Exponent®
Engineering & Scientific Consulting

Melissa Beauregard, Ph.D., P.E.

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Professional Profile

Dr. Beauregard specializes in geotechnical engineering, with a special focus in the areas of geosynthetic-reinforced structures, foundation engineering, pavement engineering, and sustainable design and construction. She has extensive experience in geotechnical engineering, including 5 years of field and laboratory experience as well as 3 years of experience in design and evaluation of the performance of earth structures.

Additionally, Dr. Beauregard has 5 years of academic experience in applied geotechnical research and engineering education. She has experience with a variety of software packages such as GeoStudio, Slide, Snail, ReSSA, MSEW, PCASE, and MATLAB.

Prior to joining Exponent, Dr. Beauregard was an Assistant Professor of Civil Engineering at the United States Air Force Academy (USAFA) where she focused on applied geotechnical research and instructed a wide variety of civil engineering courses: soil mechanics, foundation design, earth structures, sustainable engineering, and pavement design, rehabilitation, and maintenance. Her research at USAFA included topics related to energy pile performance, remote sensing for pavement condition assessment, and engineering education.

Dr. Beauregard completed her Ph.D. at the University of Colorado Denver where she earned an interdisciplinary degree in geotechnical engineering and architecture studying the holistic performance of geosynthetic reinforced soil (GRS) structures. In support of this work, she completed a comparative lifecycle assessment of GRS systems, a laboratory program focused on how facing rigidity affects GRS deformation, and a study on how human factors can inform infrastructure design.

Academic Credentials & Professional Honors

Ph.D., Engineering and Applied Science, University of Colorado, Denver, 2016

M.S., Geotechnical Engineering, University of Colorado, Boulder, 2012

B.S., Degree with Distinction, Civil Engineering, University of Delaware, 2010

Chi Epsilon

Tau Beta Pi

National Science Foundation Graduate Research Fellow (2011)

Geo-synthetics Institute Fellow (2015)

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USAFA Outstanding Academy Educator (2020)

Air Force Civilian Achievement Award (2022)

Academic Appointments

Assistant Professor, Department of Civil and Environmental Engineering, US Air Force Academy, 2017-2022

Prior Experience

Assistant Professor, US Air Force Academy, 2017-2022

Staff Engineer, Cesare, Inc, 2016-2017

Professional Affiliations

American Society of Civil Engineers (ASCE)

Geo-Institute (ASCE-GI)

Deep Foundations Institute (DFI)

International Geosynthetics Society (IGS)

Colorado Association of Geotechnical Engineers (CAGE)

Publications

Sloan, J.A., Beauregard, M.S., Russell, M.M. (2023) High Impact Practices in the Civil Engineering Major at the US Air Force Academy, Book Chapter, published by Emerald Group UK

Beauregard, M.S., Mayercsik, N.P. and Pietersen, R.A., (2022) A Critical Assessment of Unmanned Aerial System Usage and Data Analysis in Forensic Assessment. In Forensic Engineering 2022 (pp. 537-550).

Pietersen, R. A., Beauregard, M. S., & Einstein, H. H. (2022). Automated method for airfield pavement condition index evaluations. Automation in Construction, 141

Beauregard, M.S., Mayercsik, N.P., Pietersen, R.A. (2022) A Critical Assessment of Unmanned Aerial System Usage and Data Analysis in Forensic Assessment. 9th Forensic Engineering Congress, 4-7 November 2022, Denver, Colorado

Pietersen, R.A., Beauregard, M.S. Effect of Atmospheric Conditions on Energy Pile Performance. 44th Annual DFI Conference, October 2019, Chicago, IL.

Clevenger, C., Abdallah, M., Clements, N., Byun, K., Aristizabal, S., Russell, M., Beauregard, M. & Raman, J. (2020). Studying physical and cognitive status of construction workers. In Construction Research Congress 2020: Project Management and Controls, Materials, and Contracts (pp. 649-657). Reston, VA: American Society of Civil Engineers.

Beauregard, M. S., Sloan, J. A., & Brannon, M. (2019). Summarizing the use of knowledge surveys to inform effective learning and teaching practices. In Proc., Rocky Mountain Section of the American Society for Engineering Education's Annual Conf. Washington, DC: American Society for Engineering

Education.

Sievers, K., Beauregard, M. S., Pocock, J. B., Strecker, A. M., Kays, K., & Christ, J. A. (2018). Work in Progress: Sustainable Engineering for non-Engineers. In 2018 ASEE Annual Conference & Exposition.

Clevenger, C., Abdallah, M., & Beauregard, M. (2017). Advancing construction students' sustainability competencies using online tools. In Proc., ICSC17: The Canadian Society for Civil Engineering 5th Int./12th Construction Specialty Conf. Vancouver, Canada: Univ. of British Columbia.

Beauregard, M. S., Krunanithi, A. T., & Clevenger, C. M. (2016). Comparative life cycle assessment of two design alternatives for a geosynthetic reinforced bridge abutment. In 3rd Pan American Conference on Geosynthetics, GeoAmericas

Beauregard, M. S., & Cardoso, F. B. M. (2016). Exploring the Potential to Implement Sustainable Wall Facing for Geosynthetic Reinforced Soil Structures. In 3rd Pan American Conference on Geosynthetics, Geoamericas

Beauregard, M. S. (2016). Facing of geosynthetic reinforced soil structures. University of Colorado at Denver.

McCartney, J., Coccia, C., Alsherif, N., Stewart, M., Baser, T., Traore, T., & Goode, J. (2014). Unsaturated soil mechanics in geothermal energy applications.

Stewart, M. A., & McCartney, J. S. (2014). Centrifuge modeling of soil-structure interaction in energy foundations. Journal of Geotechnical and Geoenvironmental Engineering, 140(4)

Stewart, M. A., Coccia, C. J., & McCartney, J. S. (2014). Issues in the implementation of sustainable heat exchange technologies in reinforced, unsaturated soil structures. GeoCongress 2014

McCartney, J. S., Murphy, J. S., & Stewart, M. A. (2013). Thermo-mechanical behavior of energy foundations. In Proceedings of 18th international conference on soil mechanics and geotechnical engineering, Paris (pp. 3379-3382).

Parks, J. M., Stewart, M. A., & McCartney, J. S. (2012). Validation of a centrifuge permeameter for investigation of transient infiltration and drainage flow processes in unsaturated soils. Geotechnical Testing Journal, 35(1), 182-192.

Stewart, M. A. (2012). Centrifuge modeling of strain distributions in energy foundations (MS dissertation, University of Colorado at Boulder).

Stewart, M. A., & McCartney, J. S. (2012). Strain distributions in centrifuge model energy foundations. In GeoCongress 2012: state of the art and practice in geotechnical engineering (pp. 4376-4385).

Wang, W., Regueiro, R. A., Stewart, M., & McCartney, J. S. (2012). Coupled thermo-poro-mechanical finite element analysis of an energy foundation centrifuge experiment in saturated silt. In GeoCongress 2012: State of the Art and Practice in Geotechnical Engineering (pp. 4406-4415).

Presentations

Beauregard, M.S., Mayercsik, N.P., Pietersen, R.A. (2022) A Critical Assessment of Unmanned Aerial System Usage and Data Analysis in Forensic Assessment. 9th Forensic Engineering Congress, 4-7 November 2022, Denver, Colorado

Beauregard, M.S., Mayercsik, N.P. (2019) Airfield Maintenance for Remote Sensing of Pavement Condition. GAP 2019 (Geo-Structural Aspects of Pavements, Airfields, and Railways), Colorado Springs, CO, November 2019.

Beauregard, M. S., Sloan, J. A., & Brannon, M. (2019). Summarizing the use of knowledge surveys to inform effective learning and teaching practices. In Proc., Rocky Mountain Section of the American Society for Engineering Education's Annual Conf. Washington, DC: American Society for Engineering Education.

Beauregard, M. S., Krunanithi, A. T., & Clevenger, C. M. (2016). Comparative life cycle assessment of two design alternatives for a geosynthetic reinforced bridge abutment. In 3rd Pan American Conference on Geosynthetics, Geoamericas

Beauregard, M. S., & Cardoso, F. B. M. (2016). Exploring the Potential to Implement Sustainable Wall Facing for Geosynthetic Reinforced Soil Structures. In 3rd Pan American Conference on Geosynthetics, Geoamericas

Stewart, M. A., Coccia, C. J., & McCartney, J. S. (2014). Issues in the implementation of sustainable heat exchange technologies in reinforced, unsaturated soil structures. GeoCongress 2014

Sloan, J.A., Beauregard, M.S., Russell, M.M. (2023) High Impact Practices in the Civil Engineering Major at the US Air Force Academy, Book Chapter, published by Emerald Group UK

Research Grants

Air Force Civil Engineer Center – Remote Sensing for Pavement Condition Assessment ($80k)

USAFA Department of Research AFOSR Small Grant – Radiation Shielding Properties of Lunar Regolith ($10.7k)