

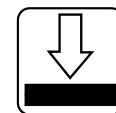
*RiverEast Center, Portland. Stormwater from the rooftop is conveyed by a downspout into a sculptural basin made with reclaimed concrete from the retrofit of the building. The basin detains and slows runoff before it flows into a series of adjacent rain gardens, grated runnels and swales.*



buildings



parking areas & impermeable landscape



impermeable soils



permeable soils

## Description

Stormwater conveyance is the flow, movement or transfer of stormwater from one location to another. Stormwater conveyance techniques deliberately transport water from where it falls to where it will be treated. All Low Impact Development Approaches (LIDA) convey stormwater, and the movement and slowing of water through these facilities improves water quality and attenuates peak stormwater flows.

There are design standards for each type of LIDA, but there is flexibility to allow creativity and site-specific adaptation for how stormwater enters and passes through these facilities to meet required performance criteria



## Application & Limitations

There are two general methods of stormwater conveyance, underground and above ground.

1. Underground conveyance channels stormwater in pipes below-ground and typically requires a plumbing permit. (See Design and Construction Standards for additional details and requirements.)
2. Above-ground conveyance moves water on the surface of the ground. In applicable locations, such as LIDA facilities, the benefits of above-ground conveyance may include:
  - Lower construction costs due to less excavation and underground piping
  - Less site disturbance
  - Improved oxygenation and cleansing of water
  - More opportunities for artistic and creative design
  - Enhanced public awareness of urban stormwater



*New Seasons, 20th and Division, Portland. A whimsical steel sculpture conveys stormwater from a grocery store rooftop into an infiltration planter.*



*Estacada Library. Stormwater is conveyed from the rooftop to an infiltration basin. As the basin fills with water, it overflows into a connected series of swales and additional infiltration basins that convey stormwater around the library.*



*North Main Village, Milwaukie. Stormwater is the featured design element for this residential courtyard. Water from rooftops is conveyed by steel scuppers into decorative planters to meandering runnels and water quality swales.*



*Headwaters at Tryon Creek, SW Portland. Headwaters is a residential development where senior housing, town homes, and an apartment building were designed to be integrated with the daylighting (removal from an underground piping system) of a tributary of Tryon Creek.*



*"Downspout 101", Seattle (artist Buster Simpson). The branching downspout is part of a public art project called "Growing Vine Street" that uses visual and provocative conveyance techniques to raise awareness of the stormwater flowing through the neighborhood.*



*PSU Stephen Epler Hall. Stormwater from the impermeable plaza area is directed to bands of granite stone that are strategically placed at low drainage points to convey stormwater to a series of flow-through planters.*



*Team Estrogen Warehouse, Washington County. Stormwater from the warehouse roof is conveyed by a scupper into a concrete splash basin. The velocity of the water is slowed before the water flows into a vegetated swale.*



*Block 11, Washougal, WA. Stormwater from surrounding rooftops is directed into the plaza's vertical sculpture before entering flow-through planters.*



*Glencoe Elementary School Rain Garden, Portland. Stormwater from neighboring streets is conveyed into an infiltration rain garden filled with native plants and rock berms that slow the flow of water. The rain garden is also a visual amenity and educational component for the elementary school (photo courtesy of 2008 Portland Stormwater Manual).*



*Headwaters at Tryon Creek, SW Portland. The rounded and stepped design of these infiltration planters are molded to the specific conditions of the site. The concrete walls are a creative interpretation of check dams that are used to convey water across flat surfaces over steep topography.*



*New Seasons, Beaverton. Two decorative scuppers collect and convey roof stormwater into an infiltration basin.*



*10th @ Hoyt, Portland. The design of this urban courtyard is inspired by Persian gardens. Downspouts convey stormwater from the surrounding rooftops into a series of channels and colorful fountains.*



*Local 49, Portland. Stormwater is conveyed from the rooftop by a decorative stainless steel metal scupper into the courtyard. Water flows from the scupper into a concrete runnel, detention basin and planters.*