GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

SUBGRADE EXPLORATION REPORT

PROPOSED INTERSECTION RECONSTRUCTION
STATE ROUTE 14 AND STATE ROUTE 43 INTERSECTION
PID: 105213
STREETSBORO, OHIO

Prepared For:

The City of Streetsboro, Ohio

Attention:

Honorable Glenn M. Broska

GPD Project No. 2022008.14 Rev.2
July 17, 2025

520 South Main Street, Suite 2531 | Akron, OH 44311 | 330.572.2100 | **gpdgroup.com**

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Executive Summary

The project involves field exploration and pavement recommendations for the proposed reconstruction at the intersection of State Route 14 and State Route 43 in Streetsboro, Ohio. The work will consist of full depth removal of the existing concrete and asphalt pavement and reconstruction with a concrete pavement section. The proposed pavement section will consist of a concrete section due to the heavy truck and turning movement volumes at this intersection. This project will utilize the existing horizontal and vertical alignments and will not involve any pavement widening. The test borings for this exploration were advance within the proposed right-of-way by GPD Geotechnical Services.

A total of four (4) borings were performed at the north, south, east, and west areas of the intersection of State Route 14 and State Route 43 on November 23, 2022. The test borings were drilled to depths of approximately seven (7.0) feet below existing grades. In summary, the four (4) borings consisted of the following:

Boring B-001-0-22, drilled west of the intersection along State Route 14, encountered a concrete layer thickness on the order of 11.0-inches. Below the concrete, brown and gray silt and clay (ODOT Class: A-6a) was encountered to boring termination at elevation (EL) 1125.5. N_{60}-values ranged from 12 to 28 blows per foot indicative of stiff to very stiff consistency. The water content ranged from 10 to 16 percent with Liquid and Plastic Limits on the order of 24 to 31 and 11 to 15 percent, respectively.

Boring B-002-0-22, drilled north of the intersection along State Route 43, encountered 12-inches of asphalt pavement. Below the asphalt, brown gravel and stone fragments with sand (ODOT Class: A-1-b) was encountered to elevation (EL) 1127.1. N_{60}-values in this stratum ranged from 25 to 10 blows per foot indicative of a medium dense consistency. The water content in this upper stratum was 8 percent. Below the upper stratum, brown and gray silt and clay (ODOT Class A-6a) extending to boring termination at EL 1124.1. N_{60}-values ranged from 16 to 20 blows per foot indicative of very stiff consistency. The water content of this layer was 16 percent.

Boring B-003-0-22, drilled south of the intersection along State Route 43, encountered an asphalt thickness on the order of about 12-inches. Below the asphalt, brown sandy silt (ODOT Class: A-4a) was encountered to elevation (EL) 1123.8. N_{60}-values in this stratum ranged from 15 to 16 blows per foot indicative of a stiff to very stiff consistency. The water content in this upper stratum was 14 to 15 percent. Below the upper stratum, brown silt and clay (ODOT Class A-6a) was present extending to boring termination at EL 1120.8. N_{60}-values were on the order of about 25 blows per foot indicative of very stiff consistency. The water content of this layer was 15 to 18 percent.

Boring B-004-0-22, drilled east of the intersection along State Route 14, encountered a concrete layer thickness on the order of 9.0-inches underlain by 11.0-inches of granular base. Below the concrete/granular base, brown and gray silt and clay (ODOT Class: A-6a) was encountered to boring termination at elevation (EL) 1125.6. N_{60}-values ranged from 15 to 23 blows per foot indicative of stiff to very stiff consistency. The water content was on the order of about 15 percent with Liquid and Plastic Limits on the order of 28 to 32 and 13 to 15 percent, respectively.

The results of the laboratory tests and Geotechnical Design Manual Subgrade Analysis Spreadsheet analysis indicate that a **CBR value of 7** can be utilized for the design of the proposed pavement structure. The above summary is intended to convey primary issues we believe are associated with this site. This report must be read in its entirety for a full description of our geotechnical recommendations.

SECTION 1

1.0 Introduction

The project involves field exploration and pavement recommendations for the proposed reconstruction at the intersection of State Route 14 and State Route 43 in Streetsboro, Ohio. The work will consist of full depth removal of the existing concrete and asphalt pavement and reconstruction with a concrete pavement section. The proposed pavement section will consist of a concrete section due to the heavy truck and turning movement volumes at this intersection. This project will utilize the existing horizontal and vertical alignments and will not involve any pavement widening. The geotechnical recommendations presented in this report are based on the available project information.

1.1 Geology and Observations

The United States Department of Agriculture ("USDA") Soil Survey of Portage County, Ohio, and the United States Geological Survey ("USGS") maps were reviewed to assess the subsurface geology and sedimentary makeup of the site location, as well as the topography of the region. The surrounding area is comprised of an urban landscape. Ohio Department of Natural Resources (ODNR) Mining resources indicate a historic surface mine to the south of the site, outside of the project limits for a former surface mining operations for aggregates. Elevations of the proposed roadway alignment range from about 1129 to 1133 feet above sea level. The frost depth in this region is approximately 40 inches per NAVFAC DM 7.01. According to the USDA, the surficial soils in this area consist primarily of Ellsworth silt loam.

1.2 Subsurface Exploration Program

1.2.1 Historical Borings Referenced

No historical boring information was available within the project limits.

1.2.2 Field Drilling and Coring Operations

The subsurface exploration consisted of drilling and sampling four (4) borings along the proposed roadway improvement area to depths of about seven (7) feet below existing grades. The boring locations were laid out by GPD personnel using a handheld GPS device. The locations of the borings and pavement cores should be considered accurate only to the degree implied by the means and methods used to define them.

The borings were drilled with a truck-mounted CME-55 rotary drill rig using hollow-stem augers and an automatic SPT hammer to advance the boreholes. Representative samples were obtained by the split-barrel sampling procedure in general accordance with the appropriate ASTM standards. In the split-barrel sampling procedure, the number of blows required to advance a standard 2-inch O.D. split-barrel sampler the last 12 inches of the typical total 18-inch penetration by means of a 140-pound hammer with a free fall of 30 inches, is the standard penetration resistance value (N-Value).

An automatic SPT hammer with a calibrated energy efficiency of 67.6 percent (calibration date of January 26, 2022) was used to advance the split-barrel sampler in the borings performed for this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the standard penetration resistance blow count (N) values. The effect of the automatic hammer's efficiency, equating to the reported N_{60}-value, has been considered in the interpretation and analysis of the subsurface information for this report. This value is used to estimate the in-situ relative density of cohesion-less soils and the consistency of cohesive soils. The sampling depths and penetration distance, plus the standard penetration resistance values, are shown on the boring logs. The samples were sealed and returned to the laboratory for testing and classification.

Field logs of each boring were prepared by the drill crew. These logs included visual classifications of the materials encountered during drilling as well as the driller's interpretation of the subsurface conditions between samples. Final boring logs included with this report represent an interpretation of the field logs and include modifications based on observations made by a Geotechnical Engineer and the results of laboratory testing.

1.3 Laboratory Testing

The samples were classified in the laboratory based on visual observation, texture and plasticity. The descriptions of the soils indicated on the boring logs are in accordance with the enclosed ODOT General Notes and Soil Classification System. Calculated ODOT Group Indexes are given on the boring logs.

The laboratory testing program consisted of performing the following tests:

- Natural water content tests (ASTM D 2216 / AASHTO T-265)
- Liquid Limits (ASTM D 4318 / AASHTO T-89)
- Plastic Limits (ASTM D 4318 / AASHTO T-90)
- Particle Size Analysis (ASTM D 422 / AASHTO T-88)
- Sulfate Content (ODOT SS1122)

Information from these tests was used in conjunction with field penetration test data to evaluate soil strength in-situ, volume change potential, and soil classification. Results of these tests are attached and provided on the boring logs.

SECTION 2

2.0 Findings

2.1 Subsurface Conditions

Boring B-001-0-22, drilled west of the intersection along State Route 14, encountered a concrete layer thickness on the order of 11.0-inches. Below the concrete, brown and gray silt and clay (ODOT Class: A-6a) was encountered to boring termination at elevation (EL) 1125.5. N_{60}-values ranged from 12 to 28 blows per foot indicative of stiff to very stiff consistency. The water content ranged from 10 to 16 percent with Liquid and Plastic Limits on the order of 24 to 31 and 11 to 15 percent, respectively.

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Boring B-003-0-22, drilled south of the intersection along State Route 43, encountered an asphalt thickness on the order of about 12-inches. Below the asphalt, brown sandy silt (ODOT Class: A-4a) was encountered to elevation (EL) 1123.8. N_{60}-values in this stratum ranged from 15 to 16 blows per foot indicative of a stiff to very stiff consistency. The water content in this upper stratum was 14 to 15 percent. Below the upper stratum, brown silt and clay (ODOT Class A-6a) extending to boring termination at EL 1120.8. N_{60}-values were on the order of about 25 blows per foot indicative of very stiff consistency. The water content of this layer was 15 to 18 percent.

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2.1.1 Groundwater Conditions

Groundwater was not observed in the borings during or immediately after completion of drilling operations. At the time the borings were drilled, the groundwater table at the boring locations was apparently below the maximum drilling depth. However, fluctuations in the groundwater table can occur and perched water can develop over low permeability soil or rock strata following periods of heavy or prolonged precipitation. This possibility should be considered when developing design and construction plans and specifications for the project. Long term monitoring in cased holes or piezometers would be necessary to accurately evaluate the potential range of groundwater conditions on the site.

Section 3

3.0 Evaluation and Recommendations

The following engineering recommendations are based on project information regarding the design of the proposed roadway improvements, the field and laboratory testing performed on the soil encountered at this site, and other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, GPD should be immediately notified so that further evaluation and supplemental recommendations can be provided.

3.1 Site Preparation and Earthwork Operations

It is recommended that all site preparation and earthwork operations be conducted in accordance with the following generalized procedures:

All concrete and asphalt pavement along with any soft or otherwise unsuitable materials should be fully removed from the site. Subsequent to stripping and rough grading; proof-rolling in accordance with ODOT Item 204 with heavy construction equipment such as a loaded tandem axle dump truck is recommended in fill and/or cut areas to aid in locating unstable subgrade materials. Any unstable materials located during ODOT Item 204 proofrolling should be removed and replaced with suitable compacted fill material under the direct supervision of the onsite Geotechnical Engineer or their representative.

The current ODOT Geotechnical Design Manual has been utilized as a guideline for development of the recommendations included in this report. Per ODOT requirements stated above, typically materials with in-situ moisture contents exceeding optimum moisture content by 3 percent or more, or materials exhibiting low SPT N_{60}-Values, require subgrade undercutting or stabilization to obtain adequate pavement support.

Based on ODOT's Subgrade Analysis worksheet, utilizing the test boring and laboratory results, ODOT guidelines and our analysis indicate that either removal and replace or recondition of the unstable soils ranges between zero (north, east and west of intersection) to a maximum of 12.0-inches below proposed grades along the southern portion of the intersection along State Route 43 will be required, pending proper evaluation via proof-rolling during construction. In general, it should be anticipated that approximately 12-inches of remove and replace with Geotextile fabric will be required from Sta 1052+45.67 to Sta 1053+63.20. Refer to the *GDM Subgrade Analysis Spreadsheet* included in the Appendix A of this report for additional details.

3.1.1 Fill Material

Any fill or backfill required within construction limits should be select material, as approved by a qualified geotechnical engineer. For all filling operations, the following should be observed:

- Prior to use, the approved fill material should be tested as outlined in ASTM D-698 to determine the maximum dry density and optimum moisture content for silty or cohesive soils, or ASTM D-4253 and D-4254 for clean granular soils. For each change in borrow material, additional tests will be required.

- For all fill or backfill used, the fill material should be placed on the approved subgrade in controlled lifts, with each lift compacted to a stable condition, to current ODOT design standards.

- All filling operations should be observed by a qualified soils technician with field density tests made, to assure compaction to specification.

Proper moisture control of fine-grained silty soils is critical in attaining the required compaction. It should be noted that both in-situ soils and new fill composed of fine-grained soils are susceptible to disturbance by construction equipment traffic when wet. Thus, construction operations should be planned to prevent such disturbance and the resulting weakening of the subgrade soils. Such precautions would include, but not be limited to grading the site to prevent ponding of water, sealing the subgrade soils at the end of operations each day, and allowing wet subgrades to dry before operating heavy equipment on exposed soil surfaces.

Compaction equipment and techniques will be dependent on the type of material being used as fill. A sheepsfoot roller should provide adequate compaction for cohesive (clayey) soils. A vibratory type compactor such as a drum roller will be required for non-cohesive (sandy) soils. It is our opinion that a vibratory drum roller would provide the most optimal compaction results for the on-site soils.

3.2 Pavement Design and Construction

Pavement design for the roadway structure will include proper preparation of subgrade sections, design of the pavement drainage systems and utilization of an adequate pavement section. It should be emphasized that an adequately designed and installed permanent surface and subsurface drainage system is considered critical in maintaining proper base and subbase support to achieve the desired service life. It is recommended that the subsurface drainage system consist of perforated drain-pipes bedded in and backfilled with suitable filter materials. The drainage system should be installed along either side of all roadways at an elevation, such that groundwater will be maintained a minimum of 3 feet below the top of the pavement structures. The filter around the drainage members is to terminate in direct contact with the aggregate base course for the pavements.

All subgrade sectors should be graded to direct water by gravity toward the drainage lines. At all low points and at regular intervals, lateral underdrain lines connected to suitably located outlet points are to be provided. Site surface grades should be such that no pavement sectors are allowed to impound water. All surface and subsurface water is to be directed to the existing or new storm sewer line or drainage ditches.

The results of the laboratory tests and the Subgrade Analysis indicate that the CBR value of 7 can be utilized for the design of the proposed pavement structures. In addition, all materials and field operations required for this project should follow recommendations and procedural details in accordance with the Ohio Department of Transportation guidelines and specifications.

3.3 Groundwater Control

At the time of this investigation, groundwater was not encountered in the borings performed during this study. As such, it is not anticipated that any water will be encountered during the construction of this project. Any water encountered would likely be the result of water bearing pervious seams, and/or a perched water table condition. Conventional dewatering methods, such as pumping from sumps, should be adequate for temporary removal of any groundwater encountered during excavation at the site. GPD should be notified in the event springs or other significant groundwater is exposed during the excavation process that cannot be controlled with conventional methods.

3.4 Excavations

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person" as defined in "CFR Part 1926," should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

If the excavations are left open and exposed to the elements for a significant length of time, desiccation of the clays may create minute shrinkage cracks which could allow large pieces of clay to collapse or slide into the excavation. Materials removed from the excavation should not be stockpiled immediately adjacent to the excavation, as this load may cause a sudden collapse of the embankment.

We are providing this information solely as a service to our client. GPD is not assuming responsibility for construction site safety or the contractor's activities; No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others.

3.5 Geohazard Considerations

Additional geohazards, outside those previously stated, are not anticipated.

3.6 General Comments

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, GPD should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental assessment of the site or identification of contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken.

This report has been prepared for the exclusive use of **the City of Streetsboro, Ohio** for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report should not be considered valid unless GPD Group reviews the changes and either verifies or modifies the conclusions of this report in writing.

Appendix

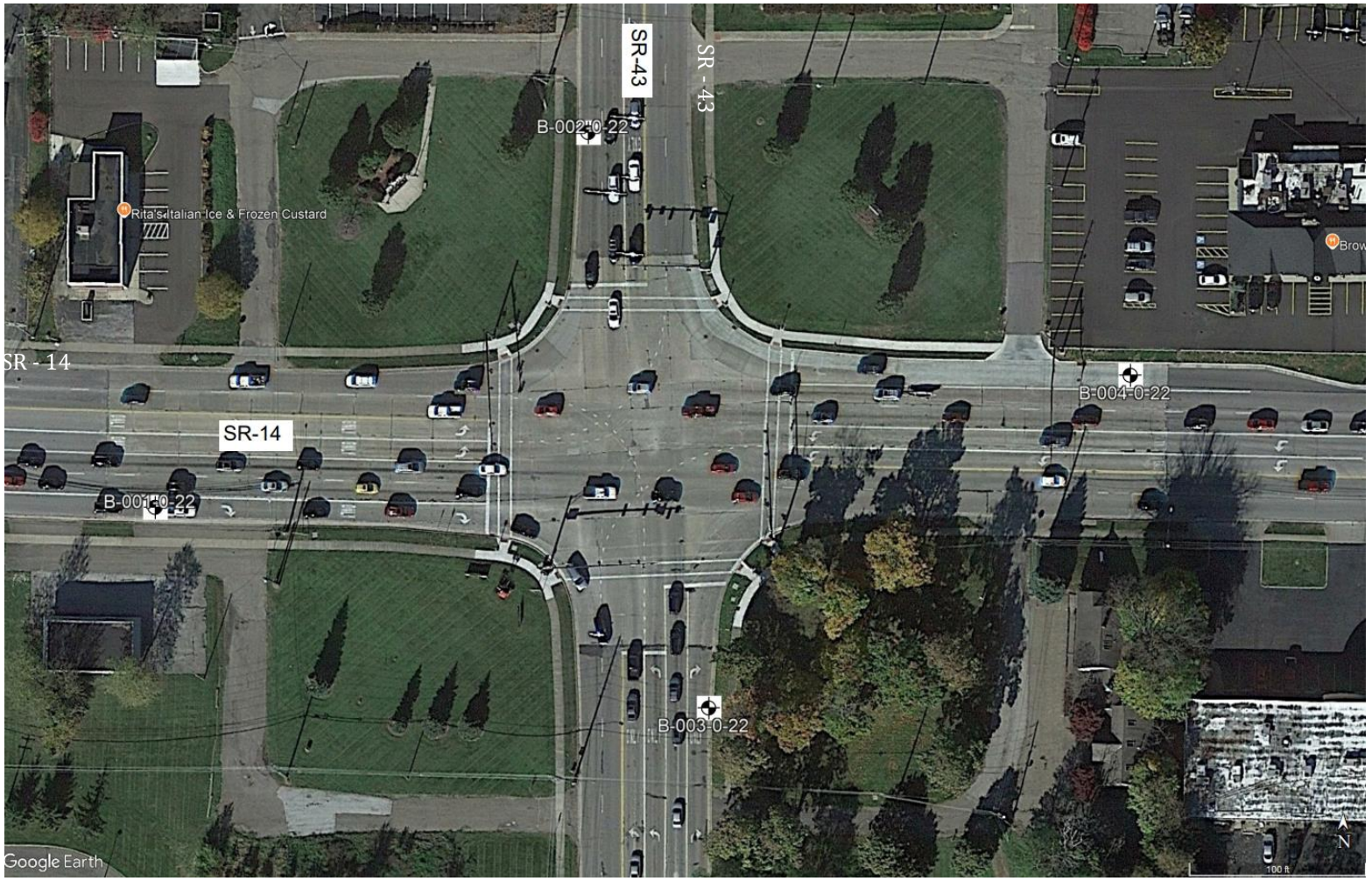
Boring Location Plan

Geotechnical Design Manual Subgrade Analysis Spreadsheet

Boring Logs

ODOT General Notes

LOCATION PLAN



N

Legend

Soil Boring: ⊕

PROJECT: ODOT – POR SR 14-43 Widening

PROJECT NUMBER: 2022008.14 **DATE**: 2/28/25

LOCATION: SR 14 and SR 43, Streetsboro, OH

520 S Main St, Suite 2531 Akron, Ohio 44311

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

PLAN SUBGRADES
Geotechnical Design Manual Section 600

Instructions: Enter data in the shaded cells only.
(Enter state route number, project description,county, consultant's name, prepared by name, and date prepared. This information will be transferred to all other sheets. The date prepared must be entered in the appropriate cell on this sheet to remove these instructions prior to printing.)

<PORTAGE-SR 14 AND SR 43>
<105213>

<PROJECT DESCRIPTION - Roadway Intersection Reconstruction >

<GPD Group>

Prepared By: <Jordan Kirkendoll>
Date prepared: <02/28/2025>

<Delbert Channels>
<520 S Main St>
<Suite 2531>
<Akron, OH 44311>
<330-572-3671>
<dchannels@gpdgroup.com>

NO. OF BORINGS: 4

#	Boring ID	Alignment	Station	Offset	Dir	Drill Rig	ER	Boring EL.	Proposed Subgrade EL	Cut Fill
1	B-001-0-22	SR 14	172+93	41	Rt	CME 55 Truck	68	1132.5	1131.0	1.5 C
2	B-002-0-22	SR 43	1055+46	29	Lt	CME 55 Truck	68	1131.1	1129.6	1.5 C
3	B-003-0-22	SR 14	052+16.	41	Rt	CME 55 Truck	68	1127.8	1126.3	1.5 C
4	B-004-0-22	SR 43	178+55	47	Lt	CME 55 Truck	68	1132.6	1131.1	1.5 C

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.7 11/6/2024

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
1	B	1	1.0	2.5	-0.5	1.0	12			24	13	11	26	17	43	10	14	A-6a	2	<100					
	001-0	2	2.5	4.0	1.0	2.5	12			31	16	15	39	37	76	16	14	A-6a	10						
	22	3	4.0	5.5	2.5	4.0	19									13	14	A-6a	10						
		4	5.5	7.0	4.0	5.5	28	12								14	14	A-6a	10						
2	B	1	1.0	2.5	-0.5	1.0	25			NP	NP	NP	10	8	18	8	6	A-1-b	0	<100					
	002-0	2	2.5	4.0	1.0	2.5	10			NP	NP	NP	11	5	16	8	6	A-1-b	0						
	22	3	4.0	5.5	2.5	4.0	16										14	A-6a	10						
		4	5.5	7.0	4.0	5.5	20	10								16	14	A-6a	10						
3	B	1	1.0	2.5	-0.5	1.0	16			24	14	10	46	25	71	14	10	A-4a	7	<100		Mc			**12-inches 204 Geotextile**
	003-0	2	2.5	4.0	1.0	2.5	15									15	10	A-4a	8			Mc			
	22	3	4.0	5.5	2.5	4.0	25			26	15	11	47	31	78	15	14	A-6a	8						
		4	5.5	7.0	4.0	5.5	25	15								18	14	A-6a	10						
4	B	1	1.0	2.5	-0.5	1.0	15										14	A-6a	10	<100					
	004-0	2	2.5	4.0	1.0	2.5	23			32	17	15	43	42	85	15	14	A-6a	10						
	22	3	4.0	5.5	2.5	4.0	19			28	15	13	45	37	82	15	14	A-6a	9						
		4	5.5	7.0	4.0	5.5	18	15								15	14	A-6a	10						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.7 11/6/2024

PID: <105213>

County-Route-Section: <PORTAGE-SR 14 AND SR 43>
No. of Borings: 4

Geotechnical Consultant: <GPD Group>
Prepared By: <Jordan Kirkendoll>
Date prepared: <02/28/2025>

Chemical Stabilization Options		
320	Rubblize & Roll	Option
206	Cement Stabilization	Option
	Lime Stabilization	No
206	Depth	12"

Excavate and Replace Stabilization Options	
Global Geotextile Average(N60L):	12"
Average(HP):	0"
Global Geogrid Average(N60L):	0"
Average(HP):	0"

Design CBR	7

% Samples within 3 feet of subgrade			
$N_{60} \leq 5$	0%	HP ≤ 0.5	0%
$N_{60} < 12$	6%	0.5 < HP ≤ 1	0%
$12 \leq N_{60} < 15$	13%	1 < HP ≤ 2	0%
$N_{60} \geq 20$	19%	HP > 2	0%
M+	13%		
Rock	0%		
Unsuitable Soil	0%		

Excavate and Replace at Surface	
Average	0"
Maximum	0"
Minimum	0"

% Proposed Subgrade Surface	
Unstable & Unsuitable	17%
Unstable	17%
Unsuitable (Soil & Rock)	0%

	N_{60}	N_{60L}	HP	LL	PL	PI	Silt	Clay	P 200	M_C	M_{OPT}	GI
Average	19	13	NP	28	15	13	33	25	59	14	13	8
Maximum	28	15	NP	32	17	15	47	42	85	18	14	10
Minimum	10	10	NP	24	13	10	10	5	16	8	6	0

Classification Counts by Sample

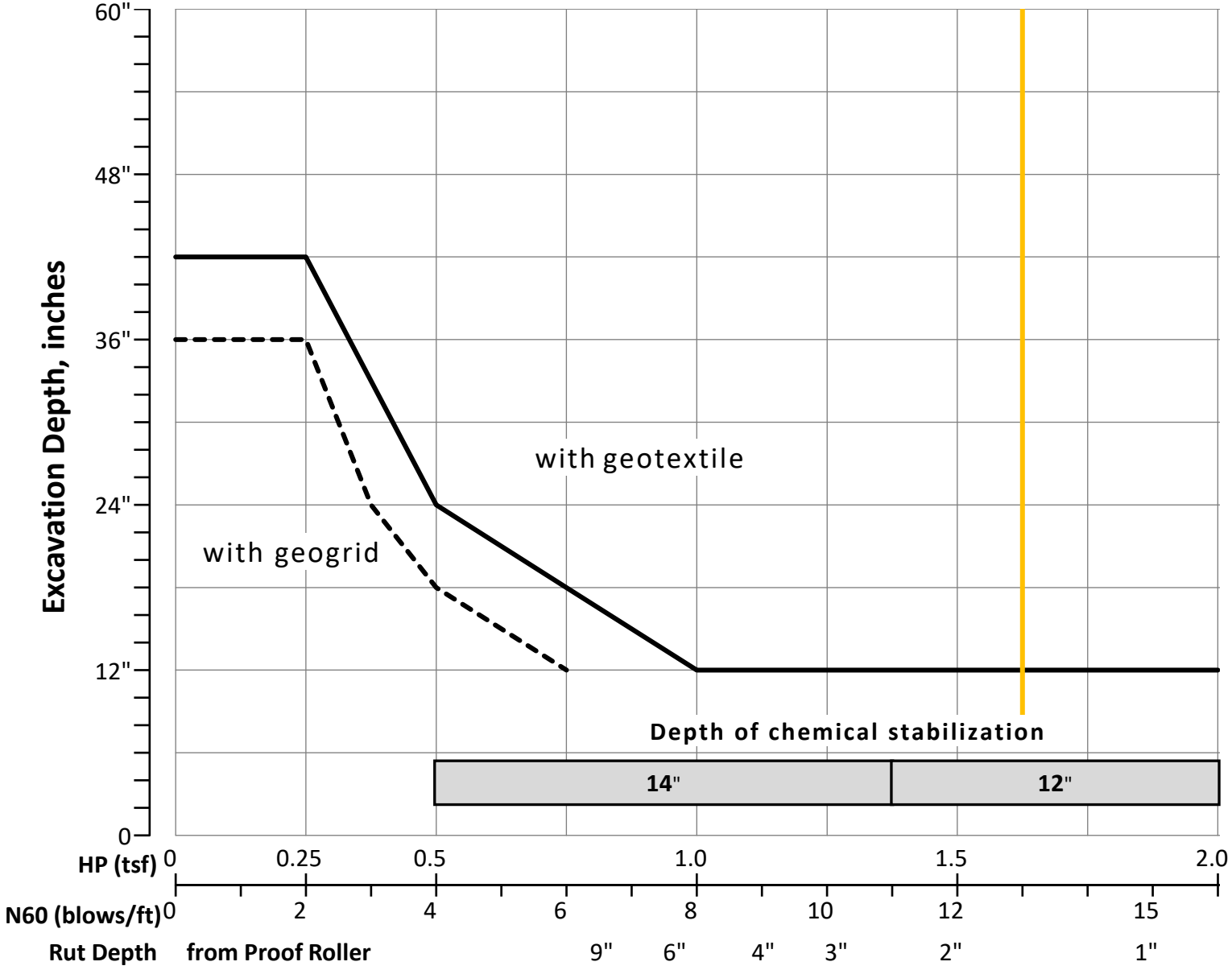
ODOT Class	UCF	Rock	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-3	A-3a	A-4a	A-4b	A-5	A-6a	A-6b	A-7-5	A-7-6	A-8a	A-8b	Totals
Count	0	0	0	2	0	0	0	0	0	0	2	0	0	12	0	0	0	0	0	16
Percent	0%	0%	0%	13%	0%	0%	0%	0%	0%	0%	13%	0%	0%	75%	0%	0%	0%	0%	0%	100%
% Rock|Granular|Cohesive	0%	0%	25%									75%								100%
Surface Class Count	0	0	0	2	0	0	0	0	0	0	2	0	0	8	0	0	0	0	0	12
Surface Class Percent	0%	0%	0%	17%	0%	0%	0%	0%	0%	0%	17%	0%	0%	67%	0%	0%	0%	0%	0%	100%

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.7 11/6/2024

Fig. 600-1 – Subgrade Stabilization



OVERRIDE TABLE

Calculated Average	New Values	Check to Override
NP	0.50	☐ HP
13.00	6.00	☐ N60L

Average HP

Average N_{60L}

PROJECT: POR-SR 14 AND SR 43-
TYPE: ROADWAY
PID: 105213 SFN:
START: 11/23/22 END: 11/23/22

DRILLING FIRM / OPERATOR: GPD / R. TOSATTO
SAMPLING FIRM / LOGGER: GPD / D. CAMPANA
DRILLING METHOD: 2.25" HSA
SAMPLING METHOD: SPT

DRILL RIG: CME 55 TRUCK
HAMMER: CME AUTOMATIC
CALIBRATION DATE: 1/26/22
ENERGY RATIO (%): 67.6

STATION / OFFSET: 172+93, 41' RT.
ALIGNMENT: SR 14
ELEVATION: 1132.5 (MSL) EOB: 7.0 ft.
COORD: 575017.0170 N, 2285727.0470 E

EXPLORATION ID B-001-0-22

MATERIAL DESCRIPTION AND NOTES	ELEV. 1132.5	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	ABAN-DONED
11" CONCRETE	1131.6																		
STIFF, BROWN & GRAY, **SILT AND CLAY**, DAMP SOME GRAVEL & SAND, TRACE ORGANICS, FILL, CHEMICAL ODOR		1	6 6 5	12	75	1	-	32	9	16	26	17	24	13	11	10	A-6a (2)	<100	
		2																	
		3	4 5 6	12	81	2	-	5	7	12	39	37	31	16	15	16	A-6a (10)	-	
@4.0' VERY STIFF, LITTLE SAND, TRACE GRAVEL		4	5 7 10	19	100	3	-	-	-	-	-	-	-	-	-	13	A-6a (V)	-	
		5																	
@5.5' LITTLE SAND & GRAVEL		6	7 12 13	28	100	4	-	-	-	-	-	-	-	-	-	14	A-6a (V)	-	
		EOB 7																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/7/25 14:11 - F:\GPD GIL\CHRIST\JOBS\2022\GPD\DRILLING\20220008.14 - POR SR 14-43 1.74-15.59 - 105213\B1 TO B4 - COPY.GPJ

PROJECT: POR-SR 14 AND SR 43-
TYPE: ROADWAY
PID: 105213 SFN:
START: 11/23/22 END: 11/23/22

DRILLING FIRM / OPERATOR: GPD / R. TOSATTO
SAMPLING FIRM / LOGGER: GPD / D. CAMPANA
DRILLING METHOD: 2.25" HSA
SAMPLING METHOD: SPT

DRILL RIG: CME 55 TRUCK
HAMMER: CME AUTOMATIC
CALIBRATION DATE: 1/26/22
ENERGY RATIO (%): 67.6

STATION / OFFSET: 1055+46, 29' LT.
ALIGNMENT: SR 43
ELEVATION: 1131.1 (MSL) EOB: 7.0 ft.
COORD: 575239.4470 N, 2285970.4960 E

EXPLORATION ID B-002-0-22

PAGE 1 OF 1

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)	SO4 ppm	ABAN-DONED
12" ASPHALT	1131.1 1130.1																		
MEDIUM DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, DAMP TRACE SILT & CLAY, FILL, CHEMICAL ODOR	1127.1	1	7 12 10	25	89	1	-	48	14	20	10	8	NP	NP	NP	8	A-1-b (0)	<100	
		2	6 4 5	10	28	2	-	54	13	17	11	5	NP	NP	NP	8	A-1-b (0)	-	
VERY STIFF, BROWN & GRAY, **SILT AND CLAY**, DAMP TRACE SAND & GRAVEL, FILL		3	5 6 8	16	94	3	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
	1124.1	4	6 7 11	20	94	4	-	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		EOB 5																	
		6																	
		7																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

PROJECT: POR-SR 14 AND SR 43-	DRILLING FIRM / OPERATOR: GPD / R. TOSATTO	DRILL RIG: CME 55 TRUCK	STATION / OFFSET: 1052+17, 41' RT.	EXPLORATION ID B-003-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: GPD / D. CAMPANA	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 14	
PID: 105213 SFN:	DRILLING METHOD: 2.25" HSA	CALIBRATION DATE: 1/26/22	ELEVATION: 1127.8 (MSL) EOB: 7.0 ft.	PAGE 1 OF 1
START: 11/23/22 END: 11/23/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 67.6	COORD: 574909.7810 N, 2286044.3020 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1127.8	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	ABAN-DONED
12" ASPHALT	1126.8																		
STIFF TO VERY STIFF, BROWN, **SANDY SILT**, DAMP LITTLE SAND, TRACE GRAVEL, FILL	1123.8	1 2 3	10 8 6	16	44	1	-	11	5	13	46	25	24	14	10	14	A-4a (V)	<100	
			7 6 7	15	56	2	-	-	-	-	-	-	-	-	-	15	A-4a (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, MOIST LITTLE SAND & GRAVEL	1120.8	4 5 6	5 8 14	25	89	3	-	8	4	10	47	31	26	15	11	15	A-6a (V)	-	
		EOB 7	4 10 12	25	100	4	-	-	-	-	-	-	-	-	-	18	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

PROJECT: POR-SR 14 AND SR 43-	DRILLING FIRM / OPERATOR: GPD / R. TOSATTO	DRILL RIG: CME 55 TRUCK	STATION / OFFSET: 178+55, 47' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: GPD / D. CAMPANA	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 43
PID: 105213 SFN:	DRILLING METHOD: 2.25" HSA	CALIBRATION DATE: 1/26/22	ELEVATION: 1132.6 (MSL) EOB: 7.0 ft.
START: 11/23/22 END: 11/23/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 67.6	COORD: 575101.1030 N, 2286288.8110 E

EXPLORATION ID B-004-0-22

MATERIAL DESCRIPTION AND NOTES	ELEV. 1132.6	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	ABAN-DONED
9" CONCRETE	1131.9																		
11" GRANULAR BASE	1130.9																		
STIFF, BROWN & GRAY, **SILT AND CLAY**, DAMP LITTLE SAND, TRACE GRAVEL		1	9 8 5	15	72	1	-	-	-	-	-	-	-	-	-	-	A-6a (V)	<100	
@2.5' VERY STIFF, BROWN, TRACE SAND & GRAVEL		2 3	6 9 11	23	89	2	-	3	4	8	43	42	32	17	15	15	A-6a (10)	-	
		4 5	7 9 8	19	100	3	-	5	4	9	45	37	28	15	13	15	A-6a (9)	-	
		6	7 7 9	18	100	4	-	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
		EOB 7																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS

APPENDIX A.1 - ODOT Quick Reference for Visual Description of Soils

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_0/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.	$\geq$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

Peat, S-Sedimentary W-Woody F-Fibrous L-Loamy & etc

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