2008 AWWA REGIONAL CONFERENCE

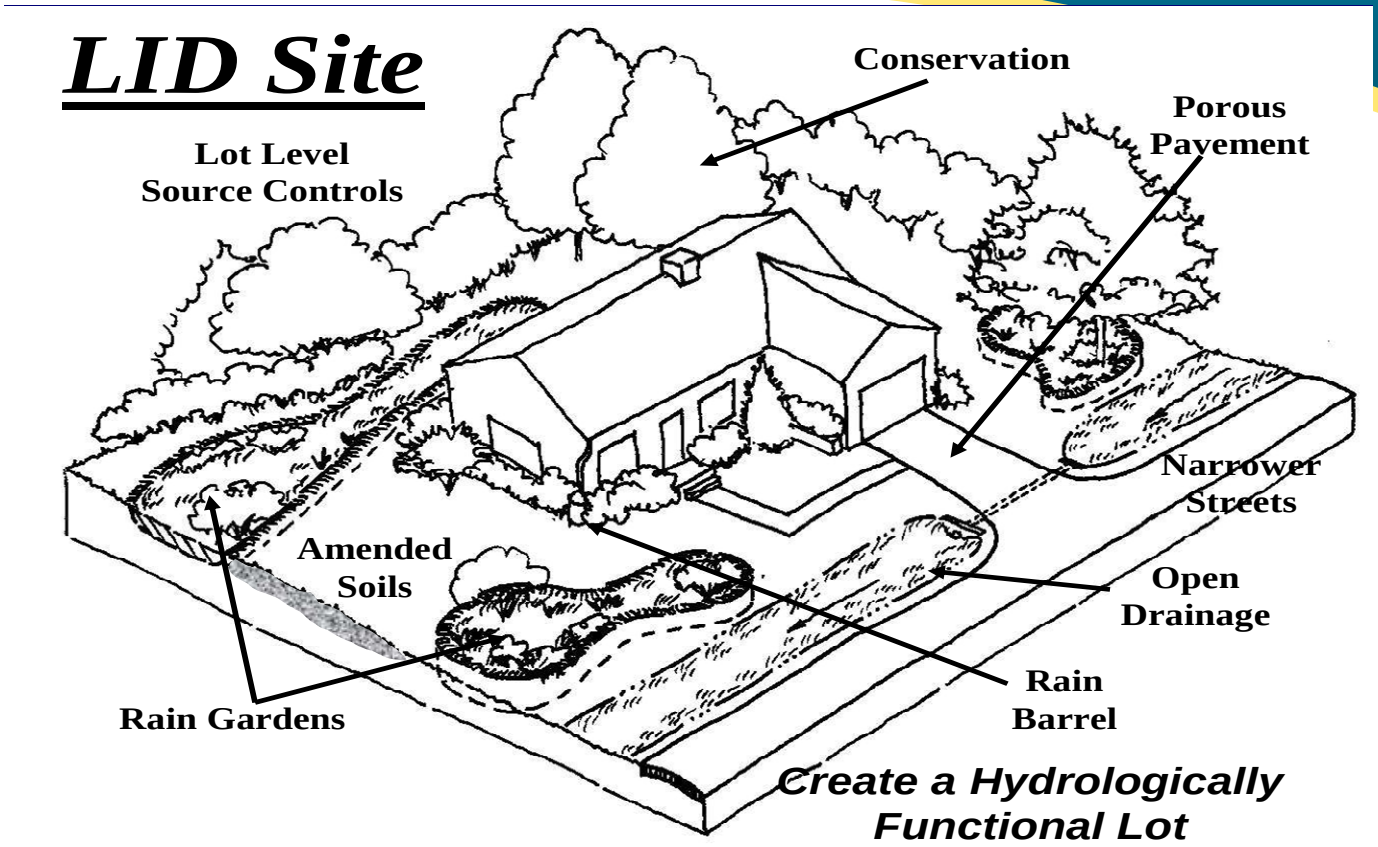
Sustainable Site & Stormwater Design For Waterworks Projects

By Scott Radford – Landscape Architect - MWH

MWH

BUILDING A BETTER WORLD

What is Sustainable Civil Site Design



Site design that addresses user needs (of the present) while accommodating the needs of the natural environment.

Why is Sustainable Site Design Important?

- Regulatory Requirements
- Meets LEED Requirements
- Better Design

Washington State First to Require Low Impact Stormwater Management Techniques

Components of Site Design?

- Existing Conditions
- Grading
- Paving
- Aesthetics
- Drainage
- Lighting
- Landscaping

Don’t forget the Designers, Operators and Users…..

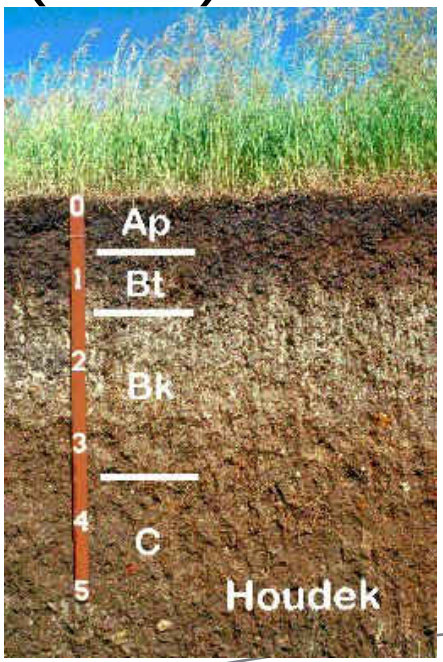
Integrated Design & Collaboration LEEDs to Sustainable Site Design.

Multi Discipline Team Meetings and Workshops.

- Engineers
- Owner
- Operators
- Maintenance
- Contractors
- Stakeholders

Sustainable Grading & Earthwork

- Balance Cut and Fill
- Preserve Existing Vegetation & Topsoil
- Sustainable Earthwork Techniques (NPS)



Guidelines and Resources
For Implementing Soil Quality and Depth BMP T5.13
in WDOE Stormwater Management Manual for Western Washington

Sustainable Paving

- Minimize Paving
- Use Porous Paving
- Slope Paving to Landscape Areas
- Use Light Colored Paving
- Narrower Roadways

Sustainable Site Layout

- Preserves Natural Areas
- Follow Natural Drainage and Contours
- Cluster Design
- Improves Visual Acuity and Aesthetics
- Aids in Building Heating & Cooling

Sustainable Drainage

Low Impact Development (LID)

DEFINITION:

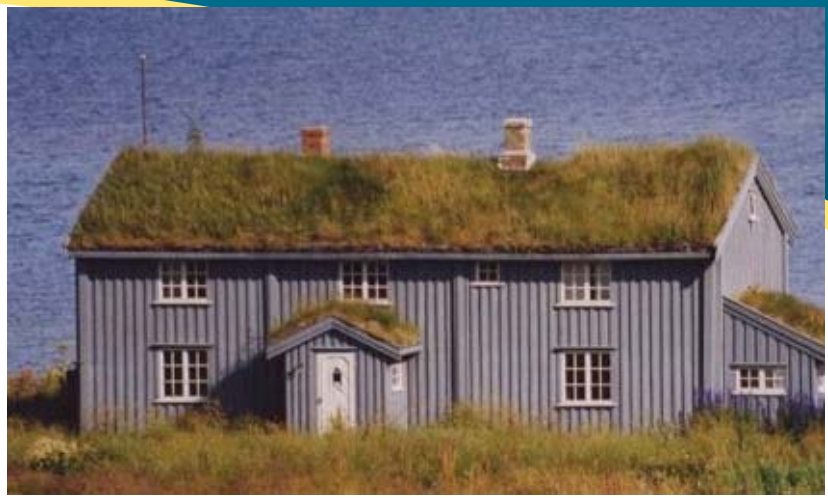
- A sustainable stormwater management technology that combines precision engineering with micro-scale controls that are engineered, designed and integrated into every site feature in order to maintain, restore or closely mimic pre-development watershed hydrologic functions (volume, recharge, evaporation and runoff).

THINK OUTSIDE THE PIPE!

Sustainable Drainage

Low Impact Development (LID)

- Reduce Impervious Surfaces
- Green Roof
- Porous Paving

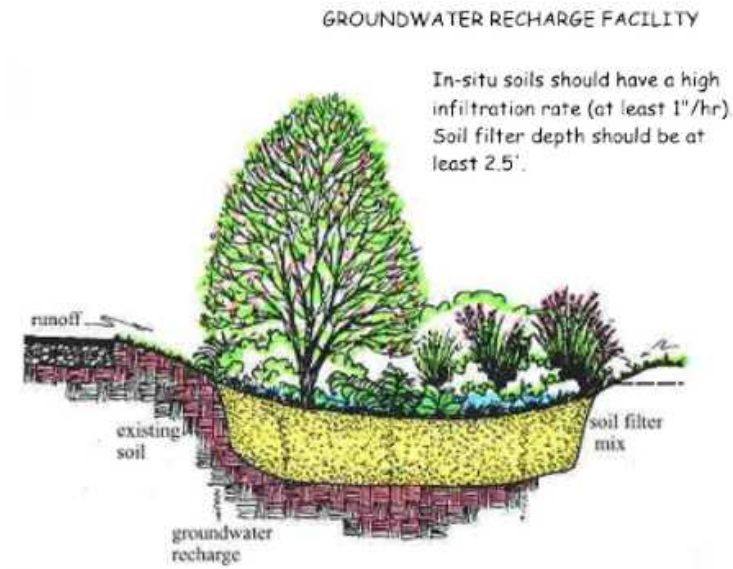


THINK OUTSIDE THE PIPE!

Sustainable Drainage

Low Impact Development (LID)

- Direct Run off into swales
- Rain Gardens
- Swales
- Bio-infiltration



THINK OUTSIDE THE PIPE!

Stormwater Management with Low Impact Development (LID)

THE NUMBER 1

BEST MANAGEMENT PRACTICE FOR IMPLEMENTING LOW IMPACT DEVELOPMENT STORMWATER MANAGEMENT IS:

BUILD HEALTHY TOPSOIL

THINK OUTSIDE THE PIPE!

Sustainable Site Design

DESIGN STRATEGIES

- Limited Clearing of site
- Limited turf (35% of conventional)
- Limited irrigation
- Limited impervious cover
- Zero discharge of stormwater.
- Capture roof runoff in cistern
- Use of native plants

LID is Sustainable Because It's Natural and Cost Effective

SEATTLE STREET ALTERNATIVES

COST SAVINGS USING LID VS. CONVENTIONAL

$100,000 SAVINGS PER CITY BLOCK

Source: Seattle Public Utilities: Natural Drainage System

SUSTAINABLE SITES INITIATIVE

GENERAL GOALS AREAS

- SOILS
- HYDROLOGY
- VEGETATION
- MATERIALS
- HUMAN WELL-BEING

SUMMARY

- KEY DESIGN CONSIDERATIONS FOR SUSTAINABLE SITE DESIGN:
  - SITE ANALYSIS
  - PRESERVE TOPSOIL & VEGETATION
  - MANAGE STORMWATER QUALITY & QUANTITY WITH BY INTEGRATING THE LANDSCAPE DESIGN WITH THE STORMWATER DESIGN.

THINK OUTSIDE THE PIPE!

Questions