advantage engineers

June 25th, 2014

Mr. Todd Bergey
Director of Support Services
Southern Lehigh School District
5775 Main Street
Center Valley, PA 18034

**RE: Proposal to Provide Geotechnical and Environmental Engineering Services**
**New Hopewell Elementary School**
**Upper Saucon Township, Lehigh County, Pennsylvania**
**Advantage Proposal No. 1400520.00**

Dear Mr. Bergey,

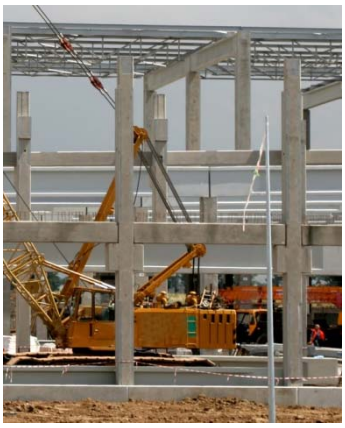
Accompanying, please find two (2) bound copies of our *Proposal to Provide Geotechnical and Environmental Engineering Services* for the above-referenced project. Our submission has also been forwarded to your attention electronically. We appreciate the opportunity to propose on this project and look forward to assisting the District toward successful completion. Should you have any questions or concerns regarding this information, please feel free to contact the undersigned

Respectfully Submitted,
**advantage engineers**

Darrick L. Kreischer, P.G.
Senior Project Manager

advantage engineers



# Proposal to Provide Geotechnical and Environmental Engineering Services
# New Hopewell Elementary School
# Upper Saucon Township, Lehigh County, Pennsylvania

Mr. Todd Bergey
Director of Support Services
Southern Lehigh School District
5775 Main Street
Center Valley, PA 18034

**June 25th, 2014**

6520 Stonegate Drive, Suite 110, Allentown, PA 18106 ▪ 610-366-7120 ▪ www.advantageengineers.com

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**RE: Proposal to Provide Geotechnical and Environmental Engineering Services**
**New Hopewell Elementary School**
**Upper Saucon Township, Lehigh County, Pennsylvania**
**Advantage Proposal No.: 1400520.00**

Dear Mr. Bergey:

In accordance with the request of Mr. Josh Grice of D'Huy Engineering, Inc. (DEI), Advantage Engineers, LLC (Advantage) is pleased to submit this proposal to provide geotechnical and environmental engineering services for the above referenced project.

## DESCRIPTION OF FIRM

Advantage Engineers, LLC is a full-service geotechnical and environmental engineering consulting firm staffed by professional engineers, geologists, and field technicians, which allows us to offer service and expertise unparalleled by our competition. We also maintain in-house soils and construction materials testing laboratories which allows for rapid turn-around of testing results.

The staff at Advantage has provided engineering services, including: Geotechnical Investigations & Reports, Construction Observation and Materials Testing, and Sinkhole Mitigation Services to numerous school districts over the past several years. Advantage is intimately familiar with capital improvement projects of this nature and your District's expectations, uniquely qualifying Advantage to complete the requested services for the New Hopewell Elementary School.

## PROJECT DESCRIPTION

The project will consist of constructing a new elementary school at 4625 West Hopewell Road in Upper Saucon Township, Lehigh County, Pennsylvania. The new school will measure approximately 60,000 square feet in plan area, and will be constructed adjacent to the existing school structure. Upon completion of the new construction, the existing school will be demolished. The project will also include the construction of new utility alignments, stormwater management facilities, and paved parking areas.

## SCOPE OF WORK

Our proposed scope of work for the project was developed based on the *Request for Proposal* (RFP) documents (DEI project No. 23501) dated June 3rd, 2014, issued by DEI.

For the purposes of this proposal, the scope of work has been separated into three (3) separate tasks described below:

- Task I – Preliminary Geotechnical Investigation
- Task II – Supplementary Geotechnical Investigation
- Task III – Phase I Environmental Investigation

The details included within each of these tasks are provided below.

## TASK I – PRELIMINARY GEOTECHNICAL INVESTIGATION

The objective of our work will be to determine the engineering characteristics and stratification of subsurface materials beneath the proposed structure and other relevant areas of the site, in order to provide preliminary foundation design criteria and construction recommendations for the project. This objective will be accomplished through completion of a scope of work which will include a detailed subsurface field investigation, laboratory testing program, geotechnical engineering analysis, and report preparation. Specific items included within each of these tasks are presented below.

### Subsurface Field Investigation

#### *Test Borings and Auger Probes*

A total of 8 standard earth borings will be completed within truck-accessible locations requested by DEI. The test borings will each extend to a depth of approximately 25 feet beneath existing surface elevations or until auger refusal is encountered. Groundwater elevations, if encountered, will be carefully monitored and recorded. Should soft, unsuitable soils, or fill, be identified at the scheduled test boring termination depths, the test borings will be advanced until suitable bearing strata are identified, and DEI will be notified.

Should the bedrock surface be encountered before the scheduled test boring termination depths, a minimum 5 L.F. rock core will be recovered from the test boring location. Rock coring will be conducted with $N_x$-size coring equipment, in accordance with all applicable ASTM guidelines. Information regarding percent recovery, RQD, drilling rates, any loss of drill fluids, and the presence of any voids or soil seams will be carefully measured and recorded. For budgetary purposes, 20 L.F. of rock coring is included in our lump sum cost for Task I.

Additionally, a total of 6 auger probes will be completed within truck-accessible areas specified by DEI. 5 of the 6 proposed auger probe locations are denoted on the plan titled *EX-1 Existing Site*, provided with the RFP, dated 5/29/14. Auger probes will be advanced to a depth of approximately 15 feet beneath existing surface elevations or until auger refusal is encountered on bedrock or obstructions.

The test borings and auger probes will be completed using a truck-mounted drill rig equipped with hollow-stem augers and split-spoon samplers. Samples of the soils encountered in the test borings will be recovered at suitable intervals and the Standard Penetration Resistance Test (SPT) values will be recorded. All sampling procedures will be performed in accordance with the applicable American Society for Testing and Materials (ASTM) standards. The test borings and auger probes will be located in the field by Advantage personnel, based upon scaled drawings provided by DEI.

### Laboratory Analysis of Soils

In order to define the physical characteristics of the soils encountered, it is proposed that laboratory analysis of soils consisting of a USCS classification be conducted, in accordance with ASTM D2487 standards and specifications. This testing will include: Atterberg limits determination, mechanical gradation analysis, and natural moisture content testing (formerly ASTM D422, 423, and 424). It is proposed that two (2) standard classification tests be performed on representative soil samples obtained from the site.

### Geotechnical Engineering Analysis and Preliminary Report

A geotechnical engineering analysis and preliminary report presenting our results and recommendations, based on the scope of work outlined above, will be prepared which will include the following:

- Geologic Site Evaluation (including terrain description, brief geological history, and surface drainage conditions)

- Description of Subsurface Conditions (including description of exploration and sampling methods, soil identifications and classifications)
- Results of Geotechnical Analysis
- Test Boring Logs & Test Boring Profiles
- Auger Probe Logs
- Subsurface Investigation Location Plan
- Results of All Laboratory Testing
- Recommendations Concerning:
  Foundation Types (including)
  (a) Allowable Bearing Capacity Values
  (b) Placement Depths
  (c) Design Frost Depths
  (d) Preparation of Foundation Areas
  (e) Deep Foundation & Ground Modification Alternatives, if warranted
  Soil Strength Conditions
  (a) Stratification Characteristics and Correlated Soil Strengths
  (b) Potential for Construction and/or Differential Settlements (if building loads are provided)
  (c) Lateral Earth Pressure Design Criteria
  (d) Seismic Site Class in Accordance with IBC
  (e) Short-term and one-second Spectral Response Acceleration
  General Earthwork Criteria
  (a) Use and Treatment of In-Situ Materials for Controlled Backfill
  (b) Control of Surface Runoff Water and Groundwater
  (c) Quality Control Requirements during Foundation Construction
  (d) Subgrade Preparation for Slabs and Pavements
- Depth of Rock Excavation, if warranted, and Characteristics of Rock to be Removed
- Impact of Groundwater on Construction
- Suitability of On-Site and Off-Site Soils for use as Structural Fill
- Modulus of Subgrade Reaction for Design of Floor Slabs and Pavements, and Recommendations relative to Drainage
- Engineered Fill Material Requirements for Building Foundations and Slabs with Compaction Requirements and any other Information Necessary for Foundation and Site Construction
- Vapor Retarder Recommendations related to Slabs and Subbase
- Pavement Design for Parking Areas and Drive Lanes using Estimated CBR Value (if traffic loading data is provided)
- Letter to Pennsylvania Department of Education Documenting our Evaluation of the Site for the Presence of Oil and Gas Wells, as well as Mining and Subsidence Activities
- Geology Study for Compliance with Local Ordinance, if warranted

Five (5) copies of the preliminary report will be delivered to DEI within approximately 45 days of receipt of written notice-to-proceed. An electronic copy shall also be provided. The report will be prepared and signed by a professional engineer, licensed in the Commonwealth of Pennsylvania and qualified in geotechnical engineering. This schedule may be impacted by weather conditions or site conditions beyond the control of Advantage.

**TASK II – SUPPLEMENTARY GEOTECHNICAL INVESTIGATION**

Once an Architectural Design team has been selected for the project, and a Schematic Design has been selected, a supplementary geotechnical investigation shall be performed. This objective will be accomplished through completion of a scope of work which will include a detailed subsurface field investigation, laboratory testing program, geotechnical engineering analysis, and final report preparation. The scope of work on this phase of the project will include the continuation of the services outlined in Task I. A final report based on the findings and results from Task I and Task II including complete field investigations, all laboratory analyses of

soils and the geotechnical analyses will be included in the final report. Specific items included within each of these tasks are presented below.

**Subsurface Field Investigation**

***Test Borings, Auger Probes & Test Pits***

A total of 12 standard earth borings will be completed at the approximate truck-accessible locations determined upon the completion of the Schematic Design of the proposed new Elementary School. The test borings will each extend to a depth of approximately 25 feet beneath existing surface elevations or until auger refusal is encountered. Groundwater elevations, if encountered, will be carefully monitored and recorded. Should soft, unsuitable soils, or fill, be identified at the scheduled test boring termination depths, the test borings will be advanced until suitable bearing strata are identified, and DEI will be notified.

Should the bedrock surface be encountered before the scheduled test boring termination depths, a minimum 5 L.F. rock core will be recovered from the test boring location. Rock coring will be conducted with $N_x$-size coring equipment, in accordance with all applicable ASTM guidelines. Information regarding percent recovery, RQD, drilling rates, any loss of drill fluids, and the presence of any voids or soil seams will be carefully measured and recorded. Rock coring will proceed until a minimum of 85% recovery is achieved, or at our discretion. For budgetary purposes, 40 L.F. of rock coring is included in our lump sum cost for Task II.

Additionally, a total of 12 auger probes will be completed at truck-accessible locations specified by DEI. Auger probes will be advanced to a depth of approximately 15 feet beneath existing surface elevations or until auger refusal is encountered, and will be placed at the approximate locations to be determined upon the completion of the Schematic Design portion of the project.

The test borings and auger probes will be completed using a truck-mounted drill rig equipped with hollow-stem augers and split-spoon samplers. Samples of the soils encountered in the test borings will be recovered at suitable intervals and the Standard Penetration Resistance Test (SPT) values will be recorded. All sampling procedures will be performed in accordance with the applicable American Society for Testing and Materials (ASTM) standards. The test borings and auger probes will be located in the field by Advantage personnel, based upon scaled drawings provided by DEI or the Architect.

It is assumed that these test borings and auger probe locations will be situated within areas that are truck accessible, or may be offset to the closest truck accessible area.

It is also understood that the Client may request 4 additional 20-foot-deep test borings while we are mobilized on site.

***Stormwater Infiltration Testing***

A total of six (6) exploratory test pits will be completed to a maximum depth of approximately ten (10) feet below site grades. The locations will be determined by Advantage and DEI, following the auger probe investigation. Test pits will be conducted using a rubber-tire backhoe in an effort to characterize the subsurface soils, locate possible limiting zones, and assess groundwater conditions.

Stormwater infiltration testing will be completed in these six (6) exploratory test pits (2 tests per excavation), at maximum depths of up to approximately 8 feet below existing site grades, using the double-ring method.

Additionally, six (6) more test pit locations will be selected for stormwater infiltration testing. This testing may be done at the surface, or within a test pit conducted at these locations.

During excavation of the test pits, a representative of DEI will be consulted regularly to make any adjustments to desired infiltration test depths, based upon the subsurface conditions encountered.

In total, a maximum of twelve (12) test pits will be excavated, and a maximum of twenty four (24) double-ring infiltration tests shall be performed.

It is also understood that the Client may request 2 additional test pits, while we are mobilized on site.

All test pit excavations will be sloped and/or benched as required to permit safe access for completion of the infiltration testing by our staff. The invert elevations at each test locations will be provided by DEI, prior to and during our investigation. It is understood that no test depth greater than 8 feet shall be requested. All stormwater infiltration testing will be completed in accordance with the PA DEP Best Management Practices guidelines.

Backfilling of the test borings, auger probes, and test pits will be performed using the auger cuttings/spoils from the excavations. The surfaces of test boring and auger probe locations within asphalt or concrete areas will be patched in kind with cold patch or Quikcrete. It must be emphasized that final grading, reseeding, maintenance, or other landscaping of test pit, test boring, and auger probe locations is specifically excluded from our scope of work. Supervision and monitoring of the field investigation operation shall be provided by a qualified representative of Advantage.

**Laboratory Analysis of Soils**

In order to define the physical characteristics of the soils encountered, it is proposed that laboratory analysis of soils consisting of a USCS classification be conducted, in accordance with ASTM D2487 standards and specifications. This testing will include: Atterberg limits determination, mechanical gradation analysis, and natural moisture content testing (formerly ASTM D422, 423, and 424). It is proposed that two (2) standard classification tests be performed on representative soil samples obtained from the site.

**Geotechnical Engineering Analysis and Final Report**

A geotechnical engineering analysis and report presenting our results and recommendations, based on the scope of work outlined above, will be prepared which will include the following:

- Geologic Site Evaluation (including terrain description, brief geological history, and surface drainage conditions)
- Description of Subsurface Conditions (including description of exploration and sampling methods, soil identifications and classifications)
- Results of Geotechnical Analysis
- Test Boring Logs & Test Boring Profiles
- Auger Probe Logs
- Test Pit Logs
- Subsurface Investigation Location Plan
- Results of All Laboratory Testing
- Recommendations Concerning:
  Foundation Types (including)
  (a) Allowable Bearing Capacity Values
  (b) Placement Depths
  (c) Design Frost Depths
  (d) Preparation of Foundation Areas
  (e) Deep Foundation & Ground Modification Alternatives, if warranted
  Soil Strength Conditions
  (a) Stratification Characteristics and Correlated Soil Strengths

(b) Potential for Construction and/or Differential Settlements (if building loads are provided)
(c) Lateral Earth Pressure Design Criteria
(d) Seismic Site Class in Accordance with IBC
(e) Short-term and one-second Spectral Response Acceleration

General Earthwork Criteria
(a) Use and Treatment of In-Situ Materials for Controlled Backfill
(b) Control of Surface Runoff Water and Groundwater
(c) Quality Control Requirements during Foundation Construction
(d) Subgrade Preparation for Slabs and Pavements

- Depth of Rock Excavation, if warranted, and Characteristics of Rock to be Removed
- Impact of Groundwater on Construction
- Suitability of On-Site and Off-Site Soils for use as Structural Fill
- Modulus of Subgrade Reaction for Design of Floor Slabs and Pavements, and Recommendations relative to Drainage
- Engineered Fill Material Requirements for Building Foundations and Slabs with Compaction Requirements and any other Information Necessary for Foundation and Site Construction
- Vapor Retarder Recommendations related to Slabs and Subbase
- Pavement Design for Parking Areas and Drive Lanes using Estimated CBR Value (if traffic loading data is provided)
- Letter to Pennsylvania Department of Education Documenting our Evaluation of the Site for the Presence of Oil and Gas Wells, as well as Mining and Subsidence Activities
- Geology Study for Compliance with Local Ordinance, if warranted
- Recommendations on effect of stormwater infiltration to downstream buildings, residences, and other impacts

Five (5) copies of the final report will be delivered to DEI within approximately 60 days from authorization after schematic design. An electronic copy shall also be provided. The report will be prepared and signed by a professional engineer, licensed in the Commonwealth of Pennsylvania and qualified in geotechnical engineering. This schedule may be impacted by weather conditions or site conditions beyond the control of Advantage.

**TASK III – PHASE I ENVIRONMENTAL SITE ASSESSMENT**

The objective of the proposed scope of work for this task will be to identify recognized environmental conditions associated with the referenced property. This objective will be accomplished through completion of a Phase I ESA conducted in accordance with the American Society for Testing and Materials (ASTM) E 1527-05 document titled "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process".

The objective of this task will be to identify recognizable environmental conditions associated with the referenced property.

The ESA will include the following activities:

- Obtain and review selected historical aerial photographs, if available.
- Research and review available background information (provided to us and from in-house data base systems) regarding the subject property in order to identify areas and/or items of potential concern relative to contamination or storage of hazardous waste. We will coordinate a computer search of various pertinent databases (including Sanborn maps).
- Contact state and local agencies regarding the availability of files for the subject site and review the files if deemed appropriate and practicable.

- Completion of a title search, if results of a title search are not provided to Advantage by the client or obtained through completion of the local municipality review described below.
- Visit the site and perform a visual reconnaissance to identify evidence of recognized environmental conditions and/or areas of concern. The reconnaissance will include readily visible and accessible areas of the site only.
- Interview one or more persons identified as knowledgeable of historical operations, if such interview can be arranged in a timely manner by the client.

It is emphasized that our findings and conclusions will be based on the historic data readily available to our project team and the specific conditions observed (and documented) during our site inspection. No attempt will be made to comment on conditions beyond those documented in our Phase I ESA report and certification of the property is not made or implied in this regard.

*Special Note Regarding Procedural Changes for "All Appropriate Inquiry"*

The Small Business Liability Relief and Brownfields Revitalization Act of 2002 mandated that the United States Environmental Protection Agency (USEPA) develop a rule to establish procedures that a person claiming liability relief as an "innocent purchaser", a "bona fide prospective purchaser" or a "contiguous landowner" must follow. The 2002 legislation identified the assessment mechanism as the ASTM International E 1527-00 "Standard for Environmental Site Assessments: Phase I Environmental Site Assessment Process". USEPA developed the All Appropriate Inquiry Rule (the Rule), which became effective November 1, 2006. The Rule also identifies the ASTM Standard as the assessment mechanism to demonstrate "All Appropriate Inquiry". ASTM worked closely with the USEPA so that a revised Standard (E 1527-05) was prepared to mirror and implement the new rule. Advantage will perform the ESA in a manner consistent with ASTM Standard E 1527-05.

Advantage notes that the updated ASTM ESA Methodology generates added responsibility and requirements of the client or "User" of the report to provide the environmental professional with adequate site information. The AAI rule requires that the *User* provide specific information relative to the site in order to obtain the Landowner Liability Protection. Attachment 2 provides a questionnaire regarding this information that must be provided to Advantage to ensure the ESA meets the definition of "All Appropriate Inquiry".

This proposal assumes that the following information and arrangements will be provided to Advantage prior to initiation of the ESA:

- Completed Attachment 2- AAI User Questionnaire.
- All documents and information known to you that relate to the identity, location, quantity, nature or characteristics of any suspected or known hazardous substances and petroleum products at, on or under the site.
- Copies of any environmental permits related to current and past site operations.
- Permission and arrangements for site access.
- Identification of appropriate persons to be interviewed regarding past and present site operations and arrangements for the interview(s).
- Copies of property chain of title record and any deeds.
- Copies of all available site plans and drawings.
- Copies of, or access to, any reports of environmental activities conducted at the site.
- Copies of any correspondence with environmental regulators regarding site conditions.

Upon completion of the ESA, Advantage will prepare a concise report that documents the findings of the assessment activities performed. The report will include a description of the work performed, identification of evidence regarding the presence or absence of recognized environmental conditions in connection with the site, limitations, findings and conclusions as appropriate. Advantage will rely on the documents and information provided; we assume no responsibility or liability for their accuracy or completeness. Further, it is

possible that due to site-specific limitations certain recognized environmental conditions may not be visible. Advantage provides no guarantee that the ESA will identify all recognized environmental conditions associated with the site.

Advantage will make all reasonable attempts to obtain specified site information to complete the ESA using information provided by the user and/or through searches/inquiries through sources noted above. The ESA Report will identify encountered data gaps and/or deficiencies as defined by the new ASTM Methodology/AAI requirements. Upon your request, if data gaps are identified that require resolution, Advantage will conduct additional investigation/inquiries on a Time and Materials basis in an attempt to resolve these gaps.

Five (5) copies of the Phase I ESA Report will be provided to DEI within approximately 45 days of receipt of written notice-to-proceed.

## FEE SCHEDULE

Fees associated with the above-referenced services are provided on the attached "Request for Proposal Form".

Appropriate Certificates of Insurance and Criminal Background Check Verifications will be provided to the Client upon award of the contract to Advantage.

## RESPONSIBILITIES OF CLIENT

The Client will provide right of entry to the site, as well as any associated project information. We will do our best to clear utilities including calling "the call before you dig" one-call system; however, the one-call system does not clear privately-owned utilities. Therefore, the Client is responsible for providing us with available utility information.

Advantage will have the drilling and excavating contractors backfill each test boring, auger probe, and test pit, as described herein, to original grade with the auger cuttings/excavation spoils, and test borings/auger probes will receive cap with cold patch (if within asphalt) and Quikcrete (if within concrete) before demobilizing from the site. However, should settlement occur, it will be the responsibility of the Client to maintain the grade at each boring/pit/probe location after we demobilize from the site. Further, final grading, reseeding, paving or landscaping of any test pit excavations will not be completed by Advantage and is the sole responsibility of the client.

The Client agrees to indemnify, hold harmless and defend Advantage and any of Advantage employees from and against all loss, injury, damage and legal liability, including attorney's fees and other costs of defense arising out of any utility damage or boring/probe/test pit settlement.

## LIMITATIONS

This proposal assumes the field investigation will be completed with the use of a truck-mounted drill rig and rubber-tire backhoe, and does not include additional work caused by unexpected subsurface conditions or by site conditions outside the control of Advantage. Advantage will require written Notice-to-Proceed prior to mobilizing to the project site.

Any costs associated with removal of the drill cuttings from the site are not included in the proposed fee. In addition, no site restoration, beyond backfilling of the test locations to the prevailing ground surface is included in this proposal.

Advantage will not be held responsible for the presence, removal, or other implied liabilities due to materials present on the site, either detected or not detected through the above outlined scope of work. Advantage

does not accept responsibility for the actions of others, the fees incurred by others, or site conditions out of its control.

We thank you for the opportunity to submit this proposal, and we look forward to working with you on this project. Should you have any questions or require any additional information, please do not hesitate to contact us.

Respectfully Submitted,
advantage engineers

Darrick L. Kreischer, P.G.
Senior Project Manager

**ACCEPTED BY:**

_____
Authorized Representative of Southern Lehigh School District

Date: _____

## ADVANTAGE ENGINEERS, LLC
## GENERAL CONDITIONS OF SERVICE

| | |
|---|---|
| Client: | Southern Lehigh School District |
| Project: | New Hopewell Elementary School<br>Upper Saucon Twp., Lehigh Co., Pennsylvania |
| Project Number: | 1400520.00 |
| Date: | June 25th, 2014 |

The terms and conditions which govern the performance of services pursuant to this Agreement are set forth below.

**INVOICES.** Advantage shall submit invoices monthly and payment in full is due upon presentation of the final report. Time beyond the scope of work outlined in the proposal shall be billed at a minimum increment of 0.25 hour.

**INTEREST.** An account will be considered "PAST DUE" if the invoice is not paid in full within 30 calendar days of the invoice date. If any invoice is not paid in full, the Client shall pay as interest an additional charge of 1.5% (or the maximum allowable by law, whichever is lower) per month of the PAST DUE amount. Payment after that shall first be applied to accrued interest and then to the unpaid principal.

**SUSPENSION OF SERVICES.** Once a payment is PAST DUE Client's non-payment shall be deemed to be in breach of this Agreement or in breach of any other Agreement between Client and Advantage. Advantage may therefore suspend performance of services at any time; and Advantage shall have no liability whatsoever to the Client for any costs or damages resulting from such suspension.

**COLLECTION COSTS**. In the event legal action is necessary to enforce the payment provisions of this Agreement, Advantage shall be entitled to recover from the Client the reasonable attorneys' fees, court costs and expenses incurred by Advantage in connection therewith.

**FEE DURATION.** The proposed fees set forth in this Agreement shall be open for acceptance for 90 days from the above date. If the Agreement is signed after that date, the proposed fees may be adjusted prior to commencement of services.

**SCOPE OF SERVICES**. A description of the services to be provided by Advantage are set in the Proposal/Scope of Services. If additional services become necessary during the course of the project, Advantage can perform such additional services in accordance with a written Agreement between the Client and Advantage setting forth the additional services and fees.

**STANDARD OF CARE**. The standard of care for services performed or furnished by Advantage under this Agreement will be the care and skill ordinarily used by members of the same profession practicing under similar conditions at the same time and in the same locality based on facts and information available at the time services are provided.

**INDEMNIFICATION**. Advantage agrees subject to the provisions herein, to indemnify and hold the Client harmless from any damage, liability or cost to the extent caused solely by Advantage's negligent acts, errors or omissions in the performance of professional services under this Agreement. The Client agrees to indemnify and hold Advantage harmless from any damage, liability or cost (including reasonable attorneys' fees and costs of defense) to the extent caused by the Client's negligent acts, errors or omissions and those of his or her contractors, subcontractors or consultants or anyone for whom the Client is legally liable. Advantage is not obligated to indemnify the Client for the Client's own negligence.

**LIMITATION OF LIABILITY**. Client and Advantage recognize and agree that Advantage's liability for any and all claims or actions, regardless of how arising, shall be limited to the total sum of $1,000,000. Client hereby releases Advantage from any liability above such amount. Such claims and causes include, but are not limited to negligence, professional errors or omissions, strict liability, breach of contract or breach of warranty. In no event shall Advantage be liable for any incidental, indirect or consequential damages, including commercial loss, or lost profits resulting from any Service furnished under this agreement.

**SITE ACCESS.** It is assumed that there will be free and uninterrupted access to and from the site in question for personnel and motor vehicle equipment during the course of work. If work is delayed or interrupted because of access difficulties, an additional $200/hour rate will be charged for time lost. (Where clearing trees and other debris is required, time will be charged at the above stated rate.)

**SITE INFORMATION.** It shall be the responsibility of the client to supply all available information regarding underground utilities to Advantage. If this is an agreement for Advantage to provide test pits, Advantage hereby represents that the test pits taken provide information regarding only a very small portion of the project area. Advantage, on the basis of the information provided by these test pits, will use its professional expertise to endeavor to project the nature and extent of subsurface conditions but the accuracy of such projections is limited by the number of test pits taken. Owner has been advised that additional test pits may be done at an additional cost but has opted to engage Advantage to perform the number of test pits agreed upon with the understanding of the limitations on the conclusions that can be reached based upon that number of test pits.

**SOIL SAMPLES.** Soil samples will be discarded 90 days after completion of our field work unless otherwise directed by the client. Soil samples, during this 90-day period, may be picked up by the client or his/her representative at our soil mechanics laboratory in Mechanicsburg, Pennsylvania.

**ACCESSIBILITY.** It is understood that right-of-entry exists, and that all available underground utility information will be provided to Advantage prior to our mobilization. Advantage's drilling subcontractor will backfill each test pit to the original grade before demobilizing from the site. Should settlement occur, it will be the responsibility of the client to maintain each boring at grade, after the drilling subcontractor demobilizes from the site.

**OWNERSHIP AND REUSE OF DOCUMENTS**. All reports, plans, specifications, computer files, field data, notes and other documents and instruments prepared by Advantage pursuant to this Agreement ("Documents") are and remain the property of Advantage as instruments of service with respect to this Agreement. The Documents are not intended or represented to be suitable for reuse by the Client or others on extensions of this project or on any other project. Any reuse of the Documents without the written approval by A Advantage will be at the Client's sole risk and without liability or legal exposure to Advantage. The Client shall indemnify, defend and hold harmless Advantage from and against any claims, damages or losses including attorney's fees and costs, arising out of or resulting there from.

Advantage grants to the Client and only the Client a non-exclusive, non-assignable and non-transferable license to reproduce, distribute and display the Documents, to the extent necessary for the Client to undertake construction and/or perform other acts that are all collectively required to construct the project. Advantage shall retain all common law, statutory and other reserved rights to the Documents, including the copyright thereto. Both the Client and Advantage agree that none of the services or Documents provided by Advantage are "work made for hire" as defined in the Copyright Act.

**GOVERNING LAW**. The laws of the Commonwealth of Pennsylvania will govern the validity of this Agreement, its interpretation and performance. Any litigation arising in any way from this Agreement shall be brought in the State or Federal Courts of Pennsylvania.

**ENTIRE AGREEMENT**. This Agreement (**consisting of (1) Proposal/ Scope of Services and (2) General Conditions**) comprises the final and complete agreement between the Client and Advantage. It supersedes all prior or contemporaneous communications, representations, or Agreements, whether oral or written, relating to the subject matter of this Agreement. Execution of this Agreement signifies that each party has read the document thoroughly, has had the opportunity to have questions explained by independent counsel and is satisfied with the terms and conditions contained herein. Amendments to this Agreement shall not be binding unless made in writing and signed by both the Client and Advantage.

# ATTACHMENTS

## REQUEST FOR PROPOSAL DOCUMENTS

## RESUMES OF KEY PERSONNEL

**REQUEST FOR PROPOSAL FORM**

Southern Lehigh School District
New Hopewell Elementary School
Report on Geotechnical Investigation
And
Phase One Environmental Investigation

June 2014

ADVANTAGE ENGINEERS, LLC
Name of Firm

6520 STONEGATE DRIVE, SUITE 110
Street Address

ALLENTOWN, PA 18106
City, State, Zip Code

JUNE 25TH, 2014
Date

Mr. Todd Bergey
Director of Support Services
Southern Lehigh School District
5775 Main Street
Center Valley, PA 18034

## PART 1 – PRELIMINARY GEOTECHNICAL INVESTIGATION

A Lump sum cost to provide the field investigation, laboratory analysis of soils, geotechnical analysis with report and all work as outlined in the attached request for proposal.

1) A. Cost including all testing, reports and analysis for 8 soil borings including 20 feet of rock drilling/sampling and 6 auger probes.

8,790.00 Dollars

2) Additional per diem cost for work performed on Saturday_____.

450.00 Dollars

3) Additional per diem cost for work performed on Sunday_____.

950.00 Dollars

Provide specifics of any proposed additional work or changes to the scope. Additional recommended testing (if necessary).

## PART 2 – SUPPLEMENTARY GEOTECHNICAL INVESTIGATION

A Lump sum cost to provide the field investigation, laboratory analysis of soils, geotechnical analysis with report and all work as outlined in the attached request for proposal.

1) A. Cost including all testing, reports and analysis for 12 soil borings including 40 feet of rock drilling/sampling and 12 auger probes _____.

13,250.00 Dollars

B Cost including 6 test pit investigations, 12 infiltration tests, 12 DRI Infiltration tests reports and analysis.

1,450.00 Dollars

B1 Cost including 6 additional test pit investigations, 12 infiltration tests, 12 DRI reports.

1,450.00 Dollars

C Additional cost for 4 additional borings (each 20 feet deep) while mobilized _____.

1,790.00 Dollars

D Additional cost for 2 test pits (12 feet deep) while mobilized

_____.

0 Dollars

Lump sum cost to provide items A, B, C and D: 16,490.00.

A+B+B1+C+D = 17,940.00 ___Dollars.

2) Additional per diem cost for work performed on Saturday_____.

450.00 Dollars.

3) Additional per diem cost for work performed on Sunday_____.

950.00 Dollars.

4) Unit cost per foot for additional borings in soil 16.50.

_____Dollars.

5) Unit cost per foot for additional borings in rock 55.00.

_____Dollars

6) Unit cost per foot for additional auger probe 11.00.

_____Dollars.

Provide specifics of any proposed additional work or changes to the scope. Additional recommended testing (if necessary).

**PHASE ONE ENVIRONMENTAL INVESTIGATION**

Fee for Phase One Environmental and Site Assessment.

Lump Sum Cost for Phase I Site Assessment:

$ 2,350.00 Dollars

Identify any additional scope or scope changes recommended.

Owner reserves the right to award any or all parts, if awards are made.

| DARRICK KREISCHER | 610 366 7120 | 610 366 7121 |
|---|---|---|
| Name (Please Print) | Telephone | Facsimile |

Signature

SD Project/23501/RFPs/Geotech RFP Hopewell

EX-1
EXISTING SITE

1" = 200'-0"

5/29/14

SOUTHERN LEHIGH SCHOOL DISTRICT

# HOPEWELL ELEMENTARY SCHOOL

D'HUY Engineering, Inc.

**REQUEST FOR PROPOSAL**
**DEI PROJECT NO. 23501**

**SOUTHERN LEHIGH SCHOOL DISTRICT**
**NEW ELEMENTARY SCHOOL AT WEST HOPEWELL ROAD**
**GEOTECHNICAL INVESTIGATION**
**AND**
**PHASE ONE ENVIRONMENTAL INVESTIGATION**

**JUNE 3, 2014**

## PROPOSALS

Sealed envelopes containing the proposals must be submitted no later than Wednesday, June 25, 2014 at 1:00 p.m. Mail or e-mail two copies to:

**Mr. Todd Bergey**
**Director of Support Services**
**Southern Lehigh School District**
**5775 Main Street**
**Center Valley, PA 18034**
E-Mail: bergeyt@slsd.org

Envelopes must be marked prominently on the outside, "Proposal for Geotechnical Investigation and Report on Phase I Environmental Investigation for the Proposed New Hopewell Elementary School"

D'Huy Engineering, Inc. (DEI) is the Southern Lehigh School District's (SLSD) Construction Manager. All work shall be coordinated with DEI.

Please contact Todd Bergey at 610-282-3121 or e-mail bergeyt@slsd.org to make arrangements for a site visit.

Please contact Josh Grice of D'Huy Engineering, Inc. at (610) 865-3000 or jag@dhuy.com to make arrangements for additional site visits and with any questions.

## PROJECT DESCRIPTION AND REQUIREMENTS

The proposed project is a new approximately 60,000 sq. ft. new elementary school building to be constructed on the existing site adjacent to the existing Hopewell Elementary School located at 4625 West Hopewell Road, Center Valley, Upper Saucon Township, Lehigh County. The existing building will be demolished after the new building is constructed. The project includes site work, building pad preparation, utilities, storm-water facilities, parking and demolition.

The project includes site work, building pad preparation, utilities, stormwater facilities, parking and demolition.

The Southern Lehigh School District requires all personnel not employed by the School District to have criminal background checks (Acts 34 and 151), FBI finger printing (Act 114) and the Public Works Employment Verifications performed prior to being permitted on School District property without a district representative escort. The successful bidder shall be required to submit these forms to the Southern Lehigh School District for approval prior to beginning work.

The contractor shall coordinate the schedule of work with the DEI. Weekend work may be required. The contractor shall provide an increase in per diem cost for Saturday work and an increase in per diem cost for Sunday work.

Contractor shall call the PA One Call System (1-800-242-1776) in compliance with Act 172 and Act 287 for the locations of underground utilities. If during site examination, layout, or drilling, the contractor should encounter any pipeline or other underground utilities, he shall prevent damage to the item and immediately notify the Geotechnical Engineer and DEI. The hole shall then be relocated at the direction of the Geotechnical Engineer.

## PART 1 – PRELIMINARY GEOTECHNICAL INVESTIGATION

### 1.1 SCOPE OF SERVICES

The scope of work on this phase of the project will include a complete field investigation, laboratory analysis of soils and a geotechnical analysis with a report.

As part of this proposal, include any additional recommended testing (borings, auger probes, etc.) to adequately define local geological conditions for the project design.

### 1.2 FIELD INVESTIGATION

**1.2.1** Eight (8) soil borings shall be made adjacent to the existing buildings at approximate locations shown on the attached site plan and after confirmation by the Geotechnical Engineer. The boring locations shall be verified with DEI prior to commencement of the work. All borings shall extend to a depth of twenty-five feet (25'-0) or to refusal (100 blows/3"). Borings shall not terminate in a soft zone of soil (less than 5 blows/foot). In such cases, extend borings into harder material after review and approval by DEI. Include in the proposal up to 20 feet of rock drilling/sampling.

**1.2.2** The borings located within areas of existing paving and concrete sidewalks shall be patched and sealed to prevent hazards for pedestrians or vehicles. All areas shall be returned to a condition suitable for the originally intended use including adding topsoil and reseeding where necessary.

**1.2.3** Six (6) auger probes with an average depth of 15 feet (90 linear feet total) shall be made based on the approximate locations shown on the attached site plan and after

confirmation with the Geotechnical Engineer. All auger probe locations shall be verified with DEI prior to commencement of work.

**1.2.4** The contractor shall provide all necessary drilling equipment, labor, materials, supplies, and permits for performing the described work in accordance with these specifications. The Contractor will be responsible for removal and replacement of any items as noted on drawings or as subsequently determined by Owner and D'Huy during the site visit.

**1.2.5** The test boring and auger probe locations shall be noted with a number system and shown on a site plan to be developed by the Geotechnical Engineer and submitted to DEI. The contractor shall accurately determine the position and surface elevation of each hole and shall do all location work. All test locations shall be verified with DEI prior to beginning work.

**1.2.6** Earth borings are to be taken by using dry sample boring methods. As each change in character of soil is encountered, beginning about two feet below grade and at not more than five foot intervals beyond the first sample, a sample of material shall be taken by a two inch O.D. split barrel sampler used to obtain blow count. The sampler shall permit procurement of "Standard Penetration Test" data (Number of blows required to advance the 2" sampler over the 12" interval from 6 to 18 inches using a 140 pound weight dropped 30''.) The recovered samples shall be immediately placed in a moisture tight screw top bottle and properly labeled for identification.

**1.2.7** Ground water evaluation shall be carefully noted for each boring; together with the date and hour each measurement was taken. If water is encountered, one subsequent reading of ground water levels shall be taken 24 hours later. If water is lost, depth of boring at a time of loss shall be recorded. If rock is encountered, Core borings may be required after prior review and approval by Owner or Owner's Representative. Submit additional costs for rock boring as indicated on the enclosed RFP form. If core borings are required they shall be made into encountered rock for a depth of five (5) feet, with suitable apparatus which will retain cores of not less than 2 1/8 inch diameter "M" series or equal; Care must be exercised to operate drill at such speeds and pressure that will assure satisfactory core recoveries and to maintain the core barrel in a thoroughly lubricated condition at all times. Cores recovered shall be preserved in suitable core boxes, properly labeled so that tops and bottoms of the cores from each hole are carefully marked.

**1.2.8** The boxes of soil and rock samples shall be retained by the Geotechnical Engineer.

**1.2.9** Provide a letter for the approval agencies that evaluates the site for the presence of oil and gas wells and mining or subsidence activities.

## 1.3 LABORATORY ANALYSIS OF SOIL

In order to define the physical characteristics of the soils encountered, laboratory analysis of soils consisting of a USCS classification are to be conducted in accordance with ASTM 2487 standards and specifications. This testing will include Atterberg limits determinations, mechanical gradation analysis and natural moisture tests. As a minimum, two standard classification tests are to be performed on two separate soil samples taken from different locations of the site.

## 1.4 GEOTECHNICAL ENGINEERING ANALYSIS AND REPORT

A geotechnical engineering analysis and report presenting the results and recommendations, based on the scope of work outlined above, will be prepared and is to include the following:

- Geologic Site Evaluation (including terrain description, brief geological history, and surface drainage conditions).
- Description of Subsurface Conditions (including description of exploration and sampling methods, soil identifications and classifications)
- Results of Geotechnical Analysis
- Test Boring Logs, Profiles and Location Plan
- Results of all Laboratory Testing:

Foundation Types (including)

a) Allowable Bearing Capacity Values
b) Placement Depths
c) Design Frost Depths
d) Preparation of Foundation Areas

Soil Strength Conditions

a) Stratification Characteristics and Correlated Soil Strengths
b) Potential for Construction and/or Differential Settlements

General Earthwork Criteria

a) Use and Treatment of In-Situ Materials for controlled Backfill
b) Control of Surface Runoff Water and Groundwater
c) Quality Control Requirements During Foundation Construction
d) Provide a recommendation for Slab and Pavement supports, including a modulus of subgrade reaction for design, and recommendation relative to drainage.
e) Earthwork recommendations for construction of load bearing fills, including an assessment of on-site soils to be excavated for use as fill, subgrade preparation, and compaction criteria, for building foundations, slabs, and landscaped areas.
f) Engineered fill material requirements for building foundations and slabs with compaction requirements and any other information necessary for foundation and site construction.

g) Vapor retarder recommendations related to slabs and sub-base.
h) Total and differential settlement values relative for the building.
i) Lateral Earth Pressures for Design of Walls below Grade, retaining walls or other retaining structures.
j) Depth of Rock Excavation, if required, and characteristics of rock to be removed. Recommendations including specifications for rock removal procedure and equipment.
k) Conclusions regarding the impact of groundwater on the structure.
l) Site classification per the 2009 International Building Code, Section 1613 'Earthquake Loads" and seismic site class for soil required by Table 20.3-1, ASCE 7 – 05. Provide short term and one second spectral response acceleration.
m) Provide geology study and information necessary for compliance with the local ordinances.
n) Provide paving design for parking areas and drives including estimated design CBR (coordinate with Borough standards where applicable).
o) Recommendations on effect of stormwater infiltration to downstream buildings, residences (basements) and other impacts.
p) Definition of suitable soil for use as fill from off-site sources using the Unified Classification System.

## 1.5 REPORTS

Five copies of a comprehensive report, including, but not limited to, the above information sealed by a registered professional engineer are to be submitted within 45 days of award to:

Josh Grice, Senior Project Manager
D'Huy Engineering, Inc.
1 East Broad Street, Suite 310
Bethlehem, PA 18018

# PART 2 – SUPPLEMENTARY GEOTECHNICAL INVESTIGATION

## 2.1 SCOPE OF SERVICES AFTER SCHEMATIC DESIGN

The School District is in the process of selecting an Architectural Design team for the design and documentation of the proposed new Hopewell Elementary School. The work outlined in Part 2 of this Request For Proposal shall be completed by the Geotechnical Engineering Firm following the awarding of a Design contract and the completion of the Schematic Design Phase of the construction documentation. The scope of work on this phase of the project will include the continuation of the services outlined in Part 1. A final report based on the findings/results from Part 1 and Part 2 including complete field investigations, all laboratory analysis of soils and the geotechnical analysis shall be included in the final report.

As part of this proposal, include any additional recommended testing (borings, test pits, etc.) to adequately define local geological conditions for the project design.

## 2.2 FIELD INVESTIGATION

**2.2.1** An additional twelve (12) soil borings shall be made on the site. Locations shall be determined upon the completion of the Schematic Design of the proposed new Elementary School and after confirmation by the Geotechnical Engineer. The boring locations shall be verified with DEI prior to commencement of the work. All borings shall extend to the depths identified of twenty-five feet (25'-0") or to refusal (100 blows/3"). Borings shall not terminate in a soft zone of soil (less than 5 blows/foot). In such cases, extend borings into harder material after review and approval by DEI. If the elevation of the rock encountered will interfere with the placement of the footings, undisturbed rock samples shall be taken at the direction of the Geotechnical Engineer. The samples shall be drilled to a minimum depth of five feet or a sufficient depth to obtain a recovery of 85 percent from five feet of penetration. From the samples, the Geotechnical Engineer shall establish rock quality, strength, pressure of voids, fractures, joints, etc. **Each proposal shall include up to 40 feet of rock drilling/sampling. Any additional costs require prior approval of Owner.**

**2.2.2** Some of the borings will be located within areas of existing paving and concrete sidewalks. These areas shall be patched and sealed to prevent hazards for pedestrians or vehicles. All areas shall be returned to a condition suitable for the originally intended use including adding topsoil and reseeding where necessary.

**2.2.3** Twelve (12) auger probes with an average depth of 15 feet (180 linear feet total) shall be made based on the locations to be determined upon the completion of the Schematic Design (and preliminary stormwater design) portion of the project and after confirmation with the Geotechnical Engineer. Based on the findings at the auger probes the infiltration test pits and testing may be adjusted. All auger probe locations shall be verified with DEI prior to commencement of work.

**2.2.4** Six (6) exploratory test pits will be conducted where designated after Schematic Design and preliminary stormwater design based on input from Civil Engineer to a depth of Ten (10) feet below proposed grade. The locations will be determined from the provided plans, prior to field testing, following an auger probe investigation. The test pits will be performed to characterize the subsurface soils, locate possible limiting zones and groundwater conditions. Final infiltration test locations and tentative elevation of the bottom of the proposed testing shall be confirmed with DEI prior to testing. Geotechnical Engineer shall provide testing and analysis necessary to verify feasibility of on-site stormwater infiltration and shall provide an analysis on whether or not the stormwater infiltration will cause any potential issues down slope of the site as well as suitability of site for infiltration and recommendation on potential for sinkholes from infiltration. Testing shall be conducted in general accordance with the Pa DEP Model Stormwater Management Ordinance requirements. Testing shall include a soil

morphologic evaluation within each test location including the preparation of a soil profile description that identifies limiting zones.

**2.2.5** Upon completion of the exploratory test pits, two (2) infiltration tests, Double Ring Infiltrometers (DRI tests) per test pit location, will be prepared and tested in accordance with standard infiltration test procedures. The depth of the infiltration locations will be assumed not to exceed ten (10) feet below existing grade.

**2.2.6** Upon completion of the above include in the proposal six (6) additional locations for test pits, with two (2) DRI tests conducted at each of the 6 locations. The locations of these additional test pits will be based on input of the Civil Engineer. These tests will be conducted to determine the infiltration rates of the subgrade soils. An exploratory test pit will be conducted in the vicinity of the specified locations. The test pits will be performed to characterize the subsurface soils, locate possible limiting zones and groundwater conditions. Include backhoe expenses and coordination. Review results of exploratory test pits with DEI to confirm infiltration test depth and make location adjustments if necessary prior to performing infiltration tests.

**2.2.7** Infiltration testing will be conducted at the site using double ring infiltrometers (DRI). These tests will be conducted to determine the infiltration rates of the subgrade soils. The tests will be performed in accordance with the PA BMP Manual for standard infiltration tests procedures. Infiltration capacity of the soil profile shall be determined and will provide a soils report for submittal to approval agency and LCCD with the NPDES application.

**2.2.8** A summary of the findings shall be prepared in a summary letter. The summary letter shall be prepared under the supervision of a Professional Engineer and/or Professional Geologist registered in the Commonwealth of Pennsylvania All infiltration testing is to be witnessed by the Owner or their representative.

**2.2.9** Proposed locations and elevations for all testing will be provided upon the completion of the Schematic Design phase of the project. The successful bidder shall field locate all borings, auger probes, and infiltration test location. All test locations shall be verified with DEI prior to beginning work.

**2.2.12** The contractor shall provide all necessary drilling equipment, labor, materials, supplies, and permits for performing the described work in accordance with these specifications. The Contractor will be responsible for removal and replacement of any items as noted on drawings or as subsequently determined by Owner and DEI during the site visit.

**2.2.14** The test boring locations shall be noted with a number system and shown on a site plan to be developed by the Geotechnical Engineer and submitted to DEI. The contractor shall accurately determine the position and surface elevation of each hole and shall do all location work.

**2.2.15** Earth borings are to be taken by using dry sample boring methods. As each change in character of soil is encountered, beginning about two feet below grade and at not more than five foot intervals beyond the first sample, a sample of material shall be taken by a two inch O.D. split barrel sampler used to obtain blow count. The sampler shall permit procurement of "Standard Penetration Test" data (Number of blows required to advance the 2" sampler over the 12" interval from 6 to 18 inches using a 140 pound weight dropped 30''.) The recovered samples shall be immediately placed in a moisture tight screw top bottle and properly labeled for identification.

**2.2.16** Ground water evaluation shall be carefully noted for each boring; together with the date and hour each measurement was taken. If water is encountered, one subsequent reading of ground water levels shall be taken 24 hours later. If water is lost, depth of boring at a time of loss shall be recorded. If rock is encountered, Core borings may be required after prior review and approval by Owner or Owner's Representative. Submit additional costs for rock boring as indicated on the enclosed RFP form. If core borings are required they shall be made into encountered rock for a depth of five (5) feet, with suitable apparatus which will retain cores of not less than 2 1/8 inch diameter "M" series or equal; Care must be exercised to operate drill at such speeds and pressure that will assure satisfactory core recoveries and to maintain the core barrel in a thoroughly lubricated condition at all times. Cores recovered shall be preserved in suitable core boxes, properly labeled so that tops and bottoms of the cores from each hole are carefully marked.

**2.2.17** The boxes of soil and rock samples shall be retained by the Geotechnical Engineer.

**2.2.18** Provide a letter for the Pennsylvania Department of Education that evaluates the site for the presence of oil and gas wells and mining or subsidence activities.

**2.2.19** Review and provide recommendations for the Earthwork Specifications Section "310000". To be provided by the selected Architect.

## 2.3 LABORATORY ANALYSIS OF SOIL

In order to define the physical characteristics of the soils encountered, laboratory analysis of soils consisting of a USCS classification are to be conducted in accordance with ASTM 2487 standards and specifications. This testing will include Atterberg limits determinations, mechanical gradation analysis and natural moisture tests. As a minimum, two standard classification tests are to be performed on two separate soil samples taken from different locations of the site.

## 2.4 GEOTECHNICAL ENGINEERING ANALYSIS AND REPORT

A geotechnical engineering analysis and report presenting the results and recommendations, based on the scope of work outlined above, will be prepared and is to include the following:

- Geologic Site Evaluation (including terrain description, brief geological history, and surface drainage conditions).
- Description of Subsurface Conditions (including description of exploration and sampling methods, soil identifications and classifications)
- Results of Geotechnical Analysis
- Test Boring Logs, Profiles and Location Plan
- Test Pit Logs, Profiles and Location Plan
- Results of all Laboratory Testing:
- Infiltration Testing Recommendations:

**Obtain column loads and other building information from Architect and Structural Engineer through DEI (Josh Grice, Tel: 610.865.3000). Geotechnical Report shall include the following information.**

Foundation Types (including)

e) Allowable Bearing Capacity Values
f) Placement Depths
g) Design Frost Depths
h) Preparation of Foundation Areas

Soil Strength Conditions

c) Stratification Characteristics and Correlated Soil Strengths
d) Potential for Construction and/or Differential Settlements

General Earthwork Criteria

q) Use and Treatment of In-Situ Materials for controlled Backfill
r) Control of Surface Runoff Water and Groundwater
s) Quality Control Requirements During Foundation Construction
t) Provide a recommendation for Slab and Pavement supports, including a modulus of subgrade reaction for design, and recommendation relative to drainage.
u) Earthwork recommendations for construction of load bearing fills, including an assessment of on-site soils to be excavated for use as fill, subgrade preparation, and compaction criteria, for building foundations, slabs, and landscaped areas.
v) Engineered fill material requirements for building foundations and slabs with compaction requirements and any other information necessary for foundation and site construction.
w) Vapor retarder recommendations related to slabs and sub-base.
x) Total and differential settlement values relative for the building.

y) Lateral Earth Pressures for Design of Walls below Grade, retaining walls or other retaining structures.
z) Depth of Rock Excavation, if required, and characteristics of rock to be removed. Recommendations including specifications for rock removal procedure and equipment.
aa) Conclusions regarding the impact of groundwater on the structure.
bb) Site classification per the 2009 International Building Code, Section 1613 'Earthquake Loads" and seismic site class for soil required by Table 20.3-1, ASCE 7 – 05. Provide short term and one second spectral response acceleration.
cc) Provide geology study and information necessary for compliance with the local ordinances.
dd) Provide paving design for parking areas and drives including estimated design CBR (coordinate with Borough standards where applicable).
ee) Permeability of soils including performance of actual permeability testing for the twenty (20) locations as requested by Civil Engineer.
ff) Recommendations on effect of stormwater infiltration to downstream buildings, residences (basements) and other impacts.
gg) Definition of suitable soil for use as fill from off-site sources using the Unified Classification System.

## 2.5 REPORTS

Five copies of a comprehensive report, including, but not limited to, the above information sealed by a registered professional engineer are to be submitted within 60 days of notification to proceed with the work to:

Josh Grice, Senior Project Manager
D'Huy Engineering, Inc.
1 East Broad Street, Suite 310
Bethlehem, PA 18018

# PART 3 – PHASE ONE ENVIRONMENTAL INVESTIGATION

## 3.1 RECORDS AND HISTORICAL USE INFORMATION REVIEW

Conduct a records review of the following state and federal databases, if reasonably ascertainable:

- National Priority List (NPL)
- Resource Conservation and Recovery Act (RCRA)
- The Pennsylvania Priorities List (SPL)
- Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)
- Solid Waste Facility Inventory (SWF)
- Leaking Underground Storage Tank Listing (LUST)
- Regulated Underground Storage Tank Listing (UST)

- Emergency Response Notification System (ERNS)
- Facility Index System (FINDS)

In addition, historical use information acquired from as many of the following sources as readily available and deemed useful by the environmental property assessor to achieve the goal of the Phase I ESA will be reviewed back to original development or 1940, whichever is earlier:

- aerial photographs
- fire insurance maps
- property tax files
- recorded land title records
- USGS 7.5 minute topographic maps
- local street directories
- building department records
- zoning/land use records

Other historical sources (i.e. previous reports, violations, etc.), if available, may also be reviewed.

## 3.2 SITE DESCRIPTION

Provide a description which will include the following:

- A description of the current uses of the grounds and any improvements on the site.
- A review of soil, wetlands, geology and hydrogeology data for the site area.
- The identification of the occupants of properties immediately adjacent to the subject site will be provided if obtainable from within the boundaries of the subject site.
- The availability of water and sewer services or the presence of wells or septic systems in the site area.

## 3.3 INTERVIEWS

Attempt to interview, either in person at the time of the site reconnaissance or by telephone, the key site manager (as identified by the client), a reasonable number of site occupants (if different from the key site manager) and local government officials.

The key site manager can be the property manager, the chief physical plant supervisor or the head maintenance person.

## 3.4 SITE RECONNAISSANCE

Perform a site reconnaissance noting the presence of the following as they may be readily visible.

In any structure:

- sumps, pits, floor drains
- residues, stains or corrosion
- chemical storage or usage areas
- above or below ground storage tanks
- acid neutralization tanks
- liquid filled electrical equipment
- suspect asbestos containing materials
- heating and cooling systems
- grease traps

On the grounds:

- soil/water discoloration
- distressed vegetation
- odors
- pools of liquid
- drums or containers
- above or below ground storage tanks
- pits, ponds, lagoons
- stained pavement
- solid waste storage or disposal
- wastewater outfalls to surface water
- chemical storage or usage areas
- stormwater drainage patterns
- on-site transformers
- areas of apparent fill

Photos of the site and identified conditions will be taken during the reconnaissance.

### 3.5 REPORT

Prepare a report of the Phase I Environmental Site Assessment. The report shall include a discussion of the following:

- The findings of the site history investigation
- The impact of site conditions on the geology and hydrogeology of the site area and vice versa
- Adjacent site uses and the potential impacts of the subject site to the adjacent sites and vice versa
- The current site usage
- The findings of the site reconnaissance and other appropriate exhibits and appendices

Five copies of a comprehensive report, including, but not limited to, the above information sealed by a registered professional engineer are to be submitted within 45 days of authorization to:

Josh Grice, Senior Project Manager
D'Huy Engineering, Inc.
1 East Broad Street, Suite 310
Bethlehem, PA 18018

## PART 4 - ADMINISTRATIVE

### 4.6 FEES

See the attached request for proposal form (page 14) for all requested information and fees. The fees must include all costs including but not limited to mileage, photocopies

and incidental work. The Southern Lehigh School District will not reimburse any additional cost without prior written authorization.

## 4.7 AUTHORIZATION

It is anticipated that an award will be made on approximately Monday, June 30, 2014. The owner reserves the right to reject all proposals.

## 4.8 SCHEDULE

**4.8.1** The tentative schedule for the selection process of the firm that will perform the Preliminary Geotechnical Investigation and the Phase One Environmental Investigation:

- Issue Request for Proposal (June 3, 2014)
- Receive Responses to Request for Proposal (June 25, 2014)
- Southern Lehigh School District approval (June 30, 2014)
- Field work shall be completed by (July 22, 2014)
- Final report shall be submitted by (July 31, 2014)

**4.8.2** The tentative schedule for the selection process of the firm that will perform the Secondary Geotechnical Investigation:

- Issue Request for Proposal (June 3, 2014)
- Receive Responses to Request for Proposal (June 25, 2014)
- Southern Lehigh School District approval (June 30, 2014)
- Field work shall be completed within 50 days from authorization after schematic design.
- Final report shall be submitted within 60 days from authorization after schematic design.

The above dates are subject to change at the Southern Lehigh School District's discretion.

advantage engineers

# Darrick L. Kreischer, P.G.

**Education**

B.S. – Geology, Bloomsburg University, 1999
Additional Field Studies, Southern Utah University, 1999
B.S. – Earth Science, Bloomsburg University, 1996

**Professional Registrations**

P.G. - Pennsylvania (004804-G)

## SUMMARY OF EXPERIENCE

Mr. Kreischer has over 13 years of experience in the industry. Management responsibilities include: business development, oversight and direction of Lehigh Valley branch office, recruitment of new staff members, cost analysis and proposal preparation, development of operating budgets, development of corporate policies, and staff training.

Technical responsibilities include; project management, coordination, and oversight of all geotechnical, environmental, and construction inspection projects for the branch office, and development and implementation of field investigations. Areas of emphasis include subsurface geophysical and geotechnical investigations, hydrogeologic investigations including pump and slug tests, water feasibility studies, nitrate loading analyses, Phase I/II environmental site assessments, baseline environmental risk assessments, geologic site assessments including karst and glaciated terrane evaluations, UST closure reports, environmental investigations and remediations in accordance with PA Act 2, and segmental retaining wall design.

## WORK EXPERIENCE

11/01-Current
Regional Director/Senior Project Manager
Advantage Engineers, LLC/CMX, Inc./Advantage Engineering, LLC

4/01-11/01
Field Geologist
Earth Engineering, Inc.

advantage engineers

# Mark Giunta, P.E.

**Education**

B.S. – Civil Engineering, Virginia Polytechnic Institute and State University, 1999

**Professional Registrations**

P.E. - Pennsylvania (PE073764)
P.E. - Florida (61683)

**Certifications**

OSHA 40-Hr Hazwoper
MSHA Surface Mine
Troxler Certified
PennDOT Certified Drilling Inspector - Level I

**Professional Affiliations**

American Society of Civil Engineers

## SUMMARY OF EXPERIENCE

Mr. Giunta has more than 13 years of practical field, laboratory and professional experience in geotechnical engineering. He has experience with projects such as high rise condominiums and office buildings, retail centers, DOT bridges, industrial projects, marine facilities, roadway projects, tunnels, and landfills. He has been responsible for all phases of geotechnical work including project management, coordination of various phases of projects, supervision of field, laboratory and engineering personnel, analysis, report preparation, consultation and construction monitoring.

Mr. Giunta's technical experience includes:

Deep Foundations

- Caissons
- Mini-Piles
- Driven Piles
- Drilled Piles
- Helical Piers

Shallow Foundations

- Spread Footings
- Surcharge
- Soil Exchange
- Geopiers
- Compaction Grouting
- Vibro Compaction
- Soil Mixing
- Deep Dynamic Compaction

Retaining Walls

- Sheetpile Walls
- Soldier Pile and Lagging Walls
- MSE Walls
- Tied-back Gunite Walls

Miscellaneous

- Rockfall mitigation