Want to learn more about low impact development and stormwater management?

http://nemo.uconn.edu

CT Nonpoint Education for Municipal Officials (CT NEMO) has information on MS4, nitrogen reduction, rain gardens, and an LID atlas that indicates where LID has been implemented in Connecticut.

---

https://www.epa.gov/green-infrastructure

The Environmental Protection Agency offers resources to assist with planning, design, operating, maintaining, and funding LID and other forms of green infrastructure.

---

www.ct.gov/deep/greeninfrastructure

The Connecticut Department of Energy and Environmental Protection has an extensive collection of photos at different LID implementation sites across the state. It also has links to information on LID and on CT DEEP's programs regarding stormwater issues.





Low Impact Development



An Environmentally-Friendly Alternative to Conventional Urban Development

LID Examples



Green roof at the University of Connecticut

Green roofs are roofs that are host to a garden of low-maintenance vegetation. A layer of waterproof material separates the actual roof from the garden to prevent leaking of rainwater. The vegetation is drought-resistant and able to withstand the extreme heat and winds that a roof can be exposed to. In addition to reducing stormwater runoff, green roofs provide insulation to the buildings it lies on top of, which can help to reduce energy costs!

Pervious asphalt is functionally identical to normal asphalt; the only difference lies in how they are made. The pervious asphalt mixture lacks finer aggregates, which creates void space that water can seep into. From there, it can percolate into the soil or evaporate. Pervious asphalt must be maintained periodically, especially in areas near gravel or in places where sand and salt are used to de-ice the roads; fine particles can end up in the void spaces and reduce the asphalt's ability to absorb water.



Pervious asphalt at Goodwin College



Rain garden in Niantic, CT

Rain gardens are similar to green roofs in that they use soil and vegetation to absorb excess stormwater. However, since rain gardens aren't limited to a rooftop location, they can support a greater variety of vegetation. Though they aren't found on roofs, they're typically found close to one; rain gardens are most effective when placed adjacent to an area with extensive impervious surface cover.

What is low impact development?

Low impact development (LID) refers to systems and practices that minimize the effects of urban development on the natural hydrology of an area by integrating and/or mimicking natural processes that allow for water to evaporate and infiltrate the soil.



What are the benefits of LID?

Low impact development restores or maintains the ability for water to cycle freely throughout the ecosystem. Traditional urban development prevents water from infiltrating the soil and being taken up by plants thanks to impervious surfaces such as roads and parking lots. With frequent or heavy storm events, water cannot evaporate quickly enough, so it begins to flow off these surfaces as runoff. Runoff can lead to flooding; additionally, if it picks up pollutants or nutrients as it flows along the topography of the area, runoff can degrade the quality of the water bodies it flows into. By allowing water to flow into the soil, low impact development reduces runoff from storm events significantly.

LID Examples

Tree box filters function similarly to rain gardens; they are placed on or near roads, sidewalks, or parking lots to absorb stormwater runoff. The engineered soil medium helps to improve water quality by removing common pollutants from stormwater before it is absorbed into the soil surrounding the filter. If an intense precipitation event occurs, there is an outflow pipe within the tree box filter that discharges excess water to the town's storm drain system.



Tree box filter in East Lyme, CT

Bioretention areas are similar to rain gardens, but are much larger in size and are engineered to perform a wider array of functions. A grass buffer strip and a sand bed work to reduce the velocity of incoming runoff and filter out particulates. A mulch layer also helps to filter out particulates, with the added benefit of providing an environment that is conducive to the growth of microorganisms. These microorganisms help to remove nutrients and organic products that reduce water quality. Bioretention areas also help to provide a habitat for wildlife!



Bioretention area in Waterford, CT (middle)

Pavers come in many different shapes and sizes, but they all function in the same way. While conventional pavement does not allow water to infiltrate, spaces are built into pavers which allows water to be absorbed into the soil, reducing the volume of runoff that comes off of sidewalks, roads, and parking lots. The pavers can be constructed with concrete, brick, stone, plastic, and even recycled glass depending on the volume of traffic expected.



Pavers in Tolland, CT