Permeable Pavements: Integrated Strategy for Multiple Benefits

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Permeable Pavement Webinar
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Integrated Strategy

- Integrated Clean Water Plan: eliminate stormwater when rebuilding streets
- Financial commitment to integration
  - Revenue Bonds (investors)
  - Street Levy Approved (voters)
  - $5 Million/year for stormwater
- 3-dimensional view of streets
- Embedding this notion into the City’s Comprehensive Plan
Objectives

- Environmental
  - Clean River faster
  - Pollutant removal beyond permit requirements

- Financially Responsible
  - Live within our means
  - Savings of multiple benefits
Permeable Pavements Benefits

Manages stormwater

WITHOUT

- Large surface area for swales
- Extra cost for piping system

AND provides a means for

- New pavement
- Bike lane options
Current Porous Pavement Installations

- West Broadway
- Hazel’s Creek LID
- Liberty Park (Madelia St.)
- Upriver Dam
- Olmsted Brothers Green
Upriver Dam

- Grass pavers in parking lot installed in 1986
- Eliminated the need for a swale
- No mowing
- Plowed during winter
- Never repaired
Upriver Dam
West Broadway

- Pervious concrete sidewalk installed July, 2010
- Too much water in the initial mix and the addition of water to the surface by misting caused binding-**not** pervious.
Pervious concrete sidewalk installed: Circa 2011

- Low infiltration rate

- Infiltration improves from north to south:
  - did the pour start at the north end and continue to dry the mix as it moved south?
  - did skill improve over length of sidewalk?
Hazel’s Creek LID

Pervious concrete trail installed August 9, 2012

Excellent Infiltration
OLMSTED BROTHERS GREEN - PERVIOUS PAVING DEMONSTRATION

WHAT IS PERVIOUS PAVING?

While pervious paving looks like ordinary paving, it provides environmental benefits by soaking up (infiltrating) and cleaning stormwater runoff. It is just as strong as conventional pavement. When properly installed and maintained it can last over twenty years. It can be used for roads, sidewalks, trails, parking lots and other surfaces.

HOW DO RAIN GARDENS WORK?

Rain gardens collect stormwater runoff from roofs, driveways and roads. The plants in the rain gardens trap sediments and metals while the roots absorb the water and nutrients. Water filters through the soil to replenish the groundwater.
Olmsted Brothers Green

- Pervious concrete sidewalk and pavers demonstration project installed July 2014
- Excellent infiltration
Future Projects

- Havana Street Bike Lanes 2015 Construction
- RPWRF LID 2015 Construction
- Finch Arboretum LID Demo 2015 Construction
- Sharp Avenue 2016 Construction
Havana Street

Typical Section

Main Features

- Porous Asphalt Bike Lanes
- Gravel Swale
- Trees
- No Curb
“LID” Demonstration at RPWRF

- Traditional Asphalt
- Grass Strip
- Interlocking Pavers
- Pervious Concrete
- Grass Pavers
Finch Arboretum LID Project

FEATURES
• Parking lot 7000 sf
• Monitoring by the City
  • Drywell flow preconstruction
  • Grab samples
  • Durability
• Monitoring by WSU
  • Temperature
  • Comparison of subsurface between pavement types

- Bioinfiltration Facility
- Rock-Lined Channel
- Educational Sign (5 typical)
- Porous Asphalt Parking Lot Addition
- Existing drywell to be removed.
- Route flow at catch basin to rain garden or rock channel; Plug downstream pipe
Sharp Avenue

3 Different Sections

- Full width porous asphalt
- Bike/parking lane porous asphalt
- Full width standard asphalt

Main Features

- Center Swale
- Trees
- Bump Outs
Sharp Avenue

Collaboration with Gonzaga University:

- Shared Maintenance
- Feasibility Study completed August 2014
- Senior Project for Monitoring Test Strip
  - Water Quality
  - Durability
  - Construction Methods
  - Maintenance
Sharp Avenue Future Monitoring & Research

- Monitoring System Design
  - Water Quality
  - Durability
  - Maintenance

- LID BMP Education