

COUNTERMEASURE DESIGN FOR BRIDGE SCOUR AND STREAM INSTABILITY

The Colorado Association of Stormwater and Floodplain Managers (CASFM) are pleased to offer a National Highway Institute course as a continuing education opportunity for all CASFM members.

Date & Time: April 13, 14, and 15th (8:00am until 4:30pm on Tuesday and Wednesday) and (8:00am until 12:00 pm on Thursday).

Food: Morning and afternoon refreshments.
Lunch is on your own, (ie. sack lunch or restaurants near by)

Location: Holiday Inn Northglenn
10 East 120th Avenue
(Southeast Corner of I-25 and 120th Avenue)

Room: Longs Peak (Holiday Inn Northglenn lower level)

Course Instructors: See Attached Descriptions

Course Outline: See Attached Description

Registration: Registration for the course is limited to the first 30 people who contact Kevin Gingery by phone or e-mail with their desire to attend the course and return a check for the registration amount as soon as possible thereafter. No registrations will be accepted by fax. No refunds will be made within 10 days before the course. Substitutions, before the course begins, are welcome.

Registration Fee: \$ 375.00 per person (CASFM Members)
\$ 450.00 per person (Non-CASFM Member)

Checks Payable To: CASFM

Mail Checks To: Kevin Gingery
City of Loveland
Fire & Administration Building
Public Works Department
410 E. 5th Street
Loveland, CO 80537

Questions: Contact Kevin Gingery
970-962-2771
gingek@ci.loveland.co.us

COURSE INSTRUCTORS

Dr. P.F. Lagasse is a senior vice president with Ayres Associates in Fort Collins, Colorado. Prior to entering private practice in 1981, Dr. Lagasse gained 20 years of engineering experience with the U.S. Army Corps of Engineers and academic assignments at the U.S. Military Academy, West Point, New York. Since 1989, Dr. Lagasse has been principal instructor for FHWA projects to develop and present training courses on stream stability and scour at highway bridges. As part of these projects, he is senior author of HEC-20, "Stream Stability at Highway Structures" and HEC-23, "Bridge Scour and Stream Instability Countermeasures." He is also a technical contributor to HEC-18, "Scour at Bridges." He prepared the Instructor Guide and Participant Workbook that support the National Highway Institute Training Course on Stream Stability and Scour at Bridges and managed, scheduled, and participated in the presentation of this course more than 180 times to state DOTs. In cooperation with FHWA reviewers, he recently completed extensive revisions of this course and developed NHI's new countermeasure design course.

Dr. L.W. Zevenbergen is a hydraulic engineer and Manager of River Engineering with Ayres Associates in Fort Collins, Colorado. Dr. Zevenbergen has more than 15 years of experience in hydrology, hydraulics and sediment transport and is a licensed engineer in three states. His areas of expertise include bridge hydraulic design and scour analysis, stream stability, sediment transport, and One- and Two-Dimensional hydraulic computer modeling. He is a contributor to HEC-18, "Scour at Bridges," HEC-20, "Stream Stability at Highway Bridges," HEC-23, "Bridge Scour and Stream Instability Countermeasures," and HDS-6, "River Engineering for Highway Encroachments." He is a National Highway Institute certified instructor and, in addition to teaching courses related to scour and river engineering, teaches the NHI HEC-RAS (River Analysis System) course. Dr. Zevenbergen has extensive involvement in developing and applying methods for hydraulic and scour analysis of tidal bridges and is currently working on HEC-25, "Tidal Hydrology, Hydraulics and Scour at Highway Bridges."

Course Title: Countermeasure Design for Bridge Scour and Stream Instability

Course Number: 135048 (3 days – CEU: 1.8 Units)

Description: This course provides an overview of countermeasures to highway related failures from the effects of stream instability, scour, erosion and stream aggradation and degradation problems. Material for the 3-day course comes primarily from Hydraulic Engineering Circular (HEC) “Bridge Scour and Stream Instability Countermeasures – Experience, Selection, and Design Guidance” (HEC-23).

Given a stream instability and scour problem, participants will select appropriate countermeasures to correct the problem. The course provides training in recommended strategies for developing a plan which includes appropriate countermeasures, including alternatives to conventional riprap and filter design.

Participants will apply hydraulics analysis techniques to countermeasure design and will select from seven available design guideline workshops for a detailed design workshop on four specific countermeasures. The course provides an introduction to fixed and portable instrumentation for scour monitoring using slides and video demonstrations. Participants will receive training in designing a monitoring program to reduce the risk from scour.

Each participant should bring a calculator to the course as the instructors will have the students work several problems during the course.

Objectives: Upon completion of the course, participants will be able to:

- Develop a plan of action for a scour critical bridge.
- Propose countermeasures for stream instability and scour problems.
- Identify countermeasures for bridge scour and stream instability using the HEC-23 countermeasures matrix.
- Design selected countermeasures with HEC-23 design guidelines.

Target Audience: Federal, State and local hydraulic, structural, and geotechnical engineers and bridge inspectors responsible for maintaining the integrity of highway bridges against possible hydraulic related problems.