

Standard Practice for Installation of Sliding Glass Doors With Integral Mounting Flange in Wood Frame Construction

This practice has been approved as an industry standard by the California Association of Window Manufacturers (CAWM) Technical Committee and by general membership ballot as of August 15, 1997

1. Scope

- 1.1 This practice covers the installation of sliding glass doors (doors) in residential wood frame buildings of no more than four (4) stories in height.
- 1.2 This practice applies to metal and non-metal framed doors when an integral mounting flange is employed for installation.
- 1.3 This practice covers the installation process from pre-installation procedures through post-installation procedures. It does not cover the fabrication or assembly of units whether such fabrication takes place in a factory or at the intended installation site.
- 1.4 This practice covers aspects of installation relating to the effectiveness and durability in service.
- 1.5 This practice provides 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 substantial additional care and precaution will have to be taken.
- 1.6 This practice does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

- 2.1 ASTM:
 - B 633 "Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel"
 - B 766 "Standard Specification for Electrodeposited Coatings of Cadmium on Steel"
 - C 920 "Standard Specification for Elastomeric Joint Seals"
- 2.2 AAMA 800 "Voluntary Specifications and Test Methods for Sealants"
- 2.3 Federal Specifications:
 - TT-S-002300 "Sealing Compound: Elastomeric Type, Single Component"
 - TT-S-001657 "Butyl Sealants"
 - TT-S-001543A "Silicone Sealants"
 - UU-B-790a "Building Paper, Vegetable Fiber: (Kraft, Waterproofed, Water Repellent and Fire Resistant)"
- 2.4 UBC Section 2325.1 - Fasteners

3. Definitions

- 3.1 **Galvanic Corrosion** -A form of deterioration of metal resulting from the electrochemical reaction that occurs when certain dissimilar materials are in contact in the presence of moisture.
- 3.2 **Residential Building** -Any building used or intended primarily for a single or multiple family dwelling.
- 3.3 **Mounting Flange** - A fin projecting from the door frame parallel to the plane of the wall for the purpose of securing the frame to the structure.
- 3.4 **Sill Pan System** - Sill pan system is a water barrier installed under the door sill with vertical returns at the jamb-sill juncture and the interior leg of sill to prevent water entry (See Figures 3d and 3f).
- 3.5 **Sill System** - Sill System is a water barrier installed under the door sill.

4. Significance and Use

- 4.1 This practice recognizes that effectiveness and durability of installed units depend not only on the choice and quality of materials, design, adequacy of assembly, and support system, but also on their proper and workmanlike installation.
- 4.2 Improper installation of units may reduce their effectiveness, lead to excessive air, water and sound leakage, condensation, and may promote the deterioration of wall constructions, windows, doors, and their respective finishes. Additionally, improper installation of metal units may result in accelerated corrosion of metal frames, trim, anchors, fasteners, and finishes.

- 4.3 The application of this practice also requires a working knowledge of applicable Federal, State, and local codes and regulations, specifically, but not limited to required means of egress and requirements for safety glazing. Consult with local building codes prior to installation.
- 4.4 The application of this practice also requires a working knowledge of the tools, equipment, and methods necessary for the installation of doors. It further assumes familiarity with caulking and sealing and with glass handling procedures, painting where applicable, and an understanding of the fundamentals of residential construction that affect the installation of these units.

5. Procedure

5.1 **Framing Requirements** - The rough framed opening 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 consult the manufacturer's literature for the recommended rough opening dimensions. The framing shall be plumb, square and level, (See Figure 1). In addition, the condition of the area where the sill is to be installed shall be level, flat and free of voids, holes, chipping, or other conditions which will not allow for sealant to maintain continuous contact (See Figures 2 & 3).

5.2 Protection from Dissimilar Materials

5.2.1 Isolate aluminum products from dissimilar or corrosive materials.

5.2.2 Protect aluminum sills from direct contact with corrosive materials, e.g. concrete, steel and stucco.

5.2.3 All fasteners shall be corrosion resistant, in accordance with ASTM B 633 or B 766.

5.3 **Flashing Requirements** - Proper flashing and/or sealing is necessary as a secondary barrier to prevent water from entering the wall between the door frame and the adjacent wall materials. Flashing and/or an appropriate method of sealing shall be designed as a part of an overall weather-resistive barrier system. It is not the responsibility of the door manufacturer to design or recommend a flashing system appropriate to each job condition.

NOTE 1 - The responsibility for supporting and protecting any flashing material from sources of damage, e.g. weather, other trades, or vandalism, and properly integrating the flashing system into the weather-resistive barrier for the entire building, will be the responsibility of the owner/general contractor or his designated agent.

5.3.1 **Penetration Flashing Material** - Flashing material shall meet Federal Specification UU-B-790a Type I, and shall be Grade C, B or A. Flashing material shall carry continuous identification.

5.4 Application

5.4.1 One of the two following methods shall be selected as the application to be followed. Once a method is selected, all procedures of that method must be performed in the described sequence. Substitution of a procedure from one method to the other is not permitted.

5.4.1.1 Method A

5.4.1.1.1 A strip of approved flashing material should be at least nine inches wide. Flashing shall be applied in a weatherboard fashion around the top and side perimeters of the opening, as well as below the sill, when applicable.

5.4.1.1.2 Apply continuous sealant beads across the full sill length of the framed opening at a point that makes contact with the door sill or sill pan system. An equivalent of two (2) 3/8" diameter beads should be used. Deposit a sufficient amount of sealant at the framed opening corners so the bottom door frame corners are embedded in sealant when door is installed (See Figure 2).

NOTE 2 - All surfaces contacting sealant must be clean, dry and free of all contaminants prior to application of sealant. Sealant used must adhere and be chemically compatible with all substrates.

5.4.1.1.3 Apply a continuous seal to the backside (interior) of the sill mounting flange, if provided, 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 (See Figure 4a). The door shall then be installed in accordance with Section 5.5 installation.

5.4.1.1.4 Next, apply a continuous seal to the exposed mounting flange at the top (head) and sides (jamb) of the installed door frame. For mechanically joined frames, apply seal at corners the full length of the seam where mounting flanges meet (See Figure 5a).

5.4.1.1.5 Starting at each jamb, embed the jamb flashing into the seal and fasten in place. Run this flashing beyond the bottom of the rough opening and above where the head flashing will intersect (See Figure 5a).

5.4.1.1.6 Finally, embed the head flashing into the sealant on the mounting flange at the door head. Cut this flashing sufficiently long so that it will extend beyond each jamb flashing. Fasten in place (See Figure 6).

5.4.1.1.7 Next, go to Section 5.5 Installation.

5.4.1.2 **Method B**

5.4.1.2.1 A strip of approved flashing material should be at least nine inches wide. Flashing shall be applied in a weatherboard fashion around the top and side perimeters of the opening, as well as below the sill, when applicable.

5.4.1.2.2 Apply continuous sealant across the full sill length of the framed opening at a point that makes contact with the door sill or sill pan system. The equivalent of two 3/8" diameter beads should be used. Deposit a sufficient amount of sealant at the framed opening corners so the bottom door frame corners are embedded in sealant when door is installed (See Figure 2).

NOTE 3 -All surfaces contacting sealant must be clean, dry and free of all contaminants prior to application of sealant. Sealant used must adhere and be chemically compatible with all substrates.

5.4.1.2.3 Next, fasten strips of flashing at each vertical edge (jamb) of the opening. Run this flashing beyond the bottom of the rough opening and above where the head flashing will intersect (See Figure 4b).

5.4.1.2.4 Apply a continuous seal to the backside (interior) of the mounting flange near the outer edge or a continuous seal to the entire perimeter of the opening at a point to assure contact with the backside (interior) of the mounting flange (See Figure 5b).

NOTE 4 - Caution must be taken to avoid disrupting the continuous seal.

5.4.1.2.5 The door shall then be installed in accordance with Section 5.5 installation procedures.

5.4.1.2.6 For mechanically joined frames, apply seal at corners the full length of the seam where mounting flanges meet.

5.4.1.2.7 Next, apply a continuous seal at the top (head) mounting flange and embed the bottom of the head flashing over the sealant and the mounting flange. Cut this flashing sufficiently long so that it will extend beyond each jamb flashing. Fasten in place (See Figure 6).

5.5 **Installation**

5.5.1 Depending on rough opening conditions, the mounting flange, if provided on the door sill, may have to be removed. These conditions may include slab on grade that continues to the exterior; metal, plastic or flexible membrane sill pan systems; recessed installations; buildings with exterior decking. Follow door manufacturer's instructions on mounting flange removal (See Figure 3).

5.5.2 Depending on the size and weight of the door and the opening conditions, shim blocks may be required under the sill to maintain straight and level condition and to prevent rotation (See Figure 3c). Consult manufacturer's recommendations.

5.5.3 If shims are needed at the sill, use enough to support the weight of the fixed and operable panels without causing distortion in the sill.

5.5.3.1 If a sill pan system is used, shim between the opening and the pan, not between the pan and the door sill.

5.5.3.2 Use sealant above and below the shims.

NOTE 5 -All surfaces contacting sealant must be clean, dry and free of all contaminants prior to application of sealant.

5.5.4 If necessary, pre-drill and fill holes with sealant and seal over fasteners that penetrate door threshold.

5.5.5 Shim and adjust the door as necessary to achieve a plumb, square and level condition, as well as an even reveal around the frame opening, securing it the full perimeter with the equivalent of 6d fasteners at a maximum 16-inch centers.

5.5.5.1 Some door manufacturers may require fasteners at the interior or through the frame members. Consult manufacturer's installation instructions.

NOTE 6 - Consult door manufacturer's installation instructions regarding attachment of head flange to rough opening.

5.5.6 In each direction from all corners there must be a fastener within 10 inches, but no closer than 3 inches, to prevent frame distortion or fracture of joint seals (See Figure 4a for Method A, 5b for Method B).

5.5.7 In all cases consult manufacturer's instructions for any special procedures or applications.

NOTE 7 - If any damage to door frame joint seals is observed during installation, it must be repaired by the installer.

5.5.8 Where weather-resistant building paper, insulating board, or other materials *by other trades* may constitute the primary weather barrier behind the exterior wall finish (i.e. stucco, masonry, siding, etc.), Owner/General Contractor is responsible to ensure that the weather barrier is continuous by effectively sealing the material to the door frame (See Figure 7).

5.6 Sealant Requirements

5.6.1 Sealing/caulking required between the door frame and the flashing can be accomplished with caulking conforming to AAMA 800 and/or ASTM C-920 and/or TT-S-00230 C (Type II) Class A, or use sealant recommended and approved by the sealant manufacturer. All sealant and caulking products used must adhere and be chemically compatible with all substrates.

5.6.2 Some exterior wall finishes require additional sealing between the perimeter of the door frame and adjacent finish wall material. Owner/General Contractor is responsible for identifying the need for any additional sealant which will be applied *by others*. Such sealant shall be elastomeric material, compatible with door framing and adjacent wall materials (See Figure 7). All sealant and caulking products used must adhere and be chemically compatible with all substrates.

5.7 Finish, Door and Sealant Protection

5.7.1 Caution shall be taken to avoid damage to doors during and after installation. Prior to installation, store doors in a near vertical position in a clean area, free of circulating dirt or debris and protected from exposure to weather elements.

5.7.2 Field-applied protective coatings can damage door sealants and gaskets and are not recommended. Contact the door manufacturer before applying any such coatings.

5.7.3 Caution should be used with some masking tapes as they may cause damage when they are removed from door surfaces.

5.7.4 Stucco or concrete left to cure on frames and glass will damage these surfaces. Remove and clean all such materials from surfaces before any curing action takes place.

5.7.5 Glass and frame surfaces exposed to leaching water from new concrete or stucco must be rinsed immediately with clear water to prevent permanent damage.



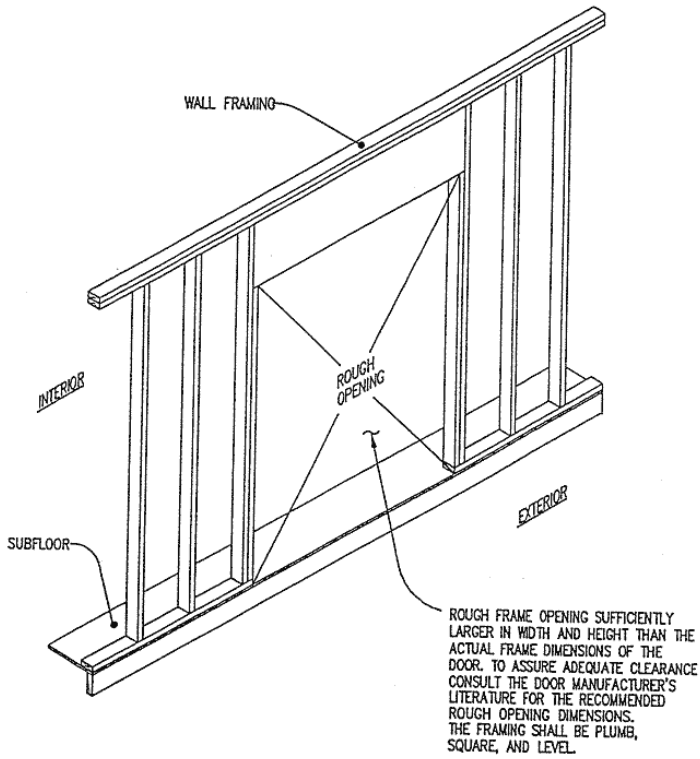


Fig. 1. Rough Door Opening

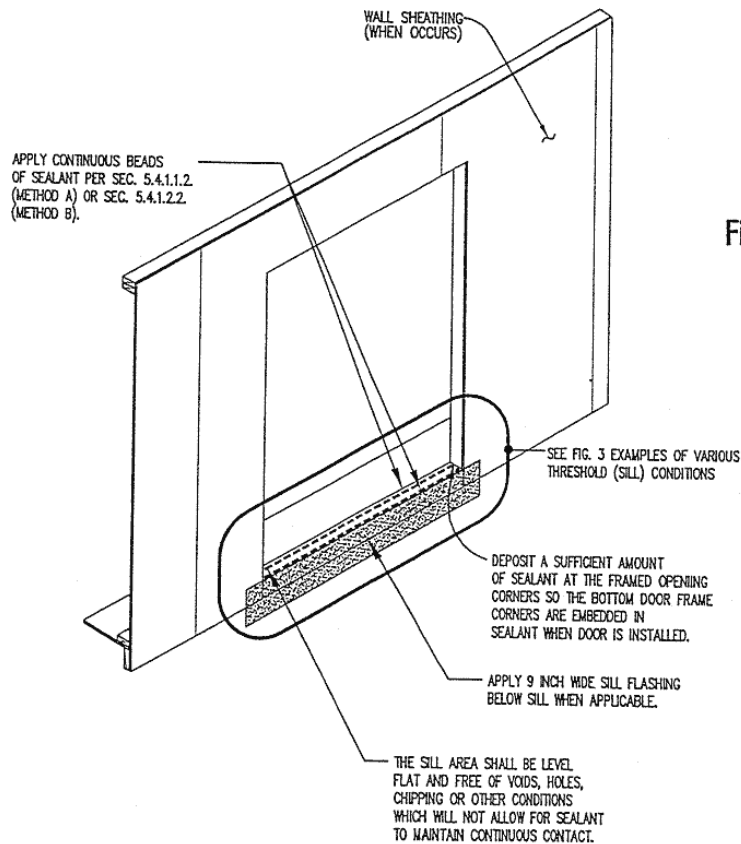


Fig. 2. Threshold (Sill) Seal Application

Fig. 3. Examples of Various Threshold (Sill) Conditions

NOTE 1: THESE SILL SECTIONS ARE SCHEMATIC AND WILL VARY BETWEEN MANUFACTURERS

NOTE 2: PROTECT ALUMINUM SILLS FROM DIRECT CONTACT WITH DISSIMILAR MATERIALS, E.G. CONCRETE, STEEL AND STUCCO.

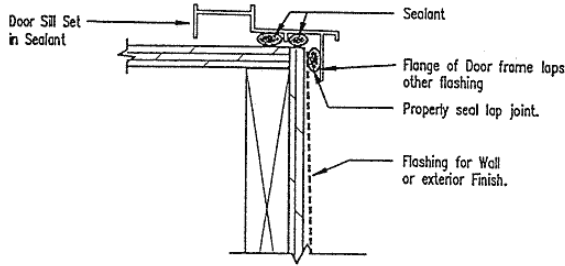


Fig. 3a. Wood Sub-Floor

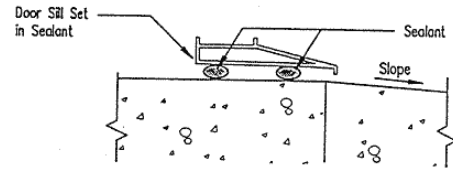


Fig. 3b. Concrete or Wood Sub-Floor

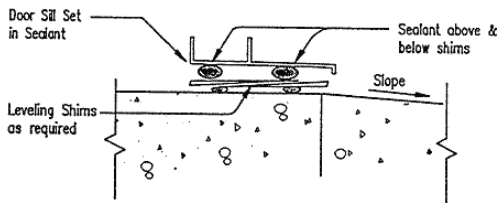


Fig. 3c. Concrete or Wood Sub-Floor with Shims

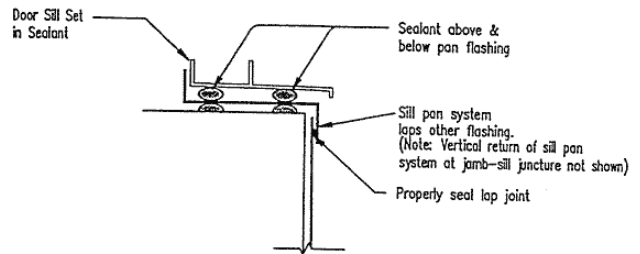


Fig. 3d. Pan Flashing

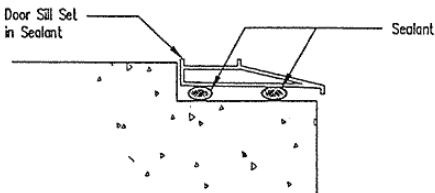


Fig. 3e. Recessed Sill

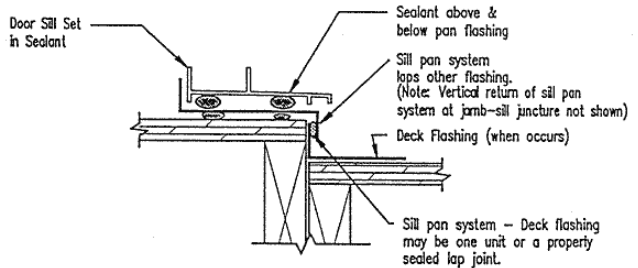


Fig. 3f. Exterior Decking

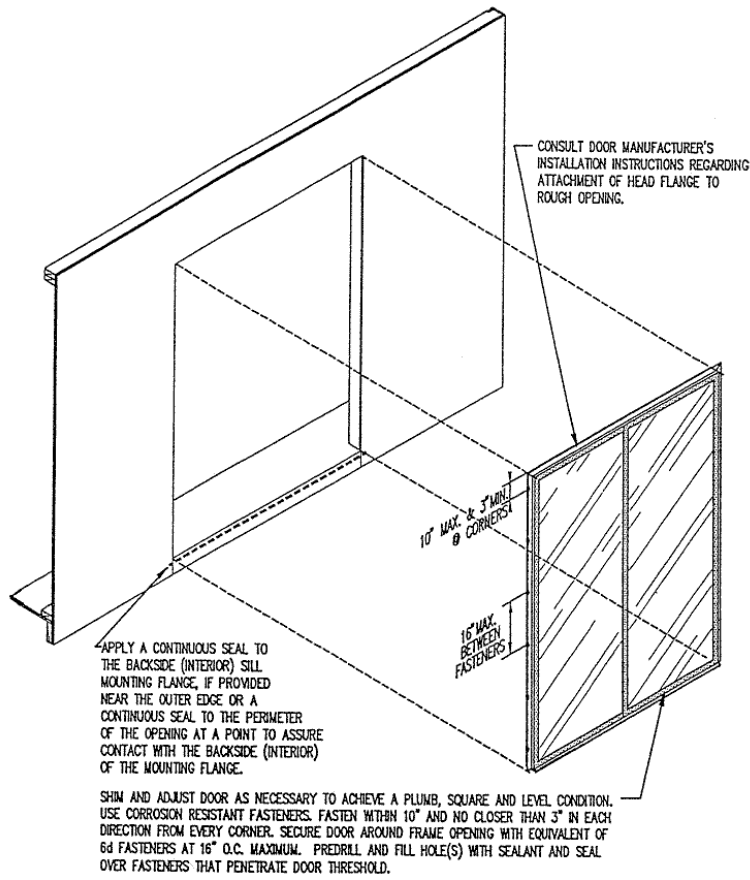


Fig. 4a. Door Installation (Method 'A')

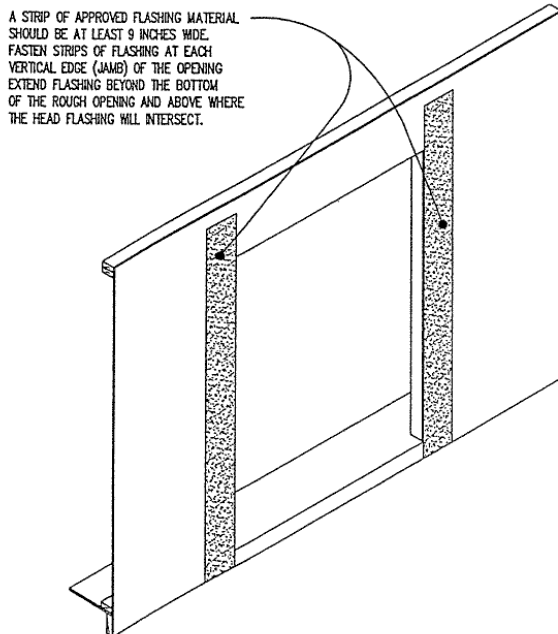


Fig. 4b. Jamb Flashing (Method 'B')

Fig. 5a. Jamb Flashing (Method 'A')

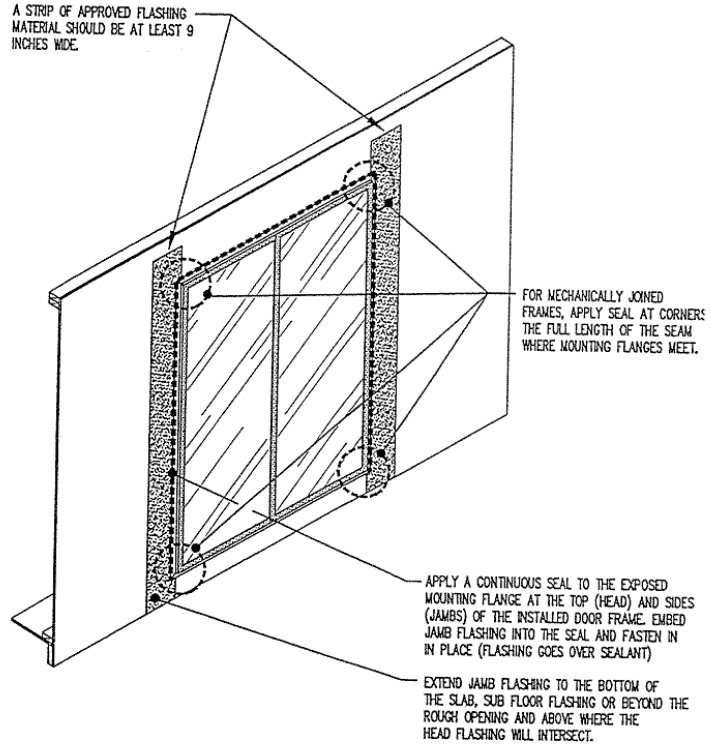
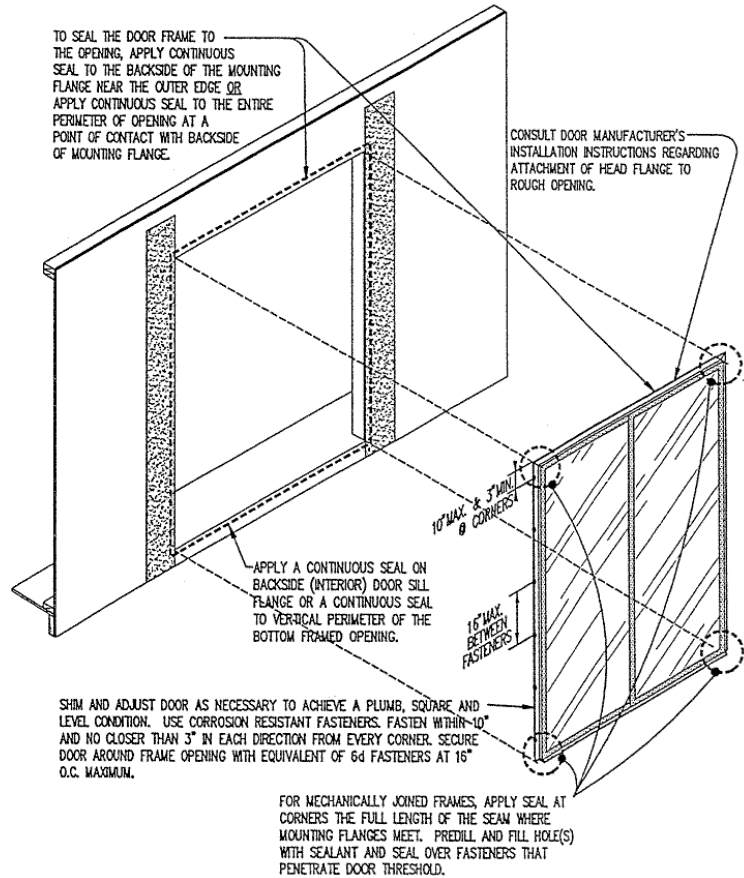


Fig. 5b. Door Installation (Method 'B')



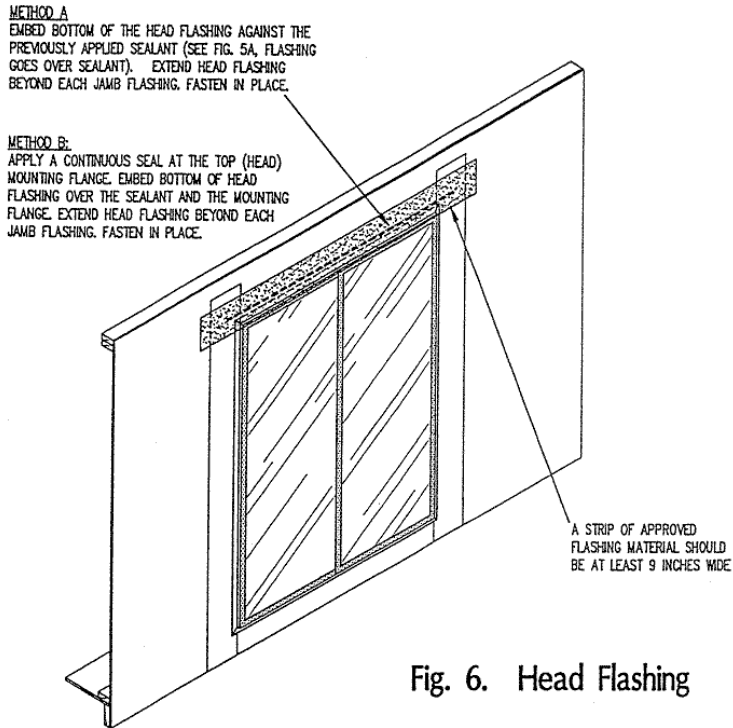


Fig. 6. Head Flashing

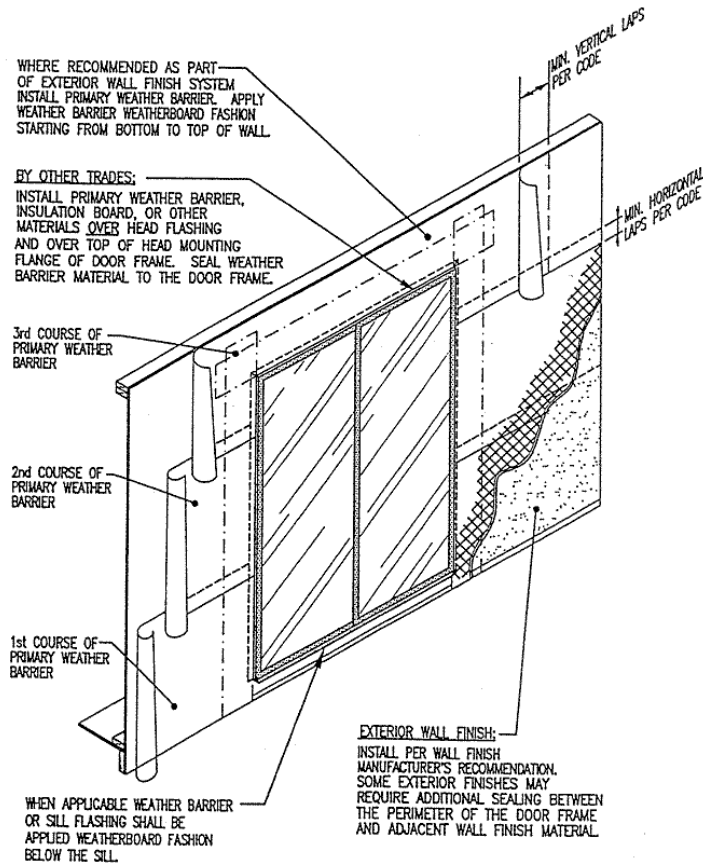


Fig. 7. Primary Weather Barrier Application by Others