ADDENDUM
NO. 1

November 6, 2025

THE NEW WALLACE AYLESWORTH MIDDLE SCHOOL

5910 Central Ave.
Portage, IN 46368

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications and the Drawings dated October 28, 2025, by Fanning Howey Associtate, Inc. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 01 and attached Geotechnical Report.

A. <u>SPECIFICATION SECTION - 00 20 00 - INFORMATIN AVAILABLE TO BIDDERS</u>

1. **ADD:**

   The attached Geotechnical Report

SUBSURFACE INVESTIGATION &
GEOTECHNICAL RECOMMENDATIONS

WILLOWCREEK MIDDLE SCHOOL
5962 CENTRAL AVENUE
PORTAGE, INDIANA
A&W PROJECT NO.: 25MV0075

PREPARED FOR:
FANNING HOWEY
INDIANAPOLIS, INDIANA

PREPARED BY:
ALT & WITZIG ENGINEERING, INC.
GEOTECHNICAL DIVISION

OCTOBER 30, 2025

Alt & Witzig Engineering, Inc.
1418 86th Place • Merrillville, Indiana • 46410
Ph (219) 314-9028 • Fax (800) 875-6028

October 30, 2025

Fanning Howey
350 East Now York Street, Suite 300
Indianapolis, Indiana 46204
Attn: Mr. Mike Schipp

Report of Subsurface Investigation and Geotechnical Recommendations

RE: Willowcreek Middle School
5962 Central Avenue
Portage, Indiana
A&W Project No.: **25MV0075**

Dear Mr. Schipp:

In compliance with your request, Alt & Witzig Engineering, Inc. has completed a subsurface investigation for the Willowcreek Middle School. The Statement of Objectives, Scope of Work, and results of our investigation are presented in the following report. It is our pleasure to transmit an electronic (.pdf) copy of the report.

The results of our test borings and laboratory tests completed to date are presented in the appendix of the report. Our recommendations for the project are presented in the "Geotechnical Analysis and Recommendations" section of the report. If you have any questions or comments regarding this matter, please contact us at your convenience.

Sincerely,
ALT & WITZIG ENGINEERING, INC.

Daniel E. Desper, P.E.

DANIEL EUGENE DESPER
REGISTERED
PE11700784
STATE OF
INDIANA
PROFESSIONAL ENGINEER

Jason R. Bennett, P.E.

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EXECUTIVE SUMMARY

Alt & Witzig Engineering, Inc. has performed a subsurface investigation and geotechnical analysis for the Willowcreek Middle School in Portage, Indiana. This investigation was performed for Fanning Howey. Authorization to perform this investigation was in the form of an Alt & Witzig Engineering proposal accepted by Mike Schipp of Fanning Howey and an executed agreement.

In compliance with your request, a total of twenty-three (23) borings were conducted. Provided plans indicated a multi-story school building with a gymnasium will be constructed as slab-on-grade. Paved parking and drive areas will also be constructed surrounding the proposed school building.

The purpose of this investigation was to determine the various soil profile components, the engineering characteristics of the subsurface materials, and to provide geotechnical recommendations for design and construction of the proposed school.

The following conditions and concerns are relevant for this project.

- The borings conducted within the existing grass areas encountered three (3) to nine (9) inches of topsoil, and the borings conducted within the paved areas encountered three (3) to five (5) inches of asphalt over two (2) to five (5) inches of aggregate base. Beneath the topsoil or the pavement, dry to wet, loose to medium dense sand and gravel was encountered extending to the termination of the borings as deep as twenty (20) feet. Layers of very loose sand were encountered within the upper fifteen (15) feet on several borings. Within the sand and gravel, layers of soft to stiff clays were encountered at various depths within the upper ten (10) feet.

- It is anticipated that final grade will be established at or near the current ground surface elevation. Therefore, footings for the proposed building will be constructed at a depth where loose to medium dense granular soils were encountered or where medium stiff cohesive soils were encountered.

- Due to the loose soil conditions and the anticipated loading of the proposed structure, a ground improvement system, such as rammed aggregate piers, with conventional footings is recommended for support of the proposed school building. Installation of a ground improvement system increases the bearing capacity of the existing soil and allows for construction of conventional foundations. A specialty contractor will be able to design the proper ground improvement system and provide a net allowable bearing capacity of the improved soil.

1.0 INTRODUCTION

In compliance with your request, we have completed a subsurface investigation and geotechnical analysis at the above referenced site for the Willowcreek Middle School located 5962 Central Avenue in Portage, Indiana.

This investigation was performed for Fanning Howey. The proposed statement of objectives and scope of work were outlined in the form of an A&W Proposal Number 2509MV005 accepted by Fanning Howey.

The purpose of this subsurface investigation was to determine the soil profile and the engineering characteristics of the subsurface materials and provide geotechnical parameters for design and construction of the proposed school.

The scope of this investigation included a review of geological maps of the area and a review of geologic and related literature, a reconnaissance of the immediate site, a subsurface exploration, field and laboratory testing, and an engineering analysis and evaluation of the materials. The scope or purpose of the investigation did not specifically or by implication provide an environmental assessment of the site.

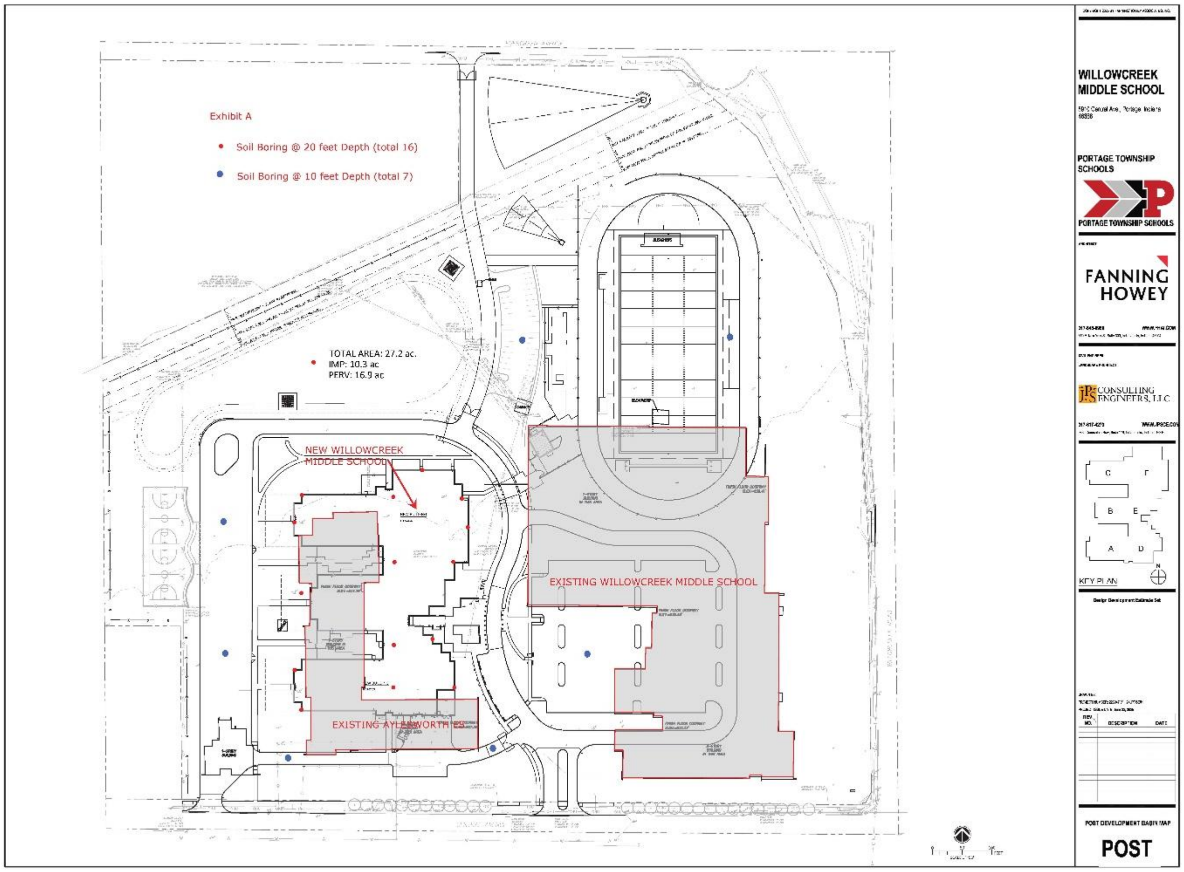
1.1 Project Description

Provided plans indicated a multi-story school building will be constructed as slab-on-grade. Additionally, a high bay gymnasium will be constructed as part of the new school. Paved parking and drive areas will also be constructed surrounding the proposed school building. A new football field will also be constructed with bleachers to the northeast of the proposed school.

Maximum structural loads of 320 kips and 9.5 kips per lineal foot for column and wall footings, respectively, were provided by Fanning Howey. If actual structural loads differ from those mentioned above, they should be submitted to Alt & Witzig Engineering, Inc. for review.

The grading plan was not available at the time of this investigation. It is anticipated that final grade for the proposed building will be established at or near the current ground surface elevation. Once the grading plan is available, it should be submitted to Alt & Witzig Engineering, Inc. for review. After this review, an addendum letter will be submitted with any necessary revisions.

Exhibit 1: Site Plan Provided by the Client



1.2 Site Location

The site is located in Porter County in northwest Indiana. More specifically, the site is located in Portage, Indiana at the street address of 5962 Central Avenue (*Exhibit 2*).

Exhibit 2: Site Location; Google Earth 2024

1.3 Regional Setting

At the time of the field investigation, the site was occupied by the existing Aylesworth Elementary School and associated school structures. According to Google Earth the site has an estimated ground surface elevation of 635 feet. Drainage along the project site typically runs across the ground surface into low-lying areas and stormwater collectors.

A review of the *Custom Soil Resource Report for Porter County, Indiana* indicated that the shallow natural soils over the project area consists mostly of Maumee loamy sand (Mm) and Urban land-Brems complex (Ud) as shown in *Exhibit 3*, below. The *Custom Soil Resource Report for Porter County, Indiana* has been included in *Appendix B* of this report.

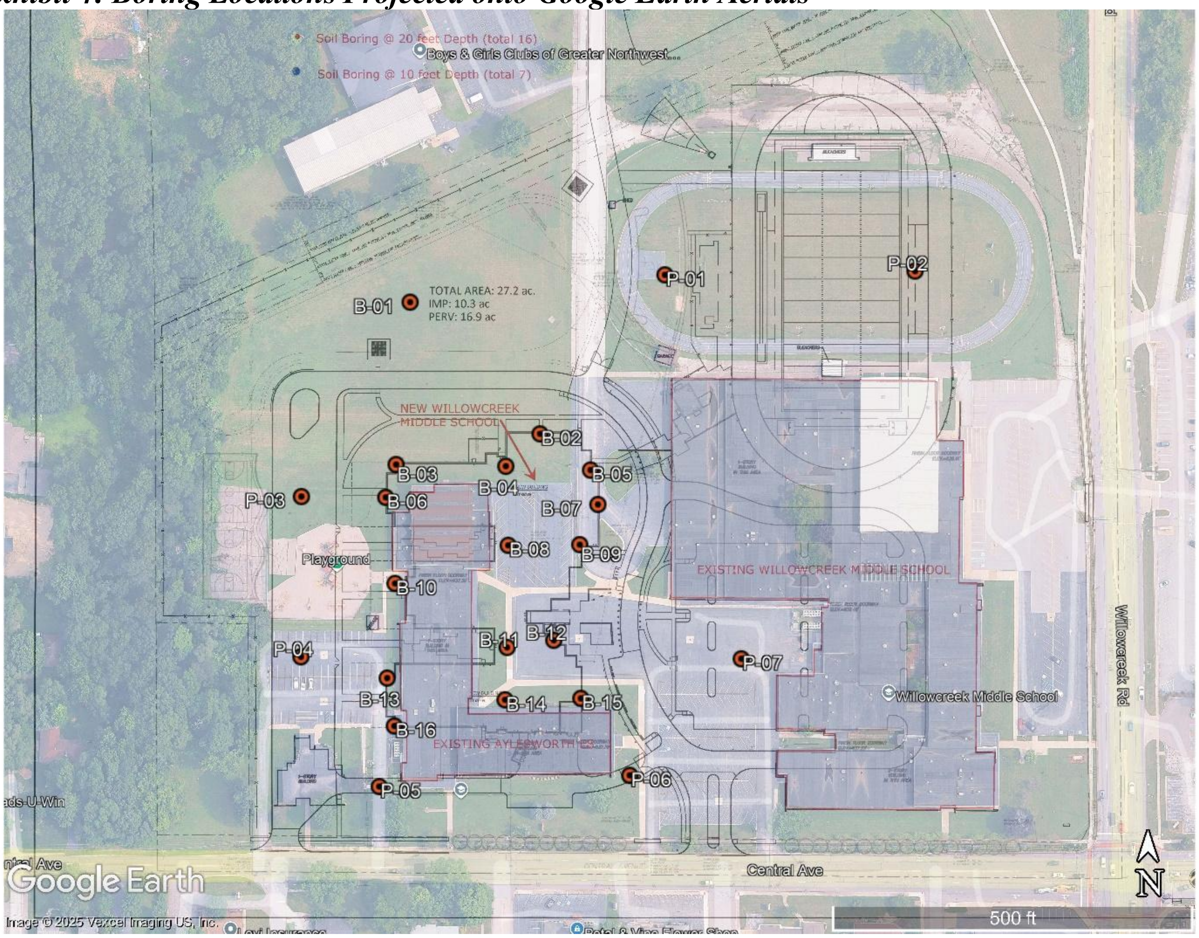
Exhibit 3: Soil Types Across Site; USDA NRCS

2.0 WORK PERFORMED

2.1 Boring Locations

Alt & Witzig Engineering, Inc. staked the locations of borings based on the "Post Development Basin Map" dated June 23, 2025. The "Post Development Basin Map," provided by Fanning Howey, was projected onto aerials provided by the Google Earth website allowing for the correlation of the approximate latitude and longitude coordinates with each boring location, as shown in *Exhibit 4*, below.

Exhibit 4: Boring Locations Projected onto Google Earth Aerials



2.2 Soil Sampling

The soil borings were performed with an ATV-mounted drilling rig equipped with a rotary head. Conventional hollow-stem augers were used to advance the holes. During the sampling procedure, standard penetration tests were performed at regular intervals in accordance with ASTM Method D-1586 to obtain the standard penetration value of the soil. The standard penetration value is defined as the number of blows a one hundred forty (140)-pound hammer, falling thirty (30) inches, required to advance the split-spoon sampler twelve (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.

Soil samples were field classified and placed in unpreserved glass jars with Teflon-lined lids for transport to our geotechnical laboratory for further analysis.

2.3 Laboratory Analyses for Soil Samples

A laboratory investigation was conducted to ascertain additional pertinent engineering characteristics of the subsurface materials at the site of the proposed school. The laboratory testing program also included.

- A visual classification of soils in accordance with ASTM D-2488.
- A calibrated soil penetrometer was used as an aid in determining the strength of the soil.
- Moisture content tests were performed in accordance with ASTM D-2216.

2.4 Groundwater Elevation

Initial depths to groundwater were estimated based on where water was observed on the sampling rods. Upon completion of drilling activities, the depth to water was measured using a tape measure with a weighted end. It should be noted that in granular soils, borings often experience caving or 'plugging' of the borehole opening due to sloughing. The depth of cave/plug is also recorded on the *Boring Logs*. The depths presented on the *Boring Logs* are accurate only for the day on which they were recorded.

3.0 Investigation Results

The types of subsurface materials encountered have been visually classified and are described in detail on the *Boring Logs*. The results of the field penetration tests, strength tests, water level observations and laboratory water contents are presented on the *Boring Logs* in numerical form. Representative samples of the soils encountered in the field were placed in sample jars and are now stored in our laboratory for further analysis if desired. Unless notified to the contrary, all samples will be disposed of after two (2) months.

3.1 Site-Specific Geologic Results

At the ground surface, the borings conducted within the existing grass areas encountered three (3) to nine (9) inches of topsoil, and the borings conducted within the paved areas encountered three (3) to five (5) inches of asphalt over two (2) to five (5) inches of aggregate base. Beneath the topsoil or the pavement, dry to wet, loose to medium dense sand and gravel was encountered extending to the termination of the borings as deep as twenty (20) feet. Layers of very loose sand were encountered within the upper fifteen (15) feet on several borings. Within the sand and gravel, layers of soft to stiff clays were encountered at various depths from beneath the surface materials extending as deep as ten (10) feet.

3.2 Site-Specific Groundwater Elevations

Typically, groundwater level measurements taken during and immediately upon the completion after the completion of drilling operations indicated groundwater as shallow seven (7) feet. The exact location of the water table shall be anticipated to fluctuate somewhat depending upon normal seasonal variations in precipitation and surface runoff.

3.3 Seismic Consideration

Based on information obtained in the subsurface investigation and experience on other projects in this area, the Seismic Site Class D is appropriate for design in accordance with the current Indiana Building Code guidelines. Maximum spectral response values of S_s=0.121 and S_1=0.063 may be used for seismic design.

4.0 GEOTECHNICAL ANALYSES AND RECOMMENDATIONS

4.1 Project Description

Provided plans indicated a multi-story school building will be constructed as slab-on-grade. Additionally, a high bay gymnasium will be constructed as part of the new school. Paved parking and drive areas will also be constructed surrounding the proposed school building. Additionally a new football field with bleachers will be constructed to the northeast of the proposed school.

The location of the soil borings in relation to preliminary configuration of the site is shown on the enclosed *Boring Location Plan*.

Maximum structural loads of 320 kips and 9.5 kips per lineal foot for column and wall footings, respectively, were provided by Fanning Howey. If actual structural loads differ from those mentioned above, they should be submitted to Alt & Witzig Engineering, Inc. for review.

The grading plan was not available at the time of this investigation. It is anticipated that final grade for the proposed building will be established at or near the current ground surface elevation. Once the grading plan is available, it should be submitted to Alt & Witzig Engineering, Inc. for review. After this review, an addendum letter will be submitted with any necessary revisions.

4.2 Site Preparation

Maximum topsoil and asphalt thicknesses of nine (9) inches and five (5) inches, respectively, were encountered across the site. The topsoil thicknesses on our boring logs are not exact and may not represent variations between boring locations. Therefore, the thicknesses should be used for estimating purposes only. If desired and the grading plan allows, the aggregate base may be left in place if a passing proof-roll is achieved. The amount of stripping will also be dependent on the condition of the subgrade during earthmoving operations. It is also recommended that the exposed subgrade be inspected by a representative of Alt & Witzig Engineering, Inc. to aid in determining if additional stripping is necessary to aid in determining where suitable soils are encountered.

After stripping, removal of undocumented fills, and prior to the placement of fill, the exposed subgrade should be proof-rolled with equipment approved by a representative of Alt & Witzig Engineering, Inc. This proof-rolling will assist in determining if any pockets of soft unstable materials exist beneath this exposed subgrade. Where soft, yielding materials are encountered, it will be necessary to remediate the area prior to placement of fill materials. Remediation of these unstable areas will be dictated by the field conditions at that time and the proposed grading. However, due to the elevated moisture contents of the shallow soils, remediation through chemical stabilization may be necessary in the wetter portions of the year. Depending upon the length of time for construction, the final subgrade may be subject to large amounts of precipitation and freeze thaw cycles. Therefore, it may be advantageous to treat the subgrade by means of cement stabilization. The exact remediation method should be determined in the field at the time of construction.

All fill placed with the intent of supporting foundations, floor slabs, and pavements should be placed in accordance with *Section 4.3*.

4.3 Demolition Recommendations

It is understood that the existing Aylesworth Elementary School will be demolished to allow construction of the new middle school. During demolition, all footings, floor-slabs, utility trenches, and below-grade structures should be removed and replaced with structural fills. Additionally, during demolition any undocumented fills should be completely removed and replaced with compacted structural fill. All fills/backfills should be placed in accordance with *Section 4.4*. It is also recommended that a representative of Alt & Witzig Engineering, Inc. be on-site to witness any backfilling operations.

4.4 Compaction Specifications

After remediation of soft soil/yielding soils identified in the proof-roll inspection, the site should be raised to subgrade elevation. Using approved material, it is recommended that the minimum dry density as determined in accordance with ASTM D-1557 be achieved in the various areas across the site mentioned in the following table. The following table illustrates the recommended compaction percentage in several areas of the site.

Table 1: Compaction Specifications

Area	Min. Percentage of Compaction ASTM D 1557	Acceptable Material	Typical Maximum Lift Thickness
Roads, Drives, & Parking Areas (including future areas)	95%	Any besides ML, MH, CH, OL, OH	8"
Under Foundations and Footings	95%	Any besides ML, MH, CH, OL, OH	8"
Sub grade Below Slab-On-Grade	95%	INDOT #53 or other coarse-grained material approved by the geotechnical engineer	8"
Construction of Permanent Slopes	95%	Any besides ML, MH, SW, SP, GW, GP	8”
Green Space (not including permanent slopes)	85%	Any	12"
Landscaped Areas (Upper 1 ft)	Maximum 90%	Any	12"
Utility Trench Backfill	98%	SW, SP, GW, GP	10"

USCS Classifications: **GW-Well Graded Gravel** **GP-Poorly Graded Gravel** **GM-Silty Gravel** **GC-Clayey Gravel**	SW-Well Graded Sand SP-Poorly Graded Sand SM-Silty Sand SC-Clayey Sand CL-Lean Clay	ML-Silt CH-Fat Clay MH-Elastic Silt OL-Organic Clay/Silt OH-Organic Clay/Silt

The ability to obtain the above-mentioned compaction requirements are dependent upon the moisture contents of the fill soils.

4.5 Foundation Recommendations

As indicated in *Section 4.1*, it is anticipated that final grade will be established at or near the current ground surface elevation. Therefore, footings for the proposed building will be constructed at a depth where loose to medium dense granular soils were encountered or where medium stiff cohesive soils were encountered.

Due to the loose soil conditions and the anticipated loading of the proposed structure, a ground improvement system, such as rammed aggregate piers or vibratory stone columns, with conventional footings is recommended for support of the proposed school building. Installation of a ground improvement system increases the bearing capacity of the existing soil and allows for construction of conventional foundations. A specialty contractor will be able to design the proper ground improvement system and provide a net allowable bearing capacity of the improved soil.

In order to alleviate the effects of frost action and seasonal variations in moisture content, all exterior foundations should be founded a minimum of three (3) feet below the final grade. Interior footings in frost protected areas may be founded at a nominal depth below the finished floor slab, provided suitable bearing materials are encountered.

4.6 Floor Slab Recommendations

The shallow soils across the site appear to be adequate for supporting a lightly loaded floor slab. However, if the subgrade fails a proof-roll inspection at the time of construction, some subgrade remediation may be required. The exact remediation method should be determined in the field after consulting with Alt & Witzig Engineering, Inc.

After preparation of the subgrade as recommended in *Section 4.2* and final grade has been established, a well-drained four (4) to six (6)-inch compacted granular material should be placed immediately beneath all floor slabs. This granular material will provide a uniform surface for construction of the floor slab and minimize capillary rise of water through the slab.

All finished subgrades should be proof-roll inspected before placing concrete to verify that the sub-grade is suitable to support the slab. If the subgrade should become disturbed, or excessively wet or dry prior to construction of the floor slabs, the affected materials should be remediated prior to installation of the granular materials. Final remediation of the finished subgrade should be performed immediately prior to placing the floor slab base course.

4.7 Pavement Subgrade Recommendations

All paved areas should be prepared in accordance with *Section 4.2*. Any necessary remediation of unstable areas will be dictated by the field conditions at the time of grading.

All paved areas should be designed to prevent water from collecting or ponding immediately beneath the pavement. It is suggested that underdrains be installed in the pavement areas to minimize potential saturation of the soils identified across the site. Underdrains should be considered at all storm structures, at asphalt to concrete interfaces, and under pavements where any slopes will drain onto a pavement surface. For under drains to be effective, minimum installation depths of 18-inches are suggested. The drains should consist of a four (4)-inch perforated plastic pipe encased in a clean granular washed No. 8 stone.

5.0 Statement Of Limitations

This report is solely for the use of Fanning Howey and their assigned agents. Any reliance of this report by third parties shall be at such party's sole risk and may not contain sufficient information for purposes of other parties for other uses. This report shall only be presented in full and may not be used to support any other objectives than those set out in the scope of work, except where written approval and consent are provided by Fanning Howey and Alt & Witzig Engineering.

Our subsurface investigation was conducted in accordance with guidelines set forth in the scope of services and applicable industry standards. The scope or purpose of this geotechnical investigation did not, either specifically or by implication, provide any environmental assessment of the site.

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.

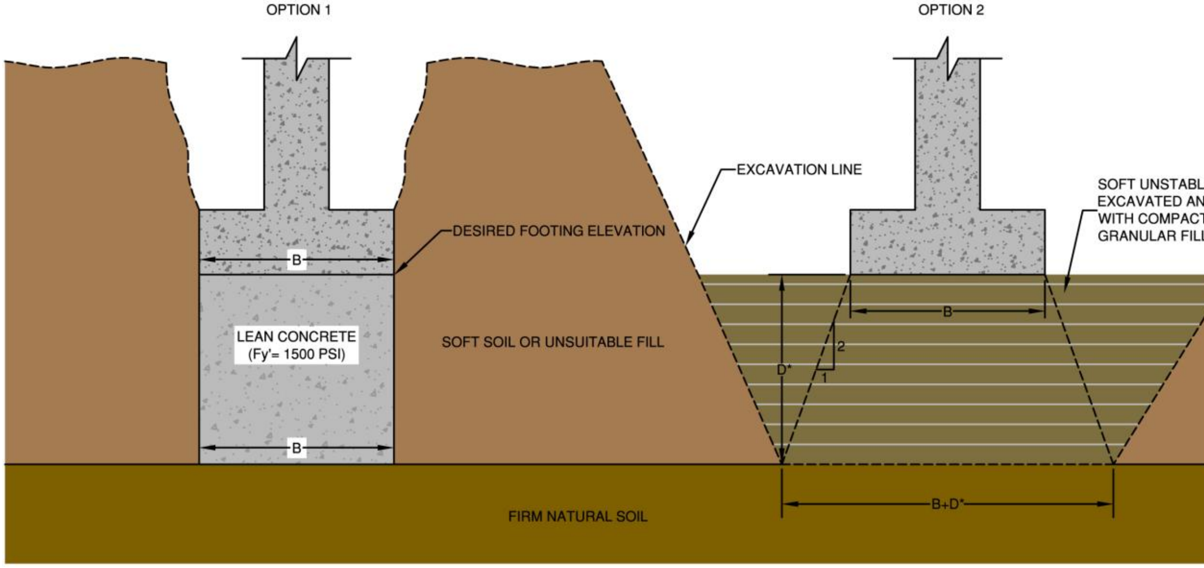
The exploration and analysis reported herein is considered in sufficient detail and scope to form a reasonable basis for design. The recommendations submitted are based on the available soil information and assumed design details enumerated in this report. If actual design details differ from those specified in this report, this information should be brought to the attention of Alt & Witzig Engineering, Inc. so that it may be determined if changes in the recommendations herein are required. If deviations from the noted subsurface conditions are encountered during construction, they should also be brought to the attention of Alt & Witzig Engineering, Inc.

We appreciate the opportunity to work with you on this project. Often, because of design and construction details that occur, questions arise concerning the soils conditions. If we can give further service in these matters, please contact us at your convenience.

Appendix A

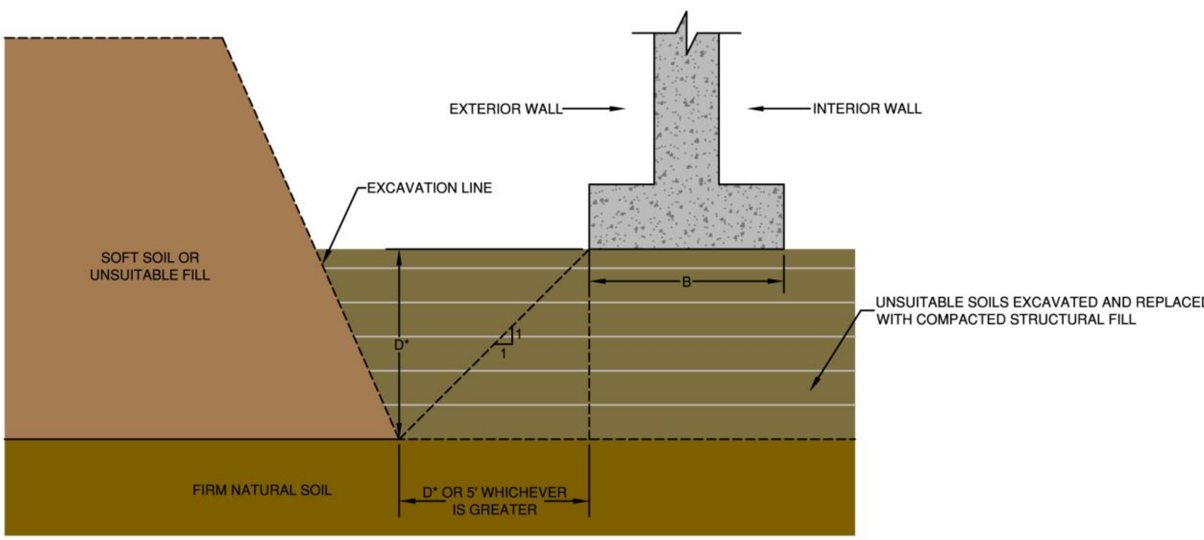
Undercut Detail for Footing Excavation in Unstable Materials
Boring Location Plan
Boring Logs
General Notes

UNDERCUT EXCAVATION FOR ISOLATED FOOTINGS IN UNSTABLE MATERIALS



D* IS DEPTH FOR SUITABLE SOILS

MASS EXCAVATION FOR FOOTINGS IN UNSTABLE MATERIALS



D* IS DEPTH FOR SUITABLE SOILS

Undercut Detail for Footing Excavation in Unstable Material

PROJECT: **Willowcreek Middle School**
LOCATION: 5962 Central Avenue, Portage, IN
CLIENT: Fanning Howey
A&W File No.: 25MV0075

Alt & Witzig Engineering Inc.
1418 86TH Place
Merrillville, Indiana 46410
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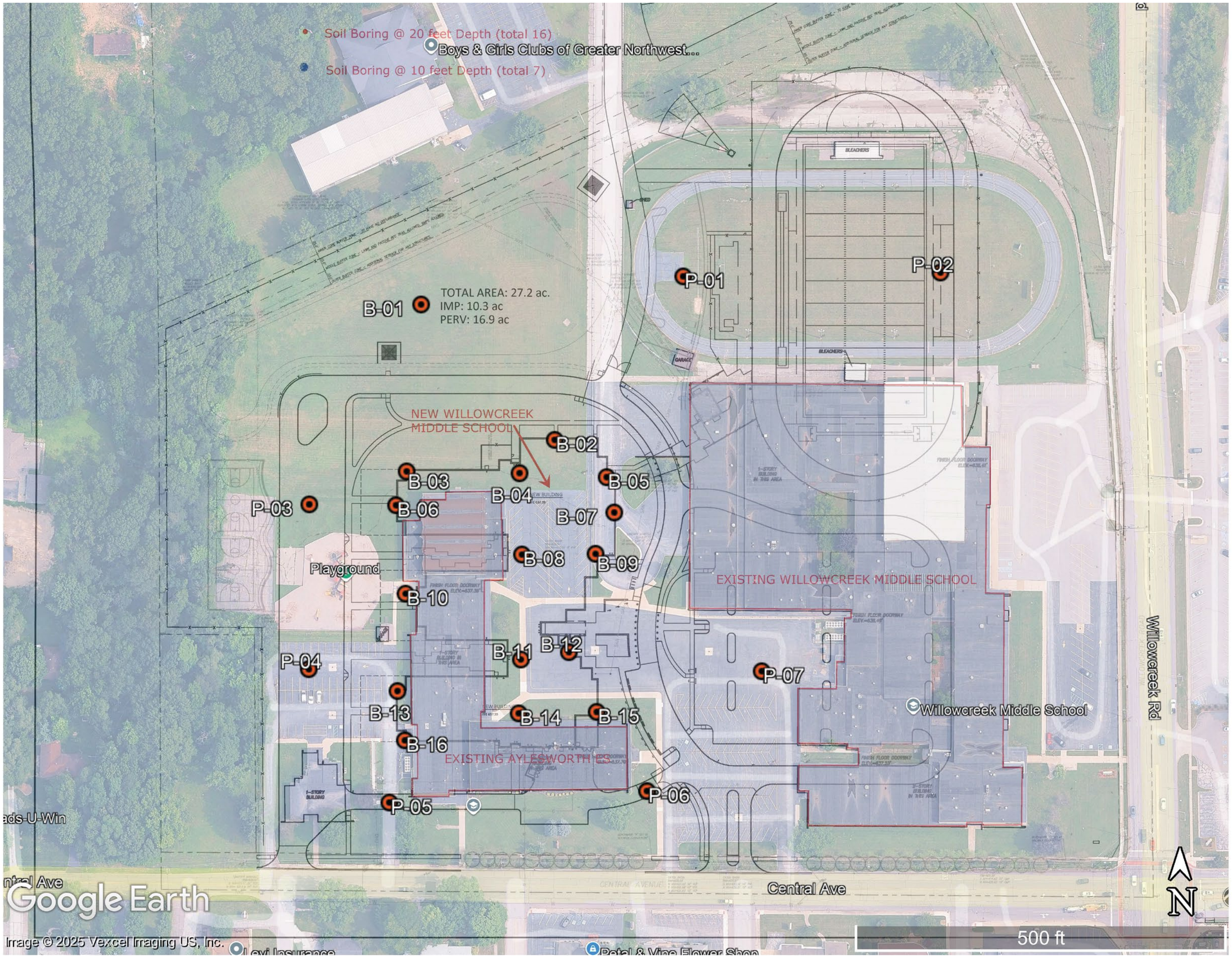

BORING LOCATION PLAN

PROJECT: **Willowcreek Middle School**
LOCATION: 5962 Central Avenue, Portage, IN
CLIENT: Fanning Howey
A&W File No.: 25MV0075

Alt & Witzig Engineering Inc.
1418 86TH Place
Merrillville, Indiana 46410
TEL (219) 314-9028 · FAX (800) 875-6028
www.altwitzig.com

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT: **Fanning Howey**
PROJECT NAME: **Willowcreek Middle School**
PROJECT LOCATION: **Portage, IN**
BORING #: **B-01**
ALT & WITZIG FILE #: **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	9/23/25	Hammer Wt.	140 lbs.
Date Completed	9/23/25	Hammer Drop	30 in.
Boring Method	HSA	Spoon Sampler OD	2 in.
Driller	Geocon	Rig Type	D50

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.3										
	Brown Sandy CLAY	2.5		1	SS			9				
	Brown SAND	5.0	5	2	SS			6				
	Gray Sandy CLAY	10.0		3	SS		⊻	1			17.4	
			10	4	SS			16				
	Gray, Wet SAND	20.0		5	SS		○	9				
			15	6	SS			10				
				7	SS			23				
			20	8	SS			23				
	End of Boring at 20 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 *11.0 ft.*
⊻ At Completion *7.0 ft.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**

BORING # **B-02**

PROJECT NAME **Willowcreek Middle School**

ALT & WITZIG FILE # **25MV0075**

PROJECT LOCATION **Portage, IN**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.3										
	Brown SAND	2.5		1	SS			7				
	Brown and Gray Sandy CLAY	5.0	5	2	SS			7		2.5	21.1	
	Gray SAND			3	SS			5				
			10	4	SS			3				
				5	SS		○	7				
			15	6	SS			7				
		20.0	20	7	SS		⊻	23				
	End of Boring at 20 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 *12.0 ft.*
⊻ At Completion *20.0 ft.*

Boring Method

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey** | BORING # **B-03**
PROJECT NAME **Willowcreek Middle School** | ALT & WITZIG FILE # **25MV0075**
PROJECT LOCATION **Portage, IN**

DRILLING and SAMPLING INFORMATION

Date Started	9/23/25	Hammer Wt.	140 lbs.
Date Completed	9/23/25	Hammer Drop	30 in.
Boring Method	HSA	Spoon Sampler OD	2 in.
Driller	Geocon	Rig Type	D50

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.3										
	Brown SAND			1	SS			16				
		5.0		2	SS			14				
	Brown and Gray Sandy CLAY		5	3	SS			7		2.0	18.1	
		7.5										
	Brown, Wet SAND			4	SS			3				
			10	5	SS			2				
							○					
				6	SS			19				
			15									
				7	SS			20				
		20.0	20									
	End of Boring at 20 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 *13.0 ft.*
▽ At Completion *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 **Fanning Howey**
PROJECT NAME **Willowcreek Middle School**
PROJECT LOCATION **Portage, IN**
BORING # **B-04**
ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % *Dry Unit Weight (pcf)*	Remarks
	TOPSOIL	0.2									
	Brown SAND			1	SS		5				
				2	SS		5				
			5								
				3	SS		8				
				4	SS		6				
			10								
				5	SS		6				
						○					
				6	SS		7				
			15								
				7	SS		9				
		20.0	20			∇					
	End of Boring at 20 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 *13.0 ft.*
∇ At Completion *20.0 ft.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**

PROJECT NAME **Willowcreek Middle School**

PROJECT LOCATION **Portage, IN**

BORING # **B-05**

ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	3" Asphalt	0.2										
	5" Aggregate	0.7										
	Brown SAND			1	SS			4				
				2	SS			8				
			5	3	SS			11				
				4	SS			5				
			10	5	SS			0				
				6	SS			11				
			15				○ (18.0 ft)					
				7	SS			24				
		20.0	20				⊻ (20.0 ft)					
	End of Boring at 20 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 *18.0 ft.*
⊻ At Completion *20.0 ft.*

Boring Method

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**
PROJECT NAME **Willowcreek Middle School**
PROJECT LOCATION **Portage, IN**

BORING # **B-06**
ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Strata Depth	Sample No.	Sample Type	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % *Dry Unit Weight (pcf)*	Remarks
	TOPSOIL	0.3								
	Brown SAND	5.0	1	SS		9				
			2	SS		16				
	Brown and Gray Sandy CLAY	10.0	3	SS		10			17.8	
			4	SS		19				
	Gray, Wet SAND	20.0	5	SS		27				
			6	SS	○	22				
			7	SS		31				
			8	SS		21				
	End of Boring at 20 feet									

Depth Scale: 5, 10, 15, 20

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 *14.0 ft.*
⊻ At Completion *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	**Fanning Howey**	BORING #	**B-07**
PROJECT NAME	**Willowcreek Middle School**	ALT & WITZIG FILE #	**25MV0075**
PROJECT LOCATION	**Portage, IN**		

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	3" Asphalt	0.2										
	5" Aggregate	0.7										
	Brown SAND			1	SS			12				
				2	SS			6				
			5									
				3	SS			3				
				4	SS			2				
			10									
				5	SS		○	9				
				6	SS			6				
			15									
				7	SS		∇	8				
		20.0	20									
	End of Boring at 20 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 *12.0 ft.*
∇ At Completion *20.0 ft.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**

PROJECT NAME **Willowcreek Middle School**

PROJECT LOCATION **Portage, IN**

BORING # **B-08**

ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Strata Depth	Depth Scale	Sample No.	Sample Type	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % *Dry Unit Weight (pcf)*	Remarks
	3.5" Asphalt	0.2									
	5" Aggregate	0.7									
	Brown SAND			1	SS		7				
				2	SS		7				
			5	3	SS		9				
			10	4	SS		10				
				5	SS	○	4				
			15	6	SS		5				
		20.0	20	7	SS	▽	17				
	End of Boring at 20 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 *12.0 ft.*
▽ At Completion *20.0 ft.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT: **Fanning Howey**
PROJECT NAME: **Willowcreek Middle School**
PROJECT LOCATION: **Portage, IN**

BORING #: **B-09**
ALT & WITZIG FILE #: **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	9/23/25	Hammer Wt.	140 lbs.
Date Completed	9/23/25	Hammer Drop	30 in.
Boring Method	HSA	Spoon Sampler OD	2 in.
Driller	Geocon	Rig Type	D50

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	3" Asphalt	0.2										
	5" Aggregate	0.7										
	Brown SAND			1	SS			13				
				2	SS			6				
			5	3	SS			8				
				4	SS			7				
			10	5	SS		○	6				
				6	SS			7				
			15	7	SS			5				
		20.0	20									
	End of Boring at 20 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 *12.0 ft.*
∇ At Completion *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 **Fanning Howey**
PROJECT NAME **Willowcreek Middle School**
PROJECT LOCATION **Portage, IN**

BORING # **B-10**
ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	Strata Depth	Sample No.	Sample Type	Ground Water	Standard Penetration Test, N - blows/foot	Qu-tsf Unconfined Compressive Strength	PP-tsf Pocket Penetrometer	Moisture Content % *Dry Unit Weight (pcf)*	Remarks
	TOPSOIL	0.2								
	Brown SAND		1	SS		10				
		5.0	2	SS		12				
	Brown Sandy CLAY	7.5	3	SS		13		2.0	23.7	
	Brown, Wet SAND		4	SS		8				
			5	SS		5				
					○					
			6	SS		9				
			7	SS		4				
		20.0	8	SS		6				
	End of Boring at 20 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 *13.0 ft.*
▽ At Completion *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 **Fanning Howey**
PROJECT NAME **Willowcreek Middle School**
PROJECT LOCATION **Portage, IN**
BORING # **B-11**
ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	9/23/25	Hammer Wt.	140 lbs.
Date Completed	9/23/25	Hammer Drop	30 in.
Boring Method	HSA	Spoon Sampler OD	2 in.
Driller	Geocon	Rig Type	D50

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.3										
	Brown SAND			1	SS			12				
				2	SS			10				
			5	3	SS			6				
				4	SS			8				
			10	5	SS			4				
				6	SS			8				
			15	7	SS			5				
		20.0	20									
	End of Boring at 20 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.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT Fanning Howey
PROJECT NAME Willowcreek Middle School
PROJECT LOCATION Portage, IN

BORING # B-12
ALT & WITZIG FILE # 25MV0075

DRILLING and SAMPLING INFORMATION

Date Started	9/23/25	Hammer Wt.	140 lbs.
Date Completed	9/23/25	Hammer Drop	30 in.
Boring Method	HSA	Spoon Sampler OD	2 in.
Driller	Geocon	Rig Type	D50

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.7										
	Brown SAND			1	SS			9				
				2	SS			4				
			5	3	SS			7				
				4	SS			8				
			10	5	SS			5				
				6	SS		○	13				
			15									
		20.0	20	7	SS		▽	20				
	End of Boring at 20 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 *14.0 ft.*
▽ At Completion *20.0 ft.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**

PROJECT NAME **Willowcreek Middle School**

PROJECT LOCATION **Portage, IN**

BORING # **B-14**

ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.3										
	Brown SAND			1	SS			7				
				2	SS			5				
			5	3	SS			5				
				4	SS			9				
			10	5	SS		○	12				
				6	SS			14				
			15									
		20.0	20	7	SS		▽	14				
	End of Boring at 20 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 *12.0 ft.*
▽ At Completion *20.0 ft.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT: Fanning Howey
PROJECT NAME: Willowcreek Middle School
PROJECT LOCATION: Portage, IN

BORING #: B-15
ALT & WITZIG FILE #: 25MV0075

DRILLING and SAMPLING INFORMATION

Date Started	9/23/25	Hammer Wt.	140 lbs.
Date Completed	9/23/25	Hammer Drop	30 in.
Boring Method	HSA	Spoon Sampler OD	2 in.
Driller	Geocon	Rig Type	D50

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.3										
	Brown SAND			1	SS			7				
				2	SS			10				
			5	3	SS			7				
				4	SS			5				
			10	5	SS		○	3				
				6	SS			5				
			15									
				7	SS			15				
		20.0	20				▽					
	End of Boring at 20 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: *12.0 ft.*
▽ At Completion: *20.0 ft.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**

PROJECT NAME **Willowcreek Middle School**

PROJECT LOCATION **Portage, IN**

BORING # **B-16**

ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	9/23/25	Hammer Wt.	140 lbs.
Date Completed	9/23/25	Hammer Drop	30 in.
Boring Method	HSA	Spoon Sampler OD	2 in.
Driller	Geocon	Rig Type	D50

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	3" Asphalt	0.2										
	5" Aggregate	0.6										
	Brown SAND			1	SS			15				
				2	SS			7				
		5.0	5									
	Brown and Gray Sandy CLAY			3	SS			5		2.0	18.5	
				4	SS			8				
		10.0	10									
	Brown, Wet SAND			5	SS			5				
				6	SS		○	8				
			15									
				7	SS			8				
				8	SS			10				
		20.0	20									
	End of Boring at 20 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 *14.0 ft.*
⊻ At Completion *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 **Fanning Howey** | BORING # **P-01**

PROJECT NAME **Willowcreek Middle School** | ALT & WITZIG FILE # **25MV0075**

PROJECT LOCATION **Portage, IN**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	4" Topsoil	0.4										
	Brown SAND			1	SS			10				
				2	SS			11				
			5	3	SS			7				
		10.0	10	4	SS			11				
	End of Boring at 10 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.*

Boring Method

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT: Fanning Howey
PROJECT NAME: Willowcreek Middle School
PROJECT LOCATION: Portage, IN
BORING #: P-02
ALT & WITZIG FILE #: 25MV0075

DRILLING and SAMPLING INFORMATION

Date Started	9/23/25	Hammer Wt.	140 lbs.
Date Completed	9/23/25	Hammer Drop	30 in.
Boring Method	HSA	Spoon Sampler OD	2 in.
Driller	Geocon	Rig Type	D50

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.4										
	Brown, Wet SAND			1	SS			14				
				2	SS			10				
			5	3	SS			5				
		10.0	10	4	SS			11				
	End of Boring at 10 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.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT	**Fanning Howey**	BORING #	**P-03**
PROJECT NAME	**Willowcreek Middle School**	ALT & WITZIG FILE #	**25MV0075**
PROJECT LOCATION	**Portage, IN**		

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.4										
	Brown SAND	2.5		1	SS			10				
	Brown and Gray Sandy CLAY	5.0	5	2	SS			11				
	Brown SAND	10.0	10	3	SS			10				
				4	SS			6				
	End of Boring at 10 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.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**
BORING # **P-04**
PROJECT NAME **Willowcreek Middle School**
ALT & WITZIG FILE # **25MV0075**
PROJECT LOCATION **Portage, IN**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	5" Asphalt	0.4										
	3" Asphalt	0.7										
				1	SS			12				
	Brown SAND											
				2	SS			6				
		5.0	5									
	Brown Sandy CLAY			3	SS			6		0.5		
		7.5										
	Brown, Wet SAND			4	SS			6				
		10.0	10									
	End of Boring at 10 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.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**
PROJECT NAME **Willowcreek Middle School**
PROJECT LOCATION **Portage, IN**

BORING # **P-05**
ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	5" Asphalt	0.4										
	2" Aggregate	0.6										
	Brown SAND	2.5		1	SS			11				
	Brown Sandy CLAY			2	SS			14		2.0		
			5	3	SS			13		2.0		
		10.0	10	4	SS			13		1.5		
	End of Boring at 10 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.*

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**

PROJECT NAME **Willowcreek Middle School**

PROJECT LOCATION **Portage, IN**

BORING # **P-06**

ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	TOPSOIL	0.2										
	Brown SAND			1	SS			15				
		5.0	5	2	SS			12				
	Brown Sandy CLAY			3	SS			8		1.0		
		10.0	10	4	SS			9				
	End of Boring at 10 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.*

Boring Method

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

BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Fanning Howey**
PROJECT NAME **Willowcreek Middle School**
PROJECT LOCATION **Portage, IN**

BORING # **P-07**
ALT & WITZIG FILE # **25MV0075**

DRILLING and SAMPLING INFORMATION

Date Started	**9/23/25**	Hammer Wt.	**140** lbs.
Date Completed	**9/23/25**	Hammer Drop	**30** in.
Boring Method	**HSA**	Spoon Sampler OD	**2** in.
Driller	**Geocon**	Rig Type	**D50**

TEST DATA

STRATA ELEV.	SOIL CLASSIFICATION / SURFACE ELEVATION	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
	5" Asphalt	0.4										
	3" Aggregate	0.8		1	SS			9				
	Brown SAND	5.0	5	2	SS			11				
	Brown Sandy CLAY	7.5		3	SS			5		1.5		
	Brown, Wet SAND	10.0	10	4	SS			3				
	End of Boring at 10 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.*

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

MATERIAL GRAPHICS LEGEND

ASPHALT: Asphalt	CL: USCS Low Plasticity Sandy Clay
SP: USCS Poorly-graded Sand	TOPSOIL
GRAVEL/COBBLES	

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)

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

RELATIVE DENSITY & CONSISTANCY CLASSIFICATION (COHESIVE SOILS)

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

Alt & Witzig

Telephone:
Fax:

GENERAL NOTES

Project: Willowcreek Middle School

Location: Portage, IN

Number: 25MV0075

APPENDIX B

U.S. Seismic Design Maps
Custom Soil Resource Report for Porter County, Indiana

Announcement
ASCE 7-22 is now available.

Willowcreek Middle School

Latitude, Longitude: 41.577997, -87.186700

Date	10/27/2025, 3:55:46 PM
Design Code Reference Document	IBC-2015
Risk Category	III
Site Class	D

Type	Value	Description
S_S	0.121	MCE_R ground motion. (for 0.2 second period)
S_1	0.063	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.193	Site-modified spectral acceleration value
S_{M1}	0.151	Site-modified spectral acceleration value
S_{DS}	0.129	Numeric seismic design value at 0.2 second SA
S_{D1}	0.1	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	B	Seismic design category
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.057	MCE_G peak ground acceleration
F_{PGA}	1.6	Site amplification factor at PGA
PGA_M	0.092	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	0.121	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.131	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.063	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.072	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.6	Factored deterministic acceleration value. (Peak Ground Acceleration)

Type	Value	Description
PGA_{UH}	0.057	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.922	Mapped value of the risk coefficient at short periods
C_{R1}	0.868	Mapped value of the risk coefficient at a period of 1 s
C_V		Vertical coefficient

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United States Department of Agriculture

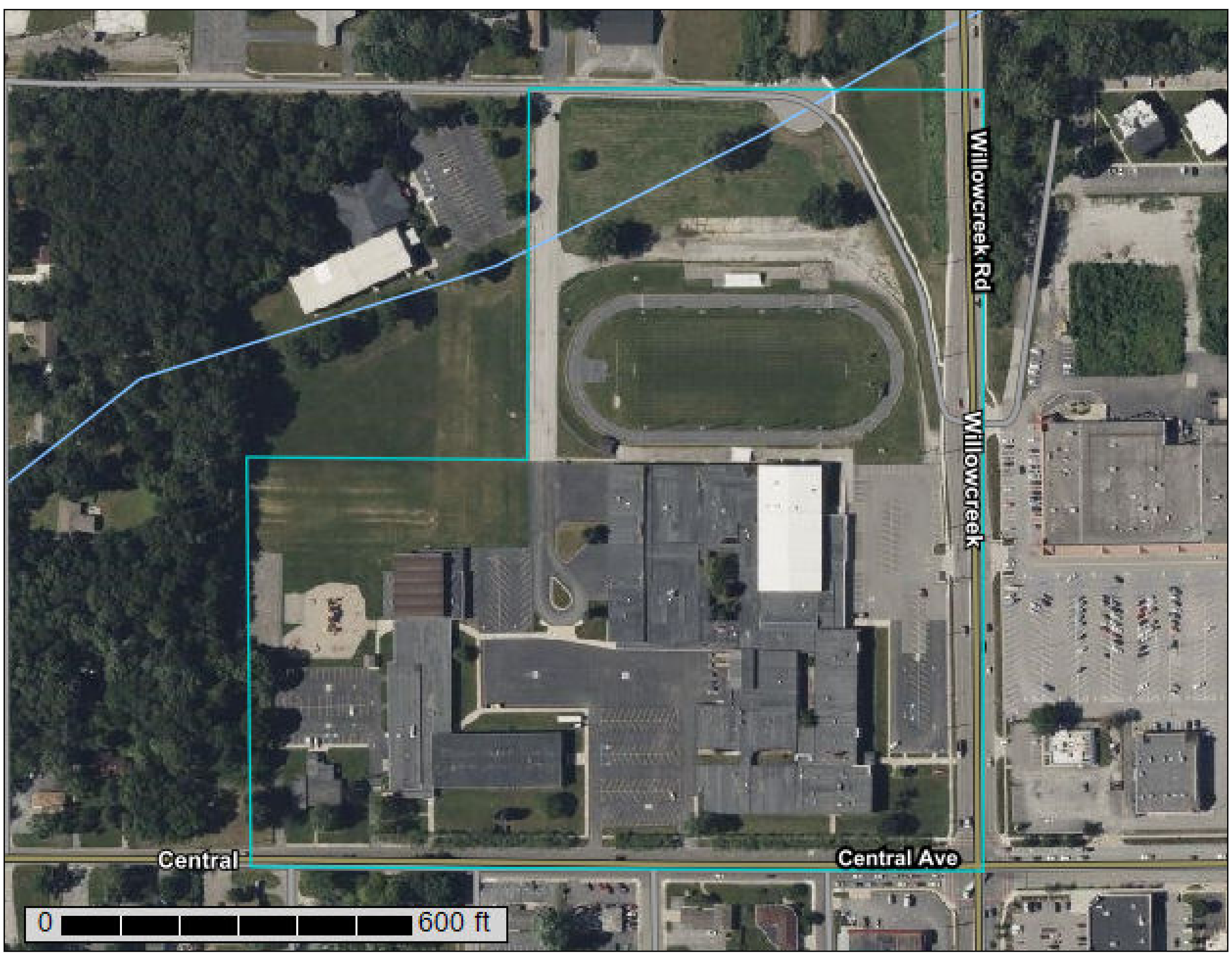
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Porter County, Indiana



October 27, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

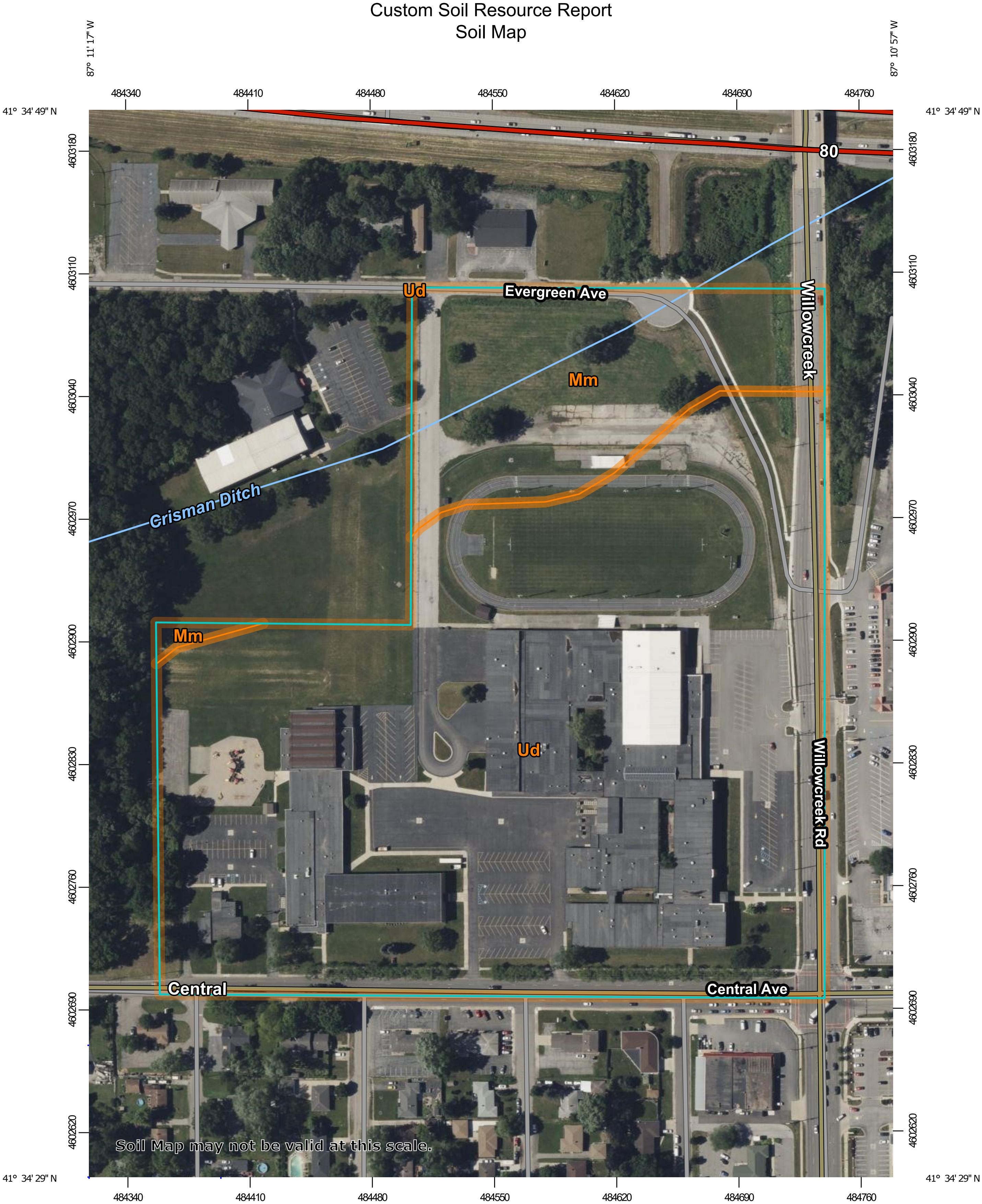
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,970 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 40, 80, 160, 240

Feet: 0, 100, 200, 400, 600

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Porter County, Indiana
Survey Area Data: Version 29, Sep 3, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 16, 2022—Jun 27, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Mm	Maumee loamy sand	5.7	18.3%
Ud	Urban land-Brems complex	25.6	81.7%
Totals for Area of Interest		**31.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Porter County, Indiana

Mm—Maumee loamy sand

Map Unit Setting

National map unit symbol: 5d5k
Elevation: 570 to 870 feet
Mean annual precipitation: 34 to 40 inches
Mean annual air temperature: 47 to 51 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Maumee and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maumee

Setting

Landform: Depressions on outwash plains
Landform position (two-dimensional): Footslope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy outwash

Typical profile

H1 - 0 to 23 inches: loamy sand
H2 - 23 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: R097XB036IN - Chicago Wet Sandy Swale
Hydric soil rating: Yes

Ud—Urban land-Brems complex

Map Unit Setting

National map unit symbol: 5d6q
Elevation: 570 to 870 feet
Mean annual precipitation: 34 to 40 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 140 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 50 percent
Brems and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Brems

Setting

Landform: Outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy outwash

Typical profile

H1 - 0 to 12 inches: fine sand
H2 - 12 to 67 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 18 to 36 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: F097XA006MI - Moist Acidic Sandy Flatwoods
Hydric soil rating: No

Minor Components

Maumee

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Newton

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Water Features

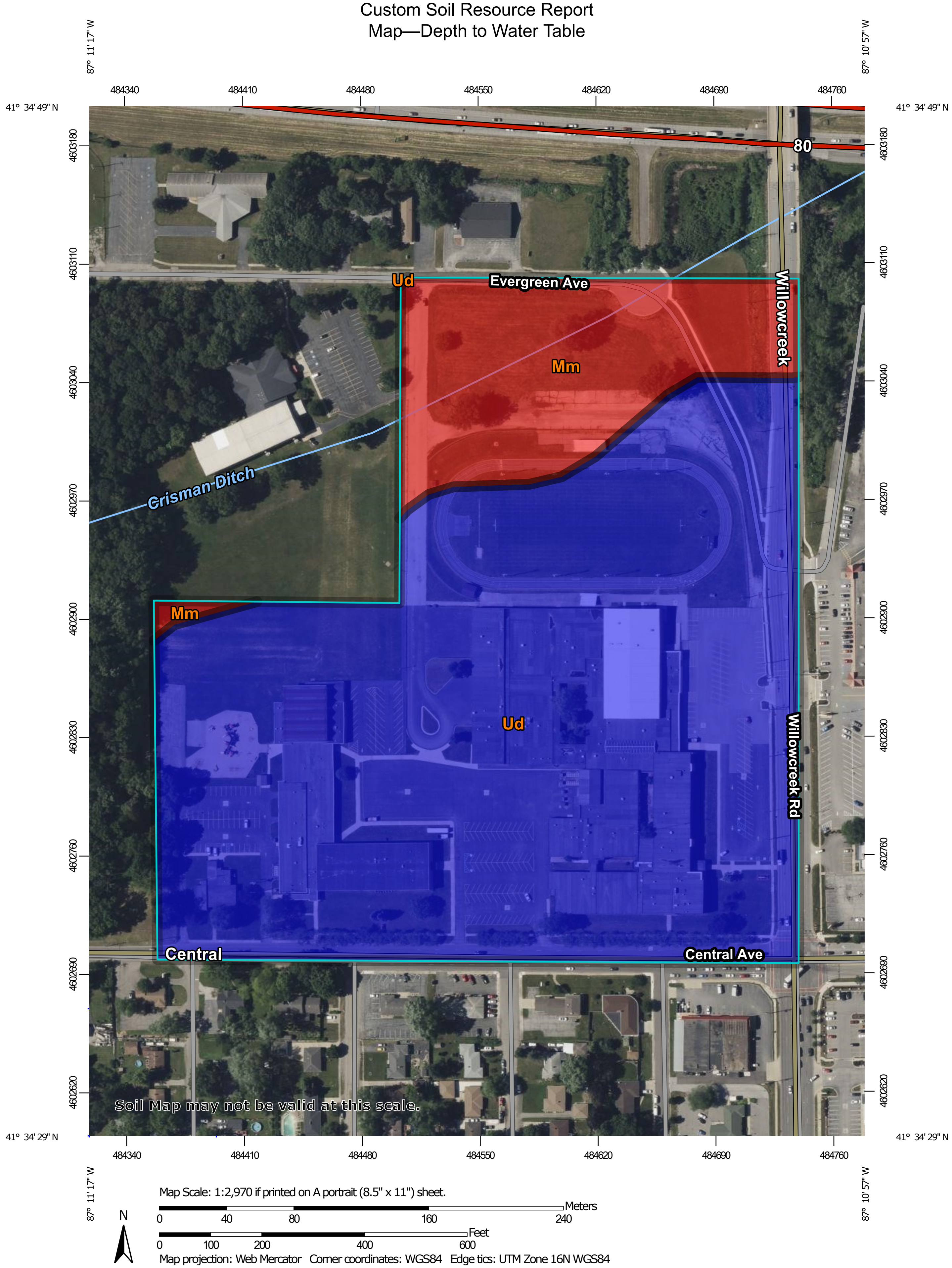
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Depth to Water Table



Map Scale: 1:2,970 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 40, 80, 160, 240

Feet: 0, 100, 200, 400, 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Porter County, Indiana
Survey Area Data: Version 29, Sep 3, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 16, 2022—Jun 27, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
Mm	Maumee loamy sand	15	5.7	18.3%
Ud	Urban land-Brems complex	>200	25.6	81.7%
Totals for Area of Interest			**31.4**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

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