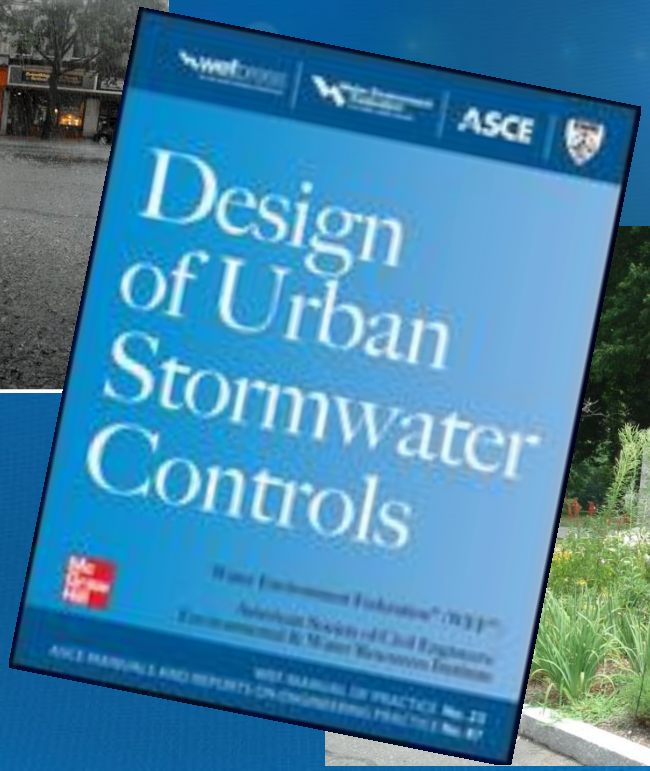
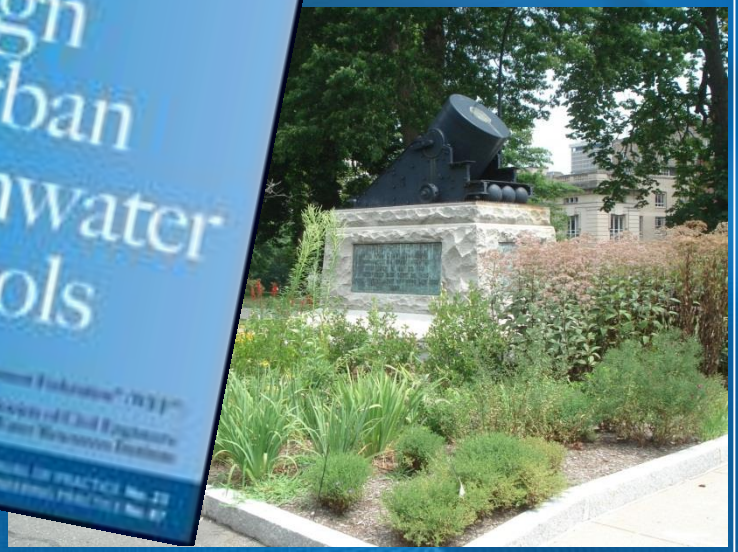
DESIGN OF URBAN STORMWATER CONTROLS TRIVIA!

CDM Smith





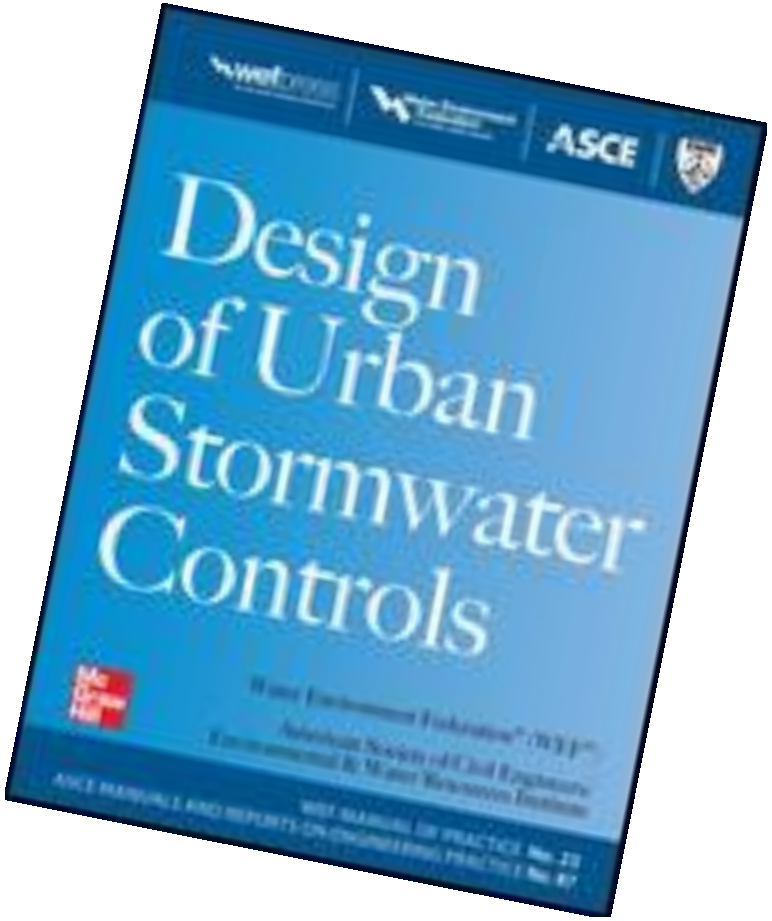
weftec
the water quality event™

Chicago, Illinois
October 9, 2013

Virginia Roach, P.E.

Outline

- Motivation
- Project Task Force
- What's new?
- MOP organization
- Chapter description
- Trivia questions



Water Environment Federation®
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ASCE AMERICAN SOCIETY OF CIVIL ENGINEERS

Motivation

- Existing MOP “Urban Runoff Quality Management” was over 14 years old
- Holistic stormwater management, not just quality
- New technology
  - LID
  - Commercial devices

Project Task Force

- Co-Chairs:

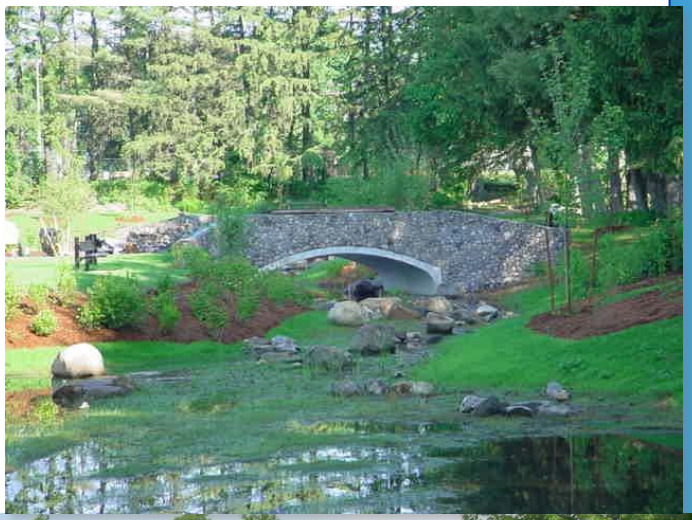
Dan Medina	Atkins	Washington, DC
Christine Pomeroy	University of Utah	Salt Lake City, UT

- Authors:

Robert Pitt	U. of Alabama	Tuscaloosa, AL
Shirley Clark	Penn State University	Harrisburg, PA
Steve Apfelbaum	Applied Ecological Svces	Brodhead, WI
Gary Minton	Resource Planning Assoc	Seattle, WA
Bill Frost	KCI Technologies	Baltimore, MD
Virginia Roach	CDM Smith	Cambridge, MA
John Aldrich	CDM Smith	Cleveland, OH
Tom Ballestero	U of New Hampshire	Durham, NH
Michael Barrett	University of Texas	Austin, TX
Aditya Tyagi	CH2M HILL	Austin, TX
Lou Regenmorter	CDM Smith	Riyadh, S. Arabia
Sri Rangarajan	New York City DEC	New York, NY
Cory Jones	URS	San Diego, CA

What's New?

- Unit Processes / Unit Operations (UP-UO) approach
- Unification of terminology
- Comprehensive view of impacts:
  - Hydrology (peak flow, runoff volume, flow duration)
  - Water quality
  - Stream geomorphology
  - Aquatic ecology
- Updated maintenance requirements and cost procedures
- Assessment and modeling methods
- Aimed at designers and non-technical municipal officials
- Sizing examples



MOP Organization

1. Introduction
2. Effects of Stormwater on Receiving Waters
3. Performance Goals for Stormwater Controls
4. Unit Processes and Operations for Stormwater Control
5. Selection Criteria and Design Considerations
6. Basins
7. Swales & Strips
8. Filters
9. Infiltrators
10. Gross Pollutant Traps & Mechanical Operations
11. Maintenance of Stormwater Controls
12. Whole Life Cost of Stormwater Controls
13. Performance Assessment
14. Analytical Tools for Simulation of Stormwater Control

“Stormwater Controls”

Unit Processes for Stormwater Control

- New framework for stormwater management
  - *Unit Process* – Mechanisms for pollutant removal or quantity control
  - *Unit Operation* - The structure in which one or more unit processes occur, i.e., stormwater controls (wet basin, sand filter, swirl concentrator)
  - *System* - One or more unit operations in series

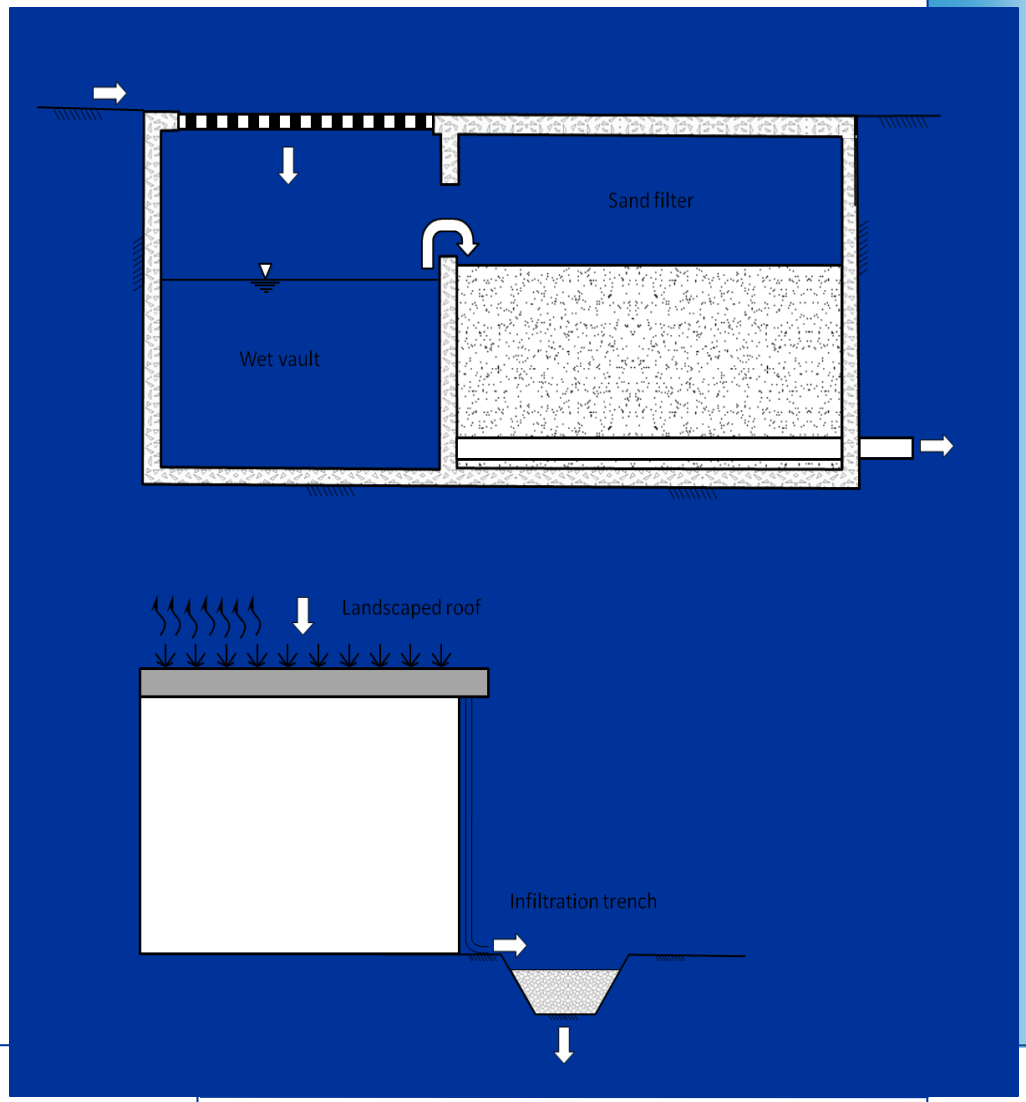
Unit Operations

- Same as “stormwater controls”
- Five types of stormwater controls:

1. Basins
2. Swales & Strips
3. Filters
4. Infiltrators
5. Gross Pollutant Traps

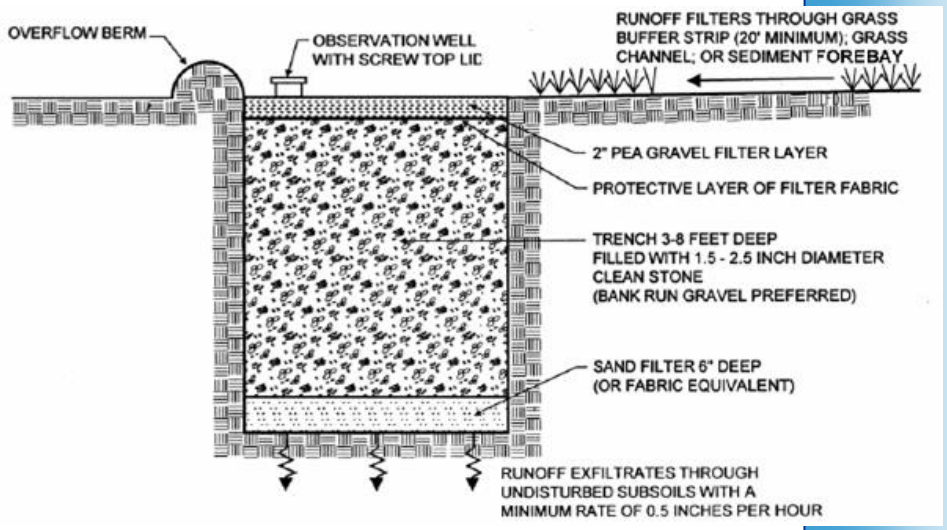
Systems

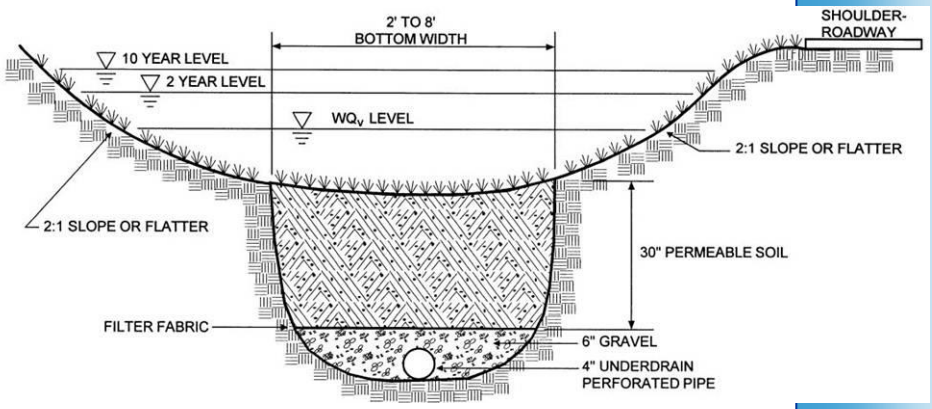
- Two or more UOs in series
- “System” preferred over “treatment train”



Outline for Each Design Chapter

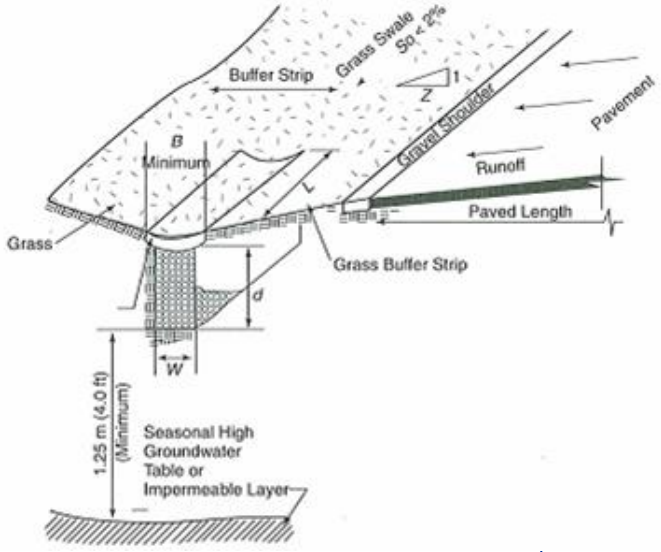
- Description
- Typical Applications
- Limitations
- Design Procedure and Criteria
- Aesthetic and Safety Considerations
- Access and Maintenance Features
- Sizing example





Design Chapters

6. Basins
   - Wet basins
   - Dry basins
   - Wetlands
   - Vaults
   - Oil/water separators
   - Forebays
   - Cisterns / Rain Barrels
7. Swales and Strips
   - Swale
   - Strip
8. Filters
   - Sand filter
   - Subsurface sand filter
   - Bioretention filter
   - Landscaped roofs
   - Drain inlet inserts
   - Manufactured filters
   - Subsurface Gravel Wetland
10. Infiltration
    - Basins
    - Trenches and Vaults
    - Dry Wells
    - Permeable pavement
11. Gross Pollutant Traps
    - Screens
    - Nets
    - Baskets
    - Racks
    - Hoods



Advancements in Design

- Research applications
- Examples:
  - Bioretention filters – media mixes
  - Infiltrators – cold climate considerations
  - Swales and strips – design curves
  - Gross pollutant traps – new devices

To play the trivia game, visit:

http://stormwater.wef.org/stormwatertrivia