

Planter Box

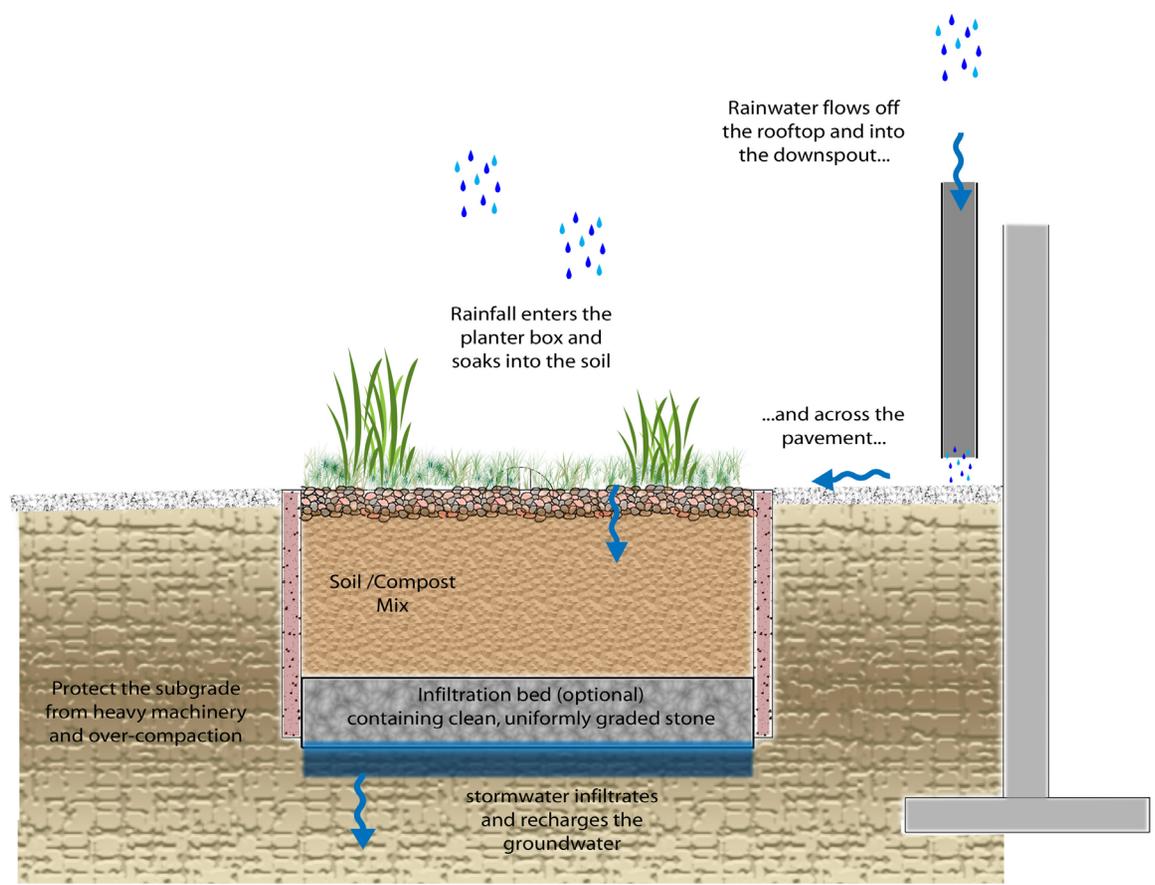


Image: Cahill Associates, Inc.

Planter Boxes are, as the name implies, constructed planters, which receive runoff usually from rooftop areas. Planter Boxes must be located reasonably close to downspouts or structures generating runoff. Runoff is used for irrigation purposes, and the vegetation in the planter box converts stormwater for evapotranspiration. Boxes can take any number of different configurations and be made out of a variety of different materials, although most are constructed from wood. Construction specifications are critical in order to make sure that an appropriate volume of runoff from smaller storms "feeds" the carefully selected vegetation types in the boxes (however carefully selected species might be, many can be expected to require additional watering during dry spells). Obviously, large volumes of runoff should not be directed into Planter Boxes which are undersized.

Planter Boxes must be carefully designed, plantings must be carefully selected, and Boxes must be carefully maintained in order for them to be successful BMPs, accomplish stormwater objectives, and perhaps, most importantly, succeed in homeowners' overall landscaping objectives.

Benefits

Stormwater benefits include reduction in runoff volumes and some reduction in peak rates of runoff; boxes which overflow effectively reduce peak rates of runoff. Depending upon the type of box selected, evapotranspiration will be increased and otherwise decreased infiltration and groundwater recharge may be replenished. Water quality may benefit, depending upon how much runoff is directed into the ground and prevented from worsening erosive stream flows. Perhaps just as important are the positive aesthetic effects.

Benefits



Costs



Cost Considerations

In terms of absolute values, costs for planter boxes - especially when constructed by homeowners - are quite modest. However, based on unit cost of cubic foot or gallons of runoff being managed, costs tend to be high. Because of the extreme variability of design and construction, it is challenging and potentially misleading to make estimates of construction cost.

Ease of Development/Construction

Retrofitting successful Planter Boxes varies in difficulty at each site. Boxes may be ideal for inclusion in patio or walkway design and integrate easily with roof downspouts. In other cases, adaptation may be challenging. In most cases - unless homeowners have particular expertise in landscape design and construction techniques, a landscape contractor is probably a wise choice, especially if the more complex Infiltration and Flow Through variation is being constructed, and especially as the size/scale of the Planter Box grows larger.

Aesthetics

When well designed, installed and maintained, planter boxes can be extremely attractive additions to homes. In fact, an essential objective in developing planter Boxes would be to enhance overall landscape aesthetics. Boxes are ideal for buffers around structures, foundation plantings, defining/walling walkways, patios, terraces, drives, and courtyards.

Aesthetics



Township Review

No special actions should be necessary in the vast majority of cases, unless the boxes were to be extremely large, triggering a land development-related permit action. Homeowner should contact the Township when constructing an Infiltration Planter Box (described below).

Site Constraints

Of all the BMPs listed in this brochure, Planter Boxes are probably most adaptable to all types of sites with all types of site constraints. The Infiltration variation (below) is limited by all those factors which are limiting to any infiltration-oriented BMP (i.e., bedrock at or close to the surface, seasonal high water table at or close to the surface, very poorly draining soils, etc., all of which are described in the *Pennsylvania Stormwater BMP Manual* and Protocols 1 and 2). However, both the Contained and Flow Through variations can be accommodated on virtually every type of site, large or small, front yard or back yard, flat or sloping, shady or sunny.

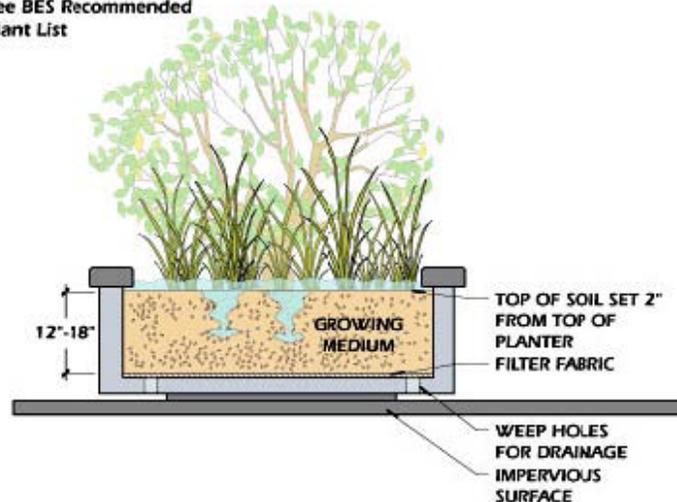
Variations

The Philadelphia Water Department's Homeowner BMP Manual lists three types of Planter Boxes (below) and although these variations are especially suited to more urbanized settings than Trout Creek, these different types may have application here:

Contained Planter Boxes can be prefabricated or constructed in place in any number of different shapes and sizes, from materials ranging from stone, concrete, brick, or wood; overflows or some sort of drainage may be provided. Size must be balanced with runoff being directed into the Planter Box together with vegetation desired (from small shrubs to larger trees). Plantings need to be selected based on variation in water availability (often from saturated to very dry conditions). Although some sources warn against directing any runoff from roof leaders or other sources into these Boxes, roof leaders with modest roof area can be directed into Boxes, if reasonably sized.

A contained planter box can be any structure planted with soil and vegetation in which stormwater runoff from downspouts are diverted into the box.

PLANTINGS:
See BES Recommended
Plant List



*Images: Portland Bureau of
Environmental Services, Oregon*

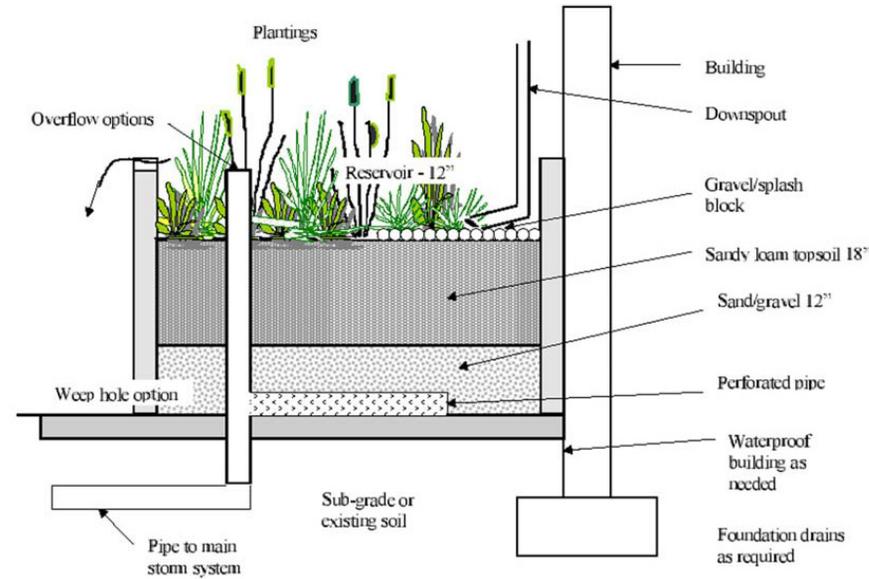
Infiltration Boxes allows runoff to enter the Box and then filter through vegetation and soil; Infiltration Planter Boxes are characterized by a direct interface with the soil (uncompacted base) which allows for infiltration of runoff collected in the Box within several (3-4) hours. Because of the design connection to roof leader/downspout, these Boxes will tend to be located close to structures. Furthermore, such locations require that infiltration being designed for not leak into lower levels of structures (basements, etc.). If these lower levels do exist, they must be waterproofed, unless a separation distance is provided. Select plants with care, again using those tolerant of these highly variable hydrologic conditions (rushes, reeds, sedges, dogwoods, currants, others). A minimum Box width of 30 inches is recommended.

An infiltration planter box is usually "buried" so that stormwater can soak into the soil through the open bottom.



Image: Cahill Associates, Inc.

Flow Through Boxes are a further variation, where the base of the Box is constructed and impervious, but the Box has been provided with an overflow pipe which directs overflow to an acceptable point of discharge. A minimum Box width of 18 inches is recommended. This Box is similar to both the Contained and Infiltration variations, though somewhat more complex to develop. Like Infiltration Planter Boxes, a property line set back of 5 feet is suggested.



Flow through stormwater planter box includes an overflow for large storms

Section Not to Scale

Images: City of Portland, 2004



Maintenance



Maintenance

Planter boxes are reasonably high maintenance, as with any containerized garden. Be prepared for maintenance of the vegetation itself, which will vary depending upon planting. Winterizing becomes an important issue, especially for larger hardy or nearly hardy species intended to winter over (in these cases, Boxes must be designed and dimensioned so that plantings are adequately protected). In many cases, good native species selection notwithstanding, Boxes may need additional watering during extremely dry periods. Selection of Box construction material is also important (i.e., masonry construction is easier to maintain than wood construction).