ROADWAY EXPLORATION

Intersection Improvements

GEA/LAK-44-18.45/00.00, PID 114163

State Route 44

Chardon & Concord Townships, Geauga & Lake Counties, Ohio

Submitted to GPD Group

FINAL REPORT - Date August 2024

Prepared by

TTL associates inc
Environmental, Geotechnical Engineering & Testing

Ohio Department of Transportation

Intersection Improvements

GEA/LAK-44-18.45/00.00,
PID 114163

Chardon & Concord Townships, Geauga & Lake Counties, Ohio

Final Report - Roadway Exploration

GPD Group
Cleveland, Ohio

August 12, 2024

TTL Project No. 2279801

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August 12, 2024 **TTL Project No. 2279801**

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Final Report
Roadway Exploration
GEA/LAK-44-18.45/00.00, PID 114163
Intersection Improvements
Chardon & Concord Townships, Geauga & Lake Counties, Ohio

Dear Mr. Neumeyer:

Following is the report of our roadway exploration performed by TTL Associates, Inc. (TTL) for the referenced project. This study was performed in accordance with TTL Proposal No. 2279801R, dated August 19, 2022, and was authorized by GPD Group via a subconsultant agreement for professional services, dated September 30, 2022, which was fully-executed on October 12, 2022. Email correspondence provided on November 22, 2022 from ODOT District 12 indicated that Borings B-059, B-062, and B-064 should be eliminated from the scope of work and Boring B-060 should be moved to the north side of Girdled Road, between Auburn Road and SR44.

A draft version of this report was provided to you on March 8, 2023. ODOT comments were provided on September 28, 2023 regarding the boring logs and on April 16, 2024 regarding the draft report. We understand that the project now consists of widening at intersections and milling/resurfacing for the portions between the intersections. This final report contains the results of our study, our engineering interpretation of the results with respect to the project characteristics, our recommendations for design and construction of pavements as well as potential modifications to subgrade soils for the widening portion of the project. Logs of borings performed in milling/resurfacing areas are provided separate from those associated with widening areas, as they are still pertinent with respect to the existing pavement cross-sections.

Should you have any questions regarding this report or require additional information, please contact our office.

Sincerely,

TTL Associates, Inc.

Christopher P. Iott, P.E.
Chief Geotechnical Engineer

Curtis E. Roupe, P.E.
Vice President

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FINAL REPORT
ROADWAY EXPLORATION
GEA/LAK-44-18.45/00.00, PID 114163
INTERSECTION IMPROVEMENTS
CHARDON & CONCORD TOWNSHIPS,
GEAUGA & LAKE COUNTIES, OHIO

FOR

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SUBMITTED

AUGUST 12, 2024
TTL PROJECT NO. 2279801

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EXECUTIVE SUMMARY

This roadway exploration report has been prepared for the intersection improvements along State Route 44 (SR44), from the Chardon North Corporation line in Chardon Township, Geauga County, north to the 4-lane section, south of Capital Parkway, in Concord Township, Lake County. Intersections within the project area planned for improvements include Hosford Road, Clark Road, Colburn Road, and Girdled Road. This exploration included 61 test borings, 20 of which included a pavement core, as well as five pavement core only locations, for the evaluation of existing pavement sections and subgrade conditions in areas of proposed roadway intersection improvements. The project now includes only widening at the intersections, and milling/resurfacing in other project areas. Subgrade evaluations were performed in accordance with ODOT GB-1 "Plan Subgrades" (Now Geotechnical Design Manual Section 600) for the borings in the widening areas. A summary of the conclusions and recommendations of this study are as follows:

1. The cores and majority of the borings were performed through existing roadway pavements. The pavements consisted of asphalt at the surface. Approximately 60 percent of the cores/borings encountered concrete underlying the asphalt. Sand base was present underlying many of the composite asphalt/concrete sections. Some borings in proposed widening areas were performed beyond the extent of existing roadway pavements, and encountered aggregate shoulder material or topsoil.

2. Existing fill materials were encountered in eight of the 61 borings, representing approximately 13 percent of the borings performed for this exploration. Fill materials were indicated where non-soil materials such as crushed stone or asphalt fragments were present in the soils. Granular fill materials were encountered in four borings, and cohesive fill materials were encountered in four borings.

3. The subsoils encountered immediately underlying the surface materials predominantly consisted of cohesive soils. Cohesive subgrade soils were encountered in approximately 75 percent of the borings performed for this exploration. The cohesive soils were generally classified as A-4a or A-6a, although zones of A-6b subgrade soils were also encountered.

4. Native granular subgrade soils were encountered in 11 borings, representing approximately 18 percent of the test borings performed for this exploration. The native granular subgrade soils were classified as A-1-b and A-3a. It should be noted that encountered granular soils were more prevalent during this exploration than what was identified in the historic borings performed for the original construction of SR44 along this alignment. As such, some of the encountered granular soils may be fill materials placed to achieve design subgrades. However, non-soil materials were not observed in the recovered samples. Therefore, they have not been identified as fill.

5. Based on the limited data available, such as the soil characteristics and the groundwater conditions encountered in the borings, it is our opinion that the "normal" groundwater level is anticipated to generally be encountered at depths of approximately 5 feet or greater below existing grades. It should be noted that "perched" water may be encountered in the fill materials

or granular soils that are underlain by relatively impermeable native cohesive soils, or at the soil/bedrock interface. If construction does not occur during a particularly wet period, adequate control of groundwater seepage into excavations extending only a few feet below the "normal" groundwater level should be achievable by minor dewatering systems, such as pumping from prepared sumps. If saturated granular soils are encountered, they may require installation of well points in addition to pumping from prepared sumps.

6. Based on the ODOT "Subgrade Analysis" worksheet, 15 of the 25 borings in intersection areas of planned widening contained subgrade soils within the upper profile which indicated subgrade modification is likely to be required. Three (3) of these borings indicated planned subgrade modification consisting of reworking granular soils in-place. Based on the GB-1/ODOT Geotechnical Design Manual Section 600 analysis results, subgrade modification may consist of global chemical stabilization using cement to a depth of 14 inches, or over-excavation and replacement with new granular engineered fill. With widening planned for widths generally 12 feet or less, it is not expected that global chemical stabilization equipment could readily access and treat the subgrades. As such, it is planned that subgrade modification for this project include over-excavation and replacement with new granular engineered fill.

7. The ODOT "Subgrade Analysis" worksheet resulted in a CBR value of 7 percent for the project site. It should be noted that the CBR determination by the Subgrade Analysis spreadsheet is based on an average Group Index (GI) of all the evaluated samples. It should be noted that group indices for the tested samples ranging from 9 to 16, which would correlate with lower CBR values than that determined based on the average GI value of 7, were generally encountered in borings that were indicated by the Subgrade Analysis spreadsheet for subgrade modification, or were present at depths of at least 1½ feet below the anticipated top of subgrade elevation. As such, it does not appear to be unconservative to use the Subgrade Analysis worksheet design CBR value of 7 percent based on the average design value calculations.

This executive summary highlights our evaluations and recommendations and should only be utilized in conjunction with the accompanying report, including the detailed findings, analysis and recommendations, and qualifications presented herein.

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APPENDICES

Appendix A: Engineering Calculations (including Subgrade Analysis Spreadsheet)
Appendix B: Non-Intersection Logs of Test Borings, Grain Size Distribution, and Photographic Logs of Selected Pavement Cores
Appendix C: Geotechnical Engineering Design Checklists
Appendix D: Historic Borings

1.0 INTRODUCTION

This roadway exploration report has been prepared for the intersection improvements along State Route 44 (SR44), from the Chardon North Corporation line in Chardon Township, Geauga County, north to the 4-lane section, south of Capital Parkway, in Concord Township, Lake County. Intersections within the project area planned for improvements include Hosford Road, Clark Road, Colburn Road, and Girdled Road. Milling/resurfacing is planned for the other project areas. The general project area is shown on the attached Site Location Map (Plate 1.0).

This study was performed in accordance with TTL Proposal No. 2279801R, dated August 19, 2022, and was authorized by GPD Group via a subconsultant agreement for professional services, dated September 30, 2022, which was fully-executed on October 12, 2022. Email correspondence provided on November 22, 2022 from ODOT District 12 indicated that Borings B-059, B-062, and B-064 should be eliminated from the scope of work and Boring B-060 should be moved to the north side of Girdled Road, between Auburn Road and SR44.

1.1 Purpose and Scope of Exploration

The purpose of this exploration was to evaluate the pavement conditions, subsurface conditions and laboratory data relative to the design and construction of pavements for the referenced project. To accomplish this, TTL performed 61 test borings, 20 of which included a pavement core, as well as five pavement core only locations, laboratory soil testing, a geotechnical engineering evaluation of the test results, and review of available geologic and soils data for the project area.

The project now includes widening at the intersections and milling/resurfacing for the other project areas. As such, data for the widening areas are incorporated as figures attached to this report. The data for the borings and cores performed in areas that are now just milling/resurfacing have been included in Appendix B.

This report summarizes our understanding of the proposed construction, describes the investigative and testing procedures utilized to evaluate the subsurface conditions at the site, and presents our findings from the field and laboratory testing. This report also presents our evaluations and conclusions in accordance with ODOT GB-1 “Plan Subgrades” (Now Geotechnical Design Manual Section 600) and provides our design and construction recommendations for pavements.

This report includes:

- A description of the existing surface materials, subsurface soils, and groundwater conditions encountered in the pavement cores and borings.
- Design recommendations for pavements.
- Recommendations concerning soil and groundwater-related construction procedures such as subgrade preparation in accordance with ODOT GB-1 criteria, earthwork, pavement construction, and related field testing.

Appendix C includes pertinent ODOT Geotechnical Engineering Design Checklists that apply to the scope of this report. This exploration did not include an environmental assessment of the surface or subsurface materials at the site.

1.2 Proposed Construction

The intersection improvements include widening in some areas, generally on the order of 12 feet or less in width. Milling/resurfacing is planned in other project areas.

Final roadway grades will approximate existing roadway grades and consist of asphalt pavements. New pavement widening areas are planned to include 9¼ inches of asphalt underlain by 6 inches of aggregate base, for a total cross-section of 15¼ inches (approximately 1.3 feet). For consideration of milling/resurfacing, existing pavement cross-sections [asphalt, concrete (where encountered), and aggregate base or sand base combined] encountered in the borings performed for this exploration varied from 7 to 28 inches in thickness, with an average of approximately 18 inches considering all borings/cores performed in existing roadways for this exploration.

2.0 GEOLOGY AND OBSERVATIONS OF THE PROJECT

2.1 General Geology and Hydrogeology

Published geologic maps from the Ohio Department of Natural Resources (ODNR) indicate that the project corridor is located in the Killbuck-Glaciated Pittsburgh Plateau Region of the Glaciated Allegheny Plateaus Section. Within this region, thin to thick Wisconsinan-age clay to loam till is present overlying Mississippian- and Pennsylvanian-age shales, sandstones, conglomerates and coals.

The USDA Natural Resource Conservation Service (NRCS) Web Soil Survey indicates that soils in the project area are predominantly mapped as various silt loams. The predominant soil type consisted of Mahoning silt loam, which constituted approximately one-third of the project area, followed by Ellsworth silt loam, which constituted approximately 15 percent of the project area, and Platea silt loam, which constituted approximately 10 percent of the project area. These soils consist of glacial till formed on till plains.

On the "Geologic Map of Ohio," the project corridor is mapped as bedrock predominantly consisting of Mississippian-age Waverly shales, sandstone, and limestone, but also includes Pennsylvanian-age Pottsville and Alleghany coal, sandstone, shales, and limestone near the southern extent, as well as Devonian-age Olentangy and Ohio shales near the northern extent. Rock coring was not performed as part of this exploration. However, where weathered bedrock samples were obtained using a split-spoon sampler, they were visually identified as sandstone (some of which contained trace shale). Based on water well logs, bedrock depths in various portions of the project corridor are summarized in the following table, along with bedrock depths in the borings performed for this exploration.

Table 2.1. Bedrock Depth in Project Area

General Area of Intersection with SR44	General Range of Depth to Bedrock (ft)	
	From Water Well Logs	Encountered in the Project Test Borings
Mentor Road (Near South Extent)	15 to 25 ft	B-001 through B-004: 3 to 7 ft (Possibly shallower due to excavation performed to achieve SR44 grade)
Hosford Road	20 to 60 ft	N.E.
Clark Road	20 to 75 ft	B-025: 6½ ft; B-034: 6 ft N.E. in other borings.
Colburn Road	5 to 25 ft	B-045: 7 ft N.E. in other borings.
Girdled Road	4 to 8 ft	B-051: 4 ft, B-052: 4½ ft, B-063: 4 ft N.E. in other borings.
Capital Parkway (Near North Extent)	5 to 10 ft	N.E.

N.E. – Not Encountered (Present at depths deeper than 7.5 to 10 feet termination depths).

Based on the ODNR "Mines of Ohio" interactive map website, mining is not indicated in the project area. A historic quarry is indicated along the northeast side of Mentor Road, approximately ¾ mile southwest of the intersection of SR44 with Hosford Road. Additionally, a surface mind for Keeney Sand & Stone, Inc. is identified approximately 4¼ miles east of the intersection of SR44 with Girdled Road.

Based on the ODNR "Ohio Karst Areas" map, the project corridor is indicated in an area not known to contain karst features.

2.2 Site Reconnaissance

TTL performed boring layout on December 1, 2022 to facilitate drilling operations in December 2022. TTL then performed a more formal site reconnaissance on March 2, 2023. The site is located in a predominantly rural area abutting the backyards of scattered residential properties. Commercial area with many retail and lodging developments were located along the northern end of the project corridor. The Maple Highland walking trail was located along the southern portion of SR44 (starting south of Boring B-023) and its centerline was approximately 15 to 20 feet east of the edge of pavement.

The pavements along SR44 were observed to be in generally fair to good condition. Signs of distress were not noticeable throughout much of the pavement areas. However, there were areas of observed longitudinal cracking down the center of the pavement, along with minor localized transverse cracking (generally spanning from edge to edge of pavement).

The pavement along Girdled Road, east of SR44, appeared to be recently resurfaced and signs of distress were not noticeable. However, in this general portion of the project area, patched areas were observed in SR44 and Crile Road.

Within the project area, SR44 appeared to be located within a generally hilly area, with scattered riparian topography and associated creeks or perennial streams. The roadway surface of SR44 was observed to be generally approximately 3 to 6 feet above surrounding grades. Multiple existing culvert pipes were observed to cross beneath the roadway. A swale was observed to extend along SR44 in the portion where the walking trail was present. The swale was observed to be 1 to 2 feet deep and exhibited ponded water in some areas, albeit after a period of rainfall the prior week.

3.0 EXPLORATION

3.1 Historic Borings

Review of the ODOT Transportation Information Mapping System (TIMS) for the project area indicated historic geotechnical information was available for the original construction of the current SR44 alignment via Project GEA/LAK-44-(18.30)(0.00). The geotechnical work for this project was performed during 1961. The geotechnical Soil Profile for this historic project is included in Appendix C of this report. It should be noted that the available soil profile from the TIMS only includes sheets 1 through 20 of 23. Included in the set are a cover sheet, laboratory test results sheets, plan-and-profile sheets, and cross-section sheets. The sheets include cross-sections from the southern project area north to Sta. 523+00, which is located approximately 2,000 feet south of Hosford Road.

It should be noted that the historic borings did not include Standard Penetration Test (SPT) results. Therefore, only a summary of the geotechnical information from the historic Soil Profile is provided in this section, and the Soil Profile is included in Appendix C. However, the historic borings are not included in evaluations, recommendations, or the Plates associated with this report, and will not be included in the Geotechnical Profile sheets for this project.

Based on the historic Soil Profile, the southern portion of the project area originally included rolling topography, which required alternating cut and fill to achieve current SR44 grades. Maximum cut and fill in the southern portion of the current project area was on the order of 25 feet. From approximately 1,600 feet south of Clark Road extending to the northern current project extent, maximum cut and fill was on the order of 10 feet or less.

The soils encountered in the historic borings predominantly consisted of cohesive soils classified as ODOT A-4a, A-6a, and A-6b soils, with occasional A-4b and A-7-6 soils. Approximately 8 percent of the tested samples consisted of granular soils, classified in the A-1, A-3, and A-2 series. Sandstone and shale bedrock were indicated in borings performed near the southern extent of the current project area, in the general area of the intersections with Colburn Road and Girdled Road, as well as near the northern extent of the current project area. It should be noted that hand auger refusal was indicated for many historic borings, but some of these borings may have encountered hand auger refusal due to difficult advancement in soils and not necessarily due to bedrock.

We have assumed that the information provided in the historic borings was accurate and correct, at the time of the respective exploration, but cannot guarantee as such. Additionally,

subgrade soil conditions may have changed or may have been modified due to construction performed following completion of the historic subsurface explorations.

3.2 Project Exploration Program

This exploration included 61 test borings, 20 of which included pavement cores, as well as five (5) pavement core only locations. The cores and borings were performed by TTL during the period from December 12 through 22, 2022.

Based on the current project approach of widening at the intersections and milling/resurfacing in the other project areas, 25 test borings, 8 of which included pavement cores, as well as the five pavement core only locations are in intersection areas where widening is planned. The data for these borings and cores are included as figures in this report. The data for the remaining borings is included in Appendix B. The existing pavement cross-sections for these borings/cores were considered pertinent to the planned milling/resurfacing portion of the project.

The cores/borings were generally extended through the existing State Route 44 (SR44) pavements on alternating northbound and southbound sides of the road, but also included three borings performed along Girdled Road. A few of the borings performed north of Girdled Road were performed outside of the pavement extents due to potential for widening in this area. Additionally, Boring B-016-0-22 was performed northeast of the intersection of SR44 and Hosford Road for a potential roundabout in that area. Although the roundabout is no longer planned, widening will be performed at this intersection. Test borings were designated as Borings B-001-0-22 through B-064-0-22, but Borings B-059-0-22, B-062-0-22, and B-064-0-22 were eliminated from the scope of work by ODOT District 12.

The borings that were considered for intersection widening for the project are summarized in the following table.

Table 3.2.A. Intersection Areas Borings

Boring Number	Location	Boring Number	Location	Boring Number	Location
B-014	SR44	B-032	SR44	B-050	SR44
B-015	SR44	B-042	SR44	B-051	SR44
B-016	SR44	B-043	SR44	B-052	SR44
B-017	SR44	B-044	SR44	B-053	SR44
B-018	SR44	B-045	SR44	B-060	Girdled Rd
B-028	SR44	B-046	SR44	B-061	Girdled Rd
B-029	SR44	B-047	SR44	B-063	Girdled Rd
B-030	SR44	B-048	SR44		
B-031	SR44	B-049	SR44		

Designations and locations for exploration consisting of only coring the pavement and determination of the presence/thickness of underlying base materials (all of which were in intersection areas planned for widening) are summarized in the following table.

Table 3.2.B. Pavement Core Only Locations	
Core Number	**Location**
X-016-1	Westbound Hosford Road, east of SR44.
X-016-2	Eastbound Hosford Road, west of SR44.
X-030-1	Eastbound Clark Road, west of SR44.
X-044-1	Eastbound Colburn Road, west of SR44.
X-050-1	Northbound SR44, offset west of B-050 performed beyond roadway for possible widening.

The cores and borings are fully designated as in accordance with ODOT protocol, however the "-0-21" or "-21" portion of the nomenclature is generally omitted for ease of identification in the discussions within this report. The borings were located in the field by TTL in general accordance with plans provided with the proposal for this project. The approximate locations of the cores and borings are shown on the Test Boring Location Plans (Plates 2.1 through 2.3 for the general southern, middle, and northern portions of the project area. Plates 3.1 through 3.4 for zoom in views at the major intersections with SR44).

Stationing, offsets, coordinates and ground surface elevations at the boring locations were obtained based on input of the boring locations into Open Roads Design (ORD). This data is provided on the logs of test borings.

In accordance with the ODOT Specifications for Geotechnical Explorations (SGE), the borings were generally performed as ODOT Type A borings to a depth of 6 feet below top of subgrade, based on subgrade anticipated 1½ feet below existing grades. Selected borings in areas of new roadway alignment were performed as ODOT Type B borings, extended to termination at a depth of 10 feet. Where auger refusal was encountered, or split-spoon refusal occurred during the final planned sample interval, the boring was terminated.

Experience indicates that the actual subsoil conditions at a site could vary from those generalized on the basis of test borings made at specific locations, especially at previously developed sites such as this site. Therefore, it is essential that a geotechnical engineer be retained to provide soil engineering services during the site preparation and pavement construction phases of the proposed project. This is to observe compliance with the design concepts, specifications, and recommendations, and to allow design changes in the event subsurface conditions differ from those anticipated prior to the start of construction.

3.3 Boring Methods

Pavement cores were obtained using a nominal 4-inch diameter core barrel. Photographic logs of the cores obtained at core-only locations, as well as selected pavement cores from test boring locations, are attached to this report.

The borings were performed with a CME 75 truck-mounted drill rig utilizing 3½-inch diameter solid-stem augers. For ODOT Type A borings, samples were generally obtained continuously using 18-inch split-spoon (SS) sample drives. For ODOT Type B borings, samples were obtained at 2½-foot intervals using 18-inch split-spoon (SS) sample drives. The samples were sealed in jars and transported to our laboratory for further classification and testing.

Split-spoon soil samples were obtained by the Standard Penetration Test Method (ASTM D 1586). The Standard Penetration Test (SPT) consists of driving a 2-inch outside diameter split-spoon sampler into the soil with a 140-pound weight falling freely through a distance of 30 inches. The sampler was driven in three successive 6-inch increments, with the number of blows per increment being recorded. The number of blows per increment was recorded at each depth interval, and these data are presented under the "SPT" column on the Logs of Test Borings attached to this report. The sum of the number of blows required to advance the sampler the second and third 6-inch increments is termed the Standard Penetration Resistance, or N_m-value, and is typically reported in blows per foot (bpf). The N_m-values were corrected to an equivalent rod energy ratio of 60 percent, N_{60}. The hammer/rod energy ratio for the truck-mounted CME 75 drill rig was 66 percent, and was last calibrated on March 15, 2021. The N_{60}-values are presented on the attached Logs of Test Borings.

Pavement and soil conditions encountered in the test borings are presented in the Logs of Test Borings, along with information related to sample data, SPT results, water conditions observed in the borings, and laboratory test data. In conjunction with published data and typical correlations, the N_{60}-values can be evaluated as a measure of soil compactness/consistency as well as shear strength.

Field and laboratory data were incorporated into gINT™ software for presentation purposes. It should be noted that these logs have been prepared on the basis of laboratory classification and testing as well as field logs of the encountered soils.

3.4 Laboratory Testing Program

All samples were visually classified in accordance with the ODOT Soil Classification System. All recovered samples of the subsoils were also tested in our laboratory for moisture content (ASTM D 2216). Unconfined compressive strength estimates were obtained for the intact cohesive samples using a calibrated hand penetrometer. It should be noted that many of the recovered cohesive samples were not intact, so these samples do not include a hand penetrometer reading on the logs of test borings. These test results are presented on the Logs of Test Borings.

Laboratory testing was performed in accordance with GB-1 "Plan Subgrades" (Now ODOT Geotechnical Design Manual Section 600) criteria, including mechanical soil classification consisting of an Atterberg limits test (ASTM D 4318) and a particle size analysis (ASTM D 6913 and D 7928) for at least two samples from each boring within 6 feet of the proposed subgrade. These test results are presented on the Logs of Test Borings and Grain Size Distribution sheets.

Compactness descriptions have been provided in the logs of test borings for samples tested or visually classified as being non-plastic, including non-plastic A-4a soils. Consistency (stiffness) descriptions have been provided in the logs of test borings for cohesive soils, as well as plastic A-4a soils (those with a plasticity index of 1 or greater).

Sulfate content determinations (ODOT Supplement 1122) were generally performed on one sample from each boring, generally within 3 feet of the proposed subgrade. These test results are presented on the Logs of Test Borings. During the initial laboratory testing program, TTL assigned varying SS-1 and SS-2 samples within 3 feet of anticipated subgrade, to evaluate if there were differing conditions within the upper 3 feet and to include data should some grades get lowered or pavement cross-sections result in deeper top of subgrade elevations. We understand that it is ODOT District 12 preference to test SS-1 samples. Additional tests have been performed to incorporate SS-1 samples that were not previously tested at the time of the draft report submittal.

4.0 FINDINGS

4.1 General Site Conditions

The cores and majority of the borings were performed through existing roadway pavements. The pavements consisted of asphalt at the surface. Approximately 60 percent of the cores/borings encountered concrete underlying the asphalt. Sand base was present underlying many of the composite asphalt/concrete sections. Some borings in proposed widening areas were performed beyond the extent of existing roadway pavements, and encountered aggregate shoulder material or topsoil. The surface materials encountered in the cores and borings are summarized in Table 4.1 below. Borings performed in areas of intersections where widening is planned are highlighted in yellow. Photographic logs of selected pavement cores are also attached to this report.

Table 4.1. Surface Materials Summary

Boring/Core Number	Pavement Component Thickness (in)					
	Asphalt	Concrete	Aggregate Base	Sand Base	Total	Notes
B-001	6	8	-	-	14	
B-002	6	12	-	-	18	
B-003	9	-	5	-	14	
B-004	7.5	-	6.25	-	13.75	
B-005	6.5	11.5	-	-	18	
B-006	7	11	-	-	18	
B-007	7.5	-	-	7	14.5	
B-008	10.5	-	6.5	-	17	
B-009	6	12	-	6	24	
B-010	6.5	8	-	2	16.5	
B-011	9.5	-	8.5	7	25	
B-012	10	-	5.5	-	15.5	
B-013	6.5	8.5	5	-	20	
B-014	6.5	7.5	-	5	19	
B-015	9.5	-	7.5	-	17	
B-016	-	-	-	-	-	3 inches topsoil, Hosford Rd
X-016-1	6.25	8	-	5	19.25	Westbound Hosford Road, east of SR44.
X-016-2	4.25	9.25	-	5	18.5	Eastbound Hosford Road, west of SR44.
B-017	7	-	-	-	7	Underlain by approx. 2-1/2 ft gravel. May be base material and possible backfill to achieve subgrade elevation.

Table 4.1. Surface Materials Summary						
Boring/Core Number	Pavement Component Thickness (in)					
	Asphalt	Concrete	Aggregate Base	Sand Base	Total	Notes
B-018	6	11	-	10	27	
B-019	6.5	8.5	-	5	20	
B-020	8.5	-	8.5	-	17	
B-021	9	-	5.5	-	14.5	
B-022	6.5	8.5	-	5	20	
B-023	6	8.75	-	5	19.75	
B-024	9	-	6	-	15	
B-025	9	-	6	-	15	
B-026	6.5	9	6	-	21.5	
B-027	6.5	10.5	-	-	17	Underlain by approx. 11 inches gravel fill with trace brick.
B-028	6	10	-	6	22	
B-029	9	-	19	-	28	
B-030	7.5	9.5	-	3	20	
X-030-1	4.5	8.25	-	8	20.75	Eastbound Clark Road, west of SR44
B-031	7	9	-	6	22	
B-032	5.5	9	-	5	19.5	
B-033	9	-	6	-	15	
B-034	9	-	6	-	15	
B-035	6.5	8.25	-	5	19.75	
B-036	7	8	-	5	20	
B-037	9	-	6	8	23	
B-038	4.5	9	-	5	18.5	
B-039	7	8	-	5	20	
B-040	6	7.5	-	11	24.5	
B-041	4	-	10	-	14	
B-042	8	-	7	-	15	
B-043	7	8	-	7	22	
B-044	4.5	9.25	-	6	19.75	
X-044-1	4.5	8.5	-	7	20	Eastbound Colburn Road, west of SR44
B-045	12	-	-	4	16	
B-046	11	-	4	-	15	
B-047	5.25	8.5	-	6	19.75	
B-048	7	9	-	5	21	
B-049	7	8	-	5	20	

Table 4.1. Surface Materials Summary						
Boring/Core Number	Pavement Component Thickness (in)					
	Asphalt	Concrete	Aggregate Base	Sand Base	Total	Notes
B-050	-	-	-	-	-	Northbound SR44 potential widening. 2 inches topsoil, underlain by 7 inches crushed stone with slag and cinders, underlain by 6 inches sand.
X-050-1	5.5	8	-	6	19.5	Northbound SR44, offset west of B-050.
B-051	-	-	-	-	-	Southbound SR44 potential widening. 4 inches topsoil, underlain by 3 inches sand
B-052	7	8	-	5	20	
B-053	5.5	8.5	-	5	19	
B-054	-	-	-	-	-	Northbound SR44 potential widening. 4 Inches aggregate at surface.
B-055	-	-	-	-	-	Southbound SR44 potential widening. 4 Inches topsoil, underlain by 6 inches aggregate.
B-056	3.25	9	-	4	16.25	
B-057	4	11	4	-	19	
B-058	7	8	-	-	15	
B-059	-	-	-	-	-	Boring was eliminated from scope of work.
B-060	6.75	-	8.25	5	20	Westbound Girdled Road, west of SR44.
B-061	3.75	8.5	-	5	17.25	Westbound Girdled Road, immediately east of SR44.
B-062	-	-	-	-	-	Boring was eliminated from scope of work.
B-063	6	-	7	-	13	Westbound Girdled Road, approx. 400 ft east of B-061.
B-064	-	-	-	-	-	Boring was eliminated from scope of work.
All Borings and Cores Data:						
Maximum	**12**	**12**	**19**	**11**	**28**	
Minimum	**3.25**	**7.5**	**4**	**2**	**7**	
Average	**7**	**9**	**7**	**6**	**18**	

Table 4.1. Surface Materials Summary						
Boring/Core Number	Pavement Component Thickness (in)					
	Asphalt	Concrete	Aggregate Base	Sand Base	Total	Notes
Intersection Areas Borings and Cores Data:						
Maximum	**12**	**11**	**19**	**10**	**28**	
Minimum	**3.75**	**7.5**	**4**	**3**	**7**	
Average	**7**	**9**	**9**	**6**	**19**	
Milling and Resurfacing Only Areas Borings and Cores Data:						
Maximum	**10.5**	**12**	**10**	**11**	**25**	
Minimum	**3.25**	**7.5**	**4**	**2**	**13.75**	
Average	**7**	**9**	**6**	**6**	**18**	

Existing fill materials were encountered in eight of the 61 borings, representing approximately 13 percent of the borings performed for this exploration. Fill materials were indicated where non-soil materials such as crushed stone or asphalt fragments were present in the soils. Granular fill materials classified as A-1-b or A-2-4 were encountered in four borings (B-027, B-034, B-042, and B-061). Cohesive fill materials classified as A-4a or A-6b were encountered in four borings (B-050, B-058, B-060, and B-063).

4.2 General Soil Conditions

Based on the results of our field and laboratory tests, the subsoils encountered immediately underlying the surface materials predominantly consisted of cohesive soils. Cohesive subgrade soils were encountered in approximately 75 percent of the borings performed for this exploration. The cohesive soils were generally classified as A-4a or A-6a, although A-6b subgrade soils were encountered in one boring.

Native granular subgrade soils were encountered in 11 borings, representing approximately 18 percent of the test borings performed for this exploration. These granular soils were encountered in Borings B-002, B-003, B-004, B-008, B-012, B-017, B-024, B-025, B-033, B-041, and B-046. The native granular subgrade soils were classified as A-1-b and A-3a. It should be noted that encountered granular soils were more prevalent during this exploration than what was identified in the historic borings performed for the original construction of SR44 along this alignment. As such, some of the encountered granular soils may be fill materials placed to achieve design subgrades. However, non-soil materials were not observed in the recovered samples. Therefore, they have not been identified as fill.

Bedrock was encountered in nine test borings at depths ranging from 3 to 7 feet below existing grades. The borings in which bedrock was encountered and the depths at which bedrock was encountered are summarized in Table 2.1, in Section 2.1 of this report.

Descriptions of the stratigraphy encountered in the borings are presented on the Logs of Test Borings attached to this report. A summary of the subgrade soils encountered in the borings is also provided in tabular form in the Subgrade Analysis spreadsheet attached in Appendix A. The subgrade soils encountered immediately underlying the existing surface materials in each boring and the depths at which bedrock was encountered in the borings are summarized in Table 4.2 below. Borings performed in areas of intersections where widening is planned are highlighted in yellow.

Table 4.2. Subgrade Soils Summary

Boring/Core Number	Subgrade Soils Immediately Underlying Existing Pavement	Bedrock Depth Below Existing Grade (ft)
B-001	A-4a	2.8
B-002	A-3a	2.5
B-003	A-3a	5.9
B-004	A-3a	7.3
B-005	A-6a	N.E.
B-006	A-4a	N.E.
B-007	A-4a	N.E.
B-008	A-3a	N.E.
B-009	A-6a	N.E.
B-010	A-6a	N.E.
B-011	A-6a	N.E.
B-012	A-1-b	N.E.
B-013	A-4a	N.E.
B-014	A-6a	N.E.
B-015	A-4a	N.E.
B-016	A-6a	N.E.
B-017	A-1-b	N.E.
B-018	A-6a	N.E.
B-019	A-6a	N.E.
B-020	A-6a	N.E.
B-021	A-6b	N.E.
B-022	A-6a	N.E.
B-023	A-4a	N.E.
B-024	A-1-b	N.E.

Table 4.2. Subgrade Soils Summary		
Boring/Core Number	**Subgrade Soils Immediately Underlying Existing Pavement**	**Bedrock Depth Below Existing Grade (ft)**
B-025	A-3a	6.5
B-026	A-6a	N.E.
B-027	A-2-4 (FILL)	N.E.
B-028	A-6a	N.E.
B-029	A-4a	N.E.
B-030	A-4a	N.E.
B-031	A-4a	N.E.
B-032	A-6a	N.E.
B-033	A-1-b	N.E.
B-034	A-1-b (FILL)	5.8
B-035	A-4a	N.E.
B-036	A-6a	N.E.
B-037	A-6a	N.E.
B-038	A-6a	N.E.
B-039	A-6a	N.E.
B-040	A-6a	N.E.
B-041	A-3a	N.E.
B-042	A-1-b (FILL)	N.E.
B-043	A-4a	N.E.
B-044	A-4a	N.E.
B-045	A-6a	7.0
B-046	A-3a	N.E.
B-047	A-6a	N.E.
B-048	A-6a	N.E.
B-049	A-4a	N.E.
B-050	A-6b (FILL)	N.E.
B-051	A-4a	4.1
B-052	A-6a	4.5
B-053	A-6a	N.E.
B-054	A-6a	N.E.
B-055	A-4a	N.E.
B-056	A-4a	N.E.
B-057	A-4a	N.E.
B-058	A-4a (FILL)	N.E.
B-060	A-4a (FILL)	N.E.
B-061	A-2-4 (FILL)	N.E.
B-063	A-4a (FILL)	4.0

4.3 Groundwater Conditions

Groundwater was initially encountered during drilling operations in only eight of the 61 test borings performed for this exploration, at depths ranging from approximately 1½ to 6½ feet below existing grades. Groundwater was observed upon completion of drilling four of these borings at depths ranging from approximately 1½ to 6½ feet. The groundwater conditions encountered in the borings are summarized in the following table.

Table 4.3. Encountered Groundwater Conditions

Boring Number	Depth of Groundwater Initially Encountered During Drilling (feet)	Depth of Groundwater Observed At Completion of Drilling (feet)
B-003	3.5	3.1
B-009	1.5	N.E.
B-013	1.3	N.E.
B-017	6.5	6.5
B-033	5.0	4.8
B-034	4.8	N.E.
B-042	5.5	N.E.
B-045	3.3	1.5

N.E. = Not Encountered

It should be noted that each of the borings was drilled and backfilled within the same day. As such, stabilized water levels may not have occurred over this limited time period. Instrumentation was not installed to observe long-term groundwater levels.

Based on the limited data available, such as the soil characteristics and the groundwater conditions encountered in the borings, it is our opinion that the "normal" groundwater level is anticipated to generally be encountered at depths on the order of 5 feet or greater below existing grades. This exploration did not include research of possible hydrological influences at the project site. It should be noted that groundwater elevations can fluctuate with seasonal and climatic influences. In particular, "perched" water may be encountered in fill materials or granular soils that are underlain by relatively impermeable native cohesive soils, or at the transition from soil to bedrock (particularly in weathered rock zones). Therefore, the groundwater conditions at the site may vary at different times of the year from those encountered during this investigation.

4.4 Remedial Measures

Based on the ODOT "Subgrade Analysis" worksheet (V14.6, 02/11/2022), 15 of the 25 borings in intersection areas of planned widening contained subgrade soils within the upper profile which indicated subgrade modification is likely to be required. Three (3) of these borings indicated planned subgrade modification consisting of reworking granular soils in-place. Based on the GB-1 (Now ODOT Geotechnical Design Manual Section 600) analysis results, subgrade modification may consist of global chemical stabilization using cement to a depth of 14 inches, or over-excavation and replacement with new granular engineered fill. With widening planned for widths generally 12 feet or less, it is not expected that global chemical stabilization equipment could readily access and treat the subgrades. As such, it is planned that subgrade modification for this project include over-excavation and replacement with new granular engineered fill.

5.0 ANALYSES AND RECOMMENDATIONS

The following analysis and recommendations are based on our understanding of the proposed construction and on the data obtained during our field exploration. If the project alignment or subgrade depth should change significantly, a review of these recommendations should be made by TTL.

5.1 GB-1 "Plan Subgrades" Evaluation

An evaluation of the subgrade soils was completed in general accordance with ODOT Geotechnical Bulletin GB-1 "Plan Subgrades" (Now Geotechnical Design Manual Section 600). As part of this evaluation, the ODOT "Subgrade Analysis" worksheet (V14.6, 02/11/2022) was completed for the project and is attached to this report in Appendix A.

Final roadway grades will approximate existing roadway grades and consist of asphalt pavements. New pavement widening areas are planned to include 9¼ inches of asphalt underlain by 6 inches of aggregate base, for a total cross-section of 15¼ inches (approximately 1.3 feet). As such, the "cut" depth in the Subgrade Analysis spreadsheet is generally 1.3 feet. In the area of Boring B-047, minor grading is planned which resulted in a "cut" depth to the planned subgrade elevation of 1.1 feet.

Based on GB-1/GDM Section 600, soils classified as ODOT A-4b, A-2-5, A-5, A-7-5, A-8a, A-8b, or rock have been designated as being problematic with respect to pavement subgrade support. Of these, only rock was encountered during this exploration at subgrade elevations. Although rock was encountered in 10 test borings, it was present within 24 inches of the subgrade elevation only in Borings B-001 and B-002. These two borings were not performed in intersection areas of widening.

The subgrade materials encountered in the borings included predominantly cohesive soils consisting generally of ODOT A-4a and A-6a soils, with some zones of A-6b soils. Approximately two-thirds of the borings included subgrade soils immediately underlying the existing surface materials consisting of granular soils. The granular soils generally consisted of ODOT A-3, A-3a, A-1-b, or A-2-4.

Based on GB-1/GDM Section 600 criteria, subgrade soils with moisture contents greater than 3 percent above optimum likely indicate the presence of unstable subgrade that may require some form of subgrade modification. Moisture contents for approximately 50 percent of the tested subgrade soil samples were greater than 3 percent above the optimum as determined

using GB-1 criteria. It should be noted that approximately two-thirds of the evaluated samples with moisture contents greater than 3 percent above optimum had moisture contents equal to or greater than 5 percent above optimum. Thus, where moisture contents were wet of optimum, they were typically significantly wet of optimum. Scarification and aeration methods may be considered for the granular soils, provided the construction schedule and weather conditions are conducive to such modification. However, scarification and aeration methods may not be feasible to achieve satisfactory proof rolling and stabilization of the cohesive subgrades.

The type and thickness of subgrade modification is determined by GB-1 criteria based on the average, low SPT N_{60}-value (N_{60L}) of the subgrade soils in a particular portion of the project area, hand penetrometer values, soil type, and moisture content. Based on these criteria, 15 of the 25 borings in intersection areas where widening is planned (60 percent of the borings) contained subgrade soils within the upper profile which indicated subgrade modification is likely to be required. Of the 15 borings indicating likely need of modification, three (3) of these borings contained granular soils that are designated to be re-compacted in-place.

Based on the GB-1 analysis results, subgrade modification may consider global chemical stabilization using cement to a depth of 14 inches, or over-excavation and replacement with new granular engineered fill. With more than 30 percent of the project indicating likely need for modification, consideration was given to the global chemical stabilization option. The sulfate content test results for subgrade soil samples ranged from 270 parts per million (ppm) to less than 100 ppm, which would not preclude use of chemical stabilization. However, with widening planned for widths generally 12 feet or less, it is not expected that global chemical stabilization equipment could readily access and treat the subgrades. As such, it is planned that subgrade modification for this project include over-excavation and replacement with new granular engineered fill.

A summary of the depths of undercut indicated by GB-1/ODOT GDM Section 600 analyses is presented in the following tables for SR44 and Girdled Road, respectively.

Table 5.1.A GB-1 Recommended Depth of Undercut and Replacement with Granular Engineered Fill SR44			
Boring Number	**GB-1 Recommended Depth of Undercut and Replacement with Granular Engineered Fill (inches)**	**Recommended Subgrade Modification Extents**	**Approximate Project Segment Length (feet)**
B-014 & B-015	12	LT: 81+21.77 to 85+48.58 RT: 80+58.97 to 84+93.51	427 435
B-030	18	LT: 139+00 to 140+28.62 RT: 139+00 to 140+07.11	129 107
B-031	12	LT: 143+87.76 to 147+51.86 RT: 142+90.84 to 147+44.74	364 454
B-048 & B-049	24	LT: 209+50 to 216+59.95 RT: 211+08.83 to 217+27.17	710 618
B-050	15	LT: 217+38.24 to 221+50 RT: 218+30.02 to 221+50	412 320
B-051	12	LT: 221+50 to 224+40.81 RT: 221+50 to 225+50	291 400
B-053	18	RT: 229+00 to 229+72.00	72

Table 5.1.B GB-1 Recommended Depth of Undercut and Replacement with Granular Engineered Fill Girdled Road			
Boring Number	**GB-1 Recommended Depth of Undercut and Replacement with Granular Engineered Fill (inches)**	**Recommended Subgrade Modification Extents**	**Approximate Project Segment Length (feet)**
Nearby B-050[1]	15	LT: 104+48.07 to 106+87.25	239
Nearby B-049[2]	24	RT: 101+90.36 to 104+55.65	265

[1]Nearest boring along Girdled Road is B-061, which indicates 12 inches of planned undercut. Since B-050 was performed just north of this widening area along SR44, and indicated slightly more conservative undercut depth of 15 inches, the recommendation is provided based on B-050.

[2]Nearest boring along Girdled Road is B-060, which was performed along left edge of roadway and indicates no planned undercut. Since B-049 was performed just south of this widening area along the west side of SR44, it is considered more representative of the material that may be present along the right edge of Girdled Road in this area of widening. Therefore, B-049 was used for the recommended undercut condition.

It should be noted that, in the above tables, transitions were generally based on the extent of planned widening. As such, stationing is indicated to the nearest hundredth of foot. Where transitions are planned between borings indicating areas of recommended treatment and borings indicating no treatment, or varying undercut depth, the transition was indicated approximately half way between borings – conservatively rounded to the nearest whole 50 feet that would provide more subgrade treatment.

Where undercut and replacement is utilized, all fill should consist of ODOT Item 304 Aggregate Base or Item 703.16C, Granular Material Type B or Type C. It is recommended that geotextile fabric (referenced in ODOT Item 204, and specified as ODOT Item 712.09, Type D) be utilized on the subgrade at the bottom of the undercut zone. If particularly unstable subgrades are encountered during construction, or undercuts are on the order of 18 inches or greater, a geogrid could be used to reduce the total undercut and replacement of the unsuitable soils by 6 inches.

It should be noted that GB-1 analyses are used as a pre-construction tool to plan subgrade modification alternatives. **Actual subgrade modification will depend on field observations of proof-rolling conditions at the time of construction.** Changes in soil moisture content could create more or less favorable subgrade conditions that may result in adjustments to subgrade modification or soil stabilization requirements at the time of construction.

5.2 Flexible (Asphalt) Pavement Design

The ODOT "Subgrade Analysis" worksheet for the entire project site resulted in a CBR value of 7 percent. It should be noted that the CBR determination by the Subgrade Analysis spreadsheet is based on an average Group Index (GI) of all the evaluated samples. It should be noted that group indices for the tested samples ranging from 9 to 16, which would correlate with lower CBR values than that determined based on the average GI value of 7, were generally encountered in borings that were indicated by the Subgrade Analysis spreadsheet for subgrade modification, or were present at depths of at least 1½ feet below the anticipated top of subgrade elevation. As such, it does not appear to be unconservative to use the Subgrade Analysis worksheet design CBR value of 7 percent based on the average design value calculations.

It should also be noted that the design CBR value is based on subgrades compacted to at least 100 percent of the maximum dry density as determined by ASTM D 698 (Standard Proctor) or verified as stable through proof-rolling in accordance with Section 5.3 of this report.

All pavement design and paving operations should conform to ODOT specifications. The pavement and subgrade preparation procedures outlined in this report should result in a reasonably workable and satisfactory pavement. It should be recognized, however, that all pavements need repairs or overlays over time as a result of progressive yielding under repeated loading for a prolonged period.

It is recommended that proof rolling, placement of aggregate base, and placement of asphalt be performed within as short a time period as possible. Exposure of the aggregate base to rain, snow, or freezing conditions may lead to deterioration of the subgrade and/or base materials due to excessive moisture conditions and to difficulties in achieving the required compaction.

5.3 Site and Subgrade Preparation

Site and subgrade preparation activities should conform to ODOT Construction and Materials Specifications (CMS) Item 204 specifications. Site preparation activities should include the removal of vegetation, topsoil, root mats, pavements, and other deleterious non-soil materials from all proposed roadway areas. The actual amount of required stripping should be determined in the field by a geotechnical engineer or qualified representative.

Upon completion of the clearing and undercutting activities, all areas that are to receive fill, or that have been excavated to proposed final subgrade elevation, should be inspected by a geotechnical engineer. Pavement subgrades should be proof rolled in accordance with ODOT CMS 204.06.

Any unsuitable materials observed during the inspection and proof-rolling operations should be undercut and replaced with compacted fill, or stabilized in place utilizing conventional remedial measures such as discing, aeration, and recompaction. As stated previously, based on the conditions encountered during our exploration, where subgrade soil moisture contents were wet of optimum, they were generally significantly wet of optimum. The encountered granular subgrade soils should be generally conducive for subgrade modification consisting of scarification, aeration, and in-place re-compaction, provided weather conditions and construction schedule will allow for these activities. However, scarification and aeration methods may not be feasible to achieve satisfactory proof rolling and stabilization of the cohesive subgrades.

The GB-1 (Now ODOT Geotechnical Design Manual Section 600) analysis indicates options for “planned” subgrade modification consisting of global chemical stabilization using cement to a depth of 14 inches, or over-excavation of unsuitable subgrade soils and replacement with new granular engineered fill. With widening planned for widths generally 12 feet or less, it is not expected that global chemical stabilization equipment could readily access and treat the subgrades. As such, it is planned that subgrade modification for this project include over-excavation and replacement with new granular engineered fill.

5.4 Groundwater Control

Encountered groundwater conditions were previously discussed in Section 4.3. Based on the limited data available, such as the soil characteristics and the groundwater conditions encountered in the borings, it is our opinion that the "normal" groundwater level is anticipated to generally be encountered at depths of 5 feet or greater below existing grades. It should be noted that "perched" water may be encountered in the fill materials or granular soils that are underlain by relatively impermeable native cohesive soils, or at the transition from soil to bedrock (particularly in weathered rock zones).

If construction does not occur during a particularly wet period, adequate control of groundwater seepage into excavations extending only a few feet below the "normal" groundwater level should be achievable by minor dewatering systems, such as pumping from prepared sumps. Even at depths slightly below the "normal" groundwater level, control of groundwater using sumps should be feasible due to the predominantly cohesive nature of the encountered soils and their associated low permeability, but will require due diligence by the contractor to maintain a stable subgrade condition at the bottom of the excavation. If saturated granular soils are encountered, they may require installation of well points in addition to pumping from prepared sumps.

5.5 Excavations and Slopes

The sides of temporary excavations for construction should be adequately sloped to provide stable sides and safe working conditions. Otherwise, the excavation must be properly braced against lateral movements. In any case, applicable Occupational Safety and Health Administration (OSHA) safety standards must be followed.

Based on the test borings, the soils likely to be encountered in shallow excavations may include:

- OSHA Type A soils (cohesive soils with unconfined compressive strengths of 3,000 pounds per square foot (psf) or greater),
- OSHA Type B soils (cohesive soils with unconfined compressive strengths greater than 1,000 psf but less than or equal to 3,000 psf, as well as dry rock that is not stable), and
- OSHA Type C soils (cohesive soils with unconfined compressive strengths less than 1,000 psf, existing fill materials, and granular soils).

Temporary excavations in Type A, B, and C soils should be constructed no steeper than ¾ horizontal to 1 vertical (¾H:1V), 1H:1V, and 1½H:1V, respectively. For situations where a higher strength soil overlies a lower strength soil, and the excavation extends into the lower strength soil, the slope of the entire excavation is governed by that required for the lower strength soil. In all cases, flatter slopes may be required if lower strength soils or adverse seepage conditions are encountered during construction.

For permanent excavations and slopes, we recommend that grades generally be no steeper than 3H:1V. It should be noted that ODOT routinely uses 2H:1V slopes for roadway embankments. While these steeper slopes may be used, it is our experience that the embankment faces on these slopes are more prone to erosion and sloughing.

5.6 Fill

Material for engineered fill or backfill required to achieve design grades should meet ODOT Item 203 "Embankment Fill" placement and compaction requirements. In general, suitable fills may consist of any non-organic soils having a maximum dry density as determined by the Standard Proctor (ASTM D 698) of 90 pounds per cubic foot (pcf) or greater. Additionally, fill utilized to achieve design grades should consist of materials similar to, or better than, the on-site soils. Otherwise, a reduced CBR value may be required for pavement design.

On-site soils may be used as engineered fill materials provided that they are free of organic matter, debris, excessive moisture, and rock or stone fragments larger than 3 inches in diameter. Depending on seasonal conditions, the on-site soils may be wet of optimum and may require scarification and aeration to achieve satisfactory compaction. However, if the construction schedule does not allow for scarification and aeration activities, it may be more practical or economical to utilize imported granular fill.

Fill should be placed in uniform layers not more than 8 inches thick (loose measure) and adequately keyed into stripped and scarified soils. Based on the planned widening, some areas of new embankment fill will require special benching per ODOT GB-2 (Now Geotechnical Design Manual Section 800). The project plans include recommendations regarding special benching. All fill placed within pavement areas should be compacted to a dry density consistent with the requirements of ODOT Item 203, based on the maximum dry density as determined by ASTM D 698.

The on-site soils consist of both cohesive and granular soils. For the cohesive soils, a sheepsfoot roller should provide the most effective soil compaction. For granular soils, as well as dense-graded aggregate pavement base materials, a vibratory smooth-drum roller would be required to provide effective compaction.

Scarified subgrade soils and all fill material should be within 3 percent of the optimum moisture content to facilitate compaction. Furthermore, fill material should not be frozen or placed on a frozen base. It is recommended that all earthwork and site preparation activities be conducted under adequate specifications and properly monitored in the field by a qualified geotechnical testing firm.

6.0 QUALIFICATION OF RECOMMENDATIONS

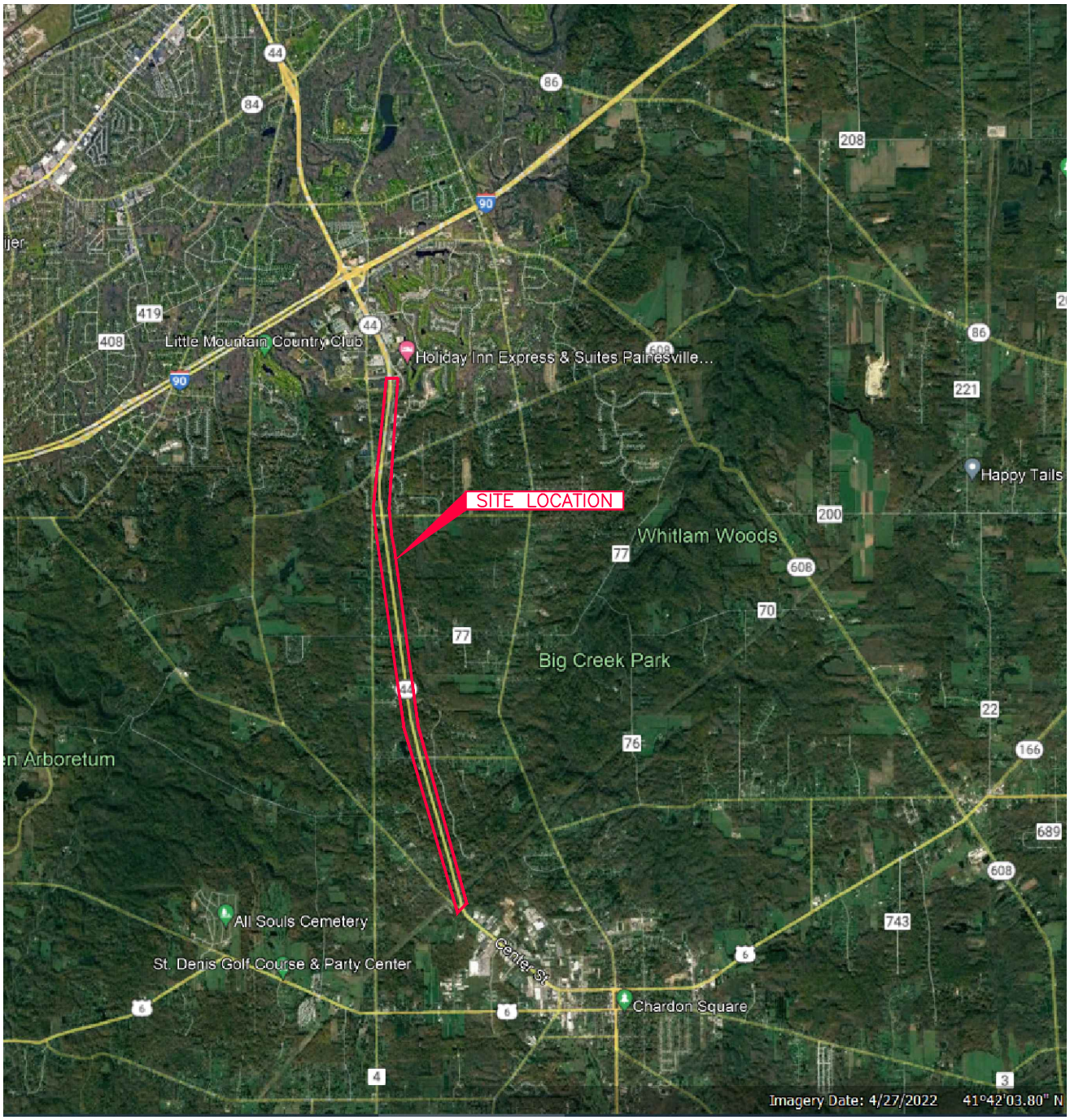
Our evaluation of the pavement design and construction conditions has been based on the data obtained during our field exploration, as well as the criteria in ODOT Geotechnical Bulletin GB-1 "Plan Subgrades" (Now Geotechnical Design Manual Section 600). The general subsurface conditions were based on interpretation of the pavement and subsurface data at specific core/boring locations. Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions between core/borings will differ from those at the boring locations, that conditions at the time of construction are not as anticipated by the designers, or that the construction process has altered the soil conditions. This potential is increased for previously developed sites. Therefore, experienced geotechnical engineers should observe earthwork and pavement construction to confirm that the conditions anticipated in design are noted. Otherwise, TTL assumes no responsibility for construction compliance with the design concepts, specifications, or recommendations.

The design recommendations in this report have been developed on the basis of the previously described project characteristics and subsurface conditions. If project criteria or locations change, TTL should be permitted to determine whether the recommendations must be modified. The findings of such a review will be presented in a supplemental report.

The nature and extent of variations between the borings may not become evident until the course of construction. If such variations are encountered, it will be necessary to reevaluate the recommendations of this report after on-site observations of the conditions.

Our professional services have been performed, our findings derived, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. TTL is not responsible for the conclusions, opinions, or recommendations of others based on this data.

PLATES



LEGEND

APPROXIMATE SITE LOCATION

N

APPROXIMATE SCALE – MILES

0 8 16

PLATE 1.0
SITE LOCATION MAP

INTERSECTION IMPROVEMENTS
GEA/LAK–44–18.45/00.00, PID 114163
CHARDON & CONCORD TOWNSHIPS, GEAUGA & LAKE COUNTY, OH

PREPARED FOR
GDP GROUP
CLEVELAND, OHIO

DRAWN TRR/2–3–23	CHECKED
REVISED	APPROVED
JOB NO. 2279801	
DRAWING NUMBER **2279801–01G**	

TTL associates inc
Environmental, Geotechnical Engineering & Testing

N

Legend

- Approx Southern Project Limit
- Pavement Core Only Location
- Test Boring Location

Auburn Rd

Mentor Rd

44

78

657

B-001
B-002
B-003
B-004
B-005
B-006
B-007
B-008
B-009
B-010
B-011
B-012
B-013
B-014
B-015
B-016
X-016-1
X-016-2
B-017
B-018
B-019
B-020
B-021
B-022
B-023
B

Approx Southern Project Limit

APPROXIMATE SCALE – FEET

0 700 1400

PLATE 2.1
TEST BORING LOCATION PLAN – SOUTH
INTERSECTION IMPROVEMENTS
GEA/LAK–44–18.45/00.00, PID 114163
CHARDON & CONCORD TOWNSHIPS, GEAUGA & LAKE COUNTY, OH

PREPARED FOR
GDP GROUP
CLEVELAND, OHIO

DRAWN TRR/2–3–23	CHECKED
REVISED	APPROVED
JOB NO. 2279801	
DRAWING NUMBER **2279801–02.1G**	

ATL associates inc
Environmental, Geotechnical Engineering & Testing

N

Legend

- Pavement Core Only Location
- Test Boring Location

675

Auburn Rd

B-021
B-022
B-023
B-024
B-025
B-026
B-027
B-028
B-029
X-030-1
B-030
B-031
B-032
B-033
B-034
B-035
B-036
44
B-037
B-038
B-039
B-040
B-041
B-042
B-043
X-044-1
B-044
B-045
B-046
B-062

CAMBDEN CREEK ESTATES

77

APPROXIMATE SCALE – FEET

0 700 1400

PLATE 2.2
TEST BORING LOCATION PLAN – MIDDLE

INTERSECTION IMPROVEMENTS
GEA/LAK–44–18.45/00.00, PID 114163
CHARDON & CONCORD TOWNSHIPS, GEAUGA & LAKE COUNTY, OH

PREPARED FOR
GDP GROUP
CLEVELAND, OHIO

DRAWN TRR/2–3–23	CHECKED
REVISED	APPROVED
JOB NO. 2279801	
DRAWING NUMBER **2279801–02.2G**	

TTL associates inc
Environmental, Geotechnical Engineering & Testing

N

Legend

- Approx Northern Project Boundary
- Pavement Core Only Location
- Test Boring Location

QUAIL HIGHLANDS

Auburn Rd

B-059 Eliminated

X-050-1

B-048

B-049

B-060

B-047

B-061

B-050

B-051

B-052

B-053

B-055

B-054

B-057

B-058

B-046

B-062 Eliminated

B-063

B-064 Eliminated

B-056

Approx Northern Project Boundary

Auburn Rd

X-044-1

B-043

B-041

B-044

B-045

B-042

B-040

039

CAMBDEN CREEK ESTATES

Colburn Rd

Girdled Rd

44

400

APPROXIMATE SCALE – FEET

0 700 1400

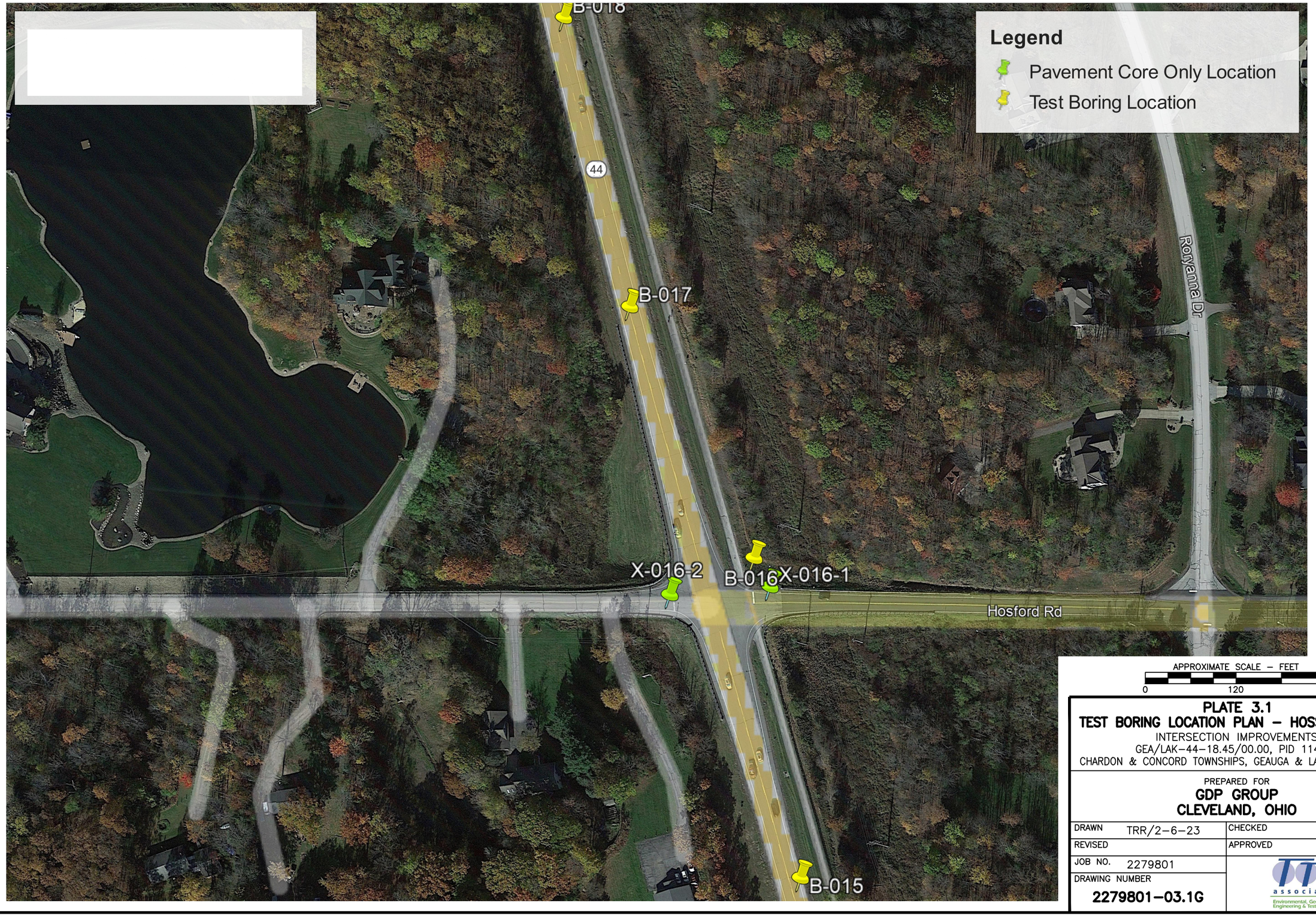
PLATE 2.3
TEST BORING LOCATION PLAN – NORTH

INTERSECTION IMPROVEMENTS
GEA/LAK-44-18.45/00.00, PID 114163
CHARDON & CONCORD TOWNSHIPS, GEAUGA & LAKE COUNTY, OH

PREPARED FOR
GDP GROUP
CLEVELAND, OHIO

DRAWN TRR/2-6-23	CHECKED
REVISED	APPROVED
JOB NO. 2279801	
DRAWING NUMBER **2279801-02.3G**	

TTL associates inc
Environmental, Geotechnical Engineering & Testing



APPROXIMATE SCALE – FEET

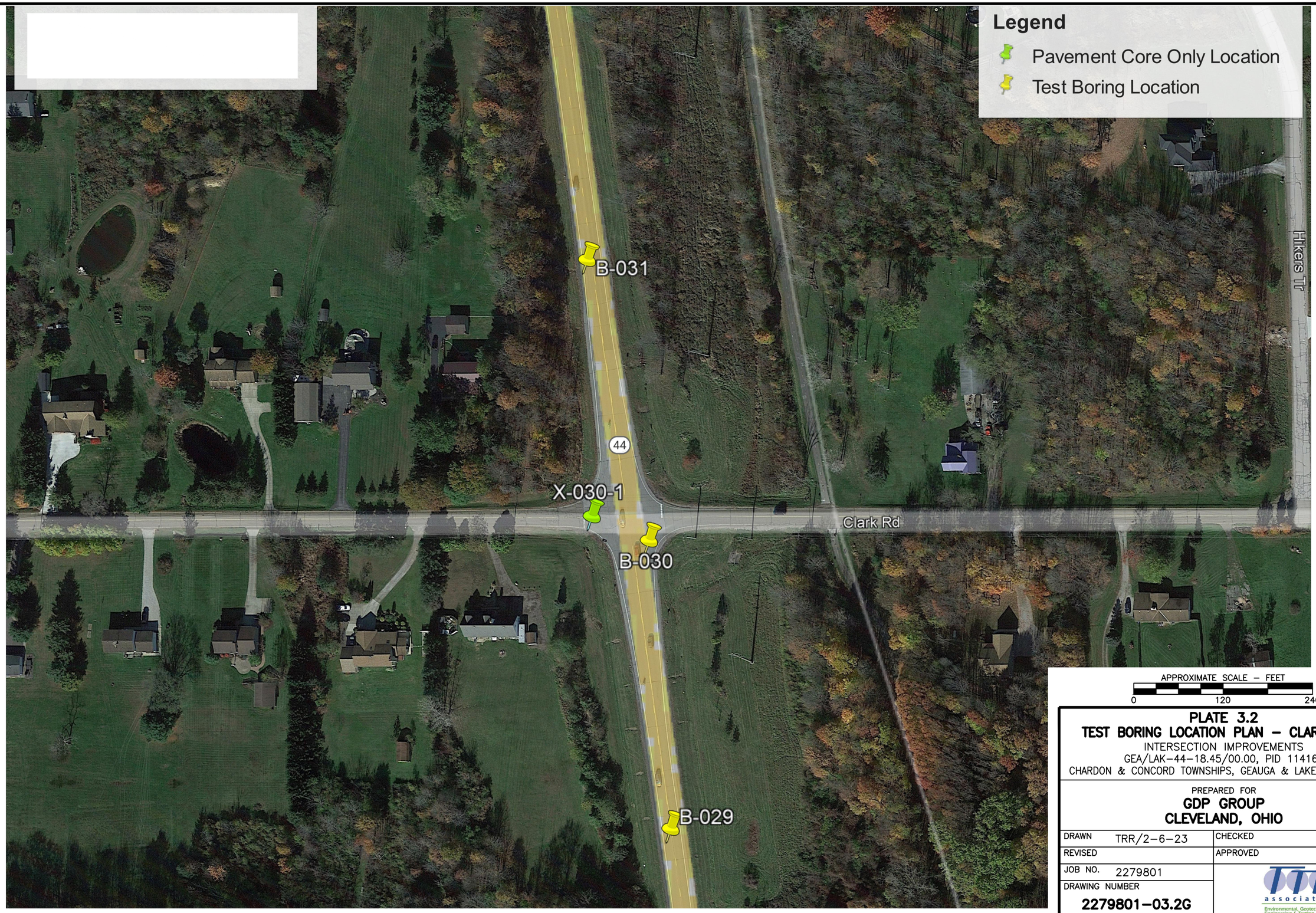
0 120 240

PLATE 3.1
TEST BORING LOCATION PLAN – HOSSFORD ROAD
INTERSECTION IMPROVEMENTS
GEA/LAK–44–18.45/00.00, PID 114163
CHARDON & CONCORD TOWNSHIPS, GEAUGA & LAKE COUNTY, OH

PREPARED FOR
GDP GROUP
CLEVELAND, OHIO

DRAWN TRR/2–6–23	CHECKED
REVISED	APPROVED
JOB NO. 2279801	
DRAWING NUMBER **2279801–03.1G**	

TTL associates inc
Environmental, Geotechnical Engineering & Testing



APPROXIMATE SCALE – FEET

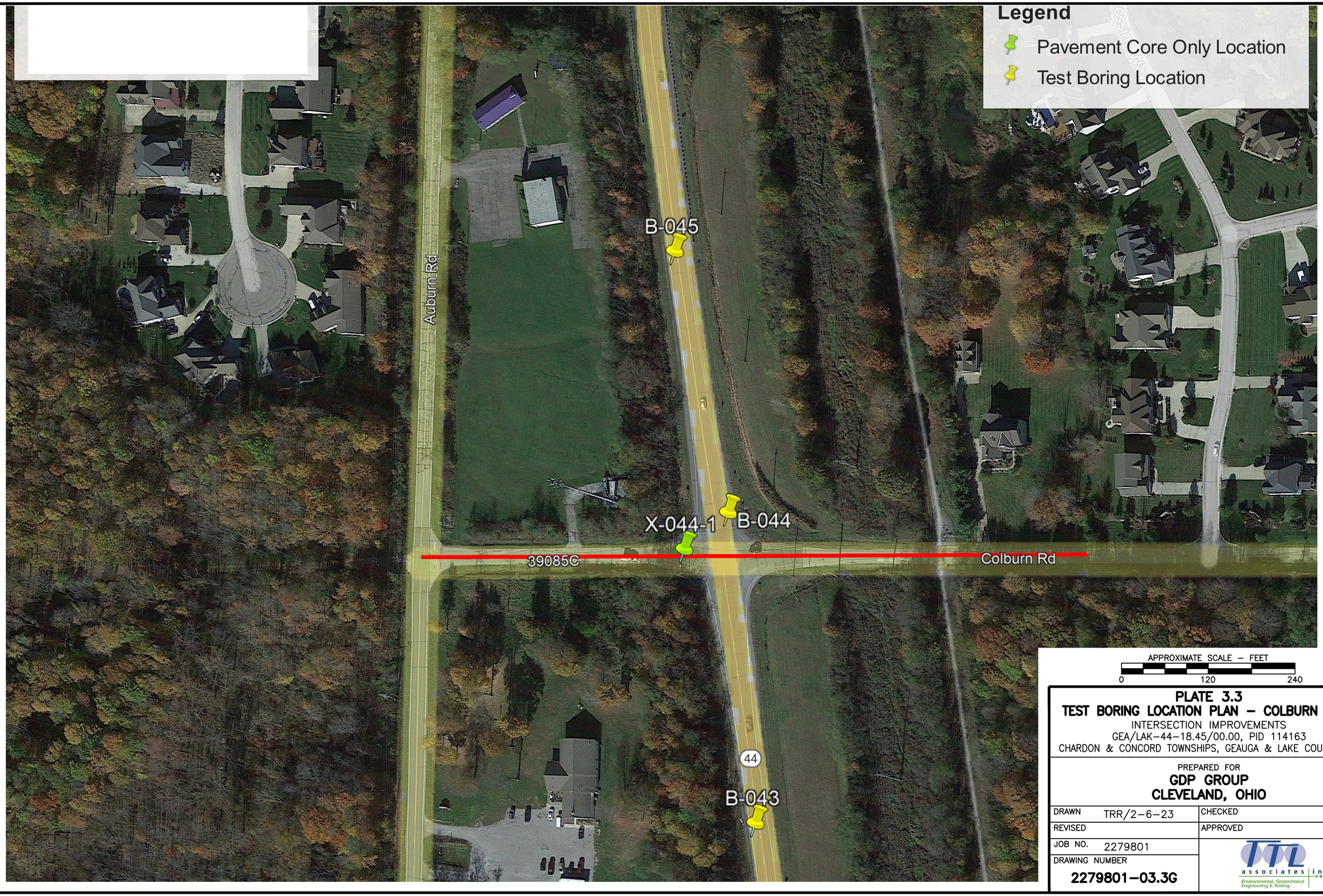
0 120 240

PLATE 3.2
TEST BORING LOCATION PLAN – CLARK ROAD
INTERSECTION IMPROVEMENTS
GEA/LAK–44–18.45/00.00, PID 114163
CHARDON & CONCORD TOWNSHIPS, GEAUGA & LAKE COUNTY, OH

PREPARED FOR
GDP GROUP
CLEVELAND, OHIO

DRAWN TRR/2–6–23	CHECKED
REVISED	APPROVED
JOB NO. 2279801	
DRAWING NUMBER **2279801–03.2G**	

TTL associates inc
Environmental, Geotechnical Engineering & Testing



APPROXIMATE SCALE – FEET

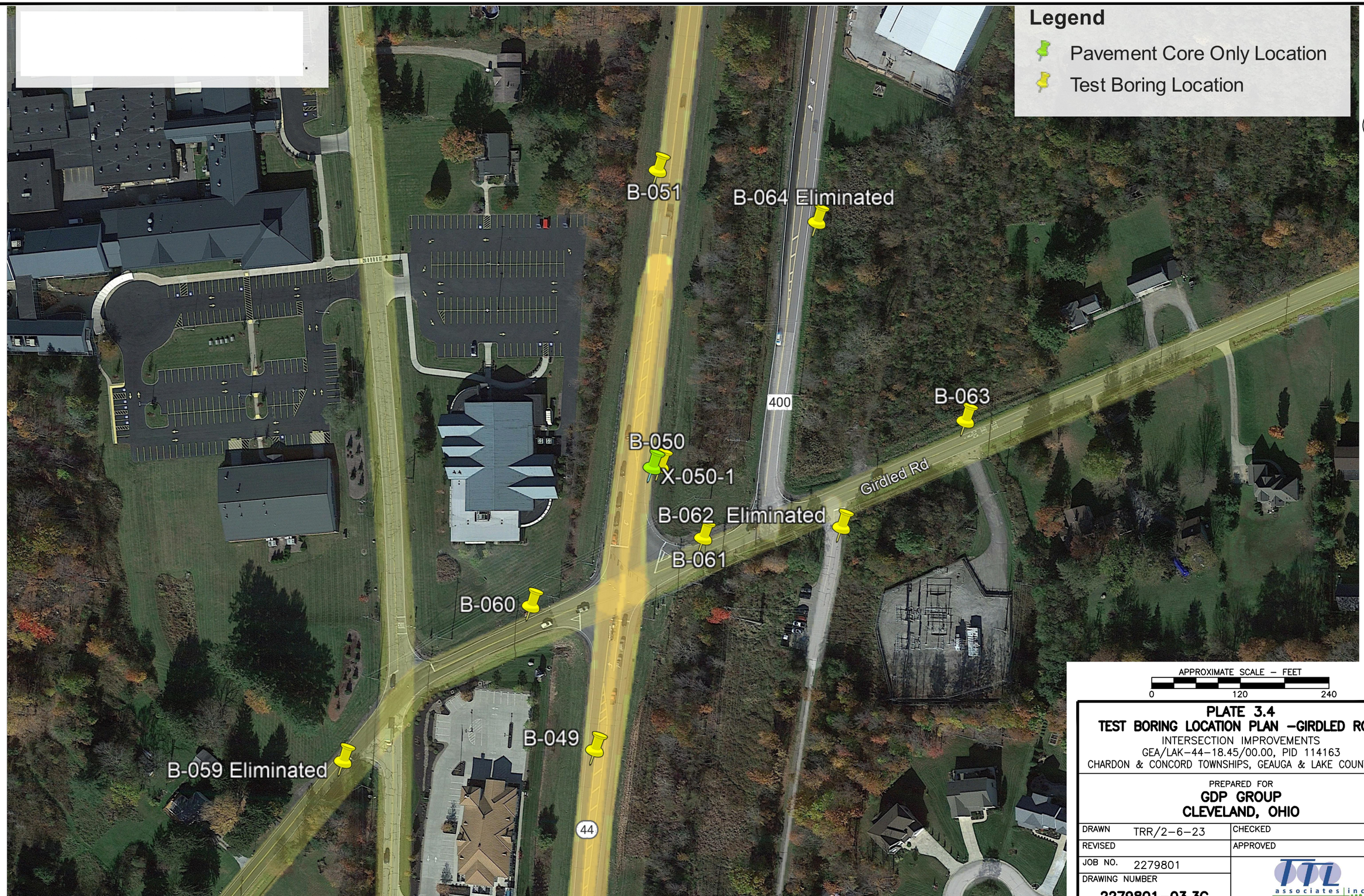
0 120 240

PLATE 3.3
TEST BORING LOCATION PLAN – COLBURN ROAD
INTERSECTION IMPROVEMENTS
GEA/LAK–44–18.45/00.00, PID 114163
CHARDON & CONCORD TOWNSHIPS, GEAUGA & LAKE COUNTY, OH

PREPARED FOR
GDP GROUP
CLEVELAND, OHIO

DRAWN TRR/2–6–23	CHECKED
REVISED	APPROVED
JOB NO. 2279801	
DRAWING NUMBER **2279801–03.3G**	

TTL associates inc
Environmental, Geotechnical Engineering & Testing



APPROXIMATE SCALE – FEET

0 120 240

PLATE 3.4
TEST BORING LOCATION PLAN –GIRDLED ROAD

INTERSECTION IMPROVEMENTS
GEA/LAK–44–18.45/00.00, PID 114163
CHARDON & CONCORD TOWNSHIPS, GEAUGA & LAKE COUNTY, OH

PREPARED FOR
GDP GROUP
CLEVELAND, OHIO

DRAWN TRR/2–6–23	CHECKED
REVISED	APPROVED
JOB NO. 2279801	
DRAWING NUMBER **2279801–03.3G**	

ATL associates inc
Environmental, Geotechnical Engineering & Testing

FIGURES

(INTERSECTIONS BORINGS/CORES)

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 79+05, 10' LT.	EXPLORATION ID B-014-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1178.5 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 710429.6910 N, 2314689.2410 E	

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	BACK FILL
ASPHALT - 6.5 INCHES	1178.5																		
	1178.0																		
CONCRETE - 7.5 INCHES	1177.3	1																	
BROWN, **FINE SAND**, TRACE SILT	1176.9					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
STIFF, GRAY, **SILT AND CLAY**, SOME SAND, TRACE SHALE FRAGMENTS, DAMP		2	3 4 6	11	100	SS-1B	-	6	6	14	21	53	30	17	13	13	A-6a (9)	260	
@3': GRAY/BROWN, LITTLE SAND, MOIST		3	5 6 7	14	100	SS-2	2.00	3	5	10	22	60	33	18	15	19	A-6a (10)	-	
	1173.5					SS-3A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
MEDIUM DENSE, GRAY/BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE CLAY, MOIST	1172.5	5	7 9 11	22	100	SS-3B	-	-	-	-	-	-	-	-	-	14	A-3a (V)	-	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE SHALE FRAGMENTS, DAMP		6	8 10 12	24	100	SS-4	-	-	-	-	-	-	-	-	-	13	A-4a (V)	-	
	1171.0	7 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 82+95, 9' RT.	EXPLORATION ID B-015-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1166.9 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 710809.3970 N, 2314596.3830 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1166.9	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	BACK FILL
ASPHALT - 9.5 INCHES	1166.1																		
AGGREGATE BASE - 7.5 INCHES	1165.5	1																	
LOOSE, BROWN, **SANDY SILT**, TRACE CLAY, TRACE GRAVEL, DAMP	1164.1	2	4 4 5	10	100	SS-1A	-	6	34	18	34	8	NP	NP	NP	7	A-4a (1)	-	
MEDIUM STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, TRACE SHALE FRAGMENTS, DAMP	1163.6	3				SS-1B	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
						SS-2A	-	4	15	10	40	31	24	16	8	14	A-4a (7)	-	
LOOSE, BROWN, **COARSE AND FINE SAND**, SOME CLAY, LITTLE SILT, MOIST	1161.9	4	3 4 3	8	100	SS-2B	-	-	-	-	-	-	-	-	-	12	A-6a (V)	<100	
						SS-3A	-	-	-	-	-	-	-	-	-	-	A-3a (V)	-	
MEDIUM DENSE, BROWN, **FINE SAND**, TRACE SILT	1161.6	5	5 7 12	21	100	SS-3B	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, SOME GRAVEL, DAMP	1160.9					SS-3C	-	-	-	-	-	-	-	-	-	9	A-6a (V)	-	
HARD, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1159.4	6 7 EOB	16 20 21	45	100	SS-4	4.50	-	-	-	-	-	-	-	-	12	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 87+11, 59' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1152.8 (NAVD88) EOB: 10.0 ft.
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 711222.7960 N, 2314525.2730 E

EXPLORATION ID B-016-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1152.8	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	BACK FILL
TOPSOIL - 3 INCHES	1152.5																		
HARD, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1149.3	1	3 5 8	14	100	SS-1	4.50	8	8	14	23	47	26	15	11	11	A-6a (7)	260	
STIFF, BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, TRACE SHALE FRAGMENTS, MOIST	1146.1	4	1 2 3	6	100	SS-2	1.25	3	9	9	22	57	29	17	12	18	A-6a (9)	-	
VERY STIFF, GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP	1144.3	6	3 4 6	11	100	SS-3A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
						SS-3B	2.50	-	-	-	-	-	-	-	-	16	A-6b (V)	-	
VERY STIFF, GRAY/BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP	1142.8	9	8 13 11	26	100	SS-4	-	-	-	-	-	-	-	-	-	14	A-6a (V)	-	
		EOB 10																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 0.5 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 90+74, 9' LT.	EXPLORATION ID B-017-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1143.5 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 711551.2100 N, 2314356.5910 E	

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	BACK FILL
ASPHALT - 7 INCHES	1143.5																		
	1142.9																		
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP		1																	
		2	7 8 7	17	100	SS-1A	-	6	49	26	17	2	NP	NP	NP	5	A-1-b (0)	-	
						SS-1B	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	<100	
	1140.3	3				SS-2A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
HARD, BROWN/GRAY, **SANDY SILT**, AND CLAY, TRACE SHALE FRAGMENTS, TRACE GRAVEL, DAMP			2 3 3	7	100	SS-2B	4.25	9	10	8	36	37	23	15	8	12	A-4a (8)	-	
	1138.7	4				SS-3A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
MEDIUM DENSE, BROWN, **FINE SAND**, TRACE GRAVEL, TRACE SILT, DAMP		5	4 5 8	14	100	SS-3B	-	-	-	-	-	-	-	-	-	5	A-3 (V)	-	
	1137.0	6				SS-4A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
VERY STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP		7	10 10 9	21	100	SS-4B	2.75	-	-	-	-	-	-	-	-	14	A-6a (V)	-	
	1136.0	EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 94+69, 10' RT.	EXPLORATION ID B-018-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1131.7 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 711936.3950 N, 2314269.4880 E	

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	BACK FILL
ASPHALT - 6 INCHES	1131.2																		
CONCRETE - 11 INCHES	1130.3	1																	
LOOSE, BROWN, **FINE SAND**, TRACE SILT, MOIST (P.S.)	1129.5	2	3 6 10	18	100	SS-1A	-	-	-	-	-	-	-	-	-	12	A-3 (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, TRACE SHALE FRAGMENTS, DAMP						SS-1B	-	6	8	13	25	48	28	17	11	14	A-6a (8)	260	
@3.5': HARD		3 4	8 12 18	33	100	SS-2	-	4	10	19	26	41	28	17	11	13	A-6a (7)	-	
@5.2': GRAY, LITTLE SANDSTONE FRAGMENTS		5	18 20 22	46	100	SS-3	-	-	-	-	-	-	-	-	-	12	A-6a (V)	-	
@6': LITTLE GRAVEL		6 7	16 21 26	52	100	SS-4	-	-	-	-	-	-	-	-	-	12	A-6a (V)	-	
	1124.2	EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 133+59, 9' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1118.3 (NAVD88) EOB: 7.5 ft.
START: 12/19/22 END: 12/19/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 715762.6270 N, 2313581.7020 E

EXPLORATION ID B-028-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1118.3	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	BACK FILL
ASPHALT - 6 INCHES	1117.8																		
CONCRETE - 10 INCHES	1117.0	1																	
BROWN, **FINE SAND**, TRACE SILT	1116.5					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
MEDIUM STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST	1115.1	2	2 2 5	8	100	SS-1B	-	7	8	14	21	50	27	16	11	17	A-6a (8)	260	
		3				SS-2A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, DAMP		4	7 12 12	26	100	SS-2B	-	39	21	9	27	4	19	17	2	7	A-2-4 (0)	-	
@4.8': GRAY/BROWN	1112.3	5	12 6 6	13	100	SS-3	-	-	-	-	-	-	-	-	-	5	A-2-4 (V)	-	
DENSE, BROWN, **FINE SAND**, LITTLE GRAVEL, TRACE SILT, DAMP	1110.8	6 7	7 17 20	41	100	SS-4	-	-	-	-	-	-	-	-	-	7	A-3 (V)	-	
		EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 137+44, 12' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1116.3 (NAVD88) EOB: 7.5 ft.
START: 12/19/22 END: 12/19/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 716139.7470 N, 2313501.4920 E

EXPLORATION ID B-029-0-22

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	BACK FILL
ASPHALT - 9 INCHES	1115.5																		
AGGREGATE BASE - 19 INCHES	1114.0	1																	
STIFF, GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, TRACE SHALE FRAGMENTS, DAMP	1113.3	2	5 6 7	14	100	SS-1A	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	-	
						SS-1B	-	1	16	20	42	21	24	15	9	14	A-4a (6)	-	
MEDIUM STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST		3	2 3 4	8	100	SS-2	-	8	4	13	21	54	30	18	12	19	A-6a (9)	260	
@4.5': STIFF, BROWN/GRAY	1110.8	4																	
VERY STIFF, GRAY, **SILT**, SOME CLAY, TRACE GRAVEL, TRACE SAND, DAMP		5	5 10 10	22	100	SS-3A	1.75	-	-	-	-	-	-	-	-	21	A-6a (V)	-	
						SS-3B	3.50	-	-	-	-	-	-	-	-	17	A-4b (V)	-	
@6': MOIST		6	10 13 13	29	100	SS-4	-	-	-	-	-	-	-	-	-	24	A-4b (V)	-	
	1108.8	7 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 141+29, 28' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1111.7 (NAVD88) EOB: 7.5 ft.
START: 12/19/22 END: 12/19/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 716525.6900 N, 2313481.4950 E

EXPLORATION ID B-030-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1111.7	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	BACK FILL
ASPHALT - 7.5 INCHES	1111.1																		
CONCRETE - 9.5 INCHES	1110.3	1																	
BROWN, **FINE SAND**, TRACE SILT	1110.0					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
MEDIUM STIFF, GRAY/BROWN, **SANDY SILT**, AND CLAY, TRACE GRAVEL, DAMP	1108.4	2	2 2 3	6	100	SS-1B	-	8	3	8	43	38	27	17	10	15	A-4a (8)	250	
		3				SS-2A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
VERY STIFF, GRAY/BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, TRACE SHALE FRAGMENTS, DAMP		4	3 5 10	17	100	SS-2B	3.25	2	6	10	22	60	31	17	14	15	A-6a (10)	-	
@4.5': BROWN/GRAY, MOIST		5	4 10 10	22	56	SS-3	3.75	-	-	-	-	-	-	-	-	20	A-6a (V)	-	
@6.1': DAMP		6																	
	1104.2	7 EOB	7 11 11	24	100	SS-4	-	-	-	-	-	-	-	-	-	15	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 145+13, 17' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1105.7 (NAVD88) EOB: 7.5 ft.
START: 12/19/22 END: 12/19/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 716898.1090 N, 2313378.1170 E

EXPLORATION ID B-031-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1105.7	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	BACK FILL
ASPHALT - 7 INCHES	1105.1																		
CONCRETE - 9 INCHES	1104.4																		
LOOSE, BROWN, **FINE SAND**, TRACE SILT, DAMP	1103.9					SS-1A	-	-	-	-	-	-	-	-	-	9	A-3 (V)	140	
STIFF, BROWN, **SANDY SILT**, LITTLE GRAVEL, LITTLE CLAY, DAMP	1102.7		4 4 4	9	61	SS-1B	-	15	28	9	37	11	20	16	4	12	A-4a (3)	-	
VERY STIFF, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST			2 4 8	13	100	SS-2	2.75	1	6	20	22	51	31	19	12	20	A-6a (8)	260	
@4.6': GRAY/BROWN, SOME SANDSTONE FRAGMENTS, DAMP			5 6 7	14	100	SS-3	-	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
@6.8': BROWN	1098.2	EOB	9 9 9	20	100	SS-4	3.25	-	-	-	-	-	-	-	-	16	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:55 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 149+01, 10' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1100.2 (NAVD88) EOB: 7.5 ft.
START: 12/19/22 END: 12/19/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 717285.9060 N, 2313344.3620 E

EXPLORATION ID B-032-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1100.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ASPHALT - 5.5 INCHES	1099.8																		
CONCRETE - 9 INCHES	1099.0																		
BROWN, **FINE SAND**, TRACE SILT	1098.6					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
HARD, GRAY/BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST	1097.2		2 3 3	7	100	SS-1B	4.25	1	7	25	27	40	30	17	13	17	A-6a (8)	240	
HARD, GRAY/BROWN, **SILTY CLAY**, AND SAND, MOIST			3 4 8	13	100	SS-2	4.50	0	10	26	29	35	34	17	17	19	A-6b (9)	-	
@4.5': VERY STIFF	1095.2					SS-3A	3.75	-	-	-	-	-	-	-	-	13	A-6b (V)	-	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE CLAY, LITTLE GRAVEL, TRACE SILT, MOIST	1094.2		8 9 10	21	100	SS-3B	-	-	-	-	-	-	-	-	-	14	A-3a (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, TRACE SHALE FRAGMENTS, DAMP	1092.7	EOB	11 11 11	24	100	SS-4	3.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 187+86, 11' RT.	EXPLORATION ID B-042-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1058.7 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/20/22 END: 12/20/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 721124.4230 N, 2312745.6970 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1058.7	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	BACK FILL
ASPHALT - 8 INCHES	1058.0																		
AGGREGATE BASE - 7 INCHES	1057.4	1																	
MEDIUM DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP (CRUSHED STONE) FILL		2	4 6 10	18	100	SS-1	-	15	39	32	11	3	NP	NP	NP	6	A-1-b (0)	<100	
@3'; LOOSE, TRACE SILT		3	3 3 3	7	100	SS-2	-	12	42	37	7	2	NP	NP	NP	6	A-1-b (0)	-	
	1053.2	4																	
	W 1053.2	5	3 2 1	3	100	SS-3A	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	-	
						SS-3B	-	-	-	-	-	-	-	-	-	15	A-6b (V)	-	
SOFT, RED/BROWN, **SILTY CLAY**, LITTLE CRUSHED STONE, LITTLE BRICK FRAGMENTS, DAMP FILL	1052.5	6				SS-4A	-	-	-	-	-	-	-	-	-	-	A-6b (V)	-	
HARD, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE CRUSHED STONE, TRACE BRICK FRAGMENTS, DAMP FILL	1051.2	7	9 14 19	36	100	SS-4B	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 16:29 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 191+74, 14' LT.	EXPLORATION ID B-043-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1054.2 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/20/22 END: 12/20/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 721503.9850 N, 2312662.0500 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1054.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ASPHALT - 7 INCHES	1053.6																		
CONCRETE - 8 INCHES	1052.9	1																	
LOOSE, BROWN, **FINE SAND**, TRACE SILT, MOIST (FS)	1052.3					SS-1A	-	-	-	-	-	-	-	-	-	12	A-3 (V)	-	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE SANDSTONE FRAGMENTS, TRACE CLAY, TRACE SHALE FRAGMENTS, DAMP		2	4 6 14	22	100	SS-1B	-	19	8	27	42	4	20	15	5	11	A-4a (2)	250	
@3.3': HARD, TRACE SANDSTONE FRAGMENTS	1049.7	3 4	4 8 12	22	100	SS-2	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
HARD, GRAY/BROWN, **SANDY SILT**, "AND" CLAY, TRACE GRAVEL, DAMP	1048.2	5	20 20 20	44	100	SS-3	-	1	10	16	36	37	28	18	10	15	A-4a (8)	-	
HARD, GRAY, **SILT AND CLAY**, LITTLE GRAVEL, LITTLE SAND, DAMP	1046.7	6 7 EOB	20 12 6	20	100	SS-4	4.50	-	-	-	-	-	-	-	-	12	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 196+00, 21' RT.	EXPLORATION ID B-044-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1046.8 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 721930.2460 N, 2312630.4430 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1046.8	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	BACK FILL
ASPHALT - 4.5 INCHES	1046.4																		
CONCRETE - 9.25 INCHES	1045.7																		
BROWN, **FINE SAND**, TRACE SILT	1045.2					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP			3 4 8	13	100	SS-1B	-	1	18	21	44	16	24	17	7	14	A-4a (5)	-	
	1043.8					SS-1C	-	-	-	-	-	-	-	-	-	-	A-4a (V)	130	
HARD, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP						SS-2A	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	-	
			6 8 11	21	100	SS-2B	-	8	12	22	43	15	25	18	7	12	A-4a (5)	250	
	1042.1					SS-3A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
VERY STIFF, BROWN, **SILT**, SOME CLAY, LITTLE SAND, TRACE SHALE FRAGMENTS, DAMP						SS-3B	3.00	-	-	-	-	-	-	-	-	15	A-4b (V)	-	
@5.3': LITTLE SANDSTONE FRAGMENTS. LITTLE GRAVEL			6 11 13	26	100	SS-3C	-	-	-	-	-	-	-	-	-	-	A-4b (V)	-	
			9 9 9	20	100	SS-4	-	-	-	-	-	-	-	-	-	13	A-4b (V)	-	
	1039.3	EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - K:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 199+67, 13' LT.	EXPLORATION ID B-045-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1039.2 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 722287.6470 N, 2312539.8630 E	

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	BACK FILL
ASPHALT - 12 INCHES	1039.2																		
	1038.2																		
BROWN, **FINE SAND**, TRACE SILT	1037.9																		
STIFF, BROWN, **SILT AND CLAY**, SOME SANDSTONE FRAGMENTS, LITTLE SAND, DAMP			4 5 6	12	100	SS-1	-	30	9	9	33	19	27	16	11	11	A-6a (4)	260	
@3': VERY STIFF	1035.9	W 1035.9				SS-2A	2.50	-	-	-	-	-	-	-	-	12	A-6a (V)	-	
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE SANDSTONE FRAGMENTS, TRACE SHALE FRAGMENTS, DAMP			4 6 8	15	100	SS-2B	3.00	4	11	20	45	20	24	18	6	17	A-4a (6)	-	
	1034.5					SS-3A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
MEDIUM DENSE, BROWN, **FINE SAND**, TRACE SILT, DAMP	1033.9		8 8 8	18	100	SS-3B	-	-	-	-	-	-	-	-	-	9	A-3 (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, LITTLE SHALE FRAGMENTS, DAMP						SS-3C	-	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
	1032.2	TR	13 23 33	62	100	SS-4A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
SANDSTONE, BROWN/GRAY, SEVERELY TO HIGHLY WEATHERED.	1031.7	EOB				SS-4B	-	-	-	-	-	-	-	-	-	10	Rock (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 203+61, 10' RT.	EXPLORATION ID B-046-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1030.5 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 722681.0170 N, 2312512.2300 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1030.5	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	BACK FILL
ASPHALT - 11 INCHES	1029.6																		
AGGREGATE BASE - 4 INCHES	1029.2																		
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP		1	4 6 9	17	100	SS-1A	-	1	25	55	17	2	NP	NP	NP	10	A-3a (0)	-	
	1027.5	2				SS-1B	-	-	-	-	-	-	-	-	-	-	A-3a (V)	<100	
LOOSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, DAMP		3	3 3 3	7	100	SS-2	-	7	45	40	6	2	NP	NP	NP	6	A-1-b (0)	<100	
	1025.1	4	2 4 6	11	100	SS-3A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
STIFF, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP		5				SS-3B	-	-	-	-	-	-	-	-	-	13	A-6a (V)	-	
@6.3': VERY STIFF, LITTLE GRAVEL		6	8 9 9	20	100	SS-4	-	-	-	-	-	-	-	-	-	14	A-6a (V)	-	
	1023.0 EOB	7																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 207+53, 11' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1022.8 (NAVD88) EOB: 7.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 723071.5910 N, 2312466.8790 E

EXPLORATION ID B-047-0-22

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	BACK FILL
ASPHALT - 5.25 INCHES	1022.8																		
	1022.4																		
CONCRETE - 8.5 INCHES	1021.7	1																	
BROWN, **FINE SAND**, TRACE SILT	1021.2					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1019.8	2	4 4 7	12	100	SS-1B	-	4	8	14	25	49	28	16	12	14	A-6a (9)	270	
HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST	1019.5	3				SS-2A	4.50	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
VERY STIFF, BLACK/BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE ORGANICS, MOIST			4 8 10	20	100	SS-2B	-	0	5	13	24	58	33	19	14	21	A-6a (10)	-	
@4.5': STIFF, DAMP	1018.1	4				SS-3A	1.75	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
HARD, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, LITTLE SANDSTONE FRAGMENTS, DAMP		5	12 18 24	46	67	SS-3B	-	-	-	-	-	-	-	-	-	12	A-6a (V)	-	
	1016.3	6				SS-4A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
HARD, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1015.3	7	20 35 35	77	83	SS-4B	-	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
		EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 211+39, 9' RT.	EXPLORATION ID B-048-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1016.8 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 723457.5490 N, 2312490.0160 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1016.8	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	BACK FILL
ASPHALT - 7 INCHES	1016.2																		
CONCRETE - 9 INCHES	1015.5																		
BROWN, **FINE SAND**, TRACE SILT	1015.1					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
STIFF, BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST			5 2 2	4	100	SS-1B	1.75	1	4	12	22	61	31	17	14	22	A-6a (10)	-	
						SS-1C	-	-	-	-	-	-	-	-	-	-	A-6a (V)	160	
	1013.5					SS-2A	2.00	-	-	-	-	-	-	-	-	26	A-6a (V)	-	
VERY STIFF, GRAY/BROWN, **SILT AND CLAY**, LITTLE SAND, MOIST	1012.3		2 3 8	12	100	SS-2B	3.00	0	2	9	21	68	34	21	13	22	A-6a (9)	270	
HARD, GRAY/BROWN, **SILT AND CLAY**, LITTLE SAND, DAMP			11 12 13	28	100	SS-3A	4.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
@5.1': BROWN, SOME SAND, TRACE GRAVEL	1010.8					SS-3B	4.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
HARD, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, TRACE SHALE FRAGMENTS, DAMP	1009.3	EOB	11 18 18	40	100	SS-4	-	-	-	-	-	-	-	-	-	15	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 215+31, 14' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1012.6 (NAVD88) EOB: 7.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 723849.9680 N, 2312495.1650 E

EXPLORATION ID B-049-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1012.6	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	BACK FILL
ASPHALT - 7 INCHES	1012.0																		
CONCRETE - 8 INCHES	1011.3																		
BROWN, **FINE SAND**, TRACE SILT	1010.9					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	1009.6		3 3 5	9	100	SS-1B	-	1	7	14	43	35	29	20	9	16	A-4a (8)	260	
STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP						SS-2A	1.50	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
@3.5': LITTLE SAND, MOIST	1008.1		2 3 4	8	100	SS-2B	2.25	2	5	13	23	57	33	19	14	19	A-6a (10)	-	
VERY STIFF, GRAY/BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	1006.6		7 8 9	19	100	SS-3	2.50	-	-	-	-	-	-	-	-	22	A-6b (V)	-	
VERY STIFF, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST	1005.1	EOB	10 12 14	29	100	SS-4	2.50	-	-	-	-	-	-	-	-	21	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 219+24, 27' RT.	EXPLORATION ID B-050-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1007.3 (NAVD88) EOB: 6.9 ft.	PAGE 1 OF 1
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 724235.9200 N, 23125798.7400 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1007.3	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	BACK FILL
TOPSOIL - 2 INCHES	1007.1																		
MEDIUM DENSE, BLACK, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, LITTLE SLAG FRAGMENTS, LITTLE CINDERS, MOIST (CRUSHED STONE) FILL	1006.5		9 6 6	13	89	SS-1A	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	-	
	1006.0	1				SS-1B	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
MEDIUM DENSE, BROWN, **FINE SAND**, TRACE SILT FILL						SS-1C	1.75	2	5	6	20	67	37	21	16	20	A-6b (10)	-	
STIFF, GRAY/BROWN, **SILTY CLAY**, LITTLE SAND, TRACE CRUSHED STONE, DAMP FILL	1005.5					SS-2A	2.00	-	-	-	-	-	-	-	-	14	A-6b (V)	-	
STIFF, BLACK/BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE SLAG FRAGMENTS, TRACE CRUSHED STONE, MOIST FILL		2	3 3 3	7	100	SS-2B	2.00	4	10	8	22	56	33	20	13	20	A-6a (9)	270	
	1004.0	3				SS-3A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
VERY STIFF, GRAY/DARK BROWN, **SILT AND CLAY**, LITTLE SAND, MOIST		4	3 4 5	10	100	SS-3B	2.50	0	3	8	21	68	33	22	11	24	A-6a (8)	-	
@4.8': GRAY/BROWN	1001.3	5	3 6 8	15	100	SS-4	4.00	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
VERY STIFF TO HARD, GRAY/BROWN, **SANDY SILT**, LITTLE CLAY, TRACE SANDSTONE FRAGMENTS, TRACE GRAVEL, DAMP	1000.4	6	17 50/5"	-	100	SS-5	-	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
		EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 223+25, 23' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1002.4 (NAVD88) EOB: 7.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 724640.3740 N, 2312571.0770 E

EXPLORATION ID B-051-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1002.4	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	BACK FILL
TOPSOIL - 4 INCHES	1002.1																		
BROWN, **FINE SAND**, TRACE SILT	1001.8					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
VERY STIFF, BROWN/DARK BROWN, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, TRACE ORGANICS, TRACE SHALE FRAGMENTS, MOIST @1.5': DAMP		1	5 6 7	14	89	SS-1B	2.50	10	14	8	36	32	28	19	9	21	A-4a (7)	-	
	1000.1	2	2 3 5	9	100	SS-2A	2.00	-	-	-	-	-	-	-	-	16	A-4a (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	999.3					SS-2B	3.00	1	5	13	26	55	35	21	14	21	A-6a (10)	270	
STIFF, ORANGE/BROWN, **SILTY CLAY**, LITTLE SAND, TRACE SANSTONE FRAGMENTS, DAMP	998.3	3	2 4 50/2"	-	71	SS-3	-	4	4	8	19	65	38	22	16	19	A-6b (10)	-	
SANDSTONE, ORANGE/BROWN, SEVERELY TO HIGHLY WEATHERED, TRACE SHALE FRAGMENTS.		TR 4																	
		5	25 50/2"	-	100	SS-4	-	-	-	-	-	-	-	-	-	12	Rock (V)	-	
@7': BROWN, LITTLE SHALE FRAGMENTS	994.9	6 7 EOB	25 35 35	77	83	SS-5	-	-	-	-	-	-	-	-	-	8	Rock (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 227+04, 10' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 998.5 (NAVD88) EOB: 6.1 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 725014.1520 N, 2312644.1810 E

EXPLORATION ID B-052-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 998.5	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	BACK FILL
ASPHALT - 7 INCHES	997.9																		
CONCRETE - 8 INCHES	997.2	1																	
BROWN, **FINE SAND**, TRACE SILT	996.8					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
VERY STIFF, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, DAMP		2	4 5 6	12	89	SS-1B	3.50	0	6	14	27	53	33	20	13	16	A-6a (9)	-	
						SS-1C	-	-	-	-	-	-	-	-	-	-	A-6a (V)	160	
@3': GRAY/BROWN, LITTLE SAND, TRACE SANDSTONE FRAGMENTS	994.0	3 4	3 7 8	17	100	SS-2	-	8	8	6	19	59	31	19	12	17	A-6a (9)	250	
SANDSTONE, BROWN, SEVERELY TO HIGHLY WEATHERED, TRACE SHALE FRAGMENTS.	992.4	TR 5	45 50/3"	-	100	SS-3	-	-	-	-	-	-	-	-	-	9	Rock (V)	-	
		EOB 6	50/1"	-	100	SS-4	-	-	-	-	-	-	-	-	-	5	Rock (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 231+11, 10' LT.	EXPLORATION ID B-053-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 993.7 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 725420.4560 N, 2312667.9170 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 993.7	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	BACK FILL
ASPHALT - 5.5 INCHES	993.2																		
CONCRETE - 8.5 INCHES	992.5	1																	
BROWN, **FINE SAND**, TRACE SILT	992.1					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
STIFF, BROWN/GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE ORGANICS, MOIST	990.7	2	2 2 3	6	100	SS-1B	1.50	0	4	8	23	65	34	20	14	24	A-6a (10)	270	
VERY STIFF, BROWN, **SILTY CLAY**, LITTLE GRAVEL, LITTLE SAND, TRACE SANDSTONE FRAGMENTS, DAMP		3	8 8 9	19	100	SS-2	3.00	14	5	10	18	53	32	19	13	16	A-6a (8)	-	
@4.5': BROWN/GRAY, TRACE WOOD		4 5	5 6 6	13	100	SS-3	3.50	-	-	-	-	-	-	-	-	23	A-6b (V)	-	
@5.9': TRACE GRAVEL		6	16 14 12	29	100	SS-4	-	-	-	-	-	-	-	-	-	26	A-6b (V)	-	
	986.2	EOB 7																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 102+18, 10' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: GIRDLED RD
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1006.2 (NAVD88) EOB: 7.5 ft.
START: 12/22/22 END: 12/22/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 724042.1640 N, 2312421.6920 E

EXPLORATION ID B-060-0-22

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	BACK FILL
ASPHALT - 6.75 INCHES	1006.2																		
	1005.6																		
AGGREGATE BASE - 8.25 INCHES	1004.9	1																	
BROWN, **FINE SAND**, TRACE SILT FILL	1004.5					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE CRUSHED STONE, DAMP FILL	1003.2	2	15 10 10	22	100	SS-1B	-	9	15	21	40	15	24	16	8	14	A-4a (4)	260	
VERY STIFF, BLACK/BROWN, **SILTY CLAY**, LITTLE CRUSHED STONE, LITTLE ASPHALT FRAGMENTS, LITTLE SAND, DAMP FILL	1002.7	3	10 50/2"	-	100	SS-2	-	-	-	-	-	-	-	-	-	12	A-6b (V)	-	
BURIED ASPHALT - 6 INCHES	1002.2	4																	
VERY STIFF, BROWN/GRAY, **SILTY CLAY**, SOME SAND, LITTLE GRAVEL, TRACE SANDSTONE FRAGMENTS, MOIST	1000.2	5	4 4 6	11	100	SS-3	2.25	11	6	15	21	47	34	17	17	20	A-6b (9)	-	
HARD, BROWN, **SANDY SILT**, LITLE CLAY, TRACE GRAVEL, DAMP	998.7	6 7 EOB	8 10 12	24	100	SS-4	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 104+56, 15' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: GIRDLED RD
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1008.5 (NAVD88) EOB: 7.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 724142.7340 N, 2312637.1760 E

EXPLORATION ID B-061-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1008.5	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	BACK FILL
ASPHALT - 3.75 INCHES	1008.2																		
CONCRETE - 8.5 INCHES	1007.5	1																	
BROWN, **FINE SAND**, TRACE SILT FILL	1007.1																		
LOOSE, BROWN/GRAY, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT**, TRACE CLAY, DAMP (CRUSHED STONE) FILL	1005.9	2	3 4 13	19	89	SS-1A	-	33	17	16	30	4	19	17	2	9	A-2-4 (0)	270	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE SANDSTONE FRAGMENTS, TRACE GRAVEL, DAMP		3				SS-1B	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
			5 6 13	21	100	SS-2A	4.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
@3.8': BROWN/GRAY, SOME SANDSTONE FRAGMENTS, LITTLE SAND		4				SS-2B	4.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
		5	14 24 24	53	100	SS-3	-	21	8	6	16	49	33	20	13	13	A-6a (7)	-	
		6	18 26 30	62	100	SS-4	4.00	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
	1001.0	7 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 108+46, 9' LT.	EXPLORATION ID B-063-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: GIRDLED RD	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1014.8 (NAVD88) EOB: 5.6 ft.	PAGE 1 OF 1
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 724295.2480 N, 2312996.3880 E	

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	BACK FILL
ASPHALT - 6 INCHES	1014.8																		
	1014.3																		
AGGREGATE BASE - 7 INCHES	1013.7	1				SS-1A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
VERY STIFF, GRAY/BLACK, **SANDY SILT**, SOME CRUSHED STONE, LITTLE ASPHALT FRAGMENTS, TRACE CLAY, DAMP FILL		2	30 8 8	18	100	SS-1B	-	33	16	11	36	4	28	19	9	13	A-4a (1)	270	
	1012.1	3																	
VERY STIFF, BROWN/GRAY, **SILT AND CLAY**, LITTLE SANDSTONE FRAGMENTS, LITTLE SAND, WET	1010.8	TR 4	8			SS-2A	2.75	-	-	-	-	-	-	-	-	42	A-6a (V)	-	
SANDSTONE, BROWN, SEVERELY TO HIGHLY WEATHERED.			24 50/3"	-	93	SS-2B	-	-	-	-	-	-	-	-	-	10	Rock (V)	-	
	1009.2	EOB 5																	

NOTES: AUGER REFUSAL AT 5.6 FT.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

LEGEND KEY

Ohio Department of Transportation Soil Symbols


A-1-a - Gravel and/or Stone Fragments


A-1-b - Gravel and/or Stone Fragments with Sand


A-2-4,A-2-5 - Gravel and/or Stone Fragments with Sand and Silt


A-2-6,A-2-7 - Gravel and/or Stone Fragments with Sand, Silt and Clay


A-3 - Fine Sand


A-3a - Coarse and Fine Sand


A-4a - Sandy Silt


A-4b - Silt


A-5 - Elastic Silt and Clay


A-6a - Silt and Clay


A-6b - Silty Clay


A-7-5 - Elastic Clay


A-7-6 - Clay


A-8a - Organic Silt


A-8b - Organic Clay


Asphalt


Sod and/or Topsoil


Concrete


Random Fill


Peat


Dolomite


Weathered Dolomite


Limestone


Weathered Limestone


Sandstone


Weathered Sandstone


Shale


Weathered Shale

Sample Symbols


SS - Split Spoon


ST - Shelby Tube


RC - Rock Core


GS - Geoprobe Sleeve


AU - Auger Cuttings


GB - Grab

Notes:

1. Pavement cores and exploratory borings were performed during the period from December 12 through 22, 2022. Cores were obtained using a nominal 4-inch diameter core barrel. Borings were advanced using 3½-inch diameter solid-stem augers.

2. These logs are subject to the limitations, conclusions, and recommendations in the report and should not be interpreted separate from the report.

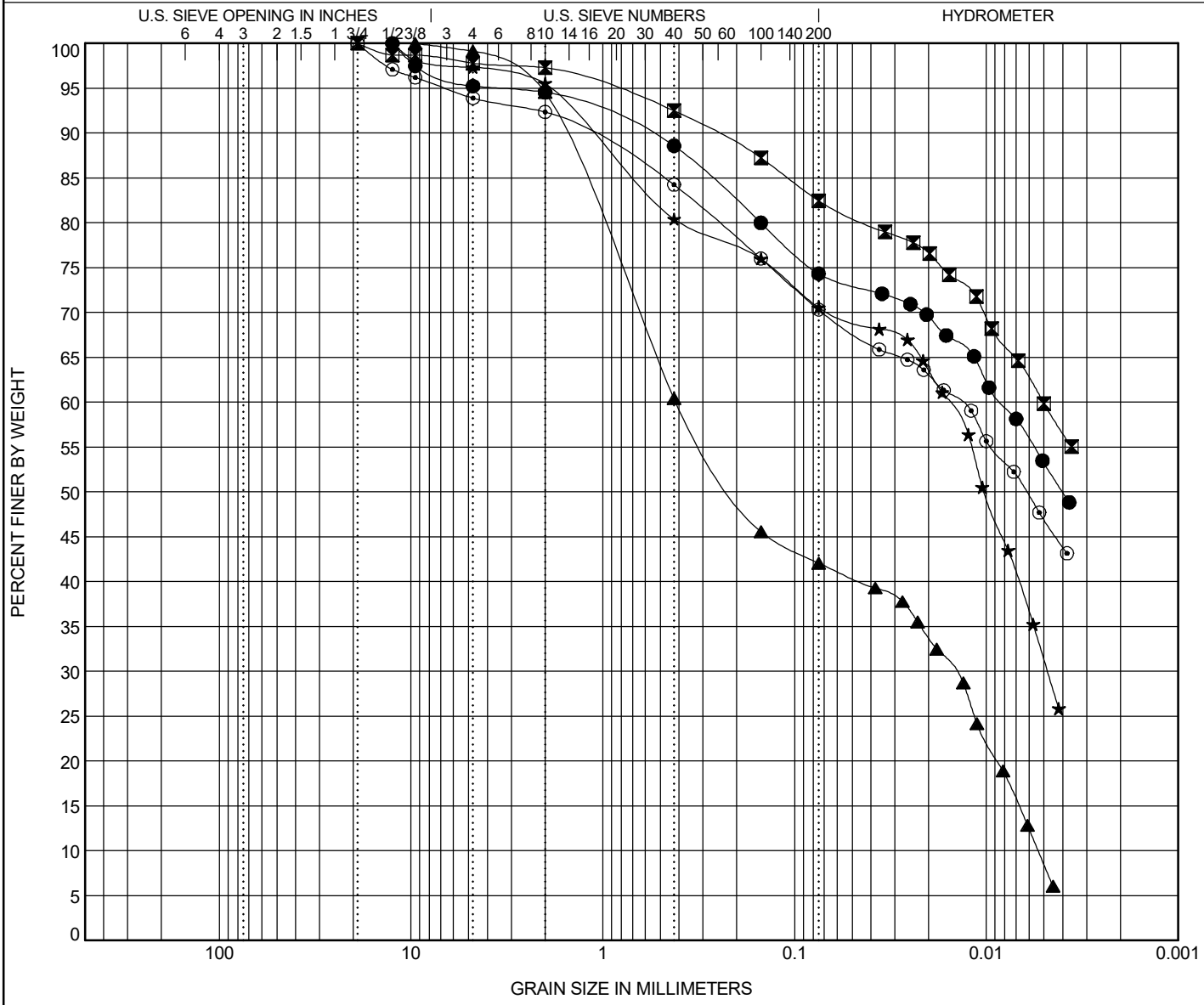
3. The boring locations were established in the field by TTL Associates, Inc. in general accordance with plans provided with the proposal for this project.

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-014-0-22	1.6	A-6a ~ LEAN CLAY with SAND(CL)	30	17	13
⊠	B-014-0-22	3.0	A-6a ~ LEAN CLAY with SAND(CL)	33	18	15
▲	B-015-0-22	1.5	A-4a ~ SILTY SAND(SM)	NP	NP	NP
★	B-015-0-22	3.0	A-4a ~ LEAN CLAY with SAND(CL)	24	16	8
⊙	B-016-0-22	1.0	A-6a ~ LEAN CLAY with SAND(CL)	26	15	11

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-014-0-22	1.6	0.613	0.004			6	6	14	21	53		
⊠	B-014-0-22	3.0	0.258				3	5	10	22	60		
▲	B-015-0-22	1.5	1.628	0.205	0.015	0.005	6	34	18	34	8	0.10	76.88
★	B-015-0-22	3.0	1.132	0.01	0.005		4	15	10	40	31		
⊙	B-016-0-22	1.0	1.274	0.006			8	8	14	23	47		

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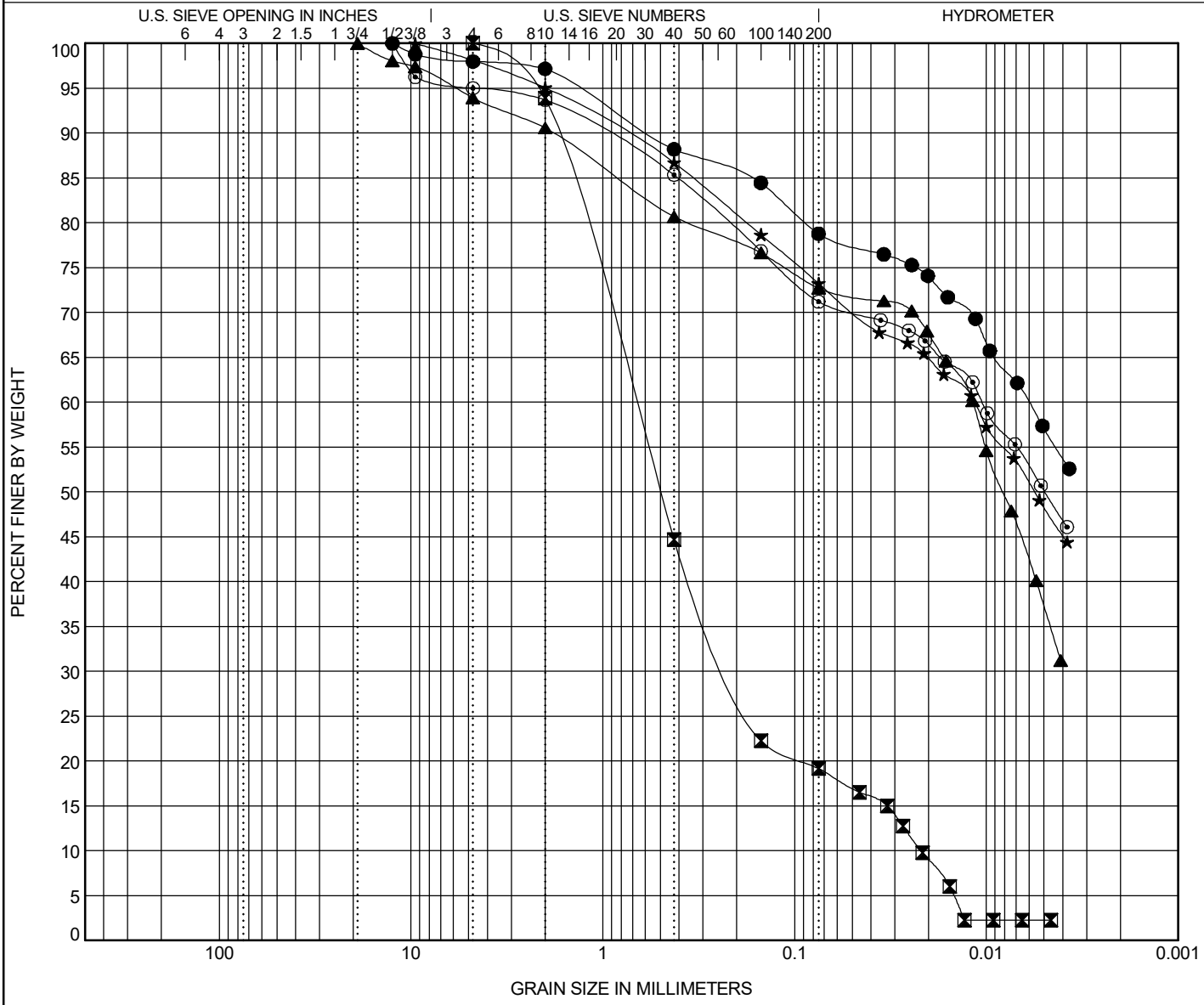
OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-016-0-22	3.5	**A-6a ~ LEAN CLAY with SAND(CL)**	**29**	**17**	**12**
⊠	B-017-0-22	1.5	**A-1-b ~ SILTY SAND(SM)**	**NP**	**NP**	**NP**
▲	B-017-0-22	3.2	**A-4a ~ LEAN CLAY with SAND(CL)**	**23**	**15**	**8**
★	B-018-0-22	2.2	**A-6a ~ LEAN CLAY with SAND(CL)**	**28**	**17**	**11**
⊙	B-028-0-22	1.8	**A-6a ~ LEAN CLAY with SAND(CL)**	**27**	**16**	**11**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-016-0-22	3.5	**0.579**				**3**	**9**	**9**	**22**	**57**		
⊠	B-017-0-22	1.5	**1.767**	**0.502**	**0.215**	**0.022**	**6**	**49**	**26**	**17**	**2**	**3.06**	**31.39**
▲	B-017-0-22	3.2	**1.826**	**0.008**			**9**	**10**	**8**	**36**	**37**		
★	B-018-0-22	2.2	**0.781**	**0.006**			**6**	**8**	**13**	**25**	**48**		
⊙	B-028-0-22	1.8	**1.006**	**0.005**			**7**	**8**	**14**	**21**	**50**		

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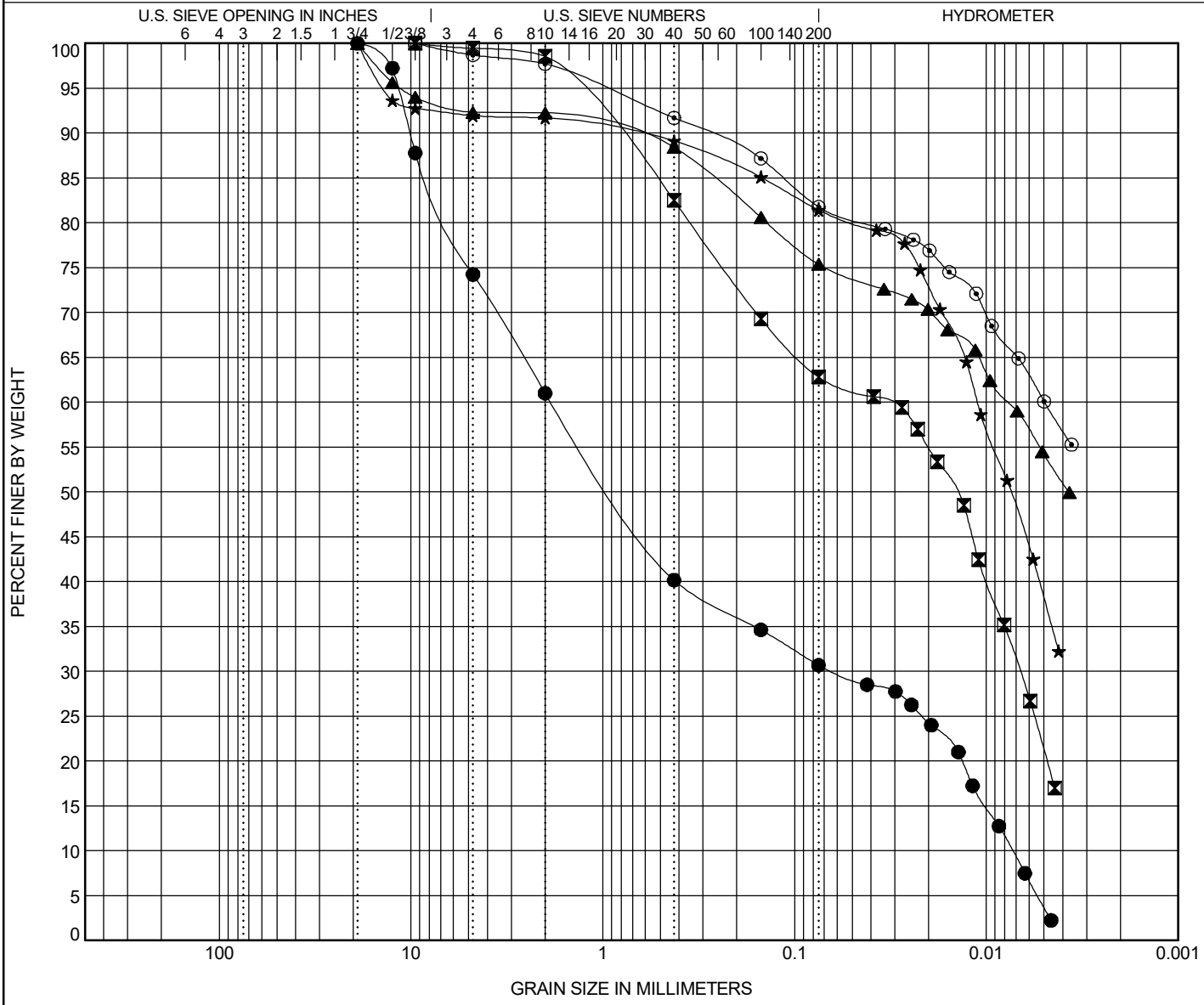
OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-028-0-22	3.2	**A-2-4 ~ SILTY SAND with GRAVEL(SM)**	19	17	2
⊠	B-029-0-22	2.3	**A-4a ~ SANDY LEAN CLAY(CL)**	24	15	9
▲	B-029-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	30	18	12
★	B-030-0-22	1.7	**A-4a ~ LEAN CLAY with SAND(CL)**	27	17	10
⊙	B-030-0-22	3.3	**A-6a ~ LEAN CLAY with SAND(CL)**	31	17	14

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-028-0-22	3.2	10.129	0.882	0.062	0.007	39	21	9	27	4	0.29	254.00
⊠	B-029-0-22	2.3	0.874	0.014	0.007		1	16	20	42	21		
▲	B-029-0-22	3.0	0.802	0.004			8	4	13	21	54		
★	B-030-0-22	1.7	0.714	0.007			8	3	8	43	38		
⊙	B-030-0-22	3.3	0.287				2	6	10	22	60		

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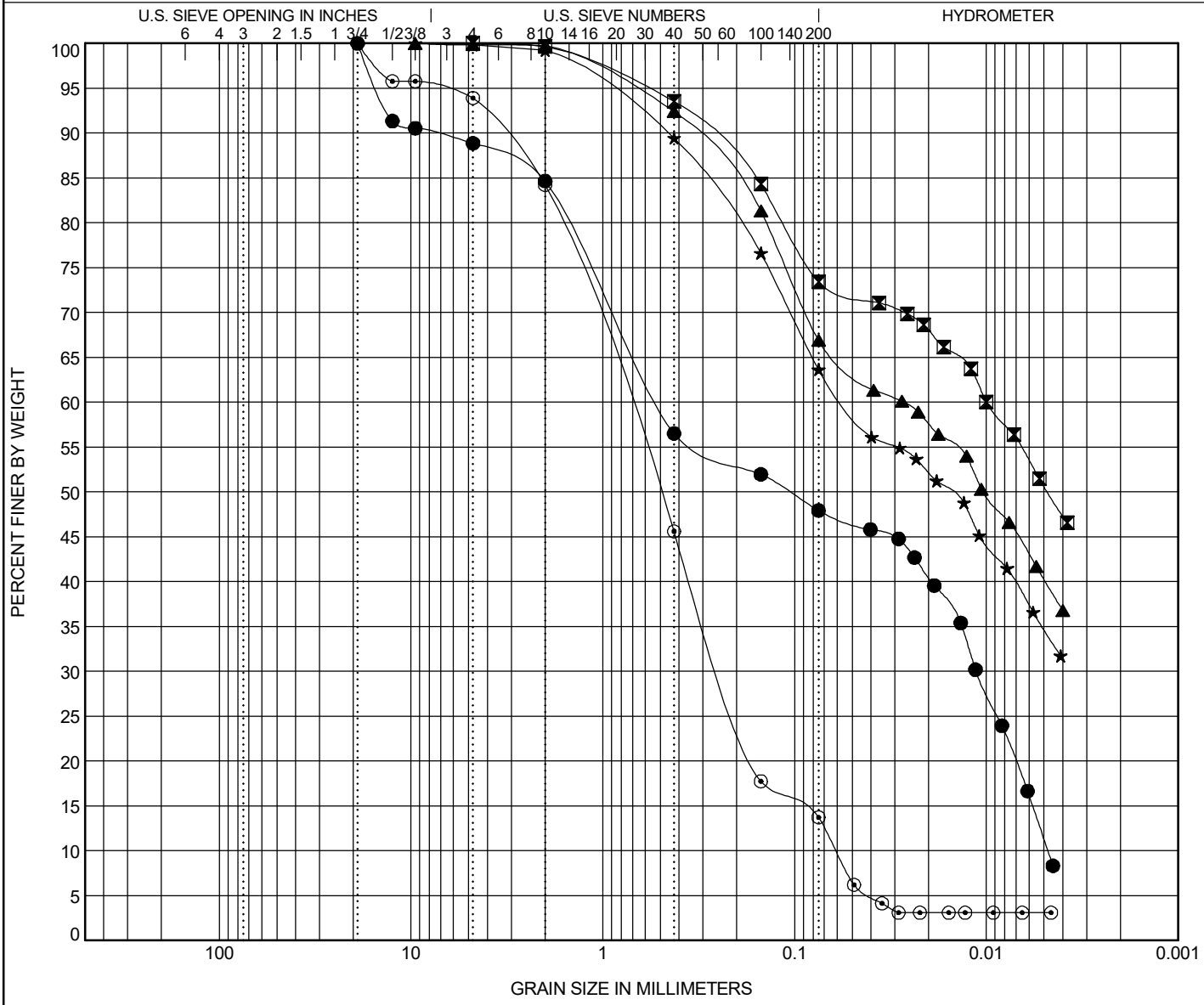

COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-031-0-22	1.8	A-4a ~ SILTY, CLAYEY SAND(SC-SM)	20	16	4
⊠	B-031-0-22	3.0	A-6a ~ LEAN CLAY with SAND(CL)	31	19	12
▲	B-032-0-22	1.6	A-6a ~ SANDY LEAN CLAY(CL)	30	17	13
★	B-032-0-22	3.0	A-6b ~ SANDY LEAN CLAY(CL)	34	17	17
⊙	B-042-0-22	1.5	A-1-b ~ SILTY SAND(SM)	NP	NP	NP

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-031-0-22	1.8	7.588	0.107	0.011	0.005	15	28	9	37	11	0.05	107.58
⊠	B-031-0-22	3.0	0.285	0.005			1	6	20	22	51		
▲	B-032-0-22	1.6	0.339	0.01			1	7	25	27	40		
★	B-032-0-22	3.0	0.464	0.015			0	10	26	29	35		
⊙	B-042-0-22	1.5	3.349	0.507	0.237	0.061	15	39	32	11	3	1.22	12.47

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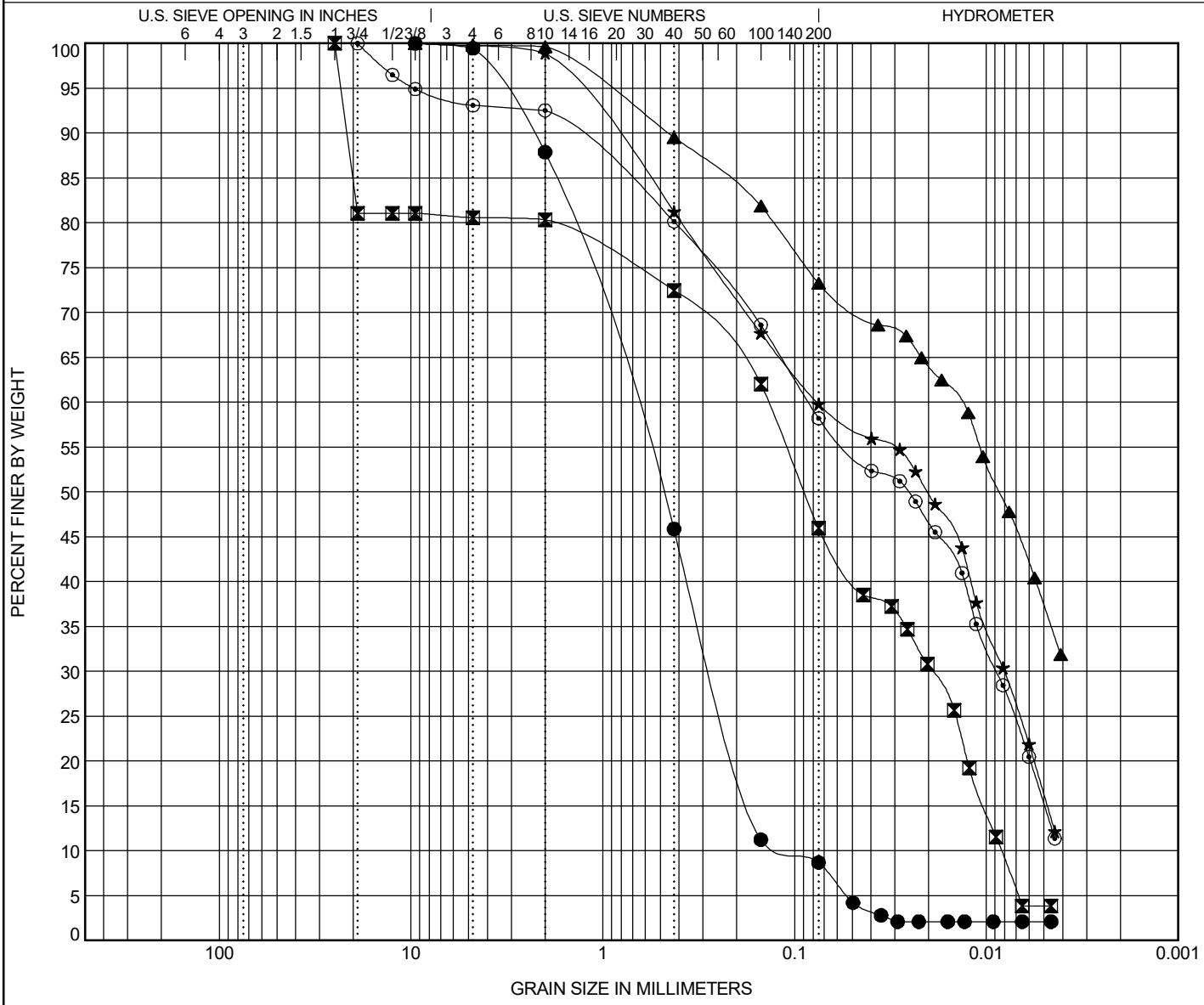

COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-042-0-22	3.0	**A-1-b ~ POORLY GRADED SAND with SILT(SP-SM)**	**NP**	**NP**	**NP**
⊠	B-043-0-22	1.9	**A-4a ~ SILTY, CLAYEY SAND with GRAVEL(SC-SM)**	**20**	**15**	**5**
▲	B-043-0-22	4.5	**A-4a ~ LEAN CLAY with SAND(CL)**	**28**	**18**	**10**
★	B-044-0-22	1.6	**A-4a ~ SANDY SILTY CLAY(CL-ML)**	**24**	**17**	**7**
⊙	B-044-0-22	3.3	**A-4a ~ SANDY SILTY CLAY(CL-ML)**	**25**	**18**	**7**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-042-0-22	3.0	**2.343**	**0.495**	**0.264**	**0.107**	**12**	**42**	**37**	**7**	**2**	**0.91**	**6.70**
⊠	B-043-0-22	1.9	**21.628**	**0.089**	**0.019**	**0.008**	**19**	**8**	**27**	**42**	**4**	**0.32**	**16.45**
▲	B-043-0-22	4.5	**0.457**	**0.009**			**1**	**10**	**16**	**36**	**37**		
★	B-044-0-22	1.6	**0.915**	**0.02**	**0.008**		**1**	**18**	**21**	**44**	**16**		
⊙	B-044-0-22	3.3	**1.457**	**0.026**	**0.009**		**8**	**12**	**22**	**43**	**15**		

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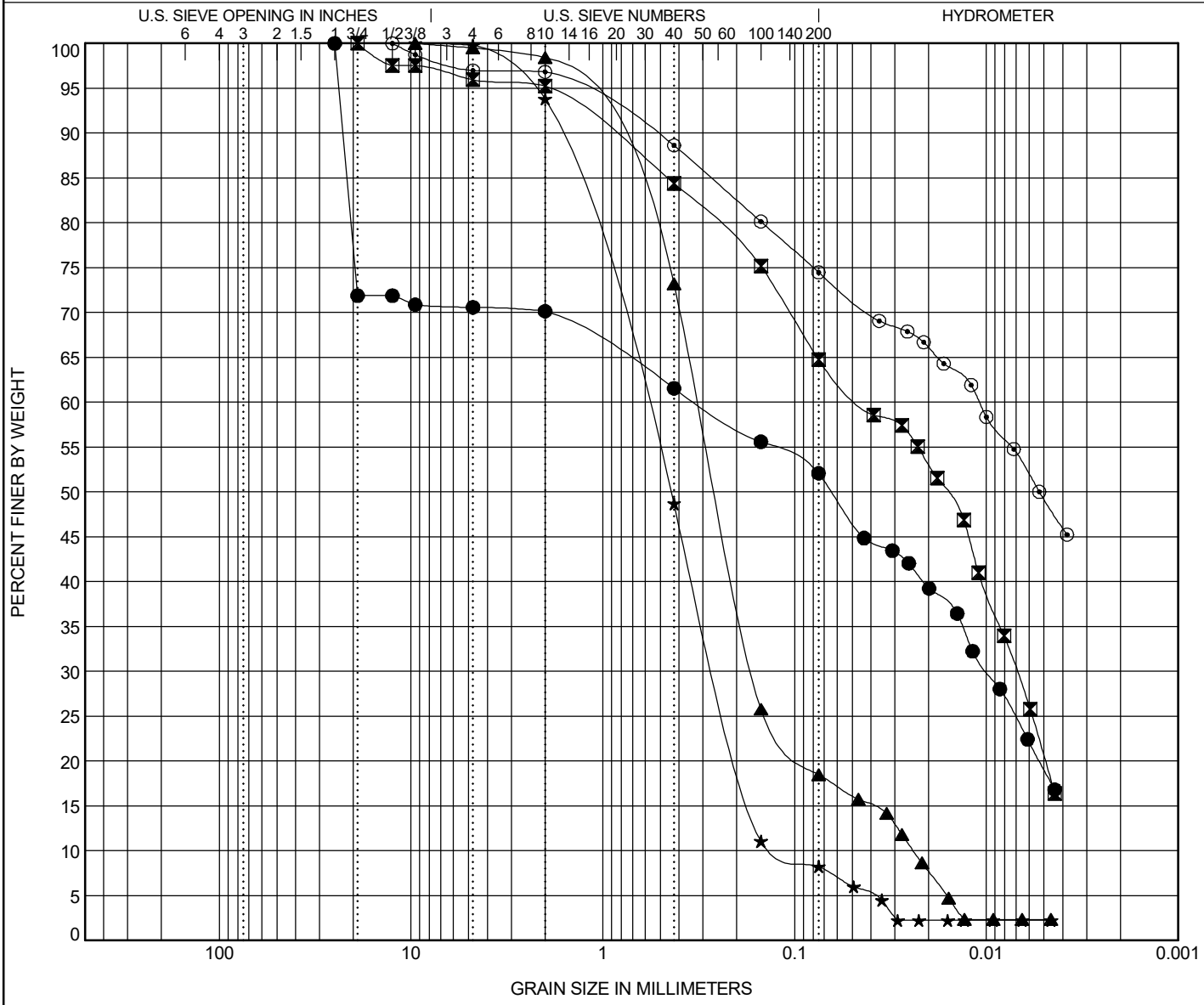
OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-045-0-22	1.5	**A-6a ~ GRAVELLY LEAN CLAY with SAND(CL)**	**27**	**16**	**11**
⊠	B-045-0-22	3.3	**A-4a ~ SANDY SILTY CLAY(CL-ML)**	**24**	**18**	**6**
▲	B-046-0-22	1.5	**A-3a ~ SILTY SAND(SM)**	**NP**	**NP**	**NP**
★	B-046-0-22	3.0	**A-1-b ~ POORLY GRADED SAND with SILT(SP-SM)**	**NP**	**NP**	**NP**
⊙	B-047-0-22	1.6	**A-6a ~ LEAN CLAY with SAND(CL)**	**28**	**16**	**12**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-045-0-22	1.5	**22.675**	**0.064**	**0.01**		**30**	**9**	**9**	**33**	**19**		
⊠	B-045-0-22	3.3	**0.945**	**0.016**	**0.007**		**4**	**11**	**20**	**45**	**20**		
▲	B-046-0-22	1.5	**1.191**	**0.255**	**0.165**	**0.024**	**1**	**25**	**55**	**17**	**2**	**3.55**	**13.24**
★	B-046-0-22	3.0	**1.754**	**0.444**	**0.253**	**0.115**	**7**	**45**	**40**	**6**	**2**	**0.89**	**5.44**
⊙	B-047-0-22	1.6	**0.55**	**0.005**			**4**	**8**	**14**	**25**	**49**		

GRAIN SIZE - OH DOT.GDT - 8/12/24 14:25 - X:\PROJECTS\2279801.GPJ

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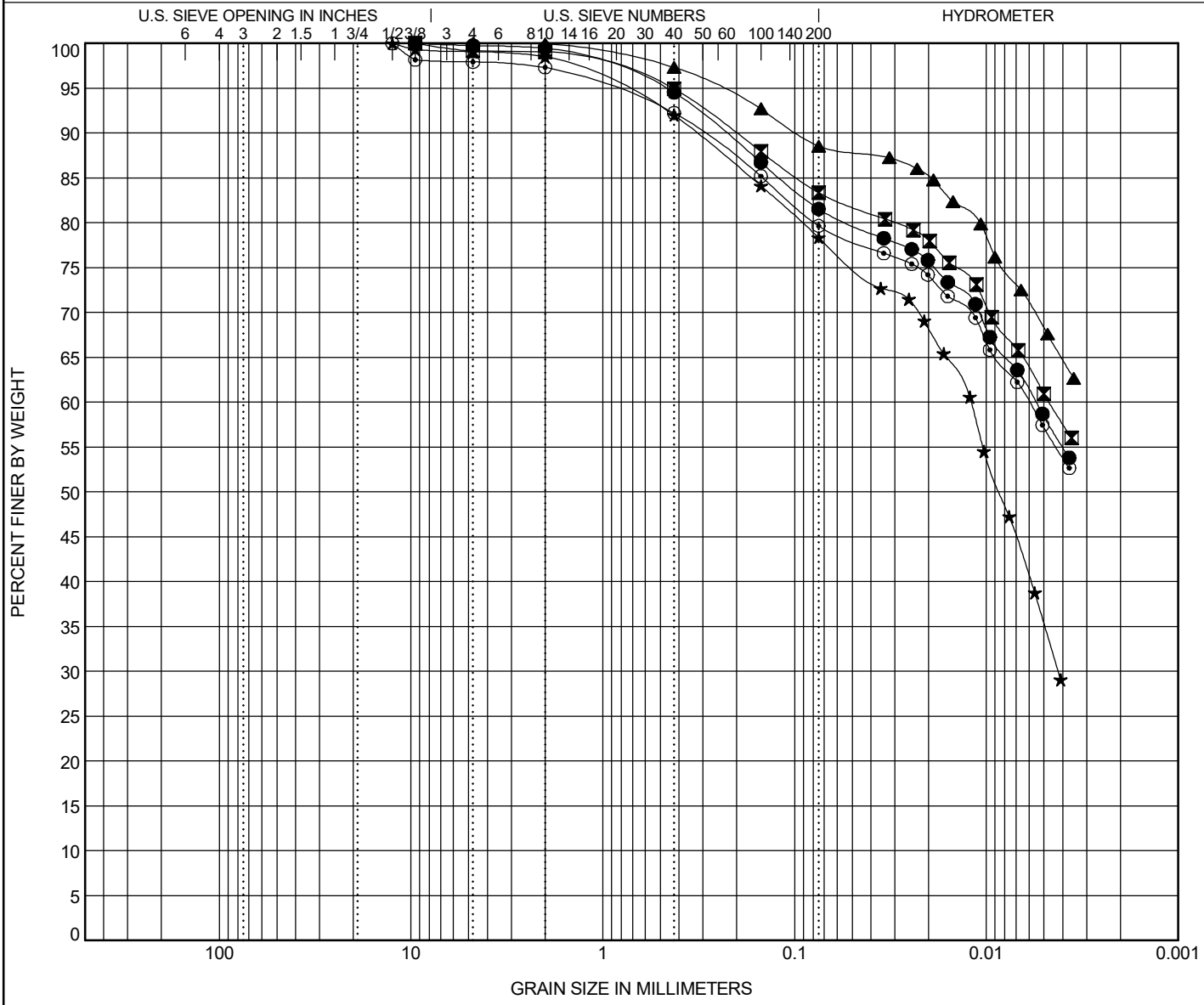

COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-047-0-22	3.3	**A-6a ~ LEAN CLAY with SAND(CL)**	**33**	**19**	**14**
⊠	B-048-0-22	1.7	**A-6a ~ LEAN CLAY with SAND(CL)**	**31**	**17**	**14**
▲	B-048-0-22	3.3	**A-6a ~ LEAN CLAY(CL)**	**34**	**21**	**13**
★	B-049-0-22	1.7	**A-4a ~ LEAN CLAY with SAND(CL)**	**29**	**20**	**9**
⊙	B-049-0-22	3.5	**A-6a ~ LEAN CLAY with SAND(CL)**	**33**	**19**	**14**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-047-0-22	3.3	**0.231**				**0**	**5**	**13**	**24**	**58**		
⊠	B-048-0-22	1.7	**0.203**				**1**	**4**	**12**	**22**	**61**		
▲	B-048-0-22	3.3	**0.095**				**0**	**2**	**9**	**21**	**68**		
★	B-049-0-22	1.7	**0.326**	**0.009**	**0.004**		**1**	**7**	**14**	**43**	**35**		
⊙	B-049-0-22	3.5	**0.305**				**2**	**5**	**13**	**23**	**57**		

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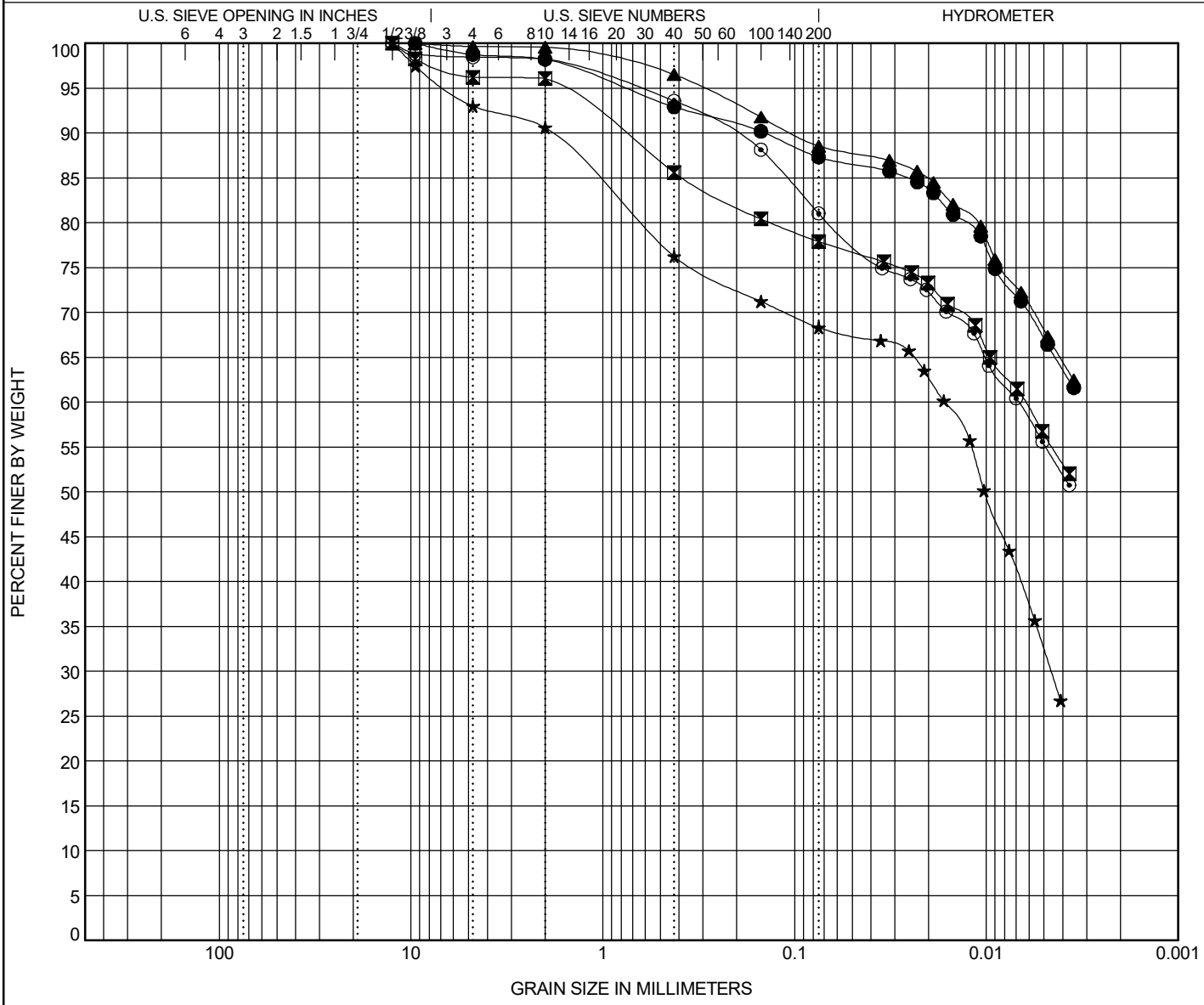
OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-050-0-22	1.3	**A-6b ~ LEAN CLAY(CL)**	**37**	**21**	**16**
⊠	B-050-0-22	1.8	**A-6a ~ LEAN CLAY with SAND(CL)**	**33**	**20**	**13**
▲	B-050-0-22	3.3	**A-6a ~ LEAN CLAY(CL)**	**33**	**22**	**11**
★	B-051-0-22	0.6	**A-4a ~ SANDY LEAN CLAY(CL)**	**28**	**19**	**9**
⊙	B-051-0-22	2.3	**A-6a ~ LEAN CLAY with SAND(CL)**	**35**	**21**	**14**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-050-0-22	1.3	**0.143**				**2**	**5**	**6**	**20**	**67**		
⊠	B-050-0-22	1.8	**0.813**				**4**	**10**	**8**	**22**	**56**		
▲	B-050-0-22	3.3	**0.102**				**0**	**3**	**8**	**21**	**68**		
★	B-051-0-22	0.6	**1.869**	**0.01**	**0.005**		**10**	**14**	**8**	**36**	**32**		
⊙	B-051-0-22	2.3	**0.213**				**1**	**5**	**13**	**26**	**55**		

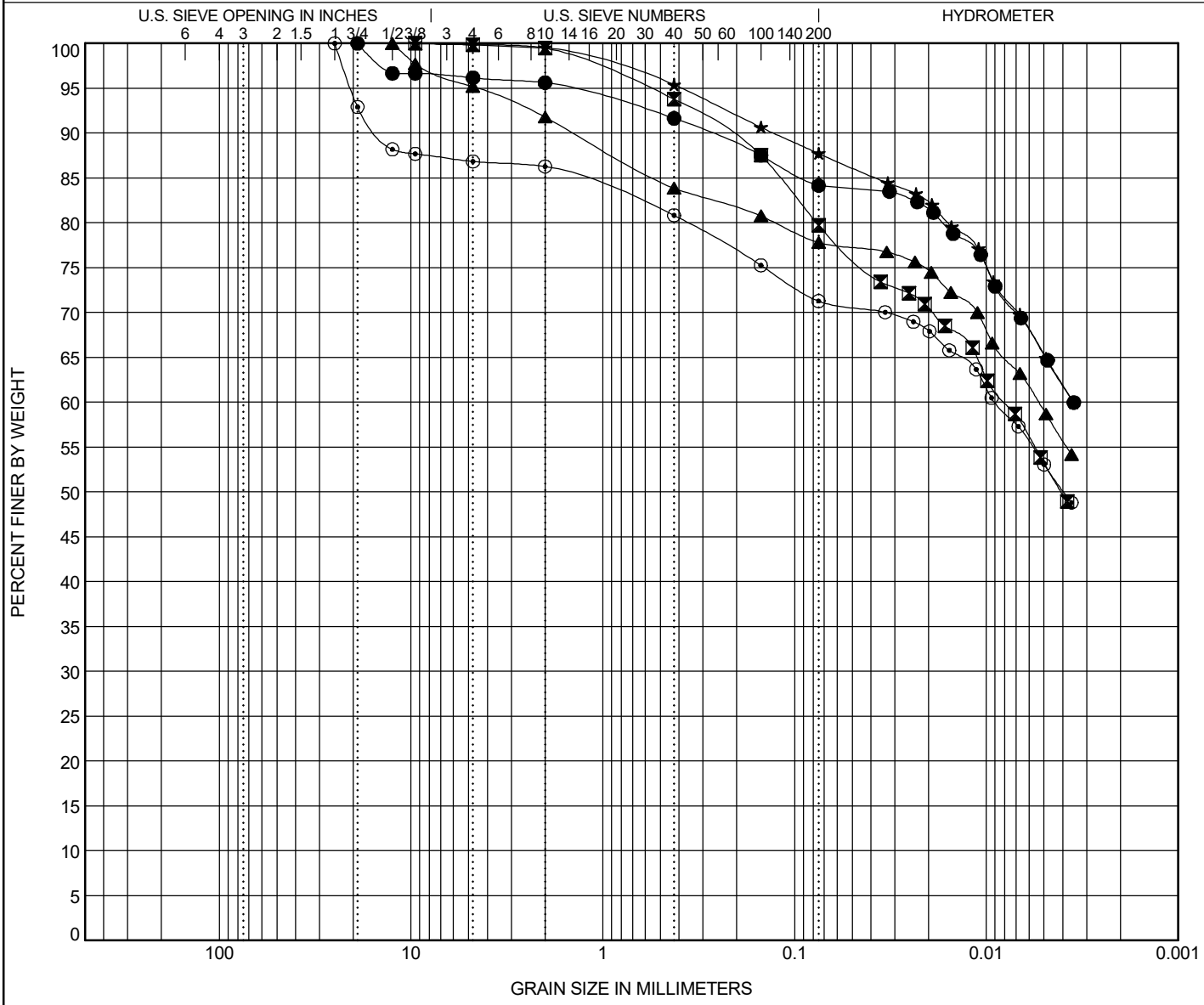
GRAIN SIZE - OH DOT.GDT - 8/12/24 14:25 - X:\PROJECTS\2279801.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-051-0-22	3.0	**A-6b ~ LEAN CLAY with SAND(CL)**	**38**	**22**	**16**
⊠	B-052-0-22	1.7	**A-6a ~ LEAN CLAY with SAND(CL)**	**33**	**20**	**13**
▲	B-052-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**31**	**19**	**12**
★	B-053-0-22	1.6	**A-6a ~ LEAN CLAY(CL)**	**34**	**20**	**14**
⊙	B-053-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**32**	**19**	**13**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-051-0-22	3.0	**0.28**				**4**	**4**	**8**	**19**	**65**		
⊠	B-052-0-22	1.7	**0.226**	**0.004**			**0**	**6**	**14**	**27**	**53**		
▲	B-052-0-22	3.0	**1.41**				**8**	**8**	**6**	**19**	**59**		
★	B-053-0-22	1.6	**0.128**				**0**	**4**	**8**	**23**	**65**		
⊙	B-053-0-22	3.0	**14.669**	**0.004**			**14**	**5**	**10**	**18**	**53**		

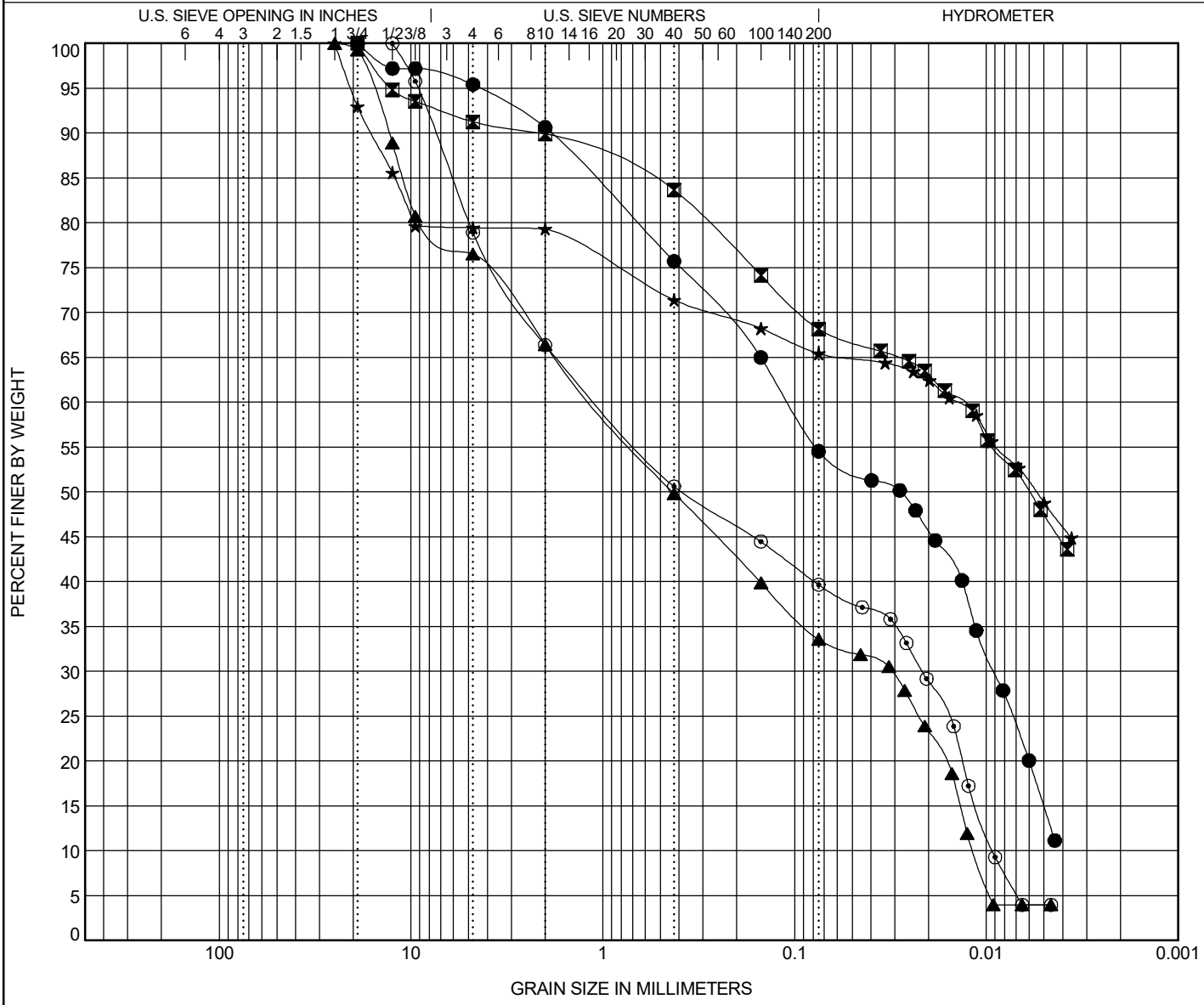
GRAIN SIZE - OH DOT.GDT - 8/12/24 14:25 - X:\PROJECTS\2279801.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-060-0-22	1.7	**A-4a ~ SANDY LEAN CLAY(CL)**	**24**	**16**	**8**
⊠	B-060-0-22	4.5	**A-6b ~ SANDY LEAN CLAY(CL)**	**34**	**17**	**17**
▲	B-061-0-22	1.5	**A-2-4 ~ SILTY SAND with GRAVEL(SM)**	**19**	**17**	**2**
★	B-061-0-22	4.5	**A-6a ~ GRAVELLY LEAN CLAY(CL)**	**33**	**20**	**13**
⊙	B-063-0-22	1.1	**A-4a ~ CLAYEY SAND with GRAVEL(SC)**	**28**	**19**	**9**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-060-0-22	1.7	**1.869**	**0.028**	**0.009**		**9**	**15**	**21**	**40**	**15**		
⊠	B-060-0-22	4.5	**2.14**	**0.006**			**11**	**6**	**15**	**21**	**47**		
▲	B-061-0-22	1.5	**13.061**	**0.432**	**0.031**	**0.012**	**33**	**17**	**16**	**30**	**4**	**0.08**	**93.98**
★	B-061-0-22	4.5	**16.054**	**0.006**			**21**	**8**	**6**	**16**	**49**		
⊙	B-063-0-22	1.1	**7.492**	**0.383**	**0.022**	**0.009**	**33**	**16**	**11**	**36**	**4**	**0.05**	**115.37**

GRAIN SIZE - OH DOT.GDT - 8/12/24 14:25 - X:\PROJECTS\2279801.GPJ

Core Log For X-016-1-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 14, 2022

ASPHALT THICKNESS (in.)	=	6.25
CONCRETE THICKNESS (in.)	=	8
SAND BASE THICKNESS (in.)	=	5
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at 2.25 and 4 inches below top of concrete

Core Log For X-016-2-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 14, 2022

ASPHALT THICKNESS (in.)	=	4.25
CONCRETE THICKNESS (in.)	=	9.25
SAND BASE THICKNESS (in.)	=	5
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at approximately 5 inches below top of concrete

Core Log For X-030-1-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 19, 2022

ASPHALT THICKNESS (in.)	=	4.5
CONCRETE THICKNESS (in.)	=	8.25
SAND BASE THICKNESS (in.)	=	8
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at approximately 3.75 inches below top of concrete

Core Log For B-032-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 19, 2022

ASPHALT THICKNESS (in.)	=	5.5
CONCRETE THICKNESS (in.)	=	9
SAND BASE THICKNESS (in.)	=	5
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at approximately 5.5 inches below top of concrete

Core Log For B-044-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 21, 2022

ASPHALT THICKNESS (in.)	=	4.5
CONCRETE THICKNESS (in.)	=	9.25
SAND BASE THICKNESS (in.)	=	6
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at approximately 4.75 inches below top of concrete

Core Log For X-044-1-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 21, 2022

ASPHALT THICKNESS (in.)	=	4.5
CONCRETE THICKNESS (in.)	=	8.5
SAND BASE THICKNESS (in.)	=	7
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at approximately 5.25 inches below top of concrete

Core Log For B-047-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 21, 2022

ASPHALT THICKNESS (in.)	=	5.25
CONCRETE THICKNESS (in.)	=	8.5
SAND BASE THICKNESS (in.)	=	6
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at 4.5 and 5.5 inches below top of concrete

Core Log For X-050-1-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 21, 2022

ASPHALT THICKNESS (in.)	=	5.5
CONCRETE THICKNESS (in.)	=	8
SAND BASE THICKNESS (in.)	=	6
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Core Log For B-060-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 22, 2022

ASPHALT THICKNESS (in.)	=	6.75
AGGREGATE BASE THICKNESS (in.)	=	8.25
SAND BASE THICKNESS (in.)	=	5
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement core appeared in good condition.

Core Log For B-061-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 21, 2022

ASPHALT THICKNESS (in.)	=	3.75
CONCRETE THICKNESS (in.)	=	8.5
SAND BASE THICKNESS (in.)	=	5
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at 5 inches below top of concrete

APPENDIX A

(Engineering Calculations)

OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

PLAN SUBGRADES
Geotechnical Bulletin GB1

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.)

GEA/LAK-44-18.45/00.00
114163

Intersection Improvements

TTL Associates, Inc.

Prepared By: Christopher P. Iott, P.E.
Date prepared: Monday, July 22, 2024

Christopher P. Iott, P.E.
TTL Associates, Inc.
1915 N. 12th Street
Toledo, Ohio 43604
419-214-5020
ciott@ctconsultants.com

NO. OF BORINGS: 25

#	Boring ID	Alignment	Station	Offset	Dir	Drill Rig	ER	Boring EL.	Proposed Subgrade EL	Cut Fill
1	B-014-0-22	SR44	79+05	10	LT	CME 75 Truck 844	66	1178.5	1177.2	1.3 C
2	B-015-0-22	SR44	82+95	9	RT	CME 75 Truck 844	66	1166.9	1165.6	1.3 C
3	B-016-0-22	SR44	87+11	59	RT	CME 75 Truck 844	66	1152.8	1151.5	1.3 C
4	B-017-0-22	SR44	90+74	9	LT	CME 75 Truck 844	66	1143.5	1142.2	1.3 C
5	B-018-0-22	SR44	94+69	10	RT	CME 75 Truck 844	66	1131.7	1130.4	1.3 C
6	B-028-0-22	SR44	133+59	9	RT	CME 75 Truck 844	66	1118.3	1117.0	1.3 C
7	B-029-0-22	SR44	137+44	12	LT	CME 75 Truck 844	66	1116.3	1115.0	1.3 C
8	B-030-0-22	SR44	141+29	28	RT	CME 75 Truck 844	66	1111.7	1110.4	1.3 C
9	B-031-0-22	SR44	145+13	17	LT	CME 75 Truck 844	66	1105.7	1104.4	1.3 C
10	B-032-0-22	SR44	149+01	10	RT	CME 75 Truck 844	66	1100.2	1098.9	1.3 C
11	B-042-0-22	SR44	187+86	11	RT	CME 75 Truck 844	66	1058.7	1057.4	1.3 C
12	B-043-0-22	SR44	191+74	14	LT	CME 75 Truck 844	66	1054.2	1052.9	1.3 C
13	B-044-0-22	SR44	196+00	21	RT	CME 75 Truck 844	66	1046.8	1045.5	1.3 C
14	B-045-0-22	SR44	199+67	13	LT	CME 75 Truck 844	66	1039.2	1037.9	1.3 C
15	B-046-0-22	SR44	203+61	10	RT	CME 75 Truck 844	66	1030.5	1029.2	1.3 C
16	B-047-0-22	SR44	207+53	11	LT	CME 75 Truck 844	66	1022.8	1021.7	1.1 C
17	B-048-0-22	SR44	211+39	9	RT	CME 75 Truck 844	66	1016.8	1015.5	1.3 C
18	B-049-0-22	SR44	215+31	14	LT	CME 75 Truck 844	66	1012.6	1011.3	1.3 C
19	B-050-0-22	SR44	219+24	27	RT	CME 75 Truck 844	66	1007.3	1006.0	1.3 C
20	B-051-0-22	SR44	223+25	23	LT	CME 75 Truck 844	66	1002.4	1001.1	1.3 C
21	B-052-0-22	SR44	227+04	10	RT	CME 75 Truck 844	66	998.5	997.2	1.3 C
22	B-053-0-22	SR44	231+11	10	LT	CME 75 Truck 844	66	993.7	992.4	1.3 C
23	B-060-0-22	Girdled Rd	102+18	10	LT	CME 75 Truck 844	66	1006.2	1004.9	1.3 C
24	B-061-0-22	Girdled Rd	104+56	15	LT	CME 75 Truck 844	66	1008.5	1007.2	1.3 C
25	B-063-0-22	Girdled Rd	108+46	9	LT	CME 75 Truck 844	66	1014.8	1013.5	1.3 C

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.6 2/11/2022

#	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	SS-1	1.6	3.0	0.3	1.7	11			30	17	13	21	53	74	13	14	A-6a	9	260		N_{60}		12''	12''
	014-0	SS-2	3.0	5.0	1.7	3.7	14		2	33	18	15	22	60	82	19	14	A-6a	10						204 Geotextile
	22	SS-3B	5.0	6.0	3.7	4.7	22									14	8	A-3a	0						
		SS-4	6.0	7.5	4.7	6.2	24	11								13	10	A-4a	8						
2	B	SS-1A	1.4	2.8	0.1	1.5	10			NP	NP	NP	34	8	42	7	11	A-4a	1			N_{60}		12''	12''
	015-0	SS-2A	2.8	3.3	1.5	2.0	7			24	16	8	40	31	71	14	11	A-4a	7			N_{60} & Mc			204 Geotextile
	22	SS-2B	3.3	5.0	2.0	3.7	8									12	8	A-3a	0	100					
		SS-3B	5.0	5.3	3.7	4.0	15	7									8	A-3	0						
3	B	SS-1	0.3	3.5	-1.0	2.2	14		4.5	26	15	11	23	47	70	11	14	A-6a	7	260					None
	016-0	SS-2	3.5	6.7	2.2	5.4	6		1.25	29	17	12	22	57	79	18	14	A-6a	9						
	22	SS-3B	6.7	8.5	5.4	7.2	11		2.5							16	16	A-6b							
		SS-4	8.5	10.0	7.2	8.7	26	6								14	14	A-6a							
4	B	SS-1A/1B	0.6	3.2	-0.7	1.9	17			NP	NP	NP	17	2	19	5	6	A-1-b	0	100					None
	017-0	SS-2B	3.2	4.8	1.9	3.5	7		4.25	23	15	8	26	37	63	12	10	A-4a	6			N_{60}			
	22	SS-3B	4.8	6.5	3.5	5.2	14									5	8	A-3	0						
		SS-4B	6.5	7.5	5.2	6.2	21	7	2.75							14	14	A-6a							
5	B	SS-1A	1.4	2.2	0.1	0.9	7									12	8	A-3	0						Rework
	018-0	SS-1B	2.2	3.0	0.9	1.7	18			28	17	11	25	48	73	14	14	A-6a	8	260					
	22	SS-2	3.0	5.2	1.7	3.9	33			28	17	11	26	41	67	13	14	A-6a	7						
		SS-3	5.2	6.0	3.9	4.7	46	7								12	14	A-6a	10						
6	B	SS-1B	1.8	3.2	0.5	1.9	8			27	16	11	21	50	71	17	14	A-6a	8	260		N_{60} & Mc		12''	12''
	028-0	SS-2B	3.2	4.8	1.9	3.5	26			19	17	2	27	4	31	7	10	A-2-4	0						204 Geotextile
	22	SS-3	4.8	6.0	3.5	4.7	13									5	10	A-2-4	0						
		SS-4	6.0	7.5	4.7	6.2	41	8								7	8	A-3	0						
7	B	SS-1A	0.8	2.3	-0.5	1.0	14									9	6	A-1-b	0						Rework
	029-0	SS-1B	2.3	3.0	1.0	1.7	14			24	15	9	42	21	63	14	10	A-4a	6			N_{60} & Mc		12''	
	22	SS-2	3.0	4.5	1.7	3.2	8			30	18	12	21	54	75	19	14	A-6a	9	260		N_{60} & Mc			
		SS-3A	4.5	5.5	3.2	4.2	22	8	1.75							21	14	A-6a	10						
8	B	SS-1B	1.7	3.3	0.4	2.0	6			27	17	10	43	38	81	15	12	A-4a	8	250		N_{60} & Mc		18''	18''
	030-0	SS-2B	3.3	4.5	2.0	3.2	17		3.25	31	17	14	22	60	82	15	14	A-6a	10						204 Geotextile
	22	SS-3	4.5	6.1	3.2	4.8	22		3.75							20	14	A-6a	10						
		SS-4	6.1	7.5	4.8	6.2	24	6								15	14	A-6a	10						
9	B	SS-1A	1.3	1.8	0.0	0.5	9									9	8	A-3	0	140					12''
	031-0	SS-1B	1.8	3.0	0.5	1.7	9			20	16	4	37	11	48	12	11	A-4a	3			N_{60}		12''	204 Geotextile
	22	SS-2	3.0	4.6	1.7	3.3	13		2.75	31	19	12	22	51	73	20	14	A-6a	8	260		N_{60} & Mc			
		SS-3	4.6	6.8	3.3	5.5	14	9								18	14	A-6a	10						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.6 2/11/2022

#	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	
10	B	SS-1B	1.6	3.0	0.3	1.7	7		4.25	30	17	13	27	40	67	17	14	A-6a	8	240		N_{60} & Mc		15''	15''
	032-0	SS-2	3.0	4.5	1.7	3.2	13		4.5	34	17	17	29	35	64	19	16	A-6b	9			N_{60} & Mc			204 Geotextile
	22	SS-3A	4.5	5.0	3.2	3.7	18		3.75							13	16	A-6b	16						
		SS-3B	5.0	6.0	3.7	4.7	21	7								14	8	A-3a	0						
11	B	SS-1	1.3	3.0	0.0	1.7	18			NP	NP	NP	11	3	14	6	6	A-1-b	0	100					None
	042-0	SS-2	3.0	4.5	1.7	3.2	7			NP	NP	NP	7	2	9	6	6	A-1-b	0						
	22	SS-3A	4.5	5.5	3.2	4.2	4									10	6	A-1-b	0						
		SS-3B	5.5	6.2	4.2	4.9	2	2								15	16	A-6b	16						
12	B	SS-1A	1.3	1.9	0.0	0.6	9									12	8	A-3	0						Rework
	043-0	SS-1B	1.9	3.3	0.6	2.0	22			20	15	5	42	4	46	11	10	A-4a	2	250					
	22	SS-2	3.3	4.5	2.0	3.2	22		4.5							14	10	A-4a	8			Mc			
		SS-3	4.5	6.0	3.2	4.7	44	9		28	18	10	36	37	73	15	13	A-4a	8						
13	B	SS-1B/1C	1.6	3.0	0.3	1.7	13			24	17	7	44	16	60	14	12	A-4a	5	130					None
	044-0	SS-2B	3.0	4.7	1.7	3.4	21		4.5	25	18	7	43	15	58	12	13	A-4a	5	250					
	22	SS-3B	4.7	5.3	3.4	4.0	26		3							15	10	A-4b	8						
		SS-4	5.3	7.5	4.0	6.2	20	13								13	10	A-4b	8						
14	B	SS-1/2A	1.3	3.3	0.0	2.0	12		2.5	27	16	11	33	19	52	11	14	A-6a	4	260					None
	045-0	SS-2B	3.3	4.7	2.0	3.4	15		3	24	18	6	45	20	65	17	13	A-4a	6			Mc			
	22	SS-3B	4.7	5.3	3.4	4.0	18									9	8	A-3	0						
		SS-3C	5.3	7.0	4.0	5.7	18	12								15	14	A-6a	10						
15	B	SS-1A/1B	1.3	3.0	0.0	1.7	17			NP	NP	NP	17	2	19	10	8	A-3a	0	100					None
	046-0	SS-2	3.0	5.4	1.7	4.1	7			NP	NP	NP	6	2	8	6	6	A-1-b	0	100					
	22	SS-3B	5.4	6.3	4.1	5.0	11									13	14	A-6a	10						
		SS-4	6.3	7.5	5.0	6.2	20	7								14	14	A-6a	10						
16	B	SS-1B	1.6	3.0	0.5	1.9	12			28	16	12	25	49	74	14	14	A-6a	9	270					None
	047-0	SS-2A	3.0	3.3	1.9	2.2	9		4.5							18	14	A-6a	10			N_{60} & Mc			
	22	SS-2B	3.3	4.5	2.2	3.4	20			33	19	14	24	58	82	21	14	A-6a	10			Mc			
		SS-3A	4.5	4.7	3.4	3.6	26	9	1.75							18	14	A-6a	10						
17	B	SS-1B/1C	1.7	3.0	0.4	1.7	4		1.75	31	17	14	22	61	83	22	14	A-6a	10	160		HP & Mc		24''	24''
	048-0	SS-2A	3.0	3.3	1.7	2.0	4		2							26	14	A-6a	10			N_{60} & Mc			204 Geotextile
	22	SS-2B	3.3	4.5	2.0	3.2	12		3	34	21	13	21	68	89	22	16	A-6a	9	270		N_{60} & Mc			
		SS-3A	4.5	5.1	3.2	3.8	24	4	4.5							15	14	A-6a	10						
18	B	SS-1B	1.7	3.0	0.4	1.7	9			29	20	9	43	35	78	16	15	A-4a	8	260		N_{60}		12''	24''
	049-0	SS-2A	3.0	3.5	1.7	2.2	4		1.5							18	14	A-6a	10			HP & Mc			204 Geotextile
	22	SS-2B	3.5	4.5	2.2	3.2	8		2.25	33	19	14	23	57	80	19	14	A-6a	10			N_{60} & Mc			
		SS-3	4.5	6.0	3.2	4.7	19	4	2.5							22	16	A-6b	16						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.6 2/11/2022

#	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	
19	B	SS-1C/2A	1.3	1.8	0.0	0.5	7		2	37	21	16	20	67	87	14	16	A-6b	10			N_{60}		15''	15''
	050-0	SS-2B	1.8	3.3	0.5	2.0	7		2	33	20	13	22	56	78	20	15	A-6a	9	270		N_{60} & Mc		15''	204 Geotextile
	22	SS-3B	3.3	4.8	2.0	3.5	10		2.5	33	22	11	21	68	89	24	17	A-6a	8			N_{60} & Mc			
		SS-4	4.8	6.0	3.5	4.7	15	7	4							18	14	A-6a	10						
20	B	SS-1B/2A	0.6	2.3	-0.7	1.0	4		2	28	19	9	36	32	68	16	14	A-4a	7			N_{60}		24''	12''
	051-0	SS-2B	2.3	3.1	1.0	1.8	9		3	35	21	14	26	55	81	21	16	A-6a	10	270		N_{60} & Mc		12''	204 Geotextile
	22	SS-3	3.1	4.1	1.8	2.8	9			38	22	16	19	65	84	19	17	A-6b	10			N_{60}			
		SS-4	4.1	6.0	2.8	4.7	100	4								12	0	Rock	0						
21	B	SS-1B/1C	1.7	3.0	0.4	1.7	12		3.5	33	20	13	27	53	80	16	15	A-6a	9	160					None
	052-0	SS-2	3.0	4.5	1.7	3.2	17			31	19	12	19	59	78	17	14	A-6a	9	250		Mc			
	22	SS-3	4.5	6.0	3.2	4.7	100									9	0	Rock	0						
		SS-4	6.0	6.1	4.7	4.8	100	12								5	0	Rock	0						
22	B	SS-1B	1.6	3.0	0.3	1.7	6		1.5	34	20	14	23	65	88	24	15	A-6a	10	270		HP & Mc		18''	18''
	053-0	SS-2	3.0	4.5	1.7	3.2	19		3	32	19	13	18	53	71	16	14	A-6a	8						204 Geotextile
	22	SS-3	4.5	5.9	3.2	4.6	13		3.5							23	16	A-6b	16						
		SS-4	5.9	7.5	4.6	6.2	29	6								26	16	A-6b	16						
23	B	SS-1B	1.7	3.0	0.4	1.7	22			24	16	8	40	15	55	14	11	A-4a	4	260		Mc			None
	060-0	SS-2	3.0	4.0	1.7	2.7	22									12	16	A-6b	16						
	22	SS-3	4.0	6.0	2.7	4.7	11		2.25	34	17	17	21	47	68	20	16	A-6b	9						
		SS-4	6.0	7.5	4.7	6.2	24	11	4.5							15	10	A-4a	8						
24	B	SS-1A	1.4	2.6	0.1	1.3	9			19	17	2	30	4	34	9	10	A-2-4	0	270		N_{60}		12''	12''
	061-0	SS-2A	2.6	3.8	1.3	2.5	13		4.5							15	14	A-6a	10						204 Geotextile
	22	SS-2B	3.8	4.5	2.5	3.2	29		4.5							15	14	A-6a	10						
		SS-3	4.5	6.0	3.2	4.7	53	9		33	20	13	16	49	65	13	15	A-6a	7						
25	B	SS-1B	1.1	2.7	-0.2	1.4	18			28	19	9	36	4	40	13	14	A-4a	1	270					None
	063-0	SS-2A	2.7	4.0	1.4	2.7	18		2.75							42	14	A-6a	10			Mc			
	22	SS-2B	4.0	5.6	2.7	4.3	100									10	0	Rock	0						
								18																	

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.6 2/11/2022

PID: 114163

County-Route-Section: GEA/LAK-44-18.45/00.00
No. of Borings: 25

Geotechnical Consultant: TTL Associates, Inc.
Prepared By: Christopher P. Iott, P.E.
Date prepared: 7/22/2024

Chemical Stabilization Options		
320	Rubblize & Roll	No
206	Cement Stabilization	Option
	Lime Stabilization	No
206	Depth	14''

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 6 feet of subgrade			
$N_{60} \leq 5$	6%	HP ≤ 0.5	0%
$N_{60} < 12$	36%	0.5 < HP ≤ 1	0%
$12 \leq N_{60} < 15$	16%	1 < HP ≤ 2	11%
$N_{60} \geq 20$	32%	HP > 2	32%
M+	24%		
Rock	2%		
Unsuitable	6%		

Excavate and Replace at Surface	
Average	16''
Maximum	24''
Minimum	12''

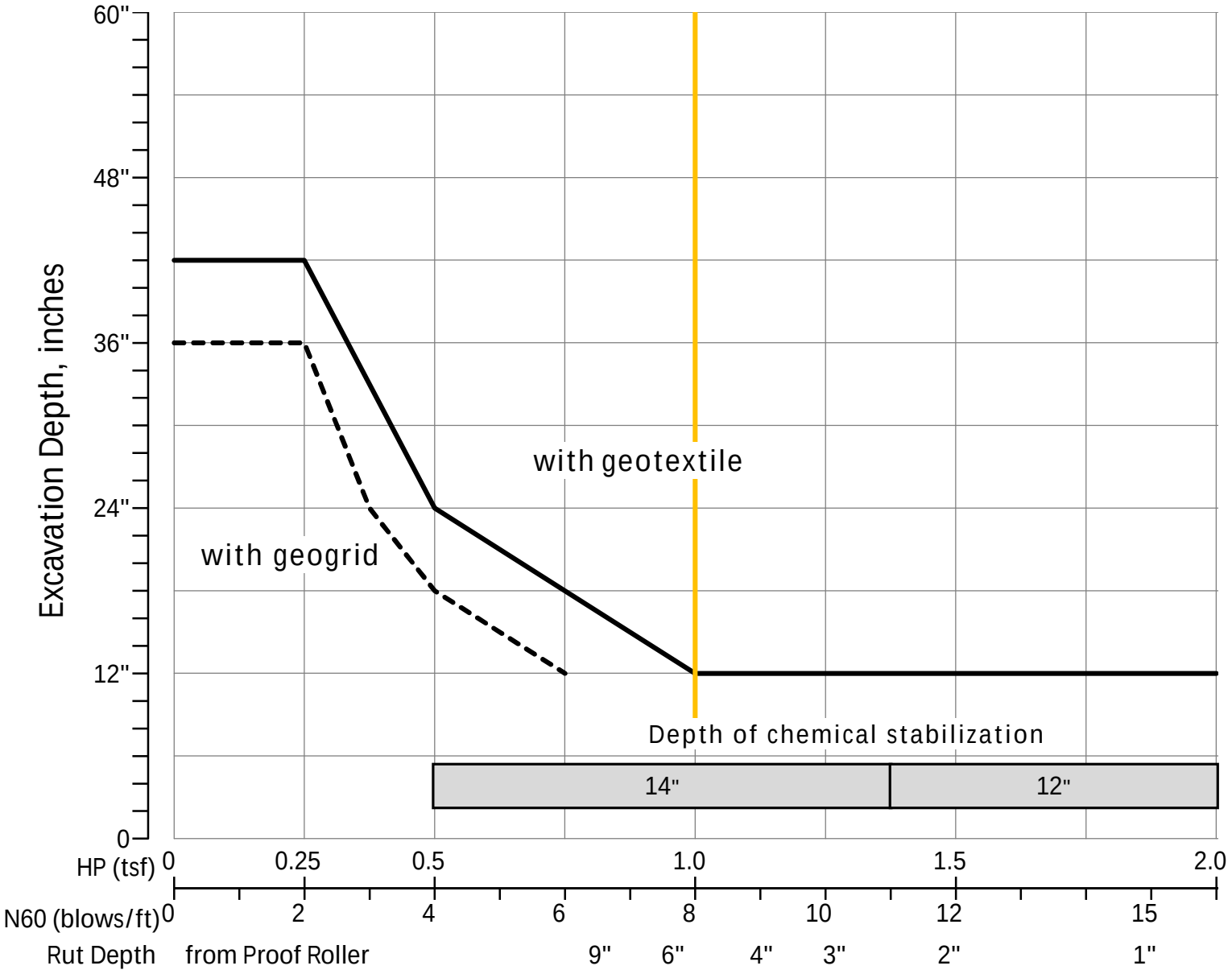
% Proposed Subgrade Surface	
Unstable & Unsuitable	52%
Unstable	52%
Unsuitable	0%

	N_{60}	N_{60L}	HP	LL	PL	PI	Silt	Clay	P 200	M_C	M_{OPT}	GI
Average	19	8	3.05	29	18	11	27	37	64	15	12	7
Maximum	100	18	4.50	38	22	17	45	68	89	42	17	16
Minimum	2	2	1.25	19	15	2	6	2	8	5	0	0

Classification Counts by Sample

ODOT Class	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	4	0	6	3	0	0	0	7	4	18	2	0	44	11	0	0	0	0	99
Percent	4%	0%	6%	3%	0%	0%	0%	7%	4%	18%	2%	0%	44%	11%	0%	0%	0%	0%	100%
% Rock|Granular|Cohesive	4%	38%									58%								100%
Surface Class Count	1	0	5	2	0	0	0	3	2	15	0	0	30	5	0	0	0	0	63
Surface Class Percent	2%	0%	8%	3%	0%	0%	0%	5%	3%	24%	0%	0%	48%	8%	0%	0%	0%	0%	100%

GB1 Figure B – Subgrade Stabilization



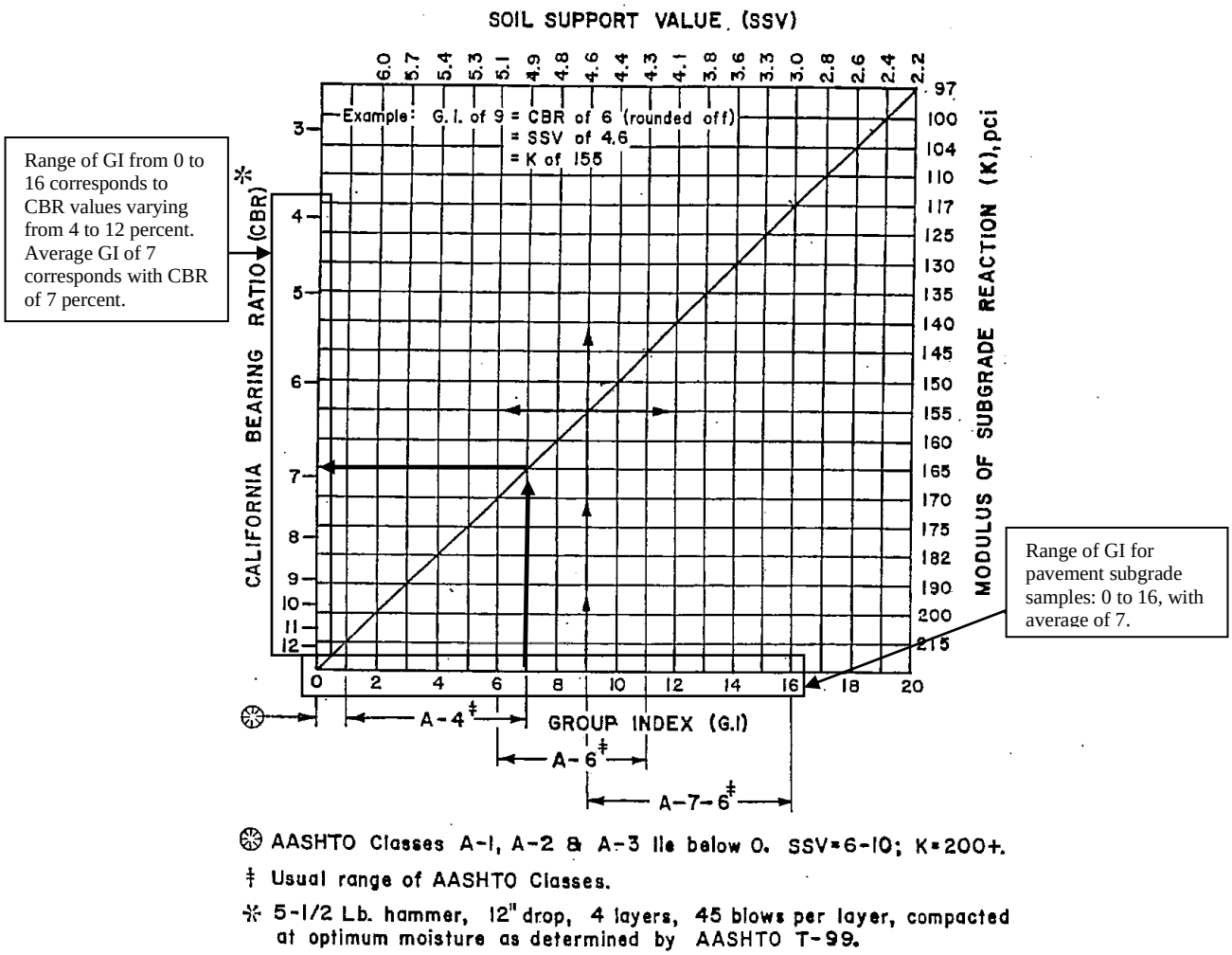
OVERRIDE TABLE

Calculated Average	New Values	Check to Override
3.05		☐ HP
8.09		☐ N60L

Average HP
Average N_{60L}

GEA/LAK-44-18.45/00.00
PID No. 114163

Fig.1301-3
Feb.1978



⊛ AASHTO Classes A-1, A-2 & A-3 lie below 0. SSV=6-10; K=200+.

‡ Usual range of AASHTO Classes.

* 5-1/2 Lb. hammer, 12" drop, 4 layers, 45 blows per layer, compacted at optimum moisture as determined by AASHTO T-99.

CORRELATION CHART FOR SUBGRADE STRENGTHS

The ODOT "Subgrade Analysis" worksheet for the borings at intersections where widening is planned resulted in a CBR value of 7 percent. It should be noted that the CBR determination by the GB-1 spreadsheet is based on an average Group Index (GI) of all the evaluated samples. It should be noted that group indices for the tested samples ranging from 9 to 16, which would correlate with lower CBR values than that determined based on the average GI value of 7, were generally encountered in borings that were indicated by the Subgrade Analysis spreadsheet for subgrade modification, or at depths of at least 1½ feet below the anticipated top of subgrade elevation. As such, it does not appear to be unconservative to use the Subgrade Analysis worksheet design CBR value of 7 percent based on the average design value calculations.

Subgrade modification may consist of undercutting and replacement with new granular engineered fill. Additionally, the Subgrade Analysis worksheet indicates global chemical stabilization to a depth of 14 inches using cement is an option. With widening planned for widths generally 12 feet or less, it is not expected that global chemical stabilization equipment could readily access and treat the subgrades. As such, it is planned that subgrade modification for this project include over-excavation and replacement with new granular engineered fill.

APPENDIX B

(Non-Intersection Logs of Test Borings, Grain Size Distribution, and Photographic Logs of Selected Pavement Cores)

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 28+26, 10' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1261.7 (NAVD88) EOB: 4.3 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 705569.3960 N, 2316162.8050 E

EXPLORATION ID B-001-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1261.7	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	BACK FILL
ASPHALT - 6 INCHES	1261.2																		
CONCRETE - 8 INCHES	1260.2	1																	
VERY STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1258.9	2	6 6 11	19	100	SS-1A	-	6	6	30	40	18	19	13	6	11	A-4a (5)	210	
		TR				SS-1B	-	-	-	-	-	-	-	-	-	-	Rock (V)	-	
SANDSTONE, BROWN, SEVERELY TO HIGHLY WEATHERED.		3	50/5"	-	100	SS-2	-	-	-	-	-	-	-	-	-	7	Rock (V)	-	
	1257.4	EOB 4																	

NOTES: AUGER REFUSAL AT 4.3 FT.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 32+13, 10' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1260.0 (NAVD88) EOB: 4.3 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 705934.7480 N, 2316032.4090 E

EXPLORATION ID B-002-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1260.0	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	BACK FILL
ASPHALT - 6 INCHES	1259.5																		
CONCRETE - 12 INCHES	1258.5	1																	
DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE SILT, TRACE SANDSTONE FRAGMENTS, TRACE CLAY, DAMP	1257.5	2	11 11 18	32	94	SS-1A	-	3	19	65	11	2	NP	NP	NP	5	A-3a (0)	<100	
	TR					SS-1B	-	-	-	-	-	-	-	-	-	-	Rock (V)	-	
SANDSTONE, ORANGE, SEVERELY TO HIGHLY WEATHERED.		3	15 50/5"	-	100	SS-2	-	-	-	-	-	-	-	-	-	8	Rock (V)	-	
	1255.7	4 EOB																	

NOTES: AUGER REFUSAL AT 4.3 FT.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:45 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 36+03, 10' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1258.6 (NAVD88) EOB: 6.2 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 706314.1680 N, 2315940.0620 E

EXPLORATION ID B-003-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1258.6	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	BACK FILL
ASPHALT - 9 INCHES	1257.8																		
AGGREGATE BASE - 5 INCHES	1257.4																		
LOOSE, GRAY/BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE GRAVEL, TRACE CLAY, MOIST			7 4 2	7	100	SS-1	-	4	33	36	25	2	NP	NP	NP	11	A-3a (0)	<100	
		W 1255.1	3 3 5	9	100	SS-2A	-	-	-	-	-	-	-	-	-	-	A-3a (V)	-	
	1254.5					SS-2B	1.50	2	3	5	23	67	34	20	14	20	A-6a (10)	-	
STIFF, GRAY, **SILT AND CLAY**, TRACE SAND, TRACE GRAVEL, MOIST						SS-3A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
	1253.5		6 8 10	20	100	SS-3B	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
MEDIUM DENSE, BROWN, **FINE SAND**, TRACE SILT	1253.1					SS-3C	3.00	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
VERY STIFF, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1252.7	TR				SS-3D	-	-	-	-	-	-	-	-	-	-	Rock (V)	-	
SANDSTONE, BROWN, SEVERELY TO HIGHLY WEATHERED. (FREE WATER NOTED)	1252.4	EOB	50/2"	-	100	SS-4	-	-	-	-	-	-	-	-	-	21	Rock (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:45 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 40+00, 12' LT.	EXPLORATION ID B-004-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1256.5 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 706688.2600 N, 2315805.1270 E	

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	BACK FILL
ASPHALT - 7.5 INCHES	1256.5																		
	1255.9																		
AGGREGATE BASE - 6.25 INCHES	1255.4	1																	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE GRAVEL, TRACE CLAY, DAMP		2	5 7 9	18	100	SS-1A	-	4	40	32	22	2	NP	NP	NP	8	A-3a (0)	<100	
	1253.9					SS-1B	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP		3	6 5 5	11	100	SS-2	-	3	47	35	13	2	NP	NP	NP	4	A-1-b (0)	-	
	1251.5	4				SS-3A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, TRACE SHALE FRAGMENTS, DAMP	1250.9	5	3 7 10	19	100	SS-3B	-	17	10	10	28	35	25	15	10	11	A-4a (6)	-	
HARD, BROWN, **SANDY SILT**, LITTLE GRAVEL, TRACE CLAY, TRACE SANDSTONE FRAGMENTS, DAMP		6				SS-3C	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
	1249.2	7	12 20 30	55	89	SS-4A	-	-	-	-	-	-	-	-	-	12	A-4a (V)	-	
SANDSTONE, SEVERELY TO HIGHLY WEATHERED.	1249.0	TR EOB				SS-4B	-	-	-	-	-	-	-	-	-	-	Rock (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:45 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 43+88, 10' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1252.7 (NAVD88) EOB: 7.5 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 707065.7840 N, 2315715.3690 E

EXPLORATION ID B-005-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1252.7	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	BACK FILL
ASPHALT - 6.5 INCHES	1252.2																		
CONCRETE - 11.5 INCHES	1251.2	1																	
HARD, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP	1249.7	2	3 2 5	8	100	SS-1	4.50	7	8	9	22	54	28	17	11	13	A-6a (8)	270	
VERY STIFF, GRAY/BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	1247.3	3 4 5	5 7 9	18	100	SS-2	2.75	4	6	11	23	56	31	17	14	17	A-6a (10)	-	
			10 10 10	22	100	SS-3A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
VERY STIFF, GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	1245.2	6 7 EOB				SS-3B	3.50	-	-	-	-	-	-	-	-	18	A-6b (V)	-	
			5 8 8	18	100	SS-4	3.75	-	-	-	-	-	-	-	-	18	A-6b (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:45 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 47+89, 10' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1246.4 (NAVD88) EOB: 7.5 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 707444.6400 N, 2315581.5890 E

EXPLORATION ID B-006-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1246.4	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	BACK FILL
ASPHALT - 7 INCHES	1245.8																		
CONCRETE - 11 INCHES	1244.9	1																	
STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP		2	4 5 7	13	100	SS-1A	-	3	7	38	42	10	18	14	4	11	A-4a (3)	-	
@2.3': GRAY/BROWN, TRACE CLAY						SS-1B	-	4	13	31	45	7	23	15	8	10	A-4a (3)	210	
	1243.2	3				SS-2A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, AND SAND, LITTLE GRAVEL, DAMP		4	6 7 7	15	100	SS-2B	3.75	11	14	24	25	26	33	19	14	17	A-6a (5)	-	
		5	7 9 11	22	0	SS-3	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
@6': TRACE GRAVEL		6	6 6 9	17	100	SS-4	3.75	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
	1238.9	7 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:45 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 51+83, 5' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1240.2 (NAVD88) EOB: 7.5 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 707826.6720 N, 2315483.4650 E

EXPLORATION ID B-007-0-22

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	BACK FILL
ASPHALT - 7.5 INCHES	1240.2																		
	1239.6																		
BROWN, **COARSE AND FINE SAND**, SOME SILT	1238.9	1																	
HARD, BROWN/GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		2	5 6 7	14	100	SS-1	4.50	3	8	18	43	28	26	16	10	12	A-4a (7)	260	
@2.2': 1-INCH SAND SEAM		3				SS-2A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
	1236.7		6 7 7	15	100	SS-2B	2.75	4	10	14	26	46	29	16	13	15	A-6a (9)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, DAMP		4																	
		5	5 8 8	18	100	SS-3	-	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
@6.3': GRAY/BROWN, LITTLE SAND, LITTLE SANDSTONE FRAGMENTS		6	7 10 10	22	100	SS-4	-	-	-	-	-	-	-	-	-	13	A-6a (V)	-	
	1232.7	7 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:45 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 55+69, 10' LT.	EXPLORATION ID B-008-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1233.9 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 708191.7280 N, 2315357.9440 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1233.9	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	BACK FILL
ASPHALT - 10.5 INCHES	1233.0																		
AGGREGATE BASE - 6.5 INCHES	1232.5																		
LOOSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE GRAVEL, TRACE CLAY, DAMP	1231.4	1	3 4 4	9	89	SS-1A	-	6	32	39	21	2	NP	NP	NP	9	A-3a (0)	-	
						SS-1B	-	4	11	20	41	24	24	15	9	13	A-4a (6)	-	
STIFF, GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	1229.4	2	4 5 7	13	100	SS-2A	-	7	10	16	44	23	24	15	9	12	A-4a (6)	-	
						SS-2B	-	-	-	-	-	-	-	-	-	-	A-4a (V)	150	
STIFF, GRAY, **SILT AND CLAY**, SOME SAND, LITTLE SHALE FRAGMENTS, DAMP	1227.9	3	7 5 9	15	100	SS-3	-	-	-	-	-	-	-	-	-	12	A-6a (V)	-	
HARD, GRAY, **SILT AND CLAY**, SOME SAND, LITTLE SHALE FRAGMENTS, DAMP	1226.4	4	7 9 11	22	100	SS-4	4.50	-	-	-	-	-	-	-	-	12	A-6a (V)	-	
		EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:45 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 59+63, 9' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1227.8 (NAVD88) EOB: 7.5 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 708575.4840 N, 2315263.7910 E

EXPLORATION ID B-009-0-22

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	BACK FILL
ASPHALT - 6 INCHES	1227.8																		
	1227.3																		
CONCRETE - 12 INCHES																			
	1226.3	W 1226.3																	
LOOSE, BROWN, **FINE SAND**, TRACE SILT, MOIST						SS-1A	-	-	-	-	-	-	-	-	-	13	A-3 (V)	-	
	1225.8		2 2 3	6	100														
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP						SS-1B	3.00	5	9	14	26	46	28	17	11	16	A-6a (8)	250	
@3': MOIST			2 2 3	6	100	SS-2	2.00	2	7	17	27	47	34	19	15	21	A-6a (10)	-	
	1222.3		3 4 5	10	100	SS-3A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
STIFF, BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, TRACE SANDSTONE FRAGMENTS, MOIST						SS-3B	2.00	-	-	-	-	-	-	-	-	19	A-6b (V)	-	
@6.5': GRAY			6 5 5	11	100	SS-4	1.00	-	-	-	-	-	-	-	-	22	A-6b (V)	-	
	1220.3	EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:45 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 63+54, 13' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1221.2 (NAVD88) EOB: 7.5 ft.
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 708943.5040 N, 2315131.1720 E

EXPLORATION ID B-010-0-22

MATERIAL DESCRIPTION AND NOTES	ELEV. 1221.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ASPHALT - 6.5 INCHES	1220.7																		
CONCRETE - 8 INCHES	1220.0																		
BROWN, **FINE SAND**, TRACE SILT	F.S. 1219.8																		
VERY STIFF, GRAY/BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1218.2		4 3 5	9	100	SS-1	3.50	2	7	18	23	50	33	18	15	17	A-6a (10)	250	
HARD, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE SHALE FRAGMENTS, DAMP			7 11 14	28	100	SS-2	4.50	-	-	-	-	-	-	-	-	13	A-6a (V)	-	
			14 15 16	34	100	SS-3	-	7	11	15	25	42	27	16	11	13	A-6a (7)	-	
			12 14 16	33	100	SS-4	4.00	-	-	-	-	-	-	-	-	13	A-6a (V)	-	
	1213.7	EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 67+39, 9' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1213.0 (NAVD88) EOB: 7.5 ft.
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 709318.3550 N, 2315401.7160 E

EXPLORATION ID B-011-0-22

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	BACK FILL
ASPHALT - 9.5 INCHES	1213.0																		
	1212.2																		
AGGREGATE BASE - 8.5 INCHES	1211.5	1																	
MEDIUM DENSE, BROWN, **FINE SAND**, TRACE SILT, DAMP	1210.9		5 6 7	14	100	SS-1A	-	-	-	-	-	-	-	-	-	10	A-3 (V)	-	
HARD, BROWN, **SILT AND CLAY**, SOME SAND, DAMP		2				SS-1B	4.50	0	6	15	28	51	32	19	13	15	A-6a (9)	250	
@3': VERY STIFF, TRACE GRAVEL	1208.5	3 4	5 6 8	15	100	SS-2	3.25	2	8	14	21	55	30	18	12	15	A-6a (9)	-	
HARD, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1207.0	5	8 12 13	28	100	SS-3	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	-	
HARD, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, TRACE SHALE FRAGMENTS, DAMP	1205.5	6 7 EOB	20 25 25	55	100	SS-4	-	-	-	-	-	-	-	-	-	13	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 71+22, 14' LT.	EXPLORATION ID B-012-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1201.9 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 709679.2370 N, 2314909.7350 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1201.9	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	BACK FILL
ASPHALT - 10 INCHES	1201.1																		
AGGREGATE BASE - 5.5 INCHES	1200.6	1																	
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	1198.9	2	5 7 7	15	100	SS-1A	-	9	47	30	12	2	NP	NP	NP	4	A-1-b (0)	-	
						SS-1B	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	<100	
LOOSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, DAMP	1197.6	3	3 3 4	8	100	SS-2A	-	27	37	26	8	2	NP	NP	NP	6	A-1-b (0)	-	
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		4				SS-2B	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
		5	4 8 12	22	100	SS-3	-	9	10	14	38	29	26	17	9	14	A-4a (6)	-	
@6': HARD		6	14 15 17	35	100	SS-4	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
	1194.4	7 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 75+10, 5' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1190.5 (NAVD88) EOB: 7.5 ft.
START: 12/14/22 END: 12/14/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 710056.1780 N, 2314816.7230 E

EXPLORATION ID B-013-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1190.5	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	BACK FILL
ASPHALT - 6.5 INCHES	1190.0																		
CONCRETE - 8.5 INCHES	1189.2	W 1189.2																	
AGGREGATE BASE - 5 INCHES	1188.8					SS-1A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
STIFF, GRAY, **SANDY SILT**, AND CLAY, TRACE GRAVEL, DAMP	1187.5	1	3 4 7	12	100	SS-1B	-	6	7	10	38	39	24	16	8	14	A-4a (8)	250	
STIFF, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP		2	3 5 7	13	100	SS-2	-	5	7	17	25	46	31	17	14	16	A-6a (9)	-	
@4.5': VERY STIFF, BROWN, MOIST		3 4 5	9 11 12	25	100	SS-3	3.25	-	-	-	-	-	-	-	-	18	A-6a (V)	-	
@6': HARD, GRAY, DAMP	1183.0	6 7 EOB	8 9 8	19	100	SS-4	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 98+47, 12' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1123.0 (NAVD88) EOB: 7.5 ft.
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 712298.3990 N, 2314156.1910 E

EXPLORATION ID B-019-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1123.0	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	BACK FILL
ASPHALT - 6.5 INCHES	1122.5																		
CONCRETE - 8.5 INCHES	1121.7	1																	
BROWN, **FINE SAND**, TRACE SILT	1121.3					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP		2	2 3 5	9	100	SS-1B	-	6	9	23	24	38	28	17	11	15	A-6a (6)	260	
@3.8': HARD	1118.5	3 4	10 18 23	45	100	SS-2	-	2	11	23	25	39	27	15	12	13	A-6a (7)	-	
VERY STIFF, GRAY, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP		5	18 19 21	44	100	SS-3	3.25	-	-	-	-	-	-	-	-	14	A-6b (V)	-	
@6': TRACE SHALE FRAGMENTS	1115.5	6 7	9 13 19	35	100	SS-4	3.00	-	-	-	-	-	-	-	-	14	A-6b (V)	-	
		EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 102+37, 9' RT.	EXPLORATION ID B-020-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1120.4 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 712682742.0000 N, 2314090.7470 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1120.4	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	BACK FILL
ASPHALT - 8.5 INCHES	1119.7																		
AGGREGATE BASE - 8.5 INCHES	1119.0																		
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP			2 3 5	9	100	SS-1	4.00	3	7	17	26	47	30	17	13	16	A-6a (9)	270	
@3.5': TRACE SHALE FRAGMENTS	1115.9		4 8 10	20	100	SS-2	-	2	9	14	28	47	30	17	13	14	A-6a (9)	-	
VERY STIFF, GRAY/BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, TRACE ORGANICS, MOIST			10 13 16	32	100	SS-3	3.75	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
@6.3': BROWN	1112.9	EOB	15 15 12	30	100	SS-4	-	-	-	-	-	-	-	-	-	17	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 106+30, 15' LT.	EXPLORATION ID B-021-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1121.6 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 713063.0370 N, 2313988.3420 E	

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	BACK FILL
ASPHALT - 9 INCHES	1121.6																		
	1120.8																		
AGGREGATE BASE - 5.5 INCHES	1120.4	1																	
VERY STIFF, BROWN/GRAY, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, MOIST		2	4 5 6	12	100	SS-1	2.50	1	5	16	25	53	35	18	17	20	A-6b (11)	270	
@2.8': BROWN, TRACE SANDSTONE FRAGMENTS		3	5 6 6	13	100	SS-2A	2.50	-	-	-	-	-	-	-	-	19	A-6b (V)	-	
	1117.8					SS-2B	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
STIFF, BROWN, **SILT AND CLAY**, SOME SAND, SOME SANDSTONE FRAGMENTS, TRACE GRAVEL, DAMP		4																	
		5	5 5 9	15	100	SS-3	-	23	10	20	20	27	29	18	11	11	A-6a (3)	-	
@6': VERY STIFF		6																	
		7	12 12 12	26	100	SS-4	-	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
	1114.1	EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 110+20, 9' RT.	EXPLORATION ID B-022-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1123.3 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 713451.6930 N, 2313943.1280 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1123.3	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	BACK FILL
ASPHALT - 6.5 INCHES	1122.8																		
CONCRETE - 8.5 INCHES	1122.0																		
BROWN, **FINE SAND**, TRACE SILT	1121.6					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
MEDIUM STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP			3 4 3	8	100	SS-1B	-	9	8	13	26	44	30	18	12	15	A-6a (8)	270	
	1120.0					SS-2A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST			6 7 7	15	100	SS-2B	-	3	11	22	25	39	29	17	12	17	A-6a (7)	-	
@4.5': VERY STIFF, TRACE SHALE FRAGMENTS, DAMP			9 9 10	21	100	SS-3	3.75	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
@6': LITTLE GRAVEL			10 15 15	33	100	SS-4	-	-	-	-	-	-	-	-	-	13	A-6a (V)	-	
	1115.8	EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 114+18, 13' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1124.8 (NAVD88) EOB: 7.5 ft.
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 713841.5190 N, 2313859.3020 E

EXPLORATION ID B-023-0-22

MATERIAL DESCRIPTION AND NOTES	ELEV. 1124.8	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	BACK FILL
ASPHALT - 6 INCHES	1124.3																		
CONCRETE - 8.75 INCHES	1123.5																		
BROWN, **FINE SAND**, TRACE SILT	1123.1					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
STIFF, GRAY, **SANDY SILT**, AND CLAY, TRACE GRAVEL, DAMP	1121.8		4 6 6	13	100	SS-1B	-	5	8	10	38	39	26	17	9	13	A-4a (8)	270	
VERY STIFF, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP			4 5 6	12	100	SS-2	2.75	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
			6 7 6	14	100	SS-3	2.50	4	9	17	27	43	27	16	11	15	A-6a (7)	-	
			9 10 9	21	100	SS-4	2.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
	1117.3	EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 118+06, 9' RT.	EXPLORATION ID B-024-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1124.4 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 714227.8300 N, 2313821.2790 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1124.4	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	BACK FILL
ASPHALT - 9 INCHES	1123.6																		
AGGREGATE BASE - 6 INCHES	1123.1	1																	
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, DAMP	1121.4	2	5 6 7	14	100	SS-1	-	12	44	37	5	2	NP	NP	NP	4	A-1-b (0)	<100	
VERY LOOSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE GRAVEL, TRACE CLAY, DAMP	1119.1	3 4 5	2 1 1	2	100	SS-2	-	5	44	25	22	4	NP	NP	NP	5	A-3a (0)	-	
VERY LOOSE, BROWN, **GRAVEL AND STONE FRAGMENTS**, TRACE SAND, TRACE SILT, DRY	1118.3	6	2 1 2	3	100	SS-3A	-	-	-	-	-	-	-	-	-	4	A-3a (V)	-	
						SS-3B	-	91	4	4	-	1 -	NP	NP	NP	1	A-1-a (0)	-	
STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, LITTLE GRAVEL, LITTLE SHALE FRAGMENTS, DAMP	1116.9	7 EOB	3 4 5	10	100	SS-4	-	-	-	-	-	-	-	-	-	12	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 121+93, 13' LT.	EXPLORATION ID B-025-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1123.0 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 714606.3790 N, 2313739.5380 E	

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	BACK FILL
ASPHALT - 9 INCHES	1123.0																		
	1122.2																		
AGGREGATE BASE - 6 INCHES	1121.7																		
LOOSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE GRAVEL, TRACE CLAY, DAMP			3 3 4	8	100	SS-1	-	-	-	-	-	-	-	-	-	7	A-3a (V)	-	
@3': VERY LOOSE			1 2 2	4	100	SS-2	-	5	44	25	22	4	NP	NP	NP	7	A-3a (0)	<100	
	1117.9		2 2 3	6	100	SS-3A	-	-	-	-	-	-	-	-	-	-	A-3a (V)	-	
MEDIUM STIFF, BROWN, **SANDY SILT**, SOME GRAVEL, LITTLE CLAY, DAMP						SS-3B	-	23	12	20	35	10	18	16	2	11	A-4a (2)	-	
	1116.5	TR				SS-4A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
SANDSTONE, BROWN, SEVERELY TO HIGHLY WEATHERED, TRACE SHALE FRAGMENTS.	1115.5	EOB	6 20 23	47	100	SS-4B	-	-	-	-	-	-	-	-	-	7	Rock (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 125+82, 9' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1121.4 (NAVD88) EOB: 7.5 ft.
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 714994.6890 N, 2313701.5280 E

EXPLORATION ID B-026-0-22

MATERIAL DESCRIPTION AND NOTES	ELEV. 1121.4	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	BACK FILL
ASPHALT - 6.5 INCHES	1120.9																		
CONCRETE - 9 INCHES	1120.1																		
AGGREGATE BASE - 6 INCHES	1119.6					SS-1A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
HARD, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1118.4		4 3 5	9	100	SS-1B	4.50	1	6	14	21	58	31	18	13	16	A-6a (9)	250	
VERY STIFF, BROWN/GRAY, **SILT AND CLAY**, LITTLE SAND, MOIST			3 5 8	14	100	SS-2	3.25	0	4	12	25	59	33	19	14	20	A-6a (10)	-	
@4.5': HARD			8 10 12	24	100	SS-3	4.25	-	-	-	-	-	-	-	-	24	A-6a (V)	-	
@6': VERY STIFF, GRAY/BROWN, SOME SAND, TRACE GRAVEL	1113.9	EOB	10 12 14	29	100	SS-4	3.25	-	-	-	-	-	-	-	-	19	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 129+71, 14' LT.	EXPLORATION ID B-027-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1119.9 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/15/22 END: 12/15/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 715375.4080 N, 2313618.4510 E	

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	BACK FILL
ASPHALT - 6.5 INCHES	1119.9																		
	1119.4																		
CONCRETE - 10.5 INCHES	1118.5	1																	
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT**, TRACE BRICK FRAGMENTS, TRACE CLAY, DAMP FILL	1117.6	2	10 12 12	26	100	SS-1A	-	45	20	8	24	3	NP	NP	NP	5	A-2-4 (0)	<100	
DENSE, BROWN, **SANDY SILT**, SOME GRAVEL, TRACE CLAY, DAMP						SS-1B	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
	1115.4	3	12 12 18	33	100	SS-2	-	33	11	16	31	9	NP	NP	NP	8	A-4a (1)	-	
VERY DENSE, BROWN, **FINE SAND**, LITTLE GRAVEL, TRACE SHALE FRAGMENTS, TRACE SILT, DAMP		4																	
		5	18 23 28	56	100	SS-3	-	-	-	-	-	-	-	-	-	5	A-3 (V)	-	
		6																	
	1112.4	7	12 27 24	56	100	SS-4	-	-	-	-	-	-	-	-	-	5	A-3 (V)	-	
		EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 152+93, 13' LT.	EXPLORATION ID B-033-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1094.5 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/19/22 END: 12/19/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 717669.4060 N, 2313261.6610 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1094.5	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	BACK FILL
ASPHALT - 9 INCHES	1093.7																		
AGGREGATE BASE - 6 INCHES	1093.2																		
MEDIUM DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, DAMP	1091.5		4 5 8	14	100	SS-1	-	14	40	35	8	3	NP	NP	NP	8	A-1-b (0)	<100	
VERY LOOSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, DAMP	1090.0		2 2 2	4	100	SS-2	-	8	47	36	7	2	NP	NP	NP	7	A-1-b (0)	-	
LOOSE, BROWN, **COARSE AND FINE SAND**, SOME CLAY, LITTLE SILT, DAMP		▼ W 1089.5	1 2 3	6	89	SS-3	-	-	-	-	-	-	-	-	-	8	A-3a (V)	-	
@6': MEDIUM DENSE	1088.0					SS-4A	-	-	-	-	-	-	-	-	-	5	A-3a (V)	-	
DENSE, GRAY, **FINE SAND**, TRACE SILT, MOIST	1087.0	EOB	13 18 23	45	100	SS-4B	-	-	-	-	-	-	-	-	-	18	A-3 (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 156+85, 10' RT.	EXPLORATION ID B-034-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1088.7 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/19/22 END: 12/19/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 718060.9730 N, 2313223.3720 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1088.7	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	BACK FILL
ASPHALT - 9 INCHES	1087.9																		
AGGREGATE BASE - 6 INCHES	1087.4	1																	
LOOSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS**, LITTLE SILT, TRACE CLAY, DAMP (CRUSHED STONE) FILL		2	3 4 5	10	100	SS-1	-	15	37	27	18	3	NP	NP	NP	9	A-1-b (0)	<100	
@3': TRACE SILT		3	3 3 3	7	100	SS-2	-	4	52	34	8	2	NP	NP	NP	7	A-1-b (0)	-	
@4.8': MEDIUM DENSE, LITTLE SANDSTONE FRAGMENTS, TRACE BRICK FRAGMENTS	1082.9	4 5 W 1083.9	2 4 8	13	100	SS-3A	-	-	-	-	-	-	-	-	-	6	A-1-b (V)	-	
		TR				SS-3B	-	-	-	-	-	-	-	-	-	-	Rock (V)	-	
SANDSTONE, BROWN, SEVERELY TO HIGHLY WEATHERED.	1081.2	6 7 EOB	4 6 8	15	100	SS-4	-	-	-	-	-	-	-	-	-	13	Rock (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 160+72, 10' LT.	EXPLORATION ID B-035-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1083.0 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/19/22 END: 12/19/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 718439.4150 N, 2313143.6000 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1083.0	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	BACK FILL
ASPHALT - 6.5 INCHES	1082.5																		
CONCRETE - 8.25 INCHES	1081.8	1																	
BROWN, **FINE SAND**, TRACE SILT	1081.4					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1080.5	2	5 6 6	13	100	SS-1B	-	9	14	23	37	17	25	15	10	12	A-4a (4)	-	
VERY STIFF, GRAY/BROWN, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, MOIST						SS-1C	-	-	-	-	-	-	-	-	-	-	A-6b (V)	130	
		3	3 4 6	11	100	SS-2	2.50	1	8	21	28	42	35	19	16	20	A-6b (9)	260	
		4																	
		5	5 10 10	22	100	SS-3	2.50	-	-	-	-	-	-	-	-	19	A-6b (V)	-	
@6': STIFF TO VERY STIFF		6				SS-4A	1.75	-	-	-	-	-	-	-	-	19	A-6b (V)	-	
@6.5': BROWN, LITTLE SANDSTONE FRAGMENTS, DAMP	1075.5	7	8 10 10	22	100	SS-4B	-	-	-	-	-	-	-	-	-	16	A-6b (V)	-	
		EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 16:14 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 164+61, 10' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1077.1 (NAVD88) EOB: 7.5 ft.
START: 12/19/22 END: 12/19/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 718827.3350 N, 2313104.1240 E

EXPLORATION ID B-036-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1077.1	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	BACK FILL
ASPHALT - 7 INCHES	1076.5																		
CONCRETE - 8 INCHES	1075.8																		
LOOSE, BROWN, **FINE SAND**, TRACE SILT, DAMP	1075.4					SS-1A	-	-	-	-	-	-	-	-	-	10	A-3 (V)	-	
MEDIUM STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1074.1		3 3 3	7	100	SS-1B	-	6	12	18	26	38	28	17	11	14	A-6a (6)	260	
STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP			4 5 6	12	100	SS-2	-	6	9	18	24	43	31	18	13	17	A-6a (8)	-	
@4.5': VERY STIFF, GRAY/BROWN	1071.1		7 10 10	22	100	SS-3	3.75	-	-	-	-	-	-	-	-	17	A-6a (V)	-	
VERY STIFF, BROWN, **SILTY CLAY**, TRACE SAND, MOIST	1069.6	EOB	10 12 12	26	100	SS-4	3.00	-	-	-	-	-	-	-	-	21	A-6b (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 168+42, 10' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1071.6 (NAVD88) EOB: 7.5 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 719200.5240 N, 2313025.1660 E

EXPLORATION ID B-037-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1071.6	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	BACK FILL
ASPHALT - 9 INCHES	1070.8																		
AGGREGATE BASE - 6 INCHES	1070.3																		
MEDIUM DENSE, BROWN, **FINE SAND**, LITTLE SANDSTONE FRAGMENTS, TRACE SILT, DAMP	1069.6					SS-1A	-	-	-	-	-	-	-	-	-	9	A-3 (V)	-	
STIFF, BROWN/GRAY, **SILT AND CLAY**, SOME SAND, TRACE SANDSTONE FRAGMENTS, MOIST	1068.6		7 5 5	11	100	SS-1B	-	1	6	18	25	50	31	17	14	17	A-6a (10)	250	
VERY STIFF, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, MOIST			5 5 6	12	100	SS-2	2.75	1	7	18	26	48	31	18	13	19	A-6a (9)	-	
@4.5': HARD, DAMP			6 9 9	20	100	SS-3	4.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
@6': VERY STIFF, MOIST	1064.1	EOB	7 9 11	22	100	SS-4	3.25	-	-	-	-	-	-	-	-	21	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 172+25, 11' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1068.2 (NAVD88) EOB: 7.5 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 719581.7600 N, 2312986.5210 E

EXPLORATION ID B-038-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1068.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
ASPHALT - 4.5 INCHES	1067.8																		
CONCRETE - 9 INCHES	1067.1																		
BROWN, **FINE SAND**, TRACE SILT	1066.7																		
VERY STIFF, BROWN, **SILT AND CLAY**, AND SAND, TRACE GRAVEL, MOIST	1065.2		3 2 4	7	100	SS-1	3.50	2	12	23	26	37	32	17	15	17	A-6a (8)	250	
VERY STIFF, BROWN, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, DAMP			3 5 7	13	100	SS-2	3.75	5	8	17	24	46	37	19	18	18	A-6b (10)	-	
@4.5': HARD	1062.2		7 11 14	28	100	SS-3	4.50	-	-	-	-	-	-	-	-	16	A-6b (V)	-	
VERY STIFF, GRAY/BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP	1060.7	EOB	11 18 13	34	100	SS-4	3.25	-	-	-	-	-	-	-	-	17	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 176+13, 14' LT.	EXPLORATION ID B-039-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1065.8 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 719961.8870 N, 2312902.4740 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1065.8	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	BACK FILL
ASPHALT - 7 INCHES	1065.2																		
CONCRETE - 8 INCHES	1064.5																		
BROWN, **FINE SAND**, TRACE SILT	1064.1					SS-1A	-	-	-	-	-	-	-	-	-	-	A-3 (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP			3 6 9	17	100	SS-1B	-	4	8	16	23	49	30	17	13	13	A-6a (9)	-	
						SS-1C	-	-	-	-	-	-	-	-	-	-	A-6a (V)	170	
@3.5': LITTLE GRAVEL, TRACE SHALE FRAGMENTS	1060.4		7 7 10	19	100	SS-2	-	10	6	12	26	46	29	18	11	14	A-6a (8)	250	
			13 23 23	51	100	SS-3A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
						SS-3B	-	-	-	-	-	-	-	-	-	12	A-1-b (V)	-	
VERY DENSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, MOIST	1059.3					SS-4A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
HARD, GRAY, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, TRACE SANDSTONE FRAGMENTS, DAMP	1058.3	EOB	17 20 23	47	100	SS-4B	-	-	-	-	-	-	-	-	-	12	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 180+08, 11' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1063.4 (NAVD88) EOB: 7.5 ft.
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 720355.4770 N, 2312865.9350 E

EXPLORATION ID B-040-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 1063.4	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	BACK FILL
ASPHALT - 6 INCHES	1063.0																		
CONCRETE - 7.5 INCHES	1062.3	1																	
LOOSE, BROWN, **FINE SAND**, TRACE SILT, MOIST (F.S.)	1061.4					SS-1A	-	-	-	-	-	-	-	-	-	14	A-3 (V)	<100	
STIFF, BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP	1059.7	2	3 4 7	12	100	SS-1B	-	2	5	13	23	57	29	17	12	14	A-6a (9)	-	
		3				SS-2A	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	1058.1	4	3 4 9	14	100	SS-2B	-	9	9	24	39	19	22	15	7	12	A-4a (5)	250	
		5				SS-3A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP			10 8 8	18	100	SS-3B	-	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
@6.1': LITTLE SAND, LITTLE SANDSTONE FRAGMENTS	1055.9	6 7	7 9 11	22	100	SS-4	-	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 183+96, 10' LT.	EXPLORATION ID B-041-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 1061.3 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/12/22 END: 12/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 720736.4310 N, 2132785.5420 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 1061.3	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	BACK FILL
ASPHALT - 4 INCHES	1061.0																		
AGGREGATE BASE - 10 INCHES	1060.1	1																	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE GRAVEL, TRACE CLAY, DAMP	1058.3	2	8 8 6	15	100	SS-1	-	8	39	29	22	2	NP	NP	NP	6	A-3a (0)	<100	
VERY LOOSE, BROWN, **GRAVEL AND STONE FRAGMENTS WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP		3	2 2 2	4	100	SS-2	-	15	42	25	16	2	NP	NP	NP	5	A-1-b (0)	-	
@5.3': LOOSE	1054.8	4 5 6	2 2 3	6	100	SS-3	-	-	-	-	-	-	-	-	-	2	A-1-b (V)	-	
						SS-4A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
HARD, BROWN, **SILT AND CLAY**, LITTLE GRAVEL, LITTLE SAND, DAMP	1053.8	7 EOB	5 6 6	13	100	SS-4B	4.25	-	-	-	-	-	-	-	-	16	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 234+99, 10' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 989.0 (NAVD88) EOB: 7.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 725804.1570 N, 2312729.2310 E

EXPLORATION ID B-054-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 989.0	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	BACK FILL
AGGREGATE - 4 INCHES	988.7																		
STIFF, DARK BROWN, **SILT AND CLAY**, LITTLE GRAVEL, LITTLE SAND, TRACE ORGANICS, DAMP		1	3 4 7	12	83	SS-1	-	-	-	-	-	-	-	-	-	20	A-6a (V)	-	
@1.5': VERY STIFF	986.8	2	3 3 3	7	89	SS-2A	2.50	-	-	-	-	-	-	-	-	20	A-6a (V)	-	
VERY STIFF, GRAY, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, TRACE ORGANICS, DAMP	986.4					SS-2B	3.25	3	3	9	25	60	33	22	11	20	A-6a (8)	-	
						SS-2C	-	-	-	-	-	-	-	-	-	-	A-6a (V)	-	
HARD, BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP	985.5	3				SS-3A	4.50	1	5	11	25	58	33	20	13	15	A-6a (9)	240	
VERY STIFF, BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST		4	8 12 16	31	100	SS-3B	3.00	-	-	-	-	-	-	-	-	21	A-6b (V)	-	
@4.5': HARD, DAMP		5	16 20 24	48	100	SS-4	4.50	1	3	12	26	58	39	23	16	16	A-6b (10)	-	
@6': TRACE SHALE FRAGMENTS		6	22 22 32	59	100	SS-5	-	-	-	-	-	-	-	-	-	15	A-6b (V)	-	
	981.5	7 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 238+92, 23' LT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 984.2 (NAVD88) EOB: 7.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 726198.8020 N, 2312738.5280 E

EXPLORATION ID B-055-0-22

MATERIAL DESCRIPTION AND NOTES	ELEV. 984.2	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	SO4 ppm	BACK FILL
TOPSOIL - 4 INCHES	983.9																		
AGGREGATE - 6 INCHES	983.4																		
MEDIUM STIFF, BROWN, **SILTY CLAY**, LITTLE SAND, TRACE CRUSHED STONE, TRACE FABRIC, DAMP FILL	982.7	1	3 4 4	9	100	SS-1A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
						SS-1B	-	-	-	-	-	-	-	-	-	15	A-6b (V)	-	
STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	981.1	2	3 2 3	6	100	SS-2	2.00	2	10	19	43	26	26	17	9	16	A-4a (7)	260	
		3				SS-3A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
STIFF, BROWN/GRAY, **SILTY CLAY**, LITTLE SAND, MOIST		4	2 2 2	4	100	SS-3B	1.25	0	4	10	25	61	39	21	18	26	A-6b (11)	-	
@4.5': VERY STIFF, GRAY	978.2	5	3 6 6	13	100	SS-4	3.25	-	-	-	-	-	-	-	-	24	A-6b (V)	-	
VERY STIFF, BROWN/GRAY, **SILT AND CLAY**, LITTLE SAND, MOIST (ORGANIC ODOR NOTED)	976.7	6 7 EOB	8 8 8	18	100	SS-5	3.50	-	-	-	-	-	-	-	-	21	A-6a (V)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 242+84, 10' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 980.1 (NAVD88) EOB: 7.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 726584.2760 N, 2312812.7580 E

EXPLORATION ID B-056-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 980.1	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	BACK FILL
ASPHALT - 3.25 INCHES	979.8																		
CONCRETE - 9 INCHES	979.0																		
BROWN, **FINE SAND**, TRACE SILT	978.7	1																	
HARD, GRAY, **SANDY SILT**, TRACE CLAY, TRACE SANDSTONE FRAGMENTS, DAMP	977.0	2	25 35 25	66	100	SS-1	-	4	20	29	42	5	34	25	9	21	A-4a (2)	100	
		3				SS-2A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
VERY STIFF, BROWN/GRAY, **SILTY CLAY**, SOME SAND, TRACE GRAVEL, MOIST		4	3 3 6	10	100	SS-2B	2.00	2	7	18	23	50	37	20	17	23	A-6b (10)	-	
@4.5': HARD	975.3					SS-3A	4.50	-	-	-	-	-	-	-	-	15	A-6b (V)	-	
VERY STIFF TO HARD, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	974.1	5	8 12 15	30	100	SS-3B	-	-	-	-	-	-	-	-	-	14	A-4a (V)	-	
HARD, BROWN, **SILT AND CLAY**, SOME SAND, DAMP	972.6	6	14 16 16	35	100	SS-4	4.50	-	-	-	-	-	-	-	-	16	A-6a (V)	-	
		7 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 246+69, 13' LT.	EXPLORATION ID B-057-0-22
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44	
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 977.1 (NAVD88) EOB: 7.5 ft.	PAGE 1 OF 1
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 726970.1180 N, 2312833.6270 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 977.1	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	BACK FILL
ASPHALT - 4 INCHES	976.8																		
CONCRETE - 11 INCHES	975.8																		
AGGREGATE BASE - 4 INCHES	975.5					SS-1A	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	-	
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	973.6	1	4 6 10	18	100	SS-1B	4.50	2	7	18	43	30	27	17	10	13	A-4a (8)	210	
		2				SS-2A	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE SANDSTONE FRAGMENTS, TRACE GRAVEL, DAMP	972.5	3	8 11 14	28	100	SS-2B	-	14	9	11	22	44	33	21	12	15	A-6a (7)	-	
DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS**, (SANDSTONE FRAGMENTS), TRACE SILT, DAMP	971.1	4	20 21 21	46	100	SS-3	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	-	
MEDIUM DENSE, BROWN, **FINE SAND**, TRACE GRAVEL, TRACE SILT, DAMP	969.6	5	20 10 10	22	100	SS-4	-	-	-	-	-	-	-	-	-	10	A-3 (V)	-	
	EOB	6																	
		7																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 7/28/24 15:46 - X:\PROJECTS\2279801.GPJ

PROJECT: GEA/LAK-44-18.45/00.00	DRILLING FIRM / OPERATOR: TTL / CW	DRILL RIG: CME 75 TRUCK 844	STATION / OFFSET: 250+65, 30' RT.
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: TTL / KKC	HAMMER: CME AUTOMATIC	ALIGNMENT: SR44
PID: 114163 SFN: N/A	DRILLING METHOD: 3.5" SSA	CALIBRATION DATE: 3/15/21	ELEVATION: 975.3 (NAVD88) EOB: 7.5 ft.
START: 12/21/22 END: 12/21/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 66	COORD: 727357.9030 N, 2312925.0320 E

EXPLORATION ID B-058-0-22

PAGE 1 OF 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 975.3	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	BACK FILL
ASPHALT - 7 INCHES	974.7																		
CONCRETE - 8 INCHES	974.0	1																	
HARD, GRAY, **SANDY SILT**, TRACE CRUSHED STONE, TRACE ASPHALT FRAGMENTS, TRACE CLAY, DAMP FILL	972.0	2	22 32 26	64	100	SS-1	-	7	19	27	42	5	32	25	7	14	A-4a (2)	100	
		3				SS-2A	-	-	-	-	-	-	-	-	-	-	A-4a (V)	-	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP		4	2 4 6	11	100	SS-2B	2.75	3	9	18	26	44	29	18	11	16	A-6a (7)	-	
@4.6': TRACE SHALE FRAGMENTS	969.3	5	6 7 8	17	100	SS-3	3.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
STIFF, BROWN/GRAY, **SILTY CLAY**, LITLTE SAND, TRACE GRAVEL, TRACE SHALE FRAGMENTS, MOIST	967.8	6	7 7 4	12	100	SS-4	1.25	-	-	-	-	-	-	-	-	19	A-6b (V)	-	
		7 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.25 BAG ASPHALT PATCH; AUGER CUTTINGS MIXED WITH 0.25 BAG BENTONITE CHIPS

LEGEND KEY

Ohio Department of Transportation Soil Symbols


A-1-a - Gravel and/or Stone Fragments


A-1-b - Gravel and/or Stone Fragments with Sand


A-2-4,A-2-5 - Gravel and/or Stone Fragments with Sand and Silt


A-2-6,A-2-7 - Gravel and/or Stone Fragments with Sand, Silt and Clay


A-3 - Fine Sand


A-3a - Coarse and Fine Sand


A-4a - Sandy Silt


A-4b - Silt


A-5 - Elastic Silt and Clay


A-6a - Silt and Clay


A-6b - Silty Clay


A-7-5 - Elastic Clay


A-7-6 - Clay


A-8a - Organic Silt


A-8b - Organic Clay


Asphalt


Sod and/or Topsoil


Concrete


Random Fill


Peat


Dolomite


Weathered Dolomite


Limestone


Weathered Limestone


Sandstone


Weathered Sandstone


Shale


Weathered Shale

Sample Symbols


SS - Split Spoon


ST - Shelby Tube


RC - Rock Core


GS - Geoprobe Sleeve


AU - Auger Cuttings


GB - Grab

Notes:

1. Pavement cores and exploratory borings were performed during the period from December 12 through 22, 2022. Cores were obtained using a nominal 4-inch diameter core barrel. Borings were advanced using 3½-inch diameter solid-stem augers.

2. These logs are subject to the limitations, conclusions, and recommendations in the report and should not be interpreted separate from the report.

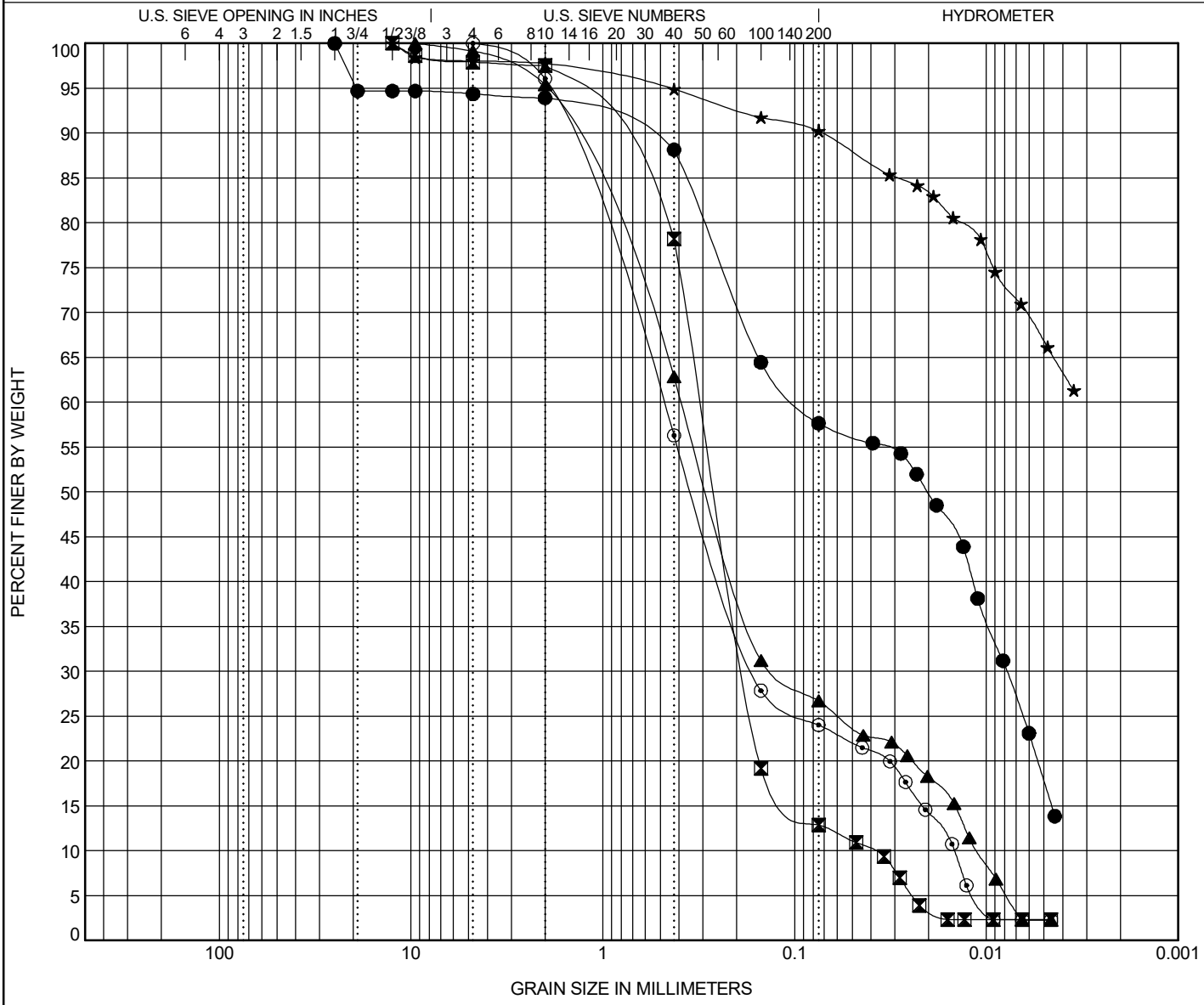
3. The boring locations were established in the field by TTL Associates, Inc. in general accordance with plans provided with the proposal for this project.

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-001-0-22	1.5	A-4a ~ SANDY SILTY CLAY(CL-ML)	19	13	6
⊠	B-002-0-22	1.5	A-3a ~ SILTY SAND(SM)	NP	NP	NP
▲	B-003-0-22	1.5	A-3a ~ SILTY SAND(SM)	NP	NP	NP
★	B-003-0-22	4.1	A-6a ~ LEAN CLAY(CL)	34	20	14
⊙	B-004-0-22	1.5	A-3a ~ SILTY SAND(SM)	NP	NP	NP

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-001-0-22	1.5	0.698	0.02	0.008		6	6	30	40	18		
⊠	B-002-0-22	1.5	1.094	0.258	0.181	0.039	3	19	65	11	2	2.72	7.86
▲	B-003-0-22	1.5	1.547	0.278	0.125	0.011	4	33	36	25	2	3.62	34.81
★	B-003-0-22	4.1	0.072				2	3	5	23	67		
⊙	B-004-0-22	1.5	1.578	0.337	0.162	0.015	4	40	32	22	2	3.65	33.43

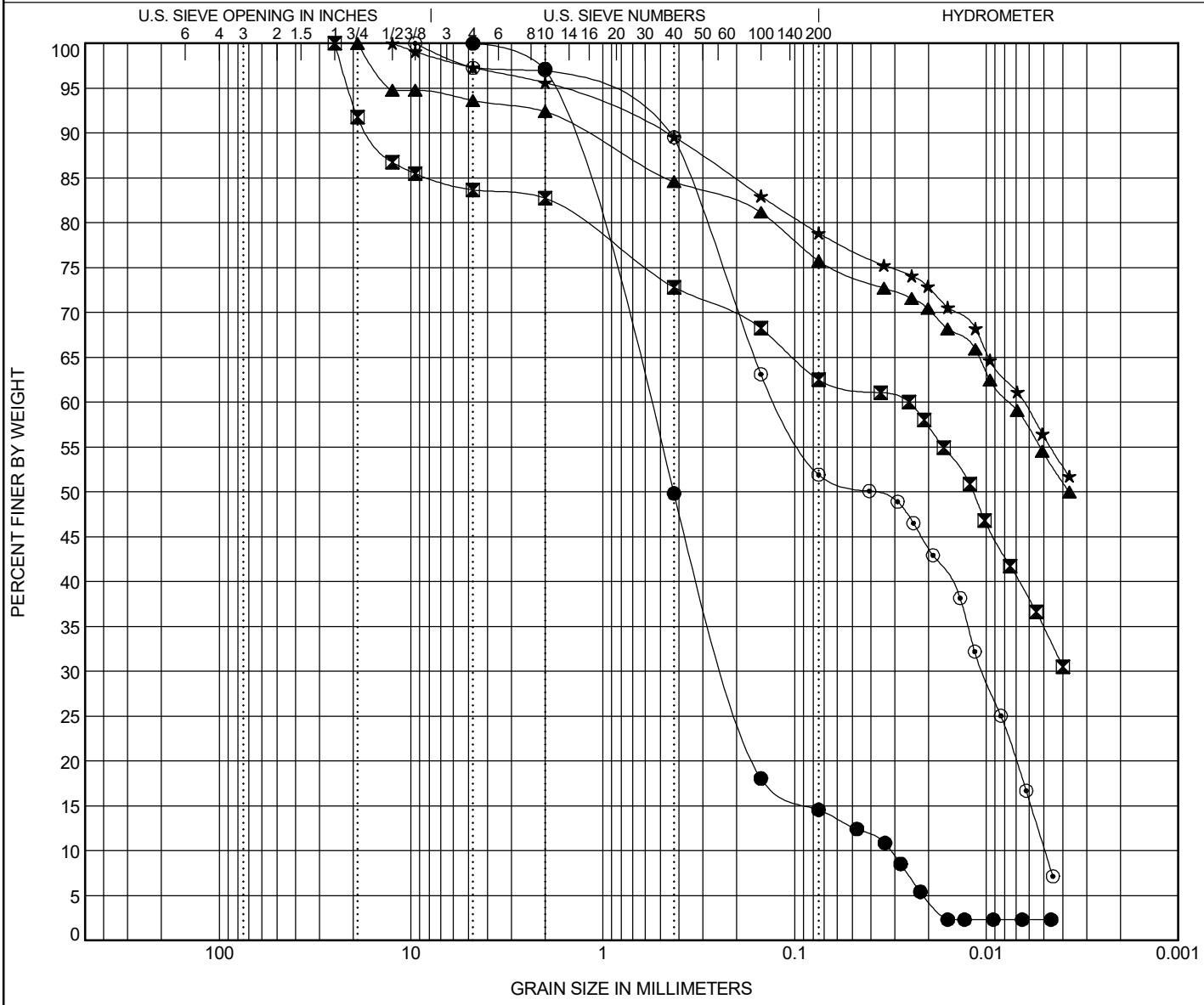
GRAIN SIZE - OH DOT.GDT - 8/12/24 14:27 - X:\PROJECTS\2279801.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-004-0-22	3.0	**A-1-b ~ SILTY SAND(SM)**	**NP**	**NP**	**NP**
⊠	B-004-0-22	5.0	**A-4a ~ SANDY LEAN CLAY with GRAVEL(CL)**	**25**	**15**	**10**
▲	B-005-0-22	1.5	**A-6a ~ LEAN CLAY with SAND(CL)**	**28**	**17**	**11**
★	B-005-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**31**	**17**	**14**
⊙	B-006-0-22	1.5	**A-4a ~ SANDY SILTY CLAY(CL-ML)**	**18**	**14**	**4**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-004-0-22	3.0	**1.583**	**0.427**	**0.222**	**0.031**	**3**	**47**	**35**	**13**	**2**	**2.63**	**18.82**
⊠	B-004-0-22	5.0	**16.4**	**0.012**			**17**	**10**	**10**	**28**	**35**		
▲	B-005-0-22	1.5	**1.242**				**7**	**8**	**9**	**22**	**54**		
★	B-005-0-22	3.0	**0.471**				**4**	**6**	**11**	**23**	**56**		
⊙	B-006-0-22	1.5	**0.467**	**0.04**	**0.01**	**0.005**	**3**	**7**	**38**	**42**	**10**	**0.18**	**24.96**

GRAIN SIZE - OH DOT.GDT - 8/12/24 14:27 - X:\PROJECTS\2279801.GPJ

GRAIN SIZE DISTRIBUTION

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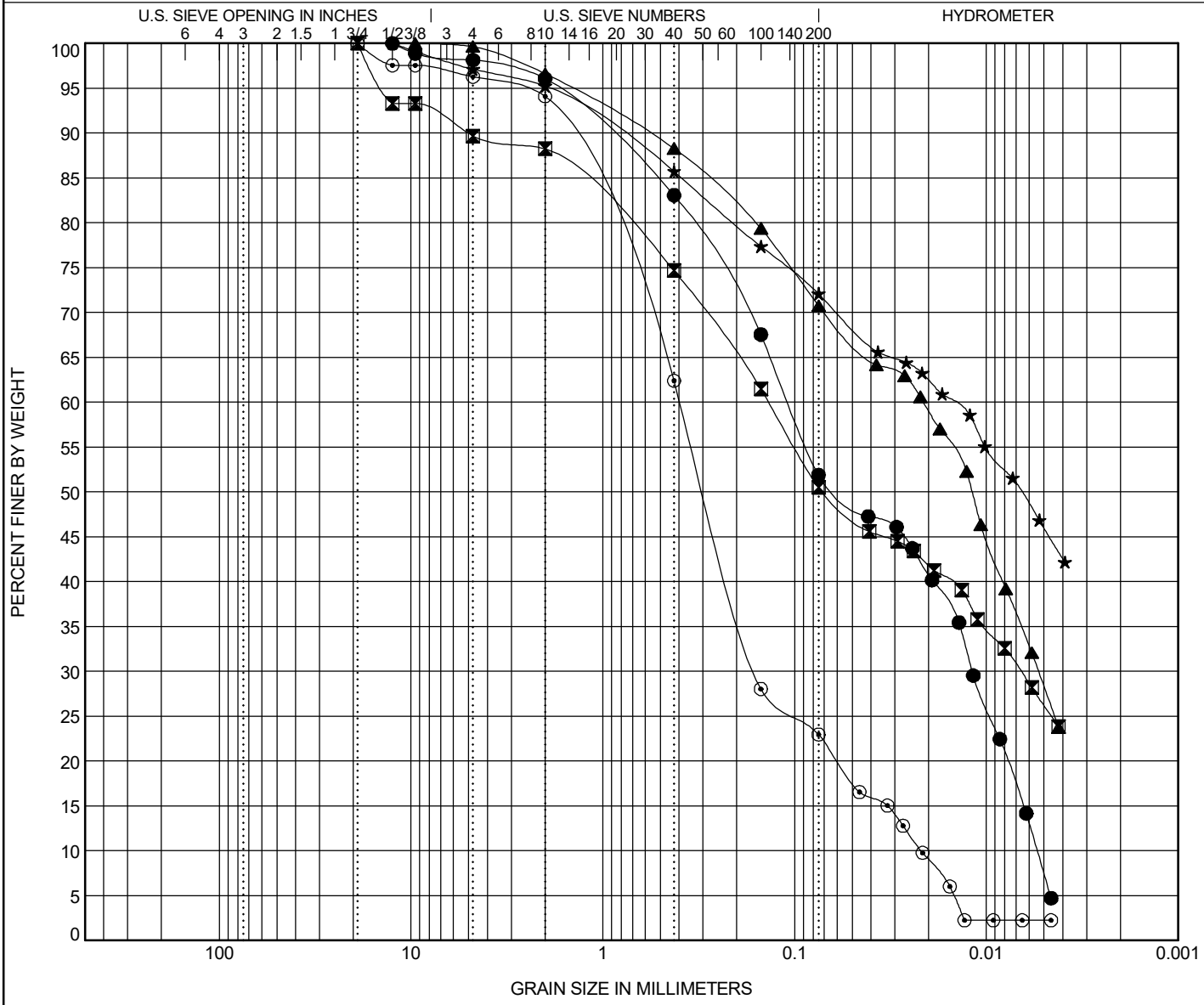
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-006-0-22	2.3	**A-4a ~ SANDY LEAN CLAY(CL)**	**23**	**15**	**8**
⊠	B-006-0-22	3.2	**A-6a ~ SANDY LEAN CLAY(CL)**	**33**	**19**	**14**
▲	B-007-0-22	1.5	**A-4a ~ LEAN CLAY with SAND(CL)**	**26**	**16**	**10**
★	B-007-0-22	3.5	**A-6a ~ LEAN CLAY with SAND(CL)**	**29**	**16**	**13**
⊙	B-008-0-22	1.5	**A-3a ~ SILTY SAND(SM)**	**NP**	**NP**	**NP**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-006-0-22	2.3	**0.969**	**0.059**	**0.012**	**0.005**	**4**	**13**	**31**	**45**	**7**	**0.24**	**19.76**
⊠	B-006-0-22	3.2	**5.038**	**0.07**	**0.007**		**11**	**14**	**24**	**25**	**26**		
▲	B-007-0-22	1.5	**0.583**	**0.012**	**0.005**		**3**	**8**	**18**	**43**	**28**		
★	B-007-0-22	3.5	**0.85**	**0.007**			**4**	**10**	**14**	**26**	**46**		
⊙	B-008-0-22	1.5	**1.636**	**0.292**	**0.159**	**0.022**	**6**	**32**	**39**	**21**	**2**	**2.93**	**18.07**

GRAIN SIZE - OH DOT.GDT - 8/12/24 14:27 - X:\PROJECTS\2279801.GPJ

GRAIN SIZE DISTRIBUTION

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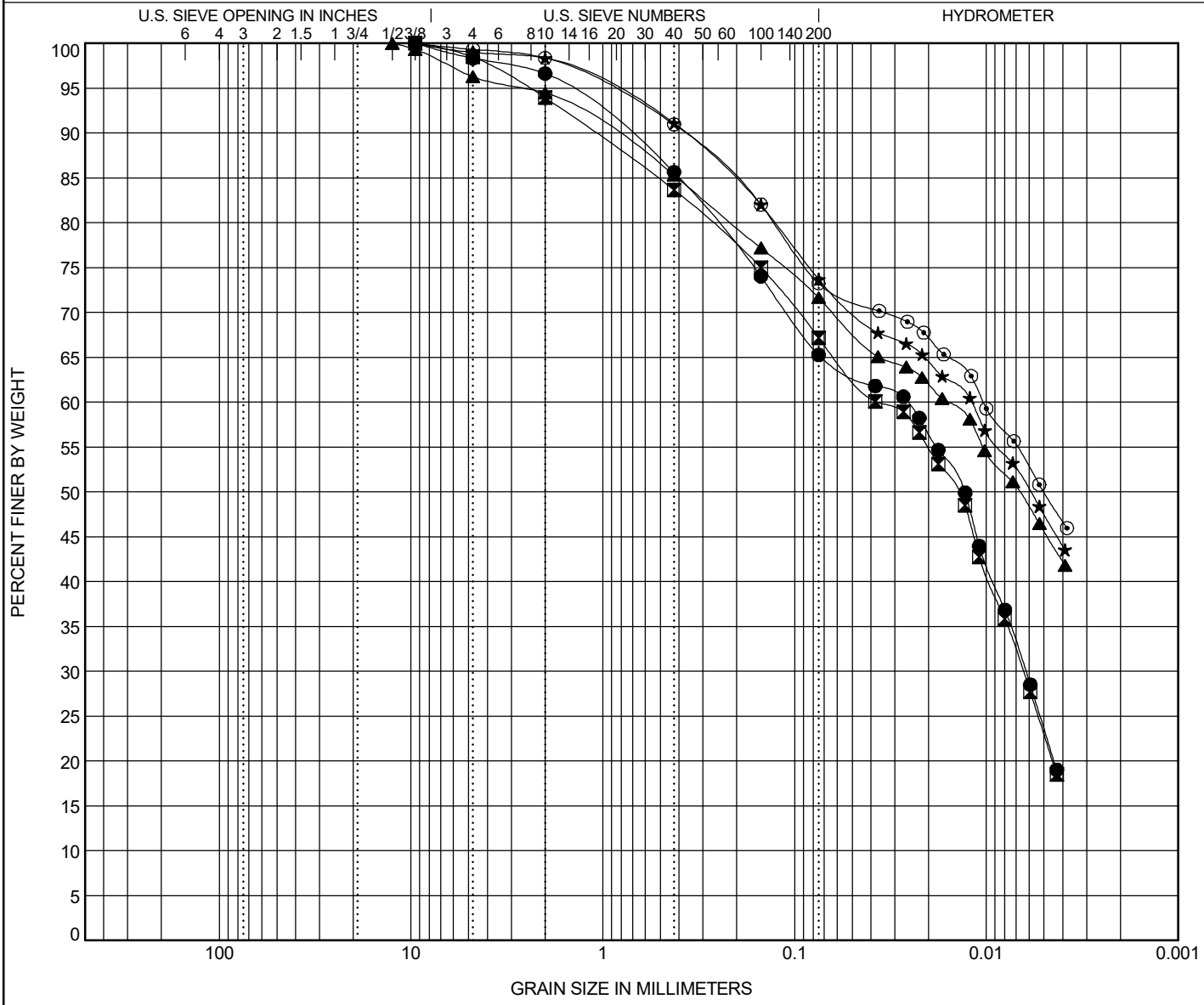
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-008-0-22	2.5	**A-4a ~ SANDY LEAN CLAY(CL)**	**24**	**15**	**9**
⊠	B-008-0-22	3.0	**A-4a ~ SANDY LEAN CLAY(CL)**	**24**	**15**	**9**
▲	B-009-0-22	2.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**28**	**17**	**11**
★	B-009-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**34**	**19**	**15**
⊙	B-010-0-22	1.5	**A-6a ~ LEAN CLAY with SAND(CL)**	**33**	**18**	**15**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-008-0-22	2.5	**0.784**	**0.013**	**0.006**		**4**	**11**	**20**	**41**	**24**		
⊠	B-008-0-22	3.0	**1.102**	**0.014**	**0.006**		**7**	**10**	**16**	**44**	**23**		
▲	B-009-0-22	2.0	**0.936**	**0.007**			**5**	**9**	**14**	**26**	**46**		
★	B-009-0-22	3.0	**0.374**	**0.006**			**2**	**7**	**17**	**27**	**47**		
⊙	B-010-0-22	1.5	**0.379**	**0.005**			**2**	**7**	**18**	**23**	**50**		

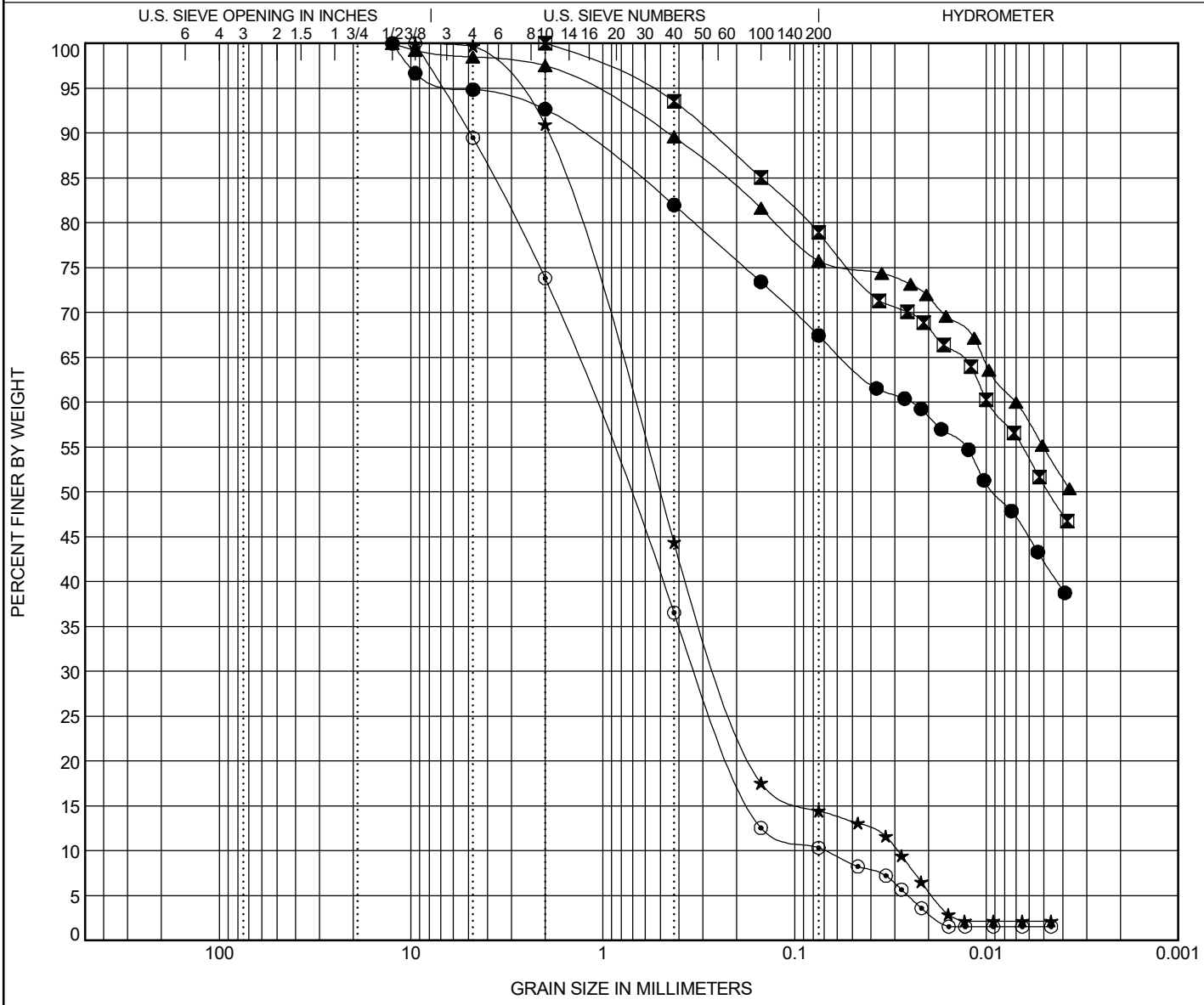
GRAIN SIZE - OH DOT.GDT - 8/12/24 14:27 - X:\PROJECTS\2279801.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-010-0-22	4.5	A-6a ~ SANDY LEAN CLAY(CL)	27	16	11
⊠	B-011-0-22	2.1	A-6a ~ LEAN CLAY with SAND(CL)	32	19	13
▲	B-011-0-22	3.0	A-6a ~ LEAN CLAY with SAND(CL)	30	18	12
★	B-012-0-22	1.5	A-1-b ~ SILTY SAND(SM)	NP	NP	NP
⊙	B-012-0-22	3.0	A-1-b ~ WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-010-0-22	4.5	1.356	0.009			7	11	15	25	42		
⊠	B-011-0-22	2.1	0.275	0.005			0	6	15	28	51		
▲	B-011-0-22	3.0	0.461				2	8	14	21	55		
★	B-012-0-22	1.5	1.937	0.512	0.243	0.029	9	47	30	12	2	2.85	24.58
⊙	B-012-0-22	3.0	4.917	0.743	0.32	0.069	27	37	26	8	2	1.31	16.20

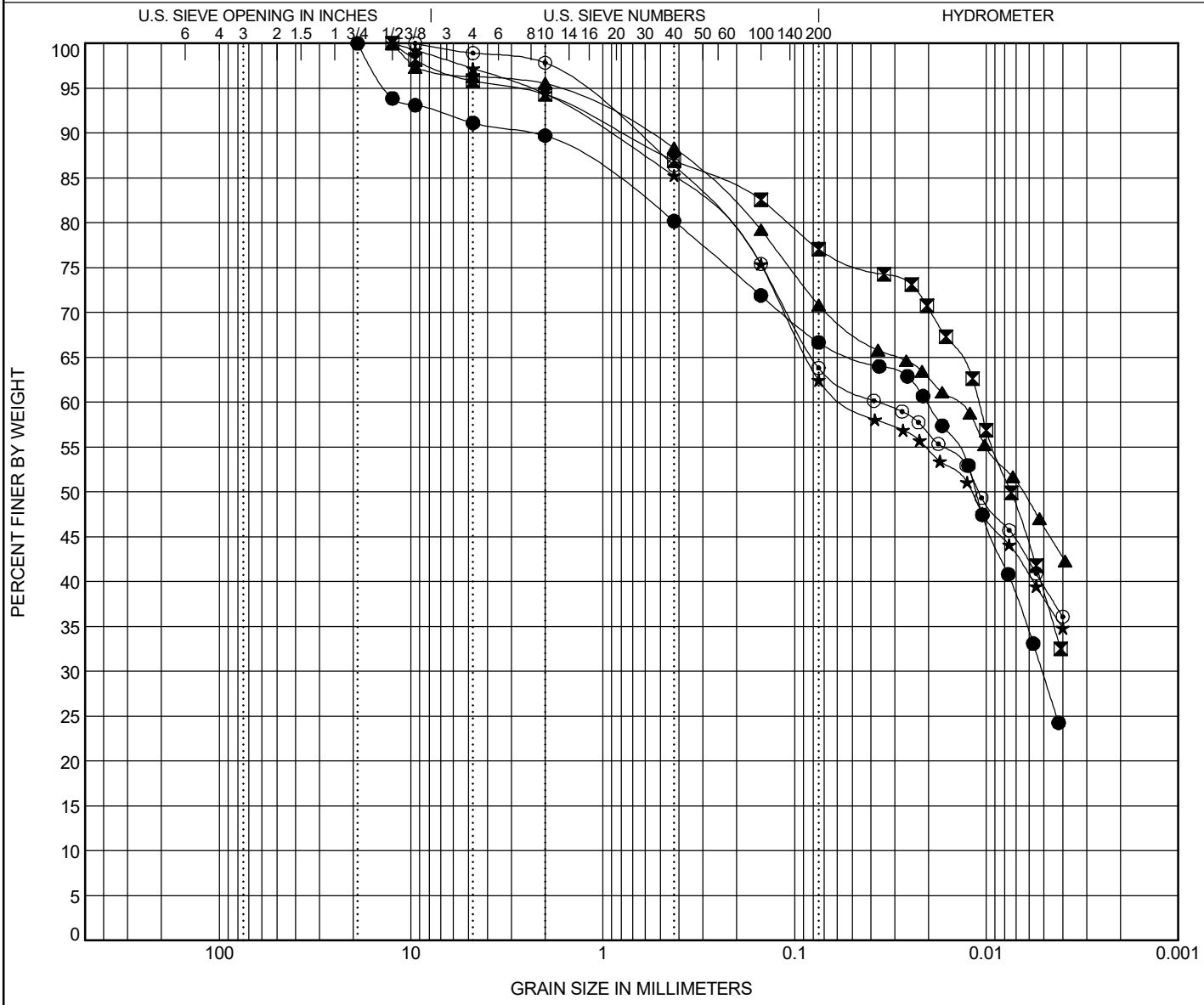
GRAIN SIZE - OH DOT.GDT - 8/12/24 14:27 - X:\PROJECTS\2279801.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-012-0-22	4.5	**A-4a ~ SANDY LEAN CLAY(CL)**	**26**	**17**	**9**
⊠	B-013-0-22	1.7	**A-4a ~ LEAN CLAY with SAND(CL)**	**24**	**16**	**8**
▲	B-013-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**31**	**17**	**14**
★	B-019-0-22	1.7	**A-6a ~ SANDY LEAN CLAY(CL)**	**28**	**17**	**11**
⊙	B-019-0-22	3.0	**A-6a ~ SANDY LEAN CLAY(CL)**	**27**	**15**	**12**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-012-0-22	4.5	**2.37**	**0.011**	**0.005**		**9**	**10**	**14**	**38**	**29**		
⊠	B-013-0-22	1.7	**0.806**	**0.007**			**6**	**7**	**10**	**38**	**39**		
▲	B-013-0-22	3.0	**0.605**	**0.006**			**5**	**7**	**17**	**25**	**46**		
★	B-019-0-22	1.7	**0.947**	**0.012**			**6**	**9**	**23**	**24**	**38**		
⊙	B-019-0-22	3.0	**0.691**	**0.011**			**2**	**11**	**23**	**25**	**39**		

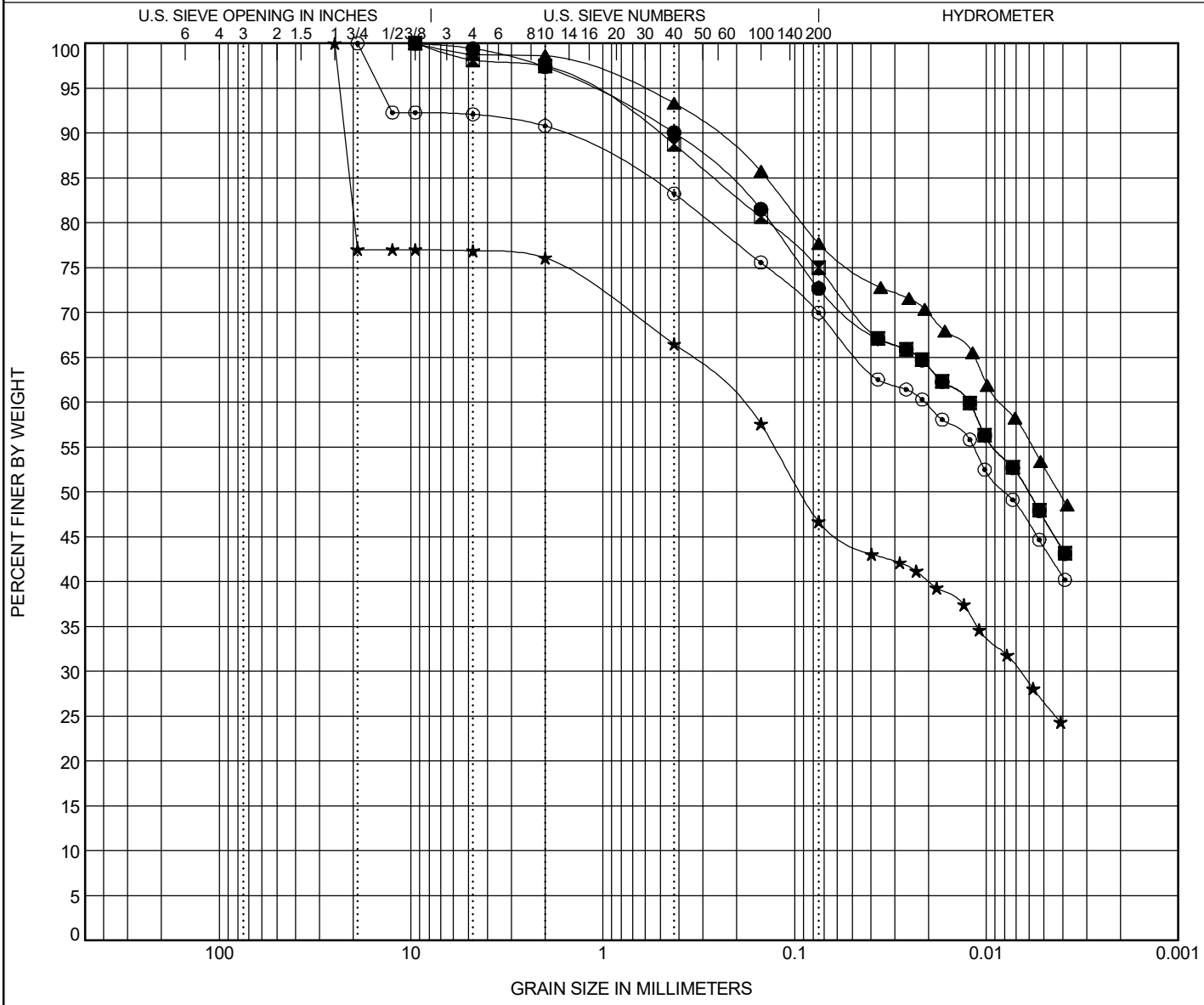
GRAIN SIZE - OH DOT.GDT - 8/12/24 14:28 - X:\PROJECTS\2279801.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT GEA/LAK-44-18.45/00.00 **PID** 114163

OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-020-0-22	1.5	**A-6a ~ LEAN CLAY with SAND(CL)**	30	17	13
⊠	B-020-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	30	17	13
▲	B-021-0-22	1.5	**A-6b ~ LEAN CLAY with SAND(CL)**	35	18	17
★	B-021-0-22	4.5	**A-6a ~ CLAYEY SAND with GRAVEL(SC)**	29	18	11
⊙	B-022-0-22	1.7	**A-6a ~ SANDY LEAN CLAY(CL)**	30	18	12

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-020-0-22	1.5	0.422	0.006			3	7	17	26	47		
⊠	B-020-0-22	3.0	0.529	0.006			2	9	14	28	47		
▲	B-021-0-22	1.5	0.269	0.004			1	5	16	25	53		
★	B-021-0-22	4.5	22.185	0.092	0.007		23	10	20	20	27		
⊙	B-022-0-22	1.7	1.696	0.008			9	8	13	26	44		

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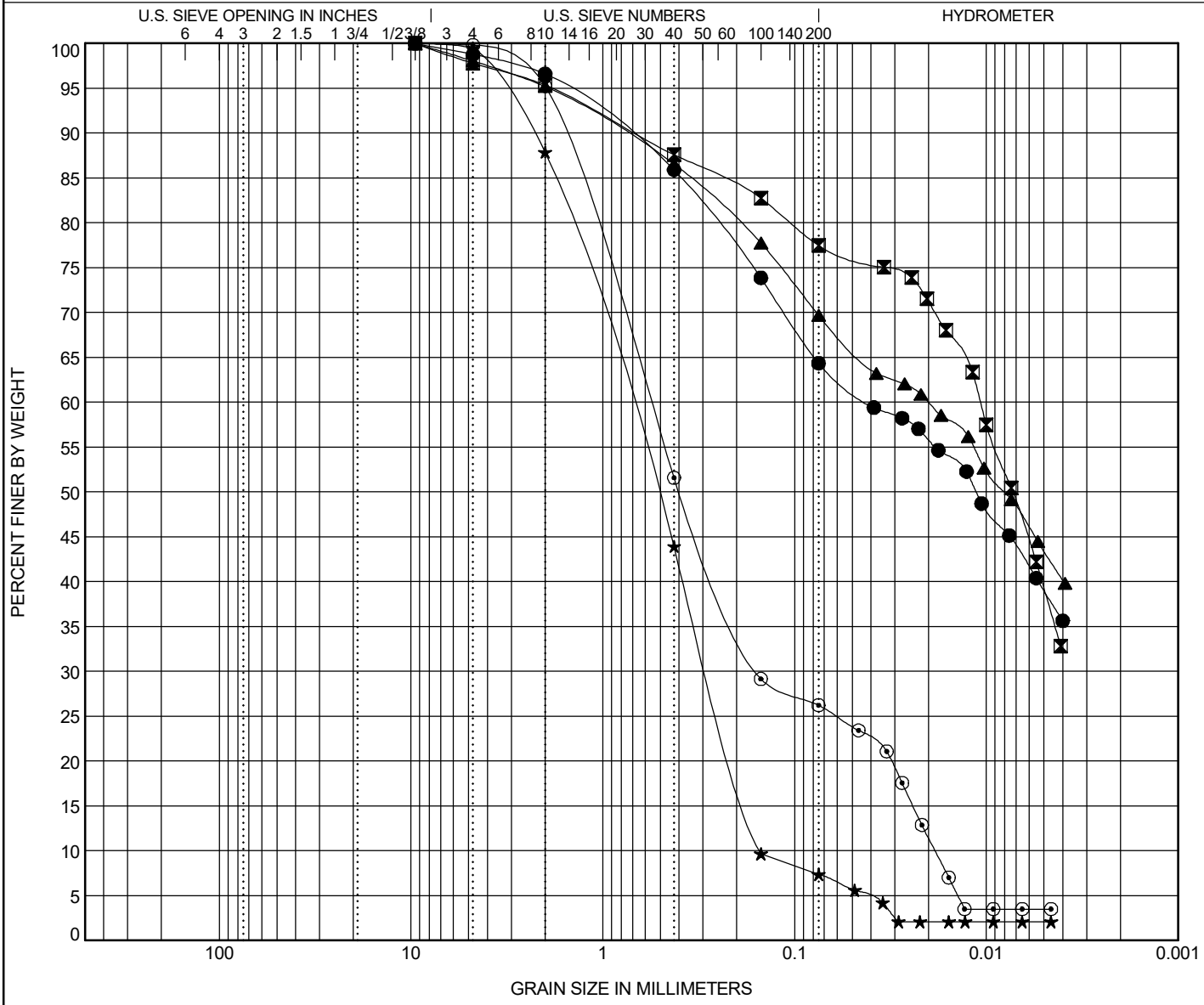
OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-022-0-22	3.3	A-6a ~ SANDY LEAN CLAY(CL)	29	17	12
⊠	B-023-0-22	1.7	A-4a ~ LEAN CLAY with SAND(CL)	26	17	9
▲	B-023-0-22	4.5	A-6a ~ SANDY LEAN CLAY(CL)	27	16	11
★	B-024-0-22	1.5	A-1-b ~ POORLY GRADED SAND with SILT(SP-SM)	NP	NP	NP
⊙	B-024-0-22	3.0	A-3a ~ SILTY SAND(SM)	NP	NP	NP

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-022-0-22	3.3	0.768	0.011			3	11	22	25	39		
⊠	B-023-0-22	1.7	0.687	0.007			5	8	10	38	39		
▲	B-023-0-22	4.5	0.788	0.008			4	9	17	27	43		
★	B-024-0-22	1.5	2.343	0.526	0.278	0.152	12	44	37	5	2	0.68	4.94
⊙	B-024-0-22	3.0	1.66	0.395	0.156	0.019	5	44	25	22	4	2.29	30.96

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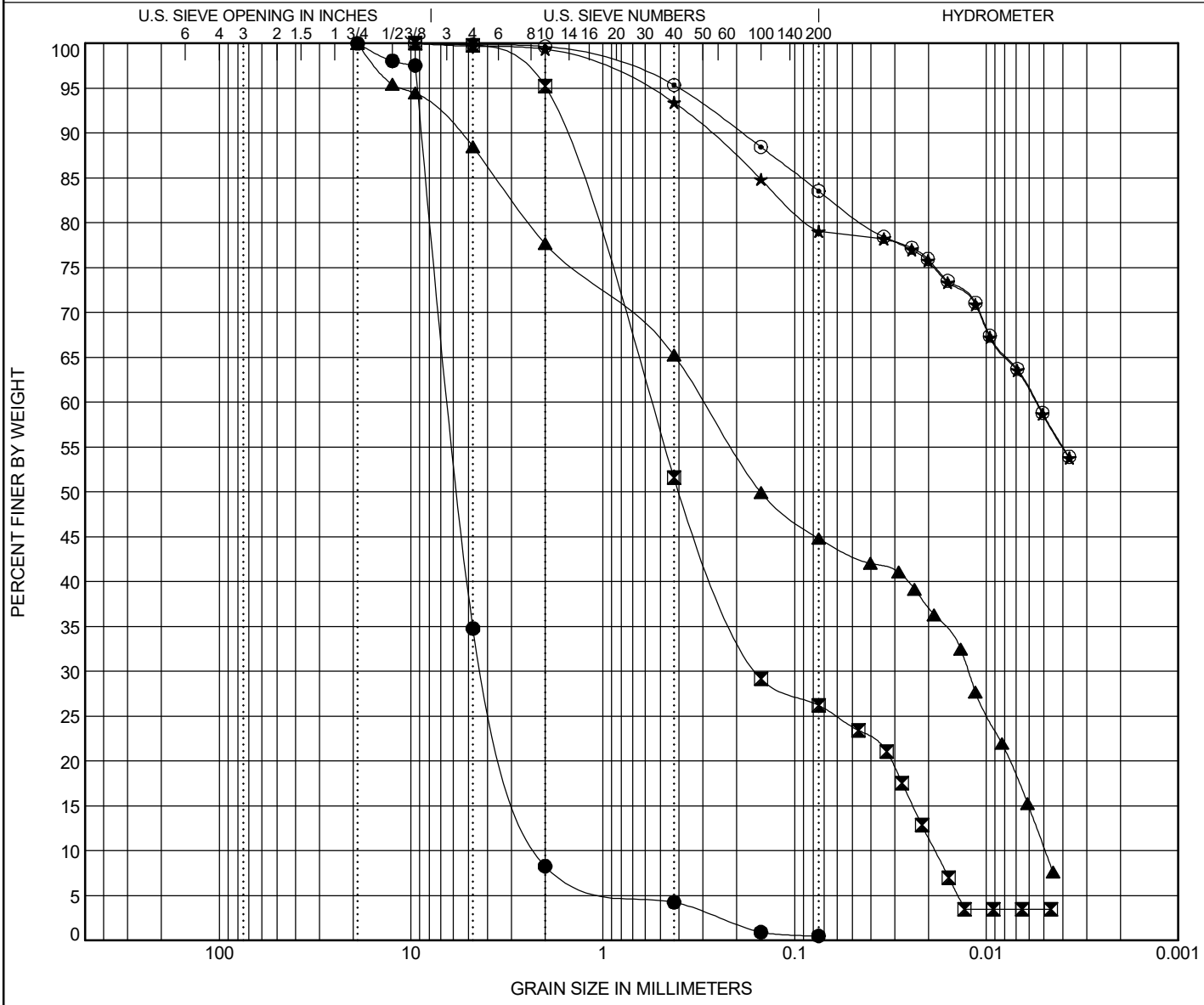

COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-024-0-22	5.3	**A-1-a ~ POORLY GRADED GRAVEL with SAND(GP)**	**NP**	**NP**	**NP**
⊠	B-025-0-22	3.0	**A-3a ~ SILTY SAND(SM)**	**NP**	**NP**	**NP**
▲	B-025-0-22	5.1	**A-4a ~ SILTY SAND(SM)**	**18**	**16**	**2**
★	B-026-0-22	1.8	**A-6a ~ LEAN CLAY with SAND(CL)**	**31**	**18**	**13**
⊙	B-026-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**33**	**19**	**14**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-024-0-22	5.3	**8.74**	**5.619**	**4.063**	**2.115**	**91**	**4**	**4**	**1**		**1.24**	**2.97**
⊠	B-025-0-22	3.0	**1.66**	**0.395**	**0.156**	**0.019**	**5**	**44**	**25**	**22**	**4**	**2.29**	**30.96**
▲	B-025-0-22	5.1	**5.659**	**0.15**	**0.012**	**0.005**	**23**	**12**	**20**	**35**	**10**	**0.10**	**60.13**
★	B-026-0-22	1.8	**0.281**				**1**	**6**	**14**	**21**	**58**		
⊙	B-026-0-22	3.0	**0.189**				**0**	**4**	**12**	**25**	**59**		

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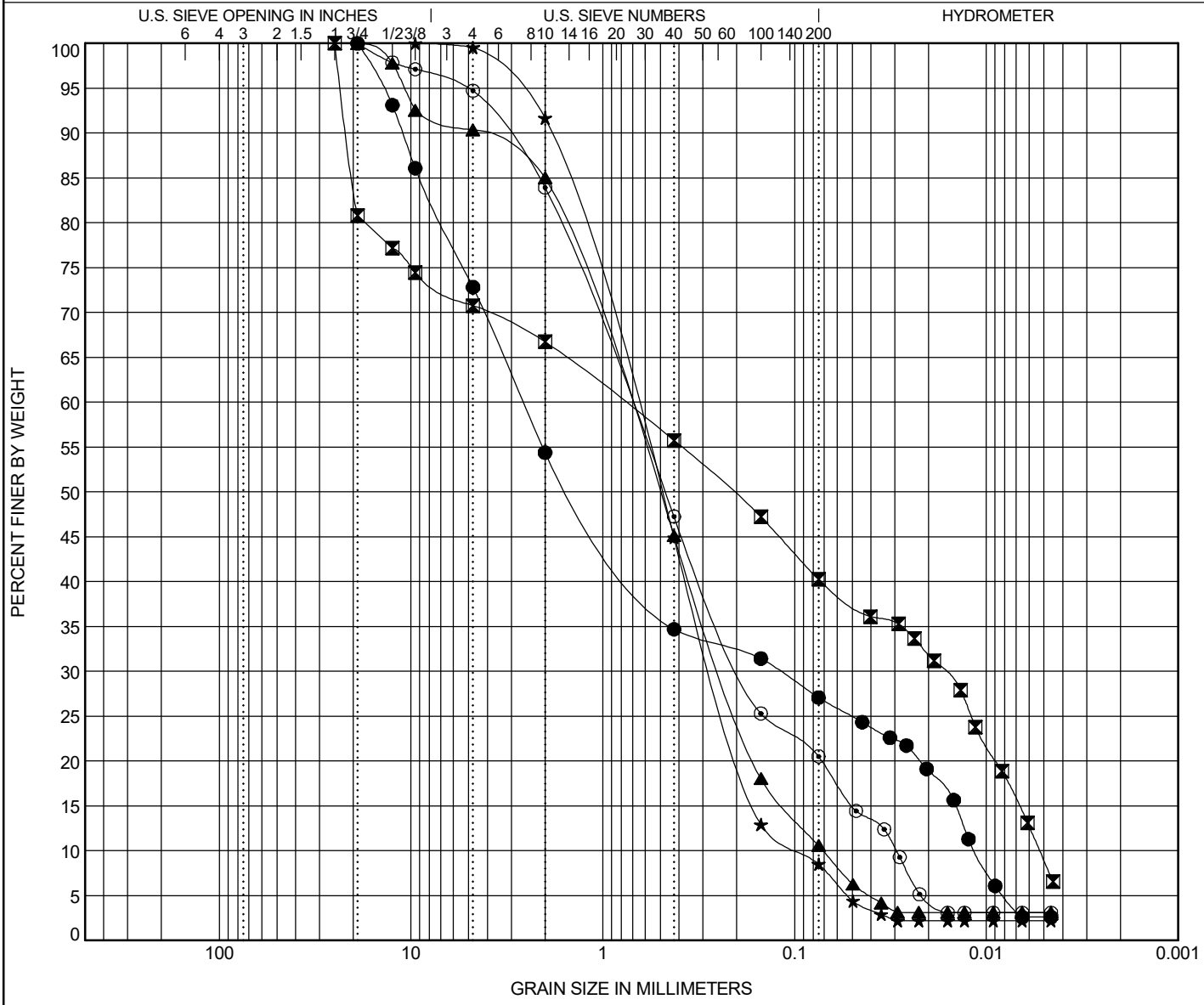

COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-027-0-22	1.5	**A-2-4 ~ SILTY SAND with GRAVEL(SM)**	**NP**	**NP**	**NP**
⊠	B-027-0-22	3.0	**A-4a ~ SILTY SAND with GRAVEL(SM)**	**NP**	**NP**	**NP**
▲	B-033-0-22	1.5	**A-1-b ~ WELL-GRADED SAND with SILT(SW-SM)**	**NP**	**NP**	**NP**
★	B-033-0-22	3.0	**A-1-b ~ WELL-GRADED SAND with SILT(SW-SM)**	**NP**	**NP**	**NP**
⊙	B-034-0-22	1.5	**A-1-b ~ SILTY SAND(SM)**	**NP**	**NP**	**NP**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-027-0-22	1.5	**11.064**	**1.417**	**0.119**	**0.011**	**45**	**20**	**8**	**24**	**3**	**0.48**	**227.37**
⊠	B-027-0-22	3.0	**21.67**	**0.21**	**0.017**	**0.005**	**33**	**11**	**16**	**31**	**9**	**0.07**	**146.64**
▲	B-033-0-22	1.5	**4.484**	**0.514**	**0.238**	**0.071**	**14**	**40**	**35**	**8**	**3**	**1.05**	**10.69**
★	B-033-0-22	3.0	**1.892**	**0.503**	**0.262**	**0.095**	**8**	**47**	**36**	**7**	**2**	**1.03**	**7.40**
⊙	B-034-0-22	1.5	**3.251**	**0.477**	**0.187**	**0.03**	**15**	**37**	**27**	**18**	**3**	**1.63**	**24.64**

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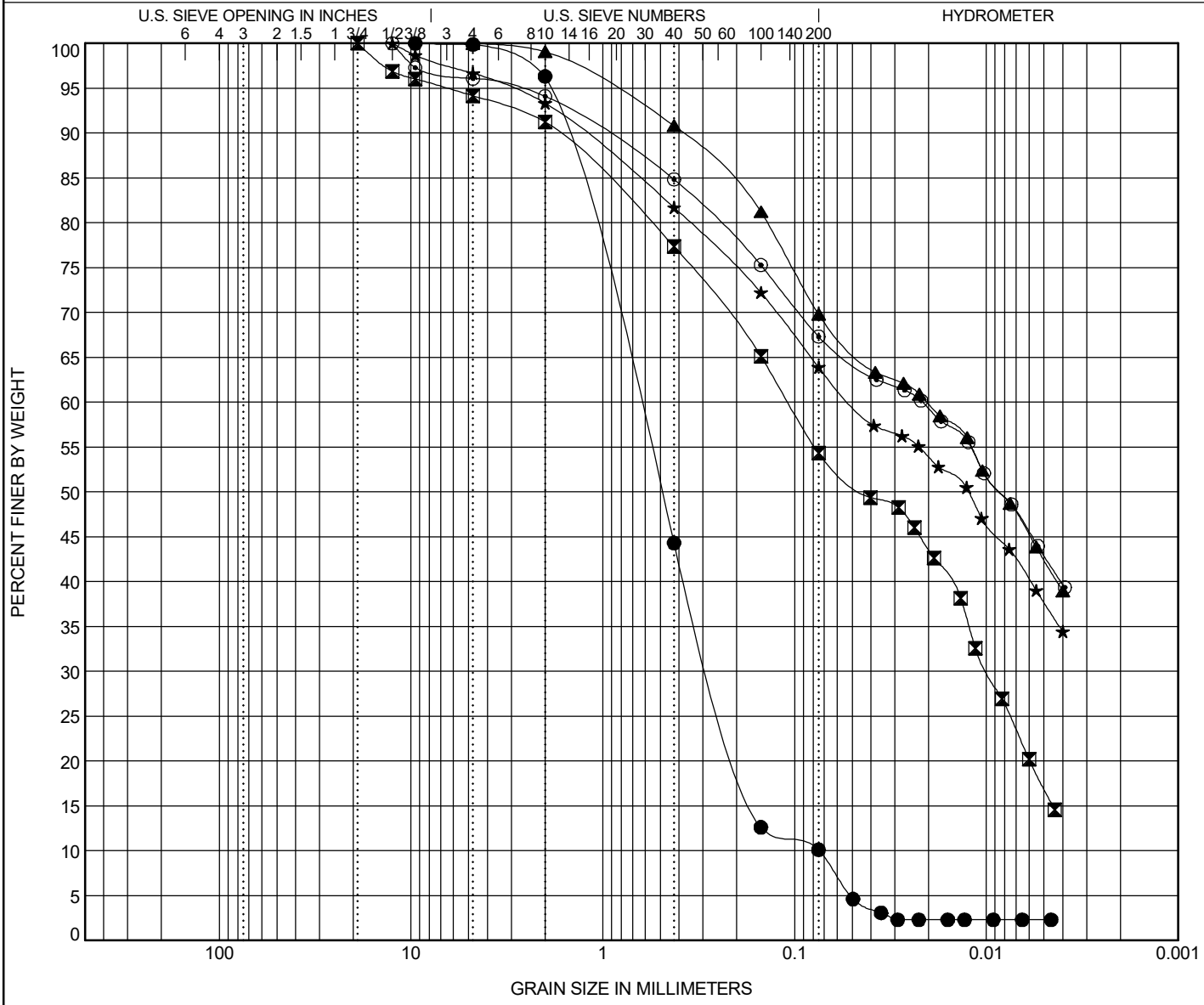

COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-034-0-22	3.0	A-1-b ~ WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP
⊠	B-035-0-22	1.6	A-4a ~ SANDY LEAN CLAY(CL)	25	15	10
▲	B-035-0-22	3.0	A-6b ~ SANDY LEAN CLAY(CL)	35	19	16
★	B-036-0-22	1.7	A-6a ~ SANDY LEAN CLAY(CL)	28	17	11
⊙	B-036-0-22	3.0	A-6a ~ SANDY LEAN CLAY(CL)	31	18	13

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-034-0-22	3.0	1.657	0.503	0.266	0.074	4	52	34	8	2	1.40	9.12
⊠	B-035-0-22	1.6	1.739	0.043	0.01		9	14	23	37	17		
▲	B-035-0-22	3.0	0.388	0.008			1	8	21	28	42		
★	B-036-0-22	1.7	1.28	0.012			6	12	18	26	38		
⊙	B-036-0-22	3.0	1.006	0.008			6	9	18	24	43		

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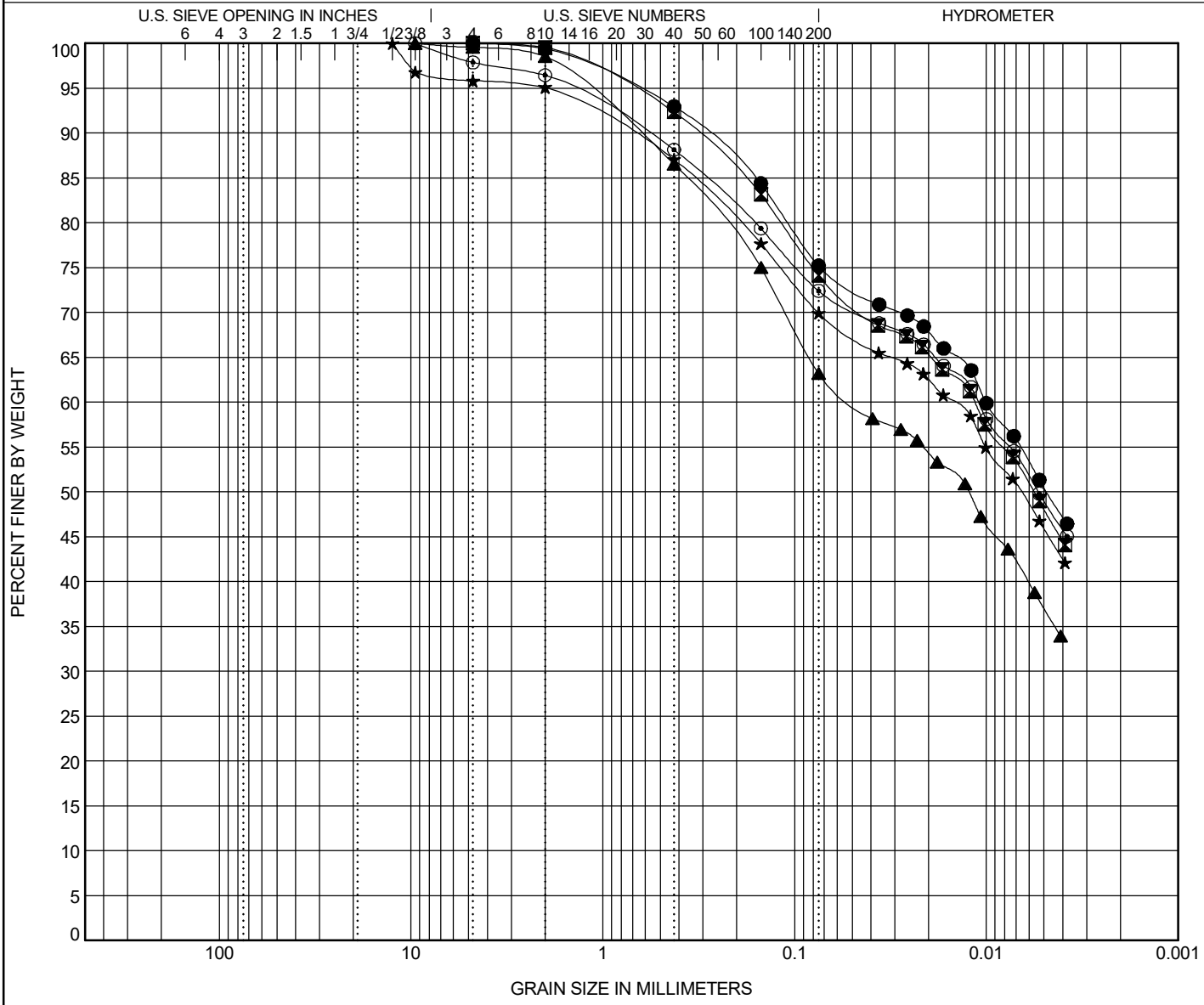
OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-037-0-22	2.0	**A-6a ~ LEAN CLAY with SAND(CL)**	31	17	14
⊠	B-037-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	31	18	13
▲	B-038-0-22	1.5	**A-6a ~ SANDY LEAN CLAY(CL)**	32	17	15
★	B-038-0-22	3.0	**A-6b ~ SANDY LEAN CLAY(CL)**	37	19	18
⊙	B-039-0-22	1.7	**A-6a ~ LEAN CLAY with SAND(CL)**	30	17	13

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-037-0-22	2.0	**0.296**	**0.005**			**1**	**6**	**18**	**25**	**50**		
⊠	B-037-0-22	3.0	**0.325**	**0.006**			**1**	**7**	**18**	**26**	**48**		
▲	B-038-0-22	1.5	**0.664**	**0.012**			**2**	**12**	**23**	**26**	**37**		
★	B-038-0-22	3.0	**0.747**	**0.007**			**5**	**8**	**17**	**24**	**46**		
⊙	B-039-0-22	1.7	**0.6**	**0.005**			**4**	**8**	**16**	**23**	**49**		

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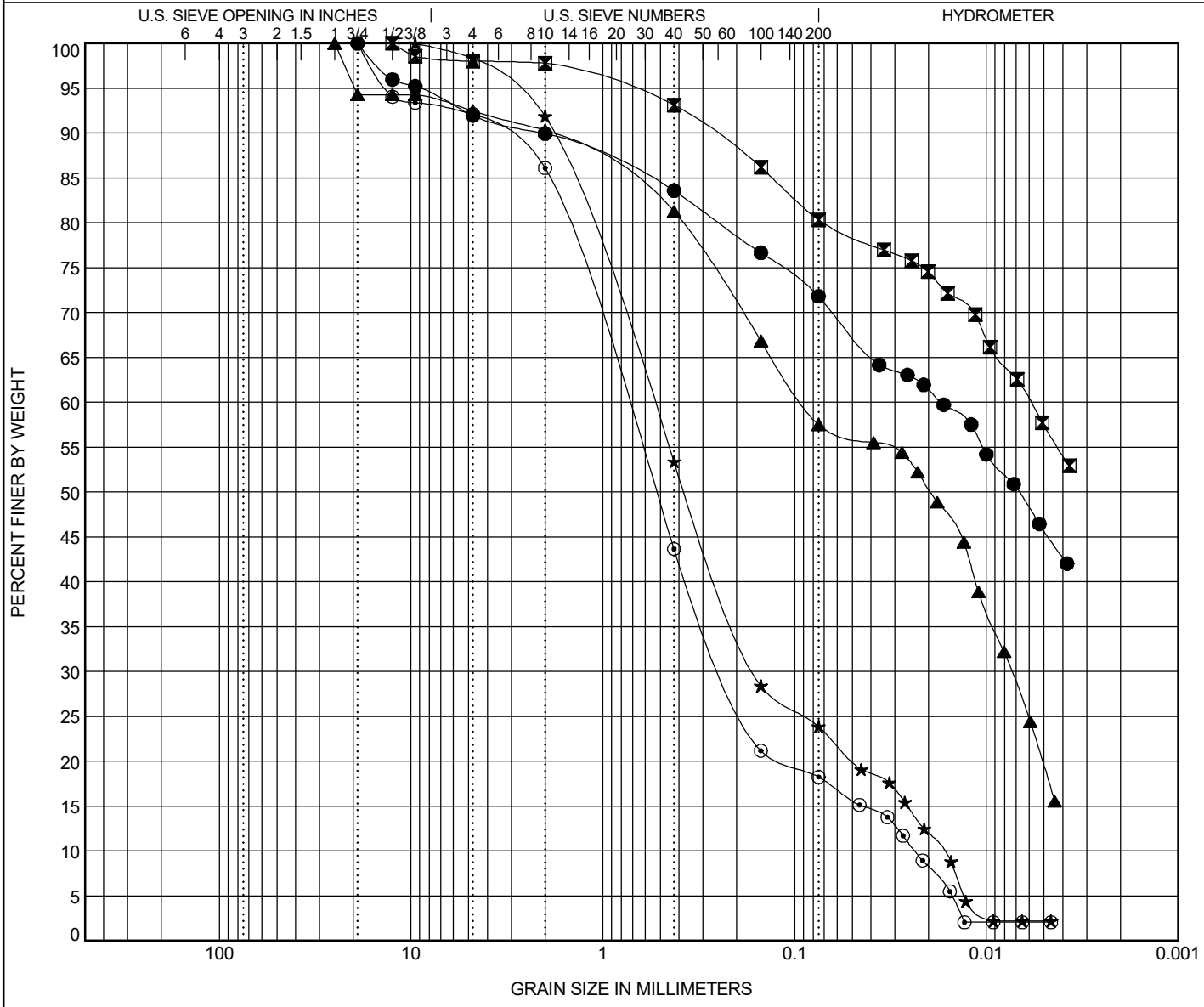

COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-039-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**29**	**18**	**11**
⊠	B-040-0-22	2.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**29**	**17**	**12**
▲	B-040-0-22	3.7	**A-4a ~ SANDY SILTY CLAY(CL-ML)**	**22**	**15**	**7**
★	B-041-0-22	1.5	**A-3a ~ SILTY SAND(SM)**	**NP**	**NP**	**NP**
⊙	B-041-0-22	3.0	**A-1-b ~ SILTY SAND(SM)**	**NP**	**NP**	**NP**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-039-0-22	3.0	**2.04**	**0.007**			**10**	**6**	**12**	**26**	**46**		
⊠	B-040-0-22	2.0	**0.265**				**2**	**5**	**13**	**23**	**57**		
▲	B-040-0-22	3.7	**1.894**	**0.019**	**0.007**		**9**	**9**	**24**	**39**	**19**		
★	B-041-0-22	1.5	**1.853**	**0.369**	**0.16**	**0.017**	**8**	**39**	**29**	**22**	**2**	**2.73**	**32.67**
⊙	B-041-0-22	3.0	**3.502**	**0.536**	**0.226**	**0.024**	**15**	**42**	**25**	**16**	**2**	**2.81**	**32.80**

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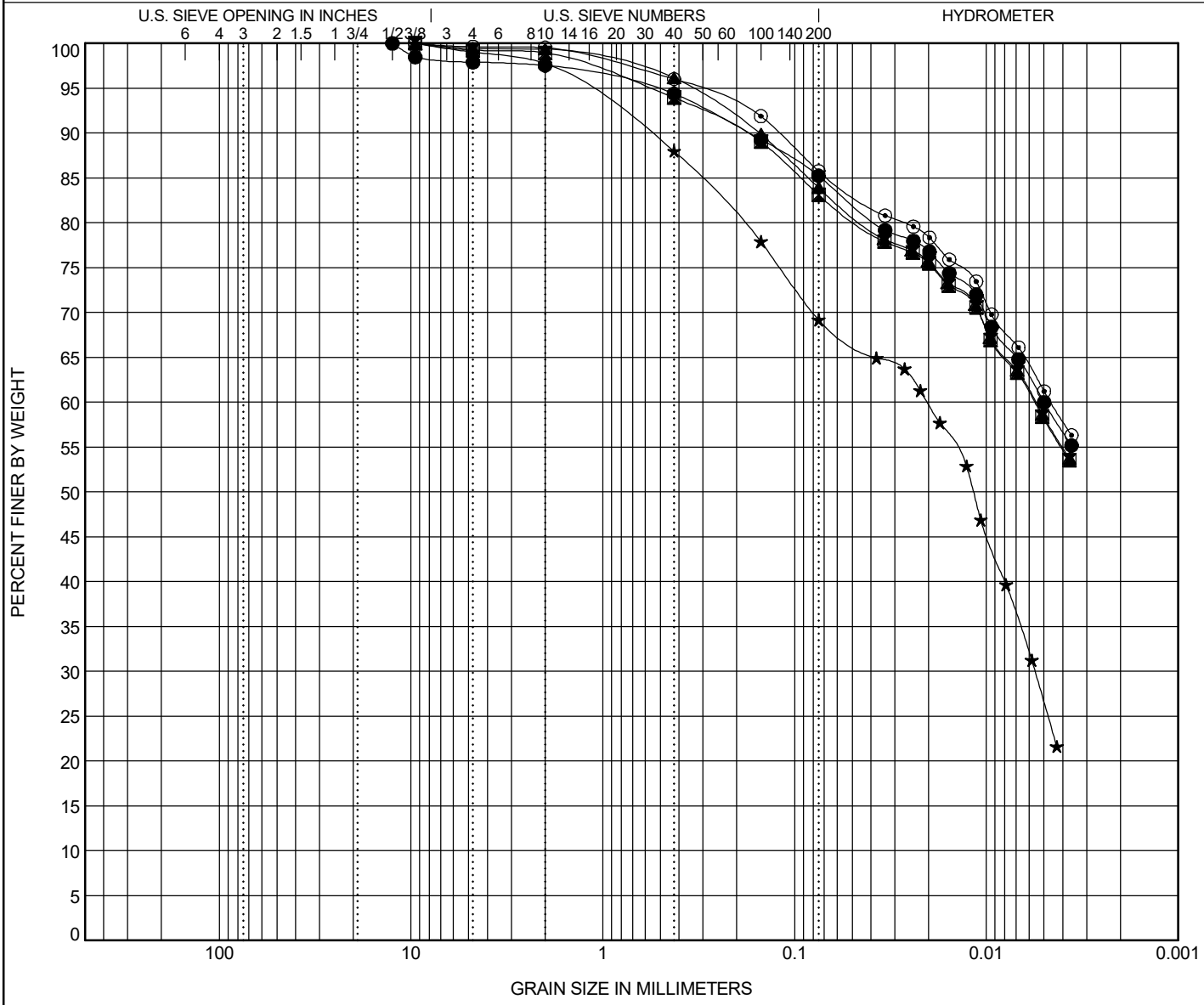
OGE NUMBER N/A **PROJECT TYPE** ROADWAY



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-054-0-22	2.2	**A-6a ~ LEAN CLAY(CL)**	**33**	**22**	**11**
⊠	B-054-0-22	3.0	**A-6a ~ LEAN CLAY with SAND(CL)**	**33**	**20**	**13**
▲	B-054-0-22	4.5	**A-6b ~ LEAN CLAY with SAND(CL)**	**39**	**23**	**16**
★	B-055-0-22	1.5	**A-4a ~ SANDY LEAN CLAY(CL)**	**26**	**17**	**9**
⊙	B-055-0-22	3.1	**A-6b ~ LEAN CLAY(CL)**	**39**	**21**	**18**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-054-0-22	2.2	**0.173**				**3**	**3**	**9**	**25**	**60**		
⊠	B-054-0-22	3.0	**0.183**				**1**	**5**	**11**	**25**	**58**		
▲	B-054-0-22	4.5	**0.153**				**1**	**3**	**12**	**26**	**58**		
★	B-055-0-22	1.5	**0.584**	**0.012**	**0.006**		**2**	**10**	**19**	**43**	**26**		
⊙	B-055-0-22	3.1	**0.121**				**0**	**4**	**10**	**25**	**61**		

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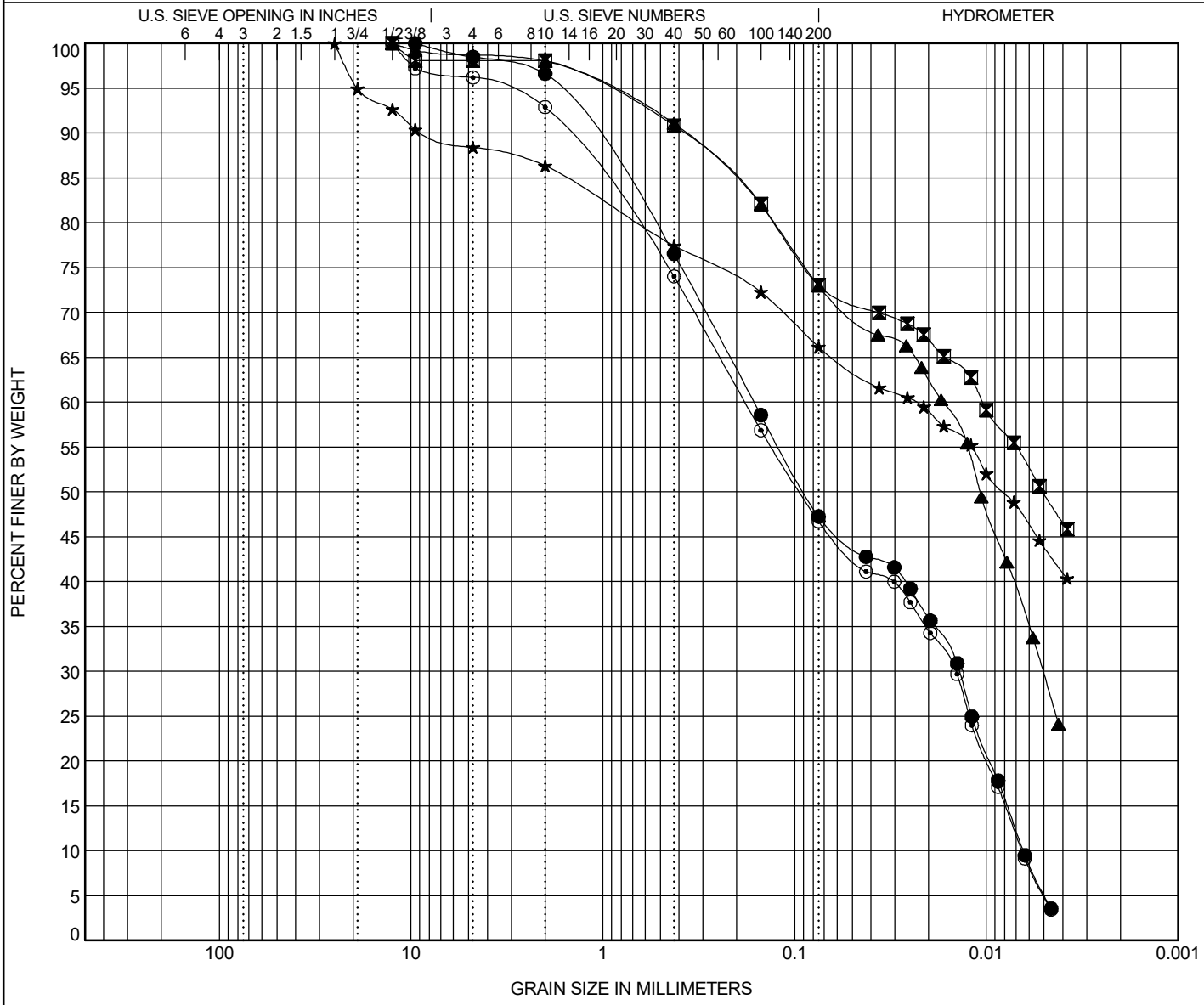

COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-056-0-22	1.5	**A-4a ~ SILTY SAND(SM)**	**34**	**25**	**9**
⊠	B-056-0-22	3.1	**A-6b ~ LEAN CLAY with SAND(CL)**	**37**	**20**	**17**
▲	B-057-0-22	1.6	**A-4a ~ LEAN CLAY with SAND(CL)**	**27**	**17**	**10**
★	B-057-0-22	3.5	**A-6a ~ SANDY LEAN CLAY(CL)**	**33**	**21**	**12**
⊙	B-058-0-22	1.5	**A-4a ~ SILTY SAND(SM)**	**32**	**25**	**7**

Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-056-0-22	1.5	**1.199**	**0.089**	**0.014**	**0.006**	**4**	**20**	**29**	**42**	**5**	**0.18**	**25.37**
⊠	B-056-0-22	3.1	**0.384**	**0.005**			**2**	**7**	**18**	**23**	**50**		
▲	B-057-0-22	1.6	**0.375**	**0.011**	**0.005**		**2**	**7**	**18**	**43**	**30**		
★	B-057-0-22	3.5	**8.286**	**0.008**			**14**	**9**	**11**	**22**	**44**		
⊙	B-058-0-22	1.5	**1.576**	**0.094**	**0.014**	**0.007**	**7**	**19**	**27**	**42**	**5**	**0.18**	**27.78**

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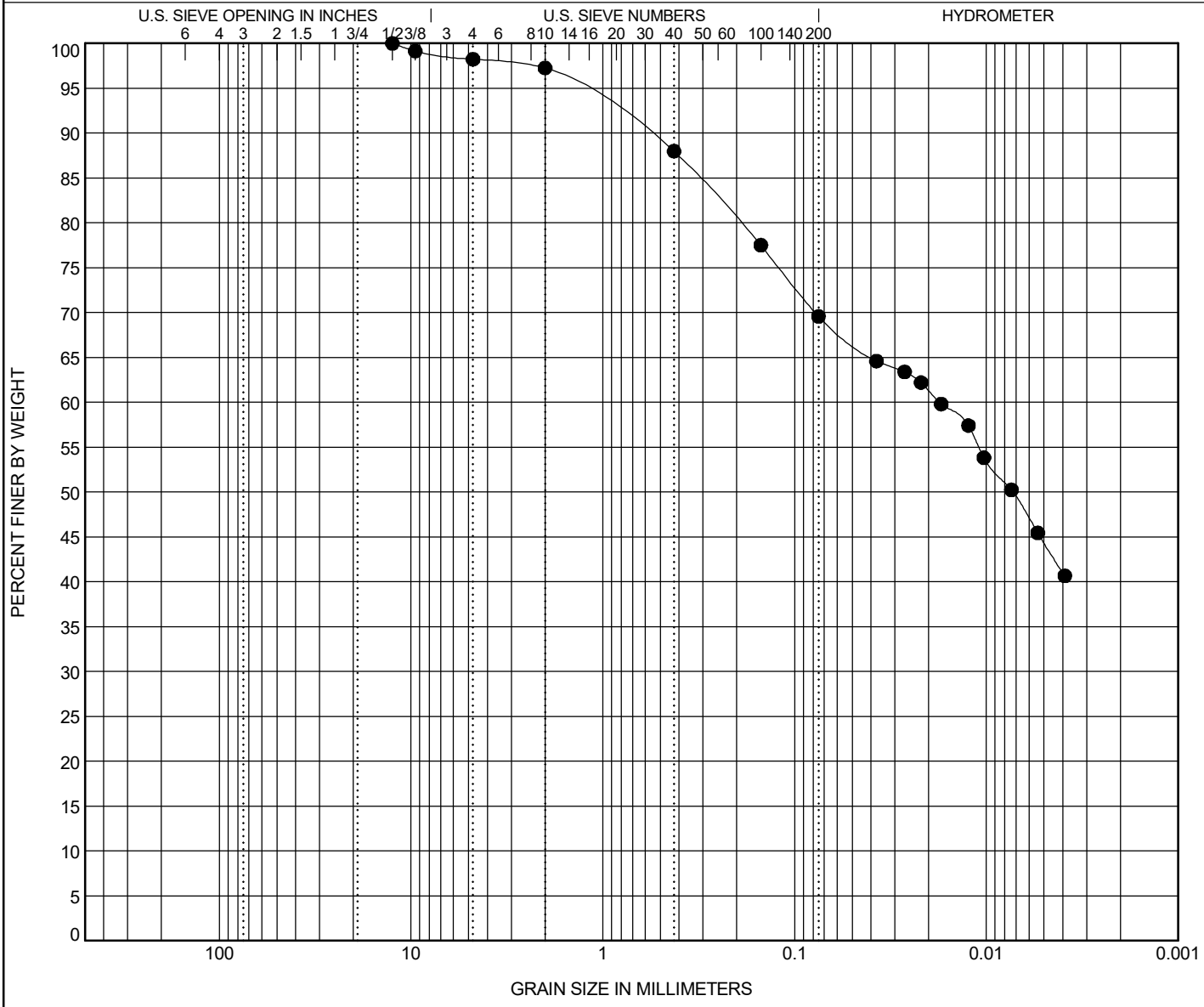

COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification		ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
● **B-058-0-22**	**3.3**	**A-6a ~ SANDY LEAN CLAY(CL)**	**29**	**18**	**11**

Specimen Identification		D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
● **B-058-0-22**	**3.3**	**0.594**	**0.007**			**3**	**9**	**18**	**26**	**44**		

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Core Log For B-001-0-22

Project : Proposed Intersection Improvements

Project Location : Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 12, 2022

ASPHALT THICKNESS (in.)	=	6
CONCRETE THICKNESS (in.)	=	8
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at 4.5" from top of concrete

No apparent aggregate base

Core Log For B-010-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 14, 2022

ASPHALT THICKNESS (in.)	=	6.5
CONCRETE THICKNESS (in.)	=	8
SAND BASE THICKNESS (in.)	=	2
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at approximately 4 inches below top of pavement

Core Log For B-013-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 14, 2022

ASPHALT THICKNESS (in.)	=	6.5
CONCRETE THICKNESS (in.)	=	8.5
AGGREGATE BASE THICKNESS (in.)	=	5
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Core Log For B-020-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 15, 2022

ASPHALT THICKNESS (in.)	=	8.5
AGGREGATE BASE THICKNESS (in.)	=	8.5
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement core appeared in good condition.

Core Log For B-026-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 15, 2022

ASPHALT THICKNESS (in.)	=	6.5
CONCRETE THICKNESS (in.)	=	9
AGGREGATE BASE THICKNESS (in.)	=	6
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Asphalt core appeared in good condition.

Horizontal fracture in concrete core at approximately 3.5 inches below top concrete.

Core Log For B-038-0-22

Project : Proposed Intersection Improvements

Project Location:Chardon & Concord Townships, Geauga & Lake Counties, Ohio

TTL Project No. 2279801

Core Date: December 12, 2022

ASPHALT THICKNESS (in.)	=	4.5
CONCRETE THICKNESS (in.)	=	9
SAND BASE THICKNESS (in.)	=	5
CORE BARREL DIAMETER (in.)	=	4

VISUAL DESCRIPTION:

Pavement cores appeared in good condition.

Rebar encountered at approximately 5 inches below top of concrete

APPENDIX C

(Geotechnical Engineering Design Checklists)

I. Geotechnical Design Checklists	
Project: GEA/LAK-44-18.45/00.00	PDP Path:
PID: 114163	Review Stage: 1

Checklist	Included in This Submission
II. Reconnaissance and Planning	✓
III. A. Centerline Cuts III. B. Embankments III. C. Subgrade	✓
IV. A. Foundations of Structures IV. B. Retaining Wall	
V. A. Landslide Remediation V. B. Rockfall Remediation V. C. Wetland or Peat Remediation V. D. Underground Mine Remediation V. E. Surface Mine Remediation V. F. Karst Remediation	
VI. A. Soil Profile VI. D. Geotechnical Reports	✓

II. Reconnaissance and Planning Checklist

C-R-S: GEA/LAK-44-18.45/00.00	PID: 114163	Reviewer: CPI	Date: 2/28/2023

Reconnaissance		(Y/N/X)	Notes:
1	Based on Section 302.1 in the SGE, have the necessary plans been developed in the following areas prior to the commencement of the subsurface exploration reconnaissance:	X	Plans to be prepared by others.
	Roadway plans		
	Structures plans		
	Geohazards plans		
2	Have the resources listed in Section 302.2.1 of the SGE been reviewed as part of the office reconnaissance?	Y	
3	Have all the features listed in Section 302.3 of the SGE been observed and evaluated during the field reconnaissance?	Y	
4	If notable features were discovered in the field reconnaissance, were the GPS coordinates of these features recorded?	X	

Planning - General		(Y/N/X)	Notes:
5	In planning the geotechnical exploration program for the project, have the specific geologic conditions, the proposed work, and historic subsurface exploration work been considered?	Y	
6	Has the ODOT Transportation Information Mapping System (TIMS) been accessed to find all available historic boring information and inventoried geohazards?	Y	
7	Have the borings been located to develop the maximum subsurface information while using a minimum number of borings, utilizing historic geotechnical explorations to the fullest extent possible?	Y	
8	Have the topography, geologic origin of materials, surface manifestation of soil conditions, and any other special design considerations been utilized in determining the spacing and depth of borings?	Y	
9	Have the borings been located so as to provide adequate overhead clearance for the equipment, clearance of underground utilities, minimize damage to private property, and minimize disruption of traffic, without compromising the quality of the exploration?	Y	

II. Reconnaissance and Planning Checklist

Planning - General		(Y/N/X)	Notes:
10	Have the scaled boring plans, showing all project and historic borings, and a schedule of borings in tabular format, been submitted to the District Geotechnical Engineer?	Y	Provided as part of proposal for this project.
	The schedule of borings should present the following information for each boring:		
a.	exploration identification number	Y	
b.	location by station and offset	X	Not provided.
c.	estimated amount of rock and soil, including the total for each for the entire program.	Y	

Planning – Exploration Number		(Y/N/X)	Notes:
11	Have the coordinates, stations and offsets of all explorations (borings, probes, test pits, etc.) been identified?	X	Not provided.
12	Has each exploration been assigned a unique identification number, in the following format X-ZZZ-W-YY, as per Section 303.2 of the SGE?	Y	
13	When referring to historic explorations that did not use the identification scheme in 12 above, have the historic explorations been assigned identification numbers according to Section 303.2 of the SGE?	X	No specific borings were referenced or utilized, since no SPT data was available. Generalized encountered conditions were summarized in the report.

II. Reconnaissance and Planning Checklist

Planning – Boring Types		(Y/N/X)	Notes:
14	Based on Sections 303.3 to 303.7.6 of the SGE, have the location, depth, and sampling requirements for the following boring types been determined for the project?	Y	
	Check all boring types utilized for this project:		
	Existing Subgrades (Type A)	✓	
	Roadway Borings (Type B)	✓	
	Embankment Foundations (Type B1)		
	Cut Sections (Type B2)		
	Sidehill Cut Sections (Type B3)		
	Sidehill Cut-Fill Sections (Type B4)		
	Sidehill Fill Sections on Unstable Slopes (Type B5)		
	Geohazard Borings (Type C)		
	Lakes, Ponds, and Low-Lying Areas (Type C1)		
	Peat Deposits, Compressible Soils, and Low Strength Soils (Type C2)		
	Uncontrolled Fills, Waste Pits, and Reclaimed Surface Mines (Type C3)		
	Underground Mines (C4)		
	Landslides (Type C5)		
	Rockfall (Type C6)		
	Karst (Type C7)		
	Proposed Underground Utilities (Type D)		
	Structure Borings (Type E)		
	Bridges (Type E1)		
	Culverts (Type E2 a,b,c)		
	Retaining Walls (Type E3 a,b,c)		
	Noise Barrier (Type E4)		
	CCTV & High Mast Lighting Towers (Type E5)		
	Buildings and Salt Domes (Type E6)		

III.C. Subgrade Checklist

C-R-S: GEA/LAK-44-18.45/00.00	PID: 114163	Reviewer: CPI	Date: 2/28/2023

If you do not have any subgrade work on the project, you do not have to fill out this checklist.

Subgrade	(Y/N/X)	Notes:
1 Has the subsurface exploration adequately characterized the soil or rock according to Geotechnical Bulletin 1: Plan Subgrades (GB1)?	Y	
a. Has each sample been visually classified and inspected for the presence of gypsum? Has a moisture content been performed on each sample?	Y	
b. Has mechanical classification (Plastic Limit (PL), Liquid Limit (LL), and gradation testing) been done on at least two samples from each boring within six feet of the proposed subgrade?	Y	
c. Has the sulfate content of at least one sample from each boring within 3 feet of the proposed subgrade been determined, per Supplement 1122, Determining Sulfate Content in Soils?	Y	
d. Has the sulfate content of all samples that exhibit gypsum crystals been determined?	X	No gypsum observed in samples.
e. Have A-2-5, A-4b, A-5, A-7-5, A-8a, or A-8b soils within the top 3 feet of the proposed subgrade been mechanically classified?	X	None present.
2 If soils classified as A-2-5, A-4b, A-5, A-7-5, A-8a, or A-8b, or having a LL>65, are present at the proposed subgrade (soil profile), do the plans specify that these materials need to be removed and replaced or chemically stabilized?	X	None present.
a. If these materials are to be removed and replaced, have the station limits, depth, and lateral limits for the planned removal been provided?	X	
3 If there is any rock, shale, or coal present at the proposed subgrade (C&MS 204.05), do the plans specify the removal of the material?	X	Rock not present at subgrade elevations in widening areas.
a. If removal of any rock, shale, or coal is required, have the station limits, depth, and lateral limits for the planned removal of the material at proposed subgrade been provided?	X	

III.C. Subgrade Checklist

Subgrade	(Y/N/X)	Notes:
4 In accordance with GB1, do the SPT (N_{60})/HP values and existing moisture contents for the proposed subgrade soils indicate the need for subgrade stabilization?	Y	
a. If removal and replacement is applicable, has the detail of subgrade removal been shown on the plans, including depth of removal, station limits, lateral extent, replacement material, and plan notes (Item 204 - Subgrade Compaction and Proof Rolling)?	Y	
b. If chemical stabilization is applicable, has the detail of this treatment been shown on the plans, including depth, percentage of chemical, station limits, lateral extent, and plan notes?	X	Cement stabilization is option per Subgrade Analysis spreadsheet, but widening is generally 12 feet or less in width. Therefore, undercut and replacement with granular engineered fill is recommended.
Indicate type of chemical stabilization specified:		
cement stabilization	✓	
lime stabilization		
5 If removal and replacement has been specified, do the plans include Plan Note G121 from L&D3?	X	Plans to be prepared by others.
6 If drainage or groundwater is an issue with the proposed subgrade, has an appropriate drainage system (e.g., pipe, underdrains) been provided?	X	Plans to be prepared by others.
7 Has an appropriate quantity of Proof Rolling (C&MS 204.06) and has Plan Note G111 from L&D3 been included in the plans?	X	Plans to be prepared by others.
8 Has a design CBR value been provided?	Y	

VI.B. Geotechnical Reports

C-R-S: GEA/LAK-44-18.45/00.00	PID: 114163	Reviewer: CPI	Date: 8/12/2024

General		(Y/N/X)	Notes:
1	Has an electronic copy of all geotechnical submissions been provided to the District Geotechnical Engineer (DGE)?	X	This submittal is being provided to Prime Consultant, whom will forward to DGE.
2	Has the first complete version of a geotechnical report being submitted been labeled as 'Draft'?	Y	
3	Subsequent to ODOT's review and approval, has the complete version of the revised geotechnical report being submitted been labeled 'Final'?	Y	This is the final report submittal
4	Has the boring data been submitted in a native format that is DIGGS (Data Interchange for Geotechnical and Geoenvironmental) compatable? gINT files may be used for this.	Y	Providing gINT project file with this submmital.
5	Does the report cover format follow ODOT's Brand and Identity Guidelines Report Standards found at http://www.dot.state. oh.us/brand/Pages/default.aspx ?	Y	
6	Have all geotechnical reports being submitted been titled correctly as prescribed in Section 705.1 of the SGE?	Y	
Report Body		(Y/N/X)	Notes:
7	Do all geotechnical reports being submitted contain the following:		
a.	an Executive Summary as described in Section 705.2 of the SGE?	Y	
b.	an Introduction as described in Section 705.3 of the SGE?	Y	
c.	a section titled "Geology and Observations of the Project," as described in Section 705.4 of the SGE?	Y	
d.	a section titled "Exploration," as described in Section 705.5 of the SGE?	Y	
e.	a section titled "Findings," as described in Section 705.6 of the SGE?	Y	
f.	a section titled "Analyses and Recommendations," as described in Section 705.7 of the SGE?	Y	
Appendices		(Y/N/X)	Notes:
8	Do all geotechnical reports being submitted contain all applicable Appendices as described in Section 705.8 of the SGE?	Y	
9	Do the Appendices present a site Boring Plan showing all boring locations as described in Section 705.8.1 of the SGE?	Y	Boring numeration shortened for clarity.

VI.B. Geotechnical Reports

Appendices		(Y/N/X)	Notes:
10	Do the Appendices include boring logs and color pictures of rock, if applicable, as described in Section 705.8.2 of the SGE?	X	No rock cored.
11	Do the Appendices include reports of undisturbed test data as described in Section 705.8.3 of the SGE?	X	No undisturbed tests.
12	Do the Appendices include calculations in a logical format to support recommendations as described in Section 705.8.4 of the SGE?	Y	

APPENDIX D

(Historic Borings)

TE-54 A
2004.4.60

GENERAL INFORMATION

INTRODUCTION

The project consists of a major realignment of SR 141, and associated intersecting roads - Mentor Rd. (West), Hosford Rd., Clark Rd., Colburn Rd., and Girdled Rd. - approximately 5.2 miles in length, beginning approximately 1.5 miles northwest of Chardon on Mentor Road, Geauga County, extends in a northerly direction, and terminates 300 feet north of Auburn Road, approximately 2.5 miles south of SR 84, Lake County.

The proposed grade indicates the following:

Mainline - cuts, ranging between 0 and 27 feet in depth at ditchline, and fill embankment ranging between 0 and 30 feet in height.

Mentor Road (West) - fill embankment, ranging between 0 and 28 feet in height.

Hosford Road - fill embankment, ranging between 0 and 14 feet in height.

Clark Road - fill embankment, ranging between 0 and 3 feet in height.

Colburn Road - cuts, ranging between 0 and 5 feet in depth.

Girdled Road - fill embankment, ranging between 0 and 14 feet in height.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

The alignment originates on an upland plateau region, crosses a bedrock outlier and descends to a lower, relatively flat, glaciated portion of an upland plain region, where the project terminates. Several exposures of bedrock were observed and measured. It is noted that the area is extensively dissected by relatively shallow drainage courses. Glacial drift, ranging in depth from 0 to at least 20 feet, overlies bedrock, comprised of shales and the Sharon Conglomerate, Pennsylvanian age, in the initial one-third of the project, and shales and sandstones of the Cuyahoga formation, Mississippian age, in the remaining two-thirds.

EXPLORATION

Exploratory borings were made by means of truck-mounted mechanical earth auger and hand auger (in areas of difficult access), between April 6 and May 2, 1961.

INVESTIGATIONAL FINDINGS

Materials occurring immediately below proposed grade and in the embankment foundation areas are predominantly comprised of sandy silts and silt clays, in the A-4a and A-6a classifications, generally having moisture contents within the plastic range. Between stations 487+00 and 493+00, proposed grade and left backslope will be in sandstone conglomerate. Frost susceptible silts were found to occur within three feet of proposed grade at stations 14+10, 482+50, 483+43, 485+35, 520+50, 580+00, 650+00, 653+90 in Geauga County, and station 11+00 in Lake County.

Wet, soft compressible sediments as much as 4 feet in thickness, were found to occur at-surface between approximately stations 22+25 and 478+50, 600+00 to 616+00, 620+00 to 623+00, and in the majority of the drainage channels throughout the project.

Intersecting Roads - Mentor Road (West), Hosford Road, Clark Road, Colburn Road, and Girdled Road. Materials occurring immediately below proposed grade and in the embankment foundation areas are predominantly comprised of sandy silt and silt clays, in the A-4a and A-6a classifications. Frost susceptible silts were found to occur within three feet of proposed grade at stations 52+00 - Mentor Road (West); 7+00 - Colburn Road; and 0+50 - Girdled Road.

LEGEND FOR PROJECT-AVERAGE RESULTS OF TESTS- 395 SAMPLES TESTED

	CLASS	CLASS	AGG	C. SAND	F. SAND	SILT	CLAY	LIMIT	INDEX	CONTENT	TESTED
Gravel and/or stone fragments	A-1-a (0)	A-1-a	66	9	13	7	5	NP	NP	18	3
Gravel and/or stone fragments with sand	A-1-b (0)	A-1-b	49	13	19	9	10	NP	NP	13	6
FS Fine sand	A-3(0)	A-3	0	1	89	- 10 -		NP	NP	22	1
Coarse and fine sand	----	A-3a	8	10	56	13	13	NP	NP	17	5
Gravel and/or stone fragments with sand and silt	A-2-4 (0)	A-2-4	45	6	18	16	15	27	4	21	13
Stone fragments with sand, silt, and clay	A-2-6 (0)	A-2-6	43	12	15	13	17	31	11	15	2
Sandy silt	A-4 (4)	A-4a	18	8	17	31	26	24	5	18	109
Silt	A-4(8)	A-4b	4	4	8	53	31	29	5	21	8
Elastic silt and clay with organic material	A-5 (9)	A-5	0	3	28	44	25	46	NP	43	1
Silt and clay	A-6 (8)	A-6a	13	5	11	33	38	30	12	19	215
Silty clay	A-6 (11)	A-6b	8	3	7	38	44	38	17	25	10
Clay	A-7-6 (12)	A-7-6	6	1	4	37	52	43	18	29	7
Bouldery zone			VISUAL CLASSIFICATION								
FT Fine-Textured peat			VISUAL CLASSIFICATION								1
Shale			VISUAL CLASSIFICATION								8
Sandstone			VISUAL CLASSIFICATION								6
Various other materials			VISUAL CLASSIFICATION								

Sod and/or Topsoil=X'=Approximate depth.

Berm material.

Auger boring - plan view.

Auger boring plotted to vertical scale only.

● Water content nearly equal to or greater than liquid limit.

⊖ Indicates a non-plastic material with high water content.

——W Free water.

B Indicates broken rock interval.

NOTE: Figures beside borings indicate water content in percent. e.g. 15

SOIL PROFILE

GEAUGA - LAKE COUNTIES

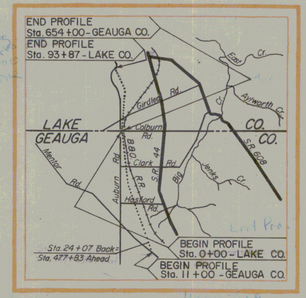
CRA - 44 - 0.00

1

OHIO STATE HIGHWAY TESTING LABORATORY

O. S. U. CAMPUS, COLUMBUS, OHIO

NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.



LOCATION MAP

Recon - C.J.K., J.S.M. - 4/7/61

Drilling - Auger - J.M., A.J.P., L.M.D., J.R.B. - 4/6/61 - 5/2/61

Drafting - R.C.B., R.A.W., C.L.I. - 5/29/61

SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44-0.00

OHIO STATE HIGHWAY TESTING LABORATORY
O. S. U. CAMPUS, COLUMBUS, OHIO

2/23

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION	OFFSET	DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
			GEAUGA COUNTY S.R. 44 (Westbound Lanes)								
14+10	12'Lt	0.4-5.0	11	7	18	35	29	23	5	24	A-4a*
		5.0-10.0	13	11	17	30	29	24	8	14	A-4a
17+58	21'Lt	0.4-5.0	0	7	14	38	41	25	11	13	A-6a
		5.0-10.0	14	6	11	33	36	24	11	17	A-6a
		10.0-12.0	8	6	11	34	41	25	11	16	A-6a
19+20	17'Lt	0.8-3.0	6	7	13	30	44	30	13	18	A-6a
		3.0-6.0	13	11	28	20	28	15	3	17	A-4a
		6.0-8.5	14	5	11	33	37	23	11	16	A-6a
22+27	14'Lt	0.4-1.0	12	7	26	35	20	NP	NP	29	A-4a
		1.0-3.0	50	6	18	15	11	NP	NP	25	A-2-4
23+75	42'Rt	0.4-2.0	0	2	14	52	32	33	9	35	A-4b
		2.0-3.5	7	16	40	18	19	NP	NP	28	A-4a
23+75	142'Rt	0.8-3.0	74	4	10	7	5	NP	NP	21	A-1-a
			S.R. 44								
476+50	85'Rt	0.4-1.0	Black Fine-Textured Peat							250	Visual
		1.0-4.0	6	6	18	42	28	36	8	49	A-4a
479+50	CL	0.4-2.0	8	7	12	50	23	NP	NP	25	A-4b
		2.0-3.0	0	6	14	36	44	30	11	26	A-6a
481+65	CL	0.4-5.0	8	7	12	31	42	36	12	19	A-6a
		5.0-8.0	8	7	12	33	40	31	12	13	A-6a
		8.0-13.0	11	6	6	39	38	28	11	13	A-6a
		13.0-18.0	9	6	13	36	36	28	11	14	A-6a*
		18.0-20.0	7	6	14	35	38	28	11	14	A-6a*
482+50	CL	0.4-3.0	8	6	14	31	41	32	11	18	A-6a
		3.0-8.0	12	8	11	31	38	29	11	15	A-6a
		8.0-11.0	10	7	12	29	42	29	11	13	A-6a
		11.0-16.0	9	6	13	35	37	24	7	14	A-4a
		16.0-20.0	13	6	13	34	34	24	7	15	A-4a*
483+45	CL	0.4-5.0	13	6	11	27	43	37	13	23	A-6a
		5.0-7.0	14	7	13	28	38	29	11	15	A-6a
		7.0-9.0	19	15	18	29	19	NP	NP	13	A-4a
		9.0-14.0	7	7	14	35	37	26	11	13	A-6a
		14.0-17.0	12	7	13	29	39	24	5	14	A-4a*
		17.0-20.0	0	1	2	36	61	34	12	22	A-6a*
485+35	CL	0.4-3.0	3	5	12	35	45	40	18	20	A-6b
		3.0-7.0	10	7	12	31	40	33	13	18	A-6a
		7.0-10.0	10	7	15	35	33	25	11	17	A-6a
		10.0-12.0	0	1	1	34	64	36	15	26	A-6a
		12.0-17.0	11	12	20	34	23	23	7	16	A-4a
		17.0-20.0	11	8	18	35	28	26	7	16	A-4a*
486+63	CL	0.4-4.0	11	6	13	34	36	34	11	23	A-6a
		4.0-7.0	0	1	3	33	63	45	16	26	A-7-6
		7.0-12.0	12	8	16	32	32	29	11	15	A-6a*
487+80	75'Lt	0.4-3.0	5	5	32	37	21	NP	NP	23	A-4a
		3.0-5.0	Brown Broken Sandstone							19	Visual
487+80	75'Rt	0.4-2.0	0	3	28	44	25	46	NP	43	A-5
491+00	100'Lt	0.4-2.0	Brown Broken Sandstone							23	Visual
491+00	60'Rt	0.3-3.0	Brown Broken Sandstone							10	Visual
493+50	110'Lt	0.4-5.0	9	6	12	37	36	31	11	20	A-6a
		5.0-10.0	10	7	13	35	35	26	11	14	A-6a
		10.0-14.0	13	7	11	35	34	26	11	15	A-6a
		14.0-14.5	8	20	33	18	21	19	7	14	A-4a
493+50	50'Lt	0.4-5.0	11	6	13	34	36	30	12	19	A-6a
		5.0-10.0	8	7	13	39	33	28	11	14	A-6a
		10.0-15.0	12	8	12	34	34	24	7	13	A-4a
		15.0-17.0	12	9	20	35	24	22	5	12	A-4a
493+50	CL	0.4-5.0	8	6	13	34	39	32	14	16	A-6a
		5.0-8.0	17	6	11	32	34	28	11	15	A-6a
		8.0-13.0	12	8	13	30	37	22	6	14	A-4a
		13.0-18.0	17	7	13	30	33	23	11	17	A-6a
		18.0-20.0	17	6	12	35	30	24	11	16	A-6a*
495+50	100'Lt	0.4-5.0	12	5	11	35	37	27	11	20	A-6a
		5.0-8.0	10	7	11	39	33	26	11	14	A-6a
		8.0-11.0	13	7	12	36	32	22	6	11	A-4a
495+50	CL	0.4-5.0	16	6	11	33	34	28	11	14	A-6a
		5.0-9.0	16	7	12	33	32	27	11	14	A-6a*
		9.0-12.0	25	4	6	26	39	26	11	13	A-6a
		12.0-15.0	12	7	14	40	27	21	5	14	A-4a
498+00	CL	0.4-5.0	17	8	12	32	31	25	11	14	A-6a
		5.0-8.0	8	7	14	34	37	28	11	14	A-6a
		8.0-13.0	12	8	13	31	36	25	11	14	A-6a*
		13.0-16.0	13	7	12	31	37	23	11	14	A-6a*
		16.0-18.0	16	9	13	34	28	22	4	13	A-4a
499+75	CL	0.4-2.0	71	6	11	8	4	NP	NP	23	A-1-a
			S.R. 44 (Cont'd)								
501+00	CL	0.4-2.0	0	5	15	40	40	31	11	22	A-6a*
		2.0-4.0	17	5	11	30	37	32	11	21	A-6a*
501+00	110'Rt	0.4-2.0	0	5	16	44	35	25	6	26	A-4a
502+25	CL	0.4-5.0	8	9	10	39	34	28	11	17	A-6a
		5.0-10.0	23	8	15	30	24	16	1	14	A-4a
502+50	75'Lt	0.4-3.0	13	5	13	33	36	31	11	18	A-6a
		3.0-8.0	23	6	10	27	34	29	11	14	A-6a
		8.0-11.0	17	8	12	31	32	26	7	12	A-4a
		11.0-16.0	16	10	16	28	30	23	8	10	A-4a
		16.0-20.0	13	8	15	37	27	20	4	13	A-4a
503+00	100'Rt	0.4-3.0	7	7	17	35	34	24	5	20	A-4a
504+00	29'Lt	0.5-5.0	12	5	13	29	41	31	11	17	A-6a
		5.0-9.0	13	6	12	32	37	26	11	13	A-6a*
		9.0-14.0	15	6	12	28	39	26	11	13	A-6a*
		14.0-17.0	7	8	13	31	41	26	7	15	A-4a
		17.0-20.0	54	18	18	5	5	NP	NP	9	A-1-a
504+00	CL	0.4-3.0	13	4	14	29	40	40	14	25	A-6a
506+20	CL	0.4-5.0	18	8	12	30	32	21	6	15	A-4a
		5.0-10.0	16	9	13	33	29	22	4	16	A-4a
		10.0-14.0	24	8	14	29	25	20	6	14	A-4a
508+20	CL	0.4-5.0	9	7	13	34	37	27	11	25	A-6a
		5.0-7.0	18	8	13	36	25	23	3	15	A-4a
		7.0-10.0	14	9	13	34	30	23	5	13	A-4a
509+75	75'Lt	0.4-5.0	20	6	5	34	35	38	11	16	A-6a
510+00	CL	0.4-1.0	35	13	20	20	12	NP	NP	28	A-2-4
		1.0-3.0	15	5	6	41	33	31	11	31	A-6a
510+25	75'Rt	0.4-2.0	31	10	12	25	22	31	9	24	A-4a
511+95	CL	0.3-2.0	9	4	13	39	35	37	16	11	A-6b
		2.0-4.0	20	6	13	33	28	27	11	17	A-6a
		4.0-5.5	23	7	13	28	29	24	6	16	A-4a
		5.5-6.5	29	7	12	27	25	22	7	15	A-4a
514+50	CL	0.4-4.0	16	9	15	29	31	29	11	22	A-6a
		4.0-9.0	9	8	13	32	38	25	7	14	A-4a
		9.0-13.0	13	7	13	29	38	22	11	12	A-6a*
		13.0-15.0	22	7	12	25	34	24	11	15	A-6a*
		15.0-20.0	11	7	14	31	37	22	11	14	A-6a
516+90	CL	0.4-5.0	9	5	13	33	40	31	11	22	A-6a*
		5.0-10.0	19	5	12	31	33	26	11	14	A-6a
		10.0-12.0	22	5	12	29	32	27	11	12	A-6a
517+50	CL	0.4-3.0	25	8	19	19	29	31	11	23	A-6a
		3.0-8.0	33	6	15	27	19	21	5	12	A-4a
		8.0-12.0	Gray Broken Shale							7	Visual
518+65	CL	0.4-2.0	40	6	15	16	23	31	9	27	A-4a
		2.0-7.0	23	6	18	33	20	NP	NP	17	A-4a
		7.0-10.5	42	3	7	28	20	26	11	16	A-6a
518+75	75'Rt	0.4-2.0	33	12	19	5	31	32	7	28	A-4a
		2.0-5.0	32	8	18	26	16	22	1	23	A-4a
		5.0-9.5	22	8	21	29	20	NP	NP	10	A-4a
520+50	CL	0.4-2.0	6	4	12	38	40	29	11	23	A-6a
		2.0-7.0	19	6	11	30	34	25	7	17	A-4a*
		7.0-11.0	13	6	15	33	33	24	7	14	A-4a
		11.0-15.0	19	6	14	29	32	25	11	14	A-6a
		15.0-17.0	10	4	9	27	50	29	11	17	A-6a
523+00	CL	0.3-3.5	47	4	9	18	22	32	11	29	A-6a
526+50	CL	0.4-4.0	7	4	15	41	33	27	8	24	A-4a
		4.0-6.0	17	5	11	30	37	32	11	19	A-6a
527+50	75'Lt	0.4-2.5	43	5	12	19	21	27	9	27	A-4a
527+50	75'Rt	0.6-2.0	19	8	21	25	27	28	8	19	A-4a
528+90	CL	0.3-3.5	8	5	12	32	43	32	13	27	A-6a*
		3.5-5.0	41	6	9	22	22	26	11	22	A-6a
533+00	CL	0.3-3.0	0	4	15	40	41	28	11	27	A-6a*
		3.0-4.0	25	5	9	32	29	25	7	23	A-4a
533+75	75'Lt	0.4-2.5	12	5	13	32	38	28	11	20	A-6a
535+00	75'Rt	0.4-1.0	Bouldery zone								Visual
		1.0-2.0	26	6	11	28	29	26	11	20	A-6a
		2.0-3.0	15	9	15	32	29	24	7	21	A-4a
537+70	CL	0.4-5.0	9	7	14	34	36	34	14	27	A-6a*
		5.0-10.0	8	8	13	36	35	30	11	16	A-6a
		10.0-15.0	13	9	13	32	33	25	7	13	A-4a
540+00	CL	0.4-2.0	3	4	11	31	51	40	15	24	A-6a
		2.0-7.0	12	8	12	33	35	28	7	15	A-4a
		7.0-12.0	17	8	12	28	35	28	11	14	A-6a*
		12.0-17.0	10	9	13	37	31	24	5	13	A-4a
		17.0-20.0	13	7	12	33	35	27	11	14	A-6a
			S.R. 44 (Cont'd)								
542+75	CL	0.3-1.5	4	8	16	37	35	24	6	24	A-4a
		1.5-6.0	12	6	11	31	40	29	11	17	A-6a
544+50	75'Rt	0.3-5.0	4	5	15	41	35	27	3	28	A-4a
544+90	CL	0.0-6.0	27	6	12	25	30	31	12	19	A-6a
		6.0-12.0	8	8	13	32	39	27	11	17	A-6a
545+75	CL	0.2-3.0	2	6	23	37	32	27	5	27	A-4a
		3.0-4.5	42	11	14	16	15	28	8	27	A-2-4
546+00	75'Lt	0.3-4.0	34	8	23	18	19	26	7	30	A-2-4
547+00	CL	0.3-2.0	6	4	10	37	43	29	11	32	A-6a
		2.0-5.0	10	7	15	34	34	29	12	24	A-6a
549+50	CL	0.4-5.0	10	7	13	31	39	31	11	17	A-6a
		5.0-10.0	12	9	13	30	36	30	11	12	A-6a*
		10.0-15.0	10	7	13	30	40	31	14	14	A-6a
		15.0-20.0	9	6	13	32	40	28	11	13	A-6a
550+90	CL	0.3-2.0	12	4	11	31	42	32	13	21	A-6a*
		2.0-4.5	32	6	10	23	29	26	11	25	A-6a
555+00	CL	0.3-2.0	7	5	13	30	45	26	11	19	A-6a
		2.0-5.5	20	6	12	29	33	27	11	15	A-6a
557+00	75'Rt	0.4-5.0	5	6	13	30	46	33	11	24	A-6a*
		5.0-10.0	18	6	11	30	36	28	11	15	A-6a
		10.0-12.0	7	8	13	29	43	30	11	19	A-6a
562+00	75'Lt	0.0-3.0	13	2	10	34	41	34	12	30	A-6a
		3.0-5.5	47	6	12	16	19	28	7	27	A-2-4
562+00	CL	0.4-5.0	7	4	9	40	40	37	14	24	A-6a
		5.0-7.0	28	21	25	9	17	29	11	17	A-2-6
		7.0-12.0	32	10	16	24	18	21	4	16	A-4a
		12.0-17.0	41	11	10	17	21	26	9	13	A-4a
		17.0-20.0	14	11	15	32	28	24	7	13	A-4a
562+00	75'Rt	0.4-4.0	0	1	6	44	49	42	21	35	A-7-6
		4.0-6.0	0	1	3	33	63	44	18	36	A-7-6
564+00	75'Lt	0.4-5.0	0	1	3	37	59	41	17	26	A-7-6
		5.0-6.5	33	8	18	20	21	24	10	25	A-4a
564+00	15'Lt	0.0-5.0	16	5	8	35	36	35	12	20	A-6a
		5.0-9.0	14	9	15	36	26	28	7	15	A-4a
		9.0-14.0	13	10	15	33	29	25	7	12	A-4a
		14.0-20.0	15	11	13	33	28	NP	NP	14	A-4a
564+00	75'Rt	0.4-5.5	0	1	2	42	55	39	16	40	A-6b
		5.5-6.5	0	1	4	45	50	28	11	25	A-6a
		6.5-8.0	50	9	17	13	11	NP	NP	15	A-1-b
566+00	75'Lt	1.5-5.7	8	6	19	38	29	NP	NP	24	A-4a
566+00	CL	0.4-3.0	13	34	19	16	18	25	4	15	A-3a
		3.0-8.0	11	13	20	27	29	20	4	15	A-4a
		8.0-13.0	12	9	15	30	34	23	11	14	A-6a
566+00	75'Rt	0.3-4.0	0	2	3	50	45	34	9	29	A-4b
		4.0-6.5	42	9	11	21	17	26	9	22	A-4a
569+00	CL	0.4-2.5	10	7	16	33	34	33	11	32	A-6a
		2.5-3.8	13	5	13	26	43	32	11	23	A-6a
572+00	CL	0.4-3.0	5	4	13	32	46	36	15	21	A-6a
576+00	CL	0.4-2.0	3	4	11	35	47	37	12	25	A-6a
		2.0-7.0	10	7	13	28	42	29	11	14	A-6a
		7.0-12.0	8	6	11	31	44	30	11	14	A-6a*
		12.0-15.0	8	7	13	32	40	27	11	14	A-6a*
		15.0-20.0	14	10	18	38	20	NP	NP	14	A-4a
580+00	CL	0.4-3.0	6	5	14	34	41	31	11	21	A-6a
		3.0-8.0	6	7	13	32	42	33	13	16	A-6a
		8.0-10.0	9	7	11	31	42	32	12	15	A-6a*
		10.0-11.0	10	7	12	33	38	27	11	13	A-6a*
		11.0-16.0	9	10	18	37	26	24	5	16	A-4a*
		16.0-18.0	25	13	19	23	20	NP	NP	14	A-4a
		18.0-20.0	32	14	22	22	10	NP	NP	11	A-4a
582+50	CL	0.4-2.0	6	5	14	33	42	29	11	20	A-6a*
		2.0-4.5	5	5	14	31	45	39	17	22	A-6b*
583+20	75'Lt	0.4-3.5	21	4	21	25	29	33	14	25	A-6a
583+60	75'Rt	0.4-4.5	0	1	2	47	50	37	18	31	A-6b
586+15	CL	0.4-5.0	0	2	9	38	51	36	14	30	A-6a*
		5.0-6.5	25	10	23	22	20	23	7	18	A-4a
588+00	CL	0.4-2.0	3	5	12	38	42	34	12	21	A-6a
		2.0-7.0	13	8	14	30	35	33	11	18	A-6a*
		7.0-12.0	45	18	15	13	9	NP	NP	9	A-1-b*
		12.0-16.0	38	21	18	12	11	NP	NP	9	A-1-b
590+00	CL	0.4-3.0	2	6	13	35	44	29	11	17	A-6a
		3.0-5.0	37	4	10	24	25	29	11	16	A-6a*
			S.R. 44 (Cont'd)								
593+50	CL	0.4-4.0	48	3	7	22	20	28	11	17	A-6a*
598+00	CL	0.8-2.0	0	3	11	44	42	31	11	27	A-6a
		2.0-4.0	15	4	10	33	38	29	11	18	A-6a
		4.0-6.0	39	11	14	15	21	25	9	23	A-4a
602+00	CL	0.3-4.0	8	7	14	35	36	25	11	15	A-6a*
		4.0-8.0	21	7	11	25	36	30	11	15	A-6a
		8.0-10.0	20	6	15	30	29	23	9	14	A-4a
		10.0-12.0	27	8	20	29	16	NP	NP	14	A-4a
606+00	10'Lt	0.3-5.0	9	5	8	39	39	31	11	21	A-6a*
		5.0-8.0	31	9	19	27	14	NP	NP	15	A-4a
		8.0-10.0	34	2	13	32	19	21	3	12	A-4a
609+00	CL	0.3-4.0	11	6	15	31	37	30	11	18	A-6a*
		4.0-6.0	10	5	13	39	33	24	11	18	A-6a
		6.0-10.0	21	8	25	25	21	18	4	11	A-4a
609+50	75'Rt	0.4-4.0	28	5	13	26	28	30	11	29	A-6a*
611+00	CL	0.0-1.0	Sediments							79	Visual*
		1.0-4.0	19	6	14	30	31	29	11	22	A-6a*
		4.0-10.0	0	1	89	-	10 -	NP	NP	22	A-3
615+00	CL	0.0-0.8	Sediments								Visual
		0.8-5.0	16	6	20	24	34	27	11	16	A-6a*
		5.0-10.0	18	5	47	14	16	NP	NP	14	A-3a*
618+00	75'Rt	0.3-2.0	33	7	22	17	21	NP	NP	31	A-4a*
		2.0-4.5	49	3	27	10	11	NP	NP	20	A-1-b
620+00	68'Lt	0.0-2.0	Sediments							158	Visual
		2.0-4.0	39	2	28	18	13	NP	NP	26	A-2-4
621+25	75'Lt	0.0-1.0	Black clayey silt with plant fibers								Visual
		1.0-2.4	43	1	40	4	12	NP	NP	25	A-2-4
621+40	CL	0.0-0.8	Sediments								Visual*
		0.8-4.0	11	6	15	32	36	27	11	21	A-6a*
		4.0-5.0	0	1	8	24	67	36	13	22	A-6a
		5.0-6.0	53	2	10	14	21	31	12	24	A-6a
623+00	80'Lt	0.0-2.0	Sediments							231	Visual
		2.0-3.3	5	4	54	21	16	NP	NP	34	A-4a
623+00	CL	0.8-2.5	9	4	31	26	30	22	5	21	A-4a
625+00	CL	0.8-3.0	0	4	15	39	42	31	11	26	A-6a
		3.0-4.5	47	2	10	15	26	32	12	19	A-6a
625+00	100'Rt	0.0-3.0	9	4	13	38	36	31	12	21	A-6a
		3.0-4.0	9	5	11	33	42	27	11	17	A-6a
627+50	75'Lt	0.0-1.0	Sediments							77	Visual
		1.0-4.0	39	5	18	22	16	24	6	23	A-4a
627+50	75'Rt	0.0-1.0	Sediments							69	Visual
		1.0-3.5	41	5	20	18	16	NP	NP	24	A-2-4
630+00	CL	1.0-5.0	6	5	12	36	41	31	11	25	A-6a*
		5.0-7.0	30	7	25	26	12	NP	NP	16	A-4a
		7.0-10.0	10	3	9	50	28	NP	NP	14	A-4b
634+00	CL	1.0-6.0	18	6	14	28	34	28	11	26	A-6a*
634+00	40'Rt	0.8-5.0	17	9	14	30	30	31	11	22	A-6a*
		5.0-8.0	32	7	12	28	21	22	4	17	A-4a*
		8.0-14.0	31	8	8	28	25	22	5	12	A-4a
635+25	20'Lt	0.8-5.5	19	5	12	33	31	30	11	17	A-6a*
		5.5-8.0	13	9	16	30	32	23	6	21	A-4a*
		8.0-13.0	21	9	11	32	27	21	4	13	A-4a
		13.0-16.0	45	5	16	15	19	20	4	9	A-2-4
636+00	50'Rt	0.3-3.0	9	6	11	40	34	34	12	29	A-6a
		3.0-4.5	9	7	20	35	29	24	7	24	A-4a*
		4.5-6.0	29	6	11	24	30	31	12	26	A-6a*
640+00	CL	0.3-5.0	3	4	11	43	39	34	11	36	A-6a*
644+00	CL	0.3-2.5	0	4	20	42	34	32	11	28	A-6a*
		2.5-4.0	4	4	10	45	37	31	12	18	A-6a
		4.0-7.0	19	5	11	32	33	29	11	22	A-6a
645+20	75'Lt	0.3-4.0	6	5	17	38	34	27	11	28	A-6a*
		4.0-6.0	16	6	13	28	37	31	11	24	A-6a
647+80	75'Rt	0.4-5.0	2	4	18	35	41	30	11	26	A-6a*
650+00	CL	0.4-2.0	5	5	12	35	43	32	11	18	A-6a
		2.0-7.0	11	10	13	35	31	28	11	13	A-6a*
		7.0-11.0	11	10	12	38	29	27	7	13	A-4a*
		11.0-15.0	15	11	11	36	27	23	4	6	A-4a
653+90	CL	0.0-5.0	22	6	13	32	27	26	8	12	A-4a*
		5.0-8.0	18	7	14	36	25	22	4	16	A-4a*
		8.0-9.5	15	11	17	40	17	NP	NP	11	A-4a
		9.5-12.0	Gray Broken Sandstone							17	Visual

(Continued on following sheet.)

SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44- 0.00
OHIO STATE HIGHWAY TESTING LABORATORY
O. S. U. CAMPUS, COLUMBUS, OHIO
3/23

SUMMARY OF SOIL TEST DATA (Cont'd)
NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTD CLASS.
					LAKE COUNTY SR 44						
14+00	25'Rt	0.3-1.5	0	7	14	38	41	29	11	27	A-6a
		1.5-5.0	0	5	14	64	17	30	11	16	A-6a*
		5.0-8.0	41	8	28	16	7	NP	NP	15	A-2-4*
		8.0-10.0	Gray Broken Sandstone							14	Visual
8+10	CL	0.3-2.0	17	3	53	15	12	NP	NP	16	A-3a
		2.0-5.0	38	2	2	25	33	35	12	15	A-6a
		5.0-8.5	Gray Broken Shale							6	Visual
11+00	CL	0.3-5.0	37	4	9	28	22	26	6	17	A-1a*
		5.0-10.0	22	2	3	32	41	33	11	14	A-6a
		10.0-11.5	Gray Broken Shale							8	Visual
15+00	15'Lt	0.2-1.5	9	7	13	31	40	33	14	27	A-6a*
		1.5-4.0	10	6	11	36	37	32	11	16	A-6a*
		4.0-6.0	44	4	3	23	26	37	13	15	A-6a
19+00	CL	0.3-4.0	52	4	12	11	21	27	10	18	A-2-4
23+00	CL	0.5-4.0	0	5	12	42	41	28	11	17	A-6a*
26+00	140'Rt	0.5-4.0	0	3	11	47	39	30	11	32	A-6a
29+00	CL	0.5-3.5	8	6	12	33	41	30	11	26	A-6a*
32+00	CL	0.3-3.0	40	1	1	21	37	43	17	22	A-7-6*
35+00	CL	0.2-4.0	15	3	22	31	29	26	9	23	A-4a
39+00	140'Rt	0.3-2.0	0	4	10	43	43	32	12	22	A-6a*
		2.0-5.0	41	3	5	23	28	33	11	16	A-6a
42+00	CL	0.3-3.0	9	4	9	37	41	32	11	16	A-6a*
		3.0-5.0	35	4	8	28	28	30	11	15	A-6a
45+00	145'Rt	0.3-3.0	9	4	10	38	39	28	6	16	A-1a
		3.0-6.0	14	5	10	36	35	27	11	16	A-6a
48+00	CL	0.4-2.0	0	2	8	46	44	35	12	22	A-6a*
		2.0-4.0	0	2	3	39	56	38	15	16	A-6a
		4.0-5.0	0	1	1	42	56	39	16	19	A-6b
51+00	140'Rt	0.4-5.0	0	5	15	41	39	31	11	29	A-6a
		5.0-7.0	31	5	12	26	26	25	4	21	A-1a
		7.0-9.0	58	3	4	17	18	33	11	13	A-2-6
		9.0-10.0	Gray Broken Shale							12	Visual
54+00	CL	0.4-5.0	10	5	11	35	39	29	11	16	A-6a*
		5.0-8.0	38	2	4	23	33	33	11	16	A-6a
		8.0-10.0	39	2	3	24	32	32	11	18	A-6a

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTD CLASS.
					SR 44 (Cont'd)						
57+00	140'Rt	0.4-3.0	7	3	10	38	42	32	11	24	A-6a*
		3.0-7.0	8	4	9	38	41	29	11	25	A-6a*
		7.0-10.0	12	2	4	37	45	39	17	27	A-6b
		10.0-11.0	45	5	4	22	24	28	5	21	A-4a
60+00	CL	0.4-2.0	0	1	1	42	56	38	11	22	A-6a*
		2.0-6.0	12	2	3	41	42	32	11	17	A-6a
		6.0-7.0	Gray Broken Shale							7	Visual
62+60	CL	1.0-6.0	0	1	4	48	47	44	19	24	A-7-6
		6.0-9.0	8	4	4	45	39	31	11	21	A-6a
		9.0-11.0	Gray Broken Shale							13	Visual
63+00	140'Rt	0.4-3.0	0	1	3	42	54	35	11	26	A-6a
		3.0-6.0	0	2	5	43	50	43	20	23	A-7-6
		6.0-8.0	Gray Broken Shale							15	Visual
65+50	140'Rt	0.4-3.0	0	2	8	46	44	32	12	30	A-6a*
		3.0-6.0	36	2	7	25	43	36	15	32	A-6a*
		6.0-10.0	64	1	2	17	16	32	10	11	A-2-4
69+00	140'Rt	0.4-2.0	0	2	9	43	46	38	14	32	A-6a
		2.0-4.0	13	2	6	38	41	36	15	17	A-6a
72+00	CL	0.4-1.0	0	1	1	46	52	40	16	28	A-6b*
		1.0-4.0	20	2	2	39	37	36	11	17	A-6a*
		4.0-7.0	16	2	3	39	40	33	12	16	A-6a
		7.0-9.0	39	1	2	30	28	32	11	21	A-6a
75+00	140'Rt	0.4-5.5	12	4	13	39	32	24	6	18	A-1a
78+00	140'Rt	0.4-3.0	5	4	9	43	39	28	11	26	A-6a
		3.0-6.0	0	2	4	53	41	29	9	15	A-4b
81+00	CL	0.4-3.0	17	2	4	37	40	33	12	19	A-6a
84+00	140'Rt	0.4-5.0	8	1	2	42	47	31	11	17	A-6a
87+00	CL	0.3-2.5	30	3	3	37	27	39	14	33	A-6a
		2.5-4.0	34	1	1	31	33	35	15	17	A-6a
		4.0-6.0	25	3	3	30	39	33	13	15	A-6a*
90+00	185'Rt	0.4-3.0	0	2	8	47	43	35	13	24	A-6a
		3.0-6.0	0	3	3	58	36	28	7	12	A-4b
93+00	CL	0.4-2.0	9	4	4	45	38	32	11	21	A-6a
		2.0-7.0	21	5	4	38	32	33	14	16	A-6a*
		7.0-11.0	Gray Brown Shale							13	Visual
					Mentor Road (West)						
52+00	131'Rt.	0.4-4.0	10	9	17	36	28	25	7	22	A-4a*
		4.0-5.5	Gray Broken Sandstone							11	Visual
54+56	81'Rt	0.4-4.0	24	6	20	26	24	25	10	20	A-1a
		4.0-7.0	37	27	25	4	7	NP	NP	7	A-1-b
55+50	131'Rt	0.4-2.0	0	1	32	42	25	24	1	36	A-1a
		2.0-3.0	10	10	46	16	18	NP	NP	26	A-3a

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTD CLASS.
					Hosford Road						
14+50	12'Rt	0.0-4.5	12	6	12	32	38	28	11	14	A-6a*
		4.5-8.0	18	6	11	29	36	26	11	12	A-6a
		8.0-10.0	7	7	13	32	41	25	11	16	A-6a
18+50	50'Lt	0.4-1.5	3	3	11	22	34	36	13	23	A-6a
		1.5-5.5	20	6	11	25	39	36	15	18	A-6a
18+50	12'Rt	0.0-6.5	9	7	13	33	38	27	11	14	A-6a
		6.5-11.0	15	6	12	28	39	26	11	14	A-6a
		11.0-12.0	9	7	13	26	45	25	11	15	A-6a
23+00	12'Lt	0.7-2.5	3	4	10	33	48	37	13	29	A-6a
		2.5-6.5	7	8	14	35	36	32	12	21	A-6a
		6.5-7.5	19	7	12	26	36	30	11	15	A-6a
26+50	12'Rt	0.0-4.5	5	4	11	37	43	33	16	20	A-6b*
		4.5-7.0	13	7	12	32	36	27	11	16	A-6a
		7.0-10.0	15	7	12	29	37	23	6	12	A-1a
					Clark Road						
8+50	12'Rt	0.0-2.0	10	6	14	34	36	29	11	17	A-6a*
		2.0-7.0	10	7	13	30	40	27	11	15	A-6a*
		7.0-10.0	12	11	39	28	10	NP	NP	12	A-1a
11+50	12'Rt	0.0-5.5	3	4	9	32	34	27	5	23	A-1b
		5.5-9.0	16	6	12	27	39	27	11	15	A-6a
		9.0-10.5	11	7	13	27	42	27	11	12	A-6a
		10.5-12.0	10	7	16	43	24	NP	NP	18	A-1a
14+50	12'Rt	0.0-5.0	12	7	12	31	38	31	11	16	A-6a*
		5.0-10.0	7	8	14	32	39	28	11	16	A-6a
					Colburn Road						
2+00	10'Rt	0.5-5.0	29	8	11	30	22	39	19	14	A-6b*
		5.0-9.0	14	10	13	35	28	22	4	13	A-1a
		9.0-11.5	32	5	17	20	26	22	6	15	A-1a
7+00	12'Lt	0.0-4.0	16	9	18	35	22	22	3	17	A-1a*
		4.0-9.0	35	9	12	27	17	20	3	11	A-1a
		9.0-12.5	2	8	69	5	16	NP	NP	16	A-3a
					Girdled Road						
0+50	8'Rt	0.4-4.0	8	5	11	61	15	25	4	15	A-4b*
		4.0-6.0	7	5	2	41	45	35	13	15	A-6a
2+50	8'Rt	0.4-4.2	5	6	21	33	35	32	13	22	A-6a
4+50	10'Rt	0.4-3.5	25	5	3	29	38	33	11	16	A-6a*
6+50	15'Lt	0.0-2.0	68	8	6	10	10	25	6	14	A-1b*
		2.0-3.5	30	18	13	23	16	NP	NP	20	A-1a*
		3.5-7.0	12	7	25	28	28	24	7	18	A-1a
		7.0-8.5	57	7	6	17	13	25	6	13	A-2-4
		8.5-10.0	34	5	3	27	31	34	12	16	A-6a

SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44- 0.00

OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

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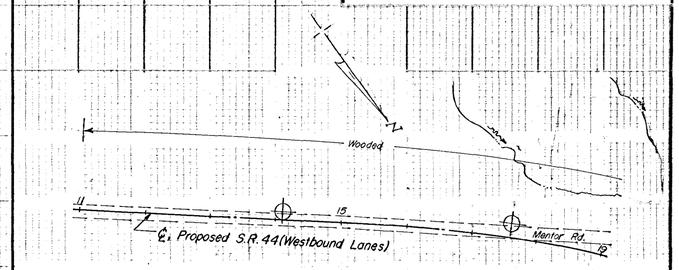
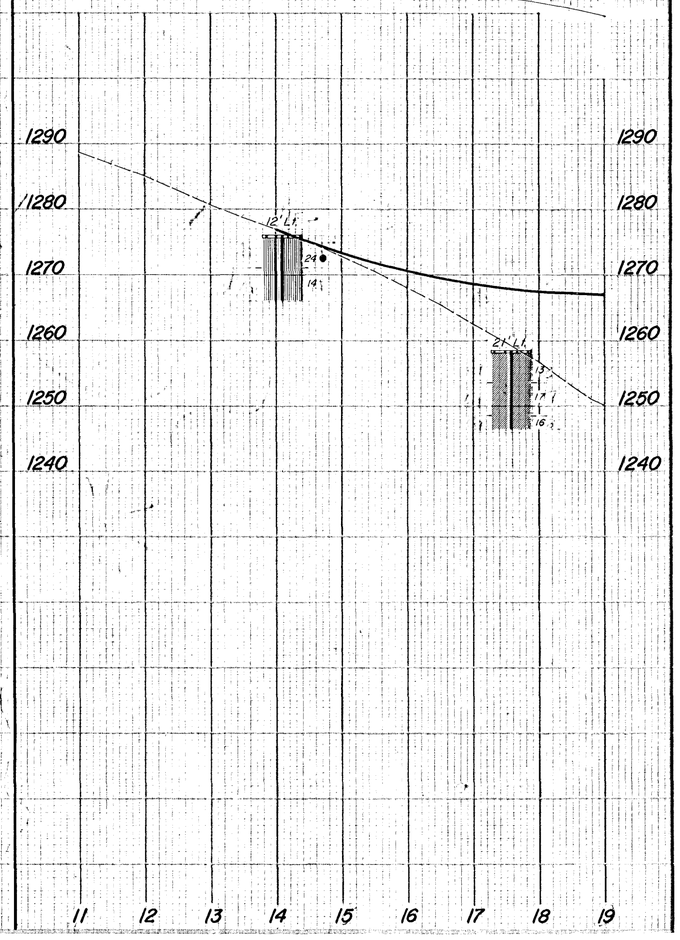
23





SOIL PROFILE
GEAUGA - LAKE COUNTIES
GEA-44-18.30
LAK-44-0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

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Cross Section Index	
Station	Sheet
477+50	18
480+00	15
484+00	17
489+00	17
491+00	17
493+50	18
495+50	18
499+50	19
501+00	19
502+29	19

Note: For alignment and profile of Proposed Mentor Rd. (West), see sheet 13.

℄ Proposed Mentor Rd. (West)

Mentor Rd.

Hay

Wooded

Weeds & brush

Hay

Wooded

Sandstone (friable, containing quartz pebbles) exposed in stream bank at elev. 1236.0'.

Spring elev. 1254.1'.

Spring elev. 1250.0'.

Steam valley gorged with glacial boulders approximately 1.0 in diameter.

℄ Proposed S.R. 44 (Westbound Lanes)

℄ Proposed S.R. 44

Hay

Wooded

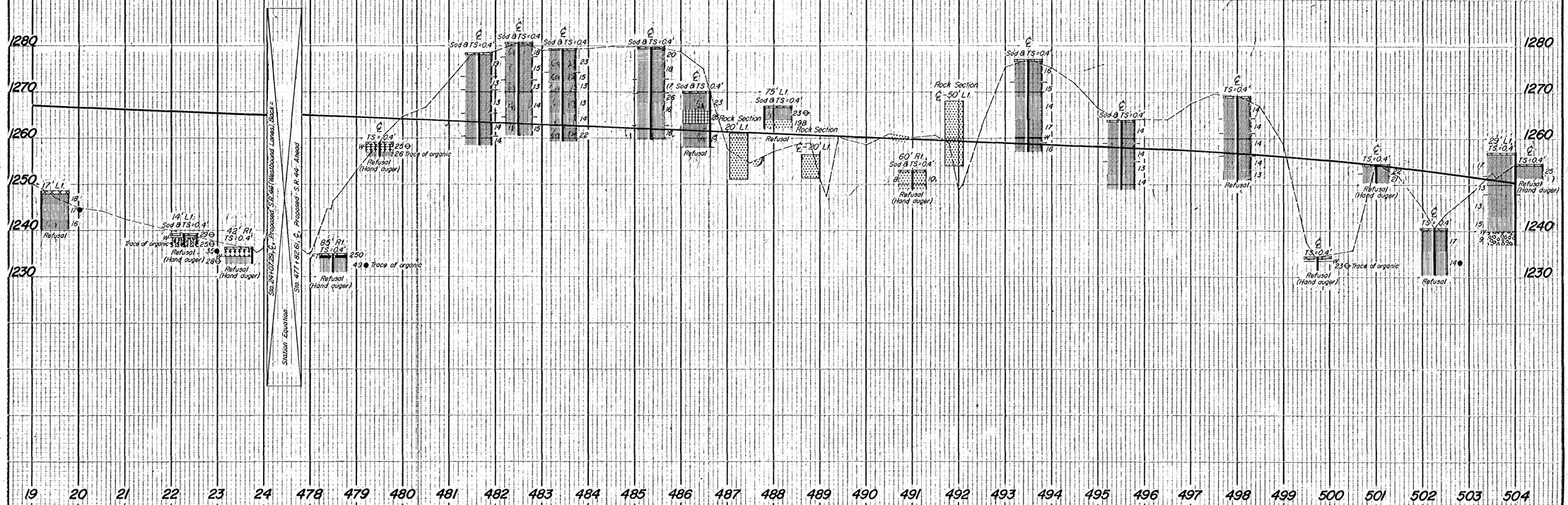
Weeds & brush

Wooded

Hay

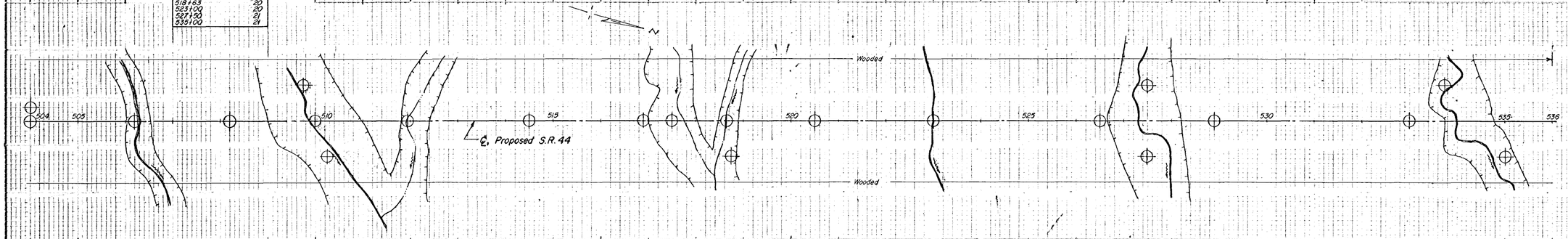
Wooded

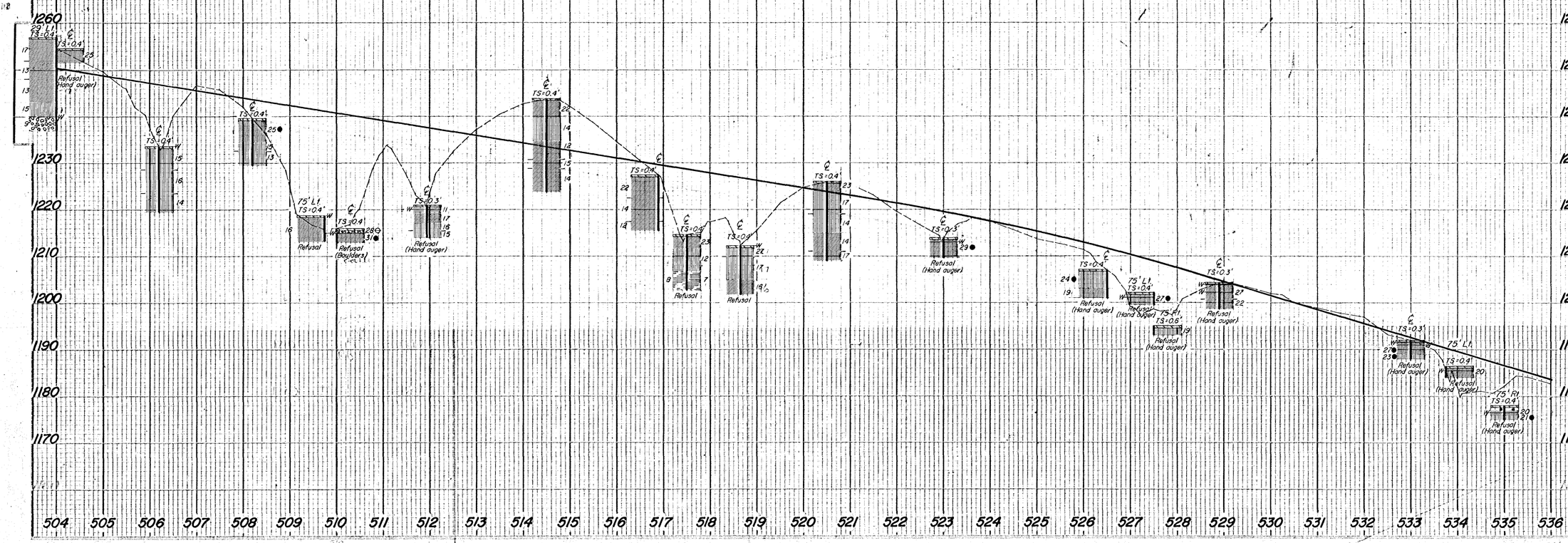
Sta. 24+07.29 Back
Sta. 477+82.61 Ahead
Station Equation



SOIL PROFILE
GEAUGA-LAKE COUNTIES 6 23
GEA-44-18.30
LAK-44-0.00
OHIO STATE HIGHWAY TESTING LABORATORY
COLUMBUS, OHIO

Cross Section Index	
Station	Sheet
510+00	19
514+50	20
518+03	20
523+00	20
527+50	21
535+00	21





Cross Section Index	
Station	Sheet
545+00	21
562+00	21
564+00	22
568+00	22

SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44-0.00
OHIO STATE HIGHWAY TESTING LABORATORY
COLUMBUS, OHIO

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23

Note: For alignment and profile of Proposed Hosford Rd., see sheet 14

N

Weeds & brush | Wooded | Weeds & brush | Existing Hosford Road | Low wet area | ℄ Proposed SR 44 | Sta 545+28.21 – ℄ Proposed SR 44 = Sta 21+18.92 – ℄ Proposed Hosford Rd. | ℄ Proposed Hosford Road | Weeds & brush | Low wet poorly drained area | Wooded | Low wet poorly drained area | Wooded

536 540 545 550 555 560 565 569

1180 1170 1160 1150 1140 1130 1120 1110 1100 1090 1080

℄ TS=0.4' — 22 W 18 13

℄ TS=0.4' — 24 15 13 14

℄ Sod=0.3' — 24 17 — Refusal (Hand auger)

℄ Sod=0.2' — W 19 17 — Refusal (Boulders) Hole caved in at elev. 1138.6'

℄ Sod=0.2' — W 2 2 — Refusal (Hand auger)

75' Lt. Sod=0.3' — W 1 1 — Refusal (Hand auger)

℄ Sod=0.3' — W 32 24 W — Refusal (Hand auger)

℄ TS=0.4' — 17 12 14 13

℄ Sod & TS=0.3' — W 21 25 — Refusal (Hand auger)

℄ Sod=0.3 — 19 15 — Refusal (Hand auger)

75' Rt. Sod & TS=0.4' — 24 15 19 — Refusal

℄ Sod & TS=0.4' — 24 17 16 13 13

75' Lt. — 20 15 12 14

℄ TS=0.4' — 15 15 14 — Refusal (Boulders)

536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568

SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44-0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

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N

Pond

Marshy

Weeds | Wooded | Weeds & brush | Pasture | Weeds | Stubble | Hay | Stubble & weeds | Hay

568 570 575 580 585 590 595 600

℄ Proposed S.R. 44

Low wet poorly drained area

Weeds | Wooded | Weeds & brush | Pasture | Weeds | Stubble | Hay | Stubble & weeds | Hay

1140 1130 1120 1110 1100

℄ TS=0.4' 32 23 Refusal (Hand auger)

℄ Sod @ TS+0.4' 21 Refusal (Hand auger)

℄ TS=0.4' 25 14 14 14 14

℄ Sod @ TS+0.4' 21 16 15 15 16 14 11

℄ Sod @ TS+0.4' 20 22 Refusal (Boulder) (Hand auger)

75' Lt. Sod @ TS+0.4' 25 Refusal (Hand auger)

75' Rt. Sod @ TS+0.4' 14 Refusal (Hand auger)

℄ Sod @ TS+0.4' 30 16 Refusal (Hand auger)

℄ Sod @ TS+0.4' 21 18 9 9

℄ Sod @ TS+0.4' 17 16 Refusal (Hand auger)

℄ Sod @ TS+0.4' 17 17 Refusal (Hand auger)

℄ Sod @ TS+0.8' 27 18 23 Refusal (Hand auger)

568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600

SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44-0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

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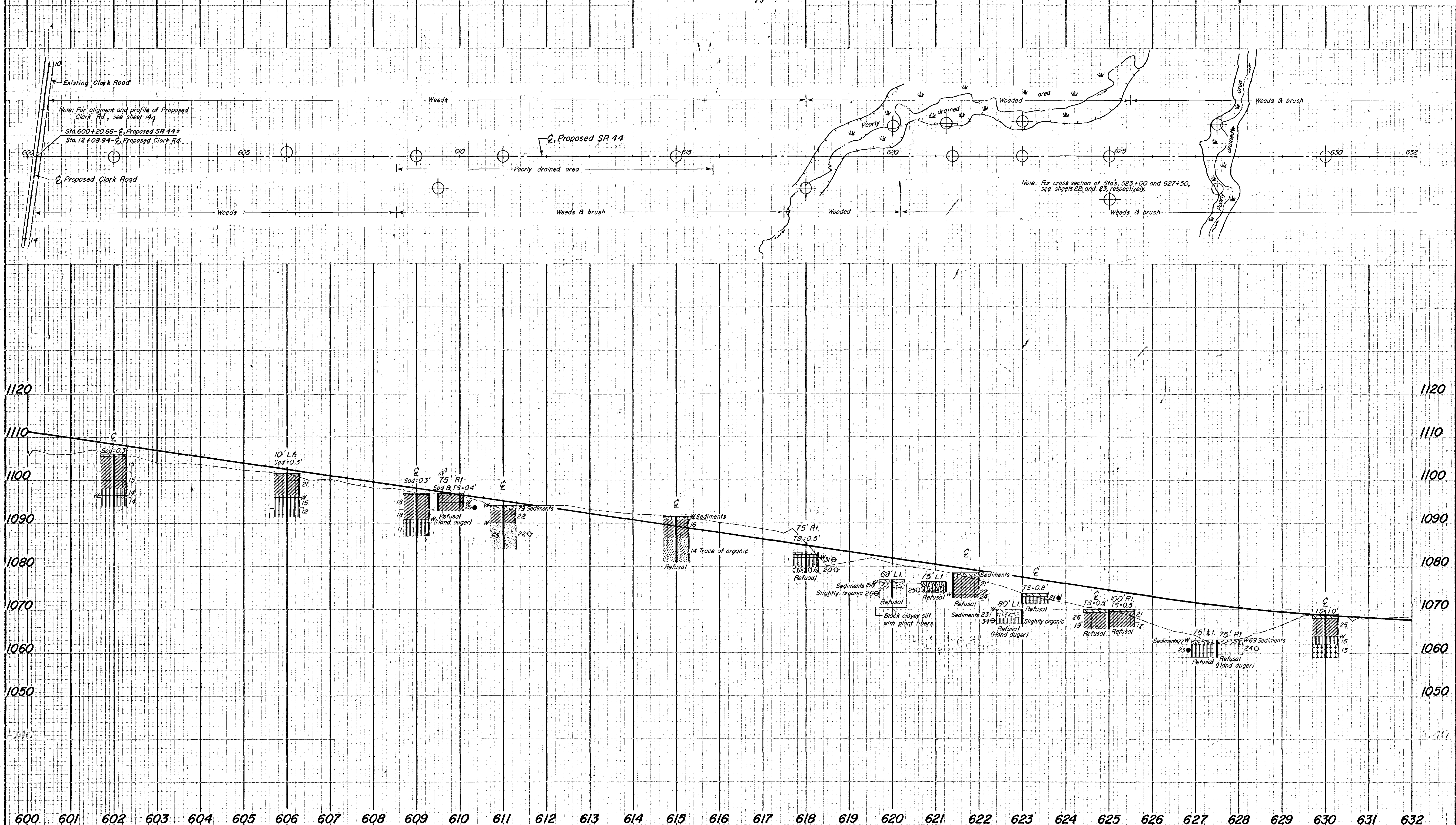

SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44-0.00
OHIO STATE HIGHWAY TESTING LABORATORY
COLUMBUS, OHIO

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23

N

Note: For alignment and profile of Proposed Colburn Rd., see sheet 15E

Weeds & brush | Plowed | Raspberries | Weeds & brush | Orchard | Weeds & brush | Pond | Wooded | Wooded | Weeds & brush | Wooded

Note: For cross section of Sta. 634+00, see sheet 23.

Existing Colburn Road

Sta. 654+00 - Geauga County =
Sta. 4+58.93 - ℄ Proposed Colburn Rd.
Sta. 0+00 - Lake County

Pond

Poorly drained area

℄ Proposed S.R. 44

℄ Proposed Colburn Road

Sandstone bedrock exposed in stream bank.

Geauga County - Lake County

632 | 635 | 640 | 645 | 650 | 654 | 5 | 10

Weeds & brush | Plowed | Raspberries | Weeds & brush | Orchard | Weeds & brush | Wooded | Wooded | Weeds & brush | Wooded

℄ Sod @ TS=1.0' — W, 26 — Refusal (Hand auger)

40' Rt. Sod @ TS=0.8' — W, 22, 17, 12

20' Lt. Sod @ TS=0.8' — W, 18, 21, 13, 9

50' Rt. Sod=0.3' — W, 29, 24, 28

℄ Sod=0.3' — W, 36 — Refusal (Hand auger)

℄ Sod=0.3' — 28, 18, 22 — Refusal (Hand auger)

75' Lt. Sod=0.3' — W, 28, 24 — Refusal (Hand auger)

75' Rt. TS=0.4' — W, 26 — Refusal (Hand auger)

℄ Sod @ TS=0.4' — 18, 13, 13, 6

℄ — 12, 16, 11, W, 7 — Refusal

25' Rt. Sod @ TS=0.3' — 22, 18, 15, 14

℄ TS=0.3' — 16, 15, 9 — Refusal

1070 | 1060 | 1050 | 1040 | 1030 | 1020 | 1010

632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 1 2 3 4 5 6 7 8 9 10

SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44-0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

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23

N

Note: For alignment and profile of Proposed Girdled Rd., see sheet 15

Wooded | Weeds | Wooded | Lawn | Hay | Weeds | Weeds | Stubble | Orchard

℄ Proposed Girdled Road

Sta. 22+27.78 - ℄ Proposed SR 44 =
Sta. 3+83.98 - ℄ Proposed Girdled Rd.

℄ Proposed S.R. 44

Existing Girdled Road

Weeds | Wooded | Lawn | Hay | Weeds | Weeds | Stubble

℄ Future Proposed Frontage Road

10 15 20 25 30 35 40 42

1030 1020 1010 1000 990 980 970

Sod @ TS+0.3'
11 14 8 8 8
Refusal

15' Lt
Sod+0.2'
27 16 15
Refusal

Sod @ TS+0.3'
18
Refusal (Boulders) (Hand auger)

TS+0.5'
16 17
Refusal (Hand auger)

140' Rt
Sod+0.5'
32
Refusal (Hand auger)

Sod+0.5'
26
Refusal (Hand auger)

Sod+0.3'
22
Refusal (Hand auger)

Sod+0.2'
24 23
Refusal (Boulders) (Hand auger)

140' Rt
TS+0.3'
22 16
Refusal (Hand auger)

TS+0.3'
18 15
Refusal (Large gravel) (Hand auger)

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42

SOIL PROFILE
GEAUGA - LAKE COUNTIES 12 23
GEA - 44 - 18.30
LAK - 44 - 0.00
OHIO STATE HIGHWAY TESTING LABORATORY
COLUMBUS, OHIO

N

Orchard | Weeds | Orchard | Wooded | Weeds | Weeds & brush | Wooded | Cultivated | Orchard | Stubble

42 43 50 55 60 65 70 74

℄ Proposed S.R.44

Standing water 4/5/61

Standing water 4/5/61

Stubble | Weeds | Orchard | Wooded | Weeds | Weeds & brush | Wooded | Cultivated | Stubble

℄ Future Proposed Frontage Road

990 980 970 960 950

℄ TS=0.3' 16 15 Refusal (Large gravel) (Hand auger)

145' Rt. TS=0.3' 16 16 Refusal (Hand auger)

℄ TS=0.4' 22 16 19 Refusal (Hand auger)

140' Rt. Sod & TS=0.4' 28 21 13 B 12

℄ Sod & TS=0.4' 16 16 18 Refusal

140' Rt. Sod & TS=0.4' 24 W 23 27 21 Refusal

℄ Sod & TS=0.4' 22 17 B 7 Refusal

℄ 34 24 B 13 Refusal

140' Rt. TS=0.4' 23 23 W 15 B Refusal

140' Rt. TS=0.4' W 30 37 Refusal

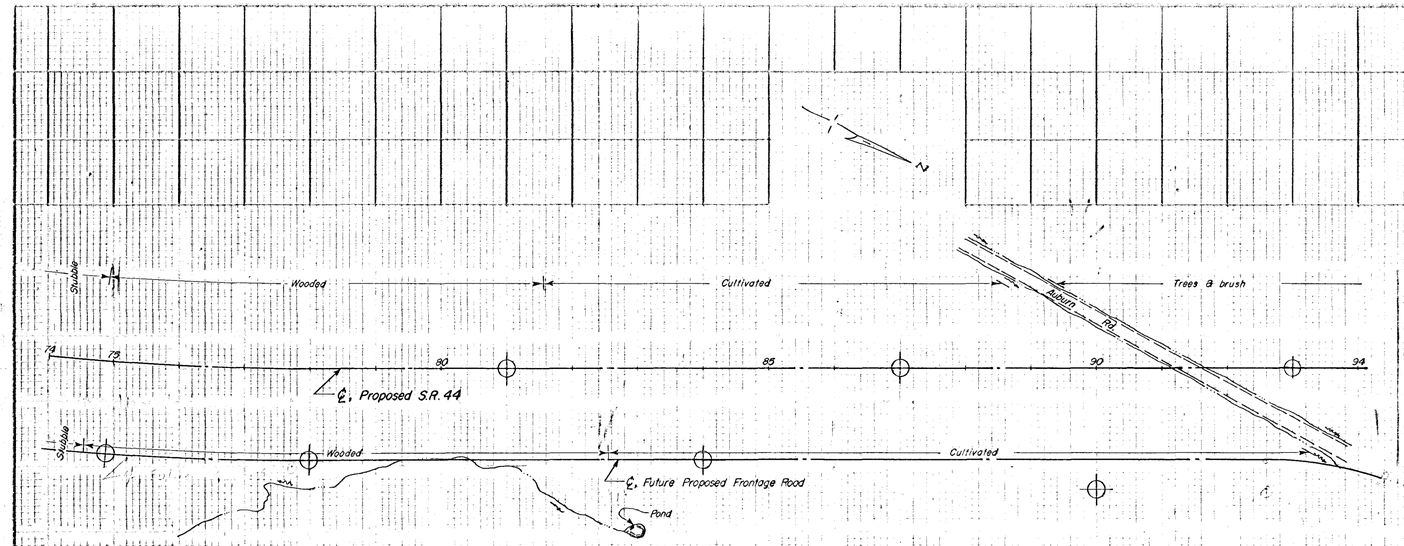
140' Rt. TS=0.4' 32 17 Refusal (Hand auger)

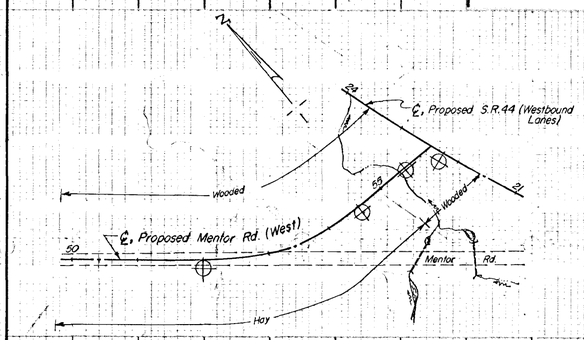
℄ Sod & TS=0.4' 28 17 16 W 21 Refusal

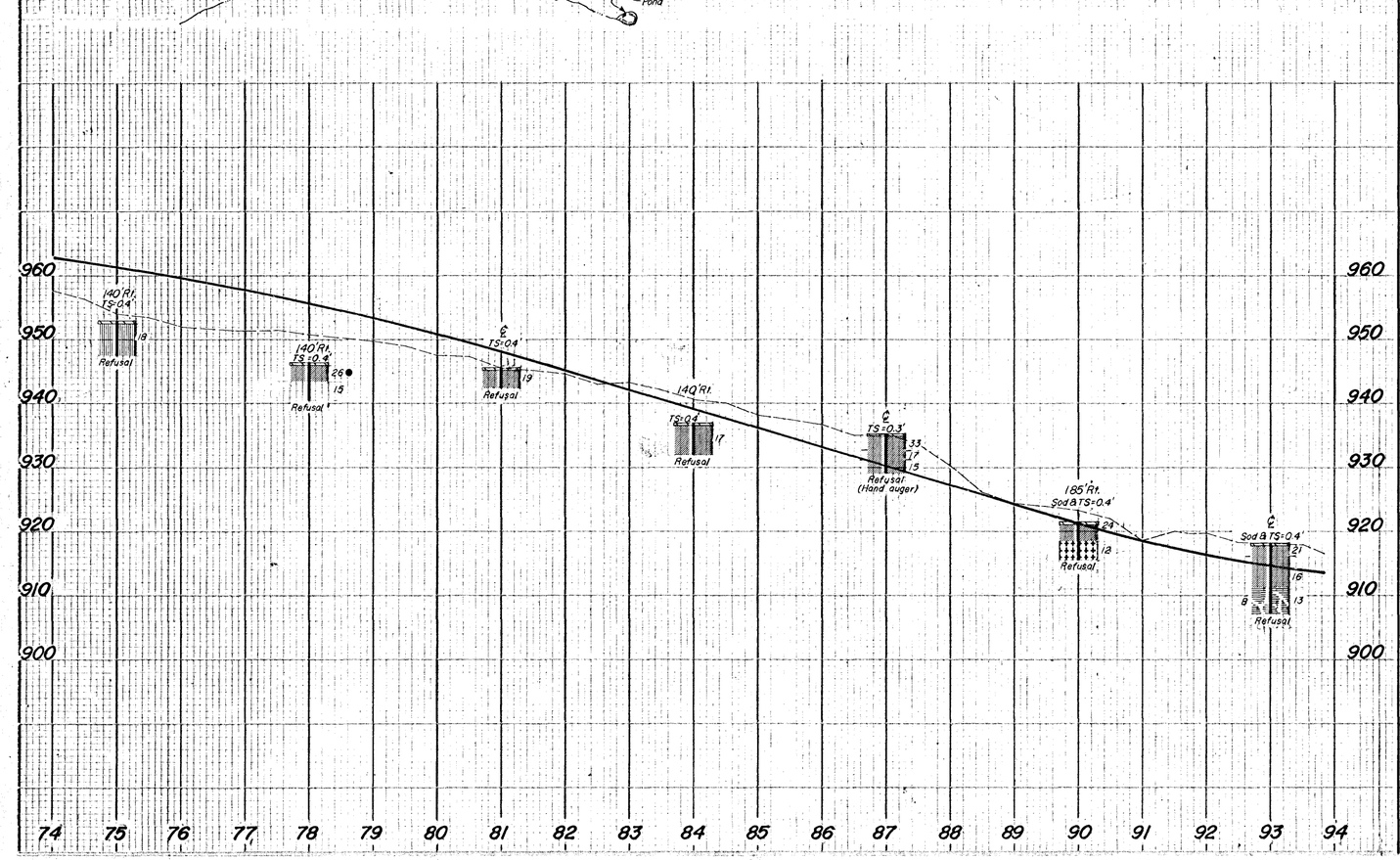
42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74

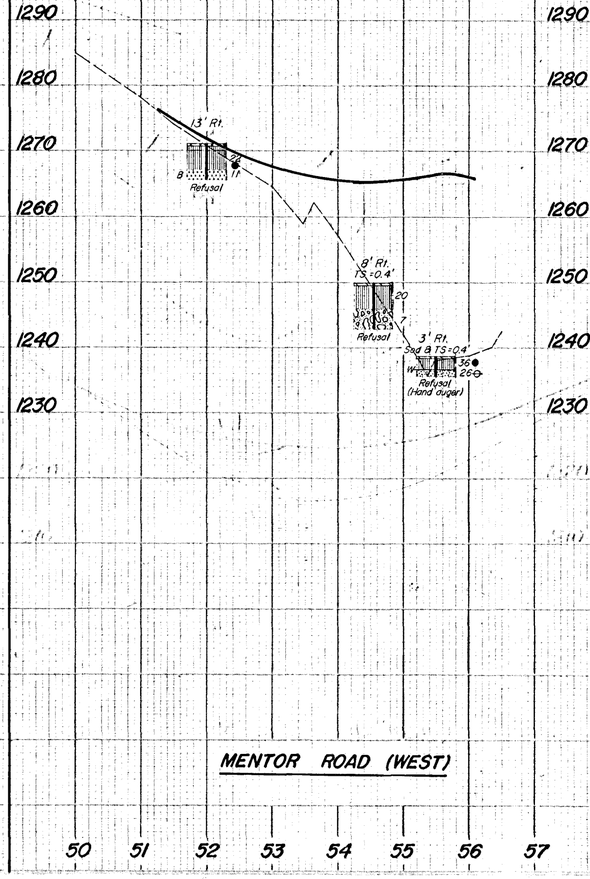
42 45 50 55

SOIL PROFILE
GEAUGA-LAKE COUNTIES (13 / 23)
GEA-44-18.30
LAK-44-0.00
OHIO STATE HIGHWAY TESTING LABORATORY
COLUMBUS, OHIO









MENTOR ROAD (WEST)

SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44- 0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

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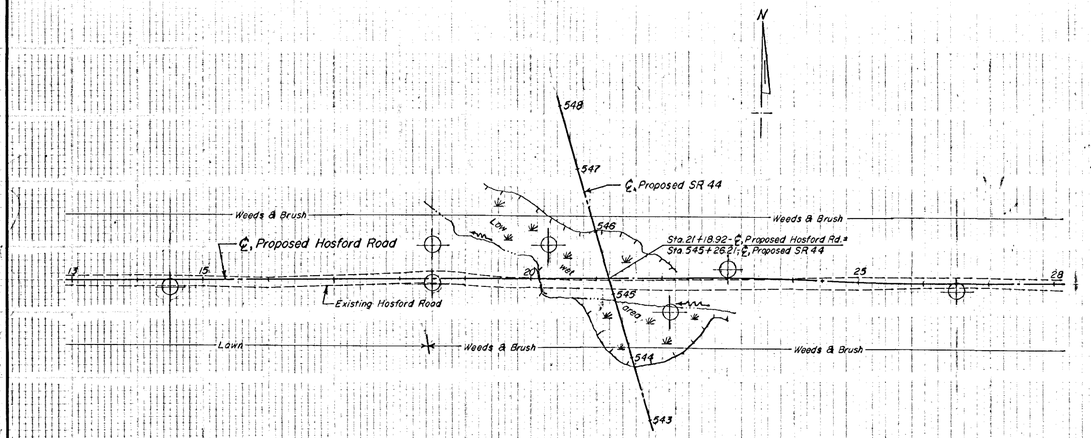
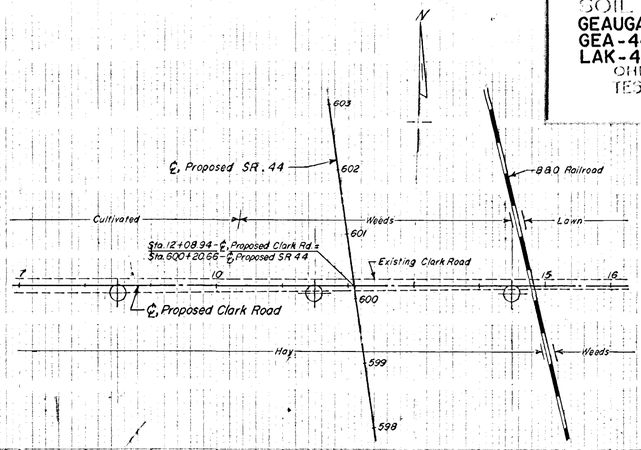
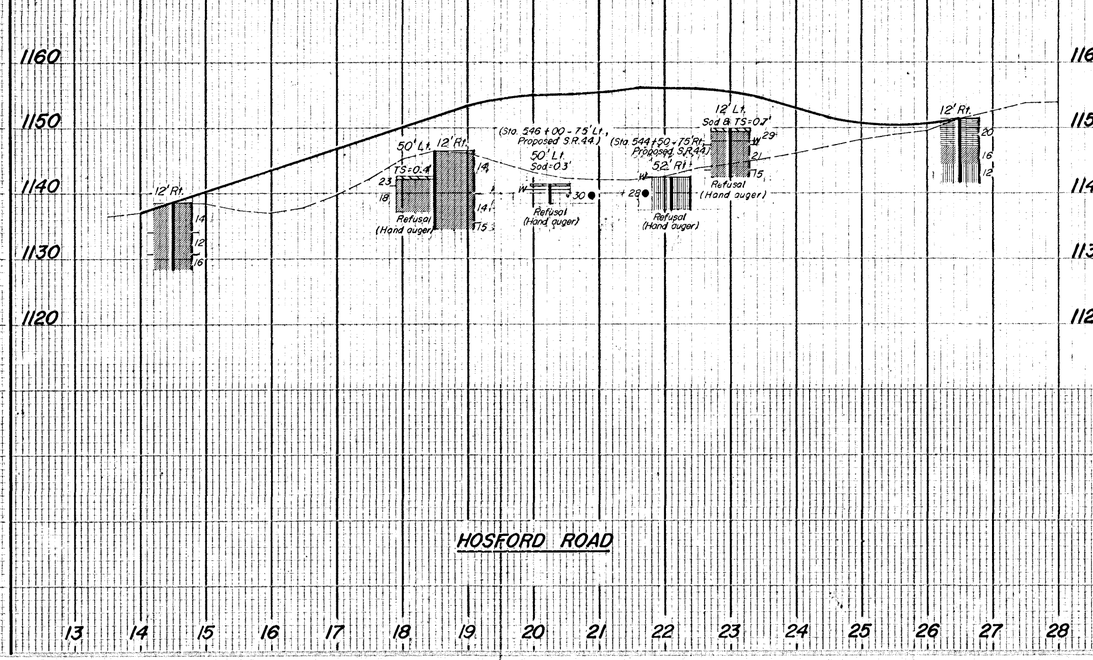
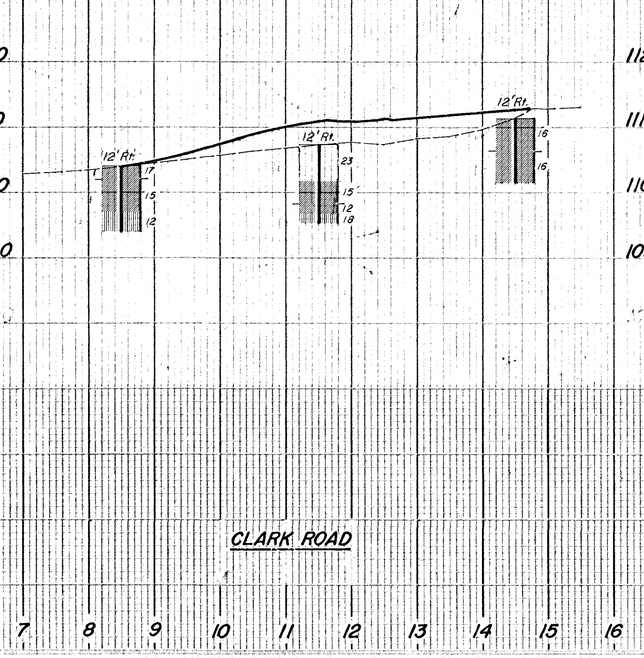
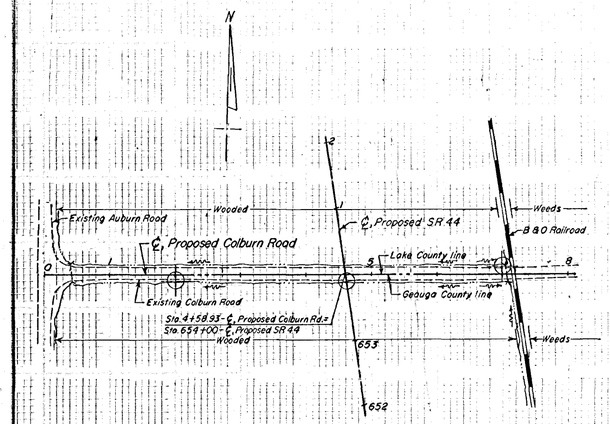


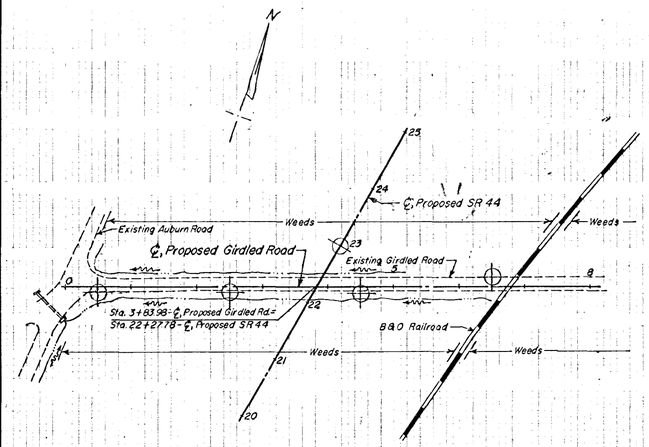


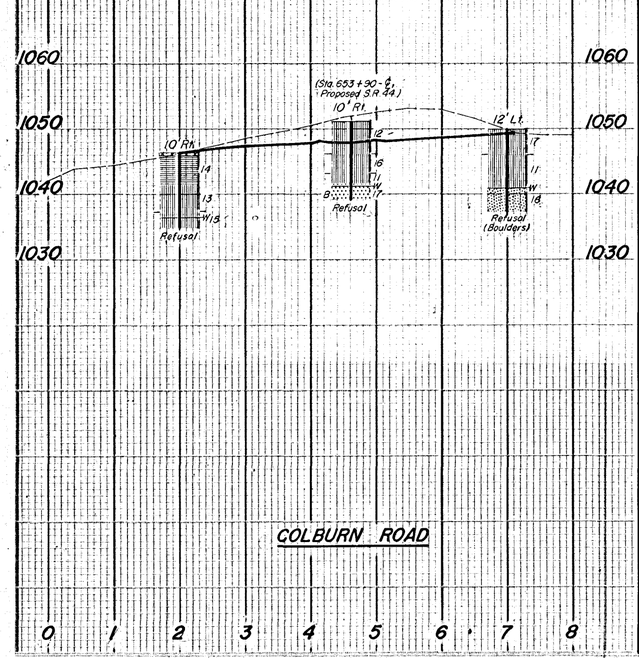


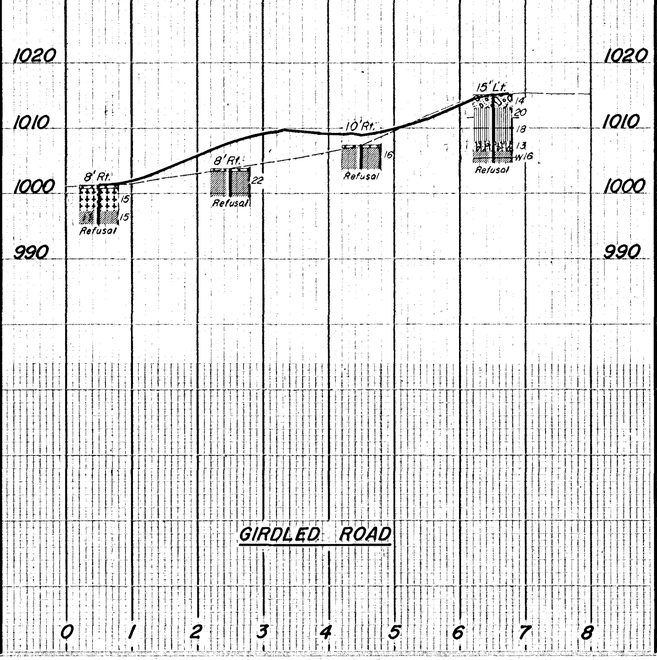


SOIL PROFILE
GEAUGA-LAKE COUNTIES 15 23
GEA-44-18.30
LAK-44- 0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO





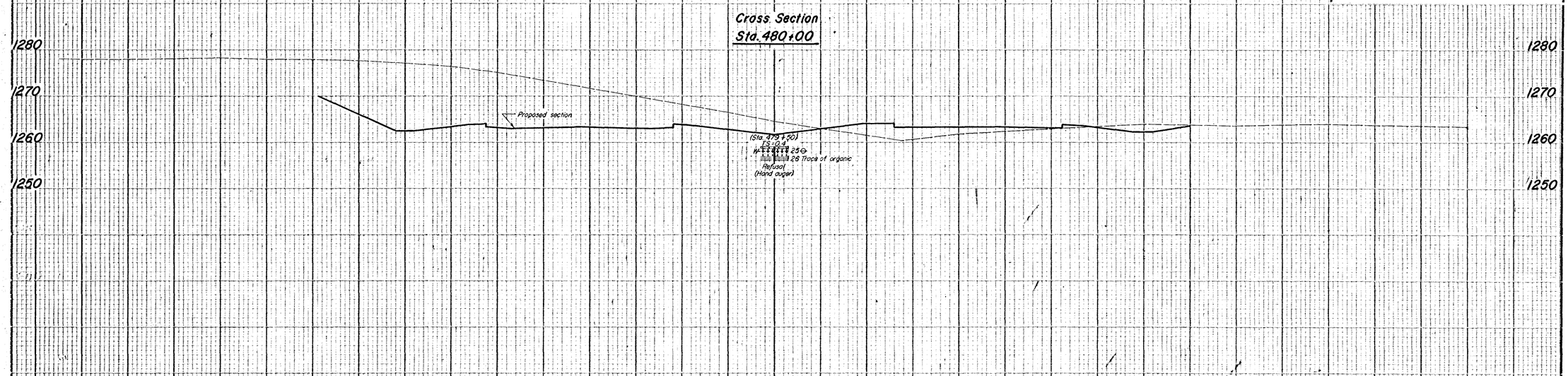




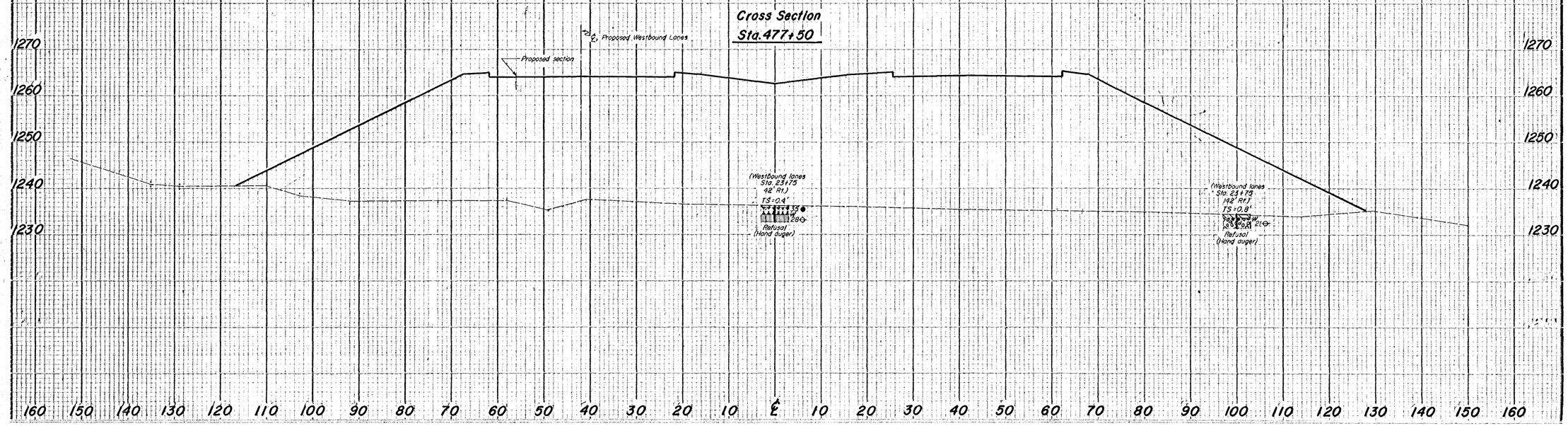
SOIL PROFILE
GEAUGA-LAKE COUNTIES
GEA-44-18.30
LAK-44- 0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

16
23

Cross Section
Sta. 480+00



Cross Section
Sta. 477+50



SOIL PROFILE
GEAUGA - LAKE COUNTIES
GEA - 44 - 18.30
LAK - 44 - 0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

17
23

Cross Section Sta. 491+00

Sod & TS=0.4'
B 23
Refusal
(Hand auger)

Proposed section

Sod & TS=0.4'
B 10
Refusal
(Hand auger)

Cross Section Sta. 488+00

(Sta. 487+80)
Sod & TS=0.4'
B 23
B 19
Refusal

Proposed section

(Sta. 487+80)
TS=0.4'
43
Refusal
(Boulders)
(Hand auger)

Cross Section Sta. 484+00

(Sta. 483+85)
Sod & TS=0.4'
23
19
13
13
14
22

Proposed section

1280
1270
1260
1250
1240
1230
1220

150 100 50 ℄ 50 100 150

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

SOIL PROFILE
GEAUGA — LAKE COUNTIES
GEA-44-18.30
LAK-44-0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

18
23

Cross Section
Sta. 499+50

Proposed section

(Sta 499+75)
TS=0.4'
W 23
Trace of organic
Refusal
(Hand auger)

Cross Section
Sta. 495+50

Sod & TS=0.4'
20
14
11
Refusal

Proposed section

Sod & TS=0.4'
14
14
13
14

Cross Section
Sta. 493+50

TS=0.4'
20
14
15
W 14
Refusal
(boulders)

Proposed section

Sod & TS=0.4'
19
14
13
12
Refusal

Sod & TS=0.4'
16
15
14
17
W
16

1260
1250
1240
1230
1290
1280
1270
1260
1250
1240

150 100 50 ℄ 50 100 150

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

SOIL PROFILE
GEAUGA-LAKE COUNTIES 19
GEA-44-18.30 23
LAK-44-0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

Cross Section Sta. 510+00

Proposed section

(Sta.509+75) TS=0.4' W 16 Refusal

TS=0.4' W 24 31 Refusal (Boulders)

(Sta.510+25) TS=0.4' 29 Refusal

Cross Section Sta. 502+24

Proposed section

(Sta.502+50) TS=0.4' 19 14 12 10 13

(Sta.502+25) TS=0.4' 17 14 Refusal

(Sta.503+00) TS=0.4' 20 Refusal (Hand auger)

Cross Section Sta. 501+00

Proposed section

TS=0.4' 23 21 Refusal (Hand auger)

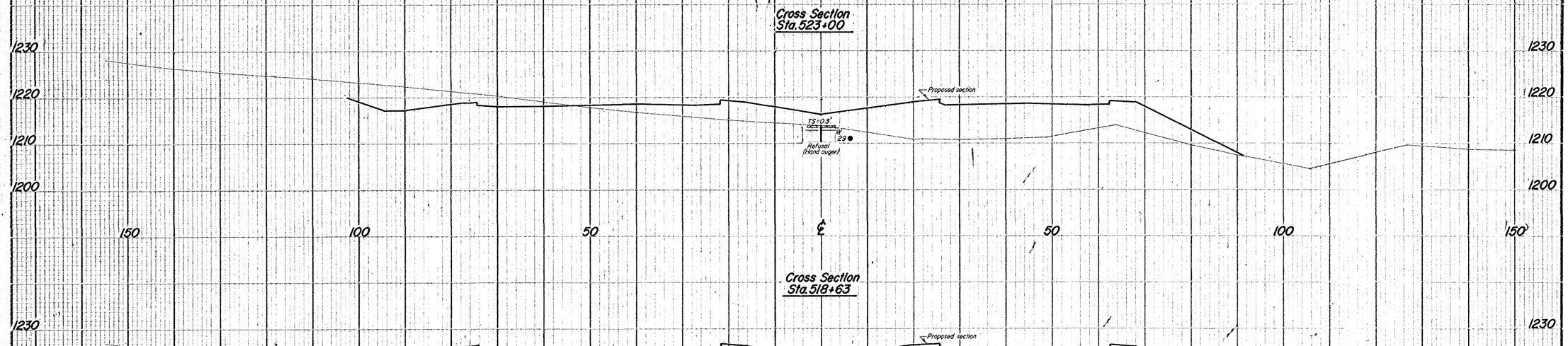
TS=0.4' 26 Refusal (Hand auger)

(5)

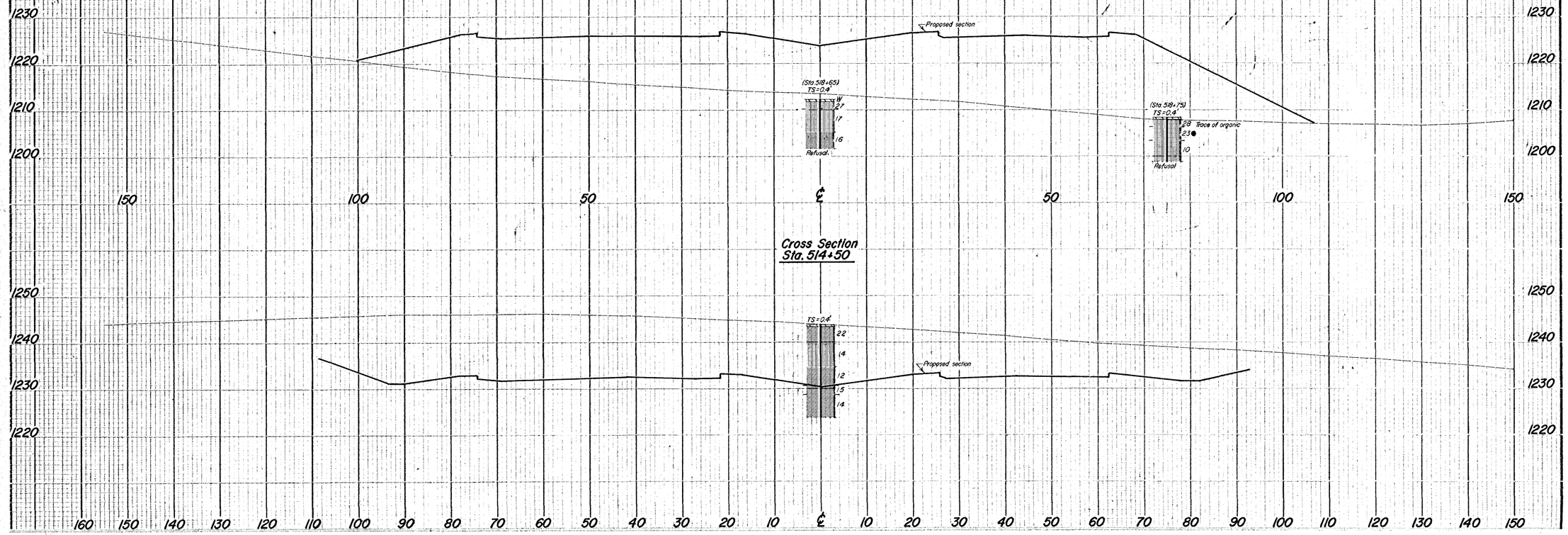
SOIL PROFILE
GEAUGA - LAKE COUNTIES
GEA - 44 - 18.30
LAK - 44 - 0.00
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

20
23

Cross Section Sta. 523+00



Cross Section Sta. 518+63



Cross Section Sta. 514+50