

## Naiyu Wang

Civil Engineering and Environmental Science  
University of Oklahoma  
Norman, OK 73019

Email: [naiyu.wang@ou.edu](mailto:naiyu.wang@ou.edu)  
Phone: 1 405 325 3600  
Website: <http://naiyuwang.ou.edu>

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### BIOGRAPHICAL SUMMARY

Dr. Naiyu Wang joined the School of Civil Engineering and Environmental Science at the University of Oklahoma in 2013. She earned her Ph.D. degree in Civil Engineering, with an emphasis in Structural Engineering, from Georgia Institute of Technology, Atlanta, Georgia, in 2010. Before joining the OU faculty, she worked as a senior structural engineer for three years at Simpson, Gumpertz & Heger, Inc. in Boston, MA, and was involved in projects concerning a variety of engineered facilities, including nuclear power plants, water distribution pipelines, radio telescopes, wind turbines, and buildings and bridges.

Dr. Wang's research interests include risk-based community resilience planning; risk-informed decision support to design and maintenance of resilient and sustainable civil infrastructure systems; analysis and mitigation of competing hazards and risks to infrastructure systems; performance-based design, renewal and rehabilitation; and structural safety and reliability assessment of complex infrastructure facilities. Her current research is aimed at providing decision support toward a resilient and sustainable built environment, emphasizing a system perspective as well as the need to embrace uncertainty and to communicate risk between different disciplines and stakeholders involved in the community resilience planning, specifically centered on: i) science-based measurement tools to assess the resilience of built environment, including building portfolios, transportation systems and utility facilities and networks; ii) risk-informed decision frameworks to support optimal life-cycle engineering aimed at enhancing community sustainability and resilience to natural hazards (e.g. earthquakes, tornados and floods); iii) interface between hazard modeling at a community scale with damage and functionality loss estimation of geographically distributed infrastructure systems in both spatial and temporal dimensions; and iv) uncertainty propagation in resilience quantification and risk-based community resilience planning. Dr. Wang is a team player in the NIST-funded Center for Risk-based Community Resilience Planning, in which she is a task lead on community building portfolio analysis, and takes an active role in decision modeling for resilience planning of transportation networks.

Dr. Wang serves a member and secretary of the ASCE Standard 7 Minimum Design Loads for Buildings and Other Structures, Subcommittee on Strength Design (Load Combinations) (since 2011), and is actively involved in several committee tasks, including working with the wind load subcommittee to develop new risk-informed wind maps for design. She also is a member of the 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 (since 2011), where she has been working to identify practical methodologies to quantify performance metrics of spatially distributed civil infrastructure networks. Dr. Wang is a member of NIST Community Resilience Panel, Committee on Data, Metrics & Tool, where she also served as a secretary in 2015-2016.

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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 |

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## PROFESSIONAL EXPERIENCE

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| 2013 - Present | Assistant Professor, School of Civil Engineering and Environmental Science, University of Oklahoma, USA |
| 2010 - 2013    | Senior Structural Engineer, Simpson Gumpertz and Heger, Inc., Waltham, MA, USA                          |

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## RESEARCH INTERESTS

- Risk-based community resilience planning;
  - Risk-informed decision support to resilient and sustainable civil infrastructure systems;
  - Analysis and mitigation of competing hazards and risks of infrastructure systems;
  - Impact of climate change on risk mitigation of civil infrastructure exposed to natural hazards;
  - Performance-based design, renewal and rehabilitation;
  - Structural safety and reliability assessment.
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## JOURNAL ARTICLES

- J1. Zhang, W., **Wang, N.**, Nicholson, C.D. & Tehrani M.H. (2017). “A Stage-wise Decision Framework for Transportation Network Resilience Planning and Recovery.” *Sustainable and Resilient Infrastructure*. In review
- J2. Lin, P. & **Wang, N.** (2017). “Stochastic Post-Disaster Functionality Recovery of Community Building Portfolios II: Implementation” *Structural Safety*. DOI: 10.1016/j.strusafe.2017.05.004
- J3. Lin, P. & **Wang, N.** (2017). “Stochastic Post-Disaster Functionality Recovery of Community Building Portfolios I: Modeling.” *Structural Safety*. DOI: 10.1016/j.strusafe.2017.05.002
- J4. McAllister, T., **Wang, N.** & Ellingwood, B.R. (2017). “Determining Mean Recurrence Intervals for Updated Wind Maps in ASCE 7-16.” *ASCE Journal of Structural Engineering*. In review
- J5. Zhang, W. & **Wang, N.** (2017). “Bridge Network Maintenance Prioritization under Budget Constraint.” *Structural Safety*. Volume 67, 96-104
- J6. Zhang, W., Lin, P., **Wang, N.**, Nicholson, C.D. & Xue, X. (2016). “Probabilistic Prediction of Post-Disaster Functionality Loss of Community Building Portfolios Considering Utility Disruptions.” *ASCE Journal of Structural Engineering, Special Issue on Structural Design and Robustness for Community Resilience to Natural Hazards*. In review

- J7. Feng, K., **Wang, N.**, Li, Q. & Lin, P. (2016). “Enhancing Resilience of Building Portfolios Considering the Functional Interdependence among Community Sectors.” *Structural Safety*. Volume 66, 118-126
- J8. Zhang, W., **Wang, N.** & Nicholson, C. (2017). “Resilience-based Post-disaster Recovery Strategies for Road-Bridge Networks.” *Structure and Infrastructure Engineering*, 13(11), 1404-1413.
- J9. Lin, P. & **Wang, N.** (2016). “Building Portfolio Fragility Functions to Support Scalable Community Resilience Assessment.” *Sustainable and Resilient Infrastructure*, 1(3-4), 108-122.
- J10. Xue, X., **Wang, N.**, Ellingwood, B.R. & Zhang, Ke. (2017). Flood Hazard Modeling to Support Community Resilience Planning for an Evolving Climate. *Natural Hazards Review*, In Review
- J11. Ellingwood, B. R., Cutler, H., Gardoni, P., Peacock, W. G., van de Lindt, J. W. & **Wang, N.** (2016). “The Centerville Virtual Community: A Fully Integrated Decision Model of Interacting Physical and Social Infrastructure Systems.” *Sustainable and Resilient Infrastructure*, 1(3-4), 95-107.
- J12. Lin, P., **Wang, N.** & Ellingwood, B. R. (2016). “A Risk De-aggregation Framework that Relates Community Resilience Goals to Building Performance Objectives.” *Sustainable and Resilient Infrastructure*, 1(1-2), 1-13.
- J13. Zhang, W. & **Wang, N.** (2016). “Resilience-based Risk Mitigation for Road Networks.” *Structural Safety*, 62, 57-65.
- J14. **Wang, N.** & B.R. Ellingwood (2015). “Limit State Design Criteria for FRP Strengthening of RC Bridge Components.” *Structural Safety*, 56, 1–8.
- J15. **Wang, N.** & Ellingwood, B. R. (2014). “Estimating Nominal Strength of Built-up CFRP Laminates from Standardized Specimen Tests.” *Structural Safety*, 47, 24-28.
- J16. **Wang, N.** & Zarghamee, M. S. (2013). “Evaluating Fitness-for-Service of Corroded Metal Pipelines: Structural Reliability Bases.” *Journal of Pipeline Systems Engineering and Practice*, 5(1), 04013012.
- J17. **Wang, N.**, O’Malley, C., Ellingwood, B. R. & Zureick, A. H. (2011). “Bridge Rating using System Reliability Assessment. I: Assessment and Verification by Load Testing.” *Journal of Bridge Engineering*, 16(6), 854-862.
- J18. **Wang, N.**, Ellingwood, B. R. & Zureick, A. H. (2011). “Bridge Rating using System Reliability Assessment. II: Improvements to Bridge Rating Practices.” *Journal of Bridge Engineering*, 16(6), 863-871.
- J19. **Wang, N.**, Ellingwood, B. R. & Zureick, A. H. (2010). “Reliability-based Evaluation of Flexural Members Strengthened with Externally Bonded Fiber-Reinforced Polymer Composites.” *Journal of Structural Engineering*, 136(9), 1151-1160.

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## BOOK CHAPTERS

- B1. Xue, X., **Wang, N.**, Ellingwood, B.R., and Zhang, K. (2017). “The role of climate change on resilience of communities vulnerable to riverine flooding.” in *Climate Change and its Impact: Risks and Inequalities*, Springer, New York (in press).

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### CONFERENCE PROCEEDINGS

- C1. Wang, Y. & **Wang, N.** (2017). A Decision Framework to Achieve Building Portfolio Resilience Goals under Tornado Hazard. *Proceedings of the 12th International Conference on Structural Safety & Reliability (ICOSSAR2017)*, Vienna, Austria, August 5-10, 2017.
- C2. Zhang, W., **Wang, N.**, Nicholson, C. & Tehrani, M.H. (2017). Stage-wised Resilience Planning for Transportation Networks. *Proceedings of the 12th International Conference on Structural Safety & Reliability (ICOSSAR2017)*, Vienna, Austria, August 5-10, 2017.
- C3. Lin, P. & **Wang, N.** (2017). A Simulation-based Model for Post-Disaster Functionality Recovery of Community Building Portfolios. *Proceedings of the 12th International Conference on Structural Safety & Reliability (ICOSSAR2017)*, Vienna, Austria, August 5-10, 2017.
- C4. Xue, X., **Wang, N.**, Ellingwood, B.R. & Zhang, K. (2017). “The Impact of Climate Change on Riverine Flooding at a Community Scale.” *Proceedings of the 12th International Conference on Structural Safety & Reliability (ICOSSAR2017)*, Vienna, Austria, August 5-10, 2017.
- C5. Dresback, D.M., Xue, X., Xu, J., **Wang, N.**, Kolar, R. L. & Geoghegan, K.M. (2017). “A Coupled Model System for Hurricanes, Storm Surge and Coastal Flooding to Support Community Resilience Planning under Climate Change.” *Proceedings of the 12th International Conference on Structural Safety & Reliability (ICOSSAR2017)*, Vienna, Austria, August 5-10, 2017.
- C6. Cutler, H., Nicholson, C., **Wang, N.** & Zahran, S. (2016). “Merging Economic and Civil Engineering Models to Estimate the Impact of Earthquakes.” *Proceedings of the 55th Annual Meeting of the Southern Regional Science Association*, Washington, D.C. 2016.
- C7. Van de Lindt, J.W., Ellingwood, B. R., **Wang, N.**, Mahmoud, H., Koliou, M. (2016). The Role of Structural Robustness in Risk-Informed Community Resilience Planning. In 85th Structural Engineers Association of California (SEAOC) Convention, Maui, 2016.
- C8. Zhang, W., Cao, M. & **Wang, N.** (2015). “Travel Time Reliability Based Bridge Network Maintenance Optimization under Budget Constraint.” *Proceedings of the 12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP12)*, Canada, July 12-15, 2015.
- C9. **Wang, N.** & Ellingwood, B.R. (2015). “De-aggregating Community Resilience Objectives to Achieve Building Performance Goals.” *Proceedings of the 12th International Conference on Applications of Statistics and Probability in Civil Engineering, ICASP12*, Canada, July 12-15, 2015.
- C10. **Wang, N.**, Ellingwood, B.R. & Zureick, A.H. (2013). “Reliability-based Framework for Improving Highway Bridge Capacity Ratings.” *International Conference on Structural Safety and Reliability (ICOSSAR2013)*, New York, USA, June 2013.

- C11. **Wang, N., & Zarghamee, M. S. (2012).** “LRFD Approach to CFRP Renewal of Prestressed Concrete Cylinder Pipes.” *Proceedings of Pipelines 2012: Innovations in Design, Construction, Operations, and Maintenance, Doing More with Less* (pp. 481-493).
- C12. **Wang, N. & Zarghamee, M. S. (2012).** “Reliability-based Framework for Determination of Fitness-for-Service of Corroding Metal Pipes.” *Proceedings of Structures Congress* (pp. 1247-1257). Chicago, USA, March 2012.
- C13. **Wang, N., Ellingwood, B. R. & Zureick, A. H. (2011).** “Improved Bridge Capacity Rating Methods Based on System Reliability Assessment.” *Proceedings of International Conference on Applications of Statistics and Probability in Civil Engineering (ICASPI1)*. Zurich, Switzerland, August 2011.
- C14. **Wang, N., Ellingwood, B.R. & Zureick, A. H. (2010).** “Reliability-Based Framework for Achieving Realistic and Time-Dependent Highway Bridge Capacity Ratings.” *Proceedings of International Symposium on Reliability Engineering and Risk Management (ISRERM2010)*, Shanghai, China, 2010.

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### TECHNICAL REPORTS

- R1. Zarghamee, M.S., Engindeniz, M. & **Wang, N.** “CFRP Renewal of Prestressed Concrete Cylinder Pipes,” Project No. 04352, published by Water Research Foundation, 2012.
- R2. Ellingwood, B.R., Zureick, A.H., **Wang, N.** & O'Malley, C. "Condition Assessment of Existing Bridge Structures, Task 4 - Development of Guidelines for Condition Assessment, Evaluation, and Rating of Bridges in Georgia" Georgia DOT Project RP 05-01, 2009.
- R3. **Wang, N.,** Ellingwood, B.R., Zureick, A.H. and O'Malley, C. "Condition Assessment of Existing Bridge Structures, Task 1 - State of the Art of Bridge Condition Assessment," Georgia DOT Project RP 05-01, 2008.
- R4. O'Malley, C., **Wang, N.,** Ellingwood, B.R. and Zureick, A. H. "Condition Assessment of Existing Bridge Structures: Report of Tasks 2&3 - Bridge Load Testing Program," Georgia DOT Project RP 05-01, 2007.

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### INVITED TALKS AND CONFERENCE PRESENTATIONS

- P1. “A Coupled Model System for Hurricanes, Storm Surge and Coastal Flooding to Support Community Resilience Planning under Climate Change.” Presented at the *12th International Conference on Structural Safety & Reliability (ICOSSAR2017)*, Vienna, Austria, August 5-10, 2017.
- P2. “Modeling the Recovery of Community Physical Systems from a Natural Disaster”. Tsinghua University, Beijing, China. June, 2017
- P3. “Measuring Robustness and Modeling Recovery of Community Building Portfolios”. Zhejiang University, Hangzhou, Zhejiang, China. May, 2017

- P4. “Stochastic Functionality Recovery of Community Building Portfolios”. Semi-Annual Meeting of the NIST-funded Center for Risk-based Community Resilience Planning, Fort Collins, Colorado, USA. April, 2017
- P5. “Stage-Wise Resilience Planning for Community Transportation Networks”. Semi-Annual Meeting of the NIST-funded Center for Risk-based Community Resilience Planning, Gaithersburg, Maryland, USA. November, 2016
- P6. “Resilience Planning of Roadway Networks” Invited talk at the Workshop on Resilient Civil Infrastructure Systems, Tsinghua University, Beijing, China. June, 2016
- P7. “Resilience Assessment of Community Building Portfolios”, Tongji University, Shanghai, China. June, 2016
- P8. “The Impact of Climate Change on Riverine Flooding”. Invited talk, co-presented at the Workshop on Climate Change and its Impacts: Risks and Inequalities, University of Illinois at Urbana-Champaign, IL, USA. March, 2016
- P9. “Toward a Resilient Built Environment”. Rice University, USA. April, 2016.
- P10. “Resilience Planning for Transportation Networks” Oregon State University, USA. May, 2015.
- P11. “Linking Community Resilience Goals to Performance Objectives of Individual Facilities.” Presentation at the Symposium on the Reliability of Engineering Systems, Hangzhou (SRES-Hangzhou), China, October 15-17, 2015.
- P12. “De-aggregating Community Resilience Objectives to Achieve Building Performance Goals.” Presentation at the International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP12), Canada, July 12-15, 2015.
- P13. “Travel Time Reliability Based Bridge Network Maintenance Optimization under Budget Constraint.” Presentation at the International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP12), Canada, July 12-15, 2015.
- P14. “Condition Assessment, Renewal and Resilience of Civil Infrastructure.” Invited talk at the Workshop on Risk and Uncertainty, University of Liverpool, UK, November 7-8, 2013
- P15. “Reliability-based Framework for Improving Highway Bridge Capacity Ratings.” Invited talk at the International Conference on Structural Safety and Reliability (ICOSSAR2013), New York, USA. June 2013.
- P16. “LRFD Approach for PCCP Renewal using CFRP Composite.” Presentation at the ASCE Pipeline Conference, Miami, USA. August 2012.
- P17. “Improved Bridge Capacity Rating Methods Based on System Reliability Assessment.” Presentation at the International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP), Zurich, Switzerland, August 2011.
- P18. “Fitness-for-Service Evaluation of Corroded Metallic Pipes.” Presentation at the ASCE Structures Congress, Chicago, USA, March 2012. (Awarded “Best of Best” Presentation)

- P19. “Reliability-based Framework for Achieving Realistic and Time-dependent Highway Bridge Capacity Ratings.” Presentation at the International Symposium on Reliability Engineering and Risk Management (ISRERM), Shanghai, China, 2010.

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### FUNDED PROJECTS

- “Collaborative Research RSB: A Risk-Informed Decision Framework to Achieve Resilient and Sustainable Buildings that Meet Community Objectives,” (2/15/15-2/14/19) National Science Foundation (NSF); Award No. CMMI-1452708; PI; \$400,000.
- “Center for Risk-Based Community Resilience Planning,” (2/1/15 - 1/31/20), National Institute of Standards and Technology (NIST); Award No. No. 70NANB15H044; OU PI; \$1,600,000.
- “Temperature Effects in Bridge Condition Evaluation and Capacity Rating in Oklahoma,” (11/01/14-04/31/17), Jointly funded by Southern Plain Transportation Center (SPTC) and Oklahoma Department of Transportation (ODOT); Award No. SPTC14.21; PI; \$168,000.

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### RESEARCH ACCOMPLISHMENTS PRIOR TO JOINING OKLAHOMA UNIVERSITY

- Dr. Wang’s research work on risk-informed condition assessment and safety evaluation of aging transportation infrastructure, conducted at Georgia Tech, developed methodologies to incorporate available site-specific in situ data into the safety evaluation process and produce a realistic and time-dependent safety measure that is reflective of structure’s in-service condition; this work formed the technical basis for Recommended *Guidelines for Condition Assessment and Rating of Bridges for the State of Georgia*.
- Dr. Wang has been involved in multiple projects on the development of probability-based limit state design criteria for strengthening RC structures using fiber-reinforced polymers (FRP) composites. These studies promote the use of FRP materials in strengthening RC structural systems and provide engineers with a rational and transparent reliability basis for repair and renewal civil structures to meet performance objectives at reasonable cost. Dr. Wang’s research supported by NCHRP and conducted at Georgia Tech contributed to the *NCHRP Guide Specification for Strengthening Existing Reinforced Concrete Bridges Using Externally Bonded Fiber Reinforced Polymer (FRP) Systems*.
- Dr. Wang’s work on renewal of prestressed concrete cylinder pipes (PCCP) using carbon FRP composites, sponsored by the Water Research Foundation and conducted at Simpson Gumpertz & Heger Inc. (SGH), provided the technical support to the limit state design criteria stipulated in the *AWWA Standard for CFRP Renewal and Strengthening of PCCP*.

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### TEACHING ACTIVITIES

- **GRADUATE ADVISING, STUDENT COMMITTEES, AND VISITING SCHOLARS**
  - **Ph.D. Students**
    - ♦ Peihui Lin; Civil Engineering; 2014-Present

Dissertation Topic: *Community Building Portfolio Analysis - Damage Assessment, Functionality Evaluation, Recovery Modeling and Resilience Planning*

- ◆ Yingjun Wang; Civil Engineering; 2015-Present  
Dissertation Topic: *A Framework for Community Resilience Planning under Multiple Competing Hazards*
- ◆ Weili Zhang; Industrial System Engineering; co-advised with Dr. Charles Nicholson (ISE); 2013-Present  
Dissertation Topic: *Modeling of Cascading Failure and Recovery of Interdependent Infrastructure Networks under Extreme Events*
- **Postdocs & Research Scientists**
  - ◆ Dr. Xianwu Xue; co-sponsored with Dr. Yang Hong (OU) & Dr. Bruce Ellingwood (CSU); July 2015- Present  
*Research Areas: Hydrological and hydraulic modeling of flood hazard to interface with damage and functionality assessment of community's civil infrastructure systems to support community resilience planning; GIS data processing*
- **Visiting Scholars**
  - ◆ Dr. Jia Xu, from Tsinghua University, August 2015-August 2016
  - ◆ Dr. Jun He, from Huzhong University of Science and Technology, January 2015 – January 2016
- **Service on Graduate Research Committees**
  - ◆ Chair and Co-chair of 3 Ph.D. Dissertation Committees
  - ◆ Member of 7 Ph.D. Dissertation Committees
  - ◆ Member of 1 M.S. Thesis Committee
- **COURSES**
  - Structural Analysis I (CEES 3414). This course introduces linear elastic static analysis (i.e., computation of joint displacements, member deformations, support joint reactions, member end forces, and internal member forces) of statically determinate and indeterminate framed structures.
  - Probability and Statistics - Application in Civil and Environmental Engineering (CEES 4253). This course provides the fundamental tools for engineering decision under uncertainty for civil and environmental systems, consistent with ASCE's Body of Knowledge for professional practice in the 21st century (c.f. ASCE Magazine, September, 2007). Topics include an introduction to probability theory; common probability laws; point and interval estimation methods; confidence intervals; statistical model development and hypothesis testing; regression analysis; and analysis of variance.
  - Structural Reliability & Risk-informed Decisions (CEES 5020). This course presents concepts and applications of probability and statistics for the analysis of reliability and risk of structures subjected to natural and man-made hazards; to provide insights and



perspectives on the use of these tools in engineering decision-making; and to establish a starting point for research in the field of structural reliability. Topics include stochastic modeling of structural strength and stiffness, loads and load combinations, reliability of structural elements and systems, time-dependent reliability, and probability-based codified design.

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### **PROFESSIONAL SERVICES**

- ❑ ASCE Standard Committee 7 on Minimum Design Loads for Buildings, Subcommittee on Strength Design (Load Combinations): Member and Secretary since 2011; actively involved in committee tasks, including working with the wind load subcommittee 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 (TG3) Risk Assessment of Structural Infrastructure Facilities and Risk-Based Decision Making: Member since 2012; actively involved in TG3 tasks, including identifying practical methodologies to quantify performance metrics of spatially distributed civil infrastructure networks.
- ❑ NIST Community Resilience Panel - Committee on Data, Metrics & Tool: Member, Since 2015; Secretary 2015-2016

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### **TECHNICAL CONFERENCES - SESSION ORGANIZATION AND CHAIR**

- ❑ International Symposium on Life-Cycle Civil Engineering (IALCCE2018), Ghent University, Belgium, October, 2018 - Member of Scientific Committee.
- ❑ International Conference on Structural Safety and Reliability (ICOSSAR2017), Vienna, Austria, 2017 - Mini-symposium on “The Role of Climate Change on Hurricanes, Storm Surges and Coastal floods,” Co-organizer and Co-chair (with Prof. Paolo Gardoni at University of Illinois at Urbana Champaign, USA).
- ❑ International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP12), Vancouver, Canada, 2015 - Mini-symposium on “Recent Developments in Reliability and Cost Prediction of Building Inventories and Civil Infrastructure Systems”; Co-organizer and Co-chair (with Prof. Bruce R. Ellingwood at Colorado State University, USA).
- ❑ International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP12), Vancouver, Canada, 2015 - Member of Scientific Committee.
- ❑ International Conference on Structural Safety and Reliability (ICOSSAR 2013), New York, USA, 2013 - Mini-symposium on “Reliability-based Methods for Civil Infrastructure Condition Assessment, Retrofit and Risk Management,” Co-organizer and Co-chair (with Prof. Akiyama Mitsuyoshi at Waseda University, Japan).

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## EDITORIAL BOARDS AND REVIEW ACTIVITIES

### ▣ EDITORIAL BOARD MEMBER:

- ◆ *Journal of Sustainable and Resilience Infrastructure*

### ▣ REVIEWER

- ◆ *ASCE Journal of Structural Engineering*
- ◆ *ASCE Journal of Bridge Engineering*
- ◆ *ASCE Journal of Pipeline Systems Engineering and Practices*
- ◆ *ASCE Journal of Natural Hazards Review*
- ◆ *Journal of Hydrology*
- ◆ *Journal of Sustainable and Resilience Infrastructure*
- ◆ *Reliability Engineering and System Safety*
- ◆ *Structure and Infrastructure Engineering*
- ◆ *Structural Safety*

### ▣ PROPOSAL REVIEWER AND PANELIST

- ◆ NSF CMMI 2013

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## HONORS AND AWARDS

- ▣ “Best of the Best” presentation at the 2012 Structures Congress, Chicago, 2012
- ▣ Edwin & Patsy G. Burdette Fellowship for Excellence, University of Tennessee, 2004.
- ▣ Outstanding Undergraduate Award, University of Electronic Science & Technology of China, 2000.
- ▣ Scholarship for Excellence, University of Electronic Science & Technology of China, 1998.

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## CONSULTING EXPERIENCE

*(Unless otherwise specified, all projects listed below are with Simpson Gumpertz & Heger Inc. 2010-2013)*

- ▣ Prestressed concrete pressure pipeline, Los Esteros Critical Energy Facility, San Jose, CA
  - ◆ Modeled and analyzed an 800ft long prestressed concrete pipeline subjected to seismic wave propagation
- ▣ Steel frame warehouse, Frazier Industrial Company, Long Valley, NJ.
  - ◆ Design, modeling and analysis of welded connection to meet AWS requirements for fatigue under cyclic load)
- ▣ 5-meter aperture terahertz telescope to be established at Dome A, Antarctica, Chinese Center for Antarctic Astronomy (CCAA), Nanjing, China.
  - ◆ Participated in conceptual-level design of the telescope to meet the performance requirement specified by CCAA;
  - ◆ modeled and analyzed the primary and secondary reflectors under gravity, thermal and extreme wind load conditions, which led to the final selection of materials and detailed design of the reflectors.
- ▣ Greenhouses at French Hall, University of Massachusetts, Amherst, MA.

- ◆ Analyzed and evaluated the ability of structures, built in the 1920's, to withstand wind and snow loads stipulated in modern codes.
- Metal pipeline, Palo Verde Nuclear Generating Station, Tonopah, AZ.
  - ◆ Investigated the failure behavior of 2"-96" diameter metal pipes with corrosion defects subjected to internal pressure load;
  - ◆ developed a closed-form solution to predict pipe burst strength.
- Prestressed concrete cylinder pipelines (PCCP), Water Research Foundation, Denver, CO.
  - ◆ Modeled and analyzed underground PCCP with diameters ranging from 12" -102" subjected to earth load, traffic load and internal pressure;
  - ◆ Assisted in full-scale three-edge-bearing test and hydrostatic test of 48"- and 54"- diameter pipes.
- Amelia Earhart Memorial Bridge, Charlotte, NC.
  - ◆ Investigated the fabrication imperfection-induced stress/strain field (e.g. caused by mill to bear tolerance or gap tolerance)
  - ◆ Developed during erection of the bridge at several joints/connections.
- Prestressed concrete pressure pipeline, Lakeside II Power Plant, Grand Prairie, TX.
  - ◆ Conducted the analysis of the behavior of a 1100ft long prestressed concrete pipeline subjected to seismic wave propagation
- Pressure-cast concrete lined steel pipe (PCSP), Ameron International, Rancho Cucamonga, CA.
  - ◆ Analyzed performance of 60" PCSP under combined bending and pressure loads;
  - ◆ developed FE model to simulate the soil-pipe interaction, which compared favorably with the observations/measurements obtained from full-scale experimental test.