SOLAR TESTING LABORATORIES, INC.
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REPORT OF GEOTECHNICAL EXPLORATION

VALLEY VIEW AREA
NATURAL AREA RESTORATION PROJECT

1212 CUYAHOGA STREET

AKRON, SUMMIT COUNTY, OHIO

Prepared for:

Mr. Stephen Long, RLA, CLARB
Landscape Architect
Summit Metro Parks
975 Treaty Line Road
Akron, OH 44313

STL Project No. S017506

October 19, 2017

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INTRODUCTION

This report presents the results of a geotechnical exploration conducted at the site of the proposed Valley View Area Natural Area Restoration Project located at 1212 Cuyahoga Street in Akron, Summit County, Ohio. This exploration was performed to determine the subsurface conditions and their suitability for reuse and support of the proposed roadway and parking areas.

The conclusions and recommendations presented in this report are based upon:

1. Visual site reconnaissance;
2. Boring, ground water, and penetration resistance data gathered during the site sampling operations;
3. Laboratory examinations, classifications, and evaluations of the soil samples;
4. Site plan and general project information provided by Summit Metro Parks; and
5. Experience with similar project and site conditions.

A summary of the data gathered during the field exploration is presented in the Appendix of this report.

PROPOSED CONSTRUCTION & SITE CONDITIONS

The Valley View Area Natural Area Restoration Project has several phases. The first will include lowering several areas along the banks of the Cuyahoga River approximately 8 feet to increase the floodplain of the river. The excavated material will be reused for base material under the proposed roadway and parking areas within the project site. The proposed roadway will enter the Valley View Area off Cuyahoga Street and gently curve back and forth toward the northwest across the project site before terminating at a future parking area and lodge near the north bank of the Cuyahoga River. A second proposed parking area will branch off the main roadway to the southwest just beyond halfway between the entrance to the Valley View Area and the lodge. The proposed roadway and parking areas will consist of heavy-duty pavement.

Cuts and fills are anticipated along the proposed roadway and parking areas. At the time of this report, no proposed grading plans are available. We do not anticipate that cuts or fills greater than 5 feet will be necessary along the proposed roadway and parking areas. Also at this time, no proposed heavy-duty pavement section or future traffic counts are known.

The project site consists of the now closed Valley View Golf Club. Much of the golf course is located between Cuyahoga Street to the east and the Cuyahoga River to the west. A small portion of the golf course is located west of the Cuyahoga River where the river juts out across the center of the project site.

FIELD EXPLORATION & LABORATORY TESTING

Fourteen soil borings with sampling, designated as B-1 through B-14, were drilled at the proposed site between September 19 and 22, 2017 to determine the subsurface conditions. The boring locations were selected and field located by Summit Metro Parks, and drilled by Ridgeway Drilling, Inc. Their locations are shown on the Boring Location Plan (Exhibit #1 as denoted by Summit Metro Parks) in the Appendix. It should be noted that boring B-1 was moved approximately 10 feet down the slope due to drilling rig stability.

The soil borings were drilled using a heavy, all-terrain-vehicle-mounted, hollow-stem, continuous rotary drill. Bulk soil samples comprised of auger cuttings were collected at select borings. Soil sampling was conducted as outlined below, in accordance with ASTM D-1586:

1. The split-barrel sampler was driven 18 to 24 inches into the soil by the use of a 140-pound hammer falling 30 inches. The number of blows of the hammer was recorded for every 6 inches of penetration (SPT data).
2. All samples were visually classified and logged by the drillers immediately upon removal from the split-barrel. The samples were then secured in glass jars and delivered to our soil mechanics laboratory in accordance with ASTM D-4220.
3. Ground water level was measured and recorded upon encounter and at completion of each soil boring.

Selected samples were tested for Moisture Content, Particle Size Analysis, Atterberg Limits, and Standard Proctor, performed in accordance with applicable ASTM Standards. The results of the laboratory testing are included in the Appendix of this report and/or shown on the soil boring logs. The soil samples were classified in accordance with the Unified Soil Classification System (USCS).

SUBSURFACE CONDITIONS

The surface was covered with 4 to 18 inches of topsoil at all boring locations except for B-10 and B-11 where no topsoil was present. Fill material, which consisted of brown sand with gravel and slag was encountered below the topsoil at boring B-12 through its termination depth of 10 feet. Solidified slag was noted in the boring at 2.5 feet below grade. It is likely that fill material exists near the surface at other boring locations or between boring locations which resulted from man-made grading of the golf course topography. However, the only boring where non-clean soil was encountered was boring B-12.

The natural subsurface was predominantly a mixture of granular soil such as coarse sand, silty sand, sandy silt, and gravel. The granular soil types varied in thickness between 12 inches to over 8 feet and had densities that ranged from very loose to dense based on SPT-N blow counts. Stiff to very stiff grey clayey silt underlain the granular soil at borings B-2, B-5, B-7, and B-13 approximately 8.5 feet below grade in addition to shallower clayey silt deposits that were encountered at borings B-8 and B-9.

The following table summarizes ground water conditions across the project site. It should be noted that ground water elevations are subject to seasonal fluctuations; therefore, we cannot predict the actual ground water level at the time of construction. For more detailed information regarding subsurface soil conditions, please refer to the enclosed Boring Logs.

Boring No.	Ground Water Depth (feet)		Boring No.	Ground Water Depth (feet)	
	Encounter	Completion		Encounter	Completion
B-1	8.0	None	B-8	None	None
B-2	None	6.5	B-9	None	None
B-3	None	None	B-10	8.0	None
B-4	8.5	None	B-11	8.0	None
B-5	None	None	B-12	None	None
B-6	8.5	None	B-13	7.5	None
B-7	9.5	None	B-14	7.5	None

RECOMMENDATIONS

A. SITE PREPARATION

1. Strip the entire proposed roadway and parking areas of all existing vegetation, topsoil, organics, and any other unsuitable material.
2. Proof roll the entire proposed roadway and parking areas with a loaded tandem-axle truck, weighing 25 to 30 tons gross, to detect any soft yielding zones. Any yielding zones discovered should be dried and recompacted in-place or undercut and replaced with clean approved fill compacted in accordance with the "GENERAL FILL CONSTRUCTION" guidelines as discussed in this report.
3. Stabilization of isolated unstable subsurface materials may be possible using crushed stone which is "bridged" or "choked" into the yielding zones.
4. Fill the site to grade as per the "GENERAL FILL CONSTRUCTION" section of this report.

B. GENERAL FILL CONSTRUCTION

Soil borings B-9 through B-14 were located in areas that will be cut approximately 8 feet in order to increase the floodplain of the Cuyahoga River. It is desired to reuse this soil as base material for the proposed roadway and parking areas.

Boring B-9 consisted entirely of fine-grained silt (ODOT A-4b soil) and clay. This material was also encountered at boring B-11 between 2 and 6 feet below existing grade, and in two relatively thin layers at boring B-13. Fine-grained sandy silt and silty sand were encountered from zero to 5.5 feet below existing grade at boring B-10, and in relatively thin layers at borings B-11 and B-14. Coarse-grained sand and gravel was encountered elsewhere throughout these borings but it should be noted that B-12 consisted entirely of sand fill material with slag and organics.

The following table summarizes the percentage of fine-grained silt and clay, fine-grained sandy silt and silty sand, and coarse-grained sand and gravel were encountered at borings B-9 through B-14. Topsoil is also included for reference.

Soil Type	Percent of Linear Feet in Borings
Topsoil	5
Silt and Clay	30
Sandy Silt and Silty Sand	20
Sand and Gravel	15 (fill material)
	30 (natural material)

Based on our fill construction criteria discussed on the following page, we believe the natural sand and gravel is suitable to be reused as fill material. The sandy silt and silty sand might be suitable to be reused as fill material provided they contain less than 50 percent silt sizes. Additional laboratory testing should be performed prior to construction to determine particle size. We do not recommend reusing the silt and clay because of the high silt content or reusing the fill material due to the presence of slag and organics. If these deleterious materials can be screened out of the fill material, the remaining sand is suitable for reuse.

1. The soil used for fill construction should conform to the following:
    a. Maximum dry density as determined by the Standard Proctor Test (ASTM D-698) shall be no less than 110 pounds per cubic foot.
    b. Liquid Limit (ASTM D-4318) shall be no greater than 40.
    c. Plasticity Index (ASTM D-4318) shall be no greater than 15.
    d. Fill material shall contain less than 50 percent silt sizes.
    e. Soil shall be free of organic material, wood fragments, tree roots, debris, or other deleterious material.
    f. Soil shall be free of rock, concrete, asphalt, or brick fragments that would be retained on a 4-inch sieve.
2. Excavated, clean materials at the proposed site should be conditioned to their optimum moisture content as determined by the Standard Proctor Test. Standard Proctor Tests should be completed on representative samples of the designated fill materials a few days before construction begins. During construction, care should be taken that the fill materials placed correspond to the samples on which Standard Proctor Tests were performed.
3. During excavation operations, materials to be used as fill should be stockpiled without intermixing soils of differing compositions.
4. The subgrades that are to receive fill should be proof rolled as described in the "SITE PREPARATION" section above and should be approved by the Geotechnical Engineer prior to placement of fill.
5. The first lift of material should be only 4 inches thick in the loose state. Each lift of soil thereafter should be placed in maximum 8 inches of loose thickness.
6. All fill materials should be placed at a water content within 2 percentage points of the optimum moisture content as determined by the Standard Proctor Test.

7. Based on the following table, all fill materials should be compacted to a minimum density percentage of the Maximum Dry Density as determined by the Standard Proctor Test.

Location of Fill Material	Minimum Compaction Percentage
Green space	95
Roadway and parking areas	98
Lodge building pad (if performed)	100

8. Densities and moistures of compacted fill materials should be verified in the field in accordance with ASTM D-6938 (Nuclear Densometer). At least one test per every 2,500 square feet on each lift, and no fewer than three total tests per lift should be conducted.
9. During fill construction and/or subgrade preparation, the contractor should maintain proper site drainage. Exposed surfaces should be positively sloped to cause runoff to flow away from the site. If water does pond in any sectors, those areas should be drained and all mud zones or softened soils should be aerated and recompacted before further construction takes place.
10. Silty soils are susceptible to breakdown by pumping under traffic loads. If silt pockets are encountered and if pumping is initiated, construction should be rerouted and the area should be restabilized either by drying and recompacting or by adding drainage and then drying and recompacting. Areas allowed to break down will gradually worsen and spread.

C. ROADWAY AND PARKING AREAS

Prior to placing pavement, prepare the subgrade giving careful consideration to the "SITE PREPARATION" and "GENERAL FILL CONSTRUCTION" sections in this report.

At the time of this report, no proposed grading plans, heavy-duty pavement profile, or future traffic counts are available. However, we do not anticipate that cuts or fills greater than 5 feet will be necessary along the proposed roadway and parking areas.

The proposed entrance roadway encompasses borings B-1 through B-5 while the two parking areas are located at borings B-7 and B-8. Except for a thin layer of clayey silt immediately under the topsoil at boring B-2 and a thicker deposit of clayey silt below 5 feet at boring B-8, the subsurface throughout these borings consists of granular soil. It should be noted that the granular soil near the surface at boring B-4 was classified as ODOT A-4b soil. Settlement of granular soil is governed by immediate, elastic settlement that occurs over a relatively short time period (weeks) compared to consolidation settlement of cohesive soil that occurs over a period of months or years. Compared to consolidation settlement, elastic settlement is small and often ignored when competent SPT-N blow counts are encountered.

Only near the surface of borings B-3 and B-4 are there SPT-N blow counts less than 5 for granular soil, which can be classified as "very loose." However, we recommend that all subgrade under the new roadway and parking areas be compacted with a vibratory roller before any fill material or the pavement section is placed. The vibratory roller should densify the granular soil and lead to even smaller magnitudes of immediate, elastic settlement after any fill material is placed. It should be noted that the ODOT A-4b soil at boring B-4 may prove difficult to compact with a vibratory roller because of its high silt content. Other pockets of such soil likely exist across the project site. If soil breakdown occurs during vibratory compaction or fill placement due to high silt content, this subgrade may need undercut and replaced with engineered fill that is not ODOT A-4b soil.

In order to estimate the magnitude of anticipated elastic settlement, the following assumptions were made: the proposed roadway width will be 10 feet and the thickness of fill material will vary between 1 and 5 feet. The following soil parameters were used for settlement analysis.

- Unit Weight of fill material = 135 pcf
- Poisson's Ratio of subgrade = 0.2 to 0.4
- Modulus of Elasticity of subgrade = 1015 to 1740 psi

Based on these assumptions and range of soil parameters, we anticipate elastic settlement of the existing soils to vary between 0.25 and 2.0 inches in the vicinity of the new roadway and parking areas. We do not anticipate any long-term consolidation settlement.

Either a rigid or flexible pavement could be used provided that the subgrade is properly prepared and well-drained, and that the pavement has a sufficient structural section determined on the basis of subgrade reaction, traffic number, and traffic loads. A presumptive California Bearing Ratio (CBR) value of 6 for flexible pavement or a presumptive Modulus of Subgrade Reaction (k) value of 150 pounds per cubic inch (pci) for rigid pavement could be used as anticipated subgrade reaction values. However, if poor drainage or other deleterious conditions are allowed to develop, these estimated values become invalid. For this reason, we recommend the installation of underdrains at the edge of pavement of the new roadway and the installation of weep holes or finger drains at all drainage structures within the parking areas.

GENERAL CONSIDERATIONS

The Valley View Area Natural Area Restoration Project has several phases, and the recommendations outlined above are based on preliminary plans of the first phase. If the plans are modified in the future or when additional phases are announced, we will review our recommendations, if so requested.

In any geotechnical exploration, it is necessary to assume that subsurface conditions do not vary greatly from the conditions encountered in the soil borings. Our experience has shown that variations do exist, and that these variations usually become apparent during construction. For this reason, it is recommended that we be retained to inspect the excavation, earthwork, and pavement operations. When variations become apparent, it is important to review and, if necessary, modify the recommendations.

We trust that you will find the project completed in accordance with your specifications, and thank you for the opportunity of working with you on this project. If you have any questions, please contact our office.

SOLAR TESTING LABORATORIES, INC.

Michael S. Russo, P.E.
Geotechnical Engineer

Mark R. Recktenwald, P.E.
Vice President

A P P E N D I X

EXHIBIT #1

BORING LOCATION PLAN

Valley View Area
Natural Area Restoration Project
1212 Cuyahoga Street, Akron, OH
STL Project No. S017506
September 19 to 22, 2017

LEGEND

- SW — EX GAS LINES
- PETRO — EX GAS LINES
- WF — EX UNDER GR ELEC
- E — EX UNDER GR ELEC
- OHE — EX OVER HD ELEC
- 778 — EX CONTOURS
- EX STREAM
- B-1 — BORING LOCATIONS

0 350 700
HORZ 1"=350'

DESIGNED BY:
DRAWN BY: STL
REFERENCES:
REVISIONS: 1
SCALE: AS SHOWN
DATE: 06/23/2017
SHEET: SOIL BORINGS 1 of 1

CASCADE VALLEY M.P. VALLEY VIEW AREA
NATURAL AREA RESTORATION

975 TREATY LINE ROAD
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Summit Metro Parks

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BORING NUMBER B-1

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/20/17 **COMPLETED** 9/20/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Boring moved 10 feet down slope.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
▽ **WATER ON ENCOUNTER** 8.0 ft
NOTES N Value corrected to N(60). Hole caved at 6.5 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0				8" TOPSOIL.								
	SS			0.7	4-3-5-3 (11)	79	7.7					
		SM		Medium dense to loose brown and grey SILTY SAND and GRAVEL, trace clay (A-4a). (Damp)								
2.5	SS				2-3-2-2 (7)	83	14.3			NP	NP	NP
				4.5								
5.0	SS			Loose grey COARSE SAND, little gravel. (Damp)	2-3-4-4 (9)	79	7.7					
		SP		▽								
7.5				8.5								
	SS	GW		Medium dense grey GRAVEL. (Wet)	8-8-3 (15)	33	13					
10.0				10.0								
				Bottom of hole at 10.0 feet.								

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BORING NUMBER B-2

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/20/17 **COMPLETED** 9/20/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
WATER ON ENCOUNTER None
NOTES N Value corrected to N(60). Hole caved at 7.5 feet.
WATER ON COMPLETION 6.5 ft
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0												
	SS			18" TOPSOIL.	2-2-3-3 (7)	83						
		ML		1.5 Medium stiff brown and grey CLAYEY SILT, little sand. (Moist)			22					
2.5	SS			2.5 Loose to medium dense grey SILT and SAND, trace clay seams (A-4a). (Damp)	2-3-3-4 (8)	88	16.6					
5.0	SS	ML			4-5-4-4 (12)	75	26.5			NP	NP	NP
7.5				8.5 Very stiff grey CLAYEY SILT. (Moist)								
	SS	ML			8-8-12 (27)	94	20.5					
10.0				10.0 Bottom of hole at 10.0 feet.								

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BORING NUMBER B-3

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/20/17 **COMPLETED** 9/20/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
WATER ON ENCOUNTER None
NOTES N Value corrected to N(60). Hole caved at 7 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0				10" TOPSOIL.								
	SS			0.8 Loose brown SILTY SAND, little gravel. (Damp)	3-4-4-3 (11)	83	9.5					
2.5	SS				2-1-1-1 (3)	54	9.7					
5.0	SS	SM			5-4-3-7 (9)	83	8.8					
7.5				8.5								
	SS	SP		Medium dense brown SAND, little gravel, sandstone pieces. (Damp)	12-11-11 (29)	83	6.3					
10.0				10.0 Bottom of hole at 10.0 feet.								

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BORING NUMBER B-4

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/20/17 **COMPLETED** 9/20/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
▽ **WATER ON ENCOUNTER** 8.5 ft
NOTES N Value corrected to N(60). Hole caved at 5.5 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0				6" TOPSOIL. 0.5								
	SS	ML		Very loose brown SILT, some sand, little clay (A-4b). (Damp)	2-1-1-1 (3)	88	18.7			NP	NP	NP
2.5	SS			3.0	2-2-4-5 (8)	88	11.2					
				Loose to medium dense brown COARSE SAND, little gravel, rock pieces. (Damp)								
5.0	SS	SP		- possible sandstone cobble at 5.5 feet	7-8-9-8 (23)	83	5					
7.5				8.5 ▽								
	SS	GW		Medium dense brown GRAVEL, little sand, rock pieces. (Wet)	6-5-5 (13)	100	12.6					
10.0				10.0								
				Bottom of hole at 10.0 feet.								

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BORING NUMBER B-5

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/19/17 **COMPLETED** 9/19/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
WATER ON ENCOUNTER None
NOTES N Value corrected to N(60). Hole caved at 4.5 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0				8" TOPSOIL. 0.7								
	SS	ML		Loose brown SANDY SILT, trace gravel. (Damp) 2.0	2-3-3-4 (8)	79	10.3					
2.5	SS	SP		Loose to medium dense brown COARSE SAND, little gravel. (Damp)	4-3-3-3 (8)	83	4.1					
5.0	SS	SP			4-4-4-5 (11)	79	4.3					
7.5		SP		8.5								
	SS	ML		Stiff grey CLAYEY SILT. (Moist) 10.0	3-3-5 (11)	94	18.4					
10.0				Bottom of hole at 10.0 feet.								

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BORING NUMBER B-6

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/19/17 **COMPLETED** 9/19/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
▽ **WATER ON ENCOUNTER** 8.5 ft
NOTES N Value corrected to N(60). Hole caved at 7 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0				7" TOPSOIL. 0.6								
	SS	ML		Loose brown SANDY SILT. (Damp) 2.0	2-2-2-3 (5)	88	9.3					
2.5	SS	SP		Loose to medium dense brown FINE SAND, little silt, trace gravel. (Damp)	2-3-3-3 (8)	88	3.6					
5.0	SS				2-2-3-4 (7)		9.4					
7.5				▽ - some rock pieces at 8.5 feet (Wet)								
10.0	SS			10.0	9-9-11 (27)	44	23.1					
				Bottom of hole at 10.0 feet.								

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BORING NUMBER B-7

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/19/17 **COMPLETED** 9/19/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
▽ **WATER ON ENCOUNTER** 9.5 ft
NOTES N Value corrected to N(60). Hole caved at 6 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0				6" TOPSOIL.								
				0.5								
	SS	SP		Loose brown SAND, little silt, gravel. (Damp)	2-2-4-4 (8)	79	6.4					
				2.0								
2.5				Medium dense to loose brown COARSE SAND, little rock pieces. (Damp)								
	SS				5-7-6-6 (17)	71	4.6					
5.0	SS	SP			4-5-2-2 (9)	75	4.9					
7.5												
				8.5								
	SS			Loose brown and grey SANDY GRAVEL, little rock pieces. (Wet) ▽	2-3-4 (9)	72	11.9					
10.0												
		GW										
12.5												
				13.5								
	SS	ML		Stiff grey CLAYEY SILT, trace sand. (Wet)	3-4-5 (12)	94	19.4					
15.0				15.0								
				Bottom of hole at 15.0 feet.								

Solar Testing Laboratories, Inc.
1125 Valley Belt Road
Brooklyn Heights, Ohio 44131
Telephone: 216-741-7007
Fax: 216-741-7011

BORING NUMBER B-8

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/19/17 **COMPLETED** 9/19/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
WATER ON ENCOUNTER None
NOTES N Value corrected to N(60). Hole caved at 8.5 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0				8" TOPSOIL.								
				0.7								
	SS			Medium dense brown SILTY SAND, little gravel, rock pieces. (Damp)	2-3-6-8 (12)	79	11.2					
2.5												
	SS	SM			3-6-9-18 (20)	71	5.3					
5.0				5.0								
	SS			Very stiff grey CLAYEY SILT. (Moist)	6-8-7-6 (20)	75	14.4					
7.5												
	SS	ML			6-6-6 (16)	94	21.3					
10.0												
12.5												
	SS				6-6-6 (16)	100	22.2					
15.0				15.0								
				Bottom of hole at 15.0 feet.								

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Fax: 216-741-7011

BORING NUMBER B-9

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/19/17 **COMPLETED** 9/19/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
WATER ON ENCOUNTER None
NOTES N Value corrected to N(60). Hole caved at 6.5 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE		U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
											LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0.0					0.3 4" TOPSOIL.								
	SS	AU	ML		Stiff brown CLAYEY SILT, trace sand, hair roots. (Moist)	4-4-6-5 (13)	79	17					
					2.0								
2.5	SS		ML		Stiff to very stiff brown and grey SILT, little clay, trace sand (A-4b). (Moist)	3-4-5-7 (12)	83	26.1			30	6	24
5.0	SS					5-6-7-8 (17)	88	27.1					
					6.0								
	SS		ML		Very stiff to stiff grey CLAYEY SILT. (Moist)	6-6-6-9 (16)	83	22.3					
7.5													
	SS		ML			5-5-5-6 (13)	88	18.1					
10.0					10.0								
					Bottom of hole at 10.0 feet.								

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BORING NUMBER B-10

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/19/17 **COMPLETED** 9/19/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
▽ **WATER ON ENCOUNTER** 8.0 ft
NOTES N Value corrected to N(60). Hole caved at 7 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE		U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0.0													
	SS		ML		Loose brown SANDY SILT, trace gravel, organics. (Damp)	2-3-3-2 (8)	88	10.1					
2.5	SS		ML		- brown sand seam at 2.5 feet	1-1-1-2 (3)	79	23.1					
5.0	SS		ML			3-3-3-5 (8)	83	22.2					
					5.5								
	SS	AU	SP		Very loose to medium dense brown and grey COARSE SAND, little gravel. (Damp)	5-2-1-2 (4)	88	13.5					
7.5					▽ (Wet)								
	SS		SP			3-6-4-5 (13)	42	16.2					
10.0					10.0								
					Bottom of hole at 10.0 feet.								

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BORING NUMBER B-11

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/19/17 **COMPLETED** 9/19/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
▽ **WATER ON ENCOUNTER** 8.0 ft
NOTES N Value corrected to N(60). Hole caved at 6 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0												
	SS	ML		Loose brown SANDY SILT, trace gravel, organics. (Damp)	2-2-3-3 (7)	88	10.6					
2.0												
2.5	SS	CL		Medium stiff brown CLAY and SILT, little sand (A-4b). (Moist)	2-2-3-3 (7)	83	30.5			33	10	23
5.0	SS				1-2-2-2 (5)	79	33.2					
6.0												
	SS	ML		Very loose brown and grey SANDY SILT, trace clay. (Wet)	1-0-1-1 (1)	71	26.1					
7.5				8.0 ▽								
	SS	SM		Very loose grey SILTY SAND, trace gravel. (Wet)	1-1-1-1 (3)	71	30.5					
10.0				10.0								
				Bottom of hole at 10.0 feet.								

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BORING NUMBER B-12

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/22/17 **COMPLETED** 9/22/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
WATER ON ENCOUNTER None
NOTES N Value corrected to N(60). Hole caved at 5 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0				6" TOPSOIL.								
				0.5								
	SS			FILL: Brown SAND, little gravel, slag, trace glass fragments. (Damp)	2-5-7-9 (16)	83	5.4					
2.5												
	SS			- grey solidified slag at 2.5 feet	15-14-7-7 (28)	88	4.1					
	SS				15-14-8-7 (29)	83	6					
5.0				5.0								
	SS			FILL: Brown SAND, some gravel, little slag, trace organics (wood). (Damp)								
	SS	AU		- brown clayey silt layer at 6.5 feet	8-5-7-6 (16)	88	23.7					
7.5												
	SS				5-6-10-12 (21)	88	10.1					
10.0				10.0								
				Bottom of hole at 10.0 feet.								

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Telephone: 216-741-7007
Fax: 216-741-7011

BORING NUMBER B-13

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/19/17 **COMPLETED** 9/19/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
▽ **WATER ON ENCOUNTER** 7.5 ft
NOTES N Value corrected to N(60). Hole caved at 7.5 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0.0				8" TOPSOIL. 0.7								
	SS	SP		Loose brown SAND, little gravel, rock pieces. (Damp) 2.0	2-3-3-3 (8)	79	8.2					
2.5	SS	ML		Medium dense brown and grey CLAYEY SILT, little sand. (Moist) 3.5	2-2-2-6 (5)	83	14.1					
5.0	SS	GW		Dense to medium dense brown SANDY GRAVEL. (Damp) - possible sandstone cobble at 5 feet	7-12-15-11 (36)	83	7					
7.5	SS			▽ (Wet) 8.0	10-9-9-8 (24)	88	10.7					
10.0	SS	ML		Very stiff grey SILT, little clay, trace sand (A-4b). (Wet) 10.0	5-7-6-7 (17)	75	21.5			NP	NP	NP
				Bottom of hole at 10.0 feet.								

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BORING NUMBER B-14

CLIENT Summit Metro Parks
PROJECT NAME Valley View Area Restoration Project
PROJECT NUMBER S017506
PROJECT LOCATION 1212 Cuyahoga Street, Akron, OH
DATE STARTED 9/22/17 **COMPLETED** 9/22/17
GROUND ELEVATION
DRILLING CONTRACTOR Ridgeway Drilling, Inc.
BORING LOCATION Please see Boring Location Plan.
DRILLING METHOD Hollow Stem Auger
GROUND WATER LEVELS:
LOGGED BY B. Frasier **DRILLER** P. Simpson
▽ **WATER ON ENCOUNTER** 7.5 ft
NOTES N Value corrected to N(60). Hole caved at 7 feet.
WATER ON COMPLETION None
HOLE SIZE **AUGER SIZE** 2.25 I.D.
WATER AFTER ____ **HRS:** ---

DEPTH (ft)	SAMPLE TYPE		U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	ATTERBERG LIMITS: PLASTIC LIMIT
0.0													
	SS		ML		12" TOPSOIL. 1.0 Medium dense brown SANDY SILT, trace hair roots. (Damp) 2.0	4-4-5-5 (12)	88	6.9					
2.5	SS	AU	SP		Loose to medium dense brown COARSE SAND, little gravel. (Damp)	4-3-2-2 (7)	83	2.9					
5.0	SS				6.0	2-6-9-12 (20)	88	5.4					
7.5	SS		GW		Medium dense brown SANDY GRAVEL, little rock pieces. (Wet) ▽	5-6-6-7 (16)	79	13.3					
10.0	SS				10.0	6-10-10-12 (27)	33	10.4					
					Bottom of hole at 10.0 feet.								

SOIL CLASSIFICATION CHART

SOIL DESCRIPTIONS

(From ODOT Specifications for Geotechnical Explorations, January 2007)

NON-COHESIVE SOILS

(Silt, Sand, Gravel, and combinations)

Relative Compactness

Term	N-Values*
Very Loose	Below 5 BPF
Loose	5 to 10 BPF
Medium Dense	11 to 30 BPF
Dense	31 to 50 BPF
Very Dense	Over 50 BPF

COHESIVE SOILS

(Clay, Silt, and combinations)

Relative Consistency

Term	N-Values*	Qu (Tsf)**
Very Soft	Below 2 BPF	Below 0.25
Soft	2 to 4 BPF	0.25 to 0.5
Medium Stiff	5 to 8 BPF	0.5 to 1.0
Stiff	9 to 15 BPF	1.0 to 2.0
Very Stiff	16 to 30 BPF	2.0 to 4.0
Hard	Over 30 BPF	Over 4.0

* N-Values listed in blows per foot (BPF) from the Standard Penetration Test (ASTM D-1586)
** Unconfined Compressive Strength (ASTM D-2166) in Tons per square foot (Tsf)

PARTICLE SIZES

Component		Size
Boulders		Larger than 12 inch
Cobbles		3 to 12 inch
Gravel	- coarse	¾ to 3 inch
	- fine	2.0 mm to ¾ inch
Sand	- coarse	0.42 to 2.0 mm
	- fine	0.074 to 0.42 mm
Silt		0.005 to 0.074 mm
Clay		Smaller than 0.005 mm

COMPONENT MODIFIERS

Term	Percent by Weight
Trace	0 to 10
Little	10 to 20
Some	20 to 35
And	35 to 50

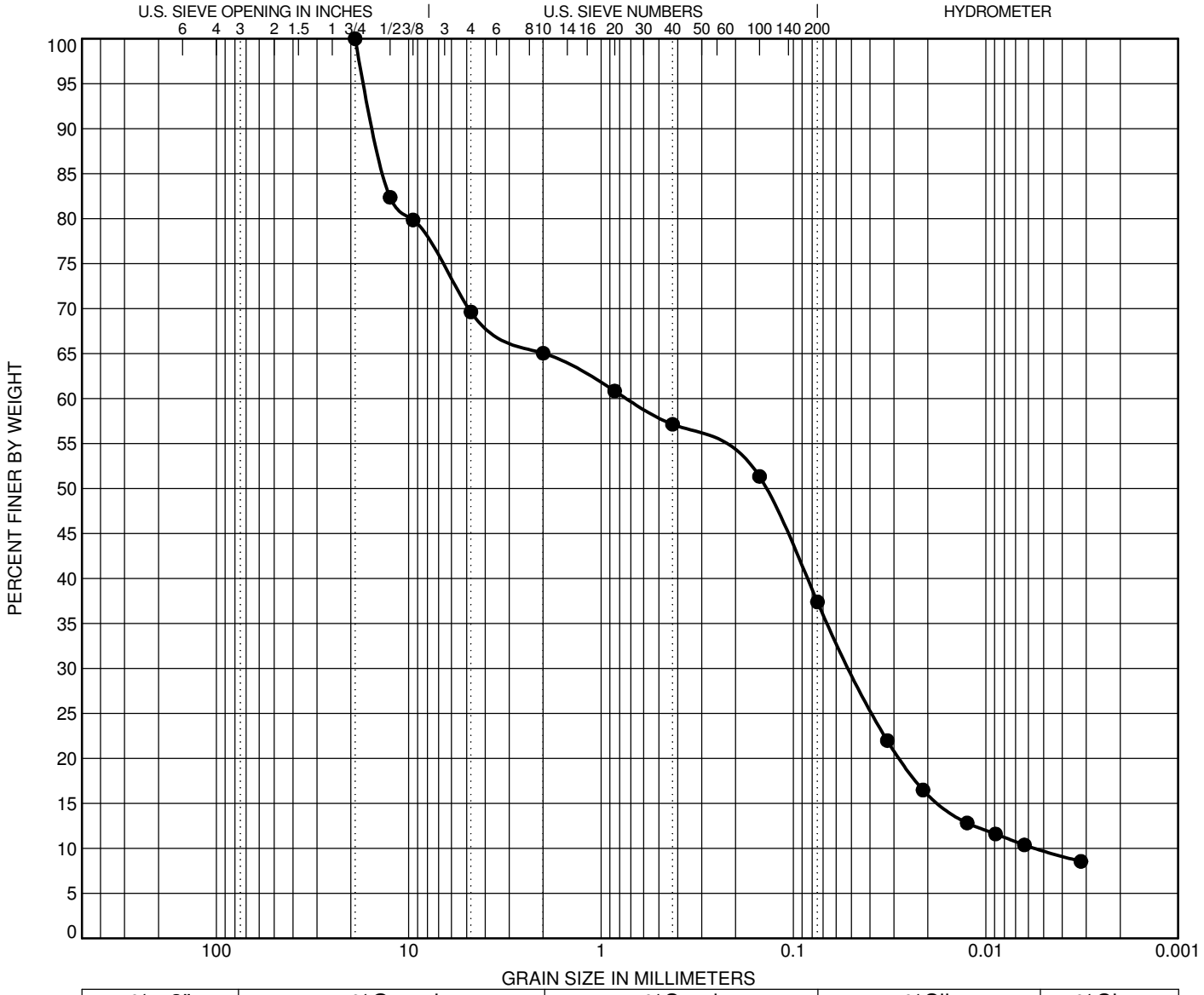
UNIFIED SOIL CLASSIFICATION SYSTEM

(ASTM D-2487)

MAJOR DIVISIONS			GROUP SYMBOLS	GROUP NAME
COARSE GRAINED SOILS	GRAVEL	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE GRAINED SOILS	SILT AND CLAY LL < 50	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY LL ≥ 50	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

REPORT NO. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	%Gravel	%Sand	%Silt	%Clay
0.0	35.0	27.6	27.6	9.8

LL	PI	D90	D60	D50	D30	D15	D10	Cc	Cu
NP	NP	14.983	0.726	0.14	0.05	0.017	0.005	0.63	132.61

REMARKS	USCS	AASHTO
	SM	A-4

PROJECT NUMBER S017506

PROJECT NAME Valley View Area Restoration Project

LOCATION B-1, 2'-4'

DATE 10/9/17

Solar Testing Laboratories, Inc.
1125 Valley Belt Road
Brooklyn Heights, Ohio 44131
Telephone: 216-741-7007
Fax: 216-741-7011

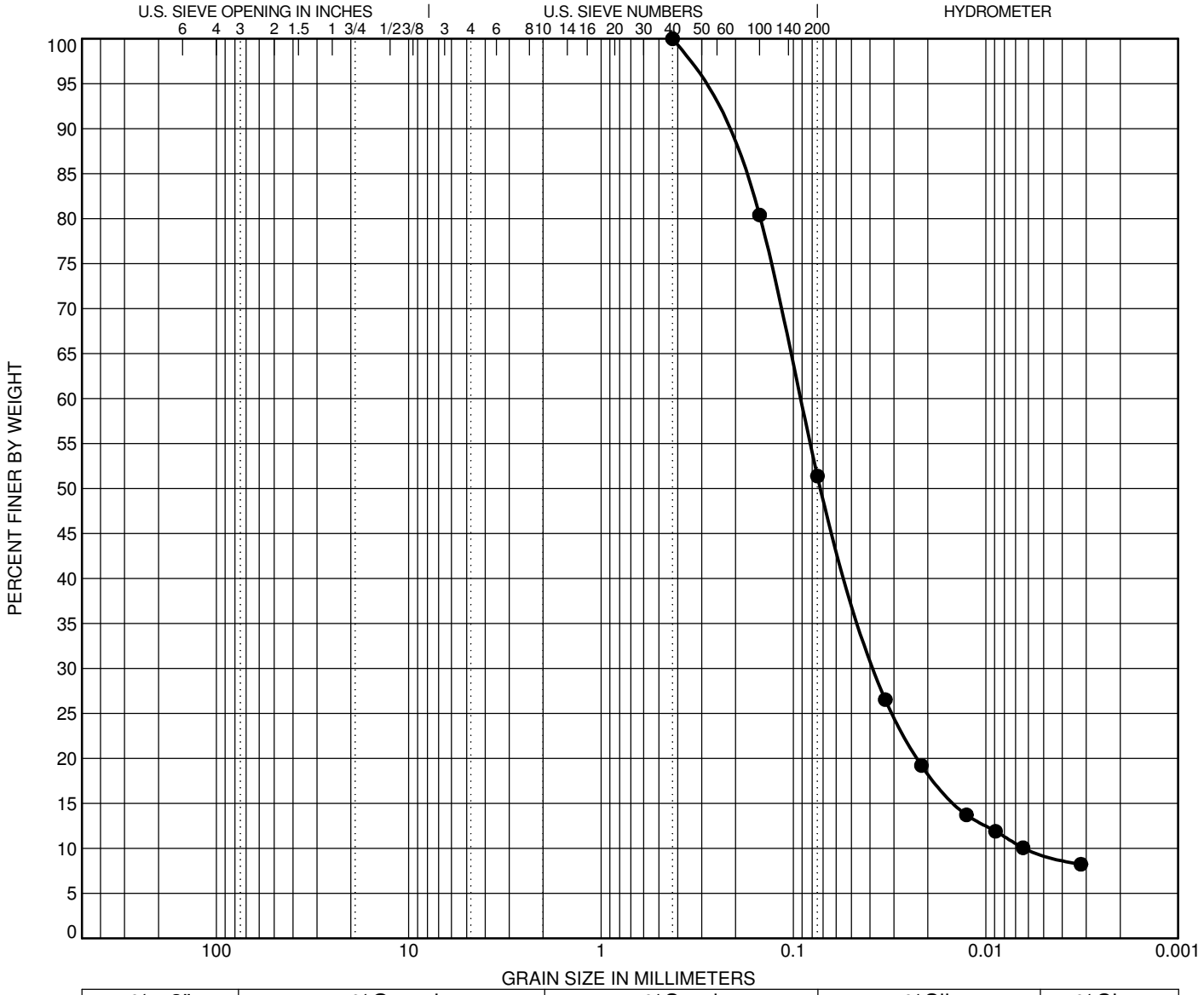
MATERIAL DESCRIPTION

Medium dense to loose brown and grey SILTY SAND and GRAVEL, trace clay (A-4a).

CURVE # ____

REPORT NO. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	%Gravel	%Sand	%Silt	%Clay
0.0	0.0	48.6	42.0	9.4

LL	PI	D90	D60	D50	D30	D15	D10	Cc	Cu
NP	NP	0.25	0.092	0.072	0.037	0.014	0.006	2.42	14.75

REMARKS	USCS	AASHTO
	ML	A-4

PROJECT NUMBER S017506

PROJECT NAME Valley View Area Restoration Project

LOCATION B-2, 4'-6'

DATE 10/9/17

MATERIAL DESCRIPTION

Loose to medium dense grey SILT and SAND, trace clay seams (A-4a).

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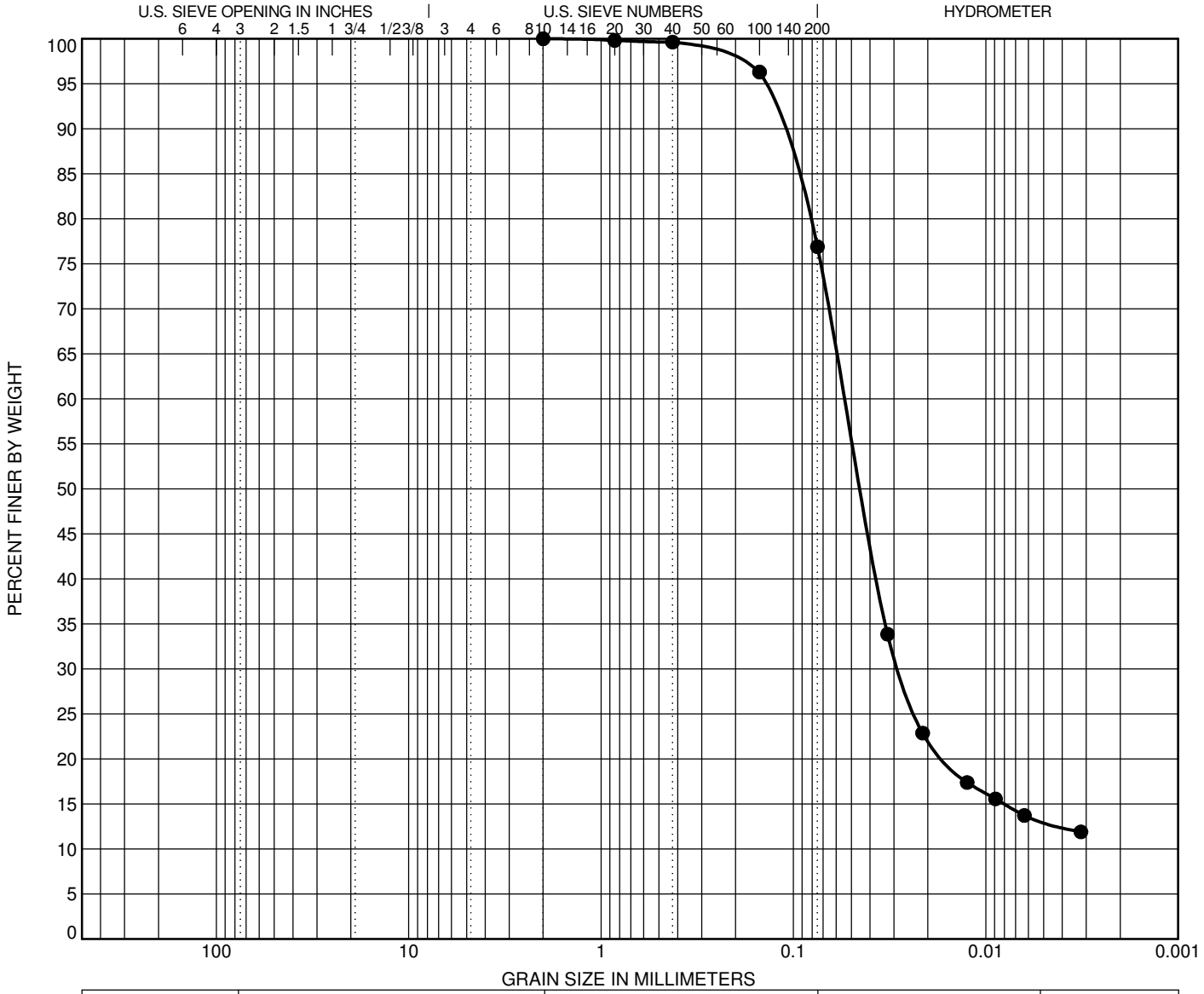
1125 Valley Belt Road
Brooklyn Heights, Ohio 44131
Telephone: 216-741-7007
Fax: 216-741-7011

CURVE # ____

REPORT NO. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	%Gravel	%Sand	%Silt	%Clay
0.0	0.0	23.1	63.8	13.1

LL	PI	D90	D60	D50	D30	D15	D10	Cc	Cu
NP	NP	0.12	0.054	0.044	0.028	0.008			

REMARKS	USCS	AASHTO
	ML	A-4

PROJECT NUMBER S017506

PROJECT NAME Valley View Area Restoration Project

LOCATION B-4, 0.5'-2'

DATE 10/9/17

Solar Testing Laboratories, Inc.
1125 Valley Belt Road
Brooklyn Heights, Ohio 44131
Telephone: 216-741-7007
Fax: 216-741-7011

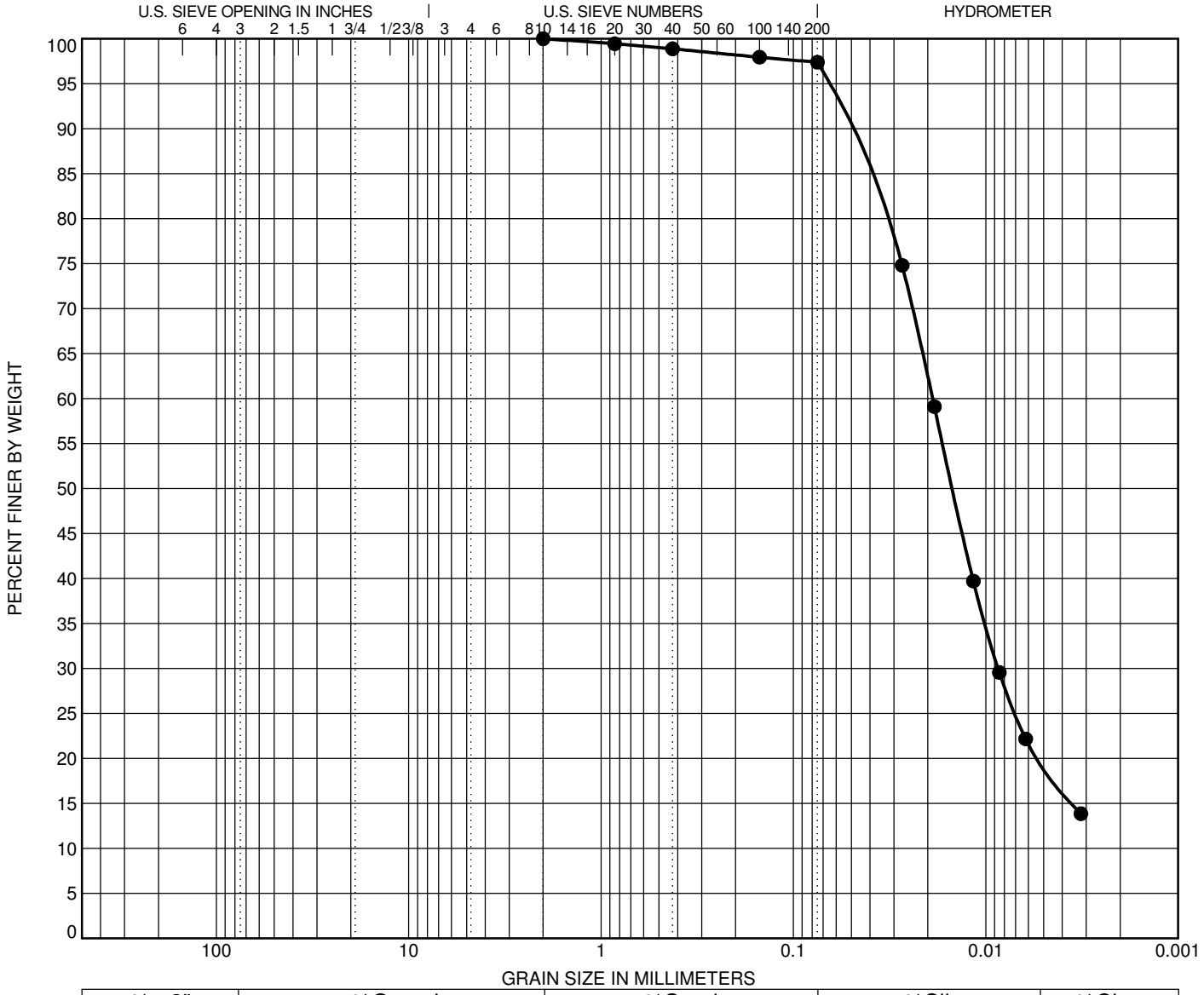
MATERIAL DESCRIPTION

Very loose brown SILT, some sand, little clay (A-4b).

CURVE # ____

REPORT NO. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	%Gravel	%Sand	%Silt	%Clay
0.0	0.0	2.6	77.9	19.5

LL	PI	D90	D60	D50	D30	D15	D10	Cc	Cu
30	6	0.054	0.019	0.015	0.009	0.004			

REMARKS	USCS	AASHTO
	ML	A-4

PROJECT NUMBER S017506

PROJECT NAME Valley View Area Restoration Project

LOCATION B-9, 2'-4'

DATE 10/9/17

Solar Testing Laboratories, Inc.
1125 Valley Belt Road
Brooklyn Heights, Ohio 44131
Telephone: 216-741-7007
Fax: 216-741-7011

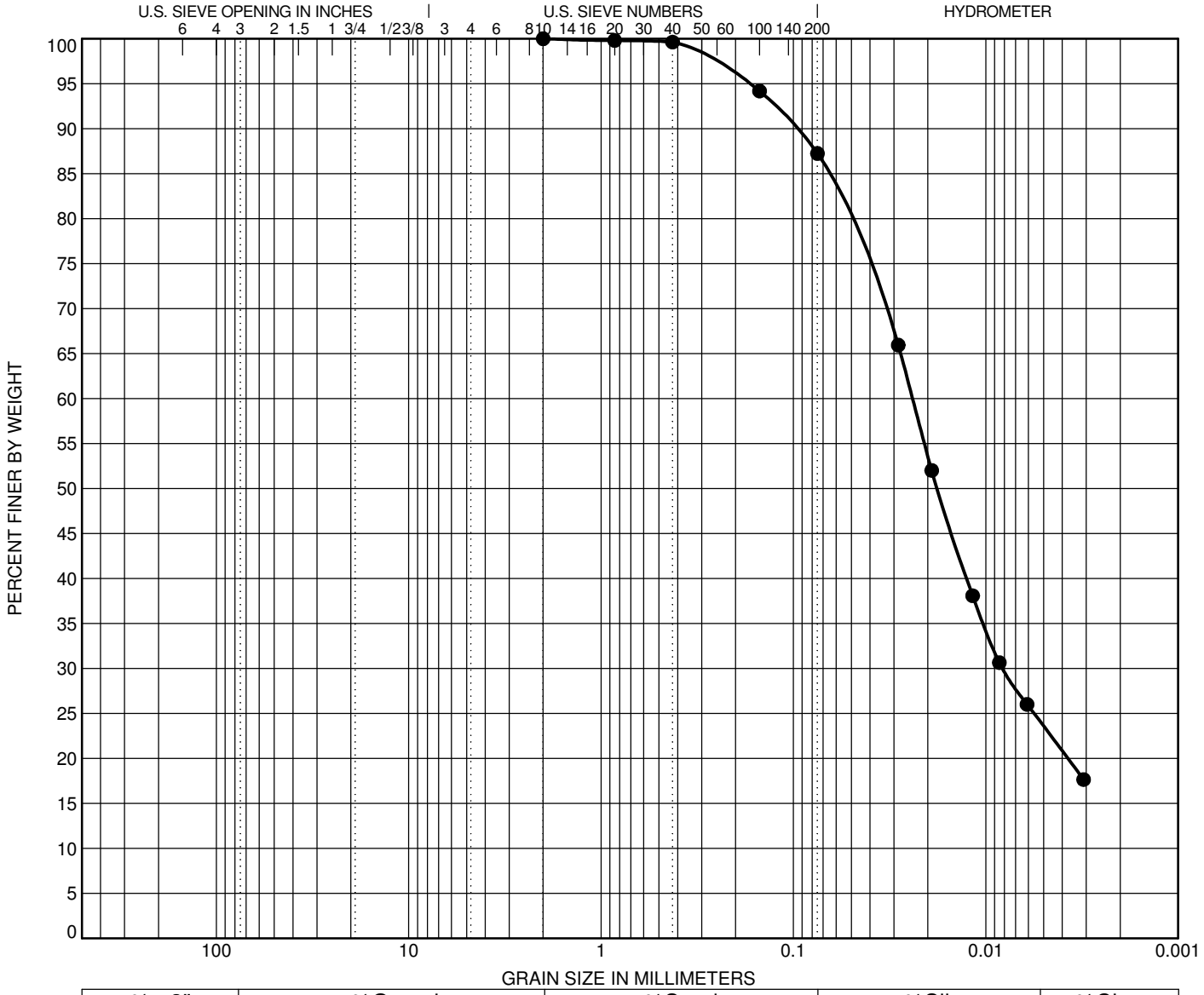
MATERIAL DESCRIPTION

Stiff to very stiff brown and grey SILT, little clay, trace sand (A-4b).

CURVE # ____

REPORT NO. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	%Gravel	%Sand	%Silt	%Clay
0.0	0.0	12.8	63.7	23.5

LL	PI	D90	D60	D50	D30	D15	D10	Cc	Cu
33	10	0.099	0.024	0.018	0.008				

REMARKS	USCS	AASHTO
	CL	A-4

PROJECT NUMBER S017506

PROJECT NAME Valley View Area Restoration Project

LOCATION B-11, 2'-4'

DATE 10/9/17

Solar Testing Laboratories, Inc.
1125 Valley Belt Road
Brooklyn Heights, Ohio 44131
Telephone: 216-741-7007
Fax: 216-741-7011

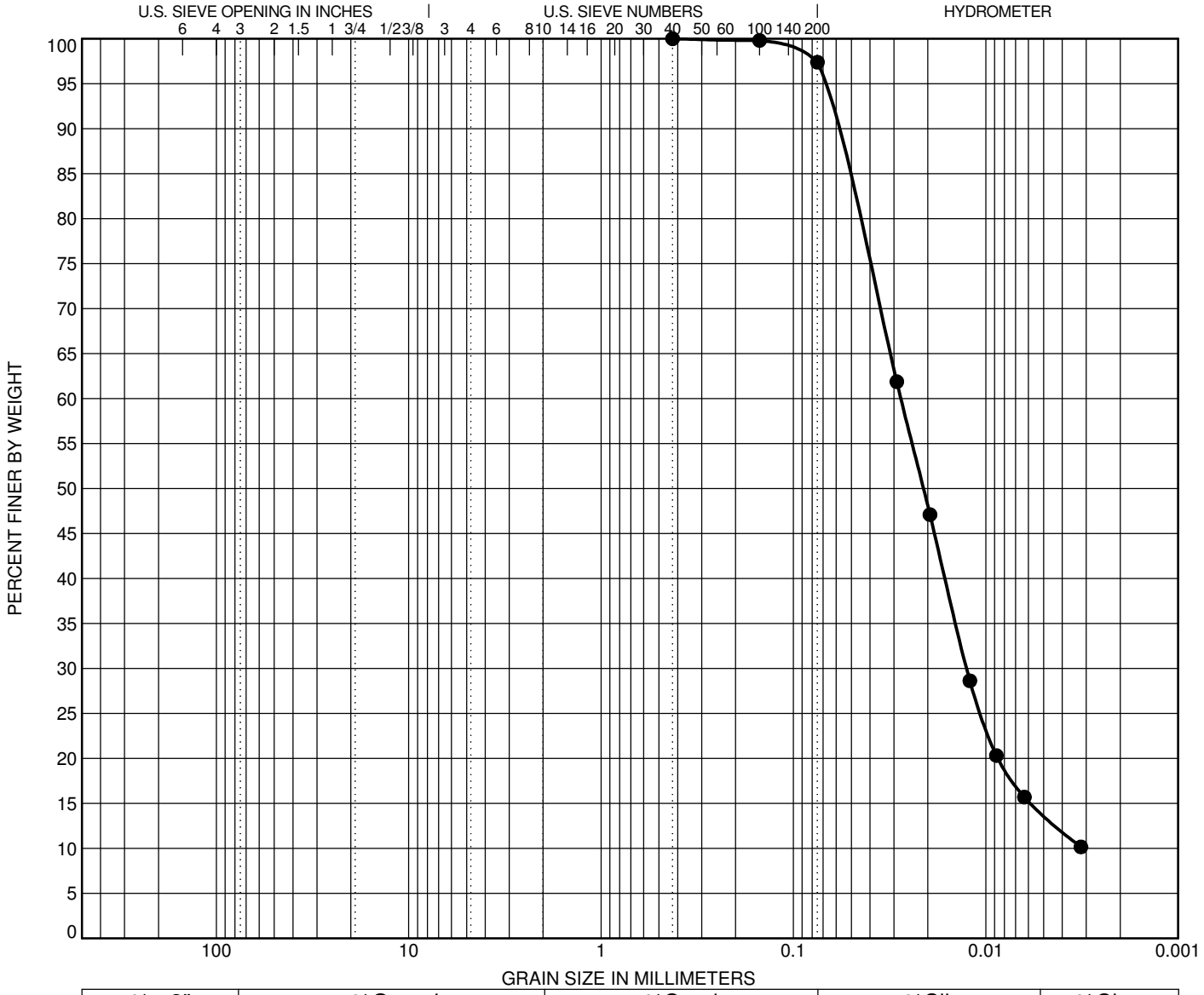
MATERIAL DESCRIPTION

Medium stiff brown CLAY and SILT, little sand (A-4b).

CURVE # ____

REPORT NO. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



% +3"	%Gravel	%Sand	%Silt	%Clay
0.0	0.0	2.6	83.6	13.8

LL	PI	D90	D60	D50	D30	D15	D10	Cc	Cu
NP	NP	0.062	0.028	0.021	0.013	0.006			

REMARKS	USCS	AASHTO
	ML	A-4

PROJECT NUMBER S017506

PROJECT NAME Valley View Area Restoration Project

LOCATION B-13, 8'-10'

DATE 10/9/17

Solar Testing Laboratories, Inc.
1125 Valley Belt Road
Brooklyn Heights, Ohio 44131
Telephone: 216-741-7007
Fax: 216-741-7011

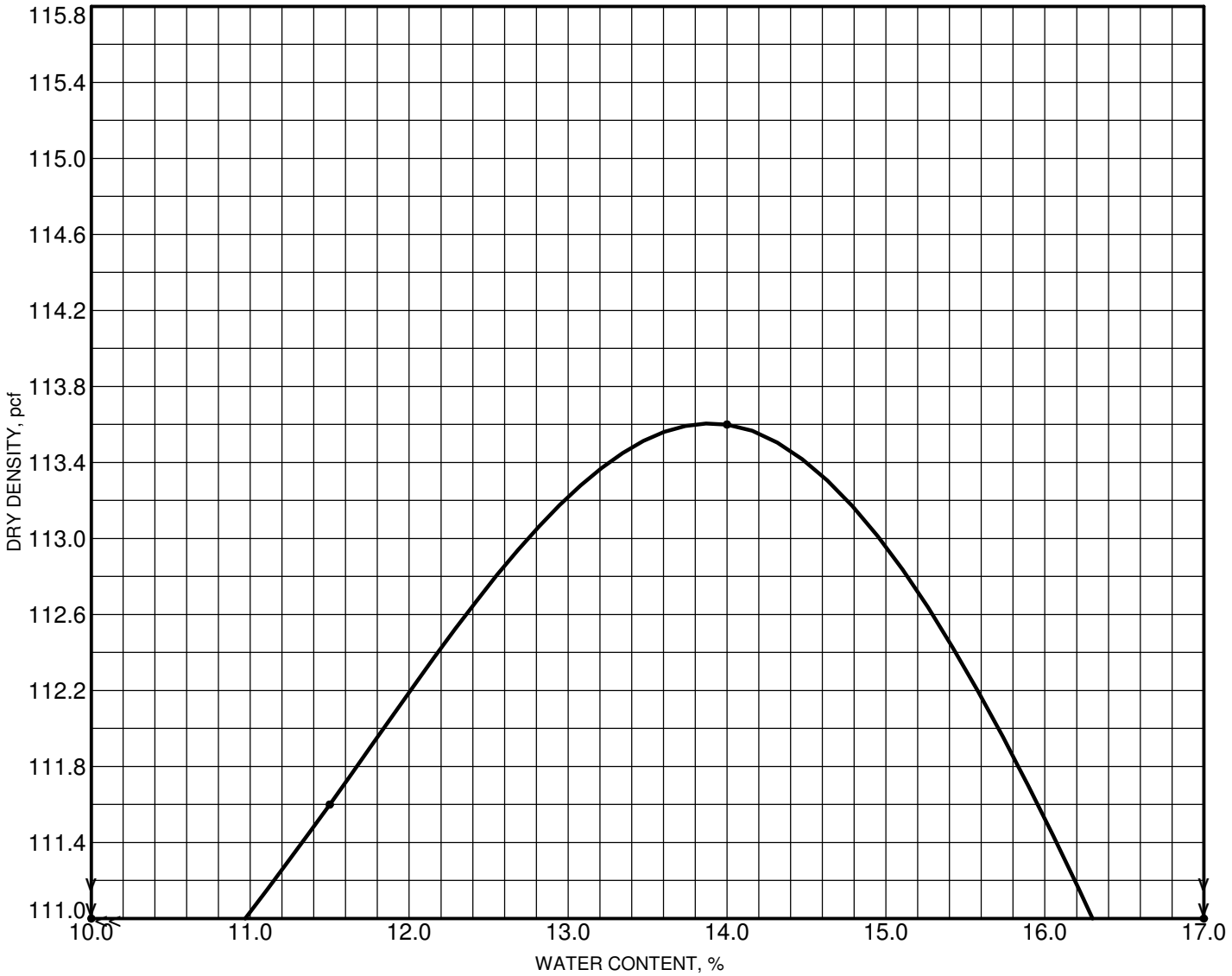
MATERIAL DESCRIPTION

Very stiff grey SILT, little clay, trace sand (A-4b).

CURVE # ____

REPORT NO. _____

MOISTURE-DENSITY RELATIONSHIP TEST



Test Specification **ASTM D698 Method B**

CLASSIFICATION		Nat. Moist	Sp. G.	LL	PI	% > 3/4 in	% < No.200
USCS	AASHTO						
ML	A-4b	20.7		30	6		97.38806

TEST RESULTS

Maximum Dry Density **113.6** PCF
Optimum Water Content **13.8** %

MATERIAL DESCRIPTION

Stiff to very stiff brown and grey SILT, little clay, trace sand (A-4b).

PROJECT NAME Valley View Area Restoration Project

PROJECT NUMBER S017506

LOCATION 1212 Cuyahoga Street, Akron, OH

DATE 10/6/17

SAMPLE LOCATION:
B-9, 1'-3' auger cuttings.

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Telephone: 216-741-7007
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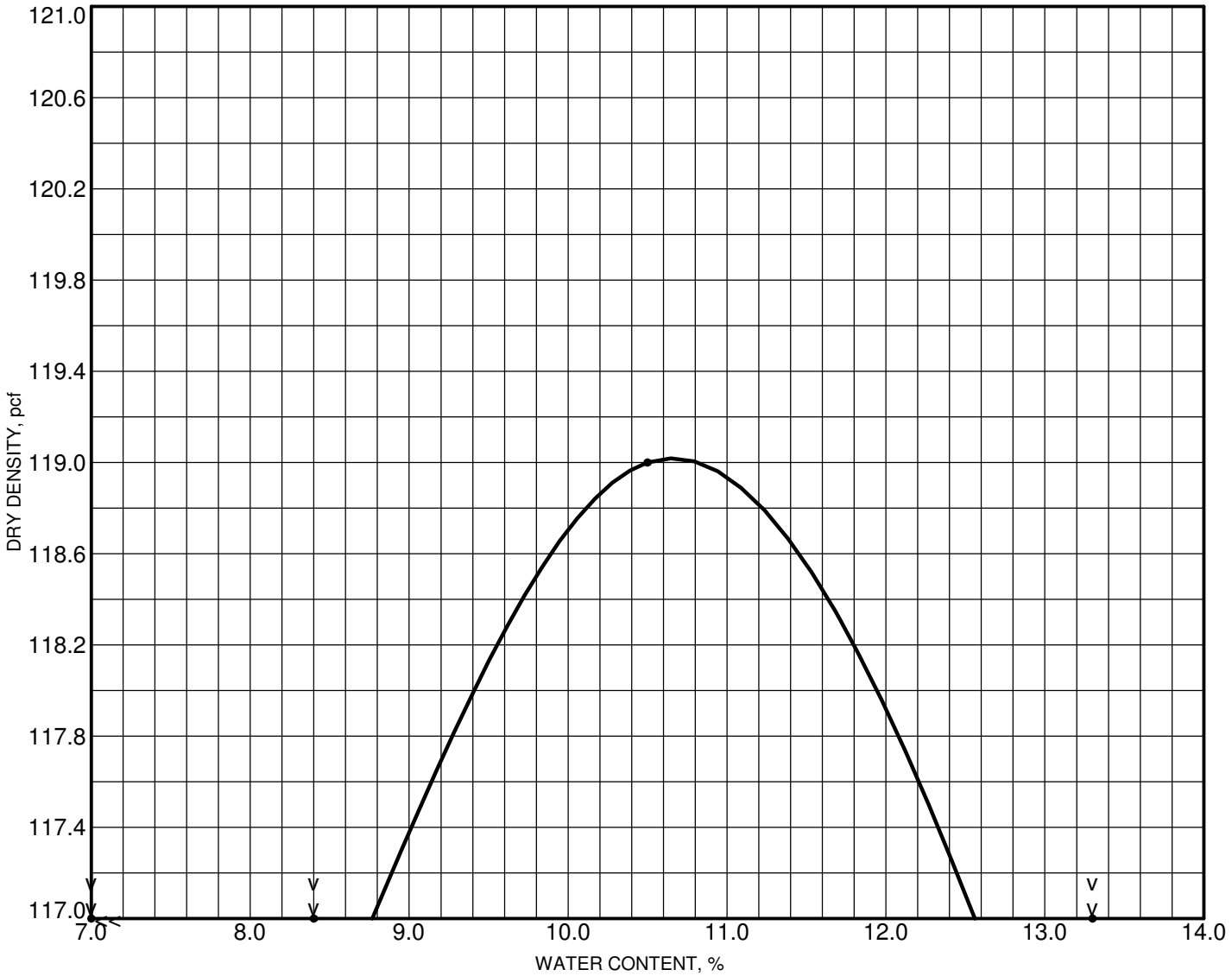
CURVE # ____

REPORT NO. _____

MOISTURE-DENSITY RELATIONSHIP TEST



Test Specification **ASTM D698 Method B**

CLASSIFICATION		Nat. Moist	Sp. G.	LL	PI	% > 3/4 in	% < No.200
USCS	**AASHTO**						
		14.1					

TEST RESULTS	**MATERIAL DESCRIPTION**
Maximum Dry Density **119.1** PCF Optimum Water Content **10.6** %	**Very loose to medium dense brown and grey COARSE SAND, little gravel.**

PROJECT NAME Valley View Area Restoration Project

PROJECT NUMBER S017506

LOCATION 1212 Cuyahoga Street, Akron, OH

DATE 10/6/17

SAMPLE LOCATION:
B-10, 6.5'-8.5' auger cuttings.

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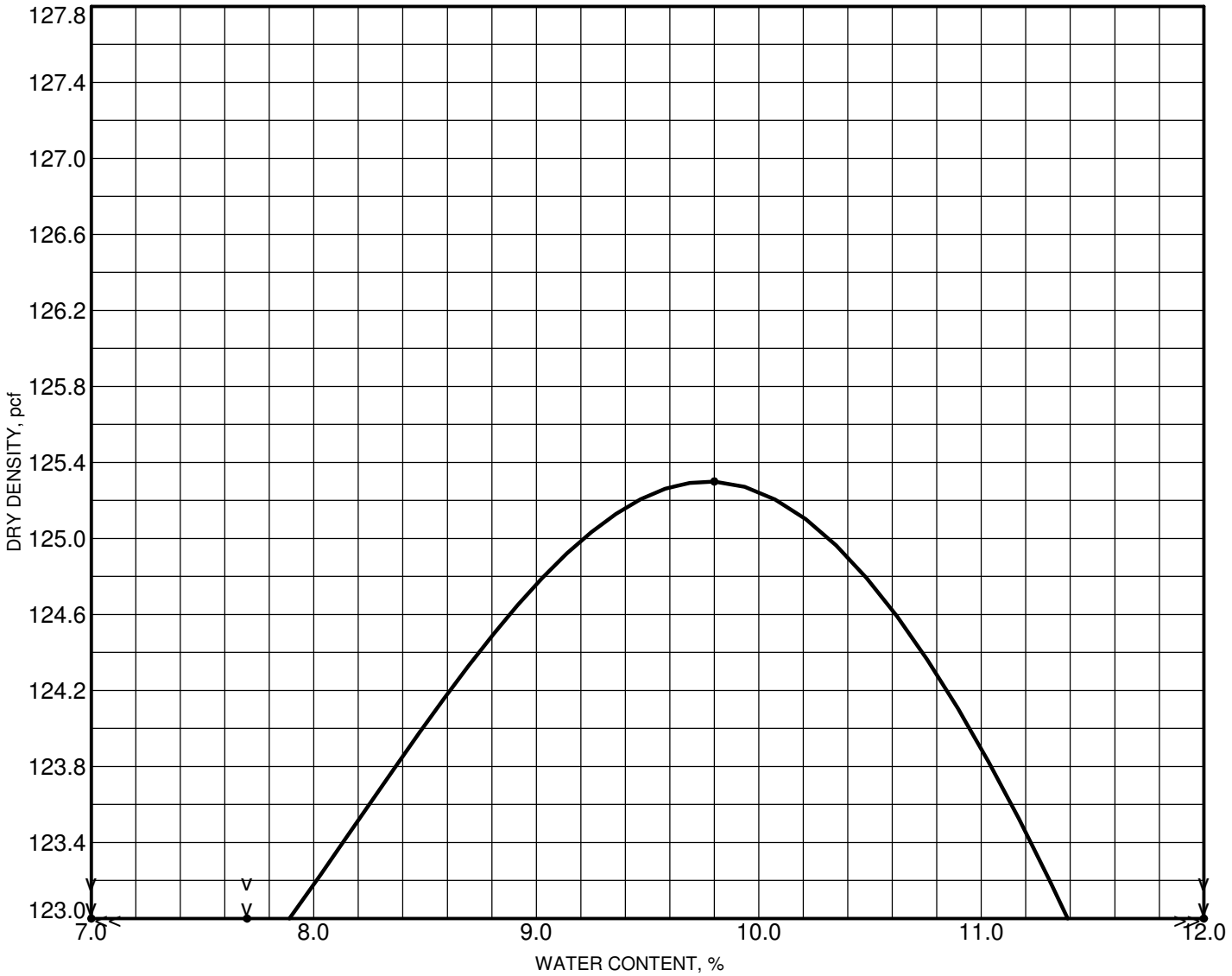
CURVE # ____

REPORT NO. _____

MOISTURE-DENSITY RELATIONSHIP TEST



Test Specification **ASTM D698 Method B**

CLASSIFICATION		Nat. Moist	Sp. G.	LL	PI	% > 3/4 in	% < No.200
USCS	**AASHTO**						
		1.8					

TEST RESULTS	**MATERIAL DESCRIPTION**
Maximum Dry Density **125.3** PCF Optimum Water Content **9.8** %	**Loose to medium dense brown COARSE SAND, little gravel.**

PROJECT NAME Valley View Area Restoration Project

PROJECT NUMBER S017506

LOCATION 1212 Cuyahoga Street, Akron, OH

DATE 10/6/17

SAMPLE LOCATION:
B-14, 2.5'-4.5' auger cuttings.

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CURVE # ____