



## Association of State Dam Safety Officials, Inc.

### Technical Training Committee

## Request for Expression of Interest

### DAM AND LEVEE SAFETY TRAIN-the-TRAINER PROGRAM

#### 1. INTRODUCTION

The Association of State Dam Safety Officials (ASDSO) is issuing this Request for Expression of Interest (EOI) from engineering consulting firms, research groups, academics, and others who are qualified to conduct technical training seminars on dam and levee safety issues for state officials and other engineers or practitioners in the dam and levee safety community.

The ASDSO Technical Training Committee will evaluate the Expressions of Interest received and develop a short list of applicants for selected classroom courses (seminars). The applicants will then be invited to participate in a Train-the-Trainer program designed to expand the pool of qualified seminar instructors who are eligible to enter into contracts with ASDSO for specific training projects.

#### 2. ABOUT THE ASDSO TRAINING PROGRAM

ASDSO is a national non-profit organization of approximately 3000 members, including state, federal and local government officials, engineering consultants, dam owners and operators, contractors, suppliers, students, academia and others interested in improving dam and levee safety in the U.S. and internationally. ASDSO supports the dam safety community and state dam safety programs by raising awareness of dam and levee safety issues and providing forums for the exchange of information, and numerous outreach programs.

Guided by the training needs of the state dam safety programs, but open to anyone working in dam safety and engineering, the technical training program is one of the most visible services offered by ASDSO. The ASDSO Technical Training Program of Study is a compilation of technical topics covering the full range of training considered necessary for a professional career in dam and levee safety. With the Program of Study serving as a guideline for selecting topics, the ASDSO Training Committee has overseen the development and delivery of 11 multi-day classroom courses and more than 70 two-hour webinars.

ASDSO is an approved provider of continuing professional education for licensed professional engineers.

Currently, ASDSO is presenting 11 classroom courses that range in length from 2 to 4 days each. Each course typically has 2 to 3 instructors. Courses have been taught in a 2-year rotation (once every other year) in various locations around the U.S.

The Training Committee is considering ideas for increasing accessibility to training, by offering more frequent seminars and additional topics, and varying the content delivery method, while at the same time making the entire series more cost-efficient.

### 3. OVERVIEW OF THE TRAIN-THE-TRAINER INITIATIVE

With the goal of better efficiency in mind, ASDSO intends to expand the pool of qualified instructors, which will increase flexibility with regard to scheduling, and thus allow the high-demand courses to be offered annually or even more often as needed.

Also, while student evaluations consistently rate the current ASDSO instructors as very effective, we must plan for continuing these courses into the future. Mentoring and the transfer of knowledge are crucial to the long-term survival of any training program. Looking ahead, it will be necessary to have qualified, experienced instructors to continue teaching and improving the training content for the next generation of students and dam safety professionals.

The Committee is evaluating each of the classroom courses and will select one or more of them to implement a train-the-trainer program in calendar 2018. In order to move forward with this initiative, we need to hear from qualified individuals in the dam safety community who are interested in becoming instructors, and we need to know which seminars best match up with your experience and qualifications. Please review the classroom course descriptions in Attachment A and indicate in your application the topic or topics that best match your educational background and work experience.

Once a course has been identified for piloting this project, the Technical Training Committee will invite the short list of applicants to participate in a Train-the Trainer program. The commitment to this training will likely require attending one of the regularly scheduled seminars, and meeting with the current instructors to closely examine the content and practice the presentations. After an applicant has completed the Train-the Trainer program, he or she will be eligible to enter into a contract with ASDSO to conduct future courses.

### 4. HOW TO SUBMIT

Please email a submission package to Susan Sorrell, ASDSO Training Program Director at [sasorrell@damsafety.org](mailto:sasorrell@damsafety.org) before the submission deadline of February 23, 2018. The information package may be submitted by a single individual, or by an organization on behalf of multiple individuals.

Please include the following components in your submission package:

Completed **Information Form** (This is your cover page)

**Statement of Interest and Experience**, to include brief descriptions of the organization's or individual's:

Current services or practice that are relevant to the project.

Previous experience working on similar educational projects or material.

A professional **Resume or CV** for the individual(s) expressing interest in this project.

Please fill out and send in **Attachment C** if you cannot be considered at this time but want to keep your name on the list for future consideration.

ASDSO reserves the right to cancel this Request for Expressions of Interest for any reason without any liability to any proponent, or to waive irregularities at their own discretion. All Expressions of Interest will remain confidential, subject to the Freedom of Information and Privacy Act.

Note that the total Expression of Interest submission should be no more than 4 pages in total, excluding attached CV or resume(s).

## 5. INQUIRIES

Questions regarding clarification of terms, conditions and project scope may be directed to:

Susan Sorrell

ASDSO Training Program Director

[sasorrell@damsafety.org](mailto:sasorrell@damsafety.org); (859) 550-2788 ext. 2

Please also contact ASDSO if you would like to see the detailed agenda outline for any of the courses described in Attachment A. General information on the current ASDSO Training Program is available at [www.damsafety.org](http://www.damsafety.org)

Any questions received by ASDSO that affect the Expressions of Interest process will be posted on the website as addenda.

## **ASDSO Core Classroom Courses**

Please contact ASDSO for detailed agenda information for any of the courses described herein.

### **Conduits, Gates and Valves**

The objective of this course is to provide a general understanding of conduits, valves and gates in the context of the operation, maintenance and design of dams and dam safety. Emphasis will be placed on issues related to the design, construction, and performance of conduits, valves, and gates types commonly used at dams. Case histories and practical exercises will be used to enhance learning of the purposes and features of conduits, valves, and gates at dams; common materials; design standards and design considerations; operation and control; performance issues; and maintenance and rehabilitation. This is a BASIC level course and is intended as an introduction for those with a minimal to moderate level of experience in the design, inspection and operation of dams. This course will provide a general understanding of conduits, gates, and valves at dams with an emphasis on design, construction, and performance.

#### Key Takeaways

- 1 Understand potential dam failure modes and role of Conduits, Gates and Valves
- 2 Understanding of conduit and materials, types of gates and issues, and an understanding of valves
3. Design considerations, guidelines and criteria for Conduits, Gates and Valves
4. Elements of project inspections.
5. Rehabilitation of conduits, gates and valves

### **Dam Failures Lessons Learned**

This course provides instruction on common failure modes for most types of dams and levees with primary emphasis on dams. The principles, concepts and design standards taught are applicable to anyone conducting inspections, performing assessments, conducting risk analyses, or involved in the design of a dam or levee project. Participants will learn about potential failure modes, conditions that can lead to these failure modes, approaches to responding to dam and levee failure modes to avert failures, and defensive design details or modifications for dams and levees to increase their resistance to various failure modes. These lessons learned will be illustrated using numerous case histories from dam and levee failures and incidents. This is a BASIC LEVEL seminar. There are no specific education or experience prerequisites for this course, although some knowledge/experience in dam engineering and dam safety would be beneficial. Some advanced geotechnical concepts will be presented.

#### Key Takeaways

1. Potential Failure modes for different dam types
2. Dam failure statistics and trends

3. State of the practice defensive design details to address common failure modes
4. Introduction to potential failure mode and risk analyses
5. Importance of inspecting and monitoring dams

### **Fundamentals of Reinforced Concrete Design of Hydraulic Structures**

"This course is intended as an introductory course for persons who have at least one course in reinforced concrete design. The course will provide a thorough overview of the fundamentals of specifying the fresh and hardened properties of concrete mixes; the review of applicable codes for concrete hydraulic structures; the design philosophy and methodology of reinforced concrete hydraulic structures; and issues associated with the construction process. The course will include actual design examples of frequently used hydraulic structures utilizing current design codes and guidelines that are focused on reducing cracking, limiting deflections, increasing durability, and decreasing permeability.

#### Key Takeaways

1. Understand what influences the fresh and hardened properties of reinforced concrete.
2. Learn the design codes and loadings unique to the design of hydraulic structures.
3. Learn how to design a durable hydraulic structure that is resistant to degradation, undermining, and destabilizing uplift pressures.
4. Be able to review concrete design reports, specifications and drawings of non-complex structures for errors and omissions.
5. Review construction means and methods affecting the performance of hydraulic structures

### **HEC-HMS**

Course Objectives: Participants will gain a practical knowledge of methods for simulation of runoff from storm rainfall. The methods covered relate to the processing of historical and hypothetical (design-storm) rainfall data; estimation of losses (infiltration); transformation of rainfall excess to direct runoff with unit hydrographs; routing of flood waves; calibration of model parameters; and modeling of runoff from watersheds. Experience will be gained in applying the methods with the program Hydrologic Modeling System (HEC-HMS). Where possible, applications will emphasize the Hydrologic Computations for Dam Safety.

#### Key Takeaways

1. Methods to simulate runoff from storm rainfall response to rainfall.
2. Estimating hydrologic abstractions
3. Transforming excess rainfall utilizing unit hydrograph theory
4. Running the HMS model on several real-world problems
5. Estimating uncertainty in modeling the runoff

## **HEC-RAS with an Introduction to HEC-RAS 2D**

This course is a three-day introduction of HEC-RAS and a one-day introduction to HEC-RAS 2D, with applications to dam safety. The three-day introduction course provides hands on opportunity to use the program and resolve specific questions. The objective of this course is to review the principles of open channel hydraulics as they relate to the natural stream environment with application to dam safety. Both steady and unsteady flow modeling will be explored. HEC-RAS 2D represents the most significant advancement of HEC-RAS in the last decade and includes many new features that will allow users to more accurately and more efficiently map the consequences of potential dam failures for hazard classification and emergency action planning. The goal of this one-day presentation is to instruct students on the basic capabilities of the HEC-RAS 2D model. Due to the limited time available in this workshop, detailed instruction on how to develop a new 2D model is not provided. Students will become familiar with the data requirements and general process of 2D modeling and will have the opportunity to explore a simple 2D model.

### Key Takeaways/Objectives

- Apply the principles to model a dam break
- Identify the data requirements for modeling
- Develop the appropriate boundary conditions
- Extract and analyze hydraulic output data
- Obtain an understanding of 1D/2D unsteady flow modeling with HEC-RAS
- Understand how to use 2D flow areas within HEC-RAS

By the end of the participant will be able to apply these seven objectives and have a comfort level in developing and analyzing a hydraulic model for typical open channel flow applications.

## **Inspection and Assessment of Dams**

The seminar provides comprehensive instruction in inspection and evaluation techniques for dams. The principles, concepts and procedures taught will be readily adaptable to any organization conducting dam inspections and evaluating their compliance with current design standards. Participants learn about a variety of dam types and their appurtenances, the function of typical dam features, and common dam failure modes and the conditions that can led to these failure modes. Actual dam failure cases will be presented. Public safety, security, and liability will also be discussed along with approaches to responding to dam incidents.

### Key Takeaways

1. Historical perspective of dam construction methods for various dam types
2. Common failure modes associated with various dam types
3. Understanding of standards for maintaining dams
4. Techniques for performing a comprehensive dam inspection

5. Awareness of emerging issues related to inspection and assessment of dams

### **Interactive Preparedness: Emergency Action Planning for Dams and Levees**

This course is intended to provide both the novice and experienced dam or levee safety emergency planner with valuable lessons and skills that will allow them to develop new EAPs and improve the effectiveness of exist-ing EAPs. The course is a hands-on, interactive workshop, covering the basic elements and knowledge required to prepare, implement, update, and review effective EAPs that will mesh with the constantly changing emergency management community. This is a BASIC level course, and there are no specific education or experience prerequisites, although some knowledge/ experience in dam or levee safety would be beneficial.

Key Takeaways/Questions to be answered:

1. Why are EAP's important?
2. What are the important components of an effective EAP?
3. How do you develop, update, and test an EAP?

### **Plans and Specifications Review and Construction Inspections for Dams, Levees and Ancillary Structures**

Important aspects of dam safety are the design and construction of the dam, levee and appurtenant structures. The basis for dam and levee safety is established in the development of the detailed design drawings and project specifications, and implemented in construction of the project. Technical reviewers have the important role of checking to verify if the design meets the requirements and criteria that have been developed by the regulatory agency, prior to issuance of the permit to construct. Designs involving the subsurface soil and geologic conditions also must be adaptable to actual conditions encountered during construction as the geotechnical investigation is not complete until construction has been completed. This seminar will focus on: 1) The design review for dam and levee safety, including what is important and how to avoid getting side-tracked by non-safety related issues, and 2) What to look for in construction inspection and addressing unexpected conditions.

Key Takeaways:

1. How to focus plans and specifications review.
2. What components of plans and specifications are critical for safe and constructible dam/levee projects
3. How construction methodologies can/should impact designs and design details
4. Importance of understanding plans & Specifications in observing and monitoring construction.
5. How construction methodologies impact the completed project.

## **Seepage Through Earthen Dams**

This 2.5-day introductory course is designed to be a participatory, interactive workshop, which will cover the basic elements required to understand and evaluate seepage-related issues for earth dams. The first day begins with providing an understanding of why seepage mechanisms in earth dams are important to dam safety. Discussions of basic principles and characteristics of seepage related to embankment dams, various modes of seepage, and computational methods for evaluating seepage will then be presented. The second day focuses on methods of investigating, controlling, and remediating dam seepage. Hands-on exercises will represent real-world, practical applications pertinent to the attendees. The final half day will include a hands-on session of the SEEP/W computer program to demonstrate computational analysis of a hypothetical seepage scenario.

### Key Takeaways

1. Why understanding seepage mechanisms in earth dams is important to dam safety
2. Principles and characteristics of seepage related to embankment dams, including review of potential seepage-related failure modes and their common initiators or triggers
3. Computational methods for evaluating seepage
4. Understanding theory, application, and design of filters
5. Methods of investigating, monitoring, controlling, and remediating seepage problems in existing dams using case histories and hands-on exercises to enforce understanding of practical applications

## **Soil Mechanics for Earth Dam Design and Analysis**

The objective of this course will be to provide a comprehensive presentation of the significant principles and concepts of soil mechanics to the participants. The material will be presented with emphasis on the application of soil mechanics to dam safety issues. At the end of the course, the participants will have the knowledge and resources to address soil mechanics issues as they relate to their work in dam safety.

### Key Takeaways

1. An understanding of the significant concepts and principles of soil mechanics as how they pertain to the analysis and design of embankment dams.
2. An understanding of the theory of consolidation and how it applies to embankment engineering.
3. An understanding of the concepts of soil shear strength and which strengths apply to different stages in the life of embankment dams.
4. Knowledge of appropriate field investigation techniques for both new and existing embankment dams.
5. Knowledge of appropriate field and insitu testing procedures for embankment dams.



## **Stability Analysis of Embankment Dams**

This course provides broad coverage of stability analysis for embankment dams. Topics addressed in the course include soil stress-strain behavior, shear strength selection, field and laboratory testing methods, slope stability analysis methods, slope stability analysis loading cases, seepage as related to stability analysis, and stability rehabilitation methods. The course includes several exercises to reinforce the information presented in lectures, as well as two optional evening sessions providing opportunities for hands-on experience with a commonly used slope stability computer program.

### Key Takeaways

1. An understanding of the importance of slope stability in dam safety, and the basic theoretical principles supporting slope stability analysis methods
2. An understanding of the significance of adequate subsurface characterization and shear strength property selection.
3. An understanding of soil stress-strain behavior and its relationship to shear strength.
4. An understanding of how to select shear strength parameters from field and laboratory data.
5. An understanding of slope stability rehabilitation measures.

## **Expression of Interest (EOI) Information Form**

Project: ASDSO Train-the Trainer Program for Classroom Courses

Complete and attach as page 1 of your Expression of Interest submission. Email documents to [sasorrell@damsafety.org](mailto:sasorrell@damsafety.org) by February 23, 2018.

### **Submitter/Primary Contact Information**

Name

Title

Organization

Mailing Address

City/State/Zip

Telephone

Email

### **Application Checklist**

Information Form  
Statement of Interest and Experience  
CV(s) or Resume(s)

Or

EOI Declined

Attach EOI Declined Form

If this is a group submittal, list names of all Individual(s) expressing interest in this project:

**EOI Declined Form**

Receipt of this completed form will assist us in calling for future interest. If applicable, please complete and submit this form prior to the closing date as shown on the Request for Expression of Interest.

Project: ASDSO Train-the Trainer Program for Classroom Courses

An expression of interest is not being submitted for the following reason(s):

- I / We do not have sufficient experience in the technical subject matter.
- I / We do not have sufficient experience conducting training seminars.
- Project specifications are not sufficiently defined/Insufficient information to prepare an application.
- Insufficient time to prepare an application.
- Cannot handle due to present work load
- Other reasons or additional comments (please explain below)

I / We wish to propose on similar services in future                      Yes                      No

Individual or Authorized Company Official:

Print Name

Date