Universal Finned Window Replacement

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Universal Replacement of Old Finned Windows

New Construction finned windows have been used extensively, and over the last 20 years the majority have been uPVC. Bargain builder windows have begun to fail and are in need of replacement.

There are considerations with the replacement, and most of them are due to differences in frame depth, and existing interior and exterior trim.

The common technique, chosen solely for economic reasons, has been to use a reciprocal saw to cut out the old window and leave the old fin behind the existing siding and trim. This is not the best approach because it destroys the water management, does not reconstruct it, and covers over the debris in the opening cavity which then is difficult to properly seal. It will be only a matter of time before it will fail and leak. Similarly, prying the old window - fin and all - out of the opening leaves a similar broken water management condition behind the old siding and trim, which is again covered over and difficult to properly seal.

The preferred technique is to cut or remove the exterior trim/siding to expose the old window’s fin and flashing. The flashing is removed and the old window is removed, and a new finned window is installed in its place and re-flashed and re-trimmed. This approach yields the best long term result.

The new window, however, needs to be the perfect size - similar fin dimension, and similar depth, etc. for a quality and weathertight finish. It often requires a more expensive window than the typical replacement product, and offers fewer style options.

There is a method that will yield a proper result, using a box-frame product. This universal approach to replacing a finned window simply has the exterior trim removed to expose the old fin, and new exterior trim reinstalled over the repaired flashing before installing the new window. This new trim is 3/8” wider than the old molding. This allows it to extend into the opening forming a “blindstop” to which the new box frame window is installed in a familiar “pocket” install.

**NOTE:** It is important to repair the flashing in the opening, around the jambs and header, and create a drainage accommodation (effective sill pan or drainage mat) on the sill. Also, placing 1/16” - 1/8” shims on the sill, over a tapered piece of siding slanted towards the outside and covered with flashing, will raise the new window properly to allow drainage to the outside. Two cap nails, installed on the sill overlap flashing will complete the weep system.
Cut Out Old Window, Leaving the Fin

Very often, the old window is cut out - through the old fin - leaving the fin in place. This is very common where “J” Channel was used to trim out the siding. The goal is to leave as much of the exterior and interior trim in place and patch/repair.

If done with care, the new window, a box frame window, can be inserted in the opening and trimmed with minimal damage to the existing opening.

This would work if the exposed space between the siding and the interior wall board, containing the original flashing and insulation, is isolated from water intrusion, and accommodating drainage of any water or moisture condensation in so that it will not collect in the opening cavity. The best approach is to use a liner and seal behind/under the liner.

**Step 1:**
Using a reciprocal saw, cut the old window out without disturbing the exterior.

**Step 2:**
After removing the window, do your best to clean the gap, injecting a small bead of foam behind the siding. You can wrap some flashing over the gap. Try to direct any water from going behind the siding.

**Step 3:**
You can line the opening with water resistant pvc trim board and mount the window or use a pre-extruded liner with built-in exterior stop, as shown*, and finish with drip cap and sealant.

*Imperial Plastics jamb liner VES3BF illustrated
Step 1: Remove the exterior trim, or cut-back the siding to expose the mounting fin of the old window.

Step 2: Remove the fasteners holding in the window in place being careful not to disturb the water management (flashing) more than necessary.

Step 3: After removing the window, cut back the old flashing leaving two inches of coverage exposed from behind the siding.

Step 4: Re-flash the opening, placing flashing tape around the head and jamb sides. Cover the 2-inch flap left in place from the old flashing.

Flash the sill to create a sill pan effect. Place the sill flashing over a piece of tapered siding to create drainage.

Fasten bottom overlap in two places with Simplex-type cap nails. These will create a 1/16”-1/8” space between the bottom trim and the flashing to allow drainage. (See Finish Detail Diagram)
**Step 5:**
Accommodate drainage from the sill. Install a “Sill Pan” with a back dam overlapping the jamb flashing - before installing new trim to form the “Blind Stop”. If you’re not using a pre-formed sill pan, you can create the effect by installing a 1 x 2 to create a back-dam before applying the flashing.

**Step 6:**
It is important to install a drip cap along the top of the header exterior trim as shown.

If J-Channel is needed instead, install it along top, and jamb sides.

Make sure the top lays over the jamb pieces and that the sill piece fits between the jamb pieces for proper drainage.

**Step 7:**
Cut new exterior trim wider than the old trim so that it projects into the opening 3/8” on 3 sides.

Use of cellular uPVC trim boards for weatherability is highly recommended.

Confirm the new trim projects 3/8” to the interior on three sides - creating an effective “blind-stop” for the pocket install.

**Step 8:**
Place a bead of caulk on all 4 sides of the inside surface of the exterior trim that extends into the opening.

Leave two 1 inch gaps along sill to allow drainage.
**Step 9:**
Set 2 shims (minimum 1/16”; maximum 1/8”) about 2 inches in from each side on the sill.

Place the new window into the opening, on the two shims and against the exterior trim, pressing against the sealant.

Shim the new window as necessary to insure it is plumb and square.

Using the supplied mounting screws, anchor the new window to the opening framing.

**Step 10:**
Re-apply interior trim and seal for finish as necessary.

**Step 11:**
Caulk seal the perimeter taking care not to seal the sill in any way that would block weep drainage.

**Finish Details:**
- Shims to establish drainage path to front
- Flashing over sill with up-turned edge at back to create Sill Pan
- Sealant
- Cap Nail Fastener to create drain path out
- New Exterior Trim 3/8” wider to form Blindstop
- Seals to establish drain path to front
Picking the Proper Sealant

AWDI understands that the application of a sealant is as crucial as the choice of sealant. When a bead of sealant is applied to a joint there are severable factors to consider:

- Adhesion
- Flexibility
- Durability
- Compatibility
- Temp, Weather, Exposure
- Aesthetics

Within these three performance aspects there are countless combinations of applications, substrates and conditions a sealant is exposed to.

Bedding Joints:
For bedding joints, it is especially important that the sealant meet AAMA 800-802, and is of the right consistency and made up of 100% solids so it will not shrink after cure, unlike solvent and latex based sealants that shrink and create gaps after curing.

Fillet Joints:
A fillet joint is formed when two surfaces come together to form a right angle. The sealant used to join these two surfaces is triangular in shape. The sealant must adhere to the variety of substrates you’re faced with. Without strong adhesion there is a high chance that the sealant will pull away from the substrate allowing for air and water infiltration.

Control Joints:
A control joint is formed when two similar or dissimilar materials meet or when substrates do not form a right angle. This joint will require both a backer rod and sealant for proper application. This joint can be as wide as 5/8 inch and be prone to extreme movement, a highly flexible sealant is necessary for a reliable seal with this application. In order to successfully install a window or door and effect a lasting weathertight seal, AWDI recommends an ASTM C920, Class 50 sealant such as premium

DYNAFLEX® from DAP as a good representative to seal the exterior joints of windows and exterior finish materials. The best choice is a sealant that meets AAMA 800-802 to assure proper adhesion to the most common building materials and that is compatible with WRB and flashing tapes; and can be used in a wide temperature range and wet surfaces.

Desired Properties

- No Shrinkage
- Locks out air and water infiltration to protect integrity of the seal
- Proven Wet Surface Application
- Ability to use the same sealant in warm and cold temperature situations to produce consistent results. 0F – 140F cold and warm weather application
- Strong Adhesion / All Surfaces Will stick to even the most difficult to bond building materials
- 5X stretch, 50% joint movement Long term durability assurance even with expansion and contraction of building materials
- 24 hour fast cure, paintable 1 HR. Fast cure to protect the building structure from outside forces and quick paintability saves time
- Achieves bubbling resistance faster to ensure optimal aesthetics
- 4,600 + Color Matches ensures perfect color match to all primary building materials
- Dirt & Dust Resistance ensures optimal visual appeal long after an installation
- UV Resistance
- Long term durability to compliment the durability of the building structure
Spray Foam Insulation

While the term “Spray Foam” is often widely used in construction, there are two different types and each has its advantages and disadvantage.

Spray foam has been shunned by window installers and manufacturers over the years because foams, in the past, have either continued to expand after trim has been applied deforming the more pliable vinyl window frames, or because they have been over used to fill the gaps left when old windows are removed and the underlying rough opening has been exposed.

Make sure the foam you use has been tested to industry standards and is labeled conforming to standards as a low expansion, low pressure foam.

Most standards applying to window installation do not delineate between open cell foam and closed cell foam, the more popular “minimal expansion” foams are most frequently used and they are mostly closed cell. More confusing yet, is when foams are recommended, the compressed foam tape alternatives are called out to be open cell.

When it comes to Spray Foams, it helps to understand the differences. Open-cell spray foam (ocSPF) has a cell structure where the cells are filled with air. The open-cell structure renders soft, flexible foam, with a density of about 0.5-0.8 pounds per cubic foot (pcf).

The R-value per inch of open-cell foam typically ranges from R3.6 to R4.5 per inch. Unlike fiberglass and cellulose, the fine cell structure of ocSPF makes it air-impermeable at certain thicknesses. The air-impermeability of ocSPF qualifies it as an air-barrier material, dramatically reducing air leakage through the building envelope, significantly lowering the building's heating and cooling costs. However, ocSPF, like fiberglass and cellulose insulations, is moisture-permeable, and may require the installation of a vapor retarder in colder climates.

Closed-cell spray foam (ccSPF) has a closed cell structure which yields rigid hard foam, with a density of 1.8-2.3 pound per cubic foot (pcf), and can provide structural enhancement in certain framed buildings. The smaller cells trap insulating gas from the curing, which has a lower thermal conductivity than still air, and increases the R-value to anywhere from R5.8 to R6.9 per inch.

Like ocSPF, ccSPF is also air impermeable at certain thicknesses and can qualify as an air-barrier material. The bigger benefit is that the closed-cell structure of ccSPF also makes it water-resistant, and is the only spray foam that can be used where contact with water is likely.

At a thickness of 1.5 inches, no additional vapor retarder is required for most applications.

**Desired Properties**

- Industry tested and labeled as a Low Pressure/Low Expansion; i.e., will not warp or deform windows & doors
- Quick Setting Formulation: can be cut or trimmed in less than 1 hour
- Cold Temperature Application: can be applied in temperatures as low as 14F
- Insulation Value of R5: makes it an efficient method for stopping air and moisture infiltration
- Remains Flexible Once Cured: will not crack or dry out

*Note: Be careful, shims can present a problem as they extend through the cavity and can allow water and air infiltration. Foam Tape used outside like backer rod can seal the opening and conform to the contours while allowing drainage.*
Using Spray Foam

For the best installation, it is necessary for the gap around the window or door to be sealed to block out air, water and vapor penetration. ccSPF can do that well if selected and used properly. Improper use can create water traps, impede drainage and exert excessive pressure to the window frame during expansion.

Remember: Vapor barriers need to applied on the warm side of the opening. Double vapor barriers (one on the warm side and another on the cool side) encourage condensation between and will trap the resulting condensation. Also, window installation cavities (the space between the window frame and the rough opening, or left-in-place old window frame) need to “breathe” to the outside, and allow drainage of collected water to the outside.

AWDI recommends ccSPF Foam which is a polyurethane closed cell, low pressure/low expansion sealant to fill the gaps as protection against moisture and air. OSI’s closed cell foam also achieves a thermal performance of R5 per inch.

Application

Foam can be applied using a Foam Applicator Gun, or a small can with “straw type” nozzle tip. The flexible tip from gun or can equally allows for more precise application. This gun offers a rear valve used to control the size of bead applied into the openings. The valve also allows the life of the foam to be extended by closing the opening of the barrel for future use.

For even smaller openings, a detachable screw on top is included with the gun to be able to fill gaps as small as 1/8” wide.

Important tips:

• Similar to the sealant gun, it is critical that you balance the movement of the foam gun or straw barrel and how you dispense the foam so that the foam makes contact with both the rough or existing window frame and replacement window frame.

• If the dispensed foam does not make contact with both the rough frame and the window frame, there won’t be an adequate bond to seal out water and air.

• Industry Standards suggest application of 1 inch beads, separated by an equal space. Be careful not to create two vapor barriers - one at the exterior and one at the interior. Make sure there is the ability for the opening to breathe to the cold side for drying and drainage. Use backer rod about one inch in the sill as a stop to make a workable back dam.

• When applying foam around the perimeter of the window or door, you must maintain a minimum depth of 1 inch. This depth is required to provide the correct thermal performance, to help improve energy savings, and to protect against condensation problems.

• When applying foam as a back dam to the gap between the window frame and the rough sill, do not allow the foam to extend to the exterior edge of the opening. Maintain a minimum of a 1 inch gap between the foam and the exterior edge of the rough sill. If foam fills this gap at the sill, any water from leakage will not be able to drain to the drainage plane or exterior cladding surface. Place backer rod the length of the sill, 1” from edge and use it as a back dam guide.