

Replacing Windows IN STUCCO WALLS

The key to a crack-free, leakproof installation is to properly tie into the existing lath and building paper

Drive through a neighborhood that has a lot of older stucco homes, and you'll probably notice some obvi-

ous patch jobs where windows have been replaced. Window replacement is

one of the most common home improvements people make in any type of house, but it takes special skill to blend the repairs into an existing stucco surface.

Looks are the least of it. Tying into the parts you can't see — the existing lath, flashings, and building paper — is a more serious challenge than making a

good visual match. Metal lath gives the stucco structural integrity, and the building paper and flashings beneath the lath are the wall's last line of defense against water. It's difficult to cut and patch those components without introducing leak points or creating the potential for cracks.

My company does stucco work on new and existing buildings in Northern California. Although the principles are the same in both, remodeling projects are harder because we have to tie into existing stucco and because old windows are often replaced as part of the project. Sometimes existing windows are removed and covered over, and sometimes new ones are added where they didn't exist before.

Removing the Old Windows

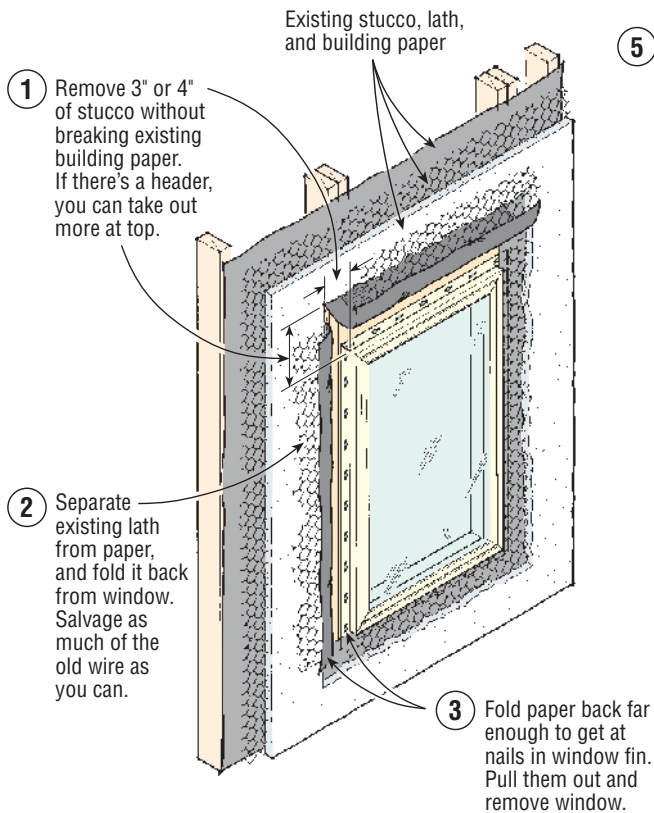
Most of the houses I work on were built after 1960, so the original jambs have fins. The first thing you have to do when you replace that kind of window is tear out the stucco around it.

The biggest mistake you can make is to use a circular saw to cut out the stucco. For one thing, the patch is more likely to show if the joint between the old and new stucco is a straight line. It's much better to have an irregular or jagged joint. Even worse, if you remove stucco with a saw, you'll cut through the building paper, and that's a hard mistake to fix. I can't overemphasize how important it is to maintain the integrity of the paper. Stucco may look weatherproof, but it's actually water permeable. If the paper is damaged,

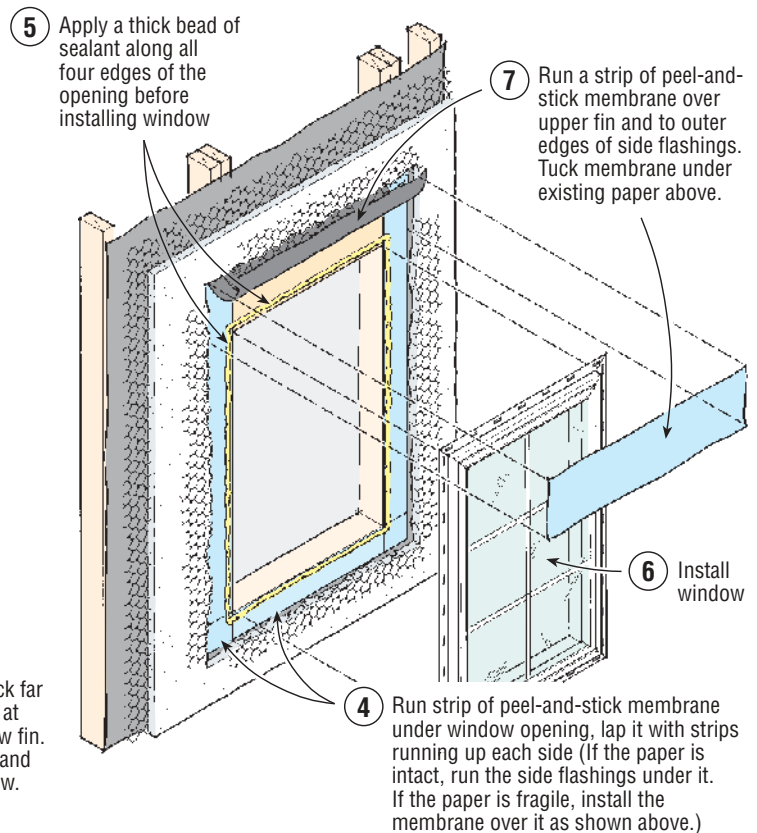


Installing a New Window in Existing Stucco

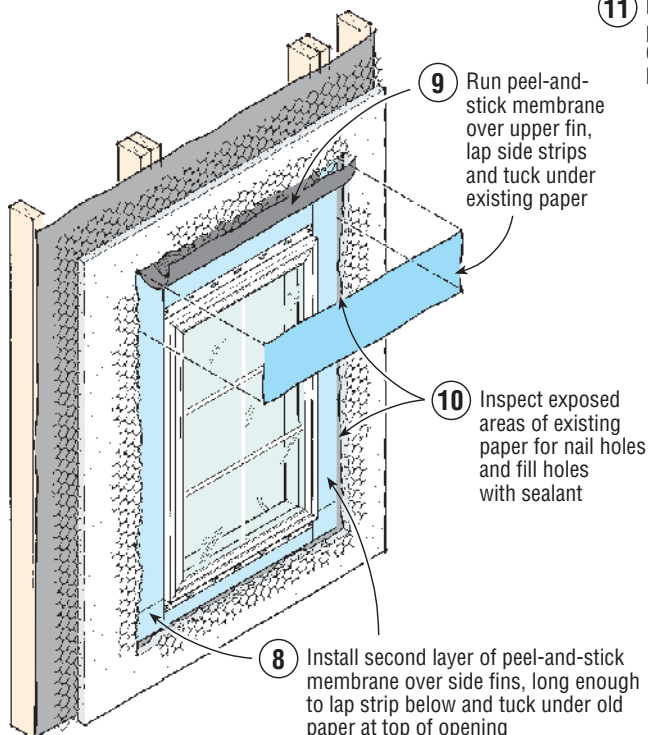
A. Prep the Opening



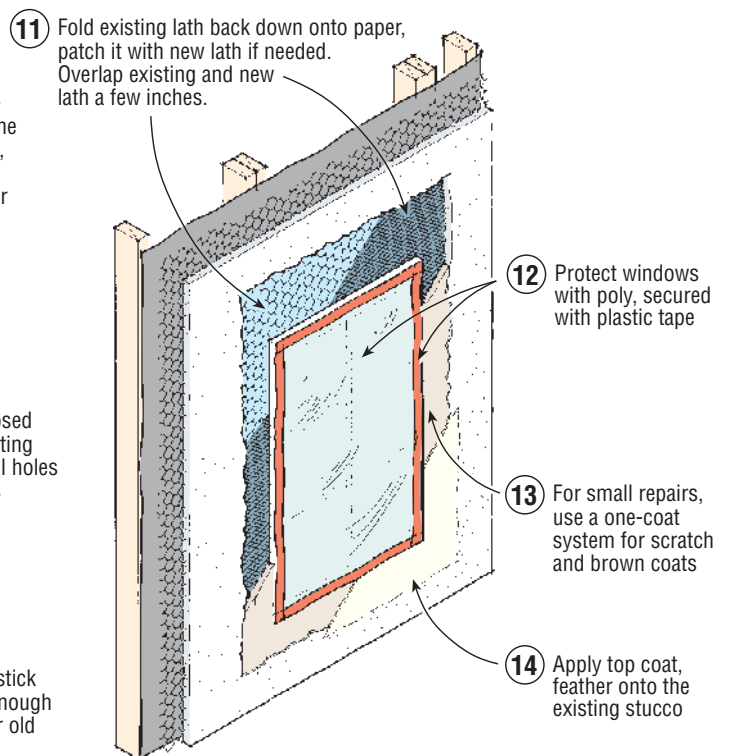
B. Flash Opening with Peel-And-Stick Membrane



C. "Paper" in Window with Peel-And-Stick Membrane



D. Install Lath and Stucco





The author uses a painstaking process of beating the stucco around the window until it falls out of the lath (left). He is careful not to damage the building paper beneath. He then bends back the lath in preparation for removing the window (below left). The photo below, taken on a different contractor's job site, illustrates a less desirable approach to removing the window. The straight saw kerf will be harder to hide when the new stucco is applied; plus, the paper protecting the sheathing has been cut, leaving gaps in the drainage plane.

water can get through to the structure.

Breaking out stucco. The proper way to remove stucco is to break it back from the opening with a hammer or pneumatic chisel. If you fracture it into small enough pieces, it will fall away from the lath. The idea is to do that without damaging the existing building paper.

Many of the older homes in this area are open-stud; that is, there's no sheathing. Building paper is fastened directly to the studs, and the lath and stucco are applied over it. Newer homes have plywood shear walls, but even then large areas could be open-stud.

Don't hammer beyond the edge of the framing when you beat back stucco; otherwise, you'll break the paper. Normally, there will be two studs on either side of a window and a double sill below. This means you can remove 3 or 4 inches of stucco without breaking the paper. You can take out more at the top, but only if there's a header there.

Old stucco is often very hard, but you should be somewhat gentle when beating it back. Bashing away wildly pokes holes in the paper, even if it is



over framing. If you destroy paper, you'll have to break back to an undamaged section. The beat-back is the most time-consuming part of the job, so there's no point in doing more of it than you have to.

Once you're down to bare wire, pull the nails that hold the lath to the frame, separate the lath from the paper,

and fold it back from the window. The next step is to fold the paper back far enough to get at the nails in the fin. Pull them out and remove the window from the building.

Prepping the Opening

Around here, most new windows are vinyl and have integral fins.

Once the old window is out of the way, the author installs new peel-and-stick flashing around the opening, sliding it under the lath and adhering it on top of the existing paper (right). Installing the new window then proceeds normally (far right).



Installing them in old buildings is similar to installing them in new ones. In both cases, the fin is installed over flash paper.

The usual procedure in new construction is to run a strip of flashing across the wall just under the opening and lap it with strips that run up either side. The window is installed over those pieces, and a fourth piece of flashing is applied above the window so that it laps the side flashings and upper fin. The walls and every fin except the bottom one are covered with two layers of building paper before the lath and stucco are applied.

Flashing material. In the stucco trade, we still refer to flashing as flashing paper, even though it's now made from other materials. Most of the builders in this area use Moistop (Fortifiber Building Systems, Reno, Nev.; 800/773-4777, www.fortifiber.com), a paperlike polyethylene membrane with a fiberglass core. One version goes on with nails, but you can also get it with peel-and-stick material along one edge. I have no problem using either of these products on new construction. You can

also use them on replacement jobs, but for that kind of work, I prefer to use a peel-and-stick adhesive membrane such as FortiFlash (also from Fortifiber). It has a rubberized asphalt core and a polyethylene skin and is similar to other sheet membranes such as Ice & Water Shield. I use FortiFlash for a couple of reasons. It's self-sealing, so it won't leak at fastener penetrations. It's very flexible, and the entire back side is sticky, so it seals tight to whatever I put it on. Adhesive membrane flashings cost more but are worth it if they can help me avoid even one leak per year.

Base flashings. Ideally, the old window would come out without causing any damage to the existing paper. However, old paper can be extremely delicate. By the time you get the nails out, it's unlikely there will be much left of the edge. Fortunately, a damaged edge can be repaired by lapping an adhesive membrane over it.

Inspectors want you to fold back the old paper and put the new flashings under them. After the window is in, you're supposed to fold the paper back over the fin. The trouble is that older

stucco buildings are covered with a different kind of paper than we use today. The old stuff is sometimes so fragile that it will break when you fold it back. It's a disaster if the paper breaks off where it comes out from under the stucco because there's no easy way to make the repair. You're supposed to lap over the break at least 6 inches with another piece of building paper. The only way to do that is to tear out more stucco. If the building is sheathed, you'd have to take out 6 more inches; but if it's open-stud, the next good stopping point could be 14½ inches away. You could shorten that distance by installing another stud closer to the break, but you'd need to do it from the inside.

Alternate flashing method. If the old paper is in good shape, we'll fold it back and install the flashing against the framing in the usual way. But if the paper is fragile, we'll install the side flashings over it. That way we don't have to risk breaking it to get the window in. Depending on how much stucco was removed, the flashing might lap 3 or 4 inches onto the paper. We always use FortiFlash for this application because it



will stick to the existing paper and create a seam that water has a hard time getting through. Once the flashings are in, it's time to install the window.

Installing New Windows

Before you install the window, use a caulking gun to put a thick bead of sealant along all four edges of the opening. It's important to use a good-quality sealant that's compatible with the flashing, window, and building paper. We use Moistop Sealant, a polyurethane product from Fortifiber.

The window is placed against the sealant and flashings, plumbed, and secured to the building with roofing nails driven through the holes in the flange. The final step is to run a strip of flashing over the upper fin all the way to the outer edges of the side flashings. This top piece of flashing should tuck under the existing building paper above.

Papering in. Once the window is installed, it's time to paper it in. The conventional way to paper in a house is to cover it with two layers of grade D building paper. The paper should lap the top and side fins and tuck under

With the new window in place, a second layer of peel-and-stick seals the window flanges to the first layer (top left). The top strip goes in last and is tuckered under the existing paper above (top right). Next, the author bends the original lath back into place in preparation for stucco. Above, he fills in with a new strip of diamond lath, overlapping the original wire by several inches to prevent cracking.

the bottom piece of flashing. This works fine when the flashings are under the paper but is impossible when the flashings are over it, which is often the case on replacement jobs.

Although the fins are bedded in sealant, they are still supposed to be

covered. Grade D paper will work, but only if you remove enough stucco to get the required 6-inch vertical lap. It's better to paper in the window with self-adhering membrane because you don't need much lap to get a good seal.

I start by running a horizontal strip



Above, the author trowels on Maxit 690, a premixed one-coat reinforced stucco that reduces the time it takes to make a patch. At right, a worker rolls on a bonding agent, which helps the stucco finish coat adhere to the painted surface of the existing stucco.



of FortiFlash across the bottom fin. Technically, this step is not necessary, because the lower flange already laps over a piece of flashing. I do it to ensure that water doesn't get through the nail punch-outs and to cover the small voids that sometimes exist at the mitered corners of the flange.

Next, I install strips of membrane over the side fins. They should be long enough to lap the strip below the window and tuck under the old paper at the top of the opening. The last strip of membrane covers the upper fin, laps the side strips, and, again, tucks under the existing paper at the top. We inspect the paper for nail holes and fill those we find with the same polyurethane sealant we used to set the windows. The wall should now be waterproof.

Lath and Stucco

After the window is papered in, it's time to install lath. The old lath can be

folded back down onto the paper and reused. If any of it's missing, you can patch it with new material. All kinds of wire lath are made for doing stucco. It doesn't matter what kind you use as long as there's a good tie-in. This means there should be a few inches of overlap between the old and new lath. If the lath doesn't lap, cracks are likely to develop at that spot.

We normally use expanded metal diamond lath on replacement jobs because we can get it in precut strips to fit the 3- to 4-inch space we have to work with. The diamond lath goes over the existing wire and is fastened every 6 inches with staples or 1¹/₄-inch roofing nails. For larger repairs, we'd use self-furring wire lath.

Materials. In this area, builders use traditional three-coat stucco. It's about ⁷/₈ inch thick and consists of a scratch coat, brown coat, and finish coat. The first two coats are made on site by

combining plastic cement, bulk sand, and water. We use a premixed bagged product for the top coat, which contains white cement, sand, and lime. It's mixed with water on site.

Repairs made with traditional cement-based stucco require multiple trips and take weeks to complete because cure time is needed between coats of mud. The scratch coat should cure for 48 hours, and the brown coat should cure for 7 days. Shrinkage cracks may appear in the finish if you skimp on curing.

We use traditional materials for new work and for large repairs. Window replacements are different because there's only a small area to patch. For small repairs, we'll use a one-coat system for the scratch and brown: Maxit 690 (Maxit, Antioch, Ill.; 847/395-7110, www.maxit-usa.com), a premixed bagged product that contains Portland cement, sand, glass fiber, lime, and additives that reduce shrinking.



For the sand finish being applied here, the top coat is applied with a trowel (left) and feathered out with a sponge float (right), which brings the sand to the surface.

Maxit 690 can be applied in a single coat up to 1 inch thick or in two coats that can go on the same day. It's more expensive than traditional material, but the labor savings make up for it by allowing you to make one less trip to the site. The manufacturer recommends 7 to 21 days of cure time, but we have had no problems with finishes applied after only a day or two of cure.

We always cover windows with plastic to keep stucco off the frame and to prevent the glass from being scratched. The plastic is held on with plastic tape, which is removed as soon as the repairs are complete. The tape can leave an adhesive residue if you leave it on too long. Never use duct tape, because the adhesive ruins vinyl frames.


Base and finish coat. The one-coat material is mixed on site and applied to the lath with a trowel. We don't want it to sag, so we add just enough water to

create a very stiff mix. I'll build the base coat flush to the surrounding stucco and then use a sponge float to smooth it out. In some cases, I'll cut it back slightly to accommodate the thickness of the finish coat. This might be $\frac{1}{8}$ inch for smooth finishes and more for textures. A day or so later, we'll come back to apply the top coat.

There are many different ways to apply the top coat of stucco. It can go on smooth or textured, be painted after it cures or be applied with the color already in it. It's beyond the scope of this article to describe all the ways there are to apply texture, but I can explain how we do the sand finish that's on the houses pictured here.

The top coat has to cover the areas we patched and feather onto the existing stucco. If distance isn't too great, we'll extend the top coat to the nearest corner. That way the transition between new and old will be harder to see.

Stucco does not adhere well to paint, so if the building was painted, you'll need to use a liquid bonding agent. It gets applied to painted surfaces where the top coat will be feathered in. We generally use bonding agent on all patches, because it prevents the base coat from sucking the moisture out of the top coat. This makes the top coat easier to work and prevents cracks by promoting an even cure.

The top coat is applied with a trowel and goes on about $\frac{1}{8}$ inch thick. We use a sponge float to smooth it out, feather it in, and create texture by exposing the sand in the mix. Once the building is painted, you won't be able to tell where repairs were made. If the underlying paper and lath were properly tied in, there will be no cracks or leaks. 

***Don Thorvund** has been in the stucco trade for 20-plus years and is the owner of TNT Plastering in Fremont, Calif.*