

Post-Construction Maintenance Plan

Project: XYZ Commercial Center

Section A:

Operation and Maintenance Information

Site Address: 123 Ridgeview Ave
Lincoln, NY 12345

Descriptive Site Location: 5-acre property bounded by Ridgeview Avenue to the South, Spring Creek to the North. Adjacent to existing Poplar Hill Shopping Center.

Property Owner: XYZ Partners, Ltd
1 Main Parkway Suite
Lincoln, NY 12345
PH: 123-456-7890

Property Management

(If different from the owner):
ABC Properties
1 Development Parkway
Lincoln, NY 12345
PH: 123-456-7890

Maintenance Plan Preparation Comments

If a commercial property or homeowners association is to be managed by an individual or organization other than the property owner, include the contact information here.

Section B:

Design and Construction Information

Permitting Authority: Lincoln County
Department of Permitting
Lincoln, NY 12345
PH: 123-999-1111

Design Engineer: Cynthia Ong
Reyes and Ong Engineers
18000 Engineering Drive
Newtown, NY 12346
PH: 123-111-9999

Contractor: B.A. Smith Grading
12 Access Road
Lincoln, NY 12345
PH: 123-191-1919

Proprietary Device Manufacturer or Distributor:
Not applicable

Emergency Contact

Town of Lincoln Department of Public Works
Emergency Response Number: 123-000-0001

This section refers to the construction of the stormwater management facility.

The permitting authority would be the department(s) that issued an erosion control and stormwater management permit, floodplain permit, storm drain permit, or grading permit.

The design engineer's contact information may be needed if structural repairs are undertaken.

The general contractor or landscaping contractor may be contacted to perform maintenance on items under warranty.

If a proprietary stormwater device is used (e.g., a catch basin insert device or hydrodynamic device in a manhole) include contact information for the manufacturer or distributor.

Local government authority to contact in case of failure of the stormwater treatment practice that threatens public safety.

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Section C: Maintenance and Inspection Responsibilities

Maintenance Mechanism:

- ☒ Maintenance Agreement
 ☒ Commercial Property
 ☐ Homeowners Association
☐ Maintenance Assumed by Government Entity
List _____

Identify the responsible party for maintenance.

Required Inspections:

- Inspection by a licensed professional engineer is required in accordance with Schedule A.
- Town of Lincoln has authority to enter the site to inspect. The frequency of this inspection has not been established.

Include inspection, tracking and reporting responsibilities outlined in the maintenance agreement, local codes, or programmatic information from the municipal department responsible for inspection.

Providers of maintenance services, if known:

- Pedraza Properties to coordinate maintenance activities and inspection.
- Green Thumb Landscaping provides landscaping and snow removal services to all Pedraza Properties in Lincoln. Green Thumb will conduct mowing of filter strip areas and swale, weeding of bioretention cell.
- Reyes and Ong Engineers will be contracted to provide inspection of stormwater management practices and submit the required reports to the Town of Lincoln.

This may include a Property Management Company (if different from owner), landscaping company, contractor, engineer, or others.

Section D: Funding Mechanism

- ☐ Maintenance Performed by Municipality and Funded through:
 ☐ General Revenues
 ☐ Stormwater Utility or other fee assessment
OR
☒ Maintenance Performed by Owner and Funded or Guaranteed through:
 ☐ Performance Bond
 ☐ Letter of Credit
 ☒ Escrow Account
 ☐ Other _____

Identify the financial mechanism that will be used.

Estimated annual operation and maintenance cost:

The estimated cost of maintenance beyond the landscaping costs are \$_____. A detailed cost estimate is attached.

Include a detailed estimate of the annual routine maintenance cost and the cost of infrequent maintenance items. The annual operation and maintenance cost is usually roughly 3-9% of the capital cost of the facility. See attachment.

Post-Construction Maintenance Plan Project: XYZ Commercial Center	Maintenance Plan Preparation Comments
<p><u>Section E: Post-construction Stormwater Management Facilities</u></p> <p>Site map identifying location of each facility. See sheet C-01 of attached construction drawings</p> <p>Facility: North Bioretention</p> <p>Type: Bioretention Cell</p> <p>Location: Northwest corner of the property in turf area. North of building, parking and rear access road.</p> <p>Contributing Drainage Area: 0.8 acres</p> <p>Attachments: See sheets C-02, C-03, C-06, L-02 and L-03 of construction drawings.</p> <p>Special needs:</p> <ul style="list-style-type: none"> ▪ Instruct landscaping contractor not to fertilize or replant this area. <p>Facility: Grass Swale</p> <p>Type: Grass Swale</p> <p>Location: Adjacent to rear access road.</p> <p>Contributing Drainage Area: 0.75 acres</p> <p>Attachments: See sheets C-02, C-04, C-06, and L-02 of construction drawings.</p> <p>Special needs:</p> <ul style="list-style-type: none"> ▪ Instruct landscaping contractor not to fertilize this area. ▪ Property manager to be aware that this area is designed to retain water after storms. 	<p><i>Show or reference a schematic site map showing the location of each stormwater management practice. This is especially helpful for underground facilities and bioretention facilities that may not be immediately recognized.</i></p> <p><i>Name/identifier for facility (match site plans).</i></p> <p><i>Type of facility e.g. bioretention, stormwater pond w/extended detention, underground sand filter, etc.</i></p> <p><i>List manuals, warranties, or other information that exists for this facility and will be attached to this document.</i></p> <p><i>List unique maintenance needs for this facility. For example, will inspectors need to be trained in confined space entry? Is a vacuum truck needed for frequent maintenance?</i></p>

Post-Construction Maintenance Plan Project: XYZ Commercial Center	Maintenance Plan Preparation Comments
<p>Section F: <u>Attachments to Maintenance Plan:</u></p> <ul style="list-style-type: none"> ▪ As-built plans ▪ Final landscaping plans ▪ Design calculations report (Drainage Area map included) ▪ Specifications for potential repair items ▪ Operation, Maintenance, and Inspection Checklist <ol style="list-style-type: none"> 1. Bioretention 2. Grass Swales ▪ Manuals and warranties Not applicable ▪ Bid specifications – 1 copy included; Appendix A contains permits ▪ Easements The storm drain easement and stormwater management easement have been recorded with Lincoln County Clerk of Court. Copies of these documents are attached. ▪ Covenants Not Applicable ▪ Maintenance Agreement The required maintenance agreement has been recorded. A copy is attached. ▪ Detailed Cost Estimate ▪ Maintenance and Tracking Log 	<p><i>[Not included in this sample plan.] Include the redlined or as-built sheets that include the plan and profile for stormwater facilities and storm drains.</i></p> <p><i>[Not included in this sample plan.] Landscaping plans showing planting zones and planting specification. Include any specifications on vegetation maintenance as well as any warranty information regarding plantings.</i></p> <p><i>[Not included in this sample plan.] While not needed for routine maintenance and inspection, these calculations will reduce the time and cost for major repairs when given to the designer or contractor completing repairs.</i></p> <p><i>These are comparable to construction specification in the level of detail. These can be used by the owner or municipality to establish a contract for maintenance services. Sample specifications are included in this plan.</i></p> <p><i>[Not included in this sample plan.] Lists frequencies for maintenance and inspection items. This should be adapted from Appendix G of the NYS Stormwater Management Design Manual.</i></p> <p><i>[Not included in this sample plan.] Include any documentation or instructions for proprietary products and mechanical components such as valves, pumps, aerators, etc.</i></p> <p><i>[Not included in this sample plan.] The bid specifications or other document that includes a copy of construction permits, particularly if there are any performance requirements that extend beyond the transfer of ownership.</i></p> <p><i>[Not included in this sample plan.] If easements are required by the local jurisdiction to provide municipal inspectors and the public works department with access to the site, include copies of the recorded documents.</i></p> <p><i>[Not included in this sample plan.] In residential developments where stormwater management responsibility falls to the homeowner's association, a covenant may be in place to make requirements of individual homeowners. If so, this document should be attached to the maintenance plan.</i></p> <p><i>Include a copy of the legal document as recorded. A sample maintenance agreement is provided in Appendix C of this document.</i></p> <p><i>Base on unit costs for maintenance activities. See attachment that follows for example on bioretention. If the municipality or county requires a specific format for the submittal of inspection results and tracking, include that here. Sample is attached.</i></p>

Example Attachments
Specifications for Bioretention

MAINTENANCE DETAILS FOR BIORETENTION

Inspection of Bioretention

The Contractor shall make a visual inspection of the bioretention area in the presence of the Engineer. Trash, debris, oil, sludge, sediment, solid levels, grass levels, and vegetation deficiencies shall be recorded and reported to the Engineer. The surface of the bioretention area shall be inspected for erosion and gulying and any deficiencies in the surface material or drainage blanket shall be reported to the Engineer. The Contractor shall record the color and condition of the mulch layer over the entire surface area of the facility. All structural components, which include all outlet structures, valves, pipes, erosion control materials, and the underdrain system, shall be inspected and any damage shall be reported to the Engineer. If standing water is observed in the bioretention area more than 48-hours after a storm event then the Contractor is responsible for investigating whether the clogging is due to a filter media clog or underdrain system clog by visually inspecting the underdrain system with access provided by the outlet structure. The Contractor shall be responsible for recording the information and contacting the Engineer for guidance or if directed by the Engineer prior to inspection, shall follow the methods described below for Underdrain Flushing or Underdrain Replacement.

All material shall be disposed of by the Contractor as specified above and in accordance with all federal, state, and local regulations.

Stormwater Facilities Weeding and Litter Removal

The work consists of removing any weeds, trash and/or debris from the bottom of the bioretention area in accordance with the specifications or at the discretion of the Engineer. Weeding shall include any weeds that negatively impact stormwater flowage through the facility, any weeds that negatively impact site lines of the roadway, and/or any weeds that are destroying original design vegetation.

Mowing

The work includes mowing of the grass around the perimeter of the bioretention area in accordance with the methods described above.

Stormwater Facilities Sediment Removal

The work includes the removal of sediment within the bioretention facility in all areas where buildup is greater than or equal to 75 mm, has accumulated to a depth of one-third the design volume, or as directed by the Engineer. The sediment shall be disposed of off-site in a pre-approved location in accordance with the methods above.

Erosion Remediation Maintenance

Any areas within the extents of the bioretention facility that are subject to erosion or gulying shall be replenished with granular drainage blanket material and mulch or as directed by the Engineer in accordance with this specification. Slope protection material shall be placed, at the discretion of the Engineer, in areas prone to erosion, in accordance with the above specifications. Embankment stability shall be inspected for seepage and burrowing animals and any erosion or gulying shall be reported to the Engineer.

Pruning

The work includes pruning of all dead or dying vegetation within the extents of the bioretention area, removal of all herbaceous vegetation root stock when overcrowding the maintenance access to the facility and removal of any vegetation that has a negative impact on stormwater flowage through the facility. Any perimeter vegetation encroaching upon the bioretention area shall be pruned if it is prohibiting access to the facility, compromising sight visibility and/or compromising original design vegetation.

Mulch Layer Removal and Replacement

The mulch layer shall be inspected at the time of the maintenance visit and if the Engineer concludes that the layer is clogged and the clogging of the system is due to a mulch layer clog then the material shall be replaced in accordance with the methods described above. To replace the mulch layer the surface of the bioretention area shall be excavated down to the drainage blanket media and properly disposed of in a pre-approved off-site location. After excavation the Engineer shall be notified and shall conduct an inspection of the drainage blanket to determine if further excavation is necessary. If the Engineer deems the drainage blanket as adequate then the mulch layer shall be replaced to its original design depth. If the Engineer determines that the drainage blanket has been contaminated then the drainage blanket layer shall be rehabilitated as specified below.

Drainage Blanket Roto-tilling

If the Engineer has concluded that the clogging of the bioretention area is due to blanket media clogging and that less than 50 percent of the blanket media surface area has been contaminated then the Contractor shall roto-till the bottom 150 mm of the drainage blanket, prior to replacing the mulch layer, to brake up hard packed soil.

Drainage Blanket Media Replacement

If the Engineer has concluded that the clogging of the bioretention area is due to blanket media clogging and that more than 50 percent of the blanket media surface area has been contaminated then the media shall be excavated and replaced prior to replacing the mulch layer in accordance with the methods described above.

Stormwater Facilities Underdrain System Flushing

If the Engineer has concluded that the clogging of the bioretention area is due to an underdrain system clog then the underdrain system shall be snaked and/or flushed in accordance with the methods described above.

Stormwater Facilities Underdrain System Replacement

If the Engineer has concluded that the clogging of the bioretention area is due to an underdrain system clog and the system has been snaked and/or flushed and the surface of the bioretention area has been cleaned of sediment and continues to pond stormwater more than 48-hours after a storm event or a visual inspection reveals that damage has been done to the underdrain system then the system shall be excavated and replaced in accordance with the methods described above. The work shall also include replacement of the gravel blanket surrounding the underdrain piping and any/all associated filter fabric or as directed by the Engineer.

Replacement Planting

This item shall include all work associated with the replacement of any/all vegetation that has died off or has not fully established, as determined at the time of the inspection. The plantings shall be replaced as directed in the specifications above and/or the Engineers recommendations.

General Cleanup

The Contractor shall be responsible for returning all areas within the extents of the bioretention facilities to the status that was found at the start of the project or in conformance of the original design Drawings. Any item within the bioretention facility area, including but not limited to vegetation, pipes, end sections, rip rap, weirs, berms, outlet structures, and frames and grates/covers, damaged or destroyed while completing this work item shall be replaced and paid for by the Contractor.

METHOD OF MEASUREMENT

The work to be performed to maintain the stormwater bioretention facility shall be measured as follows:

Item No.	Item	Pay Unit
1	Inspection of Bioretention	Square Meter
2	Stormwater Facilities Weeding and Litter Removal	Square Meter
3	Mowing	Square Meter
4	Stormwater Facilities Sediment Removal	Cubic Meter
5	Erosion Remediation Maintenance	Square Meter
6	Erosion Control Material (Rip rap & Geotextile)	Cubic Meter
7	Pruning	Square Meter
8	Soil Media Roto-tilling	Square Meter
9	Mulch Layer Removal and Replacement	Cubic Meter
10	Granular Drainage Blanket Replacement	Cubic Meter
11	Stormwater Facilities Underdrain System Flushing	Meter
12	Stormwater Facilities Underdrain System Replacement	Meter
13	Replacement Planting	Each