

## General Foundation Maintenance Overview

### Drainage Conditions and Watering the Soil

It is a generally accepted fact that most of the soils in North Texas consist of expansive (plastic) clays. This means that when the clays are relatively dry (in the summer months) they shrink, and when they experience an increase in moisture content (typically in the winter/spring months) they expand. Many times, this expansion & shrinkage of the soil is significant and will cause a foundation to move up and down with the soils.

Sometimes, this up & down foundation movement does not cause a significant problem with the structure; however, other times, the problems can be severe.

There are a few things a property owner can do to reduce (but possibly not eliminate) the potential for foundation movement when that movement is caused by seasonal factors. The two most common preventative measures homeowners can take are:

- Ensure that there are excellent drainage conditions around the foundation (to keep the clay soils from getting too wet).
- Watering the soils around the foundation (to keep the clay soils from getting too dry).

#### Proper Drainage

Water should not be allowed to pond around the foundation of a structure. In general, the ground surface around the foundation should be sloped such that the water moves rapidly away from the structure.

There are several factors that impact the drainage conditions:

- Is the ground surface around the foundation properly sloped? Does the surface water have any place to go?
- If there is an existing french-drain system, is it working properly?
- Do the rain gutter downspouts discharge the roof water well away from the foundation?
- Are the flower beds properly sloped for drainage? Are they bordered? If so, do the borders trap the water near the foundation?

#### Watering the Foundation

In North Texas, our rainy season typically occurs during the winter/spring months while our dry seasons occur in the summer. Even though some watering of the soils around a foundation is usually required during the winter months, a property owner should plan on “ramping up” his watering at the end of the spring rains but prior to the arrival of the summer drought.

This is because during a typical summer in North Texas, the soils can, depending on environmental conditions, dry out to depths of 12 to 18 feet deep (they may not get bone dry but they do get drier). It is important not allow this to occur.

At the end of the rainy season, the soil is usually at its peak moisture level, being moist several feet deep. A homeowner's goal is to maintain the soil moisture content at a constant rate year around. If a property owner begins watering during the midst of the summer, and after the drought starts, the water typically only penetrates the soil a few inches which is not effective.

To emphasize, the moisture level should be maintained to depths of several feet which is very difficult if the watering is started during the middle of the summer. During the prolonged summer drought, it may be necessary to water the soil around the foundation on a daily basis. A word of caution though - do not overwater dry expansive clays! To do so can cause upheaval of a slab foundation.

The typical method of adding water to the soils around the perimeter of a foundation is to use either an automatic irrigation system (some have zones that are specifically designed to water the soils adjacent to the foundation) or to install soaker hoses around the foundation. The soaker hose is usually placed 18" or so from the foundation. Also, buried drip irrigation systems are becoming popular.

For more information on this subject, check out the blog section located on the front page of [www.GeoDFW.com](http://www.GeoDFW.com). There is a three part blog on "Why are Texas Homeowners Told To Add Water to the Soil.....". Also, refer to <http://www.foundationrepair.org>, see the Q & A Section; the maintenance article.

### **Landscaping Factors**

To further complicate matters, trees, bushes, and shrubs can remove large amounts of water from the soils, everyday. So it is sometimes necessary to either remove the landscaping or install a root barrier between a tree and the structure. An Arborist can give guidance about this.

### **Miscellaneous Factors**

Other important factors in controlling the moisture under and around the perimeter of a foundation are to be aware of any sub slab plumbing leaks, dripping faucets, air conditioner condensate lines, overflowing rain gutters, poorly placed rain gutter downspouts, leaking swimming pools, sprinkler leaks, etc.

### **Summary**

To summarize, much of North Texas has highly expansive clays and when coupled with the wide swings between rainfall amounts and drought, the clay is prone to expand and contract significantly. When this occurs, foundation movement can occur. Therefore, an effective foundation maintenance plan is important and includes more than one single aspect. The property owner needs to consider the soil conditions, drainage conditions, watering procedures, landscaping, and the other miscellaneous factors that contribute to the overall instability of the foundation.