

### IMPORTANT! READ ALL INSTRUCTIONS BEFORE BEGINNING INSTALLATION

#### STEP 1: KNOW YOUR RESPONSIBILITIES

The user of this document is responsible for the following: (1) determining the suitability of this document for the intended use; (2) complying with the local building code; (3) providing the necessary skill to execute a proper window installation; (4) following the component manufacturers' installation instructions for the user-specified window product, flashing materials, water-resistive barrier (WRB), foam plastic insulating sheathing (FPIS), sealants, and other materials as required for a complete and effective installation; and (5) addressing any variances from manufacturers' instructions and product warranty stipulations, including consultation with the applicable product manufacturers or a design professional as needed.

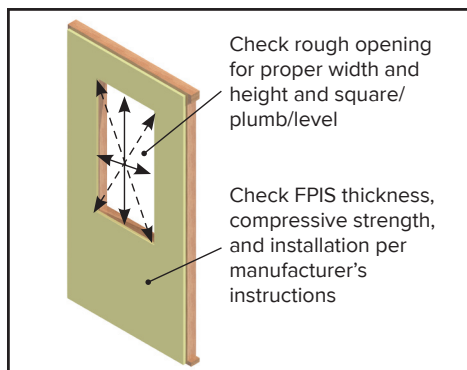


Figure 1. Rough opening and FPIS verification.

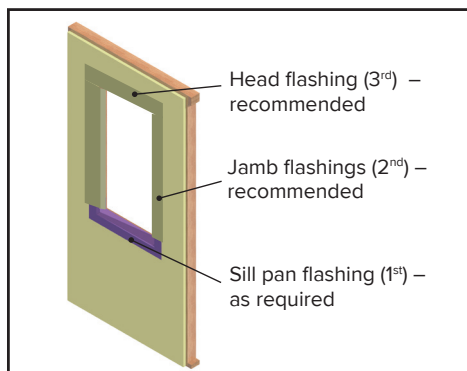


Figure 2. Install rough opening flashing, lapping shingle-fashion (bottom to top of opening).

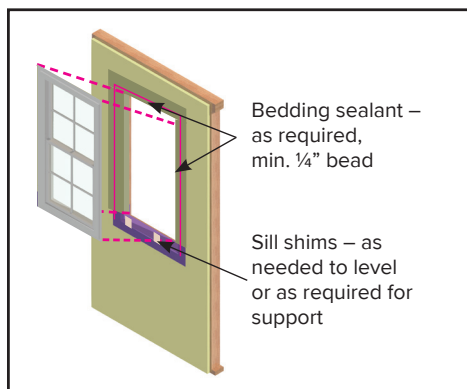


Figure 3. Apply sill shims and bedding sealant, set window into center of opening, and temporarily secure with flange nail.

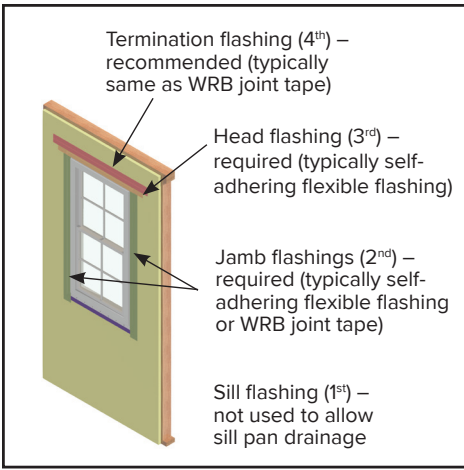
#### STEP 2: BEFORE YOU INSTALL THE WINDOW

- Verify that the rough opening is level, plumb, square, and the size required for the specified window product plus clearance for a rough opening gap as recommended by the window manufacturer (typically the rough opening width and height are ½" to ¾" greater than the window unit dimensions). See Figure 1.
- Verify that the FPIS is not greater than 1½" thick, has a minimum compressive strength of 15 psi per ASTM C578 or ASTM C1289, and is installed in accordance with the FPIS manufacturer's installation instructions for a code-compliant WRB application. Where a separate WRB material is provided, the thickness of FPIS is greater than 1½", or for other special conditions, refer to the section **SPECIAL CONDITIONS & ADDITIONAL RESOURCES**.
- Window sill pan flashing with back-dam, rough opening jamb flashings, and head flashings are a recommended installation best practice. Where used or required, install the rough opening flashing elements in shingle-lap fashion (see Figure 2). **NOTE:** Self-adhering and fluid-applied flexible flashings (or equal) are typically used for this purpose. Verify that the rough opening size can accommodate the additional thickness of flashing materials and maintain the required rough opening gap (see Item a).

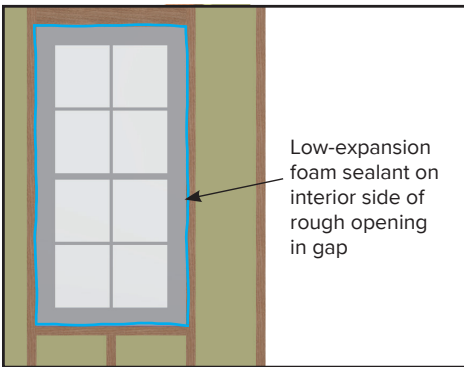
#### STEP 3: INSTALLING THE WINDOW

- Apply the window manufacturer's recommended bedding sealant (min. ¼" bead) to the rough opening perimeter approximately ½" to ¾" from the edge of the rough opening (see Figure 3). **DO NOT** apply bedding sealant to sill flange where sill pan flashing is used (see Step 2, Item c).
- Where sill shims are required by the manufacturer or where the sill is not level, shims may be placed and tacked into level position prior to setting the window unit. See Figure 3.
- With the window closed and in locked position, set into the center of the rough opening and fasten the center nail hole of the top flange to the rough opening with the manufacturer's recommended flange fastener, or initially secure as otherwise recommended by the manufacturer (See Figure 3). Verify that the required gap between the window head and header is present.
- Install sill shims (if not previously installed) and jamb shims at locations as required by window manufacturer. Adjust shims as necessary to achieve a square, plumb, and level window installation. Apply shims at window head only where required by the manufacturer.
- Check operation of the window and then install remaining nail flange fasteners as recommended by the manufacturer. A maximum fastener spacing of 6" is recommended. **NOTE:** The length of fasteners will need to accommodate the thickness of FPIS and maintain the required penetration into rough opening framing materials. Do not over- or under-drive flange fasteners. Flanges should be firmly

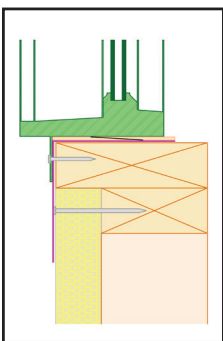
<sup>1</sup> For thicker foam sheathing and other special conditions, refer to section "SPECIAL CONDITIONS & ADDITIONAL RESOURCES"



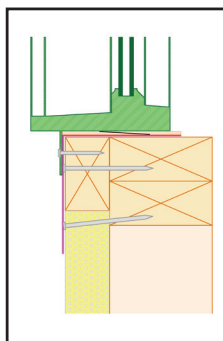
**Figure 4.** After permanently securing the flange, install exterior flashing in shingle fashion (bottom to top) on sill, jamb, and head flanges and to WRB surface. **DO NOT** apply sill flashing if rough opening sill pan is installed (as shown).



**Figure 5.** Air seal the interior side of the rough opening gap with low-expansion foam sealant.



**Figure 6.** Rough opening "window buck"



**Figure 7.** Rough opening "picture frame"

bedded in sealant and not warped out of plane. Clean off any excess sealant. Install any additional frame anchorage as required by the window manufacturer.

- f. Apply exterior flashing per manufacturer's instructions to window perimeter in shingle-lap fashion, starting at the bottom and ending with the head flashing (see Figure 4). **DO NOT** install flashing over flange at sill where a sill pan has been installed in the rough opening. Use compatible flashing materials recommended by the window manufacturer or WRB manufacturer and ensure conditions are appropriate for application (clean, dry, suitable temperature, etc.). **NOTE:** Self-adhering and fluid-applied flexible flashings (or equal) are typically used for this purpose and must have sufficient width to lap window flange and extend a minimum of 2" onto WRB surface.
- g. Air seal the interior side of the rough opening gap with low-expansion foam sealant intended for window installation. Avoid gaps or voids in the air seal. A tight interior air seal of the rough opening gap will promote proper drainage and prevent drafty window installations (see Figure 5).

## SPECIAL CONDITIONS & ADDITIONAL RESOURCES

- Where the FPIS material is greater than 1½" thick or less than 15 psi compressive strength, or where additional window or door support may be required (e.g., opening width > 6' or design wind load > 35 psf), it is recommended that a rough opening extension be applied to the rough opening. This can be done by use of 2x wood buck (see Figure 6) installed into the rough opening (which must be planned during rough framing) or by a "picture frame" furring (see Figure 7) installed around the perimeter of the rough opening of the same thickness as the FPIS for a flush installation (which can be installed at any time prior to window installation). In both cases, the window installation and flashing follow the same steps as indicated above. For additional installation guidance on this practice refer to: [continuousinsulation.org/window-installation](http://continuousinsulation.org/window-installation).
- A similar practice may be applied to integral flange door installations; however, door thresholds must be fully supported by blocking or rough opening extension as described above. In addition, where door frame or door hinges are required to be anchored to rough opening framing, ensure the FPIS thickness can be accommodated such that the anchorage fasteners (typically screws) embed into framing material with the minimum required edge distance.
- Where a separate WRB membrane layer is installed over or under the FPIS, refer to [FMA/AAMA/WDMA 500-16 Standard Practice for the Installation of Mounting Flange Windows into Walls Utilizing Foam Plastic Insulating Sheathing \(FPIS\) with a Separate Water-Resistive Barrier \(WRB\)](#) for appropriate installation and flashing details.

## RECOMMENDED TOOLS AND ACCESSORIES

- Tape measure
- Level
- Hammer
- Power screw driver with clutch
- Shims
- Sealant\*
- Flashing\*
- Fasteners\*

\*Follow manufacturer's specifications and installation recommendations as applicable.

## Additional Resources

- [Window Installation in Walls with Foam Sheathing](#)
- [Water-Resistive Barrier](#)
- [Continuous Insulation for Residential Windows](#)
- [Continuous Insulation for Commercial Windows](#)

**DISCLAIMER** While reasonable effort has been made to ensure the accuracy of the information presented, the actual design, suitability and use of this information for any particular application is the responsibility of the user. Where used in the design of buildings, the design, suitability and use of this information for any particular building is the responsibility of the Owner or the Owner's authorized agent. The information contained herein is provided "as is."



Owned and operated by the Applied Building Technology Group with support from the Foam Sheathing Committee (FSC) of the American Chemistry Council, [continuousinsulation.org](http://continuousinsulation.org) provides informational resources intended to assist the foam plastic insulating sheathing industry, using sound science to develop research supporting the reliable, efficient, and economic design and installation of foam sheathing.

