Stantec Consulting Services Inc.
11687 Lebanon Road, Cincinnati OH 45241-2012

September 14, 2022
File: 175538114

Attention: Alec Sadowski, PE
District Geotechnical Engineer
ODOT District 8
505 South SR 741
Lebanon, Ohio 45036

Reference: Report of Geotechnical Exploration (FINAL)
CLI-350-7.91
PID No. 113981

Dear Mr. Sadowski,

Stantec Consulting Services Inc. (Stantec) has completed the Report of Geotechnical Exploration for the full-depth reclamation project along SR 350 in Clinton County, Ohio. The enclosed report contains a brief description of the site, geologic conditions encountered, the scope of work performed, and geotechnical recommendations for the proposed project.

Regards,

Stantec Consulting Services Inc.

James Samples EI
Project Engineer

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Senior Principal

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Attachment: Report of Geotechnical Exploration (FINAL)

STATE OF OHIO
ERIC M. KISTNER
E-65507
9/14/22
REGISTERED
PROFESSIONAL ENGINEER

Report of Geotechnical Exploration - FINAL CLI-350-7.90 (Task Order B)

PID No. 113981

Clinton County, Ohio

September 14, 2022

Prepared for:

Ohio Department of Transportation
District 8

Prepared by:

Stantec Consulting Services Inc.
Cincinnati, Ohio

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Executive Summary

The Ohio Department of Transportation (ODOT) District 8 is planning a full-depth reclamation (FDR) project along State Route (SR) 350 in Clinton County from state line mileage (SLM) 11.43 (the intersection with SR 134) to SLM 15.64 (the intersection with SR 73). Stantec Consulting Services Inc. (Stantec) was contracted by ODOT to perform the geotechnical analysis for this project. The site reconnaissance was performed by Stantec on April 11, 2022. The land use along this portion of State Route 350 is residential and agricultural. State Route 350 consists of two lanes of travel and the existing pavement is generally in fair to good condition west of County Road 7 and in poor to fair condition east of County Road 7. East of County Road 7 (Farmers Road), the pavement has prolonged areas of alligator cracking and rutting.

A total of 29 subgrade borings with standard penetration test (SPT) sampling and 29 dynamic cone penetration (DCP) borings were advanced by RII along SR 350 within the proposed areas of FDR to obtain geotechnical data for the proposed reclamation.

The pavement at the boring locations consisted of 9.5 to 15.5 inches of asphalt pavement underlain by 0.0 to 4.75 inches of aggregate base. Below the pavement, the soils along the alignment consisted of existing roadway embankment fill and native glacially-deposited soil. Bedrock was not encountered in this exploration. The subsurface materials consist primarily of cohesive soils classifying as sandy silt (A-4a), silt and clay (A-6a), silty clay (A-6b), and clay (A-7-6). These soils were typically classified as stiff to hard and damp to moist. The sulfate content of this material ranged from 140 to 1100 parts per million with an average of 340 parts per million. Neither groundwater nor bedrock were encountered in the borings.

DCP penetration rates ranged from 9.6 to 34.1 millimeters per blow, with an average of 17.8 millimeters per blow. Correlated CBR values varied from 6 to 23, with an average of 13.4.

An ODOT Geotechnical Bulletin 1 (GB1) subgrade stabilization analysis was performed based on the results of the SPT borings. An average N_{60L} of 12 was calculated from the data obtained from the borings. A design CBR of 7 should be used for pavement design based on the subgrade analysis spreadsheet. The majority of the borings show that subgrade stabilization would be necessary. The analysis indicates the following options for global subgrade stabilization:

- Excavate and replace (Item 204) to a depth of 12 inches with a geotextile.
- Chemical stabilization (Item 206) to a depth of 12 inches with cement.
- Rubblize and roll (Item 320) is not considered to be an option based on the testing performed.

1.0 INTRODUCTION

The Ohio Department of Transportation (ODOT) District 8 is considering a full-depth reclamation (FDR) project along State Route (SR) 350 in Clinton County from state line mileage (SLM) 11.43 (the intersection with SR 134) to SLM 15.64 (the intersection with SR 73). Stantec Consulting Services Inc. (Stantec) was contracted by ODOT to perform the geotechnical exploration for this project. Stantec subcontracted Resource International, Inc. (RII) to perform the drilling, sulfate testing, and surveying for this project. Figure 1 shows the site vicinity.

Figure 1. Site Vicinity
(Google Earth)

2.0 GEOLOGY AND OBSERVATIONS OF THE PROJECT

2.1 GENERAL

The Physiographic Regions of Ohio Map (Ohio Department of Natural Resources (ODNR), 1998) indicates that the project is located in the Southern Ohio Loamy Till Plain of the Till Plains physiographic region. The Southern Ohio Loamy Till Plain region is described as containing surfaces of loamy till as well as end and recessional moraines which are commonly associated with boulder belts. Stream valleys are filled with outwash and alternate between broad floodplains and narrows, with buried valleys common. The region has moderate relief (generally 200 feet) with elevations of 530 to 1,150 feet.

2.2 SOIL GEOLOGY

According to the Quaternary Geology of Ohio map (ODNR, 1999), the project site is underlain end moraine that occurs as hummocky ridges higher than adjacent terrain originating in the late Wisconsinan age. The soil survey (Web Soil Survey of Clinton County, Ohio, United States Department of Agriculture (USDA), 2022) indicates that the project site is underlain primarily by soils from the Miamian silt loam and the Xenia silt loam complexes. The typical profile for the Miamian silt loam complex includes 6 inches of silt loam underlain by 12 to 23 inches of clay loam then 51 inches of loam. These soils are well drained with a moderately low to moderately high capacity to transmit water. The typical profile of the Xenia silt loam complex includes 9 inches of silt loam underlain by 20 inches of silty clay loam, 11 inches of clay loam, then 18 to 39 inches of loam. These soils are moderately well drained with a low to moderately high capacity to transmit water. The Drift Thickness Map of Ohio (ODNR, 2004) suggests a typical range of glacial drift cover along the project site between 20 and 80 feet with localized areas up to 210 feet thick.

2.3 BEDROCK GEOLOGY

Bedrock mapping (Ohio Geology Interactive Map [ODNR, 2022]) indicates that the overburden soils at the project site from the intersection of SR 134 to approximately one mile east are underlain primarily by sedimentary bedrock of the Waynesville Formation and the Drakes Formation, Whitewater Formation, and Liberty Formation undivided from the Ordovician age. The Waynesville Formation typically consist of interbedded shale (70%) and limestone (30%) described as gray to bluish gray and weathers to light gray, planar to irregular, and ranges from 90 to 120 feet thick. The Drakes Formation consists of interbedded shale (90%) and limestone or dolomite (10%) described as gray and maroon weathering to yellowish gray, planar to irregular, and ranges from 20 to 30 feet thick. The Whitewater Formation consists of interbedded limestone (60%) and shale (40%) described as gray weathering to yellowish gray, irregular wavy, and ranges from 20 to 80 feet thick. The Liberty Formation consists of interbedded shale (50%) and limestone (50%) described as gray weathering to yellowish gray, planar to irregular, and ranges from 20 to 40 feet thick.

From 1.2 miles to 2.3 miles east of the intersection with SR 134, the project site is underlain by Dayton and Brassfield Limestones from the Silurian age. Dayton Limestone is described as gray to bluish gray weathering grayish white, medium to thick bedded, fine grained, dolomitic, and ranging from 5 to 15 feet thick. Brassfield Limestone is described as white to pink and locally gray to reddish brown, irregular and thin to medium bedded, coarsely crystalline, fossiliferous, and ranges from 20 to 50 feet in thickness.

The remainder of the project site is underlain by Estill Shale from the Silurian age. Estill Shale is shale minorly interbedded with dolomite described as reddish to greenish gray weathering light gray, planar to irregular bedding, thin to thick bedded, and ranging from 30 to 180 feet thick. This bedrock unit is known to be unstable on slopes and can cause landslides.

According to the Ohio Mine Locator (ODNR, 2015), there is one active limestone surface mine located approximately six miles south of the site. A search of the ODNR Oil & Gas Well Locator (2021) indicates that no oil or gas wells are located within ten miles of the project site. The Ohio Karst Areas map (ODNR, 2009) indicates that the project is not located near any probable karst areas.

2.4 SEISMIC

A review of the seismic data available in the project vicinity included the OhioSeis database developed by the ODNR, Division of Geological Survey. The review was performed using the internet mapping service (rev. 2012) at the following website: https://gis.ohiodnr.gov/website/dgs/earthquakes/.

Overall, Ohio has a relatively limited amount of seismic activity. One earthquake epicenter has been recorded in Clinton County and is located approximately 4.5 miles northeast of the project site. This earthquake magnitude was recorded as 3.5. No other earthquakes were recorded within ten miles of the project site. The available data reviewed included events that occurred from 1804 to present day.

2.5 HYDROLOGY

Numerous fords and creeks run north to south along the length of SR 350 at the project site. These mostly flow southwest into the East Fork Little Miami River near Lynchburg, Ohio. The East Fork Little Miami River then flows east to the Little Miam River near Milford, Ohio which runs southeast to the Ohio River.

2.6 HYDROGEOLOGY

The Groundwater Resources of Clinton County (ODNR, 1994) map indicates that the site is a poor source of groundwater. If water is present in bedrock underlying the site, it typically occurs in the upper few feet where the rock is weathered and broken. Clayey till overburden ranges from 30 to 70 feet thick. The map states that water wells developed in the area typically provide yields less than three gallons per minute and the depth to bedrock ranges from 30 to 115 feet.

A search was performed using the ODNR Ohio Water Wells Map (2022). According to the map, 19 water wells have been drilled near SR 350 within the project limits. The well logs indicate a considerable variation of the bedrock depth, ranging from 70 to 170 feet. Water well logs in the area indicate the static water depth at the site ranges from 12 to 60 feet.

2.7 RECONNAISSANCE

The site reconnaissance was performed by Stantec on April 11, 2022. The land use along this portion of State Route 350 is residential and agricultural. State Route 350 consists of two lanes of travel and the existing pavement is generally in fair to good condition west of County Road 7 and in poor to fair condition east of County Road 7. East of County Road 7 (Farmers Road), the pavement has prolonged areas of alligator cracking and rutting.

3.0 EXPLORATION

3.1 HISTORIC EXPLORATION PROGRAMS

The ODOT Traffic Information Management System (TIMS) provides no historic geotechnical information for SR 350 along the project limits. Information is provided for a bridge replacement project that occurred along SR 134 (CLI-134-0671) in 1986. Below the road surface, fill described as brown silty clay (A-6a) was encountered to a depth of approximately 12 feet. Natural cohesive soil described as brown sandy silt (A-4a) to greenish brown to gray clay (A-7-6) was encountered to a depth of 35 feet. Limestone bedrock was then encountered until the terminus of the borings at 41 feet.

3.2 PROJECT EXPLORATION PROGRAM

A total of 29 subgrade borings and 29 dynamic cone penetration (DCP) borings were advanced by RII along SR 350 within the proposed areas of FDR to obtain geotechnical data for the proposed reclamation. Pavement cores were performed at 10 of the boring locations identified as B-001-0-22, B-004-0-22, B-007-0-22, B-010-0-22, B-013-0-22, B-017-0-22, B-020-0-22, B-023-0-22, B-026-0-22, and B-029-0-22. Boring locations are shown on the site plan in the geotechnical drawings provided in Appendix A. Boring logs are also provided in Appendix A. Photos of the pavement cores are included in Appendix B.

The subgrade borings were advanced in accordance with ODOT Specifications for Geotechnical Explorations (SGE). The borings were performed with a Mobile B-53 truck-mounted drill rig using 3¼-inch inside diameter (ID) hollow stem augers to advance the borings through soil. Standard Penetration Test (SPT) sampling was performed continuously until four samples were collected below the existing road surface. The energy ratio (ER) of the automatic hammer and drill rod system was measured to be 79 percent on March 22, 2022.

The SPT is performed by advancing a split-spoon sampler, 18 inches in length, with a 140-pound automatic hammer dropping 30 inches at select depth intervals in the boring. The number of hammer blows needed to advance the sampler each 6-inch increment is recorded. The blow count from the first 6-inch increment is discarded due to ground disturbance at the bottom of the borehole. The sum of the blow counts from the last two 6-inch increments is called the field N-value (N_{field}). The field N-value is corrected to an equivalent rod energy ratio of 60 percent (N_{60}) according to the equation below.

$$N_{60} = N_{field}\left(\frac{ER}{60}\right)$$

The depths/elevations of the SPTs with the corresponding N_{60}-values are shown on the boring logs in Appendix A.

The materials encountered were logged by a geologist, with particular attention given to soil type, consistency, and moisture content. The borings were checked for the presence of groundwater during drilling and at its conclusion with the depth of water recorded. The borings were backfilled/sealed according the ODOT SGE, and the pavement was capped with asphalt cold patch where applicable.

The soil samples obtained from the borings were returned to a geotechnical laboratory for visual classification and tested for water content. Engineering classification testing was performed on samples reflecting each of the main soil horizons. The engineering classification tests conducted on the samples were sieve and hydrometer analysis (ASTM D 422) and Atterberg limits (ASTM D 4318). The samples were classified according to the ODOT classification method. Sulfate content testing was performed on one sample from each boring in accordance with the Colormetric Method (ODOT Supplement 1122).

4.0 FINDINGS

The pavement at the boring locations consisted of 9.5 to 15.5 inches of asphalt pavement underlain by 0.0 to 4.75 inches of aggregate base. Below the pavement, the soils along the alignment consisted of existing roadway embankment fill and native glacially-deposited soil. Bedrock was not encountered in this exploration. The subsurface materials consist primarily of cohesive soils classifying as sandy silt (A-4a), silt and clay (A-6a), silty clay (A-6b), and clay (A-7-6). These soils were typically classified as stiff to hard and damp to moist. The sulfate content of this material ranged from 140 to 1100 parts per million with an average of 340 parts per million. The report for the sulfate testing is provided in Appendix C. Groundwater was not observed in any of the borings. Neither groundwater nor bedrock were encountered in the borings.

The DCP borings were advanced using a Kessler Automated DCP. Summary reports are included in Appendix A. Penetration rates ranged from 9.6 to 34.1 millimeters per blow, with an average of 17.8 millimeters per blow. Correlated CBR values varied from 6 to 23, with an average of 13.4.

5.0 ANALYSIS AND RECOMMENDATIONS

5.1 GENERAL

The recommendations that follow are based on the information discussed in this report and the interpretation of the subsurface conditions encountered at the site during our fieldwork. If future design changes are made, Stantec should be notified so that such changes can be reviewed and the recommendations amended as necessary. These conclusions and recommendations are based on data and subsurface conditions from the borings advanced during this exploration using the degree of care and skill ordinarily exercised under similar circumstances by competent members of the engineering profession. No warranties can be made regarding the continuity of conditions.

5.2 SUBGRADE ANALYSIS

The ODOT Geotechnical Bulletin 1 (GB1) outlines a procedure for estimating the method and limits of subgrade treatment that will be required to stabilize pavement subgrade prior to construction of the pavement section. The procedure is based upon the results of the borings, field testing, and laboratory testing. A subgrade analysis was completed in accordance with GB1. The subgrade analysis spreadsheet is provided in Appendix D. An average N_{60L} of 12 was calculated from the data obtained from the borings. A design CBR of 7 should be used for pavement design based on the subgrade analysis spreadsheet. The majority of the borings show that subgrade stabilization would be necessary. The analysis indicates the following options for global subgrade stabilization:

- Excavate and replace (Item 204) to a depth of 12 inches with a geotextile.
- Chemical stabilization (Item 206) to a depth of 12 inches with cement.
- Rubblize and roll (Item 320) is not considered to be an option based on the testing performed.

APPENDIX A
MODIFIED SOIL PROFILE DRAWINGS

PROJECT DESCRIPTION

THIS PROJECT, CLI-350-7.91, IS THE EXPLORATION FOR A FULL DEPTH RECLAMATION (FDR) OF THE EXISTING PAVEMENT ALONG 4.4 MILES OF STATE ROUTE 350 FROM ITS INTERSECTION WITH STATE ROUTE 134 (SLM 11.43) TO ITS INTERSECTION WITH STATE ROUTE 73 (SLM 15.64) IN CLINTON COUNTY.

HISTORIC RECORDS

NO HISTORIC BORINGS WERE FOUND FOR THIS PROJECT.

GEOLOGY

THE SITE IS LOCATED IN THE GLACIATED PORTION OF OHIO, WITHIN THE SOUTHERN OHIO LOAMY TILL PLAIN. THE SOUTHERN OHIO LOAMY TILL PLAIN REGION IS DESCRIBED AS CONTAINING SURFACES OF LOAMY TILL AS WELL AS END AND RECESSIONAL MORAINES. ACCORDING TO THE QUATERNARY GEOLOGY OF OHIO MAP (ODNR, 1999), THE PROJECT SITE IS UNDERLAIN BY AN END MORAINE DEPOSIT THAT OCCURS AS HUMMOCKY RIDGES HIGHER THAN ADJACENT TERRAIN ORIGINATING IN THE LATE WISCONSINAN AGE.

THE DRIFT THICKNESS MAP OF OHIO (ODNR, 2004) SUGGESTS A TYPICAL RANGE OF GLACIAL DRIFT COVER ALONG THE ALIGNMENT BETWEEN 20 AND 80 FEET WITH LOCALIZED AREAS UP TO 210 FEET THICK. BEDROCK MAPPING (OHIO GEOLOGY INTERACTIVE MAP [ODNR, 2022]) INDICATES THAT THE OVERBURDEN SOILS AT THE PROJECT SITE BY SEDIMENTARY BEDROCK OF THE ORDOVICIAN AND SILURIAN AGES. BEDROCK FORMATIONS CONSIST OF THE WAYNESVILLE FORMATION, THE DRAKES FORMATION, THE WHITEWATER FORMATION, AND THE LIBERTY FORMATION FROM THE ORDOVICIAN AGE. BEDROCK FORMATIONS FROM THE SILURIAN AGE CONSIST OF DAYTON AND BRASSFIELD LIMESTONE AND ESTILL SHALE.

RECONNAISSANCE

THE SITE RECONNAISSANCE WAS PERFORMED BY STANTEC ON APRIL 11, 2022. THE LAND USE ALONG THIS PORTION OF STATE ROUTE 350 IS RESIDENTIAL AND AGRICULTURAL. STATE ROUTE 350 CONSISTS OF TWO LANES OF TRAVEL AND THE EXISTING PAVEMENT IS GENERALLY IN FAIR TO GOOD CONDITION WEST OF COUNTY ROAD 7 AND IN POOR TO FAIR CONDITION EAST OF COUNTY ROAD 7. EAST OF COUNTY ROAD 7 (FARMERS ROAD), THE PAVEMENT HAS PROLONGED AREAS OF ALLIGATOR CRACKING AND RUTTING.

SUBSURFACE EXPLORATION

TWENTY-NINE (29) STANDARD PENETRATION TEST (SPT) BORINGS AND TWENTY-NINE (29) DYNAMIC CONE PENETRATION TEST (DCP) BORINGS WERE PERFORMED BETWEEN APRIL 11 AND APRIL 14, 2022. THE BORINGS WERE ADVANCED IN THE EXISTING ROADWAY LANES. TEN (10) PAVEMENT CORES WERE ALSO PERFORMED, APPROXIMATELY EVENLY SPACED ALONG THE ALIGNMENT.

THE SPT BORINGS WERE DRILLED WITH A TRUCK-MOUNTED ROTARY DRILL RIG, USING 3¼-INCH I.D. HOLLOW STEM AUGERS. THE SPTS WERE PERFORMED USING A HAMMER CALIBRATED ON MARCH 31, 2022 WITH A DRILL ROD ENERGY RATIO OF 79%. DYNAMIC CONE PENETROMETER TESTS WERE PERFORMED USING A KESSLER AUTOMATED DCP IN GENERAL ACCORDANCE WITH ASTM D6951. THE DCP TEST MEASURES THE PENETRATION DEPTH OF EACH BLOW FROM A 17.6-POUND HAMMER FALLING 22.6 INCHES.

UPON COMPLETION OF THE TEST BORINGS AND PAVEMENT CORES, THE BOREHOLES WERE BACKFILLED WITH AUGER CUTTINGS AND BENTONITE CHIPS AND PATCHED AT THE SURFACE WITH ASPHALT AFTER BACKFILLING OPERATIONS.

EXPLORATION FINDINGS

THE PAVMENT AT THE BORINGS LOCATIONS CONSISTED OF 9.5 TO 15.5 INCHES OF ASPHALT PAVEMENT UNDERLAIN BY 0.0 TO 4.75 INCHES OF AGGREGATE BASE.

BELOW THE PAVEMENT, THE SOILS ALONG THE ALIGNMENT CONSISTED OF EXISTING ROADWAY EMBANKMENT FILL AND NATIVE GLACIALLY-DEPOSITED SOIL. BEDROCK WAS NOT ENCOUNTERED IN THIS EXPLORATION. THE SUB-SURFACE MATERIALS CONSIST PRIMARILY OF COHESIVE SOILS CLASSIFYING AS SANDY SILT (A-4A) AND SILT AND CLAY (A-6A), SILTY CLAY (A-6b), AND CLAY (A-7-6). THESE SOILS WERE TYPICALLY CLASSIFIED AS STIFF TO HARD AND DAMP TO MOIST. THE SULFATE CONTENT OF THIS MATERIAL RANGED FROM 140 TO 1100 PARTS PER MILLION WITH AN AVERAGE OF 340 PARTS PER MILLION.

NEITHER GROUNDWATER OR BEDROCK WERE ENCOUNTERED IN THE BORINGS.

DCP TEST PENETRATION RATES RANGED FROM 9.6 TO 34.1 MILLIMETERS PER BLOW, WITH AN AVERAGE OF 17.8 MILLIMETERS PER BLOW. CORRELATED CBR VALUES VARIED FROM 6 TO 23, WITH AN AVERAGE OF 13.4.

SPECIFICATIONS

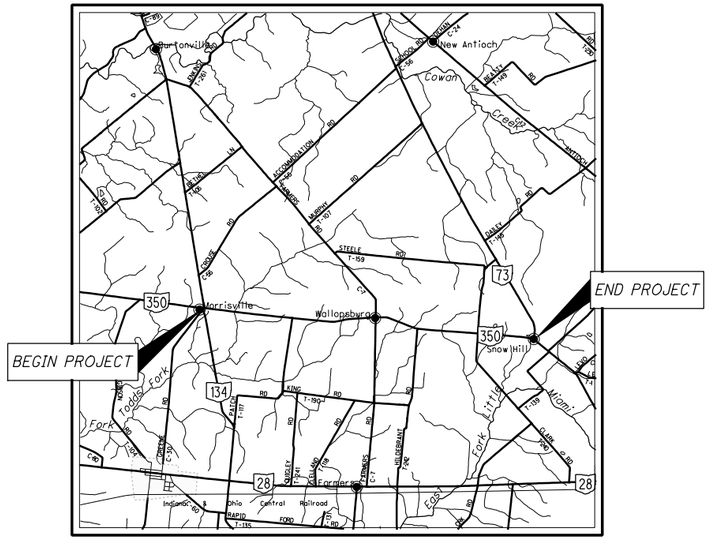
THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JANUARY 2022.

AVAILABLE INFORMATION

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

LEGEND

DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
GRAVEL AND/OR STONE FRAGMENTS	A-1-a	0	9
GRAVEL AND/OR STONE FRAGMENTS WITH SAND	A-1-b	1	0
GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT	A-2-4	1	0
COARSE AND FINE SAND	A-3a	1	0
SANDY SILT	A-4a	26	0
SILT	A-4b	1	0
SILT AND CLAY	A-6a	12	0
SILTY CLAY	A-6b	9	0
CLAY	A-7-6	7	0
	TOTAL	67	0
PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL		
BORING LOCATION - PLAN VIEW.			



LOCATION MAP

SCALE IN MILES

0 1 2 3 4

RECON. - EK &JP 04/05/2021
DRILLING - MM & JP 04/21/2021
DRAWN - MJ 06/2022
REVIEWED - EMK 06/15/2022

PARTICLE SIZE DEFINITIONS

12"	3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm
BOULDERS	COBBLES	GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE		

SOIL PROFILE - ROADWAY

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SUBSET 0 TOTAL 0
SHEET 1 TOTAL 46

CLI-350-7.91

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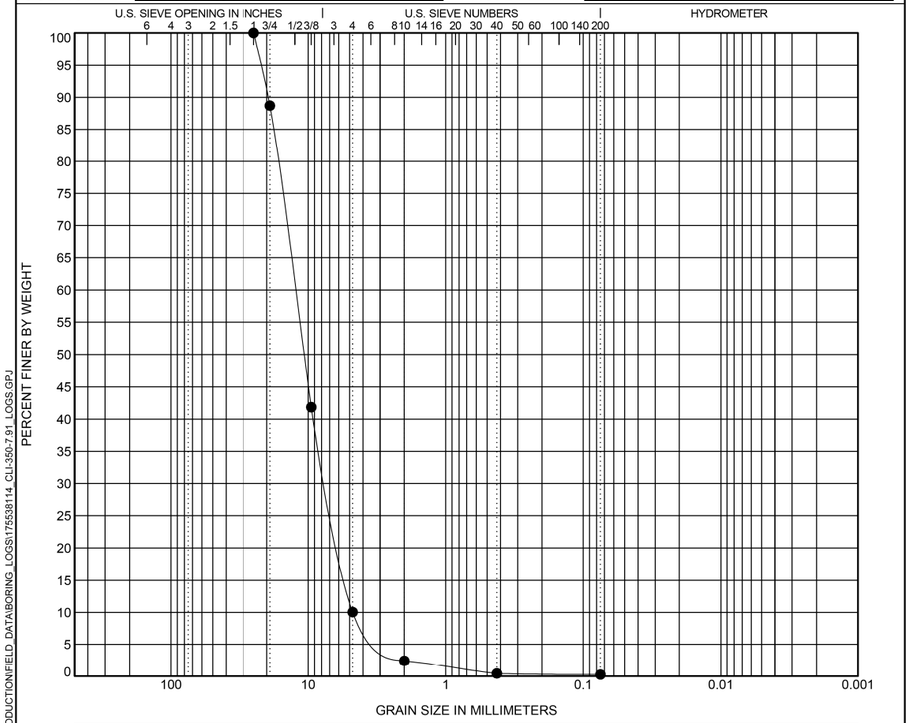
GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT CLI-350-7.91 **PID** 113981
OGE NUMBER CLI-350-7.91 **PROJECT TYPE** SUBGRADE



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-001-0-22 0.8-1.0	A-1-a ~ POORLY GRADED GRAVEL(GP)			

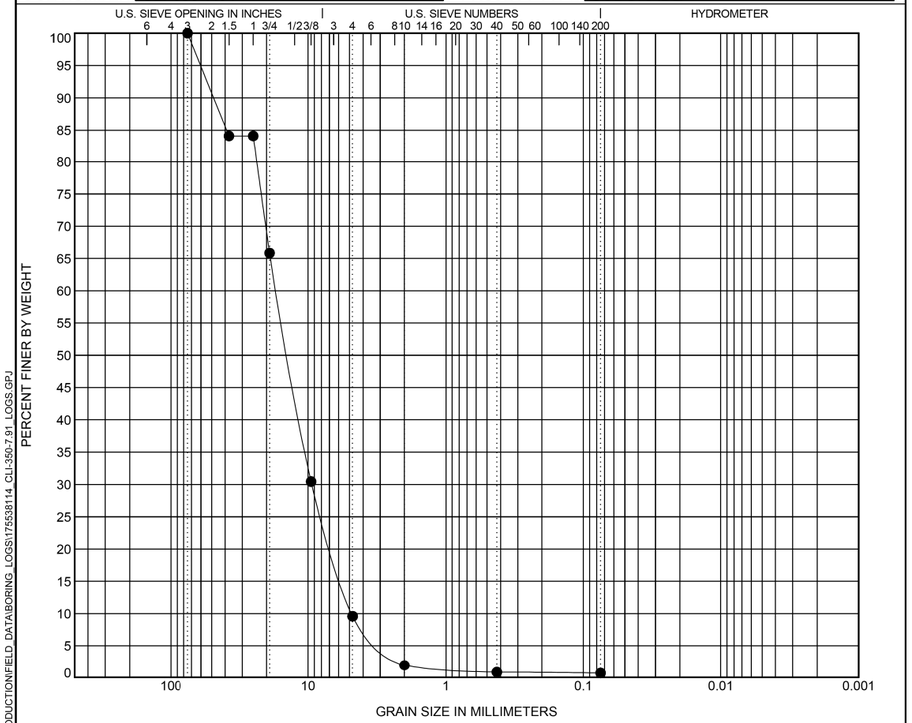
	Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-001-0-22 0.8-1.0	19.605	10.717	7.338	4.728	98	2	0	0		0.92	2.63

GRAIN SIZE - OH DOT.GDT - 6/9/22 14:32 - U:\1755381141TECHNICAL_PRODUCTION\FIELD_DATA\BORING_LOGS\1755381141 CLI-350-7.91_LOGS.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT CLI-350-7.91 **PID** 113981
OGE NUMBER CLI-350-7.91 **PROJECT TYPE** SUBGRADE



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-002-0-22 1.2-1.5	A-1-a ~ POORLY GRADED GRAVEL(GP)			

	Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-002-0-22 1.2-1.5	48.499	13.932	9.359	4.817	98	1	0	1		1.07	3.52

GRAIN SIZE - OH DOT.GDT - 6/9/22 14:33 - U:\1755381141TECHNICAL_PRODUCTION\FIELD_DATA\BORING_LOGS\1755381141 CLI-350-7.91_LOGS.GPJ

SOIL PROFILE - ROADWAY
LABORATORY TEST DATA

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SUBSET 0 TOTAL 0
SHEET 2 TOTAL 46

CLI-350-7.91

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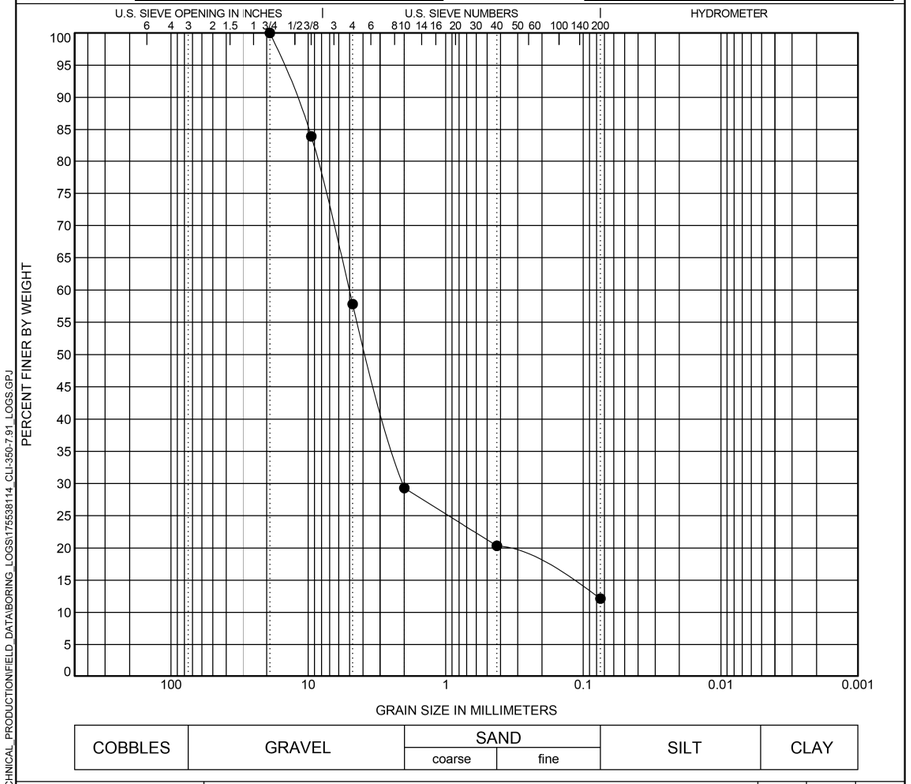
GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT CLI-350-7.91 **PID** 113981
OGE NUMBER CLI-350-7.91 **PROJECT TYPE** SUBGRADE



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	**B-004-0-22 1.2-1.5**	**A-1-a ~ SILTY SAND with GRAVEL(SM)**			

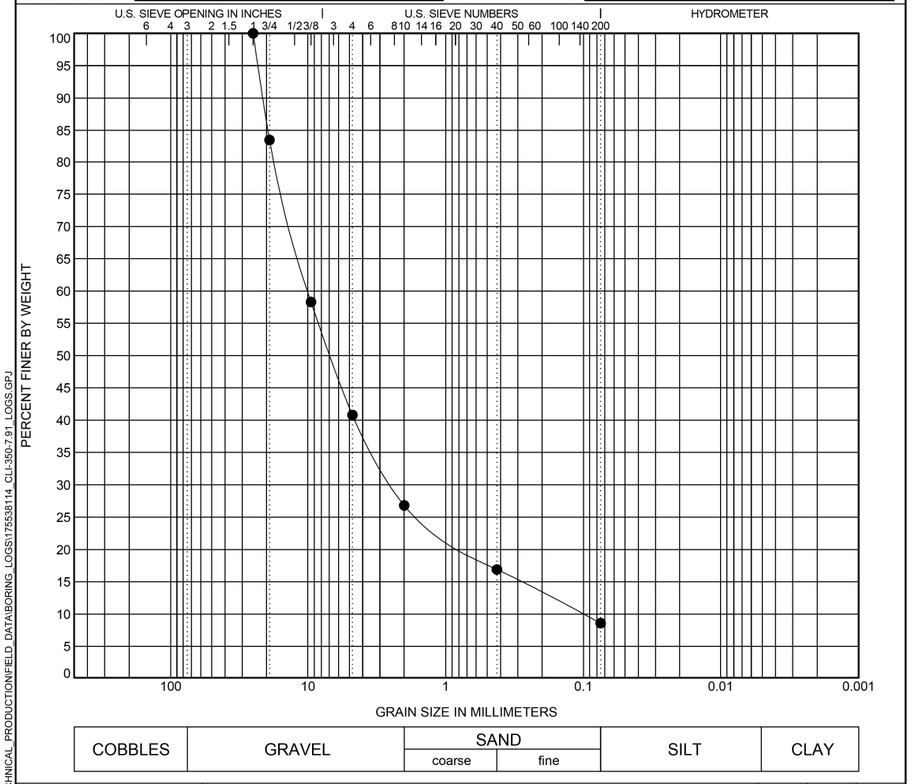
	Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	**B-004-0-22 1.2-1.5**	**12.337**	**3.749**	**2.043**		**71**	**9**	**8**	**12**		**17.39**	**105.63**

GRAIN SIZE - OH DOT.GDT - 6/9/22 14:34 - U:\175538114\TECHNICAL_PRODUCTION\FIELD_DATA\BORING_LOGS\175538114_CLI-350-7.91_LOGS.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT CLI-350-7.91 **PID** 113981
OGE NUMBER CLI-350-7.91 **PROJECT TYPE** SUBGRADE



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	**B-007-0-22 1.2-1.5**	**A-1-a ~ POORLY GRADED GRAVEL with SILT and SAND(GP-GM)**			

	Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	**B-007-0-22 1.2-1.5**	**21.167**	**6.84**	**2.435**	**0.101**	**73**	**10**	**8**	**9**		**5.91**	**98.72**

GRAIN SIZE - OH DOT.GDT - 6/9/22 14:34 - U:\175538114\TECHNICAL_PRODUCTION\FIELD_DATA\BORING_LOGS\175538114_CLI-350-7.91_LOGS.GPJ

SOIL PROFILE - ROADWAY
LABORATORY TEST DATA

CLI-350-7.91

MODEL: ll398\Sheet PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 10:37:32 AM USER: MJennings
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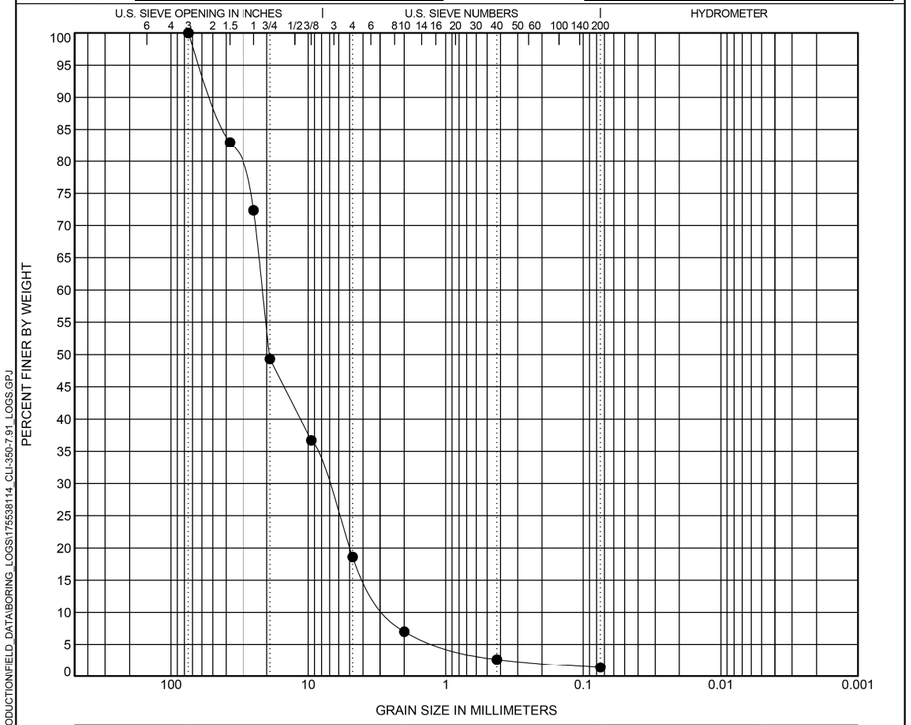
DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SUBSET 0 TOTAL 0
SHEET 3 TOTAL 46

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT CLI-350-7.91 **PID** 113981
OGE NUMBER CLI-350-7.91 **PROJECT TYPE** SUBGRADE



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-007-0-22 1.2-1.5	A-1-a ~ WELL-GRADED GRAVEL with SAND(GW)			

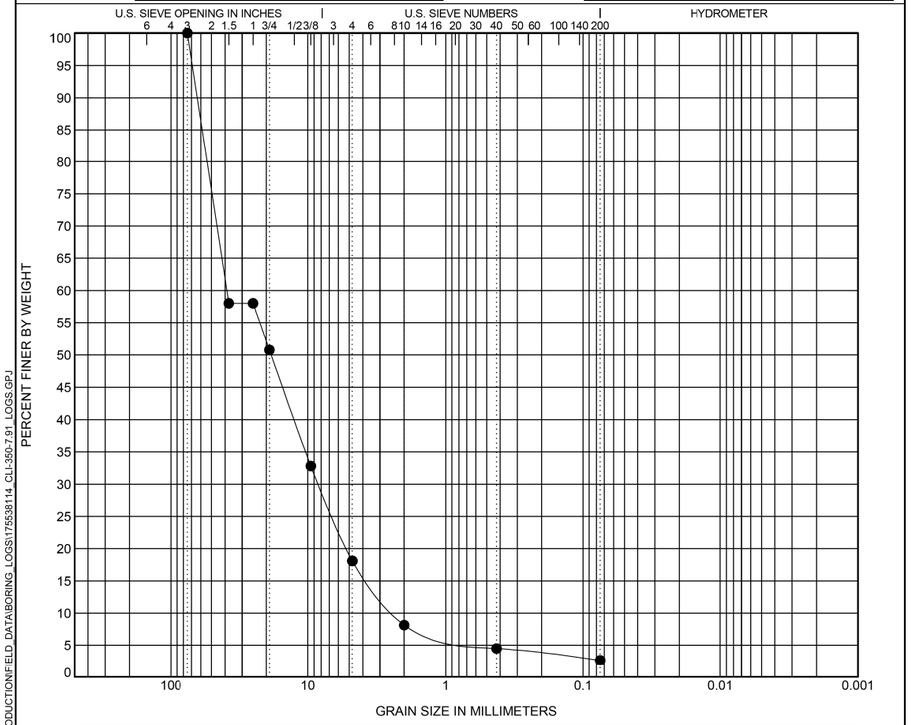
	Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-007-0-22 1.2-1.5	49.899	19.152	7.352	2.501	94	4	1	1		1.00	8.63

GRAIN SIZE - OH DOT.GDT - 6/9/22 14:34 - U:\175538114\TECHNICAL_PRODUCTION\FIELD_DATA\BORING_LOGS\175538114_CLI-350-7.91_LOGS.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT CLI-350-7.91 **PID** 113981
OGE NUMBER CLI-350-7.91 **PROJECT TYPE** SUBGRADE



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	B-010-0-22 1.0-1.2	A-1-a ~ POORLY GRADED GRAVEL with SAND(GP)			

	Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	B-010-0-22 1.0-1.2	63.59	18.437	8.323	2.353	91	4	2	3		0.76	16.47

GRAIN SIZE - OH DOT.GDT - 6/9/22 14:35 - U:\175538114\TECHNICAL_PRODUCTION\FIELD_DATA\BORING_LOGS\175538114_CLI-350-7.91_LOGS.GPJ

SOIL PROFILE - ROADWAY
LABORATORY TEST DATA

CLI-350-7.91

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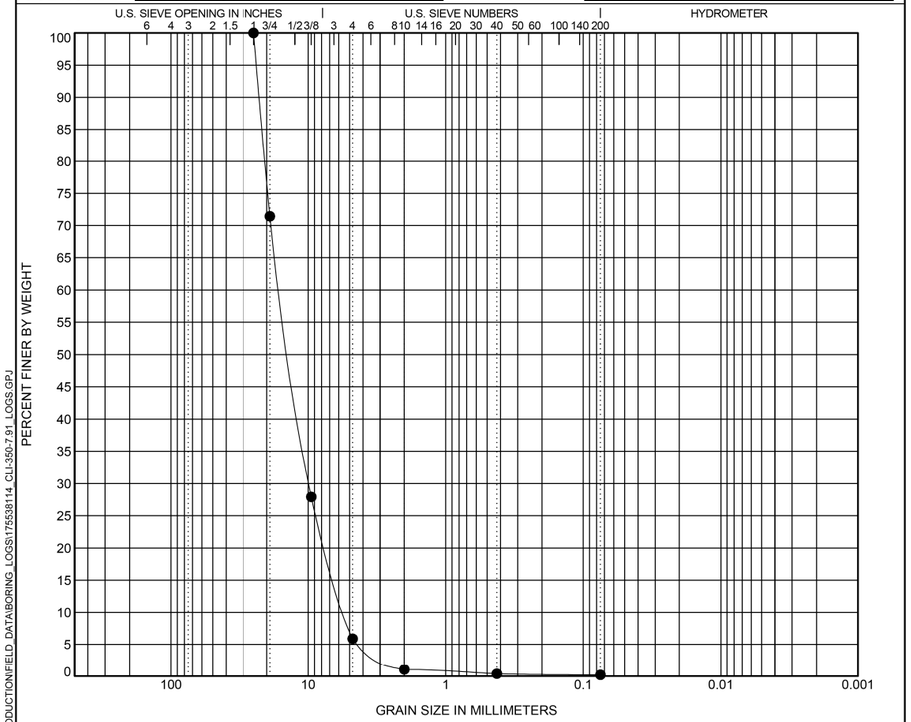
DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SUBSET 0 TOTAL 0
SHEET 4 TOTAL 46

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT CLI-350-7.91 **PID** 113981
OGE NUMBER CLI-350-7.91 **PROJECT TYPE** SUBGRADE



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
● B-017-0-22 1.1-1.5	**A-1-a ~ POORLY GRADED GRAVEL(GP)**			

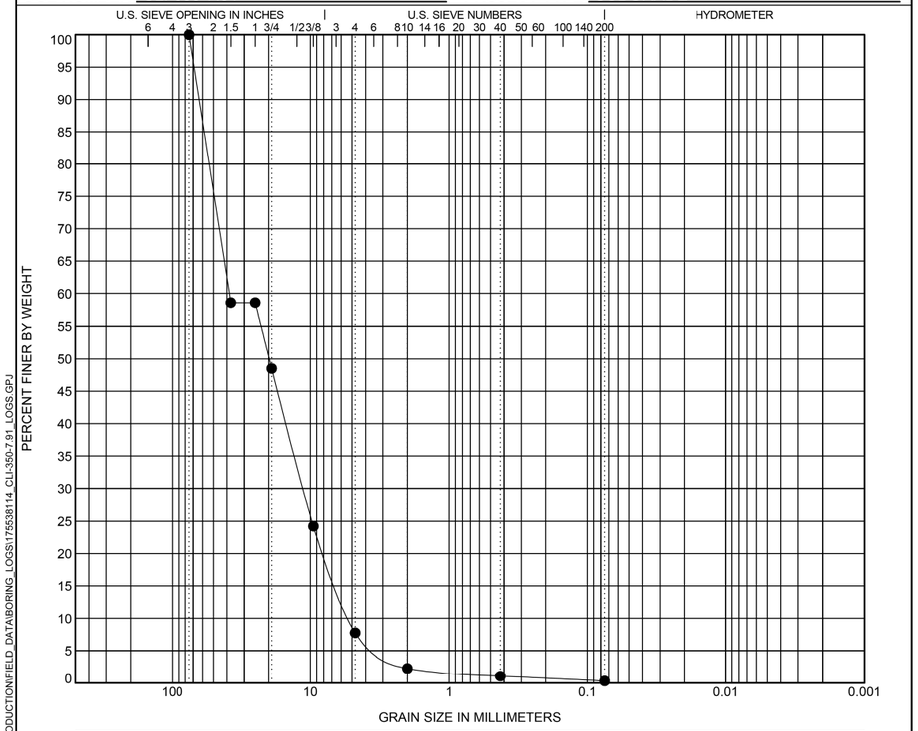
Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
● B-017-0-22 1.1-1.5	**22.71**	**13.504**	**9.819**	**5.404**	**99**	**1**	**0**	**0**		**1.13**	**2.93**

GRAIN SIZE - OH DOT.GDT - 6/9/22 14:36 - U:\175538114\TECHNICAL_PRODUCTION\FIELD_DATA\BORING_LOGS\175538114_CLI-350-7.91_LOGS.GPJ

GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT CLI-350-7.91 **PID** 113981
OGE NUMBER CLI-350-7.91 **PROJECT TYPE** SUBGRADE



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
● B-023-0-22 1.1-1.5	**A-1-a ~ POORLY GRADED GRAVEL(GP)**			

Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
● B-023-0-22 1.1-1.5	**63.433**	**19.784**	**11.204**	**5.22**	**98**	**1**	**1**	**0**		**0.63**	**7.35**

GRAIN SIZE - OH DOT.GDT - 6/9/22 14:37 - U:\175538114\TECHNICAL_PRODUCTION\FIELD_DATA\BORING_LOGS\175538114_CLI-350-7.91_LOGS.GPJ

SOIL PROFILE - ROADWAY
LABORATORY TEST DATA

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER	MSJ
REVIEWER	EMK 06-15-22
PROJECT ID	113981
SUBSET / TOTAL	0 / 0
SHEET / TOTAL	5 / 46

CLI-350-7.91

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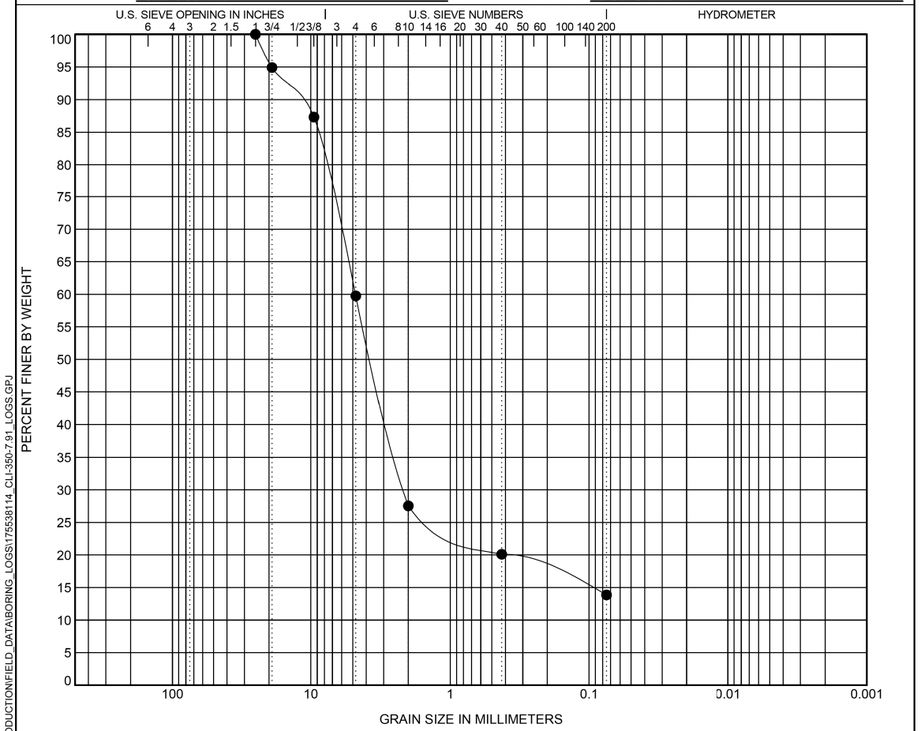
GRAIN SIZE DISTRIBUTION

OHIO DEPARTMENT OF TRANSPORTION
OFFICE OF GEOTECHNICAL ENGINEERING

PROJECT CLI-350-7.91 **PID** 113981

OGE NUMBER CLI-350-7.91 **PROJECT TYPE** SUBGRADE



COBBLES	GRAVEL	SAND		SILT	CLAY
		coarse	fine		

	Specimen Identification	ODOT (Modified AASHTO) ~ USCS Classification	LL	PL	PI
●	**B-023-0-22 1.1-1.5**	**A-1-a ~ SILTY SAND with GRAVEL(SM)**			

	Specimen Identification	D90	D50	D30	D10	%G	%CS	%FS	%M	%C	Cc	Cu
●	**B-023-0-22 1.1-1.5**	**12.131**	**3.656**	**2.137**		**73**	**7**	**6**	**14**			

GRAIN SIZE - OH DOT.GDT - 6/9/22 14:37 - U:\1755381141TECHNICAL_PRODUCTION\FIELD_DATA\BORING_LOGS\1755381141_CLI-350-7.91_LOGS.GPJ

CLI-350-7.91

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SOIL PROFILE - ROADWAY
LABORATORY TEST DATA

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER MSJ

REVIEWER EMK 06-15-22

PROJECT ID 113981

SUBSET 0 TOTAL 0

SHEET 6 TOTAL 46

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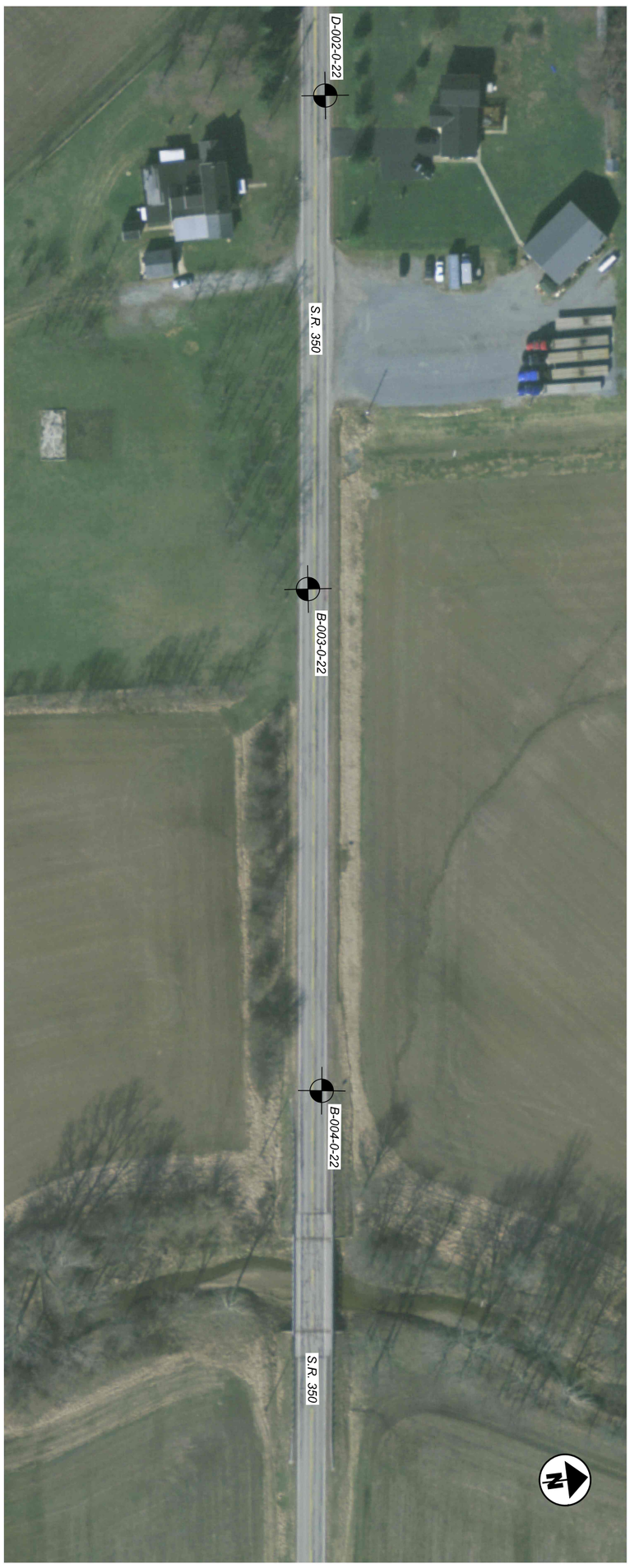

DESIGN AGENCY
Stantec
1687 Lobdell Road
Port Huron, MI 48060
(313) 842-8200

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SHEET 7 | TOTAL 46

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: Unnamed Plan-1 - Plan-2 (Sheet) PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 1:46:57 PM USER: MJennings
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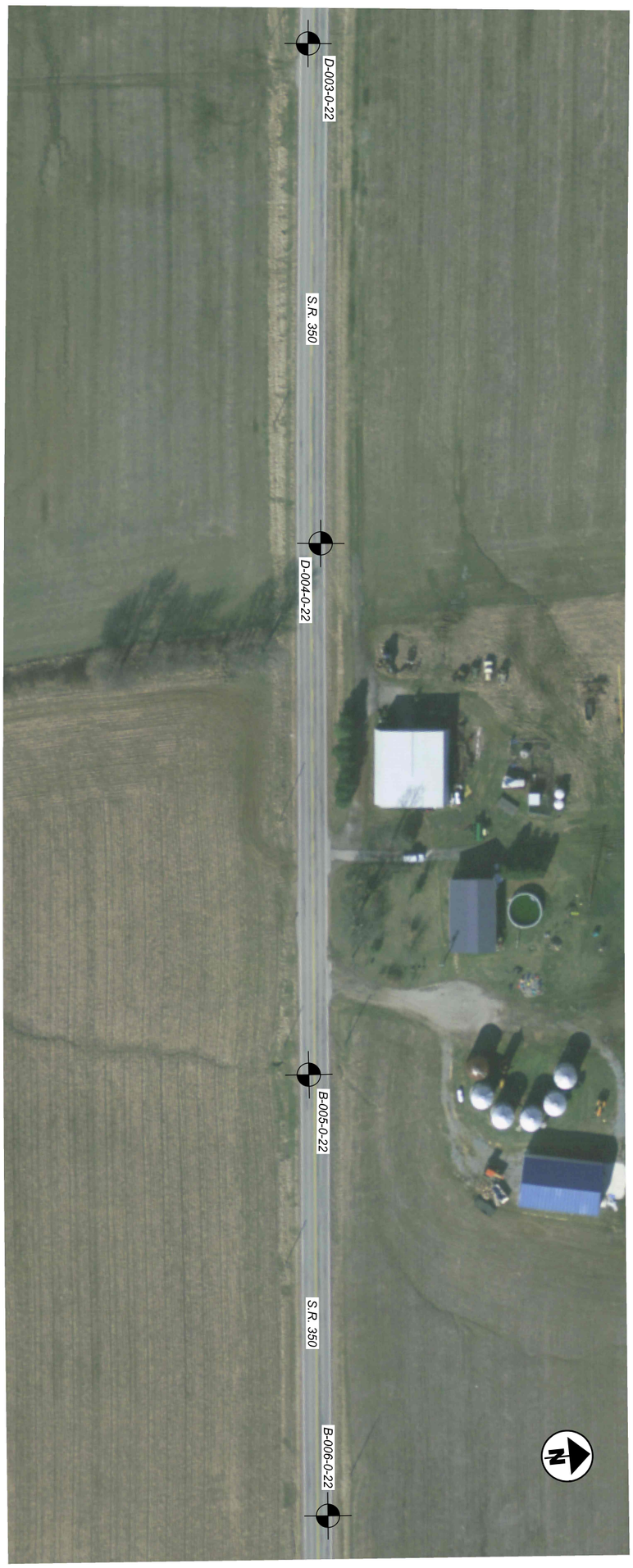

DESIGN AGENCY

Stantec

1487 Leiterman Road
St. Marys ON N4X 1C4
(519) 842-4200

DESIGNER MSJ

REVIEWER EMK 06-15-22

PROJECT ID 113961

SHEET 8 | TOTAL 46

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL SCALE IN FEET

0 50
25 100

MODEL: Unnamed Plan-1 - Plan-4 (Sheet) PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 1:47:34 PM USER: MJennings
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DESIGN AGENCY
Stantec
1409 Lebanon Road
West Mifflin, PA 15122-4041
(313) 842-8200

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SHEET 9 | TOTAL 46

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: Unnamed Plan-1 - Plan-6 (Sheet) PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 1:48:17 PM USER: MJennings
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DESIGN AGENCY

Stantec

11687 Lebanon Road
Cincinnati, OH 45241
(513) 842-8200

DESIGNER MSJ

REVIEWER EMK 06-15-22

PROJECT ID 113981

SHEET 10 TOTAL 46

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL SCALE IN FEET

0 50
25 100

MODEL: Unnamed Plan-1 - Plan-8 (Sheet) PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 1:50:37 PM USER: MJennings
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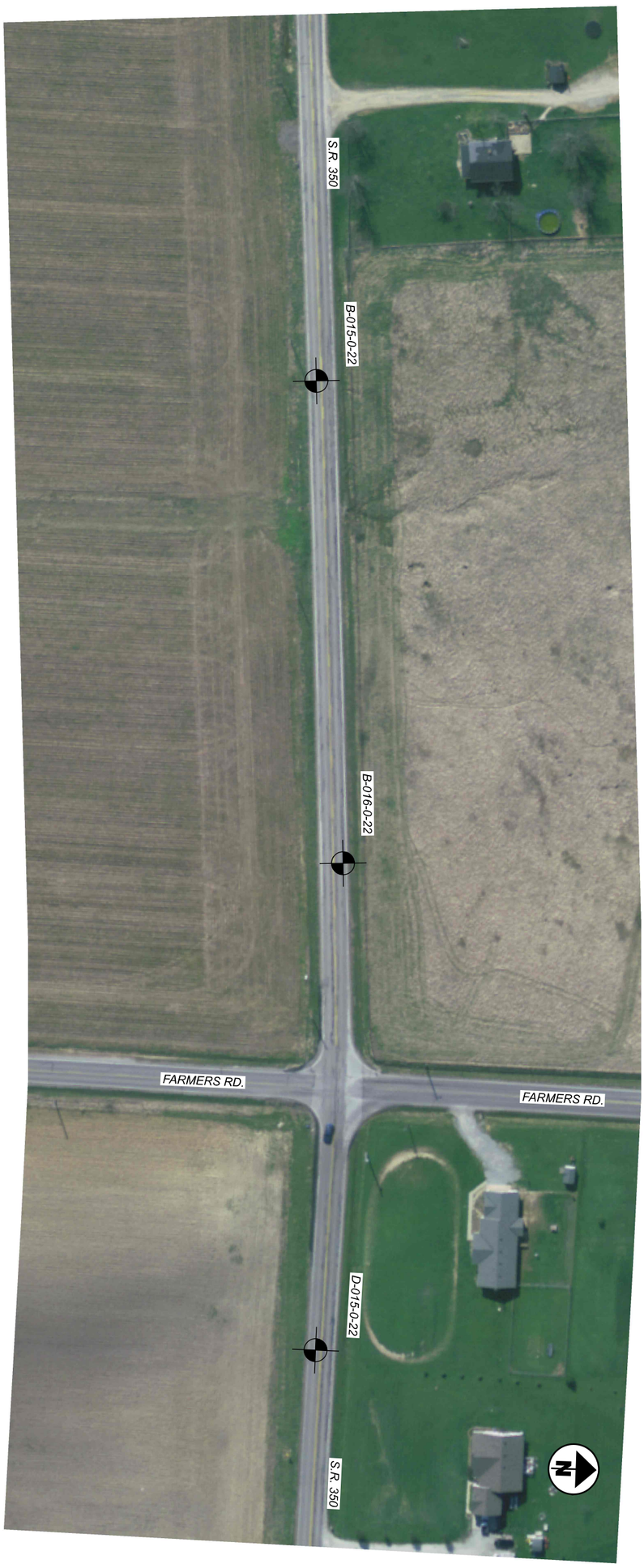

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL SCALE IN FEET
0 50
25 100

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati, OH 45241
(513) 842-8200

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SHEET 11 TOTAL 46

MODEL: Unnamed Plan-1 - Plan-10 (Sheet) PAPERSIZE: 17x11(in.) DATE: 6/17/2022 TIME: 1:51:45 PM USER: MJennings
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Stantec
11687 Lebanon Road
Cincinnati, Ohio 45241
(513) 842-8200

DESIGN AGENCY

DESIGNER MSJ

REVIEWER EMK 06-15-22

PROJECT ID 113981

SHEET 12 TOTAL 46

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: Unnamed Plan-1 - Plan-12 (Sheet) PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 1:52:56 PM USER: MJennings
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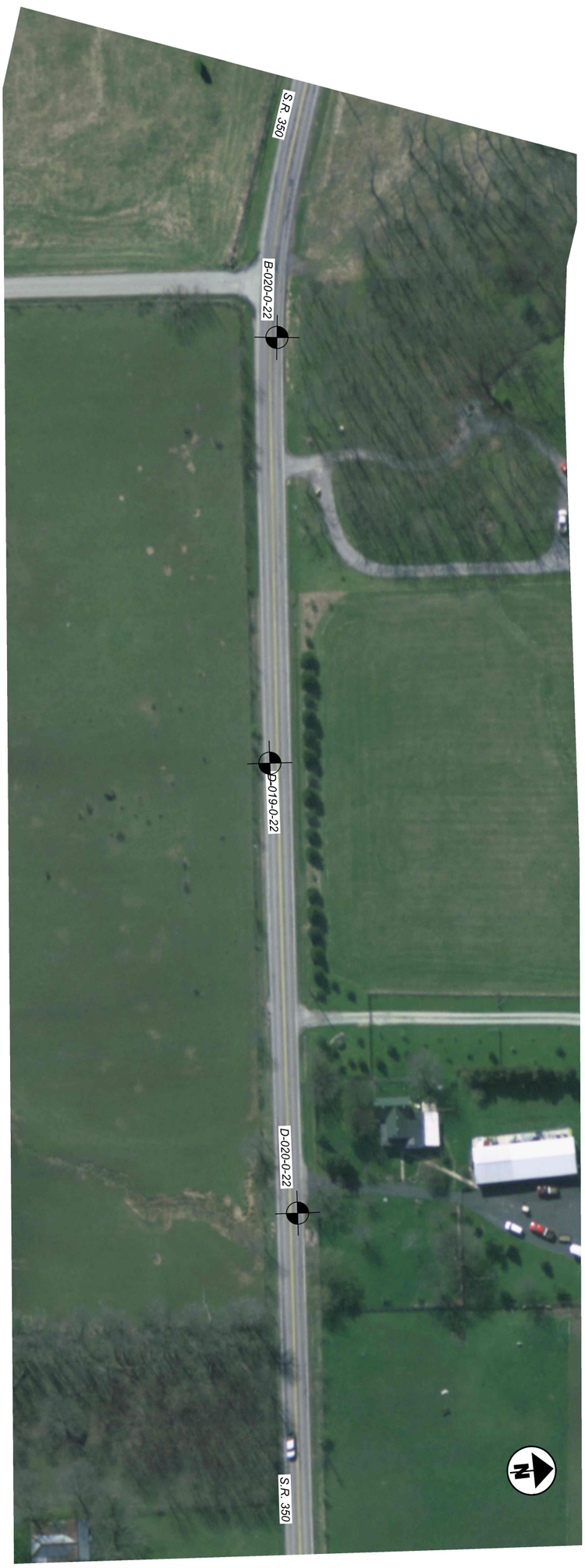

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati, OH 45241
(513) 842-3400

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SHEET 13 TOTAL 46

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: Unnamed Plan-1 - Plan-14 (Sheet) PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 1:53:45 PM USER: MJennings
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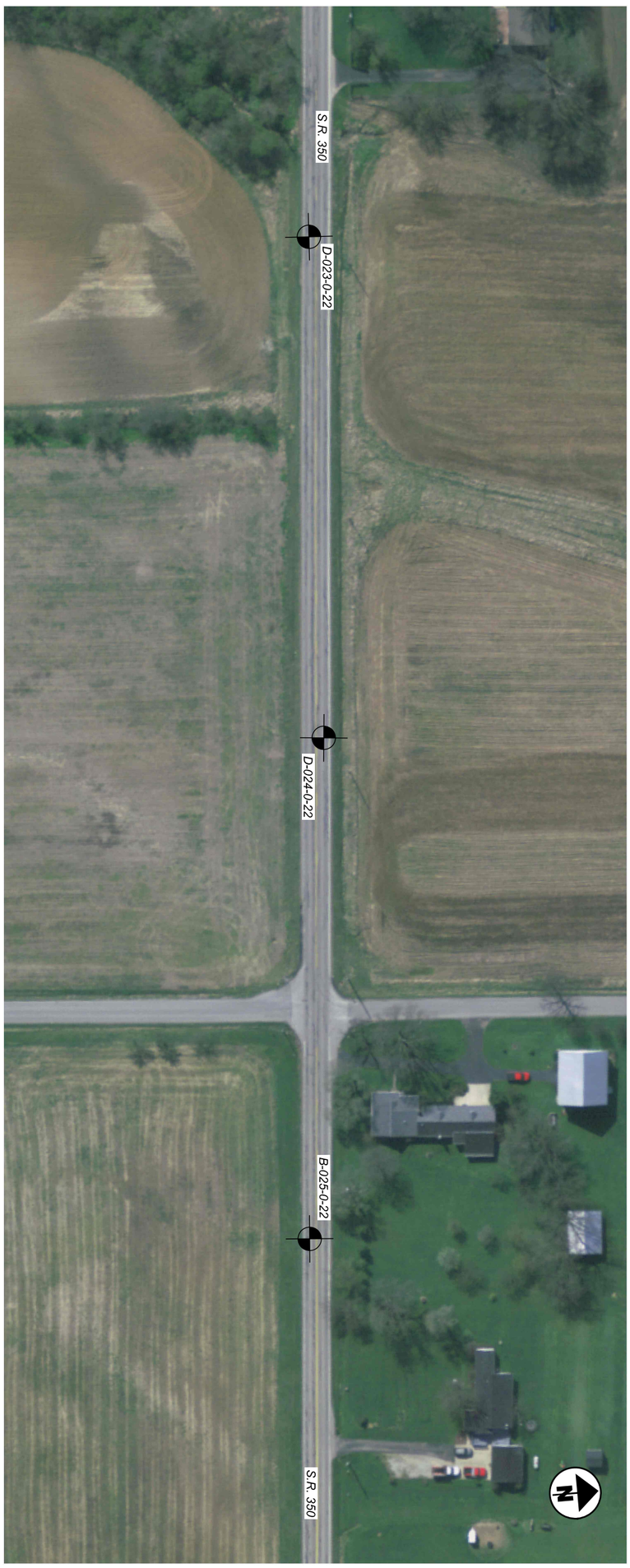

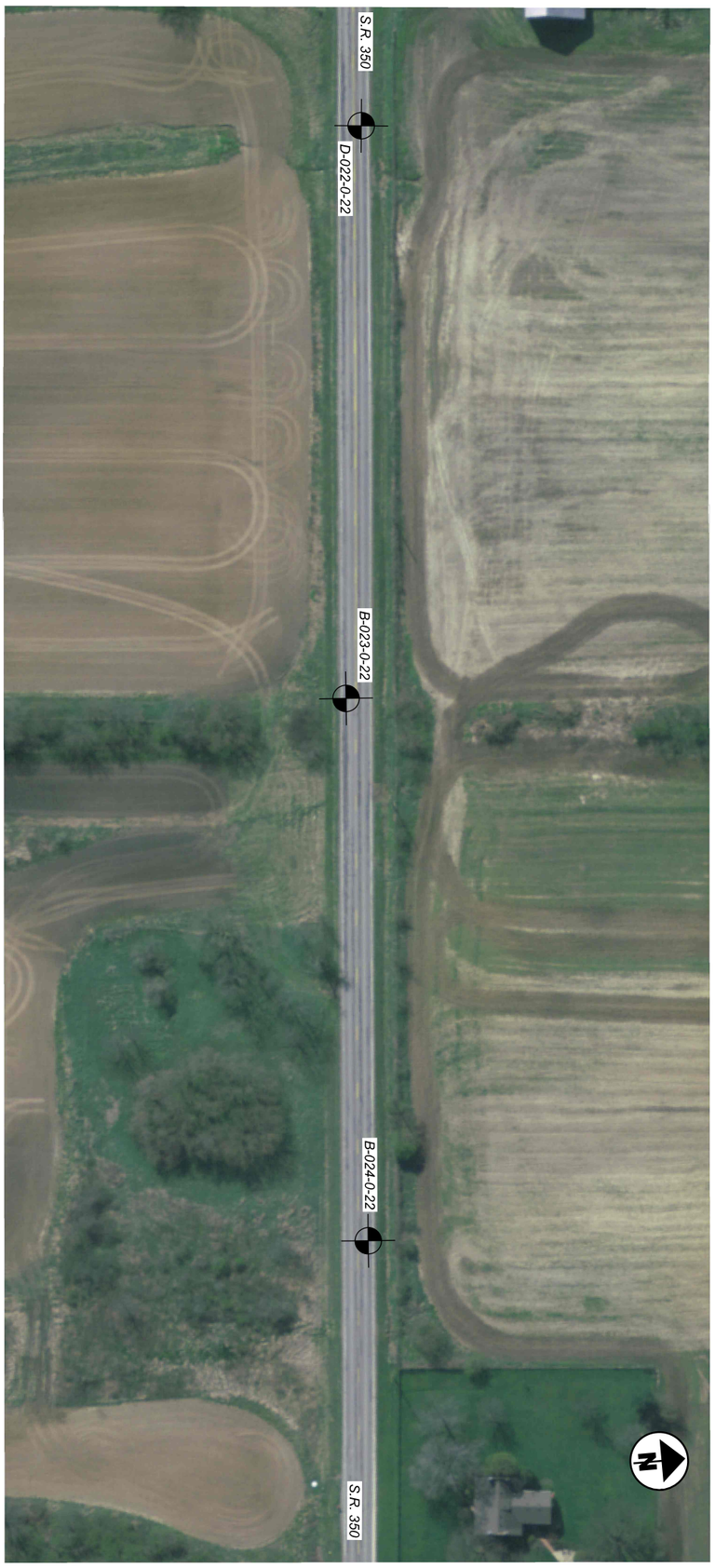

DESIGN AGENCY
Stantec
11687 Lockport Road
Gibsonia, PA 15044-9201
(313) 842-8200

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SHEET 14 TOTAL 46

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: Unnamed Plan-1 - Plan-16 (Sheet) PAPERSIZE: 17x11(in.) DATE: 6/17/2022 TIME: 1:54:15 PM USER: MJennings
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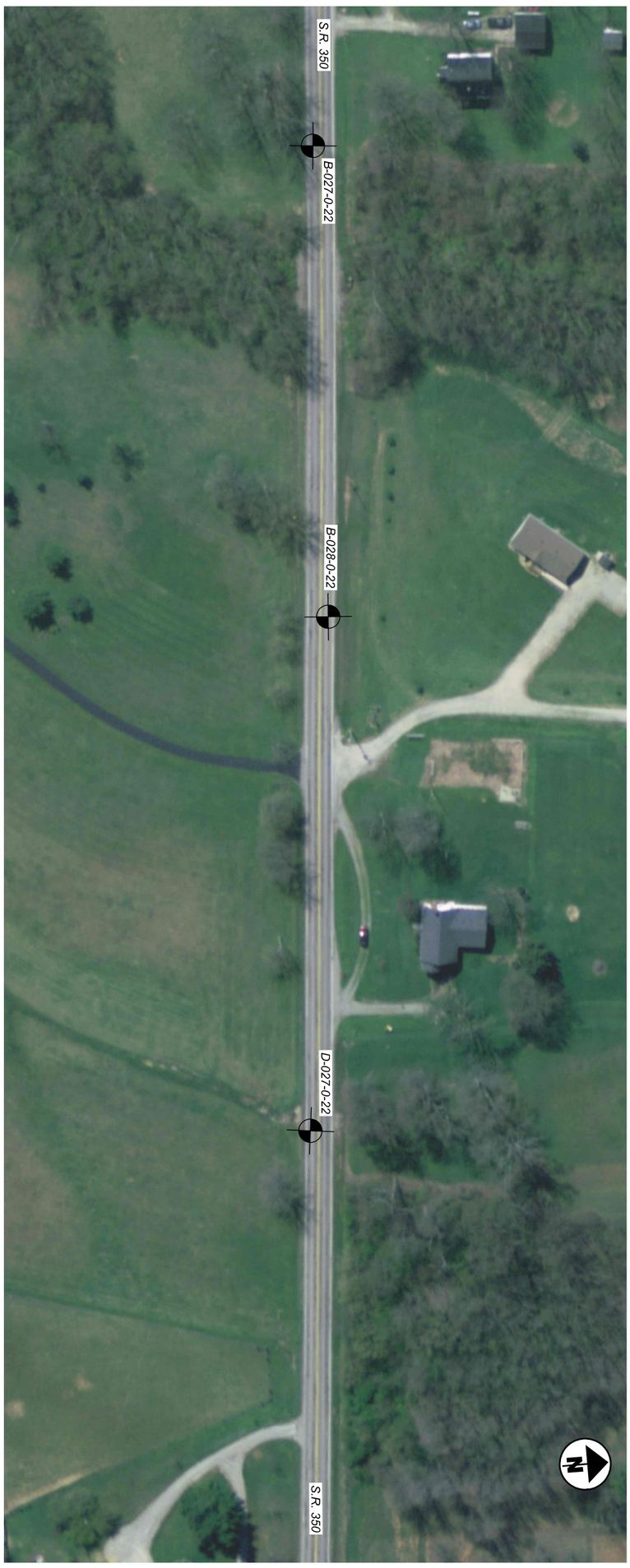

SHEET 15 | TOTAL 46	PROJECT ID 113981	REVIEWER EMK 06-15-22	DESIGNER MSJ

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati, OH 45241
(513) 842-8200

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL
SCALE IN FEET
0 50
25 100

MODEL: Unnamed Plan-1 - Plan-18 (Sheet) PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 1:54:53 PM USER: MJennings
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SHEET 16 TOTAL 46	PROJECT ID 113981	REVIEWER EMK 06-15-22	DESIGNER MSJ

DESIGN AGENCY
Stantec
1687 Jetstream Road
London ON N5V 4Z41
(519) 642-6000

SOIL PROFILE - ROADWAY
TEST LOCATIONS

HORIZONTAL SCALE IN FEET
0 50
25 100

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 11:03:11 AM USER: MJennings
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OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-001-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1064.2 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/11/22 END: 4/11/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.355597, -83.801513

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 *HORIZONTAL BREAK IN ASPHALT AT 9"*	1064.2 1063.4																		
GRANULAR BASE	1063.2	1			-	BASE-1	-	98	2	0	-	0 -	-	-	-	1	A-1a (V)	-	
STIFF TO VERY STIFF, BROWN, **SILTY CLAY**, TRACE GRAVEL, LITTLE TO SOME CLAY, MOIST		2	4 6 5	14	73	SS-1	3.00	2	4	9	47	38	39	19	20	20	A-6b (12)	160	
		3	5 7 8	20	100	SS-2	3.50	3	6	16	36	39	37	19	18	26	A-6b (11)	-	
	1059.7	EOB 4																	

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 0.8'
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-002-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1056.7 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/11/22 END: 4/11/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.355513, -83.800156

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	1056.7 1055.5																		
GRANULAR BASE	1055.2	1			-	BASE-1	-	98	1	0	-	1 -	-	-	-	2	A-1a (V)	-	
MEDIUM STIFF, BROWN, **SANDY SILT**, SOME GRAVEL, LITTLE CLAY, DAMP	1053.7	2	4 3 3	8	73	SS-1	N/A	22	18	13	29	18	25	17	8	9	A-4a (2)	-	
STIFF, DARK BROWN TO BLACK, **SILT AND CLAY**, LITTLE SAND, DAMP		3	5 5 5	13	100	SS-2	2.00	0	4	10	56	30	32	21	11	20	A-6a (8)	390	
	1052.2	EOB 4																	

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY
BORING LOGS B-001-0-22 & B-002-0-22

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 11:04:12 AM USER: MJennings
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OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-003-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1053.9 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/11/22 END: 4/11/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.355114, -83.795922

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	1053.9																		
GRANULAR BASE	1052.7	1																	
STIFF TO VERY STIFF, DARK BROWN, **SILTY CLAY**, TRACE GRAVEL, LITTLE SAND, MOIST	1052.4		2 3 4	9	80	SS-1	2.50	2	5	11	45	37	36	19	17	19	A-6b (11)	-	
		2	5 6 7	17	100	SS-2	3.00	3	6	11	43	37	35	19	16	23	A-6b (10)	170	
	1049.4	EOB 3 4																	

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-004-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1043.4 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/11/22 END: 4/11/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.355022, -83.794502

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	1043.4																		
GRANULAR BASE	1042.2	1			-	BASE-1	-	71	9	8	-	12 -	-	-	-	8	A-1-a (V)	-	
DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE GRAVEL, SOME SILT, TRACE CLAY, DAMP	1041.9		10 15 11	34	100	SS-1	-	19	33	19	20	9	NP	NP	NP	9	A-3a (0)	240	
STIFF TO VERY STIFF, DARK BROWN, **SILT AND CLAY**, SOME GRAVEL, SOME SAND, MOIST	1040.4	2																	
			5 6 5	14	67	SS-2	2.50	20	9	11	32	28	35	20	15	28	A-6a (7)	-	
	1038.9	EOB 3 4																	

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 1.2'
ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY
BORING LOGS B-003-0-22 & B-004-0-22

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-005-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1057.7 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/11/22 END: 4/11/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.354632, -83.790151

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	1057.7																		
GRANULAR BASE	1056.5	1																	
STIFF TO VERY STIFF, BROWN, **SANDY SILT**, SOME TO TRACE GRAVEL, LITTLE CLAY, DAMP	1056.2		8 5 5	13	67	SS-1	2.50	29	13	17	28	13	20	16	4	6	A-4a (1)	190	
		2																	
		3	5 5 5	13	100	SS-2	1.50	7	12	21	44	16	21	18	3	17	A-4a (5)	-	
	1053.2	EOB 4																	

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-006-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1062.9 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/11/22 END: 4/11/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.354575, -83.788895

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	1062.9																		
GRANULAR BASE	1061.7	1																	
STIFF TO HARD, LIGHT BROWN, **SANDY SILT**, LITTLE GRAVEL, SOME CLAY, DAMP	1061.4		5 4 6	13	100	SS-1	4.50	13	11	16	33	27	24	16	8	14	A-4a (5)	300	
		2																	
		3	7 7 10	22	100	SS-2	4.50	13	11	17	34	25	22	15	7	13	A-4a (5)	-	
	1058.4	EOB 4																	

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY
BORING LOGS B-005-0-22 & B-006-0-22

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-007-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1082.1 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/11/22 END: 4/11/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.354234, -83.784555

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	1082.1																		
	1080.9	1																	
GRANULAR BASE	1080.6				-	BASE-1	-	73	10	8	9	-	-	-	-	1	A-1-a (V)	-	
						BASE-2	-	94	4	1	1	-	-	-	-	1	A-1-a (V)	-	
VERY STIFF, BROWN, **SANDY SILT**, SOME GRAVEL, LITTLE CLAY, WET	1079.1	2	8 7 5	16	80	SS-1	2.50	25	13	16	32	14	19	13	6	22	A-4a (2)	<100	
VERY STIFF, BROWN, **CLAY**, TRACE GRAVEL, LITTLE SAND, SOME SILT, MOIST	1077.6	3 4	4 6 7	17	80	SS-2	3.50	8	5	11	33	43	45	22	23	24	A-7-6 (14)	-	
	EOB																		

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 1.2'
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-008-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1080.7 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/12/22 END: 4/12/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.354176, -83.783194

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	1080.7																		
	1079.4	1																	
GRANULAR BASE	1079.2																		
MEDIUM STIFF TO STIFF, DARK BROWN, **SANDY SILT**, TRACE GRAVEL, LITTLE CLAY, WET	1077.7	2	3 2 3	7	100	SS-1	1.50	5	13	17	47	18	24	17	7	23	A-4a (6)	200	
STIFF, DARK BROWN, **CLAY**, LITTLE GRAVEL, LITTLE SAND, "AND" SILT, MOIST	1076.2	3 4	3 5 6	14	100	SS-2	2.00	10	6	8	40	36	45	22	23	31	A-7-6 (14)	-	
	EOB																		

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY
BORING LOGS B-007-0-22 & B-008-0-22

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 11:11:16 AM USER: MJennings
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OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-009-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1086.2 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/12/22 END: 4/12/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.353853, -83.778837

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	1086.2																		
GRANULAR BASE	1084.9	1																	
STIFF TO VERY STIFF, LIGHT BROWN, **SANDY SILT**, LITTLE GRAVEL, LITTLE CLAY, MOIST	1084.7		5 5 5	13	67	SS-1	2.50	11	9	15	46	19	22	17	5	19	A-4a (6)	200	
STIFF TO VERY STIFF, LIGHT BROWN, **CLAY**, LITTLE GRAVEL, LITTLE SAND, "AND" SILT, MOIST	1083.2	2																	
	1081.7	3 EOB	3 4 5	12	67	SS-2	2.50	13	4	9	35	39	46	22	24	26	A-7-6 (15)	-	
		4																	

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-010-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1084.9 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/12/22 END: 4/12/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.353806, -83.777569

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 *PIECE MISSING FROM TOP, APPROXIMATELY 3.5" THICK, 80° BREAK*	1084.9																		
STIFF, BROWN, **SILT AND CLAY**, TRACE GRAVEL, SOME SAND, MOIST	1083.7	1		-		BASE-1	-	91	4	2	-	3 -	-	-	-	3	A-1-a (V)	-	
		2	5 4 5	12	73	SS-1	2.00	9	12	17	34	28	28	17	11	18	A-6a (6)	210	
	1080.4	3 EOB	3 3 4	9	100	SS-2	2.00	4	6	14	40	36	33	19	14	21	A-6a (10)	-	
		4																	

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 1.2'
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY
BORING LOGS B-009-0-22 & B-010-0-22

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 11:13:30 AM USER: MJennings
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OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-011-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1088.0 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/12/22 END: 4/12/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.353493, -83.773349

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	1088.0																		
	1086.7	1																	
GRANULAR BASE	1086.5																		
VERY STIFF, BROWN, **SANDY SILT**, LITTLE GRAVEL, SOME CLAY, DAMP TO MOIST		2	7 10 8	24	80	SS-1	N/A	18	24	22	28	8	NP	NP	NP	9	A-4a (0)	280	
		3	6 8 8	21	73	SS-2	2.00	15	14	21	34	16	20	14	6	13	A-4a (3)	-	
	1083.5	4 EOB																	

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-012-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1099.4 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/12/22 END: 4/12/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.353421, -83.771828

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	1099.4																		
	1098.2	1																	
GRANULAR BASE	1097.9																		
STIFF, BROWN, **SANDY SILT**, LITTLE GRAVEL, LITTLE SAND, DAMP		2	4 3 4	9	100	SS-1	2.00	15	11	18	39	17	25	16	9	13	A-4a (4)	580	
	1096.4	3																	
STIFF, BROWN, **SILT AND CLAY** , LITTLE GRAVEL, SOME SAND, MOIST		4	5 4 6	13	100	SS-2	2.00	16	11	16	28	29	28	17	11	20	A-6a (5)	-	
	1094.9	EOB																	

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY
BORING LOGS B-011-0-22 & B-012-0-22

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 11:14:30 AM USER: MJennings
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OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-013-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1100.9 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/12/22 END: 4/12/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.353707, -83.767041

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	1100.9																		
GRANULAR BASE	1099.8	1																	
STIFF TO VERY STIFF, BROWN, **SILT AND CLAY**, LITTLE GRAVEL, LITTLE TO SOME SAND, MOIST	1099.4	2	5 5 4	12	93	SS-1	3.00	17	7	9	37	30	28	16	12	21	A-6a (7)	540	
		3	4 4 7	14	67	SS-2	2.50	20	9	12	27	32	30	17	13	23	A-6a (6)	-	
	1096.4 EOB	4																	

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 1.1'
ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-014-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1107.1 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/12/22 END: 4/12/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.353926, -83.765630

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	1107.1																		
GRANULAR BASE	1105.8	1																	
STIFF TO VERY STIFF, BROWN, **SILTY CLAY**, TRACE TO LITTE GRAVEL, LITTLE TO SOME SAND, DAMP	1105.6	2	3 4 6	13	100	SS-1	3.50	5	4	11	41	39	36	19	17	19	A-6b (11)	380	
		3	7 6 9	20	100	SS-2	2.50	16	11	17	32	24	35	18	17	10	A-6b (7)	-	
	1102.6 EOB	4																	

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY
BORING LOGS B-013-0-22 & B-014-0-22

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91	DRILLING FIRM / OPERATOR: RII / RII	DRILL RIG: MOBILE B-53	STATION / OFFSET:	EXPLORATION ID B-015-0-22
TYPE: SUBGRADE	SAMPLING FIRM / LOGGER: STANTEC / JP	HAMMER: MOBILE AUTOMATIC	ALIGNMENT:	
PID: 113981 SFN: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 1112.4 (MSL) EOB: 4.5 ft.	PAGE 1 OF 1
START: 4/12/22 END: 4/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 39.354169, -83.761352	

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	1112.4																		
	1111.2	1																	
GRANULAR BASE	1110.9																		
MEDIUM DENSE, BROWN, **GRAVEL WITH SAND**, LITTLE SILT, TRACE CLAY, DAMP	1109.4	2	13 8 8	21	73	SS-1	N/A	42	26	13	10	9	17	14	3	8	A-1-b (0)	400	
VERY STIFF, BROWN, **SILT AND CLAY**, LITTLE GRAVEL, SOME SAND, DAMP	1107.9 EOB	3 4	4 8 6	18	100	SS-2	3.50	11	8	17	34	30	28	17	11	13	A-6a (6)	-	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91	DRILLING FIRM / OPERATOR: RII / RII	DRILL RIG: MOBILE B-53	STATION / OFFSET:	EXPLORATION ID B-016-0-22
TYPE: SUBGRADE	SAMPLING FIRM / LOGGER: STANTEC / JP	HAMMER: MOBILE AUTOMATIC	ALIGNMENT:	
PID: 113981 SFN: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 1117.6 (MSL) EOB: 4.5 ft.	PAGE 1 OF 1
START: 4/12/22 END: 4/12/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 39.354289, -83.759968	

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	1117.6																		
	1116.4	1																	
GRANULAR BASE	1116.1																		
STIFF TO HARD, BROWN, **SANDY SILT**, LITTLE GRAVEL, SOME CLAY, DAMP	1113.1 EOB	2 3 4	4 5 6 / 6 9 13	14 / 29	100	SS-1 / SS-2	4.50	10	12	17	32	29	21	14	7	12	A-4a (5)	880 / -	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY

BORING LOGS B-015-0-22 & B-016-0-22

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 11:16:45 AM USER: MJennings
V:\1736\active\175538114\engineering\113981\400-Engineering\Geotechnical\Sheets\113981_ZL009.dgn

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-017-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1113.0 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/12/22 END: 4/12/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.354073, -83.755704

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	1113.0																		
	1111.9	1																	
GRANULAR BASE	1111.5				-	BASE-1	-	99	1	0	-	0 -	-	-	-	0	A-1a (V)	-	
STIFF TO VERY STIFF, DARK BROWN AND BLACK, **SANDY SILT**, TRACE GRAVEL, SOME CLAY, DAMP TO MOIST		2	5 4 5	12	100	SS-1	3.00	3	8	16	48	25	27	20	7	16	A-4a (8)	340	
		3	2 3 4	9	60	SS-2	2.00	10	6	14	48	22	28	20	8	21	A-4a (7)	-	
	1108.5	EOB 4																	

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 1.1'
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-018-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1110.9 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/12/22 END: 4/12/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.353750, -83.754452

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	1110.9																		
	1109.7	1																	
GRANULAR BASE	1109.4																		
STIFF TO VERY STIFF, DARK BROWN, **SILT AND CLAY**, TRACE TO SOME GRAVEL, LITTLE TO SOME SAND, DAMP		2	3 2 3	7	93	SS-1	2.50	4	5	9	50	32	34	21	13	17	A-6a (9)	330	
		3	3 4 4	11	73	SS-2	2.00	21	19	14	24	22	30	17	13	12	A-6a (3)	-	
	1106.4	EOB 4																	

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY
BORING LOGS B-017-0-22 & B-018-0-22

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-019-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1114.0 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/13/22 END: 4/13/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.352546, -83.750417

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	1114.0																		
GRANULAR BASE	1112.8	1																	
MEDIUM DENSE, BROWN, **GRAVEL WITH SAND AND SILT**, TRACE CLAY, DAMP	1112.5	2	7 8 5	17	100	SS-1	N/A	25	26	18	23	8	16	14	2	8	A-2-4 (0)	220	
STIFF, DARK BROWN, **SANDY SILT**, SOME GRAVEL, LITTLE SAND, DAMP	1111.0	3	3 4 3	9	60	SS-2	1.00	21	22	18	25	14	20	14	6	12	A-4a (1)	-	
	1109.5 EOB	4																	

NOTES: NONE

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

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-020-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1125.4 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/13/22 END: 4/13/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.352213, -83.748849

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 *HORIZONTAL BREAK IN ASPHALT AT 6.25"*	1125.4																		
GRANULAR BASE	1124.4	1																	
VERY STIFF TO HARD, BROWN, **SILT AND CLAY**, LITTLE GRAVEL, SOME SAND, MOIST	1124.2	2	5 6 6	16	73	SS-1	4.50	14	10	15	31	30	30	17	13	23	A-6a (6)	340	
STIFF TO VERY STIFF, BROWN, **SILTY CLAY**, LITTLE GRAVEL, SOME SAND, MOIST	1122.4	3	3 4 5	12	93	SS-2	3.00	13	11	22	28	26	38	18	20	21	A-6b (8)	-	
	1120.9 EOB	4																	

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 1.0'

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

SOIL PROFILE - ROADWAY

BORING LOGS B-019-0-22 & B-020-0-22

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 11:18:55 AM USER: MJennings
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OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91	DRILLING FIRM / OPERATOR: RII / RII	DRILL RIG: MOBILE B-53	STATION / OFFSET:	EXPLORATION ID B-021-0-22
TYPE: SUBGRADE	SAMPLING FIRM / LOGGER: STANTEC / JP	HAMMER: MOBILE AUTOMATIC	ALIGNMENT:	
PID: 113981 SFN: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 1143.9 (MSL) EOB: 4.5 ft.	PAGE 1 OF 1
START: 4/13/22 END: 4/13/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 39.351955, -83.744744	

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	1143.9																		
	1142.7	1																	
GRANULAR BASE	1142.4																		
VERY STIFF, BROWN, **SILTY CLAY** , TRACE GRAVEL, LITTLE SAND, MOIST		2	4 6 9	20	33	SS-1	2.50	8	7	12	41	32	37	19	18	19	A-6b (11)	460	
	1140.9	3																	
VERY STIFF TO HARD, BROWN, **SANDY SILT**, SOME GRAVEL, SOME CLAY, DAMP			9 11 13	32	67	SS-2	3.50	22	10	15	29	24	23	15	8	10	A-4a (4)	-	
	1139.4	4 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91	DRILLING FIRM / OPERATOR: RII / RII	DRILL RIG: MOBILE B-53	STATION / OFFSET:	EXPLORATION ID B-022-0-22
TYPE: SUBGRADE	SAMPLING FIRM / LOGGER: STANTEC / JP	HAMMER: MOBILE AUTOMATIC	ALIGNMENT:	
PID: 113981 SFN: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 1119.2 (MSL) EOB: 4.5 ft.	PAGE 1 OF 1
START: 4/13/22 END: 4/13/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 39.351927, -83.743381	

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	1119.2																		
	1118.0	1																	
GRANULAR BASE	1117.7																		
STIFF TO VERY STIFF, BROWN, **SANDY SILT**, SOME TO LITTLE GRAVEL, LITTLE TO SOME CLAY, MOIST TO DAMP		2	4 6 5	14	80	SS-1	1.50	28	14	17	22	19	19	14	5	17	A-4a (1)	320	
		3	3 6 7	17	93	SS-2	3.50	14	11	16	28	31	23	16	7	14	A-4a (5)	-	
	1114.7	4 EOB																	

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY

BORING LOGS B-021-0-22 & B-022-0-22

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-023-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1119.2 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/13/22 END: 4/13/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.351690, -83.739073

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 *HORIZONTAL BREAK IN ASPHALT AT 5.75"*	1119.2																		
GRANULAR BASE	1118.1	1			-	BASE-1	-	98	1	1	-	0 -	-	-	-	2	A-1-a (V)	-	
	1117.7					BASE-2	-	73	7	6	-	14 -	-	-	-	12	A-1-a (V)	-	
MEDIUM STIFF TO STIFF, BROWN, **SILT AND CLAY**, TRACE GRAVEL, LITTLE SAND, DAMP	1116.2	2	3 2 3	7	93	SS-1	2.00	4	8	10	45	33	30	19	11	12	A-6a (8)	1100	
SOFT, BROWN, **CLAY**, LITTLE GRAVEL, LITTLE SAND, "AND" SILT, MOIST	1114.7	3 4 EOB	0 1 2	4	33	SS-2	2.00	14	8	6	35	37	42	22	20	26	A-7-6 (12)	-	

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 1.1'
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-024-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1116.0 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/13/22 END: 4/13/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.351670, -83.737713

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	1116.0																		
GRANULAR BASE	1114.8	1																	
MEDIUM STIFF TO STIFF, DARK BROWN, **SANDY SILT**, LITTLE GRAVEL, SOME CLAY, DAMP	1114.5	2	6 3 3	8	67	SS-1	1.50	14	10	10	39	27	28	18	10	17	A-4a (6)	320	
STIFF TO VERY STIFF, DARK BROWN, **CLAY**, TRACE GRAVEL, LITTLE SAND, "AND" SILT, MOIST	1113.0	3 4 EOB	1 2 5	9	33	SS-2	3.00	2	3	8	42	45	44	23	21	27	A-7-6 (13)	-	
	1111.5																		

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: ASPHALT PATCH; AUGER CUTTINGS MIXED WITH BENTONITE CHIPS

SOIL PROFILE - ROADWAY
BORING LOGS B-023-0-22 & B-024-0-22

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-025-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1129.8 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/13/22 END: 4/13/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.351439, -83.733419

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	1129.8																		
	1128.5	1																	
GRANULAR BASE	1128.3																		
MEDIUM STIFF TO STIFF, DARK BROWN, **SANDY SILT**, TRACE GRAVEL, SOME CLAY, DAMP		2	4 3 3	8	100	SS-1	2.50	5	12	15	43	25	31	21	10	18	A-4a (7)	490	
	1126.8	3																	
STIFF TO VERY STIFF, DARK BROWN, **CLAY**, TRACE GRAVEL, LITTLE SAND, SOME SILT, MOIST			5 6 5	14	100	SS-2	2.50	8	8	9	34	41	41	21	20	21	A-7-6 (12)	-	
	1125.3	EOB 4																	

NOTES: NONE

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

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-026-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1128.9 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/13/22 END: 4/13/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.351407, -83.732062

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	1128.9																		
	1127.9	1																	
GRANULAR BASE	1127.5																		
STIFF TO VERY STIFF, DARK BROWN, **SANDY SILT**, TRACE GRAVEL, SOME SAND, DAMP		2	5 6 5	14	93	SS-1	2.50	3	6	15	45	31	23	18	5	14	A-4a (8)	140	
	1125.9	3																	
STIFF TO VERY STIFF, DARK BROWN, **CLAY**, LITTLE GRAVEL, LITTLE SAND, "AND" SILT, MOIST			5 6 4	13	80	SS-2	2.50	12	5	11	39	33	43	21	22	24	A-7-6 (13)	-	
	1124.4	EOB 4																	

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 1.0'

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

SOIL PROFILE - ROADWAY

BORING LOGS B-025-0-22 & B-026-0-22

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-027-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1129.2 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/13/22 END: 4/13/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.351154, -83.727691

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	1129.2																		
	1128.0	1																	
GRANULAR BASE	1127.7																		
MEDIUM STIFF TO STIFF, BROWN, **SANDY SILT**, LITTLE GRAVEL, LITTLE TO SOME CLAY, MOIST TO DAMP		2	4 5 2	9	73	SS-1	0.50	19	22	20	20	19	21	15	6	16	A-4a (1)	220	
		3	1 1 3	5	60	SS-2	1.00	11	12	20	30	27	22	15	7	14	A-4a (4)	-	
	1124.7	EOB 4																	

NOTES: NONE

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

PROJECT: CLI-350-7.91 | DRILLING FIRM / OPERATOR: RII / RII | DRILL RIG: MOBILE B-53 | STATION / OFFSET: | EXPLORATION ID B-028-0-22
TYPE: SUBGRADE | SAMPLING FIRM / LOGGER: STANTEC / JP | HAMMER: MOBILE AUTOMATIC | ALIGNMENT:
PID: 113981 SFN: N/A | DRILLING METHOD: 3.25" HSA | CALIBRATION DATE: 3/21/22 | ELEVATION: 1144.7 (MSL) EOB: 4.5 ft. | PAGE 1 OF 1
START: 4/13/22 END: 4/13/22 | SAMPLING METHOD: SPT | ENERGY RATIO (%): 79 | LAT / LONG: 39.351115, -83.726355

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	1144.7																		
	1143.5	1																	
GRANULAR BASE	1143.2																		
VERY STIFF, BROWN, **SANDY SILT**, LITTLE GRAVEL, SOME CLAY, DAMP		2	5 5 7	16	67	SS-1	3.00	13	9	15	38	25	25	16	9	10	A-4a (6)	140	
	1141.7	3																	
VERY STIFF, BROWN, **SILT**, TRACE GRAVEL, SOME SAND, SOME CLAY, DAMP			5 6 9	20	33	SS-2	4.00	6	6	15	53	20	20	15	5	14	A-4b (8)	-	
	1140.2	EOB 4																	

NOTES: NONE

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

SOIL PROFILE - ROADWAY

BORING LOGS B-027-0-22 & B-028-0-22

MODEL: Sheet PAPERSIZE: 17x11 (in.) DATE: 6/17/2022 TIME: 11:22:42 AM USER: MJennings
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OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING

LOG OF BORING

PROJECT: CLI-350-7.91	DRILLING FIRM / OPERATOR: RII / RII	DRILL RIG: MOBILE B-53	STATION / OFFSET:	EXPLORATION ID B-029-0-22
TYPE: SUBGRADE	SAMPLING FIRM / LOGGER: STANTEC / JP	HAMMER: MOBILE AUTOMATIC	ALIGNMENT:	
PID: 113981 SFN: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 3/21/22	ELEVATION: 1147.6 (MSL) EOB: 4.5 ft.	PAGE 1 OF 1
START: 4/13/22 END: 4/13/22	SAMPLING METHOD: SPT	ENERGY RATIO (%): 79	LAT / LONG: 39.350777, -83.722120	

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 *LOOSE ASPHALT AT 3.5"* *HORIZONTAL BREAK IN ASPHALT AT 5"*	1147.6																		
GRANULAR BASE	1146.4	1																	
STIFF, BROWN AND BLACK, **SILTY CLAY**, LITTLE GRAVEL, SOME SAND, MOIST	1146.2		5 5 4	12	33	SS-1	1.00	16	8	16	33	27	34	18	16	22	A-6b (7)	230	
STIFF TO VERY STIFF, BROWN AND BLACK, **SILTY SAND**, LITTLE GRAVEL, LITTLE CLAY, MOIST	1144.6	2 3	3 5 8	17	47	SS-2	1.00	11	11	18	41	19	24	15	9	17	A-4a (5)	-	
	1143.1	EOB 4																	

NOTES: 4-INCH PAVEMENT CORE FROM 0.0' TO 1.2'

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

SOIL PROFILE - ROADWAY
BORING LOG B-029-0-22

6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-001-0-22
DATE TEST PERFORMED: 4/11/2022

Test Location: N: 496284.959, E: 1601282.546
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 19 in
Test Elevation: -1.6 ft msl

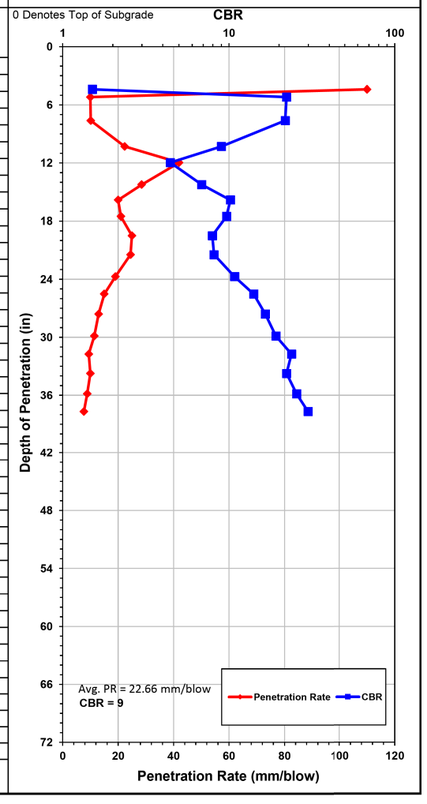
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 56.68 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	4.39	110.00	110.00	110.00	1.5
2	5.18	20.00	10.00	10.00	22.2
6	7.62	61.00	10.17	10.17	21.7
3	10.29	67.00	22.33	22.33	9.0
1	11.96	42.00	42.00	42.00	4.4
2	14.23	57.00	28.50	28.50	6.9
2	15.83	40.00	20.00	20.00	10.2
2	17.50	42.00	21.00	21.00	9.6
2	19.50	50.00	25.00	25.00	7.9
2	21.45	49.00	24.50	24.50	8.1
3	23.72	57.00	19.00	19.00	10.8
3	25.52	45.00	15.00	15.00	14.1
4	27.59	52.00	13.00	13.00	16.5
5	29.86	57.00	11.40	11.40	19.1
5	31.74	47.00	9.40	9.40	23.7
5	33.73	50.00	10.00	10.00	22.2
6	35.84	53.00	8.83	8.83	25.5
6	37.68	46.00	7.67	7.67	29.8

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-002-0-22
DATE TEST PERFORMED: 4/11/2022

Test Location: N: 496246.423, E: 1601682.707
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 19 in
Test Elevation: -1.6 ft msl

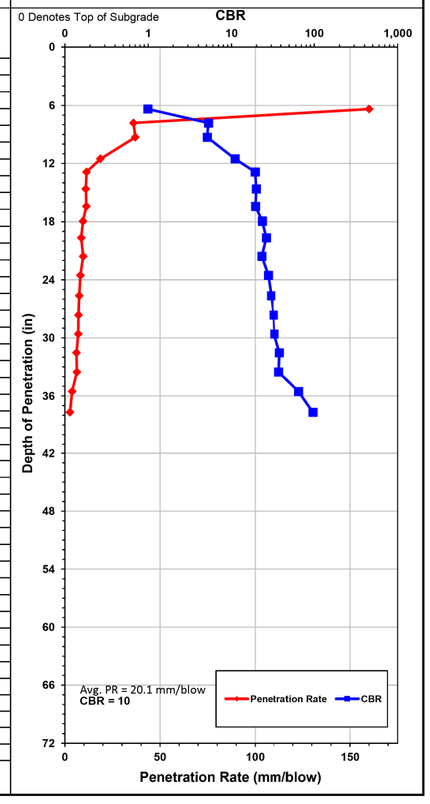
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 56.68 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	6.38	160.00	160.00	160.00	1.0
1	7.81	36.00	36.00	36.00	5.3
1	9.29	37.00	37.00	37.00	5.1
3	11.52	56.00	18.67	18.67	11.0
3	12.88	34.00	11.33	11.33	19.3
4	14.63	44.00	11.00	11.00	19.9
4	16.43	45.00	11.25	11.25	19.4
4	17.94	38.00	9.50	9.50	23.5
5	19.66	43.00	8.60	8.60	26.2
5	21.57	48.00	9.60	9.60	23.2
6	23.52	49.00	8.17	8.17	27.8
7	25.64	53.00	7.57	7.57	30.2
7	27.63	50.00	7.14	7.14	32.3
7	29.58	49.00	7.00	7.00	33.0
8	31.54	49.00	6.13	6.13	38.4
8	33.53	50.00	6.25	6.25	37.5
13	35.52	50.00	3.85	3.85	64.6
20	37.68	54.00	2.70	2.70	96.0

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-001-0-22 & D-002-0-22

Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 32 TOTAL: 46

CLI-350-7.91

MODEL: ii398\Sheet PAPERSIZE: 17x11(in.) DATE: 6/17/2022 TIME: ii2350 AM USER: MJennings
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6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-003-0-22
DATE TEST PERFORMED: 4/11/2022

Test Location: N: 496083.593, E: 1602876.581
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 19 in
Test Elevation: -1.6 ft msl

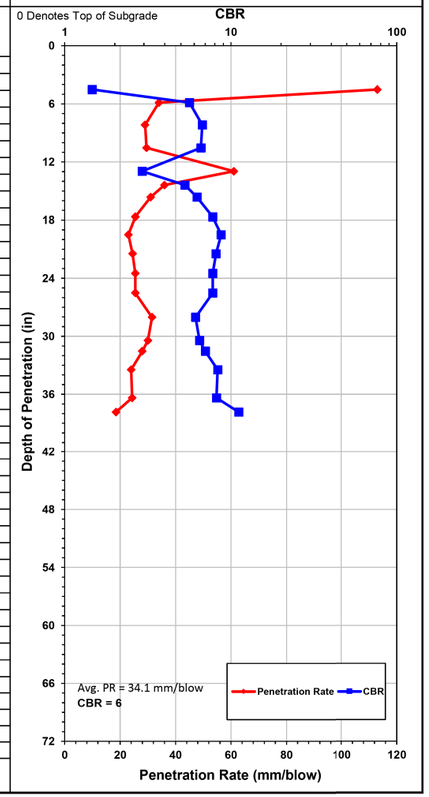
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 56.84 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	4.51	113.00	113.00	113.00	1.5
1	5.86	34.00	34.00	34.00	5.6
2	8.17	58.00	29.00	29.00	6.7
2	10.53	59.00	29.50	29.50	6.6
1	12.96	61.00	61.00	61.00	2.9
1	14.39	36.00	36.00	36.00	5.3
1	15.63	31.00	31.00	31.00	6.2
2	17.66	51.00	25.50	25.50	7.8
2	19.50	46.00	23.00	23.00	8.7
2	21.45	49.00	24.50	24.50	8.1
2	23.48	51.00	25.50	25.50	7.8
2	25.52	51.00	25.50	25.50	7.8
2	28.03	63.00	31.50	31.50	6.1
2	30.42	60.00	30.00	30.00	6.5
1	31.54	28.00	28.00	28.00	7.0
2	33.45	48.00	24.00	24.00	8.3
3	36.36	73.00	24.33	24.33	8.2
2	37.84	37.00	18.50	18.50	11.1

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-004-0-22
DATE TEST PERFORMED: 4/11/2022

Test Location: N: 496044.313, E: 1603279.564
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 17 in
Test Elevation: -1.4 ft msl

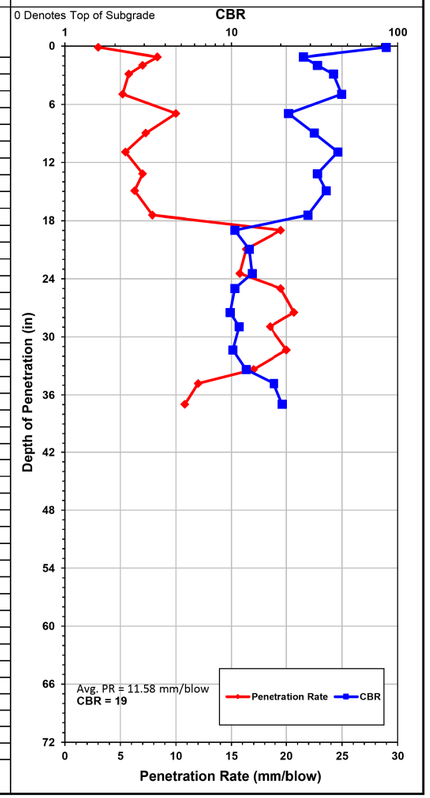
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 53.96 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	0.12	3.00	3.00	3.00	85.3
3	1.12	25.00	8.33	8.33	27.2
3	1.95	21.00	7.00	7.00	33.0
4	2.87	23.00	5.75	5.75	41.2
10	4.94	52.00	5.20	5.20	46.1
5	6.94	50.00	10.00	10.00	22.2
7	8.97	51.00	7.29	7.29	31.6
9	10.92	49.00	5.44	5.44	43.8
8	13.16	56.00	7.00	7.00	33.0
7	14.91	44.00	6.29	6.29	37.3
8	17.42	63.00	7.88	7.88	28.9
2	18.98	39.00	19.50	19.50	10.5
3	20.93	49.00	16.33	16.33	12.8
4	23.44	63.00	15.75	15.75	13.3
2	25.00	39.00	19.50	19.50	10.5
3	27.47	62.00	20.67	20.67	9.8
2	28.95	37.00	18.50	18.50	11.1
3	31.34	60.00	20.00	20.00	10.2
3	33.37	51.00	17.00	17.00	12.2
3	34.81	36.00	12.00	12.00	18.1
5	36.96	54.00	10.80	10.80	20.3

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-003-0-22 & D-004-0-22

CLI-350-7.91

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DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 33 TOTAL: 46

6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-005-0-22
DATE TEST PERFORMED: 4/11/2022

Test Location: N: 495901.516, E: 1604478.831
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 17 in
Test Elevation: -1.4 ft msl

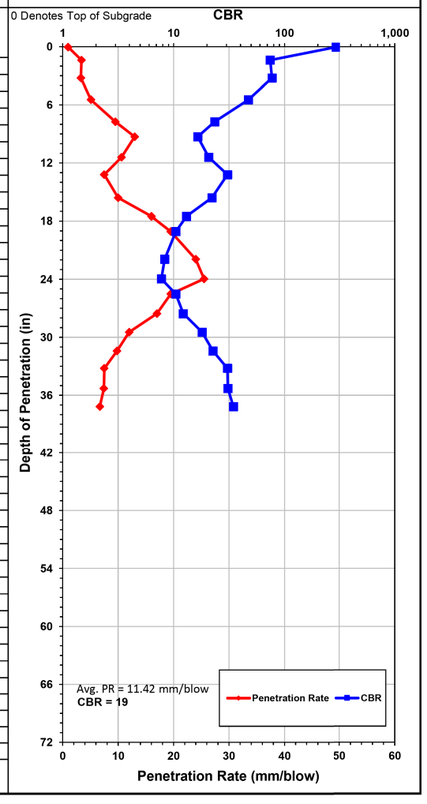
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 54.16 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	0.04	1.00	1.00	1.00	292.0
10	1.40	34.00	3.40	3.40	74.2
14	3.23	46.00	3.29	3.29	77.0
11	5.46	56.00	5.09	5.09	47.2
6	7.73	57.00	9.50	9.50	23.5
3	9.29	39.00	13.00	13.00	16.5
5	11.40	53.00	10.60	10.60	20.8
6	13.20	45.00	7.50	7.50	30.6
6	15.59	60.00	10.00	10.00	22.2
3	17.50	48.00	16.00	16.00	13.1
2	19.06	39.00	19.50	19.50	10.5
3	21.93	72.00	24.00	24.00	8.3
2	23.96	51.00	25.50	25.50	7.8
2	25.52	39.00	19.50	19.50	10.5
3	27.55	51.00	17.00	17.00	12.2
4	29.46	48.00	12.00	12.00	18.1
5	31.42	49.00	9.80	9.80	22.7
6	33.21	45.00	7.50	7.50	30.6
7	35.29	52.00	7.43	7.43	30.9
7	37.16	47.00	6.71	6.71	34.6

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-006-0-22
DATE TEST PERFORMED: 4/11/2022

Test Location: N: 495870.318, E: 1604878.823
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

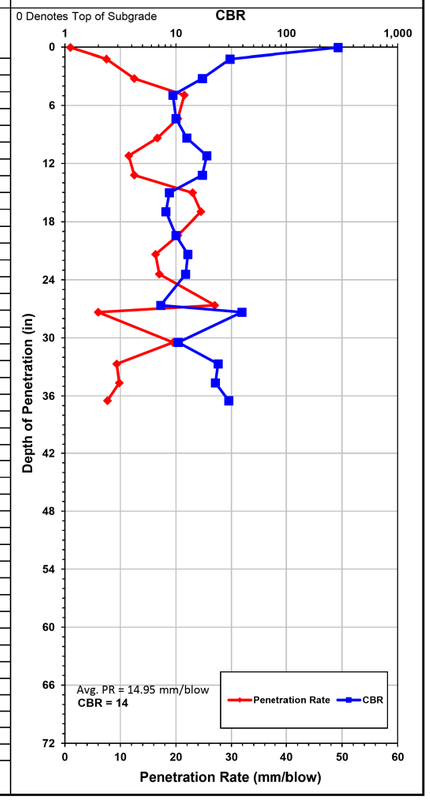
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 54.48 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	0.04	1.00	1.00	1.00	292.0
4	1.24	30.00	7.50	7.50	30.6
4	3.23	50.00	12.50	12.50	17.3
2	4.94	43.00	21.50	21.50	9.4
3	7.38	61.00	20.33	20.33	10.0
3	9.37	50.00	16.67	16.67	12.5
4	11.20	46.00	11.50	11.50	18.9
4	13.20	50.00	12.50	12.50	17.3
2	15.03	46.00	23.00	23.00	8.7
2	16.98	49.00	24.50	24.50	8.1
3	19.42	61.00	20.33	20.33	10.0
3	21.37	49.00	16.33	16.33	12.8
3	23.40	51.00	17.00	17.00	12.2
3	26.63	81.00	27.00	27.00	7.3
3	27.35	18.00	6.00	6.00	39.3
4	30.46	78.00	19.50	19.50	10.5
6	32.69	56.00	9.33	9.33	23.9
5	34.65	49.00	9.80	9.80	22.7
6	36.48	46.00	7.67	7.67	29.8

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-005-0-22 & D-006-0-22

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 34 TOTAL: 46

CLI-350-7.91

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6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-007-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495739.354, E: 1606070.921
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 17 in
Test Elevation: -1.4 ft msl

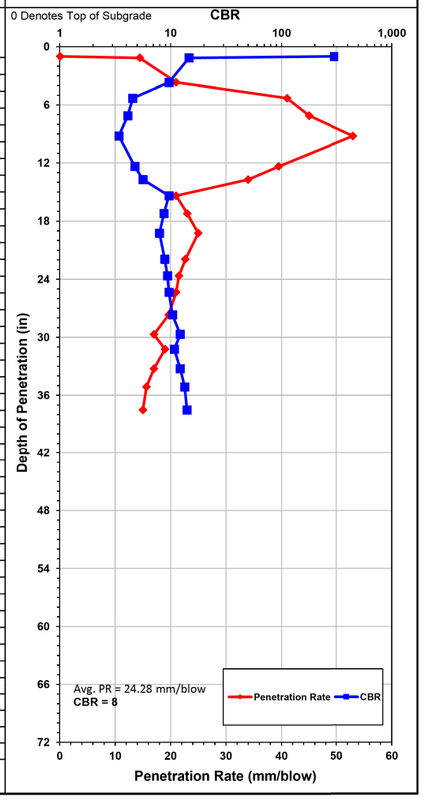
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 54.52 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	1.00	0.10	0.10	0.10	300.0
2	1.16	28.90	14.45	14.45	14.7
3	3.67	63.00	21.00	21.00	9.6
1	5.30	41.00	41.00	41.00	4.6
1	7.10	45.00	45.00	45.00	4.1
1	9.21	53.00	53.00	53.00	3.4
2	12.36	79.00	39.50	39.50	4.8
1	13.72	34.00	34.00	34.00	5.6
2	15.39	42.00	21.00	21.00	9.6
2	17.22	46.00	23.00	23.00	8.7
2	19.22	50.00	25.00	25.00	7.9
3	21.93	68.00	22.67	22.67	8.9
2	23.64	43.00	21.50	21.50	9.4
2	25.32	42.00	21.00	21.00	9.6
3	27.67	59.00	19.67	19.67	10.4
3	29.70	51.00	17.00	17.00	12.2
2	31.22	38.00	19.00	19.00	10.8
3	33.25	51.00	17.00	17.00	12.2
3	35.13	47.00	15.67	15.67	13.4
4	37.52	60.00	15.00	15.00	14.1

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-008-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495710.778, E: 1606467.56
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 17 in
Test Elevation: -1.4 ft msl

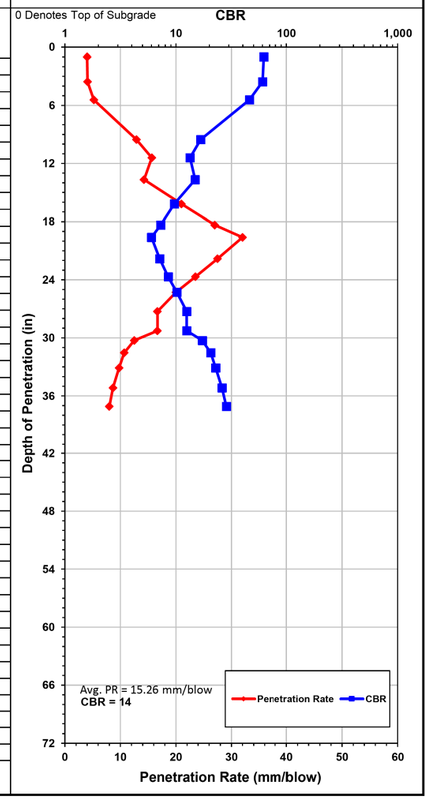
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 54.08 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
10	1.00	40.00	4.00	4.00	61.8
12	3.55	49.00	4.08	4.08	60.4
9	5.42	47.00	5.22	5.22	45.9
8	9.53	103.00	12.88	12.88	16.7
3	11.40	47.00	15.67	15.67	13.4
4	13.68	57.00	14.25	14.25	14.9
3	16.19	63.00	21.00	21.00	9.6
2	18.34	54.00	27.00	27.00	7.3
1	19.62	32.00	32.00	32.00	6.0
2	21.81	55.00	27.50	27.50	7.1
2	23.68	47.00	23.50	23.50	8.5
2	25.28	40.00	20.00	20.00	10.2
3	27.27	50.00	16.67	16.67	12.5
3	29.26	50.00	16.67	16.67	12.5
2	30.26	25.00	12.50	12.50	17.3
3	31.54	32.00	10.67	10.67	20.6
4	33.09	39.00	9.75	9.75	22.8
6	35.17	52.00	8.67	8.67	26.0
6	37.08	48.00	8.00	8.00	28.4

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-007-0-22 & D-008-0-22

CLI-350-7.91

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DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 35 TOTAL: 46

6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-009-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495580.945, E: 1607662.232
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

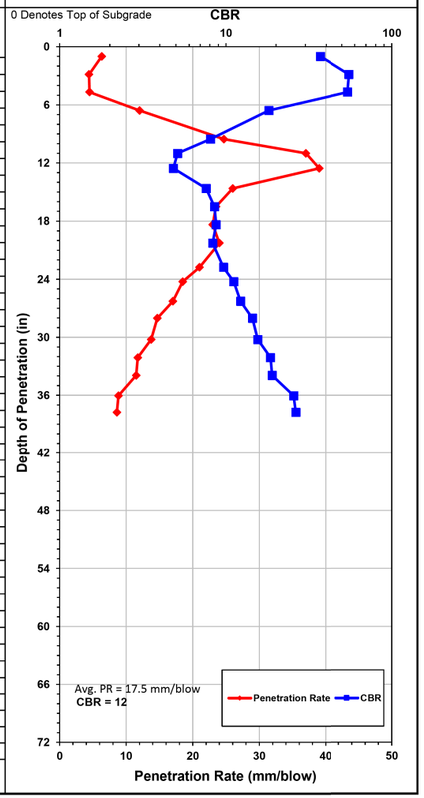
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.76 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
3	1.00	19.00	6.33	6.33	36.9
12	2.87	53.00	4.42	4.42	55.3
10	4.66	45.00	4.50	4.50	54.2
4	6.58	48.00	12.00	12.00	18.1
3	9.53	74.00	24.67	24.67	8.1
1	11.00	37.00	37.00	37.00	5.1
1	12.56	39.00	39.00	39.00	4.8
2	14.63	52.00	26.00	26.00	7.6
2	16.51	47.00	23.50	23.50	8.5
2	18.34	46.00	23.00	23.00	8.7
2	20.25	48.00	24.00	24.00	8.3
3	22.77	63.00	21.00	21.00	9.6
2	24.24	37.00	18.50	18.50	11.1
3	26.27	51.00	17.00	17.00	12.2
3	28.03	44.00	14.67	14.67	14.4
4	30.22	55.00	13.75	13.75	15.5
4	32.10	47.00	11.75	11.75	18.5
4	33.93	46.00	11.50	11.50	18.9
6	36.04	53.00	8.83	8.83	25.5
5	37.76	43.00	8.60	8.60	26.2

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-010-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495551.974, E: 1608062.829
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

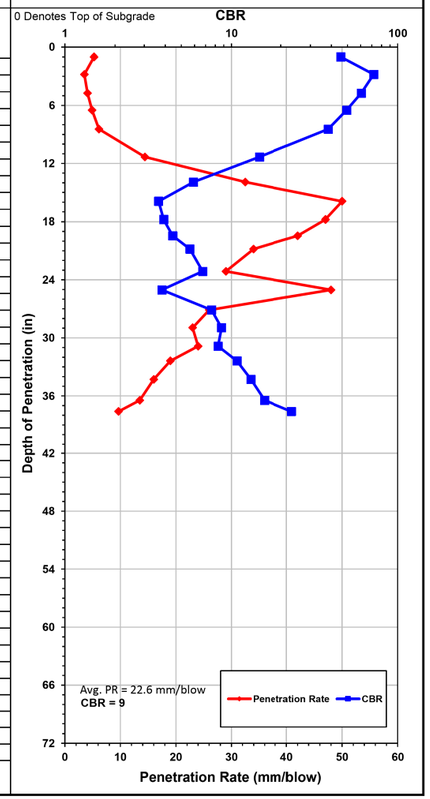
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.60 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
4	1.00	21.00	5.25	5.25	45.6
14	2.79	49.00	3.50	3.50	71.8
12	4.74	49.00	4.08	4.08	60.4
9	6.50	44.00	4.89	4.89	49.4
8	8.45	49.00	6.13	6.13	38.4
5	11.32	72.00	14.40	14.40	14.7
2	13.91	65.00	32.50	32.50	5.9
1	15.91	50.00	50.00	50.00	3.7
1	17.78	47.00	47.00	47.00	3.9
1	19.46	42.00	42.00	42.00	4.4
1	20.81	34.00	34.00	34.00	5.6
2	23.12	58.00	29.00	29.00	6.7
1	25.04	48.00	48.00	48.00	3.8
2	27.11	52.00	26.00	26.00	7.6
2	28.95	46.00	23.00	23.00	8.7
2	30.86	48.00	24.00	24.00	8.3
2	32.37	38.00	19.00	19.00	10.8
3	34.29	48.00	16.00	16.00	13.1
4	36.44	54.00	13.50	13.50	15.8
3	37.60	29.00	9.67	9.67	23.0

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-009-0-22 & D-010-0-22

CLI-350-7.91

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DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 36 TOTAL: 46

6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-011-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495425.366, E: 1609266.609
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 16 in
Test Elevation: -1.3 ft msl

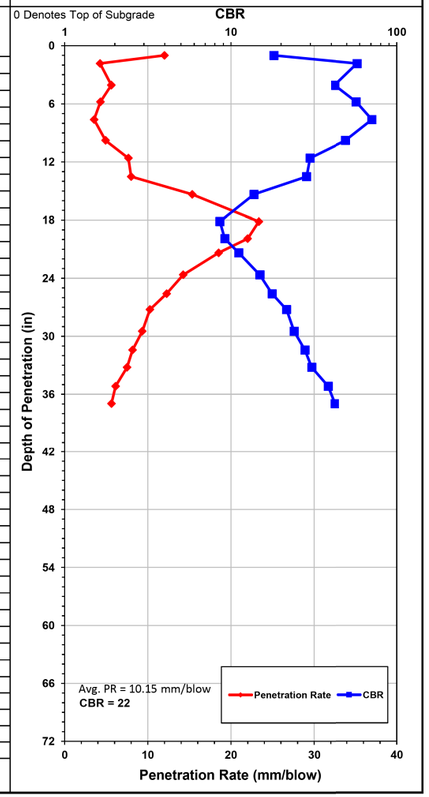
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 52.96 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	1.00	12.00	12.00	12.00	18.1
8	1.83	34.00	4.25	4.25	57.8
10	4.07	56.00	5.60	5.60	42.4
10	5.78	43.00	4.30	4.30	57.0
13	7.62	46.00	3.54	3.54	70.9
11	9.77	54.00	4.91	4.91	49.1
6	11.60	46.00	7.67	7.67	29.8
6	13.52	48.00	8.00	8.00	28.4
3	15.35	46.00	15.33	15.33	13.7
3	18.14	70.00	23.33	23.33	8.6
2	19.90	44.00	22.00	22.00	9.2
2	21.37	37.00	18.50	18.50	11.1
4	23.64	57.00	14.25	14.25	14.9
4	25.60	49.00	12.25	12.25	17.6
4	27.23	41.00	10.25	10.25	21.5
6	29.46	56.00	9.33	9.33	23.9
6	31.42	49.00	8.17	8.17	27.8
6	33.21	45.00	7.50	7.50	30.6
8	35.17	49.00	6.13	6.13	38.4
8	36.96	45.00	5.63	5.63	42.2

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-012-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495487.969, E: 1609840.154
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 14 in
Test Elevation: -1.2 ft msl

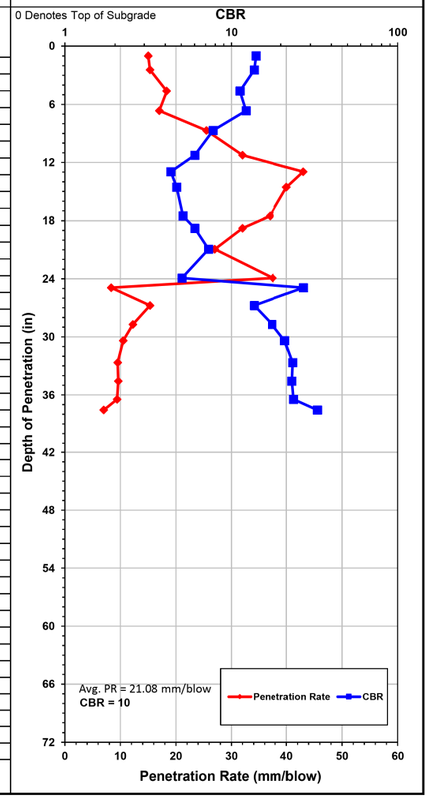
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 51.56 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	1.00	15.00	15.00	15.00	14.1
3	2.43	46.00	15.33	15.33	13.7
3	4.62	55.00	18.33	18.33	11.2
3	6.66	51.00	17.00	17.00	12.2
2	8.69	51.00	25.50	25.50	7.8
2	11.24	64.00	32.00	32.00	6.0
1	12.96	43.00	43.00	43.00	4.3
1	14.55	40.00	40.00	40.00	4.7
2	17.50	74.00	37.00	37.00	5.1
1	18.78	32.00	32.00	32.00	6.0
2	20.93	54.00	27.00	27.00	7.3
2	23.92	75.00	37.50	37.50	5.0
3	24.92	25.00	8.33	8.33	27.2
3	26.75	46.00	15.33	15.33	13.7
4	28.71	49.00	12.25	12.25	17.6
4	30.38	42.00	10.50	10.50	21.0
6	32.65	57.00	9.50	9.50	23.5
5	34.57	48.00	9.60	9.60	23.2
5	36.44	47.00	9.40	9.40	23.7
4	37.56	28.00	7.00	7.00	33.0

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-011-0-22 & D-012-0-22

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 37 TOTAL: 46

CLI-350-7.91

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6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-013-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495646.04, E: 1611036.053
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

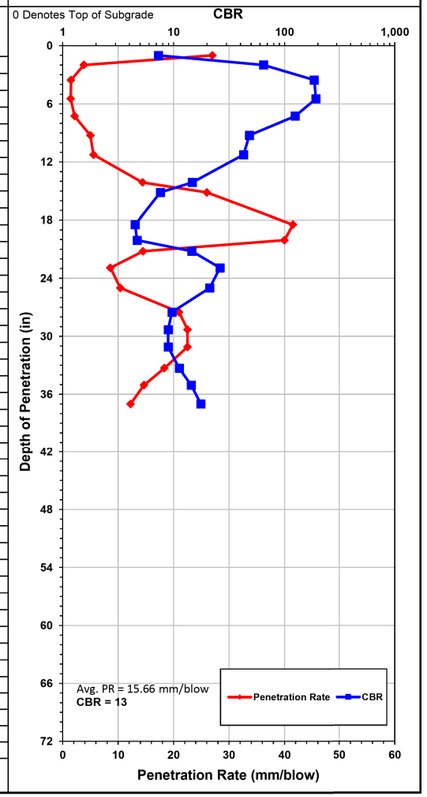
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.00 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	1.00	27.00	27.00	27.00	7.3
6	1.99	23.00	3.83	3.83	64.8
26	3.55	39.00	1.50	1.50	185.4
33	5.46	48.00	1.45	1.45	191.9
21	7.26	45.00	2.14	2.14	124.4
10	9.25	50.00	5.00	5.00	48.1
9	11.24	50.00	5.56	5.56	42.8
5	14.11	72.00	14.40	14.40	14.7
1	15.15	26.00	26.00	26.00	7.6
2	18.46	83.00	41.50	41.50	4.5
1	20.05	40.00	40.00	40.00	4.7
2	21.21	29.00	14.50	14.50	14.6
5	22.93	43.00	8.60	8.60	26.2
5	25.00	52.00	10.40	10.40	21.2
3	27.51	63.00	21.00	21.00	9.6
2	29.30	45.00	22.50	22.50	8.9
2	31.10	45.00	22.50	22.50	8.9
3	33.29	55.00	18.33	18.33	11.2
3	35.05	44.00	14.67	14.67	14.4
4	37.00	49.00	12.25	12.25	17.6

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-014-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495681.595, E: 1611436.704
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 15 in
Test Elevation: -1.3 ft msl

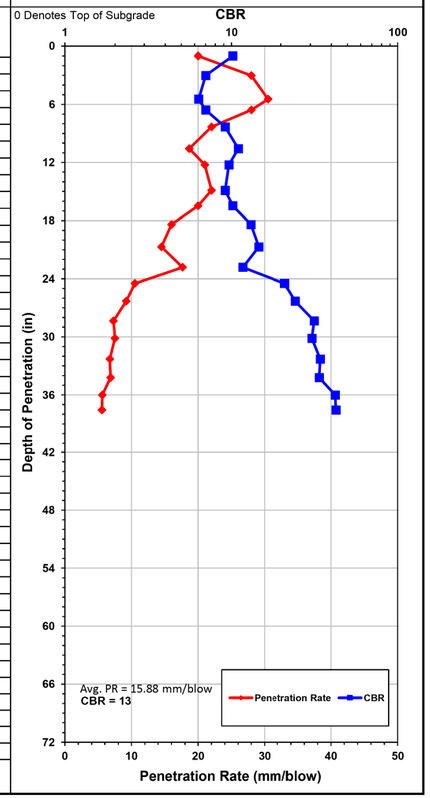
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 52.56 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	1.00	20.00	20.00	20.00	10.2
2	3.03	56.00	28.00	28.00	7.0
2	5.46	61.00	30.50	30.50	6.4
1	6.58	28.00	28.00	28.00	7.0
2	8.33	44.00	22.00	22.00	9.2
3	10.57	56.00	18.67	18.67	11.0
2	12.24	42.00	21.00	21.00	9.6
3	14.87	66.00	22.00	22.00	9.2
2	16.47	40.00	20.00	20.00	10.2
3	18.38	48.00	16.00	16.00	13.1
4	20.69	58.00	14.50	14.50	14.6
3	22.81	53.00	17.67	17.67	11.7
4	24.48	42.00	10.50	10.50	21.0
5	26.31	46.00	9.20	9.20	24.3
7	28.35	51.00	7.29	7.29	31.6
6	30.14	45.00	7.50	7.50	30.6
8	32.29	54.00	6.75	6.75	34.4
7	34.21	48.00	6.86	6.86	33.8
8	36.00	45.00	5.63	5.63	42.2
7	37.56	39.00	5.57	5.57	42.6

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-013-0-22 & D-014-0-22

CLI-350-7.91

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DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 38 TOTAL: 46

6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-015-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495735.889, E: 1612635.377
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 17 in
Test Elevation: -1.4 ft msl

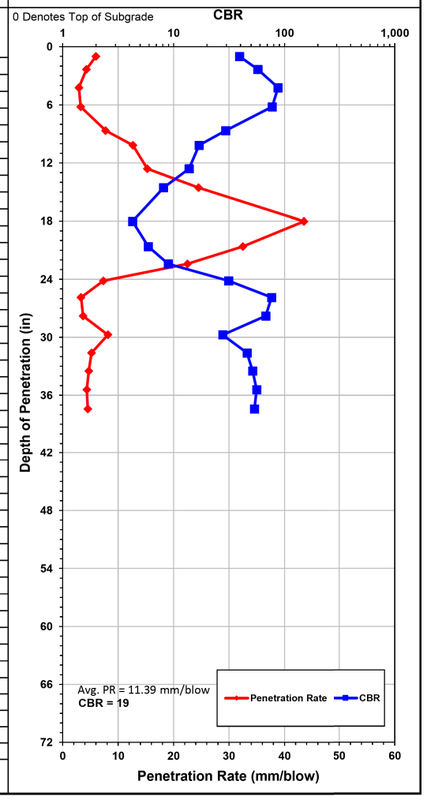
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 54.40 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
2	1.00	12.00	6.00	6.00	39.3
11	2.35	47.00	4.27	4.27	57.4
16	4.23	47.00	2.94	2.94	87.3
15	6.18	49.00	3.27	3.27	77.6
8	8.65	62.00	7.75	7.75	29.5
3	10.17	38.00	12.67	12.67	17.0
4	12.60	61.00	15.25	15.25	13.8
2	14.55	49.00	24.50	24.50	8.1
2	18.02	87.00	43.50	43.50	4.3
2	20.61	65.00	32.50	32.50	5.9
2	22.41	45.00	22.50	22.50	8.9
6	24.16	44.00	7.33	7.33	31.4
13	25.88	43.00	3.31	3.31	76.5
13	27.79	48.00	3.69	3.69	67.6
6	29.74	49.00	8.17	8.17	27.8
9	31.62	47.00	5.22	5.22	45.9
10	33.49	47.00	4.70	4.70	51.6
11	35.40	48.00	4.36	4.36	56.1
11	37.40	50.00	4.55	4.55	53.6

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-016-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495739.056, E: 1613035.574
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 17 in
Test Elevation: -1.4 ft msl

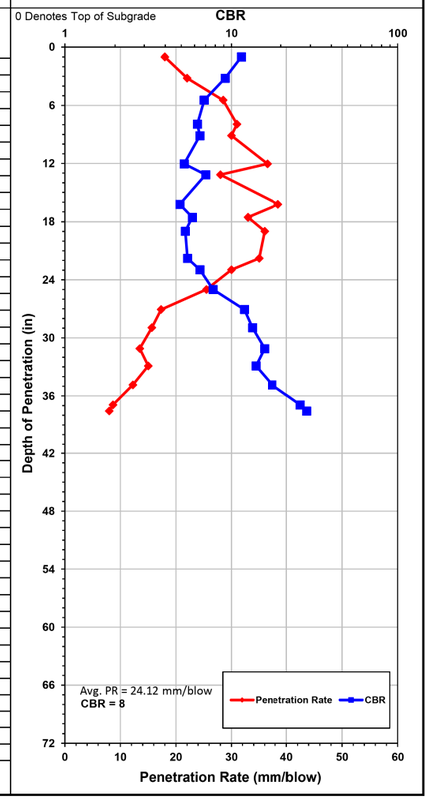
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 54.56

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
2	1.00	36.00	18.00	18.00	11.5
2	3.19	44.00	22.00	22.00	9.2
2	5.46	57.00	28.50	28.50	6.9
2	7.93	62.00	31.00	31.00	6.2
1	9.13	30.00	30.00	30.00	6.5
2	12.04	73.00	36.50	36.50	5.2
1	13.16	28.00	28.00	28.00	7.0
2	16.23	77.00	38.50	38.50	4.9
1	17.54	33.00	33.00	33.00	5.8
1	18.98	36.00	36.00	36.00	5.3
2	21.77	70.00	35.00	35.00	5.4
1	22.97	30.00	30.00	30.00	6.5
2	25.00	51.00	25.50	25.50	7.8
3	27.07	52.00	17.33	17.33	12.0
3	28.95	47.00	15.67	15.67	13.4
4	31.10	54.00	13.50	13.50	15.8
3	32.89	45.00	15.00	15.00	14.1
4	34.85	49.00	12.25	12.25	17.6
6	36.92	52.00	8.67	8.67	26.0
2	37.56	16.00	8.00	8.00	28.4

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-015-0-22 & D-016-0-22

CLI-350-7.91

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DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 39 TOTAL: 46

6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-017-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495359.97, E: 1614180.998
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

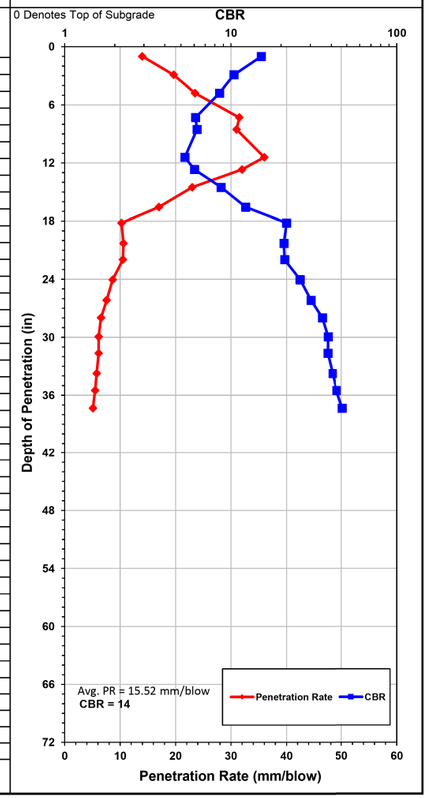
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.32

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	1.00	14.00	14.00	14.00	15.2
3	2.91	59.00	19.67	19.67	10.4
2	4.78	47.00	23.50	23.50	8.5
2	7.30	63.00	31.50	31.50	6.1
1	8.53	31.00	31.00	31.00	6.2
2	11.40	72.00	36.00	36.00	5.3
1	12.68	32.00	32.00	32.00	6.0
2	14.51	46.00	23.00	23.00	8.7
3	16.55	51.00	17.00	17.00	12.2
4	18.18	41.00	10.25	10.25	21.5
5	20.29	53.00	10.60	10.60	20.8
4	21.97	42.00	10.50	10.50	21.0
6	24.04	52.00	8.67	8.67	26.0
7	26.15	53.00	7.57	7.57	30.2
7	27.99	46.00	6.57	6.57	35.4
8	29.94	49.00	6.13	6.13	38.4
7	31.66	43.00	6.14	6.14	38.2
9	33.73	52.00	5.78	5.78	40.9
8	35.48	44.00	5.50	5.50	43.3
9	37.32	46.00	5.11	5.11	47.0

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-018-0-22
DATE TEST PERFORMED: 4/12/2022

Test Location: N: 495223.92, E: 1614561.736
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 16 in
Test Elevation: -1.3 ft msl

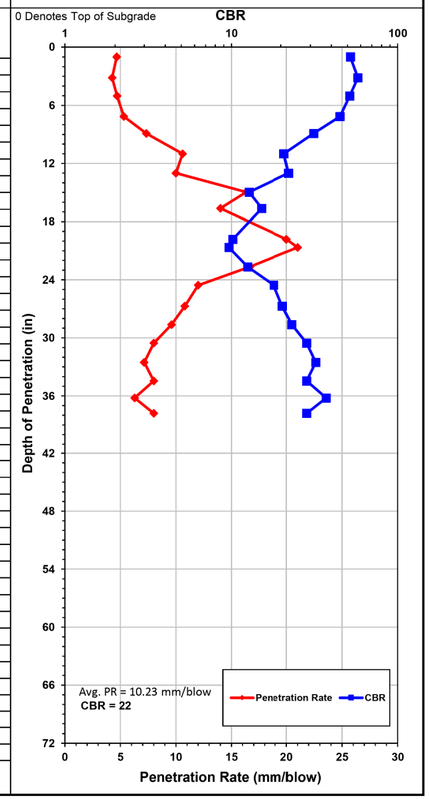
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 53.80 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
6	1.00	28.00	4.67	4.67	52.0
12	3.15	51.00	4.25	4.25	57.8
10	5.02	47.00	4.70	4.70	51.6
10	7.14	53.00	5.30	5.30	45.1
6	8.89	44.00	7.33	7.33	31.4
5	11.00	53.00	10.60	10.60	20.8
5	13.00	50.00	10.00	10.00	22.2
3	14.95	49.00	16.33	16.33	12.8
3	16.63	42.00	14.00	14.00	15.2
4	19.82	80.00	20.00	20.00	10.2
1	20.65	21.00	21.00	21.00	9.6
3	22.65	50.00	16.67	16.67	12.5
4	24.56	48.00	12.00	12.00	18.1
5	26.71	54.00	10.80	10.80	20.3
5	28.63	48.00	9.60	9.60	23.2
6	30.54	48.00	8.00	8.00	28.4
7	32.53	50.00	7.14	7.14	32.3
6	34.45	48.00	8.00	8.00	28.4
7	36.20	44.00	6.29	6.29	37.3
5	37.80	40.00	8.00	8.00	28.4

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-017-0-22 & D-018-0-22

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 40 TOTAL: 46

CLI-350-7.91

MODEL: li398Sheet PAPERSIZE: 17x11(in.) DATE: 6/17/2022 TIME: 11:33:56 AM USER: MJennings
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6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-019-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494896.402, E: 1615723.471
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

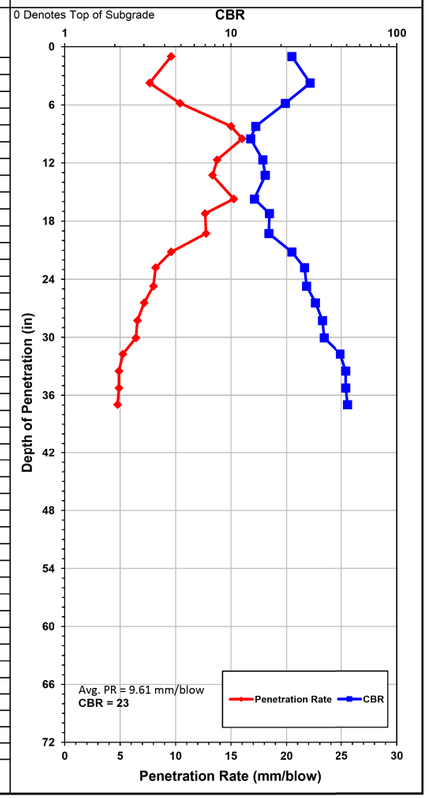
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 54.96 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
5	1.00	48.00	9.60	9.60	23.2
6	3.75	46.00	7.67	7.67	29.8
5	5.82	52.00	10.40	10.40	21.2
4	8.21	60.00	15.00	15.00	14.1
2	9.49	32.00	16.00	16.00	13.1
4	11.68	55.00	13.75	13.75	15.5
3	13.28	40.00	13.33	13.33	16.0
4	15.71	61.00	15.25	15.25	13.8
3	17.22	38.00	12.67	12.67	17.0
4	19.26	51.00	12.75	12.75	16.9
5	21.17	48.00	9.60	9.60	23.2
5	22.81	41.00	8.20	8.20	27.7
6	24.72	48.00	8.00	8.00	28.4
6	26.43	43.00	7.17	7.17	32.2
7	28.27	46.00	6.57	6.57	35.4
7	30.06	45.00	6.43	6.43	36.3
8	31.74	42.00	5.25	5.25	45.6
9	33.49	44.00	4.89	4.89	49.4
9	35.25	44.00	4.89	4.89	49.4
9	36.96	43.00	4.78	4.78	50.7

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-020-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494874.861, E: 1616122.772
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

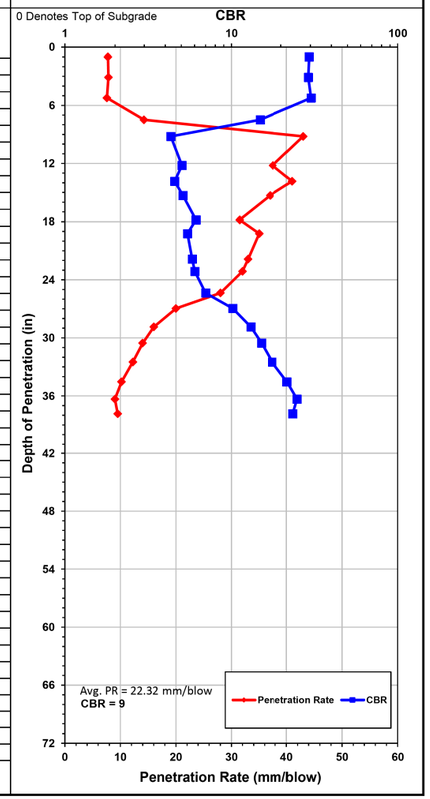
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.84 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
4	1.00	31.00	7.75	7.75	29.5
6	3.11	47.00	7.83	7.83	29.1
7	5.22	53.00	7.57	7.57	30.2
4	7.50	57.00	14.25	14.25	14.9
1	9.21	43.00	43.00	43.00	4.3
2	12.20	75.00	37.50	37.50	5.0
1	13.83	41.00	41.00	41.00	4.6
1	15.31	37.00	37.00	37.00	5.1
2	17.82	63.00	31.50	31.50	6.1
1	19.22	35.00	35.00	35.00	5.4
2	21.85	66.00	33.00	33.00	5.8
1	23.12	32.00	32.00	32.00	6.0
2	25.36	56.00	28.00	28.00	7.0
2	26.95	40.00	20.00	20.00	10.2
3	28.87	48.00	16.00	16.00	13.1
3	30.54	42.00	14.00	14.00	15.2
4	32.49	49.00	12.25	12.25	17.6
5	34.53	51.00	10.20	10.20	21.7
5	36.32	45.00	9.00	9.00	24.9
4	37.84	38.00	9.50	9.50	23.5

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-019-0-22 & D-020-0-22

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 41 TOTAL: 46

CLI-350-7.91

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6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-021-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494773.142, E: 1617319.038
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

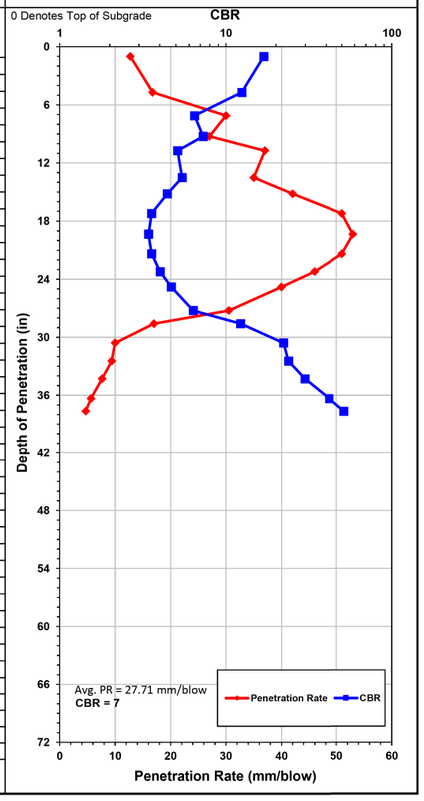
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.64 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
4	1.00	51.00	12.75	12.75	16.9
4	4.70	67.00	16.75	16.75	12.4
2	7.10	60.00	30.00	30.00	6.5
2	9.25	54.00	27.00	27.00	7.3
1	10.73	37.00	37.00	37.00	5.1
2	13.52	70.00	35.00	35.00	5.4
1	15.19	42.00	42.00	42.00	4.4
1	17.22	51.00	51.00	51.00	3.6
1	19.34	53.00	53.00	53.00	3.4
1	21.37	51.00	51.00	51.00	3.6
1	23.20	46.00	46.00	46.00	4.0
1	24.80	40.00	40.00	40.00	4.7
2	27.23	61.00	30.50	30.50	6.4
2	28.59	34.00	17.00	17.00	12.2
5	30.58	50.00	10.00	10.00	22.2
5	32.45	47.00	9.40	9.40	23.7
6	34.29	46.00	7.67	7.67	29.8
9	36.32	51.00	5.67	5.67	41.8
7	37.64	33.00	4.71	4.71	51.4

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-022-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494754.152, E: 1617720.074
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

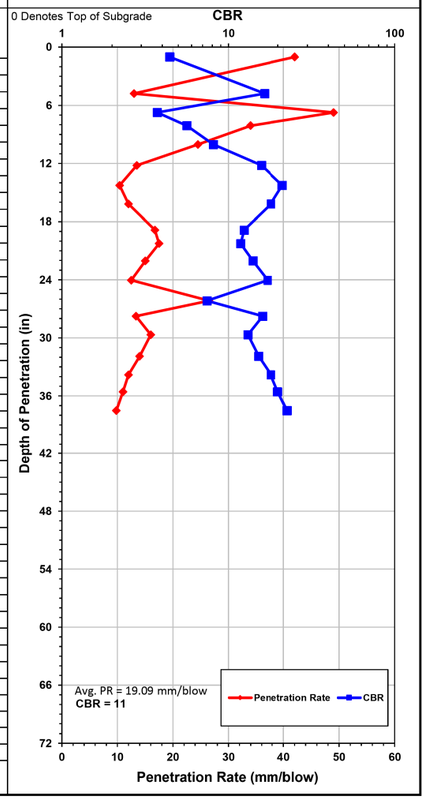
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.52 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	1.00	42.00	42.00	42.00	4.4
6	4.78	78.00	13.00	13.00	16.5
1	6.74	49.00	49.00	49.00	3.7
1	8.09	34.00	34.00	34.00	5.6
2	10.05	49.00	24.50	24.50	8.1
4	12.20	54.00	13.50	13.50	15.8
5	14.27	52.00	10.40	10.40	21.2
4	16.19	48.00	12.00	12.00	18.1
4	18.86	67.00	16.75	16.75	12.4
2	20.25	35.00	17.50	17.50	11.8
3	22.05	45.00	15.00	15.00	14.1
4	24.04	50.00	12.50	12.50	17.3
2	26.15	53.00	26.50	26.50	7.4
3	27.75	40.00	13.33	13.33	16.0
3	29.66	48.00	16.00	16.00	13.1
4	31.90	56.00	14.00	14.00	15.2
4	33.81	48.00	12.00	12.00	18.1
4	35.56	44.00	11.00	11.00	19.9
5	37.52	49.00	9.80	9.80	22.7

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-021-0-22 & D-022-0-22

CLI-350-7.91

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DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 42 TOTAL: 46

6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-023-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494659.021, E: 1618919.551
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 16 in
Test Elevation: -1.3 ft msl

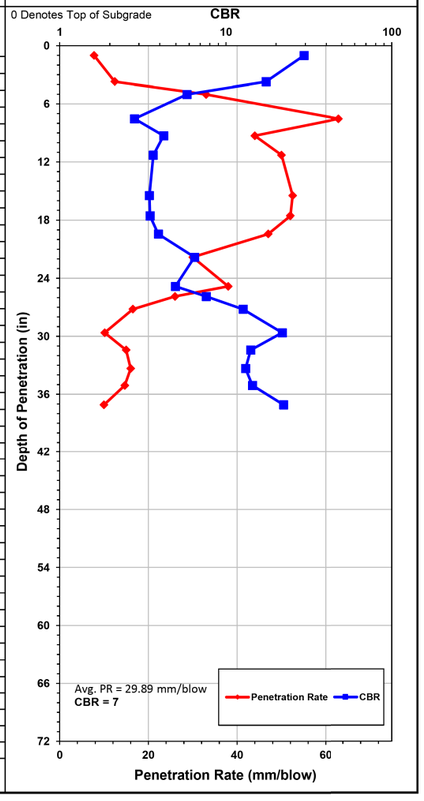
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 53.08 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
4	1.00	31.00	7.75	7.75	29.5
5	3.71	62.00	12.40	12.40	17.4
1	5.02	33.00	33.00	33.00	5.8
1	7.54	63.00	63.00	63.00	2.8
1	9.29	44.00	44.00	44.00	4.2
1	11.28	50.00	50.00	50.00	3.7
2	15.47	105.00	52.50	52.50	3.5
1	17.54	52.00	52.00	52.00	3.5
1	19.42	47.00	47.00	47.00	3.9
2	21.81	60.00	30.00	30.00	6.5
2	24.84	76.00	38.00	38.00	5.0
1	25.88	26.00	26.00	26.00	7.6
2	27.19	33.00	16.50	16.50	12.6
6	29.62	61.00	10.17	10.17	21.7
3	31.42	45.00	15.00	15.00	14.1
3	33.33	48.00	16.00	16.00	13.1
3	35.09	44.00	14.67	14.67	14.4
5	37.08	50.00	10.00	10.00	22.2

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-024-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494639.304, E: 1619322.276
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

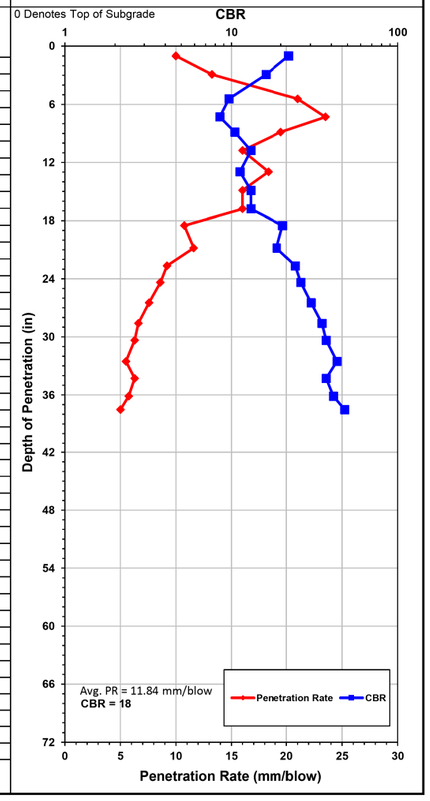
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.52 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
2	1.00	20.00	10.00	10.00	22.2
4	2.91	53.00	13.25	13.25	16.2
3	5.42	63.00	21.00	21.00	9.6
2	7.30	47.00	23.50	23.50	8.5
2	8.85	39.00	19.50	19.50	10.5
3	10.76	48.00	16.00	16.00	13.1
3	12.96	55.00	18.33	18.33	11.2
3	14.87	48.00	16.00	16.00	13.1
3	16.79	48.00	16.00	16.00	13.1
4	18.50	43.00	10.75	10.75	20.4
5	20.81	58.00	11.60	11.60	18.8
5	22.65	46.00	9.20	9.20	24.3
5	24.36	43.00	8.60	8.60	26.2
7	26.47	53.00	7.57	7.57	30.2
8	28.59	53.00	6.63	6.63	35.1
7	30.34	44.00	6.29	6.29	37.3
10	32.53	55.00	5.50	5.50	43.3
7	34.29	44.00	6.29	6.29	37.3
8	36.12	46.00	5.75	5.75	41.2
7	37.52	35.00	5.00	5.00	48.1

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-023-0-22 & D-024-0-22

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 43 TOTAL: 46

CLI-350-7.91

MODEL: ii398\Sheet PAPERSIZE: 17x11(in.) DATE: 6/17/2022 TIME: 11:39:41 AM USER: MJennings
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6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-025-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494538.391, E: 1620523.945
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

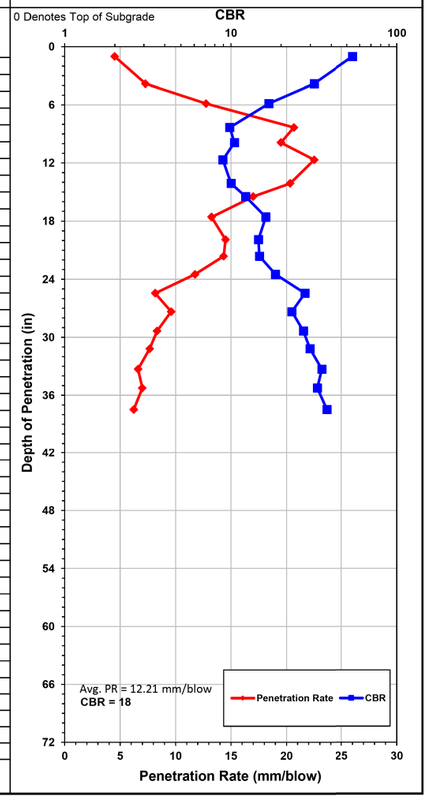
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.48 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
10	1.00	45.00	4.50	4.50	54.2
7	3.83	51.00	7.29	7.29	31.6
4	5.86	51.00	12.75	12.75	16.9
3	8.33	62.00	20.67	20.67	9.8
2	9.89	39.00	19.50	19.50	10.5
2	11.68	45.00	22.50	22.50	8.9
3	14.11	61.00	20.33	20.33	10.0
2	15.47	34.00	17.00	17.00	12.2
4	17.58	53.00	13.25	13.25	16.2
4	19.90	58.00	14.50	14.50	14.6
3	21.61	43.00	14.33	14.33	14.8
4	23.48	47.00	11.75	11.75	18.5
6	25.44	49.00	8.17	8.17	27.8
5	27.35	48.00	9.60	9.60	23.2
6	29.34	50.00	8.33	8.33	27.2
6	31.18	46.00	7.67	7.67	29.8
8	33.29	53.00	6.63	6.63	35.1
7	35.25	49.00	7.00	7.00	33.0
9	37.48	56.00	6.22	6.22	37.7

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-026-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494515.099, E: 1620923.513
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 19 in
Test Elevation: -1.6 ft msl

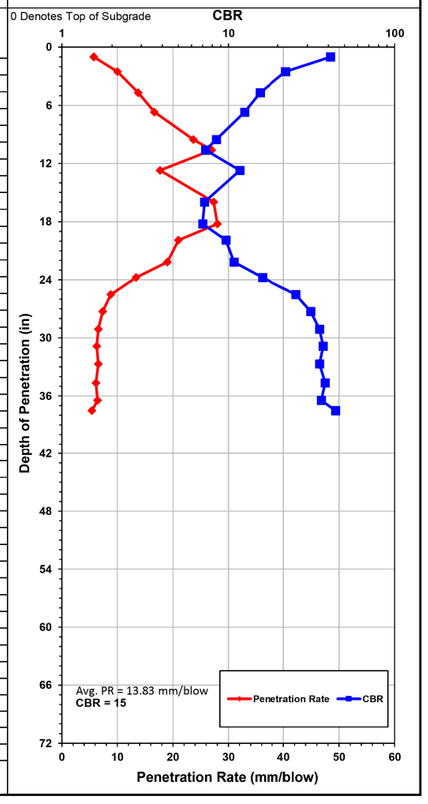
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 56.52 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
4	1.00	23.00	5.75	5.75	41.2
4	2.51	40.00	10.00	10.00	22.2
4	4.70	55.00	13.75	13.75	15.5
3	6.70	50.00	16.67	16.67	12.5
3	9.53	71.00	23.67	23.67	8.4
1	10.61	27.00	27.00	27.00	7.3
3	12.72	53.00	17.67	17.67	11.7
3	15.99	82.00	27.33	27.33	7.2
2	18.22	56.00	28.00	28.00	7.0
2	19.90	42.00	21.00	21.00	9.6
3	22.17	57.00	19.00	19.00	10.8
3	23.76	40.00	13.33	13.33	16.0
5	25.52	44.00	8.80	8.80	25.6
6	27.27	44.00	7.33	7.33	31.4
7	29.11	46.00	6.57	6.57	35.4
7	30.86	44.00	6.29	6.29	37.3
7	32.69	46.00	6.57	6.57	35.4
8	34.65	49.00	6.13	6.13	38.4
7	36.44	45.00	6.43	6.43	36.3
5	37.52	27.00	5.40	5.40	44.2

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-025-0-22 & D-026-0-22

CLI-350-7.91

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DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 44 TOTAL: 46

6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-027-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494409.761, E: 1622107.882
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

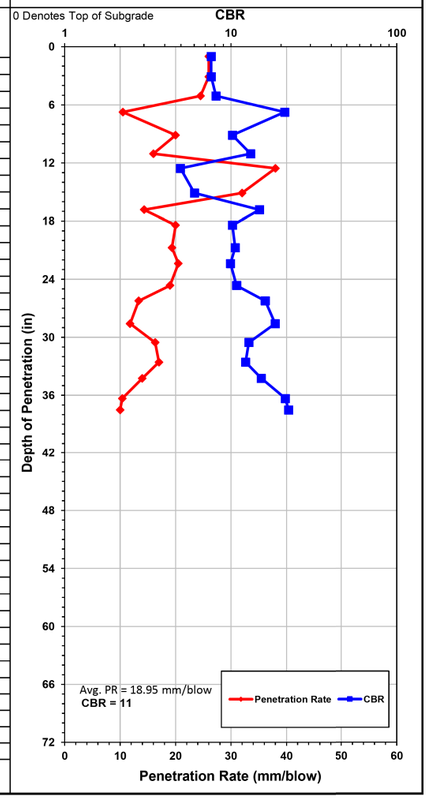
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 56.52 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	1.00	26.00	26.00	26.00	7.6
2	3.11	52.00	26.00	26.00	7.6
2	5.06	49.00	24.50	24.50	8.1
4	6.74	42.00	10.50	10.50	21.0
3	9.13	60.00	20.00	20.00	10.2
3	11.04	48.00	16.00	16.00	13.1
1	12.56	38.00	38.00	38.00	5.0
2	15.11	64.00	32.00	32.00	6.0
3	16.83	43.00	14.33	14.33	14.8
2	18.42	40.00	20.00	20.00	10.2
3	20.73	58.00	19.33	19.33	10.6
2	22.37	41.00	20.50	20.50	9.9
3	24.64	57.00	19.00	19.00	10.8
3	26.23	40.00	13.33	13.33	16.0
5	28.59	59.00	11.80	11.80	18.4
3	30.54	49.00	16.33	16.33	12.8
3	32.57	51.00	17.00	17.00	12.2
3	34.25	42.00	14.00	14.00	15.2
5	36.32	52.00	10.40	10.40	21.2
3	37.52	30.00	10.00	10.00	22.2

Notes:

Graphical Penetration Rate Plot



6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT: CLI-350-7.91
LOCATION: SR 350, Clinton County, Ohio
RII JOB No.: B-22-003 ODOT PID No.: 113981

ADCP No.: D-028-0-22
DATE TEST PERFORMED: 4/13/2022

Test Location: N: 494383.045, E: 1622520.133
Surface Elevation: 0 ft msl
Testing Personnel: SRB/JFK
Surface Mat'l / Thick.: Asphalt, 18 in
Test Elevation: -1.5 ft msl

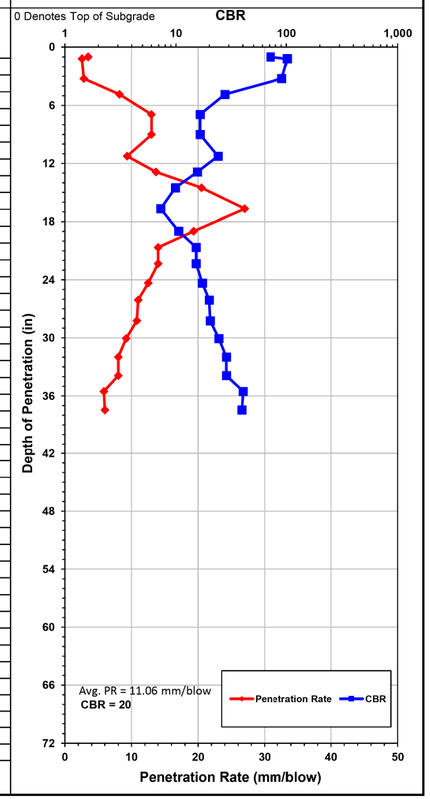
Hammer Type: Kessler DCP
Hammer Weight: 17.6 lb
Drop Height: 22.6 in
Output File Name: N/A
Termination Depth: 55.44 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
2	1.00	7.00	3.50	3.50	71.8
9	1.20	23.00	2.56	2.56	102.1
18	3.23	51.00	2.83	2.83	91.0
5	4.86	41.00	8.20	8.20	27.7
4	6.94	52.00	13.00	13.00	16.5
4	9.01	52.00	13.00	13.00	16.5
6	11.24	56.00	9.33	9.33	23.9
3	12.88	41.00	13.67	13.67	15.6
2	14.51	41.00	20.50	20.50	9.9
2	16.67	54.00	27.00	27.00	7.3
3	18.98	58.00	19.33	19.33	10.6
3	20.65	42.00	14.00	14.00	15.2
3	22.33	42.00	14.00	14.00	15.2
4	24.32	50.00	12.50	12.50	17.3
4	26.08	44.00	11.00	11.00	19.9
5	28.23	54.00	10.80	10.80	20.3
5	30.06	46.00	9.20	9.20	24.3
6	31.98	48.00	8.00	8.00	28.4
6	33.89	48.00	8.00	8.00	28.4
7	35.52	41.00	5.86	5.86	40.3
8	37.44	48.00	6.00	6.00	39.3

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOGS - D-027-0-22 & D-028-0-22

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER: MSJ
REVIEWER: EMK 06-15-22
PROJECT ID: 113981
SUBSET: 0 TOTAL: 0
SHEET: 45 TOTAL: 46

CLI-350-7.91

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6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Automated Dynamic Cone Penetrometer Summary (ASTM D6951)

PROJECT CLI-350-7.91
LOCATION SR 350, Clinton County, Ohio
RII JOB No. B-22-003 ODOT PID No. 113981

ADCP No. D-029-0-22
DATE TEST PERFORMED 4/13/2022

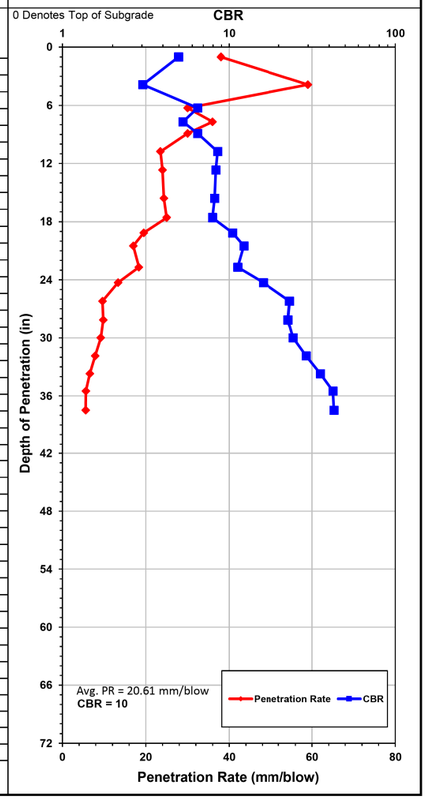
Test Location:	N: 494260.093, E: 1623315.133	Hammer Type:	Kessler DCP
Surface Elevation:	0 ft msl	Hammer Weight:	17.6 lb
Testing Personnel:	SRB/JFK	Drop Height:	22.6 in
Surface Mat'l / Thick.:	Asphalt, 17 in	Output File Name:	N/A
Test Elevation:	-1.4 ft msl	Termination Depth:	55.44 in

ADCP Summary

No. of Blows	Cumulative Penetration (in)	Penetration per Blow Set (mm)	Penetration per Blow (mm/blow)	DCPI (mm/blow)	CBR
1	1.00	38.00	38.00	38.00	5.0
1	3.87	59.00	59.00	59.00	3.0
2	6.26	60.00	30.00	30.00	6.5
1	7.69	36.00	36.00	36.00	5.3
1	8.89	30.00	30.00	30.00	6.5
2	10.76	47.00	23.50	23.50	8.5
2	12.68	48.00	24.00	24.00	8.3
3	15.59	73.00	24.33	24.33	8.2
2	17.58	50.00	25.00	25.00	7.9
2	19.14	39.00	19.50	19.50	10.5
2	20.49	34.00	17.00	17.00	12.2
3	22.69	55.00	18.33	18.33	11.2
3	24.28	40.00	13.33	13.33	16.0
5	26.19	48.00	9.60	9.60	23.2
5	28.15	49.00	9.80	9.80	22.7
5	29.98	46.00	9.20	9.20	24.3
6	31.86	47.00	7.83	7.83	29.1
7	33.69	46.00	6.57	6.57	35.4
8	35.48	45.00	5.63	5.63	42.2
9	37.48	50.00	5.56	5.56	42.8

Notes:

Graphical Penetration Rate Plot



SOIL PROFILE - ROADWAY
DCP LOG - D-029-0-22

DESIGN AGENCY
Stantec
11687 Lebanon Road
Cincinnati OH 45241
(513) 842-8200

DESIGNER MSJ
REVIEWER EMK 06-15-22
PROJECT ID 113981
SUBSET 0 TOTAL 0
SHEET 46 TOTAL 46

CLI-350-7.91

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APPENDIX B
PAVEMENT CORE PHOTOS


B-010-0-22
B-007-0-22
B-004-0-22
B-001-0-22


B-017-0-22
B-013-0-22
B-010-0-22


B-029-0-22
Large broken piece not included in photo.
B-026-0-22
B-023-0-22

APPENDIX C
SULFATE TESTING RESULTS

Corporate Office
6350 Presidential Gateway
Columbus, Ohio 43231
Telephone: (614) 823-4949
Fax Number: (614) 823-4990

Cleveland Office
9885 Rockside Road
Cleveland, OH 44125
Telephone (216) 573-0955
Fax Number: (216) 573-0963

Cincinnati Office
4480 Lake Forest Drive
Cincinnati, Ohio 45242
Telephone (513) 769-6998
Fax Number: (513) 769-7055

PROJECT	CLI-350-7.91
JOB NO.	B-22-003
DATE TESTED	5/3/2022
TESTED BY	EM/KL

DETERMINING SULFATE CONTENT IN SOILS
COLORIMETRIC METHOD
ODOT SUPPLEMENT 1122

Sample or Boring ID	Sample	Lattitude & Longitude or State Plane Coordinates		Elevation or Depth	Soaking Time (hr)	Dilution Ratio	Replicate Sample Readings			Average Reading	Sulfate Content (ppm)
							1	2	3		
B-1	1.5'-3.0'				24	20	9	8	7	8.00	160
B-2	3.0'-4.5'				24	20	20	19	19	19.33	387
B-3	3.0'-4.5'				24	20	9	8	8	8.33	167
B-4	1.5'-3.0'				24	20	12	12	12	12.00	240
B-5	1.5'-3.0'				24	20	10	9	9	9.33	187
B-6	1.5'-3.0'				24	20	15	15	15	15.00	300
B-7	1.5'-3.0'				24	20	5	4	3	4.00	80
B-8	1.5'-3.0'				24	20	11	10	9	10.00	200
B-9	1.5'-3.0'				24	20	10	10	10	10.00	200
B-10	1.5'-3.0'				24	20	10	11	10	10.33	207
B-11	1.5'-3.0'				24	20	15	14	13	14.00	280
B-12	1.5'-3.0'				24	20	29	29	29	29.00	580
B-13	1.5'-3.0'				24	20	28	27	26	27.00	540
B-14	1.5'-3.0'				24	20	19	19	19	19.00	380
B-15	1.5'-3.0'				24	20	20	20	20	20.00	400
B-16	1.5'-3.0'				24	20	44	44	44	44.00	880
B-17	1.5'-3.0'				24	20	18	17	16	17.00	340
B-18	1.5'-3.0'				24	20	17	16	16	16.33	327
B-19	1.5'-3.0'				24	20	11	11	11	11.00	220
B-20	1.5'-3.0'				24	20	18	17	16	17.00	340
B-21	1.5'-3.0'				24	20	23	23	23	23.00	460
B-22	1.5'-3.0'				24	20	16	16	16	16.00	320
B-23	1.5'-3.0'				24	20	53	53	54	53.33	1067
B-24	1.5'-3.0'				24	20	16	16	16	16.00	320
B-25	1.5'-3.0'				24	20	24	25	25	24.67	493
B-25	1.5'-3.0'				24	20	2	1	1	1.33	27
B-26	1.5'-3.0'				24	20	8	7	6	7.00	140
B-27	1.5'-3.0'				24	20	11	11	11	11.00	220
B-28	1.5'-3.0'				24	20	7	7	7	7.00	140
B-29	1.5'-3.0'				24	20	12	11	11	11.33	227

APPENDIX D
GB1 SUGBRADE ANALYSIS

#	Boring ID	Alignment	Station	Offset	Dir	Drill Rig	ER	Boring EL.	Proposed Subgrade EL	Cut Fill
1	B-001-0-22	SR 350	NA	NA		Mobile B-53	79	1064.2	1062.7	1.5 C
2	B-002-0-22	SR 350	NA	NA		Mobile B-53	79	1056.7	1055.2	1.5 C
3	B-003-2-22	SR 350	NA	NA		Mobile B-53	79	1053.9	1052.4	1.5 C
4	B-004-0-22	SR 350	NA	NA		Mobile B-53	79	1043.4	1041.9	1.5 C
5	B-005-0-22	SR 350	NA	NA		Mobile B-53	79	1057.7	1056.2	1.5 C
6	B-006-0-22	SR 350	NA	NA		Mobile B-53	79	1062.9	1061.4	1.5 C
7	B-007-0-22	SR 350	NA	NA		Mobile B-53	79	1082.1	1080.6	1.5 C
8	B-008-0-22	SR 350	NA	NA		Mobile B-53	79	1080.7	1079.2	1.5 C
9	B-009-0-22	SR 350	NA	NA		Mobile B-53	79	1086.2	1084.7	1.5 C
10	B-010-0-22	SR 350	NA	NA		Mobile B-53	79	1084.9	1083.4	1.5 C
11	B-011-0-22	SR 350	NA	NA		Mobile B-53	79	1088.0	1086.5	1.5 C
12	B-012-0-22	SR 350	NA	NA		Mobile B-53	79	1099.4	1097.9	1.5 C
13	B-013-0-22	SR 350	NA	NA		Mobile B-53	79	1100.9	1099.4	1.5 C
14	B-014-0-22	SR 350	NA	NA		Mobile B-53	79	1107.1	1105.6	1.5 C
15	B-015-0-22	SR 350	NA	NA		Mobile B-53	79	1112.4	1110.9	1.5 C
16	B-016-0-22	SR 350	NA	NA		Mobile B-53	79	1117.6	1116.1	1.5 C
17	B-017-0-22	SR 350	NA	NA		Mobile B-53	79	1113.0	1111.5	1.5 C
18	B-018-0-22	SR 350	NA	NA		Mobile B-53	79	1110.9	1109.4	1.5 C
19	B-019-0-22	SR 350	NA	NA		Mobile B-53	79	1114.0	1112.5	1.5 C
20	B-020-0-22	SR 350	NA	NA		Mobile B-53	79	1125.4	1123.9	1.5 C
21	B-021-0-22	SR 350	NA	NA		Mobile B-53	79	1143.9	1142.4	1.5 C
22	B-022-0-22	SR 350	NA	NA		Mobile B-53	79	1119.2	1117.7	1.5 C
23	B-023-0-22	SR 350	NA	NA		Mobile B-53	79	1119.2	1117.7	1.5 C
24	B-024-0-22	SR 350	NA	NA		Mobile B-53	79	1116.0	1114.5	1.5 C
25	B-025-0-22	SR 350	NA	NA		Mobile B-53	79	1129.8	1128.3	1.5 C
26	B-026-0-22	SR 350	NA	NA		Mobile B-53	79	1128.9	1127.4	1.5 C
27	B-027-0-22	SR 350	NA	NA		Mobile B-53	79	1129.2	1127.7	1.5 C
28	B-028-0-22	SR 350	NA	NA		Mobile B-53	79	1144.7	1143.2	1.5 C
29	B-029-0-22	SR 350	NA	NA		Mobile B-53	79	1147.6	1146.1	1.5 C

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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		1.5	3.0	0.0	1.5	14		3	39	19	20	47	38	85	20	16	A-6b	12	160		N_{60} & Mc		12"	
	001-0		3.0	4.5	1.5	3.0	20		3.5	37	19	18	36	39	75	26	16	A-6b	11			Mc			
	22																								
								14																	
2	B		1.5	3.0	0.0	1.5	8			25	17	8	29	18	47	9	12	A-4a	2			N_{60}		12"	
	002-0		3.0	4.5	1.5	3.0	13		2	32	21	11	56	30	86	20	16	A-6a	8	390		N_{60} & Mc			
	22																								
								8																	
3	B		1.5	3.0	0.0	1.5	9		2.5	36	19	17	45	37	82	19	16	A-6b	11			N_{60} & Mc		12"	
	003-2		3.0	4.5	1.5	3.0	17		3	35	19	16	43	37	80	23	16	A-6b	10	170		Mc			
	22																								
								9																	
4	B		1.5	3.0	0.0	1.5	34		2	NP	NP	NP	20	9	29	9	8	A-3a	0	240					
	004-0		3.0	4.5	1.5	3.0	14		2.5	35	20	15	32	28	60	28	15	A-6a	7			N_{60} & Mc			
	22																								
								14																	
5	B		1.5	3.0	0.0	1.5	13		2.5	20	16	4	28	13	41	6	11	A-4a	1	190					
	005-0		3.0	4.5	1.5	3.0	13		1.5	21	18	3	44	16	60	17	13	A-4a	5			HP & Mc			
	22																								
								13																	
6	B		1.5	3.0	0.0	1.5	13		4.5	24	16	8	33	27	60	14	11	A-4a	5	300		N_{60} & Mc		12"	
	006-0		3.0	4.5	1.5	3.0	22		4.5	22	15	7	34	25	59	13	10	A-4a	5			Mc			
	22																								
								13																	
7	B		1.5	3.0	0.0	1.5	16		2.5	19	13	6	32	14	46	22	10	A-4a	2	80		Mc			
	007-0		3.0	4.5	1.5	3.0	17		3.5	45	22	23	33	43	76	24	19	A-7-6	14			Mc			
	22																								
								16																	
8	B		1.5	3.0	0.0	1.5	7		1.5	24	17	7	47	18	65	23	12	A-4a	6	200		HP & Mc		15"	
	008-0		3.0	4.5	1.5	3.0	14		2	45	22	23	40	36	76	31	19	A-7-6	14			N_{60} & Mc			
	22																								
								7																	
9	B		1.5	3.0	0.0	1.5	13		2.5	22	17	5	46	19	65	19	12	A-4a	6	200		N_{60} & Mc		12"	
	009-0		3.0	4.5	1.5	3.0	12		2.5	46	22	24	35	39	74	26	19	A-7-6	15			N_{60} & Mc			
	22																								

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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	
								12																	
10	B		1.5	3.0	0.0	1.5	12		2	28	17	11	34	28	62	18	14	A-6a	6	210		N_{60} & Mc		12"	
	010-0		3.0	4.5	1.5	3.0	9		2	33	19	14	40	36	76	21	14	A-6a	10			N_{60} & Mc			
	22																								
								9																	
11	B		1.5	3.0	0.0	1.5	24			NP	NP	NP	28	8	36	9	11	A-4a	0	280					
	011-0		3.0	4.5	1.5	3.0	21		2	20	14	6	34	16	50	13	10	A-4a	3			Mc			
	22																								
								21																	
12	B		1.5	3.0	0.0	1.5	9		2	25	16	9	39	17	56	13	11	A-4a	4	580		N_{60}		12"	
	012-0		3.0	4.5	1.5	3.0	13		2	28	17	11	28	29	57	20	14	A-6a	5			N_{60} & Mc			
	22																								
								9																	
13	B		1.5	3.0	0.0	1.5	12		3	28	16	12	37	30	67	21	14	A-6a	7	540		N_{60} & Mc		12"	
	013-0		3.0	4.5	1.5	3.0	14		2.5	30	17	13	27	32	59	23	14	A-6a	6			N_{60} & Mc			
	22																								
								12																	
14	B		1.5	3.0	0.0	1.5	13		3.5	36	19	17	41	39	80	19	16	A-6b	11	380		N_{60} & Mc		12"	
	014-0		3.0	4.5	1.5	3.0	20		2.5	35	18	17	32	24	56	10	16	A-6b	7						
	22																								
								13																	
15	B		1.5	3.0	0.0	1.5	21			17	14	3	10	9	19	8	6	A-1-b	0	400					
	015-0		3.0	4.5	1.5	3.0	18		3.5	28	17	11	34	30	64	13	14	A-6a	6						
	22																								
								18																	
16	B		1.5	3.0	0.0	1.5	14		4.5	21	14	7	32	29	61	12	10	A-4a	5	880					
	016-0		3.0	4.5	1.5	3.0	29		4.5	21	15	6	34	28	62	12	10	A-4a	5						
	22																								
								14																	
17	B		1.5	3.0	0.0	1.5	12		3	27	20	7	48	25	73	16	15	A-4a	8	340					
	017-0		3.0	4.5	1.5	3.0	9		2	28	20	8	48	22	70	21	15	A-4a	7			N_{60} & Mc			
	22																								
								9																	
18	B		1.5	3.0	0.0	1.5	7		2.5	34	21	13	50	32	82	17	16	A-6a	9	330		N_{60}		15"	
	018-0		3.0	4.5	1.5	3.0	11		2	30	17	13	24	22	46	12	14	A-6a	3			N_{60}			

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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	
	22																								
								7																	
19	B		1.5	3.0	0.0	1.5	17			16	14	2	23	8	31	8	10	A-2-4	0	220					
	019-0		3.0	4.5	1.5	3.0	9		1	20	14	6	25	14	39	12	10	A-4a	1			HP			
	22																								
								9																	
20	B		1.5	3.0	0.0	1.5	16		4.5	30	17	13	31	30	61	23	14	A-6a	6	340		Mc			
	020-0		3.0	4.5	1.5	3.0	12		3	38	18	20	28	26	54	21	16	A-6b	8			N_{60} & Mc			
	22																								
								12																	
21	B		1.5	3.0	0.0	1.5	20		2.5	37	19	18	41	32	73	19	16	A-6b	11	460		Mc			
	021-0		3.0	4.5	1.5	3.0	32		3.5	23	15	8	29	24	53	10	10	A-4a	4						
	22																								
								20																	
22	B		1.5	3.0	0.0	1.5	14		1.5	19	14	5	22	19	41	17	10	A-4a	1	320		HP & Mc		**12"**	
	022-0		3.0	4.5	1.5	3.0	17		3.5	23	16	7	28	31	59	14	11	A-4a	5			Mc			
	22																								
								14																	
23	B		1.5	3.0	0.0	1.5	7		2	30	19	11	45	33	78	12	14	A-6a	8	1100		N_{60}		**15"**	
	023-0		3.0	4.5	1.5	3.0	4		2	42	22	20	35	37	72	26	19	A-7-6	12			N_{60} & Mc			
	22																								
								4																	
24	B		1.5	3.0	0.0	1.5	8		1.5	28	18	10	39	27	66	17	13	A-4a	6	320		HP & Mc		**12"**	
	024-0		3.0	4.5	1.5	3.0	9		3	44	23	21	42	45	87	27	20	A-7-6	13			N_{60} & Mc			
	22																								
								8																	
25	B		1.5	3.0	0.0	1.5	8		2.5	31	21	10	43	25	68	18	16	A-4a	7	490		N_{60}		**12"**	
	025-0		3.0	4.5	1.5	3.0	14		2.5	41	21	20	34	41	75	21	18	A-7-6	12			N_{60} & Mc			
	22																								
								8																	
26	B		1.5	3.0	0.0	1.5	14		2.5	23	18	5	45	31	76	14	13	A-4a	8	140					
	026-0		3.0	4.5	1.5	3.0	13		2.5	43	21	22	39	33	72	24	18	A-7-6	13			N_{60} & Mc			
	22																								
								13																	
27	B		1.5	3.0	0.0	1.5	9		0.5	21	15	6	20	19	39	16	10	A-4a	1	220		HP & Mc		**24"**	

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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	
	027-0		3.0	4.5	1.5	3.0	5		1	22	15	7	30	27	57	14	10	A-4a	4			HP & Mc			
	22																								
								5																	
28	B		1.5	3.0	0.0	1.5	16		3	25	16	9	38	25	63	10	11	A-4a	6	140					
	028-0		3.0	4.5	1.5	3.0	20		4	20	15	5	53	20	73	14	10	A-4b	8		A-4b	Mc			
	22																								
								16																	
29	B		1.5	3.0	0.0	1.5	12		1	34	18	16	33	27	60	22	16	A-6b	7	230		HP & Mc		**12"**	
	029-0		3.0	4.5	1.5	3.0	17		1	24	15	9	41	19	60	17	10	A-4a	5			HP & Mc			
	22																								
								12																	

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Subgrade Analysis

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PID: 113981

County-Route-Section: CLI-350-7.91
No. of Borings: 29

Geotechnical Consultant: Stantec Consulting Services Inc.
Prepared By: Eric M. Kistner, PE
Date prepared: 6/9/2022

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

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

Design CBR	7

% Samples within 6 feet of subgrade			
$N_{60} \leq 5$	3%	HP ≤ 0.5	2%
$N_{60} < 12$	28%	0.5 < HP ≤ 1	7%
$12 \leq N_{60} < 15$	38%	1 < HP ≤ 2	28%
$N_{60} \geq 20$	19%	HP > 2	57%
M+	66%		
Rock	0%		
Unsuitable	2%		

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

% Proposed Subgrade Surface	
Unstable & Unsuitable	79%
Unstable	78%
Unsuitable	2%

	N_{60}	N_{60L}	HP	LL	PL	PI	Silt	Clay	P 200	M_C	M_{OPT}	GI
Average	14	12	2.56	29	18	11	36	26	62	17	13	7
Maximum	34	21	4.50	46	23	24	56	45	87	31	20	15
Minimum	4	4	0.50	16	13	2	10	8	19	6	6	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	0	0	1	1	0	0	0	0	1	26	1	0	12	9	0	7	0	0	58
Percent	0%	0%	2%	2%	0%	0%	0%	0%	2%	45%	2%	0%	21%	16%	0%	12%	0%	0%	100%
% Rock|Granular|Cohesive	0%	50%									50%								100%
Surface Class Count	0	0	1	1	0	0	0	0	1	26	1	0	12	9	0	7	0	0	58
Surface Class Percent	0%	0%	2%	2%	0%	0%	0%	0%	2%	45%	2%	0%	21%	16%	0%	12%	0%	0%	100%

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Subgrade Analysis

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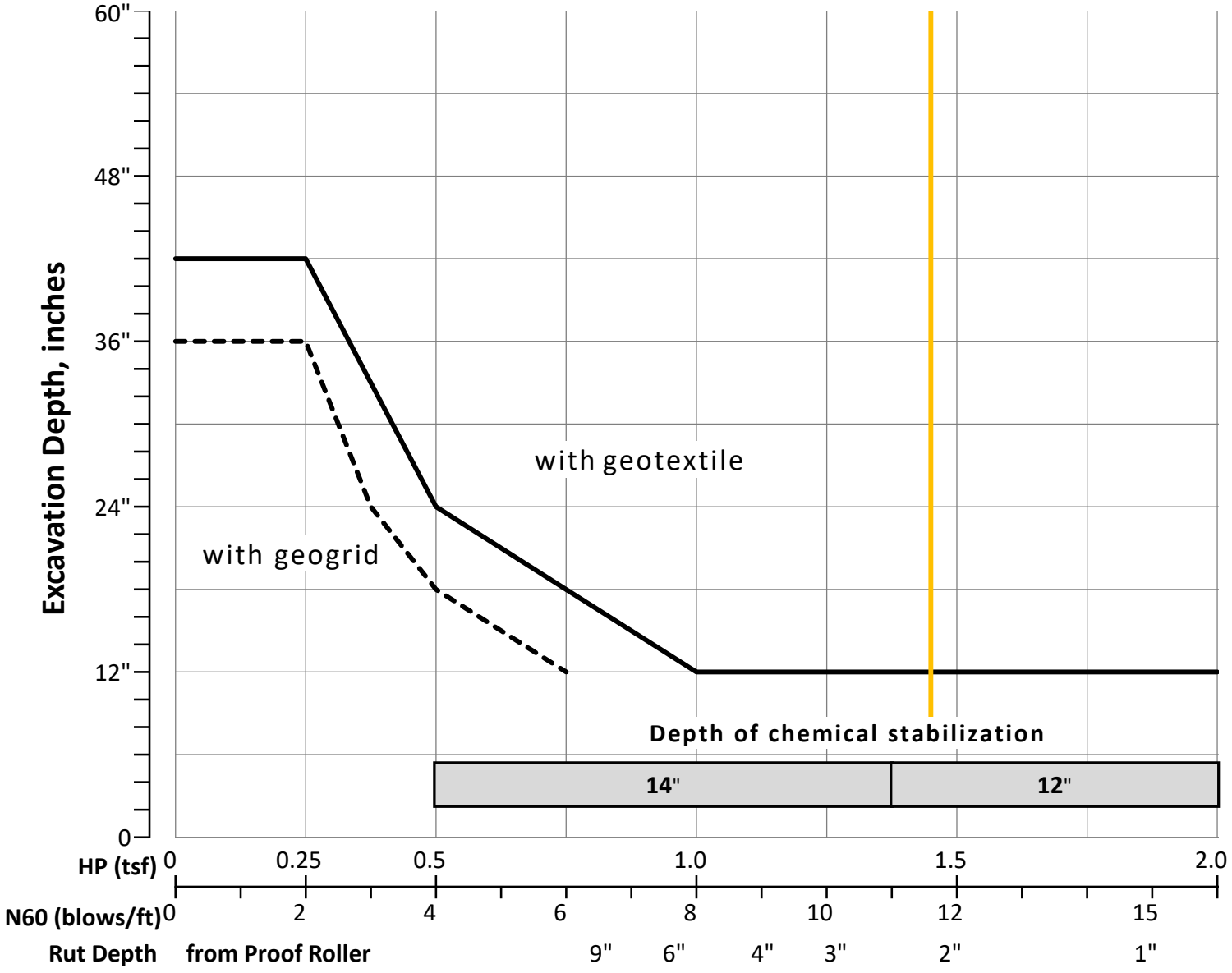
GB1 Figure B – Subgrade Stabilization



OVERRIDE TABLE

Calculated Average	New Values	Check to Override
2.56	2.50	☐ HP
11.69	10.00	☐ N60L

Average HP

Average N_{60L}