



ADDENDUM #1

July 10, 2014

Re: Harrisburg Area Community College
Lancaster Campus – Millennium Drive Repaving
Solicitation # RFB15-02

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

To: All Planholders

This Addendum is hereby made part of the Plans and Project Manual dated June 25, 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 July 1, 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 assist with the coordination of appropriate traffic controls."

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 \$597.00 / ton as obtained from the Pennsylvania Asphalt Pavement Association (see www.pahotmix.org) for the month of February 2011 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):
$$\text{Price Rebate} = (0.90 - (\text{IP} / \text{IB}))(\text{Q})(\text{IB})$$
- 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):
$$\text{Price Increase} = ((\text{IP} / \text{IB}) - 1.10)(\text{Q})(\text{IB})$$
- 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 the Skid Resistance Level (SRL) rating required on the 25 mm paving course? Typically SRL's are on the wearing course only.

A. Disregard any reference to SRL Designation on 25 mm paving course.

Q. For the volume and speed of the speed of the traffic through the campus, is the SRL designation “H” appropriate? It is more expensive.

A. The SRL can be revised to an “M” designation.

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 curbline.

Q. It is not clear what pavement markings are to be done with thermoplastic, please clarify?

A. The Advance Warning Markings, the Stop Bars and the Crosswalks shall all be Thermoplastic Markings, the Centerline shall be Waterborne paint as will all markings in the area to be seal coated.

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.

Q. Is the Contractor responsible for material testing?

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

1.4 ATTACHMENTS

A. Pre-Bid Meeting Minutes dated July 1, 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.

Lancaster Campus – Millennium Drive Repaving
Solicitation # RFB15-02

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

July 1, 2014
9:00 am

Meeting Minutes

Attendees

Dan Mahan – HACC

Greg Lamay – Eastern PCM

Anthony Eitnier – Burkholder Paving

Mark Sellers – Horst Excavating

Craig Myers – Parvin Paving

Jay Miller – B.R. Kreider & Sons, Inc.

Erik Kelican – York Excavating CO., LLC.

Gary Lutz – Pensy Supply

Josh Marton – Handwerk Site Contractors

1.0 Team Introductions

- i. Owner HACC, Central Pennsylvania's Community College
Lancaster Campus
Eleanor Bosserman – Business Director, Lebanon/Lancaster
(Not Present)
Dan Mahan – Campus Facilities Director

- ii. Architect ELA Architects
Brian Miller (Not Present)

- iii. Construction Eastern PCM, LLC
Manager Greg Lamay – Project Manager

- 1.1 Mr. Lamay noted that the Bid Form is made up of four to five pages and is included in the Project Manual, all of which must be filled out completely. A Bid Security is not 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 is dated June 25, 2014 and Plans are dated June 20, 2014.

 - 1.3 The schedule of the project is as follows:
 - a) Bid Date: Thursday, July 15, 2014, 2:00 PM EST at the Purchasing Office in the Ted Lick Administration Building – Harrisburg Campus.
 - b) Contract Award: August 5, 2014
 - c) Notice to Proceed: August 18, 2014; subject to receipt of all required supporting Contract Documentation.
 - d) Substantial Completion: December 2, 2014

 - 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 the construction. Classes are held during the daytime, evening, and weekends. Contractors are to coordinate work so as to minimize impact to owner activities.
- b) The Campus will remain open and active during the project. As such, the project will be performed in four (4) 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. The last day for questions is July 8, 2014 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 July 7, 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 or recycled content sub-base will be installed with new asphalt base and wearing courses along the approximately one-half mile drive. Work includes milling, pavement excavation, sub-base excavation, and site drainage repair. A portion of the driveway (approx. 500 LF) will receive topical repair for cracks and a seal coat only.

1.11 Alternates

Alternate # 1 – All work shown on the plans and stated in the specifications between station 15+38 +/- and Station 18+18 +/- on Millennium Drive. Includes inlet repairs at Station 15+38 +/-.

Alternate # 2 – All work shown on the plans and stated in the specifications between Station 9+52 +/- and Station 15+38 +/- on Millennium Drive. Includes inlet repairs at Station 9+52 +/-.

Alternate # 3 – All work shown on the plans and stated in the specifications between 2+00 +/- (intersection of Pitney Road and Millennium Drive) and Station 9+52 +/- on Millennium Drive.



- 1.12 The Contractor is responsible for temporary utilities and temporary toilet facilities.
- 1.13 HACC will identify location on site for stockpiling clean fill. All removed asphalt must be disposed of offsite.
- 1.14 Mr. Lamay noted the quantities of over excavation will not be specified by the Owner or Design Professional
- 1.15 Mr. Lamay noted the locations for staging and material storage will be identified by Owner and will be provided by addendum.
- 1.16 Mr. Lamay noted that unsuitable soils will be addressed by unit prices further defined by addendum.
- 1.17 Testing is the responsibility of the contractor.

Post Meeting Note: May be changed to Owner responsibility and will be clarified by addendum.

1.15 Questions & Comments

Q: Will there be an escalator for asphalt?

A: They will be included; more information will be forthcoming in addendum

Q: Are the inlets to be repaired in place?

A: Repair detail is shown in documents.

Q: Can the geotechnical report be included in addendum?

A: Yes

Q: Who will determine the cut-off date for paving?

A: Will be answered in Addendum

Q: Is line striping included?

A: The extent of painting if not specified in the documents will be clarified by addendum.

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
Eleanor Bosserman
Brian Miller





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.

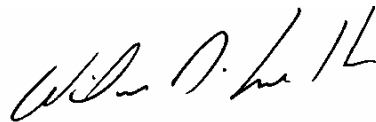
Closing:

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.



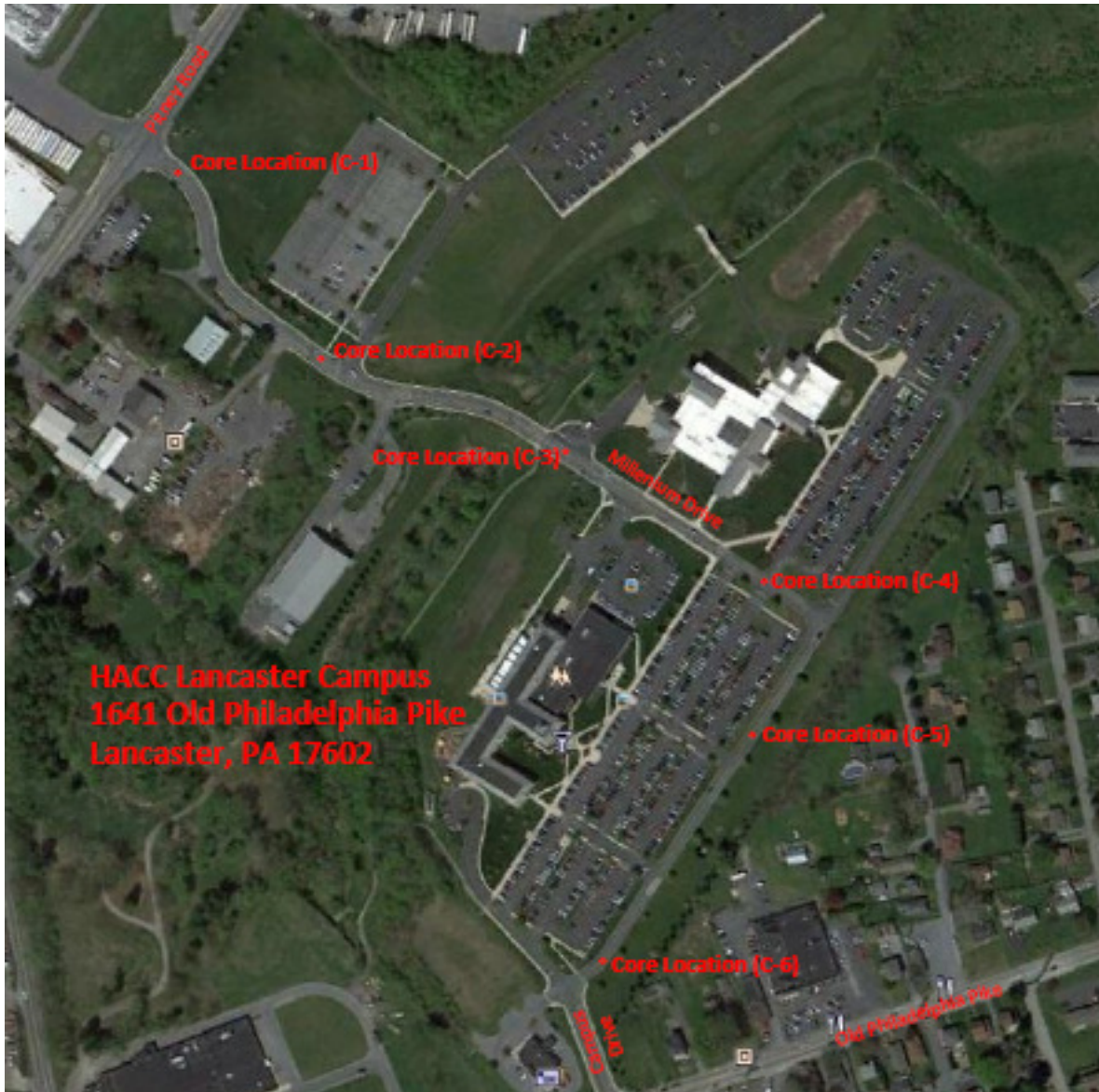
J. Matthew Carroll, P.E.
Geotechnical Group Manager



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



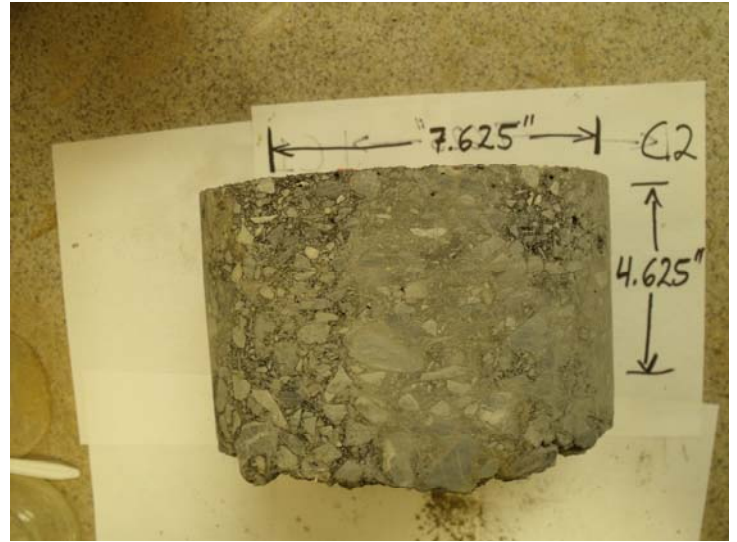
CORE # 5



CORE # 6



CORE # 1



CORE # 2



CORE # 3



CORE # 4



CORE # 5



CORE # 6

Laboratory Testing Summary

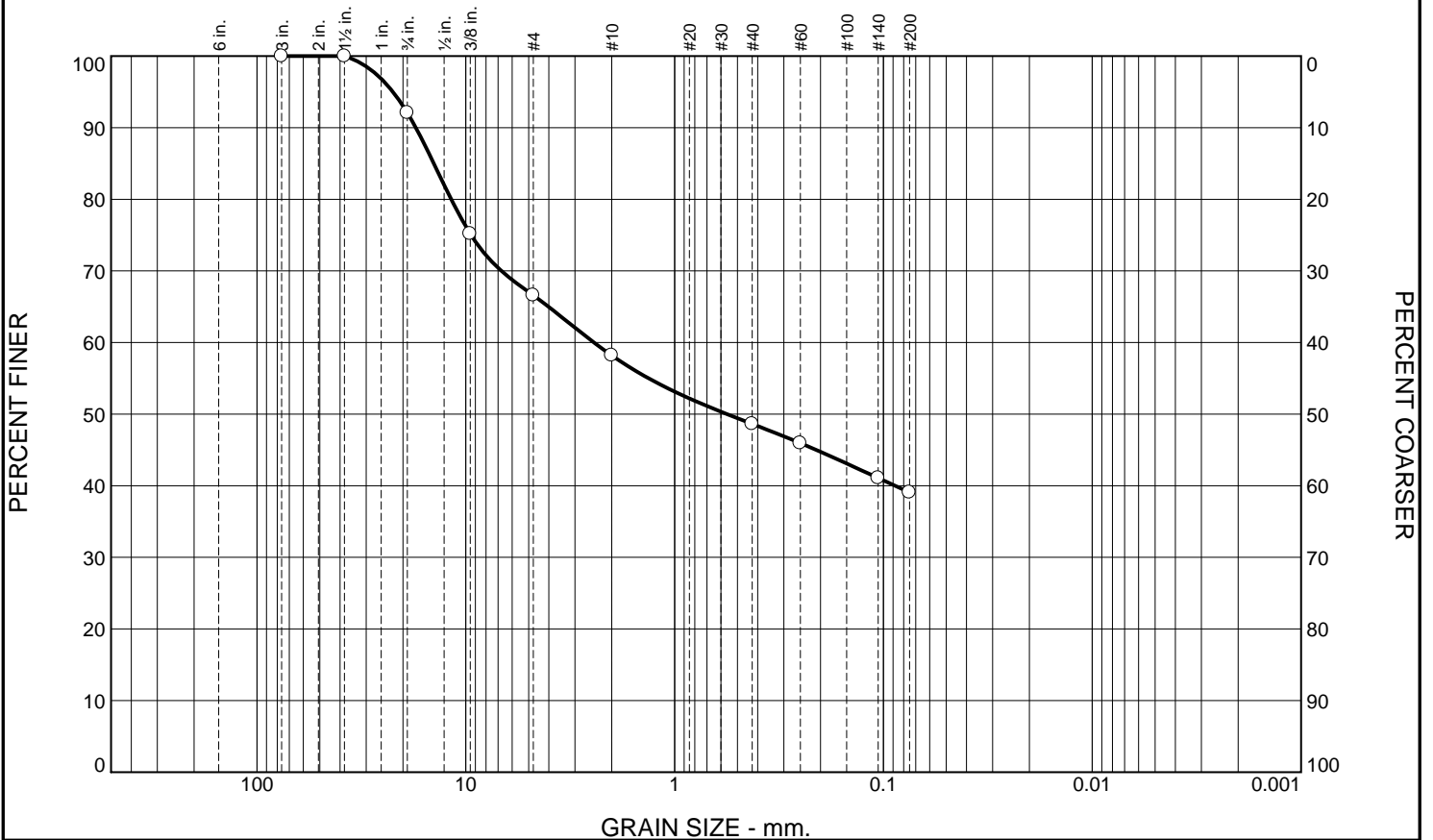
Sample Source	Sample Number	Depth (feet)	MC ¹ (%)	Soil Type ²	Atterberg Limits ³			Percent Passing No. 200 Sieve ⁴	Moisture - Density (Corr.) ⁵		CBR Value ⁶	Other
					LL	PL	PI		Maximum Density (pcf)	Optimum Moisture (%)		
C-6	D4S-6	1.00 - 1.00	9.3									
C-5	D4S-5	1.00 - 1.00	12.3									
C-3	D4S-3	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



% +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

D₉₀= 17.3448 D₈₅= 14.2234 D₆₀= 2.4310
D₅₀= 0.5605 D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= GM AASHTO= A-4(0)

Remarks

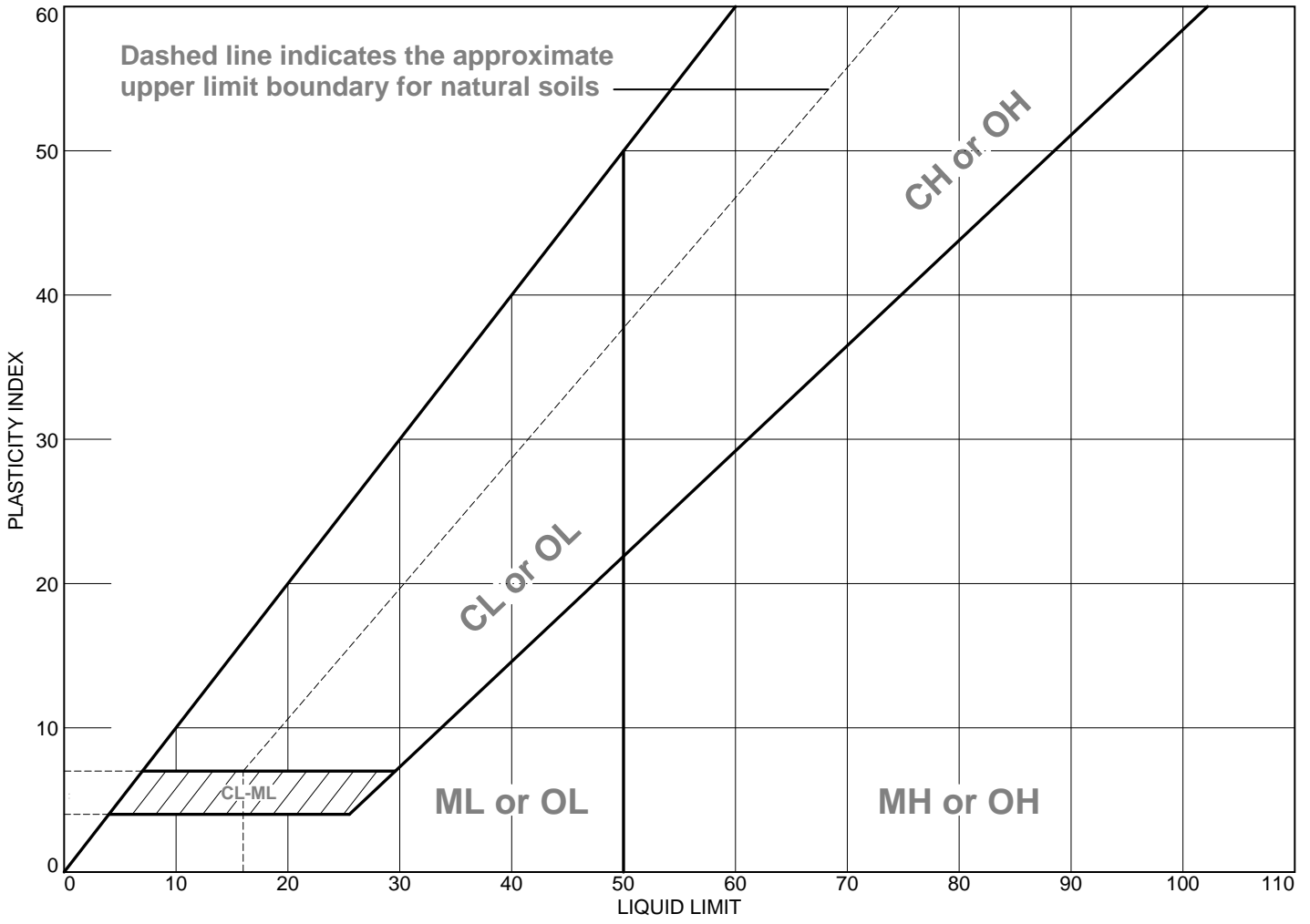
* (no specification provided)

Source of Sample: C-1 Depth: 1.00-2.00 Date: 06-11-14
Sample Number: D4S-1

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

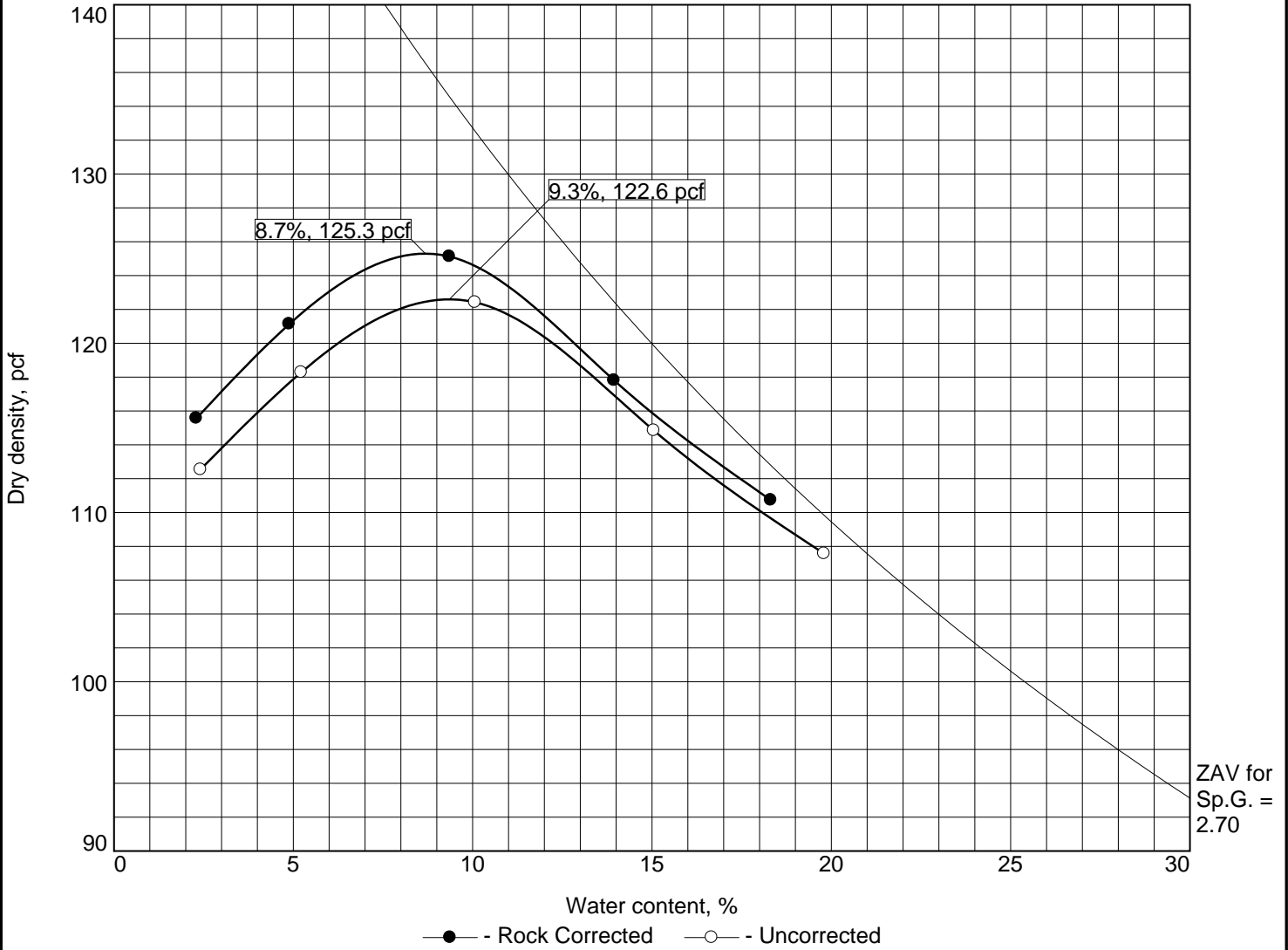
Project No. 3486 **Client:** ELA Group, Inc.
Project: HACC Lancaster Campus
● Source of Sample: C-1 **Depth:** 1.00-2.00 **Sample Number:** D4S-1

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:

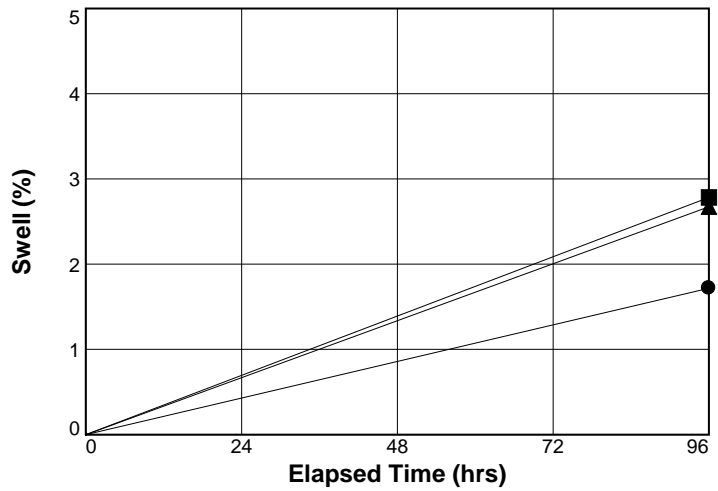
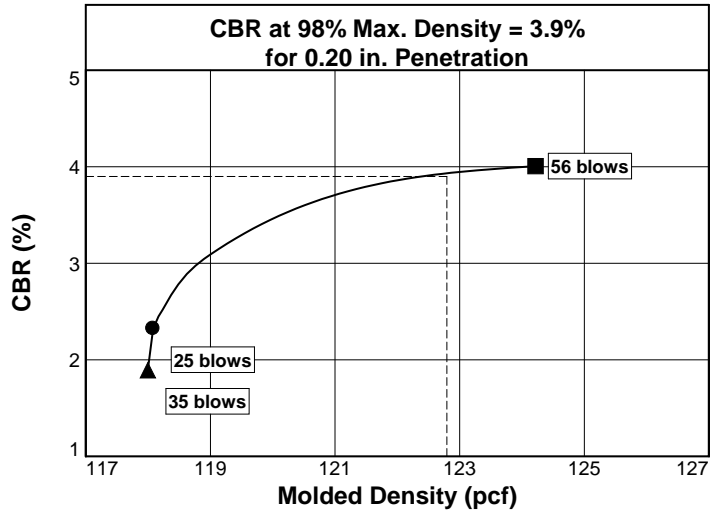
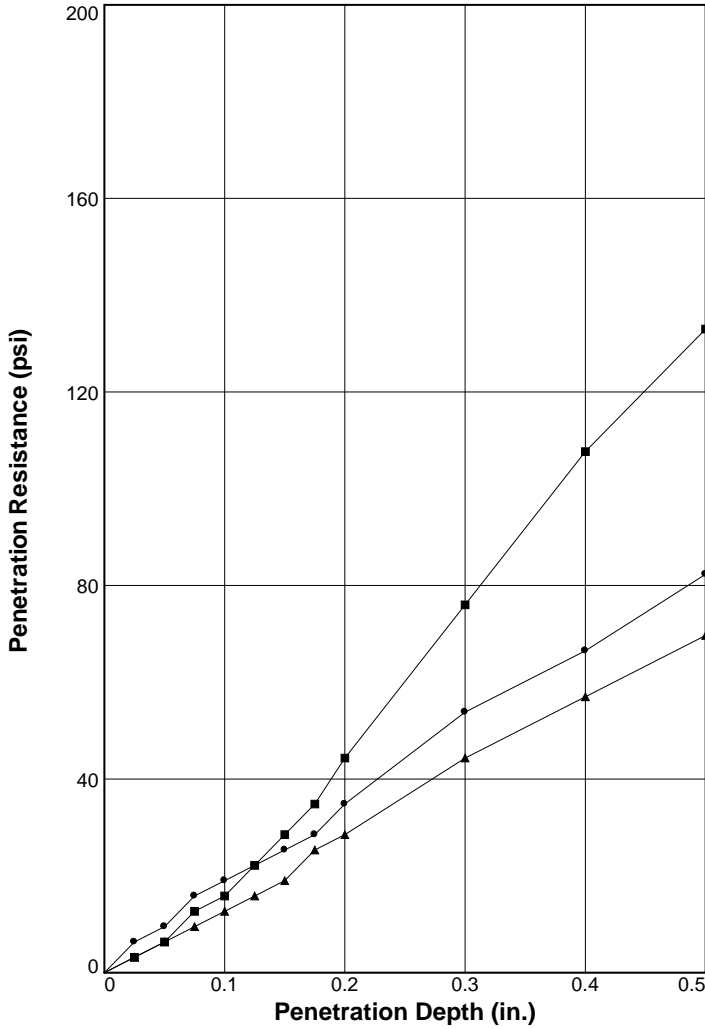
ECS MID-ATLANTIC, LLC
 56 Grumbacher Road, Suite D Phone: (717) 767-4788
 York, PA 17406 Fax: (717) 767-5658

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:

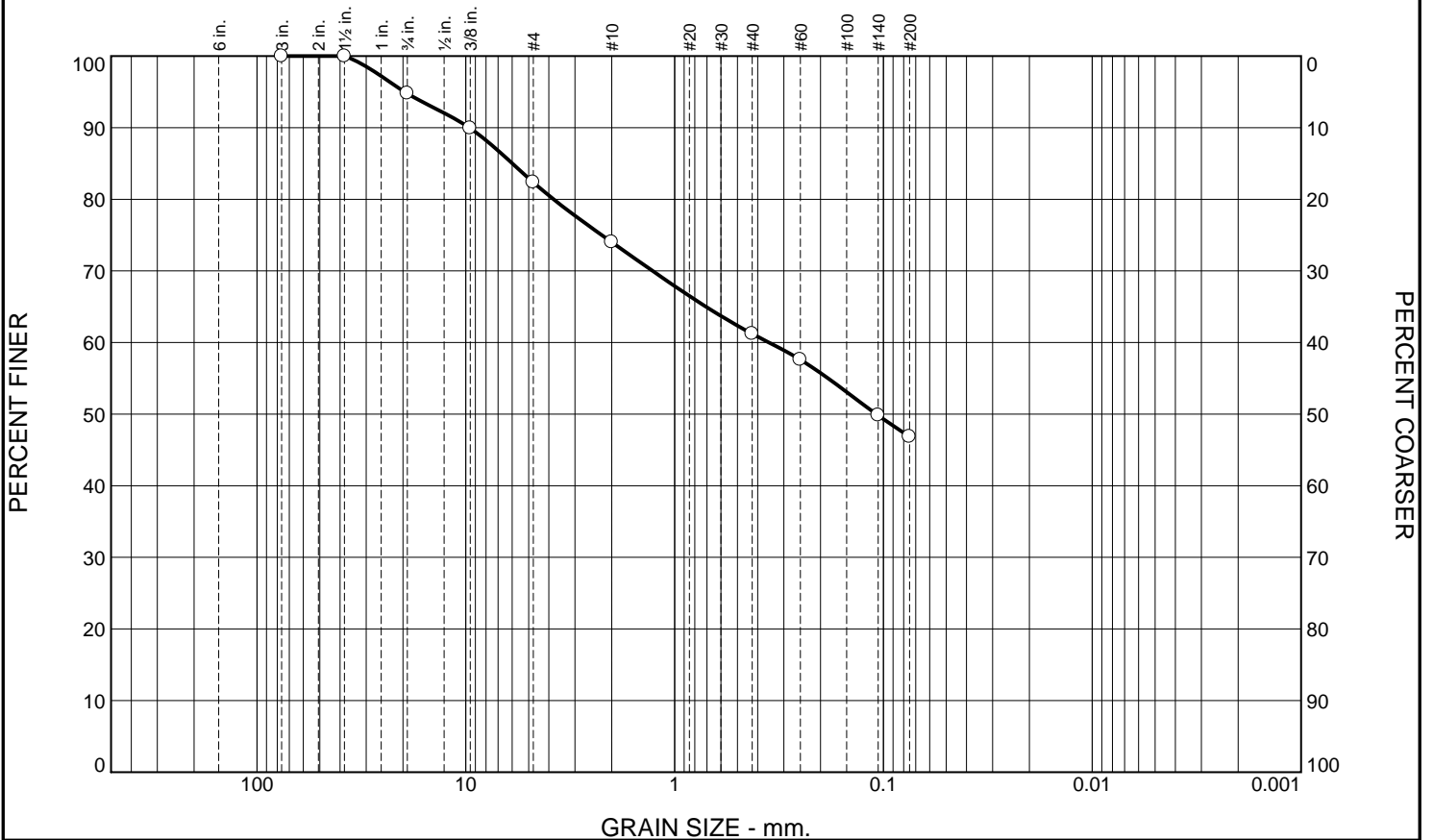


ECS MID-ATLANTIC, LLC
 56 Grumbacher Road, Suite D
 York, PA 17406

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

D₉₀= 9.6188 D₈₅= 5.9842 D₆₀= 0.3532
D₅₀= 0.1080 D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification

USCS= SM AASHTO= A-4(0)

Remarks

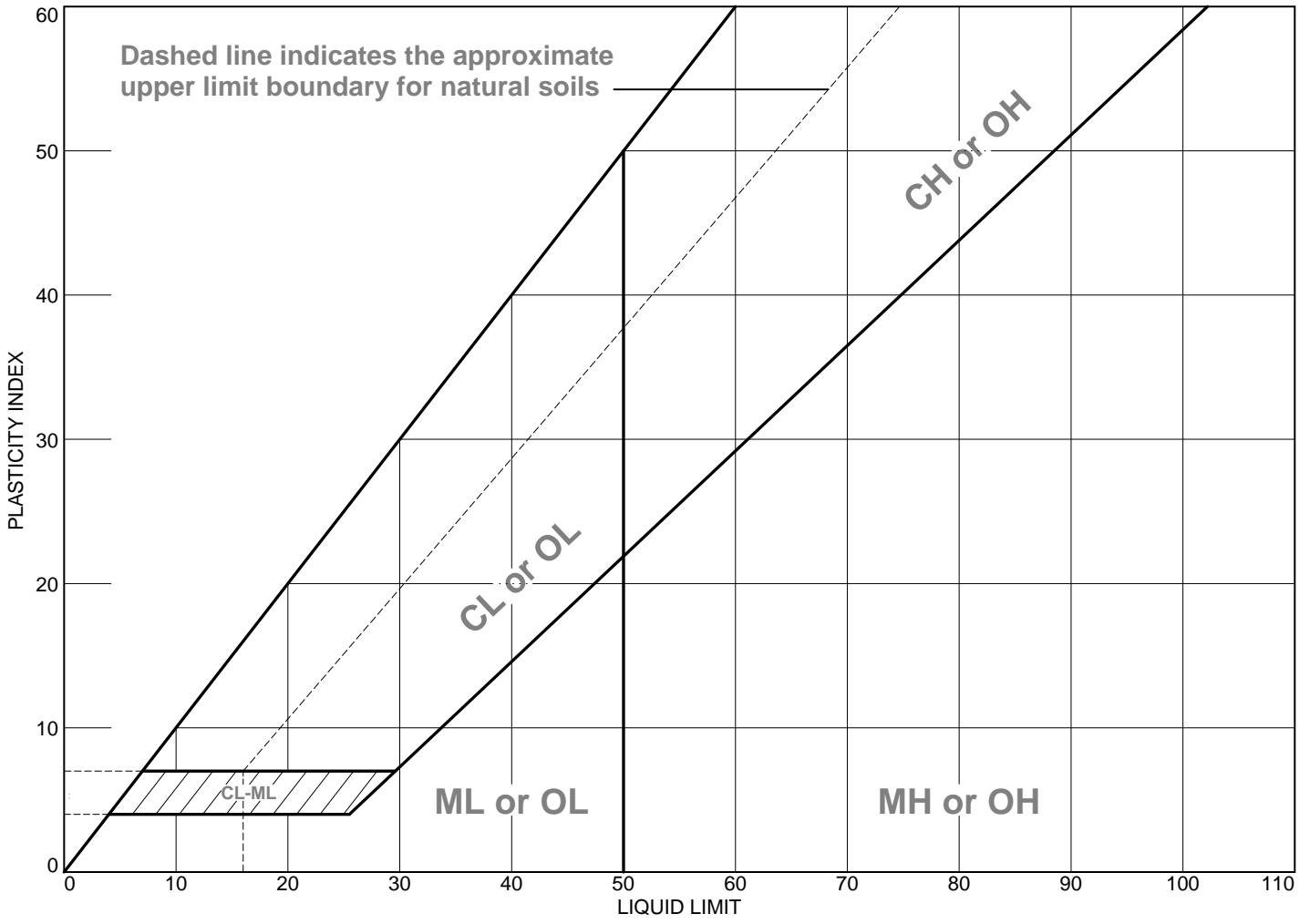
* (no specification provided)

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

ECS MID-ATLANTIC, LLC 56 Grumbacher Road, Suite D York, PA 17406 Phone: (717) 767-4788 Fax: (717) 767-5658	<p>Client: ELA Group, Inc.</p> <p>Project: HACC Lancaster Campus</p> <p>Project No: 3486</p> <p style="text-align: right;">Figure</p>
---	---

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

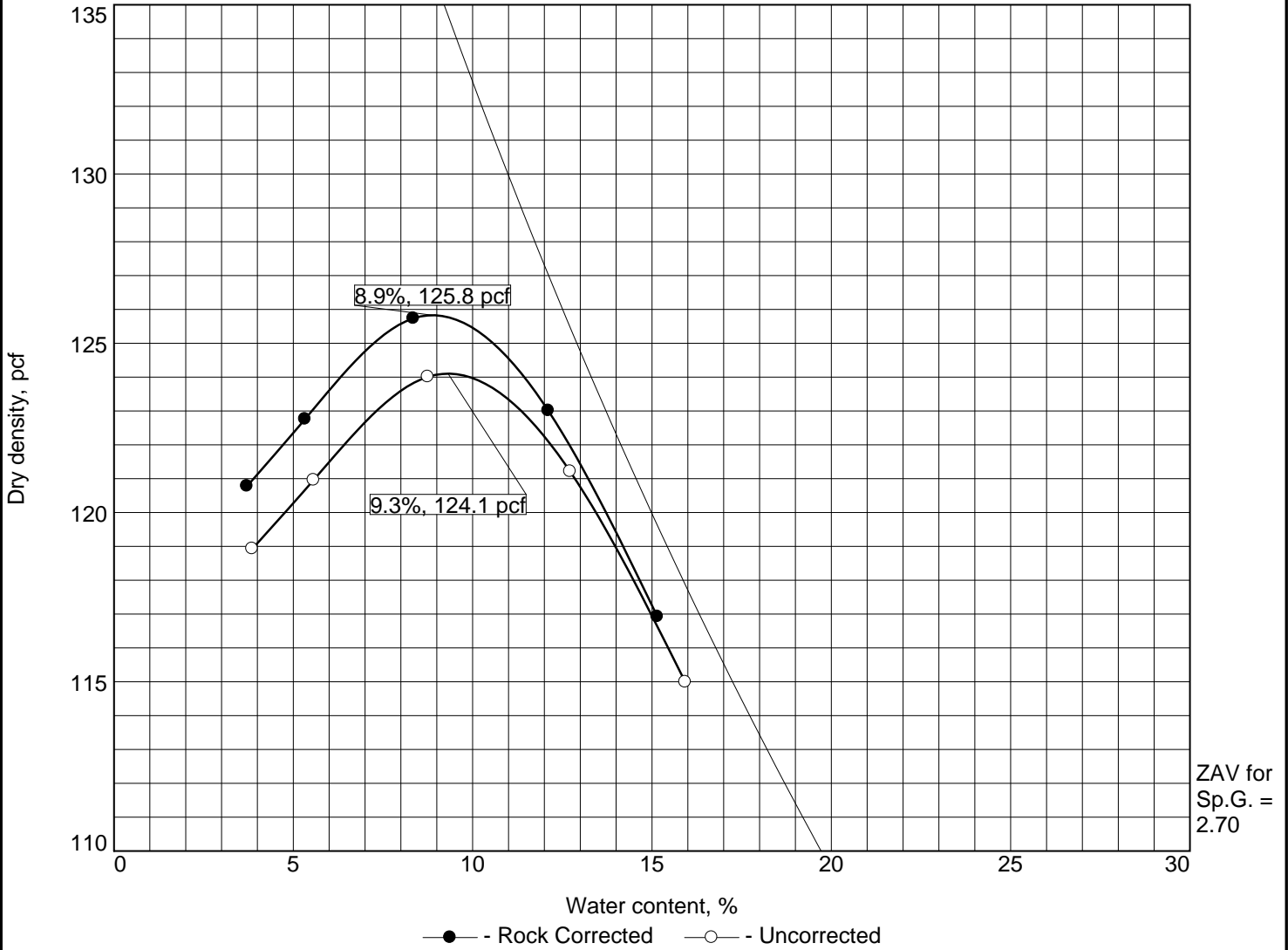
Project No. 3486 **Client:** ELA Group, Inc.
Project: HACC Lancaster Campus
● Source of Sample: C-4 **Depth:** 1.00-2.00 **Sample Number:** D4S-4

Remarks:

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

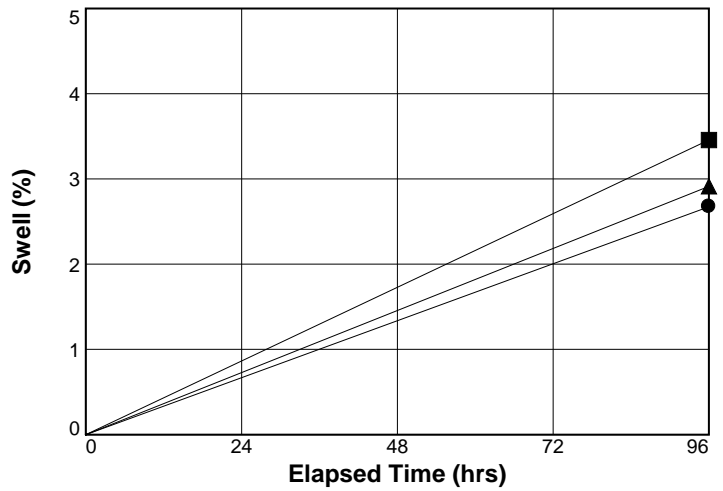
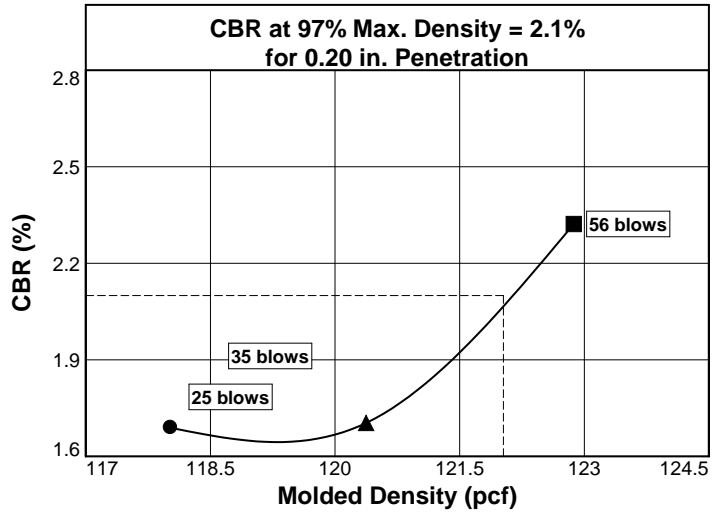
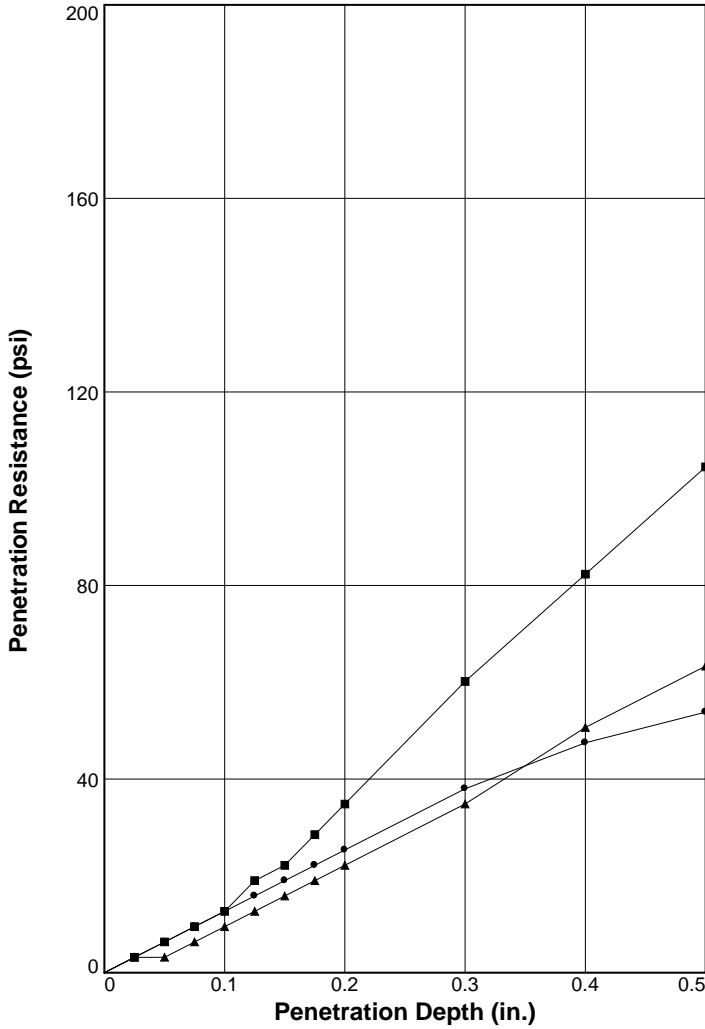
ECS MID-ATLANTIC, LLC
 56 Grumbacher Road, Suite D Phone: (717) 767-4788
 York, PA 17406 Fax: (717) 767-5658

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 ○	118.0	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	

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: