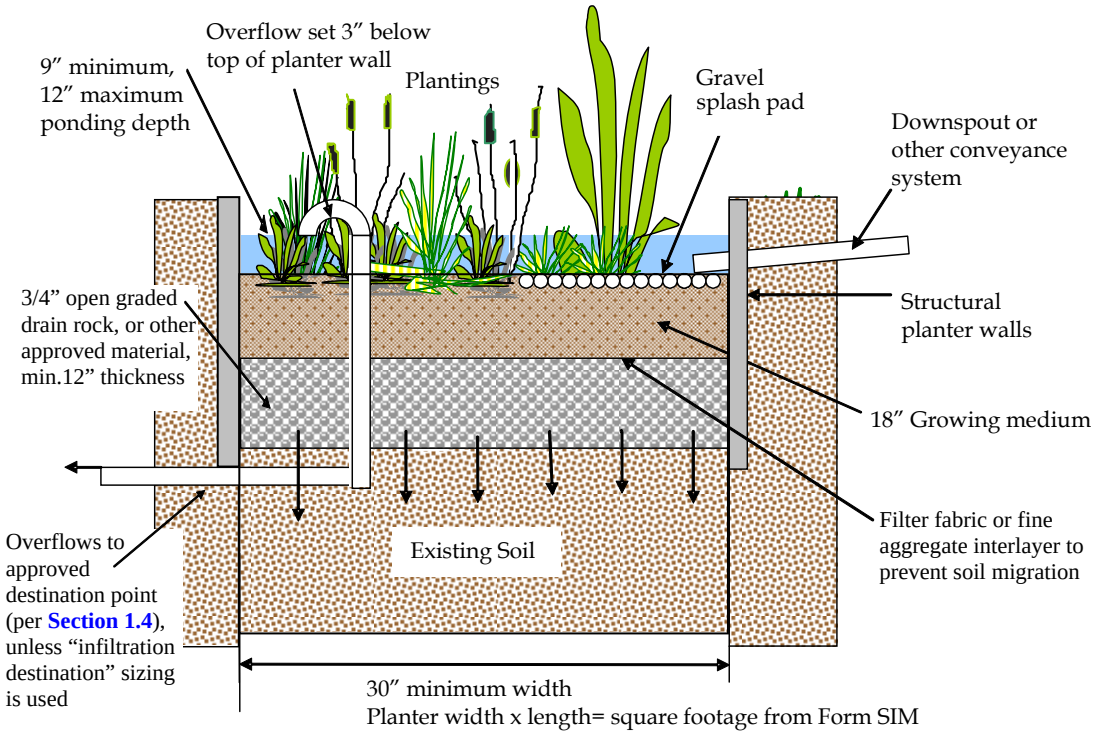
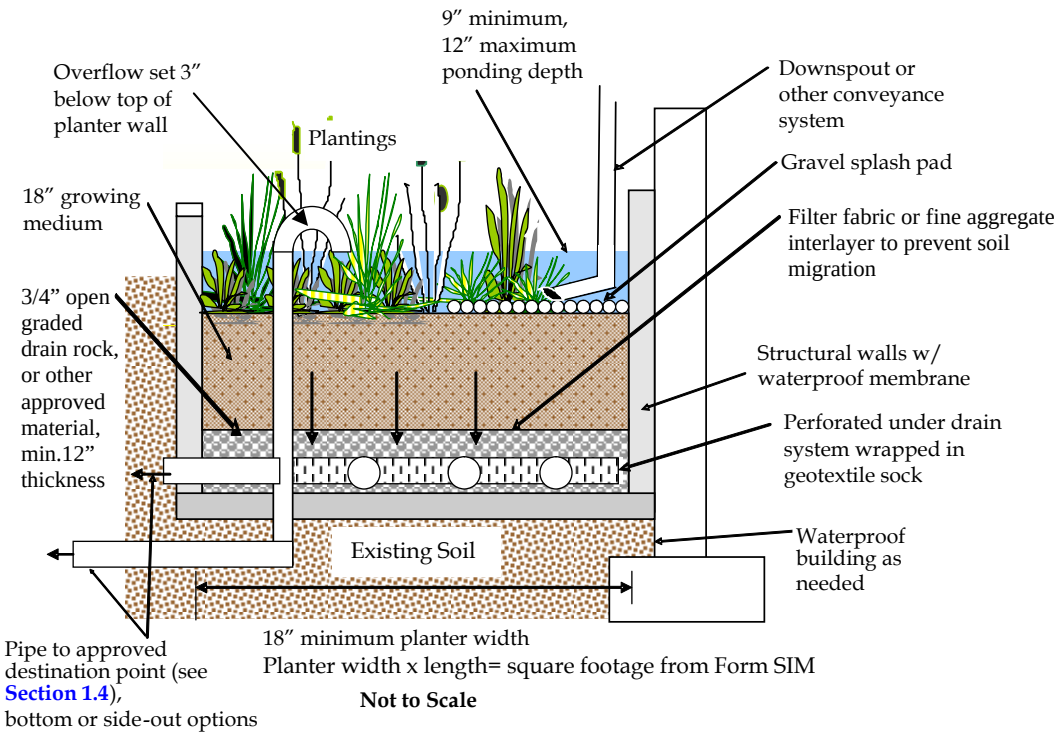
Stormwater Planters

Infiltration Stormwater Planter (Formerly Named Infiltration Planter)



Not to Scale

Filtration Stormwater Planter (Formerly Named Flow-Through Planter)



Not to Scale

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Stormwater Management Goals Achieved	Acceptable Sizing Methodologies
√ Pollution Reduction……..	SIM[1], PRES
√ Flow Control…….……	SIM
√ Destination……	PRES[2]

This facility is **not** classified as an Underground Injection Control structure (UIC).

SIM=Simplified Approach, PRES= Presumptive Approach, PERF= Performance Approach

Notes: Stormwater planters may be designed to manage runoff from rooftops, and, if submerged into the ground, parking lots and streets in many cases.

1) Projects greater than 15,000 square-feet of impervious surface area to manage must use the Presumptive Approach to size the Stormwater Planter for pollution reduction.
2) Residential applications with NRCS soil types A or B may size infiltration facilities for destination using the SIM sizing factor for Pollution Reduction with Flow Control.

Description: Stormwater planters are structural landscaped reservoirs used to collect, filter, and/or infiltrate stormwater runoff, allowing pollutants to settle and filter out as the water percolates through the planter soil before infiltrating into the ground below or piped to its downstream destination. In addition to providing pollution reduction, flow rates and volumes can also be managed with stormwater planters. 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, wall treatment, and planting scheme can be used to fit the character of a site. Stormwater planters may provide either "infiltration treatment" or "filtration treatment". An overflow to an approved destination per **Section 1.4** will be required, unless the facility is an *Infiltration Stormwater Planter* sized per **Surface Infiltration Facility** guidelines presented in this chapter.

Infiltration Stormwater Planters:

Design Considerations: The infiltration rate of the native soil is a key element in determining size and viability. *Infiltration Stormwater Planters* shall not be used on sites with infiltration rates less than 0.5 in/hr.

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Construction Considerations: Location of *Infiltration Stormwater Planters* should be clearly marked before site work begins to avoid soil disturbance during construction. No vehicular traffic, except that specifically used to construct the facility, should be allowed within 10 feet facility areas. Infiltration rates shall be verified prior to construction for soil type C.

Soil Suitability: *Infiltration Stormwater Planters* are appropriate for soils with a minimum infiltration rate of 0.5 inches per hour (NRCS soil types A, B, & C). There shall be no less than three feet of undisturbed infiltration medium between the bottom of the facility and any impervious layer (i.e. hardpan, solid rock, high groundwater levels, etc.) Topsoil shall be used within the top 18 inches of the facility. Maximum design infiltration rate of the facility is controlled by the infiltration rate of the growing medium and shall not be greater than 2.5 in/hr.

Dimensions and Slopes: Facility storage depth must be at least 9 inches, unless a larger-than-required planter square-footage is used. Minimum *Infiltration Stormwater Planter* width is 30 inches. Planters shall be constructed without slope.

Setbacks: Required setback for *Infiltration Stormwater Planters* is 5 feet from property lines and 10 feet from structures. Easements for non-buildable areas on adjacent properties may be required if facilities are located next to property lines.

Filtration Stormwater Planters:

Design Considerations: These facilities are appropriate for all soil types as they collect stormwater that filters through the growing medium and convey it to a piped stormwater system. *Filtration Stormwater Planters* may be located within 10-feet of building foundations with an approved impermeable membrane.

Construction Considerations:
Special attention needs to be paid to the planter waterproofing if constructed adjacent to building structures. The walls of a *Filtration Stormwater Planter* can often times be incorporated with the building foundation plans. The bottom of *Filtration Stormwater Planters* must be lined with an impermeable membrane of 60 mil plastic film.

Soil Suitability: Filtration Stormwater Planters are appropriate for all soils types. Topsoil shall be used within the top 18 inches of the facility. Maximum design infiltration rate of the facility is controlled by the infiltration rate of the growing medium and shall not be greater than 2.5 in/hr.

Dimensions and Slopes: Facility storage depth must be at least 9 inches, unless a larger-than-required planter square-footage is used. Minimum *Filtration Stormwater Planter* width is 18 inches. Planters shall be constructed without slope.

Setbacks: A setback for *Filtration Stormwater Planters* is not required.

General Requirements for Infiltration and Filtration Stormwater Planters:

Planter Walls: 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.

Sizing: Individual Stormwater Planters sized with the Simplified Approach shall be designed to receive less than 15,000 square-feet of impervious area runoff. For stormwater

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planters a Simplified Approach sizing factor of 0.07 for *Infiltration Stormwater Planters* and 0.03 for *Filtration Stormwater Planters* may be used to receive credit for pollution reduction. A high-flow overflow must be provided or the Presumptive Approach must be used in conjunction with a measured infiltration rate to receive credit for stormwater destination. In cases when pollution reduction is the only stormwater management goal, the Presumptive Approach may be used in conjunction with a measured infiltration rate to downsize the Simplified Approach sizing factor. Planters shall be designed to pond water for less than 18 hours after each storm event.

Landscaping: Plantings shall be designed at the following quantities per **100** square feet of facility area. Facility area is equivalent to the area of the planter calculated from Form SIM.

2 - Large shrubs/small trees 3-gallon containers or equivalent.
6 - Shrubs/large grass-like plants 1-gallon containers or equivalent

Ground cover plants: 1 per 18 inches on center, triangular spacing, for the ground cover planting area only, unless seed or sod is specified. Minimum container: 4-inch pot. At least 50 percent of the ground cover plantings shall be grasses or grass-like plants.

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

Checklist of minimal information to be shown on the permit drawings:

1) Facility dimensions and setbacks from property lines and structures
2) Profile view of facility, including typical cross-sections with dimensions
3) Planter wall material and waterproofing membrane specification
4) Growing medium specification
5) Drain rock specification
6) Filter fabric specification
7) All stormwater piping associated with the facility, including pipe materials, sizes, slopes, and invert elevations at every bend or connection
8) Stormwater destination
9) Landscaping plan

Inspection requirements and schedule: The following table shall be used to determine which stormwater facility components require City inspection, and when the inspection shall be requested. Please note that, while not all facility components may require an inspection call, inspectors will inspect for all required components in the field.

Facility Component	**Inspection Requirement**
Planter grading/ excavation	
Structural components/ liner	
Piping	Call for inspection
Drain rock	
Filter fabric	
Growing medium	
Plantings	Call for inspection

Operations and Maintenance requirements: See **Chapter 3.0**.