ADDENDUM
NO. 1

March 12, 2026

Alexandria Athletic Field Improvements
1 Burden Court
Alexandria, IN 46001

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications and the Drawings dated March 6, 2026 by Gibraltar Design. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 1-1, Geotechnical Report.

A. SPECIFICATION SECTION 00 20 00 - INFO AVAILABLE TO BIDDERS

1. Insert included herein Geotechnical Report.

PATRIOT

ENGINEERING AND ENVIRONMENTAL, INC.

REPORT

GEOTECHNICAL ENGINEERING EXPLORATION

ALEXANDRIA SCHOOLS IMPROVEMENTS

308 WEST 11TH STREET
ALEXANDRIA, INDIANA

PROJECT NUMBER:
25-1990-01G

PREPARED FOR:
Mr. Tim Funston
The Skillman Corporation
3834 South Emerson Avenue
Indianapolis, Indiana 46203

REPORT DATE:
January 21, 2025

6150 East 75th St
Indianapolis, IN 46250

WWW.PATRIOTENG.COM

January 21, 2025

Mr. Tim Funston
The Skillman Corporation
3834 South Emerson Avenue
Indianapolis, Indiana 46203

Re: Report of Geotechnical Engineering Exploration
Alexandria Schools Improvements
308 West 11th Street
Alexandria, Indiana
Patriot Project No.: 25-1990-01G

Dear Tim,

Attached is the report of our geotechnical engineering exploration for the above referenced project. This investigation was completed in general accordance with our Proposal No. P25-2767-01G dated December 3rd, 2025.

This report includes detailed and graphic logs of fifteen (15) soil borings drilled at the proposed project site. Also included in the report are the results of laboratory tests performed on samples obtained from the site, and geotechnical recommendations pertinent to the site development, foundation design, and construction.

We appreciate the opportunity to perform this geotechnical engineering investigation and are looking forward to working with you during the construction phase of the project. If you have questions regarding this report or if we may be of additional assistance regarding geotechnical aspects of the project, please do not hesitate to contact our office.

Respectfully submitted,

Patriot Engineering and Environmental, Inc.

Logan Young, P.E.
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TABLE OF CONTENTS

APPENDICES

REPORT OF GEOTECHNICAL ENGINEERING EXPLORATION

Alexandria Schools Improvements
308 West 11th Street
Alexandria, Indiana
Patriot Project No. 25-1990-01G

1.0 INTRODUCTION

1.1 General

The Skillman Corporation is planning the design and construction of various site improvements to the Alexandria Schools campus located at 308 West 11th Street in Alexandria, Indiana (i.e., Madison County). The results of our geotechnical engineering exploration for the project are presented in this report.

1.2 Purpose and Scope

The purpose of this exploration is to determine the general near surface and subsurface conditions within the project area and to develop the geotechnical engineering recommendations necessary for the design and construction of the proposed school improvements. This was achieved by drilling soil borings, and by conducting laboratory tests on samples taken from the borings. This report contains the results of our findings, an engineering interpretation of these results with respect to the available project information, and recommendations to aid in the design and construction of the proposed school improvements.

2.0 PROJECT INFORMATION

Table 0: Proposed Project Description

Item	Description
Site Address	308 West 11th Street
Site City, State, and County	Alexandria, Indiana (Madison County)
Proposed Construction	Bus Maintenance Building, Agricultural Building, Full-Depth Reconstruction of the Elementary School Parking Lot, Turf Football Field, and Storm Management Basin
Bus Maintenance Building	Single story structure (approximately 30 feet by 70 feet in plan dimension) of slab-on-grade construction
Agricultural Building	Single story structure (approximately 55 feet by 75 feet in plan dimension) of slab-on-grade construction
Grade-raise Fill/Cut	Not to exceed +/- 2 feet from existing grade
Column Loads (Assumed)	40 kips
Wall Loads (Assumed)	1,500 pounds per lineal foot (plf)
Floor Loads (Assumed)	150 pounds per square foot (psf)

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Site Conditions

Table 1: Site Description

Item	Description
Project SIte	Alexandria Monroe Elementary and Alexandria Jr/Sr High School Campuses
Site Elevation	Between 877 and 882 feet based on Google Earth Imagery
Site Slope	Relatively flat
Site Occupied By	Existing school infrastructure
Surrounding Properties	Residential and Commercial Developments and Agricultural Use

3.2 General Explored Subsurface Conditions

Our interpretation of the physically explored subsurface conditions is based upon fifteen (15) borings drilled at the approximate locations shown on the Boring Location Map (Figure No. 2). Table The soil and groundwater conditions described below are general, and some variations in the descriptions should be expected. For more specific information, refer to the Boring Logs presented in the Appendices. All depths discussed below refer to depths below the existing ground surface. The dashed stratification lines shown on the boring logs indicate approximate transitions between soil types. In-situ stratification changes could occur gradually or at different depths.

Table 2: Summary of Boring Locations

Location of Borings	Boring Numbers	Approximate Depth of Borings (Feet)
Bus Maintenance Building	B-5 and B-6	15
Agricultural Building	B-12 and B-13	15
Elementary School Parking Lot	B-1, B-2, B-3. B-4. B-14, and B-15	7 ½
Turf Football Field	B-8, B-9, B-10, and B-11	7 ½
Storm-Water Management Basin	B-7	15

3.2.1 Soil Conditions

Surficial Material: Topsoil, a surficial layer of material that is a blend of silts, sands, and clays, with varying amounts of organic matter was encountered at the ground surface at nine (9) of the fifteen (15) boring locations. Based on visual observations, the topsoil layer varies from about 4 to 7 inches thick in the borings.

An asphalt pavement section was encountered at the ground surface at six (6) of the fifteen (15) boring locations. Based on visual observations, the asphalt was approximately 4 to 5 inches thick and underlain by approximately 6 to 10 inches of crushed stone in the borings.

Silty or Sandy Clay (CL): The surficial material is generally underlain by very soft to stiff, **SILTY** or **SANDY CLAY (CL)**. The silty or sandy clay layers typically extend to depths of 3 ½ to 7 ½ feet below the existing ground surface. The natural moisture content of this material ranges from 12 to 26 percent (%). The silty or sandy clay layers have unconfined compressive strengths, as determined by a hand penetrometer, of 0.4 to 2.2 tons per square foot (tsf). Standard Penetration Test N-Values (blow counts) in this material varied from 2 to 9 blows per foot (bpf).

Very soft to soft SILTY or SANDY CLAY (CL) and possible fills were encountered in six (6) of the fifteen (15) boring locations to approximately 6 feet below the existing ground surface.

Silty Sand (SM): Below the surficial material in Boring B-5 and within the silty or sandy clay layers in Boring B-6, very loose to loose, **SILTY SAND (SM)** was encountered from below the surficial material to 3 ½ to 8 ½ feet below the existing ground surface. Standard Penetration Test N-Values (blow counts) in this material varied from 3 to 7 bpf.

Very loose, SILTY SAND (SM) was encountered in Boring B-6 from approximately 3 ½ to 6 feet below the existing ground surface.

Sand (SP-SM): Below the silty or sandy clay layers in Borings B-7 and B-14, loose to very dense, **SAND (SP-SM)** was encountered from 6 to predetermined boring termination depths of 7 ½ to 15 feet below the existing ground surface. Standard Penetration Test N-Values (blow counts) in this material varied from 6 to more than 50 bpf.

Sandy Clay (CL): Below the very soft to stiff clays and sand layers, stiff to hard, **SANDY CLAY (CL)** was encountered from 3 ½ to predetermined boring termination depths of 7 ½ to 15 feet below existing grade. The natural moisture content of this material ranges from 7 to 16 %. The sandy clay layers have unconfined compressive strengths, as determined by a hand penetrometer, of 2.1 to greater than 6.0 tsf. Standard Penetration Test N-values (blow counts) in this material varied from 10 to more than 50 bpf.

3.2.1.1 Unsuitable Soils

As previously mentioned, unsuitable very soft to soft clays, very loose sands, and possible fills were encountered in seven (7) of the fifteen (15) borings, at depths up to 6 feet below the existing ground surface. The following table presents the extent of the unsuitable soils encountered in the borings.

Table 3: Summary of Unsuitable Soils Encountered

Boring	Soil Classification	Approximate Depth of Unsuitable Soils (feet)*
B-2	Very Soft to Soft Silty Clay (CL)	0 to 6
B-3	Possible Fill	0 to 3 ½
	Soft Silty Clay (CL)	3 ½ to 6
B-4	Soft Sandy Clay (CL)	3 ½ to 6
B-6	Very Loose Silty Sand (SM)	3 ½ to 6
B-7	Soft Sandy Clay (CL)	3 ½ to 6
B-11	Soft Silty Clay (CL)	0 to 6
B-14	Possible Fill	0 to 3 ½
	Soft Silty Clay (CL)	3 ½ to 6

3.2.2 Groundwater Conditions

The term groundwater pertains to water that percolates through the soil found on-site. This includes overland flow that permeates through a given depth of soil, perched water, and water that occurs below the "water table", a zone that remains saturated and waterbearing year-round.

During drilling, sampling tools were routinely observed for the presence of free-water, which would indicate groundwater levels. Additionally, the open boreholes were also observed for water above the collapse depth after removal of the augers from the completed boring. Based on the methods, groundwater was not encountered during drilling or in open boreholes after the augers were removed.

4.0 DESIGN RECOMMENDATIONS

4.1 Basis

Our recommendations are based on data presented in this report, which include soil borings, laboratory testing, and our experience with similar projects. Subsurface variations that may not be indicated by a dispersive exploratory boring program can exist on any site. If such variations or unexpected conditions are encountered during construction, or if the project information is incorrect or changed, we should be informed immediately since the validity of our recommendations may be affected.

4.2 Foundations

Borings B-5 and B-6 were completed in the area of the Bus Maintenance Building and Borings B-12 and B-13 were completed in the are of the Agricultural Building.

As previously mentioned, very loose sand was encountered in B-6 (in the area of the Bus Maintenance Building) to depths ranging from 3 ½ to 6 feet below existing grade. Please note that very soft to soft clays and possible fills were also encountered across the project site to depths up to 6 feet below existing grade. ***If very soft to soft clays, very loose sands, existing fill materials, or other unsuitable materials are encountered at the footing level or below, they must be undercut and replaced with well-compacted structural fill prior to construction of foundations or footings can be extended to suitable natural soils.*** Following the excavation of the footing areas, the foundations subgrade should be visually inspected by a Patriot representative and probed at multiple locations at isolated footings and at every 10 feet (maximum) along wall footings using a Dynamic Cone Penetrometer (DCP) to a minimum depth of 5 feet below the footing subgrade to verify that the underlying soil has a SPT blow count of 7 or more or unconfined compressive strength of 1.0 tsf or more. Any unsuitable soils encountered at the footing subgrade or below should be removed and replaced with well-compacted structural fill.

Provided the above recommendations are followed, the proposed structures can be supported on spread footings bearing on medium stiff or better clays or loose or better sands (N-values of 5 or greater) encountered at shallow depths or on new well-compacted structural fill overlying the same. These footings should be proportioned using a net allowable soil bearing pressure not exceeding 1,500 pounds per square feet (psf) for column footings or 1,200 psf for wall (strip) footings. For proper performance at the recommended design bearing pressure, foundations must be constructed in compliance with the recommendations discussed in Section 5.0 "Construction Considerations".

In using the above net allowable soil bearing pressures, the weight of the foundation and backfill over the foundation need not be considered. Hence, only loads applied at or above the minimum finished grade adjacent to the footing need to be used for dimensioning the foundations. Each new foundation should be positioned so it does not induce significant pressure on adjacent foundations; otherwise, the stress overlap must be considered in the design.

All exterior foundations and foundations in unheated areas should be located at a depth of at least 30 inches below final exterior grade for frost protection. However, interior foundations in heated areas can bear at depths of approximately 24 inches below the finished floor. We recommend that wall (strip) footings be at least 18 inches wide and column footings be at least 24 inches wide for bearing capacity considerations.

We estimate that the total foundation settlement should not exceed approximately 1 inch, and that differential settlement should not exceed about ¾ inch. Careful field control during construction is necessary to minimise the actual settlement that will occur.

4.3 Floor Slabs

Borings B-5 and B-6 were completed in the area of the Bus Maintenance Building and Borings B-12 and B-13 were completed in the are of the Agricultural Building.

As previously mentioned, very loose sand was encountered in B-6 (in the area of the Bus Maintenance Building) to depths ranging from 3 ½ to 6 feet below existing grade. Please note that very soft to soft clays and possible fills were also encountered across the project site to depths up to 6 feet below existing grade. ***If very soft to soft clays, very loose sands, existing fill materials, or other unsuitable materials are encountered at the floor slab level or below, they must be undercut and replaced with well-compacted structural fill prior to construction of floor slabs.***

Depending on the weather conditions at the time of construction, scarifying and drying and/ or chemical modification (Refer to Section 5.5 “Chemical Modification Considerations”) may be necessary to manage moisture contents in the clays in order to achieve the necessary subgrade soil support prior to the placement of floor slabs or any grade raise fill.

We recommend that all floor slabs be designed as “floating”, that is, fully ground supported and not structurally connected to walls or foundations. This is to minimise the possibility of cracking and displacement of the floor slabs because of differential movements between the slab and the foundation. Although the movements are estimated to be within the tolerable limits for structural safety, such movements could be detrimental to the slabs if they were rigidly connected to the foundations. Additionally, we recommend that all slabs should be liberally jointed and designed with the appropriate reinforcement for the anticipated loading conditions.

The building floor slabs should be supported on a minimum 6-inch-thick well-compacted granular base course (i.e. Indiana Department of Transportation (INDOT) No. 53 crushed stone) bearing on a suitably prepared subgrade (Refer to Section 5.0 “Construction Considerations”). The granular base course is expected to help distribute loads and equalize moisture conditions beneath the slab.

Provided that the recommendations above for floor slab design and construction are followed, a modulus of subgrade reaction, “K_{30}” value of 75 pounds per cubic inch (pci), is recommended for the design of ground-supported floor slabs. It should be noted that the “K_{30}” modulus is based on a 30-inch diameter plate load empirical relationship.

4.4 Seismic Considerations

For structural design purposes, we recommend using a Site Classification of “C” as defined by the 2014 Indiana Building Code (modified 2012 International Building Code (IBC)). Furthermore, along with using a Site Classification of “C”, we recommend the use of the maximum considered spectral response acceleration and design spectral response acceleration coefficients provided in the Table below. Refer to the Appendix containing the Seismic Soil Site Classification report summary.

Table 4: Seismic Design Spectral Response Acceleration Coefficients

Period (seconds)	Maximum Considered Spectral Response Acceleration Coefficient	Soil Factor	Design Spectral Response Acceleration Coefficient
0.2	S_S = 0.129	1.2	S_{DS} = 0.104
1.0	S_1 = 0.073	1.7	S_{D1} = 0.083

These values were obtained from the "OSHPD Seismic Design Maps" program for seismic design, developed by the Structural Engineers Association (SEA), utilizing latitude 40.2497° (degree) North and longitude 85.6788° (degree) West as the designation for identifying the location of the parcel. Other earthquake resistant design parameters should be applied consistent with the minimum requirements of the Indiana Building Code.

4.5 Pavements

Borings B-1, B-2, B-3, B-4, B-14 and B-15 were completed in the existing Alexandria Monroe Elementary School parking lot and access drives.

As previously mentioned, very soft to soft clays and possible fills were encountered in four (4) of the six (6) pavement borings to depths of approximately 6 feet below existing grade. ***If very soft clays, existing fill materials, or other unsuitable materials are encountered at the pavement section level or below, they must be undercut and replaced with well-compacted structural fill prior to construction of pavements.***

Alternatively, if the Client is willing to accept the risk of future vertical movement and increased maintenance, the unsuitable soils can be undercut 3 feet below the proposed pavement section elevation and replaced with properly placed and tested structural fill (i.e., INDOT No. 53 stone). To further reduce the risk, Geogrid can be placed prior to placing the structural fill and at the base of the pavement section.

Depending on the weather conditions at the time of construction, scarifying and drying and/or chemical modification (Refer to Section 5.5 "Chemical Modification Considerations") may be necessary to manage moisture contents in the clays in order to achieve the necessary subgrade soil support prior to the placement of floor slabs or any grade raise fill.

If construction is performed during a wet or cold period, the contract will need to exercise care during the grading and fill placement activities in order to achieve the necessary subgrade soil support for the pavement section refer to 5.0 CONSTRUCTION CONSIDERATIONS he base soil for the pavement section will need to be firm and dry. The subgrade should be sloped properly in order to provide good base drainage. To minimize the effects of groundwater or surface water conditions, the base section for the pavement system should be sufficiently high above adjacent ditches and properly graded to provide pavement surface and pavement base drainage.

Based upon the near surface soils encountered in the borings, we recommend using a California Bearing Ratio (CBR) value of 3.0 for the design of flexible (hot mix asphalt (HMA)) pavement sections. For the design of rigid (concrete) pavement sections, we recommend using a modulus of subgrade reaction value of 75 pounds per cubic inch (pci). It should be recognized though, that the recommend CBR and modulus of subgrade reaction values provided are based on empirical relationships only, and laboratory tests may determine higher allowable values.

4.6 Turf Football Field

A new artificial turf football field will be constructed at the existing football field on campus. The final design of artificial turf systems is highly specialized and requires careful control of materials, grades, and drainage.

For evaluation and design of the turf footbal field, a total of four (4) borings were drilled in the areas of the football field. The borings generally encountered medium stiff or better silty or sandy clays, which extended to predetermined boring termination depths of 7 ½ feet. ***Please note that soft silty clay was encountered in Boring B-11 from below the surficial material to approximately 6 feet. It is recommended that soft clays or other unsuitable materials be undercut and replaced with properly placed structural fill prior to construction of the artificial turf field. Depending on the specifications by the specialized turf field designer undercutting the unsuitable soils 2 feet and replacing with properly placed and tested structural fill may be an option with geogrid.***

4.6.1 Subgrade and Subbase Preparation

The topsoil should be removed, and the subgrade leveled with a grader or wide track grader dozer. Areas that will receive grade raised structural fill should be compacted to around 93 percent of the maximum dry density determined in accordance with the Standard Proctor test and within the range of 0 to 3 percentage (%) points above the optimum moisture content value. The compaction requirement is provided to allow for suitable subgrade support and to aid in improving the drainage potential of the clay soils. Upon completion of the subgrade preparation, we recommend that the aggregate subbase material be placed and compacted to at least 95 percent of the Standard Proctor test.

4.6.2 Drainage

With artificial turf fields, the primary issue will be controlling drainage of the fields. The lean clays on-site are poorly draining. Poorly draining fields can cause unsafe conditions, reduction of suitable days to utilize the fields and prevalent maintenance issues. Surface drainage should be employed by proper crowning of the fields to allow for surface water to shed off and away from the fields. The surface water should be collected by interceptor drains around the perimeter of the fields that transport the water beyond the fields to a storm-sewer or day-lighted to a drainpipe in a trench a minimum of 18 inches deep. The trench should be backfilled with an open-graded well-draining coarse aggregate (e.g. INDOT No. 8 crushed stone) and wrapped in nonwoven filter fabric (e.g. Mirafi® 140N or 160N) as opposed to using a sock-wrapped pipe. The fabric should be suitably overlapped on top of the trench.

Additionally, to assist with subsurface drainage and moving water out of the soil, drainage tiles should be installed throughout the fields that are also connected to interceptor drains. We recommend the drainage tiles consist of a minimum of 6-inch diameter perforated plastic drainpipe, wrapped with a filter fabric (e.g. Mirafi® 140N or 160N) and surrounded by 6-inches of filter material (e.g. INDOT No. 8 crushed stone) wrapped with a filter fabric.

In combination with drainage, artificial turf fields will require protection from the frost heave. Therefore, turf fields should be designed overlying a well-drained subbase layer. We recommend that the subbase layer consist of a minimum of 6-inches of a clean well-graded INDOT No. 53 crushed stone (no more than 7 percent by weight passing the No. 200 sieve) stone leveling course overlying a 12-inch layer of open-graded well-draining INDOT No. 8 crushed stone.

4.7 Storm-Water Management Basin

The soils encountered in the area of the proposed storm-water management basin (list borings) consist of silty or sandy clays that extend to approximately 8 ½ feet and are underlain by dense to very dense sands. The clays are considered relatively favorable for a retention basin, due to the estimated moderate permeability characteristics of the clays. However, the sand layers generally encountered underlying the clays would not be favorable for retention of storm-water as the sand layers are estimated to have relatively high permeability characteristics. In addition, based on our experience, pockets and layers of sands are anticipated within the clay layers. Therefore, if a retention capacity is required for the detention pond, the pond will require the installation of a clay liner, and/or a synthetic liner. However, if percolation of water into the underlying soil is allowed and maintaining a long-term pond level is not a concern, a liner may not be required.

The soils encountered in our borings should be readily excavated using conventional earthwork equipment. ***Additionally, depending on the invert elevation of the proposed detention basin, sand layers and seams could be encountered, which are expected to be free-flowing and will tend to readily cave and/or slough into excavations; therefore, over-excavation, benching, and/or shoring should be expected in order to maintain the side slopes of the excavations.***

Groundwater was not encountered in our borings during drilling activities, however, depending on seasonal conditions and the invert elevation of the proposed detention basin, localized and sporadic groundwater infiltration may be encountered in the detention basin excavation (Refer to 3.2.2 Groundwater Conditions).

4.8 Subsurface Utilities

For installation of subsurface utilities (e.g., water lines, storm-sewers lines, sanitary-sewer lines, manholes, culverts, etc.) the soil conditions encountered in our borings should be readily excavated using conventional earthwork equipment. However, some additional effort may be necessary to excavate very stiff to hard clay layers, which were encountered in the upper 15 feet of soil. Additionally, depending on the invert elevations of the proposed subsurface utilities, sand layers and seams could be encountered, which are expected to be free-flowing and will tend to readily cave and/or slough into excavations; therefore, over-excavation, benching, and/or shoring should be expected in order to maintain the side slopes of the trench excavations.

Groundwater was not encountered in our borings during drilling activities, however, depending on seasonal conditions and the invert elevation of the proposed subsurface utilities, localized and sporadic groundwater infiltration may be encountered in the utility excavations (Refer to 3.2.2 Groundwater Conditions).

In regards to bearing and support of the subsurface utilities, the soil conditions encountered in the borings, if properly prepared, are suitable for support of the subsurface utilities. ***It should be recognized though, that depending on the invert elevations of the proposed subsurface utilities, very loose to loose sand layers and very soft to soft clays may be encountered at the bearing grade, which require undercutting and replacement with compacted structural backfill or in-place compaction (sands) to achieve suitable bearing for support of utilities.***

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Site Preparation

All areas that will support foundations, floors, pavements, or newly placed structural fill must be properly prepared. All loose surficial soil or “topsoil” and other unsuitable materials must be removed. Unsuitable materials include: frozen soil, relatively soft material, relatively wet soils, marl, deleterious material, or soils that exhibit a high organic content. Additionally, all existing trees, underbrush and associated root-mass must also be completely removed within the proposed building and pavement areas prior to construction.

Approximately 4 to 7 inches of loose surficial topsoil was encountered at boring locations. The topsoil was measured at discrete locations as shown on the Boring Location Map (Figure No. 2) in the Soil Borings. Therefore, it is possible that the actual stripping depth could significantly vary from this data. The data presented should be viewed only as a guide to the minimum stripping depth that will be required to remove organic material from the surface. Additional field exploration by Patriot would be required to provide an accurate estimate of the stripping depth. This limited data indicates that a minimum stripping depth will be required to remove the organic material from the surface, followed by the potential for additional stripping and/or scarification and recompaction as may be required to achieve suitable subgrade support. A Patriot representative should verify the stripping depth at the time grading operations occur.

Prior to construction of floor slabs, pavements, or the placement of new structural fill, the exposed subgrade must be evaluated by a Patriot representative, which will include proof-rolling of the subgrade. Proof-rolling should consist of repeated passes of a loaded, pneumatic-tired vehicle such as a tandem-axle dump-truck or scraper. The proof-rolling operations should be observed by a Patriot representative, and the proofrolling vehicle should be loaded as directed by Patriot.

Areas found to rut, pump, or deflect excessively should be compacted in-place or, if necessary, undercut and replaced with structural fill as specified in the Structural Fill and Fill Placement Control Section.

Care must be exercised during grading and fill placement operations. The combination of heavy construction equipment traffic and excess surface moisture can cause pumping and deterioration of the near surface soils. The severity of this potential problem depends to a great extent on the weather conditions prevailing during construction. The contractor must exercise discretion when selecting equipment sizes and make a concerted effort to control construction traffic and surface water while the subgrade soils are exposed. We recommend that heavy construction equipment (e.g., dump trucks, scrapers, etc.) be routed away from the building and pavement areas. If such problems do arise, the operations in the affected area should be halted and the Patriot representative contacted to evaluate the condition.

5.2 Foundation Excavation

Upon completion of the foundation excavations and prior to the placement of reinforcing steel, a Patriot representative should check the exposed subgrade to confirm that a bearing surface of adequate strength has been reached. Localized soft soil zones encountered at the bearing elevations should be further excavated until adequate support soils are encountered. The cavity should be backfilled with structural fill as defined below, or the footing can be poured at the excavated depth. Structural fill used as backfill beneath footings should be limited to lean concrete, well-graded sand and gravel, or crushed stone placed and compacted in accordance with Structural Fill and Fill Placement Control Section.

If it is necessary to support spread footings or mat foundations on structural fill, the fill pad must extend laterally a minimum distance beyond the edge of the footing. The minimum structural pad width would correspond with a point at which an imaginary line extending downward from the outside edge of the footing at a 1H:2V (horizontal: vertical) slope intersects the surface of the natural soils. For example, if the depth to the bottom of excavation is 4 feet below the bottom of the foundation, the excavation would need to extend laterally beyond the edge of the footing at least 2 feet, as shown in the Illustrations Section found at the conclusion of this report.

Excavation slopes should be maintained within all requirements set-forth by the Occupational Safety and Health Standards (OSHA), but specifically Section 1926 Subpart “P” – “Excavations”. We recommend that surcharge fill or heavy equipment be kept at least 5 feet away from the edge of excavations.

In addition, depending on the timing and staging of the structures for the proposed development, excavations that occur near existing in-use foundations should be carefully performed making a conscious effort not to undermine the support of the in-use foundations. If it is necessary to excavate soil adjacent to and below the bearing elevation of in-use foundations, Patriot should be contacted to make further recommendations regarding these excavations. Refer to the Illustrations Section at the end of this report for further details.

Construction traffic on the exposed surface of the bearing soil will potentially cause some disturbance of the subgrade and consequently loss of bearing capacity. However, the degree of disturbance can be minimized by proper protection of the exposed surface.

5.3 Structural Fill and Fill Placement Control

Structural fill, defined as any fill which will support structural loads (e.g., buildings, slabs, pavements, utilities, and sidewalks), should be clean and free of organic material, marl, debris, deleterious materials, and frozen soils. Samples of the proposed fill materials should be tested prior to initiating the earthwork and backfilling operations to determine the classification, the natural and optimum moisture contents and maximum dry density and overall suitability as a structural fill. Structural fill should have a liquid limit less than 40 and a plasticity index less than 20.

All structural fill beneath floor slabs, adjacent to foundations and over foundations, should be compacted to at least 95 percent (%) of its maximum Standard Proctor dry density (ASTM D-698). This minimum compaction requirement should be increased to 100 percent (%) of the maximum Standard Proctor dry density for fill supporting footings.

Structural fill supporting, around and over utilities should be compacted to at least 95 percent (%) of its maximum Standard Proctor dry density (ASTM D-698) for utilities underlying structural areas (i.e., buildings, slabs, pavements, utilities, and sidewalks). However, the minimum compaction requirement can be reduced for backfill around and over the utilities to 90 percent (%) of the maximum Standard Proctor dry density where utilities underlie greenbelt areas (i.e., grassy lawns, landscaping, and parks). We recommend that a clean well-grade granular material be utilized as the bedding material, as well as the backfill material around and over the utility lines.

In cut areas, where pavement sections are planned, the upper 10 inches of subgrade should be scarified and compacted to a dry density of at least 100 percent (%) of the Standard Proctor maximum dry density (ASTM D-698). Grade-raise fill placed within 1 foot of the base of the pavement section should also be compacted to at least 100 percent (%) of the Standard Proctor maximum dry density. This can be reduced to 95 percent (%) for structural fill placed more than 1 foot below the base of the pavement section.

To achieve the recommended compaction of the structural fill, we suggest that the fill be placed and compacted in layers not exceeding 9 inches in loose thickness and at a moisture content ranging from the optimum moisture content to about 2 percent (%) below optimum. The loose lift thickness should be reduced to 6 inches when utilizing small hand compactors. All fill placements should be monitored by a Patriot representative.

5.4 Chemical Modification Considerations

The addition of lime or lime kiln dust (LKD) to clay soils of moderate to very high plasticity generally results in the reduction of the plasticity properties of the soil, reduction in moisture holding capacity, swell reduction, and increased soil strength. However, the effectiveness of chemical modification is highly subjective to the amount of chemical additive applied to the soil, along with how well the additive is distributed, both in area and depth. Uniform distribution is critical for consistent performance of chemically modified soils. Therefore, a specialty contractor experienced in chemical modification and employing the appropriate equipment and techniques tailored to the soil and site conditions should apply and perform the application.

For determination of the effectiveness of the chemical modification, prior to the application of the lime or LKD a number of representative samples of soil should be obtained from the parcel to determine the lime or LKD reactivity and percentage (%) of lime or LKD needed for modification of the soils (e.g., usually 5 to 8 percent (%)). Once the percentage of lime or LKD has been determined, the specialty contractor should determine the rate at which hydrated lime or LKD is mixed into the existing soils. Mixing depths of 12 to 18 inches is typical. A Patriot representative should monitor the mixing and compaction processes.

Patriot would caution the placement of untreated (i.e., non-chemically modified) cohesive grade raise fill placed on top of chemically modified soil. From our experience, untreated cohesive grade raise fill, in less than 18 inches in thickness, placed on top of chemically modified soil may become unstable over time due to excessive moisture accumulation. The underlying chemically modified soil may act as a barrier to natural water seepage into the soil profile, thereby trapping the water within the fill to the point of saturation. Therefore, we would recommend cohesive grade raise fill be modified like the natural subgrade soils.

5.5 Groundwater Considerations

Groundwater was not encountered in the borings during drilling activities. However, localized and sporadic groundwater infiltration may occur into the foundation excavations depending on seasonal conditions. Groundwater inflow into shallow excavations above the groundwater table is expected to be adequately controlled by conventional methods such as gravity drainage and/or pumping from sumps. More significant inflow can be expected in deeper excavations below the groundwater table requiring more aggressive dewatering techniques, such as well or wellpoint systems. For groundwater to have minimal effects on the construction, foundation excavations should be constructed and poured in the same day, if possible.

6.0 INVESTIGATIONAL PROCEDURES

6.1 Field Work

A total of fifteen (15) soil borings were drilled, sampled, and tested at the project site between January 5th and 6th, 2025, at the approximate locations shown on the Boring Location Map in the Figures Appendix. The soil borings were drilled to depths between roughly 7 ½ and 15 feet, as shown on the Boring Logs in the Appendices. All depths are given as feet below the existing ground surface.

The borings were advanced using 3¼ inch inside diameter hollow-stem augers. Samples were recovered in the undisturbed material below the bottom of the augers using the standard drive sample technique in accordance with ASTM D 1586-74. A 2 inch outside diameter by 1⅜ inch inside diameter split-spoon sampler was driven a total of 18 inches with the number of blows of a 140-pound hammer falling 30 inches recorded for each 6 inches of penetration. The sum of blows for the final 12 inches of penetration is the Standard Penetration Test result commonly referred to as the "N"-value (i.e., blow-count). Split-spoon samples were recovered at 2½ feet intervals, beginning at a depth of 1 foot below the existing surface grade, extending to a depth of 10 feet, and at 5 feet intervals thereafter to the termination of the boring.

Groundwater levels were monitored at each borehole location during drilling and upon completion of the borings. The boreholes were backfilled with a mixture of bentonite chips and auger cuttings and borings performed in pavement areas were patched prior to demobilization for safety considerations.

Upon completion of the boring program, the samples retrieved during drilling were returned to Patriot's soil testing laboratory where they were visually examined and classified. A laboratory-generated log of each boring was prepared based upon the driller's field log, laboratory test results, and our visual examination. Test boring logs and a description of the classification system are included in the Soil Borings Appendix in this report. Indicated on each log include: the primary strata encountered, the depth of each stratum change, the depth of each sample, the Standard Penetration Test results, groundwater conditions, and selected laboratory test data. The laboratory logs were prepared for each boring giving the appropriate sample data and the textural description and classification.

6.2 Laboratory Testing

Representative samples recovered in the borings were selected for testing in the laboratory to evaluate their physical properties and engineering characteristics. Laboratory analysis included:

Laboratory Test	Number of Tests	Test Standard
Visual Classification (USCS)	Every Sample	ASTM D 2487
Moisture Content	Every cohesive sample	ASTM D 2216
Unconfined Compressive Strength (Pocket Penetrometer)	Every suitable cohesive sample	

7.0 LIMITATIONS OF PROFESSIONAL SERVICES

The professional services presented for this project along with the conclusions and recommendations prepared for this report are in accordance with generally accepted industry standards for geotechnical practice; providing a degree of care and skill ordinarily exercised. Conclusions, opinions, or recommendations expressed by others with regard to information and data provided herein are not the responsibility of Patriot Engineering and Environmental, Inc. No warranty, expressed or implied, is made as to the conclusions and professional opinions included in this report.

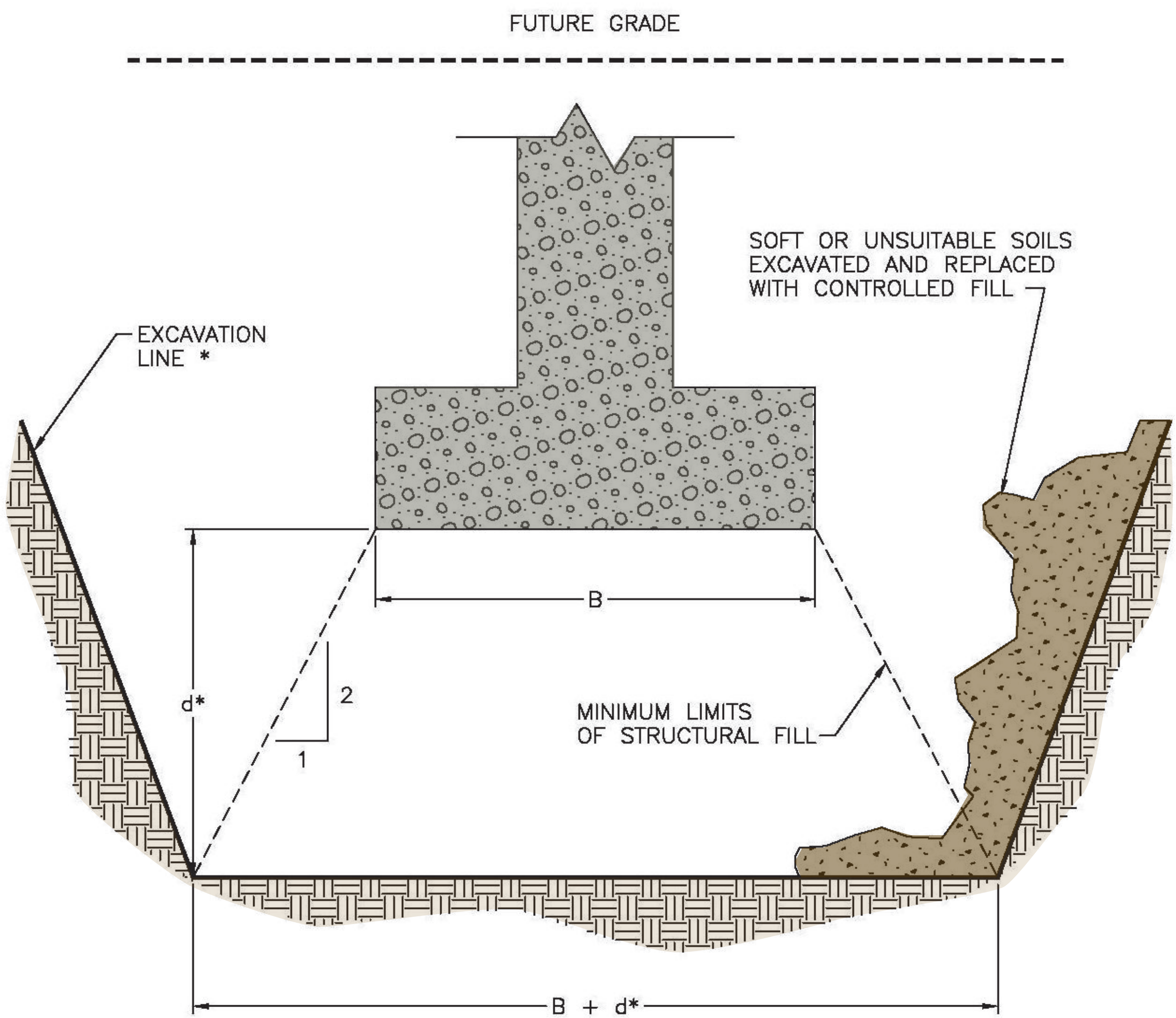
Our analyses and recommendations are based on data presented in this report, which include soil borings, laboratory testing, and our experience with similar projects. Subsurface variations that may not be indicated by a dispersive exploratory boring program can exist and not become evident until construction. If such variations or unexpected conditions are encountered during construction, Patriot Engineering and Environmental, Inc. should be informed immediately since the validity of our recommendations may be affected. Adjustments to the design(s) or alternative design recommendations should be evaluated if changes in conditions are encountered.

8.0 ILLUSTRATIONS

See Illustrations “A” and “B” on the following pages. These illustrations are presented to further visually clarify several of the construction considerations presented in Section 5.2 “Foundation Excavations”.

APPENDIX A

ILLUSTRATIONS



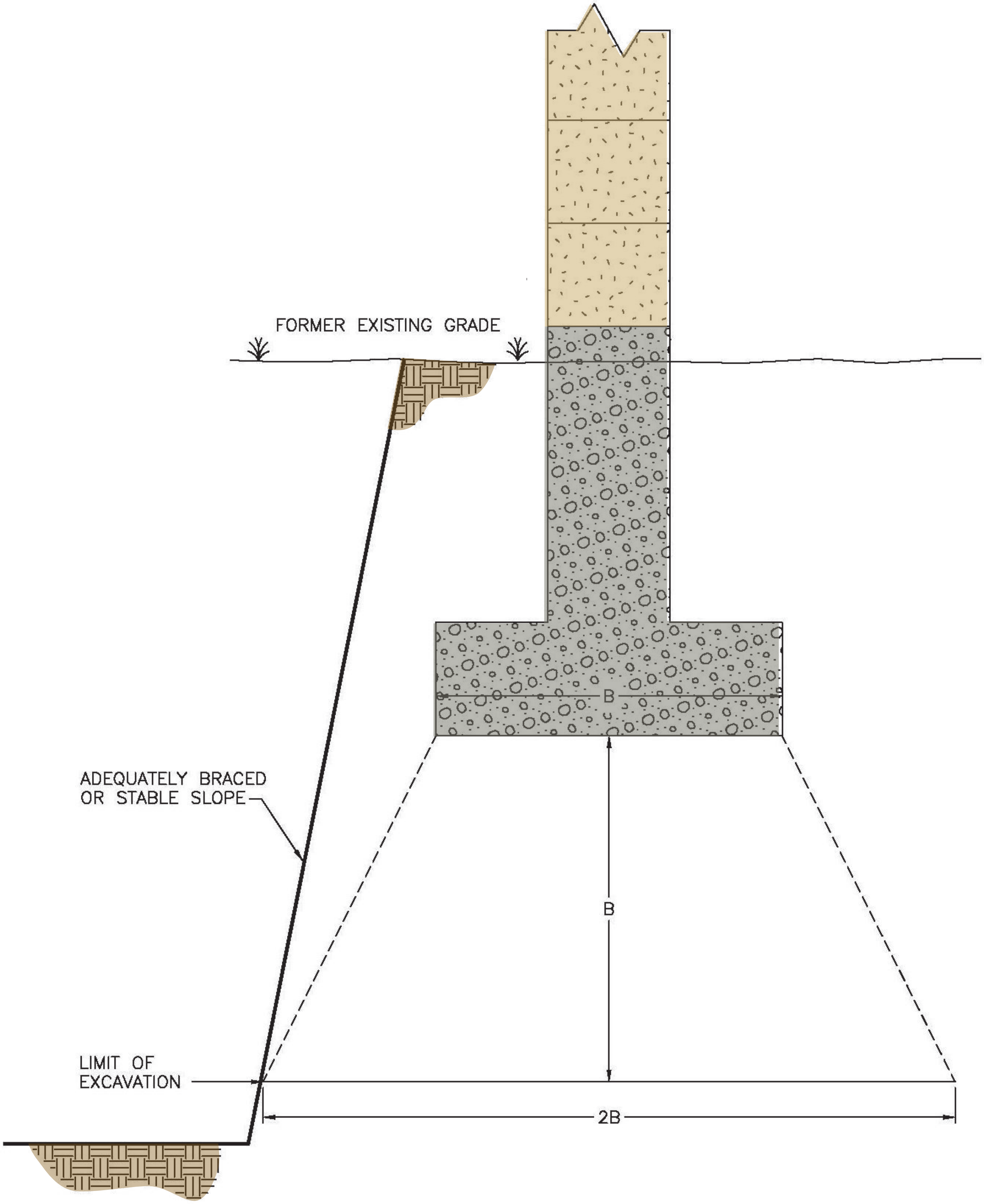
*d IS DEPTH TO SUITABLE SOILS

* IN COMPLIANCE WITH OSHA STANDARDS

PATRIOT
ENGINEERING AND ENVIRONMENTAL, INC.

ILLUSTRATION A

Foundation Undercutting & Backfilling



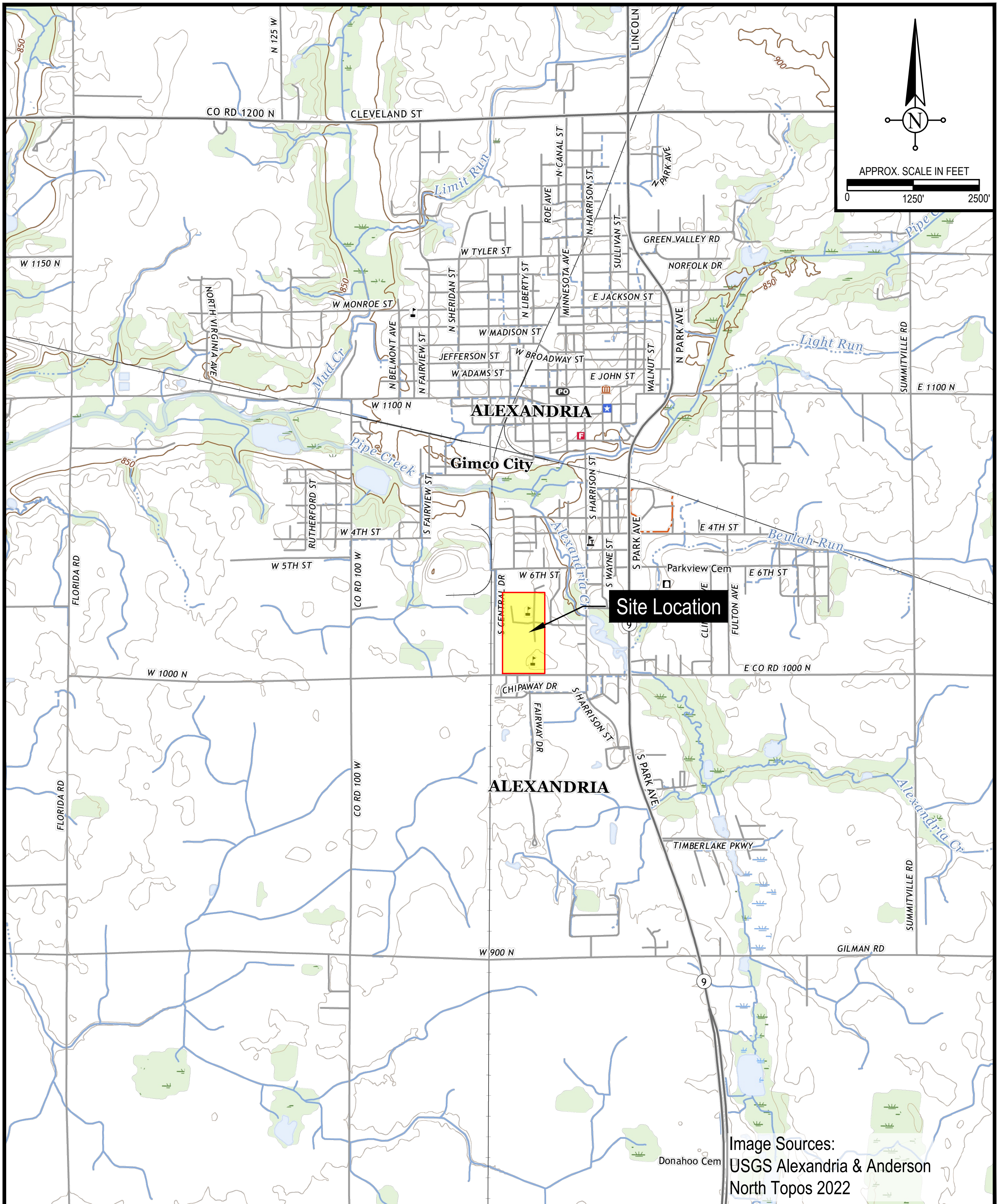
PATRIOT
ENGINEERING AND ENVIRONMENTAL, INC.

ILLUSTRATION B

Foundation Excavation Near Existing Slopes or Foundations

APPENDIX B

FIGURES

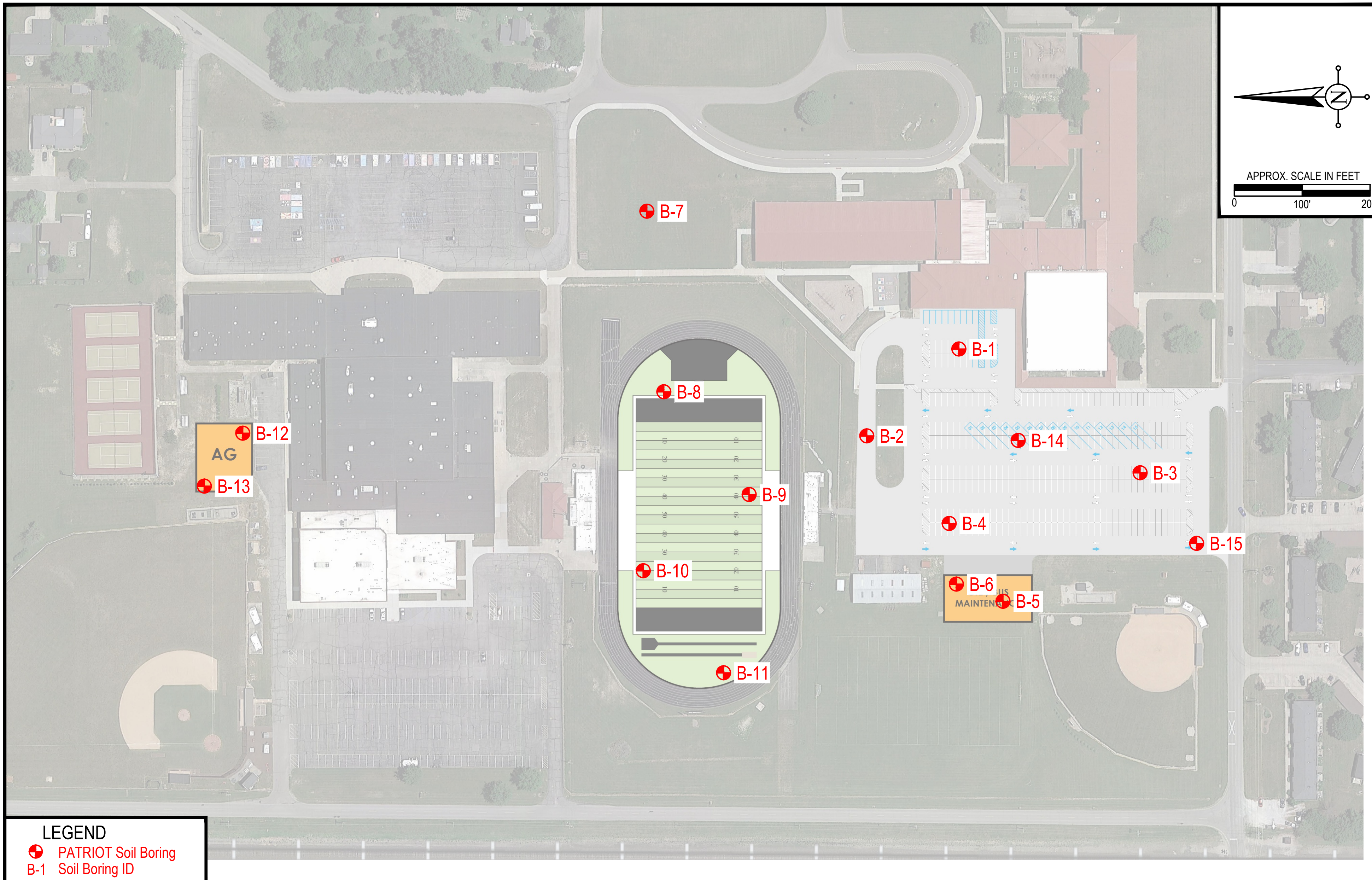


PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

Project: Alexandria Schools Improvements 308 West 11th Street Alexandria, Indiana	
	Drawn By: T. Humphreys
Project Number: 25-1990-01	Approved: L. Young
Date: January 20, 2026	DWG: 25-1990-01_geo

Figure 1

Site Vicinity Map



PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

NOTES:
1. Boring locations were staked by PATRIOT. All locations are shown as approximate.
2. All locations were determined in the field with references to existing landmarks.
3. Image Source: Client
4. Scale as shown.

Project: Alexandria Schools Improvements
308 West 11th Street
Alexandria, Indiana

	Drawn By: T. Humphreys
Project Number: 25-1990-01	Approved: L. Young
Date: January 20, 2026	DWG: 25-1990-01_geo

Figure 2

Soil Boring Location Map

APPENDIX C
SOIL BORINGS

PATRIOT
ENGINEERING AND ENVIRONMENTAL, INC.

LOG OF BORING B-1

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 882 feet
Start Date	: 01/05/2026	Latitude	: 40.249730°
Drilling Method	: HSA	Longitude	: 85.678114°

Water Levels
▼ During Drilling - Dry
▽ After Completion - Dry
◆ After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 882	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					ASPHALT (4")						
					CRUSHED STONE(7")						
	880		CL	▨	Brown, moist to very moist, medium stiff to stiff, SILTY CLAY with trace sand	1	100	2/2/3	0.9	26	
5				▨		2	100	3/4/4	2.2	16	
	875		CL	▨	Brown and gray, slightly moist, stiff to very stiff, SANDY CLAY with trace gravel	3	100	4/6/8	>6.0	13	Boring caved to 6 feet upon auger removal.
					Boring terminated at 7.5 feet.						Groundwater was not encountered during drilling, nor upon completion.
10											
	870										
15											
	865										
20											

01-15-2026 C:\Users\lyoung\Patriot Engineering\GEO - Documents\Mtech\2025 Mtech\1990-01G\b1.bor

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

LOG OF BORING B-2

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 879 feet
Start Date	: 01/05/2026	Latitude	: 40.250102°
Drilling Method	: HSA	Longitude	: 85.678573°

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 879	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					ASPHALT (4")						
					CRUSHED STONE (6")						
			CL		Brown, moist, very soft to soft, SILTY CLAY with trace sand	1	100	2/2/2	0.4	23	
5	875					2	100	1/1/1		19	
			CL		Brown, slightly moist, medium stiff to stiff, SANDY CLAY with trace gravel	3	100	2/3/5	1.9	14	Boring caved to 6.5 feet upon auger removal.
					Boring terminated at 7.5 feet.						Groundwater was not encountered during drilling, nor upon completion.
10	870										
15	865										
20	860										

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

LOG OF BORING B-3

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 880 feet
Start Date	: 01/06/2026	Latitude	: 40.248997°
Drilling Method	: HSA	Longitude	: 85.678768°

Water Levels
- ▼ During Drilling - Dry
- ▽ After Completion - Dry
- ◆ After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 880	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0	880				ASPAHLT (5")						
					CRUSHED STONE (6")						
			CL		Dark gray, medium stiff, SILTY CLAY with trace sand and trace gravel (Possible Fill)	1	56	3/3/3		20	
			CL		Gray, moist, soft, SITLY CLAY with trace sand	2	100	2/2/2		23	
5	875										
			CL		Brown, moist, stiff to very stiff, SANDY CLAY with trace gravel	3	100	4/5/4	2.1	16	Boring caved to 6 feet upon auger removal.
					Boring terminated at 7.5 feet.						Groundwater was not encountered during drilling, nor upon completion.
10	870										
15	865										
20											

01-15-2026 C:\Users\lyoung\Patriot Engineering\GEO - Documents\Mtech\2025 Mtech\1990-01G\b3.bor

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

LOG OF BORING B-4

(Page 1 of 1)

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 879 feet
Start Date	: 01/05/2026	Latitude	: 40.249769°
Drilling Method	: HSA	Longitude	: 85.679035°

Water Levels
- ▼ During Drilling - Dry
- ▽ After Completion - Dry
- ◆ After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 879	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					ASPHALT (4")						
					CRUSHED STONE (8")						
			CL		Brown, moist, medium stiff to stiff, SILTY CLAY with trace sand	1	100	2/2/3	1.9	22	
	875		CL		Brown and gray, moist, soft, SANDY CLAY with trace gravel	2	100	2/2/2	0.4	18	
5			CL		Brown, moist, stiff, SANDY CLAY with trace gravel	3	100	4/4/5	1.4	19	Boring caved to 7 feet upon auger removal.
					Boring terminated at 7.5 feet.						Groundwater was not encountered during drilling, nor upon completion.
	870										
10											
	865										
15											
	860										
20											

LOG OF BORING B-5

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 879 feet
Start Date	: 01/05/2026	Latitude	: 40.249551°
Drilling Method	: HSA	Longitude	: 85.679446°

Water Levels
- ▼ During Drilling - Dry
- ▽ After Completion - Dry
- ◆ After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 879	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					TOPSOIL (4")						
0.3–3.5			SM		Brown and gray, slightly moist, loose, SILTY SAND	1	100	3/3/4			
3.5–6	875		CL		Brown, slightly moist, medium stiff to stiff, SANDY CLAY with trace gravel	2	100	3/4/3	1.1	14	
6–8.5			CL		Brown, slightly moist, very stiff, SANDY CLAY with trace gravel	3	100	910/9		12	
8.5–13.5	870		CL		Gray, slightly moist, stiff, SANDY CLAY with trace gravel	4	17	3/4/6		9	Boring caved to 13 feet upon auger removal.
13.5–15	865		CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	5	100	35/36/48		7	
15					Boring terminated at 15 feet.						Groundwater was not encountered during drilling, nor upon completion.
20	860										

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

LOG OF BORING B-6

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 879 feet
Start Date	: 01/05/2026	Latitude	: 40.249739°
Drilling Method	: HSA	Longitude	: 85.679356°

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 879	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					TOPSOIL (4")						
			CL		Brown, moist, medium stiff, SILTY CLAY with trace sand	1	67	3/3/2	0.5	21	
5	875		SM		Brown and gray, slightly moist, very loose, SILTY SAND	2	72	2/2/1			
			SM		Brown, moist, loose, SILTY SAND	3	100	6/6/4			Boring caved to 7 feet upon auger removal.
10	870		CL		Brown, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	4	78	4/10/11	>6.0	14	
15	865		CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	5	100	12/22/23		8	
20	860				Boring terminated at 15 feet.						Groundwater was not encountered during drilling, nor upon completion.

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

LOG OF BORING B-7

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 877 feet
Start Date	: 01/05/2026	Latitude	: 40.250991°
Drilling Method	: HSA	Longitude	: 85.677388°

Water Levels
- ▼ During Drilling - Dry
- ▽ After Completion - Dry
- ◆ After 24 Hours - N/A

Depth in Feet: 0, 5, 10, 15, 20
Elevation (Feet) 877: 875, 870, 865, 860

Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
			TOPSOIL (6")						
	CL		Brown, moist, medium stiff, SILTY CLAY with trace sand	1	89	2/3/3		20	
	CL		Brown, moist, soft, SANDY CLAY with trace gravel	2	100	2/2/2	0.4	16	
	CL		Brown, moist, stiff, SANDY CLAY and gravel	3	28	7/7/8		23	
	SP-SM		Brown, slightly moist, dense, fine to medium grained, SAND and gravel with trace silt	4	39	15/20/13			
	SP-SM		Brown, slightly moist, very dense, fine to medium grained, SAND and gravel with trace silt and interbedded sandy clay seams	5	89	23/28/31			Boring caved to 13.5 feet upon auger removal.

Boring terminated at 15 feet.

Groundwater was not encountered during drilling, nor upon completion.

LOG OF BORING B-8

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 879 feet
Start Date	: 01/06/2026	Latitude	: 40.250923°
Drilling Method	: HSA	Longitude	: 85.678341°

Water Levels
- ▼ During Drilling - Dry
- ▽ After Completion - Dry
- ◆ After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 879	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					TOPSOIL (5")						
			CL		Brown, moist, medium stiff, SANDY CLAY with trace gravel	1	100	3/3/4		16	
	875		CL		Brown and gray, slightly moist, stiff to very stiff, SANDY CLAY with trace gravel	2	100	4/6/6	3.8	14	
5											Boring caved to 5.5 feet upon auger removal.
			CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY with trace gravel	3	100	6/7/6	3.5	13	
					Boring terminated at 7.5 feet.						
	870										Groundwater was not encountered during drilling, nor upon completion.
10											
	865										
15											
	860										
20											

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

LOG OF BORING B-9

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 880 feet
Start Date	: 01/06/2026	Latitude	: 40.250578°
Drilling Method	: HSA	Longitude	: 85.678883°

Water Levels
- ▼ During Drilling - Dry
- ▽ After Completion - Dry
- ◆ After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 880	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0	880				TOPSOIL (6")						
			CL		Brown, moist, stiff, SILTY CLAY with trace sand	1	67	3/4/5	1.9	20	
5	875		CL		Brown, moist, medium stiff to stiff, SANDY CLAY with trace gravel	2	100	3/2/3	1.9	18	
			CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY with trace gravel	3	89	4/5/5	2.2	13	Boring caved to 6 feet upon auger removal.
					Boring terminated at 7.5 feet.						Groundwater was not encountered during drilling, nor upon completion.
10	870										
15	865										
20											

LOG OF BORING B-10

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 881 feet
Start Date	: 01/05/2026	Latitude	: 40.251005°
Drilling Method	: HSA	Longitude	: 85.679285°

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 881	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					TOPSOIL (6")						
	880		CL		Brown, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	1	100	5/6/13	4.2	13	
5			CL		Brown, slightly moist, medium stiff to stiff, SANDY CLAY with trace gravel	2	56	3/4/4	2.2	12	Boring caved to 5 feet upon auger removal.
	875		CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY with trace gravel	3	89	4/5/6	4.1	14	
					Boring terminated at 7.5 feet.						Groundwater was not encountered during drilling, nor upon completion.
10	870										
15	865										
20											

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

LOG OF BORING B-11

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 879 feet
Start Date	: 01/05/2026	Latitude	: 40.250681°
Drilling Method	: HSA	Longitude	: 85.679823°

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 879	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					TOPSOIL (7")						
			CL		Brown, moist, soft, SILTY CLAY with trace to little sand	1	67	2/2/2	0.4	22	
	875					2	56	2/2/2	0.4	22	
5											
			CL		Brown, moist, stiff to very stiff, SANDY CLAY with trace gravel	3	100	4/5/6	4.5	16	Boring caved to 6 feet upon auger removal.
					Boring terminated at 7.5 feet.						Groundwater was not encountered during drilling, nor upon completion.
	870										
10											
	865										
15											
	860										
20											

LOG OF BORING B-12

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 879 feet
Start Date	: 01/05/2026	Latitude	: 40.252626°
Drilling Method	: HSA	Longitude	: 85.678559°

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 879	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					TOPSOIL (5")						
			CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY with trace gravel	1	100	6/8/10	3.0	11	
	875					2	100	5/5/7	2.5	12	
5											
			CL		Gray, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	3	100	6/13/12	>6.0	9	
	870		CL		Gray, slightly moist, stiff to very stiff, SANDY CLAY with trace gravel	4	100	5/5/5	2.1	14	
10											Boring caved to 11.5 feet upon auger removal.
	865					5	100	5/5/18		7	
15					Boring terminated at 15 feet.						Groundwater was not encountered during drilling, nor upon completion.
	860										
20											

LOG OF BORING B-13

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 878 feet
Start Date	: 01/05/2026	Latitude	: 40.252781°
Drilling Method	: HSA	Longitude	: 85.678839°

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 878	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					TOPSOIL (5")						
			CL		Brown and gray, slightly moist, medium stiff to stiff, SANDY CLAY with trace gravel	1	89	2/2/3	1.0	13	
	875										
			CL		Brown, moist, medium stiff, SANDY CLAY and gravel	2	11	2/3/4		15	
5											
			CL		Gray, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	3	56	11/10/8	>6.0	10	
	870										
			CL		Gray, moist, stiff to very stiff, SANDY CLAY with trace gravel	4	67	5/4/6	2.2	15	
10											
	865										Boring caved to 13 feet upon auger removal.
			CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	5	6	50/1"		13	
15					Boring terminated at 15 feet.						Groundwater was not encountered during drilling, nor upon completion.
	860										
20											

LOG OF BORING B-14

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 879 feet
Start Date	: 01/06/2026	Latitude	: 40.249490°
Drilling Method	: HSA	Longitude	: 85.678597°

Water Levels
- ▼ During Drilling - Dry
- ▽ After Completion - Dry
- ◆ After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 879	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					ASPHALT (4")						
					CRUSHED STONE (7")						
			CL		Dark gray, moist, medium stiff to stiff, SILTY CLAY with little sand (Possible Fill)	1	100	2/3/4	1.1	24	
5	875		CL		Brown and gray, moist, soft, SILTY CLAY with trace sand	2	100	2/2/2	0.4	20	
			SP-SM		Brown, slightly moist, loose, fine to medium grained, SAND with trace gravel and trace silt	3	100	3/3/3			Boring caved to 6 feet upon auger removal.

Boring terminated at 7.5 feet.

Groundwater was not encountered during drilling, nor upon completion.

Depth scale: 0, 5, 10, 15, 20. Elevation scale: 875, 870, 865, 860.

LOG OF BORING B-15

PATRIOT ENGINEERING AND ENVIRONMENTAL, INC.

Alexandira Schools Improvements
308 West 11th Street
Alexandria, Indiana

Client Name	: Skillman Corporation	Driller	: L. Garcia
Project Number	: 25-1990-01G	Sampling	: Splitspoon
Logged By	: L. Young	Approx. Elevation	: +/- 879 feet
Start Date	: 01/05/2026	Latitude	: 40.248768°
Drilling Method	: HSA	Longitude	: 85.679140°

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth in Feet	Elevation (Feet) 879	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0					ASPHALT (5")						
					CRUSHED STONE (10")						
			CL		Brown, moist, medium stiff to stiff, SILTY CLAY with trace sand	1	100	2/3/2	1.0	24	
	875					2	100	2/2/3	1.0	22	
5											
			CL		Brown and gray, moist, stiff, SILTY CLAY with trace sand	3	100	9/6/6		23	Boring caved to 7 feet upon auger removal.
					Boring terminated at 7.5 feet.						Groundwater was not encountered during drilling, nor upon completion.
	870										
10											
	865										
15											
	860										
20											

BORING LOG KEY

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

FIELD CLASSIFICATION SYSTEM
FOR SOIL EXPLORATION

NON-COHESIVE SOILS

(Silt, Sand, Gravel, and Combinations)

Density	Field Identification (SPT Blows/ft)
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 51

Grain Size Terminology

Soil Fraction	Particle Size	US Standard Sieve Size
Boulders	> 12 inches	> 12 inches
Cobbles	3 - 12 inches	3 - 12 inches
Gravel: Coarse	¾ - 3 inches	¾ - 3 inches
Small	4.76 mm - ¾ inch	No. 4 - ¾ inches
Sand: Coarse	2.00 - 4.76 mm	No. 10 - No. 4
Medium	0.42 - 2.00 mm	No. 40 - No. 10
Fine	0.074 - 0.42 mm	No. 200 – No. 40
Silt	0.005 - 0.074 mm	< No. 200
Clay	< 0.005 mm	< No. 200

RELATIVE PROPORTIONS FOR SOILS

Descriptive Term	Percent
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

COHESIVE SOILS

(Clay, Silt and Combinations)

Consistency	Unconfined Compressive Strength (tons/ft^2)	Field Identification (SPT Blows/ft)
Very Soft	Less than 0.25	0 - 2
Soft	0.25 – < 0.5	3 - 4
Medium Stiff	0.5 - < 1.0	5 - 8
Stiff	1.0 - < 2.0	9 -15
Very Stiff	2.0 - < 4.0	16 - 30
Hard	Over 4.0	> 30

Classification: Provided on Boring Logs are made by visual inspection.

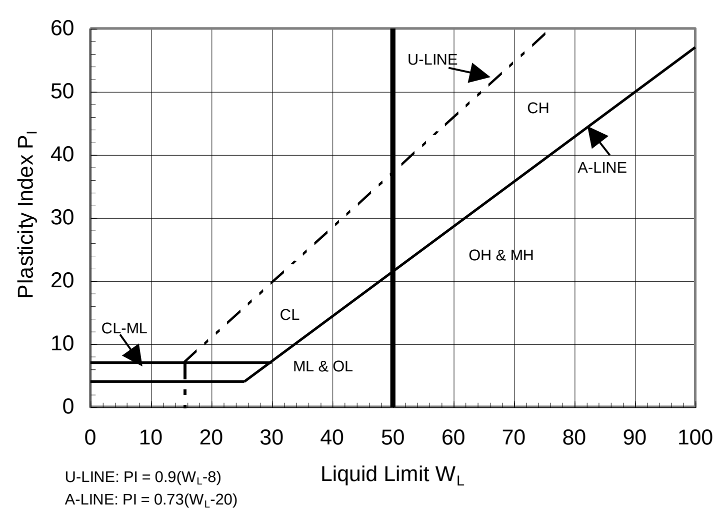
Standard Penetration Test: Driving a 2 inch outer-diameter (O.D.) by 1⅜ inch inner-diameter (I.D.) split-spoon sampler a total of 18 inches into undisturbed soil with the number of blows of a 140 pound hammer free-falling a distance of 30 inches recorded for each 6 inches of penetration. The sum of blows for the final 12 inches of penetration is the Standard Penetration Test result commonly referred to as the "N"-value (or blow-count).

Strata Changes: In the column "Descriptions" on the Boring Logs the horizontal lines represent strata changes. A solid line (———) represents an observed change, a dashed line (- - - - - -) represents an estimated change.

Groundwater: Observations were made at the times indicated on the Boring Logs. Fluctuations in the groundwater level should be expected over time due to variations in rainfall and other environmental or physical factors. *Groundwater symbols*: (▼)-observed groundwater level and/or elevation during drilling; (∇)-observed groundwater level and/or elevation upon completion of boring.

Unified Soil Classification System (USCS)

Major Divisions			Group Symbol		Typical Names	Classification Criteria for Coarse-Grained Soils		
Coarse-grained soils (more than half of material is larger than No. 200)	Gravels (more than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (little or no fines)	GW		Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U \geq 4$ $1 \leq C_C \leq 3$	$C_U = \frac{D_{60}}{D_{10}}$	$C_C = \frac{D^2_{30}}{D_{10} D_{60}}$
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW ($C_U < 4$ or $1 > C_C > 3$)		
		Gravels with fines (appreciable amount of fines)	GM	*d* *u*	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below A line or $P_I < 4$	Above A line with $4 < P_I < 7$ are borderline cases requiring use of dual symbols	
			GC		Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above A line or $P_I > 7$		
	Sands (more than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (little or no fines)	SW		Well-graded sands, gravelly sands, little or no fines	$C_U \geq 6$ $1 \leq C_C \leq 3$	$C_U = \frac{D_{60}}{D_{10}}$	$C_C = \frac{(D_{30})^2}{D_{10} D_{60}}$
			SP		Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW ($C_U < 6$ or $1 > C_c > 3$)		
		Sands with fines (appreciable amount of fines)	SM	*d* *u*	Silty sands, sand-silt mixtures	Atterberg limits below A line or $P_I < 4$	Limits plotting in hatched zone with $4 \leq P_I \leq 7$ are borderline cases requiring use of dual symbols	
			SC		Clayey sands, sand-clay mixtures	Atterberg limits above A line with $P_I > 7$		
Fine-grained soils (more than half of material is smaller than No. 200)	Silt and clays (liquid limit <50)		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	1. Determine percentages of sand and gravel from grain size curve. 2. Depending on percentages of fines (fraction smaller than 200 sieve size), coarse-grained soils are classified as follows: Less than 5% - GW, GP, SW, SP More than 12% - GM, GC, SM, SC 5-12% - Borderline cases requiring dual symbols		
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
			OL		Organic silts and organic silty clays of low plasticity			
	Silts and clays (liquid limit >50)		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts			
			CH		Inorganic clays or high plasticity, fat clays			
			OH		Organic clays of medium to high plasticity, organic silts			
	Highly organic soils		PT		Peat and other highly organic soils			



Plasticity Chart

APPENDIX D

SEISMIC SOIL SITE CLASSIFICATION

Announcement
ASCE 7-22 is now available.

OSHPD

Latitude, Longitude: 40.24972575, -85.67883813

Date	1/20/2026, 8:28:18 AM
Design Code Reference Document	IBC-2012
Risk Category	III
Site Class	C

Type	Value	Description
S_S	0.129	MCE_R ground motion. (for 0.2 second period)
S_1	0.073	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.155	Site-modified spectral acceleration value
S_{M1}	0.125	Site-modified spectral acceleration value
S_{DS}	0.104	Numeric seismic design value at 0.2 second SA
S_{D1}	0.083	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	B	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	1.7	Site amplification factor at 1.0 second
PGA	0.059	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.071	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	0.129	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.142	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.073	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.085	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.6	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.059	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.911	Mapped value of the risk coefficient at short periods

Type	Value	Description
C_{R1}	0.865	Mapped value of the risk coefficient at a period of 1 s
C_V		Vertical coefficient

DISCLAIMER

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APPENDIX E

GENERAL QUALIFICATIONS AND STANDARD CLAUSE FOR UNANTICIPATED SUBSURFACE CONDITIONS

GENERAL QUALIFICATIONS

of Patriot Engineering's Geotechnical Engineering Investigation

This report has been prepared at the request of our client for his use on this project. Our professional services have been performed, findings obtained, and recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report or on the test borings logs regarding vegetation types, odors or staining of soils, or other unusual conditions observed are strictly for the information of our client and the owner.

This report may not contain sufficient information for purposes of other parties or other uses. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field and laboratory data presented in this report. Should there be any significant differences in structural arrangement, loading or location of the structure, our analysis should be reviewed.

The recommendations provided herein were developed from the information obtained in the test borings, which depict subsurface conditions only at specific locations. The analysis, conclusions, and recommendations contained in our report are based on site conditions as they existed at the time of our exploration. Subsurface conditions at other locations may differ from those occurring at the specific drill sites. The nature and extent of variations between borings may not become evident until the time of construction. If, after performing on-site observations during construction and noting the characteristics of any variation, substantially different subsurface conditions from those encountered during our explorations are observed or appear to be present beneath excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we urge that our report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

We urge that Patriot be retained to review those portions of the plans and specifications that pertain to earthwork and foundations to determine whether they are consistent with our recommendations. In addition, we are available to observe construction, particularly the compaction of structural backfill and preparation of the foundations, and such other field observations as may be necessary.

In order to fairly consider changed or unexpected conditions that might arise during construction, we recommend the following verbiage (Standard Clause for Unanticipated Subsurface Conditions) be included in the project contract.

STANDARD CLAUSE FOR UNANTICIPATED SUBSURFACE CONDITIONS

"The owner has had a subsurface exploration performed by a soils consultant, the results of which are contained in the consultant's report. The consultant's report presents his conclusions on the subsurface conditions based on his interpretation of the data obtained in the exploration. The contractor acknowledges that he has reviewed the consultant's report and any addenda thereto, and that his bid for earthwork operations is based on the subsurface conditions as described in that report. It is recognized that a subsurface exploration may not disclose all conditions as they actually exist and further, conditions may change, particularly groundwater conditions, between the time of a subsurface exploration and the time of earthwork operations. In recognition of these facts, this clause is entered in the contract to provide a means of equitable additional compensation for the contractor if adverse unanticipated conditions are encountered and to provide a means of rebate to the owner if the conditions are more favorable than anticipated.

At any time during construction operations that the contractor encounters conditions that are different than those anticipated by the soils consultant's report, he shall immediately (within 24 hours) bring this fact to the owner's attention. If the owner's representative on the construction site observes subsurface conditions which are different than those anticipated by the consultant's report, he shall immediately (within 24 hours) bring this fact to the contractor's attention. Once a fact of unanticipated conditions has been brought to the attention of either the owner or the contractor, and the consultant has concurred, immediate negotiations will be undertaken between the owner and the contractor to arrive at a change in contract price for additional work or reduction in work because of the unanticipated conditions. The contract agrees that the following unit prices would apply for additional or reduced work under the contract. For changed conditions for which unit prices are not provided, the additional work shall be paid for on a time and materials basis."

Another example of a changed conditions clause can be found in paper No. 4035 by Robert F. Borg, published in ASCE Construction Division Journal, No. CO2, September 1964, page 37.