In the continuing bid to find out how the folks using systems and tools in the field feel about them, 38 contractors from around the country were surveyed at random to find out they think of mechanical fasteners for exterior insulation and finish systems. The first thing established is that the majority of contractors use them very little or not at all (see Chart A, page 50).

One key reason for this state of affairs is that most of contractors interviewed say they work with steel in the commercial market (see Chart B, page 53), where water intrusion is not a problem and mastic is easier to apply.

Another key reason most contractors use mastic over mechanical fasteners is a question of cost: “Most of the time EIFS is selected in commercial applications as a cladding,” says a Texan, “because it’s less expensive than other materials. Adding mechanical fasteners just runs up the costs.”

“We should do away with mechanical fasteners,” insists a contractor from Indiana. “They slow up the process because you have to be so careful with them. Usually, when you need a fastener, there is no substrate to fasten into, and it’s just a pain. They increase the price so much that we don’t even have a chance of getting the job.”

A Maryland contractor gives a slightly different angle on the cost issue and the reason he hasn’t used fasteners for a decade: “Everybody was gung-ho then about mechanical fasteners as the solution to system failures: If you put EIFS over gypsum and the gypsum sheathing failed, the whole system failed. The idea was that if you mechanically fastened to the stud or the substrate, you couldn’t fail. That was true, but it just jacked up the price. If one details the job properly and installs it properly, then mechanical fasteners become overkill, and so we quit using them.”

“The soft-coat, glue-applied PB system is cheaper,” explains a South Dakota contractor. “You use different foam boards with mechanical fasteners in PM systems that cost about $2 or $3 more per square foot than the PB system. We use fasteners only if we’re out of town a ways, to avoid losing a day waiting for the mastic to cure.”

“We do $15 million a year,” adds a Florida contractor. One or two million of that is stucco and EIFS, with most of that

By Steven Ferry
being PB systems because of cost. When you do price a PM system and a budget problem arises, the customer asks, ‘What can we do to solve the budget problem?’ and we inevitably go to a PB system to achieve a significant saving. We haven’t done a job with fasteners in three years, and that one was only because we were dealing with stucco that had been painted over. To obtain better adhesion, we had to fasten through the stucco, as well as glue.”

Water intrusion problems have led to moisture drainage systems that require fasteners. For those drier areas of the country without moisture intrusion problems, there is no need to move to this kind of barrier system, and so few are using mechanical fasteners, according to contractors from Arkansas, Louisiana, Arizona and California.

A Texan confirms that fasteners aren’t specified for his commercial work, but that “all the residential guys in the Dallas-Ft. Worth metroplex use mechanical fasteners now. The architects have been spec’ing mechanical fasteners for residential to handle the water intrusion problems that resulted from improper caulking, flashing and sealing.”

As mentioned already, many contractors are working exclusively with steel in commercial markets, and so prefer adhesives to fasteners. But the misconception seems to exist that one “only uses mechanical fasteners with wood-frame projects,” as one Californian puts it. “Most of what we do is over metal studs, and you don’t normally put screw-applied foam to a metal-stud building.” A New Yorker agrees, saying he also wouldn’t use fasteners with masonry. Yet mechanical fasteners are on the market for lighter metals, steel, masonry and concrete, all in addition to wood.

Maybe the real reason is, as one Mississippi contractor states, because “it’s faster, and the adhesion to the wall is stronger, with adhesives versus fasteners.” A couple of other contractors agree that mastic gives a better bond. Another, from Alabama, is quite adamant about the matter: “We don’t like using the fasteners, period—they
don’t belong in the EIFS system. The whole idea of the EIFS system is to create a barrier between outside and inside. In mechanically fastening a system, you’re actually puncturing the barrier over and again.”

But a contractor from New Mexico has the opposite viewpoint: “We’re doing a metal building right now, and we’re fastening the foam completely with metal fasteners. We’re not using any adhesive at all because it doesn’t work”

The last issue cutting across the use of mechanical fasteners is essentially one of familiarity and training.

“When you put a screw gun in my crew’s hands, it slows them down,” states a Louisiana contractor. “I guess if I had a drywall man put up all the foam with fasteners, the cost would be about the same.”

A contractor from North Carolina agrees: “The only power tools an EIFS guy uses is a drill to mix the mud. Installing fasteners, he would have to drag out a cord and a screw gun, which he typically doesn’t have.”

**Why Bother with Fasteners?**

So if these are all the cons, what are the pros for mechanical fasteners, as far as the mechanics on the jobsites are concerned? There are far fewer rooting for fasteners, but they are adamant in their views, which boil down to the belt-and-braces approach to the job.

“I’ve seen EIFS come off too easily with moisture intrusion when just glued on,” notes a contractor from Colorado. “I’ve always used fasteners and glue whenever possible. It has always helped hold board in place, even before EIFS became popular.”

“For 20 years, we’ve been gluing and screwing our drywall whenever possible,” adds a Missouri man, “depending on the metal, and it has reduced the number of screw and nail pops. The same idea holds for EIFS. It’s a mistake to only glue or fasten.”

A New Yorker uses mastic and mechanical fasteners when building on the oceanfront, over poured-in-place concrete and CMU. We apply the foam adhesively first, and then we come back the next day and set the mechanical fasteners. Doing both in the same day will break the bond.”

Lastly, one contractor from Ohio was recently converted to fasteners, and here is his reason why: “I only became interested in mechanical fastening in the last year. Until then, I wasn’t comfortable with them because I had seen instances where they could telegraph through the system, even when the mechanics had done a good job. When the light hit the fasteners at a certain angle, it was possible to see them after the finish job had been completed. Since then, however, fastener technology has improved, and I have seen people using them without problems. I have completed a couple of 60,000 square-foot projects with fasteners to good results since then.

“I know to look for a fastener that seats itself well, pulling itself below the surface of the foam with as little damage as possible to the foam itself, not breaking the foam but sucking in and seating itself below the surface. Then you can fill it properly and uniformly, so that each one comes out the same. You don’t want to have too much base coat in that hole, or you could invite telegraphing problems. I am leaning toward mechanical fasteners on many projects now. I have many carpenters and, frankly they can install foam using mechanical fasteners twice
as fast as plasterers, who are not adept at using a screw gun. Carpenters have difficulty using the trowel to spread the mud properly on the back of the foam. So, when we go to mechanical fasteners, they can fly.”

The demand continues to increase for mechanical fasteners, according to Doug Hill, president of Demand Products, Inc., for one simple reason: “Even with the advent of special adhesive technologies, mechanical fastening is a very positive way to attach a product. It gives the architects, engineers and contractors a comfort zone that allows them to sleep comfortably at night.”

The other qualities contractors look for in choosing mechanical fasteners included ease and speed of application as the most common concerns (see Chart C, page 57). The next most frequent reason for “choosing” one fastener over another was that they have no choice—they use whatever the architect or system manufacturer spec’d or recommended.

Eighteen percent say they look for a fastener that will hold firm, and 16 percent felt either that any difference among manufacturers was sufficiently small to not mind which make they used, or that quality was not an issue.

One contractor from South Carolina, who is concerned with quality, says he looks for “a screw that is weather- and corrosion-resistant. I want to know if the fastener will key the mud to it once you set it in the foam. When you come with your mesh and your base coat, some of them are smooth, and if you’re not careful when you brown them in, they scope back through. If it has a serrated face on it, and it’s beveled on the edges, then you have a much better chance of concealing the fastener in the wall.”

**It Gets Better...**

Although a contractor from North Carolina feels that “we’re not talking about anything more high-tech than a screw and a plastic washer, so there’s not much room for development,” not all agree with him. He does admit that “as far as the washer goes, they have probably perfected that with the perforations that lock in the base coat, much like the perforations on the side of a drywall sheet help lock in the mud.”

An Alabama man likes the way “they made it so the washer closes in over the screw head so you don’t have to fill it in so much with mud.”

“I appreciate the way we can now basically put the fasteners on the end of a gun, point and shoot them in with these powder-activated fastener,” notes a Kentucky contractor, “They’re really good for masonry or brick”.

A Louisiana contractor appreciates being able to “order my fasteners with the screws already in them so my men don’t have to waste time putting the screws and washers together.” A Michigan contractor agrees.

One Florida contractor doesn’t “see much advance in technology over the last 10 years we’ve been using mechanical fasteners in the class PM or class PB systems. But they do what they’re supposed to do and they’re well tested.”

The design that is being used today,” comments a contractor from Ohio, “allows the mechanics to move faster and produce a more consistent and quality fastening job. The fasteners tend to want to seat themselves properly without a great deal of care, so you can move much faster.”

Finally, a man from Virginia considers, “They’re easier to cover up because it’s easier to sand them down.”

The view from the manufacturing side is also pretty upbeat on industry advances. “We started with 1fl-inch and now have 2-inch plates,” says Ron Chelli, vice president of sales at Wind-Lock. “The washers have a thermal
chamber in them that allows the plate and screw to move independently and prevents a ‘cold spot’ in the center that, beyond the energy factor, can attract dirt. We’ve also changed the mechanisms for closing the chamber, increasing the keying area of the base coat, thereby allowing far greater negative wind load resistance. There are screws available for one inch foam up to 24 inches (and greater), in almost every conceivable substrate. Another important improvement has been the emphasis on independent witness testing.”

“Manufacturers have learned an awful lot over the years,” says Hill of Demand Products. “That fasteners need to have better coatings, for instance, and be better suited to the substrate they’re going through. Washers have to be made out of a certain material that will withstand the tremendous weather fluctuations in this country. Improvements are still being made. For example, more things are being attached to EIFS, such as ornamental detail. Ways are being developed to support these increasingly heavy items with mechanical fasteners, but without letting them become a deterrent to the system.”

Having said this, there are still some areas for improvement, according to the folks using mechanical fasteners. “[There: one manufacturer that] has a
good anchoring system but the drill bits they recommend in the literature don’t work,” complains a Georgia contractor. “You need a diamond-tipped drill-bit for masonry, block walls or concrete.”

“Ten years ago, we were all experimenting with pneumatic or powder-loaded guns,” says a Georgia contractor, “and they took a step back in recommending that fasteners be attached in pre-drilled holes because of inconsistencies in concrete strength. Sure, it gives a better result, but it takes longer.”

“I just want to be sure that the plastics and the metals we’re using are going to hold up under the corrosiveness of the cement,” warns another Georgia contractor. “We had blue PVC pipes installed from the street mains to the houses in Atlanta 15 years ago that are now bursting. So it concerns me, in dealing with stucco, that we’re using mechanical fasteners in the soffits.”

“Probably the biggest improvement would be speeding up the mode of fastening, whether with a strip feed gun or some other application tool,” says a Florida contractor.

“The mastic could be of better quality, instead of having some bad batches that set up too fast,” states a Michigan contractor. “You need at least half an hour before it sets, otherwise you have to re-mastic.”

One contractor from Arizona (and one from Arkansas), who haven’t heard the good news, feel that “they should come with the screws already on the washers. Putting a screw on every washer is labor intensive—on a 2,000-square-foot house, that’s six hours of wasted time, or 10 percent longer on the job.”

“Some fasteners,” complains an Arkansas contractor, “don’t suck up when you’re screwing them into the foam and into the stud. They should all suck up far enough so that when you’re sanding, you’re not hitting the top of the fastener and ruining the sandpaper.”

“Sometimes these power-actuated fasteners have hold problems,” a Virginian mentions.

“We have to use too many fasteners,”
protests an Ohio contractor. “We lay-out nine fasteners per 8 square feet of board. When mechanical fasteners were introduced, we were using one and a half-inch fasteners to grab two boards by putting them at the joints. I guess they found in pull tests that these were not getting enough foam. One guy in Michigan is working on a 3-inch fastener that you can use at the joints, thereby cutting the number of fasteners almost in half. Manufacturers have to make larger fasteners that grab more foam.”

“They could be cheaper!” is all two contractors, from North Carolina and Maryland, have to say.

“The nomenclature that [one manufacturer] uses is very confusing,” says a contractor from South Carolina. “Most manufacturers use the standard for wood frame construction, which is pretty clear: W1 is 1 inch, W2 is 1.5 inches and so on. This particular company has a great fastener, but they use millimeters; the average guy in the field has to read over the box for a minute to determine whether it’s 1.5 or 2 inches.”

“They need to find a better way of pre-filling the screw holes in the foam because it’s too difficult and time consuming,” notes an Arizonian.

Other contractors mention application difficulties that are more the reality of the job than something a manufacturer can address. “It’s not always easy to gauge how far into the foam to set the fasteners,” a Mississippi contractor notes. “Once in a while, putting the fasteners into the correct depth takes a little craftsmanship so that they don’t telegraph through the base coat,” agrees a Floridian.

“Every job is a little bit different. It’s really easy if you’re going through a plywood substrate; you can put a screw anywhere. But it’s a different ball game when you try to hit a metal stud. If it’s a 14- or a 16-gauge stud, it becomes considerably more difficult—you really have to lean on a screw gun to get the screw in,” observes an Ohio contractor.

A Kentucky contractor adds, “Sometimes it can be difficult going into brick, depending on how dense it is.”

Naturally, there are some who feel that no improvements are needed. “The spacing is pretty clear, as is the information that’s provided,” observes a South Carolinian. “They have a depth-set piece that you can put on your screw gun. They have taken all the thought process out of it and created a standard pattern. So, I don’t see what the manufacturers could do to make mechanical fastening systems any better.”

“If we have experienced any difficulty at all in applying mechanical fasteners,” notes an Oregonian, “it has been because of poor framing. Since we usually do the framing ourselves, that hasn’t really been a problem!”

“We’ve had no problems with fastening,” asserts a contractor from Ohio. “Our problems have been like everybody else’s—maintaining caulking standards for many of the applicators and keeping the people with the drainage systems working.”

**Doing It Right**

Some contractors will always probably be driven by speed perceptions and cost considerations and never give mechanical fasteners the time of day, but there always will be those who
are willing to put in the time and money for the added insurance that fasteners bring to EIFS.

Mechanical fastening, according to manufacturers, does not slow down a job. In fact, Chelli says, it allows for rasping and base coat on the same day the EPS is installed. There’s no need to wait 24 hours for an adhesive to cure.

“I believe everyone should use mechanical fasteners,” insists an Alabama contractor, “not that everyone does. One point, though, is that if EIFS manufacturers didn’t recommend a certain make, I’d use a cheaper one—I’d get the same quality and save money.”

Another vote of confidence for mechanical fasteners came from a Georgia contractor: “If I were to work on my own house, I would fasten it, paying extra attention to water management. As long as you don’t pull the fastener all the way through the board, you’ll be fine.”

A contractor from South Carolina feels that the EIFS industry as a whole has benefited from fasteners: “Something was needed in the industry, and drainage systems are forcing us into it. There has been an increased use of mechanical fasteners, which will help the industry to the degree it forces us into a secondary barrier.” This view was echoed by Chelli at Wind-Lock: “More and more residential applications are using a secondary weather barrier that is increasing the demand for fasteners.”

A no article on EIFS would be complete without a comment on the need for quality work over the clamor for ever better tools: “EIFS work when installed properly,” continues Chelli. “It’s been proven year in and year out, throughout the history of EIFS. The industry needs to promote. It’s healthy and growing, but I think it can do better. No system on earth can do as much as EIFS. Let’s brag about it. Applicators should not have the ultimate responsibility for choosing one product over another. The fasteners used should meet the specifications or requirements, not only of the manufacturer, but also of the code bodies. Assuming all washers will provide the same wind loading is absolutely incorrect. One of our distributors found 600 square feet on a site that had been fastened with Snapple bottle caps. We’ve seen people cut out bottoms of plastic buckets, put a screw through them and then call that a washer! Nothing stick to plastic—which is why our washer has 36 keying-holes for a base coat to wrap around and mechanically attach to the plate. On a 4,000 square foot, $500,000 house, fasteners come to maybe $800. Why take a chance on something that is so insignificant to the overall cost of the job?”

The view look the same from the building site: “EIFS is a good product overall,” proclaims a contractor from North Carolina. “Mechanical fasteners are being used widely for drainable systems, but these themselves are just a Band-Aid fix in my opinion. If EIFS is installed correctly, and all the other parts and pieces of the building that come in contact with it are installed correctly, it is as good a system as brick or siding. There are buildings in Europe with very similar products on them that are 500 years old and doing fine. It’s a matter of good quality work, with all the flashings being put on correctly and keeping water out of the system.”

About the Author
Steven Ferry is a free-lance writer for the construction industry. He is based in Dunedin, Fla.