

GEM Engineering, Inc.

GEOTECHNICAL ENVIRONMENTAL & MATERIALS SERVICES

KARST SURVEY REPORT

**Bellarmine Sports Complex
3408 Newburg Road
Louisville, Kentucky 40205**

GEM Project No. G-4726



August 15, 2016

Bellarmino University
2001 Newburg Road
Louisville, Kentucky 40205

Attention: Jeff Dean

Subject: Karst Survey Report
Bellarmine Sports Complex
3408 Newburg Road
Louisville, Kentucky
GEM Project G-4726

Dear Mr. Dean:

GEM Engineering, Inc. (GEM) conducted a karst survey for the referenced site in accordance with GEM Proposal No. GP-6171, Revision 1, dated July 29, 2016, and Bellarmine University Purchase Order No P0074412, dated July 29, 2016. The karst survey was conducted in general accordance with Chapter 4 Part 9 (Development on Karst Terrain, dated July 2008) of the most recent Louisville-Jefferson County Land Development Code (LDC). The karst survey included the following elements: a visual reconnaissance of site conditions for the karst geologic features specifically defined in the LDC; a review of current and historical aerial photographs; a review of soil survey information; a review of geologic maps; and a review of topographic maps.

The visual site reconnaissance was conducted on August 4, 2016. The site was primarily open grass fields with some pavement and existing structures. Several small closed depressions, concentrated in two separate areas, were noted on site during the site reconnaissance. The closed depressions appear to be related to animal burrow activities. Refer to the attached drawing for the location of the two areas where the small closed depressions were observed. Site photos showing the two areas and the closed depressions also are attached. Confirmation of the cause of these depressions is recommended either before or during construction. No other potential karst features were identified on site or in the documents reviewed.

This karst survey identified the conditions that were reasonably identifiable in areas that were accessible when the survey was conducted. Conditions may change with time or be affected by natural events, such as floods or earthquakes, or by human activity. If conditions differing from those described herein are encountered, GEM should be notified.



We appreciate the opportunity to serve as your geotechnical consultants. If we can answer any questions concerning this report, please contact the writers.

Sincerely,
GEM Engineering, Inc.

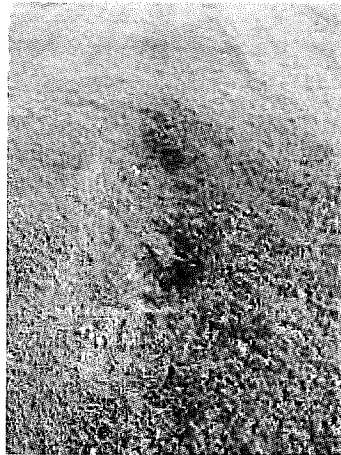
Brian Glass, E. I. T.
Project Engineer

Samantha Schardein, P. E.
Senior Engineer
Kentucky License 20438

Attachments:

Pre-App Development Plan for Bellarmine Sports Park prepared by Heritage Engineering, LLC.
dated March 18, 2016.

Site Photos



Site Photo 1: View of the southern area exhibiting closed depressions.



Site Photo 2: View of the northern area exhibiting closed depressions.



Site Photo 3: View of a closed depression that appears to be an animal burrow.



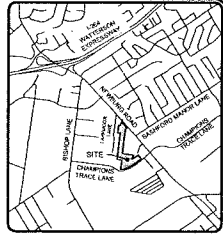
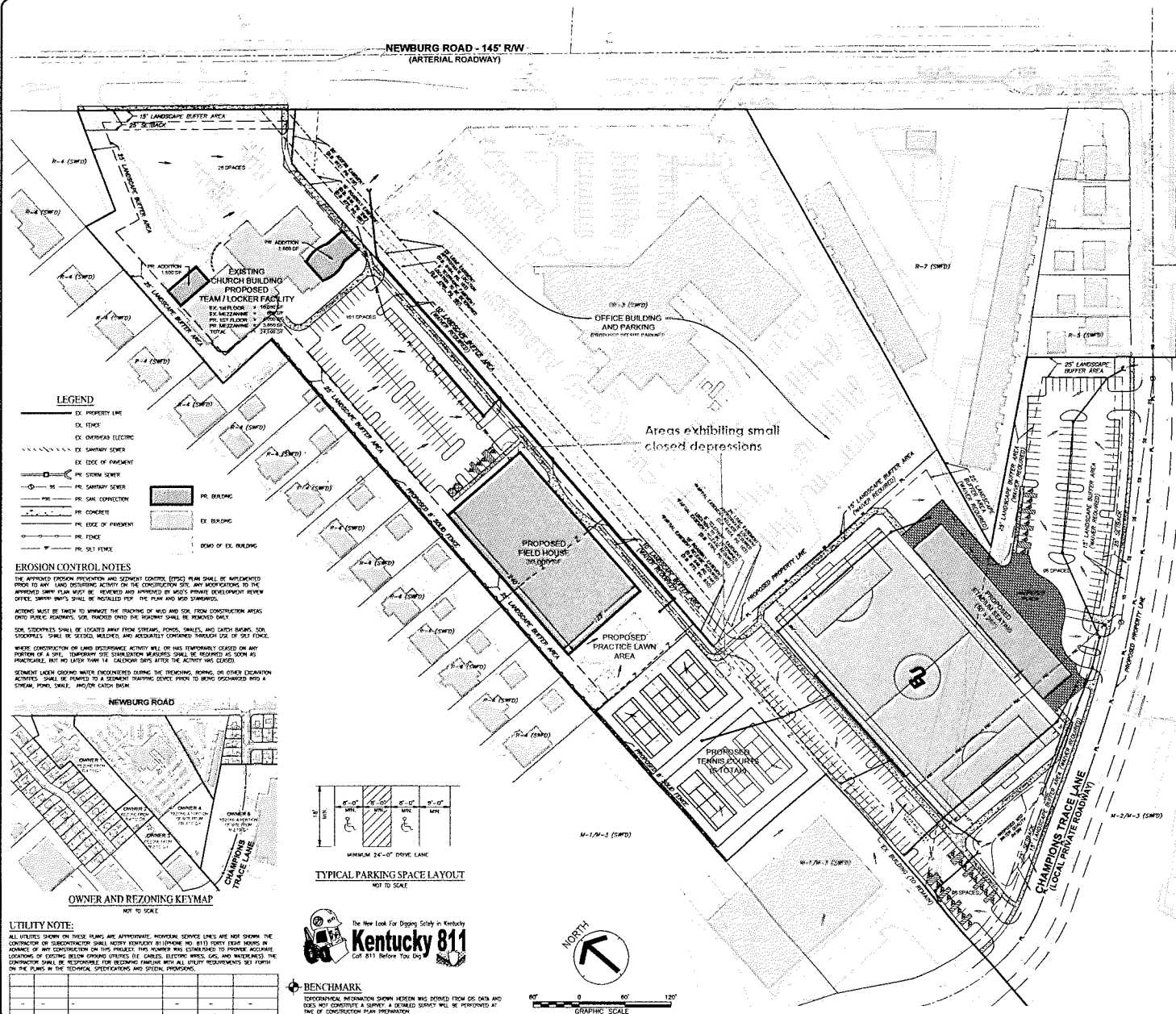
Site Photo 4: View of two closed depressions that appear to be animal burrows.



Site Photo 5: View of a closed depression that appears to be an animal burrow.



Site Photo 6: View of a closed depression that appears to be an animal burrow.



OWNERS AND SITE DATA

OWNER 1 (2400 NEWBURG ROAD)
 BELLAIRME UNIVERSITY, LLC
 2000 NEWBURG ROAD
 LOUISVILLE, KY 40202
 D.B. 10052, P.C. 717
 TAX BLOCK 600, LOT 28

OWNER 2 (2420 NEWBURG ROAD)
 BELLAIRME UNIVERSITY, LLC
 2000 NEWBURG ROAD
 LOUISVILLE, KY 40202
 D.B. 10052, P.C. 717
 TAX BLOCK 610, LOT 28

OWNER 3 (2410 NEWBURG ROAD)
 BELLAIRME UNIVERSITY, LLC
 2000 NEWBURG ROAD
 LOUISVILLE, KY 40202
 D.B. 10052, P.C. 717
 TAX BLOCK 600, LOT 28

OWNER 4 (2430 NEWBURG ROAD)
 BELLAIRME UNIVERSITY, LLC
 2000 NEWBURG ROAD
 LOUISVILLE, KY 40202
 D.B. 10052, P.C. 717
 TAX BLOCK 610, LOT 28

OWNER 5 (2400 CHAMPIONS TRACE LANE)
 ELECTRIC COOPERATIVES, INC.
 4555 SHARP LANE
 LOUISVILLE, KY 40218
 D.B. 11112, P.C. 504
 TAX BLOCK 616, LOT 36

TOTAL SITE AREA: 4,844,509 SF (111.133 ACRES)
FORM FOOTING: 23,000 SF
EX. ZONING: R-4, OF-3 AND M-2
EX. LAND USE: CHURCH OFFICE AND INDUSTRIAL
PR. LAND USE: ATHLETIC FACILITIES
P.A. ZONING: 020
EX. BUILDING: 18,000 SF
PR. BUILDING: 31,420 SF INCLUDING STORM SEATING AREAS
TOTAL BUILDING: 49,420 SF

SETBACK DATA

MIN. FRONT YARD: 65' FROM C/A
MIN. FRONT YARD: 25' FROM C/A
STREET SIDE YARD: 30' FROM C/A
SIDE YARD: NONE
REAR YARD: NONE
MIN. BUILDING HEIGHT: 10'

PARKING SUMMARY

TEAM / LOCKER FACILITIES	24,500 SF
MINIMUM PARKING REQUIRED (BY STATE)	1,800
MINIMUM PARKING PROVIDED (BY STATE)	1,800
FEED HOUSE AREA	30,000 SF
MINIMUM PARKING REQUIRED (BY STATE)	2,000
MINIMUM PARKING PROVIDED (BY STATE)	1,800
STADIUM AREA	620 SEATS
MINIMUM PARKING REQUIRED (BY STATE)	620 SPACES
MINIMUM PARKING PROVIDED (BY STATE)	620 SPACES
TOTAL MINIMUM PARKING REQUIRED	620 SPACES
TOTAL MINIMUM PARKING PROVIDED	620 SPACES
TOTAL MAINTENANCE PARKING PROVIDED	1,000 SPACES
TOTAL PARKING PROVIDED	1,620 SPACES
TOTAL MAINTENANCE PARKING PROVIDED	1,000 SPACES
TOTAL PARKING PROVIDED	2,620 SPACES

BICYCLE SUMMARY

SHOULDER SPACE REQUIRED (BY STATE) 8 SPACES
LONG TERM REQUIRED (BY STATE) 2 SPACES
TOTAL BICYCLE PARKING PROVIDED: 10 SPACES

TREE CANOPY CALCULATIONS

CRUISE SITE AREA: 404,509 SF (9.273 AC.)
CANOPY COVERAGE CLASS: CLASS C (0% TO 40%)
TOTAL TREE CANOPY REQUIRED: 8,092 SF (183)
TREE CANOPY TO BE PROVIDED: 28,070 SF (643)
TOTAL TREE CANOPY PROVIDED: 36,162 SF (826)

LANDSCAPE DATA

EXISTING V.L.A.: 65,777 SF
PROPOSED V.L.A.: 27,000 SF
TOTAL V.L.A.: 92,777 SF
V.L.A. PROVIDED (72%) 66,800 SF
V.L.A. PROVIDED: 7,000 SF

NOTES

- 1) NEIGHBORING SANITARY SEWER SERVICE WILL BE PROVIDED BY NEW PSE CONNECTION AND IS SUBJECT TO APPLICABLE TIE-IN. SANITARY SEWER FLOW WILL BE TREATED AT THE MORRIS STORMWATER QUALITY TREATMENT CENTER.
- 2) CONDUIT DEPTH REQUIREMENTS SHALL BE AS SHOWN ON SHEETS.
- 3) SUBJECT SITE TO BE SERVED BY THE LOUISVILLE WATER COMPANY. THE NECESSARY WATER SYSTEM IMPROVEMENTS REQUIRED TO SERVICE THE DEVELOPMENT SHALL BE AT THE OWNER'S / DEVELOPER'S EXPENSE.
- 4) DRAINAGE PATTERN IDENTIFIED BY ANNOTATED (---) IS FOR CONCEPT PURPOSES ONLY. FINAL CONTOUR AND SIZE OF DRAINAGE PIPES, CHANNELS AND WATER QUALITY FEATURES SHALL BE DETERMINED DURING THE CONSTRUCTION PLAN DESIGN PROCESS. DRAINAGE FACILITIES SHALL CONFORM TO 600 REQUIREMENTS, USE OF EX. DRAINAGE CONNECTIONS & STORM WATER REQUIREMENTS SHALL BE COORDINATED WITH MDC.
- 5) THE DEVELOPMENT LIES IN THE CAMP BAYLOR (PRE. DISTRICT).
- 6) NO PORTION OF THE SUBJECT PROPERTY LIES WITHIN A FLOOD HAZARD AREA PER FEMA'S FIRM MAPING (2111) (ISSUED NOV. DECEMBER 5, 2005).
- 7) ALL SITE LIGHTING SHALL BE SHIELDED AND DIRECTED DOWNWARD AND AWAY FROM ALL ADJACENT PROTECTED AREAS.
- 8) ALL LIGHTING FIXTURES, TRANSFORMERS, AND UNITS TO BE DESCRIBED IN COMPLIANCE WITH CHAPTER 10 OF IAPUDING REGULATIONS FOR OUTDOOR LIGHTING. LIGHTING SHALL BE PLACED DURING CONSTRUCTION TO PREVENT PARTICULATE MATTER FROM DRAGGING EXISTING ROADWAY PROPERTIES.
- 9) ENCROACHMENT PERMIT AND BOND ARE REQUIRED BY MPA FOR ANY WORK WITHIN RIGHT-OF-WAY.
- 10) AN EROSION PLAN WILL BE SUBMITTED TO MDC FOR APPROVAL PRIOR TO ANY CONSTRUCTION ACTIVITY.
- 11) SITE SUBJECT TO MDC'S REVIEW. MDC PERMIT FILE.
- 12) THE FINAL DESIGN OF THIS PROJECT MUST MEET ALL MDC WATER QUALITY REGULATIONS ESTABLISHED BY MDC. THE CONSTRUCTION DESIGN SHALL BE COORDINATED WITH MDC TO PREVENT SCOUR OF EXISTING BEST MANAGEMENT PRACTICES.

LEGEND

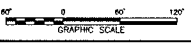
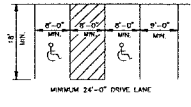
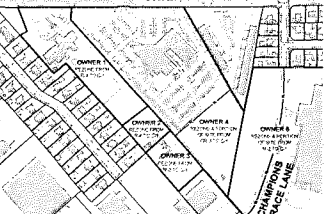
---	EX. PROPERTY LINE
---	EX. FENCE
---	EX. OVERHEAD (ELECTRIC)
---	EX. SANITARY SEWER
---	EX. EDGE OF PAVEMENT
---	PR. STORM SEWER
---	PR. SANITARY SEWER
---	PR. SANI. CONNECTION
---	PR. CONCRETE
---	EX. EDGE OF PAVEMENT
---	PR. FENCE
---	PR. SUI FENCE
---	PR. BRADING
---	EX. BRADING
---	BOND OF EX. BUILDING

EROSION CONTROL NOTES

THE APPROVED EROSION PREVENTION AND SEDIMENT CONTROL (E.P.S.C.) PLAN SHALL BE IMPLEMENTED PRIOR TO ANY LAND DISTURBING ACTIVITY ON THE CONSTRUCTION SITE. ANY MODIFICATIONS TO THE APPROVED E.P.S.C. PLAN MUST BE REVIEWED AND APPROVED BY MDC'S PRIVATE DEVELOPMENT REVIEW OFFICE. SWAMP SMITH SHALL BE NOTIFIED FOR THE PLAN AND SWAMP SMITH'S APPROVAL MUST BE OBTAINED PRIOR TO ANY CONSTRUCTION ACTIVITY. ANY CHANGES TO THE E.P.S.C. PLAN MUST BE APPROVED BY MDC AND SWAMP SMITH. CONSTRUCTION AREAS ADJACENT TO PUBLIC ROADWAYS, SIDE PAVED ONTO THE ROADWAY SHALL BE REMOVED DAILY.

SOIL DISBURSERS SHALL BE LOCATED AWAY FROM STREAMS, PONDS, SWALES, AND DITCH BASINS. SOIL DISBURSERS SHALL BE STAKED, REPLENISHED AND MAINTAINED THROUGHOUT USE OF SITE FENCE. WHERE CONSTRUCTION OR LAND DISTURBANCE ACTIVITY WILL BE TEMPORARILY CEASED ON ANY PORTION OF A SITE, TEMPORARY SITE STABILIZATION MEASURES SHALL BE INSTALLED AS SOON AS PRACTICABLE BUT NO LATER THAN 14 CALENDAR DAYS AFTER THE ACTIVITY HAS CEASED.

STORMWATER DRAINAGE WATER ENGINEERS DURING THE DESIGNING, BUILDING, OR OTHER OPERATION ACTIVITIES SHALL BE REQUIRED TO A SEDIMENT TRAPPING DEVICE PRIOR TO BEING DISCHARGED INTO A STREAM, POND, SWALE, AND/OR CATCH BASIN.



UTILITY NOTE:
 ALL UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. UTILITY SERVICE LINES ARE NOT SHOWN THE LOCATION OR DEPTH OR CONNECTION SHALL BE DETERMINED BY THE OWNER. THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE UTILITY COMPANIES AND PROVIDING THE LOCATION OF EXISTING BELOW-GROUND UTILITIES (IE. GAS, ELECTRIC, WATER, GAS, AND SEWER) TO THE DESIGNER. THE DESIGNER SHALL BE RESPONSIBLE FOR RECORDING THESE UTILITIES WITH ALL UTILITY REQUIREMENTS SET FORTH ON THE PLANS IN THE TECHNICAL SPECIFICATIONS AND SPECIAL PROVISIONS.

Revision	Date	Description	Drawn by	Checked by	Approved by

BENCHMARK
 TOPOGRAPHICAL INFORMATION SHOWN HEREON WAS OBTAINED FROM DGC DATA AND DOES NOT CONSTITUTE A SURVEY. A DETAILED SURVEY WILL BE PERFORMED AT THE TIME OF CONSTRUCTION PLAN PREPARATION.

HERITAGE ENGINEERING, LLC
 1411 South 10th Street
 Louisville, KY 40203
 (502) 261-1111
 (502) 261-1112
 (502) 261-1113 Fax

BELLAIRME UNIVERSITY
 2000 NEWBURG ROAD
 LOUISVILLE, KY 40202
 (502) 261-1111

PRE-APP DEVELOPMENT PLAN
 FOR
BELLAIRME SPORTS PARK
 2000 NEWBURG ROAD
 LOUISVILLE, KENTUCKY

JOB NO.: 15062
HORIZ. SCALE: 1"=60'
VERT. SCALE: N/A
DESIGNED BY: JMC
DRAWN BY: JMC
CHECKED BY: JMC
DATE: MARCH 18, 2016

SHEET
C07

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