



**LONG TERM OPERATION AND  
MAINTENANCE PLAN**

**October 26, 2021**

**December 27, 2021**

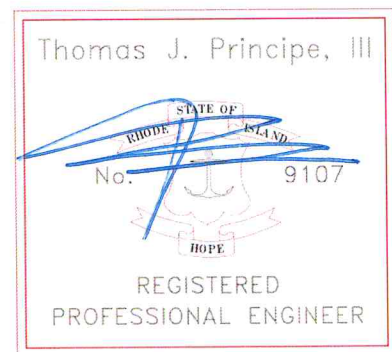
**AP 113 Lot 19A  
100 & 102 Valley Road  
Middletown, RI**

***Prepared For:***

Endeavor Holdings LLC  
51 Long Wharf Mall  
Newport, RI 02840

***Prepared By:***

Principe Engineering, Inc.  
27 Sakonnet Ridge Drive  
Tiverton, Rhode Island



## TABLE OF CONTENTS

Bioretention	Page 2
Permeable Pavement	Page 2
Appendix: 	Page 2

in order to minimize the stormwater management, adhere to the following Operation and Maintenance Plan as well as any additional requirements pertaining to inspection and maintenance measures for this site provided in Appendices E and G of the Rhode Island Stormwater Design and Installation Standards Manual.

## **Bioretention**

Bioretention Inspections are an integral part of system maintenance. During the six months immediately after construction, bioretention facilities should be inspected at least twice or more following precipitation events of at least 1.0 inch to ensure that the system is functioning properly. Thereafter, inspections should be conducted on an annual basis and after storm events of greater than or equal the 1-year, 24-hour Type III precipitation event. Minor soil erosion gullies should be repaired when they occur. Pruning or replacement of woody vegetation should occur when dead or dying vegetation is observed. Separation of herbaceous vegetation rootstock should occur when over-crowding is observed, or approximately once every 3 years. The mulch layer should also be replenished (to the original design depth) every other year, as directed by inspection reports. The previous mulch layer should be removed, and properly disposed of, or roto-tilled into the soil surface. If at least 50 percent vegetation coverage is not established after two years, a reinforcement planting should be performed. If the surface of the bioretention system becomes clogged to the point that standing water is observed on the surface 48 hours after precipitation events, the surface should be rototilled or cultivated to breakup any hard-packed sediment and then re-vegetated. Vegetation along the maintenance access roads should be mowed annually.

## **Permeable Pavement**

The areas where there is infiltrating permeable pavement practices on the site require regular vacuum sweeping or hosing (minimum every three months or as recommended by the manufacturer) to keep the surface from clogging. Maintenance frequency needs may be more or less depending on the traffic volume at the site. The use of sand and salt should be minimized during the winter months and the area should not be repaved or sealed with impermeable materials.

## **APPENDIX:**

- A. Bioretention Basin Operation, Maintenance and Management Inspection Checklist
- B. Permeable Pavement Operation, Maintenance and Management Inspection Checklist
- C. BMP Location Plan
- D. Sample Maintenance Agreement

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### Bioretention Operation, Maintenance, and Management Inspection Checklist

Project:

Location:

Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
<b>1. Debris Cleanout (Annual, After Major Storms)</b>		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
<b>2. Vegetation (Annual, After Major Storms)</b>		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 10 inches		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
No evidence of erosion		
<b>3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)</b>		
No evidence of sediment buildup		
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
<b>4. Dewatering (Semi-annually)</b>		
Dewaters between storms		
No evidence of standing water		
<b>5. Sediment Deposition (Annual, after Major Storms)</b>		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
<b>6. Outlet/Overflow Spillway (Annual, After Major Storms)</b>		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
<b>7. Integrity of Filter Bed (Annual, After Major Storms)</b>		
Filter bed has not been blocked or filled inappropriately		

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Comments:

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Actions to be Taken:

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### Permeable Pavement Operation, Maintenance, and Management Inspection Checklist

Project:

Location:

Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Sediment and Debris Cleanout (3 Months or Manufacturer's Recommendation)		
Contributing area free of sediment and debris		
Contributing area stabilized and mown, with grass clippings removed		
Surface free of sediment and debris (e.g., mulch, leaves, trash, etc.)		
No signs of clogging (e.g., standing water)		
Surface does not require vacuuming		
2. Dewatering (Monthly)		
Permeable pavement dewateres between storms		
3. Underdrain Outfall, if present (Annual)		
No evidence of erosion		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
4. Surface Repairs (Annual)		
Surface has not been sealed		
No evidence of surface deterioration or spalling		
Surface (top and base course) does not need to be replaced		

Comments:

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Actions to be Taken:

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### **Sample Stormwater Facility Maintenance Agreement**

THIS AGREEMENT, made and entered into this \_\_\_ day of \_\_\_\_\_, 20\_\_\_, by and between (Insert Full Name of Owner)

\_\_\_\_\_ hereinafter called the "Landowner", and the [Local Jurisdiction], hereinafter called the "[Town/City]".

WITNESSETH, that WHEREAS, the Landowner is the owner of certain real property described as (Tax Map/Parcel Identification Number) \_\_\_\_\_ as recorded by deed in the land records of [Local Jurisdiction] Deed Book \_\_\_\_\_ Page \_\_\_\_\_, hereinafter called the "Property".

WHEREAS, the Landowner is proceeding to build on and develop the property; and WHEREAS, the Site Plan/Subdivision Plan known as \_\_\_\_\_, (Name of Plan/Development) hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the [Town/City], provides for detention of stormwater within the confines of the property; and

WHEREAS, the [Town/City] and the Landowner, its successors and assigns, including any homeowners association, agree that the health, safety, and welfare of the residents of [Local Jurisdiction] require that on-site stormwater management facilities be constructed and maintained on the Property; and

WHEREAS, the [Town/City] requires that on-site stormwater management facilities as shown on the Plan be constructed and adequately maintained by the Landowner, its successors and assigns, including any homeowners association.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The on-site stormwater management facilities shall be constructed by the Landowner, its successors and assigns, in accordance with the plans and specifications identified in the Plan.
2. The Landowner, its successors and assigns, including any homeowners association, shall adequately maintain the stormwater management facilities in accordance with the required Operation and Maintenance Plan. This includes all pipes, channels or other conveyances built to convey stormwater to the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is herein defined as good working condition so that these facilities are performing their design functions. The Stormwater Best Management Practices Operation, Maintenance and Management Checklists are to be used to establish what good working condition is acceptable to the [Town/City].

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3. The Landowner, its successors and assigns, shall inspect the stormwater management facility and submit an inspection report annually. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the entire facilities, berms, outlet structure, basin areas, access roads, etc. Deficiencies shall be noted in the inspection report.
  4. The Landowner, its successors and assigns, hereby grant permission to the [Town/City], its authorized agents and employees, to enter upon the Property and to inspect the stormwater management facilities whenever the [Town/City] deems necessary. The purpose of inspection is to follow-up on reported deficiencies and/or to respond to citizen complaints. The [Town/City] shall provide the Landowner, its successors and assigns, copies of the inspection findings and a directive to commence with the repairs if necessary.
  5. In the event the Landowner, its successors and assigns, fails to maintain the stormwater management facilities in good working condition acceptable to the [Town/City], the [Town/City] may enter upon the Property and take whatever steps necessary to correct deficiencies identified in the inspection report and to charge the costs of such repairs to the Landowner, its successors and assigns. This provision shall not be construed to allow the [Town/City] to erect any structure of permanent nature on the land of the Landowner outside of the easement for the stormwater management facilities. It is expressly understood and agreed that the [Town/City] is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the [Town/City].
  6. The Landowner, its successors and assigns, will perform the work necessary to keep these facilities in good working order as appropriate. In the event a maintenance schedule for the stormwater management facilities (including sediment removal) is outlined on the approved plans, the schedule will be followed.
  7. In the event the [Town/City] pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner, its successors and assigns, shall reimburse the [Town/City] upon demand, within thirty (30) days of receipt thereof for all actual costs incurred by the [Town/City] hereunder.
  8. This Agreement imposes no liability of any kind whatsoever on the [Town/City] and the Landowner agrees to hold the [Town/City] harmless from any liability in the event the stormwater management facilities fail to operate properly.
  9. This Agreement shall be recorded among the land records of [Local Jurisdiction] and shall constitute a covenant running with the land, and shall be binding on the Landowner, its administrators, executors, assigns, heirs and any other successors in interests, including any homeowners association.

WITNESS the following signatures and seals:

\_\_\_\_\_  
Company/Corporation/Partnership Name (Seal)

By: \_\_\_\_\_

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(Type Name and Title)

The foregoing Agreement was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by

\_\_\_\_\_.

NOTARY PUBLIC

My Commission Expires: \_\_\_\_\_

By: \_\_\_\_\_

(Type Name and Title)

The foregoing Agreement was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by

\_\_\_\_\_.

NOTARY PUBLIC

My Commission Expires: \_\_\_\_\_

Approved as to Form:

\_\_\_\_\_  
[Town/City] Attorney Date