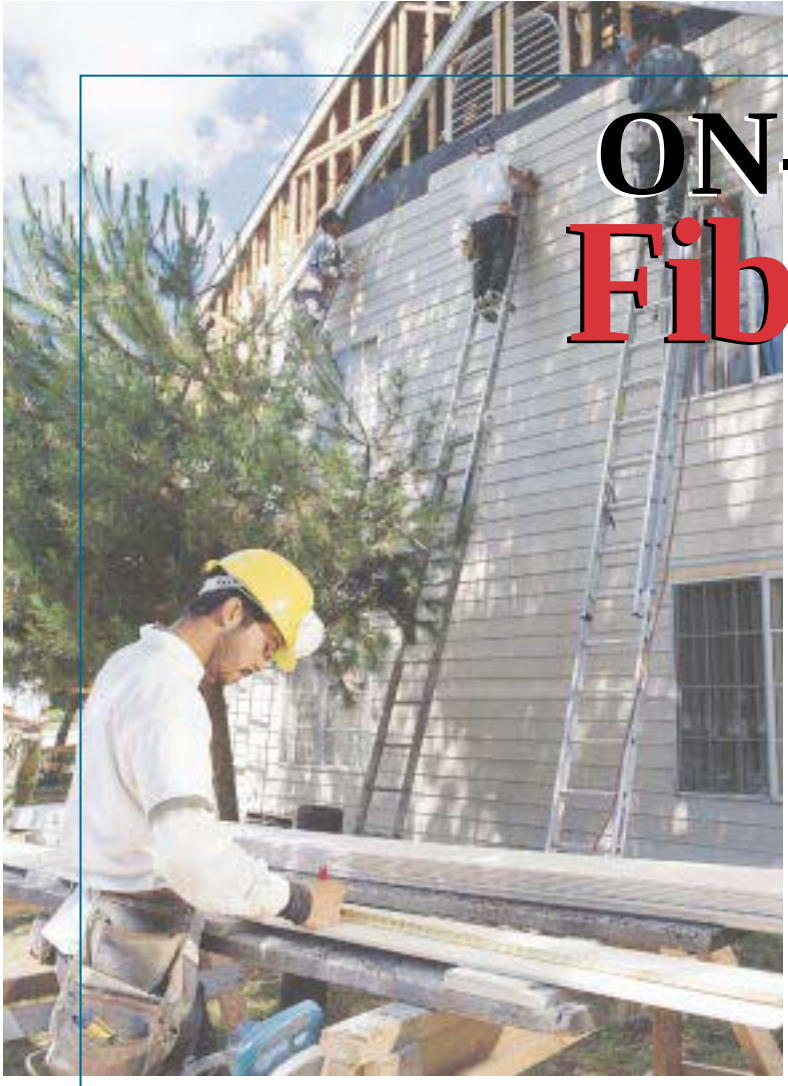

ON-SITE WITH Fiber-Cement Siding

In the 1970s I did a lot of painting and repair work on houses that had been resided with the cement shingles referred to as asbestos siding. The material held paint exceptionally well and seemed like it would last forever, but because it was brittle, it cracked and shattered easily. Because the material had been discontinued, my partner and I always kept our eyes open for extra shingles stashed in basements and garages. Often, we had to remove good pieces from the back of the building to replace broken pieces in front.

by David Frane

Fiber-Cement Update

This earlier type of fiber-cement siding fell out of favor because it was full of asbestos, hard to work with, and ugly. Builders looking for an alternative to wood turned instead to hardboard, particleboard, or vinyl siding. But by the 1990s, problems with these materials caused builders to respond favorably to a new kind of fiber-cement siding.

The main ingredients in today's fiber-cement are Portland cement, sand, and wood fiber. Essentially, it's a masonry product, so it won't burn, rot, or be eaten by insects. According to the manufacturers, fiber-cement is dimensionally stable, so unlike wood and composites, it won't cup, shrink, or swell. It comes in a broad range of patterns, and at 55¢ per square foot, fiber-cement siding is about the same price as hardboard.

Fiber-cement already makes up 7% of the U.S. siding market, and its use is expected to grow. (The fact that major blade and power tool companies are developing equipment to cut fiber-cement tells me they think it's going to be around for a while.)

Four companies are currently selling fiber-cement in the U.S.: James Hardie, FCP, MaxiTile, and ABTco. Each company spends a lot of money trying to convince builders and home buyers that it makes the best product, but that's not what this article is about. As a former carpenter, what I'm interested in is learning the right way to install it. Since more fiber-cement is sold in the Houston, Texas, area than in any other part of the country, I flew down to visit job sites and talk to contractors who used it. Here's what I discovered.

Applications

One of the people I visited was Tyrone Faust, of Faust Painting in Kingwood, Texas. He has about 25 field employees, 10 of whom are carpenters. With all the rain and humidity in his area, Faust's crews are always replacing siding that has begun to rot from roof runoff and splashback. The problem is especially bad with hardboard, and because of a class-action lawsuit, Louisiana-Pacific is paying homeowners to replace any of its Inner-Seal OSB siding that fails in service.

According to Faust, when a house has wood siding, his company replaces rotted or damaged boards with wood, but if it has composite siding, they try to replace it with fiber-cement. "We found that HardiPlank matches the size and shape of Inner-Seal to a tee," Faust said, "so we started using it to replace pieces that had rotted out." In many cases, houses are completely stripped and resided with fiber-cement.

I also spent time with Ron Rohrbacher, the Director of Construction Training at Perry Homes, a Houston-based company that builds more than 1,000 houses per year. According to Rohrbacher, when you build as many units as Perry Homes does, you can't use a product because you think it might work; it absolutely *has* to work. The company switched over to fiber-cement siding and trim a few years ago, and Rohrbacher has given a lot of thought to how it is applied.

Figure 1. Most carpenters use diamond-tipped abrasive blades to cut fiber-cement, which is hard on saws and produces serious clouds of dust. Toothed blades cut faster and produce less dust, but the carbide tips dull fairly quickly.

Figure 2. Snapper Lite shears work like motorized tin snips to make straight and curved cuts in fiber-cement without producing dust. The shears are slower than a circular saw but, claims the manufacturer, are cheaper to run than a saw.

Cutting

The first question carpenters ask when they see fiber-cement is how to cut it. Manufacturers make a variety of recommendations, including using blades with carbide-tipped teeth, abrasive blades with diamond tips, or shears.

While I was in Houston, I talked with Wes Web of Furman Lumber, a major distributor of James Hardie products. He told me Hardie does not recommend the use of abrasive blades. To demonstrate how little rpm and power it takes to cut fiber-cement, he sliced up a piece of lap siding with a 14.4-volt cordless circular saw equipped with a carbide-tipped blade. I was surprised by the smoothness of the cuts and the speed with which the little saw went through the cementlike material. It was slower than cutting cedar bevel siding, but a lot faster than cutting masonry.

When I visited job sites, however, I never once saw a carpenter cut fiber-cement with a carbide-tipped blade — they all used diamond-tipped masonry blades. The carpenters I asked about it said carbide-tipped blades wore out too fast. Tom Roe, a product manager at ABTco, says carpenters should expect to go through six carbide blades while siding an average-size house. That squares with what carpenters told me: They said they got three or four hours' use from a carbide blade when cutting fiber-cement. At $6 to $10 each, the cost of blades adds up, especially in an ultra-competitive market like Houston, where installers are paid on a per-square-foot basis. By contrast, carpenters said they were paying $80 to $100 for 7 1/4-inch diamond-tip blades and getting about three months' use out of them.

Dust problem. Reducing dust is one reason fiber-cement manufacturers promote the use of carbide blades (see Figure 1). Carbide-tipped blades also create dust, but the particles don't hang in the air as long as the ultra-fine particles produced by an abrasive blade. The dust is more than just a nuisance, because it contains silica. If you breathe enough silica over a long enough period of time, you can develop serious respiratory problems. Of course, the simplest way to deal with the dust is to wear a dust mask while cutting or use a fan to blow the dust away from the cut station.

Fiber-cement dust also shortens the life of power tools. It's gritty, so exposed moving parts wear faster, and it can stick to bearings and wick the lubricant out of them. For these reasons, fiber-cement makers are working with blade and tool manufacturers to produce longer-lasting carbide blades, as well as circular saws with efficient dust collection systems.

Abrasive blades also place a greater strain on saw motors than toothed blades, so don't overdo it by gang cutting thick stacks of fiber-cement. The carpenters I watched in Houston were cutting trim with circular saws and speed squares. They were more concerned about blade wear than tool wear, but the cost equation changes if you work in a part of the country where carpenters cut exterior trim with $500 miter saws.

Dust-free cutting. Pacific International Tool and Shear makes equipment that cuts fiber-cement without producing

Figure 3. It's important not to overdrive fasteners in fiber-cement, which is why it's a poor idea to apply it with framing guns. Coil nailers do the job more accurately, especially if they have a mechanism for adjusting depth-of-drive, like this after-market retrofit tip from Duo-Fast.

dust. The manual shear works like a giant paper cutter, while the pneumatic shear works like a guillotine. These stationary models won't cut curves, though. They cost from $600 to $1,000.

The company's hand-held shear, the Snapper Lite SS302, can make both straight and curved cuts in fiber-cement (Figure 2). It consists of a specially made Black & Decker drill joined to a shearing head. Snapper Lite's shearing action is similar to that of double-cutting metal snips in that a center blade pivots back and forth between fixed outer blades, producing a curled waste piece as the tool advances through the stock. The Snapper Lite is slower than a circular saw, however, and at $300, is relatively expensive. But the manufacturer claims it's cheaper to run than a saw, because you can cut 8,000 to 10,000 linear feet of fiber-cement on a $40 set of blades. The current model handles material up to 5/16 inch thick; a model that cuts thicker stock is in the works.

Fastening Fiber-Cement

Fiber-cement can be nailed by hand, but most carpenters use coil nailers because they're faster. No one I spoke with thought fiber-cement was particularly tough on guns, but one carpenter said he thought it made drivers wear out faster.

Depth-of-drive. The most important caution when nailing fiber-cement is to avoid overdriving fasteners. The siding is only 5/16 inch thick, so setting nail heads below the surface decreases holding power, and in the case of Hardie's products, voids the warranty. (This is the reason you can't use staples or clip-head nails; both penetrate too far and break the surface of fiber-cement.) Duo-Fast has developed an adjustable depth-of-drive mechanism that can be used to retrofit older coil nailers (Figure 3), and other tool manufacturers have started building adjustable depth-of-drive into coil nailers, so in the future, it will be easier to install siding properly.

Placing fasteners. When you consider that fiber-cement usually carries a 50-year warranty, it doesn't make sense to attach it with nails that will rust in a few years. The makers of fiber-cement mandate the use of corrosion-resistant roundhead nails. Unfortunately, the electroplated fasteners that fit most nail guns don't hold up as well as stainless steel, but stainless nails are expensive and typically only fit framing guns. Hot-dipped galvanized nails are highly resistant to corrosion and less expensive than stainless steel, but until recently, they were unavailable for use in coil nailers. Last year, however, W.H. Maze started producing hot-dipped fasteners that fit pneumatic nailers. I'd consider using them, especially if I were building near the coast.

Fasteners should be driven into framing members, and depending on the brand of fiber-cement siding, are required to penetrate 1 inch to 1 1/4 inches. Most kinds of lap siding are fastened at both the top and bottom edge. With an approved exposure, it's also permissible to blind-nail fiber-cement lap siding — meaning you have to nail only the top edge. Blind-nailing looks good, because fasteners are hidden by successive courses of siding. The builders I spoke with, however, cautioned against blind-nailing in high-wind areas, because if the wind lifts one piece of siding, it will peel everything above it off the wall. The other problem with blind-nailed siding is that the unnailed lower edge won't lie tight to the piece below unless the frame is perfectly flat. If you plan to blind-nail, use nails with large heads and place them as low as possible — just above the lap line.

Siding Details

When plans call for bevel siding, carpenters typically install vertical trim pieces at inside corners so the siding has something to butt to. Normally, the trim pieces are made from wood, but that doesn't make much sense if you're siding with a material that lasts as long as fiber-cement. On jobs with lap siding, I saw carpenters using an ingenious vinyl corner trim called the Tamlyn Vinyl Inside Corner instead of the usual wood strips (Figure 4). Once the house is sided and painted, the corner is indistinguishable from a piece of wood, but it won't split or rot. The vinyl corners are 10 feet long and retail for $7.50 apiece.

Manufacturers recommend joining pieces of fiber-cement lap siding by butting them over a stud (Figure 5). There's no need to paint or seal end cuts, but you should leave a 1/8-inch gap between the siding and the edge of wood casings and corner boards. The

Figure 4. Tamlyn's vinyl inside corner trims are designed specifically for use with fiber-cement lap siding. Once painted, they look just like wood.

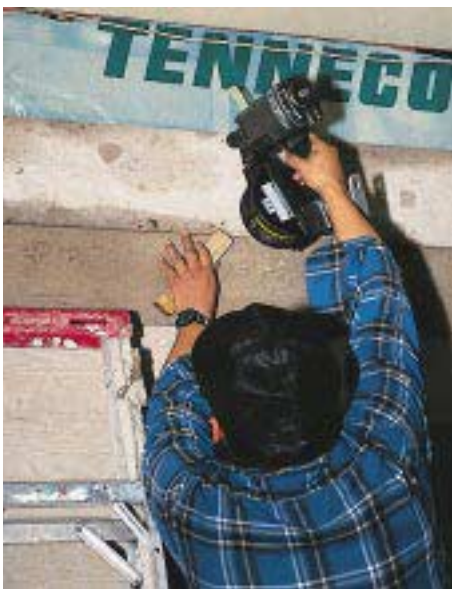

Figure 5. Fiber-cement lap siding is applied pretty much the same way as hardboard or cedar lap. Nails should hit the studs and penetrate a minimum of 1 inch.

Figure 6. The frieze, soffit, and fascia on this house are made from fiber-cement, but the uppermost piece of trim is spruce. Builders often find themselves mixing wood and wood-based materials with fiber-cement, because fiber-cement does not yet come in a 3/4-inch-thick size.

Figure 7. One problem with fiber-cement soffit is that it's hard to nail to. Tamlyn's Snapvent installs without fasteners, providing soffit ventilation while covering the fuzzy, ripped edges of the fiber-cement soffit.

gap has nothing to do with the fiber-cement; it's there to let the wood move, and should be caulked with latex sealant.

Fiber-cement siding can be installed over foam insulation board, but according to Rohrbacher, Perry Homes stopped doing it when they ran into fastening problems. "We found that when you shoot a nail into the siding," he explained, "it compresses the foam, which springs back, pulling the nail head into the fiber-cement." Rohrbacher concedes, however, that putting siding over foam might work if the installer takes extreme care when fastening. But he believes that the only way to get a trim sub to be careful enough is for the project manager to stand there and watch him put in every nail.

Fascia, Soffits, and Trim

Rohrbacher says that with all the rot and moisture problems in Texas, he's always looking for ways to replace wood and wood-based products with fiber-cement. But fiber-cement isn't yet available in enough sizes and shapes to replace every piece of wood on the houses they build. At Perry Homes, the standard cornice detail is to nail a wood 1x2 along the top edge of a 7/16-inch-thick fiber-cement fascia. Rohrbacher told me he'd prefer to build the whole assembly out of fiber-cement, but no one makes material thick enough to give them the 3/4-inch shadow line the detail calls for.

At the cornices, Rohrbacher butts the fiber-cement fascia rather than mitering (Figure 6). He explained that they tried mitering the material, but the thin edges were brittle and the cuts came out fuzzy.

Soffits are made from 1/4-inch-thick fiber-cement that comes in 8-foot sheets. Rohrbacher refrained from using the material for soffits, however, until a workable soffit vent became available. Previously, he stapled screen or nailed aluminum vents over cutouts in a wooden soffit. But while you can nail through fiber-cement to fasten it to framing, the material doesn't work as a base for nails or staples because it won't hold fasteners.

Eventually, Tamlyn and Sons developed the Snapvent, a continuous vinyl soffit vent that is unobtrusive and easy to install (Figure 7). Once this vent hit the market, Perry Homes started using fiber-cement for soffits. U-shaped channels along the edges of the Snapvent clip onto the fiber-cement soffit pieces, so there's no need to fasten the vent. In addition, the vent hides the ripped edges of soffit material. (Tamlyn makes a number of other vinyl flashings and connector pieces, as well as a vent that butts to brick frieze.)

According to Rohrbacher, he still won't use fiber-cement sheet material for entry trim, because the face isn't perfectly smooth and the factory edges are thin and rough-looking. When he needs an ultra-smooth surface, he specs MDO plywood; when he wants thick, smooth edges, he uses wood or hardboard.

Handling

Unlike cedar bevel siding, fiber-cement lap siding only comes in 12-foot lengths. As a result, on many of the sites I visited, siding joints were staggered in an overly regular pattern. I thought the installations would have looked better if the siding had been placed more randomly. The carpenters I spoke with, however, said that fiber-cement trim pieces are straighter than wood siding, so they spend less time bowing them in alignment.

On the other hand, fiber-cement is a lot heavier than wood of comparable thickness: The 5/16-inch-thick material weighs about 2 1/4 pounds per square foot. The carpenters said it takes two people to carry the number of fiber-cement pieces that a single carpenter could carry if it were made from wood. While fiber-cement is hard, it's so flexible that manufacturers suggest you carry it on edge rather than on the flat. I was also told that fiber-cement siding doesn't cover bumps in the frame the way wood

Figure 8. Dark rainwater stains on the end of this pallet of lap siding show how fiber cement absorbs moisture. As with masonry, the moisture doesn't hurt the material, but it should be allowed to dry before painting.

does; if you install fiber-cement siding over a wavy frame, the lumps are going to show through.

A couple of companies make 4x8 sheets of grooved vertical siding. The sheets are 5/16 inch thick, so unlike the plywood version I'm used to installing, the edges butt rather than lap. According to the manufacturers, the joints won't leak if you install the material over a moisture barrier and caulk the joints. They claim that caulk joints hold up well because the material doesn't expand and contract as much as wood. At Perry Homes, however, carpenters regularly double-up studs where panels butt; otherwise, there's not enough nailing base.

Painting

One of the best features of fiber-cement is how well it holds paint. According to Tyrone Faust, even the cheap paint some developers use holds up pretty well when applied to fiber-cement. "It doesn't move," he says, "and you don't get any funny business like sap bleeding through wood."

Hardie and ABTco products are available preprimed, but Faust puts the material up raw because he gives a 10-year paint warranty and wants to be sure what kind of primer goes on. "I've seen a lot of leaching come out of masonry when we painted it," he explains, "so we do our own priming to be sure our warranty holds up." The other reason Faust prefers to install fiber-cement raw has to do with mildew. He says he likes to put primer and topcoat over caulk, because he's noticed that after a few years the caulk joints on a new house will attract mildew. According to Faust, Houston is so humid that mildew will "grow on anything that stands still," and he wants to avoid any warranty claims over mildewed caulk.

Before priming a newly sided building, Faust washes it down with a power washer. "You create a lot of dust when you cut fiber-cement," he says, "and it just cakes on the siding." In addition, if the installer's hands are dirty, handprints will show through the paint. After washing, Faust waits until there have been two sunny days to dry the siding out before priming it. "I like the Pittsburgh masonry primer," he says, "which is designed to hold back the alkaline content of the material and give you a uniform sheen." He topcoats it with a 100% acrylic satin finish.

Like other contractors in the Houston area, Faust avoids using flat paint, because dirt and mildew are more likely to stick to it than to finishes that have some sheen to them. That's another reason why it's so important to do a good priming job, because satin topcoats have a greater tendency to look blotchy than flat ones.

According to most manufacturers, you shouldn't use oil-based primer with fiber-cement, although you can use an oil-based topcoat over a latex primer. For a paint job that lasts, follow the paint and siding manufacturers' specs.

Although fiber-cement is porous, Faust says he's never had any paint pop when moisture wicked into the raw end cuts. The project manager on one of the sites I visited told me, however, that he's seen moisture wick all the way through raw 4x8 siding panels after a few days of rain (Figure 8). But he didn't think this posed much of a problem as long as the siding is installed over felt and is given a proper paint and caulk job.

David Frane is a former finish carpenter and an associate editor at the Journal of Light Construction.

Sources of Supply

Fiber-Cement Siding & Panels

ABT Building Products Corp. (ABTco)
Box 98, Highway 268
Roaring River, NC 28669
800/566-2282
Fiber-cement lap siding, fiber-cement panel siding

FCP
Excelsior Industrial Park
P.O. Box 99
Blandon, PA 19510
888/327-0723
Cemplank

James Hardie
26300 La Alameda
Suite 250
Mission Viejo, CA 92691
800/942-7343
Hardiplank, Hardipanel, Shingleside

MaxiTile Inc.
17141 Kingsview Ave.
Carson, CA 90746
800/338-8453
MaxiPlank, MaxiPanel

Vinyl Trim Accessories

Tamlyn and Sons
10406 Cash Rd.
Houston, TX 77477
800/334-1676
Tamlyn Vinyl Inside Corner; Snapvent soffit vents; flashing; panel connectors

Tools & Fasteners

Duo-Fast Corporation
11951 S. Quality Dr.
Huntley, IL 60142
708/678-0100
Pneumatic nailing equipment and fasteners

Pacific International Tool and Shear, Ltd.
P.O. Box 1604
Kingston, WA 98346
800/297-7487
Snapper Lite SS302 cutting tool

W.H. Maze Company
100 Church St.
Peru, IL 61354
815/223-8290
Hot-dip zinc-coated coil nails