



Sarah Billington

Professor of Civil and Environmental Engineering and Senior Fellow at the Woods Institute for the Environment

CONTACT INFORMATION

- **Administrator**

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Bio

BIO

Our group conducts research on sustainable, durable construction materials and their application to structures and construction. Two current areas of focus are damage-tolerant, high-performance fiber-reinforced cementitious composite materials, and bio-based fiber-reinforced polymeric composites that have a closed loop life-cycle. We are also developing methodologies for performance-based durability engineering with a focus on reducing the impacts of corrosion in structural concrete bridges and assessing the impact of climate change on the vulnerability of bridges to damage or collapse caused by scour. In the area of engineering education we are researching the impact of web-based activities on mechanics self-efficacy and achievement in an introductory course on solid mechanics.

ACADEMIC APPOINTMENTS

- Professor, Civil and Environmental Engineering
- Senior Fellow, Stanford Woods Institute for the Environment

ADMINISTRATIVE APPOINTMENTS

- Associate Chair, Department of Civil & Environmental Engineering, (2009-2015)

HONORS AND AWARDS

- Milligan Family University Fellow in Undergraduate Education, Stanford University (2012-present)
- American Concrete Institute Fellow, American Concrete Institute (2006-present)
- ACI Structural Engineering Award, American Concrete Institute (2002)
- Fiona Li and Donald Li Excellence in Teaching Award, College of Engineering, Cornell University (2002)
- ARC Career Development Award, ASCE's Civil Engineering Research Foundation (2000)
- NSF Early Career Award, National Science Foundation (2000)
- Fulbright Fellowship, ETH, Zurich, Switzerland (1990-1991)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Board Member, Structural Engineers Association of Northern California (2012 - 2014)
- Board Member, Network for Earthquake Engineering Simulation, Inc. (2006 - 2009)

PROFESSIONAL EDUCATION

- PhD, University of Texas at Austin , Structural Engineering (1997)
- MSE, University of Texas at Austin , Structural Engineering (1994)
- BSE, Princeton University , Civil Engineering & Operations Research (1990)

PATENTS

- Wilfred V. Srubar III, Sarah L. Billington. "United States Patent 8507588 PHBV/Ground Bone Meal and Pumice Powder Engineering Biobased Composite Materials for Construction", Aug 13, 2013
- Sarah L. Billington, Craig S. Criddle, Margaret C. Morse, Sarah J. Christian, Allison J. Pieja. "United States Patent 7887893 Bacterial poly(hydroxy alkanoate) polymer and natural fiber composites", Feb 15, 2011

LINKS

- Billington Group: <https://billington-group.stanford.edu/>

Teaching

COURSES

2017-18

- Advanced Structural Concrete Behavior and Design: CEE 285A (Aut)
- Engineering the Built Environment: An Introduction to Structural Engineering: CEE 80N (Win)
- Intro to Solid Mechanics: ENGR 14 (Spr)
- Materials for Sustainable Built Environments: CEE 223 (Spr)

2016-17

- Influences on Structural Design: CEE 80N (Win)
- Materials for Sustainable Built Environments: CEE 223 (Spr)

2015-16

- Advanced Structural Concrete Behavior and Design: CEE 285A (Aut)

2014-15

- Advanced Topics in Structural Concrete: CEE 205B (Spr)
- Intro to Solid Mechanics: ENGR 14 (Aut)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Hai Haham

Master's Program Advisor

Courtney Urbancsik

Publications

PUBLICATIONS

- **Historical Analysis of Hydraulic Bridge Collapses in the Continental United States** *JOURNAL OF INFRASTRUCTURE SYSTEMS*
Flint, M. M., Fringer, O., Billington, S. L., Freyberg, D., Diffenbaugh, N. S.
2017; 23 (3)

- **Methodology to assess end-of-life anaerobic biodegradation kinetics and methane production potential for composite materials** *COMPOSITES PART A- APPLIED SCIENCE AND MANUFACTURING*
Ryan, C. A., Billington, S. L., Criddle, C. S.
2017; 95: 388-399
- **Assessment of models for anaerobic biodegradation of a model bioplastic: Poly(hydroxybutyrate-co-hydroxyvalerate).** *Bioresource technology*
Ryan, C. A., Billington, S. L., Criddle, C. S.
2017; 227: 205-213
- **Experimental testing of reinforced concrete and reinforced ECC flexural members subjected to various cyclic deformation histories** *Materials and Structures*
Frank, T. E., Lepech, M. D., Billington, S. L.
2017; 50 (5)
- **Bond behavior and interface modeling of reinforced high-performance fiber-reinforced cementitious composites** *Cement and Concrete Composites*
Bandelt, M. J., Frank, T. E., Lepech, M. D., Billington, S. L.
2017; 83: 188-201
- **Influence of carbon feedstock on potentially net beneficial environmental impacts of bio-based composites** *JOURNAL OF CLEANER PRODUCTION*
Miller, S. A., Billington, S. L., Lepech, M. D.
2016; 132: 266-278
- **Impact of Reinforcement Ratio and Loading Type on the Deformation Capacity of High-Performance Fiber-Reinforced Cementitious Composites Reinforced with Mild Steel** *JOURNAL OF STRUCTURAL ENGINEERING*
Bandelt, M. J., Billington, S. L.
2016; 142 (10)
- **Bond behavior of steel reinforcement in high-performance fiber-reinforced cementitious composite flexural members** *MATERIALS AND STRUCTURES*
Bandelt, M. J., Billington, S. L.
2016; 49 (1-2): 71-86
- **Integrating durability-based service-life predictions with environmental impact assessments of natural fiber-reinforced composite materials** *RESOURCES CONSERVATION AND RECYCLING*
Miller, S. A., Srubar, W. V., Billington, S. L., Lepech, M. D.
2015; 99: 72-83
- **Static versus Time-Dependent Material Selection Charts and Application in Wood Flour Composites** *JOURNAL OF BIOBASED MATERIALS AND BIOENERGY*
Miller, S. A., Lepech, M. D., Billington, S. L.
2015; 9 (2): 273-283
- **Incorporating spatiotemporal effects and moisture diffusivity into a multi-criteria materials selection methodology for wood-polymer composites** *CONSTRUCTION AND BUILDING MATERIALS*
Srubar, W. V., Miller, S. A., Lepech, M. D., Billington, S. L.
2014; 71: 589-601
- **Nonlinear Constitutive Model for Anisotropic Biobased Composite Materials** *JOURNAL OF ENGINEERING MECHANICS*
Michel, A. T., Billington, S. L.
2014; 140 (11)
- **Design Concepts for Controlled Rocking of Self-Centering Steel-Braced Frames** *JOURNAL OF STRUCTURAL ENGINEERING*
Eatherton, M. R., Ma, X., Krawinkler, H., Mar, D., Billington, S., Hajjar, J. F., Deierlein, G. G.
2014; 140 (11)
- **Behavior of unreinforced masonry prisms and beams retrofitted with engineered cementitious composites** *MATERIALS AND STRUCTURES*
Kyriakides, M. A., Billington, S. L.
2014; 47 (9): 1573-1587
- **Mechanical Characterization and Modeling of Poly (beta-hydroxybutyrate)-co-poly(beta-hydroxyvalerate)-Alfa Fiber-Reinforced Composites** *POLYMER COMPOSITES*
Ben Cheikh, R., Michel, A., Billington, S.

2014; 35 (9): 1758-1766

- **Tension stiffening in reinforced high performance fiber reinforced cement-based composites** *CEMENT & CONCRETE COMPOSITES*
Moreno, D. M., Trono, W., Jen, G., Ostertag, C., Billington, S. L.
2014; 50: 36-46
- **Influence of temporal resolution and processing of exposure data on modeling of chloride ingress and reinforcement corrosion in concrete** *MATERIALS AND STRUCTURES*
Flint, M., Michel, A., Billington, S. L., Geiker, M. R.
2014; 47 (4): 729-748
- **Seismic Retrofit of Steel Moment-Resisting Frames with High-Performance Fiber-Reinforced Concrete Infill Panels: Large-Scale Hybrid Simulation Experiments** *JOURNAL OF STRUCTURAL ENGINEERING*
Lignos, D. G., Moreno, D. M., Billington, S. L.
2014; 140 (3)
- **Cyclic Response of Nonductile Reinforced Concrete Frames with Unreinforced Masonry Infills Retrofitted with Engineered Cementitious Composites** *JOURNAL OF STRUCTURAL ENGINEERING*
Kyriakides, M. A., Billington, S. L.
2014; 140 (2)
- **Simulating bond-slip effects in high-performance fiber-reinforced cement based composites under cyclic loads** *Euro-C Conference*
Bandelt, M. J., Billington, S. L.
CRC PRESS-TAYLOR & FRANCIS GROUP.2014: 1059–1066
- **Evaluation of a Modular Framework for Performance-Based Durability Engineering through Assessment of a Coastal Reinforced Concrete Structure** *Durability of Building Materials and Components XIII*
Flint, M., Billington, S.
2014
- **Biobased Materials for Sustainable Temporary Disaster-Relief Housing** *3rd International Conference on Urban Disaster REduction, Earthquake Engineering Research Institute*
Michel, A., Srubar III, W., Billington, S.
2014
- **Stimulation of High-Performance Fiber-Reinforced Cementitious Composites with Bond-Slip Effects** *EURO-C*
Bandelt, M., Billington, S.
2014
- **Evaluation of a modular framework for performance-based durability engineering through assessment of a coastal reinforced concrete structure** *Durability of Building Materials and Components XIII*
Flint, M. M., Billington, S. L.
2014
- **Biobased Materials for Sustainable Temporary Disaster-Relief Housing** *Third International Conference on Urban Disaster Reduction*
Michel, A. T., Srubar, W. V., Billington, S. L.
EERI.2014
- **A modular framework for performance-based durability engineering: From exposure to impacts** *STRUCTURAL SAFETY*
Flint, M. M., Baker, J. W., Billington, S. L.
2014; 50: 78-93
- **Application of multi-criteria material selection techniques to constituent refinement in biobased composites** *MATERIALS & DESIGN*
Miller, S. A., Lepech, M. D., Billington, S. L.
2013; 52: 1043-1051
- **A Renewable Lignin-Lactide Copolymer and Application in Biobased Composites** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
Chung, Y., Olsson, J. V., Li, R. J., Frank, C. W., Waymouth, R. M., Billington, S. L., Sattely, E. S.
2013; 1 (10): 1231-1238
- **Shake-Table Tests of a 3-Story Masonry-Infilled RC Frame Retrofitted with Composite Materials** *JOURNAL OF STRUCTURAL ENGINEERING*

- Koutromanos, I., Kyriakides, M., Stavridis, A., Billington, S., Shing, P. B.
2013; 139 (8): 1340-1351
- **A micromechanical model for moisture-induced deterioration in fully biorenewable wood-plastic composites** *COMPOSITES PART A-APPLIED SCIENCE AND MANUFACTURING*
Srubar, W. V., Billington, S. L.
2013; 50: 81-92
 - **Behavior of Concrete and ECC Structures under Simulated Earthquake Motion** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*
Gencturk, B., Elnashai, A. S., Lepech, M. D., Billington, S.
2013; 139 (3): 389-399
 - **Improvement in environmental performance of poly(beta-hydroxybutyrate)-co-(beta-hydroxyvalerate) composites through process modifications** *JOURNAL OF CLEANER PRODUCTION*
Miller, S. A., Billington, S. L., Lepech, M. D.
2013; 40: 190-198
 - **Seismic Retrofit of Steel Moment Resisting Frames With High Performance Fiber Reinforced Concrete Infill Panels: Large Scale Hybrid Simulation Experiments** *ASCE Journal of Structural Engineering, published online*
Lignos, D., Moreno, D., Billington, S., L.
2013
 - **Bond Strength and Bond-Slip Behavior of Steel Reinforcement in High-Performance Fiber-Reinforced Cementitious Composites** *Tenth International Conference on Urban Earthquake Engineering*
Bandelt, M., Billington, S.
2013
 - **Bond of Reinforcement in High-Performance Fiber-Reinforced Concrete** *Seventh National Seismic Conference of Bridges & Highways*
Bandelt, M., Billington, S.
2013
 - **Bond of Reinforcement in High-Performance Fiber-Reinforced Concrete** *Seventh National Seismic Conference on Bridges & Highways*
Bandelt, M. J., Billington, S. L.
2013
 - **Characterizing the effects of ambient aging on the mechanical and physical properties of two commercially available bacterial thermoplastics** *3rd International Conference on Biodegradable and Biobased Polymers (BIOPOL)*
Srubar, W. V., Wright, Z. C., Tsui, A., Michel, A. T., Billington, S. L., Frank, C. W.
ELSEVIER SCI LTD.2012: 1922-29
 - **Extruded foams from microbial poly(3-hydroxybutyrate-co-3-hydroxyvalerate) and its blends with cellulose acetate butyrate** *POLYMER ENGINEERING AND SCIENCE*
Liao, Q., Tsui, A., Billington, S., Frank, C. W.
2012; 52 (7): 1495-1508
 - **Moisture diffusion and its impact on uniaxial tensile response of biobased composites** *COMPOSITES PART B-ENGINEERING*
Christian, S. J., Billington, S. L.
2012; 43 (5): 2303-2312
 - **Characterization of poly-hydroxybutyrate films and hemp fiber reinforced composites exposed to accelerated weathering** *POLYMER DEGRADATION AND STABILITY*
Michel, A. T., Billington, S. L.
2012; 97 (6): 870-878
 - **Modeling the kinetics of water transport and hydroexpansion in a lignocellulose-reinforced bacterial copolyester** *POLYMER*
Srubar, W. V., Frank, C. W., Billington, S. L.
2012; 53 (11): 2152-2161
 - **Simulation of Unreinforced Masonry Beams Retrofitted with Engineered Cementitious Composites in Flexure** *JOURNAL OF MATERIALS IN CIVIL ENGINEERING*
Kyriakides, M. A., Hendriks, M. A., Billington, S. L.

2012; 24 (5): 506-515

- **Mechanisms and impact of fiber-matrix compatibilization techniques on the material characterization of PHBV/oak wood flour engineered biobased composites** *COMPOSITES SCIENCE AND TECHNOLOGY*
Srubar, W. V., Pilla, S., Wright, Z. C., Ryan, C. A., Greene, J. P., Frank, C. W., Billington, S. L.
2012; 72 (6): 708-715
- **Tension-Stiffening in Reinforced High Performance Fiber-Reinforced Cement-Based Composites under Direct Tension** *6th International RILEM Workshop on High Performance Fiber Reinforced Cement Composites*
Moreno, D. M., Trono, W., JEN, G., Ostertag, C., Billington, S. L.
SPRINGER.2012: 263–270
- **Hybrid Simulation of a 2-Story Steel MRF Retrofitted with HPFRCC Infill Panels** *7th International Conference on Behavior of Steel Structures in Seismic Areas*
Lignos, D., Moreno, D., Billington, S.
2012
- **Creep Behavior and Modeling of PHBV-Based Composites for Construction Application** *Composites 2012*
Miller, S., Billington, S.
2012
- **Investigation of Process Improvements on PHBV-Based Composites Using Multi-Criteria Selection** *Composites 2012*
Miller, S., Billington, S., Lepech, M.
2012
- **Application of Creep Properties to Service Prediction in Lifecycle Assessment and Multi-Criteria Material Selection** *12th International Conference on Biocomposites*
Miller, S., Billington, S., Lepech, M.
2012
- **Overview of US-Norway Collaboration on Bridge Repair Sustainability** *International Congress on Durability of Concrete*
Flint, M., Michel, A., Gussias, A., Larsen, C., Ostvik, J., Billington, S., Geiker, M.
2012
- **Tension Stiffening in Reinforced High Performance Fiber Reinforced Cement-Based Composites** *9th International Conference on Urban Earthquake Engineering*
Moreno, D., Trono, W., Jen, G., Ostertag, C., Billington, S.
2012
- **A Probabilistic Framework for Performance-Based Durability Engineering** *In Durability of Building Materials and Components*
Flint, M., Baker, J., Billington, S.
Springer-Verlag.2012
- **Mechanical response of PHB- and cellulose acetate natural fiber-reinforced composites for construction applications** *COMPOSITES PART B-ENGINEERING*
Christian, S. J., Billington, S. L.
2011; 42 (7): 1920-1928
- **Performance-based earthquake engineering assessment of a self-centering, post-tensioned concrete bridge system** *EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS*
Lee, W. K., Billington, S. L.
2011; 40 (8): 887-902
- **Strain rate dependence of HPFRCC cylinders in monotonic tension** *MATERIALS AND STRUCTURES*
Douglas, K. S., Billington, S. L.
2011; 44 (1): 391-404
- **Nonlinear Micromechanical Modeling of Structural Biobased Composite Materials** *Multiscale and Multiphysics Processes in Geomechanics in Geomechanics and Geoengineering*
Srubar, W., Billington, S.
2011: 189-192

- **Response of High Performanced Fiber Reinforced Concrete Infill Panels Retrofitting Steel Moment-Resisting Frames** *8th Conference on Urban Earthquake Engineering*
Moreno-Luna, D., Lignos, D., Hanson, J., Billington, S.
2011
- **A Probabilistic Approach to Performance-based Durability Engineering** *12th International Conference on Durability of Building Materials and Components*
Flint, M., Billington, S.
2011
- **Flexure and Shear Performance of PHBV/Hemp Engineering Biobased Composite Sandwich Panels** *American Composites Manufacturers Association Composites*
Michel, A., Billington, S.
2011
- **PHBV/Oak Wood Flour Engineered Biobased Composites: Tensile Properties and Water Absorption Behavior** *American Composites Manufacturers Association Composites*
Srubar, W., Frank, C., Billington, S.
2011
- **Engineered Biobased Composites for Construction: Material Development, Multiscale Modeling, and Long-Term Durability** *2011 ASCE Structures Congress*
Srubar, W., Billington, S.
2011
- **Large Scale Hybrid Simulation Test of Existing Steel Frame Structures Retrofitted With Infill Panels** *7th National Conference of Steel Structures*
Lignos, D., Moreno, D., Billington, S.
2011
- **Confinement and Tension Stiffening Effects in High Performance Self-Consolidated Hybrid Fiber Reinforced Concret Composites** *6th International Workshop on High Performance Fiber-Reinforced Cement Composites*
Trono, W., Jen, G., Moreno, D., Billington, S., Ostertag, C.
2011
- **Tension-Stiffening in Reinforced High Performance Fiber-Reinforced Cement-Based Composites Under Direct Tension** *6th International Workshop on High Performance Fiber-Reinforced Cement Composites*
Moreno, D., Trono, W., Jen, G., Ostertag, C., Billington, S.
2011
- **A Probabilistic Framework for Performance-Based Durability Engineering: Application to Corrosion in Reinforced Concrete** *2011 ASCE Structures Congress*
Flint, M., Billington, S.
2011
- **Seismic Retrofit of Existing Steel Moment Resisting Frames with Innovative Materials: Large Scale Hybrid Simulation Test** *COMPDYN 2011 and 3rd ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*
Lignos, D., Moreno-Luna, D., Billington, S.
2011
- **Experimental and Analytical Validation of a Seismic Retrofit System for Existing Steel Moment-Resisting Frames** *8th Conference on Urban Earthquake Engineering*
Lignos, D., Moreno-Luna, D., Billington, S.
2011
- **IMPLEMENTATION OF MULTISCALE MODELS IN A PROBABILISTIC FRAMEWORK FOR PERFORMANCE-BASED DURABILITY ENGINEERING** *International Workshop on Multiscale and Multiphysics Processes in Geomechanics*
Flint, M. M., Billington, S. L.
SPRINGER-VERLAG BERLIN.2011: 173–176
- **Engineered Biomaterials for Construction: A Cradle-to-Cradle Design Methodology for Green Material Development** *International Journal of Environmental, Cultural, Economic and Social Sustainability*
Srubar, W., V., Michel, A., T., Criddle, C., S., Frank, C., W., Billington, S., L.

2011; 5 (7): 157-166

- **NONLINEAR MICROMECHANICAL MODELING OF HYGROTHERMAL EFFECTS ON STRUCTURAL BIOBASED COMPOSITE MATERIALS** *International Workshop on Multiscale and Multiphysics Processes in Geomechanics*
Srubar, W. V., Billington, S. L.
SPRINGER-VERLAG BERLIN.2011: 189–192
- **Effects of Natural Porous Additives on the Tensile Mechanical Performance and Moisture Absorption Behavior of PHBV-based Composites for Construction.** *Stanford Undergraduate Research Journal*
Alvarado, A., J., Morales, K., M., Srubar, W., V., Billington, S., L.
2011; 10
- **Cyclic behavior of precast, self-compacting ductile concrete infill panels for seismic retrofit of steel frame buildings** *ACI Structural Journal*
Olsen, E., C., Billington, S., L.
2011; 1 (108): 51-60
- **Modeling Residual Displacements of Concrete Bridge Columns under Earthquake Loads Using Fiber Elements** *JOURNAL OF BRIDGE ENGINEERING*
Lee, W. K., Billington, S. L.
2010; 15 (3): 240-249
- **Cyclic Response of Precast High-Performance Fiber-Reinforced Concrete Infill Panels** *ACI STRUCTURAL JOURNAL*
OLSEN, E. C., Billington, S. L.
2010; 108 (1): 51-60
- **Retrofitting Unreinforced Masonry Infills with Sprayable, Ductile Cement-based Composites** *ATC US-Japan Workshop on Improvement of Structural Design and Construction Practices*
Billington, S., Kyriakides, M., Blackard, B., William, K., Stavridis, A., Shing, P.
2010
- **Mechanical Performance of PHB-Based Composites for Construction Applications Exposed to Accelerated Weathering** *11th International Conference on Biocomposites: Transition to Green Materials*
Michel, A., Billington, S.
2010
- **Hybrid Testing of a Retrofitted Steel Moment Resisting Frame with Infill Panels** *9th US National and 10th Canadian Conference on Earthquake Engineering: Reaching Beyond Borders*
Lignos, D., Billington, S.
2010
- **Experimental and Analytical Investigation of Masonry Beams Retrofitted with ECC Under Out-of-Plane Bending** *9th HSTAM International Congress on Mechanics*
Kyriakides, M., Hendriks, M., Billington, S.
2010
- **Simulation of Masonry Beams Retrofitted with Engineered Cementitious Composites** *EURO-C*
Kyriakides, M., Hendricks, M., Billington, S.
2010
- **Alternate Approaches to Simulating the Performance of Ductile Fiber-reinforced Cement-based Materials in Structural Applications** *EURO-C*
Billington, S.
2010
- **Evaluation of Sequentially Linear Finite Element Analysis to Simulate Nonlinear Behavior in Mortar and Engineered Cementitious Composites in Flexure** *ACI Special Publication*
Billington, S., L.
2009: 265-12
- **Nonlinear and Sequentially Linear Analysis of Tensile Strain Hardening Cement-Based Composite Beams in Flexure** *Computational Modeling Workshop on Concrete, Masonry and on Fiber-Reinforced Composites*
Billington, S.
2009

- **Computational Modeling of Concrete, Masonry and Fiber-Reinforced Composites** *The Workshop*
Hendriks, M., Billington, S.
2009
- **Seismic Performance of Non-Ductile RC Frames with Brick Infill** *ATC & SEI Conference on Improving the Seismic Performance of Existing Buildings and Other Structures*
Shing, P., Stavridis, A., Koutouros, I., Willam, K., Blackard, B., Kyriakides, M., Billington, S., Arnold, S.
2009
- **Impact of Moisture on Biobased Composites for Construction Applications** *2009 Society for the Advancement of Material and Process Engineering*
Christian, S., Michel, A., Billington, S.
2009
- **Sustainable Biocomposites for Construction** *Composites & Polycon 2009, American Composites Manufacturers Association*
Christian, S., Billington, S.
2009
- **Comparison of Retrofitting Techniques for Existing Steel Moment Resisting Frames** *ATC & SEI Conference on Improving the Seismic Performance of Existing Buildings and Other Structures*
Lignos, D., Hunt, C., Krebs, A., Billington, S.
2009
- **Evaluation of a Sprayable, Ductile Cement-Based Composite for the Seismic Retrofit of Unreinforced Masonry Infills** *ATC & SEI Conference on Improving the Seismic Performance of Existing Buildings and Other Structures*
Billington, S., Kyriakides, M., Blackard, B., Willam, K., Stavridis, A., Shing, P.
2009
- **Impact of Moisture on Biobased Composites for Construction Applications** *Society for the Advancement of Material Process Engineering*
Christian, S., Billington, S.
2009
- **Residual Displacement Prediction for Structural Concrete Columns under Earthquake Loading** *ASCE J. Bridge Engineering*
Lee, W., K., Billington, S., L.
2009; 3 (15): 240-249
- **Simulation of Self-Centering Fiber-Reinforced Concrete Columns**
Lee, W., K., Billington, S., L.
2008
- **Mechanical Properties of Biocomposites for Sustainable Construction Practices** *17th International Associate for Bridge and Structural Engineering*
Schrass-Christian, S., Billington, S.
2008
- **Analysis of Thin Layer Ductile Concrete as a Seismic Retrofit for Masonry Infill Walls** *6th International Conference on Computation of Shell and Spatial Structures*
Kyriakides, M., Billington, S.
2008
- **A Seismic Retrofit for Masonry Infill Walls Using Ductile Concrete** *17th International Associate for Bridge and Structural Engineering*
Kyriakides, M., Billington, S.
2008
- **Modeling Biocomposites Using Laminate Plate Theory** *6th International Conference on Computation of Shell and Spatial Structures*
Schrass-Christian, S., Billington, S.
2008
- **Seismic Retrofit of Masonry-Infilled Non-Ductile Reinforced Concrete Frames Using Sprayable ECC** *14th World Conference on Earthquake Engineering*
Kyriakides, M., Billington, S.
2008

- **Creep and shrinkage of high-performance fiber-reinforced cementitious composites** *ACI MATERIALS JOURNAL*
Rouse, J. M., Billington, S. L.
2007; 104 (2): 129-136

- **Post-Tensioned Structural Concrete Bridge Piers with Self-Centering Characteristics** *ASCE-SEI Structures Congress*
Lee, W., Jeong, H., Billington, S., Mahin, S., Sakai, J.
2007

- **Simulation of self-centering, segmentally precast concrete columns for a probabilistic, performance-based assessment** *EURO-C Conference 2006*
Lee, W. K., Billington, S. L.
TAYLOR & FRANCIS LTD.2006: 731–738

- **Performance-Based Assessment of the Self-Centering Concrete Bridge Pier System for Seismic Regions** *8th US National Conference on Earthquake Engineering*
Lee, W., Billington, S.
2006

- **Analytical Assessment of the Post-Earthquake Condition of Self-Centering vs. Traditional Concrete Bridge Pier Systems** *3rd International Conference on Bridge Maintenance, Safety and Management*
Lee, W., Billington, S.
2006

- **A Comparative Performance-Based Seismic Assessment of Traditional and Enhanced-Performance Bridge Piers Systems** *5th National Seismic Conference on Bridges and Highways*
Lee, W., Billington, S.
2006

- **Modeling the Impact and Rate Dependence in HPFRCC Materials on the Behavior of Infill Panels** *8th US National Conference on Earthquake Engineering*
Douglas, K., Billington, S.
2006

- **Simulation of Self-Centering, Segmentally Precast Concrete Columns for Probabilistic, Performance-Based Assessment** *EURO-C Conference on Computational Modeling of Concrete Structures*
Lee, W., Billington, S.
2006

- **Impact of Long-Term Material Degradation on Seismic Performance of Reinforced Concrete Bridge** *8th US National Conference on Earthquake Engineering*
Matsuki, S., Billington, S., Baker, J.
2006

- **Investigation of infill panels made from engineered cementitious composites for seismic strengthening and retrofit** *JOURNAL OF STRUCTURAL ENGINEERING-ASCE*
Kesner, K., Billington, S. L.
2005; 131 (11): 1712-1720

- **Rate Dependence in High-Performance Fiber-Reinforced Cement-Based Composites for Seismic Applications** *International Workshop on High-Performance Fiber-Reinforced Cement-Based Composites for Structural Applications*
Douglas, K., Billington, S.
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