Inspection Process for BMPs

The inspection process during the construction phase can be a difficult, especially when dealing with tasks such as:

- The coordination with the contractor (meeting their timeframe) and your inspection schedule.
- Making sure that you are both using the same plan set is the first step.
- In addition, making sure that this information is provided on the as-built survey is needed.
Inspection Process for BMPs

**Inspection Process**

- What specific BMP(s) is/are being installed?
- At what point during the construction will this be installed?
- Is this BMP on the certified plan set?
- And is there a detail for this BMP?

Reminder – Several of the most common BMP’s that deal with infiltration require non-compacted soils and deep-rooted vegetation.
Inspection Process for BMPs

- Because of the difficulty of meeting time frames and scheduling – the County will be requiring, as part of the as-built submittal process, the applicant to provide a photo journal documenting the proper installation of the specific BMP.

- This requirement will be noted to the applicant both during the review process and at the time of certification.
Inspection Process for BMPs

The Journal should/shall include items such as:

- Photos of the BMP being installed
- When needed, documentation about the bedding and/or backing material.
- For those underground BMP’s dimension of structure and possibly manufacture specifics.
- When installing underground manufacture’s item – provide proof of the delivery and pictures being installed.
- Information regarding soil compaction and the type of vegetation being installed.
Inspection Process for BMPs
(Cont.)

- This document will clearly state that before the County will recommend the approval of the as-built survey (this is part of the County’s certificate of occupancy certification process) and before a reduction/release of the posted securities will be approved- this installation journal will need to be submitted and approved.
As-Built Survey Process

As-Built Process

During the County’s as-built review/inspection, those BMPs at the surface (such as swales and wet/dry ponds) will be inspected for the overall working condition (such as proper pitch, erosion and stabilization).

Those located below ground/grade (such as oil/grit separators and sediment collectors) will be inspected by manhole covers and a visual inspection inside (these are considered confined space entry).
As-Built Survey Process

As-Built Process

- Checking the conditions of the inlet and outlet stormlines-including debris removal.

- Checking stabilization of the stormwater facility-basin and slopes.

- Outlet structures (FES’s) location – BMP (distance and time where water comes in and leaves.)

- Other devices that can be used going into the facility to trap the 1st flush.
As-Built Survey Process

- The location, elevation and installation of the restrictor.
- The location, elevation and installation of the overflow weir.
- Verifying the top of berm height in relations to the HWL and freeboard.
Routine Maintenance Needs

As part of the overall maintenance the County is considering retaining an additional portion of the SW securities for possibly an additional 3-years or so, to ensure that the owner of the BMP is doing the routine maintenance.
Routine Maintenance Needs

Types of Maintenance

- Inspections
- Vegetation Management
- Debris/litter removal
- Mechanical Component Maintenance
- Pest Control
Routine Maintenance Needs

- Semi-Annual (annual inspections and after large storm events).
- Some of this can be inspected with the scheduling mowing and trash removal.
## Non-Routine Maintenance

### Non-Routine Costs

<table>
<thead>
<tr>
<th>Name</th>
<th>Sediment Removal</th>
<th>Life Expectancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wet Pond</td>
<td>5-10 years</td>
<td>20-50 years</td>
</tr>
<tr>
<td>Dry Pond</td>
<td>2-10 years</td>
<td>20-50 years</td>
</tr>
<tr>
<td>Grass Swale</td>
<td>As needed</td>
<td>Indefinite</td>
</tr>
<tr>
<td>Infiltration Trench</td>
<td>As needed</td>
<td>10 years</td>
</tr>
<tr>
<td>Sand Filter</td>
<td>As needed (6 months)</td>
<td>20-50 years</td>
</tr>
</tbody>
</table>
Non-Routine Maintenance

- De-thatch grass to remove accumulated sediment and debris.
- Aerate to promote infiltration.
- Replace BMP mechanical components.
- Reconstruct embankments and spillways.
Non-routine Maintenance Needs

- Pond Maintenance
- Bank Stabilization
- Sediment Removal
  - Wet/dry Basins- Fore Bays
  - Infiltration Trenches
Non-Routine Maintenance

Retrofit

- Create a wet or constructed wetland basin out of a dry basin.
- Stabilize shorelines and improve buffers.
- Replace turf grass with native vegetation.
Bioswale Plan

Typical Cross Section
Bioswale

Drywell
Bad Drywells
Filter Strips

Filter strips intercept undesirable contaminants from runoff before they enter a waterbody.
Parking Lot Filter Strip

Mixed planting of flood tolerant trees, shrubs, and/or perennial groundcovers

Concrete wheel stops to hold back vehicles while allowing runoff to pass under and through

Minimum 2% slope into bioretention basin

Geotextile fabric optional

6" perforated drain tile, bedded in gravel and min. 36" deep; or below frost line

Grassed swale can be located along parking edge, with landscape infiltration area set back if desired.

Swale with 2% slope
Level Spreader

Length

Depth

Level lip or level spreader

Erosion mat

Erosion mat buried > 12 in (305 mm)

Level Spreader
Section View
Porous Asphalt

- Riverjacks open into recharge bed
- Porous asphalt pavement
- Uncompacted subgrade is critical for proper infiltration
- Filter fabric lines the subsurface bed
- Uniformly graded stone aggregate
Wet Pond

Dry Pond
(Not good)
Oil/Grit Separator

- Stormdrain Inlet
- Permanent Pool 113 M³ of Storage Per Contributing Acre, 1.2 M Deep
- Trash Rack Protects Two 15 cm Orifices
- Inverted Elbow Pipe Regulates Water Levels
- First Chamber (Sediment Trapping)
- Second Chamber (Oil Separation)
- Third Chamber
- Access Manholes
- Reinforced Concrete Construction
- Overflow Pipe
In-Stream Sediment Collector
Seepage Pit

Some seepage pits have masonry or stone walls but function similarly.