

August 19, 2008

Ms. Jeannie A. Welliver  
Project Development Manager  
City of Richmond  
Department of Economic Development  
500 East Franklin Street, Suite 800  
Richmond, Virginia 23219

Subject: Proposal for Geotechnical Engineering Services, Lumpkin's Jail  
Archaeological Excavation Site, East Broad Street at I-95,  
Richmond, Virginia (Schnabel Proposal No. P8130249)

Dear Ms. Welliver:

Schnabel Engineering, LLC is pleased to submit two copies of our proposal for geotechnical engineering services for this project.

## **SITE DESCRIPTION**

The project site is located on the east side of Interstate I-95, just south of East Broad Street in Richmond, Virginia. There is a VDOT retaining wall supporting the I-95 embankment along the west side of the site. The area east of the retaining wall is asphalt paved. The site for the proposed project occupies an approximate rectangular footprint with shorter side about 80 ft away from the wall into the parking lot, and the longer side about 160 ft along the wall.

## **PROJECT DETAILS**

The project includes an archeological excavation for Lumpkin's Slave Jail. We understand the depth of excavation will vary from about 6 ft at the north end to about 10 ft at the south end of the site. We also understand that it is desired to excavate as close as possible to the existing retaining wall.

*"We are committed to serving our clients by exceeding their expectations."*

The scope of this project includes our stability evaluation of the retaining wall with respect to the proposed excavation. We plan to provide recommendations for the location of the westernmost extent of the archaeological excavation and slope angle for the excavation. We will provide this information considering a minimum factor of safety of 1.3. If the archaeological excavation needs to extend as close as practical to the existing retaining wall, we will provide design plans and specifications for the shoring system.

## **OBJECTIVE AND SCOPE**

### **Geotechnical Engineering Analysis and Recommendations**

The objective of this proposed study is to provide geotechnical engineering design recommendations for this project. This study will be conducted under the supervision of a Professional Engineer licensed in the Commonwealth of Virginia. Our proposed scope of services includes the following:

- Subsurface exploration including three test borings with Standard Penetration Tests each to a depth of 40 ft. We will install a water observation well in one of the borings to a depth of 40 ft and drill three hand augers to a depth of 5 ft on the embankment. The hand augers will allow us sample the embankment fill and help us develop cross sections for our stability analysis.
- Field engineering including site reconnaissance, boring stakeout and logging of the subsurface exploration.
- Soil laboratory testing including 30 moisture contents, four Atterberg Limit tests and four gradation tests.
- A geotechnical engineering study.

The geotechnical engineering study will include the following:

- Estimated subsurface conditions and ground water levels within the area explored.
- Evaluation of the global stability of the proposed excavation for several iterations as to the location and depth of the westernmost boundary of the excavation. We will provide recommendations for the location of the westernmost extent of the archaeological excavation and excavation slope angle considering a required factor of safety of 1.3.
- Construction considerations related to the implementation of our recommendations.

Services not specifically identified above are not included in the scope of services under this agreement. The following services are also not included in our proposed scope but can be provided upon request: attendance at client review meetings and progress meetings, geotechnical and materials observation and testing during construction, and environmental studies.

We understand rights of entry and access to the site will be provided to us. This proposal considers that the proposed boring locations are accessible with a truck-mounted drill rig. Progress of on-site work may be dependent upon weather and ground conditions or other factors beyond our control. Some damage to the ground surface may result from drilling operations. We will attempt to reduce any such damage, but no restoration is included other than backfilling the borings and patching the asphalt.

### **Geostructural Design of Shoring**

Our scope of services also includes the preparation of plans and specifications for shoring that might be needed to support the existing retaining wall. We understand these services will be needed in the event the archaeological excavation needs to extend up to the face of the existing retaining wall. We anticipate the shoring will include soldier piles with wood or precast concrete lagging. We will include tiebacks in the design if needed to provide support for the wall.

### **ESTIMATED FEE**

Our estimated fee for the proposed services is as follows:

• Geotechnical Engineering Study	\$10,200.00
• Geostructural Design of Shoring	<u>\$10,100.00</u>
Total Estimated Fee	<b>\$20,300.00</b>

A breakdown of this fee is in Attachment 1. This fee is for the specific scope of services detailed herein. If any additional services are needed, the fee for the additional work will be based on the unit prices shown in our City Contract No. 06077-1, Geotechnical and Materials Testing Services, dated July 26, 2006.

Invoicing and payment will be according to our City Contract. The Terms and Conditions of our City Contract will apply to this work. Consultation after submission of our report will be provided at your request at our standard hourly rates in effect at the time.

We appreciate the opportunity to submit this proposal and are looking forward to a cordial working relationship for this project. This proposal is valid for 90 days from the date shown. Please indicate your acceptance of this proposal by issuing a purchase order for this work.

Very truly yours,  
SCHNABEL ENGINEERING, LLC



Edward G. Drahos, P.E.  
Principal

JK:EGD:mr

Attachments:

1. Breakdown of Estimated Fee

ACCEPTED:	CLIENT:	<u>CITY OF RICHMOND</u>
	Name/Title:	_____
	Signature:	_____
	Date:	_____

**Estimated Fee Calculations**

**Proposal No:** P8130249

**Project Name:** Lumpkin Jail Site Stability Analysis

**Date:** August 19, 2008

**1.0 Professional Personnel**

**1.1 Field Engineering**

Graduate Personnel (IV.I.1) 20 hrs @ \$ 87.13 \$ 1,742.60

Subtotal, Part 1.1 \$ 1,742.60

**1.2 Geotechnical Engineering Study**

Registered Professional (IV.I.2) 32 hrs @ \$ 143.50 \$ 4,592.00

Graduate Personnel (IV.I.1) 8 hrs @ \$ 87.13 \$ 697.04

Subtotal, Part 1.2 \$ 5,289.04

**1.2 Geostructural Design of Shoring System**

Registered Professional (IV.I.2) 52 hrs @ \$ 143.50 \$ 7,462.00

Graduate Personnel (IV.I.1) 30 hrs @ \$ 87.13 \$ 2,613.90

Subtotal, Part 1.2 \$ 10,075.90

Total, Part 1 \$ 17,107.54

**2.0 Consultants/Subcontractors**

**2.1 Subsurface Exploration**

Mob/Dem (IV.E) 1 EA @ \$ 512.50 \$ 512.50

Boring, 2¼, Truck, 0-20 ft (IV.B.1.a) 60 LF @ \$ 12.81 \$ 768.60

Boring, 2¼, Truck, >20 ft (IV.B.1.b) 60 LF @ \$ 14.35 \$ 861.00

Probe 3¼, Truck, 0-20 ft (IV.B.2.a) LF @ \$ 9.23 \$ -

Probe 3¼, Truck, >20 ft (IV.B.2.b) LF @ \$ 10.25 \$ -

Shelby Tube, 3" (IV.C.2) EA @ \$ 184.50 \$ -

Water Observation Well (IV.G) 40 LF @ \$ 6.15 \$ 246.00

PID (Not in Contract) Day @ \$ 100.00 \$ -

Subtotal, Part 2.1 \$ 2,388.10

Total, Part 2 \$ 2,388.10

**3.0 Unit Billings**

**3.1 Soil Laboratory Testing**

Natural Moisture (III.C.4)	30	@	\$ 8.20	\$	246.00
Atterberg Limits and Sieve (III.C.2)	4	@	\$ 139.40	\$	557.60
				\$	803.60
<b>Subtotal, Part 3.1</b>					<b>\$ 803.60</b>
<b>Total, Part 3</b>					<b>\$ 803.60</b>
<b>Total Parts 1-3</b>					<b>\$ 20,299.24</b>
<b>Total Estimated Fee</b>					<b>\$ 20,300.00</b>