Learn how to select, design and apply a range of stormwater infiltration and biofiltration BMPs...

Designing Bio/Infiltration Best Management Practices for Stormwater Quality Improvement

- *Porous pavement*
- *Rain gardens*
- *Swales*

September 18–20, 2006
Worcester, Massachusetts

November 1–3, 2006
Madison, Wisconsin

15 PDH — Professional Development Hours
1.5 CEU — Continuing Education Units

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COLLEGE OF ENGINEERING
UNIVERSITY OF WISCONSIN-MADISON
Department of Engineering Professional Development
432 North Lake Street Madison, Wisconsin 53706

College of Engineering ■ Department of Engineering Professional Development

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The Worcester, MA course is by invitation of and in cooperation with: Riverways Program, Commonwealth of Massachusetts; Massachusetts Executive Office of Environmental Affairs; Massachusetts Office of Coastal Zone Management; Massachusetts Low Impact Development Working Group; and Environmental Protection Agency

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THE UNIVERSITY of WISCONSIN MADISON

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Know How to Select, Design and Apply BMPs

This practical course focuses on infiltration/biofiltration best management practices available for stormwater quality improvement. Our purpose is to teach you how to select, design and apply a range of stormwater infiltration and biofiltration BMPs. The course will cover a spectrum of key considerations, including

- site evaluation
- soil modification
- alternative landscape practices
- design factors for water distribution
- commercial site design
- construction/post-construction issues
- regulatory performance standards
- costs and removal efficiencies

Special Focus

The instructors will emphasize the design and application of three infiltration/biofiltration systems being used increasingly to improve the quality of stormwater:

- porous pavement
- rain gardens
- swales and trenches

How You Will Learn

This interactive course will involve you in a mix of lectures, case studies and workshops on the various approaches. You will have opportunities to get answers to your specific questions and to share experiences and problems you encounter on the job.

Outstanding Instructors

Your instructors are highly accomplished educators, consultants, regulators and managers with extensive field experience, broad knowledge of bio/infiltration issues, and demonstrated expertise in instructional settings. Plan to take advantage of their range of knowledge by participating in our class discussions and workshops and by visiting with them during refreshment breaks, lunches and after class.

For Related Course Descriptions
http://epd.engr.wisc.edu/catalogs/civil.lasso

Who Will Benefit

This course will be of particular benefit to those who are implementing low-impact development projects. Plan to attend with

- design engineers
- architects
- contractors
- developers
- regulators
- reviewers
- planning staff

Continuing Education Credits

By participating in this course you will earn 1.5 Continuing Education Units (CEU) or 15 Professional Development Hours (PDH).

Course Planning Committee

Richard Claytor
Vice President
Horsley and Witten
Sandwich, Massachusetts

Andrea Cooper
Smart Growth Coordinator
Executive Office of Environmental Affairs
Boston, Massachusetts

Patrick Eagan PhD, PE
Program Director, Associate Professor
Department of Engineering Professional Development
University of Wisconsin–Madison

Thomas Maguire
Regional Wetlands Coordinator
Wetlands Program
Massachusetts Department of Environmental Protection
Boston, Massachusetts

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Course Outline

Day One

7:30 Registration

Monday, September 18 in Worcester:

Holiday Inn-Worcester
500 Lincoln Street

Wednesday, November 1 in Madison:

The Pyle Center
702 Langdon Street

8:00 Welcome and Introduction

Patrick Eagan PhD, PE
Program Director, Associate Professor
Department of Engineering Professional Development
University of Wisconsin–Madison

Welcome for Worcester Attendees:

Andrea Cooper
Smart Growth Coordinator
Executive Office of Environmental Affairs
Boston, Massachusetts

8:20 Site Evaluation

- Where and where not to place BMPs
- Geotechnical issues
- Soil structure
- Groundwater impacts

Robert Montgomery (Worcester and Madison)
Principal
Montgomery Associates: Resource Solutions
Madison, Wisconsin

9:45 Break

10:00 Relevant Regulatory Issues for Stormwater Infiltration

Thomas Maguire (Worcester)
Regional Wetlands Coordinator
Wetlands Program
Massachusetts Department of Environmental Protection
Boston, Massachusetts

Roger Bannerman (Madison)
Non-Point Source Program
Wisconsin Department of Natural Resources
Madison, Wisconsin

11:00 Regulatory Performance Standards

Roger Bannerman (Worcester and Madison)

11:30 Soil Modification for Stormwater

- Amendments
- Replacements

Roger Bannerman (Worcester)
Bob Pitt (Madison)
Cudworth Professor of Urban Water Systems
Department of Civil and Environmental Engineering
University of Alabama
Tuscaloosa, Alabama

12:15 Lunch

1:00 Porous Pavement

- Design
- Stormwater calculations
- Soil and site conditions
- Construction
- Maintenance

Richard Claytor (Worcester)
Vice President
Horsley and Witten
Sandwich, Massachusetts

Christine Wallace (Worcester and Madison)
Project Engineer
Horsley and Witten
Sandwich, Massachusetts

2:15 Break

3:00 Alternative Landscaping Practices for Improved Infiltration

John Barten (Worcester and Madison)
Water Quality Manager
Three Rivers (Hennepin) Park District
Plymouth, Minnesota

4:30 Adjournment

Day Two

7:30 Coffee and Conversation

8:00 Designing Rain Gardens

Introduction/demonstration of the RECARGA model and how it works

Linda Severson (Worcester and Madison)
Montgomery Associates: Resource Solutions
Madison, Wisconsin

9:30 Break

9:45 Bio-Retention: Case Study

Richard Claytor/Christine Wallace (Worcester)
Nick Vande Hey (Madison)
McMahon and Associates
Neenah, Wisconsin

10:30 Designing Infiltration Systems

Swales

Roger Bannerman (Worcester)
Bob Pitt (Madison)

12:00 Lunch

1:00 Infiltration Basin with Pretreatment: Case Study

Richard Claytor/Christine Wallace (Worcester)
Bernard Michaud (Madison)
Earth Tech
Madison, Wisconsin

2:00 Break

2:15 Talking to the Town Board About Low-Impact Development

Mike Clark (Worcester)
Associate
Norfolk Ram Group
Plymouth, Massachusetts
Nick Vande Hey (Madison)

3:00 Class Problem: Arbor Hills

Patrick Eagan (Worcester and Madison)
David Liebl (Madison)
Waste Management and Reduction Specialist
Solid and Hazardous Waste Education Center
University of Wisconsin–Extension
Class Faculty

4:30 Adjournment

Day Three

7:30 Coffee and Conversation

8:00 Site Design for Commercial Sites

- Pretreatment issues
- Proprietary devices

Richard Claytor (Worcester)
Christine Wallace (Madison)

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10:00 Important Design Factors for Water Distribution

- Sheet flow
- Level spreaders
- Forebays
- Pretreatment concepts

Richard Claytor (Worcester)
Christine Wallace (Madison)

11:00 Construction and Post-Construction Issues

Richard Claytor (Worcester)
Christine Wallace (Madison)

12:00 Final Adjournment

Bring Your Team

Gain maximum value for your organization by attending as a team. If you enroll three or more people, you will receive a fee discount (see enrollment form).

Related Upcoming Courses

For details call toll free 800-462-0876, or check our Web site at http://epd.engr.wisc.edu/catalogs/civil.lasso

Storm Sewer System Design
October 9–10, 2006, Madison, WI
Course #H783

Storm Water Detention Basin Design
October 11–12, 2006, Madison, WI
Course #H784

Succeeding with a Dam Removal Project
October 16–18, 2006, Amherst, MA
Course #H890

Using the Source Loading and Management Model (SLAMM) for Urban Stormwater Management
November 13–15, 2006, Madison, WI
Course #H893

Four Easy Ways to Enroll

Need To Know More?

Call toll free **800-462-0876** and ask for

Program Director:
Patrick Eagan PhD, PE
eagan@engr.wisc.edu

Program Associate:
Diane Lange
Or e-mail **custserv@epd.engr.wisc.edu**

General Information

Fee Covers Notebook, course materials, break refreshments, lunches and certificate. We do not publish proceedings, and due to copyright laws the course materials are not available after the course.

Cancellation If you cannot attend, please notify us by September 11 for the Worcester site and October 25 for the Madison site, and we will refund your fee. Cancellations received after those dates and no-shows are subject to a $150 administrative fee. You may enroll a substitute at any time before the course starts.

Locations/Accommodations

Worcester Offering, September 18–20, 2006

The September course will be held at the Holiday Inn-Worcester, 500 Lincoln Street, Worcester, Massachusetts. If you must be contacted during the course, phone messages may be left for you at 508-852-4000.

We have reserved a block of sleeping rooms ($89 sgl/dbl plus tax) for course participants at the Holiday Inn-Worcester, 500 Lincoln Street, Worcester, Massachusetts. To reserve a room, call 508-852-4000 by September 10 and indicate that you will be attending this course. Room requests made later than September 10 will be subject to availability.

Madison Offering, November 1–3, 2006

The November course will be held at The Pyle Center, 702 Langdon Street, Madison, Wisconsin. If you must be contacted during the course, phone messages may be left for you at 608-262-1122.

We have reserved a block of sleeping rooms ($99/sgl, $114/dbl) for course participants at the Campus Inn, 601 Langdon Street, Madison, Wisconsin. To reserve a room, call 800-589-6285 or 608-257-4391 by October 10 and mention Bio/Infiltration, group reservation 53490. After October 10, the special room rates will still be available for attendees if rooms are available.

Phone:
800-462-0876 or
608-262-1299 (TDD 265-2370)

Internet:
http://epd.engr.wisc.edu/

Mail to:
Engineering Registration, The Pyle Center
702 Langdon Street, Dept. 107
Madison, Wisconsin 53706

Fax:
800-442-4214 or 608-265-3448

Course Information

Please enroll me in **Designing Bio/Infiltration Best Management Practices for Stormwater Quality Improvement**

❑ **Course #H885** September 18–20, 2006 in Worcester, Massachusetts Fee: $995

Team Discount: $895 each when 3-5 people enroll from the same organization; $795 each when 6-10 people enroll from the same organization; and $699 each when 11 or more people enroll from the same organization.

❑ **Course #H886** November 1–3, 2006 in Madison, Wisconsin Fee: $949

Team Discount: $849 each when 3-5 people enroll from the same organization; $749 each when 6-10 people enroll from the same organization; and $649 each when 11 or more people enroll from the same organization.

❑ I cannot attend at this time. Please send me brochures on future courses.

Personal Information (Please print clearly.)

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone (_____) _____ Fax (_____) _____

E-mail _____

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Important–please enter the 3-digit UW# Code from the mailing label.

❑ Please check the box if you are a person with a disability and desire special accommodations. A customer service representative will contact you. Requests will be kept confidential.