Gateways

The periodic Newsletter of Gateway Geotechnical, LLC

Summer 2009
Volume 3, Issue 1

DEALING WITH SINKHOLES

Sinkholes are natural depressions in the surface topography, typically caused by the solution and removal of soil or bedrock, often both, by percolating water. They are most common in karst topographies where underlying limestone, particularly where faulted or fragmented, is highly susceptible to weathering and erosion. As spaces and caverns develop underground, a gradual depression or bowl may form, with the land surface remaining relatively intact until there is not enough support, and then a sudden collapse or bedrock-edged chasm may occur.

Sinkholes vary in size from only a few feet to more than a hundred feet, both in diameter and depth, and are found worldwide. In St. Louis, we first think of sinkholes in the City and St. Louis County south of Highway 40, but experience shows that they may be encountered anywhere in the area. Good examples of sinkhole topography are Tilles Park in Ladue, Cliff Cave Park in south St. Louis County, and along Sinks Road (I wonder where that name came from?) in extreme north St. Louis County.

If the area is never developed, sinkhole remediation is typically not required. About the only precaution is that functioning sinkholes that act as part of the regional drainage system should not be plugged to prevent future drainage. The removal of old refrigerators and other dumping ground debris, so as to maintain flow and not contaminate subsurface waters, is a good idea.

However, if you want to develop the area occupied by the sinkhole, or build above it, significantly more effort is required for remediation. The typical procedure is difficult to identify ahead of time and unfolds, kind of like a good detective novel, during construction. First the softer materials need to be removed from the sinkhole depression, and the fissure (opening) exposed by

excavating to the top of the limestone or other sound bearing material. The fissure and surrounding area, typically 5 to 10 feet in all directions depending on the size of the opening, need to be cleaned of loose material. The opening should then be bridged by the placement of rock into the fissure, and overlain with filter rock if the sinkhole is to continue draining collected water. Depending on the size of the opening, a vented concrete or structural cap may be required. If the sinkhole is nonfunctioning or located beneath future construction the opening should be bridged,

typically with a 2-foot or thicker layer of lean concrete. In either case, the remaining excavation should be brought to grade with properly compacted soil placed to project or jurisdictional requirements.

HAPPENINGS - - - - -

T. Michael McMillen provided a day-long seminar on Soils and Foundations to the Missouri Association of Building Officials and Inspectors (MABOIA) on April 16. Approximately 35 attended the seminar.

Gateway has recently been selected or short-listed on a variety of SF330 submittals to government agencies, most recently the St. Louis District Corps of Engineers and the Veterans Administration.

Dave Minks has returned this summer as an Engineering Technician. He will be attending Southern Illinois University at Edwrdsville this fall, pursuing a degree in Construction Management.