

TO: Texas Home Owner
FROM: Strand Systems Engineering, Inc.
SUBJECT: Foundation Maintenance – 2005 Drought Conditions

During 2005 the DFW Metroplex has experienced the driest year since the drought of the 1950's. The rainfall for 2005 was the lowest on record since 1956, with only 18.97 inches of rain, 15.61 inches below the normal rainfall. The U.S. Drought Monitor has reported 2005 as an "Exceptional Drought" for the DFW area, the highest category of drought possible.

You may be asking "Why is this important to me as a homeowner?" Typically, excessive foundation movements are caused by a change in the moisture content of the soil around the perimeter of the foundation. Although residential foundations are designed to accommodate the soil movements of a normal weather cycle, the current drought conditions are an extreme condition that may increase the potential movement of the soil around your foundation.


"What can I do about this?" Since foundation movements are caused by changes in the moisture content of the soil around the foundation, the best thing that you can do is use the sprinkler system to keep the soil moist. During the drought, consistent watering is especially important. If the soil around your foundation still appears dry it may be necessary to install soaker hoses around the perimeter. It is your responsibility as a homeowner to ensure that the soil around your foundation is properly maintained.

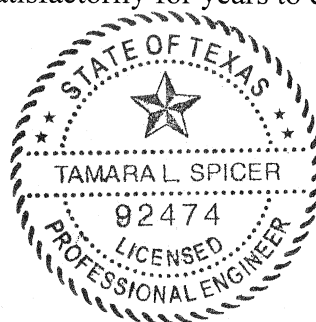
"How do I know if the soil around my foundation is too dry?" The soil should be damp to the touch and should be able to be squeezed into a ball, which will retain its shape. If the soil is hard or dusty or cracked it is too dry and should be watered immediately to help mitigate potential foundation movement.

"Can the soil be too wet?" Yes. The soil should be moist, but there should not be puddles or standing water. This most often occurs on the shady side of the house, where less water evaporates. If you use an automatic sprinkler system, it should be zoned to deliver more water on the sunny side than on the shady side. Do not try to apply too much water too quickly. Clay is very dense and absorbs water slowly. The best technique is to water moderately, but repeatedly, over an extended period of time.

Please find attached more detailed information on how to properly maintain your foundation and ensure that your foundation performs satisfactorily for years to come.

Respectfully,
Strand Systems Engineering, Inc.


Tamara L. Spicer, P.E.
Vice President



**TO: Home Owner
Dallas/Fort Worth**

FROM: Strand Systems Engineering, Inc.

SUBJECT: Foundation Maintenance and Care

Your new home has been constructed using a concrete slab-on-grade foundation. This is the most commonly used type of foundation system in Texas. This type of foundation can be reinforced with conventional mild steel reinforcing, post-tensioned tendons, or a combination of the two. Most builders in the Dallas/Fort Worth area use post-tensioning, along with some conventional reinforcing.

All slab-on-grade foundations are designed to sit on top of the ground and float or flex with movement in the bearing soils. The foundations are built with a certain amount of rigidity, however, they are allowed by normal design parameters to deflect and bend a certain amount. Typically, foundation movements are caused by some change in the bearing soils beneath and directly surrounding the house. The most critical "changeable" factor in the sub-grade soils is the moisture content. This is important because most of the clay soils in the Dallas area are "active", that is, they have an electromagnetic attraction for water and swell or heave upward when they can absorb water. On the other hand, these clays shrink and subside when they become dry. Thus it is said that in order to stabilize and control the movement of clay soils, it is necessary to control their access to water. If the moisture content under the foundation is maintained in a stable condition, the foundation itself will tend to be more stable, and deflection or cracking in the walls of the home should be minimized.

When a home is constructed, the moisture content of the soil beneath the foundation is fairly uniform and evenly distributed. The slab foundation acts as a lid or covering, and protects and stabilizes it, except at the edges. Around the edges, swelling or subsidence can take place, depending upon environmental influences. If the soil outside the foundation along the perimeter is not well-drained, rainwater, sprinkler water or other irrigation water may puddle and slowly saturate the adjacent soil under the foundation. The saturated soil will swell and heave upward, causing "edge lift". On the other hand, if watering is neglected, and the soil is exposed to summer sun and hot breezes, the soil will dry out, shrink, crack visibly, and subside, causing "edge drop" or "center lift". Either of these conditions may progress to the point where the foundation of the home is deflected and the frame structure above is distorted and develops severe cracking.

It is important that as a homeowner you realize that your foundation is more than just inert, passive concrete and steel. It is an element that will respond to changing conditions, and it needs understanding and maintenance if it is going to give satisfactory service.

The following are several recommended procedures, which will be helpful in this regard:

1. Be certain that the yard around the house slopes away from the foundation. Any standing or ponding water next to the foundation can cause undue unnecessary soil and foundation movement. Be sure the builder has sloped the yard for good drainage and that all drainage swales are working.
2. Even and consistent watering should be performed regularly and increased during dry or "drought" periods. Watering should be done around all sides of the home. If a sprinkler system is installed, it should water the entire perimeter. Zoning the system is recommended where over-saturation might otherwise occur along various portions of the home. During dry periods and if it is intended to water only the foundation, a soaker hose laid approximately 18" from the foundation can be allowed to drip moisture slowly into the soils several hours a week. This procedure has been used successfully. (How much water is enough? The answer is that soil should be damp to the touch and should be able to be squeezed into a ball, which will retain its shape. If the soil is hard or dusty or cracked, it is too dry. If it is saturated or "squishy", it is too wet.)
3. Trees and shrubs can absorb large quantities of water and their root systems can undermine your foundation. It is typically recommended that new trees be planted more than ½ the canopy width of the mature tree away from the foundation. Existing trees adjacent to the foundation should be removed if not accounted for in the original design. If existing trees are to remain, special care should be given to this area to ensure that the soil is properly maintained. The larger the tree, the greater the threat. Deep planter beds filled with absorbent planter mix soils should not be placed adjacent to the foundation.
4. It is recommended that you check for leaky hose bibs and air conditioner condensation drain pipes which could induce localized water into the sub-grade.
5. Gutters can typically be used to help prevent roof-run-off from dumping concentrated quantities of water into the ground at re-entrant areas and roof valley locations. Homes with gutters should have downspout extensions and splash blocks and the systems should be cleaned regularly. The splash blocks should not direct the flow into planter beds.
6. Be aware that alterations and improvements such as new landscaping, addition, pools, decks, sidewalks, etc., can change the drainage patterns of your home and could induce problems if area drainage is not properly addressed. Note changes in surrounding of adjacent lots since additional water could be directed at your residence.

In summation, your new foundation will better be able to serve you when the recommendations stated above are incorporated into your home's normal maintenance program.