GEOTECHNICAL EVALUATION REPORT

GEA NORTH STREET REHABILITATION
CHARDON, OHIO

SME Project Number: 100280.00
March 20, 2026

9375 Chillicothe Road
Kirtland, OH 44094-8501

T (440) 256-6500

www.sme-usa.com

March 20, 2026

Mr. Douglas G. Courtney, PE
The CW Courtney Company
700 Beta Drive, Suite 200
Mayfield Village, Ohio 44143

Via Email: dcourtney@cwcourtney.com

RE: Geotechnical Evaluation Report
GEA North Street Rehabilitation – Chardon
North Street
Chardon, Ohio 44024
SME Project No. 100280.00

Dear Mr. Courtney:

We have completed our geotechnical evaluation for the GEA North Street Rehabilitation project. This report presents the results of our observations and analyses, our geotechnical and pavement recommendations, and a discussion of potential construction considerations based on the information disclosed by the borings.

We appreciate this opportunity to be of service. If you have questions or require additional information, please contact me.

Sincerely,

SME

Thomas P. Olding, PE
Project Manager

Enclosure: SME Geotechnical Evaluation Report; Dated March 20, 2026

TABLE OF CONTENTS

1. INTRODUCTION

This report presents the results of the geotechnical evaluation performed by SME for the proposed North Street Rehabilitation project (PID 121574). This evaluation was conducted in general accordance with the scope of services outlined in SME Proposal No. P01934.25, dated May 15, 2025, except that dynamic cone penetrometer (DCP) tests were not performed due to frozen ground conditions at the time of drilling. Our services for this evaluation were authorized by Douglas Courtney with The CW Courtney Company.

SME received the following information which was used in the evaluation and preparation of this report:

- A Request for Proposal (undated) prepared by the City of Chardon.
- A proposed boring location plan showing an aerial view of the existing road and three proposed sampling locations (dated May 6, 2025).

SME completed three pavement cores and soil borings at the project site on February 17, 2026. Refer to the boring logs included in Appendix A for the specific depth of each individual boring. The approximate boring locations are depicted on the Boring Location Diagram located in Appendix A (Figure No. 1). Soil descriptions and the field and laboratory test results are presented on the boring logs. Exploration and laboratory testing procedures are presented in Section 4.

1.1 SITE CONDITIONS AND PROJECT DESCRIPTION

North Street in Chardon, Ohio, between Chardon Square and the northern Corporation Limit (approximately 4,100 feet in length), is a two-lane road with little to no paved shoulders. This stretch of North Street consists of three separate pavement sections: a brick base and asphalt overlay, full depth asphalt, and concrete base with asphalt overlay. The road surface shows signs of distress and is in need of rehabilitation.

We understand the City of Chardon is planning a pavement rehabilitation for North Street Chardon Square and the northern Corporation Limit. No pavement widening or grade changes are anticipated for this project.

The recommendations of this report are based on the information provided above and the results of the field and laboratory evaluation. Contact SME if the final design information is different than discussed herein.

1.2 SUBSURFACE CONDITIONS

Refer to the boring logs for the soil conditions at the specific boring locations. In summary, the soil conditions observed in the borings generally consisted of asphalt surfaced pavements over fill, and then natural clays extending to the explored depths of the borings or to sandstone bedrock.

The encountered pavement materials and layers are summarized in Table 1:

TABLE 1. PAVEMENT MATERIAL SUMMARY

BORING NO.	THICKNESS (INCHES)				
	ASPHALT PAVEMENT	CONCRETE PAVEMENT	BRICK PAVEMENT	SAND AND GRAVEL BASE	TOTAL
B-001	3	---	4	*2	9
B-002	10.5	---	---	13	23.5
B-003	1.5	8	---	5	14.5

**The sand and gravel base material encountered in B1 appeared to be a granular leveling course for the brick pavement layer.*

Below the pavement at B-001 and B-002, fill materials extended to depths of about 2.7 and 3.5 feet below the ground surface (bgs), respectively. The fill material included sandy silt (A-4a) soils in a very loose to medium dense condition. The upper 5 inches of fill at boring B-001 consisted of slag. In general, the sandy silt fill did not visually appear to contain organic matter or debris.

Below the pavement layers at B-003 and below the fill materials at B-001 and B-002, natural silt and clay (A-6a) soil was encountered. At B-001, the silt and clay extended to a depth of about 3.7 feet bgs. At B-002 and B-003, the silt and clay extended to the termination depths of the borings. The A-6a soil contained varying amounts of sand and gravel and was in a medium to very stiff condition.

Below the silt and clay soil at B-001, weathered sandstone bedrock was encountered at a depth of about 2.7 bgs and extended to the termination depth of the boring.

Groundwater was observed in boring B-001, at a depth of 5.5 feet during drilling and at a depth of 5.0 feet upon completion of drilling. These depths were within the weathered sandstone bedrock layer. Based on the relatively permeable nature of sandstone, the reported groundwater levels should be considered representative of the site groundwater levels at the time of our field evaluation.

Refer to the Field Testing Procedures in Appendix B for additional information about groundwater level measurements. If more information regarding groundwater levels at this site is required, then we recommend performing additional subsurface assessment(s).

1.3 TRAFFIC INFORMATION

Site-specific traffic information was not available for North Street in Chardon. However, we reviewed the ODOT TMMS database for publicly available traffic count data in the Chardon area. Main Street and East Park Street, opposing one-way streets immediately south of North Street, have annual average daily traffic (AADT) counts of 2,937 vpd (vehicles per day) and 2,768 vpd (for combined two-way AADT of 5,705). Historical growth rates have varied from -26% to +3% between 2016 and 2025. Commercial traffic percentage has decreased from 10% to 5% between 2016 and 2025.

Based on the information obtained from the ODOT TMMS database, for design purposes we have assumed one-way AADT of 3,000 vpd, a 6% commercial traffic rate, a truck factor of 0.9 (assuming most commercial will be postal-style delivery trucks, box trucks, or refuse/recycle haulers), and an annual growth rate of 2% for North Street. Based on this information, we estimate up to about 1,500,000 equivalent single axle loads (ESALs) will occur on North Street over a 20-year period.

Should these traffic assumptions be incorrect, contact SME so we can review and revise our recommendations as necessary.

2. ANALYSIS AND PAVEMENT RECOMMENDATIONS

The existing roadway consists of asphalt pavement overlying various pavement materials (i.e., brick, concrete, or asphalt base courses). In addition, the underlying granular base material was variable and the layer was relatively thin at borings B-001 and B-003. The varying pavement sections were likely constructed at different times. The existing pavement surface was in fair to poor condition at the time of our field exploration, with moderate longitudinal and transverse cracking present throughout the project extent. The upper subgrade typically consisted of sandy silt fill or natural silt overlying silt and clay or weathered sandstone to the explored depth.

Given the site conditions described above, and based on the findings from borings B-001, B-002, and B-003, we do not consider rehabilitation via pavement resurfacing or partial “surface reconstruction” methods to be feasible for the full project extent on North Street. Pavement resurfacing (i.e., partial depth ‘mill-and-overlay’) methods will not remedy subsurface conditions contributing to pavement distress, and reflective cracking of the new pavement surface could occur within a relatively short time after construction. Based on the subsurface conditions found in our evaluation and the anticipated traffic loading for the roadway, a partial depth mill and overlay approach should be considered only as a maintenance measure. The surface reconstruction option consists of removing the pavement surface layers and reusing the existing aggregate base in-place in addition to supplemental aggregate base in support of new asphalt pavement layers. A surface reconstruction approach could be considered in areas consistent with conditions encountered at boring B-002, which indicated a relatively thick pavement and aggregate base section. However, additional pavement cores and borings would need to be performed to delineate the extents of these subsurface conditions. Without additional sampling, we do not consider a surface reconstruction option to be feasible for widespread areas of the roadway at this time. If requested, SME could be retained to perform this additional sampling and provide further recommendations regarding partial reconstruction methods.

Based on the findings disclosed by the borings and our review of the data, as discussed above, we consider complete reconstruction of the roadway to be the only feasible option for rehabilitation of the roadway pavements. Complete reconstruction of the pavements will involve removing the existing pavement (asphalt, brick, concrete, and aggregate base) and constructing a new pavement section of aggregate base and hot-mix asphalt (HMA) pavement. The complete reconstruction option is expected to provide a service life of up to 20 years, provided typical pavement maintenance activities such as crack sealing, patching, and structural overlays are performed as appropriate during the service life of the pavements. The following sections of the report present our recommendations for the complete pavement reconstruction.

2.1 COMPLETE RECONSTRUCTION

Based on the borings performed for this evaluation, we expect the exposed subgrade soils at the design subgrade level in the pavement areas will consist predominantly of A-4a sandy silt fill or natural sandy silt. Subgrade preparation and the aggregate base layers need to extend out to at least 18 inches beyond the edge of pavement or beyond the back of curbs to provide support for the outer edges of pavement.

After stripping surficial materials, cutting to design subgrade levels, and removing/replacing organics or deleterious materials, but prior to raising grades, compact the exposed subgrade to a minimum of 100 percent of the maximum dry density determined by the standard Proctor test. Proofroll the resulting subgrade in the presence of SME using a fully loaded tandem axle dump truck. Improve areas exhibiting deflection greater than 1/2 inch as described in Section 2.1.1. Place and compact engineered fill as presented in Section 2.1.2.

Prior to the placement of the aggregate base, we recommend fine-grading the subgrade to slope downward draining out of the pavement footprint and toward the stormwater drainage structures. Fine-grading of the underlying subgrade will be critical to minimize low-spots below the aggregate base where water can collect, leading to excess moisture and undesirable early pavement distress. Fine-grading the subgrade is important for drainage of subsurface water, and to achieve a uniform thickness of base course to be placed throughout each of the pavement sections. Also, we recommend installing underdrains at/through low spots in the prepared subgrade to facilitate drainage of subsurface water.

Prior to placement of the aggregate base, proofroll the subgrade again and repair any areas of disturbed or unstable subgrade identified by proofrolling. Once the subgrade passes the final proofroll test, we recommend fine-grading the subgrade again and then placing the pavement layers soon thereafter to avoid further subgrade disturbance. Place and compact aggregate base to a minimum of 100 percent of the maximum dry density determined by the Standard Proctor test.

Just prior to placing the hot mix asphalt (HMA) layers, proofroll the aggregate base and recompact areas exhibiting deflection greater than 1/4 inch as described in Section 2.1.1. Place and compact engineered fill as presented in Section 2.1.2.

The recommended pavement section for complete reconstruction is shown in Table 2. These recommendations are provided based on our experience with similar applications and AASHTO pavement design methodology. The recommended layer materials described refer to standard material designations listed in the ODOT Construction and Material Specifications (dated January 1, 2023), unless otherwise modified in this report. The following section was developed to provide an estimated 20-year pavement service life, based on the traffic estimates discussed previously in this report.

TABLE 2: COMPLETE RECONSTRUCTION

LAYER	MATERIAL	MINIMUM THICKNESS (INCHES)
Asphalt Surface Course	ODOT 441 Type 1, Surface Course	1.5
Asphalt Intermediate Course	ODOT 441 - Type 2, Intermediate Course	2.5
Asphalt Base Course	ODOT 301 – Asphalt Base Course	4.0
Aggregate Base	ODOT 304	10.0

2.1.1 SUBGRADE IMPROVEMENT GUIDANCE

The subgrade may become softened/loosened and disturbed depending on the season and the amount of precipitation received immediately prior to the subgrade preparation activities, and the degree of construction equipment trafficking over the subgrade. The on-site subgrade soils are sensitive to disturbances during construction and the overall success of the subgrade preparation during mass earthwork operations will directly affect the suitability of pavement bearing soils.

The pavement subgrade needs to be prepared as recommended in Section 2.1 and as follows. For areas of disturbed subgrade and areas exhibiting deflection greater than 1/2 inch, it will be necessary to improve the disturbed soils or remove and replace them with engineered fill. Improvement of the exposed subgrade may consist of aerating and drying disturbed soils, recompacting these soils in-place, as well as placement of crushed aggregate or crushed concrete, possibly with a geotextile for separation

Mechanically improve areas of unstable subgrade revealed during proofrolling by compaction in-place, if feasible. Soils that cannot be improved in-place must be removed and replaced with engineered fill, or chemical stabilization can be considered. Additional laboratory testing is required to verify the suitability of chemical stabilization on this project site.

After the exposed subgrade is proofrolled and improved as needed, and after the surface is thoroughly compacted, engineered fill may be placed on the prepared subgrade to establish final design subgrade levels. Refer to Section 2.1.2 of this report for materials and compaction requirements for engineered fill.

2.1.2 ENGINEERED FILL REQUIREMENTS

Engineered fill needs to be free of frozen soil, significant organics and construction debris, potentially expansive and/or chemically active materials, particle sizes hindering compaction, cobbles, boulders, and other deleterious materials. Do not use soils for engineered fill that contain more than four percent organics, or debris larger than 6 inches in nominal diameter. Also, if debris material is significantly variable in nature, suspect in origin, or greater than about five percent of the soil (by weight), do not use such soils for engineered fill.

Spread fill in level layers with a loose thickness appropriate for the type of equipment used to obtain compaction, but not exceeding 9 inches thick. Thinner lifts will be required in confined spaces and where compaction is achieved with walk-behind rollers/compactors or plate compactors mounted on a backhoe or excavator. Compact the fill to a minimum of 100 percent of the maximum dry density as determined in accordance with the standard Proctor test. Compact sand fill with a smooth drum vibratory roller or vibratory plate compactors. Compact clay fill by overlapping passes with a sheepsfoot or padfoot roller at a moisture content between the optimum and two percent below the optimum.

Based on the results of our field and laboratory testing the natural clays are considered suitable for reuse as engineered backfill for pavement subgrade. The on-site soils are considered moisture-sensitive and could be difficult to compact, particularly when moisture contents are above the optimum moisture content. The contractor needs to be prepared to moisture-condition the onsite soils as-needed by aerating and drying overly wet soils or adding water to overly dry soils so the required density can be achieved during compaction. Unsuitable soils should be removed from the site.

The successful reuse of the on-site clays for engineered fill will depend on the time of year and the care the earthwork contractor uses during construction. During cold and wet periods of the year, the subgrade soils can become overly wet and disturbed, and the onsite soils can be difficult to dry. Earthwork is more successfully performed during the warmer and drier months when the likelihood of subgrade disturbance is lower, and the soils are more easily moisture conditioned. If drying of the existing onsite soils cannot be accomplished due to weather or schedule considerations, chemical modification (drying) of the onsite soils can be consider, or material can be imported. Imported fill needs to be sampled at the source, tested, and approved prior to importing to the site.

Backfill in structural areas, utility trenches, and other confined areas where compaction is accomplished primarily by smaller, walk-behind plate compaction equipment should consist of an approved granular material. We recommend using open-graded granular fill material, such as ODOT Type 2 backfill material having less than five percent passing the No. 200 sieve, in and around areas where drainage is required. A geotextile separation fabric should be used at the interface of open-grade aggregates and surrounding material to prevent migration of finer sands and aggregates and native soils into the open-graded aggregates when used. Thinner lifts may be required in confined spaces to achieve compaction of the backfill. ODOT Type 2 granular material, or a clean crushed stone (e.g., #57 stone, #8 stone) should also be used in areas requiring drainage or where the fill will serve as a capillary separation.

If required to stabilize subgrades, we recommend using an approved coarse crushed aggregate or crushed concrete, consisting of well-graded, nominal 1 to 2, or 1 to 3-inch diameter material with a maximum of seven percent passing the No. 200 sieve, such as #57 stone. The recommended crushed aggregate must be compacted using a steel-drum vibratory roller, a static roller (in the case of disturbed subgrades), vibratory plate compactor mounted on an excavator or backhoe (hoe-pac), or by tamping the aggregate layers using a backhoe or excavator bucket, if the material is placed in deep trenches or other confined areas. The crushed aggregate must be compacted until it is stable. In cases where granular engineered fill will be placed over the crushed aggregate, the surface of the coarse crushed material must be choked with a layer of at least 6 inches of ODOT 304 dense-graded aggregate dense graded aggregate or covered with a suitable non-woven geotextile to prevent migration of the sand into the coarser crushed material.

2.2 PAVEMENT DRAINAGE CONSIDERATIONS

The pavement system must be properly drained to reduce the potential of frost heaving and softening of the subgrade due to water infiltrating through cracks. The infiltrated water, if not properly drained, is expected to adversely affect the pavement performance. The new pavement surface needs to be designed and installed to provide positive drainage at a minimum slope of 1.5 percent.

We recommend installing edge/underdrains, where feasible, to facilitate subsurface drainage. Extend edge/underdrains a minimum of 25 feet along the uphill direction at curb inlets and a minimum of 25 feet in four radial directions from catch basins located at low points, if any. Connect edge/underdrains to proposed drainage structures. Excavate the edge/underdrain trenches to a minimum depth of 18 inches below the bottom of the aggregate base and a minimum of 12 inches wide. We recommend the edge/underdrains consist of a 6-inch-diameter, perforated, corrugated plastic drainpipe. Wrap the trench in a nonwoven geotextile fabric and backfill it with aggregate meeting ODOT 57 gradational requirements. The fabric should be overlapped on top. The trench should be backfilled to the proposed bottom elevation of the aggregate base.

3. CONSTRUCTION NOTES

To provide adequate service life and protect the pavement investment, we present the following construction notes. These notes should be included in the project specifications and should be implemented during the construction activities. These recommendations were developed assuming typical conditions during the June through September construction season. Any substitution of materials or deviation from these stated assumptions should be reviewed by SME.

3.1 FOR COMPLETE RECONSTRUCTION - REMOVAL OF EXISTING ASPHALT SURFACE AND AGGREGATE BASE AND PREPARATION OF EXISTING SUBGRADE

Proper subgrade preparation includes removing unsuitable fill and uniformly compacting the exposed subgrade with appropriate compaction equipment, performing proof roll tests, undercutting overly soft/loose (and/or debris/organic-laden) subgrade, and replacing undercuts with suitable engineered fill. We recommend including a contingency for additional earthwork (e.g., undercutting, in-place compaction, removal of unsuitable fill, importing suitable fill, etc.) that may be required to improve subsurface conditions.

The upper 12 inches of the exposed subgrade should be compacted to at least 100 percent of the maximum standard Proctor dry density (ASTM D1557). Subgrade preparation shall extend to at least 18 inches beyond the edge of pavement to provide support for the outer edges of pavement. The prepared subgrade should be proof rolled using a loaded tandem axle dump truck in the presence of a qualified geotechnical/pavement engineer. Any yielding or loose areas (deflections greater than ¼ inch) should be stabilized by additional compaction, undercutting and replacing with approved fill material or crushed aggregate (ODOT 304 crushed limestone), or using a geogrid below the aggregate base as dictated by site conditions at time of construction.

Once the subgrade is stable, the pavement layers should be placed soon thereafter to prevent further subgrade disturbance. If additional subgrade disturbance occurs prior to pavement placement, the disturbed areas should be proof rolled again and recompacted or repaired as necessary.

As noted previously based on the results of the borings, the subgrade support conditions are generally unsuitable in the pavement area surrounding B-001. The pavement areas in particular may require the additional earthwork discussed above. The reconstruction option includes a sand subbase to remove some of the poor-quality sandy silt. Caution should be used as shallow utility feeds may be under the road (within 2 to 3 feet of subgrade) and may be impacted by the proposed pavement section construction.

4. EVALUATION PROCEDURES

4.1 FIELD EXPLORATION

The proposed number, locations, and depths of the borings were determined jointly by CW Courtney and SME. CW Courtney and SME located the borings in the field and CW Courtney obtained the existing pavement surface elevations. The elevations on the boring logs were provided by CW Courtney.

The borings were advanced using a rotary drill rig equipped with continuous flight augers. The borings included soil sampling based on Split-Barrel Sampling procedures. Dynamic Cone Penetrometer tests were planned but were non-performed due to frozen ground conditions at the time of exploration.

Groundwater level measurements were recorded during and immediately after completion of each boring. After completion of drilling and obtaining groundwater level measurements, the boreholes were backfilled with auger cuttings. The borings performed through existing concrete or asphalt pavement were topped with asphalt cold patch quick-setting concrete mix.

The Field Testing Procedures in Appendix B provides more detailed descriptions of field tests typically performed by SME and referenced in this report.

Soil samples recovered from the field exploration were taken to our laboratory for further observations and testing.

Upon completion of the laboratory testing, boring logs were prepared and include the soil descriptions, penetration resistances, pertinent field observations, and the results of the laboratory testing. Each log also includes the estimated existing ground surface elevation. Explanations of symbols and terms used on the boring logs are provided on the Boring Log Terminology sheet included in Appendix A.

Soil samples are normally retained in our laboratory for 60 days and are then disposed, unless instructed otherwise.

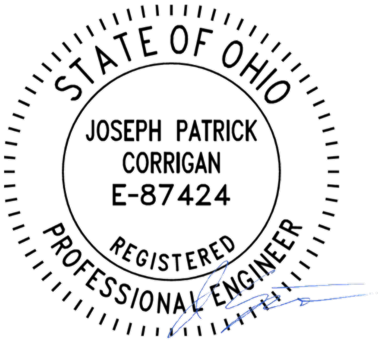
4.2 LABORATORY TESTING

The laboratory testing program consisted of visually classifying the recovered samples in accordance with ASTM D-2488, and performing moisture content tests, hand penetrometer tests, and Atterberg limits tests on selected soil samples. Based on the laboratory testing, we prepared soil descriptions and assigned a group symbol for the various soil strata observed based on the Unified Soil Classification System (USCS).

The Laboratory Testing Procedures in Appendix B provides descriptions of the laboratory tests. The results of the laboratory tests are presented on the boring logs and included in Appendix A.

5. SIGNATURES

PREPARED BY:



Joseph Corrigan, PE
Project Engineer

REVIEWED BY:

Zachary L. Miller, PE
Project Manager

REVIEWED BY:

Brendan P. Lieske, PE
Senior Consultant

APPENDIX A

BORING LOCATION DIAGRAM (FIGURE NO. 1)
BORING LOG TERMINOLOGY
BORING LOGS (B1 THROUGH B3)
PAVEMENT CORE PHOTOGRAPHS
LABORATORY TEST RESULTS

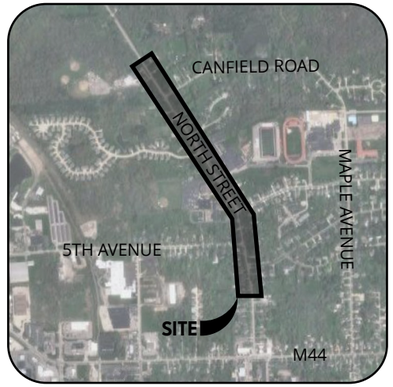
N
W E
S

0' 400' 800'

GRAPHIC SCALE: 1" = 400'

LEGEND

APPROXIMATE BORING LOCATION



LOCATION MAP

1 INCH = 0.4 MILES

NOTES:

1. BASE DRAWING INFORMATION PROVIDED FROM A DRAWING TITLED "PROPOSED PAVEMENT CORING LOCATIONS GEA NORTH STREET REHAB PID 121574," PREPARED BY GEAUGA REALINK, DATED 05-06-2025

2. AERIAL IMAGE TAKEN FROM NEARMAPS WITH AN IMAGE DATE OF 04-17-2025.

SME®

Project:

GEA NORTH STREET REHABILITATION

Project Location:

NORTH STREET,
CHARDON,
OHIO

Sheet Name:

BORING LOCATION DIAGRAM

No.	REVISION DATE

Date: 03-17-2026

GIS Specialist: A. ARENDT

Designer: J. CORRIGAN

Project No.: 100280.00

Figure No.: 1

1) STRENGTH OF SOIL:

Non-Cohesive (granular) Soils - Compactness	
Description	**Blows Per Ft.**
Very Loose	≤ 4
Loose	5 – 10
Medium Dense	11 – 30
Dense	31 – 50
Very Dense	> 50

2) COLOR :

If a color is a uniform color throughout, the term is single, modified by an adjective such as light or dark. If the predominate color is shaded by a secondary color, the secondary color procedes the primary color. If two major and distinct colors are swirled throughout the soil, the colors are modified by the term "mottled"

3) PRIMARY COMPONENT

Use **DESCRIPTION** from ODOT Soil Classification Chart on Back

Cohesive (fine grained) Soils - Consistency

Description	Qu (TSF)	Blows Per Ft.	Hand Manipulation
Very Soft	<0.25	<2	Easily penetrates 2" by fist
Soft	0.25-0.5	2 - 4	Easily penetrates 2" by thumb
Medium Stiff	0.5-1.0	5 - 8	Penetrates by thumb with moderate effort
Stiff	1.0-2.0	9 - 15	Readily indents by thumb, but not penetrate
Very Stiff	2.0-4.0	16 - 30	Readily indents by thumbnail
Hard	>4.0	>30	Indent with difficulty by thumbnail

4) COMPONENT MODIFIERS:

Description	Percentage By Weight
Trace	0% - 10%
Little	10% - 20%
Some	20% - 35%
"And"	35% -50%

5) Soil Organic Content

Description	% by Weight
Slightly Organic	2% - 4%
Moderately Organic	4% - 10%
Highly Organic	> 10%

6) Relative Visual Moisture

Description	Criteria	
	Cohesive Soil	**Non-cohesive Soils**
Dry	Powdery; Cannot be rolled; Water content well below the plastic limit	No moisture present
Damp	Leaves very little moisture when pressed between fingers; Crumbles at or before rolled to $^1/_8$"; Water content below plastic limit	Internal moisture, but no to little surface moisture
Moist	Leaves small amounts of moisture when pressed between fingers; Rolled to $^1/_8$" or smaller before crumbling; Water content above plastic limit to -3% of the liquid limit	Free water on surface, moist (shiny) appearance
Wet	Very mushy; Rolled multiple times to $^1/_8$" or smaller before crumbles; Near or above the liquid limit	Voids filled with free water, can be poured from split spoon.

CLASSIFICATION OF SOILS

Ohio Department of Transportation

(The classification of a soil is found by proceeding from top to bottom of the chart.
The first classification that the test data fits is the correct classification.)

SYMBOL	DESCRIPTION	Classifcation AASHTO	Classifcation OHIO	LL_O/LL x 100*	% Pass #40	% Pass #200	Liquid Limit (LL)	Plastic Index (PI)	Group Index Max.	REMARKS
	Gravel and/or Stone Fragments	A-1-a			30 Max.	15 Max.		6 Max.	0	Min. of 50% combined gravel, cobble and boulder sizes
	Gravel and/or Stone Fragments with Sand	A-1-b			50 Max.	25 Max.		6 Max.	0	
F S	Fine Sand	A-3			51 Min.	10 Max.	NON-PLASTIC		0	
	Coarse and Fine Sand	--	A-3a			35 Max.		6 Max.	0	Min. of 50% combined coarse and fine sand sizes
	Gravel and/or Stone Fragments with Sand and Silt	A-2-4				35 Max.	40 Max.	10 Max.	0	
		A-2-5					41 Min.			
	Gravel and/or Stone Fragments with Sand, Silt and Clay	A-2-6				35 Max.	40 Max.	11 Min.	4	
		A-2-7					41 Min.			
	Sandy Silt	A-4	A-4a	76 Min.		36 Min.	40 Max.	10 Max.	8	Less than 50% silt sizes
	Silt	A-4	A-4b	76 Min.		50 Min.	40 Max.	10 Max.	8	50% or more silt sizes
	Elastic Silt and Clay	A-5		76 Min.		36 Min.	41 Min.	10 Max.	12	
	Silt and Clay	A-6	A-6a	76 Min.		36 Min.	40 Max.	11 - 15	10	
	Silty Clay	A-6	A-6b	76 Min.		36 Min.	40 Max.	16 Min.	16	
	Elastic Clay	A-7-5		76 Min.		36 Min.	41 Min.	$\leq$ LL-30	20	
	Clay	A-7-6		76 Min.		36 Min.	41 Min.	>LL-30	20	
	Organic Silt	A-8	A-8a	75 Max.		36 Min.				W/o organics would classify as A-4a or A-4b
	Organic Clay	A-8	A-8b	75 Max.		36 Min.				W/o organics would classify as A-5, A-6a, A-6b, A-7-5 or A-7-6

MATERIAL CLASSIFIED BY VISUAL INSPECTION

Sod and Topsoil

Pavement or Base

Uncontrolled Fill (Describe)

Bouldery Zone

P Peat

* Only perform the oven-dried liquid limit test and this calculation if organic material is present in the sample.

PROJECT: GEA NORTH STREET	DRILLING FIRM / OPERATOR: SME / SS/RM	DRILL RIG: 293 (CME 55)	STATION / OFFSET:	EXPLORATION ID B-001-0-26
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: SME / JPC	HAMMER: SAFETY HAMMER	ALIGNMENT:	
PID: 121574 SFN:	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 6/11/24	ELEVATION: 1258.0 (MSL) EOB: 6.2 ft.	PAGE 1 OF 1
START: 2/17/26 END: 2/17/26	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 80	LAT / LONG: 41.586110, -81.203640	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	ABAN-DONED
3 inches of ASPHALT	1258.0																	
4 inches of BRICK	1257.7																	
2 inches of LEVELING COURSE	1257.4																	
5 inches of SLAG	1257.2																	
VERY LOOSE, BROWN, **SANDY SILT**, TRACE CLAY, **FILL**, MOIST	1256.8	1	1 1 2	4	100	SS-1	-	-	-	-	-	-	NP	NP	NP	18	A-4a (V)	
MEDIUM STIFF TO STIFF, BROWN AND GRAY, **SILT AND CLAY**, LITTLE SAND, MOIST	1255.3	2																
	1254.3	3	3 5 32	49	100	SS-2A	1.00	-	-	-	-	-	-	-	-	18	A-6a (V)	
SANDSTONE, RED AND BROWN, HIGHLY WEATHERED, VERY WEAK TO WEAK.		TR				SS-2B	-	-	-	-	-	-	-	-	-	-	Rock (V)	
		4																
		5	26 14 31	60	100	SS-3	-	-	-	-	-	-	-	-	-	16	Rock (V)	
	1251.8	6	50/6"	-	102	SS-4	-	-	-	-	-	-	-	-	-	16	Rock (V)	
		EOB																

NOTES: ELEVATION PROVIDED BY CW COURTNEY.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH ASPHALT PATCH; BACKFILLED WITH AUGER CUTTINGS

PROJECT: GEA NORTH STREET	DRILLING FIRM / OPERATOR: SME / SS/RM	DRILL RIG: 293 (CME 55)	STATION / OFFSET:	EXPLORATION ID B-002-0-26
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: SME / JPC	HAMMER: SAFETY HAMMER	ALIGNMENT:	
PID: 121574 SFN:	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 6/11/24	ELEVATION: 1227.2 (MSL) EOB: 8.0 ft.	PAGE 1 OF 1
START: 2/17/26 END: 2/17/26	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 80	LAT / LONG: 41.590270, -81.205550	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1227.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	ABAN-DONED
10.5 inches of ASPHALT	1226.3																	
13 inches of AGGREGATE BASE	1225.2	1																
MEDIUM DENSE, DARK GRAY, **SANDY SILT**, **FILL**, MOIST	1223.7	2	7 4 4	11	100	SS-1	-	-	-	-	-	-	NP	NP	NP	19	A-4a (V)	
STIFF, BROWN AND GRAY, **SILT AND CLAY**, AND CLAY, TRACE SAND, MOIST		3																
		4	2 2 2	5	100	SS-2	1.50	-	-	-	-	-	-	-	-	19	A-6a (V)	
		5																
		6	2 2 3	7	56	SS-3	1.50	-	-	-	-	-	-	-	-	19	A-6a (V)	
		7																
	1219.2	EOB 8	4 4 6	13	100	SS-4	1.50	-	-	-	-	-	-	-	-	19	A-6a (V)	

NOTES: ELEVATION PROVIDED BY CW COURTNEY.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH ASPHALT PATCH; BACKFILLED WITH AUGER CUTTINGS

PROJECT: GEA NORTH STREET	DRILLING FIRM / OPERATOR: SME / SS/RM	DRILL RIG: 293 (CME 55)	STATION / OFFSET:	EXPLORATION ID B-003-0-26	
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: SME / JPC	HAMMER: SAFETY HAMMER	ALIGNMENT:		
PID: 121574 SFN:	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 6/11/24	ELEVATION: 1208.5 (MSL) EOB: 7.2 ft.	PAGE 1 OF 1	
START: 2/17/26 END: 2/17/26	SAMPLING METHOD: SPT / NQ2	ENERGY RATIO (%): 80	LAT / LONG: 41.593680, -81.208330		

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	ABAN-DONED
1.5 inches of ASPHALT	1208.5																	
8 inches of CONCRETE	1208.4																	
5 inches of AGGREGATE BASE	1207.7																	
STIFF TO VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, MOIST	1207.3	1	7 8 9	23	89	SS-1	2.00	-	-	-	-	-	22	16	6	13	A-4a (V)	
HARD, BROWN AND GRAY, **SILT AND CLAY**, LITTLE GRAVEL, TRACE SAND, MOIST	1205.9	2																
		3	6 6 7	17	89	SS-2	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	
		4																
		5	7 6 7	17	100	SS-3	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	
		6																
		7	7 8 10	24	89	SS-4	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	
	1201.3	EOB																

NOTES: ELEVATION PROVIDED BY CW COURTNEY.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH ASPHALT PATCH; BACKFILLED WITH BENTONITE CHIPS

GEA North Street Rehabilitation
Pavement Core Log

SME Project No.: 100280.00
March 17, 2026

C1		
		
Layer Thickness, in.	**Description**	**Comments**
3.0	**ASPHALT PAVEMENT**	- Intact, delaminated at bottom of layer
4.0	**BRICK**	- Intact

GEA North Street Rehabilitation
Pavement Core Log

SME Project No.: 100280.00
March 17, 2026

C2		
		
Layer Thickness, in.	**Description**	**Comments**
10.5	**ASPHALT PAVEMENT**	- 2 inches of asphalt surface course - 5 inches of asphalt intermediate course - 3.5 inches of asphalt base course - Each asphalt course intact

GEA North Street Rehabilitation
Pavement Core Log

SME Project No.: 100280.00
March 17, 2026

C3		
		
Layer Thickness, in.	**Description**	**Comments**
1.5	**ASPHALT PAVEMENT**	- Intact, delaminated at bottom of layer
8.0	**CONCRETE PAVEMENT**	- Re-steel observed at about 6.5 inches (1/4-inch diameter) - Intact

9375 Chillicothe Road
Kirtland, Ohio 44094-8501
(440) 256-6500

California Bearing Ratio Test Report

Project No.:	**100280.00**
Report No.:	**CBR:26-4212-S1-**

Client: The C.W. Courtney Company **CC:**
Project: GEA North Street Rehab - Chardon

North Street
Chardon OH 44024

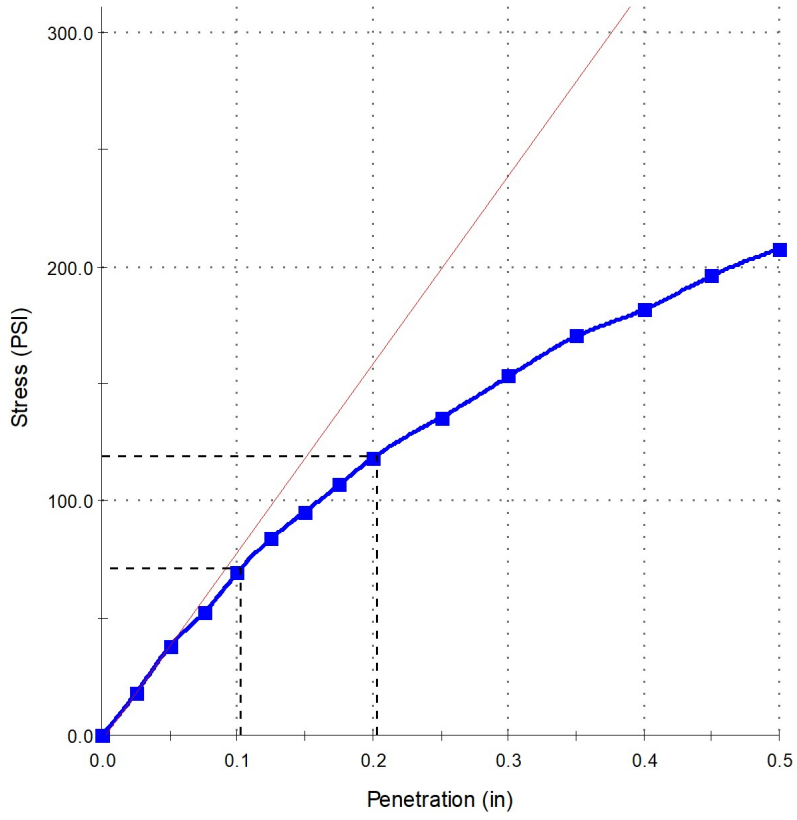
Contractor:

Reviewed By:

Sample Details

Sample ID:	26-4212-S1	**Date Sampled:**	2/17/2026
Sampled By:	Drillers		
Sampling Method:	Bulk Sample		
Source:		**Material:**	Sandy CLAY - brown
Specification:		**Location:**	B-3; 0-6ft
Tested By:	Seth Molenaar	**Date Tested:**	3/9/2026

Stress vs Penetration



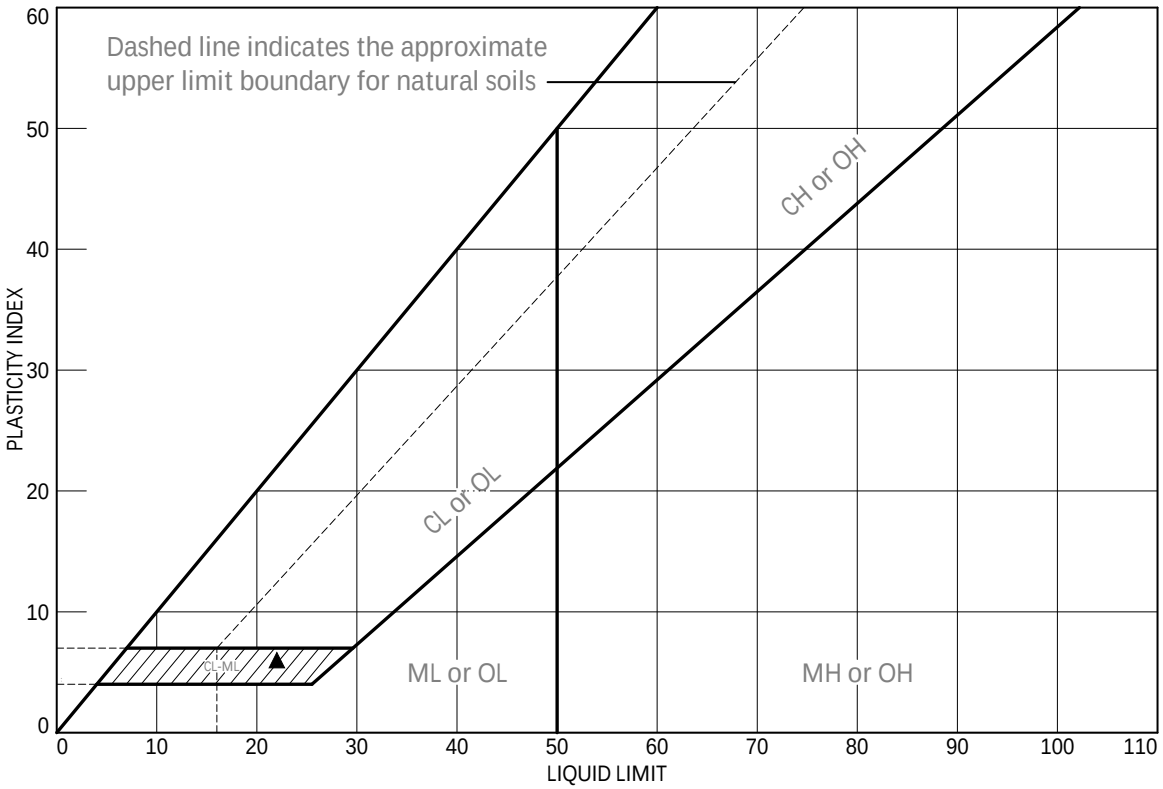
Test Results

ASTM D 1883

CBR At 0.1in (%):	7.1
CBR At 0.2in (%):	8.0
Compactive Effort:	ASTM D 698
Number of Blows:	56
% of Maximum Dry Density:	100.1
Dry Density Before Soaking (lb/ft³):	122.2
Dry Density After Soaking (lb/ft³):	121.5
MC Before Compaction (%):	12.4
MC After Compaction (%):	
Moisture Content of Top 1in (%):	14.1
Average Moisture Content (%):	13.5
Maximum Dry Density (lb/ft³):	122.1
Optimum Moisture Content (%):	12.4
Sample Condition:	Soaked
Immersion Period (h):	96
Swell (%):	0.5
Surcharge Mass (lb):	10.00
Oversize Material (%):	0.0
Date Tested:	3/9/2026

Comments

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B1	SB1T			NP	NV	NP	ML
■	B2	SB1B			NP	NV	NP	ML
▲	B3	SB1T			16	22	6	CL-ML

SME®

Client: The C.W. Courtney Company

Project: GEA North Street Rehab - Chardon

Project No.: 100280.00 Figure

Tested By: EY Checked By: SM

APPENDIX B

FIELD TESTING PROCEDURES
LABORATORY TESTING PROCEDURES
LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

FIELD TESTING PROCEDURES

STANDARD PENETRATION TESTS

The Standard Penetration Tests (SPT) generally follow the American Standard Test Method (ASTM) D-1586 “Standard Test Method for SPT and Split-Barrel Sampling of Soils”. It is typically performed using a 2-inch O.D. split-spoon sampler, which is driven to obtain samples at selected intervals. The number of blows of a 140-pound hammer dropping 30 inches is recorded for each of three or four, 6-inch penetration intervals for an 18 or 24-inch drive at each sample location. The sum of blow counts for the second and third 6-inch penetration intervals equals the raw (uncorrected) N-value for a given sample interval (i.e. 5-4-2, N = 6). We periodically calibrate SME’s drill rig auto-hammers. The hammer efficiency determined from this calibration is used to calculate the corrected N-values (N_{60}), as reported on the logs. When sampling in rock or hard soil, where a penetration of 6 inches or less was obtained for 50 hammer blows, the actual blow count and depth of penetration in inches for that interval is recorded (i.e. 50/2”). When sampling in very loose or very soft soil, where a penetration of more than 6 inches is obtained for a single hammer blow, the actual depth of penetration for that hammer blow is recorded (i.e. 1-0-0). Where the sampling equipment advanced under its own weight, “WOH” (weight of hammer) and the corresponding penetration depth are shown on the boring logs.

LABORATORY TESTING PROCEDURES

VISUAL ENGINEERING CLASSIFICATION

Visual classification was performed on recovered samples. The appended General Notes and Unified Soil Classification System (USCS) sheets include a brief summary of the general method used visually classify the soil and assign an appropriate USCS group symbol. The estimated group symbol, according to the USCS, is shown in parentheses following the textural description of the various strata on the boring logs appended to this report. The soil descriptions developed from visual classifications are sometimes modified to reflect the results of laboratory testing.

MOISTURE CONTENT

Moisture content tests were performed by weighing samples from the field at their in-situ moisture condition. These samples were then dried at a constant temperature (approximately 110° C) overnight in an oven. After drying, the samples were weighed to determine the dry weight of the sample and the weight of the water that was expelled during drying. The moisture content of the specimen is expressed as a percent and is the weight of the water compared to the dry weight of the specimen.

HAND PENETROMETER TESTS

In the hand penetrometer test, the unconfined compressive strength of a cohesive soil sample is estimated by measuring the resistance of the sample to the penetration of a small calibrated, spring-loaded cylinder. The maximum capacity of the penetrometer is 4.5 tons per square-foot (tsf). Theoretically, the undrained shear strength of the cohesive sample is one-half the unconfined compressive strength. The undrained shear strength (based on the hand penetrometer test) presented on the boring logs is reported in units of kips per square-foot (ksf).

LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

EXISTING FILL

It is sometimes difficult to distinguish between existing fill present at a site and natural soils based on samples and cuttings from small-diameter boreholes, especially if portions of the fill do not contain man-made materials, debris, topsoil, or organic layers, and when the fill appears similar in composition to the local natural soils. Therefore, consider the delineation of fill described on the logs, if encountered, to be approximate.

The composition of existing site fill, if encountered, may change abruptly over short distances and will vary from what is reported on the logs. The descriptions of debris within fill may not accurately indicate the quantity, composition, or size of the debris, and may not fully include the types of debris existing within the site fills. Perform test pits if existing fill is encountered to further evaluate the condition of the fill, particularly if the fill will be utilized for support of overlying structures and/or other improvements.

GROUNDWATER

Hydrostatic groundwater levels, and perched groundwater conditions, will fluctuate throughout the year, based on variations in precipitation, evaporation, run-off, and other factors. The groundwater information reported on the logs represent conditions at the time the readings were taken and may vary from the groundwater conditions encountered at other times.

SUBSURFACE PROFILE

The profile described in this report and included on the logs is a generalized description of the conditions observed. The stratification depths described in this report and shown on the logs indicate a zone of transition from one soil type to another. They are not meant to delineate exact depths of change between soil types. Soil conditions may vary between or away from the exploration locations. Refer to the logs for the soil descriptions, rock descriptions (when applicable), and results of the field and laboratory tests at the specific exploration locations.

If only borings with hollow-stem or solid-stem augers are performed, consider thickness measurements of surficial materials reported on the logs (e.g., gravel, asphalt, concrete, aggregate base) to be approximate since mixing of the surface materials with the underlying subgrade can occur while advancing the augers, and it is difficult to measure the thickness of surface materials in small-diameter boreholes. Perform additional evaluations for more accurate measurements of surface materials, such as test pits for topsoil and gravel thicknesses, coring for pavement thicknesses, and hand sampling for aggregate thickness.

APPENDIX C
IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT GENERAL COMMENTS

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

GENERAL COMMENTS

BASIS OF GEOTECHNICAL REPORT

This report has been prepared in accordance with generally accepted geotechnical engineering practices to assist in the design and/or evaluation of this project. If the project plans, design criteria, and/or other project information referenced in this report and utilized by SME to prepare our recommendations are changed, the conclusions and recommendations contained in this report are not considered valid unless the changes are reviewed, and the conclusions and recommendations of this report are modified or approved in writing.

The discussions and recommendations contained in this report are based on the available project information, described in this report, and the geotechnical data obtained from the field exploration at the locations indicated in the report. Variations in soil and groundwater conditions commonly occur between or away from sampling locations. The nature and extent of the variations may not become evident until the time of construction. If significant variations are observed during construction, SME must be contacted to reevaluate the recommendations of this report.

In the process of obtaining and testing samples and preparing this report, procedures are followed that represent reasonable and accepted practice in the field of geotechnical engineering. Specifically, field logs are prepared during the field exploration that describe field occurrences, sampling locations, and other information. Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory and differences may exist between the field logs and the report logs.

The engineer preparing the report reviews the field logs, laboratory classifications, and test data and then prepares the report logs. Our recommendations are based on the contents of the report logs and the information contained therein.

REVIEW OF DESIGN DETAILS, PLANS, AND SPECIFICATIONS

Retain SME to review the design details, project plans, and specifications to verify those documents are consistent with the recommendations contained in this report.

REVIEW OF REPORT INFORMATION WITH PROJECT TEAM

Implementation of our recommendations may affect the design, construction, and performance of the proposed improvements, along with the potential inherent risks involved with the proposed construction. The client and key members of the design team, including SME, should discuss the issues covered in this report so the issues are understood and applied in a manner consistent with the owner's budget, tolerance of risk, and expectations for performance and maintenance.

FIELD VERIFICATION OF GEOTECHNICAL CONDITIONS

SME needs to be retained to continue our services through construction so we may observe and evaluate the actual subsurface conditions relative to the recommendations made in this report, and so we can verify the recommendations of this report are properly implemented during construction. This may avoid misinterpretation of our recommendations by other parties and will allow us to review and modify our recommendations if variations in the site subsurface conditions are encountered.

PROJECT INFORMATION FOR CONTRACTOR

This report and any future addenda or other reports regarding this site needs to be made available to prospective contractors prior to submitting their proposals for their information only and to supply them with facts relative to the subsurface evaluation and laboratory test results. If the selected contractor encounters subsurface conditions during construction, which differ from those presented in this report, the contractor needs to promptly describe the nature and extent of the differing conditions in writing and SME needs to be notified so we can verify those conditions. The construction contract needs to include provisions for dealing with differing conditions, and contingency funds for potential problems during earthwork and foundation construction. We would be pleased to assist with the development of contract provisions based on our experience.

The contractor needs to be prepared to handle environmental conditions encountered at this site, which may affect the excavation, removal, or disposal of soil; dewatering of excavations; and health and safety of workers. Any Environmental Assessment reports prepared for this site need to be made available for review by bidders and the successful contractor.

THIRD PARTY RELIANCE/REUSE OF THIS REPORT

This report has been prepared solely for the use of our Client for the project specifically described in this report. This report cannot be relied upon by other parties not involved in the project, unless specifically allowed by SME in writing. SME also is not responsible for the interpretation by other parties of the geotechnical data and the recommendations provided herein.

Passionate People Building
and Revitalizing our World

SME®