



A Natural Systems Approach to Stormwater Management

Best Management Practices for
Implementing Low Impact Development



A New Vision for Designing with Nature

- ◆ 'Natural Systems Approach'
- ◆ 'Design with Nature'
- ◆ Preserve the Natural Water Balance
- ◆ Retain the Small, Detain the Large, and Convey the Extreme
- ◆ 'Source Controls'



Overview

- ◆ Site Level Solutions
- ◆ Subdivision Level Solutions
- ◆ Neighbourhood Level Solutions



Overview

◆ Site Level Solutions

- Soil Layer Thickness and Vegetation
- Infiltration Trenches and Pits
- Roof Downspout Disconnection
- Runoff Dispersal
- Terraced Landscaping
- Permeable Pavements
- Rain Gardens



Overview

◆ Subdivision Level Solutions

- Reduce Pavement Widths
- Tree Box Filters
- Landscaped Street Features
- 'Country Lanes'
- Exfiltrating Catch Basins and Infiltration Trenches



Overview

◆ Neighbourhood Level Solutions

- Biofiltration Streams with Integrated Wetlands
- Oil and Grit Separators



Site Level Solutions

◆ Soil Layer Thickness and Vegetation

- Minimum 300mm
Soil Layer Thickness





Site Level Solutions

◆ Infiltration Trenches and Pits

➤ Manage Rainwater from:

- Roofs
- Other Impermeable Surfaces

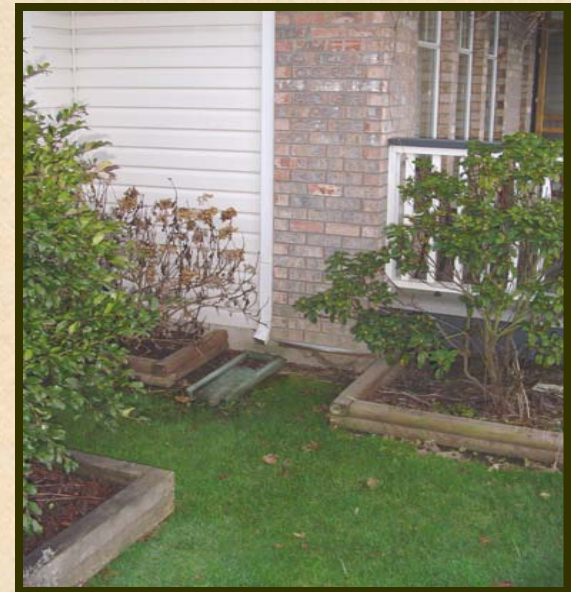




Site Level Solutions

◆ Roof Downspout Connection

- Require 'Disconnect'
between Roof Drains and
Municipal Storm Drains





Site Level Solutions

◆ Runoff Dispersal

- Forests Naturally Absorbent
 - Create Layer of 'Forest Litter'
- Streamside Setback Areas
- Greenways





Site Level Solutions

- ◆ **Terraced Landscaping**

- Enhances Filtration





Site Level Solutions

- ◆ **Permeable Pavements**

- Alternative Paving Materials





Site Level Solutions

◆ Rain Garden

- Accept and Retain Rainwater redirected from downspouts into a depressed area





Subdivision Level Solutions

◆ Reduce Pavements Widths

- Narrower Road Widths as in older, traditional areas
 - Achieve Tree Canopy
 - Uses Less Impermeable Hard Surfaces



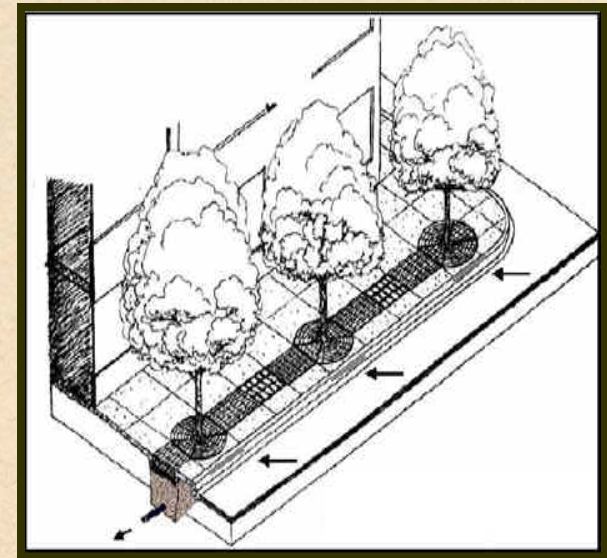


Subdivision Level Solutions

◆ Tree Box Filters

➤ Mini Bio-Retention Areas

- Installed beneath street trees
- Controls runoff





Subdivision Level Solutions

◆ Landscaped Street Features

- Extended Curbs Sections
- Traffic Circles

Together allow stormwater management methods to be integrated with safer 'Green Streets'.





Subdivision Level Solutions

◆ 'Country Lanes'

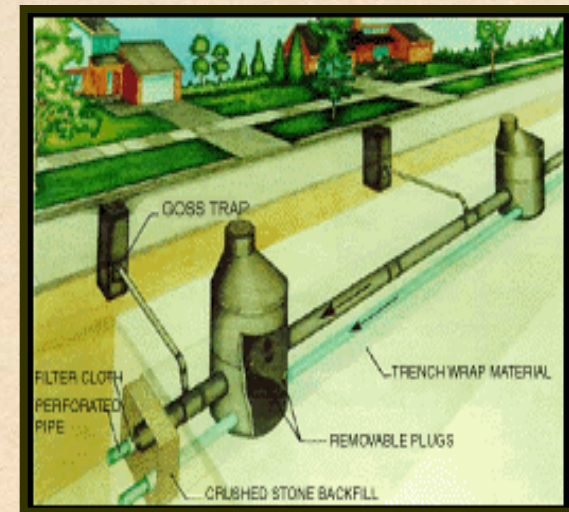
- Alternative Pervious Pavement
- Structural Soils with Grass





Subdivision Level Solutions

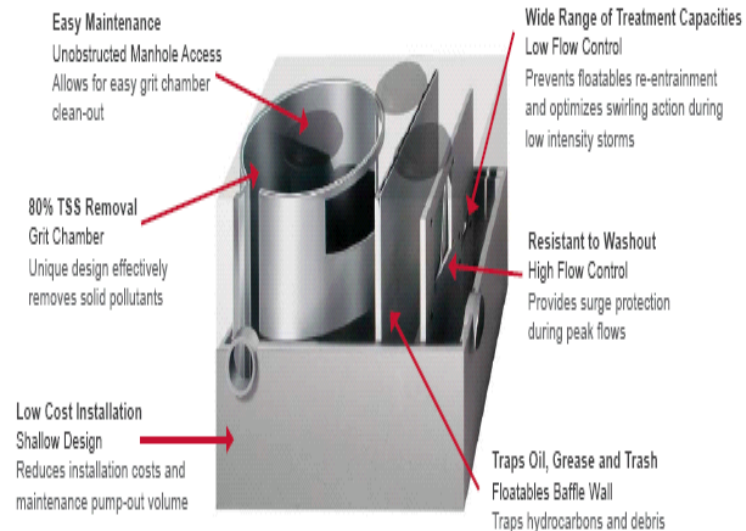
- ◆ **Exfiltrating Catch Basins and Infiltration Trenches**
 - 'Self Mitigating' Road Design
 - Sheds and disperses rainfall runoff rather than collecting and concentrating it.





Neighbourhood Level Solutions

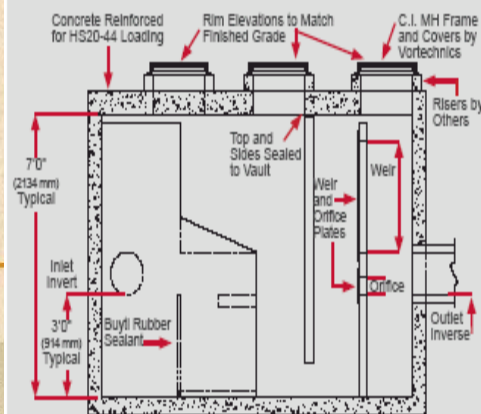
Vortechs® System Features and Benefits



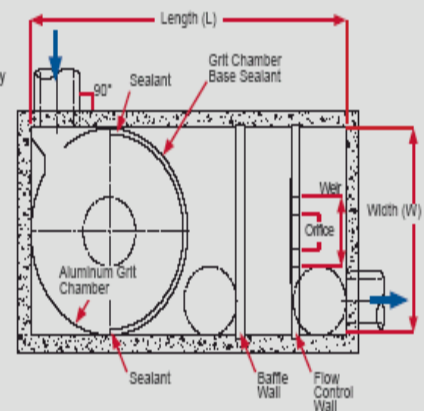
◆ Oil and Grit Separators

- Protect Water Quality at locations where rainwater runoff outfalls into streams

Typical Vortechs® System Elevation View



Typical Vortechs® System Plan View





Neighbourhood Level Solutions

- ◆ **Biofiltration Streams with Integrated Wetlands**
 - 'Bioremediation Stream'
 - Wetland Ponds on public lands

