



rain gardens
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VEGETATED INFILTRATION BASINS

(rain gardens)

Vegetated infiltration basins are landscaped depressions that are either excavated or created with bermed side slopes. An inlet pipe from or sheet flow over impervious surfaces conveys stormwater runoff into the basin, where it is temporarily stored until it infiltrates into the ground. Basins often provide complete onsite infiltration for small storm events. Check dams or weirs can be used to detain the flow. They can be sized to infiltrate large storms in areas where soils drain well, or they may require a safety overflow or disposal method.

Benefits

Basins or rain gardens eliminate or dramatically reduce stormwater flow rates and volumes. They improve water quality by settling and filtering out pollutants, they recharge groundwater, and they can provide stormwater storage capacity in a large drainage area. Trees planted in infiltration basins can shade buildings and parking lots or other paved areas, reducing runoff temperatures. The vegetation also helps prevent soil erosion, provides wildlife habitat, and is visually attractive. Vegetated infiltration basins can have an informal or formal design and are easily integrated into the overall landscape or site design.

Vegetation

Vegetated infiltration basins can be planted with a variety of trees, shrubs, grasses, and ground covers. Trees are highly recommended for their shading and temperature reduction benefits. Avoid permanent irrigation where possible. Basins are likely to need watering and weed pulling during the first one to three years.

Maintenance

Inspect the vegetation and structure periodically and after major storm events. Vegetation maintenance is similar to that used for other types of managed landscapes. Maintenance needs include removing sediment and debris; cleaning and repairing inlets, embankments, berms, dams, and outlets as needed; controlling erosion; and ensuring proper drainage. Some plant replacement may be necessary. With proper construction and maintenance, a vegetated infiltration basin can last indefinitely.

Cost

The cost of vegetated infiltration basins varies depending on size, site conditions, and the type and size of the vegetation used. Costs compare favorably with conventional stormwater management facilities.

Safety and Siting Requirements

- Vegetated infiltration basins work best in areas that drain relatively shallow slopes of usually less than 5%. Runoff from steeper slopes can be piped into the basin with proper erosion control measures in place.



- Infiltration basins located closer than ten feet from building foundations need a variance from Bureau of Development Services (BDS).
- Locate basins at least five feet away from property lines.
- Underlying soils should have a minimum infiltration rate of two inches per hour and should not be compacted.
- Where needed include an emergency overflow disposal system to a drywell or to the City's storm system.
- Infiltration basins may not be appropriate in areas with high water tables. They should not be designed as a pond, and should drain a storm event within 30 hours.
- Refer to Portland's Stormwater Management Manual for details on sizing, placement, and design.



Photo © Wisconsin Department of Natural Resources

Examples

Buckman Heights Apartments,
430 NE 16th Ave.

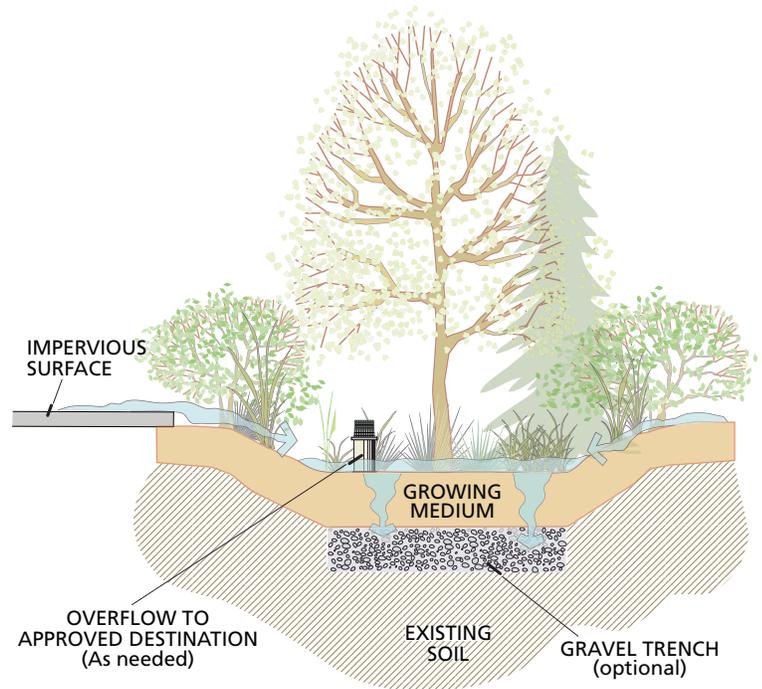
Glencoe Elementary School, 825 SE 51st Ave.

Oregon Convention Center,
NE 1st Ave. and Lloyd Blvd.

Wattles Boys and Girls Club
9330 SE Harold Street

Permits

- Depending on the size of ground disturbance, a clearing and grading permit may be required from the Bureau of Development Services.
- The stormwater management portion of the facility will need review from the Bureau of Environmental Services (BES).
- Stormwater systems on non-residential sites need a commercial building permits.



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www.cleanriverspdx.org or 503-823-7740

For Clean River Rewards information www.CleanRiverRewards.com or 503-823-1371

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