

STORMWATER AREA INVESTIGATION REPORT

PROPOSED WAREHOUSE DEVELOPMENT

401 Cottontail Lane
Franklin Township, Somerset County, New Jersey

Prepared for:

Active Acquisitions
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Englewood, NJ 07631

Prepared by:



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A handwritten signature in black ink, appearing to read 'P. Granitzki', written over a horizontal line.

Patrick J. Granitzki, P.E.

Principal

NJ PE License No. 24GE005355900

A handwritten signature in blue ink, appearing to read 'Gregory J. Fritts', written over a horizontal line.

Gregory J. Fritts

Senior Geotechnical Engineer

Project #3532-99-001E
November 20, 2020

STORMWATER AREA INVESTIGATION REPORT
PROPOSED WAREHOUSE DEVELOPMENT
401 Cottontail Road
Block 517.01, Lot 8.06
Franklin Township, Somerset County, New Jersey

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1.0 PROJECT DESCRIPTION

Dynamic Earth, LLC (Dynamic Earth) has completed an exploration and evaluation of the subsurface conditions for the proposed stormwater management facilities to be located at 401 Cottontail Lane in Franklin Township, Somerset County, New Jersey. The site is further identified as Block 68.05, Lot 1.

The subject property is bound to the north by an existing warehouse development (Barret Distribution Centers); to the east by Cottontail Lane; to the south by commercial property (ReadyRefresh by Nestle); and to the west by a wooded area, with commercial property beyond. The site of the proposed construction is shown on the *Test Location Plan* included in the Appendix of this report.

At the time of our subsurface investigations, the subject site was an undeveloped parcel with trees and vegetation at the surface. The proposed site development will include construction of a new warehouse building that will occupy a footprint area of approximately 105,205 square feet. Additional improvements include associated new pavement, utilities and stormwater management facilities. Proposed site development details were provided on an August 6, 2020 *Conceptual Site Plan 'A'* prepared by Dynamic Engineering Consultants, P.C. (Dynamic). Proposed grading plans were not available at this time; however, we preliminarily anticipate earth fills on the order of five to ten feet will be required to achieve proposed site grades within the western portion of the property.

Based on topographic information provided on a November 3, 2020 (last revised) *ALTA/NSPS Land Title Survey* prepared by Dynamic Survey, LLC. Existing site grades generally slope downward from east to west, ranging from a high elevation of approximately 72 feet within the western portion of the site (along Cottontail Lane) to a low elevation of 46 feet within the eastern portion of the site. All elevations noted herein are referenced to North American Vertical Datum of 1988 (NAVD88).

2.0 SCOPE OF SERVICES

Dynamic Earth's scope of services pertaining to this report included evaluating the subsurface conditions at soil profile pits to estimate the apparent seasonal high groundwater level. Six soil profile pits (identified as SPP-1 through SPP-6) were initially excavated with a rubber-tire backhoe at the site. Based on results of the initial subsurface investigation, relatively shallow weathered rock and machine refusal on apparent rock was encountered. As such, additional authorized scope of services included the excavation of four supplemental soil profile pits (identified as SPP-100 through SPP-103) and in-situ infiltration testing which included pit bail testing and basin flood

testing. Test locations were located within or near the area of the proposed stormwater management facilities and were backfilled to the surface with excavated soils at completion.

The soils encountered were classified using the United States Department of Agriculture (USDA) classification system. Observations were made for groundwater and/or soil mottling and mineral deposits potentially indicative of zones of saturation or seasonal high groundwater. Soil profile pit logs are included in the Appendix of this report.

Infiltration testing was performed at select soil profile pit locations in general accordance with New Jersey *Stormwater Best Management Practices Manual- Appendix E* using basin flooding or pit bail test methods. Detailed results of the in-situ infiltration testing are included in the Appendix of this report.

3.0 UNITED STATES DEPARTMENT OF AGRICULTURE (USDA) SOIL SURVEY

Based on a review of the United States Department of Agriculture – Natural Resources Conservation Services (USDA-NRCS) soil survey the following soil series are mapped within the area of the proposed site improvements. The USDA-NRCS *Soil Survey Map* is included as within the Appendix of this report.

Penn silt loam, two to six percent slopes (PenB): Penn silt loam with two to six percent slopes is mapped underlying the area of the subject site. The typical soil profile of this series soil (as reported in the soil survey) consists of silt loam to a depth of 12 inches; channery silt loam to a depth of 25 inches; very channery silt loam to a depth of 30 inches; underlain by bedrock to a depth of 40 inches below the natural ground surface (limit of report). The depth to a restrictive bedrock layer is reported to range between 20 inches and 40 inches in below the natural ground surface. The depth to the water table is reported to be more than 80 inches below the natural ground surface (limit of report).

4.0 RESULTS

Detailed descriptions of the subsurface conditions encountered at each location are provided on the *Records of Subsurface Exploration* included herein. A summary of the subsurface conditions encountered is included below.

4.1 Subsurface Soil Profile

The soil profile pits were performed within existing undeveloped, grass/brush covered areas and encountered between approximately two inches to 16 inches of topsoil at the surface. Beneath the surface cover or at the ground surface, select soil profile pits encountered existing fill materials

generally consisting of loam and silt loam with variable amounts of gravel and debris. The debris encountered consisted of plastic, metal, and wood fragments. Where encountered, the existing fill materials extended to depths ranging between approximately one foot and 2.5 feet below the ground surface; corresponding to elevations ranging between approximately 61 feet and 58.1 feet.

The top of weathered rock (shale) was encountered beneath the surface cover and/or existing fill materials at depths ranging between approximately 0.2 feet and 2.7 feet below existing site grades; corresponding to elevations ranging between approximately 61.6 feet and 58.1 feet above the referenced elevation. Each soil profile pit was terminated due to machine refusal on apparent intact bedrock at depths ranging between approximately 2.8 and 7.2 feet below the ground surface. These depths correspond to elevations ranging between approximately 60.9 feet and 52.4 feet above the referenced elevation.

4.2 Groundwater and Estimated Seasonal High Groundwater

Evidence of seasonal high groundwater (i.e. soil mottling) was encountered at one location within the south-central portion of the site at a depth of approximately 4.5 feet below the ground surface; corresponding to an elevation of approximately 55.3 feet above the reference elevation. Where encountered, groundwater was noted at depths ranging between approximately 3.4 feet and 3.5 feet below existing site grades; corresponding to elevations ranging approximately between 58.5 feet and 56.2 feet above the referenced elevation.

Groundwater levels are expected to fluctuate seasonally and following significant periods of precipitation. A summary of the groundwater and estimated seasonal high groundwater levels are presented in the following table:

SUMMARY OF SUBSURFACE CONDITIONS						
Location	Approx. Surface Elevation (feet)	Mottling		Groundwater		Comments
		Depth (Feet)	Elevation (Feet)	Depth (Feet)	Elevation (Feet)	
SPP-1	63.8	Not Encountered ¹		Not Encountered		Refusal at 2.8 ft.
SPP-2	62.0	Not Encountered ¹		Not Encountered		Refusal at 4.3 ft.
SPP-3	59.8	4.5	55.3	Not Encountered		Refusal at 6.0 ft.
SPP-4	62.8	Not Encountered ¹		Not Encountered		Refusal at 6.0 ft.
SPP-5	60.0	Not Encountered ¹		Not Encountered		Refusal at 5.0 ft.
SPP-6	59.6	Not Encountered ¹		Not Encountered		Refusal at 7.2 ft.

SUMMARY OF SUBSURFACE CONDITIONS						
Location	Approx. Surface Elevation (feet)	Mottling		Groundwater		Comments
		Depth (Feet)	Elevation (Feet)	Depth (Feet)	Elevation (Feet)	
SPP-100	62.0	Not Encountered ¹		3.5	58.5	Refusal at 6.0 ft.
SPP-101	61.5	Not Encountered ¹		Not Encountered		Refusal at 5.5 ft.
SPP-102	60.5	Not Encountered ¹		Not Encountered		Refusal at 4.0 ft.
SPP-103	59.6	Not Encountered ¹		3.4	56.2	Refusal at 5.1 ft.

¹Since soil mottling was not encountered, the depth to the seasonal high groundwater can be estimated based on the published/mapped soil series and/or through direct readings during the “wet” season.

4.3 In-Situ Permeability Testing

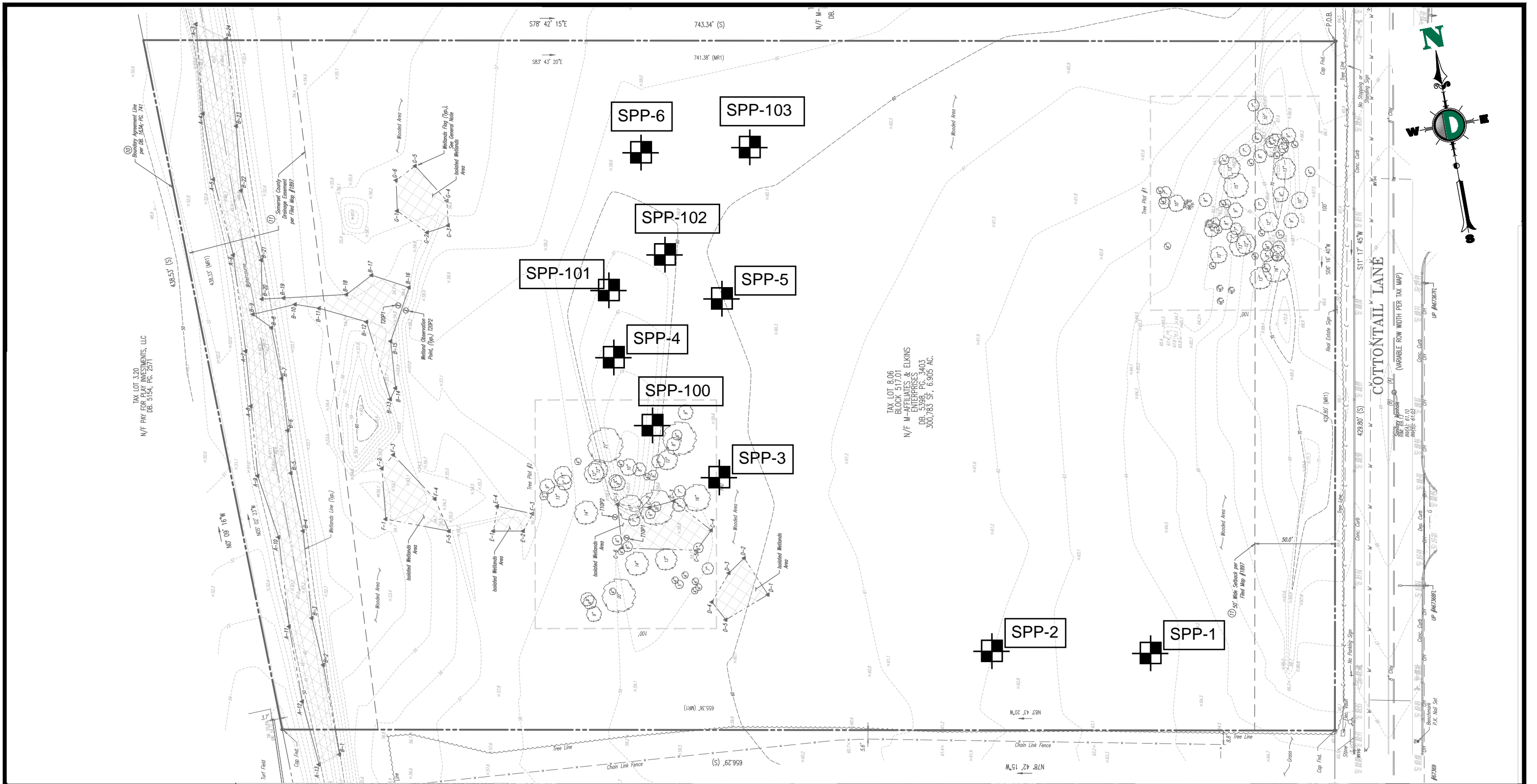
A summary of the in-situ permeability test results is presented in the following table:

SUMMARY OF SUPPLEMENTAL PERMEABILITY TESTING						
Location	Approx. Surface Elevation	Groundwater		Test Depth (feet)	In-situ Test Method	Permeability (Inches/hour)
		Depth	Elevation			
SPP-100	62.0	3.5	58.5	6.0	Pit Bail	13.5
SPP-101	61.5	Not Encountered		4.5	Basin Flood	See below
SPP-102	60.5	Not Encountered		4.0	Basin Flood	See below
SPP-103	59.6	3.4	56.2	5.1	Pit Bail	3.6

The basin flood tests did not drain within 24 hours of the initial filling. Therefore, per the NJ BMP manual, the limiting zone beneath these locations may be considered a massive rock substratum and a permeability rate cannot be determined.

Due to the highly variable permeability results, infiltration of stormwater is not recommended at this site.

Test Location Plan



SCALE: N.T.S.

JOB No:
3532-99-001E

SHEET No:
1
OF 1

DRAWN BY:
FV
DESIGNED BY:
-
CHECKED BY:
PHH
DATE:
11/17/20

TITLE:
TEST LOCATION PLAN

PROJECT: **ACTIVE ACQUISITIONS
PROPOSED WAREHOUSE DEVELOPMENT**
BLOCK 517.01, LOT 8.06
401 COTTONTAIL LANE
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NEW JERSEY

Rev. # 0 DEC Client Code: 3532

LEGEND:

SPP-X SPP-10X

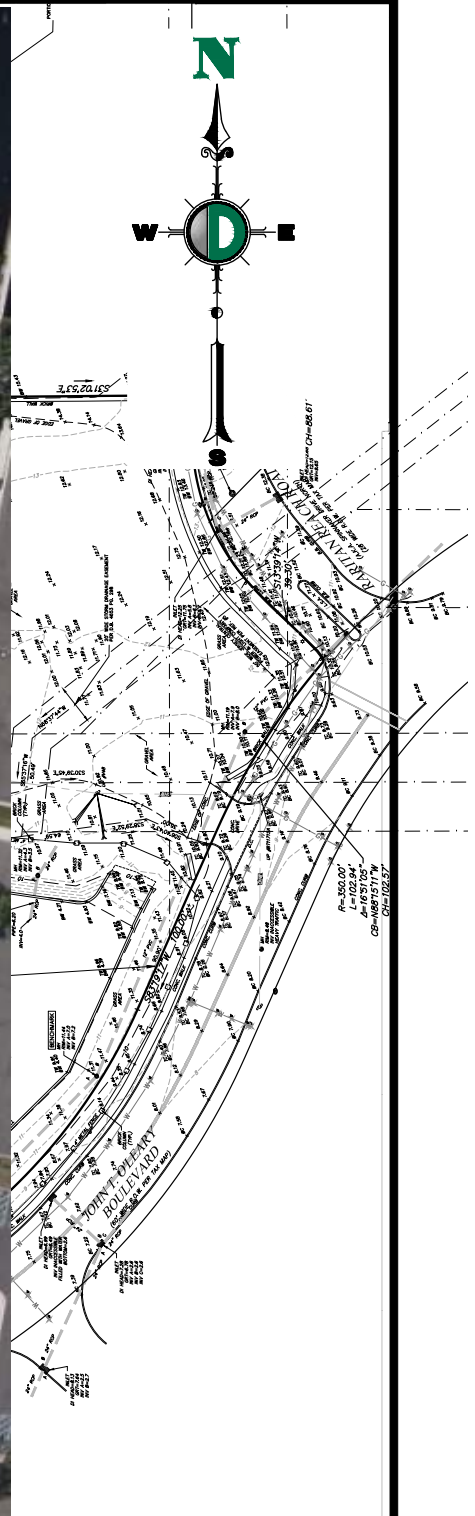
APPROXIMATE LOCATION OF SOIL PROFILE PIT - SEPTEMBER, 2020

APPROXIMATE LOCATION OF SUPPLEMENTAL SOIL PROFILE PIT - OCTOBER, 2020

NOTES:
1. THIS PLAN IS NOT FOR CONSTRUCTION AND WAS PREPARED TO ILLUSTRATE TEST LOCATIONS ONLY AND MAY NOT REFLECT THE MOST CURRENT REVISION OF THE BASE PLAN.
2. THIS PLAN HAS BEEN PREPARED BASED ON AN OCTOBER, 30 2020 DRAFT ALTA/NSPS LAND TITLE SURVEY PREPARED BY DYNAMIC SURVEY, LLC.

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Soil Survey Map



Soil Map may not be valid at this scale.

SCALE: N.T.S.

JOB No:
3532-99-001E

SHEET No:
2
OF **2**

DRAWN BY:
FV
DESIGNED BY:
-
CHECKED BY:
PHH
DATE:
11/17/20

TITLE:
USDA SOIL SURVEY PLAN

PROJECT: **ACTIVE ACQUISITIONS
PROPOSED WAREHOUSE DEVELOPMENT**
BLOCK 517.01, LOT 8.06
401 COTTONTAIL LANE
FRANKLIN TOWNSHIP, SOMERSET COUNTY, NEW JERSEY

Rev. # 0 DEC Client Code: 3532

LEGEND:

PenB: Penn silt loam, two to six percent slopes

- NOTES:
1. THIS PLAN IS NOT FOR CONSTRUCTION AND WAS PREPARED TO ILLUSTRATE TEST LOCATIONS ONLY AND MAY NOT REFLECT THE MOST CURRENT REVISION OF THE BASE PLAN.
 2. THIS PLAN HAS BEEN PREPARED BASED ON A MAP FROM THE USDA WEB SOIL SURVEY INTERACTIVE MAP.



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Records of Subsurface Exploration



SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-1

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Project: Proposed Warehouse Development										Project No.: 3532-99-001E														
Location: 401 Cottontail Lane, Franklin, New Jersey										Client: Active Acquisitions														
Surface Elevation (ft): 63.8		Date Started: 9/28/20		Groundwater Data		Depth (ft)		EL. (feet)		Groundwater Comments														
Termination Depth (ft): 2.8		Date Completed: 9/28/20		Screen:		NE		---																
Proposed Location: SWM		Logged by: S. Hume		Contractor: Terno & Sons		Groundwater:		NE																
Excavation: 1 Feet		Rig Type: Link Belt 160 LK		Mottling:		NE		---																
Method: Visual Observation																								
DEPTH (IN)	COLOR	SOIL TEXTURE		COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING		LAB RESULTS
								Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography	Quantity	Size	Contrast	Type	Depth (in)	No.		
0-2	TOPSOIL	VERY FLAGGY	LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	MEDIUM	NONE					
2-20	Reddish Brown (SYR 43)	EXTREMELY CHANNERY	SILT LOAM	CHANNERS	FLAGSTONES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	HARD	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE					
20-34	Reddish Brown (2.5YR 4/4)	EXTREMELY FLAGGY	SILT LOAM	CHANNERS	FLAGSTONES	STONES	BOULDERS	MASSIVE	STRUCTURELESS		MOIST	VERY HARD	NONSTICKY	NONPLASTIC			NONE		NONE					

Additional Remarks: Weathered rock was encountered between 2 to 34 inches. Soil profile pit SPP-1 encountered refusal at 34 inches on apparent rock.



SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-2

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Project: Proposed Warehouse Development Project No.: 3532-99-001E
 Location: 401 Cottontail Lane, Franklin, New Jersey Client: Active Acquisitions

Surface Elevation (ft): 62.0	Date Started: 9/28/20	Groundwater Data	Depth (ft): 9/28/20	El. (msl)	Groundwater Comments
Termination Depth (ft): 4.3	Date Completed: 9/28/20	Storage	NE	--	
Proposed Location: SWM	Logged by: S. Hume	Groundwater	NE	--	
Excavation / Test Method: Visual Observation	Contractor: Tierno & Sons	Mottling	NE	--	
	Rig Type: Link Belt 160 LK				

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS	MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography		Quantity	Size	Contrast	Type	Depth (ft)	No.	
0-2	TOPSOIL	LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	MEDIUM	NONE					
2-30	Reddish Brown (5YR 4/3)	EXTREMELY CHANNERY SILT LOAM	35	45	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	HARD	NONSTICKY	NONPLASTIC	GRADUAL <5"	WAVY	NONE		NONE					
30-52	Reddish Brown (2.5YR 4/4)	EXTREMELY FLAGGY SILT LOAM	40	55	<5	0	MASSIVE	STRUCTURELESS		MOIST	VERY HARD	NONSTICKY	NONPLASTIC			NONE		NONE					

Additional Remarks: Weathered rock was encountered between 2 to 52 inches. Soil profile pit SPP-2 encountered refusal at 52 inches on apparent rock.



SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-3

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Project: Proposed Warehouse Development Project No.: 3532-99-001E
 Location: 401 Cottontail Lane, Franklin, New Jersey Client: Active Acquisitions

Surface Elevation (ft): 59.8	Date Started: 9/28/20	Groundwater Data	Depth (ft): 4.5	El. (msl): 55.3	Groundwater Comments
Termination Depth (ft): 6.0	Date Completed: 9/28/20	Storage	NE	--	
Proposed Location: SWM	Logged by: S. Hume	Groundwater	NE	--	
Excavation / Test Method: Visual Observation	Contractor: Tierno & Sons Rig Type: Link Belt 160 LK	Mottling	4.5	55.3	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography	Quantity	Size	Contrast	Type	Depth (ft)	No.			
0-14	TOPSOIL	SILT LOAM	5	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	WAVY	CMN (20% MAX)	MEDIUM	NONE			BAG	8	S-1	
14-54	Reddish Brown (5YR 4/3)	EXTREMELY CHANNERY SILT LOAM	65	20	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	MODERATELY HARD	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG	24	S-2	
54-72	Reddish Brown (2.5YR 4/4)	EXTREMELY FLAGGY SILT LOAM	35	60	<5	0	MASSIVE	STRUCTURELESS		MOIST	VERY HARD	NONSTICKY	NONPLASTIC			NONE		FEW 2%	FINE <5MM	FAINT	BAG	60	S-3	

Additional Remarks: Weathered rock was encountered between 14 to 72 inches. Soil profile pit SPP-3 encountered refusal at 72 inches on apparent rock.



SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-4

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Project: Proposed Warehouse Development Project No.: 3532-99-001E
 Location: 401 Cottontail Lane, Franklin, New Jersey Client: Active Acquisitions

Surface Elevation (ft): 62.8 Date Started: 9/28/20 Groundwater Data Depth (ft) El. (msl)
 Termination Depth (ft): 6.0 Date Completed: 9/28/20 Logged by: S. Hume Storage NE
 Proposed Location: SVM Excavation Contractor: Tierno & Sons Groundwater NE
 / Test Visual Observation Method: Rig Type: Link Belt 160 LK Mottling NE

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS	MOTTLING			SAMPLING			LAB RESULTS	
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography		Quantity	Size	Contrast	Type	Depth (ft)	No.		
0-16	TOPSOIL	LOAM	25	15	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	MEDIUM	NONE			BAG	8	S-1	
16-24	Reddish Brown (5YR 4/3)	EXTREMELY GRAVELLY SILT LOAM	45	15	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG	18	S-2	
24-32	Reddish Brown (5YR 4/3)	EXTREMELY GRAVELLY SILT	60	30	<5	0	SUBANGULAR BLOCKY	MODERATE	COARSE	MOIST	FRIABLE	SLIGHTLY STICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG TUBE	28	S-3 T-1	
32-72	Reddish Brown (2.5YR 4/4)	EXTREMELY FLAGGY SILT LOAM	40	50	0	0	MASSIVE	STRUCTURELESS		MOIST	VERY HARD	NONSTICKY	NONPLASTIC			NONE		NONE						

Additional Remarks: Existing fill material encountered up to 32 inches. Debris within the fill included decomposed wood. Weathered rock was encountered between 32 to 72 inches. Soil profile pit SPP-4 encountered refusal at 72 inches on apparent rock.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-5**

Project: Proposed Warehouse Development Project No.: 3532-99-001E
 Location: 401 Cottontail Lane, Franklin, New Jersey Client: Active Acquisitions

Surface Elevation (ft): 60.0	Date Started: 9/28/20	Groundwater Data	Depth (ft):	El. (msl):	Groundwater Comments
Termination Depth (ft): 5.0	Date Completed: 9/28/20	Storage	NE	---	
Proposed Location: SVM	Logged by: S. Hume	Groundwater	NE	---	
Excavation / Test Method: Visual Observation	Contractor: Tierno & Sons	Mottling	NE	---	
	Rig Type: Link Belt 160 LK				

DEPTH (ft)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS	MOTTLING			SAMPLING		LAB RESULTS	
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography		Quantity	Size	Contrast	Type	Depth (ft)		No.
0-2	TOPSOIL	LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE					
2-60	Reddish Brown (5YR 4/3)	EXTREMELY CHANNERY LOAM	40	40	15	0	MASSIVE	STRUCTURELESS		MOIST	VERY HARD	NONSTICKY	NONPLASTIC			NONE		NONE					

Additional Remarks: Weathered rock was encountered between 2 to 60 inches. Soil profile pit SPP-5 encountered refusal at 60 inches on apparent rock.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-6**

Project: Proposed Warehouse Development Project No.: 3532-99-001E
 Location: 401 Cottontail Lane, Franklin, New Jersey Client: Active Acquisitions

Surface Elevation (ft): 59.6	Date Started: 9/28/20	Groundwater Data	Depth (ft): 9/28/20	EL. (msl)	Groundwater Comments
Termination Depth (ft): 7.2	Date Completed: 9/28/20	Storage	NE	--	
Proposed Location: SWM	Logged by: S. Hume	Groundwater	NE	--	
Excavation / Test Method: Visual Observation	Contractor: Tierno & Sons	Mottling	NE	--	
	Rig Type: Link Belt 160 LK				

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS	MOTTLING			SAMPLING			LAB RESULTS	
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography		Quantity	Size	Contrast	Type	Depth (ft)	No.		
0-18	Reddish Brown (5YR 4/3)	SILT LOAM	45	30	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE						
18-56	Reddish Brown (5YR 4/3)	EXTREMELY GRAVELLY SILT LOAM	45	45	0	0	CHANNERS	FLAGSTONES	STONES	BOULDERS	MASSIVE	STRUCTURELESS	MOIST	MODERATELY HARD	NONSTICKY	NONPLASTIC	GRADUAL <5"	WAVY	NONE					
56-86	Reddish Brown (2.5YR 4/4)	EXTREMELY GRAVELLY SILT	35	60	<5	0	CHANNERS	FLAGSTONES	STONES	BOULDERS	MASSIVE	STRUCTURELESS	MOIST	VERY HARD	NONSTICKY	NONPLASTIC			NONE					

Additional Remarks: No topsoil. Existing fill material from from 0 to 18 inches. Debris encountered included plastic and metal. Weathered rock was encountered between 18 to 86 inches. Soil profile pit SPP-6 encountered refusal at 86 inches on apparent rock.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-100**

Page 1 of 1

Project: Proposed Warehouse Development Project No.: 3532-99-001E
 Location: 401 Cottontail Lane, Franklin, New Jersey Client: Active Acquisitions

Surface Elevation (ft): 62.0	Date Started: 10/20/20	Groundwater Data	Depth (ft): NE	El. (msl)	Groundwater Comments
Termination Depth (ft): 6.0	Date Completed: 10/22/20	Storage	3.5	58.5	
Proposed Location: SWM	Logged by: S. Hume	Groundwater	NE	--	
Excavation / Test Method: Visual Observation	Contractor: Caroccia	Mottling	NE	--	
	Rig Type: CASE 500/Link Belt 160 LK				

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS	MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography		Quantity	Size	Contrast	Type	Depth (ft)	No.	
0-12	TOPSOIL	SILT LOAM	10	0	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	CLEAR <2.5"	WAVY	CMN (20% MAX)	MEDIUM	NONE					
12-20	Reddish Brown (5YR 4/3)	VERY FLAGGY SILT LOAM	5	50	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	GRADUAL <5"	WAVY	NONE		NONE					
20-42	Reddish Brown (5YR 4/3)	EXTREMELY CHANNERY SILT LOAM	45	45	<5	0	CHANNERS FLAGSTONES STONES BOULDERS	MASSIVE	STRUCTURELESS	MOIST	HARD	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE					
42-72	Reddish Brown (2.5YR 4/4)	EXTREMELY CHANNERY SILT LOAM	45	45	<5	0	CHANNERS FLAGSTONES STONES BOULDERS	MASSIVE	STRUCTURELESS	WET	HARD	NONSTICKY	NONPLASTIC			NONE		NONE					

Additional Remarks: Reworked onsite soils encountered to 12 inches. Weathered rock was encountered between 20 to 72 inches. Soil profile pit SPP-100 encountered refusal at 72 inches on apparent rock. Pit bail test performed.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-101**

Project: Proposed Warehouse Development Project No.: 3532-99-001E
 Location: 401 Cottontail Lane, Franklin, New Jersey Client: Active Acquisitions

Surface Elevation (ft): 61.5 Date Started: 10/20/20 Groundwater Data Depth (ft): El. (msl):
 Termination Depth (ft): 5.5 Date Completed: 10/22/20 Logged by: S. Hume Storage: NE Groundwater Comments
 Proposed Location: SWM Contractor: Tierno & Sons Excavation: NE Mottling: --
 / Test Method: Visual Observation Rig Type: CASE 500/Link Belt 160 LK Mottling: NE

DEPTH (ft)	COLOR	SOIL TEXTURE		COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS	MOTTLING			SAMPLING			LAB RESULTS	
								Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography		Quantity	Size	Contrast	Type	Depth (ft)	No.		
0-18	TOPSOIL	GRAVELLY	LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	MEDIUM	NONE						
18-28	Reddish Brown (5YR 4/3)	VERY FLAGGY	SILT LOAM	FLAGSTONES	CHANNERS	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	COARSE	MOIST	HARD	NONSTICKY	NONPLASTIC	GRADUAL <5"	WAVY	NONE		NONE						
28-66	Reddish Brown (5YR 4/3)	EXTREMELY CHANNERY	SILT LOAM	FLAGSTONES	CHANNERS	STONES	BOULDERS	MASSIVE	STRUCTURELESS		MOIST	VERY HARD	NONSTICKY	NONPLASTIC			NONE		NONE						

Additional Remarks: Reworked onsite soils encountered to 18 inches. Weathered rock was encountered between 26 to 66 inches. Soil profile pit SPP-101 encountered refusal at 66 inches on apparent rock. Basin flood test performed.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-102**

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Project: Proposed Warehouse Development Project No.: 3532-99-001E
 Location: 401 Cottontail Lane, Franklin, New Jersey Client: Active Acquisitions

Surface Elevation (ft): 60.5 Date Started: 10/20/20 Groundwater Data Depth (ft): El. (msl):
 Termination Depth (ft): 4.0 Date Completed: 10/22/20 Logged by: S. Hume Storage: NE Groundwater Comments
 Proposed Location: SVM Contractor: Tierno & Sons Excavation: Monitoring: NE
 / Test Method: Visual Observation Rig Type: CASE 500/Link Belt 160 LK

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS	
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography	Quantity	Size	Contrast	Type	Depth (ft)	No.				
0-12	TOPSOIL	SILT LOAM	5	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	SLIGHTLY STICKY	NONPLASTIC	CLEAR <2.5"	WAVY	CMN (20% MAX)	FINE	NONE			BAG	8	S-1		
12-48	Reddish Brown (5YR 4/3)	EXTREMELY CHANNERY SILT LOAM	55	30	0	0	MASSIVE	STRUCTURELESS		MOIST	MODERATELY HARD	NONSTICKY	NONPLASTIC			NONE		NONE			BAG	24	S-2		

Additional Remarks: Weathered rock was encountered between 12 to 48 inches. Soil profile pit SPP-102 encountered refusal at 48 inches on apparent rock. Basin flood test performed.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-103**

Page 1 of 1

Project: Proposed Warehouse Development Project No.: 3532-99-001E
 Location: 401 Cottontail Lane, Franklin, New Jersey Client: Active Acquisitions

Surface Elevation (ft): 59.6	Date Started: 10/20/20	Groundwater Data	Depth (ft):	El. (m):	Groundwater Comments
Termination Depth (ft): 5.1	Date Completed: 10/22/20		NE		
Proposed Location: SWM	Logged by: S. Hume	Storage:	3.4	56.2	
Excavation / Test Method: Visual Observation	Contractor: Tierno & Sons	Groundwater:	NE	--	
	Rig Type: CASE 500/Link Belt 160 LK	Mottling:			

DEPTH (IN)	COLOR	SOIL TEXTURE		COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS	MOTTLING			SAMPLING			LAB RESULTS	
								Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography		Quantity	Size	Contrast	Type	Depth (ft)	No.		
0-2	TOPSOIL	GRAVELLY	LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	CMN (20% MAX)	MEDIUM	NONE						
2-41	Reddish Brown (5YR 4/3)	EXTREMELY CHANNERY	SILT LOAM	CHANNERS	FLAGSTONES	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	HARD	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY			NONE						
41-61	Reddish Brown (5YR 4/3)	EXTREMELY CHANNERY	SILT LOAM	CHANNERS	FLAGSTONES	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	HARD	NONSTICKY	NONPLASTIC					NONE						

Additional Remarks: Weathered rock was encountered between 2 to 61 inches. Soil profile pit SPP-103 encountered refusal at 61 inches on apparent rock. Pit ball test performed.

Field Infiltration Testing



Basin Flood Test Data

Project: Proposed Warehouse Development
 Job Number: 3532-99-001E
 Client: Active Acquisitions
 Logged By: S. Hume

Test Pit No.: SPP-101

MUNICIPALITY Franklin Township BLOCK 517.01 LOT 8.06

- 1. Test Number: 1
- 2. Depth of Test Pit: 4.5 Feet
- 3. Area of Test Pit: 52.5 Square Feet
- 4. Description of Rock Stratum:

Type of Rock: Shale
 Name of Formation: Passaic Formation
 Average Fracture Spacing: 5 inches

Type of Fractures:
 Open (wide), Clean, Width of Openings
 Open (wide), Infilled with Fines, Width of Openings
 Tight (Closed)

Orientation of Fractures:
 Horizontal (Parallel to Pit Bottom) or Nearly So
 Inclined
 Vertical (Parallel to Sides of Pit) or Nearly So

Hardness of Rock:
 Rippable by Hand Tools
 Not Rippable by Hand Tools, Rippable by Machine
 Not Rippable by Machine, Explosives Used

5a. Date of First Basin Flooding: 10/21/2020 5b. Time of First Basin Flooding: 11:25 AM

6. Result of First Basin Flooding:
 Basin Drained within 24 hours by _____ on _____
 Basin Did Not Drain within 24 hours

7a. Date of Second Flooding: -- 7a. Time of Second Flooding: _____

8. Result of Second Basin Flooding:
 Basin Drained within 24 hours by _____ on _____
 (Drained within 12 hrs?)
 Basin Did Not Drain within 24 hours



Basin Flood Test Data

Project: Proposed Warehouse Development
 Job Number: 3532-99-001E
 Client: Active Acquisitions
 Logged By: S. Hume

Test Pit No.: SPP-102

MUNICIPALITY Franklin Township BLOCK 517.01 LOT 8.06

- 1. Test Number: 1
- 2. Depth of Test Pit: 4 Feet
- 3. Area of Test Pit: 52.5 Square Feet
- 4. Description of Rock Stratum:

Type of Rock: Shale
 Name of Formation: Passaic Formation
 Average Fracture Spacing: 4 inches

Type of Fractures:
 Open (wide), Clean, Width of Openings
 Open (wide), Infilled with Fines, Width of Openings
 Tight (Closed)

Orientation of Fractures:
 Horizontal (Parallel to Pit Bottom) or Nearly So
 Inclined
 Vertical (Parallel to Sides of Pit) or Nearly So

Hardness of Rock:
 Rippable by Hand Tools
 Not Rippable by Hand Tools, Rippable by Machine
 Not Rippable by Machine, Explosives Used

5a. Date of First Basin Flooding: 10/21/2020 5b. Time of First Basin Flooding: 11:15 AM

6. Result of First Basin Flooding:
 Basin Drained within 24 hours by _____ on _____
 Basin Did Not Drain within 24 hours

7a. Date of Second Flooding: -- 7a. Time of Second Flooding: _____

8. Result of Second Basin Flooding:
 Basin Drained within 24 hours by _____ on _____
 (Drained within 12 hrs?)
 Basin Did Not Drain within 24 hours



Pit Bailing Test

(Stormwater Basin Area Investigation)

Soil Profile Pit #: **SPP-100**
 Date: **10/20/20 - 10/22/20**

Project	Proposed Warehouse	Project Number:	3532-99-001E
Location	401 Cottontail Lane, Township of Franklin, NJ	Client:	Active Acquisitions
Surface Elevation (ft):	62.0	Weather:	Cloudy, 67°F
Proposed Location:	Stormwater Management Facility	Logged By:	S. Hume
MUNICIPALITY : Township of Franklin		BLOCK:	517.01
		LOT(s):	8.06
Depth of Test Pit:	6.0 Feet	Area of Test Pit:	54.0 Square Feet

Description of Rock Stratum:

Type of Rock/Fractured Rock: <u>Siltstone and Shale</u> Name of Formation: <u>Passaic Formation</u> Average Fracture Spacing: <u>0.5</u> inches	Hardness of Rock: <input type="checkbox"/> Rippable by Hand Tools <input checked="" type="checkbox"/> Not Rippable by Hand Tools, Rippable by Machine <input type="checkbox"/> Not Rippable by Machine, Explosives Used
Type of Fractures: <input type="checkbox"/> Open (wide), Clean, Width of Openings, (___ mm) <input type="checkbox"/> Open (wide), Infilled with Fines, Width of Openings, (approx. 5 mm) <input checked="" type="checkbox"/> Tight (Closed)	
Orientation of Fractures: <input checked="" type="checkbox"/> Horizontal (Parallel to Pit Bottom) or Nearly So <input type="checkbox"/> Inclined <input checked="" type="checkbox"/> Vertical (Parallel to Sides of Pit) or Nearly So	

Preparation:

Relatively flat & level bottom:	Yes
Time allowed for water rise & stabilize (hrs): 2hrs	No
Are large soil clumps present:	No
Are pit walls slumping continuously:	No
Seepage present:	Yes

Date of First Pit Bail Test:	10/21/2020	Time of First Pit Bail Test:	11:30 AM
Reference point datum:	62.0	FIELD DATA	
Depth to bottom of pit (in):	72	Time Interval (min)	Start Depth (in)
Depth to initial water level (ft):	3.5	Finish Depth (in)	Height (in)
Depth to bailed water level(ft):	5.0	Area of Surface (sq. ft)	K (in/ hr)
Depth to impermeable stratum (ft):	6.0	45	60
		30	56.50
		30	55.00
		30	54.00
		65	52.00
		54	1.50
		54	1.00
		54	2.00
		54	54
		54	22.485666
		54	16.159846
		54	11.538697
		54	11.733012

Permeability Rate:
 $K \text{ (in/ hr)} = (\text{height}/\text{time}) * (\text{Area of Surface} / 2.27 (H^2 - h^2)) * 60$
 H = static water level - impermeable stratum
 h = avg. depth of water - depth of impermeable stratum

Depth to static water after 24 hours (ft): 3.6

K (in/hr) = 13.5 K4

A Design Permeability Rate shall be used if the basin drains completely within 12 hours while performing the second basin flood testing. Permeability rate used shall be 0.5 inches per hour
New Jersey Stormwater Best Management Practices Manual- Appendix E (April 2014)



Pit Bailing Test

(Stormwater Basin Area Investigation)

Soil Profile Pit #: **SPP-103**
 Date: **10/20/20 - 10/22/20**

Project	Proposed Warehouse	Project Number:	3532-99-001E
Location	401 Cottontail Lane, Township of Franklin, NJ	Client:	Active Acquisitions
Surface Elevation (ft):	59.6	Weather:	Cloudy, 67°F
Proposed Location:	Stormwater Management Facility	Logged By:	S. Hume
MUNICIPALITY : Township of Franklin		BLOCK:	517.01
		LOT(s):	8.06
Depth of Test Pit:	5.1 Feet	Area of Test Pit:	15.8 Square Feet

Description of Rock Stratum:

Type of Rock/Fractured Rock: <u>Siltstone and Shale</u> Name of Formation: <u>Passaic Formation</u> Average Fracture Spacing: <u>0</u> inches	<i>Hardness of Rock:</i> <input type="checkbox"/> Rippable by Hand Tools <input checked="" type="checkbox"/> Not Rippable by Hand Tools, Rippable by Machine <input type="checkbox"/> Not Rippable by Machine, Explosives Used
<i>Type of Fractures:</i> <input type="checkbox"/> Open (wide), Clean, Width of Openings, (___ mm) <input type="checkbox"/> Open (wide), Infilled with Fines, Width of Openings, (approx. 5 mm) <input checked="" type="checkbox"/> Tight (Closed)	
<i>Orientation of Fractures:</i> <input checked="" type="checkbox"/> Horizontal (Parallel to Pit Bottom) or Nearly So <input type="checkbox"/> Inclined <input checked="" type="checkbox"/> Vertical (Parallel to Sides of Pit) or Nearly So	

Preparation:

Relatively flat & level bottom: Yes

Time allowed for water rise & stabilize (hrs): 2hrs No

Are large soil clumps present: No

Are pit walls slumping continuously: No

Seepage present: Yes

Date of First Pit Bail Test:	10/21/2020	Time of First Pit Bail Test:	11:50 AM
Reference point datum:	59.6	FIELD DATA	
Depth to bottom of pit (in):	61	Time Interval (min)	Start Depth (in)
Depth to initial water level (ft):	3.4	Finish Depth (in)	Height (in)
Depth to bailed water level(ft):	5.1	Area of Surface (sq. ft)	K (in/ hr)
Depth to impermeable stratum (ft):	5.1	28	59
		17	54.00
		24	51.50
		24	50.00
		24	49.00
			1.00
			15.8
			9.0856335

Permeability Rate:

$K \text{ (in/ hr)} = (\text{height}/\text{time}) * (\text{Area of Surface} / 2.27 (H^2 - h^2)) * 60$

H = static water level - impermeable stratum
 h=avg. depth of water - depth of impermeable stratum

Depth to static water after 24 hours (ft): 3.4

K (in/hr) = 9.1 K4

A Design Permeability Rate shall be used if the basin drains completely within 12 hours while performing the second basin flood testing. Permeability rate used shall be 0.5 inches per hour
New Jersey Stormwater Best Management Practices Manual- Appendix E (April 2014)