

August 17, 2016

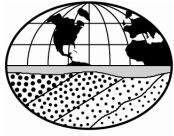
Geotechnical Engineering Report

**Arlington Career Center
816 South Walter Reed Drive
Arlington, Virginia**



**GeoConcepts
Engineering, Inc.**

**19955 Highland Vista Drive, Suite 170
Ashburn, VA 20147
Phone 703 726 8030 • www.geoconcepts-eng.com**



GeoConcepts Engineering, Inc.

19955 Highland Vista Dr., Suite 170
Ashburn, Virginia 20147
(703) 726-8030
www.geoconcepts-eng.com

August 17, 2016

J. Jennifer Xu, PhD, AIA, LEED AP
Arlington Public Schools
2770 South Taylor Street
Arlington, VA 22206

**Subject: Geotechnical Engineering Report, Arlington Career
Center, 816 South Walter Reed Drive, Arlington, Virginia
(GeoConcepts Project No. 15051.03)**

Dear Dr. Xu:

GeoConcepts Engineering, Inc. (GeoConcepts) is pleased to present the following geotechnical engineering report prepared for Arlington Career Center located at 816 South Walter Reed Drive, Arlington, Virginia.

We appreciate the opportunity to serve as your geotechnical consultant on this project. Please do not hesitate to contact me if you have any questions or want to meet to discuss the findings and recommendations contained in the report.

Sincerely,

GEOCONCEPTS ENGINEERING, INC.

Rebecca L. Smith-Zakowicz, PG
Associate
rsmith@geoconcepts-eng.com

Table of Contents

1.0 Scope of Services	1
2.0 Site Description and Proposed Construction	1
3.0 Subsurface Conditions	1
3.1 Geology.....	1
3.2 Stratification	1
3.3 Groundwater.....	2
3.4 Soil Laboratory Test Results	2
3.5 Seismic Site Classification.....	3
3.6 Hand Auger Investigation.....	3
4.0 Engineering Analysis.....	4
5.0 General Limitations.....	4

Figure 1: Site Vicinity Map

Appendix A: Subsurface Investigation

Appendix B: Soil Laboratory Test Results

1.0 Scope of Services

This geotechnical engineering report presents the results of the field investigation, soil laboratory testing, and engineering analysis of the geotechnical data. This report specifically addresses the following:

- An evaluation of subsurface conditions within the area of the proposed site development, including a seismic site classification per the International Building Code.
- Analysis and recommendations regarding the feasibility of increasing the load on the existing foundations.

Services not specifically identified in the contract for this project are not included in the scope of services.

2.0 Site Description and Proposed Construction

The site is located at 816 South Walter Reed Drive in Arlington, Virginia. A site vicinity map is presented as Figure 1 at the end of this report. The existing Arlington Career Center building is two stories with no below-grade levels, with the finished floor slab elevation (EL) at EL 201.5. We understand that the building is bearing on spread footings designed for a maximum bearing pressure of 6,000 psf, and we estimate that the bottom of foundations vary from EL 187.5 to EL 192.5 based on the existing drawings.

Based on plans provided to us by Arlington County Public Schools, the proposed construction consists of adding a third floor to the existing building. We understand that this additional floor will result in an increase to the spread footing bearing pressures up to 7,000 psf.

3.0 Subsurface Conditions

Subsurface conditions were investigated by drilling a total of three test borings adjacent to the existing building and four hand auger borings inside the existing building adjacent to interior columns. Test boring logs and a boring location plan are presented in Appendix A of this report.

3.1 Geology

The site is located within the Coastal Plain Physiographic Province of Virginia. The Coastal Plain consists of a seaward thickening wedge of unconsolidated to semi-consolidated sedimentary deposits from the Cretaceous Geologic Period to the Holocene Geologic Epoch. These deposits represent marginal-marine to marine sediments consisting of interbedded sands and clays. The Coastal Plain is bordered to the east by the Atlantic Ocean and to the west by the Piedmont Physiographic Province. The dividing line between the Coastal Plain and the Piedmont is locally referred to as the "Fall Line". This name comes from the waterfalls that form as a result of the differential erosion that occurs as streams cross the Piedmont/Coastal Plain contact.

Specifically, according to local geologic maps, the site is mapped in Pliocene sand and gravel of the Tertiary geologic period overlying the Potomac Formation of the Cretaceous geologic period. Based on our subsurface investigation, the sediments and strata correspond favorably to the geologic publications.

3.2 Stratification

The subsurface materials encountered have been stratified for purposes of our discussions herein. These stratum designations do not imply that the materials encountered are continuous across the site. Stratum designations have been established to characterize similar subsurface conditions based on material gradations and parent geology. The generalized subsurface materials encountered in the test borings completed at the site have been assigned to the following strata:

Stratum A (Existing Fill)	generally loose to medium dense, clayey sand with gravel, silty sand with gravel, FILL, moist, black, brown
------------------------------	---

Stratum B (Terrace Deposits) generally medium dense to dense, clayey SAND (SC) with gravel, silty SAND (SM) with gravel, clayey GRAVEL (GC) with sand, POORLY GRADED GRAVEL (GP-GM) with silt and sand, moist to wet, black, brown, orange

Stratum C (Potomac Formation) stiff to very stiff, FAT CLAY (CH), moist, brown, orange, gray, red-orange

The two letter designations included in the strata descriptions presented above and on the test boring logs represent the Unified Soil Classification System (USCS) group symbol and group name for the samples based on laboratory testing per ASTM D-2487 and visual classifications per ASTM D-2488. It should be noted that visual classifications per ASTM D-2488 may not match classifications determined by laboratory testing per ASTM D-2487.

3.3 Groundwater

Groundwater level observations were made in the field during drilling of the test borings. A summary of the water level readings rounded off to the nearest 0.5 feet elevation is presented in the table below.

Test Boring No.	Depth to Groundwater (ft)	Groundwater Elevation (ft)
B-1	9.0	EL 192.0
B-3	14.5	EL 185.5

The groundwater observations presented herein are considered to be an indication of the groundwater levels at the dates and times indicated. Where more impervious clay soils are encountered, the amount of water seepage into the borings is limited, and it is generally not possible to establish the location of the groundwater table through short term water level observations. Accordingly, the groundwater information presented herein should be used with caution. Also, fluctuations in groundwater levels should be expected with seasons of the year, construction activity, changes to surface grades, precipitation, or other similar factors.

3.4 Soil Laboratory Test Results

Selected soil samples obtained from the field investigation were tested for grain size distribution, Atterberg limits, and natural moisture contents. A summary of soil laboratory test results is presented in the table below, and the results of natural moisture content tests are presented on the test boring logs in Appendix A.

Test Boring No.	Depth (ft)	Sample Type	Stratum	Description of Soil Specimen	Sieve Results		Atterberg Limits			Natural Moisture Content (%)
					Percent Retained #4 Sieve	Percent Passing #200 Sieve	LL	PL	PI	
B-2	2.5-5.0	Jar	A	clayey SAND (SC) with gravel	19.2	34.8	22	14	8	13.0
B-2	8.5-10	Jar	B	clayey GRAVEL (GC) with sand	46.6	23.1	51	23	28	14.0
B-3	8.5-10	Jar	B	clayey SAND (SC) with gravel	26.7	16.0	26	16	10	9.0

Test Boring No.	Depth (ft)	Sample Type	Stratum	Description of Soil Specimen	Sieve Results		Atterberg Limits			Natural Moisture Content (%)
					Percent Retained #4 Sieve	Percent Passing #200 Sieve	LL	PL	PI	
B-3	23.5-25	Jar	C	FAT CLAY (CH)	0.0	97.8	88	26	62	34.5

Notes:

1. Soil tests are in accordance with applicable ASTM standards
2. Soil classification symbols are in accordance with Unified Soil Classification System
3. Visual identification of samples is in accordance with ASTM D-2488
4. Key to abbreviations: LL = liquid limit; PL = plastic limit; PI = plasticity index;

3.5 Seismic Site Classification

Based on the results of the subsurface investigation and our knowledge of local geologic conditions, the site soils have been assigned to a site class D per the International Building Code (IBC).

The site coefficients and adjusted Maximum Considered Earthquake (MCE) spectral response acceleration parameters were obtained from the United States Geological Survey (USGS) website and are presented in the table below.

Mapped Spectral Accelerations for Site Class B and 5% Damping (Step 1)	Site Coefficients to Modify Accelerations Based on Site Classification D (Step 2)
$S_s = 0.119(g)$	$F_a = 1.6$
$S_1 = 0.051(g)$	$F_v = 2.4$
MCE Spectral Response Accelerations (Step 3)	Design Spectral Response Accelerations (Step 4)
$S_{MS} = 0.190(g) (=S_s * F_a)$	$S_{DS} = 0.127(g) (=2/3 * S_{MS})$
$S_{M1} = 0.123(g) (=S_1 * F_v)$	$S_{D1} = 0.082(g) (=2/3 * S_{M1})$

3.6 Hand Auger Investigation

Four hand auger test borings were performed inside the building adjacent to existing column footings. In the hand auger borings, the concrete slab thickness ranged from approximately 4.5 to 6 inches and was underlain by about 2 to 3.5 inches of crushed stone. The hand auger borings refused prior to reaching the bearing depth of the of the existing spread footings. The test borings generally indicated existing fill soils and visually classified as clayey SAND (SC) and silty SAND (SM) below the existing floor slab. The locations of the hand auger borings are provided on Figure 2 in Appendix A. No groundwater was encountered during excavation of the hand auger borings.

Test Boring No.	Concrete Slab Thickness (inches)	Crushed Stone Thickness (inches)	Refusal Depth (feet)
HA-1	6	2	3.8
HA-2	6	2	3.2

Test Boring No.	Concrete Slab Thickness (inches)	Crushed Stone Thickness (inches)	Refusal Depth (feet)
HA-3	5.5	3.5	5.9
HA-4	4.5	3.5	3.2

4.0 Engineering Analysis

We understand that the bearing pressure on the existing spread footing will be increased from 6,000 psf up to about 7,000 psf with the new loading. We believe that these existing footings are bearing on the compact sands of Stratum B, and based on our observations and testing of the bearing materials, we believe that this increase in bearing pressure is feasible. We calculate that the additional settlement due to the increased loading should not exceed 0.5-inch. The structural capacity of the existing spread footings should be checked by the structural engineer at this increased loading.

5.0 General Limitations

Recommendations contained in this report are based upon the data obtained from the relatively limited number of test borings. This report does not reflect conditions that may occur between the points investigated, or between sampling intervals in test borings. The nature and extent of variations between test borings and sampling intervals may not become evident until the course of construction. Therefore, it is essential that on-site observations of subgrade conditions be performed during the construction period to determine if re-evaluation of the recommendations in this report must be made. It is critical to the successful completion of this project that GeoConcepts be retained during construction to observe the implementation of the recommendations provided herein.

This report has been prepared to aid in the evaluation of the site and to assist your office and the design professionals in the design of this project. It is intended for use with regard to the specific project as described herein. Changes in proposed construction, structural loads, etc. should be brought to our attention so that we may determine any effect on the recommendations presented herein.

This report should be made available to bidders prior to submitting their proposals to supply them with facts relative to the subsurface conditions revealed by our investigation and the results of analyses and studies that have been performed for this project. In addition, this report should be given to the successful contractor and subcontractors for their information only.

We recommend the project specifications contain the following statement: "A geotechnical engineering report has been prepared for this project by GeoConcepts Engineering, Inc. This report is for informational purposes only and should not be considered part of the contract documents. The opinions expressed in this report are those of the geotechnical engineer and represent their interpretation of the subsoil conditions, tests and results of analyses that they performed. Should the data contained in this report not be adequate for the contractor's purposes, the contractor may make their own investigations, tests and analyses prior to bidding."

This report was prepared in accordance with generally accepted geotechnical engineering practices. No warranties, expressed or implied, are made as to the professional services included in this report.

We appreciate the opportunity to be of service for this project. Please contact the undersigned if you require clarification of any aspect of this report.

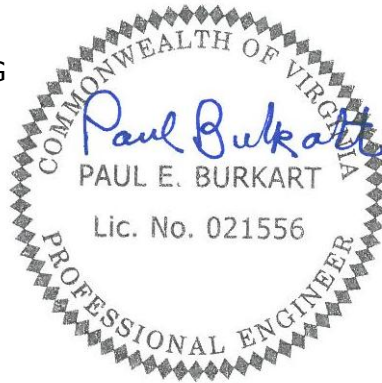
Sincerely,

GEOCONCEPTS ENGINEERING, INC.



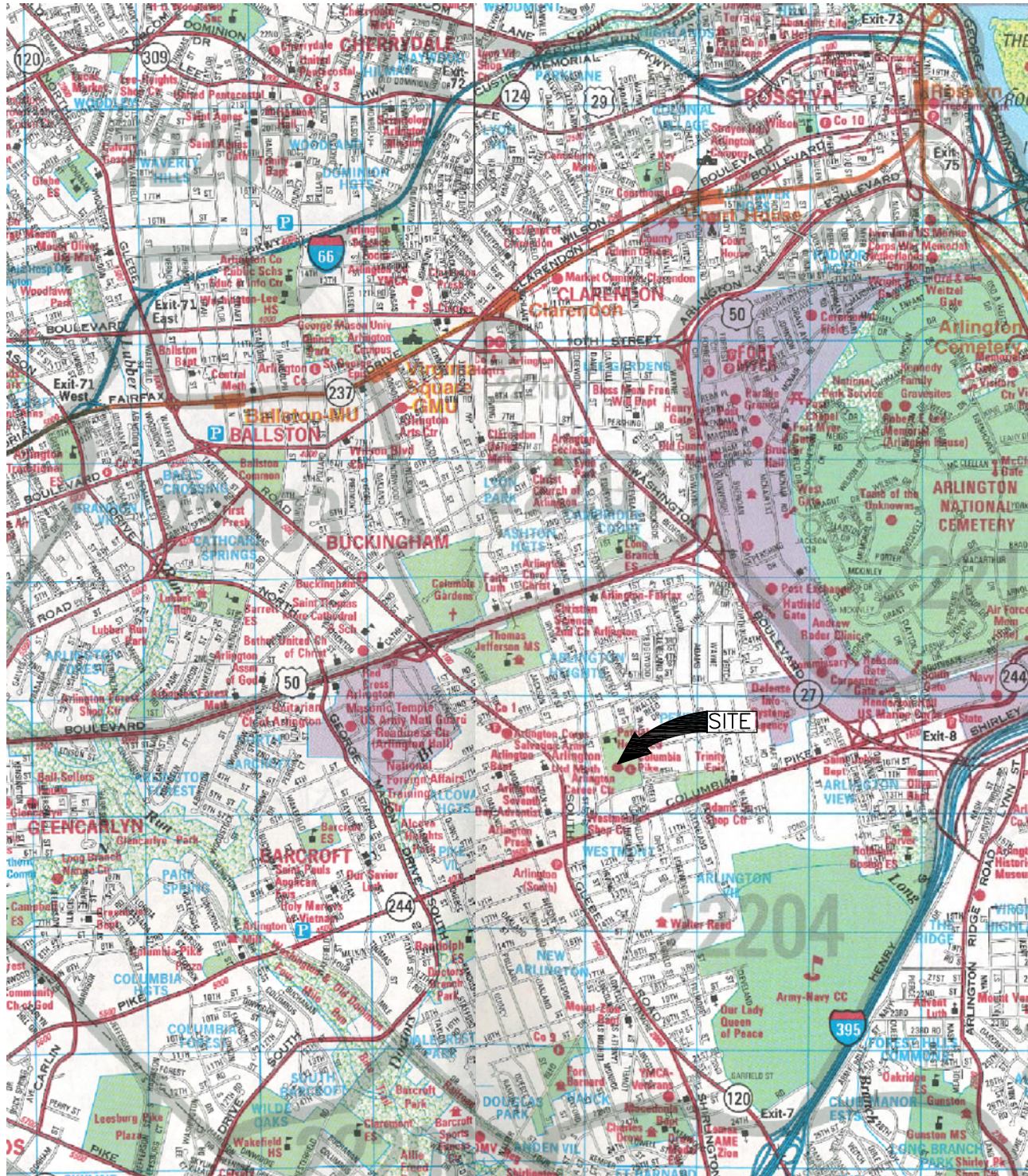
Rebecca L. Smith-Zakowicz, PG
Associate

Paul E. Burkart, PE
Principal



KF/RSZ/PEB/shm

N:\PROJECTS\Active 15 Projects\15051.03, Arlington Tech Center\Final\Arlington Career Center GER.docx



COPYRIGHT ADC THE MAP PEOPLE, PERMITTED USE 20200754



**GeoConcepts
Engineering, Inc.**

19955 Highland Vista Dr., Suite 170 (703) 726-8030
Ashburn, Virginia 20147 (703) 726-8032 fax

ARLINGTON CAREER CENTER
816 SOUTH WALTER REED DRIVE, ARLINGTON, VIRGINIA

SITE
VICINITY MAP

Scale:
N.T.S.

Fig.

Date:
AUG. 2016

Drawn By:
K.N.F.

Checked By:
P.E.B.

Project No.:
15051.03

1

Appendix A

Subsurface Investigation

Subsurface Investigation Procedures (1 page)

Identification of Soil (1 page)

Test Boring Notes (1 page)

Test Boring Logs (3 pages)

Boring Location Plan, Figure 2 (1 page)

Subsurface Investigation Procedures

1. Test Borings – Hollow Stem Augers

The borings are advanced by turning an auger with a center opening of 3-¼ inches. A plug device blocks off the center opening while augers are advanced. Cuttings are brought to the surface by the auger flights. Sampling is performed through the center opening in the hollow stem auger, by standard methods, after removal of the plug. Usually, no water is introduced into the boring using this procedure.

2. Standard Penetration Tests

Standard penetration tests are performed by driving a 2-inch O.D., 1-¾ inch I.D. sampling spoon with a 140-pound hammer falling 30 inches, according to ASTM D-1586. After an initial 6 inches penetration to assure the sampling spoon is in undisturbed material, the number of blows required to drive the sampler an additional 12 inches is generally taken as the N value. In the event 30 or more blows are required to drive the sampling spoon the initial 6-inch interval, the sampling spoon is driven to a total penetration resistance of 100 blows or 18 inches, whichever occurs first.

3. Test Boring Stakeout

The test boring stakeout was provided by GeoConcepts personnel using available site plans. Ground surface elevations were estimated from topographic information contained on the site plan provided to us and should be considered approximate. If the risk related to using approximate boring locations and elevations is unacceptable, we recommend an as-drilled survey of boring locations and elevations be completed by a licensed surveyor.

Identification of Soil

I. DEFINITION OF SOIL GROUP NAMES		ASTM D-2487	Symbol	Group Name
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines	<i>GW</i>	WELL GRADED GRAVEL
			<i>GP</i>	POORLY GRADED GRAVEL
		Gravels with Fines More than 12% fines	<i>GM</i>	silty GRAVEL
			<i>GC</i>	clayey GRAVEL
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines	<i>SW</i>	WELL GRADED SAND
			<i>SP</i>	POORLY GRADED SAND
		Sands with fines More than 12% fines	<i>SM</i>	silty SAND
			<i>SC</i>	clayey SAND
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid Limit less than 50	Inorganic	<i>CL</i>	LEAN CLAY
			<i>ML</i>	SILT
		Organic	<i>OL</i>	ORGANIC CLAY
				ORGANIC SILT
	Silts and Clays Liquid Limit 50 or more	Inorganic	<i>CH</i>	FAT CLAY
			<i>MH</i>	ELASTIC SILT
		Organic	<i>OH</i>	ORGANIC CLAY
				ORGANIC SILT
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor	<i>PT</i>	PEAT	

II. DEFINITION OF MINOR COMPONENT PROPORTIONS

<u>Minor Component</u>	<u>Approximate Percentage of Fraction by Weight</u>
Gravelly, Sandy (adjective)	30% or more coarse grained
Sand, Gravel	15% to 29% coarse grained
Silt, Clay	5% to 12% fine grained


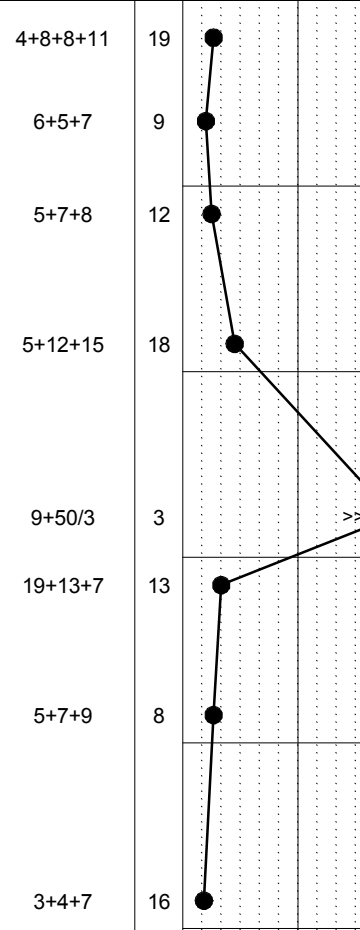




III. GLOSSARY OF MISCELLANEOUS TERMS


SYMBOLS	Unified Soil Classification Symbols are shown above as group symbols. Use "A" Line Chart for laboratory identification. Dual symbols are used for borderline classification.
BOULDERS & COBBLES	Boulders are considered pieces of rock larger than 12 inches, while cobbles range from 3 to 12 inches.
WEATHERED ROCK	Residual rock material with a standard penetration test (SPT) resistance of at least 60 blows per foot.
ROCK/SPOON REFUSAL	Rock material with a standard penetration test (SPT) resistance of 50 blows for 1 inch.
ROCK FRAGMENTS	Angular pieces of rock which have separated from original vein or strata and are present in a soil matrix. Only used in residual soils
QUARTZ	A hard silicate mineral often found in residual soils. Only used when describing residual soils.
CEMENTED SAND	Usually localized rock-like deposits within a soil stratum composed of sand grains cemented by calcium carbonate, iron oxide, or other minerals. Commonly encountered in Coastal Plain sediments, primarily in the Potomac Group sands (Kps).
MICACEOUS	A term used to describe soil that "glitters" or is shiny. Most commonly encountered in fine-grained soils.
ORGANIC MATERIALS (Excluding Peat)	Topsoil - Surface soils that support plant life and contain organic matter.
FILL	Lignite - Hard, brittle decomposed organic matter with low fixed carbon content (a low grade of coal).
CONTAINS	Man-made deposit containing soil, rock, and other foreign matter.
WITH	This is used when a fill deposit contains a secondary component that does not apply to a USCS classification. Only used for fill deposits
PROBABLE FILL LAYERS	This is used when a residual soil contains a secondary component that does not contribute to its USCS classification. Only used for natural soils.
COLOR	Soils which contain no visually detected foreign matter but which are suspect with regard to origin.
MOISTURE CONDITIONS	1/2 to 12 inch seam of minor soil component.
GRAIN SIZE	Two most predominant colors present should be described.
	Wet, moist, or dry to indicate visual appearance of specimen.
	Fine-medium-coarse

Test Boring Notes

1. Classification of soil is by visual inspection and is in accordance with the Unified Soil Classification System.
2. Estimated groundwater levels are indicated on the logs. These are only estimates from available data and may vary with precipitation, porosity of soil, site topography, etc.
3. Sampling data presents standard penetrations for 6-inch intervals or as indicated with graphic representations adjacent to the sampling data.
4. The logs and related information depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at the test locations. Also, the passage of time may result in a change in the subsurface conditions at the test locations.
5. The stratification lines represent the approximate boundary between soil types as determined in the sampling operation. Some variation may be expected vertically between samples taken. The soil profile, groundwater level observations and penetration resistances presented on the logs have been made with reasonable care and accuracy and must be considered only an approximate representation of subsurface conditions to be encountered at the particular location.

PROJECT: Arlington Career Center		LOGGED BY: R. Soper	BORING NUMBER: B-1
LOCATION: 816 South Walter Reed Drive, Arlington, Virginia		DRILLING CONTRACTOR: Connelly & Associates Inc.	
OWNER/CLIENT: Arlington County Public Schools		DRILLER: B. Mullendore	DATES DRILLED: 7/26/16 - 7/26/16
PROJECT NUMBER: 15051.03	GROUND SURFACE ELEVATION (ft): 201.0 ±	DRILLING METHOD: Automatic hammer 3.25"	OFFSET NOTES:

ELEV. (ft)	DEPTH (ft)	SAMPLE TYPE	STRATUM	GRAPHIC	MATERIAL DESCRIPTION	SOIL		
						SPT BLOW COUNTS	REC (ft)	STANDARD PENETRATION TEST RESISTANCE (BPF) 20 40 60 80
201.0					Topsoil = 0.1ft.			
200.9			A		Fill, brown and black, fine to coarse, silty SAND with gravel, medium dense, moist, SM Contains organics, without gravel	4+8+8+11	19	
198.5		6+5+7				9		
196.0	5		B		Terrace deposit, orange and black, fine to coarse, silty SAND with gravel, SM	5+7+8	12	
	10					5+12+15	18	
187.5			B		Very dense, contains lignite	9+50/3	3	>>
186.0	15					19+13+7	13	
182.5	20		C		Terrace deposit, brown and orange, coarse, POORLY GRADED GRAVEL with silt and sand, medium dense, moist, GP-GM Wet	5+7+9	8	
177.5	25					3+4+7	16	
176.0	25				Potomac formation, brown and orange, fine, FAT CLAY, stiff, moist, CH Bottom of Boring at 25.0 ft			




GROUND WATER LEVELS: ∇ ENCOUNTERED: <u>9.0</u> ft ELEV. <u>192.0</u> NOT ENCOUNTERED UPON COMPLETION	SAMPLE TYPES:  Split Spoon
CAVED: <u>4.0</u> ft ELEV. <u>197.0</u>	


REMARKS:

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT ARLINGTON CAREER CENTER.GPJ GEOCONCEPTS TEMPLATE 02-12-2015.GDT 8/15/16

PROJECT: Arlington Career Center		LOGGED BY: R. Soper		BORING NUMBER: B-2
LOCATION: 816 South Walter Reed Drive, Arlington, Virginia		DRILLING CONTRACTOR: Connelly & Associates Inc.		
OWNER/CLIENT: Arlington County Public Schools		DRILLER: B. Mullendore		DATES DRILLED: 7/26/16 - 7/26/16
PROJECT NUMBER: 15051.03	GROUND SURFACE ELEVATION (ft): 199.0 ±	DRILLING METHOD: Automatic hammer 3.25"		SHEET 1 OF 1

ELEV. (ft)	DEPTH (ft)	SAMPLE TYPE	STRATUM	GRAPHIC	MATERIAL DESCRIPTION	SOIL									
						SPT BLOW COUNTS	REC (ft)	STANDARD PENETRATION TEST RESISTANCE (BPF)		MC (%)					
						20	40	60	80						
199.0					Topsoil = 0.2ft.										
198.8			A		Fill, white and black, fine to coarse, clayey SAND with gravel, dense, moist, SC	14+16+19+22	16								
196.5					Brown and orange, loose	5+5+4	18								13.0
194.0	5				Terrace deposit, brown and orange, fine to coarse, clayey SAND with gravel, loose, moist, SC	3+3+4	5								
190.5			B		Terrace deposit, brown and orange, fine to coarse, clayey GRAVEL with sand, medium dense, moist, GC	6+6+8	18							14.0	
185.5	10				Terrace deposit, brown and orange, fine to coarse, silty SAND with gravel, dense, moist, SM	7+16+17	18								
180.5			C		Medium dense	4+8+10	6								
175.5	20				Potomac formation, red - orange, fine to coarse, sandy FAT CLAY with gravel, very stiff, moist, CH	14+16+13	10								
174.0	25				Bottom of Boring at 25.0 ft										


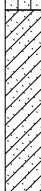

GROUND WATER LEVELS: NOT ENCOUNTERED DURING DRILLING NOT ENCOUNTERED UPON COMPLETION	CAVED: <u>4.0</u> ft ELEV. <u>195.0</u>	SAMPLE TYPES:  Split Spoon
--	---	--

REMARKS:

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.

BOREHOLE/TEST PIT ARLINGTON CAREER CENTER.GPJ GEOCONCEPTS TEMPLATE 02-12-2015.GDT 8/15/16

PROJECT: Arlington Career Center		LOGGED BY: R. Soper	BORING NUMBER: B-3
LOCATION: 816 South Walter Reed Drive, Arlington, Virginia		DRILLING CONTRACTOR: Connelly & Associates Inc.	
OWNER/CLIENT: Arlington County Public Schools		DRILLER: B. Mullendore	DATES DRILLED: 7/26/16 - 7/26/16
PROJECT NUMBER: 15051.03	GROUND SURFACE ELEVATION (ft): 200.0 ±	DRILLING METHOD: Automatic hammer 3.25"	OFFSET NOTES:

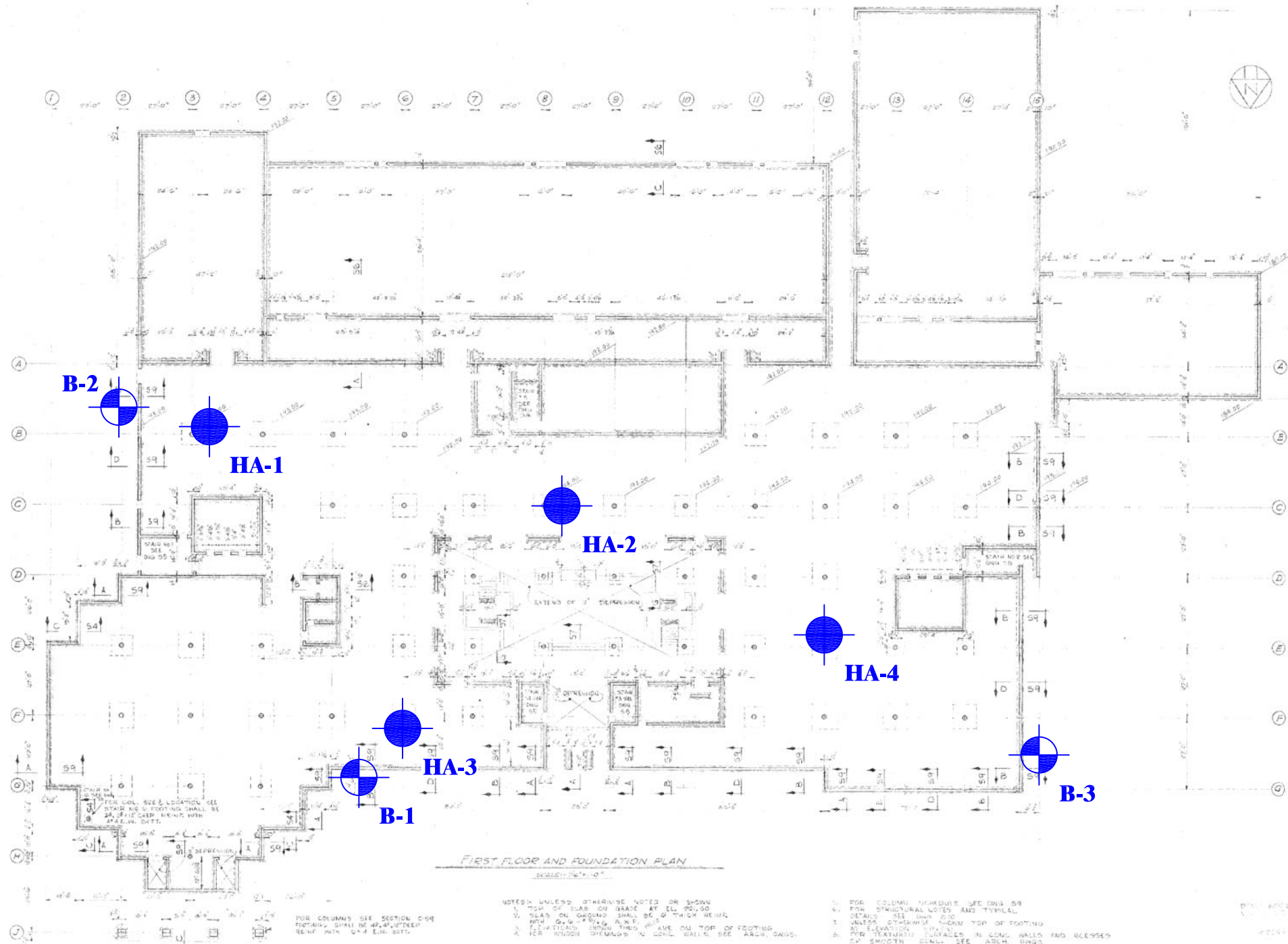
ELEV. (ft)	DEPTH (ft)	SAMPLE TYPE	STRATUM	GRAPHIC	MATERIAL DESCRIPTION	SOIL					
						SPT BLOW COUNTS	REC (in)	STANDARD PENETRATION TEST RESISTANCE (BPF)		MC (%)	
						20	40	60	80		
200.0					Topsoil = 0.2ft.						
199.8			A		Fill, brown, fine to coarse, silty SAND with gravel, medium dense, moist, SM	4+10+10+9	18				
197.5					Contains organics, without gravel	6+5+6	1				
195.0	5				Terrace deposit, brown, fine to coarse, silty SAND with gravel, medium dense, moist, SM	3+9+11	12				
191.5			B		Terrace deposit, white and brown, coarse, clayey SAND with gravel, dense, moist, SC	12+17+19	18			9.0	
186.5	10				Terrace deposit, orange, coarse, silty SAND with gravel, very dense, moist, SM	19+26+25	18				
181.5	15				Medium dense	14+15+11	13				
176.5	20		C		Potomac formation, orange and gray, FAT CLAY, stiff, moist, CH	8+5+7	17			34.5	
175.0	25				Bottom of Boring at 25.0 ft						

GROUND WATER LEVELS:	SAMPLE TYPES:
∇ ENCOUNTERED: <u>14.5</u> ft ELEV. <u>185.5</u> NOT ENCOUNTERED UPON COMPLETION	<input checked="" type="checkbox"/> Split Spoon
CAVED: <u>9.0</u> ft ELEV. <u>191.0</u>	

REMARKS:

THE STRATIFICATION LINES REPRESENT APPROXIMATE BOUNDARIES. THE TRANSITION MAY BE GRADUAL.



BOREHOLE/TEST PIT ARLINGTON CAREER CENTER.GPJ GEOCONCEPTS TEMPLATE 02-12-2015.GDT 8/15/16

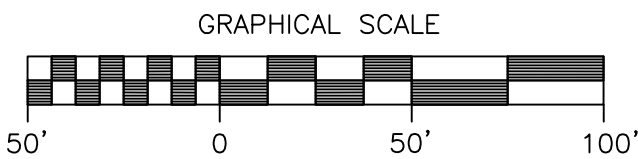


NOTES UNLESS OTHERWISE NOTED OR SHOWN:
 1. TOP OF SLAB OR GRADE AT ALL POINTS
 2. SLAB ON GROUND SHALL BE 4" THICK REINFC WITH 6# @ 18" O.C.
 3. ELEVATIONS SHOWN THIS WAY ARE ON TOP OF FOOTING
 4. FOR HIDDEN DIMENSIONS IN CONCL. WALLS, SEE ARCH. DWGS.
 5. FOR COLUMN HEADS, SEE DWG. 89
 6. FOR STRUCTURAL NOTES AND SYMBOLS, DETAIL SEE DWG. 85
 7. UNLESS OTHERWISE NOTED, TOP OF FOOTING AT ELEVATION SHOWN IN CONCL. WALLS AND RECESSES IN SMOOTH CONCL. SEE ARCH. DWGS.

NOTE: BASE PLAN PROVIDED BY WARD ASSOCIATES ARCHITECTS DATED JULY 1972.

LEGEND

-  TEST BORING LOCATION
- B-1**
-  HAND AUGER LOCATION
- HA-1**



19955 Highland Vista Dr., Suite 170 (703) 726-8030
 Ashburn, Virginia 20147 (703) 726-8032 fax

ARLINGTON CAREER CENTER 816 SOUTH WALTER REED DRIVE, ARLINGTON, VIRGINIA			
BORING LOCATION PLAN		Scale: AS SHOWN	Fig. 2
Date: AUG. 2016	Drawn By: K.N.F.	Checked By: P.E.B.	Project No.: 15051.03

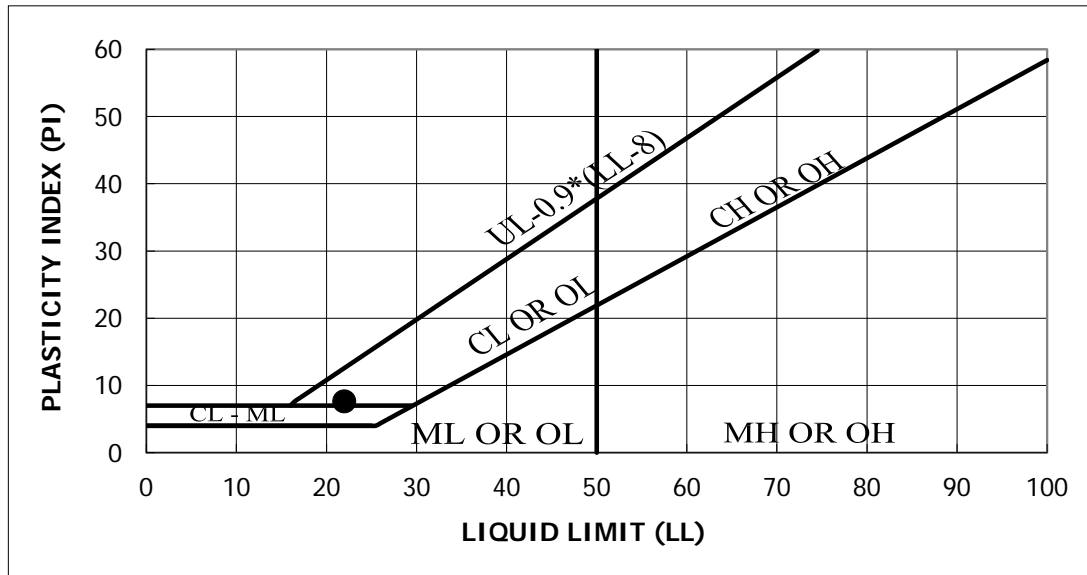
Appendix B

Soil Laboratory Test Results

Liquid and Plastic Limit, and Grain Size Analysis Test Data (8 pages)



LIQUID AND PLASTIC LIMIT - ASTM D4318			
Project No.	15051.03	Project Name	Arlington Tech Center
Test Boring No.	B-2	Depth (Feet)	2.5'-5.0'
Lab Order No.	3829-1	Date	8/8/2016

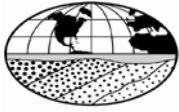


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND with gravel	22	14	8	80.8	34.8	SC	13.0
Color	Dark Brown		AASHTO Classification			A-2-4	

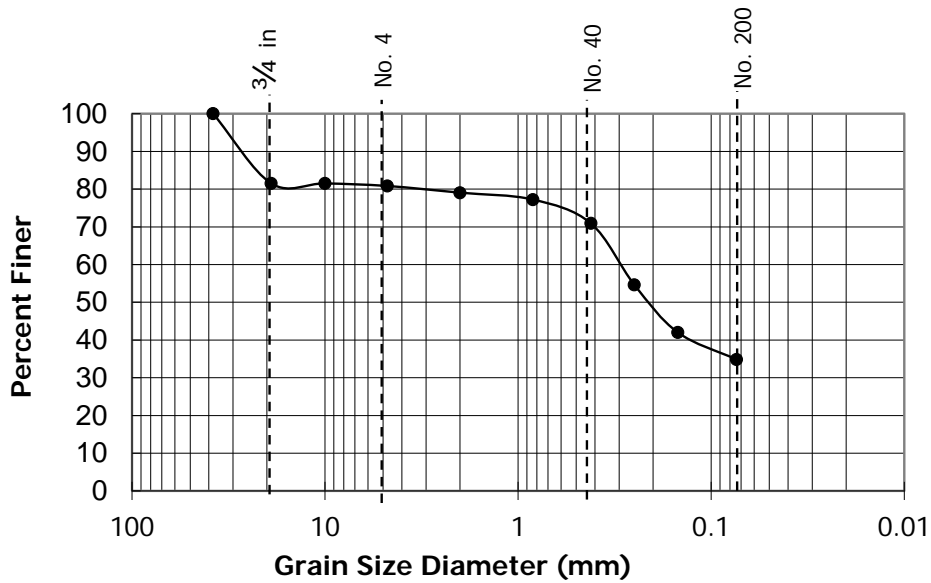
Test Method: ASTM D 4318

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by Lindsay Bartz



GRAIN SIZE ANALYSIS - ASTM D422			
Project No.	15051.03	Project Name	Arlington Tech Center
Test Boring No.	B-2	Depth (Feet)	2.5'-5.0'
Lab Order No.	3829-1	Date	8/8/2016



SIEVE	% Passing
1 1/2 "	100
3/4"	82
3/8"	82
#4	81
#10	79
#20	77
#40	71
#60	55
#100	42
#200	35
Pan	--

USCS Group Symbol	SC
USCS Group Name	CLAYEY SAND with gravel
Cu	---
Cc	---
LL	22
PI	8
Gravel	19.2
Sand	46.0
Fines	34.8
AASHTO Classification	A-2-4
Color	Dark Brown

Test Method: ASTM D 422

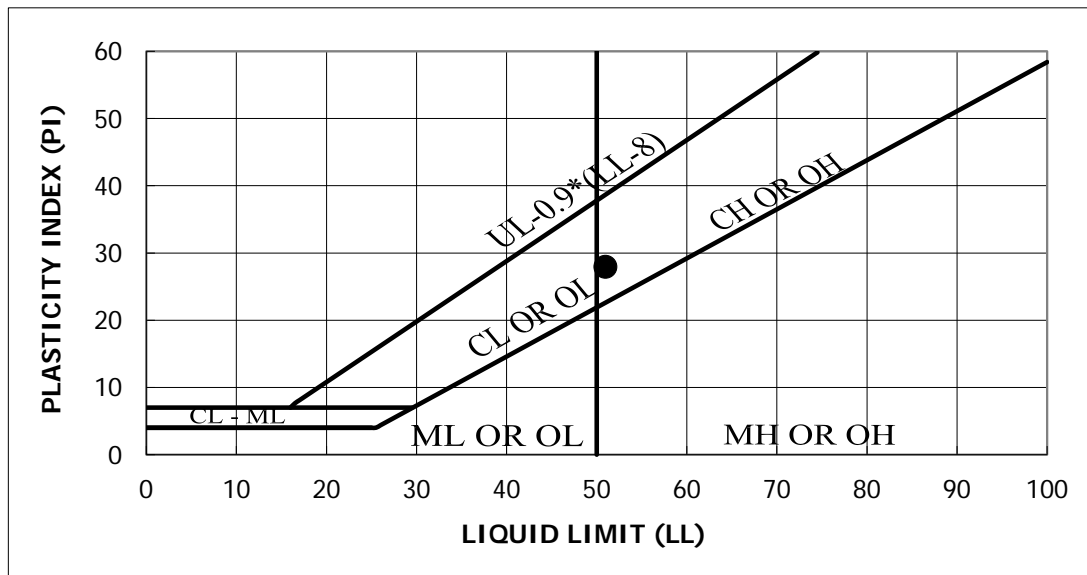
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by:

Lindsay Bantz



LIQUID AND PLASTIC LIMIT - ASTM D4318			
Project No.	15051.03	Project Name	Arlington Tech Center
Test Boring No.	B-2	Depth (Feet)	8.5'-13.5'
Lab Order No.	3829-2	Date	8/8/2016

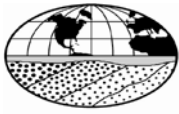


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY GRAVEL with sand	51	23	28	53.4	23.1	GC	14.0
Color	Reddish Brown		AASHTO Classification		A-2-7		

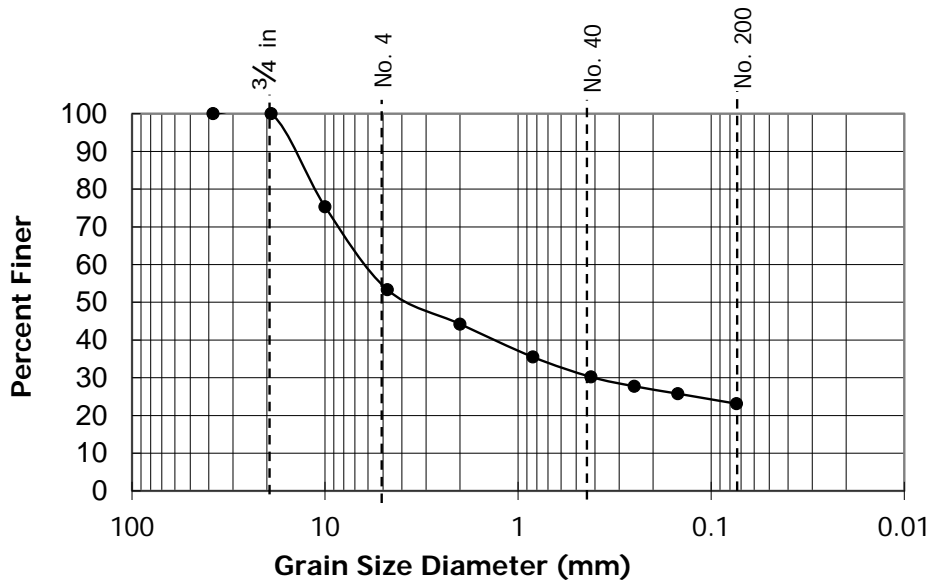
Test Method: ASTM D 4318

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by Lindsay Barty



GRAIN SIZE ANALYSIS - ASTM D422			
Project No.	15051.03	Project Name	Arlington Tech Center
Test Boring No.	B-2	Depth (Feet)	8.5'-13.5'
Lab Order No.	3829-2	Date	8/8/2016



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	75
#4	53
#10	44
#20	36
#40	30
#60	28
#100	26
#200	23
Pan	--

USCS Group Symbol	GC
USCS Group Name	CLAYEY GRAVEL with sand
Cu	---
Cc	---
LL	51
PI	28
Gravel	46.6
Sand	30.2
Fines	23.1
AASHTO Classification	A-2-7
Color	Reddish Brown

Test Method: ASTM D 422

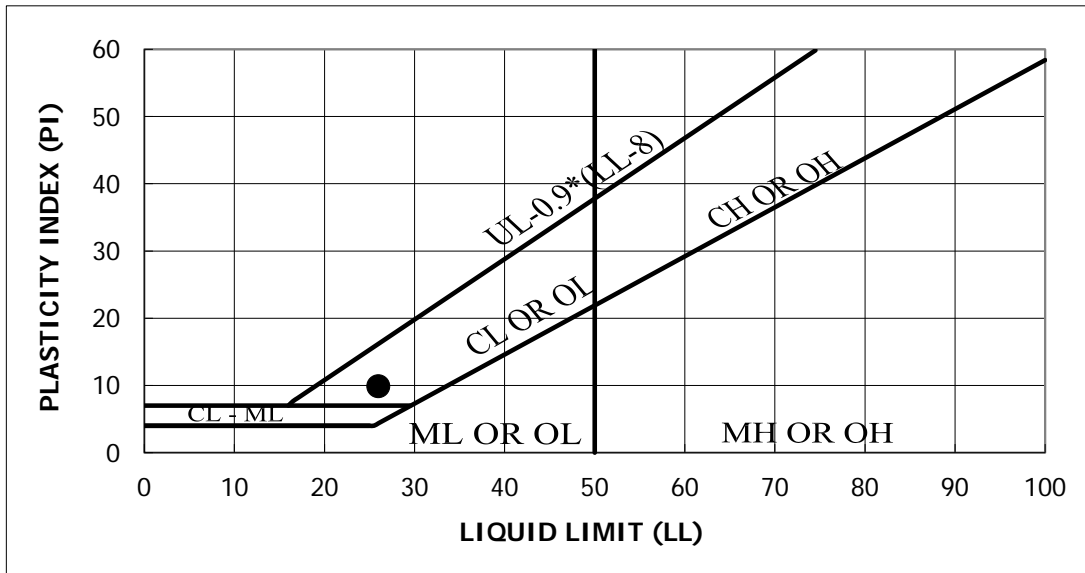
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by:

Lindsay Bartz



LIQUID AND PLASTIC LIMIT - ASTM D4318			
Project No.	15051.03	Project Name	Arlington Tech Center
Test Boring No.	B-3	Depth (Feet)	8.8'-13.5'
Lab Order No.	3829-3	Date	8/8/2016



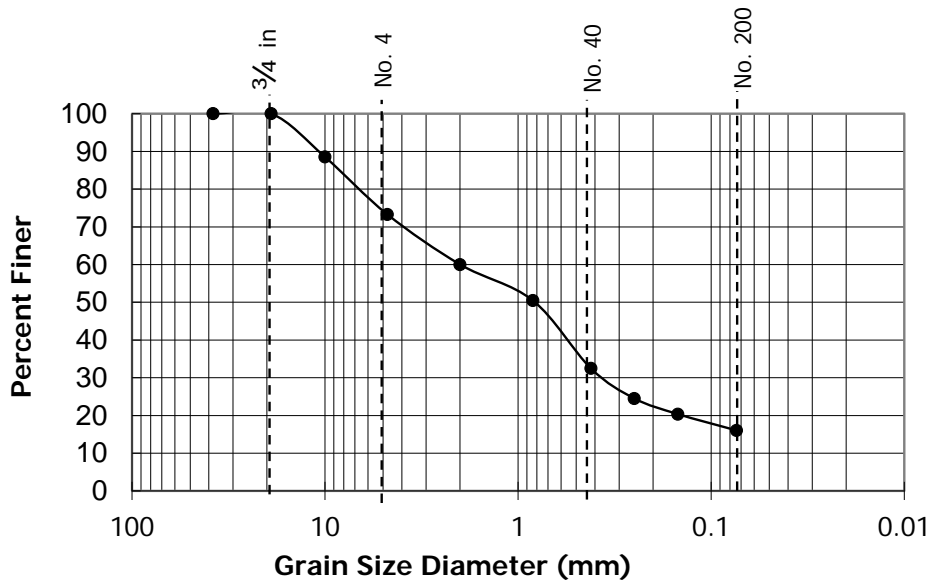
Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
CLAYEY SAND with gravel	26	16	10	73.3	16.0	SC	9.0
Color	Gray		AASHTO Classification			A-2-4	

Test Method: ASTM D 4318
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by Lindsay Bantz



GRAIN SIZE ANALYSIS - ASTM D422			
Project No.	15051.03	Project Name	Arlington Tech Center
Test Boring No.	B-3	Depth (Feet)	8.8'-13.5'
Lab Order No.	3829-3	Date	8/8/2016



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	89
#4	73
#10	60
#20	50
#40	32
#60	25
#100	20
#200	16
Pan	--

USCS Group Symbol	SC
USCS Group Name	CLAYEY SAND with gravel
Cu	---
Cc	---
LL	26
PI	10
Gravel	26.7
Sand	57.3
Fines	16.0
AASHTO Classification	A-2-4
Color	Gray

Test Method: ASTM D 422

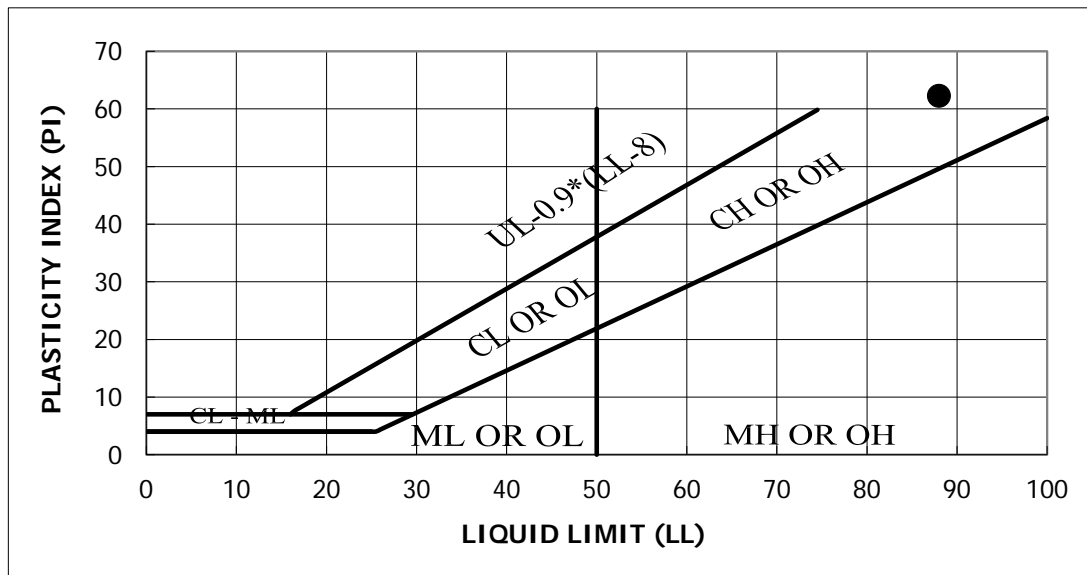
Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by:

Lindsay Bantz



LIQUID AND PLASTIC LIMIT - ASTM D4318			
Project No.	15051.03	Project Name	Arlington Tech Center
Test Boring No.	B-3	Depth (Feet)	23.5'-25.0'
Lab Order No.	3829-4	Date	8/8/2016

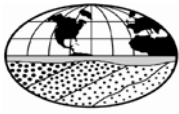


Material Description	LL	PL	PI	% Passing		USCS	w (%)
				#4	#200		
Fat Clay	88	26	62	100.0	97.8	CH	34.5
Color	Gray		AASHTO Classification		A-7-6		

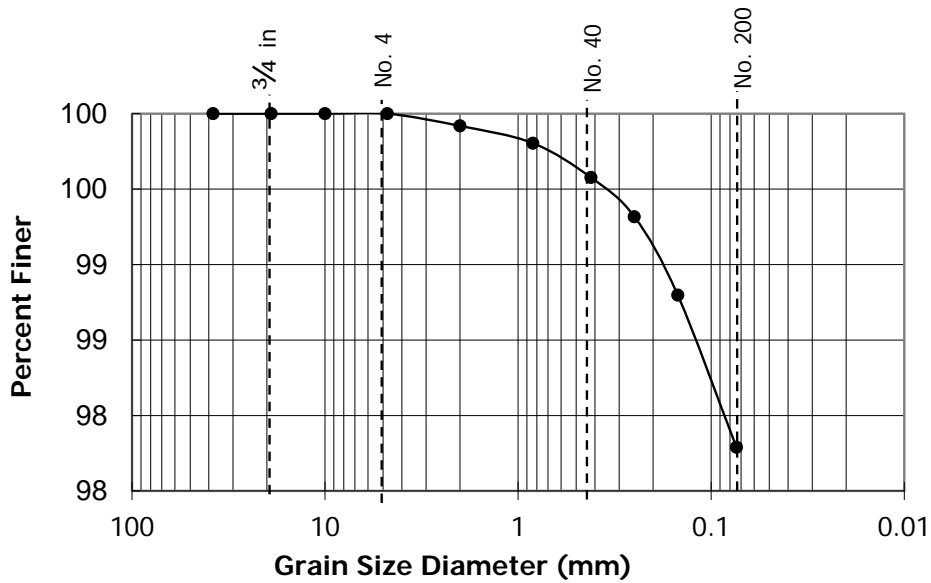
Test Method: ASTM D 4318

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by Lindsay Bartz



GRAIN SIZE ANALYSIS - ASTM D422			
Project No.	15051.03	Project Name	Arlington Tech Center
Test Boring No.	B-3	Depth (Feet)	23.5'-25.0'
Lab Order No.	3829-4	Date	8/8/2016



SIEVE	% Passing
1 1/2 "	100
3/4"	100
3/8"	100
#4	100
#10	100
#20	100
#40	100
#60	99
#100	99
#200	98
Pan	--

USCS Group Symbol	CH
USCS Group Name	Fat Clay
Cu	---
Cc	---
LL	88
PI	62
Gravel	0.0
Sand	2.2
Fines	97.8
AASHTO Classification	A-7-6
Color	Gray

Test Method: ASTM D 422

Soil Classification by ASTM D2487 and AASHTO M 145

Reviewed by:

Lucy Bartz