

## **DON J. DEGROOT, Sc.D., P.E.**

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## **BIOGRAPHY**

Dr. Don J. DeGroot is a geotechnical engineer and professor in the Department of Civil and Environmental Engineering at the University of Massachusetts Amherst. He received his Doctor of Science degree in Civil Engineering with specialization in geotechnical engineering at the Massachusetts Institute of Technology in 1989. His teaching, research and consultancy experience is primarily in the area of soil behavior with an emphasis on field and laboratory measurements for geotechnical engineering site characterization programs. He has been a Principal/Co-Principal Investigator on numerous geotechnical engineering research projects that included research on drilling and sampling of soils, in situ testing, laboratory measurement of soil behavior, and selection of soil design parameters. His consultancy work has largely involved conduct and interpretation of in situ and laboratory tests of soils. He has published findings from this research and consultancy work in many of the major geotechnical engineering journals, American Society of Civil Engineers (ASCE) *Geotechnical Special Publications*, American Society for Testing and Materials (ASTM) *Special Technical Publications* and Transportation Research Board (TRB) publications. National and international conference activities include invited Keynote, State-of-the-Art, and State-of-the-Practice papers and presentations on site characterization and soil behavior. He has served on the editorial boards of the *Journal of Geotechnical and Geoenvironmental Engineering* and the *Geotechnical Testing Journal* and served as Chair of the ASCE Geo-Institute *Soil Properties and Modeling Committee*.

## **A. EDUCATION**

### **Massachusetts Institute of Technology**

Doctor of Science in Civil Engineering, August 1989.

Master of Science in Civil Engineering, June 1985.

### **Concordia University**

Bachelor of Science in Civil Engineering with *Great Distinction*, May 1983.

### **Dawson College**

Diploma of Collegial Studies in Civil Engineering Technology, August 1979.

## **B. ACADEMIC WORK EXPERIENCE**

### **University of Massachusetts Amherst, Amherst, MA, USA.**

September 2008 – present, Professor of Civil and Environmental Engineering and Coordinator, Geotechnical Engineering Program (2000 – 2011).

September 1995 – August 2008. Associate Professor of Civil and Environmental Engineering.

August 1989 - August 1995. Assistant Professor of Civil and Environmental Engineering.

### **Centre for Offshore Foundation Systems/University of Western Australia, Perth, Australia.**

June 2005 – September 2005. Gledden Visiting Senior Fellowship.

### **Norwegian Geotechnical Institute, Oslo, Norway.**

January 1997 – July 1997. Research Council of Norway Guest Researcher Fellowship.

## **Massachusetts Institute of Technology, Cambridge, MA, USA.**

September 1983 - August 1989. Research Assistant.

### **C. PROFESSIONAL SOCIETIES**

American Society for Testing and Materials

- Member of Committee D-18 on Soil and Rock, 1990-present
- Member of Subcommittee D-18.05 on Structural Properties of Soils, 1990-present

American Society of Civil Engineers, Geo-Institute

- Member of Soil Properties Committee, 1993 – present; Secretary 1997-2001; Chair, 2001-2008
- Member of Conference Coordination Council, 2006 – 2014.

Association of Engineering Firms Practicing in the Geosciences, Faculty Member

Boston Society of Civil Engineers Section

Canadian Geotechnical Society;

- Member of Soil Mechanics and Foundations Division, 1987-present

International Society for Soil Mechanics and Geotechnical Engineering

- Member of TC-24 Committee on Soil Sampling, Evaluation, and Interpretation, 1998-2002.
- Officer of TC-39 Committee on Geotechnical Engineering for Coastal Disaster Mitigation and Rehabilitation, 2006 – present.

International Standards Organization

- Committee on Development of International Standard for Marine Soil Investigations  
Chair of Subcommittee on Laboratory Testing, 2007 – present.

### **D. PROFESSIONAL REGISTRATION/TRAINING**

Professional Engineer (Civil), License No. 41639, Massachusetts

40-hour OSHA1910.120 Hazardous Waste Site Worker Health and Safety Course

### **E. HONORS, SCHOLARSHIPS AND AWARDS**

- Outstanding Senior Faculty Award, College of Engineering, UMass Amherst, 2017
- GZA Lecture, NY Metropolitan Section of Geo-Institute/ASCE, 2013.
- Civil and Environmental Engineering Outstanding Teaching Award, UMass Amherst, 2011.
- Research Excellence Award, Civil and Environmental Engineering, UMass Amherst, 2009.
- George F. Sowers State-of-the-Art Lecture Award, Georgia Institute of Technology, 2006.
- Gledden Visiting Senior Fellowship, University of Western Australia, 2005.
- James L. Tighe Civil Engineering Distinguished Teaching Award, UMass Amherst, 1997.
- Research Council of Norway Guest Researcher Fellowship, Norwegian Geotechnical Institute, 1997.
- Outstanding Junior Faculty Award, College of Engineering, UMass Amherst, 1995.
- Chi Epsilon, initiated as Faculty Member by UMass Amherst Student Chapter, 1994.
- United Technologies Corporation Outstanding Laboratory Teaching Award, UMass Amherst, 1993.
- Nominated for University Distinguished Teaching Award, UMass Amherst, 1993, 1995 and 1999.
- *1967 Science & Engineering Scholarship*, Research Council of Canada, 1983-1987.
- Department of Civil Engineering Medal, Top Graduating Student, Concordia University, 1983.
- Chiat Medal, Top Student, School of Engineering & Computer Science, Concordia University, 1983.
- Class of 1983 Valedictorian, Concordia University.
- Summer Research Scholarship, University of Ottawa, 1993.
- Institute of Citizenship Award, Province of Quebec, Canada, 1983-1986.
- McQueen, R.B. Hood and D. Buchanan Scholarships, Concordia University, 1981-1983.

- Quebec Order of Engineers Award, 1983.
- First place, School of Engineering Technical Paper Competition, Concordia University, 1983.
- Graduated Top of Class, Department of Civil Engineering Technology, Dawson College, 1979.

## **F. COURSES TAUGHT**

### Undergraduate

CEE121 Civil and Environmental Engineering Measurements  
 CEE240 Statics  
 CEE260 Engineering Materials  
 CEE320 Soil Mechanics  
 CEE365 Civil and Environmental Engineering Laboratory  
 CEE421 Foundation Engineering  
 CEE491 Senior Seminar

### Graduate

CEE525 Geotechnical Site Investigations (formerly Environmental Geotechnology)  
 CEE620 Soil Behavior and Shear Strength  
 CEE622 Geotechnical Materials Testing  
 CEE690G Laboratory and Field Methods in Environmental Geotechnics  
 CEE720 Theoretical Soil Mechanics  
 CEE691 Geotechnical Engineering Seminar

## **G. PUBLICATIONS**

### Book Chapters

Lutenegger, A.J. and DeGroot, D.J. (2000). "Field Techniques for Sampling and Measurement of Soil Gas Constituents at Contaminated Sites." in *Remediation Engineering of Contaminated Soils*, Eds., D.L. Wise, et al. Marcel Dekker, NY, pp. 657-692.

### Refereed Publications

DeGroot, D.J., Germaine, J.T. and Gedney, R. (1991). "An Automated Electropneumatic Control System for Direct Simple Shear Testing." *Geotechnical Testing Journal*, Vol. 14, No. 4, pp. 339-348.

Lutenegger, A.J. and DeGroot, D.J. (1992). "Measurement of Hydraulic Conductivity in Clay Using Push-In Standpipe Piezometers." *Ground Water and Vadose Zone Investigations*, American Society for Testing and Materials Special Technical Publication No. 1118, pp. 362-374.

DeGroot, D.J. and Baecher, G.B. (1993). "Estimating Autocovariance of In Situ Soil Properties." *Journal of Geotechnical Engineering*, Vol. 119, No. 1, pp. 147-166.

DeGroot, D.J., Germaine, J.T. and Ladd, C.C. (1993). "The Multidirectional Direct Simple Shear Apparatus." *Geotechnical Testing Journal*, Vol. 16, No. 3, pp. 283-295.

DeGroot, D.J. and Lutenegger, A.J. (1993). "Discussion of 'Characteristics of a Bentonite Slurry as a Sealant'." by Edil and Muhanna, pub. Vol. 15, No. 1, *Geotechnical Testing Journal*, Vol. 16, No. 1, pp. 135-137.

Lutenegger, A.J. and DeGroot, D.J. (1993). "Discussion of 'Smear Effects of Vertical Drains on Soft

Bangkok Clay'." by Bergado et al., pub. Vol. 117, No. 10, *Journal of Geotechnical Engineering*, Vol. 119, No. 1., pp. 181-184.

Whittle, A.J., DeGroot, D.J., Ladd, C.C., and Seah, T.H. (1994). "Model Prediction of the Anisotropic Behavior of Boston Blue Clay." *Journal of Geotechnical Engineering*, Vol. 120, No. 1, pp. 199-224.

Sheahan, T.C., DeGroot, D.J., and Germaine, J.T. (1994). "Using Device Specific Data Acquisition for Automated Laboratory Testing." *Transportation Research Record No. 1432*, Transportation Research Board, pp. 9-17.

DeGroot, D.J., Germaine, J.T. and Ladd, C.C. (1994). "Influence of Nonuniform Stresses on Measured DSS Stress-Strain Behavior." *Journal of Geotechnical Engineering*, Vol. 120, No. 5, pp. 892-912.

DeGroot, D.J. and Lutenecker, A.J. (1994). "A Comparison Between Field and Laboratory Measurements of Hydraulic Conductivity in a Varved Clay." *Hydraulic Conductivity and Waste Contaminant Transport in Soils*, American Society for Testing and Materials Special Technical Publication No. 1142, pp. 300-317.

Lutenecker, A.J. and DeGroot, D.J. (1994). "Hydraulic Conductivity of Borehole Sealants." *Hydraulic Conductivity and Waste Contaminant Transport in Soils*, American Society for Testing and Materials Special Technical Publication No. 1142, pp. 439-460.

DeGroot, D.J. and Baecher, G.B. (1994). "Closure to 'Estimating Autocovariance of In Situ Soil Properties'." pub. Vol. 119, No. 1, *Journal of Geotechnical Engineering*, Vol. 120, No. 8., pp. 1455-1457.

DeGroot, D.J. and Sheahan, T.C. (1995). "Laboratory Methods for Determining Engineering Properties of Overconsolidated Clays." *Transportation Research Record No. 1479*, Transportation Research Board, pp. 17-25.

Lutenecker, A.J. and DeGroot, D.J. (1995). "Sealing Cone Penetrometer Holes to Protect the Subsurface Environment." *Canadian Geotechnical Journal*, Vol. 32, No. 5, pp. 880-891.

Ostendorf, D.W., DeGroot, D.J., Pollock, S.J., and Gagnon, P.J. (1995). "Aerobic Acetate Degradation Near the Capillary Fringe of Roadside Soil: Field Simulations From Soil Microcosms." *Journal of Environmental Quality*, Vol. 24, pp. 334-342.

DeGroot, D.J., Germaine, J.T., and Ladd, C.C. (1995). "Closure to 'Effect of Nonuniform Stresses on Measured DSS Strain-Strain Behavior'." pub. Vol. 120, No. 2, *Journal of Geotechnical Engineering*, Vol. 121, No. 10, pp. 743-745.

DeGroot, D.J., Ladd, C.C. and Germaine, J.T. (1996). "Undrained Multidirectional Direct Simple Shear Behavior of a Cohesive Soil." *Journal of Geotechnical Engineering*, Vol. 122, No. 2, pp. 91-98.

DeGroot, D.J., Lutenecker, A.J., Panton, J.G., Ostendorf, D.W. and Pollock, S. (1996). "Methods of Determining In Situ Oxygen Profiles in the Vadose Zone of Granular Soils." *Sampling Environmental Media*, American Society for Testing and Materials Special Technical Publication No. 1282, pp. 271-288.

Sheahan, T.C. and DeGroot, D.J. (1997). "Laboratory Determination of Coastal Sediment Mechanical Properties." *Marine Georesources and Geotechnology*, Vol. 15, pp. 231-252.

Ostendorf, D.W., DeGroot, D.J., Pollock, S.J., and Long, L.J. (1997). "Aerobic Degradation Potential Assessment From Oxygen and Carbon Dioxide Soil Gas Concentrations in Roadside Soil." *Journal of Environmental Quality*, Vol. 26, No. 2, pp. 445-453.

Shelburne, W.M. and DeGroot, D.J. (1998). "Use of Waste and Recycled Materials in Highway Construction." *Journal of Civil Engineering Practice*, Vol. 13, No. 1, Spring/Summer, pp. 5-16.

Mitchell, T.J., DeGroot, D.J., Lutenegeger, A.J., Ernst, H., and McGrath, V. (1999). "Comparison of CPTU and Laboratory Soil Parameters for Bridge Foundation Design on Fine Grained Soils: A Case Study in Massachusetts." *Transportation Research Record No. 1675*, Transportation Research Board, pp. 24-31.

Clary, J.A., Highter, W.H., and DeGroot, D.J. (1999). "Structural Numbers for Reclaimed Asphalt Pavement Base and Subbase Course Mixes." *Transportation Research Record No. 1687*, Transportation Research Board, pp. 22-28.

Sheahan, T.C., DeGroot, D.J. and Mitchell, T.J. (1999). "State of the Art: Automated Laboratory Stress-Strain-Strength Testing of Soils." *Nondestructive and Automated Testing for Soil and Rock Properties*, American Society for Testing and Materials Special Technical Publication No. 1350, pp. 203-230.

Sheahan, T.C., DeGroot, D.J., Fu, Q., and Ryan, R. (2004). "Use of 'Zero Controlled Gradient' Tests to Determine EOP Compression Behavior." *Geotechnical Testing Journal*, Vol. 27, No. 3, pp. 314-321.

Ostendorf, D.W., DeGroot, D.J., Shelburne, W.M., and Mitchell, T.J. (2004). "Hydraulic Head in Clayey Sand Till over Multiple Time Scales." *Canadian Geotechnical Journal*, Vol. 41, No. 1, pp. 89-105.

Nagaraj, T.S. and DeGroot, D.J. (2004). Discussion of "Determination of Liquid Limit from Equilibrium Sediment Volume." *Geotechnique*, Vol. 54, No. 9, pp. 611-614.

DeGroot, D.J. and Lutenegeger, A.J. (2005). "Characterization by Sampling and In Situ Testing – Connecticut Valley Varved Clay." *Studia Geotechnica et Mechanica*, Vol. XXVII, No. 3-4, pp. 91-105.

DeGroot, D.J., Poirier, S.E., and Landon, M.M. (2005). "Sample Disturbance – Soft Clays." *Studia Geotechnica et Mechanica*, Vol. XXVII, No. 3-4, pp. 107-120.

Ostendorf, D.W., DeGroot, D.J., Dunaj, P., and Jakubowski, J. (2005), "A Closed Form Slug Test Theory for High Permeability Aquifers." *Groundwater*, Vol. 43, No. 1, pp. 87-101.

Ostendorf, D.W., Hinlein, E.S., Rotaru, C., DeGroot, D.J. (2006). "Chloride Contamination of Groundwater by Outdoor Highway Deicing Agent Storage." *Journal of Hydrology*, 326, pp. 109-121.

Landon, M.M., DeGroot, D.J., Sheahan, T.C. (2007). "Non-Destructive Sample Quality Assessment using Shear Wave Velocity." *Journal of Geotechnical and Geoenvironmental Engineering*. Vol. 133, No. 4, pp. 424-432.

DeJong, J.T., Yafate, N.J., DeGroot, D.J. (2007). "Design of a Miniature Piezoprobe for High Resolution Stratigraphic Profiling." *Geotechnical Testing Journal*, Vol. 30, No. 4, DOI: 10.1520/GTJ100592.

Ostendorf, D.W., DeGroot, D.J. and Dunaj, P.J. (2007). "Waterhammer Dissipation in Pneumatic Slug Tests." *Water Resources Research*, Vol. 43, W02413, DOI:10.1029/2005WR004817.

DeGroot, D.J. and Landon, M.M. (2007). "Laboratory Testing of Undisturbed Soft Clay Samples to Determine Engineering Design Parameters." *Studia Geotechnica et Mechanica*. No. 1-2, pp. 23-37.

Ostendorf, D.W., DeGroot, D.J., and Hinlein, E.S. (2007). "Unconfined Aquifer Response to Infiltration Basins and Shallow Pump Tests." *Journal of Hydrology*. Vol. 338, No. 1, pp. 132-144.

Yafrate, N., DeJong, J., DeGroot, D.J. and Randolph, M. (2009). "Evaluation of remolded shear strength and sensitivity of soft clay using full flow penetrometers." *Journal of Geotechnical and Geoenvironmental Engineering*, Vol. 135, No. 9, pp. 1179-1189.

Ostendorf, D.W., Zlotnik, V.A. and DeGroot, D.J. (2009). "A linear theory of slug tests with annular effects." *Journal of Hydrology*. Vol. 368, No. 4, pp. 205-213.

Ostendorf, D.W. and DeGroot, D.J. (2010). "Slug tests in the presence of background head trends." *Groundwater*. Vol. 48, No. 4, pp. 609-613.

Poirier, S.E. and DeGroot, D.J. (2010). "Development of a portable probe for field and laboratory measurement of low to medium values of soil suction." *Geotechnical Testing Journal*. Vol. 33, No. 3, pp. 253-260.

DeJong, J., Yafrate, N., DeGroot, D.J., and Randolph, M.F. (2010). "Recommended practice for full-flow penetrometer testing and analysis." *Geotechnical Testing Journal*. Vol. 33, No. 2, pp. 137-149.

Ostendorf, D.W., DeGroot, D.J., Judge, A.I., and LaMesa, D. (2010). "Method to characterize aquitards above leaky aquifers with water supply wells." *Hydrogeology Journal*. Vol. 18, No. 3. pp. 595-605.

DeJong, J.T., Yafrate, N. and DeGroot, D.J. (2011). "Evaluation of undrained shear strength using full flow penetrometers." *Journal of Geotechnical and Geoenvironmental Engineering*, Vol. 137, No. 1, pp. 14-26.

Low, H.E., Landon, M.M., Randolph, M.F. and DeGroot, D.J. (2011). "Geotechnical characterisation and engineering properties of Burswood Clay." *Géotechnique*. Vol. 61, No. 7, pp. 575-591.

Yafrate, N., DeJong, J.T., DeGroot, D.J., and Randolph, M. (2011). Closure to "Evaluation of remolded shear strength and sensitivity of full-flow penetrometers." *Journal of Geotechnical and Geoenvironmental Engineering*. Vol. 137, No. 4, doi:10.1061/(ASCE)GT.1943-5606.0000372.

DeJong, J., DeGroot, D., and Yafrate, N. (2012). Closure to "Evaluation of Undrained Shear Strength Using Full-Flow Penetrometers." *Journal of Geotechnical and Geoenvironmental Engineering*. Vol. 138, No. 6, pp. 765-767.

Low, H.E., Landon-Maynard, M.L., Randolph, M.F., and DeGroot, D.J. (2012). Closure to "Geotechnical characterisation and engineering properties of Burswood clay." *Géotechnique*. Vol. 62, No. 7, 653-656.

DeGroot, D.J., Ostendorf, D.W., and Judge, A. (2012). "In situ measurement of hydraulic conductivity of saturated soils." *Geotechnical Engineering Journal of the SEAGS & AGSSEA*, Vol. 43, No.4, pp. 63-71.

Judge, A., Ostendorf, D.W., DeGroot, D.J. and Zlotnik, V.A. (2013). "Pneumatic Permeameter for Transient Tests on Coarse Gravel." *Journal of Hydrologic Engineering*. Vol. 19, No. 2, pp. 319-327.

Zhang, G., Yin, H., and DeGroot, D.J. (2013). "Thixotropism of micron-sized saltwater clay floccs." *Geotechnique Letters*, Vol. 3, Oct-Dec, pp. 162-165.

Rotaru, C., Ostendorf, D.W. and DeGroot, D.W. (2014). "Chloride dispersion across silt deposits in a glaciated bedrock river valley." *Journal of Environment Quality*. Vol. 43, No. 2, pp. 459-467.

Carswell, W., Arwade, S.R., DeGroot, D.J., Lackner, M.A. (2015). "Soil-Structure Reliability of Offshore Wind Turbine Monopile Foundations." *Wind Energy*. Vol. 18, No. 3, pp. 483–498. doi: 10.1002/we.1710

Carswell, W., Johansson, J., Løvholt, F., Arwade, S. R., Madshus, C., DeGroot, D. J., and Myers, A. T., (2015). "Foundation damping and the dynamics of offshore wind turbine monopiles." *Renewable Energy*, Vol. 80, pp. 724–736.

Lukas, W.G., DeGroot, D.J., Ostendorf, D.W., and Hinlein, E.S. (2015). "Multi-Scale Hydrogeologic Characterization of a Leaky Till Mantled Fractured Bedrock Aquifer System." *Canadian Geotechnical Journal*. Vol. 52(12), pp. 1945-1955. DOI: 10.1139/cgj-2014-0296.

Fontana, C., Carswell, W., Arwade, S., DeGroot, D.J., and Myers, A. (2015). "Sensitivity of the dynamic response of monopile-supported offshore wind turbines to structural and foundation damping." *Wind Engineering*, Vol. 39, pp. 609-627.

Carswell, W., Arwade, S.R., DeGroot, D.J., and Myers, A.T. (2016). "Natural Frequency Degradation and Permanent Accumulated Rotation for Offshore Wind Turbine Monopiles in Clay." *Renewable Energy*, Vol. 97, pp. 319-330.

Ostendorf, D.W., Lukas, W.G., and DeGroot, D.J. (2017). "Partially Penetrating Purge Tests in an Unweathered Till Layer." *Hydrology Research*, Vol. 48 (1), pp. 117-132. DOI: 10.2166/nh.2016.159

Landon, M.E., Marchetti, C., DeGroot, D.J. (2018). "Constant Rate of Strain Consolidation Testing of Saturated Clays without Back Pressure Saturation." *Geotechnical Testing Journal*, Vol. 41(2), doi.org/10.1520/GTJ20170030.

Hamin, E.M., Abunnasr, Y., Dilthey, M.R., Judge, P.K., Kenney, M.A., Kirshen, P., Sheahan, T.C., DeGroot, D.J., Ryan, R.L., McAdoo, B.G., Nurse, L., Buxton, J.A., Sutton-Grier, A.E., Albright, E.A., Marin, M.A. and Fricke, R. (2018). "Pathways to Coastal Resiliency: The Adaptive Gradients Framework." *Sustainability*. Special Issue on Sustainable Use of the Environment and Resources. Vol 10(8). doi.org/10.3390/su10082629.

Hallowell, S.T., Arwade, S.R., Fontana, C.M., DeGroot, D.J., Aubeny, C.P., Diaz, B.S., Myers, A.T., and Landon, M.E. (2018). "System Reliability of Floating Offshore Wind Farms with Multiline Anchors." *Ocean Engineering*. Vol 160(July): 94-104. <https://doi.org/10.1016/j.oceaneng.2018.04.046>.

DeJong, J.T., Krage, C.P, Albin, B.A., and DeGroot, D.J. (2018). "A Work Based Framework for Sample Quality Evaluation of Low Plasticity Soils." *Journal of Geotechnical and Geoenvironmental Engineering*,

Vol. 44(10). doi: 10.1061/(ASCE)GT.1943-5606.0001941.

Fontana, C.M., Arwade, S.R., DeGroot, D.J., Hallowell, S.T., Landon, M.E., Aubeny, C.P., Diaz, B.S., Myers, A.T., Hajjar, J.F., Ozmutlu, S. (2018). "Multiline anchor force dynamics in offshore wind farms with OC4 floating system." *Wind Energy*. Vol 21(11):1177-1190.

Lukas, W.G., DeGroot, D.J., DeJong, J.T., Krage, C.P. and Zhang, G. (2019). "Undrained Shear Behavior of Low-Plasticity Intermediate Soils Under Simulated Tube Sampling Disturbance." *Journal of Geotechnical and Geoenvironmental Engineering*. Vol 45(1). doi: 10.1061/(ASCE)GT.1943-5606.0001967

Ma, F., Song, J., Luo, S., DeGroot, D.J., Bai, X., Zhang, G. (2019). "Distinct response of nanostructured layered muscovite to uniform and nonuniform straining" *Journal of Materials Science*. Vol. 54(2): 1077–1098. doi: 10.1007/s10853-018-2887-y.

Fontana, C., Myers, A., Aubeny, C., DeGroot, D.J., Landon, M., Arwade, S., and Hallowell, S. (2019). "Spatial Coherence of Ocean Waves in Multiline Anchor Systems for Floating Offshore Wind Turbines." *Ocean Engineering*. 184(15): 59-73. doi: 10.1016/j.oceaneng.2019.04.048

DeGroot, D.J., Landon, M.E., and Poirier, S.E. (2019). Geology and engineering properties of sensitive Boston Blue Clay at Newbury, Massachusetts. *AIMS Geosciences. Special Issues: Characterization and Engineering Properties of Natural Soils used for Geotesting*. Vol. 5(3): 412-447. doi: 10.3934/geosci.2019.3.412.

Blaker, Ø., Carroll, R., Paniagua, P. DeGroot, D.J., and L'Heureux, J-S. (2019). Halden research site: geotechnical characterisation of a post glacial silt. *AIMS Geosciences. Special Issues: Characterization and Engineering Properties of Natural Soils used for Geotesting*. Vol. 5(2): 184-234. 184-234. doi: 10.3934/geosci.2019.2.184

DeGroot, D.J., Lunne, T., Ghanekar, R., Knudsen, S., Jones, C.D. Yetginer-Tjelta, T.I. (2019). "Engineering properties of low to medium overconsolidation ratio offshore clays. *AIMS Geosciences. Special Issues: Characterization and Engineering Properties of Natural Soils used for Geotesting*. Vol. 5(3): 535-567. doi: 10.3934/geosci.2019.3.535.

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#### **Invited, Keynote, State-of-the-Art, State-of-the-Practice Conference Papers**

##### ***With peer review of full paper, published in proceedings, and presented at the conference:***

DeGroot, D.J. (1996). "Analyzing Spatial Variability of In Situ Soil Properties." *Uncertainty in the Geologic Environment: From Theory to Practice*, American Society of Civil Engineers, Geotechnical Special Publication No. 58, Vol. 1, pp. 210-238.

DeGroot, D.J. (1999). "Laboratory Measurement of Undrained Shear Behaviour of Clays." *Proceedings of the International Conference on Offshore and Nearshore Geotechnical Engineering*, Panvel, India, pp. 133-140.

DeGroot, D.J. (2003). "Laboratory Measurement and Interpretation of Soft Clay Mechanical Behavior."



*Soil Behavior and Soft Ground Construction*, American Society of Civil Engineers, Geo-Institute Geotechnical Special Publication No. 119, pp. 167-200.

DeGroot, D.J. and Lutenegro, A.J. (2003). "Engineering Properties of Connecticut Valley Varved Clay." *Characterisation and Engineering Properties of Natural Soils*, Singapore, Balkema, Vol. 1., pp. 695-724.

DeGroot, D.J. (2005). "Laboratory Measurement of Foundation Soil Response of Embankments During Stage Construction." *Geomechanics: Testing, Modeling, and Simulation*, Geotechnical Special Publication No. 143, American Society of Civil Engineers, Geo-Institute. 12pp.

DeGroot, D.J. and Ladd, C.C. (2012). "Site characterization for cohesive soil deposits using combined in situ and laboratory testing." *Geotechnical Engineering State of the Art and Practice: Keynote Lectures from GeoCongress 2012*, Geotechnical Special Publication No. 226, K. Rollins and D. Zekkos, Eds., ASCE Geo-Institute, pp. 565-608.

***Published in proceedings and presented at the conference:***

DeGroot, D.J. and Santamarina, J.C. (2002). "Discussion Session 1.1 Assessment of deformation properties including time and rate effects." *Proceedings of the Fifteenth International Conference on Soil Mechanics and Geotechnical Engineering*, Vol. 4, pp. 2701-2702.

Ladd, C.C. and DeGroot, D.J. (2003). "Recommended Practice for Soft Ground Site Characterization." The Arthur Casagrande Lecture, *Proceedings of the 12<sup>th</sup> Panamerican Conference on Soil Mechanics and Geotechnical Engineering*, Boston, MA, Vol. 1, pp. 3-57.

DeGroot, D.J. and Sandven, R. (2004). "Session Report – Theme 9: Laboratory and Field Comparisons." *Proceedings of the 2<sup>nd</sup> International Conference on Site Characterization*, Porto, Portugal, Vol. 2, pp. 1775-1790.

DeGroot, D.J. and Ostendorf, D.W. (2010). "In situ and laboratory measurement of hydraulic conductivity for saturated soils." *Proc. 4<sup>th</sup> International Workshop: Soil Parameters from In Situ and Laboratory Tests*. Poznan, Poland, Sept 2010, pp. 335-351.

DeGroot, D.J., Lunne, T. and Tjelta, T.I. (2010). "Recommended best practice for geotechnical site characterisation of offshore cohesive sediments." Invited Keynote Paper. *Proceedings of the 2<sup>nd</sup> International Sym. on Frontiers in Offshore Geotechnics*. Perth, Western Australia, Nov. 2010, pp. 33-57.

DeGroot, D.J. (2014). "Evaluation of soft clay properties from interpretation of CPTU data within a SHANSEP framework." *Proc. 5<sup>th</sup> International Workshop: CPTU and DMT in Soft Clays and Organic Soils*. Poznan, Poland, Sept 2014, pp. 79-94.

**Conference Papers Published in Proceedings**

***With peer review of full paper and presented at the conference:***

Sheahan, T.C., Germaine, J.T., and DeGroot, D.J. (1993). "Laboratory Data Acquisition: A Practical Guide for System Selection." *Advances in Site Characterization: Data Acquisition, Management and Interpretation*, American Society of Civil Engineers, Geotechnical Special Publication No. 37, pp. 42-56.

Ostendorf, D.W., DeGroot, D.J., Meyer, M.M., and Pollock, S.J. (1997). "Evaporation Rates and Reaction

Kinetics of Petroleum Biosparging from Intact Core Sleeves." *Global Environmental Biotechnology*, D.L. Wise, Ed., Elsevier, pp. 621-641.

DeGroot, D.J. and Lutenegeger, A.J. (1998). "Reliability of Soil Gas Sampling and Characterization Techniques." *Proceedings of the First International Conference on Site Characterization*, Balkema, Vol. 1, pp. 629-634.

DeGroot, D.J., Knudsen, S., and Lunne, T. (1999). "Correlations Among  $p'_c$ ,  $s_u$ , and Index Properties of Offshore Clays." *Proceedings of the International Conference on Offshore and Nearshore Geotechnical Engineering*, Panvel, India, pp. 173-178.

DeGroot, D.J., Lutenegeger, A.J., and March, R.J. (2000). "Evaluation of Dispersion Characteristics of Bentonite with Application to Design of Contaminant Transport Barriers." *Proceedings of the 4<sup>th</sup> International Symposium on Environmental Geotechnology and Global Sustainable Development*, Boston, MA, pp. 1364-1373.

Mitchell, T.J., DeGroot, D.J., Lutenegeger, A.J., Ostendorf, D.W. (2003). "Direct Push Electrical Conductivity Detection of Groundwater Contamination from Deicing Salts." *Proceedings of the 12<sup>th</sup> Panamerican Conference on Soil Mechanics and Geotechnical Engineering*, Boston, MA, pp. 269-274.

DeGroot, D.J., Lunne, T., Sheahan, T.C., and Ryan, R.M. (2003). "Experience with Downhole Block Sampling in Soft Clays." *Proceedings of the 12<sup>th</sup> Panamerican Conference on Soil Mechanics and Geotechnical Engineering*, Boston, MA, pp. 521-526. [Poster Presentation].

DeJong, J.T., DeGroot, D.J., Yafrate, N.J., and Jakubowski, J.J. (2003). "Detection of Soil Layering Using a Miniature Piezo-Probe." *Proceedings of the 12<sup>th</sup> Panamerican Conference on Soil Mechanics and Geotechnical Engineering*, Boston, MA, pp. 151-156.

DeJong, J.T., Yafrate, N.J., DeGroot, D.J., and Jakubowski, J. (2004). "Evaluation of Undrained Shear Strength Profile in Soft Layered Clay Using Full-Flow Probes." *Proceedings of the 2<sup>nd</sup> International Conference on Site Characterization*, Porto, Portugal, Vol. 1, pp. 679-686.

Poirier, S.E., DeGroot, D.J., and Sheahan, T.C. (2005). "Measurement of Suction in a Marine Clay as an Indicator of Sample Disturbance." *Site Characterization and Modeling*, Geotechnical Special Publication No. 138, American Society of Civil Engineers Geo-Institute, Austin, TX. CD. 10pp.

DeGroot, D.J., Landon, M.M., and Ryan, R.M. (2007). "Objective Evaluation of Preconsolidation Stress for Soft Clays from Constant Rate of Strain Pore Pressure Data." *Advances in Measurement and Modeling of Soil Behavior*, Geotechnical Special Publication No. 173, American Society of Civil Engineers Geo-Institute, Denver, CO. CD, 10pp.

DeGroot, D.J., DeJong, J.T., Yafrate, N.J., Landon, M.M., and Sheahan, T.C. (2007). "Application of Recent Developments in Terrestrial Soft Sediment Characterization Methods to Offshore Environments.", *Proceedings of the Offshore Technology Conference*, Paper No. 18737, Houston, TX. CD, 12pp.

Morgan, E., McAdoo, B.G., Baise, L.G. and DeGroot, D.J. (2007). "Quantitative Seafloor Geomorphology and Offshore Geohazards." *Proceedings of Offshore Technology Conference*, Paper No. 18736, Houston, TX. CD, 12pp.

Yafate, N.J., DeJong, J.T., and DeGroot, D.J. (2007). "The Influence of Full-Flow Penetrometer Area Ratio on Undrained Strength Measurements." *Proceedings of the 6th International Conference on Offshore Site Investigations and Geotechnics*, London, UK. pp. 461-468.

Judge, A., DeGroot, D.J. and Ostendorf, D.W. (2008). "Development of a Slug Testing Apparatus for Measurement of Hydraulic Conductivity in Continuously Screened Monitoring Wells." *Proceedings of 3<sup>rd</sup> International Conference on Site Characterization*, Taipei, Taiwan, CD, 6pp.

DeGroot, D.J., Landon, M.M. and Lunne, T. (2008). "Synopsis of recommended practice for sampling and handling of soft clays to minimize sample disturbance." *Proceedings of 3<sup>rd</sup> International Conference on Site Characterization*, Taipei, Taiwan, CD, 6pp.

Landon, M.M. and DeGroot, D.J. (2008). "Small strain stiffness degradation of soft clays due to perfect sampling disturbance." *Proceedings of the 4<sup>th</sup> International Conference on Deformational Characteristics of Geomaterials*. Atlanta, Georgia, CD, 6pp.

LaRochelle, E.P., Schmalz, D.A., Sheahan, T.C., Landon, M.M. and DeGroot, D.J. (2008). "Development of a PC-based bender element system for shear wave measurements in soft soil." *Proceedings of the 4<sup>th</sup> International Conference on Deformational Characteristics of Geomaterials*. Atlanta, Georgia, CD, 6pp.

DeGroot, D.J., Lunne, T., Andersen, K. and Boscardin, A.G. (2012). "Laboratory measurement of the remoulded shear strength of clays with application to design of offshore infrastructure." *Proceedings of the 7th International Conference on Offshore Site Investigations and Geotechnics*, London, UK, pp. 355-366.

Nguyen, H.Q., Kelleher, P., DeGroot, D.J., Lunne, T., Senders, M. and Banimahd, M. (2013). "Offshore Site Characterization of Small Strain Shear Modulus Using a Seabed Based Drilling System." *Proceedings of Offshore Technology Conference*, Paper No. 24124-MS, Houston, TX., 14 pp.

Saleh, A.A., Gisler, E.P., Nguyen, H.Q., and DeGroot, D.J. (2014). "Site characterization of an offshore glacial-marine sediment by continuous Piezocone penetration testing and piston sampling." *International Conference on Cone Penetration Testing*, Las Vegas, NV. CD, 10 pp.

Nguyen, H.Q., DeGroot, D.J. and Lunne, T. (2014). "Small strain shear modulus of marine clays from net cone tip resistance: empirical relationships from recent field and laboratory measurements." *International Conference on Cone Penetration Testing*, Las Vegas, NV. CD, 10 pp.

Boscardin, A.G. and DeGroot, D.J. (2015). "Evaluation of a toroid for model pipeline testing of very soft offshore box core samples". *Proc. 3rd International Symposium on Frontiers in Offshore Geotechnics*, Oslo, Norway. June 2015. 6pp.

Nguyen, H., DeGroot, D.J., Meidani, M., Vanneste, M. and Lunne, T. (2015). "Measurement and interpretation of downhole seismic cone data for estimating shear wave velocity in deep-water environments". *Proc. 3rd International Symposium on Frontiers in Offshore Geotechnics*, Oslo, Norway. June 2015. 6pp.

Carswell W., Fontana C., Arwade S.R., DeGroot D.J., and Myers A.T. (2015). "Comparison of cyclic p-y methods for offshore wind turbine monopiles subjected to extreme storm loading." *Proc. 34th International Conference on Ocean, Offshore and Arctic Engineering*, St John's, Canada, June 2015. 8pp.

Krage, C.P., DeJong, J.T., DeGroot, D.J., Dyer, A.M., and Lukas, W.F. (2015). "Applicability of Clay-Based Sample Disturbance Criteria to Intermediate Soils", *Proc. 6<sup>th</sup> Int. Conf. on Earthquake Geotechnical Engineering*, Christchurch, New Zealand, Nov. 2015.

Fontana, C., Arwade, S.R., DeGroot, D.J., Myers, A.T., Landon, M., Aubeny, C., Hajjar, J.F. (2016). "Efficient multiline anchor systems for floating offshore wind turbines." *Proc. 35th International Conference on Ocean, Offshore and Arctic Engineering*, Busan, Korea, June 2016.

Krage, C.P., Albin, B.M., DeJong, J.T., and DeGroot, D.J. (2016). "The Influence of In-situ Effective Stress on Sample Quality for Intermediate Soils", *Proc. 5th International Conference on Site Characterization*, Brisbane, Australia, September 2016, 6 pp.

Hallowell, S.T., Arwade, S.R., Fontana, C.M., DeGroot, D.J., Diaz, B.D., Aubeny, C.P., and Landon, M.E. (2017). "Reliability of mooring lines and shared anchors of floating offshore wind turbines." *Proc. 27<sup>th</sup> International Ocean and Polar Engineering Conference*, San Francisco, CA, June 2017.

Fontana, C.M., Arwade, S.R., DeGroot, D.J., Hallowell, S.T., Aubeny, C.P., Landon, M.E., and Myers, A.T. (2017). "Multiline anchors for the OC4 semisubmersible floating system." *Proc. 27<sup>th</sup> International Ocean and Polar Engineering Conference*, San Francisco, CA, June 2017.

Lukas, W.G., DeGroot, D.J., DeJong, J.T., Krage, C.P. (2017). "Influence of tube sampling disturbance on small strain shear modulus and undrained shear behavior of synthetic intermediate soils." *19<sup>th</sup> International Conference on Soil Mechanics and Geotechnical Engineering*, Seoul, Korea, Sept 2017.

Fontana, C., Arwade, S., DeGroot, D.J., Hallowell, S., Landon, M., Aubeny, C., Diaz, B., Meyers, A., and Ozmutlu, S. (2019). "Force Dynamics and Station Keeping Costs for Multiline Anchor Systems with Different Spatial Parameters." *Proceedings of the ASME 2019 38<sup>th</sup> International Conference on Ocean, Offshore and Arctic Engineering*, Glasgow, Scotland. June 2019.

### **Conference Papers Published in Proceedings and/or Presented at Conference**

#### ***With peer review of abstract:***

Lutenegger, A.J. and DeGroot, D.J. (1994). "Development of a Curriculum in Environmental Geotechnics at the University of Massachusetts Amherst." *Proceedings of the 47th Canadian Geotechnical Conference*, Halifax, pp. 39-48.

DeGroot, D.J., Raymond, M.R., and Lutenegeger, A.J. (1995). "Development of a Windows Application for Estimating the Settlement of Shallow Foundations on Granular Soils." *Computer Applications in Foundation Engineering*, American Society of Civil Engineers Congress on Computing in Civil Engineering, Vol. 1, pp. 115-122.

DeGroot, D.J. and Finocchio, D.W. (1995). "Anisotropically Consolidated DSS Behavior of a Destructured Sensitive Clay." *Proceedings of the 48th Canadian Geotechnical Conference*, Vancouver, pp. 133-141.

Shelburne, W.M., Poirier, S.E., and DeGroot, D.J. (2000). "Hydrogeology of a Drumlin with Application to

Road Salt Contamination." *Proceedings of the 53th Canadian Geotechnical Conference*, Montreal, pp. 197-204.

Landon, M.M, DeGroot, D.J., and Jakubowski, J. (2004). "Comparison of Shear Wave Velocity Measured in Situ and on Block Samples of a Marine Clay." *Proceedings of the 57<sup>th</sup> Canadian Geotechnical Conference*, Quebec City, CD. 8pp.

Poirier, S.E., DeGroot, D.J., and Ostendorf, D.W. (2004). "Field Measurement of Hydraulic Conductivity of a Clayey Sand Drumlin." *Proceedings of the 57<sup>th</sup> Canadian Geotechnical Conference*, Quebec City, CD. 8 pp.

Ostendorf, D.W., DeGroot, D.J., Mitchell, T.J., and Hinlein, E.S. (2006). "Groundwater Dispersivity Induced by Stormwater Runoff." *Proceedings of American Society of Agricultural and Biological Engineers Annual Meeting*, Paper No. 062248. 12pp.

McAdoo, B.G., Baise, L.G., Morgan, E., and DeGroot, D.J., (2006). "Continental Slope Geomorphology and Offshore Geohazards." *Proceedings of the Workshop on Offshore Studies of the Andaman-Sumatran Earthquakes*, Hanover, Germany. CD.

Landon, M.M. and DeGroot, D.J. (2006). "Measurement of Small Strain Shear Modulus Anisotropy on Unconfined Clay Samples Using Bender Elements." *Proceedings GeoCongress'06: Geotechnical Engineering in the Information Technology Age*, American Society of Civil Engineers Geo-Institute, CD. 6pp.

Dunaj, P.J., DeGroot, D.J., and Ostendorf, D.W. (2006). "High Frequency Data Acquisition System for Field Measurement of Hydraulic Conductivity in a Sand Aquifer." *Proceedings GeoCongress'06: Geotechnical Engineering in the Information Technology Age*, American Society of Civil Engineers Geo-Institute, CD. 6pp.

Ostendorf, D.W., DeGroot, D.J., Judge, A., and Hinlein, E.S. (2008). "Cascade calibration of subsurface hydraulic and transport properties from multiscale groundwater monitoring networks." *Groundwater Monitoring Conference*, Feb. 2009, Anaheim, CA.

Ghanekar, R.K., DeGroot, D.J., and Lunne, T. (2010). "Intrinsic Properties' frameworks – comparative evaluation and their use in engineering practice." *Proc. 4<sup>th</sup> International Workshop on Soil Parameters from In Situ and Laboratory Tests*. Poznan, Poland, Sept 2010. pp. 363-378.

Carswell W, Arwade S.R., and DeGroot D.J. (2011). "Probability Analysis of Offshore Wind Turbine Soil-Structure Interaction." *2011 ASCE-EMI Engineering Mechanics Conference*, Boston

Boscardin, A.G. and DeGroot, D.J. (2011). "Measurement of Remolded Undrained Shear Strength of Soft Sediments using the Push Cone" *5th International Symposium on Submarine Mass Movements and Their Consequences*, Kyoto, Japan, Oct 2011.

Judge, A., Ostendorf, D.W., and DeGroot, D.J. (2011). "Using Pneumatics to Perform Laboratory Hydraulic Conductivity Tests on Gravel with Underdamped Responses" *2011 American Geophysical Union Fall Meeting*, Dec 2011, San Francisco, CA.

Carswell, W., Arwade, S. R., DeGroot, D. J., and Lackner, M. L. (2012). "Soil-Structure Interaction and the Reliability of Monopile Offshore Wind Turbine Support Structures." *ASCE Engineering Mechanics Conference*. South Bend, IN. June 2012.

Carswell, W., Arwade, S. R., DeGroot, D. J., & Lackner, M. L. (2012). "Probabilistic Analysis of Offshore Wind Turbine Soil-Structure Interaction." *North American Wind Energy Academy*. Amherst, MA. Aug 2012.

Lukas, W.G., DeGroot, D.J. and Ostendorf, D.W. (2013). "Modeling Recovery in a Fractured Bedrock Aquifer Overlain by a Leaky Aquitard". *Annual Meeting of the Geological Society of America, Northeast Section*, Bretton Woods, NH, March 2013.

Judge, A., DeGroot, D.J., and Ostendorf, D.W. (2013). "Hydraulic Conductivity of Gravel Samples using a Modified Permeameter." *Annual Meeting of the Geological Society of America, Northeast Section*, Bretton Woods, NH, March 2013.

Nguyen, H.Q and DeGroot, D.J. (2013). "Challenges in Geotechnical Site Characterization of Offshore Glacial-Marine Sediments." *Society for Underwater Technology*, Houston, TX, Sept 2013.

DeGroot, D.J., Kral, P.A., Carey, L.C., LaMasa, D.F., and Ostendorf, D.W. (2014). "In situ and laboratory measurement of the hydraulic conductivity of a glaciolacustrine silty aquitard in eastern Massachusetts." *NEWWA 2014 Annual Conference and Exhibition*, Worcester, MA, April 2014.

Arwade, S.R., Carswell, W., Johansson, J., Lovholt, F., and DeGroot, D.J. (2014). "The role of soil damping in the structural response of offshore wind turbine monopile support structures". *2014 Structures Congress*, American Society of Civil Engineers, Boston, MA. April 2014.

Carswell, W., Johansson, J., Lovhold, F., Arwade, S.R., and DeGroot, D.J. (2014). "Dynamic Mudline Damping for Offshore Wind Turbine Monopiles". *33rd International Conference on Ocean, Offshore and Arctic Engineering*, San Francisco, CA. June 2014.

Carswell, W., Arwade, S.R., and DeGroot, D.J. (2014). "Behavior of Laterally-Loaded Offshore Wind Turbine Monopiles under Storm Loading Conditions". *ASCE Engineering Mechanics Institute Conference*, Hamilton, Ontario. August 2014.

Fontana C., Carswell W., Arwade S.R., DeGroot D.J. (2015). "The Role of Damping in Offshore Wind Turbine Dynamics." *North American Wind Energy Academy Conference*, Blacksburg, VA, June 2015.

Fontana, C., Arwade, S.R., DeGroot, D.J., Aubeny, C.A., Landon, M. (2016). "Anchor sharing and structural dynamics for floating offshore wind turbines." *ASCE Engineering Mechanics Institute Conference*, Vanderbilt University, May 2016.

Judge, P., DeGroot, D.J., Zhang, G., Lin, S. (2016). "Development of a Flume for the Evaluation of Coastal Mudflat Sediment Erodibility." *State of the Coast Conference*, New Orleans, LA, June 2016.

Diaz, B.D., Rasulo, M., Aubeny, C.P., Fontana, C.M., Arwade, S.R., DeGroot, D.J., and Landon, M.E. (2016). "Multiline anchors for floating offshore wind towers." *Proceedings of Oceans '16*, Monterey, CA, Sept 2016.

Fontana, C.M., Arwade, S.R., Hallowell, S.T., DeGroot, D.J., Myers, A.T., Landon, M.E., Aubeny, C.P., and Ozmutlu, S. (2017). "Spatial wave correlation in multiline anchor systems for floating offshore wind turbines." *12<sup>th</sup> Int. Conf. on Structural Safety & Reliability*, Vienna, Austria, August 2017.

Hallowell, S.T., Fontana, C.M., Arwade, S.R., DeGroot, D.J., Aubeny, C.P., Landon, M.E., Ozmutlu, S. (2017). "System reliability analysis of multiline floating offshore wind farms." *ASCE Engineering Mechanics Institute Conference*, San Diego, CA, June 2017.

Fontana, C.M., Hallowell, S.T., Arwade, S.R., DeGroot, D.J., Aubeny, C.P., Landon, M.E., and Ozmutlu, S. (2017). "Multiline anchor forces for offshore wind: structural dynamics, directionality and cyclic effects" *ASCE Engineering Mechanics Institute Conference*, San Diego, CA, June 2017.

Luo, N., Arwade, S.R., and DeGroot, D.J. (2018). "Geospatial statistical modeling in offshore geotechnical site investigation." *ASCE Engineering Mechanics Conference*, Cambridge, MA. June 2018.

Hallowell, S.T., Arwade, S.R., Diaz, B.M., Aubeny, C.P., and DeGroot, D.J. (2018). "Optimizing Robustness in Multiline Anchorage Systems for Floating Offshore Wind Turbines." *ASCE Engineering Mechanics Conference*, Cambridge, MA. June 2018.

Arwade, S., and DeGroot, D.J. (2019). "Offshore geotechnics for wind energy: Spatial variability and modeling" *Offshore Wind International Partnering Forum*, New York, NY. April 2019.

### **Design Manuals and Selected Research Reports**

DeGroot, D.J., Ladd, C.C., and Germaine, J.T. (1992), "Direct Simple Shear Testing of Cohesive Soils." Research Report R92-18, Center for Scientific Excellence in Offshore Engineering, Department of Civil Engineering, MIT, Cambridge, MA, 153pp.

Ladd, C.C. and DeGroot, D.J. (1992). "Guidelines for Geotechnical Experimental Program for Foundation Design of Offshore Arctic Gravity Structures." Research Report R92-33, Center for Scientific Excellence in Offshore Engineering, MIT, Cambridge, MA, 435pp.

Lutenegger, A.J., DeGroot, D.J., Mirza, C., and Bozozuk, M. (1995). "Sealing Geotechnical Exploratory Holes to Protect the Subsurface Environment." Final Report, NCHRP Project HR21-4, National Cooperative Highway Research Program, National Research Council, 515pp.

DeGroot, D.J., Shelburne, W.M., and Switzenbaum, M.S. (1995). "Use of Waste and Recycled Materials in Highway Construction." Research Report UMTC-95-1, University of Massachusetts Transportation Center, Amherst, MA. 208pp.

Lutenegger, A.J. and DeGroot, D.J. (1995). "Settlement of Shallow Foundations on Granular Soils." Final Report, University of Massachusetts Transportation Center, Amherst, MA, 442pp.

DeGroot, D.J. and Mitchell, T.J. (1996). "Low Stress Direct Simple Shear Testing of Shallow Marine Sediments." Research Report NRL96-448F, Department of Civil and Environmental Engineering, University of Massachusetts, Amherst, MA, 100pp.

Danziger, F.A.B., DeGroot, D.J., and Lunne, T. (1998). "The Development of Semi-Empirical Design Procedures for Foundations: Triple Element Piezocone and Axial Capacity of Piles." Final Report No. 521551-18, Norwegian Geotechnical Institute, Oslo, Norway.

DeGroot, D.J. and Lunne, T. (2002). "Assessment of Soil Design Parameters from Index Measurements in Clays." Summary Report/Manual, Norwegian Geotechnical Institute, Oslo, Norway

### **Articles**

DeGroot, D.J., Lutenegeger, A.J., and Mirza, C. (1991). "Sealing Geotechnical Exploratory Holes to Protect the Subsurface Environment." *Geotechnical News*, Vol. 9, No. 3, pp. 40-42.

DeGroot, D.J. and Lutenegeger, A.J. (2009). "Geology and engineering behavior of Connecticut Valley Varved Clay." *Geo-Strata*, Vol. 13, No. 4, August/July, pp. 16-19.

Krage, C., DeJong, J.T., DeGroot, D.J. (2015). "Evaluation of Sample Disturbance in Intermediate Soils." *United States Society on Dams Newsletter*, November 2015.

## **H. SHORT COURSES/WORKSHOPS CONDUCTED**

*Encouraging the Use of Waste and Recycled Materials in Highway Construction*, University of Massachusetts Transportation Research Center, Bolton, Shrewsbury, Amherst, Foxboro, Falmouth, and Saugus, MA, May and June 1995.

*Hazardous Waste Site Engineering*, The Environmental Technology Program Consortium, Fort Devans, MA, January 1995; US Army Corps of Engineers Office, Waltham, MA, January 1996.

*Use of Compost and Recycled Content Products in Highway Construction*, University of Massachusetts Transportation Research Center, Amherst, North Easton, and Southborough, MA, May and June 1996.

*Estimation of Design Parameters for Soils and Rocks from Laboratory and In Situ Tests*, Asian Institute of Technology, Bangkok, Thailand, June 1996.

*Environmental Drilling and Sampling Techniques for Geotechnical Engineers*, First International Conference on Site Characterization ISC'98, Atlanta, Georgia, April 1998 and UMass Amherst, April 2000 (with A.J. Lutenegeger).

*Geotechnical Test Drilling Inspection*, Amherst, MA June 2000 & June 2001; Baltimore, MD Aug 2002 (with A.J. Lutenegeger).

*In Situ Testing for Geotechnical Engineers*, Holliston, MA, June 2001 (with A.J. Lutenegeger).

*Laboratory Testing of Soils and Rock*, Worcester, MA, January 2002 and April 2002 (with A.J. Lutenegeger).

*Cone Penetration in Geotechnical and Environmental Practice*, Argonne National Laboratory, Chicago, IL, August 2007 (with Tom Lunne).



*Site Investigations: Laboratory and In Situ Testing*, Griffith University, Gold Coast Campus, Australia, July 2007 (with Tom Lunne).

*Seabed Sediment Pore Pressure: Genesis, Measurement and Implications for Design/Analysis*. US National Science Foundation International Workshop, Oslo, Norway, March 2009.

*Geotechnical Engineering Site Investigations: In Situ Testing, Soil Sampling and Laboratory Testing*. Queen's University, Kingston Ontario, December 2009.

*Offshore Geohazards and Coastal Risk Assessment: Characterization, Uncertainties, Resiliency, and Preparedness*. US National Science Foundation International Workshop, Boston, MA, September 2011.

*Geotechnical Site Characterization*. American Society of Civil Engineers Geo-Institute, San-Diego, CA, March 2013 (with Jason T. DeJong).

*Geotechnical Site Characterization: Integrated In Situ Testing, Drilling & Sampling, & Laboratory Testing*. American Society of Civil Engineers Geo-Institute, Atlanta, GA, February 2014 (with Jason T. DeJong).

*Sustainable Adaptive Gradients in the Coastal Environment*. Brooklyn, NY, May 2014 (with E. Hamin, T. Sheahan and M. Kenney)

*Sustainable Adaptive Gradients in the Coastal Environment*. Discovery Bay, Jamaica, June 2015 (with E. Hamin, T. Sheahan and M. Kenney)

*Integrated Site Characterization and Selection of Design Parameters*. UC Davis, Davis, CA, Oct 2015 (with J.D. DeJong).

*Geotechnical Engineering for US Offshore Wind Infrastructure*. UMass Boston Club, Boston, MA, April 2016 (with S.R. Arwade and Norwegian Geotechnical Institute).

*Sustainable Adaptive Gradients in the Coastal Environment*. Bridgetown, Barbados, June 2017 (with E. Hamin, T. Sheahan and M. Kenney).

*Sustainable Adaptive Gradients in the Coastal Environment*. Baltimore, Maryland, June 2018 (with E. Hamin, T. Sheahan and M. Kenney).

*Geotechnical Site Characterization for Soft Clays: Integrated In Situ Testing, Drilling & Sampling, and Laboratory Testing*. Hanoi, Vietnam. October 2018.

*Sustainable Adaptive Gradients in the Coastal Environment*. Boston, MA, June 2019 (with E. Hamin, T. Sheahan and M. Kenney).

## **I. INVITED SEMINARS/PRESENTATIONS**

"Foundation Design of Offshore Arctic Gravity Structures." University of New Hampshire, Durham, NH, April 1991.

"Analyzing Foundation Soil Response of Offshore Arctic Structures." Rensselaer Polytechnic Institute, Troy, NY, November 1991.

"Measurement of In Situ Hydraulic Conductivity Using Push-in Piezometers." University of Connecticut, Storrs, CT, December 1991.

"Foundation Soil Response of Embankments During Stage Construction." 33rd Annual Conference of the Northeastern States Geotechnical Engineers, Federal Highway Administration, Amherst, MA, September 1992.

"Evaluation of Push-in Piezometers as an Alternative Technology for Monitoring Well Construction." Cornell University, Ithaca, NY, March 1992.

"Effect of Placement on the Performance of Geotechnical Exploratory Borehole Sealants." Syracuse University, NY, March 1993.

"Effectiveness of Bentonite as a Sealant for Geotechnical Exploratory Boreholes." Texas A&M University, TX, April 1993.

"Sealing Geotechnical Exploratory Boreholes." Saskatchewan Research Council and University of Saskatchewan, Saskatoon, Saskatchewan, May 1993.

"Sealing Geotechnical Exploratory Boreholes to Protect the Subsurface Environment." Boston Society of Civil Engineers, Boston, MA, November 1993.

"Investigating Environmental Effects of Highway Deicers." Northeastern University, Boston, MA, February 1995.

"Use of Waste and Recycled Materials in Highway Construction." New England Environmental Expo, Boston, MA, May 1995.

"Determining In Situ Oxygen Profiles." Georgia Institute of Technology, Atlanta, GA, June 1995.

"Use of Waste and Recycled Materials in Massachusetts Highway Construction." Recycling Market Development Steering Committee Meeting, Concord, NH, November 1995.

"Sealing Geotechnical Exploratory Boreholes." Chinese Institute of Civil and Hydraulic Engineers, National Taiwan University, Taipei, Taiwan, June 1996.

"In Situ Soil Gas Measurements at Hydrocarbon Contaminated Sites." Norwegian Geotechnical Institute, Oslo, Norway, March 1997.

"Sealing Exploratory Geotechnical Boreholes to Protect the Subsurface Environment." Norwegian Geotechnical Institute, Oslo, Norway, May 1997.

"Comparison of Recompression and SHANSEP Design Procedures." Norwegian Geotechnical Institute, Oslo, Norway, June 1997.

"Comparison of Recompression and SHANSEP Design Procedures." Norwegian University of Science and Technology, Trondheim, Norway, June 1997.

"Comparison of Recompression and SHANSEP Design Procedures." Building Research Establishment, Watford, United Kingdom, July 1997.

"Soil Engineering Design Parameters from Index Test Results." Norwegian Geotechnical Institute, Oslo, Norway, January 1998.

"Settlement of Shallow Foundations on Granular Soils." Massachusetts Highway Department Research Showcase, Boston, MA, May 1998.

"Laboratory Determination of Undrained Shear Strength of Clays." STS Consultants, Inc., Chicago, IL, June 1998.

"Recycled Materials/Settlement of Shallow Foundations on Granular Soils." Peer Review Research Presentation, UMass Transportation Center, Amherst, MA, February 1999.

"Laboratory Measurement of Undrained Shear Behavior of Clays." University of Oklahoma, Norman, OK, August 2000.

"Hydrogeology of a Drumlin with Application to Road Salt Contaminant Transport." Association of Engineering Geologists Meeting, November 2000.

"Laboratory Testing of Soft Clays." Institute of Engineering and Ocean Technology, Mumbai, India, December 2001.

"Laboratory Testing of Clays." Annual Meeting of the Baltic Geotechnical Society, Riga, Latvia, March 2002.

"Evaluation of Sample Disturbance: North American Clays." 1<sup>st</sup> International Workshop on Sample Disturbance in Clays, University College Dublin, Dublin, Ireland, November 2003.

"Engineering Properties of Connecticut Valley Varved Clay." Workshop on Characterization of Natural Soils, Quebec City, Quebec, Canada, October 2004.

"Sample Disturbance – Soft Clays." International Workshop on Interpretation of In Situ Tests and Sample Disturbance of Clay, August Cieszkowski Agricultural University of Poznań, Poznań, Poland, May 2004.

"Characterization by Sampling and In Situ Testing – Connecticut Valley Varved Clay." International Workshop on Interpretation of In Situ Tests and Sample Disturbance of Clay, August Cieszkowski Agricultural University of Poznań, Poznań, Poland, May 2004.

"Recommended Practice for Soft Ground Site Characterization." Norwegian Geotechnical Institute, Oslo, Norway, March 2004.

DeGroot, D.J. (presenter), Sheahan, T.C., Poirier, S.E., and Landon, M.M. "Field Measurement of Shear Wave Velocity and Suction as Indicator of Sample Quality." 2nd International Workshop on Sample Disturbance, Oslo, Norway, January 2005.

Sheahan, T.C. (presenter) and DeGroot, D.J. "Using a Soil Structure Number to Assess Susceptibility of Clays to Sample Disturbance." 2nd International Workshop on Sample Disturbance, Oslo, Norway, January 2005.

"Recommended Practice for Soft Ground Site Characterization." University of Western Australia/Centre for Offshore Foundation Systems, Perth, Australia, July 2005.

"Recommended Laboratory and In Situ Testing Procedures for Characterization of Soft Clays." National University of Singapore, Singapore, August 2005.

DeGroot, D.J. (presenter), Lunne, T., and Tjelta, T.I. "Correlations Among Index Test Data and Design Parameters for Offshore Clays." University of Western Australia/Centre for Offshore Foundation Systems, Perth, Australia, August 2005.

"Recommended Laboratory and In Situ Testing Procedures for Characterization of Soft Clays." Advanced Geomechanics Group, Perth, Australia, August 2005.

"Causes, Effects and Mitigation of Sample Disturbance in Soft Clays." University of Texas Austin, Austin, TX, October 2005.

"Recommended In-Situ and Laboratory Practice for Soft Ground Site Characterization." American Society of Civil Engineers Seattle Section, Soft Ground Engineering Seminar, May 2006.

"Laboratory Testing of Undisturbed Soft Clay Samples to Determine Engineering Design Parameters." 3rd International Workshop on Interpretation of In Situ and Laboratory Tests, August Cieszkowski Agricultural University of Poznań, Poland, September 2006.

"Evaluation of Sample Quality using Shear Wave Velocity." International Workshop on New Aspects of Soil Characterization and Related Topics. Norwegian Geotechnical Institute, Oslo, Norway, March 2007.

"Geotechnical Engineering on a Grand Scale: The Offshore Frontier." Annual Meeting of the Vermont Section of the American Society of Civil Engineers, Montpelier, VT, May 2007.

"Causes, Effects and Mitigation of Sample Disturbance in Soft Clays." Queen's University, Kingston, Ontario, Canada, October 2007.

"Development and Implementation of Early Detection Systems for Ground Movements." 48<sup>th</sup> Annual Conference of the Northeastern States Geotechnical Engineers, Federal Highway Administration, Boston, MA, October 2007.

"Engineering on a Grand Scale: The Offshore Frontier." The University of Massachusetts Amherst Retired Faculty Association, UMass Amherst, April 2008.

DeGroot, D.J. (presenter) and Lunne, T. "Special Session Report: Soil sampling and sample disturbance."

*3<sup>rd</sup> International Conference on Site Characterization*, Taipei, Taiwan, April 2008.

"The advantages and developments of in-situ investigations for soft soils." A.P. van den Berg Symposium, Heerenveen, Netherlands, September 2008.

"Geotechnical Engineering on a Grand Scale: The Offshore Frontier." Queen's University, Kingston, Ontario, Canada, October 2010.

"Geotechnical Site Characterization: Cohesive Offshore Sediments." Landslide Tsunami Probability Workshop, Nuclear Regulatory Commission and US Geological Survey, Woods Hole, MA, August 2011.

"Recommended Site Investigation Practice for Offshore Energy Systems." Deep Foundation Institute and Connecticut Society of Civil Engineers 14th Annual Geotechnical Seminar: Geotechnical Issues in Energy Projects, Berlin, CT, Sept 2011.

"Evaluation of sample quality by shear wave velocity and suction measurements." International Soft Clay Workshop. Norwegian Geotechnical Institute, Oslo, Norway, Jan 2012.

"Site Characterization for Cohesive Soil Deposits Using Combined In Situ and Laboratory Testing." Department of Civil and Environmental Engineering, Queens University, Kingston, Ontario. Feb 2012.

"Civil Engineering on a Grand Scale: The Offshore Frontier." Department of Civil and Environmental Engineering, University of Arkansas. Fayetteville, AK, May 2012

"State of the Practice: Site characterization for cohesive soil deposits using combined in situ and laboratory testing." Vancouver Geotechnical Society. Vancouver, British Columbia, June 2012.

"Civil Engineering on a Grand Scale: The Offshore Frontier." Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, LA, November 2012.

"Site Characterization for Cohesive Soil Deposits Using Combined In Situ and Laboratory Testing." Dept. Civil and Environmental Engineering, University of Michigan, Ann Arbor, MI, November 2012.

"Geotechnical Engineering Site Investigation Practice for Design of Offshore Energy Systems." Geosyntec Conference, Boston, MA, April 2013.

"Recommended Best Practice Procedures for Characterization of Soft Cohesive Soils." GZA Lecture, NY Metropolitan Section of Geo-Institute/ASCE, New York City, NY, March 2013.

"Geotechnical engineering site investigation practice for design of offshore energy systems." University of California Davis, Davis, CA, Oct 2013.

"Geotechnical engineering site investigation practice for design of offshore energy systems." Boston Society of Civil Engineers, Geo-Institute, Boston, MA, April 2014.

"Prediction of soil stiffness from CPT." *3rd International Symposium on Cone Penetration Testing*, Las Vegas, Nevada. May 2014.

"Sample quality evaluation intermediate soils (silts)." Workshop on offshore related laboratory and model testing. Norwegian Geotechnical Institute, Oslo, Norway, June 2015.

"Integrated geotechnical engineering site investigation practice for offshore wind farm development." Wind Energy Research Workshop, UMass Lowell, Lowell, MA, March 2016.

"Integrated geotechnical engineering site investigation practice – The Dogger Bank Project." Geotechnical Engineering for US Offshore Wind Infrastructure Workshop, Boston, MA, April 2016.

"Integrated marine geotechnical and geological engineering site investigation practice for offshore wind farm development." *1<sup>st</sup> International Symposium on Marine Engineering Geology*, Qingdao, China, Oct 2016.

"Integrated marine geotechnical and geological engineering site investigation practice for offshore wind farm development." Department of Civil and Environmental Engineering, Queens University, Kingston, Ontario. Nov. 2016.

"Research at USA National Geotechnical Experimental Sites (NGES)." First Norwegian GeoTest Sites Workshop. Oslo, Norway, Nov 2016.

"Geotechnical characteristics and engineering behavior of Connecticut Valley Varved Clay." Connecticut Society of Civil Engineers Spring Geotechnical Workshop, University of New Haven, West Haven, CT, April 2017.

"Measurement of sample quality based on suction and shear wave velocity." Seminar on Characterization of Clays, NTNU, Trondheim, Norway, June 2018.

"Integrated marine geotechnical and geological engineering site investigation practice for offshore wind farm development." UC Davis, Davis, CA. April 2019

## **J. PROFESSIONAL EDITORIAL ACTIVITIES**

### **Journal Editorial Board**

*Journal of Geotechnical and Geoenvironmental Engineering*

American Society of Civil Engineers, 1994 – 2000

*Geotechnical Testing Journal*

American Society for Testing and Materials, 2001 – 2006

### **Editor**

Lutenegger, A.J. and DeGroot, D.J. (2000). *Performance Confirmation of Constructed Geotechnical Facilities*. Geotechnical Special Publication No. 94, American Society of Civil Engineers, NY, 569 pp.

DeGroot, D.J., DeJong, J.T., Frost, J.D., and Baise, L.G. (2006). *Geotechnical Engineering in the Information Technology Age*. Proceedings of GeoCongress 2006, American Society of Civil Engineers Geo-Institute, CD-ROM, 285 papers.

DeGroot, D.J., Vipulanandan, C., Yamamuro, J.A., Kaliakin, V.N., Lade, P.V., Zeghal, M., El Shamy, U., Lu, N., and Song, C.R., (2007). *Advances in Measurement and Modeling of Soil Behavior*. Geotechnical Special Publication No. 173, American Society of Civil Engineers Geo-Institute, CD-ROM, 38 papers.

Lunne T. and DeGroot, D.J. (2012). Guest Editors. *Journal of the South East Asia Geotechnical Society*, Special Issue on Site Characterization by In Situ and Laboratory Testing, Dec 2012 Issue.

### **Associate Editor**

*Vertical and Horizontal Deformations of Foundations and Embankments*. Geotechnical Special Publication No. 40, American Society of Civil Engineers, 1994.

*Proceedings of the Fourth International Conference on Environmental Geotechnology and Global Sustainable Development*, Boston, MA, 2000.

*Geotechnical Engineering for Transportation Projects*. Geotechnical Special Publication No. 126, American Society of Civil Engineers, 2004.

*Proceedings of the 2<sup>nd</sup> International Conference on Site Characterization*. International Society for Soil Mechanics and Geotechnical Engineering, Porto, Portugal, 2004.

## **K. CONFERENCE ORGANIZING COMMITTEES**

*Northeast US States Geotechnical Engineering Graduate Research Symposium*, Amherst, MA, June 1991, October 2002, November 2004, October 2007.

*Northeast Recycling Council Symposium*, Sturbridge, MA, December 1995.

*Fourth International Conference on Environmental Geotechnology and Global Sustainable Development*, Boston, MA, August 1998.

*Fifth International Conference on Environmental Geotechnology and Global Sustainable Development*, Belo Horizonte, Brazil, August 2000.

*12<sup>th</sup> Panamerican Conference on Soil Mechanics and Geotechnical Engineering*, American Society of Civil Engineers, Geo-Institute, June 2003, Boston, MA, USA.

*Geo-Congress 06 – Geotechnical Engineering in the Information Technology Age*. Chair of Technical Organizing Committee, American Society of Civil Engineers, Geo-Institute, Atlanta, Georgia, February 2006.

*3rd International Symposium on Frontiers in Offshore Geotechnics*, International Advisory Committee. Oslo, Norway, June 2015.

*First Vietnam Symposium on Advances in Offshore Engineering*. International Scientific Advisory Committee. Hanoi, Vietnam, November 2018.

*First International Symposium on GeoTest Sites (ISGTS)*. Organizing Committee. Oslo, Norway, June 2019.

*North American Wind Energy Academy Symposium and the International Conference on Future Technologies in Wind Energy*. U.S. Scientific Organizing Committee Member. Amherst, MA Oct 2019

*4rd International Symposium on Frontiers in Offshore Geotechnics*, Organizing Committee. Austin, Texas, 2020.



## L. SPONSORED RESEARCH GRANTS

"Servo Control System for a New Soil Testing Apparatus." University of Massachusetts Healy Endowment Grant, PI, August 1990 - June 1991, \$5,000.

"Development of a Sedimentation Apparatus for Preparation of Soil Specimens." University of Massachusetts Faculty Retention Fund, PI, June 1990 - December 1991, \$1,625.

"Consortium Cooperative Research on Arctic Offshore Engineering and Construction." Center for Scientific Excellence in Offshore Engineering, Massachusetts Institute of Technology, Research Affiliate, July 1990 - June 1993.

"Foundation Soil Response of Embankments During Stage Construction." National Science Foundation, Research Initiation Award, PI, September 1991 - August 1994, \$59,981.

"Sealing Geotechnical Exploratory Holes to Protect the Subsurface Environment." National Cooperative Highway Research Program, Co-PI (with PI, A.J. Lutenegeger), May 1991 - July 1993, \$183,000.

"Experimental Evaluation of Normalized Behavior of Sedimentary Clays." National Science Foundation, Research Experiences for Undergraduates, PI, June 1993 - August 1993, \$10,000.

"Field Investigation of CMA Degradation in the Unsaturated Zone." Massachusetts Highway Department, Co-PI (with PI, D.W. Ostendorf and Co-PI, A.J. Lutenegeger), March 1993 - June 1996, \$449,895.

"Initial Settlement of Shallow Foundations on Granular Soils." Massachusetts Highway Department, Co-PI (with PI, A.J. Lutenegeger), March 1993 - June 1994, \$80,887.

"Leaking Storage Tank Site Assessment." Massachusetts Highway Department, Co-PI (with PI, D.W. Ostendorf and Co-PI, A.J. Lutenegeger), March 1993 - June 1994, \$149,403.

"Structural Numbers for Reclaimed Base Course Mix." Massachusetts Highway Department, Co-PI (with PI, W.H. Highter and Co-PI, W.S. Mogawer), October 1994 - December 1995, \$92,390.

"Hazardous Waste Site Remediation-Fellowships and Training." Department of Defense, Instructor (Dr. D.W. Ostendorf was the Principal Investigator), November 1994 - September 1997, \$2,933,600.

"Low Stress Direct Simple Shear Testing of Shallow Marine Sediments." Naval Research Laboratories, PI, January 1995 - September 1995, \$5,132.

"Use of Recycled Materials and Recycled Products in Highway Construction." Massachusetts Highway Department, PI (with Co-PI, M.S. Switzenbaum), February 1995 - June 1995, \$50,000.

"Salt/Premix Storage Practices and Groundwater Quality." Massachusetts Highway Department, Co-PI (with PI, D.W. Ostendorf and Co-PI, S.B. Mabee), July 1996 - June 2001, \$2,825,977.

"Use of Recycled Materials and Recycled Products in Highway Construction." Massachusetts Highway Department, PI (with Co-PI, M.S. Switzenbaum), March 1996 - June 1996, \$60,000.

"A New Experimental Approach Toward a Unified Theory of Time-Dependent Consolidation." National

Science Foundation, PI (with Co-PI, T.S. Sheahan), June 1998 - July 2000, \$141,716.

"Salt/Premix Storage Practices and Groundwater Quality – Amendment to ISA 7721." Massachusetts Highway Department, Co-PI (with PI, D.W. Ostendorf and Co-PI, A.J. Lutenegeger), May 2001 to June 2003, \$1,070,850.

"Collaborative Research: International Development of New Tools for Evaluating and Remediating Sample Disturbance." PI, National Science Foundation, Sept 2002 – August 2006, \$191,763.

"Highway Deicing Agent Impacts on Soil and Groundwater Quality." Massachusetts Highway Department, Co-PI (with PI, D.W. Ostendorf and Co-PI, A.J. Lutenegeger), July 2003 – June 2005, \$1,507,280.

"Highway Deicing Agent Impacts on Soil and Groundwater Quality (supplement)." Massachusetts Highway Department, Co-PI (with PI, D.W. Ostendorf and Co-PIs, A.J. Lutenegeger and C. Demoranville), March 2004 – June 2005, \$419,239.

"Development and Validation of a MassHighway Geotechnical Engineering In Situ Testing System." Massachusetts Highway Department, PI (with Co-PI, A.J. Lutenegeger), April 2005 – March 2007, \$165,906.

"Development and Implementation of Early Detection Systems for Ground Movements." Vermont Agency of Transportation, PI (with Co-PI, A.J. Lutenegeger), March 2005 – August 2006, \$104,953.

"Salt Remediation Program." Massachusetts Highway Department, Co-PI (with PI, D.W. Ostendorf, and Co-PIs, E.S. Hinlein and C.J. DeMoranville), April 2005 – June 2008, \$4,939,418.

"Developing International Protocols for Offshore Sediments and their Role in Geohazards: Characterization, Assessment, and Mitigation." National Science Foundation Partnerships for International Research and Education Program, PI (with Co-PIs, J.T. DeJong, L.G. Baise, T.C. Sheahan, and B.G. McAdoo), September 2005 – August 2010, \$2,341,579.

"Highway Deicing Agent Remediation Program." MA Executive Office of Transportation, Co-PI (with PI, D.W. Ostendorf). July 2008 – June 2012, \$4,844,226.

"IGERT: Offshore Wind Energy Engineering, Environmental Science, and Policy." National Science Foundation, Senior Personnel, Executive Committee (with PI, E. Baker), Aug 2011 – July 2016, \$3,200,000.

"Salt Remediation Program Support Interagency Service Agreement." MA Executive Office of Transportation, Co-PI (with PI, D.W. Ostendorf and Co-PI, E. Hinlein), July 2012 – June 2015, \$4,100,000.

"RCN-SEES: Sustainable Adaptive Gradients in the Coastal Environment (SAGE): Reconceptualizing the Role of Infrastructure in Resilience." National Science Foundation, Co-PI (with PI, E. Hamin), January 2014 – December 31, 2018. \$736,707.

"Collaborative Research: Sampling and Sample Quality Assessment of Intermediate Soils." US National Science Foundation, PI (with Co-PI, G. Zhang) and UC Davis (PI, J. DeJong), August 2014 – July 2019, \$630,000 (UMass Amherst, \$330,000).

"Salt Remediation Program Support Interagency Service Agreement." MA Department of Transportation, Co-PI (with PI, E. Hinlein, and Co-PI, D.W. Ostendorf), July 2015 – June 2019, \$4,501,094.

"Collaborative Research: GOALI: Efficient Multiline Mooring Systems for Floating Wind Turbines." US National Science Foundation. Co-PI (with PI, S. Arwade), TA&M (PI, C.P. Aubeny) and UMaine (PI, M.M. Landon), July 2015 – June 2019, \$497,341 (UMass Amherst, \$251,834).

"Development of National Offshore Wind Research Agenda Report." MA Clean Energy Center, Co-PI (with PI, J. Manwell, and Co-PIs, E. Baker, M. Lackner, S.R. Arwade). Jan 2017 – May 2018, \$72,887.

"Novel Mooring Systems for Offshore Energy Generation Systems." MA Clean Energy Center. Co-PI (with PI, S. Arwade), Sept 2016 – June 2019, \$51,000.

"Geospatial Statistical Modeling for Efficiency and Economy in Site Investigations." MA Clean Energy Center. Co-PI (with PI, S. Arwade), Sept 2017 – August 2020, \$198,020.

"Collaborative Research: Multiscale Investigation of Thixotropy in Soft Clays." US National Science Foundation. Co-PI (with PI, G. Zhang), Drexel (PI, K. Sjoblom), Sept 2016 – Sept 2019, \$548,991 (UMass share \$348,991).

#### **Current International Research Collaborators - Institutions**

Norwegian Geotechnical Institute, Oslo, Norway  
University of Western Australia, Perth, Australia

## M. GRADUATE AND UNDERGRADUATE STUDENTS SUPERVISED

### Doctor of Philosophy

Student	Thesis Topic	Graduation
Wayne M. Shelburne	The Hydrogeologic Properties of a Drumlin Till with Relation to Contaminant Transport	2001
Steven E. Poirier	Development of a Soil Suction Probe with Application to Assessment of Sample Quality for Saturated Soft Clays	2005
Melissa M. Landon	Quantification of Sample Disturbance in Soft Clays Using Nondestructive Measurements	2007
Adriane G. Boscardin	Development of Miniature Full Flow and Model Pipeline Probes for Testing of Box Core Samples of Surficial Seabed Sediments	2013
Aaron Judge	An Evaluation of Hydraulic Conductivity of Coarse Grained Soil using a Permeameter, Empirical Methods, and Observation Wells	2013
Wystan Carswell (co-advisor with Dr. S. Arwade, CEE)	Soil-Structure Modeling and Design Considerations for Offshore Wind Turbine Monopile Foundations	2015
William Lukas	An Experimental Investigation of the Influence of Sampling on the Behavior of Intermediate Soils	2017
Pamela Judge	Evaluation of the Erodibility of Soft Clays and the Influence of Biopolymers	2018
Arash Pirouzi	Compressibility and normalized undrained shear behavior of soft coastal fine-grained soils	2018
Casey Fontana (co-advisor with Dr. S. Arwade, CEE)	Multiline Anchor Systems for Floating Offshore Wind Turbines	2018
Øyvind Blaker	Strength of Sample Quality Assessment of a Norwegian Natural Silt.	In progress
Jing Peng (co-advisor with Dr. G. Zhang, CEE)	Thixotropic behavior of soft clays	In progress
Krishnaveni Balakrishnan (co- advisor with Dr. S. Arwade, CEE)	In development	In progress
Yiming Cao	In development	In progress

**Master of Science**

<b>Student</b>	<b>Thesis Topic</b>	<b>Graduation</b>
Richard Torkornoo	Multidirectional Direct Simple Shear Behavior of an Overconsolidated Clay	1991
Jeffrey D. Girard	Experimental Evaluation of Foundation Soil Response of Embankments During Stage Construction	1992
Todd D. Moline	Effectiveness of Borehole Sealants Using Rigid Wall Permeameter Tests	1992
G.N. Wagle	Stability of Stage Constructed Embankments on Soft Clays	1993
Robert J. March	Evaluation of Dispersive Characteristics of Bentonite Products	1994
David W. Finocchio	Anisotropically Consolidated Direct Simple Shear Behavior of Destructured Sensitive Clays	1994
Michael Raymond	Development of a Windows Based Program for Settlement of Shallow Foundations on Granular Soils	1994
James G. Panton	Methods of Determining in Situ Oxygen Profiles in the Vadose Zone of Granular Soils	1995
Matthew M. Bonus	Comparison of Recompression and SHANSEP Stress-Strain-Strength Behavior of Connecticut Valley Varved Clay	1995
Charlene S. Howell	Comparison of Measured and Predicted Saturated and Unsaturated Hydraulic Conductivity of a Sand	1996
Wayne M. Shelburne	Use of Waste and Recycled Materials in Highway Construction	1996
Travis J. Mitchell	Evaluation of In Situ and $CK_0$ UDSS Behavior of Boston Blue Clay	1997
Lisa M. Santonastaso	Influence of Salt Contamination on Hydraulic Conductivity of Bentonite	1999
Steven E. Poirier	Hydraulic Conductivity of a Drumlin Till	2000
George Tsitsas	Interpretation of Piezocone and Vision Cone Tests in Connecticut Valley Varved Clay	2001
Joseph Jakubowski	Use of the Seismic CPTU for Site Characterization in Soft Clays	2004
Melissa M. Landon	Field Quantification of Sample Disturbance of a Marine Clay Using Bender Elements	2004
Lorna Nielson	Determining the Thixotropic Behavior of Cohesive Soils Using the Fall Cone Apparatus and Bender Elements	2005
Philip J. Dunaj	Laboratory Measurement of Undrained Shear Strength of Remolded Natural Clays	2006
Adriane G. Boscardin	Evaluation of Miniature Full Flow Penetrometers and Push Cone for Laboratory Measurement of Remolded Undrained Shear Strength of Soft Clays	2007

Aaron Judge	Vertical Variability of Hydraulic Conductivity of an Unconfined Aquifer Measured Using a Pneumatic Multilevel Slug Testing Packer System	2007
Jeffrey Lloyd	Evaluation of an Automated Early Warning System for Unstable Soil Slopes	2008
Daniel LaMesa	The Hydrogeologic and Geotechnical Characterization of a Thick Silty Aquitard	2008
Cody Jones	Nondestructive Measurement of Sample Quality for Deep Water Soft Clays	2009
Patricia Kral	Evaluating The Effects of Anisotropy and Scale on the Hydraulic Conductivity of a Glaciolacustrine Sandy Silt Deposit	2010
Michael Henrick	Characterization of the Flank of a Drumlin at the Andover River Road Proposed Salt Shed Site	2010
Robert M. Ryan	Incremental Loading and Constant Rate of Strain Consolidation of Clays Using Block Samples	2011
Laura Carey	Undisturbed and Reconstituted Hydraulic Conductivity of a Glaciolacustrine Silty Aquitard Deposit Measured in a Flexible Wall Permeameter	2012
William Lukas	Hydrogeologic Characterization of a Till Mantled Leaky Fractured Bedrock Aquifer	2013
Shreeya Pandey	Influence of reconsolidation procedure on small strain shear modulus and undrained shear behavior of silts subjected to tube sampling disturbance	2018
Hossein Ganji	Evaluation of a new method for determining the minimum and maximum density of sands	2018
Yiming Cao	Effect of temperature on thixotropic hardening of remolded soft clays	2018
Martha Harris (co-advisor with Dr. S. Arwade, CEE)	In development	2019

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**Undergraduate**

Honors Thesis, NSF Research Experience for Undergraduates, DOD Fellowships

<b>Student</b>	<b>Thesis Topic</b>	<b>Graduation</b>
David W. Finocchio	Measurement of the Lateral Earth Pressure Coefficient at Rest in the Laboratory	1990 Honors Thesis
Kristen Hychka (Smith College)	Consolidation Properties of Soft Clays	1991 Internship
Cindy H. Carlson	Laboratory Measurement of Hydraulic Conductivity of Compacted Connecticut Valley Varved Clay from Deerfield, MA	1993 Honors Thesis
Jennifer A. Clary	CIUC Stress-Strain-Strength Behavior of Connecticut Valley Varved Clay	1994 Honors Thesis
Heather B. Scranton	Laboratory Evaluation of the Consolidation Properties of Edmonton Clay	1994 Honors Thesis
Timothy P. Bennett	Evaluation of SiteView for Analyzing Hazardous Waste Site Characterization Data	1995
Travis J. Mitchell	Use of the Fall Cone Apparatus for Determining the Liquid Limit of Soils	1996 Honors Thesis
Jodi L. Ryder (RPI)	Hydraulic Conductivity of Laboratory Compacted Glacial Till from Cohasset, MA	1998
Lisa M. Santonastaso	The Effect of Placement on the Hydraulic Conductivity and Bond Strength of Bentonite	1998
Steven E. Poirier	In Situ Measurement of Hydraulic Conductivity at Cohasset	1998
Natalie L. Mach	The Effects of Salt Water Contamination on The Physical Properties of Bentonite Sealants	2001 Honors Thesis
Stacy A. Metzger	Comparison of Russian and Scandinavian Fall Cone Methods for Determining Liquid Limit using Natural Soils	2006
Nicole Baldvins	Shear Wave Velocity of Remolded Natural Clays During Constant Rate of Strain Consolidation	2006 Honors Thesis
David Tailamee (École Centrale de Nantes, France)	Thixotropic Behavior of Remolded Soft Clays Using Bender Elements	2006
Kane C. Bennett	Development of an Electric Needle Probe for High Resolution Profiling of Layered Soils	2009 Honors Thesis
David Azinheira	An analysis of the hydrogeologic conditions of a varved clay using grouted in place piezometers	2011 Honors Thesis
Michael Nolden	Intrinsic hydraulic conductivity properties of a glacially derived silt	2011 Honors Thesis

*Last update October 2019*