Department of Environmental Protection

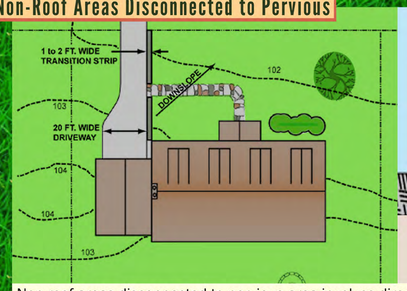
Water Quality Protection Charge: Credit Guide

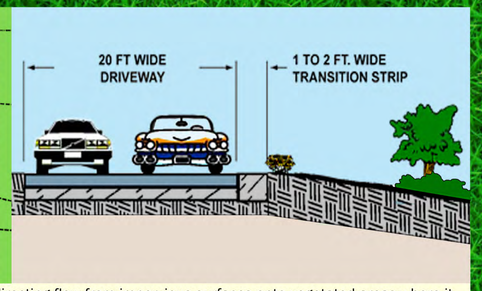
Montgomery County, Maryland

An introductory guide to practices that can help reduce your Water Quality Protection Charge

Many of the techniques below are definitions for stormwater management system facility types as defined by the Maryland Department of the Environment and recognized by the Montgomery County Department of Environmental Protection Water Quality Protection Charge Credit Program. Facility type definitions and design details provided below are cited and/or paraphrased from the MDE Stormwater Design Manual (2010 Revision), Volume I, Chapter 5, "Environmental Site Design."

Non-Roof Areas Disconnected to Pervious

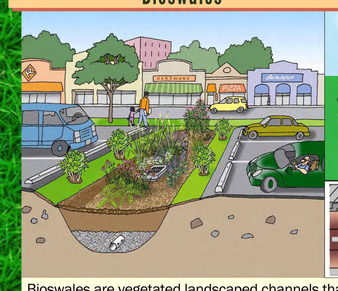


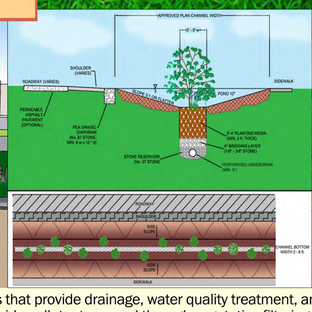


Non-roof areas disconnected to pervious area involves directing flow from impervious surfaces onto vegetated areas where it can soak into or filter over the ground. Non-rooftop disconnection is commonly applied to smaller or narrower impervious areas like driveways, sidewalks and patios, and small parking lots. Disconnections should be discharged to pervious areas with slopes less than 5% and to undisturbed or uncompacted soils that will allow stormwater to infiltrate.

(MDE Manual Page 5.61, ESD Practice N-2)

Bioswales

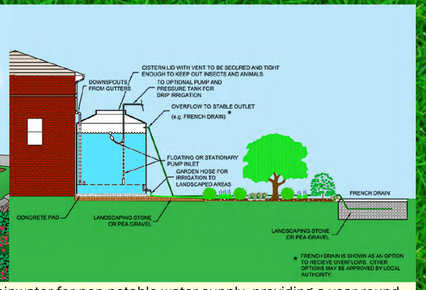




Bioswales are vegetated landscaped channels that provide drainage, water quality treatment, and attenuation of peak flow rates of stormwater runoff. Bioswales provide pollutant removal through vegetative filtering, sedimentation, biological uptake, and infiltration into the underlying soil media. They should be comprised of a 2-4' soil filter media later underlain by a gravel drainage layer. A perforated underdrain pipe is recommended in all applications and is required in poorly draining soils such as silts and clays.

(MDE Manual Page 5.108, ESD Practice M-8)

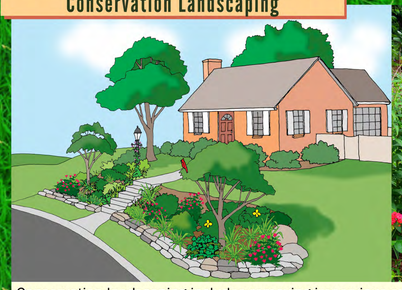
Cisterns



Cisterns are large storage tanks typically used in capturing rainwater for non-potable water supply, providing a year-round source. The complexity of the sizing, installation, and accessories of this type of application make it more realistic for commercial operations. Separate plumbing, pressure tanks, pumps, and backflow preventers are necessary for indoor applications.

(MDE Manual Page 5.71, ESD Practice M-1)

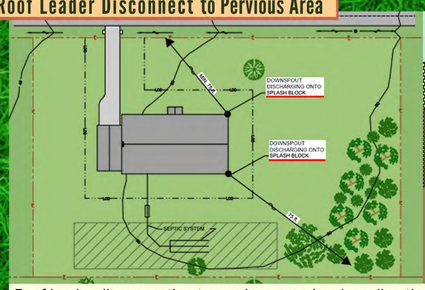
Conservation Landscaping

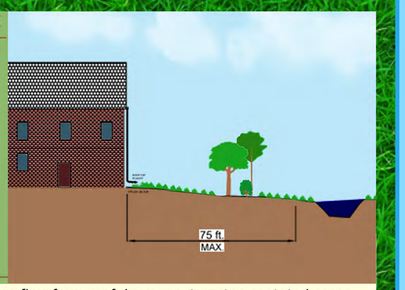


Conservation landscaping includes removing impervious surfaces, mowed turf, and/or invasive species and replacing with 6-9" of uncompacted soil, native plant species, and 1-2" of ponding depth (a depression above the soil that allows water to pond temporarily before infiltration). Conservation landscaping also helps with stormwater management because native plants don't need as much fertilizer or pesticide to thrive. This means that when it rains, fewer chemicals are channeled into the nearby waterways, which leads to healthier and cleaner streams and rivers.

(www.RainScapes.org)

Roof Leader Disconnect to Pervious Area

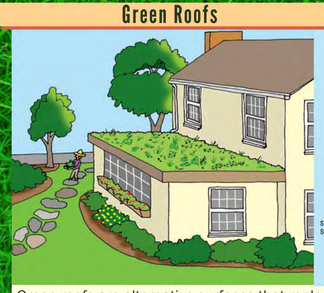


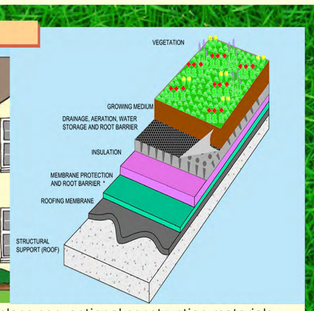


Roof leader disconnection to pervious area involves directing flow from roof downspouts onto vegetated areas where it can soak into or filter over the ground. This "disconnects" the rooftop from the storm drain system and reduces both runoff volume and pollutants delivered to streams, wetlands, lakes and the Chesapeake Bay. Disconnected downspouts should be discharged to pervious areas (lawns, landscaping, or undisturbed forests) with slopes less than 5% and to undisturbed or uncompacted soils that will allow stormwater to infiltrate.

(MDE Manual Page 5.57, ESD Practice N-1)

Green Roofs

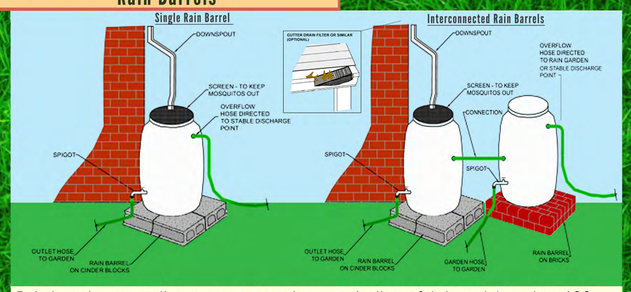




Green roofs are alternative surfaces that replace conventional construction materials and include a protective covering of planting soil and vegetation. Also known as vegetated roofs, roof gardens, or eco-roofs, these may be used in place of traditional flat or pitched roofs to reduce impervious cover and more closely mimic natural hydrology. The more common or "extensive" green roof is a lightweight system where the soil layer (growing medium) is between two and six inches thick and limits plants to low-growing, herbaceous varieties. "Intensive" green roofs have thicker soil layers (eight inches or greater) and are capable of supporting more diverse plants including trees and shrubs. A more robust structural loading capacity is needed to support the additional weight of green roofs.

(MDE Manual Page 5.42, ESD Practice A-1)

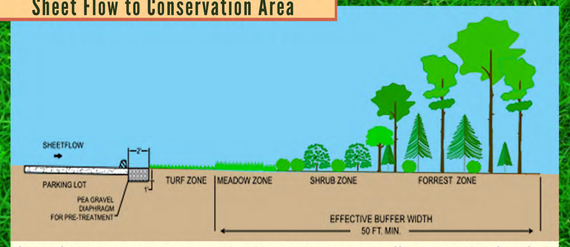
Rain Barrels



Rain barrels are small stormwater containers, typically prefabricated, less than 100 gallons, and in the shape of a barrel. They are typically used to provide temporary storage of stormwater from roof leaders. These systems are generally designed for outdoor use.

(MDE Manual Page 5.71, ESD Practice M-1)

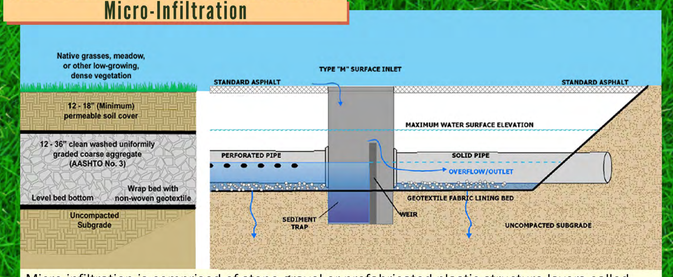
Sheet Flow to Conservation Area



Sheet flow to conservation area is when stormwater runoff is directed to flow from developed land to adjacent natural areas where it can soak into or filter over the ground. Landscaping should consist of uncompacted soils with native, non-turf landscaping or vegetation. This practice can only be used for stormwater that is sheet flowing (not concentrated or channelized) from an impervious area less than 100 feet in length. The conservation area should have a slope less than 5%, a minimum width of 50', and should be approximately ½ acre or larger in total size.

(MDE Manual Page 5.66, ESD Practice N-3)

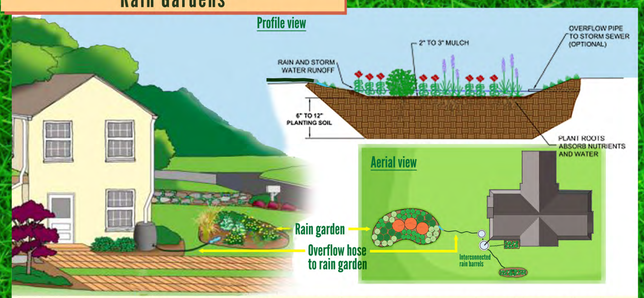
Micro-Infiltration



Micro-infiltration is comprised of stone gravel or prefabricated plastic structure layers called "infiltration beds" underlaying various site surfaces such as driveways, sidewalks, patios, or turf. Separation with filter fabric or permeable sand layers is needed to keep the infiltration bed clean. Micro infiltration must be installed over permeable, sandy soils, and the bottom of the infiltration bed must be level and uncompacted. An underdrain or overflow may be necessary to handle large rain events.

(www.RainScapes.org)

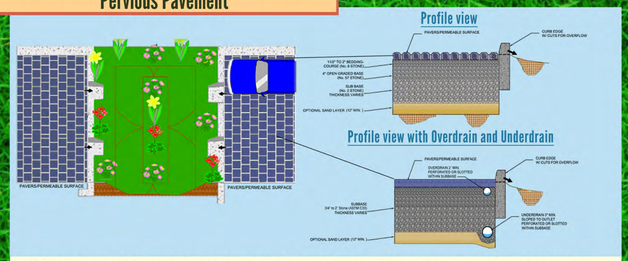
Rain Gardens



A rain garden is a shallow, excavated landscape feature or a saucer-shaped depression that temporarily holds runoff for a short period of time. Rain gardens typically consist of an absorbent-planted soil bed, a mulch layer, and planting materials such as shrubs, grasses, and flowers. The soil and mulch layer should be 12" minimum. An overflow conveyance system should be included to pass larger storms. Rain gardens are restricted for smaller drainage areas, 2,000 square feet or less, and work best in sandy or permeable soils.

(MDE Manual Page 5.104, ESD Practice M-7)

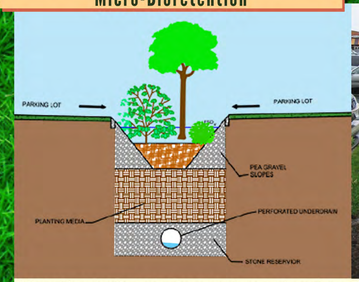
Pervious Pavement



Pervious pavements are alternatives that may be used to reduce imperviousness. While there are many different materials commercially available, permeable pavements may be divided into three basic types: porous bituminous asphalt, pervious concrete, and permeable interlocking concrete pavements. Permeable pavements typically consist of a porous surface course and open graded stone base/subbase or sand drainage system, with a minimum open graded stone depth of 12". Stormwater drains through the pavement, is captured in the stone layer, and infiltrates into the surrounding soils. Porous pavements are best suited over sandy, permeable soils, and may require an underdrain or overflow for large rain events.

(MDE Manual Page 5.46, ESD Practice A-2)

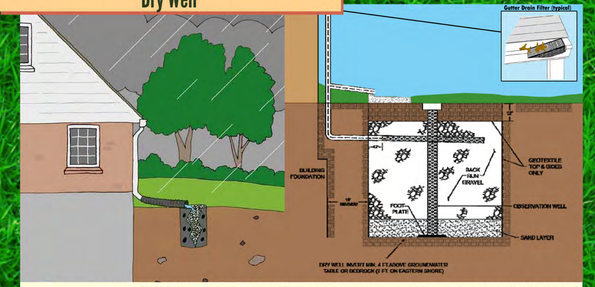
Micro-Bioretention



Micro-bioretention practices capture and treat runoff from small impervious areas by passing it through a filter bed mixture of sand, soil, and organic matter. Filtered stormwater is either returned to the site through an underdrain or partially infiltrated into the soil. Micro-bioretention practices are versatile and may be adapted for use anywhere there is landscaping. Micro-bioretention should be downhill and set back at least 10' from structures to protect the structures, unless an impermeable liner is provided. They should comprise of a 2-4' filter media later underlain by a gravel drainage layer. A perforated underdrain pipe is recommended in all applications and is required in poorly draining soils such as silts and clays.

(MDE Manual Page 5.96, ESD Practice M-6)

Dry Well



Dry wells are an excavated pit or structural chamber filled with gravel or stone that provides temporary storage of stormwater runoff, typically from rooftops. Rooftop runoff is directed to these storage areas and infiltrates into the surrounding soils prior to the next storm event. Pretreatment of water is recommended to filter sediment, leaves, and other debris that might clog the dry well. The drainage area to a dry well should not exceed 1,000 square feet and should be not be located in silt or clay soils. Dry wells constructed prior to ESD regulations (pre-2011) are not an accepted stormwater management practice.

(MDE Manual Page 5.91, ESD Practice M-5)

Contact the Montgomery County Department of Environmental Protection: WQPC.Credits@montgomerycountymd.gov or call 240-777-0311