

SOR CONSULTING ENGINEERS, INC.

Geotechnical Engineering - Materials Testing - Forensic Studies

98 Sand Park Rd., Cedar Grove, NJ 07009
(973) 239-6001 Fax (973) 239-8380

SUBSURFACE INVESTIGATION REPORT SUBSURFACE STORMWATER MANAGEMENT SYSTEM WEST ORANGE, NEW JERSEY

FOR

**GARDEN HOMES/WEST ESSEX HIGHLANDS, INC.
SHORT HILLS, NEW JERSEY**

**Prepared by: Sor Consulting Engineers, Inc.
98 Sand Park Road
Cedar Grove, New Jersey 07009**

**Report No. 24-C-02
Job No. 24-C-02
February 12, 2024**

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Geotechnical Engineering - Materials Testing - Forensic Studies

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Kamil Sor, Ph.D.
Orhun Sor, P.E.
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February 12, 2024
Job No. 24-C-02
Report No. 24-C-02

Garden Homes / West Essex Highlands, Inc.
820 Morris Turnpike, Suite 301
Short Hills, NJ 07078

Attention: Mark Hoffman
E-Mail: MarkH@gardenhomes.com

Re: Subsurface Investigation Report
Subsurface Stormwater Management System
West Orange, New Jersey

INTRODUCTION

Sor Consulting Engineers, Inc. (SCE) is pleased to present the results of a subsurface investigation performed for a proposed stormwater management system to be constructed at a site in West Orange, New Jersey. The site is identified as Lot 32, Block 179 on the municipal tax maps. Based on a concept plan dated September 23, 2022, the proposed development will reportedly include a combination of stormwater detention basins as well as underground perforated pipes installed at various locations beneath pavements.

PURPOSE AND SCOPE OF WORK

The purpose of this study was to:

- explore the subsurface soil and groundwater conditions within the proposed stormwater management system area;
- estimate the geotechnical engineering properties of the encountered subsurface materials including soil permeability;
- estimate the depth to the seasonal high water table; and
- present recommendations for stormwater infiltration system design.

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To accomplish this, an exploration program consisting of thirty-nine (39) test pits was conducted on January 9 through 23, 2024. The test pits were performed by D. Willis Excavating, Inc. using a Case Extendhoe rubber tire backhoe and extended to depths ranging from 2 to 12 feet below the existing ground surface. Tube and bag soil samples suitable for identification and laboratory testing purposes were extracted from the test pits. Upon completion, the test pits were backfilled so as not to leave any open holes.

The test pits were performed under the direct technical observation of a licensed geotechnical engineer and geologist from Sor Consulting Engineers. Our engineer and geologist logged the explorations during excavation and sampled the soils to obtain the appropriate subsurface information. The exploration locations are shown relative to the existing site features on the Exploration Location Plan included in Appendix I of this report. Detailed descriptions of the encountered subsurface conditions are presented on the individual test pit logs included in Appendix II. The subsurface profile and soil conditions at the test pit locations were logged in general accordance with the terminology and protocols described in the NJDEP Stormwater BMP Manual Appendix E and USDA and Burmeister Soil Classification Systems.

All soil samples were brought to our office where they were further examined in our soil mechanics laboratory. Mechanical grain size distribution, moisture content and falling head tube permeability test were performed on forty (40) samples to assist in sample identification and evaluation of their engineering soil properties. Laboratory test results are presented in Appendix III.

The results of the subsurface exploration and geotechnical laboratory testing programs have provided the basis for our engineering analysis and geotechnical recommendations. The following discussions of our findings and recommendations are subject to the limitations contained in Appendix IV of this report.

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SITE CONDITIONS

Geologic Overview: The subject is located within the New Jersey Piedmont Physiographic Province. The province is primarily a low rolling plain divided by a series of higher ridges formed by intruding magma of Jurassic age. Locally, glacial till deposits can be found deposited directly by glacial ice during the Wisconsinian glaciation. The bedrock underlying the site is composed of a Jurassic aged basalt formation called the Preakness Basalt, a fine to coarse grained basalt that composes the second Watchung Mountain.

Surface Features: The entire property is currently moderately to heavily wooded and contains some areas of rock outcrops. Large boulders are scattered throughout the site. Several areas identified as wetlands traverse the property in a general northeast to southwest orientation. Surface grades throughout the site reportedly range from a high of Elevation +630 feet in the extreme northern section to Elevation +530 feet along the townhomes.

STORMWATER MANAGEMENT SYSTEM DESIGN CONSIDERATIONS

Basin (TP-1 to TP-10): The area is presently a wooded site. Topographic data provided to us indicates that the ground surface elevations range from approximately +539 to +552 feet. The subsurface conditions revealed in the test pits performed for this study encountered 6 to 12 inches of topsoil/ vegetation. The topsoil was underlain by clayey soil and extended to depths of 2 to 5.5 feet below the surface. The clayey soil was underlain by reddish brown silty gravelly sand and extended to the maximum depth explored, 12 feet. Groundwater seepage was encountered at depths of 7 to 9 feet below the existing ground surface. Laboratory tube permeameter testing performed on the silty gravelly sand stratum (loam material) resulted in permeability rates of 0.25 to 1.43 inches per hour (K1 to K2 soils). However, silt loam to clay loam material resulted in permeability rates less than 0.2 inches per hour (hydraulically restrictive). We recommend that the stormwater management system be hydraulically connected to loam materials found at depths of 2 to 5.5 feet. The system should be designed in

accordance with the NJDEP Stormwater BMP Manual based on the specific measured permeability rates in each area. We also recommend that the infiltrative surface be covered with a geotextile filter fabric or properly graded soil/aggregate filter material to provide a uniform separation layer and infiltrative surface to minimize the transmission of fines and possible soil clogging.

Basin (TP-11 to TP-20): The area is presently a wooded site. Topographic data provided to us indicates that the ground surface elevations range from approximately +541 to +548 feet. The preliminary bottom of basin elevation is set at +540 feet. The subsurface conditions revealed in the test pits performed for this study encountered 6 to 10 inches of topsoil/vegetation. The topsoil was underlain by clayey soil and extended to depths of 2 to 3 feet below the surface. The clayey soil was underlain by reddish brown silty gravelly sand and extended to the maximum depth explored, 5 to 10 feet. Groundwater seepage was encountered at depths of 5.5 to 9 feet below the existing ground surface. Laboratory tube permeameter testing performed on the silty gravelly sand stratum (loam material) resulted in permeability rates of 0.62 to 2.02 inches per hour (K2 soils). However, silt loam encountered at TP-16 and 17 resulted in permeability rates less than 0.2 inches per hour (hydraulically restrictive zone). We recommend that the stormwater management system be hydraulically connected to loam to sandy loam materials found at depths of 2 to 3 feet. The system should be designed in accordance with the NJDEP Stormwater BMP Manual based on the specific measured permeability rates in each area. We also recommend that the infiltrative surface be covered with a geotextile filter fabric or properly graded soil/aggregate filter material to provide a uniform separation layer and infiltrative surface to minimize the transmission of fines and possible soil clogging.

Basin (TP-21, TP-22): The area is presently a wooded site. Topographic data provided to us indicate that ground surface elevations range from approximately +557 feet to +558 feet. The subsurface conditions revealed in the test pits performed for this study encountered 6 inches of topsoil/vegetation. The topsoil was underlain by clayey soil and extended to maximum depths explored. Basalt bedrock was encountered

beneath the clayey material at depths of 4 to 5 feet. Groundwater was not encountered to the maximum depth explored. Due to the presence of clayey soils which is hydraulically restrictive and shallow bedrock presence, the area is not suitable for stormwater infiltration design.

Basin (TP-23, TP-24): The area is presently a wooded site. Topographic data provided to us indicate that ground surface elevations range from approximately +582 feet to +583 feet. The subsurface conditions revealed in the test pits performed for this study encountered 6 inches of topsoil/vegetation. The topsoil was underlain by clayey soil and extended to depths of 2 to 5 feet below the surface. The clayey soil was underlain by silty gravelly sand (loam material) at TP-23 and extended to the maximum depths explored, 7 feet. Bedrock was encountered beneath the clay loam or loam at depths of 5 to 7 feet below surface. Groundwater seepage was encountered at depths immediately above the bedrock. Laboratory tube permeameter testing performed on the silty gravelly sand or silty clayey sand stratum (loam to clay loam material) resulted in permeability rates of 0.20 to 0.88 inches per hour (K1 to K2 soils). We recommend that the stormwater management system be hydraulically connected to these materials found at a depth of 2 feet. The system should be designed in accordance with the NJDEP Stormwater BMP Manual based on the specific measured permeability rates in each area. We also recommend that the infiltrative surface be covered with a geotextile filter fabric or properly graded soil/aggregate filter material to provide a uniform separation layer and infiltrative surface to minimize the transmission of fines and possible soil clogging.

Basin (TP-25, TP-26): The area is presently a wooded site. Topographic data provided to us indicate that ground surface elevations range from approximately +591 feet to +593 feet. The subsurface conditions revealed in the test pits performed for this study encountered 4 to 6 inches of topsoil/vegetation. The topsoil was underlain by clayey soil and extended to depths of 2.5 to 3.0 feet below the surface. The clayey soil was underlain by reddish brown silty gravelly sand (loam material) extended to the maximum depths explored, 5.5 to 6 feet where bedrock was encountered. Groundwater

seepage was encountered at depths of 5.5 to 6 feet below the surface immediately above the bedrock. Laboratory tube permeameter testing performed on the silty gravelly sand stratum (loam material) resulted in permeability rates of 0.82 inches per hour (K2 soils). We recommend that the stormwater management system be hydraulically connected to these materials found at a depth of 2.5 to 3.0 feet. The system should be designed in accordance with the NJDEP Stormwater BMP Manual based on the specific measured permeability rates in each area. We also recommend that the infiltrative surface be covered with a geotextile filter fabric or properly graded soil/aggregate filter material to provide a uniform separation layer and infiltrative surface to minimize the transmission of fines and possible soil clogging.

Basin (TP-27, TP-28): The area is presently a wooded site. Topographic data provided to us indicates that the ground surface elevations range from approximately +575 to +577 feet. The subsurface conditions revealed in the test pits performed for this study encountered 12 inches of topsoil/vegetation. The topsoil was underlain by clayey soil and extended to the maximum depths explored, 6.5 to 8 feet on bedrock. Groundwater seepage was encountered at depths of 8 feet below the existing ground surface at TP-28. Laboratory tube permeameter testing performed on the clayey sand stratum (silt/clay loam material) resulted in permeability rates of 0.09 inches per hour (K0 soils). The area is not suitable for stormwater infiltration.

Basin (TP-29, TP-30): The area is partially wooded. Topographic data provided to us indicates that the ground surface elevations range from approximately +570 to +573 feet. The subsurface conditions revealed in the test pits performed for this study encountered 6 inches of topsoil/vegetation. The topsoil was underlain by clayey soil to depths of 2 to 3 feet where bedrock was encountered. Groundwater was not encountered to the maximum depths explored. Laboratory tube permeability testing performed on the silt/clay loam resulted in permeability of less than 0.2 inches per hour (hydraulically restrictive). The area is not suitable for stormwater infiltration.

Basin (TP-31, TP-32): The area is presently partially open land. Topographic data provided to us indicates that the ground surface elevations range from

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approximately +602 to +604 feet. The subsurface conditions revealed in the test pits performed for this study encountered 8 to 18 inches of topsoil/vegetation. The topsoil was underlain by silty gravelly sand and extended to the maximum depth explored, 10 feet. Groundwater or seasonal high groundwater was not encountered at the maximum depths explored. Laboratory tube permeameter testing performed on the silty gravelly sand stratum (loam material) resulted in permeability rates of 0.61 to 0.94 inches per hour (K2 soils). We recommend that the stormwater management system be hydraulically connected to these materials found beneath the topsoil. The system should be designed in accordance with the NJDEP Stormwater BMP Manual based on the specific measured permeability rates in each area. We also recommend that the infiltrative surface be covered with a geotextile filter fabric or properly graded soil/aggregate filter material to provide a uniform separation layer and infiltrative surface to minimize the transmission of fines and possible soil clogging.

Basin (TP-33 through TP-38): The area is partially wooded. Topographic data provided to us indicates that the ground surface elevations range from +578 to +594 feet. The subsurface conditions revealed in the test pits performed for this study encountered 4 to 10 inches of topsoil/vegetation. The topsoil was underlain by clayey soil to depths of 1.5 to 3 feet at TP-33, 34, and 35. The topsoil and clayey soil was underlain by silty gravelly sand and extended to maximum depths explored. At TP-37 and 38 bedrock was encountered at depths of 5 to 6 feet below surface. Groundwater was only encountered at Test Pits 33, 34, and 36 at depths of 9 to 11 feet below surface. Laboratory tube permeameter testing performed on the silty gravelly sand (loam material) resulted in permeability rates of 0.45 to 0.82 inches per hour (K1 to K2 soils). We recommend that the stormwater management system be hydraulically connected to these materials found below the topsoil or clayey soil. The system should be designed in accordance with the NJDEP Stormwater BMP Manual based on the specific measured permeability rates in each area. We recommend that the infiltrative surface be covered with a geotextile filter fabric or properly graded soil/aggregate filter

material to provide a uniform separation layer and infiltrative surface to minimize the transmission of fines and possible soil clogging.

Basin (TP-39): The area is presently open land. The topographic data provided to us indicates that the ground surface elevations is approximately +537 feet. The preliminary bottom of basin elevation is set at +530 feet. The subsurface conditions revealed in the test pits performed for this study encountered 6 inches of topsoil. The topsoil was underlain by clayey soil to a depth of 3 feet below surface. The clayey soil was underlain by reddish brown silty gravelly sand (loam material) and extended to the maximum depth explored, 10 feet. Groundwater was encountered at a depth of 9 feet below surface. Laboratory tube permeameter testing performed on the loam material resulted in permeability rate of 0.81 inches per hour (K2 soils). We recommend that the stormwater management system be hydraulically connected to these materials found below the depth of 3 feet. The system should be designed in accordance with the NJDEP Stormwater BMP Manual based on the specific measured permeability rates in each area. We also recommend that the infiltrative surface be covered with a geotextile filter fabric or properly graded soil/aggregate filter material to provide a uniform separation layer and infiltrative surface to minimize the transmission of fines and possible soil clogging.

RECOMMENDED SERVICES

It is recommended that Sor Consulting Engineers be provided the opportunity for a general review of the final design and specifications to assure that the stormwater management system recommendations are properly interpreted and implemented in the construction documents.

We also recommend that controlled compacted fill and backfill operations as well as stormwater management system subgrades be observed by a geotechnical engineer from our firm. This is to ensure compliance with the recommendations contained herein and to address any changes in the subsurface conditions that were not disclosed by the test pits.

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Sor Consulting Engineers appreciates the opportunity to be of assistance with this project. Should there be any questions concerning the information provided herein, please do not hesitate to contact us. The following appendices are attached and complete this report:

Appendix I: Exploration Location Plan

Appendix II: Test Pit Logs TP-1 through TP-39

Burmeister and USDA Soil Classification System

Appendix III: Laboratory Soil Test Results

Appendix IV: Limitations

Respectfully submitted,

SOR CONSULTING ENGINEERS, INC.

Atilla Sencar, P.E.
Senior Engineer

AS/gs

cc: Anderson Consulting Service, LLC
Attn: Paul Anderson, P.E., P.P., CME
E-Mail: pandersonpe@gmail.com

APPENDIX I
EXPLORATION LOCATION PLAN

PAUL W. ANDERSON
N.J. PROFESSIONAL ENGINEER
No. 12020

DATE: 08/27/23
PROJECT: WEST ESSEX HIGHLANDS
SHEET: 01 OF 66

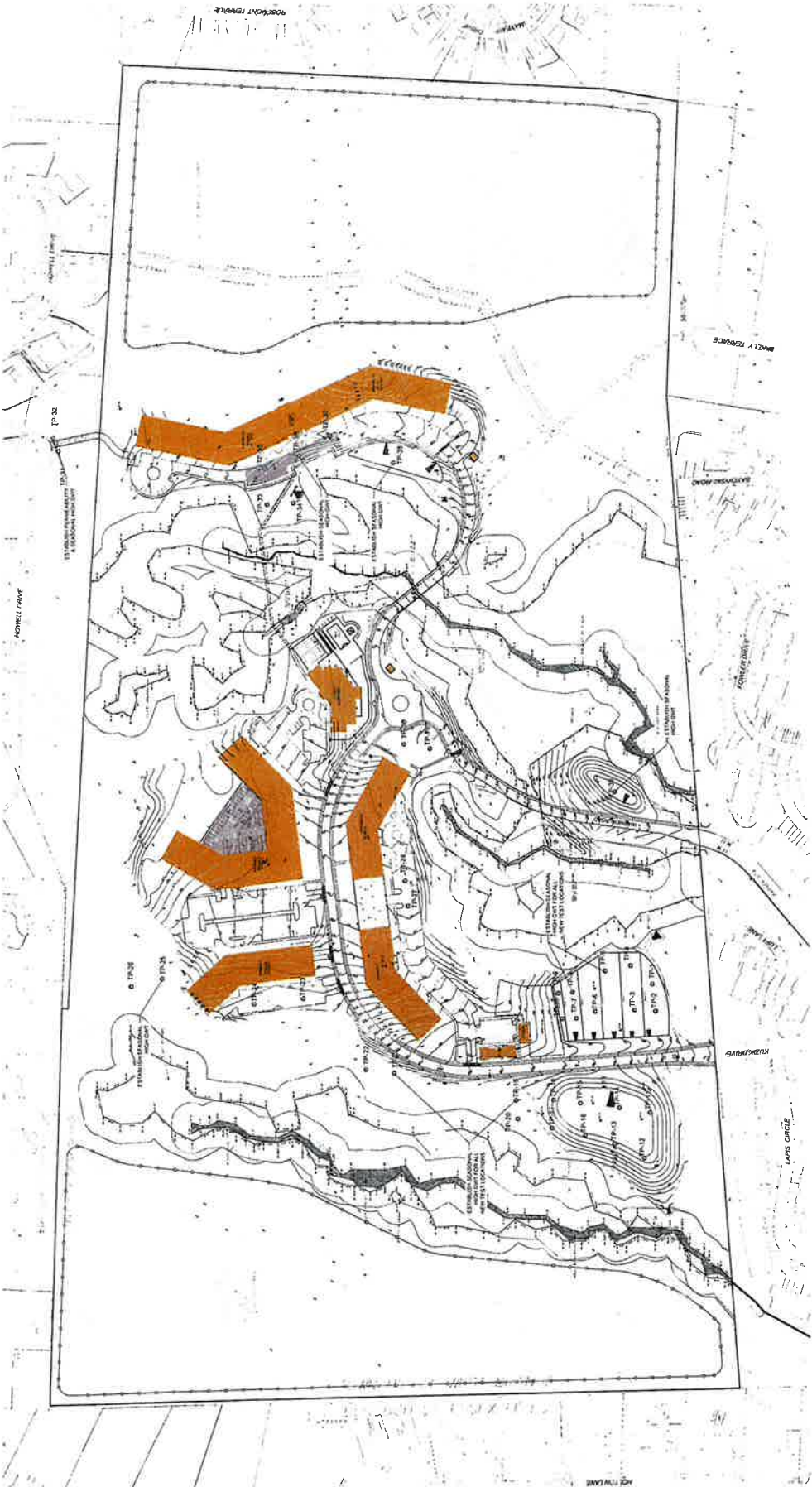
CERTIFICATE OF AUTHORIZATION
No. 12020
08/27/23

ACS
www.acs-engineering.com
Tel: 973.975.0703
Fax: 973.975.0703
48 Miller Drive
Bloomington, NJ 07005

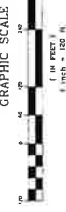
DATE: 08/27/23
PROJECT: WEST ESSEX HIGHLANDS
SHEET: 01 OF 66

PRELIMINARY AND FINAL SITE PLAN
WEST ESSEX HIGHLANDS
BLOCK 179 LOT 32
TOWNSHIP OF WEST ORANGE
ESSEX COUNTY, NEW JERSEY
OVERALL SOIL TESTING PLAN

OA
SHEET 01 OF 66



- TP-# PREVIOUSLY PERFORMED TEST PIT LOCATION
- B-# PREVIOUSLY PERFORMED SOIL BORING LOCATION
- NEW TEST TO TP-39
- PROPOSED NEW SOIL PERMEABILITY AND SEASONAL HIGH GROUNDWATER TESTING LOCATION



811
CALL BEFORE YOU DIG
For a complete list of utilities, call 811 or visit www.811nj.com
This is not a permit to dig. A separate permit is required for excavation work.
This is not a permit to dig. A separate permit is required for excavation work.

APPENDIX II

TEST PIT LOGS TP-1 THROUGH TP-39

BURMEISTER AND USDA SOIL CLASSIFICATION SYSTEM

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-1
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+539'
PROJECT :	Stormwater Management System	WATER LEVEL	8'-0"
LOCATION :	West Orange, New Jersey	DATE	1/9/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Medium Compact	Moist	Topsoil/Vegetation	Permeability @6' K=0.25in/hr (K1) Water Seepage @ 8'
2			Yellowish brown coarse to fine Sand, some Clayey Silt, some coarse to fine Gravel (Silt Loam)	
3				
4				
5	Medium Compact	Moist	Dark yellowish brown coarse to fine Sand, and Silt, some coarse to fine Gravel, with cobbles (Loam)	
6				
7				
8				
9	Medium Compact	Wet		
10				
11				
12			Test Pit Completed at 11'-6"	
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : A Sencar

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-2
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+540'
PROJECT :	Stormwater Management System	WATER LEVEL	9'-0"
LOCATION :	West Orange, New Jersey	DATE	1/9/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @5' K=1.05in/hr (K2) Water Seepage @ 9'
2			Yellowish brown coarse to fine Sand, and Clayey Silt (Silt Loam)	
3				
4				
5	Dense	Moist		
6			Reddish brown coarse to fine Sand, some Silt, and coarse to fine Gravel, cobbles (Loam)	
7				
8				
9				
10				
11				
12				
13		Wet	Test Pit Completed at 12'-0"	
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
 EQUIPMENT : Backhoe
 STL REPRESENTATIVE : A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-3
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+543'
PROJECT :	Stormwater Management System	WATER LEVEL	7'-0"
LOCATION :	West Orange, New Jersey	DATE	1/9/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @3' K=0.15in/hr (K0)
2			Yellowish brown coarse to fine Sand, and Clayey Silt, little coarse to fine Gravel (Silt Loam)	
3				
4				
5	Medium Dense	Moist	Reddish brown coarse to fine Sand, some Silt, some coarse to fine Gravel, cobbles (Sandy Loam)	Permeability @5' K=1.43in/hr (K2) Water Seepage @ 7'
6				
7				
8				
9				
10				
11				
12		Wet	Test Pit Completed at 11'-0"	
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : A Sencar

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-4
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+542"
PROJECT :	Stormwater Management System	WATER LEVEL	7'-0"
LOCATION :	West Orange, New Jersey	DATE	1/9/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @5' K=0.25in/hr (K1) Water Seepage @ 7'
2			Yellowish brown coarse to fine Sand, and Clayey Silt, little coarse to fine Gravel (Silt Loam)	
3				
4	Dense	Wet	Reddish brown coarse to fine Sand, some Silt, some coarse to fine Gravel, cobbles (Loam)	
5				
6				
7				
8				
9				
10				
11				
12			Test Pit Completed at 11'-0"	
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
 EQUIPMENT : Backhoe
 STL REPRESENTATIVE : A Sencar

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-5
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+546'
PROJECT :	Stormwater Management System	WATER LEVEL	8'-0"
LOCATION :	West Orange, New Jersey	DATE	1/15/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @6' K=1.22in/hr (K2) Water Seepage @ 8'
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Silty Clay Loam)	
3			Reddish brown coarse to fine Sand, some Silt, some coarse to fine Gravel (Sandy Loam)	
4	Medium Dense	Wet		
5				
6				
7				
8				
9				
10				
11			Test Pit Completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-6
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+548'
PROJECT :	Stormwater Management System	WATER LEVEL	8'-0"
LOCATION :	West Orange, New Jersey	DATE	1/9/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @6' K=0.79in/hr (K2) Water Seepage @ 8'
2			Yellowish brown Clayey SILT, some coarse to fine Sand (Silty Clay Loam)	
3				
4				
5	Dense	Wet	Reddish brown coarse to fine Sand, some Silt, and coarse to fine Gravel, (Loam)	
6				
7				
8				
9				
10				
11				
12			Test Pit Completed at 11'-0"	
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : A. Sencar

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-7
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+550'
PROJECT :	Stormwater Management System	WATER LEVEL	8'-0"
LOCATION :	West Orange, New Jersey	DATE	1/15/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	6"
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clayey Silt Loam)	
3			Reddish brown coarse to fine Sand, and Clayey Silt, some coarse to fine Gravel (Loam)	
4	Medium Dense	Wet		Permeability @6' K=0.27in/hr (K1)
5				
6				
7				
8				
9				Water seepage @ 8'
10			Test Pit Completed at 9'-0"	
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-8
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+550'
PROJECT :	Stormwater Management System	WATER LEVEL	8'-0"
LOCATION :	West Orange, New Jersey	DATE	1/15/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation 10"	Permeability @7' K=0.17in/hr (K0) Water Seepage @ 8'
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clayey Silt Loam) 20"	
3	Stiff		Gray to reddish brown Clayey SILT (Clay Loam)	
4				
5				
6	Dense		5'-6"	
7			Reddish brown coarse to fine Sand, and Silt, some coarse to fine Gravel (Silt Loam)	
8				
9				
10				
11			Test Pit Completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
 EQUIPMENT : Backhoe
 STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-9
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+552'
PROJECT :	Stormwater Management System	WATER LEVEL	9'-0"
LOCATION :	West Orange, New Jersey	DATE	1/15/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @6' K=0.09in/hr (K0) Water Seepage @ 9'
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3				
4	Dense	Wet	Reddish brown coarse to fine Sand, and Clayey Silt, little coarse to fine Gravel (Clay Loam)	
5				
6				
7				
8				
9				
10				
11			Test Pit Completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-10
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+552'
PROJECT :	Stormwater Management System	WATER LEVEL	5'-0"
LOCATION :	West Orange, New Jersey	DATE	1/15/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @3' K=0.42in/hr (K1)
2			Reddish brown coarse to fine Sand, and Clayey Silt, some coarse to fine Gravel (Silt Loam)	
3				
4				
5		Wet		
6			Bed-rock at 5'-6"	Test Pit Completed at 5'-6"
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
 EQUIPMENT : Backhoe
 STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-11
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+543'
PROJECT :	Stormwater Management System	WATER LEVEL	9'-0"
LOCATION :	West Orange, New Jersey	DATE	1/18/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @5' K=1.87in/hr (K2) Water seepage @ 9'
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Silty Clay Loam)	
3	Dense	WET	Reddish brown coarse to fine Sand, some Silt, some coarse to fine Gravel (Sandy Loam)	
4				
5				
6				
7				
8				
9				
10				
11			Test Pit Completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-12
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+541"
PROJECT :	Stormwater Management System	WATER LEVEL	7'-0"
LOCATION :	West Orange, New Jersey	DATE	1/18/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @5' K=2.02in/hr (K2) Water seepage @ 7'
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Silty Clay Loam)	
3	Dense	Wet	Reddish brown coarse to fine Sand, little Silt, and coarse to fine Gravel (Sandy Loam)	
4				
5				
6				
7				
8				
9				
10				
11			Test Pit Completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-13
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+541'
PROJECT :	Stormwater Management System	WATER LEVEL	7'-0"
LOCATION :	West Orange, New Jersey	DATE	1/18/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @5' K=0.66in/hr (K2) Water seepage @ 7'-0"
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3				
4	Dense		Reddish brown coarse to fine Sand, some Silt, some coarse to fine Gravel (Loam)	
5				
6				
7				
8		Wet		
9			Test Pit Completed at 8'-6"	
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-14
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+544'
PROJECT :	Stormwater Management System	WATER LEVEL	8'-0"
LOCATION :	West Orange, New Jersey	DATE	1/18/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	6"
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3	Dense		Reddish brown coarse to fine Sand, some Silt, some coarse to fine Gravel (Loam)	2'-0"
4				
5				
6				
7		Wet		Permeability @6' K=0.82in/hr (K2)
8				
9			Test Pit Completed at 8'-6" (Bedrock)	Water seepage @8'
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-15
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+546'
PROJECT :	Stormwater Management System	WATER LEVEL	7'-0"
LOCATION :	West Orange, New Jersey	DATE	1/18/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3			Reddish brown coarse to fine Sand, and Silt, some coarse to fine Gravel (Loam)	
4	Dense			Permeability @5' K=0.62in/hr (K2)
5				
6				
7				
8		Wet		Water seepage @ 7'-0"
9			Test Pit Completed at 8'-0" (Bedrock)	
10				
11				
12				
13				
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19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-16
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+543'
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/18/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @3' K=0.09in/hr (K0)
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3				
4	Dense		Reddish brown coarse to fine Sand, and Clayey Silt, some coarse to fine Gravel (Silt Loam)	
5				
			Test Pit Completed at 5'-0" (Bedrock)	
6				
7				
8				
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18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-17
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+545'
PROJECT :	Stormwater Management System	WATER LEVEL	5'-6"
LOCATION :	West Orange, New Jersey	DATE	1/18/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @3' K=0.09in/hr (K0)
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3				
4	Dense	Wet	Reddish brown coarse to fine Sand, and Clayey Silt, some coarse to fine Gravel (Silt Loam)	
5				
6				
			Test Pit Completed at 5'-6" (Bedrock)	
7				
8				
9				
10				
11				
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EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-18
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+547"
PROJECT :	Stormwater Management System	WATER LEVEL	6'-0"
LOCATION :	West Orange, New Jersey	DATE	1/18/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @4' K=0.71in/hr (K2)
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3				
4	Dense		Reddish brown coarse to fine Sand, some Silt, some coarse to fine Gravel (Loam)	
5				
6				
		Wet		Wet at bedrock at 6'-0"
7			Test Pit Completed at 6'-0" (Bedrock)	
8				
9				
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19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-19
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CLIENT :	Garden Homes/West Essex Highlands, Inc.	GSE	+548'
PROJECT :	Stormwater Management System	WATER LEVEL	6'-0"
LOCATION :	West Orange, New Jersey	DATE	1/18/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @4' K=0.95in/hr (K2) Wet at 6'-6"
2			Light brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3	Dense	Wet	Reddish brown coarse to fine Sand, and Silt, some coarse to fine Gravel (Loam)	
4				
5				
6				
7				
8	Test Pit Completed at 7'-6" (Bedrock)			
9				
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EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-20
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+545'
PROJECT :	Stormwater Management System	WATER LEVEL	6'-0"
LOCATION :	West Orange, New Jersey	DATE	1/23/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation 0'-6"	Permeability @4' K=0.69in/hr (K2)
2			Yellowish Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam) 2'-0"	
3				
4	Medium Dense	Moist	Reddish Brown coarse to fine Sand, and Silt, little coarse to fine Gravel (Loam)	
5				
6				
7		Wet	Bedrock at 6'-0"	
8			Test Pit Completed at 6'-0"	
9				
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12				
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15				
16				
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20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-21
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+557"
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/23/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation 0'-6"	Permeability @4' K=0.24 in/hr (K1)
2			Yellowish Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam) 2'-0"	
3			Dense	
4				
5				
6				
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EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-22
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+557"
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/23/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation	Permeability @2' K=0.09 in/hr (K0)
2			0'-6"	
3			Yellowish Brown Clayey Silt, little coarse to fine Sand, trace coarse to fine Gravel (Clay Loam)	
4				
5			Bedrock at 4'-0"	
6				
7			Test Pit completed at 4'-0"	
8				
9				
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18				
19				
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EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-23
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+583'
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/23/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation 0'-6"	Permeability @5' K=0.88 in/hr (K2)
2			Yellowish Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam) 2'-0"	
3	Medium Dense	Moist		
4			Reddish Brown coarse to fine Sand, some Silt, and coarse to fine Gravel (Loam)	
5				
6				
7			Bedrock at 7'-0"	
8			Test Pit completed at 7'-0"	
9				
10				
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13				
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18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maraveglas

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-24
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+582'
PROJECT :	Stormwater Management System	WATER LEVEL	5'-0"
LOCATION :	West Orange, New Jersey	DATE	1/23/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation 0'-6"	Permeability @2' K=0.20 in/hr (K1)
2			Yellowish Brown coarse to fine Sand, and Clayey Silt, some coarse to fine Gravel (Clay Loam)	
3	Firm	Wet		
4				
5			Bedrock at 5'-0"	
6			Test Pit completed at 5'-0"	
7				
8				
9				
10				
11				
12				
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16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
 EQUIPMENT : Backhoe
 STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-25
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+593'
PROJECT :	Stormwater Management System	WATER LEVEL	6'-0"
LOCATION :	West Orange, New Jersey	DATE	1/15/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation	Permeability @4' K=0.82in/hr (K2)
2			Light Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3				
4	Medium Dense	Wet	Reddish Brown coarse to fine Sand, and Silt, little coarse to fine Gravel (Loam)	
5				
6			Bedrock at 6'-0"	
7			Test Pit Completed at 6'-0"	
8				
9				
10				
11				
12				
13				
14				
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17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-26
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+591'
PROJECT :	Stormwater Management System	WATER LEVEL	5'-6"
LOCATION :	West Orange, New Jersey	DATE	1/15/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation 0'-6"	Permeability @2' K=0.10in/hr (K0)
2			Light Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3			2'-6"	
4	Firm	Wet	Reddish Brown coarse to fine Sand, some Clayey Silt, and coarse to fine Gravel (Silt Loam)	
5				
6			Bedrock at 5'-6"	
7			Test Pit completed at 5'-6"	
8				
9				
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12				
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16				
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19				
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EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-27
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+575'
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/28/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation 12"	Permeability @5' K=0.09 in/hr (K0)
2			Light Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3	Stiff			
4			3'-6"	
5			Reddish Brown coarse to fine Sand, and Clayey Silt, some medium to fine Gravel (Silt Loam)	
6				
7			Bedrock at 6'-6"	
8			Test Pit Completed at 6'-6"	
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18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-28
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+575'
PROJECT :	Stormwater Management System	WATER LEVEL	8'-0"
LOCATION :	West Orange, New Jersey	DATE	1/23/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation	Permeability @6' K=0.09in/hr (K0)
2			Light Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3				
4	Stiff			
5			Reddish Brown coarse to fine Sand, and Clayey Silt, some medium to fine Gravel (Silt Loam)	
6				
7	Wet			
8			Bedrock at 8'-0"	
9			Test Pit Completed at 8'-0"	
10				
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20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-29
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+570'
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/23/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation	Permeability @1' K=0.18 in/hr (K0)
2			Brown coarse to fine Sand, some Clayey Silt, some coarse to fine Gravel (Silt Loam) Bedrock at 2'-0"	
3			Test Pit completed at 2'-0"	
4				
5				
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EXCAVATOR : D. Willis Excavating
 EQUIPMENT : Backhoe
 STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-30
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+573'
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/23/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Soft	Moist	Topsoil/Vegetation 0'-6"	Permeability @2' K=0.13 in/hr (K0)
2			Yellowish Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam) 2'-0"	
3			Reddish Brown coarse to fine Sand, and Silt, some coarse to fine Gravel (Silt Loam)	
4			Bedrock at 3'-0"	
5			Test Pit completed at 3'-0"	
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19				
20				

EXCAVATOR : D. Willis Excavating

EQUIPMENT : Backhoe

STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-31
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+604'
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/12/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Dense	Moist	Topsoil/Vegetation	Permeability @7' K=0.61 in/hr (K2)
2			1'-6"	
3			Reddish Brown coarse to fine Sand, sme Silt, and coarse to fine Gravel (Silt Loam)	
4				
5				
6				
7				
8				
9				
10				
11			Test Pit completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-32
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+602'
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/12/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Dense	Moist	Topsoil/Vegetation	Permeability @6' K=0.94 in/hr (K2)
2				
3			Reddish Brown coarse to fine Sand, little Silt, and coarse to fine Gravel (Loam)	
4				
5				
6				
7				
8				
9				
10				
11			Test Pit completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-33
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+587"
PROJECT :	Stormwater Management System	WATER LEVEL	11'-0"
LOCATION :	West Orange, New Jersey	DATE	1/12/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation 0'-8"	Permeability @6' K=0.65 in/hr (K2)
2			Yellowish Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel 1'-6"	
3			Reddish Brown coarse to fine Sand, some Clayey Silt, and coarse to fine Gravel (Loam)	
4	Dense	Wet		
5				
6				
7				
8				
9				
10				
11				
12			Test Pit completed at 11'-0"	
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-34
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+581'
PROJECT :	Stormwater Management System	WATER LEVEL	9'-0"
LOCATION :	West Orange, New Jersey	DATE	1/12/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation 0'-10"	Permeability @5' K=0.81 in/hr (K2)
2			Light Brown coarse to fine Sand, some Clayey Silt, little coarse to fine Gravel 2'-0"	
3	Dense	Wet	Reddish Brown coarse to fine Sand, some Silt, some coarse to fine Gravel (Loam)	
4				
5				
6				
7				
8				
9				
10				
11			Test Pit completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-35
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+594'
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/12/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation 0'-10"	Permeability @6' K=0.82 in/hr (K2)
2			Light Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3			3'-0"	
4	Dense		Reddish Brown coarset to fine Sand, some Clayey silt, little coarse to fine Gravel (Loam)	
5				
6				
7				
8				
9			Bedrock at 9'-0"	
10			Test Pit completed at 9'-0"	
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-36
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+586'
PROJECT :	Stormwater Management System	WATER LEVEL	9'-0"
LOCATION :	West Orange, New Jersey	DATE	1/12/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Medium Dense	Moist	Topsoil/Vegetation	Permeability @7' K=0.5 in/hr (K1)
2				
3			Reddish Brown coarse to fine Sand, some Clayey Silt, and coarse to fine Gravel (Silt Loam)	
4				
5				
6				
7				
8				
9				
10				
11			Test Pit completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating

EQUIPMENT : Backhoe

STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-37
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+594'
PROJECT :	Stormwater Management System	WATER LEVEL	NE
LOCATION :	West Orange, New Jersey	DATE	1/15/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS	
1	Dense	Moist	Topsoil/Vegetation	Permeability @5' K=0.63 in/hr (K2)	
2			Reddish Brown coarse to fine Sand, some Silt, and coarse to fine Gravel (Loam)		
3					
4					
5					
6					
7					Bedrock at 6'-0"
8					Test Pit Completed at 6'-0"
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.		TEST PIT LOG		TEST PIT NO.	TP-38
CLIENT :	Garden Homes/ West Essex Highlands, Inc.			GSE	+578'
				WATER LEVEL	NE
PROJECT :	Stormwater Management System			DATE	1/15/2024
LOCATION :	West Orange, New Jersey			JOB NO.	24-C-02
				REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation 0'-8"	Permeability @3' K=0.45 in/hr (K1)
2			Light Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam) 2'-2"	
3	Dense			
4			Reddish Brown coarse to fine Sand, and Silt, some coarse to fine Gravel (Loam)	
5			Bedrock at 5'-0"	
6			Test Pit completed at 5'-0"	
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

SOR CONSULTING ENGINEERS, INC.	TEST PIT LOG	TEST PIT NO. TP-39
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CLIENT :	Garden Homes/ West Essex Highlands, Inc.	GSE	+537'
PROJECT :	Stormwater Management System	WATER LEVEL	9'-0"
LOCATION :	West Orange, New Jersey	DATE	1/23/2024
		JOB NO.	24-C-02
		REPORT NO.	24-C-02

DEPTH FT.	DENSITY	MOISTURE	GROUND SURFACE	REMARKS
1	Firm	Moist	Topsoil/Vegetation	Permeability @7' K=0.81 in/hr (K2)
2			Light Brown Clayey Silt, little coarse to fine Sand, little coarse to fine Gravel (Clay Loam)	
3				
4	Dense	Wet	Reddish Brown coarse to fine Sand, some Silt, some coarse to fine Gravel (Loam)	
5				
6				
7				
8				
9				
10				
11			Test Pit completed at 10'-0"	
12				
13				
14				
15				
16				
17				
18				
19				
20				

EXCAVATOR : D. Willis Excavating
EQUIPMENT : Backhoe
STL REPRESENTATIVE : T. Maravegias

VISUAL IDENTIFICATION OF SAMPLES

The samples were identified in accordance with the American Society for Engineering Education System of Definition described by Professor Donald M. Burmeister in ASTM Special Technical Publication 479, 5th Edition, 1970.

I. Definition of Soil Components and Fractions

MATERIAL	SYMBOL	FRACTION	SIEVE SIZE	DEFINITION
Boulders	Bldr	--	9" +	Material retained on 9" sieve.
Cobbles	Cbl	--	3" to 9"	Material passing the 9" sieve and retained on the 3" sieve.
Gravel	G	Coarse (c) Medium (m) Fine (f)	1" to 3" 3/8" to 1" No. 10 to 3/8"	Material passing the 3" sieve and retained on the No. 10 sieve.
Sand	S	Coarse (c) Medium (m) Fine (f)	No.30 to No. 10 No.60 to No. 30 No.200 to No. 60	Material passing the No. 10 sieve and retained on the No. 200 sieve.
Silt	\$	--	Passing No. 200 (0.074 mm)	Material passing the No. 200 sieve that is non-plastic in character and exhibits little or no strength when air dried.

Organic Silt (O\$)

Material passing the No. 200 sieve which exhibits plastic properties within a certain range of moisture content, and exhibits fine granular and organic characteristics.

		PLASTICITY	PLASTICITY INDEX	CLAY-SOIL
Clayey SILT	Cy\$	Slight (sl)	1 to 5	Material passing the No. 200 sieve which can be made to exhibit plasticity and clay qualities within a certain range of moisture content, and which exhibits considerable strength when air-dried.
SILT & CLAY	\$&C	Low (l)	5 to 10	
CLAY & SILT	C&\$	Medium (m)	10 to 20	
Silty CLAY	\$yC	High (h)	20 t 40	
CLAY	C	Very High (vh)	40 plus	

II. Definition of Component Proportions

COMPONENT	WRITTEN	PROPORTIONS	SYMBOL	PERCENTAGE RANGE BY WEIGHT*
Principal	CAPITALS	--		50 or more
Minor	Lower Case	and some little trace	a.	35 to 50
			s.	20 to 35
			l.	10 to 20
			t.	1 to 10

*Minus sign (-) lower limit, plus sign (+) upper limit, no sign middle range.

III. Glossary of Modifying Abbreviations

CATEGORY	SYMBOL	TERM	SYMBOL	TERM	SYMBOL	TERM
A. Borings	U/D	Undisturbed	B	Exploratory	A	Auger
B. Samples	C D O.E.	Casing Denison Open End	L S	Lost Spoon	U W	Undisturbed Wash
C. Colors	bk bl br gr	black blue brown gray	gn or rd tn	green orange red tan	wh yw dk lt	white yellow dark light
D. Organic Soils	dec dec'g lig	decayed decaying lignite	o rts ts	organic roots topsoil	veg pt	Vegetation peat
E. Rocks	LS Gns	Limestone Gneiss	rk SS	rock Sandstone	Shst Sh	Schist Shale
F. Fill and Misc. Material	bldr(s) brk(s) cndr(s)	boulder(s) brick(s) cinder(s)	cbl (s) wd dbr	cobble (s) wood debris	gls misc rbl	glass miscellaneous rubble
G. Misc. Terms	do el, El fgmt (s) frqt lrg mtld no rec pen	ditto elevation fragment(s) frequent large mottled no recovery penetration	pp P.I. P pc(s) rec or R	pocket penetrometer Plasticity Index pushed pressed piece(s) recovered	ref sm W.L. W.H. W.R.	refusal small water level weight of hammer weight of rods
H. Stratified Soils	alt thk thn w prt seam lyr stra vvd c pkt Ins occ freq	alternating thick thin with parting seam layer stratum varved Clay pocket lens occasional frequent	-) to 1/16" thickness - 1/16 to 1/2" thickness - 1/2 to 12" thickness - greater than 12" thickness - alternating seams or layers of sand, silt and clay - small, erratic deposit, usually less than 1 foot - lenticular deposit - one or less per foot of thickness - more than one per foot of thickness			

IV. Other Descriptive Criteria

A. Relative density of coarse-grained soils and non-plastic silts.

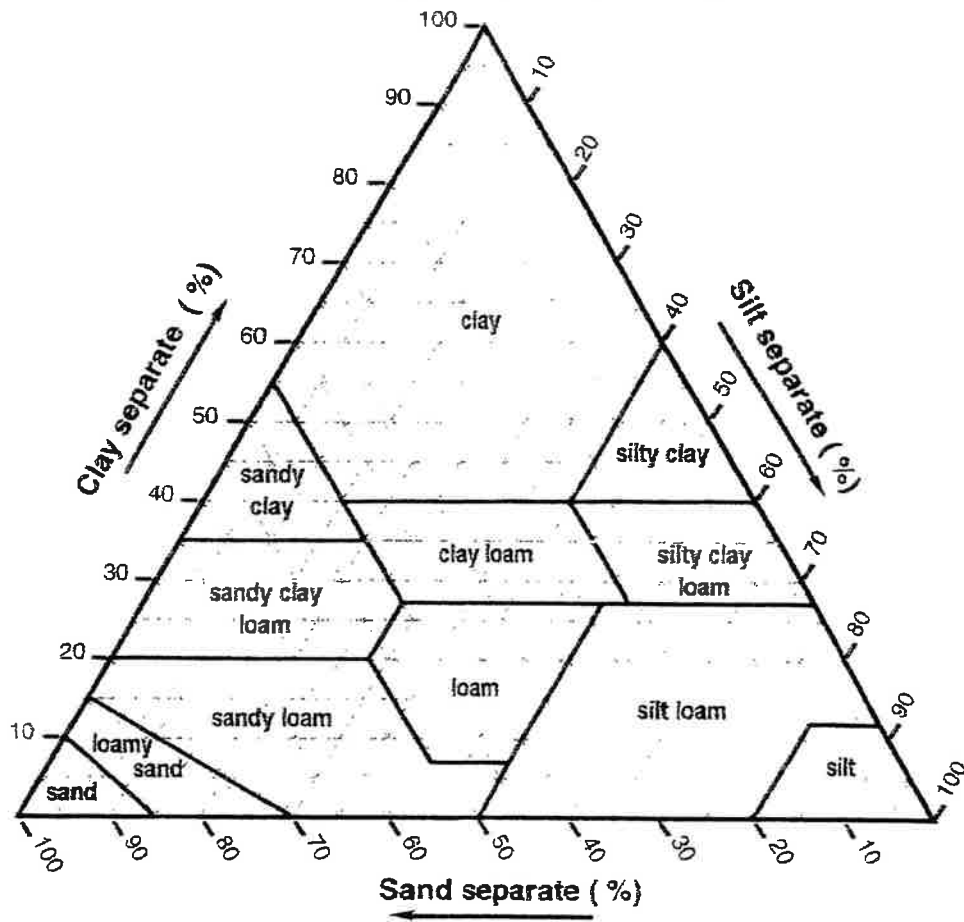
N-VALUE	DESCRIPTIVE TERM	RELATIVE DENSITY (%)
0-4	Very Loose	0-15
4-10	Loose	15-45
10-30	Medium Dense	45-70
30-50	Dense	70-85
50+	Very Dense	85-100

B. Consistency of fine-grained soils with some plasticity.

N-VALUE	DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH (tsf)
0-2	Very Soft	Less than 0.25
2-4	Soft	0.25-0.50
4-8	Medium	0.50-1.00
8-16	Stiff	1.00-2.00
16-32	Very Stiff	2.00-4.00
32+	Hard	4.00+

Texture Triangle:

Fine Earth Texture Classes (—)



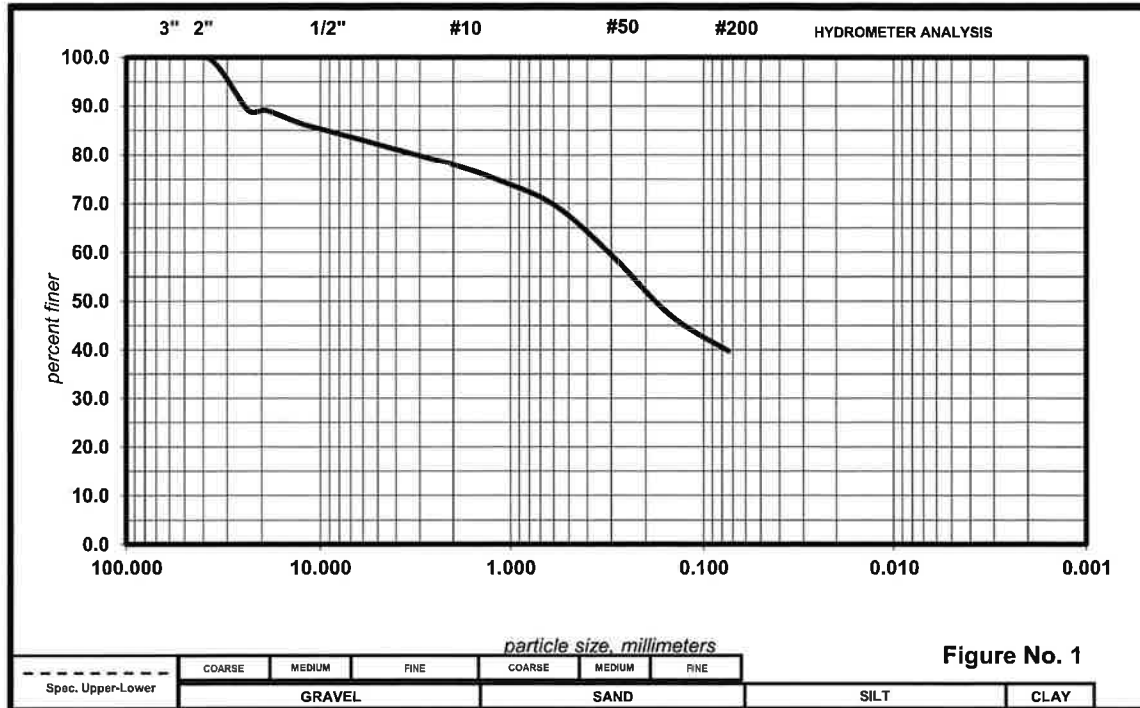
USDA SOIL CLASSIFICATION SYSTEM

APPENDIX III
LABORATORY SOIL TEST RESULTS

SOR TESTING LABORATORIES, INC.

98 Sand Park Road - Cedar Grove, NJ 07009
Tel.: (973) 239-6001 Fax: (973) 239-8380 <http://www.sorlabs.com>

PARTICLE SIZE DISTRIBUTION TEST REPORT

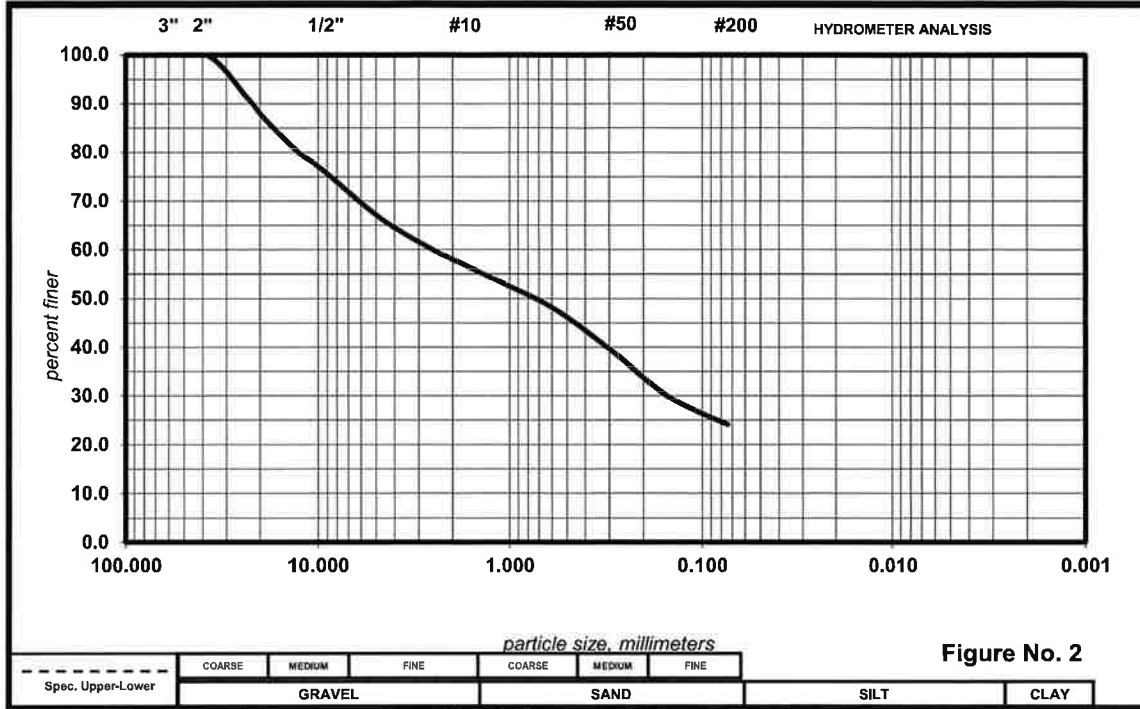


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-1 Lab No.: A24-03-01 Source/Location: 6' Description: Brown of Sand, and Silt, some of Gravel sample description in accordance with Burmister System LL : PL : PI : As received Moisture Content: 13.3 % Classification: USCS: [SM] AASHTO: Remarks: Sample received in lab on January 09, 2024 Permeability, k: 1.7 x 10-4 cm/s (0.25 in/hr) K1 Permeability, k: 1.8 x 10-4 cm/s (0.26 in/hr) K1 Client: Garden Homes Project: West Essex Highlands Stormwater Management System Location: West Orange, New Jersey Date: 12-Jan-24 Job No.: 24-C-02 Report No.:		
3" (75 mm)						
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	89.1					
3/4" (19 mm)	89.1					
5/8" (16 mm)						
1/2" (12.5 mm)	86.4					
3/8" (9.5 mm)	85.1					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	81.8					
#6 (3.35 mm)						
#8 (2.36 mm)	78.7					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	75.1					
#20 (850 μm)						
#30 (600 μm)	69.6					
#40 (425 μm)						
#50 (300 μm)	59.3					
#60 (250 μm)						
#100 (150 μm)	47.1					
#200 (75 μm)	39.7					
-						

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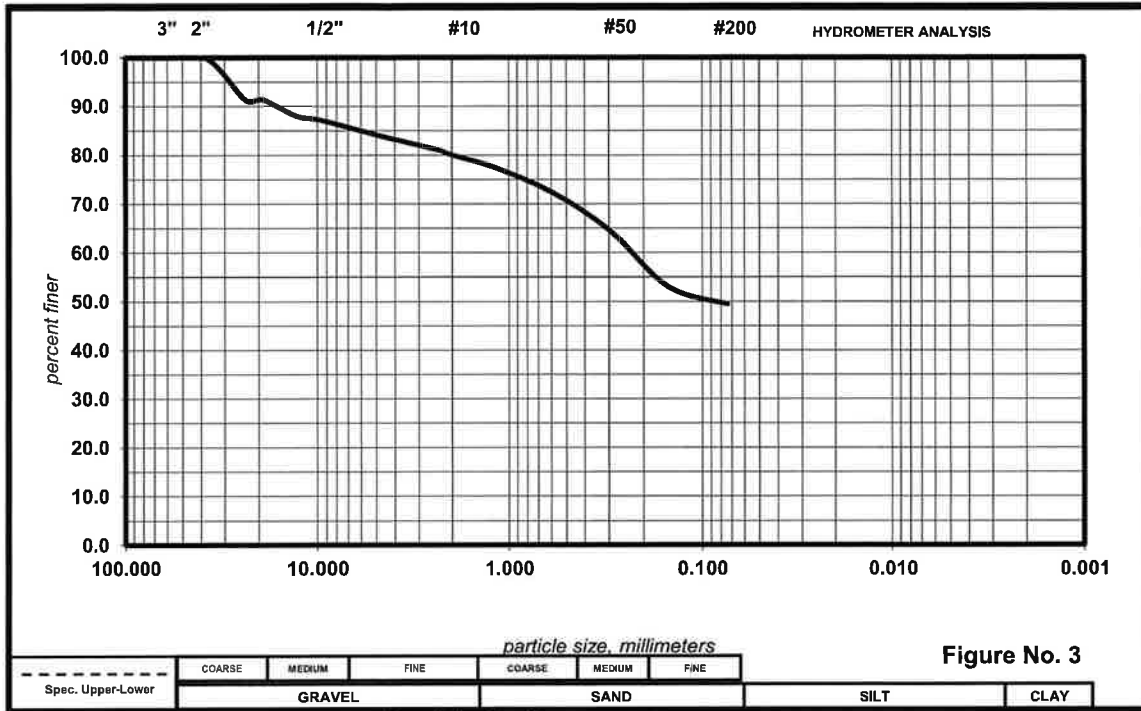


Specification*						
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-2	
2 1/2" (63 mm)				Lab No.:	A24-03-02	
2" (50 mm)				Source/Location:	6'	
1 1/2" (38.1 mm)	100.0			Description:	Brown of Sand, some Silt, and of Gravel	
1" (25 mm)	91.3					
3/4" (19 mm)	87.0					
5/8" (16 mm)						
1/2" (12.5 mm)	80.1					
3/8" (9.5 mm)	76.4			sample description in accordance with Burmister System		
5/16" (8 mm)				LL :	PL :	PI :
1/4" (6.3 mm)				As received Moisture Content: 11.2 %		
#4 (4.75 mm)	66.5			Classification:		
#6 (3.35 mm)				USCS: [SM]		
#8 (2.36 mm)	59.4			AASHTO:		
#10 (2 mm)				Remarks:		
#14 (1.4 mm)				Sample received in lab on January 09, 2024		
#16 (1.18 mm)	53.8			Permeability, k: 7.3 x 10-4 cm/s (1.05 in/hr) K2		
#20 (850 µm)				Permeability, k: 7.2 x 10-4 cm/s (1.03 in/hr) K2		
#30 (600 µm)	48.0			Client: Garden Homes		
#40 (425 µm)				Project: West Essex Highlands		
#50 (300 µm)	39.5			Stormwater Management System		
#60 (250 µm)				Location: West Orange, New Jersey		
#100 (150 µm)	29.8			Date: 12-Jan-24		
#200 (75 µm)	24.1			Job No.: 24-C-02 Report No.:		
-						

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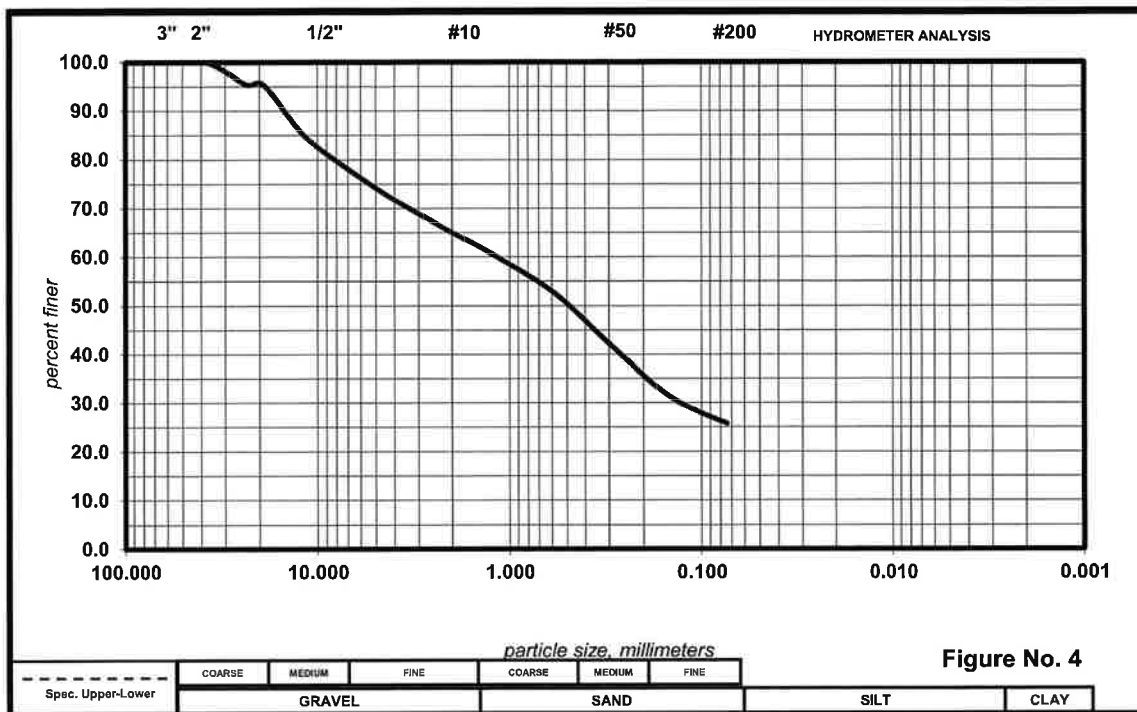


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-3		
3" (75 mm)				Lab No.: A24-03-03		
2 1/2" (63 mm)				Source/Location: 3'		
2" (50 mm)				Description:		
1 1/2" (38.1 mm)	100.0			Brown of Sand, and Clayey Silt, little of Gravel		
1" (25 mm)	91.3			sample description in accordance with Burmister System		
3/4" (19 mm)	91.3					
5/8" (16 mm)						
1/2" (12.5 mm)	87.9					
3/8" (9.5 mm)	87.1					
5/16" (8 mm)				LL :	PL :	PI :
1/4" (6.3 mm)				As received Moisture Content: 19.2 %		
#4 (4.75 mm)	83.9			Classification:		
#6 (3.35 mm)				USCS: [ML]		
#8 (2.36 mm)	81.0			AASHTO:		
#10 (2 mm)				Remarks:		
#14 (1.4 mm)				Sample received in lab on January 09, 2024		
#16 (1.18 mm)	77.4			Permeability, k: 1.0 x 10-4 cm/s (0.15 in/hr) K0		
#20 (850 µm)				Permeability, k: 1.2 x 10-4 cm/s (0.17 in/hr) K0		
#30 (600 µm)	72.3			Client: Garden Homes		
#40 (425 µm)				Project: West Essex Highlands		
#50 (300 µm)	64.5			Stormwater Management System		
#60 (250 µm)				Location: West Orange, New Jersey		
#100 (150 µm)	53.0			Date: 12-Jan-24		
#200 (75 µm)	49.4			Job No.: 24-C-02 Report No.:		
-						

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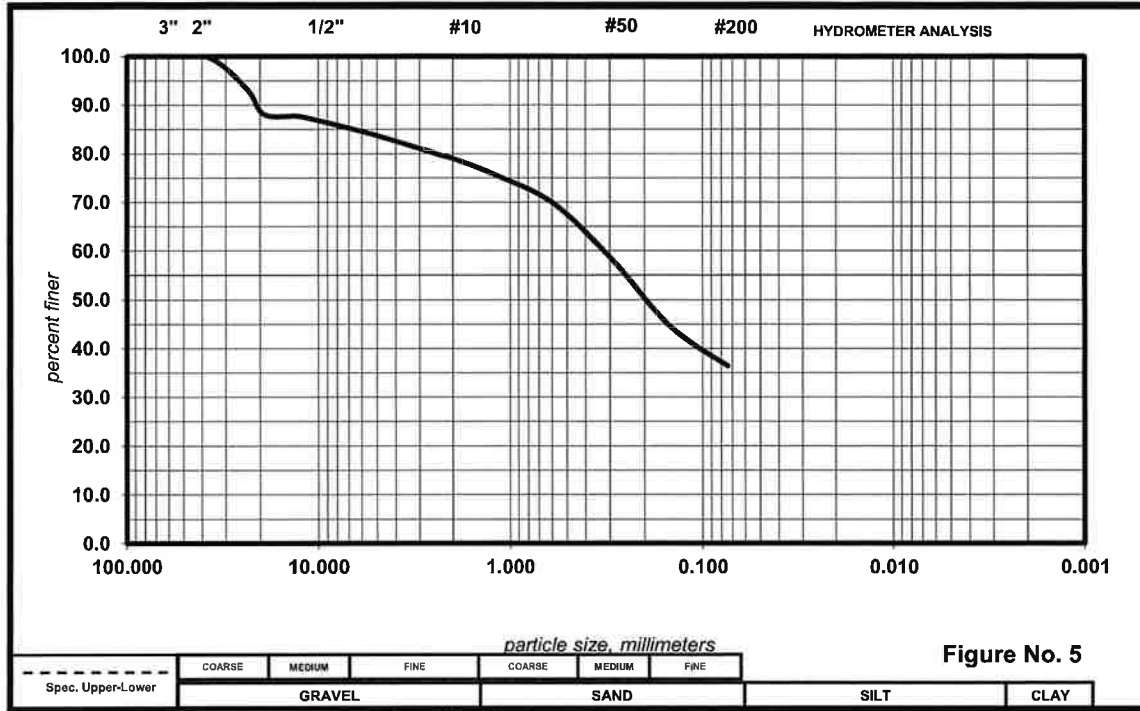
Specification*				Figure No. 4		
				COARSE	MEDIUM	FINE
				GRAVEL		
				SAND		
				SILT		
				CLAY		

Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-3	
2 1/2" (63 mm)				Lab No.:	A24-03-04	
2" (50 mm)				Source/Location:	5'	
1 1/2" (38.1 mm)	100.0			Description:	Brown of Sand, some Silt, some of Gravel	
1" (25 mm)	95.4			sample description in accordance with Burmister System		
3/4" (19 mm)	95.4			LL :	PL :	PI :
5/8" (16 mm)				As received Moisture Content: 17.2 %		
1/2" (12.5 mm)	86.5			Classification:		
3/8" (9.5 mm)	82.0			USCS:	[SM]	
5/16" (8 mm)				AASHTO:		
1/4" (6.3 mm)				Remarks:	Sample received in lab on January 09, 2024	
#4 (4.75 mm)	73.6			Permeability, k: 9.9 x 10-4 cm/s (1.43 in/hr) K2		
#6 (3.35 mm)				Permeability, k: 9.8 x 10-4 cm/s (1.41 in/hr) K2		
#8 (2.36 mm)	66.7			Client:	Garden Homes	
#10 (2 mm)				Project:	West Essex Highlands Stormwater Management System	
#14 (1.4 mm)				Location:	West Orange, New Jersey	
#16 (1.18 mm)	60.2			Date:	12-Jan-24	
#20 (850 μm)	52.8			Job No.:	24-C-02	Report No.:
#30 (600 μm)	52.8					
#40 (425 μm)	42.0					
#50 (300 μm)	42.0					
#60 (250 μm)						
#100 (150 μm)	31.5					
#200 (75 μm)	25.7					
-						

SOR TESTING LABORATORIES, INC.

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PARTICLE SIZE DISTRIBUTION TEST REPORT

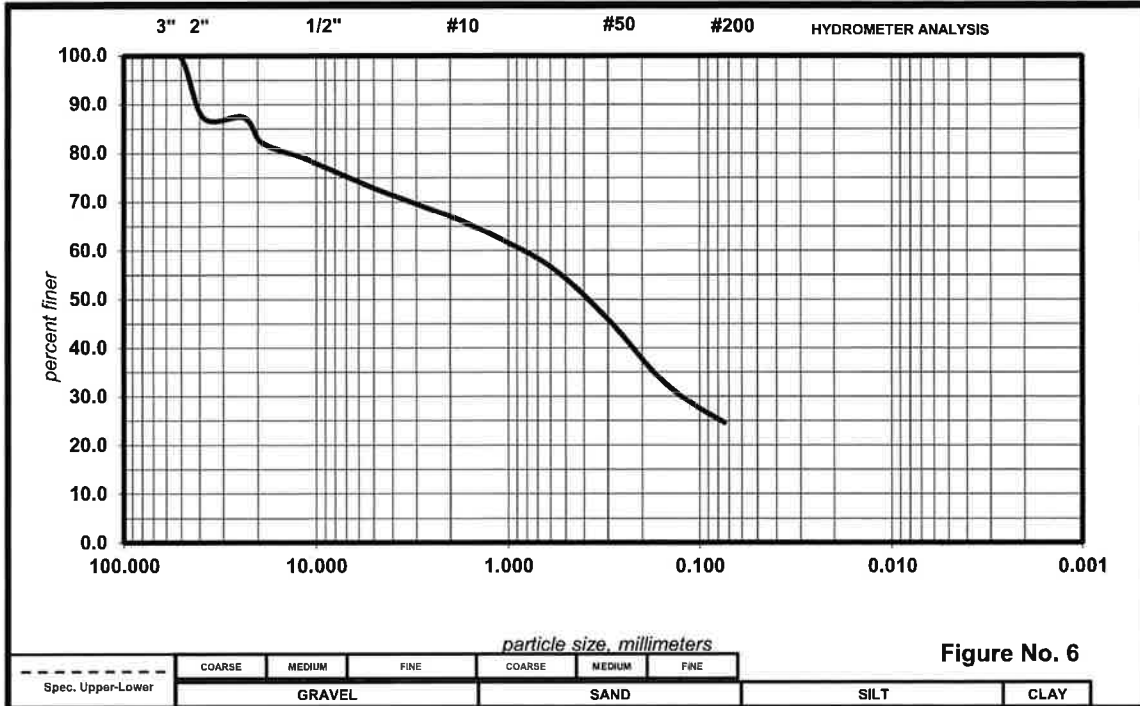


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-4 Lab No.: A24-03-05 Source/Location: 5' Description: Brown of Sand, and Silt, some of Gravel sample description in accordance with Burmister System LL : PL :PI : As received Moisture Content: 11.4 % Classification: USCS: [SM] AASHTO: Remarks: Sample received in lab on January 09, 2024 Permeability, k: 1.8 x 10-4 cm/s (0.25 in/hr) K1 Permeability, k: 1.4 x 10-4 cm/s (0.20 in/hr) K1 Client: Garden Homes Project: West Essex Highlands Stormwater Management System Location: West Orange, New Jersey Date: 12-Jan-24 Job No.: 24-C-02Report No.:		
3" (75 mm)						
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	93.4					
3/4" (19 mm)	88.0					
5/8" (16 mm)						
1/2" (12.5 mm)	87.7					
3/8" (9.5 mm)	86.6					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	83.5					
#6 (3.35 mm)						
#8 (2.36 mm)	79.8					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	75.6					
#20 (850 μm)						
#30 (600 μm)	69.8					
#40 (425 μm)						
#50 (300 μm)	58.5					
#60 (250 μm)						
#100 (150 μm)	44.7					
#200 (75 μm)	36.4					
-						

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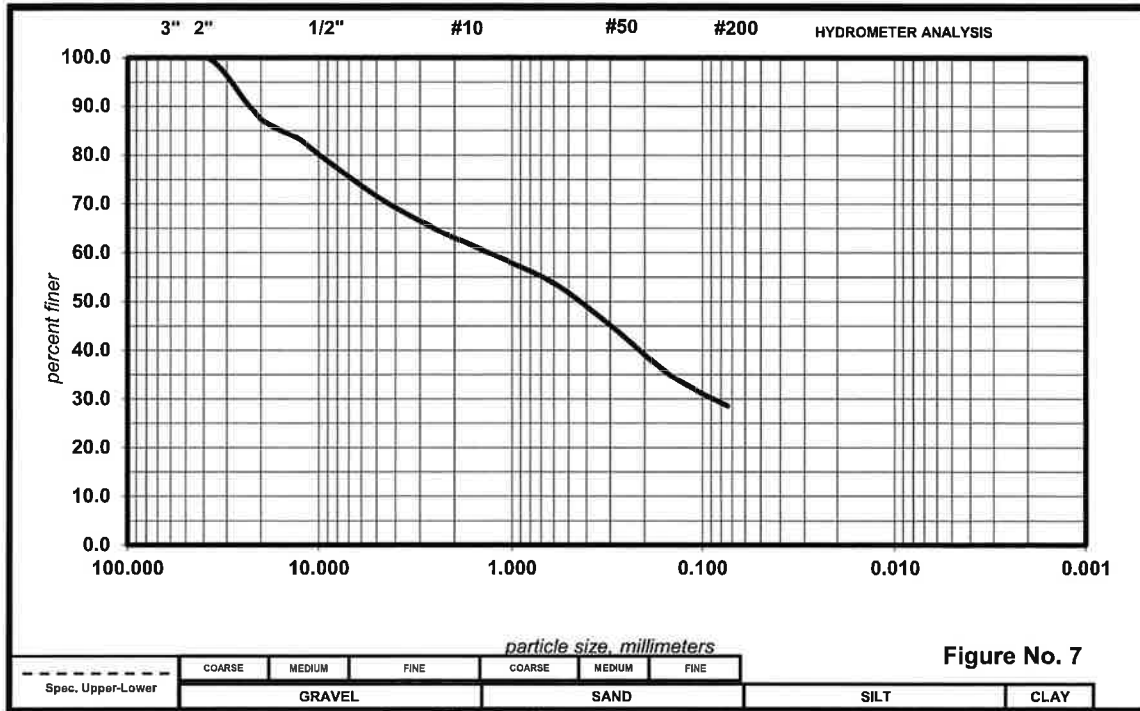


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.:	TP-5	
3" (75 mm)				Lab No.:	A24-06-01	
2 1/2" (63 mm)				Source/Location:	6'	
2" (50 mm)	100.0			Description:	Red.Brown of Sand, some Silt, some of Gravel	
1 1/2" (38.1 mm)	87.3			sample description in accordance with Burmister System		
1" (25 mm)	87.3			LL :	PL :	PI :
3/4" (19 mm)	82.1			As received Moisture Content: 13.1 %		
5/8" (16 mm)				Classification:		
1/2" (12.5 mm)	79.5			USCS: [SM]		
3/8" (9.5 mm)	77.5			AASHTO:		
5/16" (8 mm)				Remarks:		
1/4" (6.3 mm)				Sample received in lab on January 15, 2024		
#4 (4.75 mm)	72.5			Permeability, k: 8.5 x 10-4 cm/s (1.22 in/hr) K2		
#6 (3.35 mm)				Permeability, k: 8.7 x 10-4 cm/s (1.25 in/hr) K2		
#8 (2.36 mm)	68.1			Client: Garden Homes		
#10 (2 mm)				Project: West Essex Highlands		
#14 (1.4 mm)				Stormwater Management System		
#16 (1.18 mm)	63.0			Location: West Orange, New Jersey		
#20 (850 µm)				Date: 17-Jan-24		
#30 (600 µm)	56.5			Job No.: 24-C-02		
#40 (425 µm)				Report No.:		
#50 (300 µm)	45.6					
#60 (250 µm)						
#100 (150 µm)	32.4					
#200 (75 µm)	24.6					
-						

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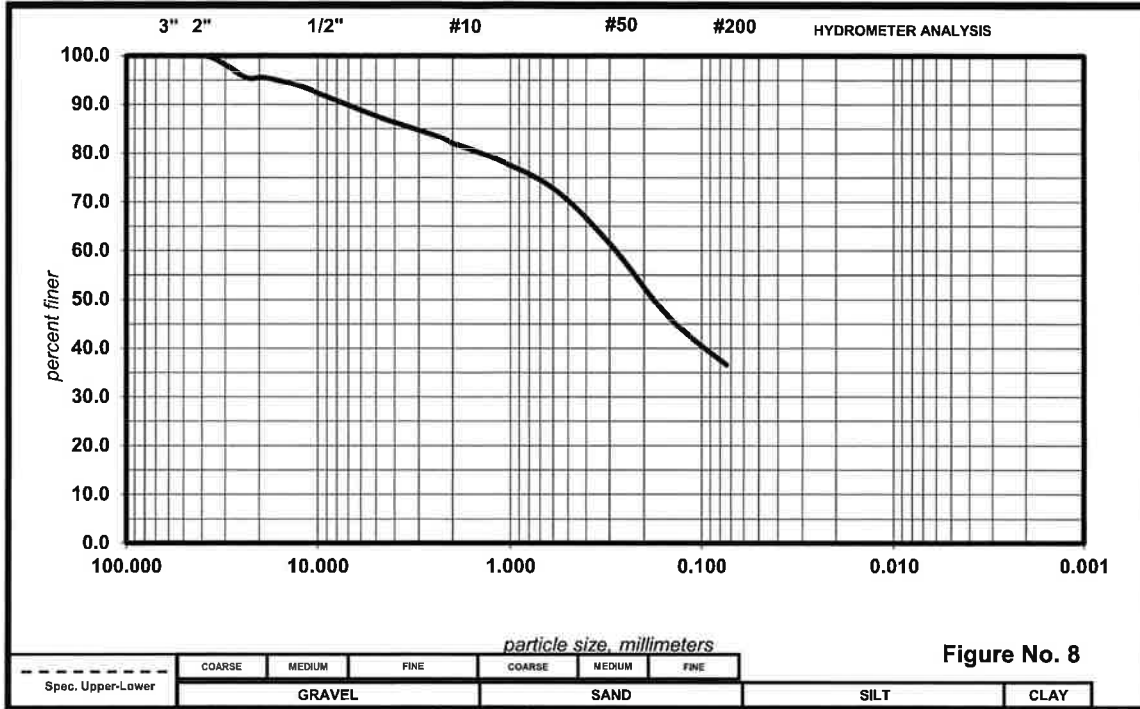
Specification*

Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-6	
2 1/2" (63 mm)				Lab No.:	A24-03-06	
2" (50 mm)				Source/Location:	6'	
1 1/2" (38.1 mm)	100.0			Description:	Brown of Sand, some Silt, and of Gravel	
1" (25 mm)	90.5					
3/4" (19 mm)	86.7			sample description in accordance with Burmister System		
5/8" (16 mm)				LL :	PL :	PI :
1/2" (12.5 mm)	83.2			As received Moisture Content: 12.1 %		
3/8" (9.5 mm)	79.5			Classification:		
5/16" (8 mm)				USCS: [SM]		
1/4" (6.3 mm)				AASHTO:		
#4 (4.75 mm)	71.0			Remarks:		
#6 (3.35 mm)				Sample received in lab on January 09, 2024		
#8 (2.36 mm)	64.4			Permeability, k: 5.5 x 10-4 cm/s (0.79 in/hr) K2		
#10 (2 mm)				Permeability, k: 5.4 x 10-4 cm/s (0.79 in/hr) K2		
#14 (1.4 mm)				Client: Garden Homes		
#16 (1.18 mm)	59.2			Project: West Essex Highlands		
#20 (850 µm)				Stormwater Management System		
#30 (600 µm)	53.6			Location: West Orange, New Jersey		
#40 (425 µm)				Date: 12-Jan-24		
#50 (300 µm)	45.0			Job No.: 24-C-02 Report No.:		
#60 (250 µm)						
#100 (150 µm)	35.0					
#200 (75 µm)	28.6					
-						

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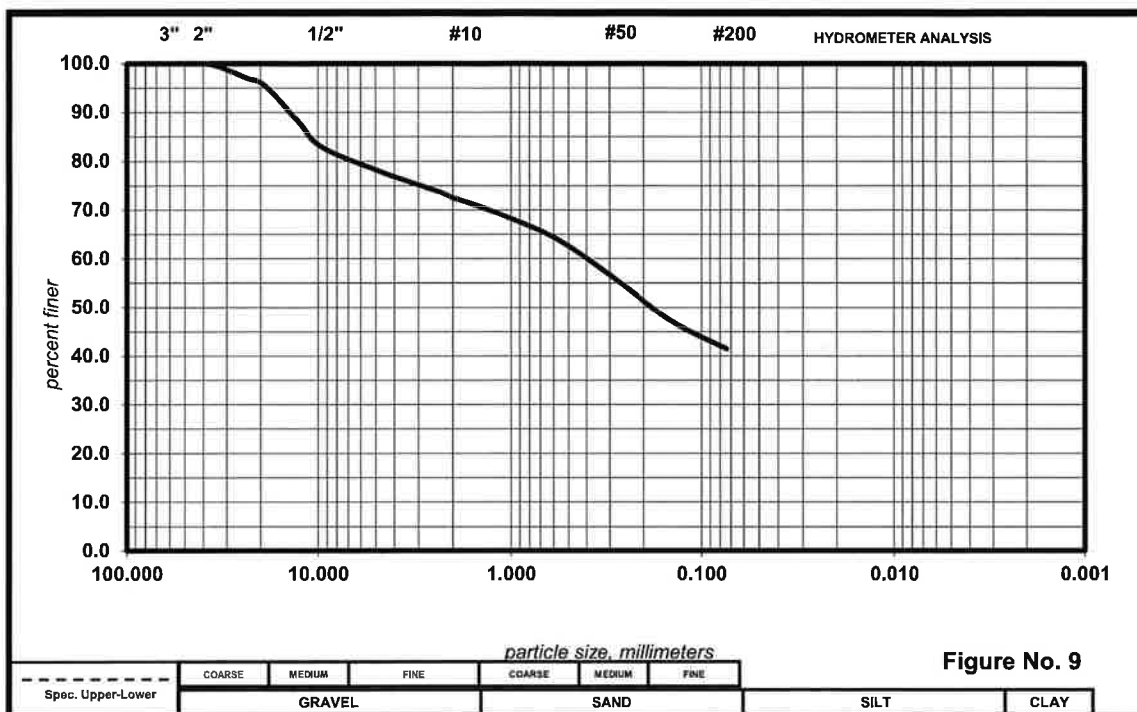


Specification*						
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-7	
2 1/2" (63 mm)				Lab No.:	A24-06-02	
2" (50 mm)				Source/Location:	6'	
1 1/2" (38.1 mm)	100.0			Description:	Red.Brown of Sand, and Silt, little of Gravel	
1" (25 mm)	95.5					
3/4" (19 mm)	95.5					
5/8" (16 mm)						
1/2" (12.5 mm)	93.9					
3/8" (9.5 mm)	92.0			sample description in accordance with Burmister System		
5/16" (8 mm)				LL :	PL :	PI :
1/4" (6.3 mm)				As received Moisture Content: 18.1 %		
#4 (4.75 mm)	87.3			Classification:		
#6 (3.35 mm)				USCS: [SM]		
#8 (2.36 mm)	83.4			AASHTO:		
#10 (2 mm)				Remarks:		
#14 (1.4 mm)				Sample received in lab on January 15, 2024		
#16 (1.18 mm)	78.8			Permeability, k: 1.9 x 10-4 cm/s (0.27 in/hr) K1		
#20 (850 μm)				Permeability, k: 2.0 x 10-4 cm/s (0.29 in/hr) K1		
#30 (600 μm)	72.6			Client: Garden Homes		
#40 (425 μm)				Project: West Essex Highlands		
#50 (300 μm)	61.2			Stormwater Management System		
#60 (250 μm)				Location: West Orange, New Jersey		
#100 (150 μm)	46.4			Date: 17-Jan-24		
#200 (75 μm)	36.6			Job No.: 24-C-02 Report No.:		
-						

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Specification*				Figure No. 9		
Sieve Size	% Finer	Min.(%)	Max.(%)	COARSE	MEDIUM	FINE
3" (75 mm)				GRAVEL		
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	96.9					
3/4" (19 mm)	95.5					
5/8" (16 mm)						
1/2" (12.5 mm)	88.1					
3/8" (9.5 mm)	82.9					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	78.0					
#6 (3.35 mm)						
#8 (2.36 mm)	73.8					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	69.4					
#20 (850 μm)						
#30 (600 μm)	64.3					
#40 (425 μm)						
#50 (300 μm)	56.5					
#60 (250 μm)						
#100 (150 μm)	47.6					
#200 (75 μm)	41.4					

Specification*				Figure No. 9		
Sieve Size	% Finer	Min.(%)	Max.(%)	COARSE	MEDIUM	FINE
3" (75 mm)				GRAVEL		
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	96.9					
3/4" (19 mm)	95.5					
5/8" (16 mm)						
1/2" (12.5 mm)	88.1					
3/8" (9.5 mm)	82.9					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	78.0					
#6 (3.35 mm)						
#8 (2.36 mm)	73.8					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	69.4					
#20 (850 μm)						
#30 (600 μm)	64.3					
#40 (425 μm)						
#50 (300 μm)	56.5					
#60 (250 μm)						
#100 (150 μm)	47.6					
#200 (75 μm)	41.4					

Specification*				Figure No. 9		
Sieve Size	% Finer	Min.(%)	Max.(%)	COARSE	MEDIUM	FINE
3" (75 mm)				GRAVEL		
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	96.9					
3/4" (19 mm)	95.5					
5/8" (16 mm)						
1/2" (12.5 mm)	88.1					
3/8" (9.5 mm)	82.9					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	78.0					
#6 (3.35 mm)						
#8 (2.36 mm)	73.8					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	69.4					
#20 (850 μm)						
#30 (600 μm)	64.3					
#40 (425 μm)						
#50 (300 μm)	56.5					
#60 (250 μm)						
#100 (150 μm)	47.6					
#200 (75 μm)	41.4					

Specification*				Figure No. 9		
Sieve Size	% Finer	Min.(%)	Max.(%)	COARSE	MEDIUM	FINE
3" (75 mm)				GRAVEL		
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	96.9					
3/4" (19 mm)	95.5					
5/8" (16 mm)						
1/2" (12.5 mm)	88.1					
3/8" (9.5 mm)	82.9					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	78.0					
#6 (3.35 mm)						
#8 (2.36 mm)	73.8					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	69.4					
#20 (850 μm)						
#30 (600 μm)	64.3					
#40 (425 μm)						
#50 (300 μm)	56.5					
#60 (250 μm)						
#100 (150 μm)	47.6					
#200 (75 μm)	41.4					

Sample Identification		
Sample No.:	TP-8	
Lab No.:	A24-06-03	
Source/Location:	7'	
Description:	Red.Brown of Sand, and Silt, some of Gravel	
sample description in accordance with Burmister System		
LL :	PL :	PI :
As received Moisture Content: 18.6 %		
Classification:		
USCS:		[SM]
AASHTO:		
Remarks:		
Sample received in lab on January 15, 2024		
Permeability, k: 1.2 x 10-4 cm/s (0.17 in/hr) K0		
Permeability, k: 1.1 x 10-4 cm/s (0.16 in/hr) K0		
Client:	Garden Homes	
Project:	West Essex Highlands	
	Stormwater Management System	
Location:	West Orange, New Jersey	
Date:	17-Jan-24	
Job No.:	24-C-02	Report No.:

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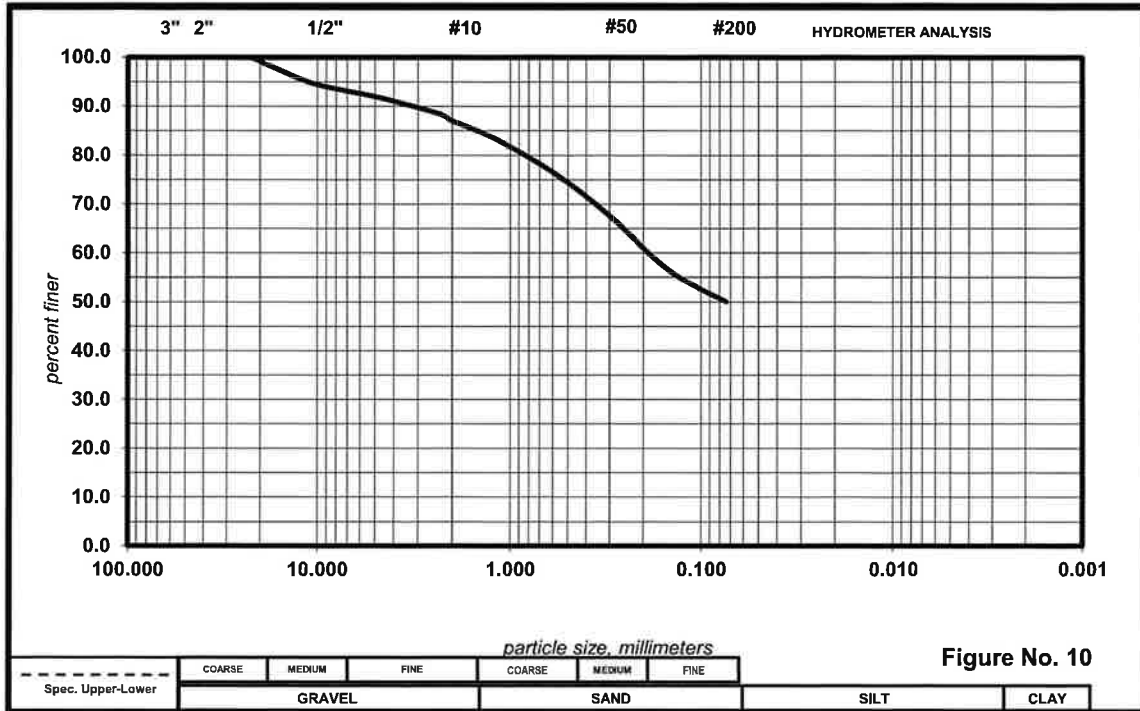


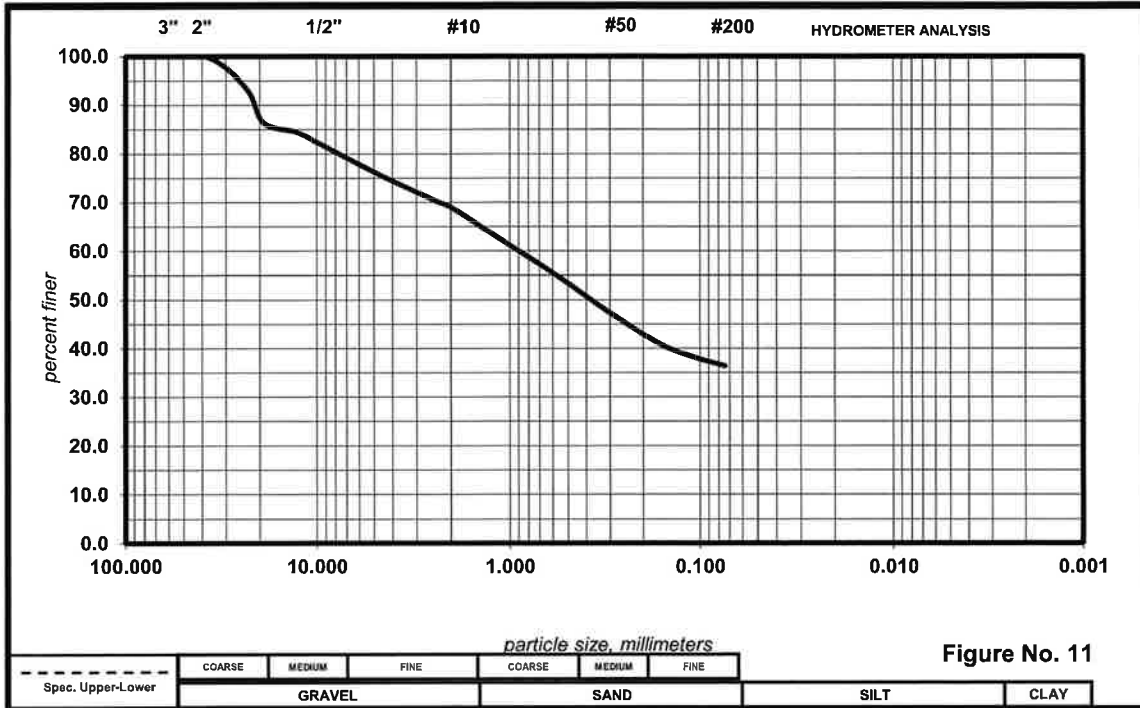
Figure No. 10

Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-9		
3" (75 mm)				Lab No.: A24-11-01		
2 1/2" (63 mm)				Source/Location: 6'		
2" (50 mm)				Description:		
1 1/2" (38.1 mm)				Red.Brown Clayey SILT and, cf Sand, little mf Gravel		
1" (25 mm)	100.0			sample description in accordance with Burmister System		
3/4" (19 mm)	98.8					
5/8" (16 mm)				LL :	PL :	PI :
1/2" (12.5 mm)	95.8			As received Moisture Content: 34.1 %		
3/8" (9.5 mm)	94.2					
5/16" (8 mm)				Classification:		
1/4" (6.3 mm)						
#4 (4.75 mm)	91.7			USCS: [ML]		
#6 (3.35 mm)						
#8 (2.36 mm)	88.6			AASHTO:		
#10 (2 mm)						
#14 (1.4 mm)				Remarks:		
#16 (1.18 mm)	83.2					
#20 (850 µm)				Sample received in lab on January 23, 2024		
#30 (600 µm)	76.4					
#40 (425 µm)				Permeability, k: 6.4 x 10-5 cm/s (0.09 in/hr) K0		
#50 (300 µm)	67.4					
#60 (250 µm)				Permeability, k: 6.3 x 10-5 cm/s (0.09 in/hr) K0		
#100 (150 µm)	56.6					
#200 (75 µm)	50.0			Client: Garden Homes		
				Project: West Essex Highlands		
				Stormwater Management System		
				Location: West Orange, New Jersey		
				Date: 29-Jan-24		
				Job No.: 24-C-02		
				Report No.:		

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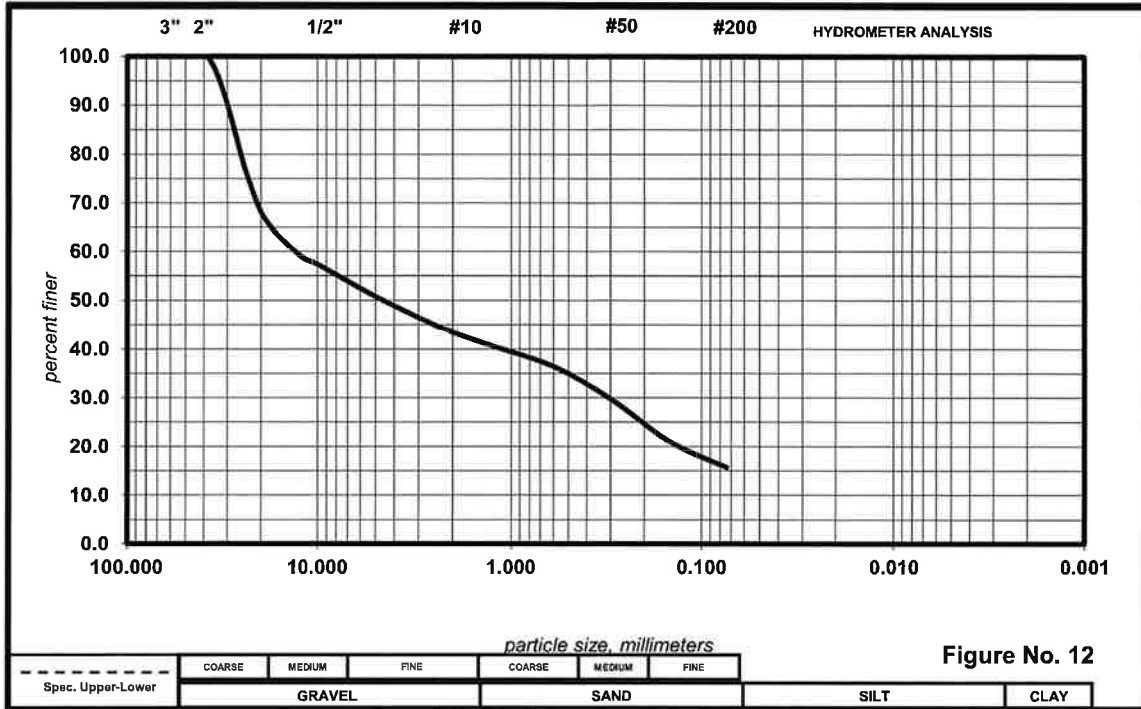


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-10 Lab No.: A24-06-04 Source/Location: 3' Description: Red.Br. of Sand, and Clayey Silt, some of Gravel sample description in accordance with Burmister System LL : PL : PI : As received Moisture Content: 21.9 % Classification: USCS: [SC] AASHTO: Remarks: Sample received in lab on January 15, 2024 Permeability, k: 2.9 x 10-4 cm/s (0.42 in/hr) K1 Permeability, k: 2.8 x 10-4 cm/s (0.40 in/hr) K1 Client: Garden Homes Project: West Essex Highlands Stormwater Management System Location: West Orange, New Jersey Date: 17-Jan-24 Job No.: 24-C-02 Report No.:		
3" (75 mm)						
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	93.4					
3/4" (19 mm)	86.3					
5/8" (16 mm)						
1/2" (12.5 mm)	84.4					
3/8" (9.5 mm)	81.9					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	75.8					
#6 (3.35 mm)						
#8 (2.36 mm)	70.2					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	63.1					
#20 (850 µm)						
#30 (600 µm)	55.4					
#40 (425 µm)						
#50 (300 µm)	47.2					
#60 (250 µm)						
#100 (150 µm)	40.2					
#200 (75 µm)	36.4					
-						

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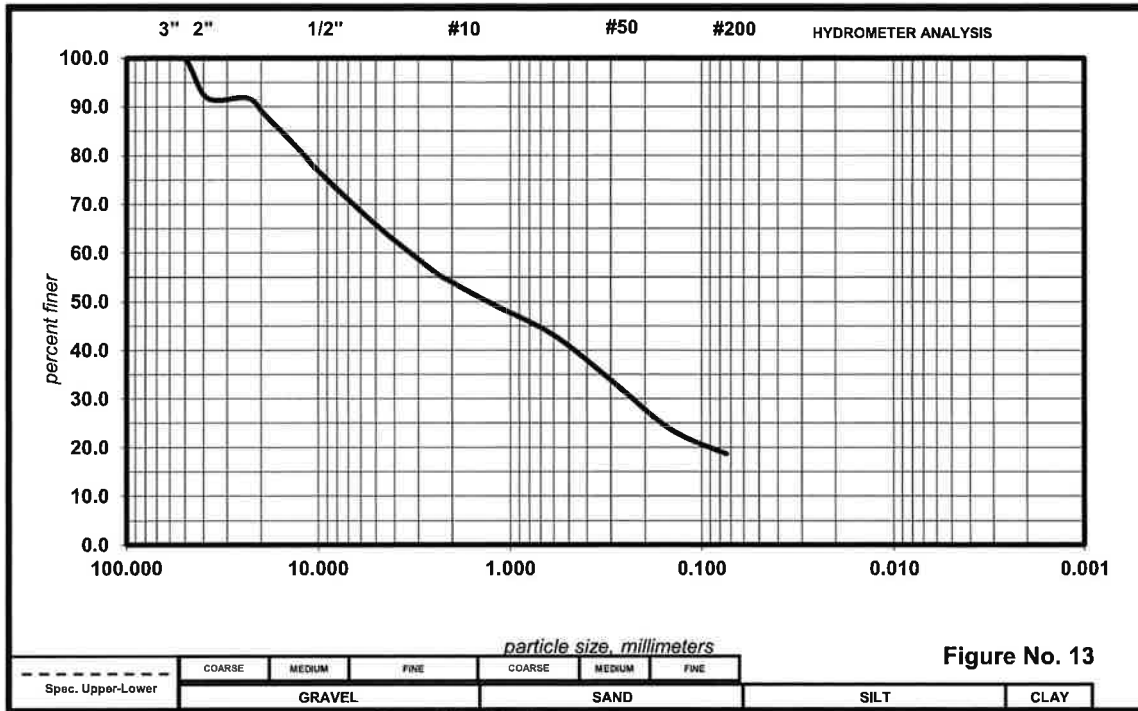


Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-11	
2 1/2" (63 mm)				Lab No.:	A24-08-01	
2" (50 mm)				Source/Location:	6'	
1 1/2" (38.1 mm)	100.0			Description:	Red.Brown of GRAVEL and, of Sand, little Silt	
1" (25 mm)	75.3			sample description in accordance with Burmister System		
3/4" (19 mm)	66.8			LL :	PL :	PI :
5/8" (16 mm)				As received Moisture Content: 10.8 %		
1/2" (12.5 mm)	59.6			Classification:		
3/8" (9.5 mm)	56.9			USCS: [GM]		
5/16" (8 mm)				AASHTO:		
1/4" (6.3 mm)				Remarks:		
#4 (4.75 mm)	50.3			Sample received in lab on January 18, 2024		
#6 (3.35 mm)				Permeability, k: 1.3 x 10-3 cm/s (1.87 in/hr) K2		
#8 (2.36 mm)	44.6			Permeability, k: 1.2 x 10-3 cm/s (1.73 in/hr) K2		
#10 (2 mm)				Client: Garden Homes		
#14 (1.4 mm)				Project: West Essex Highlands		
#16 (1.18 mm)	40.4			Stormwater Management System		
#20 (850 µm)				Location: West Orange, New Jersey		
#30 (600 µm)	36.3			Date: 25-Jan-24		
#40 (425 µm)				Job No.: 24-C-02		
#50 (300 µm)	29.6			Report No.:		
#60 (250 µm)						
#100 (150 µm)	21.2					
#200 (75 µm)	15.7					
-						

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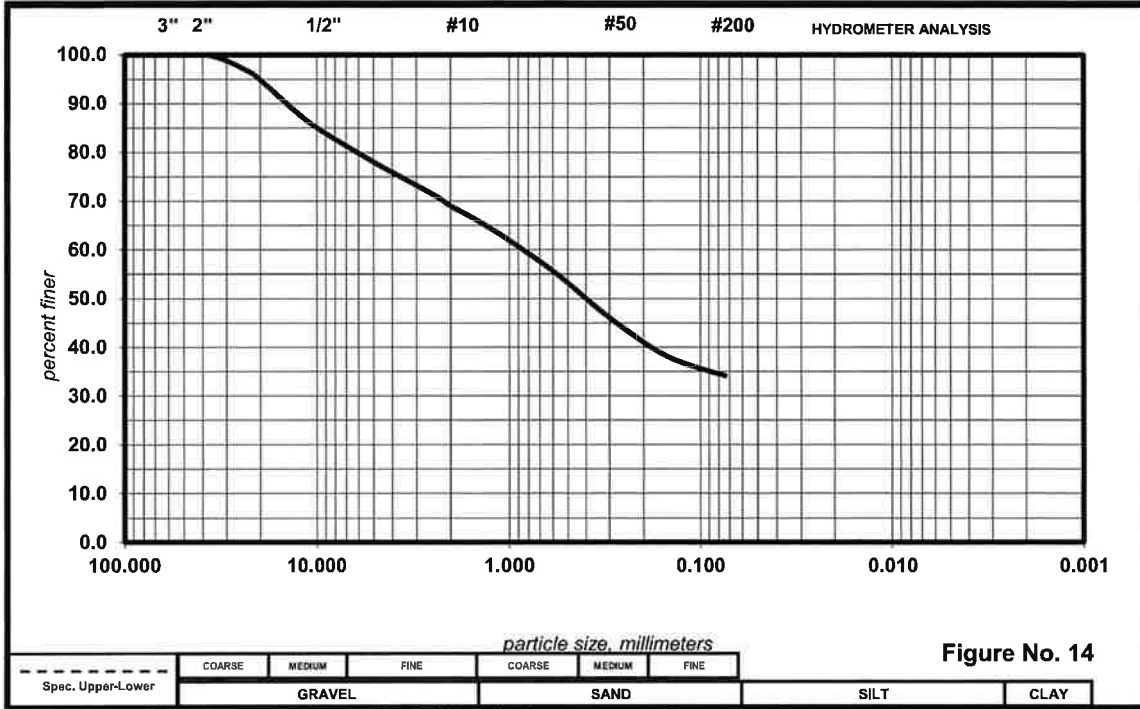


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.:	TP-12	
3" (75 mm)				Lab No.:	A24-08-02	
2 1/2" (63 mm)				Source/Location:	5'	
2" (50 mm)	100.0			Description:	Red.Brown of Sand, little Silt, and of Gravel	
1 1/2" (38.1 mm)	91.8			sample description in accordance with Burmister System		
1" (25 mm)	91.8			LL :	PL :	PI :
3/4" (19 mm)	88.3			As received Moisture Content: 13.6 %		
5/8" (16 mm)				Classification:		
1/2" (12.5 mm)	81.4			USCS: [SM]		
3/8" (9.5 mm)	76.0			AASHTO:		
5/16" (8 mm)				Remarks:		
1/4" (6.3 mm)				Sample received in lab on January 18, 2024		
#4 (4.75 mm)	65.0			Permeability, k: 1.4 x 10-3 cm/s (2.02 in/hr) K2		
#6 (3.35 mm)				Permeability, k: 1.3 x 10-3 cm/s (1.87 in/hr) K2		
#8 (2.36 mm)	55.7			Client: Garden Homes		
#10 (2 mm)				Project: West Essex Highlands		
#14 (1.4 mm)				Stormwater Management System		
#16 (1.18 mm)	49.2			Location: West Orange, New Jersey		
#20 (850 µm)				Date: 25-Jan-24		
#30 (600 µm)	42.9			Job No.: 24-C-02		
#40 (425 µm)				Report No.:		
#50 (300 µm)	33.7					
#60 (250 µm)						
#100 (150 µm)	23.9					
#200 (75 µm)	18.7					
-						

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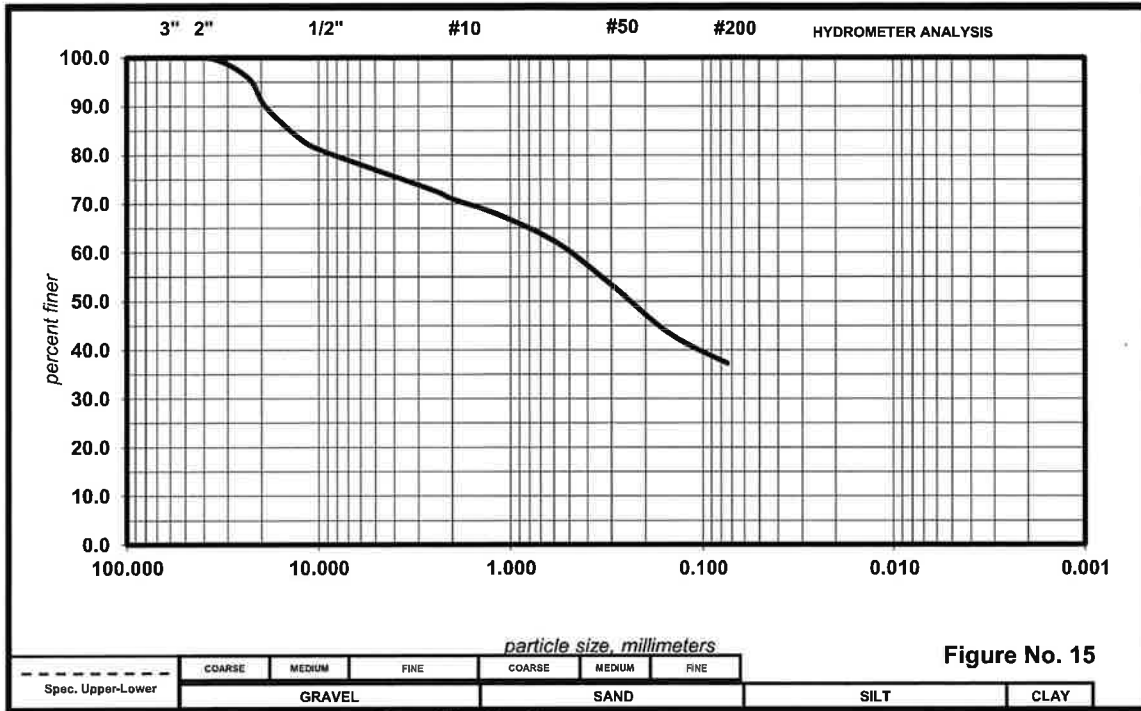
Specification*

Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-13	
2 1/2" (63 mm)				Lab No.:	A24-08-03	
2" (50 mm)				Source/Location:	5'	
1 1/2" (38.1 mm)	100.0			Description:	Red.Brown of Sand, some Silt, some of Gravel	
1" (25 mm)	96.8					
3/4" (19 mm)	94.1					
5/8" (16 mm)						
1/2" (12.5 mm)	88.1					
3/8" (9.5 mm)	84.5			sample description in accordance with Burmister System		
5/16" (8 mm)				LL :	PL :	PI :
1/4" (6.3 mm)				As received Moisture Content: 19.9 %		
#4 (4.75 mm)	77.6			Classification:		
#6 (3.35 mm)				USCS: [SM]		
#8 (2.36 mm)	71.0			AASHTO:		
#10 (2 mm)				Remarks:		
#14 (1.4 mm)				Sample received in lab on January 18, 2024		
#16 (1.18 mm)	63.9			Permeability, k: 4.6 x 10-4 cm/s (0.66 in/hr) K2		
#20 (850 µm)				Permeability, k: 4.7 x 10-4 cm/s (0.68 in/hr) K2		
#30 (600 µm)	55.4			Client: Garden Homes		
#40 (425 µm)				Project:		
#50 (300 µm)	45.9			West Essex Highlands		
#60 (250 µm)				Stormwater Management System		
#100 (150 µm)	38.0			Location: West Orange, New Jersey		
#200 (75 µm)	34.1			Date: 25-Jan-24		
-				Job No.: 24-C-02 Report No.:		

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Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-14		
3" (75 mm)				Lab No.: A24-08-04		
2 1/2" (63 mm)				Source/Location: 6'		
2" (50 mm)				Description:		
1 1/2" (38.1 mm)	100.0			Red.Brown of Sand, and Silt, some of Gravel		
1" (25 mm)	95.9			sample description in accordance with Burmister System		
3/4" (19 mm)	90.0			LL :	PL :	PI :
5/8" (16 mm)				As received Moisture Content: 22.6 %		
1/2" (12.5 mm)	83.5			Classification:		
3/8" (9.5 mm)	80.9			USCS: [SM]		
5/16" (8 mm)				AASHTO:		
1/4" (6.3 mm)				Remarks:		
#4 (4.75 mm)	76.7			Sample received in lab on January 18, 2024		
#6 (3.35 mm)				Permeability, k: 5.7 x 10-4 cm/s (0.82 in/hr) K2		
#8 (2.36 mm)	72.4			Permeability, k: 5.6 x 10-4 cm/s (0.81 in/hr) K2		
#10 (2 mm)				Client: Garden Homes		
#14 (1.4 mm)				Project: West Essex Highlands		
#16 (1.18 mm)	68.0			Stormwater Management System		
#20 (850 µm)				Location: West Orange, New Jersey		
#30 (600 µm)	62.2			Date: 25-Jan-24		
#40 (425 µm)				Job No.: 24-C-02		
#50 (300 µm)	53.2			Report No.:		
#60 (250 µm)						
#100 (150 µm)	43.2					
#200 (75 µm)	37.2					
-						

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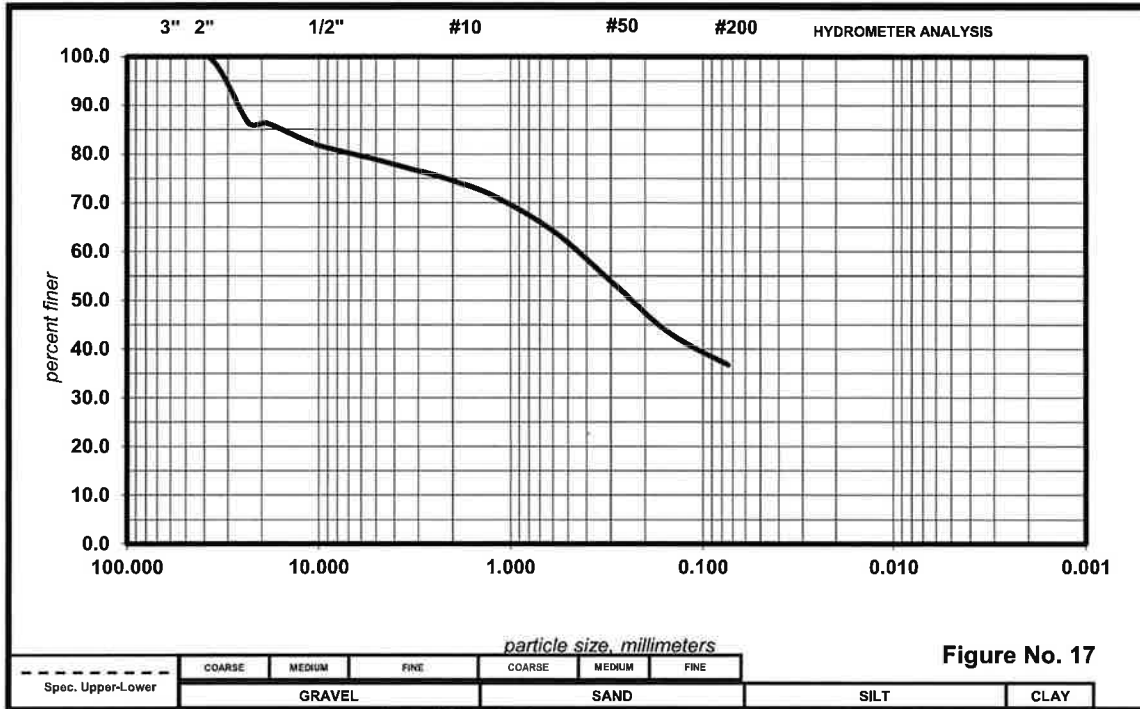


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-15		
3" (75 mm)				Lab No.: A24-08-05		
2 1/2" (63 mm)				Source/Location: 5'		
2" (50 mm)				Description:		
1 1/2" (38.1 mm)				Red.Brown of Sand, and Silt, some mf Gravel		
1" (25 mm)	100.0			sample description in accordance with Burmister System		
3/4" (19 mm)	93.9			LL :	PL :	PI :
5/8" (16 mm)				As received Moisture Content: 12.6 %		
1/2" (12.5 mm)	86.1			Classification:		
3/8" (9.5 mm)	83.5			USCS: [SM]		
5/16" (8 mm)				AASHTO:		
1/4" (6.3 mm)				Remarks:		
#4 (4.75 mm)	78.3			Sample received in lab on January 18, 2024		
#6 (3.35 mm)				Permeability, k: 4.3 x 10-4 cm/s (0.62 in/hr) K2		
#8 (2.36 mm)	73.9			Permeability, k: 4.5 x 10-4 cm/s (0.65 in/hr) K2		
#10 (2 mm)				Client: Garden Homes		
#14 (1.4 mm)				Project: West Essex Highlands		
#16 (1.18 mm)	69.6			Stormwater Management System		
#20 (850 µm)				Location: West Orange, New Jersey		
#30 (600 µm)	63.6			Date: 25-Jan-24		
#40 (425 µm)				Job No.: 24-C-02		
#50 (300 µm)	53.7			Report No.:		
#60 (250 µm)						
#100 (150 µm)	42.8					
#200 (75 µm)	36.0					
-						

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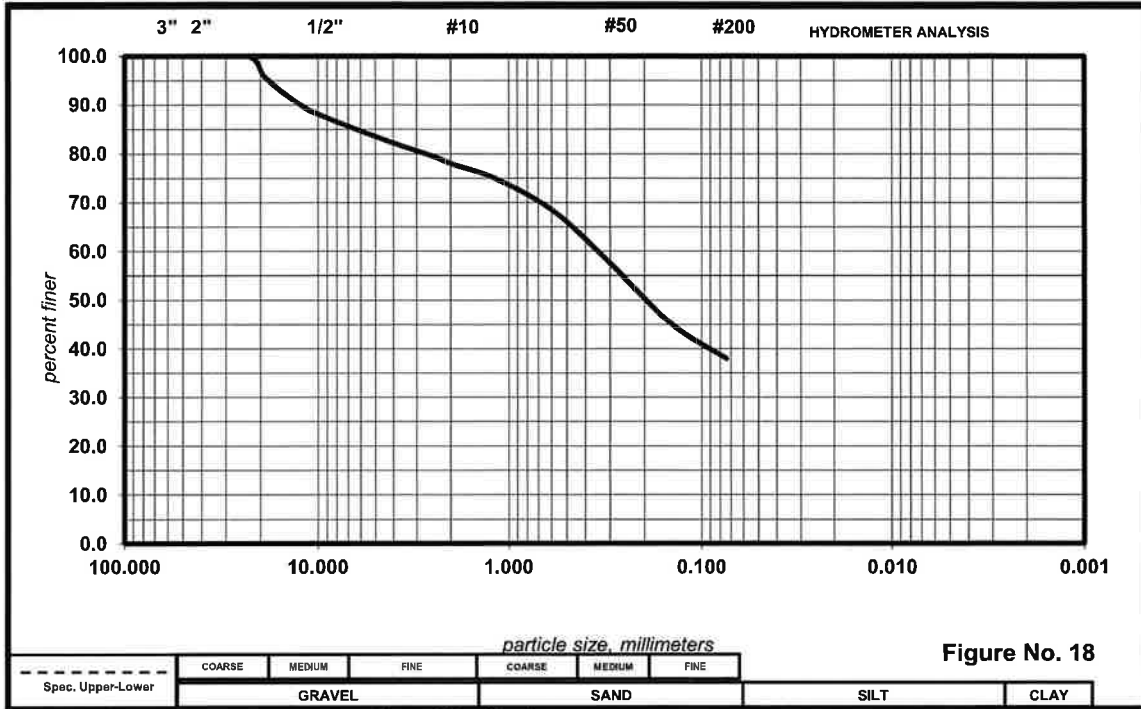


Specification*				Sample Identification				
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.:	TP-16			
3" (75 mm)				Lab No.:	A24-08-06			
2 1/2" (63 mm)				Source/Location:	3'			
2" (50 mm)				Description:	Red.Br. of Sand, and Clayey Silt, some of Gravel			
1 1/2" (38.1 mm)	100.0			sample description in accordance with Burmister System				
1" (25 mm)	86.3			LL :			PL :	PI :
3/4" (19 mm)	86.3			As received Moisture Content: 21.6 %				
5/8" (16 mm)				Classification:				
1/2" (12.5 mm)	83.3			USCS: [SC]				
3/8" (9.5 mm)	81.5			AASHTO:				
5/16" (8 mm)				Remarks:				
1/4" (6.3 mm)				Sample received in lab on January 18, 2024				
#4 (4.75 mm)	78.6			Permeability, k: 6.2 x 10-5 cm/s (0.09 in/hr) K0				
#6 (3.35 mm)				Permeability, k: 6.4 x 10-5 cm/s (0.09 in/hr) K0				
#8 (2.36 mm)	75.4			Client:	Garden Homes			
#10 (2 mm)				Project:	West Essex Highlands			
#14 (1.4 mm)					Stormwater Management System			
#16 (1.18 mm)	71.1			Location:	West Orange, New Jersey			
#20 (850 µm)				Date:	25-Jan-24			
#30 (600 µm)	64.1			Job No.:	24-C-02	Report No.:		
#40 (425 µm)								
#50 (300 µm)	53.7							
#60 (250 µm)								
#100 (150 µm)	43.3							
#200 (75 µm)	36.7							
-								

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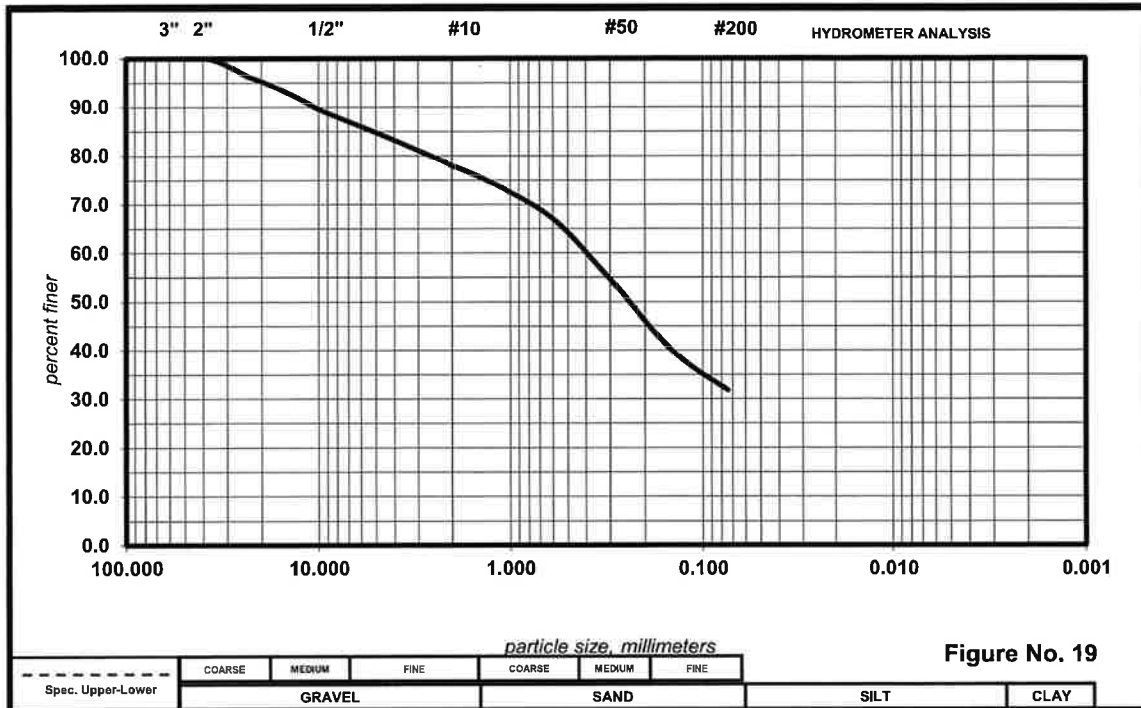


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-17		
3" (75 mm)				Lab No.: A24-08-07		
2 1/2" (63 mm)				Source/Location: 3'		
2" (50 mm)				Description:		
1 1/2" (38.1 mm)				Red.Br. cf Sand, and Clayey Silt, some mf Gravel		
1" (25 mm)	100.0			sample description in accordance with Burmister System		
3/4" (19 mm)	95.8			LL :	PL :	PI :
5/8" (16 mm)				As received Moisture Content: 18.6 %		
1/2" (12.5 mm)	90.4			Classification:		
3/8" (9.5 mm)	87.8			USCS: [SC]		
5/16" (8 mm)				AASHTO:		
1/4" (6.3 mm)				Remarks:		
#4 (4.75 mm)	83.2			Sample received in lab on January 18, 2024		
#6 (3.35 mm)				Permeability, k: 6.7 x 10-5 cm/s (0.09 in/hr) K0		
#8 (2.36 mm)	79.3			Permeability, k: 6.6 x 10-5 cm/s (0.09 in/hr) K0		
#10 (2 mm)				Client: Garden Homes		
#14 (1.4 mm)				Project: West Essex Highlands		
#16 (1.18 mm)	75.0			Stormwater Management System		
#20 (850 µm)				Location: West Orange, New Jersey		
#30 (600 µm)	68.4			Date: 25-Jan-24		
#40 (425 µm)				Job No.: 24-C-02		
#50 (300 µm)	57.4			Report No.:		
#60 (250 µm)						
#100 (150 µm)	45.6					
#200 (75 µm)	38.0					
-						

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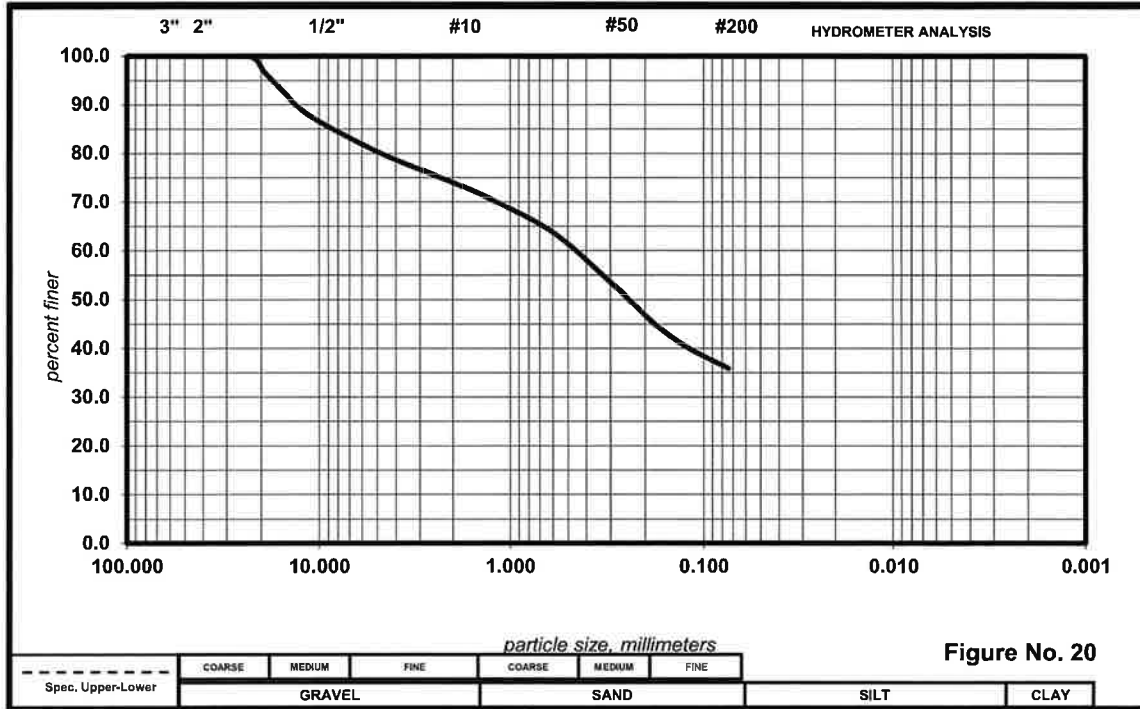


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-18 Lab No.: A24-08-08 Source/Location: 4' Description: Red.Brown of Sand, some Silt, some of Gravel sample description in accordance with Burmister System LL : PL : PI : As received Moisture Content: 17.5 % Classification: USCS: [SM] AASHTO: Remarks: Sample received in lab on January 18, 2024 Permeability, k: 4.9 x 10-4 cm/s (0.71 in/hr) K2 Permeability, k: 5.3 x 10-4 cm/s (0.76 in/hr) K2 Client: Garden Homes Project: West Essex Highlands Stormwater Management System Location: West Orange, New Jersey Date: 25-Jan-24 Job No.: 24-C-02 Report No.:		
3" (75 mm)						
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	96.2					
3/4" (19 mm)	94.9					
5/8" (16 mm)						
1/2" (12.5 mm)	91.7					
3/8" (9.5 mm)	89.2					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	84.4					
#6 (3.35 mm)						
#8 (2.36 mm)	79.4					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	74.0					
#20 (850 μm)						
#30 (600 μm)	66.9					
#40 (425 μm)						
#50 (300 μm)	54.4					
#60 (250 μm)						
#100 (150 μm)	40.4					
#200 (75 μm)	31.8					
-						

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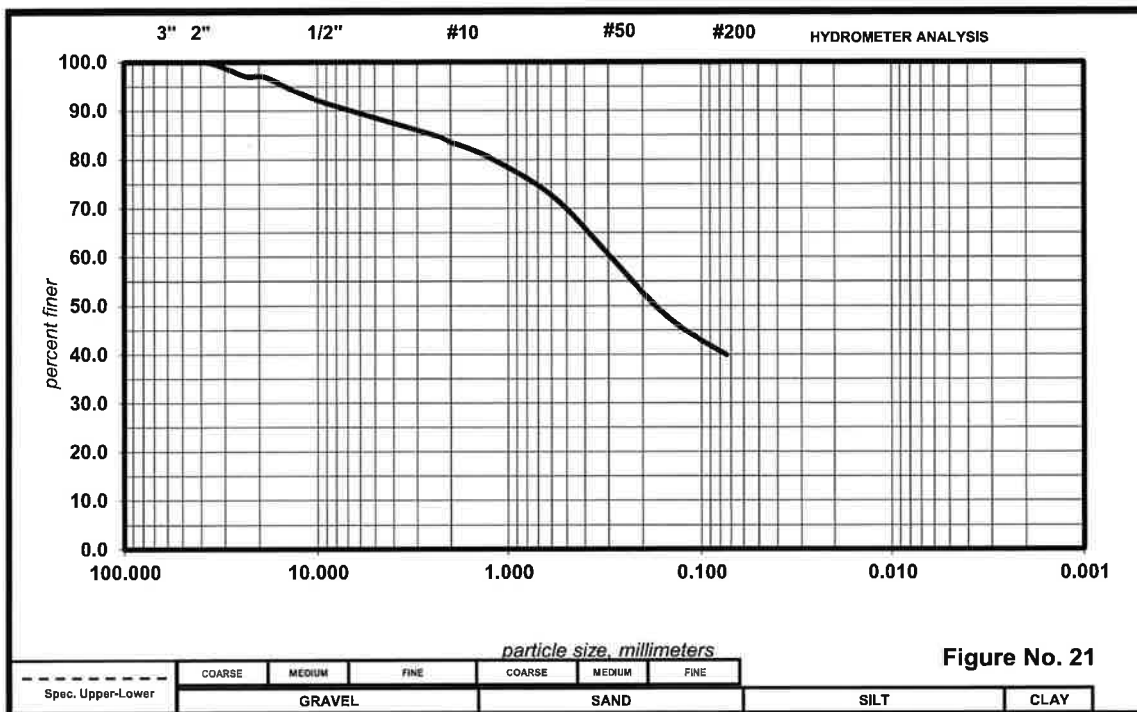


Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification				
3" (75 mm)				Sample No.:	TP-19			
2 1/2" (63 mm)				Lab No.:	A24-08-09			
2" (50 mm)				Source/Location:	4'			
1 1/2" (38.1 mm)				Description:	Red.Brown of Sand, and Silt, some mf Gravel			
1" (25 mm)	100.0			sample description in accordance with Burmister System				
3/4" (19 mm)	96.5			LL :			PL :	PI :
5/8" (16 mm)				As received Moisture Content: 15.7 %				
1/2" (12.5 mm)	89.3			Classification:				
3/8" (9.5 mm)	86.1			USCS: [SM]				
5/16" (8 mm)				AASHTO:				
1/4" (6.3 mm)				Remarks:				
#4 (4.75 mm)	79.9			Sample received in lab on January 18, 2024				
#6 (3.35 mm)				Permeability, k: 6.6 x 10-4 cm/s (0.95 in/hr) K2				
#8 (2.36 mm)	75.1			Permeability, k: 6.3 x 10-4 cm/s (0.91 in/hr) K2				
#10 (2 mm)				Client: Garden Homes				
#14 (1.4 mm)				Project: West Essex Highlands				
#16 (1.18 mm)	70.1			Stormwater Management System				
#20 (850 µm)				Location: West Orange, New Jersey				
#30 (600 µm)	63.6			Date: 25-Jan-24				
#40 (425 µm)				Job No.: 24-C-02				
#50 (300 µm)	53.4			Report No.:				
#60 (250 µm)								
#100 (150 µm)	42.4							
#200 (75 µm)	35.9							

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Specification*

Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-20	
2 1/2" (63 mm)				Lab No.:	A24-08-10	
2" (50 mm)				Source/Location:	4'	
1 1/2" (38.1 mm)	100.0			Description:	Red.Brown of Sand, and Silt, little of Gravel	
1" (25 mm)	97.0					
3/4" (19 mm)	97.0			sample description in accordance with Burmister System		
5/8" (16 mm)				LL :	PL :	PI :
1/2" (12.5 mm)	93.7			As received Moisture Content: 16.5 %		
3/8" (9.5 mm)	91.8			Classification:		
5/16" (8 mm)				USCS: [SM]		
1/4" (6.3 mm)				AASHTO:		
#4 (4.75 mm)	88.3			Remarks:		
#6 (3.35 mm)				Sample received in lab on January 18, 2024		
#8 (2.36 mm)	84.8			Permeability, k: 4.8 x 10-4 cm/s (0.69 in/hr) K2		
#10 (2 mm)				Permeability, k: 4.5 x 10-4 cm/s (0.65 in/hr) K2		
#14 (1.4 mm)				Client: Garden Homes		
#16 (1.18 mm)	80.0			Project: West Essex Highlands		
#20 (850 µm)				Stormwater Management System		
#30 (600 µm)	72.5			Location: West Orange, New Jersey		
#40 (425 µm)				Date: 25-Jan-24		
#50 (300 µm)	60.3			Job No.: 24-C-02		
#60 (250 µm)				Report No.:		
#100 (150 µm)	47.6					
#200 (75 µm)	39.9					
-						

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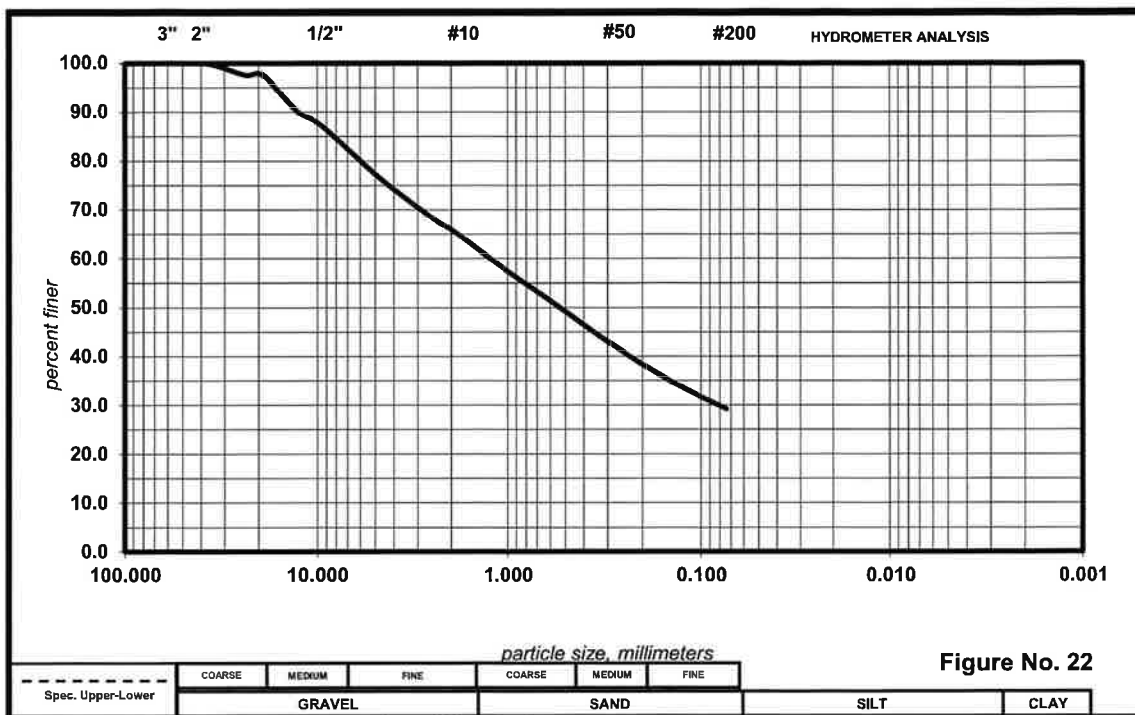


Figure No. 22

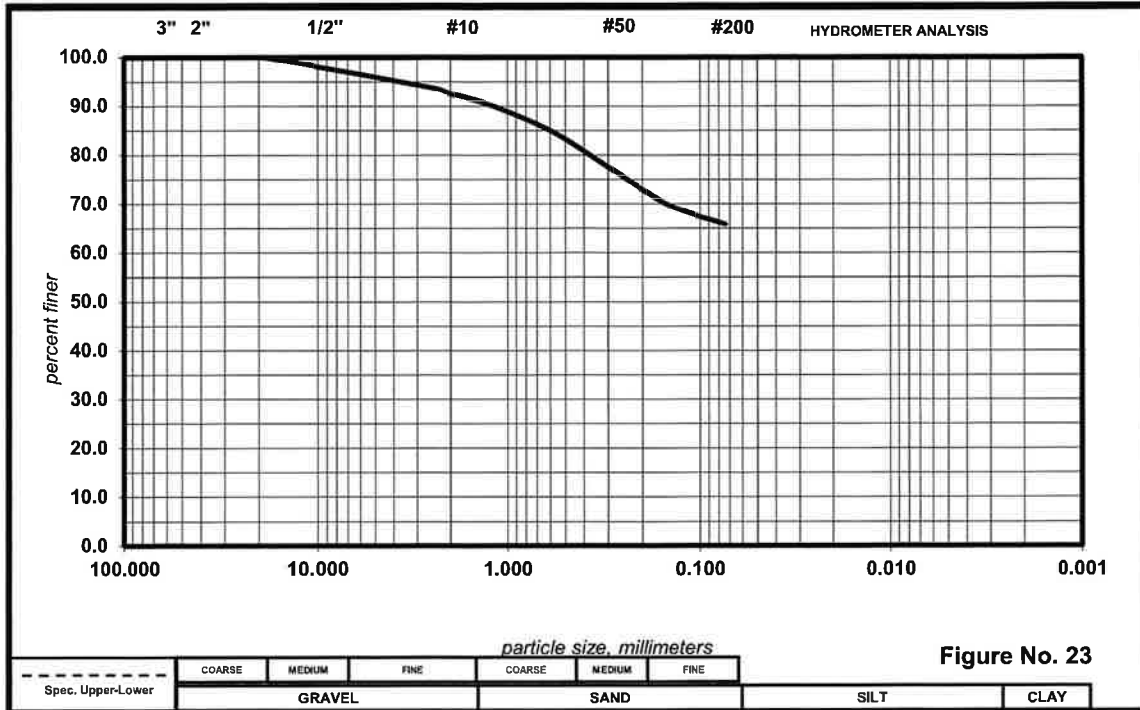
Specification*

Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification				
3" (75 mm)				Sample No.:	TP-21			
2 1/2" (63 mm)				Lab No.:	A24-11-02			
2" (50 mm)				Source/Location:	4'			
1 1/2" (38.1 mm)	100.0			Description:	Red.Brown cf Sand, some Clayey Silt, some cf Grave			
1" (25 mm)	97.5			sample description in accordance with Burmister System				
3/4" (19 mm)	97.5			LL :			PL :	PI :
5/8" (16 mm)				As received Moisture Content: 25.3 %				
1/2" (12.5 mm)	90.1			Classification:				
3/8" (9.5 mm)	87.2			USCS: [SC]				
5/16" (8 mm)				AASHTO:				
1/4" (6.3 mm)				Remarks:				
#4 (4.75 mm)	76.6			Sample received in lab on January 23, 2024				
#6 (3.35 mm)				Permeability, k: 1.6 x 10-4 cm/s (0.24 in/hr) K1				
#8 (2.36 mm)	67.6			Permeability, k: 1.4 x 10-4 cm/s (0.20 in/hr) K1				
#10 (2 mm)				Client:	Garden Homes			
#14 (1.4 mm)				Project:	West Essex Highlands			
#16 (1.18 mm)	59.5			Stormwater Management System				
#20 (850 µm)				Location:	West Orange, New Jersey			
#30 (600 µm)	51.2			Date:	29-Jan-24			
#40 (425 µm)				Job No.:	24-C-02	Report No.:		
#50 (300 µm)	42.9							
#60 (250 µm)								
#100 (150 µm)	35.3							
#200 (75 µm)	29.2							
-								

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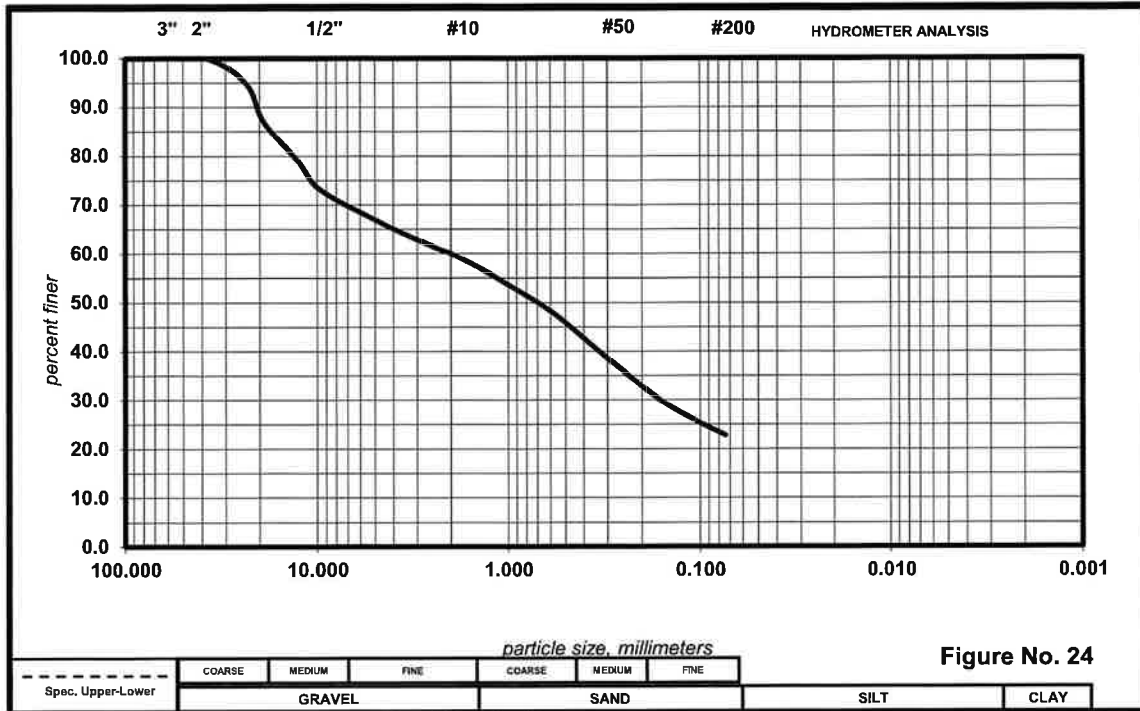


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.:	TP-22	
3" (75 mm)				Lab No.:	A24-11-03	
2 1/2" (63 mm)				Source/Location:	2'	
2" (50 mm)				Description:	Brown Clayey SILT and, cf Sand, trace mf Gravel <i>sample description in accordance with Burmister System</i>	
1 1/2" (38.1 mm)						
1" (25 mm)						
3/4" (19 mm)	100.0					
5/8" (16 mm)						
1/2" (12.5 mm)	98.8			LL :	PL :	PI :
3/8" (9.5 mm)	97.9			As received Moisture Content: 22.5 %		
5/16" (8 mm)				Classification:		
1/4" (6.3 mm)				USCS: [ML]		
#4 (4.75 mm)	95.8			AASHTO:		
#6 (3.35 mm)				Remarks:		
#8 (2.36 mm)	93.5			Sample received in lab on January 23, 2024		
#10 (2 mm)				Permeability, k: 6.0 x 10-5 cm/s (0.09 in/hr) K0		
#14 (1.4 mm)				Permeability, k: 5.7 x 10-5 cm/s (0.08 in/hr) K0		
#16 (1.18 mm)	90.0			Client: Garden Homes		
#20 (850 µm)				Project: West Essex Highlands		
#30 (600 µm)	84.9			Stormwater Management System		
#40 (425 µm)				Location: West Orange, New Jersey		
#50 (300 µm)	77.4			Date: 29-Jan-24		
#60 (250 µm)				Job No.: 24-C-02 Report No.:		
#100 (150 µm)	69.9					
#200 (75 µm)	65.8					
-						

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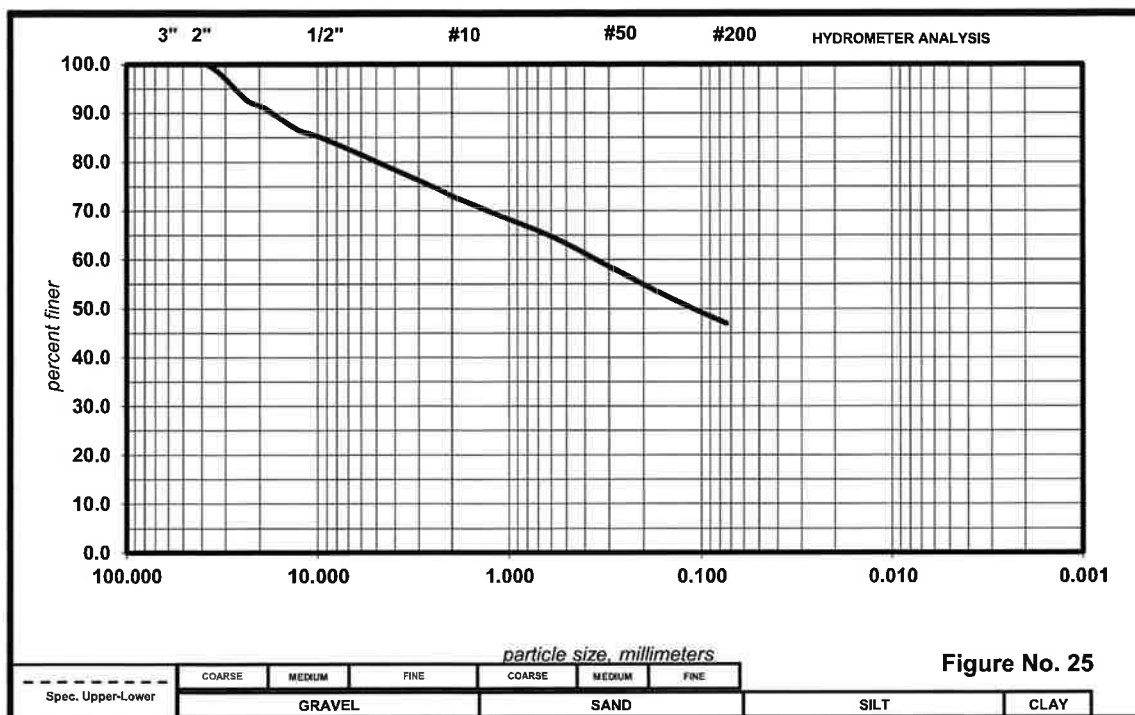


Specification*				Figure No. 24		
Spec. Upper-Lower				COARSE	MEDIUM	FINE
GRAVEL				COARSE	MEDIUM	FINE
SAND				SILT		
CLAY						
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-23	
2 1/2" (63 mm)				Lab No.:	A24-11-04	
2" (50 mm)				Source/Location:	5'	
1 1/2" (38.1 mm)	100.0			Description:	Red.Brown of Sand, some Silt, and of Gravel	
1" (25 mm)	94.8			sample description in accordance with Burmister System		
3/4" (19 mm)	87.0			LL :	PL :	PI :
5/8" (16 mm)				As received Moisture Content: 20.7 %		
1/2" (12.5 mm)	79.1			Classification:		
3/8" (9.5 mm)	72.9			USCS: [SM]		
5/16" (8 mm)				AASHTO:		
1/4" (6.3 mm)				Remarks:		
#4 (4.75 mm)	66.5			Sample received in lab on January 23, 2024		
#6 (3.35 mm)				Permeability, k: 6.1 x 10-4 cm/s (0.88 in/hr) K2		
#8 (2.36 mm)	61.1			Permeability, k: 5.5 x 10-4 cm/s (0.79 in/hr) K2		
#10 (2 mm)				Client: Garden Homes		
#14 (1.4 mm)				Project: West Essex Highlands		
#16 (1.18 mm)	55.3			Stormwater Management System		
#20 (850 μm)				Location: West Orange, New Jersey		
#30 (600 μm)	48.0			Date: 29-Jan-24		
#40 (425 μm)				Job No.: 24-C-02		
#50 (300 μm)	38.3			Report No.:		
#60 (250 μm)						
#100 (150 μm)	29.1					
#200 (75 μm)	22.8					
-						

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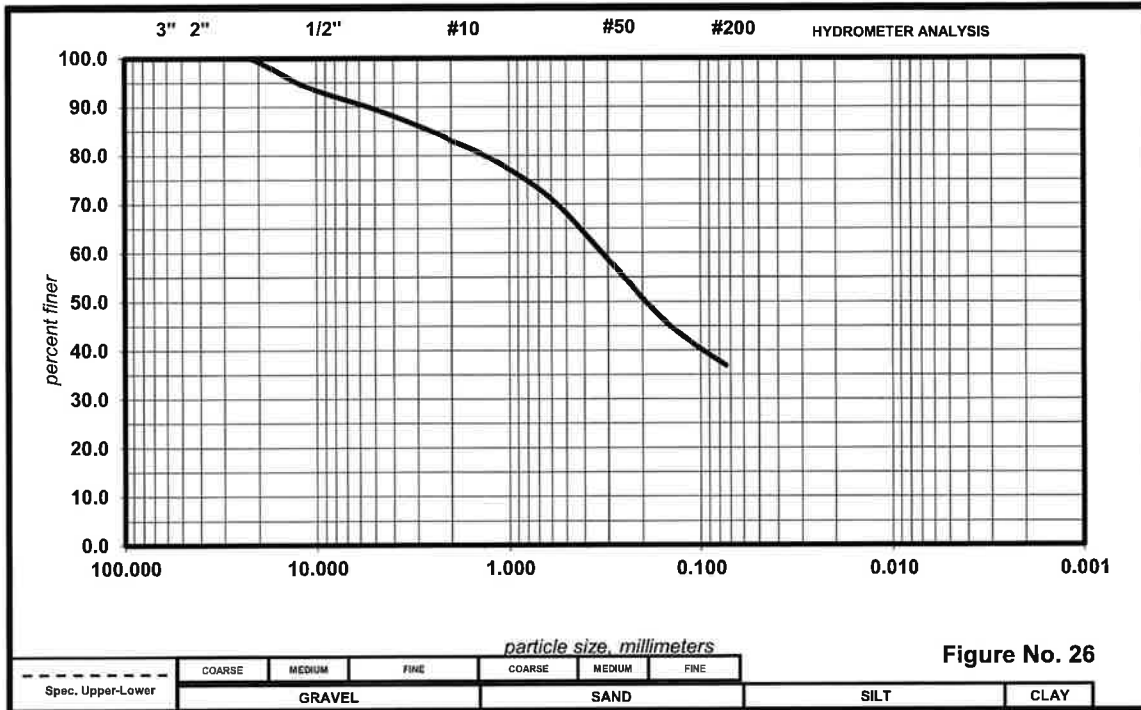


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.:	TP-24	
3" (75 mm)	-			Lab No.:	A24-11-05	
2 1/2" (63 mm)				Source/Location:	2'	
2" (50 mm)				Description:	Yel.Brown of Sand, and Clayey Silt, some of Gravel	
1 1/2" (38.1 mm)	100.0			sample description in accordance with Burmister System		
1" (25 mm)	92.7			LL :	PL :	PI :
3/4" (19 mm)	91.1			As received Moisture Content: 27.1 %		
5/8" (16 mm)				Classification:		
1/2" (12.5 mm)	86.6			USCS: [SC]		
3/8" (9.5 mm)	84.9			AASHTO:		
5/16" (8 mm)				Remarks:		
1/4" (6.3 mm)				Sample received in lab on January 23, 2024		
#4 (4.75 mm)	79.7			Permeability, k: 1.4 x 10-4 cm/s (0.20 in/hr) K1		
#6 (3.35 mm)				Permeability, k: 1.6 x 10-4 cm/s (0.23 in/hr) K1		
#8 (2.36 mm)	74.4			Client: Garden Homes		
#10 (2 mm)				Project: West Essex Highlands		
#14 (1.4 mm)				Stormwater Management System		
#16 (1.18 mm)	69.4			Location: West Orange, New Jersey		
#20 (850 µm)				Date: 29-Jan-24		
#30 (600 µm)	64.6			Job No.: 24-C-02 Report No.:		
#40 (425 µm)						
#50 (300 µm)	58.5					
#60 (250 µm)						
#100 (150 µm)	52.4					
#200 (75 µm)	46.9					
-						

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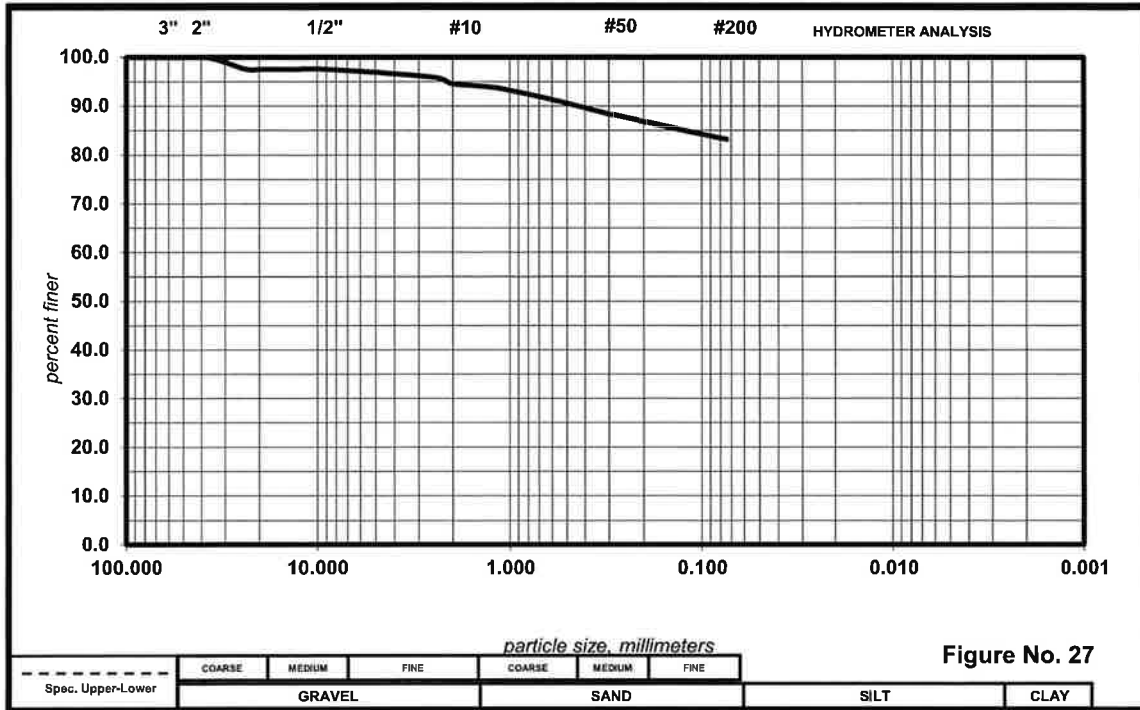


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.:	TP-25	
3" (75 mm)				Lab No.:	A24-06-05	
2 1/2" (63 mm)				Source/Location:	4'	
2" (50 mm)				Description:	Red.Brown of Sand, and Silt, little mf Gravel	
1 1/2" (38.1 mm)				sample description in accordance with Burmister System		
1" (25 mm)	100.0			LL :	PL :	PI :
3/4" (19 mm)	98.8			As received Moisture Content: 18.1 %		
5/8" (16 mm)				Classification:		
1/2" (12.5 mm)	95.0			USCS: [SM]		
3/8" (9.5 mm)	93.1			AASHTO:		
5/16" (8 mm)				Remarks:		
1/4" (6.3 mm)				Sample received in lab on January 15, 2024		
#4 (4.75 mm)	89.2			Permeability, k: 5.7 x 10-4 cm/s (0.82 in/hr) K2		
#6 (3.35 mm)				Permeability, k: 5.5 x 10-4 cm/s (0.79 in/hr) K2		
#8 (2.36 mm)	84.5			Client: Garden Homes		
#10 (2 mm)				Project: West Essex Highlands		
#14 (1.4 mm)				Stormwater Management System		
#16 (1.18 mm)	78.9			Location: West Orange, New Jersey		
#20 (850 µm)				Date: 17-Jan-24		
#30 (600 µm)	70.8			Job No.: 24-C-02 Report No.:		
#40 (425 µm)						
#50 (300 µm)	58.4					
#60 (250 µm)						
#100 (150 µm)	45.5					
#200 (75 µm)	36.8					
-						

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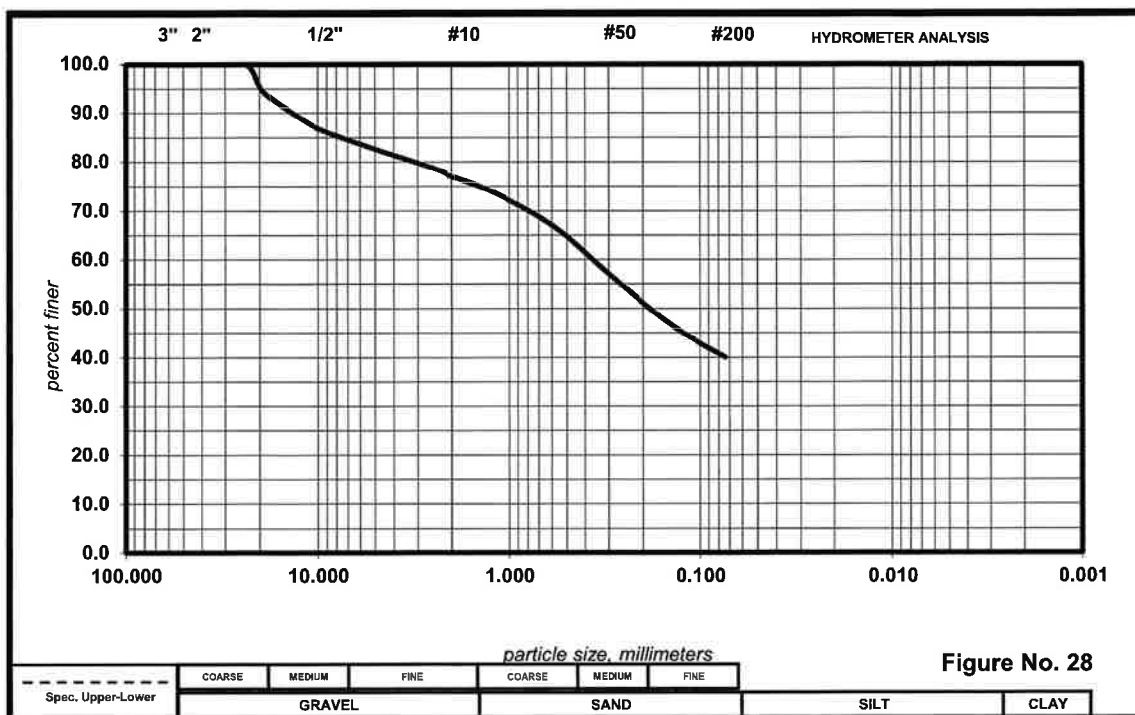


Specification*						
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.: TP-26		
2 1/2" (63 mm)				Lab No.: A24-06-06		
2" (50 mm)				Source/Location: 2'		
1 1/2" (38.1 mm)	100.0			Description:		
1" (25 mm)	97.5			Red.Br. Clayey SILT and, cf Sand, trace cf Gravel		
3/4" (19 mm)	97.5					
5/8" (16 mm)				sample description in accordance with Burmister System		
1/2" (12.5 mm)	97.5			LL :	PL :	PI :
3/8" (9.5 mm)	97.5			As received Moisture Content: 25.3 %		
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	96.8			Classification:		
#6 (3.35 mm)				USCS: [ML]		
#8 (2.36 mm)	95.7			AASHTO:		
#10 (2 mm)				Remarks:		
#14 (1.4 mm)				Sample received in lab on January 15, 2024		
#16 (1.18 mm)	93.7					
#20 (850 μm)				Permeability, k: 6.9 x 10-5 cm/s (0.10 in/hr) K0		
#30 (600 μm)	91.2			Permeability, k: 6.7 x 10-5 cm/s (0.09 in/hr) K0		
#40 (425 μm)				Client: Garden Homes		
#50 (300 μm)	88.3			Project: West Essex Highlands		
#60 (250 μm)				Stormwater Management System		
#100 (150 μm)	85.7			Location: West Orange, New Jersey		
#200 (75 μm)	83.2			Date: 17-Jan-24		
-				Job No.: 24-C-02 Report No.:		

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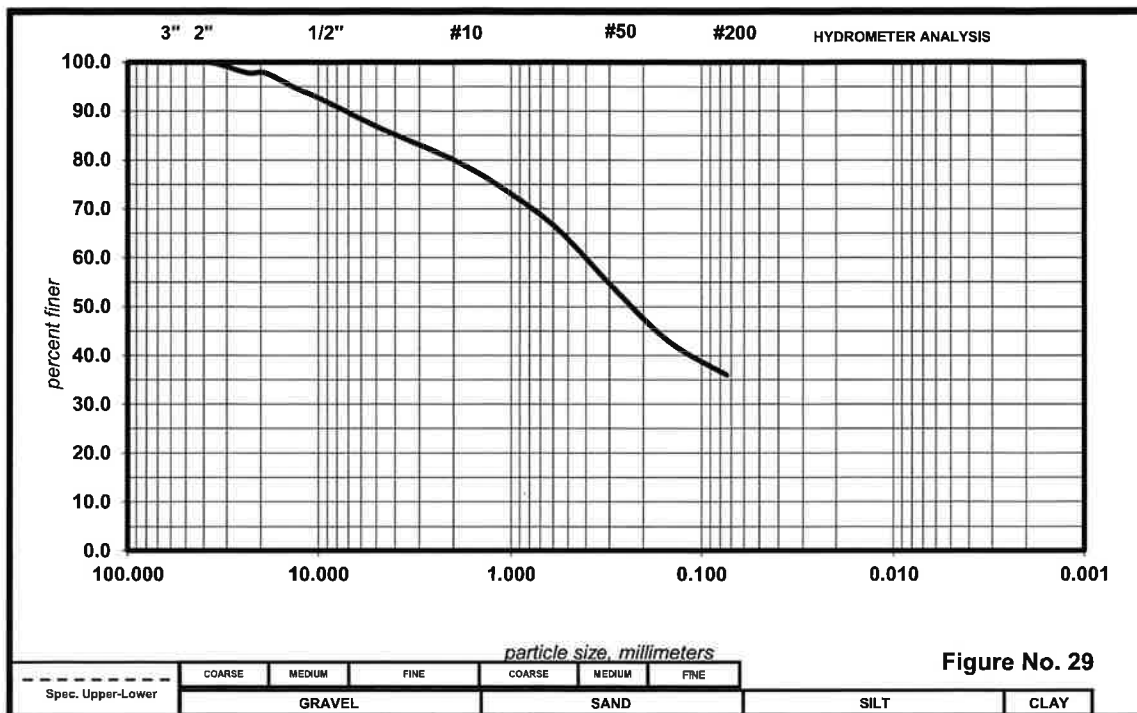


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-27		
3" (75 mm)				Lab No.: A24-11-06		
2 1/2" (63 mm)				Source/Location: 5'		
2" (50 mm)				Description:		
1 1/2" (38.1 mm)				Red.Brown cf Sand, and Clayey Silt, some mf Gravel		
1" (25 mm)	100.0			sample description in accordance with Burmister System		
3/4" (19 mm)	94.3			LL :	PL :	PI :
5/8" (16 mm)				As received Moisture Content: 13.6 %		
1/2" (12.5 mm)	89.3			Classification:		
3/8" (9.5 mm)	86.5			USCS: [SC]		
5/16" (8 mm)				AASHTO:		
1/4" (6.3 mm)				Remarks:		
#4 (4.75 mm)	82.3			Sample received in lab on January 23, 2024		
#6 (3.35 mm)				Permeability, k: 6.3 x 10-5 cm/s (0.09 in/hr) K0		
#8 (2.36 mm)	78.4			Permeability, k: 6.0 x 10-5 cm/s (0.09 in/hr) K0		
#10 (2 mm)				Client: Garden Homes		
#14 (1.4 mm)				Project: West Essex Highlands		
#16 (1.18 mm)	73.6			Stormwater Management System		
#20 (850 µm)				Location: West Orange, New Jersey		
#30 (600 µm)	66.9			Date: 29-Jan-24		
#40 (425 µm)				Job No.: 24-C-02		
#50 (300 µm)	56.9			Report No.:		
#60 (250 µm)						
#100 (150 µm)	47.1					
#200 (75 µm)	40.0					
-						

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Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-28 Lab No.: A24-11-07 Source/Location: 6' Description: Dark Br. cf Sand, and Clayey Silt, little cf Gravel sample description in accordance with Burmister System LL : PL : PI : As received Moisture Content: 15.6 % Classification: USCS: [SC] AASHTO: Remarks: Sample received in lab on January 23, 2024 Permeability, k: 6.0 x 10-5 cm/s (0.09 in/hr) K0 Permeability, k: 5.7 x 10-5 cm/s (0.08 in/hr) K0 Client: Garden Homes Project: West Essex Highlands Stormwater Management System Location: West Orange, New Jersey Date: 29-Jan-24 Job No.: 24-C-02 Report No.:		
3" (75 mm)						
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	97.8					
3/4" (19 mm)	97.8					
5/8" (16 mm)						
1/2" (12.5 mm)	94.4					
3/8" (9.5 mm)	92.3					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	86.5					
#6 (3.35 mm)						
#8 (2.36 mm)	81.3					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	75.0					
#20 (850 µm)						
#30 (600 µm)	66.4					
#40 (425 µm)						
#50 (300 µm)	54.5					
#60 (250 µm)						
#100 (150 µm)	43.0					
#200 (75 µm)	36.0					
-						

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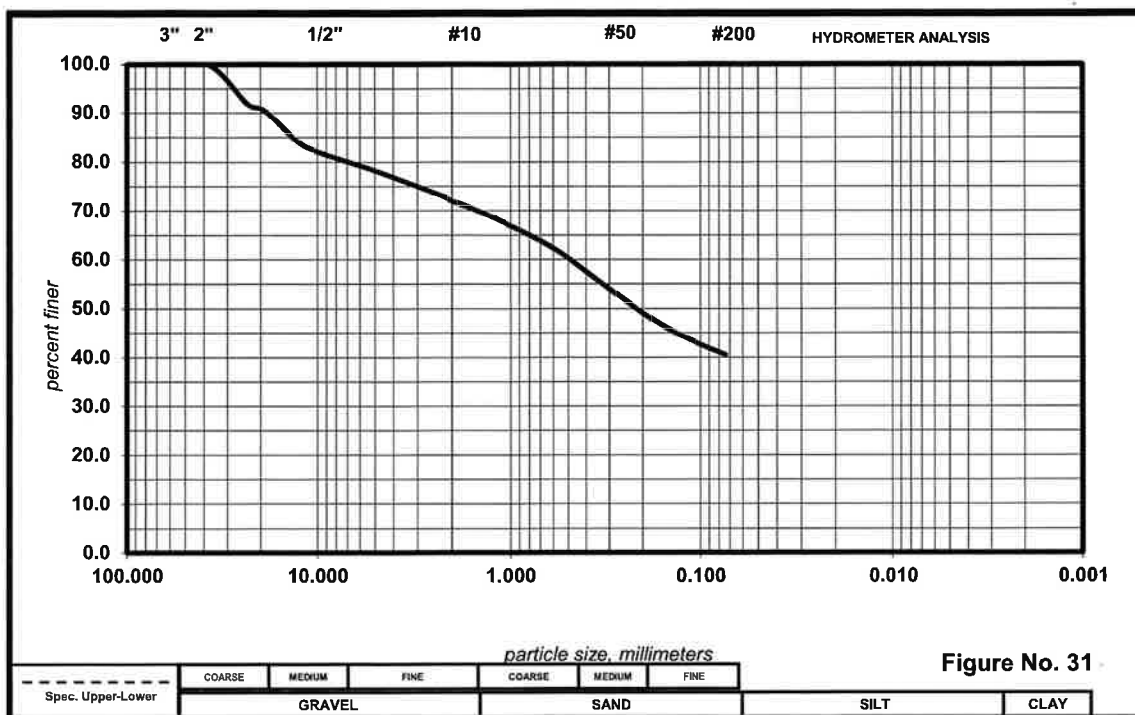


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-29 Lab No.: A24-11-08 Source/Location: 1' Description: Red.Brown of Sand, some Clayey Silt, some of Gravel sample description in accordance with Burmister System LL : PL : PI : As received Moisture Content: 16.6 % Classification: USCS: [SC] AASHTO: Remarks: Sample received in lab on January 23, 2024 Permeability, k: 1.2 x 10-4 cm/s (0.18 in/hr) K0 Permeability, k: 1.0 x 10-4 cm/s (0.14 in/hr) K0 Client: Garden Homes Project: West Essex Highlands Stormwater Management System Location: West Orange, New Jersey Date: 29-Jan-24 Job No.: 24-C-02 Report No.:		
3" (75 mm)						
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	91.5					
3/4" (19 mm)	86.6					
5/8" (16 mm)						
1/2" (12.5 mm)	84.6					
3/8" (9.5 mm)	81.9					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	77.1					
#6 (3.35 mm)						
#8 (2.36 mm)	72.9					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	67.3					
#20 (850 µm)						
#30 (600 µm)	59.6					
#40 (425 µm)						
#50 (300 µm)	48.4					
#60 (250 µm)						
#100 (150 µm)	37.8					
#200 (75 µm)	31.1					
-						

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Specification*

Specification				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.:	TP-30	
3" (75 mm)				Lab No.:	A24-11-09	
2 1/2" (63 mm)				Source/Location:	2'	
2" (50 mm)				Description:	Brown of Sand, and Silt, some of Gravel	
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	91.8					
3/4" (19 mm)	90.5			sample description in accordance with Burmister System		
5/8" (16 mm)				LL :	PL :	PI :
1/2" (12.5 mm)	84.1			As received Moisture Content: 18.2 %		
3/8" (9.5 mm)	81.8					
5/16" (8 mm)				Classification:		
1/4" (6.3 mm)						
#4 (4.75 mm)	77.9			USCS:	[SM]	
#6 (3.35 mm)				AASHTO:		
#8 (2.36 mm)	73.4			Remarks:	Sample received in lab on January 23, 2024	
#10 (2 mm)						
#14 (1.4 mm)				Permeability, k: 9.0 x 10-5 cm/s (0.13 in/hr) K0		
#16 (1.18 mm)	68.3					
#20 (850 µm)				Permeability, k: 8.7 x 10-5 cm/s (0.13 in/hr) K0		
#30 (600 µm)	62.2					
#40 (425 µm)				Client:	Garden Homes	
#50 (300 µm)	53.8			Project:	West Essex Highlands	
#60 (250 µm)				Stormwater Management System		
#100 (150 µm)	45.9			Location:	West Orange, New Jersey	
#200 (75 µm)	40.5			Date:	29-Jan-24	
-				Job No.:	24-C-02	Report No.:

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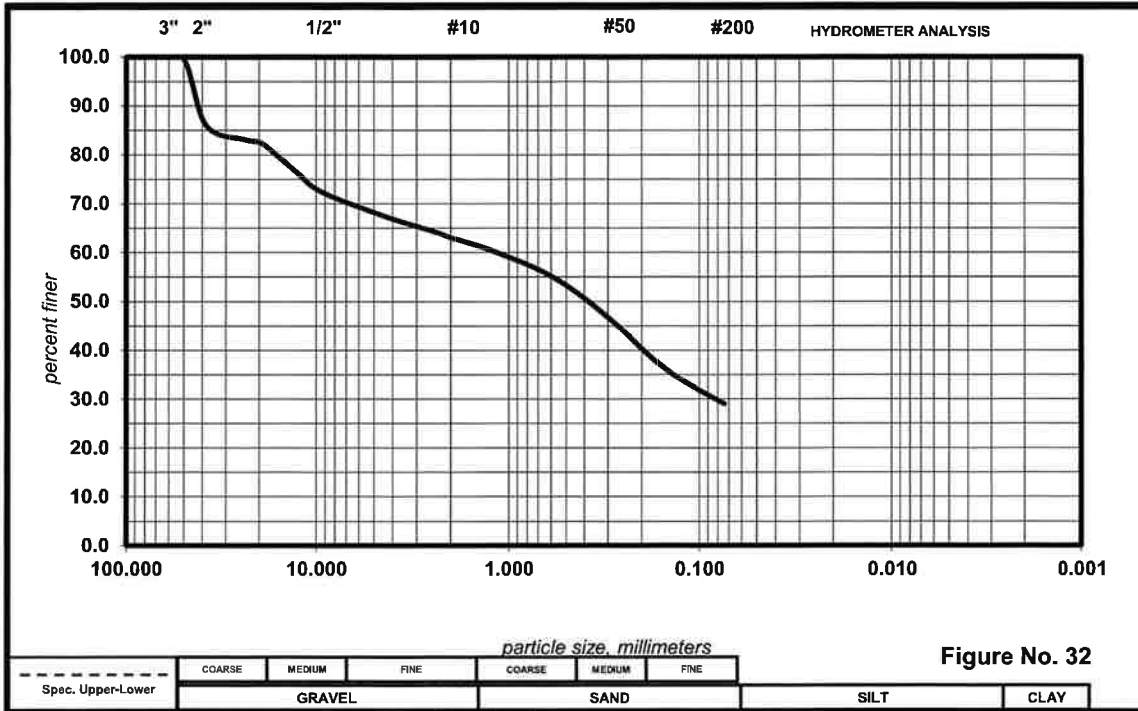


Figure No. 32

Specification*						
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-31	
2 1/2" (63 mm)				Lab No.:	A24-05-01	
2" (50 mm)	100.0			Source/Location:	7'-8'	
1 1/2" (38.1 mm)	86.0			Description:	Red.Brown of Sand, some Silt, and of Gravel	
1" (25 mm)	83.0					
3/4" (19 mm)	82.1			sample description in accordance with Burmister System		
5/8" (16 mm)						
1/2" (12.5 mm)	76.4			LL :	PL :	PI :
3/8" (9.5 mm)	72.6			As received Moisture Content: 11.3 %		
5/16" (8 mm)						
1/4" (6.3 mm)				Classification:		
#4 (4.75 mm)	67.9					
#6 (3.35 mm)				USCS: [SM] AASHTO:		
#8 (2.36 mm)	64.1					
#10 (2 mm)				Remarks:		
#14 (1.4 mm)						
#16 (1.18 mm)	60.2			Sample received in lab on January 12, 2024		
#20 (850 μm)						
#30 (600 μm)	55.0			Permeability, k: 4.2 x 10-4 cm/s (0.61 in/hr) K2 Permeability, k: 4.8 x 10-4 cm/s (0.69 in/hr) K2		
#40 (425 μm)						
#50 (300 μm)	46.6			Client: Garden Homes Project: West Essex Highlands Stormwater Management System		
#60 (250 μm)						
#100 (150 μm)	36.0			Location: West Orange, New Jersey		
#200 (75 μm)	29.0					
-				Date:	17-Jan-24	
				Job No.:	24-C-02	Report No.:

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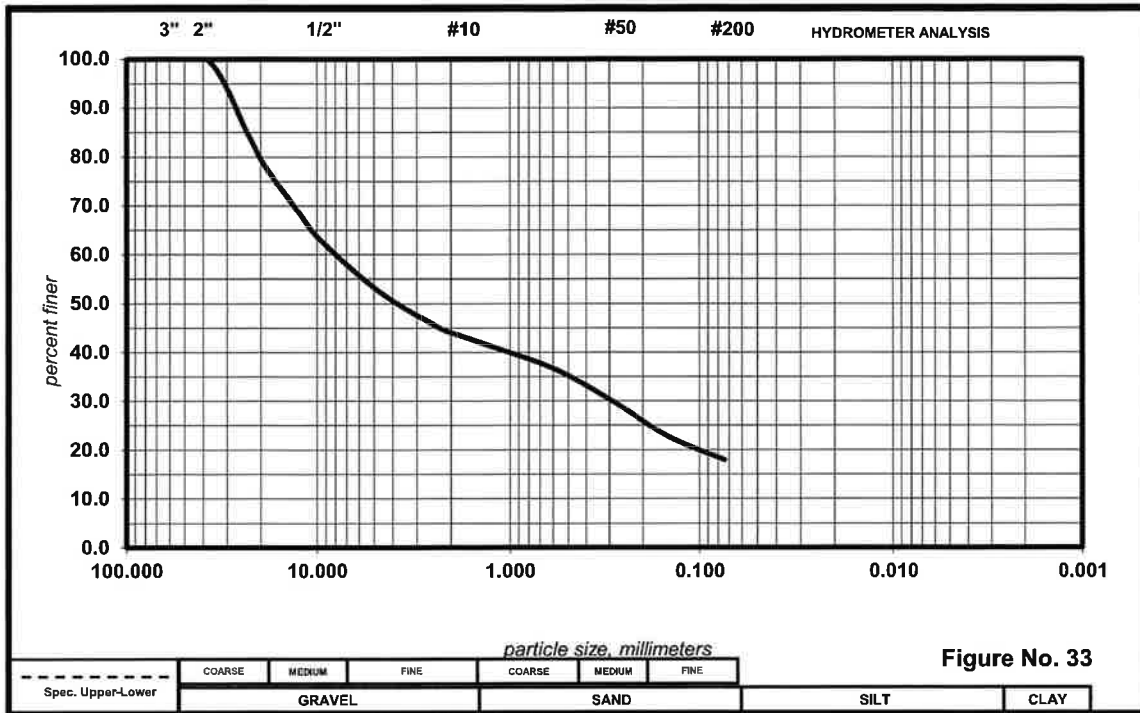


Figure No. 33

Specification*

Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-32	
2 1/2" (63 mm)				Lab No.:	A24-05-02	
2" (50 mm)				Source/Location:	6'	
1 1/2" (38.1 mm)	100.0			Description:	Red.Brown of GRAVEL and, of Sand, little Silt	
1" (25 mm)	84.8					
3/4" (19 mm)	78.2					
5/8" (16 mm)						
1/2" (12.5 mm)	69.0					
3/8" (9.5 mm)	62.9			sample description in accordance with Burmister System		
5/16" (8 mm)				LL :	PL :	PI :
1/4" (6.3 mm)				As received Moisture Content: 17.8 %		
#4 (4.75 mm)	52.6			Classification:		
#6 (3.35 mm)				USCS: [GM]		
#8 (2.36 mm)	45.3			AASHTO:		
#10 (2 mm)				Remarks:		
#14 (1.4 mm)				Sample received in lab on January 12, 2024		
#16 (1.18 mm)	40.9			Permeability, k: 6.5 x 10-4 cm/s (0.94 in/hr) K2		
#20 (850 µm)				Permeability, k: 6.6 x 10-4 cm/s (0.95 in/hr) K2		
#30 (600 µm)	36.6			Client: Garden Homes		
#40 (425 µm)				Project: West Essex Highlands		
#50 (300 µm)	30.2			Stormwater Management System		
#60 (250 µm)				Location: West Orange, New Jersey		
#100 (150 µm)	22.9			Date: 17-Jan-24		
#200 (75 µm)	18.0			Job No.: 24-C-02 Report No.:		

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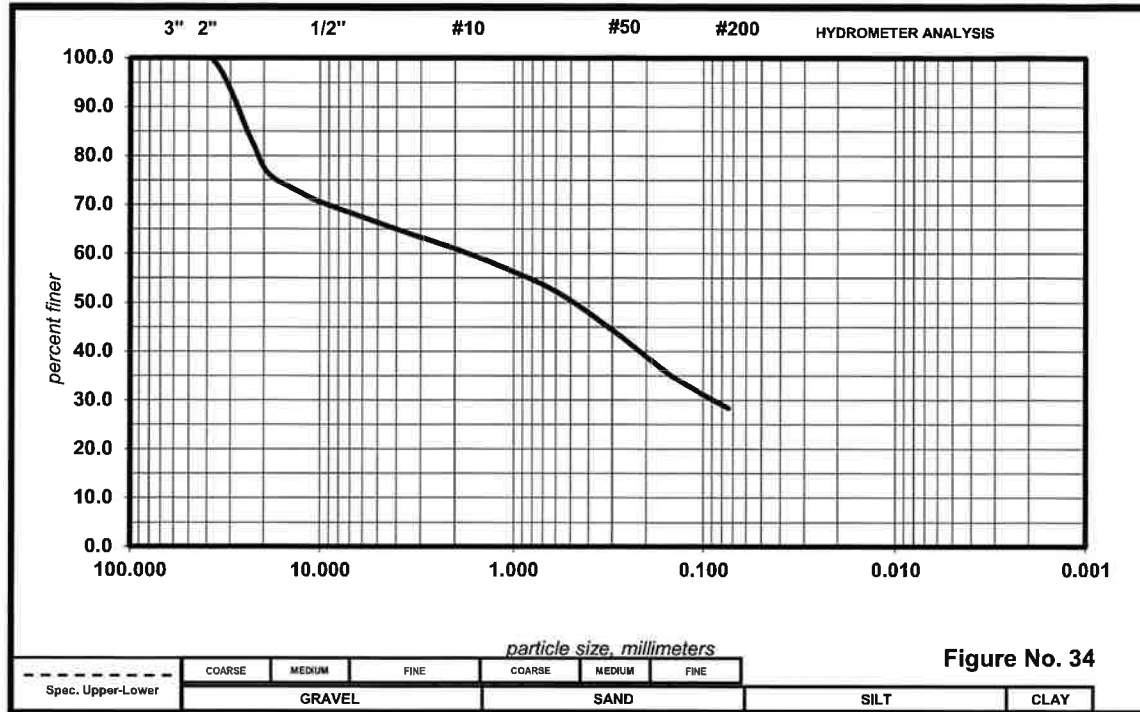


Figure No. 34

Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.:	TP-33	
3" (75 mm)				Lab No.:	A24-05-03	
2 1/2" (63 mm)				Source/Location:	6'	
2" (50 mm)				Description:	Red.Brown of Sand, some Clayey Silt, and of Gravel	
1 1/2" (38.1 mm)	100.0			sample description in accordance with Burmister System		
1" (25 mm)	83.4			LL :	PL :	PI :
3/4" (19 mm)	76.5			As received Moisture Content: 13.4 %		
5/8" (16 mm)				Classification:		
1/2" (12.5 mm)	72.4			USCS: [SC]		
3/8" (9.5 mm)	70.2			AASHTO:		
5/16" (8 mm)				Remarks:		
1/4" (6.3 mm)				Sample received in lab on January 12, 2024		
#4 (4.75 mm)	66.0			Permeability, k: 4.5 x 10-4 cm/s (0.65 in/hr) K2		
#6 (3.35 mm)				Permeability, k: 4.7 x 10-4 cm/s (0.68 in/hr) K2		
#8 (2.36 mm)	61.9			Client:	Garden Homes	
#10 (2 mm)				Project:	West Essex Highlands	
#14 (1.4 mm)				Stormwater Management System		
#16 (1.18 mm)	57.5			Location:	West Orange, New Jersey	
#20 (850 µm)	52.1			Date:	17-Jan-24	
#30 (600 µm)				Job No.:	24-C-02	Report No.:
#40 (425 µm)						
#50 (300 µm)	44.2					
#60 (250 µm)						
#100 (150 µm)	35.2					
#200 (75 µm)	28.4					

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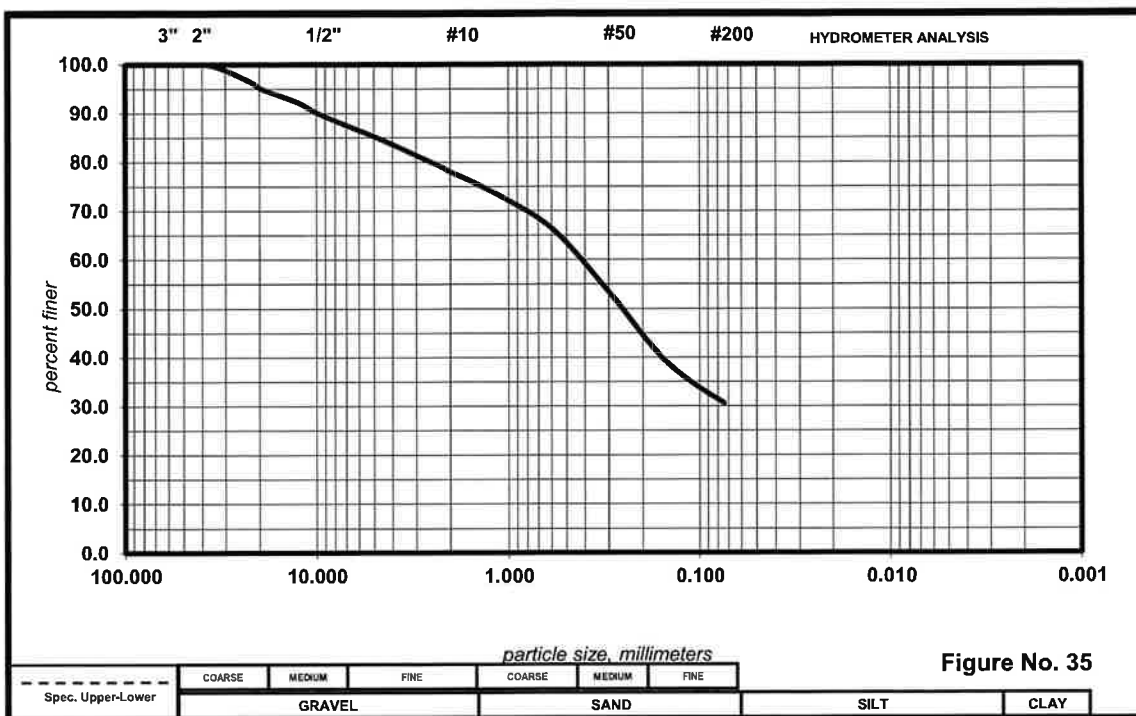


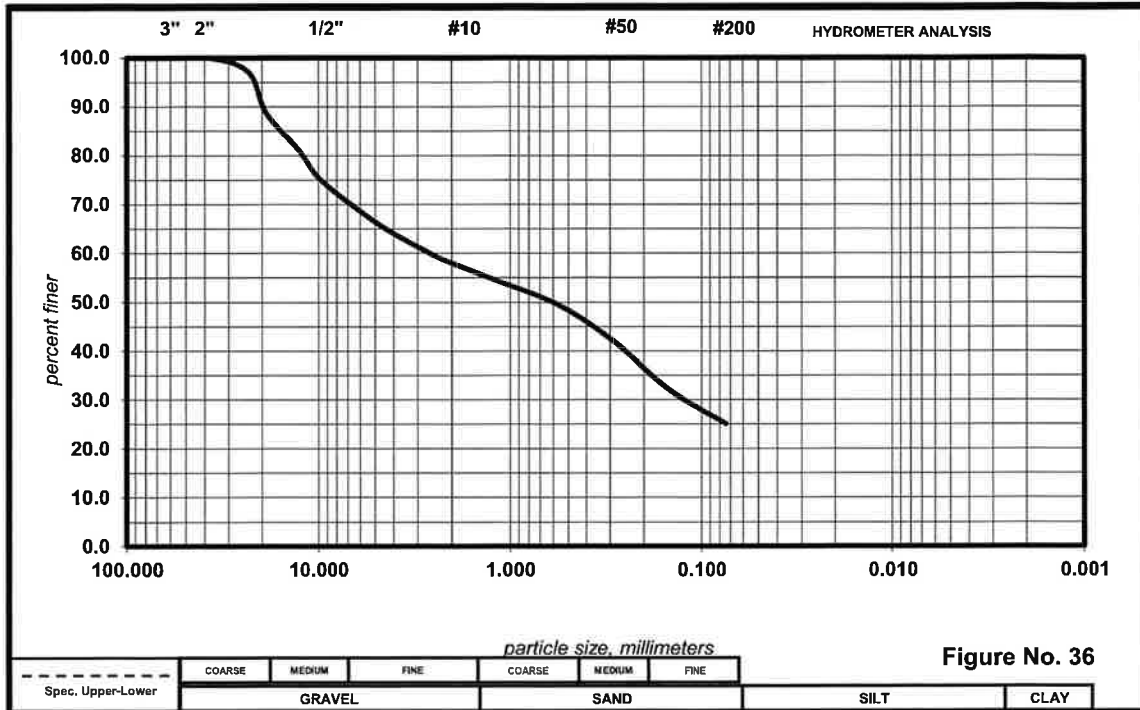
Figure No. 35

Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-34 Lab No.: A24-06-07 Source/Location: 5' Description: Red.Brown of Sand, some Silt, some of Gravel sample description in accordance with Burmister System LL : PL : PI : As received Moisture Content: 18.6 % Classification: USCS: [SM] AASHTO: Remarks: Sample received in lab on January 15, 2024 Permeability, k: 5.6 x 10-4 cm/s (0.81 in/hr) K2 Permeability, k: 5.7 x 10-4 cm/s (0.82 in/hr) K2 Client: Garden Homes Project: West Essex Highlands 0.00056 Location: West Orange, New Jersey Date: 17-Jan-24 Job No.: 24-C-02 Report No.:		
3" (75 mm)						
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)	100.0					
1" (25 mm)	96.8					
3/4" (19 mm)	94.8					
5/8" (16 mm)						
1/2" (12.5 mm)	92.3					
3/8" (9.5 mm)	89.8					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	84.9					
#6 (3.35 mm)						
#8 (2.36 mm)	79.6					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	73.8					
#20 (850 µm)						
#30 (600 µm)	66.2					
#40 (425 µm)						
#50 (300 µm)	53.2					
#60 (250 µm)						
#100 (150 µm)	38.9					
#200 (75 µm)	30.6					
-						

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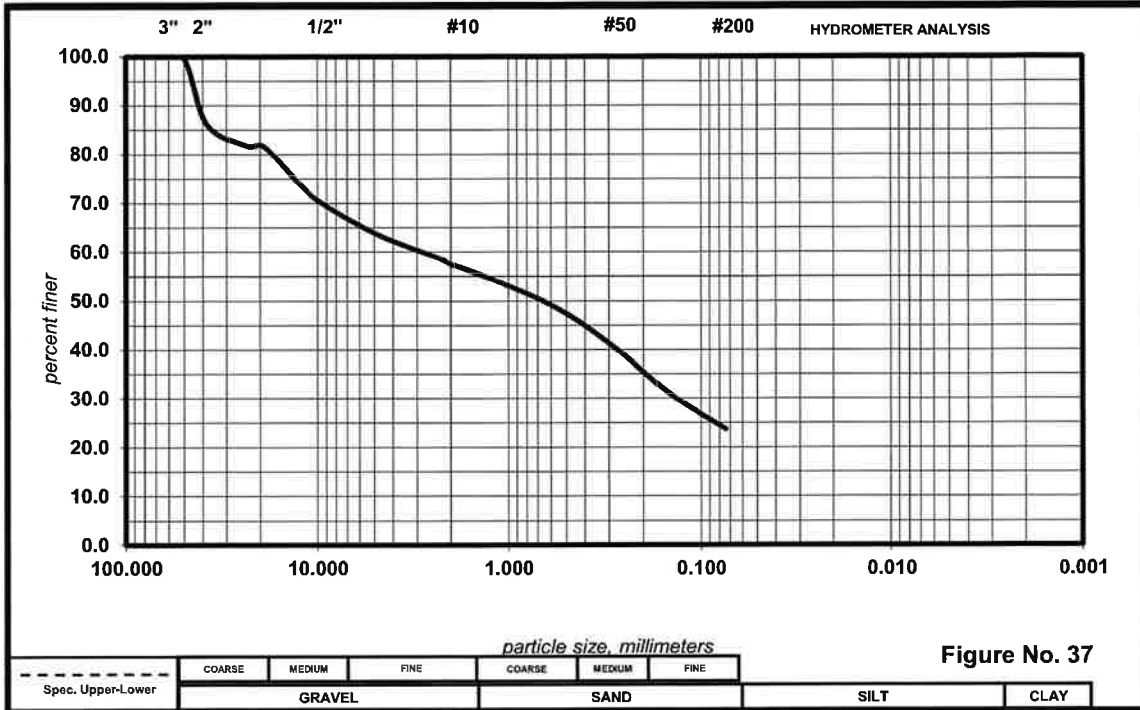


Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-35		
3" (75 mm)				Lab No.: A24-05-04		
2 1/2" (63 mm)				Source/Location: 6'		
2" (50 mm)				Description:		
1 1/2" (38.1 mm)	100.0			Red.Brown cf Sand, some Clayey Silt, and cf Gravel		
1" (25 mm)	97.0			<i>sample description in accordance with Burmister System</i>		
3/4" (19 mm)	88.8			LL :	PL :	PI :
5/8" (16 mm)				As received Moisture Content: 12.5 %		
1/2" (12.5 mm)	81.0			Classification:		
3/8" (9.5 mm)	74.7			USCS: [SC]		
5/16" (8 mm)				AASHTO:		
1/4" (6.3 mm)				Remarks:		
#4 (4.75 mm)	65.9			Sample received in lab on January 12, 2024		
#6 (3.35 mm)				Permeability, k: 5.7 x 10 ⁻⁴ cm/s (0.82 in/hr) K2		
#8 (2.36 mm)	59.2			Permeability, k: 5.8 x 10 ⁻⁴ cm/s (0.84 in/hr) K2		
#10 (2 mm)				Client: Garden Homes		
#14 (1.4 mm)				Project: West Essex Highlands		
#16 (1.18 mm)	54.5			Stormwater Management System		
#20 (850 µm)				Location: West Orange, New Jersey		
#30 (600 µm)	49.8			Date: 17-Jan-24		
#40 (425 µm)				Job No.: 24-C-02		
#50 (300 µm)	42.4			Report No.:		
#60 (250 µm)						
#100 (150 µm)	32.1					
#200 (75 µm)	25.1					

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Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.:	TP-36	
3" (75 mm)				Lab No.:	A24-05-05	
2 1/2" (63 mm)				Source/Location:	7'	
2" (50 mm)	100.0			Description:	Red.Brown cf Sand, some Clayey Silt, and cf Gravel	
1 1/2" (38.1 mm)	86.2			sample description in accordance with Burmister System		
1" (25 mm)	81.6			LL :	PL :	PI :
3/4" (19 mm)	81.6			As received Moisture Content: 13.5 %		
5/8" (16 mm)				Classification:		
1/2" (12.5 mm)	74.3			USCS: [SC]		
3/8" (9.5 mm)	70.0			AASHTO:		
5/16" (8 mm)				Remarks:		
1/4" (6.3 mm)				Sample received in lab on January 12, 2024		
#4 (4.75 mm)	63.5			Permeability, k: 3.5 x 10-4 cm/s (0.50 in/hr) K1		
#6 (3.35 mm)				Permeability, k: 3.8 x 10-4 cm/s (0.55 in/hr) K1		
#8 (2.36 mm)	58.9			Client: Garden Homes		
#10 (2 mm)				Project: West Essex Highlands		
#14 (1.4 mm)				Stormwater Management System		
#16 (1.18 mm)	54.3			Location: West Orange, New Jersey		
#20 (850 μm)				Date: 17-Jan-24		
#30 (600 μm)	49.1			Job No.: 24-C-02		
#40 (425 μm)				Report No.:		
#50 (300 μm)	41.2					
#60 (250 μm)						
#100 (150 μm)	31.2					
#200 (75 μm)	23.7					
-						

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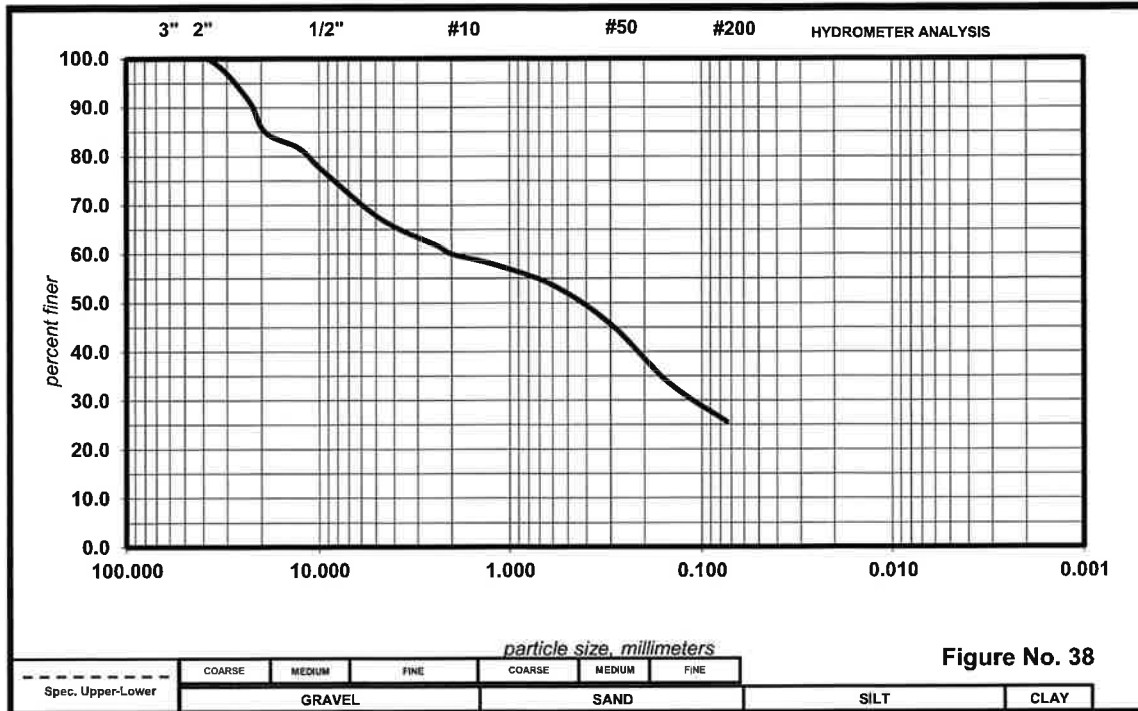


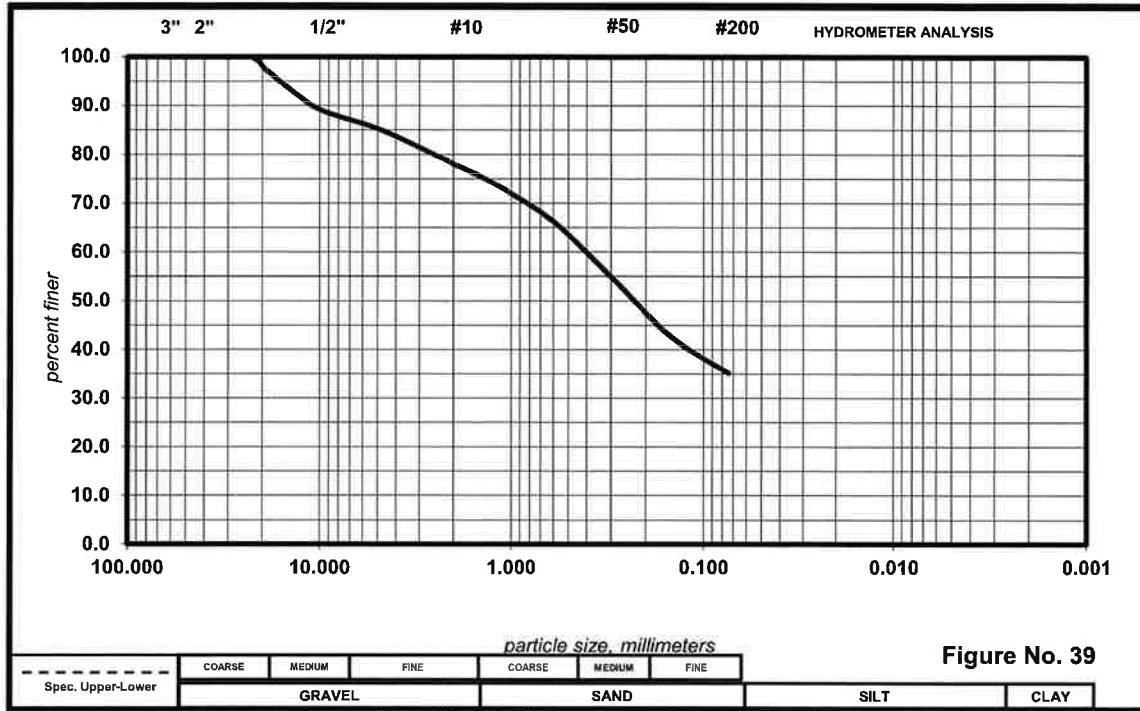
Figure No. 38

Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-37		
3" (75 mm)				Lab No.: A24-06-08		
2 1/2" (63 mm)				Source/Location: 5'		
2" (50 mm)				Description:		
1 1/2" (38.1 mm)	100.0			Red.Brown cf Sand, some Silt, and cf Gravel		
1" (25 mm)	91.8			sample description in accordance with Burmister System		
3/4" (19 mm)	84.9			LL :	PL :	PI :
5/8" (16 mm)				As received Moisture Content: 15.2 %		
1/2" (12.5 mm)	81.6			Classification:		
3/8" (9.5 mm)	77.0			USCS: [SM]		
5/16" (8 mm)				AASHTO:		
1/4" (6.3 mm)				Remarks:		
#4 (4.75 mm)	67.3			Sample received in lab on January 15, 2024		
#6 (3.35 mm)				Permeability, k: 4.4 x 10 ⁻⁴ cm/s (0.63 in/hr) K2		
#8 (2.36 mm)	61.7			Permeability, k: 4.6 x 10 ⁻⁴ cm/s (0.66 in/hr) K2		
#10 (2 mm)				Client: Garden Homes		
#14 (1.4 mm)				Project: West Essex Highlands		
#16 (1.18 mm)	57.8			Stormwater Management System		
#20 (850 µm)				Location: West Orange, New Jersey		
#30 (600 µm)	53.5			Date: 17-Jan-24		
#40 (425 µm)				Job No.: 24-C-02		
#50 (300 µm)	45.4			Report No.:		
#60 (250 µm)						
#100 (150 µm)	33.6					
#200 (75 µm)	25.6					

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PARTICLE SIZE DISTRIBUTION TEST REPORT

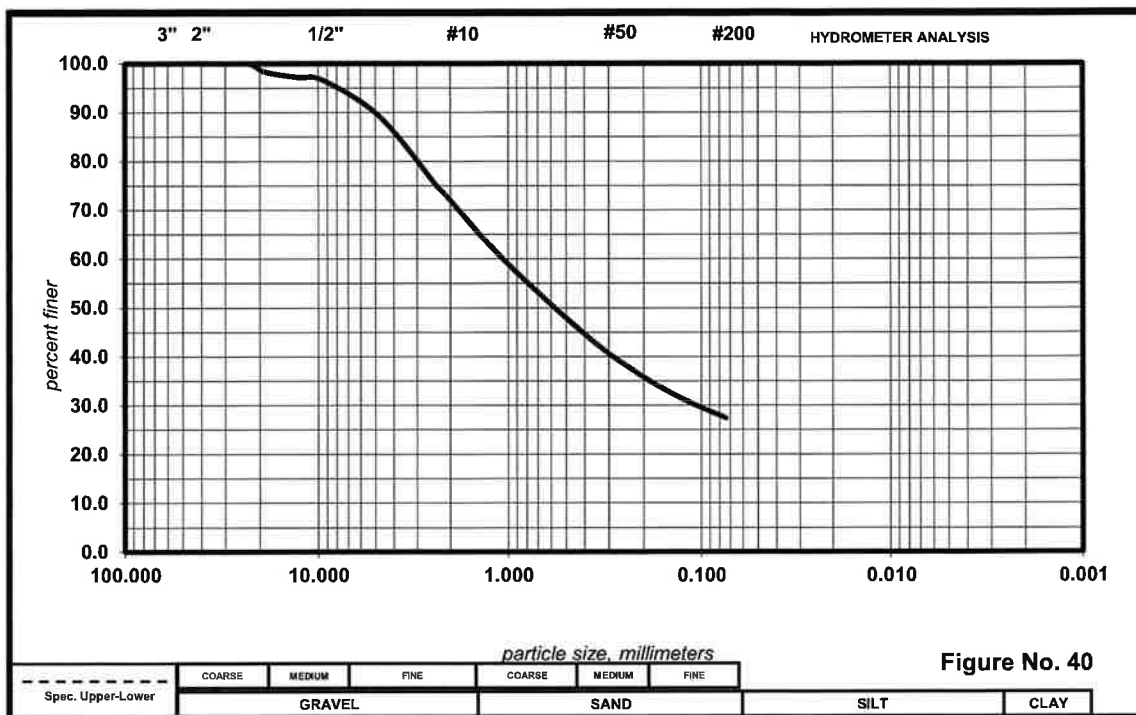


Specification*						
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification		
3" (75 mm)				Sample No.:	TP-38	
2 1/2" (63 mm)				Lab No.:	A24-06-09	
2" (50 mm)				Source/Location:	3'	
1 1/2" (38.1 mm)				Description:	Red.Brown of Sand, and Silt, some mf Gravel	
1" (25 mm)	100.0					
3/4" (19 mm)	97.2					
5/8" (16 mm)						
1/2" (12.5 mm)	91.7					
3/8" (9.5 mm)	88.9			sample description in accordance with Burmister System		
5/16" (8 mm)				LL :	PL :	PI :
1/4" (6.3 mm)				As received Moisture Content: 13.4 %		
#4 (4.75 mm)	84.9			Classification:		
#6 (3.35 mm)				USCS: [SM]		
#8 (2.36 mm)	79.5			AASHTO:		
#10 (2 mm)				Remarks:		
#14 (1.4 mm)				Sample received in lab on January 15, 2024		
#16 (1.18 mm)	73.7			Permeability, k: 3.1 x 10-4 cm/s (0.45 in/hr) K1		
#20 (850 µm)				Permeability, k: 3.2 x 10-4 cm/s (0.46 in/hr) K1		
#30 (600 µm)	66.0			Client: Garden Homes		
#40 (425 µm)				Project: West Essex Highlands		
#50 (300 µm)	54.7			Stormwater Management System		
#60 (250 µm)				Location: West Orange, New Jersey		
#100 (150 µm)	42.7			Date: 17-Jan-24		
#200 (75 µm)	35.1			Job No.: 24-C-02 Report No.:		
-						

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PARTICLE SIZE DISTRIBUTION TEST REPORT



Specification*				Sample Identification		
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample No.: TP-39 Lab No.: A24-11-10 Source/Location: 7' Description: Brown cf Sand, some Silt, some mf Gravel sample description in accordance with Burmister System LL : PL : PI : As received Moisture Content: 37.4 % Classification: USCS: [SM] AASHTO: Remarks: Sample received in lab on January 23, 2024 Permeability, k: 5.6 x 10-4 cm/s (0.81 in/hr) K2 Permeability, k: 5.5 x 10-4 cm/s (0.79 in/hr) K2 Client: Garden Homes Project: West Essex Highlands Stormwater Management System Location: West Orange, New Jersey Date: 29-Jan-24 Job No.: 24-C-02 Report No.:		
3" (75 mm)						
2 1/2" (63 mm)						
2" (50 mm)						
1 1/2" (38.1 mm)						
1" (25 mm)	100.0					
3/4" (19 mm)	98.3					
5/8" (16 mm)						
1/2" (12.5 mm)	97.1					
3/8" (9.5 mm)	96.6					
5/16" (8 mm)						
1/4" (6.3 mm)						
#4 (4.75 mm)	89.1					
#6 (3.35 mm)						
#8 (2.36 mm)	75.1					
#10 (2 mm)						
#14 (1.4 mm)						
#16 (1.18 mm)	61.9					
#20 (850 μm)						
#30 (600 μm)	50.5					
#40 (425 μm)						
#50 (300 μm)	40.5					
#60 (250 μm)						
#100 (150 μm)	32.7					
#200 (75 μm)	27.4					
-						

APPENDIX IV
LIMITATIONS

SOR CONSULTING ENGINEERS, INC

LIMITATIONS

The conclusions and recommendations contained in this geotechnical report no. 24-C-02 are based upon the applicable standards of our profession at the time this report was prepared.

The analyses and recommendations submitted in this report are based in part upon the data obtained from thirty-nine (39) test pits performed for this study. The stratification lines shown on the individual logs of the subsurface explorations represent the approximate boundaries between soil types. However, the transition between soil types may be gradual.

In our opinion, the number of explorations performed for this study is adequate for a general understanding of the site's subsurface conditions. However, the nature and extent of variations between the explorations may not become evident until construction. If, during construction, variations become evident, it will be necessary to re-evaluate the recommendations of this report.

In the event that any changes in the nature, design, or location of the stormwater systems are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and conclusions of this report modified or verified in writing.

This report may be referred to or included in the project specifications for general information purposes only but should not be solely used as the technical specifications for the work.

This geotechnical engineering report was prepared for the project by Sor Consulting Engineers, Inc. for design purposes only, and may not be sufficient to prepare an accurate bid. Contractors utilizing the information in the report should do so with the express understanding that its scope is limited to design considerations. Prospective bidders should obtain the owner's permission to perform whatever additional explorations or data gathering they deem necessary to prepare their bid accurately.

This report has been prepared in accordance with generally accepted geotechnical engineering practices for the exclusive use of Garden Homes/West Essex Highlands, Inc. and/or their authorized representatives for specific application to the design of the proposed stormwater management system to be constructed on Lot 32, Block 179 in West Orange, New Jersey. No other warranty, expressed or implied, is made.