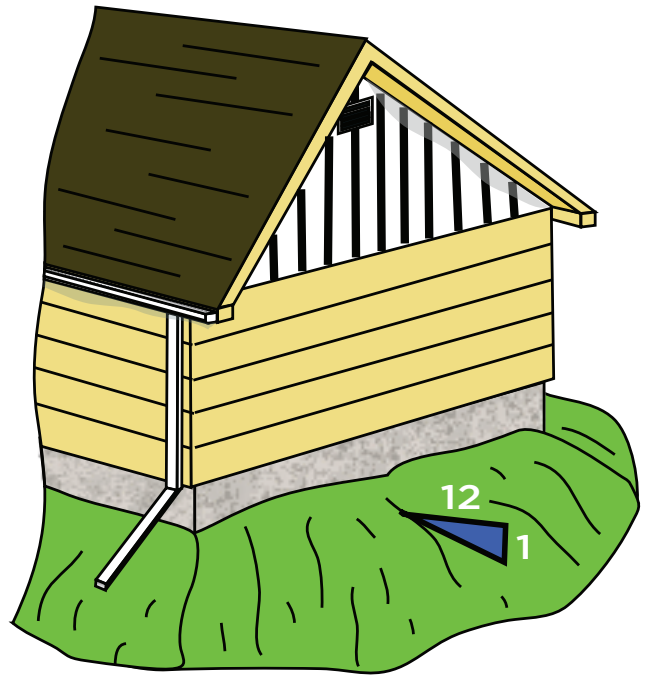


Expansive Soils

Expansive soils are soils that are sensitive to moisture. By sensitive we mean that the soil will shrink or swell depending on the moisture content. As you can imagine, soil that changes volume depending on its moisture content is problematic for structures such as your home. Expanding or shrinking soil can cause structural components to move including footings, foundation walls and floor slabs. Although the soils are called expansive, we are concerned about expanding and shrinking soils.

Sensitive soils can be found in areas throughout North America. The most notable areas are southwestern United States and Ottawa and Saint Lawrence river lowlands in Canada. These are not the only areas with pockets of sensitive soils.



What Causes the Problem?

Sensitive soils have high clay content. Clay will absorb moisture and swell. When clay dries out it shrinks. Some clay soils will shrink as it dries out and then never regain the full saturated volume.

Expert Consultation Required

If your home is affected by sensitive soils, an expert is required. In some cases the main focus is to keep the soil from drying out. In other areas, the focus is to keep the soil from getting wet! You have to know what kind of sensitive soil you are dealing with and how it interacts with your environmental conditions.

Trees

In some areas that have sensitive soil, the moisture content in the soil is fairly stable year round and no problems result. Tree roots can change the balance however. Tree roots will seek out moisture and rob the clay of its moisture content causing the soil to shrink. The result is that homes in these areas only experience problems when trees are in close proximity to the house. The recommendation is to plant trees a distance from the house equal to the expected mature height of the tree.

Subsurface Watering

In some areas, to keep the clay stable, soaker hoses are buried in the ground to water the soil and maintain consistent moisture content.

Passive Solutions

In some cases a passive approach will solve the problem. If the problem is shrinking soil, look for ways to reduce drying of the soil. If the problem is swelling soil, look for ways to reduce water in the immediate vicinity of the home. It's possible that one side of the house experiences dry soil (south and west exposure) while the other experiences wet soil (north and east exposure).

SHRINKING SOIL: Don't plant trees close to the home, use mulch on gardens to prevent drying, water lawns and gardens regularly and evenly and install an automatic irrigation system.

SWELLING SOIL: Identify and repair leaks in irrigation system piping, improve drainage around the home so that surface water flows away from the home, repair leaks in gutters, extend downspouts away from the home and avoid over-watering lawns and gardens.

Structural Intervention

If a passive approach won't work, more serious intervention may be required, such as removing and replacing soil, underpinning, helical screw piles or rebuilding the affected part of the foundation.

An expert that does not have a financial interest in the work to be done is strongly recommended. Structural work such as helical screw piles can be very expensive. It is worth investigating passive solutions first.

