# FLASHING
## residential brick veneer

*To avoid water-penetration problems, provide adequate drainage details above and below openings and at the base of the wall*

*By Walter Laska*

The most common masonry wall system in residential construction is brick veneer. All brick veneer walls are drainage walls. Their design should be based on the premise that water is going to enter into the wall system. Therefore, to ensure the wall's successful performance, the wall design must incorporate a means for water egress.

### Drainage space

The first requirement for a brick veneer wall is a functional drainage space. A minimum 1 inch of air space, clear of mortar bridging, should be indicated on the drawings. If possible, design the wall system with a 1½- to 2-inch air space. A narrow air space cannot be kept clear of mortar extrusions and mortar droppings. Furthermore, it is impossible for a mason to remove mortar from a narrow air space with his trowel, without knocking the brick out of bond. A wider air space gives the mason greater flexibility to keep that space free of mortar bridging and other mortar buildup that might impede the flow of water down the inside face of the veneer.

One recent innovation that can promote effective drainage is an insulated polyisocyanurate board with an integral plastic drainage panel as its exterior face (Figure 1). This material can be used in lieu of an airspace and standard sheathing material. The drainage panel forms a continuous, unobstructed drainage path within the wall that will function effectively no matter how much mortar accumulates between the insulation board and the outer wythe of brick.

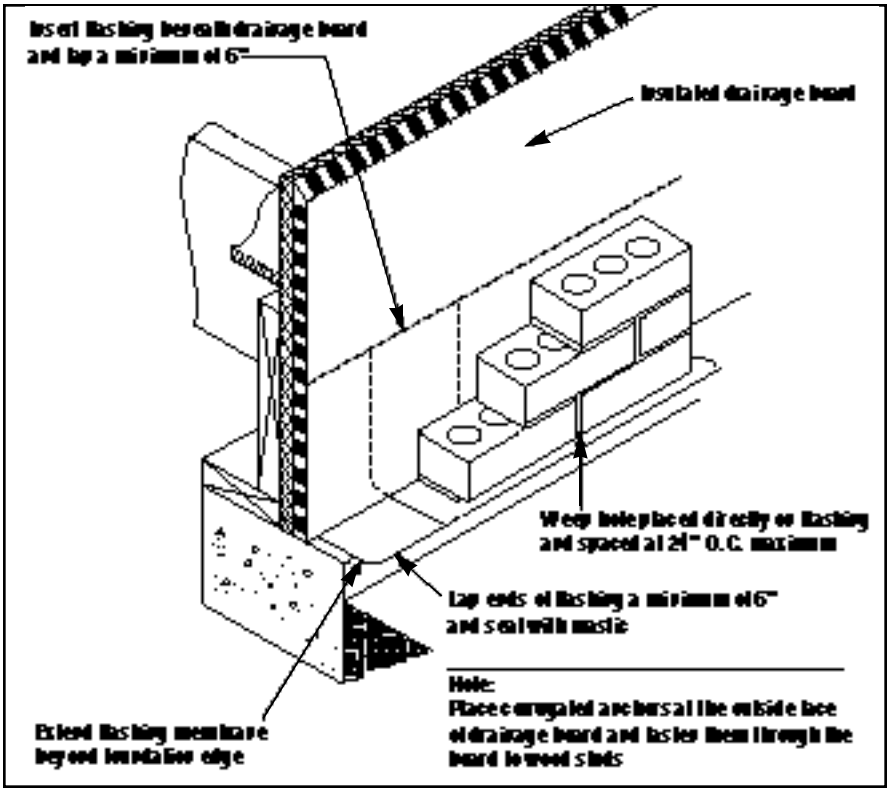


**Figure 1. Although brick veneer walls normally require a 1-inch minimum air space behind the brick, a new insulation and drainage board material used in place of the usual sheathing and building wrap allows water to drain without an open space. The vertical leg of the base flashing should be placed behind this material.**

### Flashing and weep holes

Moisture that penetrates the

brick veneer and flows down the drainage space must be collected and directed back to the exterior of the building. Flashing is a membrane installed in a drainage wall that facilitates this process. Three locations in a brick veneer wall must be designed with flashing: above openings, below openings, and at the base of the wall. A detail for each location should be developed and shown on the project drawings.

**Above openings.** Flashing above windows and other openings must be designed to collect penetrating water and divert it away from the opening (see Figure 2). Specify the flashing to be extended approximately 8 inches beyond each end of the opening and upturned to form end dams. If end dams are omitted, water collected by the flashing can flow down the sides of the opening and penetrate into the window frame. Excess water also can saturate the brick adjacent to the corners of the openings, eventually causing efflorescence or deterioration of the masonry.

The outer horizontal edge of the flashing should extend ½ inch beyond the face of the brick. If the flashing terminates within the wall, it will not direct water all the way to the exterior. The water can flow back under the flashing, causing the lintel to rust. Weep holes spaced at 24 inches on center must be located directly on the flashing to provide egress for collected water.

The inner, vertical leg of the flashing must be detailed to terminate properly under the building paper or building wrap (Figure 3). If the vertical end of the flashing is left exposed, water flowing down the sheathing can seep behind the flashing and into the building. To prevent this problem, insert the flashing under a slit made in the building wrapper. If self-adhering flashing is specified, the flashing can be adhered directly onto the building wrap.

**Below openings.** Flashing must

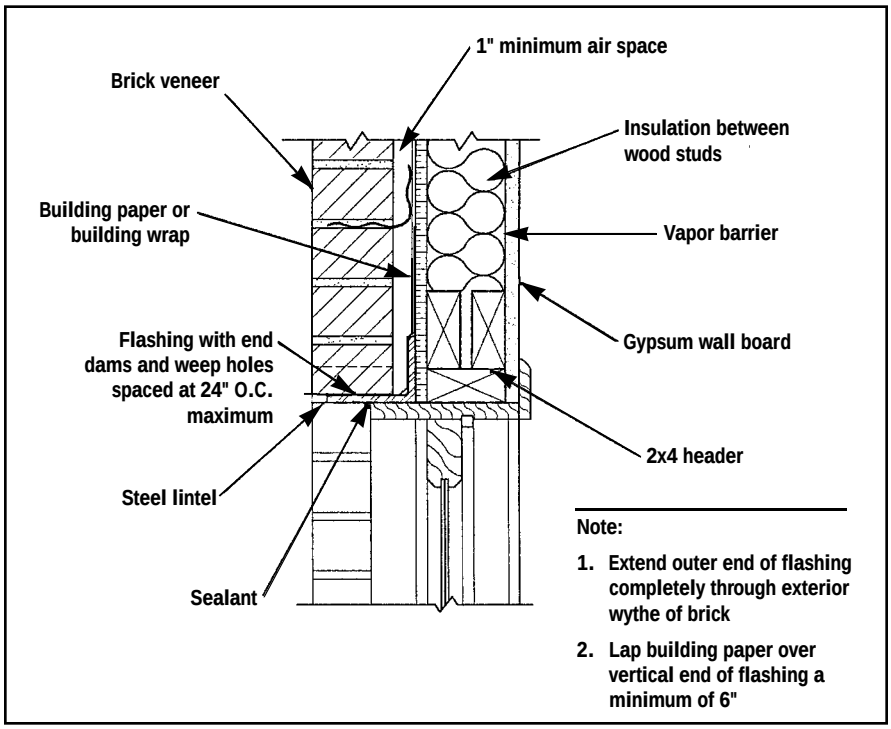


**Figure 2. Typical section at window head**

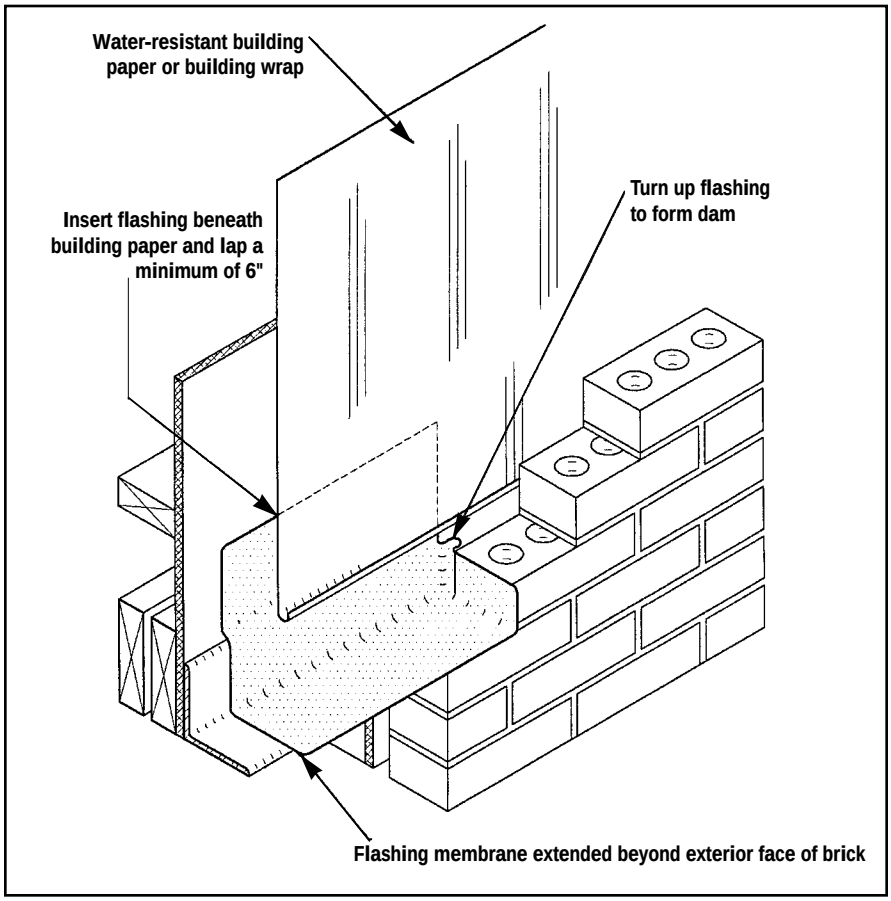


**Figure 3. Isometric of flashing above opening**

be detailed below openings as a secondary line of defense against water penetration (Figure 4). As with flashing above openings, the ends should be upturned to direct collected water to the exterior. The outer end also should be extended ½ inch beyond the face of the brick to ensure proper drainage. Specify at least two weep holes, one at each end of the sill.

Selecting a suitable sill material is important. Brick rowlock sills are not recommended for use in severe climates because their numerous mortar joints provide additional avenues for water to penetrate into the sill. Specify a sill material such as limestone or precast concrete, which can be installed in larger sections or in a single piece. Specifying that head joints between the sill sections be raked back and filled with an elastomeric sealant also will help provide a water-resistant sill.

**Base of wall.** Most water-related problems with residential brick veneer construction occur at the foundation or base of the wall, so proper flashing design for this location is critical. Here again, the outer horizontal edge of flashing should extend ½ inch beyond the exterior edge of the foundation. Inside, the vertical leg of the flashing should be inserted beneath the building paper or building wrap, to prevent water from flowing behind the flashing and entering into the building (Figure 5). Specify open head joint weep holes, totally devoid of mortar obstructions, to be located directly on top of the flashing and spaced at 24 inches on center maximum. Several available types of drainage material are sometimes specified at the base of the wall to prevent mortar blockage of weep holes.

Flashing continuity along the base of the wall is critical. Specify that ends of flashing sections be lapped a minimum of 6 inches and sealed with mastic. To be effective, flashing also must be continuous around corners. Specifying prefabricated flashing corners is a way to ensure this continuity.

Concrete foundations often are cast out of line and might be slight-

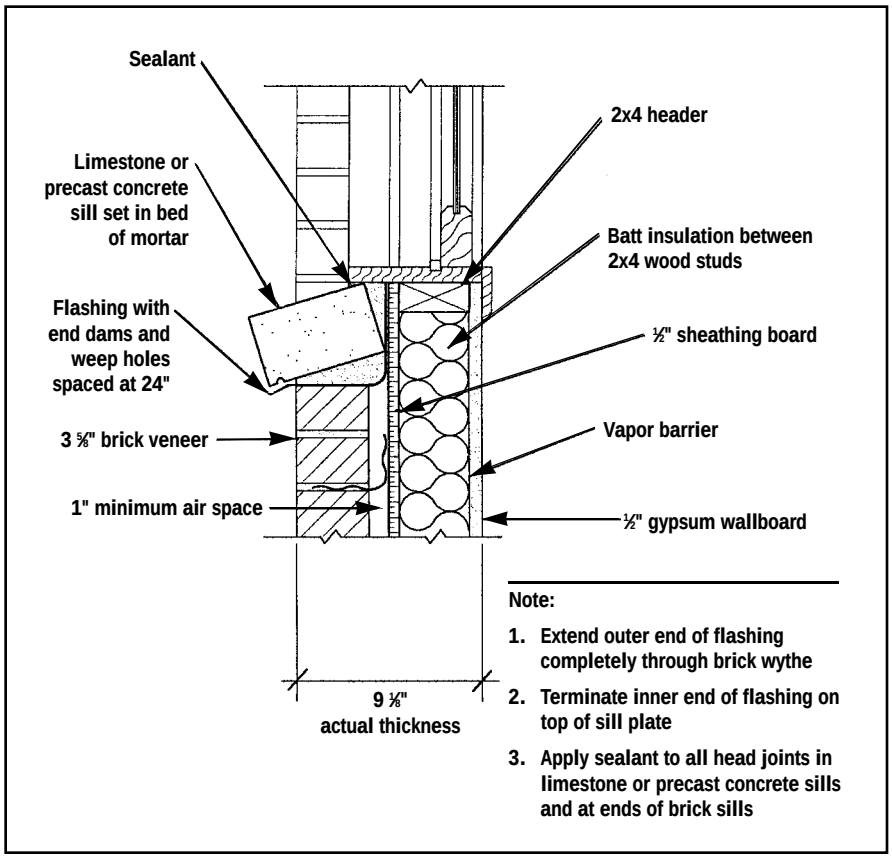


**Figure 4. Typical section at window sill**

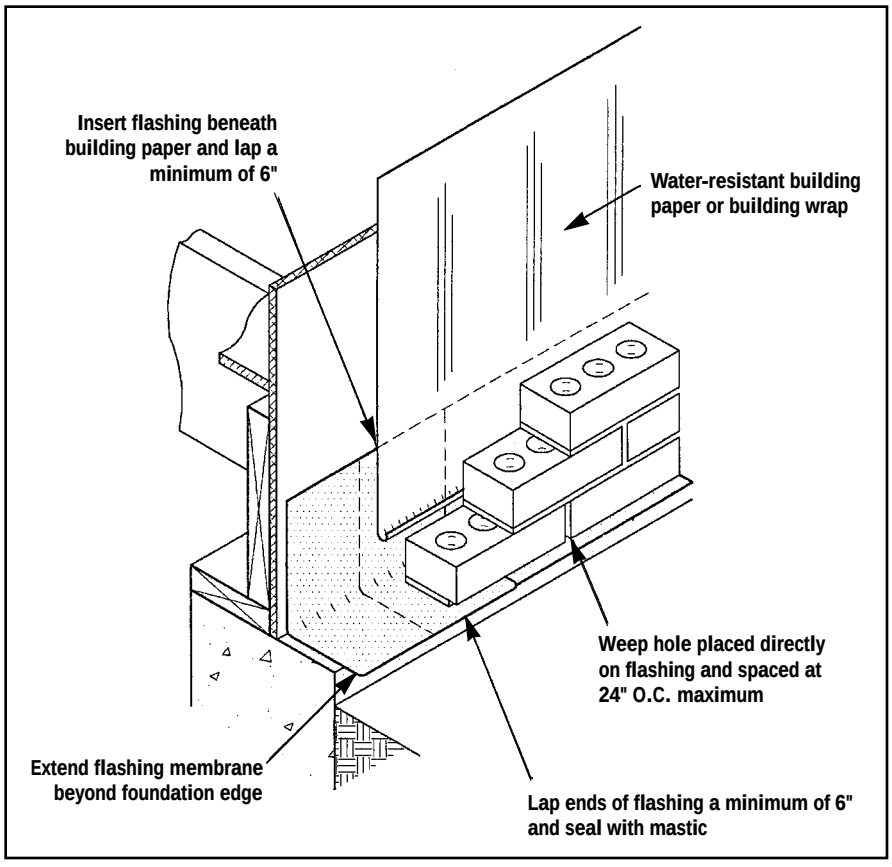


**Figure 5. Isometric of flashing at foundation**

ly wider than the intended wall design. Excessively wide foundations can produce a ledge in front of the brick at the base of the wall. Such ledges can allow water to collect and be blown under the flashing and into the building. To prevent this condition, design the brick veneer to overhang the foundation ¼ to ½ inch. In addition, specifying a drip edge and sealant at the foundation can eliminate potential problems (Figure 6).

Many water-related problems that develop in residential brick veneer walls can be traced to the wall design. Project drawings for brick veneer systems commonly lack pertinent information. Providing the mason contractor with a complete set of brick veneer details can significantly increase the likelihood of the walls' successful performance.

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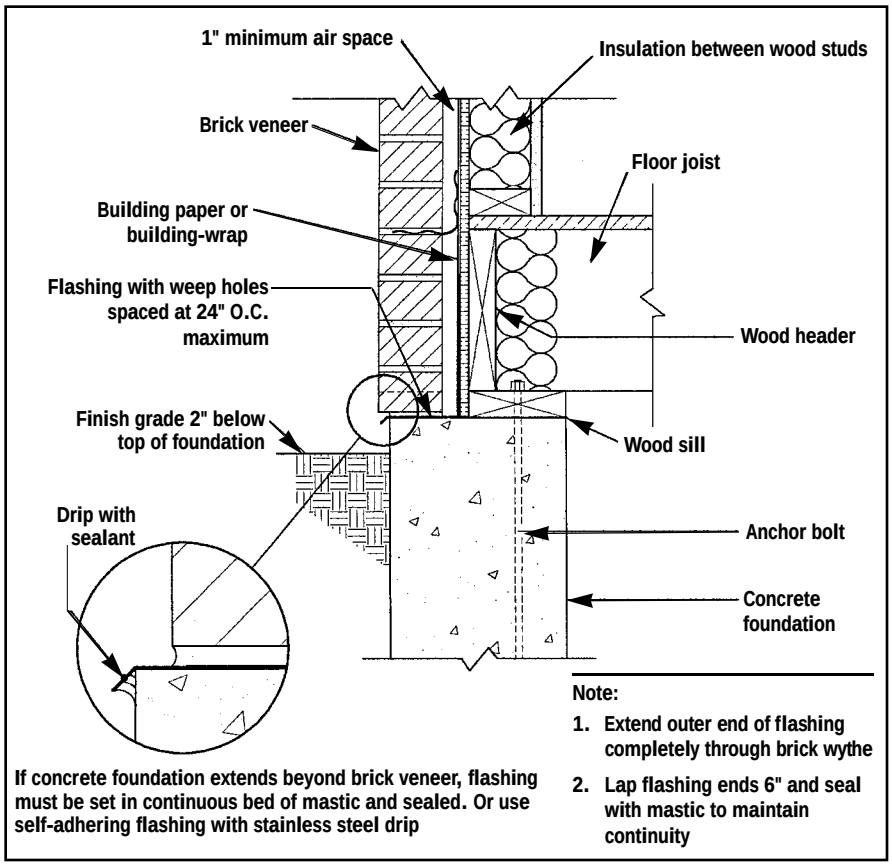


**Figure 6. Typical section at foundation**

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