

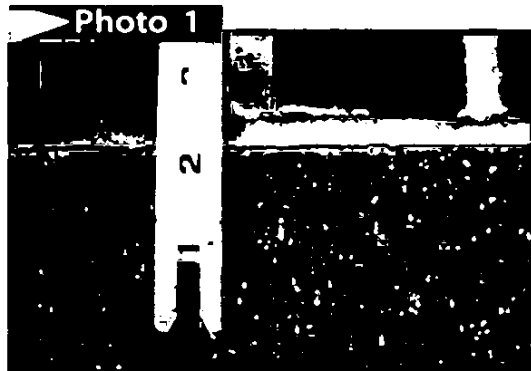
Mortar Bond and Separation Anxiety

Moisture leakage through brick masonry can be related to a lack of proper flashing, open joints at copings or window perimeters, or (less often) water absorption through certain brick faces. However, perhaps the most significant contributor to water leakage through masonry is the lack of proper bond at the brick to mortar interface.

Where widespread bond failure has occurred, significant amounts of water can enter the wall cavity, resulting in leakage or other masonry problems. This may be the result of numerous conditions:

1. The use of highly absorptive brick, which rapidly absorbs water from the joint during pointing and does not permit proper hydration of the mortar (even with proper pre-wetting procedures).
2. Pre-treatment of the brick with water repellants or penetrating sealers to reduce absorption—this results in less suction between the brick and mortar.
3. Use of additives in the mortar, which may reduce bond to brick without special precautions or procedures.
4. Improper mortar-curing procedures, such as when the mortar dries too fast under high ambient temperatures or strong wind conditions.
5. Initial installation problems such as poor contact of mortar with brick or poor compaction of mortar lifts.
6. Separations or interruptions within the bed joints caused by the introduction of flashing materials.

A common response to water penetration through exterior masonry walls is to apply a clear, penetrating sealer to the exterior surface of the masonry. While this approach may initially appear to be effective, it introduces a maintenance cycle



Wide bond separations can occur in bed joints where the bond is interrupted by flashing materials.

for the building (as it must be reapplied every five to 10 years) and can cause problems with mortar bond when repointing is required. Additionally, the bond separations may be sufficiently wide to render the product ineffective in treating the gaps between the mortar and brick surfaces.

The proper solution for water leakage attributed to bond failures at the mortar/brick interface is typically repointing the masonry in combination with other repairs as needed. After this has been completed in a mock-up area, testing can be used to confirm effectiveness in addressing existing deficiencies in the exterior wall construction that contribute to water leakage. Testing of the mock-up area and a representative unrepaired area for comparison is recommended in accordance with ASTM International C 1601-05, *Standard Test Method for Field Determination of Water Penetration of Masonry Wall Surfaces*. After successful testing, application of a clear penetrating sealer may be considered where the brick is excessively absorptive or where the building owner requires a greater level of protection—provided the issues related to the application of such sealers are understood. ●

Photo courtesy David S. Patterson



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