ANDREW BOECKMANN, Ph.D., P.E.

Senior Engineer

Professional Experience

Joined DBA 2020
Total years of experience: 13
Research Engineer, University of Missouri, Columbia, MO (2012-2020)
Geotechnical Consultant, URS Corp., St. Louis, MO (2007-2012)

Education

Ph.D., Civil and Environmental Engineering, University of Missouri, 2019
M.S., Civil and Environmental Engineering, University of Missouri, 2006
B.S., Civil and Environmental Engineering, University of Missouri, 2005

Professional Licensure and Certifications

Licensed Professional Engineer in Missouri

Fields of Expertise

Design, construction, and load testing of deep foundations for axial and lateral loading
Reuse of existing foundations
Drilled shaft concrete and concrete integrity test methods
Post-grouted drilled shafts
Slope stability and excavation stability analyses in soil and rock; seepage analysis and dewatering
Ground improvement techniques
Geotechnical asset management
Geotechnical site characterization, including geophysical methods
Reliability-based design

Major Projects

Drilled Shaft Thermal Control Plan – (2020-present) – Develop thermal control plan for large-diameter drilled shafts for a project in the Pacific Northwest. The thermal control plan was based on project-specific allowable temperature differentials and thermal modeling. The plan recommendations were significantly less onerous than the generic mass concrete specifications that would be required without the plan.

Caltrans Post-grouted Drilled Shaft Deployment – (2017-present) – Perform full-scale field load test program including installation of four test shafts and nine reaction shafts, post-grouting of most test and reaction shafts, and top-down load tests; evaluate reliability of post-grouted drilled shafts for various levels of construction monitoring; develop load and resistance factor design (LRFD) specifications and construction guidance for post-grouted shafts.

New Orleans Levee System Improvements – New Orleans, LA (2008-2011) – Designed levee raise for levees in New Orleans East after Hurricane Katrina. Design utilized deep soil mixing of the soft clay below existing levees to facilitate an accelerated construction schedule. Also designed relief wells for the levee system.

Development of Design Guidance for Drilled Shaft Concrete – (2015-present) – Develop guidance for drilled shaft concrete based on three research activities: (1) a synthesis of U.S. transportation agency practices for drilled shaft concrete, (2) thermal models of drilled shaft concrete, evaluated using results of thermal integrity profiling (TIP), and (3) large-scale lab tests of drilled shaft concrete mixes to evaluate segregation and bleed potential, especially with respect to QA/QC tests.

Probabilistic Approach for the Design of Drilled Shafts Socketed in Weak Rock in Oklahoma – (2017-present) – Perform field load test program of full-scale drilled shafts; develop resistance models for axial and lateral loading from the load test results; and incorporate models into load and resistance factor design (LRFD) specifications.

Investigation of Existing Foundations under Consideration for Reuse – (2016-2018) – Perform various condition assessment techniques to evaluate existing piles for two bridges; compare results with observations of exhumed piles. Perform various load capacity predictions for the same piles and compare results with load tests of the existing piles.

Eppley Airport (Omaha) 2011 Missouri River High Water Event – Omaha, NE (2011) – Provided emergency design services for the Missouri River flooding in summer 2011. Work included monitoring of levee integrity, design/installation of new pumped relief wells, and seepage modeling of critical areas. Underseepage was the primary concern.

Professional Memberships

Deep Foundation Institute (DFI)
Vice-chair, Subsurface Characterization Committee; Member, Testing and Evaluation Committee
American Society of Civil Engineers (ASCE)
Geo-Institute (GI) of the ASCE
FHWA Eisenhower Fellow (2005-2006)

Selected Publications and Presentations

Boeckmann, A.Z. and Loehr, J.E. (in press, anticipated 2021). "Designing for Durability: Establishing and Satisfying Thermal Requirements for Drilled Shaft Concrete," *Transportation Research Record*.

Boeckmann, A.Z. and Loehr, J.E. (2019). "Evaluation of Thermal Integrity Profiling and Crosshole Sonic Logging for Drilled Shafts with Concrete Defects," *Transportation Research Record*, 2673(8), pp. 86-98.

Boeckmann, A.Z. (2019). "Estimating Capacity and Reliability of Existing Foundations for Evaluation of Reuse," *Journal of the Deep Foundations Institute*, Deep Foundations Institute, New York, NY, Vol. 13, No. 1, pp. 11-24.

Boeckmann, A. and Loehr, J.E. (2017). "Current Practices and Guidelines for the Reuse of Bridge Foundations," *NCHRP Synthesis of Highway Practice No. 505*, Transportation Research Board, National Academies, Washington, D.C., 107 p.

Rosenblad, B. and Boeckmann, A. (2020). "Advancements in Use of Geophysical Methods for Transportation Projects," *NCHRP Synthesis of Highway Practice No. 547*, Transportation Research Board, National Academies, Washington, D.C., 106 p.

Boeckmann, A. and Loehr, J.E. (2016). "The Impact of Geotechnical Investigation Scope on Construction Claims, Change-Orders and Overruns," *NCHRP Synthesis of Highway Practice No. 484*, Transportation Research Board, National Academies, Washington, D.C., 76 p.

Loehr, J.E., Lutenegger, A., Rosenblad, B., and Boeckmann, A. (2017). "Geotechnical Site Characterization," Geotechnical Engineering Circular No. 5 (GEC 5), Federal Highway Administration, Washington, D.C., 639 p.

Boeckmann, A.Z. and Loehr, J.E. (2016). "Physical Modeling and Development of Design Criteria for Maintainable Drains for Earth Retention Systems," *Proceedings of the 41st Annual Conference of the Deep Foundations Institute*, New York, NY, 10 p.

Boeckmann, A., Myers, S., Uong, M., and Loehr, J.E. (2014). "Load and Resistance Factor Design of Drilled Shafts in Shale for Lateral Loading," Report to Missouri Department of Transportation (cmr14-011), 301 p.

Boeckmann, A.Z., and Loehr, J.E. (2013). "A Procedure for Predicting Micropile Resistance for Earth Slope Stabilization," *Stability and Performance of Slopes and Embankments III, Proceedings of 2013 Geo-Congress*, ASCE Geo-Institute., 4 p.

Cooling, T., Boeckmann, A., Filz, G., Cali, P., Evans, J., and Leoni, F. (2012). "Deep Mixing Design for Raising Levee Section, LPV 111 New Orleans, LA," *Fourth International Conference on Grouting and Deep Mixing*, New Orleans, LA, February 16-18, 2012, pp. 672-681.