

# Daniel R. VandenBerge, Ph.D., P.E.

Associate Professor of Civil Engineering - Geotechnical  
Tennessee Technological University

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## EDUCATION

Doctor of Philosophy	Virginia Polytechnic Institute	2014
Future Professoriate Graduate Certificate	Virginia Polytechnic Institute	2012
Master of Science	Michigan Technological University	2003
Bachelor of Science	Michigan Technological University	2001

## ACADEMIC CAREER

### Tennessee Technological University

Associate Professor	since 2021
Assistant Professor	2015 - 2021

### Virginia Polytechnic Institute

Postdoctoral Associate	2014 - 2015
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### Virginia Polytechnic Institute

Instructor of Record - CEE 3514	2013
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### Lakeland Community College

Part-time Faculty	2009 - 2010
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### Michigan Technological University

Graduate Teaching Assistant	2001 - 2003
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## PROFESSIONAL CAREER AND SELECT PROJECTS

### Engineering Consultant

Yeager Airport Runway 5 Failure	2015 - 2018
Lake Livingston Hydroelectric Plant	2014 - 2015
Lower Colorado River Authority	2013 - 2014

### EDP Consultants, Inc. (staff engineer and project manager)

I-90 Innerbelt Bridge Stabilization Structure Monitoring, Cleveland, OH	2009 - 2010
SR-91 Embankment Failure Repair, Willoughby, OH	2006 - 2008
Steelyard Commons, Cleveland, OH	2004 - 2006

## PRINCIPAL FIELDS OF INTEREST AND EXPERIENCE

- Soil Shear Strength Measurement and Characterization
- Slope Stability Analysis and Monitoring
- Finite Element Analysis
- Sustainability in Geotechnical Engineering
- Probabilistic Methods in Geotechnical Engineering

## PEER-REVIEWED JOURNAL PUBLICATIONS (20 in press):

Note: boldface indicates undergraduate or graduate research assistant

1. **Turkson, P.** and VandenBerge, D. R. (2023). "Rapid Drawdown Analysis Using Pore Pressures from BBM." *Geotechnical and Geological Engineering*, *accepted for publication*.
2. **Islam, S.**, Mohr, B., and VandenBerge, D. R. (2022). "Performance of natural clinoptilolite zeolite in

- the cementitious materials: A comparative study with metakaolin, fly ash, and blast furnace slag.” *Journal of Building Engineering*, 53, <https://doi.org/10.1016/j.jobbe.2022.104535>.
3. **Alhassan, M. M.**, Huff, T., and VandenBerge, D. R. (2021). "Modeling of Rayleigh Damping for the Elastic and Inelastic Dynamic Response of MDOF Structures." *Practice Periodical on Structural Design and Construction*, 26(3) [https://doi.org/10.1061/\(ASCE\)SC.1943-5576.0000596](https://doi.org/10.1061/(ASCE)SC.1943-5576.0000596).
  4. VandenBerge, D. R., **Turkson P.**, and Steiakakis, C. (2021). "Case History: Rapid Drawdown Analyses of Sparmos Dam." *Journal of Geotechnical and Geoenvironmental Engineering*, 147(9), [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0002593](https://doi.org/10.1061/(ASCE)GT.1943-5606.0002593).
  5. VandenBerge, D. R., **Reed, E. C.**, and Li, R. (2021). "Mobilized bearing capacity analysis of global stability for walls supported by rammed aggregate piers," *Journal of Geotechnical and Geoenvironmental Engineering*, 147(6), [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0002540](https://doi.org/10.1061/(ASCE)GT.1943-5606.0002540).
  6. VandenBerge, D. R., Valentine, R. J., Brandon, T. L., and Wright, S. G. 2021. "Failure of the 73-m tall reinforced soil slope at Yeager Airport, Charleston, WV." *Journal of Geotechnical and Geoenvironmental Engineering*. [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0002430](https://doi.org/10.1061/(ASCE)GT.1943-5606.0002430).
  7. VandenBerge, D. R. and McGuire, M. P. 2019. "Practical use of modified Hoek Brown criterion to predict stability of soil slopes," , *Geotechnical and Geological Engineering*, <https://doi.org/10.1007/s10706-019-00991-1>.
  8. **Reed, E.C.** and VandenBerge, D. R. 2018. "Comparison of FEA and Analytical methods for determining stability of a RAP supported MSE wall," *DFI Journal*, <https://doi.org/10.1080/19375247.2018.1562593>.
  9. VandenBerge, D. R., Castellanos, B. A., and McGuire, M. P. 2018. "Comparison and Use of Failure Envelopes for Slope Stability," *Geotechnical and Geological Engineering*, <https://doi.org/10.1007/s10706-018-0742-1>.
  10. **Alhassan, M. M.** and VandenBerge, D. R. 2018. "Shear Modulus and Damping Relationships for Dynamic Analysis of Compacted Backfill Soils," *Innovative Infrastructure Solutions*, 3(43), <https://doi.org/10.1007/s41062-018-0152-5>.
  11. McGuire, M. and VandenBerge, D. R. 2017. "Interpretation of shear strength uncertainty and reliability analyses of slopes," *Landslides*, <http://dx.doi.org/10.1007/s10346-017-0836-5>.
  12. Castellanos, B. A., Brandon, T. L., and VandenBerge, D. R. (2016). "Correlations for fully softened shear strength parameters," *Geotechnical Testing Journal*, 39(4), 1-16.
  13. VandenBerge, D. R. and Wright, S. G. 2016. "An improved undrained strength interpolation scheme for rapid drawdown (Technical Note)," *Journal of Geotechnical and Geoenvironmental Engineering*, 10.1061/(ASCE)GT.1943-5606.0001471, 06016002.
  14. Castellanos, B. A., Brandon, T. L., and VandenBerge, D. R. 2015. "Use of fully softened shear strength in slope stability analysis," *Landslides*, DOI 10.1007/s10346-015-0597-y.
  15. VandenBerge, D. R., Duncan, J. M., and Brandon, T. L. 2015. "Undrained strength of compacted clay under principal stress reorientation," *Journal of Geotechnical and Geoenvironmental Engineering*, 10.1061/(ASCE)GT.1943-5606.0001332, 04015035.
  16. VandenBerge, D. R., Brandon, T. L. and Wielputz, M. P. 2015. "Highly organic fill for levee stability berms," *Geotechnical Testing Journal*, ASTM, 38(3), 10.1520/GTJ20140151, 1-13.
  17. VandenBerge, D. R., Duncan, J. M., and Brandon, T. L. 2015. "Limitations of transient seepage analyses for calculating pore pressures during external water level changes," *Journal of Geotechnical and Geoenvironmental Engineering*, 141(5), 04015005.
  18. Batool, A., VandenBerge, D. R., and Brandon, T. L. 2015. "Practical application of blanket theory and the finite element method to levee seepage analysis," *Journal of Geotechnical and Geoenvironmental Engineering*, 141(4), 04015001.
  19. VandenBerge, D. R., Brandon, T. L. and Duncan, J. M. 2014. "Triaxial tests on compacted clays for consolidated-undrained conditions," *Geotechnical Testing Journal*, ASTM, 37(4), DOI 10.1520/GTJ20130202, 705-716.

- VandenBerge, D. R. 2014. "Total stress rapid drawdown analysis of the Pilarcitos Dam failure using the finite element method," *Frontiers of Structural and Civil Engineering*, DOI 10.1007/s11709-014-0249-7, 115-123.  
Note: boldface indicates undergraduate or graduate research assistant

#### PEER-REVIEWED CONFERENCE PUBLICATIONS (28 in press):

Note: boldface indicates undergraduate or graduate research assistant

- VandenBerge, D. R. and **Turkson, P.** (2023). "Probability of Levee Instability Following Rapid Drawdown." *Proc. of GeoRisk 2023*.
- VandenBerge, D. R. and **Turkson, P.** (2023). "Building Critical Thinking Skills through Geotechnical CAT-Apps," *Proc. of GeoCongress 2023*.
- Shiri, A.**, VandenBerge, D. R., and Shiri, Y. (2023). "A Comparison of Approaches for the Determining the Virgin Compression Line of Remolded Saturated Soils," *Proc. of GeoCongress 2023*.
- Turkson, P.** and VandenBerge, D. R. (2023). "Statistical Analysis of Undrained Strength as Linear Function of Depth." *Proc. of GeoCongress 2023*.
- VandenBerge, D. R. and **Turkson, P.** (2021). "Insights into Rapid Drawdown Stability and Rate from Infinite Slope Analysis." *Proc. Dam Safety 2021, ASDSO*.
- Ohanian, O. J., Huang, Y., Zolfaghari, N., Bungler, A.P., and VandenBerge, D. R. (2021). "High-Resolution Distributed Fiber Optic Measurement of Borehole Fractures to Enable In-situ Stress Measurement." *Proc. 55th US Rock Mechanics/Geomechanics Symposium, American Rock Mechanics Association*.
- McGuire, M. P., Loux, T. A., and VandenBerge, D. R. 2021. "Field-scale tests to evaluate foamed glass aggregate compaction." *Proc. IFCEE 2021*.
- Turkson, P.**, VandenBerge, D. R., and **Boeglin, E. R.** 2020. "Unsaturated soil model effects on the propagation of the saturated zone in levees during flooding." *Proc. Dam Safety 2020, ASDSO*.
- Boone, M. D., Thompson, M. J., and VandenBerge, D. R. 2020. "Practical guidelines for assessing undrained shear strength from triaxial compression with isotropic and anisotropic consolidation." *Proc. GeoCongress 2020*.
- VandenBerge, D. R., McGuire, M. P., and Castellanos, B. A. 2020. "Effective stress failure envelope forms and parameter variability." *Proc. GeoCongress 2020*.
- VandenBerge, D. R., Gregory, G. H., and **Turkson, P.** 2019. "Case History: Rapid Drawdown Analysis of Village Creek Plant Levee," *GeoCongress 2019*.
- Poston, K. B.**, **Turkson, P.**, and VandenBerge, D. R. 2018. "Parametric study of levee saturation for undrained rapid drawdown analysis," *Proc. of USSD 2018*, 15 pp.
- McGuire, M. P., Sloan, J. A., and VandenBerge, D. R. 2018. "Application of Reliability Analyses for Serviceability Design of Column-Supported Embankments," *Proc. of IFCEE 2018*, 10 pp.
- VandenBerge, D. R. and McGuire, M. 2017. "Response surfaces for probabilistic analyses of slope stability," *Proc. of 19th Intl. Conf. Soil Mech. and Geotech. Eng.*, Seoul, 4 pp.
- Zwetchkenbaum, J. D., Castellanos, B. A., VandenBerge, D. R., Brandon, T. L., and Pandey, U. 2017. "Potomac clay of Northern Virginia: Fully softened shear strengths," *29th Central Pennsylvania Geotechnical Conference, Hershey, PA*, 16 pp.
- Thompson, M. J. and VandenBerge, D. R. 2017. "Shear strength of remolded and compacted Beaumont Clay," *GeoFrontiers 2017*.
- VandenBerge D. R. 2017. "V-Shaped failure surfaces in bearing capacity type limit equilibrium analyses," *GeoFrontiers 2017*.
- VandenBerge, D. R., Duncan, J. M., and Brandon, T. L. 2017. "Practical considerations for measuring the shear strength of compacted clay," *GeoFrontiers 2017*.
- Reed, E.**, **Poston, K.**, **Munasque, L.**, VandenBerge, D. R. and Kalyanapu, A. K. 2016. "South Carolina flooding and dam failures," *ASDSO Dam Safety 2016*.
- VandenBerge D. R. 2016. "Probabilistic analysis of rapid drawdown," *Proceedings of the 12th International Symposium on Landslides, Napoli, Italy*.

21. Thompson, M. J., Bentler, D. J., Brandon, T. L., and VandenBerge, D. R. 2016. "Shear strength of compacted Beaumont clay for consolidated-undrained conditions," *USSD 2016 Annual Conference*.
22. VandenBerge, D. R. 2015. "A comparison of limit equilibrium and finite element methods for undrained rapid drawdown analysis," *2015 Central Pennsylvania Geotechnical Conference*, Hershey, PA, 25 pp.
23. VandenBerge, D. R., Esser, A. J., and Bumpas, K. 2015. "An overview of sustainability applied to earth structures," *Proceedings of IFCEE 2015*, 2707-2716.
24. VandenBerge, D. R. and Brandon, T. L. 2014. "Multi-stage rapid drawdown analysis using the finite element method," *Proceedings of ASDSO Dam Safety 2014*, 10 pp.
25. VandenBerge, D. R., Duncan, J. M., and Brandon, T. L. 2013. "Rapid drawdown analysis using strength reduction," *Proc. 18th Intl. Conf. Soil Mech. Geotech. Engrg.*, Paris, 829-832.
26. VandenBerge, D. R. 2013. "Total stress rapid drawdown analysis of the Pilarcitos Dam failure using finite elements," *Proc. 5<sup>th</sup> Intl. Young Geotechnical Engineers Conference*, Paris, 40-43.
27. VandenBerge, D. R., Duncan, J. M., and Brandon, T. L. 2013. "Fully softened shear strength of natural and compacted clays for slope stability," *Proceedings of GeoCongress 2013 – Stability and Performance of Slopes and Embankments III*, ASCE, San Diego, CA, 221-233.
28. Esser, A. J. and VandenBerge, D. R. 2010. "Rational analysis of slope stabilization with piers and determination of unfactored pier load," *Proceedings of GeoCongress 2010*, ASCE, West Palm Beach, FL, 3100-3109.

#### OTHER PUBLICATIONS:

1. NAVFAC DM7.02 *Foundations and Earth Structures*, Ed. D. R. VandenBerge, 660 pp., *in press*.
2. VandenBerge, D. R. "Teaching Geotechnical Engineering – It Takes Practice!" *GeoStrata Magazine*, 26(2), <https://doi.org/10.1061/geosek.0000404>, 2022.
3. NAVFAC DM7.01 *Soil Mechanics*, Ed. T.L. Brandon and D. R. VandenBerge, 557 pp., 2022.
4. Brandon, T.L., Bachus, R. C., VandenBerge, D. R., and Valentine, R.J. (2021). "Discussion of 'Stability and Stress-Deformation Analyses of Reinforced Slope Failure at Yeager Airport.' by J. G. Collin, T. D. Stark, A. Lucarelli, T. P. Taylor, and R. R. Berg", *Journal of Geotechnical and Geoenvironmental Engineering*, [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0002454](https://doi.org/10.1061/(ASCE)GT.1943-5606.0002454).
5. VandenBerge, D. R., McGuire, M. P., and Castellanos, B. A. 2018. *Linear and Nonlinear Effective Stress Shear Strength Envelopes from Triaxial Test Data*, Center for Geotechnical Practice and Research, Virginia Tech, Blacksburg, VA, 57 pp.
6. Castellanos, B. A., Brandon, T. L., and VandenBerge, D. R. 2018. "Discussion on Fully Softened Shear Strength for Soil Slope Stability Analyses," *International Journal of Geomechanics*.
7. VandenBerge, D. R. and Brandon, T. L. 2015. *Consolidated-Undrained Triaxial Compression Testing of Compacted Clay*, CGPR #84, Center for Geotechnical Practice and Research, Virginia Tech, Blacksburg, VA, 18 pp.
8. VandenBerge, D. R., Duncan, J. M., and Brandon, T. L. 2015. *Consolidated-Undrained Strength of Compacted Clay*, CGPR #83, Center for Geotechnical Practice and Research, Virginia Tech, Blacksburg, VA, 128 pp.
9. Bradley, N. and VandenBerge, D. R. 2015. *Beginner's Guide for Geotechnical Finite Element Analyses*, CGPR #82, Center for Geotechnical Practice and Research, Virginia Tech, Blacksburg, VA, 99 pp.
10. VandenBerge, D. R., Duncan, J. M., and Brandon, T. L. 2014. *Rapid Drawdown Analysis using the Finite Element Method*, CGPR #79, Center for Geotechnical Practice and Research, Virginia Tech, Blacksburg, VA, 305 pp.
11. VandenBerge, D. R., Reeb, A., and Kost, A. 2013. "Lessons learned from Geo-Legends: Robert D. Holtz, Ph.D., P.E., D.GE, Dist. M.ASCE," *Geo-Strata*, May/June 2013, 12-15.
12. Duncan, J. M., Brandon, T. L., and VandenBerge, D. R. 2011. *Report of the workshop on shear strength for stability of slopes in highly plastic clays*, CGPR #67, Center for Geotechnical Practice and Research, Virginia Tech, Blacksburg, VA, 79 pp.

13. Duncan, J. M., O'Neil, B., Brandon, T. L., and VandenBerge, D. R. 2011. *Evaluation of potential for erosion in levees and levee foundations*, CGPR #64, Center for Geotechnical Practice and Research, Virginia Tech, Blacksburg, VA, 36 pp.
14. VandenBerge, D. R., Duncan, J. M., and Brandon, T. L. 2011. *Lessons learned from dam failures*, CGPR #62, Center for Geotechnical Practice and Research, Virginia Tech, Blacksburg, VA, 55 pp.
15. VandenBerge, D. R. and Esser, A. J. 2010. "Discussion of 'Probability and Risk of Slope Failure' by Francisco Silva, T. William Lambe, and W. Allen Marr," *Journal of Geotechnical and Geoenvironmental Engineering*, 136(5), 765-769.
16. VandenBerge, D. R. 2003. *An Experimental and Theoretical Investigation of the Light Clegg Hammer*, Thesis submitted in partial fulfillment of the degree of Master of Science, Michigan Technological University, Houghton, MI.

#### ACADEMIC PUBLICATION REVIEW

Engineering Geology	since 2020
Geotechnical and Geological Engineering	since 2020
European Journal of Environmental and Civil Engineering	since 2020
International Journal of Geoenvironmental Engineering Case Histories	since 2019
Environmental Geotechnics	since 2017
Computers and Geotechnics	since 2016
National Science Foundation (ad-hoc reviewer and panelist)	since 2015
Landslides (Springer) – Reviewer and Editor	since 2015
Journal of Geotechnical and Geoenvironmental Engineering	since 2015
Geotechnical Testing Journal (ASTM)	since 2015
Journal of Basic and Applied Research International	since 2015
ASCE GeoCongress Proceedings	since 2014

#### REGISTRATIONS AND MEMBERSHIPS

American Society of Civil Engineers (ASCE) – Member	since 2007
American Society of Engineering Education (ASEE) – Member	2016 - 2018
Association of Drilled Shaft Contractors (ADSC) – Member	since 2016
ASCE – Embankments, Dams, and Slopes (EDS) Committee	since 2013
Association of State Dam Safety Officials (ASDSO)	since 2016
EDS subcommittees: Sustainability and Fully Softened Shear Strength	since 2013
American Society of Testing & Materials – Committees D-18 and D-18.05	2009 - 2011
Registered Professional Engineer – Ohio (inactive) and Pennsylvania	since 2007
United States Society on Dams –Member	since 2013

#### HONORS AND AWARDS

ASCE Outstanding Reviewer (J. Geotechnical Geoenviron. Engrg.)	2017
ASDSO Dam Safety 2014 – Student Paper Award	2014
ASCE Geo-Institute Nominee to the 5 <sup>th</sup> International Young Geotechnical Engineers Conference (5iYGEC)	2013
Institute for Critical Technology and Applied Science (ICTAS) Doctoral Scholar	2010 - 2014
Via Fellowship – VT CEE Department	2010 - 2013

#### SHORT COURSES OFFERED

ASCE GeoCongress – Soil Shear Strength	2019
Geotechnics – Consolidated Undrained Triaxial Testing	2019
Soils & Materials Engineers, Inc – Half-day CU Testing Course	2018
New Jersey ASCE Chapter – 1 day Slope Stability Course	2016
Virginia Tech CGPR – 1.5 day Shear Strength Course	2015

US Army Corps of Engineers (USACE) – 4-day Shear Strength Course 2015

**EXTERNALLY FUNDED RESEARCH PROJECTS**

Embankment Dam Risk Yield Acceleration Study	since 2023
Chemical Subgrade Stabilization for Pavements in Tennessee	since 2022
Best Practices for Bridges with Pipe Piles	since 2022
Academic Review and Rewrite of NAVFAC DM 7.02 (N62470-19-D-5013)	2020 – 2023
Consolidation and Unit Weight Testing of AeroAggregate	2019
Performance Evaluation of Existing Vegetated Swales for Stormwater Runoff Reduction –TDOT	2018 - 2019
FC 3-220-10N Soil Mechanics (Revision to NAVFAC DM7.01)	
US Naval Facilities via Virginia Tech	2018 - 2020
Rapid Distributed Sensing of Subsurface In-situ Stress – Phase II	
DOE SBIR via Luna Innovations	2017-2018
Global Stability Analysis of MSE Walls Constructed over Improved Soil Foundations	
GeoPier Foundation Company	2016-2017
Real-Time Distributed Sensing of Subsurface In-situ Stress	
DOE SBIR via Luna Innovations	2015-2016