

# FERNANDO MOREU, P.E.

[moreualo@illinois.edu](mailto:moreualo@illinois.edu) • (217) 417-1204

802 W. Nevada St. Urbana, IL 61801

Registered Professional Engineer in Indiana (PE11012342)

## RESEARCH INTERESTS

Structural dynamics, structural health monitoring, wireless smart sensor networks, railroad bridges, infrastructure management, real-time performance monitoring, structures design and construction

## EDUCATION

***Ph.D. Civil and Environmental Engineering*** May 2015

University of Illinois at Urbana-Champaign

Dissertation: “*Framework for Risk-based Management of Railroad Bridge Infrastructure; an Application of Structural Health Monitoring (SHM) using Wireless Smart Sensor Networks (WSSNs)*”

Adviser: Professor B. F. Spencer, Jr.

***M. S. Civil and Environmental Engineering*** May 2005

University of Illinois at Urbana-Champaign

Sponsored by ESCA Consultants, Inc. (Urbana, IL)

Adviser: Professor Doug A. Foutch

***B. S. Civil and Environmental Engineering*** August 1999

University of Granada (Spain)

Senior Project: “Pedestrian Bridge over C/Méndez Núñez at Granada, Spain”

With excellence award from the University of Granada for outstanding students

## RESEARCH EXPERIENCE

**Graduate Research Assistant** February 2011-present

*Smart Structures Technology Laboratory*

*University of Illinois at Urbana-Champaign*

- Proposed and conducted campaign monitoring of multiple railroad bridges within the Midwest for the validation of railroad bridge displacement measurements as a metric of bridge condition
- Developed long-term monitoring hardware and software interfaces in which the new system and sensors could be deployed for a longer period of time to collect remote, real-time data
- Designed, developed, tested and validated how to determine the speed and weight of trains using wireless friction-based strain sensors
- Developed and validated simplified field reference-free displacement estimation using WSSs of railroad bridge responses under trains
- Proposed and designed the development and initial validation of impact detection of railroad bridges (by highway traffic) using WSSs
- Developed a framework for risk-based management of railroad bridge infrastructure, providing displacement limits to assist informed decision-making at the management level

**Visiting Scholar**

June 2014-August 2014

*Structural Monitoring and Control Center, Department of Civil Engineering,  
Harbin Institute of Technology (HIT), Harbin (China) (click [here](#))*

- Assisted in the final meeting to approve the new national design code for Structural Health Monitoring (SHM) systems for large-span highway bridges approved by the Ministry of Transportation. Wrote summary in a report to ASCE (click [here](#))
- Conducted individual meetings with undergraduates, master students, Ph.D. students, young faculty, and senior faculty about the present civil engineering education in China
- Studied bridge construction practices and education methods in Chinese universities. Visited five different research centers, collecting research trends and innovations in SHM of bridges in China

**Graduate Research Assistant**

March 2009-March 2011

*RailTEC*

*University of Illinois at Urbana-Champaign*

- Identified research priorities for railroad bridges and structural engineering based on a survey of railroad bridge experts
- Determined sensor research priorities for simplified monitoring of safety and reliability of railroad bridges
- Developed a North American railroad bridge classification for SHM applications

**Visiting Scholar**

July 2010-August 2010

*Institute of Engineering Mechanics*

*China Earthquake Administration, Beijing (China) (click [here](#))*

- Assisted the pseudo-static testing of the World's largest and tallest prestressed bridge model, Niulan River Great Bridge (12 days).

**Visiting Scholar**

July 2010

*Industrial Smart Materials Applications (ISMA) (click [here](#))*

*Manufacturing Technology Platform, Eucenter, Polytect Project, University of Pavia (Italy)*

- Assisted with the seismic testing of the new sensor-embedded "seismic wallpaper", with supervision of dynamic testing using high sampling data collected by accelerometers and tiltmeters (3 days)

**Consultant**

June 2005-May 2006

*Newmark Structural Engineering Laboratory*

*University of Illinois at Urbana-Champaign*

- Identified research on railroad bridge concrete beams for Professor Kuchma's research group. Assisted with the design loads and coordinating with American Railway Engineering and Maintenance of Way Association (AREMA) Committee 8 (Concrete Bridges) (3 slab beams)

**Consultant**

February 2004-April 2004

*Champaign Builders Supply (CBS)*

*Champaign, Illinois*

- Directed the concrete testing, production, delivery, and validation for the pouring of super consolidated concrete for the strong-reaction wall for NEES facility
- Designed and tested super-flat mix design to determine water content for a new smart library project operated by robots

**Graduate Research Assistant**

May 2000-March 2001

*Mid-America Earthquake Center (MAE)*

*University of Illinois at Urbana-Champaign*

- Studied the design and performance of reinforced concrete models under seismic demand, testing new non-linear response under earthquakes.

## TEACHING EXPERIENCE

### **Certificate in Foundations of Teaching**

April 2015

*Center for Innovation in Teaching and Learning (CITL)*

*University of Illinois at Urbana-Champaign*

- Attending and evaluating the teaching of a professor and discussing teaching methodology after the lecture
- Reading one textbook about teaching philosophy and presenting results to a consultant in teaching
- Attending more than 8 hours of workshops in teaching
- Preparing teaching materials for a large audience of students, being evaluated by a teaching consultant, and receiving feedback and implementing lessons learned for a second lecture

### **Advanced Structural Dynamics**

Spring 2013

*CEE 573, University of Illinois at Urbana-Champaign*

*Teaching Assistant*

Instructor: Professor B. F. Spencer, Jr.

- Prepared teaching materials for advance graduate students
- Managed lab sessions, guided students to become familiar with digital signal processing, data acquisition, experimental model analysis, shaking table operation, sensor calibration and installation, etc.
- Prepared and delivered substitute lectures to explain theoretical concepts in simple terms, supervised group projects, created and graded homework, hosted office hours
- Designed and directed a new final project competition: full-scale in-situ sensing and experiments for modal analysis of a truss bridge
- Assisted students in the planning, execution, analysis, and presentation of the bridge testing using a FE model comparison. Allowed students to develop a new section to their project to promote creativity and critical thinking

### **Steel Design III**

Spring 2011

*CEE 560, University of Illinois at Urbana-Champaign*

*Teaching Assistant*

Instructor: Professor James M. LaFave

- Prepared homework materials and solutions for graduate students
- Provided students with industry examples to understand construction and maintenance implications related to steel design
- Graded homework, answered students questions

### **Structural Engineering**

Spring 2014

*CEE 360, University of Illinois at Urbana-Champaign*

*Lecturer*

Instructor: Professor B. F. Spencer, Jr.

- Prepared introductory notes, motivation, contents, and examples for juniors and seniors of different majors in engineering
- Prepared and delivered three lectures about fundamental methods of structural engineering analysis
- Met with students before and after the lecture period to answer students questions

## **Design of Structural Systems**

Spring 2003, Spring 2005

*CEE 360, University of Illinois at Urbana-Champaign*

*Lecturer*

Instructor: Professor Doug A. Foutch

- Designed and prepared presentations for both undergraduate (seniors) and graduate students
- Prepared and delivered two lectures about design and construction of structural systems
- Provided handouts and design materials, such as simple design drawings and contract specifications
- Met with students after the lecture period to answer students questions

## **MENTORING EXPERIENCE**

### **Professional Development Certificate**

May 2015

*Department of Civil and Environmental Engineering*

*University of Illinois at Urbana-Champaign*

- Three years program
- Assisting senior undergraduate students and junior graduate students to grow academically and professionally through mentoring
- Involves at least meeting once a month to monitor students' progress towards their academic program
- Includes service to the community through regular service hours

### **Graduate students**

- Landon Marston, Ph.D. Candidate September 2014-May 2015
- Som Dutta, Ph.D. Candidate September 2013-May 2014
- Guillermo Diaz-Fañás, M.S. January 2013-August 2014
- Fangzhou Dai, Ph.D. Candidate January 2013-December 2014
- Susu Lei, Ph.D. Candidate April 2013-September 2013

### **Undergraduate students**

- Cory Kuo (junior and senior years) September 2009-December 2010
- John Chiu (junior and senior years) January 2011-August 2011

## **INDUSTRY EXPERIENCE**

### **ESCA Consultants, Inc.**

November 2000-April 2011

*Urbana, Illinois*

*Structural engineer*

- Designed, checked, and constructed diverse structural systems
- Expert in highway and railroad bridges, University laboratories, diverse industry buildings, cooling towers and special foundations
- Diverse specialized services such as concrete ready-mix plant management and mix design, and design, fabrication, and evaluation of pre-stressed concrete beams

### **Newmark Structural Engineering Laboratory (NSEL)**

January 2000-November 2000

*Urbana, Illinois*

*Laboratory engineer*

- Programming, testing, collecting and analyzing data of multiple specimens, materials (aluminum, concrete, steel, masonry)

- Conducting experiments testing multiple behavior of structures (shear, tension, compression, flexure)

**Ofiteco Consultants**

July 1997-August 1997

*Nerja, Málaga (Spain)*

*Survey engineer*

- Assist and collaborate with the resident engineer
- Created new cartography, mapping, and directed field surveys

**AWARDS AND HONOR SOCIETIES**

Center for East Asian and Pacific Studies (CEAPS) Graduate Fellow	2014-2015
Foreign Language and Area Studies (FLAS) Graduate Fellow (click <a href="#">here</a> )	summer 2014
ASCE SEI Structures Congress Poster Selected as “Best of the Best Voting”	April 2012
Graduate College Dissertation Travel Grant, University of Illinois	2011-2012
Talentia Graduate Fellow, Spanish Government	2010-2011
2010 O. H. Ammann Research Fellow, ASCE (click <a href="#">here</a> )	2010
ASCE Young Engineer of the Year Award Central Illinois Section (click <a href="#">here</a> )	2010
Spanish Society of Civil Engineers Young Engineer of the Year Award (click <a href="#">here</a> )	2010
Max Zar Scholarship, Structural Engineering Foundation	fall 2009
National Science Foundation (NSF) Scholarship	July 2009
Regional Finalist “Idea to Product™ Competition”, Midwest Competition	March 2008
Award towards research assistants, University of Illinois	June 2000
Prize due to exceptional grades, University of Granada	June 1998
Tuition scholarship, Minister of Education of Spain	1996-1997

**REFEREED JOURNAL PUBLICATIONS**

1. **Moreu, F.**; Jo, H.; Li, J.; Kim, R.; Cho, S.; Kimmle, A.; Scola, S.; Le, H.; Spencer, Jr., B. F.; and LaFave, J. M. (2014); “Dynamic Assessment of Timber Railroad Bridges using Displacements”; ASCE Journal of Bridge Engineering (click [here](#))
2. **Moreu, F.** and LaFave, J. (2011); “Survey of current research topics-Railroad Bridges and Structural Engineering”; Railway Track & Structures, September, pgs. 65-70 (click [here](#))
3. Kim, R. E.; **Moreu, F.**; and Spencer, Jr., B. F.; “Development of a Calibrated Railroad Bridge FE Model using Wireless Smart Sensors”; Smart Structures and Systems (submitted, updating reviewers’ comments)
4. **Moreu, F.**; Jo, H.; Li, J.; Scola, S.; Spencer, Jr., B. F.; and LaFave, J. M.; “Reference-Free Displacement Estimation and Assessment for Railroad Bridges using Wireless Smart Sensors”; ASCE Journal of Bridge Engineering (submitted, updating reviewers’ comments)
5. **Moreu, F.**; Kim, R. E.; and Spencer, Jr., B. F.; “Framework for Monitoring Railroad Bridges using Wireless Smart Sensors”; Structural Control and Health Monitoring (submitted, awaiting reviewers’ comments)

6. **Moreu, F.** and Spencer, Jr., B. F.; “Framework for Risk-based Management of Railroad Bridge Infrastructure: an Application of Structural Health Monitoring (SHM) using Wireless Smart Sensor Networks (WSSNs)”;  
Structural Health Monitoring (to be submitted in February 2015)
7. **Moreu, F.** and Spencer, Jr., B. F.; “Wireless Monitoring of Dynamic Response of Railroad Bridges under Revenue Service Traffic to Inform Management Decisions”;  
ASCE Journal of Structural Engineering (to be submitted in March 2015)

## GRANTS, CONTRACTS

Grants and contracts I had formulated and wrote proposals for on behalf of the PIs (all awarded unless noted otherwise):

1. Federal Railroad Administration (FRA): Campaign Assessment of Railroad Bridges using Reference-Free Estimates of Bridge Displacement under In-Service Loads (PI B. F. Spencer, Jr.), February 2015-February 2017. Research Initiatives in Support of Rail Safety. BAA-2-14-2. FRA-TR-004, Track Structure Failure Research (concept paper accepted; formal technical submitted, under review) (\$307,461)
2. Association of American Railroads (AAR), Technology Scanning Program: Structural Health Monitoring of Railroad Bridges for Impact Detection (PI B. F. Spencer, Jr.), January 2015-December 2015 (\$30,000)
3. Federal Railroad Administration (FRA): Campaign Monitoring of Railroad Bridges in High-Speed Rail Shared Corridors using Wireless Smart Sensors (PI B. F. Spencer, Jr.), February 2013-February 2014. Research and Demonstration Projects Supporting the Development of High Speed and Intercity Passenger Rail Service, FRA BAA-2010-1 (\$164,456)
4. Association of American Railroads (AAR), Technology Scanning Program: Structural Health Monitoring of Railroad Bridges for Impact Detection (PI B. F. Spencer, Jr.), January 2014-December 2014 (\$30,000)
5. Association of American Railroads (AAR), Technology Scanning Program: Wireless Sensing Technology to Enhance Safety and Reliability for Railroad Bridges (PI James M. LaFave), January 2013-December 2013 (\$39,000)
6. Association of American Railroads (AAR), Technology Scanning Program: Wireless Sensing Technology to Enhance Safety and Reliability for Railroad Bridges (PI James M. LaFave), January 2012-December 2012 (\$34,000)
7. Association of American Railroads (AAR), Technology Scanning Program: Bridge Performance Assessment using Simplified Field Monitoring (PI James M. LaFave), January 2011-December 2011 (\$45,000)
8. Association of American Railroads (AAR), Technology Scanning Program: Structural Health Monitoring of Railroad Bridges for Impact Detection (PI B. F. Spencer, Jr.), January 2016-December 2016 (under preparation, to be submitted by March 2015)

## MAGAZINE ARTICLES

1. **Moreu, F.** (2014); “China Ministry OKs Code for Structural Health Monitoring Systems for Large Bridges”; ASCE Technical Notes (October) (click [here](#))
2. **Moreu, F.** (2009); “Young Engineers and Smart Structures”. The engineer’s activity. “Young & Engineer”. Revista de Obras Públicas. Number 3505. Colegio de Ingenieros de Caminos, Canales y Puertos. December [In Spanish] (click [here](#))

3. **Moreu, F.** (2007); Book review: “A story of the College of Civil Engineering; The College of Civil Engineering throughout its protagonists (Part I, 1802- 1898)”, by Fernando Sáenz Ridruejo. Madri+D. Dirección General de Universidades e Investigación. Consejería de Educación. Comunidad Autónoma de Madrid, Spain. October [In Spanish]
4. **Moreu, F.** (2007); “Alberto Bordallo Ruiz, civil engineer from Spain, finalist of the “Engineer of the Year” in Ireland”. The engineer’s activity. “Young & Engineer”. Revista de Obras Públicas. Number 3483. Colegio de Ingenieros de Caminos, Canales y Puertos. October [In Spanish] (click [here](#))
5. **Moreu, F.** (2007); “Seminar by Martita Mullen in the Civil Engineering College at the University of Granada”. The engineer’s activity. “Young & Engineer”. Revista de Obras Públicas. Number 3480. Colegio de Ingenieros de Caminos, Canales y Puertos. September [In Spanish] (click [here](#))

## TECHNICAL REPORTS

1. Spencer, Jr., B.F., **Moreu, F.**, Kim, R., Stuart, C. (2014); “Campaign Monitoring of Railroad Bridges in High-Speed Rail Shared Corridors using Wireless Smart Sensors”; Federal Railroad Administration. Research and Demonstration Projects Supporting the Development of High Speed and Intercity Passenger Rail Service, FRA BAA-2010-1 (accepted)
2. **Moreu, F.** and LaFave, J. (2012); “Current Research Topics: Railroad Bridges and Structural Engineering”; Newmark Structural Engineering Laboratory (NSEL) Report Series 032; University of Illinois at Urbana-Champaign (UIUC), Urbana, IL (click [here](#))

## PUBLICATIONS IN CONFERENCE PROCEEDINGS

1. Spencer, Jr., B.F., **Moreu, F.**, Kim, R. (2014); “Structural Health Monitoring of Railroad Bridges Using Wireless Smart Sensors (WSSs): Recent Real-world Experiences in North America”; Fourth International Symposium on Life-Cycle Civil Engineering (IALCEE 2014); Waseda University, Tokyo, Japan, November 16-19
2. **Moreu, F.**; Jo, H.; Li, J. Cho, S.; Kim, R.; Spencer, B.; and LaFave, J.; (2012); “Reference-free displacement estimation for structural health monitoring of railroad bridges”; AREMA 2012 Annual Conference & Exposition, Chicago, IL, September (click [here](#))
3. **Moreu, F.**; LaFave, J.; Spencer, B. (2012); "Structural health monitoring of railroad bridges – research needs and preliminary results"; Structures Congress (ASCE-SEI 2012), Chicago, IL, March (click [here](#))
4. **Moreu, F.**; LaFave, J.; Spencer, B. (2012); “New regulations on railroad bridge safety: opportunities and challenges for railroad bridge monitoring”; SPIE, Smart Structures and Nondestructive Evaluation and Health Monitoring, San Diego, CA, March (click [here](#))
5. Ren, J. J.; Wang, P.; Xiang, R.; **Moreu, F.** (2011); “Rub-plate length influence on longitudinal coupled slab track forces and displacements in railroad bridges turnouts”, Transportation Research Board (TRB) Annual Meeting, Washington, DC, January (click [here](#))
6. **Moreu, F.** (2008); “Young Structural Engineers Building Structures for the Poor”; Proceedings of the 17th Congress of IABSE (International Association for Bridge and Structural Engineering): “Creating and Renewing Urban Structures. Tall Buildings, Bridges and Infrastructure”, Chicago, IL, September (click [here](#))
7. **Moreu, F.**, Nagayama, T., Zeman, J., Rus, G., Lee, S.Y., and Park, T. (2008); “Railroad Bridge Replacement in the US Today: Current Technology and Future Possibilities”; Proceedings of the Fourth International Conference on Bridge Maintenance, Safety and Management, IABMAS

(International Association for Bridge Maintenance and Safety), Seoul, South Korea, July (click [here](#))

8. **Moreu, F.** (2008); “Upgrading Railroads Infrastructure with Prestressed Concrete Bridges”; Proceedings of the 2008 Concrete Bridge Conference. HPC – Safe, Affordable and Efficient. NCBC (National Concrete Bridge Council), Saint Louis, MO, April
9. **Moreu, F.** and Nagayama, T. (2008); “Use of Wireless Sensors for Timber Trestle Railroad Bridges Health Monitoring Assessment”; ASCE Conf. Proc. 314, 36; Proceedings of the 2008 Structures Congress: Crossing Borders; DOI:10.1061/41016 (314) 36, April (click [here](#))
10. **Moreu, F.** and Nagayama, T. (2007); “Possibilities of Using Sensing Technology For Railroad Bridges Maintenance and Repair”; Proceedings of the IABSE Symposium ‘Improving Infrastructure Worldwide – Bringing People Closer’; Weimar, Germany, September 19-21. ISBN: 978-385748-116-1 (click [here](#))
11. **Moreu, F.** (2007); “Building US Railroad Bridges Within Hours a.k.a. “Railroad Bridge Change-Outs”; Proceedings of the IABSE Symposium ‘Improving Infrastructure Worldwide – Bringing People Closer’; Weimar, Germany, September 19-21. ISBN: 978-385748-116-1 (click [here](#))
12. **Moreu, F.** (2007); “Consulting Engineering, Research and Innovation in Civil Engineering in the United States. Potential Applications to Engineering Practice in Spain”. Proceedings of the II Nacional Consulting Engineering Congress. Madrid, Spain. April 23, 24 [In Spanish]
13. **Moreu, F.** (2006); “Construction of a New 80’–0” Steel Girder Span. Mile U5.6 Edgewood Subdivision, Cruse, IL”; Proceedings of the 7th International Conference on Short and Medium Span Bridges 2006, Montreal, Canada, August
14. **Moreu, F.** (2006); “New Memphis Super Terminal (MST) Intermodal Railroad. Bridge over Horn Lake Cut-off Ditch Design and Construction”; Proceedings of the 7th International Conference on Short and Medium Span Bridges 2006, Montreal, Canada, August
15. **Moreu, F.**; Gagnon, E.; Edwards, R. (2006); “Railroad Bridges in the Service of Society”; Fernando Moreu, Eric Gagnon, Riley Edwards. Proceedings of the 3rd National Congress of Civil Engineering, Zaragoza, Spain, October
16. **Moreu, F.** (2005); “Prestressed Concrete Railroad Bridges on Driven H-Piles: The Mile Bridge, KY (USA)”; Proceedings of the Structural Engineering Seminar 2004-2005. Seminario José Antonio García García. University of Granada (Spain), May

## BOOKS

1. Seismic Performance of the non-linear new element 08 for DRAIN-2DX, analysis software for non-linear elements under seismic demands; University of Granada, Granada (Spain) [In Spanish] (click [here](#))

## PAPERS AND POSTERS PRESENTED AT PROFESSIONAL MEETINGS (WITHOUT, OR NOT IN, PROCEEDINGS)

1. Kim, R. and **Moreu, F.** (2014): “Model Development and Identification for a Railroad Bridge using Wireless Smart Sensors”; Computational Science and Engineering Annual Meeting, National Center for Super Computer Applications (NCSA), Urbana, IL, April 7
2. **Moreu, F.** (2014): “Campaign Monitoring of Railroad Bridges using Wireless Smart Sensors: Past, Present, and Future”; EKS Research Retreat, Allerton Conference Center, University of Illinois, Monticello, IL, February



3. **Moreu, F.** (2013): “Structural Health Monitoring of Railroad Bridges”; EKS Research Retreat, Allerton Conference Center, University of Illinois, Monticello, IL, February
4. **Moreu, F.;** LaFave, J.; Spencer, B. (2012); " Structural health monitoring of railroad bridges – research needs and preliminary results"; Structures Congress (ASCE-SEI 2012), Chicago, IL, March
5. **Moreu, F.** and LaFave, J. M. (2012): “Wireless Sensing Technology to Enhance Safety and Reliability for Railroad Bridges” ; Association of American Railroads (AAR) Annual Research Review, Pueblo, CO, March
6. **Moreu, F.;** LaFave, J.; Spencer, B. (2012); “ New regulations on railroad bridge safety: opportunities and challenges for railroad bridge monitoring”; SPIE, Smart Structures and Nondestructive Evaluation and Health Monitoring, San Diego, CA, March
7. **Moreu, F.** (2012): “Railroad Bridge Replacement Prioritization”; EKS Research Retreat, Allerton Conference Center, University of Illinois, Monticello, IL, February
8. **Moreu, F.** (2012); “Structural Health Monitoring of Timber Railroad Bridges”; AREMA Committee 10 meeting, Burlington, IA, June 18-20
9. **Moreu, F.** and LaFave, J. M. (2010): “Bridge Performance Assessment using Simplified Field Monitoring”; Association of American Railroads (AAR) Annual Research Review, Pueblo, CO, February

#### **INVITED ORAL PRESENTATIONS / TECHNICAL SEMINARS**

1. Institute of Disaster Prevention, Beijing (China), August 4, 2014: “Structural Health Monitoring (SHM) of Railroad Bridges”
2. Institute of Engineering Mechanics, China Earthquake Administration, Harbin (China), July 14, 2014: “Structural Health Monitoring (SHM) for Railroad Bridges using Wireless Smart Sensor (WSSs) in North America”
3. Department of Transportation Engineering, Harbin Institute of Technology (HIT), Harbin (China), July 9, 2014: “Railroad Bridges Replacement Projects in North America (Change Outs): Why, What, and How?”
4. Department of Civil Engineering, Northeast Forestry University, Harbin (China), July 7, 2014: “New Smart Technologies for Safely Designing and Maintaining Civil Engineering Structures: The Illinois Approach” (click [here](#))
5. Department of Civil Engineering, Harbin Institute of Technology, Harbin (China), July 4, 2014: “Campaign Monitoring of Railroad Bridges using Wireless Smart Sensors: Past, Present, and Future” (click [here](#))
6. Society of Civil Engineers of Spain, Granada (Spain), December 30, 2011: “Civil Engineering Professional Developments in United States”
7. University of Granada and Society of Civil Engineers of Spain, Granada, Spain, December 30, 2010: “Civil Engineering Education in United States”
8. Engineering Week, LaSalle Bajío University, León (Mexico), Teleconference, October 12, 2010: “Young and Engineer: Is there any Future?”
9. Institute of Engineering Mechanics, China Earthquake Administration, Beijing (China), August 2, 2010: “Railroad Bridges and Structural Health Monitoring”

10. Employment Fair Expo, University of Granada, Granada (Spain), May 20, 2010: “Engineering Education in the Global Market”
11. Maintenance of Way Club of Chicago, Chicago, IL, January 18, 2010: “Railroad Bridges Maintenance”
12. Department of Structural Engineering and Mechanics, University of Granada, Granada (Spain), January 12, 2010: “Railroad Bridges and Structural Health Monitoring”
13. Society of Civil Engineers of Spain, Granada (Spain), December 31, 2009: “Young & Engineering, the American Experience”
14. ASCE Eastern Illinois Professional Chapter, Champaign, IL, December 15, 2009: “Railroad Bridges in the US inspection, maintenance and management”
15. Institute of Engineering Mechanics, China Earthquake Administration (Harbin, China), August 6, 2007: “US Midwest bridges and other structures”
16. Bridges and Structures Laboratory, Department of Civil Engineering, University of Tokyo, Tokyo (Japan), August 2, 2007: “Bridges Connecting Society”
17. Department of Civil and Environmental Engineering, Christian Brothers University, Memphis, TN, March 2007: “Structural Engineering: Projects and Examples”
18. Ecole Nationale des Ponts et Chaussées, Paris (France), May 2006: “USA railroad intermodal facilities”
19. Maintenance of Way Club of Chicago, Chicago, IL, May 2006: “Edgewood Railroad Bridge Design and Construction Particularities”
20. ASCE student chapter, Civil Engineering Department, Santa Clara University, Santa Clara, CA, May 2005: “Midwest Structures Design and Construction”
21. Department of Structural Engineering and Mechanics, University of Granada, Granada (Spain), December 2004: “Prestressed Concrete Railroad Bridges on Driven H-piles: The Mile Bridge, Ky (USA)”
22. Bridges and Structures Laboratory, Department of Civil Engineering, University of Tokyo, Tokyo (Japan), May 2004: “USA Structures throughout their Design”

## **WORKSHOP PARTICIPATION**

- Workshop on Cyber-Physical Co-Design of Wireless Monitoring and Control for Civil Infrastructure, Thomas M. Siebel Center for Computer Science, University of Illinois, Urbana, IL, February 17-18 2011
- Interactive Workshop on Bridge Inspection and Rating, University of Illinois, Urbana, IL, February 24, 2010
- Design of Deep Foundations, Ensoft, Inc. Austin, TX, November 11-13, 2003
- Bridge Construction Inspection, Technology Transfer Program, IDOT, 2003

## **PROFESSIONAL SERVICE**

Professional committee memberships:

- AREMA Committee 10: Construction, Management and Maintenance of Railroad Bridges
- AREMA Committee 10, Research and Advancement Subcommittee: Assistant to the Chairman

Technical reviewer for:

- Journal of Vibration and Control
- Journal of Control and Health Monitoring (on behalf of Professor B. F. Spencer, Jr.)
- Journal of Smart Structures and Systems (on behalf of Professor B. F. Spencer, Jr.)
- Journal of Performance of Constructed Facilities, ASCE (on behalf of Professor B. F. Spencer, Jr.)
- Journal of Bridge Engineering, ASCE (on behalf of Professor James M. LaFave)
- Journal of Engineering Structures (on behalf of Professor James M. LaFave, multiple times)

Service at professional venues:

- Fulbright Scholarship Candidates Interview Committee, University of Illinois at Urbana-Champaign, September 2014
- Co-Chair, afternoon session, EKS retreat, Allerton Park Retreat Center, Monticello, IL, February 1-2 2014
- Delegate of the Spanish Society of Civil Engineers, International Meeting with Board of Directors, ASCE Annual Conference, Charlotte, NC, October 15-17, 2013
- Chairman, Second Meeting of Civil Engineers from Spain in the US, Illini Center, Chicago, IL November 10-11, 2012
- Chairman, First Meeting of Civil Engineers from Spain in the US, Urbana Country Club, Urbana, IL, April 27, 2012
- Delegate of the Spanish Society of Civil Engineers, International Agreement with the Canadian Society of Civil Engineers (CSCE), International Heritage Landmark in Civil Engineering, Niagara Falls, ON (Canada), September 28-30, 2010
- Host from the Spanish Society of Civil Engineers to Stefan Jaeger (ASCE), ASCE 2025 Vision presentation to the Spanish Civil Engineering Associations, Madrid (Spain) June 21-23, 2010
- Delegate of the Spanish Society of Civil Engineers, International Heritage Landmark in Civil Engineering, with ASCE President Blaine Leonard and Washington State Governor Christine Gregoire, Port Townsend, WA (US), April 20-23, 2010 (click [here](#))

## COMMUNITY SERVICE

- Alhambra High School IES (6<sup>th</sup>-8<sup>th</sup> grades), Granada (Spain), January 9, 2009: "US railroad bridges: design and construction"
- Math Counts Judge, Illinois Society of Professional Engineers, February 2003: Judge
- Franklin Middle School (6<sup>th</sup>-8<sup>th</sup> grades), Champaign, IL, January 2002-May 2003: "Bridges and Towers" (+10 lectures)
- Regina Mundi High School (6<sup>th</sup> and 7<sup>th</sup> grades), Granada (Spain), May 1999: "Introduction to Construction and Technology" (+4 lectures)
- Augustine's High School (juniors and seniors), Granada (Spain), March 1998: College orientation
- Augustine's Foundation (6<sup>th</sup> and 7<sup>th</sup> grades), tutor, Castell de F. Granada (Spain) 1997: summer counselor and camping trip director
- Blanca Paloma Foundation (3<sup>rd</sup>-6<sup>th</sup> grades), tutor, La Zubia, Granada (Spain) 1991: math counselor and camping trip assistant

## LEADERSHIP EXPERIENCE

- Race “Brave & Engineer” December 2007-December 2013  
Founder and Race Director  
*8 miles race co-planned with the Society of Civil Engineers from Spain at Granada, Spain*
- “Young & Engineer” May 2001-December 2011  
Founder and Chairman  
*Professional annual venue directed to young civil engineering professionals and students*
- Professional Society “Young & Engineer” December 2002-January 2007  
Founder and First President  
*Registered National Association at Spain*
- Graduate Discussion Group November 2000-May 2005  
Founder and First President  
*Registered Student Organization  
University of Illinois at Urbana-Champaign*

## PROFESSIONAL MEMBERSHIP

- American Society of Civil Engineers (ASCE)
- Structural Engineering Institute (SEI)
- Structural Engineering Association of Illinois (SEAIO)
- International Society for Optics and Photonics (SPIE)
- American Railway Engineering and Maintenance-of-Way Association (AREMA)
- American Concrete Institute (ACI)
- American Institute of Steel Construction (AISC)
- Chi Epsilon, Civil Engineering Honor Society
- Spanish Society of Professional Civil Engineers (Spain) (CICCP)
- Spanish Society of Civil Engineers (Spain) (AICCP), Member, US & Canada Representative

## LANGUAGES

- Spanish (fluent reading/writing)
- Chinese (fluent reading/writing).