Pervious Pavement
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LOW IMPACT DEVELOPMENT

Introduction
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L.I.D. Site Design Techniques

- Geometrics & Layout (i.e., “Narrow Streets”)
- Porous Pavements (Permeable Surfaces)
- Bioretention (Raingardens)
- Soil Amendments (Compost Amended Soils)
- Rainwater Collection and Reuse
LOW IMPACT DEVELOPMENT

Introduction

Ways to Mimic Nature...

No Catch Basins & No Curbs

✓ Sheet Flow Run-off
✓ Retain Water On-Site
✓ Porous Surfaces
✓ Do not Concentrate Flows
LOW IMPACT DEVELOPMENT

Introduction

Use smaller decentralized solutions at the source...

Decentralized Approach
(Small Scale Systems)

vs.

Centralized Approach
(Large Scale System)
POROUS PAVEMENTS
Impervious Surface Reduction Strategies

Permeable (Porous) Surfaces

➢ Hardscapes
  ▪ Porous Concrete / Asphalt Pavements
  ▪ Interlocking Concrete Pavers
  ▪ Gravel Cellular Confinement Systems

➢ Softscapes
  ▪ Reinforced Grass Surfaces
  ▪ Grass Cellular Confinement Systems

➢ Green Roofs
POROUS PAVEMENTS
Some Porous Pavement Design Considerations

- **Soil**
  - soil infiltration rate
  - soil’s structural capacity
  - soil’s susceptibility to swelling
  - slope stability / basement flooding

- **Use**
  - high or low traffic
  - Sources of contamination (i.e. industrial)
  - speed
  - maintenance
  - Striping
  - In ROW in Seattle is limited to the planting strip per SDOT
POROUS PAVEMENTS
Impervious Surface Reduction Strategies

Mimicking Natural Conditions…

Native Soil Section
(Natural Conditions)
POROUS PAVEMENTS
Impervious Surface Reduction Strategies

Mimicking Natural Conditions…

Porous Pavement Section
(Built Conditions)
CONCEPTS SHOWN, NOT ALL WILL BE PRESENT ON EACH DESIGN…
INTERLOCKING CONCRETE PAVERS
Types of Pavers

SF-RIMA

UNI ECOSTONE

TURFSTONE
INTERLOCKING CONCRETE PAVERS
Example Project

Residential Driveway, Bellingham, WA
POROUS GRAVEL PAVEMENT

“Gravel Pave 2”
REINFORCED GRASS PAVEMENT
Example Project

Bayview Corner, Whidbey Island, WA
REINFORCED GRASS PAVEMENT
Example Project

Boundary Bay Brewery, Bellingham, WA
LOW-ImpACT DEVELOPMENT

Example “Country Lane” sections

City of Vancouver BC Country Lane Alley Program

Proposed Porous Alley Section

Residence, Bellingham, WA
REINFORCED GRASS / PERVIOUS CONCRETE PAVEMENT

Hybrid Pervious Pavement Example Project (2006)
Stormwater Treatment, Detention/Retention and Flow Control are built into the section...

6” Pervious cement Concrete Pavement over 6” depth of 1¼” chipped rock, (deleted the fabric)
LOW-Impact Development
Pervious Cement Concrete Pavement

Provided thickened edge where curb is not present
LOW-Impact Development
Pervious Cement Concrete Pavement

Mix Design and Installation Changes

- Required a National Ready Mix Concrete Association (NRMCA) certified pervious concrete placer.
- Contractor used a Bunyan Power Screed for placing pervious concrete very smoothly.
- Refined the mix design to use a finer ¼” aggregate with certain admixtures to work really well with the Power Screen approach.
LOW-I MPACT DEVELOPMENT
Pervious Cement Concrete Pavement

New Finer Aggregate Mix
LOW-Impact Development
Pervious Cement Concrete Pavement

New Power Screen Placement Approach
LOW-I MPACT DEVELOPMENT
Pervious Cement Concrete Pavement

Jointing, Edging, and Covering
POROUS CONCRETE PAVEMENT
Example Project

Public Alley, Bellingham, WA
POROUS CONCRETE PAVEMENT
Example Project

Bayview Corner, Whidbey Island, WA
LOW-ImpACT DEVELOPMENT

Example Project (Municipal Community Center)

- 75,000 sf community center on 10.5 acres
- 100,000sf of porous concrete
- Raingardens
- Infiltration of roof water
- No curbs
- No catch basins
- Pool-water re-use for toilet flushing
LOW-I MPACT DEVELOPMENT
Example Project (Municipal Community Center)
POROUS CONCRETE PAVEMENT
Construction Photos

Firstenburg Community Center, Vancouver, WA
PERVIOUS CONCRETE PAVEMENT
Cover and Protect
THANK YOU...

Questions

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