



ENVIRONMENTAL SITE DESIGN / LOW IMPACT DEVELOPMENT PRACTICES

Specific ESD Facilities will be designed at the Preliminary and Improvement Plan stages. Potential practices may include but are not limited to:

PLANNING TECHNIQUES:

- Preserving and protecting natural resources
- Conserving natural drainage patterns
- Minimizing impervious area
- Using ESD practices to maintain recharge
- Using reinforced turf and alternative surfaces
- Limiting soil disturbances
- Clustering development

ESD TREATMENT PRACTICES

- Disconnection of rooftop runoff
- Disconnection of non-rooftop runoff
- Sheetflow to conservation
- Submerged gravel wetlands
- Landscape infiltration
- Infiltration berms
- Dry wells
- Micro-Bioretenion
- Rain Gardens
- Swales
- Enhanced Filters

STRUCTURAL BMP'S

- Ponds
- Wetlands
- Infiltration
- Filtering Systems
- Open Channel

MICRO BIORETENTION

SUSTAINABLE DESIGN ELEMENTS:

- POLLUTANT REMOVAL BY PLANT NUTRIENT UPTAKE, INFILTRATION INTO UNDERLYING SOILS.
- A MICRO BIORETENTION SYSTEM TREATS RUNOFF BY CONVERTING IT THROUGH A FILTER BED MIXTURE OF SAND, SOIL, AND ORGANIC MATTER.
- THESE FACILITIES ARE GREAT FOR SMALL SPACES AND ALLOW FOR RUNOFF TO BE CAPTURED IN A CONCENTRATED AREA.

BENEFITS OF MICRO-BIORETENTION:

- CAN BE CONSTRUCTED IN SMALL SPACES WHERE TREATMENT IS NEEDED.
- FACILITIES CAN INTEGRATE WELL WITH ADJACENT PARKING LOTS AND OTHER IMPERVIOUS STRUCTURES.
- OFFERS INTEREST TO OTHERWISE LESS FAVORABLE AREAS.

BIO RETENTION

ENVIRONMENTAL SITE DESIGN ELEMENTS:

- CAPTURES RUNOFF FROM ADJACENT IMPERVIOUS AREAS AND PROVIDES FILTRATION OF STORMWATER TO ENSURE WATER QUALITY. VEGETATION IN THE SOIL BEDS ALLOW FOR THE UPTAKE OF POLLUTANTS AND RUNOFF.
- BIORETENTION SYSTEMS ARE MOST EFFECTIVE WHEN THEY ARE ABLE TO TREAT RUNOFF AS CLOSE TO THE SOURCE AS POSSIBLE.

BIO RETENTION BENEFITS:

- REDUCES SPEED OF RUNOFF WATER.
- HELPS REMOVE SEDIMENT AND TRACE METALS BEFORE REACHING STORMDRAINS.
- ABSORBS WATER INTO GROUND PROFILE WHILE CHANNELING DOWNSTREAM.

BIO-SWALES

BIO-SWALES BENEFITS:

- RUNOFF IS FILTERED THROUGH SOIL MEDIA TO REMOVE POLLUTANTS AND PROVIDE LANDSCAPE PROMOTES NUTRIENT UPTAKE.
- A BIO-SWALE USES TWO MAIN COMPONENTS TO TREAT STORMWATER: VEGETATION AND SOIL.
- BIO-SWALES ARE LONG ENOUGH TO ACCOMMODATE ENOUGH WATER PONDING IN RELATION TO HOW MUCH WATER IS BEING RUNOFF INTO IT.

RAIN GARDENS

A PLANTED DEPRESSION THAT USES NATIVE PLANTS AND ALLOWS STORMWATER TO COLLECT BY CATCHING IT AND ABSORBING IT INTO GROUND.

A TYPICAL RAIN GARDEN IS MADE UP OF NATIVE PLANTS, SOIL, MULCH AND GRAVEL. THESE ELEMENTS HELP COLLECT AND CLEAN RUNOFF.

A FEW BENEFITS OF RAIN GARDENS:

- REDUCE DRAINAGE PROBLEMS.
- PROVIDE HABITATS FOR WILDLIFE.
- RECHARGE GROUNDWATER RESOURCE.
- PROVIDE STABILITY TO SURROUNDING LANDSCAPE FEATURES.

PLANT EXAMPLES

VERONICA NOVBORACENSIS
NEW YORK IRONWEED

SEDUM TERNstroemii
WOODLAND STONECROP

RUDBECKIA LACINATA
TALL CONEFLOWER

JUNCUS TENNIS
SLENDER RUSH

PLANT EXAMPLES

CORNUS VIRGINIANA
WITCH HAZEL

VIBURNUM DENTATUM
ARROWWOOD

ILEX VERTICILLATA
WINTERBERRY

ARONIA MELANOCARPA
BLACK CHOKEBERRY

EXHIBIT K STORMWATER CONCEPT PLAN