THE SCHOOL DISTRICT OF PHILADELPHIA
SCHOOL REFORM COMMISSION
Office of Capital Programs
440 North Broad Street, 3rd Floor – Suite 371
Philadelphia, PA 19130

TELEPHONE: (215) 400-4730

Addendum No. 1

Subject: **Bid Questions for Paving & Stormwater Management Project**
SDP Contract No. B-086C of 2016/17- General Construction

Location: **Hill-Freedman World Academy at Leeds Campus**

This Addendum, dated May 3, 2018 shall modify and become part of the Contract Documents for the work of this project. Any items not mentioned herein, or affected by, shall be performed strictly in accordance with the original documents.

1. **Question:** **What is the start date of the project? We are given completion dates but no overall duration or start date. Can we be given a duration in calendar days from Notice to Proceed?**

   Response: **it is anticipated that an award resolution will be submitted to the SRC for approval at its presently scheduled June 21, 2018 meeting. A Notice of Award should be issued to the selected contractor the day after the SRC Meeting.**

   The Contractor must sign the contract and submit insurance and bonds and any other required paperwork within five (5) days. Once the required documentation is provided, a Notice to Proceed can be issued.

   Notice to Proceed is anticipated to be effective on or about July 1, 2018.

   Completion is required by specific dates, so the contractor will have whatever number of days are available between the Notice to Proceed and the designated completion dates

2. **Question:** **Is there a geotechnical report with boring information? If yes can we please have that information.**

   Response: **The Infiltration Testing Report with geotechnical lab testing results is attached for the Contractor's information only. This information was used for design purposes only and may not be representative of site soils for the entire site or their present condition. Any interpretation of this information by the bidder is at its own risk.**

3. **Question:** **Has the material been tested in accordance with the PADEP Clean Fill Standards?**

   Response: **A "Soil Quality Testing – Stormwater Management Report" by Keating Environmental Management has been provided as an attachment to the Contract**

Documents. However, the Contractor is still responsible for soil testing for the determination of clean fill for all soil exported from the Site and soil imported to the Site. Refer to the Soils Management Plan (Part 3) requirements of the Environmental Coordination Section 01 1100 of the Bid Documents. Also see the Clean Fill notes on Drawing C-301.

4. **Question:** **Can the material be managed as Clean Fill in accordance with the PADEP Clean Fill Standards?**

   Response: **Material can be managed as clean fill if the Contractor's soil testing reveals that the material is clean fill in accordance with the PADEP Clean Fill Standards.**

5. **Question:** **What permits will the contractor be responsible for?**

   Response: **Refer to the General Conditions Section GC-4.7 entitled Permits, Fees, and Notices.**

6. **Question:** **Will the contractor be paid for additional disposal costs if the material is not Clean Fill?**

   Response: **The contractor will be paid for additional disposal costs, if any, if the material cannot be disposed of as clean fill. Refer to the General Specifications (Division 1) Section 01 1100 Environmental Coordination, Part 3 Soil Management.**

7. **Question:** **The M/WBE goals are particularly high for a project with a limited number of tasks. The scope of work is very similar to the Lankenau Project bid recently where ranges were changed to 15-20% combined M/WBE in Addendum 1. Would you consider making 15-20% combined the range for this project as well?**

   Response: **The MBE/WBE participation Goals are modified to a Combined MBE/WBE Combined Goal of 15-20%**

8. **Question:** **The following paragraph was in the Rowen School bid documents but does not appear in the Hill-Freedman documents:**

   Section 01 1100, 3.1, H. Disposal of contaminated soil that does not meet the criteria to be Certified as PADEP Clean Fill, will be at the Owner's expense and at the Contractors stated the per cubic yard Unit Price. The Unit Price shall reflect the transportation and disposal of up to 100 CY of non-hazardous soil as defined within the Resource Conservation Recovery Act, Title 40 of the CFR parts 239 through 259. Transportation and disposal of material contaminated due to a release caused by the Contractor will be at the Contractor's expense.

   Can you confirm that any soil that tests as contaminated will be paid per cubic yard for disposal? Although the specs include some analytical data on the soil, we have no way of knowing what the results our soil sampling will be.

   Response: **The testing results within the Soil Quality Testing report conducted on May 19, 2017 by Keating Environmental Management, Inc. included in the Bidding and Contract Documents documents, indicate that the material tested at Hill-Freedman satisfies the PADEP Clean Fill Concentration Limits.**

   Therefore, for bid purposes, bidders may assume that excess fill to be disposed offsite satisfies the DEP Clean fill Criteria.

If, at the time of testing during construction (to be performed by the Contractor at its expense), the results indicate that the material does not satisfy PADEP Clean Fill Concentration limits, the additional costs, if any for offsite disposal of contaminated soil will be addressed according to the Changes Clause of the General Conditions, GC-12

Attachment: Infiltration Testing Report, 27 pages

-END OF ADDENDUM NO. 1-

HUNT ENGINEERING COMPANY

April 28, 2017 (Revised June 19, 2017)

Ms. Julie Skierski, RLA
Office of Capital Programs
School District of Philadelphia
440 North Broad Street
Philadelphia, Pennsylvania 19130

RE: Infiltration Testing Summary
Hill Freedman World Academy at Leeds Campus
1100 E. Mt. Pleasant Avenue
Philadelphia, PA 19150

Dear Ms. Skierski,

Hunt Engineering Company is pleased to present this letter summarizing test results of double-ring infiltration tests performed for the School District of Philadelphia planned Hill Freedman World Academy at Leeds Campus (school) paving replacement and associated stormwater improvements. The location of the school is shown on Figure 1 in Attachment A. Two stormwater management practice (SMP) basin/features are planned, and will be located on paved school property adjacent to Sedgwick Street as shown on Figure 2 in Attachment A.

Prior to commencing the excavation / infiltration testing, Master Locators, a private utility locator service, scanned the test pit locations to identify potential underground utilities that may be encountered during the test pit excavation. Two test pits were excavated and backfilled each day, on April 14, 2017 and April 17, 2017, respectively, for a total of four test pits. Accurate Drilling LLC, under the technical guidance of Hunt Engineering Company, excavated the test pits using a Komatsu WB140 rubber tire backhoe /loader excavation equipment. The soils exposed in the excavated test pits were described and documented by a representative of Hunt Engineering Company.

Two double ring infiltrometer (DRI) tests were completed at the base of each of the four test pits for a total of 8 infiltration tests. The location of TP-L-3 was moved toward to the south from the marked location to avoid potential interference of an underground utility; however the excavated location remained within the footprint of the proposed basin. The depth of the infiltration test pits was measured by tape with respect to the top of existing paved surface. The infiltration testing was performed by Hunt Engineering Company in general accordance with the double-ring infiltrometer test methodology per the Philadelphia Water Department (PWD) Stormwater Management Guidance Manual, Chapter 3.3.

P.O. Box 537 | 22 East King Street | Malvern | PA | 19355 | p: 610-644-4600 | f: 610-644-2466 | www.huntengineering.com

Infiltration Test Summary
Hill Freedman World Academy at Leeds Campus
1100 E. Mt. Pleasant Avenue
Philadelphia, PA 19150

A summary of the infiltration rate, (inches/hour), is provided in the following Table 1. The test elevation is also provided for each test, which sometimes varied in the same test pit. The infiltration rate for each DRI test was determined by averaging the last four readings of each test. A geometric mean was determined from the average infiltration rates for each basin. Detailed results from the infiltration testing can be found in Attachment B on Double Ring Infiltration Testing Logs.

Table 1 – DRI Test Summary

Infiltration Test Location	Approximate Exist. Ground Elevation	Infiltration Test Location	Tested Elevation (ft.)	Average Infiltration Rate - Test (in/hr.)	Geometric Mean Infiltration Rate - Test (in/hr.)
TP-L-1 Basin #1	334.5±	1A	331.1	2.88	3.29
	334.5±	1B	331.1	3.69	
TP-L-2 Basin #1	338.5±	2A	336.2	3.47	
	338.5±	2B	336.1	3.19	
TP-L-3 Basin #2	342.5±	3A	340.5	1.63	4.23
	342.5±	3B	340.6	12.94	
TP-L-4 Basin #2	345.0±	4A	342.7	3.63	
	345.0±	4B	342.7	4.19	

The school site is located within the Upland Section of the Piedmont Physiographic Province of Pennsylvania. The Piedmont Upland is characterized by rolling hills and valleys underlain structurally by metamorphic rock of the Precambrian and early Paleozoic age. The most prevalent bedrock within the Piedmont Upland is the Oligoclase-Mica Schist of the Wissahickon Formation, which is a metamorphosed rock with a laminated or foliated structure. This type of schist consists of thin sheets, and easily splits apart because of the abundance of parallel and subparallel oriented mica crystals.

Infiltration Test Summary
Hill Freedman World Academy at Leeds Campus
1100 E. Mt. Pleasant Avenue
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Native soils of the Piedmont Upland are developed either in-place by chemical weathering processes of the underlying shallow bedrock resulting in a soil product termed residuum, or the surficial soils are transported, by running water; termed alluvium. Soils that develop on these eroded bedrock surfaces will closely reflect the character of the parent bedrock materials. Weathering of the schist bedrock will produce sandy silts to silty sands with varying amounts of mica. Chemical weathering of the oligoclase feldspar will result in soft decomposed clayey, silty material. The original structure of the parent rock can be retained in the soil structure. The schist rock is generally steeply dipping with near vertical joints and cleavage, which provide a secondary porosity and zones of active weathering. The continuity, and degree of weathering, or disintegration, is highly variable. Each of the infiltration tests were performed in the disintegrated zones of the Oligoclase-Mica Schist of the Wissahickon Formation.

Surficial soils in an urban setting such as the school could also be disturbed soils, such as artificial fill associated with anthropomorphic activities including natural soils mixed with debris. The soils encountered in the infiltration test locations are characteristic of the Urban Land – Chester complex (UdB). According to USDA soils documentation, UdB are classified as "well" - draining soils. The soils of the UdB generally classify according to the US Department of Agriculture (USDA) classification system, as silt loam to sandy loam soils, or according to the Unified Soil Classification System (USCS) as predominantly ML, CL or SM soils.

Each of the test pits encountered soils that had been disturbed and classify as Made Land at elevations higher than the elevation of the infiltration test. Made Land soils are sometimes similar in composition to the native soils of the area, however, the soil is considered fill since it has been disturbed.

The subsurface profile for the test pits generally consisted of asphalt overlying aggregate base/crushed stone overlying urban fill material (disturbed native soils and sometimes containing construction debris, etc.) underlain by native soil over weathered bedrock. Shallow more intact bedrock of schist, was encountered within the depth of excavation for Test Pit TP-L-3 at 3.3 feet. Details of the subsurface profile for each soil can be found on the individual soil infiltration records in Attachment B.

After completing the DRI tests, the test pit depth was increased approximately 4 feet below the infiltration test depth to check for the presence of limiting layers. Documentation of the soils encountered below the infiltrometer test elevation was reported in the soil infiltration records in Attachment B. A bulk sample from the soils at the infiltration test elevation and below was retained for laboratory testing. Results of the laboratory tests are pending.

Infiltration Test Summary
Hill Freedman World Academy at Leeds Campus
1100 E. Mt. Pleasant Avenue
Philadelphia, PA 19150

In accordance with test methodology per the Philadelphia Water Department (PWD) Stormwater Management Guidance Manual, Chapter 3.3 soil samples were collected that were representative of the soils within 1 foot of the infiltration interface. The samples were tested for laboratory particle size analysis (ASTM D422 and soils classification (ASTM D4318) by Craig Testing Laboratories. Results of the laboratory tests are summarized in the following table. Details of the soil laboratory tests are included in the Geotechnical Laboratory Testing Results, Attachment C.

Table 2 – Laboratory Testing Summary

Test Pit	Approximate Depth (ft.)	Atterberg Limits (%) (ASTM D4318)			Particle Size Distribution ASTM D422			USCS Group Symbol (See Notes 1 & 2)
		LL	PL	PI	% Gravel	% Sand	% Fines	
L-1	3.4 – 3.8	-	-	-	1.5	46.1	52.4	CL:H\ML:H
L-2	2.3 – 2.7	-	-	-	0.6	84.6	14.8	SM\SC
L-3	2.0 – 2.4	-	-	-	3.5	87.2	9.3	SW-SM\SC
L-4	2.3 – 2.4	-	-	-	1.7	80.9	19.1	SM\SC

Notes:
1. USCS Classification – used to classify soils for engineering purposes
2. Refinement of the combined USCS classification can be made with additional testing of Atterberg limits and/or a particle size analysis using a hydrometer device to better define the fine soil fraction.

The soil samples retained from within one foot of the infiltration interface were also tested by the Penn State Agricultural Analytical Services Laboratory for soil nutrient levels of soil pH, phosphorus, and potassium. The following table summarizes the results. The detailed results with recommended amendments are included in the Soil Fertility Attachment D.

Table 3 –Soil Fertility Testing Summary

Test Pit	Sample Depth (ft.)	Soil pH	Phosphorus (ppm)	Potassium (ppm)
L-1 & L-2	2.3-3.8	6.1	79	40
L-3 & L-4	2.0 -2.4	7.2	131	51

Infiltration Test Summary
Hill Freedman World Academy at Leeds Campus
1100 E. Mt. Pleasant Avenue
Philadelphia, PA 19150

Hunt Engineering Company appreciates the opportunity to be of continued service to the School District of Philadelphia on this project. If additional information is required or there are questions regarding the contents of this letter, please contact the undersigned at 610.644.4600.

Sincerely,
HUNT ENGINEERING COMPANY

Peter Neumann, MSc, P.E.
Manager – Geotechnical Engineering

Infiltration Test Summary
Hill Freedman World Academy at Leeds Campus
1100 E. Mt. Pleasant Avenue
Philadelphia, PA 19150

Attachment A – Test Location Plans

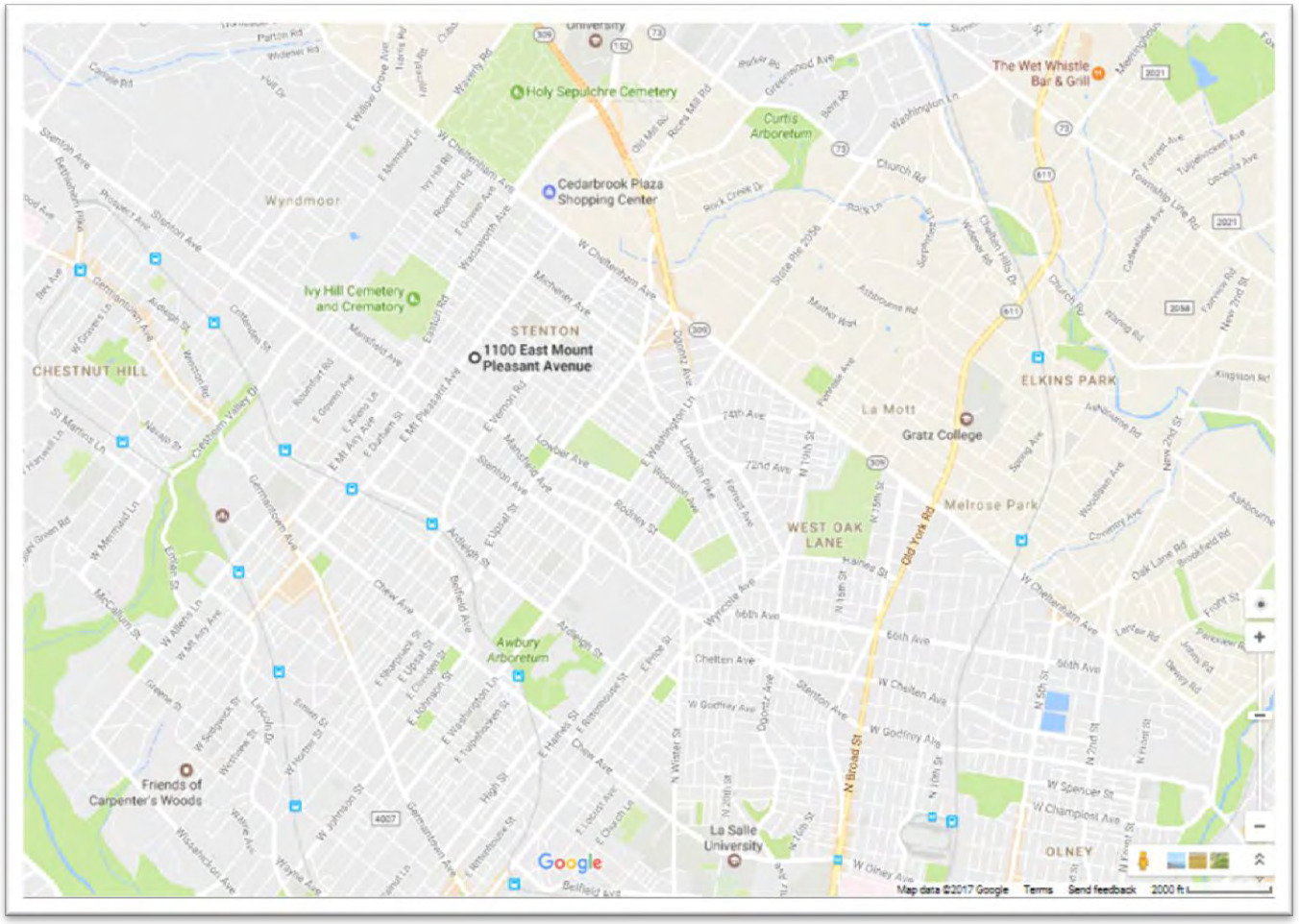
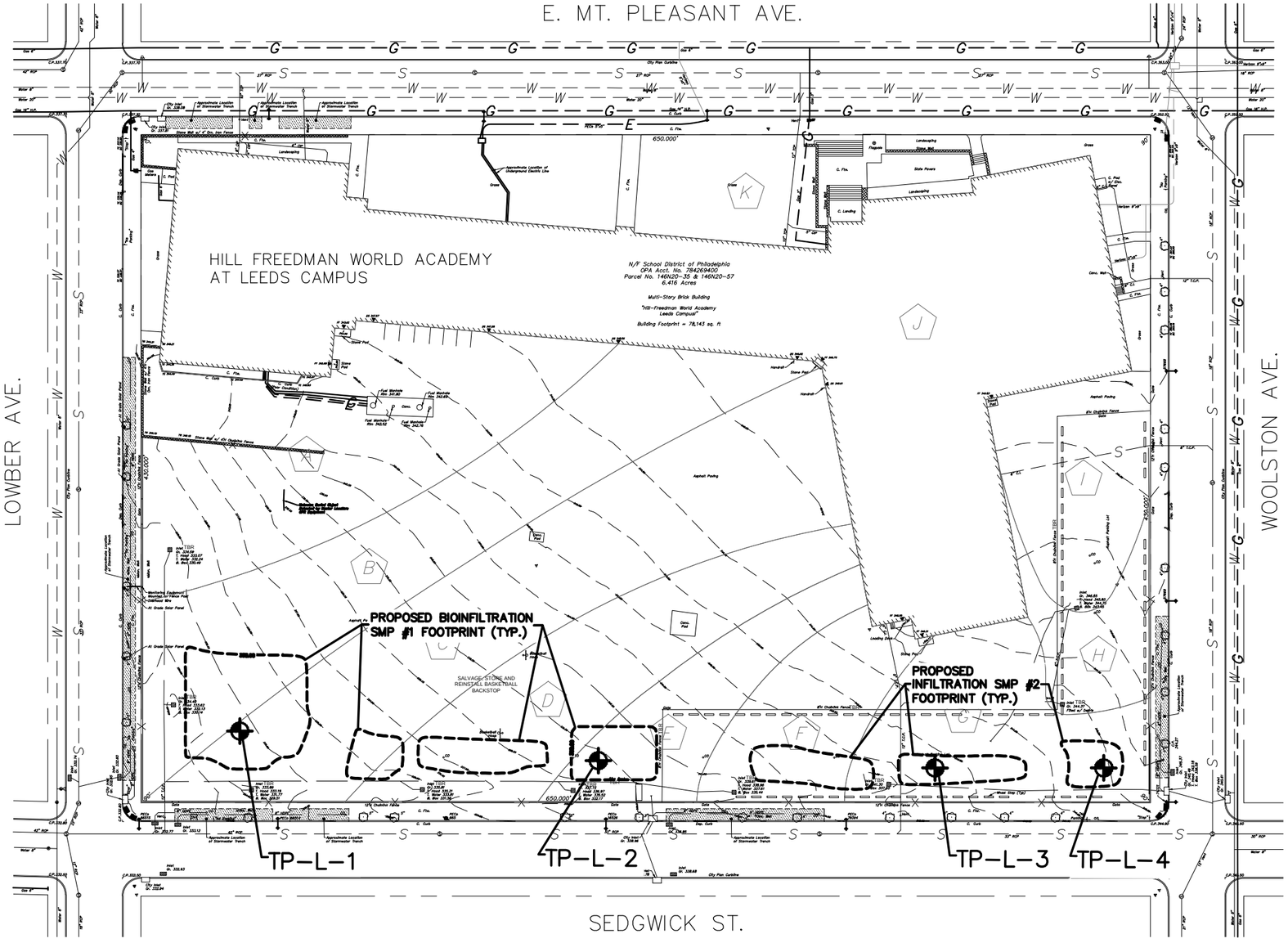


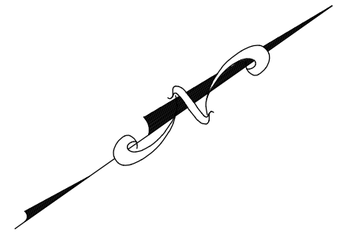
FIGURE 1

SITE LOCATION MAP

HILL FREEDMAN WORLD ACADEMY AT LEEDS CAMPUS
1100 E. MT. PLEASANT AVENUE
PHILADELPHIA, PENNSYLVANIA

Map Data © 2017 Google





NOTES:

1. THE CONCEPTUAL SMP BASIN FOOTPRINTS AND ASSOCIATED TEST PIT LOCATIONS WERE SHOWN ON TOPOGRAPHIC BASE PLAN TITLED, "HILL FREEDMAN WORLD ACADEMY AT LEEDS CAMPUS, 1100 E. MT. PLEASANT AVENUE, 19150, PAVING AND STORMWATER MANAGEMENT PROJECT, EXISTING CONDITIONS PLAN", PREPARED BY HUNT ENGINEERING COMPANY, ISSUED FOR INFILTRATION TESTING PURPOSES ON APRIL 3, 2017.
2. TEST PIT LOCATIONS WERE MARKED IN THE FIELD BY A HUNT ENGINEERING COMPANY REPRESENTATIVE ON APRIL 5, 2017.
3. EXCAVATION LOCATIONS WERE SCANNED BY A PRIVATE UTILITY LOCATOR SERVICE, "MASTER LOCATORS", ON APRIL 12, 2017.
4. TEST PITS TP-L-1 AND TP-L-2 WERE EXCAVATED AND THE INFILTRATION RATE TESTED ON APRIL 14, 2017. TEST PITS TP-L-3 AND TP-L-4 WERE EXCAVATED AND THE INFILTRATION RATE TESTED ON APRIL 17, 2017. TEST PITS WERE BACKFILLED THE SAME DAY THEY WERE EXCAVATED.
5. USE OF THIS PLAN IS LIMITED TO THE ILLUSTRATION OF THE APPROXIMATE LOCATIONS AND OTHER PERTINENT SITE FEATURES. ANY OTHER USE OF THIS PLAN WITHOUT PERMISSION FROM HUNT ENGINEERING COMPANY IS PROHIBITED.

LEGEND

- APPROXIMATE TEST PIT LOCATION
- APPROXIMATE FOOTPRINT LIMITS OF SMP BASINS #1 AND #2

SCALE

80 FEET 0 80 FEET

HORIZONTAL

INFILTRATION TEST PIT LOCATION PLAN

HILL FREEDMAN WORLD ACADEMY AT LEEDS CAMPUS
1100 E. MT PLEASANT AVENUE
PHILADELPHIA, PA 19150

HUNT ENGINEERING COMPANY

P.O. BOX 537
22 EAST KING STREET,
MALVERN, PA 19355
PHONE: 610-644-4600
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SCALE:	PROJECT NO:	FIGURE:
AS SHOWN	2155006.1	2
DRAWN BY: K. COUTSOUROS	CHECK BY: P. NEUMANN	DATE: APRIL 2017

Infiltration Test Summary
Hill Freedman World Academy at Leeds Campus
1100 E. Mt. Pleasant Avenue
Philadelphia, PA 19150

Attachment B – Infiltration Test Records

HUNT ENGINEERING COMPANY

Double Ring Infiltration Testing Log

TP-L-1A

Project Name:	Hill Freedman World Academy at Leeds Campus	**Date:**	4/14/2017
Project Basin No.:	1	**Weather:**	Overcast, 53^0 to 61^{0}F, light air, no precipitation
Testing Company:	Hunt Engineering Company	**Tester's Name:**	P. Neumann
Phone Number:	610-644-4600	**Email Address:**	pneumann@huntengineering.com
Test Number:	A	**Test Pit/Boring Hole Number:**	1
Test Method:	Stormwater Management Guidance Manual, Version 3.0 July 2015		
Test Depth (feet):	3.4	**Surface Elevation (feet):**	334.5
Instrument Diameter (inches):	Inner Ring = 6 in./Outer Ring = 12 in.		

Soil Characterization

Depth (feet):	Deposit Type:	Soil Description	Limiting Layers Type and Depth (feet):
0 - 0.2 ft (2 in. thick)	Existing Asphalt		
0.2 - 0.6 ft (3.5 to 24 in. thick)	Aggregate Base	GRAVEL, little Silty Sand, damp, homogeneous, coarse, subangular, light gray, GM	
0.6 - 1.1 ft (4 to 6 in. thick)	Fill	Silty SAND, contains boulders exposed at west end of test pit, damp, homogeneous, brown-yellow, SM	
1.1 - >7.4	Disintegrated Schist	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, uniform, black, white, brown-yellow, SM	Terminated excavation at 7.4 ft
Notes:		1. No subsurface water encountered within the depth excavated.	

Presoak

Time:	Time Interval:	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):
09:45	**0**	5.188	0.432		
10:15	**30**	5.188	0.432		
10:45	**30**	3.500	0.292	1.688	0.141

Infiltration Testing

Time:	Time Interval (10 or 30 minutes):	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):	Average Infiltration Rate (inches per hour):	Remarks:
10:45	**0**	5.188	0.432	0.000	0.000		
11:15	**30**	3.750	0.313	1.438	0.120	**2.88**	
11:45	**30**	3.625	0.302	1.563	0.130	**3.13**	
12:15	**30**	3.875	0.323	1.313	0.109	**2.63**	
12:45	**30**	3.750	0.313	1.438	0.120	**2.88**	
				Average Stabilized Infiltration Testing Rate (inches per hour):		**2.88**	

HUNT ENGINEERING COMPANY

Double Ring Infiltration Testing Log

TP-L-1B

Project Name:	Hill Freedman World Academy at Leeds Campus	**Date:**	4/14/2017
Project Basin No.:	1	**Weather:**	Overcast to Mostly Cloudy, 54^0 to 62^{0}F, light air, no precipitation
Testing Company:	Hunt Engineering Company	**Tester's Name:**	P. Neumann
Phone Number:	610-644-4600	**Email Address:**	pneumann@huntengineering.com
Test Number:	B	**Test Pit/Boring Hole Number:**	1
Test Depth (feet):	3.4	**Surface Elevation (feet):**	334.5
Test Method:	Stormwater Management Guidance Manual, Version 3.0 July 2015		
Instrument Diameter (inches):	Inner Ring = 6 in./Outer Ring = 12 in.		

Soil Characterization

Depth (feet):	Deposit Type:	Soil Description	Limiting Layers Type and Depth (feet):
0 - 0.2 ft (2 in. thick)	Existing Asphalt		
0.2 - 0.6 ft (3.5 to 4.5 in. thick)	Aggregate Base	GRAVEL, little Silty Sand, damp, homogeneous, coarse, subangular, light gray, GM	
0.6 - 1.1 ft (4 to 6 in. thick)	Fill	Silty SAND, contains boulders exposed at west end of test pit, damp, homogeneous, brown-yellow, SM	
1.1 - >7.4	Disintegrated Schist	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, uniform, black, white, brown-yellow, SM	Terminated excavation at 7.4 ft
Notes:		1. No subsurface water encountered within the depth excavated.	

Presoak

Time:	Time Interval:	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):
10:00	**0**	5.125	0.427		
10:30	**30**	5.063	0.422		
11:00	**30**	3.625	0.302	1.500	0.125

Infiltration Testing

Time:	Time Interval (10 or 30 minutes):	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):	Average Infiltration Rate (inches per hour):	Remarks:
11:00	**0**	5.125	0.427	0.000	0.000		
11:30	**30**	3.625	0.302	1.500	0.125	**3.00**	
12:00	**30**	3.125	0.260	2.000	0.167	**4.00**	
12:30	**30**	3.250	0.271	1.875	0.156	**3.75**	
13:00	**30**	3.125	0.260	2.000	0.167	**4.00**	
					Average Stabilized Infiltration Testing Rate (inches per hour):	**3.69**	

HUNT ENGINEERING COMPANY

Double Ring Infiltration Testing Log

TP-L-2A

Project Name:	Hill Freedman World Academy at Leeds Campus	**Date:**	4/14/2017
Project Basin No.:	1	**Weather:**	Mostly cloudy, 57^0 to 67^{0}F, light breeze, no precipitation
Testing Company:	Hunt Engineering Company	**Tester's Name:**	P. Neumann
Phone Number:	610-644-4600	**Email Address:**	pneumann@huntengineering.com
Test Number:	A	**Test Pit/Boring Hole Number:**	2
Test Depth (feet):	2.3	**Surface Elevation (feet):**	338.5
Test Method:	Stormwater Management Guidance Manual, Version 3.0 July 2015		
Instrument Diameter (inches):	Inner Ring = 6 in./Outer Ring = 12 in.		

Soil Characterization

Depth (feet):	Deposit Type:	Soil Description	Limiting Layers Type and Depth (feet):
0 - 0.2 ft (2 in. thick)	Asphalt		
0.2 - 0.6 ft (2 to 5 in. thick)	Aggregate Base	GRAVEL, little Silty Sand, damp, homogeneous, coarse, subangular, light gray, GM	
0.6 - 1.1 ft (4 to 6 in. thick)	Possible Fill	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, poorly graded, brown, SM	
1.1 - 4.6 ft	Weathered Schist	Silty SAND, excessively micaceous, contains weathered rock fragments, damp, homogeneous, uniform, white, SM	
4.6 - 6.4 ft	Weathered Schist	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, uniform, brown-yellow, SM	Terminated excavation at 6.4 ft
Notes:		1. No subsurface water encountered within the depth excavated.	

Presoak

Time:	Time Interval:	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):
10:00	**0**	5.000	0.417		
13:30	**30**	5.000	0.417		
14:00	**30**	3.500	0.292	1.500	0.125

Infiltration Testing

Time:	Time Interval (10 or 30 minutes):	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):	Average Infiltration Rate (inches per hour):	Remarks:
14:00	**0**	5.250	0.438	0.000	0.000		
14:30	**30**	3.563	0.297	1.688	0.141	**3.38**	
15:00	**30**	3.500	0.292	1.750	0.146	**3.50**	
15:30	**30**	3.625	0.302	1.625	0.135	**3.25**	
16:00	**30**	3.375	0.281	1.875	0.156	**3.75**	
Average Stabilized Infiltration Testing Rate (inches per hour):						**3.47**	

Double Ring Infiltration Testing Log

TP-L-2B

Project Name:	Hill Freedman World Academy at Leeds Campus	**Date:**	4/14/2017
Project Basin No.:	1	**Weather:**	Mostly cloudy, 57^0 to 67^{0}F, light breeze, no precipitation
Testing Company:	Hunt Engineering Company	**Tester's Name:**	P. Neumann
Phone Number:	610-644-4600	**Email Address:**	pneumann@huntengineering.com
Test Number:	B	**Test Pit/Boring Hole Number:**	2
Test Depth (feet):	2.4	**Surface Elevation (feet):**	338.5
Test Method:	Stormwater Management Guidance Manual, Version 3.0 July 2015		
Instrument Diameter (inches):	Inner Ring = 6 in./Outer Ring = 12 in.		

Soil Characterization

Depth (feet):	Deposit Type:	Soil Description	Limiting Layers Type and Depth (feet):
0 - 0.2 ft (2 in. thick)	Asphalt		
0.2 - 0.6 ft (2 to 5 in. thick)	Aggregate Base	GRAVEL, little Silty Sand, damp, homogeneous, coarse, subangular, light gray, GM	
0.6 - 1.1 ft (4 to 6 in. thick)	Possible Fill	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, poorly graded, brown, SM	
1.1 - 4.6 ft	Weathered Schist	Silty SAND, excessively micaceous, contains weathered rock fragments, damp, homogeneous, uniform, white, SM	
4.6 - 6.4 ft	Weathered Schist	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, uniform, brown-yellow, SM	Terminated excavation at 6.4 ft
Notes:		1. No subsurface water encountered within the depth excavated.	

Presoak

Time:	Time Interval:	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):
13:05	**0**	5.250	0.438		
13:35	**30**	5.250	0.438		
14:05	**30**	3.375	0.281	1.875	0.156

Infiltration Testing

Time:	Time Interval (10 or 30 minutes):	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):	Average Infiltration Rate (inches per hour):	Remarks:
14:05	**0**	5.250	0.438	0.000	0.000		
14:35	**30**	3.750	0.313	1.500	0.125	**3.00**	
15:05	**30**	3.500	0.292	1.750	0.146	**3.50**	
15:35	**30**	3.625	0.302	1.625	0.135	**3.25**	
16:05	**30**	3.750	0.313	1.500	0.125	**3.00**	

Average Stabilized Infiltration Testing Rate (inches per hour): **3.19**

HUNT ENGINEERING COMPANY

Double Ring Infiltration Testing Log

TP-L-3A

Project Name:	**Hill Freedman World Academy at Leeds Campus**	**Date:**	**4/17/2017**
Project Basin No.:	**2**	**Weather:**	**Overcast, 64^0 to 70^{0}F, light air, no precipitation**
Testing Company:	**Hunt Engineering Co.**	**Tester's Name:**	P. Neumann
Phone Number:	**610-644-4600**	**Email Address:**	pneumann@huntengineering.com
Test Number:	**A**	**Test Pit/Boring Hole Number:**	**3**
Test Depth (feet):	**2**	**Surface Elevation (feet):**	**342.5**
Test Method:	**Stormwater Management Guidance Manual, Version 3.0 July 2015**		
Instrument Diameter (inches):	**Inner Ring = 6 in./Outer Ring = 12 in.**		

Soil Characterization

Depth (feet):	Deposit Type:	Soil Description	Limiting Layers Type and Depth (feet):
0 - 0.2 ft (1.5 - 2 in. thick)	Asphalt		
0.2 - 0.7 ft (4 to 6 in. thick)	Aggregate Base	GRAVEL, little Silty Sand, damp, homogeneous, coarse, subangular, light gray, GM	
0.7 - 1.2 ft (4 to 6 in. thick)	Possible Fill	Silty SAND, micaceous, damp, homogeneous, poorly graded, brown-yellow, SM	
1.2 - 3.3 ft	Disintegrated Schist	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, uniform, black, white, brown-orange, SM	@3.3 ft Excavation refusal on bedrock
Notes:		1. No subsurface water encountered within the depth excavated.	
		2. Test pit was moved south to avoid potential marked underground utility identified by paint mark.	

Presoak

Time:	Time Interval:	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):
12:40	**0**	5.000	0.417		
13:20	**30**	5.000	0.417		
13:50	**30**	4.750	0.396	0.250	0.021

Infiltration Testing

Time:	Time Interval (10 or 30 minutes):	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):	Average Infiltration Rate (inches per hour):	Remarks:
13:50	**0**	5.250	0.438	0.000	0.000		**Had difficulty installing the DRI rings into the partially disintegrated schist.**
14:05	**15**	4.750	0.396	0.500	0.042	**2.00**	**Foliation planes were exposed at the prepared DRI test surface.**
14:20	**15**	4.875	0.406	0.375	0.031	**1.50**	
14:35	**15**	4.813	0.401	0.438	0.036	**1.75**	
14:50	**15**	4.813	0.401	0.438	0.036	**1.75**	
15:05	**15**	4.938	0.411	0.313	0.026	**1.25**	
15:20	**15**	4.938	0.411	0.313	0.026	**1.25**	
15:35	**15**	4.750	0.396	0.500	0.042	**2.00**	
15:50	**15**	4.750	0.396	0.500	0.042	**2.00**	
				Average Stabilized Infiltration Testing Rate (inches per hour):		**1.63**	

HUNT ENGINEERING COMPANY

Double Ring Infiltration Testing Log

TP-L-3B

Project Name:	Hill Freedman World Academy at Leeds Campus	**Date:**	4/17/2017
Project Basin No.:	2	**Weather:**	Overcast, 64^0 to 70^{0}F, light air, no precipitation
Testing Company:	Hunt Engineering Company	**Tester's Name:**	P. Neumann
Phone Number:	610-644-4600	**Email Address:**	pneumann@huntengineering.com
Test Number:	B	**Test Pit/Boring Hole Number:**	3
Test Depth (feet):	1.9	**Surface Elevation (feet):**	342.5
Test Method:	Stormwater Management Guidance Manual, Version 3.0 July 2015		
Instrument Diameter (inches):	Inner Ring = 6 in./Outer Ring = 12 in.		

Soil Characterization

Depth (feet):	Deposit Type:	Soil Description	Limiting Layers Type and Depth (feet):
0 - 0.2 ft (1.5 - 2 in. thick)	Asphalt		
0.2 - 0.7 ft (4 to 6 in. thick)	Aggregate Base	GRAVEL, little Silty Sand, damp, homogeneous, coarse, subangular, light gray, GM	
0.7 - 1.2 ft (4 to 6 in. thick)	Possible Fill	Silty SAND, micaceous, damp, homogeneous, poorly graded, brown-yellow, SM	
1.2 - 3.3 ft	Disintegrated Schist	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, uniform, black, white, brown-orange, SM	@3.3 ft Excavation refusal on bedrock
Notes:		1. No subsurface water encountered within the depth excavated.	
		2. Test pit was moved south to avoid potential marked underground utility identified by paint mark.	

Presoak

Time:	Time Interval:	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):
12:55	0	5.125	0.427		
13:25	30	5.125	0.427		
13:55	30	2.750	0.229	2.375	0.198

Infiltration Testing

Time:	Time Interval (10 or 30 minutes):	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):	Average Infiltration Rate (inches per hour):	Remarks:
13:55	0	5.125	0.427	0.000	0.000		Had difficulty installing the DRI rings into the partially disintegrated schist. Foliation planes were exposed at the prepared the DRI test surface.
14:05	10	2.750	0.229	2.375	0.198	14.25	
14:15	10	3.250	0.271	1.875	0.156	11.25	
14:25	10	3.063	0.255	2.063	0.172	12.38	
14:35	10	3.125	0.260	2.000	0.167	12.00	
14:45	10	2.625	0.219	2.500	0.208	15.00	
14:55	10	2.875	0.240	2.250	0.188	13.50	
15:05	10	2.875	0.240	2.250	0.188	13.50	
15:15	10	3.063	0.255	2.063	0.172	12.38	
15:25	10	3.000	0.250	2.125	0.177	12.75	
15:35	10	2.938	0.245	2.188	0.182	13.13	
				Average Stabilized Infiltration Testing Rate (inches per hour):		12.94	

HUNT ENGINEERING COMPANY

Double Ring Infiltration Testing Log

TP-L-4A

Project Name:	Hill Freedman World Academy at Leeds Campus	**Date:**	4/17/2017
Project Basin No.:	2	**Weather:**	Overcast to partly cloudy, 68^0 to 64^{0}F, light to moderate breeze, Light rain (0.12"/3 hrs)
Testing Company:	Hunt Engineering Co.	**Tester's Name:**	P. Neumann
Phone Number:	610-644-4600	**Email Address:**	pneumann@huntengineering.com
Test Number:	A	**Test Pit/Boring Hole Number:**	4
Test Method:	Stormwater Management Guidance Manual, Version 3.0 July 2015		
Test Depth (feet):	2.3	**Surface Elevation (feet):**	345.0
Instrument Diameter (inches):	Inner Ring = 6 in./Outer Ring = 12 in.		

Soil Characterization

Depth (feet):	Deposit Type:	Soil Description	Limiting Layers Type and Depth (feet):
0 - 0.2 ft (1.5 - 2 in. thick)	Asphalt		
0.2 - 0.7 ft (4 to 6 in. thick)	Aggregate Base	GRAVEL, little Silty Sand, damp, homogeneous, coarse, subangular, light gray, GM	
0.7 - 1.7 ft (12 in. thick)	Possible Fill	Silty SAND, contains cobbles, damp, homogeneous, uniform, brown-yellow, SM	
1.7 - >6.5 ft	Disintegrated Schist	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, uniform, black, white, brown-yellow, SM	Terminated excavation at 6.5 ft
Notes:		1. No subsurface water encountered within the depth excavated.	

Presoak

Time:	Time Interval:	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):
0930	0	5.188	0.432		
10:00	30	5.188	0.432		
10:30	30	3.500	0.292	1.688	0.141

Infiltration Testing

Time:	Time Interval (10 or 30 minutes):	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):	Average Infiltration Rate (inches per hour):	Remarks:
10:30	0	5.250	0.438	0.000	0.000		
11:00	30	3.625	0.302	1.625	0.135	3.25	Both infiltration tests were protected from the light rain by three umbrellas.
11:30	30	3.250	0.271	2.000	0.167	4.00	The light rain was completely deflected from influencing the DRI test.
12:00	30	3.500	0.292	1.750	0.146	3.50	
12:30	30	3.500	0.292	1.750	0.146	3.50	
13:00	30	3.500	0.292	1.750	0.146	3.50	
Average Stabilized Infiltration Testing Rate (inches per hour):						3.63	

HUNT ENGINEERING COMPANY

Double Ring Infiltration Testing Log

TP-L-4B

Project Name:	Hill Freedman World Academy at Leeds Campus	**Date:**	4/17/2017
Project Basin No.:	2	**Weather:**	Overcast to partly cloudy, 68^0 to 64^{0}F, light to moderate breeze, Light rain (0.12"/3 hrs)
Testing Company:	Hunt Engineering Co.	**Tester's Name:**	P. Neumann
Phone Number:	610-644-4600	**Email Address:**	pneumann@huntengineering.com
Test Number:	B	**Test Pit/Boring Hole Number:**	4
Test Depth (feet):	2.3	**Surface Elevation (feet):**	345.0
Test Method:	Stormwater Management Guidance Manual, Version 3.0 July 2015	**Instrument Diameter (inches):**	Inner Ring = 6 in./Outer Ring = 12 in.

Soil Characterization

Depth (feet):	Deposit Type:	Soil Description	Limiting Layers Type and Depth (feet):
0 - 0.2 ft (1.5 - 2 in. thick)	Asphalt		
0.2 - 0.7 ft (4 to 6 in. thick)	Aggregate Base	GRAVEL, little Silty Sand, damp, homogeneous, coarse, subangular, light gray, GM	
0.7 - 1.7 ft (12 in. thick)	Possible Fill	Silty SAND, contains cobbles, damp, homogeneous, uniform, brown-yellow, SM	
1.7 - >6.5 ft	Disintegrated Schist	Silty SAND, micaceous, contains weathered rock fragments, damp, homogeneous, uniform, black, white, brown-yellow, SM	Terminated excavation at 6.5 ft
Notes:		1. No subsurface water encountered within the depth excavated.	

Presoak

Time:	Time Interval:	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):
09:35	0	5.000	0.417		
10:05	30	5.000	0.417		
10:35	30	3.750	0.313	1.250	0.104

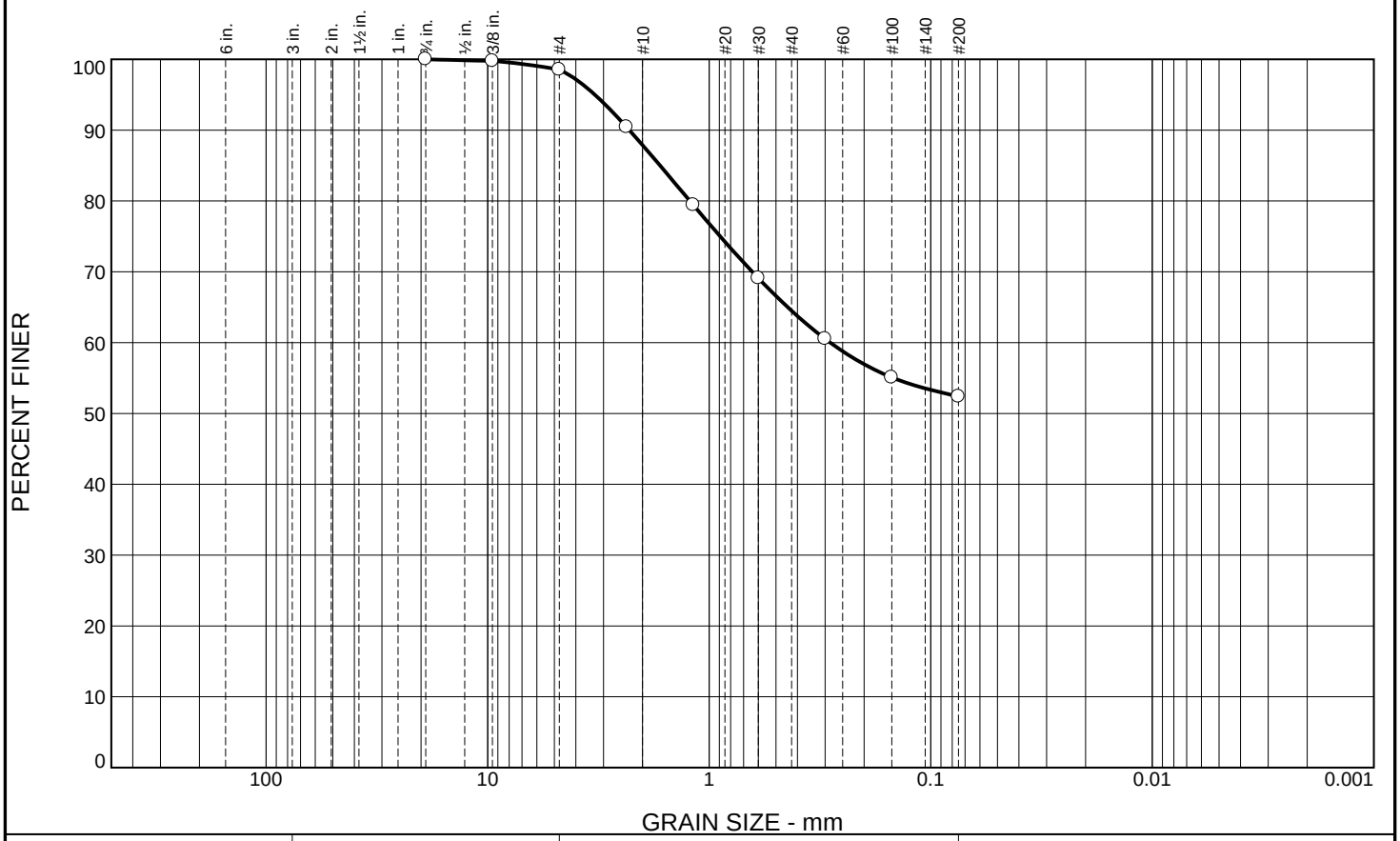
Infiltration Testing

Time:	Time Interval (10 or 30 minutes):	Measurement, (inches)	Measurement, (feet):	Drop in water level, (inches):	Drop in water level, (feet):	Average Infiltration Rate (inches per hour):	Remarks:
10:35	0	5.125	0.427	0.000	0.000		Both infiltration tests were protected from the light rain by three umbrellas. The light rain was completely deflected from influencing the DRI test.
11:05	30	3.188	0.266	1.938	0.161	3.88	
11:35	30	4.250	0.354	0.875	0.073	1.75	
12:05	30	3.125	0.260	2.000	0.167	4.00	
12:35	30	3.125	0.260	2.000	0.167	4.00	
13:05	30	2.938	0.245	2.188	0.182	4.38	
13:35	30	2.938	0.245	2.188	0.182	4.38	
				Average Stabilized Infiltration Testing Rate (inches per hour):		4.19	

Infiltration Test Summary
Hill Freedman World Academy at Leeds Campus
1100 E. Mt. Pleasant Avenue
Philadelphia, PA 19150

Attachment C – Geotechnical Laboratory Testing Results

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.5	10.6	23.4	12.1	52.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	99.8		
#4	98.5		
#8	90.4		
#16	79.4		
#30	69.1		
#50	60.5		
#100	55.1		
#200	52.4		

* (no specification provided)

Material Description

Brown sandy SILT\CLAY with trace mica

Atterberg Limits

LL= PL= PI=

Coefficients

D_{85}= 1.6671 D_{60}= 0.2843 D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL:H\ML:H

Remarks

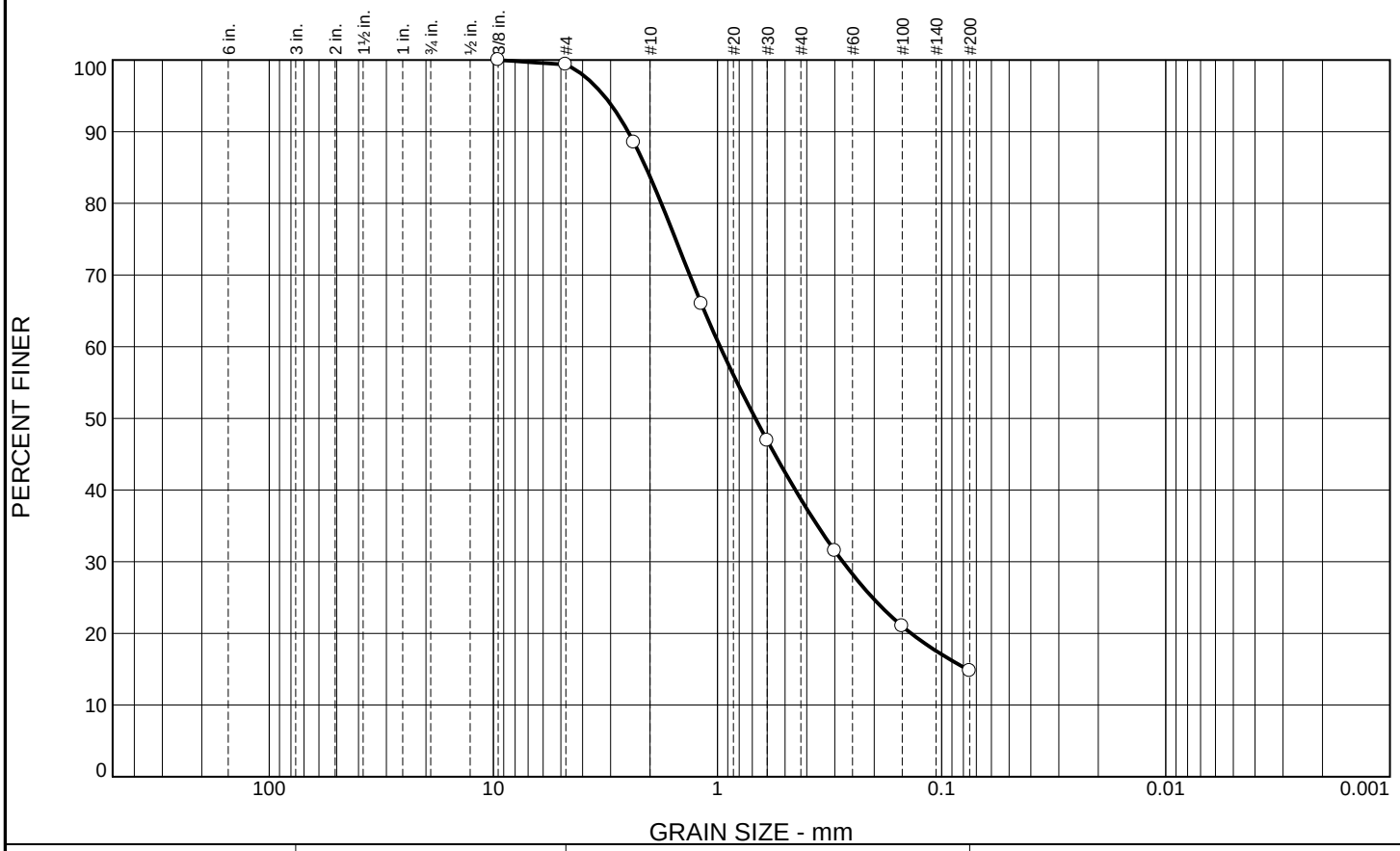
Source of Sample: On-Site **Depth:** Bulk
Sample Number: L-1 **Date:** 5/10/17

CRAIG TESTING LABORATORIES, INC.
www.craigtestinglabs.com
Mays Landing, NJ 609-625-1700

Client: Hunt Engineering
Project: 3 School Infiltration

Project No: 739502 **Plate** PSA-1

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	15.7	45.0	23.9	14.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	99.4		
#8	88.5		
#16	66.0		
#30	46.9		
#50	31.5		
#100	21.0		
#200	14.8		

* (no specification provided)

Material Description

White silty\clayey SAND

Atterberg Limits

LL= PL= PI=

Coefficients

D_{85}= 2.0857 D_{60}= 0.9741 D_{50}= 0.6778
D_{30}= 0.2762 D_{15}= 0.0772 D_{10}=
C_u= C_c=

Classification

USCS= SM\SC

Remarks

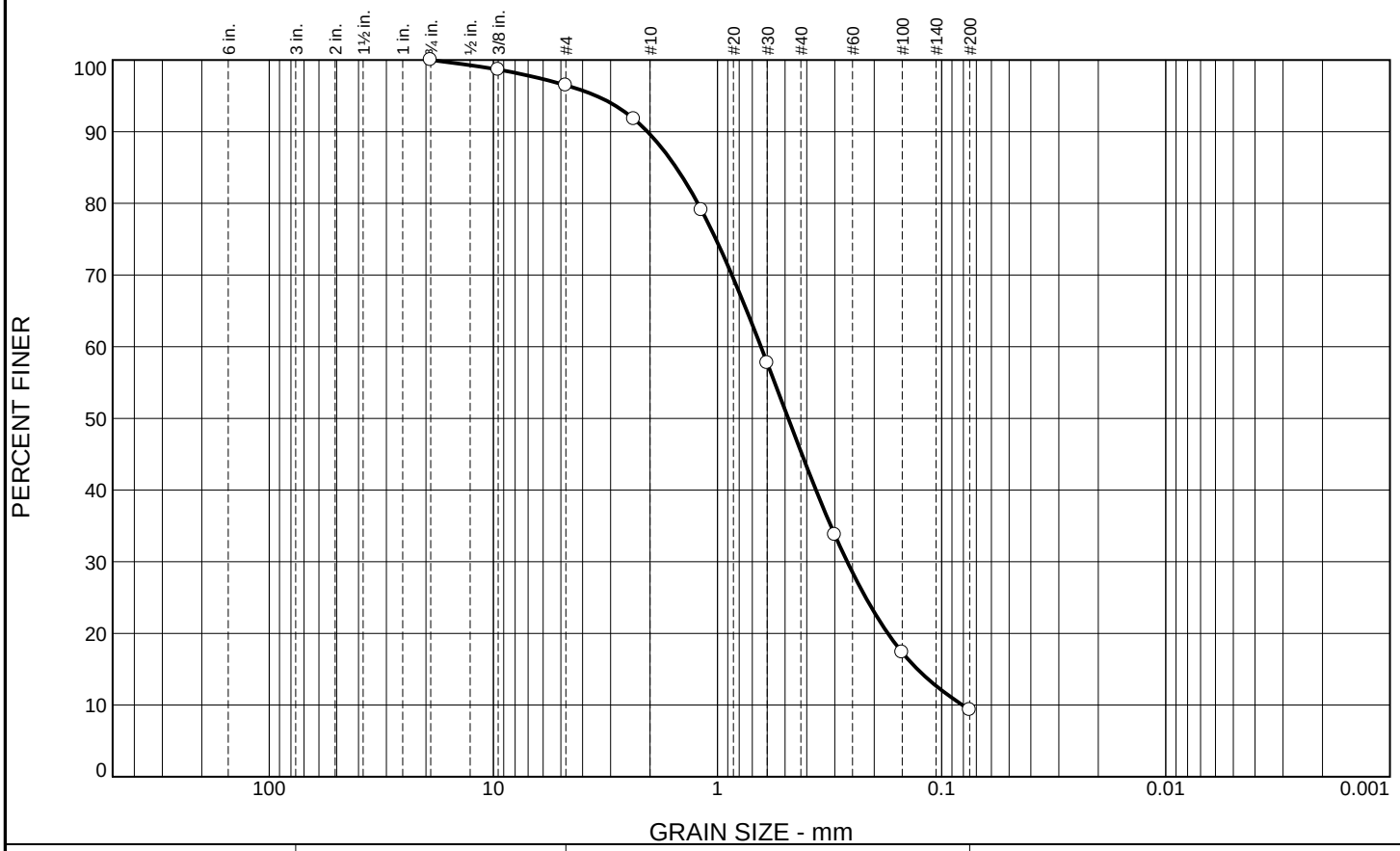
Source of Sample: On-Site **Depth:** Bulk
Sample Number: L-2 **Date:** 5/10/17

CRAIG TESTING LABORATORIES, INC.
www.craigtestinglabs.com
Mays Landing, NJ 609-625-1700

Client: Hunt Engineering
Project: 3 School Infiltration

Project No: 739502 **Plate** PSA-2

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.5	6.9	44.2	36.1	9.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	98.7		
#4	96.5		
#8	91.8		
#16	79.1		
#30	57.7		
#50	33.8		
#100	17.3		
#200	9.3		

* (no specification provided)

Material Description

Light brown well graded SAND with silt\clay

Atterberg Limits

LL= PL= PI=

Coefficients

D_{85}= 1.5294 D_{60}= 0.6400 D_{50}= 0.4836
D_{30}= 0.2640 D_{15}= 0.1282 D_{10}= 0.0808
C_u= 7.92 C_c= 1.35

Classification

USCS= SW-SM\SC

Remarks

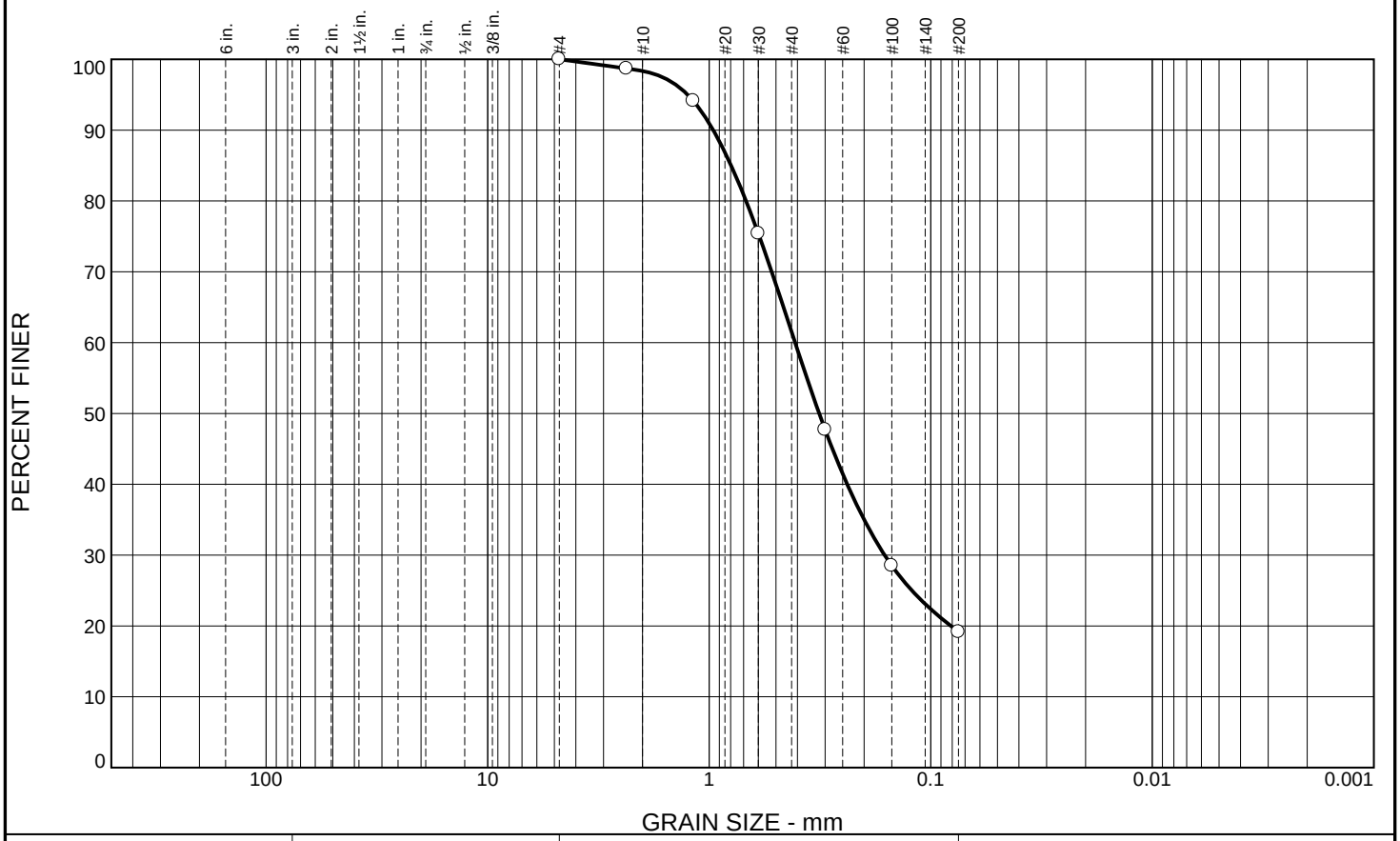
Source of Sample: On-Site **Depth:** Bulk
Sample Number: L-3 **Date:** 5/10/17

CRAIG TESTING LABORATORIES, INC.
www.craigtestinglabs.com
Mays Landing, NJ 609-625-1700

Client: Hunt Engineering
Project: 3 School Infiltration

Project No: 739502 **Plate** PSA-3

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.7	36.8	42.4	19.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#8	98.7		
#16	94.1		
#30	75.4		
#50	47.7		
#100	28.5		
#200	19.1		

* (no specification provided)

Material Description

Light brown silty\clayey SAND

Atterberg Limits

LL= PL= PI=

Coefficients

D_{85}= 0.7965 D_{60}= 0.4094 D_{50}= 0.3190
D_{30}= 0.1615 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= SM\SC

Remarks

Source of Sample: On-Site **Depth:** Bulk
Sample Number: L-4 **Date:** 5/10/17

CRAIG TESTING LABORATORIES, INC.
www.craigtestinglabs.com
Mays Landing, NJ 609-625-1700

Client: Hunt Engineering
Project: 3 School Infiltration

Project No: 739502 **Plate** PSA-4

Infiltration Test Summary
Hill Freedman World Academy at Leeds Campus
1100 E. Mt. Pleasant Avenue
Philadelphia, PA 19150

Attachment D – Soil Fertility Test Results

PENNSTATE
1855
(814) 863-0841 Fax: (814) 863-4540
Agricultural Analytical Services Laboratory
The Pennsylvania State University
University Park, PA 16802
www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
PETER NEUMANN HUNT ENGINEERING COMPANY 22 E. KING ST; PO BOX 537 MALVERN PA 19355	DEBBIE NEMIROFF HUNT ENGINEERING COMPANY 22 E. KING ST; PO BOX 537 MALVERN PA 19355

DATE	LAB #	SERIAL #	COUNTY	ACRES	FIELD ID	SOIL
05/17/2017	S17-22812	50058	Chester		L1-l2	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
Soil pH	6.1				
Phosphorus	79	ppm			
Potassium	40	ppm			

RECOMMENDATIONS FOR: ***Park Area-To Plant*** ***Tall Fescue***

Prior to planting, incorporate the following into the top 4 to 6 inches of soil.

Limestone: 50 lb/1000 square feet

Phosphate (P_2O_5): NONE

Potash (K_2O): 5 lb/1000 square feet

Apply a starter fertilizer just prior to seeding and work lightly into the soil

Apply a starter fertilizer at approximate rate of 1 lb of nitrogen per 1000 square feet, 0.5 to 1.0 lb of P_2O_5 per 1000 square feet, and 0.5 to 1.0 lb of K_2O per 1000 square feet using a fertilizer with approximate 1:1:1 or 2:1:1 ratio of N:P_2O_5:K_2O.

MESSAGES

The above recommendations are for a new establishment that will be tilled 4 to 6 inches in depth prior to planting. In some cases, turfgrass seed is planted into soils that have not been tilled. In such cases, incorporating large amounts of lime, fertilizer, and organic matter into soil 4 to 6 inches in depth is not possible. When planting into soils that have not been tilled, do not exceed 100 lb lime/1000 square feet; 5 lb P2O5/1000 square feet; or 2.0 lb K2O/1000 square feet. Do not apply organic matter unless a core aerator is used to incorporate into the soil surface. If attempting to incorporate organic matter with a core aerator, apply 1/4 to 1/2 inch of organic matter to the turf/soil surface and make 8 to 10 passes with the aerator.

LABORATORY RESULTS:										Optional Tests:		
[1]pH	[2]P lb/A	Exchangeable Cations (meq/100g)					% Saturation of the CEC			Organic Matter %	Nitrate-N ppm	Soluble salts mmhos/cm
		[3]Acidity	[2]K	[2]Mg	[2]Ca	[4]CEC	K	Mg	Ca			
6.1	158	2.20	0.10	0.26	0.60	3.2	3.2	8.2	18.9			

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

Turf-To Plant

COMMENTS

1. Apply full lime recommendation and thoroughly mix into the soil four to six inches deep. Use a high quality agricultural ground limestone product to meet the lime recommendation on this report. Manufacturers of agricultural ground limestone products provide a number called the calcium carbonate equivalent, or CCE, on the label. CCEs with high numerical values (close to 100 or above) indicate a pure lime source (greater ability to neutralize soil acidity). The amount of lime recommended on this report is based on an agricultural ground limestone with a CCE of 100. If your lime source is close to or equal to 100, you don't need to adjust the recommended amount. In the event that you use a lime source with a CCE well below or above 100, use the following formula to adjust the required amount.

$$\text{Actual liming material required} = \frac{\text{(Soil test recommendation in lbs of lime/1000 square feet)}}{\text{CCE of liming material}} \times 100$$

Example Only:

Soil Test Recommendation: Apply 75 lbs lime/1000 square feet

CCE on label: 80 percent

$$\text{Actual liming material required} = \frac{\text{(75 lbs of lime)} \times 100}{80}$$

$$= 94 \text{ lb liming material/1000 square feet}$$

2. If organic matter test was requested and organic matter is recommended, throughly mix organic matter into a four to six inch soil depth. Sphagnum peat and peat humus typically contain high amounts of organic matter (> 80 %) and will usually meet organic matter requirements when incorporated at the rate recommended on the soil test report. With the exception of putting greens and tees, a good quality compost can also be used as an organic amendment; however, most composts contain lower amounts of organic matter than peats. Therefore, you may need to add greater amounts of compost to meet soil test organic matter recommendations. For more information on using composts as organic amendments in new turf plantings, refer to the publication, "Using Composts to Improve Turf Performance". This publication is available from Penn State Cooperative Extension offices or the Publication Distribution Center, The Pennsylvania State University, 112 Agricultural Administration Bldg., University Park, PA 16802.

3. Thoroughly mix phosphate and/or potash into a four to six inch soil depth.

.

4. Grade and finish rake for seeding. Apply starter fertilizer just prior to seeding.

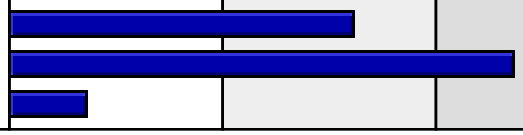
5. Fertilizers that can be used to meet recommendations for phosphate (P_2O_5) include ordinary superphosphate (0-20-0) or triple (treble) super phosphate (0-46-0). Fertilizers that can be used to meet recommendations for potash (K_2O) include muriate of potash (0-0-60) or sulfate of potash (0-0 -50).

PENNSTATE
1855
(814) 863-0841 Fax: (814) 863-4540
Agricultural Analytical Services Laboratory
The Pennsylvania State University
University Park, PA 16802
www.aasl.psu.edu

SOIL TEST REPORT FOR:	ADDITIONAL COPY TO:
PETER NEUMANN HUNT ENGINEERING COMPANY 22 E. KING ST; PO BOX 537 MALVERN PA 19355	DEBBIE NEMIROFF HUNT ENGINEERING COMPANY 22 E. KING ST; PO BOX 537 MALVERN PA 19355

DATE	LAB #	SERIAL #	COUNTY	ACRES	FIELD ID	SOIL
05/17/2017	S17-22813	50059	Chester		L-3 L-4	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
Soil pH	7.2				
Phosphorus	131	ppm			
Potassium	51	ppm			



RECOMMENDATIONS FOR: ***Park Area-To Plant*** ***Tall Fescue***

Prior to planting, incorporate the following into the top 4 to 6 inches of soil.

Limestone: NONE

Phosphate (P_2O_5): NONE

Potash (K_2O): 5 lb/1000 square feet

Apply a starter fertilizer just prior to seeding and work lightly into the soil

Apply a starter fertilizer at approximate rate of 1 lb of nitrogen per 1000 square feet, 0.5 to 1.0 lb of P_2O_5 per 1000 square feet, and 0.5 to 1.0 lb of K_2O per 1000 square feet using a fertilizer with approximate 1:1:1 or 2:1:1 ratio of N:P_2O_5:K_2O.

MESSAGES

The above recommendations are for a new establishment that will be tilled 4 to 6 inches in depth prior to planting. In some cases, turfgrass seed is planted into soils that have not been tilled. In such cases, incorporating large amounts of lime, fertilizer, and organic matter into soil 4 to 6 inches in depth is not possible. When planting into soils that have not been tilled, do not exceed 100 lb lime/1000 square feet; 5 lb P2O5/1000 square feet; or 2.0 lb K2O/1000 square feet. Do not apply organic matter unless a core aerator is used to incorporate into the soil surface. If attempting to incorporate organic matter with a core aerator, apply 1/4 to 1/2 inch of organic matter to the turf/soil surface and make 8 to 10 passes with the aerator.

LABORATORY RESULTS:

[1]pH	[2]P lb/A	Exchangeable Cations (meq/100g)					% Saturation of the CEC			Optional Tests:		
		[3]Acidity	[2]K	[2]Mg	[2]Ca	[4]CEC	K	Mg	Ca	Organic Matter %	Nitrate-N ppm	Soluble salts mmhos/cm
7.2	262	0.00	0.13	0.38	0.65	1.2	11.2	32.9	55.9			

Test Methods: [1]1:1 soil:water pH, [2]Mehlich 3 (ICP), [3]Mehlich Buffer pH, [4]Summation of Cations

Turf-To Plant

COMMENTS

1. Apply full lime recommendation and thoroughly mix into the soil four to six inches deep. Use a high quality agricultural ground limestone product to meet the lime recommendation on this report. Manufacturers of agricultural ground limestone products provide a number called the calcium carbonate equivalent, or CCE, on the label. CCEs with high numerical values (close to 100 or above) indicate a pure lime source (greater ability to neutralize soil acidity). The amount of lime recommended on this report is based on an agricultural ground limestone with a CCE of 100. If your lime source is close to or equal to 100, you don't need to adjust the recommended amount. In the event that you use a lime source with a CCE well below or above 100, use the following formula to adjust the required amount.

$$\text{Actual liming material required} = \frac{\text{(Soil test recommendation in lbs of lime/1000 square feet)}}{\text{CCE of liming material}} \times 100$$

Example Only:

Soil Test Recommendation: Apply 75 lbs lime/1000 square feet

CCE on label: 80 percent

$$\text{Actual liming material required} = \frac{\text{(75 lbs of lime)} \times 100}{80}$$

$$= 94 \text{ lb liming material/1000 square feet}$$

2. If organic matter test was requested and organic matter is recommended, throughly mix organic matter into a four to six inch soil depth. Sphagnum peat and peat humus typically contain high amounts of organic matter (> 80 %) and will usually meet organic matter requirements when incorporated at the rate recommended on the soil test report. With the exception of putting greens and tees, a good quality compost can also be used as an organic amendment; however, most composts contain lower amounts of organic matter than peats. Therefore, you may need to add greater amounts of compost to meet soil test organic matter recommendations. For more information on using composts as organic amendments in new turf plantings, refer to the publication, "Using Composts to Improve Turf Performance". This publication is available from Penn State Cooperative Extension offices or the Publication Distribution Center, The Pennsylvania State University, 112 Agricultural Administration Bldg., University Park, PA 16802.

3. Thoroughly mix phosphate and/or potash into a four to six inch soil depth.

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4. Grade and finish rake for seeding. Apply starter fertilizer just prior to seeding.

5. Fertilizers that can be used to meet recommendations for phosphate (P_2O_5) include ordinary superphosphate (0-20-0) or triple (treble) super phosphate (0-46-0). Fertilizers that can be used to meet recommendations for potash (K_2O) include muriate of potash (0-0-60) or sulfate of potash (0-0 -50).