

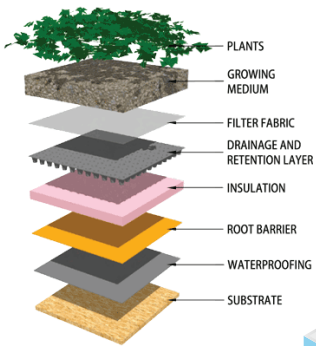
# LOW IMPACT DEVELOPMENT

## for Eco-Conscious Stormwater Management



### GREEN ROOFS

A green roof is easily installed on any type of building, residential or commercial, and can be as simple as a single layer of groundcover or as intricate as an extensive vegetable garden. In addition to providing excellent stormwater management and improving water quality, green roofs provide such benefits as reduced energy use and air pollution, and improved comfort and quality of life.



### RAIN GARDENS

By slowing stormwater as it travels downhill, rain gardens provide opportunity for stormwater to infiltrate, habitat for wildlife, and attractive landscaping, all while inhibiting erosion. Plants and soils are specifically chosen and engineered to clean stormwater by reducing nutrients and overall sediment loads.



### RAIN BARRELS

A rain barrel collects and stores stormwater runoff from rooftops, where it can later be used to water lawns and gardens. To be effective, they must be emptied between storms and utilized by a high percentage of a community's population. BONUS: Rain barrels can also be decorative, like the painted barrels shown here:



### TREE BOXES

Stormwater planters and tree boxes are installed in sidewalks and are designed to manage stormwater runoff from streets and sidewalks. Planters are typically sunken into the sidewalk, rectangular in shape with concrete sides, and lined with a permeable fabric. They are then filled with stone or gravel and topped with soil, hardy plants, and trees. Because they are built down into the sidewalk, runoff is directed into these planters that provide storage, infiltration, and evapotranspiration.



### PERMEABLE PAVEMENT

The link between high levels of impervious surfaces such as roadways and parking lots and degraded water quality is indisputable, and reducing impervious surfaces is one of the key steps in improving any community's water quality. Permeable pavement is designed to allow water to pass through it into the ground below where it is naturally filtered. Pervious pavement has a myriad of benefits including not only reduced stormwater runoff and replenished groundwater, but also reduction of flooding, pollutants, temperature, roadway ice buildup, and traffic hydroplaning accidents.



### DISCONNECTED IMPERVIOUS SURFACES (DIS)

DIS is a low-cost, effective way of reducing the volume and flow of stormwater runoff by directing it from impervious areas to graded and vegetated pervious surfaces. DIS is effective for both roofs and paved areas and provides both infiltration and filtration.



### STORMWATER BUMPOUT

A stormwater bump out is a curb extension that is typically located either mid-block or at an intersection. Composed of a layer of stone that is topped with flood and nutrient tolerant plants and soil, these attractive bumpouts filter stormwater while providing an aesthetic benefit to communities. The bumpout is constructed with a curb-cut that directs stormwater runoff into the bumpout where it can be infiltrated and filtered.



### GRASSED SWALES

A grassed swale is an open channel designed to manage a specific water quality volume, often along road-sides and parking lots. Stormwater runoff is slowed by vegetation as it flows in these channels, allowing the stormwater to infiltrate and be filtered by the underlying soil. Grassed swales are long and shallow in shape and have plants that are both flood and erosion resistant.