

R. Christopher Williams, PhD

Gerald & Audrey Professor of Civil Engineering
Department of Civil, Construction, and
Environmental Engineering
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IOWA STATE UNIVERSITY
Institute for Transportation

EDUCATION

- PhD, Civil Engineering, Purdue University, August 1996
- MS, Civil Engineering, Purdue University, August 1993
- BS, Civil Engineering, University of Vermont, May 1991

PROFESSIONAL EXPERIENCE

- Full Professor (2011–present) and Associate Professor (2005–2011)
Iowa State University, Department of Civil, Construction and Environmental Engineering
Development and enhancement of educational and research programs in asphalt materials and pavements.
- Assistant Professor (1999–2005) and Associate Professor (2005)
Michigan Technological University, Department of Civil and Environmental Engineering
Development and enhancement of educational and research programs in asphalt materials and pavements.

SELECTED RESEARCH PROJECTS

- *Development of Bio-based Polymers for Use in Asphalt*, Iowa Highway Research Board, (2011–2019), PI
- *Determination of the Economic Opportunity for Soybean Oils for Use as a Monomer*, United Soybean Board and Iowa Soybean Association, (2013–2019), Co-PI
- *Validation of Gyratory Mix Design in Iowa – Phase 2*, Iowa DOT, (2018–2019), PI
- *Implementation of Low Temperature Cracking Criteria in Iowa*, Iowa DOT, (2018–2020), PI
- *Use of J-Band to Improve the Performance of HMA Longitudinal Joints*, MnDOT, (2018–2020), PI
- *Quantifying Benefits of Improved Compaction*, MnDOT, (2018–2019), PI
- *Validation of Gyratory Mix Design in Iowa*, Iowa Highway Research Board, (2016), PI
- *Assessment of Nondestructive Testing Technologies for Quality Control/Quality Assurance of Asphalt Mixtures*, Iowa Highway Research Board, (2015), PI
- *Development of Renewable Polymers for Use in Asphalt Pavements*, The National Academies, (2014–2018), PI
- *Development of Adhesives, Paint and Coatings from Acrylated Glycerol*, US Department of Agriculture, (2014–2019), Co-PI

- *Development of Quality Standards for Inclusion of High Recycled Asphalt Pavement Content in Asphalt Mixtures*, Iowa Highway Research Board, (2013–2018), Co-PI
- *Investigation of Distillation Bottoms as a Warm Mix Asphalt Additive*, Archer Daniel Midland, (2011–2014), PI
- *Reflective Crack Mitigation Guide for Flexible Pavements*, Iowa Highway Research Board, (2015), PI
- *Early Permeability Acceptance for Asphalt*, Missouri DOT, (2009), PI

SELECTED PUBLICATIONS

- Elkashef M., Williams R.C., and Cochran, E. 2018. Effect of Asphalt Binder Grade and Source on the Extent of Rheological Changes in Rejuvenated Binders. *ASCE's Journal of Materials in Civil Engineering*, Vol. 30, No. 12.
- Chen, C., Podolsky, J. H., Hernandez, N., Hohmann, A., Williams, R. C., and Cochran, E. W. 2018. Rheological Properties and Effects of Aging on Acrylated Epoxidized Soybean Oil (AESO) Monomer Modified Asphalt Binder. *Int'l Journal of Road Materials and Pavement Design*, pp. 1–27.
- Podolsky, J. H., Buss, A. F., Williams, R. C., and Cochran, E. W. 2017. Effect of Bio-Derived/Chemical Additives on Warm Mix Asphalt Compaction and Mix Performance at Low Temperature. *International Journal of Cold Regions Science and Technology*, In press.
- Lin, S.; Ashlock, J. A., and Williams, R. C. 2016. Nondestructive Quality Assessment of Asphalt Pavements Based on Dynamic Modulus. *Journal of Construction and Building Materials*, Vol. 112, pp. 836–847.
- Chen, C., Williams, R. C., Marasinghe, M. G., Ashlock, J. C., Schram, S., and Buss, A. 2015. Assessment of Composite Pavement Performance by Survival Analysis. *ASCE Journal of Transportation Engineering*, Vol. 141, No. 9. 10.1061/(ASCE)TE.1943-5436.0000784.
- Buss, A. F., Cascione, A., and Williams, R. C. 2014. Evaluation of Warm Mix Asphalt Containing Recycled Asphalt Shingles. *Journal of Construction and Building Materials*, Vol. 61, pp. 1–9.
- Schram, S., Williams, R. C., and Buss, A. F. 2014. Evaluation of Bias in the Hamburg Wheel Tracking Device", *Journal of the Transportation Research Board*.
- Peralta, J., Williams, R. C., Silva, H., and Machado, A. 2014. Recombination of Asphalt with Bio-Asphalt: Binder Formulation and Asphalt Mixtures Application. *Journal of the Association of Asphalt Paving Technologists*, Vol. 83.
- Chen, C., Williams, R. C., Lee, D., and Schram, S. 2013. Quality Control/Quality Assurance Testing for Longitudinal Joint Density and Segregation of Asphalt Mixtures. *Journal of Construction and Building Materials*, Vol. 47, pp. 80–85.
- Li, X., Williams, R. C., Marasteanu, M. O., Clyne, T. R., and Johnson, E. 2009. Investigation of In-Place Asphalt Film Thickness and Performance of Hot Mix Asphalt Mixtures. *ASCE's Journal of Materials in Civil Engineering*, Vol. 21, No. 6, pp. 262–270.
- Vitton, S. J., Bausano, J. P., Williams, R. C., and Schaefer, V. R. 2008. Examination of Fine Aggregate Angularity Characteristics for Use in Hot Mix Asphalt Design Criteria. *International Journal of Road Materials and Pavement Design*, Vol. 9, Special Issue, pp. 397–416.

- Williams, B. A., Williams, R. C., and Bausano, J. P. 2007. Permeability Criterion Test for Method Selection in Determining the Bulk Specific Gravity of Hot Mix Asphalt. *Journal of ASTM International*, Vol. 1, No. 1.

HONORS, RECOGNITIONS, and OUTSTANDING ACHIEVEMENTS

- Howard E. Hill Chi Epsilon Outstanding Faculty of the Year for the Department of Civil and Environmental Engineering at Michigan Tech (based upon student voting), 2003–2004
- Adjunct Faculty Member, Michigan Technological University, 2005–2009
- Best Paper Award, MAIREPAV7 Conference, Auckland, New Zealand, 2012
- Best Paper Award, 2nd International Conference WASTES: Solutions, Treatments and Opportunities, Braga, Portugal, 2013
- Best Paper Award, 8th International Conference on Road and Airfield Pavement Technology, Taiwan, China, 2013
- Research Partnership Award, Center for Transportation Studies, University of Minnesota, 2013
- Named the Gerald and Audrey Olson Professor in Civil Engineering, 2014
- ISU Award for Achievement in Intellectual Property, 2018
- The American Cleaning Institute/National Biodiesel Board (ACI/NBB) Glycerine Innovation Award, 2019

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers, 1989–present
- American Society for Testing & Materials, 1996–present
- Association of Asphalt Paving Tech., 2000–present
- Canadian Technical Asphalt Assoc., 2002–2004, 2006
- National Stone, Sand & Gravel Association Research Advisory Board, 1999–present
- Transportation Research Board, 1992–present
 - **Member of AFH60:** Committee on Flexible Pavement Construction & Rehabilitation, 1997–2011
 - **Member of AFK40:** Characteristics of Bituminous-Aggregate Combinations To Meet Surface Requirements, 2005-present
 - **Member of AFK50:** Characteristics of Bituminous Paving Mixtures to Meet Structural Requirements Committee, 2005–2011
 - **University Representative** for Michigan Tech, 2004–2005
 - **Member of A2F06:** Committee on Construction Equipment, 1997–2004
 - **Member of A2B52:** Task Force on Full-Scale/Accelerated Pavement Testing, 1997–2001