OPERATION AND MAINTENANCE PLAN FOR
STORMWATER MANAGEMENT FACILITIES

Proposed Apartment Complex
308 Anderson Street
Hackensack, NJ

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 Prepared For: 308 Anderson LLC
 212 Bennington Terrace
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I. **STORMWATER MANAGEMENT MAINTENANCE:**

On site Stormwater Management Maintenance will be performed by:

308 Anderson LLC  
308 Anderson Street  
Hackensack, NJ Attention: Mr. Amit Krishnatry

A. **MAINTENANCE RESPONSIBILITIES:**

1. The above reference party shall maintain a detailed log of all preventative and corrective maintenance for the stormwater management measures shown on the plans, including a record of all inspection and copies of all maintenance related work orders.

2. The person responsible for maintenance identified above shall evaluate the effectiveness of the maintenance plan at least once a year and adjust the plan as needed.

3. The person responsible for maintenance identified above shall retain and make available upon request any public entity with administrative, health, environmental or safety authority over the site, the maintenance plan and the documentation required above.

4. Following is a list of specific areas requiring maintenance. For detailed information and schedules refer to the specific subsection for each item.

   a) Lawn & Landscaped Area Maintenance 
   b) Stormwater Collection System Maintenance. 
   c) Underground Infiltration Maintenance 
   d) Manufactured Treatment Device Maintenance

5. Where discrepancies exist, maintenance and reporting requirements of the current City of Hackensack Stormwater Control Ordinance shall govern.

B. **MUNICIPAL, COUNTY AND STATE ACCESS RIGHTS:**

City of Hackensack and/or Bergen County and/or State of New Jersey retain the right to access the property to provide emergency maintenance to ensure public safety. Should the City and/or the County and/or the State of New
Jersey have to perform emergency maintenance the owner must incur the costs associated with said maintenance and/or operation.

II. **LAWN AND LANDSCAPED AREA MAINTENANCE:**

*Description:*

Maintenance involves annual inspection of the vegetation, fertilization, and the correction of erosion problems.

Schedule III – annually or as noted

<table>
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<th>Activity</th>
<th>Schedule</th>
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<tr>
<td>Mowing</td>
<td>As specified per BMP</td>
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<tr>
<td>Fertilize</td>
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<td>Liming</td>
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<td>Aeration</td>
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1. **Maintenance: General**

   Shrubs & Trees:
   
   • These plants shall be maintained in a natural setting. No shearing is allowed, shrubs and trees will be pruned to remove dead or diseased branches. Dead plant material shall be replaced in kind unless cultural requirements necessitate change. When planting within compacted slopes, excavate larger holes and backfill with suitable planning medium.
   
   • The Landscape Contractor shall inspect all areas to verify that all work is being performed properly and as scheduled, locate potential problems, and correct unacceptable conditions. A brief verbal report is to be submitted to the Owner. Problems requiring immediate attention shall be reported to the Owner.

2. **Mowing**

   a) All clippings are to be raked, bagged and disposed off-site to prevent clogging of the outlet structure.
3. **Fertilize:**

   a) Fall: Fertilizer analyses rates are to be based on soil test results. Standard fertilizer blends rather than custom blends are assured.

4. **Liming:**

   a) One application in the fall as required by a soil test. Minimum requirements – Lime with pulverized dolomite limestone at a rate of 100 lb./1,000 s.f.

5. **Soil Testing:**

   a) The Landscape Contractor shall take soil samples from grassed areas for the following analysis, pH, available Mg, P,K,C, recommended nitrogen application. Copies of the analyses for each area are to be furnished to the Owner. Samples shall be taken before liming and fertilization as noted on the schedule.

6. **Turf disease and pest control:**

   a) As required. Submit to the Owner the following information before spraying:

      i) Targeted pests or diseases
      ii) Materials and methods used.

7. **Over-seeding:**

   a) Over-seeding is scheduled, as required per field inspection; or a minimum of once every four (4) years. A variseeder or equal equipment should be used and over-seed designated lawn areas. Seed type and rate per the following schedule.

   b) Seed type and rates for grass basin bottoms: (if applicable)
      Lofts Reclaim Conservation Mix-Damp Formula
      (At a rate of 5 lbs./1,000 s.f.)
      - 45% Tall Fescue
      - 10% Perennial Ryegrass
      - 25% Poa Trivialis
      - 10% Salty Alkaligrass
      - 5% Redtop
      - 5% Reed Canary Grass
c) Seed type and rates for lawn areas, grass basin side slopes and berms: (as it pertains) SCS Seed Mix 16.

- (3.5 lbs/1,000 s.f.) Tall Fescue
- (0.4 lbs./1,000 s.f.) Kentucky Bluegrass (blend)
- (0.4 lbs/1,000 s.f.) Perennial Ryegrass (blend)

d) Seed type and rate for low maintenance areas:
Lofts Reclaim Native Grass Mixture
(At a rate of 60lbs./acre)

- 30% Little Bluestem
- 20% Indiangrass
- 20% Azure Blue Fescue
- 15% Side Oats Grams
- 10% Big Bluestem
- 5% Switchgrass

8. **Aeration:**

a) A coring with 3” minimum hollow tines should be used to aerate lawn areas, following by a steel drag mat to disperse cores. Coring should be timed for adequate soil moisture to insure proper penetration and plug removal. Coring should be done in connection with fertilization and/or liming and overseeding in the fall, once a year.
III. **STORMWATER COLLECTION SYSTEM MAINTENANCE:**

Schedule I – Four times annually and after every storm exceeding 1 inch of rainfall in one hour.
Schedule III – annually

**Description:**

The one (1) Contech ChamberMaxx 7’ x 24’ underground detention system has been installed. Maintenance involves inspection of the storm collection system, the removal of accumulate sediment and debris and the correction of any structural problems. (See BMP inspection checklist attached). Frequency of maintenance and inspection to be performed per Schedule I and II above.

1. **Inspection: General**

   a) Hackensack Real Estate LLC shall inspect all areas to verify that all work is being performed properly and as scheduled, locate potential problems and correct unacceptable conditions. A brief verbal report is to be submitted to the Owner/Operator. Problems requiring immediate attention shall be reported to the Owner/Operator.

2. **Inspection: Schedule I**

   a) Inlets, conduit outfalls and other conveyance elements: Inspect for and clear debris from the gratings, inlets and pipes. This is to prevent clogging of the inlets and subsequent backup of stormwater runoff. Any problems or defect shall be reported to the Owner.

3. **Inspection: Schedule III (annually)**

   a) Visual inspection of all components of the onsite stormwater collection system. Inspect for and remove silt and sediment, litter and other debris from all inlets, gratings and drainage pipes. All inlets and manhole are to be vacuumed. (Frequency of vacuuming may be adjusted if maintenance records indicate that sediment and debris accumulation is insignificant). In the event that the accumulated material exceeds 10% of the inlet pipes diameters, it must be flushed/vacuumed out of the system.
4. **Prevention of Water Pollution**

   a) The operation and maintenance activities shall be performed by methods that will prevent entrance or accidental spillage of solid matter, contaminates, debris or other pollutants and wastes into the downstream conveyance system. Such pollutants and wastes include, but are not restricted to, refuse, garbage, cement, collected silt and sediment, etc. Disposal of debris and trash should be done only at suitable disposal/recycling site and must comply with all applicable local, state and federal waste regulations.
IV. UNDERGROUND DETENTION BASIN MAINTENANCE:

Effective infiltration for the ChamberMaxx’s performance requires and effective maintenance plan. Maintenance involves inspection of the detention basin, the removal of accumulated sediment and debris and the correction of any structural or erosion problems. (See BMP inspection checklist attached to previous section). Frequency of maintenance and inspection to be performed per Schedule I below.

Schedule I – four times annually and after every storm exceeding 1 inch of rainfall in 1 hour.

1. **Maintenance: General**

Maintenance personnel of 308 Anderson LLC shall inspect all areas to verify that all work is being performed properly and as schedule, locate potential problems and correct unacceptable conditions. A brief verbal report is to be submitted to the Owner/Operator. Problems requiring immediate attention shall also be reported to the Owner/Operator.

2. **Maintenance: Schedule I**

   a) **Pre-Inspection**

   A post installation inspection should be performed to allow the owner to measure the invert prior to accumulation of sediment. This survey will allow the monitoring of sediment building up without requiring access to the infiltration system.

   The following is the recommended procedure for pre-inspection:

   i. Locate the riser section or cleanouts of the infiltration system. The riser will typically be 24” in diameter or larger and the cleanouts are usually 4”, 6” or 8” in diameter
   ii. Remove the lid of the riser or cleanouts.
   iii. Insert a measuring device into the opening and make note to a point of reference on the stick or string. (This is done so that sediment build up can be determined in the future without having to enter the system).
b) *Inspection/Maintenance*

The following is the recommended procedure to inspect system in service:

i. Locate the riser section of the infiltration system. The riser will typically be 24” in diameter or larger.

ii. Remove the lid from the riser.

iii. Measure the sediment buildup at each riser and cleanout location. Only certified confined space entry personnel having appropriate equipment should be permitted to enter the infiltration system.

iv. Inspect each manifold, all laterals, stone bottom, and outlet pipes for sediment building up, obstruction or other problems. Obstructions should be removed at this time.

v. If measure sediment builds up exceeds 6” in depth, cleaning should be performed at the earliest opportunity. A thorough cleaning of the system (manifolds, laterals, and the stone infiltration bed) shall be performed by either manual methods or by a vacuum truck.

c) *Other Recommendation (Inspection interval shall be as noted in Schedule 1 above).*

i. Inspect all receiving inlets for damaged, obstruction and unsightly debris. All obstructions shall be removed immediately and any damaged repaired.

ii. Inspect for and clear excessive debris from the detention basin and inlet bottom, low flow channel, pipe inlets and apron. *(If any).*

iii. Inspect for any erosion of banks or other hazards. Any erosion shall be immediately repaired and stabilized accordingly. Maintain seeded areas until they are established. *(If any).*

iv. Any problems or defect shall be report to the Owner.

3. *ChamberMaxx Performance Criteria*

a) If significant increases or decreases in the normal drain time are observed or is the 72-hour maximum drain time is exceeded, the detention basin structure, under drain system, and both ground water and tail water levels must be evaluated, and appropriate measures taken to comply with the maximum drain time requirements and maintain the proper functioning of the detention basin.

4. *Prevention of Water Pollution*

a) Maintenance personnel of 308 Anderson LLC activities shall be performed by methods that will prevent entrance or accidental spillage of solid matter, contaminates, debris or other pollutants and waste into the downstream conveyance system. Such pollutants and wastes include, but
are not restricted to, refuse, garbage, cement, collected silt and sediment, etc. Disposal of debris and trash should be done only at suitable disposal/recycling site and must comply with all applicable local, state and federal waste regulation.
V. **MANUFACTURED TREATMENT DEVICE MAINTENANCE:**

Contech CDS2015-4-C

Schedule I – four times annually and after every storm exceeding 1 inch of rainfall in 1 hour.

Schedule II – annually

Manufactured treatment device maintenance involved inspection of the storage system, the removal of accumulated sediment and debris, and the correction of any structural problems. Frequency of maintenance and inspection to be performed per schedule I and II above.

1. **Inspection: General**

   a) Maintenance personnel of 308 Anderson LLC shall inspect all areas to verify that all work is being performed properly and as scheduled, locate potential problems and correct unacceptable conditions. A brief verbal report is to be submitted to the Owner/Operator. Problems requiring immediate attention shall also be reported to the Owner/Operator. All maintenance to be performed per manufactured specifications and recommendations.

2. **Inspection: Schedule I (four times annually)**

   a) Checking includes a visual inspection of the unit. Removal of vegetation trash and debris to be based on accumulation.

3. **Inspection: Schedule III (Annually)**

   a) At least once a year, an inspection and/or minor maintained is to be performed. This includes inspection of the vault itself and removal of vegetation, trash and debris.
   b) At least one a year or after a chemical spill, major maintenance may be performed. This includes sediment removal.
   c) Depending on the configuration of the particular system, a worker may be required to enter the vault to perform some tasks. If vault entry is required OSHA rule for confined space entry must be followed.
4. **Prevention of Water Pollution**

   a) Maintenance personnel of 308 Anderson LLC activities shall be performed by methods that will prevent entrance of accidental spillage of solid matter, contaminates, debris or other pollutants and wastes in the downstream conveyance system. Such pollutants and wastes include, but are not restricted to, refuse, garbage, cement, collected silt and sediment etc. Disposal of debris and trash should be done only at suitable disposal/recycling sites and must comply with all applicable local, state and federal waste regulations.

5. **Estimated Maintenance Costs:**

   a) Contact Contech Stormwater Solutions, Inc. for maintenance costs.