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CONSTRUCTION LAW CASE STUDY

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In the homebuilding business in Cincinnati and Northern Kentucky, builders are quite aware of the perils of constructing homes on steep hillsides and fill sites. As a result, they ordinarily consult with a soils engineer during or before excavating for foundations on steep hillsides and fill sites with "soft" soils. And the typical solutions recommended by the engineer are to construct a deeper or wider foundation footing or pier the foundation into bedrock. These situations are somewhat common, as ideal "flat" lots become less common.

However, it is not all that common for homebuilders to consult with a soils engineer (formally known as "geotechnical engineers") about unusual soil types. The obvious and understandable reason is that certain unusual, and potentially dangerous, soil types only become apparent by laboratory testing of the soils. In other words, in many instances the appearance or firmness of the soil does not raise a red flag warning the builder that he should consult with an engineer.

Nevertheless, it is generally known by homebuilders in the area that various parts of Cincinnati and Northern Kentucky have soil types that are especially sensitive to water infiltration. These soil types can look like ordinary clay soil, but they are not. They are prone to excessive swelling in the presence of water (or excessive shrinkage upon drying). They are called highly plastic clays or, depending on the nature of their formation, varved clay soils. They are prevalent in the Anderson and Mt. Healthy areas in Cincinnati, and in the Alexandria and Hebron areas in Northern Kentucky. Smaller pockets of such unusual clayey soils may be found in many other areas of Cincinnati and Northern Kentucky. Because these soils swell excessively in the presence of water, they have increased lifting force. They can raise up and crack a

basement floor slab. They can even raise up the support columns of a house – with devastating consequences for all parts of the house. In extremely dry summer months, these soils can shrink excessively, resulting in settlement cracks in various parts of a house.

Several years ago, highly swelling plastic clay soils extensively damaged three homes at the end of a cul-de-sac in Alexandria, Kentucky. Repairs to each home were in the hundreds of thousands of dollars. Soil studies by a geotechnical engineer revealed that each of the three houses was built on varved clay, formed thousands of years ago when the Licking River flowed through this area or when retreating glaciers left behind long-forgotten lakes. Seasonal layering of silt is the culprit responsible for these soils to swell excessively with the introduction of water.

Although the builders of the three houses defended the subsequent lawsuits on the grounds that varved clay looks to the naked eye like ordinary clay soil, the builders and their insurance companies lost the lawsuits. Altogether they paid almost $2 million in repair costs and attorney fees. In each case, the builder made a serious construction error. Instead of diverting water away from the house foundations, the particular building methods used brought water through the foundation footings and under the concrete basement slabs. The damage was attributable to swelling highly plastic clay soils underneath the houses, as shown by laboratory testing of the soils.

Two construction errors were apparent, although these construction methods are still used by some builders. Pea gravel was placed adjacent to the outside of the foundation walls – down to the bottom of the footings. However, the foundation drain (the typical corrugated black pipe) was placed atop the footing. As a result, water tended to drain through the pea gravel past the plastic pipe and down to the footing itself. This common construction technique probably would not have been a problem, except that the builder constructed “cross-drains” through the footings. These “cross-drains” were apparently intended to bring water out from under the houses. But because of the placement of the pea gravel and the foundation drain, the “cross-drains” brought excessive amounts of water under the basement slabs. In other words, these

through-the-footing drains worked in reverse, exposing the underlying varved or highly plastic clays to constant drenchings. In each house, these swollen clay soils lifted the support columns, which lifted floor and ceiling beams, resulting in cracked interior and exterior walls, doors, windows and fixtures throughout the structures.

Ordinarily, the homeowners would have had to pay our attorney fees in recovering the repair costs. In this case, however, the construction methods used violated building codes. And building code violations require the builder to pay the homeowners' attorney fees. All three homes were fully repaired, proper water drainage devices were installed, and the potentially damaging soil conditions completely eliminated. And all of the homeowners' expenses for repairs and attorney fees were fully reimbursed.

The lesson for builders from this litigation is not that a geotechnical engineer is needed for the construction of every home. Instead, the primary lesson is to use construction methods which guarantee that water will drain away from the house instead of under the basement. Water under a basement slab, or any slab, is not a good thing, regardless of the nature of the underlying soils – all clay soils swell and shrink to some extent. But if the general area is already known for excessively swelling clay soils, consultation with a geotechnical engineer is mandatory. Planning and zoning officials in Cincinnati and Northern Kentucky know the areas in which highly plastic or varved clay is likely present, or they can refer to free-of-charge knowledgeable sources. In this area, homebuilders need to know general soil conditions and they must employ sound and effective drainage measures. Most do. Others pay.