FRENCH & PARRELLO ASSOCIATES

Advancing Our Client's Vision
IMPROVING OUR WORLD

OPERATIONS & MAINTENANCE MANUAL

201 Walnut Avenue
Block 484, Lot 19.01
Cranford Township
Union County, NJ

Prepared For:
201 Walnut Avenue, LLC
c/o Mr. Brandon L. Boffard
55 Bleeker Street, 2nd Floor
Millburn, NJ 07041

Bahram Farzaneh, PE, PP
NJPE Lic. No. 24GE03454800

February 5, 2021
Revision April 30, 2021
FPA No. 16377.001

1800 Route 34, Suite 101 • Wall, NJ • 07719 • T 732.312.9800 • F 732.312.9801
NEW JERSEY | NEW YORK | PENNSYLVANIA | GEORGIA
fpaengineers.com

Stormwater Management Measures
Maintenance Plan & Field Manuals

Development Name: ___201 Walnut Avenue_____

Address: ____201 Walnut Avenue, Cranford, NJ 07016_____

Block(s) / Lot(s): ___Block 484, Lot 19.01_____

Township, County: ____Cranford Township, Union County, NJ_____

Party Responsible for Maintenance:

_____Iron Ore Properties, LLC_____

Address: __55 Bleeker Street, 2nd Floor_____

Contact Person(s): _Brandon K. Boffard____ Phone: __973-376-4605___

Prepared by: _French & Parrello Associates, P.A.___ Date: _____02/05/2021_____

This plan is recorded in

Deed Book # _____ Page # ____ with _____ County Clerk on Date _____

Last Revised on ____/____/_____

Table of Contents

Part I- Maintenance

Part II- Field Manuals and Maintenance Records

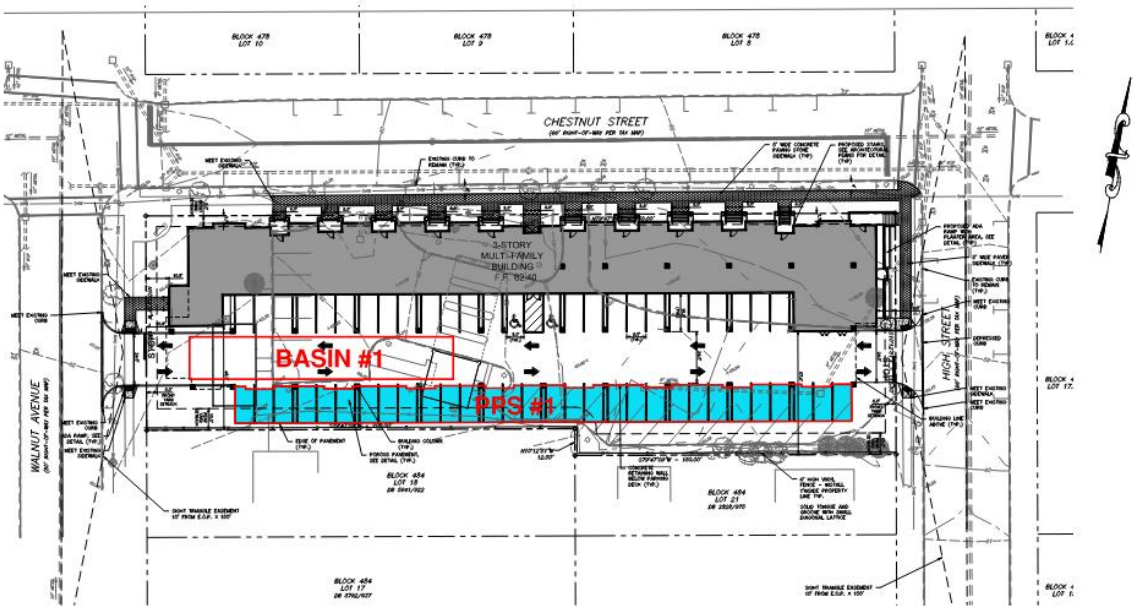
Part I- Maintenance Plan

List of Stormwater Management Measures

The stormwater management measures incorporated into this development are listed below. The corresponding Field Manuals for the stormwater management measures are located in Part II of the Maintenance Plan.

Type of Stormwater Management Measure	BMP No.	Location Description	State Plane Coordinates / Lat., Long.
Underground Detention Basin	Basin #1	Under site driveway, 40' from entrance	546,568; 662,964
Porous Pavement System	PPS #1	Adjacent to Basin #1	546,675; 662,962

Location Map



No.	Type of Stormwater Management Measure
Basin #1	Underground Detention Basin
PPS #1	Porous Pavement System

Description of Stormwater Management Measures

Name of the stormwater management measure: Basin #1
Design storm: 100-Yr Storm

- Design Purposes:
  - Detention
- Dimensions: 125′ (Length) x 20′ (Width) x 24″ (Depth)

Name of the stormwater management measure: Porous Pavement System
Design storm:

- Design Purposes:
  - Water quality
  - 1.25 inches in 2 hours

Preventative and Corrective Maintenance Action Plan

As per N.J.A.C. 7:8-5.8(b) & (e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure, including, but not limited to, repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per NJDEP BMP Manual Ch. 8 Feb. 2004), maintenance plans should include specific preventative and corrective maintenance tasks such as removal of sediment, trash, and debris; mowing, pruning, and restoration of vegetation; restoration of eroded areas; elimination of mosquito breeding habitats; control of aquatic vegetation; and repair or replacement of damaged or deteriorated components.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include recommended corrective responses to various emergency conditions that may be encountered at the stormwater management measure. It should be noted that if the stormwater management measure includes a Class I or II dam as defined in the NJDEP Dam Safety Standards at N.J.A.C. 7:20, an emergency action plan for the dam is also required. See N.J.A.C. 7:20-1.7(f) for more information.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), the maintenance plan should address the maintenance of access points to the stormwater management measures in accordance with the following:

- all components of the stormwater management measures must be readily accessible for inspection and maintenance;
- trees, shrubs, and underbrush must be pruned or trimmed as necessary to maintain access to the stormwater management measure;
- the exact limits of inspection and maintenance easements and rights-of-way should be specified on stormwater management measure plans and included in the maintenance plan.

Preventative Maintenance Actions

Frequency	Preventative Maintenance Actions	Stormwater Measures/ No.
Monthly	Remove any debris or sediment	Basin and Porous Pavement
Quarterly	Sediment removal	Basin and Porous Pavement
Semiannual	Sediment removal	Basin and Porous Pavement
Annual	Structural Inspection	Basin and Porous Pavement
Unscheduled	Quick inspection after every 1″ rain	Basin and Porous Pavement

Corrective Maintenance Actions

Potential Corrective Maintenance Actions	Stormwater Management Measures/No.
- Repair/replacement of outlet pipes or orifices	Basin #1
- Sediment Removal	Basin and Porous Pavement

Inspection and Logs of All Preventative and Corrective Maintenance

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

As per NJDEP BMP Manual Ch. 8 (Feb, 2004), a maintenance plan shall include a schedule of regular inspections and tasks, and detailed logs of all preventative and corrective maintenance performed on the stormwater management measure, including all maintenance-related work orders. The person with maintenance responsibility must retain and, upon request, make available the maintenance plan and associated logs and other records for review by a public entity with administrative, health, environmental, or safety authority over the site.

Inspection Checklists in the Field Manual for the stormwater management measures on this site include:

- Basin #1
- Porous Pavement System

The logs of all inspections, and both preventative and corrective maintenance performed should be attached in the "**Maintenance Logs and Inspection Records**" section. See Part II of the Maintenance Plan

Maintenance Personnel, Equipment, Tools, and Supplies

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include equipment, tools, and supplies necessary to perform the various preventative and corrective maintenance tasks specified in the plan. Sources of specialized, proprietary, and nonstandard equipment, tools, and supplies should also be provided.

This section applies to both maintenance tasks that are performed by in-house personnel or are outsourced.

Maintenance Personnel/Equipment/Tools/Supplies

Personnel/Equipment/Tools Name	Quantity
General Maintenance Crew	1
Shovel, rake, pick, wheel barrow, gloves, sediment probe, flashlight, camera, hard hat, broom, power washer, hose	As needed
Trucks, lightweight backhoe, vacuum truck, sump pump	As needed

Specialized, proprietary or nonstandard equipment, tools and supplies, if applicable

Name of the specialized, proprietary or nonstandard equipment, tools and supplies	Source
N/A	N/A

Disposal Plan

Disposal/Recycling Procedures

Dewatering procedures and requirements

Sediment removal shall take place when all runoff has drained from basins, porous pavers and storm sewer system and all are dry.

Unloading procedures and requirements

Disposal of the debris, trash, sediment and all other waste material should be done at an approved disposal/recycling site and in accordance with all applicable local, state and federal regulation

Disposal Field – Offsite

Description of the Offsite Disposal:

Disposal of the debris, trash, sediment and all other waste material should be done at an approved disposal/recycling site and in accordance with all applicable local, state and federal regulations. The facilities operation or contractor shall be responsible for contracting a company to dispose all material off-site

Cost Estimate

As per N.J.A.C.7:8-5.8(b), cost estimates of maintenance tasks, including, but not limited to, sediment, trash and debris removal must be included in the maintenance plan. Below is an illustration of a cost breakdown and estimation for maintenance of stormwater management measures. The actual costs may vary with factors such as local requirements, equipment, personnel, weather, and maintenance methods.

COST ESTIMATES

Cost Overview

The design engineer should list the maintenance tasks and break down the costs for each maintenance task.

Cost Type	Cost	Details
Annual Contract to perform all routine and unscheduled maintenance	$2,000	
Annual contract to perform corrective measures	$5,000	

Safety Measures and Procedures

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include procedures and equipment required to protect the safety of inspection and maintenance personnel.

Safety Regulations and Requirements

Attach all local ordinance(s) and state and federal regulations regarding occupational safety after this section

Safety Tools, Equipment and Garments

Safety Tools and Equipment	Location	Responsible Person/Contact #

Emergency Procedures

In case of emergency, Call 911

Training Plan and Records

As per NJDEP BMP Manual Ch. 8 (February 2004), maintenance training begins with a basic description of the purpose and function of the overall stormwater management measure and its major components. Such understanding will enable maintenance personnel to provide more effective component maintenance and more readily detect maintenance-related problems. Depending on the size, character, location, and components of each stormwater management measure, maintenance personnel may also require training in specialized inspection and maintenance tasks and/or the operation and care of specialized maintenance equipment. Training should also be provided in the need for and use of all required safety equipment and procedures.

I. Training Plan

Types of Training

- Mandatory Stormwater Management Basic Training and Field Manual Usage Training for new maintenance crews
- Occupational Safety Training
- Subcontractor training, if applicable

Content of Training

- **Stormwater Management Basic Training**
    - Purposes and Functions of BMPs

      Example Training Material
      - NJDEP Stormwater BMP Manual, Chapter Nine: Structural Stormwater Management Measures

More training information is available at NJ Stormwater.org (http://www.nj.gov/dep/stormwater/training.htm)

- Vegetation Care

  Example Training Material
  - NJDEP Stormwater BMP Manual, Chapter Seven: Landscaping

- Field Manual Usage Training

  - Field Manuals attached to this Maintenance Plan

- Equipment and Tools Operation Training

        - Equipment or tool manufacturer's Operation & Maintenance Manual

    - Occupational Safety Training

        - OSHA Training
        - Equipment or tool manufacturer's Operation & Maintenance Manual

II. Training Records

Training attendance sheets should be attached by the responsible party after each training.

Attach training attendance sheets from each training

Annual Evaluation of the Effectiveness of the Plan

As per N.J.A.C. 7:8-5.8(g), the person responsible for maintenance shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

The responsible party should evaluate the effectiveness of the maintenance plan by comparing the maintenance plan with the actual performance of the maintenance. The items to evaluate may include, but not limited to,

- Whether the inspections have been performed as scheduled;
- Whether the preventive maintenance has been performed as scheduled;
- Whether the frequency of preventative maintenance needs to increase or decrease;
- Whether the planned resources were enough to perform the maintenance;
- Whether the repairs were completed on time;
- Whether the actual cost was consistent with the estimated cost;
- Whether the inspection, maintenance, and repair records have been kept.

If actual performance of those items has been deviated from the maintenance plan, the responsible party should find the causes and implement solutions in a revised maintenance plan.

Annual Evaluation Records

Evaluator(s)	Date of Evaluation	Decision
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)

Documents

Please attach the following:

Transfer Agreement
As per N.J.A.C. 7:8-5.8(b), if the maintenance plan identifies a person other than the developer as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

Deed
As per N.J.A.C. 7:8-5.8(d), if the person responsible for maintenance is not a public agency, the maintenance plan and any future revisions shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

As-Built Drawings with Drainage Plans
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), as-built construction plans of the stormwater management measure and copies of pertinent construction documents, such as laboratory test results, permits, and completion certificates should be included in this Maintenance Plan.

Landscaping Plan for the Stormwater Management Measures
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if there is a Landscaping Plan for the stormwater management measures, it should be included in this Maintenance Plan.

Permeability Test/Infiltration Test Report
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if a permeability test or infiltration test is required and available, the reports for pre-construction and post-construction testing should be included in this Maintenance Plan.

Groundwater Mounding Analysis
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if a groundwater mounding analysis is required and the groundwater mounding analysis was performed, a copy of the analysis should be included in this Maintenance Plan.

Soil Boring Logs
As per NJDEP BMP Manual Ch.8 (Feb., 2004), if any soil borings were taken prior to construction, a copy of the soil boring logs should be included in this Maintenance Plan.

Local, State, Federal Permits
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), local, state, or federal permits related to the stormwater management measures for this development should be included in this Maintenance Plan. See Cost Estimate Section of This Maintenance Plan for more information. The requirement to obtain State permits depends on specific circumstances, such as, but not limited to, the specific design of the stormwater management measures, the maintenance

actions, the access and disturbance, the disposal methods, the location of disposal, the method to empty a basin, the method to dredge the basin, the pollutants in the basin, the damages to the basin, and the method to repair the basin.

Check Maintenance Guidance in NJDEP Stormwater Management Website for details and links to the relevant permits and program areas (http://www.njstormwater.org).

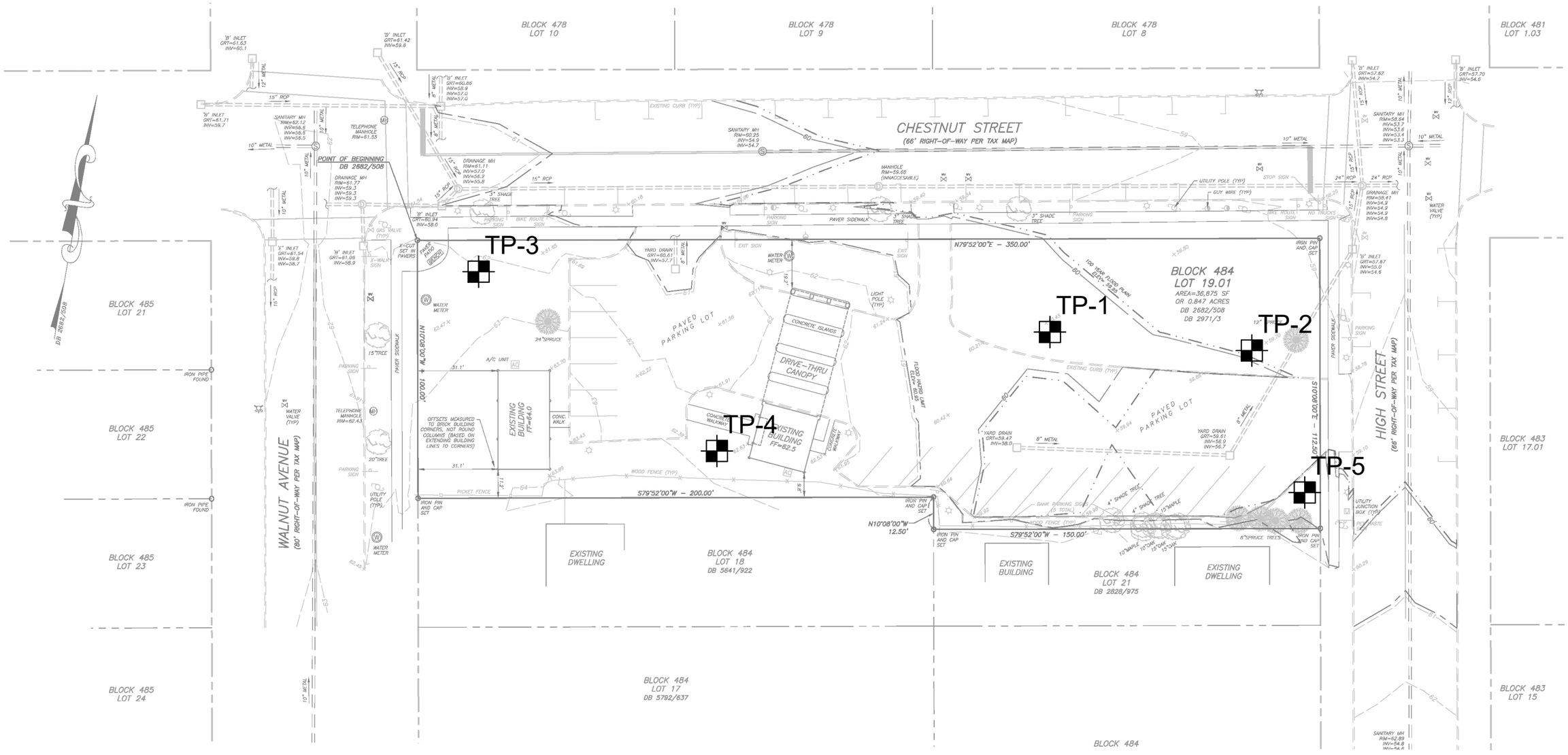
Safety Regulations and Requirements

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), all local ordinances and state and federal regulations regarding occupational safety should be included in this Maintenance Plan.

Devices/Tools/Equipment Operation and Maintenance Manual and Warranties

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), maintenance, repair, and replacement instructions for specialized, proprietary, and nonstandard equipment, tools, supplies, manufacturers' product instructions, and user manuals should be included in this Maintenance Plan.

Attach Documents Here



LEGEND:

TEST PIT LOCATION

FRENCH & PARRELLO ASSOCIATES

Corporate Office:
1800 Route 34, Suite 101
Wall, New Jersey 07719
732.312.9800

FPAengineers.com

New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

TEST PIT LOCATION PLAN
FOR
201 WALNUT AVENUE
CRANFORD TOWNSHIP
UNION COUNTY, NEW JERSEY

DATE:	SCALE:	DRAWING #
JANUARY 2021	APPROX. 1"=40'	1
DRAWN BY: DMR	PROJECT NUMBER: 16377.001	

O:\16K\16300\16377 – 201 Walnut Ave\16377.001 – 201 Walnut Ave\CADD\GEO\16377.001 – TPLP.dwg 11x17

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-1
DATE: 1/27/2021

GROUND ELEV.: +60.5'±
DEPTH OF WATER: N/A
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: N/A

DEPTH	DESCRIPTION
0 – 27"	Brown & Dark Grey-Brown mf **SAND**, some^{+} Silt. (fill w/ few pieces of asphalt & concrete – approx. 15% by volume)
27 – 42"	Grey **SILT & CLAY**, little^{-} f Sand.

END OF TEST PIT AT @ 3.5'*

NOTES: ***Test Pit filled with water to depth of 24" below ground surface. Moved test pit 10 east with similar water level in test pit. Test Pit abandoned.

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:** Esposito Construction
TEST PIT OBSERVER: D. Rohmeyer, PE	**EXCAVATOR:** Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-2
DATE: 1/27/2021

GROUND ELEV.: +60'±
DEPTH OF WATER: 96"*±
GROUNDWATER ELEV.: +52'±
DEPTH TO EST. SEASONAL HIGH WATER: 89"±

DEPTH	DESCRIPTION
0 – 31"	Dark Grey-Brown cmf^{+} **SAND**, and^{-} Silt, some^{-} c^{+}mf Gravel. (fill w/ many pieces of concrete, brick & metal - approx. 30% by volume)
31 – 65"	Tan-Grey **CLAY & SILT**, trace^{+} f Sand, trace f Gravel.
65 – 84"	Grey & Tan-Brown f **SAND**, and^{-} Silt. (w/ many pieces of cemented sands)
84 – 89"	Tan-Brown **Clayey SILT**, some mf^{+} Sand.
89 – 126"	Red-Brown c^{+}mf **SAND**, some^{+} cmf Gravel, little^{+} Silt. (w/ many cobbles)

END OF TEST PIT AT @ 10.5'

NOTES: ***Very Minor Seepage @ 66"**

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:** Esposito Construction
TEST PIT OBSERVER: D. Rohmeyer, PE	**EXCAVATOR:** Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-3
DATE: 1/27/2021

GROUND ELEV.: +62'±
DEPTH OF WATER: 74"±
GROUNDWATER ELEV.: +55.8'±
DEPTH TO EST. SEASONAL HIGH WATER: 69"±

DEPTH	DESCRIPTION
0 – 12"	Brown mf^{+} **SAND**, and^{+} Silt & Clay, trace f Gravel. (fill w/ few pieces of plastic)
12 – 41"	Brown & Grey-Brown **SILT & CLAY**, trace^{+} f Sand.
41 – 69"	Tan-Brown & Grey **SILT**, some f Sand. (w/ many pieces of cemented sands & few cobbles)
69 – 108"	Red-Brown cmf **SAND**, some^{+} cm^{+}f Gravel, little Silt. (w/ many cobbles)
108 – 122"	Red-Brown c^{+}mf **GRAVEL**, some^{-} cmf Sand, little Silt.
122 – 126"	Red-Brown highly weathered, highly fractured **SHALE**.

END OF TEST PIT AT @ 10.5'

NOTES:

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:** Esposito Construction
TEST PIT OBSERVER: D. Rohmeyer, PE	**EXCAVATOR:** Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-4
DATE: 1/27/2021

GROUND ELEV.: +63'±
DEPTH OF WATER: 66"
GROUNDWATER ELEV.: +57.5'±
DEPTH TO EST. SEASONAL HIGH WATER: 57"

DEPTH	DESCRIPTION
0 – 16"	Brown mf^{+} **SAND**, and^{-} Silt, little^{-} mf^{+} Gravel. (w/ few roots)
16 – 36"	Light Brown **Clayey SILT**, little f Sand, trace^{+} cmf Gravel. (w/ few cobbles)
36 – 57"	Tan-Brown **SILT**, some^{-} f Sand. (w/ few pieces of cemented sands)
57 – 104"	Red-Brown cmf^{+} **SAND**, some^{+} m^{+}f Gravel, little^{+} Silt. (w/ many cobbles)
104 – 120"	Red-Brown highly weathered, highly fractured **SHALE**.

END OF TEST PIT AT @ 10' *(Excavator Refusal)*

NOTES:

SOILS ENGINEER: J. Tierney, PE
TEST PIT OBSERVER: D. Rohmeyer, PE

CONTRACTOR: Esposito Construction
EXCAVATOR: Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-5
DATE: 1/27/2021

GROUND ELEV.: +60'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: 80"

DEPTH	DESCRIPTION
0 – 14"	Dark Brown **Clayey SILT**, some^{-} cm^{+}f Sand, little^{+} c^{+}mf Gravel. (fill w/ many pieces of concrete slab, cinder block, asphalt & roots – approx. 40% by volume)
14 – 36"	Light Brown **SILT & CLAY**, little^{-} f Sand.
36 – 64"	Brown **Clayey SILT**, some^{+} mf Sand, little^{+} mf^{+} Gravel.
64 – 80"	Tan-Brown & Red-Brown **SILT**, some^{-} f Sand, trace^{+} mf Gravel.
80 – 90"	Red-Brown cmf^{+} **SAND**, some^{-} Silt, little cmf Gravel.

END OF TEST PIT AT @ 7.5'*

NOTES: *Test pit ended @ 7.5' due to limited access.

SOILS ENGINEER: J. Tierney, PE
TEST PIT OBSERVER: D. Rohmeyer, PE

CONTRACTOR: Esposito Construction
EXCAVATOR: Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

Part II- Field Manuals

Attachment of Field Manuals
for Stormwater Management Measures on this Site

As per N.J.A.C. 7:8-5.8(b)&(e), preventative and corrective maintenance shall be performed to maintain the function of stormwater management measures, including repair or replacement of the structure; removal of sediment, debris or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; repair or replacement of non-vegetated linings, and removal of rodent/wildlife and repair/restoration to damaged affected areas caused by them.

Each Field Manual attached to this Maintenance Plan is a separate document pertaining to one specific stormwater management measure, and should be used by inspections and maintenance crews in order to carry out the maintenance work required by N.J.A.C. 7:8-5.8(e).

Field Manual for Basin #1
Field Manual for Porous Pavement System, PPS #1

Basin #1
on the Location Map

Development Name: 201 Walnut Avenue

Township, County: Cranford, NJ 07016

Location of Basin: E: 546,568; N: 662,964

Location Description: Under site driveway, 40' from entrance

Location Map

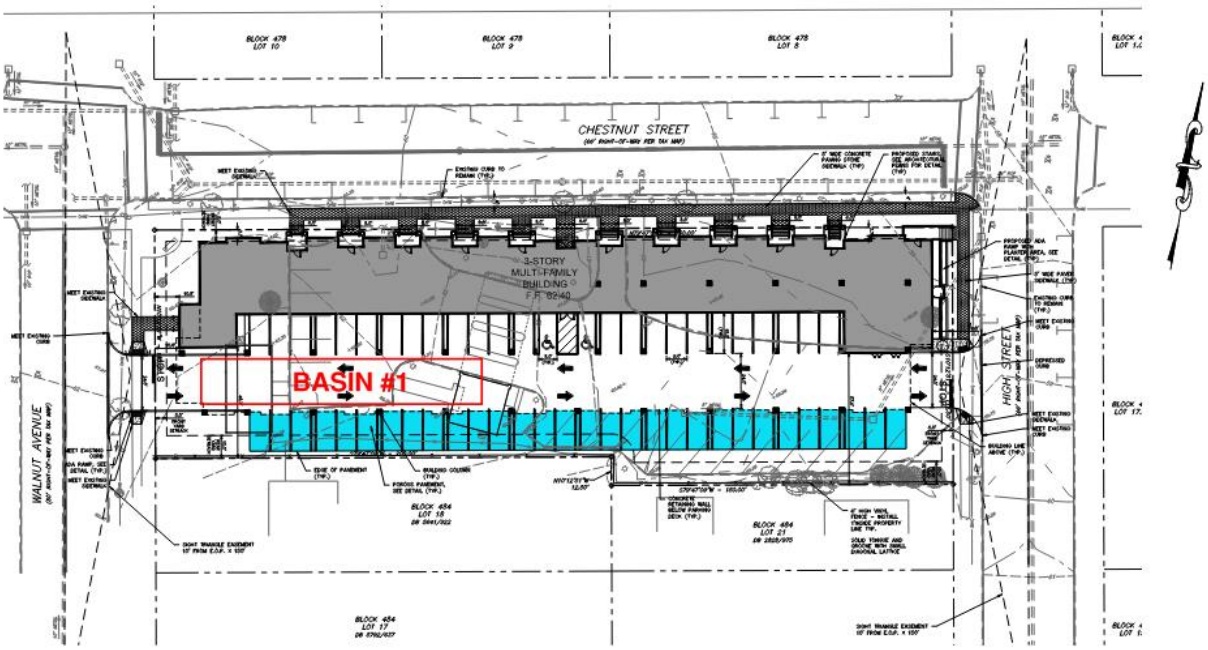


Table of Contents

Basin #1 Overview

Functionality

A detention basin is a stormwater management facility which provides temporary storage of stormwater runoff.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Basin

A detention basin is a type of ***dry*** basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

Basic Design Information

Hydrology Design Targets

1. The design drain time for the water quality storm is:
   ___Less than 5___ hours.
2. The seasonal high water table of the basin was estimated to be elevation 57.5 during test pits conducted on_1 / 27 / 2021_.
3. The overflow from this basin will be discharged to the existing storm sewer system.

Hydraulic Design Targets

1. The bottom of the basin is at elevation 58.5.

Critical Maintenance Features

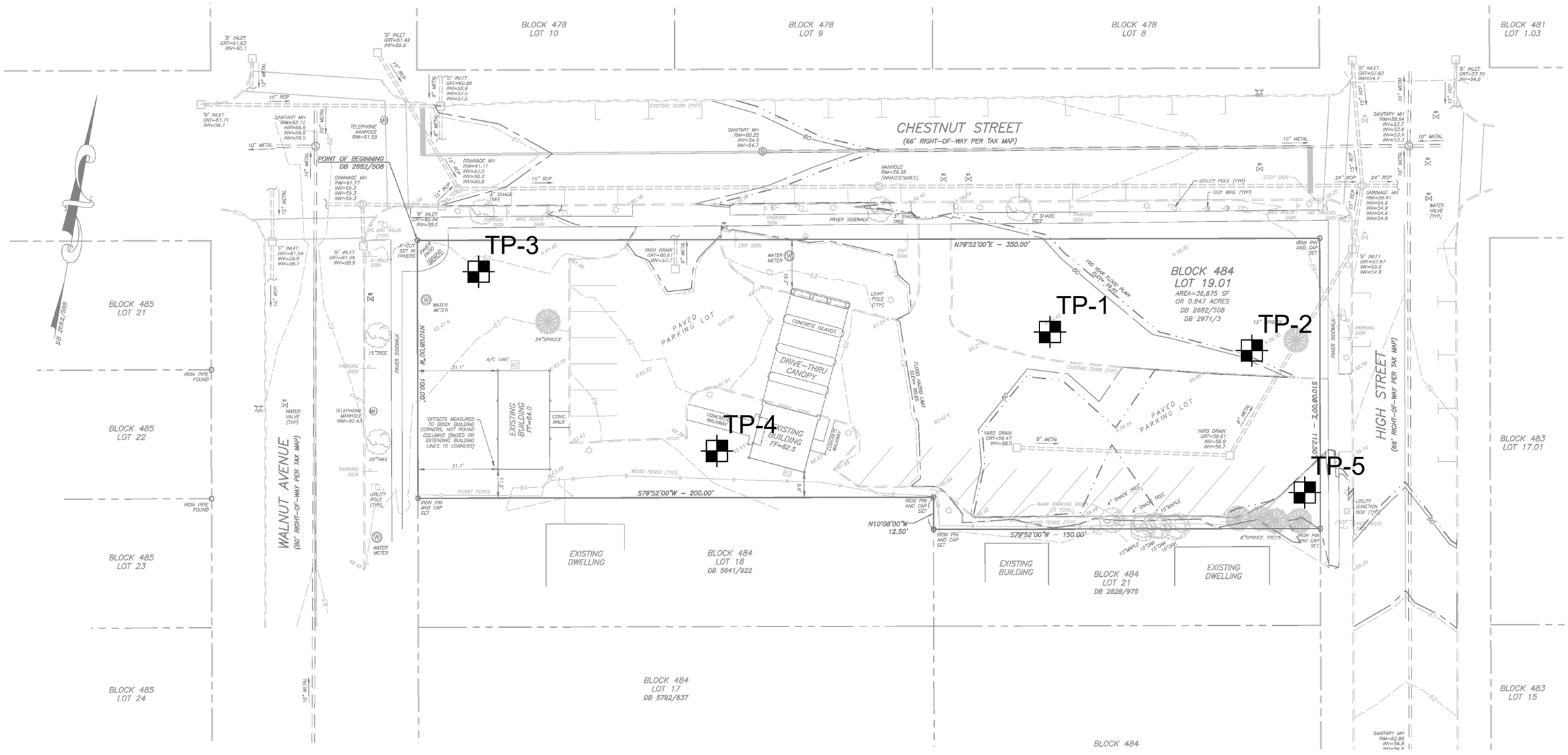
Collected sediment, if any, shall be removed with vacuum truck and disposed of.

Reference Documents

Documents to be placed in this field manual should include the following:

- As-built Drawings with Drainage Plans
- Soil Boring Logs

Attach Reference Documents Here



LEGEND:

TEST PIT LOCATION

FRENCH & PARRELLO ASSOCIATES

Corporate Office:
1800 Route 34, Suite 101
Wall, New Jersey 07719
732.312.9800

FPAengineers.com

New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

TEST PIT LOCATION PLAN
FOR
201 WALNUT AVENUE
CRANFORD TOWNSHIP
UNION COUNTY, NEW JERSEY

DATE:	SCALE:	DRAWING #
JANUARY 2021	APPROX. 1"=40'	1
DRAWN BY: DMR	PROJECT NUMBER: 16377.001	

O:\16K\16300\16377 – 201 Walnut Ave\16377.001 – 201 Walnut Ave\CADD\GEO\16377.001 – TPLP.dwg 11x17

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-1
DATE: 1/27/2021

GROUND ELEV.: +60.5'±
DEPTH OF WATER: N/A
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: N/A

DEPTH	DESCRIPTION
0 – 27"	Brown & Dark Grey-Brown mf **SAND**, some^{+} Silt. (fill w/ few pieces of asphalt & concrete – approx. 15% by volume)
27 – 42"	Grey **SILT & CLAY**, little^{-} f Sand.

END OF TEST PIT AT @ 3.5'*

NOTES: ***Test Pit filled with water to depth of 24" below ground surface. Moved test pit 10 east with similar water level in test pit. Test Pit abandoned.

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:** Esposito Construction
TEST PIT OBSERVER: D. Rohmeyer, PE	**EXCAVATOR:** Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-2
DATE: 1/27/2021

GROUND ELEV.: +60'±
DEPTH OF WATER: 96"*±
GROUNDWATER ELEV.: +52'±
DEPTH TO EST. SEASONAL HIGH WATER: 89"±

DEPTH	DESCRIPTION
0 – 31"	Dark Grey-Brown cmf^{+} **SAND**, and^{-} Silt, some^{-} c^{+}mf Gravel. (fill w/ many pieces of concrete, brick & metal - approx. 30% by volume)
31 – 65"	Tan-Grey **CLAY & SILT**, trace^{+} f Sand, trace f Gravel.
65 – 84"	Grey & Tan-Brown f **SAND**, and^{-} Silt. (w/ many pieces of cemented sands)
84 – 89"	Tan-Brown **Clayey SILT**, some mf^{+} Sand.
89 – 126"	Red-Brown c^{+}mf **SAND**, some^{+} cmf Gravel, little^{+} Silt. (w/ many cobbles)

END OF TEST PIT AT @ 10.5'

NOTES: ***Very Minor Seepage @ 66"**

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:** Esposito Construction
TEST PIT OBSERVER: D. Rohmeyer, PE	**EXCAVATOR:** Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-3
DATE: 1/27/2021

GROUND ELEV.: +62'±
DEPTH OF WATER: 74"±
GROUNDWATER ELEV.: +55.8'±
DEPTH TO EST. SEASONAL HIGH WATER: 69"±

DEPTH	DESCRIPTION
0 – 12"	Brown mf^{+} **SAND**, and^{+} Silt & Clay, trace f Gravel. (fill w/ few pieces of plastic)
12 – 41"	Brown & Grey-Brown **SILT & CLAY**, trace^{+} f Sand.
41 – 69"	Tan-Brown & Grey **SILT**, some f Sand. (w/ many pieces of cemented sands & few cobbles)
69 – 108"	Red-Brown cmf **SAND**, some^{+} cm^{+}f Gravel, little Silt. (w/ many cobbles)
108 – 122"	Red-Brown c^{+}mf **GRAVEL**, some^{-} cmf Sand, little Silt.
122 – 126"	Red-Brown highly weathered, highly fractured **SHALE**.

END OF TEST PIT AT @ 10.5'

NOTES:

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:** Esposito Construction
TEST PIT OBSERVER: D. Rohmeyer, PE	**EXCAVATOR:** Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-4
DATE: 1/27/2021

GROUND ELEV.: +63'±
DEPTH OF WATER: 66"
GROUNDWATER ELEV.: +57.5'±
DEPTH TO EST. SEASONAL HIGH WATER: 57"

DEPTH	DESCRIPTION
0 – 16"	Brown mf^{+} **SAND**, and^{-} Silt, little^{-} mf^{+} Gravel. (w/ few roots)
16 – 36"	Light Brown **Clayey SILT**, little f Sand, trace^{+} cmf Gravel. (w/ few cobbles)
36 – 57"	Tan-Brown **SILT**, some^{-} f Sand. (w/ few pieces of cemented sands)
57 – 104"	Red-Brown cmf^{+} **SAND**, some^{+} m^{+}f Gravel, little^{+} Silt. (w/ many cobbles)
104 – 120"	Red-Brown highly weathered, highly fractured **SHALE**.

END OF TEST PIT AT @ 10' *(Excavator Refusal)*

NOTES:

SOILS ENGINEER: J. Tierney, PE
TEST PIT OBSERVER: D. Rohmeyer, PE

CONTRACTOR: Esposito Construction
EXCAVATOR: Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-5
DATE: 1/27/2021

GROUND ELEV.: +60'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: 80"

DEPTH	DESCRIPTION
0 – 14"	Dark Brown **Clayey SILT**, some^{-} cm^{+}f Sand, little^{+} c^{+}mf Gravel. (fill w/ many pieces of concrete slab, cinder block, asphalt & roots – approx. 40% by volume)
14 – 36"	Light Brown **SILT & CLAY**, little^{-} f Sand.
36 – 64"	Brown **Clayey SILT**, some^{+} mf Sand, little^{+} mf^{+} Gravel.
64 – 80"	Tan-Brown & Red-Brown **SILT**, some^{-} f Sand, trace^{+} mf Gravel.
80 – 90"	Red-Brown cmf^{+} **SAND**, some^{-} Silt, little cmf Gravel.

END OF TEST PIT AT @ 7.5'*

NOTES: *Test pit ended @ 7.5' due to limited access.

SOILS ENGINEER: J. Tierney, PE
TEST PIT OBSERVER: D. Rohmeyer, PE

CONTRACTOR: Esposito Construction
EXCAVATOR: Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

Inspection Checklist / Maintenance Actions
Basin #1

Checklist (circle one)**:** Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date:** _____

Date of most recent rain event: _____

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Basin Through Inspection ports	1	Standing water is present after the design drain time The observed drain time is approximately _____ hours.	Y__ N__	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. Remove any sediment buildup with vacuum truck. Work Order # _____
	2	Excessive sediment, silt, or trash accumulation within distribution pipes	Y__ N__	Clean pretreatment system Remove silt, sediment, and trash Work Order # _____
Note:				

Follow Up Items (Component No. / Inspection Item No.):

_____

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

_____ _____ _____

Inspector Name **Signature** **Date**

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No._____, Inspection Item No._____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal **Sediment removal should take place when the basin is thoroughly dry**		
Other		

Debris, sediment, and trash are handled by _____ to disposal site _____. (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:_____/_____ **Date:** _____
(name/ signature)

Supervisor:_____/_____ **Date:** _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order # _____ Date Issued _____**

2. **Issue to be resolved:**

3. The issue was from **Corresponding Checklist No. _____, Component No. ____ _____, Inspection Item No._____.**

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**
   _____

6. **Special requirements**
   - Time of the season or weather condition:_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ Date _____
(name/signature)

Verification of completion by _____/_____ Date _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

Porous Paving System
PPS #1 on the Location Map

Development Name: 201 Walnut Avenue

Township, County: Cranford, NJ 07016

Location of System: E: 546,675; N: 662,962

Location Description: Adjacent to Basin #1

Location Map

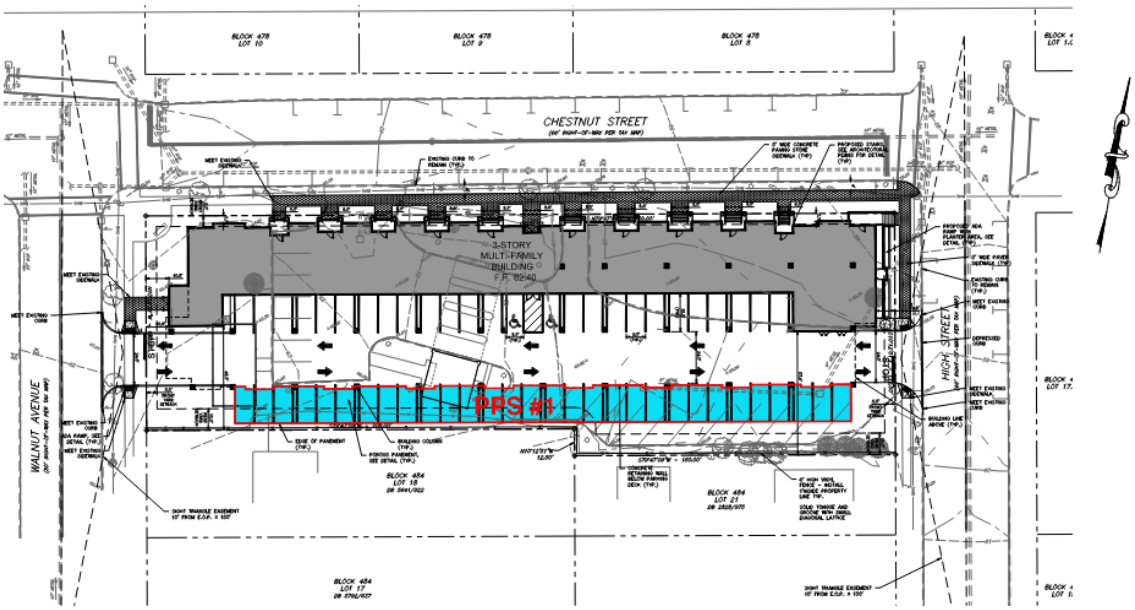


Table of Contents

Porous Pavement System Overview

Functionality

Porous paving systems are paved areas that produce less stormwater runoff than areas paved with conventional paving. This reduction is achieved primarily through the infiltration of a greater portion of the rain falling on the area than would occur with conventional paving. This increased infiltration occurs either through the paving material itself or through void spaces between individual paving blocks known as pavers.

Porous paving systems are divided into two general types. Each type depends primarily upon the nature of the Porous paving surface course and the presence or absence of a runoff storage bed beneath the surface course. Porous paving and permeable paver with storage bed systems treat the stormwater quality design storm runoff through storage and infiltration. Therefore, these systems have adopted TSS removal rates similar to infiltration structures. The adopted TSS removal rate for each type of Porous paving system is from 80%.

Porous paving systems are used to reduce runoff rates and volumes from paved, on-grade surfaces such as patios, walkways, driveways, fire lanes, and parking spaces. Porous paving systems with runoff storage beds achieve these reductions through storage of runoff and eventual infiltration into the subgrade soils. Through this infiltration process, these types of Porous paving systems also achieve stormwater quality requirements.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Stormwater Management Measure

The Porous pavement system shall fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of the porous pavement failure. It may also contribute to mosquito breeding and other health and safety issues. At no time shall there be ponding on the surface of the pavement.

Basic Design Information

Hydrology Design Targets

1. The system is porous pavement with storage bed.
2. The design drain time is approximately 2 hours.
3. The elevation of the seasonal high water table of this pavement area was observed on 01/27/21 and it was 1.9 feet below the pavement bottom surface, at EL. 57.5 feet.
4. The TSS removal rate is 80%.

Hydraulic Design Targets

1. This system is designed to infiltrate the runoff from the Water Quality Design Storm, which generates 417 cubic feet of runoff. The peak flow entering the system is 0.41 cubic feet per second.

System Configuration Targets

1. The system has no pretreatment.
2. The depth of uniformly graded coarse aggregate in the storage bed is 6 inches.

Critical Maintenance Features

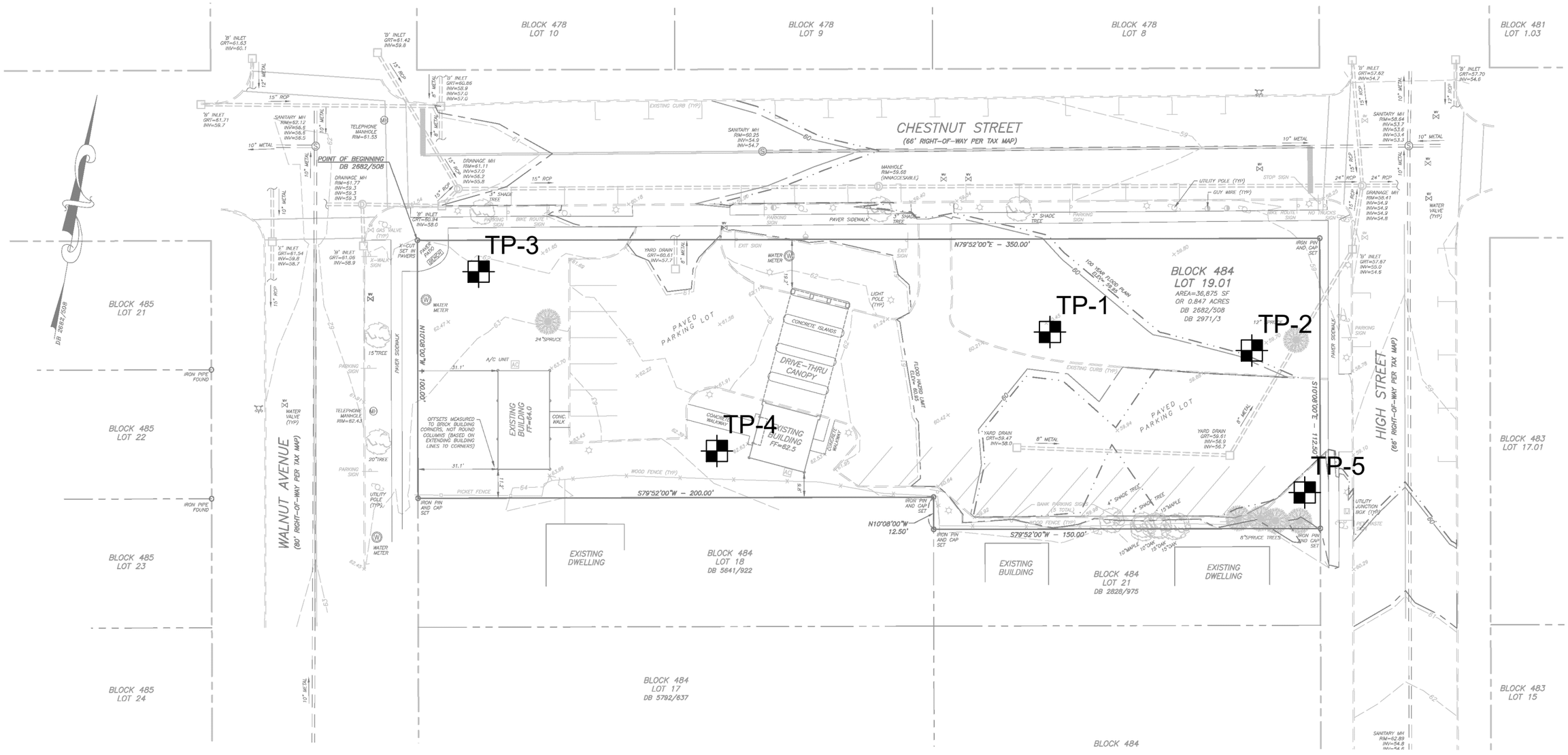
1. Avoid sand or silt onto the porous pavement area.
2. Sweep and vacuum the porous pavement area often to prevent clog.
3. Do not apply sealant to cracks or entire surface.

Reference Documents

Documents to be placed in this field manual should include the following:

- As-built Drawings with Drainage Plans
- Manufacturer's Operation and Maintenance Manual
- Soil Boring Logs

Attach Reference Documents Here



LEGEND:

TEST PIT LOCATION

FRENCH & PARRELLO ASSOCIATES

Corporate Office:
1800 Route 34, Suite 101
Wall, New Jersey 07719
732.312.9800

FPAengineers.com

New Jersey ▲ New York ▲ Pennsylvania ▲ Georgia

TEST PIT LOCATION PLAN
FOR
201 WALNUT AVENUE
CRANFORD TOWNSHIP
UNION COUNTY, NEW JERSEY

DATE:	SCALE:	DRAWING #
JANUARY 2021	APPROX. 1"=40'	1
DRAWN BY: DMR	PROJECT NUMBER: 16377.001	

O:\16K\16300\16377 – 201 Walnut Ave\16377.001 – 201 Walnut Ave\CADD\GEO\16377.001 – TPLP.dwg 11x17

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-1
DATE: 1/27/2021

GROUND ELEV.: +60.5'±
DEPTH OF WATER: N/A
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: N/A

DEPTH	DESCRIPTION
0 – 27"	Brown & Dark Grey-Brown mf **SAND**, some^{+} Silt. (fill w/ few pieces of asphalt & concrete – approx. 15% by volume)
27 – 42"	Grey **SILT & CLAY**, little^{-} f Sand.

END OF TEST PIT AT @ 3.5'*

NOTES: ***Test Pit filled with water to depth of 24" below ground surface. Moved test pit 10 east with similar water level in test pit. Test Pit abandoned.

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:** Esposito Construction
TEST PIT OBSERVER: D. Rohmeyer, PE	**EXCAVATOR:** Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-2
DATE: 1/27/2021

GROUND ELEV.: +60'±
DEPTH OF WATER: 96"*±
GROUNDWATER ELEV.: +52'±
DEPTH TO EST. SEASONAL HIGH WATER: 89"±

DEPTH	DESCRIPTION
0 – 31"	Dark Grey-Brown cmf^{+} **SAND**, and^{-} Silt, some^{-} c^{+}mf Gravel. (fill w/ many pieces of concrete, brick & metal - approx. 30% by volume)
31 – 65"	Tan-Grey **CLAY & SILT**, trace^{+} f Sand, trace f Gravel.
65 – 84"	Grey & Tan-Brown f **SAND**, and^{-} Silt. (w/ many pieces of cemented sands)
84 – 89"	Tan-Brown **Clayey SILT**, some mf^{+} Sand.
89 – 126"	Red-Brown c^{+}mf **SAND**, some^{+} cmf Gravel, little^{+} Silt. (w/ many cobbles)

END OF TEST PIT AT @ 10.5'

NOTES: ***Very Minor Seepage @ 66"**

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:** Esposito Construction
TEST PIT OBSERVER: D. Rohmeyer, PE	**EXCAVATOR:** Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-3
DATE: 1/27/2021

GROUND ELEV.: +62'±
DEPTH OF WATER: 74"±
GROUNDWATER ELEV.: +55.8'±
DEPTH TO EST. SEASONAL HIGH WATER: 69"±

DEPTH	DESCRIPTION
0 – 12"	Brown mf^{+} **SAND**, and^{+} Silt & Clay, trace f Gravel. (fill w/ few pieces of plastic)
12 – 41"	Brown & Grey-Brown **SILT & CLAY**, trace^{+} f Sand.
41 – 69"	Tan-Brown & Grey **SILT**, some f Sand. (w/ many pieces of cemented sands & few cobbles)
69 – 108"	Red-Brown cmf **SAND**, some^{+} cm^{+}f Gravel, little Silt. (w/ many cobbles)
108 – 122"	Red-Brown c^{+}mf **GRAVEL**, some^{-} cmf Sand, little Silt.
122 – 126"	Red-Brown highly weathered, highly fractured **SHALE**.

END OF TEST PIT AT @ 10.5'

NOTES:

SOILS ENGINEER: J. Tierney, PE	**CONTRACTOR:** Esposito Construction
TEST PIT OBSERVER: D. Rohmeyer, PE	**EXCAVATOR:** Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-4
DATE: 1/27/2021

GROUND ELEV.: +63'±
DEPTH OF WATER: 66"
GROUNDWATER ELEV.: +57.5'±
DEPTH TO EST. SEASONAL HIGH WATER: 57"

DEPTH	DESCRIPTION
0 – 16"	Brown mf^{+} **SAND**, and^{-} Silt, little^{-} mf^{+} Gravel. (w/ few roots)
16 – 36"	Light Brown **Clayey SILT**, little f Sand, trace^{+} cmf Gravel. (w/ few cobbles)
36 – 57"	Tan-Brown **SILT**, some^{-} f Sand. (w/ few pieces of cemented sands)
57 – 104"	Red-Brown cmf^{+} **SAND**, some^{+} m^{+}f Gravel, little^{+} Silt. (w/ many cobbles)
104 – 120"	Red-Brown highly weathered, highly fractured **SHALE**.

END OF TEST PIT AT @ 10' *(Excavator Refusal)*

NOTES:

SOILS ENGINEER: J. Tierney, PE
TEST PIT OBSERVER: D. Rohmeyer, PE

CONTRACTOR: Esposito Construction
EXCAVATOR: Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

TEST PIT LOG

201 WALNUT AVENUE
CRANFORD TOWNSHIP, UNION COUNTY, NEW JERSEY (FPA JOB NO. 16377.001)

TEST PIT NO.: TP-5
DATE: 1/27/2021

GROUND ELEV.: +60'±
DEPTH OF WATER: Dry
GROUNDWATER ELEV.: N/A
DEPTH TO EST. SEASONAL HIGH WATER: 80"

DEPTH	DESCRIPTION
0 – 14"	Dark Brown **Clayey SILT**, some^{-} cm^{+}f Sand, little^{+} c^{+}mf Gravel. (fill w/ many pieces of concrete slab, cinder block, asphalt & roots – approx. 40% by volume)
14 – 36"	Light Brown **SILT & CLAY**, little^{-} f Sand.
36 – 64"	Brown **Clayey SILT**, some^{+} mf Sand, little^{+} mf^{+} Gravel.
64 – 80"	Tan-Brown & Red-Brown **SILT**, some^{-} f Sand, trace^{+} mf Gravel.
80 – 90"	Red-Brown cmf^{+} **SAND**, some^{-} Silt, little cmf Gravel.

END OF TEST PIT AT @ 7.5'*

NOTES: *Test pit ended @ 7.5' due to limited access.

SOILS ENGINEER: J. Tierney, PE
TEST PIT OBSERVER: D. Rohmeyer, PE

CONTRACTOR: Esposito Construction
EXCAVATOR: Deere 50G Mini Excavator

The information shown hereon indicates the subsurface conditions encountered at the specified test pit location on the date(s) of excavation. Subsurface conditions are likely to vary across the project site. Interpretation of the subsurface data shall be at the discretion of the user.

Inspection Checklist / Maintenance Actions
Porous Pavement System

Checklist (circle one)**:** Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date:** _____

Date of most recent rain event: _____

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Pavement Surface (Porous Pavement)	1	Standing water is present after the design drain time The observed drain time is approximately _____ hours. Excessive sediment or mud accumulation on top of the pavement	Y__ N__	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. If excessive sediment is present, the system may be clogged - Sweep the surface - Power wash (at 45 degree angle to the top) - Vacuum the surface - Excavate to inspect the storage bed for clogging, replace the storage bed material if it is severely clogged - Check the permeability rate of the subsoil Work Order # _____
	2	Cracking, subsidence, spalling, or other damage to the pavement	Y__ N__	Repair according to the manufacturer's procedures and material. See Reference Documents section. Work Order # _____
	3	Weeds or other vegetation on the porous pavement	Y__ N__	Remove the vegetation
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
B Outlet	1	Clogged overflow outlet	Y__ N__	Clear and remove sediment
	2	Discharge pipe apron is eroded or scoured	Y__ N__	Restabilize the discharge riprap apron Work Order #_____
Note:				

Follow Up Items (Component No. / Inspection Item No.):

_____

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

_____	_____	_____
Inspector Name	**Signature**	**Date**

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No._____, Inspection Item No._____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal	A – Pavement Surface (Porous Pavement)	
	B – Outlet	

Debris, sediment, and trash are handled (onsite / by _____ (contractor name) to disposal site _____). (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:_____/_____ **Date:** _____
(name/ signature)

Supervisor:_____/_____ **Date:** _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order # _____ Date Issued _____**

2. **Issue to be resolved:**

3. The issue was from **Corresponding Checklist No. _____, Component No._, Inspection Item No. _____.**

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**
   _____

6. **Special requirements**
   - Time of the season or weather condition:_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ Date _____
(name/signature)

Verification of completion by _____/_____ Date _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

Maintenance Logs and Inspection Records

As per N.J.A.C. 7:8-5.8(e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure(s), including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

The responsible party shall maintain a record of all maintenance actions performed, including:

- Inspection checklists from each performed inspection
- Preventative maintenance logs
- Corrective maintenance logs, including work orders
- Other maintenance records

Inspection Checklist / Maintenance Actions
Basin #1

Checklist (circle one)**:** Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date:** _____

Date of most recent rain event: _____

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Basin Through Inspection ports	1	Standing water is present after the design drain time The observed drain time is approximately _____ hours.	Y__ N__	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. Remove any sediment buildup with vacuum truck. Work Order # _____
	2	Excessive sediment, silt, or trash accumulation within distribution pipes	Y__ N__	Clean pretreatment system Remove silt, sediment, and trash Work Order # _____
Note:				

Follow Up Items (Component No. / Inspection Item No.):

_____

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

_____ _____ _____

Inspector Name **Signature** **Date**

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No._____, Inspection Item No._____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal **Sediment removal should take place when the basin is thoroughly dry**		
Other		

Debris, sediment, and trash are handled by _____ to disposal site _____. (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:_____/_____ **Date:** _____
(name/ signature)

Supervisor:_____/_____ **Date:** _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order # _____ Date Issued _____**

2. **Issue to be resolved:**

3. The issue was from **Corresponding Checklist No. _____, Component No. ____ _____, Inspection Item No._____.**

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**
   _____

6. **Special requirements**
   - Time of the season or weather condition:_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ Date _____
(name/signature)

Verification of completion by _____/_____ Date _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

Inspection Checklist / Maintenance Actions
Porous Pavement System

Checklist (circle one)**:** Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date:** _____

Date of most recent rain event: _____

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
A Pavement Surface (Porous Pavement)	1	Standing water is present after the design drain time The observed drain time is approximately _____ hours. Excessive sediment or mud accumulation on top of the pavement	Y__ N__	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. If excessive sediment is present, the system may be clogged - Sweep the surface - Power wash (at 45 degree angle to the top) - Vacuum the surface - Excavate to inspect the storage bed for clogging, replace the storage bed material if it is severely clogged - Check the permeability rate of the subsoil Work Order # _____
	2	Cracking, subsidence, spalling, or other damage to the pavement	Y__ N__	Repair according to the manufacturer's procedures and material. See Reference Documents section. Work Order # _____
	3	Weeds or other vegetation on the porous pavement	Y__ N__	Remove the vegetation
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
B Outlet	1	Clogged overflow outlet	Y__ N__	Clear and remove sediment
	2	Discharge pipe apron is eroded or scoured	Y__ N__	Restabilize the discharge riprap apron Work Order #_____
Note:				

Follow Up Items (Component No. / Inspection Item No.):

_____

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

_____	_____	_____
Inspector Name	**Signature**	**Date**

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No._____, Inspection Item No._____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal	A – Pavement Surface (Porous Pavement)	
	B – Outlet	

Debris, sediment, and trash are handled (onsite / by _____ (contractor name) to disposal site _____). (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:_____/_____ **Date:** _____
(name/ signature)

Supervisor:_____/_____ **Date:** _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order # _____ Date Issued _____**

2. **Issue to be resolved:**

3. The issue was from **Corresponding Checklist No. _____, Component No._, Inspection Item No. _____.**

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**
   _____

6. **Special requirements**
   - Time of the season or weather condition:_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ Date _____
(name/signature)

Verification of completion by _____/_____ Date _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.