

DID YOU KNOW?

HYDROSTATIC PRESSURE & MOISTURE VAPOR

BUILDING TRUST



HYDROSTATIC PRESSURE

When we talk about moisture, it is always followed by a lot of questions. We will try to answer a couple of them through this document.

Hydrostatic pressure (called hydrostatic head as well) concerns the slab on grade and below grade. Typically this pressure is caused by a moisture source close to the bottom of the slab, which in the absence of an effective moisture barrier below, water can rise through the pores in the concrete. It is a really a complex phenomena and destructive **force** (can move rocks, buckle walls, and cause havoc with your concrete) that acts on a coating through the movement of water. This migration becomes a problem in a coating sense when it becomes trapped beneath an impermeable film sitting on the surface, at which point the build-up of **pressure** can be sufficient to blow sections off or cause other forms of damage like blisters.

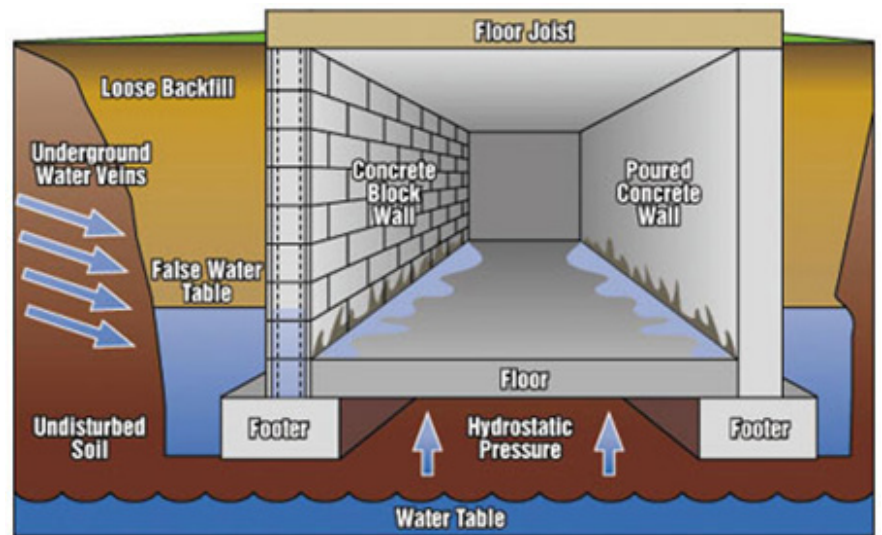
Some signs can reflect hydrostatic pressure problem. If you grind your concrete and it starts to darken soon after, then this is a possibility of hydrostatic pressure. In that case you should also keep an eye out for efflorescence, which are visible marks that result from water coming to the surface and depositing silt-like substances as it dries. Another option is duck taping a 2ft x 2ft plastic sheet to the concrete and leaving it for 24 hours. If water droplets appear on the underside of the plastic it can be an indication of hydrostatic pressure.

The correct way to get rid of hydrostatic pressure issues is to drain the job site and then use a waterproof barrier.

MOISTURE VAPOR

While concrete is a relatively solid material when dry, it isn't impervious to moisture. As concrete dries, water vapor from the original concrete mixture exits the slab, creating small capillary networks. These pathways remain open and can be the path for moisture.

Concrete moisture vapor emission is a **natural** constituent of any concrete slab. It may be encountered as the emission of mix water during the drying process of a new concrete slab. Concrete drying creates an emission from the slab regardless of whether the concrete slab is below, on or above grade. Beyond the drying process, moisture **vapor emission** may be the result of moisture vapor transmission from sources below the slab. The moisture source can be water trapped in a blotter course over a vapor retarder or moisture from the earth passing through the slab system.



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