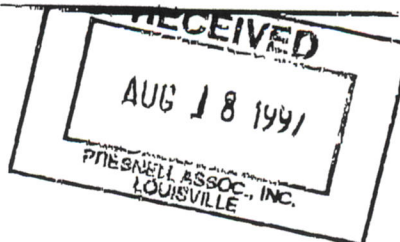


Post-it Fax Note 7671		Date	# of pages 7
To Powell Spears		From	
Co./Dept.		Co.	
Phone #		Phone #	
Fax # 426-8543		Fax #	

13005 Middletown
Industrial Boulevard, Suite E
Louisville, Kentucky
40223-4775
502-244-6519
502-244-8826 FAX

Fuller
Mossbarger
Scott &
May

FMSM
ENGINEERS



August 14, 1997

O.1.1.L96001.L03

Mr. David Reed
Presnell Associates, Inc.
717 West Main Street
Louisville, Kentucky 40202

Re: Sinkhole Review
Lots 21, 22, 23 and 28
Blankenbaker Commerce Centre
Jefferson County, Kentucky

As requested, Fuller, Mossbarger, Scott and May Engineers, Inc. has reviewed sinkholes on the referenced lots. The field review was performed with Mr. Eddie Heinsohn of Presnell on August 4, 1997. A summary of published geologic data, and our observations and recommendations are provided as follows.

Site Geology

Available geologic mapping (U.S.G.S. Geologic Map of the Jeffersontown Quadrangle) indicates that the site is predominantly underlain by bedrock of the Laurel Dolomite Formation. The Laurel Dolomite is described as containing fine grained dolomite and dolomitic shale in beds of one to two feet thick, with sinkholes being common in the upland areas. The process that leads to the formation of sinkholes usually begins at the soil/bedrock contact. The soil is eroded from below by groundwater surging upwardly from a chemically enlarged joint or fissure in the bedrock. The surging action occurs during wet periods when the conveyance ability of the underground drainage system is exceeded and the groundwater is surcharged. The groundwater rises above the bedrock level and forces itself into the soil surrounding the bedrock joint or fissure. When the groundwater pressure returns to normal, soil particles are flushed into the bedrock and a void within the soil is created. With continued time and hydraulic action, the void increases in size and eventually leads to collapse of the soil arch above to form a sinkhole at the ground surface.

Lot 21

No sinkholes were noted at the surface on this lot.

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Lot 22

An approximate 10-foot by 10-foot by 4-foot deep excavation had been made to the rock surface. This sinkhole is labeled as Sinkhole 1 on the attached portion of the plan view drawing. It is located at the south-central area of the lot. A one to two-foot wide crevice was observed in the rock surface running in a north-south direction. On the north side of the excavation, the crevice had been cleaned to a depth of about three feet and was clay-filled below this depth. The crevice had not been cleaned on the south side of the excavation. Prior to any treatment, the excavation will need to be extended to the south to determine the limits of the crevice.

A pond was also observed on the east side of the lot and is marked on the attached layout.

Lot 23

An approximate 10-foot by 20-foot by 5-foot deep excavation had been made to the rock surface. This sinkhole is labeled as Sinkhole 2 on the attached portion of the plan view. It is located at the extreme east side of the lot. The eastern half of this sinkhole is located in a 15-foot wide sewer and drainage easement, and it appears to extend just into Lot 22. An approximate six-inch wide crevice is present in the sinkhole running in an east-west direction. This crevice was probed and an open throat extended to a depth of five feet below the rock surface in several locations. This excavation will need to be extended to the east and west to define the limits of the crevice prior to treatment.

Stone remnants from an old house foundation were observed near the southwest corner of the lot.

Lot 28

An approximate 25-foot diameter sinkhole (Sinkhole 3) about 2 to 3 feet deep was observed 80 to 90 feet east of the southwest corner of the lot. A tree is present in this sinkhole. No excavation had been performed and an open throat was not visible.

Recommendations

From a geotechnical standpoint, sewers, pavements and buildings should be sited to avoid sinkholes because of an increased risk for damage caused by any future ground collapses. However, this will probably not be possible because Sinkhole 1 is in the central portion of Lot 22²² where pavement or a building will likely be placed, and Sinkholes 2 and 3 are in sewer and drainage easements. Therefore, these sinkholes will need to be treated to help prevent future collapse.

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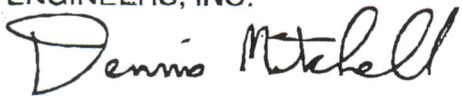
The method of treatment for the sinkholes will require that the rock surface be exposed to identify any voids or crevice features in the bedrock (the rock surface has already been exposed at Sinkholes 1 and 2). The voids or crevices should be cleaned and filled with No. 2 or 3 crushed stone up to the rock surface. Additional crushed stone wrapped in KDOH Type IV geotextile fabric would then be placed to provide a cap or a seal over the void or crevice. Normal fill placement can then take place to reach final grades. A Geotechnical Engineer should be present to review treatment of the sinkholes in conjunction with the proposed construction and grades so that any changes or adjustments can be made.

It should also be noted that construction in areas underlain by carbonate bedrock is always accompanied by some risk that other features may be encountered during construction or may affect the improvements in the future.

We look forward to assisting you with treatment of the sinkholes. If we can be of further service, or if you have questions, please call.

Respectfully submitted,

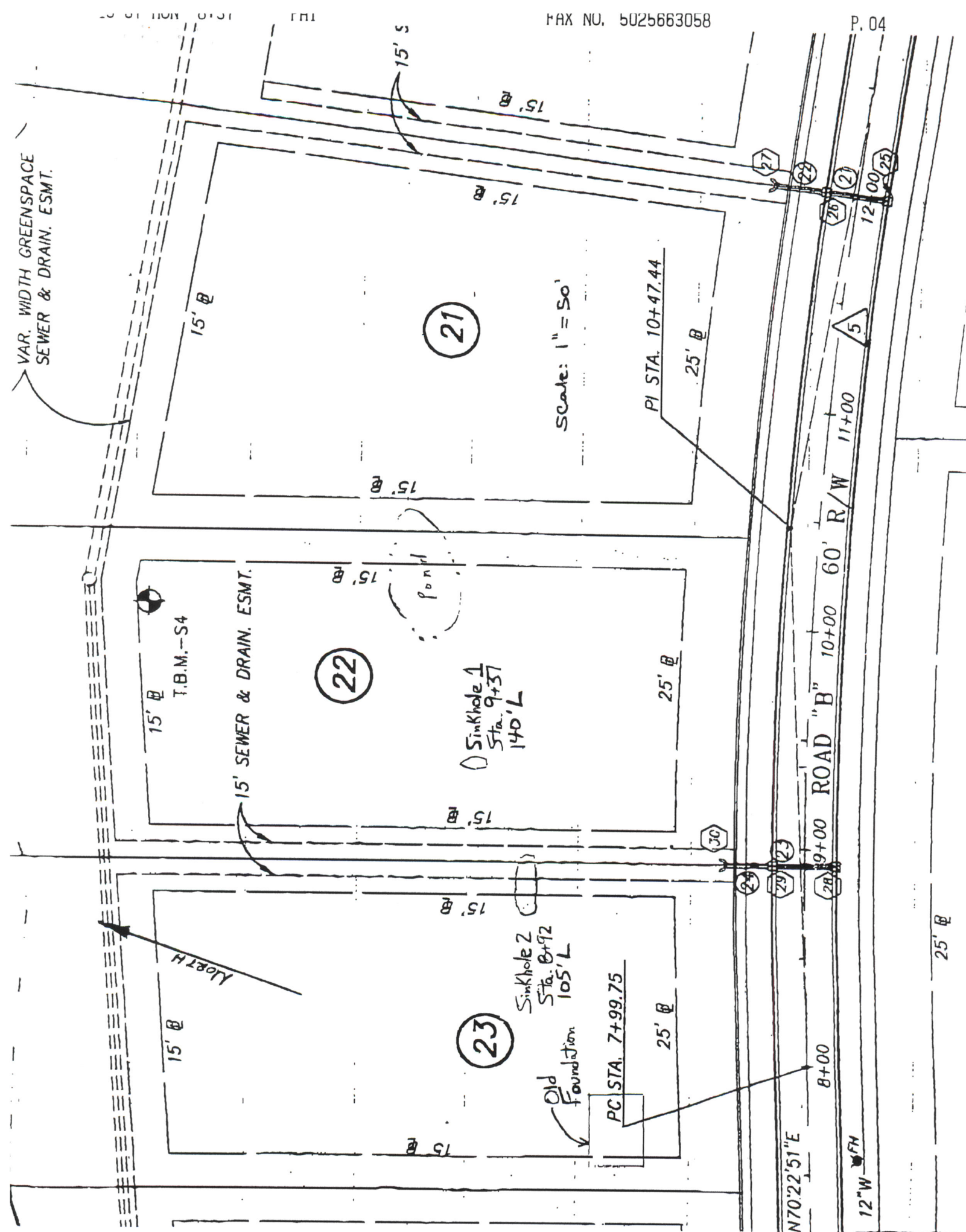
FULLER, MOSSBARGER, SCOTT AND MAY
ENGINEERS, INC.



Dennis Mitchell, P.E.
Project Engineer

DM:map

Attachments



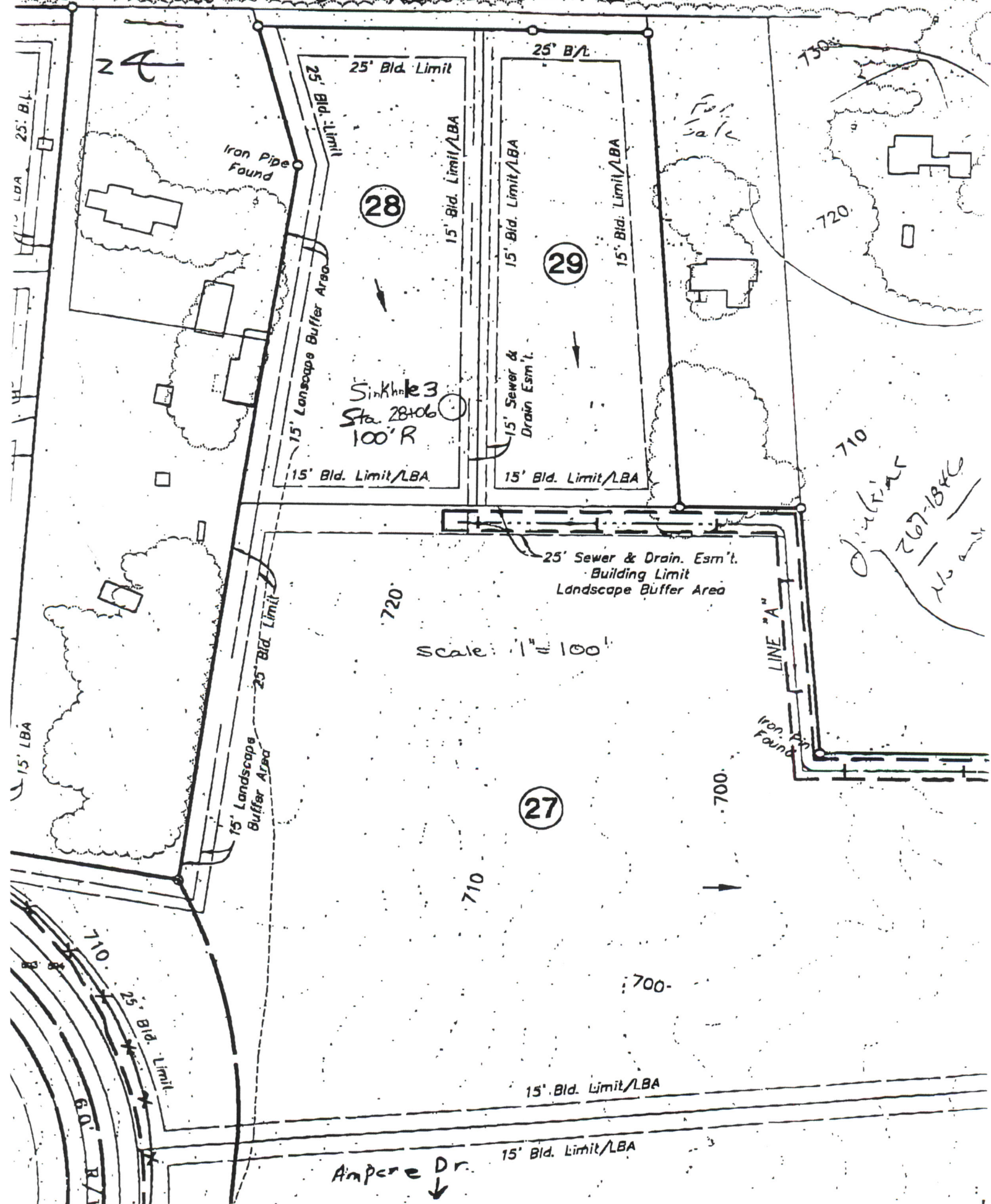
~~Blankenbaker Rd.~~



Photo 2 - Crevice at Sinkhole No. 2 - Lot 23



Photo 1 - Crevice at Sinkhole No. 1 - Lot 22