



BRICK WALL WATER SEEPAGE: ROOT CAUSE AND PREVENTION

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INTRODUCTION

Water seepage can be defined literally as the process when water slowly leaks through porous materials, cracks, openings, or barriers. It is one of the most difficult building problems to rectify, yet it is very common in buildings, especially older ones that were poorly designed and built, and those with maintenance deficiency. Water seepage has become a major concern and prevalent in all buildings, as which it can emerge as a major catalyst for foundation damage and brick deterioration.

Water can enter bricks in three main ways: directly through brick surfaces, mortar surfaces, or through the contact zone between mortar and brick ^[1]. A common water enter point is through the vertical joints, this is because one side of every brick can have similar type of weakness due to standard technique in brick installation.

ROOT CAUSE OF BRICK WALL WATER SEEPAGE

1. Excessive Power Washing

One probable cause of water seepage is excessive or extreme power washing of a brick wall exterior. Too frequent of washing can cause chipping, cracking, and breakage within the brick and hence water getting into the interior. The simple analogy behind this is when the collision between the water and brick is at a great velocity, it maximizes the chances of the water getting in its way into the brick wall, whether through the joints or directly ^[2].

When using a power tool, it is important to be able to control how strong is the water current. Indeed, the higher pressure of power washer is good to wash away all grime and stains but it could also damage the walls. Therefore, the preventive measure would be minimizing the frequency of power washing the brick wall, only wash when necessary and if possible, or acquire cleaning help and advice from professionals.

2. Improper or Damaged Drainage and Piping System

Next, houses or buildings with improper or poorly installed drainage and piping system are susceptible to water damage such as insect infestation, mold and in the worst case scenario could lead to major building failures. Gutter and drainage systems are important as if when they are in poor condition, water can seep through brick walls and cause structural issues. Improper installation of the gutter as well as insufficient capacity of the drainage system to handle the amount of storm water will eventually lead to flooding and water infiltration through brick wall and possible openings into the house ^[3]. Similarly, the leaky pipe in the wall will cause water seeping inside-out of the brick wall.

This problem could be solved by calling in professional construction to reinstall or fix the defective drainage system and leaky pipes. Alternatively, we should check the gutters and drainage system regularly. Waterproofing brick wall is an essential precaution step to prevent water penetration and avoid any possible water damage such as insect infestation, mold, and in worst case scenario of structural failure.

3. Relentless Rain Exposure

Water seepage along the wall is often associated with relentless rain. Even though the brick itself is very resistant to water passing through it, water can still find its way to enter the brick

wall. As the building ages, the mortar film will eventually be washed away, allowing water seepage through the interface where the mortar touches up the brick. While a single rainy day would not compromise the wall structure, however, a prolonged storm with high wind could be enough to erode the wall and damage the mortar between the bricks. As the rain continues, the wind's pressure pushes the water into the wall with force, causing water to stream into the wall [4].

There is nothing we can do to stop the occurrence of heavy rain, but we can take measures to protect the brick wall from rain. One of the measures to be taken is to treat the brick surfaces with breathable sealant. We need to avoid coating the brick surfaces with paint or a non-breathable sealant as it can trap water under the surface, thus leading to damage.

4. Wall Crack

Wall cracks can occur due to various reasons, including contraction and expansion, foundation movement and soil settlement, improper structural design, poor workmanship, etc. When there is a crack, there is bound to water seepage. There are several mechanisms for water to penetrate the brick wall through cracks, such as kinetic energy, capillary action, gravity, and air pressure difference. Capillarity is an important mechanism of water penetration for brick wall. As the size of the cracks decreases, the capillary force increases, thus allowing water to be driven into the small cracks [5].

To prevent cracks in brick wall that can lead to water seepage, movement joints should be considered during the design and construction stage. This is to provide a gap for brick wall shrinkage and expansion due to substantial thermal variation that is liable to cracking. For instance, expansion joints, construction joints, control joints, and slip joints. Once a crack is detected on the wall, it should be monitored and repaired promptly before it develops over time, providing a preferential pathway for water penetration.

CONCLUSION

As we have taken the time to understand the root cause behind water seepage through brick wall and the prevention methods to tackle the issues, we can conclude that how the presence of water in a building can be devastating. For the reasons of health risks from mold issues and also damage to the house's structural integrity, which could put the occupants in grave physical danger. With that said, it is an indubitable fact for everyone to take serious considerations in taking the prevention measures to waterproof their house to avoid water seepage into their premises.

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