WEB BASED CORE APPLICATION SPECIFIC INSTALLATION INFORMATION AND METHODS

Proper Window & Door Flashing

Proper Flashing - Divert. Drain. Dry.

Regardless of whether a window is installed in a brand new opening or an existing opening, the installation must be integrated into the wall to allow water to be diverted from coming into the cavity and therefore into the interior. Water that enters the cavity must be allowed to drain; and moisture trapped in the wall or cavity between the window and the framing, must be allowed to dry to prevent mold, mildew and rot. Simple: Divert, Drain and Dry.

This goal is accomplished through proper flashing which not only blocks the infiltration of water, but also is lapped in such a way that the water drains down, and then to the outside.

An integral part of a properly flashed opening is the sill. Moisture can enter the cavity from outside and also from inside.

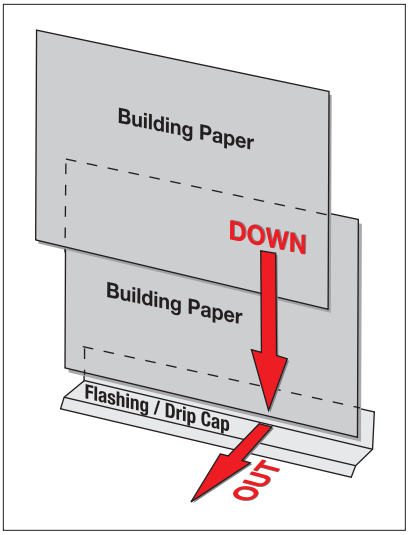
When the outside is colder than the inside, the inside air will carry a lot more moisture, and since warm air moves towards cold air, the warm, moist interior air will makes its way into the wall where it will condense out the moisture.

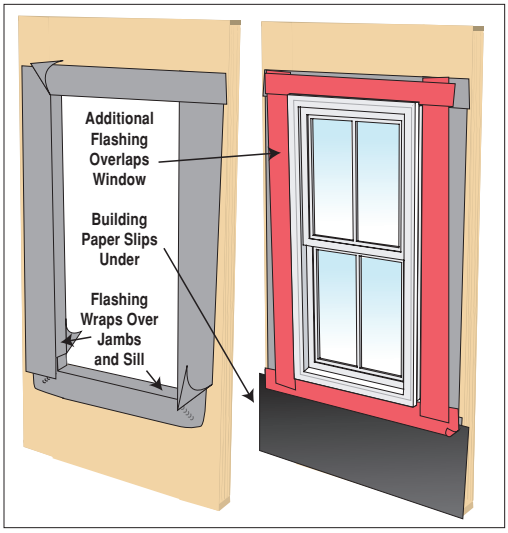
This moisture, in the wall, when the opening is properly flashed, will makes its way down the sides of the new window towards the sill, where the sill configuration should allow this moisture to exit.

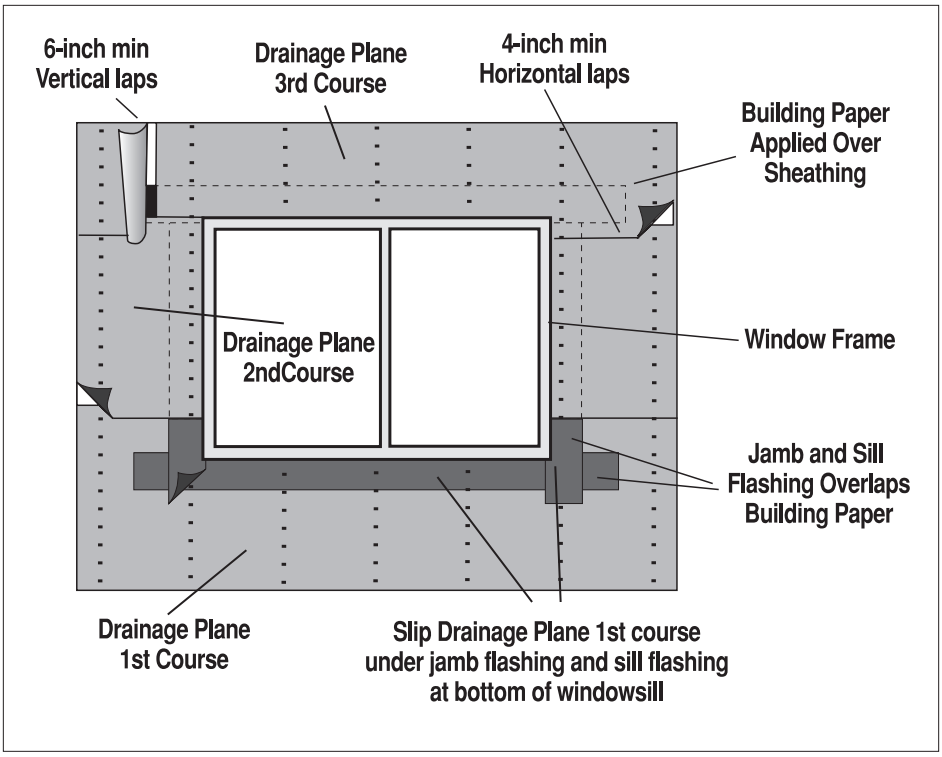
For the moisture that may be left to be prevented from causing problems, the cavity must be allowed to dry. This is accomplished by not completely sealing the full perimeter of the new window/wall interface allowing the space and materials to properly dry.

There are two basic methods of flashing: Method A where the Weather Resistive Barrier is applied after the window is mounted, and Method B where it is applied before window mounting.

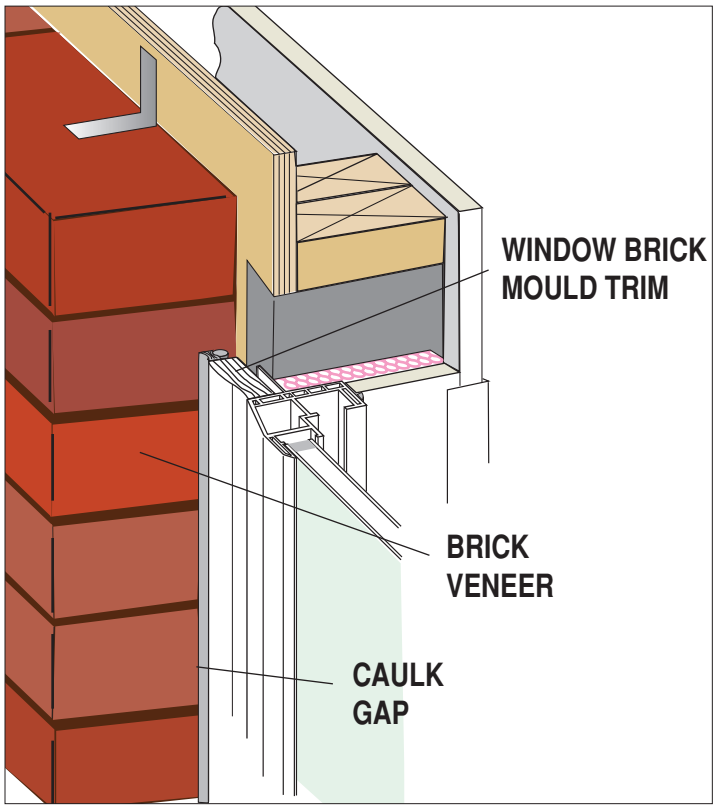
The bottom line is divert the environmental water, drain any that makes its way inside, and dry whatever is left.

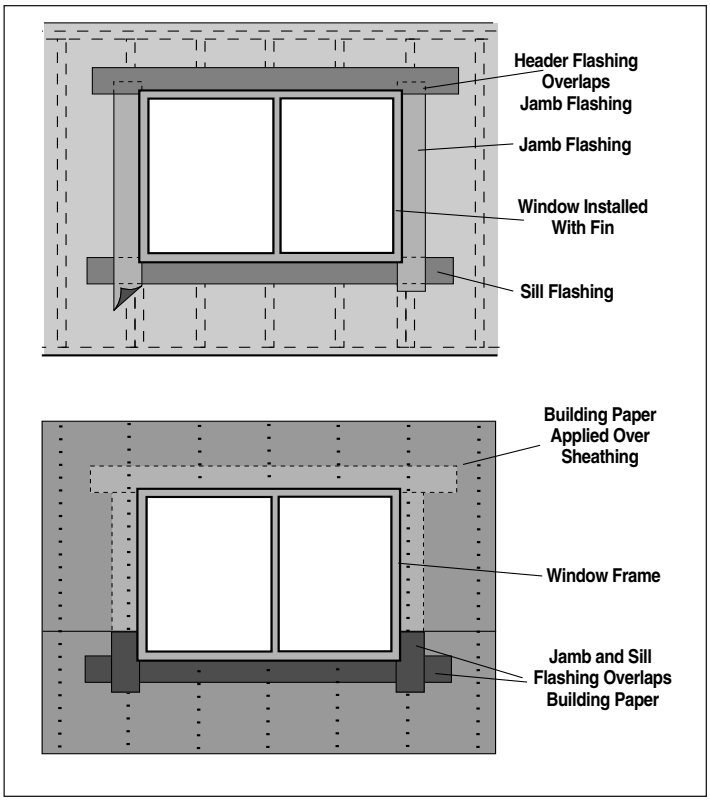






Drip Cap, Penetration Flashing Basics





Flashing: The flashing configuration will depend on the surrounding construction. You can install the flashing before or after the new window (Method A or B) is placed in the rough opening. Either way, the flashing must be installed in a manner to preclude entry of water into the wall cavity and the rough opening gap. In some cases, the window may have an integral flashing design. In other cases, flashing materials can be used in conjunction with the application of the finish siding. (See section on Penetration Flashing)

Header Drip Cap: At the head of the window, a drip cap should be installed from under the sheathing paper at the header, to beyond the exterior face of the window. It should also extend past the trim at the sides of the window. Install a continuous piece of aluminum or galvanized flashing material onto the building sheathing, tucked under the sheathing paper, with a 90 degree bend to extend over the new window's header. A 1/4" return bend is applied down the face of the window's header. To finish, the siding veneer will overlap the header flashing.

Penetration Flashing: Material for flashing shall be barrier coated reinforced flashing material and shall provide for 4-hour minimum protection from water penetration when tested in accordance with current ASTM specs.

Sealant used with penetration flashing techniques shall comply with current Federal Specifications.

Application: To flash against water penetration in a wood frame and sheathing application, a strip of approved flashing material, at least 9" wide, shall be applied in overlapping, weatherboard fashion (counter flashing), on all sides of the opening. The first strip is applied horizontally immediately underneath the sill - before the window is installed. It should be long enough to extend past each side of the window, and beyond the jamb flashing when it is applied. Fasten the top edge of the sill flashing to the sill, but do not secure the middle or lower edge so that building paper, later applied, may be slipped up and underneath the bottom of the applied sill flashing.

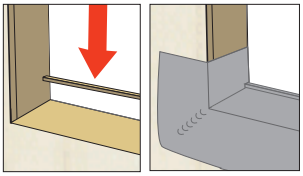
Next cut and apply the two vertical jamb flashing segments, again making them 9 inches wide, and sufficiently long enough to extend above the (to be applied) header flashing, and to extend below the (already applied) sill flashing. The jamb flashings should overlap the applied sill flashing. Fasten only the top portion of the jamb flashing so that the lower section(s) will allow the to be applied building paper to be slipped up and underneath the jamb flashing ends as well as the sill flashing.

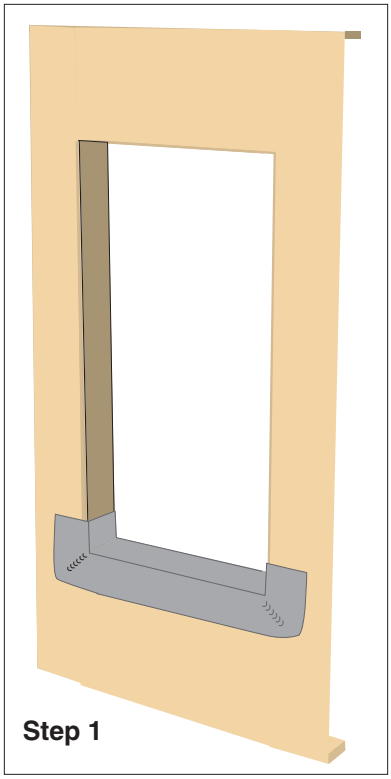
Sill Pans and Flashing

Step 1:
Using Adhesive-backed Flashing Material place flashing over rough sill extending 5 inches down the front, and 4 inches up each side.

Be careful not to tear or buckle the membrane.

NOTE: If you're not using a pre-formed sill pan, you can create the effect by installing a 1 x 2 to create a backdam before applying the flashing



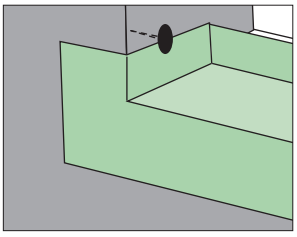


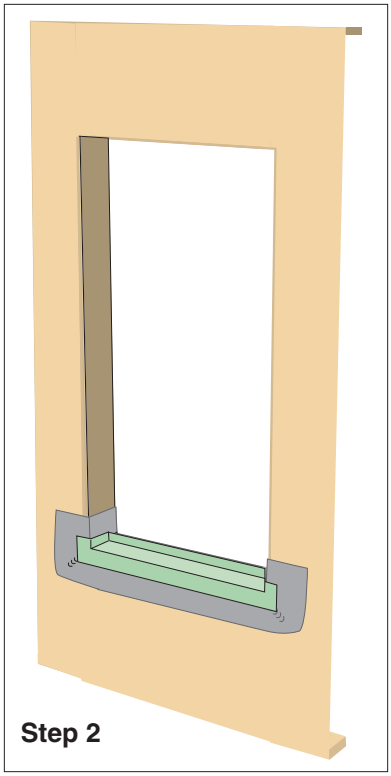
Step 1

Step 2:
Assemble Sill Pan (Jam-Sill or equal) to fit between the jambs and set on top of the sill.

Do not anchor the sill pan to the rough sill with fasteners as doing so will create a leak path.

Fix the sill pan to each jamb using the head of a roofing nail, as shown below.

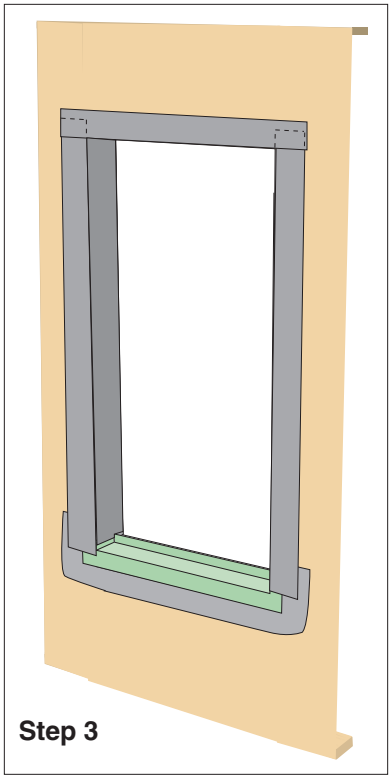




Step 2

Step 3:
Using adhesive-backed flashing material (Vycor or equal) place flashing around each jamb, overlapping the sill flashing.

Place adhesive-backed flashing across the header extending up and over the jamb flashing.

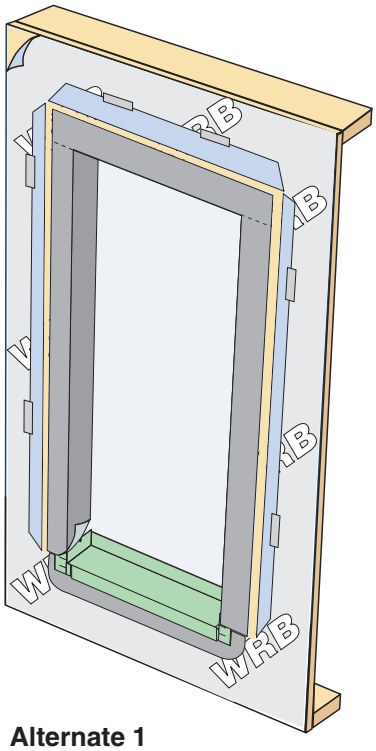


Step 3

Alternate 1:
If house wrap has been applied to the wall prior to beginning the window or door installation (Method B), cut the house wrap in such a way to be able to fold it back, and tape it out of the way.

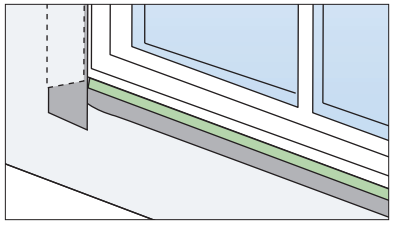
Flashing materials must adhere directly to the sheathing for maximum bond.

If adhered to house-wrap, flashing may direct water under the wrap and into the cavity between the window or door and the rough opening.

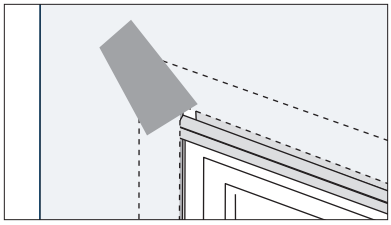


Alternate 1

Alternate 2 and 3:
If the house wrap has been moved aside, it can now be un-taped and placed over the second layer of self-adhesive flashing to complete the installation. Again, take care to leave the bottom free for drainage into the drainage plane.
(See full detailed steps in the New Construction Installation section elsewhere in this manual).



Alternate 2



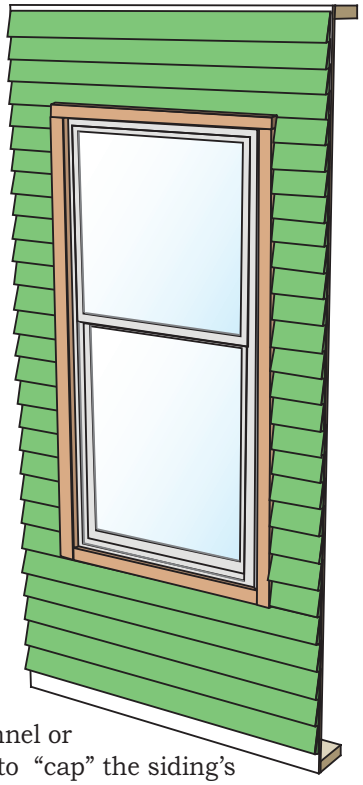
Alternate 3

Metal Frame-Out- *Replacement Sequence*

Step 1:
Most original windows with a fin have been trimmed with applied exterior wood trim or casing to cover the mounting fin and abut the siding.

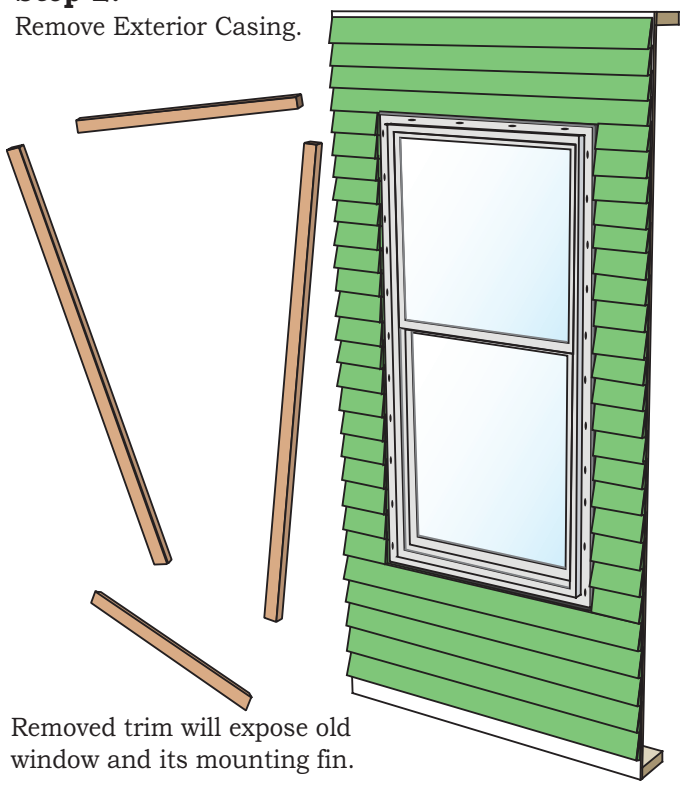
Carefully break any sealed joints between the casing, the siding and the window.

If there is no casing and the siding butts to window frame using a “J” Channel, cut-back the siding with circular saw or Fein Tool to expose the old window’s fin, and proceed the same from there.



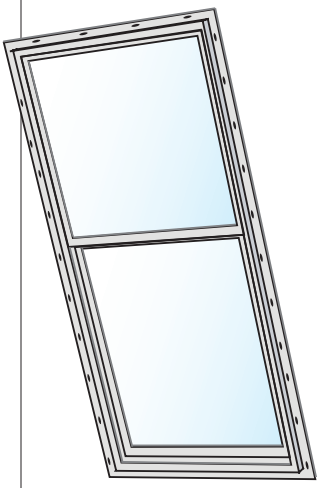
At the finish, use “J” Channel or extended leg “C” Channel to “cap” the siding’s cut ends and form a joint with the new casing trim.

Step 2:
Remove Exterior Casing.

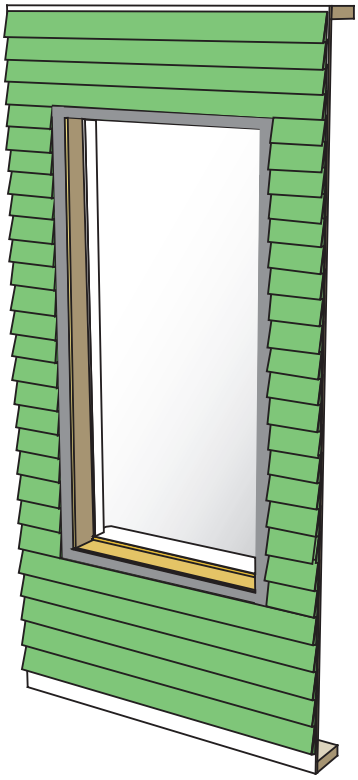


Removed trim will expose old window and its mounting fin.

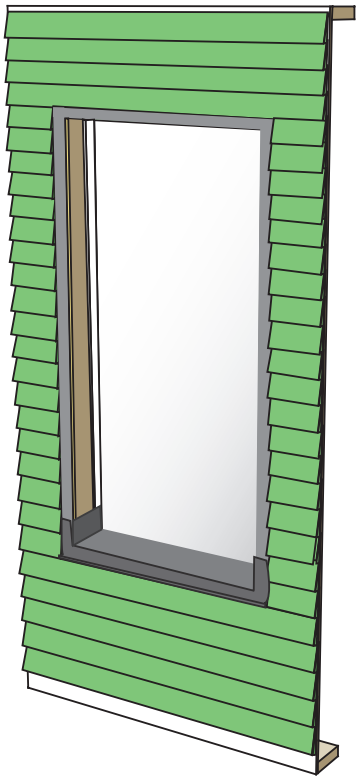
Step 3:
Removed the nails carefully from the old window’s fin.



Try to disrupt old flashing as little as possible.

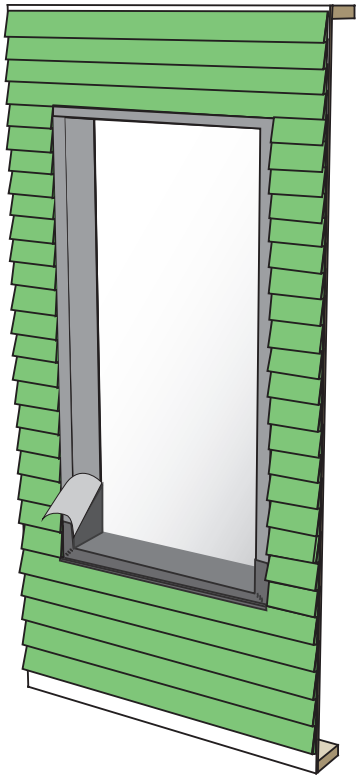


Step 4:
Create Sill Flashing using adhesive-backed flashing, and/or liquid applied flashing to cover the old sill and extend up the jambs about 6 inches.

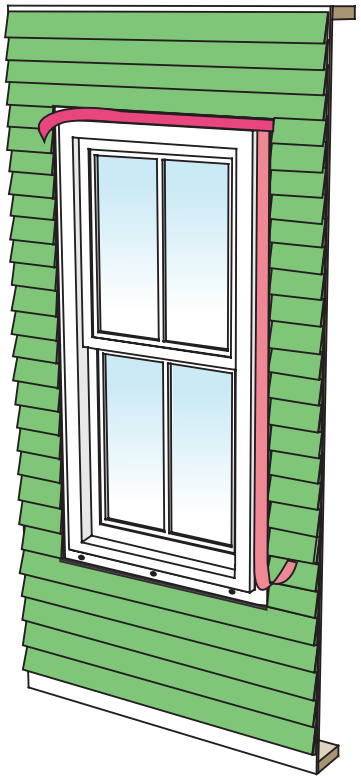


Step 5:
Re-establish jamb and header flashing using adhesive-backed flashing or liquid applied flashing.

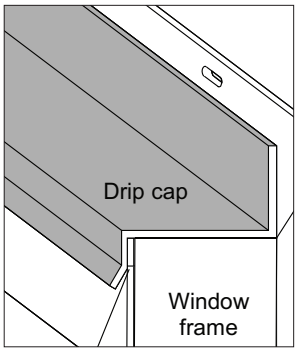
Where adhesive-backed flashing is used, overlap the sill flashing with the jamb flashing, and overlap the jamb flashing with the header flashing.



Step 7:
Apply Adhesive-backed flashing over fin and tuck under siding.



Place Drip Cap on top.



Step 6:
Set the new window in place. Carefully shim to leave drainage space at sill and make new window plumb, square and level.

Carefully fasten being careful not to nail the new window too tight.

Use Simplex (or equal) cap nails at header to allow expansion.

Step 7:
Apply new pvc trim casing over flashed fin on header and jambs and then seal.

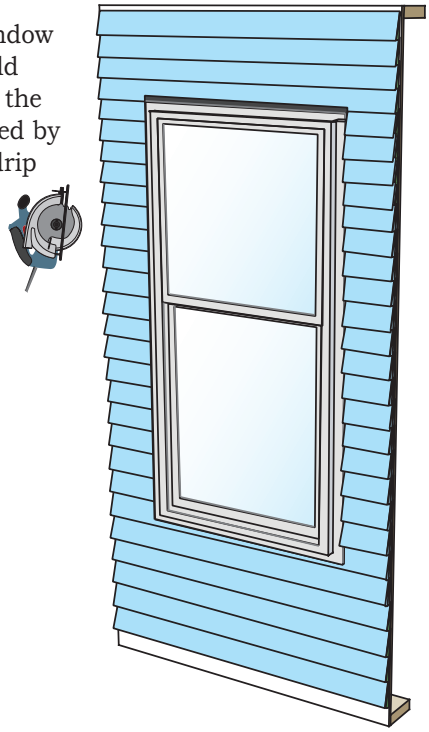
Trim placed along bottom must allow drainage of any water that may accumulate in sill.

Nailing Fin Frame-Out- *Alternate*

If a Fin-Mounted Window has the fin covered with J-Channel and siding, the siding can be cut back to expose the nailing fin making the old window easy to remove. Once the new window is installed and flashed, exterior trim molding can be applied as shown on previous page.

Step 1:

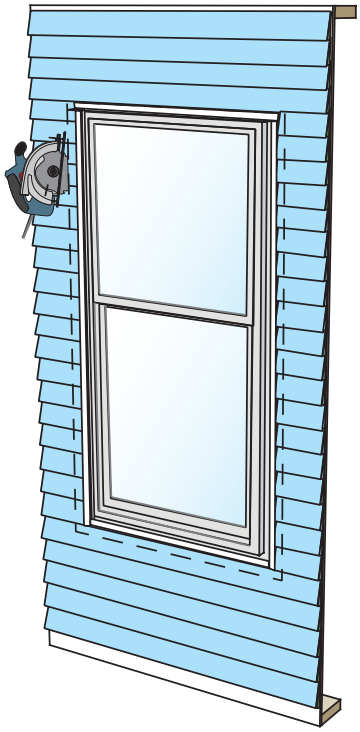
A very common window installation of an old finned window has the mounting fin covered by "J" Channels and drip cap and has the siding butting up to the "J" Channel.



Step 2:

Cut-back the siding with circular saw or Oscillating Tool sufficient width (approximately 1/2" to 2") to expose the old window's mounting fin.

Take care not to cut too deep.



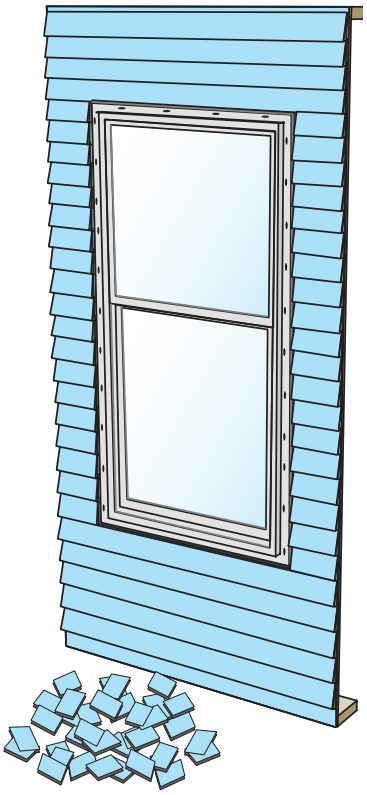
Step 3:

Removed the siding carefully nails carefully from and make adjustments as necessary to expose the complete fin.

Try to disrupt old flashing as little as possible.

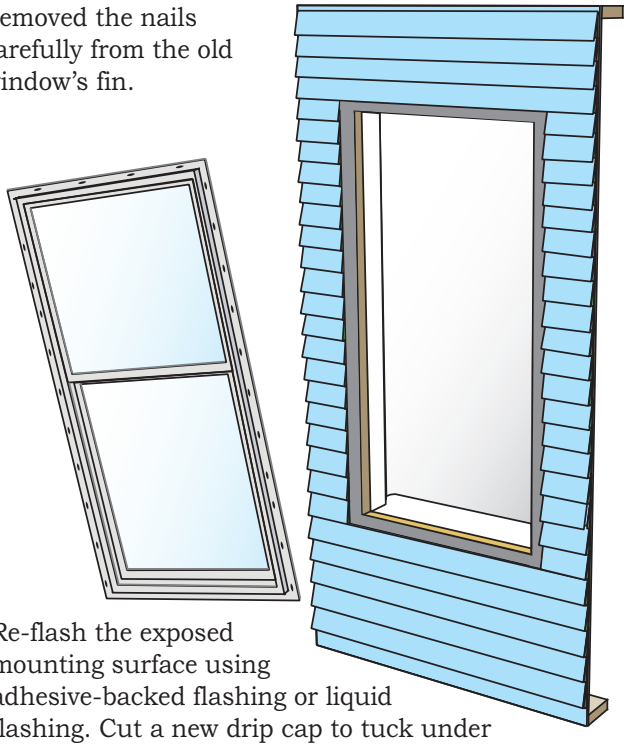
Remove all the siding pieces from around the window as cleanly as possible- trying to preserve any flashing.

The cleaner the cutaway, the easier and better the finished replacement will be.



Step 4:

Removed the nails carefully from the old window's fin.



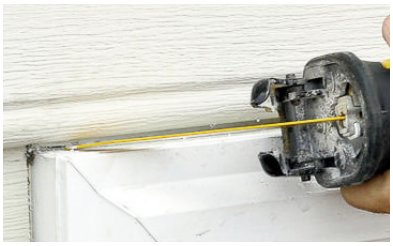
Re-flash the exposed mounting surface using adhesive-backed flashing or liquid flashing. Cut a new drip cap to tuck under the siding after the new window is installed.

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.

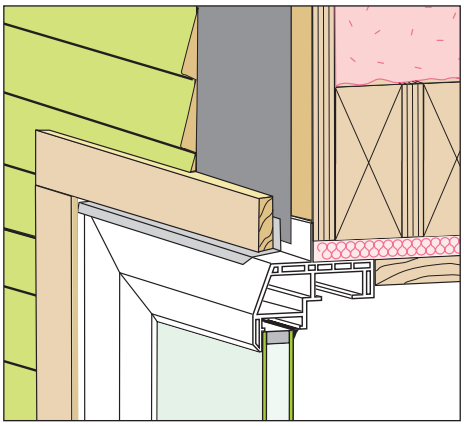
The common technique, chosen solely for economic reasons, has been to use a reciprocal saw to cut out the old window and leave the old fin behind the existing siding and trim. This is not the best approach because it destroys the water management, does not reconstruct it, and covers over the debris in 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.



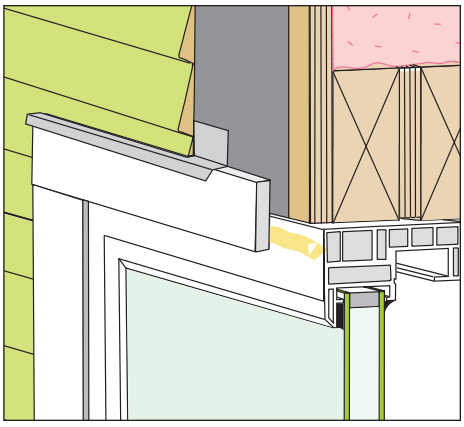
The preferred technique is to cut or remove the exterior trim/siding to expose the old window's fin and flashing. The flashing is removed and the old window is removed, and a new finned window is installed in its place and reflashed and re-trimmed. This approach yelds the best long term result.

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.



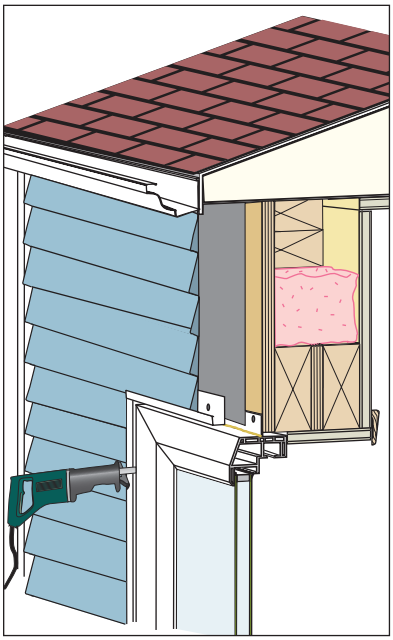
Regardless of what style old window was used in a home, if it was mounted with a fin, the fin was covered with flashing and then either siding or trim was used to cover the flashed fin.



The new box-frame replacement window can be mounted against the new exterior trim using pocket Install techniques.

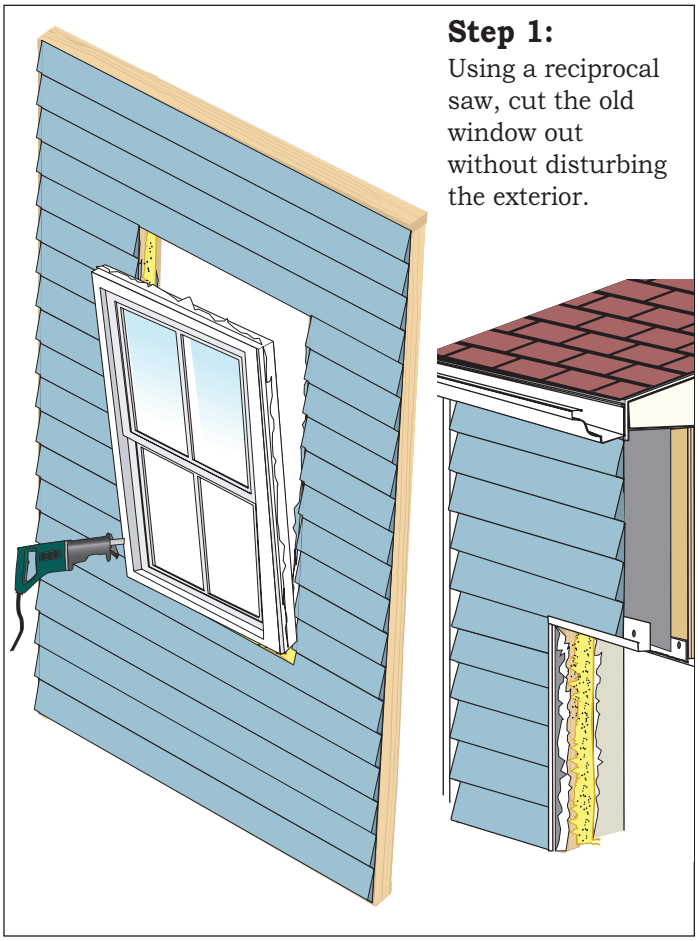
NOTE: *It is important to repair the flashing in the opening, around the jambs and header, and create a drainage accommodation (effective sill pan or drainage mat) on the sill. Also, placing 1/16" - 1/8" shims on the sill, over a tapered piece of siding slanted towards the outside and covered with flashing, 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

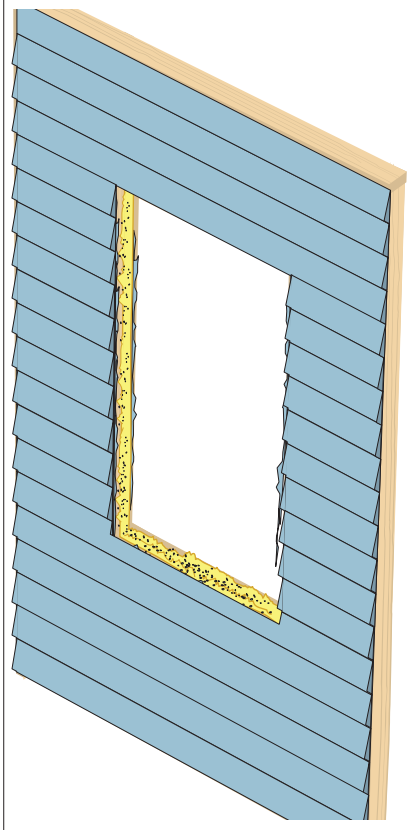


Very often, the old window is cut out - (through the old fin) leaving the fin in place. This is very common where “J” Channel was used to trim out the siding. The goal is to leave as much of the exterior and interior trim in place and minimally patch and/or repair.

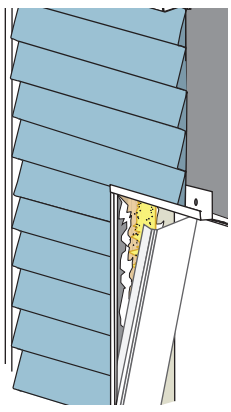
If done with care, the new window (a box frame window) can be inserted in the opening and trimmed with minimal damage to the existing opening. This would work if the exposed space between the siding and the interior wall board, containing the original flashing and insulation, is isolated from water intrusion, 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.

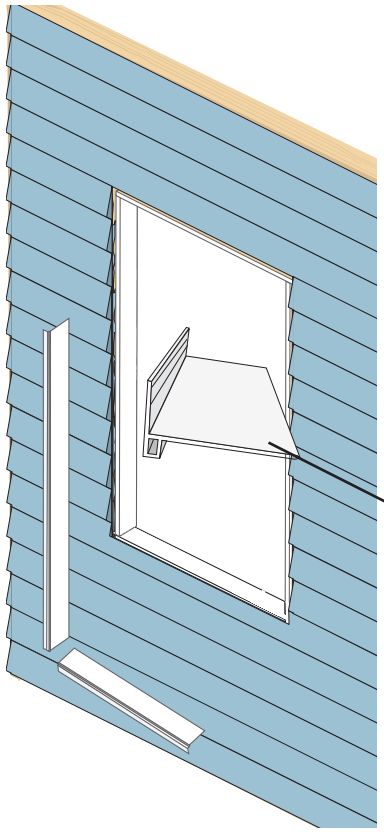


Step 1:
Using a reciprocal saw, cut the old window out without disturbing the exterior.

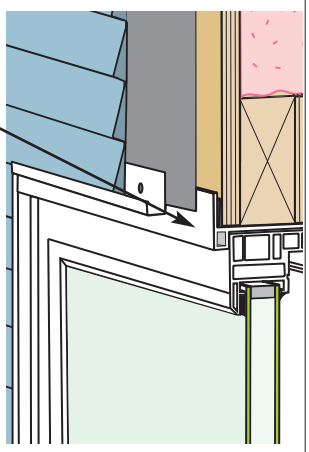


Step 2:
After removing the window, do your best to clean the gap, injecting a small bead of foam behind the siding. You can wrap some flashing over the gap. Try to direct any water from going behind the siding.



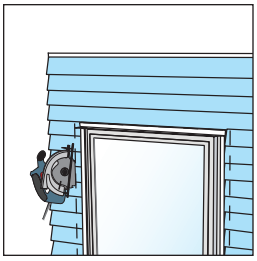


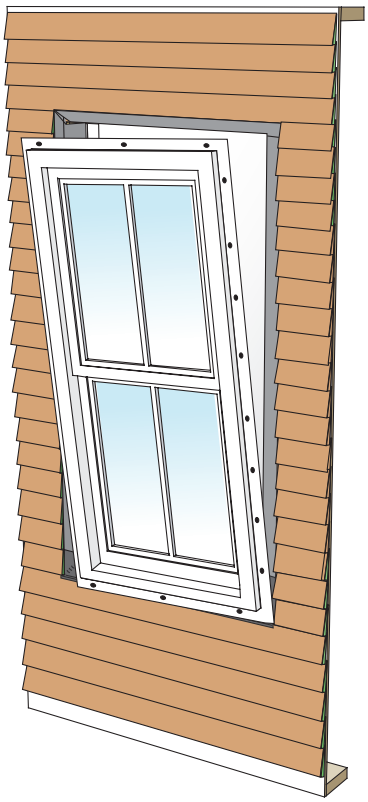
Step 3:
You can line the opening with water resistant pvc trim board and mount the window or use a pre-extruded liner with built-in exterior stop, as shown, and finish with drip cap and sealant.



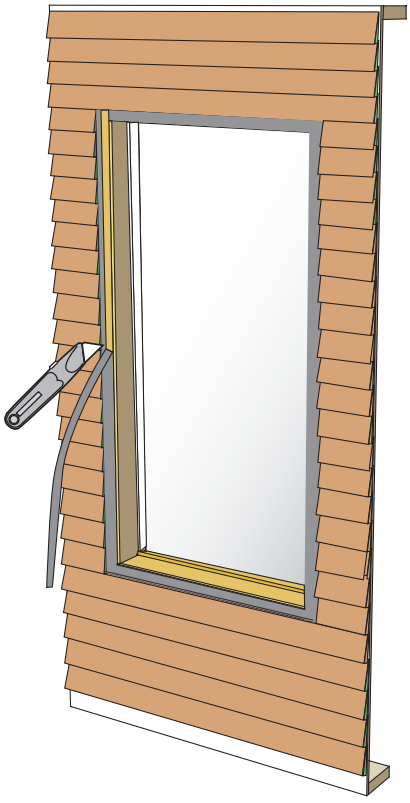
Remove Exterior Trim to take Fin and Frame Out

Step 1:
Remove the exterior trim, or cut-back the siding to expose the mounting fin of the old window.

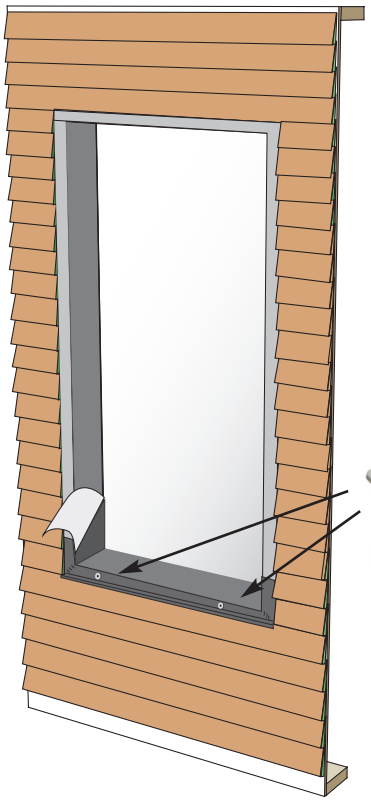


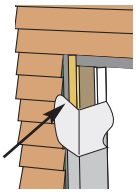


Step 2:
Remove the fasteners holding in the window in place being careful not to disturb the water management (flashing) more than necessary.



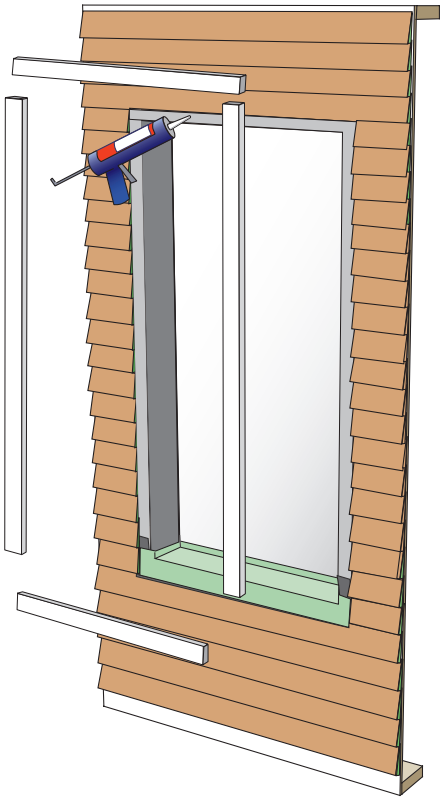
Step 3:
After removing the window, cut back the old flashing leaving two inches of coverage exposed from behind the siding.



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.

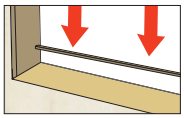
Flash the sill to create a sill pan effect. Place the sill flashing over a piece of tapered siding to create drainage.

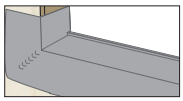
Fasten bottom overlap in two places with Simplex-type cap nails. These will create a 1/16”-1/8” space between the bottom trim and the flashing to allow drainage. (See Finish Detail Diagram)

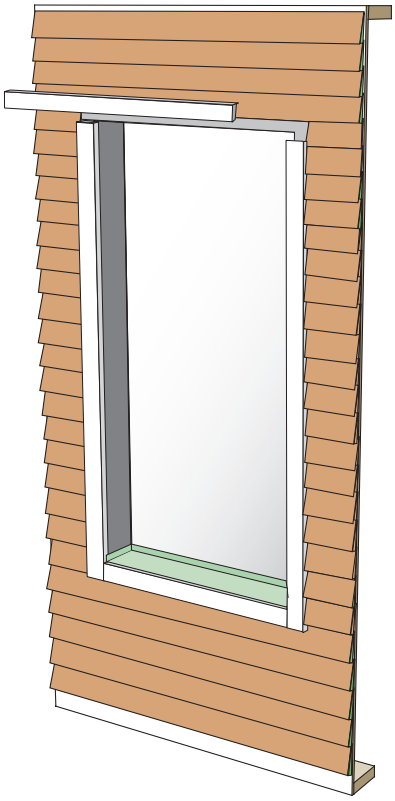


Step 5:

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.





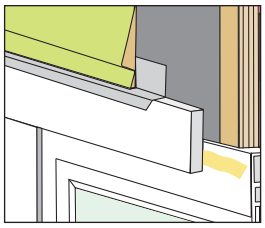


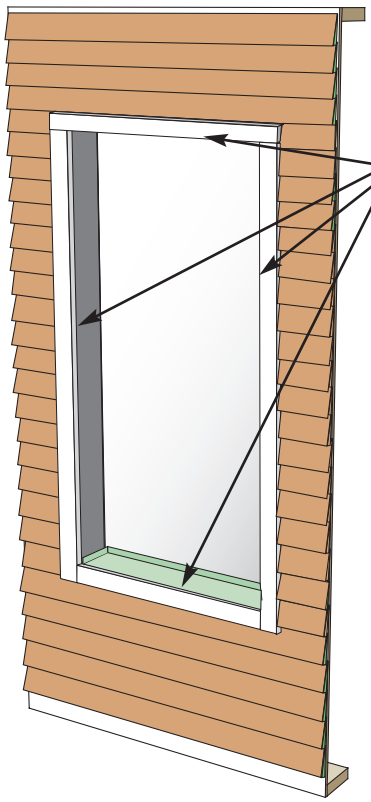
Step 6:

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.



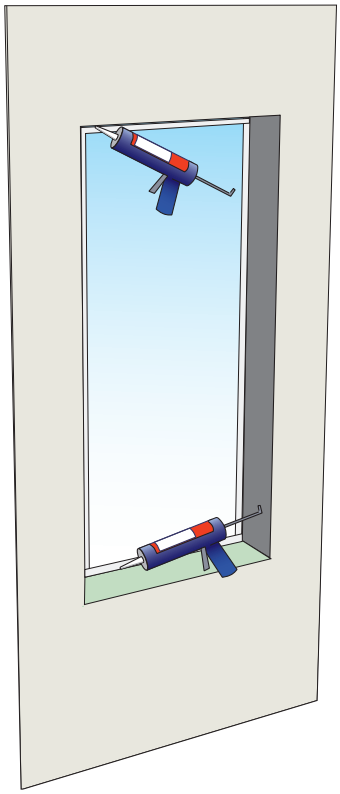


Step 7:

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.

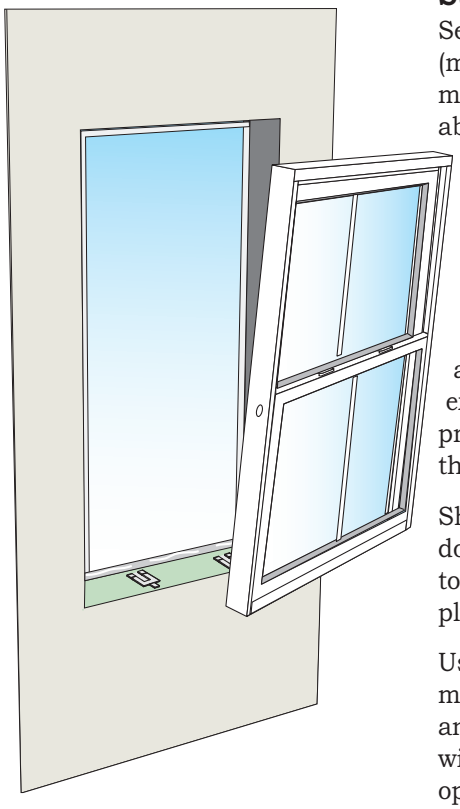
Confirm the new trim projects 3/8” to the interior on three sides - creating an effective “blind-stop” for the pocket install.



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.

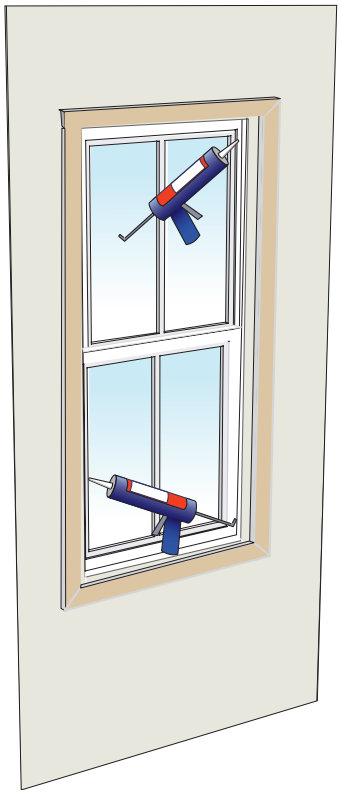


Step 9:
Set 2 shims (minimum 1/16”; maximum 1/8”) about 2 inches in from each side on the sill.

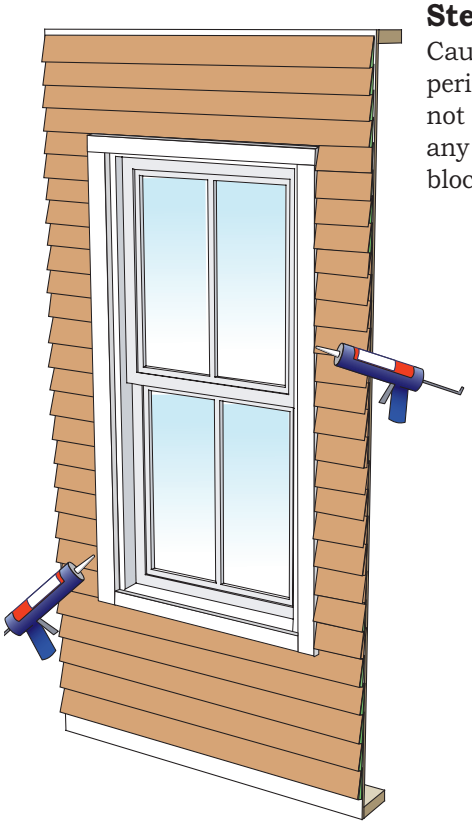
Place the new window into the opening, on the two shims and against the exterior trim, pressing against the sealant.

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.

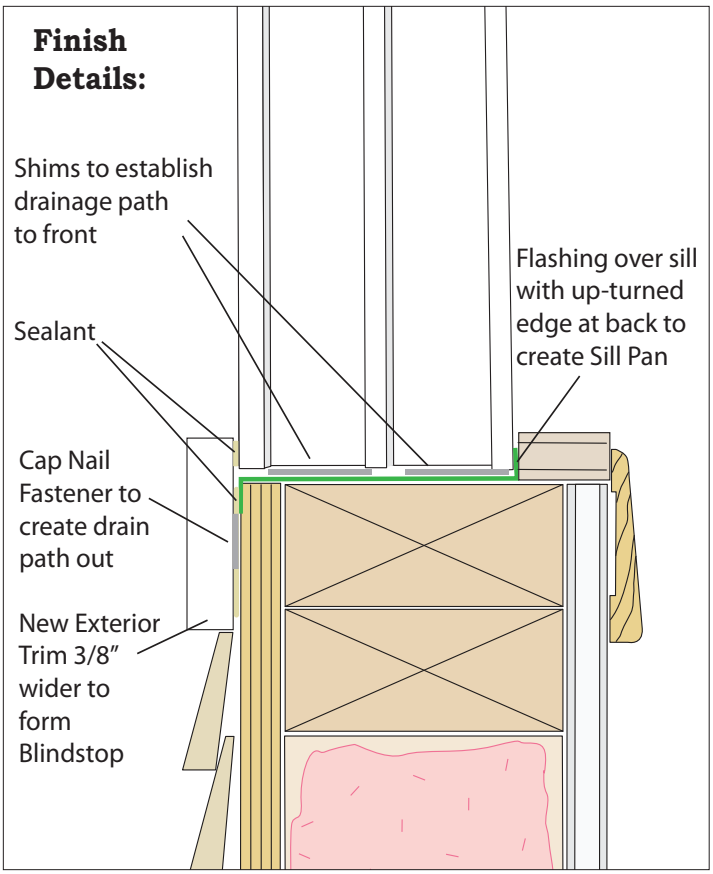


Step 10:
Re-apply interior trim and seal for finish as necessary.



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

Finish Details:



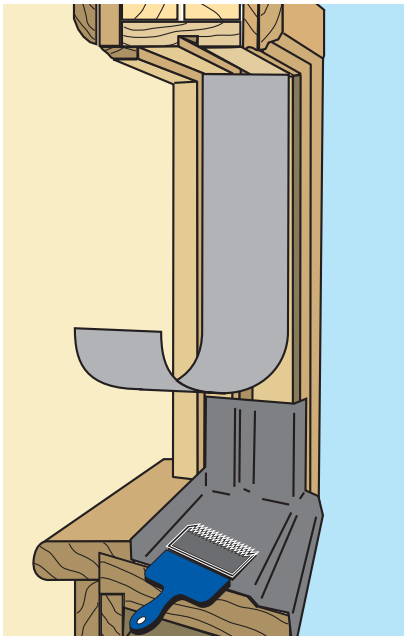
Outside-In Installation of Box Frame Windows

Box Frame Installation of vinyl replacement windows is based on "blindstop" techniques where the window is set into the opening from the inside of the house. Outside-In installation is accomplished from the outside the house and leaves the interior stops intact. Paring away the exterior blindstop, removing the parting stops and both sash provides a clear opening to install the window from the outside without disturbing the interior and without having to lift it over the stool to place it in the opening.

This is an advanced technique that is somewhat more complicated than the traditional "blindstop" method. But its advantage lies in giving satisfactory results while probably being a more effective method for installing all vinyl replacement windows. But, it is important that the old window frame is adequately integrated into the water management system of the wall, or you should use frame out techniques.

Outside-in installation will require access to the opening from outside the house, and though the window can be passed out of the opening from the inside before it is set in place, it may be an advisable and safer method to set the window in place from the outside. For openings above the ground floor, or for large or heavy windows, it is not recommended that outside-in installations be done by one person.

Proper Flashing is Recommended



If you leave the old frame in, and install from the outside, it is best to “flash” the opening.

Using liquid flashing on the sill, a pan can be created that will allow any water intrusion to drain to the outside.

Using adhesive-backed applied flashing on the jambs and header, make sure the jamb overlaps the sill, and the header flashing overlaps the jambs.

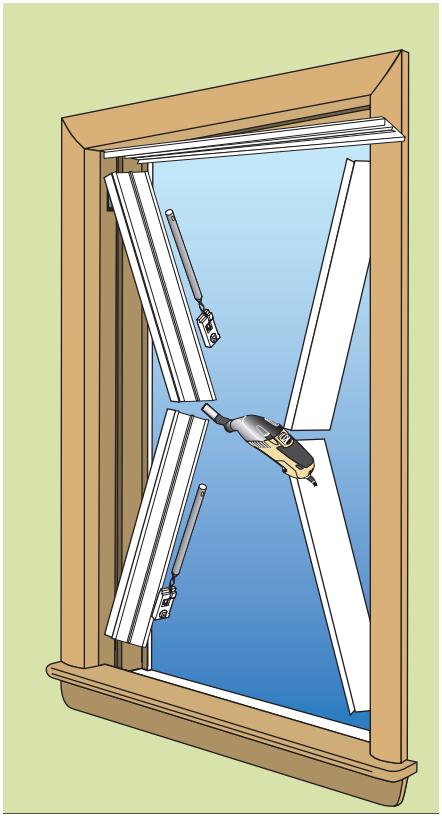
Making the Decision

The decision to install a replacement window from the “outside in”, against the interior stops, by removing the exterior stops, requires more outside work, but this method of installation has many added benefits:

1. The interior stops don’t need to be removed and replaced which makes a better looking installation since there is no damage to over-painted interior stops or moulding, etc. The job is cleaner and neater.
2. Since the exterior is to be re-finished in most instances, there is a work savings by not having to remove and replace the inside stops.
3. It is easier to brake and install capping to finish off the exterior of an opening without a blindstop than to cover an old blindstop. The capping looks better, too.
4. Most Replacement Windows without head expanders fit better against interior stops without the 1/8" offset of the material thickness of the expander.
5. The installation is more energy efficient and requires no insulation stuffed into the head expander..
6. More glass and egress area is possible without a head expander. The window can be made taller.

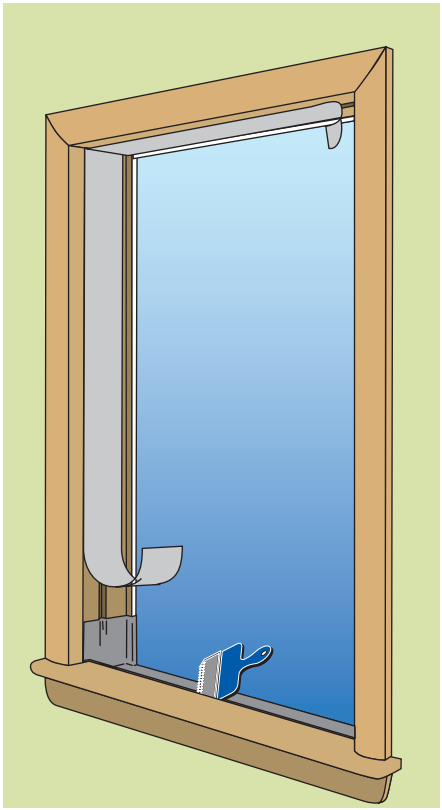
These advantages have to be weighed against the labor of chipping away the blindstop and shimming and squaring the opening from “outside”. The diagrams show that the exterior “blindstop”, when removed, clears the opening allowing a full height, full width window to be securely installed without the use of a head expander.

Replacing Old PVC Pocket Window



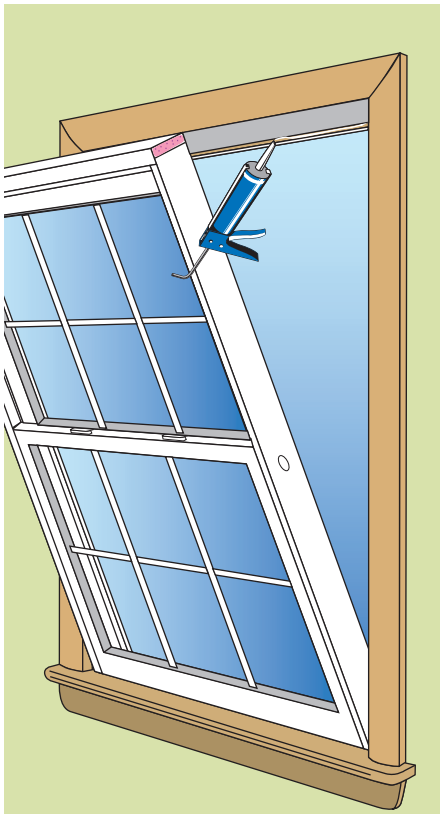
Step 5:
Remove any screws in the jambs anchoring the old window.

Once cut through, collapse the jambs in on each side to free the old window frame.



Step 6:
Clean any sealant and debris from the jambs, header and sill of the old, left-in-place window frame.

Using liquid and/or adhesive-backed flashing, flash the header and jambs and sill to create proper flashing and sill drainage with the make-shift sill pan using the interior face of the stool as the back dam.



Step 7:
Take the new window and install it over the stool and down into the pocket using the same bedding sealant sealant and mounting techniques for inside-out pocket window install.

Water Damage:
Old Pocket Vinyl Replacement Windows might have allowed water into the cavity or behind the trim.

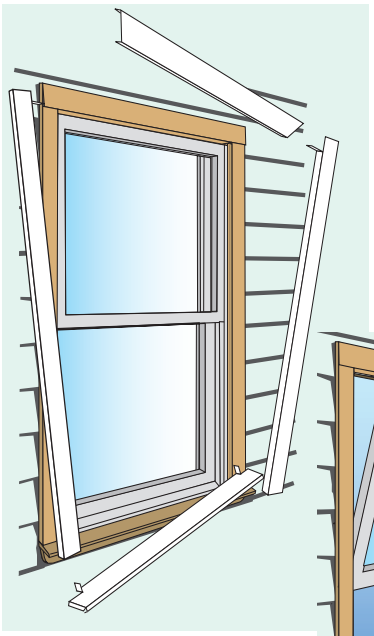
This water may have caused damage, or it may have left the wood damp.

Impel Rods, which are harmless boron rods the diameter of a pencil. Inserted in the old wood frame at strategic places will protect the wood from rot, mold, mildew and insects.

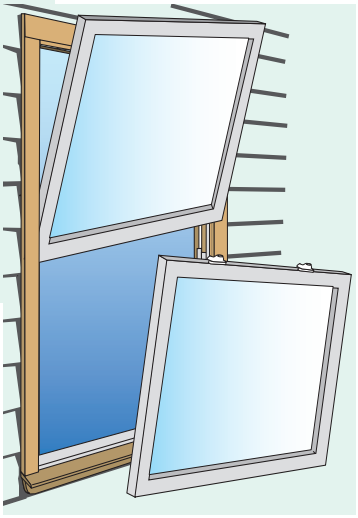
When they come in contect with water or moisture they release the boron which is a natural wood preservative. Boron rods are widely used in log homes and are very effective for wood window frames that come in contact with moisture.

Just drill a hole, insert the rod, and install the window.

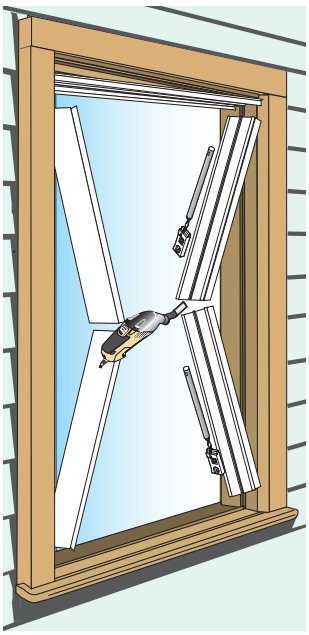
Replacing Old PVC Pocket Window From Outside



Step 1 & 2:
Whether the original pocket window was installed from inside or outside, an Outside-In install can replace it with the added benefit of not using head expander.



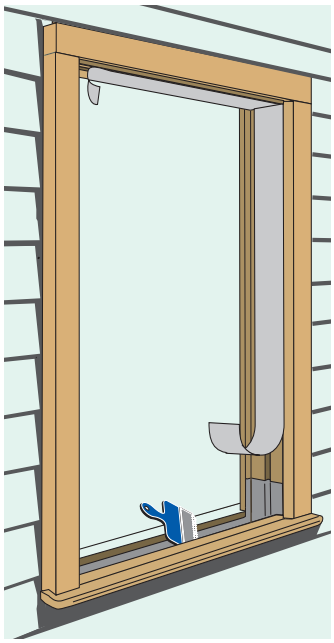
Remove the outside trim or wrap (capping) and proceed to remove the old window as shown.

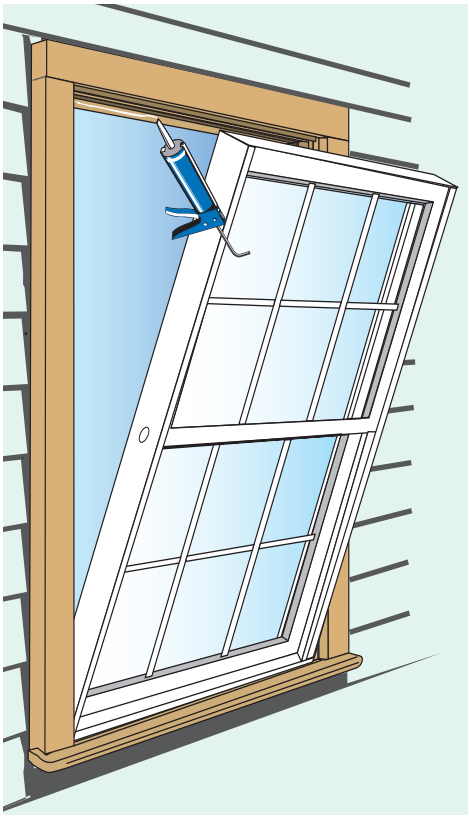


Clean interior stops of sealant residue to prepare for install.

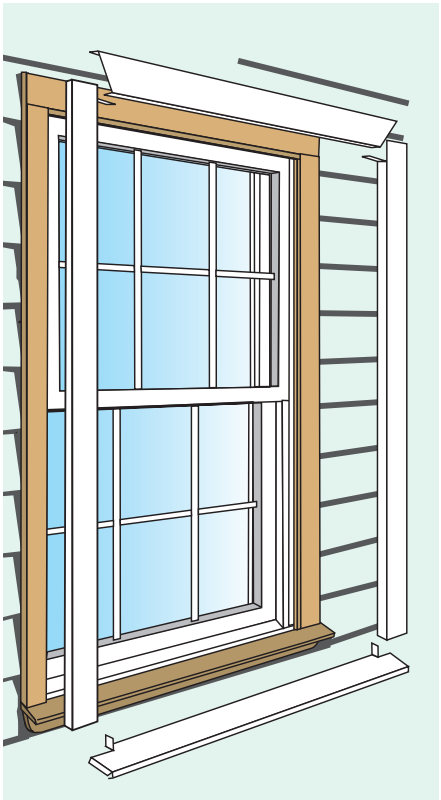
Flash opening and make sill pan.

Step 3 & 4:
Use oscillating tool to sever old frame and collapse inward and then remove it.





Step 5:
Take the new window and install it over the stool and down into the pocket using the same bedding sealant and mounting techniques for first time inside-out pocket window install.



Step 6:
Once the new window is installed from the outside it will be necessary to re-trim using cap stock to cover the old exterior frame and trim.

If warranted, use Impel Rods before you install and cap to mitigate moisture damage.

Installing Vinyl Windows in New Construction

Most manufacturers of vinyl windows supply an optional nailing fin that can be easily attached to the perimeter of the window on all four sides. There are also integral nailing fins that are permanently part of the frame of the vinyl window. These integral fins are most commonly available on single-hung and single-slider windows.

Vinyl Windows with nailing fin allow them to be installed in a conventional manner for new construction applications.

Instructions for New Construction

These instructions are meant as a guide only. Code compliance and architectural design may create situations that differ from the illustrations. Some modification may be required, but these instructions will cover the basic elements of most installations.

If there is no existing rough opening, construct an opening like Figure 1, 1/2" larger in height and width than the window to be used. If there is an existing rough opening, order a window 1/2" smaller in height and width. The rough opening should look similar to Figure 1. No window should be installed without a proper header and sill support. All framing should be in compliance with local codes.

Figure 2 shows the completed rough opening. Sheathing can be plywood, or structural insulation board. The important consideration is that the window can be nailed through the sheathing material to solid framing - the header, rough sill, and jack studs.

Method "A" and "B"

There are two basic methods of flashing: Method A where the Weather Resistive Barrier is applied **after** the window is mounted, and Method B where it is applied **before** window mounting. These instructions focus on method "B" with brief reference to the "A" method. Either way the bottom line is divert the environmental water, drain any that makes its way inside, and dry whatever is left. Proper flashing and sill pan are the key. With the opening properly flashed, moisture will make its way down the sides of the new window towards the sill, where the sill configuration should allow this moisture to exit.

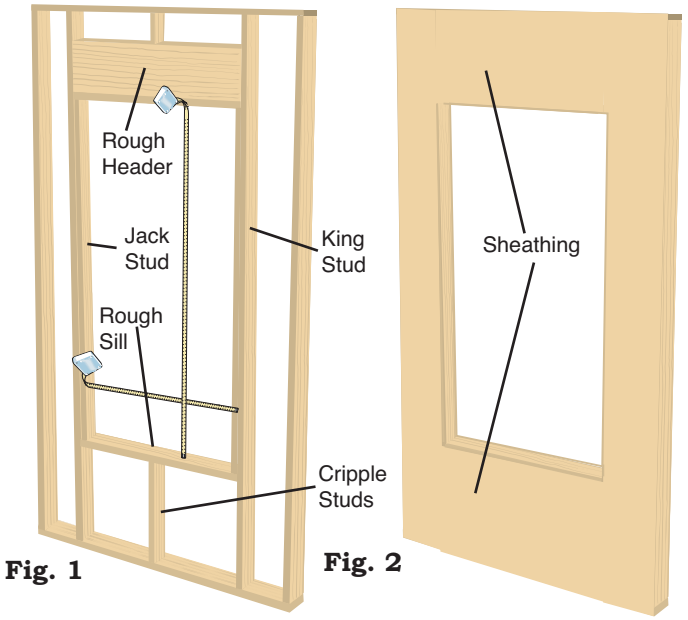
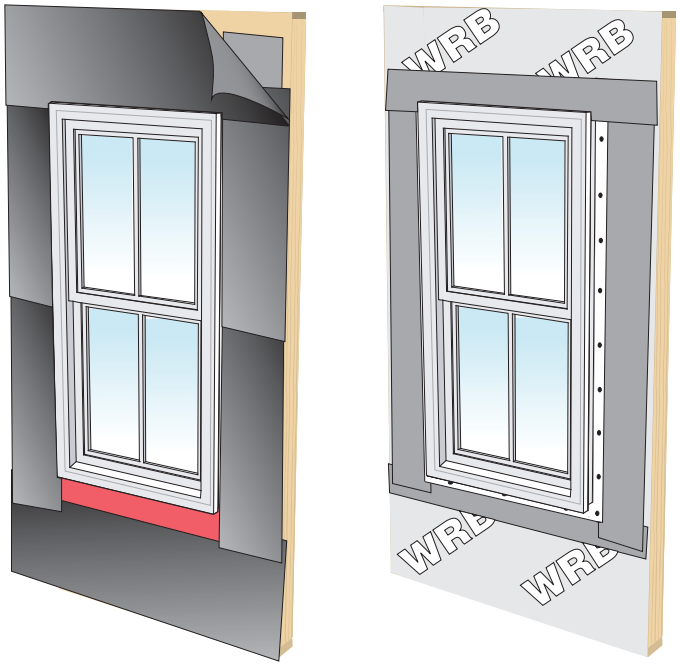


Fig. 1 **Fig. 2**

BASIC WINDOW FRAMING



METHOD "A" **METHOD "B"**

