



## **ADDENDUM #1**

**December 23, 2014**

Re: Harrisburg Area Community College  
Lancaster Campus – Millennium Drive Repaving & Campus Walkpath Extension  
Solicitation # RFB15-16

From: Eastern PCM, LLC  
Construction Manager – HACC  
645 N. 12<sup>th</sup> Street, Suite 200  
Lemoyne, PA 17043

To: All Planholders

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This Addendum is hereby made part of the Plans and Project Manual dated December 9, 2014 for the above referenced project. The provisions of this Addendum are intended to supplement the provisions of the Plans and Project Manual and/or supersede them where contradictory thereto.

This Addendum contains changes to the requirements of the Plans and Project Manual. Such changes shall be incorporated into the Plans and Project Manual and shall apply to work with the same meaning and force as if they had been included in the original Plans and Project Manual. Where this Addendum modifies a portion of a paragraph or phrase of the Project Manual, the remaining unmodified portion of the paragraph or phrase shall remain in force.

The conditions and terms of the Plans and Project Manual shall govern work described in this Addendum. Whenever the conditions of work, or the quality or quantity of materials or workmanship are not fully described in this Addendum, the conditions of work etc. included in the Plans and Project Manual for similar items of work shall apply to the work described in this Addendum. If no similar items of work are included in the Plans and Project Manual, the quality of material and workmanship shall be subject to the written acceptance of the Architect.

### **1.1 PRE-BID MEETING MINUTES**

Meeting minutes from the Pre-Bid Meeting held on December 17, 2014 are attached and are a part of this Addendum. In the event of a conflict between the information contained in the Pre-Bid Meeting Notes and the Drawings, Specifications and responses to questions contained in this Addendum, the latter shall take precedence.

## 1.2 CHANGES TO THE PROJECT MANUAL

### A. 00150 Information For Bidders

1. **ADD** the following sentence to Paragraph “7. CONSTRUCTION PHASING NARRATIVE”:

“The Contractor will notify the college prior to the commencement of each phase and will throughout the project, implement all appropriate traffic controls per PennDOT Publication 213, “Work Zone Traffic Control Guidelines”, March 2014 (or latest revision).”

### B. 01250 Contract Modification Procedures:

1. **ADD** the following paragraph 1.7 to read:

#### “1.7 PRICE ADJUSTMENT OF LIQUID ASPHALT

- A. This section provides for a price adjustment, in the form of payment to the Contractor or a rebate to the owner, for fluctuations in the cost of liquid asphalt used in the bituminous materials placed as part of the construction work for the proposed asphalt pavement installations. This adjustment applies to bituminous materials only (no adjustment will be made for labor or any other costs).
- B. The liquid asphalt Price Index value for this project (hereafter the “IB”) shall be \$598.00 / ton as obtained from the Pennsylvania Asphalt Pavement Association (see [www.pahotmix.org](http://www.pahotmix.org)) for the month of December, 2014 in Zone 1.
- C. Contractor shall provide Owner the quantity (in tons) of bitumen in mixture to be placed (hereafter “Q”) for the bituminous concrete base course and the ID-2 wearing course on the entire project within thirty (30) days of award of contract. Supporting calculations and/or documentation which justifies this quantity must be provided.
- D. If the liquid asphalt Price Index value for the month during which the applicable material is placed (hereafter the “IP”) for Zone 1 as obtained from the Pennsylvania Asphalt Pavement Association results in the ratio IP / IB being less than 0.90, the Owner will receive an automatic price rebate based on the following formula (note that such rebate will be presented by the Contractor to the Owner in the form of a change order):  
$$\text{Price Rebate} = (0.90 - (IP / IB))(Q)(IB)$$
- E. If the IP for Zone 1 as obtained from the Pennsylvania Asphalt Pavement Association results in the ratio IP / IB being greater than 1.10, the Contractor will receive an automatic price increase based on the following formula (note that such increase will be presented by the Contractor to the Owner in the form of a change order):  
$$\text{Price Increase} = ((IP / IB) - 1.10)(Q)(IB)$$

F. Contractor shall notify the Owner of any requested price increase and secure approval from same prior to ordering, furnishing, or placing any bituminous material or incurring any additional costs associated with an asphalt price increase. The quantities shall be verified with certified delivery tickets furnished to the construction manager.

G. If the ratio IP / IB falls within the range of 0.90 to 1.10, no price adjustment will be made for any bituminous materials placed during the relevant month.”

### **1.3 BID DOCUMENT QUESTIONS AND ANSWERS**

**Q.** Is resetting the inlet tops required?

**A.** The Repair Detail indicates re-grouting between the box and the top. The inlet tops do not need to be reset unless required to accommodate the re-grouting or if the pavement settlement has created a grade difference with the adjoining curb line.

**Q.** Can the Geo Tech Report be issued as part of the Addendum?

**A.** Yes, it is attached.

**Q.** Will a Permit be required?

**A.** No, it is a maintenance project, the Lancaster County Conservation District has been notified and given a set of Drawings. No further submission is required.

### **1.4 ATTACHMENTS**

A. Pre-Bid Meeting Minutes dated December 17, 2014.

B. Report of Pavement Evaluation - Geo Tech Report dated June 18, 2014.

**END OF ADDENDUM**



Please sign and return this page, via fax, to Eastern PCM, LLC at (717) 233-1666 indicating receipt of this Addendum.

Harrisburg Area Community College  
Lancaster Campus – Millennium Drive Repaving  
Solicitation # RFB15-16

Addendum # 1 has been received.

Company: \_\_\_\_\_  
Print Company Name

Received By: \_\_\_\_\_  
Print Name Signature

Date: \_\_\_\_\_

Please check one:

- \_\_\_\_\_ We are bidding as a prime contractor
- \_\_\_\_\_ We are not bidding
- \_\_\_\_\_ We are a sub-contractor

**HACC, Central Pennsylvania's Community College  
Lancaster Campus  
Millennium Drive Paving**

Pre-Bid Meeting

December 17, 2014  
9:00 am

**Meeting Minutes**

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**Attendees**

Eleanor Bosserman – HACC	Nate Elliot – York Excavating Co., LLC.
Dan Mahan – HACC	Josh Morton – Handwerk Site Contractors
Brian Biller – ELA Architects	Dakota Reinert – Shiloh Paving & Excavating, Inc.
Greg Lamay – Eastern PCM, LLC	Jay Miller – B.R. Kreider & Son, Inc.
Peter Shkuda – Eastern PCM, LLC	Dustin Daubert – A.H. Moyer, Inc.
Gary Lutz – Pennsy Supply	Trevor Matthews – Kinsley Construction
Ross Clubb – Flyway Excavating, Inc.	Anthony Eitnier – Burkholder Paving
Lynn Crills – Martin Paving, Inc.	Frank Montgomery – Rogele, Inc.

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**1.0 Team Introductions**

- |                           |  |
|---------------------------|--|
| i. Owner                  | HACC, Central Pennsylvania's Community College<br>Lancaster Campus<br>Eleanor Bosserman – Business Director, Lebanon/Lancaster<br>Dan Mahan – Campus Facilities Director |
| ii. Architect             | ELA Architects<br>Brian Miller – Civil Engineer  |
| iii. Construction Manager | Eastern PCM, LLC<br>Greg Lamay – Project Manager<br>Peter Shkuda – Project Engineer  |

- 1.1 Mr. Lamay noted that the Bid Form is made up of four pages and is included in the Project Manual, all of which must be filled out completely. A Bid Security is required. A Non-Collusion Affidavit and a MBE/WBE Utilization Form are also required.
- 1.2 Bid Documents can be obtained from Eastern PCM. The Project Manual and Plans are dated December 9, 2014.
- 1.3 The schedule of the project is as follows:
- Bid Date: Tuesday, January 27, 2015, 2:00 PM EST at the Purchasing Office in the Ted Lick Administration Building – Harrisburg Campus.
  - Contract Award: March 4, 2015
  - Notice to Proceed: March 18, 2015; subject to receipt of all required supporting Contract Documentation.
  - Substantial Completion: August 1, 2015
-

- 1.4 A public bid opening will be held immediately following Bid receipt.
- 1.5 Working Hours will be 7:00 am – 7:00 pm, Monday through Friday; work outside of these hours must be coordinated in advance with the Owner.  
Phasing Requirements
  - a) HACC will remain an active campus throughout construction. Classes are held during the daytime, evening, and weekends. Contractors to coordinate work so as to minimize impact to Owner activities. It is intended that the project will be performed in discreet phases to allow for adequate redirection of campus traffic.
- 1.6 All questions are to be directed to the office of the Construction Manager in writing via fax or e-mail (attn.: Greg Lamay): Fax (717) 233-1666, E-mail: [epcm@easternpcm.com](mailto:epcm@easternpcm.com). The last day for questions is January 9, 2015 by end of business.
- 1.7 Addenda are expected to be issued via fax or UPS (depending on size) on the following dates subject to number and substance of questions received:
  - i. Addendum No. 1 – Expected December 22, 2014; Including Meeting Minutes from the Pre-Bid Meeting
  - ii. Additional Addendum will be issued as needed
- 1.8 This is a prevailing wage project. Refer to specifications for rate determination.
- 1.9 Mr. Lamay stated that a building permit is not applicable for this type of project. Any trade specific permits (i.e. Electrical, Plumbing, Paving, if required by East Lampeter Township, etc.) are to be obtained and paid for by applicable contractors in accordance with jurisdictional requirements.
- 1.10 Project Overview – Scope of Work
  - a) The work will be performed under Single Prime Contract and consists of asphalt repaving of the access driveways. A new subbase will be installed with new asphalt base and wearing course along with the approximately one-half mile drive. Work includes milling, pavement excavation, subbase repairs, and repairs to storm water inlets. A portion of the driveway (approx. 500 LF) will receive topical repair for cracks and a seal coat only. In addition, a (approx. 1,000 LF) extension of the campus 6 foot wide asphalt walk path will also be considered to be constructed, as an alternate.
- 1.11 Alternates
  - Alternate # 1 – Construction of an approximately 1000’ asphalt walk path extension
- 1.12 The Contractor is responsible for temporary utilities and temporary toilet facilities.
- 1.13 All removed asphalt must be disposed of offsite.
- 1.14 Mr. Lamay stated that an asphalt escalator clause will be incorporated into the documents. It will be issued via Addendum.

1.15 Questions & Comments

Q: Will a maximum of 2% cross slope be required on the walk path?

A: The Contractor is to maintain a reasonable cross slope. The path is not intended to be ADA compliant and will follow the existing topography.

Q: Will recycled material be acceptable?

A: The intent is to use all new material for purposes of the bid.

Q: Are there any testing requirements?

A: Yes, if the information is not included in the documents, it will be included via addendum.

Q: Will there be liquidated damages on this project?

A: Yes, see Supplementary General Conditions for terms.

Q: Will the Contractor be required to reset all inlets?

A: Details are on the drawings.

Q: Is the line painting thermoplastic?

A: Paint specs are noted on the drawings.

Q: May the Contractor shut down the road during break in May?

A: Possibly, as long as there is a way in and out. A phasing plan will be reviewed with successful bidder and may be adjusted based on college approval and access for emergency vehicles.

Q: What are the hours of operation for the college?

A: The campus is active from 7:00 AM until 9:00 PM.

Q. Is the Contractor responsible for material testing?

A. No, the college will contract an independent testing agency.

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Respectfully Submitted,  
Peter J. Shkuda, Eastern PCM, LLC

The above summations are the interpretation of the author as to the items discussed and the decisions reached. Corrections or additions to these minutes are to be made in writing and sent to the attention of the writer no later than 5 days after receipt; otherwise, these minutes will stand as written.

cc: All Attendees





June 18, 2014

Mr. Brian Miller  
ELA Group, Inc.  
743 South Broad Street  
Lititz, PA 17543

ECS Job No. 18.3486

Reference: Report of Pavement Evaluation  
HACC Lancaster Campus  
1641 Old Philadelphia Pike  
Lancaster, PA

Dear Mr. Miller:

As authorized by your acceptance of our proposal No. 18.4628, dated May 13, 2014, ECS Mid-Atlantic, LLC. (ECS) has completed the limited pavement coring and subgrade assessment for evaluation of the pavement at the above-referenced project.

ECS visited the site on May 30, 2014 to perform the asphalt coring and soil sampling. The results of the exploration, combined with the results of our review of published information are outlined in the paragraphs below. We have also reviewed the plans provided depicting the locations, extents, and pavement sections specified for the pavement repairs in 2009, and provided recommended pavement sections for the areas of concern. It should be noted that the 2009 Construction Drawings reflect a thinner pavement section than the original design drawing. It is our understanding that the decision to proceed with a reduced pavement section in the 2009 repairs was provided by HACC personnel.

### **Field Exploration**

As outlined in our proposal, ECS completed a visual survey of the pavement and extracted asphalt cores from various locations. The cores were obtained to determine the thickness of the existing pavement sections, observe and record gravel subbase thickness, and observe and sample the subgrade soils.

The work included extraction of 6 asphalt cores and a visual survey of the general pavement condition along Campus Drive and Millennium Drive. Six (6) 8-inch diameter cores were obtained from various locations along the roadway alignment, as shown on the attached location diagram. The core locations were selected based on the original core location plan provided by ELA Group, Inc., and adjusted slightly in the field to allow for coring at areas of varying pavement condition for comparison purposes. The core locations were backfilled with tamped gravel and capped with asphalt patch upon completion. The pavement core thicknesses were recorded, and are summarized on the table on the following page. Photographic documentation of the cores is provided in the figures attached to this report. The aggregate subbase thicknesses were also recorded where encountered, as well as the visual USCS classification of the subgrade soils was noted at each core location. ECS also performed dynamic cone penetrometer (DCP) testing at the soil subgrade elevation to provide additional information on the condition of the soil subgrade.

Field Exploration Results:

The results of the asphalt coring program are summarized in the following table:

Core No.	Asphalt Core Thickness (in)	Subbase Thickness (in)	Subgrade USCS Soil Classification	Asphalt Condition at Core Location	DCP
1	4.50	4.00	ML	Good	11, 20, 20+ (Refusal)
2	4.625	8.50	ML	Good	14, 20+ (Refusal)
3	4.25	7.25	ML	Severe to Moderate Alligator Cracking	6, 11, 20+ (Refusal)
4	3.375	5.00	ML	Moderate Longitudinal Cracking	7, 12, 18, 20+ (Refusal)
5	3.125	4.75	ML	Minor Longitudinal Cracking	6, 12, 20+ (Refusal)
6	3.50	5.25	ML	Severe Alligator Cracking	5, 20+ (Refusal)

Soil Conditions

The soils recovered from the core locations were found to be in a moist condition, and generally consistent across the site. The soils generally visually classified as SILT (ML) with lesser amounts of sand and gravel. The soils were not excessively wet or deleterious in nature, but they do exhibit the weak characteristics of silt when wet. The DCP values recorded indicated that the soils are generally medium dense in consistency. The soils appear to be consistent with soils common in the local area and as mapped by the *Soil Survey of Lancaster County, Pennsylvania*, as published by the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>). Mapped soils include the following.

- Conestoga silt loam, 3 to 8 percent slopes (CnB), are residuum weathered from limestone and/or residuum weathered from schist that are well drained, are non-hydric, and mapped as Hydrologic Group B. Bedrock is typically 60-99 inches, and the water table is typically more than 80 inches.
- Hollinger silt loam, 3 to 8 percent slopes (HfB), are residuum weathered from limestone and/or residuum weathered from phyllite that are well drained, are non-hydric, and mapped as Hydrologic Group B. Bedrock is typically 60-99 inches, and the water table is typically more than 80 inches.
- Hollinger silt loam, 15 to 25 percent slopes (HfD), are residuum weathered from phyllite and/or residuum weathered from limestone that are well drained, are non-hydric, and

mapped as Hydrologic Group B. Bedrock is typically 60-99 inches, and the water table is typically more than 80 inches.

- Linden silt loam (Lg), are alluvium derived from sedimentary rock that are well drained, are non-hydric, and mapped as Hydrologic Group B. Bedrock is typically 60-99 inches, and the water table is typically 36-72 inches.
- Nolin silt loam (Ne), are alluvium derived from sedimentary rock over residuum weathered from limestone and shale, are non-hydric, and mapped as Hydrologic Group B. Bedrock is typically 60-99 inches, and the water table is typically 36-60 inches.

We have included a map indicating the various mapped soils in the figures attached to this report.

### **General Observations and Conclusions**

Based on a combination of the field observations, core thicknesses, soil conditions and types, design documentation, and traffic loading, the following presents a list of observations and conclusions.

1. The revised pavement section from the 2009 Construction Drawings for the pavement repairs reflects a section that has one 1 inch less of asphalt than the original design (4.5 inches vs. 5.5 inches total asphalt thickness).
2. Cores C-1 and C-2 contained asphalt in good condition and met or exceeded the design section of 4.5 inches of asphalt and 8 inches of stone.
3. Cores C-3 through C-6 were 0.25 inch to 1.0 inch deficient in asphalt thickness and up to 4.0 inches deficient in subbase thickness.
4. Cores in areas of deteriorated pavement conditions (C-1 through C-6) correspond with deficient pavement sections listed in Item 3 above.
5. Areas of primary deterioration appear to be associated with areas where areas of concentrated stormwater runoff accumulates, namely lower site elevation, adjacent to curbs, and adjacent to inlets.
6. General failure mechanisms include alligator cracking, longitudinal cracking, limited transverse cracking, and rutting.
7. The existing pavement section is thin relative to the traffic loading that the pavement receives.

### **Recommendations**

Traffic counts for the access drives were provided by ELA Group, Inc. The traffic information indicates that 471 vehicles entered the site in the a.m. (7:00-9:00), including 4 trucks/busses. In the afternoon, 344 vehicles entered the site in the p.m. peak time between 3:00 and 6:00, including 8 trucks/buses. It is our understanding that there are typically several delivery trucks (Fed-Ex/UPS) per day, as well as several tractor trailers per week. Extrapolating these vehicle counts to obtain Equivalent Standard Axle Loads (ESAL's), we have assumed average daily lane traffic to include 1,200 cars/day, 1 tractor trailer/day, and 20 delivery truck/buses per day.

The pavement design for the access drive pavement section will be based on maximum traffic loads of 700,000 equivalent single axle loads (ESALs), initial serviceability of 4.2, terminal serviceability of 2.2, a reliability of 90 percent, a standard deviation of 0.45 for flexible pavements, and a design life of 20 years. The design analyses for pavements have been based on methodology from the American Association of State Highway and Transportation Officials' (AASHTO) *Guide of Design of Pavement Structures*, 1993 and guidelines established for SUPERPAVE as outlined in the Hot Mix Asphalt Pavement Design Guide from the Pennsylvania Asphalt Pavement Association.

ECS did perform laboratory California Bearing Ratio (CBR) testing of the on site soils for evaluating their strength as a pavement subgrade. Based on the lab results and our field observations, we have utilized a CBR value of 3. Based on these design parameters, we have determined the following pavement design for the access drive (Campus Drive and Millennium Drive) pavement areas for the project site. The recommended pavement section is 1.5 inches of 9.5mm SUPERPAVE as a wearing course, 4.0 inches of 25mm of SUPERPAVE base course, and 10.0 inches of compacted 2A aggregate as a subbase. This recommendation is summarized in the table on the following page.

Alternate Pavement Section – Recycled Asphalt Pavement (RAP) as subbase:

It is our understanding that consideration may be given to recycling the asphalt for reuse as subbase aggregate (Recycled Asphalt Pavement - RAP). This is an acceptable alternative and would result in a thicker pavement section due to the reduced strength characteristics of the RAP when placed as subbase. For the purposes of design evaluation, we have assumed that the RAP would be blended with the existing aggregate subbase at the site to form the new subbase material. This blending of the subbase materials would result in a stronger subbase material than just RAP alone. **Assuming the blend is a minimum of 40% 2A aggregate, the resulting pavement section would require a RAP/2A subbase thickness of 14 inches,** instead of the 12 inches needed with the pavement design listed above.

RAP should be processed to meet the requirements of PennDOT 2A. After milling or crushing RAP to the required gradation, it is recommended that the material be placed as soon as possible to avoid the possibility of stockpiles becoming overly wet or hardening in warmer weather due to the bitumen content. During placement and compaction, ECS testing personnel should note that moisture content and compaction test results from nuclear gauges are affected by the RAP, as both density and moisture tend to be overestimated by the presence of hydrogen ions in the asphalt bitumen. Quality control procedures should use a control strip to determine appropriate compaction parameters.

It should be noted that the bitumen binder used in asphalt has hydrocarbons that are considered pollutants. The primary concern over the use of milled asphalt lies in the potential for contamination from small dust-like particles that may blow into the air or wash off of the surface of the RAP. These concerns can be alleviated by implementing common sense management practices including not milling or crushing under windy conditions, covering stockpiles with tarps or plastic, and maintaining appropriate E&S measures during construction.

The following table presents a summary of the recommended pavement replacement options.

**SUMMARY OF PAVEMENT REPLACEMENT OPTIONS**

	Option 1 Remove and Replace	Option 2 RAP as subbase
Wearing Course	1.5" 9.5mm SUPERPAVE	1.5" 9.5mm SUPERPAVE
Base Course	4.0" 25mm SUPERPAVE	4.0" 25mm SUPERPAVE
Subbase	10.0" 2A Aggregate	14.0" RAP blended with 2A
Total Section Thickness	15.5 inches	19.5 inches

Immediately prior to new pavement construction, the exposed subsoils throughout the proposed paved areas must be carefully and thoroughly proofrolled/compacted and visually examined in order to detect yielding or soft soil conditions. In the event that unstable conditions are encountered, the yielding and loose areas must be densified, or undercut and returned to subgrade level with approved, controlled and compacted fill. Proofrolling should be accomplished with approved equipment and must be monitored by the Geotechnical Engineer or their authorized representative.

Closing:

We have enjoyed being of continued service to ELA Group, Inc. during the design phase of this project. We look forward to the opportunity to work with you on the construction phase of this project as well. If there are any questions regarding the information and geotechnical recommendations contained in this report, please do not hesitate to contact us.

Respectfully submitted,  
**ECS MID-ATLANTIC, LLC.**



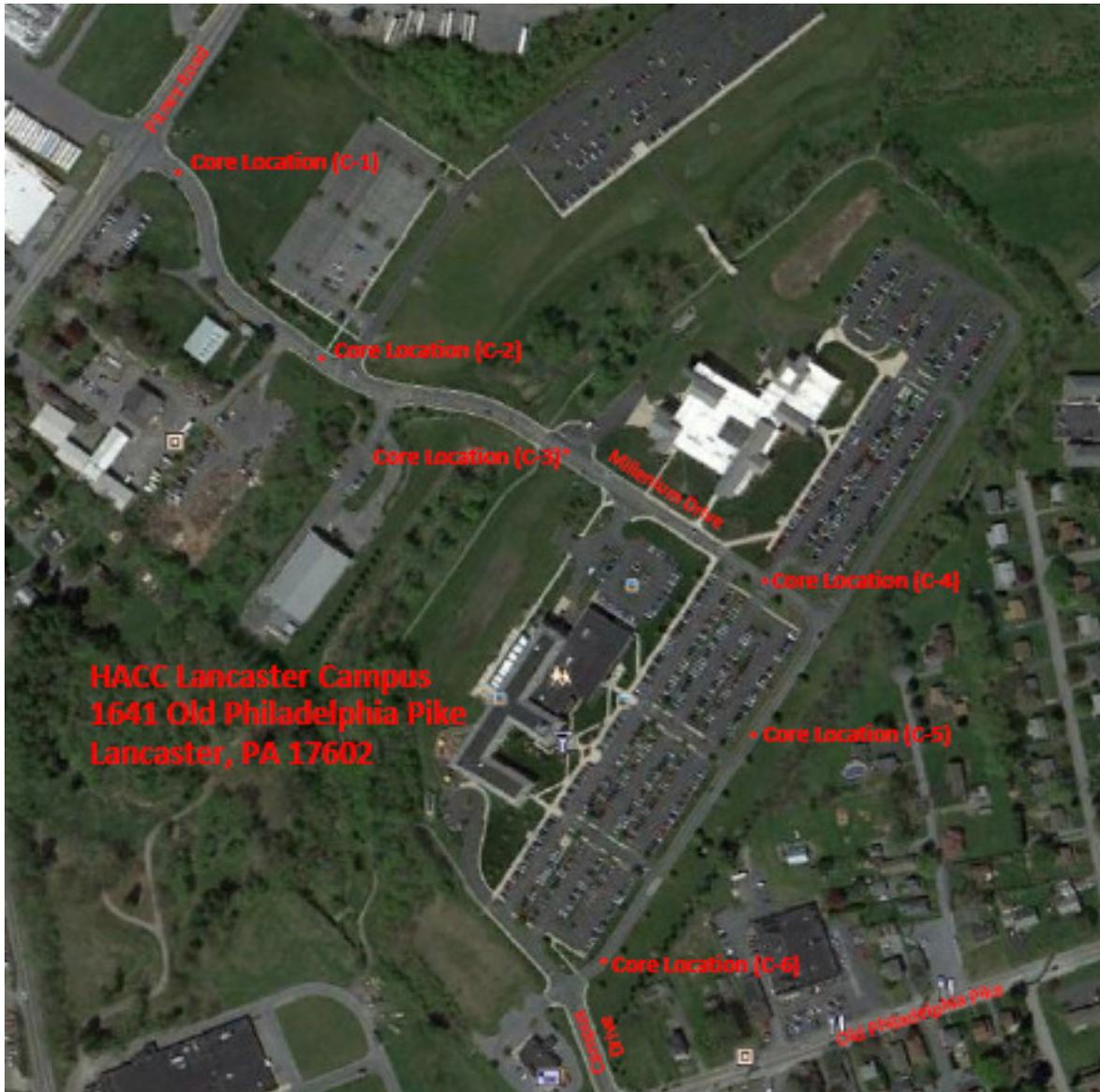
J. Matthew Carroll, P.E.  
Geotechnical Group Manager



William D. Friedah, P.E.  
Principal Engineer

Attachments:

- Core Location Plan
- Soils Mapping
- Core Location Photographs
- Core Photographs
- Laboratory Testing Results



Source: GoogleMaps



**Core Locations**

HACC Lancaster Campus  
Lancaster, PA



**Appendix**

Site Location Diagram  
ECS Project 18-3486  
June 2014



Source: Web Soil Survey



**Soils Map**

HACC – Lancaster Campus  
Lancaster, PA



**Appendix**

Soils Map  
ECS Project 18.3486  
June 2014



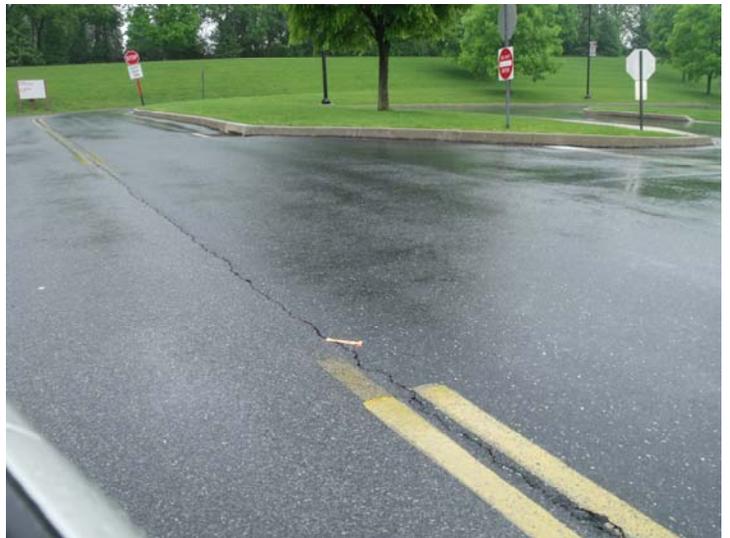
CORE # 1



CORE # 2



CORE # 3



CORE # 4

ECS PROJECT # 18:3486  
HACC Lancaster Campus  
LANCASTER, PA



EXISTING ROADWAY CORE LOCATIONS  
JUNE 2014



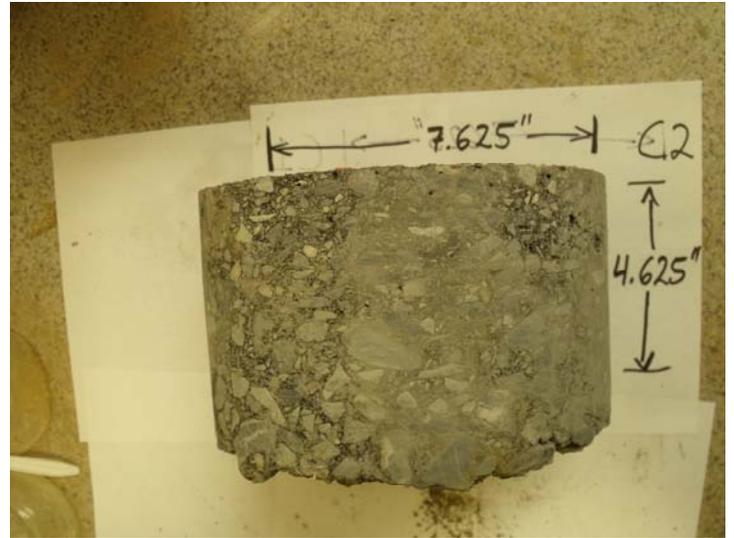
CORE # 5



CORE # 6



CORE # 1



CORE # 2



CORE # 3



CORE # 4



CORE # 5



CORE # 6

## Laboratory Testing Summary

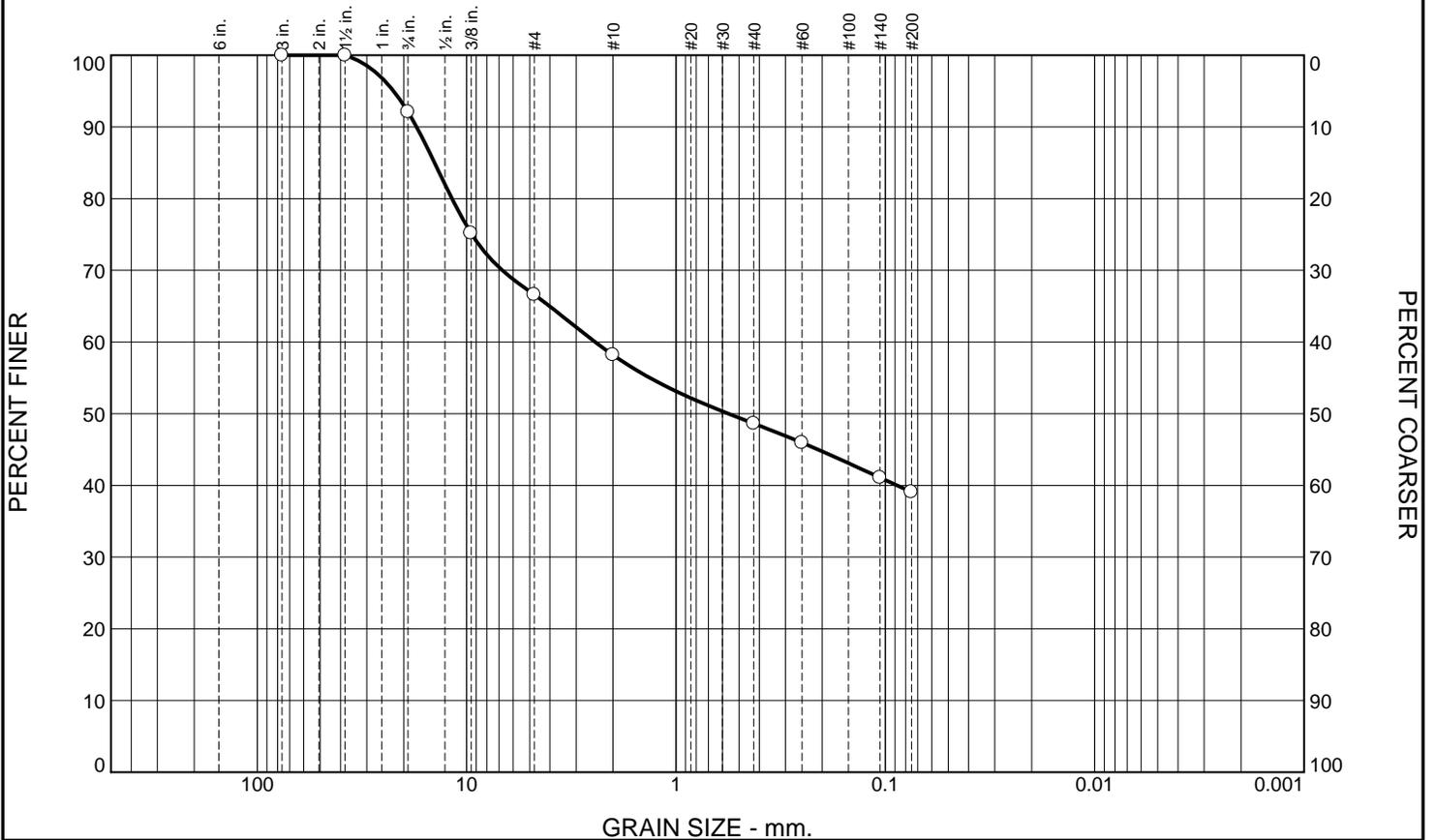
Sample Source	Sample Number	Depth (feet)	MC <sup>1</sup> (%)	Soil Type <sup>2</sup>	Atterberg Limits <sup>3</sup>			Percent Passing No. 200 Sieve <sup>4</sup>	Moisture - Density (Corr.) <sup>5</sup>		CBR Value <sup>6</sup>	Other
					LL	PL	PI		Maximum Density (pcf)	Optimum Moisture (%)		
C-6	D4S-6	1.00 - 1.00	9.3									
C-5	D4S-5	1.00 - 1.00	12.3									
C-3	D4S-3	1.00 - 1.00	7.9									
C-2	D4S-2	1.00 - 1.00	7.9									
C-4	D4S-4	1.00 - 1.00		SM	NP	NP	NP	46.8	125.8	8.9	1.7	
											1.7	
											2.3	
C-1	D4S-1	1.00 - 1.00		GM	NP	NP	NP	39.1	125.3	8.7	2.3	
											1.9	
											4	

**Notes:** 1. ASTM D 2216, 2. ASTM D 2487, 3. ASTM D 4318, 4. ASTM D 1140, 5. See test reports for test method, 6. See test reports for test method  
**Definitions:** MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content (ASTM D 2974)

**Project No.** 3486  
**Project Name:** HACC Lancaster Campus  
**PM:** J. Matthew Carroll  
**PE:** J. Matthew Carroll  
**Printed On:** Wednesday, June 18, 2014



# Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.9	25.5	8.4	9.6	9.5	39.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
1 1/2	100.0		
3/4	92.1		
3/8	75.2		
#4	66.6		
#10	58.2		
#40	48.6		
#60	45.9		
#140	41.1		
#200	39.1		

**Soil Description**

silty gravel with sand

**Atterberg Limits**

PL= NP      LL= NP      PI= NP

**Coefficients**

D<sub>90</sub>= 17.3448      D<sub>85</sub>= 14.2234      D<sub>60</sub>= 2.4310  
D<sub>50</sub>= 0.5605      D<sub>30</sub>=                      D<sub>15</sub>=  
D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

**Classification**

USCS= GM                      AASHTO= A-4(0)

**Remarks**

\* (no specification provided)

**Source of Sample:** C-1  
**Sample Number:** D4S-1

**Depth:** 1.00-2.00

**Date:** 06-11-14



**ECS MID-ATLANTIC, LLC**  
56 Grumbacher Road, Suite D  
York, PA 17406  
Phone: (717) 767-4788  
Fax: (717) 767-5658

**Client:** ELA Group, Inc.  
**Project:** HACC Lancaster Campus

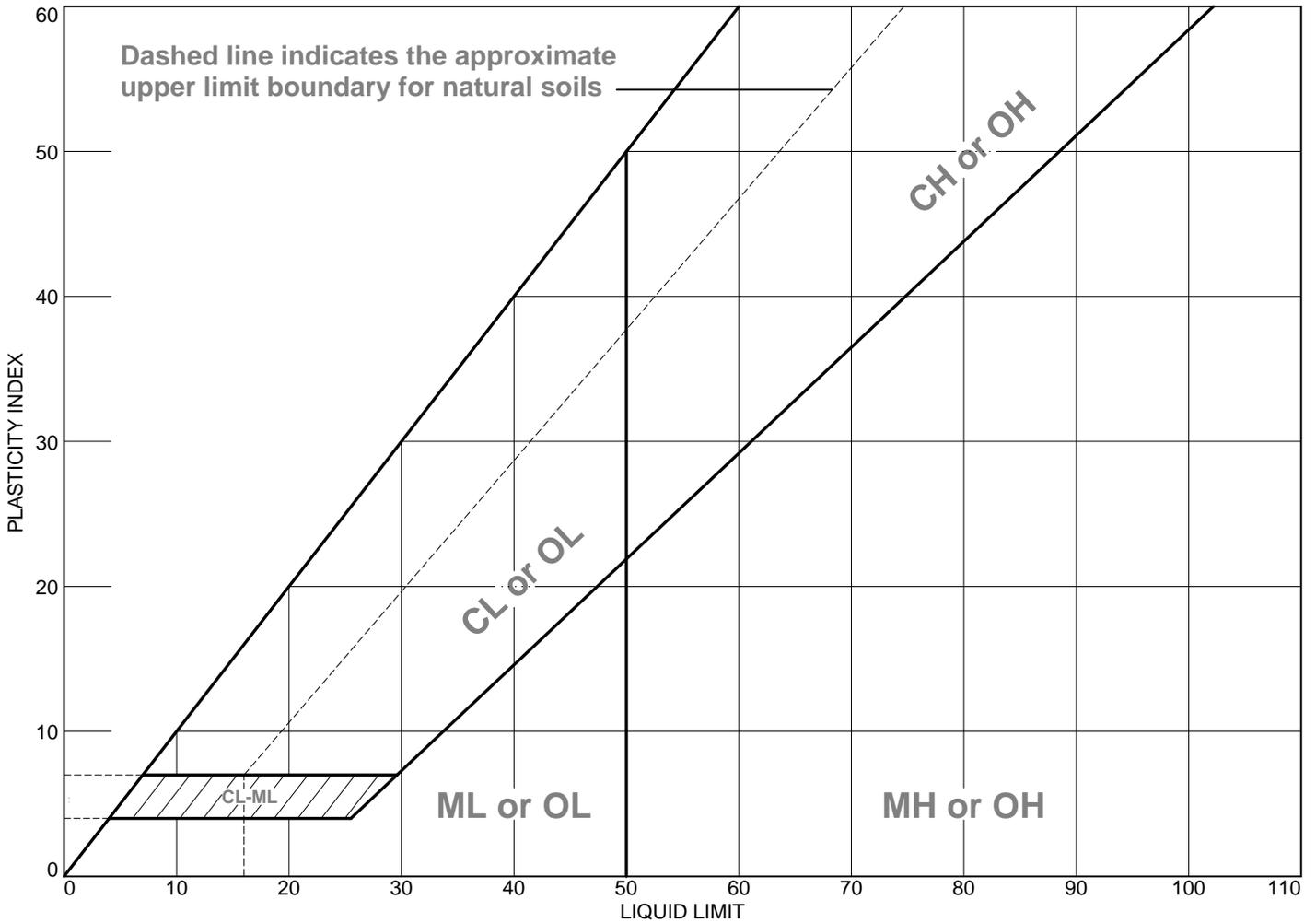
**Project No:** 3486

**Figure**

**Tested By:** PJS

**Checked By:** JMC

# LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● silty gravel with sand	NP	NP	NP	48.6	39.1	GM

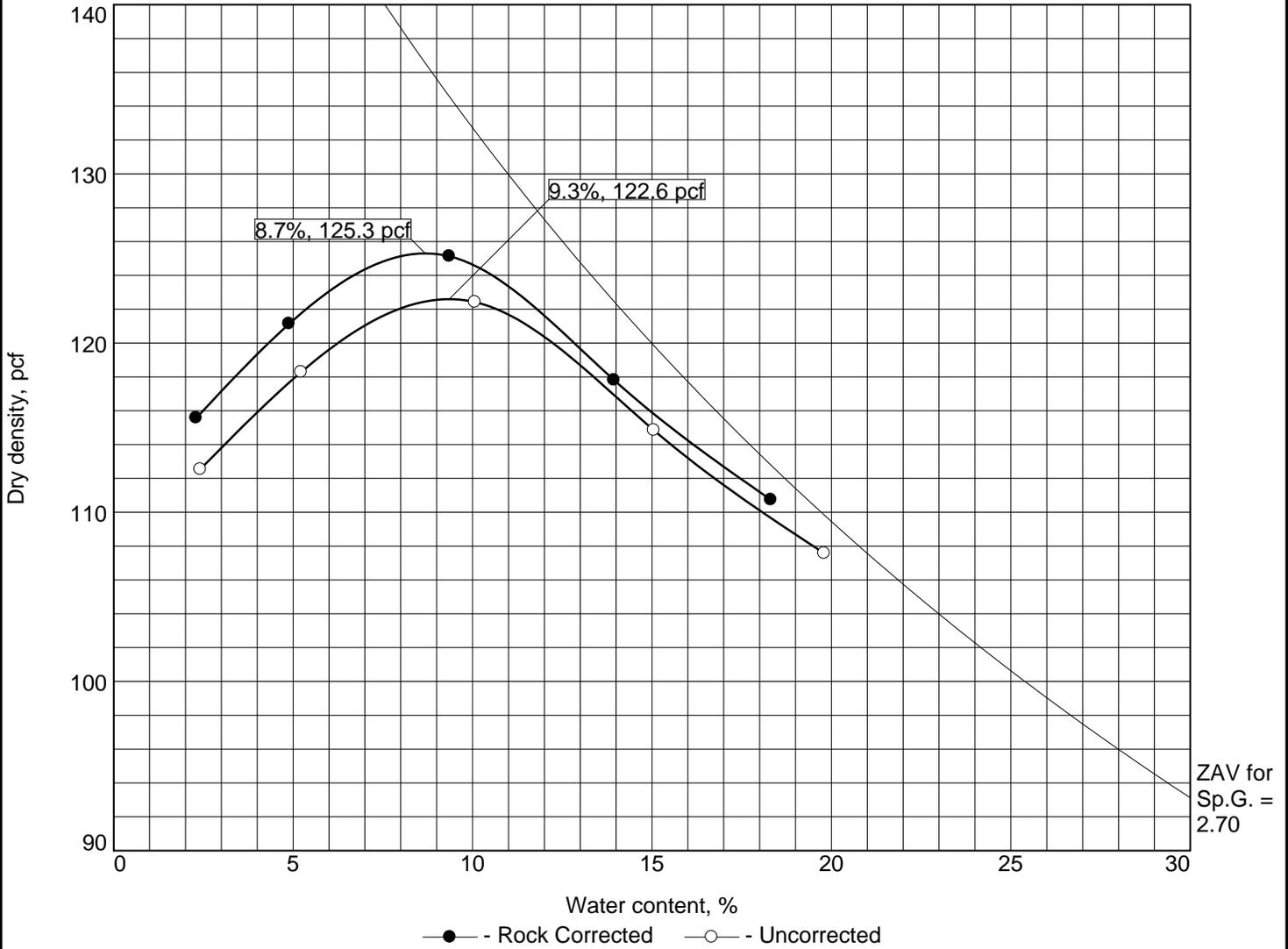
**Project No.** 3486      **Client:** ELA Group, Inc.  
**Project:** HACC Lancaster Campus  
**● Source of Sample:** C-1      **Depth:** 1.00-2.00      **Sample Number:** D4S-1

**Remarks:**


**ECS MID-ATLANTIC, LLC**  
 56 Grumbacher Road, Suite D      Phone: (717) 767-4788  
 York, PA 17406      Fax: (717) 767-5658

Figure

**Tested By:** PJS      **Checked By:** JMC



Test specification: ASTM D 698-12 Method C Standard  
 ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
1.00-2.00	GM	A-4(0)		2.70	NP	NP	7.9	39.1

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 125.3 pcf	122.6 pcf	silty gravel with sand
Optimum moisture = 8.7 %	9.3 %	

**Project No.** 3486      **Client:** ELA Group, Inc.  
**Project:** HACC Lancaster Campus  
**Date:** 06-11-14  
 **Source of Sample:** C-1      **Sample Number:** D4S-1

**Remarks:**

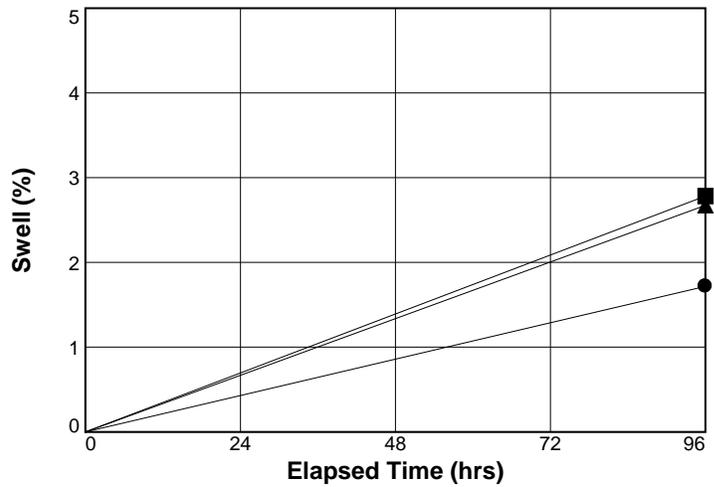
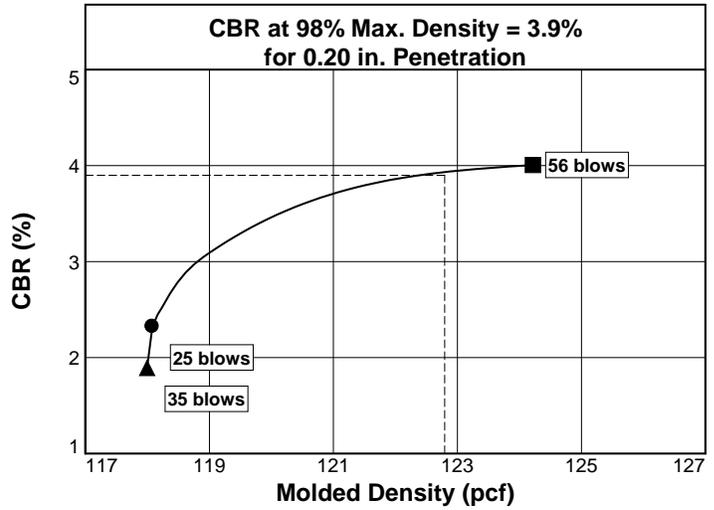
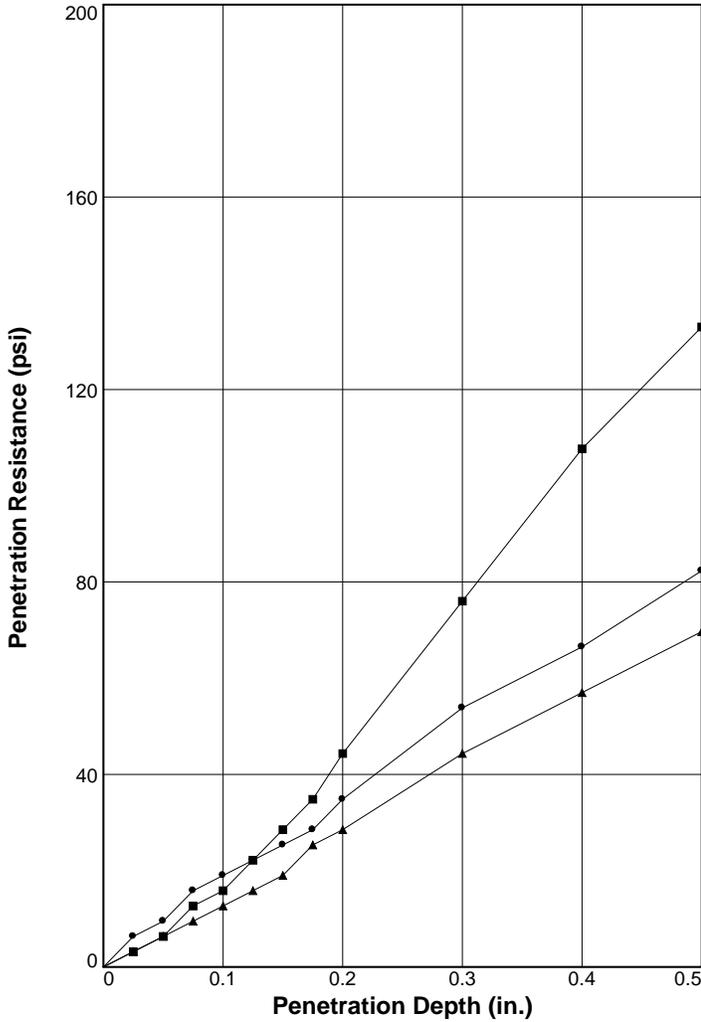
**ECS MID-ATLANTIC, LLC**  
 56 Grumbacher Road, Suite D      Phone: (717) 767-4788  
 York, PA 17406      Fax: (717) 767-5658

Figure

**Tested By:** PJS      **Checked By:** JMC

# BEARING RATIO TEST REPORT

## ASTM D 1883-07



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	118.1	94.3	9.9	116.1	92.6	16.3	1.9	2.3	0.000	10	1.7
2 △	118.0	94.2	10.2	114.9	91.7	15.8	1.3	1.9	-0.001	10	2.7
3 □	124.2	99.1	8.6	120.9	96.5	14.9	2.8	4.0	0.050	10	2.8

Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
	silty gravel with sand	GM	125.3	8.7	NP

**Project No:** 3486  
**Project:** HACC Lancaster Campus  
**Source of Sample:** C-1      **Depth:** 1.00-2.00  
**Sample Number:** D4S-1  
**Date:** 06-11-14

**Test Description/Remarks:**

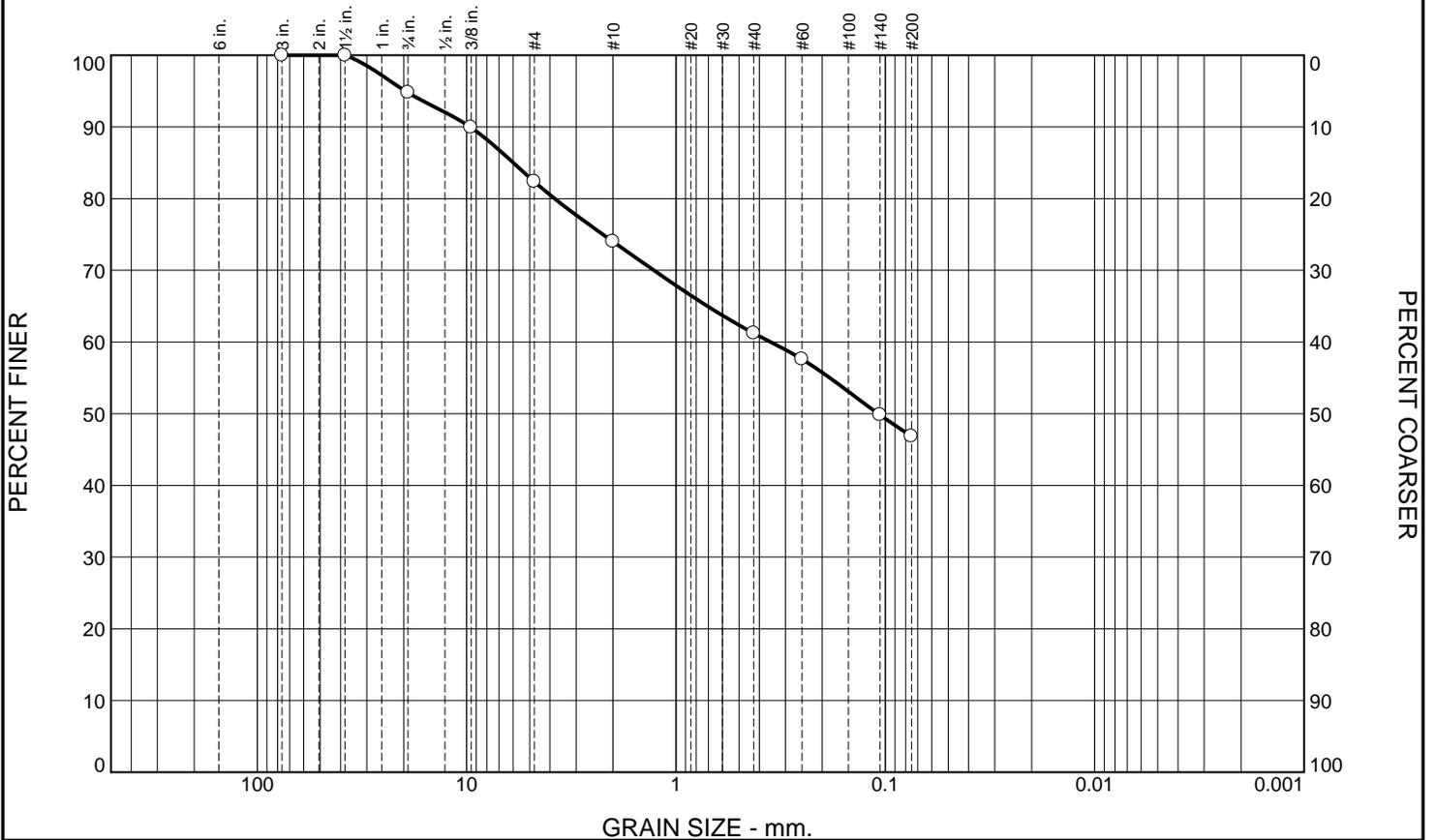


**ECS MID-ATLANTIC, LLC**  
 56 Grumbacher Road, Suite D  
 York, PA 17406

Phone: (717) 767-4788  
 Fax: (717) 767-5658

Figure \_\_\_\_\_

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.2	12.4	8.4	12.8	14.4	46.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
1 1/2	100.0		
3/4	94.8		
3/8	89.9		
#4	82.4		
#10	74.0		
#40	61.2		
#60	57.6		
#140	49.8		
#200	46.8		

**Soil Description**

silty sand with gravel

**Atterberg Limits**

PL= NP      LL= NP      PI= NP

**Coefficients**

D<sub>90</sub>= 9.6188      D<sub>85</sub>= 5.9842      D<sub>60</sub>= 0.3532  
D<sub>50</sub>= 0.1080      D<sub>30</sub>=              D<sub>15</sub>=  
D<sub>10</sub>=              C<sub>u</sub>=              C<sub>c</sub>=

**Classification**

USCS= SM      AASHTO= A-4(0)

**Remarks**

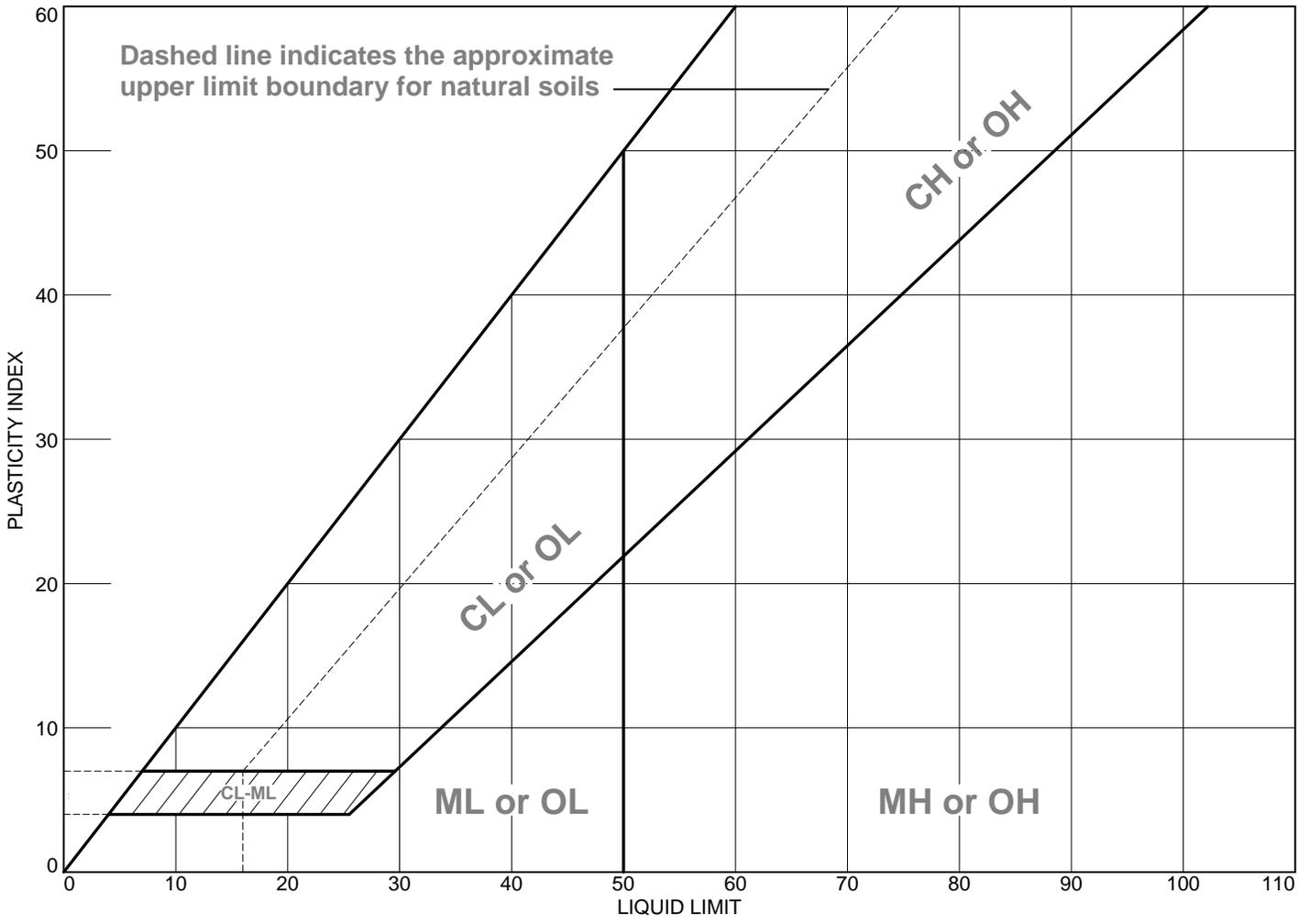
\* (no specification provided)

Source of Sample: C-4      Depth: 1.00-2.00      Date: 06-12-14  
Sample Number: D4S-4

<b>ECS MID-ATLANTIC, LLC</b> 56 Grumbacher Road, Suite D York, PA 17406 Phone: (717) 767-4788 Fax: (717) 767-5658	<b>Client:</b> ELA Group, Inc. <b>Project:</b> HACC Lancaster Campus  <b>Project No:</b> 3486 <b>Figure</b>
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Tested By: PJS      Checked By: JMC

# LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● silty sand with gravel	NP	NP	NP	61.2	46.8	SM

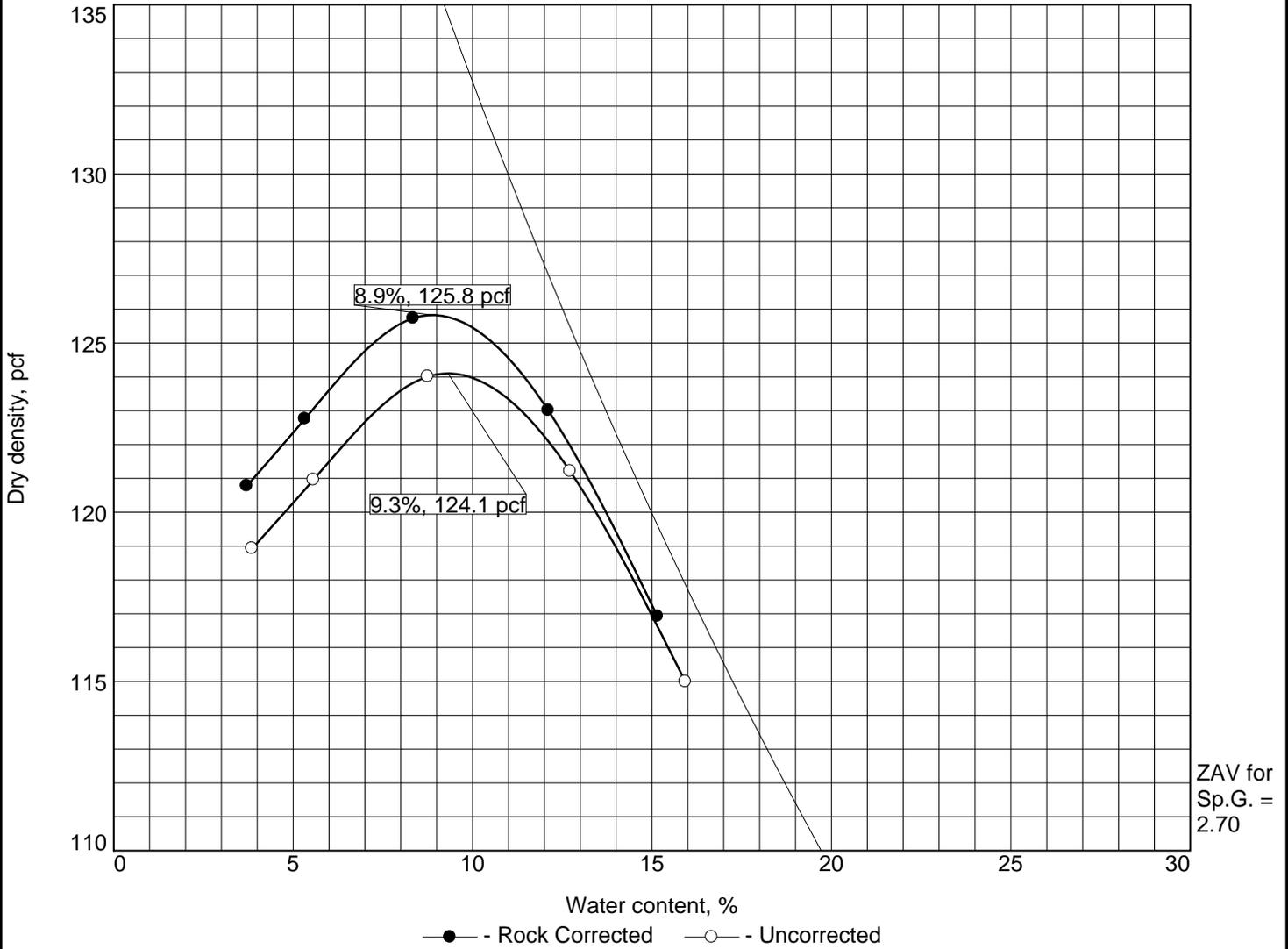
**Project No.** 3486      **Client:** ELA Group, Inc.  
**Project:** HACC Lancaster Campus  
**● Source of Sample:** C-4      **Depth:** 1.00-2.00      **Sample Number:** D4S-4

**Remarks:**

**ECS MID-ATLANTIC, LLC**  
 56 Grumbacher Road, Suite D      Phone: (717) 767-4788  
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**Figure**

**Tested By:** PJS      **Checked By:** JMC



Test specification: ASTM D 698-12 Method C Standard  
 ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
1.00-2.00	SM	A-4(0)		2.70	NP	NP	5.2	46.8

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 125.8 pcf	124.1 pcf	silty sand with gravel
Optimum moisture = 8.9 %	9.3 %	

**Project No.** 3486      **Client:** ELA Group, Inc.  
**Project:** HACC Lancaster Campus  
**Date:** 06-10-14  
**Source of Sample:** C-4      **Sample Number:** D4S-4

**Remarks:**

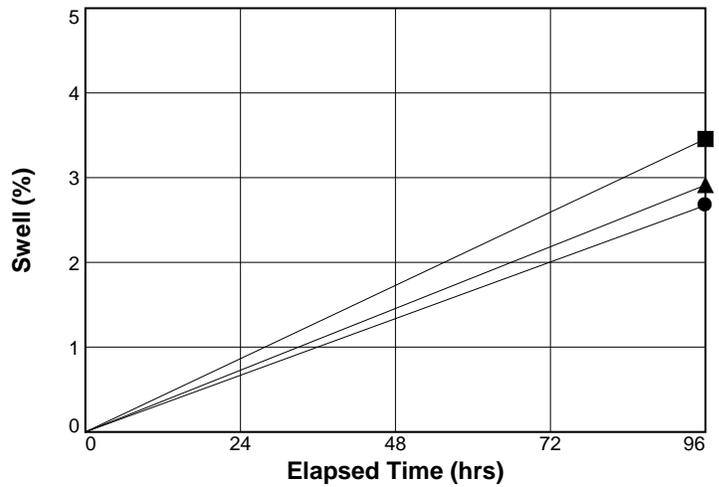
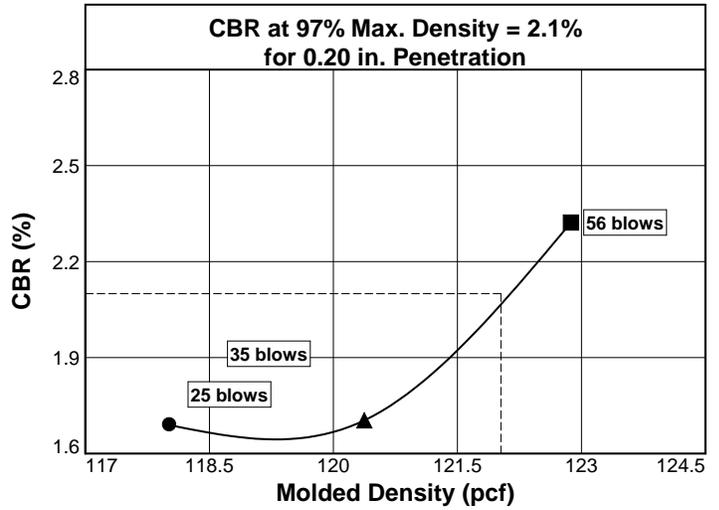
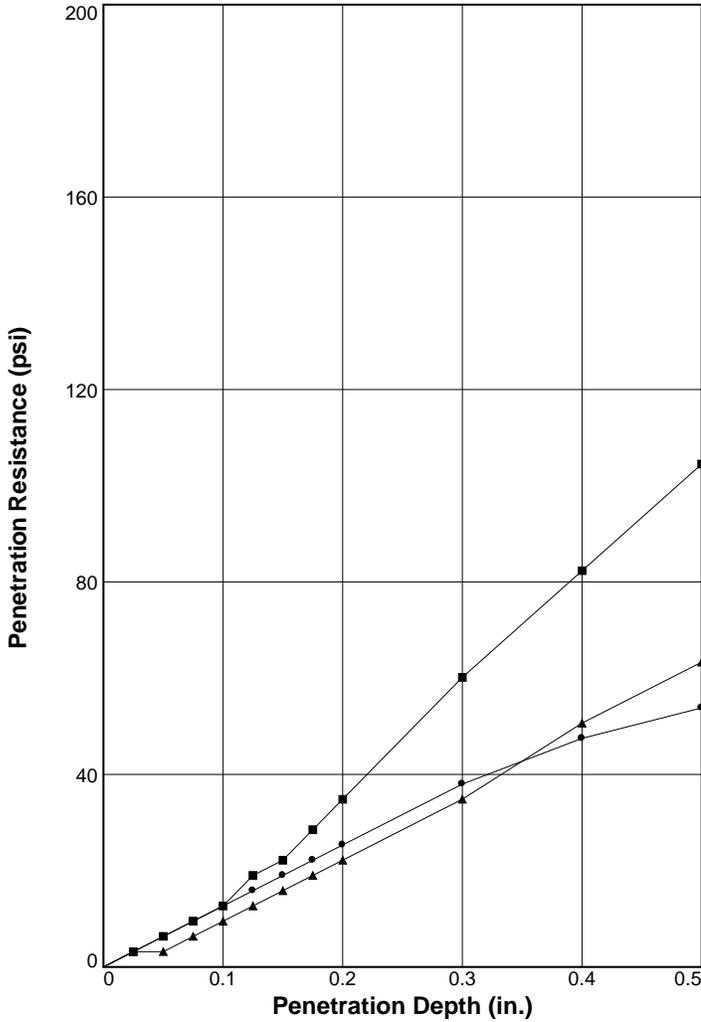


Figure

**Tested By:** PJS      **Checked By:** JMC

# BEARING RATIO TEST REPORT

## ASTM D 1883-07



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	118.0	93.8	9.8	115.0	91.4	16.4	1.3	1.7	0.000	10	2.7
2 △	120.4	95.7	9.9	117.0	93	16.2	1.3	1.7	0.027	10	2.9
3 □	122.9	97.7	10.1	118.8	94.4	14.8	1.3	2.3	0.000	10	3.5

Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
silty sand with gravel											

**Project No:** 3486  
**Project:** HACC Lancaster Campus  
**Source of Sample:** C-4      **Depth:** 1.00-2.00  
**Sample Number:** D4S-4  
**Date:** 06-12-14

**Test Description/Remarks:**