

Agenda

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Science of Structures and Soils

- Typical loads on shallow foundations
- Gravity loads
 - Lateral loads
- Typical loads on walls
- Gravity loads
 - Soil loads
- Typical loads on slabs
- Soil mechanics and effects on structures
- Soil properties
 - Bearing capacity
 - Soil settlement
 - Effects of water, frost and freeze/thaw cycle

Foundation Features, Materials and Functionality

- Design and construction of shallow foundations
- Continuous wall footings, column footings
- Design and construction of slab foundations
- Design and construction of basements and retaining walls
- Design and construction of specialty features:
- walk-outs, partially-exposed foundations

Evaluating and Repairing Foundation/Slab Damage

- Inspecting, monitoring and assessing damage
- Settlement
 - Frost heave
 - Expansive soils
 - Shrinkage
 - Subsurface erosion
 - Subsidence
 - Cracking
 - Utility failures
- Repairing foundations and slabs
- Piers, piles
 - Soil tiebacks
 - Underpinning
 - Ground improvement

Evaluating and Repairing Wall Damage

- Inspecting, monitoring and assessing damage
- Settlement
 - Frost loading
 - Expansive soils
 - Shrinkage
 - Poor drainage
 - Utility failures
- Repairing wall damage
- Piers, piles
 - Soil tiebacks
 - Carbon fibers
 - Soldier beams
 - Crack repair
 - Secant-tangent walls
 - Underpinning
 - Reconstruction

Foundation Damage and Repair: Science, Materials and Techniques

Nashville, TN - Thursday, April 30, 2020



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Learning Objectives

You'll be able to:

- Explore** typical loads on shallow foundations.
- Understand** soil properties, bearing capacity, and soil settlement.
- Discuss** the design of shallow and slab foundations.
- Identify** the damaging effects of water, frost and the freeze/thaw cycle.
- Evaluate** different types of foundation damage caused by expansive soils, settlement and heaving.
- Conduct** foundation repairs.
- Explore** repair techniques, including piers, piles, soil tiebacks, underpinning and ground improvement.



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- Understand** the science of structures and soils
- Discuss** typical loads on shallow foundations, walls, and slabs
- Examine** foundation features, materials and functionality
- Evaluate** foundation/slab damage caused by settlement, shrinkage and erosion
- Evaluate** repair techniques including piers, piles, soil tiebacks, ground improvements and underpinning

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