1 Considerations for a Successful Project

Details are Important
Green street facilities are an important part of the stormwater infrastructure system. A stormwater management facility that fails to perform due to improper installation or lack of maintenance can have negative impacts on the stormwater infrastructure and water quality.

City Inspection Requirements
The city may reject any material placed without an inspection, including rock, fabric, soil, soil amendment, trees and other vegetation.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Inspection Staff</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction (includes soil placement)</td>
<td>Bureau of Environmental Services</td>
<td>503-823-5728</td>
</tr>
<tr>
<td>Shrubs and groundcover planting</td>
<td>City Revegetation Program</td>
<td>503-823-2940</td>
</tr>
<tr>
<td>Tree Planting</td>
<td>City Urban Forestry Program</td>
<td>503-823-4489</td>
</tr>
<tr>
<td>Call before you dig</td>
<td></td>
<td>1-800-332-2344</td>
</tr>
</tbody>
</table>

Do Not...

- allow trash and construction debris in the facility
- use the facility to store construction materials
- allow foot or vehicle traffic through the facility
- plant, place soil, or grade soil in saturated conditions
- allow flows into the facility before planting, check dams and mulch are installed
Green street facilities manage stormwater at its source, protect surface and groundwater quality, replenish groundwater supplies, cool the air, improve air quality and provide urban green spaces. The City of Portland is a leader in green street facility design and has integrated green street facilities into city policy because of their many benefits.

This brochure is for permit applicants, contractors and sub-contractors applying for permits to construct green street facilities. Following these recommendations will help ensure that green street facilities operate properly and will not require costly repairs.

**City-Installed Vegetation**

If the applicant contracts with the Bureau of Environmental Services (BES) Watershed Revegetation Program, the city will design, install and maintain the green street vegetation, and release the applicant from most liability during the warranty period, including the four required inspections. However, this does not absolve the applicant of responsibility if the facility fails due to problems with construction, soil, drainage, compaction or erosion.

To use the Revegetation Program’s services, the applicant must sign a contract and make payment before the city issues a permit. The Revegetation Program will not contract with applicants after the permit is issued.

For information about the City of Portland Watershed Revegetation Program, call 503-823-2024.

For more information about Green Street facilities visit www.portlandonline/greenstreets or call Emily Hauth, 503-823-7378

WS 0910 Jan 2009
2 Construction Schedule

Why it Matters
Working with soil and planting at inappropriate times can cause erosion, compaction, and poor plant health, and compromise facility performance and plant survival.

Scheduling
The best conditions for planting are in spring and fall. In the winter, plants may not be available and have higher mortality rates, and soils can compact from foot traffic and rain. In summer, new plants can easily die in the hot weather without regular irrigation.

3 Grading

Why it Matters
Proper grading of both flatwork and soils is essential. Without proper grading, water will not move through the facility as intended and can cause the following problems:

- The facility may not retain water for infiltration and flow control benefits.
- Water may exit the facility in the wrong place.
- Water may bypass the facility.
- Water may cause erosion and undercutting in the facility.

Scheduling
- Grade when soil is loose and friable.
- Do not grade while the soil is saturated.
Why it Matters
Healthy soils filter, absorb, and slowly release runoff. They also support plants, immobilize pollutants, and support the worms and microbes that process oil, grease, and other pollutants. The city soil specification is designed to provide all of these benefits, but poor installation practices can substantially alter the results.

Scheduling
Don’t handle or install soils in wet conditions because of the potential for compaction and erosion. Placement of soils between November and February generally carries a much higher risk of problems than placing soils at other times of year.
• Do not install saturated soils.
• Do not install soils when the facility is full of stormwater.

Critical Considerations for Installation
• Call for subgrade conditions inspection before placing soil.
• Place the imported topsoil in 9” lifts. Lifts may be lightly compacted with a water-filled landscape roller.
• For infiltration facilities with no drain rock specified, work the first lift of imported topsoil into the subgrade/native soil before placing additional lifts.
• Do not over-compact soil. Using mechanical compactors is not recommended.
• Account for the import of soil with vegetation when setting final grades. Planting will raise final grades.
Vegetation

Why it Matters
Plant roots stabilize soil, filter stormwater pollutants and improve infiltration. Mature plants also keep foot traffic out of facilities, protecting the soils from compaction. Healthy plants are green infrastructure and a high priority for city inspectors.

Scheduling
• Check plant sources in advance; availability is seasonal and substitutions require city approval prior to installation.

• Call for topsoil conditions inspection before planting.
• In general, plant as soon as possible after the soil is placed and graded; plants reduce the risk of erosion and compaction.

Critical Considerations for Installation
The top of a tree’s root ball should be at, or just above, finish grade after settling.

Installation Sequence
1 Trees
(requires inspection by Urban Forestry)

2 Large shrubs and groundcovers on the side slopes (requires inspection)

3 Grass and grasslike plants on the bottom of the facility, working from one end to the other

4 Rake loose excess soils from around the plants back up to the curb edge, and either remove or spread uniformly across the side slope, filling in gaps along the curb and sidewalk. Loose soil remaining on the bottom of the facility can compromise stormwater storage capacity. (requires inspection)

Installing in this order, from end to end, minimizes trampling of installed plants and allows free passage of foot traffic down the middle of the facility while installing upland and side slope plants.
6 Erosion Control

Why it Matters
Erosion and the fine sediment it produces damage stormwater facilities by depositing layers that impede infiltration. Sediment also fouls public drains and damages streams.

Scheduling
• Keep erosion control measures in place until the facility is planted and check dams are installed, as required by erosion control plan.
• City approved mulch should be placed in the facility only above the high water line.

7 Two-Year Warranty Period/ Maintenance

Why it Matters
The applicant is responsible for ensuring the facility functions well for the first two years*. Responsibilities include maintaining plant health, weeding, watering, and protecting the facility from foot compaction to ensure adequate infiltration. Required repairs can include plant replacement, or even replacement of the soil and replanting.

Scheduling
• The owner is responsible for maintaining the facility and vegetation during the warranty period.
• The owner is responsible for reporting maintenance activities and facility conditions to BES on a scheduled basis. BES will inspect and verify the information.
• If the facility does not pass BES inspection, BES will submit a letter to the owner describing necessary remedial actions.
• If the owner does not correct the deficiencies, the city will perform the work and seek reimbursement from the owner for all costs.

* See page 1 for information about city-installed vegetation.