

# **GEOTECHNICAL SUBSURFACE INVESTIGATION REPORT**

## **Montgomery County Task Order #13 Subtask B Phase II (Franklin Knolls) Montgomery County, Maryland**



### **PREPARED FOR:**

**McCormick Taylor  
509 South Exeter Street, 4th Floor  
Baltimore, Maryland 21202**

### **PREPARED BY:**



**AB CONSULTANTS, INC.  
9450 ANNAPOLIS ROAD  
LANHAM, MARYLAND 20706**

**September 11, 2012**



September 11, 2012

Attn: Ms. Kimi Schmidt  
McCormick Taylor  
509 South Exeter Street, 4th Floor  
Baltimore, Maryland 21202

**REF: Report of Subsurface Investigation and Studies  
Montgomery County Task Order #13 Subtask B Phase II,  
Roadway LID - Franklin Knolls  
Montgomery County, Maryland  
AB Job No. 10-368**

Dear Ms. Schmidt:

AB Consultants, Inc. (ABC) is pleased to submit this soil report containing the results of geotechnical investigation for the above referenced site. To obtain information of the subsurface condition, a total of twenty-five (25) 10-ft deep soil borings and infiltration tests were planned to be drilled and performed. Due to site utility conflict, five (5) soil borings and on-site infiltration tests was canceled. The purpose of this study was to explore the subsurface conditions of this storm water management (SWM) improvement project. The following report sections discuss the results of field and laboratory studies, design recommendations and construction methods for the proposed structures.

All samples obtained from soil test borings will be retained in our laboratory for a period of thirty (30) days from the date of this report. They will be available for inspection during this period. After that time, the samples will be discarded.

It has been a pleasure serving you on this project. If you have any questions regarding this report, or if we can be of further service in any way, please contact us.

Very truly yours,  
AB Consultants, Inc.

Kim-Hou Chan, P.E.  
Director, Geotechnical & Field Services



## TABLE OF CONTENT

<b>1.0 INTRODUCTION .....</b>	<b>2</b>
1.1 GENERAL.....	2
1.2 SCOPE OF WORK .....	2
1.3 SITE LOCATION .....	2
<b>2.0 FIELD ACTIVITIES AND SUBSURFACE EXPLORATION.....</b>	<b>2</b>
2.1 SOIL BORINGS .....	2
2.2 SUBSURFACE INVESTIGATION .....	3
2.3 ON-SITE INFILTRATION TEST AND RESULTS .....	3
<b>3.0 LABORATORY TESTING PROGRAM.....</b>	<b>4</b>
3.1 LABORATORY TESTING .....	4
<b>4.0 GENERAL SITE AND SUBSURFACE CONDITIONS.....</b>	<b>5</b>
4.1 SITE CONDITION.....	5
4.2 SITE GEOLOGY .....	5
4.3 SUBSURFACE SOIL CONDITION.....	5
4.4 GROUNDWATER OBSERVATIONS.....	6
<b>5.0 ANALYSIS AND RECOMMENDATIONS .....</b>	<b>6</b>
5.1 SWM FACILITY CONSIDERATIONS .....	6
<b>6.0 SITE GRADING AND CONSTRUCTION CONSIDERATIONS.....</b>	<b>8</b>
6.1 SITE GRADING.....	8
6.2 SUITABLE FILL MATERIAL .....	9
6.3 COMPACTION REQUIREMENT .....	9
<b>7.0 CONSTRUCTION CONSIDERATIONS .....</b>	<b>9</b>
<b>8.0 GENERAL COMMENTS .....</b>	<b>10</b>
<b>APPENDICES</b>	
A. General Notes	
B. Vicinity Map	
C. Boring Plan	
D. Boring Logs	
E. Lab Test Results	
F. Field Infiltration Test Results	

## **1.0 INTRODUCTION**

### **1.1 General**

This report summarizes the findings from subsurface soil investigations conducted by ABC for the storm water management (SWM) improvement project located in Montgomery County, Maryland. Per information provide to us, multiple Low Impact Design SWM facilities are proposed on various streets in Montgomery County, Maryland. The objective was accomplished by conducting field and laboratory tests. The results of these tests constitute the bases for determining pertinent design parameters for the proposed improvement. This study was conducted for McCormick Taylor and has been performed in general accordance with our letter proposal dated on December 2010 and subsequent conversations.

### **1.2 Scope of Work**

The investigation of existing subsurface soil conditions at the site consisted of the following:

- Planning and executing subsurface exploration programs to evaluate soil and ground conditions for SWM improvements.
- Conducting on-site infiltration tests.
- Performing laboratory tests on soil samples obtained from the borings.
- Providing geotechnical report that includes results of field and laboratory studies.

### **1.3 Site Location**

The field study was performed at various streets in the subdivision of Franklin Knolls, Montgomery County, Maryland. Soil borings and infiltration test holes are located on Linton Street, Loudon Court, Buckingham Drive, Kimes Street, Daleview Drive, Daleview Court, Compton Street, Weaver Street, Cornwall Street and Malibu Drive.

## **2.0 FIELD ACTIVITIES AND SUBSURFACE EXPLORATION**

### **2.1 Soil Borings**

A total of twenty-five (25) soil borings were planed to be drilled for subsurface study on this project site. Due to utilities conflicts, five (5) borings were canceled and four (4) borings were relocated. Borings were drilled at the referenced site to depths of

7.5- to 10-ft below the existing ground surface on May 11 to May 17 2012, and August 27 to 28 2012. Soil borings were staked out in the field by ABC. Site locations and boring plans are included in the Appendix.

## 2.2 Subsurface Investigation

Borings were drilled using truck mounted drill rig, B-61. Test borings were advanced by using hollow-stem augers and soil samples were obtained using the Standard Penetration Tests (SPT) in accordance with ASTM D1586. SPT samples were obtained for each boring at depth intervals of every 2.5 feet. A representative portion of each split spoon sample was placed in a glass jar and was transported to our laboratory.

In the split-barrel sampling procedure, a 2.0-inch O.D. split-barrel sampling spoon is driven into the ground with a 140-pound hammer, free falling a distance of 30 inches. The blows required to advance the sampling spoon to a specified distance are reported as the penetration resistance values. The values are shown on boring logs at the depths of their occurrence. The N-value is the sum of standard penetration resistance values that advanced through the last 12-inches of sampling. The N-value is an indication of the relative density of in-place granular soils and, to a lesser degree of accuracy, the consistency of cohesive soils.

Groundwater level was monitored in the boring. Samples obtained from the boring were inspected by a geotechnical engineer and the field logs were edited accordingly. The final logs that indicate the subsurface conditions encountered are included in the Appendix.

## 2.3 On-site Infiltration Test and Results

Twenty (20) infiltration tests were performed in auger borings drilled at a 5-ft offset from the soil sample boring. Test holes were drilled with 8-inch diameter auger to a depth of 5.5-ft below existing ground. 5-inch diameter solid PVC casings were inserted and water was then introduced for an overnight presoak period. Infiltration tests were performed the next day by refilling PVC casings with water to the presoak level and then monitoring water levels at one hour intervals for four hours. Field in-situ infiltration test data are included in the Appendix and results are summarized in following table.

SUMMARY OF IN-SITU INFILTRATION TEST RESULTS				
Boring No.	Test Hole Depth	Existing Elevation	Sample Description at Bottom of Test Hole	Suggested Average Infiltration Rate (in./hr)
B-26	5.5	280	Silty fine sand	2.5
B-27	5.5	271.5	Silty fine sand	2.5
B-28	Cancelled			
B-29	5.5	280	Silty fine sand	0.1*
B-30	5.5	287.5	Silty fine sand	0.9
B-31	5.5	290	Silty fine sand	3.3
B-32	5.5	267	Fine sandy silt	0.1*
B-33	5.5	255	Silty fine sand	5.8
B-34	5.5	249	Silty fine sand	2.5
B-35	5.5	236.5	Silty fine sand	4.0
B-36	Cancelled			
B-37	5.5	235	Silty fine sand	2.1
B-38	5.5	242	Silty fine sand	3.9
B-39	5.5	229.5	Silty fine sand	1.2
B-40	5.5	244	Silty fine sand	2.7
B-41	5.5	245	Silty fine sand	0.0*
B-42	5.5	249	Silty fine sand	1.9
B-43	5.5	250.5	Silty fine sand	1.8
B-44	5.5	249	Silty fine sand	5.7
B-45	5.5	246	Silty fine sand	0.4
B-46	5.5	252	Silty fine sand	0.9
B-47	Cancelled			
B-48	Cancelled			
B-49	Cancelled			
B-50	5.5	259	Silty fine sand	1.4

\* Low infiltration rates were recorded. It may be the result of dense soil stratum.

### 3.0 LABORATORY TESTING PROGRAM

#### 3.1 Laboratory Testing

Laboratory tests were performed on selected representative samples. Natural moisture contents were performed on all soil samples, and results are included in boring logs. Atterberg limits and sieve analysis were conducted on selected samples. Atterberg limits results are shown in boring logs in correspondence with the sample depths and results of sieve analyses are presented in the Appendix.

#### **4.0 GENERAL SITE AND SUBSURFACE CONDITIONS**

##### **4.1 Site Condition**

The SWM facilities are proposed on various streets in the Franklin Knolls Subdivision in Silver Spring, Maryland. Borings on this project site are located in the single-home residential areas. Utilities in the vicinity of boring holes include underground water, sewer and gas, cable and overhead power.

##### **4.2 Site Geology**

Geologically, the project site is in the Boulder Gneiss of the Eastern Piedmont Metasedimentary Rocks Series of the Piedmont Plateau Province, which is composed of thick-bedded to massive, pebble- and boulder-bearing, arenaceous to pelitic metamorphic rock, typically a medium-grained, garnet-oligoclase-mica-quartz gneiss; locally an intensely foliated gneiss or schist.

##### **4.3 Subsurface Soil Condition**

Various soil types were grouped into the major zones noted on the boring logs. A brief explanation of the terms and notes used in the logs is included with this report. The stratification lines designating the interfaces between earth materials on the boring logs are approximate; in situ, the transitions may be gradual. Detailed soil description and depth of various soil strata are given in boring logs, together with SPT blow counts with depth. In general, the encountered soils are grouped and summarized as follows:

- Topsoil: Topsoil was encountered in all boring. Topsoil is defined as the more high-organic, weathered surficial soils horizon capable of supporting vegetation.
- Type A *Silty Fine Sand*: Below the Topsoil, brown sandy soil with mica and trace of rock fragments was encountered in most of borings and extended to completion depth of borings. N-values in this layer were ranging from 3 to more than 50 blows per foot. Due to the presence of rock fragments, higher blow counts were recorded in some boreholes at various depths.
- Type B *Fine Sandy Silt*: Localized reddish brown and gray silty soil with mica was encountered in boring B-32 and extended to completion depth of borings. N-values in these soils were ranging from 8 and more than 50 blows per foot.

#### 4.4 Groundwater Observations

Groundwater observations were made in every borehole during drilling, and after completion of drilling operations. As noted on boring logs, groundwater was **not encountered** in all borings during drilling and after drilling. Water level observations are presented at the lower left hand corner of boring logs. Fluctuations in the level and quantity of ground water will occur due to variations in rainfall, temperature, soil permeability and other factors not evident at the time of the water level measurements recorded on boring logs.

### 5.0 ANALYSIS AND RECOMMENDATIONS

#### 5.1 SWM Facility Considerations

The infiltration design criteria established by the Maryland Department of the Environment (MDE) Water Management Administration advises that infiltration practices are not recommended to be utilized: (a) in regions where the bottom of the infiltration facility is in existing or newly placed fill, or (b) in materials that exhibit an infiltration rates less than 0.52 inches per hour, or (c) where the groundwater table or bedrock is within 4 feet of the bottom of the infiltration facility.

Proposed plan or structural detail of the proposed SWM facilities were not provided by the date of this report. Per the information provided from McCormick Taylor, Inc., infiltration structures are considered in this SWM improvement project. Based on information revealed from borings, laboratory test results, and our visual classification of the recovered soil samples, the encountered subsoils are classified per the USDA classification system and a summary is presented in the following table.

SUMMARY OF SOIL PROPERTIES PER USDA CLASSIFICATION				
Boring No.	Sample Depth (ft)	USDA Textural Classification	Minimum Infiltration Rate (in/hr)	Hydrologic Soil Grouping
B-26	0.5 to 10	Sandy loam	1.02	A
B-27	0.5 to 10	Loamy sand	2.41	A
B-28	Cancelled			
B-29	0.5 to 10	Loamy sand	2.41	A
B-30	0.5 to 10	Sandy loam	1.02	A
B-31	0.5 to 10	Sandy loam	1.02	A
B-32	0.5 to 10	Loam	0.52	B
B-33	0.5 to 10	Sand	8.27	A
B-34	0.5 to 9	Loamy sand	2.41	A
B-35	0.5 to 10	Sand	8.27	A
B-36	Cancelled			
B-37	0.5 to 10	Loamy sand	2.41	A
B-38	0.5 to 10	Loamy sand	2.41	A
B-39	0.5 to 10	Loamy sand	2.41	A
B-40	0.5 to 10	Sandy loam	1.02	A
B-41	0.5 to 7.5	Sandy loam	1.02	A
B-42	0.5 to 10	Sandy loam	1.02	A
B-43	0.5 to 10	Loamy sand	2.41	A
B-44	0.5 to 10	Loamy sand	2.41	A
B-45	0.5 to 10	Sandy loam	1.02	A
B-46	0.5 to 10	Sandy loam	1.02	A
B-47	Cancelled			
B-48	Cancelled			
B-49	Cancelled			
B-50	0.5 to 10	Loamy sand	2.41	A

Considering the USDA classification, boring information, on-site infiltration tests and groundwater observation, most of the proposed SWM areas are considered suitable for infiltration design in accordance with general design criteria. Results of our findings are summarized in the following table.

SUMMARY OF SWM CONSIDERATIONS AT 2.5- to 6-ft BELOW GROUND					
Boring No.	Existing Elevation	Facility Bottom Elevation	On-site Infiltration Rate (in/hr)	Infiltration Rate per USDA (in/hr)	Infiltration SWM Facility
B-26	280	274.5	2.5	1.02	Acceptable
B-27	271.5	266	2.5	2.41	Acceptable
B-28	Cancelled				
B-29	280	274.5	0.1*	2.41	Not acceptable
B-30	287.5	282	0.9	1.02	Marginal
B-31	290	284.5	3.3	1.02	Acceptable
B-32	267	261.5	0.1*	0.52	Not acceptable
B-33	255	249.5	5.8	8.27	Acceptable
B-34	249	243.5	2.5	2.41	Acceptable
B-35	236.5	231	4.0	8.27	Acceptable
B-36	Cancelled				
B-37	235	229.5	2.1	2.41	Acceptable
B-38	242	236.5	3.9	2.41	Acceptable
B-39	229.5	224	1.2	2.41	Acceptable
B-40	244	238.5	2.7	1.02	Acceptable
B-41	245	239.5	0.0*	1.02	Not acceptable
B-42	249	243.5	1.9	1.02	Acceptable
B-43	250.5	245	1.8	2.41	Acceptable
B-44	249	243.5	5.7	2.41	Acceptable
B-45	246	240.5	0.4	1.02	Marginal
B-46	252	246.5	0.9	1.02	Acceptable
B-47	Cancelled				
B-48	Cancelled				
B-49	Cancelled				
B-50	264.5	259	1.4	2.41	Acceptable

\* Low infiltration rates were recorded. It may be the result of dense soil stratum.

It is recommended that during construction of the SWM facility, the soil encountered at and below the planned elevation, to be verified along with their infiltration characteristics.

## 6.0 SITE GRADING AND CONSTRUCTION CONSIDERATIONS

### 6.1 Site Grading

Grading preparation should include clearing within the limits of construction, grubbing and removal of the organic surficial soils. The potential thickness of material

subject to stripping will vary from zero inches to six (6) inches. Design and construction should include provisions for temporary storage, hauling, and disposal of stripped materials at an approved off-site location.

Following stripping, cutting, the subgrade should be verified prior to the installation of SWM structures. Areas identified during the verification process as soft or exhibiting “pumping” tendencies should be undercut, processed and recompact or removed and replaced with suitable fill, whichever is appropriate.

## 6.2 Suitable Fill Material

Fill and backfill for general areas should be free of organics and debris and rock fragments in excess of 3-in. in any dimension. In the upper 18 inches of fill, maximum particle size should be limited to about 1.5 inches. As per ASTM D2478 classification, imported select fill should consist of sandy gravel (GM), clayey gravel (GC), gravelly sand (SP), silty sand (SM), clayey sand (SC), or low-plasticity sandy clay (CL) with a liquid limit and plasticity index of less than 40 and 15 respectively, or an approved alternate.

## 6.3 Compaction Requirement

Fill soils should be compacted to a minimum of 95 percent of maximum Standard Proctor dry density (ASTM D698), with a moisture content range of minus to plus 2 percent of optimum. Fill should be placed in a nominal 10-inch-thick loose lifts. Each lift of fill should be properly compacted, tested and approved prior to placing subsequent lifts.

## 7.0 CONSTRUCTION CONSIDERATIONS

Positive surface drainage should be established at the start of work, be maintained during construction and following completion of the project to prevent surface water ponding and subsequent saturation of subgrade soils. Prolonged exposure or saturation of subgrade soils by ponding or runoff water may result in significant changes in strength and compressibility characteristics. Saturated subgrade soils should be excavated and replaced with suitable materials.

Depending upon weather conditions during and prior to construction, groundwater may be encountered in the excavation areas. Any seepage into the construction

excavation could be controlled by pumping from sump pits. During site preparation, surface runoff should be directed away from the construction areas.

## **8.0 GENERAL COMMENTS**

The soil classifications presented in this report are based upon the data obtained from the soil borings performed at indicated locations and from any other information discussed in this report. This report does not reflect any variations that may occur across the site. The nature and extent of such variations may not become evident until construction. If variations appear evident, the conclusion and recommendations of this report should then be reviewed by ABC geotechnical engineer in light of the new information.

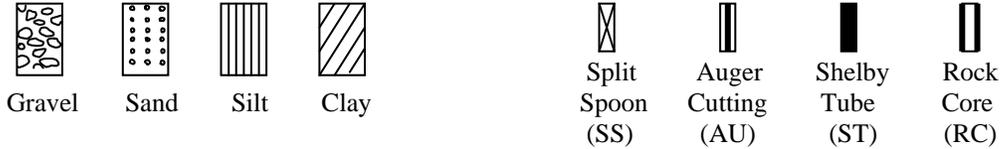
This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranties, either expressed or implied, are intended or made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by ABC geotechnical engineer of record.

## **APPENDIX**

- A. General Notes
- B. Vicinity Map
- C. Boring Plan
- D. Boring Logs
- E. Lab Test Results
- E. Field Infiltration Test Results

## GENERAL NOTES

### Drilling and Sampling Symbols



N = Standard penetration, blows per foot of a 140 lbs hammer for 30" drop

RQD = Rock Quality Designation

LL = Liquid Limit

PL = Plastic Limit

PI = Plasticity Index

### Cohesionless Soils

If the sand or silt content of a soil is great enough, the soil becomes non-cohesive or semi-cohesive. The soil classification becomes SAND or SILT with the other soil constituents being modifying.

#### Based on N-Value

0 to 4 Blows.....Very Loose

5 to 9 Blows.....Loose

10 to 29 Blows.....Medium Dense

30 to 59 Blows.....Dense

Over 60 Blows.....Very Dense

### Cohesive Soils

If clay content is sufficient so that clay dominates soil properties, then CLAY becomes the major soil constituent as modifier. Other minor soil constituents may be added according to classification breakdown for cohesion less soils: i.e. silty clay, trace of some sand, trace of gravel.

#### Based on N-Value

0 to 3 Blows.....Very Soft

4 to 5 Blows.....Soft

6 to 16 Blows.....Firm

16 to 30 Blows.....Stiff

30 to 60 Blows.....Very Stiff

Over 61 Blows.....Hard

#### Based on Penetrometer Value

Below 0.25.....Very Soft

0.25 to 0.49.....Soft

0.50 to 0.99.....Firm

1.00 to 1.99.....Stiff

2.00 to 3.99.....Very Stiff

Over 4.00.....Hard

### Quantity Modifiers

<u>Term</u>	<u>% of Dry Weight</u>
trace	0 to 10
little	11 to 20
some	21 to 35
and/with	36 to 50

### Particle Size Identifications

Boulder .....Over 8 inch diameter

Cobbles.....3 inch to 8 inch

Gravel.....Coarse.....1 inch to 3 inch

Medium.....1/2 inch to 1 inch

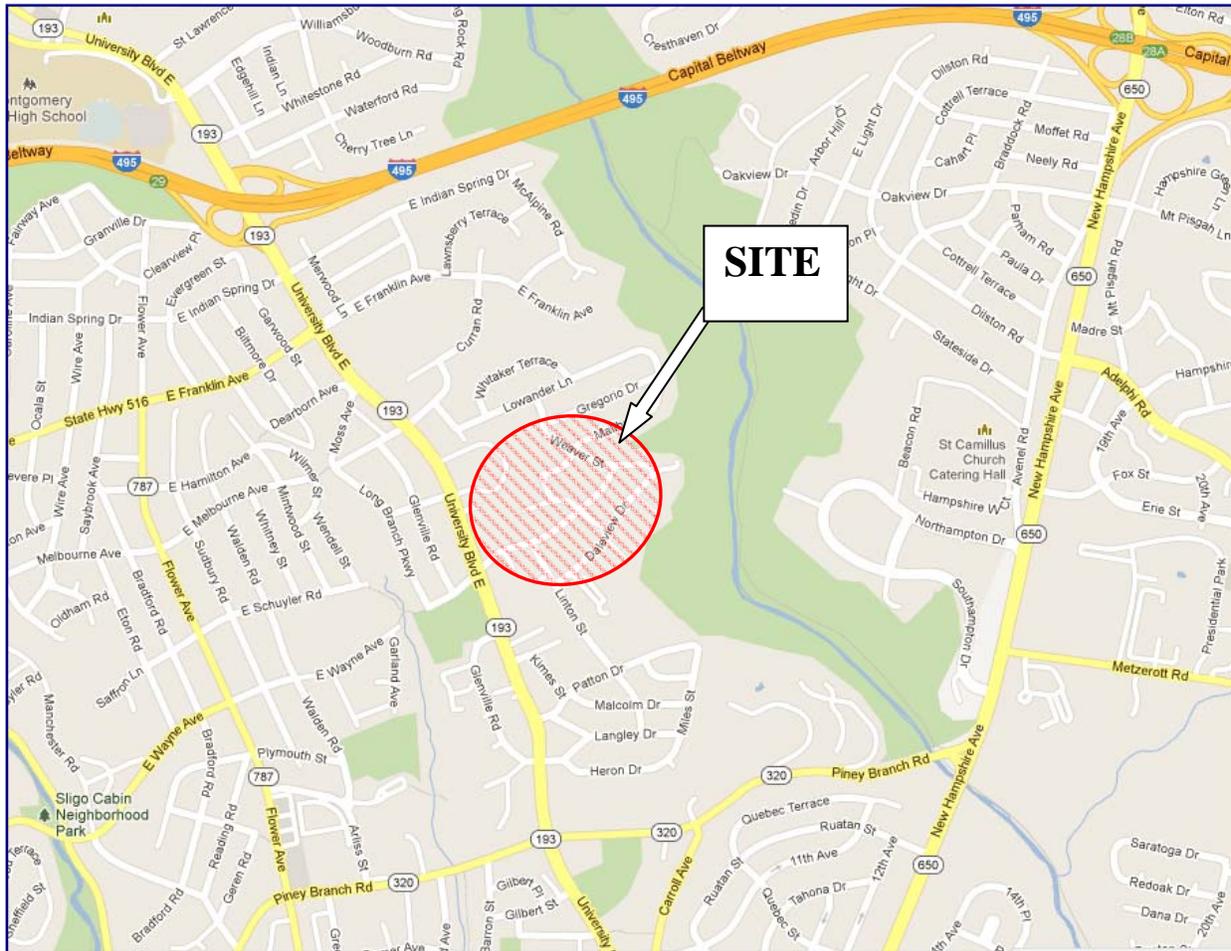
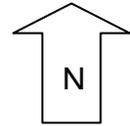
Fine.....4.75 mm to 1/2 inch

Sand.....Coarse.....2 mm to 4.75 mm

Medium.....0.425 mm to 2 mm

Fine.....0.075 mm to 0.425 mm

Silt/Clay.....Below 0.075 mm



**VICINITY MAP**  
Montgomery County Task Order #13 Subtask B Phase II  
Montgomery County, Maryland

JOB NO.: 10-368  
SCALE: N.T.S.  
DATE: 9/11/12



**BORING PLAN**  
 Montgomery County Task Order #13 Subtask B Phase II  
 Montgomery County, Maryland

JOB NO.: 10-368  
 SCALE: N.T.S.  
 DATE: 9/11/12

# BORING LOGS

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 280.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.2 - 3" Topsoil		279.8	3-6-8 N=14	1	SS	13/18 72%	14				
Medium dense to dense reddish brown SILTY FINE SAND (SM) with mica and rock fragments			6-8-15 N=23	2	SS	14/18 78%	16			37	
-become very dense between 6 to 7.5 ft			12-26-38 N=64	3	SS	14/18 78%	12				
			15-18-23 N=41	4	SS	15/18 83%	13				
10.0		270.0									
End of Boring @ 10 ft											

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
 Lanham, MD 20706  
 Phone: 301-306-3091  
 Fax: 301-306-3092

STARTED:	5/16/12	FINISHED:	5/16/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 271.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS					
			BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA	
0.2 - 3" Topsoil		0.2 - 0.5										
Medium dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		0.5 - 10										
-become loose between 3.5 to 8.5 ft		3.5 - 8.5										
		3.5	3-8-8 N=16	1	SS	10/18 56%	18					
		3.5	3-3-3 N=6	2	SS	15/18 83%	15			27		
		5										
		5	2-2-4 N=6	3	SS	14/18 78%	13					
		7										
		7	3-7-12 N=19	4	SS	15/18 83%	11					
		10										
End of Boring @ 10 ft		10										

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
 Lanham, MD 20706  
 Phone: 301-306-3091  
 Fax: 301-306-3092

STARTED:	8/28/12	FINISHED:	8/28/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 280.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.2 - 3" Topsoil		279.8									
Medium dense to very dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		10.0									
			6-12-15 N=27	1	SS	0/18 0%	12				Auger sample
			5-9-12 N=21	2	SS	12/18 67%	12			22	
			24-51/4"	3	SS	6/10 60%	9				
			35-37-51/4"	4	SS	12/16 75%	16				
End of Boring @ 10 ft		10.0									

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 4.5 ft	@ 0 Hrs
WL	Dry, caved in 4.5 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
 Lanham, MD 20706  
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STARTED:	5/11/12	FINISHED:	5/11/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 287.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.2 - 3" Topsoil		2.3-4	1	SS	13/18 72%	18					
Loose to medium dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		1-2-4	2	SS	14/18 78%	22		35			
		3-5-8	3	SS	14/18 78%	18					
		3-8-12	4	SS	14/18 78%	14					
End of Boring @ 10 ft											

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 7 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
 Lanham, MD 20706  
 Phone: 301-306-3091  
 Fax: 301-306-3092

STARTED:	5/8/12	FINISHED:	5/8/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
	BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.2 - 3" Topsoil									
289.8	2-3-3 N=6	1	SS	12/18 67%	19				
5	2-4-6 N=10	2	SS	15/18 83%	18				
10	3-6-9 N=15	3	SS	14/18 78%	20		40		
10	2-6-19 N=25	4	SS	14/18 78%	12				
280.0									
10.0	End of Boring @ 10 ft								

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	@ 24 hrs



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 Lanham, MD 20706  
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 Fax: 301-306-3092

STARTED:	5/8/12	FINISHED:	5/8/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 267.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.2 - 3" Topsoil		0.2 - 0.5									
Loose to very dense brown and gray FINE SANDY SILT (ML) with trace of clay and rock fragments		0.5 - 10.0									
		2.5	2-3-5 N=8	1	SS	12/18 67%	10				
		4.5	2-3-5 N=8	2	SS	14/18 78%	19			53	LL = 28 PL = 20 PI = 8
		7.5	1-4-14 N=18	3	SS	14/18 78%	18				
		9.5	5 1/6"	4	SS	5/6 83%	7				
10.0		10.0									
End of Boring @ 9 ft											
Auger refusal below 9 ft											

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 5.5 ft	@ 0 Hrs
WL	Dry, caved in 5.5 ft	@ 24 hrs



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STARTED:	5/13/12	FINISHED:	5/13/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 255.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.4 5" Topsoil		254.6									
Loose to very dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments											
		5									
			2-3-4 N=7	1	SS	13/18 72%	7				
			37-51/6"	2	SS	10/12 83%	5			14	
			51/5"	3	SS	5/5 100%	5				
			51/2"	4	SS	0/2 0%					
9.0		246.0									
End of Boring @ 9 ft											

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 5 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
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STARTED:	8/27/12	FINISHED:	8/27/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 249.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				
			BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.3 4" Topsoil		248.7	4-7-7 N=14	1	SS	8/18 44%	8				
Medium dense to very dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		5	5-9-21 N=30	2	SS	12/18 67%	9			18	
-become loose between 6 to 7.5 ft			3-4-4 N=8	3	SS	4/18 22%	8				
9.0		240.0	5 1/2"	4	SS	0/2 0%					
Auger refusal @ 9 ft		10									

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 4 ft	@ 0 Hrs
WL	Dry, caved in 4 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
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STARTED:	5/16/12	FINISHED:	5/16/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 236.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS					
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA	
0.2 - 3" Topsoil		0.2 - 0.5										
Medium dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		0.5 - 10.0										
		3	3-5-7 N=12	1	SS	14/18 78%	7					
		5	3-8-5 N=13	2	SS	12/18 67%	6					
		9	4-9-16 N=25	3	SS	14/18 78%	7			15		
		10	4-8-10 N=18	4	SS	12/18 67%	10					
End of Boring @ 10 ft		10.0										

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	@ 24 hrs



AB Consultants, Inc.  
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STARTED:	5/13/12	FINISHED:	5/13/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 235.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS						
			BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA		
0.7	8" Topsoil	0.7											
234.3	Loose to dense to loose brown and gray SILTY FINE SAND (SM) with mica and rock fragments	234.3	2-4-5 N=9	1	SS	8/18 44%	7						
		5	3-4-19 N=23	2	SS	14/18 78%	13			23			
			19-19-13 N=32	3	SS	5/18 28%	11						
			4-3-2 N=5	4	SS	12/18 67%	15						
10.0	End of Boring @ 10 ft	10.0											

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 7.5 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs



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 Lanham, MD 20706  
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STARTED:	8/27/12	FINISHED:	8/27/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 242.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.2 - 3" Topsoil		0.2	5-51/3"	1	SS	7/9 78%	10				
Very dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		241.8	51/4"	2	SS	4/4 100%	7		23		
		5	51/5"	3	SS	3/5 60%	8				
			51/3"	4	SS	3/3 100%	5				
10.0		232.0	10								
End of Boring @ 10 ft											

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 6 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	@ 24 hrs



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STARTED:	5/12/12	FINISHED:	5/12/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 229.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.2 - 3" Topsoil		0.2 - 229.3	1-2-3 N=5	1	SS	12/18 67%	15				
Loose to very dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		229.3 - 5	1-1-2 N=3	2	SS	14/18 78%	23				
-become very loose between 3.5 to 5 ft		3.5 - 5									
		5 - 11-44-51	11-44-51 N=95	3	SS	14/18 78%	9			25	
		11-44-51 - 23-51/6"	23-51/6"	4	SS	12/12 100%	9				
10.0		10.0 - 219.5									
End of Boring @ 10 ft											

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 7.5 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
 Lanham, MD 20706  
 Phone: 301-306-3091  
 Fax: 301-306-3092

STARTED:	5/12/12	FINISHED:	5/12/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 244.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA	
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE		
0.2 - 3" Topsoil		0.2										
Very loose to medium dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		243.8	2-1-2 N=3	1	SS	12/18 67%	14					
		5	2-1-3 N=4	2	SS	12/18 67%	17			33		
			5-7-5 N=12	3	SS	4/18 22%	13					
			3-7-18 N=25	4	SS	12/18 67%	12					
10.0		234.0										
End of Boring @ 10 ft												

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 6 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
 Lanham, MD 20706  
 Phone: 301-306-3091  
 Fax: 301-306-3092

STARTED:	5/12/12	FINISHED:	5/12/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 245.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS					
			BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA	
0.2 - 3" Topsoil			3-11-35 N=46	1	SS	12/18 67%	11			31		
Dense to very dense brown and gray SILTY FINE SAND (SM) with rock fragments			5 1/2"	2	SS	1/2 50%	2					
			5 1/2"	3	SS	0/2 0%						
7.5		237.5	Auger Refusal @ 7.5 ft									

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling
WL	Dry, caved in 2 ft	@ 0 Hrs
WL	Dry, caved in 2 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
 Lanham, MD 20706  
 Phone: 301-306-3091  
 Fax: 301-306-3092

STARTED:	5/12/12	FINISHED:	5/12/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 249.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS			
			BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE
0.2 - 3" Topsoil		0.2 - 0.8	3-3-7 N=10	1	SS	6/18 33%	11			
Medium dense to very loose brown and gray SILTY FINE SAND (SM) with mica and rock fragments		0.8 - 10.0	2-3-2 N=5	2	SS	14/18 78%	17			
		5	1-3-4 N=7	3	SS	15/18 83%	23		46	
		10	1-1-2 N=3	4	SS	15/18 83%	24			
End of Boring @ 10 ft		10.0								

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 7 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs



**AB Consultants, Inc.**  
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STARTED:	5/12/12	FINISHED:	5/12/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA
	BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	
0.2 - 3"	0.2 - 3" Topsoil								
250.3	Medium dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments								
5	5-6-7 N=13	1	SS	12/18 67%	7				
5	3-8-9 N=17	2	SS	14/18 78%	12			20	
5	7-10-12 N=22	3	SS	13/16 81%	13				
5	4-7-13 N=20	4	SS	14/18 78%	14				
10.0	End of Boring @ 10 ft								

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 5.5 ft	@ 0 Hrs
WL	Dry, caved in 5.5 ft	@ 24 hrs



AB Consultants, Inc.  
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STARTED:	5/13/12	FINISHED:	5/13/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 249.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				
			BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.2 - 3" Topsoil		0.2									
Brown and gray SILTY FINE SAND (SM) with rock fragments		248.8	1	AU	18	8					
		5	2	AU	18	9			23		
			3	AU	18	7					
			4	AU	18	3					
10.0		10									
End of Boring @ 10 ft											
Due to overhead power, SPT was not able to be performed											

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 7 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs



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STARTED:	5/11/12	FINISHED:	5/11/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 246.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				REMARKS/ ADDITIONAL DATA	
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE		
0.2 - 3" Topsoil		0.2 - 0.5										
Medium dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		0.5 - 10.0										
-become very loose to loose between 3.5 to 7.5 ft												
			7-10-12 N=22	1	SS	12/18 67%	12					
			1-2-2 N=4	2	SS	16/18 89%	37					
			1-2-4 N=6	3	SS	15/18 83%	23			22		
			5-9-12 N=21	4	SS	13/18 72%	15					
10.0	236.0	10										
End of Boring @10 ft												

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 7 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs



**AB Consultants, Inc.**  
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STARTED:	5/11/12	FINISHED:	5/11/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 252.0 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.2 - 3" Topsoil		0.2 - 251.8									
Loose to medium dense brown and gray SILTY SAND (SM) with mica and rock fragments		251.8 - 10.0									
		5	2-3-3 N=6	1	SS	13/18 72%	17				
			2-4-4 N=8	2	SS	13/18 72%	17			29	
			2-5-3 N=8	3	SS	14/18 78%	15				
			3-6-10 N=16	4	SS	14/18 78%	22				
End of Boring @ 10 ft		10.0									

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 6.5 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs



**AB Consultants, Inc.**  
 9450 Annapolis Road  
 Lanham, MD 20706  
 Phone: 301-306-3091  
 Fax: 301-306-3092

STARTED:	5/13/12	FINISHED:	5/13/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

CLIENT: McCormick Taylor, Inc

PROJECT: MO County Task Order #13 Subtask B (Phase 2)

ARCHITECT/ENGINEER:

SITE: Franklin Knolls, Maryland

SURFACE ELEV.: 264.5 ft.	GRAPHIC LOG	DEPTH (FT)	SAMPLES				TESTS				
			BLOWS/6" N - VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.5 6" Topsoil		0.5 - 0.6									
Loose to very dense brown and gray SILTY FINE SAND (SM) with mica and rock fragments		0.6 - 10.0									
		264.0	2-3-6 N=9	1	SS	6/18 33%	17				
			3-4-6 N=10	2	SS	14/18 78%	13			21	
		5									
			8-10-18 N=28	3	SS	14/18 78%	11				
			20-43-51/5"	4	SS	14/18 78%	8				
		10									
10.0 End of Boring @ 10 ft		254.5									

BORING LOG AB09 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

WATER LEVEL OBSERVATIONS		
WL	Dry	@ Drilling
WL	Dry, caved in 7 ft	@ 0 Hrs
WL	Dry, caved in 7 ft	@ 24 hrs

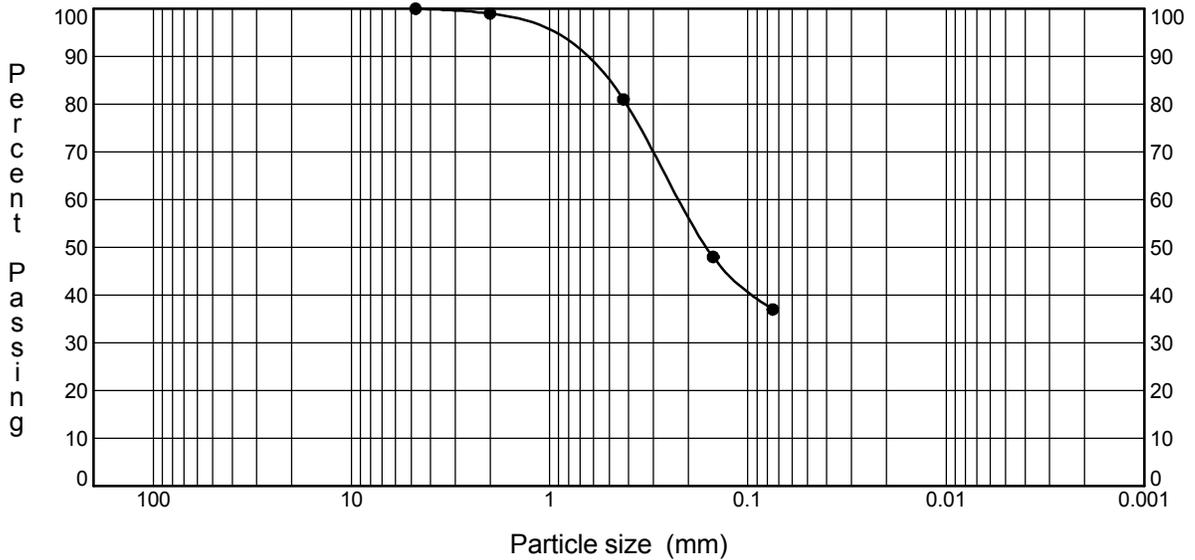


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 Fax: 301-306-3092

STARTED:	8/27/12	FINISHED:	8/27/12
DRILL CO.:	ABC	DRILL RIG:	B61
DRILLER:	PS	ASST DRILLER:	
LOGGED BY:		APPROVED:	

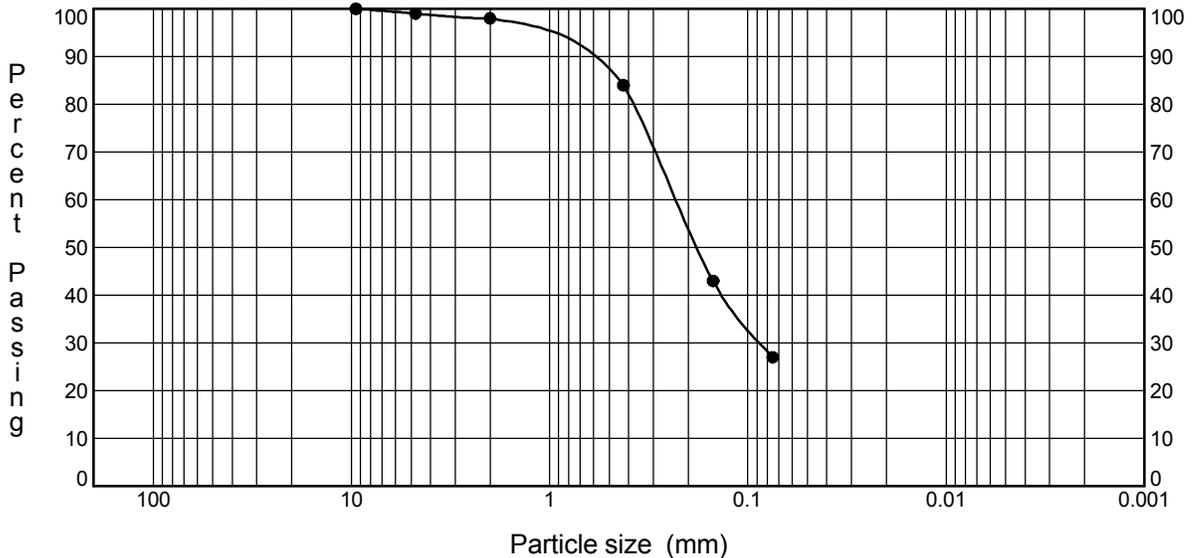
## LAB TEST RESULTS

BOREHOLE NO. **B-26** DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						

BOREHOLE NO. **B-27** DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						



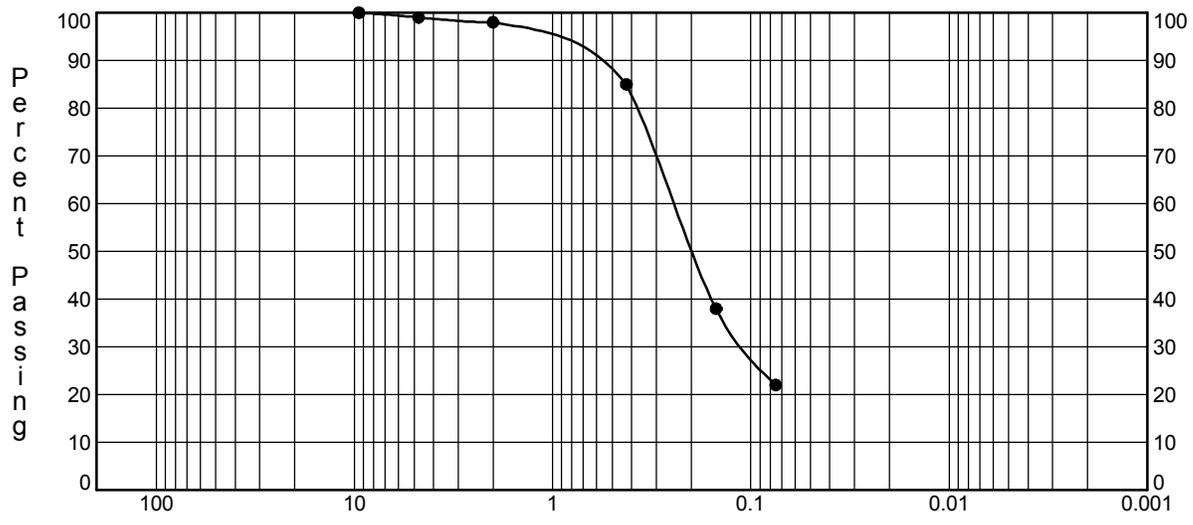
**AB Consultants, Inc.**  
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 Phone: 301-306-3091  
 Fax: 301-306-3092

**GRAIN SIZE DISTRIBUTION**

CLIENT: McCormick Taylor, Inc  
 PROJECT NO.: 10-368.01  
 PROJECT: MO County Task Order #13 Subtask B (Phase 2)  
 SITE: Franklin Knolls, Maryland

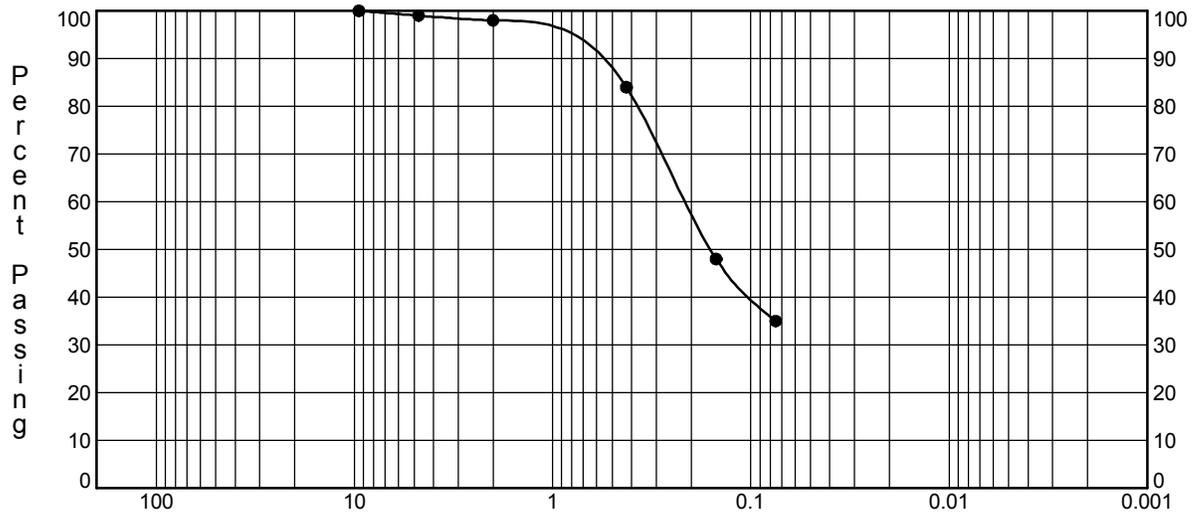
U.S. GSD\_DOUBLE 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2)\GPJ\_AB\_CONS.GDT 9/11/12

BOREHOLE NO. **B-29** DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						

BOREHOLE NO. **B-30** DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						



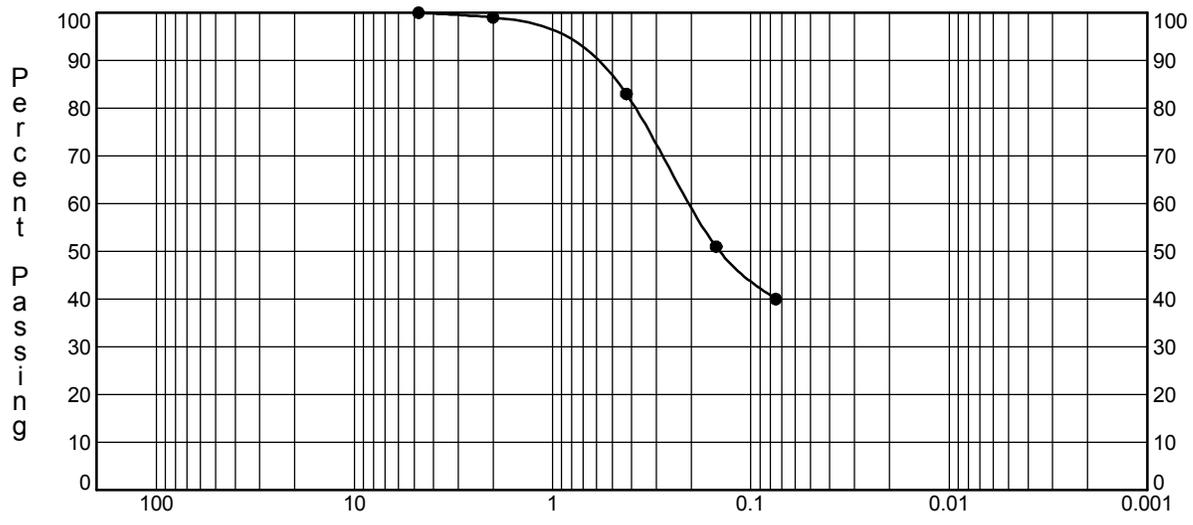
**AB Consultants, Inc.**  
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 Phone: 301-306-3091  
 Fax: 301-306-3092

**GRAIN SIZE DISTRIBUTION**

CLIENT: McCormick Taylor, Inc  
 PROJECT NO.: 10-368.01  
 PROJECT: MO County Task Order #13 Subtask B (Phase 2)  
 SITE:  
 Franklin Knolls, Maryland

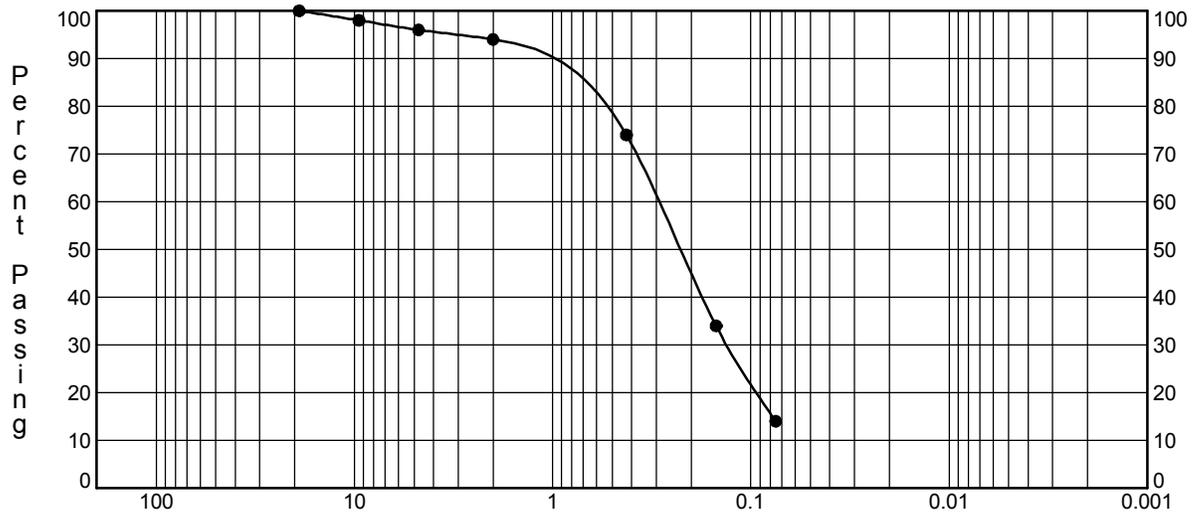
U.S. GSD\_DOUBLE 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2)\GPJ\_AB\_CONS.GDT 9/11/12

BOREHOLE NO. **B-31** DEPTH **6.0**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						

BOREHOLE NO. **B-33** DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						



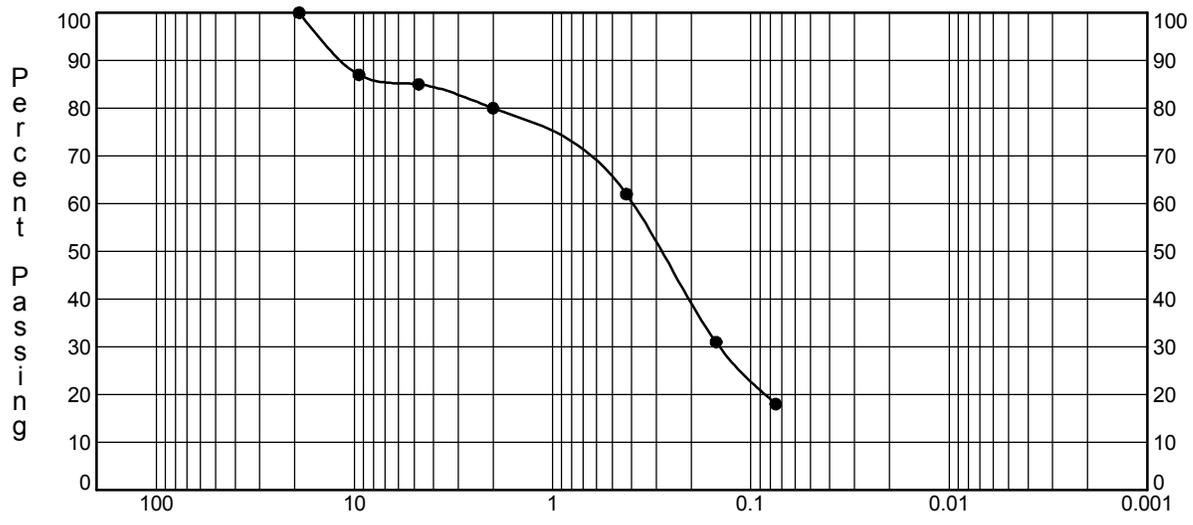
**AB Consultants, Inc.**  
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 Phone: 301-306-3091  
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**GRAIN SIZE DISTRIBUTION**

CLIENT: McCormick Taylor, Inc  
 PROJECT NO.: 10-368.01  
 PROJECT: MO County Task Order #13 Subtask B (Phase 2)  
 SITE:  
 Franklin Knolls, Maryland

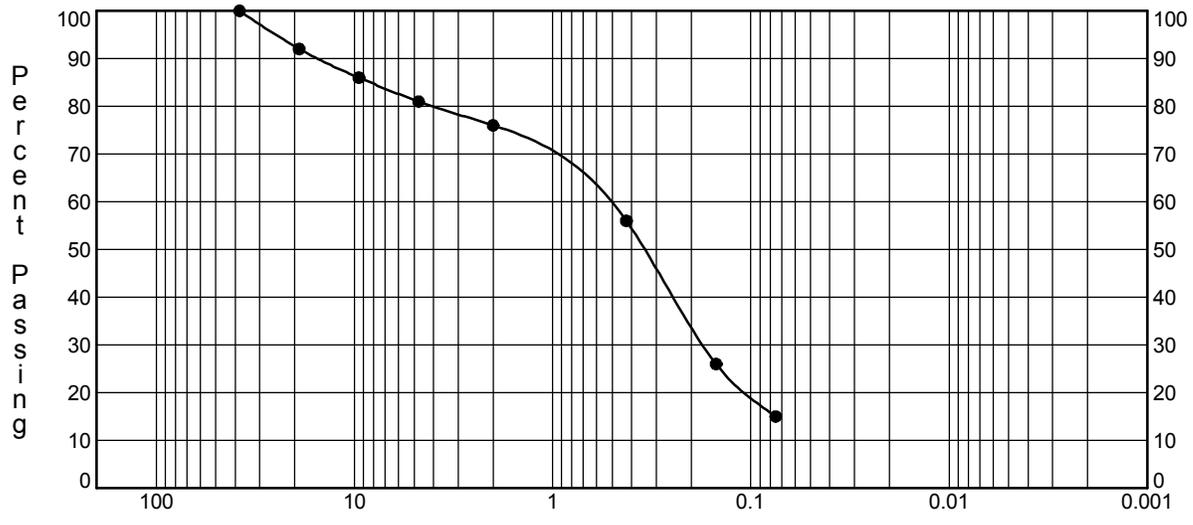
U.S. GSD\_DOUBLE 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2)\GPJ\_AB\_CONS.GDT 9/11/12

BOREHOLE NO. **B-34** DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						

BOREHOLE NO. **B-35** DEPTH **6.0**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						



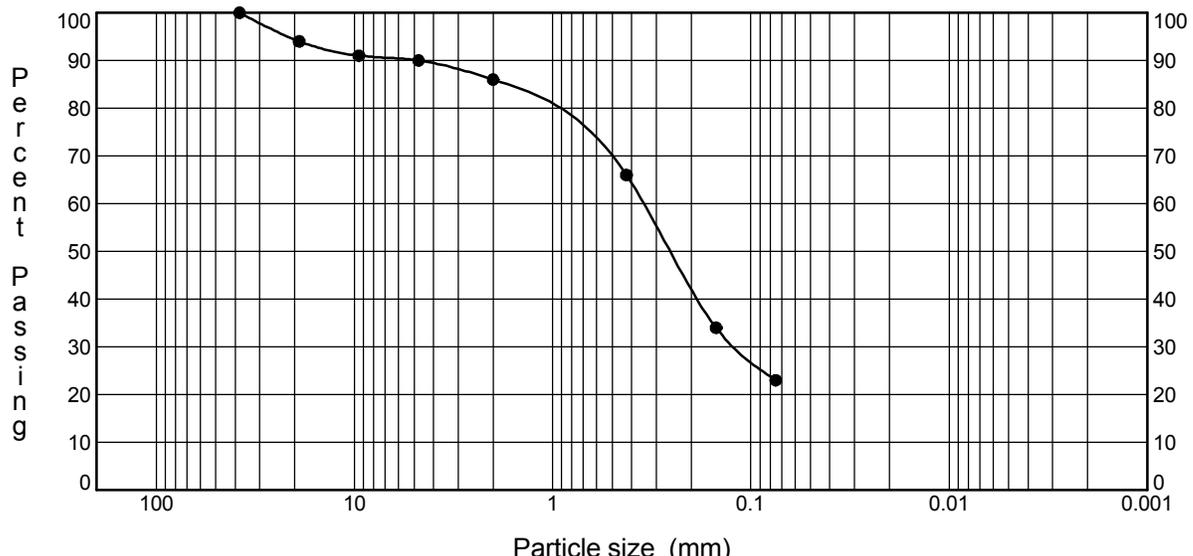
**AB Consultants, Inc.**  
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 Phone: 301-306-3091  
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**GRAIN SIZE DISTRIBUTION**

CLIENT: McCormick Taylor, Inc  
 PROJECT NO.: 10-368.01  
 PROJECT: MO County Task Order #13 Subtask B (Phase 2)  
 SITE:  
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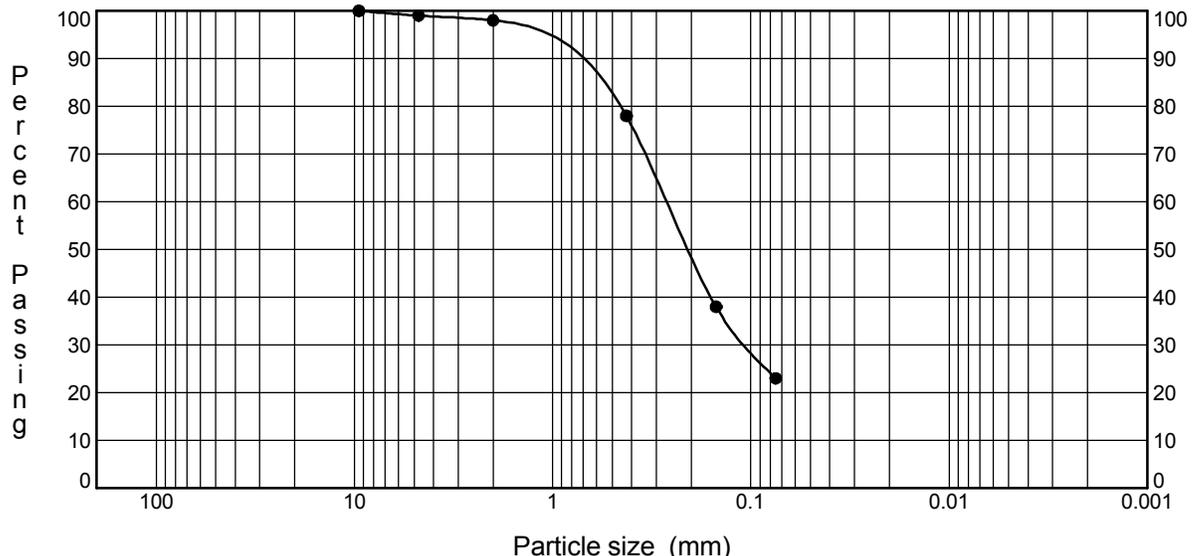
U.S. GSD\_DOUBLE 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2).GPJ AB\_CONS.GDT 9/11/12

BOREHOLE NO. **B-37** DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						

BOREHOLE NO. **B-38** DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						



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**GRAIN SIZE DISTRIBUTION**

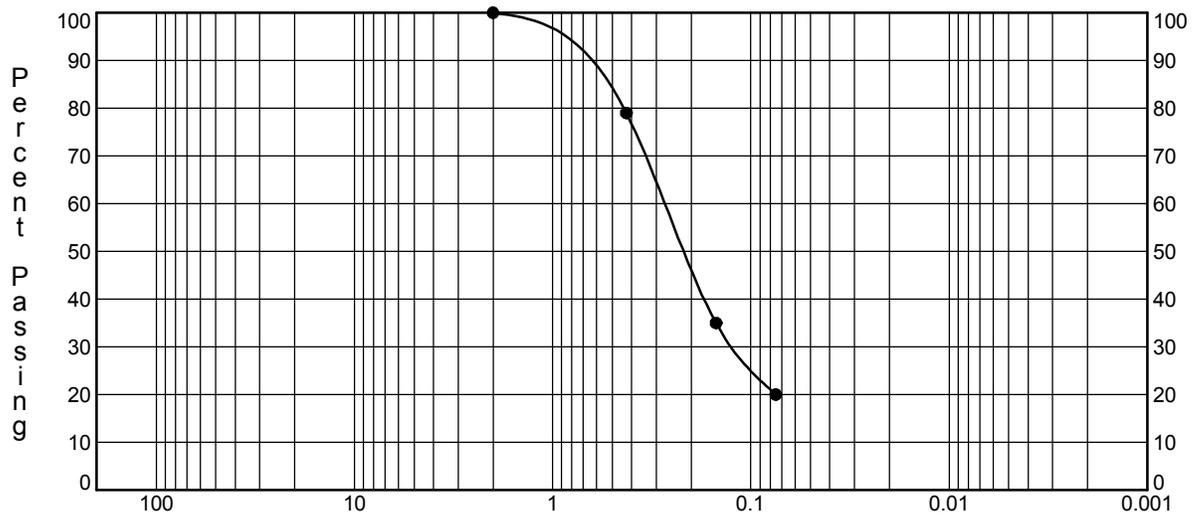
CLIENT: McCormick Taylor, Inc  
 PROJECT NO.: 10-368.01  
 PROJECT: MO County Task Order #13 Subtask B (Phase 2)  
 SITE: Franklin Knolls, Maryland





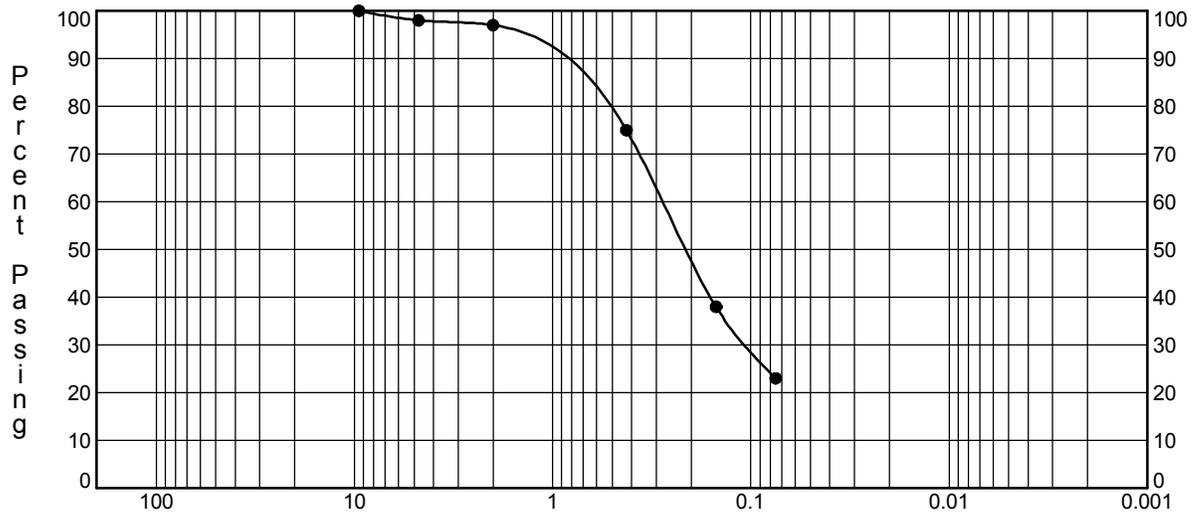
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BOREHOLE NO. **B-43**                      DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						

BOREHOLE NO. **B-44**                      DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						



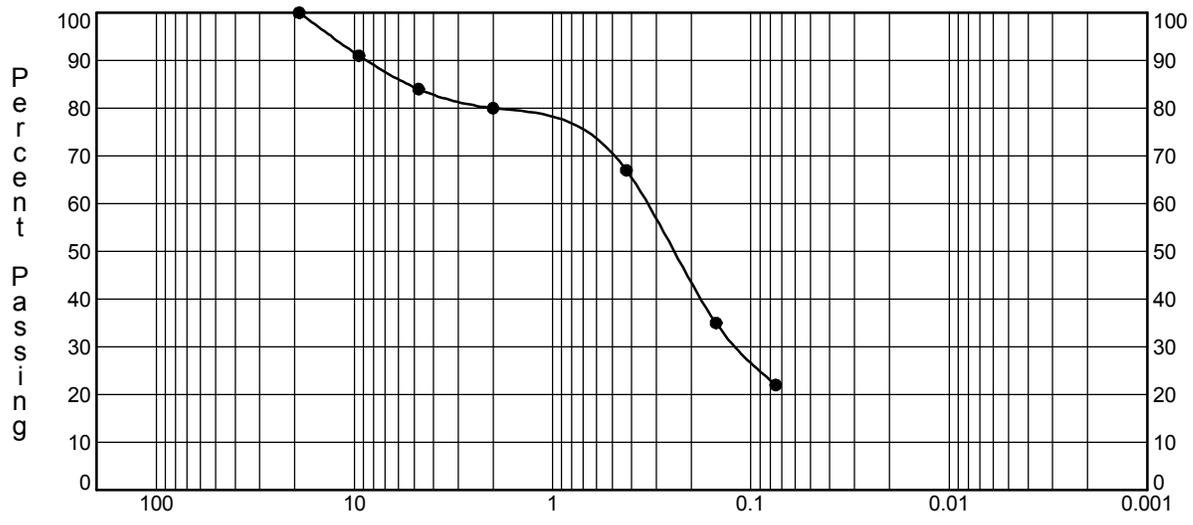
**AB Consultants, Inc.**  
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 Lanham, Maryland 20706  
 Phone: 301-306-3091  
 Fax: 301-306-3092

**GRAIN SIZE DISTRIBUTION**

CLIENT: McCormick Taylor, Inc  
 PROJECT NO.: 10-368.01  
 PROJECT: MO County Task Order #13 Subtask B (Phase 2)  
 SITE:  
 Franklin Knolls, Maryland

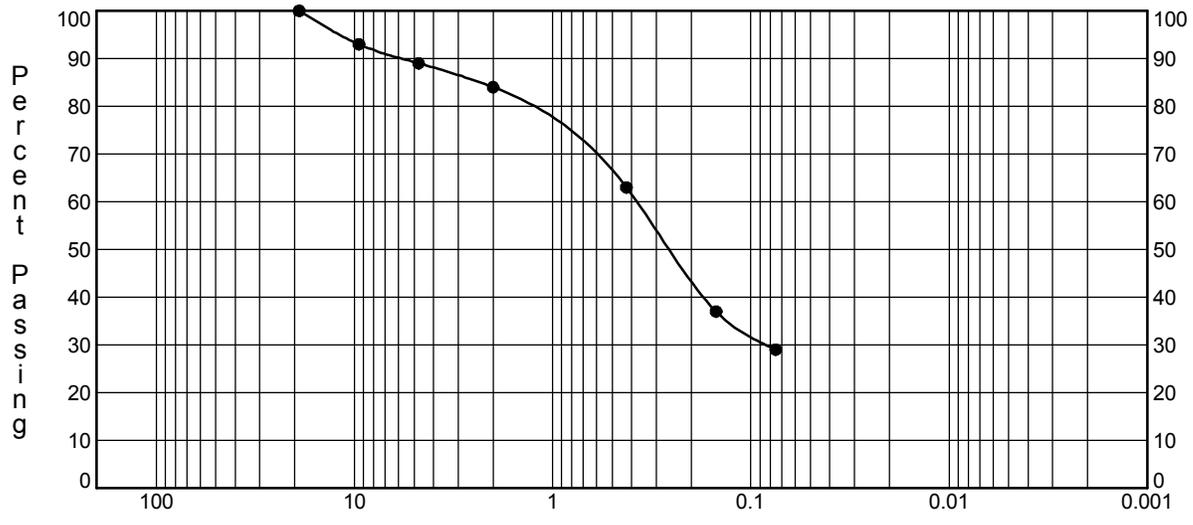
U.S. GSD\_DOUBLE 10-368 MONT. CO. TASK ORDER #13 SUBTASK B (PHASE 2)\GPJ\_AB\_CONS.GDT 9/11/12

BOREHOLE NO. **B-45** DEPTH **6.0**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						

BOREHOLE NO. **B-46** DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel						



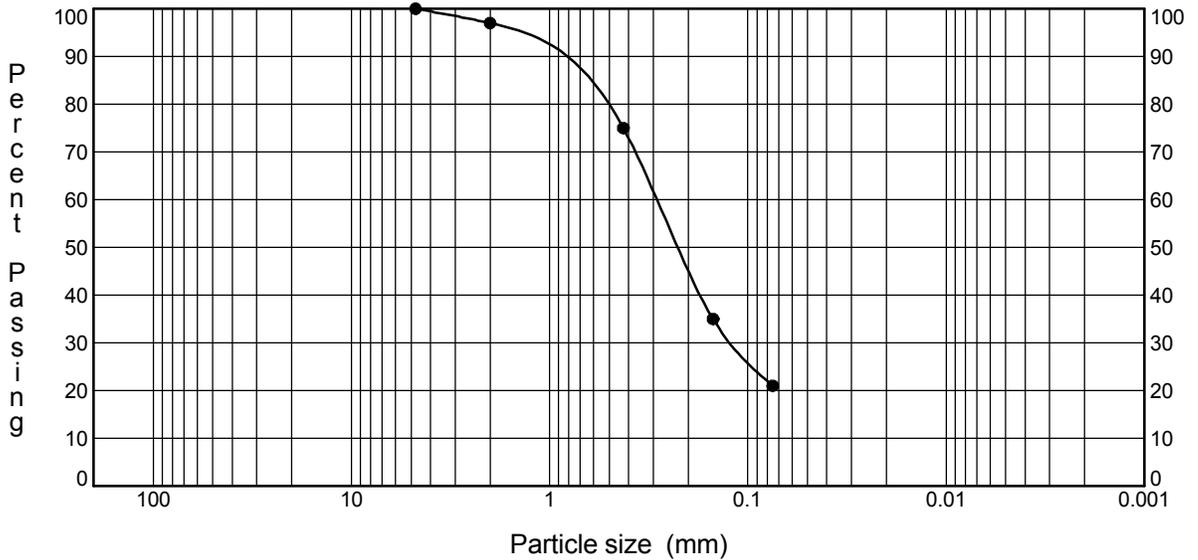
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 Phone: 301-306-3091  
 Fax: 301-306-3092

**GRAIN SIZE DISTRIBUTION**

CLIENT: McCormick Taylor, Inc  
 PROJECT NO.: 10-368.01  
 PROJECT: MO County Task Order #13 Subtask B (Phase 2)  
 SITE: Franklin Knolls, Maryland

BOREHOLE NO. **B-50**

DEPTH **3.5**



Cobbles	coarse	fine	coarse	medium	fine	Silt	Clay
	Gravel		Sand				

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### GRAIN SIZE DISTRIBUTION

CLIENT: McCormick Taylor, Inc  
PROJECT NO.: 10-368.01  
PROJECT: MO County Task Order #13 Subtask B (Phase 2)  
SITE:  
Franklin Knolls, Maryland

## FIELD INFILTRATION TEST RESULTS

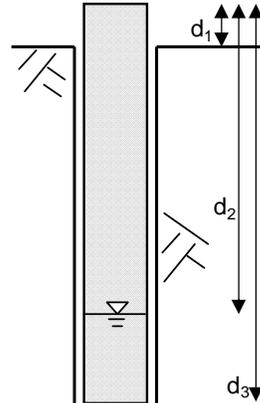
# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/16/2012

**HOLE NO.:** B-26  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/16/2012

**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/JL  
**TESTED DATE:** 5/17/2012



**Measurements (in.)**  
 16 12/16  
 79 9/16  
 79 9/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth:** (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:20	9:20	60	56 1/16	58 14/16	2.813	2.81
9:21	10:21	60	56 7/16	59	2.563	2.56
10:22	11:22	60	55 13/16	58 3/16	2.375	2.38
11:23	12:23	60	56	58 6/16	2.375	2.38

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 2.53 in./hr  
**Recommended Infiltration Rate:** 2.50 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**

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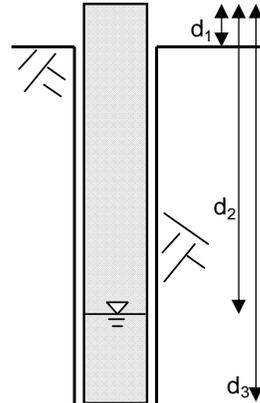
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# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 8/28/2012

**HOLE NO.:** B-27  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 8/28/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/AT  
**TESTED DATE:** 8/28/2012



**Measurements (in.)**  
 6  
 72 1/16  
 72 1/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:05	9:05	60	49 11/16	52 3/16	2.500	2.50
9:07	10:07	60	46 3/16	48 10/16	2.400	2.40
10:10	11:10	60	46 6/16	48 14/16	2.500	2.50
11:12	12:12	60	44 8/16	47	2.500	2.50

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 2.48 in./hr  
**Recommended Infiltration Rate:** 2.50 in./hr  
**Report Reviewed and Prepared By:** KC

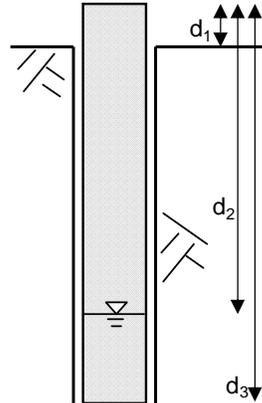
**REMARKS:**

# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/11/2012

**HOLE NO.:** B-29  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/11/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/12/2012



**Measurements (in.)**  
 13 14/16  
 57 13/16  
 80 2/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 22 5/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:18	10:18	60	33 9/16	33 9/16	0.000	0.00
10:20	11:20	60	33 9/16	33 12/16	0.188	0.19
11:21	12:24	63	33 8/16	33 8/16	0.000	0.00
12:24	1:25	61	33 8/16	33 10/16	0.125	0.12

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 0.08 in./hr  
**Recommended Infiltration Rate:** 0.10 in./hr  
**Report Reviewed and Prepared By:** KC

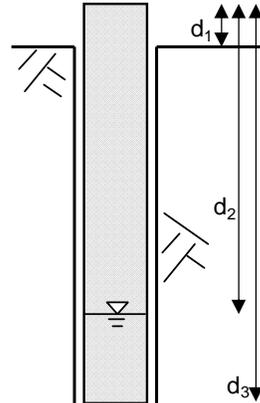
**REMARKS:** Dense soil stratum was encountered below 5 ft

# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/11/2012

**HOLE NO.:** B-30  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/11/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/12/2012



**Measurements (in.)**  
 13 6/16  
 69 4/16  
 79 4/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 10

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:06	10:06	60	44 14/16	45 15/16	1.063	1.06
10:08	11:08	60	44 14/16	45 15/16	1.063	1.06
11:09	12:08	59	44 14/16	45 13/16	0.938	0.95
12:09	12:10	61	44 14/16	45 8/16	0.625	0.61

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 0.92 in./hr  
**Recommended Infiltration Rate:** 0.90 in./hr  
**Report Reviewed and Prepared By:** KC

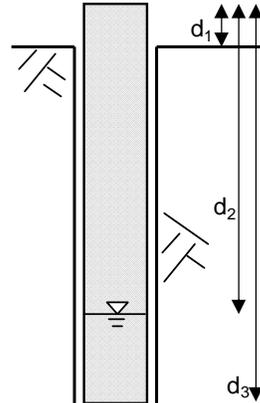
**REMARKS:**

# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/11/2012

**HOLE NO.:** B-31  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/11/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/12/2012



**Measurements (in.)**  
 16 6/16  
 81 2/16  
 81 2/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:54	9:55	61	56 12/16	61	4.250	4.18
9:56	10:56	60	56 12/16	60 1/16	3.313	3.31
10:59	12:01	62	56 8/16	59 14/16	3.375	3.27
12:02	1:03	61	56 12/16	59 6/16	2.625	2.58

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 3.34 in./hr  
**Recommended Infiltration Rate:** 3.30 in./hr  
**Report Reviewed and Prepared By:** KC

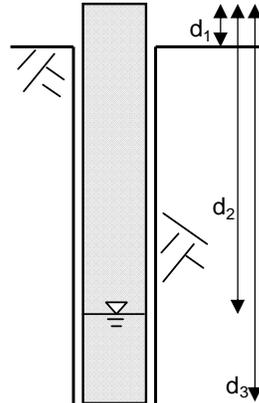
**REMARKS:**

# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/13/2012

**HOLE NO.:** B-32  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/16/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/JL  
**TESTED DATE:** 5/17/2012



**Measurements (in.)**  
 15 5/16  
 56 3/16  
 80 3/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 24

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:30	9:28	58	32 10/16	32 11/16	0.063	0.06
9:30	10:29	59	31 8/16	31 9/16	0.063	0.06
10:30	11:30	60	30 6/16	30 7/16	0.063	0.06
11:30	12:30	60	30 7/16	30 8/16	0.063	0.06

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 0.06 in./hr  
**Recommended Infiltration Rate:** 0.10 in./hr  
**Report Reviewed and Prepared By:** KC

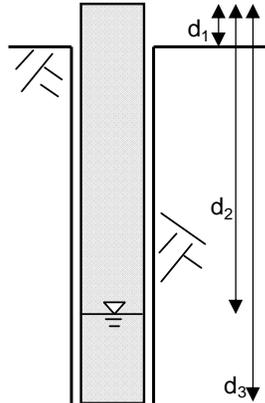
**REMARKS:** Dense soil stratum was encountered below 8 ft

# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 8/27/2012

**HOLE NO.:** B-33  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 8/27/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/AT  
**TESTED DATE:** 8/28/2012



**Measurements (in.)**  
 18  
 78 8/16  
 78 8/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
10:55	11:55	60	54	60 3/16	6.200	6.20
11:58	12:58	60	53 8/16	59 3/16	5.700	5.70
13:00	14:00	60	53 13/16	59 8/16	5.700	5.70
14:02	15:02	60	54 13/16	60 6/16	5.600	5.60

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 5.80 in./hr  
**Recommended Infiltration Rate:** 5.80 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**

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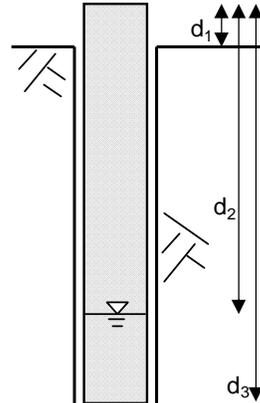
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# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/16/2012

**HOLE NO.:** B-34  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/16/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/JL  
**TESTED DATE:** 5/17/2012



**Measurements (in.)**  
 17 1/16  
 80 7/16  
 80 7/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:40	9:38	58	56 4/16	58 10/16	2.375	2.46
9:40	10:40	60	55 4/16	57 12/16	2.500	2.50
10:43	11:43	60	55 12/16	58 5/16	2.563	2.56
11:45	12:45	60	55 14/16	58 6/16	2.500	2.50

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 2.50 in./hr  
**Recommended Infiltration Rate:** 2.50 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**

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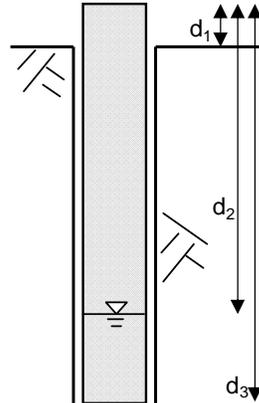
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# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/13/2012

**HOLE NO.:** B-35  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/16/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/JL  
**TESTED DATE:** 5/17/2012



**Measurements (in.)**  
 12 4/16  
 76 6/16  
 76 6/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
8:50	9:50	60	52 10/16	57 1/16	4.438	4.44
9:53	10:53	60	51 10/16	55 10/16	4.000	4.00
10:55	11:55	60	52 8/16	56 7/16	3.938	3.94
11:57	12:57	60	54 1/16	57 15/16	3.875	3.88

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 4.06 in./hr  
**Recommended Infiltration Rate:** 4.00 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**

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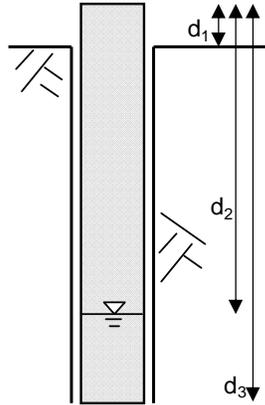
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# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 8/27/2012

**HOLE NO.:** B-37  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 8/27/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/AT  
**TESTED DATE:** 5/28/2012



**Measurements (in.)**  
 18 8/16  
 83 8/16  
 83 8/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth:** (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
10:45	11:45	60	54 2/16	56 5/16	2.200	2.20
11:48	12:48	60	53 11/16	55 13/16	2.100	2.10
12:50	13:50	60	53 14/16	56	2.100	2.10
13:55	14:55	60	53 10/16	55 11/16	2.100	2.10

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 2.13 in./hr  
**Recommended Infiltration Rate:** 2.10 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**

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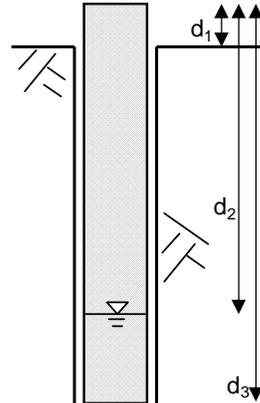
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# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/12/2012

**HOLE NO.:** B-38  
**HOLE DEPTH:** 5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/12/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/13/2012



**Measurements (in.)**  
 8 6/16  
 65 7/16  
 65 7/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth:** (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:50	8:49	59	41 6/16	45 10/16	4.250	4.32
8:51	9:50	59	41 4/16	45	3.750	3.81
9:52	10:51	59	41 6/16	45 1/16	3.688	3.75
10:53	11:56	64	40 14/16	45	4.125	3.87

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 3.94 in./hr  
**Recommended Infiltration Rate:** 3.90 in./hr  
**Report Reviewed and Prepared By:** KC

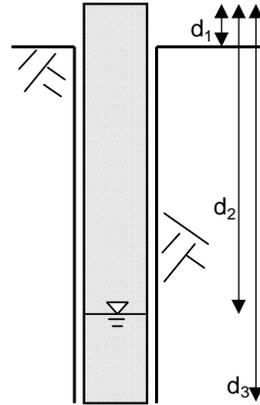
**REMARKS:**

# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/12/2012

**HOLE NO.:** B-39  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/12/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/13/2012



**Measurements (in.)**  
 19 6/16  
 66 8/16  
 83

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 16 8/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:44	8:44	60	42 8/16	43 13/16	1.313	1.31
8:45	9:45	60	42 8/16	43 11/16	1.188	1.19
9:47	10:48	61	42 8/16	43 12/16	1.250	1.23
10:49	11:49	60	42 7/16	43 7/16	1.000	1.00

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 1.18 in./hr  
**Recommended Infiltration Rate:** 1.20 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**

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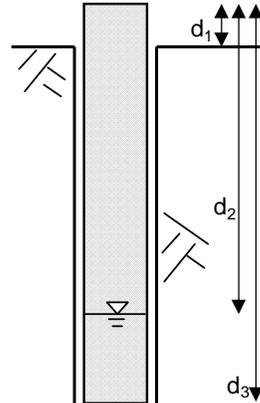
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# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/12/2012

**HOLE NO.:** B-40  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/12/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/13/2012



**Measurements (in.)**  
 14 4/16  
 78 4/16  
 78 4/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:36	8:35	59	53 9/16	56 2/16	2.563	2.61
8:36	9:36	60	53 7/16	56 4/16	2.813	2.81
9:37	10:37	60	53 5/16	56	2.688	2.69
10:39	11:40	61	53 9/16	56 4/16	2.688	2.64

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 2.69 in./hr  
**Recommended Infiltration Rate:** 2.70 in./hr  
**Report Reviewed and Prepared By:** KC

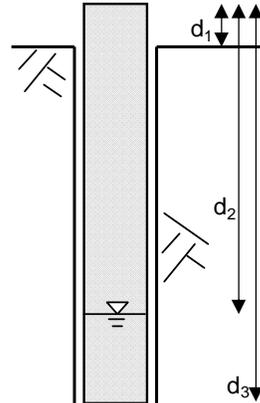
**REMARKS:**

# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/12/2012

**HOLE NO.:** B-41  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/12/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/13/2012



**Measurements (in.)**  
 19 14/16  
 59 6/16  
 82 13/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 23 7/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:30	8:30	60	35 6/16	35 6/16	0.000	0.00
8:30	9:30	60	35 6/16	35 6/16	0.000	0.00
9:30	10:32	62	35 6/16	35 6/16	0.000	0.00
10:34	11:34	60	35 6/16	35 6/16	0.000	0.00

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 0.00 in./hr  
**Recommended Infiltration Rate:** 0.00 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:** Very dense soil stratum was encountered in this boring

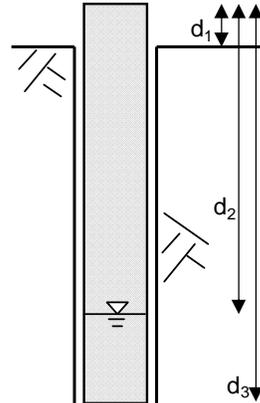
# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/12/2012

**HOLE NO.:** B-42  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/12/2012

**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/13/2012



**Measurements (in.)**  
 12 13/16  
 75 15/16  
 75 15/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth:** (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
7:22	7:23	61	51 9/16	53 11/16	2.125	2.09
8:25	9:24	59	50 8/16	52 7/16	1.938	1.97
9:24	10:27	63	51	53 2/16	2.125	2.02
10:28	11:28	60	51 9/16	53	1.438	1.44

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 1.88 in./hr  
**Recommended Infiltration Rate:** 1.90 in./hr  
**Report Reviewed and Prepared By:** KC

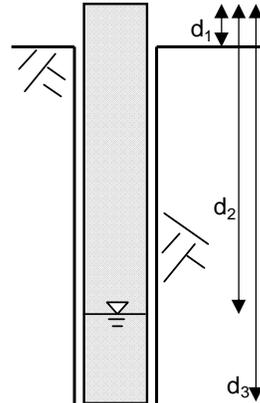
**REMARKS:**

# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/13/2012

**HOLE NO.:** B-43  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/16/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/JL  
**TESTED DATE:** 5/17/2012



**Measurements (in.)**  
 13 8/16  
 77 10/16  
 77 10/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth:** (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:00	9:58	58	53 7/16	55 5/16	1.875	1.94
10:00	11:00	60	52 12/16	54 10/16	1.875	1.88
11:03	12:03	60	52	53 11/16	1.688	1.69
12:05	13:05	60	51 1/16	52 12/16	1.688	1.69

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 1.80 in./hr  
**Recommended Infiltration Rate:** 1.80 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**

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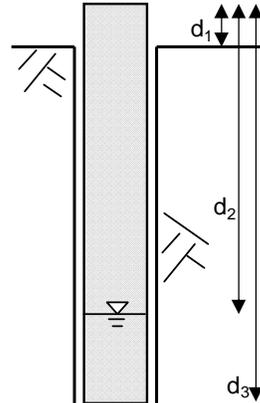
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# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/11/2012

**HOLE NO.:** B-44  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/11/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/12/2012



**Measurements (in.)**  
 8 3/16  
 72 12/16  
 72 12/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth:** (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:27	10:28	61	48 15/16	54 13/16	5.875	5.78
10:30	11:31	61	48 4/16	54 1/16	5.813	5.72
11:32	12:35	63	48 5/16	54 3/16	5.875	5.60
12:37	1:39	62	48 3/16	54 6/16	6.188	5.99

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 5.77 in./hr  
**Recommended Infiltration Rate:** 5.70 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**

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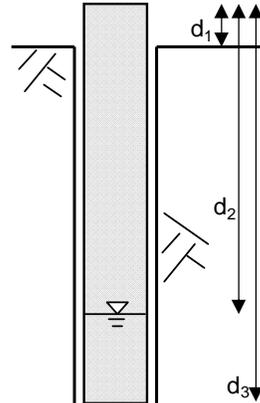
# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/11/2012

**HOLE NO.:** B-45  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/11/2012

**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** AD/JL  
**TESTED DATE:** 5/12/2012



**Measurements (in.)**  
 7 3/16  
 50 5/16  
 70 13/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 20 8/16

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:34	10:39	65	26 5/16	26 7/16	0.125	0.12
10:42	10:41	59	26 6/16	27	0.625	0.64
11:43	12:43	60	26 1/16	26 10/16	0.563	0.56
12:45	1:45	60	26 8/16	26 13/16	0.313	0.31

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 0.41 in./hr  
**Recommended Infiltration Rate:** 0.40 in./hr  
**Report Reviewed and Prepared By:** KC

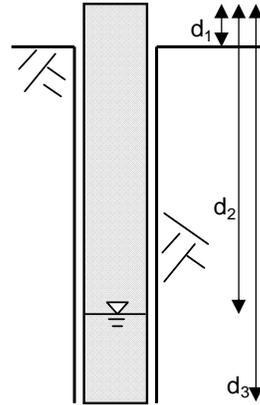
**REMARKS:**

# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 5/13/2012

**HOLE NO.:** B-46  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 5/16/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/JL  
**TESTED DATE:** 5/17/2012



**Measurements (in.)**  
 3 15/16  
 67 12/16  
 67 12/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth:** (from bottom) 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
9:10	10:09	59	43 9/16	44 9/16	1.000	1.02
10:10	11:10	60	43 8/16	44 6/16	0.875	0.88
11:12	12:12	60	41 3/16	42 2/16	0.938	0.94
12:15	13:15	60	39 15/16	40 14/16	0.938	0.94

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 0.94 in./hr  
**Recommended Infiltration Rate:** 0.90 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**

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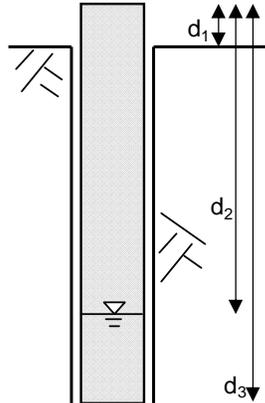
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# ON-SITE INFILTRATION TEST

**JOB NO.:** 2010-368.01  
**PROJECT:** Mont Co Subtask B (Phase 2)  
**LOCATION:**

**DRILLED BY:** PS  
**DATE:** 8/27/2012

**HOLE NO.:** B-50  
**HOLE DEPTH:** 5.5 ft  
**HOLE DIAMETER:** 8 inch  
**PRE-SOAK DATE:** 8/27/2012  
**PIPE DIAMETER:** 5 inch  
**PIPE MATERIAL:** PVC  
**TESTED BY:** SP/AT  
**TESTED DATE:** 8/28/2012



**Measurements (in.)**  
 19  
 77 12/16  
 77 12/16

**Pre-soak water remaining in the hole:** Yes / No      **Depth: (from bottom)** 0

Time of Reading (Hr : Min)		Time Escaped	Water Level (Below Reference)		Drop in Level	Infiltration Rate
Initial	final	(min)	Initial	Final	(in.)	(in./hr)
11:05	11:05	60	53 13/16	55	1.200	1.20
12:07	13:07	60	53 14/16	55 3/16	1.300	1.30
13:10	14:10	60	53 11/16	55 3/16	1.500	1.50
14:12	15:12	60	52 10/16	54 2/16	1.500	1.50

NOTE: \* Reading accuracy to 1/16"

**Average of 4-hr Monitoring Period:** 1.38 in./hr  
**Recommended Infiltration Rate:** 1.40 in./hr  
**Report Reviewed and Prepared By:** KC

**REMARKS:**