

GREENBAUM ASSOCIATES, INC.
GEOTECHNICAL & MATERIALS ENGINEERS

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December 9, 2019

Mr. John Miller
Miller Wihry
1387 South Fourth Street
Louisville, KY 40208

Re: Karst Survey
5101 Bardstown Road
Louisville, Kentucky
Project Number 19-277G

Dear Mr. Miller:

Yesterday I walked the above referenced site to discover any evidence of karst development. Rock appears to be very shallow at this site as evidenced by rock visible on the ground surface at a couple locations and large pieces of rock present in the material excavated and visible where a sewer was installed in the southwest portion of the property. In the northwest portion of the property, I found what appears to be a karst feature on the property. It forms a lineation across that portion of the property and an opening in the soil is visible at one point (see photographs below).



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This site is covered by residuum which is underlain by the Louisville Limestone. The Geological Survey describes the Louisville Limestone as:

Dolomitic limestone, light gray, yellowish gray, light brownish gray, weathers to light brown, medium gray; fine grained, thin to very thick bedded. Thin, irregular chert nodules in several layers near top; calcite is scattered throughout in small patches less than 2 inches in diameter. Fossils moderately abundant, include distinctive chain coral *Halysites* sp., and brachiopod *Pentamerus* sp. Unit is resistant and forms a broad upland in central and southwestern parts of quadrangle; soil cover probably less than 10 feet thick; locally may include unmapped residuum of overlying Devonian limestones. Lower contact locally gradational over interval of 6 to 12 inches, poorly exposed.

It is our understanding that there is to be no construction in the portion of the site in which the karst features mentioned previously are found. A building is proposed for the rear of the site in an area that has been filled. As far as we are aware, the nature and compaction of this fill is undocumented. This report does not address the condition of that fill since that is beyond the scope of this investigation.

There is no evidence of karst development at the rear of the site, nor is there evidence of karst development in the southeast portion of the site where a shallow detention basin is planned.

If construction is to take place in the portion of the site in which karst features are present, it will be necessary to expose the bedrock and install a filter in any crevices or openings in the bedrock. A diagram of a typical treatment of a karst feature using a filter is included with this letter for illustration.

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If you have any questions in regard to this study, please call.

Sincerely,

GREENBAUM ASSOCIATES, INC.

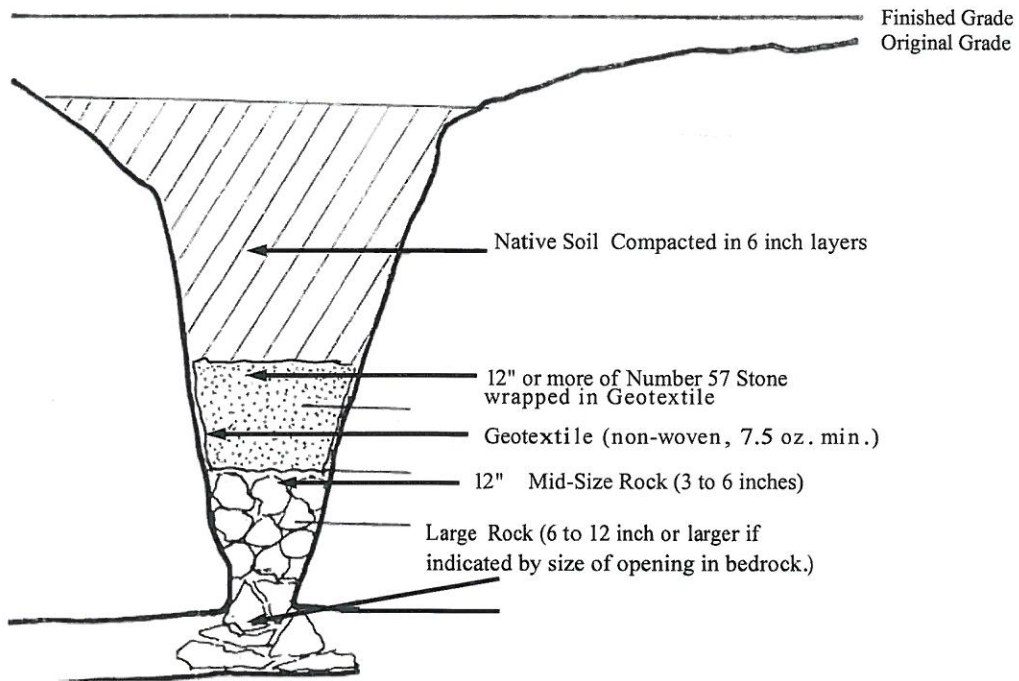
Sandor R.

Greenbaum

Sandor R. Greenbaum, P.E.

Principal Engineer

Digitally signed by Sandor R. Greenbaum
DN: cn=Sandor R. Greenbaum,
o=Greenbaum Associates, Inc., ou,
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Miller Wihry



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Diagram of Typical Karst Remediation
Freedom Senior Center
Louisville, Kentucky
Greenbaum Project Number: 19-277G