Proposed Mixed Use Building

321 Main Street
City of Hackensack
Bergen County, New Jersey

Stormwater Management
Maintenance Manual

July 22, 2020

Prepared for:

307 Main MF 2019-Q, LLC.
22 Maple Street
Morristown, NJ 07960

Prepared by:

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I. PURPOSE

In accordance with the New Jersey Stormwater Best Management Practices Manual (February 2004), this Stormwater Management Maintenance Plan is intended to establish an inspection protocol and to identify specific preventive and corrective maintenance procedures, schedules, and responsible parties for the care of the stormwater collection and detention system at the 321 Main Street in the City of Hackensack, NJ.

Regular and thorough maintenance is necessary for stormwater management measures to perform effectively and reliably. Failure to perform such maintenance can lead to diminished performance, deterioration and failure, in addition to a range of health and safety problems including mosquito breeding, vermin, and the potential for drowning. The potential for such problems to develop is accentuated by many of the very features and characteristics that allow stormwater management measures to do their job, including standing or slow moving water, sumps, trash racks and the need to continually function in all types of weather.

II. RESPONSIBLE PARTIES:

307 Main MF 2019-Q, LLC
22 Maple Street
Morristown, NJ 07960
(973)-734-9415

III. STORMWATER MANAGEMENT SYSTEMS OVERVIEW

One underground detention basin exists on the site. The system will be constructed within the parking garage beneath the concrete drive aisle in the southern and western portion of the lot. The detention basin is designed to accept runoff from 1.5 acres of the building roof area. The underground system will consist of 350 LF of 36” perforated HDPE pipe surrounded by stone. The proposed detention system detains runoff from the development prior to discharging out to one (1) Type D inlet located in the State Street right-of-way. The flow is tributary an existing 40” RCP storm pipe located beneath State Street. A location map of the basins and details of their components are included in this manual. See Appendix A for maintenance of the underground detention systems.

Refer to SK-01 Basin Location Map, located in Appendix C, for the locations of the proposed infiltration systems.
IV. INSPECTION & MAINTENANCE OVERVIEW

This Stormwater Management Maintenance Plan has two primary components: 1) Scheduled Inspections and 2) Maintenance of the Stormwater Management Systems. Discussions of each component are contained within the text of this plan.

Sample forms, to be completed by a qualified inspector, are also contained in this plan. These forms are meant to be a guide with the minimum amount of information to be reported during regular inspection and maintenance occurrences.

V. SAFETY

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local Police Department at 911. Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local Police Department immediately for response by the Hazardous Materials Unit. The emergency contact number is 911.

VI. FIELD INSPECTION EQUIPMENT

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots
- Safety equipment (vest, hard hat, confined space entry equipment)
- Communication equipment
- Operation and Maintenance Manual for the site including stormwater management facility location maps
- Clipboard
- Stormwater Management System Inspection Report Forms
- Manhole Lid Remover
- Shovel

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.
VII. INSPECTING STORMWATER MANAGEMENT FACILITIES

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent Best Management Practices (BMPs). Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual at a minimum of once per year. Inspections should also be conducted following a major storm event. See Appendices A and B for specifications on the various components of the stormwater management system.

B. Inspection Report

The person(s) conducting the inspection activities shall complete a Stormwater Management System Inspection Report Form for each stormwater management facility. Sample Inspection Report Forms are located in this plan. Inspection Report Forms shall be completed by the contractor completing the required inspections. The form shall then be reviewed by the property owner and retained indefinitely. A copy of the Inspection Report Form shall be provided to City of Hackensack Public Works upon request.

The following information explains how to fill out the Inspection Forms:

1. General Information

This section identifies the facility location, person conducting the inspection, the date and time the facility was inspected, and approximate days since the last rainfall.

The reason for the inspection is also identified on the form depending on the nature of the inspection. All facilities should be inspected on an annual basis at a minimum. In addition, all facilities should be inspected after a significant precipitation event to ensure the facility is draining appropriately and to identify any damage that occurred as a result of the increased runoff.

2. Inspection Scoring

For each inspection item, a score must be given to identify the urgency of required maintenance. The scoring is as follows:

0 = No deficiencies identified.

1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.
2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program. This can include items like vegetation management or debris/trash removal.

3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred. This could include items such as structural failure of a feature, significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.

3. Inspection Summary/Additional Comments

Additional explanations to inspection items, and observations about the facility not covered by the form, are recorded in this section.

4. Overall Facility Rating

An overall rating must be given for each facility inspected. The overall facility rating should correspond with the highest score (0, 1, 2, 3) given to any feature on the inspection form.

C. Maintenance Plan Effectiveness

Bi-annually, the responsible party shall review this maintenance plan and evaluate, in writing, the effectiveness of the plan. Specifically, the following items should be addressed:

- Measures employed to educate users of the facility on the maintenance plan components. Specifically, the proper use of receptacles for trash, and the location where parking lot spill absorbents are stored.
- Ensure property maintenance contracts include corrective and preventive maintenance measures discussed in Section VIII and IX below.
- Evaluate the frequency of inspections, and corrective and preventive maintenance and ensure accurate records are being kept.

Copies of the written plan evaluations shall be kept at the facility and shall be provided to the City of Hackensack Public Works upon request.

VIII. CORRECTIVE MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained. Corrective maintenance should also be conducted following a major storm event to the extent possible.
A. **Maintenance Categories**

Stormwater management facility maintenance programs are separated into three broad categories of work. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

1. **Routine Work**

   The majority of this work consists of scheduled mowings and trash and debris pickups for stormwater management facilities during the growing season. This includes items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as weed control, mosquito treatment, and algae treatment. These activities normally will be performed numerous times during the year. Table 1 below provides a summary of recommended routine maintenance activities.

2. **Restoration Work**

   This work consists of a variety of isolated or small-scale maintenance and work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment.

3. **Rehabilitation Work**

   This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater management facilities. This work may require an engineering design with construction plans to be prepared for review and approval. This work may also require more specialized maintenance equipment, surveying, construction permits or assistance through private contractors and consultants. Should rehabilitation work be required, contact the site engineer of record:

   Michael E. Dipple, PE  
   L2A Land Design, LLC  
   60 Grand Avenue  
   Englewood, NJ 07631  
   201-227-0300

B. **Maintenance Personnel**

Maintenance personnel must be qualified to properly maintain stormwater management facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

**Maintenance Forms**

The Stormwater Management System Maintenance Activity Form provides a record of maintenance activities. Sample Maintenance Activity Forms for each facility type are provided in this Plan. Maintenance Activity Forms shall be completed by the contractor completing the
required maintenance items. The form shall then be reviewed by the property owner and retained indefinitely. A copy of the Maintenance Activity Form shall be provided to the City of Hackensack Public Works Division upon request.

### TABLE 1
Summary of Corrective Maintenance Activities

<table>
<thead>
<tr>
<th>Maintenance Activity</th>
<th>Minimum Frequency</th>
<th>Look for:</th>
<th>Maintenance Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Trash/Debris Removal</td>
<td>Quarterly and after every storm exceeding 1 inch of rainfall.</td>
<td>Trash &amp; debris within inlet filters</td>
<td>Remove and dispose of trash and debris*</td>
</tr>
<tr>
<td>2. Sediment Removal</td>
<td>Annually; Twice during the first year</td>
<td>Accumulation of sediment, typically near outlet pipe</td>
<td>Remove and dispose of sediment*</td>
</tr>
<tr>
<td>3. Conditions of Drainage Systems</td>
<td>Quarterly and after every storm exceeding 1 inch of rainfall.</td>
<td>Damage and wear at inlet filters; structural integrity of vault system; condition of Flogard inserts</td>
<td>Perform required system maintenance.</td>
</tr>
<tr>
<td>4. Preventative Maintenance Opportunities</td>
<td>Quarterly and after every storm exceeding 1 inch of rainfall.</td>
<td>Sources of potential pollutants, proper lawn maintenance, areas of erosion</td>
<td>Perform required preventive maintenance</td>
</tr>
</tbody>
</table>

* Dispose debris and sediment in a licensed disposal facility in New Jersey. For a list of licensed disposal facilities contact a licensed disposal contractor or the City of Hackensack Department of Public Works (201) 646-3950.

### IX. PREVENTATIVE MEASURES TO REDUCE MAINTENANCE COSTS

The most effective way to maintain your water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. A thoughtful maintenance program will include measures to address these potential contaminants, and will save money and time in the long run. Key points to consider in your maintenance program include:

1. Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
2. Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings.
3. Ensure the proper disposal of hazardous wastes and chemicals.
4. Plan lawn care to minimize the use of chemicals and pesticides.
5. Sweep paved surfaces and put the sweepings back on the lawn.
6. Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
7. Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
8. Clean out the upstream components of the storm drainage system, including inlets and storm sewers.
9. Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

X. CORRECTIVE RESPONSE TO EMERGENCY CONDITIONS

The parties responsible for the stormwater management facilities should be well prepared to respond to emergencies and take necessary corrective action to prevent emergencies from happening. The following is a discussion of emergency response and emergency prevention.

Emergency Response

Below is a list of potential emergency conditions related to the detention basins and their appurtenances. In the case of any emergency, dial 911 immediately.

- **Accidental or Intentional Vehicular or Pedestrian Entry** – The initial response to any emergency is to call 911. Be prepared to give the exact location, by street address, of the emergency location. Flow in a detention basin can be very strong especially in the vicinity of the outlet structure. Only trained personnel should enter a full detention basin to attempt a rescue.

- **Hazardous Waste Spill** - The initial response to any emergency is to call 911. Inform the dispatcher that the emergency involves a hazardous waste spill. The dispatcher will contact the Ocean County Hazardous Materials Response Unit. Follow the directions of the emergency responders upon their arrival. Do not go near the detention basin nor allow anyone to go near the detention basin or spill area. A hazardous spill of liquid chemicals that occurs within the property will likely drain to the detention basins onsite.

- **Flooding** – If a detention basin appears to be approaching a condition of flooding or overflow, contact the police by dialing 911. Do not attempt to unclog a blockage in the system to remedy the problem. Follow the directions of the emergency responders upon their arrival.

- **Downed Power Lines** - The initial response to any emergency is to call 911. Be prepared to give the exact location, by street address, of the emergency location. Keep a safe distance from any standing water. At a safe distance, stop vehicular and pedestrian traffic from approaching the area of the downed power line.

Emergency Prevention

Below is a list of measures that can be taken to help to prevent emergency situation from happening at the onsite detention basins.
• Outlet Works Cleaning – Flooding at the detention basins is typically caused by clogging at the outlet structure. The outlet structures should be maintained in accordance with the schedule above.

• Tree Pruning – Periodically inspect tree branches that could impact power lines. Contact either PSE&G and/or JCP&L for tree pruning in the vicinity of power lines.
APPENDIX A

Underground Detention System Maintenance
Maintenance Protocol

The underground stormwater detention system design provides easy access for inspection and maintenance as follows:

Inspection

Quarterly inspections, at least four (4) times annually, of the underground stormwater management systems and following every storm event exceeding 1 inch of rainfall are recommended. Catch basins are installed at multiple points along the single row of 36” HDPE pipe system for easy cleaning and maintenance. If upon visual inspection it is found that the average depth of sediment in the 36” HDPE pipe exceeds 3 inches, clean-out should be performed. A review of the drain time for the system shall be observed to ensure that the functionality of the system is in accordance with the NJDEP BMP Manual. A stadia rod can be inserted at each inspection port to determine if the stormwater detention basin is not performing properly.

Maintenance

If inspection indicates the potential need for maintenance, access is provided standard manholes located at each of the four corners for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself through the system while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best.

Step 1) Inspect infiltration system for sediment:

   A) Remove all manhole cover at all components of the infiltration system.
   B) Using a flashlight, inspect the infiltration system through the outlet pipe.
      a. Mirrors on poles or cameras may be used to avoid a confined space entry.
      b. Follow OSHA regulations for confined space entry if entering manhole.
   C) If the average sediment level is approximately 3 inches in depth, proceed to Step 2. If not, proceed to Step 3.

Step 2) Clean out infiltration system using the JetVac process:

   A) A fixed culvert cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable.
   B) Apply multiple passes of JetVac until backflush water is clean.
   C) Vacuum manhole sump as required.

Step 3) Replace all lids and covers. Record observations and actions.
Step 4) Inspect & clean catch basins and manholes upstream of the detention system.
APPENDIX B
Maintenance and Inspection Forms
Date: ______________________

Amount: ___________________ Inches

Detention Basin Location: ____________________

Maintenance Category: Routine Restoration Rehabilitation
(Circle All That Apply)

MAINTENANCE ACTIVITIES PERFORMED

ROUTINE WORK

_____ Trash/Debris Removal
_____ Accumulated Sediment Removal
_____ Accumulated Sediment Jet-Vac

Describe Restoration and Rehabilitation Work
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Estimated Manhours: ______________________

Equipment/Material Used: ____________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Comments: ________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

This Maintenance Activity Form shall be kept indefinitely and made available to the City of Hackensack Public Works Department upon request.
STORMWATER MANAGEMENT SYSTEM
INSPECTION REPORT FORM
(Underground Detention Basins and Storm Sewers)

Date: _____________________________

Development Name: 307 Main MF 2019-Q, LLC
Address: 321 Main Street, Hackensack, NJ

Inspector:

Weather:

Date of Last Rainfall: Amount: Inches:

Detention Basin Location: _____________________________

Reason for Inspection:
(Circle One)
Routine Complaint After Significant Rainfall Event

INSPECTION SCORING - For each facility inspection item, insert one of the following scores:
0 = No deficiencies identified 2 = Routine maintenance required
1 = Monitor (potential for future problem exists) 3 = Immediate repair necessary
N/A = Not applicable

FEATURES

1.) Catch Basins
   ___Sediment/Debris Accumulation
   ___Condition of Casting
   ___Condition of Concrete Box
   ___Condition of Pipe Penetrations
   ___Other (Explain Below)

2.) Storm Sewers
   ___Sediment/Debris Accumulation
   ___Cracking of Pipe
   ___Deformation
   ___Asphalt Settlement Above
   ___Other (Explain Below)

Inspection Summary / Additional Comments:

OVERALL FACILITY RATING (Circle One)
0 = No Deficiencies Identified 2 = Routine Maintenance Required
1 = Monitor (potential for future problem exists) 3 = Immediate Repair Necessary

This inspection form shall be kept indefinitely and made available to the City of Hackensack Public Works Department upon request.
APPENDIX C
Basin Location Map and Details
3" THROUGH 10" FIRE SERVICE CONNECTION

STANDARD PIPE CLEANOUT

STANDARD PAVER DETAIL

SANITARY SEWER SERVICE CONNECTION

TYPICAL TRENCH

STORM SEWER MANHOLE

CATCH BASIN INLET

ROOF-LEADER DRAIN

HANDICAP STRIPING

DETENTION SYSTEM

SANITARY SEWER SERVICE CONNECTION

STORM SEWER MANHOLE

CATCH BASIN INLET

ROOF-LEADER DRAIN

HANDICAP STRIPING

DETENTION SYSTEM
OUTLET CONTROL STRUCTURE (OCS-A3)

EFFLUENT TRASH GUARD DETAIL (OR APPROVED EQUAL)

TYPE 'D' INLET

STREET LIGHT POLE DETAIL

DECIDUOUS TREE PLANTING

IRONSMITH STARBURST SERIES 2 4816

TREE GRATE CONCRETE ANCHOR