

# ***DR. ALAN J. LUTENEGGER, P.E., F. ASCE***



## **ADDRESS:**

Department of Civil and Environmental Engineering  
27 Marston Hall  
University of Massachusetts  
Amherst, Ma 01003  
Telephone: (413) 545-2872  
email: lutenegg@ecs.umass.edu

## **BIRTH:**

24 August 1952                      Burlington, Iowa

## **CITIZENSHIP:**

United States

## **DEGREES:**

|       |      |   |
|-------|------|---|
| Ph.D. | 1979 | Iowa State University – Ames, Iowa<br><u>Geotechnical Engineering</u> |
| M.S.  | 1977 | Iowa State University – Ames, Iowa<br><u>Geotechnical Engineering</u> |
| B.S.  | 1975 | Iowa State University – Ames, Iowa<br><u>Construction Engineering</u> |

## **CAREER:**

|                      |  |
|----------------------|--|
| April 2000-July 2006 | <u>Department Head</u> , Department of Civil and Environmental Engineering<br>University of Massachusetts, Amherst, Massachusetts  |
| Sept. 1997-Aug. 1998 | <u>Interim Department Head</u> , Department of Civil and Environmental Engineering,<br>University of Massachusetts, Amherst, Massachusetts   |
| Sept. 1995–present   | <u>Professor</u> , Department of Civil and Environmental Engineering, University<br>of Massachusetts, Amherst, Massachusetts<br><br>Area Coordinator - Geotechnical Engineering Program (1992-1997)<br><br>Site Manager - U.S. National Geotechnical Experimentation Site (1992-Present) |
| Jan. 1989-Aug. 1995  | <u>Associate Professor</u> , Department of Civil and Environmental Engineering, University of<br>Massachusetts, Amherst, Massachusetts   |

Jan. 1984-Dec. 1988 Associate Professor, Department of Civil and Environmental Engineering, Clarkson University, Potsdam, New York

Area Coordinator - Geotechnical Engineering (1984-1988)

Jan. 1980 - Dec. 1983 Principal, Geotechnical Test Systems, Inc., Ames, Iowa

Nov. 1979 - Dec. 1980 Postdoctoral Research Fellow, Iowa State University, Ames, Iowa

### **OTHER WORK EXPERIENCE:**

Geotechnical Engineer, Patzig Testing Laboratories, Des Moines, Iowa, (part-time 1979-1982).

Heavy Equipment Operator (scapers, crawler dozers), Jack A. Schroder Construction, Burlington, Iowa, (summers 1970-1975).

### **VISITING POSITIONS:**

1982 Visiting Scientist, Geotechnical Laboratory, Bulgarian Academy of Sciences, Russe, Bulgaria (5 months)

### **AWARDS:**

1991 University of Massachusetts, College of Engineering, Outstanding Junior Faculty Award

1998 Canadian Geotechnical Journal Honorable Mention Best Paper Award

2009 Tighe Teaching Award, Department of Civil & Environmental Engineering, University of Massachusetts

### **COURSES TAUGHT IN CAREER:**

#### **UNIVERSITY OF MASSACHUSETTS**

##### Undergraduate

|           |  |
|-----------|--|
| Engin 111 | Introduction to Civil & Environmental Engineering          |
| CEE 121   | Civil & Environmental Engineering Measurements (Initiated) |
| CEE 320   | Soil Mechanics   |
| CEE 421   | Foundation Engineering                                     |
| CEE 485   | Civil Engineering Construction Materials and Methods       |
| CEE 486   | Civil & Environmental Engineering Design Project           |
| CEE 496   | Independent Study  |
| HON 391   | Engineering the Ancient World (Initiated)                  |

##### Graduate

|         |   |
|---------|---|
| CEE 523 | Ground Improvement and Geo-Construction |
| CEE 525 | Environmental Geotechnology (Initiated) |
| CEE 623 | Foundation Engineering                  |

CEE 625 In Situ Testing Techniques in Geotechnical Engineering (Initiated)  
CEE 697 Special Projects in Geotechnical Engineering  
EDUC 791L Civil & Environmental Engineering in Our World (Initiated)

## CLARKSON UNIVERSITY

### Undergraduate

IE 305 Engineering for Non-Engineers  
CE 310 Geotechnical Engineering  
CE 403 Civil Engineering Laboratory  
CE 414 Engineering Geology and Geomorphology  
CE 415 Foundation Engineering  
CE 495 Special Problems in Geotechnical Engineering

### Graduate

CE 516 Advanced Soil Mechanics  
CE 517 Engineering Properties of Soils  
CE 691 Advanced Foundation Engineering  
CE 620 Special Topics in Geotechnical Engineering

## CONSULTING:

Allender-Butzke Engineers, Des Moines, Ia.  
Applied Research Associates, South Royalton, Vt.  
Association of American Railroads, Chicago, Ill  
Atlantic Testing Laboratories, Canton, NY  
C & H Engineers, P.C., Syracuse, NY  
Clough-Harbor Associates, Albany, NY  
Converse Consultant, Parsippany, NJ  
Ecotec Environmental Assoc., E. Longmeadow, Ma.  
Federal Highway Administration, Washington, D.C.  
Gannett-Fleming Geotechnical Engineers, Harrisburg, Pa.  
General Motors Corporation, Messena, NY  
Geotechnical Engineers Inc., Winchester, Ma.  
Gifford Engineering, Schenectady, NY  
Goldberg-Zoino Associates, Bridgeport, Ct.  
Goldberg-Zoino Associates, Newton Falls, Ma.  
Groundwater and Environmental Services, Palmer, Ma.  
Haley & Aldrich Engineers, Cambridge, Ma.  
Iowa Geological Survey Bureau, Iowa City, Ia.  
Jaworski Geotech Inc., Manchester, NH  
John P. Stopen Engineers, Syracuse, NY  
Patzig Testing Laboratories, Des Moines, Ia.  
SEA Consultants, Inc., Cambridge, Ma.  
St. Lawrence Seaway Development Corporation, Massena, NY  
U.S. State Department

### **PROFESSIONAL SOCIETY MEMBERSHIP:**

American Society of Civil Engineers - Member  
ASCE Shallow Foundations Committee - Chairman (2001 - 2005)  
International Society of Soil Mechanics and Foundation Engineering - Member

### **PROFESSIONAL REGISTRATION:**

Registered Professional Engineer, State of Iowa, No. 10338  
OSHA 40 hour Hazardous Materials Safety Training 1993  
(8 Hour Refresher Course 1994,1995,1996, 2009)

### **REVIEWER FOR PROFESSIONAL JOURNALS:**

ASTM Special Technical Publications  
ASCE Geotechnical Specialty Publications  
Transportation Research Record  
Canadian Geotechnical Journal  
Geotechnical and Geological Engineering  
Proceedings of the ICE: Geotechnical Engineering  
Engineering Geology  
Geotechnical Testing Journal, ASTM  
Journal of Geotechnical & Geoenvironmental Engineering, ASCE  
Geotechnique

### **SPONSORED RESEARCH - EXTERNAL SOURCES:**

“Adaptive Use of Historic Truss Bridges for Civil Engineering Instruction”, 6/1/08 – 6/1/10, National Science Foundation, \$149,771 (Co-PI with Sanjay Arwade)

“Civil and Environmental Engineering in Our World” – Summer Instruction Course for Massachusetts Middle School Science Teachers, 6/1/07 – 8/31/09, Massachusetts Board of Higher Education, \$126,032.

“Full-Scale Pilot Study to Reduce Lateral Stresses in Retaining Structures Using GeoFoam”, 1/1/06 – 12/31/07, Vermont Agency of Transportation, \$84,624.

“Development and Implementation of Early Detection Systems for Ground Movement”, 7/1/05 – 6/30/07, Vermont Agency of Transportation, \$104,953 (Co-PI with D.J. DeGroot).

“In Situ Testing”, 5/20/05 – 12/31/07, Massachusetts Highway Department, \$169,360 (Co-PI with D.J. DeGroot).

“Highway Deicing Agents Impact on Soil and Groundwater Quality”, 2002 – 2005, Massachusetts Highway Department, \$1,374,355 (Co PI with D.W. Ostendorf, D.J. DeGroot and C.J. DeMoranville).

“Evaluation of Highway Deicing Agents”, 2001 - 2003, Massachusetts Highway Department, \$535,000 (Co PI with D. W. Ostendorf and D.J. DeGroot).

“Salt/Premix Storage Practices and Groundwater Quality”, 1996 – 2003, Massachusetts Highway Department, \$4,062,570. (Co PI with D.W. Ostendorf and D.J. DeGroot).

“Compression and Uplift Load Testing of Geopier Foundations in Clay”, Sept. 2001 – May 2003, Federal Highway Administration, \$38,500

“Behavior of Geosynthetic Reinforced Block Bridge Piers”, Jan. 2000 - Dec. 2000, Federal Highway Administration, \$100,000.

“Fate and Transport of Highway Deicing Agents in Groundwater”, June 30, 1999 - July 1, 2002, Massachusetts Highway Department, \$588,500 (Co PI with D. W. Ostendorf).

“Bearing Capacity of Shallow Foundations on a Sand Layer”, August 10, 1999 - May 1, 2000, Federal Highway Administration, \$19,100.

“Tension Tests on Driven Pipe Piles at the National Geotechnical Experimentation Site”, April 1, 1998 - July 1, 1998, Federal Highway Administration, \$10,000

“Behavior of Reinforced Soil Foundations”, May 30, 1997 - Aug. 31, 1998, Federal Highway Administration, \$49,950.

“Passive Earth Pressures Behind Integral Bridge Abutments” (Year Three), Jan. 1, 1997 - Dec. 31, 1997, Mass. Highway Dept., \$107,000.

“Air Sparging to Remediate Jet Fuel Contaminated Soils- Plattsburgh AFB” Aug. 31, 1995- Aug. 31, 1996, Air Force Office of Advanced Technology, \$325,000. (Co PI with D. Ostendorf and S. Ergas).

“Passive Earth Pressures Behind Integral Bridge Abutments” (Year Two), Oct. 27, 1995 - Dec. 31, 1996, Mass. Highway Dept., \$219,000.

“Hazardous Waste Site Remediation - Fellowships and Training”, Oct. 1, 1994 - Sept. 30, 1997, U.S. Department of Defense, \$1,300,000 (Co PI with D. Ostendorf and J. Male).

"Passive Earth Pressures Behind Integral Bridge Abutments" (Year One), Oct. 1, 1994 - Oct. 27, 1995, Mass. Highway Dept., \$93,800.

"Leaking Underground Storage Tank Site Assessment Protocol - Phase II", Oct. 1, 1994 - June 30, 1995. Mass. Highway Dept., \$225,000 (Co PI with D. Ostendorf and S. Long).

"National Geotechnical Experimentation Site Equipment Grant", Sept. 15, 1994 - Sept. 15, 1995, Federal Highway Administration, \$33,000.

"Development of In Situ Testing Program", May 1, 1994 - April 30, 1995, Federal Highway Administration, \$24,700.

"Use of Electrical Resistivity to Verify Grouting with Tremie Pipes", March 1, 1994 - April 1, 1995, Federal Highway Administration, \$23,500.

"Settlement of Shallow Foundations on Granular Soils", April 1, 1993 - June 30, 1994, Mass. Highway Dept., \$80,350 (Co PI with D.J. DeGroot).

"Field Tests of Bearing Capacity of Shallow Footings on Layered Soils; Sept. 1, 1993 - Aug. 31, 1994, Federal Highway Administration, \$23,500.

"Field Investigation of CMA Degradation in the Unsaturated Zone," April 1, 1992 - May 31, 1995, Mass Highway Department, \$300,000 (Co PI with D.W. Ostendorf and D.J. DeGroot).

"Leaking Underground Storage Tank Site Assessment Protocol - Phase 1", April 1, 1992 - May 31, 1993, Mass.

Highway Department, \$125,000 (Co PI with D.W. Ostendorf and D.J. DeGroot).

"The Use of Electrical Resistivity to Verify Grouting of Cone Penetrometer Holes", Federal Highway Administration, Jan. 1 1993 - Dec. 31, 1994, \$13,000.

"Pile Load Test Data Base", August 1, 1992 - Nov. 1, 1992, Federal Highway Administration, \$17,000.

"U.S. National Geotechnical Experimentation Site", Sept. 1, 1992 - Jan. 1, 1996, National Science Foundation, \$89,000.

"Geotechnical Site Investigation of Solar Heat Storage Site," September 1, 1991 -September 1, 1992, U.S. Department of Energy, \$24,500.

"Sealing Exploratory Geotechnical Boreholes to Protect the Subsurface Environment," March 1, 1991 - June 1, 1993, National Cooperative Highway Research Program, \$183,000 (Co PI with D.J. DeGroot).

"In Situ Characterization of Railroad Track Subgrade," June 1, 1990 - August 30, 1990, Burlington Northern Railroad, \$14,162.

"Stability of Existing Granite Block Bridge Abutments," November 27, 1989 - June 30, 1991, Mass. Department of Public Works, \$97,300 (Co PI with C.S. Chang and E.T. Selig).

"Hydrogeologic/Groundwater Protection - Iowa Geological Survey Bureau," January 1, 1989 - June 30, 1990, The Esker Corp. (Iowa Dept. of Nat. Resources), \$70,000.

"Soil Response to the Penetration of a Flat-Plate in Saturated Clays" March 1, 1988 - September 1, 1989, National Science Foundation, \$60,000 (Co PI with A. Huang).

"Fundamental Penetration Mechanics of Flat Plates in Saturated Clays," February 15, 1988 - February 15, 1990, Air Force office of Scientific Research, \$148,155 (Co PI with A. Huang).

"In Situ Shear Strength of Foundation Bedrock - Snell Lock," January 1, 1988 - June 30, 1988, Gannett-Fleming Geotechnical Engineers, \$22,582.

"Cyclic Shear Behavior and Flow Failure of Silty Soils - Phase I," September 1, 1987 - August 31, 1988, National Center for Earthquake Engineering Research, \$65,000.

"Research Experience for Undergraduates," April 1, 1987 - October 31, 1987, National Science Foundation, \$8,000.

"Cyclic Shear Behavior and Flow Failure of Silty Soils - Phase II," September 1, 1986 - August 31, 1987, National Center for Earthquake Engineering Research, (Co PI with M. Vucetic), \$68,000.

"In Situ Testing for Full Scale Transmission Tower Foundation Pullout Tests," August 1, 1986 - December 31, 1986, Cornell University, \$10,000.

"A Fundamental Investigation of the Collapse Mechanism in Loess Soils," May 15, 1985 - October 1, 1987, National Science Foundation, Initiation Grant, \$60,000.

### **GRADUATE STUDENT THESIS ADVISOR:**

CLARKSON UNIVERSITY

- Timian, David A. "Application of the Stepped Blade in Sensitive Marine Clay," M.S. Thesis, Jan. 1986.
- Saber, Robert T. "Investigation of the Pore-Size Distribution and Collapse Potential of Friable Loess Soils," M.S. Thesis, Dec. 1986
- Tierney, Kevin F. "Investigation of the Borehole Shear Test in a Marine (Leda) Clay," M.S. Thesis, Jan. 1987.
- Perkins, Steven "In Situ Investigation of Crustal Leda Clay in Massena, New York with the Pressuremeter and Borehole Earth Settlement Apparatus," M.S. Thesis, May 1987.
- Cooke, Raymond\* "Contact Stress Distributions Beneath a Rigid Circular Plate Resting on Cohesionless Mass," M.S. Thesis, April 1988.
- Mithwani, M.K.\* "Deformation Characteristics of Rectangular Plates Resting on Unilateral Edge Supports," M.S. Thesis, April 1988.
- Khadr, Wael, M. "Shear Strength Behavior and Pore Pressure Response of Natural and Reconstituted Silts," M.S. Thesis, April 1988.
- Kabir, M.G. "Interpretation of Piezocone and Piezoblade Tests in Clay," M.S. Thesis, Feb. 1988.
- Miller, Gerald A. "Undrained Shear Strength Anisotropy and Normalized Behavior from Field Vane Measurements," M.S. Thesis, Oct. 1988.

\* Coadvised with Dr. J.P. Dempsey, Clarkson University

#### UNIVERSITY OF MASSACHUSETTS

- Blanchard, Jonathan D. "Interpretation of Hydraulic Fracture Tests in Clay Using a Push-in Type Piezometer," M.S. Project, April 1989.
- Opiatowski, Anthony J. "The Determination of the Anisotropy of Hydraulic Conductivity in Geologic Sediments," M.S. Project, Dec. 1989.
- Farley, Neil A. "Microscopic and Macroscopic Aspects of Soil Fabric and Their Effects on Hydraulic Conductivity," M.S. Project, Jan. 1990.
- Eley, David "Stability of Existing Granite Block Bridge Abutments," M.S. Project, Jan. 1991.
- Tonzi, Christopher "In Situ Hydraulic Conductivity from Piezocone and Dilatometer Tests," M.S. Project, Sept. 1991.
- Artura, Celeste "Hydraulic Conductivity of Selected Borehole Sealants," M.S. Project, June 1992.
- Lally, Michael "A Field and Laboratory Investigation of Geotechnical Properties for Design of a Seasonal Heat Storage Facility," M.S. Project, Jan. 1993.

Difini, John "The Influence of Placement Technique on the Effectiveness of Borehole Sealants for Geotechnical Exploratory Boreholes," M.S. Project, May 1993.

Brown, Lizette "The Use of Electrical Resistivity to Verify Grout Placement in Cone Penetrometer Holes", M.S. Project, Dec. 1993.

Miller, Gerald A. "Behavior of Displacement Piles in an Overconsolidated Clay," Ph.D. Dissertation, May 1994.

Jordan, Jennifer "A Comparison of Different Ground Water Sampling Techniques at the National Geotechnical Experimentation Site", M.S. Project, Dec. 1994.

Windoloski, David "Load-Displacement Behavior of Shallow Foundations on Granular Soil", M.S. Project, Sept., 1995.

McClusky, Mark "Bearing Capacity of Shallow Foundations on Granular Soils Using In Situ Tests", M.S. Project, May 1996.

Riccardi, Charles "Factors Affecting Contact Earth Pressure Cell Calibration", M.S. Project, Aug. 1996.

Cheever, Paul "Methods of Determining Soil Gas Profiles in the Vadose Zone of Leaking Underground Storage Tanks", M.S. Project, Aug. 1996.

Costa, George "Uplift Behavior of Grouted Anchor Groups in Stiff Clay", M.S. Project, March, 1997.

Kelley, Shawn "A Comparison of In Situ Test Results for Obtaining Deep Foundation Design Parameters in Sand", M.S. Project, Sept., 1997.

Hazelwood, Jeffrey "Residual Strength of Clays", M.S. Project, Dec., 1997.

Thomson, Theodore "Passive Earth Pressures Behind Integral Bridge Abutments", PhD Dissertation, Dec., 1998.

Mitchell, Mike "Behavior of Reinforced Soil Foundations", M.S. Project, June, 1999.

Drury, Patrick "Bearing Capacity and Settlement of Footings on a Finite Thickness Sand Layer", M.S. Project, June, 1999.

Smith, Scott "Behavior of Compacted Grouted Anchors", M.S. Project, August, 1999.

Cerato, Amy "Influence of Surface Area on Geotechnical Characteristics of Fine-Grained Soils", M.S. Project, May, 2001.

Ball, Jennifer "Scale Effects of Skin Friction on Grouted Anchors", M.S. Project, Jan., 2002.

Mitchell, Jon "Behavior of Geosynthetically Reinforced Soil Bridge Piers", M.S. Project, Feb., 2002.

Dearth, Amy "Scale Effects of Laterally Loaded Drilled Shafts", M.S. Project, May, 2002.



|                     |   |
|---------------------|---|
| Kelley, Shawn       | “Electrical Conductivity in a Salt Contaminated Unconfined Aquifer”, PhD Dissertation, August, 2003.                    |
| Lillis, Christopher | “Uplift and Compression Load Tests on Geopier Foundations in Clay”, M.S. Project, December, 2003.                       |
| Cerato, Amy         | “Scale Effects of Shallow Foundation Bearing Capacity in Granular Soils”, PhD Dissertation, December, 2004.             |
| Tooley, Jennifer    | “Dissolved Oxygen in an Unconfined Aquifer”, M.S. Project, December, 2004.  |
| Fabri, Ricardo      | “Behavior of Helical Screw Piles in Clay and Sand”, M.S. Project, May, 2005.  |
| Rubin, Aaron        | “Tensile Strength of Some Compacted Fine-Grained Soils”, M.S. Project, May, 2007  |
| Ciuffetti, Mathew   | “Performance of Bridge Abutments with Geofom Backfill”, M.S. Project, May, 2008.  |
| Toombs, Brian       | “Frost Heave and Uplift Behavior of Instant Helical Foundations”, M.S. Project, December, 2011.                         |
| Orszulak, Thomas    | “Uplift Behavior of Shallow Solar Panel Foundations” M.S. Project, August, 2012.  |
| Khalili, Jahan      | “Aging Effects on the Uplift Capacity of Driven Pipe Piles in Sand, Silt and Clay.” M.S. Project, August, 2013.         |
| Ruberti, Mark       | “Installation Torque and Torque-to-Capacity Relationships for Screw-Piles and Helical Anchors”, M.S. Project, May, 2015 |
| Zapata, Hasian      |   |

### **UNDERGRADUATE STUDENT PROJECTS ADVISOR**

|                   |  |
|-------------------|--|
| Artura, Celeste   | “Analysis and Verification of the Bearing Capacity of Shallow Foundations on Non-Uniform Soil Conditions”, 1991. |
| Kudaruskas, Peter | “Confined Compression of Solid Waste”, May, 1997.  |
| Mitchell, Mike    | “Influence of Grain Size and Grain-Size Distribution on Minimum and Maximum Density of Sands”, December, 1998.   |
| Dearth, Amy       | “Swelling Pressure of Bentonite”, May, 2000.   |
| Mitchell, Jon     | “Load Settlement Behavior of Circular Footings on Granular Soil of Limited Thickness”, May, 1999.                |
| Goodridge, Luke   | “Effect of Shaft Diameter on the Lateral Load Behavior of Drilled Shafts”, May, 2000.                            |

|  |  |
|--|--|
| Fairbanks, Brian                                 | “Stability of Granite Block Bridge Abutments”, May, 2001.  |
| Stover, Perry                                    | “The Effects of Grain-Size Distribution, Grain Size and Angularity on the Shear Strength of Sands at Constant Relative Density”, December, 2001. |
| Harrington, Ninfa                                | “Some Physical and Chemical Properties of Residual Soils of the Piedmont Province”, December, 2003.  |
| Mones, Jarett                                    | “Compaction and Strength Characteristics of Fine-Grained Soils”, December, 2003.   |
| Major, Steve                                     | “Structural Integrity of Two Iron Pony Bridges”, December, 2003.   |
| Roy, Nathan                                      | “Influence of Specimen Geometry on Compressive Strength of Portland Cement Concrete”, May, 2004.   |
| Murphy, Kyle<br>Burch, Casey<br>Goodman, Michael | “Historic Iron/Steel Bridge Preservation”, May, 2004.  |
| Silvestri, Simone                                | “Dispersion Characteristics of Fine-Grained Soils”, May, 2005.   |
| Skelley, Mathew                                  | “Fabrication of Lenticular Truss Pedestrian Bridge”, May, 2005.  |
| Halpern, Yonah                                   | “Behavior of Multi-Helix Screw-Piles in Clay”, May, 2008.  |
| James Smith                                      | “Evaluation of Harvard Miniature Compaction for Fine-Grained Soils”, May, 2009.  |
| Helie, Derek                                     | “Design of Grouted Shaft Helical Micropiles and Influence of Construction Procedures”, May 2009.   |
| Toombs, Brian                                    | “Installation Torque Method for Predicting Capacity of Grouted Shaft Helical Micropiles”, May, 2010.   |
| Eastman, Brian &<br>Brandt, Benjamin             | “Rapid Field Testing Methods for Predicting Capacity of Helical Anchors”, May, 2010.   |
| Davis, Nathan                                    | “Dispersion Characteristics of London Clay and Evaluation of Initial Lime Consumption of Clays”, May, 2010.                                      |
| Swei, Omar                                       | “Grout Bond Strength on Galvanized Square Shaft Helical Anchor Shafts”, May, 2010.   |
| Toombs, Brian                                    | “Installation Disturbance Effects of Helical Screw Anchors in Clay”, December 2010.  |
| Dzidek, Chris                                    | “Reevaluation of Hilt & Davidson Lime Fixation Point and Initial Consumption of Lime”, May, 2011.  |

|                    |  |
|--------------------|--|
| Humphrey, Dennis   | “Undrained Shear Strength of Lime Treated Clays”, May, 2011.   |
| Orszulak, Tom      | “Free-Swell of Lime-Treated Clays”, May, 2011.   |
| Loughlin, Kate     | “Influence on Particle Shape and Fines Content on Minimum and Maximum Index Density of Sand”, May, 2012. |
| Zapata, Hasian     | “Influence of Soil Composition on Atterberg Limits of Fine-Grained Soils”, May, 2013.                    |
| Bazzett, David     | “Thixotropy of Remolded Clays from Fall Cone Tests”, December, 2014.                                     |
| Hallock, Thomas    | “Shrinkage Behavior of Undisturbed and Remolded Clays”, December, 2014.                                  |
| Brakey, Jesse      | “An Investigation of the Sensitivity-Liquidity Index Relationship”, December, 2014.                      |
| Hagedorn, Mark     | “Evaluation of Light-Duty In Situ Testing Techniques in Sand and Clay”, Dec., 2014.                      |
| Biagini, Brian     | “Engineering Classification and Characteristics of Intermediate Fine-Grained Soils”, December, 2016.     |
| Hanna, Frederick   | “Influence of Specimen Size on Unconfined Compressive Strength of Remolded Clay”, December, 2016.        |
| Sassaman, Brian    | “Changes in Clay Properties from Portland Cement Grout Migration”, December, 2016.                       |
| Simmonetti, Rachel | “Thixotropic Hardening of Remolded Clays and Influence of Initial State”, December, 2017.                |
| Harris, Martha     | “Undrained Shear Strength of Lime Treated Soft Clays” May, 2018.   |
| Currier, Austin    | “Ultimate Capacity of Segmental Jacked Piles in Clay”, May, 2018.  |

### **GRADUATE INDEPENDENT STUDY PROJECTS ADVISOR**

|   |  |
|---|--|
| Hazelwood, Jeffrey                            | “Residual Shear Strength of Clays”, Dec., 1997.  |
| Borecki, Scott, Dunga, A.<br>& Pause, Stephen | “Uplift Tests on Cast-in-Place Concrete-Pedestal Foundations”, May 2009                |
| Toombs, Brian                                 | “Disturbance Effects on the Load Capacity of Helical Anchors in Clay”, December, 2010. |
| Chancy, Mark                                  | “Evaluating the Uniformity of Soils from Field and Laboratory Tests” December, 2012    |

|                              |   |
|------------------------------|---|
| Kalili, Jahan                | “Thixotropic Behavior of Clays from Fall Cone Tests”, May, 2012.  |
| Toombs, Keith                | “Comparison Between Convection Oven, Microwave Oven and Speedy Moisture Meter”, May, 2013.  |
| Hellyar, Zach                | “Analysis of Load-Displacement Behavior of Screw Anchors and the Influence of Helix Spacing, Retesting, Soil Type and Geometry”, May, 2013.           |
| Rubin, Aaron                 | “Enhancing the Thermal Conductivity of Bentonite Grouts with Flyash”, May 2014.   |
| Ruberti, Mark                | “Influence of Mineralogy on Water Content-Remolded Undrained Shear Strength Relationship of Clays Using Fall Cone Test and Lab Vane Test”, May, 2014. |
| Williams, Nick & Erikson, J. | “Influence of Surface Coating on Installation Torque and Uplift Capacity of Round Shaft Helical Anchors”, May 2014.                                   |
| Zapata, Hasian               | “Influence of Mineralogy on the Thixotropic Behavior of Clays”, Dec., 2014.   |
| Ruberti, Mark                | “Shaft Resistance of Model Driven Piles: Influence of Pile Volume and Shaft Taper Effects”, Dec., 2014.   |
| Hagedorn, Mark               | “Soil Characteristics Adjacent to Driven Pipe Piles in Clay after Long-Term Aging”, April, 2016.  |

**PATENTS:**

|           |  |
|-----------|--|
| 4,122,704 | Portable Variable Expansion Testing Device |
| 4,411,160 | Vane Modulus Soil Tester                   |
| 4,458,525 | Borehole Plate Test                        |
| 4,474,066 | Portable Variable Expansion Testing Device |
| 4,539,851 | Soil and Rock Shear Tester                 |
| 4,543,820 | Tapered Blade In Situ Testing Device       |
| 8,506,207 | Helical Screw Pile                         |
| 9,115,478 | Helical Screw Pile                         |

**BOOKS:**

Lutenegger, A.J., 2008. In Situ Testing Techniques in Geotechnical Engineering (In press by John Wiley and Sons, New York)

**PUBLICATIONS:** (\* indicates refereed):

1978

\***Lutenegger**, A.J., Remmes, B.D., and Handy, R.L., 1978. "Borehole Shear Tests for Stiff Soils," Journal of the Geotechnical Engineering Division, ASCE, Vol. 104, pp. 1403-1407.

Hallberg, G.R., Fenton, T.E., Miller, G.A. and **Lutenegger**, A.J., 1978. "The Iowan Erosion Surface: an old story, and important lesson and some new wrinkles," in Anderson, R.R., ed., Geology of East-Central Iowa, Iowa Geological Survey Guidebook No. 2.

1979

\***Lutenegger**, A.J., Wollenhaupt, N.C., and Handy R.L., 1979. "Laboratory simulation of shale expansion by induced gypsum growth," Canadian Geotechnical Journal, Vol. 16, pp.405-409.

\*Handy, R.L., **Lutenegger**, A.J. and Hoover, J.M., 1979. "The Iowa K-Test," Transportation Research Record, No. 678, pp.42-49.

**Lutenegger**, A.J., Hallberg, G.R. and Handy, R.L., 1979. "Review of Geotechnical Investigations of Loess in North America," Iowa Geological Survey Open File Report.

1980

**Lutenegger**, A.J., 1980. "Some Observations of the Loess in the Southeast Iowa Study Area," in Hallberg, et al., Yarmouth Revisited, Iowa Geological Survey Guidebook No. 3.

1981

**Lutenegger**, A.J., 1981. "Stability of loess in light of the inactive particle theory," Nature, 291, p. 360.

\***Lutenegger**, A.J. and Hallberg, G.R., 1981. "Borehole Shear Test in Geotechnical Investigations," ASTM STP 740, pp. 566-578.

Kemmis, T. J., Hallberg, G.R., and **Lutenegger**, A.J., 1981. Depositional Environmental of Glacial Sediments and Landforms on the Des Moines Lobe, Iowa, Iowa Geological Survey Guidebook No. 6, Iowa Geological Survey.

1982

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## EDITOR OF SPECIAL PUBLICATIONS:

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**INVITED LECTURES and ORAL PRESENTATIONS at  
CONFERENCES/SYMPOSIA/PROFESSIONAL MEETINGS:**

“In Situ Testing with Flat-Plate Penetrometers,” Carleton University, Ottawa, Canada, October 1983.

“In Situ Soil Testing,” Syracuse University, Syracuse, New York, April 1985.

“In Situ Testing Techniques,” Cornell University, Ithaca, New York, July 1985.

“Application of In Situ Tests in Loess,” Omaha Section ASCE Annual Geotechnical Conference, Omaha, Nebraska, February 1986.

“In Situ Tests with Flat Dilatometer,” Rensselaer Polytechnic Institute, Troy, New York, February 1987.

“Field Tests vs. Calibration Chamber Tests: An Alternative Perspective,” 1st International Conference on Calibration Chamber Testing, Potsdam, New York, August 1991.

“Applications and Limitations of In Situ Testing in Structured Soils”, US/Brazil NSF Geotechnical Workshop, Belo Horizonte, Brazil, November 1992.

“Borehole Shear Tests in Stiff Clay Soils”, Building Research Establishment, Garston, England, January 1994.

“Dynamic Penetration Tests”, Discussion Presentation, International Conference on Site Characterization, Atlanta, Georgia, April, 1998.

“The Standard Penetration Test Revisited”, Boston Society of Civil Engineers, Boston, Ma., April, 1998.

“Full Scale Passive Load Tests on an Integral Bridge Abutment”, Boston Society of Civil Engineers, Boston, Ma., May, 1999.

“Tension Tests on Bored Piles in Residual Soil”, GeoCharlotte, Charlotte, N.C., October 17, 1999.

“Characterization of a Shallow Sand & Gravel Aquifer - Plymouth, Ma.”, Meeting of the Association of Engineering Geologists, Malden, Ma., Jan., 2000.

“Helical Pile Foundations”, Connecticut Section ASCE Annual Foundations Seminar, Meriden, Ct., Oct., 2002.

“Load-Settlement Behavior of Shallow Foundations”, Iowa Section ASCE 27<sup>th</sup> Annual Geotechnical Conference, Williamsburg, Iowa, March 6, 2003.

“Historical Development of Screw Piles and Screw Anchors”, DFI Helical Pile Conference, Cincinnati, Ohio, Aug., 8, 2003.

“Field Exploration for Analysis, Design and Construction of Deep Foundations”, Boston Society of Civil Engineers Deep Foundations Seminar, Waltham, Ma., Nov. 15, 2003.

“A New Look at the Standard Penetration Test”, Nebraska Section ASCE Geotechnical Seminar, Omaha, Ne., Feb. 24, 2004.

“Historical Development of Screw Piles and Screw Anchors”, Helical Foundation Seminar, Chance Anchor Co. Centralia, Mo; June, 10 - 12, 2004.

“Repair of Light-Frame Residential Structures Using Helical Screw-Piles and Screw Anchors”, Massachusetts Building Inspectors Annual Meeting, Amherst, Ma., October 4, 2004.

“Partnership Between ASCE Student Chapters and CEE Departments”, ASCE National Convention, Baltimore, Md., Nov. 16, 2004.

“Standard Penetration Test with Torque”, GeoFrontiers, ASCE Geotechnical Conference, Austin, Texas, Jan. 28, 2005.

“Historical Development of Screw Piles and Screw Anchors”, Helical Foundation Seminar, Helitech, Springfield, Illinois, May, 2005.

“Historical Development of Screw Piles and Screw Anchors”, Helical Foundation Seminar, Chance Anchor Co. Columbia, Mo., October 19-21, 2005.

“The Standard Penetration Test Revisited”, University of Missouri Department of Civil Engineering Geotechnical Seminar, Columbia, Mo., October 20, 2005.

“Historical Development of Screw Piles and Screw Anchors”, Helical Foundation Seminar, Helitech, Inc, Indianapolis, Indiana, Sept. 28. 2006.

“Historical Development of Screw-Pile Foundations”, Bicester and Leighton Buzzard, U.K., May 12, 2007.

“Design of Screw-Pile Foundations and Helical Anchors”, Wooton and Ongar, U.K., May 16, 2007.

“Lenticular Truss Bridges of the Berlin Iron Bridge Company” 20<sup>th</sup> Annual Symposium on Industrial Archeology in the New England Area – Society of Industrial Archeology, Worcester, Ma., Feb. 24, 2007.

“Does the Clay Fraction Really Influence the Engineering Behavior of Loess? – Southwestern Iowa Revisited”, Handy Symposium, Iowa State University, Ames, Iowa, May 30, 2008.

Cylindrical Shear or Plate Bearing? Uplift Behavior of Multi-Helix Screw-Piles in Clay. ASCE Geotechnical Congress, Orlando, Florida, March 17, 2009.

“The Standard Penetration Test – Revisited”, National Drillers Association National Meeting, Newark, Ohio, October, 9, 2009.

“Design of Screw-Piles and Helical Anchors”, Chance Civil Construction Helical Foundation Seminar, Redondo Beach, Ca.,, November 10, 2009.

“Standard Penetration Test with Oversized Equipment”, National Drillers Association National Meeting, St. Louis, Mo. September 30, 2010.

“Historical Development of Screw-Pile Foundations”, Chance Helical Foundations Academy, Foundation Technologies, Inc., Atlanta, Ga., December 9, 2011.

“Tension Tests on Driven Fin Piles for Support of Solar Panel Arrays”, ASCE GeoCongress, Oakland, Ca., March 16, 2012.

“Field Studies on the Behavior of Screw-Piles and Helical Anchors”, Syracuse University, April 13, 2012.

“Past, Present and Future of Helical Foundations”, Nebraska ASCE Geotechnical Symposium, Omaha, Ne., Feb. 8, 2013.

“Past, Present and Future of Helical Foundations in Civil Construction”, Massachusetts Building Inspectors Annual Meeting, Woburn, Ma., Feb. 21, 2013.

“Factors Affecting Installation Torque and Torque-to-Capacity Correlations for Screw-Piles and Helical Anchors”, 1<sup>st</sup> International Symposium on Helical Foundations, Amherst, Ma., August 8, 2013.

“A Review of Full Scale Field Tests on Screw-Piles and Helical Anchors”, 1<sup>st</sup> International Symposium on Helical Foundations, Amherst, Ma., August 8, 2013.

“Uplift of Shallow Single-Helix Screw Piles”, 1<sup>st</sup> International Symposium on Helical Foundations, Amherst, Ma., August 8, 2013.

“Preservation of Historic Structures and Monuments Using Minimally Invasive Screw-Piles and Helical Anchors: Two Case Histories”, Naples, Italy, 2013.

“Tension Tests on Driven H-Piles in Sand and Clay”, International Foundation Congress and Equipment Exposition, San Antonio, Texas, March 20, 2015.

“Uplift Tests on Shallow Cast-in-Place Enlarged Base Pedestal Foundations in Clay”, International Foundation Congress and Equipment Exposition, San Antonio, Texas, March 20, 2015.

“Uplift Resistance of Coated Steel Piles”, International Foundation Congress and Equipment Exposition, San Antonio, Texas, March 20, 2015.

“Screw-Piles, Helical Anchors and Soil Mechanics: Where are We?”, Kansas City Chapter ASCE Geotechnical Symposium, Kansas City, Ks., January 10, 2014.

“Screw-Piles and Helical Anchors in Soils – A Civil Engineering Legacy”, Deep Foundations Institute Helical Piles and Tiebacks Seminar, St. Charles, Mo., April 3, 2014.

“Load-Displacement Behavior of Screw-Piles and Helical Anchors in Sand and Clay”, Albany Chapter ASCE, 5th Annual Geotechnical Symposium, Albany, N.Y., November 14, 2014.

“Challenges in the Design of Screw-Piles and Helical Anchors in Soils”, GeoVirginia Geotechnical Symposium, Williamsburg, Va., April 28, 2015.

“Load Tests on Grouted Shaft Helical Micropiles in Some UK Soils”, 16<sup>th</sup> European Conference on Soil Mechanics and Geotechnical Engineering, Edinburgh, Scotland, September 15, 2015.

“Foundation Alternatives for Ground Mount Solar Panel Installations”, ASCE Geo-Structures Conference, Phoenix, Az., February 15, 2016.

“Looking Back and Looking Ahead – How Iowa State Shaped a Career in Geotechnical Engineering”, Handy Celebration Dinner, Iowa State University and Iowa Chapter ASCE, Ames, Iowa, March 8, 2017.

“Geotechnical Considerations for Design of Helical Pier Foundations”, Iowa Chapter ASCE, 41<sup>st</sup> Geotechnical Symposium, Ames, Iowa, March 9, 2017.

“Aged Undrained Shear Strength of Remolded Clays”. Society for Underwater Technology, International Conference on Offshore Geotechnics, London, U.K., September 12, 2017.

“Support of Offshore Structures Using Helical Anchors”. Society for Underwater Technology, International Conference on Offshore Geotechnics, London, U.K., September 12, 2017.

“Design and Installation Monitoring of Helical Piles and Anchors”, invited Talk for 66<sup>th</sup> Annual Geotechnical Conference, University of Minnesota, February 23, 2018.

“Uplift Behavior of Square-Shaft Single-Helix Helical Anchor Groups in Clay”, International Foundations Congress and Equipment Exposition, Orlando, Fl., March 10, 2018.

“Historical Background of Helical Piles and Anchors”, invited talk to 2018 Ct. ASCE Geotechnical Seminar, April 6, 2018, New Haven, Ct.

“Design Considerations for Helical Piles and Anchors”, invited talk to 2018 Ct. ASCE Geotechnical Seminar,

April 6, 2018, New Haven, Ct.

“Installation Monitoring of Helical Piles and Anchors”, invited talk to 2018 Ct. ASCE Geotechnical Seminar, April 6, 2018, New Haven, Ct.

**KEYNOTE LECTURES:**

“Current Status of the Marchetti Dilatometer,” 1st International Symposium on Penetration Testing, Orlando, Florida, March 1988.

“A Review of Full Scale Field Tests on Screw-Piles and Helical Anchors”, 1<sup>st</sup> International Symposium on Helical Foundations, Amherst, Ma., August 8, 2013.

“Lime Modification and Stabilization of Fine-Grained Soils – An Iowa State Geotechnical Legacy Revisited”, James M. Hoover Distinguished Lecture, Department of Civil Engineering, Iowa State University, Ames, Iowa, November 9, 2017.

**SHORT COURSES/WORKSHOPS PRESENTED:**

“Use of In Situ Tests for Design of Drilled Foundations,” Association of Drilled Shaft Contractors Engineering Faculty Workshop, Ft. Collins, Colorado, July 1987.

“Flat Dilatometer Testing,” University of Wisconsin - Milwaukee, Milwaukee, Ws. June 1988.

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“Geoenvironmental Drilling and Sampling for Geotechnical Engineers”, Atlanta, Ga., April, 1998.

“Geoenvironmental Drilling and Sampling for Geotechnical Engineers”, Amherst, Ma., April, 2000.

“Geotechnical Test Drilling Inspection” June 15, 2000, Amherst, Ma.

“Geotechnical Test Drilling Inspection” June 12, 2001, Amherst, Ma.

“In Situ Testing For Geotechnical Engineers”, June, 2001, Wellsley, Ma.

“Laboratory Testing of Soil and Rock”, June 18, 2002, Worcester, Ma.

“Helical Anchor Foundation Systems Analysis”, June 2, 2005, St. Louis, Mo.

“Helical Anchor Foundation Systems Analysis”, Sept. 28, 2006, Indianapolis, In.

“History of Helical Piles” April 30, 2007, Henley in Arden, UK

“History of Helical Piles” May 3, 2007, Leighton Buzzard, UK

“History of Helical Piles” May 10, 2007, Ongar, UK

“Helical Pile and Anchor Installation Inspector’s Training Course, April 9, 2013, Lawrenceville, Ga.

“Geotechnical Test Drilling Inspection” June 12, 2016, Amherst, Ma.

“Design of Helical Piles and Anchors” June 19, 2016, Amherst, Ma.

“Helical Pile and Anchor Installation Inspector’s Training Course, January 9, 2018, Ontario, Canada.

**Instructor – National Highway Institute (NHI)**

Since 2005 Dr. Lutenegger has been an Instructor for the U.S. Federal Highway Administration National Highway Institute (NHI) courses, 132031 “Subsurface Investigations”; 132037 “LRFD Design of Shallow Foundations” and 132079 “Subsurface Investigation Specialist Qualification”. He is the Lead Instructor and was a co-developer of Course 132079. He has taught courses for NHI at state highway departments around the U.S. in Anchorage, Ak., Baltimore, Md., Baton Rouge, La., Chicago, Ill., Columbus, Oh., Dover, De., Fairbanks, Ak., Topeka, Ks., Harrisburg, Pa., Helena, Mt., Jefferson City, Mo., Minneapolis, Mn., Montgomery, Al., Orlando, Fl., Pierre, S.D., Phoenix, Az., Reno, Nv., Sacramento, Ca., Seattle, Wa., West Lebanon, N.H., Lansing, Mi. and Worcester, Ma.

He has also taught the NHI “Subsurface Investigation Specialist Qualification” Course 132079 for the National Drillers Association (NDA) in Baltimore, Md., Cleveland, Oh., Columbus, Oh., Dayton, Oh., St. Louis, Mo., Seven Springs, Pa. and Orlando, Fl.