Installing Wood Clapboards

How a seasoned crew uses a story pole and an efficient work sequence to install this traditional siding

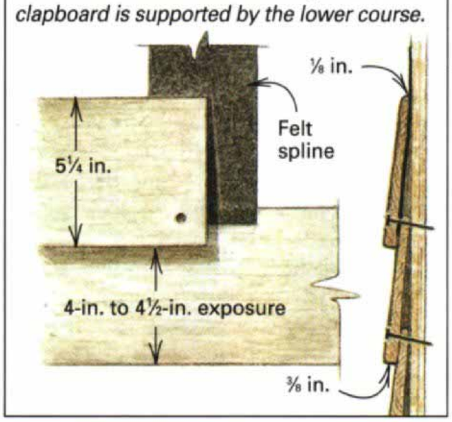
by Rick Arnold and Mike Guertin

We've installed clapboards just about every way but upside down. We've tried different nailing locations and patterns, and various hand-driven and pneumatic fasteners. We've installed clapboards from the bottom up and from the top down, and we've organized our installation teams several ways. Although we wouldn't call any of our experiments failures, we have found a layout method, fastener and fastening pattern, crew size and details that assure good performance and efficient installation (photo above).

A few details before starting—Before we lay out and install clapboards, several details need to be in place. We have up whatever housewrap we're using, and install the corner boards (drawings facing page). Corner boards provide a stop for the clapboards so that they don't have to be mitered or coped. We make our inside corners out of 1x2 or square 5/4 stock. Anything less would be too thin and leave the painter no room to caulk between the inside corner and the ends of the clapboards.

Outside corner boards avoid the need for delicate mitered joints at locations easily damaged by lawnmowers and other equipment. We make

The common clapboard. *The authors nail about 1 in. from the bottom, where the clapboard is supported by the lower course.*



ours from 1-in. stock and prime any raw edges before installing the siding. Doing so minimizes shrinking and swelling and just about eliminates stains from dissolved tannins leaking to the face.

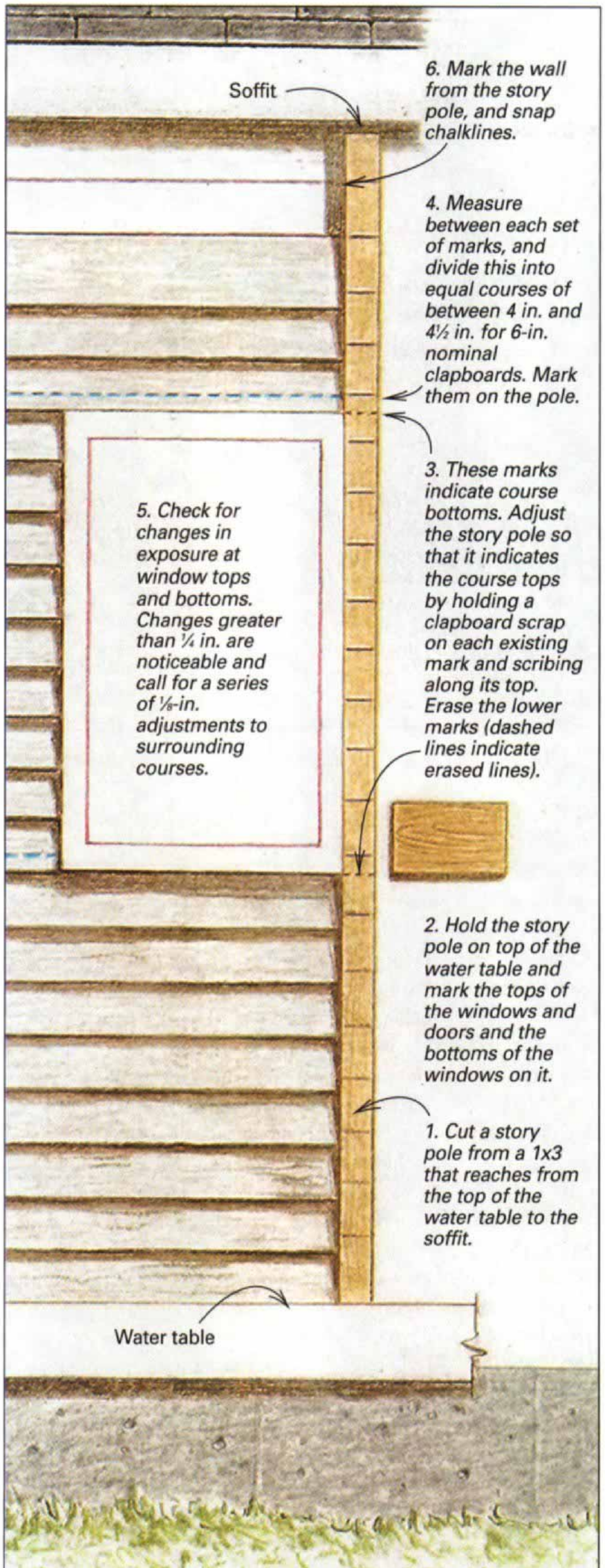
For a heavier look, we sometimes build outside corners from 1x3 furring and apply 1x6 finish corner boards over them after the siding goes on. We nail the outside edge of the finish corner board to the clapboards every 16 in. to 24 in., being sure to nail through the thick bottom of the clapboards. The clapboards support the overhanging corner board, and nailing is less likely to crack it. Overlapping clapboards with the corner board in this way is a more watertight detail, but the nooks where clapboards go under corners can provide homes for insects.

When we apply the corner boards, we let them run long. Then we trim them to length once the water table—the horizontal board where the wall meets the foundation—has been installed (photo right, p. 64).

On gable ends without overhangs, we install 1x6 rake boards over 1x3 furring that runs flush with the top of the roof sheathing. We leave enough room to slide the clapboards at least 3 in. under the 1x6 (drawing bottom right, facing page). On overhanging rakes, we cut the clapboards to the rake angle and butt them to the soffit. Then we trim this joint with a piece of 1x3.

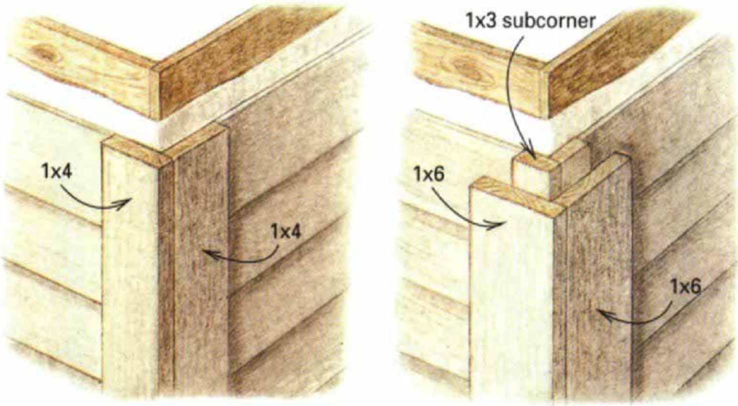
Careful layout is crucial to a good job—The common clapboard in our area is ⅜ in. thick at the butt end and 5¼ in. wide (drawing above). Clapboards typically have 4 in. of

Drawings: Rick Daskum

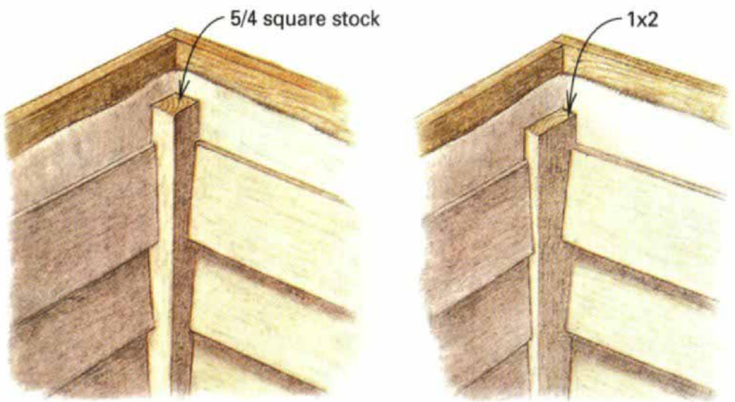


Layout with a story pole. *On the best clapboard jobs, the courses align with the tops and bottoms of the windows and the tops of the doors, and the final course below the soffit is a full clapboard. The authors vary the exposure to make the layout fall where they want. The key to successful layout is the story pole, and the steps and drawing above describe its use.*

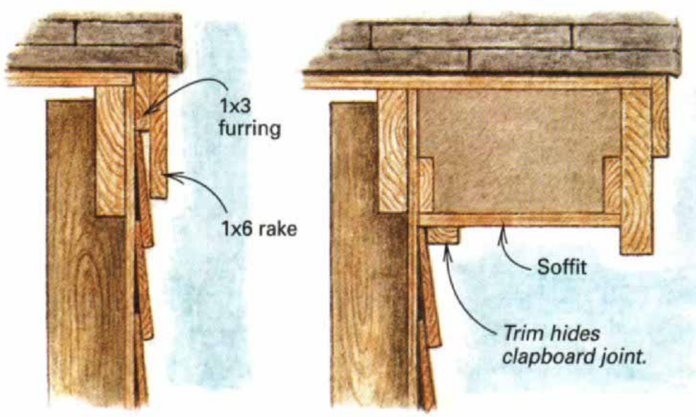
Outside corners serve two purposes. *They are a way to turn a corner without using a compound miter, and they protect the clapboards from damage at this exposed location. Overlapping 1x4s form the simplest comer. For a heavier look, nail on a subcorner of 1x3 furring, butt the clapboards to the 1x3 and apply a finish corner made of 1x6 that laps the clapboards and the water table.*



Inside corner boards make coping or mitering the clapboards unnecessary. *Butt the clapboards to a vertical piece of 5/4 square stock or 1x2 at the inside corners. Both options leave plenty of room for a neat caulking job.*



A neat finish where clapboards meet the gable. *On walls with no overhanging gable, nail 1x3 furring to the house, and go over this furring with a 1x6 finish rake board. The tops of both are flush with the top of the roof sheathing. The roof shingles extend over these boards, and the clapboards tuck into the space behind the 1x6. On houses with an overhang, cut the clapboards to the rake angle, butt them to the soffit and cover this joint with a trim piece.*

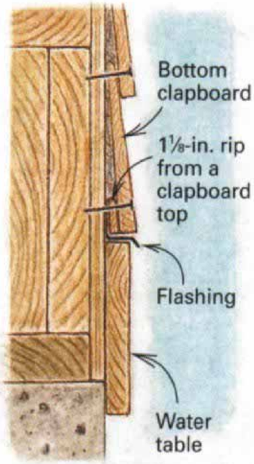


All raw wood is primed. Water entering through end grain gets under the surface and causes paint to peel. Back-priming and end-sealing minimize this problem.

A clapboard ripping is nailed above the water table. The ripping shims out the first course to match the angle of the following courses. The measurements written on the wall keep the cutter busy if he gets ahead of the nailers.

The water table is the starting point

It should hang about 1 in. lower than the foundation's top, and its top should fall on a 4-in. to 4½-in. increment from the window bottoms.



exposure to the weather, but we tweak the layout so that the bottom of one course lands directly on top of the windows and the bottom of another course matches the bottoms of the windows (bottom photo, p. 66). We also want no more than a ⅛-in. variation between adjacent courses. With luck, we can make the bottom of a course fall directly on top of the doors, too. Good layout results in a look that sets clapboards apart from vinyl siding, whose layout shows no regard for window and door height.

By the way, layout is quick and easy if you set all the windows at the same height. If their height varies, plan the differences between windows to match clapboard-course increments.

Make sure the top of the water table, usually 1x6 stock, falls on a 4-in. to 4½-in. increment from the bottom of the windows and that its bottom overhangs the foundation by 1 in. If the foundation steps down as the grade changes, we lower the water table by course increments.

The story pole is the crucial layout tool (drawing left, p. 63). We cut it from 1x3 furring and make it long enough to reach from the top of the water table to just beneath the soffit. On this job we needed two story poles because a second-floor overhang made it impossible to use one that was two stories high.

With the story-pole bottom atop the water table, we mark the tops and bottoms of each window and the tops of the doors on the pole. We indicate which mark belongs to which window or door to avoid confusion. These window and door locations are the primary marks.

The tops of the clapboards have to be marked on the wall. If the bottoms were marked, each clapboard would cover up the mark for the next one. The primary marks indicate clapboard bottoms. To make the adjustment, we hold a piece of clapboard to each mark and to the bottom of the pole and draw a line at its top. We then erase or cross out the original marks. Now we have primary marks indicating the tops of clapboard courses that match windows and doors.

Starting at the bottom of the story pole, we measure to the next higher mark and divide this distance into equal courses of 4 in. to 4½ in. We do the same thing between each pair of primary marks. Sometimes the space between primary marks is too awkward to divide, say 10 in. There's no way to match a 4-in. course to that space. Usually, it's on the back or side of the house with a shorter bathroom or kitchen window; or it's at the top of a door, so it doesn't concern us. We erase the out-of-sync primary mark to avoid confusion, knowing that we'll be notching a clapboard to fit around a window that is off-layout. After we divide the sections, we check for abrupt changes in exposure; those greater than ¼ in. are noticeable. The biggest differences occur just after a primary mark.

Because a primary mark indicates a door or window, we can't change it. We blend the change over a couple of the surrounding courses, making it less obvious. For example, say the courses change from 4 in. to 4⅜ in. We would make one of the 4⅜-in. courses 4⅛ in., then a couple courses at 4¼ in. and a couple at 4⅜ in. To make up the difference, we mark a few at 4½ in. and go back to 4⅜ in. Once we select the final course marks, we square them off and erase any errant marks.

With the pole complete, we use it to mark the sides of all corner boards, windows and doors. We mark and snap all the lines within reach and begin installing clapboards. As we raise the staging, we mark and snap the rest.

Three carpenters make an efficient crew—One carpenter cutting and two nailing keep the momentum going the best. We first install the water table and cap it with an aluminum drip cap that extends about 1½ in. up the wall and hangs over the water table by ¼ in. or so. Then we measure short spans between windows and count how many courses high the windows are. We write these numbers in crayon on the wall. The cutter can spend his downtime precutting those sections. The cutter begins by squaring the factory ends and setting up starter packs of staggered lengths for long sections of wall. We insist on random staggers (top photo, facing page). Nothing's worse than seeing equal 1-ft. staggers forming a pattern that catches your eye.

We nail a 1⅛-in. ripping from the top of a clapboard to the wall above the water table (photo right). This shims the bottom of the first clapboard out to match the succeeding courses. The measurement 1⅛ in. is the common overlap of 4-in. exposures of 5¼ in. (finished size) clapboard, minus the saw kerf. We use the leftover 4-in. bottom rip as the last piece under the soffit.

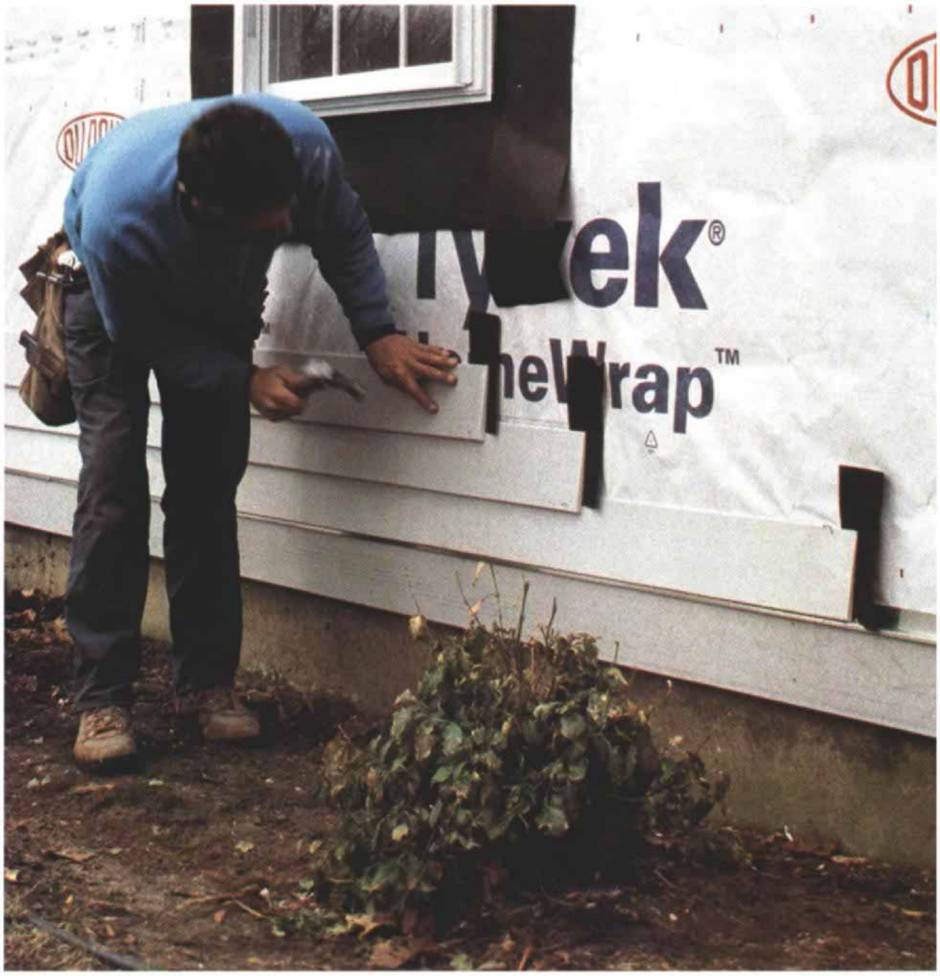
One carpenter nailed on corners and the water table, another cut the starter clapboards. He planned the cuts so that the joints are randomly staggered. Efficient crew members leapfrog each other, cutting or measuring ahead so that there is no downtime.

The nailers tack up the starter clapboards and measure the subsequent pieces before nailing off. The cutter can ready pieces with no downtime. Installers often tack the clapboards on a whole face and finish nailing when they crank the staging down. By keeping ahead of each other, by precutting or by premeasuring, the cutter and nailers always have something to do.

Details for appearance and weather resistance—There are several reliable details we use on every job. Although many siders bevel-cut their joints, we butt purs. We have no shrinkage problems with the dry finger-joint primed material we use, and square cuts look better over time. We keep a pail of primer handy and dab cut ends to seal out water (photo left, facing page). We insert tar-paper or aluminum step-flashing cards behind each seam (bottom photo). They lap the lower clapboard by $\frac{1}{2}$ in. or so and shed any water that penetrates the joint. We keep the clapboards $\frac{1}{16}$ in. to $\frac{1}{8}$ in. back from windows. We've had clapboards swell and pinch the windows so that the sash wouldn't move.

A bead of paintable silicon caulk around the window seals out water and lets the clapboards move without distorting the jamb. In high-wind areas where leakage from driven rain is a concern, we caulk the clapboard ends before butting them to the corner boards or casings.

We put tar-paper or bituminous-membrane splines around window flanges for protection



Tar-paper splines ensure a leakproof joint. Placed under each butt joint and at the windows, the splines lap the lower course by $\frac{1}{2}$ in. and guide any water that enters the joint to the outside of the clapboards.

Tar-paper splines lap each other from top to bottom. Finally, they lap the top of a lower clapboard. Any water that gets behind the siding is shed back to the outside.

from water (top photo). The head spline laps the side splines, which lap the bottom spline. We lap the bottom spline ¼ in. to ½ in. over the top of a lower course of clapboard.

Where a wall, such as a dormer sidewall, meets a roof, we lay a clapboard flat on the shingles with its thin edge against the wall to act as a spacer. We then cut, prime and nail the clapboards to the sidewall, tight against the spacer. When we remove the spacer, there is a clean ¼-in. space between the siding and the roof shingles. Without this space, the siding could wick up water, blistering paint and hastening decay.

When we get to the top of a window, the course just below butts the casing on two sides. The tops of these clapboards extend 1¼ in. higher than the window, but there is nothing above

The top of a clapboard fills the space above the windows. This keeps the next course from bowing inward as it's nailed. With vinyl windows such as these, the authors leave a 1⁄16-in. to ⅛-in. expansion gap between the windows and the clapboards and caulk it.

the window. To shim out the next course, we rip the top of a piece of clapboard to $1\frac{1}{8}$ in., just as we did above the water table. We cut it to fit between the projecting tops of the lower course, nail it in place above the window and move to the next course (bottom photo, facing page).

Clapboards come with one side rough and one side smooth. We guarantee finishes only on rough-side-out installations. Smooth-side-out installations require labor-intensive hand-sanding to break the shiny surface left by the planing process, or the primers won't bond. We've found that the smooth side of preprimed clapboards needs a light sanding before finish-painting. Even when we've sanded, we've had paint fail on smooth clapboards.

Nailing wrong means more than hitting your thumb—Fastener location and pattern are controversial issues. We'll admit it: We nail in the wrong place. We nail too low; everybody we know nails too low, and they know it, too. You're supposed to nail through the lower part of the clapboard just above the top of the clapboard beneath. In theory, this gives the boards freedom to expand and to contract in height. If you nail too low, as we do, you'll trap the clapboard with nails high and low, and the clapboards will split as they move. In theory.

The reality is that we've never had a problem when we nail too low, say within 1 in. of the bottom. But we have had problems when we nail "properly." The upper board splits at that point because it has no support from below. Sure, we could nail loosely to try to avoid splitting, but what about the customers who want the nails set and the holes filled? Splits galore. We're not the only ones who nail wrong. We've remodeled homes built in just about every decade of the past 250 years and found similar "poor" workmanship in most. Nuff said.

The proper nailing pattern for clapboards is just as controversial. Should you nail randomly, or should you nail into the studs? The only time we purposely nail into the studs is when a house is sheathed with foam board or when the customer thinks it's a quality issue. We sheathe most of our homes with $\frac{7}{16}$-in. oriented strand board. OSB holds nails well, so we don't have to hit the studs.

Nailing into the studs causes aesthetic defects. First, the uniform vertical lines of nails belie the horizontal nature of clapboard. Second, the clapboards are drawn more tightly to the wall at the nails. Nailing into the studs creates noticeable waves in the siding. Two-ft. stud spacing makes the problem worse. The only solution is random nailing. When we argue the issue with other builders, they insist that we're cheating, that random nailing is easier. Actually, it's not. Easy is having marked vertical lines to nail on.

It's difficult to be carefully random and to maintain regular 12-in. to 18-in. nail spacing. We take great care not to have one nail atop another. Random nailing works well for us because we locate our fasteners thoughtfully.

We finally found the right fasteners—We have tried several fasteners over the years; some worked, some didn't. Pneumatic staples driven parallel with the grain leave tiny slots that need to be filled before painting. The galvanized staples hold well, and the gun countersinks them well. But we rarely use this method because we install the clapboards rough side out, and the smooth, puttied slots stand out. On smooth-side out installations, we might consider staples.

We've tried pneumatically driven galvanized ring-shank box nails. We could adjust the gun so that the nails would either be set or be flush. Nailing was fast. But the electrogalvanized finish wasn't thick enough, and they'd rust after a year.

Hot-dipped galvanized ring-shank shake nails were the old standard; we used them for years. We'd set the nails flush and paint over them. Two problems developed. Hammering the nails wears off the galvanized finish, causing them to rust. The tannins in red cedar and redwood react with the galvanization and cause streaking that goes right through the finish paint or stain.

Our final solution is stainless-steel ring-shank siding nails set flush. They cost five times what galvanized nails do. That sounds like a lot, but it's $ 10 vs. $50 on a house. That's money well spent. The waffle pattern on the nail head blends in with the rough texture of the siding, so with random nailing, they almost disappear.

Real clapboards vs. the vinyl alternative—In our area, $\frac{1}{2}$-in. by $5\frac{1}{4}$-in. finger-jointed preprimed A and better clapboards cost $160 per square. Good-quality vinyl siding goes for $60 per square. It takes about 50% longer to install clapboards than vinyl siding. Then there's the cost of painting or staining the entire house every five years. Even in conservative, slow-to-change New England, we're seeing less clapboard siding going on new homes. Economics and high maintenance are taking their toll.

Still, vinyl siding just doesn't look as good. It fits awkwardly around windows. Seams are obvious when viewed from the wrong direction. There's debris-catching J-channel everywhere. Vinyl creaks from expansion when the sun hits it. The best vinyl siding is said to look almost like clapboards. Almost. But there's nothing like the real thing. □

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Choosing a wood species for clapboards

We've applied clapboards of several wood species over the years. Red cedar is the most common, and redwood a sometime substitute. We've seen pine and spruce on occasion, and mahogany only rarely. Knotty pine has a poor record of splitting, warping and shrinking. We avoid it completely. Radially sawn clear pine might be better, but we haven't used it. Spruce is a newcomer in our region. Although we haven't tried it yet, we've heard good reviews from those who have. Mahogany is seldom available, and we've found it hard to nail without splitting. Otherwise, it performs nicely without shrinking or warping, and it takes finishes well.

Red cedar conies in several grades. Clear vertical grain performs the best and is the most costly. A and better performs well and is what we use the most. Because most of our customers prefer to paint clapboards, we pay a little extra for factory preprinted stock. Preprinted wood resists absorbing moisture from the back that can cause the paint to blister and peel. It nearly eliminates cupping and extractive bleed. Before preprinted material was readily available, we back-primed the clapboards ourselves to get a better finished product. We don't miss the mess. Some of our first preprinted clapboard projects still sport their original paint and after nearly seven years look like new.

To be both environmentally and cost conscious, we began installing preprinted, finger-jointed clapboards six years ago and never looked back. We no longer have to use five bundles of 4-footers on the back of the garage; finger-jointed clapboards are manufactured in 16-ft. lengths. Occasionally, there's a bad section, but we can easily cut it out before installation. We've had to replace only two or three boards in the last 150,000 lin. ft.
—R. A. and M. G.