

Nicholas J. Yafrate

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Education

- PhD. Geotechnical Engineering** University of California, Davis
Expected Graduation 2007.
- M.S.C.E. Geotechnical Engineering** University of Massachusetts, Amherst, Massachusetts
September, 2004, GPA: 3.8
- B.S.C.E. Civil and Environmental** University of Massachusetts, Dartmouth, Massachusetts
May, 2002, GPA: 3.4

PhD Thesis Research (2004-present)

Thesis: The Use of Full Flow Penetrometers in Soft Clays

Graduate Advisor: Jason T. DeJong, Assistant Professor, Civil and Environmental Engineering University of California, Davis

M.S.C.E. Thesis Research (2002-2004)

Thesis: The Development and Use of a Miniature Piezoprobe for the Detection of Layering in Varved Clay.

Graduate Advisor: Jason T. DeJong, Assistant Professor, Civil and Environmental Engineering University of Massachusetts, Amherst

Professional Awards and Contributions

Awards and Honors

2006 Summer Graduate Student Researcher Award – UCDavis: This award provides full time salary for summer research and is awarded based on recommendations of the student's faculty mentor.

2003 Leo Casagrande Scholarship – This scholarship is given by the Boston Society of Civil Engineers to a new or first year Geotechnical Engineering Graduate Student in honor of Dr. Leo Casagrande.

2002 Allen Campbell Award – UMass Dartmouth: This award is given to graduating Civil Engineering students with the highest GPA.

1998-2002 Competitive Edge Scholarship – UMass Dartmouth: The award of these scholarships is based on academic achievement, community service, and leadership. Eligible students must major in a field related to manufacturing, industry, or technology.

1998-2002 Chancellor's Merit Scholarship – UMass Dartmouth: This scholarship is awarded to undergraduate students based on GPA and SAT scores.

Certifications

FE (*Fundamentals of Engineering*): September 1999: Massachusetts

Professional Affiliations

American Society of Civil Engineers, (ASCE) – Student Member, 1998-present, President of the UMass Dartmouth Student Chapter 1997-1998.

Geo Institute (ASCE)

Research Experience

Laboratory Testing

- Performed Routine Laboratory Soil Characterization Tests: Atterberg Limits, Compaction Tests, Grain-Size Distribution, Direct Shear, Linear Shrinkage, One-Dimensional Consolidation, Rigid and Flexible Wall Conductivity, Shrinkage Limits, Simple Shear and Triaxial Testing
- Penetration of a Miniature Piezoprobe into block samples of Connecticut Valley Varved Clay to examine soil deformation.
- Tested the response time of the miniature piezoprobe saturated with glycerin, water, silicone oil and olive oil to determine which fluid is most suitable for piezocone penetration.
- Testing the saturation of piezocone filters under varying degrees of vacuum and time to determine which fluid was most suitable for piezocone filter saturation.

Field Testing

- Performed multiple full-flow penetrometer tests at test sites in Amherst, Massachusetts; Newburyport, Massachusetts; Louiseville, Ontario; Gloucester, Quebec; Onsoy, Norway; and Perth, Western Australia.
- Performed Seismic Cone Penetration testing at many of sites listed above.
- Performed multiple miniature piezoprobe profiles for the detection of varves in varved clay and permeable layers in a uniform deposit.
- Performed in situ testing including: Standard Penetration Test, Standard Penetration Torque Tests, Drive Cone Penetration, Pressuremeter, Field Vane, Dilatometer, Piezocone Penetrometer, Seismic Piezocone Penetration.
- Penetration and exhumation of a Miniature Piezoprobe into Connecticut Valley Varved Clay at the NGES test site to examine soil deformation.
- Worked with several drill rigs for field investigations, soil sampling, monitoring well installation and in situ testing.
- Performed field evaluation and verification of the GeoGage as an assistant to Professor Heather Miller for the Massachusetts Highway Association and in collaboration with Worcester Polytechnic Institute.

Graduate Coursework

- Advanced Soil Mechanics (Parts A and B)
- Advanced Foundation Engineering
- Bridge Design
- Environmental Geotechnology
- Geophysics
- Geotechnical Earthquake Engineering
- Geotechnical Materials Testing
- Ground Improvement
- Groundwater Hydrology
- In Situ Testing
- Earth and Rock Filled Dams
- Numerical Methods in Geotechnical Engineering
- Electro-Physio-Chemical Properties of Soils*
- Seismic Structural Analysis
- Slope Stability Analysis
- Soil Behavior
- Theory of Elasticity

*Note the listed name in my transcript for Electro-Physio-Chemical Properties of Soils is In Situ Evaluation of Soils.

Industry

Consulting - Under the advisement of Dr. Alan Lutenegger, University of Massachusetts Amherst– Fall 2005

- Performed and analyzed pressuremeter tests for the construction of a LNG tank in Fall River MA

Geotechnical Lab Technician GZA - Geoenvironmental, Newton, MA – Summer 2000

- Performed geotechnical laboratory testing.

Advising

Alan Abad: Network for Earthquake Engineering Simulation (NEES) research experience for undergraduates summer program (funded by NSF). Topic: Intermediate soils: Specimen Preparation and Characterization. (Summer 2006)

Mark Jones: Network for Earthquake Engineering Simulation (NEES) research experience for undergraduates summer program (funded by NSF). Topic: Intermediate soils: Specimen Preparation and Characterization. (Summer 2006)

Journal Publications

DeJong, J.T., and Yafrate, N.J. (2006). Fluid Saturation Evaluation and Soil Deformation Assessment in the Design of a Miniature Piezoprobe. *ASTM Testing Journal*. (In Press).

Peer Reviewed Conference Publications

Yafrate, N.J., DeJong, J.T. and DeGroot, D.J. (2007) The influence of full-flow penetrometer area ratio on undrained strength measurements. *6th International Conference on Offshore Site Investigation and Geotechnics*, Society for Underwater Technology (SUT), London (Abstract submitted)

Yafrate, N. J., DeJong, J. T., Jaeger, R. (2007) Use of a Full Flow Ball Penetrometer with Pore Pressure Measurements in Soft Clay. *ISC-3: 3rd International Conference on Site Characterization* (ISSMGE), (Abstract accepted).

Yafrate, N. J., and DeJong, J. T. (2007) Influence of Penetration Rate on Measured Resistance with Full Flow Penetrometers in Soft Clay. *GeoDenver 2007* (In Press).

Yafrate, N.J, DeJong, J.T. (2006) Interpretation of Sensitivity and Remolded Undrained Shear Strength with Full Flow Penetrometers. *ISOPE-06: International Society for Offshore and Polar Engineering*, San Francisco, CA.

Yafrate, N.J, DeJong, J.T., (2005) Considerations in Evaluating the Remoulded Undrained Shear Strength from Full Flow Penetrometer Cycling. - *ISFOG-05: International Symposium on Offshore Geotechnics*, Perth Western Australia.

Yafrate, N.J, DeJong, J.T., (2005) Detection of Stratigraphic Interfaces and Thin Layering Using a Miniature Piezoprobe. *Geotechnical Special Publication*, n 130-142, *Geo-Frontiers 2005*, Houston, TX, 2005, p 2103-2113.

DeJong, J.T., Yafrate, N.J., DeGroot, D.J. & Jakubowski, J. (2004) Evaluation of the undrained shear strength profile in soft layered clay using full-flow probes. *ISC-2: 2nd International Conference on Site Characterization*, Porto Portugal, Viana da Fonseca & Mayne (eds.)

Yafrate, N. J. (2004) Evaluation of the Undrained Shear Strength Profile in Soft Layered Clay using full-flow Probes. *2004 Northeast Graduate Research Symposium*, University of Massachusetts Amherst. (abstract).

DeJong, J.T., DeGroot, D.J., Yafrate, N.J., and Jakabowski, J. (2003) Detection of Soil Layering in a Varved Clay Using a Piezo-Probe, *Soil Rock America 2003: 12th Panamerican Conference for Soil Mechanics and Geotechnical Engineering and the 39th US Rock Mechanics Symposium*, Boston, MA.

Yafrate, N. J. (2002) Detection of Layering in Varved Soils with a Miniature Piezoprobe. *2002 Northeast Graduate Research Symposium*, University of Massachusetts Amherst. (abstract).

Technical Presentations

Interpretation of Sensitivity and Remolded Undrained Shear Strength with Full Flow Penetrometers. *ISOPE-06: International Society for Offshore and Polar Engineering*, San Francisco, CA, June 2006.

The Development and Use of a Miniature Piezoprobe for the Detection of Soil Layering. Seminar Presentation at the University of Western Australia, Centre for Offshore Foundation Systems (COFS), March 2005.

The Use of a Miniature Piezoprobe for the Detection of Soil Layering. *Northeast Geotechnical Graduate Research Symposium*, UMass-Amherst, November 2004.

The Use of a Miniature Piezoprobe for the Detection of Varves in Varved Clay. *Northeast Geotechnical Graduate Research Symposium*, UMass-Amherst, November 2002.