Amjad J. Aref, Ph.D.

OFFICE

University at Buffalo–The State University of New York
Department of Civil, Structural, and Environmental Engineering
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CITIZENSHIP: U.S.

EDUCATION

Ph.D. Civil Engineering
University of Illinois at Urbana-Champaign, January 1997
Dissertation: "A Novel Fiber Reinforced Composite Bridge Structural System"
Advisor: Professor I.D. Parsons

M.S. Civil Engineering
New Jersey Institute of Technology, May 1991
Advisor: Professor M. A. Saadeghvaziri

B.S. Civil Engineering
Birzeit University, Palestine, May 1987

PROFESSIONAL EXPERIENCE

Academia

University at Buffalo, Department of Civil, Structural and Environmental Engineering
Associate Professor, August 2003–present.

University at Buffalo, Department of Civil, Structural and Environmental Engineering
Assistant Professor, August 1997–July 2003.

University of Illinois at Urbana-Champaign, Department of Civil Engineering
Research Assistant, August 1993- August 1996
Teaching Assistant, September 1996– January 1997

Industry

East Coast Welding Co., East Orange, New Jersey
Engineer, June 1991- July 1992

AWARDS

Riefler Award, 1999. Awarded by the School of Engineering at SUNY-Buffalo.

The Pankow Award for Innovation, 2000. Awarded by the Civil Engineering Research Foundation for the project dealing with effective rehabilitation of a truss bridge with fiber reinforced polymeric (FRP) deck system. Jointly awarded with New York State Department of Transportation and industrial partners.

Research Summary

Current research activities focus on the following:

- The applications of fiber reinforced polymeric (FRP) structural systems for buildings and bridges.
- Computational mechanics with emphasis on development of efficient algorithms for solving nonlinear structural problems.
  The primary focus of this research is on the formulation and parallel implementation of flexibility-based algorithms and computational framework.
- Multi-physics problems, which cover the following two aspects:
  1. *Development of high performance functionally graded materials for blast and high velocity impact applications.*
  2. *Blast simulations and assessment of structural vulnerabilities.*
- Earthquake engineering related research that focuses on the development of innovative systems for accelerated bridge construction.
  This research deals with the application of precast-prestressed segmental concrete systems for bridge piers and superstructural systems in seismic regions.

Graduate Student Advisement

Ph.D. Dissertations (primary advisor)

1. YiHong He, "Simplified Analysis and Optimum Design of FRP Web Core Sandwich Bridge Deck Systems," completed May 2002.
2. Yasuo Kitane, "Development of Hybrid FRP-Concrete Bridge Deck and Superstructure Systems," completed January 2003. Assistant Professor, Department of Civil Engineering, Nagoya University, Japan.
3. WooYoung Jung, "Polymer Matrix Composite Infill Wall Systems for Seismic Retrofitting," completed September 2003. Assistant Professor, Kangnung National University, South Korea.
4. Methee Chiewanichakorn, "Intrinsic Method of Effective Flange Width Evaluation for Steel-Concrete Composite Bridges," completed January 2005. KPFF Consulting, Los Angeles, CA.
5. Wasim Barham, "Development of Large Increment Method for Solving Nonlinear Structural Systems," September 2005. Assistant Professor, Southern Polytechnic State University, Marietta, GA.
6. Wael Alnahhal, "Development and Optimization of Hybrid FRP-Concrete bridge components," completed December 2006. Structural Engineer, Halcrow Yolles, Toronto, Canada.
7. Xiaobo Luo, "Development of Layered Elastic Stress Wave Attenuators for Mitigating Impulsive Loadings," completed February 2008.
8. Petros Sideris, "Seismic Effects of Prefabricated Superstructure Systems", (co–advised with A. Filitrault).
9. Hongwei Cai, "Cable-stayed Bridges with FRP Components"

Ph.D. Dissertation (committee member)

10. Ayman Shama, "On the Seismic Analysis and Design of Pile-to-Cap Connections," J. Mander and S. Chen , advisors, August 2000. Bridge Engineer, Parsons Bridge and Tunnel Division, New York, NY.

11. Ying Zhao, "Mechanics of Ball Grid Array Packages: Testing and Modeling," December 2000. Senior Reliability Engineer, Analog Devices, Norwood, MA. C. Basaran, advisor.

12. George Mavroeidis, "Modeling and Simulation of Near-Fault Ground Motion and its Implications on Long-Period Structures, " Apostolos S. Papageorgiou, advisor. 2004.

13. Hong Tang, "A Thermodynamic Damage Mechanics Theory and Experimental Verification: Thermomechanical Fatigue Life Prediction of Microelectronics Solder Joints. " 2003. C. Basaran, advisor.

14. Shiwa Nie, "A Thermodynamic Framework for Damage Mechanics of Particle Infilled Polymer Composites," 2005. C. Basaran, advisor.

15. Renee M. Bagwell, "Modifying Ductile Fibers to Improve Fracture and Impact Toughness if Brittle Matrix composites," 2005. Department of Mechanical and Aerospace Engineering, UB, Wetherhold, R. C., advisor.

16. Weiwei Jia, "Electro-Osmotic Grouting Technique for Liquefaction Mitigation of Low Permeability Silty Soils," 2006, Theva, advisor.

17. Shuichi Fujikura, "Multi-hazard design of bridge piers General area of investigation: Structural Eng and Blast eng," Michel Bruneau, advisor.

18. Bing Qu, "Seismic Behavior and Design of Boundary Frame Members of Steel Plate Shear Walls," Michel Bruneau, advisor.

19. Sangyul Cho, "Multiple Hazards and Corresponding Loads for Highway Bridges Design", Geroge Lee, advisor.

20. Dongkeon Kim, " The study of constitutive and fracture damage model for large deformation problem under dynamic loading," G. Dargush, advisor.

21. Ioannis V. Kalpakidis, "Heating and History of Loading Effects on Behavior of Lead-Rubber Bearings," Ph.D., expected 2008, M. Constantinou, advisor.

22. Yu-Chen Ou, "Precast Segmental Post-Tensioned Concrete Bridge Piers for Seismic Retrofitting," G.C. Lee, advisor, September 2007.

23. Hongbo Wang, " A Passive Adaptive Control Fluid Damping Device for Seismic Protection of Structures," G.C. Lee, Advisor, December 2007.

24. Yi-Lun Chu, "Modal Analysis of Arbitrarily Damped Three-Dimensional Linear Structures Subjected to Seismic Excitations," G.C. Lee, Advisor, February 2008.

25. Lee, HyunSuk "Accurate and Efficient Boundary Element Analysis of 3-D Wave" G. Dargush, advisor.

26. Eray Gunel. "Stress Whitening in Thermoformed Particle Filled Acrylic Sheets", Basaran, advisor.

27. Samer Elbahey. "Structural Fuse Concept for Bridges" Bruneau, advisor.

Ph.D. Dissertation (outside reader)

28. Zhen Mei (D. L. Chung, advisor), "Nondestructive Evaluation of Composite Materials by Electrical Resistance Measurement," Department of Mechanical and Aerospace Engineering, University at Buffalo, December, 2000.

Post- Doctoral Supervision

29. Dr. Methee Chiewanichakorn, 2005–2006.

30. Dr. Gordon Warn, 2007–2008.

Masters Theses and Projects

31. Justin Gecewicz, M.S. "A framework for Determining the Effectiveness of Polymer Matrix Composite Box Infill Walls as a Seismic Retrofit System." Completed May 2004. Engineer at Moog Inc.

32. Jeffrey Carpenter. M.S., "Negative Moment Experimental Investigation of Two 1/2–scale Composite Bridge Specimens." Completed August 2004. Engineer at Baird Air, Inc. (co-advised with S. Chen)

33. Ioannis V. Kalpakidis, M.E. degree. "Evaluation of the Effective Slab Width for Composite Cable-Stayed Bridges." Completed August 2004. (co–advised with S. Chen)

34. Aaron Nottis, M.S. "Experimental and Analytical Comparison of Service and Strength Limit States for 1/4–scale Composite Bridge." Completed February 2004. Acres International. (co-advised with S. Chen)

35. Sumit Bansal, " Implementation of the Large Increment Finite Element Method for Nonlinear Analysis of Structures," January 2007. Weidlinger Associates, NY.

36. Ashish Goel, "Computational Design of Layered Barrier System for Vehicle Impact Attenuation." (committee member, advisor: G. Dargush, MAE)

GRANTS

Fatigue Behavior of Hybrid FRP-Concrete Bridge Deck Systems and Connection Details; (C-02-07 continuation)
A. J. Aref (PI)
Sponsor: Transportation Infrastructure Research Consortium (TIRC)/New York State Department of Transportation (NYSDOT)
June 2007-May 2009; funding: $120,000.
Effort: 100%

Development of technical Monograph on Seismic Effects of Prefabricated Bridge Systems,
Aref (PI) with G.C. Lee and S. Chen.
Sponsor: FHWA
September 2007-September 2008, funding: $30,714.
Effort: 33%

Seismic Effects of Prefabricated Superstructure Systems,
Aref (PI)
Sponsor: FHWA
September 2007-September 2008, funding: $100,272.
Effort: 100%

Investigation of Seismic Effects of Prefabricated Superstructure Systems,
Aref (PI)
Sponsor: FHWA
September 2005-September 2007, funding: $146,400.
Effort: 100%

Temporal Thermal Analysis of Fiber-reinforced Polymer Bridge Deck
Aref (PI)
Sponsor: NYSDOT
September 2004-December 2004, funding: $9500.
Effort: 100%

Travel Support to attend the NSF-supported workshop on the "Performance and Design of Fiber Reinforced Polymer Composites at Very Low Temperatures"
Workshop held in Fairbanks, Alaska, August 13-16, 2004.
Funds: $1000, NSF through Purdue University
Effort: 100%

Modeling Visco-elastic Composite Panels and Impact on Floor Velocity and Acceleration
A. J. Aref (PI)
Sponsor: MCEER, NSF;
2004-2005 (year 8); funding: $40,000.
Effort: 100%

Seismic Effects of Prefabricated Bridge Substructures
A. J. Aref (PI)
Sponsor: FHWA
2005-2007; funding: $140,000.
Effort: 100%

Hybrid FRP-Concrete Bridge Deck Systems; (C02-07)
A. J. Aref (PI)
Sponsor: Transportation Infrastructure Research Consortium (TIRC)/New York State Department of Transportation (NYSDOT)
2003-2006; funding: $240,000.
Effort: 100%

GRANTS (continued)

The Application of a Finite Element-Based Large Increment Method for Nonlinear Structural Problems; (CMS-0002936)
A. J. Aref (PI) and G. F. Dargush (co-PI)
Sponsor: National Science Foundation (NSF)
2000-2003; funding: $180,000.
Effort: 50%

Effective Slab Width for Composite Steel Bridge Members; (NCHRP 12-58)
A. J. Aref (co-PI), S. Chen (PI)
Sponsor: National Cooperative Highway Research Program (NCHRP)
2001-2004; funding: $200,000.
Effort: 50%

Scale Model Testing for Effective Slab width; (NCHRP12-58- supplemental)
A. J. Aref (co-PI), S. Chen (PI)
Sponsor: National Cooperative Highway Research Program (NCHRP)
2001-2004; funding: $160,000.
Effort: 50%

Use of New and Durable Advanced Materials for Infrastructure Applications; (C008737)
A. J. Aref (PI)
Sponsor: Transportation Infrastructure Research Consortium (TIRC)/NYSDOT
1999-2000; funding: $50,000.
Effort: 100%

Analysis and Design Procedures of FRP bridge Deck Systems; (C008737)
A. J. Aref (PI)
Sponsor: Transportation Infrastructure Research Consortium/NYSDOT
2000-2001; funding: $50,000.
Effort: 100%

Polymer Matrix Composite Infill Walls For Seismic Retrofitting;
A. J. Aref (PI)
Sponsor: Multidisciplinary Center for Earthquake Engineering Research (MCEER), NSF
1998-2002; funding: $146,000.
Effort: 100%

Polymer Matrix Composite Infill Walls For Seismic Retrofitting;
A. J. Aref (PI)
Sponsor: MCEER, NSF;
2002-2003 (year 6); funding: $40,000.
Effort: 100%

Polymer Matrix Composite Infill Walls For Seismic Retrofitting;
A. J. Aref (PI)
Sponsor: MCEER, NSF;
2003-2004 (year 7); funding: $60,000.
Effort: 100%

Pending Proposals

Development of Sustainable Bridge Systems
A.J. Aref (PI) with Dr. Khaldoon Bani – Hani Lead PI from Qatar University
Sponsor: Qatar National Research Fund
Requested funding: $1,047,000 (UB's allocated budget is 35%)

Title: Development of functionally graded protective system for attenuation of blast loading
A.J. Aref (PI), and G.F. Dargush (co-PI)
Sponsor: NSF
Requested funding: $330,380
Submission Date: October 1, 2008

Title: RELIABILITY OF NEW YORK STATE BRIDGE INSPECTION PROGRAM
G.C. Lee (PI), J. O'Connor (co-PI) and A.J. Aref (co-PI)
Sponsor: NYSDOT
Requested funding: $400,000
Submission Date: December 8, 2008

Graduate Students Supported on Grants

Yihong He, Ph.D.
Transportation Infrastructure Research Consortium/New York State Department of Transportation, 1999-2001

Wooyoung Jung, Ph.D.
Multidisciplinary Center for Earthquake Engineering Research (MCEER), 1999-2003

Methee Chiewanichakorn, Ph.D.
National Cooperative Highway Research Program (NCHRP), 2001-2006

Wasim Barham, Ph.D. student
National Science Foundation, 2001-2006

Wael Alnahhal, Ph.D. student
Transportation Infrastructure Research Consortium (TIRC)/New York State Department of Transportation (NYSDOT), July 2003- January 2007.

Xiaobo Luo, Ph.D. student
Multidisciplinary Center for Earthquake Engineering Research (MCEER)/FHWA, 2004-2007.

Jongmin Seo , Ph.D. student
FHWA, 2006-2007

Petros Sideris, Ph.D. Student
FHWA, 2007-2009

Justin Gecewicz, M.S.
Multidisciplinary Center for Earthquake Engineering Research (MCEER), 2003-2004.

Teaching Summary

Newly Developed or Substantially Revised Graduate Courses

Behavior and Design of FRP Composite Structures (CIE528)
- Spring 1999; Enrollment: 4
- Spring 2001; Enrollment: 7
- Spring 2005; Enrollment: 14
- Fall 2007; Enrollment: 4

Blast Engineering (CIE500b)
- Spring 2007; Enrollment: 9

Concrete Structures (CIE525)
- Spring 1999; Enrollment: 13
- Spring 2001; Enrollment: 10

Finite Element Structural Analysis (CIE426/526)
- Fall 2003; Enrollment: 25
- Fall 2004; Enrollment: 15
- Fall 2005; Enrollment: 28
- Spring 2007: Enrollment: 18
- Spring 2008: Enrollment 17

Newly Developed or Substantially Revised Undergraduate Courses

Advanced Structural Analysis (CIE 423)
- Spring 1998; Enrollment: 8
- Spring 2000; Enrollment: 13
- Spring 2002; Enrollment: 15

Engineering Computations (EAS451)
- Spring 2000; Enrollment: 16
- Fall 2001; Enrollment: 26
- Fall 2003; Enrollment: 4
- Fall 2004; Enrollment 6

Dynamics (EAS208)
- Fall 2005; Enrollment:50
- Fall 2006; Enrollment:55

Civil Engineering Materials, lecture and laboratory (CIE 427)
- Fall 1997; Enrollment: 44
- Fall 1998; Enrollment: 49
- Fall 1999; Enrollment: 58
- Fall 2000; Enrollment: 38
- Fall 2001; Enrollment: 67

Civil Engineering Materials, lecture (CIE 327)
- Fall 2002; Enrollment: 52

PUBLICATIONS

Refereed Journal Papers (34)

1. Aref, A. J., and Parsons, I.D. (1999). "Design Optimization Procedures for a Fiber Reinforced Plastic Bridge." *Journal of Engineering Mechanics,* ASCE, Vol. 125, No. 9, 1040–1047.

2. Aref, A. J., and Parsons, I.D. (2000). "Design and Performance of a Modular Fiber Reinforced Plastic Bridge." *Composites Journal- Part B: Engineering*, Vol. 31, 619–628.

3. Aref, A. J., Alampalli, S., and **He, Y.** (2001). "A Ritz-Based Static Analysis Method for Fiber Reinforced Plastic Skew Bridge Superstructure." *Journal of Engineering Mechanics,* ASCE, Vol. 127, No. 5, 450–458.

4. Aref, A. J., and, **Guo, Z.** (2001). "A Framework of a Finite Element-Based Large Increment Method for Nonlinear Structural Problems." *Journal of Engineering Mechanics*, ASCE, Vol. 127, No. 7, 739–746.

5. Aref, A. J., and Alampalli, S. (2001). "Vibration Characteristics of a Fiber Reinforced Plastic Bridge Deck." *Journal of Composite Structures*, Vol. 52, No. 3–4, 467–474.

6. **Shama, A.,** Chen, S., Mander, J., and Aref, A. (2001). "Ambient Vibration and Seismic Evaluation of a Cantilever Bridge." *Engineering Structures Journal*. Vol. 23, No. 10, 1281–1292.

7. **Shama, S.**, Mander, J., and Aref, A. (2002). "Seismic Performance and Retrofit of Steel Pile to Concrete Cap Connections." *ACI Structural Journal*, Vol. 99, No. 1, 51–61.

8. **He, Y.**, and Aref, A. (2002). "A Semi-Analytical Procedure for Simplified Design of Bidirectional FRP Web-core Sandwich Bridge Decks." *International Journal of Computational Engineering Science,* Vol. 3, No. 2, 129–154.

9. Aref, A. J., and **Jung, W.** (2003). "Energy Dissipating Polymer Matrix Composite Infill Wall System for Seismic Retrofitting." *Journal of Structural Engineering*, ASCE. Vol. 129, No. 4, 440–448.

10. **Jung, W.,** and Aref, A. (2003). "A Combined Honeycomb and Solid Viscoelastic Material for Structural Damping Applications." *Mechanics of Materials Journal*, Vol. 35, No. 8, 831–844.

11. **He, Y.**, and Aref, A. J. (2003). "An Optimization Design Procedure for Fiber Reinforced Web-core Sandwich Bridge Deck system." *Journal of Composite Structures,* Vol. 60, 2, 183–195.

12. **Chiewanichakorn, M.**, Aref, A.J., and Alampalli, S. (2003). "Failure Analysis of a Fiber-reinforced Polymer Bridge Deck System." *ASTM Journal of Composites and Technology,* Vol. 25, No.2, 119–128.

13. **Kitane, Y.**, Aref. A., and Lee, G. (2004). "Static and Fatigue Testing of Hybrid FRP-Concrete Bridge Superstructure." *Journal of Composites for Construction*, ASCE. Vol. 8, No. 2, 182–190.

14. **Chiewanichakorn, M.**, Aref, A., Chen, S., Ahn, I. (2004). "Effective Flange Width Definition for Steel–Concrete Composite Bridge Girder." *Journal of Structural Engineering,* ASCE. Vol. 130, No. 12, 2016–2031.

Refereed Journal Papers (continued)

15. Ahn, I., **Chiewanichakorn, M.**, Chen, S., and Aref, A. (2004). "Effective Width Provisions for Steel Bridges." *Engineering Structures Journal*. Vol. 26, 1843–1851.

16. **Jung, W.** and Aref, A. J. (2005). "Analytical and Numerical Studies of Polymer Matrix Composite Sandwich infill Panels." *Composite Structures Journal* , Vol. 68, No. 3, 359–370.

17. Aref, A., **Kitane, Y.,** and Lee, G. (2005) "Analysis of Hybrid FRP-Concrete Multi-Cell Bridge Superstructure." *Journal of Composite Structures*. Vol 69, No. 3, 346–359.

18. Aref, A., Alampalli, S. and **He, Y.** (2005). "Performance of a Fiber Reinforced Polymer Web Core Skew Bridge Superstructure, Part I: Field Testing and Finite Element Analysis." *Composite Structures*. Vol. 69, No. 4, 491–499.

19. Aref, A., Alampalli, S. and **He, Y.** (2005). "Performance of a Fiber Reinforced Polymer Web Core Skew Bridge Superstructure, Part II: Failure Modes and Parametric Study." *Composite Structures*. Vol. 69, No. 4, 500–509.

20. **Barham, W.,** Aref, A., Dargush, G. (2005). "Flexibility-based Large Increment Method for Analysis of Elastic Perfectly Plastic Beam Structures." *Computers & Structures*. Vol 83/28–30, 2453–2462.

21. I.–S. Ahn, **M. Chiewanichakorn,** A.F. Nottis, J.A. Carpenter, S.S. Chen, and A.J. Aref, (2005). "Experimental Study on the Ultimate Behavior at the Negative Moment Regions of Composite Bridges." Design of Structures 2005, Transportation Research Record, *Journal of the Transportation Research Board*, No. 1928, 3–12.

22. **M. Chiewanichakorn,** A.J. Aref, S.S. Chen, and I.-S. Ahn, (2005). "Methodologies for Evaluation of Effective Slab Width." Design of Structures 2005, Transportation Research Record, *Journal of the Transportation Research Board*, No. 1928, 13–26.

23. **Barham, W.,** Aref, A., Dargush, G. (2005). "Development of the Large Increment Method For Elastic Perfectly Plastic Analysis of Plane Frame Structures Under Monotonic Loading." *Int. J. of Solids & Structures*. Vol. 42, 6586–6609.

24. **Alnahhal, W. Chiewanichakorn, M.,** Aref, A. and Alampalli, S. (2006). "Temporal Thermal Behavior and damage Simulations of FRP Deck." *Journal of Bridge Engineering, ASCE*. Vol.11, No. 4, 452–465.

25. Aref, A. and **Jung, W.** (2006). "Advanced Composite Panels for Seismic and Vibration Mitigation of Existing Structures." *Journal of Engineering Materials Technology, ASME*. Transactions of the ASME, Vol 128, 618–633.

26. **Alnahhal. W., Chiewanichakorn, M.**, Aref, A.J. and Alampalli, S. (2007), "Simulations of Structural behavior of Fiber-reinforced Polymer Bridge Deck under Thermal Effects" *International Journal of Materials and Product Technology (IJMPT)*. Vol. 28, No.1/2, 122–140.

27. Ou, Y.-C, **Chiewanichakorn, M.,** Ahn, I.-S., Aref, A., Chen, Filiatrault, A and Lee, G. (2006). "Cyclic Performance of Precast Segmental Bridge Columns." Transportation Research Record, *Journal of the Transportation Research Board*. No. 1976, 66–74.

28. Chen, S.S., Aref, A.J., **Chiewanichakorn, M.,** and Ahn, I-S. (2007). "Proposed Effective Flange Width Criteria for Composite Bridge Girders", *Journal of Bridge Engineering*, ASCE. Vol. 12, No. 3, 325–338.

Refereed Journal Papers (continued)

29. Aref, A.J., **Chiewanichakorn, M.,** Chen, S.S., Ahn, I-S. (2007). "Effective Width Definitions for Negative Moment Regions of Composite Bridges", *Journal of Bridge Engineering*, ASCE. Vol. 12, No. 3, 339–349.

30. **Chiewanichakorn, M.,** Aref, A.J., Alampalli, S. (2007). "Dynamic and Fatigue Response of a Truss Bridge with Fiber Reinforced Polymer Deck." International Journal of Fatigue. Vol. 29, No. 8, 1475–1489.

31. Ou, Y-C, **Chiewanichakorn, M.,** Aref, A.J., Lee, G.C. (2007). "Seismic Performance of Segmental Precast Unbonded Post-tensioned Concrete Bridge Columns." *Journal of Structural Engineering*, ASCE. Vol. 133, No. 11, 1636–1647.

32. **Alnahhal, W.,** Aref, A. and Alampalli, S. (2008). "Composite Behavior of Hybrid FRP-Concrete Bridge Decks on Steel Girders." *Journal of Composite Structures*, Vol 84/1 29–43.

33. **Alnahhal, W.** and Aref, A. (2008). "Structural Performance of Hybrid Fiber Reinforced Polymer-Concrete Bridge Superstructure Systems." *Journal of Composite Structures*, Vol. 84, No. 4, 319–336.

34. **Barham, W.**, Aref, A. and Dargush, G. (2008). "On the Elastoplastic Cyclic Analysis of Plane Beam Structures Using a Flexibility-Based Finite Element Approach." *Int. Journal of Solids & Structures.* Vol 45, pp. 5688–5704.

35. **Ballantyne, G.,** Whittaker, A.S., Dargush, G.F., and Aref, A.J. (2008). "Air-blast effects on structural shapes of finite width." ASCE Journal of Structural Engineering, *(Accepted)*

Discussion and Closure to Journal Papers

36. **Chiewanichakorn, M.,** Aref, A.J., Chen, S.S., and Ahn, I-S. (2006). Closure to: Effective Flange Width Definition for Steel-Concrete Composite Bridge Girder, *Journal of Structural Engineering,* ASCE. Vol. 132, No. 2, pp. 322–324.

37. Aref, A.J., **Chiewanichakorn, M.,** Chen, S.S., Ahn, I-S. (2008). Closure to: Effective Width Definitions for Negative Moment Regions of Composite Bridges", *Journal of Bridge Engineering*, ASCE. Vol. 13, pp. 426–427.

Pending Refereed Journal Papers

38. Aref, A. and **Lou, X.** (2008). "Functionally-Optimized Fiber Reinforced Polymer Composite Panels for Seismic Energy Dissipation." *International Journal of Materials and Product Technology, (In review, 1/2008)*

39. **Luo, X.,** Aref, A., and Dargush, G. (2008). "Analysis and Optimum Design of Layered Structure Subjected to Impulsive Loading." Computers and Structures Journal. *(In review, 5/2008).*

40. **Luo, X.,** Aref, A., and Dargush, G. (2008). "Optimum Design of Layered Elastic Stress Wave Attenuator Using a Real Encoded Adaptive Genetic Algorithm." Journal of Structural and Multidisciplinary Optimization. *(In review, 6/2008)*

41. **Luo, X.,** Aref, A. (2008). "Optimal Design of Bundled Layered Elastic Stress Wave Attenuators." ASCE Journal of Engineering Mechanics, *(In review, 8/2008)*

Conference Proceedings Papers (62)
(* indicates presenter)

1. Aref, A. and **Warn, G.** (2008). "Experimental Investigation of the Creep behavior and Fatigue Resistance of a Hybrid FRP-Concrete Bridge Deck." SAMPE conference, Long Beach, CA, May 18-22, 2008.

2. **Alnahhal, W.***, and Aref, A. (2008). "Experimental and Analytical Evaluation of Hybrid FRP-Concrete Bridge Deck System." The fifth International Conference on Advanced Composite materials in Bridges and Structures (ACMBS - V), Winnipeg, Manitoba, Canada, September 22-24, 2008.

3. Aref*, **Luo,** and Dargush, (2008). "Optimal Analysis of Layered Elastic Stress Wave Attenuator Subjected to Arbitrary Transient Loading." Inaugural International Mechanics Institute (EM08) Conference, May 18-21, 2008 at University of Minnesota, in Minneapolis, Minnesota.

4. Aref, A.*, Filiatrault, A., **Warn, G. and Sideris, P.** (2008). "Seismic Performance of Precast-Prestressed Segmental Bridge Superstructure." Sixth National Seismic Conference on Bridges and highways, Charleston, SC. July 27-30, 2008.

5. Chen, S., Aref, A., Ahn, I-S*, and **Chiewanchakorn, M**., (2008). "Comparative Study of Effective Flange Width of Steel-Concrete Composite Girders: NCHRP12-58 vs. Korean Provisions." The International Association for Bridge Maintenance and Safety (IABMAS), Seoul, South Korea, July 13-17, 2008.

6. Aref, A. and **Alnahhal, W.*** (2007). "Development of Hybrid FRP-Concrete Bridge Deck System," SAMPE '07 in Baltimore, Maryland, June 3-7, 2007.

7. Aref, A.* and **Alnahhal, W.** (2007). "Nonlinear Behavior of Hybrid-FRP-Concrete bridge Deck and Superstructure System." FRPRCS-8 Symposium, Patras, Greece, July 16-18, 2007.

8. **Luo, X.*,** Aref, A., and Dargush, G. (2007). "Analytical Solutions of Layered Elastic Stress Wave Attenuators Subjected to Impulse Loading." Engineering Mechanics Division Conference of the American Society of Civil Engineers. June 3-6, 2007 .

9. **Luo, X.,** Aref, A., and Dargush, G. (2007). "Optimal Analysis of Layered Elastic Stress Wave Attenuator Subjected to Blast Loading." Compdyn 2007, June 13-15, 2007, Crete Greece.

10. Graeme Ballantyne, Amjad Aref, Gary Dargush, and Andrew Whittaker. (2007). "Evaluation of Concrete Material Models Under Dynamic and Quasi-Static Loading." Workshop on Modeling Concrete Under High-Impulsive Loadings, 20-21 March 2007, Austin, Texas.

11. **Alnahhal,** Aref*, and Alampalli. (2007. "Composite Action of FRP decks on Steel Girders" ASNT 16th Annual Research Symposium Program Dates: March 27-29, 2007

12. Ou, Y-C, **Chiewanichakorn,** M.*, Aref, A. Lee, G. (2006). "Nonlinear response time-history analysis of segmental precast concrete bridge columns for seismic regions." PCI conference on accelerated construction: getting in and getting out fast. Grapevine, TX, October 2006.

13. **Luo X.*** and Aref, A., (2006) "Fiber Reinforced Polymer Panels for Attenuating Floor Accelerations in a Hospital Structure." Structures Congress, ASCE, St. Louis, Missouri, May18-21, 2006.

Conference Proceedings (continued)

14. **Chiewanichakorn, M**.*, and Aref, A. (2006). "Finite Element Simulations of Seismic Response of Precast Concrete Segmental Columns." Structures Congress, ASCE, St. Louis, Missouri, May18–21, 2006.

15. **Alnahhal, W., Chiewanichakorn, M.,** Alampalli, S. and Aref, A.* (2006). "Simulations of Fire Temporal Thermal Behavior of Fibre Reinforced Polymer Bridge Decks" The Eighth International Conference on Computational Structures Technology Las Palmas de Gran Canaria, Spain 12–15 September 2006.

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22. **Barham, W.S.,** Aref, A.J., and Dargush, G.F.* (2005). "Large Increment Method for Elastic Perfectly Plastic Analysis of Plane Frames Under Cyclic Loading." The 2005 Joint ACSE/ASME/SES Conference on Mechanics and Materials, Baton Rouge, Louisiana, June 1–3, 2005.

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34. **Chiewanichakorn, M.***, Ahn, I., Chen, S., and Aref, A. (2004). "The development of Revised Effective Slab Width Criteria for Steel-Concrete Composite Bridges." Structures Congress, ASCE, Nashville, May 26-29, 2004.

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38. Chen, S.*, Ahn, I., Nottis, A., **Chiewanichakorn, M.**, and Aref, A. (2004). "Continuous Composite Bridge Experiments: Behavior at Service & Ultimate Loads" TRB, Washington DC. January 2004.

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41. Aref, A. J.*, and **Jung, W.** (2003). "Conceptual Infill Panel Designs for Seismic Retrofitting," Structures Congress, ASCE, May 29-31, 2003, Seattle, Washington, (on CD-ROM.

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Workshops and Other Publications

1. Aref, A. (2008). "Cable supported Bridges," ASCE/SEI Bridge Workshop – Enhancing Bridge Performance. Reston, VA, February 21–22, 2008.

2. Aref, A. (2006). "Prefabricated Bridge Pier Structures in Seismic Zones," 2nd US–Taiwan Bridge Engineering Workshop, San Mateo, CA, September 21–22, 2006.

3. Aref A. (2005) "Development of Visco–elastic Composite panels for Increasing Damping in Hospital Buildings" California Office of State-wide Health Planning & Development (OSHPD)–MCEER Seminar. Sacramento, CA February 24, 2005.

4. Aref, A. (2004). "Temporal Thermal Simulation of FRP Decks." Workshop on the Performance and Design of Fiber Reinforced Polymer Composites at Very Cold Temperatures. Workshop held at University of Alaska–Fairbanks and organized by Hong Liang and Judy Liu. Moderated a session on failure Mechanisms. Fairbanks, Alaska, August 10–12, 2005.

5. Research Progress and Accomplishments, MCEER. M. Bruneau, editor. Contributed paper "Advanced Composite Infills", May 2003.

6. Chiewanichakorn, Aref, A., and Alampalli, S. (2003). "Structural Behavior Study of an FRP Deck System Using FEA." Federal Highway Administration (FHWA) Workshop, New York City, NY, August 20–21, 2003.

7. Alampalli, S., Aref, A., Schongar, G., and Greenberg, H. (2003). "In-Service Performance and Analytical Investigations of an FRP Superstructure," Conference Proceedings, Fourth International Workshop on Structural Health Monitoring, Stanford, CA, p.239.

8. Workshop that focused on using case-study approach toward engineering curricula. Held at University at Buffalo, June 1–5,1998.

9. Two-day workshop cosponsored by NSF and ASEE, which focused on teaching and learning processes. Held at University at Buffalo, Spring 1998.

Books and Technical Reports

1. Aref, A.J., Luo, X., Dargush, G.F. (2007). "Analysis and optimal Design of Multi-layer Structures Subjected to Impulse Loading." B.H.V Topping, editor, *Civil Engineering Computations: Tools and Techniques, Chapter 16, pp. 369-390,* Saxe-Coburg Publications, Stirlingshire, Scotland.

2. Aref, A.J. and **Chiewanichakorn, M.** (2006). Fatigue Implications of Replaced Concrete Deck with Fiber-reinforced Polymer Deck. New York State Department of transportation.

3. Jung, W., **Chiewanichakorn, M.,** and Aref, A. (2006). "Conceptual Design and Experimental Investigation of Polymer Matrix Composite Infill Panels For Seismic Retrofitting." MCEER report, MCEER-06-0010, September 21, 2006, 321 pages.

4. Chen, S.S., Aref, A.J., Ahn, I., and **Chiewanichakorn, M.** (2004). "Effective Slab Width for Composite Steel Bridge Members. NCHRP 12-58" Final Report prepared for National Cooperative Highway Research Program (NCHRP), Transportation Research Board, National Research Council. NCHRP Report No. 543, December 31, 2004.

5. Aref, A. J., and **Chiewanichakorn, M.** (2004)."Temporal Thermal Behavior and Damage Simulations of FRP Deck." Report submitted to New York State Department of Transportation, Albany, NY.

6. Aref, A. J., and **Chiewanichakorn, M.** (2002)."The Analytical Study of Fiber Reinforced Polymer Deck on an Old Truss Bridge." Report submitted to New York State Department of Transportation, Transportation Research Development Bureau and Transportation Infrastructure Research Consortium, New York.

7. Aref, A. J. and **He, Y.** (2002). "A Ritz-Based Simplified Analysis Method for Fiber Reinforced Polymer Web-Core Sandwich Bridge Deck." Report submitted to New York State Department of Transportation, Transportation Research Development Bureau, and Transportation Infrastructure Research Consortium, New York.

8. Aref, A. J. and **He, Y.** (2001). "Finite Element Analysis of a Fiber Reinforced Polymer Bridge Superstructure." Report submitted to New York State Department of Transportation, Transportation Research Development Bureau, and Transportation Infrastructure Research Consortium, New York.

9. Aref, Amjad J. (1997). "A Novel Fiber Reinforced Composite Bridge Structural system," Ph.D. Dissertation, University of Illinois at Urbana-Champaign. 184 pages.

Professional Affiliation

E.I.T., Illinois
Who's Who in Computational Science and Engineering

Professional Service

Professional Societies Membership

Member, American Society of Civil Engineers (ASCE)
Member, American Concrete Institute (ACI)
Member, International Association of Computational Mechanics (IACM)
Member, American Academy of Mechanics
Member, International Institute for FRP in Construction (IIFC)

Technical Committees Membership

Member of Methods of Analysis Committee, ASCE, 2001–2007
Member of Dynamics Committee, ASCE, 2000–present
Member of Seismic Effects Committee, ASCE, 2000–present
Member of Methods of Monitoring, ASCE, 2002–present
Vice–chair of Advanced Materials and Structures, ASCE (2004–present)
Member of Blast Standards, ASCE (2006–present)

Editorial Boards

Associate Editor, ASCE Journal of Structural Engineering, 2007–present
Editorial Board, the Eighth International Conference on Computational Structures Technology, Las Palmas de Gran Canaria, Spain, 2006
Editorial Board, the Eleventh International Conference on Civil, Structural and Environmental Engineering Computing, St. Julians, Malta, 2007
Editorial Board, the Ninth International Conference on Computational Structures Technology will take place in Athens, Greece, from 2–5 September 2008

Technical Referee

Journal of Engineering Mechanics, ASCE
Journal of Structural Engineering, ASCE
Journal of Composites for Construction, ASCE
Mechanics of Materials Journal
Computers and Structures
Composites Science and Technology
International Journal of Solids and Structures
Engineering Fracture Mechanics
Journal of Polymer Engineering
Journal of Constructional Steel Research
Journal of Earthquake Engineering and Structural Dynamics
Computer-Aided Civil and Infrastructure Engineering – An International Journal
National Science Foundation – Panelist, Structural Systems Program, June 2000
National Science Foundation – Panelist, Analysis Methods Panel, July 2006.
Referee for a promotion and tenure case
Referee for the Marie Curie individual fellowship proposal
with the European Commission's 7th Framework Program

University Service

UB Engineering Tenure Committee, Member, 2007-present
CSEE, Academic Intergrity ad-hoc committee, member, Fall 2008
Graduate School Executive committee, member, 2007-present
Department Graduate Studies Committee, Chair, 2007-present
Department Computer Committee, Chair, 2004-2007
Department Undergraduate Studies Committee, Member, 2004-2005
Department Strategic Planning Committee, member, Fall 2005
University Standing Committee on Academic Integrity, Fall 2005-present
Department Search Committee for faculty in computational Mechanics, Spring 2006
Participation in the Provost's Envisioning Retreat for Computer and Information Technology Strategic Strength. Retreat was held on March 31, 2005
Seminar Coordinator, 1998-1999
Department Graduate Studies Committee, University at Buffalo, Member, 1999-2004
Undergraduate Mentor, 1999-2000

Short Courses

"Finite Element Analysis of Structures," Short Course presented by A.J. Aref and G.F. Dargush to engineers at New York State Department of Transportation, Albany, NY, July 26-27, 2001

"Finite Element Analysis" Short Course presented by A.J. Aref and G.F. Dargush to engineers working in local industries. Buffalo, NY, September 19-22, 2005

Selected Seminars and Presentations

"Advanced Composite Material Applications in Structural Engineering--Advances and Challenges," Structural Engineering Lecture Series, Department of Civil, Structural and Environmental Engineering, University at Buffalo, October 18, 2007.

"Invited Lecture: Analysis and optimal Design of Multi-layer Structures Subjected to Impulse Loading." The 11th International Conference in Civil, structural and Environmental Engineering Computing, St. Julians, Malta, September 18-21, 2007.

"Seismic Performance of Precast Bridge Piers" second US-Taiwan Bridge Engineering Workshop, San Francisco, CA, September 22, 2006.

"Dynamic Considerations of rehabilitated Bridges with FRP Deck System", Institute of Engineering Mechanics (IEM), Harbin, China, May 29, 2006.

"Overview of CSEE Department", Tongji University, Shanghai, China, June 7, 2006.

"Hybrid FRP-Concrete Bridge Deck System" Seminar at Jordan University of Science and Technology, Irbid, Jordan, May 30, 2005.

"Development of Visco-elastic Composite Panels for Increasing Damping in Hospital Buildings" California Office of Statewide Health Planning & Development (OSHPD)-MCEER Seminar. Sacramento, CA February 24, 2005.

"Novel Polymer Matrix Composite Panels for Seismic Retrofitting," Department of Civil and Environmental Engineering, University of California, Los Angeles, February 21, 2002, Los Angeles, CA.

"Advanced Composite Energy Dissipating panels, " Mitigation of Earthquake Disaster by Advanced Technologies (MEDAT-II), Workshop organized by MCEER, November 30-December 1, 2000, Las Vegas, NV.

"Fiber Reinforced Polymer Bridge Concepts for Infrastructure Renewal," ASCE Buffalo Section Meeting, September 19, 2001, Amherst, NY.

"Fiber Reinforced Polymer Composites," project presentation at New York State Department of Transportation, March 9, 2001, Albany, NY.

"Manufacture, Design, and Performance of a Modular Fiber Reinforced Composite Bridge," 31st International SAMPE Technical Conference, October 29, 1999, Chicago, IL.

"Finite Element Modeling of FRP Bridges," Composite Materials Workshop sponsored by New York State Department of Transportation, Union College, August 24, 1999, Schenectady, NY.

"Recent Advances in the Applications of FRP in the Infrastructure," Department of Civil Engineering, Technion, August, 9, 1999, Haifa, Israel.

"A Study of Structural Behavior of FRP Composite Bridges," Department of Civil, Structural and Environmental Engineering, University at Buffalo, January 30, 1998, Buffalo, NY.

Organization of Technical Sessions

Aref, A. and Lee, G. "Accelerated Bridge Construction in Seismic Regions." ASCE Structures Congress, Austin, TX, April 30–May 2, 2009.

Amjad Aref & Ertugrul Taciroglu, "Advances in Simulation and Mitigation of Damage under Extreme Loads." Mini-Symposium at the Inaugural International Conference of the Engineering Mechanics Institute (EM08), Minneapolis, Minnesota, May 18–21, 2008.

Aref, A. and Alampalli, S. (2007). " FRP Composites" ASNT 16th Annual Research Symposium Program Dates: March 27–29, 2007

Aref, A. "Analysis and Design of Innovative FRP Systems" Earth and Space 2006 Conference. Houston TX, March 5–8, 2006.

Aref, A. "NDT/NDE for Infrastructure III: FRP Applications" Structural Materials Technologies (SMT): NDE/NDT for Highways and Bridges. September 14–17, 2004, Buffalo, NY.

Aref, A. "Composites Sessions (I & II)", 17th Engineering Mechanics Conference, ASCE, University of Delaware, June 13–16, 2004.

Aref, A. "Structures ST-15: Fiber Composites for Seismic Strengthening," Seventh U.S. National Conference on Earthquake Engineering, Earthquake Engineering Research Institute (EERI), July 23, 2002, Boston, MA.

Aref, A. "Structural Identification and Monitoring: Session 3 Health Monitoring I." Mechanics and Materials Conference, ASCE, ASME, and Society of Engineering Science, June 27, 2001, San Diego, CA.

Aref, A. "Multi-Scale Modeling of Materials: VI", Mechanics and Materials Conference, ASCE, ASME, and Society of Engineering Science, June 29, 2001, San Diego, CA.

Aref, A. "NDT/NDE Technologies for Fiber-Reinforced Polymer Composites," Structural Materials Technology: A Non-destructive Testing Conference, February 28–March 3, 2000, Atlantic City, NJ.