Infrastructure and building construction often require deep excavations. These excavations must be supported to ensure the safety of workers and to minimize impact on adjacent properties and utilities. Excavation depths exceeding 10 to 20 feet require specialized planning and design for support. Often times deep excavations encounter groundwater, control of which is crucial to prevent failures due to excessive ground settlement. The short course is designed to increase the knowledge and skill of the practicing engineers / consultant / contractors / academician / students involved in geotechnical works in design and execution of a technically sound and economically feasible deep excavation and dewatering system. The participants shall have the opportunity to improve their knowledge of the various methods of excavation support, design and numerical modeling of excavation support, control of groundwater and shoring construction.

Course attendees will be eligible to receive 0.7 Continuing Education Units (CEU) or 7 Professional Development Hours (PDH).

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**REGISTRATION**
$350 Early Registration (before April 13th)
$400 After Registration Deadline
$75 Students

Register Today at [http://www.seattlegeotech.org](http://www.seattlegeotech.org)
Abstract and Speaker Bio

#1 A general Overview of Shoring Methods and Areas of Application
Mark Rohrbach - Hayward Baker

Abstract:

This class provides a general overview of popular shoring systems (soldier pile and timber lagging with and without anchors, Soldier pile walls with low-permeability lagging with and without anchors, soil nails, secant walls, DSM walls, internally braced excavations, etc.) as well as the areas of application. In addition, appropriate exploration methods, laboratory testing and the current permitting environment will be discussed. One of the goals of this class is to minimize the redundancy and overlap of topics for the following speakers.

Speaker Bio:

Mark Rohrbach, PE, GE, P.Eng. is a design engineer for Hayward Baker’s Northwest Region (including Alaska, British Columbia, Alberta, Saskatchewan, Washington, Oregon, Idaho and portions of California). Mark Earned his B.S. and MSCE at the University of Washington and has over 20 years of experience in geotechnical engineering, construction engineering and design of shoring systems across North America. Key projects include Gateway Station Shell, Pittsburg, PA, Cottonwood Pass (near) Fresno, CA, significant landslide stabilization projects, and numerous local 'simple' shoring projects.

#2 Groundwater Control - Ground Freezing/ Dewatering
Joe Sopko - Moretrench

Abstract:

This class discusses two methods of controlling groundwater for excavation support and large hydraulic barriers. Aspects of construction dewatering include basic theory, deep wells and well points as well as a few case histories. Ground freezing to provide excavation support and groundwater control will include an introduction to frozen soil properties, design and construction of ground freezing systems as well as a shaft and tunnel case history.

Speaker bio:

Joe Sopko is the Freeze Guy for Moretrench, a Hayward Baker Company. Joe earned his B.S., M.S. and Ph.D. in Civil Engineering from Michigan State University and has over 35 years of experience in groundwater control using ground freezing and dewatering. Key projects that Joe has been a part of include several frozen shafts for the Milwaukee Deep Tunnel CSO project, the No. 7 Line Extension and 2nd Avenue Subway in New York City, frozen shafts and tunnel adits for the First Street Tunnel in Washington, D.C. and frozen cross passages for the Northgate Link Subway Tunnel in Seattle.
#3 Shoring Design (including both geotechnical and structural discussions)  
Mike Wongkaew and Murali Hariharan - HNTB

Abstract:
The class will cover the geotechnical and structural design aspects of “rigid” shoring systems including secant pile and slurry (diaphragm) walls with either ground anchors or internal bracings. A few local examples will be used to illustrate the design approach and sequence. The class will also discuss different results that would be obtained with different level of analysis refinements, which would tie in to the numerical analysis class. If time permits, the class will also cover design of circular shafts with penetrations, e.g. for tunnel boring machine, using rigid shoring systems without internal bracing or ground anchor.

Speakers bio:

Mike Wongkaew, PhD, PE, SE, PMP is an Associate Vice President and National Tunnel Practice Lead – Northwest for HNTB with extensive hands-on experience in the design and construction of tunnels and underground structures. His representative project experience included WSDOT SR 99 Bored Tunnel Project (Seattle), Sound Transit Downtown Bellevue Tunnel, Los Angeles Metro Regional Connector Project, and Portland West Side CSO and East Side CSO Tunnels and Shafts Projects. Mike currently leads the tunnel and underground structure design effort for Sound Transit West Seattle to Ballard Links Extension.

Murali Hariharan, MSc, PE, GE is a Senior Technical Advisor at HNTB with specialist geotechnical analysis and design experience of underground structures, shafts and deep excavation support. His representative projects include the Los Angeles Metro Crenshaw LAX Subway, Port Mann Tunnel and Shafts in Vancouver, BC, Los Angeles Metro Regional Connector Project, California High Speed Rail CP4 Segment and BART VTA San Jose Subway Project. Murali is currently the lead engineer for post design phase of the Crenshaw project.

#4 Numerical Modeling in Geotechnical Engineering: An Introduction and Case Studies  
Augusto Lucarelli -Itasca

Abstract:
The class provides a brief introduction about numerical modeling in Geotechnical Engineering with emphasis on constitutive models, soil properties calibration and Strength Reduction Method. Several case studies will also be presented and discussed. If properly used, numerical modeling is an essential tool for value engineering and better risk assessments in complex situations. The case studies will mostly focus on excavation/seepage/dewatering and tunneling analyses. If time allows, other areas can be discussed such as dynamic/earthquake engineering, liquefaction, foundation.

Speaker bio:

Augusto Lucarelli obtained his master’s degree in civil engineering in 1996 from Ancona University (Italy). He started his consulting career in 1995 at Studio Geotecnico Italiano in Milan. He founded his consulting company in 1998 providing services to major Contractor and Government Agency in Italy and Europe with a focus in Geotechnical Engineering and Soil-Structure interaction mostly for large transportation infrastructures. He joined Itasca in 2012 and is now Principal Engineer. His major focus is numerical analysis for Civil Projects mainly in Soil-structure interaction, Earthquake Engineering, Deep Excavation, Foundations.

Register Today at  
http://www.seattlegeotech.org
Abstract:

Building a state-of-the-art shoring system entails more than just a safe, efficient shoring design applicable to the soil conditions, it requires consideration of the Owner’s contracting methods, the selection process for the shoring contractor, and the selected Contractor’s experience, personnel, and approach. This presentation will look at how the Owner’s contracting methods, the selection process for the shoring contractor, and the Shoring Contractor’s methods all conspire to make or break a shoring project. Some case history excerpts related to tieback shoring, secant walls, and DSM shoring systems will be referenced to highlight some key considerations to building a successful shoring system.

Speaker bio:

Dominic Parmantier is the Vice President of Engineering for Condon-Johnson & Associates with responsibility for the company’s internal design efforts. Mr. Parmantier holds a BS in Civil Engineering from the University of Portland and a MS in Civil Engineering from Virginia Polytechnic Institute and State University. He is a registered professional engineer in WA, OR, CA, and ID, and he has over 20yrs of deep foundation, grouting, ground improvement, and anchored earth retention experience. Mr. Parmantier has authored several papers and articles for DFI, ASCE, and ADSC conferences and publications. He is an active member of the DFI Soil Mixing and Grouting Committees and the Seattle Chapter of the Geo-Institute.
Registration and Site Information

- **Register via Brown Paper Tickets.** For groups with multiple attendees that would prefer to pay by check, first register via Brown Paper Tickets, and then mail the check with names of registered attendees for the Short Course and/or Seminar to:
  ASCE Seattle Geotechnical Group  
  c/o Drew Mason  
  201 NW 39th Street, APT 104  
  Seattle, WA 98107

- **Register early.** Registration will be on a first-come first-served basis. Registration on the day-of seminar will be accepted only if space is available.

- **Registration includes** morning and afternoon refreshments, lunch, and a bound seminar program containing and electronic access to the presentations for both the short course and seminar.

- The **Spring Short Course** will be held on Friday April 26th at the Columbia Tower Club, 701 5th Ave, Seattle, WA 98104.

- The **Spring Seminar** will be held at the Kane Hall Room 220 at the University of Washington Campus in Seattle. The Exhibitor Hall will be in Kane Hall Room 225. The closest parking on campus is at the Central Plaza Parking Garage for a fee. A map of the campus can also be found online at: [www.washington.edu/home/maps/](http://www.washington.edu/home/maps/)

- For additional information about the Spring Seminar contact Ty Jahn at 206.707.3876 ([TJahn@condon-johnson.com](mailto:TJahn@condon-johnson.com)).

- To be an **Exhibitor and/or Sponsor** for the Spring Seminar please contact Tyler Jahn at 206.707.3876 ([TJahn@condon-johnson.com](mailto:TJahn@condon-johnson.com)).

- **Volunteers** please contact Ty Jahn.