SUBSURFACE INVESTIGATION &
FOUNDATION RECOMMENDATIONS

NEW NORTH HIGH SCHOOL
AND MIDDLE SCHOOL
EVANSVILLE, INDIANA

Prepared for:

EVANSVILLE VANDERBURGH SCHOOL CORPORATION
EVANSVILLE, INDIANA

Prepared by:

ALT & WITZIG ENGINEERING, INC.
EVANSVILLE, INDIANA

AUGUST 6, 2009 **PROJECT NO. : 09EV0016**

Alt & Witzig Engineering, Inc.
2315 A Glenview Drive • Evansville, Indiana 47720
(812) 422-4446 • Fax (812) 422-8377

August 6, 2009

Evansville Vanderburgh School Corporation.
One SE Ninth Street
Evansville, Indiana 47708
ATTN: Mr. Pat Tuley, Chief Facilities Officer

RE: Subsurface Investigation &
Foundation Recommendations
New North High School
and Middle School
Evansville, Indiana
Alt & Witzig File: 09EV0016

Gentlemen:

In compliance with your request, we have conducted a foundation investigation and evaluation for the above referenced project. It is our pleasure to transmit herewith four (4) copies of our report.

The results of our investigation and evaluation are discussed in detail in the Foundation Discussion and Recommendations Section of this report. Parameters have been given that can be used in the design of the project.

If we can give further service in these matters, please contact us at your convenience.

Respectfully Submitted,

ALT & WITZIG ENGINEERING, INC.

Robert Smith, P.E.
Project Engineer

RS:PAK

Patrick A. Knoll, P.E.

TABLE OF CONTENTS

SUBSURFACE INVESTIGATION

AND

FOUNDATION RECOMMENDATIONS

INTRODUCTION

General

This report presents the results of a foundation investigation for the proposed new school to be constructed in Evansville, Indiana. Our investigation was conducted for Evansville Vanderburgh School Corporation.

Authorization to perform this investigation was in the form of an accepted proposal prepared by Alt and Witzig Engineering Inc. and a notice to proceed from the Evansville Vanderburgh School Corporation.

The scope of this investigation included a review of geological maps of the area, a review of geologic and related literature; a reconnaissance of the immediate site, subsurface exploration; field and laboratory testing; engineering analysis and evaluation of the materials.

The purpose of this foundation investigation was to determine the various soils profile components, the engineering characteristics of the subsurface materials and to provide criteria for use by the design engineers and architects in preparing the foundation design for the School.

DESCRIPTION OF SITE

Site Location

The site of the new North High School and Middle School is located on the north side of Evansville, Indiana. The new school will be located on the east side of U.S. 41 and is bound by Peck Road to the east. Specifically the site consists of 14901 U.S. Highway 41 N, 15325 U.S. Highway 41 N, and 15150 Peck Road. The approximate location of the site is shown on the enclosed Site Location Map presented in the Appendix.

Site Topography and Drainage

The surface of the immediate site is relatively flat to rolling with an approximate relief of ten (10) to twenty-five (25) feet across the site. Several drainage swales of varying size were noted across the site. Predominately drainage is directed to these swales.

Ground cover across the site at the time of boring operations consisted of open grass covered fields with some trees along the property lines. Three houses and associated structures exists on the site. A large mound of fill exists at the 14901 US. 41 N property. It is our understanding that the fill was placed for use in construction at the site. It appears that the site has predominantly been used for agricultural purposes. The existing structures will be demolished with the proposed construction.

FIELD INVESTIGATION

Scope

Field investigations to determine the engineering characteristics of the foundation materials included a reconnaissance of the project site, and drilling fifty-four (54) borings. Borings are located as shown on the enclosed boring location plan. Standard penetration tests with split-spoon sampling were performed during drilling operations. The apparent groundwater level at each boring location was also determined.

Drilling and Sampling Procedures

The soil borings were performed with a drilling rig equipped with a rotary head. Conventional hollow-stem augers were used to advance the holes. Representative samples were obtained employing split-spoon sampling procedures in accordance with ASTM Procedure D-1586.

Field Tests and Measurements

Penetration tests. During the sampling procedure, standard penetration tests were performed at regular intervals to obtain the standard penetration value of the soil. The standard penetration value is defined as the number of blows a 140-pound hammer, falling 30 inches, is required to advance the split-spoon sampler one (1) foot into the soil. The results of the standard penetration tests indicate the relative density and comparative consistency of the soils, and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components.

Water Level Measurements

In relatively impervious soils, such as those on this site, the groundwater elevation is difficult and often impossible to accurately determine. The exact location of the water table should be anticipated to fluctuate somewhat depending upon normal seasonal variations in precipitation and surface runoff.

Ground Surface Elevation

The elevation of the ground surface shown on the boring logs was determined using conventional leveling techniques and are presumably accurate to within ± 1.0 foot. All depths and elevations referred to in this report are referenced from the existing ground surface at each boring location. However, it is suggested that the borings be field located by the survey/site engineer and shown on the proposed site layout and grading plan. Borings were field staked using a hand-held GPS unit based on the proposed boring locations shown on the drawing titled "soil borings" provided by VPS architecture. Our locations were established by scaling from the drawing and are only as accurate as these methods permit.

LABORATORY INVESTIGATIONS

In addition to the field investigations, a supplemental laboratory investigation was conducted to ascertain additional pertinent engineering characteristics of the foundation materials necessary in analyzing the behavior of the proposed new school in Evansville, Indiana.

All phases of the laboratory investigation were conducted in general accordance with applicable ASTM Specifications.

The laboratory-testing program included supplementary visual classification and water content tests on several cohesive samples. The results of our testing is presented in the Appendix of this report.

Samples of the cohesive soil from the split-spoon-sampling device were frequently tested in unconfined compression by use of a calibrated spring testing machine. In addition, a calibrated soil penetrometer was used as an aid in determining the strength of the soil. The values of the unconfined compressive strength as determined on soil samples from the split-spoon sampling must be considered, recognizing the manner in which they were obtained since the split-spoon sampling techniques provide a representative but somewhat disturbed soil sample.

FOUNDATION DISCUSSION AND RECOMMENDATIONS

Project Description

The proposed North Campus will consist of a new High School and Middle School. The facility will be a one (1) to two (2) story building with exterior load bearing masonry walls and uniformly spaced interior columns. The development will include a basketball arena and a performing arts auditorium along with classrooms. In addition, a new football stadium and several new athletic fields will be constructed across the site.

The ground floor elevation for the structure has been set at 460. Based on existing grades approximately four (4) feet of cut to eleven (11) feet of fill will be required to establish finished floor elevation. Extensive cuts and fill are anticipated across the site.

It is assumed that the structure will be moderately loaded with the structural loads transferred to the soils by conventional spread footings and continuous wall footings, if possible. Maximum column loads within this structure are assumed to be on the order of fifty (50) to one-hundred and fifty (150) kips with wall loads of two (2) to four (4) kips per foot and 10 kips/foot at the gymnasium.

Included with the construction of this facility will be a large light-duty parking area and light to heavy duty roadway areas will be necessary for bus staging.

Subsurface Conditions

Predominately, our borings encountered relatively soft and medium stiff to stiff silty clay and clay at a shallow depth below grade across the site. Very soft soils were noted at borings B-13, B-14, B-15, B-16, B-17, B-18, B-19. B-20, B-21, B-23, B-50, B-51, and B-52 (this appears to consist of all areas below natural surface elevation 452). Isolated areas of silt were noted at various locations across the site. Beneath the clay, bedrock consisting of clayey shale to very weathered

shale was encountered at depths ranging from approximately fourteen (14) to twenty-seven (27) feet below grade across the site.

Groundwater readings taken during and upon completion of boring operations indicated a water level of eight and one-half (8½) to twenty-four and one-half (24½) feet below grade. Several to twenty-four hours after completion a water level of one and one-half (1½) to seventeen (17) feet below grade was noted.

The following table illustrates the noted depth and elevation of bedrock across the site:

Boring	Depth to Bedrock (ft)	Elevation of Bedrock (ft)	Depth to Auger Refusal (ft)
B-1	24	74	31
B-2	18	77.2	27
B-3	24	71	28.5
B-4	14	76.8	23
B-5	19	74.4	26
B-6	14	76.5	21
B-7	17	75.8	23
B-8	20	72.6	20
B-9	18	74.1	18
B-10	17.5	74	17.5
B-11	14.5	77	14.5
B-12	26.5	65.5	26.5
B-13	15	76.6	15
B-14	23.5	68.8	23.5
B-15	21	---	21
B-16	21	72.3	21
B-17	21	71.5	21
B-18	21	73.5	21
B-19	23	71.7	31
B-20	23	70.2	26
B-21	21.5	73	21.5
B-22	26	67.3	26
B-23	22	71	22
B-24	20.5	72.7	20.5
B-25	27	66.2	27
B-26	24	69.2	24
B-27	25.5	66.9	25.5
B-28	17	75	17
B-29	21	76.7	21
B-30	21	72	21
B-31	20	72.9	20
Boring	Depth to Bedrock (ft)	Elevation of Bedrock (ft)	Depth to Auger Refusal (ft)

Construction of Fills

It is anticipated that up to eleven (11) feet of fill will be necessary to raise and level the site to the proposed grade. Most on-site soils, with the exception of the topsoil, can be used as structural fills in elevating the building areas and/or roadway and parking areas.

The predominate soil types encountered at a shallow depth are clays and silty clays. The laboratory tests indicated natural moisture contents of the shallow cohesive soils ranged from 19.5% to 29.1% at the time of our boring operations. Optimum moisture content for the natural soils is anticipated to range from 14% to 20%. Because of the engineering characteristics of these cohesive soils, difficulty can be anticipated if wet soils are used as fill. Thus, aerating and drying of the shallow soils will be necessary prior to compaction. For proper compaction of the soils, moisture conditioning to within approximately –2% to +2% of optimum moisture content should be achieved with soils.

Due to the quantity of the fill material to be placed, it is anticipated that settlement will be induced in the natural very soft soils that exist on the northern half of the school. Estimated settlements vary from approximately one (1) to three (3) inches at the deepest fills and could take several months to a year to complete. The amount of settlement will vary across the site due to the variability of the natural soils at this site. Additionally, some additional settlement would be expected once the structure is constructed.

In order to minimize the amount of fill induced settlement several options may be considered. The option include constructing and monitoring the fills, accelerating settlement by pre-loading critical areas, or some form of ground modification.

Monitoring. This option would include construction and monitoring of the fills until the magnitude and rate of settlement indicate that the remaining settlement is anticipated to be within tolerable limits. Construction of fill would be performed consistent with the current industry standards and project specifications except settlement plates would be installed prior to placing the fill.

As mentioned above settlement may take several months to a year to be within tolerable range and allowing construction to continue. Placing a layer of structural "B" Borrow eighteen (18) inches in thickness at the base of the fill and sloping this layer to drain would help to accelerate settlement.

Preloading. To further accelerate settlement, after placing the settlement plates, structural "B" Borrow and constructing the fill, a layer of additional fill may be placed to pre-load the site. If this method is selected, it is recommended that an additional five (5) feet of fill be placed on this portion of the school. The fill can consist of topsoil or other fill that will or will not be used on the site. By placing this additional load it will increase the total settlement of the natural soils and will decrease the time for the settlement to reach an acceptable level. Again, to monitor the rate of settlement it is recommended that several settlement plates be placed on the natural soils at the commencement of fill operations.

For either method mentioned above the settlement plates should be placed in any fill that exceeds eight (8) feet. The elevations and locations of the plates should be recorded by the site design engineer and re-checked on a bi-weekly basis. The log of these elevation shots should be provided to the geotechnical engineer for evaluation.

Construction of the building should not follow placement of the fill until the settlement rate of this material has subsided as follows. Elevation readings should be taken on a bi-weekly basis for at least ninety (90) days prior to placement of the masonry walls and glass. The settlement recorded over a minimum of four (4) consecutive readings should be 0.01 feet or less. Tolerable settlement ranges for the building are assumed to be one-half (½) to three-quarters (¾) inches for differential settlement and one (1) to one and one-quarter (1¼) inches for total settlement.

Rammed-Aggregate Pier Foundation System. A soil modification system such as Rammed-Aggregate piers can be considered at this site. Given the amount of fill and the very soft soils noted on the northern portion of the site this ground modification system offers a suitable alternative for

the school. Such a foundation system utilizes drilled holes filled with compacted aggregate to stabilize the subsurface soils. The aggregate is compacted in twelve (12) inch lifts using a beveled tamper. This beveled tamper also provides lateral compaction to the adjacent soil. The result of this process is the creation of an aggregate pier, as well as a significant stiffening of the adjacent soils. Rammed-aggregate pier construction typically reduces time for foundation placement as compared to other deep foundation systems since spread foundations are placed directly on the reinforced soil mass and there is no set up time for the aggregate elements. However, if this system is chosen it is recommended that the entire northern half of the school, where existing surface elevations are below 452, be placed on rammed aggregate piers, including floor slab areas. The most desirable method would be to place the piers prior to construction of the fills, thereby, reducing the amount of settlement that the fills would induce in the natural soils and eliminate the delay with building construction required to allow for settlement to occur with the natural soils if ground modification is not performed. As mentioned above, a layer of structural "B" Borrow, outleted to drain, should be placed at the top of the piers.

It is estimated that piers would be extended approximately twelve (12) to sixteen (16) feet below existing grade. However, if this foundation system is considered, it is recommended that the specific design and placement of the elements be determined by a representative of the specialty foundation company.

For any of the methods given above the following foundation recommendations should be used for the foundations of the school.

Foundation Recommendations

The following recommendations should be used in the design of all foundations across the site. If the desired foundations for the football stadium grandstand differ from those given below the geotechnical engineer should be consulted for additional recommendations.

Shallow Spread Footings

Spread footings and continuous wall footings are generally most economical when the existing soil conditions allow them to be founded at a shallow depth. However, given the soft soils below elevation 452 across the site and the amount of fill to be added over these soft soils special consideration will be necessary for construction of the building. These include either surcharging (preloading) as outlined in the previous section or ground modification using rammed aggregate piers.

Net allowable soil bearing pressures of 2500 and 2000 psf are recommended to design conventional spread footings and continuous wall footings, respectively. The above-recommended bearing pressures are assuming the footings will be founded on the medium stiff natural soils or compacted fills.

The above recommended bearing pressures are "net allowable soil pressures". In utilizing these net allowable pressures for dimensioning footings, it is necessary to consider only those loads applied above the finished floor elevations. In order to alleviate the effects of seasonal variation in moisture content on the behavior of the footings and eliminate the effects of frost action, all exterior foundations should be founded a minimum of thirty (30) inches or greater below the final grade.

Wherever soft or loose soils are encountered, these footing areas must be undercut. After excavation to an adequate bearing material, the footing areas can then be re-established to the proposed footing elevation by placing lean concrete.

Floor Slab Recommendations

The ground floor for the proposed building can be constructed as a slab-on-grade supported by existing soils and/or well-compacted fill materials. After the building area has been cut or raised to the proper elevation, a four (4) to six (6) inch compacted granular fill should be placed immediately beneath the floor slab. This compacted granular fill will provide a uniform surface for construction of the slab and minimize capillary rise of groundwater from the

subgrade into the slab. A vapor barrier should be placed immediately below the floor slab in any areas of the building where floor coverings such as carpet, vinyl tile, ceramic tile, etc. will be placed.

Before any fill is placed, it is recommended that the exposed subgrade be proofrolled with equipment approved by the soil engineer. This proofrolling will expose any soft, compressible soil. Soft areas should be undercut to a depth determined at the time of the proofroll inspection and replaced with a well-compacted fill. Depending on the final grade and the time of year of the site is prepared, chemical stabilization could be necessary due to the susceptible nature of the cohesive soils to moisture. It appears that lime would react favorably with the soils at this site. However, isolated areas of silt exist across the site and some cement could be required for successful stabilization.

Seismic Requirements

Seismic design consideration based on the information obtained in our subsurface investigation and the Indiana Building Code guidelines indicates that the site will be classified with a site class C.

Parking Area Construction and Pavement Design

Proposed Parking Area

Borings performed for the parking and drive areas primarily encountered soft and medium stiff clays and silty clays at a shallow depth below grade.

These soils should provide an adequate subgrade if compacted and properly drained. The strength of the subgrade soils at this site depends upon several variables including compaction and groundwater level. It is important that all paved areas be designed to prevent water from collecting or ponding immediately beneath the pavement. It is suggested that underdrains be placed in the pavement areas from each catch basin. These drains should be at least 18 inches below subgrade elevation with a 4” diameter perforated “socked” pipe and backfilled with clean

No. 8 stone. The actual number, location, and length of these drains will be dependent on the final grading plans and should be determined by the owner, site design engineer, and soil engineer prior to completion of construction plans.

For these soils to provide adequate support for pavements, it will also be necessary that proper site work techniques are followed by the earthmoving contractor. It is recommended that after stripping has been performed, the exposed subgrade should be proofrolled with approved equipment. This proofrolling will determine if any pockets of soft unsuitable materials exist beneath this exposed subgrade. If pockets of unsuitable materials are encountered, stabilization or removal and replacement with a well-compacted material would be required. It is recommended that a representative of the soils engineer be present for inspection during the stripping and proofrolling phases of this project to determine where stabilization would be required and evaluate the most feasible methods available. As with the floor slab area, it appears that lime stabilization would be effective at this site and should be considered if operations occur during the wetter months of the year, typically November through May.

Pavement Design Recommendations

Information for design of the pavement was estimated from similar facilities which Alt & Witzig Engineering, Inc. has designed. It is estimated that the pavement will be subjected to several cars, some two (2) and three (3) axle delivery trucks per week and two (2) trash trucks per week. In addition, it is assumed that up to 60 buses per day could exist on sections of the pavement. The following pavement sections were determined based on these assumed traffic conditions, utilizing a twenty (20) year design life and a CBR value in the range of 3.0 and the American Association of State Highway Officials (AASHTO) design method. If actual traffic conditions differ greatly than mentioned above we should be contacted so that appropriate changes in the design can be made.

In light duty areas were buses will not be present a pavement section of :

6" of crushed stone,
3" of asphalt base, and
1½" of asphalt surface course should be sufficient.

In heavy duty areas with buses a pavement section of :

8" of crushed stone,
5" of asphalt base, and
1½" of asphalt surface course should be sufficient.

Alternately, a concrete pavement may be selected. It is recommended that the concrete be air entrained and have a minimum modulus of rupture of 700 psi. A minimum of six (6) inches of concrete is recommended for standard duty areas, and eight (8) inches for heavy-duty areas such as the concrete apron for the truck dock areas and in areas that will be subject to bus traffic. This concrete should be placed over a well prepared subgrade compacted to 98% of maximum dry density in accordance with ASTM D-698. Drainage beneath the pavement is critical to performance as mentioned above. Furthermore, it is recommended that eight (8) inches of No. 53 stone be placed beneath the concrete.

Maximum joint spacing within the concrete pavement on the order of thirty (30) times the concrete thickness is recommended. Control joints must be sawed a minimum of one-fourth of the thickness of the slab and must be cut at such a time that random cracking does not occur.

It is recommended that the area designed for placement of the trash container be constructed with a concrete pad. These concrete aprons will support the heavy twisting loads often imparted to the pavement section during pick-up of these containers. It is suggested that eight (8) inches of compacted No. 53 stone and eight (8) inches of unreinforced concrete be used to construct the dumpster pad. The concrete pad should be of sufficient size to accommodate the entire truck during loading and unloading conditions.

Alternate Heavy Duty Pavement Section

Given the anticipated pavement loading conditions and the thickness of the sections given above a more practical solution could be roller compacted concrete (RCC) for the heavy duty areas such as in the bus loading/unloading zones. Roller Compacted Concrete is typically placed in a similar manner as asphalt; however, consists of a concrete mix that is then compacted to increase its overall strength. The concrete is placed drier than normal concrete mixes and can be placed quickly and typically does not require joints unless appearance is critical to the final product. Although, RCC creates a smooth surface, it is not typically recommended for high speed traffic since some imperfections do exist in the finished product. However, given the use of this site, it is recommended that this type of pavement be considered for this area. The final design and costs for RCC should be determined by a specialty contractor who regularly deals with the design and placement of RCC. A list of contractors can be provided if requested.

Athletic Field

Borings B-32, B-35, and B-38 were performed in the southern most athletic fields. Medium stiff silty clay was predominately encountered beneath the topsoil in this area. Water was noted within our borings at a depth of five (5) to nine (9) feet below grade.

Borings B-42, B-43, and B-44 were performed in the tennis courts and softball/baseball fields located on the west side of the property. These borings encountered medium stiff silty clay in this area. Water was noted at nine (9) feet below grade.

Borings B-45, B-46, and B-49 were performed in the area of the football and practice fields. These borings encountered soft and medium stiff silty clay, clay, and silt in this area. Water was noted at a depth of eight (8) to eighteen (18) feet below grade.

These shallow cohesive soils will provide an adequate subgrade if proper site and compaction procedures are maintained. Because of the anticipated perched groundwater levels, it is suggested that the fields should be elevated slightly above existing grade in order to provide positive

drainage from the field. Alternately, an underdrain system could be installed in the field to maintain the groundwater level sufficiently below the surface of the field to prevent damage from foot or equipment traffic. Final grading of this area should be reviewed before construction to verify that adequate drainage will be provided to this area.

Proposed Retention Pond

Plans indicate that two (2) retention ponds are to be constructed in conjunction with this project.

Borings were not performed in these areas, however, soils are anticipated to consist of silty clays with areas or layers of silt. The results of our evaluations indicate that soils at this site have moderate to high silt and clay contents with some sand and a trace of gravel. From past experience, it is anticipated that the silty clays have permeabilities (k values) in the range of 10^{-4} and 10^{-5} cm/sec. From past experience, it is anticipated that the clayey silts have permeabilities (k values) in the range of 10^{-5} and 10^{-6} cm/sec. In addition, water elevation is anticipated to be around four (4) to nine (9) feet for this area.

It is anticipated that pond excavations will be constructed within the underlying silty clay soils. However, if sand or silt seams are exposed on the slope or bottom of the excavation, this retention facility will not function as a sealed system. Without a liner covering the side slopes, the water elevation within the pond will fluctuate with a rise and fall of the natural groundwater level.

If isolated pockets of sand or sandy silts are encountered during excavation operations, then a liner or covering will be necessary to maintain the sealed pond system. Various types of liners are available including a clay-bentonite sealer, natural clay liners, and various synthetic liners to create a sealed retention pond system. It appears that the most economically feasible liners could be either a natural clay or bentonite liner.

CONSTRUCTION CONSIDERATIONS

Site Preparation

Excessively organic topsoil and loose dumped fill materials will generally undergo high volume changes which are detrimental to the behavior of pavements, floor slabs, structural fills, and shallow foundations placed upon them. Therefore, it is recommended that excessively organic topsoils and loose materials be stripped from the construction areas and wasted or stockpiled for later use. Our test borings indicate that stripping on the order of eight (8) to eighteen (18) inches will be necessary across the site. However, because the existing subgrade soils are relatively soft, the equipment used to strip the topsoil will have a tendency to push organics further below grade. Thus, the depth of stripping required will vary somewhat with weather conditions and the type of equipment used. Also, some additional stripping to remove large roots may be anticipated across wooded areas and the wet low lying areas. The exact depth of stripping should be determined by a representative of the soils engineer in the field at the time of the stripping operations.

It is recommended that after the above mentioned stripping has been performed, the exposed subgrade should be proofrolled with approved equipment. This proofrolling will determine if any pockets of soft unsuitable materials are encountered. Should soft unsuitable materials be encountered, the material should be removed and replaced with a well-compacted material. It is recommended that a representative of the soil engineer be present for this phase of this project.

After the existing subgrade soils are excavated to design grade, proper control of subgrade compaction and fill, and structural fill replacement should be maintained by a representative of the soils engineer as per the "Recommended Specifications for Compacted Fills and Backfills", presented in the Appendix of this report; thus minimizing volume changes and differential settlements which are detrimental to behavior of shallow foundations, floor slabs and pavements.

Groundwater

The borings indicated water could be encountered as shallow as one (1) to five (5) feet below existing grade. The soil survey produced by the U.S. Dept. of Agriculture indicates that a seasonal groundwater level of one (1) to three (3) feet below grade could be encountered for the soil types that exist on this site. Therefore, it appears that if operations occur during the wetter portions of the year, typically November through May, difficulty could be encountered due to the groundwater elevation at this site. Additionally, depending upon the weather conditions during construction, seepage from surface runoff may occur. Since these foundation materials tend to soften when exposed to free water, every effort should be made to keep the excavations dry should groundwater be encountered. A gravity drainage system, sump pumps, or other conventional dewatering procedures should be sufficient for this purpose. If significant groundwater is encountered during foundation excavations a lean concrete mud mat could be required. Further evaluation for the requirement of undercutting or replacement with lean concrete should be performed during foundation inspections. To minimize these difficulties it is also recommended that all concrete for footings be placed the same day that the individual foundation excavations are made.

On-Site Borrow Material

Most on-site soils, with the exception of the topsoil, can be used as structural fills in elevating the building areas and/or roadway and parking areas.

The predominate soil types encountered at a shallow depth are clays and silty clays with isolated areas of silt. The laboratory tests indicated natural moisture contents of the shallow cohesive soils range from 19.5% to 29.1% at the time of our boring operations. Optimum moisture content for the silty clays and clays is anticipated to be in the range of 14% to 20%. Because of the engineering characteristics of these cohesive soils, difficulty can be anticipated if wet soils are used as fill. Thus, aerating and drying of the shallow soils would be necessary prior to compaction. For

proper compaction of the soils, moisture conditioning to within approximately –2% to +2% of optimum moisture content should be achieved with soils.

If the underlying shale and limestone is to be used as structural fill, it is critical that the material be sufficiently pulverized during placement. The shale material will break down when subjected to moisture. Thus, it could be necessary to moisturize the material in order to achieve adequate compaction of the material. A water truck could be required in order to facilitate proper moisture conditioning of the shale. The weathered shales should be placed at or slightly above optimum moisture content. Shale that is not properly treated during placement could result in future slaking of the soft rock material when exposed to groundwater that would result in consolidation of the material (i.e. settlement).

SUMMARY

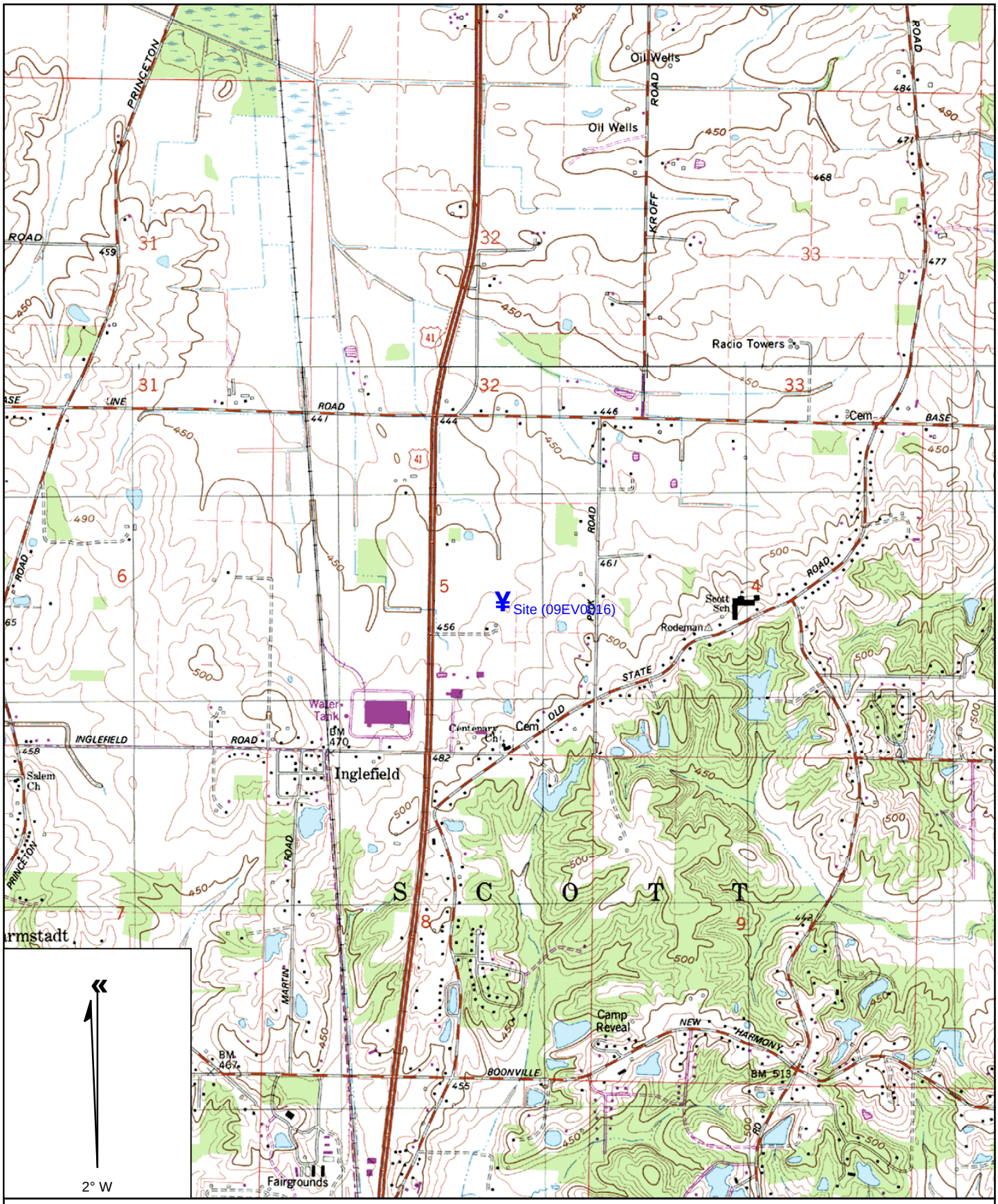
An exploration and evaluation of the foundation conditions has been conducted at the proposed new North High/Middle School to be constructed in Evansville, Indiana. Foundation design criteria have been suggested and possible design and construction problems have been discussed.

The exploration and analysis of the foundation conditions reported herein is considered in sufficient detail and scope to form a reasonable basis for design. The recommendations submitted are based on the available soil information and the preliminary design details furnished by the architects for the proposed structure.

APPENDIX

RECOMMENDED SPECIFICATIONS FOR COMPACTED FILLS AND BACKFILLS

All fills shall be formed from material free of vegetable matter, rubbish, large rock, and other deleterious material. Prior to placement of fill, a sample of the proposed fill material should be submitted to the soil engineer for his approval. The fill material should be placed in layers not to exceed eight (8) inches in loose thickness and should be sprinkled with water as required to secure specified compactions. Each layer should be uniformly compacted by means of suitable equipment of the type required by the materials composing the fill. Under no circumstances should a bulldozer or similar tracked vehicles be used as compacting equipment. Material containing an excess of water so the specified compaction limits cannot be attained should be spread and dried to a moisture content that will permit proper compaction. All fill should be compacted to the specified percent of the maximum density obtained in accordance with ASTM density Test D-698 (100 percent of maximum dry density below the base of footing elevation and 98 percent beneath floor slabs and pavement sections). Should the results of the in-place density tests indicate that the specified compaction limits are not obtained, the areas represented by such tests should be reworked and retested as required until the specified limits are reached.

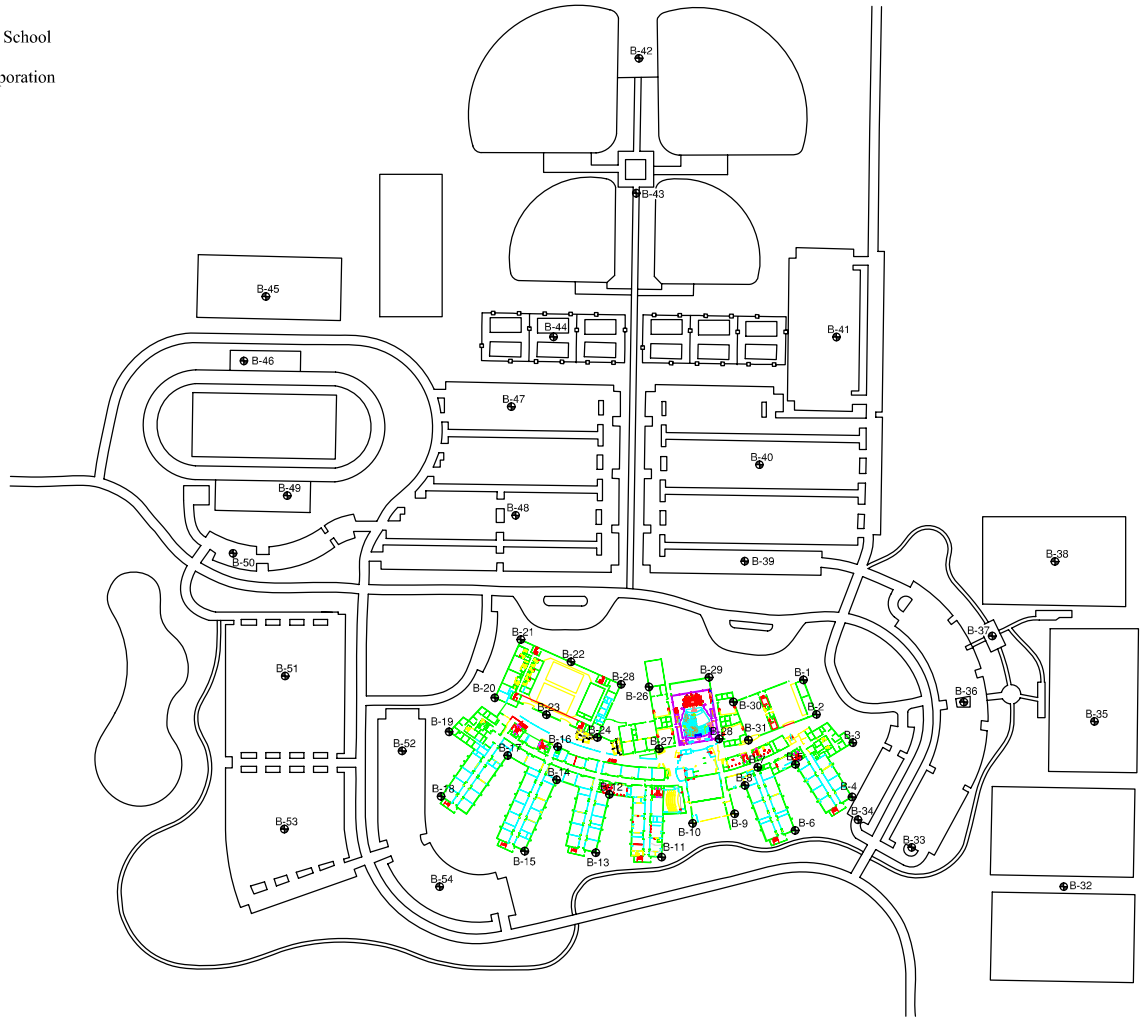


Name: EVANSVILLE NORTH
Date: 5/28/2009
Scale: 1 inch equals 2000 feet

Location: 038° 06' 52.7" N 087° 32' 59.6" W
Caption: Site Location Map 09EV0016
New North High School and Middle School
Evansville, Indiana

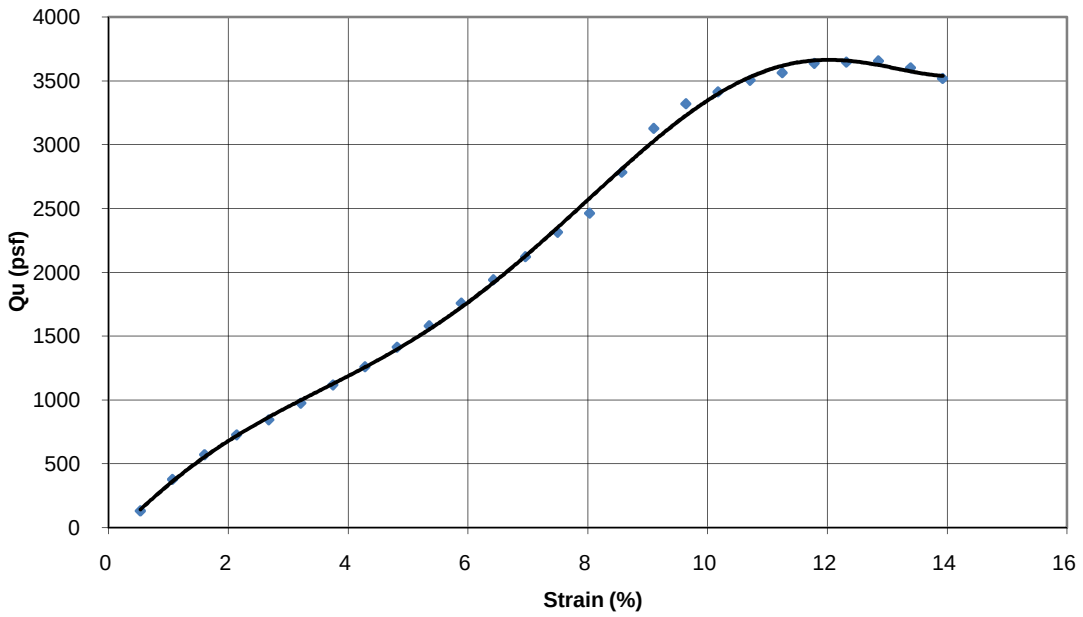
BORING LOCATION PLAN

New North High School and Middle School
Evansville, Indiana
Evansville Vanderburgh School Corporation



09EV0016

Unconfined Compression Test

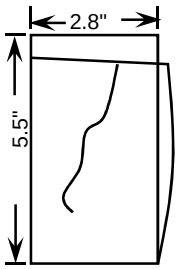


Sample Location B-1

Depth 2 - 4 feet Moisture Content: 23.6 (%)

Strain Rate 2% min. Dry Unit Weight: 97.4 (pcf)

FAILURE SKETCH



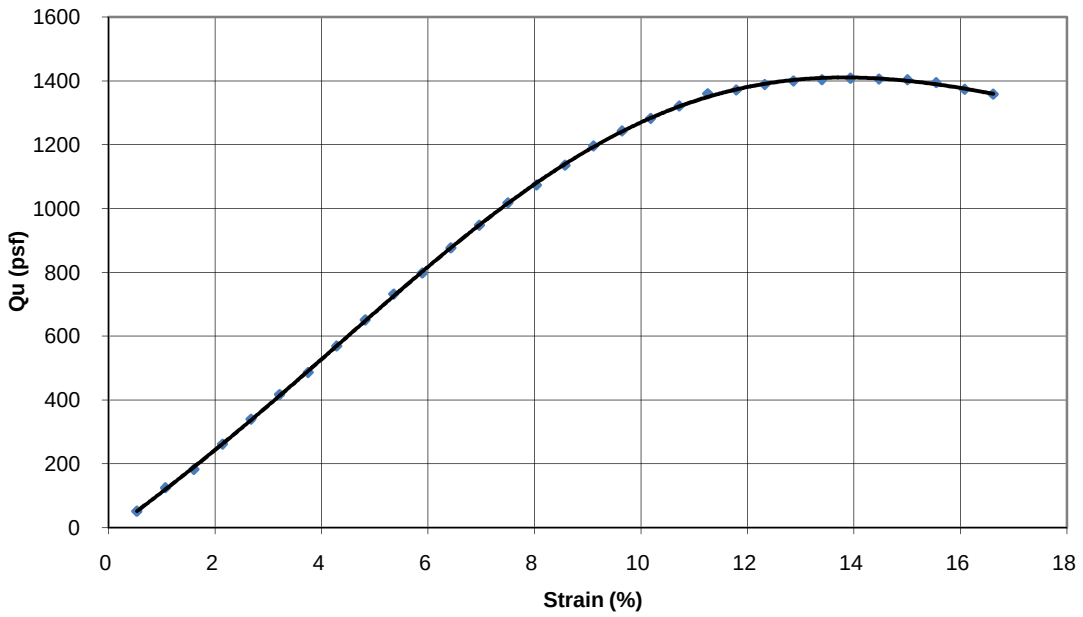
Soil Description Brown Mottled Gray Silty Clay

Unconfined Compressive Strength (psf) 3650

Failure Strain (%) 12

PREPARED FOR: Evansville Vanderburgh Schoo Evasnville, Indiana		**PREPARED BY:** Alt & Witzig Engineering, Inc. Evansville, Indiana	
PROJECT NAME: New North School Evansville, Indiana		**PROJECT NO.:** 09EV0016	**DATE:** 6/09

Unconfined Compression Test



Sample Location B-20

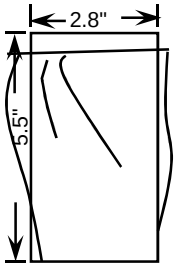
Depth 7 - 9 feet

Moisture Content: 25.1 (%)

Strain Rate 2% min.

Dry Unit Weight: 97.8 (pcf)

FAILURE SKETCH



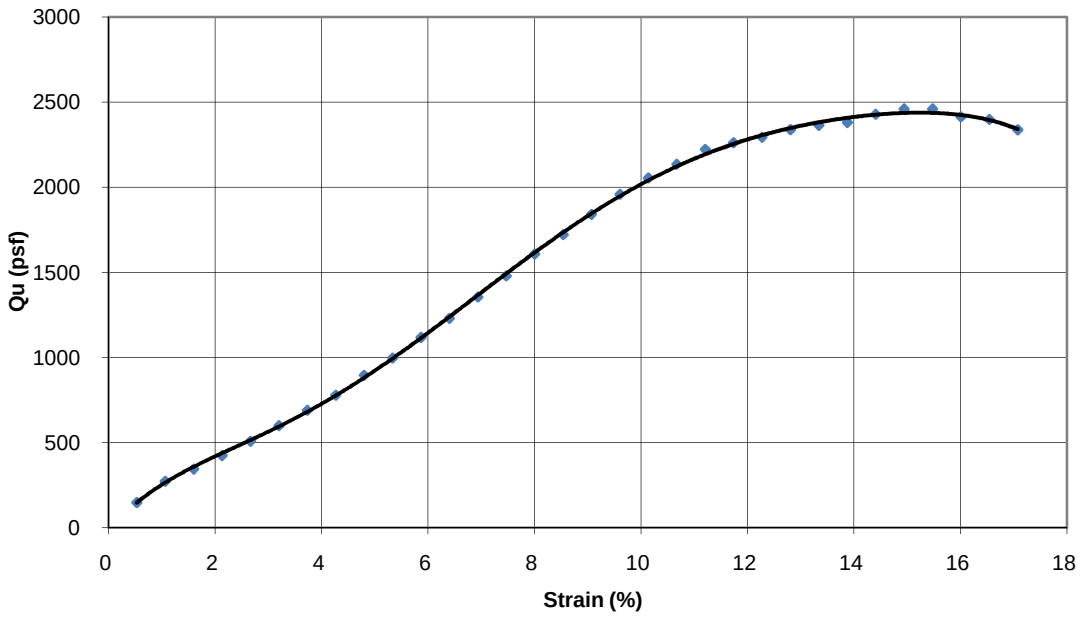
Soil Description Brown Mottled Gray Silty Clay

Unconfined Compressive Strength (psf) 1407.6

Failure Strain (%) 13.9

PREPARED FOR: Evansville Vanderburgh Schoo Evasnville, Indiana		**PREPARED BY:** Alt & Witzig Engineering, Inc. Evansville, Indiana	
PROJECT NAME: New North School Evansville, Indiana		**PROJECT NO.:** 09EV0016	**DATE:** 6/09

Unconfined Compression Test

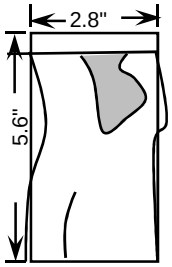


Sample Location B-27

Depth 3 -5 feet Moisture Content: 21.0 (%)

Strain Rate 2% min. Dry Unit Weight: 92.5 (pcf)

FAILURE SKETCH



Soil Description Brown Mottled Gray Silty Clay

Unconfined Compressive Strength (psf) 2440.0

Failure Strain (%) 15.2

PREPARED FOR: Evansville Vanderburgh Schoo Evasnville, Indiana		PREPARED BY: Alt & Witzig Engineering, Inc. Evansville, Indiana	
PROJECT NAME: New North School Evansville, Indiana		PROJECT NO.: 09EV0016	DATE: 6/09

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-1
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 98.0	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-6" Topsoil 6"-4.0 Brown Mottled Gray Silty Clay			1	SS	X		8		1.8	24.1	
93.0	4.0-7.0 Brown Peppered Dark Brown Silty clay	5	4.0	2	SS	X		6	1.2	1.0	25.3	
	7.0-9.0 Brown Moist Silt		7.0	3	SS	X		8		4.0	19.2	
88.0	9.0-12.0 Brown Clay Some Silt Seams	10	9.0	4	SS	X		13	4.0	4.5	20.1	
	12.0-17.0 Brown Mottled Gray Peppered Black Clay		12.0									
83.0		15		5	SS	X		16	4.7	4.5	20.7	
	17.0-24.0 Brown Mottled Gray Clay		17.0									
78.0		20		6	SS	X		20	4.3	4.5	13.9	
73.0	24.0-28.0 Gray and Black Clayey Shale	25	24.0	7	SS	X		35		4.5+		
	Gray Mottled Brown Very Weathered Shale		28.0									
67.0		30		8	SS	X		50/2"		4.5+		
	Boring Terminated at 31 feet		31.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-2
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 95.2	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-9" Topsoil			1	SS			6		3.0	25.1	
	9"-2.0 Brown Silty Clay Trace Roots		2.0									
	2.0-7.0 Brown and Dark Brown Silty Clay			2	SS			10	1.6	1.0	25.9	
90.2		5		3	SS			10		1.3	23.0	
			7.0									
	7.0-9.0 Brown Mottled Light Brown Peppered Black Silty Clay Some Silt Seams			4	SS			15	2.8	3.0	20.3	
			9.0									
85.2	9.0-13.0 Brown Clay	10		5	SS			18	2.8	3.5	20.5	
			13.0									
	13.0-18.0 Gray Mottled Dark Gray Clay											
80.2		15		6	SS			15	3.5	3.0		
			18.0									
	18.0-27.0 Gray Clayey to Weathered Shale											
75.2		20		7	SS			42		4.5		
68.2		25		8	SS			57		4.5		
			27.0									
	Auger Refusal at 27 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-3
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 95.0

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil 7"-4.0 Brown Mottled Gray and Black Silty Clay		4.0	1	SS			10		3.0	23.9	
90.0	4.0-7.0 Brown Silty Clay	5		2	SS			10	2.0	3.3	20.7	
	7.0-14.0 Brown Clay		7.0	3	SS			18		3.5	23.0	
85.0		10		4	SS			21	6.3	4.5	21.1	
80.0	14.0-18.0 Gray Clay with Coal Seams	15	14.0	5	SS			16		3.0	32.7	
	18.0-24.0 Grayish Brown Shaley Clay		18.0									
75.0		20		6	SS			27		4.0		
66.0	24.0-28.5 Gray Clayey Shale	25	24.0	7	SS			50		4.5+		
	Auger Refusal at 28.5 feet		28.5									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After 24 hours 17.0 ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-4
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 90.8	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil 7"-9.0 Brown Mottled Gray Silty Clay			1	SS		▼	7		1.5	23.8	
85.8		5		2	SS			7		2.0	24.5	
				3	SS			12	2.7	2.5	20.9	
80.8	9.0-12.0 Brown Mottled Gray Peppered Black Clay	10	9.0	4	SS			9		3.0	22.3	
	12.0-14.0 Brown Mottled Gray Clay		12.0	5	SS			12	3.0	3.0	22.2	
75.8	14.0-17.0 Gray and Brown Clayey Shale	15	14.0	6	SS			30		4.5+		
	17.0-23.0 Gray Very Weathered Shale		17.0	7	SS			36		4.5+		
67.8		20		8	SS			40		4.5+		
			23.0	9	SS			50/1"				
	Auger Refusal at 23 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion Dry ft.
▼ After 24 hours 4.5 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-5
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 93.4	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-6" Topsoil 6"-3.0 Brown Silty Clay			1	SS			5		1.5	26.1	
			3.0	2	SS			16	2.3	2.0	22.1	
88.4	3.0-5.0 Brown Silty Clay with Light Brown Silt Seams	5	5.0	3	SS			11	2.3	2.0	22.2	
	5.0-9.0 Brown Silty Clay			4	SS			15	4.1	3.8	18.8	
83.4	9.0-13.0 Brown Clay	10	9.0	5	SS			18	3.6	3.0	23.6	
	13.0-19.0 Brown Mottled Gray, Black, and Red Clay		13.0									
78.4		15		6	SS			24		4.5		
			19.0									
73.4	19.0-26.0 Brownish Gray Clayey Shale	20		7	SS			39		4.5+		
67.4		25										
			26.0	8	SS			50/1"				
	Auger Refusal at 26 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-6
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 90.5

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil											
	8"-6.5 Brown Mottled Gray Silty Clay			1	SS			10	1.8	2.5	23.8	
85.5		5		2	SS			11		3.3	21.6	
			6.5									
	6.5-9.0 Brown Silty Clay			3	SS			15	3.7	3.8	20.4	
			9.0									
80.5	9.0-14.0 Brown and Dark Brown Clay	10		4	SS			11	3.5	3.0	20.7	
			14.0									
75.5	14.0-18.0 Brownish Gray Clayey Shale	15		5	SS			37		4.5+		
			18.0									
	18.0-21.0 Gray Weathered Shale											
69.5		20		6	SS			50/1"				
			21.0									
	Auger Refusal at 21 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After 24 hours 7.0 ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-7
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 92.8

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil 7"-7.0 Brown Mottled Gray Silty Clay			1	SS	X		11	2.3	1.5	24.1	
87.8		5		2	SS	X		12		1.0	23.1	
	7.0-9.0 Brown Silty Clay		7.0	3	SS	X		16	3.5	3.5	19.9	
82.8	9.0-14.0 Brown Mottled Gray Peppered Black Clay	10	9.0	4	SS	X		19	3.9	3.5	19.3	
				5	SS	X		25	5.0	4.5+		
77.8	14.0-17.0 Brown and Gray Shaley Clay	15	14.0	6	SS	X		21		4.5+		
	17.0-23.0 Gray Weathered Shale Some Coal Seams		17.0	7	SS	X		28		4.5+		
69.8		20		8	SS	X		32		4.5+		
			23.0	9	SS	X		50/2"				
	Auger Refusal at 23 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-8
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 92.6	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil 7"-4.0 Brown Mottled Gray Silty Clay			1	SS			7	1.6	1.0	24.0	
87.6	4.0-7.0 Brown Silty Clay	5	4.0	2	SS			8		3.0	22.6	
	7.0-9.0 Brown Clay with Silt Seams		7.0	3	SS			14	2.3	2.3	20.4	
82.6	9.0-20.0 Brown Mottled Gray Peppered Black Clay	10	9.0	4	SS			14	2.1	3.0	21.7	
77.6		15		5	SS			21	4.1	3.5		
72.6		20	20.0	6	SS			50/2"				
	Auger Refusal at 20.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-9
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 92.1

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil 7"-9.0 Brown Silty Clay			1	SS	X		10	1.9	1.5	24.7	
87.1		5		2	SS	X		8	1.9	2.5	22.6	
				3	SS	X		12		1.5	22.3	
			9.0									
82.1	9.0-12.0 Brown Mottled Gray Clay	10		4	SS	X		14	2.6	3.3	21.5	
			12.0									
	12.0-18.0 Brown Mottled Gray Peppered Black Clay			5	SS	X		24		4.5		
74.1		15		6	SS	X		21	3.9	4.0		
			18.0	7	SS	X		50/1"				
	Auger Refusal at 18.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-10
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	SURFACE ELEVATION 91.5											
	0.0-7" Topsoil			1	SS			8		2.8	26.4	
	7"-3.0 Brown and Black Clay		3.0	2	SS			8	2.7	2.0	23.9	
	3.0-9.0 Brown Silty Clay	5		3	SS			9		2.0	24.0	
86.5				4	SS			16	2.5	2.3	19.2	
			9.0									
81.5	9.0-17.5 Brown Mottled Gray Peppered Black Clay	10		5	SS			15	2.8	2.0	21.8	
73.5		15		6	SS		▽	19		2.8		
			17.5									
	Auger Refusal at 17.5 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 16.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-11
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	SURFACE ELEVATION 91.4											
	0.0-7" Topsoil 7"-3.0 Brown Silty Clay		3.0	1	SS			9				
86.4	3.0-9.0 Brown Mottled Gray Silty Clay Trace Silt Seams	5		2	SS			8		0.5	25.0	
				3	SS		○	9		3.5	19.0	
81.4	9.0-14.5 Brown Mottled Peppered Black Clay	10	9.0	4	SS		▽	10	2.5	2.0	19.9	
76.4	Auger Refusal at 14.5 feet	15	14.5									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 11.0 ft.
▼ After hours ft.
○ Water on Rods 8.5 ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-12
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 92.0

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-10" Topsoil 10"-7.0 Brown Mottled Gray Clay			1	SS			13		1.5	25.7	
87.0		5		2	SS			8	2.0	1.0	24.0	
	7.0-9.0 Brown Silty Clay		7.0	3	SS			11		3.0	19.7	
82.0	9.0-13.0 Brown Silty Clay with Gray Clay Seams	10	9.0	4	SS			11	1.6	1.5	20.5	
	13.0-18.0 Brown Peppered Black Clay		13.0									
77.0		15		5	SS			15	3.7	2.5	19.7	
	18.0-23.0 Red Mottled Gray Clay		18.0									
72.0		20		6	SS			17	3.1	4.5		
	23.0-26.5 Brown Clay		23.0									
65.0		25		7	SS			50/5"	3.5	3.5		
	Auger Refusal at 26.5 feet		26.5									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-13
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 91.6	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-10" Topsoil 10"-9.0 Brown Mottled Gray Silty Clay			1	SS			8	2.4	2.0	23.6	
86.6		5		2	SS			5		0.5	24.8	
				3	SS			12		1.5	21.6	
			9.0									
81.6	9.0-15.0 Brown Mottled Gray Peppered Black Clay	10		4	SS		▽	16	3.9	3.0	20.5	
							○					
76.6		15	15.0	5	SS			50/1"				
	Auger Refusal at 15.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 11.0 ft.
▼ After hours ft.
○ Water on Rods 12.5 ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-14
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	SURFACE ELEVATION 92.3											
	0.0-6"-Topsoil 6"-4.0 Brown Mottled Gray Peppered Black Clay		4.0	1	SS			7		3.5	24.2	
87.3	4.0-13.0 Brown Mottled Gray Silty Clay	5		2	SS			5		1.0	24.8	
				3	SS			6	3.3	1.8	18.0	
82.3		10		4	SS			7		3.0		
	13.0-21.0 Gray Mottled Brown Clay		13.0									
77.3		15		5	SS			7	1.8	2.0		
71.3		20		6	SS			16	4.3	4.5		
	Boring Terminated at 21 feet		23.5									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion 22.0 ft.
After 2 hours 17.0 ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-15
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-4.0 Brown Mottled Black Clay			1	SS			3	1.3	1.0	26.7	
	4.0-12.0 Brown Mottled Gray Silty Clay	5	4.0	2	SS			5		1.3	22.1	
				3	SS			7	2.5	2.5	19.0	
		10		4	SS			7	2.2	2.0	18.2	
	12.0-18.0 Brown Mottled Gray Peppered Black Clay		12.0									
		15		5	SS			8	2.6	2.5		
	18.0-21.0 Brown Mottled Light Gray Clay		18.0									
		20		6	SS			33		4.0		
	Auger Refusal at 21 feet		21.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After 7 hours 17.0 ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-16
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	SURFACE ELEVATION 93.3											
	0.0-7" Topsoil			1	SS			4	2.9	3.0	19.5	
	7"-2.0 Brownish Gray Moist Silt		2.0									
	2.0-13.0 Brown Mottled Gray Silty Clay			2	SS			7		2.0	21.4	
88.3		5		3	SS			6	2.1	3.0	23.3	
				4	SS		○	5	1.6	1.3	21.7	
83.3		10		5	SS			10	3.1	2.5	18.6	
	13.0-19.0 Brown Mottled Gray Clay		13.0									
78.3		15		6	SS			8		2.3	18.8	
			19.0									
72.3	19.0-21.0 Brown and Gray Shaley Clay	20		7	SS		▽	50/4"				
	Auger Refusal at 21 feet		21.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 20.0 ft.
▼ After hours ft.
○ Water on Rods 9.0 ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-17
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 92.5

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-4.0 Brown Mottled Gray Clay		4.0	1	SS			6		1.5	24.8	
87.5	4.0-14.0 Brown Mottled Gray Silty Clay with Silt Seams	5		2	SS			5		1.5	22.0	
				3	SS			7	2.1	1.5	18.3	
82.5		10		4	SS			6	2.9	2.0	17.9	
			14.0									
77.5	14.0-19.0 Brown Mottled Gray Peppered Black Clay	15		5	SS		▼	5		2.3		
			19.0				▽					
71.5	19.0-21.0 Brown Mottled Light Gray Clay	20		6	SS			50/3"		2.3		
	Auger Refusal at 21 feet		21.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 19.5 ft.
▼ After 3 hours 15.0 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-18
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 94.5	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-1.0 Topsoil											
	1.0-9.0 Brown Mottled Gray Clay			1	SS			6		1.5	22.7	
89.5		5		2	SS			5	1.9	1.5	22.1	
				3	SS			6	2.1	1.5	19.0	
84.5	9.0-21.0 Brown Mottled Gray Peppered Black Clay	10	9.0	4	SS			6	2.1	2.3	18.1	
79.5		15		5	SS			6		3.0		
73.5		20		6	SS			50/4"		1.0		
	Auger Refusal at 21 feet		21.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 19.0 ft.
▼ After 4 hours 1.5 ft.
○ Water on Rods 9.0 ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-19
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 94.7	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-6" Topsoil 6"-2.0 Dark Gray Silty Clay		2.0	1	SS			4		1.5	24.1	
	2.0-4.0 Gray Clay		4.0	2	SS			4	1.6	1.5	24.2	
89.7	4.0-9.0 Brown Mottled Gray Clay	5		3	SS			7	1.3	1.0	26.6	
				4	SS			14	2.1	1.5	18.1	
84.7	9.0-12.0 Light Gray Mottled Brown Silty Clay	10	9.0	5	SS			8	2.3	2.3	18.1	
	12.0-23.0 Brown Mottled Gray Peppered Black Clay		12.0									
79.7		15		6	SS			10	3.2	1.5		
74.7		20		7	SS			15	2.1	2.0		
	23.0-31.0 Gray Shale with Limestone		23.0									
69.7		25		8	SS			50/4"				
63.7		30		9	SS			50/3"				
	Boring Terminated at 31 feet		31.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-20
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 93.2	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-4.0 Brown Mottled Gray Clay			1	SS			3	1.0	0.5	28.4	
88.2	4.0-7.0 Gray Clay	5	4.0	2	SS			6	1.6	1.0	27.4	
	7.0-14.0 Brown Mottled Gray Silty Clay		7.0	3	ST							
83.2		10		4	SS			6	1.7	1.5	18.4	
78.2	14.0-23.0 Brown Mottled Gray Peppered Black Clay	15	14.0	5	SS			8	2.1	2.0	20.5	
73.2		20		6	SS			8		4.0	20.7	
	23.0-26.0 Gray Shale		23.0				○					
67.2		25		7	SS			50/2"				
	Auger Refusal at 26 feet		26.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion ft.
▼ After hours ft.
○ Water on Rods 24.0 ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-21
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 94.5	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-1.0 Topsoil											
	1.0-7.0 Dark Brown Silty Clay			1	SS			8	2.1	2.0	21.6	
89.5		5		2	SS			6	1.6	1.5	21.3	
			7.0									
	7.0-13.0 Brown Mottled Gray Silty Clay			3	SS			5	1.7	1.5	22.0	
84.5		10		4	SS			7	1.9	1.3	19.5	
			13.0									
	13.0-17.0 Gray Peppered Black Clay											
79.5		15		5	SS			7	1.6	1.5		
			17.0									
	17.0-21.0 Brown Mottled Gray Clay			6	SS			17		4.5+		
73.5		20		7	SS		▽	17		4.0		
			21.0									
	Auger Refusal at 21 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 20.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-22
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	SURFACE ELEVATION 93.3											
	0.0-6" Topsoil 6"-4.0 Brown Mottled Brownish Gray Clay		4.0	1	SS			9	2.7	1.5	21.6	
88.3	4.0-23.0 Brown Mottled Gray clay	5		2	SS			11	2.5	2.0	20.8	
				3	SS			8	2.5	2.0	20.1	
83.3		10		5	SS			10		0.8	22.2	
78.3		15		6	SS			13	2.1	2.0		
73.3		20		7	SS		▽	22	4.5	3.0		
	23.0-26.0 Brown Wet Clay and Limestone		23.0									
67.3		25		8	SS			50/2"				
	Auger Refusal at 26 feet		26.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 20.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-23
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 93.0	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-6" Tosoil 6"-7.0 Brown Mottled Gray Clay			1	SS			6	2.2	2.5	25.8	
88.0		5		2	SS			7	1.6	1.5	25.0	
	7.0-13.0 Brown Mottled Brownish Gray Silty Clay		7.0	3	SS			5	1.2	0.5	21.6	
83.0		10		4	SS			8	2.9	1.5	18.1	
	13.0-18.0 Brown Mottled Gray Peppered Black Clay		13.0									
78.0		15		5	SS		▽	9	2.0	1.5		
	18.0-21.0 Brown Mottled Gray Clay with Siltstone		18.0									
72.0		20		6	SS			58				
	Auger Refusal at 21 feet		21.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 16.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-24
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 93.2	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-11" Topsoil											
	11"-7.5 Brown Mottled Gray Silty Clay			1	SS	X		9		2.3	23.4	
88.2		5		2	SS	X		8		1.0	25.5	
	7.5-15.0 Brown Silty Clay		7.5	3	SS	X		10		0.5	21.6	
83.2		10		4	SS	X		9		0.5	20.6	
78.2	15.0-20.5 Reddish Brown Mottled Gray Peppered Black Clay	15	15.0	5	SS	X		11		2.0	19.9	
72.2		20	20.5	6	SS	X		50/1"				
	Auger Refusal at 20.5 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-25
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 93.2

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-9.0 Brown Mottled Gray Silty Clay			1	SS			8		1.8	22.9	
88.2		5		2	SS			7	2.6	2.5	23.7	
				3	SS			11		1.0	24.4	
			9.0									
83.2	9.0-13.0 Brown Silty Clay	10		4	SS			10	2.2	1.5		
			13.0									
	13.0-19.0 Brown Mottled Gray Peppered Black Clay											
78.2		15		5	SS			11		2.0		
			19.0									
73.2	19.0-27.0 Brown Mottled Gray Clay	20		6	SS			18	3.9	4.5		
66.2		25		7	SS		▽	50/2"				
			27.0									
	Auger Refusal at 27 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 24.5 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-26
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 93.2	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-9" Topsoil 9"-8.0 Brown Mottled Gray Silty Clay			1	SS			13		2.8	22.8	
88.2		5		2	SS			9	1.9	1.0	24.7	
			8.0	3	SS			14		1.3	21.0	
	8.0-14.0 Brown Silty Clay											
83.2		10		4	SS			11		2.5	20.3	
			14.0									
78.2	14.0-18.0 Red Mottled Gray Clay with Black Deposit	15		5	SS			18	4.3	3.0	19.3	
			18.0				▽					
	18.0-24.0 Brown Mottled Gray Shaley Clay to Very Weathered Shale											
69.2		20		6	SS			22		4.5+	19.4	
				7	SS			50/3"				
			24.0									
	Auger Refusal at 24 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 18.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-27
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 92.4

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil											
	7"-10.0 Brown Mottled Gray Silty Clay			1	SS			11		2.0	23.0	
87.4		5		2	SS			10	1.8	1.3	24.4	
				3	SS			12	3.4	2.3	21.9	
82.4		10	10.0	4	SS			12		2.5	19.1	
	10.0-20.0 Gray Silty Sandy Clay											
77.4		15		5	SS			11		4.0	20.0	
72.4		20	20.0	6	SS			26		4.5+	17.6	
	20.0-21.0 Brown Mottled Gray Shaley Clay											
66.4		25	25.5									
	Auger Refusal at 25.5 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion 22.5 ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-28
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	SURFACE ELEVATION 92.0											
	0.0-7" Topsoil 7"-4.0 Brown Mottled Gray Silty Clay			1	SS			8	1.3	1.5	24.2	
87.0	4.0-7.0 Brown Silt	5	4.0	2	SS			15		3.0	20.3	
	7.0-9.0 Brown Silty Clay with Silt Seams		7.0	3	SS			17	2.8	3.5	19.8	
82.0	9.0-17.0 Brown Peppered Black Mottled Gray Clay	10	9.0	4	SS			20	3.1	3.0	20.1	
75.0		15		5	SS		▽	50/5"	4.5	4.5+		
	Auger Refusal at 17 feet		17.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 16.5 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-29
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 93.7	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil			1	SS			7	1.7	4.3	23.2	
	7"-7.0 Brown Mottled Gray Silty Clay with Silt Seams			2	SS			12		2.8	24.4	
88.7		5		3	SS			17		2.0	21.9	
			7.0									
	7.0-9.0 Brown Clay			4	SS			20	3.1	3.5	25.7	
			9.0									
83.7	9.0-14.0 Brown Mottled Gray Peppered Black clay	10		5	SS			29	4.7	4.5+	18.8	
			14.0									
78.7	14.0-21.0 Gray Clay	15		6	SS			24	4.3	4.5+		
72.7		20										
			21.0	7	SS			50/2"				
	Auger Refusal at 21 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-30
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 93.0	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-6" Topsoil 6"-7.0 Brown Mottled Gray Silty Clay			1	SS			12	1.9	1.5	25.7	
88.0		5		2	SS			11		2.5	29.1	
	7.0-9.0 Brown Silty Clay		7.0	3	SS			14	2.7	3.0	20.3	
83.0	9.0-13.0 Brown Clay with Silt Seams	10	9.0	4	SS		▽	17	2.7	2.0	22.2	
	13.0-21.0 Brown Mottled Gray Peppered Black Clay		13.0									
78.0		15		5	SS			17	3.7	2.0		
72.0		20										
			21.0	6	SS			50/2"		4.5		
	Auger Refusal at 21 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 10.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-31
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 92.9	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-1.5 Topsoil		1.5									
	1.5-7.0 Brown Mottled gray Silty Clay			1	SS	X		11		1.0	24.3	
87.9		5		2	SS	X		12		4.5	20.6	
	7.0-9.0 Brown Clay with Silt Seams		7.0	3	SS	X		18	2.9	3.0	22.3	
82.9	9.0-13.0 Brown Peppered Black and Mottled Gray Clay	10	9.0	4	SS	X		25	4.3	4.0	17.7	
	13.0-20.0 Gray Mottled Brown Clay		13.0									
77.9		15		5	SS	X		25	4.7	4.5	21.7	
72.9		20	20.0	6	SS	X		50/1"				
	Auger Refusal at 20.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-32
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 91.1	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-10 Brown Silty Clay			1	SS			13	2.0	2.0	25.1	
86.1		5		2	SS		▼	13		3.5	19.0	
				3	SS			15		3.5	17.2	
80.1		10	10.0	4	SS			15	3.0	4.0	18.1	
	10.0-11.0 Brown Mottled Gray Clay		11.0									
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion Dry ft.
▼ After 24 hours 5.0 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-33
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	SURFACE ELEVATION 93.5											
	0.0-8" Topsoil											
	8"-7.0 Brown Peppered Black Silty Clay			1	SS			14	1.7	1.3	26.3	
88.5		5		2	SS		▼	15		2.3	23.9	
			7.0									
	7.0-9.0 Brown Mottled Brownish Gray Clay			3	SS			16	3.1	3.5	19.3	
			9.0									
82.5	9.0-11.0 Brown Clay	10		4	SS			17	4.1	4.5+	25.5	
			11.0									
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion Dry ft.
▼ After 24 hours 6.0 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-34
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 89.7	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-4.0 Brown Mottled Gray Silty Clay			1	SS			11		2.0	22.4	
84.7	4.0-7.0 Brown Mottled Gray Peppered Black Silty Clay	5	4.0	2	SS		▼	8		1.5	23.7	
	7.0-11.0 Brown Silty Clay		7.0	3	SS			15	3.3	3.3	20.3	
78.7		10		4	SS			13	3.5	3.0	20.6	
	Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion Dry ft.
▼ After 24 hours 5.0 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-35
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	SURFACE ELEVATION 99.5											
	0.0-9" Topsoil											
	9"-8.0 Brown Peppered Black Silty Clay			1	SS			10		1.8	23.5	
94.5		5		2	SS		▼	11		3.5	16.6	
			8.0	3	SS			18	4.6	4.5+	24.7	
	8.0-10.0 Reddish Brown Clay											
88.5		10	10.0	4	SS			19	5.1	4.5+	18.2	
	10.0-11.0 Reddish Brown Mottled Gray Clay		11.0									
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion Dry ft.
▼ After 24 hours 6.0 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-36
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 96.2	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-1.1 Topsoil		1.0									
	1.1-11.0 Brown Mottled Gray Silty Clay			1	SS		▼	8		2.5	21.8	
91.2		5		2	SS			8		1.5	21.3	
				3	SS			11		0.8	24.0	
85.2		10		4	SS			14	3.1	2.5	19.3	
	Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion Dry ft.
▼ After 24 hours 4.0 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-37
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 97.3	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-10.0 Brown Mottled Gray Peppered Black Silty Clay			1	SS			7		0.8	24.0	
92.3		5		2	SS		▼	9		2.8	22.5	
				3	SS			12		4.0	21.0	
86.3		10	10.0	4	SS			11		2.0	20.3	
	10.0-11.0 Reddish Brown Mottled Gray Clay Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion Dry ft.
▼ After 24 hours 5.0 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-38
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 104.0	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-2.5 Light Brown Silty Clay Trace Roots		2.5	1	SS			5		3.5	23.4	
	2.5-10.0 Black Peppered Brown Mottled Gray Silty Clay			2	SS			11	3.0	2.3	23.2	
99.0		5		3	SS			13		2.3	22.0	
				4	SS		▼	15	2.1	2.3	18.6	
93.0		10	10.0									
	10.0-11.0 Black Peppered Brown Mottled Gray Shaley Cl		11.0	5	SS			37	6.0	4.5+	14.7	
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion Dry ft.
▼ After 24 hours 9.0 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-39
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 93.0

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-6" Topsoil											
	6"-7.0 Brown Mottled Gray Silty Clay			1	SS	X		7	1.6	1.0	24.2	
88.0		5		2	SS	X		9		3.5	19.2	
			7.0									
	7.0-11.0 Brown Mottled Gray Clay			3	SS	X		10	2.2	2.0	24.0	
82.0		10		4	SS	X		10		4.0	21.5	
			11.0									
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-40
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-1.0 Topsoil											
	1.0-9.0 Brown Mottled Gray Clay			1	SS			6	1.7	1.5	27.4	
		5		2	SS			6		2.0	22.9	
				3	SS		▽	8	2.3	2.0		
			9.0									
	9.0-11.0 Brown Silty Clay	10		4	SS			10		3.0		
			11.0									
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 9.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-41
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-1.0 Topsoil											
	1.0-4.0 Light Brown Moist Silt			1	SS			4		1.5	24.5	
			4.0									
	4.0-7.0 Brown Mottled Gray Peppered Black Silty Clay	5		2	SS			7		2.3	21.6	
			7.0				▽					
	7.0-9.0 Brown Peppered Black Clay			3	SS			21		4.0		
			9.0									
	9.0-11.0 Red Mottled Brown Clay	10		4	SS			16		4.5		
			11.0									
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 7.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-42
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 115.0

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-2" Topsoil 2'-7.0 Brown Mottled Brownish Gray Clay			1	SS			10		2.5	23.6	
110.0		5		2	SS			8	1.2	1.0	22.8	
	7.0-9.0 Brown Silty Clay		7.0	3	SS		▽	14		2.0	15.9	
104.0	9.0-11.0 Reddish Brown Clay	10	9.0	4	SS			15	3.6	2.5	22.8	
	Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 9.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-43
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 106.8	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-1.0 Topsoil		1.0									
	1.0-9.0 Brown Silty Clay			1	SS			7	1.3	1.0	26.4	
101.8		5		2	SS			12	1.9	3.5	21.9	
				3	SS		▽	13	3.9	3.5	18.6	
			9.0									
95.8	9.0-11.0 Brown Mottled Gray Clay	10		4	SS			10		4.3	18.2	
			11.0									
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 9.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-44
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil 7"-4.0 Brown Mottled Gray Peppered Black Clay			1	SS			7		1.0	24.9	
	4.0-7.0 Brown Silty Clay	5	4.0	2	SS			9	2.3	2.3	22.9	
	7.0-9.0 Brown Moist Silt		7.0	3	SS		▽	11		4.5	20.4	
	9.0-11.0 Reddish Brown Clay	10	9.0	4	SS			10	3.3	3.0	19.8	
	Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 9.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-45
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-4.0 Brown Silty Clay			1	SS			7	1.3	1.5	24.1	
	4.0-7.0 Brown Moist Silt	5	4.0	2	SS			7		1.0	22.2	
	7.0-9.0 Brown Silty Clay with Gray Clay Seams		7.0	3	SS		○ ▽	10	1.8	1.8	20.8	
	9.0-11.0 Brown Mottled Gray Peppered Black Clay	10	9.0	4	SS			9	2.7	2.8	21.2	
	Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 9.0 ft.
▼ After hours ft.
○ Water on Rods 8.0 ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-46
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil 7"-7.0 Brown and Dark Brown Silty Clay			1	SS			7		1.0	24.4	
		5		2	SS			8	1.7	0.5	20.3	
			7.0									
	7.0-11.0 Red Mottled Brown and Black Clay			3	SS			12		4.0	22.9	
		10										
				4	SS		▽	11	2.5	2.5	31.7	
			11.0									
	Auger Refusal at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 11.0 ft.
▼ After hours ft.
○ Water on Rods ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-47
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil											
	7"-4.0 Brown Mottled Gray Clay			1	SS	X		9		1.5	22.6	
			4.0									
	4.0-7.0 Reddish Brown Silty Clay	5		2	SS	X		7		1.5	20.5	
			7.0									
	7.0-9.0 Red Mottled Brown Clay			3	SS	X	▽	9	2.5	1.5	20.8	
			9.0									
	9.0-11.0 Brown Peppered Black Clay	10		4	SS	X		13	4.1	2.5	20.5	
			11.0									
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 9.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-48
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 95.5	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-4.0 Brown Mottled Gray Silty Clay with Silt Seams			1	SS			7		1.3	23.1	
90.5	4.0-9.0 Brown Silty Clay	5	4.0	2	SS			14	1.3	1.5	22.1	
				3	SS			9	2.9	2.5	19.9	
84.5	9.0-11.0 Brown Peppered Black Clay	10	9.0	4	SS			8	2.9	2.5	19.7	
	Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-49
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil 7"-4.0 Dark Gray Clay			1	SS			5		1.3	26.6	
			4.0									
	4.0-12.0 Brown Mottled Gray Clay	5		2	SS			6		1.8	23.2	
				3	SS			7	1.9	1.5	18.4	
		10		4	SS			7	2.3	2.0	17.7	
			12.0									
	12.0-19.0 Brown Mottled Gray and Black Clay	15		5	SS			7	1.7	1.5	18.3	
							▽					
			19.0									
	19.0-21.0 Brown Siltstone	20		6	SS			50/1"		4.5		
			21.0									
	Auger Refusal at 21 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 18.0 ft.
▼ After hours ft.
○ Water on Rods ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-50
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 98.6	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-8" Topsoil 8"-4.0 Brown Mottled Gray Clay			1	SS	X		6		1.5	23.1	
93.6	4.0-9.0 Brown Mottled Black and Gray Clay	5	4.0	2	SS	X		6	1.9	1.8	19.6	
				3	SS	X		5		0.8	23.3	
87.6	9.0-11.0 Brown Peppered Black Clay	10	9.0	4	SS	X		6	1.9	2.0	20.7	
	Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-51
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	SURFACE ELEVATION 96.6											
	0.0-8" Topsoil											
	8"-7.0 Brown Mottled Gray Clay			1	SS			4		1.3	24.6	
91.6		5		2	SS			5		2.0	22.7	
			7.0									
	7.0-11.0 Brown Mottled Black and Gray Clay			3	SS		▽	5		2.0	22.5	
85.6		10										
			11.0	4	SS			5		2.0	22.0	
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion 9.0 ft.
▼ After hours ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-52
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

STRATA ELEV.	SOIL CLASSIFICATION SURFACE ELEVATION 94.8	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-6" Topsoil 6"-5.0 Gray Silty Clay with Gray Silt Layers			1	SS	X		6	1.3	1.0	23.9	
89.8		5	5.0	2	SS	X		8	1.3	1.0	23.2	
	5.0-7.0 Gray Mottled Brown Clay Some Silt Seams		7.0									
	7.0-9.0 Brown Mottled Gray Silty Clay			3	SS	X		8	2.1	1.0	19.5	
83.8	9.0-11.0 Brown Mottled Gray and Black Clay	10	9.0	4	SS	X		8		1.3	18.3	
	Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-53
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 98.2

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-7" Topsoil 7"-6.0 Brown Peppered Black Silty Clay			1	SS	X		9		4.0	26.2	
93.2		5		2	SS	X		7		2.3	22.3	
	6.0-9.0 Brown Moist Silt		6.0	3	SS	X		7		2.3	21.5	
87.2	9.0-11.0 Brown Mottled Gray Clay	10	9.0	4	SS	X		9	3.0	3.5	20.3	
	Boring Terminated at 11.0 feet		11.0									

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
At Completion Dry ft.
After hours ft.
Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

RECORD OF SUBSURFACE EXPLORATION

Alt & Witzig Engineering, Inc.

CLIENT Evansville-Vanderbaugh School Corporation
PROJECT NAME New North High School and Middle School
LOCATION Evansville, Indiana

Boring # B-54
Alt & Witzig File No. 09EV0016

DRILLING and SAMPLING INFORMATION

Date Started 5/21/2009 Hammer Wt. 140 lbs.
Date Completed 5/21/2009 Hammer Drop 30 in.
Boring Method HSA Spoon Sampler OD 2 in.

SURFACE ELEVATION 94.3

STRATA ELEV.	SOIL CLASSIFICATION	Depth Scale	Strata Depth	Sample No.	Sample Type	Sampler Graphics	Ground Water	Standard Penetration Test, N - Blows/foot	Qu - tsf Unconfined Compressive Strength	Pp - tsf Pocket Penetrometer	Moisture Content %	Remarks
	0.0-6" Topsoil											
	6"-7.0 Brown Mottled Gray Clay			1	SS			6	2.3	2.0	21.4	
89.3		5		2	SS		▼	6	1.2	1.0	21.5	
			7.0									
	7.0-9.0 Brown Moist Silt			3	SS			7	2.1	2.5	20.8	
			9.0									
83.3	9.0-11.0 Brown Mottled Gray Peppered Black Clay	10		4	SS			8		3.0	16.9	
			11.0									
	Boring Terminated at 11.0 feet											

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Auger
DC - Driving Casing
MD - Mud Drilling

GROUNDWATER
▽ At Completion Dry ft.
▼ After 5 hours 5.0 ft.
○ Water on Rods Dry ft.
C - Boring Caved Depth

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2 inch O.D. split-spoon.

Qu: Unconfined compressive strength, TSF

Qp: Penetrometer value, unconfined compressive strength, TSF

Mc: Water content, %

LL: Liquid limit, %

PL: Plastic limit, %

Dd: Natural dry density, PCF

▼ : Apparent groundwater level at time noted after completion

DRILLING AND SAMPLING SYMBOLS

SS: Split-spoon - 1 3/8" I.D., 2" O.D., except where noted
ST: Shelby tube - 3" O.D., except where noted
AU: Auger sample
DB: Diamond bit
CB: Carbide bit
WS: Washed sample

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

TERM (NON-COHESIVE SOILS)	BLOWS PER FOOT
Very loose	0 - 4
Loose	5 - 10
Firm	11 - 30
Dense	31 - 50
Very Dense	Over 50

TERM (COHESIVE SOILS)	Qu (TSF)
Very soft	0 - 0.25
Soft	0.25 - 0.50
Medium	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.(+)	Coarse Sand	5 mm-0.6 mm	Silt	0.075 mm - 0.005 mm
Cobbles	8 in. - 3 in.	Medium Sand	0.6mm-0.2 mm	Clay	0.005mm(-)
Gravel	3 in. - 5 mm	Fine Sand	0.2mm-0.075 mm		