

Stormwater Maintenance Manual 2.3.11: Stormwater Planter

Facility Description

Stormwater Planters

are walled vegetated surface reservoirs used to collect and treat stormwater runoff from impervious surfaces by allowing pollutants to settle and filter out as the water percolates through the vegetation and soil mediums before infiltrating into the ground below or being piped to its downstream destination.

Stormwater Planters can be used to help fulfill a site's required landscaping area requirement and should be integrated into the overall site design. Numerous design variations of shape and planting scheme can be used to fit the character of a site.

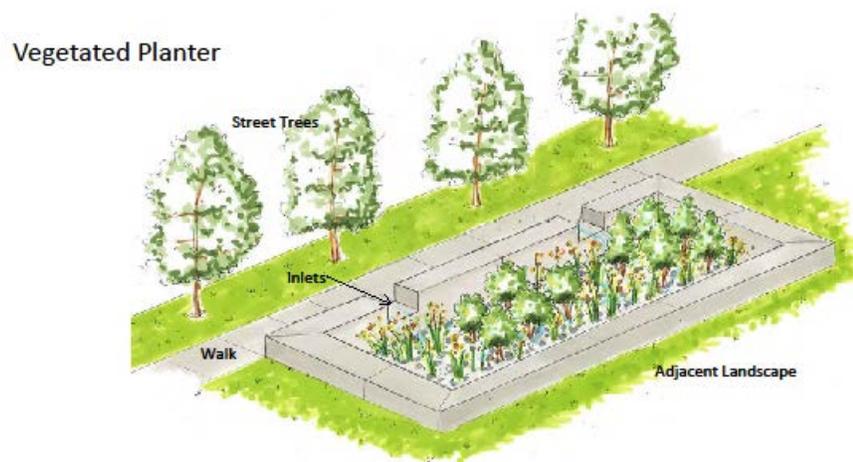
Stormwater Planters qualify as infiltration and filtration facilities. Stormwater Planters meet the stormwater management standards for water quality and flow control when designed under the Simplified Approach. Stormwater Planters meet the stormwater management standards for water quality, flow control and food control when designed under the Presumptive Approach.

Design Requirements

All facilities shall require an overflow to an approved discharge point unless sized to fully infiltrate the flood control storm.

Sizing: The Simplified Approach may be utilized for stormwater quality and flow control purposes for runoff from impervious surface areas less than 15,000 square-feet. Planters shall use a sizing factor of 0.03 for water quality with the Simplified Approach. Planters shall use a sizing factor of 0.07 for flow control with the Simplified Approach.

The Presumptive Approach shall be used for all other water quality, flow control and flood control designs in conjunction with a measured infiltration rate. Planters shall be designed to pond water for less than 30 hours after each storm event.



Soil Suitability: Soils with infiltration rates greater than 2 in/hr shall be designed as infiltration treatment facilities. Soils with infiltration rates less than 2 in/hr shall be designed as filtration facilities.

Dimensions and Slopes: Facility storage depth must be at least 6 inches (from inlet to top of growing medium); unless a larger-than-required planter square-footage is used. Maximum facility storage depth is 12". The minimum planter width is 24 inches (measured from inside of walls). Planters shall be constructed with no more than .5% slope.

For planters in the public right-of-way, all applicable City requirements for other street elements (curbs, sidewalks, trees, etc.) must be met. Planters located next to public sidewalks or curbs shall have a minimum 12 inch-wide flat area between the planter wall and the sidewalk or curb. Edge protection is required adjacent to bike and pedestrian facilities.

Setbacks: The required setback for infiltration planters is 5 feet from property lines and 10 feet from structures. Lined filtration planters do not require a setback with an approved waterproof liner. For planters that will be located abutting a structure, the planter shall have 30 inches of clearance from any electrical service panel/meter base and any point of overflow shall be located a minimum of 6 inches below any organic building material (siding).

Materials

Mulch: Washed pea gravel, river run rock or other non-floating mulch is recommended for planters. It should be applied 2 – 3 inches thick to cover all exposed soil between plants. It should not be over applied.

Planter Walls: Private planter walls shall be made of stone, concrete, brick, wood, or other durable material. Chemically treated wood that can leach out toxic chemicals and contaminate stormwater shall not be used.

Public planter walls shall be made of structural concrete, segmented retaining wall block or other material approved by the City of Eugene.

Piping: Pipes shall be sized to convey design flow rates per the uniform plumbing code but shall be no less than 3 inches for private piping. Sizing of public conveyance piping shall conform to the Public Improvement Design Standards Manual.

Drain Rock: Drain rock may be used below the growing medium of a planter. Drain rock can be used for retention, detention or conveyance. Drain rock shall be open graded washed 3/4 inch to 2-1/2 inch diameter open graded aggregate. Drain rock and growing medium must be separated by a geotextile.

Waterproof Liners: The use of waterproof liners is discouraged as infiltration is encouraged on all facility types. Waterproofing liners may be required in areas where hydraulic isolation is required due to existing structural, hydrologic or geotechnical limitations exist. Waterproof liners are required where planters are constructed within 10

feet of a building. The walls of a filtration Stormwater Planters can often be incorporated with the building foundation plans. The bottom of filtration Stormwater Planters located next to buildings must be lined with an impermeable membrane of 30 mil (minimum) plastic film or equivalent.

Vegetation

The entire Stormwater Planter must maintain 90 percent coverage by vegetation at establishment. Vegetation shall conform to the facility planting list located in **Appendix D**.

Vegetated stormwater planters shall be planted with minimum plant quantities from Schemes I, II or III. Minimum plant quantities for vegetated stormwater planters are as follows:

Vegetated Stormwater Planter Planting Scheme	I	II	III
Ground Cover , 4-inch pots spaced 1’ on center (per 100 square feet of the facility)	100	80	60
Small Shrubs , 1 gal. pots spaced 2’ on center (per 100 square feet of the facility)		4	12

Tree planting is not required in planters, but tree planting is encouraged near planters.

Vegetation shall be established as soon as possible after the planter is completed, and before water is allowed to enter the facility. Unless vegetation is established, biodegradable erosion control matting shall be installed in the flow area of the planter before allowing water to flow through the planter.

Growing Medium: The growing medium shall be a minimum 12 inches of topsoil or the soil shall be amended to support plant growth. Imported topsoil shall be a sandy loam mixed with compost or a sand/soil/compost blend. It shall be roughly one-third compost by volume, free-draining, and support plant growth. The compost shall be derived from plant material; animal waste is not allowed. In all cases, the growing medium shall be minimum 12 inches deep.

4.5.9 Stormwater Planter Operation and Maintenance Plan

Stormwater Planters are infiltration and filtration stormwater facilities that can provide flood control, flow control and stormwater quality benefits. Stormwater Planters are walled vegetated surface reservoirs used to collect and treat stormwater runoff from impervious surfaces by allowing pollutants to settle and filter out as the water percolates through the vegetation and soil mediums before infiltrating into the ground below or being piped to its downstream destination.

Stormwater Planters can be used to help fulfill a site's required landscaping area requirement and should be integrated into the overall site design. Numerous design variations of shape and planting scheme can be used to fit the character.

All facility components and vegetation shall be inspected for proper operations and structural stability. These inspections shall occur, at a minimum, quarterly for the first 2 years from the date of installation, 2 times per year thereafter, and within 48 hours after each major storm event.

Training and/or Written Guidance information for operating and maintaining Stormwater Planters shall be provided to all property owners and tenants. A copy of the O & M Plan shall be provided to all property owners and tenants.

Inspection Logs shall be kept by the facility owner demonstrating the following items have been inspected and are being maintained properly:

- **Access** to Stormwater Planters shall be safe and efficient. Obstacles preventing maintenance personnel and/or equipment access to the components of the facility shall be removed.
- **Debris and Litter** shall be removed to prevent channelization, clogging, and interference with plant growth. Fallen leaves and debris from deciduous plant foliage shall be raked and removed.
- **Erosion Damage** shall be identified and controlled when native soil is exposed or erosion channels are forming.
- **Filter Media** consisting of sand and/or topsoil shall be tested to ensure stormwater percolates through the planter. Remove and replace sand and/or topsoil to correct percolation deficiencies.
- **Infiltrating Stormwater Planters** shall be excavated and cleaned, and gravel or soil shall be replaced to correct low infiltration rates. Water should drain through the planter within 3-4 hours after a storm event.
- **Inlets** shall be cleared when conveyance capacity is plugged to ensure unrestricted stormwater flow to the rain garden.
- **Mulch** shall be replenished as needed to ensure healthy plant growth.
- **Nuisance and Prohibited Vegetation** from the Eugene Plant List (such as blackberries and English Ivy) shall be removed when discovered. Invasive

vegetation contributing up to 25% of vegetation of all species shall be removed and replaced.

- **Outlets** shall be cleared when 50% of the conveyance capacity is plugged.
- **Piping** shall be cleared of sediment and debris to maintain conveyance capacity.
- **Planter Walls** shall be examined for deficiencies, such as rot, cracks, and failure, and repaired as needed. Holes that are not consistent with the design and allow water to flow directly through the planter to the ground shall be plugged.
- **Sedimentation** build-up near or exceeding 2" in depth shall be hand-removed with minimum damage to vegetation using proper erosion control measures. Sediment shall be removed if it is more than 4 inches thick or so thick as to damage or kill vegetation.
- **Vegetation** shall be healthy and dense enough to provide filtering while protecting underlying soils from erosion. Dead vegetation shall be removed to maintain less than 10% of area coverage or when vegetative filter function is impaired. Vegetation shall be replaced immediately to control erosion where soils are exposed and within 3 months to maintain cover density.

Spill Prevention Measures shall be exercised on site when handling substances that contaminate stormwater. Releases of pollutants shall be corrected as soon as identified.

Non-Chemical Pest Control measures shall be taken to prevent development of insects, mosquitoes, and rodents.