COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION

CULPEPER DISTRICT MATERIALS SECTION

NOVEMBER 3, 2003
(Translated to English units – September 2007)

MEMORANDUM TO: Mr. A. J. Mergenmeier
Attention: Mr. Stan Hite

From: Haroon Shami, Ph.D., P.E.
Subject: Subsurface Investigation Report
Proposed Retaining Wall
McIntire Road, extended, City of Charlottesville, VA
Project No. U000-104-V02, PE101, C501
PPMS ID. 2529

The Culpeper District Materials Section has performed an exploration at the site of the proposed retaining wall for the referenced project. The exploration was conducted as a portion of the preliminary engineering phase of the project to extend McIntire Road. Drilling was commenced on August 26, 2003 and was completed on August 29, 2003.

The retaining wall is to be located between Stations 29+90 and 30+77, 65 to 70 feet right of McIntire Road Extended Construction Baseline. Based on the information shown on the plan and cross-section sheets, the length of the proposed retaining wall is approximately 85 feet and the height of the exposed face is approximately 4 feet. The retaining wall will support the base of a slope. Therefore, the design must take into account the mass and force that is attributable to the surcharge.

Four test borings were performed at the proposed wall location. The borings were advanced a minimum of approximately 18 feet and were terminated in weathered bedrock. The borings were performed in general accordance with the methods described in ASTM D-1586 (Standard Penetration Test) and the AASHTO Manual on Subsurface Investigations. The drilling was performed using a CME-45B drill equipped with an automatic hammer.

The boring logs indicate an average of 11.8 feet of soft to very soft SILT, Silty CLAY or Clayey SILT over a stratum consisting of a SILT/SAND/GRAVEL mixture. The "N" values of the soil materials ranged between zero (0) and 43. Decomposed to highly weathered SCHIST or PHYLLITE bedrock was encountered below the soil materials. The elevation of the top of the decomposed/weathered bedrock ranged between approximately 346.5 and 349.8 feet MSL, and averaged approximately 348.2 feet MSL. The "N" values in the weathered bedrock ranged from 29 blows for one (1) foot of sampler penetration to 50 blows for zero (0) feet of sampler penetration.

The measurements to the groundwater surface after the completion of the borings indicated elevations ranging between approximately 354.0 and 357.3 feet MSL, and averaged 355.7 feet MSL. However, the measured water level in boring B-3 was 2.9 feet greater than in boring B-4, which had the next highest water surface elevation. In borings B-1, B-2, and B-4, the difference in the measurements to the water surface was within a 0.8-foot range, having an average elevation of 354.2 feet MSL.

RECOMMENDATIONS

The results of the test borings were used to assess the subsurface conditions at the location of the proposed retaining wall. Two soil samples were tested to determine their grain size distribution, plasticity, Maximum Dry Density, and Optimum Moisture Content. Other characteristics (and values) were estimated using the results of Natural Moisture Content tests and empirical values based on the results of Standard Penetration Tests. The results of the tests and the estimated values indicate that the soils will be inadequate to properly support a standard RW-3 retaining wall; therefore, it is recommended that an alternative retaining wall design be considered. The following alternatives are offered:

1.) A Mechanically Stabilized Earth (MSE) retaining wall;

2.) A retaining wall consisting of steel H-piles and lagging;

3.) A concrete retaining wall supported on piles;

4.) A concrete retaining wall supported by a spread footing bearing on weathered rock;

Use the following criteria for the analysis and design:

A phi angle of 28 degrees can be assumed for the existing soils.

A phi angle of 30 degrees can be assumed for the compacted fill soils (retained).

For existing soils, use a unit weight value of 94.5 pounds per cubic foot.

For retained fill soils, use a unit weight value of 107.4 pounds per cubic foot.

For structures bearing on weathered rock, use a bearing capacity value of 7.9 kips per square foot.

If a pile foundation is used, the piles should be set into sockets that are pre-bored.

For stability, brace excavations having sidewalls greater than four feet in height.

Bruce C. Mills
Culpeper District Materials Section
(540) 829-7581

cc: J. L. Bryan
K. P. Kilby
L. F. Fanton

VIRGINIA DEPARTMENT OF TRANSPORTATION
INTRA-DEPARTMENTAL MEMORANDUM

September 17, 2007

MEMORANDUM TO: Mr. C. L. Winstead

ATTENTION: Mr. S. L. Hite

FROM: Roger C. Riner

McIntire Road Extended
U000-104-V02, PE101
U000-104-102, C501
UPC 2529
City of Charlottesville

SUBJECT: Supplemental Subsurface Investigation – Retaining Wall & Embankment Foundation
Right of Stations 29+00 to 33+00, McIntire Road Construction BL

In response to concerns raised by the design consultants (Wilbur Smith Associates) about the global stability of the proposed embankment and its foundation at the location of the required retaining wall, additional field exploration and laboratory testing has been performed to supplement the findings and recommendations contained in our 11-3, 2003 foundation report for the retaining wall. [Please note that in 2003 the project's design was in metric units, but has now been re-engineered in conventional English units.] A copy of the 2003 report that has been translated into English units of measure is attached for your convenience.

The area of exploration is in the flood plain of Schenks Branch and covers an area extending beyond the actual retaining wall limits.

The supplemental investigation entailed the performing of nine borings, numbered 1A thru 9A. Boring 1A was an auger probe boring made in the cut area adjacent to the embankment area to secure bulk samples to represent the fill material the proposed embankment will be constructed from. The remaining borings were standard penetration test borings made to further characterize the subsurface conditions of the site. In two of these borings, undisturbed sampling was performed to secure samples for laboratory shear and consolidation testing. The logs for these borings are attached, along with the original four borings made in 2003 which have been converted to show English units of measure. A portion of the plan sheet is attached, showing the locations of all 13 borings.

The supplemental borings indicate the site (to the depth explored) can be generally characterized by three strata, first a 4.5 to 14.5 foot thick surface stratum of alluvium, then a 0 to 6 foot thick stratum of residual soil and finally weathered bedrock. The alluvium includes varying thicknesses of Silt, Lean Clay, silty Sand, Sand with silt and Sand. No distinct continuous stratification is evident in the alluvium. Standard Penetration Test "N" values range from 0 to 7 in the alluvial stratum. The residual soil stratum is primarily comprised of silty Sands and Sands with variable rock fragment contents. There is no clear demarcation between the alluvial and residual strata. "N" values in the residual stratum vary between 4 and 33. The weathered rock is texturally similar to the residual soil stratum, but is distinguished by "N" values between 46 per foot and 50 for 1 inch of penetration. The weathered rock is identified as a Feldspathic METASANDSTONE and is encountered at a depth of 10.5 to 15.5 feet below the existing ground surface.

Stabilized ground water measurements in the borings show a relatively consistent ground water table between elevations 353.5 and 354.4, which is nearly the same as noted in the 2003 investigation.

As noted previously, undisturbed sampling was performed in two borings (4A & 6A). Four Shelby tube samplers were pushed, but two were significantly damaged upon extraction from the borings and their samples were considered unsuitable for laboratory testing. Consequently, only two samples were submitted to the Central Office laboratory for testing. These two samples were visually described in the laboratory as an orange-yellow-brown Silt with a trace of sand and a gray Clay with a trace of silt. However, subsequent classification tests identify both samples as Silts [A-5(9) and A-4(0) in the AASHTO classification system or ML in the Unified

classification system]. These samples were subjected to CD Direct Shear and Consolidation testing. The Direct Shear tests produced peak angles of internal friction of 28.5^0 and 39.1^0 with cohesion values of 1.1psi and 1.9 psi, respectively for the two soil samples. The complete shear test results as well as the results of the consolidation tests are attached.

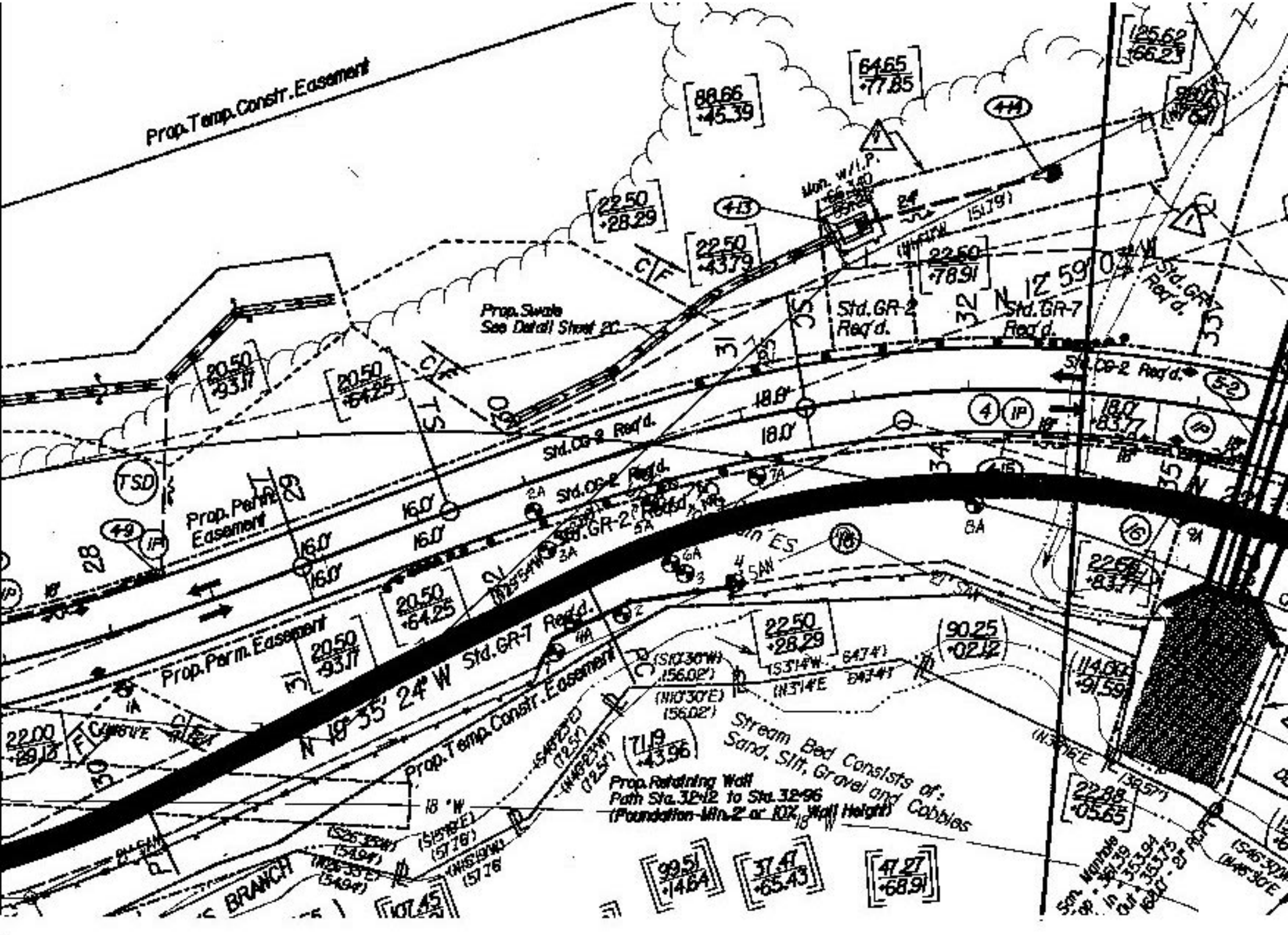
The two bulk soil samples obtained from boring 1A were visually described as a tan Silt with a trace of sand and a tan Silt, with fine to coarse sand & a trace of weathered rock fragments. The laboratory classified both samples as A-5 or ML soils. These samples were laboratory compacted and subjected to CD Direct Shear Testing only. The shear testing produced peak angles of internal friction of 20.1^0 and 37^0 with cohesion values of 5.9 psi and 2.3 psi, respectively. The reports for these tests are also included in the attachments.

Recommendations \ Request for Assistance:

While this office is not equipped with the software to run slope stability analyses, the shear tests generally produced results near to the assumed values recommended in our 2003 report and which were subsequently used by Wilbur Smith Associates in their analyses. Thus, we expect that further stability analyses will confirm the unsatisfactory factors of safety for global stability produced by Wilbur Smith Associates. For verification, we are requesting your office perform stability analyses at the retaining wall location (sta. 30+50) and at sta. 33+00. For such analyses, we suggest that the alluvial and residual strata be considered as one stratum and the proposed fill as two strata; and that multiple analysis runs be made using the individual shear strength properties from the two undisturbed samples separately with the proposed fill being characterized by two equal depth strata with the top stratum being assigned the lower angle of internal friction from the two laboratory compacted tests.

Since we expect confirmation that this floodplain site will result in unstable slope conditions, we are also asking for your assistance in developing a geotechnical solution to carry the proposed embankment across the floodplain. From our previous telephone conversations about this situation, we are anticipating a pile supported embankment or stone column installation as being the most viable solution. If such is recommended, then we will need the full design details with drawings and special provisions that can be incorporated into the project plans.

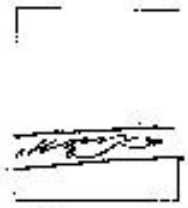
Roger C. Riner
Assistant District Materials Engineer


Prop. Temp. Constr. Easement
Prop. Swale
See Detail Sheet 2C
Std. GR-2 Req'd.
Std. GR-7 Req'd.
Prop. Perm. Easement
Prop. Temp. Constr. Easement
N 19° 35' 24" W
Prop. Retaining Wall
Path Sta. 32+12 to Sta. 32+96
(Foundation Min. 2' or 10' Wall Height)
Stream Bed Consists of:
Sand, Silt, Gravel and Cobbles
BRANCH

Oedometer Settlement Tests

Sample details

Sketch showing specimen location in original Sample



Depth: 7.0' to 9.0'
Description: Gray Clay w/tr. of Silt.

Type	
Height H_0 (in)	0.992
Diameter D_0 (in)	2.5
Weight W_0 (gr)	153.73
Bulk Density ρ (PCF)	120.27
Particle Density ρ_s	2.85 (assumed)

Initial Conditions

Settlement Channel	113
Moisture Content w_0%	23.4
Dry Density ρ_d (PCF)	97.46
Voids Ratio e_0	0.6667
Deg of Saturation S_0%	89.5
Swelling Pressure Ss (TSF)	0.000

Final Conditions

Moisture Content w_f%	23.4
Dry Density ρ_d (PCF)	141.95
Voids Ratio e_f	0.1649
Deg of Saturation S_f%	100.00
Settlement: (in)	0.311
Compression Index C_c	0.135

Notes

[redacted] AASHTO - 216

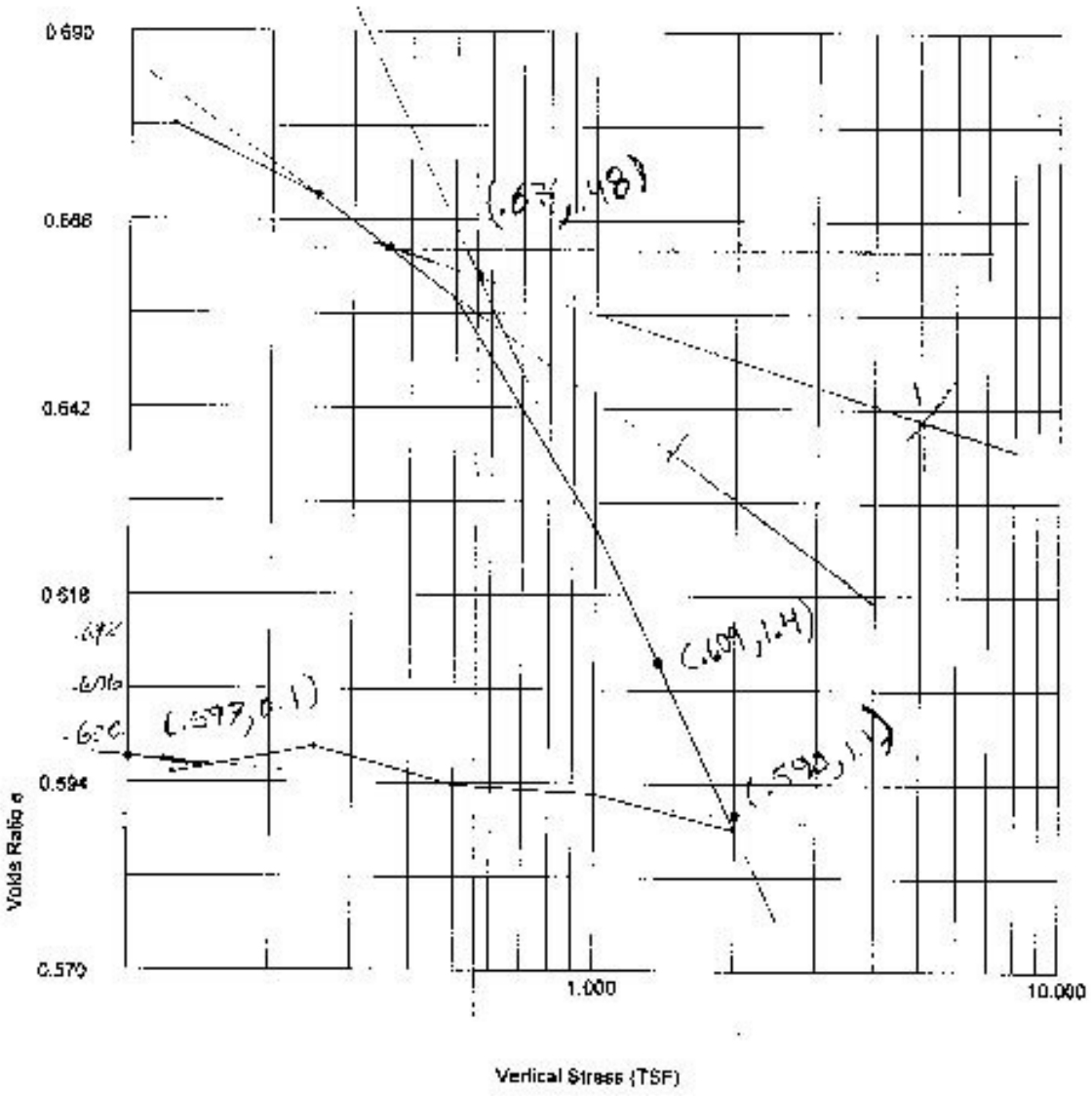
Test name: con1
Date of Test: 7/12/200

Site Reference: UD00-104-102,PE101,C501
Jobfile: C:\OLDWIN~1\620.JOB
Sample: 9-45-07
Borehole: B-4A

Operator: Jason Bennett
Checked: [illegible] 7.24.07
Approved:

Oedometer Settlement Tests

$C_c = \frac{.671 - .609}{\log 1.1 - .1} = \frac{.062}{.464} = .1332$

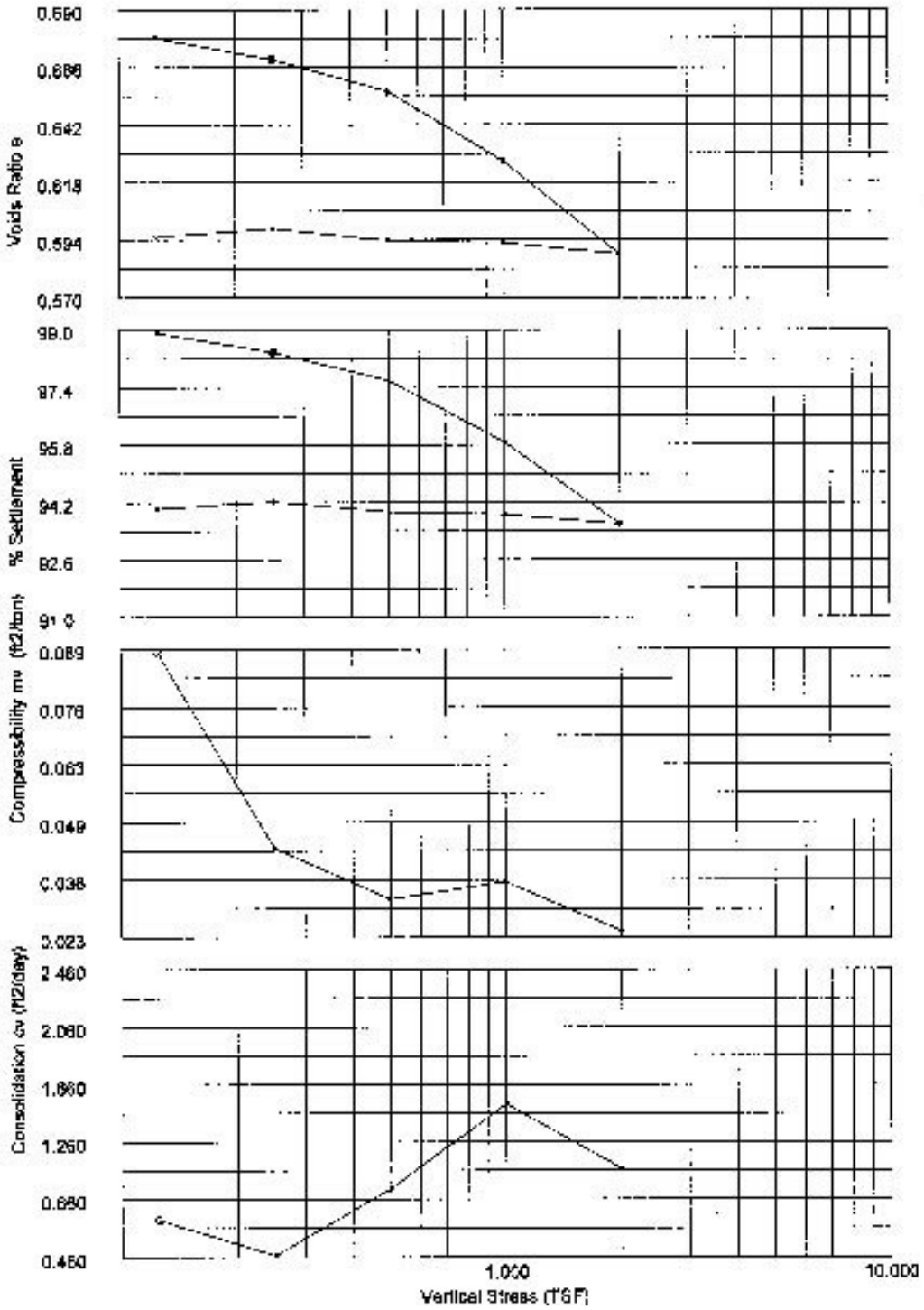


$C_s = \frac{(.597 - .590)}{(1.1 - .1)} = \frac{.007}{1.04} = .0067$

AASHTO – T216

Test name	cont		
Date of Test:	7/12/200		
Site Reference:	U000-104-102,PE101.C501	Sample:	9-45-07
Job File:	C:\OLDWIN~1\BZD.JOB	Borehole:	B-4 A
Operator:	Checked:	Approved	

Oedometer Settlement Tests



ASTM D2435-96 AASHTO - T216

Test name	con1
Date of Test:	7/12/200
Site Reference:	U000-104-102.PE101,C531
Jobfile:	C:\OLDWIN~1\820.JOB
Sample:	9-45-07
Borehole:	B-4A
Operator:	
Checked:	
Approved:	

Oedometer Settlement Tests

Sample details

Sketch showing specimen location in original Sample

Depth -5.0 to -7.0'
Description: Orange, Yellow, and Brown Silty Soil w/lr. of Sand.

Type
Height H_0 (in) 0.986
Diameter D_c (in) 2.5
Weight W_0 (gr) 142.67
Bulk Density ρ (PCF) 112.29
Particle Density ρ_s 2.65 (assumed)

Initial Conditions

Settlement Channel	113
Moisture Content w_0%	36.9
Dry Density ρ_d (PCF)	82.04
Voids Ratio e_0	1.0157
Deg of Saturation S_0%	96.2
Swelling Pressure Ss (TSF)	0.000

Final Conditions

Moisture Content w_f%	37.9
Dry Density ρ_d (PCF)	115.05
Voids Ratio e_f	0.4373
Deg of Saturation S_f%	100.00
Settlement (in)	0.283
Compression Index C_c	1.084

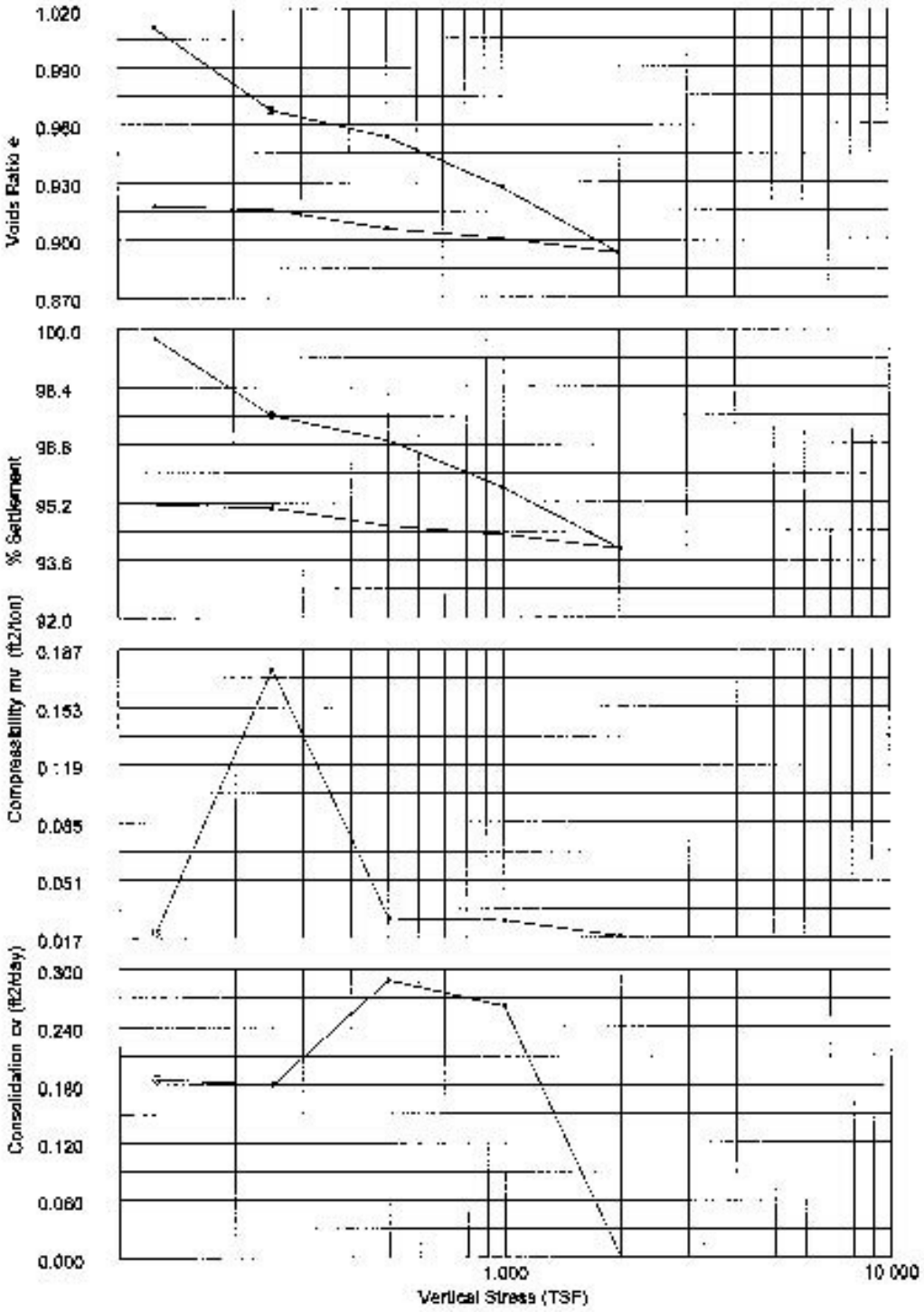
Notes:

~~ASTM D2435-96~~ AASHTO - T216

Site Reference: U000-104-102 PE101,C501
Jobfile: C:\OLDWIN~1\B2D.JOB
Operator: Jason A. Barnett Checked:

Test name Con1
Date of Test 7/24/2007
Sample: 9-46-07
Borehole: B6 B-6A
Approved:

Oedometer Settlement Tests

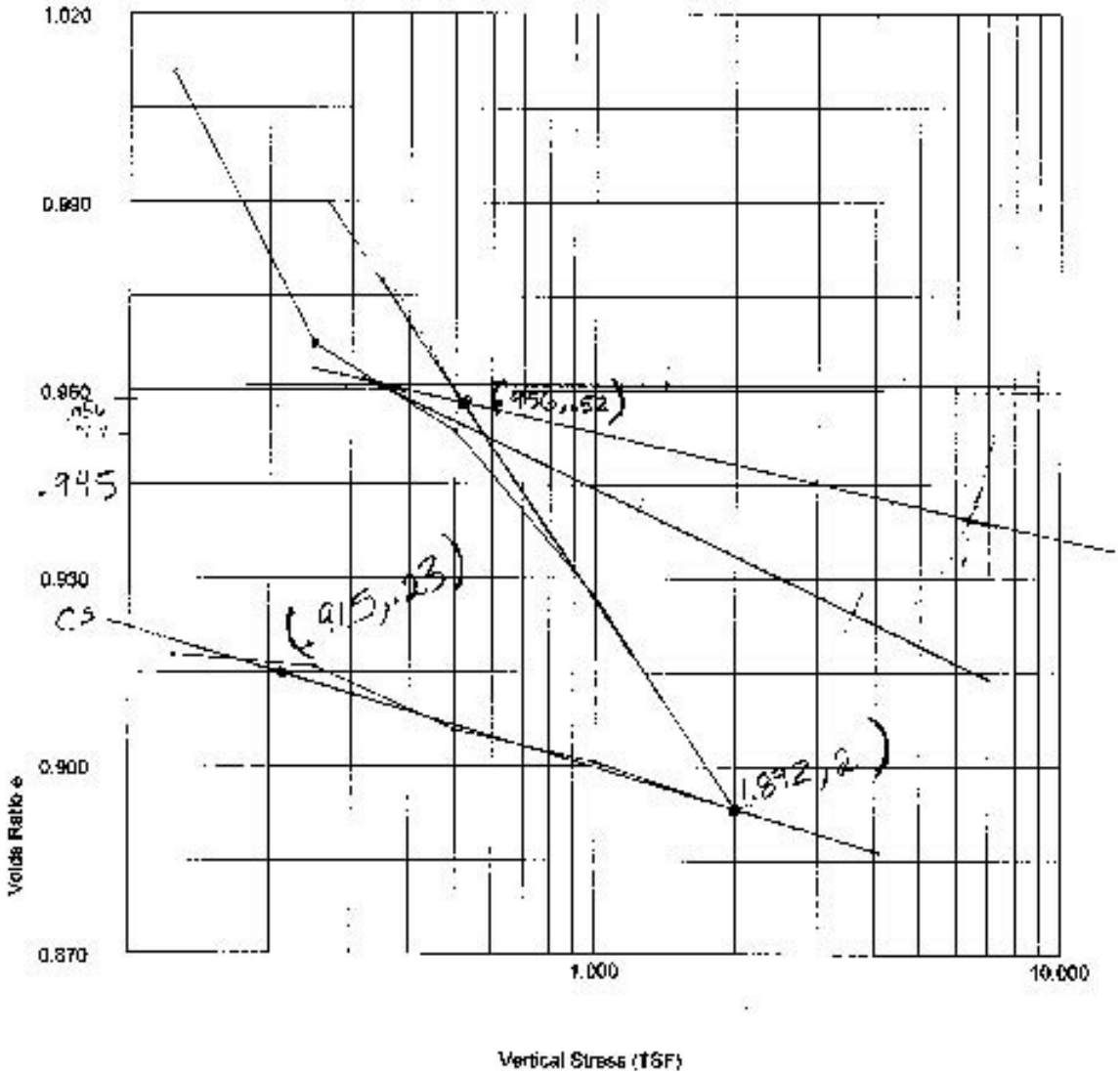


~~ASTM D2435-96~~ AASHTO = T216

		Test name	Cont
		Date of Test:	7/24/2007
Site Reference:	U000-104-102,PE101,CS01	Sample:	9-46-07
Jobfile:	C:\OLDWIN~1\820.JOB	Borehole:	B-5 B-6A
Operator: James A. Bennett	Checked:		Approved:

Oedometer Settlement Tests

$$C_c = \frac{.956 - .892}{2\log - .52\log} = \frac{.064}{.585} = 1.094$$



$$C_s = \frac{.915 - .892}{2\log - .23\log} = \frac{.023}{.9393} = .023$$

AASHTO - T216

Test name:	Con1
Date of Test:	7/24/2007
Site Reference:	U000-104-102,PE101,C501
Jobfile:	C:\OLDWIN~1\820.JOB
Sample:	9-46-07
Borehole:	B-6A
Operator:	
Checked:	
Approved:	

Direct Shear Tests

Direct Multi-Specimen CD

Sample details

Sketch showing specimen location in original Sample

Depth: -0.2 to 5.0'
Description: Tan Silt w/lr. of fine sand.

	Specimen 1	Specimen 2
Type		
Height H_0 (in)	1.2417	1.2482
Diameter D_0 (in)	2.5	2.5
Weight W_0 (gr)	205.6	203.52
Bulk Density ρ (PCF)	126.50	125.44
Particle Density ρ_s	2.68 (assumed)	2.68 (assumed)

Initial Condition

	Specimen 1	Specimen 2
Normal Stress τ_n (lbf/in2)	5.0	10.0
Submersed	Yes	Yes
Reversal Method	Machine Drive	Machine Drive
Hor Displ. Channel	102	102
Load Channel	12-28	12-28
Vert Displ. Channel	HS-10/4081	HS-10/4081
Moisture Content w_0%	14.9	14.5
Dry Density ρ_d (PCF)	111.81	110.48
Voids Ratio e_0	0.50	0.51
Deg of Saturation S_0%	80.70	75.54

Max Shear Stress Results

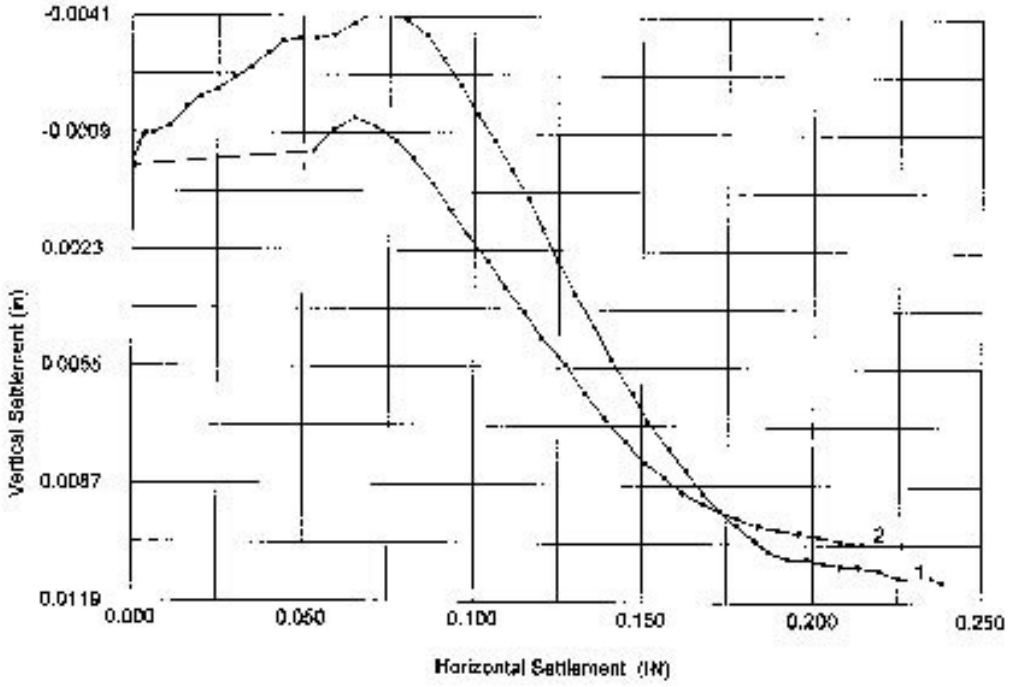
	Specimen 1	Specimen 2
Moisture Content w_f%	18.0	18.9
Dry Density ρ_{df} (PCF)	116.39	121.03
Voids Ratio e_f	0.39	0.33
Deg of Saturation S_f%	100.	100.
Max Shear Stress τ (lbf/in2)	7.7	9.6
H.Settlement (in)	0.2250	0.1200
V.Settlement (in)	0.0112	0.0047
Residual Stress τ_R (lbf/in2)	7.7	8.8

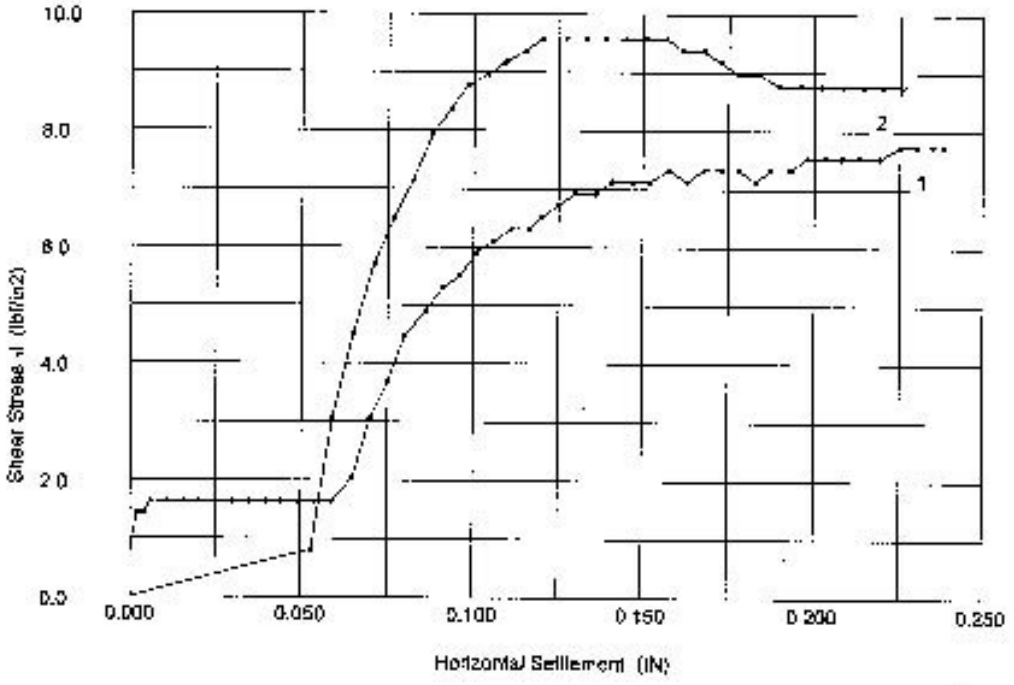
Test Method : ~~ASTM D3080-98~~ AASHTO - T236
Site Reference: UD00-104-102,PE101.DS01
Jobfile: C:\OLDWIN~1\820.JOB
Operator: [signature]
Checked: [signature]

Test name: DS1 Direct Shear (CD)
Date of Test: 8/8/2007
Sample: 9-50-07
Borehole: B-1
Approved:

Direct Shear Tests

Direct Multi-Specimen CD





Test Method : ~~ASTM D3080~~ AASHTO - T236		Test name	DS1 Direct Shear (CD)
Site Reference:	U000-104-102,PE101,C507	Date of Test:	8/8/2007
Jobfile:	C:\OLDWIN~1\820.JOB	Sample:	9-50-07
Operator: Kevin Bennett	Checked:	Borehole:	B-1
			Approved:

Direct Shear Tests

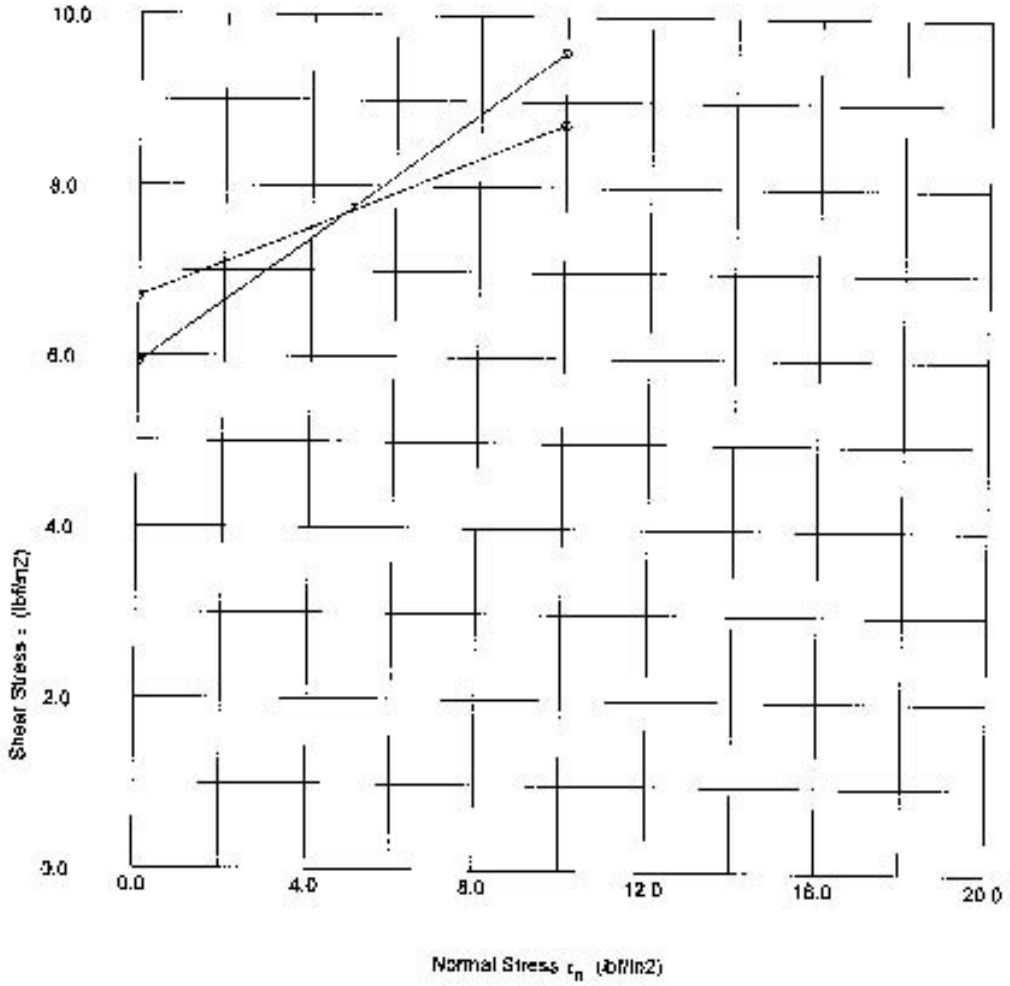
Direct Multi-Specimen CD

Envelope Failure Results

Specimen	1	2
Moisture Content w_f%	18.9	18.9
Dry Density ρ_d (PCF)	116.39	121.03
Voids Ratio e_f	0.39	0.33
Deg of Saturation S_f%	100.	100.

Peak Cohesion c' (lbf/in2)	5.8
Peak Friction Angle φ'	20.10
Residual Cohesion c_R' (lbf/in2)	0.7
Residual Friction Angle φ_R'	11.60

Notes: Sample 3 was taken out due to a spike in the shear phase which may have been caused by a rock.



Test Method : ~~ASTM D3080-98~~ AASHTO - T236

Site Reference: U900-104-102.PE101.C501

Jobfile: C:\OLDWIN~1\820.JOB

Operator: [signature]

Checked:

Approved:

Test name: DS1 Direct Shear (CD)

Date of Test: 8/8/2007

Sample: 9-50-07

Borehole: B-1

Direct Shear Tests

Direct Multi-Specimen CD

Sample details

Sketch showing specimen

and & lr. of weathered rock fragment Sample

Remolded

Depth	-12.5' to -15.0'		
Description:	Tan Silt w/fine to course		
	Specimen 1	Specimen 2	Specimen 3
Type			
Height H_0 (in)	1.2352	1.2395	1.234
Diameter D_0 (in)	2.5	2.5	2.5
Weight W_c (gr)	199.64	200.8	199.87
Bulk Density ρ (PCF)	125.43	125.72	125.70
Particle Density ρ_s	2.65 (assumed)	2.65 (assumed)	2.65 (assumed)

Initial Condition

	Specimen 1	Specimen 2	Specimen 3
Normal Stress τ_1 (lbf/in2)	5.0	10.0	18.0
Submersed:	Yes	Yes	Yes
Reversal Method	Machine Drive	Machine Drive	Machine Drive
Hor Displ. Channel	102	102	102
Load Channel	12-28	12-28	12-28
Vert Displ. Channel	HS-10/4081	HS-10/4081	HS-10/4081
Moisture Content w_0%	11.6	11.2	11.5
Dry Density ρ_d (PCF)	112.41	113.04	112.74
Voids Ratio e_0	0.49	0.48	0.48
Deg of Saturation S_0%	63.67	62.73	63.75

Max Shear Stress Results

	Specimen 1	Specimen 2	Specimen 3
Moisture Content w_f%	16.0	16.1	15.7
Dry Density ρ_{df} (PCF)	125.59	130.92	128.18
Voids Ratio e_f	0.28	0.22	0.17
Deg of Saturation S_f%	100	100.	100.
Max Shear Stress τ_f (lbf/in2)	6.1	9.8	15.9
H.Settlement (in)	0.2540	0.1970	0.2270
V Settlement (in)	0.0112	0.0025	0.0054
Residual Stress τ_R (lbf/in2)	6.1	9.8	15.9

Test Method : ~~ASTM D3080-90~~ AASHTO - T236

Test name: DS1 Direct Shear (CD)

Date of Test: 8/6/2007

Site Reference: U000-104-102,PE101,C501

Jobfile: C:\OLDWIN~1\B20.JOB

Sample: 9-51-07

Borehole: B-1

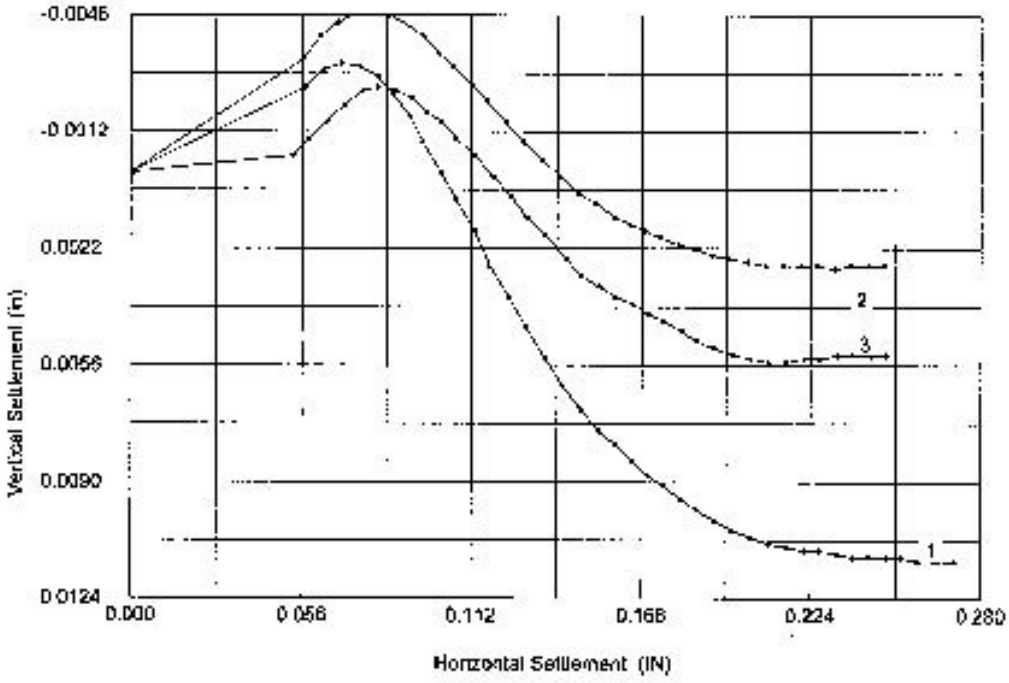
Operator: Jason Barnett

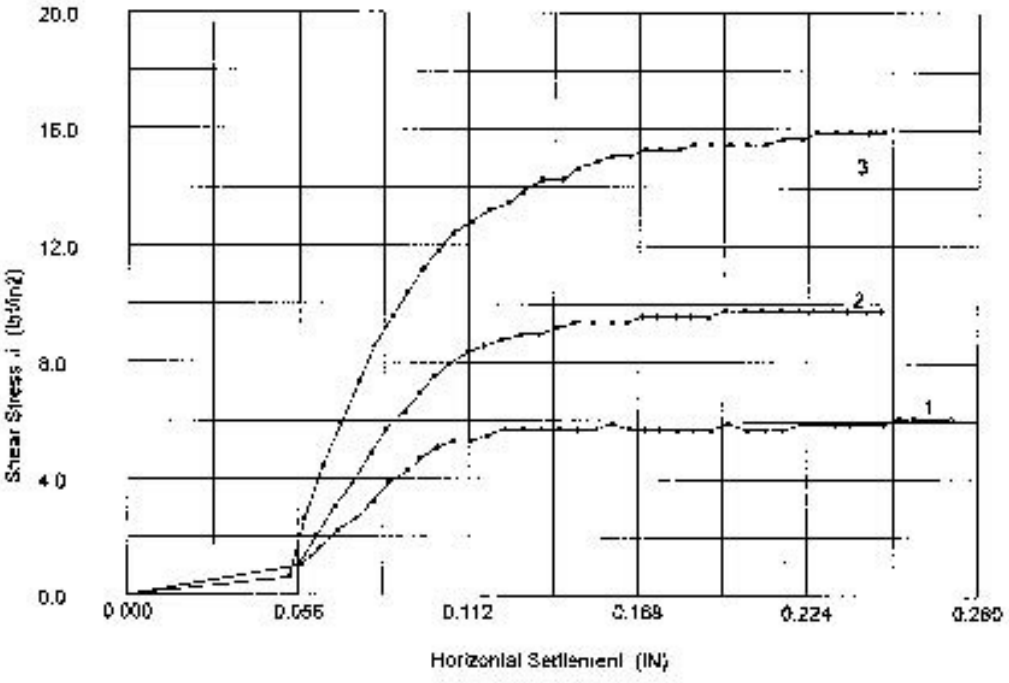
Checked: Robert

Approved:

Direct Shear Tests

Direct Multi-Specimen CD





Test Method : ~~ASTM-D3080-98~~ AASHTO - T236		Test name	D51 Direct Shear (CD)
		Date of Test:	8/8/2007
Site Reference:	U000-104-102,PE101,C501	Sample:	9-51-07
Jobfile:	C:\OLDWIN~1\820.JOB	Borehole:	B-1
Operator: Juan Bonilla	Checked.		Approved.

Direct Shear Tests

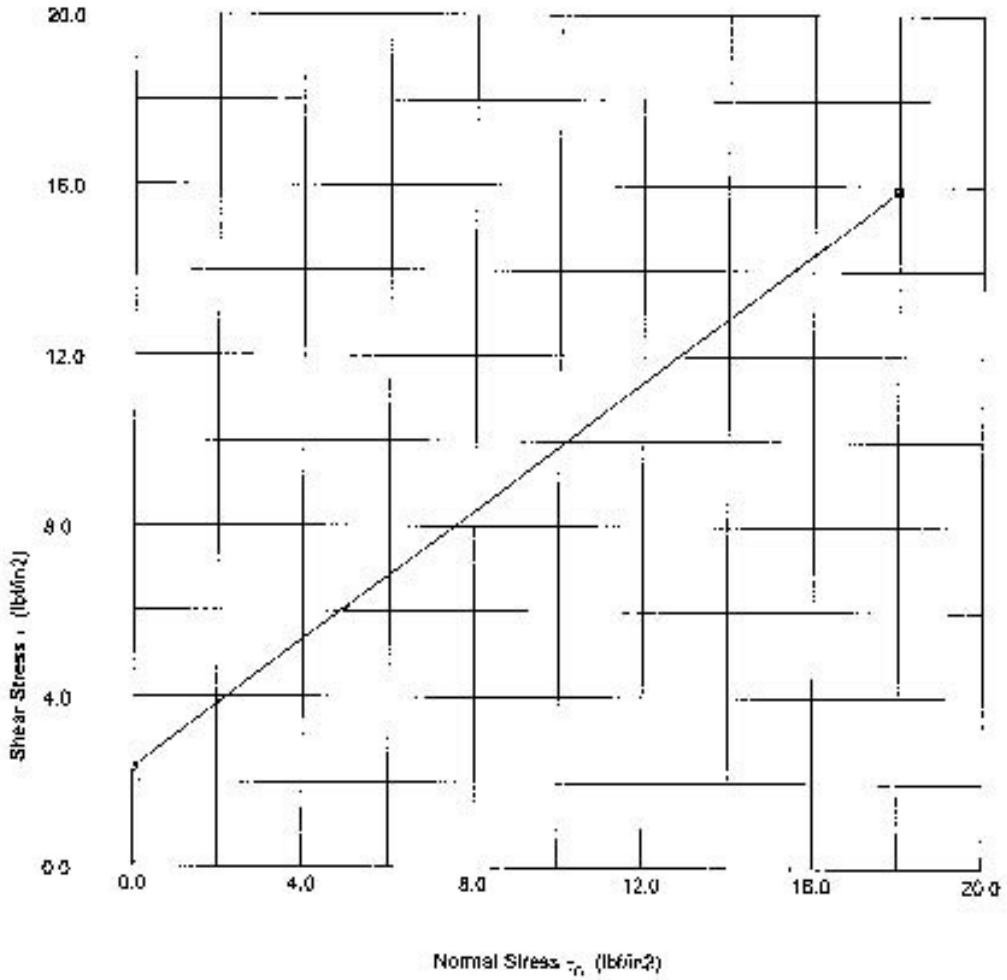
Direct Multi-Specimen CD

Envelope Failure Results

Specimen	1	2	3
Moisture Content w_f%	16.0	16.1	15.7
Dry Density ρ_d (PCF)	125.59	130.92	138.18
Voids Ratio e_f	0.28	0.22	0.17
Deg of Saturation S_f%	100.	100.	100.

Peak Cohesion c' (lbf/in2)	2.3
Peak Friction Angle φ'	37.00
Residual Cohesion c_R' (lbf/in2)	2.3
Residual Friction Angle φ_R'	37.00

Notes:



Test Method : ~~ASTM D3080-90~~ AASHTO - T236

Site Reference: U000-104-102,PE101,C501

Jobfile: C:\OLDWIN~1\820.JOB

Operator: Juan Bautista | Checked:

Test name: DS1 Direct Shear (CD)

Date of Test: 8/6/2007

Sample: 9-61-07

Borehole: B-1

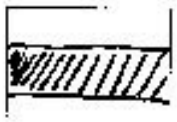
Approved:

Direct Shear Tests

Direct Multi-Specimen CD

Sample details

Sketch showing specimen location in original Sample



Depth: 7.0 to 8.0
Description: Gray Clay w/tr. of Silt.

	Specimen 1	Specimen 2	Specimen 3
Type			
Height H_0 (in)	1.2415	1.2415	1.2332
Diameter D_c (in)	2.5	2.5	2.5
Weight W_0 (gr)	159.42	159.14	161.66
Bulk Density γ (PCF)	105.91	99.48	114.45
Particle Density ρ_s	2.69 (assumed)	2.68 (assumed)	2.68 (assumed)

Initial Condition

	Specimen 1	Specimen 2	Specimen 3
Normal Stress τ_n (lbf/in2)	5.0	10.0	15.0
Submersed:	Yes	Yes	Yes
Reverse' Method	Machine Drive	Machine Drive	Machine Drive
Hor Displ. Channel	102	102	102
Load Channel	12-28	12-28	12-28
Vert Displ. Channel	HS-10/4081	HS-10/4081	HS-10/4081
Moisture Content w_0%	50.0	66.6	29.7
Dry Density ρ_d (PCF)	70.59	60.06	88.22
Voids Ratio e_0	1.37	1.76	0.90
Deg of Saturation S_0%	97.93	98.58	89.00

Max Shear Stress Results

	Specimen 1	Specimen 2	Specimen 3
Moisture Content w_f%	46.8	56.6	26.9
Dry Density γ_{df} (PCF)	87.00	81.90	120.50
Voids Ratio e_f	0.96	1.16	0.42
Deg of Saturation S_f%	100.	100.	100.
Max Shear Stress τ (lbf/in2)	4.9	11.8	15.9
H.Settlement (in)	0.1610	0.4960	0.4810
V.Settlement (in)	-0.0014	-0.0419	-0.0361
Residual Stress τ_R (lbf/in2)	4.1	9.8	15.9

Test Method : [illegible] AASHTO : T236

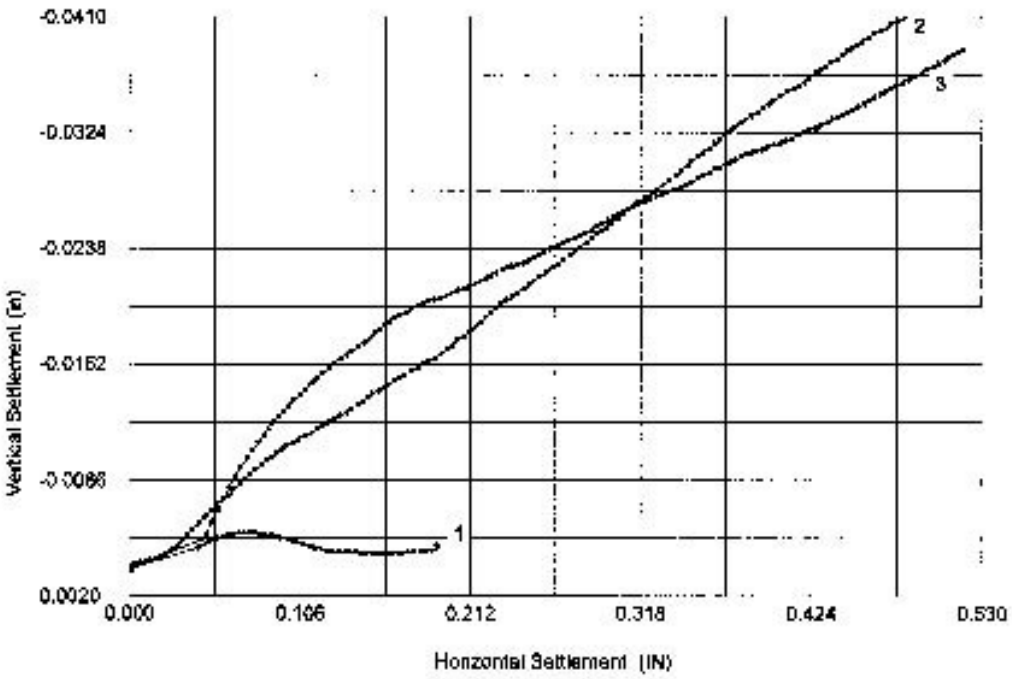
Test Name: DS1 Direct Shear (CD)
Date of Test: 7/10/200

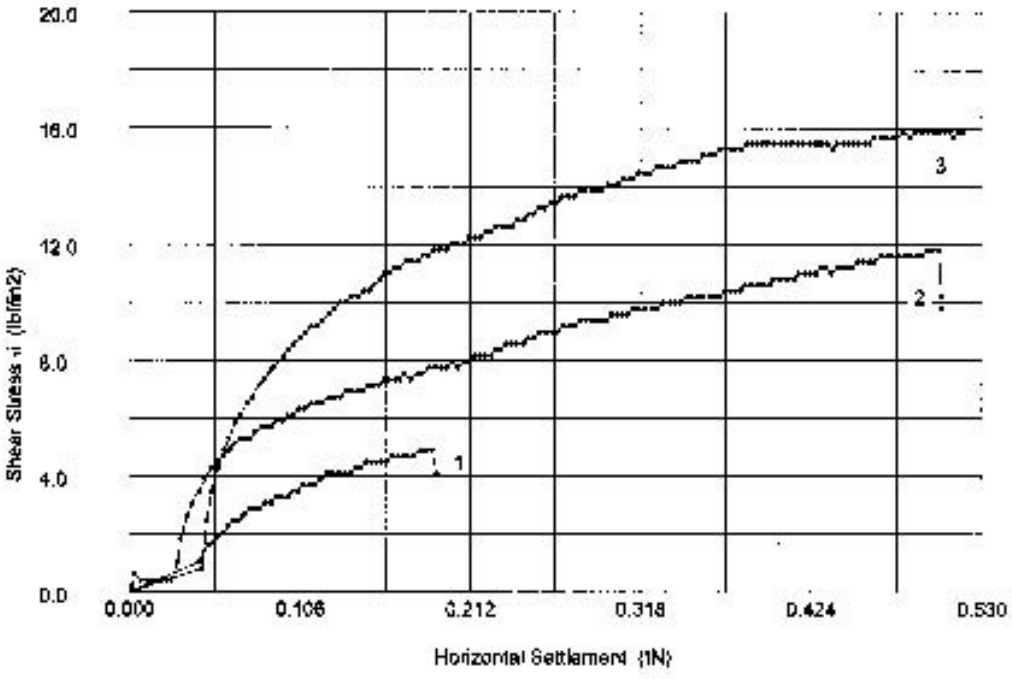
Site Reference: U000-104-102.PE101,C501
Jobfile: C:\OLDWIN~1\820.JOB
Sample: 9-45-07
Borehole: B-4A

Operator: [signature] Checked: Approved:

Direct Shear Tests

Direct Multi-Specimen CD





Test Method : AASHTO: T236		Test name	DS1 Direct Shear (CD)
		Date of Test:	7/10/200
Site Reference:	U000-104-102,PE101,CS01	Sample:	9-45-07
Jobfile:	C:\OLDWIN~1\B2D.JOB	Borehole:	B-4A
Operator:	Checked:		Approved:

Direct Shear Tests

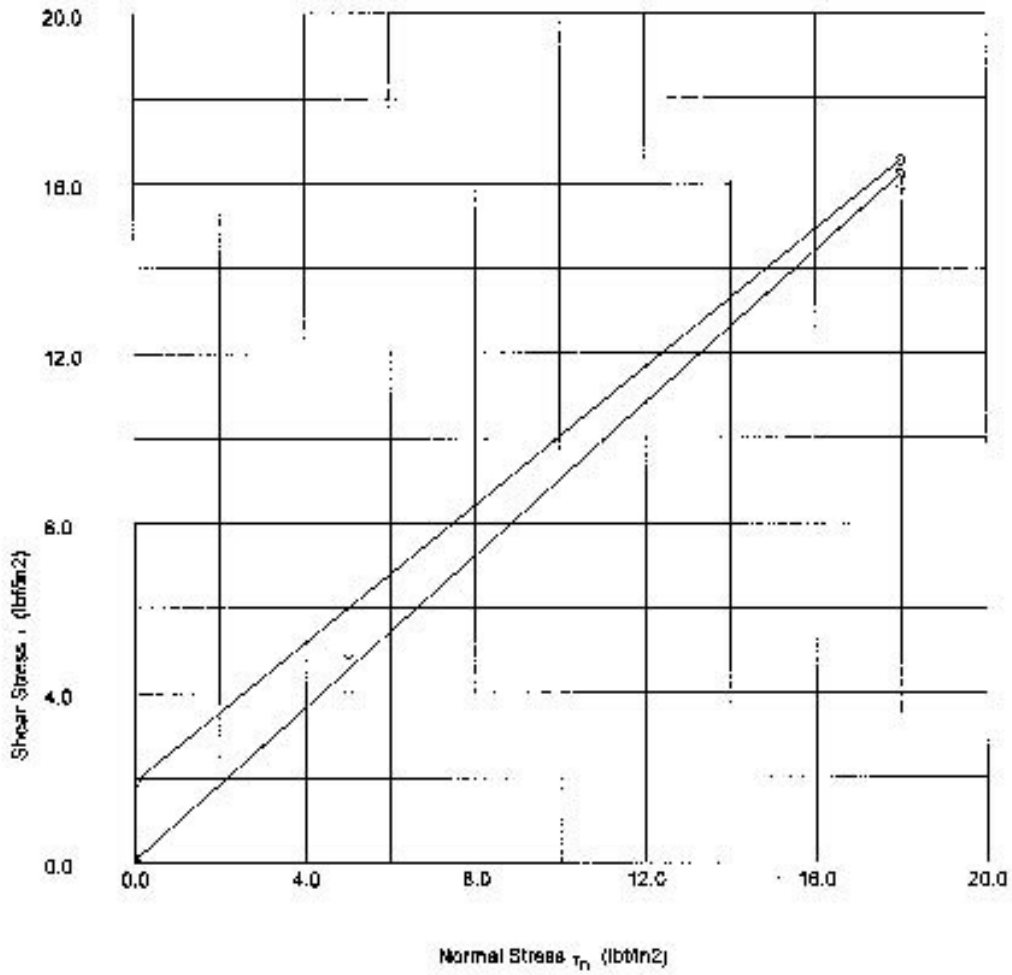
Direct Multi-Specimen CD

Envelope Failure Results

Specimen	1	2	3
Moisture Content w_f%	46.9	68.8	26.8
Dry Density ρ_d (PCF)	87.00	81.90	120.80
Voids Ratio e_i	0.98	1.16	0.42
Deg of Saturation S_f%	100.	100.	100.

Peak Cohesion, c' (lbf/in2)	1.9
Peak Friction Angle φhl'	39.10
Residual Cohesion c_R' (lbf/in2)	0.1
Residual Friction Angle φ_R'	41.90

Notes:



Test Method : [redacted] AASHTO: T236		Test name	DS1 Direct Shear (CD)
		Date of Test	7/10/200
Site Reference:	U000-104-102,PE1C1,C601	Sample:	9-45-07
Jobfile:	C:\OLDWIN~1\820.JOB	Borehole:	B-4A
Operator:	Checked:		Approved:

Direct Shear Tests

Direct Multi-Specimen CD

Sample details

Sketch showing specimen location in original Sample

Depth: -5.0' to -7.0'
Description: Orange, Yellow, and Brown Silty Soil with Trace of Sand.

	Specimen 1	Specimen 2	Specimen 3
Type			
Height H_0 (in)	1.241	1.2505	1.241
Diameter D_0 (in)	2.5	2.5	2.5
Weight W_0 (gr)	175.08	174.18	174.38
Bulk Density ρ (PCF)	85.99	84.90	85.66
Particle Density ρ_s	2.68 (assumed)	2.68 (assumed)	2.68 (assumed)

Initial Condition

	Specimen 1	Specimen 2	Specimen 3
Normal Stress σ_n (lbf/in2)	6.0	10.0	18.0
Submersed:	Yes	Yes	Yes
Reversal Method	Machine Drive	Machine Drive	Machine Drive
Hor Displ. Channel	102	102	102
Load Channel	12-28	12-28	12-28
Vert Displ. Channel	HS-10/4081	HS-10/4081	HS-10/4081
Moisture Content w_0%	37.8	38.1	38.9
Dry Density ρ_d (PCF)	62.48	61.53	63.04
Voids Ratio e_0	1.68	1.74	1.65
Deg of Saturation S_0%	60.15	60.24	59.15

Max Shear Stress Results

	Specimen 1	Specimen 2	Specimen 3
Moisture Content w_f%	39.7	42.4	39.2
Dry Density ρ_{df} (PCF)	72.51	75.36	74.53
Voids Ratio e_f	1.27	1.17	1.21
Deg of Saturation S_f%	83.5	97.4	84.9
Max Shear Stress τ (lbf/in2)	3.8	6.4	10.9
H.Settlement (in)	0.1460	0.1450	0.4470
V.Settlement (in)	0.0010	-0.0025	-0.0251
Residual Stress τ_R (lbf/in2)	3.8	6.4	10.9

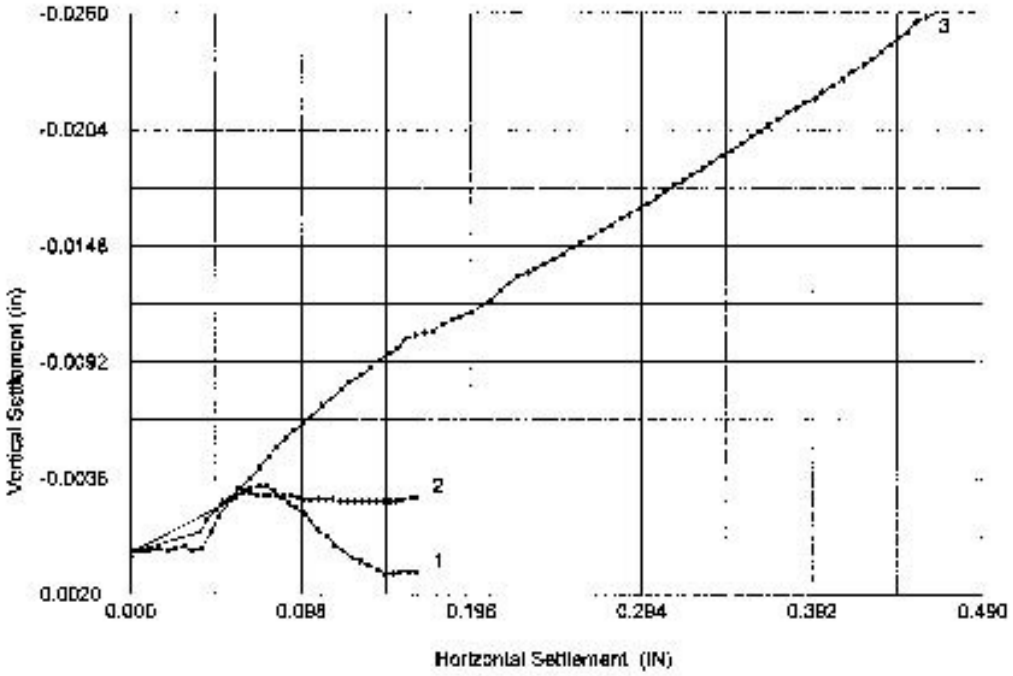
Test Method : ~~ASTM D3080-98~~ AASHTO - T236
Test name: DS1 Direct Shear (CD)
Date of Test: 7/24/2007

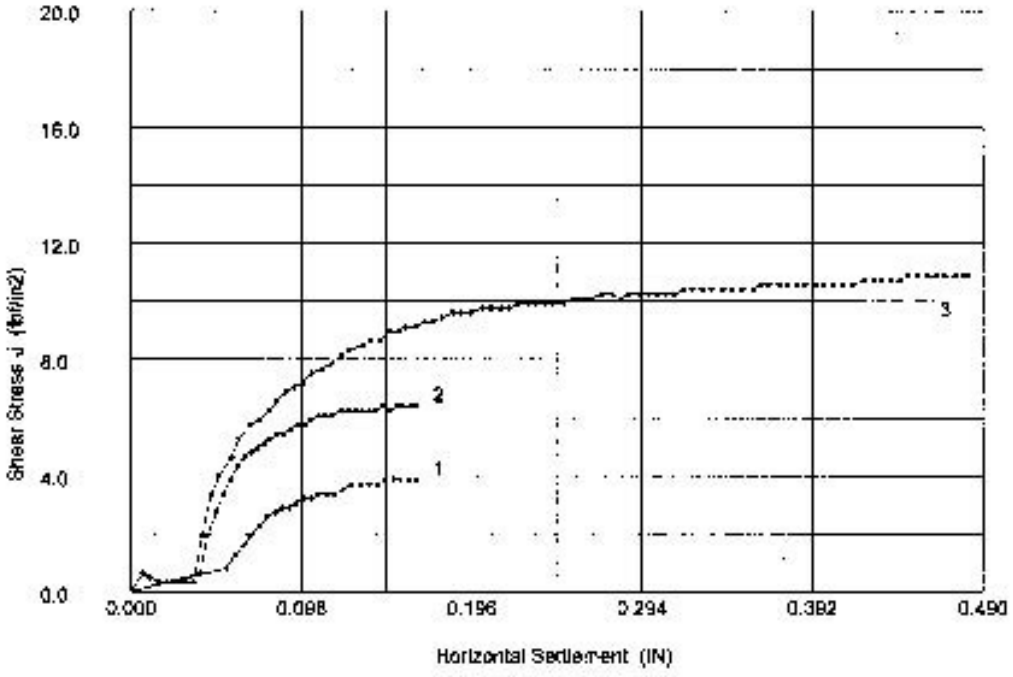
Site Reference: U030-104-102,PE101,C501
Jobfile: C:\OLDWIN-1\920.JOB
Sample: 9-46-07
Borehole: ~~B-5~~ B-6A

Operator: [signature]
Checked: [signature] 8.2.07
Approved:

Direct Shear Tests

Direct Multi-Specimen CD





Test Method	AASHTO – T236	Test name	DS1 Direct Shear (CD)
		Date of Test:	7/24/2007
Site Reference:	U050-104-102.PE101,C501	Sample:	9-46-07
Jobfile:	C:\OLDWIN~1\920 JOB	Borehole:	B-5 B-6A
Operator:	Checked:		Approved:

Direct Shear Tests

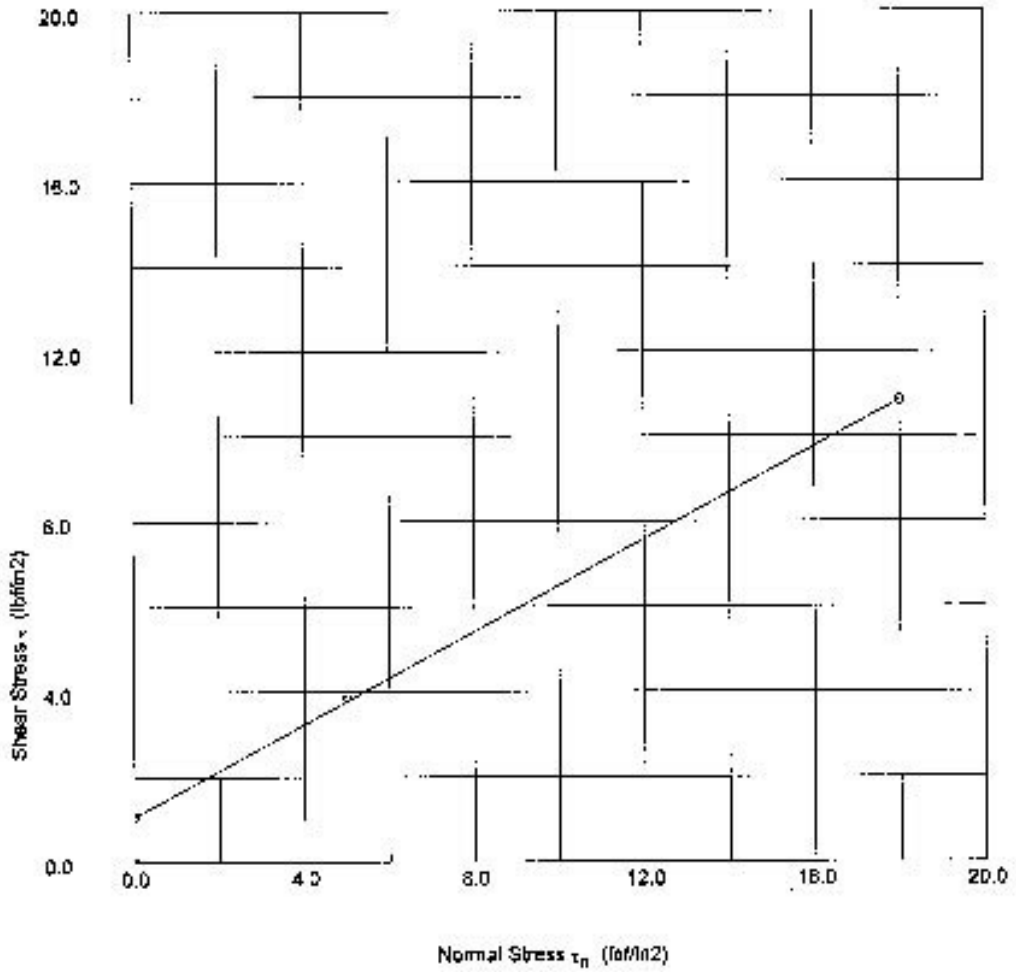
Direct Multi-Specimen CD

Envelope Failure Results

Specimen	1	2	3
Moisture Content w_f%	39.7	42.4	38.2
Dry Density ρ_d (PCF)	72.51	75.36	74.53
Voids Ratio e_f	1.27	1.17	1.21
Deg of Saturation S_f%	83.5	97.4	84.9

Peak Cohesion c' (lbf/in2)	1.1
Peak Friction Angle phi	28.50
Residual Cohesion c_R' (lbf/in2)	1.1
Residual Friction Angle φ_R'	28.50

Notes:



Test Method : AASHTO - T236 Test name DS1 Direct Shear (CD)
Date of Test: 7/24/2007

Site Reference: U000-104-102.PE101,C501 Sample: 9-46-07
Jobfile: C:\OLDWIN~1\820.JOB Borehole: B-5 B-6A

Operator: Checked Approved

Form TL-32A (5/31/2005)

Soil Sample Report

Materials Division

Project No. : U000-104-102,PE101,C501
UPC No. :
Route No. : U000
For Use In : Slope Design & Fill Material

Report No. : 9-60-07
Sample No. : 1
Submitted By : Paul E. Coates
At : Culpeper

September 5, 2007

Tests : T86, T88, T90, T99, T236

Mechanical Analysis of Total Sample (e)			
Sieve Sizes	Grams Retained	Percent Retained	Percent Passing
>63.00mm (+2 1/2 in.)	0.0	0.0%	100.0%
63.00mm (2 1/2 in.)	0.0	0.0%	100.0%
50.00mm (2 in.)	0.0	0.0%	100.0%
37.50mm (1 1/2 in.)	0.0	0.0%	100.0%
25.00mm (1 in.)	0.0	0.0%	100.0%
19.00mm (3/4 in.)	0.0	0.0%	100.0%
9.50mm (3/8 in.)	0.0	0.0%	100.0%
4.75mm (#4)	0.0	0.0%	100.0%
2.00mm (#10)	0.0	0.0%	100.0%
0.850mm (#20)	0.0	5.8%	94.2%
0.425mm (#40)	0.0	9.0%	85.2%
0.250mm (#60)	0.0	6.8%	79.4%
0.180mm (#80)	0.0	4.8%	74.6%
0.150mm (#100)	0.0	2.7%	71.9%
0.075mm (#200)	0.0	10.8%	61.2%
<0.075mm (-#200)	0.0	61.2%	0.0%
Total	1000.0		

Mechanical Analysis of Soil Mortar (e)			
Sieve Sizes	Grams Retained	Percent Retained	Percent Passing
>63.00mm (+2 1/2 in.)			
63.00mm (2 1/2 in.)			
50.00mm (2 in.)			
37.50mm (1 1/2 in.)			
25.00mm (1 in.)			
19.00mm (3/4 in.)			
9.50mm (3/8 in.)			
4.75mm (#4)			
2.00mm (#10)			100.0%
0.850mm (#20)	7.5	5.8%	94.2%
0.425mm (#40)	10.4	8.0%	85.2%
0.250mm (#60)	8.9	6.8%	79.4%
0.180mm (#80)	6.2	4.8%	74.6%
0.150mm (#100)	3.5	2.7%	71.9%
0.075mm (#200)	14.0	10.8%	61.2%
<0.075mm (-#200)		61.2%	
Total	130.0		

Description of Sample (h): Tan Silt w/t. Of Fine Sand.

Water Content (g):	N/A
AASHTO Soil Classification: (f)	A-5 (12)

Physical Characteristics of Soil	
Liquid Limit:	N/A
Plastic Limit:	Non-Plastic
Plasticity Index:	N/A
Optimum Water Content (a)	
Total Soil	N/A
-4 Portion	13.0%
Maximum Density (lbs./cu. ft.) (a)	
Total Soil	N/A
-4 Portion	117

CBR Data (d)	Compacted Specimen	Specimen After Immersion
% Water	0.00%	0.00%
% Density	0.00%	0.00%
CBR Value		0.0%
% Swell After Soaking	0.000	0.00%

Liquid Limit (b)	
Number of Blows:	0
Weight of Dish:	0
Weight of Dish + Wet Soil:	0
Weight of Dish + Dry Soil:	0
Weight of Water:	0
Weight of Dry Soil:	0
Water Content:	0
Liquid Limit:	N/A

Plastic Limit (c)	
Weight of Dish:	0.00
Weight of Dish + Wet Soil:	0.00
Weight of Dish + Dry Soil:	0.00
Weight of Water:	0.00
Weight of Dry Soil:	0.00
Plastic Limit:	Non-Plastic

Sampled from the Property of :

Location : Station 28+00, 25' Lt. Const B/L
Depth : -0.2' to 8.0'
Representing : Borehole #1
Remarks : Liquid Limit Could not be Determined due to Sample Sliding on Cup. Tests Performed at Elko Materials Lab.

Reported By : Stanley L. Hite, P.E.
Assistant State Materials Engineer

For : Christopher L. Winstead, PE
Acting State Materials Engineer

Test procedures include a= T 99, b= T 89, c= T 90, d= T 193, e= T 85, f= M 145, g= T 265 and h= D2488 (D2487).

Form TL-32A (5/31/2005)

Soil Sample Report

VDOT Materials Division

Project No. : U000-104-102,PE101,C501
UPC No. :
Route No. : U000
For Use In : Slope Design & Fill Material

Report No. : 6-51-07
Sample No. : 2
Submitted By : Paul E. Coates
At : Culpeper

August 10, 2007

Tests : T88, T89, T90

Mechanical Analysis of Total Sample (a)			
Sieve Sizes	Grams Retained	Percent Retained	Percent Passing
>63.00mm (+2 1/2 in.)	0.0	0.0%	100.0%
63.00mm (2 1/2 in.)	0.0	0.0%	100.0%
50.00mm (2 in.)	0.0	0.0%	100.0%
37.50mm (1 1/2 in.)	0.0	0.0%	100.0%
25.00mm (1 in.)	0.0	0.0%	100.0%
19.00mm (3/4 in.)	0.0	0.0%	100.0%
9.50mm (3/8 in.)	0.0	0.0%	100.0%
4.75mm (#4)	0.0	0.0%	100.0%
2.00mm (#10)	0.0	0.0%	100.0%
0.850mm (#20)	0.0	17.2%	82.8%
0.425mm (#40)	0.0	12.1%	70.7%
0.250mm (#60)	0.0	7.3%	63.3%
0.180mm (#80)	0.0	4.6%	58.7%
0.150mm (#100)	0.0	2.6%	56.1%
0.075mm (#200)	0.0	11.2%	44.9%
<0.075mm (-#200)	0.0	44.9%	0.0%
Total	1000.0		

Mechanical Analysis of Soil Mortar (e)			
Sieve Sizes	Grams Retained	Percent Retained	Percent Passing
>63.00mm (2 1/2 in.)			
63.00mm (2 1/2 in.)			
50.00mm (2 in.)			
37.50mm (1 1/2 in.)			
25.00mm (1 in.)			
19.00mm (3/4 in.)			
9.50mm (3/8 in.)			
4.75mm (#4)			
2.00mm (#10)			100.0%
0.850mm (#20)	22.8	17.2%	82.8%
0.425mm (#40)	16.0	12.1%	70.7%
0.250mm (#60)	9.7	7.3%	63.3%
0.180mm (#80)	6.1	4.6%	58.7%
0.150mm (#100)	3.4	2.6%	56.1%
0.075mm (#200)	14.9	11.2%	44.9%
<0.075mm (-#200)		44.9%	
Total	132.2		

Liquid Limit (b)	
Number of Blows:	0
Weight of Dish:	0
Weight of Dish + Wet Soil:	0
Weight of Dish + Dry Soil:	0
Weight of Water:	0
Weight of Dry Soil:	0
Water Content:	0
Liquid Limit:	N/A

Plastic Limit (c)	
Weight of Dish:	0.00
Weight of Dish + Wet Soil:	0.00
Weight of Dish + Dry Soil:	0.00
Weight of Water:	0.00
Weight of Dry Soil:	0.00
Plastic Limit:	Non Plastic

Sampled from the Property of :

Description of Sample (h):
Tan Silt with Fine to Coarse Sand & Trace of Weathered Rock Fragments.

Water Content (g):	N/A
AASHTO Soil Classification: (f)	A-5 (12)

Physical Characteristics of Soil	
Liquid Limit:	N/A
Plastic Limit:	Non-Plastic
Plasticity Index:	N/A

Optimum Water Content (a)	
Total Soil	N/A
-4 Portion	N/A

Maximum Density (lbs./cu. ft.) (a)	
Total Soil	N/A
-4 Portion	N/A

CBR Data (d)	Compacted Specimen	Specimen After Immersion
% Water	0.00%	0.00%
% Density	0.00%	#DIV/0!
CBR Value		0.0%
% Swell After Soaking	0.000"	0.00%

Location : Station 28+00, 25' LT. Const B/L at -12.5' to -16.0'. Borehole No.1.
Depth :
Representing :
Remarks : Liquid Limit Could not be Determined Due to Sample Sliding in Cup. Tests Performed at Elko Materials Lab.

Reported By : Stanley L. Hite, P.E.
Assistant State Materials Engineer

For : Christopher L. Winstead, PE
Acting State Materials Engineer

Test procedures include :a= T 99, b= T 89, c= T 90, d= T 193, e= T 88, f= M 145, g= Y 265 and h= D2488 (D2487).

Form TL-32A (5/31/2005)

Soil Sample Report

Materials Division

Project No. : U000-104-102,PE101,C501
UPC No. :
Route No. : U000
For Use In : Retaining Wall Foundation & Fill Emb

Report No. : 9-45-07
Sample No. : 2
Submitted By : Paul Coates
At : Culpeper

July 19, 2007

Tests : T88, T89, T90

Mechanical Analysis of Total Sample (a)			
Sieve Sizes	Grams Retained	Percent Retained	Percent Passing
>63.00mm (+2 1/2 in.)	0.0	0.0%	100.0%
63.00mm (2 1/2 in.)	0.0	0.0%	100.0%
50.00mm (2 in.)	0.0	0.0%	100.0%
37.50mm (1 1/2 in.)	0.0	0.0%	100.0%
25.00mm (1 in.)	0.0	0.0%	100.0%
19.00mm (3/4 in.)	0.0	0.0%	100.0%
9.50mm (3/8 in.)	0.0	0.0%	100.0%
4.75mm (#4)	0.0	0.0%	100.0%
2.00mm (#10)	0.0	0.0%	100.0%
0.850mm (#20)	0.0	0.6%	99.4%
0.425mm (#40)	0.0	2.0%	97.4%
0.250mm (#60)	0.0	3.8%	93.6%
0.180mm (#80)	0.0	3.6%	90.0%
0.150mm (#100)	0.0	2.3%	87.7%
0.075mm (#200)	0.0	9.6%	78.1%
<0.075mm (-#200)	0.0	78.1%	0.0%
Total	1000.0		

Mechanical Analysis of Soil Mortar (a)			
Sieve Sizes	Grams Retained	Percent Retained	Percent Passing
>63.00mm (+2 1/2 in.)			
63.00mm (2 1/2 in.)			
50.00mm (2 in.)			
37.50mm (1 1/2 in.)			
25.00mm (1 in.)			
19.00mm (3/4 in.)			
9.50mm (3/8 in.)			
4.75mm (#4)			
2.00mm (#10)			100.0%
0.850mm (#20)	0.9	0.6%	99.4%
0.425mm (#40)	3.0	2.0%	97.4%
0.250mm (#60)	5.6	3.8%	93.6%
0.180mm (#80)	5.3	3.6%	90.0%
0.150mm (#100)	3.4	2.3%	87.7%
0.075mm (#200)	14.2	9.6%	78.1%
<0.075mm (-#200)		78.1%	
Total	147.9		

Description of Sample (h):
Grey Clay w/tr. Of Silt and Some Organics.

Water Content (g):	N/A
AASHTO Soil Classification: (f)	A-4 (0)

Physical Characteristics of Soil

Liquid Limit:	21.9%
Plastic Limit:	18.7%
Plasticity Index:	3.2%

Optimum Water Content (e)

Total Soil	N/A
-4 Portion	N/A

Maximum Density (lbs./cu. ft.) (e)

Total Soil	N/A
-4 Portion	N/A

CBR Data (d)	Compacted Specimen	Specimen After Immersion
% Water	0.00%	0.00%
% Density	0.00%	#DIV/0!
CBR Value		0.0%
% Swell After Soaking	0.000"	0.00%

Liquid Limit (b)	
Number of Blows:	28
Weight of Dish:	33.99
Weight of Dish + Wet Soil:	57.85
Weight of Dish + Dry Soil:	53.58
Weight of Water:	4.27
Weight of Dry Soil:	19.59
Water Content:	21.8%
Liquid Limit:	21.9%

Plastic Limit (c)	
Weight of Dish:	34.39
Weight of Dish + Wet Soil:	43.14
Weight of Dish + Dry Soil:	41.76
Weight of Water:	1.38
Weight of Dry Soil:	7.37
Plastic Limit:	18.7%

Sampled from the Property of : VDOT

Location : Station 30+00, 64' RT, Const.B/L
Depth : -7.0' to -9.0'
Representing : Borehole NO. 4A
Remarks : Tests Performed at Eko Materials Lab.

Reported By : Stanley L. Hite, P.E.
Assistant State Materials Engineer

For : Christopher L. Winstead, PE,
Acting State Materials Engineer

Test procedures include :a= T 99, b= T 88, c= T 90, d= T 193, e= T 88, f= M 145, g= T 265 and h= D2488 (D2487).

Form TL-32A (5/31/2005)

Soil Sample Report

Materials Division

Project No : UC00-104-102,PE101,C501
UPC No :
Route No. : UC00
For Use In : Retaining Wall Foundation & Fill Emb

Report No. : 8-48-07
Sample No. : 1
Submitted By : Paul Coates
At : Culpeper

August 2, 2007

Tests : 188, T89, T90

Mechanical Analysis of Total Sample (e)			
Sieve Sizes	Grams Retained	Percent Retained	Percent Passing
>63.00mm (+2 1/2 in.)	0.0	0.0%	100.0%
63.00mm (2 1/2 in.)	0.0	0.0%	100.0%
50.00mm (2 in.)	0.0	0.0%	100.0%
37.50mm (1 1/2 in.)	0.0	0.0%	100.0%
25.00mm (1 in.)	0.0	0.0%	100.0%
19.00mm (3/4 in.)	0.0	0.0%	100.0%
9.50mm (3/8 in.)	0.0	0.0%	100.0%
4.75mm (#4)	0.0	0.0%	100.0%
2.00mm (#10)	0.0	0.0%	100.0%
0.850mm (#20)	0.0	1.1%	98.9%
0.425mm (#40)	0.0	2.0%	96.9%
0.250mm (#60)	0.0	1.8%	95.1%
0.180mm (#80)	0.0	1.0%	94.0%
0.150mm (#100)	0.0	0.4%	93.6%
0.075mm (#200)	0.0	2.4%	91.2%
<0.075mm (-#200)	0.0	91.2%	0.0%
Total	1000.0		

Mechanical Analysis of Soil Mortar (e)			
Sieve Sizes	Grams Retained	Percent Retained	Percent Passing
>63.00mm (+2 1/2 in.)			
63.00mm (2 1/2 in.)			
50.00mm (2 in.)			
37.50mm (1 1/2 in.)			
25.00mm (1 in.)			
19.00mm (3/4 in.)			
9.50mm (3/8 in.)			
4.75mm (#4)			
2.00mm (#10)			100.0%
0.850mm (#20)	1.8	1.1%	98.9%
0.425mm (#40)	3.1	2.0%	96.9%
0.250mm (#60)	2.9	1.8%	95.1%
0.180mm (#80)	1.6	1.0%	94.0%
0.150mm (#100)	0.7	0.4%	93.6%
0.075mm (#200)	3.8	2.4%	91.2%
<0.075mm (-#200)		91.2%	
Total	157.8		

Liquid Limit (b)	
Number of Blows:	22
Weight of Dish:	32.86
Weight of Dish + Wet Soil:	66.65
Weight of Dish + Dry Soil:	49.49
Weight of Water:	7.06
Weight of Dry Soil:	16.63
Water Content:	41.9%
Liquid Limit:	41.3%

Plastic Limit (c)	
Weight of Dish:	30.57
Weight of Dish + Wet Soil:	40.70
Weight of Dish + Dry Soil:	38.09
Weight of Water	2.61
Weight of Dry Soil	7.52
Plastic Limit:	34.7%

Sampled from the Property of :

Description of Sample (h):
Orange Yellow, & Brown Silty Soil w/tr. Of Sand.

Water Content (g):	N/A
AASHTO Soil Classification: (f)	A-6 (9)

Physical Characteristics of Soil	
Liquid Limit:	41.3%
Plastic Limit:	34.7%
Plasticity Index:	6.6%

Optimum Water Content (g)	
Total Soil	N/A
-4 Portion	N/A

Maximum Density (lbs./cu. ft.) (g)	
Total Soil	N/A
-4 Portion	N/A

CBR Data (d)	Compacted Specimen	Specimen After Immersion
% Water	0.00%	0.00%
% Density	0.00%	#DIV/0!
CBR Value		0.0%
% Swell After Soaking	0.000"	0.00%

Location : Station 30+30, 54' RT, Const. SIL at Bore Hole # CA
Depth : -5.0' to -7.0'
Representing :
Remarks : Tests Performed at Elko Materials.

Reported By : Stanley L. Hite, P.E.
Assistant State Materials Engineer

For : Christopher L. Winstead, PE.
Acting State Materials Engineer

Test procedures include: a= T 99, b= T 89, c= T 90, d= T 193, e= T 88, f= M 145, g= T 265 and h= D2488 (D2487).

ROUTE: McIntire Road extended
BY: P. E. Coates & P. J. Brockman
PROJECT NO: U000-104-V02, PE101, C501
PURPOSE: Soil Survey
DATE: 4-10, 4-23, 4-24 & 4-28, 2003
COUNTY: City of Charlottesville
(If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road, extended ***									
BH 1										
Sta. 10+68	TOPSOIL	0.0 - 0.7								SPT's = 0-1-2 at 0.0 - 1.5 ft
68 ft Rt.	Brown Clayey SILT, trace of sand and mica	0.7 - 2.5		1.9	0.7 - 2.5	429	19.5	14.9	112.9	
Const. B/L	Gray Silty CLAY, trace of fine sand	2.5 - 5.0		4.6	2.5 - 5.0	478	41.9	14.7	115.8	
BH 1p										
Sta. 10+63	TOPSOIL	0.0 - 0.6								
30 ft Lt.	Tan micaceous SILT, trace of fine sand and gravel	0.6 - 5.0		2.5	0.6 - 2.5	53	15.9	9.9	124.5	Boring made in 1996, soil represented by sample 8
Const. B/L				4.9	2.5 - 5.0	283	17.3	9.9	124.5	from 1996.
BH 2										
Sta. 12+00	TOPSOIL	0.0 - 0.5								SPT's = 2-4-3 at 0.0 -1.5 ft
12.5 ft Lt.	Tan and brown SILT	0.5 - 5.0		2.2	0.5 - 2.8	456	14.9	12.9	117.2	
Const. B/L				4.1	2.8 - 5.0	459	16.4	12.9	117.2	
BH 3										
Sta. 12+65	TOPSOIL	0.0 - 2.0								SPT's = 1-3-5 at 0.0 - 1.5 ft
95 ft Rt.	Tan Clayey SILT, trace of gravel, sand & mica	2.0 - 5.0		2.0	2.0 - 3.7	293	21.5	14.9	112.9	
Const. B/L				4.2	3.7 - 5.0	499	34.1	14.9	112.9	
BH 2p										
Sta. 13+24	TOPSOIL	0.0 - 0.6								
5 ft Rt.	Brown Clayey SILT, trace gravel, fine sand, and mica	0.6 - 4.0		4.0	0.6 - 4.0	267	22.2	15.3	115.3	Boring made in 1996, soil represented by sample 21
Const. B/L	Reddish-brown Clayey SILT, trace gravel and fine sand	4.0 - 5.0		4.9	4.0 - 5.0	231	18.7	20.7	103.8	from 1996.
BH 4										
Sta. 13+32	TOPSOIL	0.0 - 0.4								SPT's = 4-50/0.5 at 0.0 - 1.0 ft
16 ft Rt.	Brown SILT, some rock fragments and sand	0.4 - 3.2		2.6	0.4 - 3.2	329	5.9	12.0	119.8	
Const. B/L	**UNABLE TO PENETRATE (Rock or boulder?)**	3.2								

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended PROJECT NO: U000-104-V02, PE101, C501 COUNTY: City of Charlottesville DATE: 4-10, 4-23, 4-24, 4-28 & 4-29, 2003
BY: P. E. Coates & P. J. Brockman PURPOSE: Soil Survey (If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road extended, cont'd. ***									
BH 3p										
Sta. 13+88	TOPSOIL	0.0 - 0.4								This boring & sample from 1996
79 ft Rt.	Reddish-brown to tan micceous SILT, trace fine sand	0.4 - 6.6	8	1.6	0.4 - 4.9	280	12.6	9.9	124.5	A-4(0), LL=25, PI=N.P., CBR=9.6
Const. B/L				5.6	4.9 - 6.6	416	4.8	9.9	124.5	
BH 5										
Sta.13+96	TOPSOIL	0.0 - 0.4								SPT's = 2-3-3 at 0.0 - 1.5 ft
23 ft Lt.	Reddish-brown Silty CLAY, trace of sand & mica	0.4 - 4.9		3.1	0.4 - 4.9	123	21.6	14.7	115.8	
Const. B/L	Tan and brown SILT	4.9 - 13.8		6.7	4.9 - 8.9	355	12.7	12.0	119.8	SPT's = 4-5-7 at 5.0 - 6.5 ft
				10.2	8.9 - 13.8	437	13.1	12.0	119.8	SPT's = 4-5-5 at 8.0 - 9.5 ft
BH 6										
Sta. 14+61	TOPSOIL	0.0 - 0.5								SPT's = 1-2-2 at 0.0 - 1.5 ft
15 ft Rt.	Reddish-brown Silty CLAY, trace of sand	0.5 - 3.0	2	2.5	0.5 - 3.0	505	19.9	14.7	115.8	A-4(5), LL=35, PI=10, CBR=12.5
Const. B/L	Reddish-brown Clayey SILT, trace of sand	3.0 - 11.5	1	6.2	3.0 - 7.5	182	15.1	12.8	118.8	A-4(0), LL=34, PI=N.P., CBR=1.3
				9.3	7.5 - 11.5	434	17.3	12.8	118.8	SPT's = 8-14-13 at 5.0 - 6.5 ft
										SPT's = 7-11-10 at 6.5 - 8.0 ft
BH 7										
Sta. 14+61	TOPSOIL	0.0 - 0.4								SPT's = 1-0-1 at 0.0 - 1.5 ft
219 ft Rt.	Reddish-brown SILT, trace of sand & mica	0.4 - 2.8		2.1	0.4 - 2.8	504	15.1	12.8	118.8	
Const. B/L	Tan SILT, trace of sand and mica	1.8 - 4.1		3.4	1.8 - 4.1	499	6.4	12.0	119.8	
	Highly weathered ROCK	4.1 - 5.0		4.6	4.1 - 5.0	135	6.8	12.0	119.8	
BH 4p										
Sta. 15+15	TOPSOIL	0.0 - 0.4								
61 ft Rt.	Reddish-brown to tan micceous SILT, trace fine sand	0.4 - 8.2		1.3	0.4 - 3.0	274	8.1	9.9	124.5	Boring made in 1996, soil represented by sample 8
Const. B/L				3.9	3.0 - 8.2	107	8.5	9.9	124.5	from 1996.

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended PROJECT NO: U000-104-V02, PE101, C501 COUNTY: City of Charlottesville DATE: 4-10, 4-23, 4-24, 4-28 & 4-29, 2003
BY: P. E. Coates & P. J. Brockman PURPOSE: Soil Survey (If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road extended, cont'd. ***									
BH 8										
Sta. 15+21	TOPSOIL	0.0 - 0.4								SPT's = 1-4-8 at 0.0 - 1.5 ft
48 ft Lt.	Reddish-brown Silty CLAY, trace of sand & mica	0.4 - 2.5		1.9	0.4 - 2.5	135	20.8	14.7	115.8	
Const. B/L	Brown, tan, reddish-brown SILT, trace of sand & mica	2.5 - 16.7		6.2	2.5 - 9.5	236	6.8	12.0	119.8	SPT's = 9-16-15 at 5.0 - 6.5 ft
				12.2	9.5 - 16.7	401	8.7	12.0	119.8	SPT's = 12-17-17 at 10.0 - 11.5 ft
BH 9										
Sta. 15+23	TOPSOIL	0.0 - 0.4								SPT's = 1-2-8 at 0.0 - 1.5 ft
47 ft Rt.	Tan and brown SILT, trace of sand and mica	0.4 - 12.0		2.8	0.4 - 3.4	331	10.2	12.0	119.8	
Const. B/L				4.2	3.4 - 5.8	441	9.5	12.0	119.8	SPT's = 5-12-12 at 5.0 - 6.5 ft
				6.1	5.8 - 7.0	532	16.8	12.0	119.8	
				10.2	7.0 - 12.0	504	9.6	12.0	119.8	SPT's = 7-13-17 at 7.0 - 8.5 ft
BH 10										
Sta. 16+01	TOPSOIL	0.0 - 0.4								SPT's = 1-1-8 at 0.0 - 1.5 ft
182 ft Rt.	Tan micaceous SILT with gray veins, some	0.4 - 5.6		2.2	0.4 - 3.0	73	8.3	13.8	117.1	
Const. B/L	boulder fragments and sand			4.6	3.0 - 5.6	478	6.7	13.8	117.1	
BH 11										
Sta. 16+59	TOPSOIL	0.0 - 0.4								SPT's = 1-7-12 at 0.0 - 1.5 ft
29 ft Lt.	Tan, gray, reddish-brown micaceous Sandy SILT	0.4 - 18.0		2.6	0.4 - 5.3	50	9.4	12.9	117.2	
Const. B/L	(Weathered ROCK)			6.4	5.3 - 8.8	267	7.9	12.9	117.2	SPT's = 12-22-33 at 5.0 - 6.5 ft
				10.2	8.8 - 12.0	313	8.0	12.9	117.2	SPT's = 18-17-24 at 10.0 - 11.5 ft
				14.3	12.0 - 18.0	405	7.3	12.9	117.2	SPT's = 14-24-50/0.4 at 13.0 - 14.4 ft
BH 12										
Sta. 16+59	TOPSOIL	0.0 - 0.6								SPT's = 1-1-3 at 0.0 - 1.5 ft
36 ft Rt.	Tan SILT, trace of sand	0.6 - 7.9	4	2.2	0.6 - 3.0	27	13.7	12.0	119.8	A-4(0), LL=33, PI=N.P., CBR=0.8
Const. B/L				3.8	3.0 - 4.9	33	17.7	12.0	119.8	SPT's = 7-6-9 at 3.0 - 4.5 ft
				6.6	4.9 - 7.9	479	12.6	12.0	119.8	
BH 13										
Sta. 17+17	TOPSOIL	0.0 - 1.0								SPT's = 1-3-2 at 0.0 - 1.5 ft
16 ft Rt.	Reddish-brown Clayey SILT, trace of sand	1.0 - 4.0		3.1	1.0 - 4.0	66	18.1	12.8	118.8	SPT's = 2-4-3 at 2.0 - 3.5 ft
Const. B/L	Reddish-brown SILT	4.0 - 5.5	3	4.8	4.0 - 5.5	467	14.1	11.7	122.1	A-4(0), LL=29, PI=N.P.
	Tan and brown SILT	5.5 - 7.5		6.2	5.5 - 7.5	507	9.3	12.0	119.8	

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended PROJECT NO: U000-104-V02, PE101, C501 COUNTY: City of Charlottesville DATE: 4-10, 4-21 & 4-25, 2003
BY: P. E. Coates PURPOSE: Soil Survey (If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road extended, cont'd. ***									
BH 14										
Sta. 17+22	TOPSOIL	0.0 - 0.5								SPT's = 0-2-3 at 0.0 - 1.5 ft
122 ft Rt.	Brown micaceous Clayey SILT, trace of sand	0.5 - 5.0	5	2.6	0.5 - 3.1	250	20.9	14.9	112.9	A-4(4), LL=35, PI=10
Const. B/L				4.2	3.1 - 5.0	540	23.2	14.9	112.9	
BH 15										
Sta. 17+82	TOPSOIL	0.0 - 0.4								SPT's = 1-3-3 at 0.0 - 1.5 ft
61 ft Lt.	Reddish-brown Silty CLAY	0.4 - 3.5		2.2	0.4 - 3.5	33	18.9	19.7	103.2	
Const. B/L	Reddish-brown Clayey SILT	3.5 - 5.2		4.1	3.5 - 5.2	413	26.1	12.8	118.8	SPT's = 3-4-5 at 4.0 - 5.5 ft
	Tan SILT with gray veins, trace of mica	5.2 - 8.9		6.7	5.2 - 8.9	467	21.0	13.8	117.1	
BH 16										
Sta. 18+52	TOPSOIL	0.0 - 0.8								SPT's = 1-1-2 at 0.0 - 1.5 ft
113 ft Rt.	Tan Clayey SILT	0.8 - 5.0		2.2	0.8 - 2.9	66	19.5	21.0	101.9	
Const. B/L				4.1	2.9 - 5.0	467	18.1	21.0	101.9	
BH 17										
Sta. 19+17	TOPSOIL	0.0 - 0.4								SPT's = 2-3-3 at 0.0 -1.5 ft
9 ft Lt.	Reddish-brown Silty CLAY	0.4 - 2.3		1.9	0.4 - 2.3	70	22.4	19.7	103.2	SPT's = 2-4-5 at 5.0 - 6.5 ft
Const. B/L	Tan, gray and brown SILT, trace of mica	2.3 - 18.0	6	4.7	2.3 - 6.1	182	18.5	17.5	107.8	A-4(1), LL=32, PI=N.P., CBR=2.1
				9.2	6.1 - 12.8	449	17.9	17.5	107.8	SPT's = 3-3-3 at 10.0 - 11.5 ft
				14.9	12.8 - 18.0	463	18.2	17.5	107.8	SPT's = 4-6-10 at 13.0 -14.5 ft
BH 18	TOPSOIL	0.0 - 0.4								SPT's = 2-3-2 at 0.0 - 1.5 ft
Sta. 19+79	Tan, gray and brown SILT, trace of mica	0.4 - 14.8		3.9	0.4 - 5.5	66	10.9	17.5	107.8	
7.5 ft Lt.				8.2	5.5 - 10.0	242	18.8	17.5	107.8	SPT's = 5-6-6 at 5.0 - 6.5 ft
Const. B/L				11.1	10.0 - 12.2	409	8.3	17.5	107.8	SPT's = 12-12-12 at 10.0 - 11.5 ft
				14.1	12.2 - 14.8	434	10.6	17.5	107.8	
BH 19										
Sta. 19+84	TOPSOIL	0.0 - 0.8								SPT's = 0-2-2 at 0.0 - 1.5 ft
82 ft Rt.	Brown Clayey SILT, trace of sand	0.8 - 5.0		1.9	0.8 - 2.6	33	27.3	21.0	101.9	
Const. B/L				4.1	2.6 - 5.0	182	26.2	21.0	101.9	

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended
BY: P. E. Coates
PROJECT NO: U000-104-V02, PE101, C501
PURPOSE: Soil Survey
DATE: 4-21, 4-25 & 4-28, 2003
COUNTY: City of Charlottesville
(If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road extended, cont'd. ***									
BH 20										
Sta. 20+56	TOPSOIL	0.0 - 0.4								SPT's = 1-2-3 at 0.0 - 1.5 ft
31 ft Lt.	Brown micaceous SILT with dark brown veins	0.4 - 9.8		3.2	0.4 - 4.4	265	16.4	20.4	106.1	
Const. B/L				5.1	4.4 - 6.9	274	31.2	20.4	106.1	SPT's = 2-3-4 at 5.0 - 6.5 ft
				7.6	6.9 - 9.8	320	27.4	20.4	106.1	
BH 21										
Sta. 21+18	TOPSOIL	0.0 - 0.4								SPT's = 1-2-4 at 0.0 -1.5 ft
4 ft Lt.	Tan micaceous Sandy Clayey SILT	0.4 - 11.5		3.1	0.4 - 4.0	123	14.6	14.9	112.9	
Const. B/L				5.8	4.0 - 7.5	152	10.2	14.9	112.9	SPT's = 11-20-26 at 5.0 - 6.5 ft
				8.9	7.5 - 11.5	331	10.8	14.9	112.9	
BH 22										
Sta. 21+14	TOPSOIL	0.0 - 0.8								SPT's = 0-2-1 at 0.0 - 1.5 ft
80 ft Rt.	Brown Clayey SILT, trace of sand	0.8 - 5.0		2.6	0.8 - 3.2	413	31.0	21.0	101.9	
Const. B/L				4.2	3.2 - 5.0	434	28.6	21.0	101.9	
BH 23										
Sta. 21+62	TOPSOIL	0.0 - 0.4								SPT's = 1-2-3 at 0.0 - 1.5 ft
22.5 ft Lt.	Reddish-tan micaceous SILT, trace of clay	0.4 - 15.0	7	3.2	0.4 - 4.6	50	24.8	20.4	106.1	A-4(2), LL=38, PI=N.P., CBR=9.5
Const. B/L				5.4	4.6 - 7.2	236	26.6	20.4	106.1	SPT's = 5-10-12 at 5.0 - 6.5 ft
				8.9	7.2 - 11.5	267	27.0	20.4	106.1	
				12.8	11.5 - 15.0	441	33.4	20.4	106.1	SPT's = 4-7-9 at 10.0 - 11.5 ft
BH 5p										
Sta. 22+21	TOPSOIL	0.0 - 0.5								
80 ft Lt.	Reddish-tan Clayey SILT, trace of mica	0.5 - 5.0		3.0	0.5 - 5.0	122	32.5	20.7	103.8	Boring made in 1996, soil represented by samples 1
Const. B/L	Grayish-tan micaceos SILT	5.0 - 8.0		6.5	5.0 - 8.0	404	22.8	16.6	109.8	and 3 from 1996.
BH 24										
Sta. 22+58	TOPSOIL	0.0 - 0.4								SPT's = 1-2-2 at 0.0 - 1.5 ft
1 ft Rt.	Reddish-tan SILT, trace of mica and clay	0.4 - 5.6		2.3	0.4 - 3.2	495	21.5	20.4	106.1	
Const. B/L				4.1	3.2 - 5.6	266	15.1	20.4	106.1	

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended
BY: P. E. Coates
PROJECT NO: U000-104-V02, PE101, C501
PURPOSE: Soil Survey
DATE: 4-23, 4-28, 4-29 & 5-2, 2003
COUNTY: City of Charlottesville
(If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road extended, cont'd. ***									
BH 25										
Sta. 22+48	TOPSOIL	0.0 - 0.7								SPT's = 1-2-2 at 0.0 - 1.5 ft
97 ft Rt.	Brown Clayey SILT, trace of mica and sand	0.7 - 3.8		2.5	0.7 - 3.8	76	28.5	21.0	101.9	
Const. B/L	Gray CLAY	3.8 - 5.0		4.3	3.8 - 5.0	178	42.3	N/A	N/A	
BH 26										
Sta. 23+12	TOPSOIL	0.0 - 0.7								SPT's = 1-2-2 at 0.0 - 1.5 ft
1 ft Lt.	Brown Clayey SILT, trace of mica and sand	0.7 - 5.0		2.3	0.7 - 2.8	161	28.3	21.0	101.9	
Const. B/L				4.1	2.8 - 5.0	149	33.7	21.0	101.9	
BH 27										
Sta. 23+80	TOPSOIL	0.0 - 0.7								SPT's = 1-2-2 at 0.0 - 1.5 ft
117 ft Rt.	Brown Clayey SILT, trace of mica and sand	0.7 - 4.1		3.4	0.7 - 4.1	329	34.2	21.0	101.9	
Const. B/L	Gray CLAY	4.1 - 5.0		4.6	4.1 - 5.0	152	31.2	N/A	N/A	
BH 28										
Sta. 24+46	TOPSOIL	0.0 - 0.4								
30 ft Rt.	Reddish-brown micaceous Clayey SILT, trace of sand	0.4 - 2.5		2.0	0.4 - 2.5	478	16.3	14.9	112.9	SPT's = 1-3-2 at 0.0 - 1.5 ft
Const. B/L	Reddish-brown micaceous SILT, trace of clay	2.5 - 5.0		4.1	2.5 - 5.0	285	18.8	20.4	106.1	
BH 29										
Sta. 25+10	TOPSOIL	0.0 - 0.4								SPT's = 2-2-3 at 0.0 -1.5 ft
31 ft Lt.	Brown SILT, trace of sand and mica	0.4 - 4.2		2.2	0.4 - 4.2	234	14.8	12.0	119.8	
Const. B/L	Gray weathered ROCK with reddish-brown veins	4.2 - 10.2		6.1	4.2 - 7.0	285	14.3	12.9	117.2	SPT's = 10-26-36 at 5.0 - 6.5 ft
				8.3	7.0 - 10.2	459	9.5	12.9	117.2	

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended
BY: P. E. Coates
PROJECT NO: U000-104-V02, PE101, C501
PURPOSE: Soil Survey
DATE: 12-4, 1996 and 4-29, 4-30 & 5-2, 2003
COUNTY: City of Charlottesville
(If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road extended, cont'd. ***									
BH 30										
Sta. 25+07	TOPSOIL	0.0 - 0.4								SPT's = 2-3-2 at 0.0 - 1.5 ft
75 ft Rt.	Reddish-brown micaceous Clayey SILT, trace sand	0.4 - 2.7		2.1	0.4 - 2.7	135	18.4	14.9	112.9	
Const. B/L	Reddish-brown micaceous SILT, trace sand & clay	2.7 - 5.0		3.8	2.7 - 5.0	313	16.1	20.4	106.1	
BH 7p										
25+13	TOPSOIL.	0.0 - 0.5								
65 ft Lt.	Tan micaceous SILT.	0.5 - 14.0		3.0	0.5 - 4.0	149	18.7	16.6	109.8	Boring made in 1996, soil represented by samples 3
Const. B/L				5.0	4.0 - 7.0	459	14.1	16.6	109.8	and 4 from 1996.
				12.0	7.0 - 14.0	518	10.9	16.6	109.8	
	Tan micaceous SILT, with rock fragments.	14.0 - 21.3		17.0	14.0 - 21.3	238	8.5	13.7	116.5	
BH 31										
Sta. 26+42	TOPSOIL	0.0 - 0.4								SPT's = 2-3-3 at 0.0 -1.5 ft
64 ft Lt.	Reddish-brown Clayey SILT, trace of sand and mica	0.4 - 1.8		1.1	0.4 - 1.8	176	14.5	14.9	112.9	
Const. B/L	Decomposed SCHIST	1.8 - 9.0		3.9	1.8 - 5.2	293	10.5	13.8	117.1	SPT's = 15-22-34 at 5.0 - 6.5 ft
				7.6	5.2 - 9.0	532	9.7	13.8	117.1	
BH 32										
Sta. 26+42	TOPSOIL	0.0 - 1.0								SPT's = 2-4-6 at 0.0 - 1.5 ft
35 ft Rt.	Reddish-brown micaceous Clayey SILT, trace sand	1.0 - 2.2		1.5	1.0 - 2.2	459	17.5	14.9	112.9	
Const. B/L	Reddish-brown micaceous SILT, trace sand & clay	2.2 - 5.0		3.6	2.2 - 5.0	76	14.3	20.4	106.1	
BH 33										
Sta. 26+75	TOPSOIL	0.0 - 1.0								SPT's = 1-2-2 at 0.0 -1.5 ft
11 ft Lt.	Tan SILT with gray veins, trace of mica	1.0 - 2.5		2.0	1.0 - 2.5	76	12.1	12.9	117.2	SPT's = 8-20-50/0.4 at 5.0 - 6.4 ft
Const. B/L	Decomposed SCHIST	2.5 - 15.0	8	7.4	2.5 - 9.4	178	19.4	13.8	117.1	A-4(0), LL=27, PI=N.P., CBR=5.6
				11.8	9.4 - 15.0	313	10.0	13.8	117.1	SPT's = 50/0.5 at 10.0 - 10.5 ft
BH 34										
Sta. 27+74	TOPSOIL	0.0 - 1.0								SPT's = 2-4-7 at 0.0 - 1.5 ft
62.5 ft Lt.	Tan and gray Clayey SILT with brown veins	1.0 - 5.0		2.8	1.0 - 5.0	161	9.9	13.8	117.1	
Const. B/L	Decomposed SCHIST	5.0 - 19.7		7.2	5.0 - 8.3	429	6.0	13.8	117.1	SPT's = 18-50/0.4 at 5.0 - 5.9 ft
				9.2	8.3 - 10.0	437	8.3	13.8	117.1	
				12.2	10.0 - 15.5	454	7.4	13.8	117.1	SPT's = 50/0.4 at 10.0 - 10.4 ft
				18.2	15.5 - 19.7	521	9.8	13.8	117.1	SPT's = 36-50/0.4 at 15.0 - 15.9 ft
BH 35										
Sta. 27+67	TOPSOIL	0.0 - 1.5								SPT's = 1-3-3 at 0.0 -1.5 ft
87 ft Rt.	Brown SILT with rock fragments and sand, tr mica	1.5 - 5.0		2.6	1.5 - 3.2	70	16.8	15.5	110.9	
Const. B/L				4.1	3.2 - 5.0	532	12.7	15.5	110.9	

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended PROJECT NO: U000-104-V02, PE101, C501 DATE: 5-1, 5-2 & 5-6, 2003
BY: P. E. Coates & P. J. Brockman PURPOSE: Soil Survey COUNTY: City of Charlottesville
(If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road extended, cont'd. ***									
BH36										
Sta. 28+34	TOPSOIL	0.0 - 0.5								SPT's = 0-2-2 at 0.0 - 1.5 ft
33.5 ft Lt.	Reddish-brown SILT, trace of clay and mica	0.5 - 1.5		2.0	0.5 - 1.5	123	20.4	20.4	106.1	SPT's = 7-11-18 at 5.0 - 6.5 ft
Const. B/L	Tan, gray and brown SILT, trace of mica	1.5 - 15.0	9	4.4	1.5 - 7.5	236	10.3	12.9	117.2	A-4(0), LL=28, PI=N.P., CBR=3.2
				11.5	7.5 - 15.0	266	10.2	12.9	117.2	SPT's = 14-27-30 at 10.0 - 11.5 ft
	Decomposed ROCK	15.0 - 20.5		18.2	15.0 - 20.5	449	12.2	12.9	117.2	SPT's = 50/0.45 at 15.0 - 15.5 ft
BH 37										
Sta. 29+03	TOPSOIL	0.0 - 0.8								SPT's = 0-2-1 at 0.0 -1.5 ft
40 ft Rt.	Reddish-brown Clayey SILT with rock fragments	0.8 - 2.4		1.8	0.8 - 2.4	265	14.6	14.9	112.9	
Const. B/L	Tan SILT, trace of sand and mica	2.4 - 5.0		3.7	2.4 - 5.0	413	20.3	12.0	119.8	
BH 38										
Sta. 29+66	TOPSOIL	0.0 - 0.4								SPT's = 0-2-2 at 0.0 -1.5 ft
110 ft Rt.	Reddish-brown Clayey SILT, trace of mica	0.4 - 1.9		1.0	0.4 - 1.9	149	19.5	21.0	101.9	
Const. B/L	Tan, gray and brown micaceous SILT with sand	1.9 - 8.6		5.5	1.9 - 8.6	495	10.9	12.9	117.2	SPT's = 1-2-2 at 5.0 - 6.5 ft
	Tan micaceous SILT, trace of sand and mica	8.6 - 11.2		10.2	8.6 - 11.2	242	11.3	12.9	117.2	
BH 39										
Sta. 30+33	TOPSOIL	0.0 -0.4								SPT's = 1-2-1 at 0.0 - 1.5 ft
100 ft Lt.	Reddish-brown SILT, trace of clay and mica	0.4 - 1.5		1.0	0.4 - 1.5	33	24.5	20.4	106.1	
Const. B/L	Tan SILT, trace of mica	1.5 - 9.5		7.6	1.5 - 9.5	331	14.0	12.0	119.8	SPT's = 6-7-6 at 5.0 6.5 ft
	Tan and gray SILT, trace of sand and mica	9.5 - 15.0		12.4	9.5 - 15.0	504	18.6	12.9	117.2	SPT's = 5-9-10 at 10.0 -11.5 ft
BH 40										
Sta. 30+33	TOPSOIL	0.0 - 0.8								SPT's = 0-0-1 at 0.0 -1.5 ft
40 ft Rt.	Tan micaceous SILT, trace of clay	0.8 - 5.0		2.1	0.8 - 2.6	176	29.8	20.4	106.1	
Const. B/L				3.6	2.6 - 5.0	234	33.9	20.4	106.1	
BH 11p										
Sta. 31+23	TOPSOIL	0.0 - 0.5								
125 ft Lt.	Reddish-tan SILT with gray veins, some clay, tr mica	0.5 - 3.0		2.0	0.5 - 3.0	355	23.3	17.5	108.8	Boring made in 1996, soil represented by samples 2
Const. B/L	Tan micaceous SILT	3.0 - 7.9		5.9	3.0 - 7.9	538	17.4	16.6	109.8	and 3 from 1996.

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended
BY: P. E. Coates & P. J. Brockman
PROJECT NO: U000-104-V02, PE101, C501
PURPOSE: Soil Survey
COUNTY: City of Charlottesville
DATE: 6-11, 6-13, 6-18, 9-2, 9-3 & 9-9, 2003
(If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road extended, cont'd. ***									
BH 40A										
Sta. 31+65	TOPSOIL	0.0 - 1.0								
36 ft Rt.	Tan Clayey SILT, trace of gravel, sand and mica	1.0 - 5.5		1.0	1.0 - 1.5	537	30.5	19.1	106.3	SPT's = 0-1-1 at 0.0 - 1.5 ft
Const. B/L				3.0	1.5 -5.5	490	38.5	19.1	106.3	SPT's = 1-2-3 at 2.5 - 4.0 ft
	Gray Silty CLAY with organics	5.5 - 10.0		6.2	5.5 - 6.5	73	43.2	N/A	N/A	SPT's = 0-0-1 at 5.0 - 6.5 ft
				8.3	6.5 - 10.0	504	66.9	N/A	N/A	SPT's = 0-3-1 at 7.5 - 9.0 ft
	Gray CLAY, trace of sand	10.0 - 12.3		10.8	10.0 - 12.3	107	30.9	N/A	N/A	SPT's = 0-0-1 at 10.0 - 11.5 ft
	Weathered ROCK	12.3 - 15.0		14.6	12.3 - 15.0	430	10.9	15.0	114.1	SPT's = 14-16-50 at 13.5 - 15.0 ft
										groundwater @ 6.3 ft, caved @ 10.6 ft at 24hrs
BH 41										
Sta. 31+65	TOPSOIL	0.0 -0.5								SPT's = 0-1-2 at 0.0 - 1.5 ft
13 ft Rt.	Brown Clayey SILT, trace of mica	0.5 - 5.0	10	2.2	0.5 - 2.9	495	29.6	21.0	101.9	A-4(9), LL=37, PI=8
Const. B/L				4.1	2.9 - 5.0	504	40.4	21.0	101.9	
BH 41A										
Sta. 31+65	TOPSOIL	0.0 - 1.3								SPT's = 0-1-1 at 0.0 - 1.5 ft
13 ft Rt.	Brown Clayey SILT, trace of sand and mica	1.3 - 5.0		1.3	1.3 - 1.5	191	24.0	21.0	101.9	
Const. B/L				3.0	1.5 - 5.0	n/a	n/a	21.0	101.9	SPT's = 5-6-3 at 2.5 - 4.0 ft
	Brown Silty CLAY with gray veins, trace sand & mica	5.0 - 7.5		5.8	5.0 - 7.5	295	39.2	17.5	108.8	SPT's = 1-1-1 at 5.0 - 6.5 ft
	Gray CLAY, trace of sand	7.5 - 13.5		8.4	7.5 -9.0	424	46.9	N/A	N/A	SPT's = 0-0-0 at 7.5 - 9.0 ft
				11.0	9.0 - 13.5	459	24.1	N/A	N/A	SPT's = 0-0-2 at 10.0 - 11.5 ft
	Weathered ROCK	13.5 - 15.0		14.3	13.5 - 15.0	466	19.4	15.0	114.1	SPT's = 8-10-16 at 13.5 - 15.0 ft
										groundwater @ 3.6 ft, caved @ 6.9 ft at 21 days
BH 42										
Sta. 32+94	TOPSOIL	0.0 - 0.8								SPT's = 0-0-2 at 0.0 - 1.5 ft
56 ft Rt.	Brown Silty CLAY, trace of fine sand	0.8 - 5.0	11	2.3	0.8 - 3.1	123	36.1	19.7	103.2	A-4(11), LL=38, PI=9
Const. B/L				4.1	3.1 - 5.0	266	31.5	19.7	103.2	
BH 42A										
Sta. 32+94	TOPSOIL	0.0 - 1.0								
56 ft Rt.	Brown Clayey SILT, trace of sand and mica	1.0 - 2.5		1.0	1.0 - 2.5	33	31.8	21.0	101.9	SPT's = 1-2-3 at 0.0 - 1.5 ft
Const. B/L	Brown and gray Clayey SILT, trace of sand and mica	2.5 - 4.5		3.3	2.5 - 4.5	178	34.4	15.0	0.0	SPT's = 1-3-3 at 2.5 - 4.0 ft
	Gray Silty CLAY with reddish-brown veins, trace of sand	4.5 - 9.0		5.9	4.5 - 6.5	340	37.6	15.0	0.0	SPT's = 0-0-2 at 5.0 - 6.5 ft
				8.2	6.5 - 9.0	420	39.8	15.0	0.0	SPT's = 0-0-0 at 7.5 - 9.0 ft
	Gray Silty SAND with mica	9.0 - 12.0		10.6	9.0 - 12.0	439	26.0	15.0	0.0	SPT's = 0-0-0 at 10.0 - 11. 5 ft
	Gray Clayey SILT with fine sand and mica	12.0 - 13.7						15.0	0.0	
	Brown Silty SAND with gravel	13.7 - 14.2		14.1	13.7 - 14.2	495	51.3	15.0	0.0	SPT's = 8-8-11 at 13.5 - 15.0 ft
	Gray CLAY with mica (some organics)	14.2 - 15.0								

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended PROJECT NO: U000-104-V02, PE101, C501 COUNTY: City of Charlottesville DATE:
BY: P. E. Coates & P. J. Brockman PURPOSE: Soil Survey (If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** McIntire Road extended, cont'd. ***									
BH 43										
Sta. 34+26	TOPSOIL	0.0 - 2.5								SPT's = 0-0-0 at 0.0 - 1.5 ft
Const. B/L	Brown micaceous Clayey SILT, trace of sand	2.5 - 5.0		3.1	2.5 - 3.8	406	38.6	14.9	112.9	
				4.6	3.8 - 5.0	495	36.4	14.9	112.9	
BH 43A										
Sta. 34+26	TOPSOIL	0.0 - 1.0								
Const. B/L	Brown SILT, trace of sand and mica	1.0 - 2.0		1.0	1.0 - 2.0	95	26.1	15.5	110.9	SPT's = 1-2-4 at 0.0 - 1.5 ft
	Brown Clayey SILT with gray veins, trace sand & mica	2.0 - 3.5		3.1	2.0 - 3.5	283	28.8	17.5	107.8	SPT's = 1-2-3 at 2.5 - 4.0 ft
	Brown SILT with fine sand and mica	3.5 - 4.0						15.5	110.9	
	Gray CLAY with fine sand (organics present)	4.0 - 10.0		5.7	4.0 - 10.0	289	47.6	N/A	N/A	SPT's = 0-1-0 at 5.0 - 6.5 ft
	Gray Silty SAND with gravel	10.0 - 11.0						N/A	N/A	SPT's = 11-17-17 at 10.0 - 11.5 ft
	Brown SILT with weathered rock fragments	11.0 - 13.5		11.1	11.0 - 13.5	496	43.3	12.2	118.1	
	Weathered ROCK	13.5 - 15.0		14.2	13.5 - 15.0	525	14.3	12.2	118.1	SPT's = 34-48-39 at 13.5 - 15.0 ft groundwater @ 4.9 ft, caved @ 7.2 ft after 15 days
BH 44										
Sta. 35+58	Mixed asphalt, topsoil, debris	0.0 - 1.5								SPT's = 3-5-6 at 0.0 - 1.5 ft
43 ft Rt.	Brown SILT, trace of sand, clay & mica	1.5 - 5.0	12	2.0	1.5 - 3.2	274	15.2	15.5	110.9	A-4(0), LL=30, PI=N.P.
Const. B/L				4.3	3.2 - 5.0	456	31.0	15.5	110.9	
BH 45										
Sta. 36+89	Mixed ORGANICS	0.0 - 2.1								SPT's = 0-0-1 at 0.0 -1.5 ft
19 ft Rt.	Brown Clayey SILT, trace of sand	2.1 - 5.0		2.1	2.1 - 2.5	496	n/a	14.9	112.9	Standing water on ground surface
Const. B/L				3.8	2.5 - 5.0	406	57.1	14.9	112.9	
BH 12p										
Sta. 37+37	Mixed SOILS and ORGANICS	0.0 - 17.0								Boring made in 1996
30 ft Lt.										stockpile of yard debris from 36+25 to 38+25
Const. B/L										on both the NBL and SBL
BH 13p										
Sta. 37+93	TOPSOIL	0.0 - 3.0								
19 ft Rt.	Reddish-tan highly micaceous SILT	3.0 - 6.6		4.8	3.0 - 6.6	285	33.2	14.6	116.4	Boring made in 1996, soil represented by sample 10
Const. B/L										

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

ROUTE: McIntire Road extended
BY: P. E. Coates
PROJECT NO: U000-104-V02, PE101, C501
PURPOSE: Soil Survey
DATE: 6-15, 2004
COUNTY: City of Charlottesville
(If borrow) LANDOWNER:

Station or Hole #	SOIL DESCRIPTION	Depth (feet)	Soil Sample Number	FIELD MOISTURE DETERMINATION Depth Taken	Depth Repres.	Dish #	Field Moist.	Lab Results of Soil O.M.	M.D.	REMARKS
	*** Route 250 Connection ***									
BH 46										
Sta. 34+00	TOPSOIL	0.0 - 0.5								SPT's = 4-5-4 at 0.0 - 1.5 ft
5 ft Lt.	Reddish-brown SILT, some clay, trace of sand & mica	0.5 - 3.5		2.8	0.5 - 3.5	428	22.1	14.7	115.8	
Const. C/L	Tan SILT, trace of gravel, sand, and mica	3.5 - 4.5		3.9	3.5 - 4.5	523	10.7	9.9	124.5	Represented by sample 8 from 1996 borings.
	Weathered ROCK	4.5 - 6.5		5.2	4.5 - 6.5	449	11.6	9.9	124.5	SPT's = 10-16-7 at 5.0 - 6.5 ft
BH 47										
33+44	ASPHALT CONCRETE	0.0 - 0.8								
24 ft Lt.	Tan Sandy SILT, some gravel and mica	0.8 - 1.3								
Const. C/L										
BH 48										
Sta. 33+08	TOPSOIL	0.0 - 0.5								SPT's = 2-3-3 at 0.0 - 1.5 ft
5 ft Lt.	Reddish-brown Silty CLAY, trace of mica	0.5 - 5.0		3.6	0.5 - 5.0	66	10.6	14.7	115.8	
Const. C/L	Tan micaceous SILT, trace of sand	5.0 - 6.5		5.9	5.0 - 6.5	427	28.7	9.9	124.5	SPT's = 7-9-11 at 5.0 - 6.5 ft

The borings for this project were originally made and referenced to the metric version of the project alignment and the depths recorded in metric units. For this summary the boring locations have been referenced to property lines or other physical objects, then re-plotted on the current plans to establish the english stationing. The boring depths have been mathmatically convered from the depths measured in metric units.

Note: Depth measurements were recorded in meters and have been mathmatically converted to feet. Soil descriptions are based on the visual/manual method.

VIRGINIA
VTRC
TRANSPORTATION RESEARCH COUNCIL

ONE-POINT PROCTOR

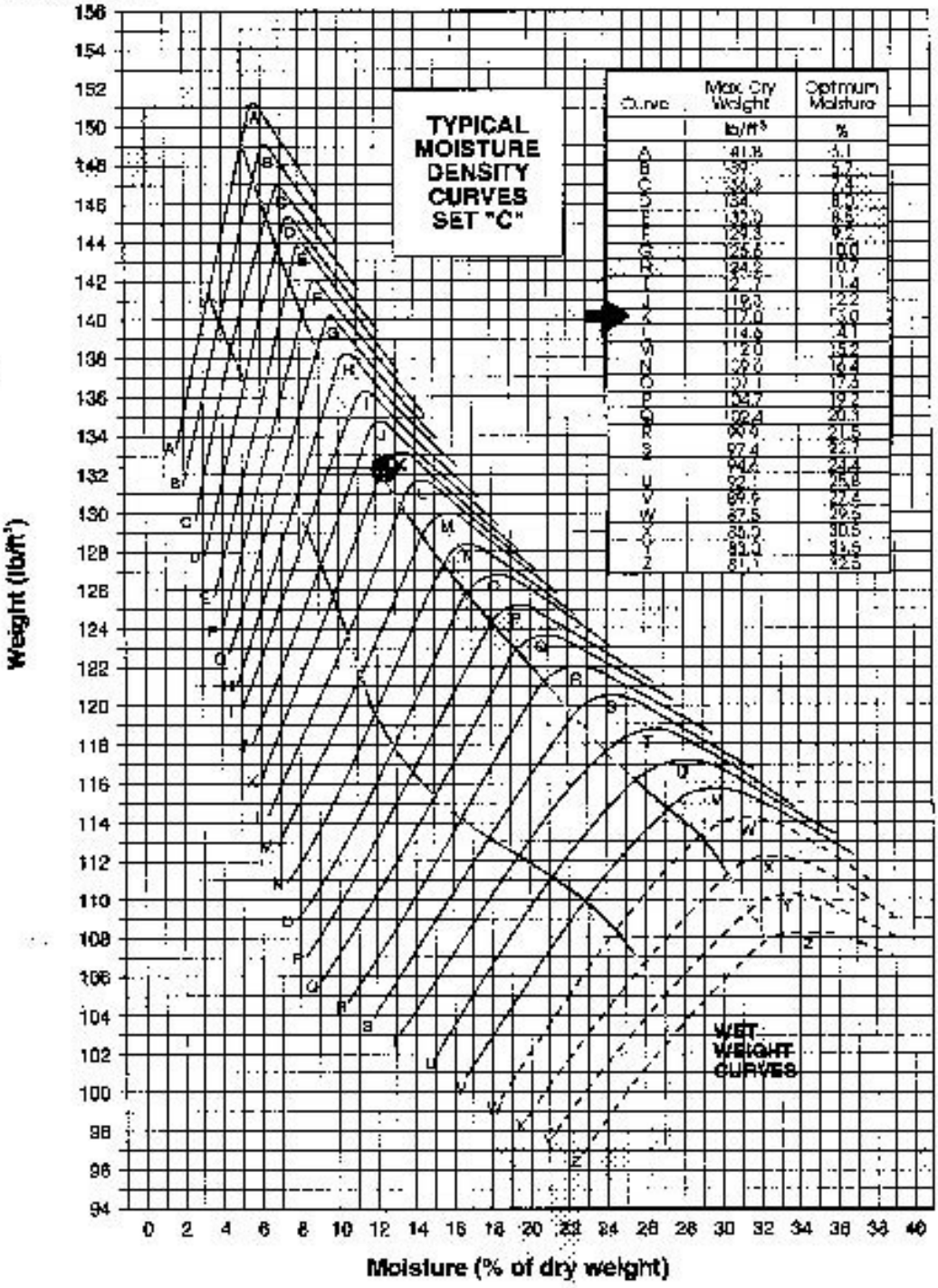


Figure 1

V.D.O.T.

Culpeper District Materials Section

Foundation Investigation Boring Log

ROUTE: McIntire Road, extended

PROJECT NO: U000-104-V02, PE101, C501

COUNTY / CITY: City of Charlottesville

STREAM / ROAD CROSSING: n/a

BENCHMARK LOCATION: Top of sanitary sewer manhole, Station 31+35, 57 ft right of Const. C/L

BENCHMARK ELEVATION: 363.19 feet

DRILL / METHOD USED: CME-45B, hollow stem augers, automatic hammer

BORING NO: 1

BORING LOCATION: Station 29+89, 75.0 ft rt. Const. C/L

BORING ELEVATION: 363.02 feet

SUBSTRUCTURE UNIT: retaining wall

DATE DRILLED: August 26 and 27, 2003

LOGGED BY: Coates

DIAMOND CORE SIZE: n/a

SDTERPATHAS (feet)	STERLAETVA feet	MATERIAL DESCRIPTION	DEPTH FROM (feet)	DEPTH TO (feet)	ELEV (feet)	STANDARD PENETRATION TEST RESULTS BLOWS	STANDARD PENETRATION TEST RESULTS REC (feet)	NATURAL MOISTURE JAR No.	NATURAL MOISTURE (%)
	363.02	TOPSOIL	0.00						
0.50	362.52					1-3-2	0.70	191	26.4
		Brown micaceous SILT, trace of fine sand		1.50	361.52				
1.50	361.52		2.50		360.52	1-2-3	1.00	124	23.6
		Tan micaceous Clayey SILT with reddish-brown veins, some fine sand		4.00	359.02				
			5.00		358.02	1-2-2	1.10	293	32.2
		BULK SAMPLE TAKEN: A-4(1), LL=34, PI=N.P., 83.2% passing #200		6.50	356.52				
		Max Dry Density: 106.3 lbs per cubic foot @18.2% moisture	7.50		355.52				
8.00	355.02					0-1-0	0.90	469	36.1
		Dark brown Clayey SILT, organics present ▼							
9.00	354.02			9.00	354.02				
		Gray Silty CLAY, trace of fine sand and mica (wood debris in sampler)	10.00		353.02	4-3-4	1.20	495	22.4
11.50	351.52			11.50	351.52				
		Brown Sandy SILT with gravel	12.50		350.52				
13.50	349.52					10-11-36	1.10	507	14.5
				14.00	349.02				
		Weathered rock	15.00		348.02	14-20-19	1.60	107	15.5
				16.50	346.52				
			17.50		345.52	45-50/0.2	0.50	36	14.5
				18.20	344.82				
19.20	343.82								
		bottom of boring @ 19.2 feet							

GROUNDWATER DEPTH: 8.90 feet CAVE-IN DEPTH: 9.8 feet GROUNDWATER ELEV. : 354.12 @ 48 Hours

REMARKS: very moist to saturated from ground surface to 13.5 feet below ground surface

▼ = measured water surface

V.D.O.T.

Culpeper District Materials Section

Foundation Investigation Boring Log

ROUTE: McIntire Road, extended

PROJECT NO: U000-104-V02, PE101, C501

COUNTY / CITY: City of Charlottesville

STREAM / ROAD CROSSING: n/a

BENCHMARK LOCATION: Top of sanitary sewer manhole, Station 31+35, 57 ft right of Const. C/L

BENCHMARK ELEVATION: 363.19 feet

DRILL / METHOD USED: CME-45B, hollow stem augers, automatic hammer

BORING NO: 2

BORING LOCATION: Station 30+21, 69 ft rt. Const. C/L

BORING ELEVATION: 362.83 feet

SUBSTRUCTURE UNIT: retaining wall

DATE DRILLED: August 27, 2003

LOGGED BY: Coates

DIAMOND CORE SIZE: n/a

SDTERPATHAS (feet)	STERLAETVA (feet)	MATERIAL DESCRIPTION	DEPTH FROM (feet)	DEPTH TO	ELEV (feet)	STANDARD PENETRATION TEST RESULTS BLOWS	STANDARD PENETRATION TEST RESULTS REC (feet)	NATURAL MOISTURE JAR No.	NATURAL MOISTURE (%)
	362.83	TOPSOIL	0.00						
1.00	361.83					1-2-2	0.90	178	23.9
		Brown micaceous SILT, trace of fine sand		1.50	361.33				
2.50	360.33		2.50		360.33	1-1-3	1.00	313	29.7
		Tan micaceous Clayey SILT with reddish-brown and gray veins, some fine sand (small roots)		4.00	358.83				
			5.00		357.83	1-2-2	1.20	466	37.4
				6.50	356.33				
7.00	355.83		7.50		355.33				
		Gray Silty CLAY (wood debris in sampler)				0-0-0	1.00	329	26.8
8.50	354.33	▼							
				9.00	353.83				
		Gray Silty CLAY, trace of fine sand and mica (small roots)	10.00		352.83	0-2-1	1.00	27	23.7
				11.50	351.33				
13.00	349.83		12.50		350.33				
						9-11-18	1.10	303	10.4
				14.00	348.83				
		Weathered rock	15.00		347.83	50/0.4	0.20		
				15.40	347.43				
			17.50		345.33	18-50/0.5	0.70		
				18.50	344.33				
			20.00		342.83	50/0.4	0.20		
20.40	342.43			20.40	342.43				
		bottom of boring @ 20.4 feet							

GROUNDWATER DEPTH: 8.80 feet CAVE-IN DEPTH: 10.4 feet GROUNDWATER ELEV. : 354.03 @ 48 Hours

REMARKS: very moist to saturated between ground surface and 13.0 feet below the ground surface

▼ = measured water surface

V.D.O.T.

Culpeper District Materials Section

Foundation Investigation Boring Log

ROUTE: McIntire Road, extended

PROJECT NO: U000-104-V02, PE101, C501

COUNTY / CITY: City of Charlottesville

STREAM / ROAD CROSSING: n/a

BENCHMARK LOCATION: Top of sanitary sewer manhole, Station 31+35, 57 ft right of Const. C/L

BENCHMARK ELEVATION: 363.19 feet

DRILL / METHOD USED: CME-45B, hollow stem augers, automatic hammer

BORING NO: 3

BORING LOCATION: Station 30+54, 60 ft rt. Const. C/L

BORING ELEVATION: 362.50 feet

SUBSTRUCTURE UNIT: retaining wall

DATE DRILLED: August 27, 2003

LOGGED BY: Coates

DIAMOND CORE SIZE: n/a

SDTERPATHAS (feet)	STERLAETVA (feet)	MATERIAL DESCRIPTION	DEPTH FROM (feet)	DEPTH TO	ELEV (feet)	STANDARD PENETRATION TEST RESULTS BLOWS	STANDARD PENETRATION TEST RESULTS REC (feet)	NATURAL MOISTURE JAR No.	NATURAL MOISTURE (%)
	362.50	TOPSOIL	0.00		362.50				
1.00	361.50	----------				1-2-2	1.00	459	26.4
		Brown micaceous Clayey SILT, trace of fine sand		1.50	361.00				
		BULK SAMPLE TAKEN: A-4(1), LL=34, PI=N.P., 83.4% passing #200	2.50		360.00	1-2-1	0.90	149	32.6
		Max Dry Density: 103.6 lbs/cubic foot @19.1% moisture		4.00	358.50				
5.00	357.50	---------- ▼	5.00		357.50	0-0-0	1.30	406	38.5
		Gray Silty CLAY with reddish-brown veins, some fine sand		6.50	356.00				
7.50	355.00	----------	7.50		355.00				
		Gray Silty CLAY, some sand				0-0-0	1.30	424	26.7
				9.00	353.50				
			10.00		352.50				
						0-2-5	0.90	73	23.0
11.30	351.20	----------		11.50	351.00				
		Tan Silty SAND and GRAVEL	12.50		350.00	9-15-28	0.80	350	18.3
14.00	348.50	----------		14.00	348.50				
			15.00		347.50	50/0.4	0.20	n/a	n/a
		Weathered rock		15.40	347.10				
			17.50		345.00	50/0.4	0.30	n/a	n/a
				17.90	344.60				
			20.00		342.50	50/0.1	0.70	n/a	n/a
				20.10	342.40				
			25.00		337.50	50/0.2	0.00	n/a	n/a
25.20	337.30	----------		25.20	337.30				
		bottom of boring @ 25.20 feet							

GROUNDWATER DEPTH: 5.20 feet CAVE-IN DEPTH: 7.3 feet GROUNDWATER ELEV. : 357.30 @ 24 Hours

REMARKS: very moist to saturated between ground surface and 14.0 feet below ground surface

▼ = measured water surface

V.D.O.T.

Culpeper District Materials Section

Foundation Investigation Boring Log

ROUTE: McIntire Road, extended

PROJECT NO: U000-104-V02, PE101, C501

COUNTY / CITY: City of Charlottesville

STREAM / ROAD CROSSING: n/a

BENCHMARK LOCATION: Top of sanitary sewer manhole, Station 31+35, 57 ft right of Const. C/L

BENCHMARK ELEVATION: 363.19 feet

DRILL / METHOD USED: CME-45B, hollow stem augers, automatic hammer

BORING NO: 4

BORING LOCATION: Station 30+77, 69 ft rt. Const. C/L

BORING ELEVATION: 362.47 feet

SUBSTRUCTURE UNIT: retaining wall

DATE DRILLED: August 29, 2003

LOGGED BY: Coates

DIAMOND CORE SIZE: n/a

SD TERP ATH AS (feet)	STRL AEV A (feet)	MATERIAL DESCRIPTION	DEPTH FROM (feet)	DEPTH TO (feet)	ELEV (feet)	STANDARD PENETRATION TEST RESULTS BLOWS	STANDARD PENETRATION TEST RESULTS REC (feet)	NATURAL MOISTURE JAR No.	NATURAL MOISTURE (%)
	362.47	TOPSOIL	0.00						
1.00	361.47					0-2-3	1.20	33	22.7
		Brown and gray micaceous Clayey SILT, trace of fine sand		1.50	360.97				
			2.50		359.97	1-2-2	1.00	111	27.8
				4.00	358.47				
			5.00		357.47	0-1-2	1.30	135	35.9
				6.50	355.97				
6.50	355.97		7.50		354.97				
		▼				0-0-0	1.00	234	24.9
		Gray Silty CLAY, trace of sand		9.00	353.47				
			10.00		352.47				
10.50	351.97					3-8-12	1.20	250	18.5
		Brown/gray Sandy SILT with gravel		11.50	350.97				
12.00	350.47		12.50		349.97	10-9-12	1.00	289	17.3
		Brown micaceous SILT with gravel and sand		14.00	348.47				
			15.00		347.47				
16.00	346.47					13-28-50/0.4	0.90	340	16.4
		Weathered rock		16.40	346.07				
			17.50		344.97	45-50/0	0.30	N/A	N/A
				18.00	344.47				
18.00	344.47								
		Spoon refusal at 18.0 feet							

GROUNDWATER DEPTH: 8.10 feet CAVE-IN DEPTH: 8.9 feet GROUNDWATER ELEV. : 354.37 @ 96 Hours

REMARKS: very moist to saturated between ground surface and 16 feet below ground surface

▼ = measured water surface

Virginia Department of Transportation

PROJECT #: U000-104-102, PE101, C501
LOCATION: Charlottesville
STRUCTURE: Retaining Wall/Fill Emb. Foundation

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STATION: 28+00 OFFSET: 25 ft rt of Const. BL
LATITUDE: LONGITUDE:
SURFACE ELEVATION: 400.3 ft COORD. DATUM:

FIELD DATA

Date(s) Drilled: 6-27-2007 - 6-27-2007
Drilling Method(s): Hollow Stem Auger
SPT Method: Automatic Hammer
Other Test(s):
Driller: John Finks
Logger: Paul Coates

GROUND WATER
NOT ENCOUNTERED DURING DRILLING
DRY AFTER 24 HRS

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP: STRATA	ROCK: DIP: JOINTS	STRATA LEGEND	DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
0	400				0.2						0.0 / 400.3 Light brown sandy SILT (ML) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **ML**			
2														4.9
4														
	395													
6					6									
8														5.2
10	390													
12					12.5									
14														5.1
					15						15.0 / 385.3 Bottom of Hole			

REMARKS: BM: Unknown - Elevations supplied by VDOT survey party.
RIG TYPE: CME 550X.

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SPT_LOG:U000-104-102,PE101,C501 (UPC #02529) - RET WALL & FILL EMB FOUNDATION.GPJ:8.1.016:050307:9/10/07

Virginia Department of Transportation

PROJECT #: U000-104-102, PE101, C501
LOCATION: Charlottesville
STRUCTURE: Retaining Wall/Fill Emb. Foundation

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STATION: 30+00 OFFSET: 13 ft rt of Const. BL
LATITUDE: LONGITUDE:
SURFACE ELEVATION: 368.4 ft COORD. DATUM:

FIELD DATA

Date(s) Drilled: 7-10-2007 - 7-10-2007
Drilling Method(s): Hollow Stem Auger
SPT Method: Automatic Hammer
Other Test(s):
Driller: John Finks
Logger: Paul Coates

GROUND WATER
NOT ENCOUNTERED DURING DRILLING
DRY AFTER 24 HRS

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP: STRATA	ROCK: DIP: JOINTS	STRATA LEGEND	DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
		1			0						0.0 / 368.4 Dark yellow-brown silty SAND, contains roots, mica and rock fragments, loose, moist (SM) **SM**			10.0
		2	80											
		3			1.5									
2														
		2			2.5									
	365	3	87											13.2
4		3			4									
											4.5 / 363.9 Dark yellow-brown silty SAND, contains rock fragments, medium dense, moist (SM) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **SM**			
		3			5									
		5	93											10.4
6		8			6.5									
		7			7.5									
8		10	80											4.4
	360	11			9									
10		15			10									
		50	60											5.5
					11									
											10.5 / 357.9 Dark yellow-brown ROCK FRAGMENTS with silty sand, very dense, moist (GP) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **GP**			
12														
		50/3"	33		12.5 12.8						12.7 / 355.7 Bottom of Hole			

REMARKS: BM: Unknown - Elevations supplied by VDOT survey party.
RIG TYPE: CME 550X.

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SPT_LOG:U000-104-102,PE101,C501 (UPC #02529) - RET WALL & FILL EMB FOUNDATION.GPJ:8.1.016:050307:9/11/07

Virginia Department of Transportation

PROJECT #: U000-104-102, PE101, C501
LOCATION: Charlottesville
STRUCTURE: Retaining Wall/Fill Emb. Foundation

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STATION: 30+00 OFFSET: 30 ft rt of Const. BL
LATITUDE: LONGITUDE:
SURFACE ELEVATION: 365.1 ft COORD. DATUM:

FIELD DATA

Date(s) Drilled: 7-10-2007 - 7-10-2007
Drilling Method(s): Hollow Stem Auger
SPT Method: Automatic Hammer
Other Test(s):
Driller: John Finks
Logger: Paul Coates

GROUND WATER
FIRST ENCOUNTERED AT: 11.0 ft DEPTH
STABILIZED AT: 11.2 ft (353.9ft ELEV.) AFTER 24 HRS

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SOIL: SAMPLE LEGEND	SOIL: SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP STRATA	ROCK: DIP JOINTS	STRATA LEGEND	DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
0	365	3 3 2	40		0 1.5						0.0 / 365.1 Red-brown sandy SILT, with a trace of clay, contains roots, rock fragments, twigs and mica, loose, moist (SM) **SM**			24.7
2		1 1 1	87		2.5 4						2.0 / 363.1 Dark red-brown SILT with sand, trace of clay, contains roots and mica, soft, moist (ML) **ML**			24.2
4	360	1 1 3	93		5 6.5						4.5 / 360.6 Brown sandy SILT with clay, contains rock fragments, roots and mica, soft, moist (SM) **SM**			22.2
6		3 5 6	100		7.5 9						7.0 / 358.1 Dark yellow-brown silty SAND, contains mica and rock fragments, medium dense, moist (SM) **SM**			12.6
8	355	2 2 2	87		10 11.5						9.5 / 355.6 Dark yellow-brown fine SAND with clay, contains mica and rock fragments, loose, wet (SP) **SP**			17.6
10		2 13 33	87		12.5 14						12.0 / 353.1 Same; medium dense **SP**			8.3
12	350	50/5"	75		15 15.4						13.5 / 351.6 Light olive-brown SILT with sand, hard, moist (ML) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **ML** 14.5 / 350.6 Light olive-brown fine to medium SAND with silt, contains rock fragments, very dense, moist (SP) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **SP**			
14		50/3"	67		17.5 17.8						17.8 / 347.3 Bottom of Hole			
16														

REMARKS: BM: Unknown - Elevations supplied by VDOT survey party.
RIG TYPE: CME 550X.

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SPT_LOG:U000-104-102,PE101,C501 (UPC #02529) - RET WALL & FILL EMB FOUNDATION.GPJ:8.1.016:050307:9/10/07

Virginia Department of Transportation

PROJECT #: U000-104-102, PE101, C501
LOCATION: Charlottesville
STRUCTURE: Retaining Wall/Fill Emb. Foundation

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STATION: 30+00 OFFSET: 64 ft rt of Const. BL
LATITUDE: LONGITUDE:
SURFACE ELEVATION: 363.3 ft COORD. DATUM:

FIELD DATA

Date(s) Drilled: 7-5-2002 - 7-5-2007
Drilling Method(s): Hollow Stem Auger
SPT Method: Automatic Hammer
Other Test(s):
Driller: Phillip Brockman
Logger: Paul Coates

GROUND WATER
▽ FIRST ENCOUNTERED AT: 11.0 ft DEPTH
▼ STABILIZED AT: 9.6 ft (353.7ft ELEV.) AFTER 96 HRS

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP STRATA	ROCK: DIP JOINTS	STRATA LEGEND	DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
		1 2 2	87		0 – 1.5						0.0 / 363.3 Dark yellow-brown SILT with sand, trace of clay, contains roots and mica, soft, moist (ML) (Alluvium) **ML**			27.4
2	360	1 1 2	80		2.5 – 4									36.5
4		1 2 2	87		5 – 6.5						4.5 / 358.8 Brown and gray SILT with clay, trace of sand, contains roots and mica, soft, moist (ML) (Alluvium) **ML**			35.2
6					7									
8	355				9						7.5 / 355.8 Brown and gray lean CLAY with sand, contains roots, twigs, black wood chip and mica, moist (CL) (Alluvium) Note: No consistency due to pushing of Shelby Tube **CL**			
10					11									
12		6 18 15	100		12.5						11.0 / 352.3 Dark yellow-brown fine to coarse SAND with silt, trace of clay, contains rock fragments and mica, hard, moist (SW) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation)) **SW**			6.6
14	350	15 31 40	80		14						12.5 / 350.8 Brown SILT with sand, contains mica, very hard, moist (ML) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **ML**			
		22 50/5"	100		15 – 15.9						15.9 / 347.4 Bottom of Hole			

REMARKS: BM: Unknown - Elevations supplied by VDOT survey party.
RIG TYPE: CME 550X.

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SPT_LOG:U000-104-102,PE101,C501 (UPC #02529) - RET WALL & FILL EMB FOUNDATION.GPJ:8.1.016:050307:9/10/07

Virginia Department of Transportation

PROJECT #: U000-104-102, PE101, C501
LOCATION: Charlottesville
STRUCTURE: Retaining Wall/Fill Emb. Foundation

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STATION: 30+50 OFFSET: 25 ft rt of Const. BL
LATITUDE: LONGITUDE:
SURFACE ELEVATION: 363.0 ft COORD. DATUM:

FIELD DATA

Date(s) Drilled: 6-28-2007 - 6-28-2007
Drilling Method(s): Hollow Stem Auger
SPT Method: Automatic Hammer
Other Test(s):
Driller: John Finks
Logger: Paul Coates

GROUND WATER
▽ FIRST ENCOUNTERED AT: 10.0 ft DEPTH
▼ STABILIZED AT: 9.3 ft (353.7ft ELEV.) AFTER 24 HRS

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SOIL: SAMPLE LEGEND	SOIL: SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP STRATA	ROCK: DIP JOINTS	STRATA LEGEND	DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
0		0 2 2	87		0 1.5						0.0 / 363.0 Dark yellow-brown SILT with sand, trace of clay, contains roots and mica, soft, moist (ML) **ML**			19.6
2	360	1 2 2	87		2.5 4									27.4
4		1 1 1	87		5 6.5						4.5 / 358.5 Dark yellow-brown mottled with gray clayey SAND, contains mica, very loose, moist (SC) **SC**			22.9
6											6.0 / 357.0 Dark gray-brown lean CLAY with silt, trace of sand, contains mica, leaves, roots and twigs, very soft, moist (CL) **CL**			
8	355	0 0 0	80		7.5 9						7.0 / 356.0 Dark yellow-brown lean CLAY with sand, trace of gravel, contains mica, very soft, wet (CL) **CL**			25.1
10		1 2 3	87		10 11.5						9.5 / 353.5 Same; firm **CL**			21.6
12	350	8 20 30	87		12.5 14						12.0 / 351.0 Dark yellow-brown silty SAND, contains rock fragments and mica, dense, moist (SM) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **SM**			
14		25 30 36	87		15 16.5						14.5 / 348.5 Same; very dense **SM**			
16											16.5 / 346.5 Bottom of Hole			

REMARKS: BM: Unknown - Elevations supplied by VDOT survey party.
RIG TYPE: CME 550X.

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SPT_LOG:U000-104-102,PE101,C501 (UPC #02529) - RET WALL & FILL EMB FOUNDATION.GPJ:8.1.016:050307:9/10/07

Virginia Department of Transportation

PROJECT #: U000-104-102, PE101, C501
LOCATION: Charlottesville
STRUCTURE: Retaining Wall/Fill Emb. Foundation

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STATION: 30+50 OFFSET: 54 ft rt of Const. BL
LATITUDE: LONGITUDE:
SURFACE ELEVATION: 362.9 ft COORD. DATUM:

FIELD DATA

Date(s) Drilled: 6-29-2007 - 6-29-2007
Drilling Method(s): Hollow Stem Auger
SPT Method: Automatic Hammer
Other Test(s):
Driller: John Finks
Logger: Paul Coates

GROUND WATER
▽ FIRST ENCOUNTERED AT: 7.5 ft DEPTH
▼ STABILIZED AT: 8.6 ft (354.3ft ELEV.) AFTER 72 HRS

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SAMPLE LEGEND / SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP STRATA	ROCK: DIP JOINTS	STRATA LEGEND	DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
0		1 2 3	87	0 – 1.5						0.0 / 362.9 Dark yellow-brown silty SAND, contains roots and mica, loose, moist (SM) **SM**			24.5
2	360	1 1 2	87	2.5 – 4						2.0 / 360.9 Same; very loose **SM**			26.9
4				5						4.5 / 358.4 Dark yellow-brown mottled with gray lean CLAY with sand, contains mica, wet (CL) Note: No consistency, Shelby tube pushed **CL**			
6				7									
8	355	0 0 0	100	7.5 – 9						7.0 / 355.9 Dark gray-brown SILT with clay, trace of sand, contains roots and mica, very soft, moist (ML) **ML**			27.6
10				10						9.5 / 353.4 Dark yellow-brown fine to medium SAND, trace of clay, contains mica, moist (SW) Note: No consistency, Shelby tube taken **SW**			
12	350	9 11 43	80	12 – 12.5 – 14						12.0 / 350.9 Dark yellow-brown fine to coarse SAND with silt, trace of clay, very dense, moist (SW) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **SW**			17.1
14				15									
16		18 24 28	100	16.5						16.5 / 346.4 Bottom of Hole			9.6

REMARKS: BM: Unknown - Elevations supplied by VDOT survey party.
RIG TYPE: CME 550X.

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SPT_LOG:U000-104-102,PE101,C501 (UPC #02529) - RET WALL & FILL EMB FOUNDATION.GPJ:8.1.016:050307:9/11/07

Virginia Department of Transportation

PROJECT #: U000-104-102, PE101, C501
LOCATION: Charlottesville
STRUCTURE: Retaining Wall/Fill Emb. Foundation

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STATION: 31+00 OFFSET: 25 ft rt of Const. BL
LATITUDE: LONGITUDE:
SURFACE ELEVATION: 362.6 ft COORD. DATUM:

FIELD DATA

Date(s) Drilled: 6-27-2007 - 6-27-2007
Drilling Method(s): Hollow Stem Auger
SPT Method: Automatic Hammer
Other Test(s):
Driller: John Finks
Logger: Paul Coates

GROUND WATER
▽ FIRST ENCOUNTERED AT: 7.5 ft DEPTH
▼ STABILIZED AT: 8.2 ft (354.4ft ELEV.) AFTER 24 HRS

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SAMPLE LEGEND / SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP STRATA	ROCK: DIP JOINTS	STRATA LEGEND	DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
		2 2 3	87	0 – 1.5						0.0 / 362.6 Dark yellow-brown silty SAND, contains mica and roots, loose, moist (SM) (Alluvium) **SM**			19.2
2	360	1 2 3	87	2.5 – 4						2.0 / 360.6 Dark yellow-brown SILT with sand, contains mica and roots, trace of clay, firm, moist (ML) (Alluvium) **ML**			30.6
4		1 1 2	73	5 – 6.5						4.5 / 358.1 Same; no roots, soft **ML**			37.1
8	355	0 1 0	100	7.5 – 9						7.0 / 355.6 Very dark gray-brown lean CLAY, contains mica and leaves, very soft, wet (CL) (Alluvium) **CL**			44.9
10		0 0 0	100	10 – 11.5						9.5 / 353.1 Same; dark yellow-brown and gray, no leaves **CL**			23.4
12	350	13 10 9	53	12.5 – 14						12.0 / 350.6 Dark yellow-brown ROCK FRAGMENTS with fine to coarse sand, trace of clay, medium dense, wet (GW) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **GW**			24.1
14		23 50/3"	71	15 – 15.7									16.4
16										15.5 / 347.1 Very dark gray silty SAND with rock fragments, very dense, wet (SM) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **SM**			
18	345	30 27 35	87	17.5 – 19						19.0 / 343.6 Bottom of Hole			19.5

REMARKS: BM: Unknown - Elevations supplied by VDOT survey party.
RIG TYPE: CME 550X.

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SPT_LOG:U000-104-102,PE101,C501 (UPC #02529) - RET WALL & FILL EMB FOUNDATION.GPJ:8.1.016:050307:9/10/07

Virginia Department of Transportation

PROJECT #: U000-104-102, PE101, C501
LOCATION: Charlottesville
STRUCTURE: Retaining Wall/Fill Emb. Foundation

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PAGE 1 OF 1

STATION: 32+00 OFFSET: 50 ft rt of Const. BL
LATITUDE: LONGITUDE:
SURFACE ELEVATION: 361.7 ft COORD. DATUM:

FIELD DATA

Date(s) Drilled: 6-28-2007 - 6-28-2007
Drilling Method(s): Hollow Stem Auger
SPT Method: Automatic Hammer
Other Test(s):
Driller: John Finks
Logger: Paul Coates

GROUND WATER
▽ FIRST ENCOUNTERED AT: 10.0 ft DEPTH
▼ STABILIZED AT: 8.2 ft (353.5ft ELEV.) AFTER 24 HRS

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SAMPLE LEGEND / SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP STRATA	ROCK: DIP JOINTS	STRATA LEGEND	DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
		1 2 4	87	0 – 1.5						0.0 / 361.7 Dark yellow-brown silty SAND, contains roots and mica, loose, moist (SM) (Alluvium) **SM**			17.9
2	360	2 3 4	93	2.5 – 4									15.5
4		1 3 4	87	5 – 6.5						4.5 / 357.2 Dark yellow-brown and gray SILT with sand, trace of clay, contains mica, loose, moist (ML) (Alluvium) **ML**			26.0
6	355	1 1 1	100	7.5 – 9						7.0 / 354.7 Very dark gray-brown lean CLAY, trace of sand, contains mica, soft, wet (CL) (Alluvium) **CL**			38.0
8 ▼		0 0 0	87	10 – 11.5						9.5 / 352.2 Dark gray-brown and gray medium SAND with silt, trace of clay, contains mica, very loose, wet (SP) (Alluvium) **SP**			25.0
10 ▽													
12	350	50/1"		12.5 – 12.6						12.0 / 349.7 Brown ROCK FRAGMENTS (GW) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **GW** 13.0 / 348.7 Bottom of Hole			

REMARKS: BM: Unknown - Elevations supplied by VDOT survey party.
RIG TYPE: CME 550X.

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SPT_LOG:U000-104-102,PE101,C501 (UPC #02529) - RET WALL & FILL EMB FOUNDATION.GPJ:8.1.016:050307:9/10/07

Virginia Department of Transportation

PROJECT #: U000-104-102, PE101, C501
LOCATION: Charlottesville
STRUCTURE: Retaining Wall/Fill Emb. Foundation

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PAGE 1 OF 1

STATION: 33+00 OFFSET: 50 ft rt of Const. BL
LATITUDE: LONGITUDE:
SURFACE ELEVATION: 361.5 ft COORD. DATUM:

FIELD DATA

Date(s) Drilled: 6-22-2007 - 6-22-2007
Drilling Method(s): Hollow Stem Auger
SPT Method: Automatic Hammer
Other Test(s):
Driller: John Finks
Logger: Paul Coates

GROUND WATER
FIRST ENCOUNTERED AT: 7.5 ft DEPTH
STABILIZED AT: 7.1 ft (354.4ft ELEV.) AFTER 72 HRS

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP STRATA	ROCK: DIP JOINTS	STRATA LEGEND	DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
		1 1 3	67		0 – 1.5						0.0 / 361.5 Dark yellow-brown SILT with sand, trace of clay, contains roots, twigs and mica, soft, moist (ML) (Alluvium) **ML**			29.5
2	360													
		1 1 2	87		2.5 – 4									30.2
4														
		1 1 2	80		5 – 6.5									36.2
6	355													
		0 0 0	100		7.5 – 9						7.0 / 354.5 Very dark gray-brown lean CLAY with silt, contains black wood chips and mica, very soft, moist (CL) (Alluvium) **CL**			55.2
8														
		0 0 0	100		10 – 11.5						9.5 / 352.0 Brown and gray fine to medium SAND with silt, contains mica, very loose, wet (SP) (Alluvium) **SP**			25.5
10	350													
		0 3 7	87		12.5 – 14						12.0 / 349.5 Same; dark gray, medium dense **SP**			27.5
12														
		16 50	60		15 – 16						13.5 / 348.0 Brown and gray fine to coarse SAND with gravel, contains wood chips and mica, medium dense, wet (SW) (Alluvium) **SW**			15.8
14														
	345										14.5 / 347.0 Dark yellow-brown SILT with SAND, contains mica, hard, moist (ML) (Weathered Feldspathic METASANDSTONE bedrock of the Charlottesville Formation) **ML**			
16														
		50	60		17.5 – 18									
18											18.0 / 343.5 Bottom of Hole			

REMARKS: BM: Unknown - Elevations supplied by VDOT survey party.
RIG TYPE: CME 550X.

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SPT_LOG:U000-104-102,PE101,C501 (UPC #02529) - RET WALL & FILL EMB FOUNDATION.GPJ:8.1.016:050307:9/10/07