from expanding and contracting freely. Use mounting blocks for all surface-mounted fixtures.

Subtrade Sabotage

Surface-mounted exterior fixtures (electrical meter bases, shutters, dryer vents, hose bibs, etc.) should always be fastened to mounting blocks (Figure 6). The rationale is simple: Any item that is fastened directly through a siding panel will lock the panel in place, short-circuiting the nailing slots that allow the panel to expand and contract.

Most suppliers keep a number of prefabricated mounting blocks in stock. Larger items (meter bases, for example) can be mounted on a 1 1/2-inch-thick piece of treated lumber.

No matter how careful you are when allowing for expansion and contraction, a subcontractor can undo the best-laid plans of a quality siding installation in less than ten minutes. Plumbers, electricians, and the phone company installers should mount all of their devices or equipment on mounting blocks.

The general contractor is typically responsible for providing the siding installer with the type and location of required mounting blocks, but in many cases, the evil deeds are done long after the project is completed. It's always a good idea to explain to both the general contractor and the homeowner what can happen if items are fastened directly through the siding. It may not always prevent problems, but at least you'll be able to say "I told you so."

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