MARK R. MUSZYNSKI, Ph.D., P.E.

502 E. Boone Ave. Spokane, WA 99258 muszynski@gonzaga.edu

Education

Ph.D. Civil/Geotechnical Engineering

May 2013

University of Illinois at Urbana-Champaign, IL, USA Roy E. Olson/Stanley D. Wilson Fellowship Recipient

Thesis title: "Evaluating Soil Pressures on Deep Foundations due to Liquefaction-Induced Lateral Spreading"

Advisor: Scott M. Olson, Ph.D., P.E.

M.S. Civil/Geotechnical Engineering

May 2000

Michigan Technological University, Houghton, MI, USA

Thesis title: "Void Ratio Distribution of Coarse-Grained Magnetite Tailings as a Function of Aging Time"

Advisor: Ralph J. Hodek, Ph.D., P.E.

B.S. Civil/Structural Engineering

May 1998

Michigan Technological University, Houghton, MI, USA

Order of the Engineer-Member (inducted at Michigan Tech-Link #104)

Spring 1998
Chi Epsilon honor society-Member, (inducted at Michigan Tech)

Spring 1997

Professional Licensure

Professional Engineer, Washington #50386 May 2013 Professional Engineer, Michigan #62010-50952 Jan. 2004

Professional Experience

Gonzaga University, Spokane, WA, USA

Professor of Civil Engineering/Chair
Associate Professor of Civil Engineering
Assistant Professor of Civil Engineering
Aug. 2018-Aug. 2023
Aug. 2018-Aug. 2018
Aug. 2013-Aug. 2018
Aug. 2012-Aug. 2018

Courses developed and/or taught:

- ENSC 205 Statics:
- CENG 225 Engineering Geology;
- CENG 331/L Soil Mechanics/Soil Mechanics Laboratory;
- CENG 391 *Civil Engineering Design and Practice;*
- CENG 463 Pavement Design;
- CENG 464 *Ground Behavior for Structures*;
- CENG 480 Construction Management;

OHM Advisors, Petoskey, MI, USA

Jan. 2018-present

Civil/Geotechnical Engineer, Transportation Design Team (part time, remote position)

 Evaluates ground conditions and soil parameters for municipal projects/infrastructure; roads, bridges, etc. for foundation design, construction engineering, QA/QC, and other purposes;

Professional Experience (cont.)

Northwest Design Group, LLC, Petoskey, MI, USA

Jan. 2015-Dec. 2017

Geotechnical Engineer (part time, remote position) (company acquired by OHM in 2017)

- Performed analyses for consolidation on soft soil sites, slope stability, evaluation of bedrock, and other studies;
- Prepared geotechnical studies, research reports, and other engineering evaluations;

University of Illinois at Urbana-Champaign, IL, USA

Aug. 2010-Aug, 2012

Teaching Assistant: CEE 380 Geotechnical Engineering

- Held office hours for undergraduate students;
- Graded exams/assignments, and developed homework assignments;
- Conducted lectures in the instructor's absence at his request;

CPH Engineering, Inc., Madison, WI, USA

Aug. 2008-Jan. 2010

Geotechnical Engineer (part time, remote position)

- Assisted in preparation of geotechnical reports;
- Performed laboratory tests and soil classification;

Gosling Czubak Engineering Sciences, Inc., Traverse City, MI, USA Aug. 2000-Aug. 2008 Geotechnical Engineer/Project Manager (full-time position)

- Evaluated sites and developed ground recommendations for all types of projects;
- Provided oversight for soil borings/drilling/geotechnical reports on hundreds of sites;
- Managed projects and personnel;

Michigan Technological University, Houghton, MI, USA

Sept. 1998-May 2000

Graduate Teaching Assistant (TA), Soils Laboratory

- Planned and delivered laboratory lectures;
- Described data acquisition techniques in laboratory sections;
- Managed laboratory course to ensure timely progress of material;

Michigan Technological University, Houghton, MI, USA

Dec. 1997-Dec. 1998

Graduate Research Assistant w/ R.J. Hodek, Ph.D., P.E., Mine Tailings Study (independent of MS thesis work)

- Obtained parameters for long-term planning of a tailings dam;
- Conducted grain size distribution and 1-D compression and aging tests;
- Assisted in interpreting the results and provided input for the final report;

Consumers Power Co., Manistee, Benzie, & Traverse City, MI, USA

1994-1998

Technician, Engineering Dept. (40 hrs/week, summers/part-time fall, spring, winter)

- Designed route alternatives for electrical service to customers, working with them directly on site in most cases;
- Performed conductor voltage drop and tension, transformer capacity, pole size and height, and guy lead calculations;
- Secured state, county, and personal property right-of-way (ROW) permits;

Presentations

- "Dynamic Cone Penetrometer and Relative Compaction Relationships for Silty Sands, with a Comparison to Clean, Poorly-Graded Sands," U. of Minnesota Geotechnical Conference, February 23, 2024, Minneapolis, MN;
- "Applications of Math in Civil Engineering," original presentation for MATH 360 by invitation of Drs. Alsaker and Cangelosi, January 28, 2022;
- "Small Scale Testing for Feasibility of Rubblized Concrete Foundations," International Association for Bridge and Structural Engineering conference, IABSE, September 22-24, 2021;
- "Behavior of Soft Lake Marl at a Preload Test Site in the Great Lakes Region" U. of Minnesota Geotechnical Conference, February 23, 2018, Minneapolis, MN;
- "Dynamic Cone Penetrometer and Relative Density Relationships for Uniformly-Graded Sands" U. of Minnesota Geotechnical Conference, February 24, 2017, Minneapolis, MN;
- "Lateral Earth Pressure Fundamentals and Shearing Resistance of Soil; Is the friction angle really always 30 degrees?" Annual spring ASCE conference 2015 in Spokane, WA;
- "Soft Lake Marl Considerations in Engineering Practice," ASCE General meeting, Bangkok Thai meeting room, Spokane, WA, (October 16, 2014);
- "Introduction to Civil Engineering," Gonzaga Experience Live (GEL), Spokane, WA (April 2013-2019) (GEL is a summer event for prospective students considering Gonzaga);
- "Career Paths," Gonzaga University ASCE student chapter meeting, Spokane, WA (March 2013) Presentation made to ASCE student members describing career options and offering advice;
- "Lateral Spreading-Induced Pressures against a Large, Rigid Foundation," Quake Summit 2012, Boston, MA (July 2012);
- "Preloading Soft Lake Marl," Lawrence Tech, Southgate, MI, presented to civil engineering students (November 2011);
- "Geotechnical Engineering at a Small Firm," Lawrence Tech, Southgate, MI, (November 2011). Presented to civil engineering students;
- "Preloading Soft Lake Marl," Western Mich. Univ., Kalamazoo, MI, (November 2011);
- "Using SPT to Develop Design Parameters," U. of Illinois, Urbana, IL, (October 2011). Presented to students of the graduate course *Geotechnical Instrumentation* by Prof. Scott Olson;
- "Preliminary Results of Centrifuge and OpenSees Modeling of Lateral Spreading Pressures Against a Large, Rigid Foundation," 24th Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP), Charleston, SC (April 2011);
- "Intro to Civil Engineering," Illinois Summer Youth Program, Urbana, IL (2010 & 2011). Offered as part of a range of activities related to engineering for middle school students interested in an engineering career;
- "Dynamic Cone Penetrometer Testing: Fact and Fiction, Uses and Misuses," American Institute of Architects (AIA) meeting, Traverse City, MI (November 2007);
- "A Soft Lake Marl Site with Preloading Results," Department of Civil & Environmental Engineering, University of Illinois Urbana-Champaign, IL (April 2007);
- "Construction Dewatering," Gosling Czubak (to staff), Traverse City, MI (November 2006);

"Foundation Failures: Case Studies," Seminar offered by Gosling Czubak to county building code officials from the region), Grand Traverse, MI (2003);

"Site Improvement," Presented to the American Institute of Architects (AIA) chapter, Traverse City, MI (2002);

Professional Service

Reviewer for various journal and conference manuscripts:

Journal of Earthquake Engineering	2023
Deep Foundations Institute (DFI) Conference	2023
Journal of Case Studies in Construction Materials	2023, 2021
ASTM Geotechnical Testing Journal 2	022, 2021, 2020, 2018, 2007
Journal of Measurement (Elsevier)	2020
ASCE Journal of Performance of Constructed Facilities	<i>2021, 2019,</i> 2018
Journal of Building Engineering	2019
ASCE Journal of Geotechnical and Geoenvironmental Engineer	ering 2018, 2017
Journal of Building Engineering	2015
Acta Geotechnical Journal	2014
Journal of Building Construction	2014
Engineering Geology	2014
External reviewer of application of a faculty member at Lawren for promotion to associate professor	nce Tech
8th International Conference on Physical Modelling in Geotech 2014 (ICPMG 2014) conference	2013

Publications

Refereed Journals

Tessari, A. and **Muszynski, M. R.**, (2023). "Evaluating Sand Particle Surface Smoothness Using a New Computer-Based Approach to Improve the Characterization of Macroscale Parameters," *Geotechnics 2023, 3, 854-873, https://doi.org/10.3390/geotechnics3030046.*

Olson, Scott M., **Muszynski, Mark R.**, Hashash, Youssef M. A., and Phillips, Camilo, (2021). "Mitigating Lateral Spreading Forces on Large Foundations using Ground Deflection Walls," *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 147(11) https://doi.org/10.1061/(ASCE)GT.1943-5606.0002644.

Milacek, McKenna, S., Schultz, Joshua, and **Muszynski, Mark R.**, (2020). "Multi-objective Comparative Analysis of Alternative Structural Systems for Low-income Housing," Forum in *ASCE Journal of Architectural Engineering*.

Tessari, A., **Muszynski, M. R.**, and Colletti, J., (2018). "Surface Smoothness Evaluation of Etched and Unaltered Sand Specimens with Mechanical Behavior Assessment," *ASTM Geotechnical Testing Journal* https://doi.org/10.1520/GTJ20170261.ISSN 0149-6115.

Refereed Journals (cont.)

Mark R. Muszynski and Stanley J. Vitton (2017). Discussion of "Particle Roundness and Sphericity from Images of Assemblies by Chart Estimates and Computer Methods" By: Roman D. Hryciw, Junxing Zheng, and Kristen Shetler, ASCE Journal of Geotechnical and Geoenvironmental Engineering, 143(9), 10.1061/(ASCE)GT.1943-5606.0001757.

Muszynski, M.R. and Prince, R. (2017). "Geotechnical Perspectives of Project Success Concerning Residential Client on Challenging Building Sites," *ASCE Journal of Performance of Constructed Facilities*, DOI 10.1061/(ASCE)CF.1943-5509.0000972.

Olson, Scott M., Hashash, Youssef M. A., **Muszynski, Mark R.**, and Phillips, Camilo, (2017). "Passive Wedge Formation and Lateral Loads on Large Foundations during Lateral Spreading," *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, 143(7), 13PP., DOI: 10.1061/(ASCE)GT.1943-5606.00001663.

Muszynski, Mark R., Olson, Scott M., Hashash, Youssef M. A., and Phillips, Camilo, (2016). "Earth Pressure Measurements Using Tactile Pressure Sensors in a Saturated Sand during Static and Dynamic Centrifuge Testing," *ASTM Geotechnical Testing Journal*, 39(3), pp. 371-390. DOI: 10.1520/GTJ20150049.

Muszynski, Mark R., Olson, Scott M., Hashash, Youssef M. A., and Phillips, Camilo, (2014). "Repeatability of Centrifuge Tests Containing a Large, Rigid Foundation Subjected to Lateral Spreading," *ASTM Geotechnical Testing Journal*, 37(6), 1002-1015, doi:10.1520/GTJ20130093. ISSN 0149-6115.

Muszynski, M.R. and Vitton, S.J. (2012). "Particle Shape Estimates of Uniform Sands: Visual and Automated Methods Comparison," *ASCE Journal of Materials in Civil Engineering*, 24(2), 194-206. doi: http://dx.doi.org/10.1061/(ASCE)MT.1943-5533.0000351.

Phillips, C., Hashash, Y.M.A., Olson, S.M., and **Muszynski, M.R.** (2012). "Significance of Small Strain Damping and Dilation Parameters in Numerical Modeling of Free-Field Lateral Spreading Centrifuge Tests," *Soil Dynamics and Earthquake Engineering* 42, 161–176. http://dx.doi.org/10.1016/j.soildyn.2012.06.001

Muszynski, M.R. (2009). "Incorporating Reliability Methods in Geotechnical Engineering," *ASCE Journal of Performance of Constructed Facilities*, 23(3), 130-131, DOI: http://dx.doi.org/10.1061/(ASCE)CF.1943-5509.0000035.

Muszynski, M.R. (2008). "Effects of Particle Shape and Gradation on Miniature DCP Tests in Sand," ASTM Geotechnical Testing Journal, 31(6), 531-539. DOI: 10.1520/GTJ101575.

Muszynski, M.R. (2006). "Determination of Maximum and Minimum Densities of Poorly Graded Sands using a Simplified Method," *ASTM Geotechnical Testing Journal*, 29(3), 263-272, https://doi.org/10.1520/GTJ12591. ISSN 0149-6115.

Conference Proceedings

Muszynski, Mark (in press) "Dynamic Cone Penetrometer and Relative Compaction Relationships for Silty Sands, with a Comparison to Clean, Poorly-Graded Sands," U. of Minnesota Geotechnical Conference, February 23, 2024, Minneapolis, MN.

R. Michael Cousins, GISP, Austin Doezema, GISP, Alice Roache, P.E., M.ASCE and **Mark R. Muszynski, Ph.D., P.E.**, M.ASCE (2022) "Cloud-Based GIS Mapping Software as an Evaluation Tool for Condition Assessments" *ASCE 9th Forensic Engineering Congress 2022*, November 7, 2022

Conference Proceedings (cont.)

Schultz, J. and **Muszynski, M.R.** (2021) "Small-Scale Testing for Feasibility of Rubblized Concrete Foundations," *IABSE Congress Ghent 2021*, Structural Engineering for Future Societal Needs, Congress Proceedings, Eds. H.H. Snijder, B. De Pauw, S.F.C. van Alphen & P. Mengeot, IABSE, Zurich, 2021, 8pp.

Schultz, J.A. and **Muszynski, M.R.** (2021). "Small-Scale Testing for Feasibility of Rubblized Concrete Foundations," *IABSE Congress Ghent 2021-Structural Engineering for Future Societal Needs*, 8pp.

Roache, Alice, Cousins, Michael, and **Muszynski, Mark R.**, (2020). "Evaluation of the 2018 Father's Day Flood using Technology-Based Tools," *ASCE 2020 Geo-Congress, February 25-28, 2020, Minneapolis, Minnesota*.

Milacek, McKenna, S., Schultz, Joshua, and **Muszynski, Mark R.**, (2019). "Revisiting Low Income Residential Construction Options in Spokane," *The Evolving Metropolis*, 2019 IABSE Congress, New York City.

Muszynski, M.R. and Funk, J.R. (2018). "Behavior of Soft Lake Marl at a Preload Test Site in the Great Lakes Region" U. of Minnesota Geotechnical Conference, February 23, 2018, Minneapolis, MN.

Muszynski, M.R. (2017). "Dynamic Cone Penetrometer and Relative Density Relationships for Uniformly-Graded Sands" U. of Minnesota Geotechnical Conference, February 24, 2017, Minneapolis, MN.

Niezgoda, S.L., **Muszynski, M.R.**, and Navickis-Brasch, A., (2016). A Critical Review of Permeable Asphalt Behavior and Performance to Guide Application to Arterial Streets in Cold Climates, Conference: World Environmental and Water Resources Congress 2016, DOI: 10.1061/9780784479865.008.

Muszynski, M.R. and Hodek, R.J. (2014). "Change in Local Void Ratio Distribution of Sand as a Function of Aging Time," 8th International Conference on Physical Modelling in Geotechnics 2014 (ICPMG 2014), Perth, Australia, 14-17 January 2014, pp. 1267–1272, ISBN: 978-1-138-00152-7, DOI: 10.1201/b16200-182.

Vitton, Stanley J. and **Muszynski, Mark R.** (2013). "Strength and Creep Properties of a Frozen Coastal Sand in Saltwater," Mechanical Properties of Frozen Soils, STP 1568, Hannele Zubeck and Zhaohui Yang, Eds., pp. 153–166, doi:10.1520/STP156820130034, ASTM International, West Conshohocken, PA, ASTM Symposium on Mechanical Properties of Frozen Soils on January 31, 2013 in Jacksonville, FL. DOI: 10.1520/STP156820130034.

Olson, S.M., **Muszynski, M.R.**, Hashash, Y.M.A., and Phillips, C. (2013). "Downslope Ground Movements during Liquefaction-Induced Lateral Spreading in Centrifuge Testing," *Geo-Congress2013: Stability and Performance of Slopes and Embankments III*. http://dx.doi.org/10.1061/9780784412787.095

Olson, S.M., Hashash, Y.M.A., **Muszynski, M.R.**, Phillips, C., and Polito, C. (2010). "Using Tactile Pressure Sensors to Measure Lateral Spreading-Induced Earth Pressures against a Large, Rigid Foundation," *Fifth Int'l Conf. on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*, S. Prakash (Ed.), (10pp). San Diego, CA

Electronic Journals and magazines

Jafari, N., **Muszynski, M.**, and Anderson, A., (2012). "Lessons Learned from Geo-Legends: Clyde N. Baker, Jr., P.E., S.E.", *Geo-Institute Geostrata Magazine*, (2012 March/April), 2(16), 10-12. ftp://gsd.asce.org/MAR.APR.GEO.pdf

Muszynski, M.R. and Brumbaugh, C.D. (2009). "Friction Pile Capacity in Soft, Fine-Grained Soils: Two Case Studies," *Electronic Journal of Geotechnical Engineering (EJGE)*, 14, Bundle B. http://www.ejge.com/2009/Ppr0921/Abs0921.htm

Muszynski, M.R. and Brumbaugh, C.D. (2007). "Geotechnical Characteristics of Soft Lake Marl with Preload Test Results," *Electronic Journal of Geotechnical Eng. (EJGE)*, 12, Bundle A. http://www.ejge.com/2007/Ppr0721/Abs0721.htm

Research Reports

Niezgoda, S.L., **Muszynski, M.R.**, and Navickis-Brasch. (2016). "Sharp Avenue Porous Asphalt Monitoring System Design Phase II – Sharp Avenue Monitoring Study Final Report," Gonzaga University, Spokane WA, Submitted to The City of Spokane, Capital Improvements Management, June 15, 2016, 30pp.

Niezgoda, S.L., Allen, L., Collins, C., Cupp, M., Fitterer, H., Hatfield, T., Ngan, C., Rivarola, L., **Muszynski, M.R.**, Bormann, N., London, M., Navickis-Brasch, A., Cleary, D., Carpenter, D. (2014). "Sharp Avenue Permeable Pavement Feasibility Study Final Report," Gonzaga University, Spokane WA, Submitted to The City of Spokane, Capital Improvements Management, August 2014, 70pp.

Engineering Consulting Reports/Instruments of Service Select Examples

Geotechnical, hydrogeological, and other civil engineering reports related to design and construction of industrial, commercial, municipal, institutional, and residential projects, including approximately 500 geotechnical reports from August 2000 to 2018. Additionally, I have recently participated in design activities (non-report writing tasks) involving a number of project types. The list below includes several recent examples of projects:

- (2023) GEA-12-87 bridge design, Ohio, with John Ubbing;
- (2023) Sault Ste. Marie soft clay study for armory with Jared Hyrkas;
- (2021) Big Traverse Bay seawall design(s) with Jared Hyrkas, Alice Roache, and others;
- (2020) 6 Mile Creek culvert replacement design with Jared Hyrkas;
- (2020) Peepsock Creek culvert replacement design [Mark Muszynski, Engineer of Record, with Jared Hyrkas, Alice Roach, Mike Drewyor, and others];
- (2019) Sault Ste. Marie salt storage structure design, with Amanda Porath;
- (2018) "Fred Meijer White Pine Trail over the East Branch of Hersey Creek Culvert Replacement," Report prepared for MDTMB, November 16, 2018, 51pp.m with Amanda Porath:
- (2017) GTRC Peninsula Drive slope repair [Mark Muszynski, Engineer of Record, with Jason Fate];
- (2017) "Sault Ste. Marie DPW Complex Site Additions and Improvements," Geotechnical report, Northwest Design Group, submitted to The City of Sault Ste. Marie, February 2017, 44pp., with Nils Lindwall;

Engineering Consulting Reports/Instruments of Service Select Examples

(2016). "Boyne City Marina Expansion Project," Geotechnical report, Northwest Design Group, submitted to The City of Boyne City, February 2016, 33pp., with Nils Lindwall;

(2015) "Mackinac Island Geology Study for Septic System," Preliminary study report, Northwest Design Group, submitted to The Sunset Forest Association, March 25, 2015, 13pp., with Nils Lindwall;

(2015) "Little Rapids Habitat Restoration Design-Build Project," Geotechnical report, Northwest Design Group, submitted to Payne and Dolan, November 2015, 38pp., with Nils Lindwall;

(2015). "O'Neal Lake Dam Repairs," Remedial repair study report, Northwest Design Group, submitted to Nowak & Fraus Engineers, December 2015, 34pp. with Nils Lindwall;

University and School Committees and Service

•	Department Chair	2023-present
•	Interim Department Chair	Spring 2022
•	Evaluation Committee	2022-present
•	DEI Committee	2023
•	Interim Department Chair	Spring 2022
•	SEAS Review Committee	2021-present
•	SEAS Associate Dean Search committee	2021-2022
•	SEAS FYS committee	2020-2021
•	Academic Integrity Board	2018-2020
•	University Core Implementation Committee	2014-2020
•	University Core Executive Committee with the AVP	2016-2017
•	Academic Vice President (AVP) Advisory Committee	2015-2016
•	Herak Building Committee	2015-2018
•	Search committees for Civil Engineering Department	2013-present

Community Outreach and other External Activities

Regional governor for Order of the Engineer

•	Spokane Community Housing & Human Services (CHHS) Affordable	2014-present
	Housing (AH) board member	

- American society of civil engineers (ASCE) Inland Empire Section 2012-2019
 (past president, vice president, president-elect, president, past president, director on board)
- Order of the Engineer ceremony- Gonzaga Link (#279)
 (co-organizer with Sue Niezgoda), and ceremony participant
- Greeter/host for Spokane Intercollegiate Research Conference (SIRC)
 2017
- Poster presentation regarding civil engineering, Roosevelt Elem. School
 2016, 2017

2020-present

•	Presentation about engineering, Seth Woodard Elementary School (1st grade)	2016
•	ASCE Region 8 Awards Selection Committee member	2016, 2017
•	Gonzaga chapter of American Public Works Association (APWA), advisor	2012-2013
•	University of Illinois Graduate Teaching Academy, participant	2012
•	Graduate Student Advisory Committee (GSAC), University of Illinois	2010-2012
•	Geotechnical Engineering Student Organization (GESO), University of Illino	ois 2008-2011
•	Earthquake Engineering Research Institute (EERI), member	2009-present
•	American Society of Civil Engineers (ASCE) Geo-Institute, member	2008-present
•	Michigan MathCounts, Northern Michigan, volunteer	2004-2008, 2012
•	Michigan Society of Professional Engineers (MSPE), Northern Michigan Chapter, Secretary	2004-2008
•	Michigan regional Science Olympiad competition: (judge for bridge/tower/cantilever structure competition)	2000-2012
Awards/grants		
•	McDonald Work Award Program: \$4,536	2022-2023
•	Gonzaga University Research Council award: \$960	2021-2022
•	McDonald Work Award Program: \$1,053	2020-2021
•	Engineer of Merit, ASCE Inland Empire section	2020
•	Public Entity Risk Institute (PERI), Award amount: \$8,300 (related to earthquake engineering and other hazards to infrastructure)	2012
•	Roy E. Olson/Stanley D. Wilson Fellowship Recipient, Univ. of Illinois	2008