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Established 1927

November 11, 2025

Johnson, Mirmiran & Thompson, Inc.
4215 Worth Avenue, Suite K-230
Columbus, OH 43219

Attention: Mr. Brent Downing, P.E.

Reference: **Roadway Exploration Report**
VAN-30-11.34; PID 120666
RCUT Intersection Improvement at US30 & John Brown Road
Pleasant Township, Van Wert County, Ohio
CTL Project No. 25050021WAP

Mr. Downing:

CTL Engineering, Inc. has completed the roadway exploration report for the above referenced project. We are providing a version of the report in portable document format (.pdf) via electronic mail (e-mail).

Thank you for the opportunity to be of service to you on this project. If you have any questions, please contact me at our office.

Respectfully Submitted,

CTL ENGINEERING, INC.

A handwritten signature in blue ink, appearing to read 'Frederick Schoen', is written over a light blue horizontal line.

Frederick Schoen, P.E.
Project Manager

ROADWAY EXPLORATION REPORT

VAN-30-11.34
RCUT INTERSECTION IMPROVEMENT
at US ROUTE 30 & JOHN BROWN ROAD
PLEASANT TOWNSHIP, VAN WERT COUNTY, OHIO

PID NO. 120666

CTL PROJECT NO. 25050021WAP

PREPARED FOR:

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November 11, 2025



**OHIO DEPARTMENT OF
TRANSPORTATION**

RECORD OF REVISIONS

Date of Transmittal	Description	Remarks
7/22/2025	Initial Submittal of Draft Report	--
11/11/2025	Submittal of Final Report	Revised report per ODOT comments

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I. EXECUTIVE SUMMARY

The project involves the conversion of the intersection of U.S. Route 30 (US 30) and John Brown Road (Township Road 83) to a Restricted Crossing U-Turn (RCUT) in Pleasant Township, Van Wert County, Ohio.

A total of six (6) soil test borings, identified as B-001-0-25 through B-006-0-25, were drilled for this project. In addition to the six (6) test borings, four (4) pavement cores, identified as X-001-0-25 through X-004-0-25, were performed within the existing roadways.

The surface materials encountered within the test borings consisted of topsoil, while the pavement cores encountered asphalt to various depths. Beneath the surficial materials, subgrade soils consisted of fine-grained, cohesive materials which were visually and mechanically classified as silt and clay (A-6a), silty clay (A-6b), and clay (A-7-6) soils.

Groundwater was encountered one (1) of the six (6) test borings (B-003-0-25) at a depth of 6.0 feet below existing surface grades during drilling operations. Borehole cave-in occurred in each borehole and measured from about 4.5 feet to 9.0 feet below existing surface grades.

Based on the subsurface conditions encountered in the borings, and the results of the subgrade analyses, an estimated CBR value of 4 may be used in the pavement thickness design of the roadway. According to requirements outlined in ODOT's Geotechnical Design Manual (GDM), a majority of the roadway subgrade soils encountered will require stabilization due to being unsuitable or unstable. Please refer to the *Analyses and Recommendations* section for additional information.

Note: *This summary is provided for general information only, and it should not be used as the sole source of information for any design, estimating, or bidding. Detailed recommendations are provided throughout the subsequent geotechnical report. This report should be used in its entirety.*



II. INTRODUCTION

The project, identified as VAN-30-11.34, involves the conversion of the intersection of U.S. Route 30 (US 30) and John Brown Road (Township Road 83) to a Restricted Crossing U-Turn (RCUT) in Pleasant Township, Van Wert County, Ohio. The purpose of this geotechnical exploration is to determine the subsurface conditions in conjunction with providing recommendations for the construction and pavement design of the realigned roadways in general accordance with ODOT's Specification for Geotechnical Explorations (SGE) requirements dated January 2025.

This roadway exploration report was performed in accordance with CTL Engineering's (CTL) proposal number 25050020WAP-PPL, dated March 14, 2025.

III. GEOLOGY AND OBSERVATIONS

A. Geology

According to the Ohio Department of Natural Resources (ODNR) mapping, the project site is located within the Maumee Lake Plains physiographic region. This physiographic region is described as Pleistocene-age deposits of silt, clay, and wave-planed clayey till, which overlie Silurian-age carbonate bedrock and shale formations.

According to the Web Soil Survey, United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS); the major surficial soil mapped within the subject site is described as Hoytville silty clay, 0 to 1 percent slopes (HtA). This soil is known to be highly corrosive to steel; however, not very corrosive to concrete.

Geologic mapping (Surficial Geology of the Ohio Portion of the Lima 30 x 60 Minute Quadrangle, Ohio Division of Geological Survey, 2011) indicates that the overburden soils are mapped to consist of Wisconsinan-age glacial till deposits. According to the mapping of bedrock geology in the area (Preliminary Bedrock Geology of the Scott, Ohio, Quadrangle, Ohio Division of Geological Survey, 1992), the surficial soil deposits across the site are underlain by Silurian-age sedimentary bedrock identified as the Salina Undifferentiated. This formation is described as gray and brown dolomite that is thin bedded.

Mapping of the bedrock topography (Bedrock Topography of the Scott, Ohio, Quadrangle, Ohio Division of Geological Survey, 1991), indicates that the bedrock surface elevation in the vicinity of the project area is approximately 740± feet above mean sea level (AMSL). Based on this mapping and the existing ground surface elevations ranging approximately from 765± feet to 770± feet within the project limit, the estimated depth to the bedrock surface ranges from approximately 25± feet to 30± feet below ground surface (bgs).

It should be noted that the bedrock surface elevations in the referenced mapping was determined from individual data points in the vicinity of the project site. Therefore, the



previously stated estimated depths and elevations to the bedrock surface could have a significant disparity from the actual depths and elevations to the bedrock surface within the project limits.

According to the mapping of karst features (Karst Interactive Map, *ODNR Division of Geological Survey*, date accessed June 25, 2025), there are no mapped karst features in the general vicinity of the project area. Additionally, karst features were not observed at the ground surface during our field exploration.

According to the mapping of historic and active mines (Mines of Ohio, *ODNR Division of Mineral Resources*, date accessed June 25, 2025), there are no documented mines in the general vicinity of the project area.

B. Observations of the Project

A field reconnaissance was completed by CTL personnel on April 23, 2025. US 30 is a four-lane, bi-directional road that runs generally west-northwest to east-southeast within the project area. John Brown Road (Township Road 83) is a two-lane, bi-directional road which generally runs north to south within the project area.

The regional topography consists of relatively level terrain with US 30 supported by minor embankments having downward side slopes towards drainage ditches and finger drains adjacent to the roadway. Existing roadway embankment side slopes and ditches are grass covered and appear to be in good condition. The surrounding land usage consists of residential, industrial, and agricultural. Minor pavement cracking was observed throughout the roadway during the field reconnaissance.

IV. EXPLORATION

Four (4) historical borings were found within the project limits when using the Ohio Department of Transportation's (ODOT) Transportation Information Mapping System (TIMS). The test borings, identified as B-003-0-64 through B-006-0-64, were performed in 1964 (VAN-30-11.36 with unknown TIMS sub batch identification number due to federal government shutdown and inoperable TIMS website) for the design and relocation of US 30 in order to by-pass the City of Van Wert. These borings were drilled to depths ranging from 10 feet to 12 feet. Although the information provided by these borings was beneficial in determining anticipated conditions, the information on the condition of the subgrade soils for use with the current exploration was decided to be unreliable for the current subgrade analyses; therefore, these results were not utilized during the current design.

A total of six (6) soil test borings, identified as B-001-0-25 through B-006-0-25, were drilled for this project at the locations shown on the Geotechnical Profile - Roadway plan sheets in *Appendix A*. In addition to the six (6) test borings, four (4) pavement cores, identified as X-001-0-25 through X-004-0-25, were performed within the existing US 30 paved shoulders and John Brown Road.



The number and locations of the test borings were selected by CTL to meet ODOT guidelines and provide a general profile of the subsurface conditions across the site. The locations of the test borings were determined in the field by CTL personnel using measurements from existing site features. Test boring coordinates were obtained using Google Earth™ computer software, internet-based satellite imagery, and a handheld GPS unit. Ground surface elevations were interpolated from topographic elevation contour lines obtained from a partial construction plan set for VAN-30-11.34; PID 120666 by Johnson, Mirmiran & Thompson, Inc.

The test borings were performed by CTL on May 1, 2025, utilizing 3¼-inch inside diameter hollow stem augers powered by an all-terrain (ATV)-mounted rotary drill rig. Split-barrel (spoon) samples and Standard Penetration Tests (SPTs) were performed in the test borings using a 140-pound automatic hammer falling 30 inches to drive 2-inch outside diameter split barrel samplers for 18 inches in accordance with AASHTO T-206 methods. The automatic hammer associated with the drill rig used for this project was calibrated at an energy ratio of 75.7 percent on April 1, 2024.

Materials recovered from the split-spoon sampling were preserved in glass jars, visually classified in the field, and delivered to CTL's soil laboratory for visual classification, testing and analysis. Samples were also tested for moisture content. Representative samples were subjected to laboratory testing which included Atterberg Limits, grain-size distribution, hand penetrometer tests. Select samples were also subjected to laboratory testing for water-soluble sulfate content tests in accordance with ODOT Supplement 1120.

Drilling, sampling, field and laboratory testing were performed according to standard geotechnical engineering practices and current AASHTO/ASTM/ODOT test procedures. Results from field tests are shown on the enclosed Test Boring Records in *Appendix B* of this report. Results from the laboratory tests are shown on the enclosed laboratory test results in *Appendix C* of this report. Pavement type, depth, and description of each pavement core, along with photographs of the asphalt core is presented in *Appendix E* of this report.

V. **FINDINGS**

A. **Subsurface Conditions**

A general description of the soils encountered during our subsurface exploration is presented below. Further details of the subsurface conditions encountered during CTL's geotechnical exploration are presented in the Test Boring Records in *Appendix B*. Results of the soil laboratory tests are presented in *Appendix C*.

1. **Surficial Materials**

The test borings were drilled within mowed grass sod and encountered two (2) to three (3) inches of topsoil at the ground surface. The two (2) pavement cores performed within the existing John Brown Road ranged from 4.4 to 7.8 inches in



thickness. The two (2) pavement cores performed within the paved outside shoulders of US 30 ranged from 11.3 to 13.3 inches in thickness.

2. General Stratigraphy

Subgrade soils encountered across the project site consisted of native fine-grained, cohesive soils down to the boring termination depth. The native fine-grained soils were described as stiff to hard, brown, brownish gray, grayish brown, and gray silt and clay (A-6a), silty clay (A-6b), and clay (A-7-6) soils. SPT N_{60} -values determined within the fine-grained soils ranged from 8 blows per foot (bpf) to 39 bpf with moisture content values ranging from 14 to 30 percent.

The N_{60} -value is the SPT blow count corrected for the hammer efficiency delivered by the hammer system utilized, normalized to 60 percent efficiency in bpf.

3. Groundwater

Groundwater was encountered in one (1) of the six (6) test borings (B-003-0-25) at a depth of 6.0 feet bgs during drilling operations. The boreholes were backfilled immediately upon completion of drilling, and therefore, the long-term groundwater level measurements were not determined. Borehole cave-in occurred in each borehole and measured from about 4.5 feet to 9.0 feet bgs.

It should be noted that the groundwater depths encountered during this subsurface exploration may not be a reliable indication of long-term groundwater levels. Fluctuations in the level of the groundwater table (or saturated soils/perched water levels) will occur due to seasonal variances in rainfall, drainage, types of soils present and other factors. Groundwater can be perched at various elevations above the general static groundwater level after periods of rainfall, especially in the lower elevations and natural drainage paths of the site.

B. Results of Laboratory Tests

Soil samples obtained from split spoon sampling were subjected to laboratory testing. Each sample was tested to determine its moisture content and strength via hand penetrometer testing. Twelve (12) soil samples were also subjected to Atterberg Limits and grain size distribution tests, and six (6) samples were subject of water-soluble sulfate testing.

A summary of our findings includes:

- Hand penetrometer values ranged from 1.25 to 4.50 tsf, averaging 2.85 tsf.
- Liquid Limit (LL) values ranged from 37 to 52, averaging 47.
- Plasticity Index (PI) values ranged 18 to 31, averaging 26.
- Moisture content values ranged from 15 to 30 percent, averaging 23.
- Samples exhibited sulfate contents of less than 100 parts per million (ppm).



VI. ANALYSES AND RECOMMENDATIONS

Upon review and analyses of the subsurface soil and groundwater conditions, the site is considered suitable for the conversion of the intersection of US 30 and John Brown Road to a RCUT. Should the design information for the proposed project be substantially different from the assumptions stated in this report, CTL should be provided this information for our review and allowed to re-evaluate our recommendations, if necessary.

Excavations of roadway subgrade soils may be accomplished using conventional earth moving equipment. Excavation sidewalls should be sloped to meet OSHA standards or shored to protect workers.

Surface drainage across the site may be altered with the proposed construction. It is recommended that all surface water run-off be collected or directed away from pavements and/or their subgrades and towards drainage control structures so that subgrade soils under pavements do not become saturated and lose strength. Any subgrade drainage tiles, if encountered and disturbed during construction, should be reconnected, and groundwater flow should be redirected away from pavement areas.

Based upon the subsurface information obtained from the field and laboratory testing, the following recommendations are provided.

A. Roadway Subgrade Recommendations

A subgrade analysis was performed utilizing the subsurface information from the drilled borings, ODOT Geotechnical Design Manual (GDM) Section 600, and ODOT's Subgrade Analyses Spreadsheet. A copy of the Subgrade Analysis is provided in *Appendix D*. It is understood that the vertical alignment of the proposed travel lines will match the vertical alignment of the existing travel lanes near elevations 769.5 to 771.0 feet. Additionally, a proposed pavement thickness of 1.4 feet (17.25-inches) was utilized in the Subgrade Analysis.

The following is a summary of the analysis of the near surface subgrade soils encountered within the CTL performed test borings.

- 100% of the subgrade soils consists of cohesive soils described as A-6a, A-6b, and A-7-6 soils.
- 23% of the subgrade soils are estimated to have excessively high moisture contents
- 56% of the proposed subgrade is anticipated to be unstable.
- SPT N_{60} -values ranged from 8 to 39 blows per foot (bpf), averaging 16 bpf in the upper 6 feet of the existing soil profiles.
- The lowest N_{60} -value (N_{60L}) from each boring ranged from 8 to 15 blows per foot (bpf), averaging 11 bpf.
- Group Index values were calculated for each of the subgrade samples tested. Group Index values for the samples tested ranged from 11 to 18, with an average value of 16.



- These Group Index values correspond to an estimated average California Bearing Ratio (CBR) value of 4.0 percent.

The ODOT Subgrade Analysis identified two (2) of the six (6) test borings (B-003-0-25 and B-004-0-25) as requiring subgrade soil improvement due to being unstable. Furthermore, although the Subgrade Analysis did not identify borings B-002-0-25 and B-005-0-25 as requiring soil improvement, these two borings exhibited marginally high moisture soils at proposed subgrade elevations. The marginally moist soils may also require soil improvements. The subgrade stabilization may consist of excavate and replace per Item 204 with materials meeting the requirements of Item 703.16.C, Type B and/or Type C Granular Material underlain by a geotextile fabric per Item 712.09 or Item 712.15. The approximate areas and depths are summarized in *Table 1*.

Furthermore, isolated areas of exceptionally weak, unstable soils may be encountered during construction. If during construction such weak soils are identified, they may be over-excavated, followed by being backfilled with Item 703.16.C, Type B and/or Type C Granular Material. If severely weaker subgrade conditions are encountered, a multi-axial geogrid per Items 204 and 712.15 and Geotechnical Design Manual (GDM) Section 600 should be used.

The approximate depth of the over-excavate and replace is measured from the top of the proposed pavement subgrade level. The locations and values are only an estimate and were based on borings representing the subgrade conditions for the added lane of traffic which the borings were positioned in. The actual depths and horizontal limits of excavate and replace will be determined by the Project Engineer in the field based upon proofrolling.

Table 1 – Estimated Location and Depths for Excavate and Replace

Boring Location	Alignment	Stationing	Problem Unstable/Unsuitable	Approximate Depth of Excavate and Replace (in)
B-001-0-25	US 30 - West U-Turn Lane	±605+00	--	--
B-002-0-25	US 30 – Westbound Left Turn Lane	605+00 to 610+00	--	--
B-003-0-25	US 30 – Eastbound Right Turn Lane	604+25 to 611+50	Unstable	12
B-004-0-25	US 30 – Westbound Right Turn Lane	611+50 to 619+00	Unstable	12
B-005-0-25	US 30 – Eastbound Left Turn Lane	613+25 to 618+00	--	--
B-006-0-25	US 30 - East U-Turn Lane	±618+25	--	--



As an alternative to the over-excavation and replace depths in *Table 1*, chemical stabilization using lime would be an option for this project. Per the Subgrade Analysis, the recommended depth for chemical stabilization is 12 inches. According to ODOT GDM Section 605, if it is determined that 30 percent or more of the subgrade area must be stabilized, consideration should be given to stabilizing the entire project (global stabilization). A cost analysis of the options should be evaluated along with considering the presence of shallow underground utilities and the maintenance of traffic.

B. Site Preparation and Earthwork Recommendations

General construction and earthwork recommendations are provided below. Site preparation and earthwork should be performed in accordance with the ODOT Construction and Material Specifications.

1. Embankments for roadway construction should follow ODOT Specifications, Section 203 and related sections.
2. During construction, adequate drainage should be provided on the surface of the exposed soils. Absorption of heavy rainfall, accumulations of water and heavy construction traffic may result in softening these soils, hence, severely weakening the subgrade soils.
3. Compaction of the subgrade materials should be performed in accordance with ODOT Item 204. Any soft soils encountered during the compaction operations which will not readily compact should be removed and replaced with engineered fill.
4. Side slopes should be seeded and mulched as soon as possible to allow vegetation growth to develop and minimize or limit erosion, sloughing and potential slope failure.
5. Temporary excavations in excess of 4.0 feet in depth should be sloped, benched or shored in accordance with OSHA regulations.

VII. CHANGED CONDITIONS

The evaluations, conclusions, and recommendations in this report are based on our interpretation of the field and laboratory data obtained during the exploration, our understanding of the project and our experience with similar sites and subsurface conditions using generally accepted geotechnical engineering practices. Although individual test borings are representative of the subsurface conditions at the boring locations on the dates drilled, they are not necessarily representative of the subsurface conditions between boring locations or subsurface conditions during other seasons of the year. In the event that changes in the project are proposed, additional information becomes available, or if it is apparent that subsurface conditions are different from those provided in this report, CTL should be notified so that our recommendations can be modified, if required.



VIII. TESTING AND OBSERVATION

During the design process, it is recommended that CTL work with the project designers to confirm that the geotechnical recommendations are properly incorporated into the final plans and specifications, and to assist with establishing criteria for the construction observation and testing.

IX. CLOSING

The report was prepared by CTL Engineering, Inc. (Consultant) solely for the use of Client in accordance with an executed contract. The Client's use of or reliance on this report is limited by the terms and conditions of the contract and by the qualifications and limitations stated in the report. It is also acknowledged that the Client's use of and reliance of this report is limited for reasons which include: actual site conditions that may change with time; hidden conditions, not discoverable within the scope of the assessment, may exist at the site; and the scope of the investigation may have been limited by time, budget and other constraints imposed by the Client.

Neither the report, nor its contents, conclusions or recommendations, are intended for the use of any party other than the Client. Consultant and the Client assume no liability for any reliance placed on this report by such party. The rights of the Client under contract may not be assigned to any person or entity, without the consent of the Consultant which consent shall not be unreasonably withheld. This geotechnical report does not address the environmental conditions of the site. The Consultant is not responsible for consequences or conditions arising from facts that were concealed, withheld, or not fully disclosed at the time the assessment was conducted.

To the fullest extent permitted by law, the Consultant and Client agree to indemnify and hold each other, and their officers and employees harmless from and against claims, damages, losses and expenses arising out of unknown or concealed conditions. Furthermore, neither the Consultant nor its employees shall be liable to the Owner in an amount in excess of the available professional liability insurance coverage of the Consultant. In addition, Client and Consultant agree neither shall be liable for any special, indirect or consequential damages of any kind or nature.

The Consultant's services have been provided consistent with its professional standard of care. No other warranties are made, either expressed or implied.

Thank you for the opportunity to be of service to you on this project. If you have any questions regarding our services, please contact our office.

Respectfully Submitted,
CTL ENGINEERING, INC.



Christopher D. Carey, E.I.
Project Engineer



Frederick Schoen, P.E.
Project Manager





APPENDIX A

GEOTECHNICAL PROFILE - ROADWAY



PROJECT DESCRIPTION

THE PROJECT, IDENTIFIED AS VAN-US30-11.34, IS LOCATED IN PLEASANT TOWNSHIP, VAN WERT COUNTY, OHIO. THE PROJECT CONSISTS OF THE CONVERSION OF THE INTERSECTION OF U.S. ROUTE 30 AND JOHN BROWN ROAD TO A RESTRICTED CROSSING U-TURN (RCUT).

HISTORIC RECORDS

HISTORIC GEOTECHNICAL RECORDS FROM A HISTORIC GEOTECHNICAL EXPLORATION WAS OBTAINED FROM ODOT'S TRANSPORTATION INFORMATION MAPPING SYSTEM (TIMS) FOR VAN-30-11.36, WHICH WAS COMPLETED IN 1964. RESULTS OF THIS EXPLORATION INDICATED THAT BOTH FINE-GRAINED, COHESIVE SOILS (A-4b, A-6a, A-6b, A-7-6) AS WELL AS COARSE-GRAINED, GRANULAR SOILS (A-2-4) WERE ENCOUNTERED AT SUBGRADE ELEVATIONS. THESE RESULTS WERE PRESENTED ON GEOTECHNICAL PROFILE PLAN SHEET 3 AND 4, BUT WERE NOT UTILIZED WITH THE SUBGRADE ANALYSES.

GEOLOGY

THE PROJECT SITE IS LOCATED WITHIN THE MAUMEE LAKE PLAINS PHYSIOGRAPHIC REGION THAT IS DESCRIBED AS PLEISTOCENE-AGE DEPOSITS OF SILT, CLAY, AND WAVE-PLANED CLAYEY TILL, WHICH OVERLIE CARBONATE BEDROCK AND SHALE FORMATIONS. THE PROJECT SITE IS COVERED BY WISCONSINAN-AGE GLACIAL TILL. THE UNDERLYING BEDROCK CONSISTS OF SILURIAN-AGE SEDIMENTARY BEDROCK IDENTIFIED AS THE SALINA UNDIFFERENTIATED, WHICH IS DESCRIBED AS GRAY AND BROWN DOLOMITE.

RECONNAISSANCE

A FIELD RECONNAISSANCE WAS COMPLETED BY CTL PERSONNEL ON APRIL 23, 2025. U.S. ROUTE 30 (U.S. 30) IS A FOUR-LANE, BI-DIRECTIONAL ROAD THAT RUNS GENERALLY WEST-NORTHWEST TO EAST-SOUTHEAST, IMMEDIATELY NORTH OF THE CITY OF VAN WERT. THE REGIONAL TOPOGRAPHY CONSISTS OF RELATIVELY LEVEL TERRAIN WITH US 30 SUPPORTED BY MINOR EMBANKMENTS HAVING DOWNWARD SIDE SLOPES TOWARDS DRAINAGE DITCHES AND FINGER DRAINS ADJACENT TO THE ROADWAY. EXISTING ROADWAY EMBANKMENT SIDE SLOPES AND DITCHES ARE GRASS COVERED AND APPEAR TO BE IN GOOD CONDITION. THE SURROUNDING LAND USAGE CONSISTS OF RESIDENTIAL, INDUSTRIAL AND AGRICULTURAL. MINOR PAVEMENT CRACKING WAS OBSERVED THROUGHOUT THE ROADWAY DURING THE FIELD RECONNAISSANCE.

SUBSURFACE EXPLORATION

SIX (6) TEST BORINGS, IDENTIFIED AS B-001-0-25 THROUGH B-006-0-25, WERE COMPLETED FOR THIS SUBSURFACE EXPLORATION. IN ADDITION TO THESE SIX (6) TEST BORINGS, FOUR (4) PAVEMENT CORES, IDENTIFIED AS X-001-0-25 THROUGH X-004-0-25, WERE PERFORMED WITHIN THE EXISTING US30 PAVED SHOULDERS AND JOHN BROWN ROAD. EACH TEST BORING WAS DRILLED IMMEDIATELY ADJACENT TO THE EXISTING ROADWAY WITHIN THE EXISTING GRASS MEDIAN AND OUTSIDE SHOULDERS OF US30. THE TEST BORINGS WERE DRILLED TO DEPTHS RANGING FROM 7.0 FEET TO 10.0 FEET BELOW THE EXISTING GROUND SURFACE.

THE TEST BORINGS WERE DRILLED ON MAY 1, 2025 UTILIZING HOLLOW STEM AUGERS POWERED BY A TRUCK-MOUNTED ROTARY DRILL RIG. SPLIT-BARREL (SPOON) DISTURBED SOIL SAMPLES AND STANDARD PENETRATION TESTS WERE PERFORMED IN ACCORDANCE WITH AASHTO T206 AT CONTINUOUS AND 2.5-FOOT INTERVALS. THE AUTOMATIC HAMMER WAS LAST CALIBRATED ON APRIL 1, 2024 AND EXHIBITS AN ENERGY RATIO OF 75.7 PERCENT.

EXPLORATION FINDINGS

THE SIX (6) TEST BORINGS DRILLED WITHIN THE EXISTING GRASS MEDIAN AND OUTSIDE SHOULDERS ENCOUNTERED TWO (2) TO THREE (3) INCHES OF TOPSOIL AT THE GROUND SURFACE. THE FOUR (4) PAVEMENT CORES PERFORMED WITHIN THE EXISTING PAVEMENT OF JOHN BROWN ROAD AND US 30 OUTSIDE SHOULDERS ENCOUNTERED FIVE (5) TO FOURTEEN (14) INCHES OF ASPHALT AT THE GROUND SURFACE.

BENEATH THE SURFICIAL MATERIALS, STIFF TO HARD, FINE-GRAINED SOILS (A-6a, A-6b, AND A-7-6) HAVING MOISTURE CONTENT VALUES RANGING FROM 14 TO 30 PERCENT WERE ENCOUNTERED IN THE TEST BORINGS PRIOR TO REACHING THE BORING TERMINATION DEPTHS.

GROUNDWATER WAS ENCOUNTERED IN TEST BORING B-003-0-25 AT A DEPTH OF 6.0 FEET BELOW EXISTING GROUND SURFACE DURING DRILLING OPERATIONS.

SPECIFICATIONS

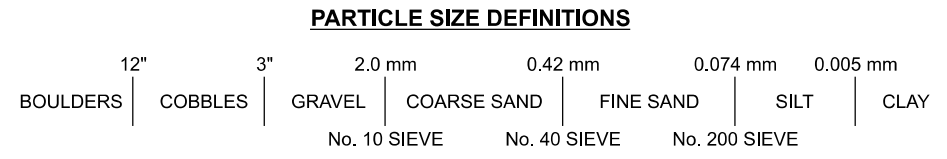
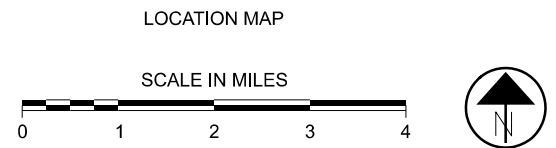
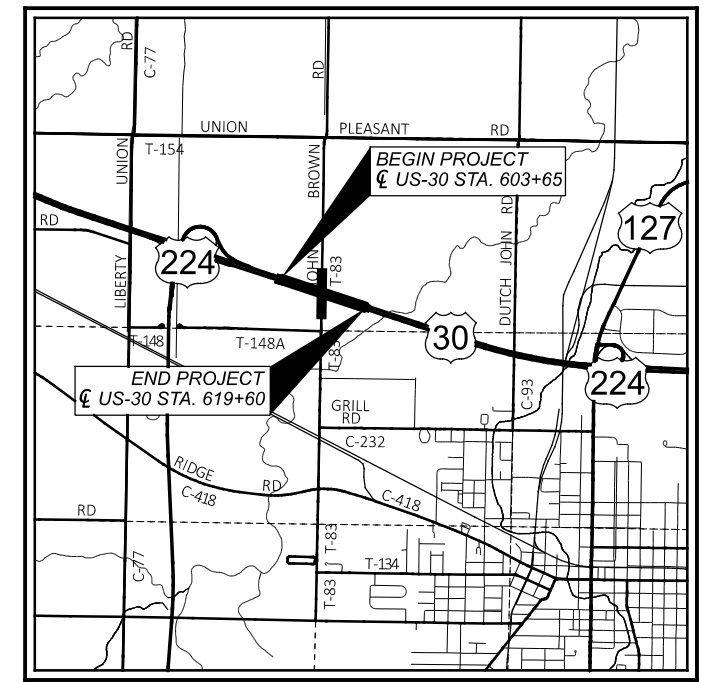
THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JANUARY 2025.

AVAILABLE INFORMATION

THE SOIL AND GROUNDWATER INFORMATION COLLECTED FOR THIS SUBSURFACE EXPLORATION THAT CAN BE CONVENIENTLY DISPLAYED ON THE GEOTECHNICAL PROFILE SHEETS HAS BEEN PRESENTED. GEOTECHNICAL REPORTS, IF PREPARED, ARE AVAILABLE FOR REVIEW ON THE OFFICE OF CONTRACT SALES WEBSITE.

LEGEND		CURRENT BORINGS		HISTORIC BORINGS		
DESCRIPTION		ODOT CLASS	CLASSIFIED MECH./VISUAL	ODOT CLASS	CLASSIFIED MECH./VISUAL	
	SILT AND CLAY	A-6a (9)	0 2		A-2-4	1 0
	SILTY CLAY	A-6b (11)	2 5		A-4b	1 0
	CLAY	A-7-6 (17)	10 6		A-6a	6 0
		TOTAL	12 13		A-6b	1 0
	TOPSOIL	VISUAL			A-7-6	4 0
		TOTAL	13 0			
	HISTORIC BORING LOCATION - PLAN VIEW				DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.	
	BORING LOCATION - PLAN VIEW				INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.	
	INDICATES FREE WATER ELEVATION.				INDICATES SPLIT-SPOON SAMPLE.	

INDEX OF SHEETS			
COVER SHEET 1			
SUMMARY OF SOIL TEST DATA 2			
LOCATION FROM STA.	TO STA.	PLAN VIEW SHEET	PROFILE SHEET
US 30			
603+00.00	614+00.00	3	3
614+00.00	620+00.00	4	4



RECON. - FS 04/23/2025
DRILLING - CTL 05/01/2025
DRAWN - NKS 07/22/2025, 11/10/25
REVIEWED - FS 07/22/2025, 11/10/2025

GEOTECHNICAL PROFILE - ROADWAY

DESIGN AGENCY	
2860 FISHER ROAD COLUMBUS, OHIO 43204 PHONE: (614)276-8123 FAX: (614)276-8377	
DESIGNER	N.K.S
REVIEWER	FS 11-11-25
PROJECT ID	120666
SUBSET	TOTAL
1	4
SHEET	TOTAL
P.	-

SUMMARY OF SOIL TEST DATA

US 30


EXPLORATION NO., STATION & OFFSET	FROM TO	SAMPLE ID	N ₆₀	% REC	HP tsf	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)	ppm SO ₄
B-001-0-25 STA. 605+22, 2' RT. LATITUDE = 40.891316 LONGITUDE = -84.612670	01.00-02.50	SS-1	11	67	2.25	1	1	9	27	62	52	21	31	27	A-7-6 (18)	<100
	02.50-04.00	SS-2	10	83	3.0	5	5	11	29	50	38	20	18	21	A-6b (11)	-
	04.00-05.50	SS-3	8	83	1.25	STIFF, BROWN CLAY, TRACE SILT, TRACE SAND, TRACE GRAVEL								30	A-7-6 (VISUAL)	-
	05.50-07.00	SS-4	19	100	1.75	SAME AS SS-3								29	A-7-6 (VISUAL)	-
B-002-0-25 STA. 608+47, 21' LT. LATITUDE = 40.891115 LONGITUDE = -84.611523	01.00-02.50	SS-1	15	67	3.0	0	2	10	29	59	51	23	28	28	A-7-6 (17)	<100
	02.50-04.00	SS-2	14	83	3.25	2	2	9	28	59	51	23	28	25	A-7-6 (17)	-
	04.00-05.50	SS-3	18	83	2.5	SAME AS SS-2								23	A-7-6 (VISUAL)	-
	05.50-07.00	SS-4	25	33	3.0	SAME AS SS-2								26	A-7-6 (VISUAL)	-
B-003-0-25 STA. 610+93, 69' RT. LATITUDE = 40.890689 LONGITUDE = -84.610769	01.00-02.50	SS-1	13	67	3.0	0	2	10	30	58	50	23	27	27	A-7-6 (17)	<100
	02.50-04.00	SS-2	15	100	3.0	2	2	10	27	59	50	20	30	25	A-7-6 (18)	-
	04.00-05.50	SS-3	15	67	3.0	VERY STIFF, BROWN SILTY CLAY, LITTLE SAND, TRACE GRAVEL								15	A-6b (VISUAL)	-
	05.50-07.00	SS-4	16	100	4.5	HARD, GRAY AND BROWN, SILTY CLAY, LITTLE SAND, TRACE GRAVEL								20	A-6b (VISUAL)	-
B-004-0-25 STA. 612+27, 71' LT. LATITUDE = 40.890944 LONGITUDE = -84.610165	01.00-02.50	SS-1	11	67	2.0	3	2	12	36	47	46	22	24	28	A-7-6 (15)	<100
	02.50-04.00	SS-2	11	67	2.0	12	6	12	31	39	43	19	24	23	A-7-6 (13)	-
	04.00-05.50	SS-3	10	83	1.25	SAME AS SS-2								21	A-7-6 (VISUAL)	-
	05.50-07.00	SS-4	24	100	4.5	HARD, BROWN SILTY CLAY, TRACE SAND, TRACE GRAVEL								18	A-6b (VISUAL)	-
B-005-0-25 STA. 614+86, 19' RT. LATITUDE = 40.890498 LONGITUDE = -84.609355	01.00-02.50	SS-1	16	67	3.0	1	2	10	29	58	51	22	29	28	A-7-6 (18)	<100
	02.50-04.00	SS-2	15	83	3.0	0	2	10	26	62	52	21	31	26	A-7-6 (18)	-
	04.00-05.50	SS-3	19	83	2.0	SAME AS SS-2								24	A-7-6 (VISUAL)	-
	05.50-07.00	SS-4	23	67	3.5	VERY STIFF, GRAYISH BROWN SILTY CLAY, LITTLE SAND, TRACE GRAVEL								21	A-6b (VISUAL)	-
B-006-0-25 STA. 618+39, 1' RT. LATITUDE = 40.890264 LONGITUDE = -84.608115	01.00-02.50	SS-1	8	67	2.25	3	2	10	36	49	45	18	27	24	A-7-6 (16)	<100
	02.50-04.00	SS-2	10	100	2.5	4	5	12	31	48	37	19	18	19	A-6b (11)	-
	04.00-05.50	SS-3	26	100	4.5	SAME AS SS-2								17	A-6b (VISUAL)	-
	05.50-07.00	SS-4	39	67	4.5	HARD, BROWN AND GRAY SILT AND CLAY, TRACE SAND, TRACE GRAVEL								15	A-6a (VISUAL)	-

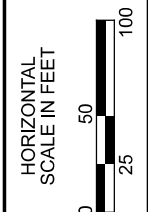
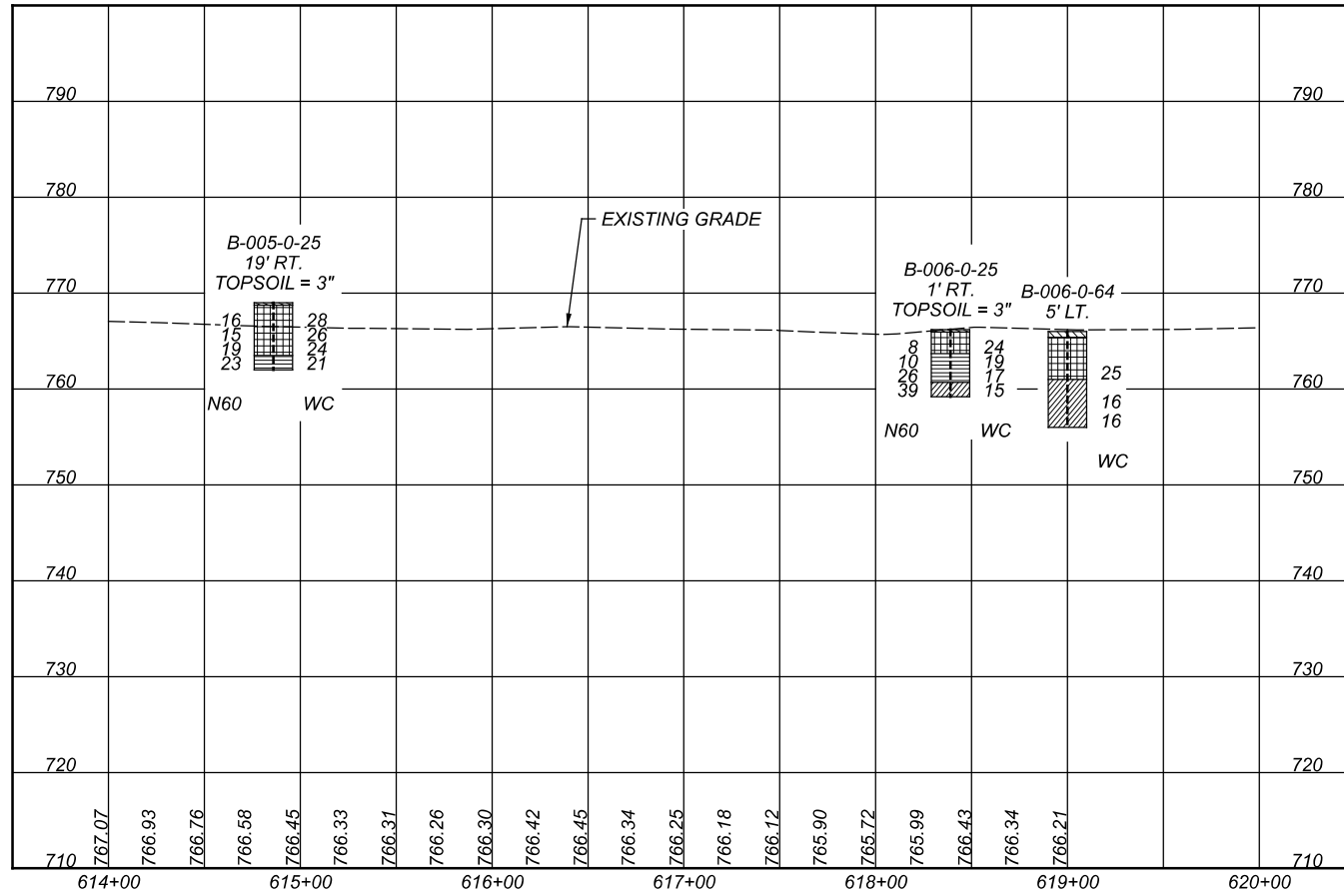
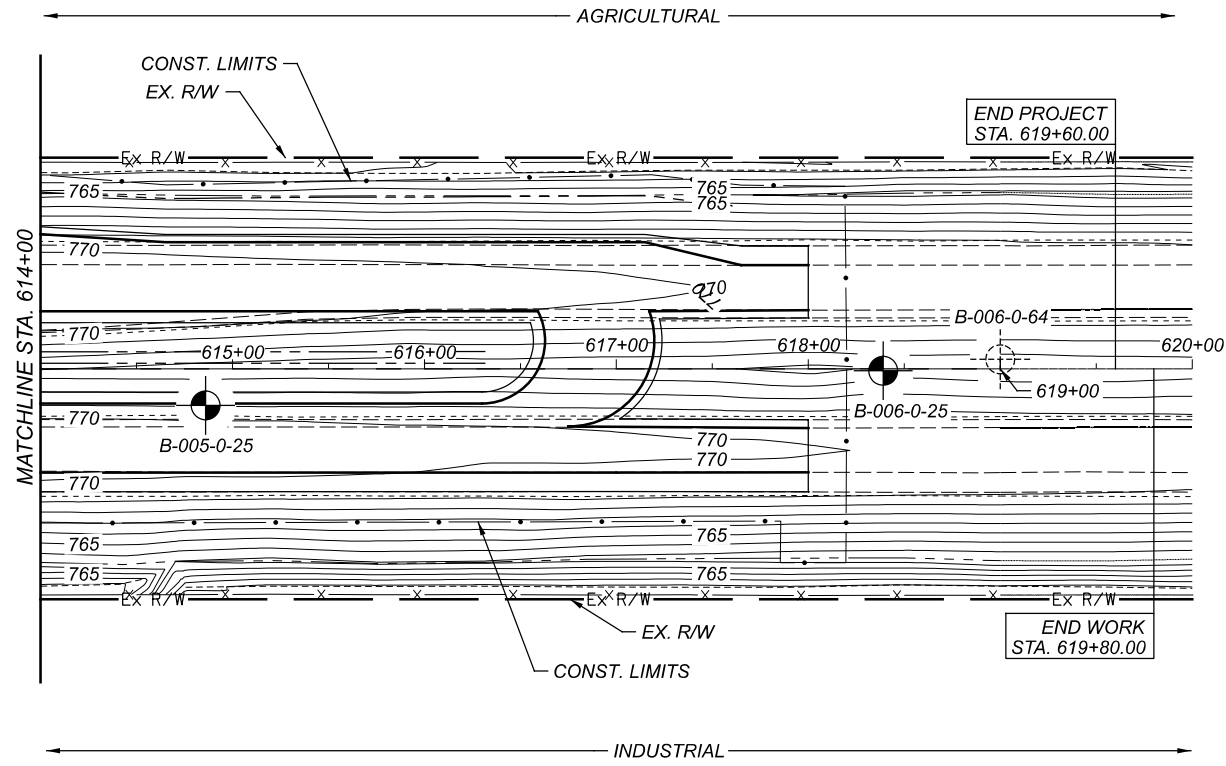
SUMMARY OF SOIL TEST DATA - HISTORIC BORINGS

US 30

EXPLORATION NO., STATION & OFFSET	FROM TO	SAMPLE ID	N ₆₀	% REC	HP tsf	% GR	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-003-0-64 STA. 606+00, 5' LT. LATITUDE = 40.891282 LONGITUDE = -84.612393	00.50-04.00	-	-	-	-	0	1	8	28	63	48	24	24	22	A-7-6 (15)
	04.00-07.50	-	-	-	-	0	4	9	28	59	37	22	15	20	A-6a (10)
	07.50-12.00	-	-	-	-	16	7	12	32	33	22	11	11	11	A-6a (6)
B-004-0-64 STA. 610+00, 5' LT. LATITUDE = 40.890956 LONGITUDE = -84.611006	00.60-03.00	-	-	-	-	0	0	8	31	61	47	22	25	21	A-7-6 (15)
	03.00-09.00	-	-	-	-	0	5	11	27	57	37	20	17	16	A-6b (11)
	09.00-12.00	-	-	-	-	0	4	12	50	34	21	19	2	13	A-4b (8)
B-005-0-64 STA. 612+00, 5' RT. LATITUDE = 40.890760 LONGITUDE = -84.610325	00.30-04.00	-	-	-	-	0	1	7	34	58	54	23	31	24	A-7-6 (19)
	04.00-08.00	-	-	-	-	0	4	10	26	60	36	21	15	19	A-6a (10)
	08.00-10.00	-	-	-	-	0	4	10	34	52	32	18	14	16	A-6a (10)
	10.00-12.00	-	-	-	-	29	16	21	16	18	NP	NP	NP	10	A-2-4 (0)
B-006-0-64 STA. 619+00, 5' LT. LATITUDE = 40.890233 LONGITUDE = -84.607894	00.60-05.00	-	-	-	-	0	2	7	27	64	55	25	30	25	A-7-6 (19)
	05.00-08.00	-	-	-	-	0	4	9	30	57	35	21	14	16	A-6a (10)
	08.00-10.00	-	-	-	-	12	4	8	27	49	34	19	15	16	A-6a (10)

GEOTECHNICAL PROFILE - ROADWAY
 SUMMARY OF SOIL TEST DATA

SHEET P.	TOTAL	PROJECT ID 120666	REVIEWER FS 11-10-25	DESIGNER N.K.S	



GEOTECHNICAL PROFILE - ROADWAY
 STA. 614+00 TO STA. 620+00 US 30



DESIGNER	N.K.S	
REVIEWER	FS	
PROJECT ID	120666	
SUBSET	4	TOTAL 4
SHEET	P.	TOTAL -

APPENDIX B

TEST BORING RECORDS



EXPLANATION OF TERMS AND SOIL DESCRIPTIONS
(ODOT Specifications of Geotechnical Explorations)

CONSISTENCY AND RELATIVE DENSITY DESCRIPTIONS

Descriptors for soil consistency used in this report are based upon the Standard Penetration Test (SPT), ASTM D 1587, with the penetration (N) values corrected to N_{60} , based upon the efficiency of the SPT Hammer (Energy Ratio) used for the soil sampling.

<u>NON-COHESSIVE SOILS</u>		<u>COHESSIVE SOILS</u>		
<u>Consistency</u>	<u>SPT-N_{60} (bpf)</u>	<u>Consistency</u>	<u>SPT-N_{60} (bpf)</u>	<u>Qu (tsf)</u>
Very Loose	< 5	Very Soft	< 2	< 0.25
Loose	5 – 10	Soft	2 – 4	0.25 – 0.5
Medium Dense	11 – 30	Medium Stiff	5 – 8	0.5 – 1.0
Dense	31 - 50	Stiff	9 – 15	1.0 – 2.0
Very Dense	> 50	Very Stiff	16 – 30	2.0 – 4.0
		Hard	> 30	> 4.0

COMPONENT MODIFIERS

<u>SOIL MODIFIERS</u>		<u>ORGANIC CONTENT</u>	
<u>Modifier</u>	<u>% by Weight</u>	<u>Modifier</u>	<u>% by Weight</u>
Trace	0 – 10	Organic	$LL_{oven}/LL_{air} < 0.75$
Little	10 – 20	Slightly	2 – 4
Some	20 – 35	Moderately	4 – 10
“And”	35 – 50	Highly	> 10

MOISTURE DESCRIPTIONS

<u>Terms</u>	<u>Non-Cohesive Soils</u>	<u>Cohesive Soils</u>
Dry	Moisture Absent	Powdery
Damp	Some Moisture	Below Plastic Limit
Moist	Damp to the Touch	Between Plastic and Liquid Limits
Wet	Visible Water	Above Liquid Limit

PARTICLE SIZE DESCRIPTIONS

<u>Component</u>	<u>AASHTO Particle Size</u>
Boulders	12-in. (300 mm)
Cobbles	< 12-in. (300 mm) to 3-in. (75 mm)
Coarse Gravel	< 3-in. (75 mm) to ¾-in. (19 mm)
Fine Gravel	< ¾-in. (19 mm) to #10 Sieve (2.0 mm)
Coarse Sand	< #10 Sieve (2.0 mm) to #40 Sieve (0.42 mm)
Fine Sand	< #40 Sieve (0.42 mm) to #200 Sieve (0.074 mm)
Silt	< #200 Sieve (0.074 mm) to 0.005 mm
Clay	< 0.005 mm





PROJECT VAN-30-11.34

PID 120666

CTL NUMBER 25050021WAP

PROJECT TYPE ROADWAY

LITHOLOGIC SYMBOLS
(ODOT Classification System)



A-2-4: Ohio DOT: A-2-4, gravel and/or stone fragments with sand and silt



A-4B: Ohio DOT: A-4b, silt



A-6A: Ohio DOT: A-6a, silt and clay



A-6B: Ohio DOT: A-6b, silty clay



A-7-6: Ohio DOT: A-7-6, clay



PAVEMENT OR BASE: Ohio DOT: Pavement or Aggregate base



TOPSOIL: Ohio DOT: Sod and Topsoil

BACKFILL SYMBOLS






Soil Cuttings Backfill mixed with Bentonite Pellets or Chips



Asphalt or Concrete Pavement Patch

ABBREVIATIONS

LL - LIQUID LIMIT (%)
 PI - PLASTIC INDEX (%)
 W - MOISTURE CONTENT (%)
 DD - DRY DENSITY (PCF)
 NP - NON PLASTIC
 -200 - PERCENT PASSING NO. 200 SIEVE
 PP - POCKET PENETROMETER (TSF)

TV - TORVANE
 PID - PHOTOIONIZATION DETECTOR
 UC - UNCONFINED COMPRESSION
 ppm - PARTS PER MILLION
 Water Level at Time Drilling, or as Shown
 Water Level at End of Drilling, or as Shown
 Water Level After 24 Hours, or as Shown

KEY TO SYMBOLS - OH DOT.GDT - 6/25/25 09:29 - O:\PROJECT\2025\WAP-05\25050021WAP_JOHNSON MIRIRAN AND THOMPSON INC.- VAN-30-11-34- PID 120666 US30 RCUT6_LAB SERVICES\GINT_BORING LOGS\25050021WAP.GPJ

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 25/7/21 15:07 - D:\06 PROJECTS FOR REVIEW\25050021WAP JOHNSON MIRMIRAN AND THOMPSON INC. VAN-30-11-34- PID 12

PROJECT: <u> VAN-30-11.34 </u>	DRILLING FIRM / OPERATOR: <u> CTL / MATTOX </u>	DRILL RIG: <u> CME 550X ATV </u>	STATION / OFFSET: <u> 605+22, 2' RT. </u>	EXPLORATION ID <u> B-001-0-25 </u>
TYPE: <u> SUBGRADE </u>	SAMPLING FIRM / LOGGER: <u> CTL / HUGHES </u>	HAMMER: <u> CME AUTOMATIC </u>	ALIGNMENT: <u> US 30 </u>	PAGE 1 OF 1
PID: <u> 120666 </u> SFN: <u> N/A </u>	DRILLING METHOD: <u> 3.25" HSA </u>	CALIBRATION DATE: <u> 4/1/24 </u>	ELEVATION: <u> 768.3 (MSL) </u> EOB: <u> 7.0 ft. </u>	
START: <u> 5/1/25 </u> END: <u> 5/1/25 </u>	SAMPLING METHOD: <u> SPT </u>	ENERGY RATIO (%): <u> 75.7 </u>	LAT / LONG: <u> 40.891316, -84.612670 </u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	SO4 ppm	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
TOPSOIL (3")	768.3																		
VERY STIFF, BROWN AND GRAY, CLAY , TRACE SAND, TRACE GRAVEL, MOIST	768.1	1	3																
	765.8	2	4	11	67	SS-1	2.25	1	1	9	27	62	52	21	31	27	A-7-6 (18)	<100	
VERY STIFF, BROWN AND GRAY, SILTY CLAY , LITTLE SAND, TRACE GRAVEL,, MOIST	764.3	3	3	10	83	SS-2	3.00	5	5	11	29	50	38	20	18	21	A-6b (11)	-	
STIFF, BROWN, CLAY , TRACE SILT, TRACE SAND, TRACE GRAVEL, MOIST	761.3	4	3	8	83	SS-3	1.25	-	-	-	-	-	-	-	-	30	A-7-6 (V)	-	
		5	3																
		6	4	19	100	SS-4	1.75	-	-	-	-	-	-	-	-	29	A-7-6 (V)	-	
		7	7	8															
		EOB																	

NOTES: CAVED AT 5.0'
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 25/7/21 15:07 - D:\06_PROJECTS FOR REVIEW\25050021WAP_JOHNSON MIRMIRAN AND THOMPSON INC. VAN-30-11-34- PID 12

PROJECT: <u> VAN-30-11.34 </u>	DRILLING FIRM / OPERATOR: <u> CTL / MATTOX </u>	DRILL RIG: <u> CME 550X ATV </u>	STATION / OFFSET: <u> 608+47, 21' LT. </u>	EXPLORATION ID <u> B-002-0-25 </u>
TYPE: <u> SUBGRADE </u>	SAMPLING FIRM / LOGGER: <u> CTL / HUGHES </u>	HAMMER: <u> CME AUTOMATIC </u>	ALIGNMENT: <u> US 30 </u>	
PID: <u> 120666 </u> SFN: <u> N/A </u>	DRILLING METHOD: <u> 3.25" HSA </u>	CALIBRATION DATE: <u> 4/1/24 </u>	ELEVATION: <u> 770.1 (MSL) </u> EOB: <u> 7.0 ft. </u>	PAGE <u> 1 OF 1 </u>
START: <u> 5/1/25 </u> END: <u> 5/1/25 </u>	SAMPLING METHOD: <u> SPT </u>	ENERGY RATIO (%): <u> 75.7 </u>	LAT / LONG: <u> 40.891115, -84.611523 </u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	SO4 ppm	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
TOPSOIL (3")	770.1																		
VERY STIFF, BROWNISH GRAY, CLAY, SOME SILT, LITTLE SAND, MOIST	769.9	1	3																
@2.5'; TRACE GRAVEL		2	6	15	67	SS-1	3.00	0	2	10	29	59	51	23	28	28	A-7-6 (17)	<100	
@4.0'; GRAYISH BROWN		3	6																
		4	6	14	83	SS-2	3.25	2	2	9	28	59	51	23	28	25	A-7-6 (17)	-	
		5	6																
		6	8	18	83	SS-3	2.50	-	-	-	-	-	-	-	-	23	A-7-6 (V)	-	
		7	8																
	763.1	EOB	9	25	33	SS-4	3.00	-	-	-	-	-	-	-	-	26	A-7-6 (V)	-	
			11																

NOTES: CAVED AT 5.0'
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 25/7/21 15:07 - D:\06 PROJECTS FOR REVIEW\25050021WAP JOHNSON MIRMIRAN AND THOMPSON INC. VAN-30-11-34- PID 12

PROJECT: <u> VAN-30-11.34 </u>	DRILLING FIRM / OPERATOR: <u> CTL / MATTOX </u>	DRILL RIG: <u> CME 550X ATV </u>	STATION / OFFSET: <u> 610+93, 69' RT. </u>	EXPLORATION ID <u> B-003-0-25 </u>
TYPE: <u> SUBGRADE </u>	SAMPLING FIRM / LOGGER: <u> CTL / HUGHES </u>	HAMMER: <u> CME AUTOMATIC </u>	ALIGNMENT: <u> US 30 </u>	PAGE 1 OF 1
PID: <u> 120666 </u> SFN: <u> N/A </u>	DRILLING METHOD: <u> 3.25" HSA </u>	CALIBRATION DATE: <u> 4/1/24 </u>	ELEVATION: <u> 769.5 (MSL) </u> EOB: <u> 10.0 ft. </u>	
START: <u> 5/1/25 </u> END: <u> 5/1/25 </u>	SAMPLING METHOD: <u> SPT </u>	ENERGY RATIO (%): <u> 75.7 </u>	LAT / LONG: <u> 40.890689, -84.610769 </u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				SO4 ppm	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI	WC		
TOPSOIL (2")	769.5																	
VERY STIFF, GRAY, CLAY , SOME SILT, LITTLE SAND, MOIST	769.3	1	3															
@2.5'; BROWN AND GRAY, TRACE GRAVEL		2	3	13	67	SS-1	3.00	0	2	10	30	58	50	23	27	27	A-7-6 (17)	<100
		3	5	15	100	SS-2	3.00	2	2	10	27	59	50	20	30	25	A-7-6 (18)	-
	765.5	4	3	15	67	SS-3	3.00	-	-	-	-	-	-	-	-	15	A-6b (V)	-
VERY STIFF, BROWN, SILTY CLAY , LITTLE SAND, TRACE GRAVEL, DAMP		5	5	15	67	SS-3	3.00	-	-	-	-	-	-	-	-	15	A-6b (V)	-
@5.5'; HARD, GRAY AND BROWN, MOIST		6	3	16	100	SS-4	4.50	-	-	-	-	-	-	-	-	20	A-6b (V)	-
		7	6	16	100	SS-4	4.50	-	-	-	-	-	-	-	-	20	A-6b (V)	-
		8																
	761.0	9	7	39	100	SS-5	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	-
HARD, GRAY, SILT AND CLAY , LITTLE SAND, TRACE GRAVEL, DAMP	759.5	10	13	39	100	SS-5	4.50	-	-	-	-	-	-	-	-	14	A-6a (V)	-
		EOB	18															

NOTES: CAVED AT 9.0'
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 25/7/21 15:07 - D:\06_PROJECTS FOR REVIEW\25050021WAP_JOHNSON MIRMIRAN AND THOMPSON INC. VAN-30-11-34- PID 12

PROJECT: <u> VAN-30-11.34 </u>	DRILLING FIRM / OPERATOR: <u> CTL / MATTOX </u>	DRILL RIG: <u> CME 550X ATV </u>	STATION / OFFSET: <u> 612+27, 71' LT. </u>	EXPLORATION ID <u> B-004-0-25 </u>
TYPE: <u> SUBGRADE </u>	SAMPLING FIRM / LOGGER: <u> CTL / HUGHES </u>	HAMMER: <u> CME AUTOMATIC </u>	ALIGNMENT: <u> US 30 </u>	PAGE 1 OF 1
PID: <u> 120666 </u> SFN: <u> N/A </u>	DRILLING METHOD: <u> 3.25" HSA </u>	CALIBRATION DATE: <u> 4/1/24 </u>	ELEVATION: <u> 768.8 (MSL) </u> EOB: <u> 7.0 ft. </u>	
START: <u> 5/1/25 </u> END: <u> 5/1/25 </u>	SAMPLING METHOD: <u> SPT </u>	ENERGY RATIO (%): <u> 75.7 </u>	LAT / LONG: <u> 40.890944, -84.610165 </u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	SO4 ppm	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
TOPSOIL (2")	768.8																		
STIFF, BROWN AND GRAY, CLAY , "AND" SILT, LITTLE SAND, TRACE GRAVEL, MOIST	768.6	1	2																
@2.5'; SOME SILT, LITTLE GRAVEL		2	4	5	11	67	SS-1	2.00	3	2	12	36	47	46	22	24	28	A-7-6 (15)	<100
		3	3	5	11	67	SS-2	2.00	12	6	12	31	39	43	19	24	23	A-7-6 (13)	-
	763.3	4	4	5	10	83	SS-3	1.25	-	-	-	-	-	-	-	-	21	A-7-6 (V)	-
HARD, BROWN, SILTY CLAY , TRACE SAND, TRACE GRAVEL, MOIST	761.8	5	4	4															
		6	4	8	24	100	SS-4	4.50	-	-	-	-	-	-	-	-	18	A-6b (V)	-
	761.8	7	11																
		EOB																	

NOTES: CAVED AT 6.5'
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 25/7/21 15:07 - D:\06 PROJECTS FOR REVIEW\25050021WAP - JOHNSON MIRMIRAN AND THOMPSON INC. VAN-30-11-34- PID 12

PROJECT: <u> VAN-30-11.34 </u>	DRILLING FIRM / OPERATOR: <u> CTL / MATTOX </u>	DRILL RIG: <u> CME 550X ATV </u>	STATION / OFFSET: <u> 614+86, 19' RT. </u>	EXPLORATION ID <u> B-005-0-25 </u>
TYPE: <u> SUBGRADE </u>	SAMPLING FIRM / LOGGER: <u> CTL / HUGHES </u>	HAMMER: <u> CME AUTOMATIC </u>	ALIGNMENT: <u> US 30 </u>	PAGE 1 OF 1
PID: <u> 120666 </u> SFN: <u> N/A </u>	DRILLING METHOD: <u> 3.25" HSA </u>	CALIBRATION DATE: <u> 4/1/24 </u>	ELEVATION: <u> 769.0 (MSL) </u> EOB: <u> 7.0 ft. </u>	
START: <u> 5/1/25 </u> END: <u> 5/1/25 </u>	SAMPLING METHOD: <u> SPT </u>	ENERGY RATIO (%): <u> 75.7 </u>	LAT / LONG: <u> 40.890498, -84.609355 </u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				SO4 ppm	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI	WC		
TOPSOIL (3")	769.0																	
VERY STIFF, BROWN AND GRAY, CLAY , SOME SILT, LITTLE SAND, TRACE GRAVEL, MOIST	768.8	1	3															
@2.5'; NO GRAVEL		2	6	16	67	SS-1	3.00	1	2	10	29	58	51	22	29	28	A-7-6 (18)	<100
		3	4	15	83	SS-2	3.00	0	2	10	26	62	52	21	31	26	A-7-6 (18)	-
	763.5	4	4	19	83	SS-3	2.00	-	-	-	-	-	-	-	-	24	A-7-6 (V)	-
VERY STIFF, GRAYISH BROWN, SILTY CLAY , LITTLE SAND, TRACE GRAVEL, MOIST	762.0	5	7	23	67	SS-4	3.50	-	-	-	-	-	-	-	-	21	A-6b (V)	-
		6	8															
		7	10															
		EOB																

NOTES: CAVED AT 4.5'
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

STANDARD ODOT LOG W/ SULFATES (8.5 X 11) - OH DOT.GDT - 25/7/21 15:07 - D:\06 PROJECTS FOR REVIEW\25050021WAP_JOHNSON MIRMIRAN AND THOMPSON INC. VAN-30-11-34- PID 12

PROJECT: <u> VAN-30-11.34 </u>	DRILLING FIRM / OPERATOR: <u> CTL / MATTOX </u>	DRILL RIG: <u> CME 550X ATV </u>	STATION / OFFSET: <u> 618+39, 1' RT. </u>	EXPLORATION ID <u> B-006-0-25 </u>
TYPE: <u> SUBGRADE </u>	SAMPLING FIRM / LOGGER: <u> CTL / HUGHES </u>	HAMMER: <u> CME AUTOMATIC </u>	ALIGNMENT: <u> US 30 </u>	PAGE 1 OF 1
PID: <u> 120666 </u> SFN: <u> N/A </u>	DRILLING METHOD: <u> 3.25" HSA </u>	CALIBRATION DATE: <u> 4/1/24 </u>	ELEVATION: <u> 766.2 (MSL) </u> EOB: <u> 7.0 ft. </u>	
START: <u> 5/1/25 </u> END: <u> 5/1/25 </u>	SAMPLING METHOD: <u> SPT </u>	ENERGY RATIO (%): <u> 75.7 </u>	LAT / LONG: <u> 40.890264, -84.608115 </u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	SO4 ppm	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
TOPSOIL (3")	766.2																		
VERY STIFF, BROWN AND GRAY, CLAY , "AND" SILT, LITTLE SAND, TRACE GRAVEL, MOIST	766.0	1	2																
	763.7	2	3	8	67	SS-1	2.25	3	2	10	36	49	45	18	27	24	A-7-6 (16)	<100	
VERY STIFF, BROWN AND GRAY, SILTY CLAY , LITTLE SAND, TRACE GRAVEL, MOIST		3	1	10	100	SS-2	2.50	4	5	12	31	48	37	19	18	19	A-6b (11)	-	
@4.0'; HARD, DAMP		4	4																
	760.7	5	9	26	100	SS-3	4.50	-	-	-	-	-	-	-	-	17	A-6b (V)	-	
HARD, BROWN AND GRAY, SILT AND CLAY , TRACE SAND, TRACE GRAVEL, DAMP	759.2	6	10	39	67	SS-4	4.50	-	-	-	-	-	-	-	-	15	A-6a (V)	-	
		7	13																
		EOB	18																

NOTES: CAVED AT 6.0'
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

APPENDIX C

LABORATORY TEST RESULTS



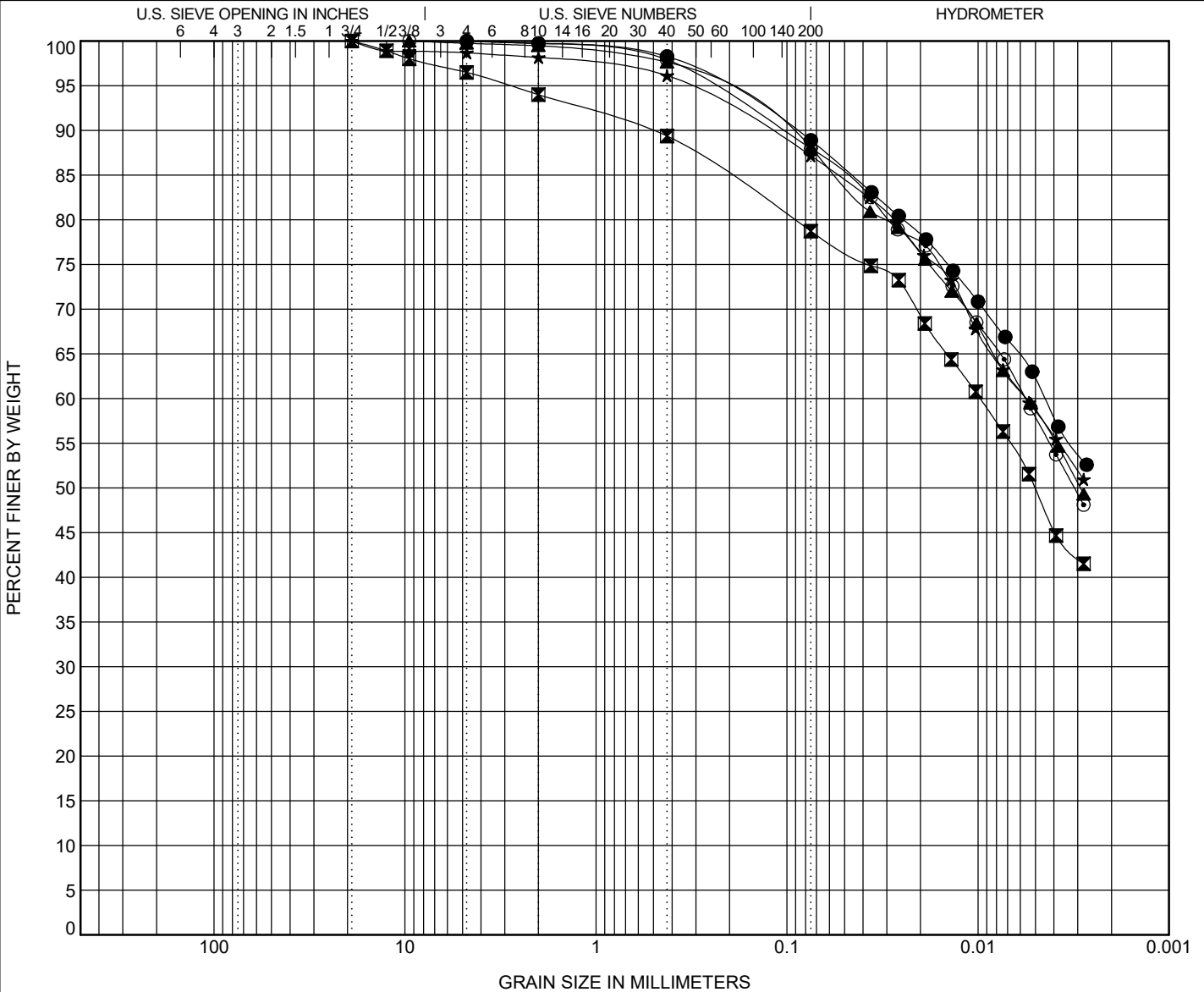
PROJECT VAN-30-11.34

PID 120666

CTL NUMBER 25050021WAP

PROJECT TYPE ROADWAY

GRAIN SIZE - OH.DOT.GDT - 6/24/25 16:00 - O:\PROJECT\2025\WAP-05\25050021WAP - 05\25050021WAP - BORING LOGS\25050021WAP.GPJ



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification		ODOT (Modified AASHTO) ~ USCS Classification								LL	PL	PI
●	B-001-0-25 1.0	A-7-6 ~ FAT CLAY(CH)								52	21	31
■	B-001-0-25 2.5	A-6b ~ LEAN CLAY with SAND(CL)								38	20	18
▲	B-002-0-25 1.0	A-7-6 ~ FAT CLAY(CH)								51	23	28
★	B-002-0-25 2.5	A-7-6 ~ FAT CLAY(CH)								51	23	28
◎	B-003-0-25 1.0	A-7-6 ~ FAT CLAY(CH)								50	23	27
Specimen Identification		D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-001-0-25 1.0	0.092				1	1	9	27	62		
■	B-001-0-25 2.5	0.524	0.005			5	5	11	29	50		
▲	B-002-0-25 1.0	0.106	0.003			0	2	10	29	59		
★	B-002-0-25 2.5	0.129				2	2	9	28	59		
◎	B-003-0-25 1.0	0.107	0.003			0	2	10	30	58		



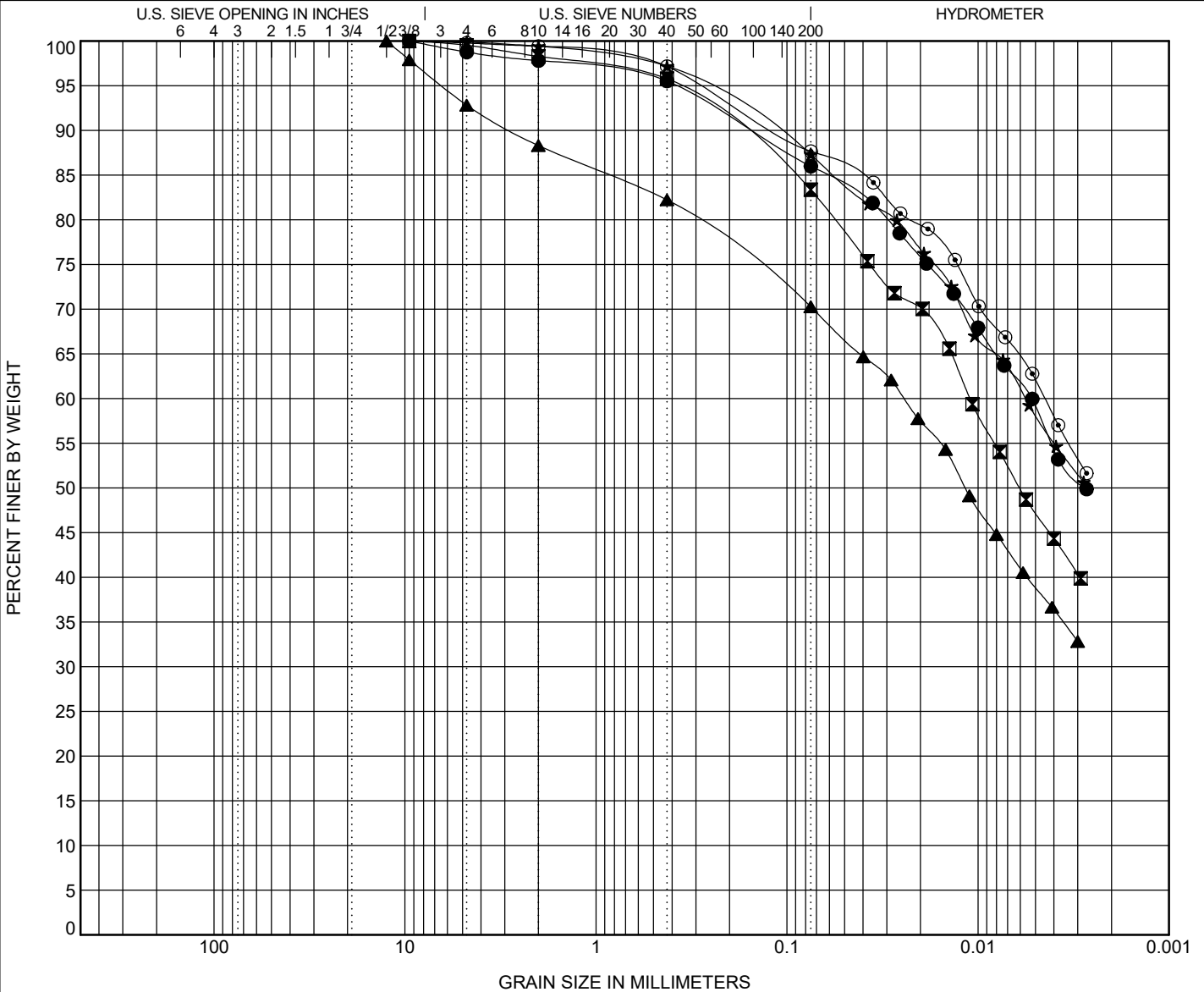
PROJECT VAN-30-11.34

PID 120666

CTL NUMBER 25050021WAP

PROJECT TYPE ROADWAY

GRAIN SIZE - OH.DOT.GDT - 6/24/25 16:00 - O:\PROJECT\2025\WAP-05\25050021WAP - 05\25050021WAP - BORING LOGS\25050021WAP.GPJ



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification									LL	PL	PI
● B-003-0-25 2.5	A-7-6 ~ FAT CLAY(CH)									50	20	30
☒ B-004-0-25 1.0	A-7-6 ~ LEAN CLAY with SAND(CL)									46	22	24
▲ B-004-0-25 2.5	A-7-6 ~ LEAN CLAY with SAND(CL)									43	19	24
★ B-005-0-25 1.0	A-7-6 ~ FAT CLAY(CH)									51	22	29
◎ B-005-0-25 2.5	A-7-6 ~ FAT CLAY(CH)									52	21	31
Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu	
● B-003-0-25 2.5	0.156	0.003			2	2	10	27	59			
☒ B-004-0-25 1.0	0.189	0.006			3	2	12	36	47			
▲ B-004-0-25 2.5	2.769	0.012			12	6	12	31	39			
★ B-005-0-25 1.0	0.12				1	2	10	29	58			
◎ B-005-0-25 2.5	0.115				0	2	10	26	62			



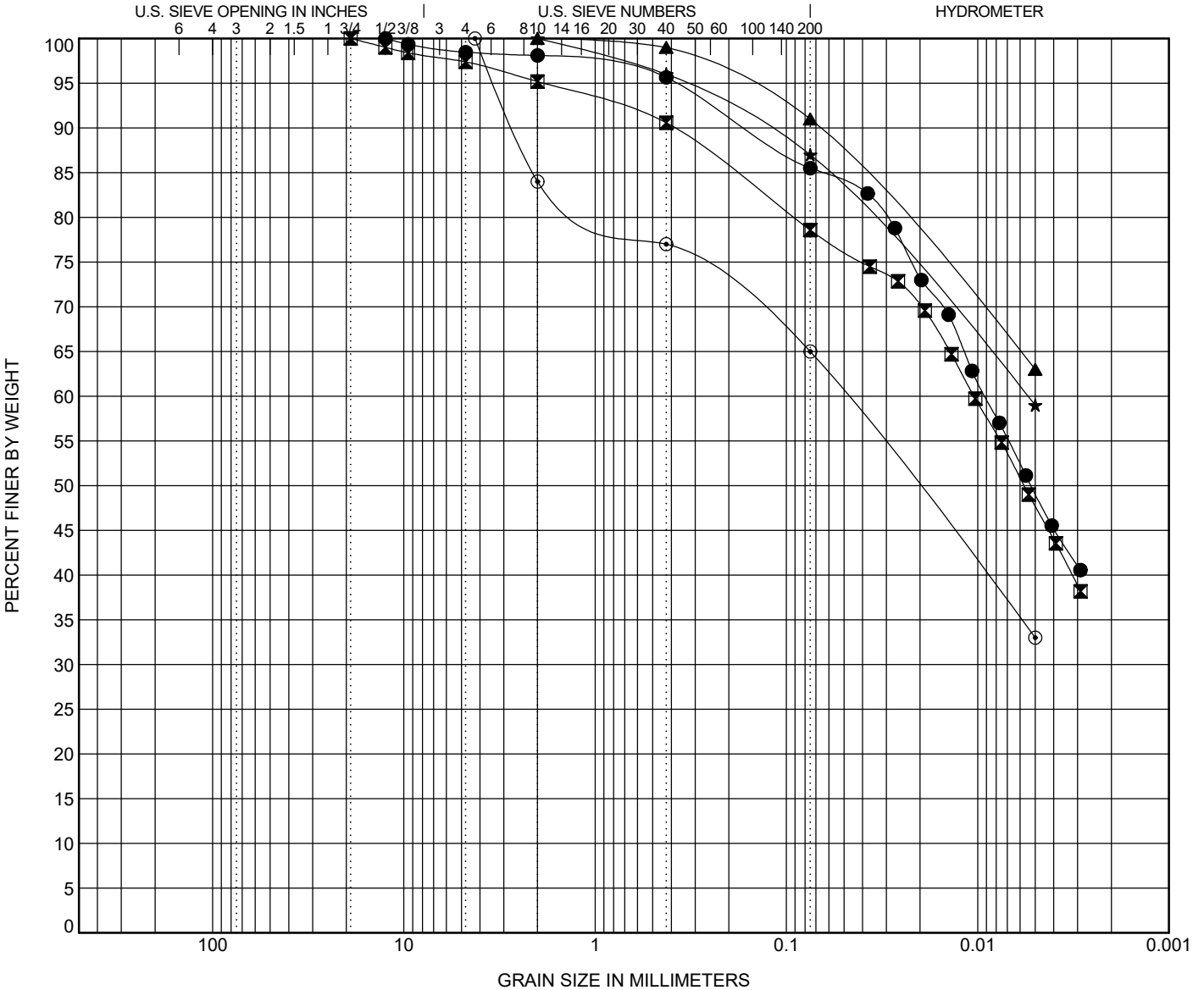
PROJECT VAN-30-11.34

PID 120666

CTL NUMBER 25050021WAP

PROJECT TYPE ROADWAY

GRAIN SIZE - OH.DOT.GDT - 6/24/25 16:00 - O:\PROJECT\2025\WAP-05\25050021WAP-05\25050021WAP-BORING LOGS\25050021WAP.GPJ



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification									LL	PL	PI
● B-006-0-25 1.0	A-7-6 ~ LEAN CLAY(CL)									45	18	27
☒ B-006-0-25 2.5	A-6b ~ LEAN CLAY with SAND(CL)									37	19	18
▲ B-606-0-64 0.5	A-7-6 ~ LEAN CLAY(CL)									48	24	24
★ B-606-0-64 4.0	A-6a ~ LEAN CLAY(CL)									37	22	15
◎ B-606-0-64 7.5	A-6a ~ SANDY LEAN CLAY(CL)									22	11	11
Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu	
● B-006-0-25 1.0	0.162	0.005			3	2	10	36	49			
☒ B-006-0-25 2.5	0.39	0.006			4	5	12	31	48			
▲ B-606-0-64 0.5	0.068				0	1	8	28	63			
★ B-606-0-64 4.0	0.134				0	4	9	28	59			
◎ B-606-0-64 7.5	2.653	0.021			16	7	12	32	33			



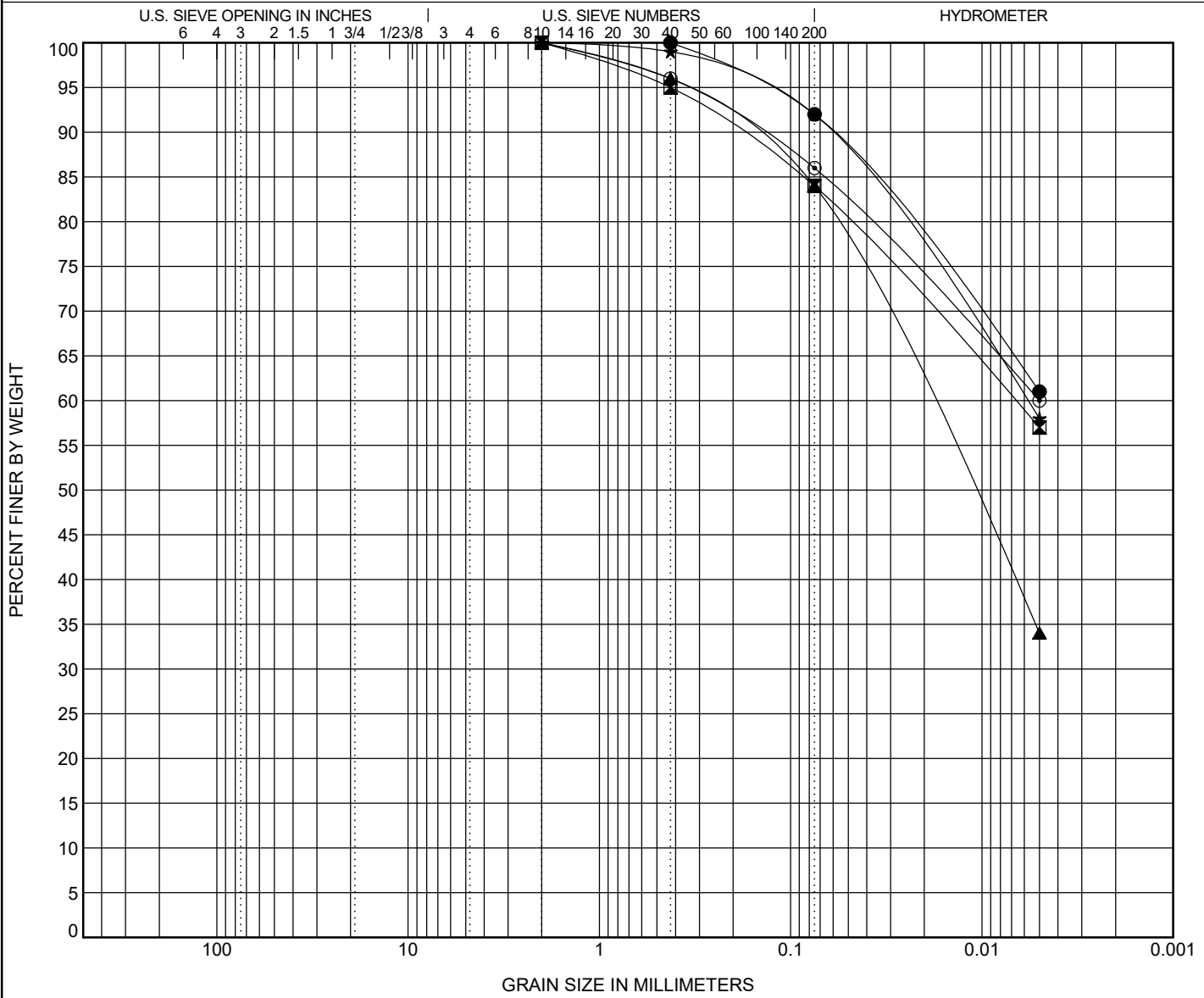
PROJECT VAN-30-11.34

PID 120666

CTL NUMBER 25050021WAP

PROJECT TYPE ROADWAY

GRAIN SIZE - OH.DOT.GDT - 6/24/25 16:00 - O:\PROJECT\2025\WAP-05\25050021WAP-05\25050021WAP_BORING LOGS\25050021WAP.GPJ



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification									LL	PL	PI
● B-610-0-64 0.6	A-7-6 ~ LEAN CLAY(CL)									47	22	25
■ B-610-0-64 3.0	A-6b ~ LEAN CLAY with SAND(CL)									37	20	17
▲ B-610-0-64 9.0	A-4b ~ SILT with SAND(ML)									21	19	2
★ B-612-0-64 0.3	A-7-6 ~ FAT CLAY(CH)									54	23	31
◎ B-612-0-64 4.0	A-6a ~ LEAN CLAY(CL)									36	21	15
Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu	
● B-610-0-64 0.6	0.063				0	0	8	31	61			
■ B-610-0-64 3.0	0.193				0	5	11	27	57			
▲ B-610-0-64 9.0	0.179	0.012			0	4	12	50	34			
★ B-612-0-64 0.3	0.064				0	1	7	34	58			
◎ B-612-0-64 4.0	0.15				0	4	10	26	60			



CTL ENGINEERING, INC.
WWW.CTLENG.COM

GRAIN SIZE DISTRIBUTION

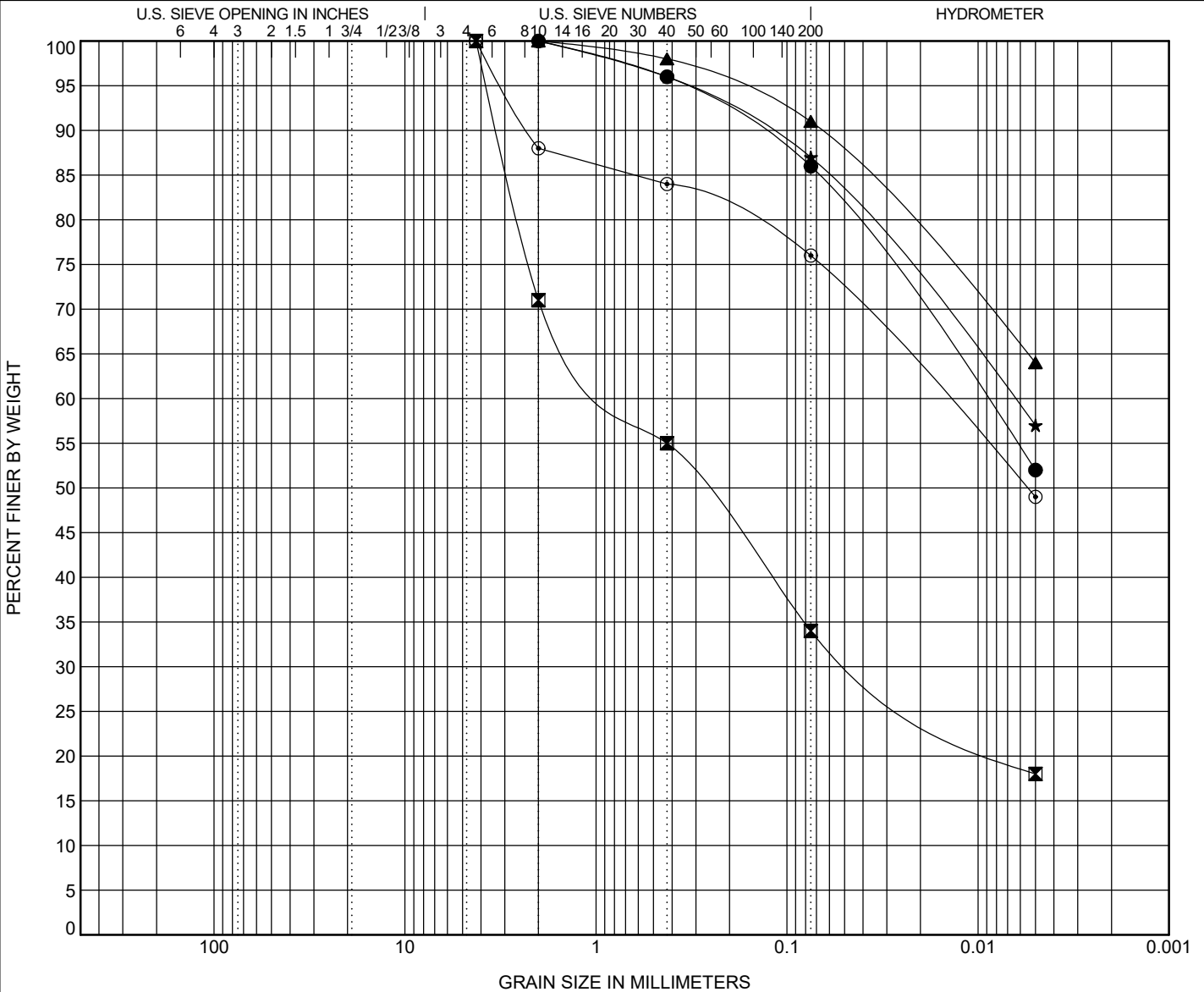
PROJECT VAN-30-11.34

PID 120666

CTL NUMBER 25050021WAP

PROJECT TYPE ROADWAY

GRAIN SIZE - OH.DOT.GDT - 6/24/25 16:00 - O:\PROJECT\2025\WAP-05\25050021WAP - 05\25050021WAP - BORING LOGS\25050021WAP.GPJ



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification			ODOT (Modified AASHTO) ~ USCS Classification							LL	PL	PI	
●	B-612-0-64	8.0	A-6a ~ LEAN CLAY(CL)							32	18	14	
☒	B-612-0-64	10.0	A-2-4 ~ SILTY SAND(SM)							NP	NP	NP	
▲	B-619-0-64	0.6	A-7-6 ~ FAT CLAY(CH)							55	25	30	
★	B-619-0-64	5.0	A-6a ~ LEAN CLAY(CL)							35	21	14	
◎	B-619-0-64	8.0	A-6a ~ LEAN CLAY with SAND(CL)							34	19	15	
Specimen Identification			D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-612-0-64	8.0	0.15				0	4	10	34	52		
☒	B-612-0-64	10.0	3.277	0.281	0.038		29	16	21	16	18		
▲	B-619-0-64	0.6	0.068				0	2	7	27	64		
★	B-619-0-64	5.0	0.134				0	4	9	30	57		
◎	B-619-0-64	8.0	2.268	0.006			12	4	8	27	49		



OHIO DEPARTMENT OF TRANSPORTATION
DETERMINING SULFATE CONTENT IN SOILS
SUPPLEMENT 1122

Project C-R-S: VAN-30-11.34



PID No: 120666

Report Date: 5/22/2025

Consultant: CTL Engineering

Technician: RV

Sample or Boring ID	Station	Offset	Latitude & Longitude or State Plane Coordinates		Elevation	Soaking Time (hr)	Replicate Sample Readings						Sulfate Content (ppm)
							1		2		3		
							Dilution	Reading	Dilution	Reading	Dilution	Reading	
B-001-0-25, SS-1	605+22	2' Rt	40.891316	-84.612670	766.8	20	20	< 5	20	< 5	20	< 5	< 100
B-002-0-25, SS-1	608+47	21' Lt	40.891115	-84.611523	768.6	20	20	< 5	20	< 5	20	< 5	< 100
B-003-0-25, SS-1	610+93	69' Rt	40.890689	-84.610769	768.0	20	20	< 5	20	< 5	20	< 5	< 100
B-004-0-25, SS-1	612+27	71' Lt	40.890944	-84.610165	767.3	20	20	< 5	20	< 5	20	< 5	< 100
B-005-0-25, SS-1	614+86	19' Rt	40.890498	-84.609355	767.5	20	20	< 5	20	< 5	20	< 5	< 100
B-006-0-25, SS-1	618+39	1' Rt	40.890264	-84.608115	764.7	20	20	< 5	20	< 5	20	< 5	< 100

APPENDIX D

ROADWAY SUBGRADE ANALYSES



OHIO DEPARTMENT OF TRANSPORTATION**OFFICE OF GEOTECHNICAL ENGINEERING****PLAN SUBGRADES****Geotechnical Design Manual Section 600****VAN-30-11.34****120666**

The project involves the conversion of U.S. 30 and John Brown Road intersection to restricted crossing U-Turn (RCUT) in Pleasant Township, Van Wert County, Ohio.

CTL Engineering, Inc.

Prepared By: F. Schoen, P.E.
Date prepared: Thursday, November 6, 2025

**CTL Engineering, Inc.
102 Commerce Drive
Wapakoneta, Ohio 45895
P.O. Box 44
www.ctleng.com
ctl@ctleng.com**

NO. OF BORINGS: **6**

NO. OF DCPS:

#	Boring ID	Alignment	Station	Add DCP Test Data Worksheets				Boring EL.	Proposed Subgrade EL.	Cut Fill
				Offset	Dir	Drill Rig	ER			
1	B-001-0-25	US 30	605+22	2	Rt	CME 550x ATV	76	768.3	769.6	1.3 F
2	B-002-0-25	US 30	608+47	21	Lt	CME 550x ATV	76	770.1	769.6	0.5 C
3	B-003-0-25	US 30	610+93	69	Rt	CME 550x ATV	76	769.5	769.1	0.4 C
4	B-004-0-25	US 30	612+27	71	Lt	CME 550x ATV	76	768.8	768.9	0.1 F
5	B-005-0-25	US 30	614+86	19	Rt	CME 550x ATV	76	769.0	768.6	0.4 C
6	B-006-0-25	US 30	618+39	1	Rt	CME 550x ATV	76	766.2	768.1	1.9 F

#	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 001-0 25	SS-1	1.0	2.5	2.3	3.8	11	8	2.25	52	21	31	27	62	89	27	18	A-7-6	18	99					
		SS-2	2.5	4.0	3.8	5.3	10		3	38	20	18	29	50	79	21	16	A-6b	11						
		SS-3	4.0	5.5	5.3	6.8	8		1.25							30	18	A-7-6							
		SS-4	5.5	7.0	6.8	8.3	19		1.75							29	18	A-7-6							
2	B 002-0 25	SS-1	1.0	2.5	0.5	2.0	15	14	3	51	23	28	29	59	88	28	20	A-7-6	17	99		Mc			
		SS-2	2.5	4.0	2.0	3.5	14		3.25	51	23	28	28	59	87	25	20	A-7-6	17			N ₆₀ & Mc			
		SS-3	4.0	5.5	3.5	5.0	18		2.5							23	18	A-7-6	16						
		SS-4	5.5	7.0	5.0	6.5	25		3							26	18	A-7-6	16						
3	B 003-0 25	SS-1	1.0	2.5	0.6	2.1	13	13	3	50	23	27	30	58	88	27	20	A-7-6	17	99		N ₆₀ & Mc		12"	12" 204 Geotextile
		SS-2	2.5	4.0	2.1	3.6	15		3	50	20	30	27	59	86	25	18	A-7-6	18						
		SS-3	4.0	5.5	3.6	5.1	15		3							15	16	A-6b	16						
		SS-4	5.5	7.0	5.1	6.6	16		4.5							20	16	A-6b							
4	B 004-0 25	SS-1	1.0	2.5	1.1	2.6	11	10	2	46	22	24	36	47	83	28	19	A-7-6	15	99		N ₆₀ & Mc		12"	12" 204 Geotextile
		SS-2	2.5	4.0	2.6	4.1	11		2	43	19	24	31	39	70	23	18	A-7-6	13						
		SS-3	4.0	5.5	4.1	5.6	10		1.25							21	18	A-7-6	16						
		SS-4	5.5	7.0	5.6	7.1	24		4.5							18	16	A-6b							
5	B 005-0 25	SS-1	1.0	2.5	0.6	2.1	16	15	3	51	22	29	29	58	87	28	19	A-7-6	18	99		Mc			
		SS-2	2.5	4.0	2.1	3.6	15		3	52	21	31	26	62	88	26	18	A-7-6	18						
		SS-3	4.0	5.5	3.6	5.1	19		2							24	18	A-7-6	16						
		SS-4	5.5	7.0	5.1	6.6	23		3.5							21	16	A-6b							
6	B 006-0 25	SS-1	1.0	2.5	2.9	4.4	8	8	2.25	45	18	27	36	49	85	24	18	A-7-6	16	99					
		SS-2	2.5	4.0	4.4	5.9	10		2.5	37	19	18	31	48	79	19	16	A-6b	11						
		SS-3	4.0	5.5	5.9	7.4	26		4.5							17	16	A-6b							
		SS-4	5.5	7.0	7.4	8.9	39		4.5							15	14	A-6a							

PID: 120666

County-Route-Section: VAN-30-11.34

No. of Borings: 6

Geotechnical Consultant: CTL Engineering, Inc.

Prepared By: F. Schoen, P.E.

Date prepared: 11/6/2025

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

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

Design CBR	4
------------	---

% Samples within 3 feet of subgrade			
N ₆₀ ≤ 5	0%	HP ≤ 0.5	0%
N ₆₀ < 12	18%	0.5 < HP ≤ 1	0%
12 ≤ N ₆₀ < 15	9%	1 < HP ≤ 2	9%
N ₆₀ ≥ 20	0%	HP > 2	36%
M+	23%		
Rock	0%		
Unsuitable Soil	0%		

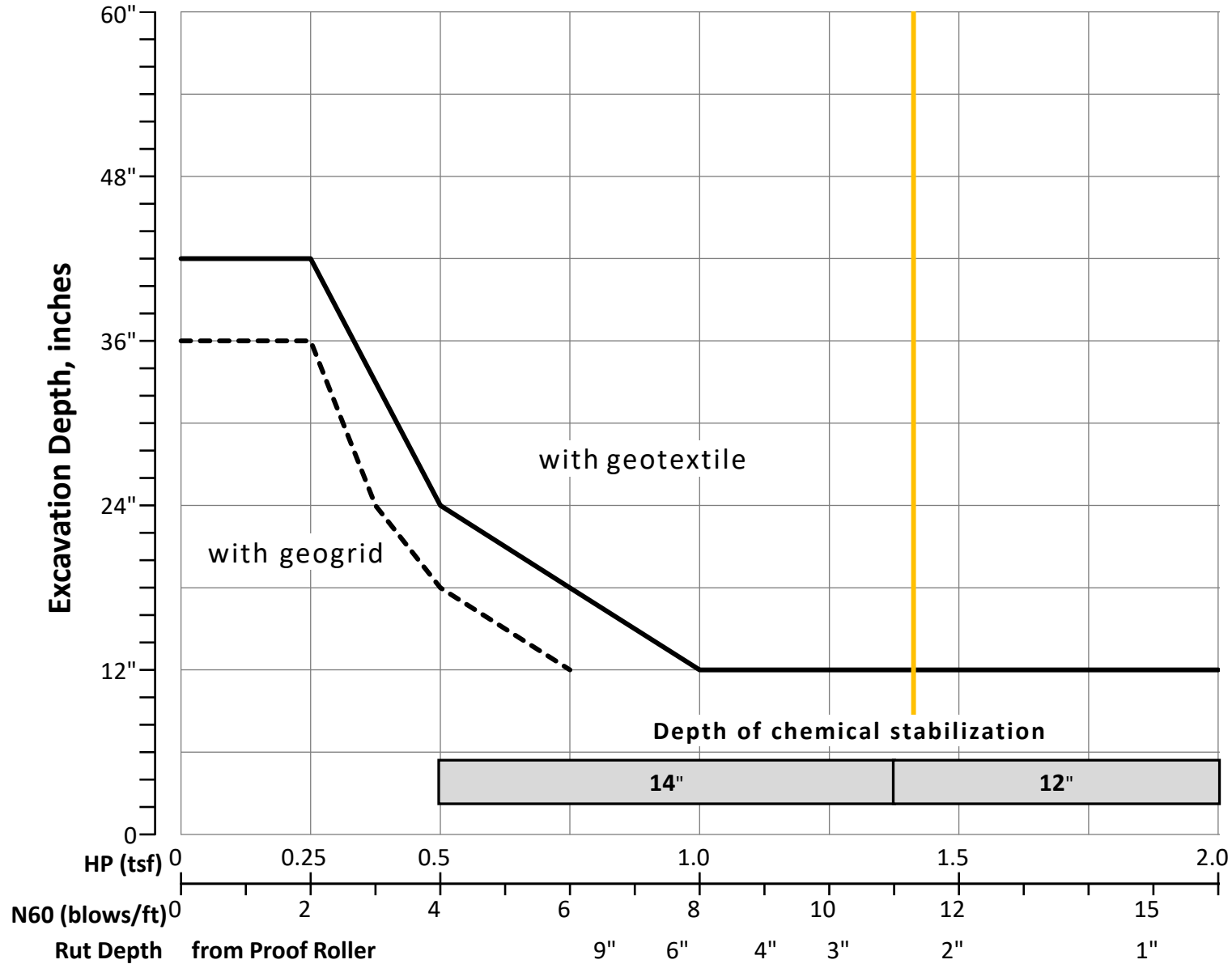
Excavate and Replace at Surface	
Average	4"
Maximum	12"
Minimum	0"

% Proposed Subgrade Surface	
Unstable & Unsuitable	56%
Unstable	56%
Unsuitable (Soil & Rock)	0%

	N ₆₀	N _{60L}	HP	LL	PL	PI	Silt	Clay	P 200	M _C	M _{OPT}	GI
Average	16	11	2.85	47	21	26	30	54	84	23	18	16
Maximum	39	15	4.50	52	23	31	36	62	89	30	20	18
Minimum	8	8	1.25	37	18	18	26	39	70	15	14	11

Classification Counts by Sample																				
ODOT Class	UCF	Rock	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-3	A-3a	A-4a	A-4b	A-5	A-6a	A-6b	A-7-5	A-7-6	A-8a	A-8b	Totals
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	16	0	0	24
Percent	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	29%	0%	67%	0%	0%	100%
% Rock Granular Cohesive	0%	0%	0%										100%						100%	
Surface Class Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9
Surface Class Percent	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%

Fig. 600-1 – Subgrade Stabilization



OVERRIDE TABLE



Calculated Average	New Values	Check to Override
2.85	2.00	<input type="checkbox"/> HP
11.33	12.00	<input type="checkbox"/> N60L

Average HP —
 Average N_{60L} —

APPENDIX E
PAVEMENT CORE REPORT





		CTL ENGINEERING, INC. 102 COMMERCE DR. P.O. BOX 44 WAPAKONETA, OHIO 43885 PHONE: (419) 738-1447 FAX: (419) 738-7670	EMPLOYEE OWNED GEOTECHNICAL ENGINEERS TESTING * INSPECTION LABORATORY SERVICES		PAVEMENT CORE LOCATION PLAN			
				Scale Not-to-Scale	Johnson, Mirmiran & Thompson, Inc. VAN-30-11.34 RCUT; PID 120666 US 30 Intersection with John Brown Road Van Wert, OH			
				Date 7/21/2025	Drawn By CC	Reviewed By FLS	Page 1 of 1	Project No. 25050021WAP

REPORT ON PAVEMENT CORE



CTL ENGINEERING, INC.
102 COMMERCE DR. P.O. BOX 44
WAPAKONETA, OHIO 45896
PHONE: (419) 738-1447
FAX: (419) 738-7670

PROJECT: VAN-30-11.34; PID 120666
LOCATION: Van Wert, OH - John Brown Rd
PROJ. No.: 25050021WAP
BORING/CORE No.: X-001-0-25
DATE OBTAINED: 5/1/2025
OBTAINED BY: M. Mattox, CTL Engineering

ALIGNMENT: US 30
STATION: 611+17
OFFSET: 128' Lt.
LATITUDE (N): 40.891184
LONGITUDE (E): -84.610487

	Material Type	Layer Thickness (in.)			Notes
Pavement	Asphalt - Surface	2.00	4.4	4.4	
	Asphalt - Subsurface Layers	2.38			
Base Layer	Asphalt - Base	--	--	--	
	Portland Cement Concrete	--			
Subbase Layer	Hardened Clay Brick	--	--	--	Observed, Not Measured
	Dense Graded Crushed Aggregate	--			
Subgrade	Brown Clay (A-7-6)	<u>MC</u>	<u>LL</u>	<u>PI</u>	
		--	--	--	
Total Pavement Thickness (in)		4.4	4.4	4.4	
Field Reported Overall Thickness (in)		<u>5.0</u>			
Difference / Material Loss (in)		0.6			

John Brown Rd.,
north of US 30



Photograph : X-001-0-25

CORE DIAMETER (in.): 4.0

REPORT ON PAVEMENT CORE



CTL ENGINEERING, INC.
102 COMMERCE DR. P.O. BOX 44
WAPAKONETA, OHIO 45896
PHONE: (419) 738-1447
FAX: (419) 738-7670

PROJECT: VAN-30-11.34; PID 120666
LOCATION: Van Wert, OH - US 30
PROJ. No.: 25050021WAP
BORING/CORE No.: X-002-0-25
DATE OBTAINED: 5/1/2025
OBTAINED BY: M. Mattox, CTL Engineering

ALIGNMENT: US 30
STATION: 606+90
OFFSET: 61' Rt.
LATITUDE (N): 40.891028
LONGITUDE (E): -84.612149

	Material Type	Layer Thickness (in.)			Notes
Pavement	Asphalt - Surface	2.00	13.3	13.3	Breaks @ 5.6 & 8.0 in.
	Asphalt - Subsurface Layers	11.30			
Base Layer	Asphalt - Base	--	--		
	Portland Cement Concrete	--	--		
Subbase Layer	Hardened Clay Brick	--	--	--	Observed, Not Measured
	Dense Graded Crushed Aggregate	--	--	--	
Subgrade	Brown Clay (A-7-6)	<u>MC</u>	<u>LL</u>	<u>PI</u>	
		--	--	--	
Total Pavement Thickness (in)		13.3	13.3	13.3	
Field Reported Overall Thickness (in)		<u>14.0</u>			
Difference / Material Loss (in)		0.7			

US 30 Eastbound
Outside Shoulder



Photograph : X-002-0-25

CORE DIAMETER (in.): 4.0

REPORT ON PAVEMENT CORE



CTL ENGINEERING, INC.
102 COMMERCE DR. P.O. BOX 44
WAPAKONETA, OHIO 45896
PHONE: (419) 738-1447
FAX: (419) 738-7670

PROJECT: VAN-30-11.34; PID 120666
LOCATION: Van Wert, OH - US 30
PROJ. No.: 25050021WAP
BORING/CORE No.: X-003-0-25
DATE OBTAINED: 5/1/2025
OBTAINED BY: M. Mattox, CTL Engineering

ALIGNMENT: US 30
STATION: 615+83
OFFSET: 60' Lt.
LATITUDE (N): 40.89063
LONGITUDE (E): -84.608934

	Material Type	Layer Thickness (in.)			Notes
Pavement	Asphalt - Surface	2.00	11.3	11.3	Breaks @ 5.0 & 8.4-in.
	Asphalt - Subsurface Layers	9.25			
Base Layer	Asphalt - Base	--	--		
	Portland Cement Concrete	--	--		
Subbase Layer	Hardened Clay Brick	--	--	--	Not Observed
	Dense Graded Crushed Aggregate	0.0	--	--	
Subgrade	Brown Clay (A-7-6)	<u>MC</u>	<u>LL</u>	<u>PI</u>	
		--	--	--	

US 30 Westbound Outside Shoulder	Total Pavement Thickness (in)	11.3	11.3	11.3
	Field Reported Overall Thickness (in)	<u>11.0</u>		
	Difference / Material Loss (in)	-0.3		



Photograph : X-003-0-25

CORE DIAMETER (in.): 4.0

REPORT ON PAVEMENT CORE



CTL ENGINEERING, INC.
102 COMMERCE DR. P.O. BOX 44
WAPAKONETA, OHIO 45896
PHONE: (419) 738-1447
FAX: (419) 738-7670

PROJECT: VAN-30-11.34; PID 120666
LOCATION: Van Wert, OH - John Brown Rd
PROJ. No.: 25050021WAP
BORING/CORE No.: X-004-0-25
DATE OBTAINED: 5/1/2025
OBTAINED BY: M. Mattox, CTL Engineering

ALIGNMENT: US 30
STATION: 612+11
OFFSET: 140' Rt.
LATITUDE (N): 40.890403
LONGITUDE (E): -84.610438

	Material Type	Layer Thickness (in.)			Notes
Pavement	Asphalt - Surface	2.25	7.8	7.8	
	Asphalt - Subsurface Layers	5.50			
Base Layer	Asphalt - Base	--	--		
	Portland Cement Concrete	--	--		
Subbase Layer	Hardened Clay Brick	--	--	--	Observed, Not Measured
	Dense Graded Crushed Aggregate	--	--	--	
Subgrade	Brown Clay (A-7-6)	<u>MC</u>	<u>LL</u>	<u>PI</u>	
		--	--	--	
Total Pavement Thickness (in)		7.8	7.8	7.8	
John Brown Rd., south of US 30	Field Reported Overall Thickness (in)	<u>9.0</u>			
	Difference / Material Loss (in)	1.3			



Photograph : X-004-0-25

CORE DIAMETER (in.): 4.0