

Registration

Four ways to register: **PHONE** **FAX** **MAIL** **ONLINE**

Fees: Course fee is \$895 and includes workshop materials, breaks, and lunch both days.

Hydraulic Design of Culverts

Des Moines, IA December 13-14, 2010

Name(s)/Title(s) _____

Department _____

Organization _____

Address _____

City _____ State _____ Zip _____

Phone/Fax _____

Email _____

Emergency Number *(will not call unless course cancelled)* _____

P.O. Number _____

Credit Card: American Express Mastercard Visa

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**Water Resources
Learning Center, Inc.**
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HYDRAULIC DESIGN OF CULVERTS (1.4 CEUs/14 PDHs)

Des Moines, IA
December 13-14, 2010

Other Courses/Locations:
Design of Stormwater Management Systems

St. Louis, MO
Columbus, OH
Atlanta, GA

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Hydraulic Design of Culverts

Des Moines, IA

December 13-14, 2010

Course Description

This two-day course provides a comprehensive discussion of hydraulic design concepts and procedures for culvert design emphasizing the theory, design procedures, and practical applications. The course was recently revised and expanded to include hydrologic procedure appropriate for culverts as well as other considerations. Attendees will perform design calculations by hand (bring a calculator!) to reinforce their knowledge and increase their confidence. This course is based on the Federal Highway Administration manual, HDS-5, "Hydraulic Design of Culverts" and other nationally recognized documents and software. This course will also include the new Windows version of HY-8 for culvert design 1.4 CEUs

Course Outline

- Introduction to Culverts
- Review of Hydraulic Theory
- Open Channel Flow Calculations
- Hydrology for Culvert Design
- Culvert Hydraulics
- Conventional Culvert Design
- Improved Inlets
- New HY-8 Computer Program
- Other Considerations

Benefits

- Learn basic hydrologic methods for culverts.
- Understand the theory and assumptions involved in culvert hydraulics.
- Learn the hydraulic design procedures used for culverts.
- Learn the benefits and opportunities for improved inlets.
- Understand the theory and procedures for storage routing.
- Understand the benefits of HY-8.

Course Material

Students will receive a course workbook, a printed copy HDS-5, "Hydraulic Design of Culverts," HDS-3 "Design Charts for Open Channel Flow," and the new Windows version of the FHWA software, HY-8.

Who Should Attend?

This workshop is intended for engineers, technicians, consultants, designers, plan reviewers and permit issuers who either work with culverts or would like to develop a better understanding of the hydraulic aspects of culvert. While construction techniques are not covered in this workshop, those who work in construction will benefit from exposure to the design process. The course is presented in such a manner that those with limited hydraulic background will have no problem understanding the material. The course will benefit those who are new to this topic as well as those with experience.

"Good review course for public works directors."

Bruce Temple, City of Claremont, NH

"I highly recommend this and any other courses taught by the Water Resources Learning Center and Brian Roberts. His knowledge of the material is extensive. The material taught applies to real world situations."

Anthony Stella, P.E.

"Great seminar. Information provided was very useful and presented very well."

Randy Mendenhall, Snyder & Associates

"The seminar was excellent. I will recommend to others."

Rod Pakzadian, St. John's River Water Management District

"The instructor is very knowledgeable and does not speak over your head – very practical teaching style."

Jen Hancock, HWS Consulting Group

"A great advanced study of culvert design."

Chris Vaught, LA County Sanitation Districts

"Brian's passion for the subject matter is evident in his course structure and presentation."

Darwin L. Christensen, PEPG Engineering

Book Store

Hard copies of our reference manuals can now be purchased directly from Water Resources Learning Center. Please see website for details.

Course Time: 8:30 am- 4:30 pm

Registration & Continental Breakfast: 8:00am

Des Moines, IA

Radisson Des Moines Airport Hotel

6800 Fleur Drive

Des Moines, IA 50321

515-285-7777

Room Rate: \$104.00

Water Resources Learning Center

The Water Resources Learning Center is a training organization dedicated to continuing education in the field of water resources. The organization offers courses in hydrology, hydraulics, stormwater management, watershed planning and management, software applications, drainage design, storm sewers, stream channels, NPDES & TMDL's, erosion and sediment control, etc. These highly "interactive" courses are designed for an adult learning environment for the professional and are taught throughout the United States and abroad. Courses are offered in both a "live" instructor lead environment and online (coming soon). **In-house training programs are also available to organizations. This may be more economical and allows for course material to be customized to meet your specific needs.**

PLEASE NOTE: In order to maintain a credible environment conducive to learning, we do not endorse products nor accept sponsorships or exhibits from providers of products and services.

Instructor

Brian C. Roberts, Director of the Water Resources Learning Center, will present this workshop. Mr. Roberts has held several significant water resources positions throughout the years including President of Water Resource Consultants, Hydraulics Engineer for FHWA, Project Manager for Fairfax County Stormwater Management, Executive Director of National Corrugated Steel Pipe Association. He has taught for the Federal Highway Administration, American Society of Civil Engineers, International Erosion Control Association, Soil Conservation Service and more than 35 State Departments of Transportation. He has a BS and MS in Civil Engineering (Water Resources), and has held professional engineering licenses in Virginia and Maryland.

Continuing Education Units

Seminar participants are eligible for 1.4 (one and four tenths) CEUs for successful completion of the program. The CEU is a nationally recognized unit of measurement for continuing education and training programs that meet certain requirements. Certificates of completion will be issued to each participant.

Fees

Course fee is \$895 and includes workshop materials, breaks, and lunch both days. Please inform us of any special dietary requirements when submitting registration form.

Cancellation Policy

Cancellations must be made five (5) working days in advance to be eligible for refund. Participants can be substituted at any time. Credit will be given for future courses for those unable to make the cancellation deadline. Please note that seating is limited at these locations.