

**GENERAL RECOMMENDATIONS FOR A FOUNDATION WATERING MAINTENANCE PROGRAM
FOR MOST STRUCTURES IN THE DFW AREA**

We live in an area of Texas generally referred to as the "Blackland Prairie." This area was quickly settled by pioneers because of its outstanding agricultural potential and has experienced rapid development ever since. While these soils are excellent for crop production, they often cause various problems due to their inherent characteristics of high plasticity, or "shrink-swell" potential. It is this behavior that affects house foundations and which must be carefully controlled to prevent damage to your house.

These highly plastic clay soils are characterized as very expansive, or possessing high shrink-swell potential. Simply put, expansive soil has the ability to shrink to a low volume when very dry and swell to a large volume when wet. This sponge-like behavior is directly affected by seasonal moisture variations, vegetation, and precipitation patterns. In Texas, the clays typically swell in the winter and then shrink in the summer.

When your house was built and the yard and landscaping installed, the natural effects of climate and precipitation on the soils around your home were modified. Over the long-term, the soils will tend to be wetter or have greater volume under the center of the house and will seasonally dry out and shrink near the edges. When these moisture variations occur, the underlying clays experience shrink-swell cycles, and the foundation will attempt to conform to the shape of the supporting soils. This can result in movements of the foundation, which, in turn, stress the walls of the structure above it, i.e., your house. After repeated cycling, stress cracks will eventually appear in the walls and grade beams. Once the cracks appear, they may become progressively worse at an accelerated rate if the shrink-swell cycles are allowed to continue.

Your builder recognized the activity of the soils in this area and designed and constructed your house foundation to accommodate the soil movements as much as possible. While it is virtually impossible to eliminate all movements, controlling the moisture content and keeping any moisture variations relatively constant throughout the year can minimize them. The soil volumes will then remain relatively constant and any related movements are limited.

As a homeowner, you can control these moisture variations by implementing a program of proper foundation watering. The purpose of such a program is to maintain a high, uniform moisture level in the foundation soils by restoring the moisture lost to seepage, evaporation, and plant transpiration. This watering can be accomplished by either proper lawn and landscaping maintenance or by a separate foundation watering system using soaker hoses or drip irrigation tubes. In either case, artificial precipitation equivalent to approximately one inch of rainfall per week should be applied evenly to the soils near the foundation. Obviously, the watering can be postponed if the natural precipitation is sufficient. The water should be applied slowly to allow absorption and prevent runoff. To verify the adequacy of the watering program, surface soils should be routinely checked for shrinkage, cracking, and/or pulling away from the foundation. If either condition develops, or if landscaping shows moisture stress such as wilting or leaf drop, the frequency and amount of watering should be increased. Root growth of trees and shrubs should also be directed away from the foundation by adequate watering and fertilization of the yard away from the house. It should also be noted that sprinkler systems alone would seldom supply the needed moisture to the soils.

Interestingly, the recommended watering program corresponds almost exactly with the area's leading horticulturist's recommendations. Incorporation of this watering program not only provides protection against foundation movements, but also gives favorable conditions for yards and landscaping.

Periodic visual inspections of your home's interior and exterior for any evidence of movements are strongly suggested. The most noticeable results of these movements may be sheetrock cracks; binding doors or warped door frames; unevenness in floors or walls; exterior mortar or brick fractures; cracks around window or door frames, or in trimboards; and as cracks in the grade beams, patios, garage floors, or porches of your home. Any of these items, along with many others, may be indications of undesirable foundation movements. Usually the watering program outlined above will stabilize the slab and minimize future movements, but structural repairs may be come necessary in some cases. If you suspect any of these problems, we suggest calling a professional engineer to visit your home and make recommendations to remedy the problem. In the meantime, don't forget to water that foundation.