

# Southland Windows Inc.

Clad Swing Door – Installation Instructions



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## Foreword

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The following instructions are for the Southland Windows Inc. (SWI) aluminum clad exterior/wood interior pre-hung Swing Doors with a factory installed nail fin. This door system is intended for use in the new construction of residential and light commercial buildings of no more than three stories above grade in height. The installation assumes the use of a membrane/drainage system to prevent water and air intrusion into the building.

### 1.0 Scope

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**1.1** This instruction covers the installation of doors in new construction detached one- and two-family dwellings and townhouses not more than three stories above-grade in height with a separate means of egress. It does not cover retrofit/replacement applications.

**1.2** This instruction only applies to units with a mounting flange or nail fin where the flange is employed for securing the door into a vertical stud frame wall.

**1.3** These instructions apply to factory assembled, one leaf “single” and two leaf “pair” door styles. *Note: all SWI pre-hung doors are assembled and checked for proper operation in the factory. Some units may need to be disassembled for delivery.*

**1.4** This instruction covers the installation process from pre-installation procedures through post-installation procedures. Fabrication or assembly of units whether such fabrication takes place in a factory or at the intended installation site is not included in these directions.

**1.5** Aspects of installation relating to installation effectiveness and reasonable durability in service are covered in this document. It does not cover aspects of installation relating to door frame and panel handling, storage or the safety of the person installing the units.

**1.6** These instructions provide minimum requirements that will help to ensure the installation of doors in an effective manner. Actual conditions in buildings vary greatly, and in some cases additional care and precaution may need to be taken.

**1.7** This instruction does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this document to consult and establish appropriate safety procedures and determine the applicability of regulatory limitations prior to use.

**1.8** This instruction is not intended to replace federal, state, or local building codes. In all cases follow applicable building codes for any special procedures, applications, or requirements.

**1.9** Installation and flashing details that do not fall under this standard are the responsibility of the engineer or architect of the project. For example, door installations into recessed, corner or radius openings are not covered in this instruction.

**1.10** These instructions may not apply to door systems whose mounting flange has been bent, cracked, cut, or removed. If such damage or modification has occurred, consult Southland Windows for repair or special installation instructions.

## 2.0 Definitions of Terms

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**2.1 ACTIVE DOOR (OR LEAF):** First operating door in a pair of door leaves, when unlocking; the door usually equipped with cylinder control for the locking mechanism.

**2.2 BOND BREAKER:** Material with the purpose of preventing three sided adhesion in sealant joints.

**2.3 BRICKMOLD:** Also known as exterior casing, it is an extrusion in the aluminum clad product line used as an exterior trim and a nail fin on SWI products.

**2.4 FENESTRATION:** An opening in or on the building envelope, such as windows, doors, secondary storm products, curtains walls, storefronts, roof windows, tubular day lighting devices, sloped glazing, and skylights, intended to permit the passage of air, light or people.

**2.5 FLASHING:** Flexible sheet materials with water resistive properties that are used to bridge the joint (gap) between exterior wall penetrations such as window and door framing members and adjacent water-resistive barriers or sealed drainage plane material. The purpose of flashing is to drain water away from the exterior wall penetration and help prevent intrusion of water into the wall assembly

**2.6 HEADER:** A horizontal structural member or beam that supports the load over an opening, such as that of a door or window. The header transfers that load to the vertical members at the sides of the opening.

**2.7 MEMBRANE/DRAINAGE SYSTEM:** A wall system employing a concealed WRB in which the exterior building surface is not the sole method of protecting the building form moisture penetration.

**2.8 NAIL FIN:** A fin projecting from the door frame parallel to the plane of the wall, also known as a mounting flange, for the purpose of securing the frame to the structure.

- 2.9 OPEN STUD FRAMING:** A building framing system comprised of unsheathed structural components (studs, headers, sills, plates, etc.) and areas with shear wall framing.
- 2.10 PLUMB:** Used to describe surface or edge that is vertical or the process of making a surface or edge vertical.
- 2.11 PAN FLASHING (A.K.A. SILL FLASHING):** A type of flashing used at the base of a rough opening to divert water to the exterior or to the exterior surface of a concealed WRB. Pan flashings have upturned legs at the rear interior edge (back dam) and right and left sides (end dams), to form a three sided pan that has the front open for drainage. These corners and seams must be water tight. They are intended to collect and drain water toward the exterior, including water that may enter through the door units or around the frame (between rough opening and fenestration). Pan flashing can be made from self-adhered flashing or from rigid or semi-rigid material, such as metal or semi rigid polymer.
- 2.12 RESIDENTIAL BUILDING:** Any building used or intended primarily for a single or multiple family dwelling.
- 2.13 SEALANT:** Any of a variety of compounds used to fill and seal joints or openings in wood, metal, masonry, and other materials, as contrasted to a sealer; which is a liquid used to seal a porous surface.
- 2.14 SELF ADHERING FLASHING:** Flexible sheet materials coated completely, or partially, on at least one side with an adhesive material and which do not depend on mechanical fasteners for permanent attachment. A J-roller tool is useful to ensure proper contact and adhesion between the flashing and substrate. Southland Windows recommends the use of self-adhered flashing material.
- 2.15 SHEATHING TAPE:** Tape used to seal joints in the weather resistant barrier (WRB). These materials are recommended by the WRB manufacturer for this specific purpose.
- 2.16 SHIM:** A thin, flat or wedge shaped piece of suitable material used to level or plumb a door frame during installation.
- 2.17 WATER-RESISTIVE BARRIER:** The surface or surfaces of a wall responsible for preventing water infiltration into the building interior. This will also be referred to the WRB in this installation instruction.

### 3.0 Clarifications and Qualifications

**3.1** This installation instruction realizes that the effectiveness and durability of installed units depends not only on the choice and quality of materials, design, adequacy of assembly, and support system, but also on their proper installation.

**3.2** Improper installation of fenestration units may reduce their effectiveness, lead to excessive air, water and sound leakage, condensation, and may promote the deterioration of wall constructions, units themselves and their respective finishes.

**3.3** The application of these instructions also requires a working knowledge of applicable Federal, State, and local codes and regulations regarding fenestration products, specifically, but not limited to:

- A required means of egress or rescue
- Requirements for safety glazing
- Minimum grades of water-resistive barrier (WRB) materials

**3.4** Please use caution to avoid damage to doors and frames before, during and after installation. Prior to installation, store door leafs in a near vertical position in a clean area, free of circulating dirt or debris and protected from exposure to weather and the elements.

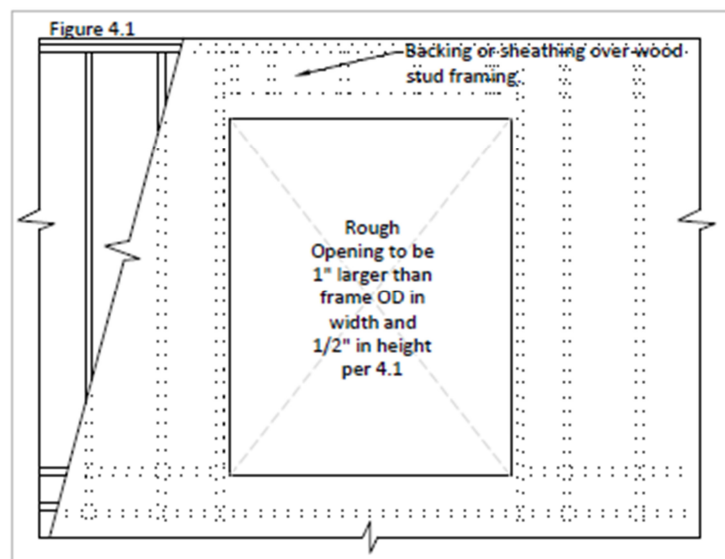
**3.5** Field-applied protective coatings may damage window sealants and gaskets and may not be recommended. Contact the SWI sales representative for consultation before applying any such coatings.

**3.6** This installation instruction recognizes that the coordination of trades and proper sequencing are essential for effective installation.

**3.7** Southland Windows Inc. is a window and door manufacturer and not an installation company. This instruction has been created to support properly trained fenestration installers with generally accepted installation practices.

### 4.0 Door Frame and Related Issues

**4.1 FRAMING REQUIREMENTS:** The rough opening framed to receive the door shall be sufficiently larger in width and height than the actual frame dimensions of the door. To assure adequate clearance, the framer shall follow the SWI's recommended



rough opening dimensions which are 1/2" on both sides of the door units and 1/2" over the frame OD size in height. In other words; the opening should be 1" greater than the frame outside dimensions in width and 1/2" in height. Per ASTM E2112, the framing members comprising the rough opening shall be within ¼" of plumb, level, square and true prior to the installation of the window. The studs shall be free of voids, holes, chipping, twisting, or other conditions that will not allow the sealants and flashings to maintain continuous contact. As self-adhered flashing material is recommended, the wall framing needs to be covered by backing support or sheathing before the flashing can be applied. The flashing will be applied onto the sheathing and the door frame will be mounted with the nailing fin flush against the sheathing.

**4.2 COMPATIBILITY:** All materials such as, but not limited to, coatings, flashings and sealants that come into contact with each other should be chemically compatible for their intended purpose (see AAMA 713).

**4.3 CORROSION RESISTANCE:**

**4.3.1** Metal products shall be isolated from dissimilar or corrosive materials with a nonconductive coating or sealant material.

**4.3.2** All fasteners shall be corrosive resistant, in accordance with ASTM B456, B633, or B766 as indicated in AAMA TIRA9.

**4.4 FLASHING REQUIREMENTS:**

**4.4.1** Proper flashing and/or sealing is necessary as a barrier to prevent water from infiltrating into the building. Flashing and an appropriate method of sealing shall be designed as a part of a whole water-resistive barrier system.

**4.4.2** The general contractor, or his designated agent, should ensure that the flashing material is protected from damage by weather, other trades, or vandalism. The general contractor, or his designated agent, should also ensure that the flashing system be properly integrated into the water-resistive barrier for the entire building.

**4.4.3** Flashing material shall carry continuous manufacturer identification.

**4.4.4** Self adhering flashings which are preferred by SWI, shall meet the performance requirements of AAMA 711 and are used to seal the joint between fenestration framing members and the adjacent water-resistive barriers.

**4.5 JOINTS AND FASTENING:** Joints and fasteners between the building envelope (WRB assembly) and fenestration product shall be designed to accommodate differential thermal expansion and contraction, as well as the structural requirements within the door and wall assembly.

**4.6 SEALANT REQUIREMENTS:**

**4.6.1** Sealing and caulking between the door frame and the flashing, if necessary, can be accomplished with sealant material conforming to AAMA 808.3 within AAMA 800. Use sealants

recommended and approved by the sealant/flashing manufacturer. To ensure compatibility, follow the sealant manufacturer's printed application procedures and precautions. ASTM E2112 gives guidance on sealant selection and application.

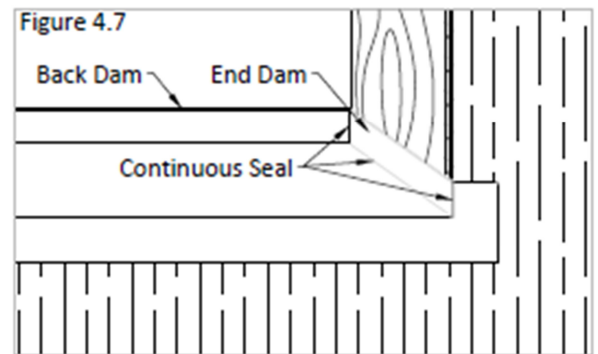
**4.6.2** Where sealant is required in these instructions, an application of a nominal 3/8" diameter sealant bead is intended.

**4.6.3** Where wet sealant is used, the installer shall look for the sealant to "squeeze out" or appear along the edge of the flange/flashing to assure a continuous seal. "Squeeze out" should be promptly tooled smooth.

**4.6.4** Install the door frame immediately after sealant application and before a skin forms or any contamination is allowed to occur on the sealant surface.

#### 4.7 SILL PAN FLASHING INSTALLATION:

**4.7.1** The sill pan should be completely sealed and made from a non-corrosive material formed to the specific opening condition and be three sided with a back dam and two side dams as high as is aesthetically and functionally possible and tall enough to prevent water penetration. The seams and corners must be water tight. (Figure 4.7)



**4.7.2** When the wall opening will have a WRB continued below, such as on a second floor where the door will open onto a balcony/deck to be built afterwards, a flexible self-adhesive flashing material should be installed prior to the sill pan. The lower portion and sides of the flashing should not be permanently fastened at this time. When the WRB is applied, it will be tucked up under the flexible flashing to allow the installer to fully integrate the WRB and the door frame flashing. (see figure 4.9.2) If the unit is being set in a slab-on-grade condition, this additional strip of self-adhesive flashing will not be necessary.

**4.7.3** After checking for a level rough opening at the sill, make sure the area is free of contaminants and apply two 3/8" beads of sealant on the sub-floor where the pan will be positioned. One bead should be toward the interior and the other should be toward the exterior. Both beads should extend up the jam approximately 6". *Note: Shims used to level the sill should be made of non-degradeable material such as hard plastic/composite material and be placed under the sill pan.*

**4.7.4** Set the sill pan into position, compressing it down onto the sealant beads and over any flexible flashing materials used in this specific application.



**4.7.5** Attach the sill pan to the sill condition at a maximum of 16" O.C. When the sill pan flashing is penetrated with fasteners, pre-drill the hole, apply sealant into the hole, attach the fastener, then seal over the fastener head and/or washers with appropriate sealant.

**4.7.6** The sill pan must be sealed to the water resistive barrier along all joints, including the joint between the pan flashing end caps and the jamb condition.

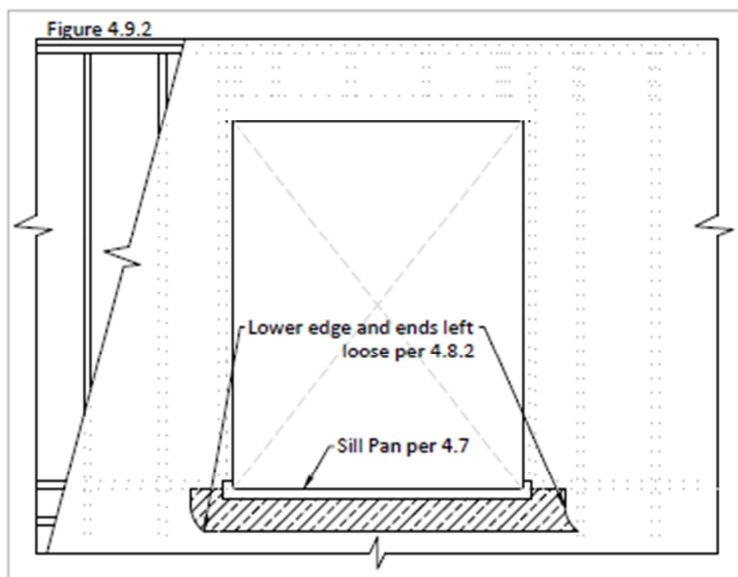
**4.7.7** Prior to installing the door frame into the sill pan, place a bead of sealant on the top of the exterior side of the rear upturned leg and end caps of the sill pan. Also, place a discontinuous bead leaving a minimum of two, 2" voids, no more than 4' apart, toward the outboard side. This bead will make contact with the bottom of the door frame to allow water to drain between the door sill and the sill pan. This bead should also continue up the end caps at the jambs.

**4.8 FLASHING AND SEALANT APPLICATION METHODS:** One of the two following methods shall be selected as the application to be followed. Once a method is selected, all procedures of that specific method shall be performed in the described sequence. Substitution of a procedure from one method to the other is not permitted.

- **METHOD A:** The door frame, sill pan and flashings are mounted before WRB or wrap. (See 4.9)
- **METHOD B:** WRB is to be installed before the door unit and related flashing. This method requires modification of the WRB. (See Section 4.10)

**4.9 METHOD A (Installed prior to WRB):**

**4.9.1** Place the sill pan flashing as described in step 4.7.

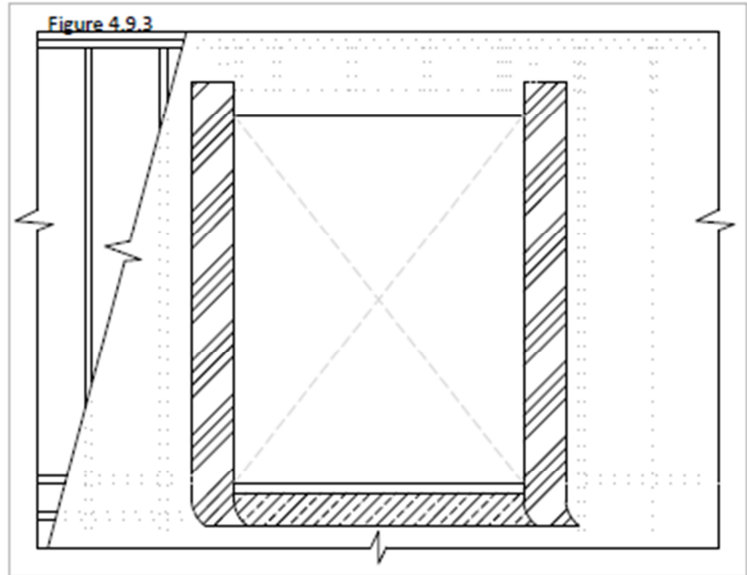


**4.9.2** If applicable, confirm the first strip of flashing has been previously placed immediately below the sill as in step 4.7.2, cut it long enough to extend past each side of the door frame, so that it projects even with the vertical jamb flashing (roughly 9" on each side) that will be applied later (see Figure 4.9.2). Again, the lower portion and last 9" on each side will not be fastened in order to intergrate the WRB in later steps of the project. *Note: Coordinate between horizontal and vertical flashing*

*applications to ensure that no gaps remain at the transition between components. In addition,*

*free ends of the flashing should be secured to prevent curling or contamination of the adhesive surface prior to installing the exterior facade.*

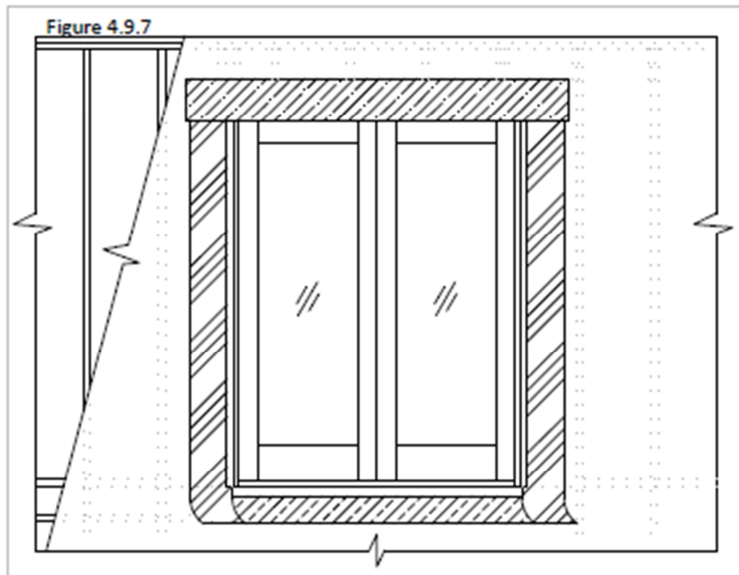
**4.9.3** Next, fasten or adhere strips of flashing along each vertical edge of the opening. Extend this flashing to approximately ½” less than the bottom of the sill flashing and beyond the top of the door frame to approximately 2” less than the top of the head flashing location (see Figure 4.9.3). Do not fasten or adhere the bottom 9” of the jamb flashing, so the water-resistive barrier applied later may be slipped up and underneath the flashing in weatherboard fashion by the WRB installer.



**4.9.4** Apply a continuous seal to the backside (interior) of the nail fin (or SWI brickmold if used) near the outer edge or a continuous seal to the perimeter of the opening at a point to assure contact with the backside (interior) of the mounting flange. Apply sealant in line with the pre-punched holes or slots on the mounting flanges.

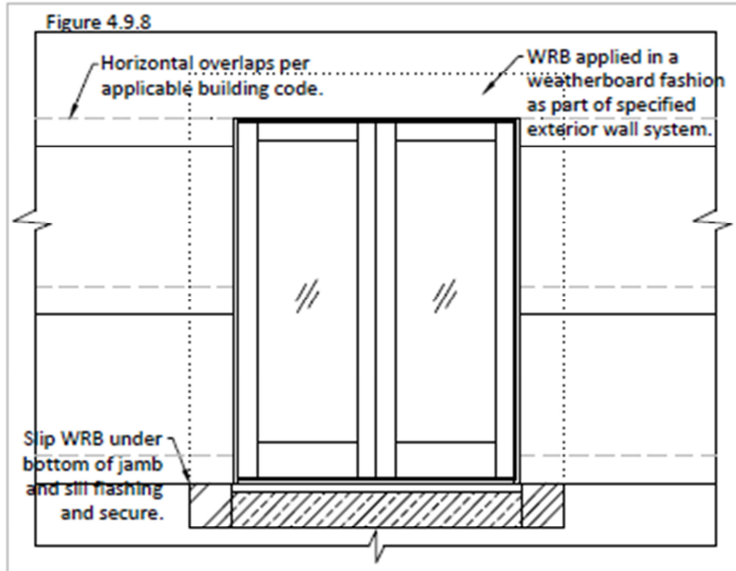
*Note: Caution shall be taken to avoid disrupting this continuous seal prior to installation.*

**4.9.5** Re-apply sealant at corners the full length of the seam (mitered corners) where nail fins meet and the outside of the frame corner joints.



**4.9.6** Install the door frame according to section 4.11 Door Frame Installation.

**4.9.7** Apply a continuous strip of the self-adhered flashing along the head of the frame. Cut the flashing sufficiently long so that it will extend approximately 1” beyond each jamb flashing (Figure 4.9.7). Press firmly over nail fin and onto sheathing.



**4.9.8** The WRB or house wrap may now be installed in a weather board fashion as in figure 4.9.8. The WRB installer should be sure to tuck the WRB under the jamb and sill flashing left loose in steps 4.9.2 and 4.9.3

**4.10 METHOD B (Installed after WRB):**

**4.10.1** When a previously installed water-resistive barrier covers the window opening, make an "I-Cut" in the barrier as shown in Figure 4.10.1.

**4.10.2** Place the sill pan flashing as described previously in step 4.7.

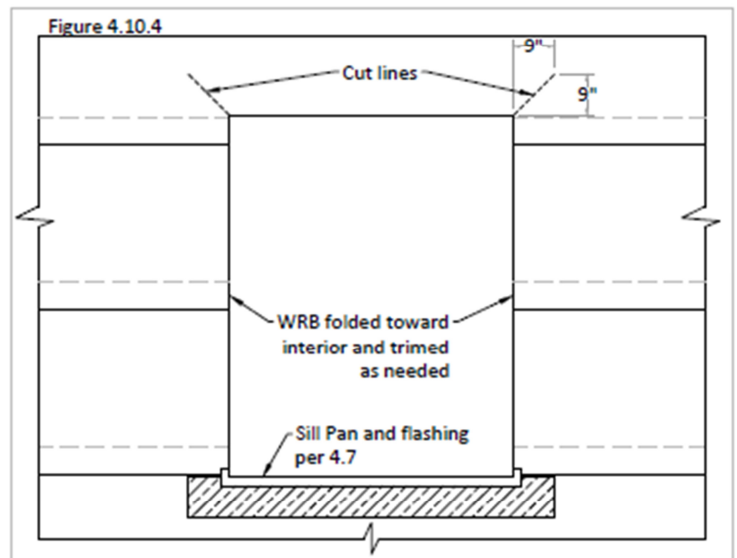
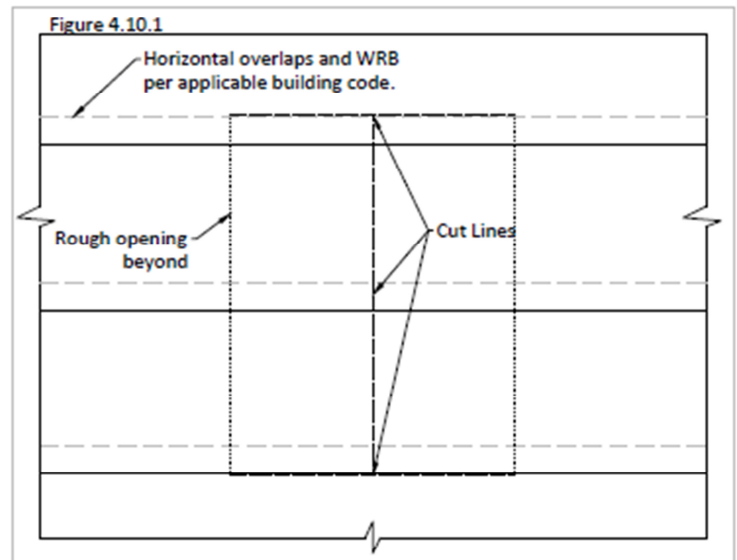
**4.10.2** Fold the side flaps over and behind the interior sides of the rough framing.

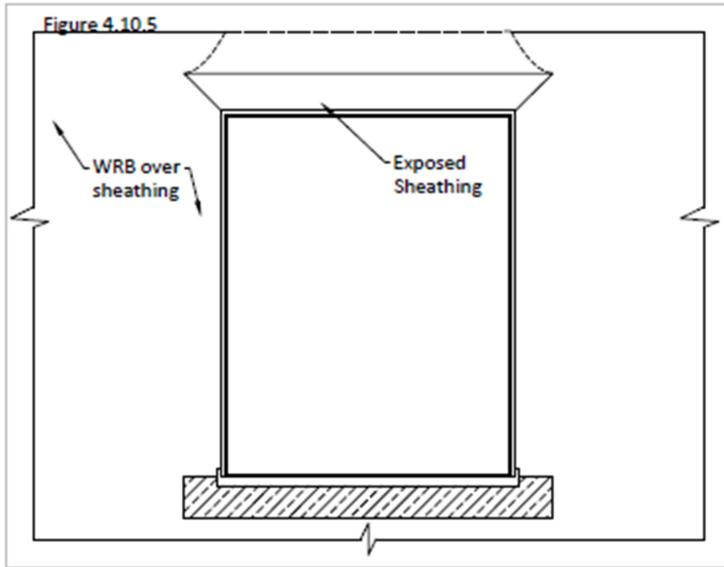
**4.10.3** Fasten flaps on interior with staples set every 12" to 16" to prevent wrinkling and/or distortion.

**4.10.4** Measure for diagonal cuts at top of door frame corners through the WRB (see Figure 4.10.4)

- Measure from the corner 9" up and 9" over, and mark 45° diagonal line.
- Cut on the diagonal line from marked point to the rough opening corner.
- Measure and cut the other upper corner in the same manner.

**4.10.5** Gently raise the top edge of the WRB and tape the corners and center to the barrier surface above. This will allow for installation of the door





frame and flashing in the following steps (Figure 4.10.5 on next page)

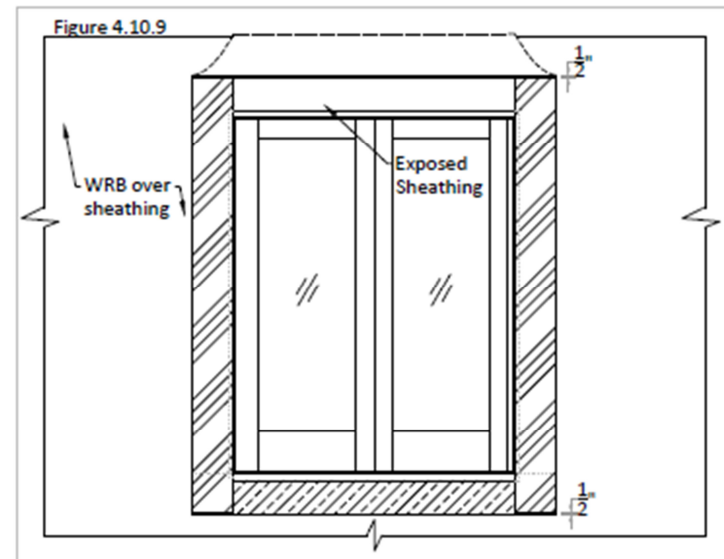
**4.10.6** As discussed earlier, the first strip of flashing immediately below the sill pan and rough opening will have been placed under the sill pan with the ends and bottom portion remaining loose if applicable.

**4.10.7** Apply a continuous seal to the backside (interior) of the mounting flange near the outer edge or a continuous seal to the perimeter of the opening at a point to assure contact with the backside (interior) of the nail fin. Apply sealant in line with the pre-punched holes or slots on the mounting flanges.

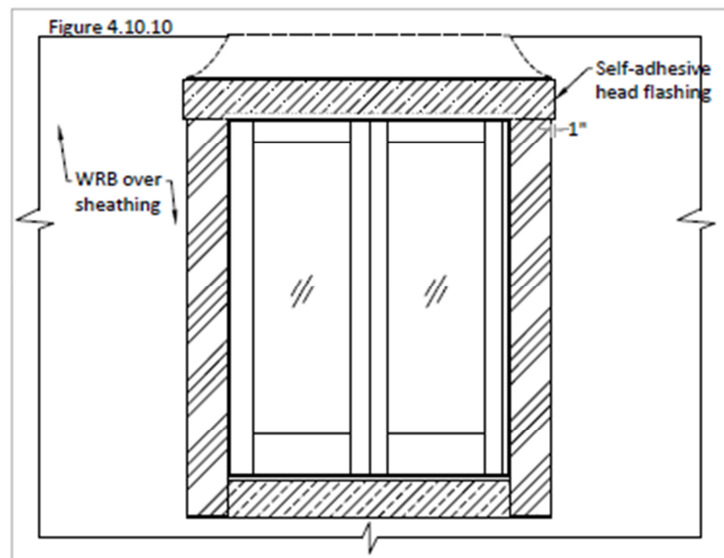
*Note: Caution shall be taken to avoid disrupting this continuous seal during the installation.*

**4.10.8** Install the door frame according to Section 4.11 Door Frame Installation.

**4.10.9** Next, adhere strips of flashing along each vertical edge (jamb) of the opening. Extend this flashing to approximately 1/2" less than the sill flashing and beyond the top of the door frame to approximately 2" less than the top of the diagonal cuts made in the WRB previously (see Figure 4.10.9).

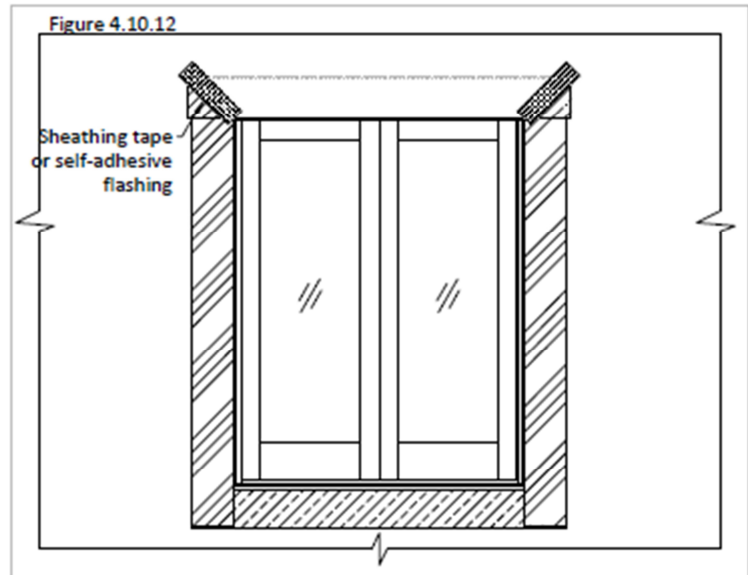


**4.10.10** Apply a continuous strip of the self-adhered flashing material over the door head. Cut the head flashing long enough so that it will extend approximately 1" beyond each jamb flashing (figure 4.10.10). Tuck this flashing underneath the WRB that was taped up and out of the way in 4.9.4 and press firmly over nail fin and onto sheathing.



**4.10.11** Finally, remove the previously applied tape which held the flap of the WRB during installation at the door frame head and allow it to lie flat over the head nail fin of the.

**4.10.12** Apply a piece of sheathing tape or self-adhering flashing over the entire diagonal cut made in the WRB during step 4.9.4 and press firmly assuring contact between the WRB and the tape or flashing as in Figure 4.10.12.



#### 4.11 DOOR FRAME INSTALLATION:

**4.11.1** After establishing the rough opening is the correct size and within the parameters noted in 4.1, remove the temporary handles attached to the side jambs and dry fit the door frame into the opening to determine any further shimming requirements. You can also cut the strap wrapped vertically around the head and the sill. *Note: Shims along the sill should be approximately 6" to 8" apart to ensure continuous, solid and level support.*

**4.11.2** Because the doors are typically fitted and tested in the factory, the door leafs can be left in place during installation. Make sure doors are closed and locked when lifting into place. Use glazing suction cups or flat straps under the sill that can slip out between the sill and sill pan to lift the doors into place.

**4.11.2** With the door lying flat on the exterior face in front of the opening or, leaning against saw horses, etc. set the sill close to the sill pan, lift the unit upright while setting it into place. Be sure to protect the exposed front surfaces from scratches and dents. The doors can be large and this may take a considerable amount of people to do safely and effectively.

**4.11.3** Secure the sill by applying discontinuous lengths of sealant in the sill pan. Refer to step 4.7.7. This will fasten the sill to the sill pan while allowing moisture out from underneath the door frame.

**4.11.4** Because the sill was previously leveled before the sill pan was installed in step 4.7, the unit should be sitting level and plumb in the opening.

**4.11.5** Insert shims along the head between the frame and header. It is critical that the head remain straight and level.

**4.11.6** Insert shims between the side jambs no more than 24" on center. The jambs should be straight and plumb.

**4.11.7** Check the overall square-ness of the frame. The diagonals (upper right corner to lower left and upper left to lower right) should not differ by any more than 1/16".

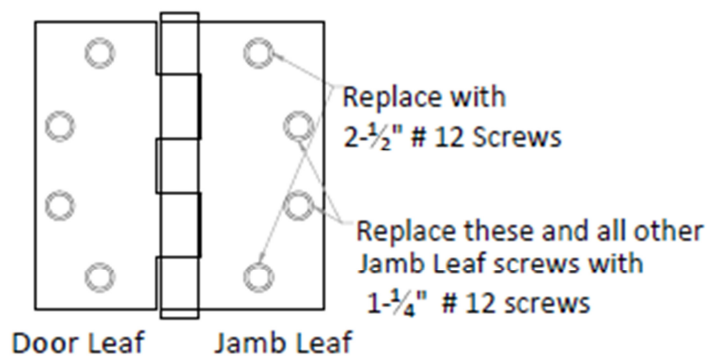
**4.11.8** Further secure the head and side jambs with the minimum equivalent of 6d fasteners through every pre-punched hole provided in the nail fin or at a maximum of 16" on center.

*Note: Avoid overdriving fasteners. Use an appropriately sized fastener to cover the width of the pre-punched hole and adequately secure the door to the structure.*

**4.11.9** Each direction from all corners there shall be a fastener within 10", but no closer than 3" to prevent frame distortion or fracture of joint seals.

*Note: If any damage to door frame joint seals or mounting flanges is observed during installation, the installer shall make the necessary repairs or consult Southland Windows.*

Figure 4.11.10



**4.11.10** When the door frame is in place, replace the screws in the jamb side of the hinge with the corrosion resistant screws provided. Replace the top and bottom screws of each hinge with the 2-1/2" screws and the center screws with 1-1/4" screws. (Figure 4.11.10)  
*Note: Make sure the longer screws penetrate the framing material and take care not to over tighten the screws which may distort the frame. Use adequate shimming behind the hinges.*

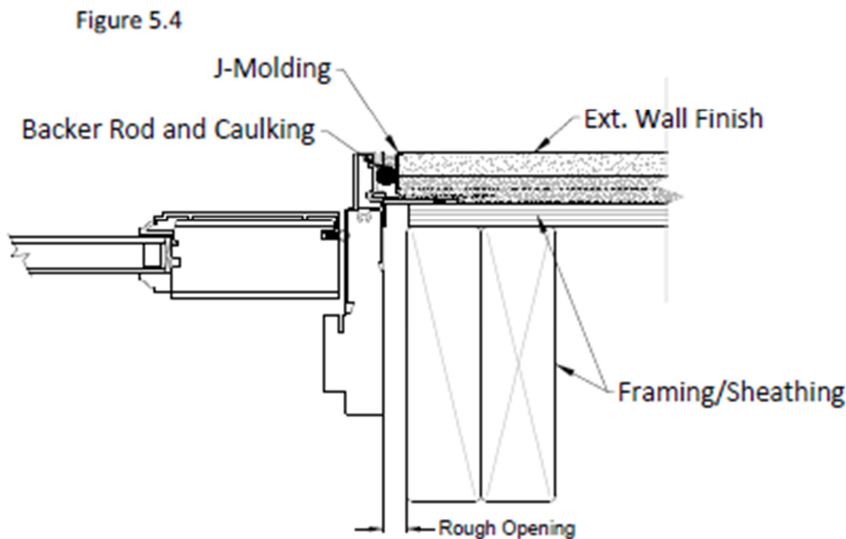
**4.11.11** The Owner/General Contractor is responsible to ensure that the water-resistive barrier is effectively integrated around the door frame according to the installation methods above.

## 5.0 Post-installation Procedures

**5.1** After installation is complete, check the door for proper operation and locking and make adjustments to the hinges or shims according to industry standards before additional interior or exterior finishes are applied.

**5.2** Ensure that flashing materials are covered (installation of exterior wall surface) in a time frame recommended by the flashing manufacturer.

**5.3** Damaged flashings or water-resistive barriers shall be repaired prior to installation of exterior wall surface in order to ensure the continuity between the water-resistive barrier and the new materials.



**5.4** Maintain a minimum  $\frac{1}{4}$ " joint between the door frame and the final exterior wall surface (siding, stucco, etc.). SWI recommends the use of a J-mold or similar metal trim to be installed adjacent the perimeter of the window frame to allow for precise tooling of the sealant as well as providing a suitable surface for sealant adhesion. (Figure 5.4)

**5.5** Install appropriate sized open-cell backer rod or bond breaker in the joint between the door frame and the final exterior wall surface (siding, stucco, etc.) then apply sealant per the sealant manufacturer's recommendations along with reference to the methods set forth in ASTM E2112.

**5.6 INTERIOR SEALANT TREATMENT:** To ensure compatibility, follow the sealant manufacturer's printed application procedures and precautions. ASTM E2112 gives guidance on sealant selection and application.

**5.6.1** Using an appropriate sealant along with backer rod or bond breaker, apply a bead of sealant between the interior side of the door frame and the rough opening around all sides of the unit to form a continuous air seal.

**5.6.2** In cases where shims, clips, or anchoring devices cause interference with the application of the interior air and water seal, trim, remove or take steps necessary to seal the obstructions to allow for a continuous air and water seal. In all cases, make sure the entire perimeter joint has been sealed creating an air and water tight condition.



## 6.0 Additional Items

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**6.1 DOOR HANDLES, LOCKS AND OTHER HARDWARE:** These finish items are to be installed after the interior finishes of the doors are complete. Install and maintain these items according to the manufacturer's instructions.

**6.2 HINGE MAINTENANCE:** Every 6 months, wipe down the visible surfaces with warm soapy water on a soft rag and then rinse off by wiping with a clean damp rag. Application of a thin film of light machine oil or corrosion preventative sprays will help to maintain the original luster of the metal finish. Be careful not to get these compounds on the wood or other incompatible surfaces as it may cause staining

**6.3 SERVICE:** Service parts and labor are available by contacting your Southland Windows sales person or dealer.

## 7.0 Reference Documents

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**7.1** ASTM E2112-07, Standard Practice for Installation of Exterior Windows, Doors and Skylights

**7.2** FMA/AAMA/WDMA 300-12, Standard Practice for the Installation of Exterior Doors in Wood Frame Construction for Extreme Wind/Water Exposure

**7.3** AAMA 2400-10, Standard Practice for Installation of Windows with a Mounting Flange in Open Stud Frame Construction for Low Wind/Water Exposure

**7.4** Installation Masters Training Manual, 2008

**7.5** AAMA AG-13, AAMA Glossary