

# The Word

A look at terms used in home inspection reports

## Siding ABCs

BY BRUCE BARKER



**ONCE AGAIN, THE WORD INVITES YOU TO TRAVEL** into the dark realm of subjects that are sometimes misunderstood by home inspectors. The Word hopes you will find this trip informative and maybe a little entertaining.

The Word's topic this month is "**siding ABCs.**" The Word finds this topic interesting because we are required to describe the type of exterior wall covering and inspect it as well. It would help to know a little about some of the many different types of siding we might encounter.

### A is for Aluminum Siding

Aluminum siding was first introduced in the late 1940s and was popular through the 1960s. While still available, this market niche has been filled by vinyl siding. You're most likely to see aluminum siding on homes built between 1950 and 1980.

Most aluminum siding was installed horizontally in interlocking strips. It was also available in vertical strips. Aluminum siding is easily distinguishable from other siding by its metallic sound and feel; however, steel siding has a similar sound and feel. You can use a magnet to tell the difference — the magnet will stick to the steel siding and not to the aluminum siding.

Aluminum siding is a good wall-covering material. It doesn't rust, although it can oxidize if the bare metal is exposed, especially near the ocean. It's durable and if properly maintained, can serve throughout the life of the structure. It originally came pre-painted and accepts repainting well.

Complaints about aluminum siding include that it is easily damaged and repair can be difficult. It can be noisy in the wind and rain.

Some believe that aluminum (and steel) siding needs to be grounded/bonded. There is no requirement in the National Electrical Code to ground or bond aluminum (or steel) siding, although some local jurisdictions may require it. This is a little silly since only the piece to which the grounding/bonding wire is attached might be effectively grounded/bonded. The resistance of the physical and electrical connection to the other pieces is far too high to effectively ground/bond all of the siding.

Aluminum siding shares many of the installation techniques of vinyl siding. We'll discuss vinyl and aluminum siding installation in another column.

### A is for Asbestos Cement Siding

Asbestos cement siding was first introduced in the early 1900s and was popular from the 1920s through the 1950s. You could see this siding on homes built between about 1910 and 1974. Asbestos was banned in building materials in 1973, although existing stock was allowed to be used. This market niche has been filled by fiber cement siding.

Asbestos cement siding was manufactured as rectangular shingles measuring about 12 by 24 inches. It was also manufactured as horizontal lap siding. The siding was first produced with a smooth face. Vertical grooves and wood grain patterns were introduced soon thereafter. Some types have an uneven lower edge. This siding is usually about 1/8 inch thick.

Asbestos cement siding is a good wall-covering material. It resists fire, rot and wood-destroying organisms. It's durable and if properly maintained, can serve throughout the life of the structure. It accepts paint well.

Complaints about asbestos-cement siding include that it is brittle, which makes it crack easily and makes it easy to damage. Repair can be difficult, but at least one manufacturer makes a similar-looking product from modern fiber cement siding.

Like all asbestos containing building materials, asbestos cement siding is not dangerous if it is intact and undamaged. Siding repair involving sanding, cutting or removal must be performed by a trained contractor, and disposal of this siding involves hazardous waste protocols. This makes repair and removal very expensive.

**C is for Cement (Fiber) Siding**

Fiber cement siding was first introduced to the United States market in the mid-1980s, has gained significant market share since the mid-1990s and has almost replaced wood-based siding in many markets. In fact, The Word was one of the first builders in Atlanta to use this material in the mid-1990s.

Fiber cement siding is available as horizontal lap siding, as panel siding, as simulated cedar shingles and shakes, and in shapes such as octagonal and half-round that are sometimes used as decorative accents in gables. The siding is available in smooth and textured finishes. Lap siding widths range between 5¼ and 12 inches wide. Panel siding is 48 inches wide and comes in lengths between 8 and 12 feet. This siding is usually between 5/16 and ½ inch thick.

Fiber cement siding can be difficult to distinguish from some wood-based siding, although most wood-based siding is thicker than fiber cement siding. Wood-based siding will readily compress when probed, whereas fiber cement siding won't. Fiber cement siding has a distinctive sound when tapped.

Fiber cement siding is sometimes called "Hardie Board" after the company that first introduced the product to the U.S. market. Other companies manufacture this siding and inspectors should not describe fiber cement siding as "Hardie Board." Inspectors should use the generic term fiber cement siding.

Fiber cement siding is a good wall-covering material. It resists fire, rot and wood-destroying organisms. It's durable and if properly maintained, can serve throughout the life of the structure. It accepts acrylic paint well, but not stain and oil-based paint. Manufacturers don't recommend using these coatings.

Complaints about fiber cement siding appear to involve improper installation. Lawsuits have been filed against James Hardie and

Certaainteed alleging product defects. These suits are recent and the allegations have not been substantiated.

Failure to comply with manufacturers' installation instructions voids their warranties and is likely a significant factor in complaints about the siding. Lap siding should be blind-nailed, although face-nailing is allowed in high-wind areas. Blind-nailing is when nails are installed near the top of the siding and the nails are covered by the course above. Face-nailing is when nails are installed through both courses of the siding and the nails are visible. See Figure 1.

Nails should be installed not closer than ⅜ inch to the edge of lap and panel siding. Nails should be driven straight into and fit snug or flush with the siding. Snug means that the bottom of the nail head touches the siding and flush means that the top of the nail head is even with the siding. Overdriven nails (more than ⅛ inch) should have the holes filled and a correctly installed nail should be placed nearby. See Figure 2. Good luck doing this with a nail gun.

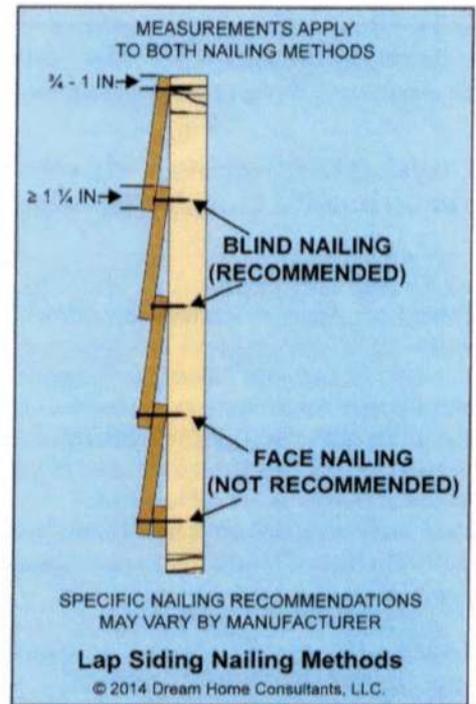


Figure 1

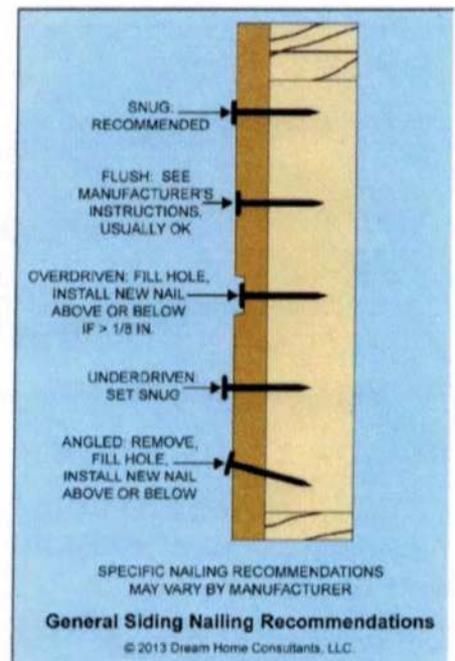


Figure 2

**Clearances between the siding and other materials are very important for avoiding siding deterioration. Although fiber cement siding resists rot, it will deteriorate if regularly exposed to moisture. This is why manufacturers recommend painting cut siding ends.**

**Caulking and flashing is important for water control. Caulk should be applied at inside and outside corner boards. Caulking lap siding butt joints is generally not recommended for aesthetic reasons.**

Panel siding should be installed vertically with joints aligned with studs. A horizontal joint should occur at each floor level and should be flashed with Z-flashing. Treatment of vertical joints depends on the manufacturer's instructions for the specific type of siding. Typical vertical joint treatment instructions call for battens (vertical strips of wood), manufactured H-joints or caulking the joint. Caulked joints should be about 1/8 inch wide. Much less and there won't be enough caulk in the joint. Much more and the caulk won't effectively fill the space. Some manufacturers allow installation with no joint treatments or caulking.

Clearances between the siding and other materials are very important for avoiding siding deterioration. Although fiber cement siding resists rot, it will deteriorate if regularly exposed to moisture. This is why manufacturers recommend painting cut siding ends.

The following clearances apply to both lap and panel siding: (1) clearance between siding and the ground should be at least 6 inches; (2) clearance to other surfaces such as decks, roofs, sidewalks and driveways should be at least 1 inch; two inches is required in northern climates by Hardie; (3) clearance between gutter end caps and siding should also be at least 1 inch; (4) clearance above Z-flashing at windows, doors and panel siding horizontal joints should be at least 1/4 inch and the gap should not be caulked.

Caulking and flashing is important for water control. Caulk should be applied at inside and outside corner boards. Caulking lap siding butt joints is generally not recommended for aesthetic reasons. The caulk will pull away, sometimes very soon after installation. Flashing under these butt joints is recommended by manufacturers (required for some products) and is especially important in areas subject to wind-driven rain. Kick-out flashing should be installed in the usual place where a sidewall extends past a roof. Kick-out flashing should be at least 4 inches tall and 4 inches wide.

See Figure 3.

### The Bottom Line

**There's a lot more to inspecting siding than looking for damage and rot. Now we have some more tools to take our siding inspection to the next level.**

Memo to Hestia (goddess of the home and hearth): The Word does not reside on Mt. Olympus (just at its base) and welcomes other viewpoints. Send your lightning bolts or emails to [Bruce@Dream-HomeConsultants.com](mailto:Bruce@Dream-HomeConsultants.com). The thoughts contained herein are those of The Word; they are not ASHI standards or policies. ■

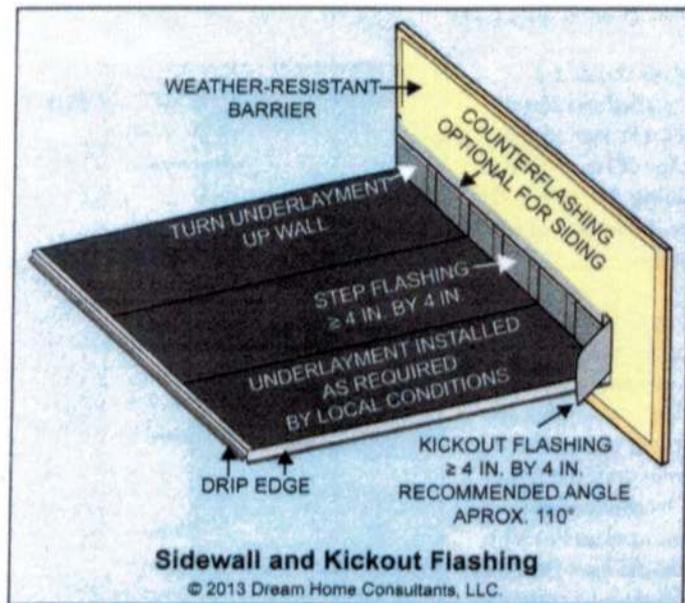


Figure 3



Bruce Barker operates Dream Home Consultants. He has been building and inspecting homes since 1987. He is the author of "Everybody's Building Code" and currently serves as chair of the ASHI Standards Committee. To read more of Barker's articles, go to [www.dreamhomeconsultants.com](http://www.dreamhomeconsultants.com).

# The Word

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### Part 2

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**ONCE AGAIN, THE WORD** invites you to travel into the dark realm of subjects that are sometimes misunderstood by home inspectors. The Word hopes you will find this trip informative and maybe a little entertaining.

This month we continue our discussion of “**siding ABCs.**” The Word finds this topic interesting because we are required to describe the type of exterior wall covering and inspect it as well. It would help to know a little about some of the many different types of siding we might encounter.

#### **H is for Hardboard Siding**

The precursors to hardboard siding were invented in the 1850s. Hardboard siding as we know it today was introduced in the early 1920s and Masonite, the best known brand, was introduced in the late 1920s. Hardboard siding was popular from the 1940s through the 1990s. While hardboard siding is still available and used in new construction, vinyl and fiber cement siding are more widely used alternatives today.

Distinguishing between hardboard siding and similar siding can be a challenge. Siding made from oriented strand board (OSB) is not hardboard siding. A hybrid product made from OSB and hardboard, Masonite Omniwood, is also not hard-

board siding. Siding made from OSB can look almost identical to hardboard siding from the finished side, so the generic term hardboard siding may be the best we can do when describing these products. That said, if you can distinguish between hardboard siding and siding made from OSB, you would be wise to do so. While hardboard and OSB-based siding share many characteristics, OSB-based siding can be more problematic than hardboard siding.

Siding made from plywood is not hardboard siding; it is a wood structural panel. Plywood siding is usually easy to distinguish from hardboard siding.

The most common style of hardboard siding, at least where The Word has worked, is horizontal lap. Panel (4' by 8' and 4' by 9') hardboard siding is also common, mostly on lower end production homes. Horizontal strips that mimic wood shingle siding are also available. Hardboard siding comes in dozens of styles and finishes ranging from smooth, to wood-grain, to finishes that mimic stucco.

Hardboard siding can be a problematic wall-covering material. We'll discuss specific problems in a moment. It's important to note that hardboard siding failure varies

significantly between manufacturers and between siding from the same manufacturer made at different plants and at different times. Thus, it is not correct to assume that all hardboard siding is defective, even siding made by manufacturers of problematic products.

Masonite and Louisiana Pacific are the best known manufacturers of problematic hardboard and OSB siding, especially siding made during the 1980s and early 1990s. Several other manufacturers were also sued in the 1990s over alleged product defects. The claims filing deadline has passed for most of these suits; however, a few manufacturers may honor warranty claims.

The estimated service life of hardboard siding is around 30 years when properly installed and maintained; however, there is a wide variance in this number. Remember that our Standard of Practice requires us to report on components that are near the end of their service life. It does not require reporting a component's age. Reporting end of service life for hardboard siding (and other components for that matter) should be based on its condition and not exclusively on its age. Hardboard siding that has been improperly installed or painted could

be near the end of its service life in less than ten years in a wet environment.

Problems with hardboard siding should be expected when you consider that it's made from "sawdust and glue" (an exaggeration, but not too far from accurate). Any moisture that finds its way inside the siding is going to cause problems. To be fair, many hardboard siding problems are caused by improper installation, poor painting and poor maintenance.

The most common and serious hardboard siding problem is swelling. This occurs most frequently on the lower (drip) edge where water remains and wicks up into siding. Not coincidentally, the drip edge is also the place where the painters often either don't paint or apply a thin coat. The other place where swelling often occurs is around holes created by over driven nails. Less common moisture intrusion points are the cut edges and the unpainted rear of the siding.

Buckling is another reported problem, mostly with hardboard lap siding, and is related to swelling. A certain amount of waviness is common in hardboard lap siding installations, especially when the siding is installed over foam insulating sheathing. Waviness and buckling becomes a problem when it causes gaps between the pieces of siding.

As is true for most manufactured components, installation according to a manufacturer's instructions is important. Our problem as inspectors is that these instructions vary by manufacturer and vary over time. Here are some installation instructions that are common to many manufacturers.

- Nails should be ring shank or deformed 8d siding nails that are long enough to penetrate the siding and sheathing and penetrate the stud at least 1½ inches.
- Nails should be set straight and flush or slightly raised from the siding. Holes (little water traps) where the nail is countersunk should be caulked. Nails counter-

sunk more than ¼ inch should be caulked and another nail should be installed. See Figure 1.

- Two nails should be installed at each stud for each piece of lap siding, one nail at the top and one at the bottom. Panel siding should be nailed at 6 inches on center around the edges and 12 inches on center in the field. Closer nail spacing is required if panel siding is part of the wall bracing system.

- Joints should occur only at studs or other solid supports. Look at butt joint spacing. Might the nails be in something other than a stud if the spacing is less than 16 inches?

- Vertical joints should have a gap of about ⅛ inch between siding butt-joints (joints between 2 pieces of siding) and between siding and components such as corner boards and windows. Gaps should be caulked. Other joint treatments such as battens may be acceptable for some hardboard siding styles. See Figure 2.

- Horizontal joints between sheets of panel siding should be lapped at least 1 inch or Z-flashing should be installed.

- Windows and doors should have Z-flashing at their headers.

- Sidewall flashing should be installed under the siding where a roof intersects a vertical sidewall.

- Kick-out flashing should be installed in the usual place where a sidewall extends past a roof. Kick-out flashing should be at least 4 inches tall and 4 inches wide. See Figure 3 on Page 10.

- Siding should be installed at least 2 inches above solid surfaces like patios and drive-ways, at least 2 inches above roof coverings and at least 6 inches above soil.

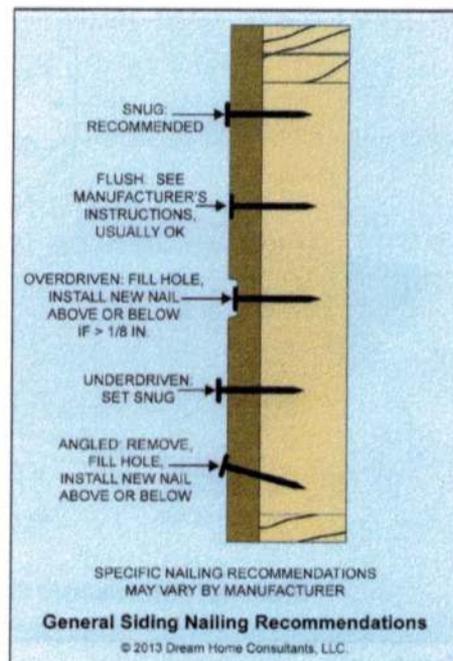


Figure 1

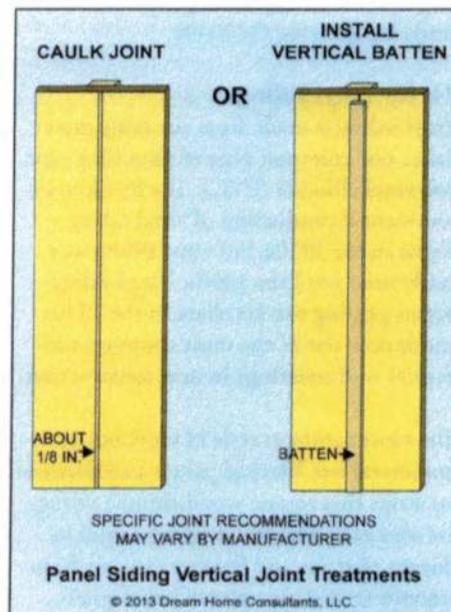


Figure 2

- A caulked gap of about 3/16 inch should be left between siding and other materials and flashing such as above windows and doors and where siding transitions to different wall covering materials such as brick.

Poor maintenance is a common contributor to hardboard siding failures. Check the siding, especially the drip edge, for poor or deteriorating paint coverage. Check for poor or deteriorating caulk. Check siding at vulnerable water exposure points such as

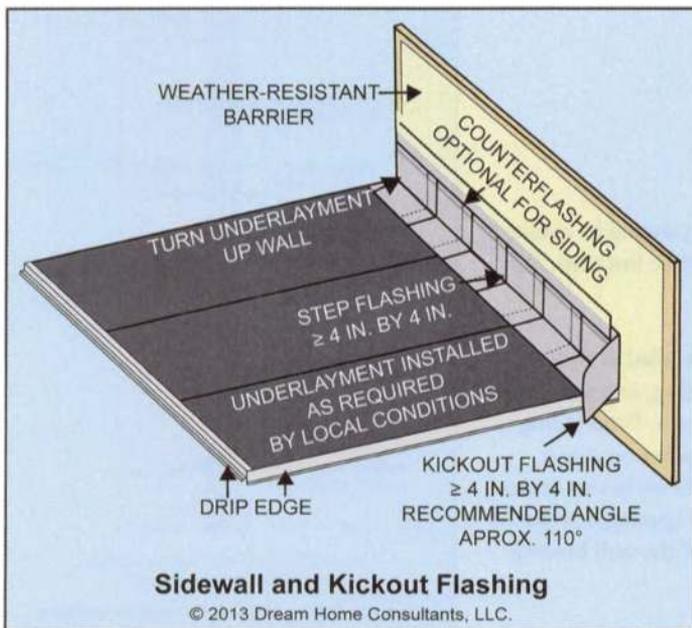


Figure 3

near the ground, near the roof, near windows and near gutters. Check around lawn irrigation heads for indications that the heads are spraying the house.

### V is for Vinyl Siding

Vinyl siding is made from the same material as one common type of plumbing pipe, polyvinyl chloride (PVC). The first known commercial production of vinyl siding began in the 1930s, but vinyl siding was rarely used until the 1960s. Vinyl siding began gaining market share in the 1970s and is now one of the most common residential wall coverings in new construction.

The most common style of vinyl siding is horizontal lap. Vertical panels and horizontal strips that mimic wood-shingle siding are also available. Vinyl siding comes in dozens of styles and finishes ranging from smooth to various styles of wood-grain.

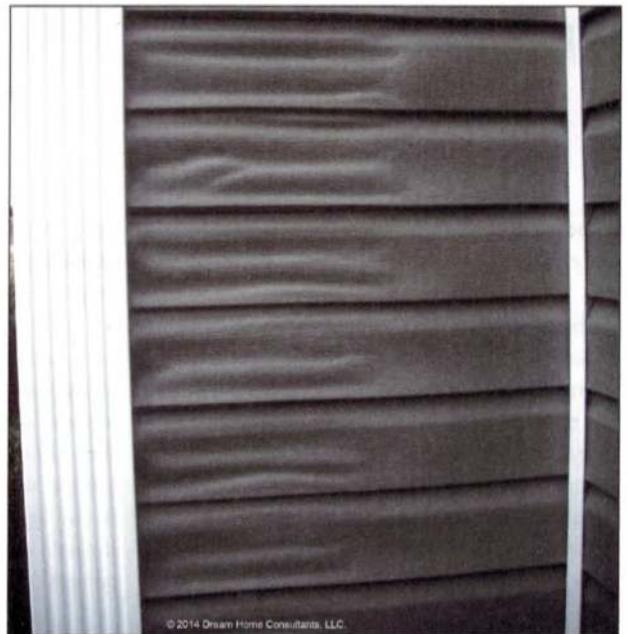
Vinyl siding is a good wall-covering material. It does not rot, rust or deteriorate, and is not susceptible to insect damage. Maintenance, assuming no damage, involves only periodic cleaning. Painting is not required nor recommended, although it is possible to paint vinyl siding with specially formulated paint. There are no known recalls or class action lawsuits involving vinyl siding.

Service life estimates for vinyl siding range from 20 years to the life of the structure. Reporting end of service life on vinyl siding should be based on its condition and not necessarily on its age.

One complaint about vinyl siding is that the color fades, sometimes after only a few years. This is supposed to be less common among the newer and better vinyl siding grades. Another complaint is that it's easily damaged and that repair of damaged sections is difficult because of color matching. Damage is more likely as the vinyl ages. Vinyl siding may not be the best choice for very hot and very cold environments. It can warp and even melt when exposed to high heat. In fact, vinyl siding has been known to warp due to heat reflected by nearby windows. See *Picture 1*. It can become brittle and be more susceptible to damage when very cold.

As is true for most manufactured components, installation of vinyl siding according to manufacturer's instructions is important. The good news for inspectors is that instructions for installing vinyl siding are reasonably consistent among manufacturers. Here are some common installation instructions:

- Vinyl siding should be installed over a water-resistant barrier and over sheathing. Foam insulating sheathing may be used but is not recommended and may result in a wavy appearance. Vinyl siding used to be allowed to be installed without a water-resistant barrier but even so, it's still not good practice.
- Nails, staples or screws may be used. It is important to drive the fasteners straight and to leave a 1/32 inch gap that allows



Picture 1

the siding to move freely when it expands and contracts.

- Horizontal panels should lap each other about 1 inch. About a 1/4 inch gap should be left at panel ends where they butt against corners, windows, doors and other channel components.
- A starter strip should be installed below the first siding course.
- Outside corner posts (F-channels) and inside corner posts should be installed at all corners. Upper pieces should lap over lower pieces (if any) about 3/4 inch.
- Header flashing and J-channel trim should be installed around windows and doors trimmed with brick molding. J-channel trim is not required around windows (such as some vinyl and aluminum windows) that are attached using a nail flange.
- J-channel trim should be installed at the intersection of a roof and a vertical sidewall. The J-channel should be at least 1/2 inch above the roof. Typical sidewall flashing should be installed under the vinyl siding at this roof/wall intersection and kick-out flashing should be installed where the sidewall extends beyond the roof.
- J-channel trim should be installed at rake soffits.

- Horizontal panels should be at least 24 inches long.
- Appropriate flashing and caulking should be installed where vinyl siding transitions to other wall coverings such as brick.
- Panels should not be caulked where they lap each other or at corner posts and trim.

A common visible effect of improper vinyl siding installation is buckling. Buckling usually occurs either because the fasteners were installed too tight against the siding or because an insufficient expansion gap was left at places like corners and windows.

Vinyl siding is often used to cover other wall coverings. It isn't necessarily wrong to cover other materials with vinyl siding; that's what vinyl was originally intended for. The problem is that you may not be able to identify and evaluate the type or condition of the wall covering under the vinyl, including any water-resistant barrier and flashing. You should look for and report if you cannot determine what's under vinyl siding used to cover other materials.

### The Bottom Line

There's a lot more to inspecting siding than looking for damage and rot. Now we have some more tools to take our siding inspection to the next level.

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