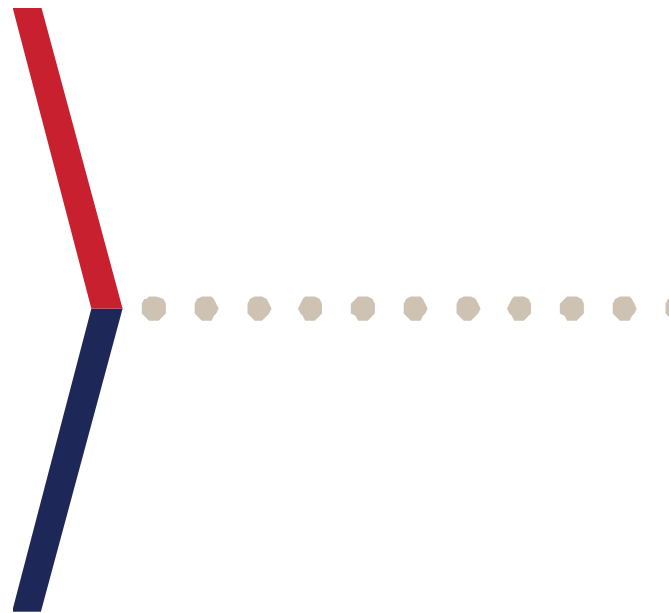


# Low Impact Development Practices



# What is LID?

LID is an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product.



# Where Can I Use LID Practices?

- LID can be applied to new development, redevelopment, or as retrofits to existing development.
- LID has been adapted to a range of land uses from high density ultra-urban settings to low density development.



# Obstacles to Using LID Practices

- The appropriateness of LID practices is dependent on site conditions, and is not based strictly on spatial limitations.
- Evaluation of soil permeability, slope and water table depth must be considered in order to effectively use LID practices.
- Many communities have development rules that may restrict innovative practices that would reduce impervious cover.



High Point





# Types of LID Practices?

- Bioretention Facilities
- Rain Gardens
- Vegetated Rooftops
- Rain Barrels
- Permeable Pavements



# Bioretention Systems

- Bioretention facilities are less cost intensive than traditional structural stormwater conveyance systems.
- For example, bioretention practices reduced the amount of storm drain pipe at a Medical Office building in Prince George's County, Maryland from 800 to 230 feet, which resulted in a cost savings of \$24,000 or 50% of the overall drainage cost for the site
- Annual maintenance is required for the overall success of bioretention systems.





# Grass Swales

- Adaptable to a variety of site conditions, are flexible in design and layout, and are relatively inexpensive
- They function as a mechanism to reduce runoff velocity and as filtration/infiltration devices.
- Engineered swales are less costly than installing curb and gutter/storm drain inlet and storm drain pipe systems.



# Vegetated Roof Covers/Green Roofs

- Reduces urban stormwater runoff by reducing the percentage of impervious surfaces in urban areas.
- Vegetated roof covers in urban areas offer a variety of benefits, such as extending the life of roofs, reducing energy costs and conserving valuable land that would otherwise be required for stormwater runoff controls.
- Green roofs are highly effective in reducing total runoff volume.
- Can be added to existing rooftops without additional reinforcement or structural design requirements





# Permeable Pavement

- Effective means of reducing the percent of imperviousness in a drainage basin.
- Porous pavements are best suited for low traffic areas, such as parking lots and sidewalks.
- Permeable pavements allow stormwater to infiltrate into underlying soils promoting pollutant treatment and recharge, as opposed to producing large volumes of rainfall runoff requiring conveyance and treatment.



Tarrytown Modern, Luxury Homes



# Benefits of LID

- Economical and environmental benefits
- Less disturbance of the development area
- Conservation of natural features
- Can be less cost intensive than traditional stormwater control mechanisms



# Builder Concerns with LID

- Many homeowners want large-lots and wide streets and view reduction of these features as undesirable and even unsafe.
- Many people believe that without conventional controls, such as curbs and gutters and end of pipe BMPs, they will be required to contend with basement flooding and subsurface structural damage.
- Concerns that open channels are potential nuisance problems, present maintenance problems, or impact pavement stability.







# Questions?

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