



Preliminary Report of Infiltration and Septic Evaluation

483 & 485 Elizabeth Avenue
Block 507.14, Lots 61 & 62
Township of Franklin, Somerset County, New Jersey

October 2020

Prepared For

Elizabeth Realty Partners, LLC
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Manasquan, NJ 08736

Prepared By

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A handwritten signature in black ink that reads 'Michael Carnivale III'.

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MC Project No. 19000649A





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1.0 INTRODUCTION

This report presents the results of the infiltration and septic evaluation for the proposed warehouse development located at 483 & 485 Elizabeth Avenue in the Township of Franklin, Somerset County, New Jersey (Block 507.14, Lots 61 & 62), with respect to proposed stormwater management areas, septic beds, and preliminary infiltration rates for use in conceptual design. Maser Consulting understands that the proposed development consists of the construction of a 76,200 square foot (sf) building, containing warehouse and office space, with associated trailer spaces, vehicular parking, and site improvements, including stormwater management facilities and septic beds.

Infiltration rate considerations provided in this preliminary infiltration report are based on review of published data, accepted engineering practice, and field observations. Maser Consulting has evaluated subsurface conditions at exploration locations within the site and provided an evaluation of potential infiltration rates for soils encountered at depth within the area of the proposed stormwater management systems and design seasonal high-water levels.

2.0 SITE DESCRIPTION

The subject project site is located at 483 & 485 Elizabeth Avenue in the Township of Franklin, Somerset County, New Jersey, as shown on the attached Site Location Plan (Figure No. 1) and is referred to as Block 507.14, Lots 61 & 62 on the Franklin Township Tax Maps. The project site has frontage along Elizabeth Avenue and is located between School House Road and Weston Road. The subject property is approximately 8.4 acres. The site contains two residential structures and is partially wooded or contains lawn area. An unnamed tributary of the Raritan River traverses the site in a generally south to north direction. Ordinary and Intermediate Value Wetlands and State open water exist on the property per a Freshwater Wetland Letter of Interpretation (LOI) Line Verification issued on February 27, 2020.

Based on the “Concept Plan for Elizabeth Realty Partners LLC, Lots 61 & 62, Block 507.14, Franklin Township, Somerset County, New Jersey”, dated September 21, 2020, prepared by Maser Consulting, we understand that a minor subdivision of the property in which the two existing lots



will be reconfigured to one residential lot of approximately 40,000 sf and one large lot, approximately 325,711 sf, for the 76,200 sf industrial building, including 9 truck loading spaces, 36 spaces for passenger vehicles, and one above-ground stormwater management basin.

3.0 SCOPE OF SERVICES

To explore the subsurface conditions within the influence of the proposed stormwater management and septic system areas, and to subsequently provide considerations regarding encountered subsurface infiltration rates and design estimated seasonal high-water levels (ESHWL), we performed the following scope of services:

- a) Engaged the services of an excavation contractor to excavate test pits for exploration of subsurface soil and groundwater conditions within proposed stormwater management area and septic system;
- b) Coordinated the witnessing of the septic system excavations and infiltration testing by the Somerset County Board of Health;
- c) Provided full-time technical observation of the excavation work;
- d) Obtained representative soil samples encountered within the zone of influence of the proposed construction;
- e) Evaluated the field data and prepared test pit logs showing the types of soils observed, depths to groundwater, and depths to estimated seasonal high groundwater;
- f) Performed a combination of laboratory testing (tube permeameter) on select soil samples and field testing (pit-bailing and basin flooding) to evaluate groundwater infiltration rates for the subgrade soils; and
- g) Provided a *Preliminary Report of Infiltration and Septic Evaluation* that reviews potential soil infiltration rates for design and groundwater considerations for the proposed basin and septic system requirements.



4.0 SUBSURFACE EXPLORATION

The subsurface conditions were evaluated on August 17 - 19, 2020 through the excavation of twelve test pits, labeled TP-1 through TP-12. Test pits for the exploration were excavated at the locations shown on the Test Pit Location Plan, Figure No. 2. Test pits were excavated to depths ranging from approximately 5 to 10 feet below the existing ground surface and were generally terminated where groundwater or practical bucket refusal was encountered.

Test pits TP-1 through TP-4 were performed in proposed wet basin between the southern loading dock, the DRCC Stream Corridor and the Franklin Township Stream Corridor Preservation Area. TP-5 through TP-6 were performed in a proposed septic disposal field in the southeast corner of the site. TP-7 through TP-9 were advanced in areas of potential proposed infiltration BMPs. TP-10 through TP-12 were conducted for the purpose of a potential revision to the current Hydrologic Soil Group (HSG) designation.

Representatives from Maser Consulting's Geotechnical Department observed the test pit excavations. In addition, the Somerset County Board of Health, witnessed the excavation and testing of test pits TP-5 and TP-6, as part of the septic evaluation. Soils encountered were classified in the field in accordance with N.J.A.C. 7:9A, Subchapter 5.3, Terminology Required for Soil Logs. Representative soil samples of strata encountered were collected and returned to Maser Consulting's Red Bank laboratory facilities for further evaluation and analyses. Details pertaining to the subsurface conditions encountered are presented on the Test Pit Logs in Appendix A.

Groundwater was encountered within the vertical reaches in six of the test pits excavated as part of this exploration – TP-1 through TP-6. The subsurface strata were observed with respect to mottling and soil staining for indications that seasonal high groundwater levels extended into the test pit depths. Staining and mottling within a soil stratum can indicate seasonal high-water level fluctuations but can also be found along wormholes and/or as an indication of geologic depositional factors. These conditions are evaluated in the field on a case by case basis. Potential indicators of seasonal high-water level were observed in the same test pits that groundwater was encountered. In test pits TP-2, TP-5 and TP-5, the estimated seasonal high-water level (ESHWL)



appears to correspond with the existing groundwater level. In test pits, TP-1, TP-4 and TP-4, the ESHWL was higher than the existing groundwater. Indicator of seasonal high water were not observed in the remaining test pits as part of this preliminary evaluation.

Please refer to Table 1 for a summary of depths to the groundwater table and to the estimated seasonal high-water level (ESHWL). Soil moisture and groundwater conditions should be expected to fluctuate with season, precipitation amounts, and other on-site and off-site factors including site utilization.

TABLE 1 DEPTH TO GWT AND ESHWL SUMMARY				
Test Pit ID	Ground Surface Elev. (ft)	Depth of Test Pit (in)	Depth to Groundwater Table, GWT (in)	Depth to Estimated Seasonal High-Water Level, ESHWL (in)
TP-1	73.20	96	60	39
TP-2	73.49	84	60	60
TP-3	76.07	96	90	90
TP-4	74.33	96	49	49
TP-5	80.97	120	92	92
TP-6	80.97	120	74	74
TP-7	79.26	72	Not Encountered	Not Encountered
TP-8	75.40	96	Not Encountered	Not Encountered
TP-9	78.33	78	Not Encountered	Not Encountered
TP-10	79.81	72	Not Encountered	Not Encountered
TP-11	80.81	72	Not Encountered	Not Encountered
TP-12	85.28	60	Not Encountered	Not Encountered

5.0 SUBSURFACE CONDITIONS

5.1 Regional Geology

According to the *Surficial Geology of the Bound Brook Quadrangle, Somerset and Middlesex Counties New Jersey* (Stanford 1992), the surficial soils are composed of weathered bedrock material, particularly weathered shale and mudstone (Map Unit – *Q_{sw}*) which is characterized as diamict material consisting of some to many angular chips of red shale in reddish-brown, red, and reddish-yellow silty clay to clayey silt, generally 3 to 10



feet thick. Based on the *Bedrock Geology of the Bound Brook Quadrangle, Somerset and Middlesex Counties New Jersey* (Volkert and Monteverde, 2011), the bedrock is part of the Passaic Formation, Lower Jurassic and Upper Triassic (Map Unit – *JTRp*) which is an interbedded sequence of reddish-brown, and less commonly, maroon or purple, fine- to coarse-grained sandstone, siltstone, shaly siltstone, silty mudstone, and mudstone.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the soils at the project site are classified as *Norton loam, 2 to 6 percent slopes (NotB)*. The typical soil profile consists of loam, silty clay loam, and channery loam, underlain by shallow weathered bedrock. The mapped Hydrologic Soil Group (HSG) is C. The parent material is classified as red fine-silty till and/or colluvium. The depth to restrictive feature (lithic bedrock) is anticipated to be 42 to 80 inches below grade.

5.2 Subsurface Description

The test pits were excavated in portions of the property that were either in grassy lawn areas or in the surrounding wooded areas. The test pits disclosed a layer of red, reddish brown and reddish yellow silt loam, slit clay loam and loam, with varying amounts of gravel ranging from 5 to 50%, and varying amounts of cobbles, up to 90%, but predominately in the 5% or less range. This stratum varied in depth from approximately 20 to 72 inches below grade and can be characterized as residual or decomposed rock. Underlying this stratum is a layer of weathered bedrock consisting of red and reddish-brown fractured platy rock fragment with soil fillings which extended to the termination depths of the test pits.

Test pit logs presented in Appendix A provide soil descriptions visually classified per N.J.A.C. 7:9A, Subchapter 5.3, Terminology Required for Soil Logs.



6.0 SOIL INFILTRATION & SEPTIC EVALUATION

Selected soil samples were tested by our Geotechnical Laboratory in Mays Landing, New Jersey. The testing consisted of eleven (11) Tube Permeameter Tests performed to estimate the infiltration rate of groundwater through the soils at depth. Tube Permeameter testing was performed in accordance with N.J.A.C. 7:9A-6.2 and *New Jersey Stormwater Best Management Practices Manual, Appendix E* (BMP-E) requirements. The soil samples were selected based on the visual observation and field classification of soils encountered in the test pits by design personnel, the proposed infiltration depths, and comparison to other strata encountered at each test pit location. The tube samples were collected from the soils directly by inserting the sample tube into the ground and retrieving the tube by excavating the soils surrounding it. Tube Permeameter test results are summarized in Table 2 and presented in Appendix B.

Test Pit ID	Ground Surface Elev. (ft)	Test Depth below Existing Grade (in)	Infiltration Rate (in/hr)	K Rating
TP-1	73.20	7	0.53 / 3.08	K1 / K3
		30	17.5 / 5.42	K4 / K3
TP-2	73.49	6	7.21 / 2.71	K4 / K3
TP-3	76.07	6	1.57 / 47.70	K2 / K5
TP-4	74.33	6	14.45	K4
		24	12.49	K4
TP-7	78.26	6	9.27 / 9.08	K4 / K4
TP-9	78.33	5	6.08 / 0.82	K4 / K2
TP-10	79.81	15	0.11 / 4.30	K0 / K3
TP-11	80.81	8	21.09 / 11.87	K5 / K4
TP-12	85.28	12	15.98 / 2.54	K4 / K3

A single Basin Flooding Test was conducted in test pit TP-8 at a depth of 6 feet below existing grade in accordance with N.J.A.C. 7:9A-6.7 and BMP-E requirements. Following the excavation of the test pit to the required dimensions with a flat bottom, the test basin was filled with exactly 12 inches of water and allowed to drain completely which was accomplished in less than 24 hours, at which point it was immediately refilled with 12 inches. The basin drained completely within 12 hours of the second filling, and therefore is considered to be a fractured rock substratum. Per



BMP-E, since the basin drained in less than 12 hours, the design permeability rate that can be used shall be 0.5 in/hr.

For the septic evaluation conducted in test pit TP-6, a pit-bailing test was conducted in accordance with N.J.A.C. 7:9A-6.5 and BMP-E requirements, to obtain the field measured hydraulic conductivity value, K, using the following equations:

$$K = (h_{rise} / t) \times [A_{av} / 2.27(H^2 - h^2)] \times 60 \text{ min/hr} \quad (\text{in inches/hour})$$

where: K = permeability, in inches per hour;

h_{rise} = difference in depth to water level at the beginning and end of the time interval, in inches;

t = length of time interval, minutes;

A_{av} = average of water surface area at the beginning of time interval (end of previous time interval) and at the end of the time interval, in square feet;

H = difference between depth to assumed static water level and actual or assumed depth to impermeable stratum, in feet (depth to impermeable stratum, if unknown, is assumed to be one and one-half times the depth of the pit; and

h = difference between average depth of water levels at the beginning and end of time interval and actual or assumed depth to impermeable stratum, in feet.

TABLE 3 PIT-BAILING TEST SUMMARY									
t (min)	Date	d_n (in.)	Length (ft)	Width (ft)	Area, A_n (ft²)	h_{rise} (in)	A_{sy} (ft²)	H (ft)	K_a (in/hr)
0	8/17	96	5.00	3.00	15.00	----	----	----	----
5	8/17	91	6.33	3.00	18.99	5	17.00	9.16	14.0
10	8/17	87	6.41	3.00	19.23	4	19.11	9.16	15.3
15	8/17	84	7.41	3.00	22.23	3	20.73	9.16	15.0
<i>Notes: 1. Pit-Bailing Test Excavation and Water Level Reading Observed by Somerset County Board of Health. 2. Stabilized Groundwater Established in TP-6 at 70 in. below existing grade 3. Depth to impermeable stratum assumed to be 1.5 times the depth of the 10 ft deep pit = 15 feet.</i>									



7.0 DISCUSSION

Test pits TP-1 through TP-4 were performed in proposed wet basin between the southern loading dock, the DRCC Stream Corridor and the Franklin Township Stream Corridor Preservation Area. TP-5 through TP-6 were performed in a proposed septic disposal field in the southeast corner of the site. TP-7 through TP-9 were advanced in areas of potential proposed infiltration BMPs. TP-10 through TP-12 were conducted for the purpose of a potential revision to the current Hydrologic Soil Group (HSG) designation.

Based upon the test pit information collected during our witnessed explorations and in conjunction with pit bailing testing, the soils within the proposed primary on-site septic disposal system, characterized by test pits TP-5 and TP-6, have a permeability rate of 15 in/hr, equivalent to a Soil Permeability Class Rating of K4, and are is considered suitable for use. For design purposes we recommend that the lower bound of K4 soils, 6 in/hr, be considered in the design of the septic bed.

The Basin Flooding Test conducted in test pit TP-8 at a depth of 6 feet below existing grade indicated that the weather and decomposed shale should be considered a fractured rock substratum. Given that the basin drained in less than 12 hours, a design permeability rate of 0.5 in/hr can be used per Appendix E.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the soils at the project site are classified as *Norton loam, 2 to 6 percent slopes (NotB)*. The typical soil profile consists of loam, silty clay loam, and channery loam, underlain by shallow weathered bedrock. The mapped Hydrologic Soil Group (HSG) is C. The parent material is classified as red fine-silty till and/or colluvium, which is consistent with the description of the soils, per the *Surficial Geology of the Bound Brook Quadrangle, Somerset and Middlesex Counties New Jersey* (Stanford 1992), of weathered bedrock material, particularly weathered shale and mudstone consisting of some to many angular chips of red shale in reddish-brown, red, and reddish-yellow silty clay to clayey silt. Tube permeameter test results within samples collected in the upper 24 inches of the soil profile throughout the site generally had a Soil Permeability Class Rating of K3 or better. As a result, it is our opinion that the reclassification of the HSG designation is not practical.



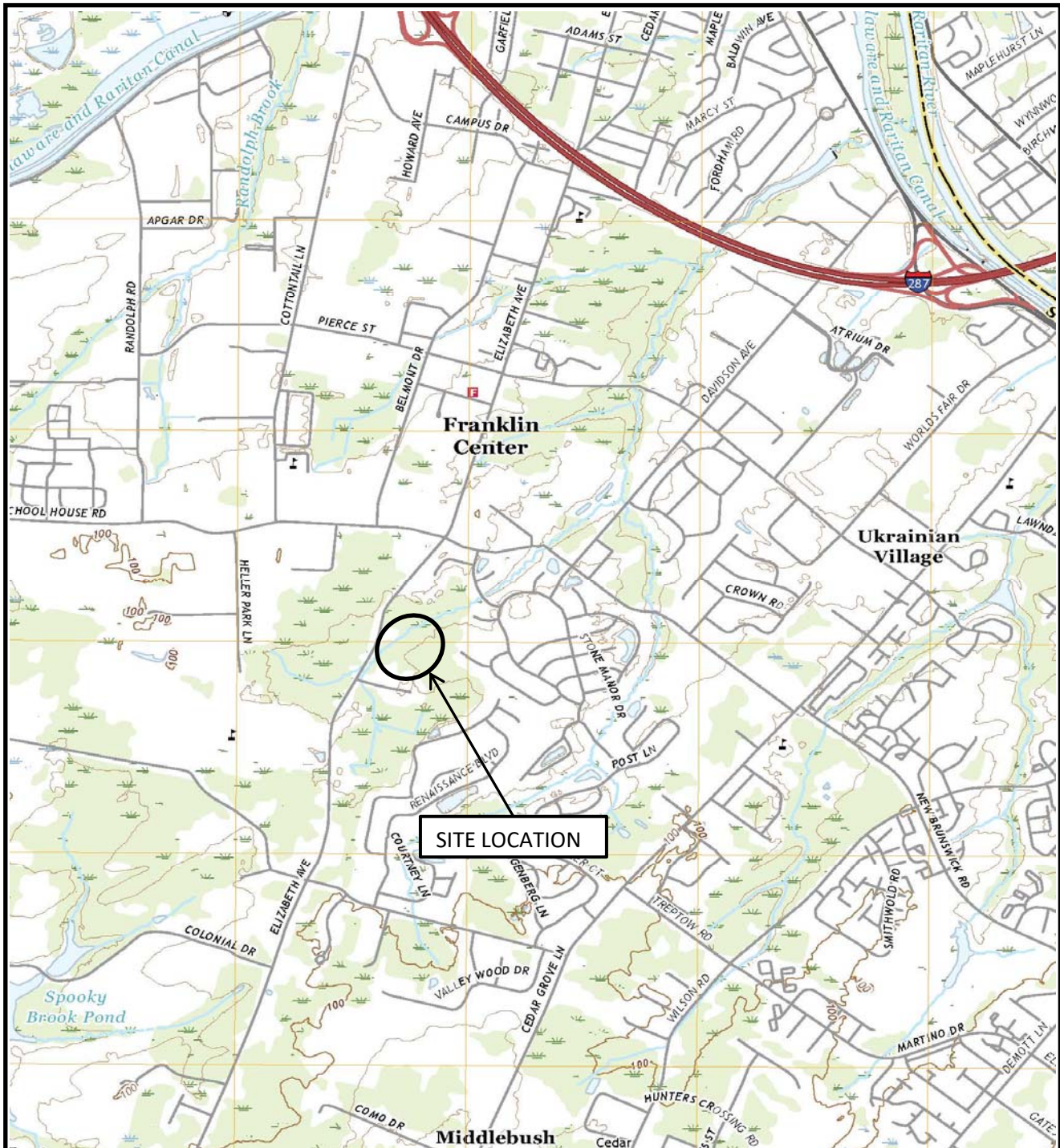
8.0 CLOSING

The considerations contained in this report are contingent upon the actual field conditions being consistent with those encountered during our field exploration. Should any variation in the anticipated conditions be encountered, or should site regrading be proposed, Maser Consulting should be notified immediately to determine what impact the changed conditions may have upon the presented considerations.

9.0 LIMITATIONS

Services performed by Maser Consulting during this project have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation, expressed or implied, and no warranty or guarantee is included or intended in the services provided. This is not an Environmental Assessment.

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NOTES:

1.) *SITE MAP OBTAINED FROM USGS TOPOGRAPHIC MAP, BOUND BROOK, NJ QUADRANGLE, DATED 2019.



Consulting, Municipal & Environmental Engineers
Planners ■ Surveyors ■ Landscape Architects

New Jersey New York Pennsylvania Virginia
Customer Loyalty through Client Satisfaction

Title: SITE LOCATION MAP		
Project: PROPOSED WAREHOUSE FACILITY 483 and 485 Elizabeth Avenue Block 507.14, Lots 61 & 62		
Franklin Township, Somerset County, NJ		
Drawn By: *	Checked By: MC	Project No.: 19000649A
Scale: N.T.S.	Date: 9/11/2020	Figure No.: 1



**483 & 485 ELIZABETH AVENUE
MC PROJECT NO. 19000649A**

APPENDIX A

TEST PIT LOGS



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-1
PAGE 1 OF 1

MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNO\ONE\DRIVE - MASER CONSULTING P.A\WORK DOCUMENTS - MM\GINT\GINT PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>73.2</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) <u> </u> Date <u> </u>
Operator: <u>Kevin Viersma</u>	First Encountered <u> </u>
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) <u>5</u> <u>8/17/2020</u>
	After Completion (≥ 24 Hrs.) <u> </u> <u> </u>

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
		0.0	73.2	
	5YR 3/4 Silt Loam, 5% Gravel, Granular, Very Friable	0.58		
	2.5YR 4/4 Silt Loam, 40% Gravel, Subangular Blocky, Friable	1.75		
	5YR 4/3 Silt Loam, Subangular Blocky, Friable	2.5		
	2.5YR 4/4 Silty Clay Loam, 10% Gravel, Subangular Blocky, Friable	3.25	70.7	
	2.5YR 4/4 Silt Loam 90% Cobble, Massive, Firm with Many/Fine/Distinct 7.5YR 5/6 Redox (Densic)	5		
	2.5YR 4/4 Fractured Platy Rock Fragments with soil fillings (Paralithic)	5.0	68.2	
		7.5	65.7	
		8		

Bottom of Test Pit at 8.0 Ft.

Logged By: AY Checked By: MC

Notes: ESHWT: 39 inches

TEST PIT TP-1
PAGE 1 OF 1



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-2
 PAGE 1 OF 1

MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNO\ONE\DRIVE - MASER CONSULTING P.A\WORK DOCUMENTS - MM\GINT\GINT PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>73.5</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) <u> </u> Date <u> </u>
Operator: <u>Kevin Viersma</u>	First Encountered <u> </u>
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) <u>5</u> <u>8/17/2020</u>
	After Completion (≥ 24 Hrs.) <u> </u> <u> </u>

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
0.0		73.5		
0.5	5YR 3/3 Silt Loam, Granular, Very Friable			
1.25	5YR 4/4 Silty Clay Loam, 5% Gravel, Subangular Blocky, Friable			
1.83	2.5YR 4/4 Silt Loam 45% Gravel, Massive, Friable			
2.5	2.5YR 4/4 Fractured Platy Rock Fragments with soil fillings (Paralithic)	71.0		
5.0		68.5		
7				

Bottom of Test Pit at 7.0 Ft.

Logged By: AY Checked By: MC

Notes:



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-3
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MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNO\ONE\DRIVE - MASER CONSULTING\PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>76.1</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) <u> </u> Date <u> </u>
Operator: <u>Kevin Viersma</u>	First Encountered <u> </u>
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) <u>▼ 7.5</u> <u>8/17/2020</u>
	After Completion (≥ 24 Hrs.) <u>▼</u> <u> </u>

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
0.0		76.1		
0.5	2.5YR 3/3 Silt Loam, Granular, Very Friable			
1.5	2.5YR 4/4 Silt Loam, Subangular Blocky, Friable			
2	5YR 5/4 Silt Loam, 5% Gravel, Subangular Blocky, Friable with Many/Fine/Distinct 7.5YR 5/6 Redox			
2.5	2.5YR 3/4 Loam, 30% Gravel, Massive Very Firm (Densic)	73.6		
3	2.5YR 4/4 Fractured Platy Rock Fragments with soil fillings (Paralithic)			
5.0		71.1		
7.5		▼ 68.6		
8				

Bottom of Test Pit at 8.0 Ft.

Logged By: AY Checked By: MC

Notes: ESHWT: 90 inches - The observed redox observed in the soils are considered to be the result of slow infiltration and is not indicative of season high water



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-4
 PAGE 1 OF 1

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Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>74.3</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) Date
Operator: <u>Kevin Viersma</u>	First Encountered ∇ _____
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) ∇ <u>4.1</u> <u>8/17/2020</u>
	After Completion (\geq 24 Hrs.) ∇ _____

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
		0.0	74.3	
	2.5YR 4/4 Silt Loam, 10% Gravel, Granular, Very Friable	0.5		
	2.5YR 3/4 Silt Loam, 40% Gravel, Subangular Blocky, Friable	1.5		
	5YR 4/3 Silt Loam, 5% Gravel, Subangular Blocky, Friable	2		
	5YR 4/4 Silty Clay Loam 5% Gravel, Subangular Blocky, Friable with Many/Fine/Faint 7.5YR 5/6 Redox	2.5	71.8	
	2.5YR 4/4 Fractured Platy Rock Fragments with soil fillings (Paralithic)	3		
		5.0	69.3	∇
		7.5	66.8	
		8		

Bottom of Test Pit at 8.0 Ft.

Logged By: AY Checked By: MC

Notes: ESHWT: 49 inches - The observed redox observed in the soils are considered to be the result of slow infiltration and is not indicative of season high water



Project: 483 & 485 ELIZABETH AVENUE

TEST PIT TP-5

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Location: FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ

Number: 19000649A

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Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>81</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) Date
Operator: <u>Kevin Viersma</u>	First Encountered ∇ _____
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) ∇ <u>7.7</u> <u>8/17/2020</u>
	After Completion (\geq 24 Hrs.) ∇ _____

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
	5YR 2.5/1 Silt Loam, Granular, Very Friable	0.0	81.0	
	7.5YR 5/4 Silt Loam 5% Gravel, Subangular Blocky, Friable	0.5		
	5YR 5/4 Fractured Platy Shale with 2% Soil Fillings	1.58		
		2.5	78.5	
		5.0	76.0	
		7.5	73.5	
		10	71.0	

Bottom of Test Pit at 10.0 Ft.

Logged By: AY Checked By: MC

Notes:

TEST PIT TP-5

PAGE 1 OF 1



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-6
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MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNO\ONE\DRIVE - MASER CONSULTING P.A\WORK DOCUMENTS - MM\GINTGINT PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>81</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) Date
Operator: <u>Kevin Viersma</u>	First Encountered ∇ _____
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) ∇ <u>6.2</u> <u>8/17/2020</u>
	After Completion (\geq 24 Hrs.) ∇ _____

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
		0.0	81.0	
	5YR 2.5/1 Silt Loam, Granular, Very Friable	0.5		
	5YR 5/4 Silt Loam, 10% Gravel, Subangular Blocky, Friable			
		2.5	78.5	
	5YR 4/3 Silty Clay Loam, 10% Gravel, Subangular Blocky, Firm			
		5.0	76.0	
	5YR 5/4 Fractured Platy Shale with 2% Soil Fillings	6		
		7.5	73.5	
		10	71.0	

Bottom of Test Pit at 10.0 Ft.

Logged By: AY Checked By: MC

Notes:



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-7
 PAGE 1 OF 1

MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNO\ONE DRIVE - MASER CONSULTING P.A\WORK DOCUMENTS - MM\GINTGINT PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>78.3</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) Date
Operator: <u>Kevin Viersma</u>	First Encountered ∇ _____
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) ∇ <u>NE</u> <u>8/17/2020</u>
	After Completion (\geq 24 Hrs.) ∇ _____

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
0.0		78.3		
0.5	5YR 3/4 Silt Loam, Granular, Very Friable			
2	5YR 4/4 Silty Clay Loam, 20% Gravel, 5% Cobble, Subangular Blocky, Friable			
2.5	5YR 4/3 Loam, 20% Gravel, Subangular Blocky, Very Friable	75.8		
5	2.5YR 4/4 Fractured Platy Rock Fragments with soil fillings (Paralithic)	73.3		
6	Bottom of Test Pit at 6.0 Ft.			

Logged By: AY Checked By: MC

Notes:



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-8
PAGE 1 OF 1

MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNOVONEDRIVE - MASER CONSULTING\PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>75.4</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) Date
Operator: <u>Kevin Viersma</u>	First Encountered <input type="checkbox"/> _____
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) <input checked="" type="checkbox"/> <u>NE</u> <u>8/17/2020</u>
	After Completion (≥ 24 Hrs.) <input type="checkbox"/> _____

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
		0.0	75.4	
[Diagonal Hatching]	5YR 4/4 Silt Loam, Granular, Very Friable	0.5		
[Diagonal Hatching]	5YR 5/4 Silty Clay Loam, 10% Gravel, Subangular Blocky, Firm	2		
[Diagonal Hatching]	2.5YR 4/4 Silt Loam, 50% Gravel, Massive, Friable	2.5	72.9	
[Diagonal Hatching]	2.5YR 4/4 Fractured Platy Rock Fragments with soil fillings (Paralithic)	3		
[Diagonal Hatching]		5.0	70.4	
[Diagonal Hatching]		7.5	67.9	
[Diagonal Hatching]		8		

Bottom of Test Pit at 8.0 Ft.

Logged By: AY Checked By: MC

Notes:



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-9
PAGE 1 OF 1

MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNO\ONEDRIVE - MASER CONSULTING P.A\WORK DOCUMENTS - MM\GINT\GINT PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>78.3</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) Date
Operator: <u>Kevin Viersma</u>	First Encountered <input type="checkbox"/> _____
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) <input checked="" type="checkbox"/> <u>NE</u> <u>8/17/2020</u>
	After Completion (≥ 24 Hrs.) <input type="checkbox"/> _____

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
0.0		78.3		
0.42	5YR 4/4 Silt Loam, Granular, Very Friable			
1.25	2.5YR 4/4 Silty Clay Loam, 10% Gravel, Subangular Blocky, Friable			
2.5	2.5YR 3/4 Loam, 50% Gravel, 20 % Cobble, Massive, Firm (Densic)	75.8		
5.0		73.3		
6				
6.5	2.5YR 4/4 Fractured Platy Rock Fragments with soil fillings (Paralithic)			

Bottom of Test Pit at 6.5 Ft.

Logged By: AY Checked By: MC

Notes:



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-10
 PAGE 1 OF 1

MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNO\ONE\DRIVE - MASER CONSULTING P.A\WORK DOCUMENTS - MM\GINT\GINT PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>79.8</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) <u> </u> Date <u> </u>
Operator: <u>Kevin Viersma</u>	First Encountered <u>▽</u> <u> </u>
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) <u>▼</u> <u>NE</u> <u>8/17/2020</u>
	After Completion (≥ 24 Hrs.) <u>▼</u> <u> </u> <u> </u>

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
0.0		79.8		
0.42	5YR 3/3 Silt Loam, 5% Gravel, Granular, Very Friable			
1	5YR 5/4 Silt Loam, 5% Gravel, Platy, Friable			
1.67	2.5YR 4/4 Silty Clay Loam, 20% Gravel, 5% Cobble, Subangular Blocky, Friable			
2.5	2.5YR 3/4 Silt Loam, 90% Cobble, Massive, Very Firm (Densic)	77.3		
5.0		74.8		
6				

Bottom of Test Pit at 6.0 Ft.

Logged By: AY Checked By: MC

Notes:



Project: **483 & 485 ELIZABETH AVENUE**

TEST PIT TP-11

PAGE 1 OF 1

Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**

Number: **19000649A**

MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNOVIONEDRIVE - MASER CONSULTING P.A\WORK DOCUMENTS - MM\GINTGINT PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>80.8</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) Date
Operator: <u>Kevin Viersma</u>	First Encountered ∇ _____
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) ∇ <u>NE</u> <u>8/17/2020</u>
	After Completion (\geq 24 Hrs.) ∇ _____

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
0.0		80.8		
0.42	7.5YR 3/4 Silt Loam, 5% Gravel, Granular, Very Friable			
1	5YR 4/4 Silty Clay Loam, 5% Gravel, Subangular Blocky, Friable			
1.67	2.5YR 4/4 Silt Loam, 40% Gravel, 5% Cobble, Subangular Blocky, Friable			
2.5	2.5YR 4/4 Fractured Platy Rock Fragments with soil fillings (Paralithic)	78.3		
5.0		75.8		
6				

Bottom of Test Pit at 6.0 Ft.

Logged By: AY Checked By: MC

Notes:

TEST PIT TP-11

PAGE 1 OF 1



Project: **483 & 485 ELIZABETH AVENUE**
 Location: **FRANKLIN TOWNSHIP, SOMERSET COUNTY, NJ**
 Number: **19000649A**

TEST PIT TP-12
 PAGE 1 OF 1

MASER TEST PIT - KZA DATA TEMPLATE.GDT - 10/19/20 17:50 - C:\USERS\MAGNO\ONE\DRIVE - MASER CONSULTING P.A\WORK DOCUMENTS - MM\GINTGINT PROJECTS\19000649A - 483 & 485 ELIZABETH AVENUE, FRANKLIN TWP, NJ.GPJ

Date Started: <u>8/17/20</u>	Ground Surface Elevation (ft.): <u>85.3</u>
Date Completed: <u>8/17/20</u>	Datum: <u>TOPO</u>
Contractor: <u>Bob Viersma & Sons</u>	Groundwater: Depth (ft.) Date
Operator: <u>Kevin Viersma</u>	First Encountered ∇ _____
Equipment: <u>Trackhoe</u>	At Completion (0 Hrs.) ∇ <u>NE</u> <u>8/17/2020</u>
	After Completion (\geq 24 Hrs.) ∇ _____

GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft.)	ELEVATION (ft.)	REMARKS
	7.5YR 3/3 Silt Loam, 5% Gravel, Granular, Very Friable	0.0	85.3	
	5YR 5/6 Silt Loam, 20% Gravel, Subangular Blocky, Friable	0.5		
	2.5YR 4/4 Fractured Platy Rock Fragments with soil fillings (Paralithic)	1.67		
		2.5	82.8	
		5	80.3	

Bottom of Test Pit at 5.0 Ft.

Logged By: AY Checked By: MC

Notes:



**483 & 485 ELIZABETH AVENUE
MC PROJECT NO. 19000649A**

APPENDIX B

TUBE PERMEAMETER TEST RESULTS



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-1A **Depth:** 7"
Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	14.7	4.96	2.875	121.7	106.1
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	128.5	2.142	19.0	0.78	1.025	0.80
2	90.0	80.0	10.0	125.1	2.086	19.0	0.80	1.025	0.82
3	90.0	80.0	10.0	129.8	2.163	19.0	0.77	1.025	0.79
4	80.0	70.0	10.0	191.6	3.194	19.0	0.59	1.025	0.61
5	80.0	70.0	10.0	194.6	3.243	19.0	0.58	1.025	0.60
6	80.0	70.0	10.0	192.7	3.212	19.0	0.59	1.025	0.61
7	70.0	60.0	10.0	293.8	4.897	18.4	0.45	1.041	0.47
8	70.0	60.0	10.0	295.7	4.928	18.4	0.44	1.041	0.46
9	70.0	60.0	10.0	299.7	4.995	18.4	0.44	1.041	0.46
10	60.0	50.0	10.0	383.5	6.391	18.0	0.40	1.051	0.43
11	60.0	50.0	10.0	388.9	6.481	18.0	0.40	1.051	0.42
12	60.0	50.0	10.0	383.9	6.398	18.0	0.40	1.051	0.43
13	50.0	40.0	10.0	553.6	9.226	18.0	0.34	1.051	0.36
14	50.0	40.0	10.0	558.4	9.306	18.0	0.34	1.051	0.36
15	50.0	40.0	10.0	557.5	9.291	18.0	0.34	1.051	0.36

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	0.53
SOIL PERMEABILITY CLASS:	K1

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Some localized gaps in soil due to gravel pieces and organic matter



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-1B **Depth:** 7"
Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	14.7	4.48	2.875	118.2	103.1
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	21.7	0.362	19.0	4.18	1.025	4.29
2	90.0	80.0	10.0	21.6	0.361	19.0	4.19	1.025	4.30
3	90.0	80.0	10.0	21.6	0.360	19.0	4.20	1.025	4.31
4	80.0	70.0	10.0	35.9	0.598	19.0	2.87	1.025	2.94
5	80.0	70.0	10.0	35.6	0.593	19.0	2.89	1.025	2.96
6	80.0	70.0	10.0	35.7	0.595	19.0	2.88	1.025	2.95
7	70.0	60.0	10.0	45.5	0.758	19.0	2.61	1.025	2.68
8	70.0	60.0	10.0	45.5	0.758	19.0	2.61	1.025	2.68
9	70.0	60.0	10.0	45.6	0.759	19.0	2.61	1.025	2.67
10	60.0	50.0	10.0	52.8	0.879	19.0	2.66	1.025	2.73
11	60.0	50.0	10.0	52.9	0.882	19.0	2.66	1.025	2.72
12	60.0	50.0	10.0	52.8	0.879	19.0	2.66	1.025	2.73
13	50.0	40.0	10.0	64.1	1.068	19.0	2.68	1.025	2.75
14	50.0	40.0	10.0	64.2	1.070	19.0	2.68	1.025	2.75
15	50.0	40.0	10.0	64.2	1.070	19.0	2.68	1.025	2.75

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	3.08
SOIL PERMEABILITY CLASS:	K3

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Some localized gaps in soil due to gravel pieces and organic matter



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-1A **Depth:** 30"
Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Sample Type: Undisturbed <input checked="" type="checkbox"/> Re-Compacted <input type="checkbox"/>	22.7	4.83	2.875	123.5	100.6

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1	2		3	4	5		6	7	8	9					
	Burette Readings				Head, h (cm)	Time, t					Temp, T (°C)	Permeability at T°C, k _T	Temp Correc.	Permeability at 20°C, k ₂₀	
	h ₁ (cm)	h ₂ (cm)				Sec									Min
1	90.0	80.0	10.0	4.2	0.069	19.7	23.52	1.008	23.70						
2	90.0	80.0	10.0	4.3	0.071	19.7	23.03	1.008	23.20						
3	90.0	80.0	10.0	4.3	0.071	19.7	22.92	1.008	23.09						
4	80.0	70.0	10.0	5.8	0.096	19.7	19.30	1.008	19.44						
5	80.0	70.0	10.0	5.9	0.098	19.7	18.93	1.008	19.08						
6	80.0	70.0	10.0	5.8	0.097	19.7	19.16	1.008	19.31						
7	70.0	60.0	10.0	7.8	0.130	19.7	16.46	1.008	16.59						
8	70.0	60.0	10.0	8.0	0.133	19.7	16.01	1.008	16.13						
9	70.0	60.0	10.0	8.2	0.136	19.7	15.66	1.008	15.78						
10	60.0	50.0	10.0	10.0	0.167	19.7	15.15	1.008	15.26						
11	60.0	50.0	10.0	10.3	0.172	19.7	14.65	1.008	14.76						
12	60.0	50.0	10.0	10.2	0.171	19.7	14.81	1.008	14.92						
13	50.0	40.0	10.0	14.3	0.239	19.7	12.96	1.008	13.05						
14	50.0	40.0	10.0	14.1	0.235	19.7	13.16	1.008	13.26						
15	50.0	40.0	10.0	14.7	0.245	19.7	12.60	1.008	12.69						

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	17.35
SOIL PERMEABILITY CLASS:	K4

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Localized void along sample wall but did not extend full length of sample.



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A

Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020

Boring/Sample # or Descrip./Location: TP-1B **Depth:** 30"

Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	25.5	5.04	2.875	125.0	99.6
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	16.1	0.268	19.6	6.34	1.010	6.40
2	90.0	80.0	10.0	16.2	0.271	19.6	6.28	1.010	6.34
3	90.0	80.0	10.0	16.3	0.271	19.6	6.26	1.010	6.32
4	80.0	70.0	10.0	21.4	0.357	19.4	5.39	1.015	5.47
5	80.0	70.0	10.0	21.4	0.356	19.4	5.41	1.015	5.49
6	80.0	70.0	10.0	21.4	0.357	19.4	5.39	1.015	5.47
7	70.0	60.0	10.0	26.4	0.441	19.4	5.05	1.015	5.12
8	70.0	60.0	10.0	26.5	0.441	19.4	5.04	1.015	5.12
9	70.0	60.0	10.0	26.5	0.442	19.4	5.03	1.015	5.11
10	60.0	50.0	10.0	31.4	0.523	19.3	5.03	1.018	5.12
11	60.0	50.0	10.0	31.2	0.520	19.3	5.05	1.018	5.14
12	60.0	50.0	10.0	31.3	0.521	19.3	5.05	1.018	5.13
13	50.0	40.0	10.0	39.4	0.656	19.2	4.91	1.020	5.00
14	50.0	40.0	10.0	39.2	0.654	19.2	4.92	1.020	5.02
15	50.0	40.0	10.0	39.4	0.656	19.2	4.91	1.020	5.00

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	5.42
SOIL PERMEABILITY CLASS:	K3

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Localized void along sample wall but did not extend full length of sample.



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A

Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020

Boring/Sample # or Descrip./Location: TP-2A **Depth:** 6"

Visual Description of Soil (USCS): Brown silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:
Undisturbed
Re-Compacted

Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
27.5	5.02	2.875	110.6	86.8

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	12.8	0.213	18.7	7.97	1.033	8.23
2	90.0	80.0	10.0	12.8	0.213	18.7	7.97	1.033	8.23
3	90.0	80.0	10.0	12.8	0.214	18.7	7.93	1.033	8.19
4	80.0	70.0	10.0	16.1	0.268	18.7	7.18	1.033	7.41
5	80.0	70.0	10.0	16.2	0.269	18.7	7.13	1.033	7.37
6	80.0	70.0	10.0	16.2	0.269	18.7	7.14	1.033	7.37
7	70.0	60.0	10.0	19.4	0.323	18.9	6.87	1.028	7.06
8	70.0	60.0	10.0	19.4	0.323	18.9	6.87	1.028	7.06
9	70.0	60.0	10.0	19.4	0.324	18.9	6.85	1.028	7.04
10	60.0	50.0	10.0	23.2	0.387	18.9	6.78	1.028	6.96
11	60.0	50.0	10.0	23.3	0.388	18.9	6.76	1.028	6.95
12	60.0	50.0	10.0	23.3	0.389	18.9	6.75	1.028	6.94
13	50.0	40.0	10.0	30.6	0.510	19.0	6.30	1.025	6.45
14	50.0	40.0	10.0	30.6	0.509	19.0	6.30	1.025	6.46
15	50.0	40.0	10.0	30.6	0.510	19.0	6.30	1.025	6.46

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	7.21
SOIL PERMEABILITY CLASS:	K4

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-2B **Depth:** 6"
Visual Description of Soil (USCS): Brown silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	30.9	4.90	2.875	111.6	85.3
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	29.0	0.484	18.7	3.41	1.033	3.52
2	90.0	80.0	10.0	29.9	0.498	18.7	3.32	1.033	3.43
3	90.0	80.0	10.0	29.8	0.497	18.7	3.32	1.033	3.43
4	80.0	70.0	10.0	37.2	0.620	18.9	3.02	1.028	3.10
5	80.0	70.0	10.0	37.2	0.621	18.9	3.02	1.028	3.10
6	80.0	70.0	10.0	37.3	0.622	18.9	3.01	1.028	3.10
7	70.0	60.0	10.0	54.6	0.909	18.6	2.38	1.036	2.46
8	70.0	60.0	10.0	54.6	0.910	18.6	2.38	1.036	2.46
9	70.0	60.0	10.0	54.6	0.909	18.6	2.38	1.036	2.46
10	60.0	50.0	10.0	64.4	1.074	18.5	2.38	1.038	2.47
11	60.0	50.0	10.0	64.5	1.075	18.5	2.38	1.038	2.47
12	60.0	50.0	10.0	64.5	1.076	18.5	2.38	1.038	2.47
13	50.0	40.0	10.0	93.9	1.565	18.4	2.00	1.041	2.08
14	50.0	40.0	10.0	93.9	1.565	18.4	2.00	1.041	2.08
15	50.0	40.0	10.0	94.0	1.566	18.4	2.00	1.041	2.08

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	2.71
SOIL PERMEABILITY CLASS:	K3

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A

Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020

Boring/Sample # or Descrip./Location: TP-3A **Depth:** 5"

Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	17.9	4.81	2.875	107.1	90.9
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	62.7	1.045	19.0	1.55	1.025	1.59
2	90.0	80.0	10.0	61.8	1.029	19.0	1.58	1.025	1.62
3	90.0	80.0	10.0	62.8	1.046	19.0	1.55	1.025	1.59
4	80.0	70.0	10.0	84.3	1.404	18.9	1.31	1.028	1.35
5	80.0	70.0	10.0	82.1	1.369	18.9	1.34	1.028	1.38
6	80.0	70.0	10.0	83.4	1.390	18.9	1.32	1.028	1.36
7	70.0	60.0	10.0	88.7	1.478	18.8	1.44	1.030	1.48
8	70.0	60.0	10.0	79.2	1.320	18.8	1.61	1.030	1.66
9	70.0	60.0	10.0	79.4	1.324	18.8	1.60	1.030	1.65
10	60.0	50.0	10.0	93.9	1.565	18.7	1.61	1.033	1.66
11	60.0	50.0	10.0	93.3	1.555	18.7	1.62	1.033	1.67
12	60.0	50.0	10.0	92.5	1.541	18.7	1.63	1.033	1.68
13	50.0	40.0	10.0	118.6	1.977	18.6	1.56	1.036	1.61
14	50.0	40.0	10.0	116.1	1.935	18.6	1.59	1.036	1.65
15	50.0	40.0	10.0	117.5	1.959	18.6	1.57	1.036	1.63

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	1.57
SOIL PERMEABILITY CLASS:	K2

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A

Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020

Boring/Sample # or Descrip./Location: TP-3B **Depth:** 5"

Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	18.7	4.85	2.875	108.4	91.3
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	2.2	0.037	19.6	44.86	1.010	45.31
2	90.0	80.0	10.0	2.2	0.036	19.6	45.48	1.010	45.94
3	90.0	80.0	10.0	2.2	0.037	19.6	44.26	1.010	44.70
4	80.0	70.0	10.0	2.5	0.041	19.5	45.09	1.013	45.66
5	80.0	70.0	10.0	2.4	0.039	19.5	47.40	1.013	47.99
6	80.0	70.0	10.0	2.4	0.040	19.5	46.22	1.013	46.80
7	70.0	60.0	10.0	2.9	0.049	19.4	44.19	1.015	44.85
8	70.0	60.0	10.0	2.8	0.047	19.4	45.28	1.015	45.96
9	70.0	60.0	10.0	2.9	0.048	19.4	44.80	1.015	45.48
10	60.0	50.0	10.0	3.2	0.053	19.0	48.28	1.025	49.50
11	60.0	50.0	10.0	3.1	0.052	19.0	48.59	1.025	49.81
12	60.0	50.0	10.0	3.2	0.053	19.0	47.67	1.025	48.88
13	50.0	40.0	10.0	3.7	0.062	19.0	50.04	1.025	51.30
14	50.0	40.0	10.0	3.7	0.062	19.0	50.31	1.025	51.57
15	50.0	40.0	10.0	3.7	0.061	19.0	50.58	1.025	51.85

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	47.7
SOIL PERMEABILITY CLASS:	K5

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Localized void along sample wall but did not extend full length of sample.
- Sample was very loose inside of the tube. Sample able to slide up and down within the tube during preparation.



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-4A **Depth:** 6"
Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	17.0	4.37	2.875	127.2	108.7
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1	2		3	4	5		6	7	8	9					
	Burette Readings				Head, h (cm)	Time, t					Temp, T (°C)	Permeability at T°C, k _T	Temp Correc.	Permeability at 20°C, k ₂₀	
	h ₁ (cm)	h ₂ (cm)				Sec									Min
1	90.0	80.0	10.0	4.6	0.076	19.0	19.38	1.025	19.86						
2	90.0	80.0	10.0	4.7	0.078	19.0	19.00	1.025	19.48						
3	90.0	80.0	10.0	4.7	0.079	19.0	18.76	1.025	19.23						
4	80.0	70.0	10.0	8.2	0.137	19.0	12.23	1.025	12.54						
5	80.0	70.0	10.0	8.2	0.137	19.0	12.26	1.025	12.57						
6	80.0	70.0	10.0	8.3	0.138	19.0	12.17	1.025	12.48						
7	70.0	60.0	10.0	9.2	0.153	18.9	12.67	1.028	13.02						
8	70.0	60.0	10.0	9.2	0.154	18.9	12.56	1.028	12.90						
9	70.0	60.0	10.0	9.2	0.153	18.9	12.62	1.028	12.97						
10	60.0	50.0	10.0	10.2	0.169	18.9	13.50	1.028	13.88						
11	60.0	50.0	10.0	10.2	0.170	18.9	13.48	1.028	13.85						
12	60.0	50.0	10.0	10.1	0.168	18.9	13.57	1.028	13.95						
13	50.0	40.0	10.0	12.9	0.216	18.9	12.97	1.028	13.33						
14	50.0	40.0	10.0	13.0	0.216	18.9	12.92	1.028	13.28						
15	50.0	40.0	10.0	12.9	0.215	18.9	12.98	1.028	13.34						

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	14.45
SOIL PERMEABILITY CLASS:	K4

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Large stone at top of sample.



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-4A **Depth:** 24"
Visual Description of Soil (USCS): Red brown silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	21.7	4.50	2.875	117.2	96.3
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	7.8	0.129	19.6	11.75	1.010	11.87
2	90.0	80.0	10.0	7.7	0.128	19.6	11.86	1.010	11.98
3	90.0	80.0	10.0	7.7	0.129	19.6	11.80	1.010	11.92
4	80.0	70.0	10.0	8.6	0.144	19.5	11.97	1.013	12.12
5	80.0	70.0	10.0	8.6	0.144	19.5	12.00	1.013	12.15
6	80.0	70.0	10.0	8.6	0.144	19.5	11.97	1.013	12.12
7	70.0	60.0	10.0	9.9	0.165	19.3	12.08	1.018	12.29
8	70.0	60.0	10.0	9.8	0.164	19.3	12.15	1.018	12.37
9	70.0	60.0	10.0	9.9	0.165	19.3	12.06	1.018	12.27
10	60.0	50.0	10.0	11.2	0.186	19.2	12.64	1.020	12.89
11	60.0	50.0	10.0	11.2	0.187	19.2	12.60	1.020	12.86
12	60.0	50.0	10.0	11.1	0.186	19.2	12.67	1.020	12.93
13	50.0	40.0	10.0	13.3	0.222	19.1	12.94	1.023	13.23
14	50.0	40.0	10.0	13.4	0.224	19.1	12.84	1.023	13.13
15	50.0	40.0	10.0	13.4	0.223	19.1	12.89	1.023	13.18

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	12.49
SOIL PERMEABILITY CLASS:	K4

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-7A **Depth:** 6"
Visual Description of Soil (USCS): Red brown silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	20.1	5.01	2.875	106.7	88.8
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1	2		3	4	5		6	7	8	9					
	Burette Readings				Head, h (cm)	Time, t					Temp, T (°C)	Permeability at T°C, k _T	Temp Correc.	Permeability at 20°C, k ₂₀	
	h ₁ (cm)	h ₂ (cm)				Sec									Min
1	90.0	80.0	10.0	9.5	0.159	19.0	10.65	1.025	10.92						
2	90.0	80.0	10.0	9.6	0.160	19.0	10.60	1.025	10.86						
3	90.0	80.0	10.0	9.6	0.159	19.0	10.61	1.025	10.87						
4	80.0	70.0	10.0	12.7	0.212	19.0	9.04	1.025	9.27						
5	80.0	70.0	10.0	12.8	0.213	19.0	9.02	1.025	9.24						
6	80.0	70.0	10.0	12.8	0.214	19.0	8.97	1.025	9.20						
7	70.0	60.0	10.0	16.6	0.277	19.0	7.99	1.025	8.20						
8	70.0	60.0	10.0	16.8	0.280	19.0	7.89	1.025	8.09						
9	70.0	60.0	10.0	16.8	0.281	19.0	7.88	1.025	8.08						
10	60.0	50.0	10.0	18.3	0.305	18.9	8.57	1.028	8.81						
11	60.0	50.0	10.0	18.3	0.306	18.9	8.56	1.028	8.80						
12	60.0	50.0	10.0	18.4	0.307	18.9	8.54	1.028	8.77						
13	50.0	40.0	10.0	21.2	0.353	18.9	9.07	1.028	9.32						
14	50.0	40.0	10.0	21.2	0.354	18.9	9.06	1.028	9.31						
15	50.0	40.0	10.0	21.2	0.353	18.9	9.08	1.028	9.33						

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	9.27
SOIL PERMEABILITY CLASS:	K4

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A

Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020

Boring/Sample # or Descrip./Location: TP-7B **Depth:** 6"

Visual Description of Soil (USCS): Red brown silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	20.9	4.87	2.875	114.7	94.9
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1	2		3	4	5		6	7	8	9					
	Burette Readings				Head, h (cm)	Time, t					Temp, T (°C)	Permeability at T°C, k _T	Temp Correc.	Permeability at 20°C, k ₂₀	
	h ₁ (cm)	h ₂ (cm)				Sec									Min
1	90.0	80.0	10.0	10.6	0.177	18.6	9.29	1.036	9.62						
2	90.0	80.0	10.0	10.6	0.177	18.6	9.30	1.036	9.64						
3	90.0	80.0	10.0	10.8	0.179	18.6	9.17	1.036	9.50						
4	80.0	70.0	10.0	13.2	0.219	18.5	8.50	1.038	8.82						
5	80.0	70.0	10.0	13.2	0.219	18.5	8.50	1.038	8.83						
6	80.0	70.0	10.0	13.2	0.220	18.5	8.49	1.038	8.81						
7	70.0	60.0	10.0	15.3	0.254	18.4	8.46	1.041	8.81						
8	70.0	60.0	10.0	15.2	0.253	18.4	8.51	1.041	8.86						
9	70.0	60.0	10.0	15.3	0.255	18.4	8.43	1.041	8.77						
10	60.0	50.0	10.0	18.8	0.314	18.4	8.12	1.041	8.45						
11	60.0	50.0	10.0	18.8	0.314	18.4	8.11	1.041	8.44						
12	60.0	50.0	10.0	18.9	0.314	18.4	8.10	1.041	8.43						
13	50.0	40.0	10.0	20.0	0.333	18.4	9.36	1.041	9.74						
14	50.0	40.0	10.0	20.0	0.333	18.4	9.37	1.041	9.75						
15	50.0	40.0	10.0	20.0	0.333	18.4	9.35	1.041	9.73						

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	9.08
SOIL PERMEABILITY CLASS:	K4

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-9A **Depth:** 5"
Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	23.6	4.88	2.875	118.3	95.7
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1	2		3	4	5		6	7	8	9
	Burette Readings				Head, h (cm)	Time, t				
Trial No.	h ₁ (cm)	h ₂ (cm)	Sec	Min						
1	90.0	80.0	10.0	15.9	0.265	19.0	6.22	1.025	6.38	
2	90.0	80.0	10.0	15.7	0.262	19.0	6.28	1.025	6.44	
3	90.0	80.0	10.0	15.9	0.265	19.0	6.22	1.025	6.38	
4	80.0	70.0	10.0	18.8	0.313	19.0	5.97	1.025	6.12	
5	80.0	70.0	10.0	18.8	0.313	19.0	5.95	1.025	6.10	
6	80.0	70.0	10.0	18.8	0.314	19.0	5.95	1.025	6.10	
7	70.0	60.0	10.0	21.2	0.353	18.9	6.11	1.028	6.28	
8	70.0	60.0	10.0	21.4	0.357	18.9	6.04	1.028	6.21	
9	70.0	60.0	10.0	21.3	0.355	18.9	6.06	1.028	6.23	
10	60.0	50.0	10.0	28.6	0.477	18.8	5.34	1.030	5.51	
11	60.0	50.0	10.0	28.6	0.476	18.8	5.35	1.030	5.51	
12	60.0	50.0	10.0	28.5	0.475	18.8	5.36	1.030	5.52	
13	50.0	40.0	10.0	31.5	0.525	18.7	5.94	1.033	6.13	
14	50.0	40.0	10.0	31.4	0.524	18.7	5.95	1.033	6.15	
15	50.0	40.0	10.0	31.6	0.526	18.7	5.92	1.033	6.12	

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	6.08
SOIL PERMEABILITY CLASS:	K4

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Large stone at bottom of sample.



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-9B **Depth:** 5"
Visual Description of Soil (USCS): Red brown silty/clayey SAND

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	23.0	4.87	2.875	114.4	93.0
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	84.9	1.415	19.2	1.16	1.020	1.18
2	90.0	80.0	10.0	84.8	1.413	19.2	1.16	1.020	1.19
3	90.0	80.0	10.0	84.9	1.415	19.2	1.16	1.020	1.19
4	80.0	70.0	10.0	139.0	2.317	19.1	0.80	1.023	0.82
5	80.0	70.0	10.0	138.9	2.315	19.1	0.80	1.023	0.82
6	80.0	70.0	10.0	139.2	2.321	19.1	0.80	1.023	0.82
7	70.0	60.0	10.0	167.5	2.792	19.0	0.77	1.025	0.79
8	70.0	60.0	10.0	167.6	2.793	19.0	0.77	1.025	0.79
9	70.0	60.0	10.0	167.6	2.793	19.0	0.77	1.025	0.79
10	60.0	50.0	10.0	232.2	3.870	18.7	0.66	1.033	0.68
11	60.0	50.0	10.0	232.3	3.871	18.7	0.66	1.033	0.68
12	60.0	50.0	10.0	232.3	3.871	18.7	0.66	1.033	0.68
13	50.0	40.0	10.0	310.3	5.172	18.7	0.60	1.033	0.62
14	50.0	40.0	10.0	310.5	5.174	18.7	0.60	1.033	0.62
15	50.0	40.0	10.0	310.4	5.174	18.7	0.60	1.033	0.62

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	0.82
SOIL PERMEABILITY CLASS:	K2

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A

Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020

Boring/Sample # or Descrip./Location: TP-10A **Depth:** 15"

Visual Description of Soil (USCS): Red brown silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	22.7	4.97	2.875	108.8	88.7
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1	2		3	4	5		6	7	8	9
	Burette Readings				Head, h	Time, t				
Trial No.	h ₁ (cm)	h ₂ (cm)	(cm)	(cm)	Sec	Min	(°C)	T°C, k _T	Correc.	20°C, k ₂₀
1	90.0	80.0	10.0	10.0	771.7	12.861	20.1	0.13	0.998	0.13
2	90.0	80.0	10.0	10.0	773.8	12.896	20.1	0.13	0.998	0.13
3	90.0	80.0	10.0	10.0	772.5	12.875	20.1	0.13	0.998	0.13
4	80.0	71.0	9.0	9.0	900.0	15.000	20.0	0.11	1.000	0.11
5	70.0	62.5	7.5	7.5	900.0	15.000	19.8	0.11	1.005	0.11
6	60.0	55.0	5.0	5.0	900.0	15.000	19.7	0.08	1.008	0.08
7	50.0	46.3	3.7	3.7	900.0	15.000	19.5	0.07	1.013	0.07

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	0.11
SOIL PERMEABILITY CLASS:	K0

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-10B **Depth:** 15"
Visual Description of Soil (USCS): Red brown silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Sample Type: Undisturbed <input checked="" type="checkbox"/>	18.2	5.07	2.875	111.6	94.4
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1	2		3	4	5		6	7	8	9					
	Burette Readings				Head, h (cm)	Time, t					Temp, T (°C)	Permeability at T°C, k _T	Temp Correc.	Permeability at 20°C, k ₂₀	
	h ₁ (cm)	h ₂ (cm)				Sec									Min
1	90.0	80.0	10.0	21.6	0.360	19.0	4.76	1.025	4.88						
2	90.0	80.0	10.0	21.4	0.357	19.0	4.80	1.025	4.92						
3	90.0	80.0	10.0	21.5	0.358	19.0	4.78	1.025	4.90						
4	80.0	70.0	10.0	25.9	0.432	18.7	4.50	1.033	4.64						
5	80.0	70.0	10.0	25.9	0.432	18.7	4.49	1.033	4.64						
6	80.0	70.0	10.0	25.7	0.428	18.7	4.53	1.033	4.68						
7	70.0	60.0	10.0	30.7	0.512	18.6	4.37	1.036	4.53						
8	70.0	60.0	10.0	30.9	0.515	18.6	4.35	1.036	4.51						
9	70.0	60.0	10.0	30.8	0.514	18.6	4.36	1.036	4.51						
10	60.0	50.0	10.0	41.5	0.692	18.6	3.83	1.036	3.97						
11	60.0	50.0	10.0	41.6	0.693	18.6	3.82	1.036	3.96						
12	60.0	50.0	10.0	41.5	0.691	18.6	3.83	1.036	3.97						
13	50.0	40.0	10.0	58.7	0.978	18.4	3.32	1.041	3.45						
14	50.0	40.0	10.0	58.7	0.978	18.4	3.31	1.041	3.45						
15	50.0	40.0	10.0	58.7	0.979	18.4	3.31	1.041	3.45						

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	4.30
SOIL PERMEABILITY CLASS:	K3

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Large localized voids along inner tube wall but did not extend full length of sample.



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-11A **Depth:** 8"
Visual Description of Soil (USCS): Red brown silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	21.0	4.71	2.875	115.9	95.8
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	4.9	0.082	19.2	19.47	1.020	19.86
2	90.0	80.0	10.0	4.9	0.082	19.2	19.39	1.020	19.78
3	90.0	80.0	10.0	5.0	0.083	19.2	19.20	1.020	19.58
4	80.0	70.0	10.0	5.2	0.086	19.1	20.96	1.023	21.44
5	80.0	70.0	10.0	5.2	0.087	19.1	20.80	1.023	21.27
6	80.0	70.0	10.0	5.1	0.086	19.1	21.09	1.023	21.56
7	70.0	60.0	10.0	6.1	0.102	19.1	20.37	1.023	20.83
8	70.0	60.0	10.0	6.6	0.109	19.1	19.06	1.023	19.50
9	70.0	60.0	10.0	6.6	0.110	19.1	18.95	1.023	19.38
10	60.0	50.0	10.0	6.9	0.115	19.0	21.40	1.025	21.94
11	60.0	50.0	10.0	6.9	0.116	19.0	21.31	1.025	21.85
12	60.0	50.0	10.0	7.0	0.116	19.0	21.19	1.025	21.72
13	50.0	40.0	10.0	8.2	0.136	19.0	22.15	1.025	22.71
14	50.0	40.0	10.0	8.3	0.138	19.0	21.86	1.025	22.41
15	50.0	40.0	10.0	8.2	0.137	19.0	21.96	1.025	22.52

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	21.09
SOIL PERMEABILITY CLASS:	K5

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Localized void along sample wall but did not extend full length of sample.
- Sample was very loose inside of the tube. Sample able to slide up and down within the tube during preparation.



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-11B **Depth:** 8"
Visual Description of Soil (USCS): Red brown silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	22.5	4.72	2.875	109.9	89.7
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1	2		3	4	5		6	7	8	9					
	Burette Readings				Head, h (cm)	Time, t					Temp, T (°C)	Permeability at T°C, k _T	Temp Correc.	Permeability at 20°C, k ₂₀	
	h ₁ (cm)	h ₂ (cm)				Sec									Min
1	90.0	80.0	10.0	8.6	0.144	19.6	11.06	1.010	11.17						
2	90.0	80.0	10.0	8.6	0.143	19.6	11.10	1.010	11.21						
3	90.0	80.0	10.0	8.7	0.146	19.6	10.94	1.010	11.05						
4	80.0	70.0	10.0	9.7	0.161	19.4	11.22	1.015	11.39						
5	80.0	70.0	10.0	9.7	0.161	19.4	11.22	1.015	11.39						
6	80.0	70.0	10.0	9.6	0.160	19.4	11.25	1.015	11.42						
7	70.0	60.0	10.0	11.2	0.187	19.3	11.14	1.018	11.33						
8	70.0	60.0	10.0	11.4	0.189	19.3	11.00	1.018	11.19						
9	70.0	60.0	10.0	11.3	0.188	19.3	11.09	1.018	11.28						
10	60.0	50.0	10.0	12.9	0.216	19.2	11.43	1.020	11.66						
11	60.0	50.0	10.0	13.0	0.216	19.2	11.39	1.020	11.61						
12	60.0	50.0	10.0	13.0	0.216	19.2	11.39	1.020	11.62						
13	50.0	40.0	10.0	13.3	0.222	19.2	13.56	1.020	13.83						
14	50.0	40.0	10.0	13.2	0.221	19.2	13.67	1.020	13.95						
15	50.0	40.0	10.0	13.3	0.221	19.2	13.65	1.020	13.93						

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	11.87
SOIL PERMEABILITY CLASS:	K4

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A

Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020

Boring/Sample # or Descrip./Location: TP-12A **Depth:** 12"

Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	12.0	4.66	2.875	75.4	67.3
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	5.2	0.087	19.1	18.06	1.023	18.47
2	90.0	80.0	10.0	5.3	0.088	19.1	17.96	1.023	18.37
3	90.0	80.0	10.0	5.3	0.088	19.1	17.89	1.023	18.30
4	80.0	70.0	10.0	6.7	0.112	19.0	15.98	1.025	16.38
5	80.0	70.0	10.0	6.7	0.112	19.0	15.91	1.025	16.31
6	80.0	70.0	10.0	6.8	0.113	19.0	15.74	1.025	16.14
7	70.0	60.0	10.0	8.4	0.140	19.0	14.71	1.025	15.08
8	70.0	60.0	10.0	8.4	0.139	19.0	14.78	1.025	15.15
9	70.0	60.0	10.0	8.4	0.141	19.0	14.62	1.025	14.99
10	60.0	50.0	10.0	9.5	0.158	18.9	15.40	1.028	15.83
11	60.0	50.0	10.0	9.4	0.157	18.9	15.48	1.028	15.91
12	60.0	50.0	10.0	9.5	0.158	18.9	15.41	1.028	15.84
13	50.0	40.0	10.0	12.9	0.215	18.9	13.88	1.028	14.27
14	50.0	40.0	10.0	12.9	0.215	18.9	13.86	1.028	14.24
15	50.0	40.0	10.0	12.8	0.213	18.9	13.98	1.028	14.37

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	15.98
SOIL PERMEABILITY CLASS:	K4

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Sample was very loose inside of the tube. Sample able to slide up and down within the tube during preparation.



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TUBE PERMEAMETER TEST

(N.J.A.C. 7:9A - Standards for Individual Subsurface Sewage Disposal Systems; Subchapter 6, Section 6.2, page 39, Modified)

Client: John Kainer **MC #:** 19000649A
Project: 483 and 485 Elizabeth Avenue, Franklin Township, NJ **Date:** September 11, 2020
Boring/Sample # or Descrip./Location: TP-12B **Depth:** 12"
Visual Description of Soil (USCS): Brown red silty/clayey SAND with gravel and trace organics

Technician: K. Perry **Proctor Data:**

Max Dry Density (pcf)	% of Max Dry Density	Opt. Moisture (%)
-	-	-

Initial Specimen Data:

Sample Type:	Water Content (%)	Length, L (in)	Diameter (in)	Wet Density (pcf)	Dry Density (pcf)
Undisturbed <input checked="" type="checkbox"/>	11.1	5.02	2.875	84.0	75.6
Re-Compacted <input type="checkbox"/>					

Radius of Burette, r: 0.3141 in

Radius of Soil Specimen, R: 1.4375 in

TEST DATA

1 Trial No.	2 Burette Readings		4 Head, h (cm)	5 Time, t		6 Temp, T (°C)	7 Permeability at T°C, k _T	8 Temp Correc.	9 Permeability at 20°C, k ₂₀
	h ₁ (cm)	h ₂ (cm)		Sec	Min				
1	90.0	80.0	10.0	33.0	0.550	19.1	3.08	1.023	3.15
2	90.0	80.0	10.0	35.3	0.589	19.1	2.88	1.023	2.94
3	90.0	80.0	10.0	34.2	0.570	19.1	2.97	1.023	3.04
4	80.0	70.0	10.0	43.8	0.731	19.0	2.63	1.025	2.69
5	80.0	70.0	10.0	43.5	0.724	19.0	2.65	1.025	2.72
6	80.0	70.0	10.0	43.8	0.730	19.0	2.63	1.025	2.70
7	70.0	60.0	10.0	57.6	0.959	19.0	2.31	1.025	2.37
8	70.0	60.0	10.0	56.8	0.947	19.0	2.34	1.025	2.40
9	70.0	60.0	10.0	58.2	0.969	19.0	2.29	1.025	2.34
10	60.0	50.0	10.0	69.3	1.155	18.8	2.27	1.030	2.34
11	60.0	50.0	10.0	69.7	1.162	18.8	2.26	1.030	2.33
12	60.0	50.0	10.0	69.7	1.162	18.8	2.26	1.030	2.33
13	50.0	40.0	10.0	87.3	1.455	18.7	2.20	1.033	2.28
14	50.0	40.0	10.0	89.1	1.485	18.7	2.16	1.033	2.23
15	50.0	40.0	10.0	89.3	1.488	18.7	2.16	1.033	2.23

Perm, k_T (7) = 60 * L/t * r²/R² * ln(h₁/h₂) = 60 * L/(5) * r²/R² * ln((2)/(3))

Head, h (4) = (2) - (3); Perm, k₂₀ (9) = (7)*(8)

AVERAGE k₂₀ (in/hr):	2.54
SOIL PERMEABILITY CLASS:	K3

Soil Permeability Classes

- > 20 inches per hour (in/hr) K5
- 6 - 20 in/hr K4
- 2 - 6 in/hr K3
- 0.6 - 2 in/hr K2
- 0.2 - 0.6 in/hr K1
- < 0.2 in/hr K0

Remarks

- Sample was very loose inside of the tube. Sample able to slide up and down within the tube during preparation.