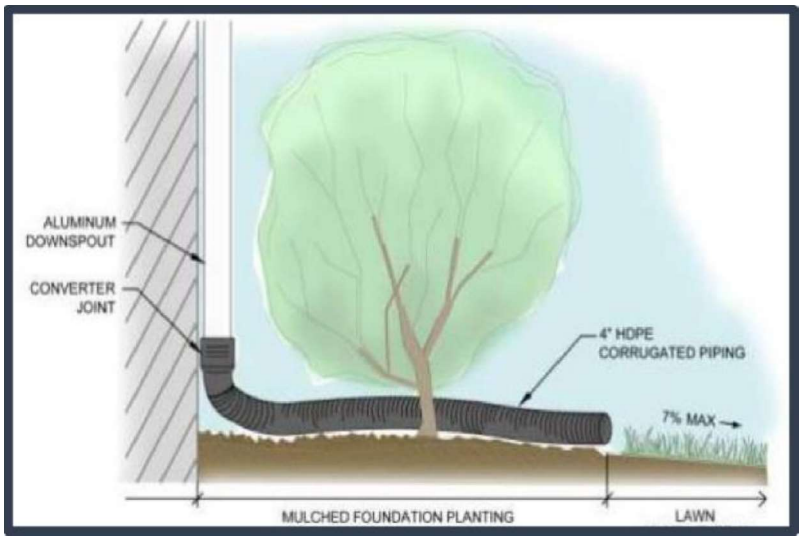
GREEN INFRASTRUCTURE: IMPERVIOUS AREA DISCONNECTION

Impervious area disconnection aims to slow down the rate of stormwater runoff, using pervious areas to filter and infiltrate stormwater. This practice reduces the volume of stormwater draining into the municipal storm sewer by draining rooftops, driveways, sidewalks, patios, and other impervious areas to grass swales, bio-retention areas, infiltration trenches or other infiltration devices. The two primary types of impervious area disconnection are downspout disconnection and pavement disconnection. Downspout disconnection is shown in the image to the right.



DESIGN CONSIDERATIONS

Roofs and driveways contribute toxic chemicals, oil, and metals to stormwater runoff. Routing rooftop runoff to vegetated areas will reduce runoff volume and peak discharge, as well as improve water quality by slowing runoff, allowing for filtration, and providing opportunity for infiltration and evapotranspiration. Disconnecting impervious areas is not appropriate for use in areas with slopes exceeding 6 percent, or areas with highly erodible soils. The maximum roof surface area directed to any one downspout disconnection is 300 square feet. Additionally, the infiltration area should be setback at least 10 feet from the building foundation and flow along at least 20 feet of permeable areas prior to leaving the property.

CONSTRUCTION AND COSTS

Downspout extensions are relatively inexpensive and could be installed by residents. Downspout and footing drain disconnections are considered relatively low-cost control measures that provide a cost-effective method to reducing flows into municipal stormwater systems and promoting infiltration.

ADVANTAGES	DISADVANTAGES
• Reduced peak discharge, • Increased infiltration and evapotranspiration, • Improved water quality, • Decreased stormwater runoff volume, • Increased stormwater time of concentration, and • Easily retrofitted into existing urban areas at minimal cost.	• Potential for erosion, • Potential for standing/stagnant water, and • Increased potential for basement seepage.

MAINTENANCE

The required maintenance is relatively low. The table below includes general maintenance activities.

Maintenance Activity	Frequency
• Mowing, weed control, and watering of vegetation • Reseeding bare areas. • Clearing of debris and blockages.	As needed (seasonal)
• Health evaluation of the vegetation.	biannual

FLOOD REDUCTION

The use of pervious areas for rooftop discharge has the ability to reduce the quantity of site stormwater runoff and improve the quality of the stormwater that does discharge from the site. Disconnecting impervious areas can reduce or eliminate surface runoff during small storms and reduce runoff from low to medium density residential developments and smaller commercial sites. However, there is large variation in the reduction in runoff volume and peak discharge from disconnecting impervious areas during large storms.