WEB BASED
APPLICATION SPECIFIC
INSTALLATION INSTRUCTIONS

New Construction Applications

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

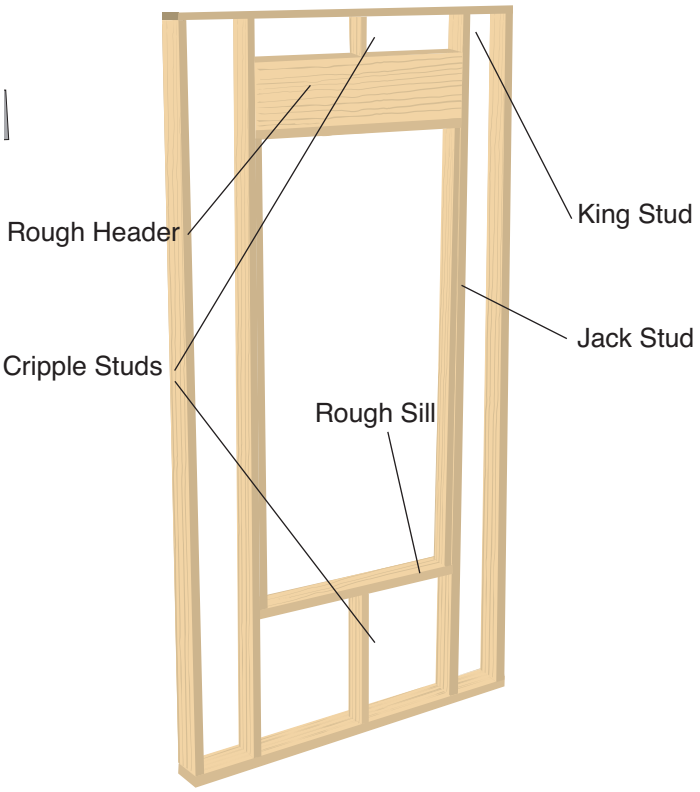
Vinyl Windows with nailing fin allow them to be installed in a conventional manner for new construction applications. It is also convenient to use a nailing fin if the old window to be replaced does not have a 3-1/4" sash track to allow standard blindstop installation. The old window can be removed completely, and a custom vinyl window with nailing fin can be ordered to fit exactly. This will reduce any disturbance to the interior walls, or exterior siding.

To measure for such an installation, follow the measuring instructions for Bay and Bow Windows. This procedure will give you the proper tip-to-tip dimensions of the new window.

Installation 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.

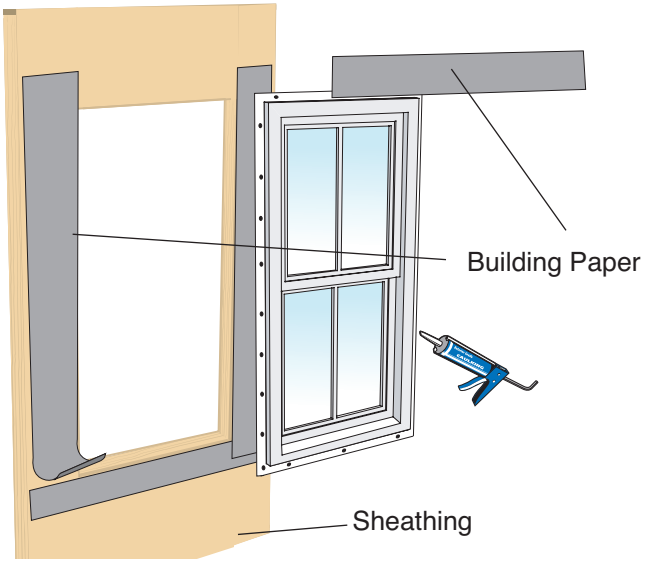


The rough opening should look similar to Figure 1. No window should be installed without a proper header and sill support. All framing should be in compliance with local codes.

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.

It is advisable to staple building paper over the edges of the rough opening as shown. Put the bottom strip on first, and the sides next. The top strip is mounted after the window is installed and overlaps the top nailing flange. This will direct water away from the window opening.

Once the bottom and side strips of building paper are



mounted, run a bead of caulk around the inside of the fin.

Place the window in the opening with the flanges tight against the opening. Position the window 1/8" from the top, and 3/8" from the bottom, and center the window side to side. This will allow the interior trim to be installed without impeding the operation of the window.

Nail across the top first (in every other slot), making sure the window-top is level. This procedure will in effect "hang the window" and assure that it is both level and plumb. Re-check the level and plumb, and nail the sides (in every other slot) from the top down.

Do not nail the flange tight. Like siding, nailing should be just tight enough to hold the window, but not impede movement of the structure underneath during environmentally caused expansion and contraction.

Staple the top strip of building paper in place if needed.

When siding and/or trim is installed, it should be fitted over the nailing flange using the proper drip-caps, J-channels, or other flashing materials.

Interior Trim

Though there are many ways to trim-out the interior of the new Vinyl Window, the two most popular ways are Wood Jamb/Trim, & Casing; and
Full Sheetrock Return on all 4 sides. Even with the sheetrock return, a wood stool is recommended to facilitate cleaning, and minimize marks.

FIG 3 **FIG 4**

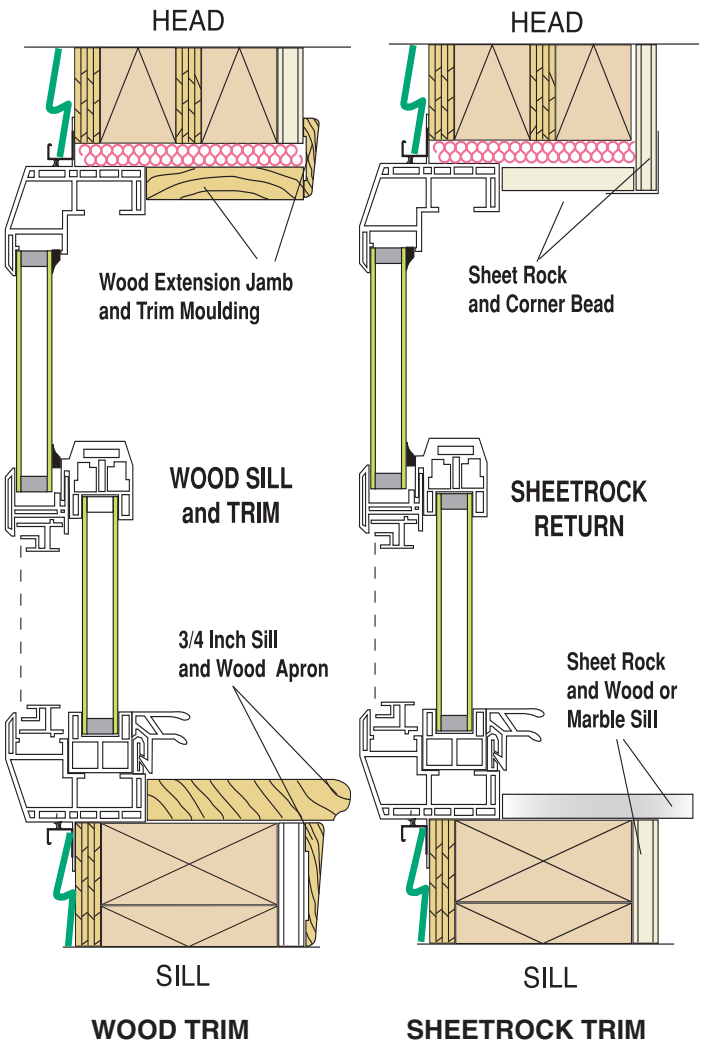


Figure 3 details typical, conventional wood trim - including wood jambs, wood stool, and clamshell or colonial casing and apron. Using standard 3/4" or 5/4" wood stock, butt the stool and jamb to the window, and then the sheetrock can be butted to the jamb and stool and covered as shown.

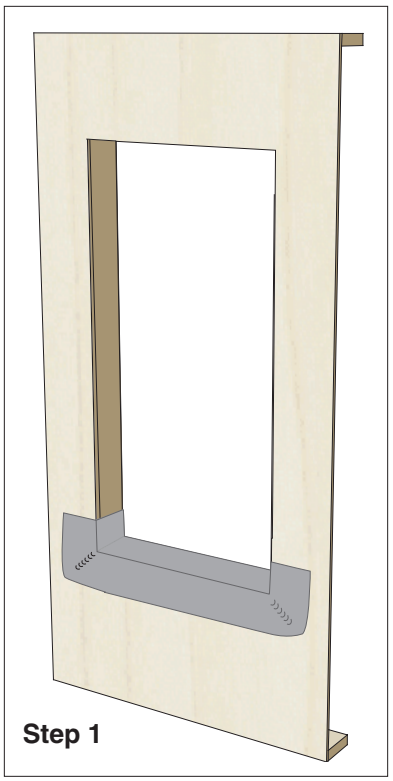
Figure 4 details a typical sheetrock return. Be careful to trim the sheetrock square as it will butt against the window. If possible use the outside, wrapped, edges of the sheet to keep the joint neat. Using metal corner bead, cover the wall and jamb/sill joints and spackle as necessary.

It is also desirable to install a 3/4" wood stool over the sheetrock sill and use casing for an apron below.

Sill Pans and Flashing

Step 1:
Using Adhesive-backed Flashing Material (Vycor or equal) 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.

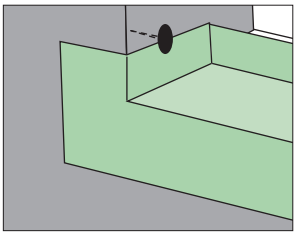


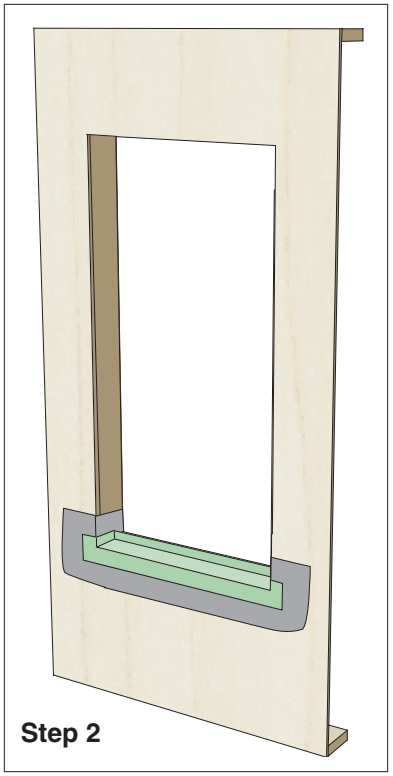
Step 1

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.

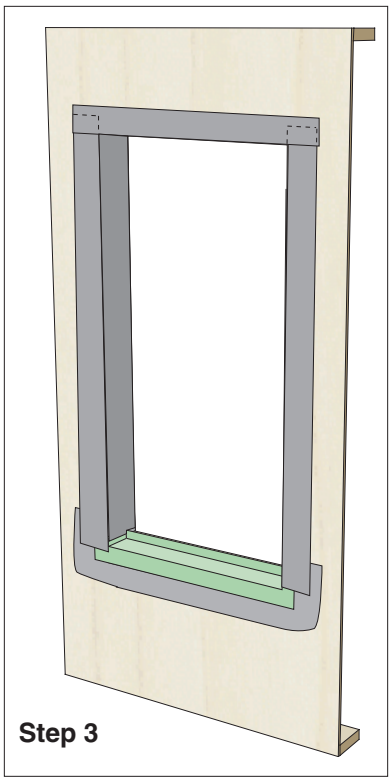




Step 2

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.

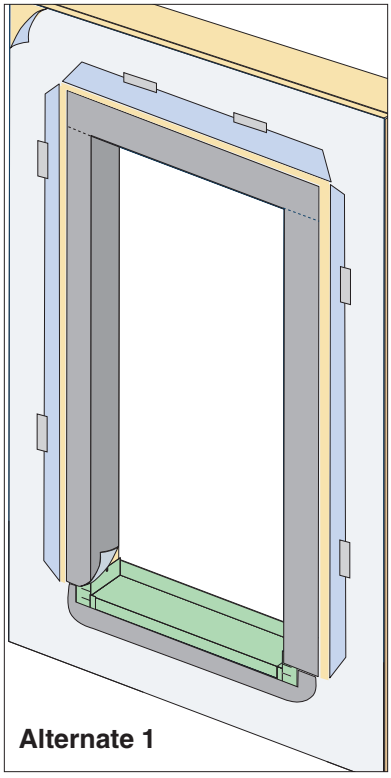


Step 3

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

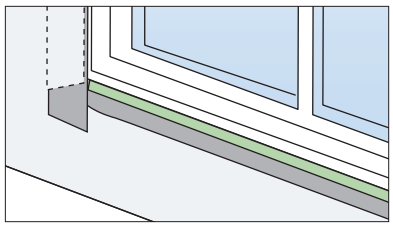
Flashing materials must adhere directly to the sheathing for maximum bond.

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.

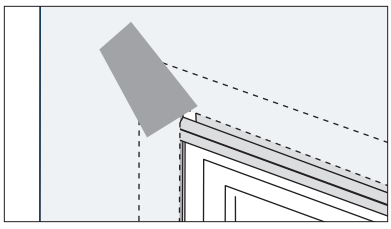


Alternate 1

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.



Alternate 2



Alternate 3

Recommended Installation Details

Before You Start

Successful installation starts with a proper rough opening. If it is out-of-square, mis-measured, or otherwise not acceptable, it can cause as many installation related problems as any other reason. It is imperative that the installing technician or surveyor determine 5 critical things before any installation starts:

1. Is the Opening the Proper Size? Most manufacturers have a tolerance for the difference between the window size and the rough opening size. AWDI Standards allow no more 1/4" on the width and 1/2" to 3/4" on the height to accommodate the sill pan and sill shimming. Too small, and the window/door may have to be forced into the opening distorting it, and too much difference will make it hard to shim and mount securely.

2. Is the Opening Plumb and Square? Precision window and door products depend on the plumb and square of the installation to allow easy operation while maintaining weatherseal integrity. Small differences in plumb and square may be accommodated with proper shimming, but be sure there's room to do so. Equal, or nearly equal (less than 1/8" difference is recommended) diagonals are the easiest way to determine squareness of the opening. For better accuracy when available, either manufacturers recommendations or the AWDI formula (found in version 1.3) should be used.

3. Is the Sill Level? A 32" sill can be 1/8" out of level and still meet code. An 1/8" difference at one side or the other can throw the who unit out of square. If the 1/8" is in the middle, it can deform the sill over time and effect proper operation and closure.

4. Has the Opening been Framed Properly? The opening, whether made out of masonry or wood, can have irregularities such as mortar deposits, exposed and raised nail heads, intruding sheathing cuts, or tilted (front to back) jambs, header and sill. Any of these can interfere with proper installation and should be fixed prior to the start.

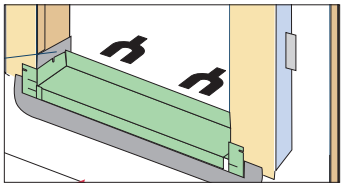
5. Is the Window/Door Complete? Even when the window or door product to be installed is order and delivered by others, the installer or surveyor needs to make sure all the relevant parts and hardware are with the unit. The time to find out is not when you're half-way through.

Basic Installation Requirements

While a proper opening and proper sequential steps will enable the technician to install effectively, successful installations require skills in Shimming and Caulking and Sealing and Maintaining Water and Air barrier integrity of the wall unit itself.

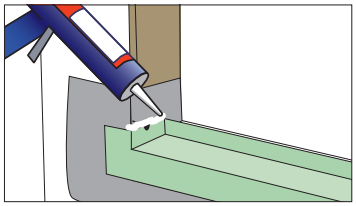
Shimming: All shimming is done with plastic, stackable, non-tapered shims. Take care to not make them too tight, or too loose, but just right.

Shimming should be done between the frame and the opening, behind each mounting hardware position.

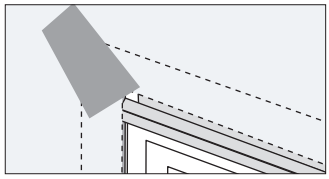


In addition, shimming should be done under the sill pane to make sure it is level, be careful not to tilt it to the back of the opening to maintain its ability to redirect any water accumulation towards the outside. When installing wood windows, the jambs often extend below the sill. If the window is resting on the sill pan and water collects in the pan, wicking can occur, eventually causing rot or degradation of the wood jamb. It is recommended that a single plastic shim be placed on the extended jamb bottom to lift it off the sill pan and away from any possible accumulated water.

Caulking and Sealing: The best sealant is silicone-based or urethane-based to be sure that it adheres to the two materials being sealed. Joints greater than 1/8" to 1/4" should contain backer rod to maintain the bond during expected expansion and contraction of the materials. All mounting holes should be caulked over, and the top edge of the sill pan be sealed before the adhesive backed flashing is placed over the pan and it's mounting nail head.



Air and Moisture Barrier Integrity: When any cuts are made in applied building paper or wrap, these cuts should be fixed and sealed in a shingle lap fashion to maintain the air and water protection they were designed for. Place tape on the lower end of a cut to adhere it to the sheathing, then tape the upper end over the taped lower tab to step water flow down and away from the opening.



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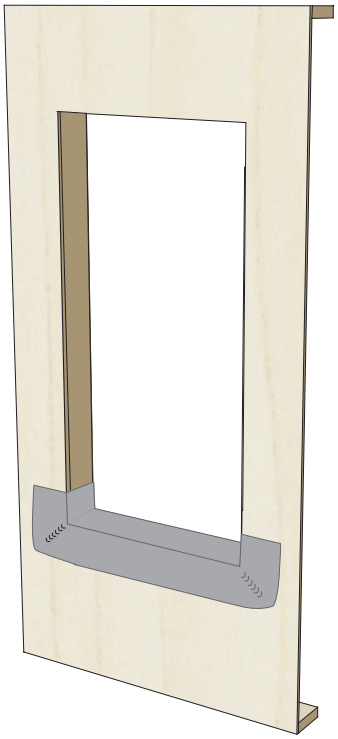

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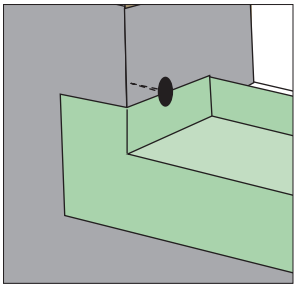

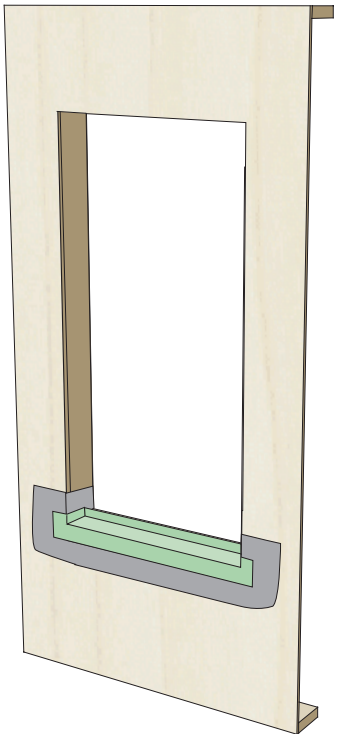

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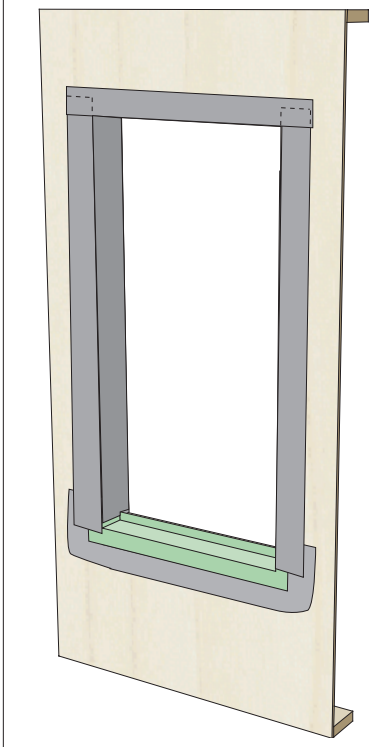

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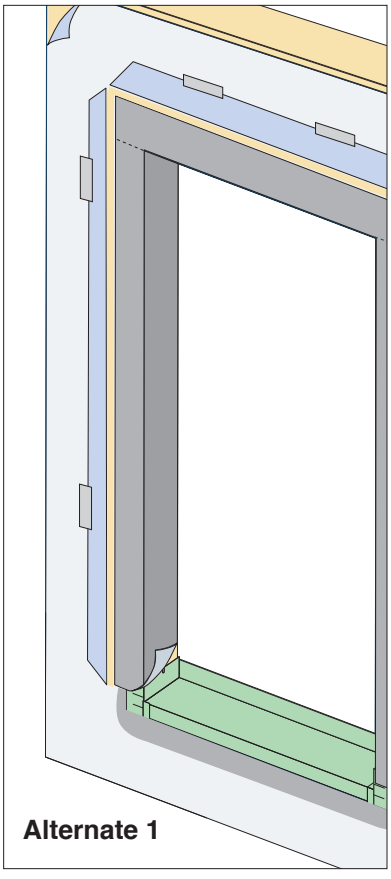


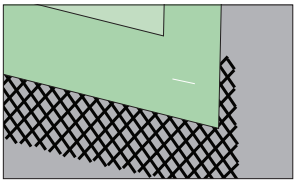
Alternate 1

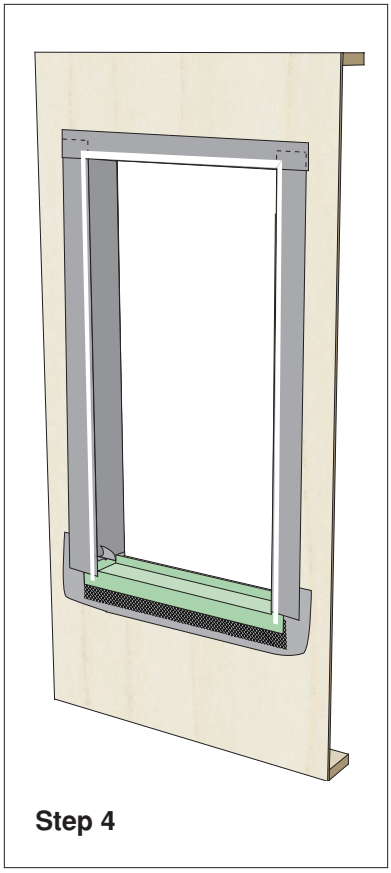
Step 4:

Cut the proper size Weep Screen and insert it under the front lip of the installed sill pan, as shown, and staple it to the sheathing.

Place a bead of sealant (Sika or equal) on the back of the nailing fin/flange of the window or door. You can also apply the bead of sealant to the flashing directly.

Do not place a continuous bead along the sill of the opening or the window or door.





Step 4

Step 5:

Place window/door unit into opening, pressing the nailing flange/fin against the flashed opening to make a firm contact with the sealant.

Using a framing square, plumb and square the window/door carefully. Remove operable sash if necessary. Shim with plastic, flat, stackable shims. Never use tapered wood shims.

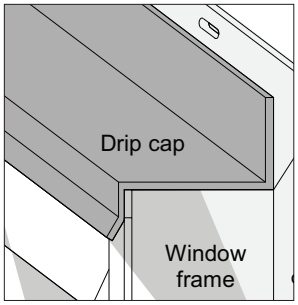
Using fasteners, anchor window through frame into the jambs on both sides. Use Simplex Cap Nails on Header. Lightly apply mounting nails through slots in fin if provided. Do not nail tightly.

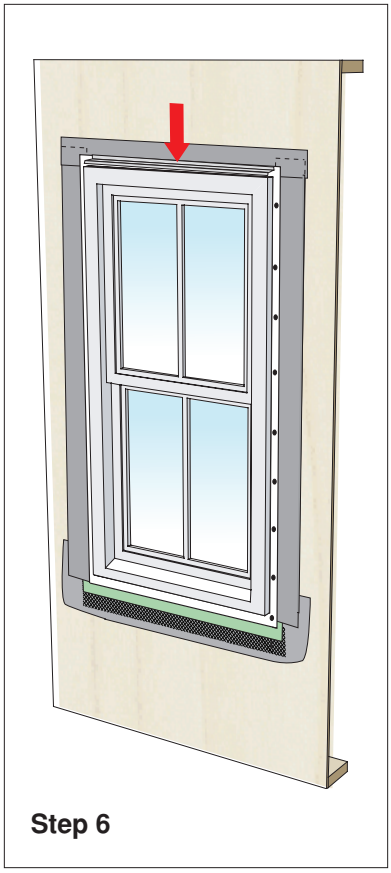
Step 5

Step 6:

A drip cap should be used across the header of the of the installed window/door. Often, "J-Channel", when used with siding is thought to be a drip cap.

Do not rely on the work of others . Bend a cap or used the supplied cap and install on top of the window/door using sealant.





Step 6

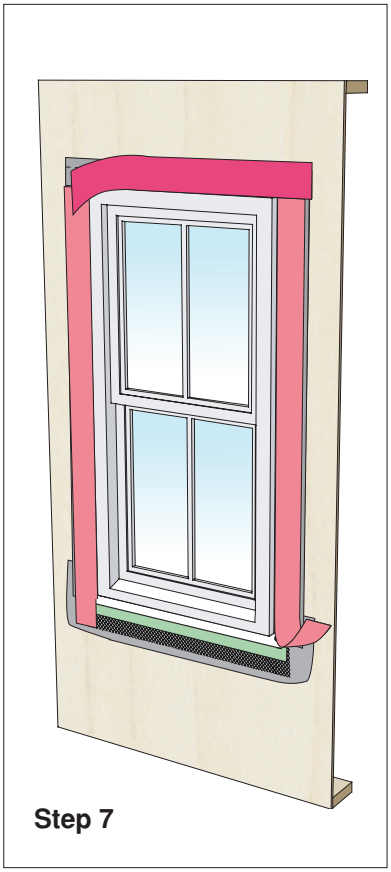
Step 7:

Once the drip cap is installed and the window is seated in the opening, plumb and square, the top layer of the adhesive-backed flashing can be applied.

The surface flashing is applied to the jamb sides first, overlapping the sill pan, weep screen and sill flashing assembly.

The header flashing is applied over the top fin/flange of the window and overlaps the jamb flashing.

The bottom is kept free to allow drainage of any water penetration into the drainage plane.

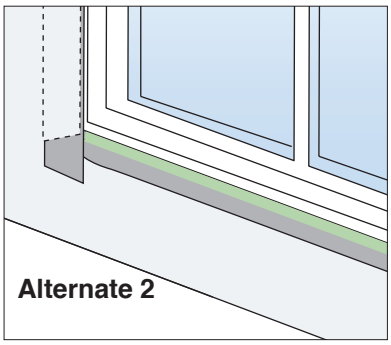


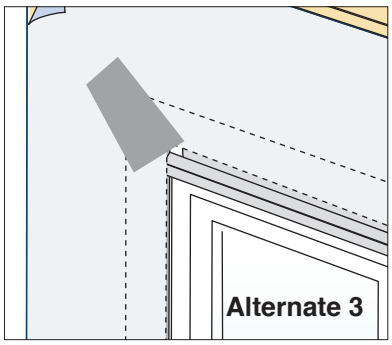
Step 7

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.





Vapor Barrier Continuity:

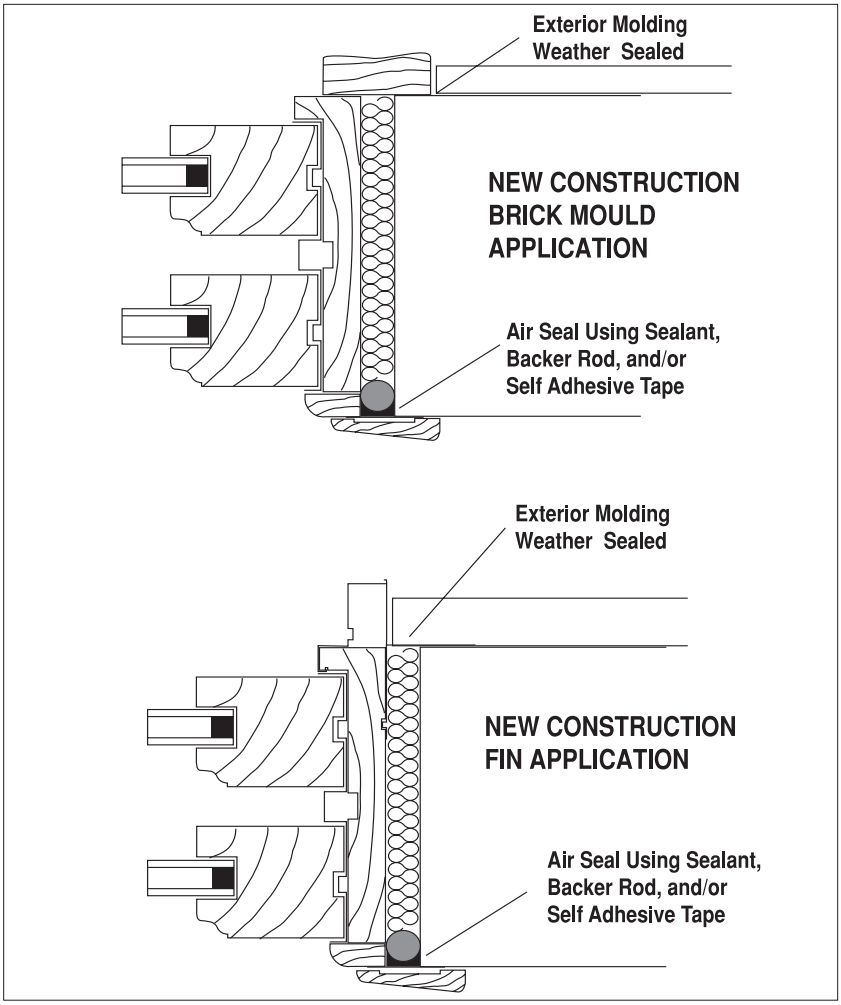
As detailed, the continuity of the Vapor Barrier of the wall assembly must be maintained.

ASHRAE identifies different climate areas that create different dynamics to water vapor migration.

AWDI recommends that the cavity between the window/door unit and the rough opening be sealed to prevent this migration of moisture laden air from the warm side of the wall to the cold side of the wall which can cause condensation and trapped water.

This condensed water, if it can't dry or escape can cause mold, rot, and decay and lessen the ability of insulation materials placed in the cavity to perform.

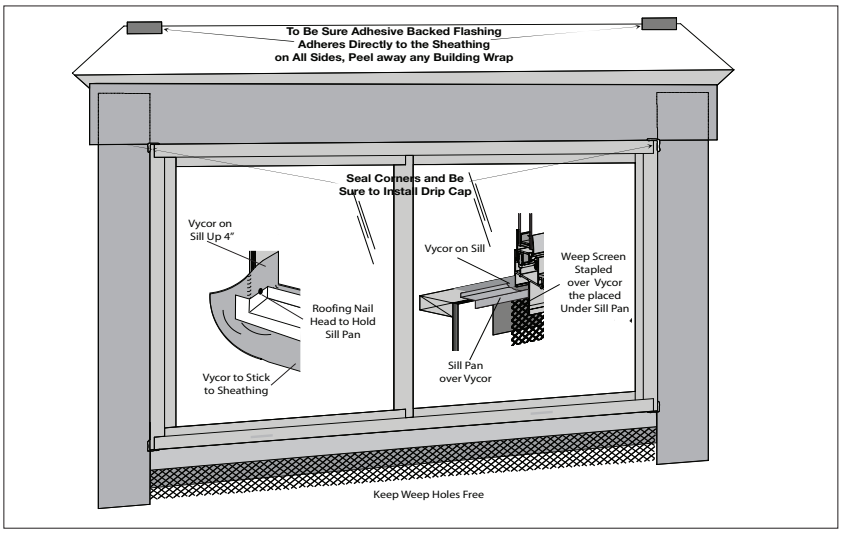
Details of maintaining vapor barrier continuity can vary by climate. However, under no circumstances should a water resistant barrier be placed on both sides of any wall, as a double vapor barrier will cause many problems long after construction is completed and all window and door products have been installed.



The Sequence is Important.

The process is called shingling, and it describes the overlapping of each layer when creating a water-tight window and door installation. There should be no tears in the flashing that aren't taped, mounting hardware holes that are not filled with sealant, and all materials must overlap in a manner to direct the water away from the interior, away from the window, and into the drainage system in the wall.

Barrier techniques do not work because of flaws in the materials and in the labor, and because they materials degrade over time, and eventually fail long before the window/door unit and the house construction.



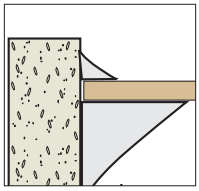
Picking the Proper Sealant

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:

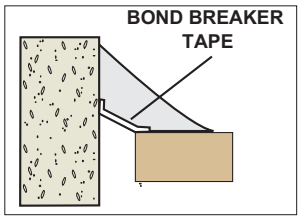
- Adhesion
- Flexibility
- Durability
- Compatibility
- Temp, Weather, Exposure)
- Aesthetics

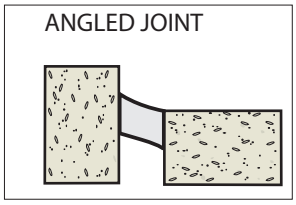
Within these three performance aspects there are countless combinations of applications, substrates and conditions a sealant is exposed to.

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.

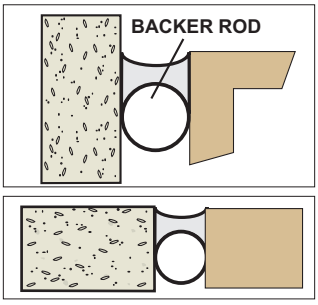


Fillet Joints:
A fillet joint is formed when two surfaces come together to form a right angle. The sealant used to join these two surfaces is triangular in shape. The sealant must adhere to the variety of substrates you're faced with. Without strong adhesion there is a high chance that the sealant will 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 ued 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 in accordance with AAMA 812 and meets standard for low pressure development.

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.

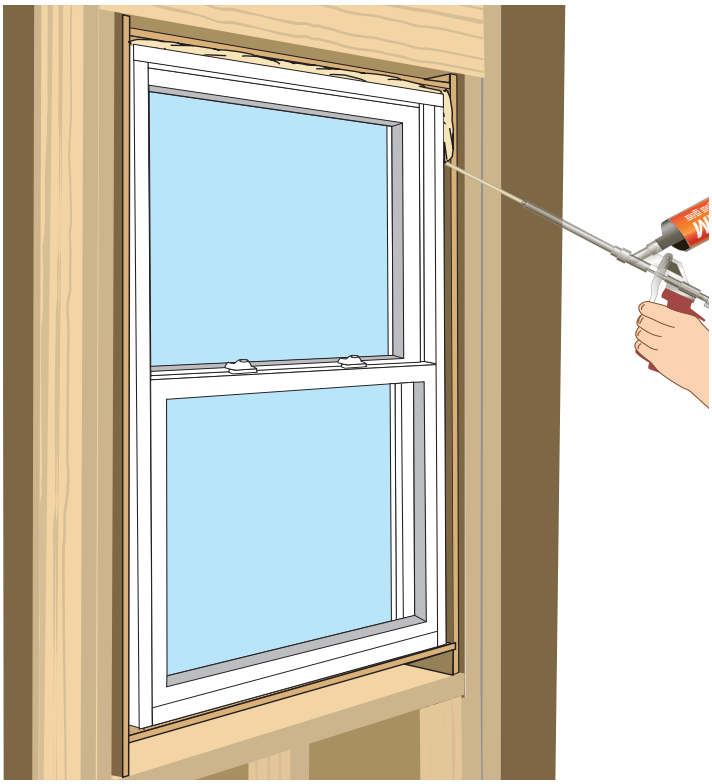
Closed-cell spray foam (ccSPF) has a closed cell structure which yields rigid hard foam, with a density of 1.8-2.3 pound per cubic foot (pcf), and can provide structural enhancement in certain framed buildings. The smaller cells trap insulating gas from the curing, which has a lower thermal conductivity 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

- Make sure the foam used has been tested in accordance with AAMA 812 and meets standard for low pressure development.
- 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



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.

Used wisely, ccSPF can be the best solution. AWDI recommends DAP® DRAFTSTOP 812 Window and Door foam. DAP® DRAFTSTOP 812 also achieves a thermal performance of R-5 per inch.

Application

DAP DRAFTSTOP Foam is applied using a Foam Applicator Gun. This foam and gun combination allows for more precise application than the straw grade foam alternative. 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 ¼" 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.