RESTORATION PRIMER

Wood Window Sills: Repair or Replace

by John Leeke

In many cases, it's more economical to rejuvenate wood windows than to replace them. This is especially true if you consider the historic character and value of original windows.

Often the deciding factor is the condition of the sill. Where the sill is shot, people often opt for complete replacement, frame and all. However, if the sill was repaired or replaced, the window could be saved. Here are a few methods I've used to deal with bad sills.

Sills

First let's review a few basics of function and construction. The sill is a structural part of the frame that holds the sash snugly, yet lets the sash open and close freely. A weather seal is formed between the bottom rail of the lower sash and the sill. The sill drains away rain water that washes down from the window and wall above.

Houses built in the 1700s and early 1800s usually have simple framed windows with the sill housed in rabbets at the lower end of vertical stiles (see Figure 1). Windows in later buildings may have more complex framing with finish sills supported by sub-sills of wood or stone. More parts mean a greater chance for trapped moisture and decay.

I find that two different conditions are common in deteriorated wood sills. The conditions relate to window location and require very different treatments. Sills on the south and west sides of the building tend to be dried out with deep cracks that need to be filled. North and east window sills are more likely damp with decayed wood that needs to be treated or replaced.

Weather Checks

Sills on the south and west side of the house often have deep "weather checks." Once a small natural check opens up, sun and water get in. The sun's ultra-violet rays deteriorate wood fiber not protected with paint. The damp-dry and freeze-thaw cycles open the checks wider and deeper. Checks up to 1/4 inch wide by 3/8 inch deep are extreme but common.

Weather checks are easy to see if the old paint has weathered away. Even if sills have been painted recently, breaks in the new paint film will be visible since the spackle most painters use will last only a season or two in this situation.

Usually the rest of the sill and frame are in good condition. Exterior casings may also have weather checks, but not as bad as the sill.

Materials. Epoxy filler is the only treatment I have found for weather checks that I consider a permanent solution. It will adhere to the sides of the checks, flex with seasonal wood movement, and provide a good base for paint.

Methods. Look for deep decay by raking out a few of the largest checks (see Figure 2). Deep decay is not common under checks, but if found, should be repaired before filling the checks. (Repair might require removal of the sill and epoxy injection through drilled holes.)

If only the checks need repair, start by removing heavy paint buildup from the surface of the sill. It's not necessary to clean out all the cracks completely, just get out the big loose chunks of paint and old putty. The epoxy will consolidate any remaining debris.

Then cover the sill loosely with poly sheeting to dry it out. This might take a week or a month, but the wood must be dry so the cracks are at their widest when you fill them.

Prime the checks by filling them with epoxy consolidant, such as Abatron's LiquidWood (Abatron, Inc., 141 Center Dr., Gilberts, IL 60136; 312/426-2200). Use a narrow applicator bottle so the consolidant doesn't go all over the surface (Figure 3).

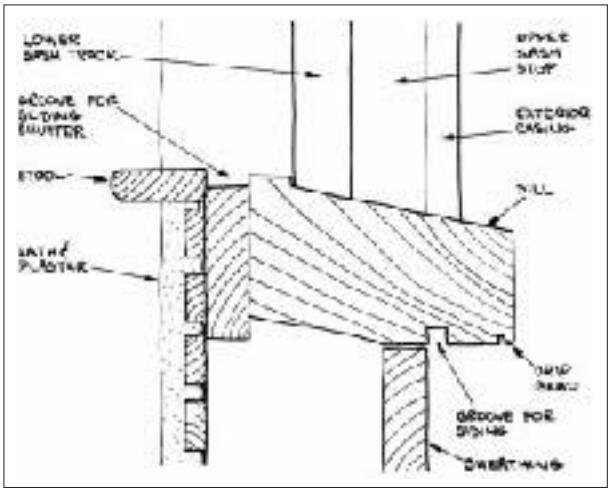

Figure 1. *Sill detail for a 1790s frame house. The sill is housed in rabbets in the sides of the frame.*

Figure 2. *A special scraper helps clean out the checks in a weathered sill, before epoxy treatment.*

Figure 3. *Epoxy consolidant is applied to the checks as a primer before they are filled with epoxy filler.*

Figure 4. *Peeling paint on the siding beneath the sill indicates high moisture content—and possibly a decayed sill.*

Most of the consolidant will soak in. The next day, fill the checks with epoxy filler (Abatron's WoodEpox).

You may be tempted to cover the whole top surface of the sill with epoxy, thinking more of a good thing is better. But don't. This would limit the wood's ability to dry out. Also, improperly formulated filler might be too brittle and crack with wood movement. I sometimes build up the top face of the sill with epoxy to even it out just where it meets the sash. This provides a regular surface for the sash and weatherstripping to make a weather-resistant seal. But don't build up a flat, true surface across the whole sill, since this would look odd next to weather-beaten exterior casing and clapboards. It's better to fill all the weather checks, while letting the original texture show.

When the epoxy has set, paint the sills with an oil-based primer and two top coats.

Causes. Weather checks are caused by ineffective paint maintenance. Once the damage is repaired you'll want to advise the building owner to check the sills for breaks in the paint film every few years and to do spot paint maintenance as needed.

Decay. Decay is a common condition I find in sills on the north and east sides of a building. Without the drying effects of the sun moisture can build up leading to decay.

Decay begins at the joints where the sill meets the frame stile. Water is trapped by the blind stop or exterior casing. Heavy paint buildup keeps the wood beneath from drying out.

Use an icepick to probe the joint for

Figure 5. *The decayed sill has been removed to determine the extent of damage to sill and frame. Note the rabbet joint at bottom of the frame stile.*

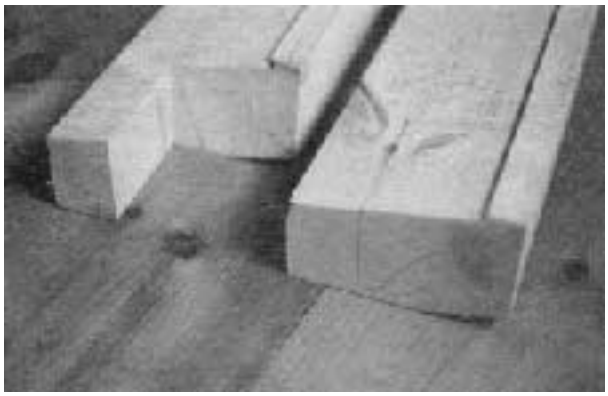

Figure 6. *A new wood sill of eastern white pine is about to be screwed in place to repaired frame stile.*

soft decayed wood. Also, look for peeling paint on the sill, exterior casings, and siding beneath the sill, which would indicate high moisture content (see Figure 4). In a really bad case, the sill may have dropped an inch or more over the years, and the sash may have been refit to compensate for the gap. (Do not consider building up the sill with epoxy—that's just a cover-up of the real problem at the joints.)

If there is any decay, you must remove the sill to determine the extent of the damage. This can often be done without disturbing the rest of the frame or the interior casings (Figure 5).

Treatment. When the decay is localized right at the joint, you can do the epoxy treatment with the frame in place. If the decay is extensive, however, you'll need to make a replacement sill of new wood, and possibly remove the whole frame to replace the frame stiles.

Methods. First, restore the limited decay in the old sill and stile joint by consolidating decayed wood and rebuilding the joint with epoxy consolidant and filler. Again, the wood must be dry for epoxy treatment. So protect the gap left in the wall when you removed the sill. Store the sill in a well-ventilated, protected place so it will dry too.

Treat the stile ends in place with consolidant and rebuild the joint with filler. This is easy to do when the top shoulder of the rabbet joint is still sound. If not, the rest of the frame may have to come out to treat the stiles.

Make a new sill out of decay resistant wood or treat the wood to protect it. Here in New England I usually use the traditional eastern white pine, selecting pieces of all heartwood with slow annual growth to resist decay. I typically follow the original sill as a pattern, adding a siding groove and drip bead if the old one didn't have them.

Next, install the new or preserved sill, seating the joints with a long-life paintable sealant such as Sikaflex (Sika Corp., 875 Valley Brook Ave., Lyndhurst, NJ 07071; 201/933-8800). Fasten the sill in place with galvanized drywall screws or nails (Figure 6).

Maintenance

To ensure long life for the restored window sills, recommend that your customer take the following steps to prevent moisture build-up and decay:

- Leave a slight ventilation gap between the bottom of the storm window and the sill.
- Install gutters if they are missing, and keep them unclogged.
- Cut or move shrubbery back at least two feet and trees at least ten feet from the house. Otherwise, they limit air flow.

Costs

When estimating costs for sill work, I use the following figures: To epoxy weather checks and paint three coats takes one to man-hours per sill. To make a new sill and install it, leaving the frame in place, takes 6 to 10 man-hours.

In a future column, I'll talk more about using epoxies for decayed wood consolidation. ■

John Leeke, of Sanford, Maine, restores and maintains historic buildings. He also consults with contractors, architects, and owners working on older buildings.