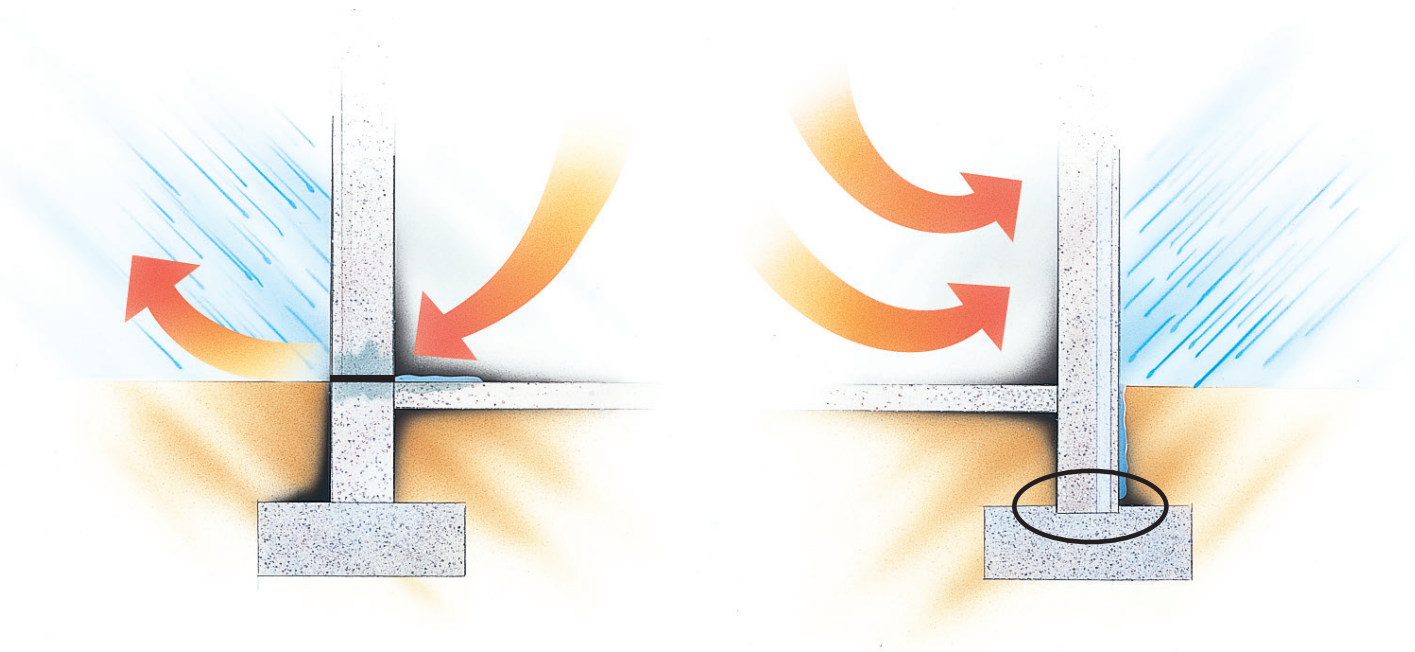


WATER IMPERMEABILITY AND RESISTANCE



Reduction of Air and Moisture Infiltration

OF INCREASING IMPORTANCE in terms of public health and safety is concrete's exceptional resistance to mold. When mold formation occurs in buildings, occupants may begin to report odors and a variety of health problems, such as headaches, breathing difficulties, skin irritation, allergic reactions, and aggravation of asthma symptoms.

Walls must be absolutely airtight to retard moisture, as vapor will move through even the smallest opening in a panel. Due to its low permeability, concrete is able to resist vapor transmission, which in turn, maintains strict humidity control.

Wall movement must also be kept to a minimum to maintain a tight building. Flexing and bowing, common with many other building materials, cause high air infiltration rates, leading to high moisture permeability and possible mold growth.

Precast panels extend below the grade, so they prevent rain and snow runoff from penetrating the building exterior, further reducing moisture and air infiltration.

In the on-grade image above left, rain and snow runoff finds its way through the joint, while heat exits the building. Where the wall is anchored to the foundation, the right-hand image shows that moisture remains outside the building when the wall extends below-grade, and the heat remains in the structure.

A theoretical computation from Construction Technologies Lab (CTL) estimates the moisture permeability of one manufacturer's 12-ft. panel to be between 0.37 and 0.51 perms. This puts the performance of the panel between that of a vapor retarder and a vapor barrier.