Stormwater Management Measures
Maintenance Plan & Field Manuals

Development Name: Grove Street Developers LLC

Address: _251 Grove Avenue

Block(s) / Lot(s): _Block 1201 / Lot 12

Township, County: _Township of Verona, Essex County

DEC # 0922 25-03663

Party Responsible for Maintenance:

Grove Street Developers LLC

Address: 80 South Jefferson Road, Suite 202,
Whippany, NJ 07981

Contact Person(s): _____Giuseppi Forgione_____ Phone: __973-451-0111__

Prepared by: Daniel T. Sehnal, PE Date: October 2026

This plan is recorded in

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

Last Revised on ____/____/_____

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Part II- Field Manuals and Maintenance Records

Field Manual for Basin 2.1 – Bioretention Basin
Field Manual for Basin 2.2 – Bioretention Basin

Maintenance Logs and Inspection 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.
Bioretention Basin	Basin #2.1	Eastern portion of site to the rear of Buildings 5 and 6	564909, 732083
Bioretention Basin	Basin #2.2	Southern corner of the site adjacent to the drive aisle between Buildings 4 and 5.	564850, 731941

Location Map

The image below depicts the Overall Site Plan for the proposed development. The two (2) proposed bioretention basins are located within the southeastern portion of the subject site.



No.	Type of Stormwater Management Measure
Bioretention Basin #2.1	Bioretention Basin
Bioretention Basin #2.2	Bioretention Basin

Description of Stormwater Management Measures

Bioretention Basin #2.1

Design storm: Water Quality Design Storm (WQDS) and Township of Verona Retention Storm

- Design Purposes:
    - Water quality and water quantity
    - 1.25 inches in 2 hours
    - Retention Storm: 2.05 inches
- Dimensions: 200′ (Length) x 55′ (Width) x 1.85′ (Depth)

Bioretention Basin #2.2

Design storm: Water Quality Design Storm (WQDS) and Township of Verona Retention Storm

- Design Purposes:
    - Water quality and water quantity
    - WQDS: 1.25 inches in 2 hours
    - Retention Storm: 2.05 inches
- Dimensions: 140′ (Length) x 45′ (Width) x 3.00′ (Depth)

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 via roadways, paths, and ramps, including paths through perimeter vegetation to permanent pools, aquatic benches, and safety ledges to allow for the inspection and control of mosquito breeding; and
- 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

The frequency of the preventative maintenance actions listed here is adopted from Chapter 9, BMP Manual of Structural Stormwater Management Measures. Design engineer and responsible party should adjust the frequency of preventative maintenance actions according to the situations of the stormwater management measures in the development.

Frequency	Preventative Maintenance Actions	Stormwater Measures/ No.
Monthly	• Vegetation mowing and removal in growing season • Removal and disposal of trash and debris	Bioretention Basins (Basin #2.1, Basin #2.2)
Quarterly	• Quarterly inspection • Elimination of potential mosquito breeding habitats • Inspection and sediment removal if accumulation is 6 inches or greater. If less than 6 inches of accumulation, inspection schedule should be modified to be semiannual.	Bioretention Basins (Basin #2.1, Basin #2.2)
Semiannual	• Sediment removal	Bioretention Basins (Basin #2.1, Basin #2.2)
Annual	• Basin Structural Inspection	Bioretention Basin (Basin #2.1, Basin #2.2)
Unscheduled	• Quick inspection after every 1" rain	Bioretention Basins (Basin #2.1, Basin #2.2)

Corrective Maintenance Actions

Depending on many factors, such as the performance of preventative maintenance actions, weather, or unexpected incidents, corrective maintenance requirements may not be precisely

anticipated; however, a list of potential corrective maintenance actions may assist the responsible party in planning and estimating costs in advance.

Potential Corrective Maintenance Actions	Stormwater Management Measures/No.
• Repair/replacement of eroded or damaged outlet protection • Repair/replacement of missing or damaged trash racks • Repair/replacement of outlet pipes or orifices • Revegetation of eroded side slope, basin bottom, etc.	Bioretention Basins (Basin #2.1, Basin #2.2)

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 2.1 – Bioretention Basin
- Basin 2.2 – Bioretention Basin

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. The design engineer has to list the required amount of maintenance personnel, equipment, tools, and supplies necessary to perform the various preventative and corrective maintenance tasks specified in the plan. In addition, the sources of specialized, proprietary, and nonstandard equipment, tools and supplies for specific measures, such as manufactured treatment devices should also be listed.

Maintenance Personnel/Equipment/Tools/Supplies

Personnel/Equipment/Tools Name
General maintenance crew
Geotechnical engineer
Lawn mowers, trimmers, & edgers
Seed and fertilizer spreaders
Hedge trimmers
Lightweight backhoe
Portable pump for dewatering
Shovels
Rakes

Disposal Plan

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), the maintenance plan should include approved disposal and recycling sites and procedures for sediment, trash, debris and other material removed from stormwater management measures during maintenance operations.

Disposal/Recycling Procedures

Any sediment, trash, debris and other material removed from stormwater management measures during maintenance operations shall be removed from the site by the maintenance crew and disposed of in accordance with all local, state and federal laws.

Disposal/Recycling Sites

Any sediment, trash, debris and other material removed from stormwater management measures during maintenance operations will be disposed/recycled as seen fit at an off-site location.

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 design engineer should estimate the cost based on the expected maintenance required for each stormwater management measure. 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
Cost of sediment , trash, and debris removal	$1,000
General cost for routine maintenance	$3,500
General cost – unscheduled maintenance	$1,000
Total cost	$5,500

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 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 Tools, Equipment and Garments

List required safety tools and equipment, their location, the responsible person and the contact number. List first aid tools to be carried to field.

Safety Tools and Equipment	Location	Responsible Person/Contact #
Gloves		Maintenance Crew Supervisor
Safety Glasses		Maintenance Crew Supervisor
Hearing Protection		Maintenance Crew Supervisor

Safety Training

Maintenance providers shall be responsible for ensuring applicable safety training has been completed in accordance with applicable OSHA guidelines.

Safety Procedures

Maintenance providers shall be responsible for performing all work in accordance with applicable OSHA guidelines.

Emergency Procedures

Verona Fire Department	(973) 857-1078
Verona Police Department	(973) 239-5000
Verona Rescue Squad	(973) 857-4760

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

    - Vegetation Care

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

    - Field Manual Usage Training

      Training Material
        - Field Manuals attached to this Maintenance Plan

    - Equipment and Tools Operation Training

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

    - Occupational Safety Training

      Training Material
        - 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

The following applicable documents will be attached prior to finalizing Maintenance Plan:

- **Transfer Agreement**
- **Deed**
- **Drainage Plans**

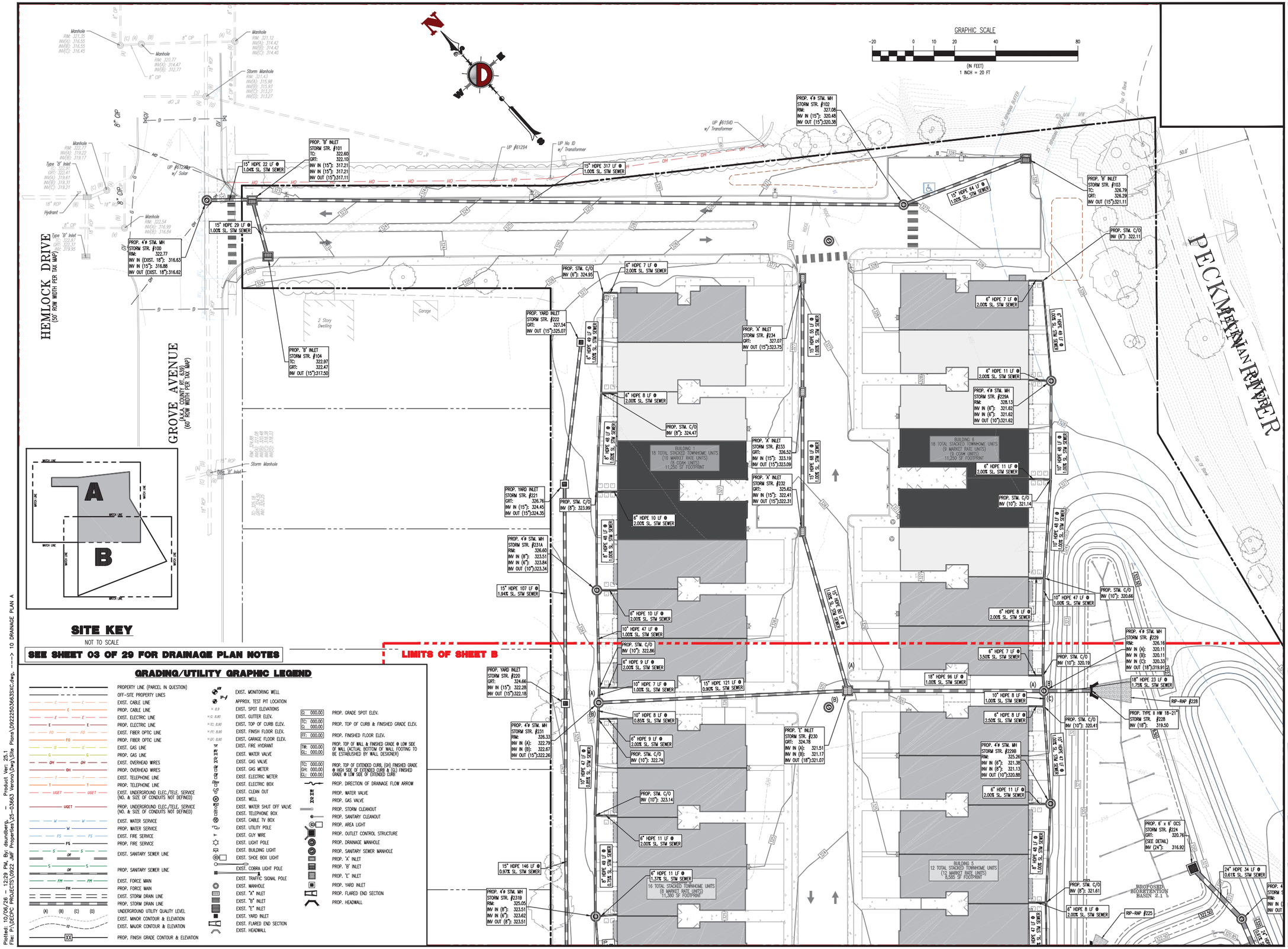
Landscaping Plan for the Stormwater Management Measures

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.

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**
- **Safety Regulations and Requirements**
- **Devices/Tools/Equipment Operation and Maintenance Manual and Warranties**



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REV.	DATE	COMMENTS	BY
4	10/06/26	REVISIONS PER TOWNSHIP COMMENTS	ASD
3	07/29/26	REVISED PER SOCP CONSERVATION DISTRICT COMMENTS	ASD
2	06/02/26	REVISED PER MUNICIPAL SUBMISSION	EMF
1			BT

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

PROJECT: GROVE STREET DEVELOPERS LLC
PROPOSED TOWNHOUSE DEVELOPMENT
BLOCK 2201, LOT 2
211 GROVE AVENUE
TOWNSHIP OF VERONA, ESSEX COUNTY, NEW JERSEY

DRAWN BY: EMF | DESIGNED BY: MGS | DESIGNED BY: DTS | DESIGNED BY: ____

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PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 41985

DANIEL T. SEHNAL
PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 53572

TITLE: DRAINAGE PLAN A

SCALE: (H) 1"=20' (V). DATE: 05/01/2026
PROJECT No: 0922-25-03663
SHEET No: 10 OF 29 Rev. #: 4

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Plotted: 10/06/26 – 12:29 PM By: dsundberg — Product Ver: 25.1
File: P:\JECPC PROJECTS\0922 Jeff Properties\25-03663 Verona\Dwg\Site Plans\D922250366SXC.dwg, ----> 10 DRAINAGE PLAN A

PROP. YARD INLET STORM STR. #220 GRT: 324.66 INV IN (15"): 322.28 INV OUT (15"):322.18

PROP. 4'Ø STM. MH STORM STR. #231 RIM: 326.33 INV IN (A): 322.79 INV IN (B): 322.67 INV OUT (15"):322.26

PROP. STM. C/O INV (10"): 322.86

6" HDPE 9 LF @ 2.00% SL. STM SEWER

10" HDPE 7 LF @ 1.00% SL. STM SEWER

15" HDPE 121 LF @ 0.90% SL. STM SEWER

10" HDPE 8 LF @ 0.85% SL. STM SEWER

6" HDPE 9 LF @ 2.00% SL. STM SEWER

PROP. STM. C/O INV (10"): 322.74

10" HDPE 47 LF @ 0.85% SL. STM SEWER

PROP. 'E' INLET STORM STR. #230 GRT: 324.78 INV IN (A): 321.51 INV IN (B): 321.17 INV OUT (18"):321.07

PROP. STM. C/O INV (10"): 323.14

6" HDPE 11 LF @ 2.00% SL. STM SEWER

15" HDPE 146 LF @ 0.97% SL. STM SEWER

6" HDPE 11 LF @ 1.37% SL. STM SEWER

16 TOTAL STACKED TOWNHOME UNITS (8 MARKET RATE UNITS) 11,360 SF FOOTPRINT

6" HDPE 47 LF @ 0.85% SL. STM SEWER

PROP. 4'Ø STM. MH STORM STR. #231B RIM: 325.05 INV IN (8"): 323.51 INV IN (6"): 323.62 INV OUT (8"): 323.51

PROP. YARD INLET STORM STR. #219 GRT: 323.75 INV IN (15"): 320.76 INV OUT (15"):321.08

PROP. STM. C/O INV (8"): 323.86

6" HDPE 7 LF @ 2.00% SL. STM SEWER

6" HDPE 49 LF @ 0.75% SL. STM SEWER

15" HDPE 71 LF @ 0.92% SL. STM SEWER

PROP. STM. C/O INV (6"): 324.23

6" HDPE 7 LF @ 0.75% SL. STM SEWER

15" HDPE 59 LF @ 0.92% SL. STM SEWER

PROP. 'B' INLET STORM STR. #217 TC: 324.13 GRT: 323.63 INV IN (15"): 319.78 INV OUT (15"):319.68

PROP. 4'Ø STM. MH STORM STR. #218 RIM: 325.23 INV IN (15"): 320.43 INV OUT (15"):320.33

PROP. 'B' INLET STORM STR. #227 TC: 323.22 GRT: 322.72 INV OUT (15"):319.94

6" HDPE 7 LF @ 3.50% SL. STM SEWER

PROP. STM. C/O INV (10"): 320.19

18" HDPE 96 LF @ 1.00% SL. STM SEWER

10" HDPE 8 LF @ 1.00% SL. STM SEWER

6" HDPE 8 LF @ 2.50% SL. STM SEWER

PROP. STM. C/O INV (10"): 320.41

PROP. 4'Ø STM. MH STORM STR. #229B RIM: 325.26 INV IN (6"): 321.38 INV IN (8"): 321.13 INV OUT (10"):320.88

6" HDPE 11 LF @ 2.00% SL. STM SEWER

10" HDPE 47 LF @ 1.00% SL. STM SEWER

BUILDING 5 12 TOTAL STACKED TOWNHOME UNITS (12 MARKET RATE UNITS) 8,585 SF FOOTPRINT

6" HDPE 49 LF @ 1.00% SL. STM SEWER

PROP. STM. C/O INV (8"): 321.61

6" HDPE 8 LF @ 2.00% SL. STM SEWER

6" HDPE 47 LF @ 1.00% SL. STM SEWER

PROP. STM. C/O INV (6"): 322.08

6" HDPE 9 LF @ 2.00% SL. STM SEWER

15" HDPE 88 LF @ 0.30% SL. STM SEWER

PROP. 4'Ø STM. MH STORM STR. #226 RIM: 321.62 INV IN (15"): 319.65 INV OUT (15"):319.65

15" HDPE 226 LF @ 0.30% SL. STM SEWER

PROP. 4" WINGED HEADWALL STORM STR. #216 INV (15"): 319.00

PROP. 4'Ø STM. MH STORM STR. #229B RIM: 325.26 INV IN (A): 320.11 INV IN (B): 320.11 INV IN (C): 320.33 INV OUT (18"):319.91

18" HDPE 23 LF @ 1.75% SL. STM SEWER

RIP-RAP #228

PROP. TYPE II MW 18-21" STORM STR. #228 INV (18"): 319.50

PROP. 6' x 6' OCS STORM STR. #224 GRT: 320.76 (SEE DETAIL) INV (24"): 316.92

24" HDPE 34 LF @ 0.61% SL. STM SEWER

PROP. 4'Ø STM. MH STORM STR. #223 RIM: 321.31 INV IN (24"): 316.71 INV OUT (24"):316.71

PROPOSED BIORETENTION BASIN 2.1

RIP-RAP #225

PROP. TYPE II HW 18-21" STORM STR. #225 INV (15"): 319.50

LIMITS OF SHEET A

30" HDPE 20 LF @ 0.30% SL. STM SEWER

PROP. 4" WINGED HEADWALL STORM STR. #207 INV (30"): 316.27

RIP-RAP #207

RIP-RAP CHUTE #1

RIP-RAP #216

18" HDPE 16 LF @ 0.57% SL. STM SEWER

PROP. 4'Ø STM. MH STORM STR. #208 RIM: 320.01 INV IN (24" HDPE): 316.33 INV IN (B): 316.33 INV IN (C): 316.33 INV OUT (30"):316.33

18" HDPE 14 LF @ 0.30% SL. STM SEWER

PROP. 6' x 6' OCS STORM STR. #209 GRT: 319.77 (SEE DETAIL) INV (18"): 316.42

PROP. 4'Ø STM. MH STORM STR. #210 RIM: 320.01 INV IN (18"): 316.37 INV OUT (18"):316.37

FLOOD STORAGE AREA

PROP. 6' x 6' OCS STORM STR. #211 GRT: 319.77 (SEE DETAIL) INV (18"): 316.42

PROPOSED BIORETENTION BASIN 2.2

18" HDPE 17 LF @ 0.30% SL. STM SEWER

RIP-RAP #200

PROP. 4" WINGED HEADWALL STORM STR. #200 INV (15"): 315.50

15" HDPE 23 LF @ 1.00% SL. STM SEWER

6" HDPE 9 LF @ 1.00% SL. STM SEWER

RIP-RAP #212

15" HDPE 116 LF @ 0.30% SL. STM SEWER

PROP. 4" WINGED HEADWALL STORM STR. #212 INV (15"): 319.00

6" HDPE 9 LF @ 1.00% SL. STM SEWER

BUILDING 4 12 TOTAL STACKED TOWNHOME UNITS (12 MARKET RATE UNITS) 8,585 SF FOOTPRINT

6" HDPE 11 LF @ 1.00% SL. STM SEWER

12" HDPE 48 LF @ 1.00% SL. STM SEWER

PROP. STM. C/O INV (12"): 319.96

12" HDPE 45 LF @ 1.00% SL. STM SEWER

15" HDPE 43 LF @ 0.96% SL. STM SEWER

PROP. 4'Ø STM. MH STORM STR. #213 RIM: 322.64 INV IN (12"): 319.48 INV IN (6"): 320.08 INV OUT (15"):319.23

PROP. YARD INLET STORM STR. #201 GRT: 318.42 INV IN (15"): 315.92 INV OUT (15"):315.82

6" HDPE 9 LF @ 1.00% SL. STM SEWER

6" HDPE 9 LF @ 1.00% SL. STM SEWER

10" HDPE 49 LF @ 1.00% SL. STM SEWER

15" HDPE 40 LF @ 1.00% SL. STM SEWER

PROP. STM. C/O INV (10"): 321.10

15" HDPE 55 LF @ 0.50% SL. STM SEWER

PROP. YARD INLET STORM STR. #202 GRT: 319.53 INV IN (15"): 316.43 INV OUT (15"):316.33

6" HDPE 7 LF @ 1.00% SL. STM SEWER

BUILDING 3 (TWELVE) TOWNHOME UNITS (8 MARKET RATE UNITS) 5,785 SF FOOTPRINT

10" HDPE 47 LF @ 1.00% SL. STM SEWER

8" HDPE 48 LF @ 1.00% SL. STM SEWER

PROP. 4'Ø STM. MH STORM STR. #215 RIM: 325.34 INV IN (8"): 321.75 INV IN (6"): 322.08 INV OUT (10"):321.58

PROP. YARD INLET STORM STR. #203 GRT: 319.88 INV IN (15"): 316.94 INV OUT (15"):316.84

6" HDPE 49 LF @ 1.00% SL. STM SEWER

PROP. STM. C/O INV (8"): 322.22

15" HDPE 99 LF @ 2.00% SL. STM SEWER

PROP. YARD INLET STORM STR. #204 GRT: 320.31 INV IN (15"): 317.31 INV OUT (15"):317.21

PROP. 4'Ø STM. MH STORM STR. #214 RIM: 322.78 INV IN (10"): 320.61 INV IN (6"): 320.94 INV OUT (12"):320.44

PROP. YARD INLET STORM STR. #206 GRT: 325.64 INV OUT (15"):321.03

6" HDPE 7 LF @ 1.00% SL. STM SEWER

PROP. STM. C/O INV (6"): 322.71

15" HDPE 83 LF @ 2.00% SL. STM SEWER

PROP. YARD INLET STORM STR. #205 GRT: 323.75 INV IN (15"): 319.38 INV OUT (15"):319.28

PECKMAN RIVER

Top of Bank

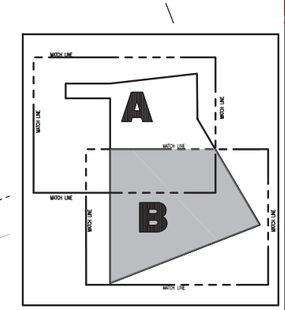
25' BRANCH BUFFER

GRAPHIC SCALE

-20 0 10 20 40 80

(IN FEET)
1 INCH = 20 FT

SEE SHEET 03 OF 29 FOR DRAINAGE PLAN NOTES



SITE KEY
NOT TO SCALE

PlotNed: 10/06/26 – 12:33 PM, By: dsundberg, — Product Ver: 25.1
File: P:\JEC\PC PROJECTS\0922 JMF Properties_25-03663 Verona\Dwg\Site Plans\D0222503663SXC.dwg, ----> 11 DRAINAGE PLAN B

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BY	REV.	DATE	COMMENTS
EMF	4	10/06/26	REVISIONS PER TOWNSHIP COMMENTS
ASD	3	07/23/26	REVISED PER SOCP CONSERVATION DISTRICT COMMENTS
ASD	2	06/02/26	REVISED PER MUNICIPAL SUBMISSION
EMF	1	04/01/26	PRELIMINARY SUBMISSION
BT			

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

DRAWN BY: EMF | DESIGNED BY: MGS | CHECKED BY: DTS | CHECKED BY: ____

PROJECT: GROVE STREET DEVELOPERS LLC
PROPOSED TOWNHOUSE DEVELOPMENT
BLOCK 201, LOT 2
GROVE STREET & ANNE
TOWNSHIP OF VERONA, ESSEX COUNTY, NEW JERSEY

811 New Jersey Call before you dig.
PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
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PROFESSIONAL ENGINEER
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DANIEL T. SEHNAL
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TITLE: DRAINAGE PLAN B

SCALE: (H) 1"=20' (V). | DATE: 05/01/2026
PROJECT No: 0922-25-03663

SHEET No: 11 OF 29 | Rev. #: 4

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY

SEE SHEET 17 OF 29 FOR LANDSCAPE PLAN NOTES

HEMLOCK DRIVE
(50' ROW WIDTH PER TAX MAP)

GROVE AVENUE
A.K.A. COUNTY RT. 639
(60' ROW WIDTH PER TAX MAP)

PECKMAN RIVER

BUILDING 1
18 TOTAL STACKED TOWNHOME UNITS
(10 MARKET RATE UNITS)
(8 COAH UNITS)
11,250 SF FOOTPRINT

BUILDING 6
18 TOTAL STACKED TOWNHOME UNITS
(9 MARKET RATE UNITS)
(9 COAH UNITS)
11,250 SF FOOTPRINT

BUILDING 2
16 TOTAL STACKED TOWNHOME UNITS
(8 MARKET RATE UNITS)
11,360 SF FOOTPRINT

BUILDING 5
12 TOTAL STACKED TOWNHOME UNITS
(12 MARKET RATE UNITS)
8,585 SF FOOTPRINT

PROPOSED BIORETENTION BASIN 2.1

NJBMP STANDARD BASIN PLANTING DESIGN (SEE BIO-RETENTION BASIN LANDSCAPE SCHEDULE)

EXISTING VEGETATION TO REMAIN

LIMITS OF SHEET B

SITE KEY

NOT TO SCALE

GRAPHIC SCALE

-20 0 10 20 40 80

(IN FEET)
1 INCH = 20 FT

SEE SHEET 17 OF 29 FOR LANDSCAPE PLAN NOTES

Plotted: 10/06/26 - 12:29 PM By: dsundberg
File: P:\DEPC PROJECTS\0922 JMF Properties\25-03663 Verona\Dwg\Site Plans\0922250363SL4.dwg, ---> 15 LANDSCAPE PLAN A

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REV.	DATE	COMMENTS	BY
4	10/06/26	REVISIONS PER TOWNSHIP COMMENTS	ASD
3	07/23/26	REVISED PER NJDEP CONSERVATION DISTRICT COMMENTS	ASD
2	06/02/26	REVISED PER MUNICIPAL SUBMISSION	EMF

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

PROJECT: GROVE STREET DEVELOPERS LLC
PROPOSED TOWNHOUSE DEVELOPMENT
BLOCK 201, LOT 2
211 GROVE AVENUE
TOWNSHIP OF VERONA, ESSEX COUNTY, NEW JERSEY

DRAWN BY: EMF | DESIGNED BY: MGS | CHECKED BY: DTS | CHECKED BY: ____

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TITLE: LANDSCAPE PLAN A

SCALE: (H) 1"=20'
(V) ----
DATE: 05/01/2026
PROJECT No: 0922-25-03663

SHEET No: 15 OF 29
Rev. #: 4

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY

LIMITS OF SHEET A

PECKMAN RIVER

BUILDING 2
16 TOTAL STACKED TOWNHOME UNITS
(8 MARKET RATE UNITS)
11,360 SF FOOTPRINT

BUILDING 5
12 TOTAL STACKED TOWNHOME UNITS
(12 MARKET RATE UNITS)
8,585 SF FOOTPRINT

BUILDING 4
12 TOTAL STACKED TOWNHOME UNITS
(12 MARKET RATE UNITS)
8,585 SF FOOTPRINT

BUILDING 3
8 TOTAL STACKED TOWNHOME UNITS
(8 MARKET RATE UNITS)
5,785 SF FOOTPRINT

PROPOSED BIORETENTION BASIN 2.1

PROPOSED BIORETENTION BASIN 2.2

NJBMP STANDARD BASIN PLANTING DESIGN (SEE BIO-RETENTION BASIN LANDSCAPE SCHEDULE)

FLOOD STORAGE AREA

EXISTING VEGETATION TO REMAIN

GRAPHIC SCALE
-20 0 10 20 40 80
(IN FEET)
1 INCH = 20 FT

SEE SHEET 17 OF 29 FOR LANDSCAPE PLAN NOTES

SITE KEY
NOT TO SCALE

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REV.	DATE	COMMENTS	BY
4	10/06/26	REVISIONS PER TOWNSHIP COMMENTS	ASD
3	07/29/26	REVISED PER NJDEP CONSERVATION DISTRICT COMMENTS	ASD
2	06/02/26	REVISED PER MUNICIPAL SUBMISSION	EMF
1			

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

DRAWN BY: EMF
DESIGNED BY: MCS
DESIGNED BY: DTS
DESIGNED BY:

PROJECT: GROVE STREET DEVELOPERS LLC
PROPOSED TOWNHOUSE DEVELOPMENT
BLOCK 201, LOT 2
811 GROVE AVENUE
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TITLE: LANDSCAPE PLAN B

SCALE: (H) 1"=20' (V).
DATE: 05/01/2026
PROJECT No: 0922-25-03663

SHEET No: 16 OF 29
Rev. #: 4

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY

PLANTING NOTES

1. PLANT MATERIAL SHALL BE FURNISHED AND INSTALLED AS INDICATED; INCLUDING ALL LABOR, MATERIALS, PLANTS, EQUIPMENT, INCIDENTALS, AND CLEAN-UP.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AT CORRECT GRADES AND ALIGNMENT. LAYOUT TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
3. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY; HAVE NORMAL GROWTH HABITS; WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE FROM DEFECTS AND INJURIES.
4. CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR TO BE IN VIGOROUS GROWING CONDITION. PROVISION SHALL BE MADE FOR A GROWTH GUARANTEE OF AT LEAST ONE (1) YEAR FROM THE DATE OF ACCEPTANCE FOR TREES AND SHRUBS. REPLACEMENTS SHALL BE MADE AT THE BEGINNING OF THE FIRST SUCCEEDING PLANTING SEASON. ALL REPLACEMENTS SHALL HAVE A GUARANTEE EQUAL TO THAT STATED ABOVE.
6. INSOFAR AS IT IS PRACTICABLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT STOCK NOT PLANTED. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. ANY PLANTS NOT INSTALLED DURING THIS PERIOD WILL BE REJECTED.
7. QUALITY AND SIZE OF PLANTS, SPREAD OF ROOTS, AND SIZE OF BALLS SHALL BE IN ACCORDANCE WITH ANSI Z60.1 (REV. 2001) "AMERICAN STANDARD FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
8. ALL PLANTS SHALL BE PLANTED IN AMENDED TOPSOIL THAT IS THOROUGHLY WATERED AND TAMPED AS BACK FILLING PROGRESSES. PLANTING MIX TO BE AS SHOWN ON PLANTING DETAILS. LARGE PLANTING AREAS TO INCORPORATE FERTILIZER AND SOIL CONDITIONERS AS STATED IN PLANTING SPECIFICATIONS.
9. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES. PLANTS SHALL BE HANDLED FROM THE BOTTOM OF THE BALL ONLY.
10. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION. ALL PLANT MATERIAL SHALL BE SPRAYED WITH WILT-PRUF" OR EQUAL AS PER MANUFACTURER'S INSTRUCTIONS.
11. NO PLANT, EXCEPT GROUND COVERS, SHALL BE PLANTED LESS THAN TWO FEET FROM EXISTING STRUCTURES AND SIDEWALKS.
12. SET ALL PLANTS PLUMB AND STRAIGHT. SET AT SUCH LEVEL THAT, A NORMAL OR NATURAL RELATIONSHIP TO THE CROWN OF THE PLANT WITH THE GROUND SURFACE WILL BE ESTABLISHED. LOCATE PLANT IN THE CENTER OF THE PIT.
13. ALL INJURED ROOTS SHALL BE PRUNED TO MAKE CLEAN ENDS BEFORE PLANTING UTILIZING CLEAN, SHARP TOOLS. IT IS ADVISABLE TO PRUNE APPROXIMATELY 1/3 OF THE GROWTH OF LARGE TREES (2" CALIPER AND OVER) BY THE REMOVAL OF SUPERFLUOUS BRANCHES, THOSE WHICH RUN PARALLEL, ETC. MAIN LEADER OF TREES WILL NOT BE CUT BACK. LONG SIDE BRANCHES, HOWEVER, MUST BE SHORTENED.
14. EACH TREE AND SHRUB SHALL BE PRUNED IN ACCORDANCE WITH STANDARD HORTICULTURAL PRACTICE TO PRESERVE NATURAL CHARACTER OF PLANT. PRUNING SHALL BE DONE WITH CLEAN, SHARP TOOLS.
15. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES AS A RESULT OF CONSTRUCTION OPERATIONS. ALL EXISTING TREES SHALL BE FERTILIZED WITH A REGULAR GARDEN FERTILIZER (5-10-5) UPON COMPLETION OF WORK. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE TRUNK. CONTRACTOR TO ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH SHARP TOOLS AND FILLED AROUND WITH TOPSOIL. COMPLETELY SATURATE THESE AREAS WITH WATER. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR IS TO PROTECT ALL EXISTING TREES TO REMAIN BY ERECTING TREE PROTECTION FENCE AT THE DRIP LINE. THIS WILL ENSURE NO COMPACTION OF THE ROOT MASS.
16. ALL PLANTING BEDS SHALL BE MULCHED WITH 4" LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH.
17. NEW PLANTING AREAS AND SOD SHALL BE ADEQUATELY IRRIGATED OR WATERED TO ESTABLISH THE PROPOSED PLANTS AND LAWN.
18. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE AS SHOWN ON THE APPROVED LANDSCAPE PLAN MUST BE INSTALLED, INSPECTED AND APPROVED BY THE MUNICIPAL LANDSCAPE ARCHITECT. THE MUNICIPAL ENGINEER AND LANDSCAPE ARCHITECT SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER AS REQUIRED BY OR ASSOCIATED WITH A SUBDIVISION OR SITE PLAN APPROVAL BY THE PLANNING BOARD OR ZONING BOARD OF ADJUSTMENT SHALL BE INSTALLED DURING THE FOLLOWING PLANTING SEASONS:

TYPE	DATES
PLANTS	3/15 TO 12/15
LAWN	3/15 TO 6/15
	9/15 TO 12/1

FURTHERMORE, THE FOLLOWING TREE VARIETIES SHALL NOT BE PLANTED DURING THE FALL PLANTING SEASON DUE TO THE HAZARDS ASSOCIATED WITH DIGGING THESE TREES IN THIS SEASON.

ACER RUBRUM	POPULUS VARIETIES
BETULA VARIETIES	PRUNUS VARIETIES
CARPINUS VARIETIES	PYRUS VARIETIES
CASTACEUS VARIETIES	QUERCUS VARIETIES
KOELREUTERIA	SALIX WEEPING VARIETIES
LIQUIDAMBAR STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES
PLATANUS ACERIFOLIA	

ANY PLANTINGS INSTALLED IN CONFLICT WITH THIS REQUIREMENT MUST RECEIVE THE WRITTEN APPROVAL BY THE MUNICIPAL ENGINEER OR LANDSCAPE ARCHITECT, PRIOR TO PLANTING. FAILURE TO COMPLY WITH THESE REQUIREMENTS WILL REQUIRE THE REMOVAL OF THE PLANTING IN QUESTION. THIS REQUIREMENT DOES NOT APPLY TO SEEDING OR SODDING OR PLANTINGS SPECIFICALLY FOR SOIL STABILIZATION PURPOSES. THE PLANTING ASSOCIATED WITH ANY LOT GIVEN A CERTIFICATE OF OCCUPANCY OUTSIDE THESE PERIODS SHALL BE PROVIDED DURING THE PREVIOUS OR NEXT APPROPRIATE SEASON.

19. ALL DISTURBED AREAS TO BE TREATED WITH TOPSOIL SEED SOD STABILIZATION METHOD.

PLANTING SPECIFICATIONS

1. SCOPE OF WORK
   A. THIS WORK SHALL CONSIST OF PERFORMING, CLEARING AND SOIL PREPARATION, FINISH GRADING, PLANTING AND DRAINAGE, INCLUDING ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND ANY OTHER APPURTENANCES NECESSARY FOR THE COMPLETION OF THIS PROJECT.
2. MATERIALS
   A. GENERAL – ALL MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION (D.O.T.) MANUAL OF ROADWAY AND BRIDGE CONSTRUCTION (LATEST EDITION) OR APPROVED EQUAL.
   B. PLANTS – ALL PLANTS SHALL BE HEALTHY OR NORMAL GROWTH, WELL ROOTED, FREE FROM DISEASE AND INSECTS.
   C. TOPSOIL – LOAMY SILT, HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, pH RANGE BETWEEN 4.5 – 7, BE FREE OF DEBRIS, ROCKS LARGER THAN TWO INCHES (2"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.
   D. MULCH – FOUR (4") INCHES DOUBLE SHREDDED HARDWOOD BARK MULCH.
3. FERTILIZER AND SOIL CONDITIONER – PLANTED AREAS
   A. ORGANIC FERTILIZER – SHALL BE PROCESSED SEWER SLUDGE WITH MINIMAL CONTENT OF 1% NITROGEN AND 2% PHOSPHORIC ACID, EQUAL TO "NITROHUMUS".
   B. ORGANIC FERTILIZER AND SOIL CONDITIONER – SHALL BE "ORO– POWER" AND ORGANIC BASE MATERIALS COMPRISED OF DECOMPOSED ANIMAL AND VEGETABLE MATTER AND COMPOSTED TO SUPPORT BACTERIAL CULTURES, CONTAINING NO POULTRY OR HUMAN WASTE. GUARANTEED ANALYSIS (5–3–1): NITROGEN 5% PHOSPHATE 3%, POTASH 1%. 50% HUMUS AND 15% HUMIC ACIDS.
4. GENERAL WORK PROCEDURES
   A. LANDSCAPE WORK SHALL COMMENCE AS SOON AS THOSE PORTIONS OF THE SITE ARE AVAILABLE. CONTRACTOR TO UTILIZE WORKMANLIKE STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH DAY'S WORK. ALL DEBRIS, MATERIALS, AND TOOLS SHALL BE PROPERLY STOCKPILED OR DISPOSED OF. ALL PAVED SURFACES SHALL BE SWEPT CLEAN AT THE END OF EACH DAYS WORK.
5. WEEDING
   A. BEFORE AND DURING PRELIMINARY GRADING AND FINISH GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
6. TOPSOILING
   A. CONTRACTOR TO PROVIDE A 4" THICK TOPSOIL LAYER IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO PRODUCE A 4" UNSETTLED THICKNESS. TOPSOIL PRESENT AT THE SITE, IF ANY, MAY BE USED TO SUPPLEMENT TOTAL AMOUNT REQUIRED. CONTRACTOR TO FURNISH AN ANALYSIS OF ON–SITE TOPSOIL UTILIZED IN ALL PLANTING AREAS. ADJUST pH AND NUTRIENT LEVELS AS REQUIRED TO ENSURE AN ACCEPTABLE GROWING MEDIUM.
7. SOIL CONDITIONING:
   A. CULTIVATE ALL AREAS TO BE PLANTED TO A DEPTH OF 6". ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF AT THE CONTRACTOR'S EXPENSE. SPREAD EVENLY IN ALL PLANTING AREAS AND TILL (2 DIRECTIONS) INTO TOP 4" WITH THE FOLLOWING PER 1,000 SQ. FT.:
      20 POUNDS "ORO–POWER"
      100 POUNDS AGRICULTURAL GYPSUM
      20 POUNDS NITROFORM (COURSE) 38–0–0 BLUE CHIP

   SOIL MODIFICATIONS:
   A. THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6 TO 12 IN. OF MOST PLANTING SOILS TO IMPROVE THE SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS. USE COMPOSTED BARK, RECYCLED YARD WASTE OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A pH HIGHER THAN 7.5.
   B. MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. IMPROVE DRAINAGE IN HEAVY SOILS BY PLANTING ON RAISED MOUNDS OR BEDS AND INCLUDING SUBSURFACE DRAINAGE LINES.
   C. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.
8. PLANTING
   POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT BEFORE EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.
   A. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACK FILLED WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
      1 PART PEAT MOSS BY VOLUME
      1 PART COW MANURE BY VOLUME
      3 PARTS TOPSOIL BY VOLUME
      21 GRAM "AGRIFORM" PLANTING TABLETS AS FOLLOWS:
      2 TABLETS PER 1 GAL. PLANT
      3 TABLETS PER 5 GAL. PLANT
      4 TABLETS PER 15 GAL. PLANT
      LARGER PLANTS (2) TWO TABLETS PER 1/2" DIAM. OF TRUNK CALIPER
   B. PREPARED SOIL SHALL BE TAMPED FIRMLY AT BOTTOM OF PIT. FILL PREPARED SOIL AROUND BALL OF PLANT 1/2 WAY, AND INSERT PLANT TABLETS. COMPLETE BACK FILL AND WATER THOROUGHLY.
   C. ALL PLANTS SHALL BE SET SO THAT, THEY BEAR THE SAME RELATION TO THE REQUIRED GRADE AS THEY BORE TO THE NATURAL GRADE BEFORE BEING TRANSPLANTED.
   D. PREPARE RAISED EARTH BASIN AS WIDE AS PLANTING HOLE OF EACH TREE.
   E. WATER IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACK FILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED.
   F. PRUNE ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS TO A MIN. OF 7' BRANCHING HEIGHT.
9. GROUND COVER
   A. ALL GROUND COVER AREAS SHALL RECEIVE A 1/4" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING GROUND COVER.
   B. SPACING AND VARIETY OF GROUND COVER SHALL BE AS SHOWN ON DRAWINGS.
   C. IMMEDIATELY AFTER PLANTING GROUND COVER, CONTRACTOR SHALL THOROUGHLY WATER GROUND COVER.
   D. ALL GROUND COVER AREAS SHALL BE TREATED WITH A PRE–EMERGENT BEFORE FINAL LANDSCAPE INSPECTION. GROUND COVER AREAS SHALL BE WEEDED PRIOR TO APPLYING PRE–EMERGENT. PRE–EMERGENT TO BE APPLIED AS PER MANUFACTURER'S RECOMMENDATION.
10. FINISH GRADING
    A. ALL AREAS WILL BE RECEIVED BY THE CONTRACTOR AT SUBSTANTIALLY PLUS/MINUS .1 FOOT OF FINISH GRADE.
    B. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE, UNLESS OTHERWISE DIRECTED BY LANDSCAPE ARCHITECT. SOIL AREAS ADJACENT TO THE BUILDINGS SHALL SLOPE AWAY.
    C. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER.
11. GUARANTEE
    A. CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF ONE (1) YEAR FROM ACCEPTANCE OF JOB. OWNER TO SECURE A MAINTENANCE BOND FROM THE CONTRACTOR FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE COMMENCEMENT OF THE GUARANTEE PERIOD AND PASSES A FINAL INSPECTION BY THE OWNER OR OWNERS REPRESENTATIVE.
12. CLEANUP
    A. UPON THE COMPLETION OF ALL PLANTING WORK AND BEFORE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL MATERIAL, EQUIPMENT, AND DEBRIS RESULTING FROM HIS WORK. ALL PAVED AREAS SHALL BE BROOM CLEANED AND THE SITE LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE.
    B. MAINTAIN TREES, SHRUBS AND OTHER PLANTS BY PRUNING, CULTIVATING AND WEEDING AS REQUIRED FOR HEALTHY GROWTH. RESTORE PLANTING SAUCERS. TIGHTEN AND REPAIR STAKE AND GUY SUPPORTS AND RESET TREES AND SHRUBS TO PROPER GRADES OR VERTICAL POSITION AS REQUIRED. RESTORE OR REPLACE DAMAGED WRAPPINGS. SPRAY WITH HERBICIDE AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE.
    C. MAINTAIN LAWNS BY WATERING, FERTILIZING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGRADING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.
13. MAINTENANCE (ALTERNATE BID) COST PER MONTH AFTER INITIAL 90–DAY MAINTENANCE PERIOD.

PLANT SCHEDULE

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE [1] [2] [3]	CONTAINER
DECIDUOUS TREE(S)					
AR	4	ACER RUBRUM	RED MAPLE	2 1/2–3" CAL.	B&B
LSH	3	LIQUIDAMBAR STYRACIFLUA "HAPPIDELL"	HAPPIDAZE® SWEET GUM	2 1/2–3" CAL.	B&B
NSD	4	NYSSA SYLVATICA "DAVID ODOM"	AFTERBURNER® TUPELO	2 1/2–3" CAL.	B&B
PO	1	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	2 1/2–3" CAL.	B&B
QP	4	QUERCUS PALUSTRIS	PIN OAK	2 1/2–3" CAL.	B&B
UAP	3	ULMUS AMERICANA "PRINCETON"	PRINCETON AMERICAN ELM	2 1/2–3" CAL.	B&B
	19	SUBTOTAL:			
EVERGREEN TREE(S)					
CT	3	CHAMAECYPARIS THYOIDES	ATLANTIC WHITE CYPRESS	6–8'	B&B
IO	2	AMERICAN HOLLY	ILEX OPACA	6–8'	B&B
IOJK	2	ILEX OPACA 'JERSEY KNIGHT'	JERSEY KNIGHT AMERICAN HOLLY	6–8'	B&B
IOJP	12	ILEX OPACA 'JERSEY PRINCESS'	JERSEY PRINCESS AMERICAN HOLLY	6–8'	B&B
JV	3	JUNIPERUS VIRGINIANA	EASTERN REDCEDAR	6–8'	B&B
JVB	19	JUNIPERUS VIRGINIANA 'BURKII'	BURK EASTERN REDCEDAR	6–8'	B&B
JVC	9	JUNIPERUS VIRGINIANA 'CORCORCOR'	EMERALD SENTINEL™ EASTERN REDCEDAR	6–8'	B&B
PSF	8	PINUS STROBUS 'FASTIGIATA'	PYRAMIDAL WHITE PINE	6–8'	B&B
	58	SUBTOTAL:			
ORNAMENTAL TREE(S)					
ACCS	4	AMELANCHIER CANADENSIS	CANADIAN SERVICEBERRY	8–10'	B&B
CC	7	CERCIS CANADENSIS	EASTERN REDBUD	8–10'	B&B
CF	7	CORNUS FLORIDA	FLOWERING DOGWOOD	8–10'	B&B
CKR	4	CORNUS KOUSA 'RUTPINK'	SCARLET FIRE® KOUSA DOGWOOD	8–10'	B&B
CV	1	CHIONANTHUS VIRGINICUS	WHITE FRINGETREE	8–10'	B&B
MV	4	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	8–10'	B&B
	27	SUBTOTAL:			
DECIDUOUS SHRUB(S)					
AAB	29	ARONIA ARBUTIFOLIA 'BRILLIANTISSIMA'	BRILLIANT RED CHOKEBERRY	24–30"	#5 CAN
CANJ	34	CEANOTHUS AMERICANUS	NEW JERSEY TEA	24–30"	#5 CAN
CASC	72	CLETHRA ALNIFOLIA 'SIXTEEN CANDLES'	SIXTEEN CANDLES SUMMERSWEET	24–30"	#5 CAN
HAWW	9	HYDRANGEA ARBORESCENS 'NICHAS'	INVINCIBELLE® WEE WHITE HYDRANGEA	18–24"	#3 CAN
IVF	21	ITEA VIRGINICA 'SMNVMM'	FIZZY WIZZY® SWEETSPIRE	18–24"	#3 CAN
MP	11	MORELLA PENSYLVANICA	NORTHERN BAYBERRY	24–30"	#5 CAN
RV	32	RHODODENDRON VISCOSUM	SWAMP AZALEA	24–30"	#5 CAN
VDM	54	VIBURNUM DENTATUM 'MORTON'	NORTHERN BURGUNDY™ ARROWWOOD VIBURNUM	30–36"	#7 CAN
	262	SUBTOTAL:			
EVERGREEN SHRUB(S)					
IBPR	31	ILEX GLABRA 'SQUEEZE BOX'	SQUEEZE BOX INKBERRY HOLLY	30–36"	#5 CAN
IGS	44	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY HOLLY	24–30"	#5 CAN
RM	21	RHODODENDRON MAXIMUM	ROSEBAY RHODODENDRON	30–36"	#7 CAN
	65	SUBTOTAL:			
GROUND COVER					
LMSB	104	LIRIOPE MUSCARI 'SUPER BLUE'	SUPER BLUE LILYTURF	1 GAL.	1" X 2"
	104	SUBTOTAL:			
GRASS(ES)					
CP	433	CAREX PENSYLVANICA	PENNSYLVANIA SEDGE	2 GAL.	CONTAINER
CR	120	CAREX ROSEA	ROSY SEDGE	2 GAL.	CONTAINER
PVCB	110	PANICUM VIRGATUM 'CAPE BREEZE'	CAPE BREEZE SWITCH GRASS	2 GAL.	CONTAINER
	663	SUBTOTAL:			

1. DECIDUOUS TREES PROPOSED WITHIN THE 15' LANDSCAPED BUFFER ALONG NEIGHBORING RESIDENTIAL USES SHALL BE PLANTED WITH A CAL. SIZE OF 3–3 1/2".
2. EVERGREEN TREES PROPOSED WITHIN THE 15' LANDSCAPED BUFFER ALONG NEIGHBORING RESIDENTIAL USES SHALL HAVE A PLANTING HEIGHT OF 8–10'.
3. ORNAMENTAL TREES PROPOSED WITHIN THE 15' LANDSCAPED BUFFER ALONG NEIGHBORING RESIDENTIAL USES SHALL HAVE A PLANTING HEIGHT OF 10–12'.

BIO-RETENTION BASIN LANDSCAPE SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	SPACING	MATURE HEIGHT (FT)
SHADE TREE(S)							
QMX	4	QUERCUS MICHAUXII	SWAMP CHESTNUT OAK	2 1/2–3" CAL.	B+B	AS SHOWN	40–60'
DECIDUOUS SHRUB(S)							MATURE HEIGHT, SPREAD (FT)
MSG	32	ILEX VERTICILLATA 'SOUTHERN GENTLEMAN' / 'WINTER RED'	SOUTHERN GENTLEMAN / WINTER RED WINTERBERRY HOLLY	30–36"	#5 CAN	30" O.C.	6' X 8'
LB	32		SPICEBUSH	30–36"	#5 CAN	30" O.C.	6' X 12'
VD	32	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	30–36"	#5 CAN	30" O.C.	6' X 10'
	96						
ORNAMENTAL GRASS(ES)							
JE	32	JUNCUS EFFUSUS	SOFT RUSH	2 GAL.	CONTAINER	30" O.C.	4' X 1'
PVI	32	PANICUM VIRGATUM	SWITCH GRASS	2 GAL.	CONTAINER	30" O.C.	4' X 3'
	64						

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN IN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE.
NOTE: PLANT SHRUBS AND GRASSES IN GROUPS OF 5–7 SAME SPECIES PLANTS, SPREAD RANDOMLY THROUGHOUT THE BASIN.

STABILIZATION SPECIFICATIONS - PERMANENT SEEDING:

TYPE A (FOR R.O.W. ONLY)	MINIMUM PURITY, PERCENT	MINIMUM GERMINATION, PERCENT	PERCENT TOTAL WEIGHT OF MIXTURE
KENTUCKY BLUEGRASS:	85	75	20
RED FESCUE:	95	80	35
KENTUCKY 31:	95	80	20
REDTOP:	92	85	10
PERENNIAL RYEGRASS:	98	85	10
WHITE CLOVER:	97	90	5

(SOW AT A RATE OF 4 LBS/1,000 SQ. FT.)

ALL OTHER SEEDING
HARD FESCUE: 2.7 LBS/1,000 SQ. FT. (120 LBS/AC.)
CREEPING FESCUE: 0.7 LBS/1,000 SQ. FT. (30 LBS/AC.)
PERENNIAL RYEGRASS: .25 LBS/1,000 SQ. FT. (10 LBS/AC.)

- PERMANENT STABILIZATION SPECIFICATIONS: MULCHING
  A. MULCH MATERIALS TO BE UNROTTED SALT HAY, HAY, OR SMALL GRAIN STRAW AT THE RATE OF 1.5 TO 2 TONS PER ACRE OR 70 TO 90 POUNDS PER 1,000 SQ. FT.
  B. SPREAD UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 75% TO 95% OF SOIL SURFACE WILL BE COVERED.
  C. MULCH ANCHORING TO BE DONE IMMEDIATELY AFTER PLACEMENT BY ONE OF THE FOLLOWING METHODS:
     (1) PEG AND TWINE
     (2) MULCH NETTING
     (3) LIQUID MULCH–BINDERS

LANDSCAPE COMPLIANCE CHART

ORDINANCE SECTION	REQUIREMENT	CALCULATIONS	COMPLIANCE
§ 150–11.2A ENCLOSED USES	ANY ENCLOSED USE REQUIRE BY THIS CHAPTER TO BE LANDSCAPED SHALL BE PROVIDED WITH A FENCE OR A VISUAL SCREEN DESIGNED TO PRODUCE A DENSE COVER CONSISTING OF EVERGREEN OR EVERGREEN–TYPE HEDGES OR SHRUBS, SPACED AT INTERVALS OF NOT MORE THAN FIVE FEET, LOCATED AND MAINTAINED IN GOOD CONDITION WITHIN 10 FEET OF THE PROPERTY LINE OR AS SHALL BE DETERMINED BY THE PLANNING BOARD.	A FENCE AND PLANTED BUFFER IS PROVIDED WITHIN THE PROPOSED LANDSCAPE BUFFER AREA.	COMPLIES
§ 150–11.7B	PLANTING OF NATIVE SPECIES IS RECOMMENDED OVER AND ABOVE EXOTIC OR NON–NATIVE SPECIES. NATIVE PLANTS IN MANY PARTS OF THE U.S. ARE STRUGGLING BECAUSE OF CHANGES IN LAND USE, DEVELOPMENT PRACTICES, AND CLIMATE, POSING PROBLEMS FOR THE WILDLIFE SPECIES THAT DEPEND ON THEM FOR SUSTENANCE AND SANCTUARY. NATIVE PLANTS PROMOTE BIODIVERSITY AND ARE MORE ADAPTIVE TO THE LOCAL CLIMATE AND SOIL CONDITIONS AND THEREFORE REQUIRE LESS FERTILIZER OR PESTICIDES. NATIVE PLANTS GENERALLY REQUIRE LESS WATER AND HELP PREVENT SOIL EROSION. ACCORDINGLY, NATIVE SPECIES ARE RECOMMENDED OVER AND ABOVE EXOTIC OR NON–NATIVE SPECIES.	A MAJORITY OF NATIVE PLANTS HAVE BEEN PROVIDED.	COMPLIES
REDEVELOPMENT PLAN	(II) A MINIMUM SETBACK OF 30–FEET FROM THE REAR OF ANY TOWNHOUSE BUILDING (EXCLUSIVE OF REAR DECKS) TO THE NEAREST RESIDENTIAL PROPERTY LINE, THAT IS TO BE SCREENED WITH A BOARD–ON–BOARD FENCE AND A LANDSCAPING BUFFER THAT IS TO BE APPROXIMATELY 8–FEET IN WIDTH AND IS TO INCLUDING THE PLANTING OF MATURE TREES;	EVERGREEN TREES AND LARGE DECIDUOUS AND EVERGREEN SHRUBS HAVE BEEN PROVIDED WITHIN THE LANDSCAPE BUFFER ALONG WITH A BOARD ON BOARD FENCE.	COMPLIES

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Plotted: 10/06/26 – 12:29 PM, By: dsundberg, – Product Ver: 25.1
File: P:\DECPC PROJECTS\0922 JMF Properties\25–03663 Verona\Dwg\Site Plans\0922250366SLA.dwg, ----> 16 LANDSCAPE NOTES & DETAILS

DYNAMIC ENGINEERING CONSULTANTS, P.C.
"PLANNING • DESIGN • SURVEY • TRAFFIC"

REV.	DATE	COMMENTS
4	10/06/26	REVISIONS PER TOWNSHIP COMMENTS
3	07/29/26	REVISED PER NJDEP CONSERVATION DISTRICT COMMENTS
2	06/02/26	REVISED PER MUNICIPAL SUBMISSION
1		

DRAWN BY: EMF | DESIGNED BY: MGS | CHECKED BY: DTS | CHECKED BY: ____

THIS PLAN SET IS FOR PERMITTING PURPOSES ONLY AND MAY NOT BE USED FOR CONSTRUCTION

PROJECT: GROVE STREET DEVELOPERS LLC
PROPOSED TOWNHOUSE DEVELOPMENT
BLOCK 201, LOT 2
TOWNSHIP OF VERONA, ESSEX COUNTY, NEW JERSEY

811 Know what's below. Call before you dig.
PROTECT YOURSELF
ALL STATES REQUIRE NOTIFICATION OF EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN ANY STATE
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NEW JERSEY LICENSE No. 41985

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PROFESSIONAL ENGINEER
NEW JERSEY LICENSE No. 53572

TITLE: LANDSCAPE NOTES & DETAILS

SCALE: (V) NOT TO (V) SCALE | DATE: 05/01/2026
PROJECT No: 0922–25–03663

SHEET No: 17 OF 29 | Rev. #: 4

DYNAMIC EARTH

BOREHOLE LOG

Boring No : B-1

Project:	Proposed Multi-Family Residential Development	**Proj. No.:**	0922 25-03661
Location:	251 Grove Avenue, Township of Verona, Essex County, New Jersey	**Client:**	JMF Properties

Surface Elevation:	328.3 feet	**Date Started:**	09-24-2025	**Groundwater Data**	**Depth**	**El.**	**Additional Groundwater Data**	**Depth**	**El.**
Termination Depth:	0.8 feet	**Date Completed:**	09-24-2025		**(ft)**	**(ft)**		**(ft)**	**(ft)**
Proposed Location:	Building	**Logged by:**	B. Peschel	**While Drilling:** ▽	NE	-			
Drill/Test Method:	HSA/SPT	**Contractor:**	Beechwood	**At Completion:** ▼	NE	-			
Hammer Type:	Auto	**Rig Type:**	CME 55						

Sample Information							Depth (ft)	Strata	DESCRIPTION OF MATERIALS (Classification)	Remarks
Depth (Feet)	Number	Type	Rec (in)	RQD %	Blows per 6" or drill time (mm:ss)	N				
0.0-0.8	S-1	SS	3	--	19 / -- 50/4 / --	50/4		FILL	Gray coarse to fine sand, and coarse to fine gravel, little silt, little debris (millings), moist (FILL)	
									Boring B-1 encountered refusal at approximately 0.8 feet below the ground surface.	
							5			
							10			
							15			
							20			

DYNAMIC EARTH

BOREHOLE LOG

Boring No : B-1A

Project:	Proposed Multi-Family Residential Development	**Proj. No.:**	0922 25-03661
Location:	251 Grove Avenue, Township of Verona, Essex County, New Jersey	**Client:**	JMF Properties

Surface Elevation:	328.3 feet	**Date Started:**	09-24-2025	**Groundwater Data**	**Depth**	**El.**	**Additional Groundwater Data**	**Depth**	**El.**
Termination Depth:	1.5 feet	**Date Completed:**	09-24-2025		**(ft)**	**(ft)**		**(ft)**	**(ft)**
Proposed Location:	Building	**Logged by:**	B. Peschel	**While Drilling:** ▽	NE	-			
Drill/Test Method:	HSA/SPT	**Contractor:**	Beechwood	**At Completion:** ▼	NE	-			
Hammer Type:	Auto	**Rig Type:**	CME 55						

Sample Information							Depth (ft)	Strata	DESCRIPTION OF MATERIALS (Classification)	Remarks
Depth (Feet)	Number	Type	Rec (in)	RQD %	Blows per 6" or drill time (mm:ss)	N				
0.0-1.5	S-1	SS	0	--	50/0 -- / -- --	50/0		FILL	No recovery	
									Boring B-1A encountered refusal at approximately 1.5 feet below the ground surface.	
							5			
							10			
							15			
							20			

DYNAMIC EARTH

BOREHOLE LOG

Boring No : B-1B

Project:	Proposed Multi-Family Residential Development	**Proj. No.:**	0922 25-03661
Location:	251 Grove Avenue, Township of Verona, Essex County, New Jersey	**Client:**	JMF Properties

				Groundwater Data	Depth (ft)	El. (ft)	Additional Groundwater Data	Depth (ft)	El. (ft)
Surface Elevation:	328.3 feet	**Date Started:**	09-24-2025						
Termination Depth:	2.3 feet	**Date Completed:**	09-24-2025						
Proposed Location:	Building	**Logged by:**	B. Peschel	**While Drilling:** ▽	NE	-			
Drill/Test Method:	HSA/SPT	**Contractor:**	Beechwood	**At Completion:** ▼	NE	-			
Hammer Type:	Auto	**Rig Type:**	CME 55						

Sample Information							Depth (ft)	Strata	DESCRIPTION OF MATERIALS (Classification)	Remarks
Depth (Feet)	Number	Type	Rec (in)	RQD %	Blows per 6" or drill time (mm:ss)	N				
0.0-2.0	S-1	SS	13	--	21 / 34 50/4 / --	84/10		FILL	Gray coarse to fine sand, and coarse to fine gravel, some silt, moist (FILL)	
2.0-2.3	S-2	SS	3	--	50/4 / --	50/4		Glacial Deposits	Brown silt, some coarse to fine gravel, little coarse to fine sand, moist, hard (ML)	
									Boring B-1B encountered refusal at approximately 2.3 feet below the ground surface.	
							5			
							10			
							15			
							20			

DYNAMIC EARTH

BOREHOLE LOG

Boring No : B-2

Project:	Proposed Multi-Family Residential Development	**Proj. No.:**	0922 25-03661
Location:	251 Grove Avenue, Township of Verona, Essex County, New Jersey	**Client:**	JMF Properties

				Groundwater Data	Depth (ft)	El. (ft)	Additional Groundwater Data	Depth (ft)	El. (ft)
Surface Elevation:	316.7 feet	**Date Started:**	09-23-2025						
Termination Depth:	12.5 feet	**Date Completed:**	09-23-2025						
Proposed Location:	Parking Garage	**Logged by:**	B. Peschel	**While Drilling:** ▽	6.0	310.7			
Drill/Test Method:	HSA/SPT	**Contractor:**	Beechwood	**At Completion:** ▼	7.0	309.7			
Hammer Type:	Auto	**Rig Type:**	CME 55						

Sample Information								Depth (ft)	Strata	DESCRIPTION OF MATERIALS (Classification)	Remarks
Depth (Feet)	Number	Type	Rec (in)	RQD %	Blows per 6" or drill time (mm:ss)	N					
0.0-2.0	S-1	SS	12	--	22 18 22 20	40			FILL	Dark gray coarse to fine sand, some debris (millings, wood), little silt, little coarse to fine gravel, moist (FILL)	
2.0-4.0	S-2	SS	7	--	25 20 14 14	34				Dark gray coarse to fine sand, some silt, little coarse to fine gravel, little debris (millings), trace clay, moist (FILL)	
4.0-6.0	S-3	SS	8	--	7 6 6 8	12		5	Glacial Deposits	Brownish gray coarse to fine sand, and silt, trace roots, moist, medium dense (SM)	
6.0-8.0	S-4	SS	12	--	7 6 5 6	11		▽ ▼		Brownish gray coarse to fine sand, some silt, wet, medium dense (SM)	
8.0-10.0	S-5	SS	18	--	14 16 31 24	47		10		Gray coarse to fine sand, some silt, little clay, little coarse to fine gravel, wet, dense (SM)	
12.5	S-6	SS	0	0	50/0 -- -- --	50/0		15		Boring B-2 encountered refusal at approximately 12.5 feet below the ground surface.	
								20			

DYNAMIC EARTH

BOREHOLE LOG

Boring No : B-3

Project:	Proposed Multi-Family Residential Development	**Proj. No.:**	0922 25-03661
Location:	251 Grove Avenue, Township of Verona, Essex County, New Jersey	**Client:**	JMF Properties

				Groundwater Data	Depth (ft)	El. (ft)	Additional Groundwater Data	Depth (ft)	El. (ft)
Surface Elevation:	319.8 feet	**Date Started:**	09-23-2025						
Termination Depth:	23.8 feet	**Date Completed:**	09-23-2025						
Proposed Location:	Building	**Logged by:**	B. Peschel	**While Drilling:** ▽	7.0	312.8			
Drill/Test Method:	HSA/SPT	**Contractor:**	Beechwood	**At Completion:** ▼	8.0	311.8			
Hammer Type:	Auto	**Rig Type:**	CME 55						

Sample Information							Depth (ft)	Strata	DESCRIPTION OF MATERIALS (Classification)	Remarks
Depth (Feet)	Number	Type	Rec (in)	RQD %	Blows per 6" or drill time (mm:ss)	N				
								Surface Cover	3 inches of asphalt	
0.5-2.0	S-1	SS	7	--	-- 19 / 12 13	31		FILL	Gray coarse to fine sand, and coarse to fine gravel, little silt, moist (FILL)	
2.0-2.8	S-2	SS	12	--	6 50/2 / -- --	50/2			Gray coarse to fine sand, and silt, little coarse to fine gravel, little clay, moist (FILL)	
4.0-6.0	S-3	SS	13	--	2 2 / 2 2	4	5	Organic Deposits	Gray clay, some peat, little coarse to fine sand, moist, medium stiff (CL)	Qp = 0.5 tsf
6.0-8.0	S-4	SS	24	--	2 2 / 8 11	10	▽ ▼		Dark gray clay, some peat, little coarse to fine sand, wet, soft (OL)	Qp < 0.25 tsf
8.0-10.0	S-5	SS	10	--	9 11 / 11 11	22	10	Glacial Deposits	Brown silt, some coarse to fine sand, wet, very stiff (ML)	
13.0-15.0	S-6	SS	16	--	4 4 / 5 5	9	15		As above, stiff (ML)	
18.0-20.0	S-7	SS	15	--	7 17 / 12 12	29	20		As above, very stiff (ML)	
23.0-23.8	S-8	SS	6	--	25 50/4 / -- --	50/4			Grayish brown clay, some silt, little coarse to fine sand, wet, very stiff (CL)	Qp = 3.0 tsf
									Boring B-3 encountered refusal at approximately 23.8 feet below the ground surface.	

DYNAMIC EARTH

BOREHOLE LOG

Boring No : B-4

Project:	Proposed Multi-Family Residential Development	**Proj. No.:**	0922 25-03661
Location:	251 Grove Avenue, Township of Verona, Essex County, New Jersey	**Client:**	JMF Properties

				Groundwater Data	Depth (ft)	El. (ft)	Additional Groundwater Data	Depth (ft)	El. (ft)
Surface Elevation:	319.8 feet	**Date Started:**	09-24-2025						
Termination Depth:	18.8 feet	**Date Completed:**	09-24-2025						
Proposed Location:	Building	**Logged by:**	B. Peschel	**While Drilling:** ▽	4.0	315.8			
Drill/Test Method:	HSA/SPT	**Contractor:**	Beechwood	**At Completion:** ▼	4.0	315.8			
Hammer Type:	Auto	**Rig Type:**	CME 55						

Sample Information										
Depth (Feet)	Number	Type	Rec (in)	RQD %	Blows per 6" or drill time (mm:ss)	N	Depth (ft)	Strata	DESCRIPTION OF MATERIALS (Classification)	Remarks
0.0-2.0	S-1	SS	14	--	9 12 / 12 13	24	0	FILL	Gray coarse to fine sand, and coarse to fine gravel, little silt, moist (FILL)	
2.0-4.0	S-2	SS	10	--	10 9 / 6 5	15			As above (FILL)	
4.0-6.0	S-3	SS	4	--	2 2 / 1 WOH	3	5		As above, wet (FILL)	
6.0-8.0	S-4	SS	0	--	1 1 / 2 4	3			No recovery	
8.0-10.0	S-5	SS	11	--	5 5 / 5 5	10	10		Brown silt, some coarse to fine sand, wet, stiff (ML)	
13.0-15.0	S-6	SS	16	--	32 15 / 14 14	29	15	Glacial Deposits	Brown silt, little coarse to fine gravel, little coarse to fine sand, wet, hard (ML)	Qp = 4.25 tsf
18.0-18.8	S-7	SS	7	--	29 50/3 / -- --	50/3			Brown silt, little coarse to fine sand, little coarse to fine gravel, little clay, wet, hard (ML)	Rig chatter Qp = 4.0 tsf
							20		Boring B-4 encountered refusal at approximately 18.8 feet below the ground surface.	

DYNAMIC EARTH

BOREHOLE LOG

Boring No : B-5

Project:	Proposed Multi-Family Residential Development	**Proj. No.:**	0922 25-03661
Location:	251 Grove Avenue, Township of Verona, Essex County, New Jersey	**Client:**	JMF Properties

				Groundwater Data	Depth (ft)	El. (ft)	Additional Groundwater Data	Depth (ft)	El. (ft)
Surface Elevation:	320.0 feet	**Date Started:**	09-24-2025						
Termination Depth:	9.0 feet	**Date Completed:**	09-24-2025						
Proposed Location:	Building	**Logged by:**	B. Peschel	**While Drilling:** ▽	4.0	316.0			
Drill/Test Method:	HSA/SPT	**Contractor:**	Beechwood	**At Completion:** ▼	4.0	316.0			
Hammer Type:	Auto	**Rig Type:**	CME 55						

Sample Information							Depth (ft)	Strata	DESCRIPTION OF MATERIALS (Classification)	Remarks
Depth (Feet)	Number	Type	Rec (in)	RQD %	Blows per 6" or drill time (mm:ss)	N				
								Surface Cover	2.5 inches of asphalt, 8 inches of subbase	
1.0-2.0	S-1	SS	6	--	7 20 -- --	27		FILL	Dark brown coarse to fine sand, some silt, little coarse to fine gravel, moist (FILL)	
2.0-2.3	S-2	SS	3	--	50/4 --	50/4			Dark brown clay, some coarse to fine sand, some silt, little debris (concrete), trace roots, moist (FILL)	
4.0-6.0	S-3	SS	8	--	10 9 4 3	13	5	Organic Deposits	Gray clay, some coarse to fine sand, little silt, trace organics, moist, soft (CL)	Qp < 0.25 tsf
6.0-8.0	S-4	SS	14	--	3 3 6 6	9		Glacial Deposits	Bluish gray coarse to fine gravel, and clay, some coarse to fine sand, wet, loose (GC)	
8.0-9.0	S-5	SS	7	--	3 2 50/0 --	52/6			As above, very dense (GC)	
							10		Boring B-5 encountered refusal at approximately 9 feet below the ground surface.	
							15			
							20			

DYNAMIC EARTH

BOREHOLE LOG

Boring No : B-6

Project:	Proposed Multi-Family Residential Development	**Proj. No.:**	0922 25-03661
Location:	251 Grove Avenue, Township of Verona, Essex County, New Jersey	**Client:**	JMF Properties

				Groundwater Data	Depth (ft)	El. (ft)	Additional Groundwater Data	Depth (ft)	El. (ft)
Surface Elevation:	328.0 feet	**Date Started:**	09-24-2025						
Termination Depth:	7.2 feet	**Date Completed:**	09-24-2025						
Proposed Location:	Building	**Logged by:**	B. Peschel	**While Drilling:** ▽	NE	-			
Drill/Test Method:	HSA/SPT	**Contractor:**	Beechwood	**At Completion:** ▼	NE	-			
Hammer Type:	Auto	**Rig Type:**	CME 55						

Sample Information							Depth (ft)	Strata	DESCRIPTION OF MATERIALS (Classification)	Remarks
Depth (Feet)	Number	Type	Rec (in)	RQD %	Blows per 6" or drill time (mm:ss)	N				
0.0-2.0	S-1	SS	8	--	19, 22, 22, 19	44		FILL	Gray coarse to fine gravel, some coarse to fine sand, little silt, moist (FILL)	
2.0-4.0	S-2	SS	3	--	17, 19, 12, 12	31		FILL	Brown coarse to fine sand, some silt, little coarse to fine gravel, moist (FILL)	
4.0-6.0	S-3	SS	5	--	13, 12, 13, 19	25	5	Glacial Deposits	Brown coarse to fine sand, some silt, little coarse to fine gravel, moist, medium dense (SM)	
6.0-7.2	S-4	SS	7	--	11, 26, 50/2, --	76/8		Glacial Deposits	As above, very dense (SM)	
							10		Boring B-6 encountered refusal at approximately 7.2 feet below the ground surface.	
							15			
							20			

DYNAMIC EARTH

BOREHOLE LOG

Boring No : B-7

Project:	Proposed Multi-Family Residential Development	**Proj. No.:**	0922 25-03661
Location:	251 Grove Avenue, Township of Verona, Essex County, New Jersey	**Client:**	JMF Properties

				Groundwater Data	Depth (ft)	El. (ft)	Additional Groundwater Data	Depth (ft)	El. (ft)
Surface Elevation:	317.8 feet	**Date Started:**	09-23-2025						
Termination Depth:	13.0 feet	**Date Completed:**	09-23-2025						
Proposed Location:	Building	**Logged by:**	B. Peschel	**While Drilling:** ▽	4.0	313.8			
Drill/Test Method:	HSA/SPT	**Contractor:**	Beechwood	**At Completion:** ▼	3.0	314.8			
Hammer Type:	Auto	**Rig Type:**	CME 55						

Sample Information							Depth (ft)	Strata		DESCRIPTION OF MATERIALS (Classification)	Remarks
Depth (Feet)	Number	Type	Rec (in)	RQD %	Blows per 6" or drill time (mm:ss)	N					
0.0-2.0	S-1	SS	6	--	9 10 / 23 12	33		FILL		Gray coarse to fine sand, and coarse to fine gravel, little silt, little debris (millings), moist (FILL)	
2.0-4.0	S-2	SS	5	--	16 19 / 13 13	32				Gray coarse to fine sand, some silt, little coarse to fine gravel, moist (FILL)	
4.0-6.0	S-3	SS	12	--	4 5 / 4 3	9	5			Gray coarse to fine sand, and silt, little clay, little coarse to fine gravel, wet (FILL)	
6.0-8.0	S-4	SS	16	--	3 2 / 3 6	5		Organic Deposits		Gray clay, some silt, little peat, trace sand, wet, medium stiff (CL)	Qp = 0.5 tsf
8.0-10.0	S-5	SS	5	--	6 7 / 9 10	16	10	Glacial Deposits		Brown clay, and coarse to fine sand, little coarse to fine gravel, wet, stiff (CL)	Qp = 1.5 tsf
13.0	S-6	SS	0	0	50/0 -- / -- --	50/0				Boring B-7 encountered refusal at approximately 13 feet below the ground surface.	
							15				
							20				

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-1

Project: Proposed Multi-Family Residential Development
Project No.: 0922 25-03661
Location: 251 Grove Avenue, Township of Verona, Essex County, New Jersey
Client: JMF Properties

Surface Elevation (ft): 326.4
Termination Depth (ft): 11.0
Proposed Location: SWM
Excavation / Test Method: Visual Observation
Date Started: 9/23/25
Date Completed: 9/23/25
Logged by: B. Peschel
Contractor: Neighbors Property Management
Rig Type: Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	
Groundwater	9.8	316.6	
Seasonal High Groundwater	9.8	316.6	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
			GRAVEL	COBBLES	STONES	BOULDERS																		
0-3	ASPHALT		0	0	0	0								CLEAR <2.5"		NONE		NONE						
3-7	SUBBASE Very Dark Gray (7.5YR 3/1)	EXTREMELY GRAVELLY LOAMY SAND	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE						
			90	0	0	0																		
7-19	FILL Brown (7.5YR 5/4)	GRAVELLY SILT LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG TUBE	12 12	S-1 T-1	A < 0.2 iph B < 0.2 iph
			25	10	0	0																		
19-40	Brown (7.5YR 5/2)	SILT LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		NONE			BAG TUBE	36 36	S-2 T-2	A < 0.2 iph B < 0.2 iph
			5	0	0	0																		
40-60	Brown (7.5YR 5/2)	SILT LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG	42	S-3	
			5	0	0	0																		
60-118	Dark Reddish Gray (5YR 4/2)	VERY GRAVELLY LOAMY SAND	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG TUBE	78 78	S-4 T-3	A = 4.1 iph B = 5.7 iph
			25	15	0	0																		
118-132	Dark Reddish Gray (5YR 4/2)	VERY GRAVELLY SANDY LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE			BAG	120	S-5	
			25	15	0	0																		

Additional Remarks: Existing fill material encountered to approximately 19 inches below the ground surface. Soil profile pit SPP-1 was terminated at approximately 11 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-2

Project: Proposed Multi-Family Residential Development
Project No.: 0922 25-03661
Location: 251 Grove Avenue, Township of Verona, Essex County, New Jersey
Client: JMF Properties

Surface Elevation (ft): 320.3
Termination Depth (ft): 4.5
Proposed Location: SWM
Excavation / Test Method: Visual Observation

Date Started: 9/23/25
Date Completed: 9/23/25
Logged by: B. Peschel
Contractor: Neighbors Property Management
Rig Type: Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	
Groundwater	3.9	316.4	
Seasonal High Groundwater	3.9	316.4	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
			GRAVEL	COBBLES	STONES	BOULDERS																		
0-3	ASPHALT		0	0	0	0								ABRUPT <1"		NONE		NONE						
3-12	FILL Very Dark Gray (7.5YR 3/1)	GRAVELLY LOAMY SAND	GRAVEL 25	COBBLES 5	STONES 0	BOULDERS 0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE						
12-27	GLEY1 6/10GY	SANDY LOAM	GRAVEL 10	COBBLES 0	STONES 0	BOULDERS 0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG TUBE	18 18	S-1 T-1	A = 0.4 iph B = 0.6 iph
27-47	Brown (7.5YR 5/3)	SANDY LOAM	GRAVEL 10	COBBLES 0	STONES 0	BOULDERS 0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		NONE			BAG	36	S-2	
47-54	Brown (7.5YR 5/3)	LOAMY SAND	GRAVEL 10	COBBLES 0	STONES 0	BOULDERS 0	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE			BAG	52	S-3	

Additional Remarks: Existing fill material encountered to approximately 12 inches below the ground surface. Soil profile pit SPP-2 was terminated due to sidewall collapse at approximately 4.5 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-3

Project: Proposed Multi-Family Residential Development
Project No.: 0922 25-03661
Location: 251 Grove Avenue, Township of Verona, Essex County, New Jersey
Client: JMF Properties

Surface Elevation (ft): 320.0
Termination Depth (ft): 7.0
Proposed Location: SWM
Excavation / Test Method: Visual Observation

Date Started: 9/23/25
Date Completed: 9/23/25
Logged by: B. Peschel
Contractor: Neighbors Property Management
Rig Type: Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	
Groundwater	6.0	314.0	
Seasonal High Groundwater	6.0	314.0	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
			GRAVEL	COBBLES	STONES	BOULDERS																		
0-12	FILL Very Dark Gray (7.5YR 3/1)	VERY GRAVELLY SANDY LOAM	50	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE						
12-24	Reddish Yellow (7.5YR 6/6)	GRAVELLY LOAM	25	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG	18	S-1	
24-72	Brown (7.5YR 4/4)	SILTY CLAY LOAM	5	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG TUBE	36 36	S-2 T-1	A < 0.2 iph B < 0.2 iph
72-84	Brown (7.5YR 4/3)	GRAVELLY SILTY CLAY LOAM	15	5	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	WET	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC			NONE		NONE			BAG	84	S-3	

Additional Remarks: Existing fill material encountered to approximately 12 inches below the ground surface. Soil profile pit SPP-3 encountered refusal on apparent bedrock at approximately 7 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-4

Project: Proposed Multi-Family Residential Development
Project No.: 0922 25-03661
Location: 251 Grove Avenue, Township of Verona, Essex County, New Jersey
Client: JMF Properties

Surface Elevation (ft):	318.2	**Date Started:**	9/23/25	**Groundwater Data**	**Depth (ft)**	**El. (ft)**
Termination Depth (ft):	5.0	**Date Completed:**	9/23/25		NE	-
Proposed Location:	SWM	**Logged by:**	B. Peschel		NE	-
Excavation / Test Method:	Visual Observation	**Contractor:**	Neighbors Property Management	**Groundwater**	NE	-
		Rig Type:	Bobcat E60	**Seasonal High Groundwater**		

Groundwater Comments: Seepage encountered within stone fill layer at 1.5 feet.

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
			GRAVEL	COBBLES	STONES	BOULDERS																		
0-7	ASPHALT		0	0	0	0								ABRUPT <1"		NONE		NONE						
7-18	FILL Dark Gray (5YR 4/1)	EXTREMELY GRAVELLY SANDY LOAM	GRAVEL 75	COBBLES 0	STONES 0	BOULDERS 0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE						
18-40	FILL Reddish Brown (5YR 5/4)	VERY GRAVELLY SANDY LOAM	GRAVEL 25	COBBLES 15	STONES 0	BOULDERS 0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG	24	S-1	
40-60	Gray (7.5YR 6/1)	GRAVELLY SILTY CLAY LOAM	GRAVEL 15	COBBLES 5	STONES 0	BOULDERS 0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE			BAG TUBE	54 54	S-2 T-1	A < 0.2 iph B < 0.2 iph

Additional Remarks: Existing fill material encountered to approximately 40 inches below the ground surface. Debris encountered included asphalt and wood. Soil profile pit SPP-4 encountered refusal at approximately 5 feet below the ground surface.

DYNAMIC EARTH

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP-5

Project: Proposed Multi-Family Residential Development
Project No.: 0922 25-03661
Location: 251 Grove Avenue, Township of Verona, Essex County, New Jersey
Client: JMF Properties

Surface Elevation (ft): 318.0
Termination Depth (ft): 9.2
Proposed Location: SWM
Excavation / Test Method: Visual Observation

Date Started: 9/23/25
Date Completed: 9/23/25
Logged by: B. Peschel
Contractor: Neighbors Property Management
Rig Type: Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	
Groundwater	8.0	310.0	
Seasonal High Groundwater	8.0	310.0	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
			GRAVEL	COBBLES	STONES	BOULDERS																		
0-40	FILL Very Dark Gray (7.5YR 3/1)	GRAVELLY LOAM	30	0	0	0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG	18	S-1	
40-72	FILL Dark Gray (7.5YR 4/1)	VERY GRAVELLY CLAY LOAM	30	10	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG TUBE	54 54	S-2 T-1	A < 0.2 iph B < 0.2 iph
72-96	Dark Gray (7.5YR 4/1)	SILT LOAM	10	0	0	0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG TUBE	84 84	S-3 T-2	A < 0.2 iph B < 0.2 iph
96-110	Very Dark Gray (7.5YR 3/1)	GRAVELLY SANDY LOAM	20	5	0	0	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		NONE			BAG	104	S-4	

Additional Remarks: Existing fill material encountered to approximately 72 inches below the ground surface. Debris encountered included brick, glass, asphalt, concrete, plastic and wood. Soil profile pit SPP-5 was terminated at approximately 9.2 feet below the ground surface.

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). Design engineers should prepare the field manuals in accordance with the design of each measure and the specific requirements of the site. See the sample field manuals for further guidance.

Field Manual for Basin 2.1 – Bioretention Basin
Field Manual for Basin 2.2 – Bioretention Basin

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

Bioretention Systems

Basin #2.1 on the Location Map
Basin #2.2 on the Location Map

Development Name: Grove Street Developers, LLC, Proposed Townhouse Development

Township, County: Township of Verona, Essex County

Bioretention System Overview

Functionality

Bioretention systems are used to remove a wide range of pollutants, such as suspended solids, nutrients, metals, hydrocarbons, and bacteria from stormwater runoff. They can also be used to reduce peak runoff rates and increase stormwater infiltration when designed as a multi-stage, multi-function facility.

A bioretention system can be configured as either a bioretention basin or a longer, narrower bioretention swale. In general, a bioretention basin has a flat bottom while a bioretention swale may have sloping bottom. Runoff storage depths above the soil bed surface are typically shallow. The TSS removal rate for bioretention systems is 80 or 90 percent, depending upon the thickness of the soil planting bed and the type of vegetation grown in the bed.

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 / Infiltration

A bioretention system 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.

A bioretention system with infiltration can also be designed for extended detention, in which case it will attenuate peak flows from storms larger than the Water Quality Design Storm.

Basic Design Information

Basin #2.1

Location of System: N: 564909; E: 732083

Location Description: Eastern portion of the property to the rear of Buildings 5 and 6.

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The system is designed with an underdrain to allow the basin to drain within 72 hours.
3. The elevation of the water table below this basin was observed on September 23, 2025 at EL. 310.0 feet. The bottom of the proposed BMP is designed to be EL. 316.67 feet.
4. The design permeability rate for the planting bed soil is 0.50 inches/hour.
5. This system is designed to function without subsoil permeability.
6. This basin discharges stormwater runoff to the Peckman River to the east of the property, referred to as Point of Analysis 2 in the associated Stormwater Management Report.

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	Township of Verona Retention Storm
Rainfall Depth (inches)	1.25 inches in 2 hours	2.05 inches in 24 hours
Runoff Volume (cubic feet)	6,883	12,525
Peak Flow Rate (cfs)	0.00	0.19
Water Surface Elevation (feet)	320.50	320.76

2. The emergency spillway is at EL. 321.26 feet.

Basin Configuration Targets

1. Planting Soil Bed
    - The depth of the soil planting bed is 1.50 feet.
    - Mixture of the planting soil consists of 85-95% of sand. (with no more than 25% of the sands as fine or very fine sands; no more than 15% silt and clay with 2% to 5% clay content). The organic matter shall be within 3 % to 7% by weight.

- The pH of the planting soil should be in the range of 5.5 and 6.5.
- Filter fabric is placed along the sides of the soil planting bed.
- The system is designed with a planting soil permeability rate of 0.5 inch/hour (pre-construction) and _____ inches/hour (post-construction – tested on (MM) / (DD) / (YYYY)).

2. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Weir	6"	320.50
Outlet #2	Overflow Grate	6' x 6	320.76

3. Vegetation
   - The vegetation type to be used in this bioretention system is site-tolerant grasses, terrestrial forested community.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Basic Design Information

Basin #2.2

Location of System: N: 564850; E: 731941

Location Description: Southern corner of the site adjacent to the drive aisle between Buildings 4 and 5

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. The system is designed with an underdrain to allow the basin to drain within 72 hours.
3. The elevation of the water table below this basin was observed on September 23, 2025 at EL. 310.0 feet. The bottom of the proposed BMP is designed to be EL. 316.17 feet.
4. The design permeability rate for the planting bed soil is 0.50 inches/hour.
5. This system is designed to function without subsoil permeability.
6. This basin discharges stormwater runoff to the Peckman River to the east of the property, referred to as Point of Analysis 2 in the associated Stormwater Management Report.

Hydraulic Design Targets

1. Design parameters

	Water Quality Design Storm	2-year storm
Rainfall Depth (inches)	1.25 inches in 2 hours	3.31 inches in 24 hours
Runoff Volume (cubic feet)	3,361	6,568
Peak Flow Rate (cfs)	0.00	0.19
Water Surface Elevation (feet)	319.63	319.77

2. The emergency spillway is at EL. 320.01 feet.

Basin Configuration Targets

1. Planting Soil Bed
    - The depth of the soil planting bed is 1.50 feet.

- Mixture of the planting soil consists of 85-95% of sand. (with no more than 25% of the sands as fine or very fine sands; no more than 15% silt and clay with 2% to 5% clay content). The organic matter shall be within 3 % to 7% by weight.
- The pH of the planting soil should be in the range of 5.5 and 6.5.
- Filter fabric is placed along the sides of the soil planting bed.
- The system is designed with a planting soil permeability rate of 0.5 inches/hour (pre-construction) and _____ inches/hour (post-construction – tested on (MM) / (DD) / (YYYY)).

2. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Weir	6″	319.63
Outlet #2	Weir	6″	319.63
Outlet #3	Overflow Grate	6′ x 6′	319.77
Outlet #4	Overflow Grate	6′ x 6′	319.77

3. Vegetation
   - The vegetation type to be used in this bioretention system is site-tolerant grasses, terrestrial forested community.
4. Underdrain
   - The perforated laterals are 4 inches in diameter, at a slope of 0%.
   - There are 9 lateral pipes in the basin. Each lateral is 75 feet long at maximum.
   - The manifold pipe is 4 inches in diameter, (perforated) at a slope of 0%, and 480 feet in length.

   (Note: The cleanout pipe shall **not** be perforated.)
   - The gravel layer surrounding the underdrain consists of 3 inches of gravel above the underdrain and 3 inches of gravel below the underdrain.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

Visual Aid for Dry Type Stormwater Basin Inspection

(Note: Basins shown here include various types of dry basins, not limited to the category of basin in this field manual.)



Issue:	The inlet is not properly drained, assuming it has not rained within 72 hours.
Corrective Action:	Clear and remove sediment. Also check the permeability of the underlying soil, if necessary.
Preventative Action:	Routine inspections and removal of sediment from the basin.



Issue:	The Inflow pipe is clogged by sediment and vegetation.
Corrective Action:	Clear and remove sediment and unwanted vegetation.
Preventative Action:	Routine inspection and removal of sediment and unwanted vegetation.



Issue:	The Inflow pipe is entirely clogged by sediment and trees.
Corrective Action:	Clear and remove sediment and trees.
Preventative Action:	Routine inspection & removal of sediment and unwanted vegetation.



Issue:	The excessive sediment in inflow pipe (shown above) might be caused by a blockage of flow to the basin due to excessive vegetation and overgrown trees.
Corrective Action:	Clear and remove trees and vegetation. If necessary, re-grade the bottom slope to ensure the flow properly spreads over the basin bottom.
Preventative Action:	Routine inspection and removal of sediment and unwanted vegetation.



Issue: Eroded inflow apron

Corrective Action: Repair apron.

Preventative Action: Routine inspection and rehabilitation, if necessary.



Issue: Ponding water 72 hours after storm event.

Corrective Action: Check the permeability rate of the soil and the water table elevation. Replace the soil if necessary.

Preventative Action: Routine inspection and tilling/aeration, if necessary.



Issue:	Trash rack is damaged.
Corrective Action:	Repair the trash rack.
Preventative Action:	Routine inspection, especially after large storm events. Tighten any loose bolts and repair structural flaws.

Inspection Checklist / Maintenance Actions
Bioretention 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
A1 Pretreatment (Forebay)	1	Scouring or erosion is present at inlet structure and/or riprap apron	Y__ N__	Check the flow diversion device before the inlet pipe and whether the bypass flow channel is clogged Work Order # _____
	2	Clogged pipes or excessive sediment in the forebay	Y__ N__	Remove sediment or debris
	3	Damaged outlet structure (e.g., cracking, subsidence, spalling, erosion, or deterioration)	Y__ N__	Repair or replace the outlet structure Work Order # _____
A2 Pretreatment (MTD)	1	MTD inspection (if installed)	Y__ N__	(If a MTD is used for pretreatment, see Maintenance Manual Provided by the manufacturer)
A3 Pretreatment (Structural BMP)	1	BMP inspection	Y__ N__	(See BMP No. _____ Field Manual)
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
B Basin Bed	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 Check the soil permeability Till the soil bed with rotary tiller or disc harrow Replace the planting soil, if necessary Work Order # _____
	2	Excessive sediment, silt, or trash accumulation on basin bed	Y__ N__	Clean pretreatment system Remove silt, sediment, and trash
	3	Erosion or channelization is present	Y__ N__	Check whether the flow bypass or diversion device is clogged Re-grade the infiltration bed Work Order # _____
	4	Animal burrows/rodents are present	Y__ N__	Pest control Work Order # _____
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
B Basin Bed	5	Uneven bed	Y__ N__	Use light equipment to resurface the bed Work Order # _____
	6	Evidence of sinkholes or subsidence	Y__ N__	Monitor for sinkhole development
C Vegetation	1	Large spot(s) showing bare soil	Y__ N__	Vegetative cover must be maintained at 85%. Revegetate the entire basin if 50% or more vegetation has been lost. Check Landscaping plan for guidance (if available) Work Order # _____
	2	Invasive plants are present	Y__ N__	Remove the invasive plants and restore the vegetation in accordance with the landscaping plan Work Order # _____
	3	The vegetation in the basin has been mowed or removed	Y__ N__	Revegetate the system in accordance with the vegetation plan Work Order # _____ Note: The vegetation in a bioretention system should **not** be mowed or removed
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
D Bioretention System Embankment and Side Slopes	1	Signs of erosion, soil slide or bulges, seeps and wet spots, loss of vegetation, or erosion on the basin slope	Y__ N__	Check for excessive overland runoff flow through the embankment. Check for any sink hole development Direct the overland runoff to the forebay or pretreatment area Restabilize the bank Work Order # _____
	2	Overgrown perimeter vegetation	Y__ N__	Mow the vegetation on the perimeter of the embankment Work Order # _____ Note: Mowing of vegetation should only take place in the area **outside** the basin. Dense vegetation must be maintained in the basin.
E Outlet	1	Trash or debris accumulation more than 20%	Y__ N__	Clean and remove Determine source of trash and address to reduce future maintenance costs or basin failure
	2	Trash rack is damaged or rusted greater than 50% Trash rack is bent, loose, or missing parts	Y__ N__	Repair or replace trash rack Work Order #_____
	3	Outlet components (e.g., orifice plates or weir plate) skewed, misaligned, or missing	Y__ N__	Repair or replace component Work Order #_____
	4	Discharge pipe apron is eroded or scoured	Y__ N__	Restabilize the discharge riprap apron Work Order #_____
Note:				

	For Inspector			For Maintenance Crew
Component No. Component Name	Inspection Item and Inspection Item No.		Result	Preventative / Corrective Maintenance Actions
F Emergency Spillway	1	Trees or excessive vegetation present	Y__ N__	Remove trees and roots, and restore berms if necessary Work Order #_____
	2	Damaged structure	Y__ N__	Repair Work Order #_____
G Miscellaneous	1	Fence: broken or eroded parts	Y__ N__	Repair or replace Work Order #_____
	2	Gate: missing gate or lock	Y__ N__	Repair or replace Work Order #_____
	3	Sign/plate: tiled, missing, or faded	Y__ N__	Repair or replace Work Order #_____
	4	Excessive or overgrown vegetation blocking access to the basin	Y__ N__	Clear, trim, or prune the vegetation to allow access for inspection and maintenance 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 be taken place when the basin is thoroughly dry.**	A1/A2/A3 – Pretreatment	
	B – Basin Bed	
	D – Bioretention System Embankment and Side Slopes	
	E – Outlet	
Vegetation removal	A1/A2/A3 – Pretreatment	
	B – Basin Bed	
	D – Basin Embankment and Side Slopes	
	E – Outlet	
	F – Emergency Spillway	

Vegetation is removed by _____ (type of equipment) with minimum disruption to the remaining vegetation.

All use of fertilizers, pesticides, mechanical treatments, and other means to ensure optimum vegetation health must not compromise the intended purpose of the stormwater management measure. The fertilizer applied is _____ (type), and _____ (quantity per usage) is applied _____ (frequency of use).

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** _____, **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.