

Naiyu Wang, Ph.D.

Assistant Professor

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Education

Ph.D.	Georgia Institute of Technology	Civil Engineering	2010
M.S.	University of Tennessee, Knoxville	Civil Engineering	2005
B.S.	Univ. of Elec. Sci. & Tech. of China	Civil Engineering	2000

Professional Experience

2013-present	Assistant Professor	School of Civil Eng. and Envir. Sci., Univ. of Oklahoma
2010-2013	Senior Structural Engineer	Simpson Gumpertz and Heger, Inc. (SGH), Waltham, MA
2010	Instructor	Georgia Institute of Technology

Research Interests

Resilience of built environment; Risk-informed sustainable decisions for civil infrastructure; Analysis and mitigation of competing hazards and risks; Impact of climate change on risk mitigation of civil infrastructure exposed to natural hazards; Risk-based condition assessment; Performance-based design, renewal and rehabilitation; Applications of statistics and probability in civil engineering; Structural safety and reliability.

Research Publications

Refereed Journals

- Wang, N. and Zhang, W. (2014) "Resilience-Based Pre-Disaster Risk Mitigation for Bridge Networks." *Structural Safety*. In review.
- McAllister, T., Wang, N and Ellingwood, B.R. "Determining Mean Recurrence Intervals for Updated Wind Maps in ASCE 7-16." *ASCE Journal of Structural Engineering*. In review. October, 2014
- Zhang, W. and Wang, N "Bridge Network Maintenance Optimization under Budget Constraint." *ASCE Journal of Infrastructure Systems*. In review. 2014
- Wang, N. and Ellingwood, B.R. (2014) "Limit State Design Criteria for FRP Strengthening of RC Bridge Components," *Structural Safety*, Accepted, 2014.
- Wang, N., and Zarghamee, M.S. (2013) "Fitness-For-Service Evaluation of Metal Pipes using Reliability Based Method," *ASCE Journal of Pipeline Systems Engineering and Practices*, Volume 5, Issue 1. 04013012.
- Wang, N. and Ellingwood, B.R. (2013) "Characteristic Strengths of Built-Up CFRP Laminate," *Structural Safety*, Volume 47, pp24-28
- Wang, N., O'Malley, C., Ellingwood, B.R. and Zureick, A.-H. (2011) "Bridge Rating Using System Reliability Assessment I: Assessment and Verification by Load Testing," *ASCE Journal of Bridge Engineering*, Vol.16, No.6, pp.854-862.

- Wang, N., Ellingwood, B.R. and Zureick, A.-H. (2011), "Bridge Rating Using System Reliability Assessment II: Improvements to Bridge Rating Practices," *ASCE Journal of Bridge Engineering*, Vol.16, No.6, pp.854-862.
- Wang, N., Ellingwood, B.R. and A. Zureick, A.-H. (2010) "Reliability-Based Evaluation of Flexural Members Strengthened with Externally Bonded Fiber-Reinforced-Polymer Composites," *ASCE Journal of Structural Engineering*, Vol. 136, No. 9, pp.1151-1160.

Conference Proceedings

- Wang, N. and Zhang, W. (2015) "Resilience-Based Risk Mitigation for Highway Bridge Networks" Abstract Submitted to *Symposium on the Reliability of Engineering Systems*, Taiwan (SRES-Taiwan), Taipei, October 21-24, 2015
- Wang, N., Lin, P. and Ellingwood, B.R. (2015) "Linking Community Resilience Goals to Performance Objectives of Individual Facilities" Abstract Submitted to *Symposium on the Reliability of Engineering Systems*, Hangzhou (SRES-Hangzhou), China, October 15-17, 2015
- Wang, N. and Ellingwood, B.R. (2015) "De-aggregating Community Resilience Objectives to Achieve Building Performance Goals" *Proceedings, The 12th International Conference on Applications of Statistics and Probability in Civil Engineering*, ICASP12, Canada, July 12-15, 2015. Accepted.
- Zhang, W., Cao, M. and Wang, N (2015) "Travel Time Reliability Based Bridge Network Maintenance Optimization under Budget Constraint" *Proceedings, The 12th International Conference on Applications of Statistics and Probability in Civil Engineering*, ICASP12, Canada, July 12-15, 2015. Accepted.
- Wang, N., Ellingwood, B.R. and Zureick, A.-Z. (2013) "Reliability-based framework for improving highway bridge capacity ratings," *Proceedings, International Conference on Structural Safety and Reliability (ICOSSAR)*, New York, USA, June 2013.
- Wang, N., and Zarghamee, M.S. (2012), "LRFD Approach for PCCP Renewal using CFRP Composite," *Proceedings, 2012 ASCE Pipeline Conference*, Miami, USA, August 2012.
- Wang, N., Ellingwood, B.R. and Zureick, A.-H. (2011) "Improved Bridge Capacity Rating Methods Based on System Reliability Assessment," *Proceedings, International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP)*, Zurich, Switzerland, August 2011.
- Wang, N., and Zarghamee, M.S. (2012) "Fitness for Service of Corroded Metallic Pipe," *Proceedings, ASCE Structures Congress*, Chicago, USA, March 2012.
- Wang, N. and Ellingwood, B.R. (2010) "Reliability-Based Framework for Achieving Realistic and Time-Dependent Highway Bridge Capacity Ratings," *Proceedings, International Symposium on Reliability Engineering and Risk Management (ISRERM)*, Shanghai, China, 2010.

Technical Report

- Zarghamee, M.S., M. Engindeniz, and N. Wang, CFRP Renewal of Prestressed Concrete Cylinder Pipes," Project No. 04352, published by Water Research Foundation, 2012.
- Ellingwood, B.R., A.H. Zureick, N. Wang, and C. O'Malley, "Condition Assessment of Existing Bridge Structures, Task 4 - Development of Guidelines for Condition Assessment, Evaluation, and Rating of Bridges in Georgia," GDOT Project RP 05-01, 2009.
- Wang, N., B.R. Ellingwood, A.H. Zureick, and C. O'Malley, "Condition Assessment of Existing Bridge Structures, Task 1 - State of the Art of Bridge Condition Assessment," GDOT Project RP 05-01, 2008.

- O'Malley, C., N. Wang, B.R. Ellingwood, and A. Zureick, "Condition Assessment of Existing Bridge Structures: Report of Tasks 2&3 - Bridge Load Testing Program," GDOT Project RP 05-01, 2007.

Presentations

- “Condition Assessment, Renewal and Resilience of Sustainable Civil Infrastructure,” Workshop on Risk and Uncertainty, University of Liverpool, UK, November 7-8, 2013
- “Reliability-based framework for improving highway bridge capacity ratings," International Conference on Structural Safety and Reliability (ICOSSAR), New York, USA, June 2013.
- “LRFD Approach for PCCP Renewal Using CFRP Composites," 2012 ASCE Pipeline Conference, Miami, USA, August 2012.
- “Fitness For Service Evaluation of Corroded Metallic Pipes," 2012 ASCE Structures Congress, Chicago, USA, March 2012. [Awarded “Best of the Best”]
- “Improved Bridge Capacity Rating Methods Based on System Reliability Assessment,” International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP), Zurich, Switzerland, August 2011.
- “Reliability-Based Framework for Achieving Realistic and Time-Dependent Highway Bridge Capacity Ratings," International Symposium on Reliability Engineering and Risk Management (ISRERM), Shanghai, China, 2010.

Teaching Experiences

<i>University of Oklahoma</i>	<i>Georgia Institute of Technology</i>
CEES 3414 - Structural Analysis	CEES 3305B - Structural Analysis
CEES 4131 – Probability & Statistics in Civil Engineering	
CEES 5020B - Structural Reliability and Risk Assessment	
CEES 5020C - Structural Loads	

Professional Activities

Professional Affiliations and Memberships

- Subcommittee on Strength Design (Load Combinations) of the ASCE Standard Committee 7 on Minimum Design Loads for Buildings, Member and Secretary, 2010 - present. Actively involved in several ASCE 7 subcommittee tasks, including working with the wind load committee on developing new risk-informed wind maps for design.
- SEI-ASCE Technical Council on Life-Cycle Performance, Safety, Reliability and Risk of Structural Systems Task Group 3 Risk Assessment of Structural Infrastructure Facilities and Risk-Based Decision Making, Member, 2012 - present.
- American Society of Civil Engineers (ASCE), Associate Member, 2010 - present.
- Boston Society of Civil Engineers Section (BSCES), Member, 2010 - present.
- American Institute of Steel Construction (AISC), Member, 2012 – present.

Contributions to the Organization of Conferences and Conduct of Workshops

- ICASP12 Mini-symposium on Recent Developments in Reliability and Cost Prediction of Building Inventories and Civil Infrastructure Systems, Co-organizer and Co-chair, Vancouver, Canada, 2015.
- Workshop on Risk and Uncertainty, University of Liverpool, UK, November 7-8, 2013

- ICOSSAR Mini-symposium on Reliability-based Methods for Civil Infrastructure Condition Assessment, Retrofit and Risk Management, Co-organizer and Co-chair, New York City, 2013.

Journal and Proposal Reviews

- Reviewer for NSF CMMI HMSE, January 7-8 2014;
- Reviewer for *Journal of Structural Safety*, since 2010.
- Reviewer for ASCE *Journal of Pipeline Systems Engineering and Practices*, since 2013.

Development of Guidelines and Standards

- Conducted research on risk-informed condition assessment and safety evaluation of aging transportation infrastructure, which formed the technical basis for Recommended *Guidelines for Condition Assessment and Rating of Bridges for the State of Georgia*.
- Conducted research on fiber-reinforced polymer (FRP) composite-strengthened concrete bridges and contributed to the *NCHRP Report 655 - Guide Specification for Strengthening Existing Reinforced Concrete Bridges Using Externally Bonded Fiber Reinforced Polymer Systems*
- Contributed to the development of *AWWA Guide-CFRP Renewal of Prestressed Concrete Cylinder Pipes*.

Consulting Experience

Dr. Wang had three years of professional experience at Simpson, Gumpertz & Heger, Inc. (SGH), where she was involved with research projects concerning various types of engineering facilities, including nuclear power plants, radio telescopes, wind turbines, buildings and bridges, and especially, water distribution pipelines.

Honors and Awards

- “Best of the Best” presentation at the 2012 Structures Congress, Chicago, 2012
- Graduate Student Travel Fellowship, School of Civil and Environmental Engineering, Georgia Institute of Technology, 2010.
- Edwin & Patsy G. Burdette Fellowship for Excellence, University of Tennessee, 2004.