



Alt & Witzig Engineering, Inc.

208 East Collins Drive – Fort Wayne, IN 46825
Phone: (260) 484-0813 – Fax: (260) 482-9652

April 22, 2014

Economic Development Group of Wabash County, Inc.
214 S Wabash Street
Wabash, Indiana 46992
Attention: Mr. Bill Konyha

Report of Subsurface Investigation and Geotechnical Recommendations

RE: Borgers – Wabash Site
Wabash, Indiana
A&W Project No.: 14FW0034

Dear Mr. Konyha:

In compliance with your request, we have completed a subsurface investigation for the proposed Borgers Site in Wabash, Indiana. It is our pleasure to provide the following information for your review, a full report of our findings and full recommendations will be provided within a supplemental report.

This investigation was conducted at the request of Mr. Bill Konyha of the Economic Development Group of Wabash County, Inc. The purpose of this subsurface investigation was to determine 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 proposed building to be constructed in Wabash, Indiana.

Site Description

The Site is located on the north side of Wabash, Indiana within the Wabash Northeast Business Complex. The Site is located within Lots 5, 6, 10 & 11 near the southwest corner of the Northeast Business Complex (*Exhibit 1*).

Exhibit 1: General Site Location



Field Methods

Field activities in the scope of the investigation included reconnaissance of the project site, soil borings, standard penetration tests, and collection of soil samples by means of standard split-spoon sampling. Boring locations were staked in the field by Alt & Witzig Engineering using hand held GPS equipment at the approximate locations provided by the Economic Development Group of Wabash County, Inc.

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

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 lb hammer, falling 30 inches, required to advance the split-spoon sampler 12 inches 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.

Laboratory Investigation

In addition to the field investigations, a supplemental laboratory investigation was conducted to ascertain additional pertinent engineering characteristics of the subsurface materials necessary in

analyzing the behavior of the proposed roadway. All phases of the laboratory investigation were conducted in accordance with applicable ASTM Specifications and INDOT's Geotechnical Manual. The laboratory-testing program included:

- Classification of soils in accordance with ASTM D 2488
- Moisture content tests were performed in accordance with ASTM 2216.
- Unconfined Compressive Strength using Hand Held Penetrometer

Subsurface Conditions

The borings performed at this site indicated approximately four (4) inches of topsoil at the surface. Beneath the upper topsoil layer the borings typically encountered medium stiff to hard cohesive soils that continued to the termination depth of the borings. However some intermittent sand layers and sand seems were noted at various locations throughout the site. For a more detailed description of the soils please refer to the Soil Borings presented in the Appendix.

Project Description

Design plans indicate that this project will consist of a pre-engineered manufacturing building is to be constructed at the site previously mentioned. The building has been indicated to be a 165,400 square foot, one story steel frame building with a large machine pad near the center of the building at the location of borings B-16 and B-17. In order to balance the site it has been indicated that the grade may be dropped slightly, however it is anticipated that the finished floor elevation will be founded within one (1) foot of the existing grade.

Engineering Assumptions

It is assumed that structural loads for this building will be transferred to the soils by a combination of spread footings and continuous wall footings. For the purpose of our analysis, a maximum column load of two hundred (200) kips and continuous wall footing loads of less than three (3) klf have been assumed.

If the final design loads exceed these used in our analysis, they should be submitted to Alt & Witzig Engineering, Inc. for review. Further, the grading plans were not available for the proposed building. The grading plans should also be submitted to Alt & Witzig. After a review of this information, it will be determined if changes to these recommendations are warranted.

Foundation Recommendations

Considering the encountered soil conditions at the boring locations, the anticipated load of the structure, and the relative economics of the available foundation types, conventional spread and continuous wall footings are anticipated to be the most economical with the existing soil conditions.

Based upon the observed soil conditions, a net allowable soil bearing pressure of 4,000 psf may be used for the design of spread and continuous wall footings for the proposed building.

Using the above mentioned bearing pressure and recommendations, total settlements of less than one (1) inch and differential settlements of one half (½) inch or less can be anticipated.

Wherever unsuitable material is encountered during the excavation of footings, it may be necessary to undercut these areas to suitable bearing materials. Some softer soils were encountered in the northwest portion of the site near borings B-1, B-4 and B-8. All foundation excavations should be inspected by Alt & Witzig Engineering, Inc. to verify that the materials in the base of the footings are suitable prior to placement of the concrete

Floor Slab Recommendations

Based upon the existing soil conditions the floor slab for the proposed structure may be constructed as a slab on grade founded upon the existing soils if a passing proofroll inspection can be achieved. In the areas where the existing grade is above the final floor elevation, the building area should be undercut and a six (6) inch layer of granular material should be placed beneath the slab. In those areas where the existing grade is below the final floor elevation, a well-compacted structural fill will be necessary to raise the site to desired grade. Where structural compacted fill is required for portions of the building pads, they may consist of the on-site natural soils, with the exception of topsoil.

Prior to placing fill and floor slab, it is recommended that the exposed subgrade be proofrolled in the presence of a representative of Alt & Witzig Engineering, Inc. with approved equipment. This proofrolling is intended to identify the presence of any soft unsuitable materials immediately below the exposed subgrade. Where soft unsuitable areas are detected during the proofroll, the areas should be undercut and replaced with approved structural fill material. If filling in confined spaces, granular material must be utilized. Cohesive fills may only be utilized at near optimum moisture conditions during mass filling operations.

Heavily Loaded Slab Recommendations

It has been indicated that some heavily loaded equipment pads are expected at this site. In order to constructed the floor slab at these areas a thickened slab may be constructed at this location. Based upon the soils at this site the following modulus of subgrade reaction values are recommended:

RECOMMENDED MODULUS OF SUBGRADE REACTION FOR VARIOUS METHODS OF SUBGRADE PREPARATION			
	Compact 12" Subgrade	Compact 6" Pit Run	Compact 6" #53 Stone
K_s , pci	125	175	200

Site Grading

The predominate soil type near the surface at this site consisted of cohesive materials. These materials (excluding the topsoil) should be suitable for use during mass earthwork at this site. However if these soils are exposed to excessive moisture (such as rain) they will become soft which will cause rutting and pumping under construction traffic. Additionally repeated construction traffic

across the subgrade may cause rutting and pumping over time.

Statement of Limitations

An inherent limitation of any geotechnical engineering study is that conclusions must be drawn on the basis of data collected at a limited number of discrete locations. The geotechnical parameters provided in this report were developed from the information obtained from the test borings that depict subsurface conditions only at these specific locations and on the particular date indicated on the boring logs. Soil conditions at other locations may differ from conditions encountered at these boring locations and groundwater levels shall be expected to vary with time. The nature and extent of variations between the borings may not become evident until the course of construction.

Often, because of design and construction details that occur, questions arise concerning the soils conditions.

Sincerely,
ALT & WITZIG ENGINEERING, INC.



Jason R. Bennett, P.E.



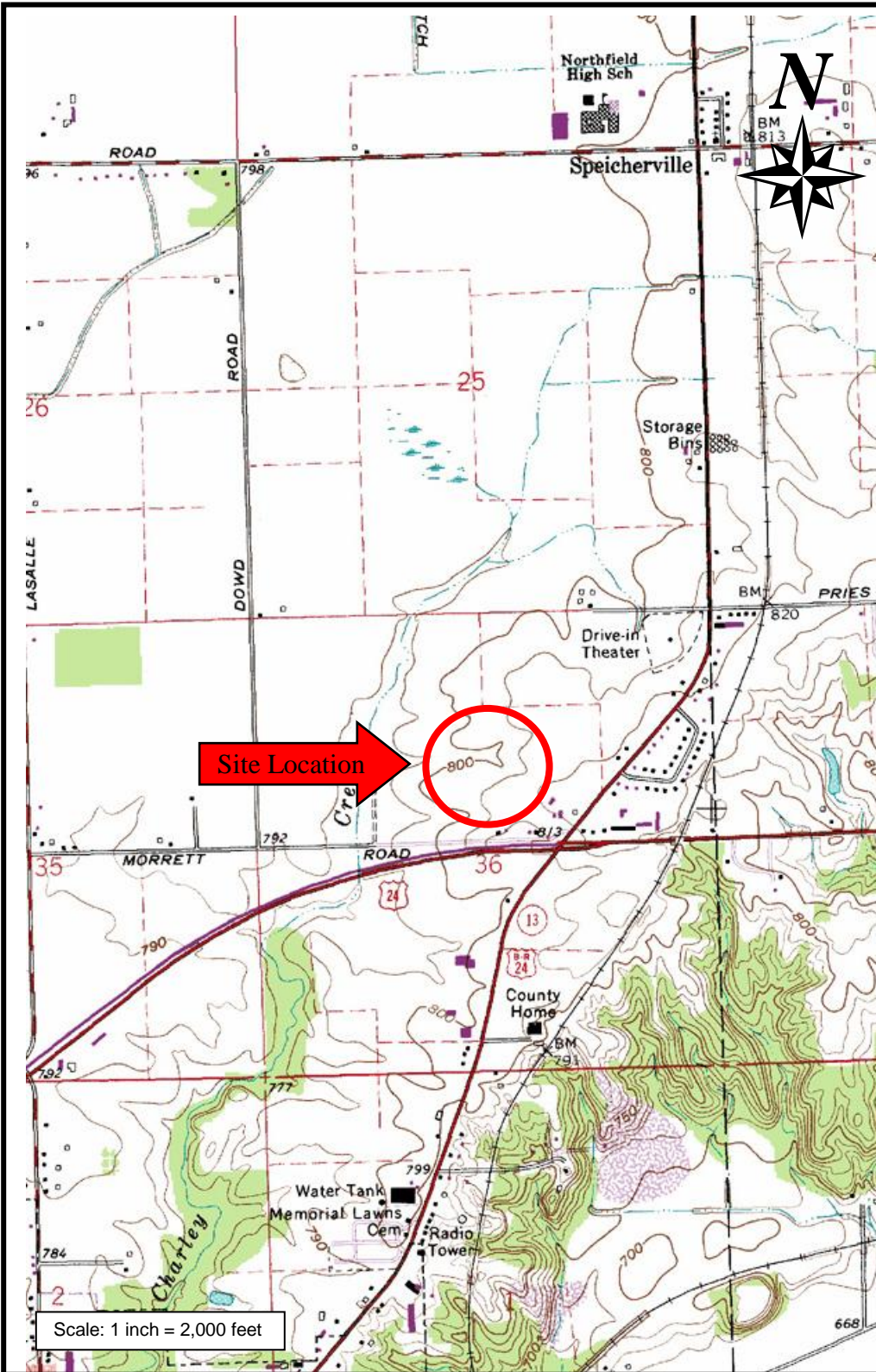
Thomas J. Coffey, P.E.



APPENDIX

Site Location Map
Boring Location Plan
Logs of Test Borings
General Notes

SITE LOCATION MAP



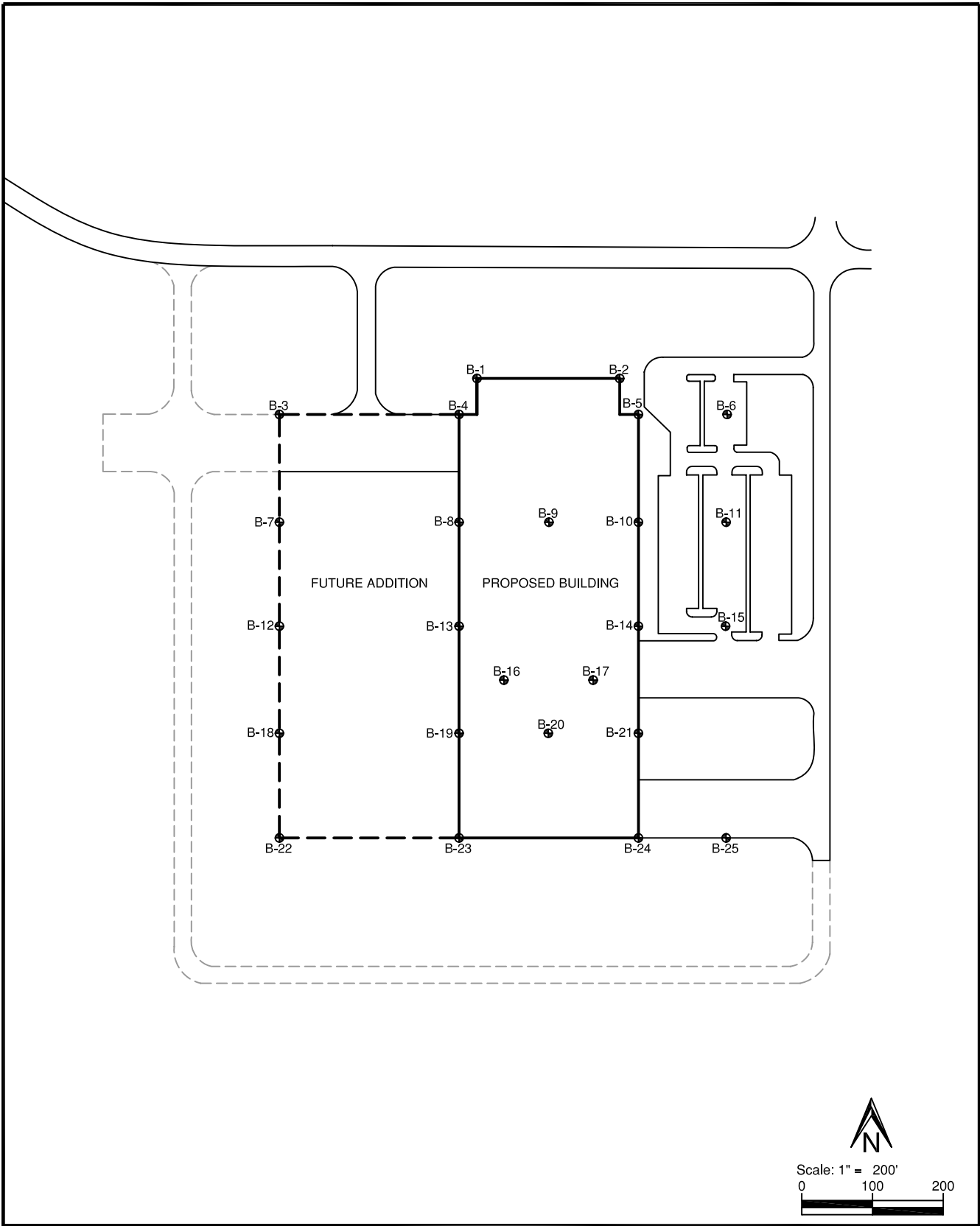
USGS Topographic Map:
Wabash Quadrangle

Township: T 28 N.
Range: R 6 E.
Section: 36

Scale: 1 inch = 2,000 feet

PROJECT: Borgers-Wabash Site
LOCATION: Wabash, Indiana
CLIENT: Economic Development Group of Wabash County, Inc.
A&W File No.: 14FW0034


AW Alt & Witzig Engineering Inc.
 208 E. Collins Drive · Fort Wayne, IN 46825
 TEL (260) 484-08130 · FAX (260) 482-9652
www.altwitzig.com



BORING LOCATION PLAN

PROJECT NAME: Borgers - Wabash Site
 LOCATION: Wabash, Indiana
 CLIENT: Economic Dev. Group of Wabash County, Inc
 PROJECT NO: 14FW0034

Project Manager: JB
 Checked By: DH
 Drawn By: JT
 Date: 04/14

 Alt & Witzig Engineering, Inc.
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BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-1
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

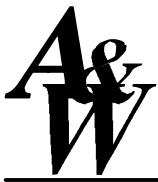
TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
	Brown LEAN CLAY		1	1	SS			11		4.5		
			5	2	SS			9	2.9	1.0		
				3	SS			14		3.8		
			10.0	10	4	SS		13	3.7	3.8		
				15	5	SS		14		1.5		
	Gray LEAN CLAY with Sand Seams		20	6	SS			10		4.5		
			26.0	25	7	SS		45		2.0		
	End of Boring at 26 feet											

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

Groundwater
 ○ During Drilling Dry ft.
 ∇ At Completion Dry ft.
 ∇ After 2 hours 19.5 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-2
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/17/14 Hammer Wt. 140 lbs.
 Date Completed 4/17/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	Dark Brown TOPSOIL	0.3										
	Brown Silty Sandy CLAY	5.0	1	1	SS		▼	8		4.5	13.7	
	Brown Silty SAND	7.0	2	2	SS			7				
	Brown LEAN CLAY	10.0	3	3	SS			22		3.0		
	Brown LEAN CLAY	15.0	4	4	SS			13		2.8		
	Brown LEAN CLAY	15.0	5	5	SS			16		2.3		
	Gray Silty CLAY	20.0	6	6	SS			20				
	Gray Silty CLAY	25.0	7	7	SS		▼	42		4.5		
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling Dry ft.
 ▼ At Completion 23 ft.
 ▼ After 24 hours 2 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-3
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

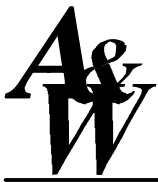
TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.5										
	Brown LEAN CLAY			1	SS			13	2.5	3.0		
				2	SS			14	3.1	4.5		
				3	SS			12				
				4	SS			23				
				5	SS			24		4.5		
				6	SS			35		4.5		
				7	SS			67		4.5		
	Brown Well Graded SAND with Clay	8.0										
	Gray LEAN CLAY with Sand Seams	15.0										
			20									
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling 14 ft.
 ∇ At Completion 4.5 ft.
 ▼ After 1 hours 3 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-4
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks	
	Dark Brown TOPSOIL	0.4											
	Brown LEAN CLAY			1	SS	▼		8	2.0	1.3			
				2	SS			5					
					3	SS	○		14	5.4	4.5		
					4	SS			14	4.3	4.5		
			14.5		5	SS	▽		16	4.7	4.0		
		Gray LEAN CLAY with Sand Seams			6	SS			10		1.3		
					7	SS			62		2.3		
	End of Boring at 26 feet	26.0											

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

Groundwater
 ○ During Drilling 6.5 ft.
 ▽ At Completion 15 ft.
 ▼ After 3 hours 2.5 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-5
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/17/14 Hammer Wt. 140 lbs.
 Date Completed 4/17/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.3										
	Brown LEAN CLAY with Sand Seams	15.0	1	1	SS		▼	20		4.5	13.1	
			5	2	SS				18	5.4	4.5	
			10	3	SS				19		4.5	
			15	4	SS		○		13		4.0	
			20	5	SS		▽		17		4.5	
			25	6	SS				15			
			26.0	7	SS				29		3.0	
	End of Boring at 26 feet											

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

Groundwater
 ○ During Drilling 9.5 ft.
 ▽ At Completion 15 ft.
 ▼ After 24 hours 2 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-6
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/17/14 Hammer Wt. 140 lbs.
 Date Completed 4/17/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks	
	SURFACE ELEVATION												
	Dark Brown TOPSOIL	0.3											
	Brown LEAN CLAY with Sand Seams			1	SS		▼	10		4.5			
			5	2	SS			24	5.4	4.5	12.3		
					3	SS			16		4.5		
					4	SS			27		4.5		
			12.0										
					5	SS			12		2.5		
					6	SS			17		4.5		
	Gray LEAN CLAY						▽						
				7	SS			7					
	End of Boring at 26 feet	26.0											

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

Groundwater
 ○ During Drilling Dry ft.
 ▽ At Completion 22 ft.
 ▼ After 24 hours 2.5 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-7
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller D. McWherter Rig Type B-57 Truck

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.5										
	Brown Sandy LEAN CLAY		1	1	SS			10		2.3		
			5	2	2	SS		21	5.4	4.5		
	Brown LEAN CLAY		7.5	3	3	SS		22		4.5		
			10	4	4	SS		15		4.5		
	Gray LEAN CLAY with Sand Seams		14.5	5	5	SS		19		4.0		
			20	6	6	SS		34		4.5		
	End of Boring at 26 feet		25	7	7	SS		50/2		4.5		
			26.0									

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

Groundwater
 ○ During Drilling 22.5 ft.
 ∇ At Completion 13 ft.
 ☒ Caved At Completion 23 ft.
 ▼ After 2 hours 6 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-8
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller D. McWherter Rig Type B-57 Truck

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks	
	SURFACE ELEVATION												
	Dark Brown TOPSOIL	0.4											
	Brown LEAN CLAY			1	SS			12	3.9	4.5			
			5	2	SS			7		0.8			
					3	SS			7		1.3		
			10	4	SS			13		4.5			
			15	5	SS			14					2 Attempts No Recovery
			20.0	20	6	SS			12		1.8		
			26.0	25	7	SS			50/3		4.5		
	Gray LEAN CLAY with Sand Seams												
	End of Boring at 26 feet												

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

Groundwater
 ○ During Drilling _____ Dry ft.
 ▽ At Completion _____ Dry ft.
 ☒ Caved At Completion 22 ft.
 ▼ After 1 hours 16 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-9
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller D. McWherter Rig Type B-57 Truck

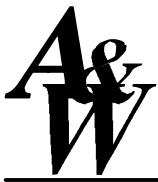
TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.5										
	Brown LEAN CLAY with Sand Seams			1	SS			13		3.0		
				2	SS			16		1.5		
				3	SS			11		4.0		
				4	SS			10		3.5		
	Gray LEAN CLAY	15.0		5	SS			11		3.0		
				6	SS			10		1.3		
		26.0		7	SS			48		4.5		
	End of Boring at 26 feet											

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

Groundwater
 ○ During Drilling Dry ft.
 ∇ At Completion Dry ft.
 Caved At Completion 21 ft.
 ▼ After 2 hours 22 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-10
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller D. McWherter Rig Type B-57 Truck

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks	
	SURFACE ELEVATION												
	Dark Brown TOPSOIL	0.4											
	Brown LEAN CLAY			1	SS			11		2.8			
				2	SS			12		3.0			
				3	SS			16		4.3			
				4	SS			17		4.5			
			14.5		5	SS			18		4.5		
		Gray LEAN CLAY			6	SS			18		4.5		
		Gray LEAN CLAY with Sand Seams	20.0		7	SS			31		3.0		
	End of Boring at 26 feet	26.0											

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

Groundwater
 ○ During Drilling 23 ft.
 ∇ At Completion 21 ft.
 Caved At Completion 22 ft.
 ▼ After 3 hours 18 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-11
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/17/14 Hammer Wt. 140 lbs.
 Date Completed 4/17/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
	Brown LEAN CLAY		1	1	SS			8	2.1	2.3	21.0	
			5	2	SS			9		2.5	19.3	
				3	SS			10		4.0		
			10	4	SS			17	5.2	4.5		
			15.5	5	SS		▼	15		4.5		
		Gray LEAN CLAY		20	6	SS		19		4.3		
				25	7	SS			16		4.5	
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling Dry ft.
 ▼ At Completion Dry ft.
 ▼ After 24 hours 15 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-12
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/18/14 Hammer Wt. 140 lbs.
 Date Completed 4/18/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
				1	SS			10		1.5	18.6	
				2	SS			13	5.2	4.5	13.2	
	Brown LEAN CLAY with Sand Seams			3	SS			16		4.5		
				4	SS			18		4.5		
		13.0										
	Gray Sandy LEAN CLAY			5	SS			8				
		19.0										
	Gray LEAN CLAY with Sand Seams			6	SS			50/3				Driving on a Rock
		26.0										
	End of Boring at 26 feet			7	SS			50/0				Driving on a Rock

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

Groundwater
 ○ During Drilling Dry ft.
 ∇ At Completion Dry ft.
 ▼ After 24 hours 4 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-13
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/18/14 Hammer Wt. 140 lbs.
 Date Completed 4/18/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.3										
	Brown LEAN CLAY			1	SS			16		3.3	16.7	
				2	SS			32	5.3	4.5	13.2	
				3	SS			14		4.5		
				4	SS			15				
				5	SS			14		1.8		
				6	SS			12		4.5		
				7	SS			76				
	Gray LEAN CLAY	16.0										
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling Dry ft.
 ∇ At Completion Dry ft.
 ▼ After 24 hours 2 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-14
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/17/14 Hammer Wt. 140 lbs.
 Date Completed 4/17/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.3										
	Brown LEAN CLAY			1	SS			14	5.4		12.6	
			5	2	SS			24		4.5		
					3	SS	▼	25				
			10		4	SS		24		4.5		
			14.5		5	SS		15		2.5		
			20		6	SS		15		4.5		
			25		7	SS		15				
	Gray LEAN CLAY											
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling Dry ft.
 ▼ At Completion Dry ft.
 ▼ After 24 hours 7.5 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-15
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/17/14 Hammer Wt. 140 lbs.
 Date Completed 4/17/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
	Brown Sandy LEAN CLAY	5.0	1	1	SS			11		4.5		
	Brown LEAN CLAY	5.0	5	2	SS			19		4.5		
		10	3	3	SS			23		4.5		
		10	4	4	SS			30		4.5		
		15.0	5	5	SS			16		4.5		
	Gray LEAN CLAY with Sand Seams	20	6	6	SS			22		4.5		
	End of Boring at 26 feet	26.0	25	7	SS			9		3.0		

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

Groundwater
 ○ During Drilling Dry ft.
 ∇ At Completion Dry ft.
 ▼ After 24 hours 2 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-16
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/18/14 Hammer Wt. 140 lbs.
 Date Completed 4/18/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
	Brown LEAN CLAY			1	SS			8		4.5	21.6	
				2	SS			10	4.5	4.5	14.9	
				3	SS			19		4.5		
				4	SS			23		4.5		
			14.5		5	SS		14		4.5		
					6	SS		27		4.3		
					7	SS		12		3.8		
	Gray LEAN CLAY											
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling Dry ft.
 ∇ At Completion Dry ft.
 ▼ After 24 hours 4 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-17
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/18/14 Hammer Wt. 140 lbs.
 Date Completed 4/18/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

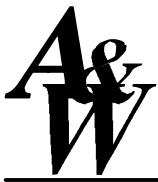
TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	Dark Brown TOPSOIL	0.3										
			1	1	SS			22	5.4	4.5		
			5	2	SS			31		4.5		
	Brown LEAN CLAY			3	SS			34		4.5		
			10	4	SS			20		4.5		
		15.0	15	5	SS		▽	29				Two Attempts No Recovery
	Gray LEAN CLAY		20	6	SS		○	26		4.5		
			25	7	SS			17				
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling 19.5 ft.
 ▽ At Completion 15 ft.
 ▼ After 24 hours 1.5 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-18
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/18/14 Hammer Wt. 140 lbs.
 Date Completed 4/18/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
	Brown Sandy LEAN CLAY	3.0		1	SS			8	2.5	2.0	16.0	
	Brown LEAN CLAY with Sand Seams			5	2	SS		14		4.5		
				10	3	SS		13		4.3		
				15	4	SS		13		3.8		
				20	5	SS		26		4.0		
				25	6	SS		14		4.0		
	Gray LEAN CLAY	18.0		25	7	SS		87		4.5		
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling Dry ft.
 ∇ At Completion Dry ft.
 ▼ After 24 hours 1.5 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-19
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/18/14 Hammer Wt. 140 lbs.
 Date Completed 4/18/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

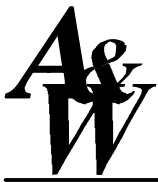
TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.3										
	Brown LEAN CLAY with Sand Seams			1	SS			21	5.4	4.5	11.9	
				2	SS			22		4.5		
				3	SS			23		4.5		
				4	SS			25				
				5	SS			14				
				6	SS			11				
				7	SS			8				
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling 19 ft.
 ▽ At Completion Dry ft.
 ▽ After 24 hours 10 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-20
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
	Brown LEAN CLAY			1	SS			6	1.2	1.3		
				2	SS			20	5.4	4.5		
				3	SS			19	5.4	4.5		
			10.5	10	4	SS			18		3.3	
	Brown LEAN CLAY with Wet Sand Seams	13.0										
	Gray LEAN CLAY with Sand Seams			5	SS			14		4.5		
			20	20	6	SS			14		4.5	
	End of Boring at 26 feet			7	SS			9				
			26.0	25								

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

Groundwater
 ○ During Drilling Dry ft.
 ∇ At Completion Dry ft.
 ∇ After 24 hours 17 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-21
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks	
	Dark Brown TOPSOIL	0.4											
	Brown LEAN CLAY		1	1	SS			23	5.4	4.5			
			5	2	SS			26		4.5			
					3	SS			22	5.2	4.5		
			10	4	SS			22	5.4	4.5			
			15	5	SS			19	5.4	4.5			
			18.0										
		Gray LEAN CLAY with Sand Seams		20	6	SS			12		4.0		
			25	7	SS			18		4.0			
	End of Boring at 26 feet	26.0											

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

Groundwater
 ○ During Drilling 23 ft.
 ▽ At Completion Dry ft.
 ▼ After 9 hours 18 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-22
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
	Brown LEAN CLAY with Sand	5.0	1	1	SS			7		1.0		
	Brown LEAN CLAY		2	2	SS			9		4.5		
			3	3	SS			12		3.5		
			10	4	4	SS			14		4.5	
			12.5									
	Gray LEAN CLAY with Sand Seams		5	5	SS			12		4.5		
			20	6	6	SS			12		1.3	
			25	7	7	SS			50/1		4.5	
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling _____ Dry ft.
 ∇ At Completion 18.5 ft.
 ∇ After 4 hours 9 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-23
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
	Brown LEAN CLAY with Sand Seams			1	SS			13		4.5		
				2	SS			18		4.5		
				3	SS			17		4.5		
				4	SS			20		4.5		
				5	SS		▼	10		3.8		
			20.0		6	SS			13		4.5	
		Gray LEAN CLAY										
	Gray Silty CLAY with Sand Seams	25.0		7	SS			16		1.0		
	End of Boring at 26 feet	26.0										

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

Groundwater
 ○ During Drilling Dry ft.
 ▼ At Completion Dry ft.
 ▼ After 5 hours 15 ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-24
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks	
	SURFACE ELEVATION												
	Dark Brown TOPSOIL	0.4											
	Brown LEAN CLAY			1	SS			23		4.5			
				2	SS			26		4.5			
				3	SS			20	5.4	4.5			
				4	SS			25		4.5			
			14.5		5	SS			24	5.4	4.5		
		Gray LEAN CLAY			6	SS			10		3.3		
					7	SS			12		2.0		
	End of Boring at 26 feet	26.0											

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

Groundwater
 ○ During Drilling Dry ft.
 ∇ At Completion Dry ft.
 ▼ After 8 hours Dry ft.

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



BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Economic Development Group of Wabash County, Inc
 PROJECT NAME Borgers - Wabash Site
 PROJECT LOCATION Wabash, IN

BORING # B-25
 ALT & WITZIG FILE # 14FW0034

DRILLING and SAMPLING INFORMATION

Date Started 4/21/14 Hammer Wt. 140 lbs.
 Date Completed 4/21/14 Hammer Drop 30 in.
 Boring Method HSA Spoon Sampler OD 2 in.
 Driller M. Winkler Rig Type D-50 Track ATV

TEST DATA

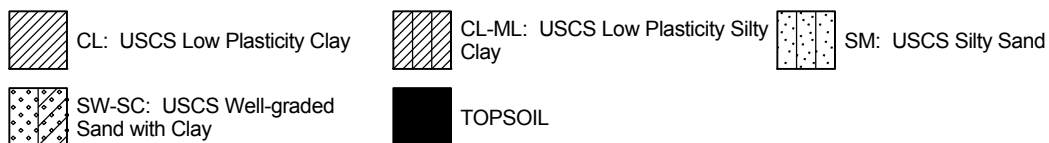
STRATA ELEV.	SOIL CLASSIFICATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % Dry Unit Weight (pcf)	Remarks
	SURFACE ELEVATION											
	Dark Brown TOPSOIL	0.4										
	Brown Sandy LEAN CLAY	5.0	1	1	SS			12		2.5		
	Brown LEAN CLAY	10.0	5	2	SS			21	5.4	4.5		
	Brown LEAN CLAY	15.0	10	3	SS			25	5.4	4.5		
	Gray LEAN CLAY	20.0	15	4	SS			26		4.5		
	Gray LEAN CLAY	25.0	20	5	SS			15		4.0		
	Gray LEAN CLAY	26.0	25	6	SS			11		4.5		
	End of Boring at 26 feet	26.0	25	7	SS			14		3.0		

Sample Type
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Groundwater
 ○ During Drilling _____ Dry ft.
 ∇ At Completion _____ Dry ft.
 ▼ After 7 hours _____ Dry ft.

Boring Method
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MATERIAL GRAPHICS LEGEND



SOIL PROPERTY SYMBOLS


N: Standard "N" penetration value. Blows per foot of a 140-lb hammer falling 30" on a 2" O.D. split-spoon.
 Qu: Unconfined Compressive Strength, tsf PP: Pocket Penetrometer, tsf
 LL: Liquid Limit, % PL: Plastic Limit, % PI: Plasticity Index, %

DRILLING AND SAMPLING SYMBOLS

GROUNDWATER SYMBOLS

- Apparent water level noted while drilling.
- ∇ Apparent water level noted upon completion.
- ▼ Apparent water level noted upon delayed time.

SAMPLER SYMBOLS

 SS: Split Spoon

RELATIVE DENSITY & CONSISTANCY CLASSIFICATION (NON-COHESIVE SOILS)

<u>TERM</u>	<u>BLOWS PER FOOT</u>
Very Loose	0 - 5
Loose	6 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	>51

RELATIVE DENSITY & CONSISTANCY CLASSIFICATION (COHESIVE SOILS)

<u>TERM</u>	<u>BLOWS PER FOOT</u>
Very Soft	0 - 3
Soft	4 - 5
Medium Stiff	6 - 10
Stiff	11 - 15
Very Stiff	16 - 30
Hard	>31



Alt & Witzig Engineering, Inc.

Telephone:
Fax:

GENERAL NOTES

Project: Borgers - Wabash Site
 Location: Wabash, IN
 Number: 14FW0034

MATERIAL GRAPHICS LEGEND



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GENERAL NOTES - PROJECT SPECIFIC 14FW0025 04.01.14.GPJ US EVAL.GDT 4/22/14



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