

# WINDOW FLASHING



## Installing Flanged Windows: Two Strategies Compared Part 2: A proper AMAA 'A-1' method, step-by-step

BY GENE SUMMY

In January, *JLC* published Part 1 of this series, which examines the two predominant window flashing techniques—AAMA “A” and “B” methods. In Part 1, I delved deep into the step-by-step process for completing the “B” method. After more than 20 years of installing windows, and inspecting and testing window installations all over the U.S., I feel the “B” methods are more robust, reliable, and durable under typical jobsite conditions.

In a nutshell, my preference boils down to this: Sealant is absolutely necessary to any window installation. Some denigrate it as a “barrier” system that will fail and say that we need a “drainable” assembly instead. The fact is we need both. We do need to lap materials and provide a sill pan that will allow water to drain out of the

window assembly. But we also need sealant. For one, it’s required by every window manufacturer out there, making its use an integral part of the building code. It’s a fluid material that fills in the imperfections that exist between every window flange and wall surface. With the “B” methods, you don’t cover the flanges with self-adhering flashing (SAF), and therefore you can inspect and verify that enough sealant was used—because you can see the squeeze-out.

However, despite my arguments, some installers prefer to use the “A” methods. On the following pages, I outline step-by-step the process I instruct those installers to use.

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**Mark housewrap for cuts.** Properly measure, mark, and cut the housewrap at each rough opening (RO). I recommend using the “modified I-cut” (sometimes called the “upside-down Martini glass”) method. Locate the corners of the RO, then draw lines indicating the centerline and bottom-angle cuts and the cut along the RO’s top edge (1). Head laps should be cut at 45 degrees and to the width of the head and side flashing—no more, no less. A simple trick is to use a square piece of flashing as a template to help correctly mark the outer end of the cut (2). Connect the “outer” mark with the top corner of the RO, making a 45-degree line (3). It’s important to get this lap cut right; head laps that are sliced at different angles and lengths are harder to seal.

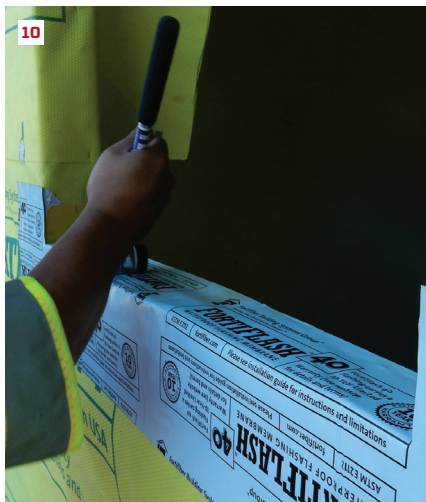


**Cut housewrap.** A “modified I-cut” is easier for installers to get right than a “true I-cut” (or a full cut-out), which requires fairly precise cutting of the housewrap flush with the sill (or sides) (4). Pull the resulting flaps into the RO. Secure flaps with a few staples, keeping the housewrap taut in the opening—do not over-pull the flaps. At the head, cut along your angled (45 degree) lines to the width of the flashing to create a flap in the housewrap; temporarily hold it up with tape (5). At the sill corners, I highly recommend using plastic corner pieces (6). Run a bead of sealant along the RO’s sill and jamb in preparation for the rigid-plastic flashing corners. This is especially important if a drainable housewrap is to be installed (as shown here). If a flexible flashing product is used for the sill, sealant is not needed.





**Flash the sill.** Staple the flashing corners in place on both sides of the sill. The corners help seal the sill's three-directional corner from pinhole openings in the membrane flashing and provide protection in case the window is roughly slammed into place (7). Install self-adhered flashing (SAF), starting at the sill. Each end of this sill flashing should extend at least 9 inches (the width of the flashing material) beyond the opening so the side flashing can fully lap over it. Roll the SAF flat with a J-roller (8). Cut the SAF and fold it down onto the RO's sill. Note: If a cementitious cladding, such as stucco, brick, or stone veneer, is planned for the house, install a through-wall flashing apron first under the self-adhered pan flashing. This will ensure that water drains to the exterior (9).



**Install end dams.** Using a J-roller, roll flat the peel-and-stick applied to the sill, being careful not to create wrinkles. Surprisingly, I don't often see installers using a J-roller, but this tool helps improve the adhesion of SAF, even in cold and wet conditions (10). Install an end dam at each end of the sill by creating three-directional corners made of SAF. These need to cover the vertical leg of the plastic flashing corners (if you use them), and must lap a minimum 1 inch onto the sill. Slit each patch so it can be folded onto the face of the sheathing (11). After folding the patch onto the sheathing, J-roll the patch legs. Note: If not using plastic corners, you must apply the patches without creating wrinkles or "over stretching" the material. The corners must be absolutely tight to the RO. The benefit to rigid flashing corners is you can create tighter corners, avoiding wrinkles more easily (12).



## INSTALLING FLANGED WINDOWS: PART 2



**Apply sealant.** Before installing the window, apply a fat,  $\frac{3}{16}$ - to  $\frac{1}{2}$ -inch-wide, continuous bead of sealant to the back of the nailing flange—rather than around the RO—on both sides and the top of the window (13). If applying the sealant to the flange is not practical, perhaps because of a window's size or location, apply it around the RO such that the bead will line up with the outer edge of the flange. This way, it seals the edge and will ooze through any pre-punched holes. Along the bottom fin, the sealant should be discontinuous. Either leave a series of 3- to 4-inch gaps in the sealant, or omit the sealant at the lower fin. I like leaving gaps at the sides (14) and under any vertical mulls. Be sure the sealant is compatible with the membrane; I recommend using the same manufacturer for both the sealant and the flashing, or you can use a butyl-based SAF.



**Set the window level, square, and plumb.** Shim as required. Watch for sealant “squeeze-out” everywhere sealant is used—along the edge of the nailing flange and at any pre-punched holes. Proper squeeze-out confirms that the window is adequately set in sealant. Use exterior-grade, self-tapping pancake screws, 8 to 12 inches on-center (15). The compression from the fasteners creates a “gasket” between the fins and the WRB or the sheathing at the head (16). Also, be sure that the squeeze-out is buttered flat before it hardens (17). I cannot emphasize this enough. The next layer of flashing will need to lie correctly on it. Not buttering your squeeze-out flat in an A1 installation method is a recipe for disaster. Note: The window shown here is masked off with plastic and red tape for future water testing.





**Install self-adhered side flashings.** If you are using a drainable housewrap product, as shown here, use at least 9-inch-wide material. (For smooth-faced WRBs, 6-inch-wide SAF is adequate.) Apply the SAF carefully. Use a J-roller to ensure adhesion and eliminate wrinkles (18). If adhesion is difficult because of weather conditions, use a primer. Pay special attention where the side flashing laps onto the sill flashing, and J-roll the lap to ensure adhesion (19). Nailing flanges typically have mitered corners, which are “welded.” The resulting seams often create raised surfaces, which cause the SAF to bubble and wrinkle at this critical juncture. Ideally, the SAF should lie flat on the fin, transitioning to the sill flashing without “fish-mouthing.” This is an area where I suggest sealant be applied at the edge of the membrane to prevent water from passing under the SAF.



**Install the head flashing last.** Here, the installer flushed up the end of the head flashing with the outside of the side flashing, but it's preferable to extend each end past the side flashing. J-roll the peel-and-stick flat to fully adhere the membrane (20). Next, drop the head flap down. Prior to taping it off, apply a dab of sealant at the top of the 45-degree cut (21). This may seem unnecessary, but this little dab is important, particularly for drainable housewraps. Water can potentially get behind the tape at this juncture. Tape the head lap closed at the ends (22). Strips of SAF membrane are better than construction tape, but the tape will work, too. If the flap needs to be taped along the bottom edge, use short pieces with gaps between them so any water that might get behind there can drain out.



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**Seal side-flashing edge.** For added protection, apply a bead of sealant along the edge of the side flashing where it butts into the window frame. This will help if the SAF does not adhere properly to the nail fin because of dust, cold, or moisture (23). Tool the sealant bead with a finger. The sealant helps mitigate potential moisture entry points from wrinkles in the side flashing (24).



**Seal gap at sill.** Also, I always recommend applying a bead of sealant along the seam below the window. J-rolling cannot always be relied on to seal this troublesome “lumpy” spot, and fish-mouthing easily occurs here (25). Tool the sealant with a finger. Sealing this juncture is important; if water migrates behind the SAF, it’ll find the path of least resistance, working its way into the interior. Even if the flashing installation is executed perfectly, as illustrated in this story, there is potential for water to get in, most likely through the pre-punched holes or cracked nailing fins (26).





**Seal the interior.** On the inside of the window, apply a bead of sealant 6 to 8 inches down each side and all the way across the bottom (27). Tool the sealant into place using a finger. This will stop any unintended water from reaching inside the home. Apply low-expansion foam around the rest of the RO (28).



**Water testing.** After many years of water testing windows in the field, I am certain that 80% or more of the water intrusion we observe is due to flashing and sealant errors. Shown is a recent AAMA 502, ASTM E 1105 water test we performed where we isolated the window out of the test—only the flashing method, sealant, and WRB were being evaluated. The “window leaks” we are called to investigate are usually not window leaks at all, but flashing and sealant leaks. All of these leaks may be easily prevented by following the steps in this article (29, 30).