

Weeps:

Getting the Water Out

DRAINAGE IN A MASONRY CAVITY WALL IS SOMETHING WE DEAL WITH EACH AND EVERY DAY AS WE CONSTRUCT OUR WALLS. But drainage can be complicated — from the arrangement of pipes and conduits found in the cavity and architectural features that can create obstructions, to footing step-downs due to grade differentials, insulation requirements, and anchors that can turn an “ordinary” installation into anything but ordinary.

By Steven Fechino and Gary Porter

In the masonry industry, there are some things that are done that don't have a lot of technical facts or research behind them, but they follow the industry

standard, work well to solve a problem and have a good performance history. Weeps or weep holes and their placement is one of these things.

Weeps have several functions. However, the main function of a weep is to allow water that collects on the flashings (which can be placed at the base of the wall, at a shelf angle or lintel) a clear and open path to the exterior of the façade.

In the masonry code describing masonry veneer, the commentary states:

“Water will penetrate the veneer, and the wall system should be designed, detailed and constructed to prevent water penetration into the building.”

— TMS 402 12.1.2

Flashing and weeps are the means for water to exit the masonry wall.



Mortar Net WeepVent.

The Brick Industry Association (BIA, www.gobrick.com) has a technical note* which recommends leaving an open head joint by simply leaving mortar out of it. Experts agree this is the best method for getting moisture out of a masonry assembly, but sometimes this is not aesthetically pleasing, as head joints need to be at least 2 inches high. The technical note further explains that non-corrosive metal, mesh or plastic screens can be installed in the open head joints, thus forming weeps.

Therefore, while it was once common to leave open head joints, a variety of weep configurations are now being used, with all of them attempting to serve the same function. Geographical locations, and thus meteorological variations, can offer different performance of a weep. Some of the weeps that have been around for a while are described below.

Types of Weeps

THE COTTON WICK, which became popular in the late 1980s, is nothing more than a 3/8-inch thick cotton rope cut into sections on-site and laid into the cavity, then extended through a head joint to the outside of the veneer. There is an area of the country where this weep will not function for more than about two years before it begins to rot. Once decay of the cotton fiber begins, the weep literally turns to a black mush, preventing any possible opportunity for drainage. For this reason, the Brick Industry Association has removed these weeps as a recommended option.

Plastic ferrules or weep tubes are another weep that has been commonly placed for years. These tubes are installed simply by cutting away the bed mortar placed on the flashing, placing the tube in the joint and pulling a buttered brick into place. Unfortunately, the tubes serve as an excellent passageway for stink bugs, ants, honey bees and a host of other non-desirable insects. For a weep tube to be functional, the interior opening of the tube must be against the mortar collection device, so that mortar droppings will not spatter and clog the tube.

Corrugated mesh weeps are available from many manufacturers and can be purchased in colors that



TotalFlash drainage mat weeps.

conveniently match many mortars. This is a time-proven product that does not offer a downside. A gray-colored vent will often work well during the life of the building, even with contrasting mortar colors used during construction.

Polyester mesh weeps are also available in several colors and can offer the least airflow restriction of all the weeps listed. Manufactured to be 90 percent air, air and vapor can easily pass through the vent with very little resistance. The polyester weeps are non-directional and can be utilized with different-sized materials simply by rotating the weep. Some companies, like Mortar Net Solutions, have cut their weep to work with a modular brick, or if rotated 90° it can serve as a weep for a utility brick, thus minimizing the need to purchase separate materials when both bricks are used on a project.

Louvered weeps also offer a tried and true weep insert that is commonly used only in modular brick. This weep has a louver that fills the face of the head joint and a tab that extends across the top of the brick, keeping it secure. The weep may not be the most aesthetic, but it has a good ability to function for the life of the structure.

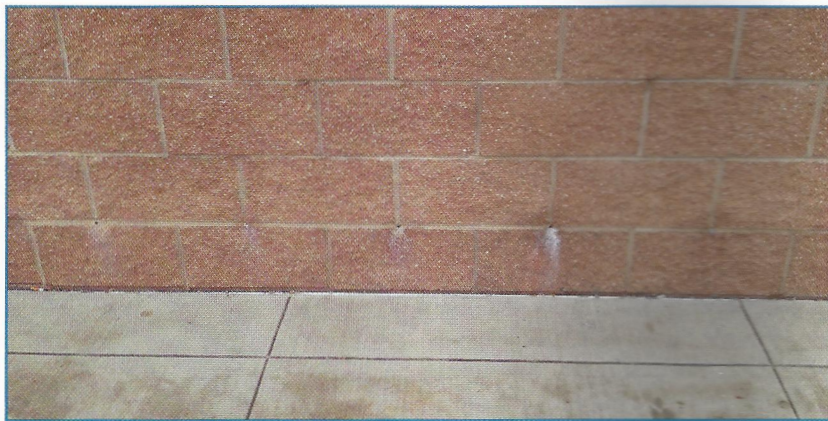
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Placement and Spacing of Weeps

THE FUNCTION OF WEEPS is not limited to flashing. It has become somewhat standard to place weeps at the upper level of the floor veneer, typically under the shelf angle in commercial construction or just under the soffit in residential construction. When placed in these locations, a chimney effect can occur in the cavity. During the heat of the day, vaporized air can find its way to the top of the cavity and vent through a weep placed at the top of the cavity — or what is becoming commonly known as a ventilation weep.

Weeps are typically not placed in the head joints of a single-wythe wall, as this



CMU wall weeping above finish grade and below finish floor.



CMU wall weeping excessively due to uncovered walls during construction.



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would reduce strength and likely create an opportunity for leaks. One product on the market that is used for throughwall drainage and allows weeping of the single-wythe wall is called BlockFlash. It can be found detailed in the National Concrete Masonry Association's single-wythe details 15B.

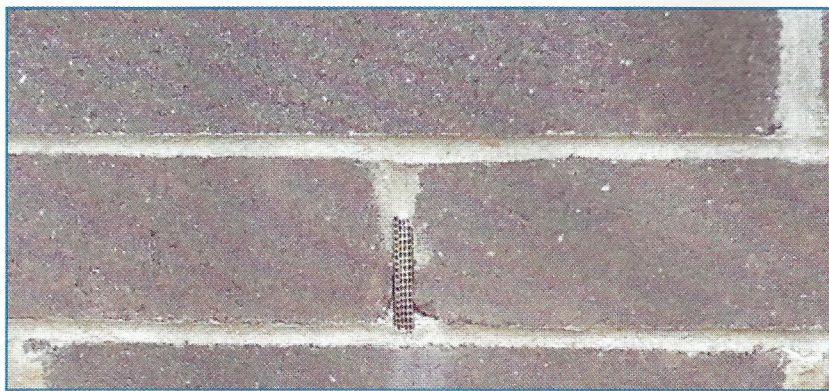
A newly completed masonry project in suburban Chicago seems to possess more weep ropes than usual protruding from the brick wall. These weep ropes were spaced at 8 inches on center. Aesthetically, this looks odd and appears like too many weep ropes were used.

Weeps are typically placed at 24 inches on center, and this is a good rule of thumb. The less distance the moisture has to travel once it collects on the flashings, the quicker it can dry.

The recommended spacing for rope wick and tube weeps, if used, is no more than 16 inches on center. Most building codes allow no less than 3/16 inch diameter and up to 33 inches on center spacing of weeps. In this case, these wicks need to be at least 16



CMU single-wythe wall with functioning weep tubes. The building was dried in at time of photo.



Typical cell vent installation in veneer

inches long and extend through the brick into the air-space and along the back of the brick.

The building in suburban Chicago is in compliance with the local code and with the BIA technical note, as the spacing is less than the recommended spacing for rope wicks. Yet, as mentioned earlier, experts recommend and prefer open head joints, as sometimes rope wicks can deteriorate, rot or become clogged with mortar dropped into the cavity if not properly installed.

Conclusion

WEEPS ARE NOT EXCITING TO DISCUSS, so oftentimes little attention is paid to this accessory, and many masons do what they have always done. However, building science has identified many details that, when designed and constructed correctly, not only offer the building owner a higher-performing building, but actually simplify the mason's work. Weeps are just one of those many details that can make your work simpler in the long run. And remember, simplified work means you will eventually make more money. **IMAS**

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*Technical Note #7 — Water Penetration Resistance Design and Detailing, Brick Industry Association.

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