Photos by Chris Ermides

Repairing Plaster Interiors

BY MYRON FERGUSON

I am often called to repair plaster work in older homes. Typically, it's to repair a cracked ceiling or areas of walls or ceilings where significant reworking of the plumbing or other mechanicals has been done. I've developed some efficient strategies for both situations that don't require rocking over or demolishing the entire surface.

LARGE WALL REPAIR

A difficult repair I did on a customer's plaster wall last summer provides a great example. Some major plumbing renovations had required opening up the wall and demolishing a big section of plaster. On top of that, a drain pipe that had been relocated into the wall cavity couldn't be pushed back far enough and stuck out beyond the plane of the existing plaster surface **(1)**. In this case, as it often is, the door casing and baseboard needed to be left in place, and I wouldn't be able to build up the plaster or joint compound to be too thick along the edges of the trim. All of this meant that I couldn't easily cover the wall section with board material, so I opted for using metal lath instead.

We settled for having the inside corner of the room just a few degrees out of square. To make that work, I began by ripping a piece of 2-by and installing it even with the plane of the pipe **(2)** to create a solid attachment for metal lath, which I could then roll out from the corner 2x2 over the drain pipe, and blend into the casing.

Fabric and lath. In previous repairs, I had discovered the use of plaster over wire lath that had been backed with rosin paper to help prevent too much plaster from falling through the lath. Instead of rosin paper, I used FibaFuse Wall Reinforcement fabric, which I use regularly for resurfacing ceilings, as I will explain


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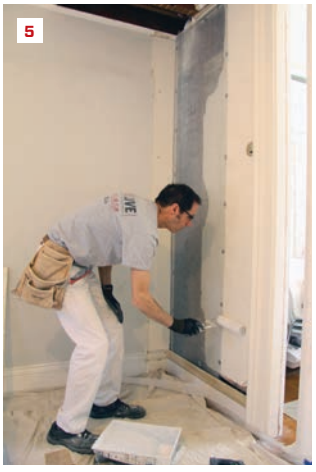
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later in this article. For the wall repair, I stapled the fabric over the opening in the wall **(3)**, and then covered it with wire lath, securing the lath with screws and plaster washers **(4)**. As luck would have it, the opening I was repairing could be covered with a single sheet of lath measuring 8 feet by 27 inches—a common size for wire lath.

Primer and base coat. Before applying the plaster over the mesh and ceiling repair, I first had to apply a plaster bonding agent **(5)**. In addition to helping the plaster bond to a variety of materials, the bonding agent reduces the water absorption out of the plaster, allowing the plaster to cure properly.

I mixed the base-coat plaster to a thick consistency, and I started applying the plaster along the bottom of the wall **(6)**. Because I used a thick mix, started along the bottom, and had the fabric behind the lath, I was able to build up the plaster to a thickness of at least ½ inch and taper it to nothing along the casing. When I returned the next day, the plaster had set up into a solid surface. The blend-in over the drain pipe already looked good.

For the next coat, I applied a thick coat of setting compound, which set up in about an hour. I then applied a thin coat of lightweight joint compound for the final coat **(7)**. This coat was just a skim coat of compound to smooth and fill in any remaining defects in the surface. When it was dry, I sanded it to a smooth finish with 220-grit sandpaper.

REPAIRING CEILINGS

Large ceiling areas can be repaired with pieces of drywall. On this job, an area of the ceiling above the wall repair had also been demolished, by the same plumber who installed the drainpipe. The plaster and lath was about one inch thick, so I padded out the


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ceiling joists with strips of ½-inch drywall **(8)** before installing large pieces of the same material to fill in the hole. Note that the plaster around the perimeter should be well secured with screws and plaster washers, and any small areas of exposed lath should also be secured.

Regular drywall can be used as a plaster base, but it—and any exposed wood lath you want to plaster over—must be treated with a bonding agent **(9)**. Next, I prefill any open joints and the perimeter of the patch with base-coat plaster **(10)**, into which I embed fiberglass tape. When that has set up, I follow with a coat of setting compound and feather in the patch before resurfacing the rest of the ceiling.

RESURFACING PLASTER CEILINGS

Many old plaster ceilings have shallow cracks over much of the surface, and it's time-consuming to apply tape over every crack even when you're using self-adhesive mesh tape. Then all those taped areas have to be concealed with multiple layers of compound. This is before the spider cracks are even considered.

Spider cracks are what I call the fine cracks that are sometimes all over an old plaster ceiling. They appear to just be cracks in the paint, but I was never sure what to do about them. Was it necessary to reinforce each one? Doing that would be difficult and time-consuming and require a lot of mesh tape.

Prep work. You're finishing over an existing surface, so if it's in poor condition, any material applied over it will be compromised. If the base is loose, dirty, or too absorbent, or if it offers poor adhesion or has some other problem, then the new surface may not create the stable, durable finish desired.

To prep the existing surface, I remove any loose plaster or paint and seal any watermarks or stained areas of the ceiling. Often, areas of the ceiling will have separated from the lath, typically because the keys into the wood lath have broken. These areas can be pulled in tight to the lath by using plaster washers.

If the surface is very smooth, first rough it up with a coarse-grit paper (80 grit or coarser). On glossy painted surfaces, I have used paint de-glossers with success, but using a plaster bonding agent, such as Plaster-Weld, is my preferred method.

I suggest V-grooving larger cracks, then filling them with setting compound and covering them with extra-strength fiberglass mesh tape. Areas that are recessed or crowned should be filled or feathered out at this time with a setting compound **(11)**. Using the setting compound allows me to complete the prep work and move right on to embedding the glass mat I plan on using to reinforce the entire ceiling.

Tip: Prior to starting a job, you should prep a test area to make sure that the method you are thinking of using is going to work. That way, when you start the work, you can feel confident that you will have good adhesion.

Resurfacing. To achieve a new, smooth ceiling surface over old plaster, I begin by coating the ceiling with a thin layer of joint compound. This acts as an adhesive for a fiberglass mat, which serves

as a reinforcement to bind small cracks together and create a new, even surface.

My preferred method for applying the joint compound is using a paint roller that has a ½-inch nap cover **(12)**. The skim coat could also be applied with a wide taping knife or even with a paint sprayer capable of spraying joint compound. The compound thickness should be about ⅛ inch (3mm). Edges close to walls and ceilings can be coated by applying the compound with a paint brush or taping knife.

I suggest using a heavy-weight all-purpose compound, rather than a lighter-weight compound, because of its greater strength and adhesion qualities.

The reinforcing mat I use, FibaFuse Wall Reinforcement, is a fiberglass mat (not a weave), and because the fibers are not particularly dense, it is quite porous. So it's easy to embed in joint compound, which is the adhesive that holds the material in place.

You should span the entire ceiling with one length. (On a wall, the mat should be hung vertically as one length, as well.) Position the first piece of wall reinforcement along a straight corner or chalked line and press it into the compound with a wide taping knife, working from the center toward the edges **(13)**.

Each adjacent piece of the fiberglass mat is butted to the prior piece. This method is preferred, and I do it by first snapping a series chalk lines at intervals the width of the FibaFuse roll. Because the mat is relatively thin, it can also be lapped and double-cut, as you might do with wallpaper. Double-cutting is when you cut through both layers with a utility knife and then remove the narrow strips, leaving tight-fitting butted edges.

Excess material along the edges and around cased openings gets cut off with a taping knife. The fiberglass mat cuts easily, so there's no need to use a sharp knife. Continue to embed tightly with the taping knife until the mat is smooth and compound is forced through the face.

Work one length at a time. Within a few minutes of embedding one length of the fiberglass fabric into the compound, apply a second coat of the same joint compound, rolling it on and working it firmly into the surface **(14)**. This process fills any voids in the surface and any dry areas behind the fiberglass mat. Immediately smooth and remove most of this layer of compound with a wide taping knife, leaving only a thin coat of compound over the surface.

Let the compound dry thoroughly—it will most likely take more than 24 hours. At that point, lightly sand with a fine, 220-grit sandpaper.

Coat again. After sanding the base coat, roll on more joint compound **(15)**. (A lightweight compound can be used for this final application). Remove and smooth with a wide taping knife, leaving the surface smooth and tight **(16)**. This process is similar to applying a Level 5 finish (see "Specifying Drywall Finishes," Nov/09). In most cases, no additional sanding is needed.

Myron Ferguson is a drywall contractor from Middle Grove, N.Y. For more articles, ideas, and techniques, visit his website at thisisdrywall.com.


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Replacing Basement Windows

BY EMANUEL SILVA

When it comes to replacing windows, homeowners seem to give the least amount of thought to the ones in the basement. In many of the older homes I work on, the original wooden sashes on these windows are rotting away and no longer operate. Often, the sashes are nailed shut, making the basement damp and musty from lack of fresh air. Additionally, the inefficient single-pane glass in the windows is frequently dingy and loose with the putty falling out, letting in cold winter air but not letting in much daylight.

The typical fix is just sliding a replacement window into the existing wooden frame and running a bead of caulk around the outside perimeter. But for bigger problems, that's just a Band-Aid. Instead, I always suggest replacing the whole window unit—frame and sash. A modern-day double-glazed window is more energy efficient, and the thinner, modern frame lets it admit more light with less air leakage, while offering better security and easier operation. Recently, a client needed eight basement windows replaced in an older home with a rubble foundation, and here's how I approached the job.

Photos by Emanuel Silva

MEASURE AND ORDER WINDOWS

I started by measuring the openings of all the existing windows around the outside perimeter of the frame. I then deducted for the frame, the sills, and the space needed for insulation, plus another 1/2 inch to deal with any out-of-square situations I might encounter in the openings. These measurements gave me the window sizes I needed.

With the windows ordered, I put together a list of material that I'd need to complete each window unit. I added up the widths and lengths of all the necessary pieces and figured that I could get them all out of two 4x8 sheets of 3/4-inch PVC. I also rounded up pocket screws, deck screws, PVC glue, foam insulation, caulk, and some mortar to complete my materials list.

FRAME FABRICATION

After the windows arrived, I used them to determine the exact sizes of the parts for the window frames. The original window sills extended only about 1/2 inch beyond the foundation, which concerned me. So I decided to make them about an inch wider to better deflect water away from the foundation.

I always cut the pieces I need from PVC sheets because I can make them any size I need with minimal waste. Using a Trac Saw, I ripped all the larger widths, labeling them as I went **(1)**. For smaller rips, I used a table saw. I then cut the sides of the frame to length on the miter saw, including the 12-degree angle needed for the sloped sill.

After cutting the sill stock to a rough length, I glued and screwed a 2-inch-wide piece onto the outer edge to double the thickness where the sill extended beyond the foundation **(2)**. After gluing the two pieces together, I ran the assembly through a table saw with the blade set at a 12-degree angle to make the outer edge plumb **(3)**. To help keep water from entering under the sill through capillary action, I cut a saw kerf 1/2 inch in and about 3/8 inch deep along the bottom outer edge of the sill. Finally, I stacked the head jamb and sill together and cut them to the same length with one pass on a miter saw.

To assemble the frame, I drilled pocket holes along the bottom edges and secured them to the sills with weather-resistant pocket screws and PVC glue **(4)**. I finished the frame by gluing and screwing the head jambs to the sides with deck screws to form simple butt joints.

WINDOWS GO INTO THE FRAMES

Before I could put the new units into the frames I'd built, I needed to install the interior stops for the windows to fit against. Taking the lengths directly from the frame, I marked each stop piece and cut it to length. After predrilling the stops and inserting screws in my holes, I screwed the stops into place, using a spacer block as a guide to space them evenly from the inside edge of the frame **(5)**.

Each window came with a head expander that slides up to fill the gap at the top of the window. I applied polyurethane low-expansion foam to each expander and slid it onto the top of a window **(6)**. Next I squeezed out a bead of caulk (I used DAP Dynaflex 230, an

elastomeric latex sealant) onto the front side of the stops and pressed the window against the stops, leaving equal space along both sides for insulation **(7)**.

Opening the windows let me access the holes for securing the units to the frames, which I did with four screws short enough not to go through the frames **(8)**. I then checked the frame for square by taking diagonal measurements. If adjustments had been needed, I would have used the attachment screws to tweak the fit.

At the bottoms of the windows, I attached a sill expander that I had ripped to width on a table saw. After applying low-expansion foam to the bottom of the window, I tapped the expander into its groove, starting at one end of the window and slowly working my way to the other end until it was secure.

Next, I measured and cut the exterior stops for the top and sides. Then, installing one piece at a time, I filled the gap between the window and the frame with low-expansion foam and installed the stop to keep the foam from oozing out **(9)**. A bead of caulk applied to the back of each stop piece sealed it against the window sash before I screwed it into place. I finished by filling the screw holes with OSI Quad sealant.

PREPPING AND INSTALLATION

Removing the rotten and dilapidated old windows was pretty easy. They were no match for my pry bar and reciprocating saw. When all the pieces were removed, I cleaned the opening with a brush.

As I was removing the windows, I noticed that some of the openings needed additional attention. The old rubble stone foundation hadn't been maintained through the years, and a few stones were loose. After vacuuming up any loose debris, I applied a bonding agent that helped the new mortar adhere to the stones and to the old mortar. Using Type-N mortar, I secured the loose stones and then applied a coat of new mortar to the entire opening, brushing it smooth **(10)**.

The next step was installing the new windows and frames in the openings. Fastening the frames to the old stones with masonry anchors would have been extremely difficult, if not impossible. So after sliding the frames into the openings, I secured them to the house sill through the head jamb of the frames. To keep the units from moving in the openings and to air-seal around them, I sprayed low-expansion foam between the frame and the foundation.

After the foam had cured, I applied mortar around the perimeter of the frames, both inside and outside **(11)**. When the mortar had cured a few days later, I cleaned the mortar residue off the stones around the opening with muriatic acid.

The impact of the new windows was immediate. Opening the windows quickly improved the musty smell of the basement, which was much brighter with the added light. And the new double-glazed basement windows made of rot-proof material should easily perform better and last far longer than the original windows.

A frequent contributor to JLC, *Emanuel Silva owns Silva Lightning Builders, in North Andover, Mass.*