

# Agenda

*Presented by James "Jay" McKelvey III*

## Soil Investigation and Classification

- Properties of soil
  - Importance of recognizing soil properties
  - Formation of soils
  - Types of soils
- Soil investigation
  - Site reconnaissance
  - Geology and visual observations
  - Drilling and boring
  - Test pits
  - Establishing appropriate investigational methods
  - Obtaining and reviewing geotechnical reports

## Reviewing Hydraulic and Mechanical Properties of Soils

- Soil permeability
- Compressibility of soil
- Soil hydraulics
  - Saturation, hydraulic gradient, and conductivity
- Drained and undrained shear strength
  - Vertical and lateral earth pressure
- Stress and failure in soils

## Determining and Increasing Bearing Capacity

- Calculating bearing capacity
- Bearing capacity of shallow foundations
- Bearing capacity of piers and piles
- Increasing bearing capacity
  - Draining and compaction
  - Soil improvement

## Determining and Increasing Slope Stability

- Natural and engineered slopes
- Reviewing basic concepts of slope stability
- Understanding slope failures
- Impact of surface water and groundwater
- Examining slope stabilization methods
  - Unloading
  - Draining and compaction
  - Reinforcement
  - Soil improvement

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## Soil Mechanics, Bearing Capacity, and Slope Stabilization

Live, Interactive Webinar - Monday, January 25, 2021

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## Learning Objectives

### You'll be able to:

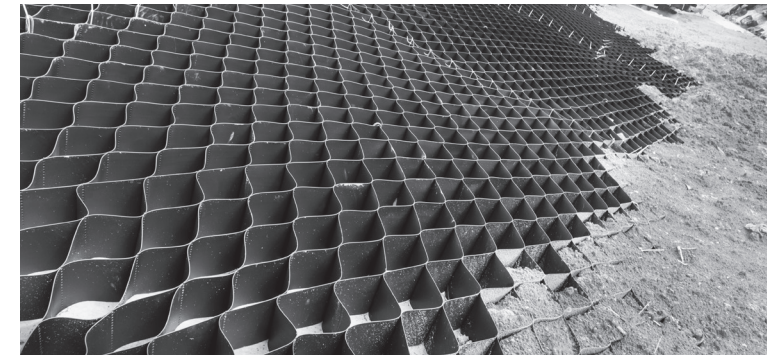
- Describe** the mechanical and hydraulic properties of soils that affect bearing capacity and slope stability.
- Identify** appropriate soil investigation methods.
- Define** soil permeability, compressibility, conductivity and drained and undrained shear strength.
- Determine** bearing capacity and know how to increase it through draining and compaction.
- Evaluate** slope stability and identify causes of slope failures.
- Explore** slope stabilization methods including reinforcement and soil improvement.

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## HalfMoon Education Online Learning

# Soil Mechanics, Bearing Capacity, and Slope Stabilization

Live, Interactive Webinar - Monday, January 25, 2021



**Learn** about the properties of soil and explore soil investigation procedures

**Review** hydraulic and mechanical properties of soils and learn about stress and failure in soils

**Examine** the bearing capacity of shallow foundations, piers and piles

**Understand** slope failures and the impact of surface and groundwater

**Compare** slope stabilization methods, such as unloading and draining

## Continuing Education Credits

**Professional Engineers**  
6.5 PDHs

**Architects**  
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**AIA**  
6.5 LU | HSW

**Landscape Architects**  
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**LA CES**  
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**International Code Council**  
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# Faculty

**James “Jay” McKelvey III** *Director- Geotechnical Design Division at Earth Engineering Inc.*  
Mr. McKelvey is the director of the Geotechnical Design Division at Earth Engineering Inc. in East Norriton, Pennsylvania. He is a registered professional engineer (P.E.) in California, Delaware, Maryland, New Jersey, Pennsylvania, Virginia and the District of Columbia. Mr. McKelvey is also a diplomate (D.GE) of the Academy of Geo-Professionals and a fellow of the American Society of Civil Engineers (F.ASCE).

Mr. McKelvey has extensive experience in geotechnical engineering including site assessment and field investigations; deep and shallow foundation design for buildings, bridges and other structures; retaining wall design; embankment stability; mechanically-stabilized soil structures; and subsurface hydrology.

He also has significant experience in mitigating heavy construction claims and in litigation support pertaining to impacted heavy construction projects. Mr. McKelvey has also handled construction support and construction quality assurance projects. His environmental engineering experience includes technical contributions to the remediation of many Superfund sites and over 50-landfill design projects.

Mr. McKelvey has published over 30 technical papers in journals, conference proceedings and trade magazines. He is the past chair for the Delaware Valley Geo-Institute (DVGI) and is a voting member in ASTM committees on soil and rock (D18), and geosynthetics (D35), and he is an editorial board member of the *Geotechnical Testing Journal*. Mr. McKelvey also serves on two Geo-Institute committees: Earth Structures and Embankments and Dams. For the latter, he is a member of the subcommittee on landslide risk assessment.

# Webinar Information

|                                           |                                         |
|-------------------------------------------|-----------------------------------------|
| Log into Webinar<br>8:00 - 8:30 am CST    | Break<br>12:15 - 1:15 pm CST            |
| Morning Session<br>8:30 am - 12:15 pm CST | Afternoon Session<br>1:15 - 4:30 pm CST |

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# Additional Learning

**Introduction to HEC-HMS Modeling**  
- Tues., January 12, 2021 | 8:30 am - 5:00 pm CST

**Landscaping for Pollinators**  
- Wed., Jan. 13, 2021 | 10:00 am - 12:00 pm CST

**Practical Site Engineering: Science & Techniques**  
- Thurs., Jan. 14, 2021 | 11:00 am - 3:15 pm CST  
- Fri., Jan. 15, 2021 | 11:00 am - 2:15 pm CST

**Commercial Provisions of the IECC**  
- Thurs., January 14, 2021 | 11:00 am - 3:30 pm CST  
- Fri., January 15, 2021 | 11:00 am - 2:00 pm CST

**The Arborist Short Course: Advanced Tree Knowledge for Better Tree Care**  
- Fri., January 15, 2021 | 9:00 am - 4:30 pm CST

**Slab-on-Grade Concrete and Pavement for Private Facilities**  
- Tues., Jan. 19, 2021 | 11:00 am - 2:45 pm CST  
- Wed., Jan. 20, 2021 | 11:00 am - 2:45 pm CST

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This course has been approved by the American Institute of Architects Continuing Education System 6.5 LU | HSW (Sponsor No. J885). Course approval is pending from the Landscape Architect Continuing Education System. Only full participation is reportable to the AIA/CES and LA CES.

Course approval is applied for and pending from the International Code Council in the specialty area of Sitework (Preferred Provider No. 1232).

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# Registration

**Soil Mechanics, Bearing Capacity, and Slope Stabilization**  
Live, Interactive Webinar - Monday, January 25, 2021

|                                                                                                                                                                     |                                                                                                                                                                        |
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