

BY SCOTT GUTHRIDGE



Leaky Basement Windows

I was working on my parents' home, which I had built for them in 2009, finishing their basement off in stages as I had time between other projects, and I had one last window to trim out. The basement windows were hung on a treated-wood frame I used to surround the concrete opening in a Superior Wall foundation.

THE PROBLEM

As I looked from inside the home at the wooden framing around the window, I saw what looked like a water stain on the corner. I wondered what had caused it, so I looked outside around the perimeter of the window and found a slight crack in the gray caulk that my crew had originally applied to seal the window.

We had used a polyurethane sealant that the manufacturer of Superior Wall recommends to seal and adhere the precast fabricated foundation wall panels. I understood it to be durable enough to last the lifetime

of the structure, and this is likely true for below-grade applications. But in this case, direct exposure to the elements seemed to have caused the sealant to pull away from the vinyl window and the concrete opening it was placed in.

In homes with these precast foundations, I build a rough opening that is $\frac{1}{2}$ inch bigger than the vinyl replacement-style window. This provides an even, $\frac{1}{4}$ -inch space around the window, which I air-seal with non-expanding foam and seal on the exterior with caulking. I also set the window unit about 2 inches in from the face of the exterior wall to protect the head of the window from driving rain. This inset eliminates the need for head flashing, which can fail when adhered to the face of a concrete wall, and it saves time.

I cleaned off the dirt and debris from the existing sealant, as well as the mildew that had formed around the opening, and with some mild detergent,



Short of pulling all the basement windows and using a peel-and-stick to create a drainable sill pan, the expedient fix was to inject a high-quality polyurethane sealant into the gap below and on the sides of the window unit, creating a retrofit sealant pan before installing extension jambs.

I scrubbed, rinsed, and dried the opening.

I grabbed a new tube of caulk (Vulkem 116 polyurethane sealant, which is very similar to the Superior Wall caulk). While cracked, the existing caulk was still strongly adhered to the concrete. I applied the new sealant over the old and made sure it was bonding well to the concrete wall and the vinyl window.

Out of curiosity, the next day, when the sealant was thoroughly dry, I took a garden hose, set the nozzle to shower mode, and gently sprayed the window to replicate a rain shower. After spraying water for a couple of minutes, I went into the basement to check, assuming everything would be fine. But to my surprise, I saw water coming in around the corner of the window. "What in the world is going on here," I thought. I started to investigate. I looked outside and saw the caulk was tight, and the weep holes seemed open and clear in the window frame.

What had actually happened, to the best of my knowledge, was that the vinyl window itself had small cracks in the corners of the window frame. I took some photos and started documenting the process.

I dried up the water with some rags and went outside, set up the hose to spray the window, and left it running. Then I headed back into the basement to determine where the water was leaking through first. It appeared that the left side was leaking almost

immediately, and eventually the right side started leaking as well.

THE SOLUTION

I was determined to find a solution for this leak before installing the extension jambs and trim.

I certainly did not want to tear out the window and start from scratch, although it crossed my mind. If I had removed the window, I would have been able to place a peel-and-stick membrane under the window, just as I do on all windows in a wood-frame wall. Short of this measure, I decided to create a pan by injecting the same polyurethane sealant that I had used on the outside to fill in the gap around the bottom and sides of the window.

I removed all the spray foam that I had used to air-seal the opening and cleaned it out as well as I could. I then took my caulk gun and shoved the tip as far into the 1/4-inch gap as it would go. I wanted to make sure the entire space was filled with sealant to prevent any water from entering the structure. As the sealant was squeezed into the opening and started oozing out in front, I troweled the sealant along the bottom and up the sides about 3 inches.

After letting the sealant dry for a day, I got out my hose. Again, I set it up to spray the window gently, and I went inside and hoped for the best. This time, there was no evidence of water inside. I let the hose run

for five to 10 minutes, and still no water was leaking through. The amount of water that hit the window in that period of time was a deluge compared with the typical rainstorms we have in this area, and I was confident I had solved the problem of water leaking into the structure.

I had already trimmed two other basement windows on the house without testing them. The thought crossed my mind to tear out the trim and use the same procedure. For a paying customer, I might have been more motivated, if only to avoid the potential liability. But I decided against it, since one window was already finish painted. I rationalized that the actual rainfall on these windows is minimal, and the opening's frames are treated lumber and concrete. If there were a slight leak, it would take many years before any damage materialized.

I have built many homes with my original basement window detail and thought I was doing it well. Lesson learned. There are hidden cracks in many windows that usually go unseen. I do not know if the failure at the corners of this unit occurred at the time of original installation or in the ensuing years. All I know is that I am going to be water-testing more openings before finishing them off in the future.

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