Low-Impact Development (LID)

CE4505 Surface Water Quality Engineering

Stormwater Mgmt: Problems

- Flooding;
- Erosion;
- Water quality issues;
- Flashiness of urban river systems;
- Water scarcity;
Low Impact Development

Definition of LID

Low Impact Development (LID) is an approach to land development that uses various land planning and design practices and technologies to simultaneously conserve and protect natural resource systems and reduce infrastructure costs. LID still allows land to be developed, but in a cost-effective manner that helps mitigate potential environmental impacts.
Components of LID

- integrate stormwater management early in site planning activities
- use natural hydrologic functions as the integrating framework
- focus on prevention rather than mitigation
- emphasize simple, nonstructural, low-tech, and low cost methods
- manage as close to the source as possible
- distribute small-scale practices throughout the landscape
- rely on natural features and processes
- create a multifunctional landscape

Ten Common LID Practices

1. Rain Gardens and Bioretention Cells
2. Rooftop Gardens
3. Sidewalk Storage
4. Vegetated Swales, Buffers, and Strips; Tree Preservation
5. Roof Leader Disconnection
6. Rain Barrels and Cisterns
7. Permeable Pavers
8. Soil Amendments
9. Impervious Surface Reduction and Disconnection
10. Pollution Prevention and Good Housekeeping
Rain gardens

More rain gardens
Bioretention Cells

Constitution Avenue Features:
- Four bioretention cells
- High efficiency irrigation using collected stormwater

West Building Parking Garage Features:
- Six 1000-gallon cisterns for rooftop stormwater collection
- Irrigation system delivers collected stormwater to Constitution Avenue bioretention cells
Green Roofs

Courses

CE 4640 - Stormwater Management and Low Impact Development Design techniques for stormwater collection, conveyance, infiltration, and detention storage systems are discussed, both traditional stormwater management systems and newer approaches based on the philosophy of low impact development (LID) that seek not to alter the natural ecology of a site.

Credits: 3.0 Lec-Rec-Lab: (3-0-0) Semesters
Offered: Spring Pre-Requisite(s): CE 3620