

Agenda

Presented by: Binod Tiwari, Ph.D., P.E.

Types of Retaining Walls

- Traditional cantilevered retaining walls
 - Reinforced concrete walls
 - Reinforced concrete masonry walls
- Soldier pile and lagging walls
- Traditional timber walls
- Traditional gravity walls
- Reinforced soil retaining walls
- Anchored retaining walls (tie-backs, soil nailing, etc.)
- Temporary retaining walls
- Over-steepened reinforced slopes
- Gabion walls Crib walls
- Private-sector vs. highway retaining wall systems
- Cost of retaining walls

Retaining Wall Design

- Soil design parameters
- Lateral earth pressure
- External stability
 - Sliding
 - Bearing capacity
 - Settlement
 - Overturning
 - Scour
- Internal stability Global stability
- Special considerations for tiered retaining walls
- Backfill Groundwater
- Service life Design software

Slope Stabilization

- Science of slope stability
- Long term vs. short term stability
- Slope stabilization techniques
 - Regrading
 - Excavation and replacement
 - Slope reinforcement/pinning
 - Ground improvement
 - Toe retaining walls

Retaining Wall and Slope Stabilization Case Histories

- Various commercial, residential projects
- Various highway and institutional projects

Retaining Wall Design and Slope Stabilization Techniques
Santa Barbara, CA - Friday, April 20, 2018

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Learning Objectives

You'll be able to:

- Explore** different types of retaining walls including traditional cantilevered walls, timber walls and gravity walls.
- Identify** and quantify the forces that act on retaining walls.
- Design** for retaining wall internal, external and global stability.
- Discuss** the factors that impact slope stability and can lead to slope failures.
- Evaluate** crucial slope stabilization techniques including regrading, reinforcement and ground improvement.



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- Explore** different types of retaining walls, including traditional cantilevered, timber, gravity and anchored walls
- Recognize** special considerations for tiered retaining walls
- Review** the forces acting on retaining walls including pressure from retained soil and the impacts of groundwater
- Analyze** key factors that influence long-term and short-term slope stability
- Learn** how to utilize slope stabilization techniques such as reinforcement and ground improvement

Continuing Education Credits

- | | |
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| Professional Engineers
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| Landscape Architects
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| Floodplain Managers
7.0 ASFPM CECs | |



Faculty

Binod Tiwari, Ph.D., P.E. *California State University, Fullerton*

Dr. Tiwari is a professor in the Civil and Environmental Engineering Department of California State University, Fullerton. He earned his Ph.D. degree in 2003 in Geotechnical Engineering and is expert in the fields of slope stability and stabilization, landslide mitigation, applied GIS, soil behavior and characterization, earth retaining structures, and geotechnical earthquake engineering. Dr. Tiwari is a member of various technical committees for the American Society of Civil Engineers and the International Society for Soil Mechanics and Geotechnical Engineering, and he is an editor as well as a reviewer for various international journals pertinent to geotechnical engineering. He was post-doc at Niigata University, Japan, and at Virginia Tech for more than three years prior to joining CSUF in 2006. Dr. Tiwari is a licensed professional engineer in the state of California and has more than 25 years experience in design and implementation of projects pertinent to slope stability and stabilization as well as earth retaining structures.

Seminar Information

The Fess Parker - A DoubleTree by Hilton Resort
633 East Cabrillo Blvd.
Santa Barbara, CA 93103
(805) 564-4333

Registration
8:00 - 8:30 am
Morning Session
8:30 am - 12:15 pm
Lunch (on your own)
12:15 - 1:15 pm
Afternoon Session
1:15 - 5:00 pm

Tuition
\$279 for individual registration
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This seminar is open to the public and offers a 7.0 hour continuing education opportunity to California professional engineers, landscape architects, architects (non-credit), and floodplain managers. Continuing education is not required for license maintenance or renewal in California.

This seminar is approved by the American Institute of Architects for 7.0 HSW Learning Units (Sponsor No. J885), the Landscape Architecture Continuing Education System for 7.0 HSW PDHs, and the Association of State Floodplain Mangers for 7.0 CECs. Only full attendance can be reported to the AIA/CES and LA/CES.

Professional engineers, landscape architects, and architects seeking continuing education credit in other states will be able to apply the hours earned at this seminar, in most cases. Refer to specific state rules to determine eligibility.

Attendance will be monitored, and attendance certificates will be available after the seminar for most individuals who complete the entire event. Attendance certificates not available at the seminar will be mailed to participants within fifteen business days.

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Additional Learning

Webinar Series

National Electrical Code: A Solar Photovoltaic System Perspective

• **National Electrical Code for Building Professionals, Part I**

Wed., Feb. 21, 2018, 11:00 AM - 2:15 PM CST

• **National Electrical Code for Building Professionals, Part II**

Thurs., Feb. 22, 2018, 11:00 AM - 2:15 PM CST

Erosion and Sediment Control

• **Erosion and Sediment Overview**

Thurs., Feb. 22, 2018, 11:00 AM - 12:00 PM CST

• **Stormwater Permit Requirements and Procedures**

Thurs., Feb. 22, 2018, 12:30 - 2:00 PM CST

• **Stream Stabilization Measures**

Fri., Feb. 23, 2018, 11:00 AM - 12:00 PM CST

• **Best Management Practices and Maintenance**

Fri., Feb. 23, 2018, 12:30 - 2:30 PM CST

Solar Photovoltaic Project Design and Development

• **Solar Photovoltaic Project Design and Development, Part I**

Wed., Mar. 7, 2018, 11:00 AM - 2:15 PM CST

• **Solar Photovoltaic Project Design and Development, Part II**

Thurs., Mar. 8, 2018, 11:00 AM - 2:15 PM CST

Handling Ethical Issues in Professional Engineering Practice

Fri., Mar. 9, 2018, 11:00 AM - 12:00 PM CST

Deep Excavations

• **Introduction to Deep Excavations**

Thurs., Mar. 15, 2018, 11:00 AM - 1:00 PM CDT

• **Soil Mechanics, Cantilever Walls and Anchored Sheet Pile Walls**

Thurs., Mar. 15, 2018, 1:30 - 3:00 PM CDT

• **Braced Excavation Design**

Fri., Mar. 16, 2018, 11:00 AM - 12:30 PM CDT

• **ASD and LRFD Design**

Fri., Mar. 16, 2018, 1:00 - 2:30 PM CDT

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Registration

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