LID Site Planning – Non Structural Best Management Practices (BMPs)

- ✓ **Restoration and Preservation of pre-development topography and soil profile:**
  - ➢ Preserved and incorporate natural flow paths in design
  - ➢ Reduce construction on highly permeable soils
  - ➢ Locate new buildings and parking areas in areas that have lower hydrologic function
- ✓ **Preservation and use of native and local vegetation:**
  - ➢ Preservation and incorporation of conservation areas and wetland habits
  - ➢ Removal of exotic vegetation (recommended when greater than 5%)
  - ➢ Retention of existing native vegetation
  - ➢ Introducing native vegetation appropriate to existing site conditions
  - ➢ Conservation of existing Tree Canopy
- ✓ **Open space design and conservation:**
  - ➢ Increase (or augment) the amount of vegetation on the site.
  - ➢ Maximize use of open swale systems
  - ➢ Maximize overland sheet flow
  - ➢ Avoid total site clearing
  - ➢ Reduce fill and grade operations
- ✓ **Minimization of total impervious areas:**
  - ➢ Alternative roadway, sidewalk, parking lot, and driveway design standards to minimize imperviousness
  - ➢ Minimize width and lengths of traffic distribution networks
  - ➢ Implement pervious shoulders and right-of-ways
  - ➢ Limit the installation of sidewalks to one side of roadways
- ✓ **Reduction of directly connected impervious areas:**
  - ➢ Direct drainage to stabilized vegetated areas
  - ➢ Site layout to break up flow directions from large paved surfaces
  - ➢ Disconnect roof drains and drain to vegetated areas
  - ➢ Site development to encourage sheet flow through vegetated areas (locate impervious areas so that they drain to permeable areas)

LID Site Planning – Structural Best Management Practices (BMPs)

Bioretention Basins or Rain Gardens

Tree Box Filters or Infiltration Planters

Vegetated Swales

Infiltration Trench

Filter Strips or Vegetated Buffers

Low Impact Development

LID Site Planning – Structural Best Management Practices (BMPs)

Parking Stormwater Chambers

Retention Pond

Exfiltration Trench or French Drain

Permeable Pavement

Green Roof or Rain Barrels/Cisterns

Low Impact Development

A·D·A ENGINEERING

LID City of Doral Current Sediment Control Practices

Storm Drain Inlet Protection

Temporary Gravel Construction Entrance & Exit

Stacked Turbidity Barrier and Silt Fence

Low Impact Development

A·D·A ENGINEERING

LID Erosion Control Practices

- Soil Stabilization
  - ✓ Vegetative stabilization/seeding (temporary and permanent)
  - ✓ Topsoiling, Mulching, Geotextiles
  - ✓ Erosion control mattings
  - ✓ Preservation of mature vegetation
  - ✓ Tree protection
- Runoff Control
  - ✓ Reduction and detention of runoff
  - ✓ Interception and diversion of runoff
  - ✓ Proper handling and disposal of concentrated flow

Soil Stabilization Methods

Geotextiles

Erosion Control Mattings

Stone Outlet Trap

Runoff Control Methods

Runoff Trap & Spillway

Level Spreader

Stone Check Dam

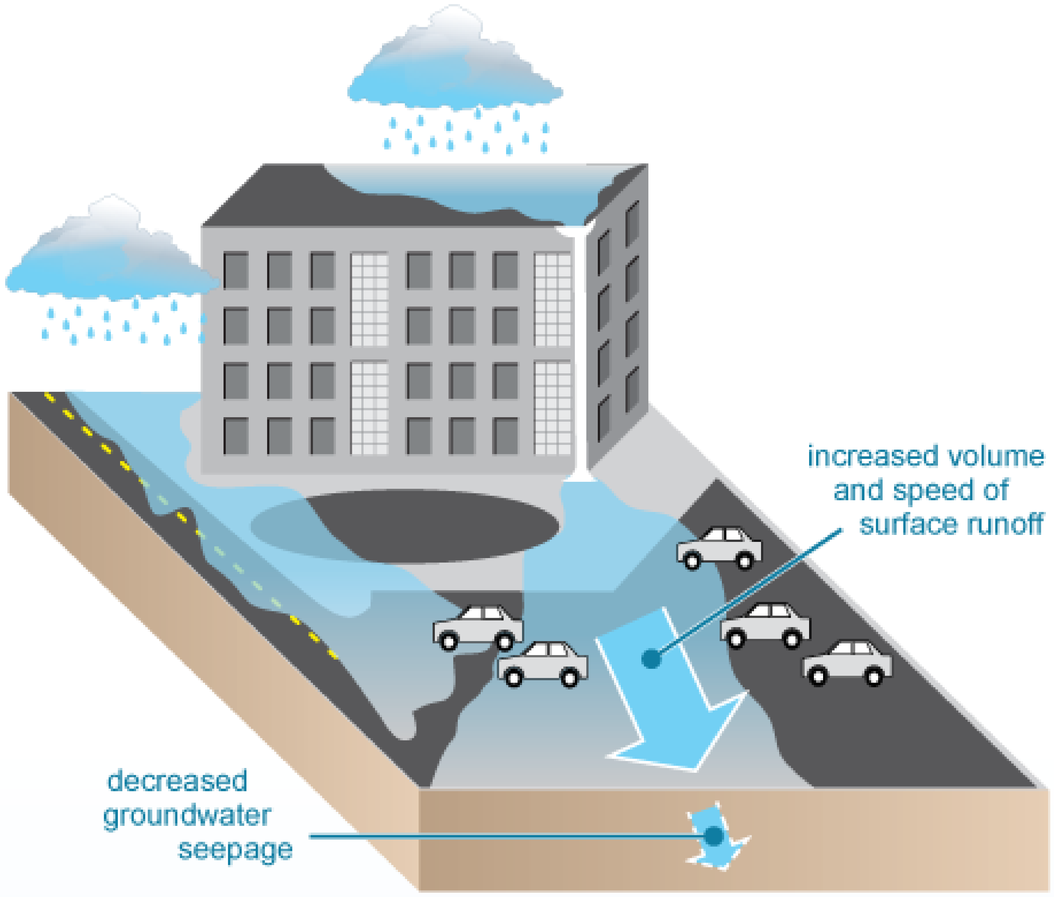
Low Impact Development

A·D·A ENGINEERING

Impervious and Pervious Surfaces – Conceptual Diagram

Current Approach

Impervious surfaces



Impervious 'hard' surfaces (roofs, roads, large areas of pavement, and asphalt parking lots) increase the volume and speed of stormwater runoff. This swift surge of water erodes streambeds, reduces groundwater infiltration, and delivers many pollutants and sediment to downstream waters.

LID BMP

Pervious surfaces

Pervious 'soft' surfaces (green roofs, rain gardens, grass paver parking lots, and infiltration trenches) decrease volume and speed of stormwater runoff. The slowed water seeps into the ground, recharges the water table, and filters out many pollutants and sediment before they arrive in downstream waters.

Conceptual diagram illustrating impervious and pervious surfaces. Impervious surfaces are hard and increase stormwater runoff, causing pollutant and sediment delivery in downstream waters. Pervious surfaces are soft and decrease stromwater runoff, which filters out pollutants and sediments before they arrive in downstream waters.
Diagram courtesy of the Integration and Application Network (ian.umces.edu), University of Maryland Center for Environmental Science. Source: Chesapeake and Atlantic Coastal Bays Trust Fund, 2013. Stormwater Management: Reducing Water Quantity and Improving Water Quality. IAN press, newsletter publication.

Low Impact Development

A·D·A ENGINEERING